American Power Fuses
AMP-TRAP 2000®
AJT (Class J TD)



SMARTSPOT® with Maximum circuit protection

Amp-trap 2000® SmartSpot® AJT fuses now provide a visual open fuse indicator. With advanced material technology added to the existing product line the AJT fuse provides IEC Type "2" (No Damage) protection to main, feeder, and branch circuits, for all types of loads — yet, they require only half the mounting space needed for 600VAC Class RK fuses. AJT's time delay characteristics for handling typical in-rush currents, its current limiting ability.

Highlights

- Smart Spot Indicator
- Time Delay
- Highly Current Limiting
- DC Ratings
- Optional Mechanical Indicator (70 to 600A fuses)

Features/Benefits

- Solid State SmartSpot Indicator
- Time delay for motor starting and transformer inrush
- 300kA interrupting rating - self-certified, UL witnessed tests
- Extremely current limiting for low peak let-thru current
- Most current limiting UL class fuse
- Small footprint requires less mounting space and allows smaller, more economical fuse blocks
- Easy 2-to-1 selectivity for prevention of nuisance shutdowns
- Unique Class J dimensions prevent replacement errors
- High-visibility orange label gives instant recognition
- Metal-embossed date and catalog number for traceability and lasting identification
- Fiberglass body provides dimensional stability in harsh industrial settings
- High-grade silica filler ensures fast arc quenching
- Optional EI Indicator/Switch mount for AJT70 to 600 open fuse indication

Applications

- Motor Circuits
- Mains
- Feeders
- Branch Circuits
- Lighting, Heating and General Loads
- Transformers
- Control Panels
- Circuit Breaker Back-up
- Bus Duct
- Load Centers

Ratings

AC: 1 to 600A
600VAC, 200kA I.R. (self certified for 600VAC, 300kA I.R.,UL witnessed)
DC: 1 to 600A
500VDC, 100kA I.R.

Approvals

AJT (1-600):

- UL Listed to Standard 248-8
- DC Listed to UL Standard 198L
- CSA Certified to Standard C22.2 No. 248.8
- IEC 269-2-1

AJT (70-600) EI:

- UL Component Recognized
- DC Tested to UL Standard 198L

American Power Fuses
AMP-TRAP 2000®
AJT (Class J TD)

Standard Fuse Ampere Ratings, Catalog Numbers and Ref Numbers

Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
1	AJT1	X214748	25	AJT25	X211160
1-1/4	AJT1-1/4	C215765	30	AJT30	W213229
1-1/2	AJT1-1/2	B215258	35	AJT35	M213727
1-6/10	AJT1-6/10	G216275	40	AJT40	C215259
1-8/10	AJT1-8/10	H216782	45	AJT45	D215766
2	AJT2	P219364	50	AJT50	Z217303
2-1/4	AJT2-1/4	A200882	60	AJT60	B218846
2-1/2	AJT2-1/2	T223094	70	AJT70*	L201421*
2-8/10	AJT2-8/10	M201422	80	AJT80*	W211159*
3	AJT3	Q211683	90	AJT90*	V212193*
3-2/10	AJT3-2/10	L212714	100	AJT100*	B215764*
3-1/2	AJT3-1/2	W212194	110	AJT110*	F216780*
4	AJT4	W214241	125	AJT125*	A217810*
4-1/2	AJT4-1/2	Y214749	150	AJT150*	Y218843*
5	AJT5	H216276	175	AJT175*	K219889*
5-6/10	AJT5-6/10	J216783	200	AJT200*	Y200880*
6	AJT6	D217813	225	AJT225*	V211158*
6-1/4	AJT6-1/4	P218329	250	AJT250*	K212713*
7	AJT7	Q219365	300	AJT300*	L213726*
8	AJT8	M219891	350	AJT350*	W214747*
9	AJT9	D222574	400	AJT400*	G216781*
10	AJT10	Y217302	450	AJT450*	M218327*
12	AJT12	C217812	500	AJT500*	N219363*
15	AJT15	N218328	600	AJT600*	C222573*
17-1/2	AJT17-1/2	A218845			
20	AJT20	Z201939			

**For optional indicator/switch mount add EI. For Example: AJT100EI .See table below*
***Note**: Indicator not available for rating 1A to 7A.*

Recommended Fuse Blocks With Box Connectors for Amp-trap® Class J Fuses

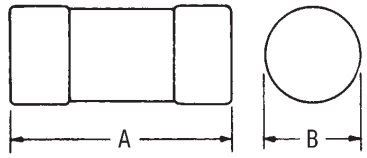
Fuse Ampere Rating	600V OR LESS			
	1 Pole		3 pole	
	Catalog Number	Reference Number	Catalog Number	Reference Number
0-30	US3J1I	M212922	US3J3I	K214967
31-60	US6J1I	F222047	US6J3I	M211381
61-100	61036J	Z201640	61038J	G212917
101-200	62001J	D214455	62003J	E214962
201-400	64031J	X218543	64033J	S219068
401-600	6631J	P201125	6633J	A201641

A variety of pole configurations and termination provisions is available.

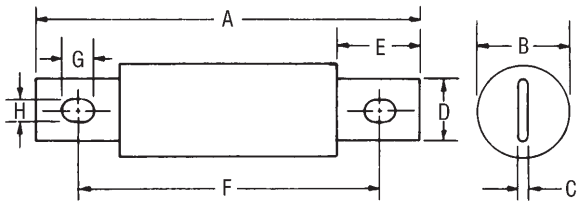
American Power Fuses
AMP-TRAP 2000®
AJT (Class J TD)

Dimensions

AMPERE RATING	A		B		C		D		E		F		G		H	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1-30	2-1/4	57	13/16	21	-	-	-	-	-	-	-	-	-	-	-	-
31-60	2-3/8	60	1-1/16	27	-	-	-	-	-	-	-	-	-	-	-	-
61-100	4-5/8	117	1-1/8	29	1/8	3.2	3/4	19	1	25	3-5/8	92	3/8	10	9/32	7
101-200	5-3/4	146	1-5/8	41	3/16	4.8	1-1/8	29	1-3/8	35	4-3/8	111	3/8	10	9/32	7
201-400	7-1/8	181	2-1/8	54	1/4	6.3	1-5/8	41	1-7/8	48	5-1/4	133	17/32	14	13/32	10
401-600	8	203	2-1/2	64	3/8	9.5	2	51	2-1/8	54	6	152	11/16	18	17/32	13

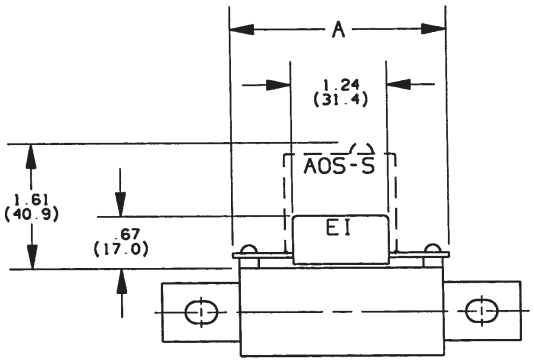


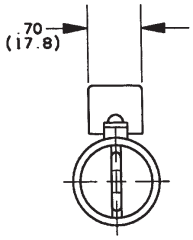
1-60A



70-600A

Optional Indicator/Microswitch Mount (EI) dimensions:



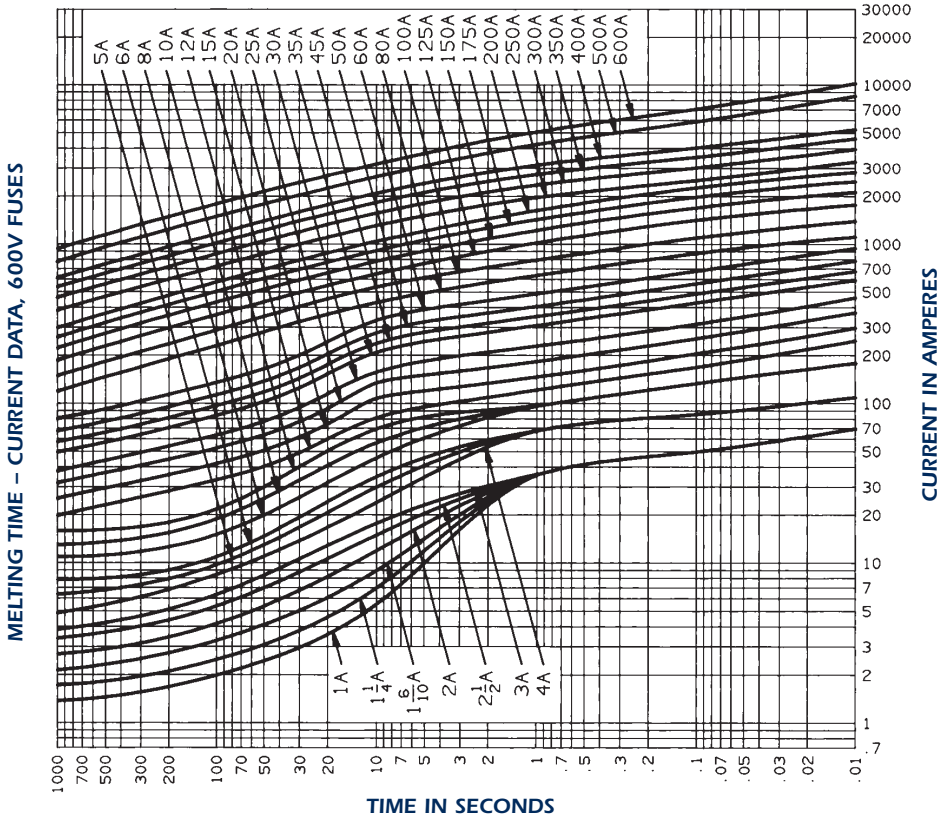


***Note**: Fuses with the EI option will receive the AOS-S or AOS-Q Add-On-Switch whiech is ordered reparately.*

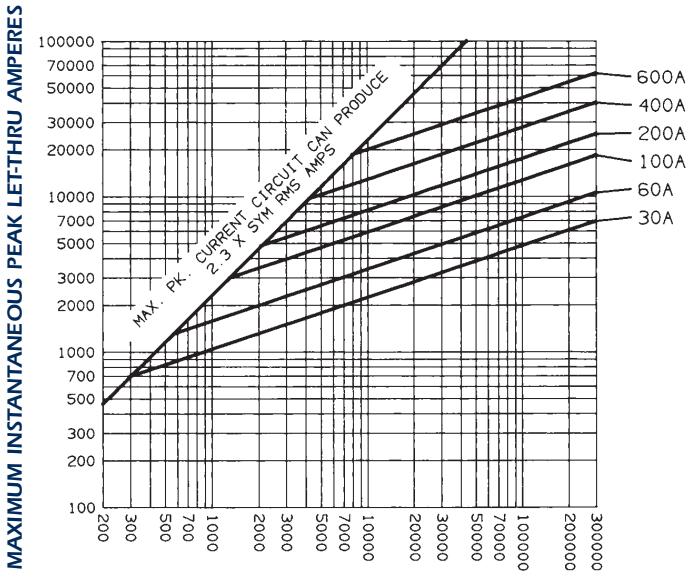
Catalog Number	Reference Number	A
AJT70EI	Y201938	2.80 (71.0)
AJT80EI	P211682	
AJT90EI	V214240	
AJT100EI	F216274	
AJT110EI	W217300	3.22 (81.8)
AJT125EI	L218326	
AJT150EI	M219362	
AJT175EI	R223092	
AJT200EI	K201420	3.24 (82.2)
AJT225EI	N211681	
AJT250EI	V213228	
AJT300EI	T214239	
AJT350EI	A215257	
AJT400EI	X217301	
AJT450EI	Z218844	3.61 (91.8)
AJT500EI	L219890	
AJT600EI	S223093	

American Power Fuses
AMP-TRAP 2000®
AJT (Class J TD)

AJT 1 to 600



Peak Let-Thru Current Data
AJT 30 to 600, 600 Volts AC



Three Phase Motor Fuse Selection

230 Volt Three Phase Class J AJT Fuses

Motor HP	Full Load Amperes at 230V	Recommended Fuse Ampere Rating Motor Acceleration Times		
		Minimum 2 sec.	Typical 5 sec.	Heavy Load Over 5 sec.
1/2	2.2	3	3-1/2	4
3/4	3.2	4	5	6
1	4.2	5	6-1/4	8
1-1/2	6	8	9	10
2	6.8	8	10	12
3	9.6	12	15	17-1/2
5	15.2	20	25	30
7-1/2	22	30	35	40
10	28	35	40	50
15	42	50	60	80
20	54	70	80	100
25	68	80	100	125
30	80	100	125	150
40	104	125	150	200
50	130	175	200	250
60	154	200	225	300
75	192	250	300	350
100	248	300	350	450
125	312	400	450	600
150	360	450	500	600
200	480	600	-	-

American Power Fuses
AMP-TRAP 2000®
AJT (Class J TD)

Three Phase Motor Fuse Selection

380 Volt Three Phase Class J AJT Fuses

Motor HP	Full Load Amperes at 380V	Recommended Fuse Ampere Rating		
		Motor Acceleration Times		
		Minimum 2 sec.	Typical 5 sec.	Heavy Load Over 5 sec.
1/2	1.3	1-6/10	2	2-1/4
3/4	1.9	2-1/2	2-8/10	3-1/2
1	2.5	3-2/10	4	4-1/2
1-1/2	3.6	4-1/2	5-6/10	6
2	4.1	5	6	7
3	5.8	8	8	10
5	9.2	12	15	17-1/2
7-1/2	13.3	17-1/2	20	25
10	17	20	25	30
15	25	30	40	45
20	33	40	50	60
25	41	50	60	70
30	48	60	80	90
40	68	80	100	125
50	79	90	125	150
60	93	110	150	175
75	116	150	175	200
100	150	175	225	250
125	189	250	300	350
150	218	300	350	400
200	291	350	450	500

460 Volt Three Phase Class J AJT Fuses

Motor HP	Full Load Amperes at 460V	Recommended Fuse Ampere Rating		
		Motor Acceleration Times		
		Minimum 2 sec.	Typical 5 sec.	Heavy Load Over 5 sec.
1/2	1.1	1-1/2	1-6/10	2
3/4	1.6	2	2-1/4	3
1	2.1	2-1/2	3-2/10	4
1-1/2	3	3-1/2	4-1/2	5-6/10
2	3.4	4	5	6
3	4.8	6	8	9
5	7.6	10	12	15
7-1/2	11	15	15	20
10	14	17-1/2	20	25
15	21	25	30	40
20	27	35	40	50
25	34	40	50	60
30	40	50	60	70
40	52	70	80	90
50	65	80	100	125
60	77	100	125	150
75	96	125	150	175
100	124	175	200	250
125	156	200	225	300
150	180	225	250	350
200	240	300	350	450
250	302	400	450	600
300	361	450	600	-

Three Phase Motor Fuse Selection

575 Volt Three Phase Class J AJT Fuses

Motor HP	Full Load Amperes at 575V	Recommended Fuse Ampere Rating		
		Motor Acceleration Times		
		Minimum 2 sec.	Typical 5 sec.	Heavy Load Over 5 sec.
1/2	.9	1-1/4	1-1/2	1-6/10
3/4	1.3	1-6/10	2	1-1/2
1	1.7	2-1/4	2-1/2	3
1-1/2	2.4	3	3-1/2	4-1/2
2	2.7	3-2/10	4	5
3	3.9	5	6	7
5	6.1	8	9	12
7-1/2	9	12	15	17-1/2
10	11	15	17-1/2	20
15	17	20	25	30
20	22	30	35	35
25	27	35	40	50
30	32	40	50	60
40	41	50	60	70
50	52	70	80	90
60	62	80	90	110
75	77	100	125	150
100	99	125	150	175
125	125	150	200	225
150	144	175	225	250
200	192	250	300	350
250	240	300	350	400
300	289	350	450	500

Minimum - Minimum sizing may not be heavy enough for motors with code letter G or higher.

Typical - Suggested for most applications. Will coordinate with NEMA Class 20 overload relays. Suitable for motor acceleration times up to 5 seconds.

Heavy Load - In accordance with Table 430-152. If this fuse is not sufficient to start the load, it may be increased to a maximum of 225% of full-load amperes (430-52 Exc. 2b). Use this column for Design E Motors.

American Power Fuses
AMP-TRAP 2000®
A4BQ (Class L TD)



Put the highest current-limitation... at your service.

Amp-trap 2000® A4BQ fuses are 20% more current limiting than any other Class L fuse on the market. When correctly coordinated, they bring a superior level of protection to service entrance equipment. Downstream circuit components have maximum protection against short circuit let-thru current. A4BQ's built-in, 4-second time delay characteristic (at 500% of rated current) accommodates harmless inrush currents with no nuisance opening.

Features/Benefits

- Fastest operation under short circuit conditions: Let-thru currents are typically 20% lower, with a corresponding let-thru energy (clearing I^2t) up to 40% lower than the next fastest Class L fuse
- Time delay for high inrush loads such as motors and transformers, without nuisance opening
- 300kA interrupting rating - self-certified, UL witnessed tests
- Most current limiting for lowest peak let-thru current; even at fault currents up to 300kA
- Pure silver links ensure lowest let-thru current and longer fuse life
- Easy 2-to-1 selectivity for prevention of nuisance shutdowns and "blackouts"
- Rejection-style design prevents replacement errors
- High-visibility orange label gives instant recognition
- Reduced inventory because A4BQ can replace all older types of Class L fuses now in service
- Metal-embossed date and catalog number for traceability and lasting identification
- Fiberglass body provides dimensional stability in harsh industrial settings
- High-grade silica filler ensures fast arc quenching

Ratings

AC: 100 to 6000A 600VAC, 200k A I.R.(self certified for 600VAC, 300k A I.R.,UL witnessed) 4-second delay at 500% rating

Note: *100-600A ratings are non-listed*

DC: 601 to 3000A 600VDC, 100kA I.R.

Highlights

- Time Delay
- Industry's Most Current-Limiting Class L Fuse
- Pure Silver Elements
- AC & DC Rated

Applications

- Mains, Feeders
- Large Motors
- Lighting, Heating and General Loads
- Circuit Breaker Back-up
- DC Rated: UPS DC Links, Battery Disconnects, Other DC Applications

Approvals

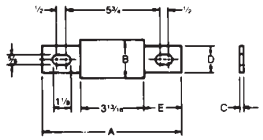
- UL Listed to Standard 248-10 (601-6000A)
- DC Listed to UL Standard 198L (601-3000A)
- CSA Certified to Standard C22.2 No. 248.10 (601-6000A)

**Please contact factory for special trigger actuator*

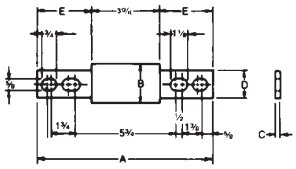
American Power Fuses
AMP-TRAP 2000®
A4BQ (Class L TD)

Standard Fuse Ampere Ratings

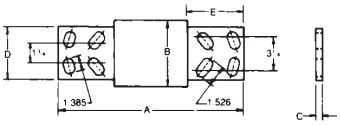
Ampere Rating	Catalog Number	Reference Number
100	A4BQ100	J215771
150	A4BQ150	X218336
200	A4BQ200	L222581
250	A4BQ250	H200889
300	A4BQ300	F201945
350	A4BQ350	Y211690
400	A4BQ400	E213237
450	A4BQ450	D214248
500	A4BQ500	F214756
600	A4BQ600	K215772
601	A4BQ601	H217311
650	A4BQ650	M217821
700	A4BQ700	Y218337
750	A4BQ750	K218854
800	A4BQ800	Z219373
900	A4BQ900	W219899
1000	A4BQ1000	P216282
1200	A4BQ1200	R216790
1350	A4BQ1350	G217310
1400	A4BQ1400	L217820
1500	A4BQ1500	J218853
1600	A4BQ1600	Y219372
1800	A4BQ1800	V219898
2000	A4BQ2000	B223101
2500	A4BQ2500	V201429
3000	A4BQ3000	F211168
3500	A4BQ3500	E212202
4000	A4BQ4000	W213735
5000	A4BQ5000	K215266
6000	A4BQ6000	Q216283



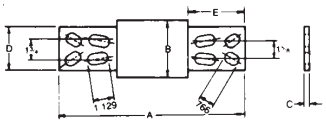
100-800A



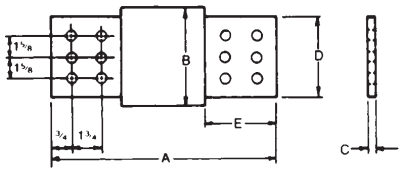
801-2000A



3001-4000A



2001-3000A



4001-6000A

Safety Note: Class L fuses are dimensioned for one-way interchangeability. A Class L fuse of any lower ampere rating can be substituted for a given Class L fuse.

Dimensions

AMPERE RATING	A		B		C		D		E	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
100-600	8-5/8	219	2	51	5/16	8	1-5/8	41	2-13/32	61
601-800	8-5/8	219	2-1/2	63	3/8	9	2	51	2-13/32	61
801-1200	10-3/4	273	2-1/2	63	3/8	9	2	51	3-15/32	88
1201-1600	10-3/4	273	3	76	7/16	11	2-3/8	60	3-15/32	88
1601-2000	10-3/4	273	3-1/2	89	1/2	12	2-3/4	70	3-15/32	88
2001-2500	10-3/4	273	4-1/2	114	3/4	19	3-1/2	89	3-15/32	88
2501-3000	10-3/4	273	5	127	3/4	19	4	102	3-15/32	88
3001-4000	10-3/4	273	5-3/4	146	3/4	19	4-3/4	121	3-15/32	88
4001-5000	10-3/4	273	6-1/4	159	1	25	5-1/4	133	3-15/32	88
5001-6000	10-3/4	273	7-1/8	181	1	25	5-3/4	146	3-15/32	88

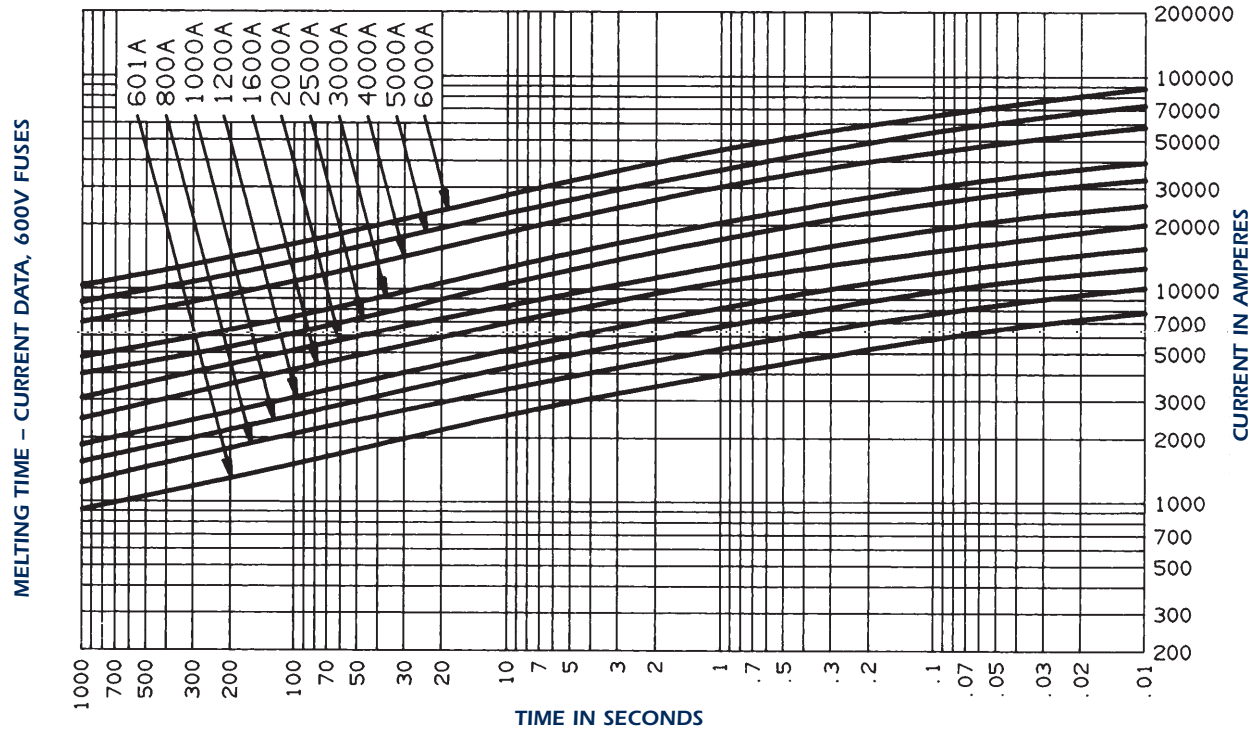
American Power Fuses
AMP-TRAP 2000®
A4BQ (Class L TD)

A4BQ (601 to 6000) Let-Thru Current in kilo-Amperes

Available Fault	601		800		1000		1200		1600		2000		2500		3000		4000		5000		6000	
RMS AMPS	RMS	IP	RMS	IP	RMS	IP	RMS	IP	RMS	IP	RMS	IP	RMS	IP	RMS	IP	RMS	IP	RMS	IP	RMS	IP
10,000	7.4	17	8.7	20	10	23	10	23	10	23	10	23	10	23	10	23	10	23	10	23	10	23
15,000	8.3	19	10	23	12	27	13	30	15	35	15	35	15	35	15	35	15	35	15	35	15	35
20,000	9.1	21	11	25	13	29	14	33	17	39	20	46	20	46	20	46	20	46	20	46	20	46
25,000	9.8	23	12	27	13	31	15	35	18	42	22	50	25	58	25	58	25	58	25	58	25	58
30,000	10	24	13	29	14	33	16	37	20	45	23	53	29	66	30	69	30	69	30	69	30	69
35,000	11	25	13	30	15	35	17	39	20	47	24	56	30	69	35	81	35	81	35	81	35	81
40,000	12	27	14	32	16	37	18	41	21	49	25	58	31	72	36	83	40	92	40	92	40	92
50,000	13	29	15	34	17	40	19	44	23	53	27	63	34	78	39	89	48	111	50	115	50	115
60,000	13	30	16	36	18	42	20	47	25	57	29	67	36	83	41	94	51	118	60	138	60	138
80,000	14	33	17	40	20	46	23	52	27	62	32	73	40	91	45	104	57	130	67	153	77	176
100,000	16	36	19	43	22	50	24	56	29	67	34	79	43	98	49	112	61	140	72	165	83	190
150,000	18	41	21	49	25	57	28	64	33	77	39	90	49	112	56	128	70	160	82	189	94	217
200,000	20	45	24	54	27	63	31	71	37	84	43	100	53	123	61	141	77	176	90	208	104	239

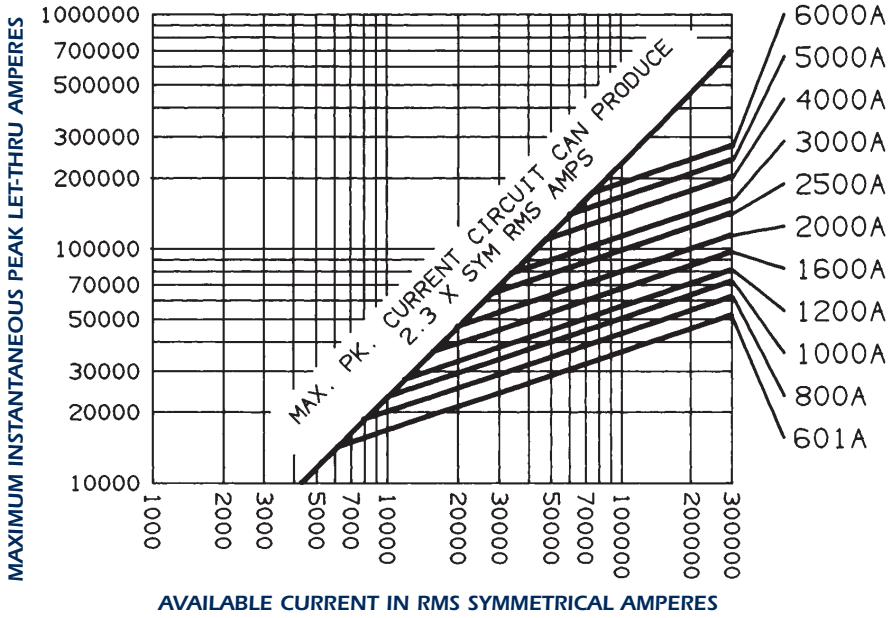
The current limiting effect of A4BQ Class L fuses is presented in the table above. This table correlates actual fuse peak let-thru currents with equal value peak currents reached in the first half cycle (worst case) of short circuits in unfused circuits. The let-thru current is expressed as "Apparent RMS Symmetrical Amperes" in order to be more useful for practical applications. The currents are based on an assumed 15% power factor. Example: An A4BQ1200, when applied in a circuit with 40,000 RMS symmetrical amperes available, will limit that current during a short circuit, to an apparent 18,000 RMS symmetrical amperes. Under this condition, any equipment being protected would be subjected to only 18,000 RMS amperes.

A4BQ 601 to 6000



American Power Fuses
AMP-TRAP 2000®
A4BQ (Class L TD)

Peak Let-Thru Current Data – A4BQ 601 to 6000, 600 Volts AC



American Power Fuses
AMP-TRAP 2000®
A2D and A6D (Class RK1 TD)



Upgrade yesterday's circuits to today's Type 2 protection

Amp-trap 2000® SmartSpot® A2D, A6D fuses now provide a visual open fuse indicator. With advanced material technology added to the existing product line the A2D, A6D fuses provide IEC Type "2" (No Damage) protection to main, feeder, and branch circuits, for all types of loads — A2D, A6D's time delay characteristics for handling harmless in-rush currents, its current limiting ability and wide range of ratings (from 1 to 600 Amperes) — give excellent protection for all your applications.

Features/Benefits

- Solid State SmartSpot Indicator
- Time delay for motor starting and transformer inrush currents without nuisance opening
- 300kA interrupting rating - self-certified, UL witnessed tests
- Extremely Current Limiting for low peak let-thru current
- Easy 2-to-1 selectivity for prevention of nuisance shut downs and "black outs"
- Rejection-style design prevents replacement errors (when used with recommended fuse blocks)
- High-visibility orange label gives instant recognition
- Reduced inventory by taking the place of RK5, K, and H fuses
- Metal-embossed date and catalog number for easier traceability and lasting identification
- Fiberglass body provides dimensional stability in harsh industrial settings
- Brass end-caps (blade-style) for cooler operation and superior performance

Ratings

A2D AC: 1/10 to 600A 250VAC, 200kA I.R. (self certified for250VAC, 300kA I.R., UL witnessed)

A6D AC: 1/10 to 600A 600VAC, 200kA I.R. (self certified for 600VAC, 300kA I.R.)

Highlights

- SmartSpot Indicator
- Time Delay
- Current Limiting
- Plated Terminals

Applications

- Motors
- Safety Switches
- Transformers
- Branch Circuit Protection
- Disconnects
- Control Panels
- All General-purpose Circuits

Approvals

- UL Listed to Standard 248-12
- CSA Certified to Standard C22.2 No. 248.12

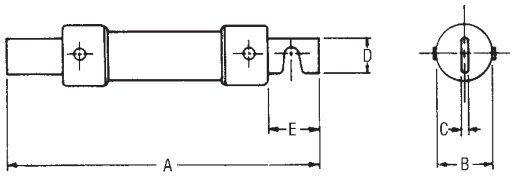
American Power Fuses
AMP-TRAP 2000®
A2D and A6D (Class RK1 TD)

Standard Fuse Ampere Ratings

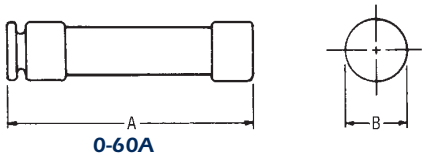
Ampere Rating	Cat. Number		Ref. Number		Amp. Rating	Cat. Number		Ref. Number	
	250V	600V	250V	600V		250V	600V	250V	600V
1/10	A2D1/10R	A6D1/10R	Q215248	R201932	10	A2D10R	A6D10R	Z216268	G211675
15/100	A2D15/100R	A6D15/100R	M217292	D212707	12	A2D12R	A6D12R	Z216774	M212186
2/10	A2D2/10R	A6D2/10R	J223085	C216271	15	A2D15R	A6D15R	R217802	N213222
3/10	A2D3/10R	A6D3/10R	K212184	G219357	17-1/2	A2D17-1/2R	A6D17-1/2R	C218318	E213720
4/10	A2D4/10R	A6D4/10R	N214740	E201415	20	A2D20R	A6D20R	P200872	C216777
1/2	A2D1/2R	A6D1/2R	T215757	P211153	25	A2D25R	A6D25R	B201412	Q217295
6/10	A2D6/10R	A6D6/10R	R218837	N214234	30	A2D30R	A6D30R	B212705	E219884
8/10	A2D8/10R	A6D8/10R	Q200873	D216778	35	A2D35R	A6D35R	L213220	W222567
1	A2D1R	A6D1R	Q218836	M214233	40	A2D40R	A6D40R	R215249	S201933
1-1/8	A2D1-1/8R	A6D1-1/8R	K213219	V222566	45	A2D45R	A6D45R	V215758	Q211154
1-1/4	A2D1-1/4R	A6D1-1/4R	A212704	D219883	50	A2D50R	A6D50R	N217293	E212708
1-4/10	A2D1-4/10R	A6D1-4/10R	B213717	L223087	60	A2D60R	A6D60R	E219355	R214743
1-6/10	A2D1-6/10R	A6D1-6/10R	J214230	R200874	70	A2D70R	A6D70R	N201929	E218320
1-8/10	A2D1-8/10R	A6D1-8/10R	M214739	D201414	75	A2D75R	-	L211150	-
2	A2D2R	A6D2R	P201930	V217805	80	A2D80R	A6D80R	D211672	S218838
2-1/4	A2D2-1/4R	A6D2-1/4R	C219882	T215251	90	A2D90R	A6D90R	J212183	F219356
2-1/2	A2D2-1/2R	A6D2-1/2R	D219354	Q214742	100	A2D100R	A6D100R	P215247	N211152
2-8/10	A2D2-8/10R	A6D2-8/10R	S222564	X215760	110	A2D110R	A6D110R	S215756	F211674
3	A2D3R	A6D3R	C213718	M223088	125	A2D125R	A6D125R	Y216267	L212185
3-2/10	A2D3-2/10R	A6D3-2/10R	E211673	T218839	150	A2D150R	A6D150R	Y216773	C212706
3-1/2	A2D3-1/2R	A6D3-1/2R	M211151	F218321	175	A2D175R	A6D175R	L217291	M213221
4	A2D4R	A6D4R	A216269	H211676	200	A2D200R	A6D200R	Q217801	D213719
4-1/2	A2D4-1/2R	A6D4-1/2R	K214231	S200875	225	A2D225R	A6D225R	B218317	L214232
5	A2D5R	A6D5R	S217803	P213223	250	A2D250R	A6D250R	P218835	P214741
5-6/10	A2D5-6/10R	A6D5-6/10R	A216775	N212187	300	A2D300R	A6D300R	C219353	S215250
6	A2D6R	A6D6R	T222565	V215252	350	A2D350R	A6D350R	B219881	W215759
6-1/4	A2D6-1/4R	A6D6-1/4R	D218319	F213721	400	A2D400R	A6D400R	R222563	B216270
7	A2D7R	A6D7R	K223086	Y215761	450	A2D450R	A6D450R	H223084	B216776
8	A2D8R	A6D8R	C201413	R217296	500	A2D500R	A6D500R	N200871	P217294
9	A2D9R	A6D9R	Q201931	W217806	600	A2D600R	A6D600R	A201411	T217804

Dimensions

Ampere Rating	A		B		C		D		E	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
250V-A2D										
0-30	2	51	9/16	14	-	-	-	-	-	-
31-60	3	76	13/16	21	-	-	-	-	-	-
61-100	5-/8	149	1-1/16	27	1/8	3	3/4	19	1	25
101-200	7-1/8	181	1-9/16	40	3/16	5	1-1/8	28	1-3/8	35
201-400	8-5/8	219	2-1/16	53	1/4	6	1-5/8	41	1-7/8	48
401-600	10-3/8	264	2-9/16	66	1/4	6	2	51	2-1/4	57
600V-A6D										
0-30	5	127	13/16	21	-	-	-	-	-	-
31-60	5-1/2	139	1-1/16	27	-	-	-	-	-	-
61-100	7-7/8	200	1-5/16	34	1/8	3	3/4	19	1	25
101-200	9-5/8	244	1-13/16	46	3/16	5	1-1/8	28	1-3/8	35
201-400	11-5/8	295	2-9/16	66	1/4	6	1-5/8	41	1-7/8	48
401-600	13-3/8	340	3-1/8	80	1/4	6	2	51	2-1/4	57



61-600A



0-60A

American Power Fuses
AMP-TRAP 2000®
A2D and A6D (Class RK1 TD)

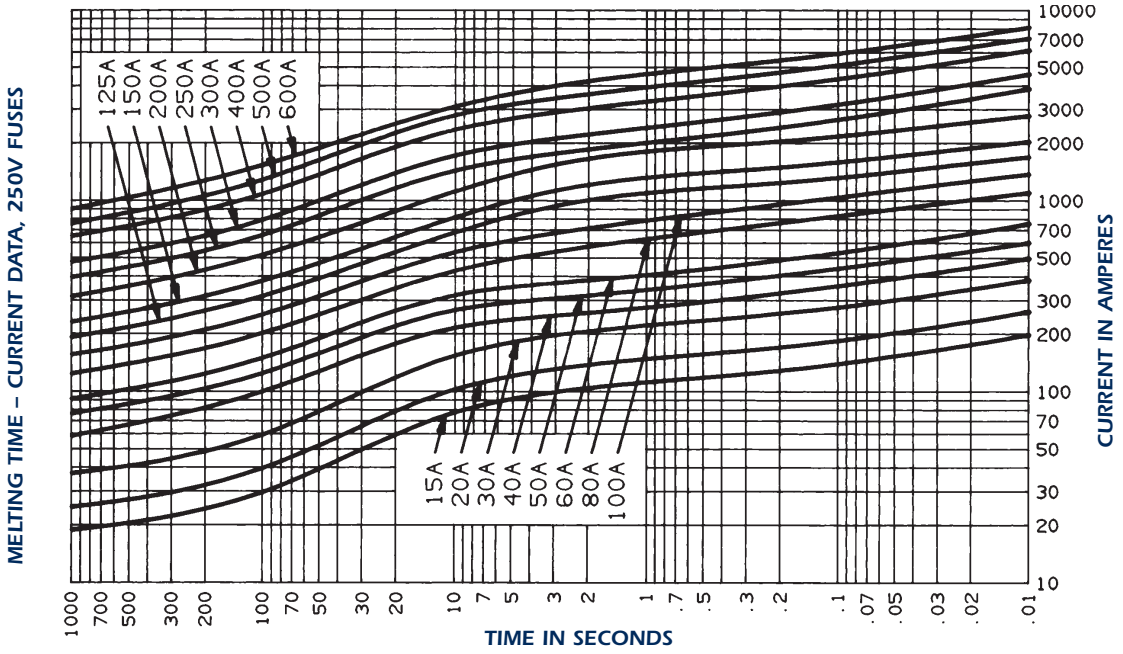
Recommended Fuse Blocks with Box Connectors for Amp-trap® Class RK1 Fuses

Fuse Ampere Rating	Catalog Number 250V		Reference Number 250V	
	1 Pole	3 pole	1 pole	3 pole
0-30	20306R	20308R	T213411	K215956
31-60	20606R	20608R	B212383	E214939
61-100	21036R	21038R	D201621	M212899
101-200	22001R	22003R	R213915	G214941
201-400	24001R	24003R	J219566	D222022
401-600	2631R	2633R	H214942	P215960

Fuse Ampere Rating	Catalog Number 600V		Ref. Number 600V	
	1 Pole	3 pole	1 pole	3 pole
0-30	60306R	60308R	H212389	K214438
31-60	60606R	60608R	K212391	M214440
61-100	61036R	61038R	W204788	Z211875
101-200	62001R	62003R	V212906	B213924
201-400	64001R	64003R	D219055	M222030
401-600	6631R	6633R	J216990	E218021

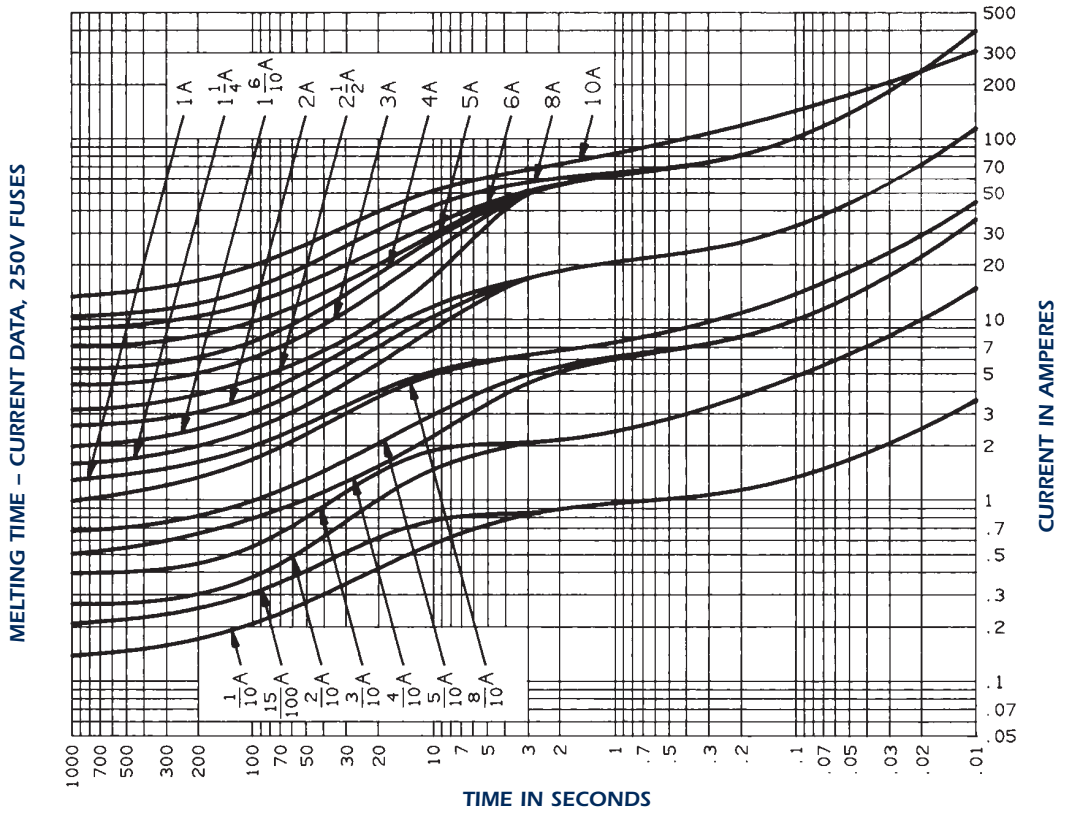
A variety of pole configurations and termination provisions is available.

A2D 15 to 600

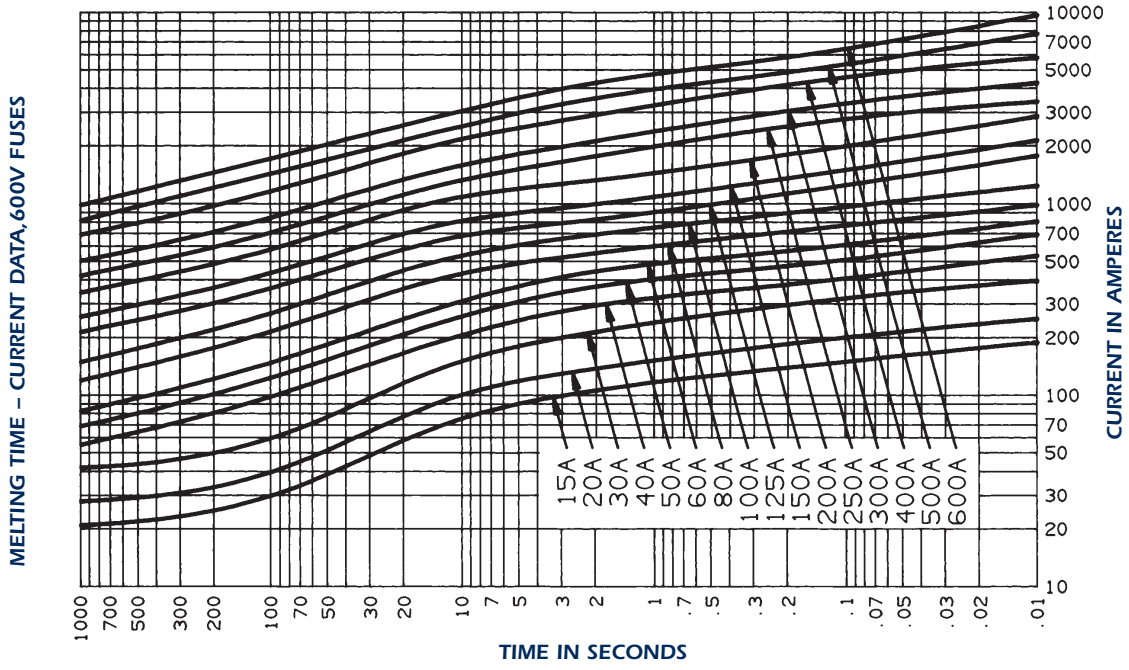


American Power Fuses
AMP-TRAP 2000®
A2D and A6D (Class RK1 TD)

A2D 1/10 to 10

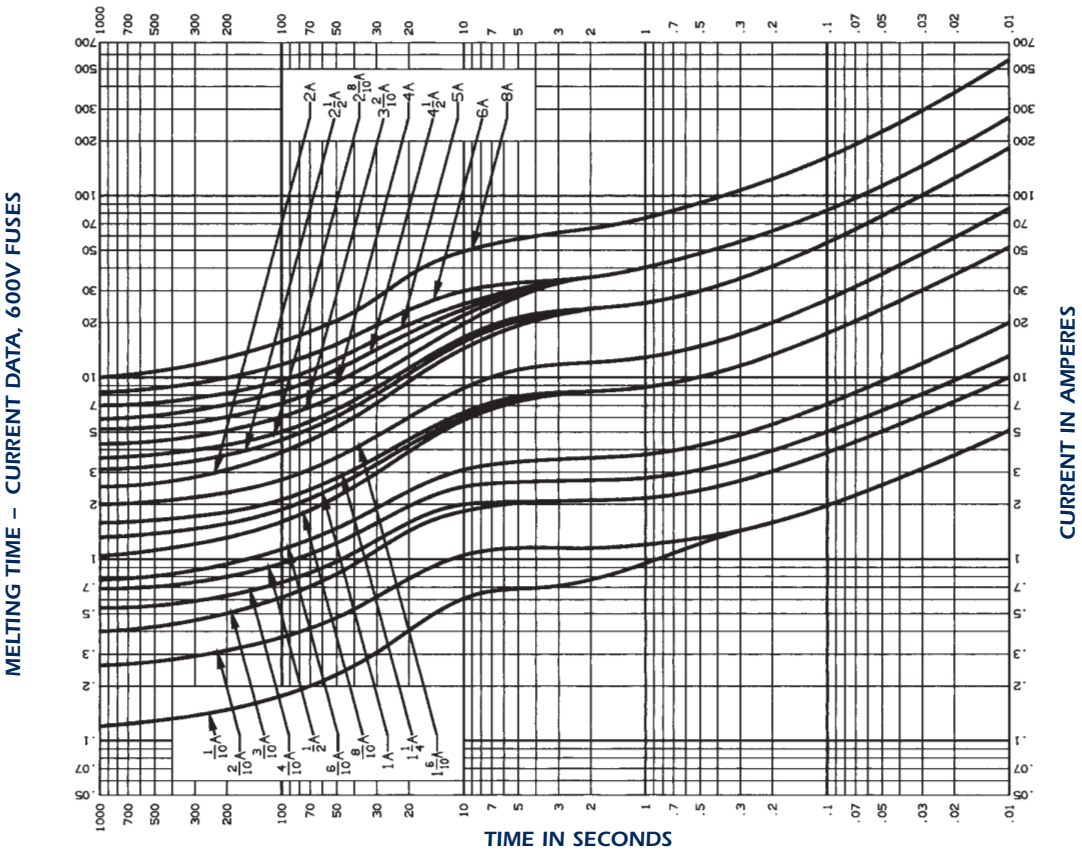


A6D 15 to 600

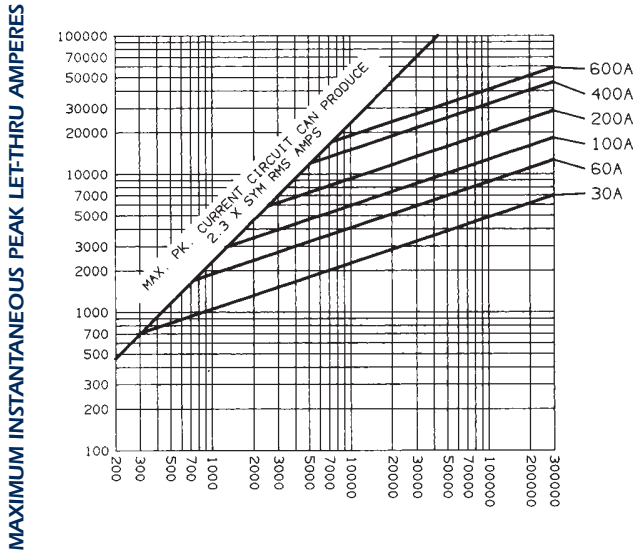


American Power Fuses
AMP-TRAP 2000®
A2D and A6D (Class RK1 TD)

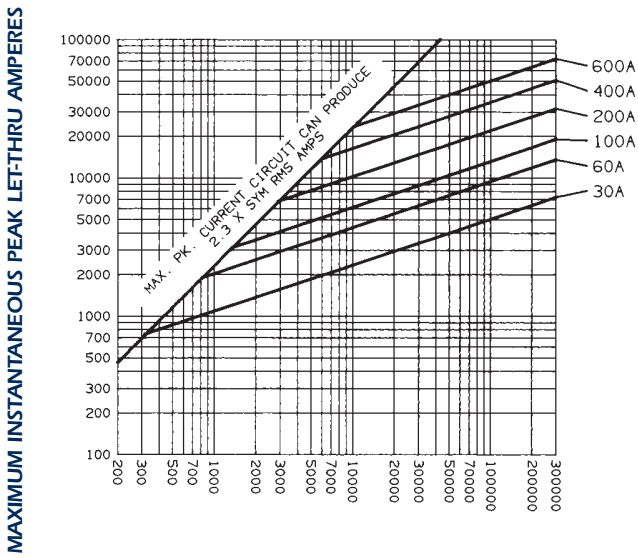
A6D 1/10 to 8



Peak Let-Thru Current Data
A2D 30 to 600, 250 Volts AC



Peak Let-Thru Current Data
A6D 30 to 600, 600 Volts AC



NOTE: SEE APPLICATION INFORMATION SECTION OF CATALOG (LOW VOLTAGE FUSES FOR MOTOR PROTECTION) FOR GUIDELINES ON THREE PHASE MOTOR FUSE SELECTION, CLASS RK1 A2D & RK1 A6D FUSES

American Power Fuses
AMP-TRAP 2000®
ATDR (Class CC TD)



The best protection for today's small motors

Amp-trap 2000® ATDR small-dimension fuses can provide IEC Type 2 "no damage" protection to your facility's increasingly sensitive branch circuit components and small motors – minimizing the risk of fault-related damage. ATDR Class CC fuses deliver the best time delay characteristics in their class with excellent cycling ability for small motor loads.

Features/Benefits

- Time delay for motor starting inrush currents without nuisance opening
- Highly current limiting for low peak let-thru current
- Improved cycling ability for frequent motor starts/stops without nuisance fuse opening
- Rejection-style design prevents replacement errors (when used with recommended fuse blocks)
- High-visibility orange label ensures instant recognition, simplifies replacement
- Metal-embossed date and catalog number for traceability and lasting identification
- Fiberglass body provides dimensional stability in harsh industrial settings
- High-grade silica filler ensures fast arc quenching and optimum current limitation

Ratings

AC: 1/4 to 30A 600VAC, 200kA I.R.

DC: 1/4 to 30A 300VDC, 100kA I.R.

Highlights

- Time Delay
- Best Choice for Small Motor Protection
- Highly Current-Limiting
- AC & DC Rated

Applications

- Small Motors
- Contactors
- Lighting, Heating and General Loads
- Branch Circuit Protector

Approvals

- UL Listed to Standard 248-4
- CSA Certified to Standard C22.2 No. 248.4
- DC Listed to UL Standard 198L

American Power Fuses
AMP-TRAP 2000®
ATDR (Class CC TD)

Standard Fuse Ampere Ratings

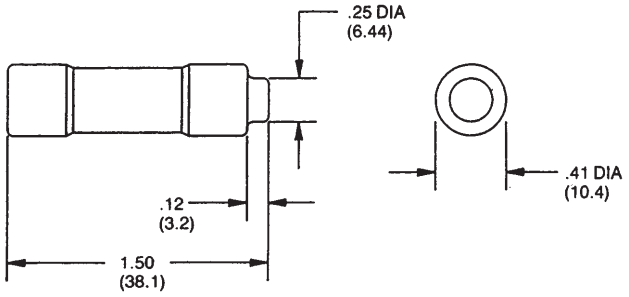
Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
1/4	ATDR1/4	W200855	4	ATDR4	V217276
1/2	ATDR1/2	Q223068	4-1/2	ATDR4-1/2	Z217786
8/10	ATDR8/10	K201397	5	ATDR5	K218302
1	ATDR1	T217275	5-6/10	ATDR5-6/10	Z218821
1-1/8	ATDR1-1/8	Y218820	6	ATDR6	L219338
1-1/4	ATDR1-1/4	J218301	6-1/4	ATDR6-1/4	L219867
1-4/10	ATDR1-4/10	K219337	7	ATDR7	A222548
1-1/2	ATDR1-1/2	Y217785	7-1/2	ATDR7-1/2	R223069
1-6/10	ATDR1-6/10	K219866	8	ATDR8	X200856
1-8/10	ATDR1-8/10	Z222547	9	ATDR9	Y201915
2	ATDR2	S212168	10	ATDR10	J201396
2-1/4	ATDR2-1/4	T213204	12	ATDR12	X201914
2-1/2	ATDR2-1/2	J212689	15	ATDR15	V211135
2-8/10	ATDR2-8/10	L213703	7-1/2	ATDR17-1/2	L211656
3	ATDR3	Y215232	20	ATDR20	R214214
3-2/10	ATDR3-2/10	J216254	25	ATDR25	V214723
3-1/2	ATDR3-1/2	C215742	30	ATDR30	G216758

Small Motor Fuse Protection, 600 Volts AC or Less

Motor Full load Amperes	ATDR Rating*	
	Minimum Duty	Normal Duty
.71 - .89	1-1/4	1-6/10
.90 - 1.19	1-6/10	2
1.20 - 1.34	2	2-1/2
1.35 - 1.79	2-1/2	3
1.80 - 2.25	3	4
2.26 - 2.69	4	5
2.70 - 2.90	4	6
2.91 - 3.20	5	6
3.21 - 3.75	5	7
3.76 - 4.50	6	8
4.51 - 5.34	8	10
5.35 - 5.69	10	12
5.70 - 6.70	12	12
6.71 - 7.79	12	15
7.80 - 8.88	15	17-1/2
8.89 - 11.1	17-1/2	20
11.2 - 13.3	20	25
13.4 - 15.2	25	30

** The 1996 National Electrical Code allows time-delay Class CC fuses to be sized at up to 400% (maximum) of motor FLA, if needed.*

Dimensions

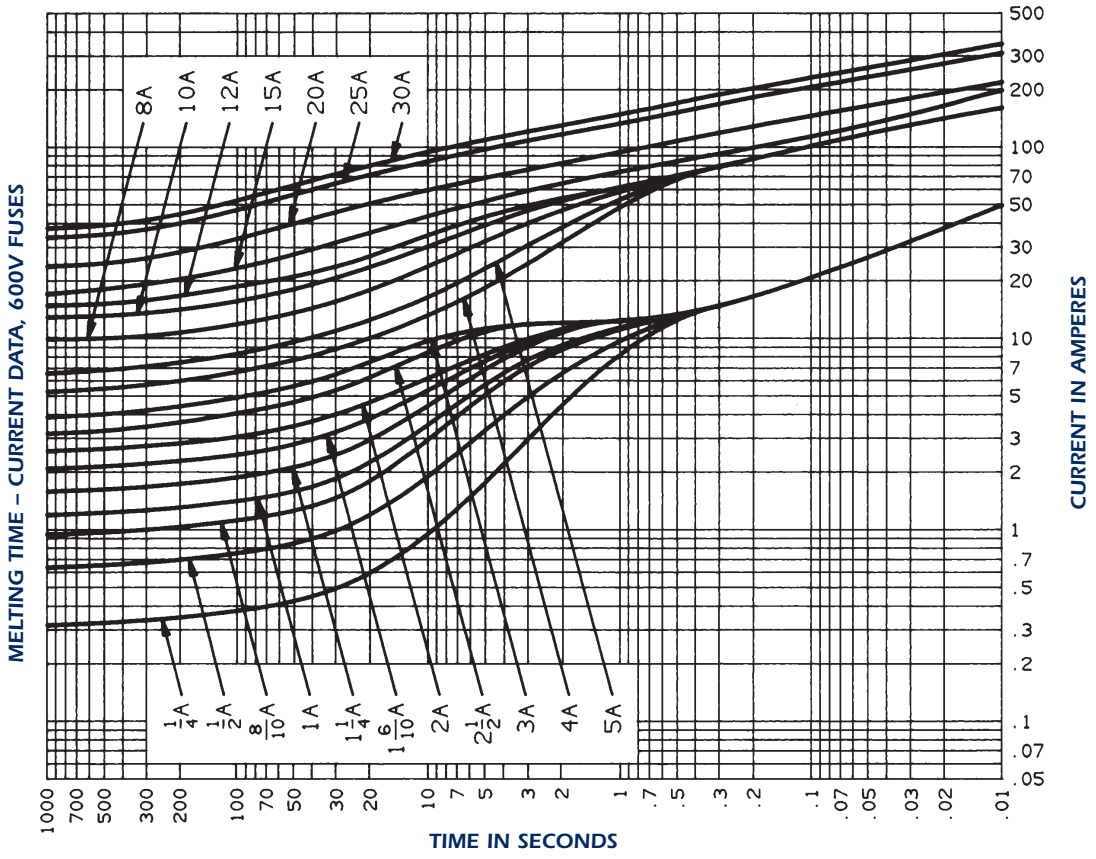


Recommended Fuse Blocks for Class CC Fuses

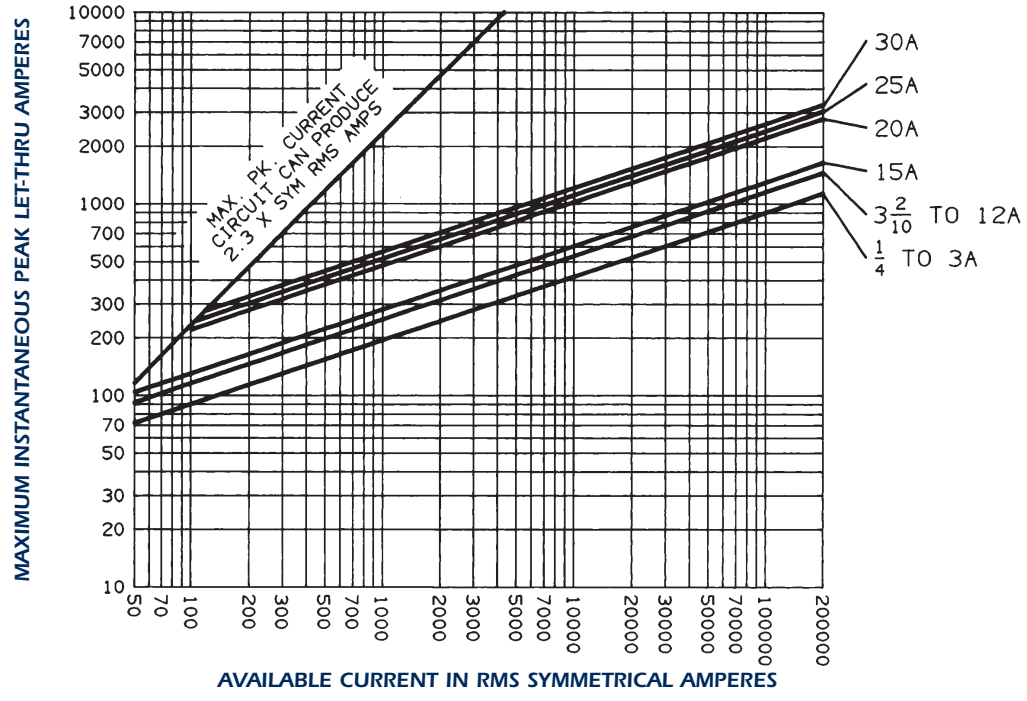
Number of Poles	Catalog Number				Reference number			
	Ultrasafe Indicating Fuse Holder	Screw Connector w/ Double Quick Connects	Pessure Plate Connector w/ Double Quick Connects	Copper Box Connector	Ultrasafe Indicating Fuse Holder	Screw Connector w/ Double Quick Connects	Pressure Plate Connector w/ Double Quick Connects	Copper Box Connector
ADDER		30310R	30320R	30350R		W204857	Z217510	N213429
1	USCC1I	30311R	30321R	30351R	X213943	R212397	M218534	G213929
2	USCC2I	30312R	30322R	30352R	D217008	Z212910	Y219579	V214447
3	USCC3I	30313R	30323R	30353R	Y218038	M213428	B222779	X214955

American Power Fuses
AMP-TRAP 2000®
ATDR (Class CC TD)

ATDR 1/4 to 30



Peak Let-Thru Current Data – ATDR 1/4 to 30, 600 Volts AC



American Power Fuses
AMP-TRAP 2000®
ATQR (Class CC TD)



Take control of fault currents headed for your control transformer

ATQR small-dimension fuses feature time delay characteristics ideally suited for the high inrush currents of control transformers, solenoids, and similar inductive loads. The newest member of our Amp-trap 2000® family of fuses - ATQR fuses provide superior protection for the branch circuits of electrical distribution systems.

Features/Benefits

- Time delay for control transformer inrush loads without nuisance opening
- Highly current limiting for low peak let-thru current
- Rejection-style design prevents replacement errors (when used with recommended fuse blocks)
- High-visibility orange label ensures instant recognition, and simplifies replacement
- Metal-embossed date and catalog number for traceability and lasting identification
- Fiberglass body provides dimensional stability in harsh industrial settings
- High-grade silica filler ensures fast arc quenching and high current limitation

Ratings

AC: 1/10 to 30A 600VAC, 200kA I.R.

Highlights

- Time Delay
- Best Choice for Small Transformer Protection
- Most Current-Limiting

Applications

- Control Transformers
- Solenoids
- Inductive Loads
- Lighting, Heating and General-purpose Loads

Approvals

- UL Listed to Standard 248-4
- CSA Certified to Standard C22.2 No. 248.4

American Power Fuses
AMP-TRAP 2000®
ATQR (Class CC TD)

Standard Fuse Ampere Ratings, Reference Numbers

Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
1/10	ATQR1/10	E201921	2-8/10	ATQR2-8/10	Q216260
1/8	ATQR1/8	A212175	3	ATQR3	T218310
15/100	ATQR15/100	S223507	3-2/10	ATQR3-2/10	V219346
3/16	ATQR3/16	J222556	3-1/2	ATQR3-1/2	G218828
2/10	ATQR2/10	Q216766	4	ATQR4	S201404
1/4	ATQR1/4	V211664	4-1/2	ATQR4-1/2	F201922
3/10	ATQR3/10	V219875	5	ATQR5	W211665
4/10	ATQR4/10	D211143	5-6/10	ATQR5-6/10	B212176
1/2	ATQR1/2	C211142	6	ATQR6	T212698
6/10	ATQR6/10	V213711	6-1/4	ATQR6-1/4	D213213
3/4	ATQR3/4	A223077	7	ATQR7	B214223
8/10	ATQR8/10	L215750	7-1/2	ATQR7-1/2	E214732
1	ATQR1	F218827	8	ATQR8	H215241
1-1/8	ATQR1-1/8	H222555	9	ATQR9	R216261
1-1/4	ATQR1-1/4	T219874	10	ATQR10	S212697
1-4/10	ATQR1-4/10	Z223076	12	ATQR12	C213212
1-1/2	ATQR1-1/2	T219345	15	ATQR15	T213710
1-6/10	ATQR1-6/10	E200863	17-1/2	ATQR17-1/2	A214222
1-8/10	ATQR1-8/10	R201403	20	ATQR20	D217284
2	ATQR2	D214731	25	ATQR25	H217794
2-1/4	ATQR2-1/4	K215749	30	ATQR30	F200864
2-1/2	ATQR2-1/2	G215240			

Recommended ATQR Class CC Primary Fuses For Single Phase Control Transformers

Trans VA	Primary Volts	Primary Fla	ATQR AMPS
25	600	0.04	1/10
	480	0.05	1/10
	240	0.10	2/10
	208	0.12	1/4
	120	0.21	4/10
50	600	0.08	1/4
	480	0.10	1/4
	240	0.21	4/10
	208	0.24	1/2
	120	0.42	6/10
75	600	0.13	1/4
	480	0.16	3/10
	240	0.31	1/2
	208	0.36	3/4
	120	0.63	1
100	600	0.17	3/10
	480	0.21	4/10
	240	0.42	6/10
	208	0.48	1
	120	0.83	1-1/2
150	600	0.25	1/2
	480	0.31	1/2
	240	0.63	1
	208	0.72	1-1/2
	120	1.25	2-1/2
200	600	0.33	1/2
	480	0.42	6/10
	240	0.83	1-1/2
	208	0.96	2
	120	1.67	3
250	600	0.42	6/10
	480	0.52	1-1/8
	240	1.04	2
	208	1.2	3
	120	2.08	4*
300	600	0.50	1-1/8
	480	0.63	1-1/2
	240	1.25	2-1/2
	208	1.44	3
	120	2.5	5*
500	600	0.83	1-1/2
	480	1.04	2
	240	2.08	4*
	208	2.40	6*
	120	4.17	10*
750	600	1.25	2-1/2
	480	1.56	3
	240	3.13	7*
	208	3.61	8*
	120	6.25	15*
1000	600	1.67	3
	480	2.08	4*
	240	4.16	10*
	208	4.81	12*
	120	8.33	20*
1500	600	2.50	5*
	480	3.13	7*
	240	6.25	10
	208	7.21	20*
	120	12.5	25*
2000	600	3.33	8*
	480	4.17	10*
	240	8.33	20++*
	208	9.62	20++*
3000	600	5.00	12+*
	480	6.25	15+*
	240	12.5	30++*
5000	600	8.33	20++*
	480	10.4	25+*

** Secondary protection is required for these ratings.*
+ Fuse will withstand 30 x FLA for .01 second
++ Fuse will withstand 25 x FLA for .01 second

American Power Fuses
AMP-TRAP 2000®
ATQR (Class CC TD)

Recommended Fuse Blocks for Class CC Fuses

Catalog Number

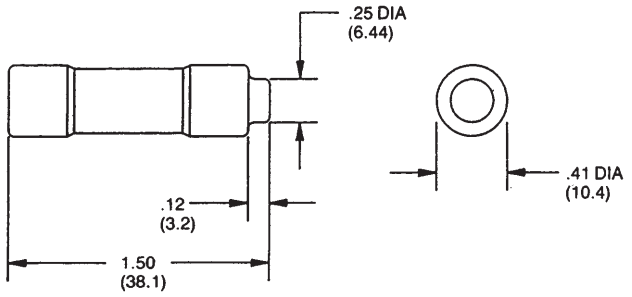
Number of Poles	Ultrasafe Indicating Fuse Holder	Screw with Double Quick Connects	Pressure Plate with Double Quick Connects	Copper Box Connector
ADDER		30310R	30320R	30350R
1	USCC1I	30311R	30321R	30351R
2	USCC2I	30312R	30322R	30352R
3	USCC3I	30313R	30323R	30353R

Reference Number

Number of Poles	Ultrasafe Indicating Fuse Holder	Screw with Double Quick Connects	Pressure Plate with Double Quick Connects	Copper Box Connector
ADDER		W204857	Z217510	N213429
1	X213943	R212397	M218534	G213929
2	D217008	Z212910	Y219579	V214447
3	Y218038	M213428	B222779	X214955

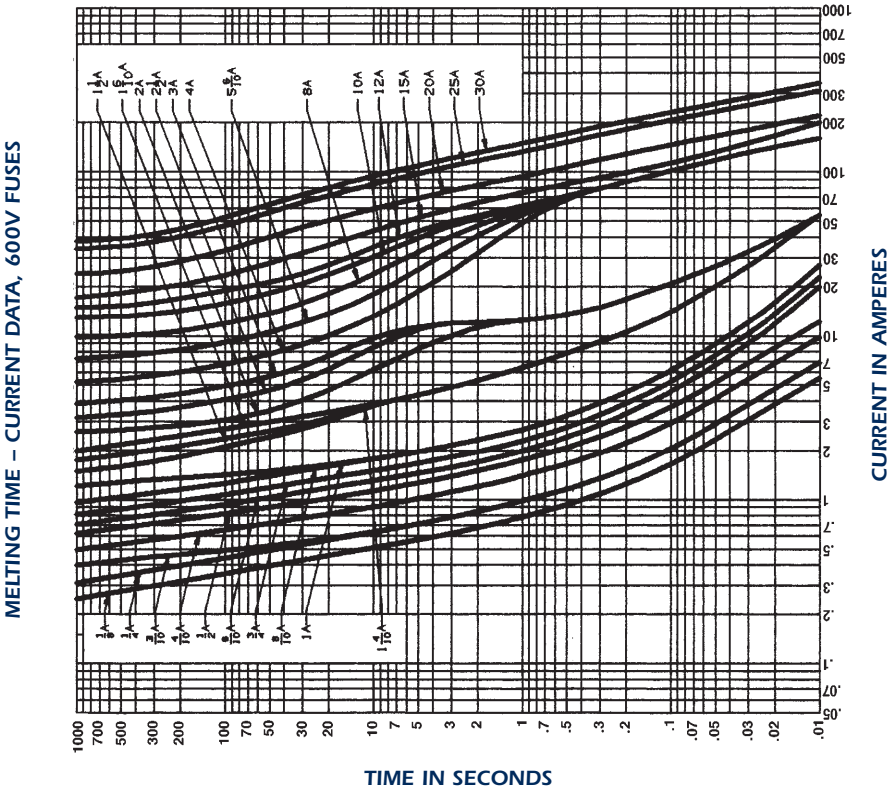
Primary fuses - If primary FLA is less than 2 amps, fuse may be 300% max. (500% for motor control). If primary FLA exceeds 2 amps but is less than 9 amps, fuse may not exceed 167% of primary FLA unless secondary protection is used, when it may be increased to 250%. Fuse sizes shown are based on approx. 40 x FLA for .01 sec.

Dimensions

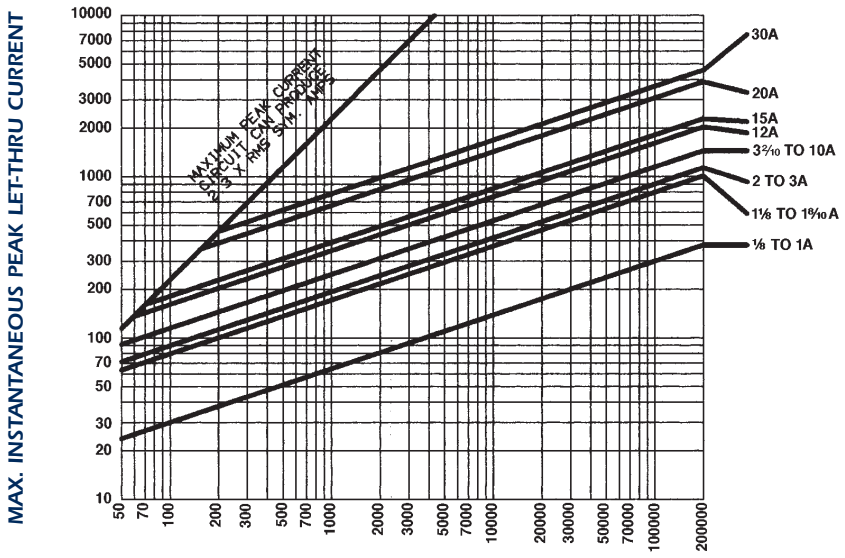


American Power Fuses
AMP-TRAP 2000®
ATQR (Class CC TD)

ATQR 1/8 to 30



Peak Let-Thru Current Data – ATQR 1/8 to 30, 600 Volts AC



American Power Fuses
TRI-ONIC®
TR and TRS (Class RK5 TD)



The industry's Most popular fuse for Motor circuit protection.

Tri-onic® SmartSpot® fuses now provide a visual open fuse indicator. With advanced material technology added to the existing product the TR and TRS current limiting time delay fuses are engineered for overcurrent protection of motors and transformers, service entrance equipment, feeder and branch circuits. Tri-onic proven time delay characteristic safely handles harmless starting currents and inrush currents associated with today's motors and transformers.

Features/Benefits

- Solid State SmartSpot Indicator
- Time delay for motor start-ups and transformer inrush currents without nuisance opening
- Current limiting for low peak let-thru current
- Rejection-style design prevents replacement errors (when used with recommended fuse blocks)
- Easy-to-read label for quick recognition and replacement
- Metal-embossed date and catalog number for traceability and lasting identification
- Fiberglass body provides dimensional stability in harsh industrial settings
- Brass end-caps (blade-style) for cooler operation and superior performance
- High-grade silica filler ensures fast arc quenching and high current limitation

Ratings

TR

AC: 1/10 to 600A 250VAC, 200kA I.R.

DC: 1/10 to 2 8/10A and 35 to 400A, 250VD, 20 A.I.R
3 to 30A & 450 to 600A,
160VDC, 20kA I.R.

TRS

AC: 1/10 to 600A, 600VAC, 200kA I.R.

DC: 1/10 to 12A, 600VDC, 20kA I.R.
70 to 600A, 600VDC, 100kA I.R.
15 to 60A, 300VDC, 20kA I.R.

Highlights

- Time Delay
- Current Limiting
- AC & DC Rated

Applications

- Motor Circuits
- Mains
- Feeders
- Branch Circuits
- Transformers
- Service Entrance Equipment
- General-purpose Protection

Approvals

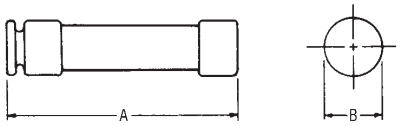
- UL Listed to Standard 248-12
- CSA Certified to Standard C22.2 No. 248.12
- DC Listed to UL Standard 198L

American Power Fuses
TRI-ONIC®
TR and TRS (Class RK5 TD)

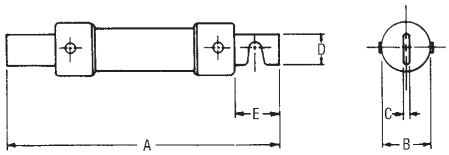
Standard Fuse Ampere Ratings

Ampere Rating	Catalog Number		Reference Number		Ampere Rating	Catalog Number		Reference Number	
	250V	600V	250V	600V		250V	600V	250V	600V
1/10	TR1/10R	TRS1/10R	F222530	W216748	10	TR10R	TRS10R	D200839	N218811
15/100	TR15/100R	TRS15/100R	E201898	F223059	12	TR12R	TRS12R	S201381	B219858
2/10	TR2/10R	TRS2/10R	Z214198	X216749	15	TR15R	TRS15R	D211120	B201389
3/10	TR3/10R	TRS3/10R	C217260	J212160	17-1/2	TR17-1/2R	TRS17-1/2R	S211639	K211126
4/10	TR4/10R	TRS4/10R	Z223053	Y216750	20	TR20R	TRS20R	D214708	P217777
1/2	TR1/2R	TRS1/2R	Y223052	N217776	25	TR25R	TRS25R	G215217	B219329
6/10	TR6/10R	TRS6/10R	R216238	L213197	30	TR30R	TRS30R	F217769	K213196
8/10	TR8/10R	TRS8/10R	T219322	R217779	35	TR35R	TRS35R	F218804	J214207
1	TR1R	TRS1R	Z212151	H212159	40	TR40R	TRS40R	E200840	Q217778
1-1/8	TR1-1/8R	TRS1-1/8R	Q218284	G212158	45	TR45R	TRS45R	F201899	Q218813
1-1/4	TR1-1/4R	TRS1-1/4R	E217768	J211125	50	TR50R	TRS50R	B213188	D201391
1-4/10	TR1-4/10R	TRS1-4/10R	E218803	H213194	60	TR60R	TRS60R	P216742	M214716
1-6/10	TR1-6/10R	TRS1-6/10R	R219320	G214205	70	TR70R	TRS70R	Q219848	Y213691
1-8/10	TR1-8/10R	TRS1-8/10R	S219850	R215732	75	TR75R	TRS75R	E222529	P215730
2	TR2R	TRS2R	J215725	Q222539	80	TR80R	TRS80R	W223050	W216242
2-1/4	TR2-1/4R	TRS2-1/4R	A213187	H214206	90	TR90R	TRS90R	B200837	L217774
2-1/2	TR2-1/2R	TRS2-1/2R	Q212672	J213195	100	TR100R	TRS100R	K216738	D214202
2-8/10	TR2-8/10R	TRS2-8/10R	S213686	S215733	110	TR110R	TRS110R	B218800	K215220
3	TR3R	TRS3R	T219851	P215224	125	TR125R	TRS125R	N219317	N215729
3-2/10	TR3-2/10R	TRS3-2/10R	N216741	N201906	150	TR150R	TRS150R	P219847	S216745
3-1/2	TR3-1/2R	TRS3-1/2R	Q216237	M200847	175	TR175R	TRS175R	D222528	K217773
4	TR4R	TRS4R	A212152	D219860	200	TR200R	TRS200R	V223049	K218808
4-1/2	TR4-1/2R	TRS4-1/2R	G222531	A216246	225	TR225R	TRS225R	A200836	Y219855
5	TR5R	TRS5R	E214709	M211128	250	TR250R	TRS250R	P201378	L222535
5-6/10	TR5-6/10R	TRS5-6/10R	R212673	H223061	300	TR300R	TRS300R	B201895	J200844
6	TR6R	TRS6R	S218286	V215735	350	TR350R	TRS350R	A211117	J201902
6-1/4	TR6-1/4R	TRS6-1/4R	S218286	K212161	400	TR400R	TRS400R	P211636	G211123
7	TR7R	TRS7R	G218805	Z216751	450	TR450R	TRS450R	N218282	E212156
8	TR8R	TRS8R	V219852	R218814	500	TR500R	TRS500R	C218801	W212677
9	TR9R	TRS9R	H222532	S222541	600	TR600R	TRS600R	P219318	F213192

***Note**: Indicator not available (1/10-7) Amps*



0-60A



61-600A

Recommended Fuse Blocks With Box Connectors For Tri-onic® Class RK5 Fuses

Fuse Ampere Rating	Catalog Number 250V		Ref. Number 250V	
	1 Pole	3 pole	1 pole	3 pole
0-30	20306R	20308R	T213411	K215956
31-60	20606R	20608R	B212383	E214939
61-100	21036R	21038R	D201621	M212899
101-200	22001R	22003R	R213915	G214941
201-400	24001R	24003R	J219566	D222022
401-600	2631R	2633R	H214942	P215960

Fuse Ampere Rating	Catalog Number 250V		Ref. Number 250V	
	1 Pole	3 pole	1 pole	3 pole
0-30	60306R	60308R	H212389	K214438
31-60	60606R	60608R	K212391	M214440
61-100	61036R	61038R	W204788	Z211875
101-200	62001R	62003R	V212906	B213924
201-400	64001R	64003R	D219055	M222030
401-600	6631R	6633R	J216990	E218021

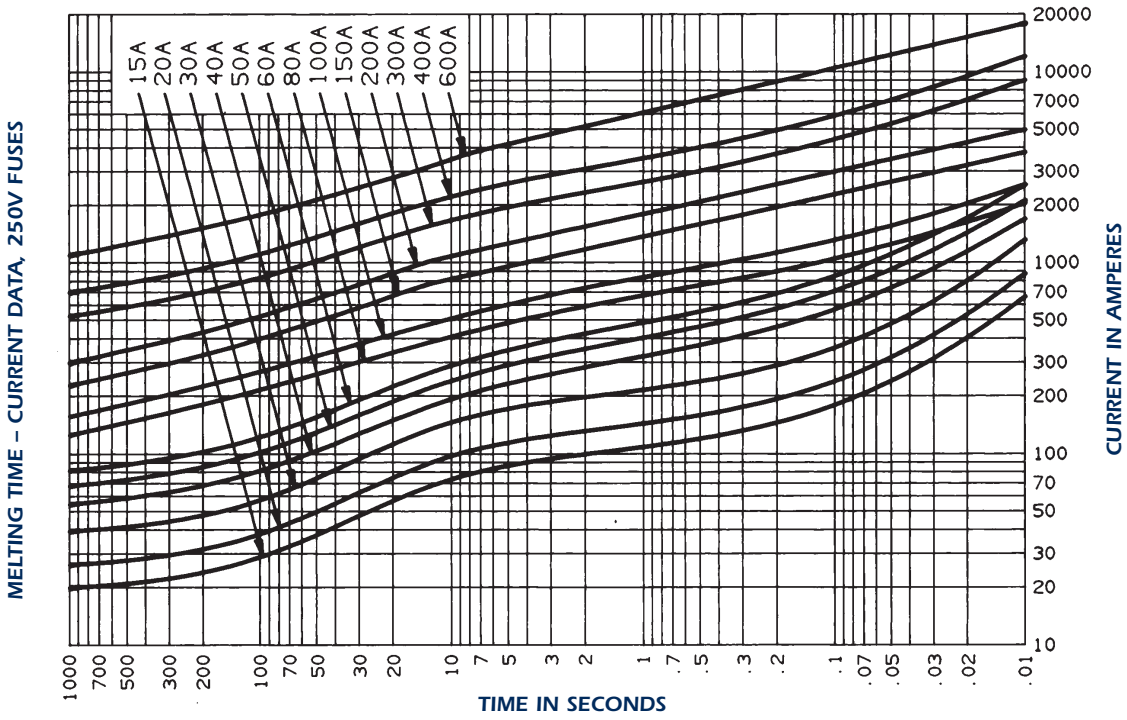
A variety of pole configurations and termination provisions is available.

Dimensions

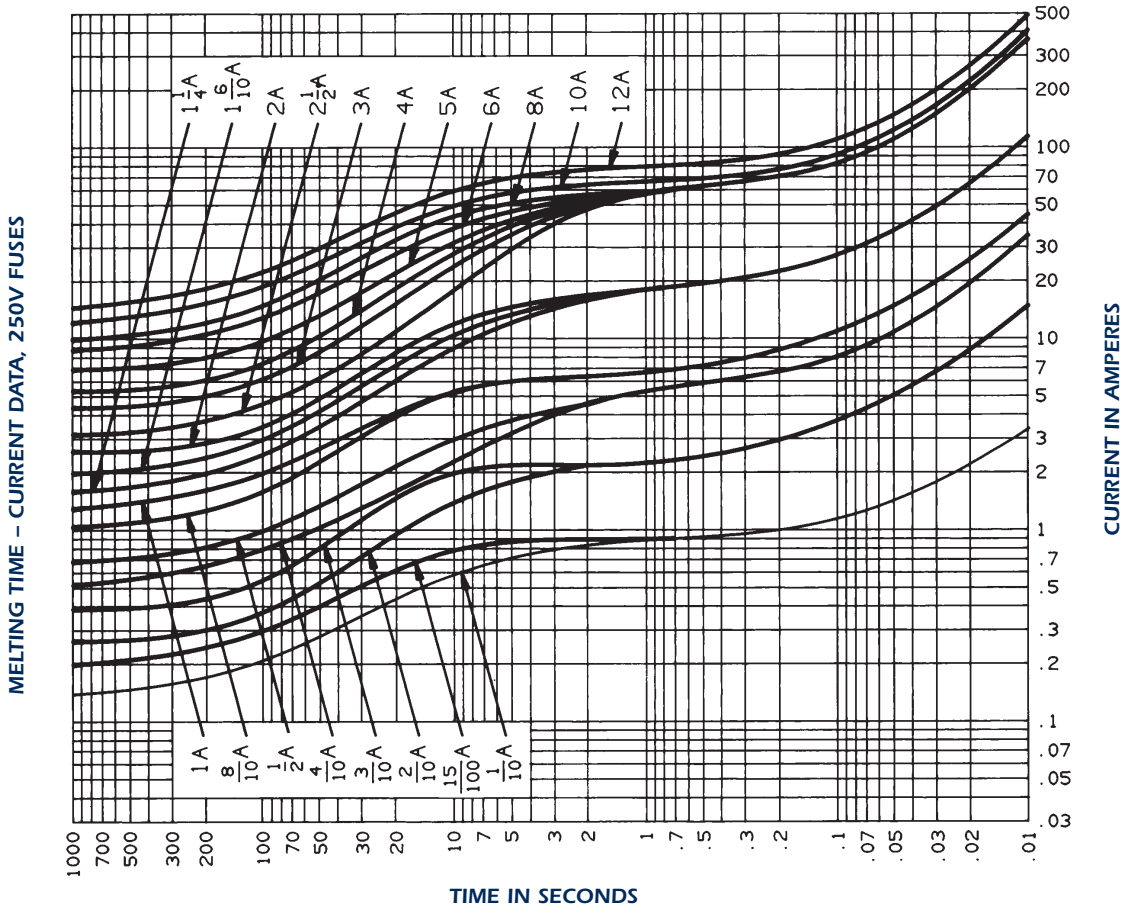
Ampere Rating	A		B		C		D		E	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
250V-TR Fuses										
0-30	2	51	9/16	14	-	-	-	-	-	-
31-60	3	76	13/16	21	-	-	-	-	-	-
61-100	5-7/8	149	1-1/16	27	1/8	3	3/4	19	1	25
101-200	7-1/8	181	1-9/16	40	3/16	5	1-1/8	28	1-3/8	35
201-400	8-5/8	219	2-1/16	53	1/4	6	1-5/8	41	1-7/8	48
401-600	10-3/8	264	2-9/16	66	1/4	6	2	51	2-1/4	57
600V-TRS Fuses										
0-30	5	127	13/16	21	-	-	-	-	-	-
31-60	5-1/2	139	1-1/16	27	-	-	-	-	-	-
61-100	7-7/8	200	1-5/16	34	1/8	3	3/4	19	1	25
101-200	9-5/8	244	1-13/16	46	3/16	5	1-1/8	28	1-3/8	35
201-400	11-5/8	295	2-9/16	66	1/4	6	1-5/8	41	1-7/8	48
401-600	13-3/8	340	3-1/8	80	1/4	6	2	51	2-1/4	57

American Power Fuses
TRI-ONIC®
TR and TRS (Class RK5 TD)

TR 15 to 600

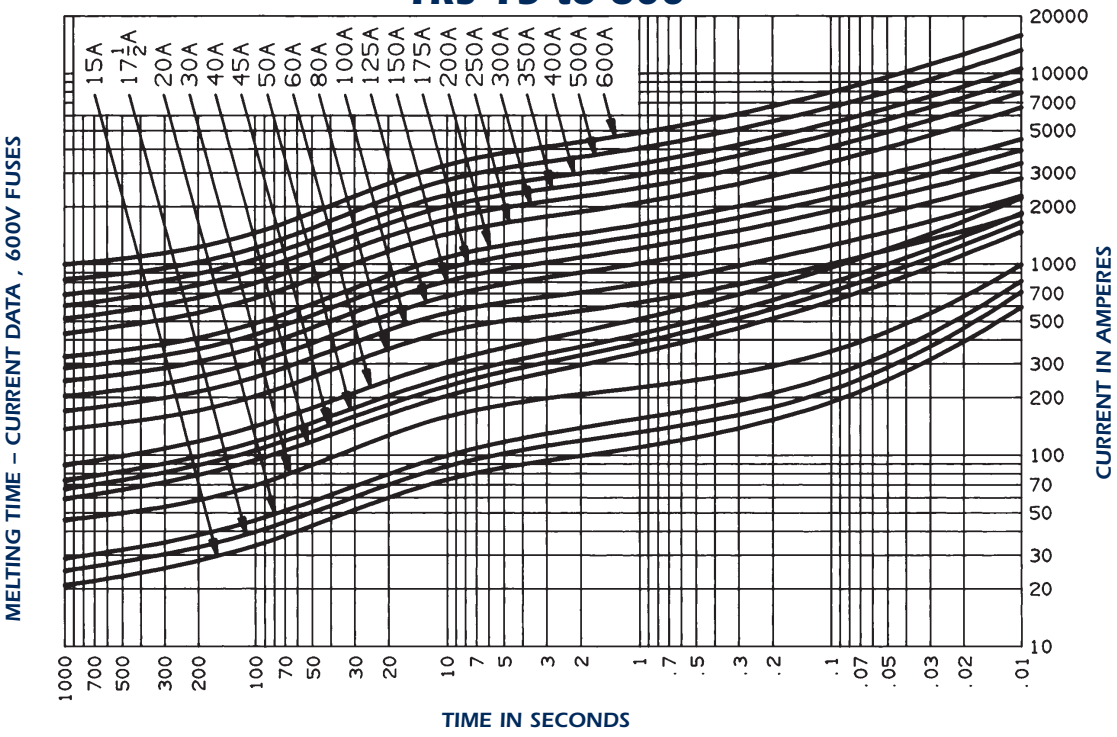


TR 1/10 to 12

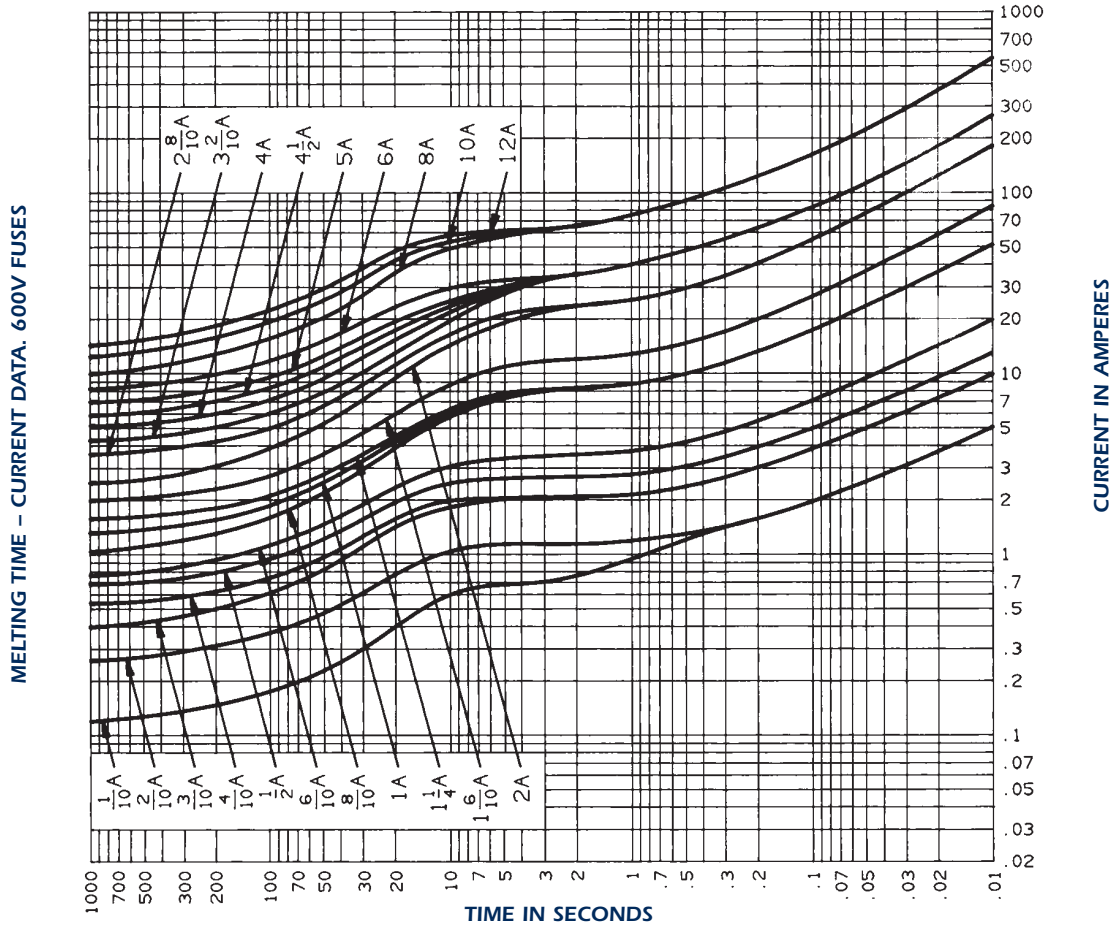


American Power Fuses
TRI-ONIC®
TR and TRS (Class RK5 TD)

TRS 15 to 600

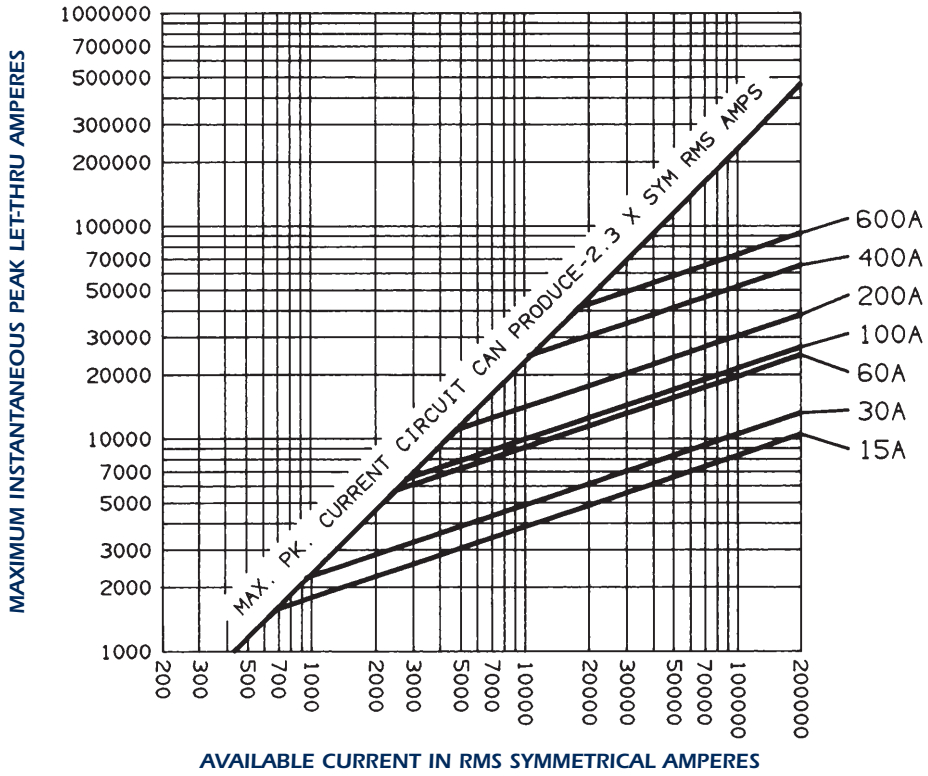


TRS 1/10 to 12

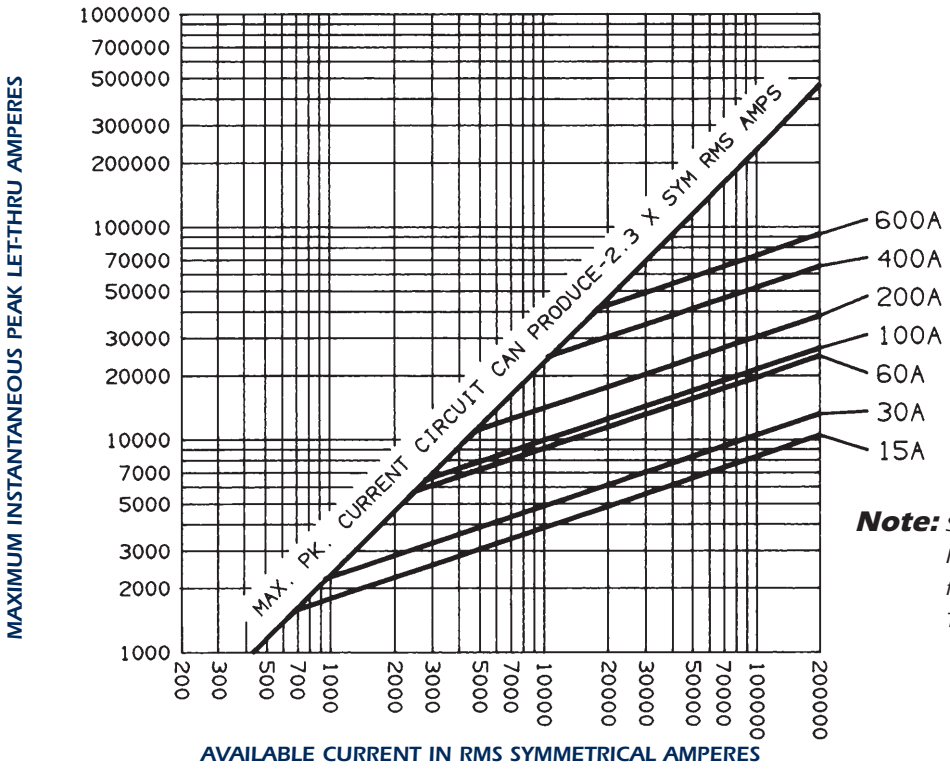


American Power Fuses
TRI-ONIC®
TR and TRS (Class RK5 TD)

Peak Let-Thru Current Data – TR 30 to 600, 250 Volts AC



Peak Let-Thru Current Data – TRS 15 to 600, 600 Volts AC



Note: *See Application Information page L9 for All Motor and Transformer Tables.*

American Power Fuses
TRI-ONIC®
TRS - RDC (DC Rated TD)



DC RATED FOR TOUGH DC APPLICATIONS

The Tri-onic DC fuse series is designed for DC circuit protection in surface and underground mines. The TRS-RDC is MSHA approved and meets the industry's most severe third party requirements for 600VDC rated fuses. The TRS-RDC is a time-delay fuse with essentially the same time-current characteristic as the standard Tri-onic.

Features/Benefits

- DC rated for mine duty and other long time-constant applications
- Time delay for motor start-ups and high inrush loads without nuisance opening
- Rugged glass melamine body for superior reliability in harsh environments

Ratings

DC: 1 to 30A 300VDC, 20kA.I.R.
(Consult Factory forAvailability)

DC: 35 to 400A 600VDC, 20kA I.R.

Highlights

- Time Delay
- DC Rated

Applications

- Mine Circuits
- Trailing Cables
- Pump Motors
- Rail Heaters

Approvals

- MSHA Approval No. 28-26-0

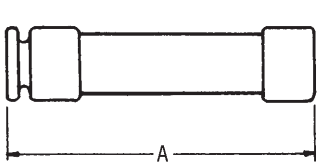
American Power Fuses
TRI-ONIC®
TRS - RDC (DC Rated TD)

Standard Fuse Ampere Ratings, Catalog Numbers

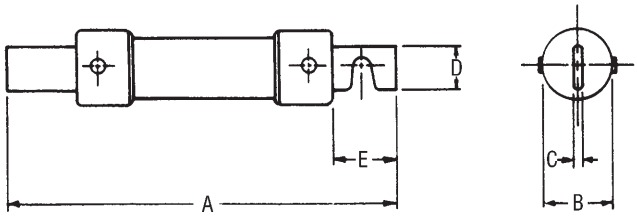
Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number
1	TRS1RDC	10	TRS10RDC	40	TRS40RDC	90	TRS90RDC	200	TRS200RDC
2	TRS2RDC	12	TRS12RDC	45	TRS45RDC	100	TRS100RDC	250	TRS250RDC
3	TRS3RDC	15	TRS15RDC	50	TRS50RDC	125	TRS125RDC	300	TRS300RDC
5	TRS5RDC	20	TRS20RDC	60	TRS60RDC	150	TRS150RDC	400	TRS400RDC
6	TRS6RDC	30	TRS30RDC	70	TRS70RDC	175	TRS175RDC		
8	TRS8RDC	35	TRS35RDC	80	TRS80RDC				

Standard Fuse Ampere Ratings, Reference Numbers

Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number
1	Z212680	10	A219328	40	B218294	90	X218290	200	X219325
2	G223060	12	P222538	45	C219330	100	G214711	250	D223057
3	T215734	15	M201905	50	P201907	125	V216241	300	Y201386
5	D211649	20	P218812	60	Q215225	150	G217264	400	Y211644
6	B216247	30	C213695	70	E214203	175	W218289		
8	E219861	35	L21471s	80	H217265				



31-60 AMPERES

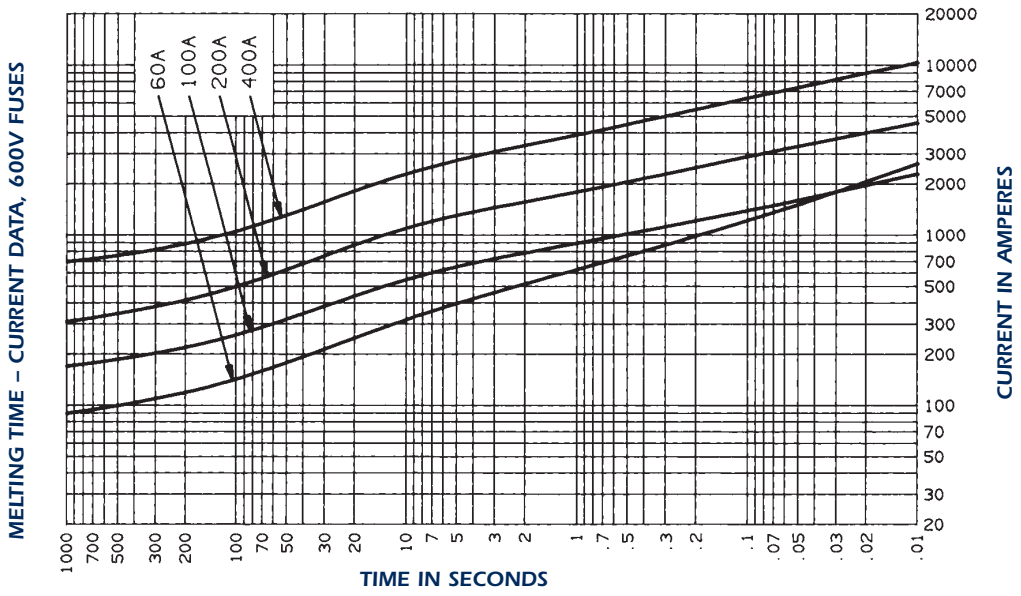


61-400 AMPERES

Dimensions

AMPERE RATING	A		B		C		D		E	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1-30	5	127	13/16	21	-	-	-	-	-	-
31-60	5-1/2	139	1-1/16	27	-	-	-	-	-	-
61-100	7-7/8	200	1-5/16	34	1/8	3	3/4	19	1	25
101-200	9-5/8	244	1-13/16	46	3/16	5	1-1/8	28	1-3/8	35
201-400	11-5/8	295	2-9/16	66	1/4	6	1-5/8	41	1-7/8	48

TRS-RDC 60 to 400



American Power Fuses
AMP-TRAP®
A4J (Class J FA)



FOR EXCELLENT CURRENT LIMITING PROTECTION

A4J Class J fuses deliver excellent current-limiting protection to a wide variety of applications. Their unique dimensions prevent the substitution of other fuses with lower voltage ratings, interrupting ratings, or current-limiting capability.

Highlights

- Fast Acting
- Very Current-Limiting
- DC Ratings

Applications

- Capacitors
- Loadcenters
- Panelboards
- Switchboards
- Bus Duct
- Feeder Circuits
- Circuit Breakers
- Lighting, Heating, and General Loads

Features/Benefits

- High current limitation for low peak let-thru current
- Unique dimensions prevent replacement by other fuseclasses
- Fiberglass body provides dimensional stability in harsh industrial environments

** Easy-to-read imprint label for quick recognition and replacement*

Ratings

AC: 1 to 600A
600VAC, 200kA I.R.

DC: 1 to 600A
300VDC, 20kA I.R.

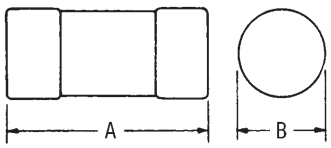
Approvals

- UL Listed to Standard 248-8.
- CSA Certified to Standard C22.2 No. 248.8
- DC Tested to UL198L limits
- EC 269-2-1

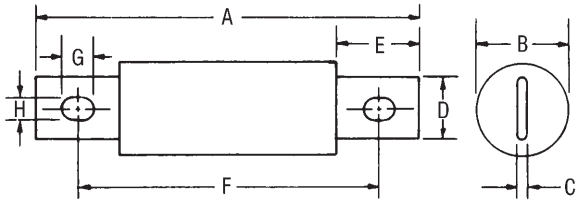
American Power Fuses
AMP-TRAP®
A4J (Class J FA)

Standard Fuse Ampere Ratings, Reference Numbers

Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
1	A4J1	V217299	45	A4J45	J201419	175	A4J175	Q212189
3	A4J3	J219888	50	A4J50	X201937	200	A4J200	G212710
6	A4J6	T211157	60	A4J60	M211680	225	A4J225	X215254
10	A4J10	Z217809	70	A4J70	H212711	250	A4J250	T217298
15	A4J15	K218325	80	A4J80	J213724	300	A4J300	K219360
20	A4J20	X218842	90	A4J90	R214237	350	A4J350	H219887
25	A4J25	L219361	100	A4J100	N223089	400	A4J400	Z222570
30	A4J30	A222571	110	A4J110	V200877	450	A4J450	W200878
35	A4J35	Q223091	125	A4J125	V201935	500	A4J500	W201936
40	A4J40	X200879	150	A4J150	R211155	600	A4J600	S211156



1-60A



70-600A

Recommended Fuse Blocks With Box Connectors for Amp-trap Class J Fuses

Fuse Ampere Rating	600V OR LESS			
	1 Pole		3 pole	
	Cat N°	Ref N°	Cat N°	Ref N°
0-30	US3J1I	M212922	US3J3I	K214967
31-60	US6J1I	F222047	US6J3I	M211381
61-100	61036J	Z201640	61038J	G212917
101-200	62001J	D214455	62003J	E214962
201-400	64031J	X218543	64033J	S219068
401-600	6631J	P201125	6633J	A201641

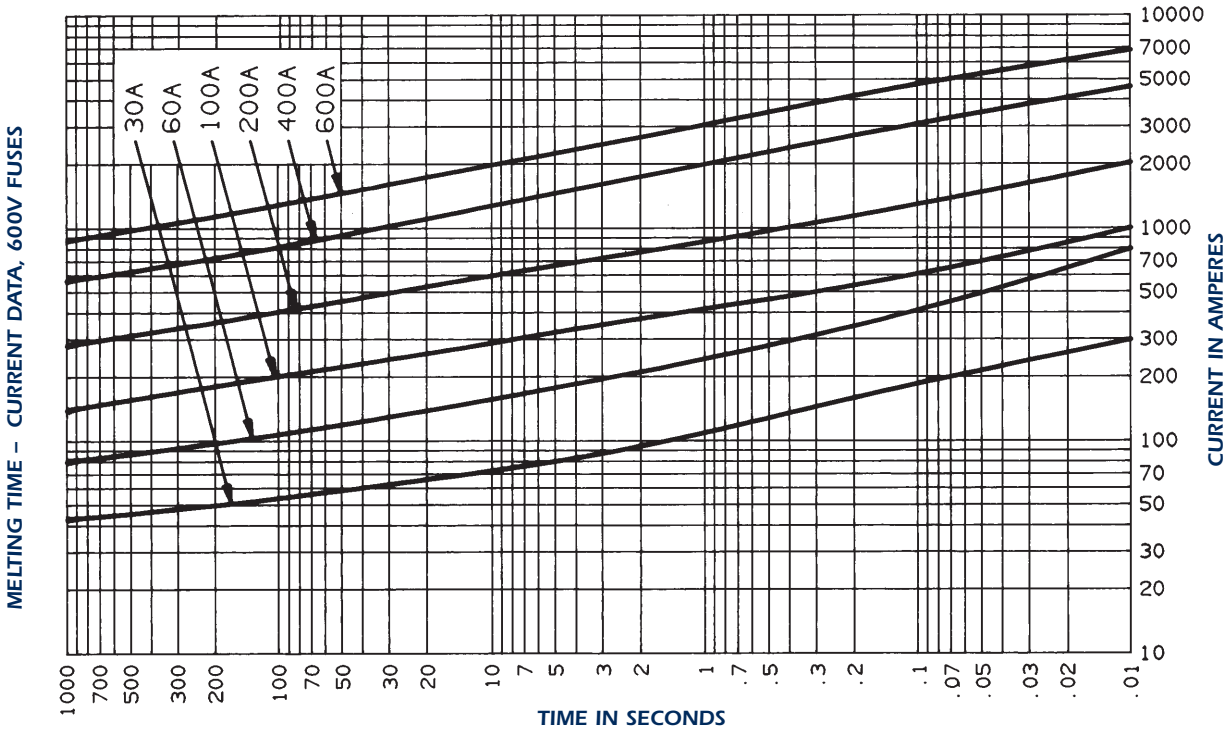
A variety of pole configurations and termination provisions is available. Refer to the fuse block section of this catalog for details.

Dimensions

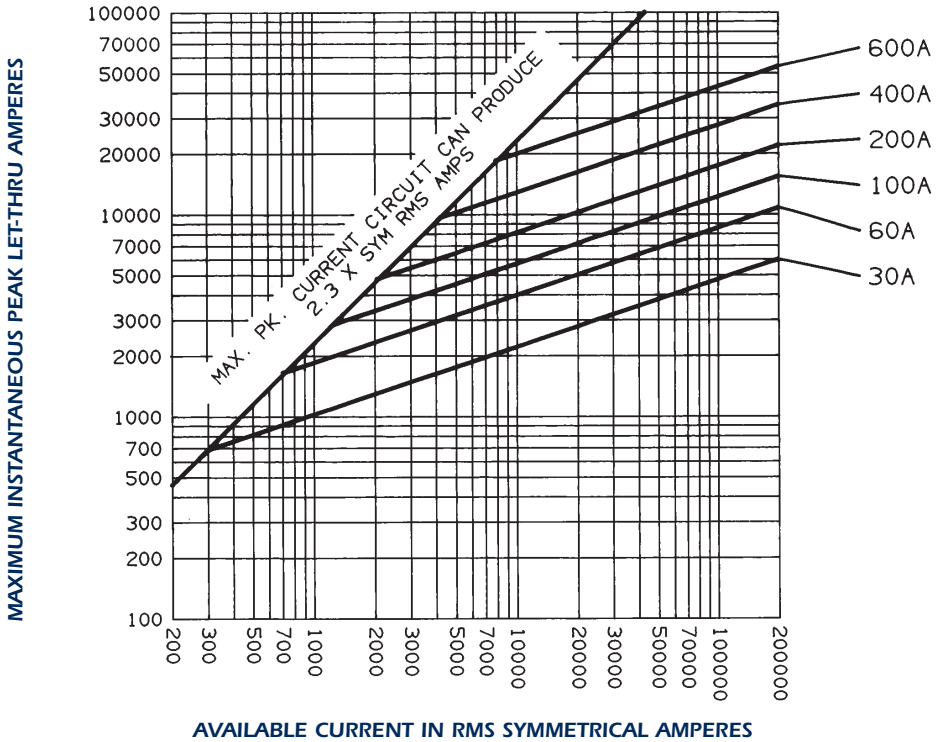
Ampere Rating	A		B		C		D		E		F		G		H	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
1-30	2-1/4	57	13/16	21	-	-	-	-	-	-	-	-	-	-	-	-
31-60	2-3/8	60	1-1/16	27	-	-	-	-	-	-	-	-	-	-	-	-
61-100	4-5/8	117	1-1/8	29	1/8	3.2	3/4	19	1	25	3-5/8	92	3/8	10	9/32	7
101-200	5-3/4	146	1-5/8	41	3/16	4.8	1-1/8	29	1-3/8	35	4-3/8	111	3/8	10	9/32	7
201-400	7-1/8	181	2-1/8	54	1/4	6.3	1-5/8	41	1-7/8	48	5-1/4	133	17/32	13	13/32	10
401-600	8	203	2-1/2	64	3/8	9.5	2	51	2-1/8	54	6	152	11/16	18	17/32	13

American Power Fuses
AMP-TRAP®
A4J (Class J FA)

A4J 30 to 600



Peak Let-Thru Current Data – 30 to 600, 600 Volts AC



American Power Fuses
AMP-TRAP®
A4BY (Class L)



Count on the high interrupting rating of our most widely-used class L fuse

When it comes to protecting service entrance equipment, feeder circuits, and circuit breakers, A4BY fuses have been the industry's favorite. The A4BY is a 100% rated device and may be applied at continuous currents up to its ampere rating. A 4-second minimum time delay at 500% rating allows the A4BY to pass normal current surges and to coordinate with ground fault relays.

Applications

- Mains, Feeders
- Circuit Breakers
- Loadcenters
- Panelboards
- Switchboards
- Metering Centers

Features/Benefits

- Unique dimensions prevent replacement by other fuse classes
- Blade stamped catalog numbers for permanent identification
- Glass melamine body and plated terminals provide superior reliability in harsh environments

Approvals

- UL Listed to Standard 248-10 (601-6000A)
- CSA Certified to Standard C22.2 No. 248.10 (601-6000A)
- DC Tested to UL 198L limits (601-6000A)

Ratings

AC: 200 to 6,000A
600VAC,200kA I.R.

DC: 200 to 2500A
300VDC, 100kA I.R.

Highlights

- Current-Limiting
- 4-Second Time Delay
- DC Ratings
- Uniform Characteristics in all Ampere Ratings

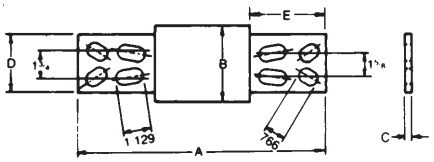
Indicators:

Optional built-in fuse indicators (-TI) are available. Consult factory.

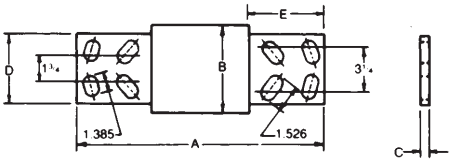
American Power Fuses
AMP-TRAP®
A4BY (Class L)

Standard Fuse Ampere Ratings

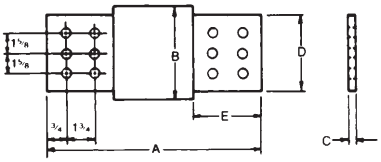
Ampere Rating	Catalog Number	Ref. Number	Ampere Rating	Catalog Number	Ref. Number	Ampere Rating	Catalog Number	Ref. Number
200	A4BY200	P217823	801	A4BY801	K211172	2000	A4BY2000	A218339
250	A4BY250	P222584	900	A4BY900	C211694	2001	A4BY2001	M218856
300	A4BY300	J201948	1000	A4BY1000	X201431	2500	A4BY2500	L200892
350	A4BY350	Y212725	1100	A4BY1100	H211170	3000	A4BY3000	J211171
400	A4BY400	Z213738	1200	A4BY1200	A211692	3001	A4BY3001	H212205
500	A4BY500	T216286	1201	A4BY1201	X212724	3500	A4BY3500	H213240
600	A4BY600	Q217824	1350	A4BY1350	G213239	4000	A4BY4000	G214251
601	A4BY601	C219376	1400	A4BY1400	Y213737	4001	A4BY4001	J214759
650	A4BY650	Z219902	1500	A4BY1500	H214758	5000	A4BY5000	V216793
700	A4BY700	Q222585	1600	A4BY1600	L215267	6000	A4BY6000	N218857
750	A4BY750	M200893	1601	A4BY1601	T216792			
800	A4BY800	Z201433	1800	A4BY1800	K217313			



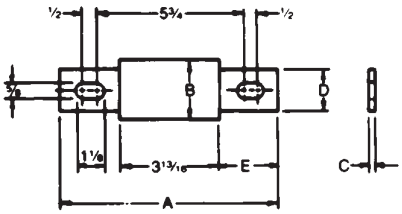
2001-3000A



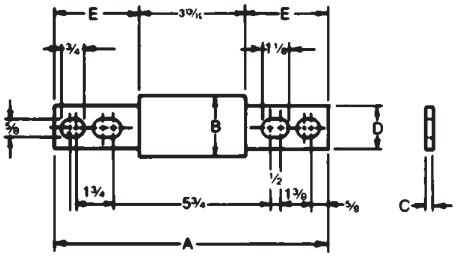
3001-4000A



4001-6000A



200-800A



801-2000A

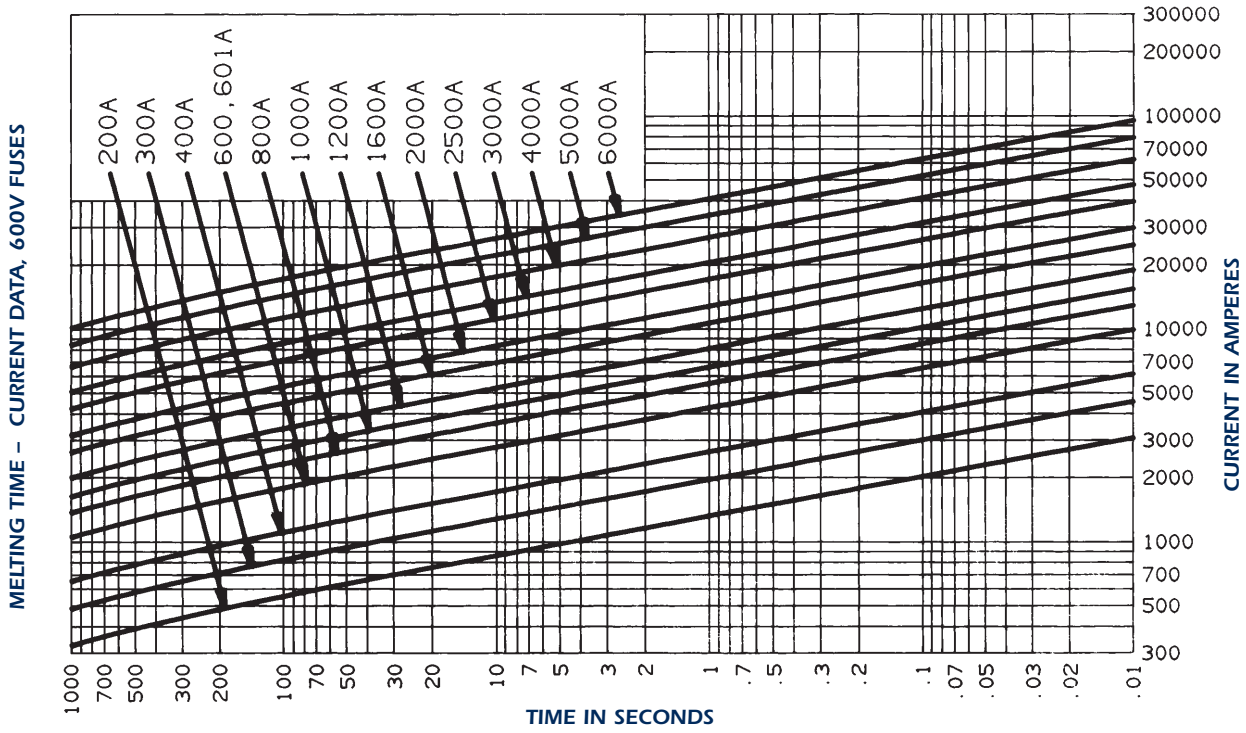
Dimensions

Ampere Rating	A		B		C		D		E	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
200-600*	8-5/8	219	2	51	5/16	8	1-5/8	41	2-13/32	61
601-800	8-5/8	219	2-1/2	63	3/8	9	2	51	2-13/32	61
801-1200	10-3/4	273	2-1/2	63	3/8	9	2	51	3-15/32	88
1201-1600	10-3/4	273	3	76	7/16	11	2-3/8	60	3-15/32	88
1601-2000	10-3/4	273	3-1/2	89	1/2	13	2-3/4	70	3-15/32	88
2001-2500	10-3/4	273	4-1/2	114	3/4	19	3-1/2	89	3-15/32	88
2501-3000	10-3/4	273	5	127	3/4	19	4	102	3-15/32	88
3001-4000	10-3/4	273	5-3/4	146	3/4	19	4-3/4	121	3-15/32	88
4001-5000	10-3/4	273	6-1/4	159	1	25	5-1/4	133	3-15/32	88
5001-6000	10-3/4	273	7-1/8	181	1	25	5-3/4	146	3-15/32	88

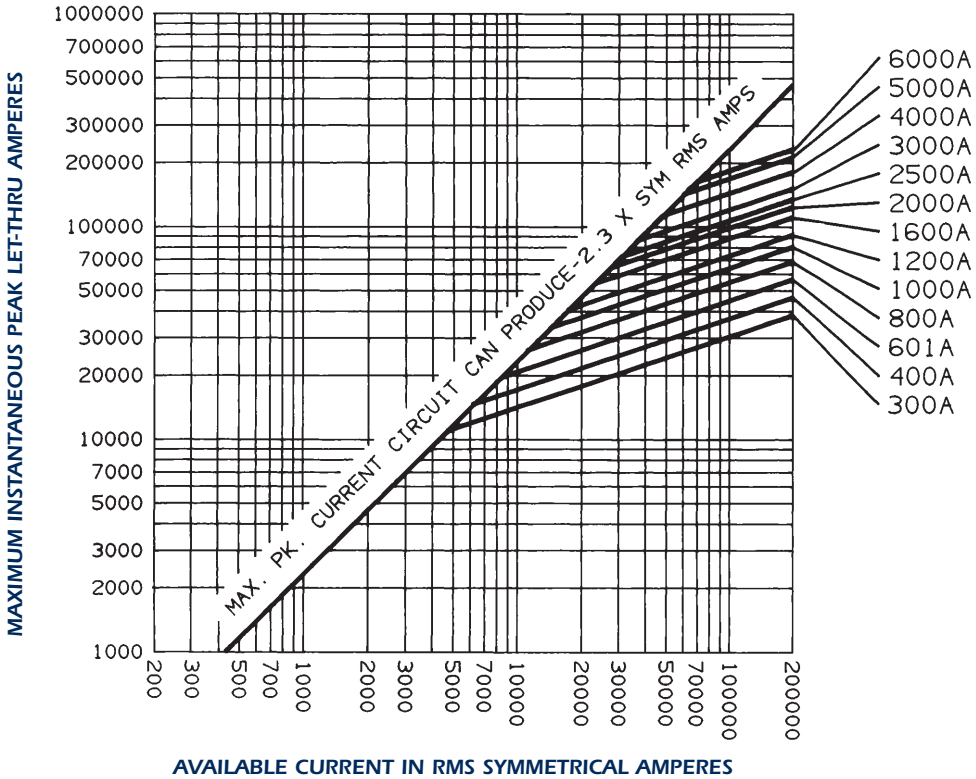
Safety Note: *Class L fuses are dimensioned for one-way interchangeability.*
A Class L fuse of any lower ampere rating can be substituted for a given Class L fuse.

American Power Fuses
AMP-TRAP®
A4BY (Class L)

A4BY 200 to 6000



Peak Let-Thru Current Data – A4BY 300 to 6000, 600 Volts AC



American Power Fuses
AMP-TRAP®
A3T and A6T (Class T FA)



These small dimension fuses are the right fit... for a tight fit

Fast acting A3T and A6T Class T fuses combine two highly desirable features – high current limitation and a small physical size. Their unique dimensions prevent the substitution of other fuses with lower voltage ratings or current limiting capability. These fuses have glass melamine bodies for superior dimensional stability and catalog numbers stamped into the blades for permanent identification.

Features/Benefits

- Extremely current limiting for low peak let-thru current
- Unique dimensions prevent replacement by other fuse classes
- Blade-stamped catalog numbers for permanent identification
- Small physical size for greater design flexibility

Ratings

A3T
AC: 1 to 1200A 300VAC, 200kA I.R.
DC: 1 to 1200A 160VDC, 50kA I.R.

A6T
AC: 1 to 800A 600VAC, 200kA I.R.
DC: 1 to 800A 300VDC, 100kA I.R

Highlights

- Fast Acting
- Extremely Current Limiting
- Small Physical Size
- DC Ratings

Applications

- Loadcenters
- Panelboards
- Switchboards
- Circuit Breakers
- Metering Centers

Approvals

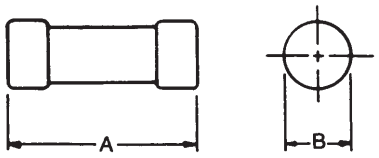
- UL Listed to Standard 248-15
- CSA Certified to Standard C22.2 No. 248.15
- DC Tested to UL Standard 198L

American Power Fuses
AMP-TRAP®
A3T and A6T (Class T FA)

Standard Fuse Ampere Ratings

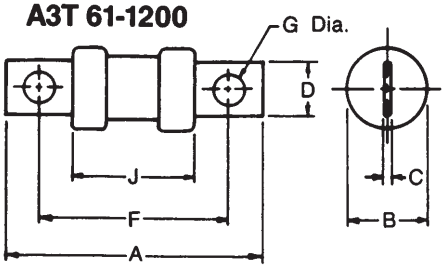
Ampere	Catalog Number		Reference Number		Ampere	Catalog Number		Reference Number	
Rating	300V	600V	300V	600v	Rating	300V	600V	300V	600V
1	A3T1	A6T1	Q212212	L219384	110	A3T110	A6T110	G218345	K219383
3	A3T3	A6T3	R214766	H201441	125	A3T125	A6T125	H219381	F219908
6	A3T6	A6T6	Y217831	S213249	150	A3T150	A6T150	D219906	Y222592
10	A3T10	A6T10	E212731	G219909	175	A3T175	A6T175	W222590	N223112
15	A3T15	A6T15	Q213247	Z222593	200	A3T200	A6T200	L223110	V200900
20	A3T20	A6T20	G213745	P223113	225	A3T225	A6T225	S200898	G201440
25	A3T25	A6T25	P214258	W200901	250	A3T250	A6T250	E201438	Q201954
30	A3T30	A6T30	V215275	R201955	300	A3T300	A6T300	N201952	S211179
35	A3T35	A6T35	W215782	T211180	350	A3T350	A6T350	Q211177	K211701
40	A3T40	A6T40	B216293	L211702	400	A3T400	A6T400	H211699	R212213
45	A3T45	A6T45	C216800	S212214	450	A3T450	A6T450	P212211	F212732
50	A3T50	A6T50	T217321	G212733	500	A3T500	A6T500	D212730	R213248
60	A3T60	A6T60	J218347	J213747	600	A3T600	A6T600	P213246	H213746
70	A3T70	A6T70	F213744	Q214259	700	A3T700	A6T700	N214257	S214767
80	A3T80	A6T80	Q214765	W215276	800	A3T800	A6T800	T215274	D216801
90	A3T90	A6T90	V215781	V217322	1000	A3T1000	-	W217829	-
100	A3T100	A6T100	R217319	W218864	1200	A3T1200	-	T218862	-

A3T



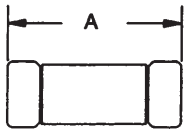
A3T 1-60

A3T 61-1200

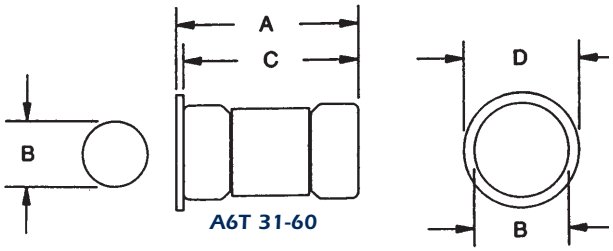


A3T 61-1200

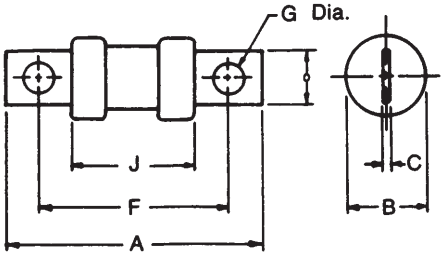
A6T



A6T 1-30



A6T 31-60



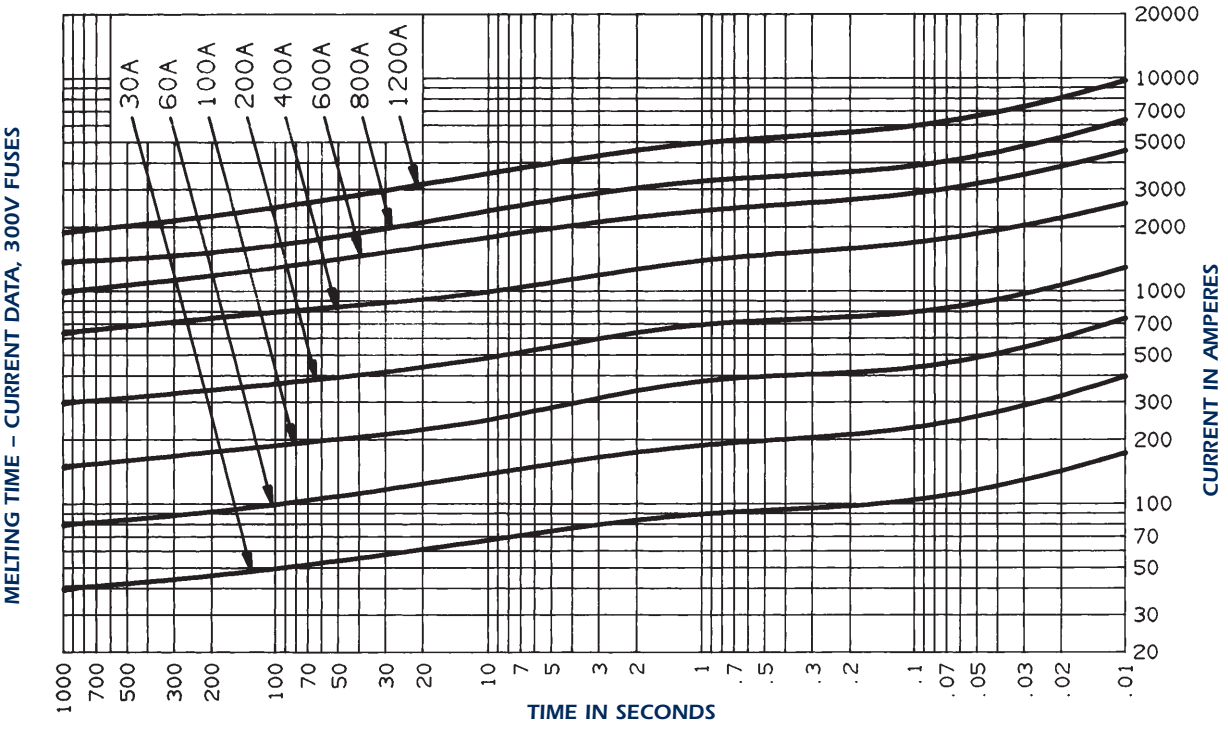
A6T 61-800

Dimensions

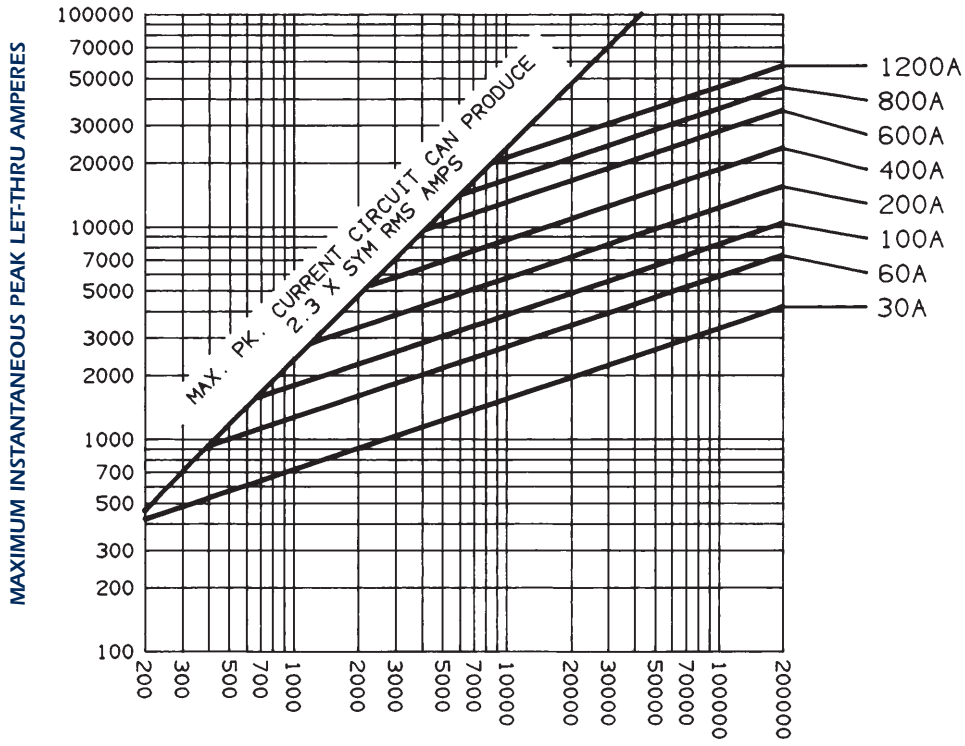
Ampere	A		B		C		D		F		G		J	
Rating	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
A3T														
1-30	.88	22.4	.41	10.3	-	-	-	-	-	-	-	-	-	-
31-60	.88	22.4	.56	14.1	-	-	-	-	-	-	-	-	-	-
61-100	2.16	54.9	.81	20.6	.12	3.2	.75	19.0	1.56	39.6	.28	7.1	.82	20.8
101-200	2.44	62.0	1.06	26.9	.19	4.8	.88	22.4	1.70	43.2	.34	8.6	.83	21.1
201-400	2.75	69.8	1.33	33.8	.25	6.4	1.00	25.4	1.84	46.7	.41	10.4	.84	21.3
401-600	3.06	77.7	1.62	41.1	.31	7.8	1.25	31.8	2.03	51.6	.48	12.2	.84	21.3
601-800	3.38	85.8	2.08	52.8	.38	9.7	1.75	44.4	2.22	56.4	.55	14.0	.88	22.4
801-1200	4.00	102	2.52	64.0	.44	11.2	2.00	50.8	2.53	64.3	.61	15.5	1.03	26.2
A6T														
1-30	1.50	38.1	.57	14.5	-	-	-	-	-	-	-	-	-	-
31-60	1.57	39.9	.81	20.6	1.51	38.4	1.00	25.4	-	-	-	-	-	-
61-100	2.95	74.9	.82	20.8	.12	3.2	.75	19.1	2.35	59.7	.28	7.1	1.58	40.1
101-200	3.26	82.8	1.07	27.2	.19	4.8	.88	22.4	2.51	63.7	.34	8.6	1.61	41.0
201-400	3.62	92.1	1.62	41.3	.25	6.4	1.00	25.4	2.72	69.1	.41	10.4	1.70	43.2
401-600	3.98	101.2	2.06	52.4	.31	7.9	1.25	31.8	2.95	75.0	.48	12.2	1.70	43.2
601-800	4.33	110.0	2.50	63.5	.37	9.5	1.75	44.4	3.17	80.5	.56	14.1	1.70	43.2

American Power Fuses
AMP-TRAP®
A3T and A6T (Class T FA)

A3T 30 to 1200

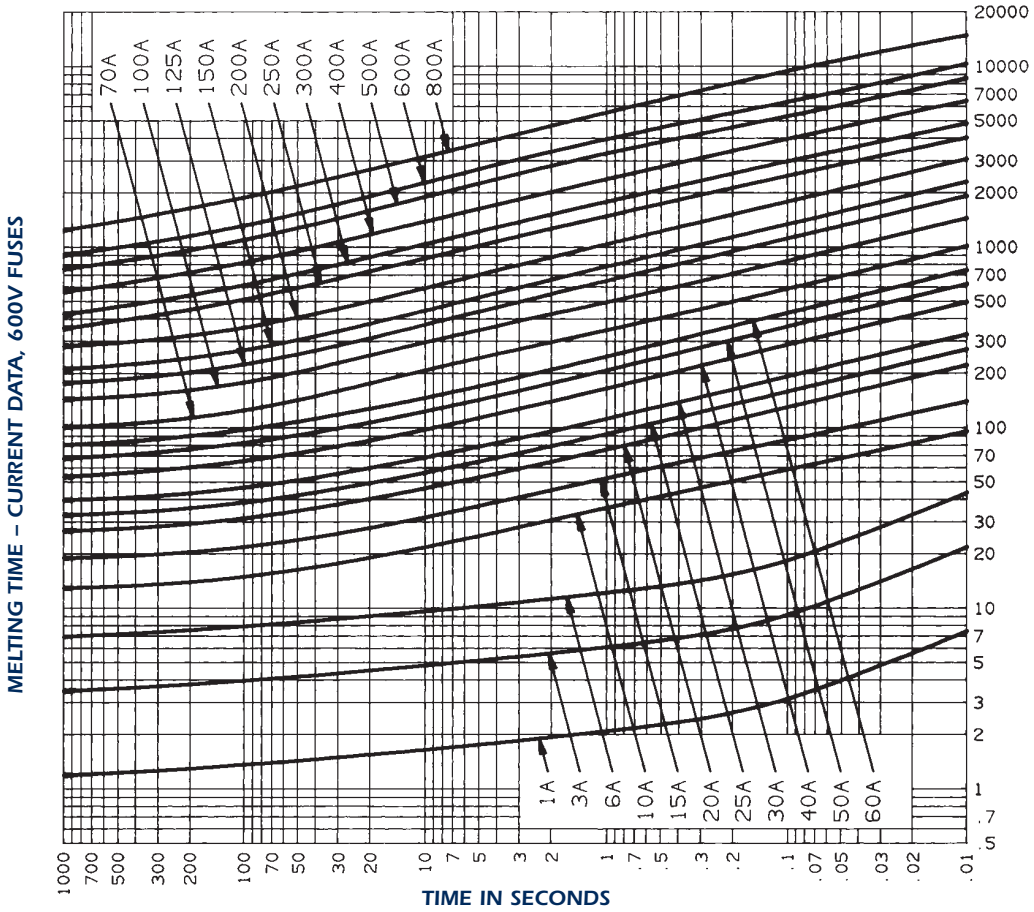


Peak Let-Thru Current Data – A3T 30 to 1200, 300 Volts AC

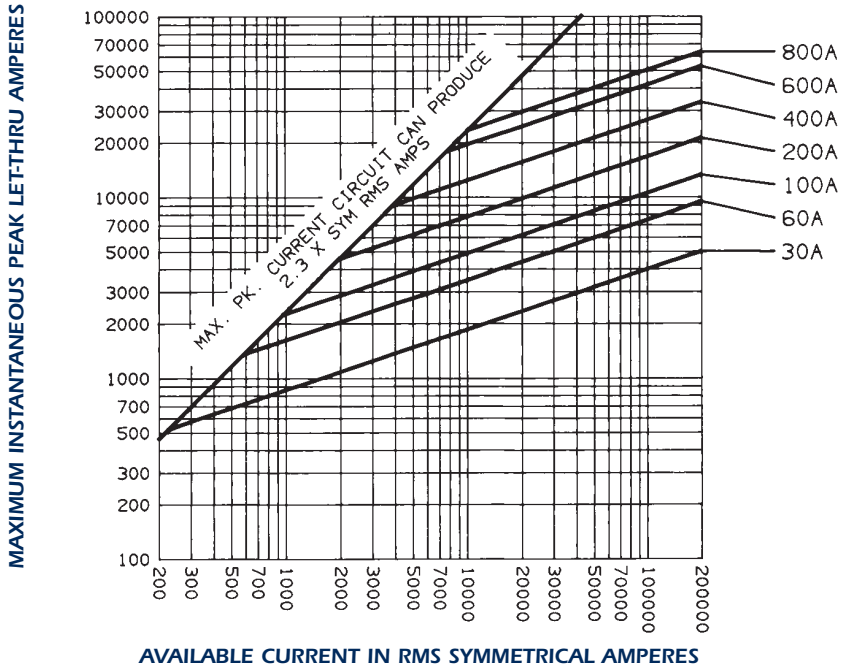


American Power Fuses
AMP-TRAP®
A3T and A6T (Class T FA)

A6T 1 to 800



Peak Let-Thru Current Data – A6T 30 to 800, 600 Volts AC



American Power Fuses
AMP-TRAP®
A2K and A6K (Class RK1FA)



These fast-acting fuses deliver a high degree of current limitation where

Current-limiting A2K and A6K fuses provide excellent protection where high available short circuit currents exist. These fast-acting fuses are particularly good for branch/feeder circuits and back-up protection.

Features/Benefits

- Rejection style design prevents replacement by other fuse classes
- Fiberglass body provides dimensional stability in harsh industrial environments
- Easy-to-read imprint label for quick recognition and replacement
- High degree of current limitation for low peak let-thru current

Ratings

A2K
AC: 1 to 600A 250VAC, 200kA I.R.
DC: 1 to 600A 250VDC, 200kA I.R.
A6K
AC: 1 to 600A 600VAC, 200kA I.R.
DC: 1 to 600A 300VDC, 200kA I.R.

Highlights

- Highly Current-Limiting
- Fast Acting
- Rejection Style

Applications

- Loadcenters
- Panelboards
- Switchboards
- Bus Duct
- Feeder Circuits
- Non-inductive Loads
- Lighting Circuits

Approvals

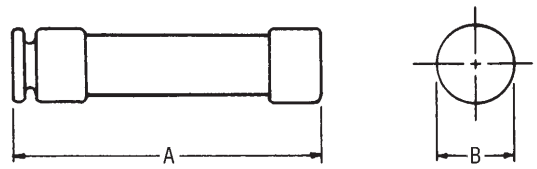
- UL Listed to Standard 248-12
- CSA Certified to Standard C22.2 No. 248.12
- DC tested to UL Standard 198L

American Power Fuses
AMP-TRAP®
A2K and A6K (Class RK1FA)

Standard Fuse Ampere Ratings

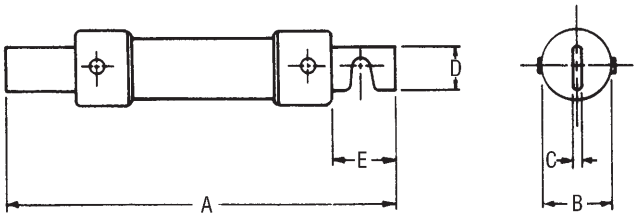
Ampere Rating	Catalog Number 250V	Catalog Number 600V	Reference Number 250V	Reference Number 600V	Ampere Rating	Catalog Number 250V	Catalog Number 600V	Reference Number 250V	Reference Number 600V
1	A2K1R	A6K1R	M215245	A219880	70	A2K70R	A6K70R	H211147	K217290
3	A2K3R	A6K3R	N217799	M201928	80	A2K80R	A6K80R	A211669	P217800
4	-	A6K4R	-	H212182	90	A2K90R	A6K90R	F212180	A218316
5	A2K5R	A6K5R	P222561	J213218	100	A2K100R	A6K100R	L215244	Y201409
6	A2K6R	A6K6R	L200869	H214229	110	A2K110R	A6K110R	V216264	L201927
8	-	A6K8R	-	L214738	125	A2K125R	A6K125R	V216770	J211148
10	A2K10R	A6K10R	G213216	N218834	150	A2K150R	A6K150R	H217288	B211670
12	A2K12R	-	F214227	-	175	A2K175R	A6K175R	M217798	G212181
15	A2K15R	A6K15R	J214736	B219352	200	A2K200R	A6K200R	Y218314	Y212702
20	A2K20R	A6K20R	Q215754	Q222562	225	A2K225R	A6K225R	L218832	H213217
25	A2K25R	A6K25R	W216265	G223083	250	A2K250R	A6K250R	Z219350	Z213715
30	A2K30R	A6K30R	W216771	M200870	300	A2K300R	A6K300R	Y219878	G214228
35	A2K35R	A6K35R	J217289	Z201410	350	A2K350R	A6K350R	N222560	K214737
40	A2K40R	A6K40R	Z218315	K211149	400	A2K400R	A6K400R	E223081	N215246
45	A2K45R	A6K45R	M218833	C211671	450	A2K450R	A6K450R	K200868	R215755
50	A2K50R	A6K50R	Z219879	Z212703	500	A2K500R	A6K500R	X201408	X216266
60	A2K60R	A6K60R	F223082	A213716	600	A2K600R	A6K600R	K201926	X216772

Recommended Fuse Blocks With Box Connectors For Amp-trap Class RK1Fuses



0-60A

Fuse Ampere Rating	Catalog Number 250 V 1 Pole	Catalog Number 250 V 3 Pole	Ref.Number 250 V 1 Pole	Ref.Number 250 V 3 Pole
0-30	20306R	20308R	T213411	K215956
31-60	20606R	20608R	B212383	E214939
61-100	21036R	21038R	D201621	M212899
101-200	22001R	22003R	R213915	G214941
201-400	24001R	24003R	J219566	D222022
401-600	2631R	2633R	H214942	P215960



61-600A

Fuse Ampere Rating	Catalog Number 600 V 1 Pole	Catalog Number 600 V 3 Pole	Ref.Number 600 V 1 Pole	Ref.Number 600 V 3 Pole
0-30	60306R	60308R	H212389	K214438
31-60	60606R	60608R	K212391	M214440
61-100	61036R	61038R	W204788	Z211875
101-200	62001R	62003R	V212906	B213924
201-400	64001R	64003R	D219055	M222030
401-600	6631R	6633R	J216990	E218021

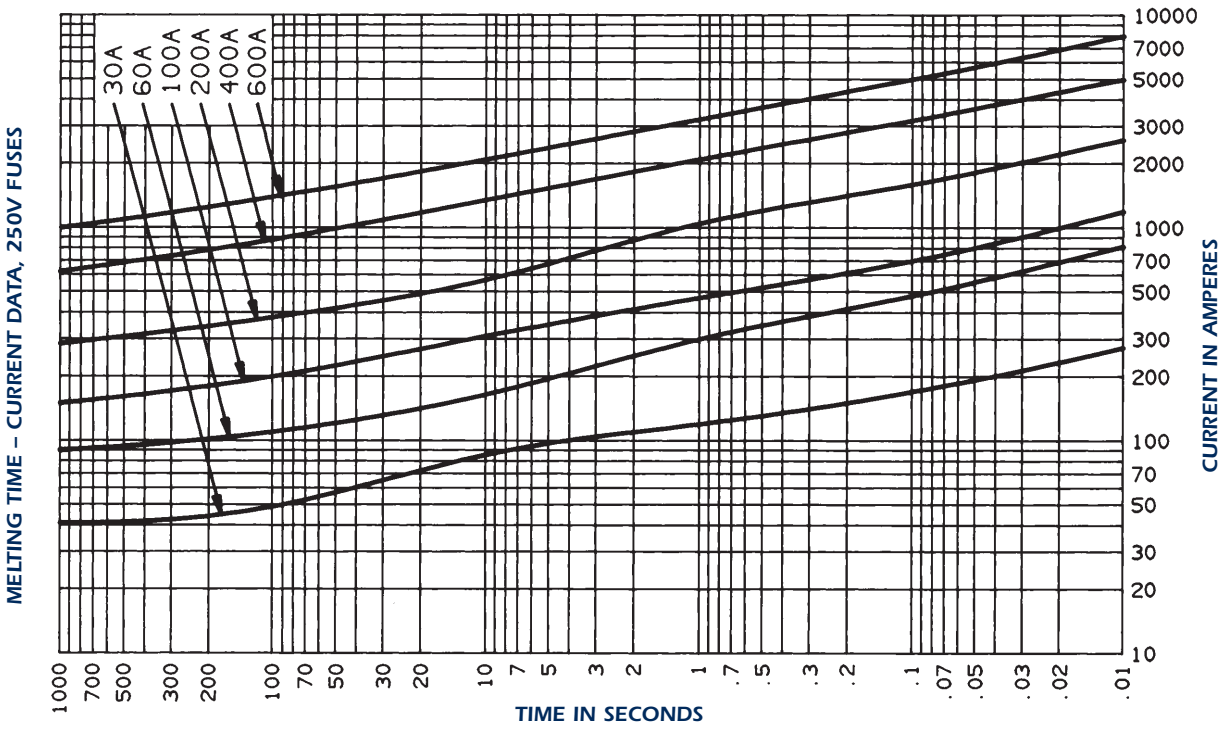
Dimensions

Ampere Rating	A In.	A mm	B In.	B mm	C In.	C mm	D In.	D mm	E In.	E mm
250V-A2K Fuses										
0-30	2	51	9/16	14	-	-	-	-	-	-
31-60	3	76	13/16	21	-	-	-	-	-	-
61-100	5-7/8	149	1-1/16	27	1/8	3	3/4	19	1	25
101-200	7-1/8	181	1-9/16	40	3/16	5	1-1/8	28	1-3/8	35
201-400	8-5/8	219	2-1/16	53	1/4	6	1-5/8	41	1-7/8	48
401-600	10-3/8	264	2-9/16	66	1/4	6	2	51	2-1/4	57
600V-A6K Fuses										
0-30	5	127	13/16	21	-	-	-	-	-	-
31-60	5-1/2	139	1-1/16	27	-	-	-	-	-	-
61-100	7-7/8	200	1-5/16	34	1/8	3	3/4	19	1	25
101-200	9-5/8	244	1-13/16	46	3/16	5	1-1/8	28	1-3/8	35
201-400	11-5/8	295	2-9/16	66	1/4	6	1-5/8	41	1-7/8	48
401-600	13-3/8	340	3-1/8	80	1/4	6	2	51	2-1/4	57

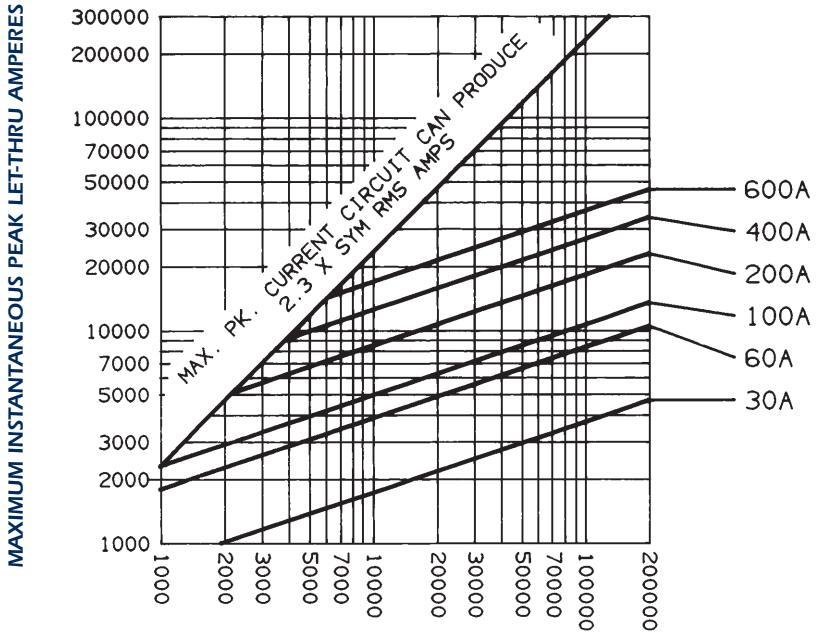
A variety of pole configurations and termination provisions is available. Refer to the fuse block section of this catalog for details.

American Power Fuses
AMP-TRAP®
A2K and A6K (Class RK1FA)

A2K30 to 600

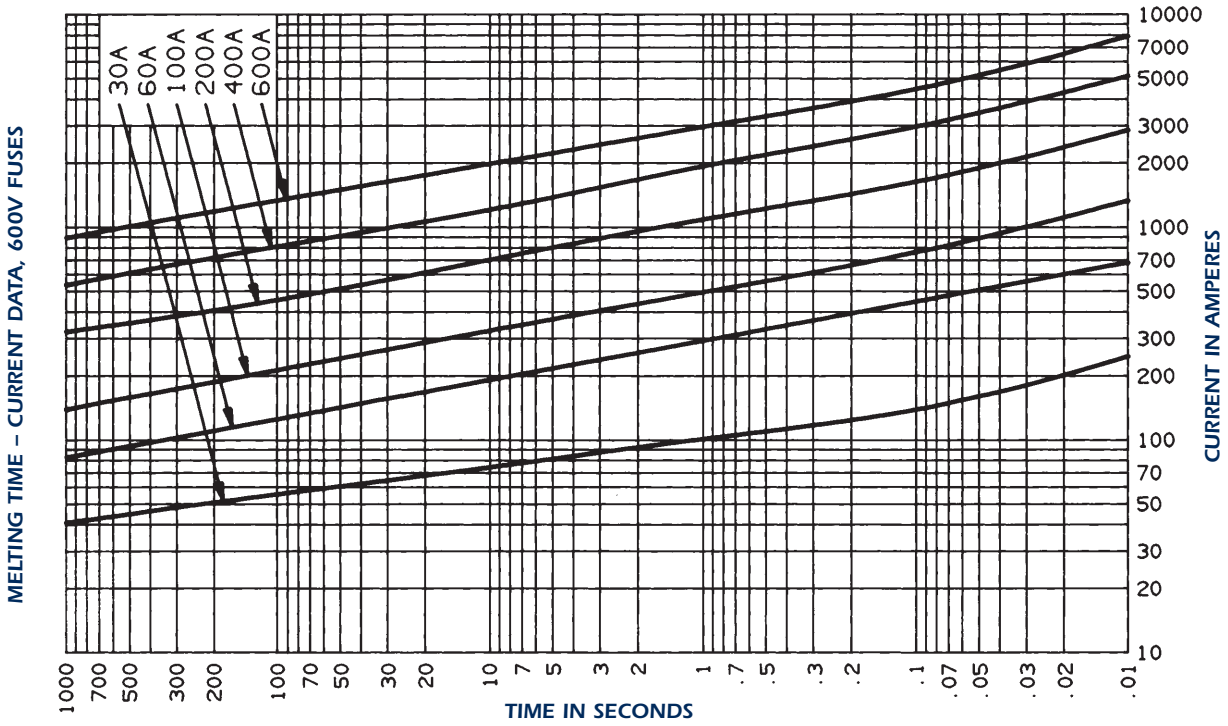


Peak Let-Thru Current Data – A2K30 to 600, 250 Volts AC

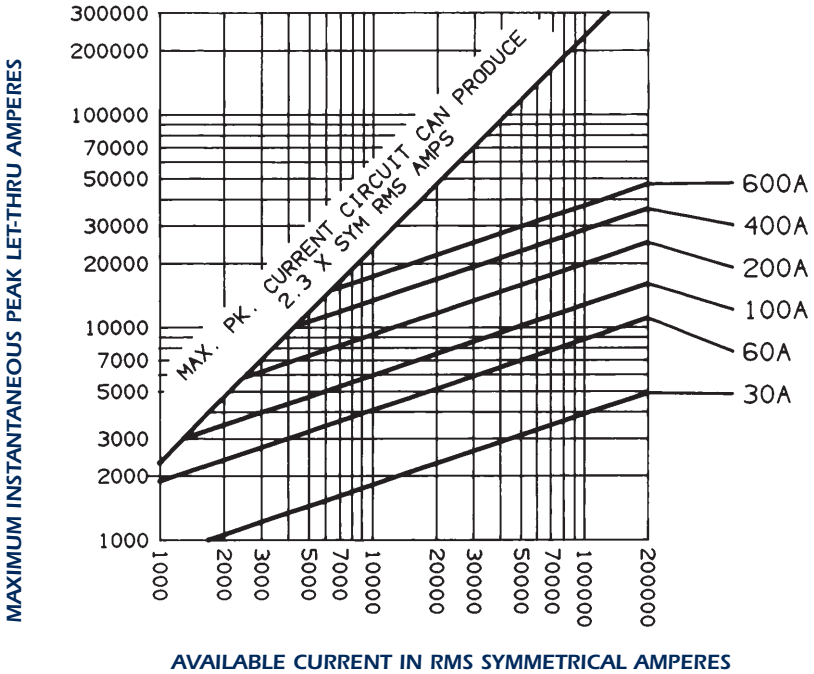


American Power Fuses
AMP-TRAP®
A2K and A6K (Class RK1FA)

A6K 30 to 600



Peak Let-Thru Current Data – A6K 30 to 600, 600 Volts AC



American Power Fuses
AMP-TRAP®
AG (Class G)



AMP-TRAP AG Fuses fit right in to a wide variety of industrial applications

The Ferraz Shawmut Amp-trap AG fuse series is a complete line of Class G fuses. AG fuses safely fit a wide variety of applications. Class G fuses are made in four physical sizes and provide good branch-circuit protection for lighting, heating, and appliance circuits.

Features/Benefits

- Four unique sizes from 1-60 amperes do not allow inter-changeability with other fuse classes
- Fiberglass bodies provide dimensional stability in harsh industrial settings

Applications

- Lighting
- Heating*
- Appliances
- Branch Circuits

** Except in Canada where fuses must be "P" or "D" type.*

Approvals

- UL Listed to Standard 248-5
- CSA Certified to Standard C22.2No. 248.5

Ratings

AC: 1/2 to 20A 600VAC, 100K A I.R.
25 to 60A, 480VAC, 100k A I.R.

Highlights

- Current-Limiting
- Time Delay (above 5A)

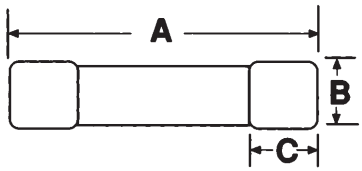
Standard Fuse Ampere Ratings

Ampere Rating	Catalog Number	Ref. Number
1/2	AG1/2	P201470
1	AG1	T223140
1-1/2	AG1-1/2	B200929
2	AG2	R211730
3	AG3	Y213277
4	AG4	B215304
5	AG5	L216831
6	AG6	H217863
8	AG8	F218896
10	AG10	Z201985
15	AG15	A211209
20	AG20	Z212243
25	AG25	L212760
30	AG30	P213775
35	AG35	Y214289
40	AG40	D215812
45	AG45	H216322
50	AG50	A217350
60	AG60	R218377

Dimensions

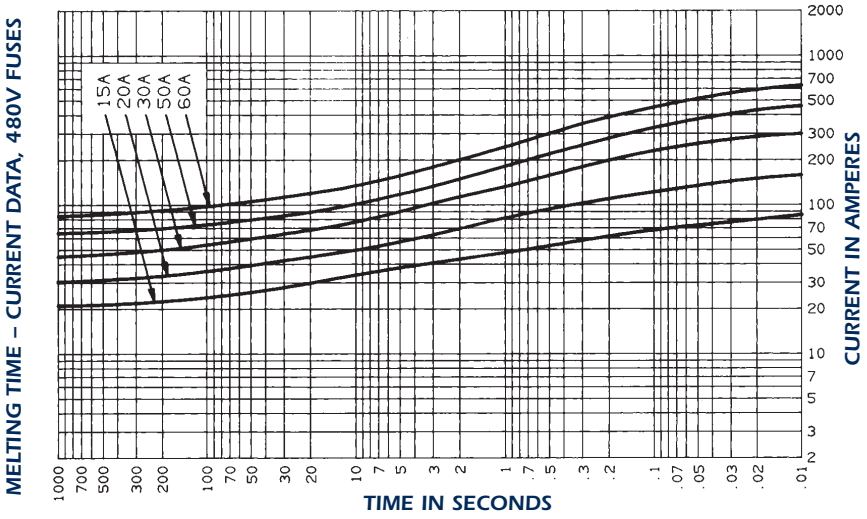
AMPERE RATING	A		B		C	
	In.	mm	In.	mm	In.	mm
1/2-15A	1.31	33.3	.406	10.3	.28	7.1
20A	1.41	35.8	.406	10.3	.28	7.1
25, 30A	1.62	41.2	.406	10.3	.28	7.1
35-60A	2.25	57.2	.406	10.3	.50	12.7

Cross Reference:
AG will replace the following fuses: Bussmann SC, Littelfuse SLC

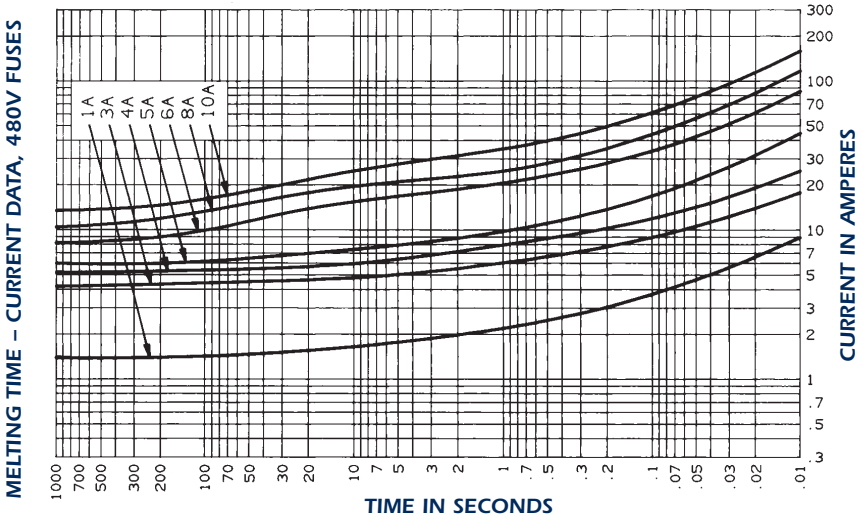


American Power Fuses
AMP-TRAP®
AG (Class G)

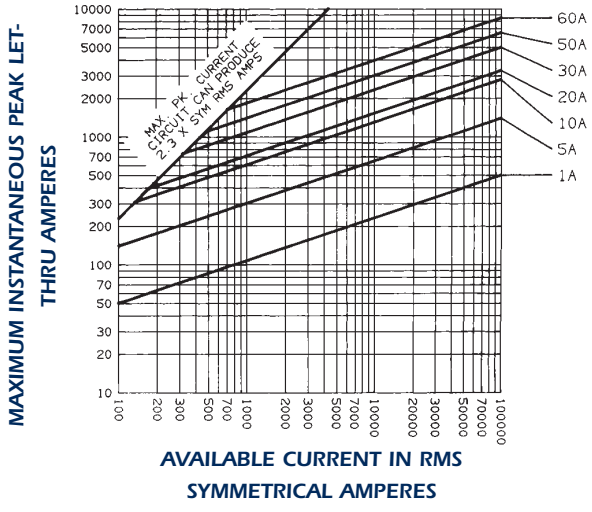
AG 15 to 60



AG 1 to 10



Peak Let-Thru Current Data – AG 1 to 60, 480 Volts AC



American Power Fuses
AMP-TRAP®
ATMR (Class CC)



Small Fuse - Big protection for general circuits

Amp-trap ATMR fuses, in the Class CC family, are the smallest dimension 600V fuses suitable for branch circuit protection. The ATMR is a popular choice for economical protection of control circuits and control circuit transformers where available short circuit currents exceed 10,000 amperes. ATMR's rejection dimensions prevent substitution by lesser rated fuses. These fast acting fuses give current limiting protection to general circuits.

Features/Benefits

- Rejection style design prevents replacement errors when used with recommended fuse blocks
- Fiberglass body provides dimensional stability in harsh industrial environments
- Versatile design for individual component and branch circuit protection

Ratings

AC: 1/10 to 30A 600VAC,
200kA I.R.

Highlights

- Fast Acting
- Very Current-Limiting

Applications

- Control Circuits
- Lighting
- General Loads
- Branch Circuit Protection

Approvals

- UL Listed to Standard 248-4
- CSA Certified to Standard C22.2No. 248.4

Primary Fuse Sizing for Control Transformer

Transformer Volt-Amperes	ATMR Rating	
	480V primary	600V primary
50	1/2*	3/10*
75	3/4*	1/2*
100	1	3/4*
150	1-1/2	1*
200	2	1-1/2*
250	2	2
300	3	2
350	3-1/2	2
500	5	4
750	7	6
1000	-	8

All rating will wiyhstand inrush currents of 40 times transformer full load for 1/2 cycle unless otherwise noted.

* These ratings will withstand inrush currents of 35 times transformer full load for 1/2 cycle.

Standard Fuse Ampere Ratings

Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
1/10	ATMR1/10	C217789	3-1/2	ATMR3-1/2	Y213208
1/8	ATMR1/8	P219341	4	ATMR4	G215746
2/10	ATMR2/10	B201918	5	ATMR5	M216257
1/4	ATMR1/4	C218824	6	ATMR6	L216762
3/10	ATMR3/10	W214218	7	ATMR7	Z217280
1/2	ATMR1/2	N218305	8	ATMR8	D217790
3/4	ATMR3/4	Z214727	9	ATMR9	P218306
1	ATMR1	L216256	10	ATMR10	P219870
1-1/4	ATMR1-1/4	Y217279	12	ATMR12	D222551
1-1/2	ATMR1-1/2	K216761	15	ATMR15	V223072
2	ATMR2	A200859	20	ATMR20	Z211139
2-1/2	ATMR2-1/2	N201400	25	ATMR25	Q211660
3	ATMR3	N212693	30	ATMR30	C215236

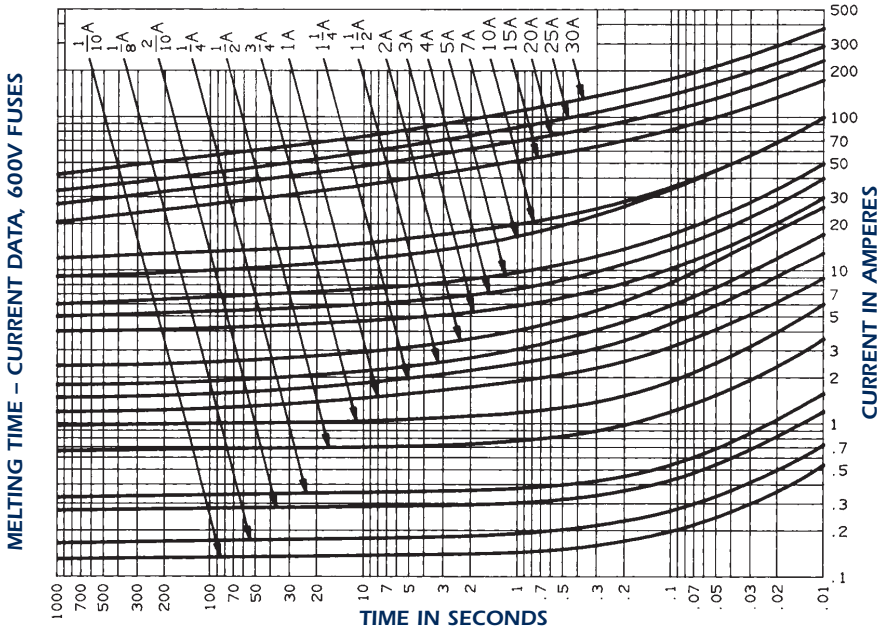
American Power Fuses
AMP-TRAP®
ATMR (Class CC)

Recommended Fuse Blocks For Amp-Trap® Class CC Fuses

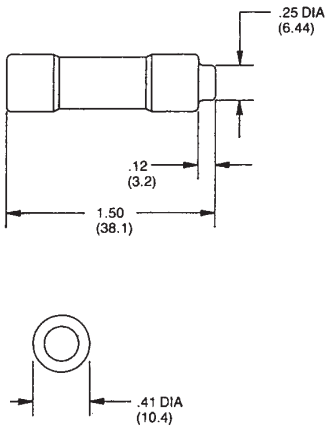
Number of Poles	Catalog Number				Reference Number			
	ULTRA-SAFE Indicating Fuse Holder	Screw Connector w/ Double Quick Connects	Pressure Plate Connector w/ Double Quick Connects	Copper Box Connector	ULTRA-SAFE Indicating Fuse Holder	Screw Connector w/ Double Quick Connects	Pressure Plate Connector w/ Double Quick Connects	Copper Box Connector
ADDER		30310R	30320R	30350R		W204857	Z217510	N213429
1	USCC1I	30311R	30321R	30351R	X213943	R212397	M218534	G213929
2	USCC2I	30312R	30322R	30352R	D217008	Z212910	Y219579	V214447
3	USCC3I	30313R	30323R	30353R	Y218038	M213428	B222779	X214955

Refer to the Class CC Fuse Block section of this catalog for other details.

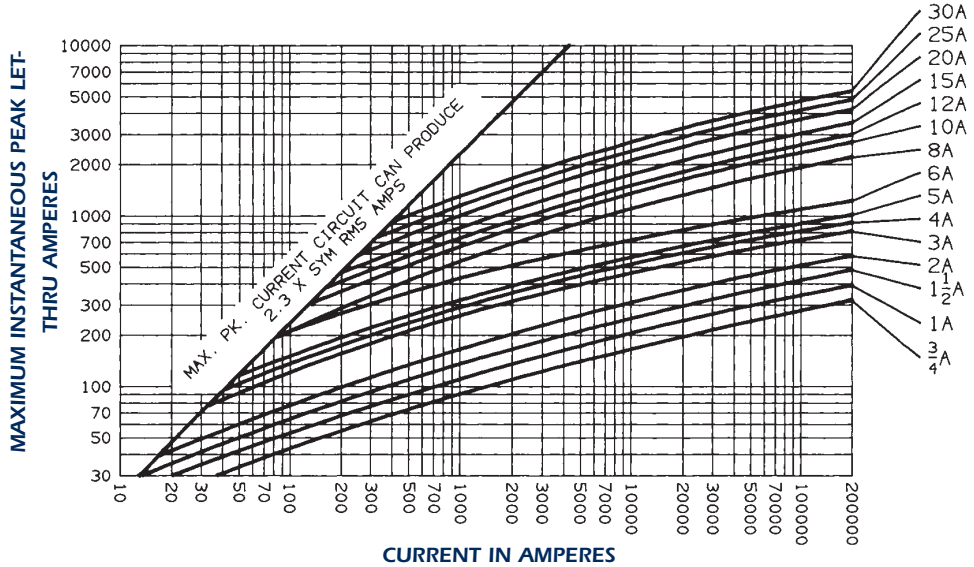
ATMR 1/10 to 30



Dimensions



Peak Let-Thru Current Data – ATMR 3/4 to 30, 600 Volts AC



American Power Fuses
One-Time
OT, OTN, OTS (Class K-5)



For versatility and economy, these general purpose fuses are hard to beat

OT, OTN and OTS general purpose fuses provide low cost protection for feeder and branch circuits serving lighting, heating, and other non-motor loads OT, OTN and OTS fuses will safely interrupt available short circuit currents up to 50,000 amperes in all ratings.

OT, OTN and OTS fuses are not rejection fuses – care should be taken to ensure that replacement fuses do not have lower interrupting ratings than original fuses. OTN 15 through 60 satisfy the Canadian electrical code requirement for Type "P," low melting-point, non-time delay fuses.

Features/Benefits

- Easy to read imprint label for quick recognition and replacement
- Low cost for high protection value

Ratings

OT
AC: 1 to 600A 250VAC, 50kA I.R.
DC: 1 to 600A 250VDC, 20kA I.R.

OTN (Canada)
AC: 15 to 60A 250VAC, 50kA I.R.

OTS
AC: 1 to 600A 600VAC, 50kA I.R.
DC: 1 to 600A 300VDC, 20kA I.R.

Highlights

- Versatile
- Lowest cost protection for circuits serving non-inductive loads

Applications

- Feeders
- Branch Circuits
- Resistive Heating
- Residential and Small Commercial Installations

Approvals

- UL Listed to Standard 248-9
- CSA Certified toStandard C22.2 No. 248.9*
- DC Tested to UL Standard 198L

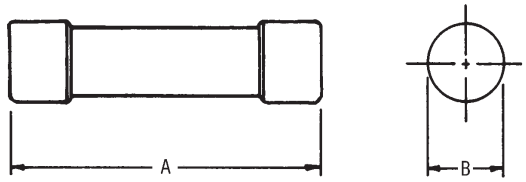
* *The Canadian Electrical Code requires these fuses in ratings 15 through 60A to be of the low melting point design use OTN 15-60.*

American Power Fuses
One-Time
OT, OTN, OTS (Class K-5)

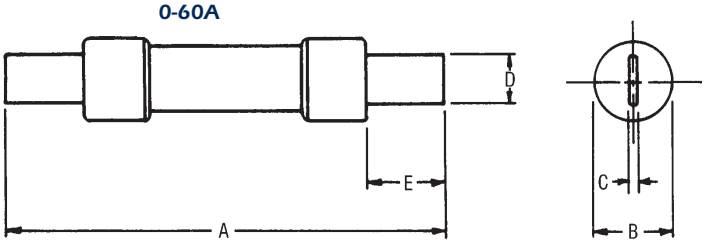
Standard Fuse Ampere Ratings

Ampere Rating	Catalog Number 250V	Catalog Number 600V	Reference Number 250V	Reference Number 600V	Ampere Rating	Catalog Number 250V	Catalog Number 600V	Reference Number 250V	Reference Number 600V
1	OT1	OTS1	H218277	D215720	65	OT65	OTS65	V201889	-
2	OT2	OTS2	Y222523	L218280	70	OT70	OTS70	T211111	A222525
3	OT3	OTS3	K201374	M219845	75	OT75	OTS75	H211630	R223046
4	OT4	OTS4	Q212143	Y200834	80	OT80	OTS80	P212142	X200833
5	OT5	OTS5	W214701	Y211115	90	OT90	OTS90	G212664	M201376
6	OT6	OTS6	H216230	T212146	100	OT100	OTS100	Y215209	T213181
7	OT7	OTS7	Z217763	R223506	110	OT110	OTS110	Z215716	L213680
8	OT8	OTS8	J218278	W213183	125	OT125	OTS125	F216228	S214192
10	OT10	OTS10	X218796	K216232	150	OT150	OTS150	D216732	X214702
12	OT12	OTS12	H219312	H216736	175	OT175	OTS175	S217251	B215212
15	OT15	OTS15	J219842	X217255	200	OT200	OTS200	X217761	C215719
20	OT20	OTS20	P223044	Z218798	225	OT225	OTS225	G218276	J216231
25	OT25	OTS25	V200831	L219315	250	OT250	OTS250	W218795	G216735
30	OT30	OTS30	W201890	B222526	300	OT300	OTS300	G219311	W217254
35	OT35	OTS35	J211631	S223047	350	OT350	OTS350	H219841	A217764
40	OT40	OTS40	H212665	N201377	400	OT400	OTS400	X222522	K218279
45	OT45	OTS45	K213679	Z201893	450	OT450	OTS450	N223043	Y218797
50	OT50	OTS50	A215211	M211634	500	OT500	OTS500	T200830	K219314
60	OT60	OTS60	F216734	L212668	600	OT600	OTS600	J201373	L219844

OTN 15 to 60A: consult us.



0-60A



61-600A

Recommended Fuse Blocks With Box Connectors For One-Time Class K-5 Fuses

Fuse Ampere Rating	Catalog Number 250 V 1 Pole	Catalog Number 250 V 3 Pole	Ref.Number 250 V 1 Pole	Ref.Number 250 V 3 Pole
0-30	20306	20308	Z212381	F215446
31-60	20606	20608	N211865	C214431
61-100	21036	21038	S201105	Q211867
101-200	22001	22003	Y213415	E214433
201-400	24001	24003	T219046	-
401-600	2631	2633	F214434	K215450

Fuse Ampere Rating	Catalog Number 600 V 1 Pole	Catalog Number 600 V 3 Pole	Ref.Number 600 V 1 Pole	Ref.Number 600 V 3 Pole
0-30	60306	60308	V211871	X213920
31-60	60606	60608	X211873	Z213922
61-100	61036	61038	K201627	S211363
101-200	62001	62003	M212393	H213424
201-400	64001	64003	H218530	T219575
401-600	6631	6633	Z216475	W217507

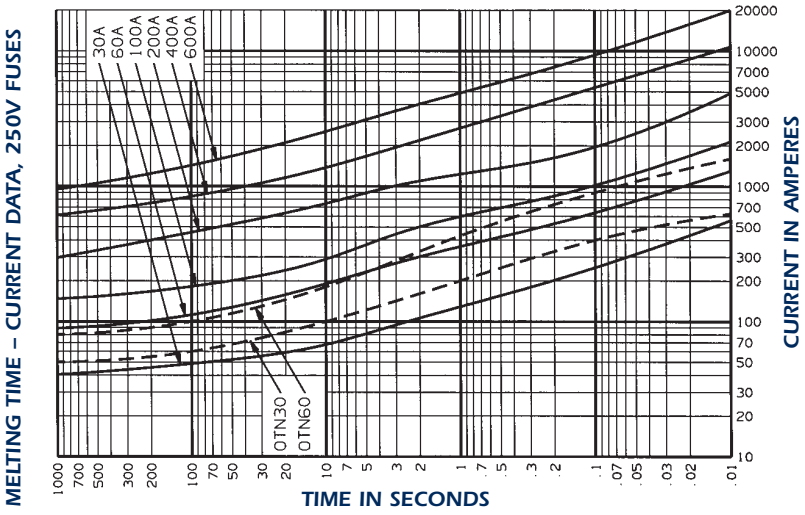
Dimensions

Ampere Rating	A In.	A mm	B In.	B mm	C In.	C mm	D In.	D mm	E In.	E mm
250V-OT, OTN FUSES										
0-30	2	51	9/16	14	-	-	-	-	-	-
31-60	3	76	13/16	21	-	-	-	-	-	-
61-100	5-7/8	149	1-1/16	27	1/8	3	3/4	19	1	25
101-200	7-1/8	181	1-9/16	40	3/16	5	1-1/8	28	1-3/8	35
201-400	8-5/8	219	2-1/16	53	1/4	6	1-5/8	41	1-7/8	48
401-600	10-3/8	264	2-9/16	66	1/4	6	2	51	2-1/4	57
600V-OTS FUSES										
0-30	5	127	13/16	21	-	-	-	-	-	-
31-60	5-1/2	139	1-1/16	27	-	-	-	-	-	-
61-100	7-7/8	200	1-5/16	34	1/8	3	3/4	19	1	25
101-200	9-5/8	244	1-13/16	46	3/16	5	1-1/8	28	1-3/8	35
201-400	11-5/8	295	2-9/16	66	1/4	6	1-5/8	41	1-7/8	48
401-600	13-3/8	340	3-1/8	80	1/4	6	2	51	2-1/4	57

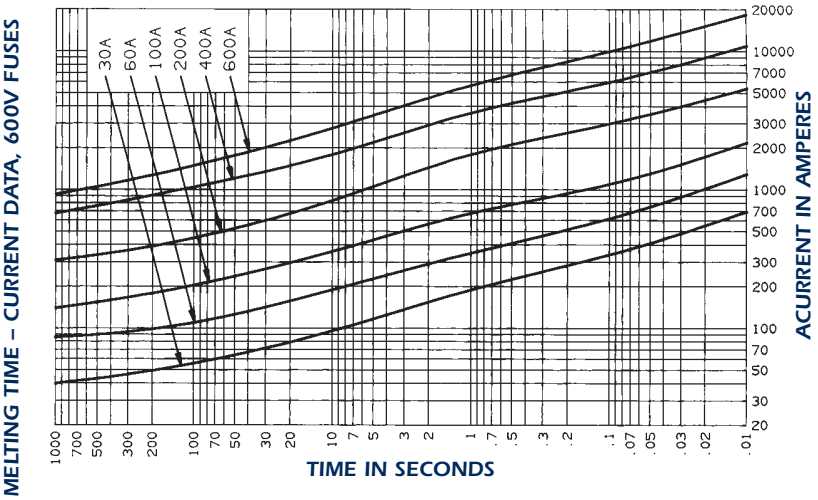
A variety of pole configurations and termination provisions is available. Refer to the fuse block section of this catalog for details.

American Power Fuses
One-Time
OT, OTN, OTS (Class K-5)

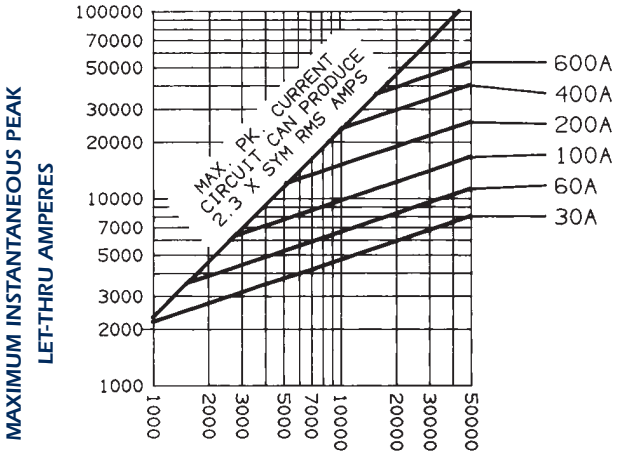
OT 30 to 600; OTN 30, 60



OTS 30 to 600



Peak Let-Thru Current Data – OT, OTN & OTS 30 to 600, 250 and 600 Volts AC



American Power Fuses
Renewable
RF/RFS and RL/RLS (Class H)



Traditional protection for circuits with less than 10,000A Short circuit current

RF and RFS general purpose fuses are suitable for application where available short circuit currents do not exceed 10,000 amperes. RF and RFS renewable fuses use matched RL and RLS die-cut zinc links from 1 to 600 amperes in 32 ratings.

Note: To be replace by TR (250V) and TRS (600V) compatible class RK5

Features/Benefits

- Knurled bushings for ease of disassembly
- Rugged construction for maximum service life
- Precision die-cut renewal links renew quickly and give repeatable performance

Ratings

RF

AC: 1 to 600A 250VAC, 10kA I.R.

RFS

AC: 1 to 600A 600VAC, 10kA I.R.

Highlights

- Renewable
- 32 Renewal Link Ratings

Applications

- General purpose loads where short circuits are 10,000 amperes or less

Approvals

- UL Listed to Standard 248-7
- CSA Certified to Standard C22.2 No. 248.7

Midget Fuses (10x38 US)
Time Delay
ATQ 500VAC (TD)



Amp-trap® ATQ midget time-delay fuses are rated a full 500 volts AC with 42 ampere ratings from 1/10 to 30A. They are an excellent choice for supplemental protection of circuits up to 30A where the available short circuit current does not exceed 10,000A. (Not for Branch Circuit Protection).

Features/Benefits

- Numerous ratings for a wide variety of applications up to 500VAC
- Time delay (12 seconds at 200% rating) for circuits with high inrush current
- UltraSafe TM fuse holder: refer to Fuse Blocks and Fuse Holders section for details, Catalog Number and Reference Number

Ratings

- AC: 1/10 to 30A 500VAC, 10kA I.R.

Highlights

- Time Delay

Applications

- Supplemental protection of lighting, solenoid, motor, and transformer circuits
- Transformers
- Control Panels
- Circuit Breaker Back-up
- Bus Duct
- Load Centers

Approvals

- UL Listed to Standard 248-14
- CSA Certified to Standard C22.2 No. 248.14

Standard Fuse Ampere Ratings, Catalog Numbers

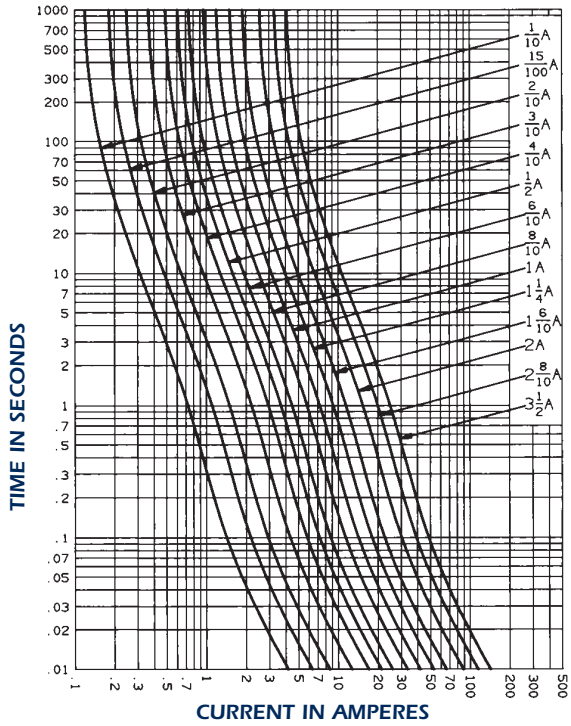
Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number
1/10	ATQ1/10	3/10	ATQ3/10	1-1/8	ATQ1-1/8	2	ATQ2	3-2/10	ATQ3-2/10	6	ATQ6	12	ATQ12
1/8	ATQ1/8	4/10	ATQ4/10	1-1/4	ATQ1-1/4	2-1/8	ATQ2-1/8	3-1/2	ATQ3-1/2	6-1/4	ATQ6-1/4	14	ATQ14
15/100	ATQ15/100	1/2	ATQ1/2	1-4/10	ATQ1-4/10	2-1/4	ATQ2-1/4	4	ATQ4	7	ATQ7	15	ATQ15
3/16	ATQ3/16	6/10	ATQ6/10	1-1/2	ATQ1-1/2	2-1/2	ATQ2-1/2	4-1/2	ATQ4-1/2	8	ATQ8	20	ATQ20
2/10	ATQ2/10	8/10	ATQ8/10	1-6/10	ATQ1-6/10	2-8/10	ATQ2-8/10	5	ATQ5	9	ATQ9	25	ATQ25
1/4	ATQ1/4	1	ATQ1	1-8/10	ATQ1-8/10	3	ATQ3	5-6/10	ATQ5-6/10	10	ATQ10	30	ATQ30

Standard Fuse Ampere Ratings, Reference Numbers

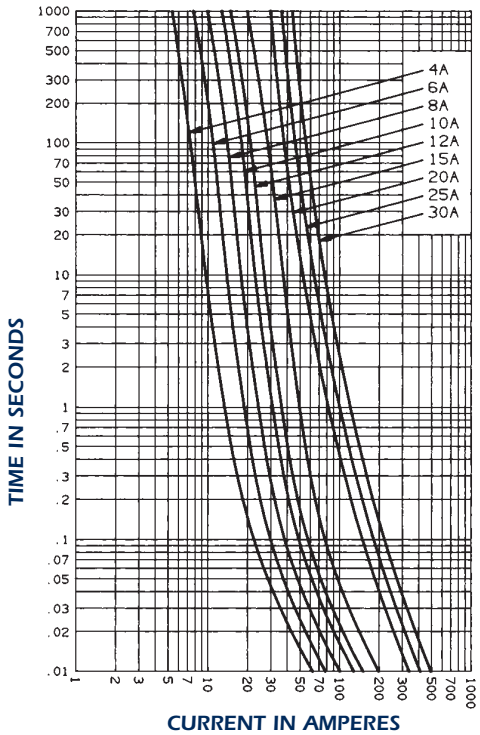
Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number
1/10	S211662	3/10	Q201402	1-1/8	R219872	2	P216259	3-2/10	D200862	6	Z214221	12	Y214220
1/8	A213210	4/10	R212696	1-1/4	R219343	2-1/8	F217792	3-1/2	Y223075	6-1/4	C214730	14	B214729
15/100	J215748	1/2	Y212173	1-4/10	F222553	2-1/4	B217282	4	T211663	7	P216765	15	E215238
3/16	D201920	6/10	F215239	1-1/2	Q218307	2-1/2	N216764	4-1/2	Z212174	8	C217283	20	S219344
2/10	E218826	8/10	G217793	1-6/10	X223074	2-8/10	R218308	5	B213211	9	S218309	25	S219873
1/4	Q212695	1	E217791	1-8/10	C200861	3	G222554	5-6/10	S213709	10	R213708	30	B211141

Midget Fuses (10x38 US)
Time Delay
ATQ 500VAC (TD)

Melting Time – Current Data 1/10 - 3-1/2 Amperes, 500 Volts AC



Melting Time – Current Data 4 - 30 Amperes, 500 Volts AC



Midget Fuses (10x38 US)
Time Delay
TRM



Tri-onic® TRM time-delay midget fuses are rated 250 volts AC and are offered in 36 ampere ratings from 1/10A to 30A. They have 12 seconds time delay at 200% rating to provide supplemental protection of small motors, small transformers and other high inrush loads, plus many other 250 volt applications. (Not for Branch Circuit Protection).

Features/Benefits

- Numerous ratings for a wide variety of applications
- 250VAC rating in all sizes up to 30A
- Time delay for circuits with high inrush currrent
- UltraSafe ™ fuse holder: refer to Fuse Blocks and Fuse Holders section for details,Catalog Number and Reference Number

Ratings

- AC: 1/10 to 30A
  250VAC, 10kA I.R.

Highlights

- Time Delay
- 250 VAC Rated

Applications

- Small Motors
- Small Transformers
- Lighting Circuits
- Control Circuits

Approvals

- UL Listed to Standard 248-14
- CSA Certified to Standard C22.2 No. 248.14

Standard Fuse Ampere Ratings, Catalog Numbers

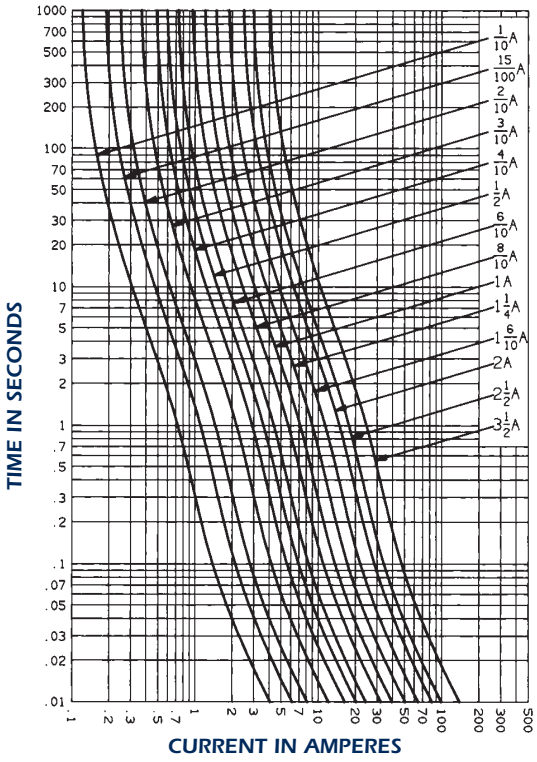
Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number
1/10	TRM1/10	6/10	TRM6/10	1-6/10	TRM1-6/10	3	TRM3	5-6/10	TRM5-6/10	10	TRM10
15/100	TRM15/100	8/10	TRM8/10	1-8/10	TRM1-8/10	3-2/10	TRM3-2/10	6	TRM6	12	TRM12
2/10	TRM2/10	1	TRM1	2	TRM2	3-1/2	TRM3-1/2	6-1/4	TRM6-1/4	15	TRM15
3/10	TRM3/10	1-1/8	TRM1-1/8	2-1/4	TRM2-1/4	4	TRM4	7	TRM7	20	TRM20
4/10	TRM4/10	1-1/4	TRM1-1/4	2-1/2	TRM2-1/2	4-1/2	TRM4-1/2	8	TRM8	25	TRM25
1/2	TRM1/2	1-4/10	TRM1-4/10	2-8/10	TRM2-8/10	5	TRM5	9	TRM9	30	TRM30

Standard Fuse Ampere Ratings, Reference Numbers

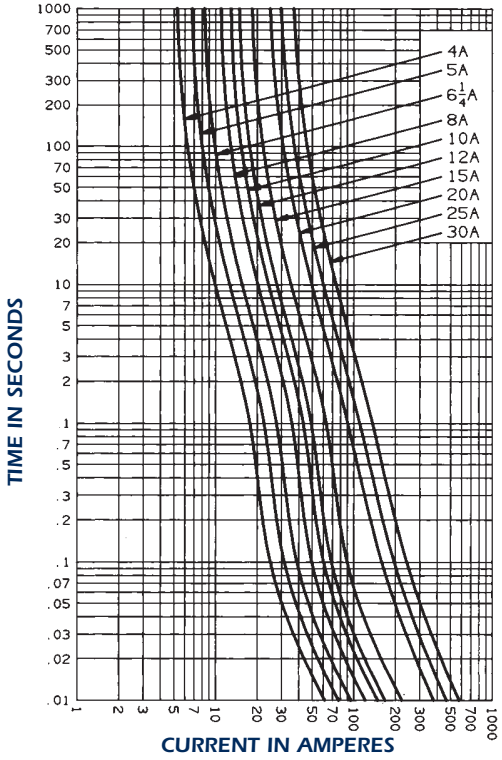
Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number	Ampere Rating	Reference Number
1/10	R217273	6/10	X222545	1-6/10	E216250	3	H213700	5-6/10	W218818	10	V218817
15/100	M223065	8/10	G201394	1-8/10	C216754	3-2/10	R214720	6	H219335	12	G219334
2/10	P212165	1	M214210	2	S200852	3-1/2	N214211	6-1/4	H219864	15	W222544
3/10	V215229	1-1/8	T215228	2-1/4	R211132	4	F216251	7	N223066	20	F212686
4/10	W217783	1-1/4	Q214719	2-1/2	T201911	4-1/2	D216755	8	T200853	25	Q213201
1/2	V217782	1-4/10	Y215738	2-8/10	H211653	5	G218299	9	V201912	30	Z215739

Midget Fuses (10x38 US)
Time Delay
TRM

Melting Time – Current Data 1/10 - 3-1/2 Amperes, 250 Volts AC



Melting Time – Current Data 4 - 30 Amperes, 250 Volts AC



Midget Fuses (10x38 US)
Time Delay
GFN



GFN midget indicating fuses are available in 34 ratings from 1/10A through 30A. These time-delay fuses have built-in blown fuse indicators which pop out at the end of the fuse to visually indicate when the fuse has operated to open the circuit. Indicators may be used to trip a switch for remote as well as visual indication. (Not for Branch Circuit Protection).

Features/Benefits

- Pin indicator provides visual indication of open fuse or actuates switch for remote signaling
- Numerous ratings for a wide variety of applications
- 12 second time delay at 200% rating
- UltraSafeTM fuse holder: refer to Fuse Blocks and Fuse Holders section for details, Catalog Number and Reference Number

Ratings

- AC: 1/10 to 10A 250VAC, 200A I.R.,
  125VAC, 10kA I.R.;
  12 to 15A 125VAC, 10kA I.R.;
  20 to 30A 32VAC, 10kA I.R.

Highlights

- Pin Indicating
- Time Delay

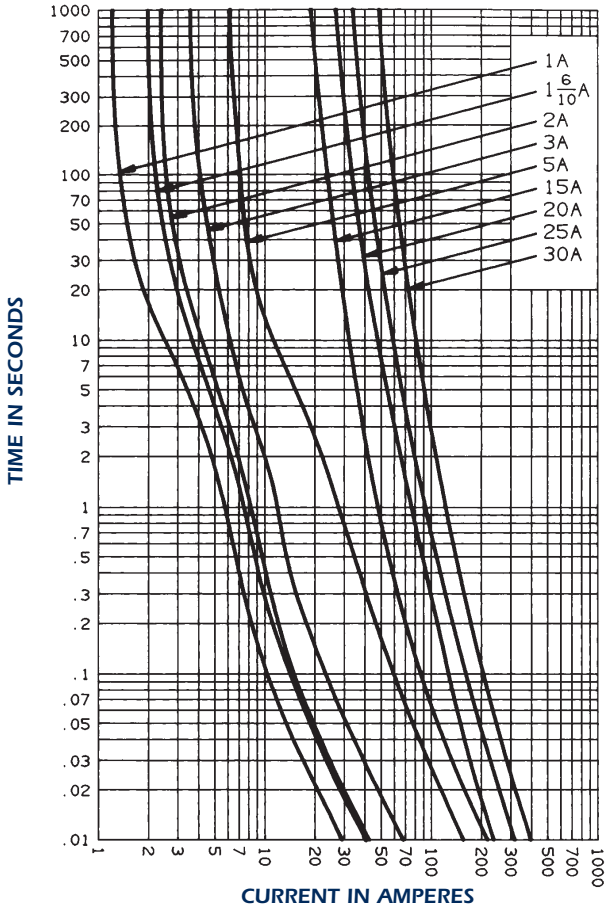
Applications

- For supplemental protection of circuits where time delay and blown fuse indication are required, such as solenoid circuits or control circuits.

Approvals

- UL Listed to Standard 248-14 (1/10 to 15A)
- CSA Certified to Standard C22.2 No.248.14 (1/10 to 15A)

Melting Time – Current Data
1 - 30 Amperes, 250 Volts AC



Standard Fuse Ampere Ratings

Ampere Rating	Catalog Number	Reference Number
1/10	GFN1/10	K222557
1/8	GFN1/8	T201405
15/100	GFN15/100	C212177
2/10	GFN2/10	C214224
1/4	GFN1/4	G200865
3/10	GFN3/10	F217286
4/10	GFN4/10	X219348
1/2	GFN1/2	B223078
6/10	GFN6/10	H201924
8/10	GFN8/10	Y211667
1	GFN1	R216767
1-1/8	GFN1-1/8	V218311
1-1/4	GFN1-1/4	J217795
1-4/10	GFN1-4/10	H218829
1-1/2	GFN1-1/2	E217285
1-6/10	GFN1-6/10	W219347
1-8/10	GFN1-8/10	W219876

Ampere Rating	Catalog Number	Reference Number
2	GFN2	V212699
2-1/4	GFN2-1/4	W213712
2-1/2	GFN2-1/2	E213214
3	GFN3	M215751
3-2/10	GFN3-2/10	S216768
3-1/2	GFN3-1/2	S216262
4	GFN4	W218312
4-1/2	GFN4-1/2	J218830
5	GFN5	L222558
6-1/4	GFN6-1/4	V201406
8	GFN8	F211145
10	GFN10	G201923
12	GFN12	E211144
15	GFN15	X211666
20	GFN20	F214733
25	GFN25	J215242
30	GFN30	J215242

Midget Fuses (10x38 US)
Fast Acting
A6Y-2B



A6Y "Type 2B" Amp-trap® midget fuses are fast acting on short circuits, yet have sufficient time delay to offer supplemental protection for small motors, transformers, and control circuits.
(Not for Branch Circuit Protection).

Features/Benefits

- Moderate amount of time delay for circuits with inrush characteristics
- Fast acting on short circuits
- UltraSafeTM fuse holder: refer to Fuse Blocks and Fuse Holders section for details,Catalog Number and Reference Number

Ratings

- AC: 1/4 to 3A 600VAC,
  10kA I.R.
  3-2/10 to 15A
  500VAC, 10kA I.R.

Standard Fuse Ampere Ratings

Ampere Rating	Catalog Number	Reference Number
1/4	A6Y1/4-2B	Y222546
1/2	A6Y1/2-2B	J219865
6/10	A6Y6/10-2B	T214722
3/4	A6Y3/4-2B	-
1	A6Y1-2B	X218819
1-1/4	A6Y1-1/4-2B	H218300
1-1/2	A6Y1-1/2-2B	X217784
1-6/10	A6Y1-6/10-2B	J219336
2	A6Y2-2B	T211134
2-1/2	A6Y2-1/2-2B	W201913
3	A6Y3-2B	H212688
3-2/10	A6Y3-2/10-2B	R212167
3-1/2	A6Y3-1/2-2B	K211655
4	A6Y4-2B	S213203
5	A6Y5-2B	K213702
6	A6Y6-2B	Q214213
7	A6Y7-2B	X215231
8	A6Y8-2B	B215741
9	A6Y9-2B	F216757
10	A6Y10-2B	P223067
12	A6Y12-2B	V200854
15	A6Y15-2B	H201395

Highlights

- Fast Acting

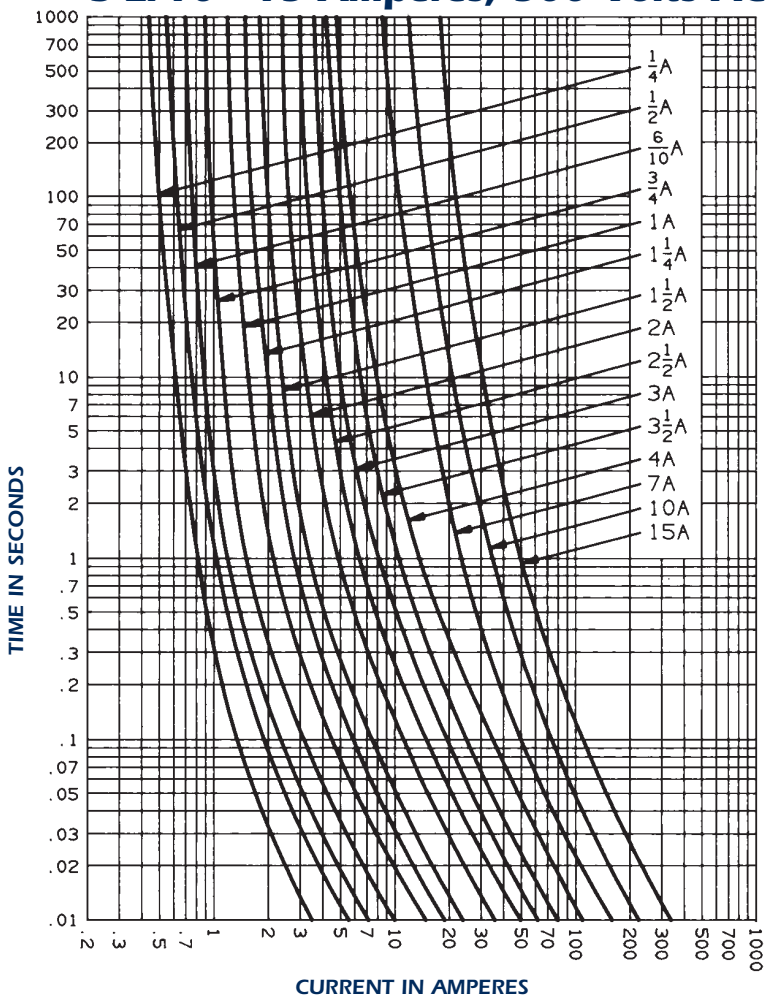
Applications

- Supplemental protection of 600V (up to 3A) and 500V (3-2/10-15A) AC circuits
- Small motors, transformers, and control circuits

Approvals

- Ferraz Shawmut Certified

Melting Time – Current Data
1/4 - 3 Amperes, 600 Volts AC
3-2/10 - 15 Amperes, 500 Volts AC





Midget Fuses (10x38 US) Fast Acting ATM

Amp-trap® midget fast-acting ATM fuses are rated 600 volts AC, with a 100kA interrupting rating. These ratings give the ATM a wide range of applications not covered by other midget fuses. In addition, ratings of 30/35, 30/40 and 30/50 amperes are offered for specific applications such as capacitor protection. These ATM fuses must still be considered 30A fuses because of their dimensions, but are able to withstand much higher inrush currents and tougher duty cycles. (Not for Branch Circuit Protection).

Features/Benefits

- For supplemental protection of small motors and transformers
- Extended ratings for special protection of capacitors and circuits with high inrush currents
- 500VDC ratings for a wide variety of applications
- UltraSafe™ fuse holder: refer to Fuse Blocks and Fuse Holders section for details,Catalog Number and Reference Number

Ratings

- AC: 1/10 to 30A 600VAC, 100kA I.R.; 35 to 50A 600VAC, 10kA I.R.
- DC: 1/10 to 30A 500VDC, 100kA I.R.

Highlights

- Fast Acting
- Special Ratings (above 30A)

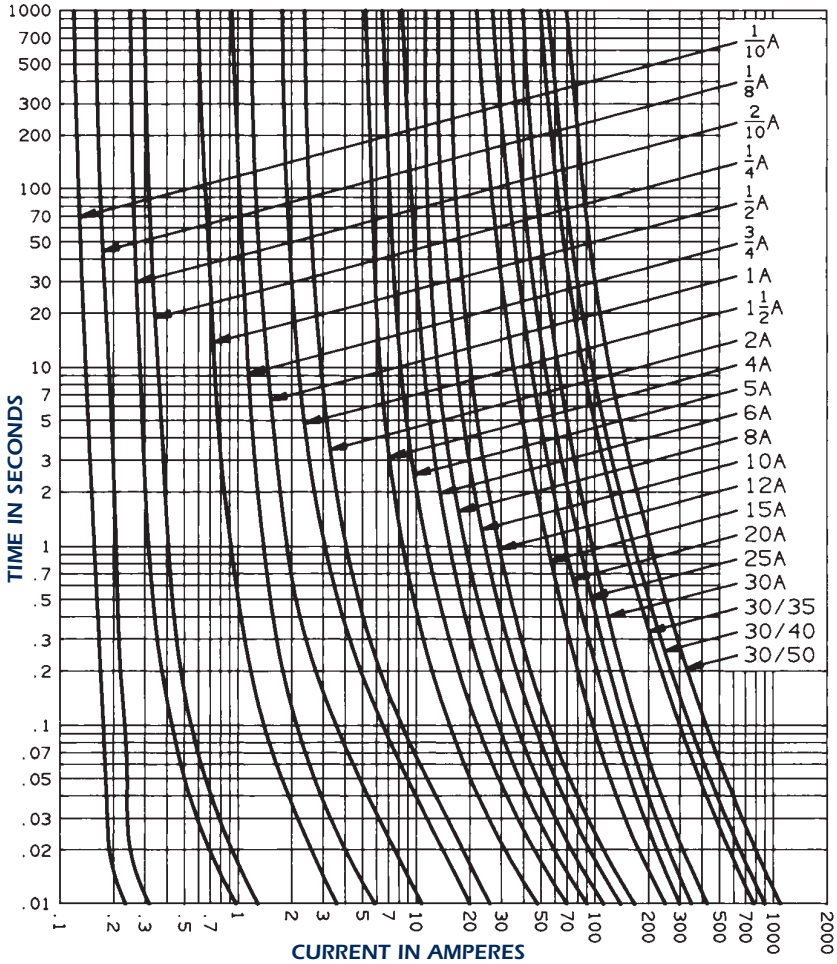
Applications

- Supplemental protection of a wide variety of circuits up to 600VAC and 500VDC with100kA I.R.

Approvals

- UL Listed to Standard 248-14 (1/10 to 30A)
- DC listed to UL Standard 248-14 (1/10 to 30A)
- CSA Certified to Standard C22.2 No. 248.14 (1/10 to 30A)

Melting Time – Current Data 1/10 30/50 Amperes, 600 Volts AC



Standard Fuse Ampere Ratings, Reference Numbers

Ampere Rating	Catalog Number	Reference Number
1/10	ATM1/10	L218303
1/8	ATM1/8	M219868
2/10	ATM2/10	X211137
1/4	ATM1/4	M219339
1/2	ATM1/2	A218822
3/4	ATM3/4	W213206
1	ATM1	W217277
1-1/2	ATM1-1/2	A217787
2	ATM2	Z201916
3	ATM3	L212691
4	ATM4	E215744
5	ATM5	K216255
6	ATM6	J216760
8	ATM8	B217788
10	ATM10	B222549
12	ATM12	Y200857
15	ATM15	L201398
20	ATM20	N211658
25	ATM25	V212170
30	ATM30	N213705
30/35	ATM30/35*	T214216*
30/40	ATM30/40*	X214725*
30/50	ATM30/50*	A215234*

Not continuous current rated devices

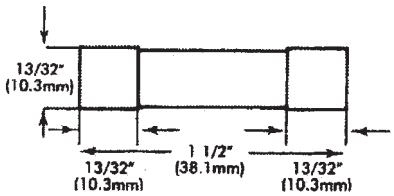
Midget Fuses (10x38 US)
Fast Acting
6JX



600VAC - 500VDC
100000 A.I.R
Current limiting

Ferraz Shawmut 6JX Midget Fuses are recommended for applications requiring very precise operating characteristics and where high available fault currents demand high interrupting capacities. Typical applications include control circuit, lighting circuit, small motor and control transformer protection.

Dimensions



6JX fuses can be mounted in the UltraSafe™ fuse holder. Refer to Fuse Blocks and Fuse Holders section for details, Reference Number and Catalog Number.

Test specifications

I_{NF} = 110% I_N t Ø 4 Hours

I_F = 135% I_N t ≤ 1 Hour

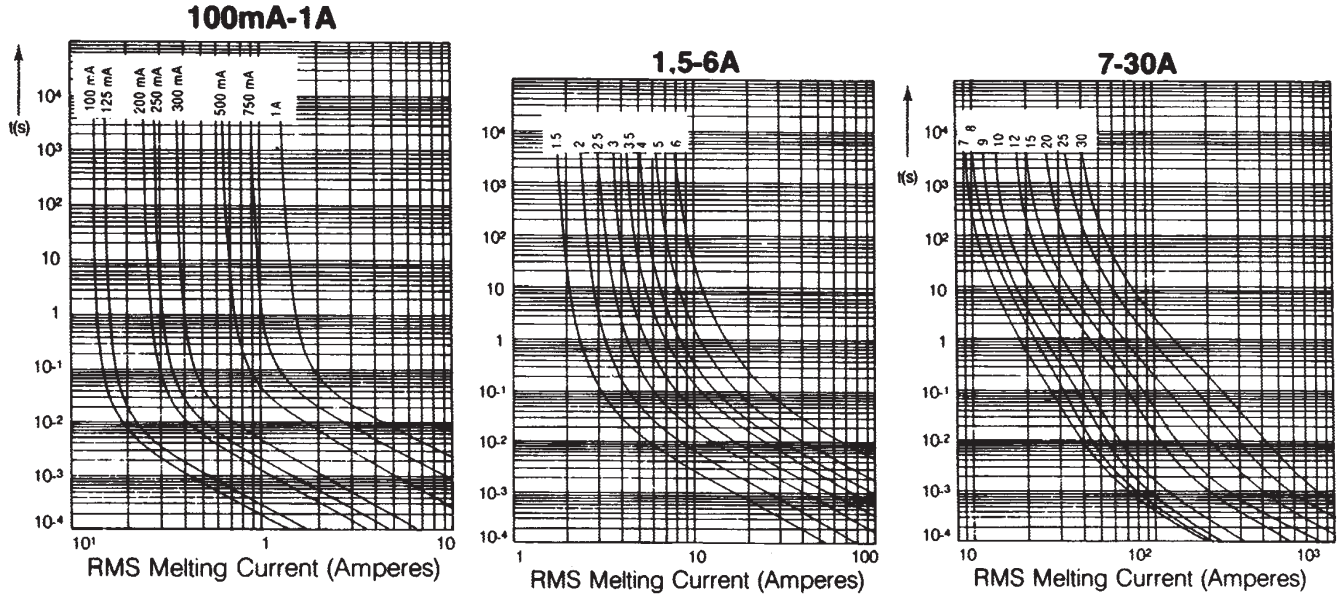
I_F= 200% I_N t ≤ 120 Sec.

UL LISTED
CSA CERTIFIED

Standard Fuse Ampere Ratings, Reference Numbers

Ampere Rating	Reference Number	Catalog Number	Ampere Rating	Reference Number	Catalog Number
0,100	C079651J	6JX0,1	4	E083471J	6JX4
0,125	D079652J	6JX0,125	5	X089398J	6JX5
0,200	K079681J	6JX0,2	6	B082686J	6JX6
0,250	L079682J	6JX0,25	7	W079783J	6JX7
0,300	T082334J	6JX0,3	8	B080294J	6JX8
0,500	R083068J	6JX0,5	9	R079848J	6JX9
0,750	Q079686J	6JX0,75	10	E082689J	6JX10
1	S083069J	6JX1	12	W089397J	6JX12
1,5	S080838J	6JX1,5	15	F082805J	6JX15
2	K082326J	6JX2	20	S079849J	6JX20
2,5	A080293J	6JX2,5	25	K079865J	6JX25
3	F082690J	6JX3	30	S079895J	6JX30
3,5	E079745J	6JX3,5			

Metting Time-current Data



Midget Fuses (10x38 US) Fast Acting OTM



One-time OTM midget fuses provide low-cost protection for 250 volt AC general purpose lighting, heating, control circuits, etc. where time delay is not required.
(Not for Branch Circuit Protection).

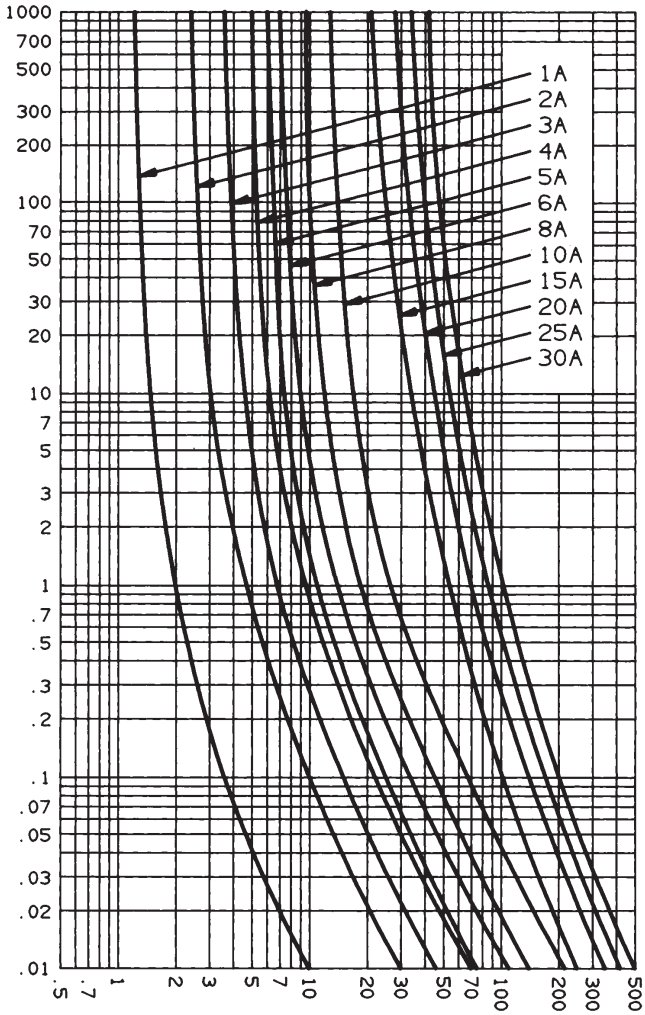
Features/Benefits

- Low cost and fully rated for economy without compromise
- UltraSafe ™ fuse holder: refer to Fuse Blocks and Fuse Holders section for details, Catalog Number and Reference Number

Ratings

- AC: 1 to 30A 250VAC, 10kA I.R.

Melting Time – Current Data 1-30 Amperes, 250 Volts AC



Highlights

- Fast Acting
- 250 VAC Rated

Applications

- Supplemental protection of circuits up to 250VAC and 10kA

Approvals

- UL Listed to Standard 248-14
- CSA Certified to Standard C22.2 No. 248.14

Standard Fuse Ampere Ratings, Reference Numbers

Ampere Rating	Catalog Number	Reference Number
1	OTM1	E215721
2	OTM2	Y217256
3	OTM3	A218799
4	OTM4	N219846
5	OTM5	C222527
6	OTM6	T223048
8	OTM8	Z200835
10	OTM10	L216233
15	OTM15	J216737
20	OTM20	B217765
25	OTM25	M218281
30	OTM30	M219316

Midget Fuses (10x38 US) Fast Acting GGU



125 volt AC rated GGU fuses have midget fuse dimensions (1-1/2" long x 13/32" diameter). Ratings 3 through 15 amperes have glass bodies for easy checking of fuse link status. Ratings 20, 25, and 30 amperes have ceramic bodies, allowing use in higher ambient temperature conditions than other similar fuses. (Not for Branch Circuit Protection).

Features/Benefits

- Glass body on 3-15A makes status of fusible element clearly visible
- All ratings 125VAC - higher than competitors
- Ceramic body on 20-30A allows use in higher temperature applications
- Fast acting for protection of circuits up to 30A and 125VAC
- UltraSafe TM fuse holder: refer to Fuse Blocks and Fuse Holders section for details, Catalog Number and Reference Number

Ratings

- AC: 3 to 30A 125VAC, 10kA I.R

Highlights

- Fast Acting

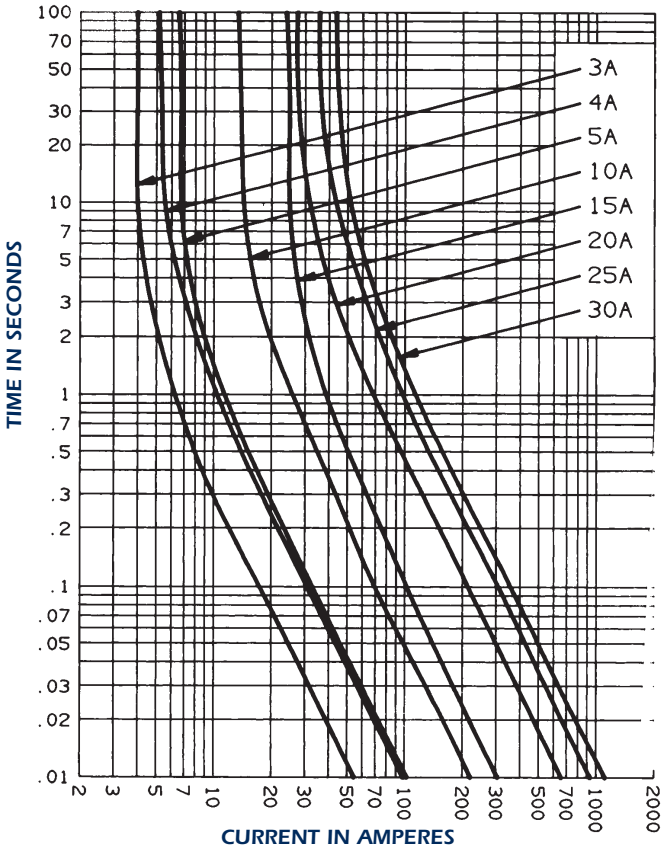
Applications

- General Purpose
- 125 Volt AC Circuits
- Supplemental Protection

Approvals

- UL Listed to Standard 248-14 (3 to 15A)
- UL Recognized Component Guide No. JDYX2 (20 to 30A)

Melting Time – Current Data 3-30 Amperes, 125 Volts AC



Standard Fuse Ampere Ratings, Reference Numbers

Ampere Rating	Catalog Number	Reference Number
3	GGU3	Q212442
4	GGU4	K213472
5	GGU5	E213973
8	GGU8	Q214489
10	GGU10	K201673
15	GGU15	S205475
20	GGU20	A211416
25	GGU25	C211924
30	GGU30	A212957

Midget Fuses (10x35 US)
Fast Acting
SBS



Unique dimensions for today's smaller equipment and components

Fast-acting general purpose SBS fuses were developed in response to the industry's demand for smaller equipment and components. They are the only fuses in their size with a full 600 volt AC rating for all ampere ratings by Underwriters Laboratories standard 198G and CSA No. 59.2, and are the only fuses of this size with an interrupting rating of 100kA RMS, compared to 10kA on other brands. SBS fuses are 1-3/8" long, smaller by 1/8" than most standard midget fuses and are available in 22 ampere ratings, from 2/10A to 30A. (Not for Branch Circuit Protection).

Features/Benefits

- Small unique physical size for maximum design flexibility and non-interchangeability with ther fuse classes
- Fiberglass body provides dimensional stability in harsh industrial environments
- UltraSafeTM fuse holder: refer to Gear and Fuse Gear section for details, Catalog Number and Reference Number

Ratings

- AC: 2/10 to 30A 600VAC, 100kA I.R.

Applications

- Control Circuits
- Lighting Ballasts
- Meter Circuits
- Electronic Circuits

Highlights

- Fast Acting
- General Purpose
- Unique Dimensions

Approvals

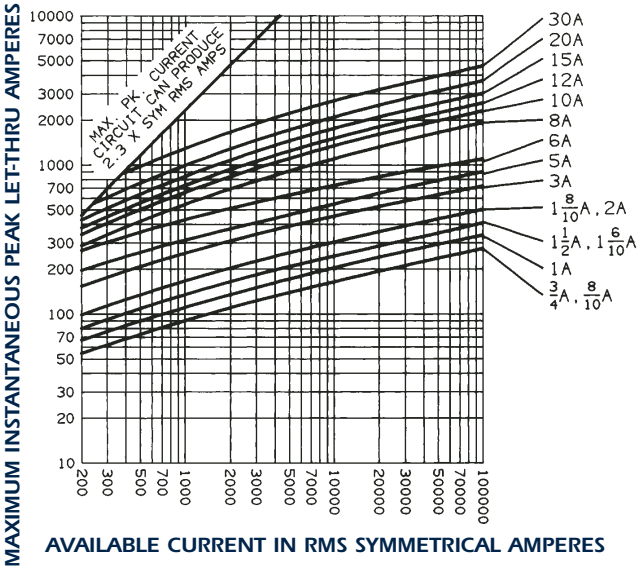
- UL Listed to Standard 248-14
- CSA Certified to Standard C22.2 No. 248.14

Standard Fuse Ampere Ratings, Reference Numbers

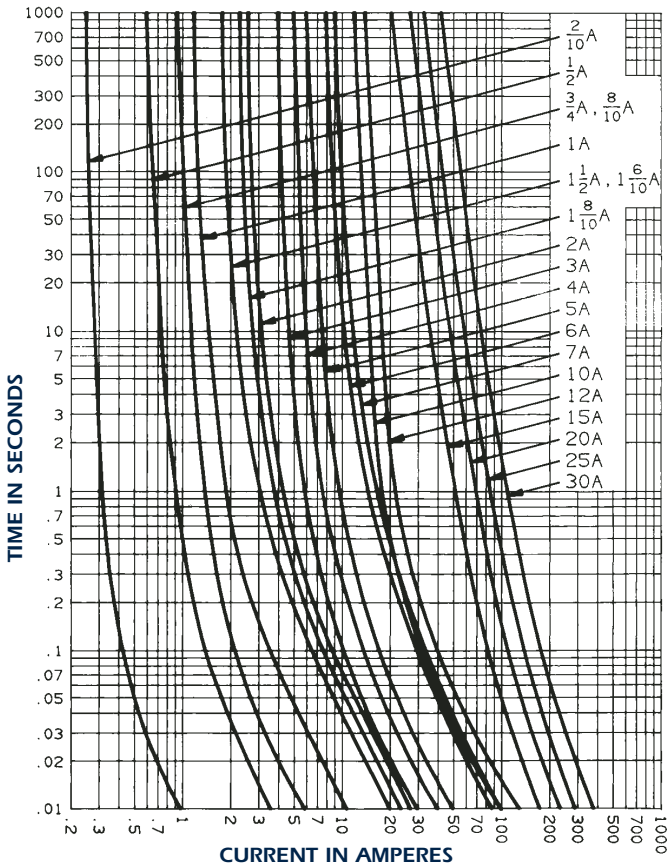
Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
2/10	SBS2/10	Y219349	4	SBS4	J201925
4/10	SBS4/10	G211146	5	SBS5	Z211668
1/2	SBS1/2	T216769	6	SBS6	E212179
3/4	SBS3/4	J200867	7	SBS7	X212701
8/10	SBS8/10	H214735	8	SBS8	E214226
1	SBS1	G214734	10	SBS10	G217287
1-1/2	SBS1-1/2	K215243	12	SBS12	G217287
1-6/10	SBS1-6/10	N215752	15	SBS15	X218313
1-8/10	SBS1-8/10	T216263	20	SBS20	X219877
2	SBS2	K218831	25	SBS25	M222559
3	SBS3	D223080	30	SBS30	W201407

Cross Reference: SBS will replace Bussmann BBS, Littelfuse BLS fuses

Peak Let-thru Current Data 3/4 - 30 Amperes, 600 Volts AC



Melting Time – Current Data 2/10 - 30 Amperes, 600 Volts AC



Midget Fuses (10x38 US)
PC Mount
PCF



Fast acting fuses for direct mounting on printed circuit boards

Ferraz Shawmut's new PCF series of fast-acting direct-mountable fuses addresses the increasing need for electrical protection at the PC board as current and voltage requirements push higher. These fuses help printed circuit board manufacturers reduce parts by eliminating clips and fuse blocks and allowing automated assembly. PCF fuses can be used for the protection of main frame power boards, small circuit breakers with low interrupting ratings and other critical components. PCF fuses bring greatly increased ampere, voltage and interrupting ratings to the board itself and are UL Component Recognized.

Ratings

- AC: 1 to 30A 600VAC, 100kA I.R.
- DC: 1 to 30A 500VDC, 100kA I.R. L/R ≤10ms

Highlights

- Fast Acting
- PC Board Mount
- Three Mounting Styles

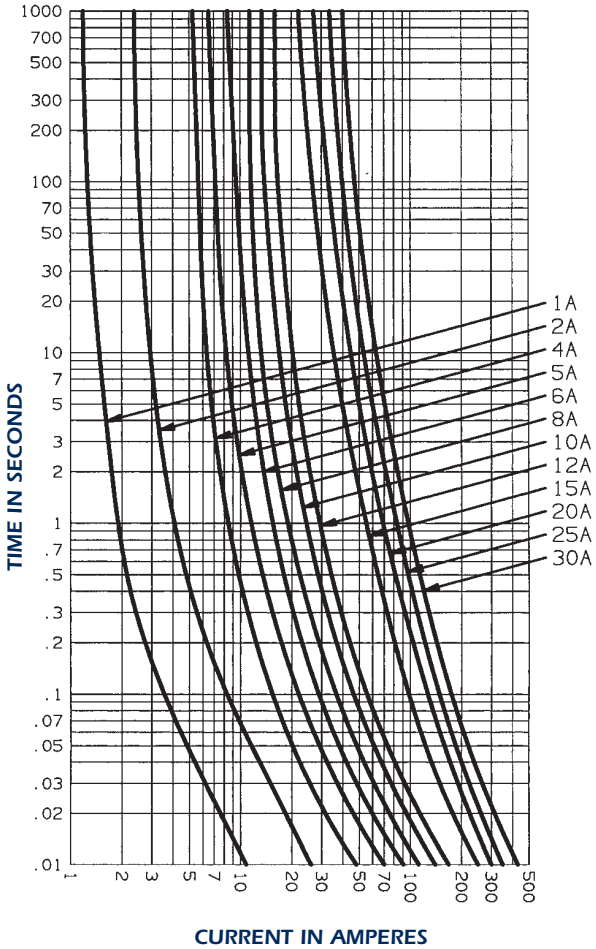
Applications

- Protection of main frame power boards, circuit breakers, components

Approvals

- UL Recognized Components

Melting Time – Current Data



Standard Fuse Ampere Ratings, Ref. Numbers

Slot Mount

Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
1	PCF1-R	N212256	8	PCF8-R	P213292
2	PCF2-R	V218909	10	PCF10-R	E213789
3	PCF3-R	P212257	12	PCF12-R	T215826
4	PCF4-R	F218390	15	PCF15-R	Q217364
5	PCF5-R	D219952	20	PCF20-R	V222635
6	PCF6-R	G201486	25	PCF25-R	F201485
7	PCF7-R	G211744	30	PCF30-R	Q215317

Double Hole Mount

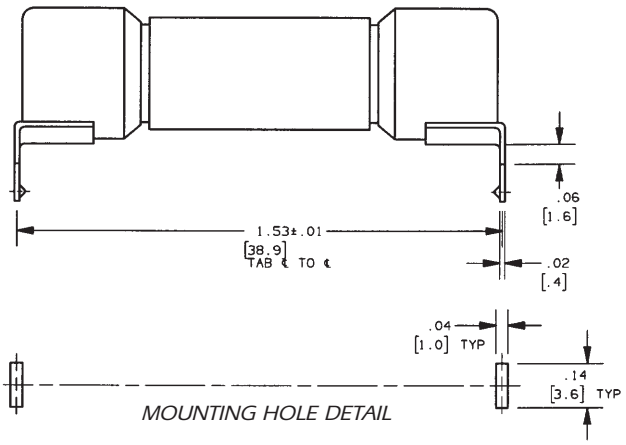
1	PCF1-H	E211742	8	PCF8-H	C212775
2	PCF2-H	E218389	10	PCF10-H	N213291
3	PCF3-H	F211743	12	PCF12-H	N214809
4	PCF4-H	Z217878	15	PCF15-H	B216845
5	PCF5-H	K219429	20	PCF20-H	C219951
6	PCF6-H	Q200942	25	PCF25-H	P200941
7	PCF7-H	R211224	30	PCF30-H	F213790

Surface Mount

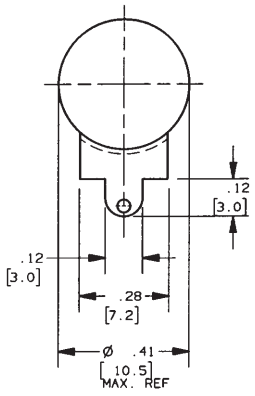
1	PCF1-S	A212773	8	PCF8-S	G213791
2	PCF2-S	J219428	10	PCF10-S	N214303
3	PCF3-S	B212774	12	PCF12-S	Y216336
4	PCF4-S	W218910	15	PCF15-S	Y217877
5	PCF5-S	W222636	20	PCF20-S	J223154
6	PCF6-S	T202026	25	PCF25-S	Q211223
7	PCF7-S	Q212258	30	PCF30-S	V215827

Midget Fuses (10x38 US)
PC Mount
Mechanics PCx

PCF1-R thru PCF30-R
PCS5-R thru PCS30-R
PCT1-R thru PCT30-R



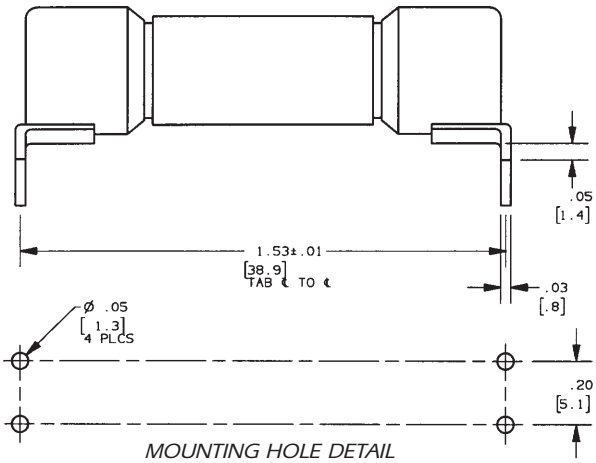
MOUNTING HOLE DETAIL



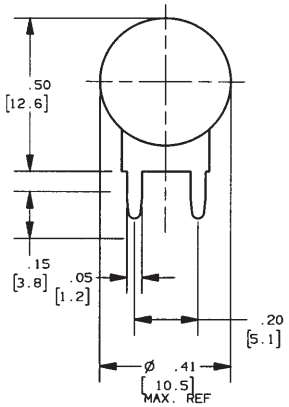
FOR .062 (1.6) NOMINAL CIRCUIT BOARD THICKNESS

Double Hole Mount (Round Holes) "H" terminal

PCF1-H thru PCF30-H
PCS5-H thru PCS30-H
PCT1-H thru PCT30-H



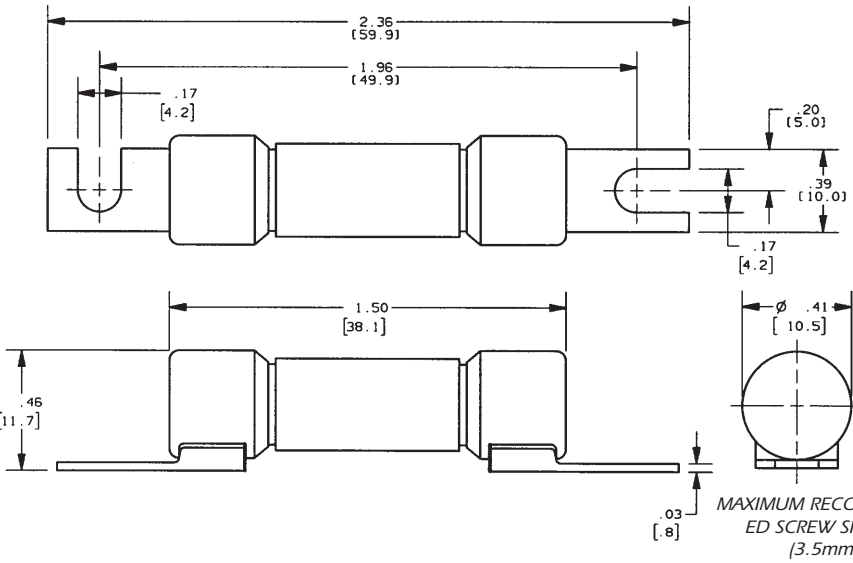
MOUNTING HOLE DETAIL



FOR .062 (1.6) NOMINAL CIRCUIT BOARD THICKNESS

Surface (Screw) Mount "S" terminal

PCF1-S thru PCF30-S
PCS5-S thru PCS30-S
PCT1-S thru PCT30-S



MAXIMUM RECOMMENDED SCREW SIZE #6 (3.5mm)

Midget Fuses (10x38 US)
PC Mount
PCS



Semiconductor protection fuses for direct mounting on printed circuit boards

Ferraz Shawmut's new PCS series of extremely fast-acting, direct-mountable fuses addresses the increasing need for electrical protection at the PC board as current and voltage requirements push higher. These fuses help printed circuit board manufacturers reduce parts by eliminating clips and fuse blocks and allowing automated assembly. PCS fuses are AC and DC rated and are extremely current-limiting. They will protect semiconductors, main frame boards, circuit breakers with low interrupting rating and other critical components. PCS fuses bring I2t protection, higher voltage and interrupting ratings to the board itself and are UL Component Recognized.

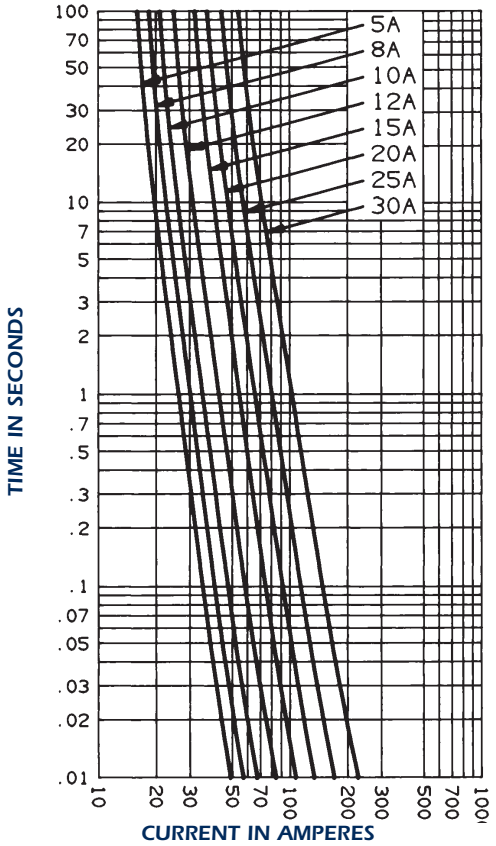
Ratings

- AC: 5 to 30A 600VAC, 200kA I.R.
- DC: 5 to 30A 600VAC, 100kA I.R.
  L/R ≤ 10 ms

Highlights

- Extremely Fast Acting
- PC Board Mount
- Three Mounting Styles

Melting Time – Current Data



Applications

- Protection of semiconductors, circuit breakers, critical components

Approvals

- UL Recognized Components

Standard Fuse Ampere Ratings

Ampere Rating	Catalog Number	Reference Number
Slot Mount		
5	PCS5-R	B217880
8	PCS8-R	M219431
10	PCS10-R	Z216337
12	PCS12-R	A217879
15	PCS15-R	L219430
20	PCS20-R	K223155
25	PCS25-R	V202027
30	PCS30-R	R212259
Double Hole Mount		
5	PCS5-H	S217366
8	PCS8-H	Y218912
10	PCS10-H	P214304
12	PCS12-H	R217365
15	PCS15-H	X218911
20	PCS20-H	X222637
25	PCS25-H	H201487
30	PCS30-H	H211745
Surface Mount		
5	PCS5-S	H218392
8	PCS8-S	F219954
10	PCS10-S	C216846
12	PCS12-S	G218391
15	PCS15-S	E219953
20	PCS20-S	R200943
25	PCS25-S	S211225
30	PCS30-S	D212776

Midget Fuses (10x38 US)
PC Mount
PCS

I²t at 600VDC, 100kA, L/R = 10 ms

Ampere Rating	Clearing I²t (A²s)
5	40
8	42
10	70
12	90
15	110
20	200
25	260
30	520

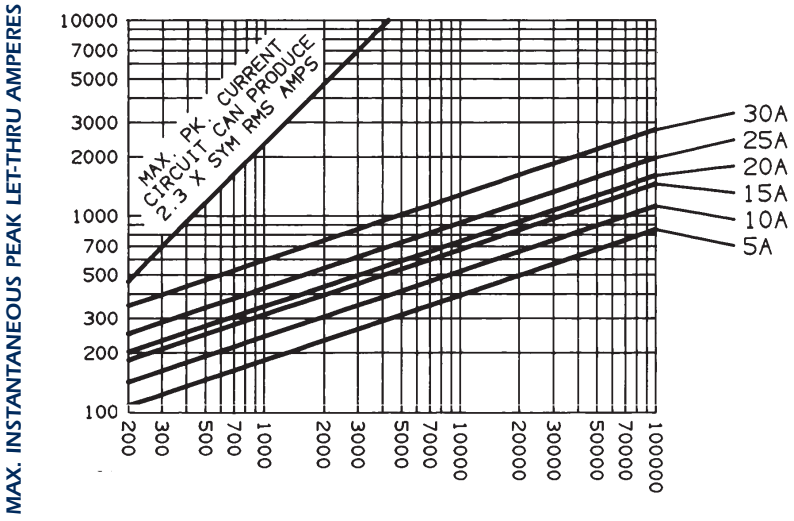
I²t at 600VAC, 100kA

Ampere Rating	Melting I²t (A²s)	Clearing I²t (A²s)
5	5	60
8	6.5	70
10	10	110
12	17	150
15	26	180
20	41	330
25	69	440
30	132	860

Watts Loss Data

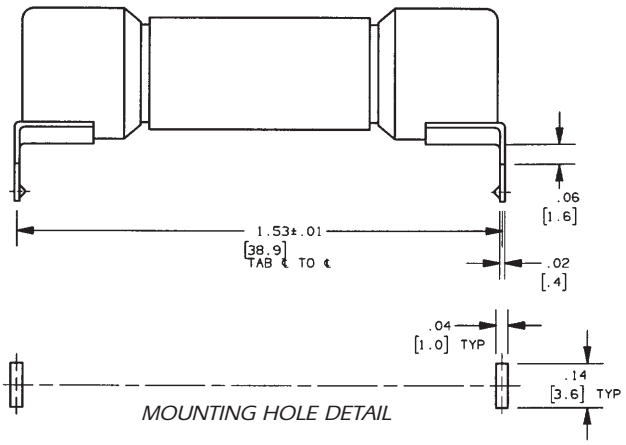
Ampere Rating	Watts Loss @ 80% Rating (w)	Watts Loss @ 100%Rating (w)
5	0.5	0.7
10	0.9	1.5
15	1.9	3.0
20	2.6	4.4
25	2.9	5.3
30	3.0	5.8

Peak Let-Thru Current Data – PCS5 to 30-R, H or S, 600 Volts AC

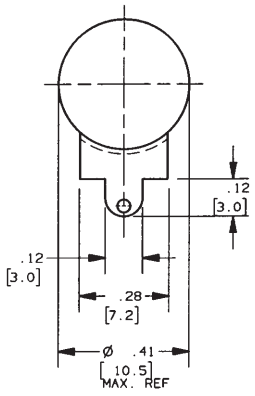


Midget Fuses (10x38 US)
PC Mount
Mechanics PCx

PCF1-R thru PCF30-R
PCS5-R thru PCS30-R
PCT1-R thru PCT30-R



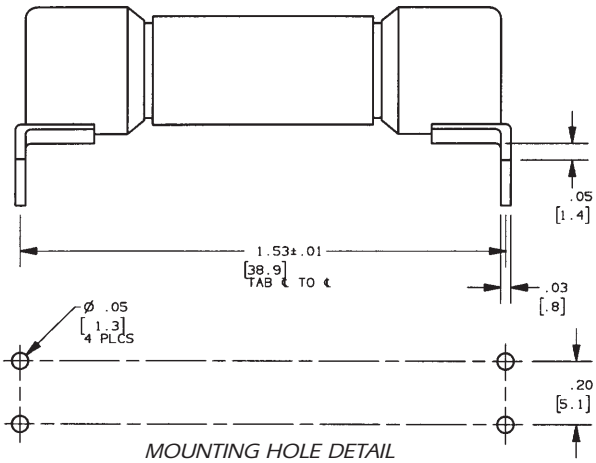
MOUNTING HOLE DETAIL



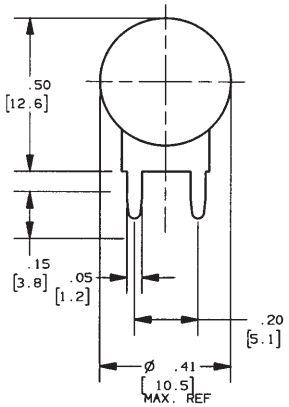
FOR .062 (1.6) NOMINAL CIRCUIT BOARD THICKNESS

Double Hole Mount (Round Holes) "H" terminal

PCF1-H thru PCF30-H
PCS5-H thru PCS30-H
PCT1-H thru PCT30-H



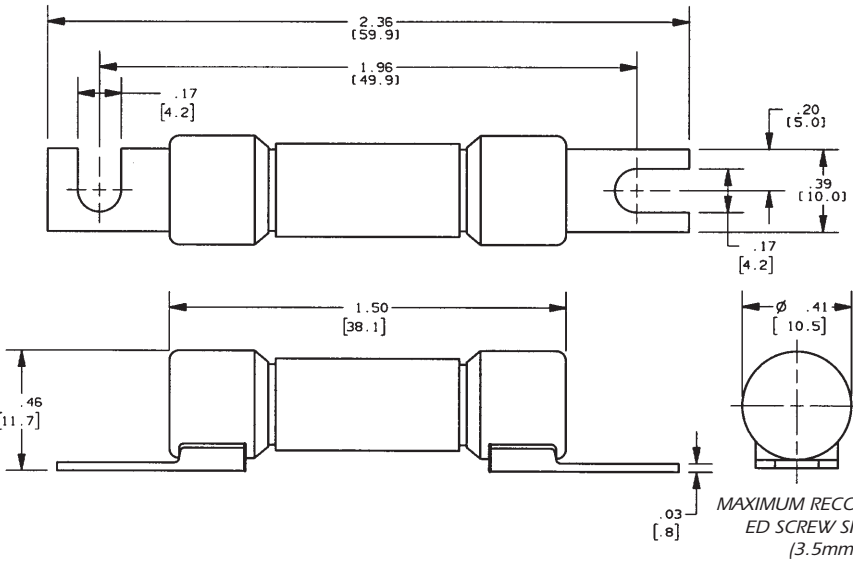
MOUNTING HOLE DETAIL



FOR .062 (1.6) NOMINAL CIRCUIT BOARD THICKNESS

Surface (Screw) Mount "S" terminal

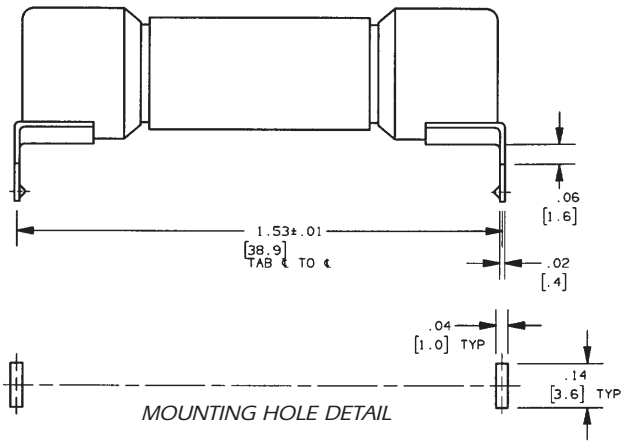
PCF1-S thru PCF30-S
PCS5-S thru PCS30-S
PCT1-S thru PCT30-S



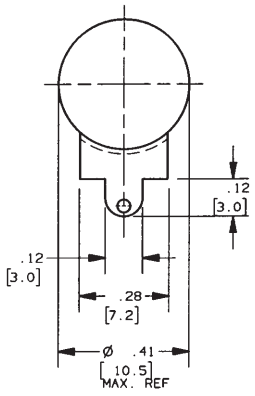
MAXIMUM RECOMMENDED SCREW SIZE #6 (3.5mm)

Midget Fuses (10x38 US)
PC Mount
Mechanics PCx

PCF1-R thru PCF30-R
PCS5-R thru PCS30-R
PCT1-R thru PCT30-R



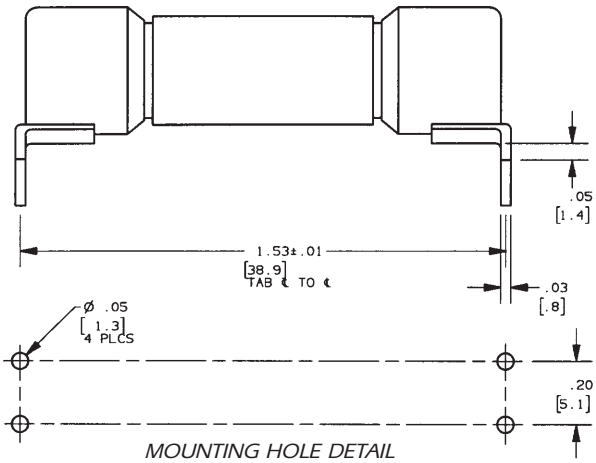
MOUNTING HOLE DETAIL



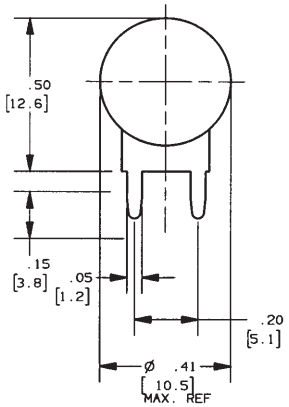
FOR .062 (1.6) NOMINAL CIRCUIT BOARD THICKNESS

Double Hole Mount (Round Holes) "H" terminal

PCF1-H thru PCF30-H
PCS5-H thru PCS30-H
PCT1-H thru PCT30-H



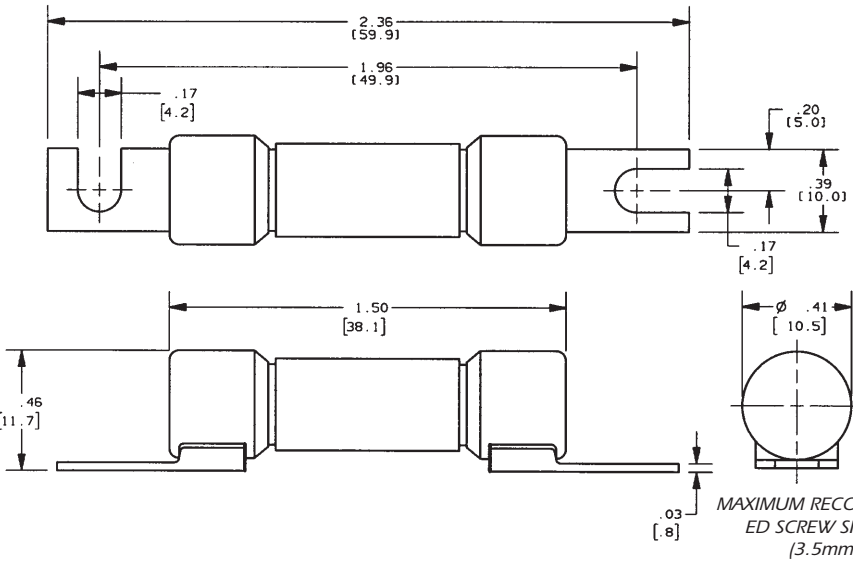
MOUNTING HOLE DETAIL



FOR .062 (1.6) NOMINAL CIRCUIT BOARD THICKNESS

Surface (Screw) Mount "S" terminal

PCF1-S thru PCF30-S
PCS5-S thru PCS30-S
PCT1-S thru PCT30-S



MAXIMUM RECOMMENDED SCREW SIZE #6 (3.5mm)

Midget Fuses (10x38 US)
PC Mount
PCT



TIME DELAY FUSES FOR DIRECT MOUNTING ON PRINTED CIRCUIT BOARDS

Ferraz Shawmut's new PCT series of time-delay, direct-mountable fuses addresses the increasing need for electrical protection at the PC board as current and voltage requirements push higher. These fuses help printed circuit board manufacturers reduce parts by eleminiating clips and fuse blocks and allowing automated assembly. PCT fuses can be used for the protection of main frame power boards, small circuit breakers with low interrupting ratings and other components. PCT fuses bring protection with time delay, greatly increased ampere, voltage and interrupting ratings to the board itself and are UL Component Recognized

Ratings

- AC: 1 to 30A 500VAC, 100kA

Highlights

- Time Delay
- PC Board Mount
- Three Mounting Styles

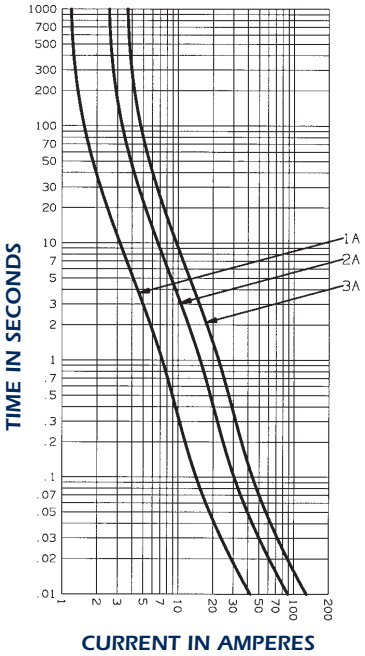
Applications

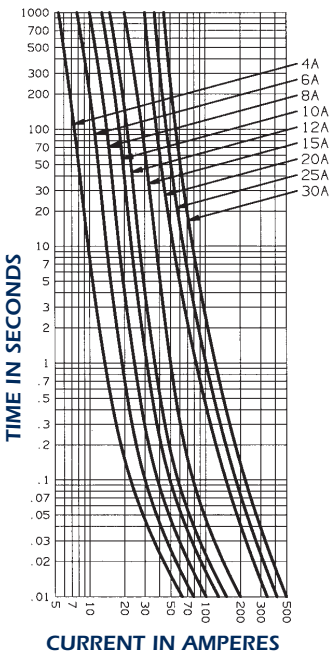
- Protection of main frame power boards, circuit breakers, components

Approvals

- UL Recognized Components

Melting Time – Current Data



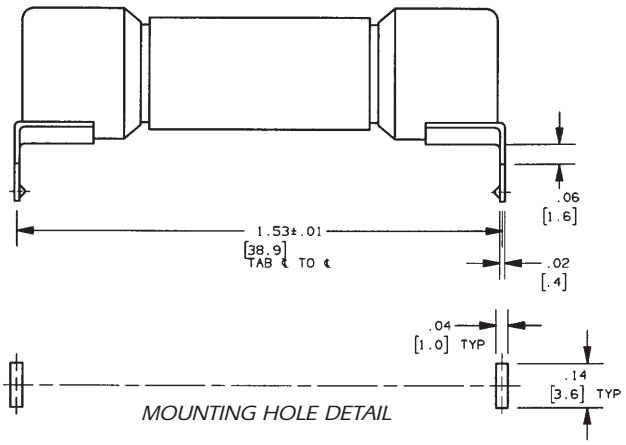


Standard Fuse Ampere Ratings, Ref. Numbers

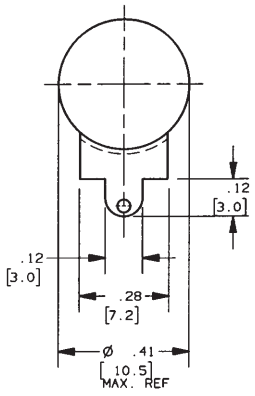
Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
Slot Mount					
1	PCT1-R	L223156	8	PCT8-R	D217882
2	PCT2-R	S215319	10	PCT10-R	D202081
3	PCT3-R	Z222639	12	PCT12-R	S212260
4	PCT4-R	K211747	15	PCT15-R	J213793
5	PCT5-R	S213295	20	PCT20-R	T217367
6	PCT6-R	Q214811	25	PCT25-R	Z218913
7	PCT7-R	C216340	30	PCT30-R	K201489
Double Hole Mount					
1	PCT1-H	Y222638	8	PCT8-H	V217368
2	PCT2-H	P214810	10	PCT10-H	J201488
3	PCT3-H	G219955	12	PCT12-H	J211746
4	PCT4-H	V211227	15	PCT15-H	R213294
5	PCT5-H	F212778	20	PCT20-H	D216847
6	PCT6-H	S214307	25	PCT25-H	J218393
7	PCT7-H	X215829	30	PCT30-H	T200945
Surface Mount					
1	PCT1-S	S200944	8	PCT8-S	K218394
2	PCT2-S	B216339	10	PCT10-S	T211226
3	PCT3-S	M223157	12	PCT12-S	E212777
4	PCT4-S	T212261	15	PCT15-S	R214306
5	PCT5-S	K213794	20	PCT20-S	C217881
6	PCT6-S	T215320	25	PCT25-S	N219432
7	PCT7-S	E216848	30	PCT30-S	N202090

Midget Fuses (10x38 US)
PC Mount
Mechanics PCx

PCF1-R thru PCF30-R
PCS5-R thru PCS30-R
PCT1-R thru PCT30-R



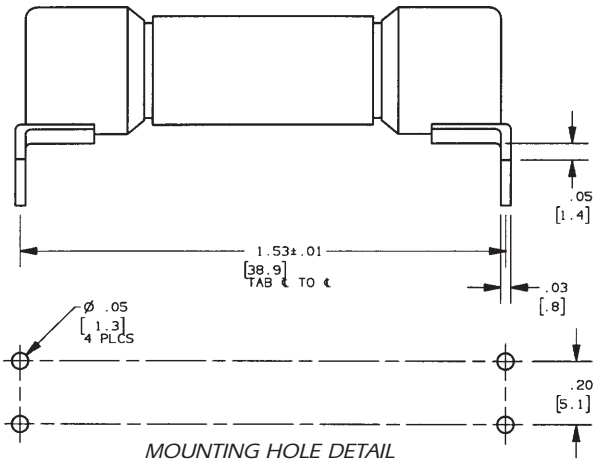
MOUNTING HOLE DETAIL



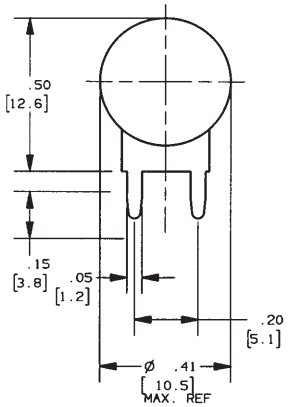
FOR .062 (1.6) NOMINAL CIRCUIT BOARD THICKNESS

Double Hole Mount (Round Holes) "H" terminal

PCF1-H thru PCF30-H
PCS5-H thru PCS30-H
PCT1-H thru PCT30-H



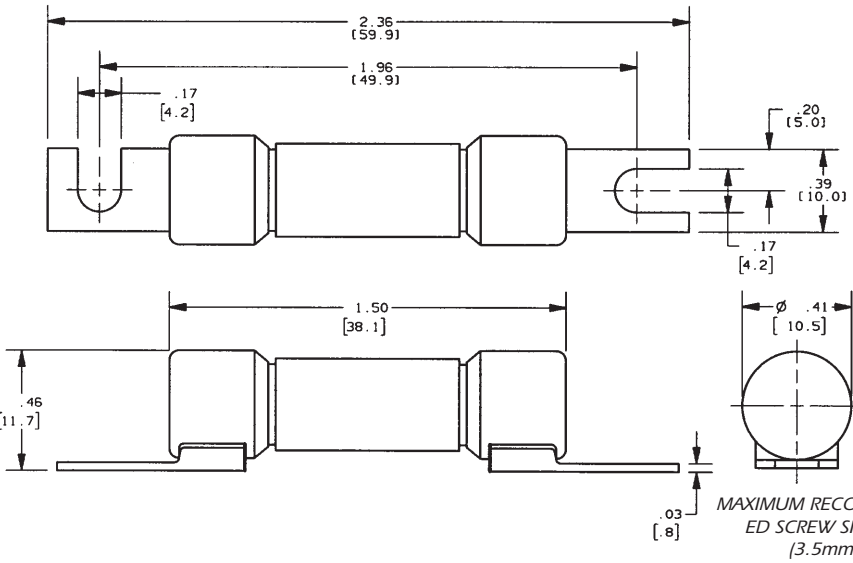
MOUNTING HOLE DETAIL



FOR .062 (1.6) NOMINAL CIRCUIT BOARD THICKNESS

Surface (Screw) Mount "S" terminal

PCF1-S thru PCF30-S
PCS5-S thru PCS30-S
PCT1-S thru PCT30-S



MAXIMUM RECOMMENDED SCREW SIZE #6 (3.5mm)

Ferrule Fuses
aM & gG 400V to 690V with/without Striker
aM & gG 8x32, 10x38, 14x51, 22x58



Residential and Industrial Cylindrical Fuse-links

Ferraz Shawmut gF/gG-gG and aM fuse-links cover a wide range of physical sizes and ampere ratings for 250, 380*/ 400, 500, and 660* 690volts AC. gF/gG fuse-links are for residential use. gG and aM fuse-links are for industrial applications. Most ratings are available with an optional indicator. All industrial fuse-links have the option of a built-in striker. All cylindrical fuse-links have ceramic bodies and silver-plated ferrules.

** Fuse-links marked 380V (gF/gG) and 660V (gG-aM) will be re-marked (and safely used at) 400V AC and 690V AC in compliance with changes in IEC Standard 269, but should not be used above 418V AC or 726V AC.*

gF/gG

Residential Full Range Protection

- 7 physical sizes from 6.3 x 23mm to 10.3 x 38 mm
- 250 and 380 Volt ratings - 0.5A through 32A
- Most ratings available with indicator
- Meet IEC, NFC, UNE standards
- See residential fuse-links, Special Purpose section

gG

Full Range Protection

- 4 physical sizes from 8 x 31mm to 22 x 58 mm
- 400, 500 and 690 Volt ratings -0.5A through 125A
- Most ratings available with indicator
- Meet IEC, NFC and UNE standards
- Approved by Lloyds Register of Shipping and Bureau Veritas

gG

Full Range Protection

Fuse-links with striker

- 2 sizes- 14 x 51mm and 22 x 58 mm
- 400, 500 and 690 Volt ratings 4A through 125A
- All ratings include striker
- Meet IEC, NFC and UNE standards
- Approved by Lloyds Register of Shipping and Bureau Veritas

aM

Short Circuit Protection

- 4 physical sizes from 8 x 31 mm to 22 x 58 mm
- 400, 500 and 690 Volt ratings- 0.16A through 125A
- Most ratings available with indicator
- Meet IEC, NFC and UNE standards
- Approved by Lloyds Register of Shipping and Bureau Veritas

aM

Short Circuit Protection

Fuse-links with striker

- 2 sizes - 14 x 51mm and 22 x 58mm
- 400, 500 and 690 Volt ratings - 2A through 125A
- All ratings include striker
- Meet IEC, NFC and UNE standards
- Approved by Lloyds Register of Shipping and Bureau Veritas

Ferrule Fuses
gG 400V to 690V
with/without Striker
gG 8x32, 10x38, 14x51, 22x58

Ratings - gG (Optional Blown-Fuse Indicator)

Size	Rated In Current (A)	Rated Voltage	Previous References		Reference Number		Breaking Capacity	Catalog Number	
			w/o Indicator	w Indicator	w/o Indicator	w Indicator		w/o Indicator	w Indicator
8 x 31	0.5	400V	15009	-	P218191	-	20kA - 400V	FR8GG40V0.5	
	1		15011	-	C218709			FR8GG40V1	
	2		15013	15213	Q219227	B222204		FR8GG40V2	FR8GG40V2I
	4		15019	15219	W222958	X222959		FR8GG40V4	FR8GG40V4I
	6		15023	15223	A211025	V201291		FR8GG40V6	FR8GG40V6I
	8		15027	15227	B213096	B211026		FR8GG40V8	FR8GG40V8I
	10		15031	15231	A214613	A212060		FR8GG40V10	FR8GG40V10I
	12		15033	15233	R216146	C213097		FR8GG40V12	FR8GG40V12I
	16		15035	15235	P216650	Y214105		FR8GG40V16	FR8GG40V16I
	20		15037	15237	F217677	J215127		FR8GG40V20	FR8GG40V20I
	25		15039	15239	D218710	S216147		FR8GG40V25	FR8GG40V25I
10 X 38	0.5	500V	16009	-	C211027	-	120kA - 500V	FR10GG50V0.5	FR10GG50V2I
	1		16011	-	B212061	-		FR10GG50V1	FR10GG50V4I
	2		16013	16213	D213098	S216653		FR10GG50V2	FR10GG50V6I
	4		16019	16219	X213598	E217170		FR10GG50V4	FR10GG50V10I
	6		16023	16223	K215128	T218195		FR10GG50V6	FR10GG50V10I
	8		16027	16227	D217169	V219231		FR10GG50V10	FR10GG50V12I
	10		16031	16231	S218194	E222207		FR10GG50V10	FR10GG50V16I
	12		16033	16233	W219761	H200751		FR10GG50V12	FR10GG50V20I
	16		16035	16235	G200750	H201809		FR10GG50V16	FR10GG50V25I
	20		16037	16237	D211028	X211551		FR10GG50V20	FR10GG50V32I
	25		16039	16239	E213099	W212585		FR10GG50V25	FR10GG50V2I
	32	400V	16043	16243	A214107	Z213600	120kA - 400V	FR10GG40V32	FR10GG40V32I
14 X 51	1	690V	17011	-	K218716	-	80kA - 690V	FR14GG69V1	
	2		17013	17213	Y219234	C201298		FR14GG69V2	FR14GG69V2I
	4		17019	17219	A219765	H211032		FR14GG69V4	FR14GG69V4I
	6		17023	17223	H222210	G212066		FR14GG69V6	FR14GG69V6I
	8		17027	17227	D222965	K213104		FR14GG69V8	FR14GG69V8I
	10		17031	17231	L200754	H214620		FR14GG69V10	FR14GG69V10I
	12		17033	17233	L201812	R215640		FR14GG69V12	FR14GG69V12I
	16		17035	17235	A211554	X216657		FR14GG69V16	FR14GG69V16I
	20		17037	17237	Z212588	N217684		FR14GG69V20	FR14GG69V20I
	25		17039	17239	C213603	M218718		FR14GG69V25	FR14GG69V25I
	32	500V	17043	17243	W216656	C219767	120kA - 500V	FR14GG50V32	FR14GG50V32I
	40		17047	17247	X218198	F222967		FR14GG50V40	FR14GG50V40I
	50	400V	17051	17251	Z219235	D201299	120kA - 400V	FR14GG40V50	FR14GG40V50I
22 x 58	2	690V	18013	-	F219241	-	80kA - 690V	FR22GG69V2	
	4		18019	18219	H219772	Q211039		FR22GG69V4	FR22GG69V4I
	6		18023	18223	P222216	P212073		FR22GG69V6	FR22GG69V6I
	8		18027	18227	L222972	R213110		FR22GG69V8	FR22GG69V8I
	10		18031	18231	T200761	N214119		FR22GG69V10	FR22GG69V10I
	12		18033	18233	J201304	Y215140		FR22GG69V12	FR22GG69V12I
	16		18035	18235	S201818	D216157		FR22GG69V16	FR22GG69V16I
	20		18037	18237	P211038	R217181		FR22GG69V20	FR22GG69V20I
	25		18039	18239	N212072	F218206		FR22GG69V25	FR22GG69V25I
	32		18043	18243	F212594	H219243		FR22GG69V32	FR22GG69V32I
	40		18047	18247	J213609	R222218		FR22GG69V40	FR22GG69V40I
	50		18051	18251	P214626	W200763		FR22GG69V50	FR22GG69V50I
	63		18055	18255	Y215646	V201820		FR22GG69V63	FR22GG69V63I
	80		18059	18259	Q217180	K211563		FR22GG69V80	FR22GG69V80I
	100	500V	18063	18263	E218205	H212596	120kA -500V	FR22GG50V100	FR22GG50V100I
	125	400V	18065	18265	J219773	L213611	120kA -400V	FR22GG40V125	FR22GG40V125I

Packaging 10



X211551



M218718

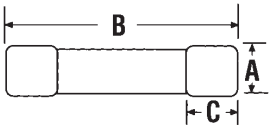


K211563

Blown-Fuse Indicator



Dimensions



Fuse Size	A	B	C
8 x 31	8.5	31.5	6.3
10 x 38	10.3	38	10.5
14 x 51	14.3	51	13.8
22 x 58	22.2	58	16.2

Ferrule Fuses gG 400V to 690V with/without Striker gG 8x32, 10x38, 14x51, 22x58



P201815



R212075

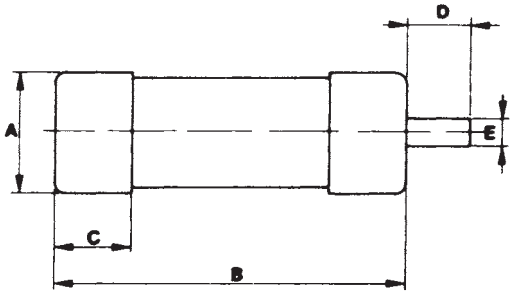
Ratings – gI-gG with Striker

Size (mm x mm)	Rated Current In (A)	Rated Voltage	Previous Reference	Reference Number	Breaking Capacity	Catalog Number
14 X 51	2	500V	17413	J211033	120kA - 500V	FR14GG50V2P
	4		17419	H212067		FR14GG50V4P
	6		17423	G214113		FR14GG50V6P
	8		17427	R215134		FR14GG50V8P
	10		17431	Z216153		FR14GG50V10P
	12		17433	L217176		FR14GG50V12P
	16		17435	Z218200		FR14GG50V16P
	20		17437	B219237		FR14GG50V20P
	25		17439	L222213		FR14GG50V25P
	32		17443	P200757		FR14GG50V32P
	40		17447	P201815		FR14GG50V40P
	50	400V	17451	D211557	120kA - 400V	FR14GG40V50P
22 X 58	4	690V	18419	R214628	80kA - 690V	FR22GG69V4P
	6		18423	A215648		FR22GG69V6P
	8		18427	F216665		FR22GG69V8P
	10		18431	W217691		FR22GG69V10P
	12		18433	W218726		FR22GG69V12P
	16		18435	L219775		FR22GG69V16P
	20		18437	P222975		FR22GG69V20P
	25		18439	M201307		FR22GG69V25P
	32		18443	S211041		FR22GG69V32P
	40		18447	R212075		FR22GG69V40P
	50		18451	M213612		FR22GG69V50P
	63		18455	S214629		FR22GG69V63P
	80		18459	F216159		FR22GG69V80P
	100	500V	18463	T217183	120kA - 500V	FR22GG69V100P
	125	400V	18465	H218208	120kA - 400V	FR22GG69V125P

Packaging 10

Dimensions

Fuse Size	A	B	C	D	E
14 x 51	14.3	51	13.8	7.5	3.8
22 x 58	22.2	58	16.2	7.5	3.8



Striker

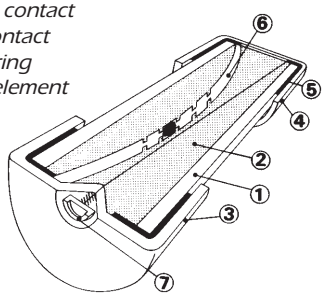


BEFORE



AFTER

1 *Ceramic body*
2 *Sand*
3 *Indicator contact*
4 *Lower contact*
5 *Contact ring*
6 *Melting element*
7 *Indicator*

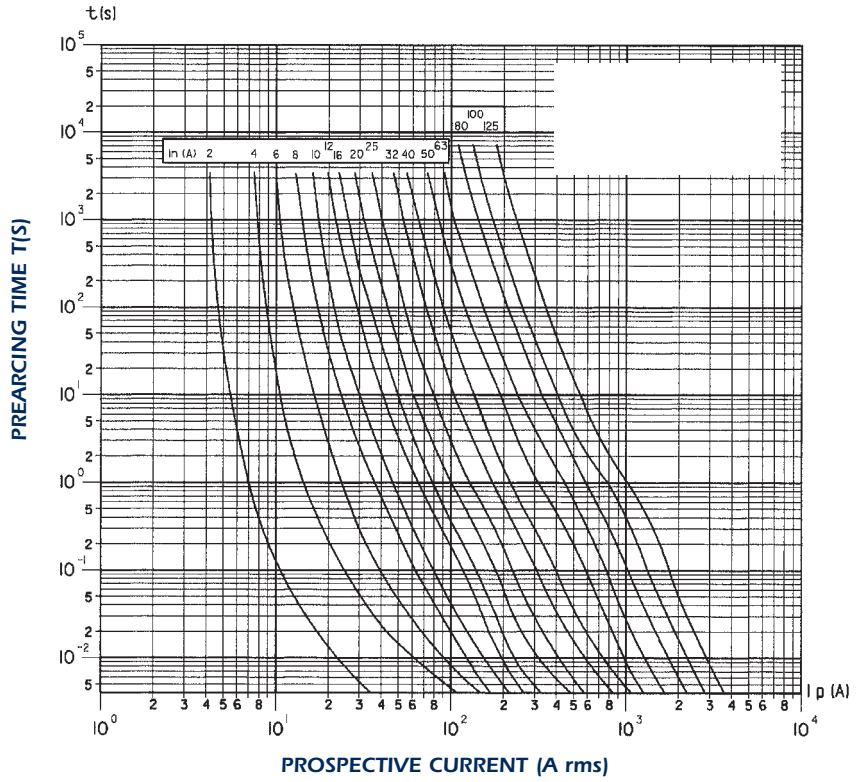


Neutral

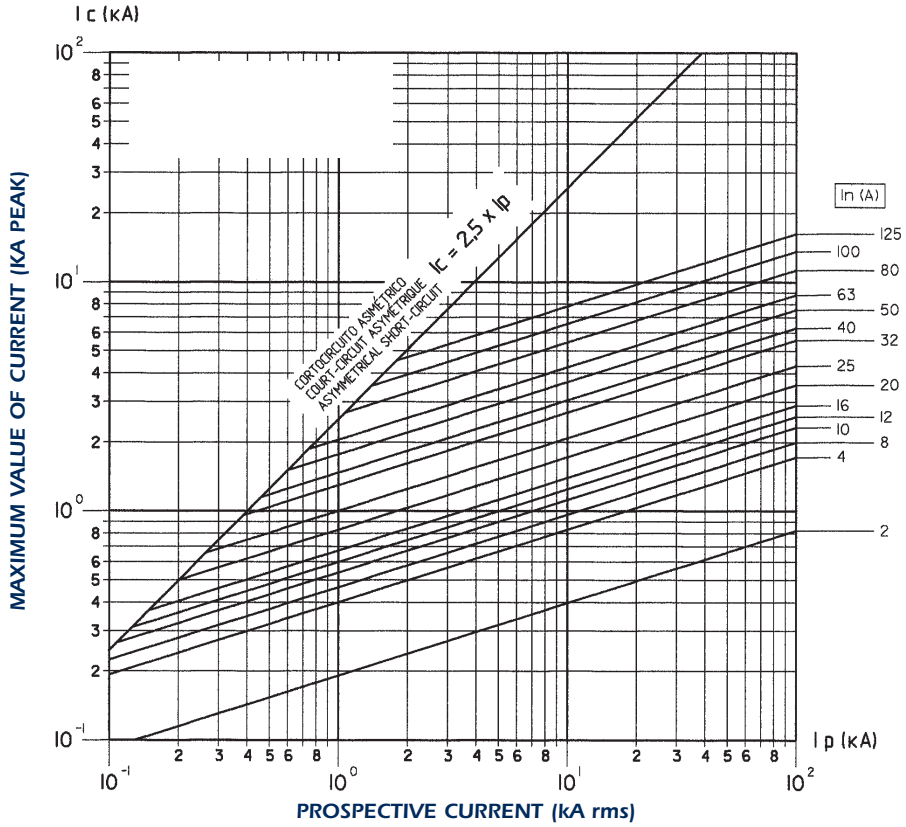
Size (mm x mm)	Previous Reference	Reference Number	Standard Pack/CTN	Catalog Number
10 x 38	19100	R211569		FRN1038
14 x 51	19200	M212600	10	FRN1451
22 x 58	19300	R213616		FRN2258

Ferrule Fuses
gG 400V to 690V
with/without Striker
gG 8x32, 10x38, 14x51, 22x58

Characteristics t-I

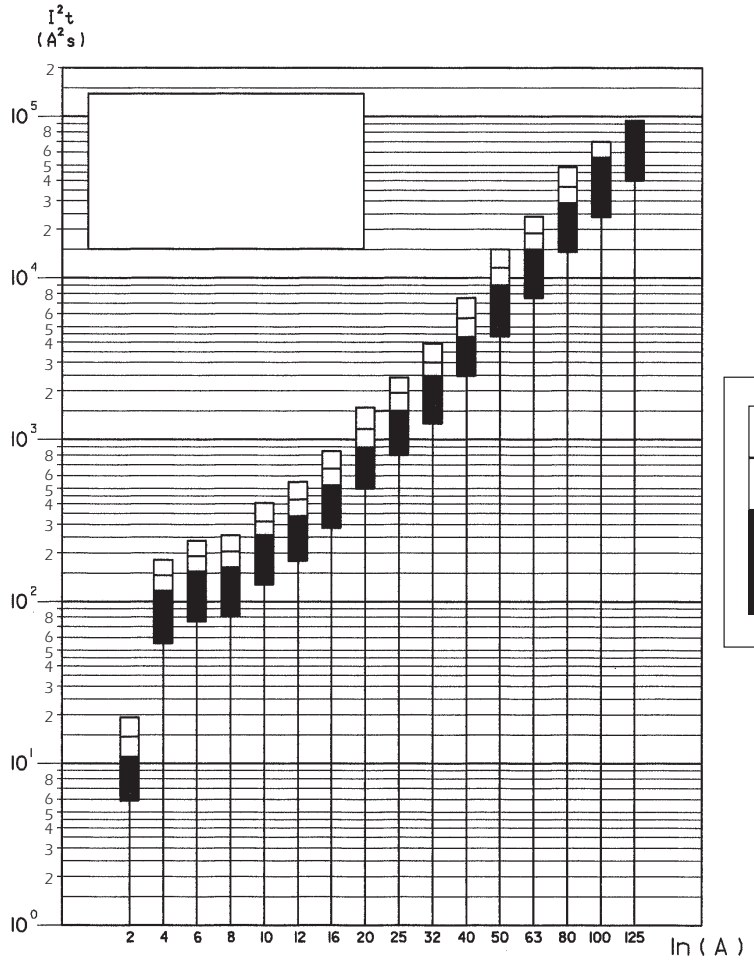


Cut-off characteristics



Ferrule Fuses
gG 400V to 690V
with/without Striker
gG 8x32, 10x38, 14x51, 22x58

Characteristics I2t



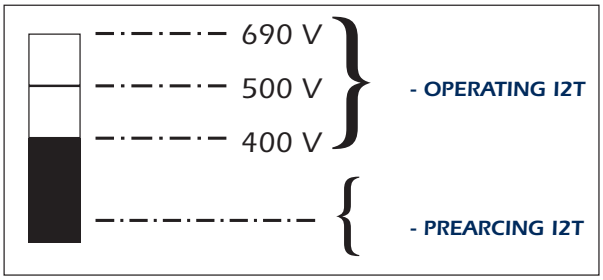
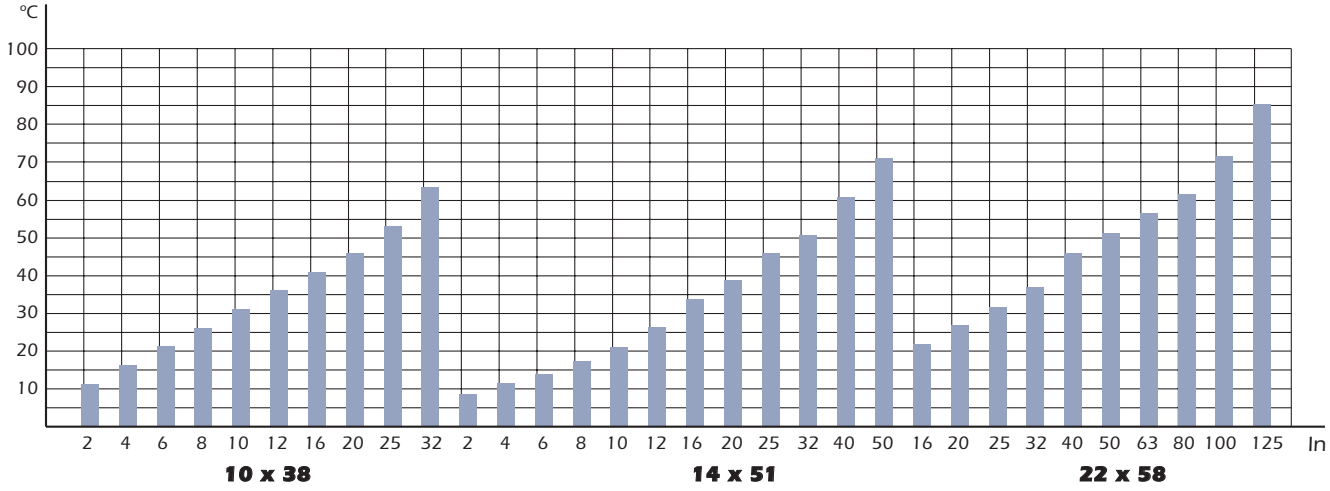


Table temperature increase (testing in superior contact)



Ferrule Fuses
gG 400V to 690V
with/without Striker
gG 8x32, 10x38, 14x51, 22x58

Power loss table

In	Size		
	10 x 38	14 x 51	22 x 58
0,5 A	2 W		
1 A	2,5 W	3,4 W	
2 A	0,70 W	1 W	1,20 W
4 A	0,80 W	1,10 W	1,30 W
6 A	0,90 W	1,20 W	1,40 W
8 A	1,10 W	1,50 W	1,65 W
10 A	1,35 W	1,80 W	2 W
12 A	1,55 W	2,10 W	2,40 W
16 A	1,90 W	2,55 W	3 W
20 A	2,30 W	3 W	3,40 W
25 A	2,80 W	3,50 W	3,80 W
32 A	3 W	3,80 W	4,30 W
40 A		4,40 W	5,10 W
50 A		4,7 W	5,50 W
63 A			6,70 W
80 A			8 W
100 A			9 W
125 A			12,5 W

Maximum standardized power low.

IEC 269-2-1 NFC 63.213 UNE 21.103-2-1	10 x 38	14 x 51	22 x 58
	25 A	40 A	100 A
	3 W	5 W	9,5 W

Table of maximum length of network in function of In and conductor section.
Maximum standardized power low.

gG Class Fuses

Copper conductor section (mm²)	Rated Current (In) OF gG Fuses (in A)									
	16	20	25	32	40	50	63	80	100	125
1,5	99/113	86/87	40/59	21/29	13/16	7/9				
2,5		134	110/122	67/84	41/51	25/33	13/20	8/11		
4			183	139	108/119	67/84	46/58	24/32	14/17	7,3/10
6				214	165	139	94/113	55/70	33/41	20/27
10					275	226	172	130	90/108	57/70
16							283	217	168	128
25								336	257	197
35									367	283
50										379

** 99/118:*
- 99; Cond. PVC / 118; Cond. PRC

Ferrule Fuses
aM & gG 400V to 690V with/without Striker
aM & gG 8x32, 10x38, 14x51, 22x58



Residential and Industrial Cylindrical Fuse-links

Ferraz Shawmut gF/gG-gG and aM fuse-links cover a wide range of physical sizes and ampere ratings for 250, 380*/ 400, 500, and 660* 690volts AC. gF/gG fuse-links are for residential use. gG and aM fuse-links are for industrial applications. Most ratings are available with an optional indicator. All industrial fuse-links have the option of a built-in striker. All cylindrical fuse-links have ceramic bodies and silver-plated ferrules.

** Fuse-links marked 380V (gF/gG) and 660V (gG-aM) will be re-marked (and safely used at) 400V AC and 690V AC in compliance with changes in IEC Standard 269, but should not be used above 418V AC or 726V AC.*

gF/gG

Residential Full Range Protection

- 7 physical sizes from 6.3 x 23mm to 10.3 x 38 mm
- 250 and 380 Volt ratings - 0.5A through 32A
- Most ratings available with indicator
- Meet IEC, NFC, UNE standards
- See residential fuse-links, Special Purpose section

gG

Full Range Protection

- 4 physical sizes from 8 x 31mm to 22 x 58 mm
- 400, 500 and 690 Volt ratings -0.5A through 125A
- Most ratings available with indicator
- Meet IEC, NFC and UNE standards
- Approved by Lloyds Register of Shipping and Bureau Veritas

gG

Full Range Protection

Fuse-links with striker

- 2 sizes- 14 x 51mm and 22 x 58 mm
- 400, 500 and 690 Volt ratings 4A through 125A
- All ratings include striker
- Meet IEC, NFC and UNE standards
- Approved by Lloyds Register of Shipping and Bureau Veritas

aM

Short Circuit Protection

- 4 physical sizes from 8 x 31 mm to 22 x 58 mm
- 400, 500 and 690 Volt ratings- 0.16A through 125A
- Most ratings available with indicator
- Meet IEC, NFC and UNE standards
- Approved by Lloyds Register of Shipping and Bureau Veritas

aM

Short Circuit Protection

Fuse-links with striker

- 2 sizes - 14 x 51mm and 22 x 58mm
- 400, 500 and 690 Volt ratings - 2A through 125A
- All ratings include striker
- Meet IEC, NFC and UNE standards
- Approved by Lloyds Register of Shipping and Bureau Veritas

Ferrule Fuses aM 400V to 690V with/without Striker aM 8x32, 10x38, 14x51, 22x58

Ratings – aM (Optional Blown-Fuse Indicator)



S219229



F214618



Q217686



C215650

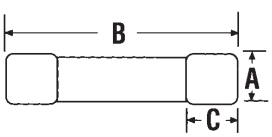
Size (mm x mm)	Rated In Current (A)	Rated Voltage	Previous Reference w/o Indicator	Previous Reference w Indicator	Reference Number w/o Indicator	Reference Number w Indicator	Breaking Capacity	Catalog Number w/o Indicator	Catalog Number w Indicator
8 x 31		400V	15511	-	C217168	-	20kA - 400V	FR8AM40V1	
	2		15513	-	R218193	-		FR8AM40V2	
	4		15519	-	S219229	-		FR8AM40V4	
	6		15523	-	C222205	-		FR8AM40V6	
	8		15527	-	F200749	-		FR8AM40V8	
	10		15531	-	W201292	-		FR8AM40V10	
10 X 38	0.16	500V	16503	-	E214617	-	120kA - 500V	FR10AM50V0.16	
	0.25		16507	-	M215130	-		FR10AM50V0.25	
	0.5		16509	-	W216150	-		FR10AM50V0.5	
	1		16511	16711	F217171	X219233		FR10AM50V1	FR10AM50V1I
	2		16513	16713	H218714	G222209		FR10AM50V2	FR10AM50V2I
	4		16519	16719	W219232	K200753		FR10AM50V4	FR10AM50V4I
	6		16523	16723	F222208	K201811		FR10AM50V6	FR10AM50V6I
	8		16527	16727	Z201295	Z211553		FR10AM50V10	FR10AM50V10I
	10		16531	16731	Y211552	H213102		FR10AM50V10	FR10AM50V10I
	12		16533	16733	A213601	D214110		FR10AM50V12	FR10AM50V12I
	16		16535	16735	F214618	P215132		FR10AM50V16	FR10AM50V16I
	20		16537	16737	X216151	V216655		FR10AM50V20	FR10AM50V20I
	25	400V	16539	16739	G217172	L217682	120kA - 400V	FR10AM50V25	FR10AM50V25I
	32	400V	16543	-	J218715	-	120kA - 400V	FR10AM50V32	
14 X 51	0.25	690V	17507	-	B212590	-	80kA - 690V	FR14AM69V0.25	
	0.5		17509	-	L213105	-		FR14AM69V0.5	
	1		17511	17711	E213605	C212591		FR14AM69V1	FR14AM69V1I
	2		17513	17713	H214114	M213106		FR14AM69V2	FR14AM69V2I
	4		17519	17719	K214622	J214115		FR14AM69V4	FR14AM69V4I
	6		17523	17723	S215135	T215136		FR14AM69V6	FR14AM69V6I
	8		17527	17727	T215642	A216660		FR14AM69V8	FR14AM69V8I
	10		17531	17731	Z216659	R217687		FR14AM69V10	FR14AM69V10I
	12		17533	17733	M217177	Q218721		FR14AM69V12	FR14AM69V12I
	16		17535	17735	Q217686	F219770		FR14AM69V16	FR14AM69V16I
	20		17537	17737	P218720	R200759		FR14AM69V20	FR14AM69V20I
	25		17539	17739	E219769	Q201816		FR14AM69V25	FR14AM69V25I
	32	500V	17543	17743	M222214	F211559	120kA - 500V	FR14AM69V32	FR14AM69V32I
	40		17547	17747	Q200758	D212592		FR14AM69V40	FR14AM69V40I
	45		17549	17749	L211035	G213607		FR14AM69V45	FR14AM69V45I
	50	400V	17551	17751	E211558	M214624	120kA - 400V	FR14AM69V50	FR14AM69V50I
22 x 58	1	690V	18511	-	M219776	-	80kA - 690V	FR22AM69V1	
	2		18513	-	T222220	-		FR22AM69V2	
	4		18519	18719	Q222976	L219246		FR22AM69V4	FR22AM69V4I
	6		18523	18723	Y200765	V222221		FR22AM69V6	FR22AM69V6I
	8		18527	18727	N201308	Y201823		FR22AM69V8	FR22AM69V8I
	10		18531	18731	X201822	N211566		FR22AM69V10	FR22AM69V10I
	12		18533	18731	T211042	K212598		FR22AM69V12	FR22AM69V12I
	16		18535	18735	M211565	P213614		FR22AM69V16	FR22AM69V16I
	20		18537	18737	S212076	V214631		FR22AM69V20	FR22AM69V20I
	25		18539	18739	J212597	D215651		FR22AM69V25	FR22AM69V25I
	32		18543	18743	V213113	J216668		FR22AM69V32	FR22AM69V32I
	40		18547	18747	N213613	Z217694		FR22AM69V40	FR22AM69V40I
	50		18551	18751	R214122	P219778		FR22AM69V50	FR22AM69V50I
	63		18555	18755	C215650	Z200766		FR22AM69V63	FR22AM69V63I
	80		18559	18759	H216667	P211567		FR22AM69V80	FR22AM69V80I
	100	500V	18563	18763	Y217693	L212599	120kA - 500V	FR22AM69V100	FR22AM69V100I
	125	400V	18565	18765	J218209	W214632	120kA - 400V	FR22AM69V125	FR22AM69V125I

Packaging 10

Blown-Fuse Indicator

BEFORE 

AFTER 



Dimensions

FUSE SIZE	A	B	C
8 x 31	8.5	31.5	6.3
10 x 38	10.3	38	10.5
14 x 51	14.3	51	13.8
22 x 58	22.2	58	16.2

Ferrule Fuses
aM 400V to 690V
with/without Striker
aM 8x32, 10x38, 14x51, 22x58



X215645



K216669

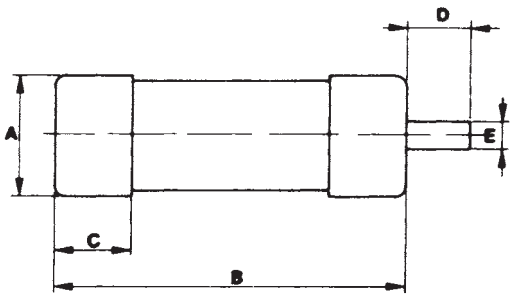
Ratings – aM with Striker

Size (mm x mm)	Rated Current In (A)	Rated Voltage	Previous Reference	Reference Number	Breaking Capacity	Catalog Number
14 X 51	1	500V	17911	W215644	120kA 500V	FR14AM69V1P
	2		17913	B216661		FR14AM69V2P
	4		17919	C218203		FR14AM69V4P
	6		17923	E219240		FR14AM69V6P
	8		17927	N222215		FR14AM69V8P
	10		17931	S200760		FR14AM69V10P
	12		17933	R201817		FR14AM69V12P
	16		17935	G211560		FR14AM69V16P
	20		17937	E212593		FR14AM69V20P
	25		17939	H213608		FR14AM69V25P
	32		17943	N214625		FR14AM69V32P
	40		17947	X215645		FR14AM69V40P
	45		17949	C216662		FR14AM69V45P
	50	400V	17951	D218204	120kA - 400V	FR14AM69V50P
22 X 58	1	690V	18911	E215652	80kA - 690V	FR22AM69V1P
	2		18913	J216162		FR22AM69V2P
	4		18919	A217695		FR22AM69V4P
	6		18923	Y218728		FR22AM69V6P
	8		18927	Q219779		FR22AM69V8P
	10		18931	S222978		FR22AM69V10P
	12		18933	R201311		FR22AM69V12P
	16		18935	W211044		FR22AM69V16P
	20		18937	W212079		FR22AM69V20P
	25		18939	Q213615		FR22AM69V25P
	32		18943	X214633		FR22AM69V32P
	40		18947	F215653		FR22AM69V40P
	50		18951	K216669		FR22AM69V50P
	63	500V	18955	B217696	120kA - 500V	FR22AM69V63P
	80		18959	Z218729		FR22AM69V80P
	100		18963	T222979		FR22AM69V100P
	125	400V	18965	S201312	120kA - 400V	FR22AM69V125P

Packaging 10

Dimensions

Fuse Size	A	B	C	D	E
14 x 51	14.3	51	13.8	7.5	3.8
22 x 58	22.2	58	16.2	7.5	3.8



Striker



BEFORE AFTER

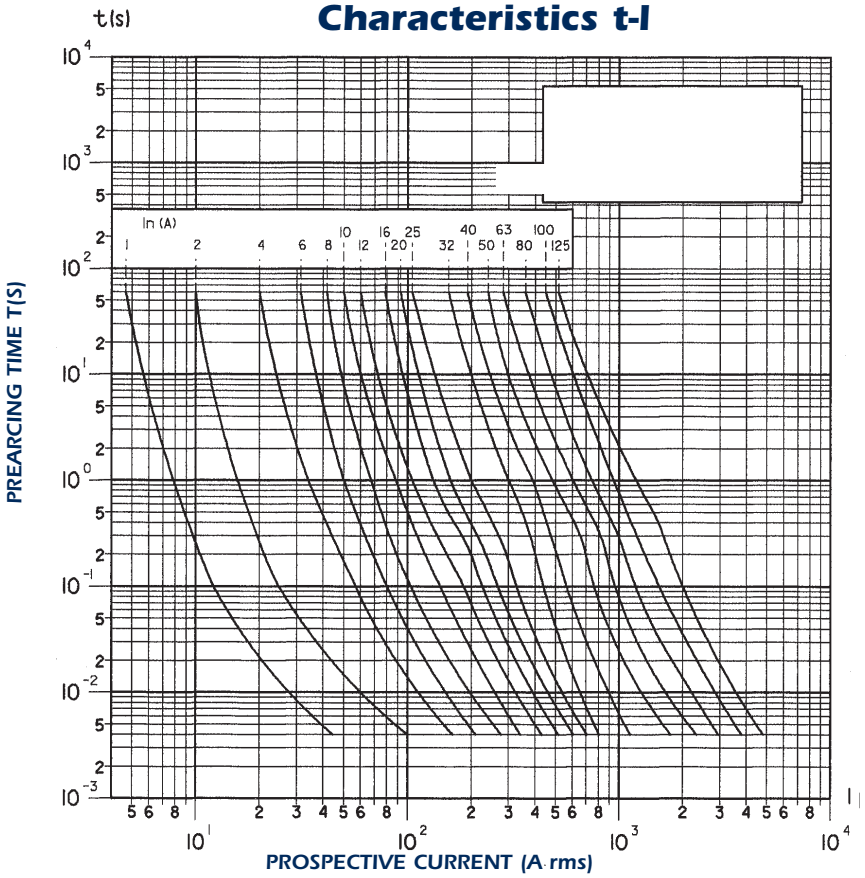
Neutral

Size (mm x mm)	Previous Reference	Reference Number	Standard Pack/CTN	Catalog Number
10 x 38	19100	R211569		FRN1038
14 x 51	19200	M212600	10	FRN1451
22 x 58	19300	R213616		FRN2258

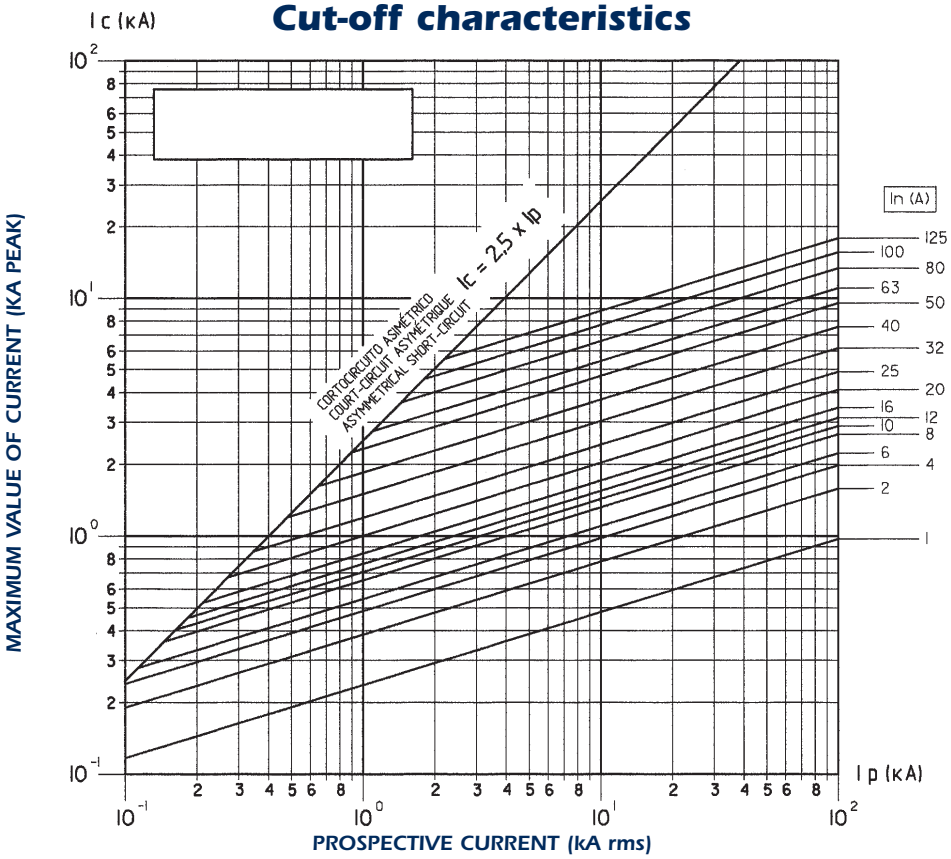
Ferraz Shawmut

Ferrule Fuses
aM 400V to 690V
with/without Striker
aM 8x32, 10x38, 14x51, 22x58

Characteristics t-I

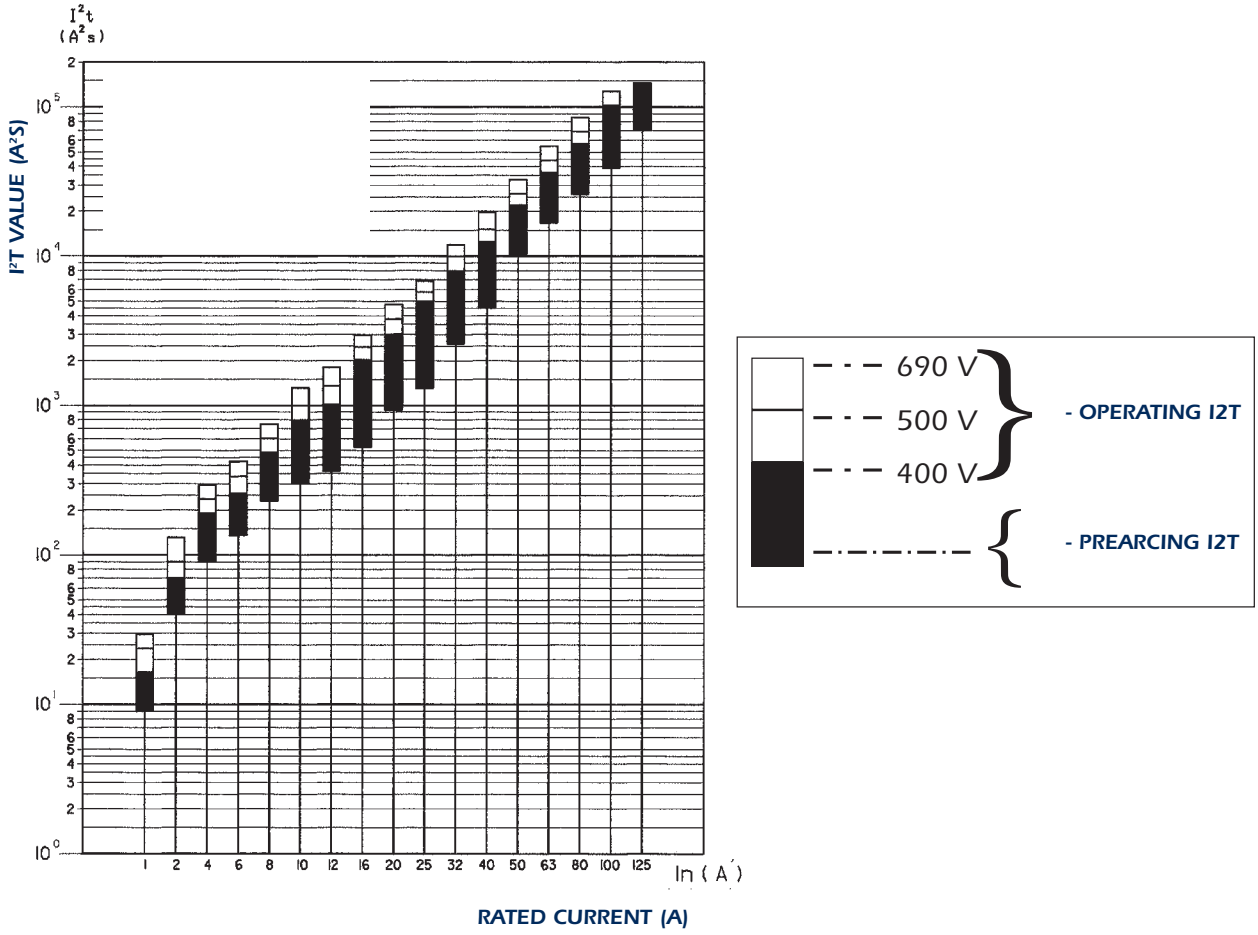


Cut-off characteristics

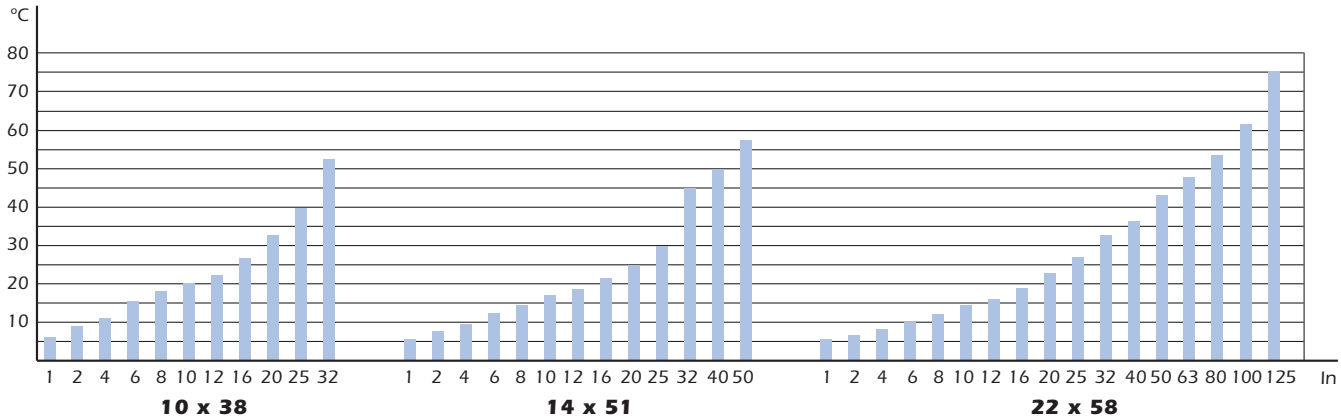


Ferrule Fuses
gG 400V to 690V
with/without Striker
aM 8x32, 10x38, 14x51, 22x58

Characteristics I2t



Temperature increase table (testing in superior contact)



Ferrule Fuses
aM 400V to 690V
with/without Striker
aM 8x32, 10x38, 14x51, 22x58

Power loss table

In	Size		
	10 x 38	14 x 51	22 x 58
0,16 A	0,35 W		
0,25 A	0,50 W	0,70 W	
0,5 A	0,50 W	0,75 W	
1 A	0,13 W	0,18 W	0,20 W
2 A	0,20 W	0,25 W	0,30 W
4 A	0,30 W	0,40 W	0,50 W
6 A	0,45 W	0,55 W	0,65 W
8 A	0,55 W	0,65 W	0,75 W
10 A	0,65 W	0,75 W	0,85 W
12 A	0,75 W	0,85 W	1 W
16 A	0,90 W	1,20 W	1,40 W
20 A	1,10 W	1,50 W	1,70 W
25 A	1,40 W	1,80 W	2 W
32 A	2 W	2,10 W	2,60 W
40 A		2,60 W	3,20 W
45 A		2,80 W	
50 A		2,90 W	3,90 W
63 A			4,60 W
80 A			5,60 W
100 A			6,50 W
125 A			9,50 W

Maximum standardized power low.

IEC 269-2-1 NFC 63.213 UNE 21.103-2-1	10 x 38	14 x 51	22 x 58
	16 A	50 A	100 A
	1,2 W	3 W	7 W

Table of maximum length of network in function of In and conductor section.
Maximum standardized power low.

aM Class Fuses

Copper conductor section (mm²)	Rated Current (In) OF aM Fuses (in A)									
	16	20	25	32	40	50	63	80	100	125
1,5	55/64	37/45	25/30	15/20						
2,5	116	84/94	58/68	40/49	26/32	17/20				
4	181	147	118	84/95	58/68	42/48	28/33	18/23		
6	273	223	178	139	105/117	79/89	55/64	37/42	26/31	14/20
10				227	181	147	113/125	80/94	57/69	40/47
16						236	189	151	120	83/97
25								231	185	147
35									262	210

NH Fuses (Plain Blades)
gG 400V, 500V, 690V
aM 500V, 690V

NH Fuse System



DIN 57 636/VDE 0636 Parts 1, 10, 21, 22, 201

IEC 60269-2

DIN 43 620 Parts 1 to 4 (Standard dimensions)

The use category is identified by two letters, the first indicating the operational class and the second the object to be protected.
The Ferraz shawmut range includes fuse-links to DIN VDE 0636 standard for the following uses categories:

gG: general purpose cable and line protection
aM: Partial purpose, motor circuit protection
gTr: general purpose, transformer protection
gR: general purpose, fast acting
aR: partial purpose, fast acting

Classification

The NH system is classed among plug-in fuse systems and is comprised of:
- fuse-base, (possibly including terminal covers and phase barriers)
- fuse-link with blade contact
- fuse-link replacement device (LV HRC fuse puller)

Since the design of this system cannot guarantee non-interchangeability of rated current, it must be handled by a qualified professional.

Approval symbols

Germany

Austria

Switzerland

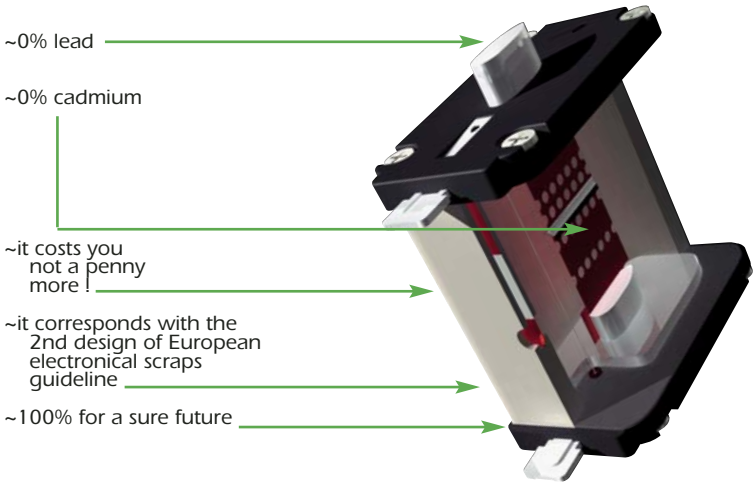
Netherlands



Beige melted



Red non melted



Ferraz Shawmut



Pb-free

NH Fuses (Plain Blades) gG 400V, 500V, 690V gG 400V Size 000 to 3

NH-fuses, 400VAC gG

with non-isolated gripping lugs, double indicator, contact blades, complying with DIN VDE 0636Part 201 and IEC 60269-2-1

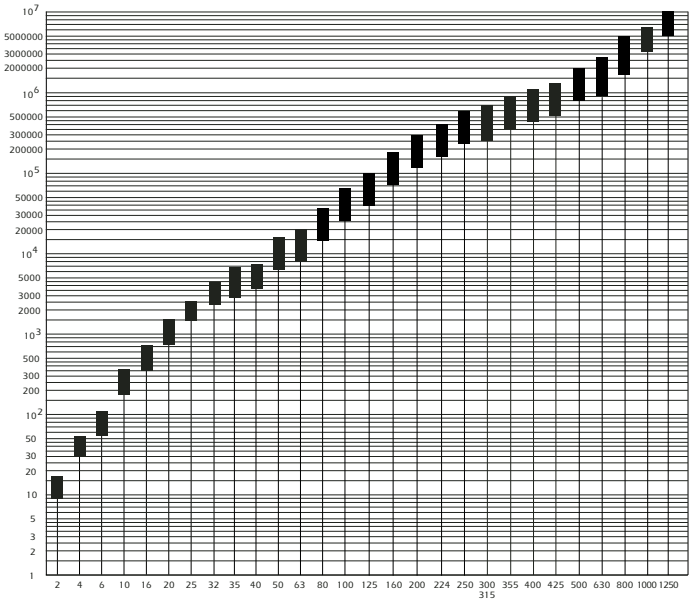
Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	Micro-switch[1]	weight kg/pce	pack.	Catalog Number
000	2	3,3	Z223674	1A613.	Y	0,12	3	NH000GG40V2
000	4	1,35	A223675	1A619.	Y	0,12	3	NH000GG40V4
000	6	1,7	B223676	1A623.	Y	0,12	3	NH000GG40V6
000	10	1,0	C223677	1A631.	Y	0,12	3	NH000GG40V10
000	16	1,8	D223678	1A635.	Y	0,12	9	NH000GG40V16
000	20	2,0	E223679	1A637.	Y	0,12	9	NH000GG40V20
000	25	2,4	F223680	1A639.	Y	0,12	9	NH000GG40V25
000	32	2,6	G223681	1A643.	Y	0,12	9	NH000GG40V32
000	35	3,2	H223682	1A645.	Y	0,12	9	NH000GG40V35
000	40	3,1	J223683	1A647.	Y	0,12	9	NH000GG40V45
000	50	3,5	K223684	1A651.	Y	0,12	9	NH000GG40V50
000	63	4,6	L223685	1A655.	Y	0,12	9	NH000GG40V63
000	80	5,0	M223686	1A659.	Y	0,12	9	NH000GG40V80
000	100	5,5	N223687	1A663.	Y	0,12	9	NH000GG40V100
00	125	8,6	E223702	1A765.	Y	0,18	3	NH00GG40V125
00	160	9,6	F223703	1A769.	Y	0,18	3	NH00GG40V160
1	35	3,9	J223706	1A145.	N	0,28	3	NH1GG40V35
1	50	4,5	K223707	1A151.	N	0,28	3	NH1GG40V50
1	63	5,7	L223708	1A155.	N	0,28	3	NH1GG40V63
1	80	5,5	M223709	1A159.	N	0,28	3	NH1GG40V80
1	100	7,0	N223710	1A163.	N	0,28	3	NH1GG40V100
1	125	9,1	P223711	1A165.	N	0,30	3	NH1GG40V125
1	160	13,0	Q223712	1A169.	Y	0,30	3	NH1GG40V160
1	200	13,1	R223713	1A171.	Y	0,30	3	NH1GG40V200
1	224	15,1	S223714	1A173.	Y	0,30	3	NH1GG40V224
1	250	16,9	T223715	1A175.	Y	0,30	3	NH1GG40V250
2	35	3,9	T227257	1A245.	N	1,87	3	NH2GG40V35
2	50	4,5	V227258	1A251.	N	1,87	3	NH2GG40V50
2	63	5,7	W227259	1A255.	N	1,87	3	NH2GG40V63
2	80	6,1	F223726	1A259.	N	0,32	3	NH2GG40V80
2	100	7,3	G223727	1A263.	N	0,32	3	NH2GG40V100
2	125	9,1	H223728	1A265.	N	0,32	3	NH2GG40V125
2	160	13,0	J223729	1A269.	N	0,32	3	NH2GG40V160
2	200	13,5	K223730	1A271.	N	0,32	3	NH2GG40V200
2	224	15,1	L223731	1A273.	N	0,32	3	NH2GG40V224
2	250	18,0	M223732	1A275.	N	0,32	3	NH2GG40V250
2	315	19,9	N223733	1A279.	Y	0,40	3	NH2GG40V315
2	355	22,7	P223734	1A281.	Y	0,40	3	NH2GG40V355
2	400	28,0	Q223735	1A283.	Y	0,40	3	NH2GG40V400
3	250	19,9	R223736	1A375.	N	0,45	1	NH3GG40V250
3	315	22,7	S223737	1A379.	N	0,45	1	NH3GG40V315
3	400	28,0	T223738	1A383.	Y	0,45	1	NH3GG40V400
3	500	30,8	V223739	1A387.	Y	0,60	1	NH3GG40V500
3	630	43,0	W223740	1A389.	Y	0,60	1	NH3GG40V630

(1) Suitable for Microswitch describes gG/aM Mechanics for Ceramic body Section page GPEU34

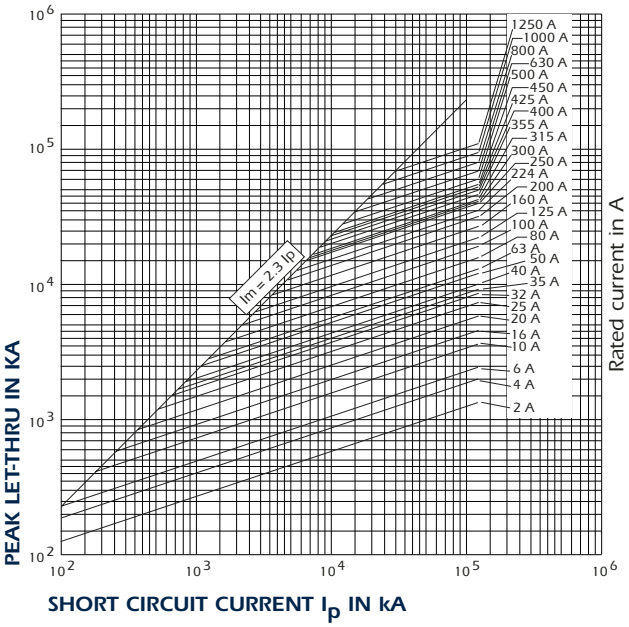
NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG Curves Set

NH-fuses, 400VAC, 500VAC gG

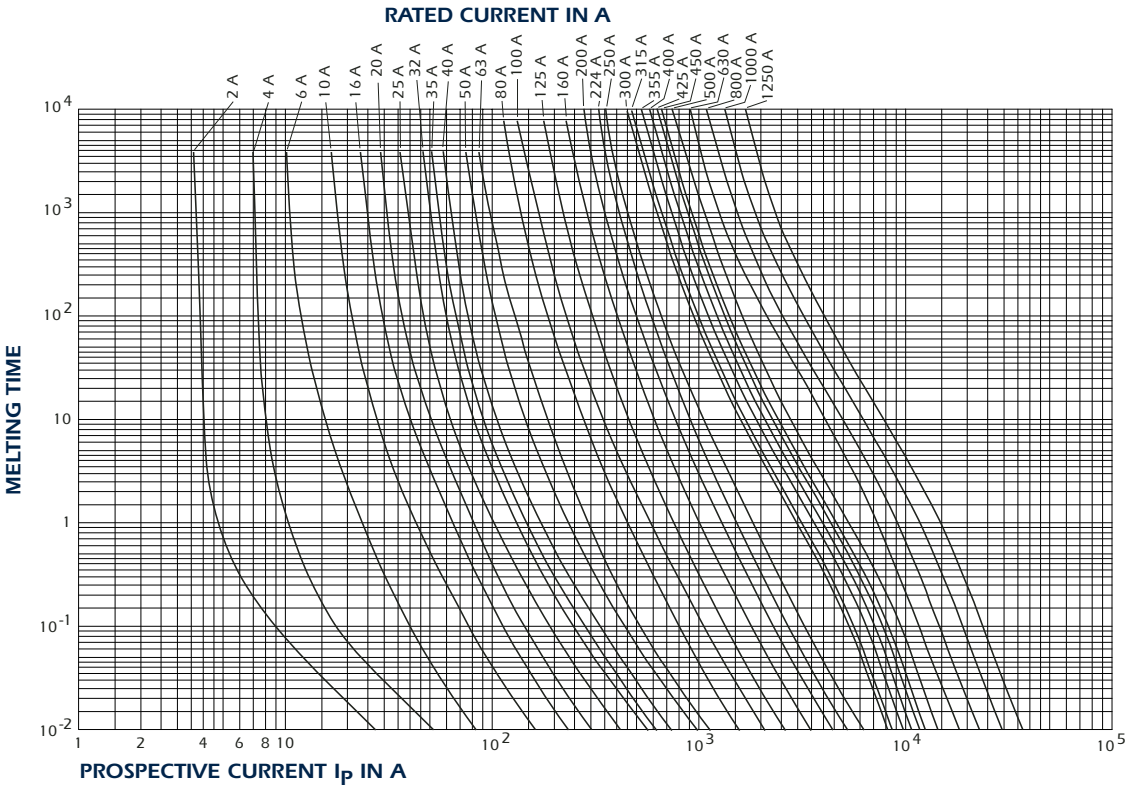
Total Clearing I²t



Current Limitation Curves



Time VS. Current Characteristics



Ferraz Shawmut

NH Fuses (Plain Blades)
gG 400V, 500V, 690V

NH Fuse System



DIN 57 636/VDE 0636 Parts 1, 10, 21, 22, 201

IEC 60269-2

DIN 43 620 Parts 1 to 4 (Standard dimensions)

The use category is identified by two letters, the first indicating the operational class and the second the object to be protected.
The Ferraz shawmut range includes fuse-links to DIN VDE 0636 standard for the following uses categories:

gG: general purpose cable and line protection
aM: Partial purpose, motor circuit protection
gTr: general purpose, transformer protection
gR: general purpose, fast acting
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Classification

The NH system is classed among plug-in fuse systems and is comprised of:
- fuse-base, (possibly including terminal covers and phase barriers)
- fuse-link with blade contact
- fuse-link replacement device (LV HRC fuse puller)

Since the design of this system cannot guarantee non-interchangeability of rated current, it must be handled by a qualified professional.

Approval symbols

Germany

Austria

Switzerland

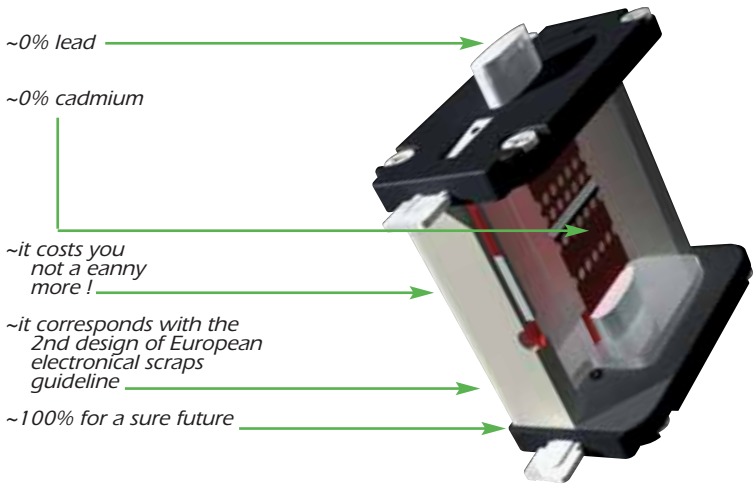
Netherlands



Beige melted



Red non melted



Ferraz Shawmut

NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG 400V Size 000 to 3 - Isolated Lug



Pb-free

NH-fuses, 400VAC gG

with isolated metal gripping lugs (SGL), double indicator, contact blades, complying withDIN VDE 0636 Part 201 and IEC 60269-2-1

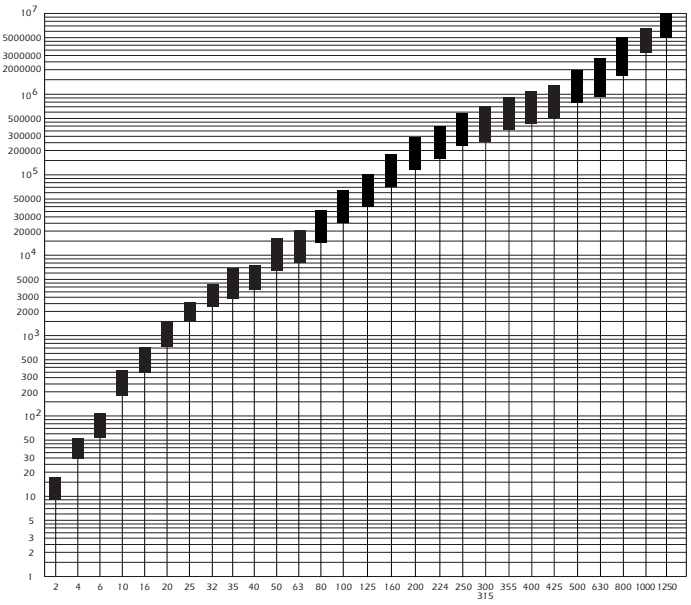
Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	weight kg/pce	pack.	Catalog Number
000	2	3,3	P223688	1E613.	0,12	3	NH000GG40V2-1
000	4	1,35	Q223689	1E619.	0,12	3	NH000GG40V4-1
000	6	1,7	R223690	1E623.	0,12	3	NH000GG40V6-1
000	10	1,0	S223691	1E631.	0,12	3	NH000GG40V10-1
000	16	1,8	T223692	1E635.	0,12	9	NH000GG40V16-1
000	20	2,0	V223693	1E637.	0,12	9	NH000GG40V20-1
000	25	2,4	W223694	1E639.	0,12	9	NH000GG40V25-1
000	32	2,6	X223695	1E643.	0,12	9	NH000GG40V32-1
000	35	3,2	Y223696	1E645.	0,12	9	NH000GG40V35-1
000	40	3,1	Z223697	1E647.	0,12	9	NH000GG40V40-1
000	50	3,5	A223698	1E651.	0,12	9	NH000GG40V50-1
000	63	4,6	B223699	1E655.	0,12	9	NH000GG40V63-1
000	80	5,0	C223700	1E659.	0,12	9	NH000GG40V80-1
000	100	5,5	D223701	1E663.	0,12	9	NH000GG40V100-1
00	125	8,6	G223704	1E765.	0,18	3	NH00GG40V125-1
00	160	9,6	H223705	1E769.	0,18	3	NH00GG40V160-1
1	35	3,9	V223716	1E145.	0,28	3	NH1GG40V35-1
1	50	4,5	W223717	1E151.	0,28	3	NH1GG40V50-1
1	63	5,7	X223718	1E155.	0,28	3	NH1GG40V63-1
1	80	5,5	Y223719	1E159.	0,28	3	NH1GG40V80-1
1	100	7,0	Z223720	1E163.	0,28	3	NH1GG40V100-1
1	125	9,1	A223721	1E165.	0,30	3	NH1GG40V125-1
1	160	13,0	B223722	1E169.	0,30	3	NH1GG40V160-1
1	200	13,1	C223723	1E171.	0,30	3	NH1GG40V200-1
1	224	15,1	D223724	1E173.	0,30	3	NH1GG40V224-1
1	250	16,9	E223725	1E175.	0,30	3	NH1GG40V250-1
2	35	3,9	L227250	1E245.	2,65	3	NH2GG40V35-1
2	50	4,5	M227251	1E251.	2,65	3	NH2GG40V50-1
2	63	5,7	N227252	1E255.	2,65	3	NH2GG40V63-1
2	80	6,1	X223741	1E259.	0,32	3	NH2GG40V80-1
2	100	7,3	Y223742	1E263.	0,32	3	NH2GG40V100-1
2	125	9,1	Z223743	1E265.	0,32	3	NH2GG40V125-1
2	160	13,0	A223744	1E269.	0,32	3	NH2GG40V160-1
2	200	13,5	B223745	1E271.	0,32	3	NH2GG40V200-1
2	224	15,1	C223746	1E273.	0,32	3	NH2GG40V224-1
2	250	18,0	D223747	1E275.	0,32	3	NH2GG40V250-1
2	315	19,9	E223748	1E279.	0,40	3	NH2GG40V315-1
2	355	22,7	F223749	1E281.	0,40	3	NH2GG40V355-1
2	400	28,0	G223750	1E283.	0,40	3	NH2GG40V400-1
3	250	19,9	H223751	1E375.	0,45	1	NH3GG40V250-1
3	315	22,7	J223752	1E379.	0,45	1	NH3GG40V315-1
3	400	28,0	K223753	1E383.	0,45	1	NH3GG40V400-1
3	500	30,8	L223754	1E387.	0,60	1	NH3GG40V500-1
3	630	43,0	M223755	1E389.	0,60	1	NH3GG40V630-1

Non suitable for Microswitch.

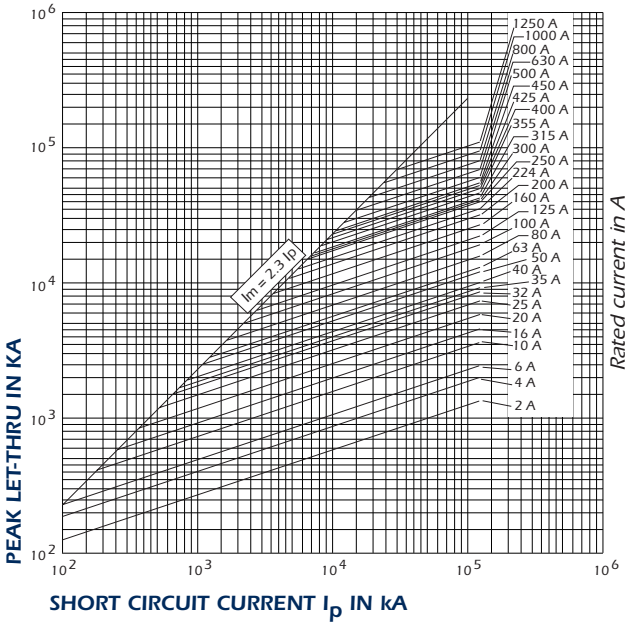
NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG Curves Set

NH-fuses, 500VAC gG

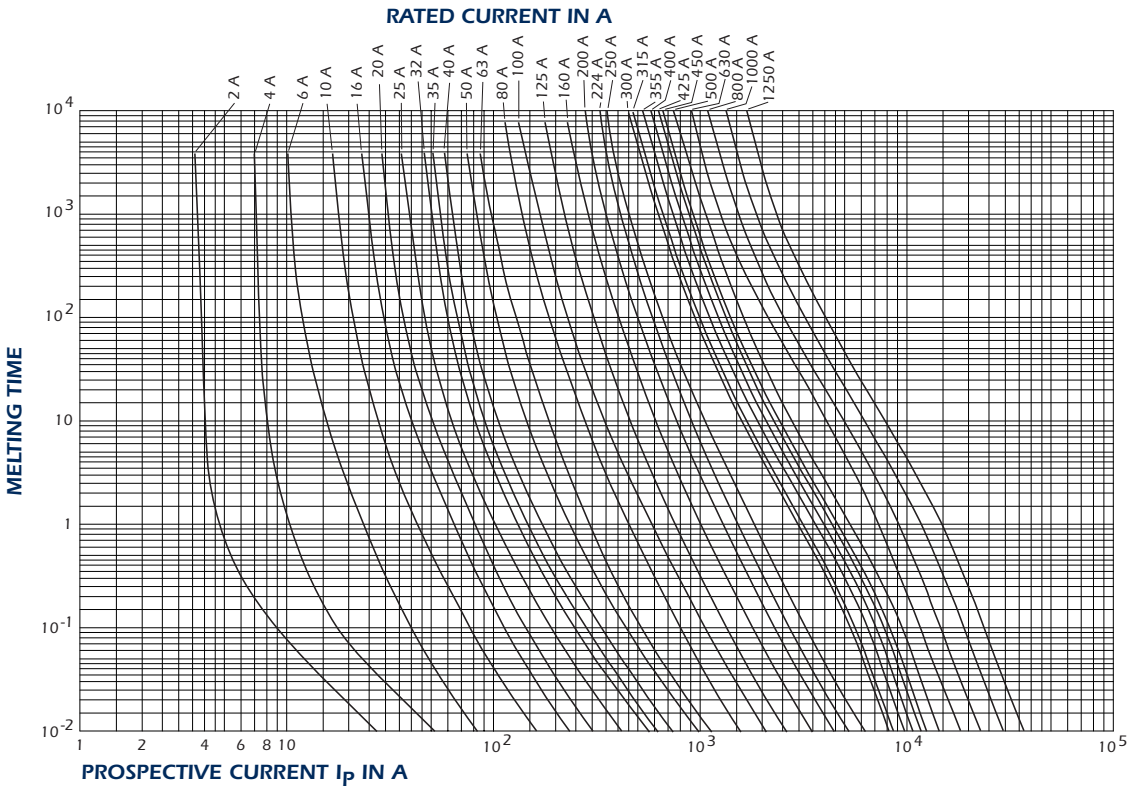
Total Clearing I²t



Current Limitation Curves



Time VS. Current Characteristics



Ferraz Shawmut

NH Fuses (Plain Blades)
gG 400V, 500V, 690V

NH Fuse System



DIN 57 636/VDE 0636 Parts 1, 10, 21, 22, 201

IEC 60269-2

DIN 43 620 Parts 1 to 4 (Standard dimensions)

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Approval symbols

Germany

Austria

Switzerland

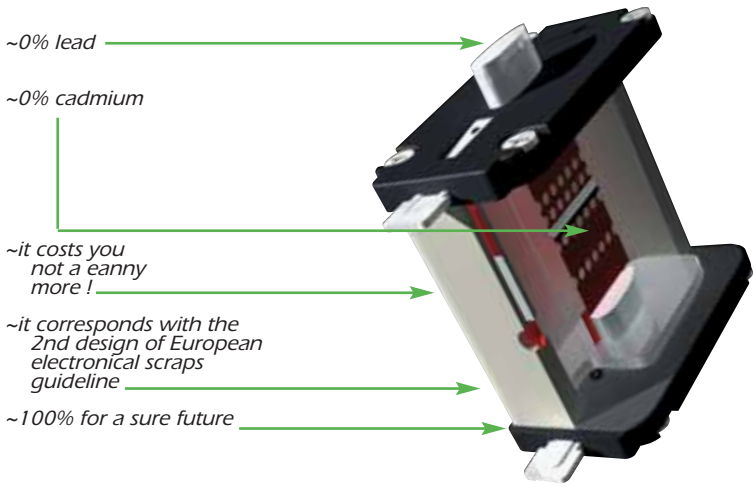
Netherlands



Beige melted



Red non melted



Ferraz Shawmut



Cd/Pb-free

NH Fuses (Plain Blades) gG 400V, 500V, 690V gG 500V Size 000 to 4a

NH-fuses, 500VAC gG

with non-isolated gripping lugs, double indicator, contact blades, complying with DIN VDE 0636 Part 201 and IEC 60269-2-1

Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	Micro-switch(1)	weight kg/pce	pack.	Catalog Number
000	2	1,9	B211946	1B613.	Y	0,13	3	NH000GG50V2
000	4	1,5	M212462	1B619.	Y	0,13	3	NH000GG50V4
000	6	1,6	D213995	1B623.	Y	0,13	3	NH000GG50V6
000	10	1,1	B219651	1B631.	Y	0,13	3	NH000GG50V10
000	16	1,8	K222097	1B635.	Y	0,13	9	NH000GG50V16
000	20	2,3	A222847	1B637.	Y	0,13	9	NH000GG50V20
000	25	2,4	E201185	1B639.	Y	0,13	9	NH000GG50V25
000	32	3,1	Z211438	1B643.	Y	0,13	9	NH000GG50V32
000	35	3,0	C211947	1B645.	Y	0,13	9	NH000GG50V35
000	40	3,7	N212463	1B647.	Y	0,13	9	NH000GG50V40
000	50	4,1	T212974	1B651.	Y	0,13	9	NH000GG50V50
000	63	5,4	E213996	1B655.	Y	0,13	9	NH000GG50V63
000	80	6,5	Y216543	1B659.	Y	0,13	9	NH000GG50V80
000	100	7,5	B219122	1B663.	Y	0,13	9	NH000GG50V100
00	125	10,0	R201863	1B765.	Y	0,20	3	NH00GG50V125
00	160	12,3	P211084	1B769.	Y	0,20	3	NH00GG50V160
0	6	1,6	H213148	1B023.	Y	0,27	3	NH0GG50V6
0	10	1,1	G214159	1B031.	Y	0,27	3	NH0GG50V10
0	16	1,8	Q215179	1B035.	Y	0,27	3	NH0GG50V16
0	20	2,3	R215686	1B037.	Y	0,27	3	NH0GG50V20
0	25	2,4	Y216198	1B039.	Y	0,27	3	NH0GG50V25
0	32	3,1	W216702	1B043.	Y	0,27	3	NH0GG50V32
0	35	3,0	J217220	1B045.	Y	0,27	3	NH0GG50V35
0	40	3,7	P217731	1B047.	Y	0,27	3	NH0GG50V40
0	50	4,1	Z218246	1B051.	Y	0,27	3	NH0GG50V50
0	63	6,6	N218765	1B055.	Y	0,27	3	NH0GG50V63
0	80	8,0	C219284	1B059.	Y	0,27	3	NH0GG50V80
0	100	9,4	D219814	1B063.	Y	0,27	3	NH0GG50V100
0	125	11,8	P222492	1B065.	Y	0,27	3	NH0GG50V125
0	160	14,6	F223013	1B069.	Y	0,27	3	NH0GG50V160
0	200	18,1	C229611	1B071.	Y	0,27	3	NH0GG50V200
0	224	19,2	D229612	1B073.	Y	0,27	3	NH0GG50V224
0	250	20,3	E229613	1B075.	Y	0,27	3	NH0GG50V250
1	16	1,8	M200801	1B135.	N	0,28	3	NH1GG50V16
1	20	2,3	C201344	1B137.	N	0,28	3	NH1GG50V20
1	25	2,4	N201860	1B139.	N	0,28	3	NH1GG50V25
1	32	3,1	L211081	1B143.	N	0,28	3	NH1GG50V32
1	35	3,0	A211600	1B145.	N	0,28	3	NH1GG50V35
1	40	3,7	Y212633	1B147.	N	0,28	3	NH1GG50V40
1	50	4,1	B213648	1B151.	N	0,28	3	NH1GG50V50
1	63	6,6	L214669	1B155.	N	0,28	3	NH1GG50V63
1	80	8,0	S215687	1B159.	N	0,28	3	NH1GG50V80
1	100	9,4	X216703	1B163.	N	0,28	3	NH1GG50V100
1	125	11,8	Q217732	1B165.	Y	0,30	3	NH1GG50V125
1	160	14,6	A218247	1B169.	Y	0,30	3	NH1GG50V160
1	200	18,0	P218766	1B171.	Y	0,30	3	NH1GG50V200
1	224	19,0	D219285	1B173.	Y	0,30	3	NH1GG50V224
1	250	20,0	E219815	1B175.	Y	0,30	3	NH1GG50V250
1	315	20,5	Q228519	1B179.	Y	0,42	3	NH1GG50V315
1	355	23,7	R228520	1B181.	Y	0,42	3	NH1GG50V355

(1) Suitable for Microswitch describes page 106

NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG 500V Size 000 to 4a



Cd/Pb-free

NH-fuses, 500VAC gG

with non-isolated gripping lugs, double indicator, contact blades, complying with DIN VDE 0636 Part 201 and IEC 60269-2-1

Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	Micro-switch[1]	weight kg/pce	pack.	Catalog Number
2	25	2,4	N200802	1B239.	N	0,42	3	NH2GG50V25
2	32	3,1	D201345	1B243.	N	0,42	3	NH2GG50V32
2	35	3,0	P201861	1B245.	N	0,42	3	NH2GG50V35
2	40	3,7	M211082	1B247.	N	0,42	3	NH2GG50V40
2	50	4,1	B211601	1B251.	N	0,42	3	NH2GG50V50
2	63	6,8	Z212634	1B255.	N	0,42	3	NH2GG50V63
2	80	8,3	C213649	1B259.	N	0,42	3	NH2GG50V80
2	100	10,7	M214670	1B263.	N	0,42	3	NH2GG50V100
2	125	12,2	T215688	1B265.	N	0,42	3	NH2GG50V125
2	160	15,0	Y216704	1B269.	N	0,42	3	NH2GG50V160
2	200	18,5	R217733	1B271.	N	0,42	3	NH2GG50V200
2	224	19,2	Q218767	1B273.	N	0,42	3	NH2GG50V224
2	250	20,6	R222494	1B275.	N	0,42	3	NH2GG50V250
2	300	21,0	P200803	1B277.	Y	0,64	3	NH2GG50V300
2	315	25,0	E201346	1B279.	Y	0,64	3	NH2GG50V315
2	355	31,5	Q201862	1B281.	Y	0,64	3	NH2GG50V355
2	400	28,5	N211083	1B283.	Y	0,64	3	NH2GG50V400
2	425	29,2	S228521	1B285.	Y	0,64	3	NH2GG50V425
2	500	35,6	T228522	1B287.	Y	0,64	3	NH2GG50V500
3	250	21,1	C211602	1B375.	N	0,65	1	NH3GG50V250
3	300	20,0	A212635	1B377.	N	0,65	1	NH3GG50V300
3	315	25,0	L213151	1B379.	N	0,65	1	NH3GG50V315
3	355	32,0	K214162	1B381.	N	0,65	1	NH3GG50V355
3	400	34,0	T215182	1B383.	N	1,05	1	NH3GG50V400
3	425	34,0	B216201	1B385.	Y	1,05	1	NH3GG50V425
3	450	38,0	Z216705	1B386.	Y	1,05	1	NH3GG50V450
3	500	43,0	M217223	1B387.	Y	1,05	1	NH3GG50V500
3	630	43,1	S217734	1B389.	Y	1,05	1	NH3GG50V630
3	800	53,2	V228523	1B391.	Y	1,05	1	NH3GG50V800
with screw contact								
4	400	31,0 *)	A216039	8004.4007	N	2,00	1	NH4GG50V400-8
4	500	35,0 *)	X216542	8004.5007	N	2,00	1	NH4GG50V500-8
4	630	46,6 *)	W217576	8004.6307	N	2,00	1	NH4GG50V630-8
4	800	70,0 *)	E218090	8004.8007	N	2,00	1	NH4GG50V800-8
4	1000	83,3 *)	H201694	8004.1007	N	2,00	1	NH4GG50V1000-8
4	1250	110,0 *)	C213994	8004.1257	N	2,00	1	NH4GG50V1250-8
contact blades for NH-bottom size 4a with swivel unit								
4a	500	35,0 *)	D201184	8014.5007	N	1,95	1	NH4AGG50V500-8
4a	630	46,6 *)	T205752	8014.6307	N	1,95	1	NH4AGG50V630-8
4a	800	70,0 *)	Y211437	8014.8007	N	1,95	1	NH4AGG50V800-8
4a	1000	83,3 *)	A219650	8014.1007	N	1,95	1	NH4AGG50V1000-8
4a	1250	110,0 *)	J200637	8014.1257	N	1,95	1	NH4AGG50V1250-8

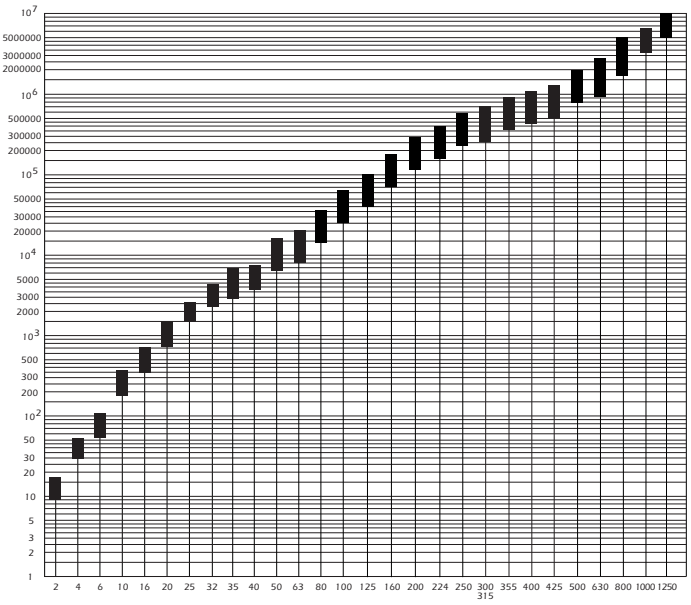
**) with indicator on top*

(1) Suitable for Microswitch describes page 106

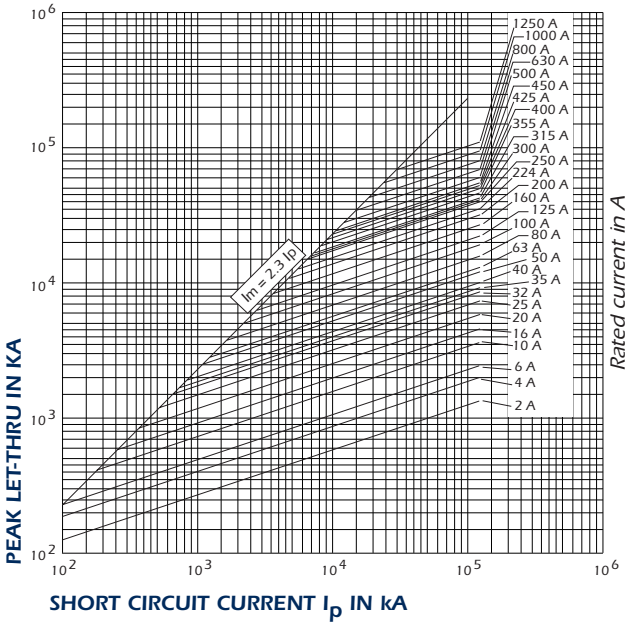
NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG Curves Set

NH-fuses, 500VAC gG

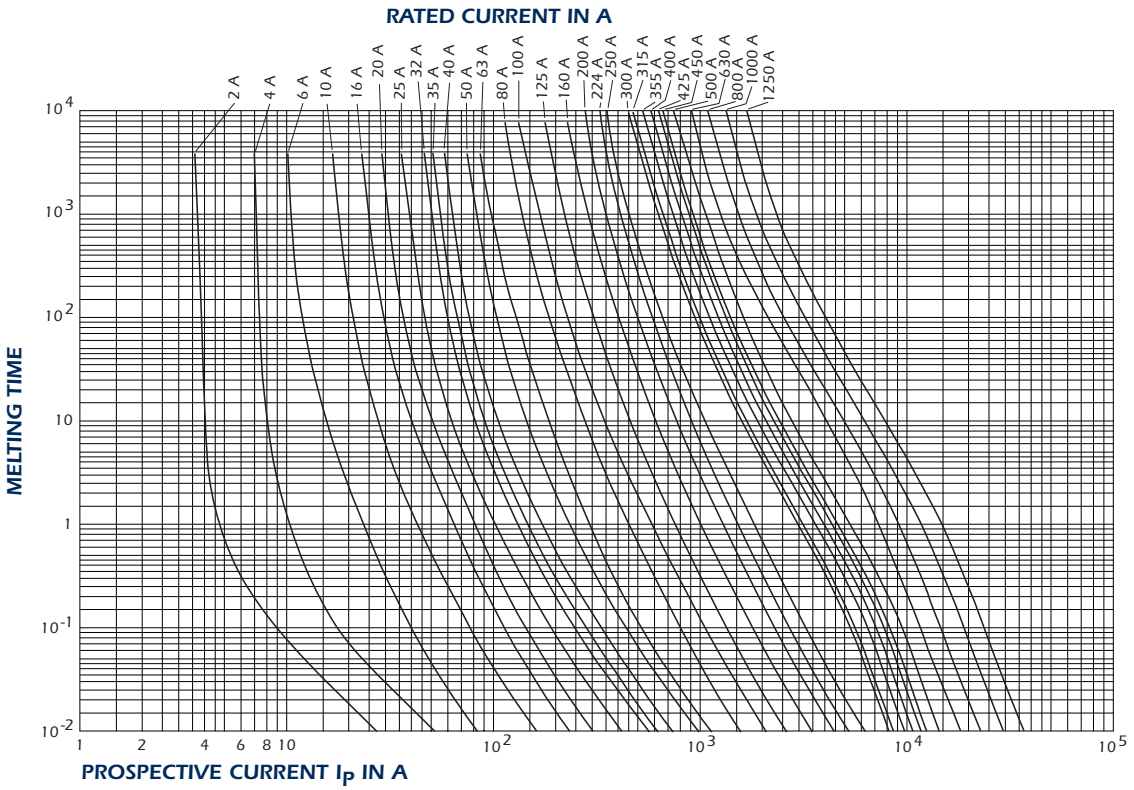
Total Clearing I²t



Current Limitation Curves



Time VS. Current Characteristics



Ferraz Shawmut

NH Fuses (Plain Blades)
gG 400V, 500V, 690V

NH Fuse System



DIN 57 636/VDE 0636 Parts 1, 10, 21, 22, 201

IEC 60269-2

DIN 43 620 Parts 1 to 4 (Standard dimensions)

The use category is identified by two letters, the first indicating the operational class and the second the object to be protected.
The Ferraz shawmut range includes fuse-links to DIN VDE 0636 standard for the following uses categories:

gG: general purpose cable and line protection
aM: Partial purpose, motor circuit protection
gTr: general purpose, transformer protection
gR: general purpose, fast acting
aR: partial purpose, fast acting

Classification

The NH system is classed among plug-in fuse systems and is comprised of:
- fuse-base, (possibly including terminal covers and phase barriers)
- fuse-link with blade contact
- fuse-link replacement device (LV HRC fuse puller)

Since the design of this system cannot guarantee non-interchangeability of rated current, it must be handled by a qualified professional.

Approval symbols

Germany

Austria

Switzerland

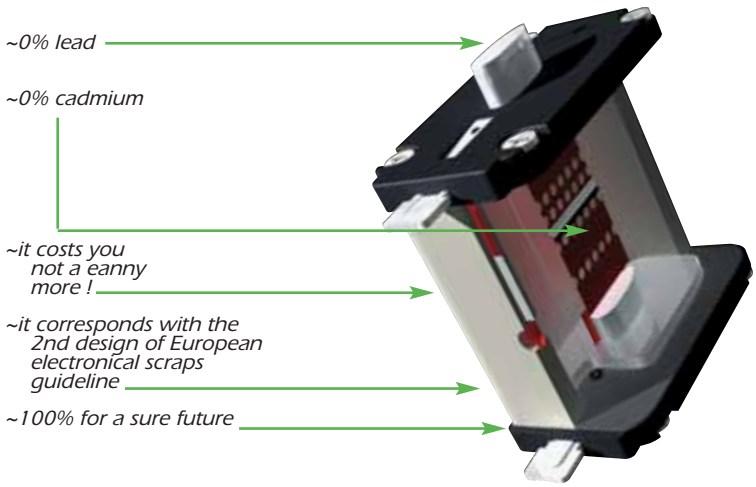
Netherlands



Beige melted



Red non melted



Ferraz Shawmut



Cd/Pb-free

NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG 500V Size 000 to 3 - Isolated Lug

NH-fuses, 500VAC gG

with isolated metal gripping lugs (SGL), double indicator, contact blades, complying with DIN VDE 0636 Part 201 and IEC 60269-2-1

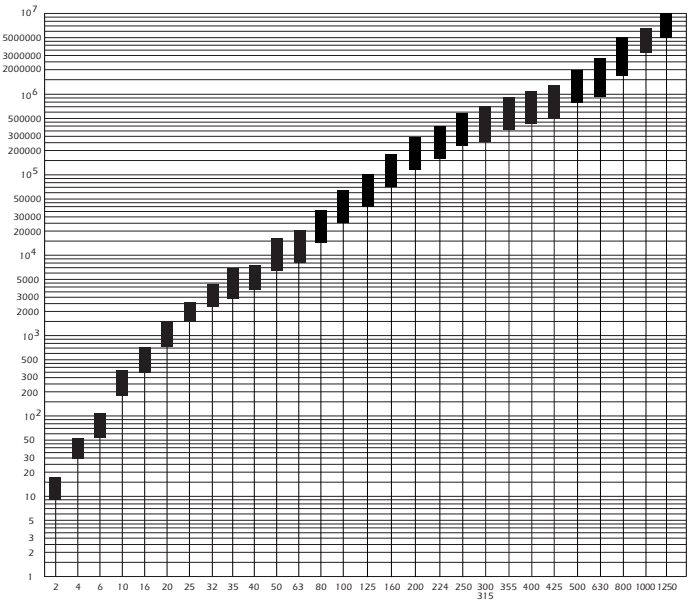
Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	weight kg/pce	pack.	Catalog Number
000	2	1,9	C219652	1F613.	0,14	3	NH000GG50V2-1
000	4	1,5	N205770	1F619.	0,14	3	NH000GG50V4-1
000	6	1,6	P212464	1F623.	0,14	3	NH000GG50V6-1
000	10	1,1	V215528	1F631.	0,14	3	NH000GG50V10-1
000	16	1,8	F213997	1F635.	0,14	9	NH000GG50V16-1
000	20	2,3	F218091	1F637.	0,14	9	NH000GG50V20-1
000	25	2,4	K200638	1F639.	0,14	9	NH000GG50V25-1
000	32	3,1	D213489	1F643.	0,14	9	NH000GG50V32-1
000	35	3,0	G201187	1F645.	0,14	9	NH000GG50V35-1
000	40	3,7	D219653	1F647.	0,14	9	NH000GG50V40-1
000	50	4,1	C222849	1F651.	0,14	9	NH000GG50V50-1
000	63	5,4	R212466	1F655.	0,14	9	NH000GG50V63-1
000	80	6,5	N215016	1F659.	0,14	9	NH000GG50V80-1
000	100	7,5	J201189	1F663.	0,14	9	NH000GG50V100-1
00	125	10,0	V200808	1F765.	0,20	3	NH00GG50V125-1
00	160	12,3	W201867	1F769.	0,20	3	NH00GG50V160-1
0	6	1,6	B212636	1F023.	0,26	3	NH0GG50V6-1
0	10	1,1	M213152	1F031.	0,26	3	NH0GG50V10-1
0	16	1,8	E213651	1F035.	0,26	3	NH0GG50V16-1
0	20	2,3	L214163	1F037.	0,26	3	NH0GG50V20-1
0	25	2,4	P214672	1F039.	0,26	3	NH0GG50V25-1
0	32	3,1	V215183	1F043.	0,26	3	NH0GG50V32-1
0	35	3,0	W215690	1F045.	0,26	3	NH0GG50V35-1
0	40	3,7	C216202	1F047.	0,26	3	NH0GG50V40-1
0	50	4,1	A216706	1F051.	0,26	3	NH0GG50V50-1
0	63	6,6	N217224	1F055.	0,26	3	NH0GG50V63-1
0	80	8,0	T217735	1F059.	0,26	3	NH0GG50V80-1
0	100	9,4	D218250	1F063.	0,26	3	NH0GG50V100-1
0	125	11,8	S218769	1F065.	0,26	3	NH0GG50V125-1
0	160	14,6	F219287	1F069.	0,26	3	NH0GG50V160-1
1	16	1,8	H219818	1F135.	0,29	3	NH1GG50V16-1
1	20	2,3	T222496	1F137.	0,29	3	NH1GG50V20-1
1	25	2,4	K223017	1F139.	0,29	3	NH1GG50V25-1
1	32	3,1	R200805	1F143.	0,29	3	NH1GG50V32-1
1	35	3,0	G201348	1F145.	0,29	3	NH1GG50V35-1
1	40	3,7	Q211085	1F147.	0,29	3	NH1GG50V40-1
1	50	4,1	L212116	1F151.	0,29	3	NH1GG50V50-1
1	63	6,6	N213153	1F155.	0,29	3	NH1GG50V63-1
1	80	8,0	M214164	1F159.	0,29	3	NH1GG50V80-1
1	100	9,4	W215184	1F163.	0,29	3	NH1GG50V100-1
1	125	11,8	D216203	1F165.	0,42	3	NH1GG50V125-1
1	160	14,6	B216707	1F169.	0,42	3	NH1GG50V160-1
1	200	18,0	P217225	1F171.	0,42	3	NH1GG50V200-1
1	224	19,0	V217736	1F173.	0,42	3	NH1GG50V224-1
1	250	20,0	E218251	1F175.	0,42	3	NH1GG50V250-1

Non suitable for Microswitch.

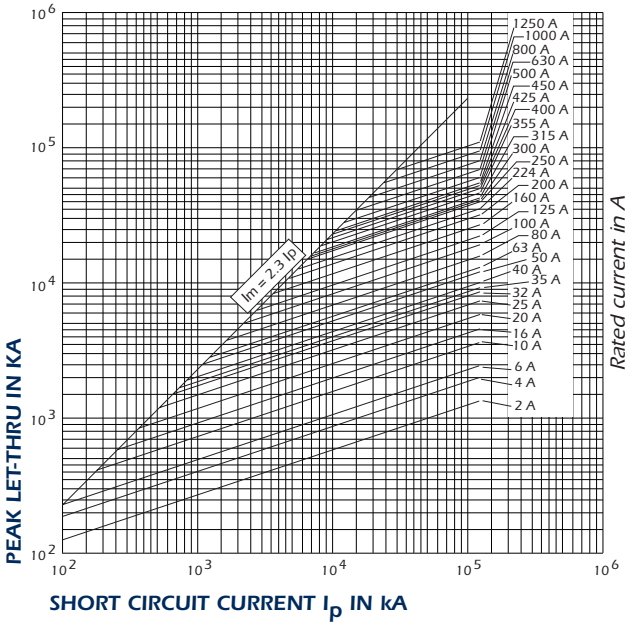
NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG Curves Set

NH-fuses, 500VAC gG

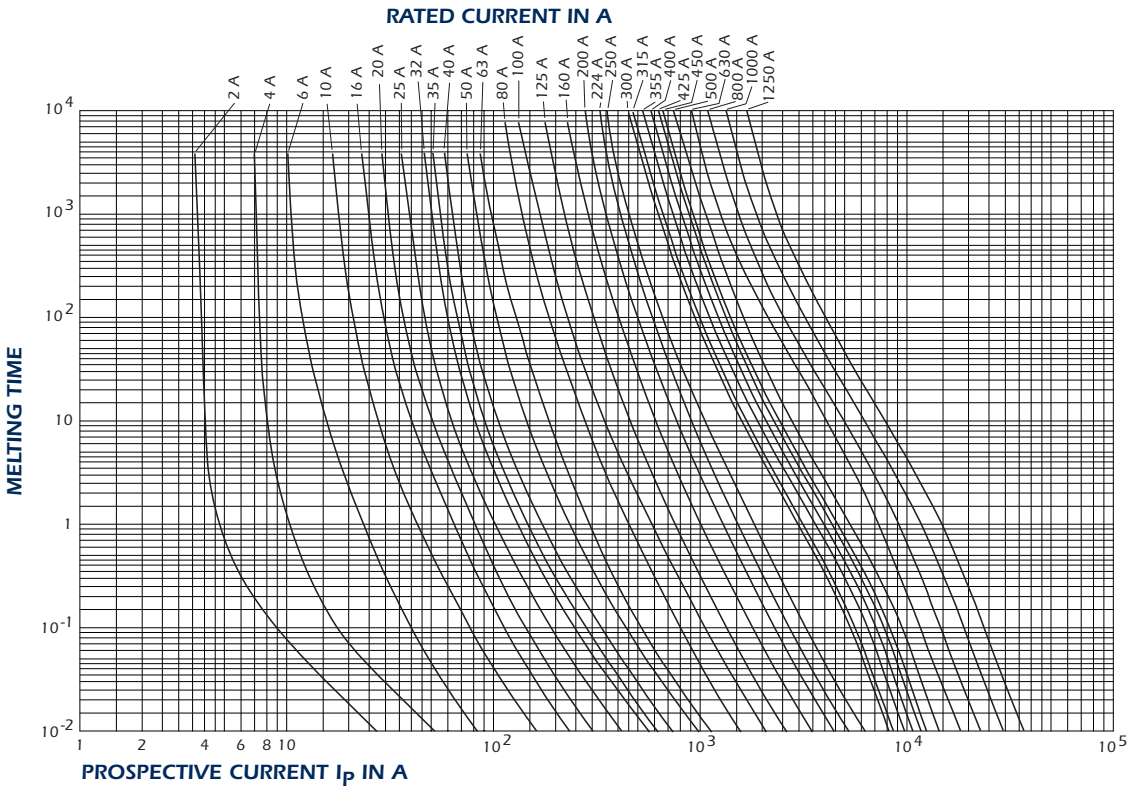
Total Clearing I²t



Current Limitation Curves



Time VS. Current Characteristics



Ferraz Shawmut

NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG 500V Size 000 to 3 - Isolated Lug



Cd/Pb-free

NH-fuses, 500VAC gG

with isolated metal gripping lugs (SGL), double indicator, contact blades, complying with DIN VDE 0636 Part 201 and IEC 60269-2-1

Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	weight kg/pce	pack.	Catalog Number
2	25	2,4	J219819	1F239.	0,42	3	NH2GG50V25-1
2	32	3,1	V222497	1F243.	0,42	3	NH2GG50V32-1
2	35	3,0	L223018	1F245.	0,42	3	NH2GG50V35-1
2	40	3,7	S200806	1F247.	0,42	3	NH2GG50V40-1
2	50	4,1	H201349	1F251.	0,42	3	NH2GG50V50-1
2	63	6,8	T201865	1F255.	0,42	3	NH2GG50V63-1
2	80	8,3	F211605	1F259.	0,42	3	NH2GG50V80-1
2	100	10,7	P213154	1F263.	0,42	3	NH2GG50V100-1
2	125	12,2	N214165	1F265.	0,42	3	NH2GG50V125-1
2	160	15,0	X215185	1F269.	0,42	3	NH2GG50V160-1
2	200	18,5	E216204	1F271.	0,42	3	NH2GG50V200-1
2	224	19,2	Q217226	1F273.	0,42	3	NH2GG50V224-1
2	250	20,6	F218252	1F275.	0,42	3	NH2GG50V250-1
2	300	21,0	H219289	1F277.	0,64	3	NH2GG50V300-1
2	315	25,0	K219820	1F279.	0,64	3	NH2GG50V315-1
2	355	31,5	M223019	1F281.	0,64	3	NH2GG50V355-1
2	400	28,5	T200807	1F283.	0,64	3	NH2GG50V400-1
3	250	21,1	J201350	1F375.	0,65	1	NH3GG50V250-1
3	300	20,0	S211087	1F377.	0,65	1	NH3GG50V300-1
3	315	25,0	G211606	1F379.	0,65	1	NH3GG50V315-1
3	355	32,0	E212639	1F381.	0,65	1	NH3GG50V355-1
3	400	34,0	H213654	1F383.	1,05	1	NH3GG50V400-1
3	425	34,0	S214675	1F385.	1,05	1	NH3GG50V425-1
3	450	38,0	Z215693	1F386.	1,05	1	NH3GG50V450-1
3	500	43,0	F216205	1F387.	1,05	1	NH3GG50V500-1
3	630	43,1	D216709	1F389.	1,05	1	NH3GG50V630-1

Non suitable for Microswitch.

NH Fuses (Plain Blades)
gG 400V, 500V, 690V

NH Fuse System



DIN 57 636/VDE 0636 Parts 1, 10, 21, 22, 201

IEC 60269-2

DIN 43 620 Parts 1 to 4 (Standard dimensions)

The use category is identified by two letters, the first indicating the operational class and the second the object to be protected.
The Ferraz shawmut range includes fuse-links to DIN VDE 0636 standard for the following uses categories:

gG: general purpose cable and line protection
aM: Partial purpose, motor circuit protection
gTr: general purpose, transformer protection
gR: general purpose, fast acting
aR: partial purpose, fast acting

Classification

The NH system is classed among plug-in fuse systems and is comprised of:
- fuse-base, (possibly including terminal covers and phase barriers)
- fuse-link with blade contact
- fuse-link replacement device (LV HRC fuse puller)

Since the design of this system cannot guarantee non-interchangeability of rated current, it must be handled by a qualified professional.

Approval symbols

Germany

Austria

Switzerland

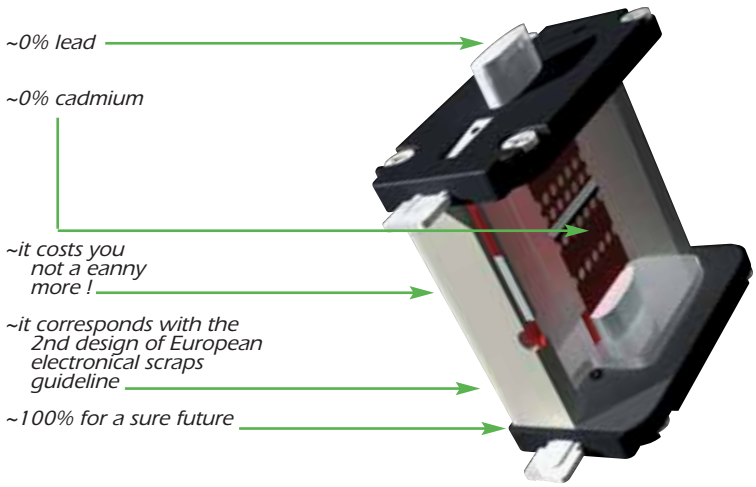
Netherlands



Beige melted



Red non melted



Ferraz Shawmut



Cd/Pb-free

NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG 500V Size 000 to 3 - Isolated Lug

NH-fuses, 500VAC gG

with isolated metal gripping lugs (SGL), double indicator, contact blades, complying with DIN VDE 0636 Part 201 and IEC 60269-2-1

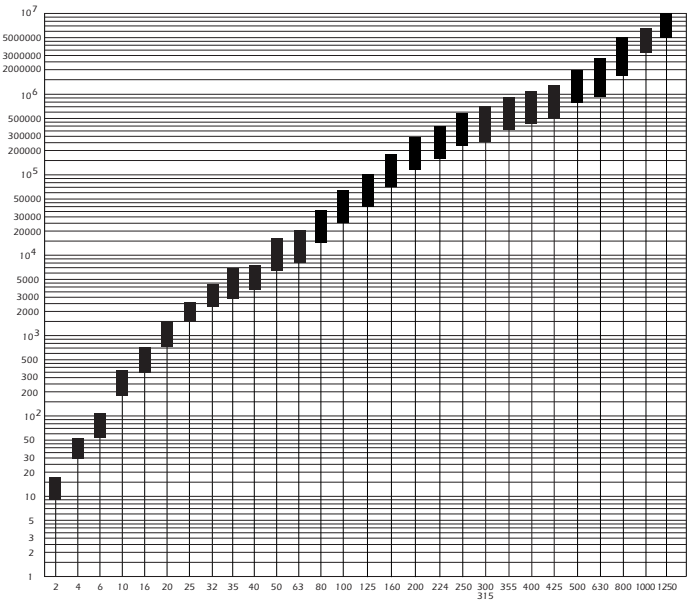
Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	weight kg/pce	pack.	Catalog Number
000	2	1,9	C219652	1F613.	0,14	3	NH000GG50V2-1
000	4	1,5	N205770	1F619.	0,14	3	NH000GG50V4-1
000	6	1,6	P212464	1F623.	0,14	3	NH000GG50V6-1
000	10	1,1	V215528	1F631.	0,14	3	NH000GG50V10-1
000	16	1,8	F213997	1F635.	0,14	9	NH000GG50V16-1
000	20	2,3	F218091	1F637.	0,14	9	NH000GG50V20-1
000	25	2,4	K200638	1F639.	0,14	9	NH000GG50V25-1
000	32	3,1	D213489	1F643.	0,14	9	NH000GG50V32-1
000	35	3,0	G201187	1F645.	0,14	9	NH000GG50V35-1
000	40	3,7	D219653	1F647.	0,14	9	NH000GG50V40-1
000	50	4,1	C222849	1F651.	0,14	9	NH000GG50V50-1
000	63	5,4	R212466	1F655.	0,14	9	NH000GG50V63-1
000	80	6,5	N215016	1F659.	0,14	9	NH000GG50V80-1
000	100	7,5	J201189	1F663.	0,14	9	NH000GG50V100-1
00	125	10,0	V200808	1F765.	0,20	3	NH00GG50V125-1
00	160	12,3	W201867	1F769.	0,20	3	NH00GG50V160-1
0	6	1,6	B212636	1F023.	0,26	3	NH0GG50V6-1
0	10	1,1	M213152	1F031.	0,26	3	NH0GG50V10-1
0	16	1,8	E213651	1F035.	0,26	3	NH0GG50V16-1
0	20	2,3	L214163	1F037.	0,26	3	NH0GG50V20-1
0	25	2,4	P214672	1F039.	0,26	3	NH0GG50V25-1
0	32	3,1	V215183	1F043.	0,26	3	NH0GG50V32-1
0	35	3,0	W215690	1F045.	0,26	3	NH0GG50V35-1
0	40	3,7	C216202	1F047.	0,26	3	NH0GG50V40-1
0	50	4,1	A216706	1F051.	0,26	3	NH0GG50V50-1
0	63	6,6	N217224	1F055.	0,26	3	NH0GG50V63-1
0	80	8,0	T217735	1F059.	0,26	3	NH0GG50V80-1
0	100	9,4	D218250	1F063.	0,26	3	NH0GG50V100-1
0	125	11,8	S218769	1F065.	0,26	3	NH0GG50V125-1
0	160	14,6	F219287	1F069.	0,26	3	NH0GG50V160-1
1	16	1,8	H219818	1F135.	0,29	3	NH1GG50V16-1
1	20	2,3	T222496	1F137.	0,29	3	NH1GG50V20-1
1	25	2,4	K223017	1F139.	0,29	3	NH1GG50V25-1
1	32	3,1	R200805	1F143.	0,29	3	NH1GG50V32-1
1	35	3,0	G201348	1F145.	0,29	3	NH1GG50V35-1
1	40	3,7	Q211085	1F147.	0,29	3	NH1GG50V40-1
1	50	4,1	L212116	1F151.	0,29	3	NH1GG50V50-1
1	63	6,6	N213153	1F155.	0,29	3	NH1GG50V63-1
1	80	8,0	M214164	1F159.	0,29	3	NH1GG50V80-1
1	100	9,4	W215184	1F163.	0,29	3	NH1GG50V100-1
1	125	11,8	D216203	1F165.	0,42	3	NH1GG50V125-1
1	160	14,6	B216707	1F169.	0,42	3	NH1GG50V160-1
1	200	18,0	P217225	1F171.	0,42	3	NH1GG50V200-1
1	224	19,0	V217736	1F173.	0,42	3	NH1GG50V224-1
1	250	20,0	E218251	1F175.	0,42	3	NH1GG50V250-1

Non suitable for Microswitch.

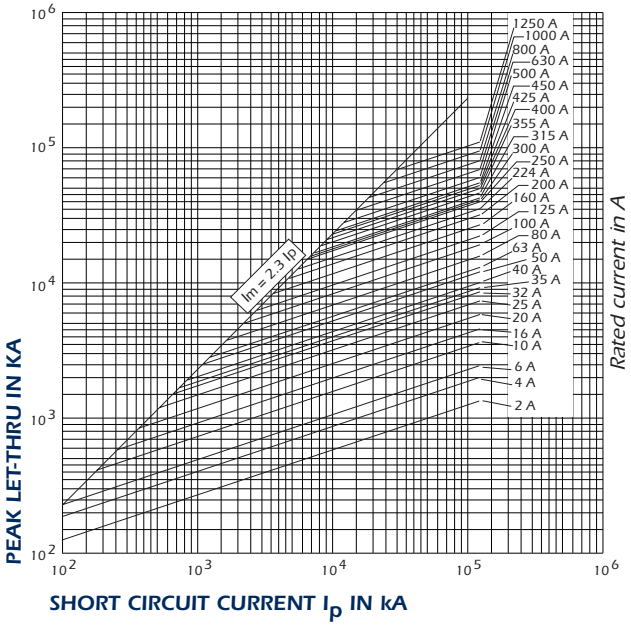
NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG Curves Set

NH-fuses, 500VAC gG

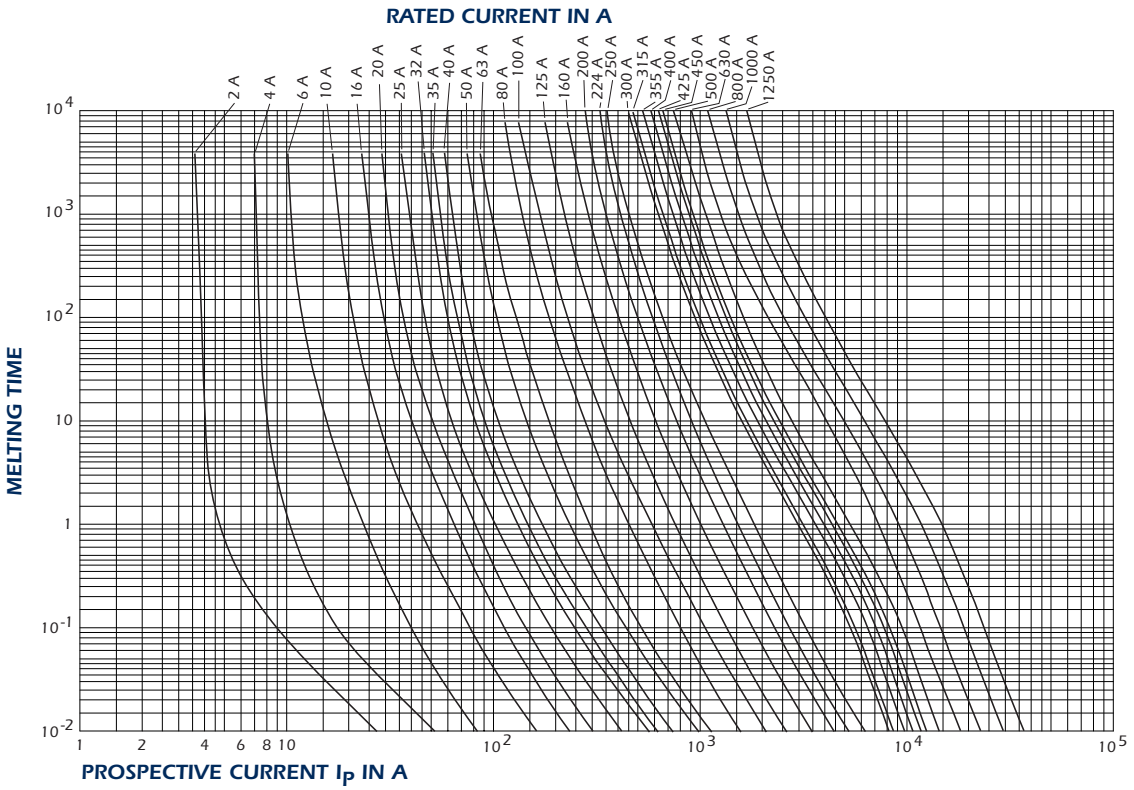
Total Clearing I²t



Current Limitation Curves



Time VS. Current Characteristics



Ferraz Shawmut

NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG 500V Size 000 to 3 - Isolated Lug



Cd/Pb-free

NH-fuses, 500VAC gG

with isolated metal gripping lugs (SGL), double indicator, contact blades, complying with DIN VDE 0636 Part 201 and IEC 60269-2-1

Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	weight kg/pce	pack.	Catalog Number
2	25	2,4	J219819	1F239.	0,42	3	NH2GG50V25-1
2	32	3,1	V222497	1F243.	0,42	3	NH2GG50V32-1
2	35	3,0	L223018	1F245.	0,42	3	NH2GG50V35-1
2	40	3,7	S200806	1F247.	0,42	3	NH2GG50V40-1
2	50	4,1	H201349	1F251.	0,42	3	NH2GG50V50-1
2	63	6,8	T201865	1F255.	0,42	3	NH2GG50V63-1
2	80	8,3	F211605	1F259.	0,42	3	NH2GG50V80-1
2	100	10,7	P213154	1F263.	0,42	3	NH2GG50V100-1
2	125	12,2	N214165	1F265.	0,42	3	NH2GG50V125-1
2	160	15,0	X215185	1F269.	0,42	3	NH2GG50V160-1
2	200	18,5	E216204	1F271.	0,42	3	NH2GG50V200-1
2	224	19,2	Q217226	1F273.	0,42	3	NH2GG50V224-1
2	250	20,6	F218252	1F275.	0,42	3	NH2GG50V250-1
2	300	21,0	H219289	1F277.	0,64	3	NH2GG50V300-1
2	315	25,0	K219820	1F279.	0,64	3	NH2GG50V315-1
2	355	31,5	M223019	1F281.	0,64	3	NH2GG50V355-1
2	400	28,5	T200807	1F283.	0,64	3	NH2GG50V400-1
3	250	21,1	J201350	1F375.	0,65	1	NH3GG50V250-1
3	300	20,0	S211087	1F377.	0,65	1	NH3GG50V300-1
3	315	25,0	G211606	1F379.	0,65	1	NH3GG50V315-1
3	355	32,0	E212639	1F381.	0,65	1	NH3GG50V355-1
3	400	34,0	H213654	1F383.	1,05	1	NH3GG50V400-1
3	425	34,0	S214675	1F385.	1,05	1	NH3GG50V425-1
3	450	38,0	Z215693	1F386.	1,05	1	NH3GG50V450-1
3	500	43,0	F216205	1F387.	1,05	1	NH3GG50V500-1
3	630	43,1	D216709	1F389.	1,05	1	NH3GG50V630-1

Non suitable for Microswitch.

NH Fuses (Plain Blades)
gG 400V, 500V, 690V
aM 500V, 690V

NH Fuse System



DIN 57 636/VDE 0636 Parts 1, 10, 21, 22, 201

IEC 60269-2

DIN 43 620 Parts 1 to 4 (Standard dimensions)

The use category is identified by two letters, the first indicating the operational class and the second the object to be protected.
The Ferraz shawmut range includes fuse-links to DIN VDE 0636 standard for the following uses categories:

gG: general purpose cable and line protection
aM: Partial purpose, motor circuit protection
gTr: general purpose, transformer protection
gR: general purpose, fast acting
aR: partial purpose, fast acting

Classification

The NH system is classed among plug-in fuse systems and is comprised of:
- fuse-base, (possibly including terminal covers and phase barriers)
- fuse-link with blade contact
- fuse-link replacement device (LV HRC fuse puller)

Since the design of this system cannot guarantee non-interchangeability of rated current, it must be handled by a qualified professional.

Approval symbols

Germany

Austria

Switzerland

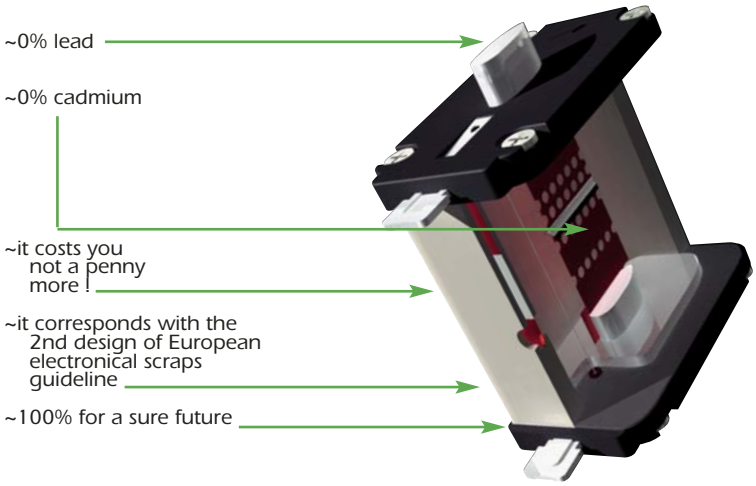
Netherlands



Beige melted



Red non melted



Ferraz Shawmut

NH Fuses (Plain Blades) gG 400V, 500V, 690V gG 690V Size 000 to 4a



Cd/Pb-free

NH-fuses, 690VAC gG

with non-isolated gripping lugs, doubleindicator, contact blades, complying with DIN VDE 0636 Part 201 and IEC 60269-2-1

Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	Micro-switch[1]	weight kg/pce	pack.	Catalog Number
000	2	1,9	E228440	1C613.	Y	0,13	3	NH000GG69V2
000	4	1,5	F228441	1C619.	Y	0,13	3	NH000GG69V4
000	6	1,6	G228442	1C623.	Y	0,13	3	NH000GG69V6
000	10	1,1	J228444	1C631.	Y	0,13	3	NH000GG69V10
000	16	1,8	K228445	1C635.	Y	0,13	3	NH000GG69V16
000	20	2,3	L228446	1C637.	Y	0,13	3	NH000GG69V20
000	25	2,4	M228447	1C639.	Y	0,13	3	NH000GG69V25
000	32	3,1	N228448	1C643.	Y	0,13	3	NH000GG69V32
000	35	3,0	P228449	1C645.	Y	0,13	3	NH000GG69V35
000	40	3,7	Q228450	1C647.	Y	0,13	3	NH000GG69V40
000	50	4,1	R228451	1C651.	Y	0,13	3	NH000GG69V50
000	63	5,4	S228452	1C655.	Y	0,13	3	NH000GG69V63
000	80	6,5	T228453	1C659.	Y	0,13	3	NH000GG69V80
00	32	3,1	V228454	1C743.	Y	0,20	3	NH00GG69V32
00	35	3,0	W228455	1C745.	Y	0,20	3	NH00GG69V35
00	40	3,7	X228456	1C747.	Y	0,20	3	NH00GG69V40
00	50	4,1	Y228457	1C751.	Y	0,20	3	NH00GG69V50
00	63	5,6	Z228458	1C755.	Y	0,20	3	NH00GG69V63
00	80	6,8	A228459	1C759.	Y	0,20	3	NH00GG69V80
00	100	7,5	B228460	1C763.	Y	0,20	3	NH00GG69V100
00	125	10,0	C228461	1C765.	Y	0,20	3	NH00GG69V125
0	6	1,6	D228462	1C023.	Y	0,27	3	NH0GG69V6
0	10	1,1	E228463	1C031.	Y	0,27	3	NH0GG69V10
0	16	1,8	F228464	1C035.	Y	0,27	3	NH0GG69V16
0	20	2,3	G228465	1C037.	Y	0,27	3	NH0GG69V20
0	25	2,4	H228466	1C039.	Y	0,27	3	NH0GG69V25
0	32	3,1	J228467	1C043.	Y	0,27	3	NH0GG69V32
0	35	3,0	K228468	1C045.	Y	0,27	3	NH0GG69V35
0	40	3,7	L228469	1C047.	Y	0,27	3	NH0GG69V40
0	50	4,1	M228470	1C051.	Y	0,27	3	NH0GG69V50
0	63	6,6	N228471	1C055.	Y	0,27	3	NH0GG69V63
0	80	8,0	P228472	1C059.	Y	0,27	3	NH0GG69V80
0	100	9,4	Q228473	1C063.	Y	0,27	3	NH0GG69V100
0	125	11,8	R228474	1C065.	Y	0,27	3	NH0GG69V125
0	160	14,6	S228475	1C069.	Y	0,27	3	NH0GG69V160
1	16	1,8	T228476	1C135.	N	0,26	3	NH1GG69V16
1	20	2,3	V228477	1C137.	N	0,26	3	NH1GG69V20
1	25	2,4	W228478	1C139.	N	0,26	3	NH1GG69V25
1	32	3,1	X228479	1C143.	N	0,26	3	NH1GG69V32
1	35	3,0	Y228480	1C145.	N	0,26	3	NH1GG69V35
1	40	3,7	Z228481	1C147.	N	0,26	3	NH1GG69V40
1	50	4,1	A228482	1C151.	N	0,26	3	NH1GG69V50
1	63	6,6	B228483	1C155.	N	0,26	3	NH1GG69V63
1	80	8,0	C228484	1C159.	N	0,26	3	NH1GG69V80
1	100	9,4	D228485	1C163.	N	0,26	3	NH1GG69V100
1	125	11,8	E228486	1C165.	N	0,42	3	NH1GG69V125
1	160	14,6	F228487	1C169.	N	0,42	3	NH1GG69V160
1	200	18,0	G228488	1C171.	Y	0,42	3	NH1GG69V200
1	224	19,0	V233261	1C173.	Y	0,42	3	NH1GG69V224
1	250	20,0	W233262	1C175.	Y	0,42	3	NH1GG69V250

(1) Suitable for Microswitch describes page 106

NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG 690V Size 000 to 4a



Cd/Pb-free

NH-fuses, 690VAC gG

with non-isolated gripping lugs, doubleindicator, contact blades, complying with DIN VDE 0636 Part 201 and IEC 60269-2-1

Size	Rated current I_N(A)	Power dissipation (W)		FS ref.-no.	Previous ref.	Micro-switch[1]	weight kg/pce	pack.	Catalog Number
2	32	3,1		H228489	1C243.	N	0,42	3	NH2GG69V32
2	35	3,0		J228490	1C245.	N	0,42	3	NH2GG69V35
2	40	3,7		K228491	1C247.	N	0,42	3	NH2GG69V40
2	50	4,1		L228492	1C251.	N	0,42	3	NH2GG69V50
2	63	6,8		M228493	1C255.	N	0,42	3	NH2GG69V63
2	80	8,3		N228494	1C259.	N	0,42	3	NH2GG69V80
2	100	10,7		P228495	1C263.	N	0,42	3	NH2GG69V100
2	125	12,2		Q228496	1C265.	Y	0,42	3	NH2GG69V125
2	160	15,0		R228497	1C269.	Y	0,42	3	NH2GG69V160
2	200	18,5		S228498	1C271.	Y	0,42	3	NH2GG69V200
2	224	19,2		T228499	1C273.	Y	0,42	3	NH2GG69V224
2	250	20,6		V228500	1C275.	Y	0,42	3	NH2GG69V250
2	300	21,0		W228501	1C277.	Y	0,64	3	NH2GG69V300
2	315	25,0		X228502	1C279.	Y	0,65	3	NH2GG69V315
2	355	31,5		Y228503	1C281.	Y	0,65	3	NH2GG69V355
3	250	21,1		Z228504	1C375.	N	0,65	1	NH3GG69V250
3	300	22,6		A228505	1C377.	N	0,65	1	NH3GG69V300
3	315	25,0		B228506	1C379.	Y	0,65	1	NH3GG69V315
3	355	32,0		C228507	1C381.	Y	0,65	1	NH3GG69V355
3	400	34,0		D228508	1C383.	Y	1,05	1	NH3GG69V400
3	425	34,0		E228509	1C385.	Y	1,05	1	NH3GG69V425
3	500	43,0		F228510	1C387.	Y	1,05	1	NH3GG69V500
with screw contact									
4	400	31,0	*)	N214004	8004.400765	N	2,00	1	NH4GG69V400-8
4	500	35,0	*)	Y215025	8004.500765	N	2,00	1	NH4GG69V500-8
4	630	46,6	*)	E215537	8004.630765	N	2,00	1	NH4GG69V630-8
4	800	70,0	*)	K216554	8004.800765	N	2,00	1	NH4GG69V800-8
contact blades for NH-bottom size 4a with swivel unit									
4a	400	31,0	*)	W217070	8014.400765	N	1,95	1	NH4AGG69V400-8
4a	500	35,0	*)	H217587	8014.500765	N	1,95	1	NH4AGG69V500-8
4a	630	46,6	*)	W222107	8014.630765	N	1,95	1	NH4AGG69V630-8
4a	800	70,0	*)	M222858	8014.800765	N	1,95	1	NH4AGG69V800-8

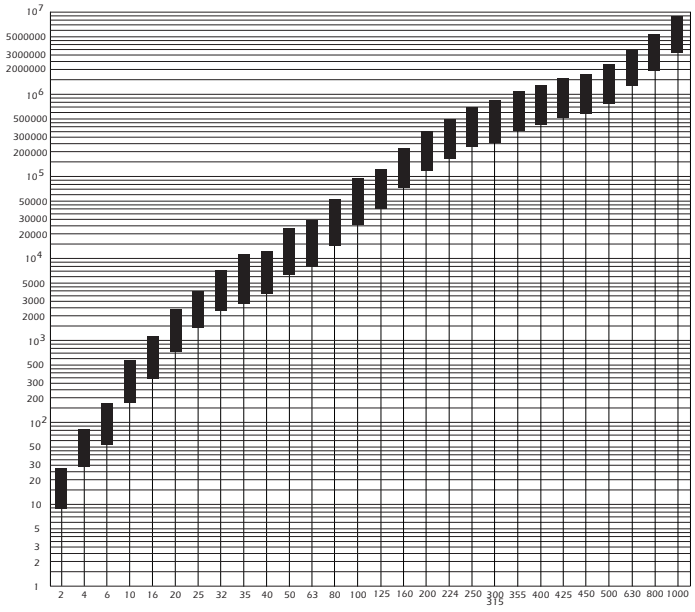
**) with indicator on top*

(1) Suitable for Microswitch describes page 106

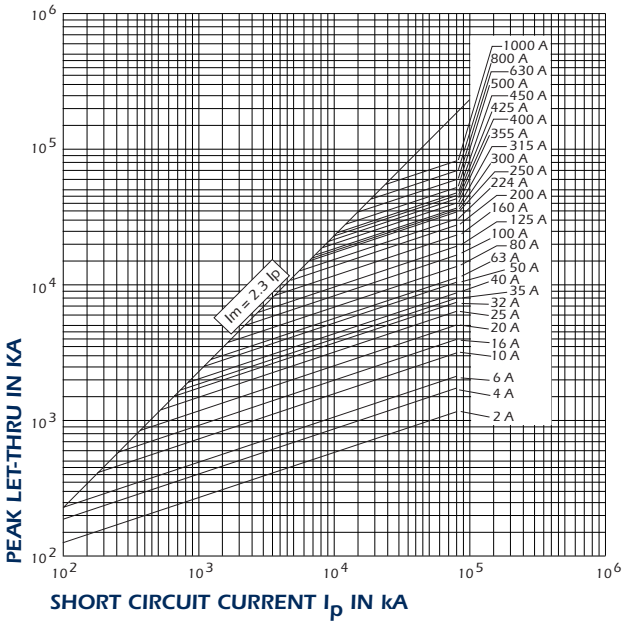
NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG Curves Set

NH-fuses, 690VAC gG

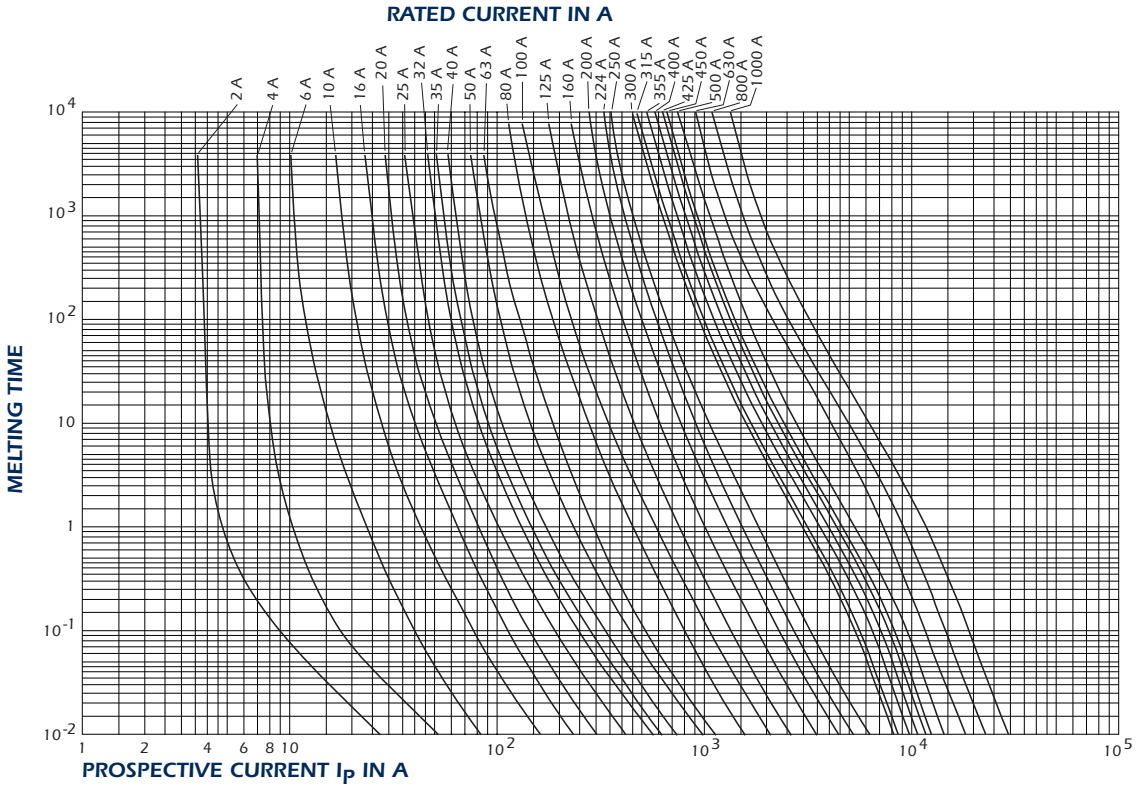
Total Clearing I²t



Current Limitation Curves



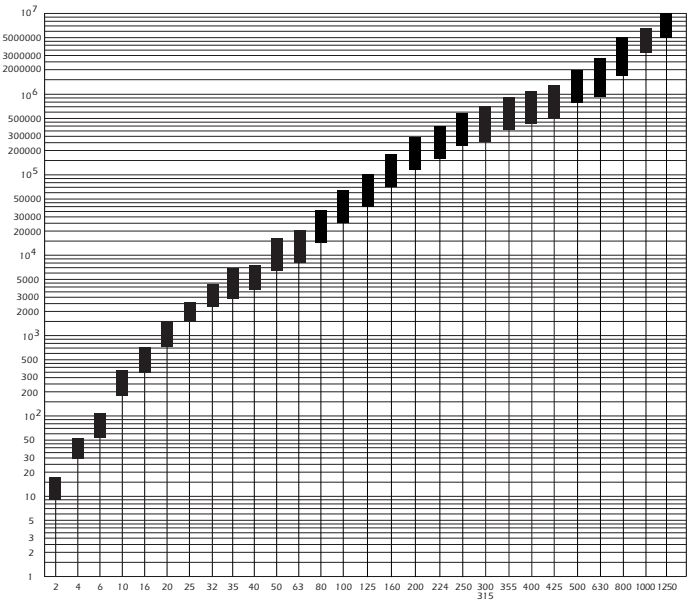
Time VS. Current



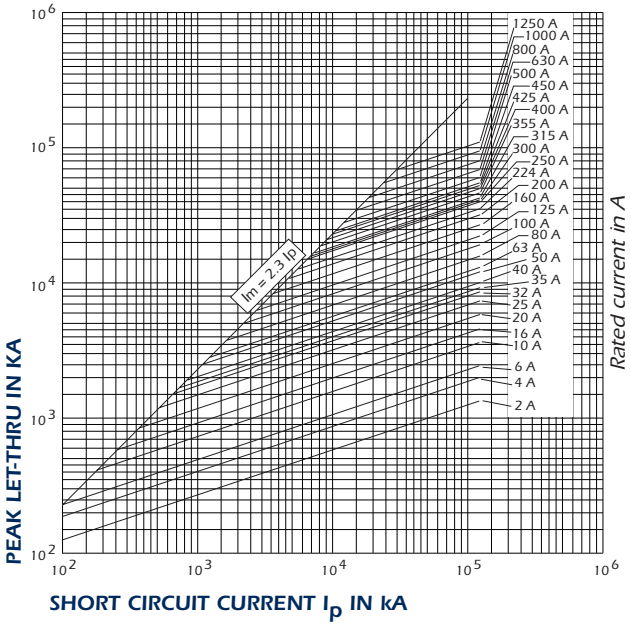
NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG Curves Set

NH-fuses, 500VAC gG

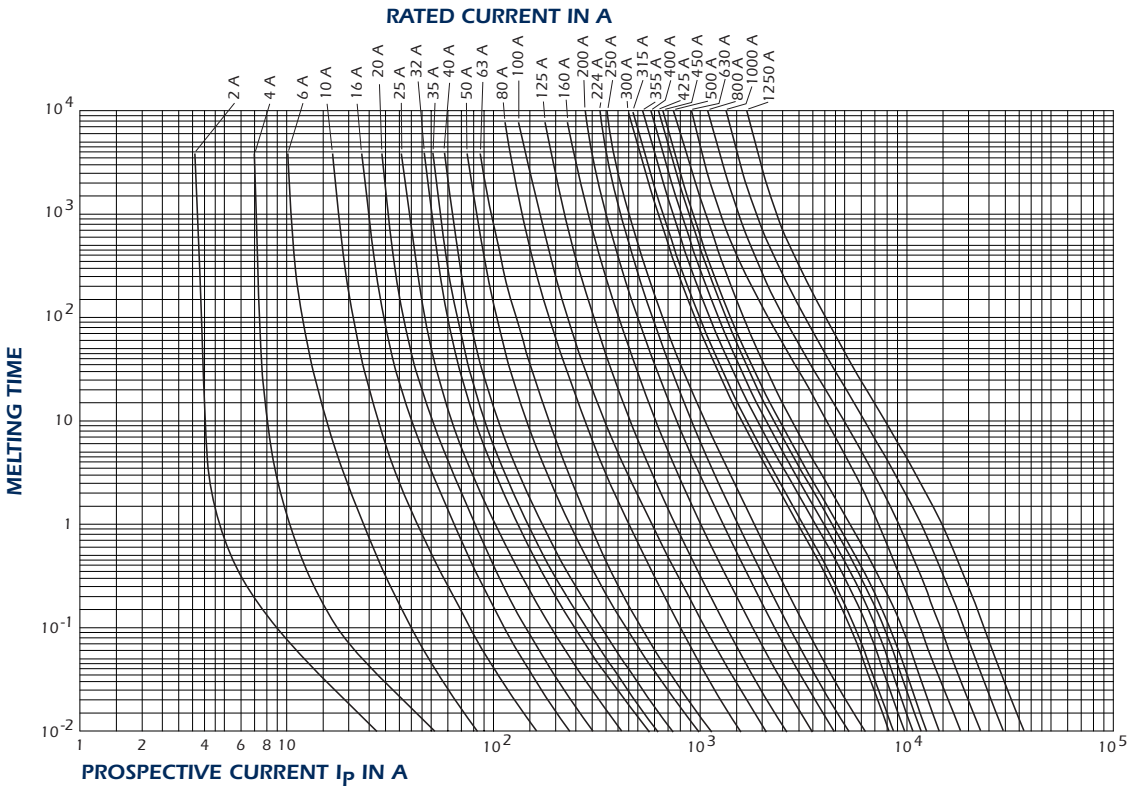
Total Clearing I²t



Current Limitation Curves



Time VS. Current Characteristics

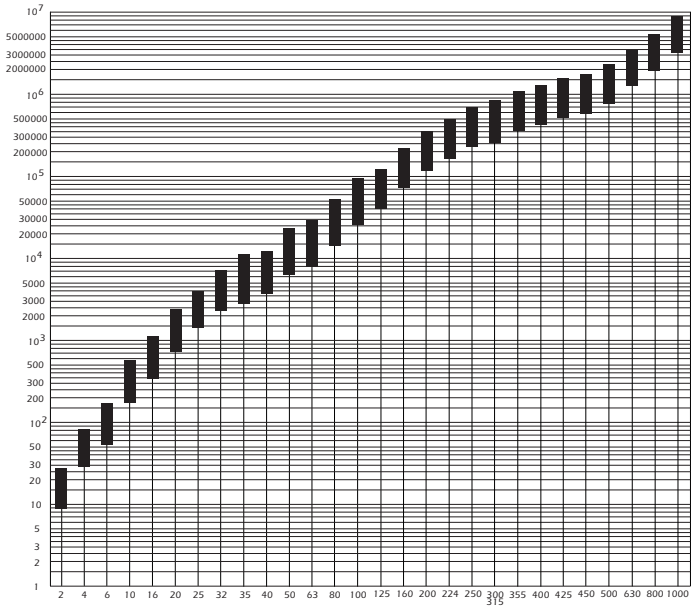


Ferraz Shawmut

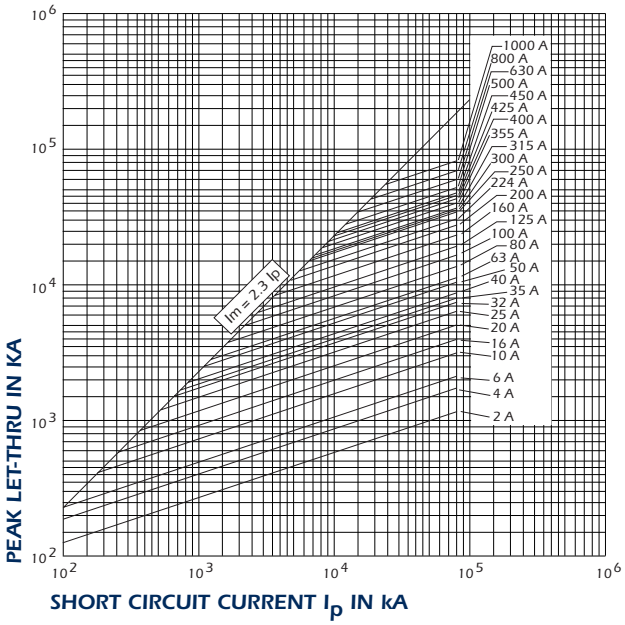
NH Fuses (Plain Blades)
gG 400V, 500V, 690V
gG Curves Set

NH-fuses, 690VAC gG

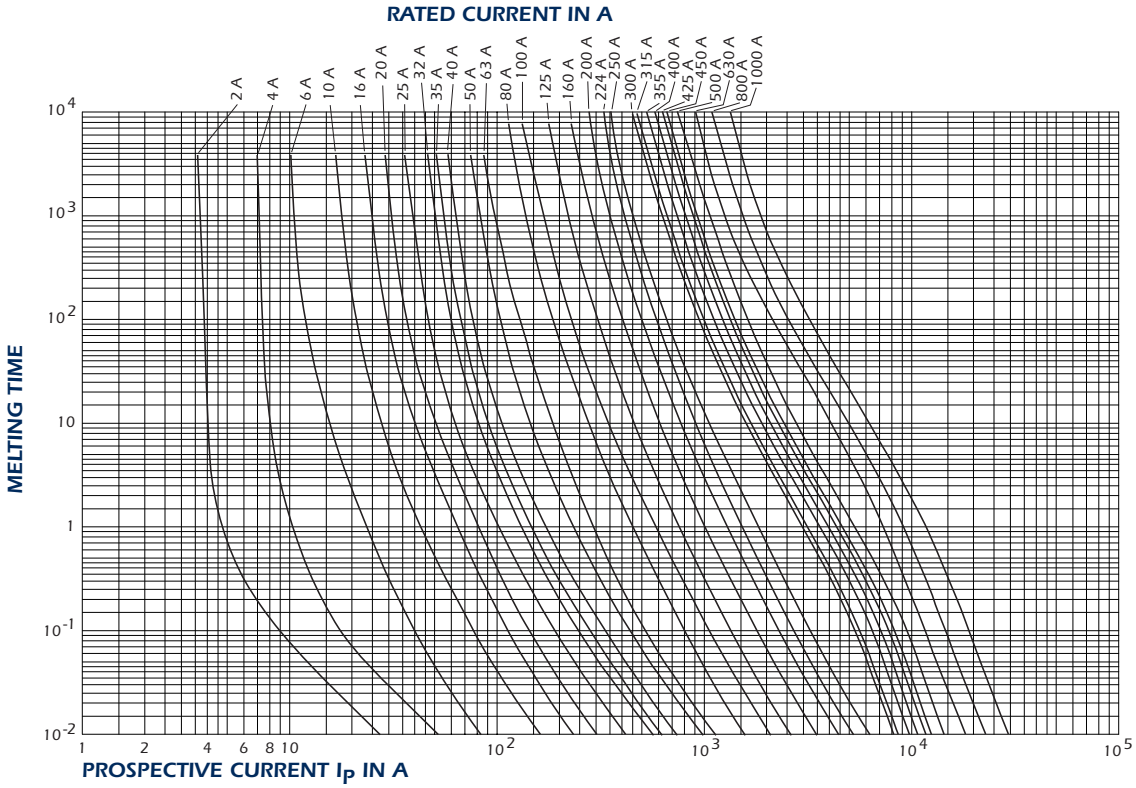
Total Clearing I²t



Current Limitation Curves



Time VS. Current



NH Fuses (Plain Blades)
gG 400V, 500V, 690V

NH Fuse System



DIN 57 636/VDE 0636 Parts 1, 10, 21, 22, 201

IEC 60269-2

DIN 43 620 Parts 1 to 4 (Standard dimensions)

The use category is identified by two letters, the first indicating the operational class and the second the object to be protected.
The Ferraz shawmut range includes fuse-links to DIN VDE 0636 standard for the following uses categories:

gG: general purpose cable and line protection
aM: Partial purpose, motor circuit protection
gTr: general purpose, transformer protection
gR: general purpose, fast acting
aR: partial purpose, fast acting

Classification

The NH system is classed among plug-in fuse systems and is comprised of:
- fuse-base, (possibly including terminal covers and phase barriers)
- fuse-link with blade contact
- fuse-link replacement device (LV HRC fuse puller)

Since the design of this system cannot guarantee non-interchangeability of rated current, it must be handled by a qualified professional.

Approval symbols

Germany

Austria

Switzerland

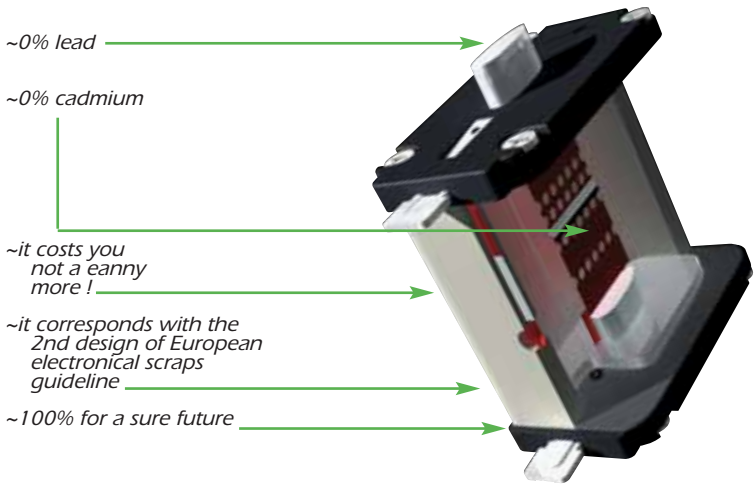
Netherlands



Beige melted



Red non melted



Ferraz Shawmut

NH Fuses (Plain Blades)
aM 500V, 690V
aM 500V Size 000 to 4a



Cd/Pb-free

NH-fuses, 500VAC aM

with non-isolated gripping lugs, double indicator, contact blades, complying with DIN VDE 0636 Part 201and IEC 60269-2-1

Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	Micro-switch[1]	weight kg/pce	pack.	Catalog Number
000	2	0,1	K232493	2B613.	Y	0,13	3	NH000AM50V2
000	4	0,2	L232494	2B619.	Y	0,13	3	NH000AM50V4
000	6	0,3	M232495	2B623.	Y	0,13	3	NH000AM50V6
000	10	0,5	N232496	2B631.	Y	0,13	3	NH000AM50V10
000	16	0,7	P232497	2B635.	Y	0,13	3	NH000AM50V16
000	20	0,9	Q232498	2B637.	Y	0,13	3	NH000AM50V20
000	25	1,2	R232499	2B639.	Y	0,13	3	NH000AM50V25
000	32	1,5	S232500	2B643.	Y	0,13	3	NH000AM50V32
000	35	1,6	T232501	2B645.	Y	0,13	3	NH000AM50V35
000	40	1,8	V232502	2B647.	Y	0,13	3	NH000AM50V40
000	50	2,3	W232503	2B651.	Y	0,13	3	NH000AM50V50
000	63	2,9	X232504	2B655.	Y	0,13	3	NH000AM50V63
000	80	3,6	C227863	2B659.	Y	0,13	3	NH000AM50V80
00	100	5,8	Y232505	2B763.	Y	0,20	3	NH00AM50V100
00	125	6,4	Z232506	2B765.	Y	0,20	3	NH00AM50V125
00	160	7,9	J227869	2B769.	Y	0,20	3	NH00AM50V160
0	100	6,0	A232507	2B063.	Y	0,26	3	NH0AM50V100
0	125	7,9	B232508	2B065.	Y	0,26	3	NH0AM50V125
0	160	10,5	C232509	2B069.	Y	0,26	3	NH0AM50V160
0	200	11,8	A227884	2B071.	Y	0,26	3	NH0AM50V200
1	100	5,8	D232510	2B163.	Y	0,42	3	NH1AM50V100
1	125	7,5	E232511	2B165.	Y	0,42	3	NH1AM50V125
1	160	10,4	F232512	2B169.	Y	0,42	3	NH1AM50V160
1	200	14,2	G232513	2B171.	Y	0,42	3	NH1AM50V200
1	224	15,8	H232514	2B173.	Y	0,42	3	NH1AM50V224
1	250	17,5	J232515	2B175.	Y	0,42	3	NH1AM50V250
1	315	22,1	K227962	2B179.	Y	0,42	3	NH1AM50V315
2	250	16,8	K232516	2B275.	Y	0,64	3	NH2AM50V250
2	315	23,1	L232517	2B279.	Y	0,64	3	NH2AM50V315
2	355	26,4	M232518	2B281.	Y	0,64	3	NH2AM50V355
2	400	29,7	N232519	2B283.	Y	0,64	3	NH2AM50V400
2	500	34,4	C227978	2B287.	Y	0,64	3	NH2AM50V500
3	315	21,0	P232520	2B379.	Y	1,05	1	NH3AM50V315
3	355	23,3	Q232521	2B381.	Y	1,05	1	NH3AM50V355
3	400	29,1	R232522	2B383.	Y	1,05	1	NH3AM50V400
3	425	29,1	S232523	2B385.	Y	1,05	1	NH3AM50V425
3	450	34,0	T232524	2B386.	Y	1,05	1	NH3AM50V450
3	500	42,0	V232525	2B387.	Y	1,05	1	NH3AM50V500
3	630	42,0	M227987	2B389.	Y	1,05	1	NH3AM50V630
with screw contact								
4	400	26,0 *)	P233555	8004.400505	N	2,18	1	NH4AM50V400-8
4	500	38,0 *)	Q233556	8004.500505	N	2,18	1	NH4AM50V500-8
4	630	50,0 *)	E222115	8004.630505	N	2,18	1	NH4AM50V630-8
4	800	65,0 *)	V222865	8004.800505	N	2,18	1	NH4AM50V800-8
4	1000	80,0 *)	S219137	8004.100505	N	2,18	1	NH4AM50V1000-8
4	1250	110,0 *)	V219668	8004.125505	N	2,21	1	NH4AM50V1250-8
contact blades for NH-bottom size 4a with swivel unit								
4a	500	38,0 *)	R233557	8014.500505	N	2,00	1	NH4AAM50V500-8
4a	630	50,0 *)	S233558	8014.630505	N	2,00	1	NH4AAM50V630-8
4a	800	65,0 *)	T233559	8014.800505	N	2,00	1	NH4AAM50V800-8
4a	1000	80,0 *)	V233560	8014.100505	N	2,00	1	NH4AAM50V1000-8
4a	1250	110,0 *)	W233561	8014.125505	N	2,00	1	NH4AAM50V1250-8

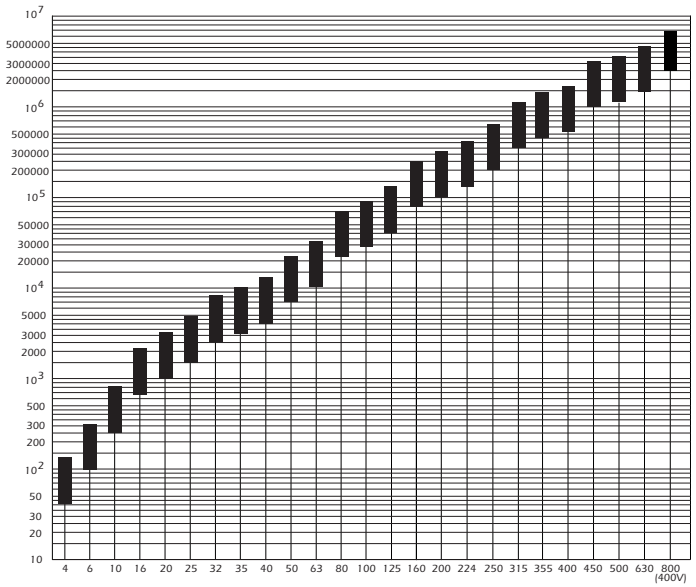
**) with indicator on top*

(1) Suitable for Microswitch describes page 106

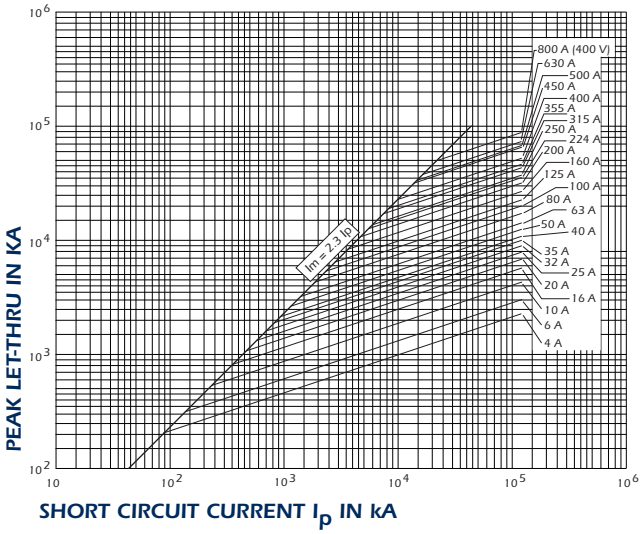
NH Fuses (Plain Blades) aM 500V, 690V aM Curves Set

NH-fuses, 500VAC aM

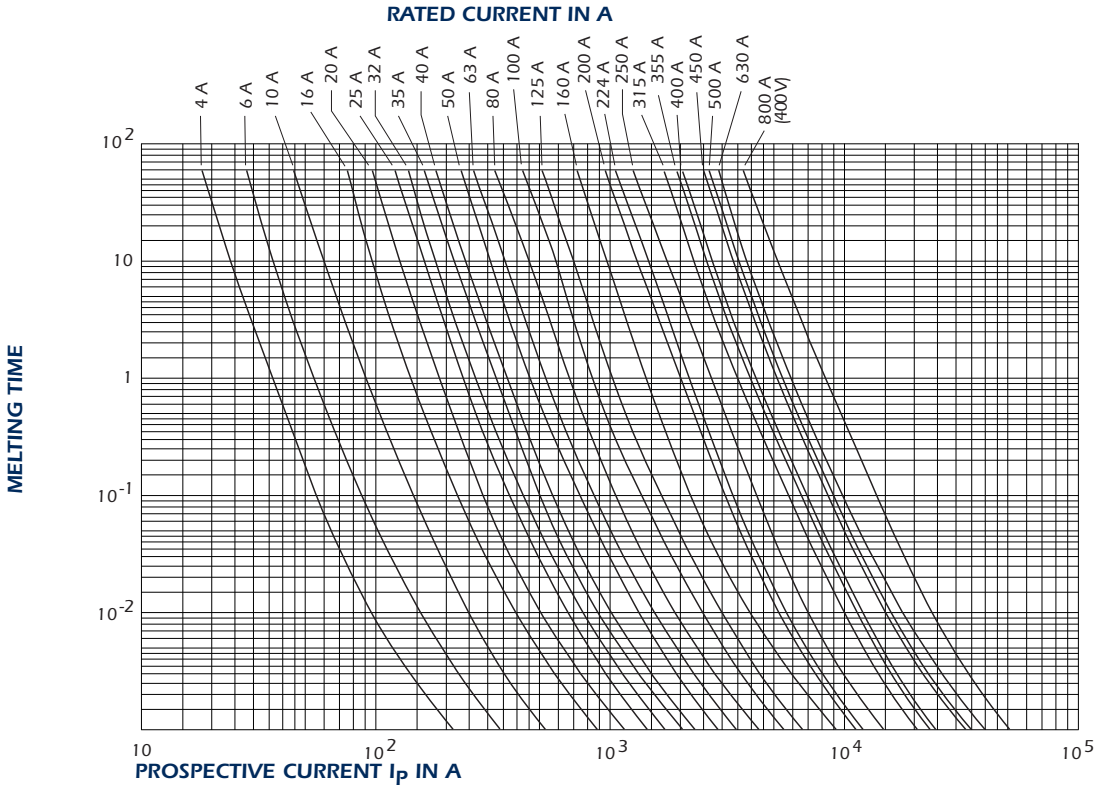
Total Clearing I²t



Current Limitation Curves



Time VS. Current Characteristics



NH Fuses (Plain Blades)
gG 400V, 500V, 690V

NH Fuse System



DIN 57 636/VDE 0636 Parts 1, 10, 21, 22, 201

IEC 60269-2

DIN 43 620 Parts 1 to 4 (Standard dimensions)

The use category is identified by two letters, the first indicating the operational class and the second the object to be protected.
The Ferraz shawmut range includes fuse-links to DIN VDE 0636 standard for the following uses categories:

gG: general purpose cable and line protection
aM: Partial purpose, motor circuit protection
gTr: general purpose, transformer protection
gR: general purpose, fast acting
aR: partial purpose, fast acting

Classification

The NH system is classed among plug-in fuse systems and is comprised of:
- fuse-base, (possibly including terminal covers and phase barriers)
- fuse-link with blade contact
- fuse-link replacement device (LV HRC fuse puller)

Since the design of this system cannot guarantee non-interchangeability of rated current, it must be handled by a qualified professional.

Approval symbols

Germany

Austria

Switzerland

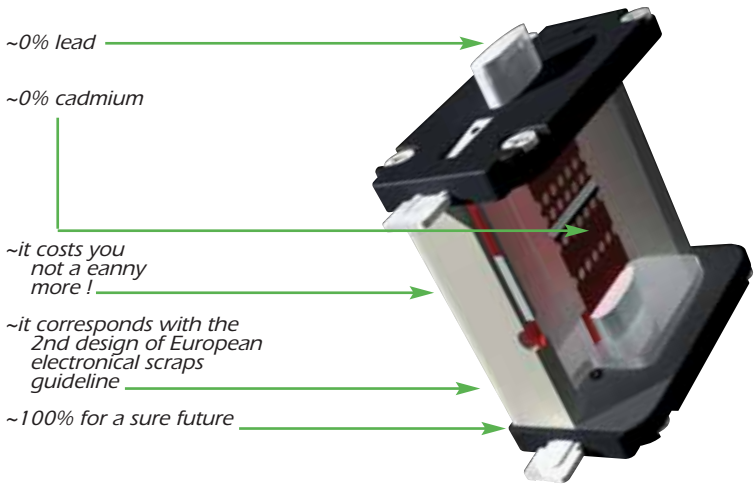
Netherlands



Beige melted



Red non melted



Ferraz Shawmut

NH Fuses (Plain Blades)
aM 500V, 690V
aM 690V Size 000 to 4a



Cd/Pb-free

NH-fuses, 690VAC aM

with non-isolated gripping lugs, double indicator, contact blades, complying with DIN VDE 0636 Part 201 and IEC 60269-2-1

Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	Micro-switch(1)	weight kg/pce	pack.	Catalog Number
000	2	0,1	P227851	2C613.	Y	0,13	3	NH000AM69V2
000	4	0,2	Q227852	2C619.	Y	0,13	3	NH000AM69V4
000	6	0,3	R227853	2C623.	Y	0,13	3	NH000AM69V6
000	10	0,5	S227854	2C631.	Y	0,13	3	NH000AM69V10
000	16	0,7	T227855	2C635.	Y	0,13	3	NH000AM69V16
000	20	0,9	V227856	2C637.	Y	0,13	3	NH000AM69V20
000	25	1,2	W227857	2C639.	Y	0,13	3	NH000AM69V25
000	32	1,5	X227858	2C643.	Y	0,13	3	NH000AM69V32
000	35	1,6	Y227859	2C645.	Y	0,13	3	NH000AM69V35
000	40	1,8	Z227860	2C647.	Y	0,13	3	NH000AM69V40
000	50	2,3	A227861	2C651.	Y	0,13	3	NH000AM69V50
000	63	2,9	B227862	2C655.	Y	0,13	3	NH000AM69V63
00	50	2,3	D227864	2C751.	Y	0,20	3	NH00AM69V50
00	63	2,9	E227865	2C755.	Y	0,20	3	NH00AM69V63
00	80	3,6	F227866	2C759.	Y	0,20	3	NH00AM69V80
00	100	5,2	G227867	2C763.	Y	0,20	3	NH00AM69V100
00	125	6,4	H227868	2C765.	Y	0,20	3	NH00AM69V125
0	6	0,3	K227870	2C023.	Y	0,26	3	NH0AM69V6
0	10	0,5	L227871	2C031.	Y	0,26	3	NH0AM69V10
0	16	0,8	M227872	2C035.	Y	0,26	3	NH0AM69V16
0	20	1,0	N227873	2C037.	Y	0,26	3	NH0AM69V20
0	25	1,3	P227874	2C039.	Y	0,26	3	NH0AM69V25
0	32	1,6	Q227875	2C043.	Y	0,26	3	NH0AM69V32
0	35	1,7	R227876	2C045.	Y	0,26	3	NH0AM69V35
0	40	2,0	S227877	2C047.	Y	0,26	3	NH0AM69V40
0	50	2,8	T227878	2C051.	Y	0,26	3	NH0AM69V50
0	63	3,4	V227879	2C055.	Y	0,26	3	NH0AM69V63
0	80	4,9	W227880	2C059.	Y	0,26	3	NH0AM69V80
0	100	6,0	X227881	2C063.	Y	0,26	3	NH0AM69V100
0	125	7,9	Y227882	2C065.	Y	0,26	3	NH0AM69V125
0	160	10,5	Z227883	2C069.	Y	0,26	3	NH0AM69V160
1	16	1,0	B227885	2C135.	Y	0,43	3	NH1AM69V16
1	20	1,2	C227886	2C137.	Y	0,43	3	NH1AM69V20
1	25	1,4	D227887	2C139.	Y	0,43	3	NH1AM69V25
1	32	1,9	E227888	2C143.	Y	0,43	3	NH1AM69V32
1	35	2,0	F227889	2C145.	Y	0,43	3	NH1AM69V35
1	40	2,3	G227890	2C147.	Y	0,43	3	NH1AM69V40
1	50	2,9	H227891	2C151.	Y	0,43	3	NH1AM69V50
1	63	3,6	J227892	2C155.	Y	0,43	3	NH1AM69V63
1	80	4,6	K227893	2C159.	Y	0,43	3	NH1AM69V80
1	100	5,8	L227894	2C163.	Y	0,43	3	NH1AM69V100
1	125	7,5	M227895	2C165.	Y	0,43	3	NH1AM69V125
1	160	10,4	N227896	2C169.	Y	0,43	3	NH1AM69V160
1	200	14,2	P227897	2C171.	Y	0,43	3	NH1AM69V200
1	224	15,8	Q227898	2C173.	Y	0,43	3	NH1AM69V224
1	250	17,5	R227899	2C175.	Y	0,43	3	NH1AM69V250

(1) Suitable for Microswitch describes page 106

NH Fuses (Plain Blades)
aM 500V, 690V
aM 690V Size 000 to 4a



Cd/Pb-free

NH-fuses, 690VAC aM

with non-isolated gripping lugs, double indicator, contact blades, complying with DIN VDE 0636 Part 201and IEC 60269-2-1

Size	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	Micro-switch[1]	weight kg/pce	pack.	Catalog Number
2	35	1,8	L227963	2C245.	Y	0,64	3	NH2AM69V35
2	40	2,1	M227964	2C247.	Y	0,64	3	NH2AM69V40
2	50	2,7	N227965	2C251.	Y	0,64	3	NH2AM69V50
2	63	3,4	P227966	2C255.	Y	0,64	3	NH2AM69V63
2	80	4,4	Q227967	2C259.	Y	0,64	3	NH2AM69V80
2	100	5,5	R227968	2C263.	Y	0,64	3	NH2AM69V100
2	125	6,4	S227969	2C265.	Y	0,64	3	NH2AM69V125
2	160	9,3	T227970	2C269.	Y	0,64	3	NH2AM69V160
2	200	11,3	V227971	2C271.	Y	0,64	3	NH2AM69V200
2	224	12,2	W227972	2C273.	Y	0,64	3	NH2AM69V224
2	250	16,8	X227973	2C275.	Y	0,64	3	NH2AM69V250
2	300	21,0	Y227974	2C277.	Y	0,64	3	NH2AM69V300
2	315	23,1	Z227975	2C279.	Y	0,64	3	NH2AM69V315
2	355	26,4	A227976	2C281.	Y	0,64	3	NH2AM69V355
2	400	29,7	B227977	2C283.	Y	0,64	3	NH2AM69V400
3	250	14,6	D227979	2C375.	Y	1,05	1	NH3AM69V250
3	300	21,0	E227980	2C377.	Y	1,05	1	NH3AM69V300
3	315	21,0	F227981	2C379.	Y	1,05	1	NH3AM69V315
3	355	23,3	G227982	2C381.	Y	1,05	1	NH3AM69V355
3	400	29,1	H227983	2C383.	Y	1,05	1	NH3AM69V400
3	425	29,1	J227984	2C385.	Y	1,05	1	NH3AM69V425
3	450	34,0	K227985	2C386.	Y	1,05	1	NH3AM69V450
3	500	42,0	L227986	2C387.	Y	1,05	1	NH3AM69V500
with screw contact								
4	400	26,0 *)	Q227990	8004.40056	N	2,00	1	NH4AM69V400-8
4	500	38,0 *)	R227991	8004.50056	N	2,00	1	NH4AM69V500-8
4	630	50,0 *)	S227992	8004.63056	N	1,75	1	NH4AM69V630-8
4	800	65,0 *)	T227993	8004.80056	N	1,75	1	NH4AM69V800-8
4	1000	80,0 *)	V227994	8004.10056	N	2,00	1	NH4AM69V1000-8
contact blades for NH-bottom size 4a with swivel unit								
4a	500	38,0 *)	X227996	8014.50056	N	1,95	1	NH4AAM69V500-8
4a	630	50,0 *)	Y227997	8014.63056	N	1,95	1	NH4AAM69V630-8
4a	800	65,0 *)	A227999	8014.80056	N	1,95	1	NH4AAM69V800-8
4a	1000	80,0 *)	B228000	8014.10056	N	1,95	1	NH4AAM69V1000-8

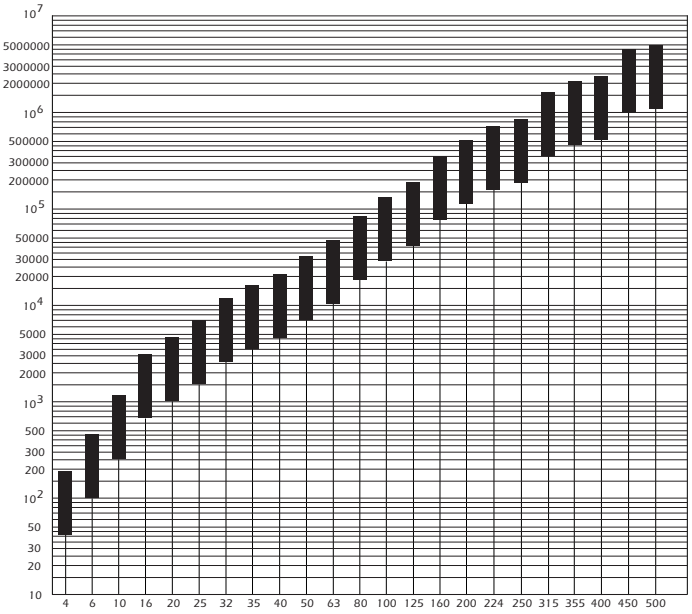
**) with indicator on top*

(1) Suitable for Microswitch describes page 106

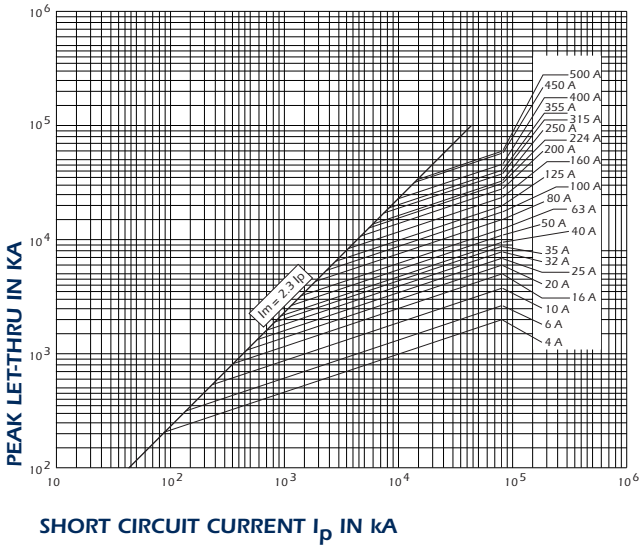
NH Fuses (Plain Blades)
aM 500V, 690V
aM Curves Set

NH-fuses, 690VAC aM

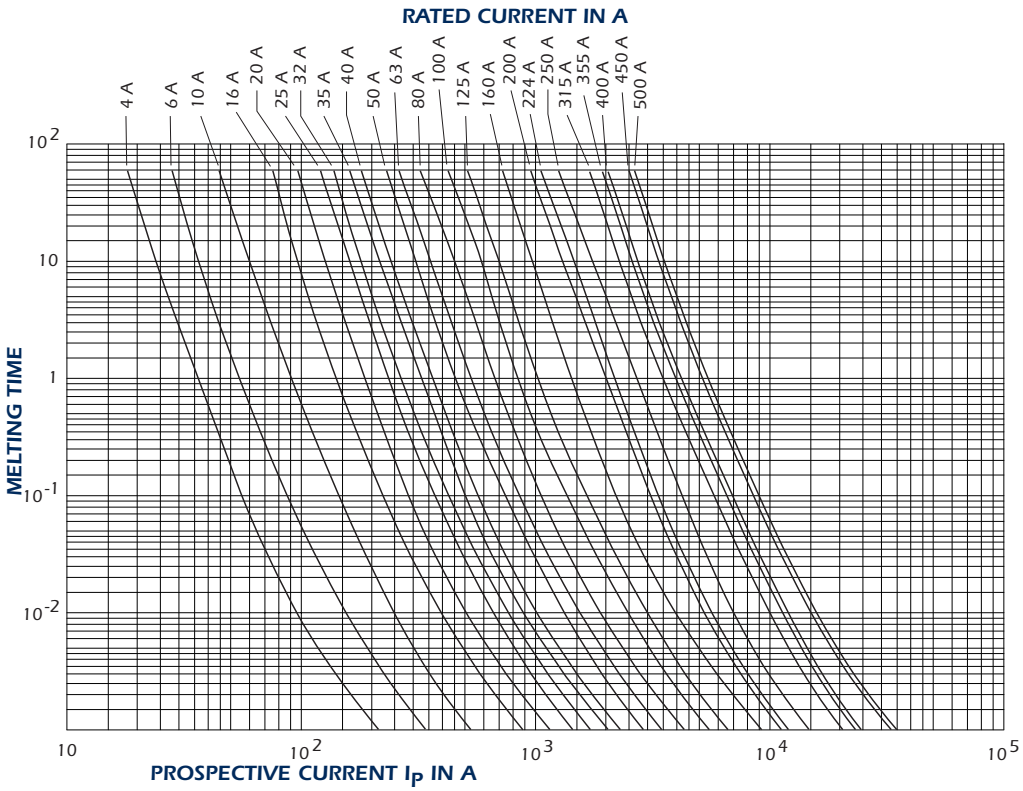
Total Clearing I²t



Current Limitation Curves



Time VS. Current Characteristics

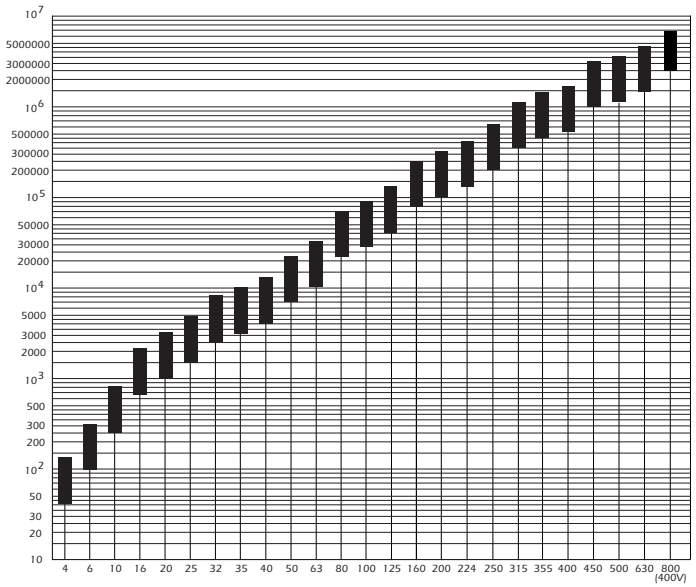


Ferraz Shawmut

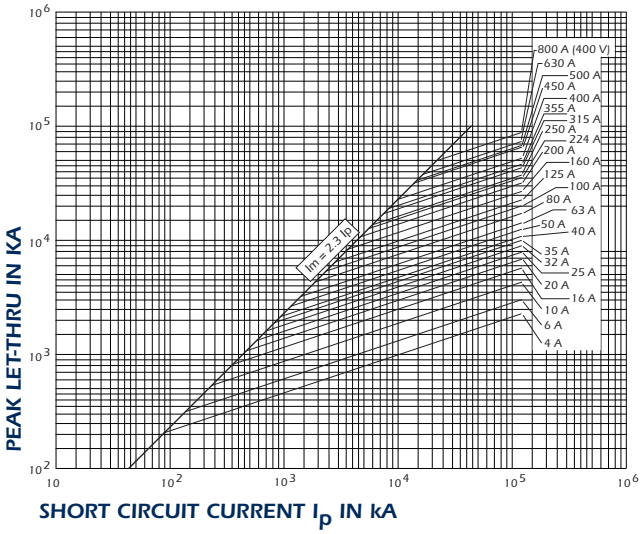
NH Fuses (Plain Blades) aM 500V, 690V aM Curves Set

NH-fuses, 500VAC aM

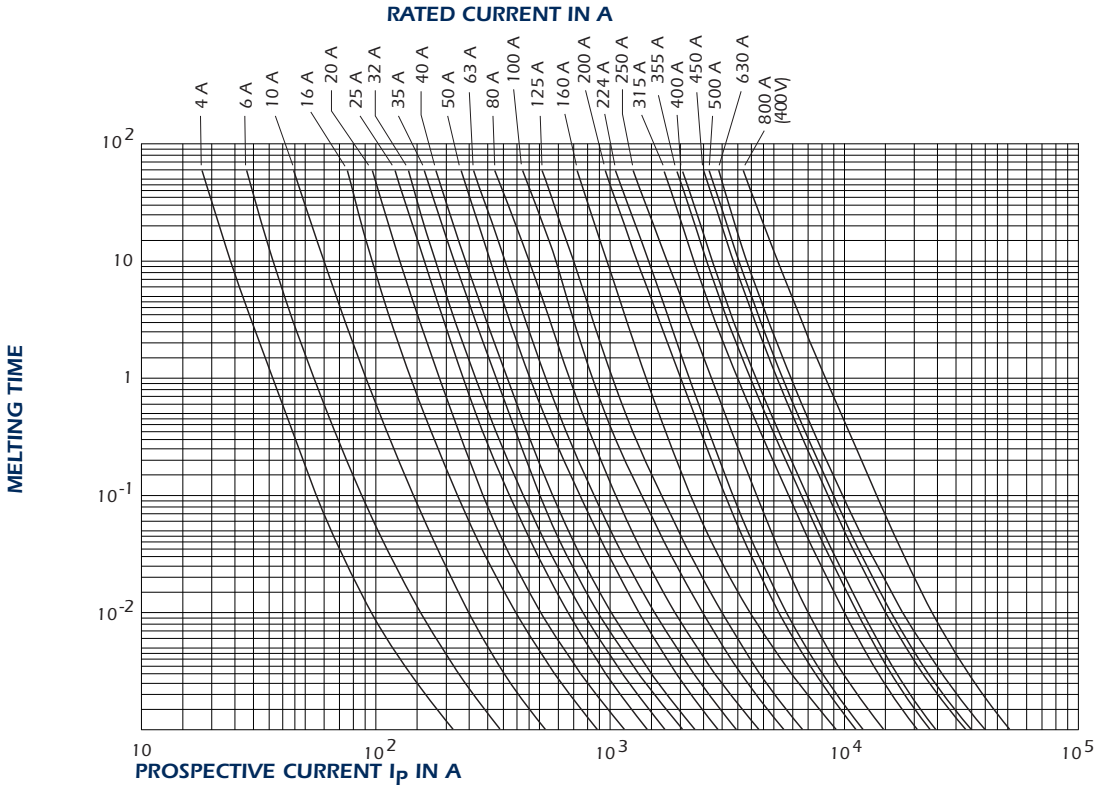
Total Clearing I²t



Current Limitation Curves



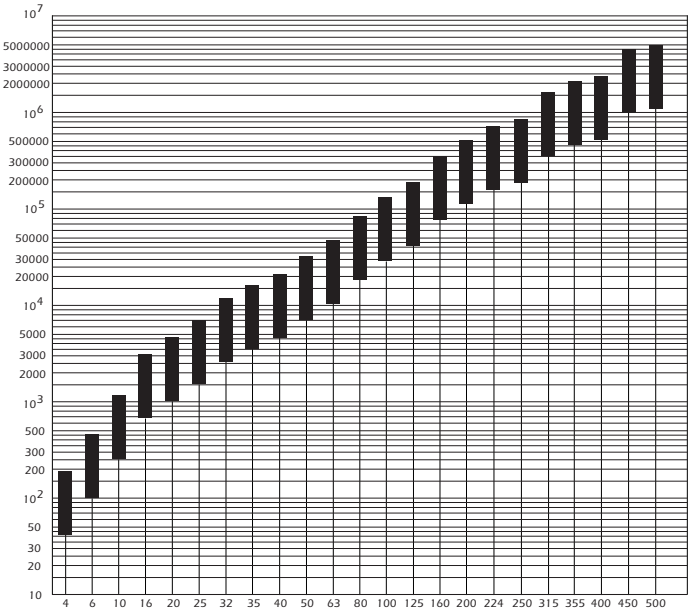
Time VS. Current Characteristics



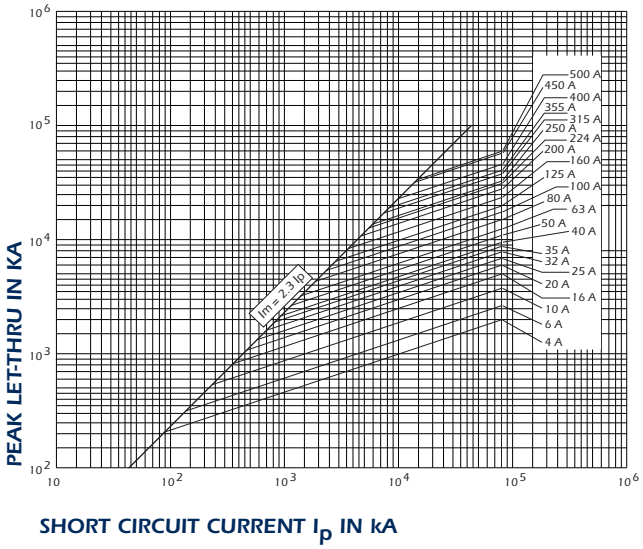
NH Fuses (Plain Blades)
aM 500V, 690V
aM Curves Set

NH-fuses, 690VAC aM

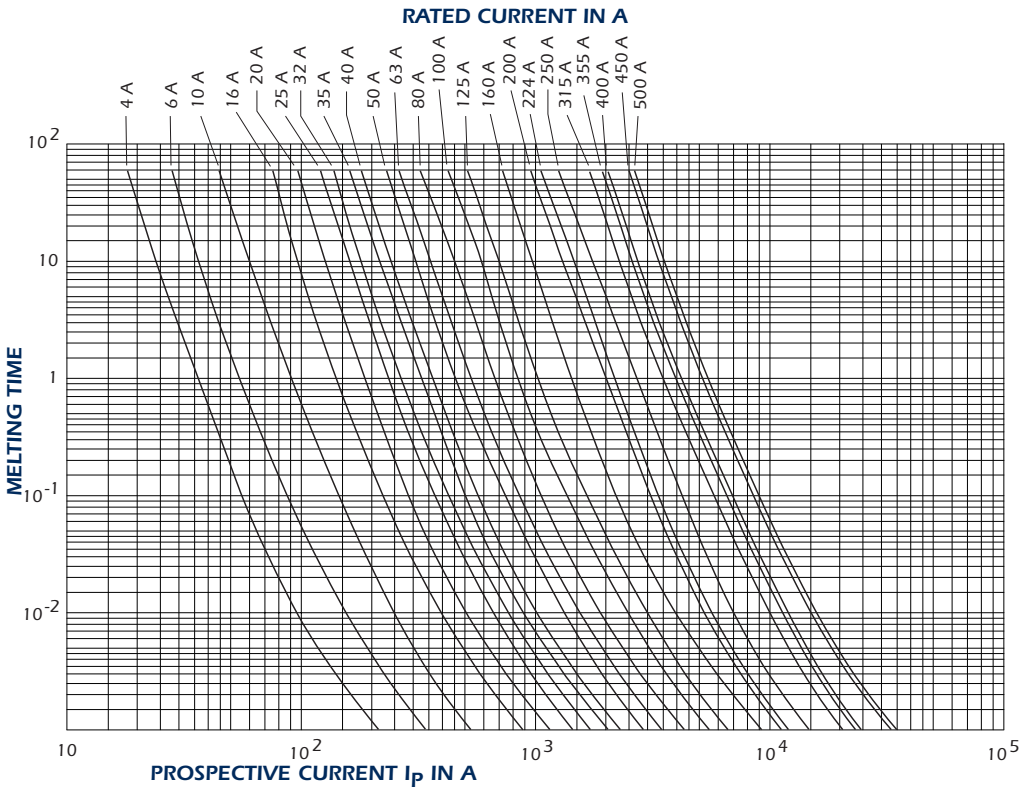
Total Clearing I²t



Current Limitation Curves



Time VS. Current Characteristics



Ferraz Shawmut



NH Fuses (Plain Blades) 400V gTr

NH-fuses, 400VAC gTr

with non-isolated gripping lugs, double indicator, contact blades, complying with DIN VDE 0636 Part 22, DIN VDE 0636 Part 201

Size	Voltage	Transformer capacity (kVA)	Rated current I_N(A)	Power dissipation (W)	FS ref.-no.	Previous ref.	weight kg/pce	pack.	Catalog Number
2	400	50,0	72		H232813[2]	5A251.	0,37	1	NH2GTR50KVA
2	400	75,0	108		G232812[2]	5A257.	0,37	1	NH2GTR75KVA
2	400	100,0	145	12,0	B232807[2]	5A263.	0,37	1	NH2GTR100KVA
2	400	125,0	181	15,0	C232808[2]	5A265.	0,37	1	NH2GTR125KVA
2	400	160,0	231	18,4	D232809[2]	5A269.	0,37	1	NH2GTR160KVA
2	400	200,0	289	22,0	E232810[2]	5A271.	0,37	1	NH2GTR200KVA
2	400	250,0	361	27,0	F232811[2]	5A275.	0,37	1	NH2GTR250KVA
3	400	250,0	361	26,0	J232814[2]	5A375.	0,61	1	NH3GTR250KVA
3	400	315,0	455	34,0	K232815[2]	5A379.	0,61	1	NH3GTR315KVA
3	400	400,0	578	39,0	L232816[2]	5A383.	0,61	1	NH3GTR400KVA
3	400	500,0	723		M232817	5A387.	0,81	1	NH3GTR500KVA
3	400	630,0	910		N232818	5A389.	0,81	1	NH3GTR630KVA
contact blades for NH-bottom size 4a with swivel unit									
4a	400	100,0	145	11,4 *)	T212997	8008.100005	2,09	1	NH4AGTR100KVA-8
4a	400	125,0	181	14,5 *)	Y213507	8008.125005	2,17	1	NH4AGTR125KVA-8
4a	400	160,0	231	17,8 *)	Z214014	8008.160005	1,95	1	NH4AGTR160KVA-8
4a	400	200,0	289	20,6 *)	C214523	8008.200005	1,95	1	NH4AGTR200KVA-8
4a	400	250,0	361	25,7 *)	F215032	8008.250005	2,13	1	NH4AGTR250KVA-8
4a	400	315,0	455	33,2 *)	M215544	8008.315005	1,95	1	NH4AGTR315KVA-8
4a	400	400,0	578	38,1 *)	S216055	8008.400005	1,95	1	NH4AGTR400KVA-8
4a	400	500,0	723	53,2 *)	V216563	8008.500005	1,95	1	NH4AGTR500KVA-8
4a	400	630,0	910	68,7 *)	E217078	8008.630005	1,95	1	NH4AGTR630KVA-8
4a	400	800,0	1155	90,4 *)	R217595	8008.800005	2,10	1	NH4AGTR800KVA-8

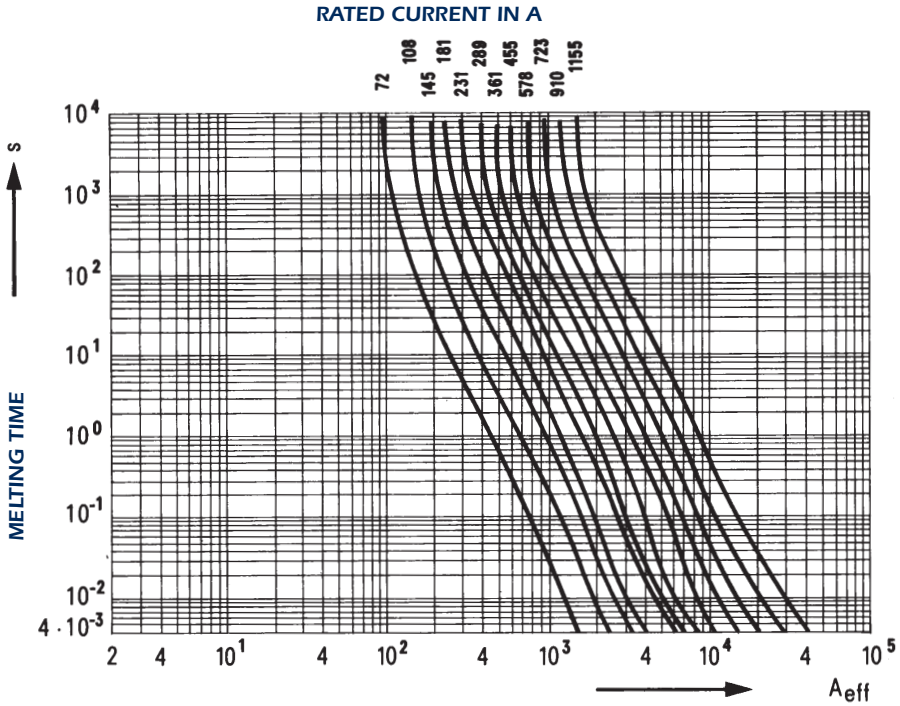
**) with indicator on top*

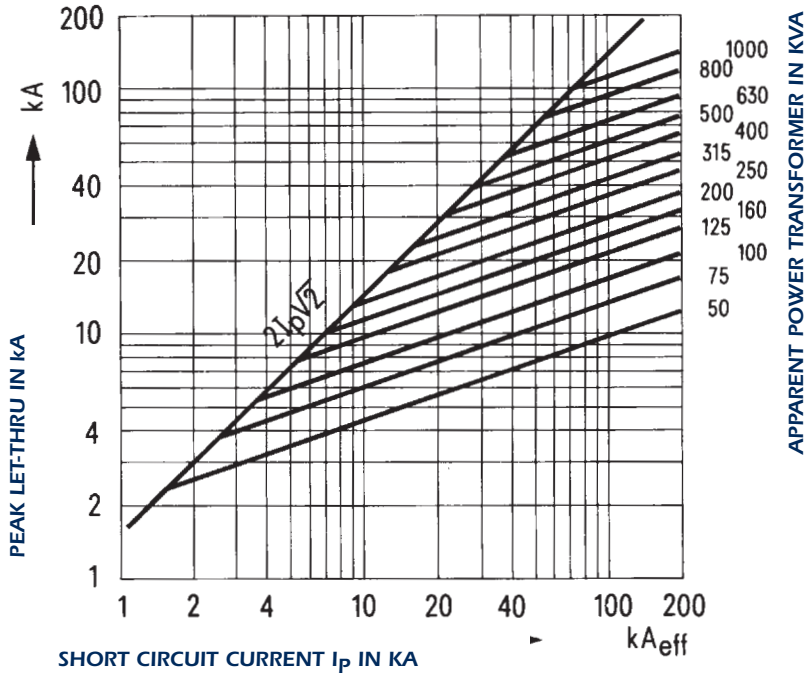
[2] These fuses are able to operate it 500VAC (tested at 550V +0 +5%).

NH Fuses (Plain Blades)
400V gTr
gTr Curves Set

NH-fuses, 400VAC gTr

Time VS. Current Characteristics

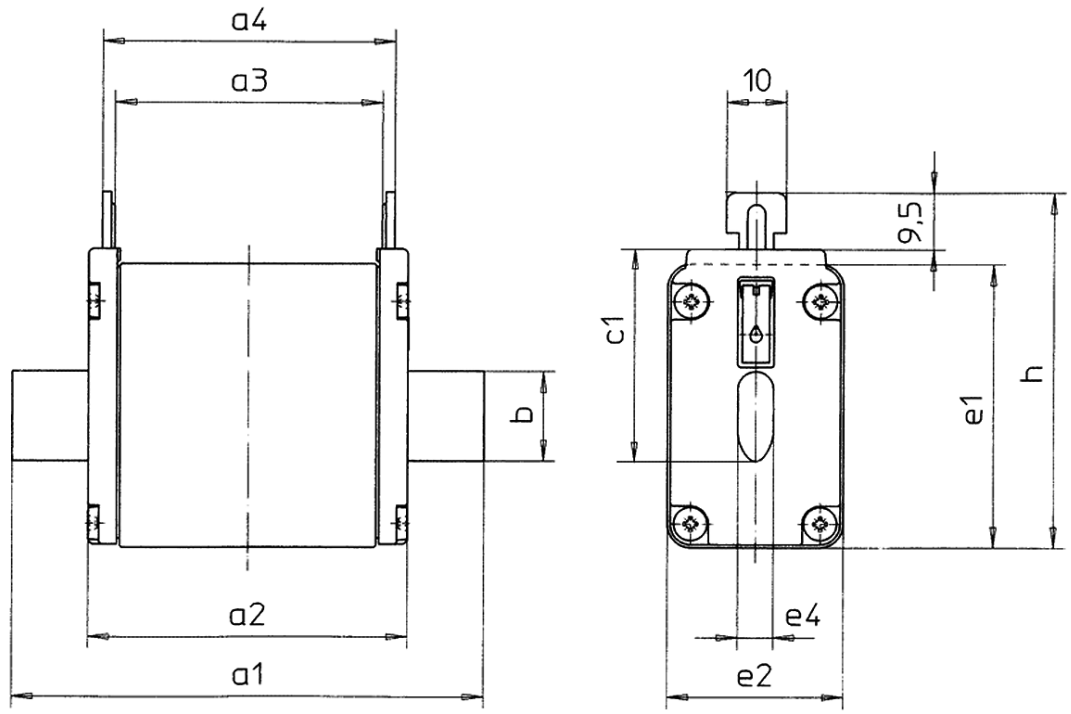




Ferraz Shawmut

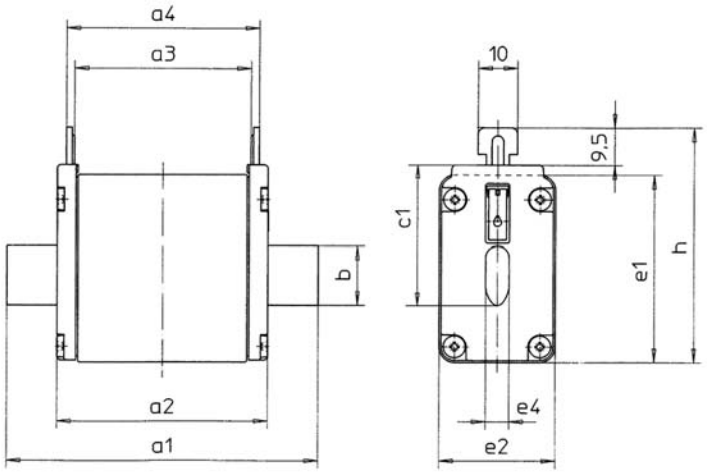
NH Fuses (Plain Blades)
gG/aM Mechanics for ceramic Body

NH Fuses-links



Size	Rated current I_N(A)	a1	a2	a3	a4	b	c1	e1	e2	e4	h
Standard 400V and 500V gG with non-isolated gripping lugs											
size 000	2 – 100A	79	52	45,5	49,5	15	35	40,5	20,8	6	52,5
size 00	125/160A	79	52,8	45	50	15	35	47,5	29,5	6	59,5
size 0	2 – 160A (500V)	125	66,8	61	66	15	35	47,5	29,5	6	59,5
size 116	100A (500V), 16 – 125A (400V)	135	70,8	63	68	15	40	47,5	29,5	6	64,5
size 1125	355A (500V),160 – 250A (400V)	135	70,8	63	68	20	40	52,5	39,5	6	64,5
size 2	16 – 250A	150	72,3	63	68	20	48	52,5	39,5	6	72,5
size 2	300 – 500A	150	72,3	63	68	26	48	60	51	6	72
size 3	250 – 400A	150	72,3	63	68	26	60	60	51	6	83,5
size 3	425 – 800A	150	72,3	63	68	33	60	74	70	6	86
size 4	400 – 1250A	200	85	62	68	49	86	108	90	8	117,5
size 4a	500 – 1250A	200	85	84	90	49	86	108	90	6	117,5
Standard 400V and 500V gG (SGL) with isolated gripping lugs											
size 000	2 – 100A	78	53,4	45,7	49,7	15	35	40,5	20,8	6	52,5
size 00	125/160A	79	53,5	44,8	49	15	35	47,5	29,5	6	59,5
size 0	2 – 160A (500V)	125	67,5	62,5	66,7	15	35	47,5	29,5	6	59,5
size 116	100A (500V), 16 – 125A (400V)	135	71,5	62,8	67	15	40	47,5	29,5	6	64,5
size 1125	250A (500V), 160 – 250A (400V)	135	73,4	63	67,2	20	40	52,5	39,5	6	64,5
size 2	16 – 250A	150	73,4	63	67,2	20	48	52,5	39,5	6	72,5

NH Fuses (Plain Blades) gG/aM Mechanics for ceramic Body



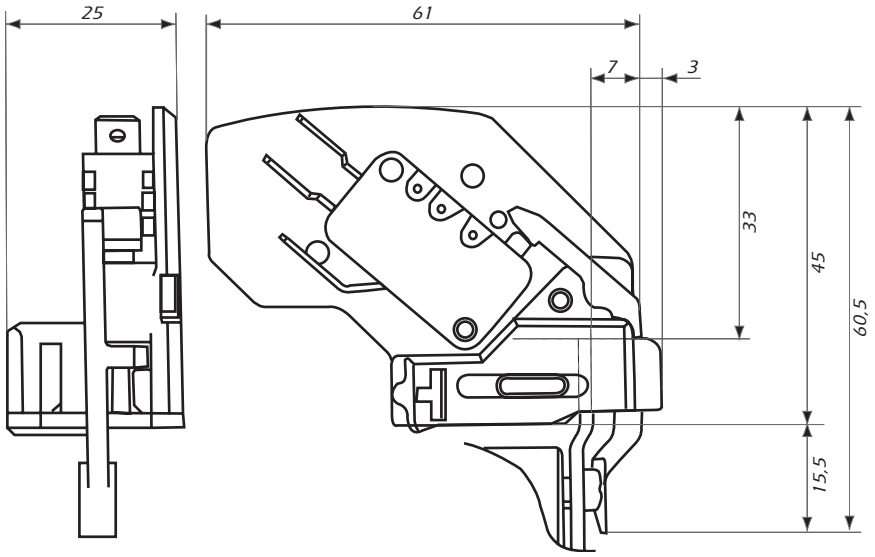
NH Fuses-links

Size	Rated current I_N(A)	a1	a2	a3	a4	b	c1	e1	e2	e4	h
size 2	300 – 400A	150	73,4	63	67,2	26	48	60	51	6	72
size 3	250 – 400A	150	73,4	63	68	26	60	60	51	6	83,5
size 3	425 – 630A	150	73,4	63	68	33	60	74	70	6	86
NH 690V gG with non-isolated gripping lugs											
size 000	2 – 35A	79	53,8	45	49	15	35,8	40	20	6	47,8
size 00	40 – 100A	79	53,8	45	49	15	35,8	48	30	6	47,8
size 1	16 – 160A	135	75	64	68	20	40	44	30	6	52
size 1	200 – 250A	135	75	64	68	20	40	47	39	6	52
size 2	35 – 100A	150	75	64	68	626	48	44	30	6	60
size 2	125 – 315A	150	75	64	68	26	60	47	39	6	72
size 3	250 – 300A	150	75	64	68	26	60	47	39	6	72
size 3	315 – 425A	150	75	64	68	33	60	58	51	6	72
size 3	500A	150	75	64	68	33	70	64	64	6	72
size 4	400 – 800A	200	85	62	68	49	86	108	90	8	117,5
size 4a	400 – 800A	200	85	84	90	49	86	108	90	6	117,5
NH 690V gG (SGL) with isolated gripping lugs											
size 000	2 – 35A	79	53,8	45	49	15	35,8	40,5	21	6	47,8
size 0	40 – 125A	79	53,8	45	49	15	35,8	40,5	30	6	47,8
size 1	35 – 200A	135	75	64	68	20	40	51	39	6	52
size 2	32 – 200A	150	75	64	68	26	48	51	39	6	60
size 2	250 – 315A	150	75	64	68	26	48	60	46	6	60
size 3	250 – 315A	150	73,4	63	68	26	60	60	51	6	83,5
size 3	350 – 425A	150	73,4	63	68	33	60	74	70	6	86
NH 500V aM with non-isolated gripping lugs											
size 000	2 – 80A	79	53,8	45	49	15	35,8	40,5	21	6	47,8
size 00	100 – 160A	79	53,8	45	49	15	35,8	40,5	30	6	47,8
size 0	100 – 200A	125	68	64	68	15	35,8	44	30	6	47,8
size 1	160 – 250A	135	75	64	68	20	40	47	39	6	52
size 2	250 – 500A	150	75	64	68	26	48	47	39	6	60
size 3	315 – 630A	150	75	64	68	33	60	58	51	6	72
size 4	630 – 1250A	200	85	62	68	49	86	108	90	8	117,5
NH 690V aM with non-isolated gripping lugs											
size 000	2 – 80A	79	52	45,5	49,5	15	35	40,5	20,8	6	52,5
size 00	50 – 160A	79	52,8	45	50	15	35	47,5	29,5	6	59,5
size 0	6 – 200A	125	66,8	61	66	15	35	47,5	29,5	6	59,5
size 1	16 – 315A	135	70,8	63	68	20	40	52,5	39,5	6	64,5
size 2	35 – 500A	150	72,3	63	68	26	48	60	51	6	72
size 3	250 – 630A	150	72,3	63	68	33	60	74	70	6	86
size 4	400 – 1250A	200	85	62	68	49	86	108	90	8	117,5
size 4a	500 – 1250A	200	85	84	90	49	86	108	90	6	117,5
NH 400/500V gTr with non-isolated gripping lugs											
size 2	50 – 250kVA	150	72,3	63	68	26	48	60	51	6	72
size 3250 – 400kVA (500V), 500 - 630VA (400V)		150	72,3	63	68	33	60	74	70	6	86
size 4a	100 – 800kVA	200	85	84	90	49	86	108	90	6	117,5

NH Fuses (Plain Blades)
Microswitch indication system for
NH-fuses size 000 to 3 with non-isolated gripping lugs



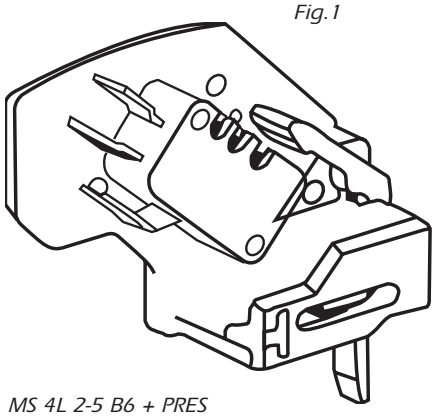
FS ref.-no.	Designation	weight g/piece	pack. unit	Catalog Number
2,8mm clips, automatically resettable				
G210157	MS 4L 2-5 B2 + PRES	26	3	MS4L2-5B2PRES
6,3mm clips, automatically resettable				
F210156	MS 4L 2-5 B6 + PRES	30	3	MS4L2-5B6PRES



Automatically resettable, these microswitch systems indicate fuse pressence (PRES) and proper mounting.

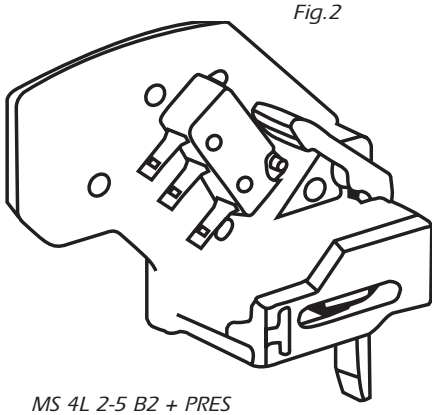
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed).

Fig.1



MS 4L 2-5 B6 + PRES
F210156
6,3mm clips

Fig.2



MS 4L 2-5 B2 + PRES
G210157
2,8mm clips

NH Fuses (Plain Blades)
gG Ceramic body with French striker
gG 690V Size 0 to 3



H216690



R223000



X214656

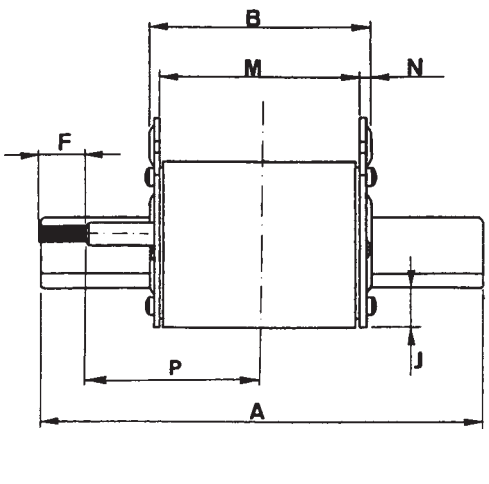


N219271

gG 500 - 690VAC

Size	Rated current I_N(A)	Rated voltage (V)	Previous ref.	Ref.-no.	Breaking capacity	Catalog Number
0	32	690V	36443	P213637	80kA - 690V	NH0GG69V32P-2
0	35	690V	36445	S214146	80kA - 690V	NH0GG69V35P-2
0	40	690V	36447	W214655	80kA - 690V	NH0GG69V40P-2
0	50	690V	36451	B215166	80kA - 690V	NH0GG69V50P-2
0	63	690V	36455	D215674	80kA - 690V	NH0GG69V63P-2
0	80	690V	36459	J216185	80kA - 690V	NH0GG69V80P-2
0	100	690V	36463	H216690	80kA - 690V	NH0GG69V100P-2
0	125	500V	36465	V217207	120kA - 500V	NH0GG50V125P-2
0	160	500V	36469	A217718	120kA - 500V	NH0GG50V160-2
0	200	500V	36471	K218233	120kA - 500V	NH0GG50V200P-2
1	80	690V	36559	Y218751	80kA - 690V	NH1GG69V80P-2
1	100	690V	36563	M219270	80kA - 690V	NH1GG69V100P-2
1	125	690V	36565	P219801	80kA - 690V	NH1GG69V125P-2
1	160	690V	36569	Z222478	80kA - 690V	NH1GG69V160P-2
1	200	690V	36571	R223000	80kA - 690V	NH1GG69V200P-2
1	224	500V	36573	Y200788	120kA - 500V	NH1GG50V224P-2
1	250	500V	36575	Q201333	120kA - 500V	NH1GG50V250P-2
1	315	500V	36579	Z201847	120kA - 500V	NH1GG50V315P-2
1	355	500V	36581	W211067	120kA - 500V	NH1GG50V355P-2
2	125	690V	36665	W212102	80kA - 690V	NH2GG69V125P-2
2	160	690V	36669	L212622	80kA - 690V	NH2GG69V160P-2
2	200	690V	36671	Y213139	80kA - 690V	NH2GG69V200P-2
2	224	690V	36673	Q213638	80kA - 690V	NH2GG69V224P-2
2	250	690V	36675	T214147	80kA - 690V	NH2GG69V250P-2
2	315	690V	36679	X214656	80kA - 690V	NH2GG69V315P-2
2	355	500V	36681	E215675	120kA - 500V	NH2GG69V355P-2
2	400	500V	36683	K216186	120kA - 500V	NH2GG50V400P-2
2	500	500V	36687	W217208	120kA - 500V	NH2GG50V500P-2
3	315	690V	36779	B217719	80kA - 690V	NH3GG69V315P-2
3	355	690V	36781	L218234	80kA - 690V	NH3GG69V355P-2
3	400	690V	36783	Z218752	80kA - 690V	NH3GG69V400P-2
3	500	690V	36787	N219271	80kA - 690V	NH3GG69V500P-2
3	630	500V	36789	Q219802	120kA - 500V	NH3GG50V630P-2

Pack. : *3 pieces*



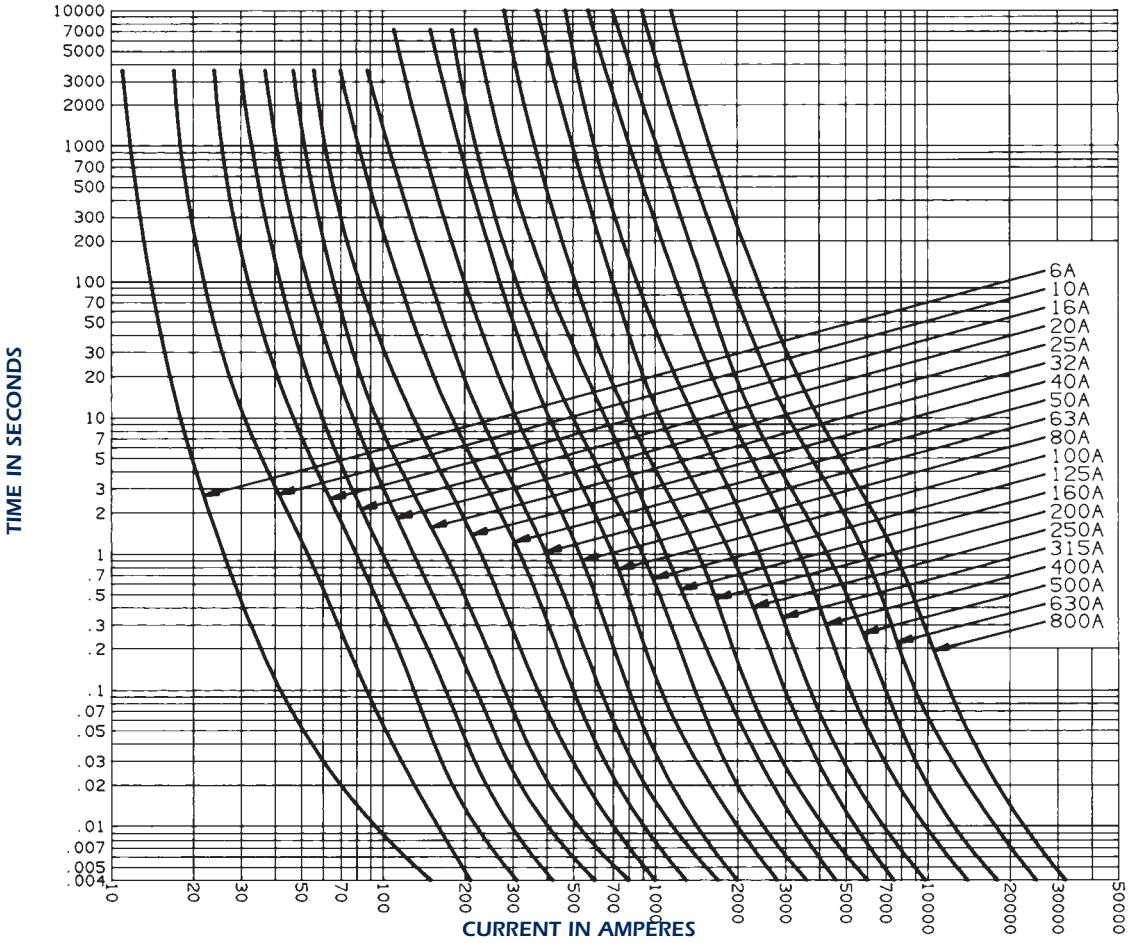
Dimensions

	0	1	2	3
A	124.5	134.5	150	150
B	66	67	67	67
C	39	40	56	69
D	49	55	62.5	76
E	14.5	16	19	24
F	15.5	15.5	15.5	15.5
G	14	14.5	14.5	14.5
H	15	20	26	32
I	6	6	6	6
J	14	14	15	16
K	10	10	10	10
L	59	65	72.5	86
M	60	61	61	61
N	3	3	3	3
O	41.5	45	-	-
P	47	52	60	60

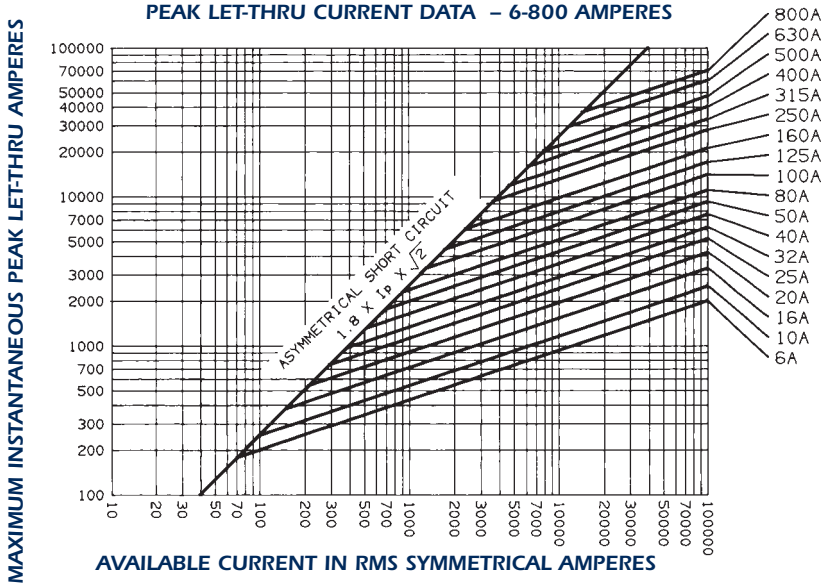
NH Fuses (Plain Blades)
gG Ceramic body with French striker
gG 690V Size 0 to 3

gG 500 - 690VAC

MELTING TIME - CURRENT DATA – 6-800 AMPERES



PEAK LET-THRU CURRENT DATA – 6-800 AMPERES



Striker



Ferraz Shawmut

NH Fuses (Plain Blades)
gG Ceramic body with French striker
gG 690V Size 0 to 3

gG 500 - 690VAC

Power Loss (Watts) at Rated Current

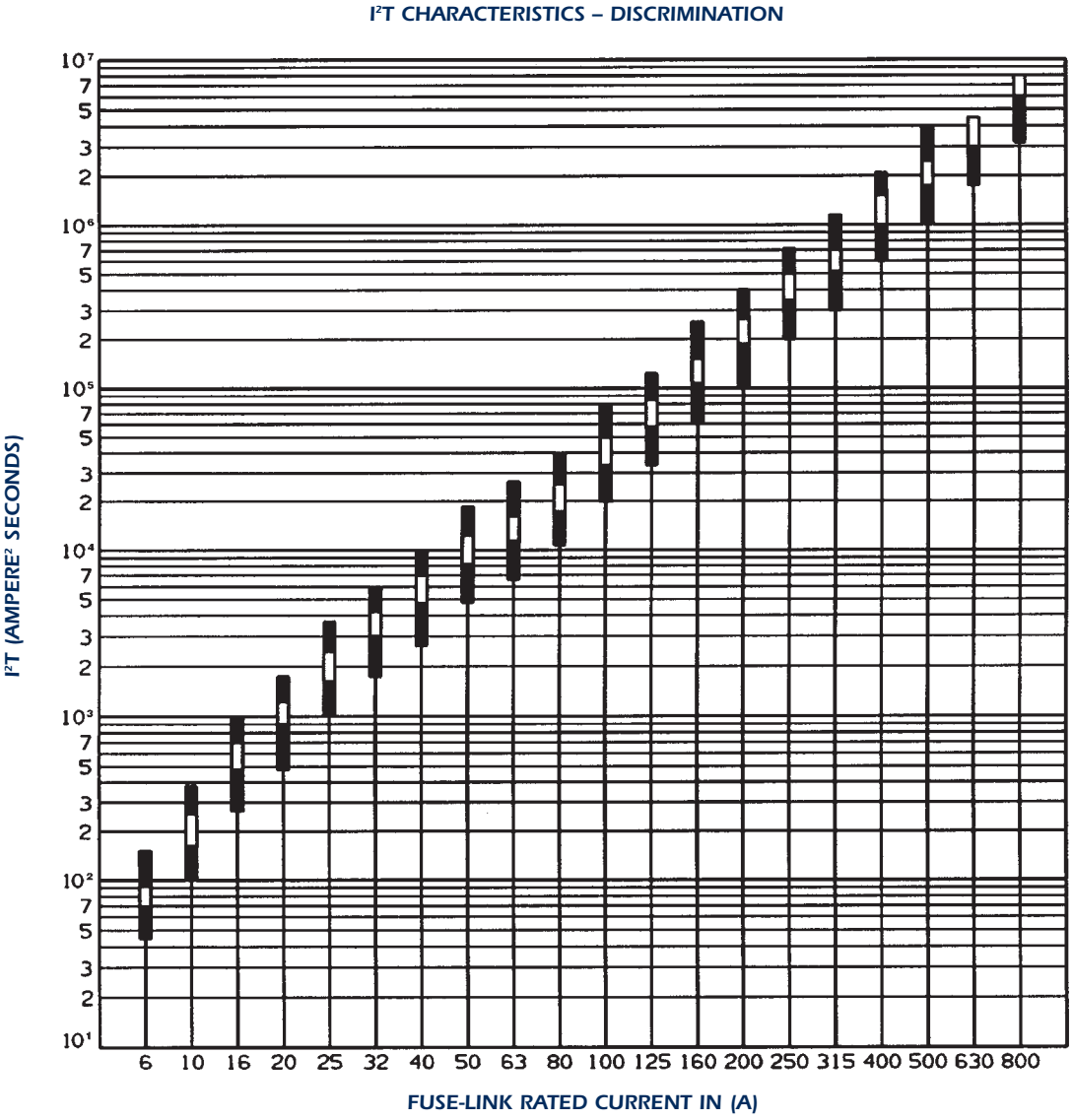
Rated current I_N(A)	Size 0	1	2	3
32	3.7 W			
35	4.0 W			
40	4.5 W			
50	5.2 W			
63	6.2 W			
80	7.5 W	6.9 W		
100	8.5 W	8.1 W		
125	10.7 W	9.6 W	9.5 W	
160	13.5 W	11.9 W	11.5 W	
200	15.0 W	14.9 W	14.5 W	
224		16.7 W	16.0 W	
250		18.7 W	17.5 W	
315		25.0 W	23.0 W	23 W
355		28.0 W	25.0 W	25 W
400			29.0 W	29 W
425			34.0 W	34 W
500			39.0 W	39 W
630				47 W
800				67 W

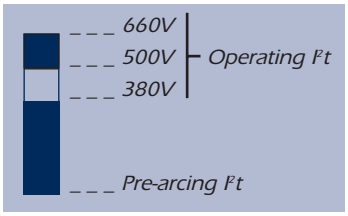
Typical values allowed by the standards

Rated current I_N(A)	0 160A	1 250A	2 400A	3 630A
VDE 0660 (500V)	25 W	32 W	45 W	60 W
IEC 269-2-1 (660V)	25 W	32 W	45 W	60 W
UNE 21103 (500V)	25 W	32 W	45 W	60 W
NFC 63210 (500V)	25 W	32 W	45 W	60 W
VDE 0636 (660V)	-	23 W	34 W	48 W
VDE 0636 (500V)	16 W	23 W	34 W	48 W
IEC 269 (500V)	16 W	23 W	34 W	48 W
UNESA (500V)	17 W	26 W	32 W	48 W
WDE W (500V)	16 W	21 W	32 W	42 W

NH Fuses (Plain Blades)
gG Ceramic body with French striker
gG 690V Size 0 to 3

gG 500 - 690VAC





NH Fuses (Plain Blades)
aM Ceramic body with French striker
aM 690V Size 0 to 3


L216187


P219272

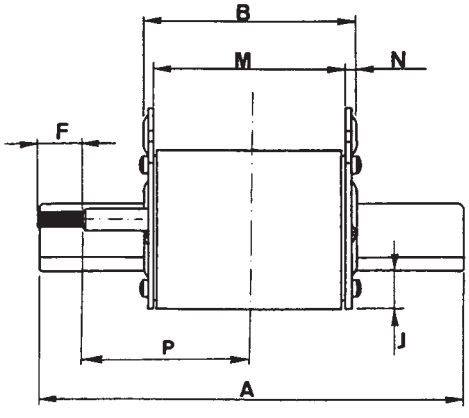

Y212104


M216187

aM 500 - 690VAC

Size	Rated current I_N(A)	Rated voltage (V)	Previous ref.	Ref.-no.	Breaking capacity	Catalog Number
0	32	690V	37443	Z213140	80kA - 690V	NH0AM69V32P-2
0	40	690V	37447	R213639	80kA - 690V	NH0AM69V40P-2
0	50	690V	37451	V214148	80kA - 690V	NH0AM69V50P-2
0	63	690V	37455	Y214657	80kA - 690V	NH0AM69V63P-2
0	80	690V	37459	C215167	80kA - 690V	NH0AM69V80P-2
0	100	690V	37463	F215676	80kA - 690V	NH0AM69V100P-2
0	125	690V	37465	L216187	80kA - 690V	NH0AM69V125P-2
0	160	690V	37469	J216691	80kA - 690V	NH0AM69V160P-2
0	200	500V	37471	X217209	120kA - 500V	NH0AM50V200P-2
1	80	690V	37559	C217720	80kA - 690V	NH1AM69V80P-2
1	100	690V	37563	M218235	80kA - 690V	NH1AM69V100P-2
1	125	690V	37565	A218753	80kA - 690V	NH1AM69V125P-2
1	160	690V	37569	P219272	80kA - 690V	NH1AM69V160P-2
1	200	690V	37571	B222480	80kA - 690V	NH1AM69V200P-2
1	250	690V	37575	T223002	80kA - 690V	NH1AM69V250P-2
1	315	500V	37579	A200790	120kA - 500V	NH1AM50V315P-2
2	125	690V	37665	S201335	80kA - 690V	NH2AM69V125-2
2	160	690V	37669	B201849	80kA - 690V	NH2AM69V160-2
2	200	690V	37671	Y211069	80kA - 690V	NH2AM69V200-2
2	224	690V	37673	P211590	80kA - 690V	NH2AM69V224P-2
2	250	690V	37675	Y212104	80kA - 690V	NH2AM69V250-2
2	315	690V	37679	N212624	80kA - 690V	NH2AM69V315P-2
2	355	690V	37681	A213141	80kA - 690V	NH2AM69V355-2
2	400	690V	37683	S213640	80kA - 690V	NH2AM69V400-2
2	500	500V	37687	W214149	120kA - 500V	NH2AM50V500-2
3	315	690V	37779	Z214658	80kA - 690V	NH3AM69V315P-2
3	355	690V	37781	D215168	80kA - 690V	NH3AM69V355P-2
3	400	690V	37783	G215677	80kA - 690V	NH3AM69V400P-2
3	500	690V	37787	M216188	80kA - 690V	NH3AM69V500P-2
3	630	500V	37789	K216692	120kA - 500V	NH3AM50V630P-2

Pack. : *3 pieces*



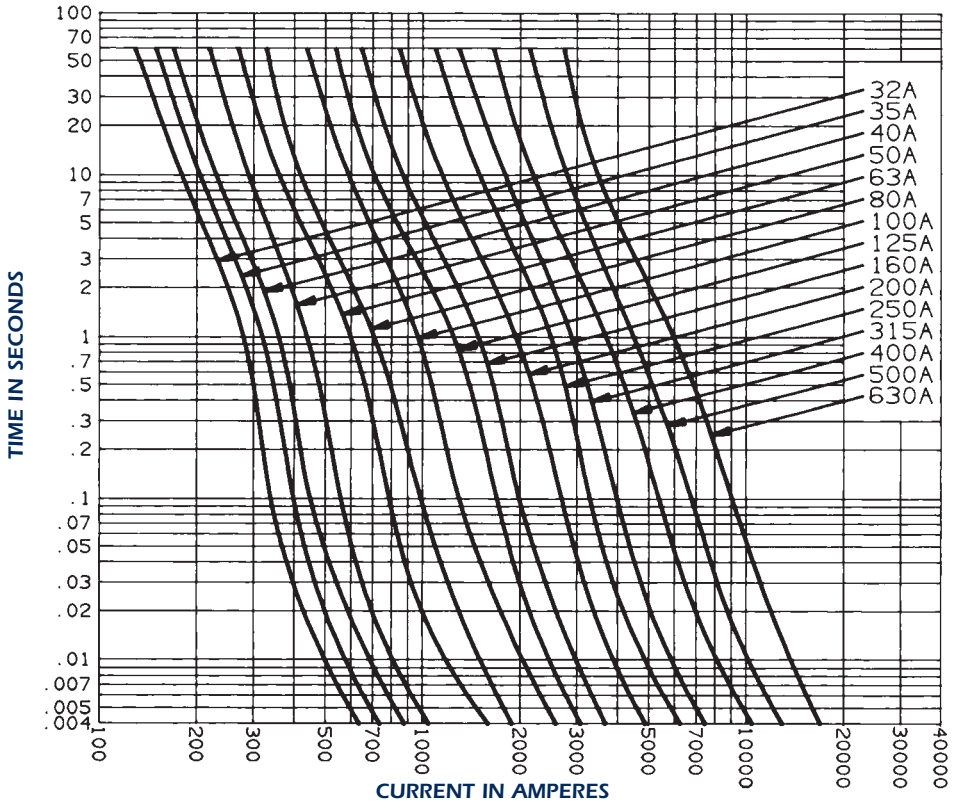
Dimensions

	0	1	2	3
A	124.5	134.5	150	150
B	66	67	67	67
C	39	40	56	69
D	49	55	62.5	76
E	14.5	16	19	24
F	15.5	15.5	15.5	15.5
G	14	14.5	14.5	14.5
H	15	20	26	32
I	6	6	6	6
J	14	14	15	16
K	10	10	10	10
L	59	65	72.5	86
M	60	61	61	61
N	3	3	3	3
O	41.5	45	-	-
P	47	52	60	60

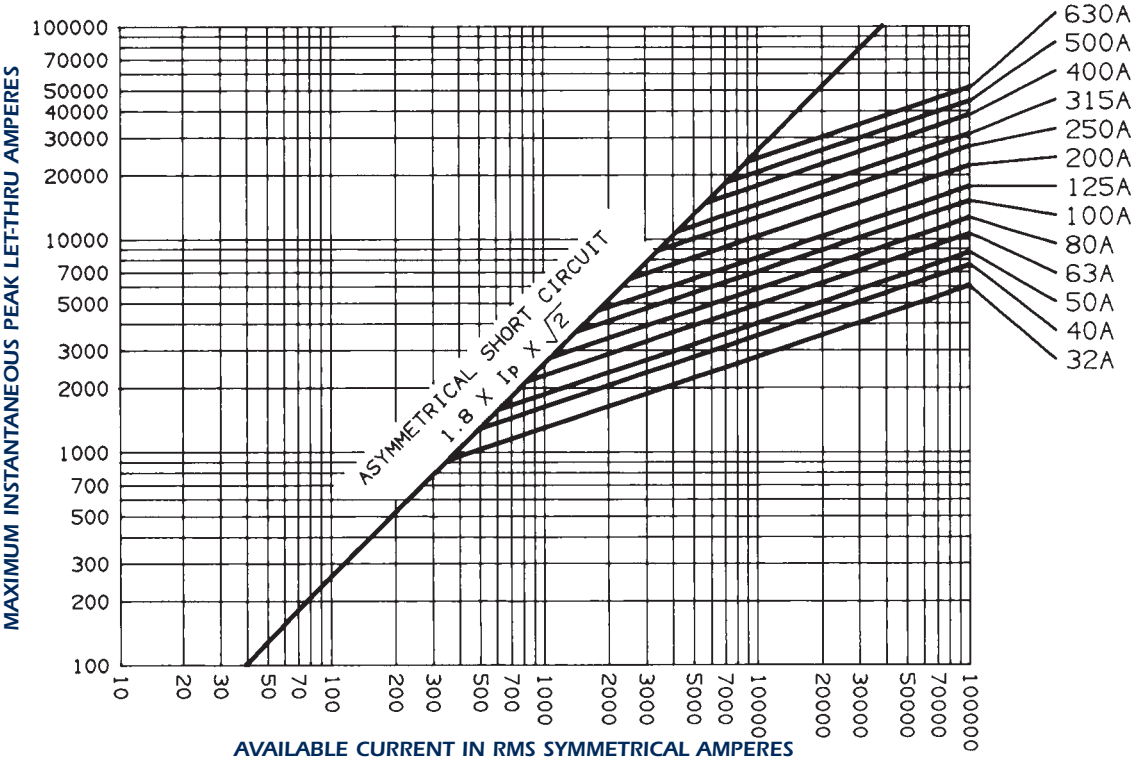
NH Fuses (Plain Blades)
aM Ceramic body with French striker
aM 690V Size 0 to 3

aM 500 - 690VAC

MELTING TIME - CURRENT DATA – 32-630 AMPERES



PEAK LET-THRU CURRENT DATA – 32-630 AMPERES



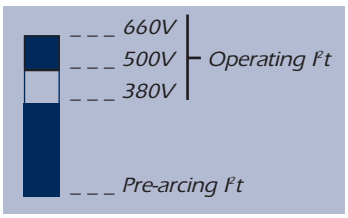
Ferraz Shawmut

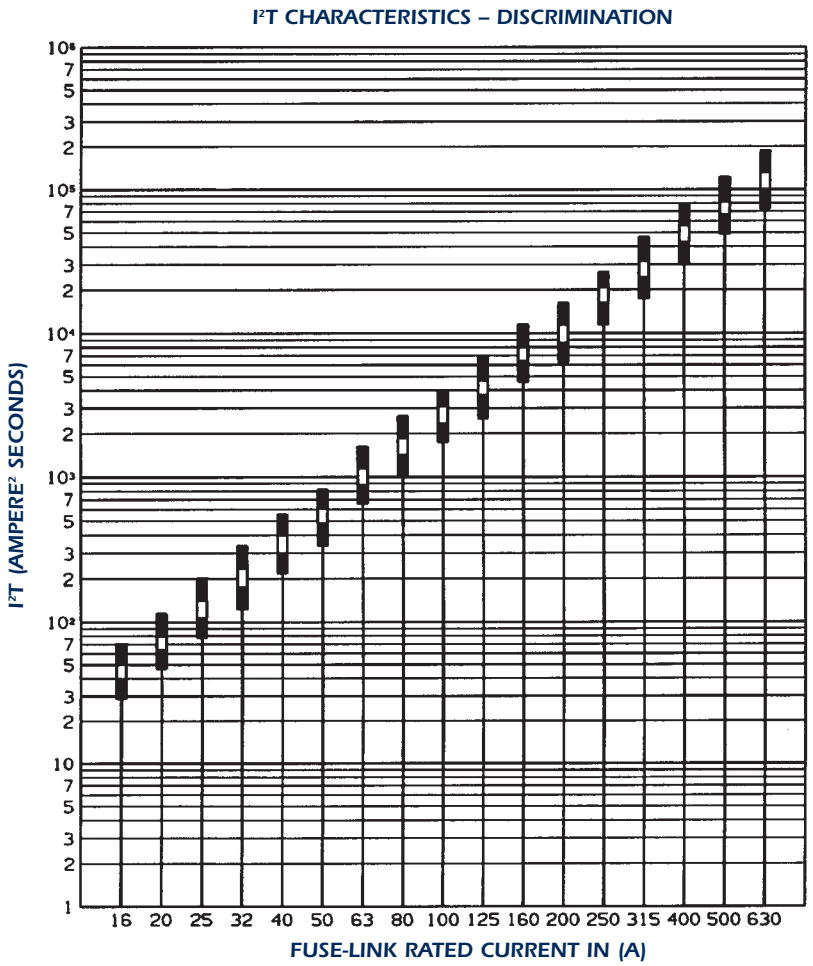
NH Fuses (Plain Blades)
aM Ceramic body with French striker
aM 690V Size 0 to 3

aM 500 - 690VAC

Power Loss (Watts) at Rated Current

Rated current I_N(A)	Size 0	1	2	3
32	2.4 W			
40	2.8 W			
50	3.6 W			
63	4.6 W			
80	6.0 W	6.0 W		
100	7.5 W	7.5 W		
125	9.5 W	9.9 W		
160	12.0 W	12.7 W	12.7 W	
200		16.4 W	16.4 W	
224		18.7 W	18.7 W	
250		21.5 W	21.5 W	
315			29.0 W	25.0 W
355			32.0 W	29.0 W
400			34.0 W	34.0 W
425				38.5 W
500				45.0 W
630				60.0 W





Masterfuse
gG 690V



Highlights

- High ratings 1250 to 2500 A
- gG operating fuse for 690V AC Nominal
- Conformity with IEC 60269 1 and 2
- Dimensional according section V on IEC 60269-2-1
- Breaking capacity 690V 160 KA – 50Hz

Applications

- General protection on Low Voltage Panel
- High power protection on 690V AC Voltage
- Back up for circuit breaker
- Blade fuses for power bus bar assembly
- Disconnector, Switch and/or Circuit Breaker isolation

Main characteristics

Rated current	Size (ø in mm)	Melting I^2t (KA^2s)	Total I^2t at 690V (KA^2s)	Power losses at I_n (W)	Breaking capacity	Ref.Number	Catalog number
1250 A	76	1590	8200	78		E 302753	MF 76 GG 69V 1250
1600 A	89	2500	13000	111	160 KA	F 302754	MF 89 GG 69V 1600
2000 A	114	4800	25000	128	at 690V AC	G 302755	MF 114 GG 69V 2000
2500 A	127	7000	36000	175		H 302756	MF 127 GG 69V 2500

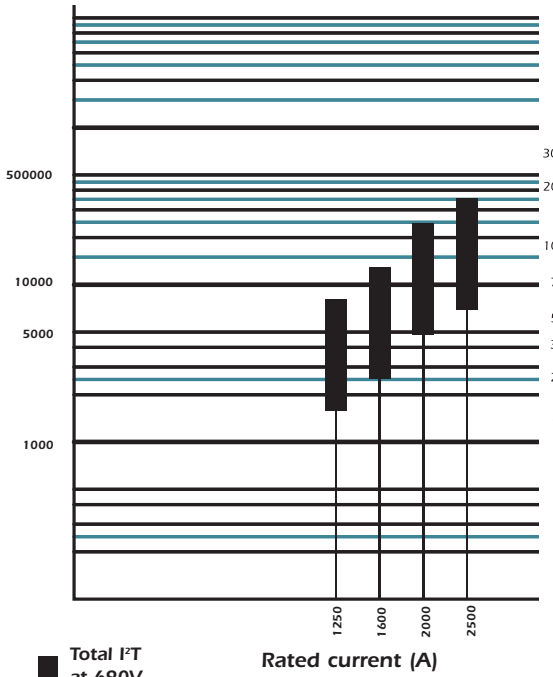
Pack: *1piece*

For ratings 3200A(Ø 146mm) – 4000A (Ø 160mm) – 4800 A (Ø 181mm) consults us

Electrical characteristics

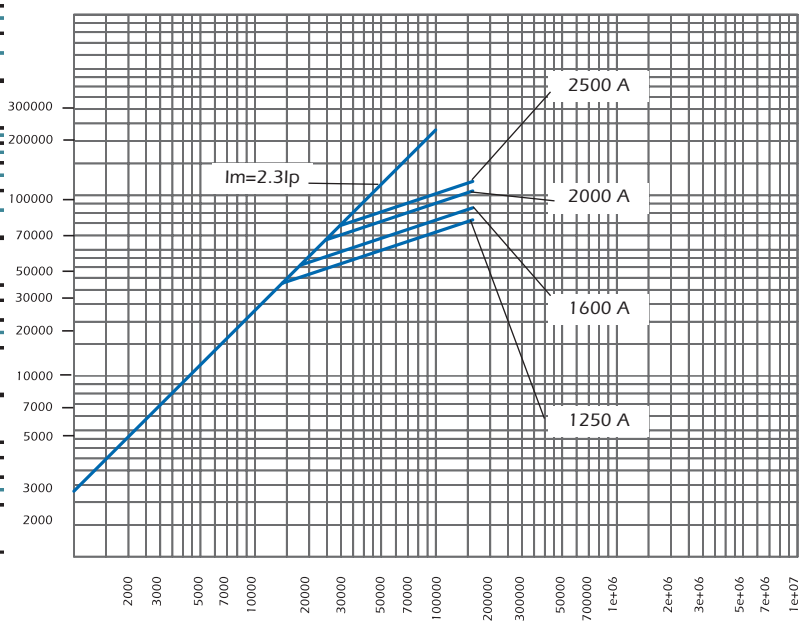
I^2t vs rated current and applied voltage characteristics

Prearcing and clearing I^2t(kA^2s)



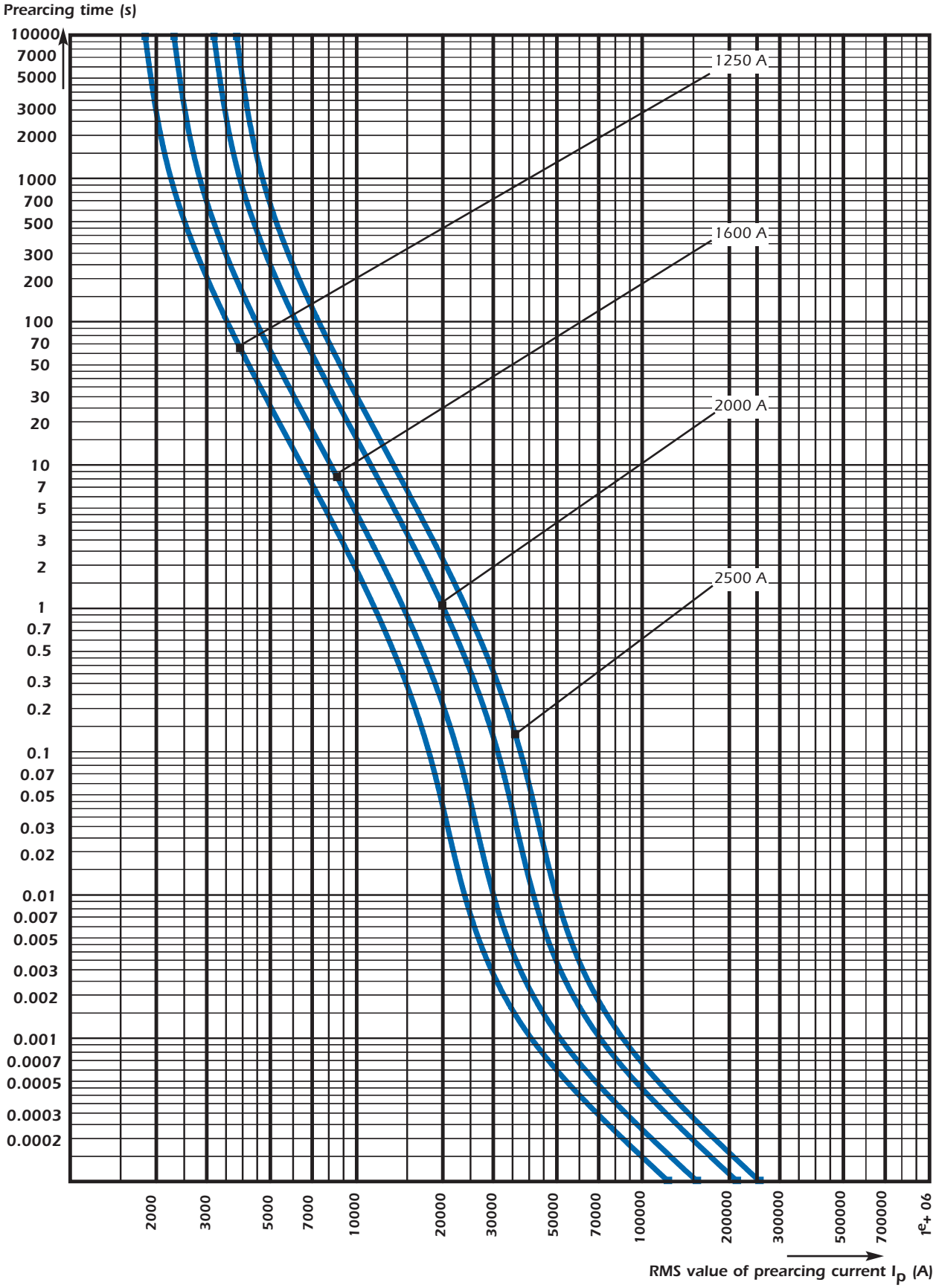
Peak let-thru current characteristics

Maximum peak let-thru current I_m (A)



Masterfuse
gG 690V

Time current characteristics

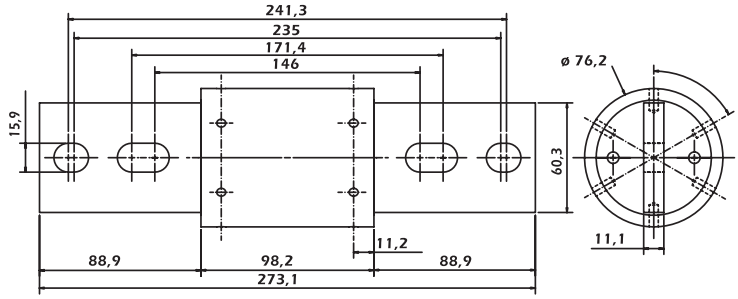


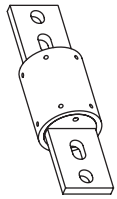
Ferraz Shawmut

Masterfuse
gG 690V

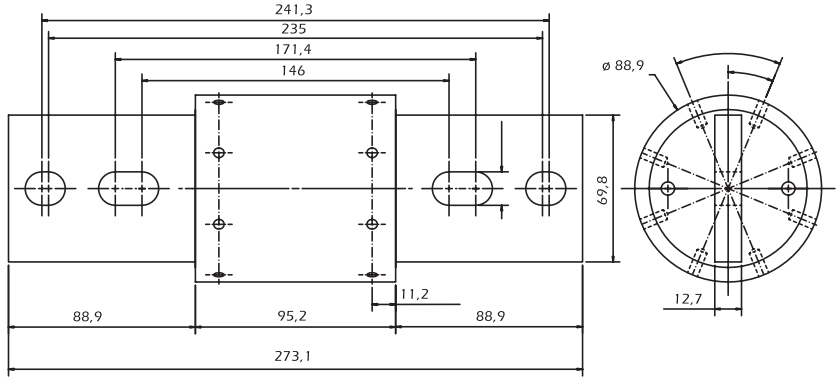
Dimensions

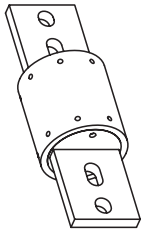
690 VgG 1250 A



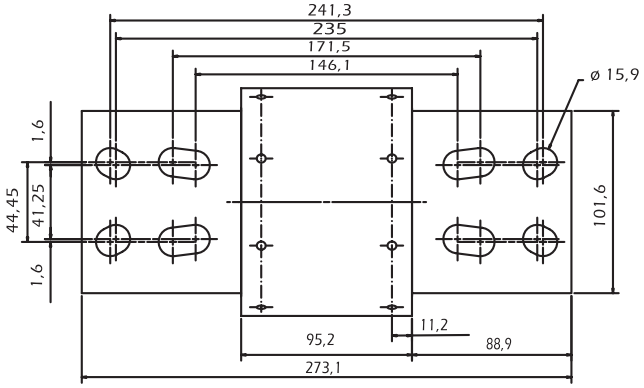


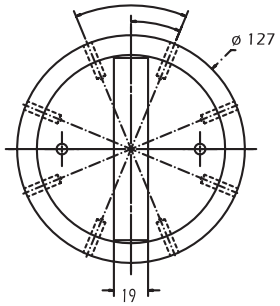
690 VgG 1600 A

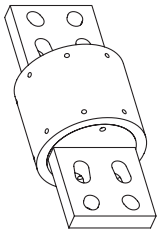




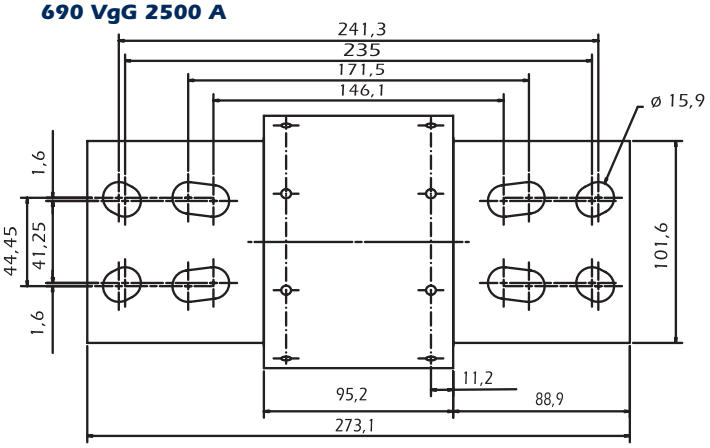
690 VgG 2000 A

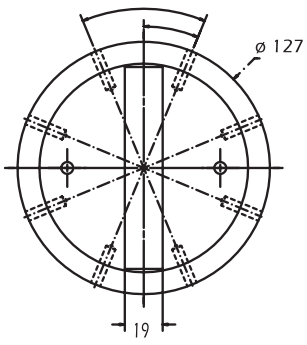


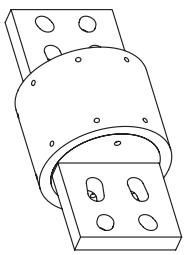




690 VgG 2500 A







DIN Fuses
D0-type
NEOZED



D0 Fuse System

2–100 A, 400 (440) VAC, 250 VDC

Line protection fuses - gG

Motor protection fuses - aM

IEC 269-3-1

DIN VDE 0636 Part 41

DIN VDE 0636 Part 301

Germany

Austria

Denmark

Norway

Dimensions are stipulated in the following regulations:

DIN 49522 D0 Fuse-links

DIN 49523 D0 Gauge rings

DIN 49524 D0 Fuse bases

Structure of NEOZED fuse system

The NEOZED system, similar to the D-system, consists of a fuse base, gauge-ring, fuse link and screw cap. It is dimensioned for nominal voltages of 440VAC 400 VAC and 250 VDC. The system guarantees that from 6 A onwards rated current will not be confused from current stage to current stage. This is ensured by staging the diameter of the fuse link's base current in connection with gauge diameters determined accordingly.

DIN Fuses
D0-type
NEOZED

D0 Fuse System

NEOZED Fuse-links 2–100 A gG

400 VAC, 250 VDC

Size	Rated in Current (A)	Gauge Color	Previous Reference	Reference Number	Pack	Catalog Number
D01	2	pink	01700.002000	T214676	50	
	4	brown	01700.004000	W200809	50	
	6	green	01700.006000	B215695	50	
	10	red	01700.010000	W211090	50	
	13	black	01700.013000*	C201206*	50	
	16	grey	01700.016000	R223023	50	
D02	20	blue	01701.020000	B217742	50	
	25	yellow	01701.025000	W213160	50	
	35	black	01701.035000	R219826	50	
	50	white	01701.050000	D215191	50	
	63	copper	01701.063000	C201873	50	
D03	80	silver	01702.080000	L216716	10	
	100	red	01702.100000	N212647	10	

**No VDE, ÖVE testing mark*



Back-up fuse in operating class gG

Rated in Current (A)	20 A	25 A	35 A	50 A	63 A	80 A
20 A aM	600	300	200	<100	<100	<100
25 A aM	-	1500	700	100	<100	<100
35 A aM	-	-	1000	300	200	<100

NEOZED Fuse-links 20–35 A aM

400 VAC / 440 VAC

Size	Rated in Current (A)	Gauge Color	Previous Reference	Reference Number	Pack	Catalog Number
D02	20	blue	01701.020500*	H211607*	10	
	25	yellow	01701.025500*	F212640*	10	
	35	black	01701.035500*	J213655*	10	

**No VDE, ÖVE testing mark*

Dimensions see following pages



DIN Fuses
D0-type
NEOZED

D0 Fuse System

INNOZED Neozed-Sicherungssockel

für Schnappbefestigung mit Abdeckung, 400VAC



Größe	Bemessungs-strom in A	Polzahl	Referenz Nummer	Gewich in g/Stück	VE	Artikel -Gruppe
D01	16	1	2724.	75	12	42
D01	16	3	2734.	223	4	42
D02	63	1	2725.	77	12	42
D02	63	3	2735.	229	4	42

INNOZED Neozed-Sicherungssockel

für Schnappbefestigung ohne Abdeckung, 400VAC



Größe	Bemessungs-strom in A	Polzahl	Referenz Nummer	Gewich in g/Stück	VE	Artikel -Gruppe
D01	16	1	2724.1	70	12	42
D01	16	3	2734.1	210	4	42
D02	63	1	2725.1	72	12	42
D02	63	3	2735.1	217	4	42

Abdeckung für INNOZED



Größe	Bemessungs-strom in A	Polzahl	Referenz Nummer	Gewich in g/Stück	VE	Artikel -Gruppe
D01/ D02		1	2718.	5	24	42
D01/ D02		3	2732.	12	12	42

DIN Fuses
D0-type
NEOZED

D0 Fuse System
NEOZED Screw cap - plastic

400 VAC / 440 VAC

Size	Rated in Current (A)	Cap Thread	Previous Reference	Reference Number	Pack	Catalog Number
with testing hole						
D01	16	E 14	01714.000200	E212501	20	
D02	63	E 18	01715.000200	P211981	20	
for D01 fuse links with adapter spring						
D02		E 18	01715.890200	M214026	20	
with sealable hole and testing hole						
D01	16	E 14	11714.000220	R214536	20	
D02	63	E 18	11715.000220	S214537	20	
without testing hole						
D02	63	E 18	01715.000000	L206435	20	



NEOZED Screw cap - porcelain

400 VAC / 440 VAC

Size	Rated in Current (A)	Cap Thread	Previous Reference	Reference Number	Pack	Catalog Number
with testing hole						
D01	16	E	14 01710.000200	H201211	20	
D02	63	E 18	01711.000200	T215044	20	
without testing hole						
D03 100	M30 x 2		01712.000200	V215045	20	

Dimensions see following pages



NEOZED Gauge rings

Size	Rated in Current (A)	Cap Thread	Previous Reference	Reference Number	Pack	Catalog Number
D01	2	pink	01705.002000	J216576	50	
	4	brown	01705.004000	J219681	50	
	6	green	01705.006000	P206438	50	
	10	red	01705.010000	M213014	50	
D02	2	pink	01706.002000*	K216577*	50	
	4	brown	01706.004000*	S222127*	50	
	6	green	01706.006000*	R211983*	50	
	10	red	01706.010000*	H216069*	50	
	16	grey	01706.016000*	Q218629*	50	
	20	blue	01706.020000	S200668	50	
	25	yellow	01706.025000	R213524	50	
	35	black	01706.035000	J216070	50	
	50	white	01706.050000	R218630	50	
D03	80	silver	01707.080000	T200669	25	

**For use of D01 fuse-links in D02 fuse-bases*

Dimensions see following pages



DIN Fuses
D0-type
NEOZED

D0 Fuse System

NEOZED Insulating covers

single pole for ceramic fuse bases:



3 pole:

	Previous Reference	Reference Number	Pack	Catalog Number
for type D01/D02				
with 1-side marking area	01718.008000	M222881	50	
with marking area	01718.700000	V200670	50	
for type D03				
without marking area	01728.000000	V211986	20	
for type D01/D02				
cover - cap	01721.030000	X201730	20	
for type D01/D02				
with marking area	01732.700000	M216579	20	

Dimensions see following pages

NEOZED Fuse bases

for screw mounting without shock-proof protection-cover, 400 VAC



Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
D01	16	1 (1*)	4	01720.100000	Z216061	20	
D02	63	1 (2*)	25	01721.200000	M214532	20	
D02	63	1 (4*)	25	01721.400000	F213008	20	
D03	100	1 (4*)	50	01722.400000	J213011	10	
D01	16	3 (1*)	4	01730.100000	K200661	5	
D02	63	3 (2*)	25	01731.200000	F216573	5	
D02	63	3 (4*)	25	01731.400000	K206365	5	

NEOZED Fuse bases

for snap-on fastening without shock-proof protection-cover, 400 VAC



D01	16	1 (1*)	4	01720.150000	J200660	20	
D02	63	1 (2*)	25	01721.250000	J218623	20	
D02	63	1 (4*)	25	01721.450000	W215552	20	
D03	100	1 (4*)	50	01722.450000	Q214535	10	
D01	16	3 (1*)	4	01730.152000	B216063	5	
D02	63	3 (2*)	25	01731.252000	Y217601	5	
D02	63	3 (4*)	25	01731.452000	M211979	5	

**Terminal type and dimensions see following pages*

NEOZED Fuse bases

For snap-on fastening with shock-proof protection-cover



Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
D01	16	1 (1*)	4	01720.170000	B211463	20	
D01	16	1 (3*)	4	01720.370000	T215550	20	
D01	16	3 (1*)	4	01730.172000	A219144	5	
D02	63	1 (2*)	25	01721.270000	M200663	20	
D02	63	1 (4*)	25	01721.470000	K218624	20	
D02	63	3 (2*)	25	01731.272000	E222874	5	
D02	63	3 (4*)	25	01731.472000	K213518	5	
D03	100	1 (4*)	50	01722.470000	F216067	10	

Dimensions see following pages

DIN Fuses
D0-type
NEOZED

D0 Fuse System

LINOZED Fuse bases

For snap-on fastening, 400VAC



Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
D01	16	1	35	01724.000000	M217085	6	
D02	63	1	35	01725.000000	R215042	6	
D01	16	3	35	01734.000000	E201208	2	
D02	63	3	35	01735.000000	Y215554	2	

Dual function terminals

Dimensions see following pages



NEOZED Universal fuse bases

for screw mounting, 400 VAC



Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
D01	16	1 (1*)	4	01720.130000	B222871	20	
D02	63	1 (2*)	25	01721.230000	D216571	20	
	63	1 (4*)	25	01721.430000	Q215041	20	
D03	100	1 (4*)	50	01722.430000	K214024	10	
D01	16	1 (1*)	4	01720.180000	G213515	20	
D02	63	1 (2*)	25	01721.280000	L211978	20	
D02	63	1 (4*)	25	01721.480000	G213009	20	
D03	100	1 (4*)	50	01722.480000	H219680	10	

** Terminal type and dimensions see following pages*

NEOZED 3-pole fuse bases

without shock-proof protection, 400 VAC



Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
Screw fixing							
D01	16	3 (1*)	4	01737.100000	A212497	5	
D02	63	3 (2*)	25	01738.200000	Z217602	5	
Snap-on fastening							
D01	16	3 (1*)	4	01737.150000	E213007	5	
D02	63	3 (2*)	25	01738.250000	B218110	5	

** Terminal type and dimensions see following pages*

NEOZED 3-pole fuse bases

without shock-proof protection, 400 VAC

Clamp fixing





Snap-on fastening

Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
Clamp fixing for busbar 12 x 4…5mm, 15 x4…5 mm							
D02	63	1 (2*)	25	01746.200801	P222124	20	
Clamp fixing for busbar 12 x 4 …10 mm, 15 x 4 …10 mm							
D02	63	1 (2*)	25	01741.200001	L218625	20	
Snap-on fastening for busbar 15 x 5 mm							
D02	63	1 (2*)	25	01741.250000	G219679	20	

** Terminal type and dimensions see following pages*

DIN Fuses
D0-type
NEOZED

D0 Fuse System

NEOZED Fuse-links 2–63 A gG

440 VAC, 250 VDC



Size	Rated in Current (A)	Code Color	Previous Reference	Reference Number	Pack	Catalog Number
D01	2	rosa	01700.002400	E218780	50	
	4	braun	01700.004400	V219829	50	
	6	grün	01700.006400	X223028	50	
	10	rot	01700.010400	S201358	50	
	16	grau	01700.016400	C211096	50	
D02	20	blau	01701.020400	X212126	50	
	25	gelb	01701.025400	S213663	50	
	35	schwarz	01701.035400	C214684	50	
	50	weiß	01701.050400	J215702	50	
	63	Kupfer	01701.063400	N216718	50	

Dimensions see following pages

NEOZED Fuse bases

for snap-on fastening without shock-proof protection cover,440 VAC



Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
D01	16	1 (1*)	4	01720.150040	D201207	20	
D02	63	1 (2*)	25	01721.250040	M222122	20	
D02	63	1 (4*)	25	01721.450040	C216064	20	
D01	16	3 (1*)	4	01730.152040	C216570	5	
D02	63	3 (2*)	25	01731.252040	A218109	5	
D02	63	3 (4*)	25	01731.452040	C212499	5	

** Terminal type see following pages*

LINOZED Fuse bases, Dual function clamps

for snap-on fastening,440 VAC



Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
D01	16	1	35	01724.000040	X217600	6	
D02	63	1	35	01725.000040	X215553	6	

Dimensions see following pages

LINOZED Fuse bases, Dual function terminal

for snap-on fastening,440 VAC



Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
D01	16	3	35	01734.000040	P201723	2	
D02	63	3	35	01735.000040	E216066	2	

Dimensions see following pages

DIN Fuses
D0-type
NEOZED

D0 Fuse System

NEOZED - Special holding spring

Size	Previous Reference	Reference Number	Pack	Catalog Number
D01 Fuse-links in D02-socket	01713.000000	Z215049	50	
D02 Fuse-links in D03-socket	01709.000000	P214028	10	
D01 Fuse-links in DL-socket	01733.000000	J218117	100	



NEOZED - Spacer

Size	Previous Reference	Reference Number	Pack	Catalog Number
D02 Fuse-links in D03-socket	01707.000000	T211985	10	



NEOZED - Gauge ring key

Size	Previous Reference	Reference Number	Pack	Catalog Number
gauge-rings D01, D02, D03	01708.000000	J212505	10	



NEOZED - Screw-cap remover

Size	Previous Reference	Reference Number	Pack	Catalog Number
plastic screw-caps D01, D02	01716.000000	X222936	1	
	01716.333000	F200726	1	



NEOZED - Locking caps

Size	Previous Reference	Reference Number	Pack	Catalog Number
D01 supply boards (1)	01714.800000*	D212546*	25	
D01 Industry (2)	01714.810000	P213062	25	
D02 supply boards (1)	01715.800000*	R214582*	25	
D02 Industry (2)	01715.810000	Y215094	25	



** only for authorized energy supplier personnel*
1) black top, red screw pitch
2) red top, black screw pitch

NEOZED - Locking keys

Size	Previous Reference	Reference Number	Pack	Catalog Number
D02 Supply boards	01714.820000*	K213564	10	
D02 Industry	01714.830000	J214069	10	

** for authorized energy supplier personnel only*

DIN Fuses
D0-type
NEOZED

D0 Fuse System

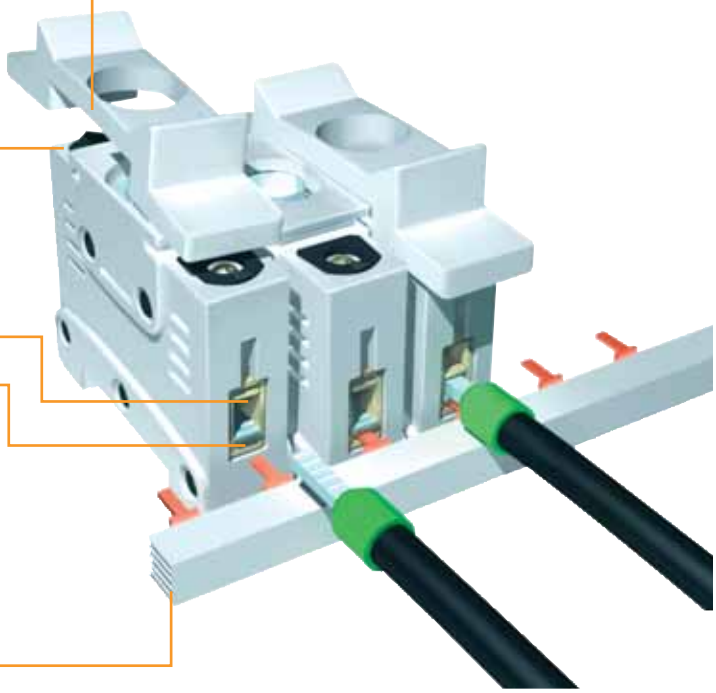
INNOZED

Der Neozed-Sicherungssockel mit innovativer Anschlusstechnik

Kunststoffe

mit höchsten Ansprüchen

- Sockelabdeckung aus flammwidrigem Polyamid
- Gehäuse aus glasfasergefülltem, duroplastischem Polyester
- Hohe mechanische und thermische Belastbarkeit



Innovative Anschlusstechnik

durch zweigeteilte Rahmenklemme.

- Kontaktierung der Einspeiseleitungen
- Anschluss der Verdrahtungsschienen
- Leitungen leichter einführbar Klemmstellen der Leitungen visuell kontrollierbar
- Einsparung von Montagezeit
- Zusätzliche Betriebssicherheit und Flexibilität

Verdrahtungsschienen

Folgende Schienen sind einsetzbar:

- 3-phasig 16 mm2 – Ref.Nr. 2963.003
- 1-phasig 16 mm2 – Ref.Nr. 2963.

Flexible Klemmentechnik

Unterschiedliche Leiterquerschnitte und Leiterarten sind problemlos klemmbar, sowohl eingangs- als auch abgangsseitig

- Flexibilität bei der Verdrahtung
- Erhöhung der Betriebssicherheit bei der Klemmung unterschiedlicher Leiter



35mm² und 4mm² abgangseitig



2 x 16mm² auf der Einspeiseseite



Zwillingsaderendhülse auf der Einspeiseseite



35mm² und 4mm2 auf der Einspeiseseite

DIN Fuses
D0-type
NEOZED

D0 Fuse System
Variabler Berührungsschutz



MIT SOCKELABDECKUNG FÜR VERTEILERBAU

Berührungsschutz durch einfaches Aufrasten der Sockelabdeckung.



OHNE SOCKELABDECKUNG IM INDUSTRIELLEN ANLAGENBAU

Berührungsschutz nach BGVA 2 auch ohne ockelabdeckung bis 25mm²

Anschlussquerschnitt

- *Einsparung der Montagezeit und der Kosten der Sockelabdeckung*



FELDABDECKUNG AUS KUNSTSTOFF

individuell zugeschnitten

- *einfach und kostengünstig*

Geteilte Anschlussklemme zur Klemmung zweier Leitungen

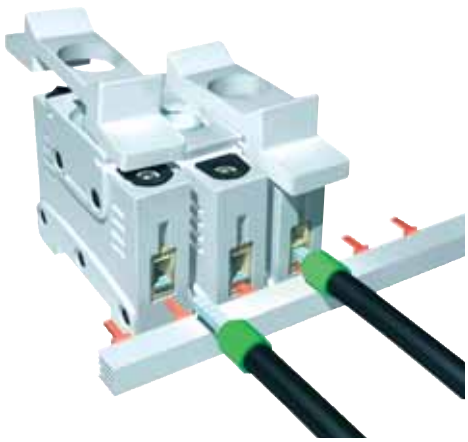
	Einspeisung	Abgang
1. flexible Leitungen mit Aderendhülse		
zwei Leitungen gleichen Querschnitts:	bis max. 10mm²	bis max. 16mm²
zwei unterschiedliche Leitungen:	16mm² u. max. 10mm²	
	25mm² u. max. 6mm²	25mm² u. max. 6mm²
	35mm² u. max. 4mm²	35mm² u. max. 4mm²
mit Zwillingsaderendhülse:	bis max. 16mm²	bis max. 16mm²
2. flexible, feindrähtige Leitungen ohne Aderendhülse		
zwei Leitungen gleichen Querschnitts:	bis max. 10mm²	bis max. 16mm²
zwei unterschiedliche Leitungen:	16mm² u. max. 10mm²	
	25mm² u. max. 10mm²	25mm² u. max. 16mm²
	35mm² u. max. 10mm²	5mm² u. max. 10mm²
3. kurzschlussfeste Leitungen:		
zwei Leitungen gleichen Querschnitts:	bis max. 6mm²	bis max. 6mm²

Maximaler Anschlussquerschnitt der Zu- und Abgangsklemme: 35mm²



V O R T E I L E des INNOZED

- Schnellere Montage
- Höhere Betriebssicherheit
- Klemmstelle sichtbar vor Verdrahtungsschiene



Ferraz Shawmut

DIN Fuses
D0-type
NEOZED

D0 Fuse System

Vorschriften
IEC 60269-3-1
DIN VDE 0636 Teil 301

Prüfzeichen
Germany **Denmark** **Norway**

Baugrößen
Drei Baugrößen stehen zur Verfügung:
- Sicherungssockel D01
  - Gewinde E 14
  - Nennstrom 16A
  - für Sicherungseinsätze 2 ... 16A
- Sicherungssockel D02
  - Gewinde E 18
  - Nennstrom 63A
  - für Sicherungseinsätze 20 ... 63A
  - mit Spezialpasshülsen auch verwendbar für Sicherungseinsätze 2 ... 16A
- Sicherungssockel D03
  - Gewinde M 30 x 2
  - Nennstrom 100A
  - für Sicherungseinsätze 80 und 100A

Betriebsklassen
Die Betriebsklasse ist durch zwei Buchstaben gekennzeichnet.
Der erste Buchstabe gibt die Funktionsklasse, der zweite das zu schützende Objekt an. Unser Lieferprogramm umfasst NEOZEDSicherungseinsätze nach DIN VDE 0636 für folgende Betriebsklassen:
- gG: Ganzbereichskabel- und Leitungsschutz
- gR: Ganzbereichs-Halbleiterschutz
- aM: Teilbereichs-Schaltgeräteschutz (Motorschutz)

Schaltvermögen
NEOZED-Sicherungseinsätze schalten im gesamten Bereich der Zeit-Stromkennlinie auch im Bereich der kritischen Ströme zuverlässig ab.
Das Schaltvermögen ist 50kA.

Klemmrausführunger der keramiksockel

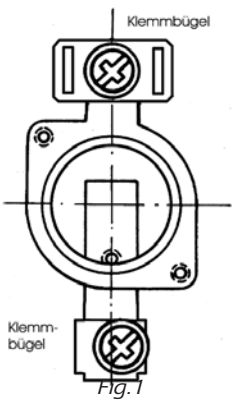


Fig.1

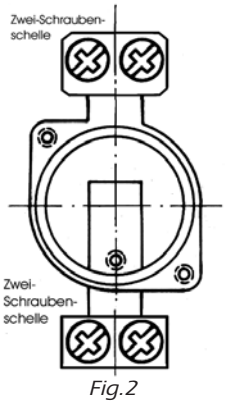


Fig.2

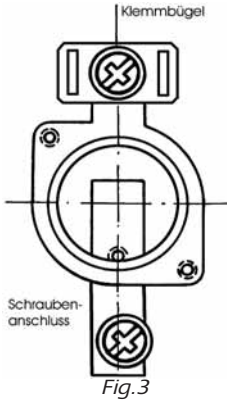


Fig.3

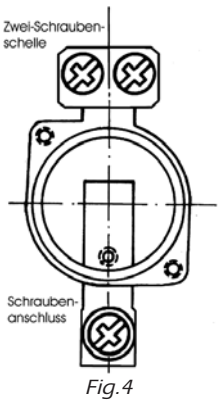


Fig.4

DIN Fuses
D0-type
NEOZED

D0 Fuse System
Ausschreibungstexte

Neozed-Sicherungssockel INNOZED
400VAC / 250VDC,
D01 (D02), 16A (63A),
Berührungsschutz nach BGVA 2 (auch ohne Abdeckung)
Abdeckung abnehmbar bei eingeschraubter Sicherung
Material Kunststoff zweigeteilte Rahmenklemmen

Neozed-Sicherungssockel LINOZED
400VAC / 250VDC
D01 (D02), 16A (63A)
Berührungsschutz nach BGVA 2
Material Kunststoff
Doppelfunktionsklemmen gefederter Fußkontakt

Neozed-Sicherungssockel
400VAC / 250VDC
D01 (D02, D03)
16A (63A, 100A)
Material Keramik
Anschlussart Klemmbügel (Schelle – Schelle, Schraube – Schelle)

Neozed-Sicherungseinsatz
400VAC / 250VDC
D01 (D02, D03)
2 ... 16A (20 ... 63A, 80 ... 100A)
Betriebsklasse gG

Neozed-Sicherungseinsatz
400VAC / 400VAC
D02, 20A (25A,35A)
Betriebsklasse aM für Schaltgeräteschutz in Motorenstromkreisen

Neozed-Sicherungseinsatz
440VAC
D01 (D02, D03)
2 ... 16A (20 ... 63A, 80 ... 100A)
Betriebsklasse gR für Halbleiterschutz

Neozed-Schraubkappen
400VAC / 250VDC
D01 (D02, D03)
16A (63A, 100A)
Material Kunststoff (Keramik),
mit Prüfloch (und Plombierloch)

Neozed-Hülsenpasseinsatz
D01 (D02, D03)
2 ... 10A (20 ... 50A, 80A)
Neozed-Spezialhülsenpasseinsatz für D01-Sicherungseinsätze in D02-Sicherungssockeln
D02, 2 ... 16A

DIN Fuses
D0-type
NEOZED

D0 Fuse System

2 – 100A, 400 (440)VAC,250VDC Leitungsschutzsicherungen gG

Eigenverbrauch in W

Nennstrom in A	Größtwerte *	Messwerte
2	2,5/2,5	1,5
4	1,8	1,5
6	1,8	1,3
10	2,0	1,8
16	2,5/2,2	2,1
20	3,0/2,5	2,3
25	3,5/3,0	2,6
35	4,0	2,9
50	5,0	3,5
63	5,5	4,2
80	6,5	4,9
100	7,0	5,8

Selektivität

NEOZED-Sicherungseinsätze sind im Verhältnis 1:1,6 der Nennströme mit allen Sicherungseinsätzen selektiv, die folgenden Anforderungen entsprechen:
Betriebsklasse gG entspr. IEC 60269-2-1, 60269-3-1
Betriebsklasse gG entspr. DIN VDE 0636 Teil 201, 301
NEOZED-Sicherungseinsätze sind untereinander und bei gemischtem Einsatz mit Sicherungseinsätzen anderer Lindner-Systeme im Verhältnis 1:1,25 selektiv, d.h. von Nennstromstufe zu Nennstromstufe. Beide Sicherungen sollten jedoch bei so enger Staffelung gleichen Umgebungseinflüssen ausgesetzt sein.

NEOZED-Sicherungseinsätze 32A

Zur Absicherung von 32A CEE Steckdosen sind entsprechend der neuen DIN VDE 0623 Teil 1/06.93 (DIN EN 60309-1) Sicherungseinsätze mit maximal 32A Bemessungsstrom vorgeschrieben.
Bisher durften 32A CEE Steckdosen ausnahmsweise mit 35A abgesichert werden.
Diese Ausnahmeregelung darf zukünftig für Neuanlagen nicht mehr angewendet werden, da die entsprechende Vorschrift DIN VDE 0623/03.77 nicht mehr gültig ist. Es gilt jedoch eine Übergangsfrist bis 2003-02-01.
Passorgane: Es sind die Hülsenpasseinsätze 35A zu verwenden.

DIN Fuses
D0-type
NEOZED

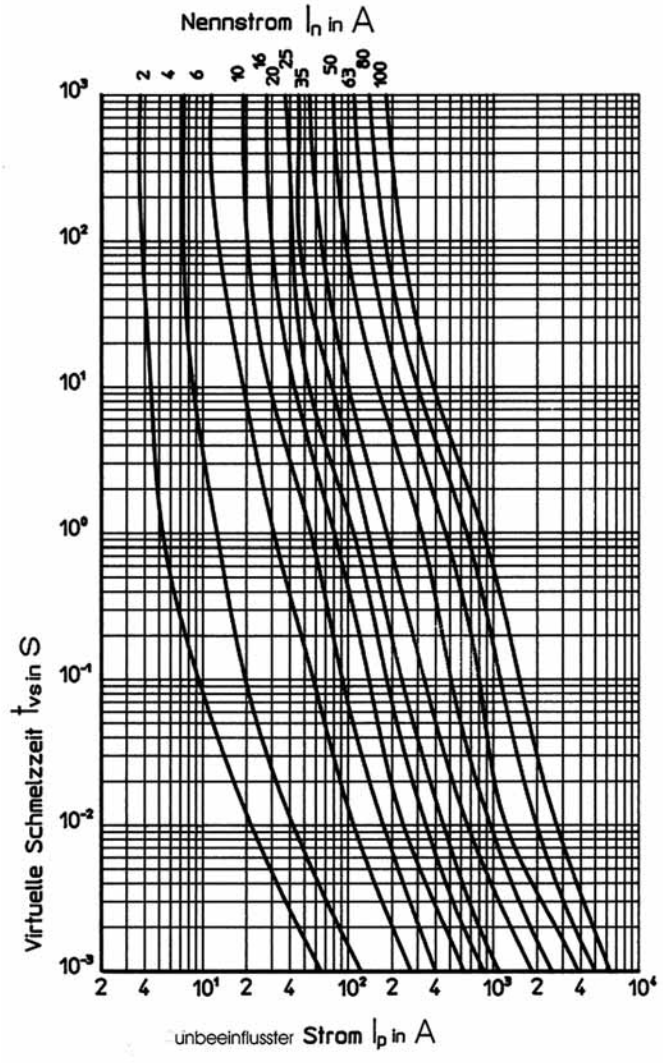
D0 Fuse System

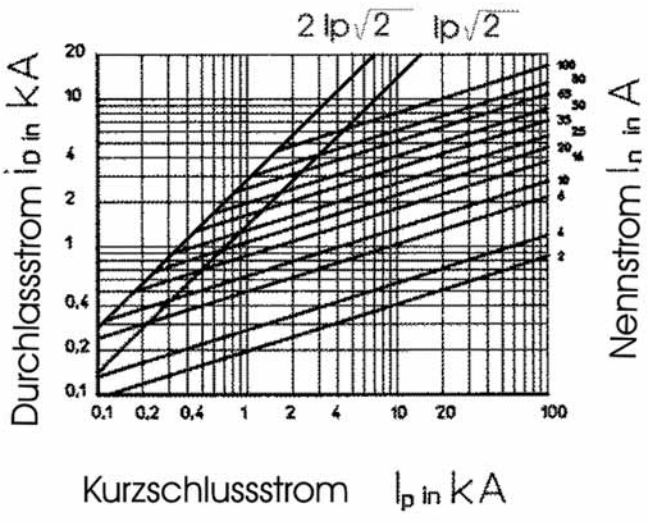
Direkte Zuordnung bei Schutz von Kabel und Leitungen bei Überlast

Bei der Zuordnung von Überstrom-Schutzorganen zum Kabel- und Leitungsschutz sind nach DIN VDE 0100 Teil 430 folgende Bedingungen zu erfüllen:

$I_B \leq IN \leq IZ$ (Nennstromregel) (1)
$I_2 \leq 1{,}45 \times IN$ (Auslöseregel) (2)
I_B - Betriebsstrom des Stromkreises
I_N - Nennstrom der ausgewählten Überstromeinrichtung
I_Z - zulässige Strombelastbarkeit des Kabels
I_2 - Auslösestrom der Schutzeinrichtung

DIN VDE 0636 Teil 301 wurde durch eine Zusatzprüfung "Abschalten mit I2 = 1,45 x IN in der konventionellen Prüfdauer" ergänzt.
NEOZED-Sicherungseinsätze gG erfüllen die Bedingungen dieser Zusatzprüfung. Damit ist eine direkte Zuordnung des Nennstromes des Sicherungseinsatzes zur Belastbarkeit der Leitung oder des Kabels möglich.





Ferraz Shawmut

DIN Fuses
D0-type
NEOZED

D0 Fuse System

Vorschriften
IEC 60269-3-1
DIN VDE 0636 Teil 301
20/25/35A 400 (440)VAC, 250VDC
Schaltgeräteschutz-Sicherungen aM

Anwendung
NEOZED-Sicherungseinsätze der Betriebsklasse aM gewähren Motoren und Schaltgeräten den besten Schutz im Fall eines Kurzschlusses.
Im Vergleich zu alternativen Schutzorganen haben Sicherungseinsätze der Betriebsklasse aM entscheidende Vorteile:
Besonders träges Abschaltverhalten im Überlastbereich verhindert unerwünschtes, vorzeitiges Auslösen des Schutzorganes; sehr flinkes Abschalten im Kurzschlussfall sorgt für höchste Kurzschlussstrombegrenzung und verhindert damit das Abbrennen und Verschweißen der Kontakte des Schaltgerätes.
Eine um bis zu 50% geringere Verlustleistung bietet entscheidende Vorteile bei häufigem Lastwechsel und Reversierbetrieb und spart außerdem noch Energiekosten.

Nennströme und Zeit-Strombereiche
NEOZED-Sicherungseinsätze aM gibt es nur in der Baugröße D02
20A 25A 35A
Zeit-Strombereiche nach IEC 60269

Selektivität
Selektivität erreicht man, wenn die vorgeschaltete Sicherung der Betriebsklasse gG mindestens drei Nennstromstufen größer als die Motorschutzsicherung aM ist. Dies verhindert unerwünschtes Abschmelzen der Vorsicherung bei kleinen Kurzschlussströmen.

- Beispiel: Nennstrom der Motorschutzsicherung 25A aM
  Nennstrom der Vorsicherung 35A gG
  Kurzschlussstrom im Motorstromkreis 500A
  Selektivitätsgrenze lt. Tabelle 700A
- Ergebnis: keine Selektivität

Selektivitätsgrenzen in A

Nennstrom	20A	25A	35A	50A	63A	80A
20A aM	600	300	200	<100	<100	<100
25A aM	–	1500	700	100	<100	<100
35A aM	–	–	1000	300	200	<100

Vorsicherung der Betriebsklasse gG

Eigenverbrauch und Erwärmung
Die Verlustleistung der NEOZED-Sicherungseinsätze aM sind technisch bedingt geringer als bei den vergleichbaren der Betriebsklasse gG. Auch bei diesen Sicherungseinsätzen unterschreitet die LINDNER-Konstruktion die Größenwerte entsprechender Norm erheblich.

Eigenverbrauch in W

Nennstrom in A	Größtwerte *	Messwerte
20A	3,0/2,5	1,10
25A	3,5/3,0	1,05
35A	4	1,95

**) nach IEC 269-3-1, DIN VDE 0636 Teil 301/DIN VDE 0636 Teil 41*

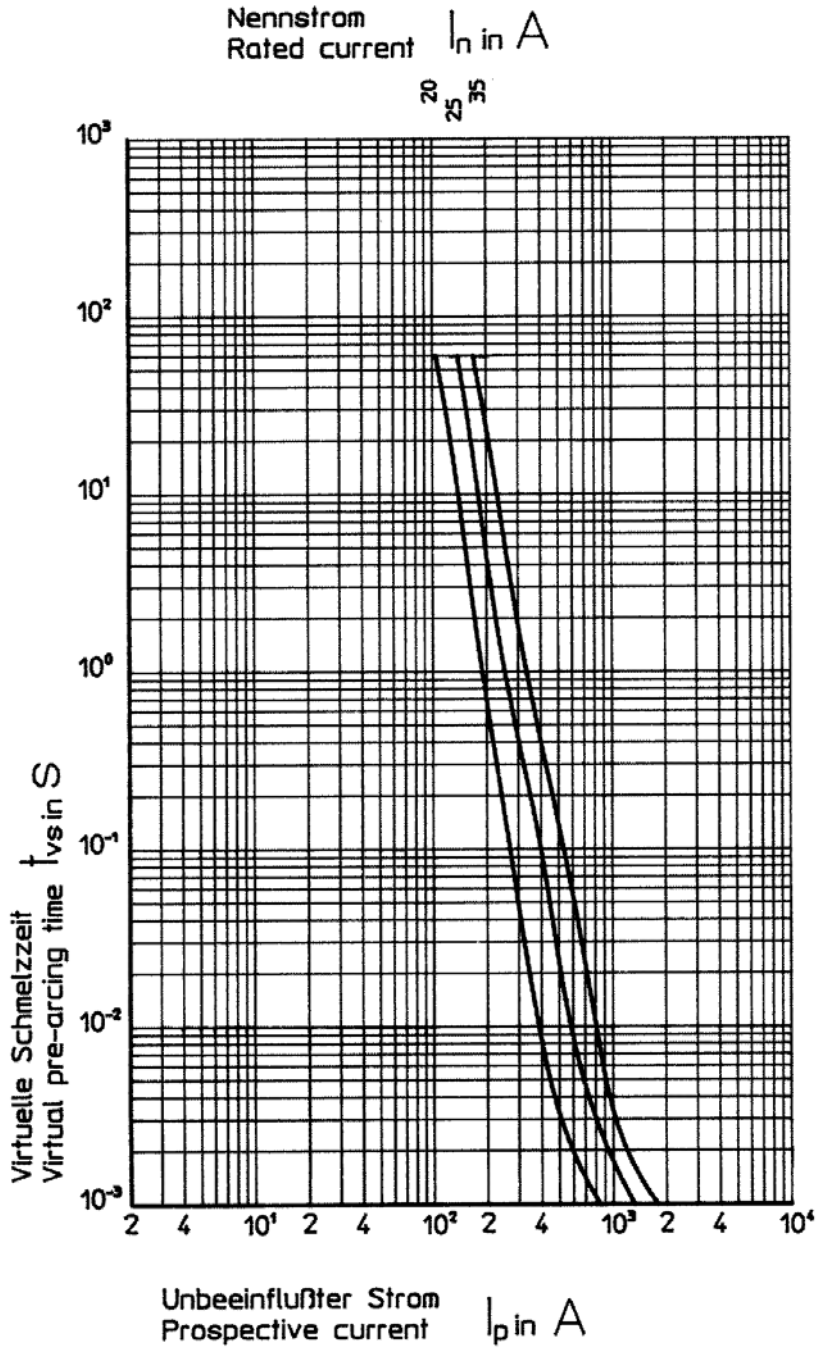
DIN Fuses
D0-type
NEOZED

D0 Fuse System

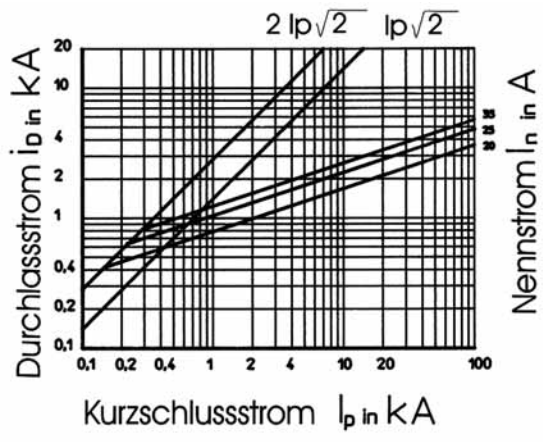
Aufbau

Die NEOZED Sicherunsein stätze der Betnebklasse aM bestehen aus den gleichen Bauteilen wie die Standard-Typen der Betriebsklasse gG: Keramikhülse, Kontaktkappen, Kennmelder mit Kennmelderdraht, Löschsand. Nur der Schmelzleiter, der die Kennlinie und das Abschmelzverhalten einer Sicherung ausmacht, ist ein anderer. Zur Unterscheidung zu anderen Betriebsklassen sind die aM-Sicherungseinsätze in grüner Farbe beschriftet.

ZEIT-STROM-KENNLINIEN



DURCHLASSSTROM-KENNLINIEN

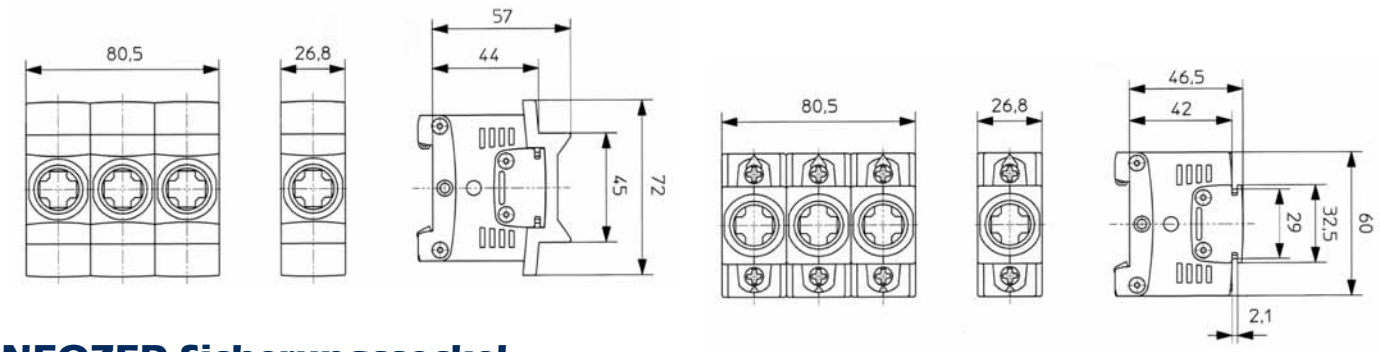


Ferraz Shawmut

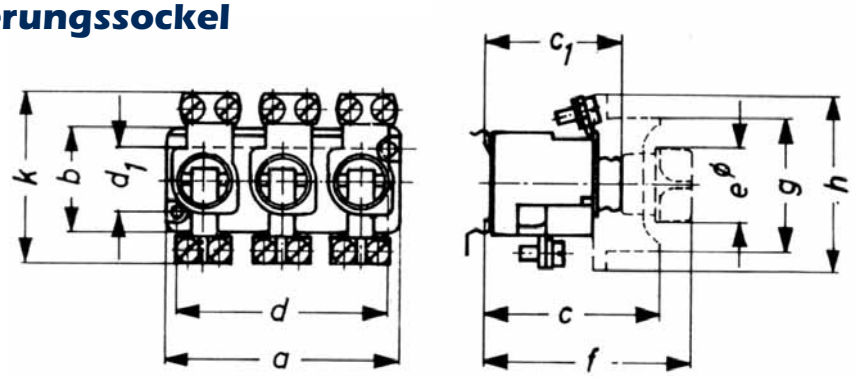
DIN Fuses
D0-type
NEOZED

D0 Fuse System

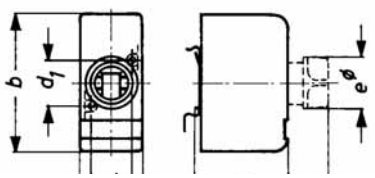
INNOZED-Sicherungssockel



NEOZED-Sicherungssockel



Referenz. Nummer	Catalog Number	a	b	c	c1	d	d1	eØ	f	g	h	k
1720.1		26	36	–	39,5	20	22	25,5	64	34Ø	–	50,5
1721.2/.4		26	36	–	39,5	20	22	25,5	64	34Ø	–	57,5
1722.4		44	50	–	44	32	32	40	74	52Ø	–	86
1730.1		81	36	–	39,5	74	22	25,5	64	–	–	50,5
1731.2/.4		81	36	–	39,5	74	22	25,5	64	–	–	57,5
1730.12		81	36	55	39,5	74	22	25,5	64	45	71	50,5
1731.22/.42		81	36	55	39,5	74	22	25,5	64	45	71	57,5
1720.15		26	36	–	41,5	20	22	25,5	66	34Ø	–	50,5
1721.25/.45		26	36	–	41,5	20	22	25,5	66	34Ø	–	57,5
1722.45		44	50	–	46	32	32	40	76	52Ø	–	86
1720.17		27	36	57	41,5	20	22	25,5	66	45	71	50,5
1721.27/.47		27	36	57	41,5	20	22	25,5	66	45	71	57,5
1722.47		44	50	54,5	46	32	32	40	76	45	71	86
1730.15		81	36	–	41,5	74	22	25,5	66	–	–	50,5
1731.25/.45		81	36	–	41,5	74	22	25,5	66	–	–	57,5
1730.17		81	36	57	41,5	74	22	25,5	66	45	71	50,5
1731.27/.47		81	36	57	41,5	74	22	25,5	66	45	71	57,5

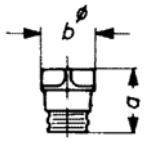


Referenz. Nummer	Catalog Number	a	b	c	d	d1	eØ	f
1720.13		31	70	44,5	20	22	25,5	64
1721.23/1721.43		31	70	44,5	20	22	25,5	64
1722.43		50	105	48	32	32	40	74
1720.18		31	70	46,5	20	22	25,5	66
1721.28/1721.48		31	70	46,5	20	22	25,5	66
1722.48		50	105	50	32	32	40	76

DIN Fuses
D0-type
NEOZED

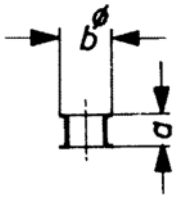
D0 Fuse System

NEOZED
Schraubkappen



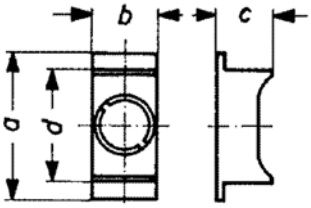
Referenz. Nummer	Catalog Number	a	b
1714.		29,5	23
1715.		29,5	23
1710.		31	25
1711.		31	25
1712.		37	40

NEOZED
Hülsenpasseinsätze



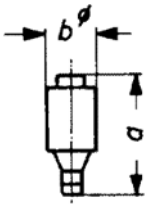
Referenz. Nummer	Catalog Number	a	b
1705.		10	12
1706.		10	16
1707.		10	27

NEOZED
Abdeckungen



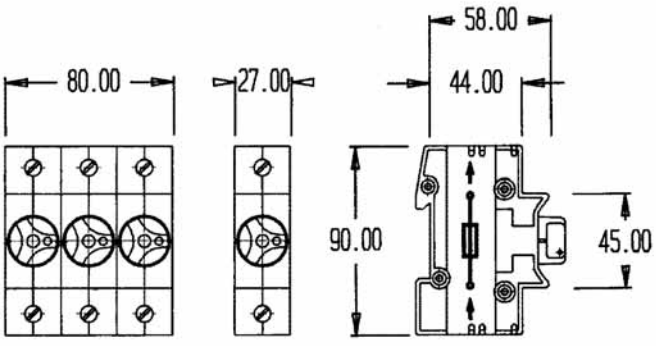
Referenz. Nummer	Catalog Number	a	b	c
1718.008		60	26,8	23
1728.7		71	26,8	23
1728.		60	44	18
1732.7		71	81	23

NEOZED
Sicherungseinsätze



Referenz. Nummer	Catalog Number	a	b
D01		36	11
D02		36	15
D03		43	22

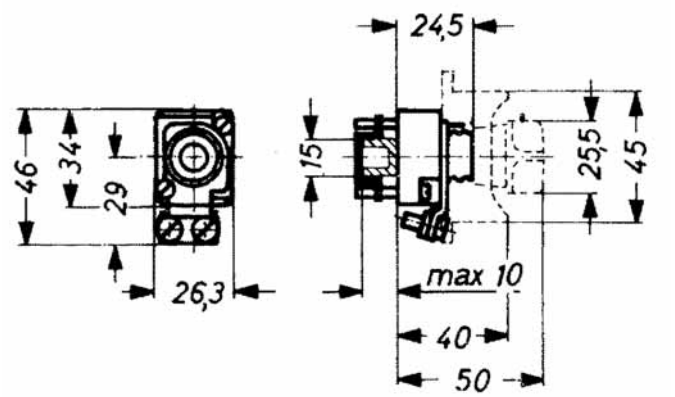
LINOZED-Sicherungssockel



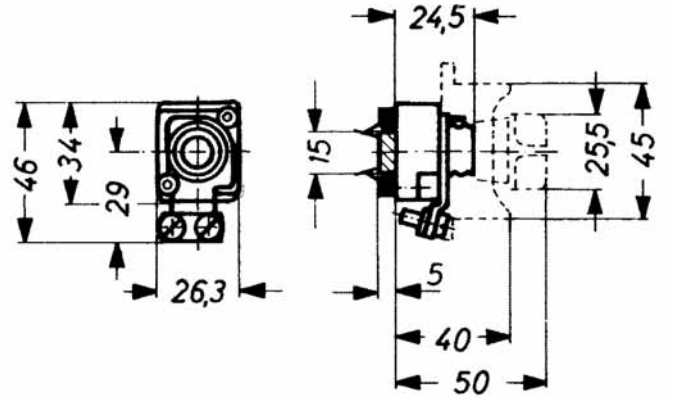
DIN Fuses
D0-type
NEOZED

D0 Fuse System

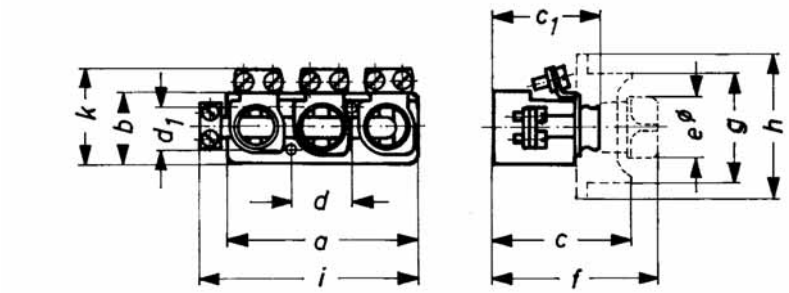
NEOZED-Reiter-Sicherungssockel
mit Schellenbefestigung, 400VAC



NEOZED-Reiter-Sicherungssockel
mit Schnappbefestigung, 400VAC



NEOZED-Reihen-Sicherungssockel



Referenz. Nummer	Catalog Number	a	b	c	c1	d	d1	eØ	f	g	h	i	k
1737.12		80,5	30	55	39,5	22	20	25,5	64	45	71	88,5	36,5
1738.22		80,5	30	55	39,5	22	20	25,5	64	45	71	91,5	44,5
1737.17		80,5	30	57	41,5	22	20	25,5	66	45	71	88,5	36,5
1737.27		80,5	30	57	41,5	22	20	25,5	66	45	71	91,5	44,5

DIN Fuses
D-type
DIAZED

D Fuse System

2 – 200 A, 500 V, 690 V

Line protection fuses gL-gG
IEC 60269 parts1, 3 and 3-1
DIN VDE 0636 Parts 10, 30 and 31

Dimensions are stipulated in the following regulations:
DIN 49360 D Fuse-links
DIN 49515 D Fuse-links
DIN 49367 D Fuse-links, long design
DIN 49514 D Screw caps
DIN 49510 D Fuse bases
DIN 49362 D Gauge rings
DIN 49516 D Screw gauge pieces

Structure of the D fuse system

Like the modern NEOZED system, the D-Fuse system consists of fuse base, gauge piece, fuse link and screw cap. It is designed for a rated voltage of 500V. Noninterchangeability of rated current is guaranteed from one current level to the other above 6 Amps. This is ensured by graduating the diameter of the bottom contact of the fuse-link along with corresponding fixed diameters for the gauge piece.



DIN Fuses
D-type
DIAZED

D Fuse System
D Fuse bases

for snap-on fastening 500 VAC / 690 VAC

Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
without shock-proof protection cover							
DII	25	1*	6	00685.100000	K207055	15	
DIII	63	4*	16	00686.400000	V215597	15	
with shock-proof protection cover							
DII	25	1	6	00685.110000	D211511	10	
DIII	63	4	16	00686.410000	C216110	10	

* Terminal type see following pages



D Fuse bases

for screw fixing 500 VAC / 690 VAC

Size	Rated in Current (A)	Pole	Max. cross sect. mm²	Previous Reference	Reference Number	Pack	Catalog Number
without shock-proof protection cover							
DII	25	1*	6	00081.100000	K218670	15	
DIII	63	4*	16	00072.400000	H212021	15	
with shock-proof protection cover							
DII	25	1*	6	00081.110000	Z219189	10	
DIII	63	4*	16	00072.410000	A212543	10	

* Terminal type see following pages



D Fuse-links

2 - 200A fast acting (CEE-16 standard), 500 VAC

Size	Rated in Current (A)	Gauge Color	Previous Reference	Reference Number	Pack	Catalog Number
NDZ	2	pink	00594.002000	C222918	25	
NDZ	4	brown	00594.004000	L200708	25	
NDZ	6	green	00594.006000	A201250	25	
NDZ	10	red	00594.010000	L201766	25	
NDZ	16	gray	00594.016000	D207049	25	
NDZ	20	blue	00594.020000	B211509	25	
NDZ	25	yellow	00594.025000	Y212541	25	
DII	2	pink	00597.002000	E213559	25	
DII	4	brown	00597.004000	D214064	25	
DII	6	green	00597.006000	L214577	25	
DII	10/6 (1)	red	00597.610000	X218152	25	
DII	10	red	00597.010000	S215089	25	
DII	16	gray	00597.016000	A216108	25	
DII	20	blue	00597.020000	J217128	25	
DII	25	yellow	00597.025000	P217639	25	
DIII	35	Black	00598.035000	J218669	25	
DIII	50	white	00598.050000	J222165	25	
DIII	63	copper	00598.063000	M200709	25	

(1) with base contact stud for 6 A





DIN Fuses
D-type
DIAZED

D Fuse System

D Fuse-links

2 -200 A gG, 500 VAC



Size	Rated in Current (A)	Gauge Color	Previous Reference	Reference Number	Pack	Catalog Number
NDZ	2	pink	00594.002700	W212539	25	
NDZ	4	brown	00594.004700	G213055	25	
NDZ	6	green	00594.006700	C213557	25	
NDZ	10	red	00594.010700	B214062	25	
NDZ	16	grey	00594.016700	J214575	25	
NDZ	20	blue	00594.020700	Q215087	25	
NDZ	25	yellow	00594.025700	Q215593	25	
D II	2	pink	00597.002700	Z219718	25	
D II	4	brown	00597.004700	G222163	25	
D II	6	green	00597.006700	B222917	25	
D II	10/6 f1	red	00597.610700	D213558	25	
D II	10	red	00597.010700	K200707	25	
D II	16	grey	00597.016700	K201765	25	
D II	20	blue	00597.020700	A211508	25	
D II	25	yellow	00597.025700	X212540	25	
1 with base contact stud for 6 A (without VDE test mark)						
D III	35	black	00598.035700	C214063	25	
D III	50	white	00598.050700	K214576	25	
D III	63	copper	00598.063700	R215088	25	
D IV	80	silver	00595.080700	V216609	10	
D IV	100	red	00595.100700	M217637	10	
D V	125	yellow	00596.125700	V218150	10	
D V	160	copper	00596.160700	G218667	10	
D V	200	blue	00596.200700	W219186	10	



Characteristics see following pages

D Fuse system 690 VAC

In this design, the fuse base and gauge piece correspond to the 500 V standard for D III (E33). The extended fuse links D III and a special extended screw cap serve to complement the present system. D-type 690 V fuses are only available in size III.

D Fuse-links

2 - 63 A gG 690 VAC



Size	Rated in Current (A)	Gauge Color	Previous Reference	Reference Number	Pack	Catalog Number
D III	2	pink	00603.002700	R215594	25	
D III	4	brown	00603.004700	Z216107	25	
D III	6	green	00603.006700	W216610	25	
D III	10	red	00603.010700	H217127	25	
D III	16	grey	00603.016700	N217638	25	
D III	20	blue	00603.020700	W218151	25	
D III	25	yellow	00603.025700	H218668	25	
D III	35	black	00603.035700	X219187	25	
D III	50	white	00603.050700	A219719	25	
D III	63	copper	00603.063700	H222164	25	

D Screw-cap long design 690 VAC



D III	63		00605.000000	L218671	25	

Dimensions see following pages

DIN Fuses
D-type
DIAZED

D Fuse System
D Screw caps

Porcelain and Plastic, 500 VAC



Size	Rated in Current (A)	Gauge Color	Previous Reference	Reference Number	Pack	Catalog Number
Porcelain with testing hole						
DII	25	E 27	00690.000200	E218619	20	
DIII	63	E 33	00691.000200	B213004	20	
Porcelain without testing hole						
NDZ	25	E 16	00589.000000	Z216613	50	
DII	25	E 27	00690.000000	Z218108	20	
DIII	63	E 33	00691.000000	F211973	20	
DIV	100	R11/4	00592.000000	Y216060	10	
Plastic with testing hole						
DII	25	E 27	02071.000000	L201720	20	
DII	63	E 33	02072.000000	E214019	20	



D Gauge piece



Size	Rated in Current (A)	Gauge Color	Previous Reference	Reference Number	Pack	Catalog Number
NDZ	2	pink	01655.002000	B212544	50	
NDZ	4	brown	01655.004000	M213060	50	
NDZ	6	green	01655.006000	H213562	50	
NDZ	10	red	01655.010000	G214067	50	
NDZ	16	grey	01655.016000	P214580	50	

D Screw gauge pieces for DII / DIII



D II	2	pink	01657.002000	A219190	25	
D II	4	brown	01657.004000	D219722	25	
D II	6	green	01657.006000	L222167	25	
D II	10	red	01657.010000	F222921	25	
D II	16	grey	01657.016000	P200711	25	
D II	20	blue	01657.020000	D201253	25	
D II	25	yellow	01657.025000	P201769	25	
D III	35	black	01658.035000	C207071	25	
D III	50	white	01658.050000	E211512	25	
D III	63	copper	01658.063000	J212022	25	

D Gauge rings for DII / DIII, TRI60 System



D II	2	pink	01652.002000	W215092	50	
D II	4	brown	01652.004000	W215598	50	
D II	6	green	01652.006000	D216111	50	
D II	10	red	01652.010000	A216614	50	
D II	16	grey	01652.016000	M217131	50	
D II	20	blue	01652.020000	S217642	50	
D II	25	yellow	01652.025000	A218155	50	
D III	2	pink	01653.002000	M218672	50	
D III	4	brown	01653.004000	E219723	50	
D III	6	green	01653.006000	M222168	50	
D III	10	red	01653.010000	G222922	50	
D III	16	grey	01653.016000	Q200712	50	
D III	20	blue	01653.020000	E201254	50	
D III	25	yellow	01653.025000	Q201770	50	
D III	35	black	01653.035000	L207079	50	
D III	50	white	01653.050000	F211513	50	

Dimensions see following pages

Ferraz Shawmut

DIN Fuses
D-type
DIAZED

Key for D gauge pieces

D Fuse System



Size	Previous Reference	Reference Number	Pack	Catalog Number
DII, DIII	01657.993000	E216112	10	

D Cover insulating material



Single pole

D II (40 mm width)	00685.700000*	H214068	30	
D III (50 mm width)	00686.700000*	X215093	30	
D II (45 mm width)	00685.709000	Q214581	30	
D III (54 mm width)	00686.709000	X215599	30	

* *Standart version*

Tiple pole

D II	00625.700000	N213061	8	
D II	00626.700000	J213563	8	

D Touch Protection rings



Plastic

D II	00181.900000	K222120	50	
D III	00182.900000	A222870	50	

Porcelain

D II	00081.900000	C219675	30	
D III	00072.900000	K212023	20	

D Adapter fittings



for DII-fuses links in D III-bases

D II/ D III	00581.000000	C212545	50	

D Locking caps



DII Supply boards[1]	02071.800000*	B216615*	10	
DII Industry[2]	02071.810000	N217132	10	
DIII Supply boards[1]	02072.800000*	T217643*	10	
DIII Industry[2]	02072.810000	B218156	10	

* *For authorized energy supplier personnel only*

[1] *black top, red screw pitch*

[2] *red top, black screw pitch*

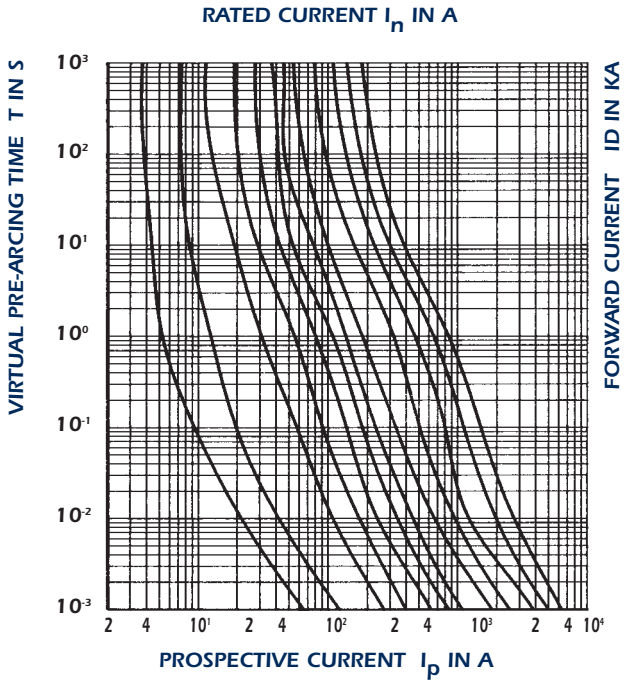
Locking keys

Supply boards	01714.820000*	K213564*	10	
Industry	01714.830000	J214069	10	

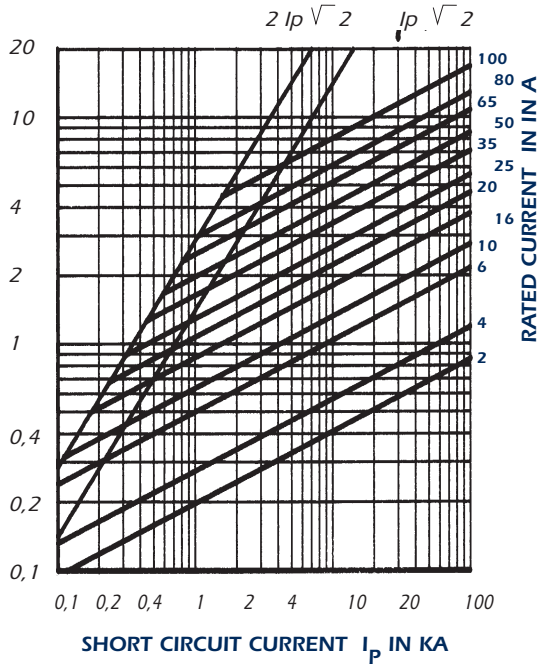
**For authorized energy supplier personnel only*

DIN Fuses
D-type
DIAZED

D Fuse System

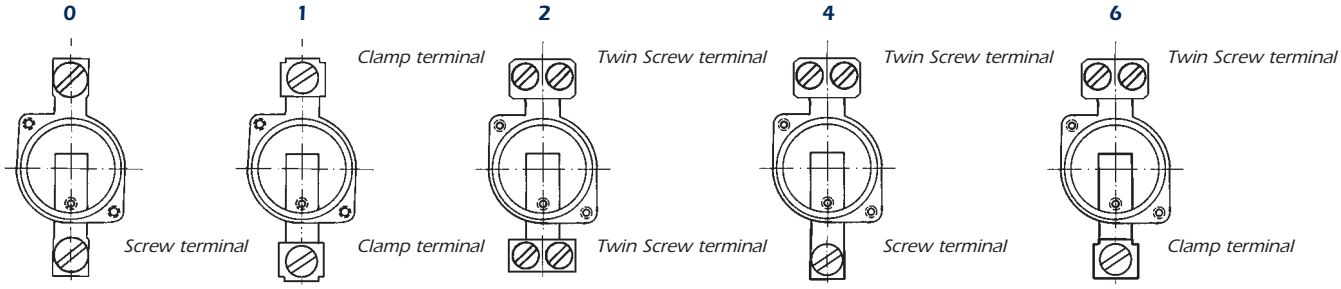


Time-current characteristics of D Fuses 2...100 A gL-gG

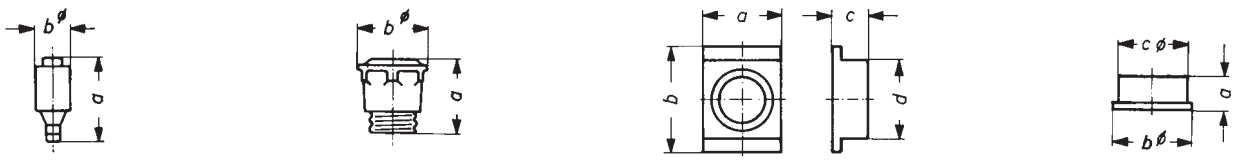


Forward current characteristics of DIAZED fuses 2...100 A gL-gG

Terminal types



Dimensions



D Fuse-links

Cat Number	a_1	bX
NDZ	50	12
DII	50	22
DIII	50	27
DIV	63	37
DV	65	45

D Screw caps

Cat Number	a	b
690.0002	42	34
691.0002	43	42
589.0002	34	27
690	42	34
691	43	42
592	52	60
2071	42	33
2072	43	40

D Covers

Cat Number	a	b	C
685.7	40	90	22
686.7	50	90	22
685.709	45	90	22
686.709	54	90	22
625.7	107	107	51
626.7	127	130	51

D touch protection rings

Cat Number	a	b	C
181.9	17,5	44,5	40,5
182.9	19	54	50,5
81.9	18,5	43,5	39,8
72.9	18	53,5	50,5

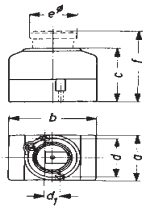
Ferraz Shawmut

DIN Fuses
D-type
DIAZED

Dimensions

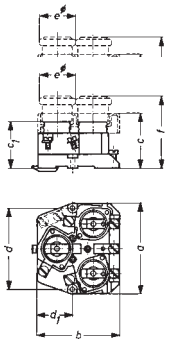
D Fuse System

Catalog number	Sizes in mm						
	a	b	c	d	d1	eX	f
99	40	70	53	32	–	38	82
199	40	70	54	20	–	38	83
200	50	90	54	20	–	48	83

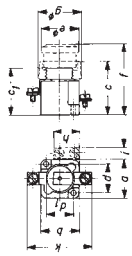


Catalog number	Sizes in mm							
	a	b	c	c_1	d	d1	eX	f
625	90	81	54.5	46	80	35	37	81
626	109	100	54.5	46	95	49.5	46.5	81
625*	107	107	51	–	–	–	–	–
626*	127	130	51	–	–	–	–	–

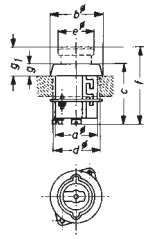
** with cover cap*



Catalog number	Sizes in mm											
	a	b	c	c1	d	d1	eX	f	X	h	i	k
685/81	38	40	60	46	29	27	38	82	43	–	–	60
686/72	46	44	57	48	35	33,5	48	84	52	–	–	73



Catalog number	Sizes in mm							
	a	b	c	d	e	f	g	g1
120	42	52	60	44	38	85	12	37
121	52	62	63	54	48	88	13	38



Ferraz Shawmut

BS88 LV Fuse Links
Catalog 2006

Blue Dot



CARBONE LORRAINE

Ferraz Shawmut

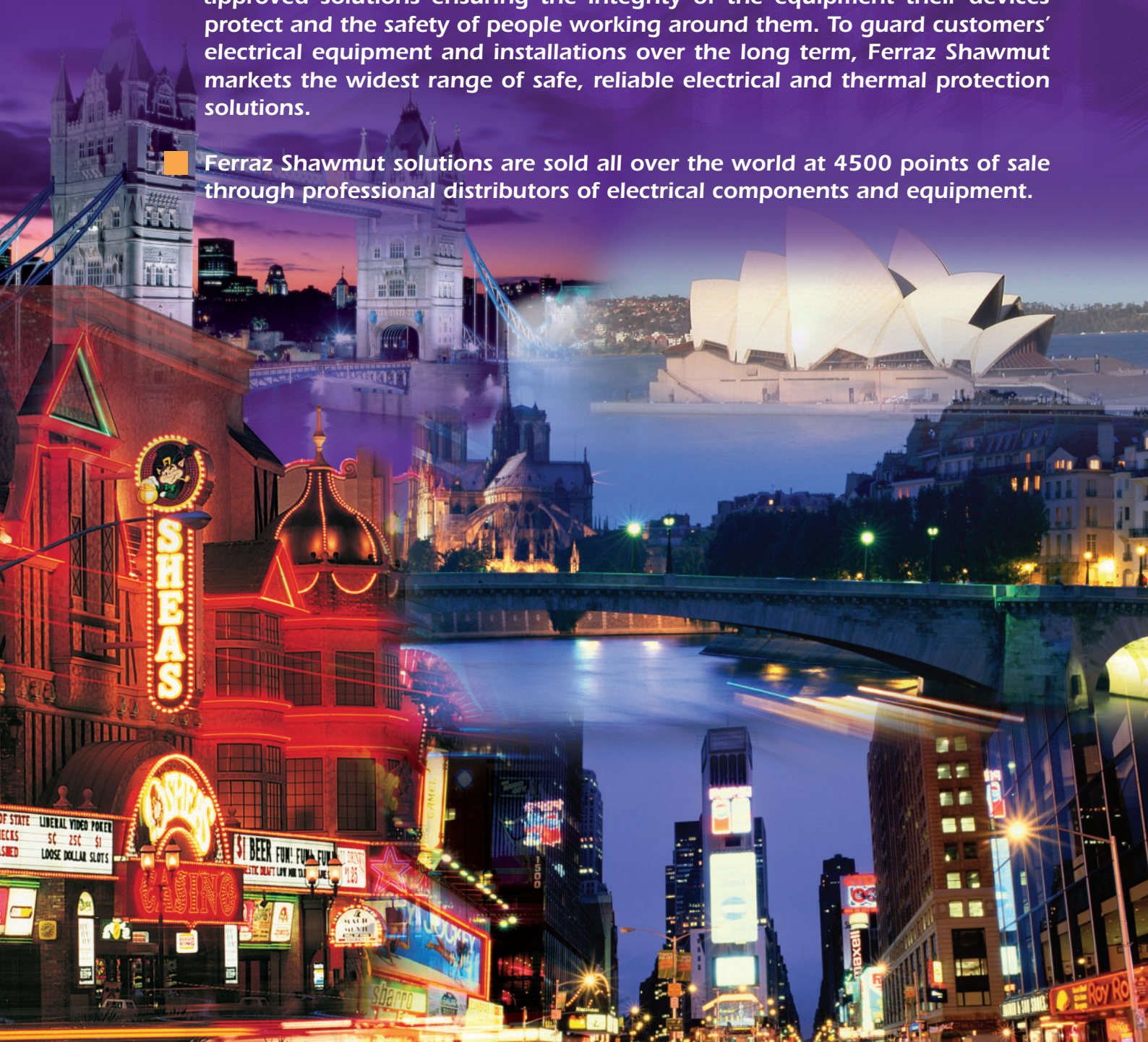
- Powerful presence of the world's leader on the circuit protection market Ferraz Shawmut, Carbone Lorraine's Electrical Protection Division, offer innovative solutions to enhance the safety of low and medium voltage installations and equipment.

- Above and beyond the supply of products, the company also provides added value in the form of technical support for OEMs, electrical contractors, panel builders, plant maintenance department and utilities.

- As a global player, Ferraz Shawmut has established production facilities on every continent to optimize the offering (France, Tunisia, United States, Canada, Mexico, India, Japan and P.R. of China). All these locations are united around a global quality, safety and environment policy.

- The world-class organization of Ferraz Shawmut offers tried, proven and approved solutions ensuring the integrity of the equipment their devices protect and the safety of people working around them. To guard customers' electrical equipment and installations over the long term, Ferraz Shawmut markets the widest range of safe, reliable electrical and thermal protection solutions.

- Ferraz Shawmut solutions are sold all over the world at 4500 points of sale through professional distributors of electrical components and equipment.





Blue Dot is the brand name of the Ferraz Shawmut's BS88 General Purpose Fuse and Fusegear range of products.

Blue Dot brand provides you with high-quality products designed and manufactured by Ferraz Shawmut in compliance with ISO 9001 Standard.

All the circuit protection solutions advertised in this catalogue are ASTA 20 certified and comply with the RoHS European Directive.

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Offset Bolted Tag Fuse Links (A-type)

Offset Bolted Tag Fuses Links (A-type)

Reference data

Rated Voltage: 415V ac
Breaking Capacity: 80kA











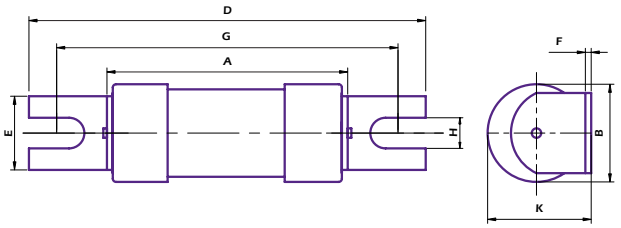




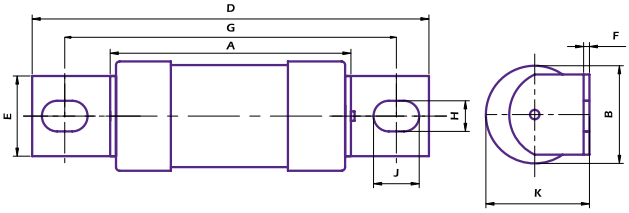
Rating (A)	Catalog Number	Reference Number	BS Standard Reference	IEC Standard Reference	Designation (Fuse Type)	Pack.
2	BNIT42V2	N226263J	BS88-2	IEC60269-2	2A1	10
4	BNIT42V4	P226264J	BS88-2	IEC60269-2	4A1	10
6	BNIT42V6	Q226265J	BS88-2	IEC60269-2	6A1	10
10	BNIT42V10	R226266J	BS88-2	IEC60269-2	10A1	10
16	BNIT42V16	S226267J	BS88-2	IEC60269-2	16A1	10
20	BNIT42V20	T226268J	BS88-2	IEC60269-2	20A1	10
25	BNIT42V25	V226269J	BS88-1	IEC60269-1	25A1	10
32	BNIT42V32	W226270J	BS88-1	IEC60269-1	32A1	10
25	BNIT42V20M25	X226271J	BS88-2	IEC60269-2	20M25A1	10
32	BNIT42V20M32	Y226272J	BS88-2	IEC60269-2	20M32A1	10
2	BTIA42V2	Z226273J	BS88-2	IEC60269-2	2A2	10
4	BTIA42V4	A226274J	BS88-2	IEC60269-2	4A2	10
6	BTIA42V6	B226275J	BS88-2	IEC60269-2	6A2	10
10	BTIA42V10	C226276J	BS88-2	IEC60269-2	10A2	10
16	BTIA42V16	D226277J	BS88-2	IEC60269-2	16A2	10
20	BTIA42V20	V227833J	BS88-2	IEC60269-2	20A2	10
25	BTIA42V25	E226278J	BS88-2	IEC60269-2	25A2	10
32	BTIA42V32	F226279J	BS88-2	IEC60269-2	32A2	10
40	BTIA42V32M40	G226280J	BS88-2	IEC60269-2	32M40A2	10
50	BTIA42V32M50	H226281J	BS88-2	IEC60269-2	32M50A2	10
63	BTIA42V32M63	K226283J	BS88-2	IEC60269-2	32M63A2	10
40	BTIS42V40	L226284J	BS88-2	IEC60269-2	40A3	10
50	BTIS42V50	M226285J	BS88-2	IEC60269-2	50A3	10
63	BTIS42V63	N226286J	BS88-2	IEC60269-2	63A3	10
80	BTIS42V80	P226287J	BS88-1	IEC60269-1	80A3	10
100	BTIS42V100	Q226288J	BS88-1	IEC60269-1	100A3	10
80	BTIS42V63M80	R226289J	BS88-2	IEC60269-2	63M80A3	10
100	BTIS42V63M100	S226290J	BS88-2	IEC60269-2	63M100A3	10
32	BTCP42V32	T226291E	BS88-2	IEC60269-2	32A4	5
40	BTCP42V40	V226292E	BS88-2	IEC60269-2	40A4	5
50	BTCP42V50	W226293E	BS88-2	IEC60269-2	50A4	5
63	BTCP42V63	X226294E	BS88-2	IEC60269-2	63A4	5
80	BTCP42V80	Y226295E	BS88-2	IEC60269-2	80A4	5
100	BTCP42V100	Z226296E	BS88-2	IEC60269-2	100A4	5
125	BTCP42V100M125	A226297E	BS88-2	IEC60269-2	100M125A4	5
160	BTCP42V100M160	B226298E	BS88-2	IEC60269-2	100M160A4	5
200	BTCP42V100M200	C226299E	BS88-2	IEC60269-2	100M200A4	5
125	BTFP42V125	D226300E	BS88-1	IEC60269-1	125A4X	5
160	BTFP42V160	E226301E	BS88-1	IEC60269-1	160A4X	5
200	BTFP42V200	F226302E	BS88-1	IEC60269-1	200A4X	5
250	BTFP42V200M250	G226303E	BS88-1	IEC60269-1	200M250A4X	5
315	BTFP42V200M315	H226304E	BS88-1	IEC60269-1	200M315A4X	5

Offset Bolted Tag Fuses Links (A-type)

Dimensions



Pos. No.	Fuse Type	Current Rating (A)	Dimensions A max	B max	D max	E max	F nom	G nom	H nom	K max
01	BNIT	2,4,6,10,16,20,25,32,20M25,20M32	35.5	13.5	56.0	11.2	0.8	44.5	4.8	14.5
02	BTIS	40,50,63	57.0	21.9	88.5	13.0	1.2	73.0	5.5	23.5
03	BTIS	80,100,63M80,63M100	57.0	26.9	88.5	13.0	1.2	73.0	5.5	28



Pos. No.	Fuse Type	Current Rating (A)	Dimensions A max	B max	D max	E max	F nom	G nom	J nom	H nom	K max
01	BTIA	2,4,6,10,16,20,25,32	35.5	13.5	86.0	9.2	0.8	73.0	8.0	5.5	14.5
02	BTIA	32M40,32M50,32M63	56.5	21.9	86.0	9.2	1.2	73.0	8.0	5.5	23.5
03	BTCP	32,40,50,63,80,100	59.5	26.9	111.0	19.5	2.4	94.0	11.0	8.7	28.5
04	BTCP	100M125,100M160,100M200	67.0	36.1	111.0	19.5	3.2	94.0	11.0	8.7	38.5
05	BTFP	125,160,200	67.0	36.1	111.0	19.5	3.2	94.0	11.0	8.7	38.5
06	BTFP	200M250,200M315	76.0	41.9	111.0	19.5	3.2	94.0	11.0	8.7	44.0

Electrical characteristics

Fuse Type	Rating (A)	Curve	I^2t (Ampere² seconds) Pre Arcing	Total	Watts Loss
BNIT/BTIA	2	gG	1	3.5	0.9
BNIT/BTIA	4	gG	7.6	26	1.5
BNIT/BTIA	6	gG	28	100	1.8
BNIT/BTIA	10	gG	70	315	1.2
BNIT/BTIA	16	gG	120	540	1.6
BNIT/BTIA	20	gG	250	1125	1.7
BNIT/BTIA	25	gG	420	1890	2.0
BNIT	20M25	gM	420	1890	1.3
BNIT/BTIA	32	gG	670	3000	2.9
BNIT	20M32	gM	670	3000	1.1
BTCP	32	gG	700	3000	3.6
BTIS/BTCP	40	gG	1300	5850	4.0
BTIA	32M40	gM	1300	5850	2.6
BTIS/BTCP	50	gG	2600	11700	4.8
BTIA	32M50	gM	2600	11700	2.0
BTIS/BTCP	63	gG	4000	17500	5.9
BTIA	32M63	gM	4000	17500	1.6
BTIS/BTCP	80	gG	8500	38250	6.5
BTIS	63M80	gM	8500	38250	4.0
BTIS/BTCP	100	gG	14000	65000	7.5
BTIS	63M100	gM	14000	65000	3.0
BTFP	125	gG	28000	78400	11.3
BTCP	100M125	gM	28000	78400	7.2
BTFP	160	gG	60000	168000	14.0
BTCP	100M160	gM	60000	168000	5.5
BTFP	200	gG	105000	293000	16.2
BTCP	100M200	gM	105000	293000	4.1
BTFP	200M250	gM	190000	532000	15.4
BTFP	200M315	gM	270000	756000	12.5

Offset Bolted Tag Fuses Links (A-type)

Central Bolted Tag Fuse Links (B & C-Type)

Central Bolted Tag Fuse Links (B & C-Type)

Reference data

Rated Voltage: 415V ac
Breaking Capacity: 80kA







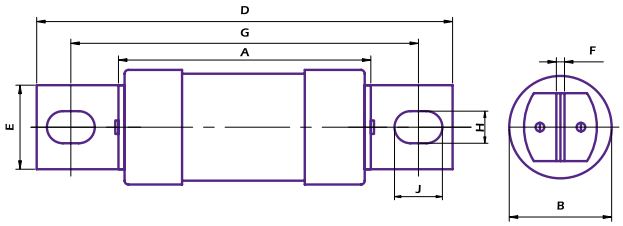




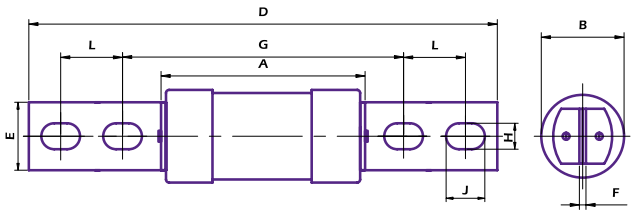


Rating (A)	Catalog Number	Reference Number	BS Standard Reference	IEC Standard Reference	Designation (Fuse Type)	Pack.
32	BTBC42V32	J226305J	BS88-2	IEC60269-2	32B1X	10
40	BTBC42V40	K226306J	BS88-2	IEC60269-2	40B1X	10
50	BTBC42V50	L226307J	BS88-2	IEC60269-2	50B1X	10
63	BTBC42V63	M226308J	BS88-2	IEC60269-2	63B1X	10
80	BTC42V80	N226309E	BS88-2	IEC60269-2	80B1	5
100	BTC42V100	P226310E	BS88-2	IEC60269-2	100B1	5
125	BTC42V100M125	Q226311E	BS88-2	IEC60269-2	100M125B1	5
160	BTC42V100M160	R226312E	BS88-2	IEC60269-2	100M160B1	5
200	BTC42V100M200	S226313E	BS88-2	IEC60269-2	100M200B1	5
125	BTF42V125	T226314E	BS88-2	IEC60269-2	125B2	5
160	BTF42V160	V226315E	BS88-2	IEC60269-2	160B2	5
200	BTF42V200	W226316E	BS88-2	IEC60269-2	200B2	5
250	BTF42V200M250	X226317A	BS88-2	IEC60269-2	200M250B2	1
315	BTF42V200M315	Y226318A	BS88-2	IEC60269-2	200M315B2	1
250	BTKF42V250	Z226319A	BS88-2	IEC60269-2	250B3	1
315	BTKF42V315	A226320A	BS88-2	IEC60269-2	315B3	1
400	BTKF42V315M400	B226321A	BS88-1	IEC60269-1	315M400B3	1
250	BTKM42V250	C226322A	BS88-1	IEC60269-1	250B3X	1
315	BTKM42V315	D226323A	BS88-1	IEC60269-1	315B3X	1
355	BTMF42V355	E226324A	BS88-2	IEC60269-2	355B4	1
400	BTMF42V400	F226325A	BS88-2	IEC60269-2	400B4	1
355	BTM42V355	G226326A	BS88-2	IEC60269-2	355C1	1
400	BTM42V400	H226327A	BS88-2	IEC60269-2	400C1	1
450	BTTM42V450	J226328A	BS88-2	IEC60269-2	450C2	1
500	BTTM42V500	K226329A	BS88-2	IEC60269-2	500C2	1
560	BTTM42V560	L226330A	BS88-2	IEC60269-2	560C2	1
630	BTTM42V630	M226331A	BS88-2	IEC60269-2	630C2	1
670	BTLM42V670	N226332A	BS88-2	IEC60269-2	670C3	1
710	BTLM42V710	P226333A	BS88-2	IEC60269-2	710C3	1
750	BTLM42V750	Q226334A	BS88-2	IEC60269-2	750C3	1
800	BTLM42V800	R226335A	BS88-2	IEC60269-2	800C3	1

Dimensions



Pos. No.	Fuse Type	Current Rating (A)	Dimensions A max	B max	D max	E max	F nom	G nom	H nom	J nom
01	BTC/BTBC	32,40,50,63,80,100	57.0	26.9	137.0	19.5	3.2	111.0	8.7	14.0
02	BTC	100M125,100M160,100M200	63.0	36.1	137.0	19.5	3.2	111.0	8.7	14.0
03	BTF	125A,160A,200A	63.0	36.1	137.0	19.5	3.2	111.0	8.7	14.0
04	BTF	200M250,200M315	73.0	41.9	138.0	19.5	3.2	111.0	8.7	14.0
05	BTKF	250,315	73.0	41.9	138.0	19.5	3.2	111.0	8.7	14.0
06	BTKF	315M400	75.0	59.1	138.0	26.0	4.8	111.0	8.7	14.0
07	BTKM	250,315	73.0	41.9	159.0	26.0	3.2	133.0	10.3	14.0
08	BTMF	355,400	75.0	59.1	138.0	26.0	4.8	111.0	8.7	14.0



Pos. No.	Fuse Type	Current Rating (A)	Dimensions A max	B max	D max	E max	F nom	G nom	H nom	J nom	L nom
01	BTM	355,400	75.0	59.1	212.0	26.0	4.8	133.0	10.3	16.0	25.4
02	BTTM	450,500,560,630	83.0	74.4	212.0	26.0	6.3	133.0	10.3	16.0	25.4
03	BTLM	670,710,750,800	86.0	82.4	212.0	26.0	9.5	133.0	10.3	16.0	25.4

Electrical characteristics

Fuse Type	Rating (A)	Curve	I²t (Ampere² seconds) Pre Arcing	Total	Watts Loss
BTBC	32	gG	700	3000	3.6
BTBC	40	gG	1300	5850	4.0
BTBC	50	gG	2600	11700	4.8
BTBC	63	gG	4000	17500	5.9
BTC	80	gG	8500	38250	6.5
BTC	100	gG	14000	65000	7.5
BTF	125	gG	28000	78400	11.3
BTC	100M125	gM	28000	78400	7.2
BTF	160	gG	60000	168000	14.0
BTC	100M160	gM	60000	168000	5.5
BTF	200	gG	105000	293000	16.2
BTC	100M200	gM	105000	293000	4.1
BTKF/BTKM	250	gG	190000	532000	24.0
BTF	200M250	gM	190000	532000	15.4
BTKF/BTKM	315	gG	270000	756000	31.0
BTF	200M315	gM	270000	756000	12.5
BTMF/BTM	355	gG	395000	1106000	32.0
BTMF/BTM	400	gG	505000	1414000	38.0
BTKF	315M400	gM	505000	1414000	23.5
BTTM	450	gG	650000	1820000	42.0
BTTM	500	gG	850000	2380000	48.0
BTTM	560	gG	1200000	3360000	50.0
BTTM	630	gG	1546000	4437000	54.0
BTLM	670	gG	1950000	5460000	60.0
BTLM	710	gG	2400000	6720000	62.0
BTLM	750	gG	3000000	8400000	65.0
BTLM	800	gG	3769000	10900000	68.0

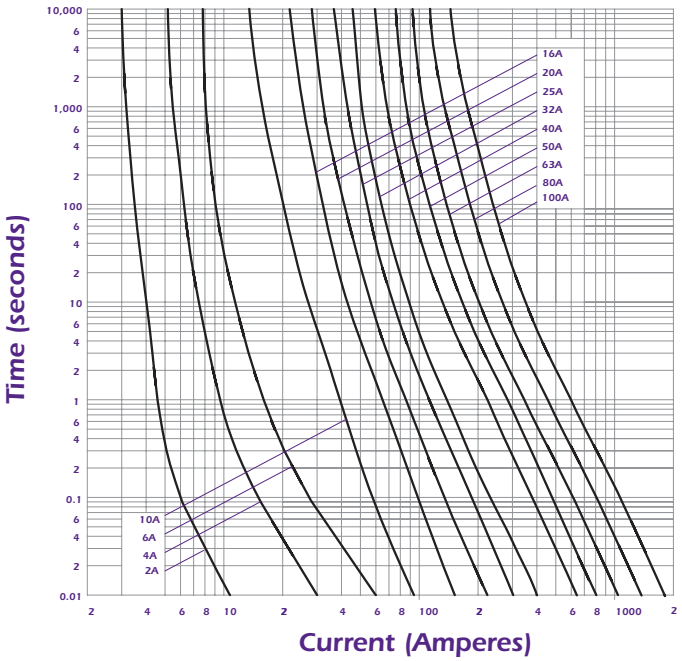
Central Bolted Tag Fuse Links (B & C-Type)

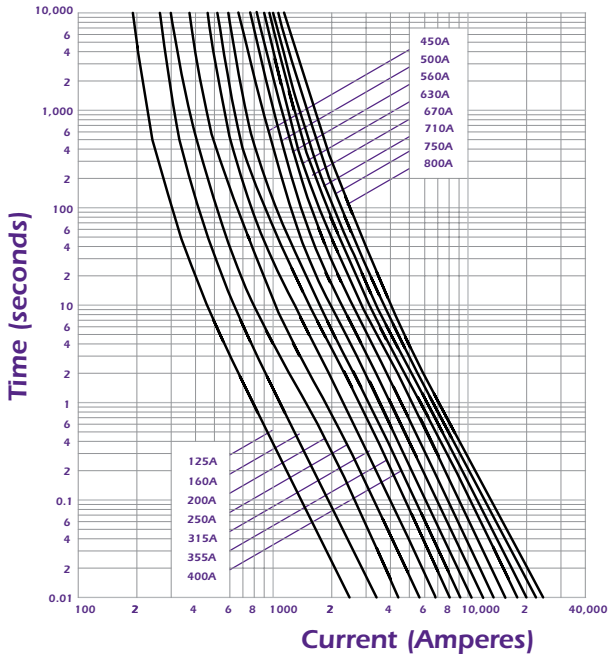
Curves Set for A, B & C Type

Curves Set for A, B & C Type

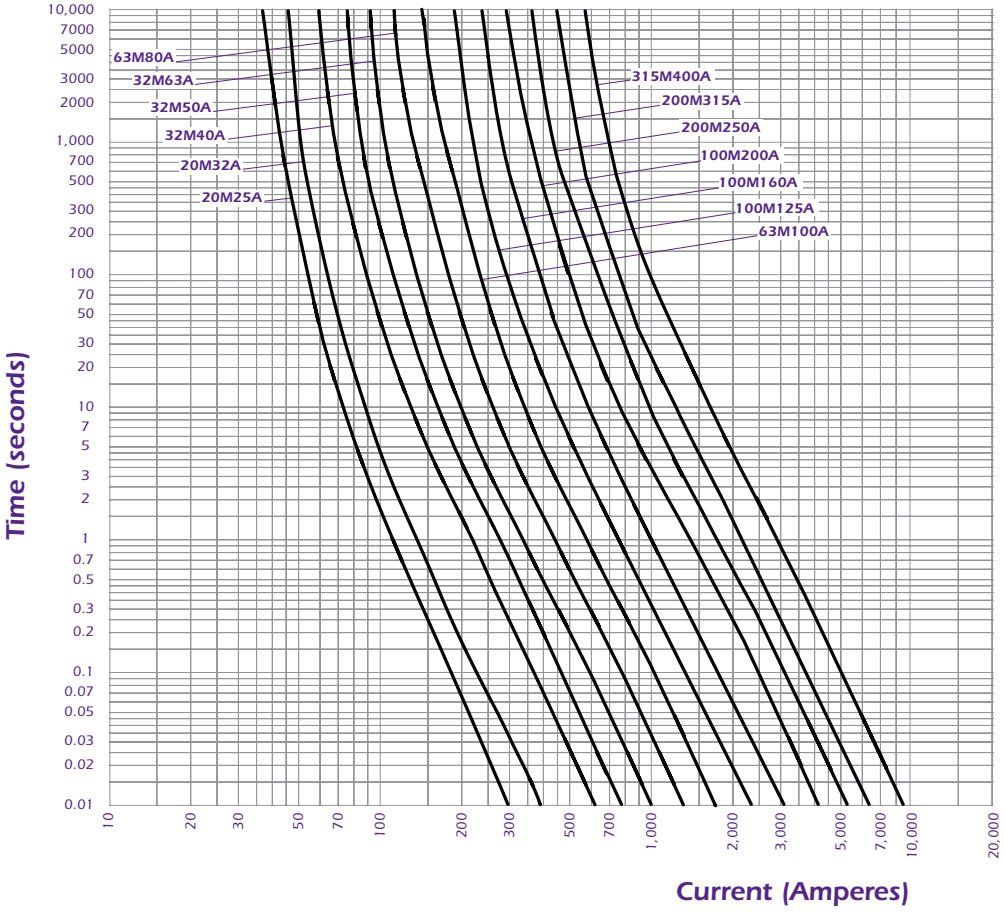
Time vs. Current characteristics

gG curves - 2 to 800A - 415VAC



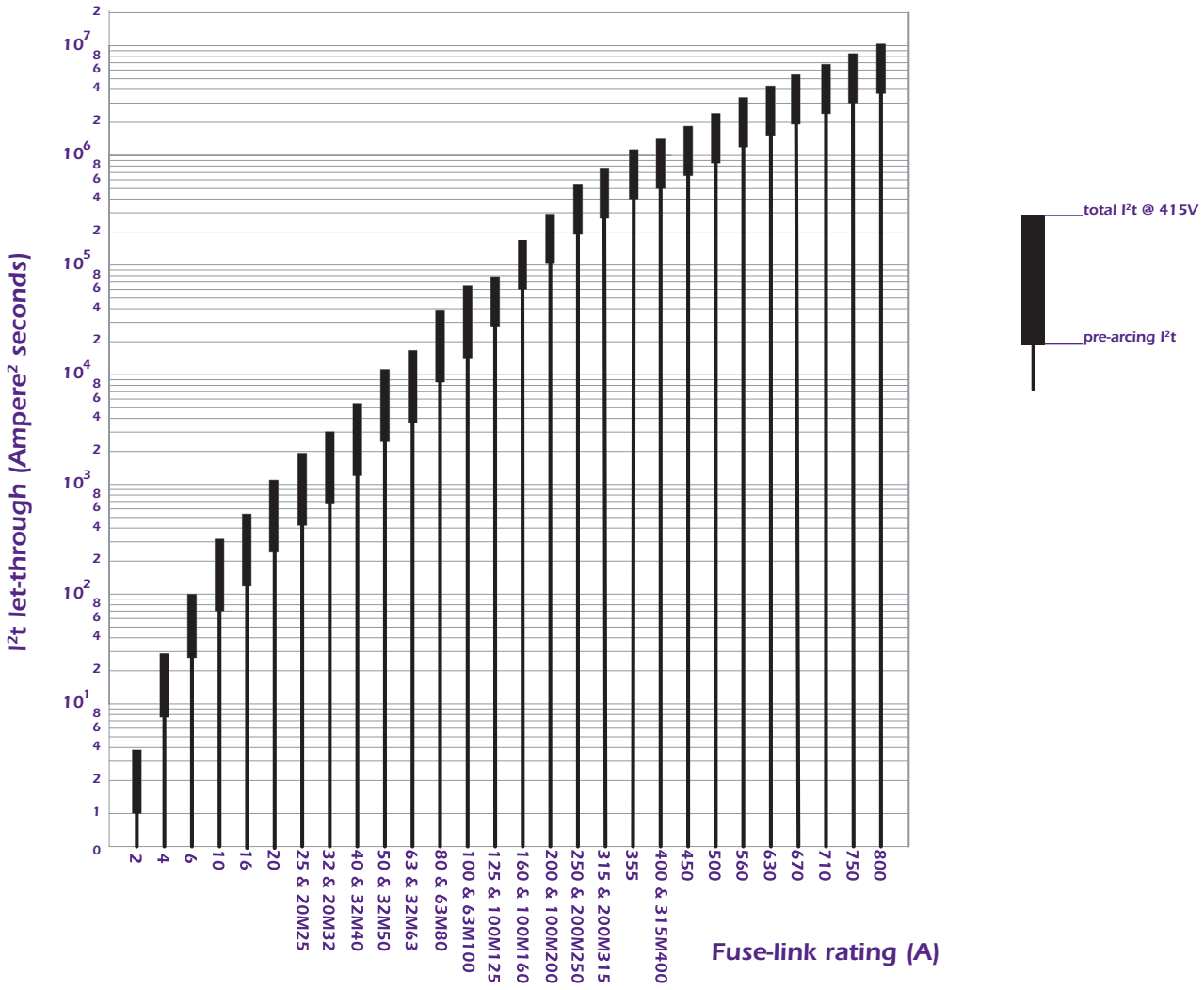


gM curves - 20M25 to 315M400A - 415VAC

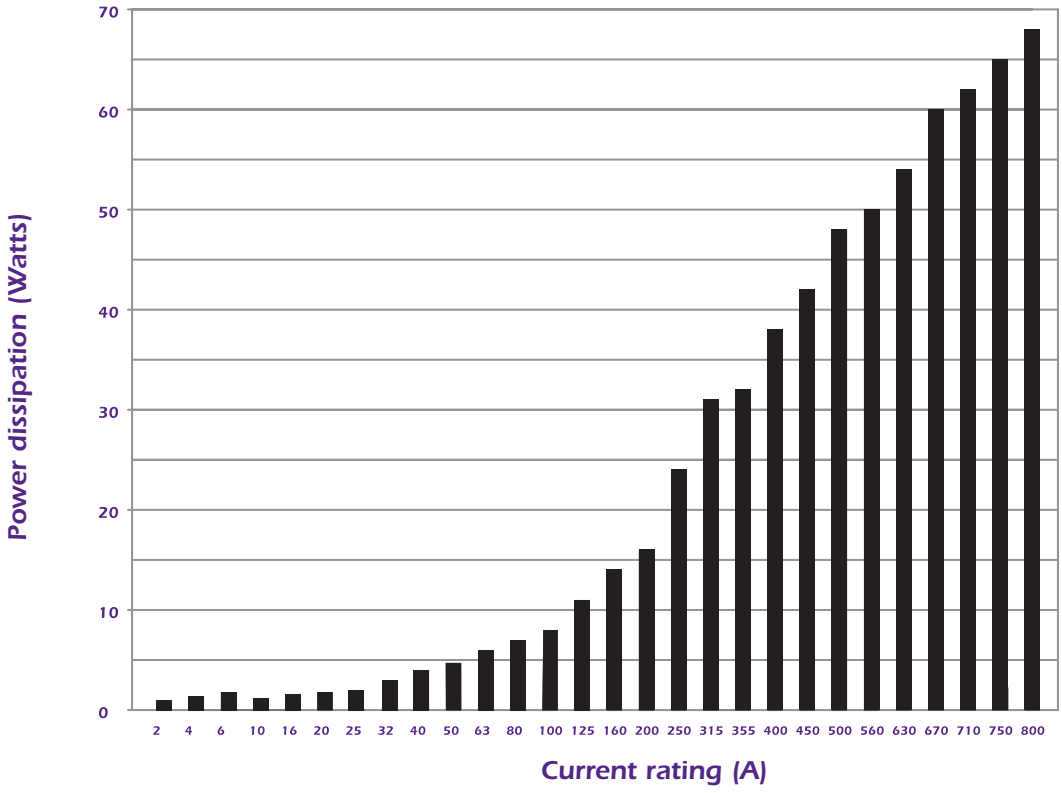


Ferraz Shawmut

I^2t characteristics



Power dissipation chart



Curves Set for A, B & C Type

Offset Blade Tag Fuse Links (F-Type)

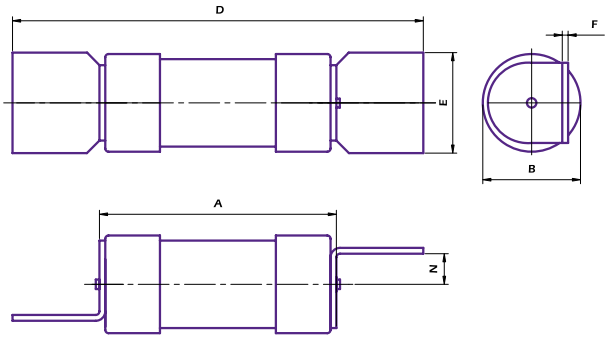
Reference data

Rated Voltage: 415V ac - Breaking Capacity: 80kA



Rating (A)	Catalog Number	Reference Number	BS Standard Reference	IEC Standard Reference	Designation (Fuse Type)	Pack.
2	BNS42V2	S226336J	BS88-6	IEC60269-2	2F1	10
4	BNS42V4	T226337J	BS88-6	IEC60269-2	4F1	10
6	BNS42V6	V226338J	BS88-6	IEC60269-2	6F1	10
10	BNS42V10	W226339J	BS88-6	IEC60269-2	10F1	10
16	BNS42V16	X226340J	BS88-6	IEC60269-2	16F1	10
20	BNS42V20	Y226341J	BS88-6	IEC60269-2	20F1	10
25	BNS42V25	Z226342J	BS88-6	IEC60269-2	25F1	10
32	BNS42V32	A226343J	BS88-6	IEC60269-2	32F1	10
25	BNS42V20M25	B226344J	BS88-6	IEC60269-2	20M25F1	10
32	BNS42V20M32	C226345J	BS88-6	IEC60269-2	20M32F1	10
10	BES42V10	D226346J	BS88-6	IEC60269-2	10F2	10
16	BES42V16	E226347J	BS88-6	IEC60269-2	16F2	10
20	BES42V20	F226348J	BS88-6	IEC60269-2	20F2	10
25	BES42V25	G226349J	BS88-6	IEC60269-2	25F2	10
32	BES42V32	H226350J	BS88-6	IEC60269-2	32F2	10
40	BES42V40	J226351J	BS88-6	IEC60269-2	40F2	10
50	BES42V50	K226352J	BS88-6	IEC60269-2	50F2	10
63	BES42V63	L226353J	BS88-6	IEC60269-2	63F2	10

Dimensions



Pos. No.	Fuse Type	Current Rating (A)	Dimensions A max	B max	D max	E max	F nom	N nom
01	BNS	2,4,6,10,16,20,25,32,20M25,20M32	35.5	13.5	61.0	12.7	0.8	3.5
02	BES	10,16,20,25,32,40,50,63	39.5	17.1	69.0	15.2	1.2	3.5

Electrical characteristics

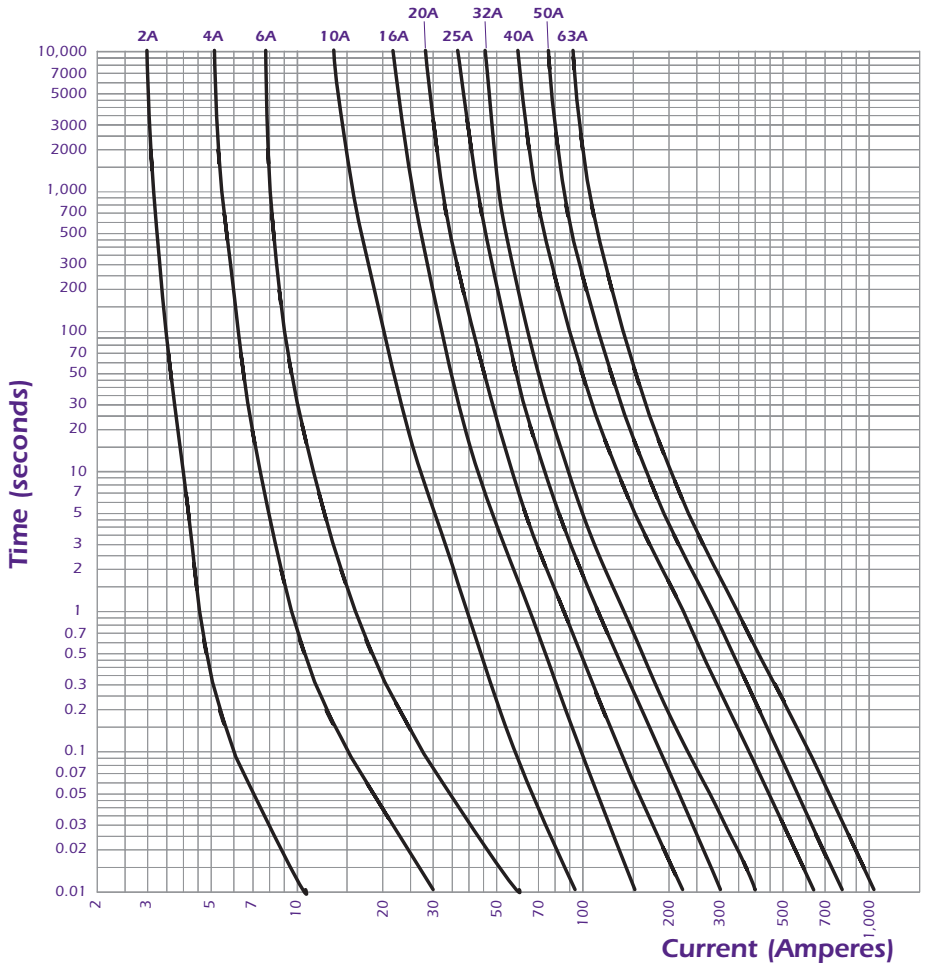
Fuse Type	Rating (A)	Curve	I^2t (Ampere^2 seconds) Pre Arcing	Total	Watts Loss
BNS	2	gG	1	3.5	0.9
BNS	4	gG	7.6	26	1.5
BNS	6	gG	28	100	1.8
BNS/BES	10	gG	70	315	1.2
BNS/BES	16	gG	120	540	1.6
BNS/BES	20	gG	250	1125	1.7
BNS/BES	25	gG	420	1890	2.0
BNS	20M25	gM	420	1890	1.3
BNS/BES	32	gG	670	3000	2.9
BNS	20M32	gM	670	3000	1.1
BES	40	gG	1300	4200	3.0
BES	50	gG	2600	8750	3.6
BES	63	gG	4000	13900	4.7

Ferraz Shawmut

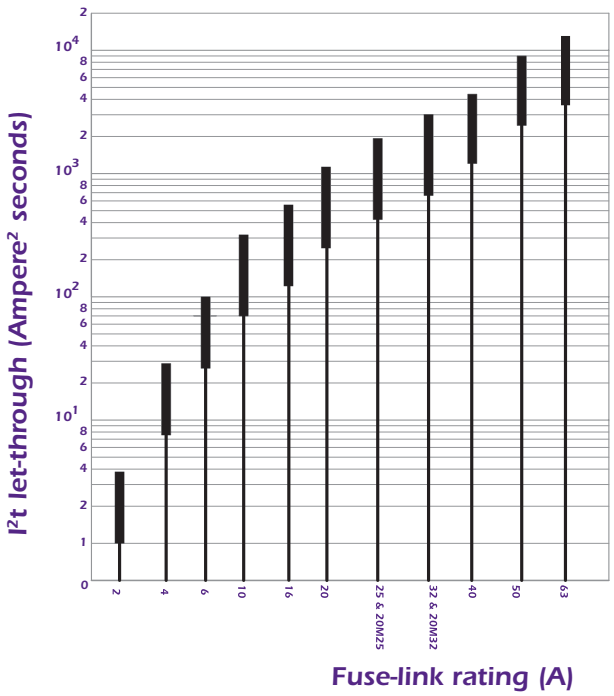
Curves Set F Type

Time vs. Current characteristics

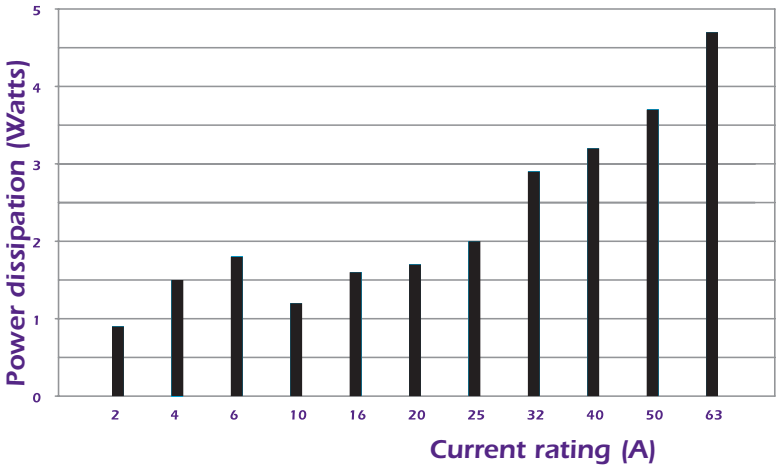
gG curves - 2 to 63A - 415VAC



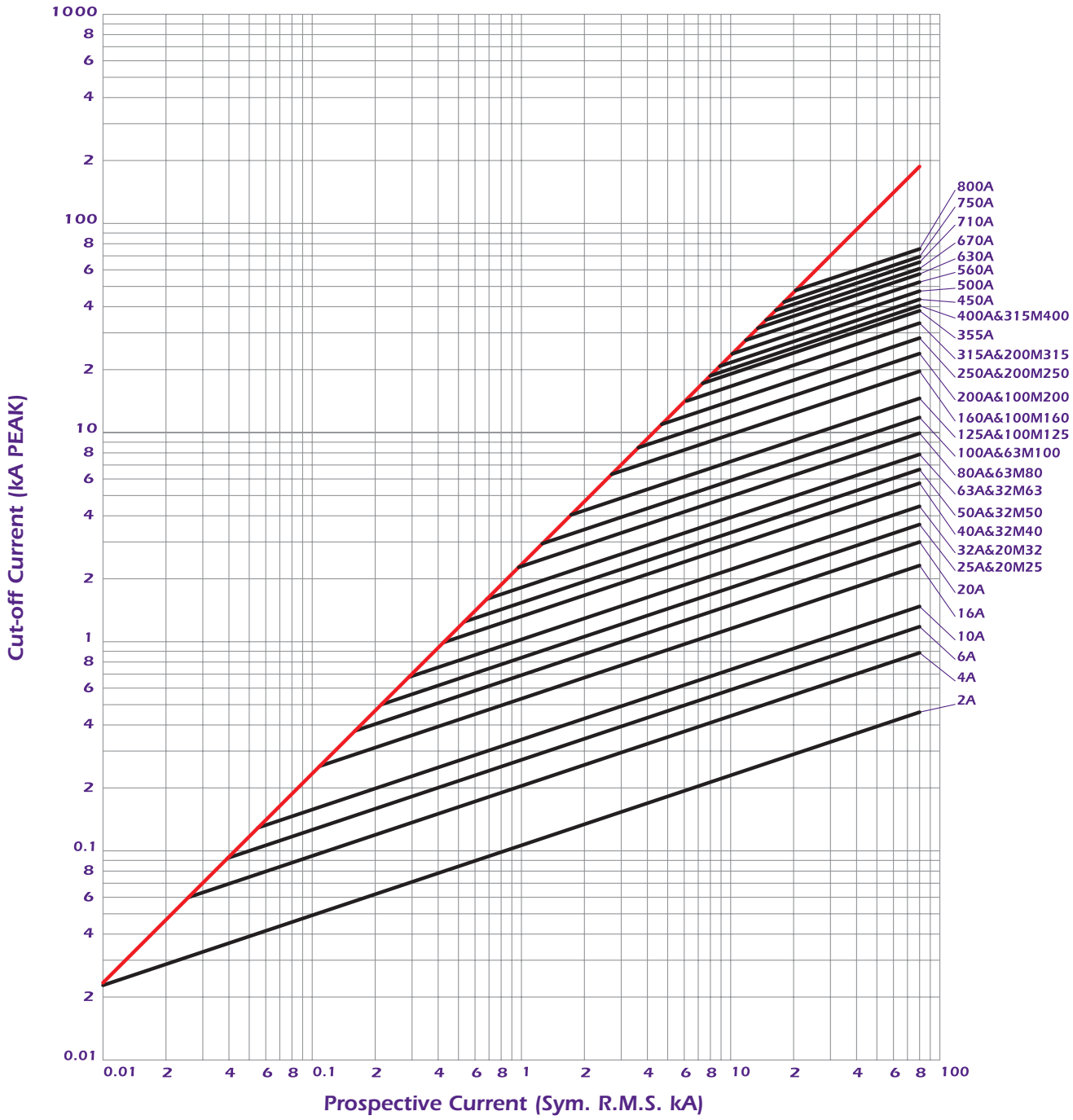
I^2t characteristics



Power dissipation chart



Cut-off Current Characteristics A,B,C & F Type





ASTA

CERTIFICATE OF SHORT-CIRCUIT RATING

Laboratory Ref. No: S2050596

Certificate No. 16264

APPARATUS: Low Voltage HRC Fuses, which represented the minimum and maximum ratings of a homogeneous series.
Rated Voltage: 415V, Rated currents: 450A & 650A[1]. Rated frequency: 50Hz

DESIGNATION : 450C2-630C2

MANUFACTURER: **Carbone Lorraine India Private Limited**, Ferraz Shawmut Division, A-3, ESSAE Industrial Estate, 62/3, Begur Hobli Road, Bommanahalli, Bangalore – 560 068, India

TESTED BY: **Central Power Research Institute**, Switchgear Testing & Development Station, Bhopal- 462 023, Madhya Pradesh, India.

DATE OF TESTS: 17th to 27th October 2005

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this certificate has been subjected to the series of proving tests in accordance with

IEC 60269-1:2005, IEC 60269-2-1:2004, BSEN 60269-1:1999 (incorporating Corrigendum 1: 2001), **BSEN 60269-2:1995** (incorporating Amendment 1), **BS 88: Part 1: 1988** (incorporating Amendment No: 1 & 2), **BS 88-2.1: 1988** (incorporating Amendment No: 1 & 2) **and BS 88-2.2: 1988** (incorporating Amendment No: 1, 2 & 3) **Clause No. 8.5**

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above standard(s) and to justify the ratings assigned by the manufacturer as stated below.

Breaking Range and Utilization Category: gG

Rated Breaking Capacity: 80kA at 415Vac.

1) The above fuse-links represent the minimum (450A) and maximum (630A) ratings of a homogeneous series. Fuse links intermediate ratings (500A & 560A) have been examined and comply with clause 8.1.5.2 of the standard as part of this series.

The record of Proving Tests applies only to the apparatus tested. The responsibility for conformity of apparatus having the same designations with that tested rests with the manufacturer.

This Certificate comprises 11 pages, 2 diagrams, 22 oscillograms, 4 photographs, 1 drawing and no other sheets as detailed on page 1

Only integral reproduction of this Certificate, or reproductions of this page accompanied by any page(s) on which are stated the assigned rated characteristics of the apparatus tested, are permitted without written permission from ASTA BEAB Certification Services, Hilton House, Corporation Street, Rugby. CV21 2DN, England.

UKAS PRODUCT CERTIFICATION 010

Rajani Menon
ASTA Observer

C. Nick-Evans
DIRECTOR

16th March 2006
Date

ASTA

CERTIFICATE OF SHORT-CIRCUIT RATING

Laboratory Ref. No: S2050597

Certificate No. 16265

APPARATUS: Low Voltage HRC Fuses, which represented the minimum and maximum ratings of a homogeneous series.
Rated Voltage: 415V, Rated currents: 670A & 800A[1]. Rated frequency: 50Hz

DESIGNATION : 670C3-800C3

MANUFACTURER: **Carbone Lorraine India Private Limited**, Ferraz Shawmut Division, A-3, ESSAE Industrial Estate, 62/3, Begur Hobli Road, Bommanahalli, Bangalore – 560 068, India

TESTED BY: **Central Power Research Institute**, Switchgear Testing & Development Station, Bhopal- 462 023, Madhya Pradesh, India.

DATE OF TESTS: 17th to 27th October 2005

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this certificate has been subjected to the series of proving tests in accordance with

IEC 60269-1:2005, IEC 60269-2-1:2004, BSEN 60269-1:1999 (incorporating Corrigendum 1: 2001), **BSEN 60269-2:1995** (incorporating Amendment 1), **BS 88: Part 1: 1988** (incorporating Amendment No: 1 & 2), **BS 88-2.1: 1988** (incorporating Amendment No: 1 & 2) **and BS 88-2.2: 1988** (incorporating Amendment No: 1, 2 & 3) **Clause No. 8.5**

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above standard(s) and to justify the ratings assigned by the manufacturer as stated below.

Breaking Range and Utilization Category: gG

Rated Breaking Capacity: 80kA at 415Vac.

1) The above fuse-links represent the minimum (670A) and maximum (800A) ratings of a homogeneous series. Fuse links having intermediate ratings (710A & 750A) have been examined and comply with clause 8.1.5.2 of the standard as part of this series.

The record of Proving Tests applies only to the apparatus tested. The responsibility for conformity of any apparatus having the same designations with that tested rests with the manufacturer.

This Certificate comprises 11 pages, 2 diagrams, 22 oscillograms, 4 photographs, 1 drawing and no other sheets as detailed on page 1

Only integral reproduction of this Certificate, or reproductions of this page accompanied by any page(s) on which are stated the assigned rated characteristics of the apparatus tested, are permitted without written permission from ASTA BEAB Certification Services, Hilton House, Corporation Street, Rugby. CV21 2DN, England.

UKAS PRODUCT CERTIFICATION 010

Rajani Menon
ASTA Observer

C. Nick-Evans
DIRECTOR

16th March 2006
Date

Voltage rating selection

BS 88 fuses comply with IEC 60269 standards. They are tested under a voltage at least 10% higher than the fuse rated voltage.

Ambient Temperature

Above an ambient of 40°C a general de-rating of 0.5% of the fuse-link ratied current per excess degree centigrade is recommended

Cable protection

gG fuses protect cables against both overload and short circuit current. The cable is protected when the following conditions are fulfilled:

$$I_B \leq I_N \leq I_Z$$
$$I_F \leq 1.45\ I_Z$$

I_B : operating current of the cable
I_Z : maximum current carrying capacity of the cable
I_N : rated current of the fuse
I_F : conventional fusing current of the fuse

Capacitor circuit protection

The fuse selection must take into account:
- the inrush current occurring when the capacitor is switched on
- the harmonic currents during the normal operation of the network
- Capacitor tolerances

The fuse link should be chosen with a current rating greater than 1.7 times the rated capacitor current. Correction for ambient temperature higher than 40°C must be added.

Transformer protection

Fuses must be fitted both in the primary and the secondary of the transformer. The fuse selection must take into account the high transient inrush current in the primary of the transformer. Consequently the normal current rating of the fuse links on the primary side of transformers should be at least twice the nominal transformer primary current. The normal IN value of the fuse links on the secondary side of transformers is at least equal to the nominal transformer secondary current when the temperature does not exceed 40°C.

Motor circuit protection

The motor starters manufacturer generally recommend the fuse link rating to be used in conjunction with the motor starter. Type 2 co-ordination is easily obtained with FERRAZ SHAWMUT fuses in view of having the pre arcing I2t values closer to the lower limit of the specified limits of the standard. The gM fuse selection as for an aM fuse requires the melt current at 5s is 7 times the fuse rating.

Protection against electrical shock

The rule is to disconnect within a time specified by local standards. Generally wiring regulations require a disconnecting time not exceeding 5 seconds for a distribution circuit. It will be less than 1 second in many other cases.

Rating (A)	Z_s (Ohms)	Rating (A)	Z_s (Ohms)
6	14	100	0.44
10	7.7	125	0.35
16	4.3	160	0.27
20	3.0	200	0.20
25	2.4	250	0.16
32	1.9	315	0.13
40	1.4	400	0.092
50	1.1	500	0.067
63	0.86	630	0.056
80	0.60	800	0.035

for more information, please contact our Technical Support :
ts@fr.ferrazshawmut.com

Comparison Chart

Comparison chart for BS88 LV Fuse links

Competitors		FERRAZ SHAWMUT
NIT	NITD	BNIT42Vx
TIA	AAO	BTIA42Vx
TIS	BAO	BTIS42Vxx
TCP	CEO	BTCP42Vxx
TFP	DEO	BTFP42Vxxx
TBC	BD	BTBC42Vxx
TC	CD	BTC42Vxx
TF	DD	BTF42Vxxx
TKF	ED	BTKF42Vxxx
TKM	EFS	BTKM42Vxxx
TMF	ED	BTMF42Vxxx
TM	EF	BTM42Vxxx
TTM	FF	BTTM42Vxxx
TLM	GF	BTLM42Vxxx
NS	NSD	BNS42Vx
MES	ESD	BES42Vxx

This list is intended for guidance only. Ferraz Shawmut do not guarantee identical performance for the comparative types.
It is essential that the performance characteristics are checked to ensure compatibility

Ferraz Shawmut Numbering System

BS88 LV Industrial fuse links

B	NIT	42V	xxx
BS88	Part Number	Rated Voltage (415V AC)	Current Rating

BS88 LV Industrial fuse links Motor Rated

B	NIT	42V	xxMxx
BS88	Part Number	Rated Voltage (415V AC)	Current Rating

DISTRIBUTOR:

Ferraz Shawmut

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69626 VILLEURBANNE Cedex - FRANCE
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A-3, Essae Industrial Estate,
62/3 Begur Hobli Road,
Bommanahalli, Bangalore - 560068
Tel: 0091-80-25730502 / 03 - Fax: 0091-80-25734727

www.ferrazshawmut.com

Amalgame - 04/2006

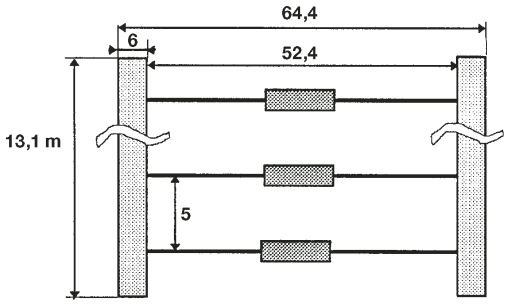
IEC Fuses
Subminiature
MQ Fast Acting

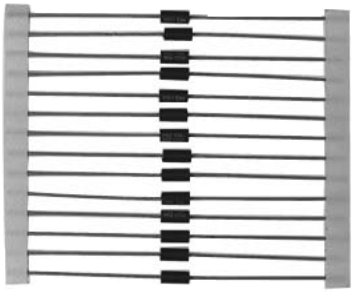
Complying with UL / CSA STD 248-14

125 VAC
FROM 0,1 TO 15 A

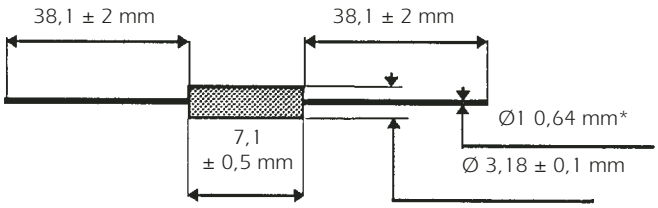
Dimensions

Packaging : Ammo-box





Max weight: 0.5 g



*** Ø1 = 0,81 mm pour (for) 10A, 15A**

Basic Characteristics

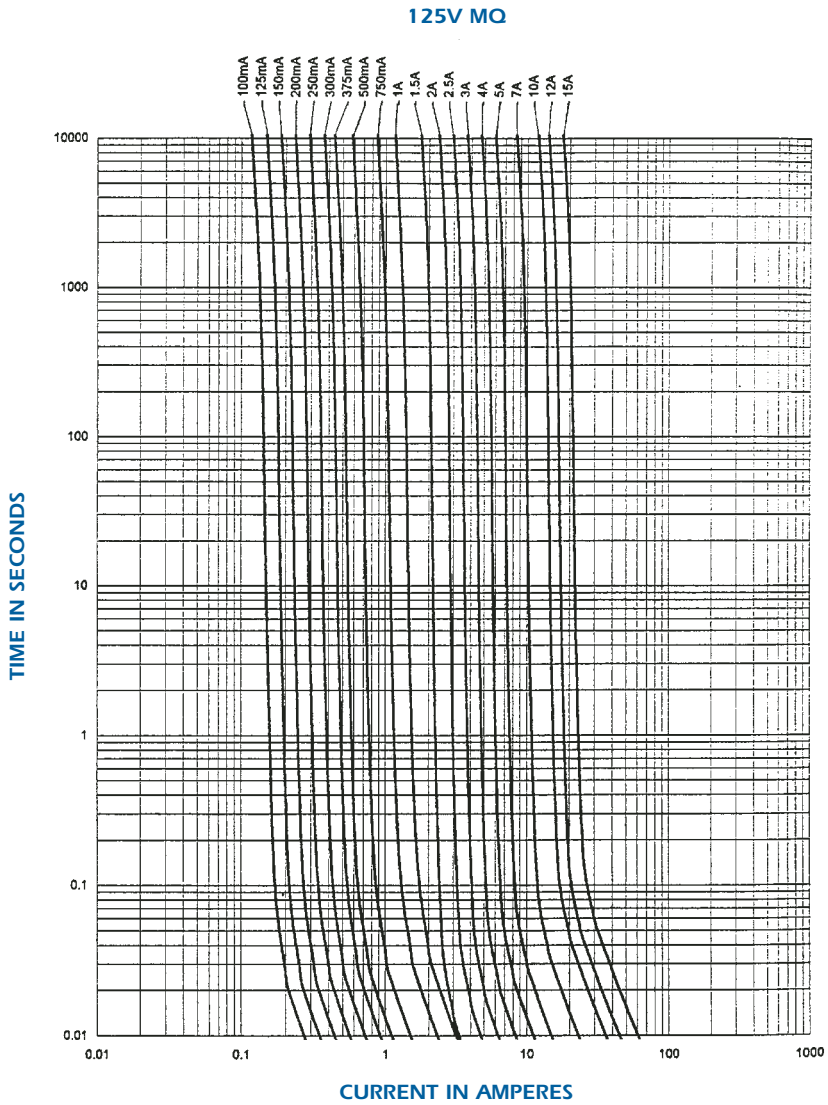
Size	Rated Voltage	Rated Current	Breaking Capacity under 125 V	Max. power dissip	Max. Voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	W	V			
3,2 X 7,6	125	0,100	125 VAC 50A 125VDC 300A	0,35	3	125V F 0,100 A MQ AMMO	M 208 621	MIMQF12,5V0,1
		0,125		0,087	0,61	125V F 0,125 A MQ AMMO	G 090 695	MIMQF12,5V0,125
		0,150		0,10	0,54	125V F 0,150 A MQ AMMO	X 208 929	MIMQF12,5V0,15
		0,200		0,12	0,58	125V F 0,200 A MQ AMMO	Y 208 930	MIMQF12,5V0,2
		0,250		0,14	0,43	125V F 0,250 A MQ AMMO	E 075 996	MIMQF12,5V0,25
		0,375		0,18	0,35	125V F 0,375 A MQ AMMO	F 075 997	MIMQF12,5V0,375
		0,500		0,21	0,31	125V F 0,500 A MQ AMMO	M 090 700	MIMQF12,5V0,5
		0,750		0,27	0,25	125V F 0,750 A MQ AMMO	G 075 998	MIMQF12,5V0,75
		1,000		0,33	0,22	125V F 1 A MQ AMMO	Q 090 703	MIMQF12,5V1
		1,500		0,42	0,18	125V F 1,5 A MQ AMMO	H 075 999	MIMQF12,5V1,5
		2,000		0,33	0,24	125V F 2 A MQ AMMO	T 090 706	MIMQF12,5V2
		2,500		0,40	0,22	125V F 2,5 A MQ AMMO	V 090 707	MIMQF12,5V2,5
		3,000		0,48	0,2	125V F 3 A MQ AMMO	W 090 708	MIMQF12,5V3
		3,500			0,2	125V F 3,5 A MQ AMMO	C 085 424	MIMQF12,5V3,5
		4,000		0,58	0,19	125V F 4 A MQ AMMO	X 090 709	MIMQF12,5V4
		5,000		0,71	0,17	125V F 5 A MQ AMMO	Y 090 710	MIMQF12,5V5
		7,000		0,9	0,15	125V F 7 A MQ AMMO	J 076 000	MIMQF12,5V7
		10,00		1,3	0,093	125V F 10 A MQ AMMO	T 078 700	MIMQF12,5V10
		15,00		1,8	0,088	125V F 15 A MQ AMMO	K 076 001	MIMQF12,5V15

IEC Fuses
Subminiature
MQ Fast Acting

Melting time limits

Current	100 % x In	200 % x In
100 mA –> 15 A	4 h mini	5 s maxi

Time-current characteristics



Packaging: in box of 100 and 1000 pieces

Installation instructions

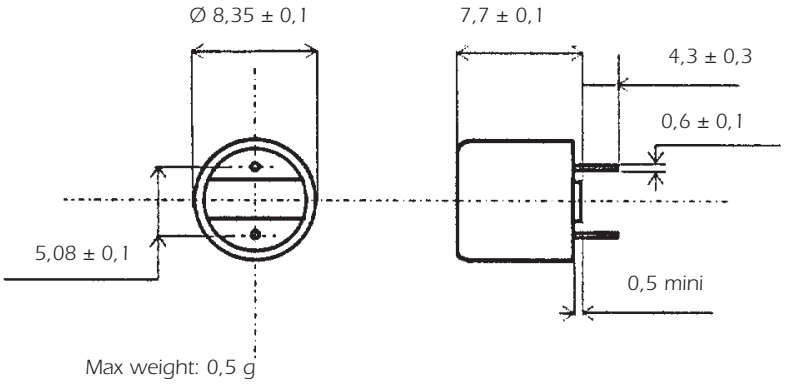
- Soldering heat resistance as per IEC 68-2-20-: 260°C for 10 seconds.
- Material:
  - Body: Thermoset V0 UL 94.
  - Connection: Tin-plated copper.
- Operating temperature: -55°C to 125°C.

IEC Fuses
Subminiature
MRF Fast Acting

Complying with IEC-127-3 Standard Sheet 3

250 VAC
FROM 0,050 TO 6,3 A

Dimensions



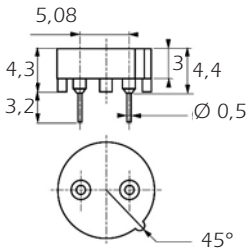


Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Max. power dissip	Max. Voltage drop	Désignation	Reference Number	Catalog Number
mm	VAC	A	A	W	V			
Ø8,35 x h=7,7	250	0,050		0,08	0,72	250V MRF 0,05 A	K 085 385	MIMRF25V0,05
		0,063		0,09	0,65	250V MRF 0,063 A	L 085 386	MIMRF25V0,063
		0,080		0,11	0,58	250V MRF 0,08 A	M 085 387	MIMRF25V0,08
		0,100		0,12	0,52	250V MRF 0,1 A	N 085 388	MIMRF25V0,1
		0,125		0,14	0,47	250V MRF 0,125 A	P 085 389	MIMRF25V0,125
		0,160		0,10	0,27	250V MRF 0,16 A	Q 085 390	MIMRF25V0,16
		0,200		0,12	0,26	250V MRF 0,2 A	R 085 391	MIMRF25V0,2
		0,250		0,15	0,254	250V MRF 0,250 A	S 085 392	MIMRF25V0,25
		0,315		0,18	0,246	250V MRF 0,315 A	T 085 393	MIMRF25V0,315
		0,400		0,22	0,239	250V MRF 0,400 A	V 085 394	MIMRF25V0,4
		0,500		0,27	0,232	250V MRF 0,500 A	X 085 396	MIMRF25V0,5
		0,630		0,15	0,106	250V MRF 0,630 A	Y 085 397	MIMRF25V0,63
		0,800		0,19	0,103	250V MRF 0,800 A	Z 085 398	MIMRF25V0,8
		1,000	35	0,23	0,1	250V MRF 1 A	A 085 399	MIMRF25V1
		1,250		0,28	0,097	250V MRF 1,25 A	B 085 400	MIMRF25V1,25
		1,600		0,35	0,094	250V MRF 1,6 A	C 085 401	MIMRF25V1,6
		2,000		0,42	0,091	250V MRF 2 A	D 085 402	MIMRF25V2
		2,500		0,51	0,088	250V MRF 2,5 A	E 085 403	MIMRF25V2,5
		3,150		0,62	0,086	250V MRF 3,15 A	F 085 404	MIMRF25V3,15
		4,000	40	0,77	0,083	250V MRF 4 A	G 085 405	MIMRF25V4
		5,000	50	0,93	0,081	250V MRF 5 A	R 208 625	MIMRF25V5
		6,300*	63	1,14	0,078	250V MRF 6,3 A	S 208 626	MIMRF25V6,3

** Non approval rating*





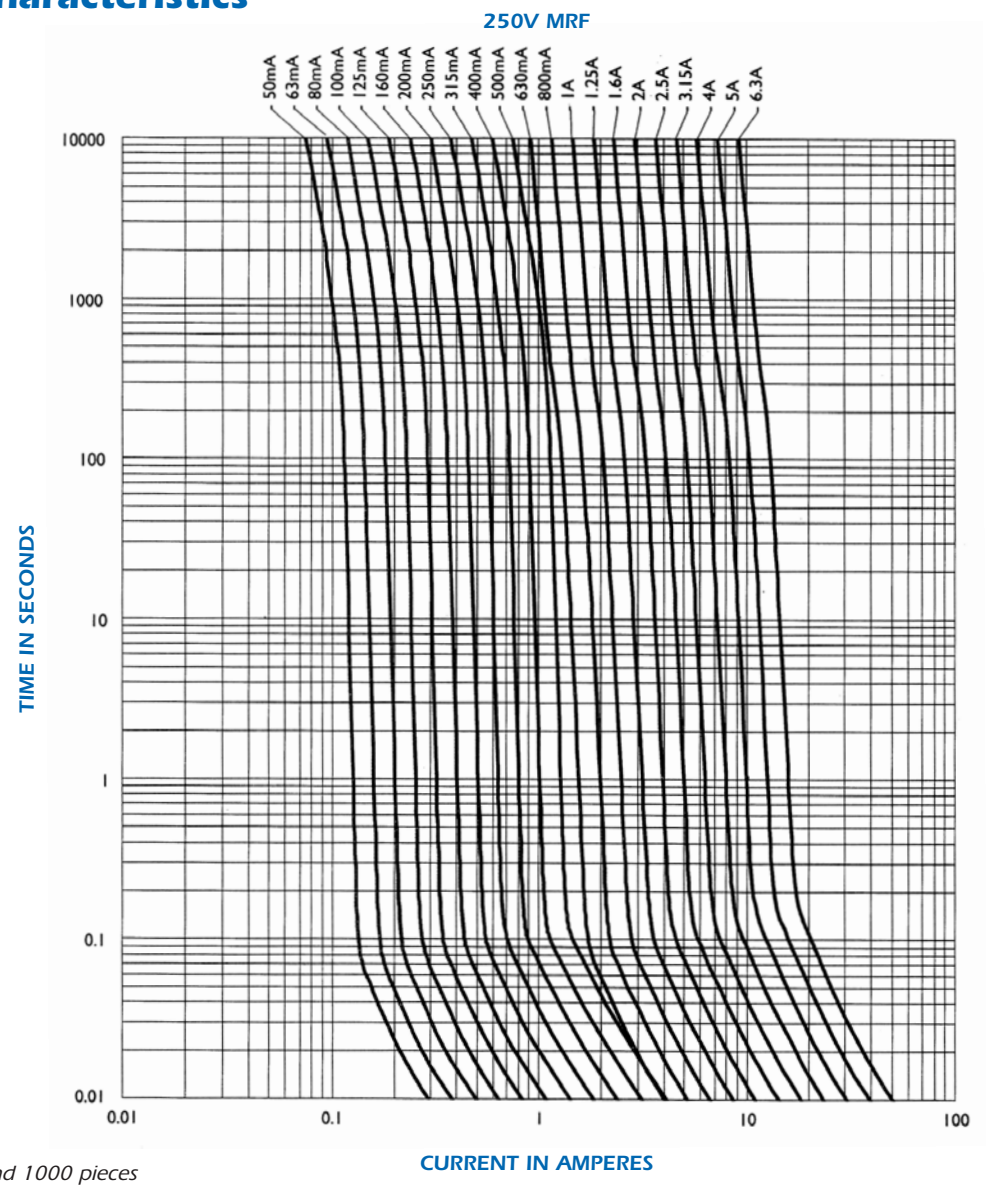
Reference Number:
G210548
Catalog number MISIMRT/MRF

IEC Fuses
Subminiature
MRF Fast Acting

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In
50 mA –> 6,3 A	30 min maxi	10 ms mini	3 s maxi	3 ms mini	300 ms maxi	20 ms maxi

Time-current characteristics



Packaging: *in box of 100 and 1000 pieces*

Installation instructions

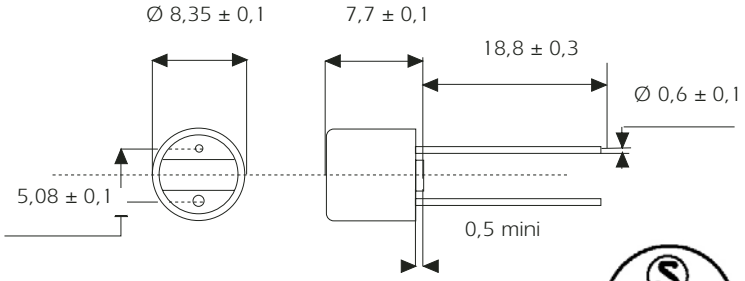
- Soldering heat resistance as per IEC 68-2-20: 260°C for 10 seconds.
- Material:
  - Body: Thermoplastic V0 UL 94.
  - Connection: Tin-plated copper alloy.
- Operating temperature: -55°C to 125°C.

IEC Fuses
Subminiature
MRFLL Fast Acting

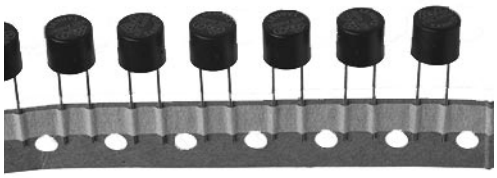
Complying with IEC-127-3 Standard Sheet 3

250 VAC
FROM 0,250 TO 6,3 A

Dimensions



Max weight: 0,5 g



T 1A 250V FERRAZ

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Max. power dissip	Max. Voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	W	V			
Ø8,35 x h=7,7	250	0,250	35	0,15	0,254	250V MRF 0,250 A LL AMMO	B 208289	MIMRF25V0,25LL
		0,315		0,18	0,246	250V MRF 0,315 A LL AMMO	C 208290	MIMRF25V0,315LL
		0,400		0,22	0,239	250V MRF 0,400 A LL AMMO	D 208291	MIMRF25V0,4LL
		0,500		0,27	0,232	250V MRF 0,500 A LL AMMO	E 208292	MIMRF25V0,5LL
		0,630		0,15	0,106	250V MRF 0,630 A LL AMMO	F 208293	MIMRF25V0,63LL
		0,800		0,19	0,103	250V MRF 0,800 A LL AMMO	G 208294	MIMRF25V0,8LL
		1,000		0,23	0,100	250V MRF 1 A LL AMMO	H 208295	MIMRF25V1LL
		1,250		0,28	0,097	250V MRF 1,25 A LL AMMO	J 208296	MIMRF25V1,25LL
		1,600		0,35	0,094	250V MRF 1,6 A LL AMMO	K 208297	MIMRF25V1,6LL
		2,000		0,42	0,091	250V MRF 2 A LL AMMO	L 208298	MIMRF25V2LL
		2,500		0,51	0,088	250V MRF 2,5 A LL AMMO	M 208299	MIMRF25V2,5LL
		3,150		0,62	0,086	250V MRF 3,15 A LL AMMO	N 208300	MIMRF25V3,15LL
		4,000	40	0,77	0,083	250V MRF 4 A LL AMMO	P 208301	MIMRF25V4LL
		5,000	50	0,93	0,081	250V MRF 5 A LL AMMO	X 208630	MIMRF25V5LL
		6,000	63	1,14	0,078	250V MRF 6,3 A LL AMMO	Y 208631	MIMRF25V6,3LL

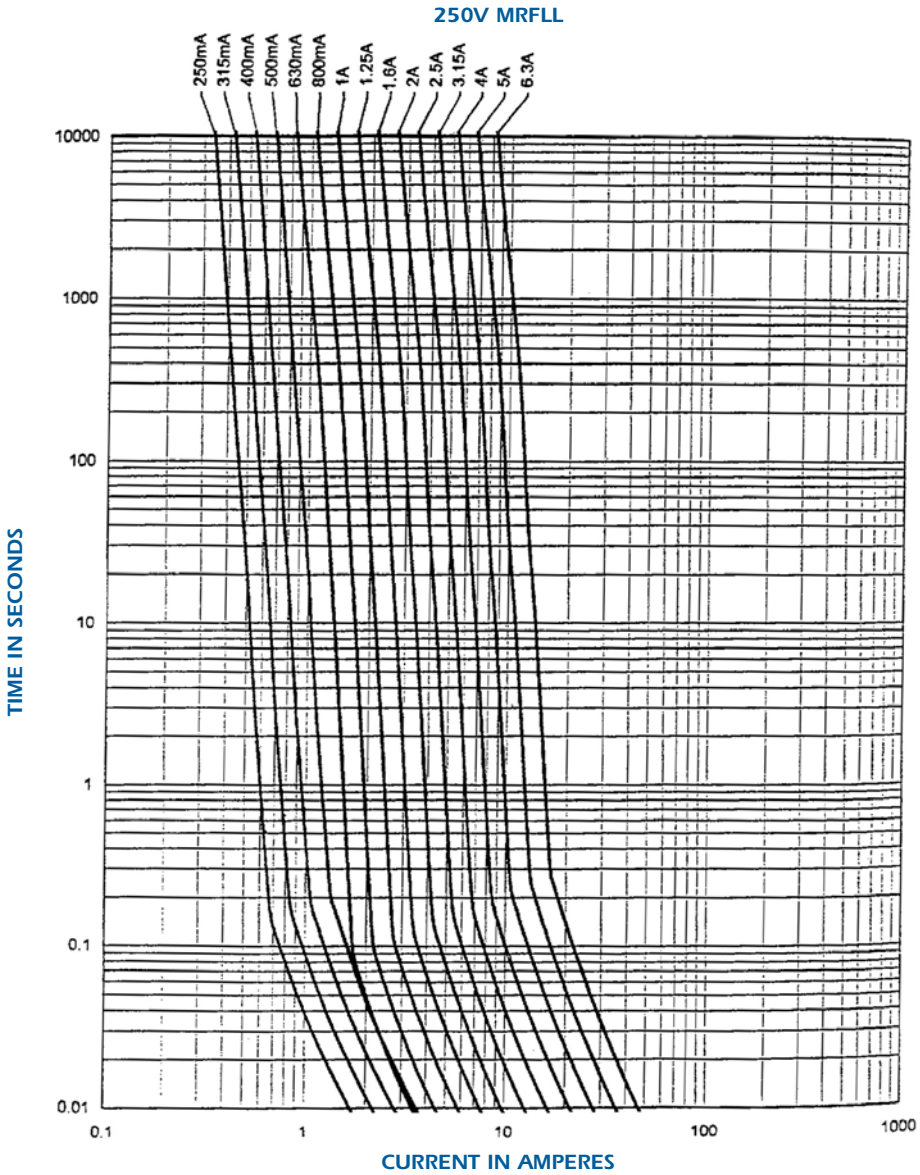
Lower rated current consult us

IEC Fuses
Subminiature
MRFLL Fast Acting

Melting time limits

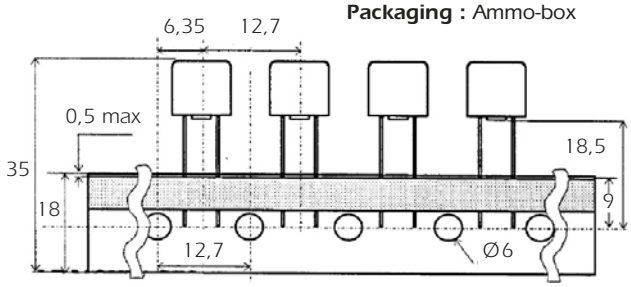
Current	210 % x In	275 % x In		400 % x In		1 000 % x In
250 mA –> 4 A	30 min maxi	10 ms mini	3 s maxi	3 ms mini	300 ms maxi	20 ms maxi

Time-current characteristics



Packaging: in box of 100 and 1000 pieces

Packaging : Ammo-box



Installation instructions

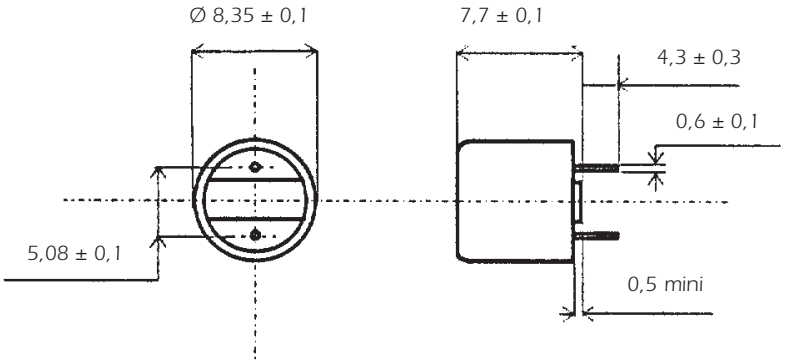
- Soldering heat resistance: according IEC 68-2-20: 260°C for 10 seconds.
- Material:
  - Body: Thermoplastic V0 UL 94.
  - Connection: Tin-plated copper alloy.

IEC Fuses
Subminiature
MRT Time Lag

Complying with IEC-127-3 Standard Sheet 4

250 VAC
FROM 0,080 TO 6,3 A

Dimensions





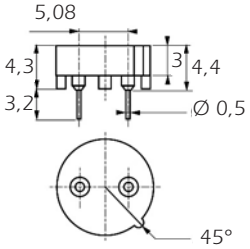
Max weight: 0.5 g

Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Max. power dissip	Max. Voltage drop	Designation				Reference Number	Catalog Number
mm	VAC	A	A	W	V						
Ø8,35 x h=7,7	250	0,080	35**	0,10	0,40	250V	MRT	0,080	A	C 081 767	MIMRT25V0,08
		0,100		0,11	0,35	250V	MRT	0,100	A	D 082 550	MIMRT25V0,1
		0,125		0,13	0,30	250V	MRT	0,125	A	E 082 551	MIMRT25V0,125
		0,160		0,15	0,28	250V	MRT	0,160	A	F 082 552	MIMRT25V0,16
		0,200		0,17	0,25	250V	MRT	0,200	A	G 082 553	MIMRT25V0,2
		0,250		0,19	0,22	250V	MRT	0,250	A	H 082 554	MIMRT25V0,25
		0,315		0,22	0,19	250V	MRT	0,315	A	J 082 555	MIMRT25V0,315
		0,400		0,25	0,16	250V	MRT	0,400	A	K 082 556	MIMRT25V0,4
		0,500		0,29	0,15	250V	MRT	0,500	A	L 082 557	MIMRT25V0,5
		0,630		0,33	0,13	250V	MRT	0,630	A	M 082 558	MIMRT25V0,63
		0,800		0,38	0,12	250V	MRT	0,800	A	N 082 559	MIMRT25V0,8
		1,000		0,44	0,11	250V	MRT	1	A	P 082 560	MIMRT25V1
		1,250		0,51	0,10	250V	MRT	1,25	A	Q 082 561	MIMRT25V1,25
		1,600		0,58	0,095	250V	MRT	1,6	A	R 082 562	MIMRT25V1,6
		2,000		0,67	0,090	250V	MRT	2	A	S 082 563	MIMRT25V2
		2,500		0,77	0,087	250V	MRT	2,5	A	T 082 564	MIMRT25V2,5
		3,150		0,88	0,083	250V	MRT	3,15	A	V 082 565	MIMRT25V3,15
		4,000*	40**	1,02	0,080	250V	MRT	4	A	W 082 566	MIMRT25V4
		5,000*	50**	1,17	0,077	250V	MRT	5	A	Z 208 632	MIMRT25V5
		6,300*	63**	1,34	0,073	250V	MRT	6,3	A	A 208 633	MIMRT25V6,3

** approval only.*
*** 100A for*





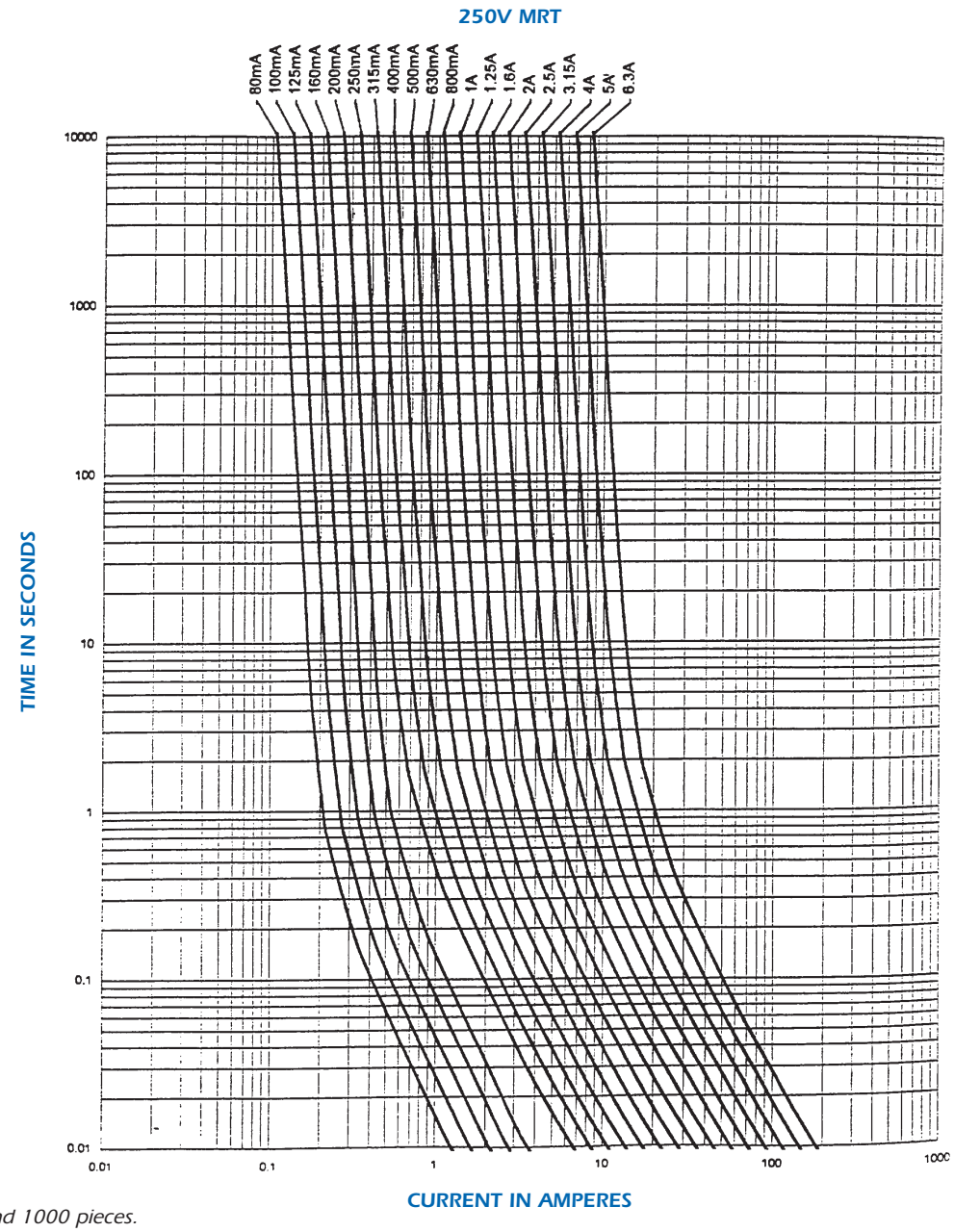
Reference Number:
G210548
Catalog number MISIMRT/MRF

IEC Fuses
Subminiature
MRT Time Lag

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In	
80 mA –> 6,3 A	2 min maxi	400 ms mini	10 s maxi	150 ms mini	3 s maxi	20 ms mini	150 ms maxi

Time-current characteristics



Packaging: *in box of 100 and 1000 pieces.*

Installation instructions

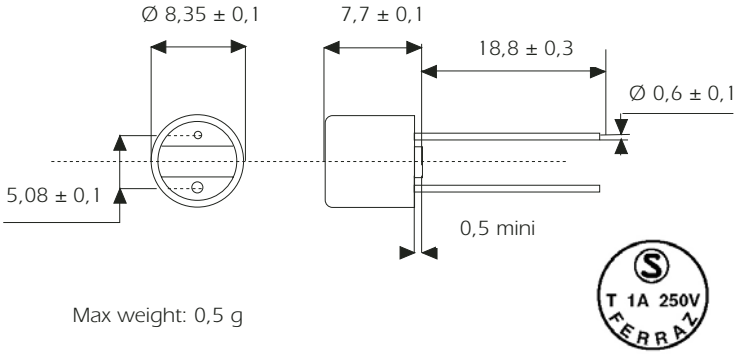
- Soldering heat resistance as per IEC 68-2-20 260°C for 10 seconds.
- Material:
  - Body: Thermoplastic V0 UL 94.
  - Connection: Tin-plated copper alloy.
- Operating temperature: -55°C to 125°C

IEC Fuses
Subminiature
MRTLL Time Lag

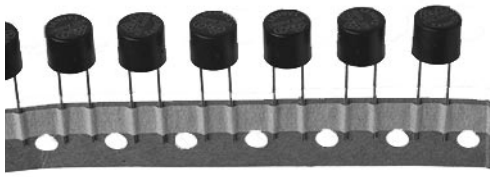
Complying with IEC-127-3 Standard Sheet 4

250 VAC
FROM 0,080 TO 6,3 A

Dimensions



Max weight: 0,5 g



Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Max. power dissip	Max. Voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	W	V			
Ø8,35 x h=7,7	250	0,080	35**	0,10	0,40	250V MRT 0,080 LL AMMO	W 208 284	MIMRT25V0,08LL
		0,100		0,11	0,35	250V MRT 0,100 LL AMMO	X 208 285	MIMRT25V0,1LL
		0,125		0,13	0,30	250V MRT 0,125 LL AMMO	Y 208 286	MIMRT25V0,125LL
		0,160		0,15	0,28	250V MRT 0,160 LL AMMO	Z 208 287	MIMRT25V0,16LL
		0,200		0,17	0,25	250V MRT 0,200 LL AMMO	A 208 288	MIMRT25V0,2LL
		0,250		0,19	0,22	250V MRT 0,250 LL AMMO	Q 208 302	MIMRT25V0,25LL
		0,315		0,22	0,19	250V MRT 0,315 LL AMMO	R 208 303	MIMRT25V0,315LL
		0,400		0,25	0,16	250V MRT 0,400 LL AMMO	S 208 304	MIMRT25V0,4LL
		0,500		0,29	0,15	250V MRT 0,500 LL AMMO	T 208 305	MIMRT25V0,5LL
		0,630		0,33	0,13	250V MRT 0,630 LL AMMO	V 208 306	MIMRT25V0,63LL
		0,800		0,38	0,12	250V MRT 0,800 LL AMMO	W 208 307	MIMRT25V0,8LL
		1,000		0,44	0,11	250V MRT 1 LL AMMO	X 208 308	MIMRT25V1LL
		1,250		0,51	0,10	250V MRT 1,25 LL AMMO	Y 208 309	MIMRT25V1,25LL
		1,600		0,58	0,095	250V MRT 1,6 LL AMMO	Z 208 310	MIMRT25V1,6LL
		2,000		0,67	0,090	250V MRT 2 LL AMMO	A 208 311	MIMRT25V2LL
		2,500		0,77	0,087	250V MRT 2,5 LL AMMO	B 208 312	MIMRT25V2,5LL
		3,150		0,88	0,083	250V MRT 3,15 LL AMMO	C 208 313	MIMRT25V3,15LL
		4,000*	40**	1,02	0,080	250V MRT 4 LL AMMO	D 208 314	MIMRT25V4LL
		5,000*	50**	1,17	0,077	250V MRT 5 LL AMMO	B 208 634	MIMRT25V5LL
		6,300*	63**	1,34	0,073	250V MRT 6,3 LL AMMO	C 208 635	MIMRT25V6,3LL

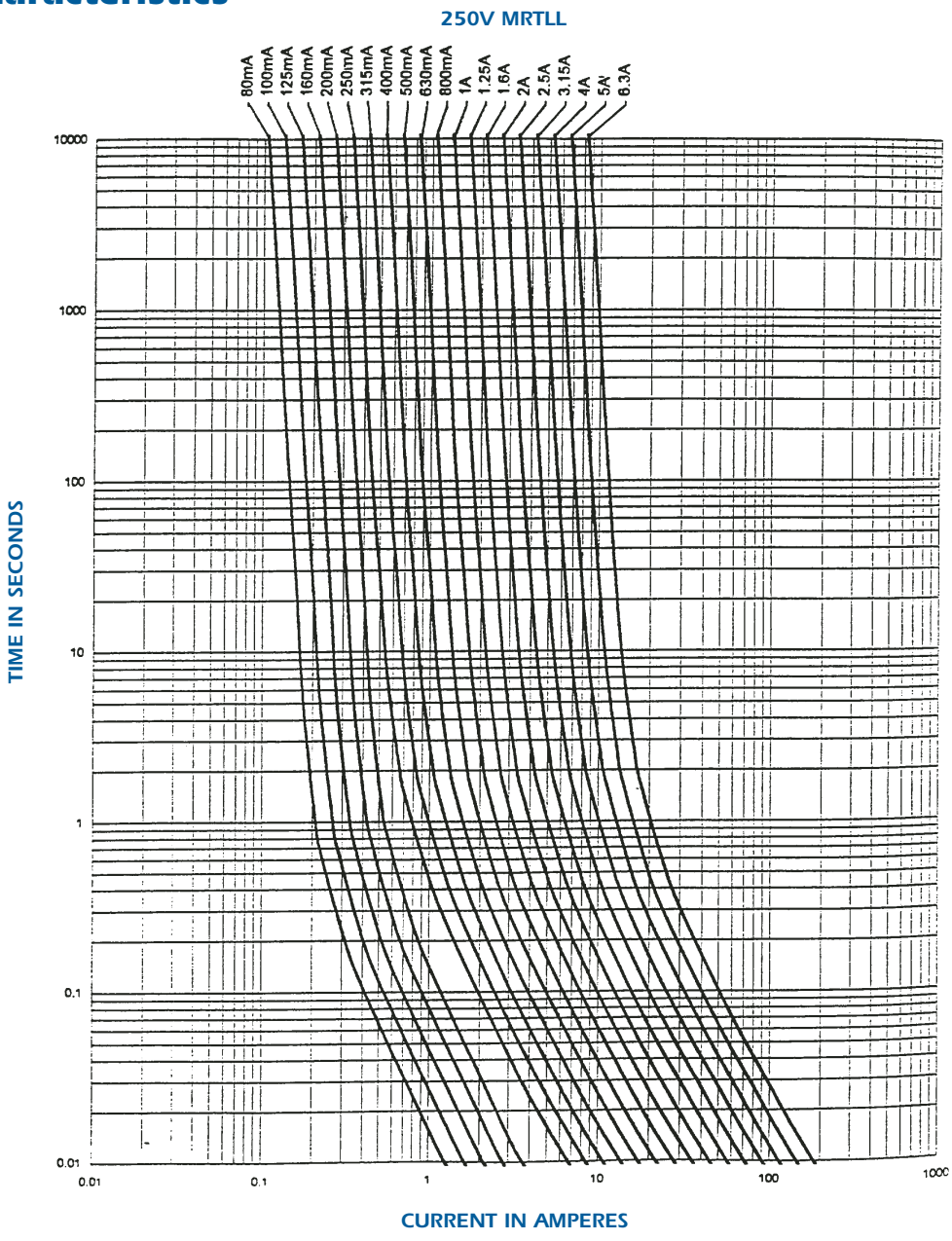
* approval only.
** 100A for

IEC Fuses
Subminiature
MRTLL Time Lag

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In	
80 mA –> 6,3 A	2 min maxi	400 ms mini	10 s maxi	150 ms mini	3 s maxi	20 ms mini	150 ms maxi

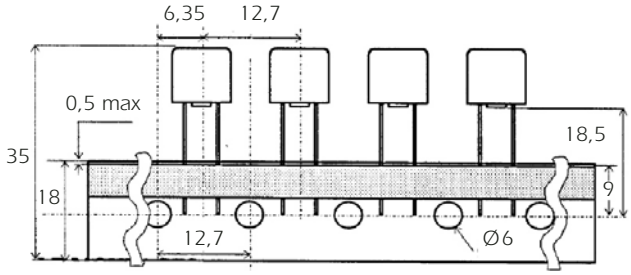
Time-current characteristics



Packaging: in box of 100 and 1000 pieces.

Installation instructions

- Soldering heat resistance as per IEC 68-2-20 260°C for 10 seconds.
- Material:
  - Body: Thermoplastic V0 UL 94.
  - Connection: Tin-plated copper alloy.
- Operating temperature: -55°C to 125°C.



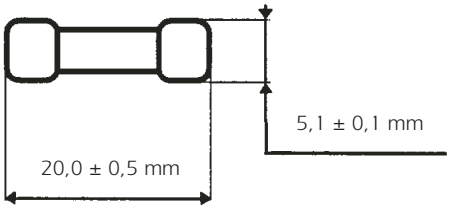
IEC Fuses
5x20 low breaking capacity
5SF Fast Acting

Complying with IEC-127-2 Standard Sheet 2

250 VAC
FROM 0.08 TO 10 A

Dimensions

Glass tube



Max weight: 1.2 g



Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Max. power dissip	Max. Voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	W	V			
5 x 20	250	0,08	35	0,39	0,93	250V 5SF 0,08 A 5 x 20	Z 090504	MI5SF25V0,08
		0,1		0,44	0,84	250V 5SF 0,1 A 5 x 20	A 090505	MI5SF25V0,1
		0,125		0,5	0,76	250V 5SF 0,125 A 5 x 20	B 090506	MI5SF25V0,125
		0,16		0,57	0,68	250V 5SF 0,16 A 5 x 20	C 090507	MI5SF25V0,16
		0,2		0,64	0,62	250V 5SF 0,2 A 5 x 20	D 090508	MI5SF25V0,20
		0,25		0,73	0,56	250V 5SF 0,25 A 5 x 20	E 090509	MI5SF25V0,25
		0,315		0,83	0,50	250V 5SF 0,315 A 5 x 20	F 090510	MI5SF25V0,315
		0,4		0,94	0,45	250V 5SF 0,4 A 5 x 20	G 090511	MI5SF25V0,40
		0,5		0,12	0,14	250V 5SF 0,5 A 5 x 20	H 090512	MI5SF25V0,50
		0,63		0,15	0,13	250V 5SF 0,63 A 5 x 20	J 090513	MI5SF25V0,63
		0,8		0,2	0,13	250V 5SF 0,8 A 5 x 20	K 090514	MI5SF25V0,80
		1		0,27	0,12	250V 5SF 1 A 5 x 20	L 090515	MI5SF25V1
		1,25		0,35	0,11	250V 5SF 1,25 A 5 x 20	M 090516	MI5SF25V1,25
		1,6		0,47	0,11	250V 5SF 1,6 A 5 x 20	N 090517	MI5SF25V1,6
		2		0,62	0,10	250V 5SF 2 A 5 x 20	P 090518	MI5SF25V2
		2,5		0,82	0,10	250V 5SF 2,5 A 5 x 20	Q 090519	MI5SF25V2,5
		3,15		1,08	0,09	250V 5SF 3,15 A 5 x 20	R 090520	MI5SF25V3,15
		4	40	1,43	0,09	250V 5SF 4 A 5 x 20	S 090521	MI5SF25V4
		5	50	1,89	0,08	250V 5SF 5 A 5 x 20	T 090522	MI5SF25V5
		6,3	63	2,5	0,08	250V 5SF 6,3 A 5 x 20	V 090523	MI5SF25V6,3
		8*	80	3,3	0,08	250V 5SF 8 A 5 x 20	W 090524	MI5SF25V8
		10*	100	4,37	0,07	250V 5SF 10 A 5 x 20	X 090525	MI5SF25V10

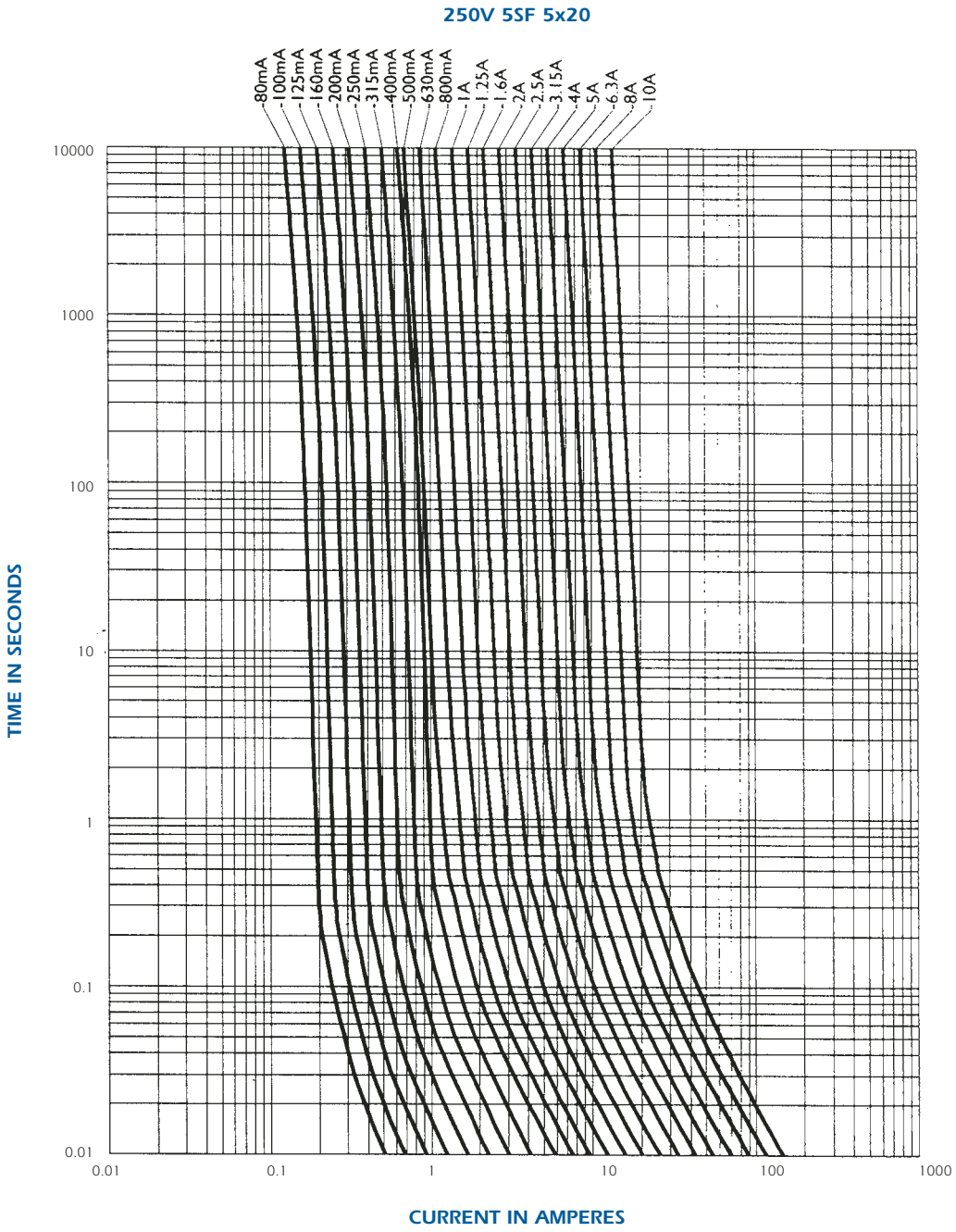
* and approval only.
* Non standard rating.

IEC Fuses
5x20 low breaking capacity
5SF Fast Acting

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In
0,08 mA –> 100 mA	30 min maxi	10 ms mini	500 ms maxi	3 ms mini	100 ms maxi	20 ms maxi
125 mA –> 10 A	30 min maxi	50 ms mini	2 s maxi	10 ms mini	300 ms maxi	20 ms maxi

Time-current characteristics



Packaging: in box of 1000 pieces.
in blister of 50 pieces.

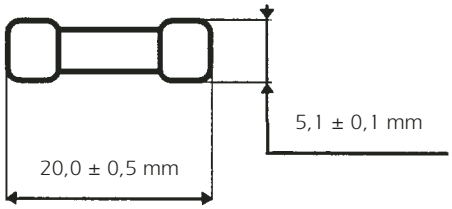
IEC Fuses
5x20 low breaking capacity
5ST Time Lag

Complying with IEC-127-2 Standard Sheet 3

250 VAC
FROM 0.063 TO 10 A

Dimensions

Glass tube



Max weight: 1.2 g



Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Max. power dissip	Max. Voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	W	V			
5 x 20	250	0,063	35	0,28	2,77	250V 5ST 0,063 A 5 x 20	D 090531	MI5ST25V0,063
		0,08		0,29	2,24	250V 5ST 0,08 A 5 x 20	E 090532	MI5ST25V0,08
		0,1		0,30	1,82	250V 5ST 0,1 A 5 x 20	F 090533	MI5ST25V0,1
		0,125		0,30	1,47	250V 5ST 0,125 A 5 x 20	G 090534	MI5ST25V0,125
		0,16		0,31	1,19	250V 5ST 0,16 A 5 x 20	H 090535	MI5ST25V0,16
		0,2		0,32	0,97	250V 5ST 0,2 A 5 x 20	J 090536	MI5ST25V0,2
		0,25		0,32	0,78	250V 5ST 0,25 A 5 x 20	K 090537	MI5ST25V0,25
		0,315		0,33	0,63	250V 5ST 0,315 A 5 x 20	L 090538	MI5ST25V0,315
		0,4		0,34	0,51	250V 5ST 0,4 A 5 x 20	M 090539	MI5ST25V0,4
		0,5		0,34	0,42	250V 5ST 0,5 A 5 x 20	N 090540	MI5ST25V0,5
		0,63		0,18	0,17	250V 5ST 0,63 A 5 x 20	P 090541	MI5ST25V0,63
		0,8		0,20	0,15	250V 5ST 0,8 A 5 x 20	Q 090542	MI5ST25V0,8
		1		0,17	0,10	250V 5ST 1 A 5 x 20	R 090543	MI5ST25V1
		1,25		0,19	0,09	250V 5ST 1,25 A 5 x 20	S 090544	MI5ST25V1,25
		1,6		0,23	0,09	250V 5ST 1,6 A 5 x 20	T 090545	MI5ST25V1,6
		2		0,26	0,08	250V 5ST 2 A 5 x 20	V 090546	MI5ST25V2
		2,5		0,31	0,07	250V 5ST 2,5 A 5 x 20	W 090547	MI5ST25V2,5
		3,15		0,36	0,07	250V 5ST 3,15 A 5 x 20	X 090548	MI5ST25V3,15
		4	40	0,42	0,06	250V 5ST 4 A 5 x 20	Y 090549	MI5ST25V4
		5	50	0,49	0,06	250V 5ST 5 A 5 x 20	Z 090550	MI5ST25V5
		6,3	63	0,57	0,06	250V 5ST 6,3 A 5 x 20	A 090551	MI5ST25V6,3
		8*	80	0,8	0,06	250V 5ST 8 A 5 x 20	P 206070	MI5ST25V8
		10*	100	1	0,06	250V 5ST 10 A 5 x 20	Q 206071	MI5ST25V10

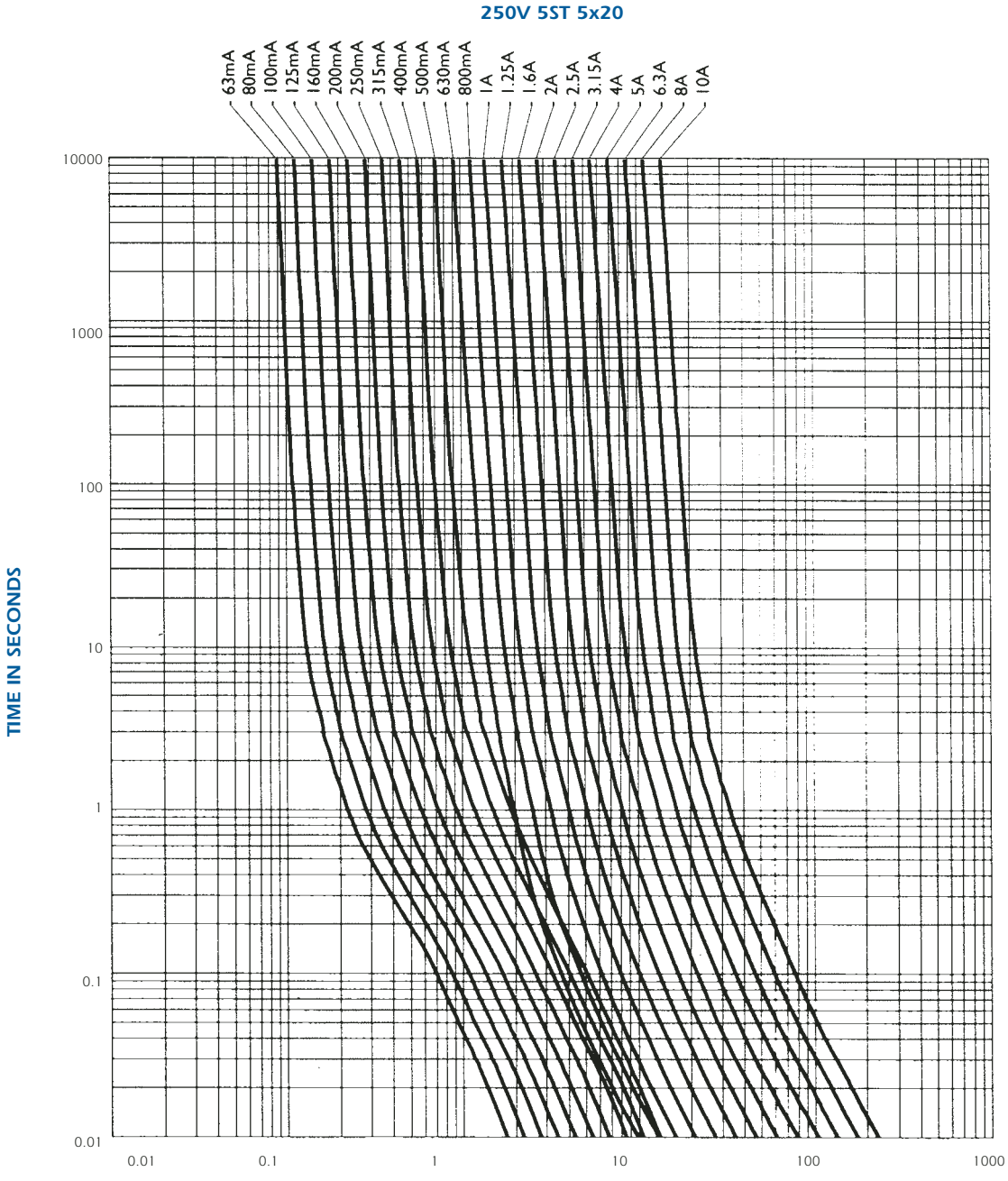
* Non-standard ratings.

IEC Fuses
5x20 low breaking capacity
5ST Time Lag

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In	
0,063 A –> 0,1 A	2 min maxi	200 ms mini	10 s maxi	40 ms mini	3 s maxi	10 ms mini	300 ms maxi
0,125 A –> 10 A	2 min maxi	600 ms mini	10 s maxi	150 ms mini	3 s maxi	20 ms mini	300 ms maxi

Time-current characteristics



Packaging: in box of 1000 pieces.
in blister of 50 pieces.

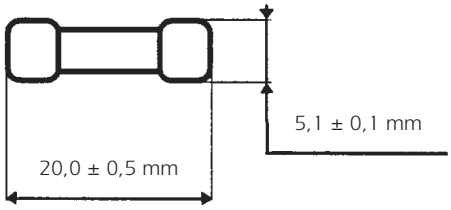
IEC Fuses
5x20 High breaking capacity
5HF Fast Acting

Complying with IEC-127-2 Standard Sheet 1

250 VAC
FROM 0.1 TO 10 A

Dimensions

Ceramic tube



Max weight: 1.2 g



Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Max power dissip	Max voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	W	V			
5 x 20	250	0,1#	1500	0,30	0,56	250V 5HF 0,1 A 5 x 20	G095548	MI5HF25V0,1
		0,125#		0,36	0,54	250V 5HF 0,125 A 5 x 20	H095549	MI5HF25V0,125
		0,16#		0,43	0,52	250V 5HF 0,16 A 5 x 20	J095550	MI5HF25V0,16
		0,2#		0,52	0,5	250V 5HF 0,2 A 5 x 20	Q095556	MI5HF25V0,2
		0,25#		0,63	0,48	250V 5HF 0,25 A 5 x 20	R095557	MI5HF25V0,25
		0,315#		0,76	0,46	250V 5HF 0,315 A 5 x 20	S095558	MI5HF25V0,315
		0,4#		0,92	0,44	250V 5HF 0,4 A 5 x 20	T095559	MI5HF25V0,4
		0,5#		1,11	0,43	250V 5HF 0,5 A 5 x 20	V095560	MI5HF25V0,5
		0,63#		1,35	0,41	250V 5HF 0,63 A 5 x 20	W095561	MI5HF25V0,63
		0,8#		0,58	0,2	250V 5HF 0,8 A 5 x 20	X095562	MI5HF25V0,8
		1		0,69	0,18	250V 5HF 1 A 5 x 20	Y095563	MI5HF25V1
		1,25		0,81	0,17	250V 5HF 1,25 A 5 x 20	C095567	MI5HF25V1,25
		1,6		0,96	0,16	250V 5HF 1,6 A 5 x 20	D095568	MI5HF25V1,6
		2		1,1	0,15	250V 5HF 2 A 5 x 20	E095569	MI5HF25V2
		2,5		1,3	0,14	250V 5HF 2,5 A 5 x 20	F095570	MI5HF25V2,5
		3,15		1,6	0,14	250V 5HF 3,15 A 5 x 20	G095571	MI5HF25V3,15
		4		1,9	0,13	250V 5HF 4 A 5 x 20	H095572	MI5HF25V4
		5		2,2	0,12	250V 5HF 5 A 5 x 20	J095573	MI5HF25V5
		6,3		2,7	0,113	250V 5HF 6,3 A 5 x 20	K095574	MI5HF25V6,3
		8*#		3,1	0,106	250V 5HF 8 A 5 x 20	J085407	MI5HF25V8
		10*#		3,7	0,1	250V 5HF 10 A 5 x 20	K085408	MI5HF25V10

* Non-standard ratings.

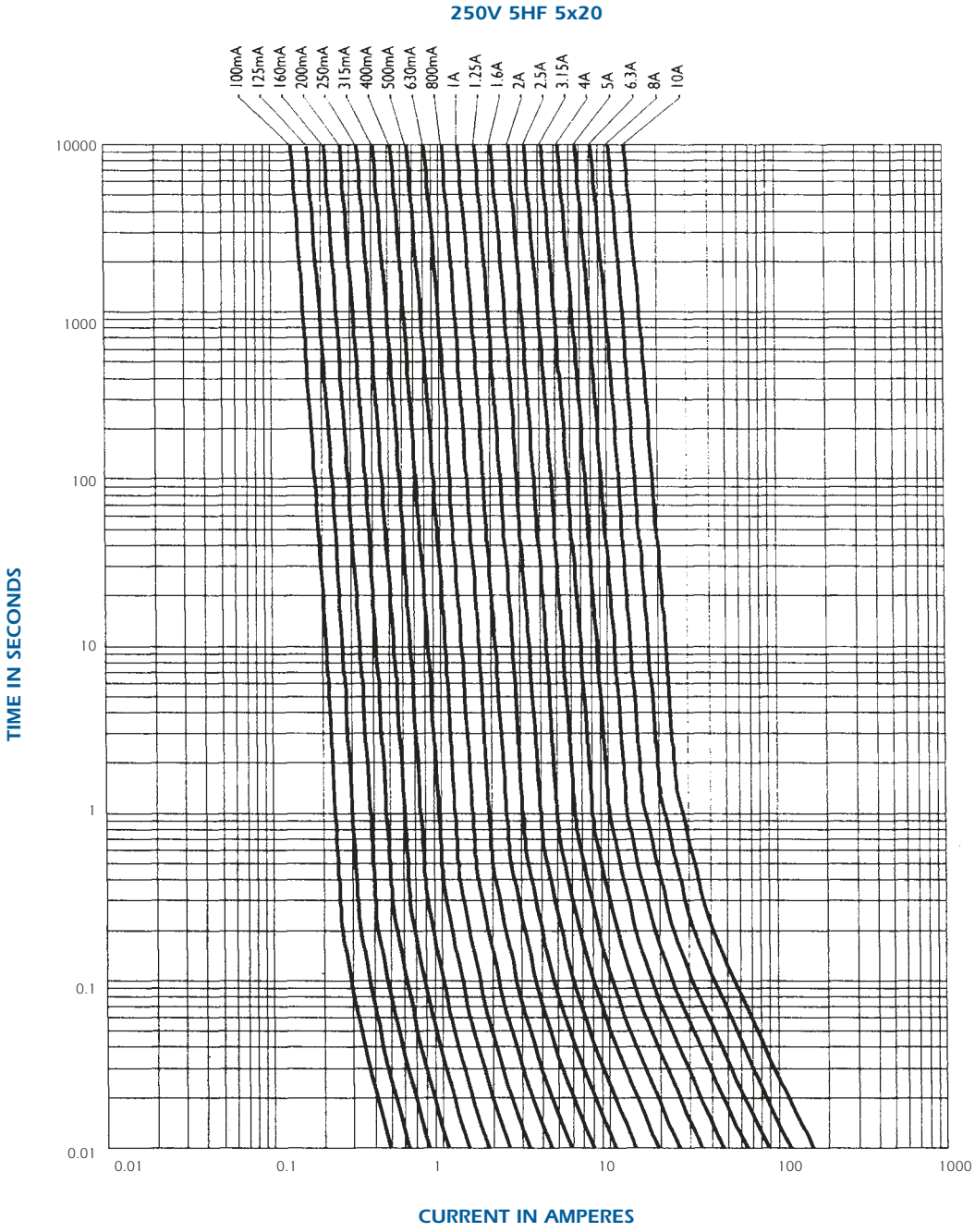
Product non-certified.

IEC Fuses
5x20 High breaking capacity
5HF Fast Acting

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In
1 A –> 3,15 A	30 min maxi	10 ms mini	2 s maxi	3 ms mini	300 ms maxi	20 ms maxi
4 A –> 10 A	30 min maxi	10 ms mini	3 s maxi	3 ms mini	300 ms maxi	20 ms maxi

Time-current characteristics



Packaging: in box of 1000 pieces.
in blister of 50 pieces.

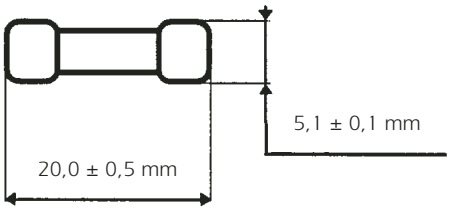
IEC Fuses
5x20 High breaking capacity
5HT Time Lag

Complying with IEC-127-2 Standard Sheet 5

250 VAC
FROM 0,25 TO 10 A

Dimensions

Ceramic tube



Max weight: 1,2 g



Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Max power dissip	Max voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	W	V			
5 x 20	250	0,25#	1500		0,7	250V 5HT 0,25 A 5 x 20	P085366	MI5HT25V0,25
		0,315#			0,68	250V 5HT 0,315 A 5 x 20	R094821	MI5HT25V0,315
		0,4#			0,64	250V 5HT 0,4 A 5 x 20	W094825	MI5HT25V0,4
		0,5#			0,6	250V 5HT 0,5 A 5 x 20	S085369	MI5HT25V0,5
		0,63#			0,5	250V 5HT 0,63 A 5 x 20	X094826	MI5HT25V0,63
		0,8#			0,385	250V 5HT 0,8 A 5 x 20	V085371	MI5HT25V0,8
		1		0,73	0,25	250V 5HT 1 A 5 x 20	W085372	MI5HT25V1
		1,25		0,81	0,22	250V 5HT 1,25 A 5 x 20	X085373	MI5HT25V1,25
		1,6		0,91	0,19	250V 5HT 1,6 A 5 x 20	Y085374	MI5HT25V1,6
		2		1	0,17	250V 5HT 2 A 5 x 20	Z085375	MI5HT25V2
		2,5		1,1	0,15	250V 5HT 2,5 A 5 x 20	A085376	MI5HT25V2,5
		3,15		1,2	0,13	250V 5HT 3,15 A 5 x 20	B085377	MI5HT25V3,1
		4		1,4	0,1	250V 5HT 4 A 5 x 20	C085378	MI5HT25V4
		5		1,5	0,1	250V 5HT 5 A 5 x 20	D085379	MI5HT25V5
		6,3		1,7	0,1	250V 5HT 6,3 A 5 x 20	E085380	MI5HT25V6,3
		8*		2,7	0,1	250V 5HT 8 A 5 x 20	A208357	MI5HT25V8
		10*		2,9	0,1	250V 5HT 10 A 5 x 20	B208358	MI5HT25V10

* Non-standard ratings.

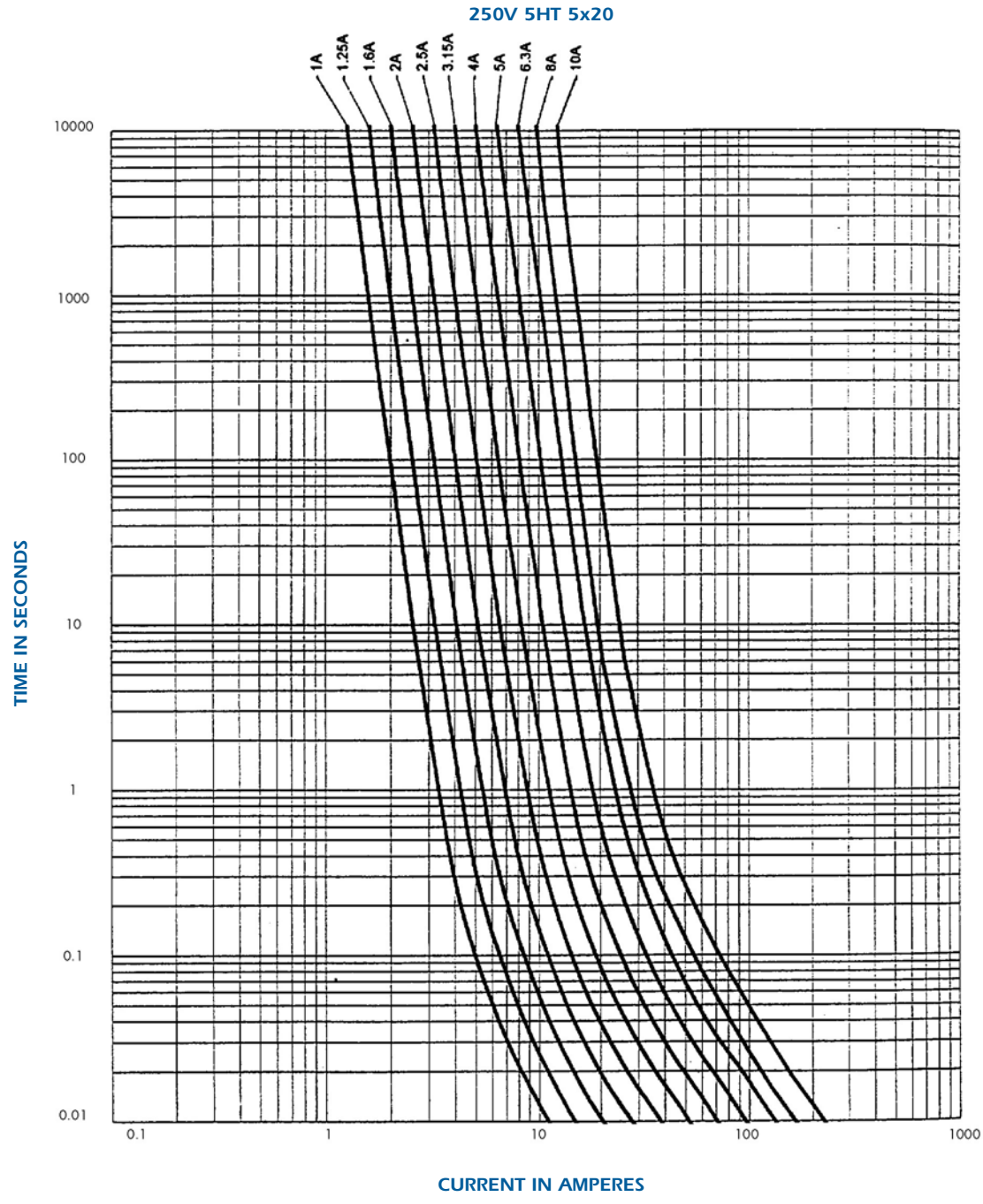
Product non-certified.

IEC Fuses
5x20 High breaking capacity
5HT Time Lag

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In	
1 A –> 3,15 A	30 min maxi	1 s mini	80 s maxi	95 ms mini	5 s maxi	10 ms mini	100 ms maxi
4 A –> 10 A	30 min maxi	1 s mini	80 s maxi	150 ms mini	5 s maxi	20 ms mini	100 ms maxi

Time-current characteristics



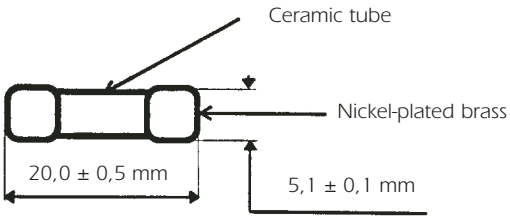
Packaging: in box of 1000 pieces.
in blister of 50 pieces.

IEC fuses
5x20 high breaking capacity
FC Fast Acting

Complying with IEC 127-2 Standard Sheet 1

250 VAC
FROM 0,16 TO 10A

Dimensions





Sand-filled fuses
Max weight: 1.2 g

Basic Characteristics

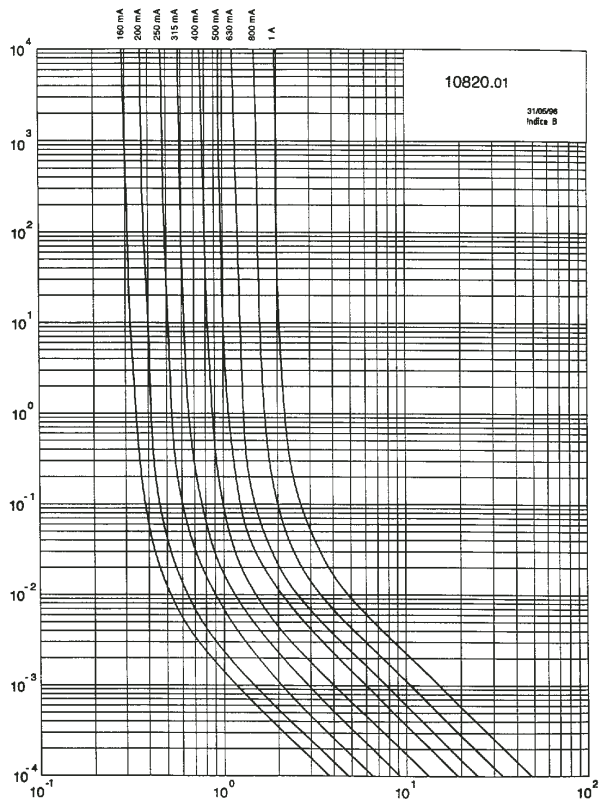
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A² s		V			
5 x 20	250	0,160	along IEC 127 1500 A under 250 VAC cos φ ≥ 0,7 along IEC 269.1 and IEC 269.3 6 kA under 250 VAC cos φ ≥ 0,2	0,0011	0,0025	1,6	250V FC 0,160 A 5x20	S206027	MI5FC25V0,16
		0,200		0,0018	0,004	1,45	250V FC 0,200 A 5x20	T206028	MI5FC25V0,20
		0,250		0,0035	0,008	1,3	250V FC 0,250 A 5x20	K206112	MI5FC25V0,25
		0,315		0,0072	0,016	1,15	250V FC 0,315 A 5x20	W206030	MI5FC25V0,31
		0,400		0,015	0,032	1,1	250V FC 0,400 A 5x20	X206031	MI5FC25V0,4
		0,500		0,032	0,066	1	250V FC 0,500 A 5x20	Y206032	MI5FC25V0,5
		0,630		0,052	0,082	0,45	250V FC 0,630 A 5x20	Z206033	MI5FC25V0,63
		0,800*		0,098	0,16	0,4	250V FC 0,800 A 5x20	A206034	MI5FC25V0,8
		1,000		0,2	0,32	0,37	250V FC 1,000 A 5x20	T205844	MI5FC25V1
		1,250		0,11	0,35	0,55	250V FC 1,250 A 5x20	D206037	MI5FC25V1,25
		1,600		0,28	0,55	0,42	250V FC 1,600 A 5x20	E206038	MI5FC25V1,6
		2,000		0,55	1,2	0,38	250V FC 2,000 A 5x20	F205119	MI5FC25V2
		2,500		1,1	2,4	0,34	250V FC 2,500 A 5x20	F206039	MI5FC25V2,5
		3,150		2,5	5	0,28	250V FC 3,150 A 5x20	G206040	MI5FC25V3,15
		4,000		6,1	12	0,23	250V FC 4,000 A 5x20	H206041	MI5FC25V4
		5,000		11	22	0,21	250V FC 5,000 A 5x20	Y205411	MI5FC25V5
		6,300		25	45	0,18	250V FC 6,300 A 5x20	E205785	MI5FC25V6,3
		8*		72	130	0,13	250V FC 8,000 A 5x20	G205925	MI5FC25V8
		10*		150	270	0,11	250V FC 10,00 A 5x20	T205683	MI5FC25V10

* Non-SEMKO approved rating.

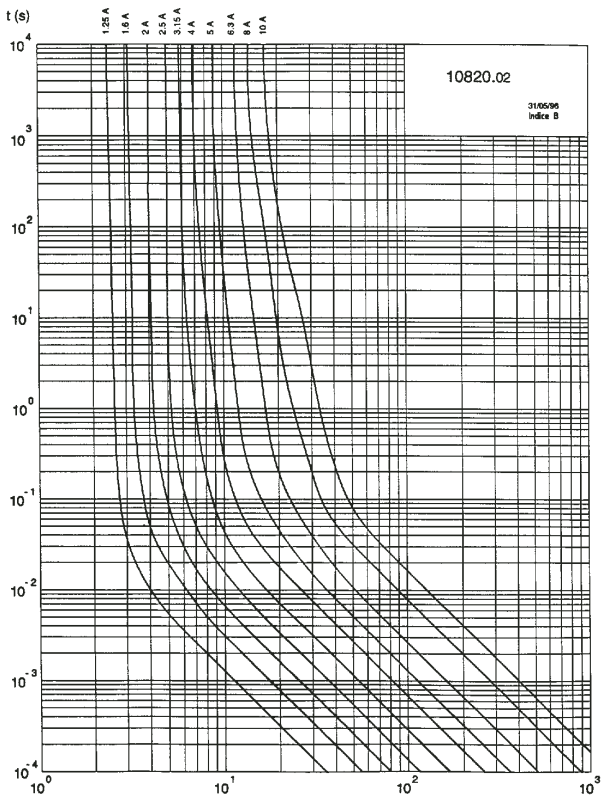
IEC fuses
5x20 high breaking capacity
FC Fast Acting

Time-current characteristics

250V FC 5x20



250V FC 5x20



I tolerance ± 12 %. Actual pre-arcing time (s). R.M.S. Value of pre-arcing current (A).

Packaging: in boxes of 1,000 pieces.
These fuses are available with axial leads: refer to data sheet FC "AL" Fast Acting.

IEC Fuses
Fuses maintenance set
Set 5SF, 5ST, 5HF, 5HT



Range 5SF - 5x20 - 250VAC
Fast acting F - Low breaking capacity
Reference number: G203763
Catalog number: MIBOX5SF

According to IEC-127-2 publication standard sheet 2

Breaking capacity under 250 VAC: 35 A or 10 I_N					
100 mA A090505	**125 mA** B090506	**160 mA** C090507	**200 mA** D090508	**250 mA** E090509	**315 mA** F090510
400 mA G090511	**500 mA** H090512	**630 mA** J090513	**800 mA** K090514	**1 A** L090515	**1,25 A** M090516
1,6 A N090517	**2 A** P090518	**2,5 A** Q090519	**3,15 A** R090520	**4 A** S090521	**6,3 A** V090523

Max weight: 400 g
Packaging: 360 pieces (20x18)

Range 5ST - 5x20 - 250VAC
Time lag T - Low breaking capacity
Reference number: H203764
Catalog number: MIBOX5ST

According to IEC-127-2 publication standard sheet 3

Breaking capacity under 250 VAC: 35 A or 10 I_N					
100 mA F090533	**125 mA** G090534	**160 mA** H090535	**200 mA** J090536	**250 mA** K090537	**315 mA** L090538
400 mA M090539	**500 mA** N090540	**630 mA** P090541	**800 mA** Q090542	**1 A** R090543	**1,25 A** S090544
1,6 A T090545	**2 A** V090546	**2,5 A** W090547	**3,15 A** X090548	**4 A** Y090549	**6,3 A** A090551

Max weight: 400 g
Packaging: 360 pieces (20x18)

IEC Fuses
Fuses maintenance set
Set 5SF, 5ST, 5HF, 5HT



Range 5HF - 5x20 - 250VAC
Fast acting F - High breaking capacity
Reference number: B229863
Catalog number: MIBOX5HF

According to IEC-127-2 publication standard sheet 1

Breaking capacity under 250 VAC : 1500 A					
100 mA G095548	**125 mA** H095549	**160 mA** J095550	**200 mA** Q095556	**250 mA** R095557	**315 mA** S095558
400 mA T095559	**500 mA** V095560	**630 mA** W095561	**800 mA** X095562	**1 A** Y095563	**1,25 A** C095567
1,6 A D095568	**2 A** E095569	**2,5 A** F095570	**3,15 A** G095571	**4 A** H095572	**6,3 A** K095574

Max weight : 400 g
Packaging: 360 pieces (20x18)

Range 5HT - 5x20 - 250VAC
Time lag T - High breaking capacity
Reference number: C229864
Catalog number: MIBOX5HT

According to IEC-127-2 publication standard sheet 5

Breaking capacity under 250 VAC : 1500 A					
250 mA P085366	**315 mA** R094821	**400 mA** W094825	**500 mA** S085369	**630 mA** X094826	**800 mA** V085371
1 A W085372	**1,25 A** X085373	**1,6 A** Y085374	**2 A** Z085375	**2,5 A** A085376	**3,15 A** B085377
4 A C085378	**5 A** D085379	**6,3 A** E085380	**8 A** A208357	**10 A** B208358	

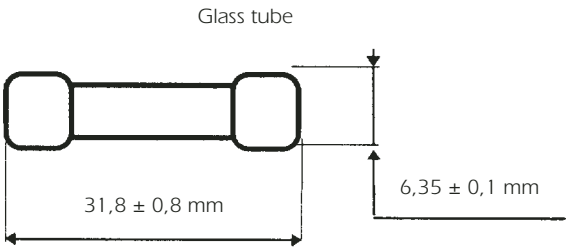
Max weight : 400 g
Packaging: 360 pieces (20x18)

IEC Fuses
6x32 low breaking capacity
3SF Fast Acting

Complying with IEC-127-2 Standard Sheet 4

250 VAC
FROM 0.315 TO 10 A

Dimensions



Max weight : 2,2 g



Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Max power dissip	Max voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	W	V			
6 x 32	250	0,315	35	1,64	3,15	250V 3SF 0,315 A 6.32	P 090564	MI6SF25V0,315
		0,4		1,92	2,93	250V 3SF 0,4 A 6.32	Q 090565	MI6SF25V0,4
		0,5		0,27	0,26	250V 3SF 0,5 A 6.32	R 090566	MI6SF25V0,5
		0,63		0,31	0,24	250V 3SF 0,63 A 6.32	S 090567	MI6SF25V0,63
		0,8		0,37	0,23	250V 3SF 0,8 A 6.32	T 090568	MI6SF25V0,8
		1		0,44	0,21	250V 3SF 1 A 6.32	V 090569	MI6SF25V1
		1,25		0,51	0,2	250V 3SF 1,25 A 6.32	W090570	MI6SF25V1,25
		1,6		0,59	0,18	250V 3SF 1,6 A 6.32	X 090571	MI6SF25V1,6
		2		0,70	0,17	250V 3SF 2 A 6.32	Y 090572	MI6SF25V2
	250 (150*)	2,5		0,83	0,16	250V 3SF 2,5 A 6.32	Z 090573	MI6SF25V2,5
		3,15		1	0,15	250V 3SF 3,15 A 6.32	A 090574	MI6SF25V3,15
		4	40	1,19	0,15	250V 3SF 4 A 6.32	B 090575	MI6SF25V4
		5	50	1,37	0,14	250V 3SF 5 A 6.32	C 090576	MI6SF25V5
	250 (60*)	6,3	63	1,71	0,13	250V 3SF 6 A 6.32	D 090577	MI6SF25V6,3
		8**	80	2,05	0,13	250V 3SF 8 A 6.32	E 090578	MI6SF25V8
		10**	100	2,45	0,12	250V 3SF 10 A 6.32	F 090579	MI6SF25V10

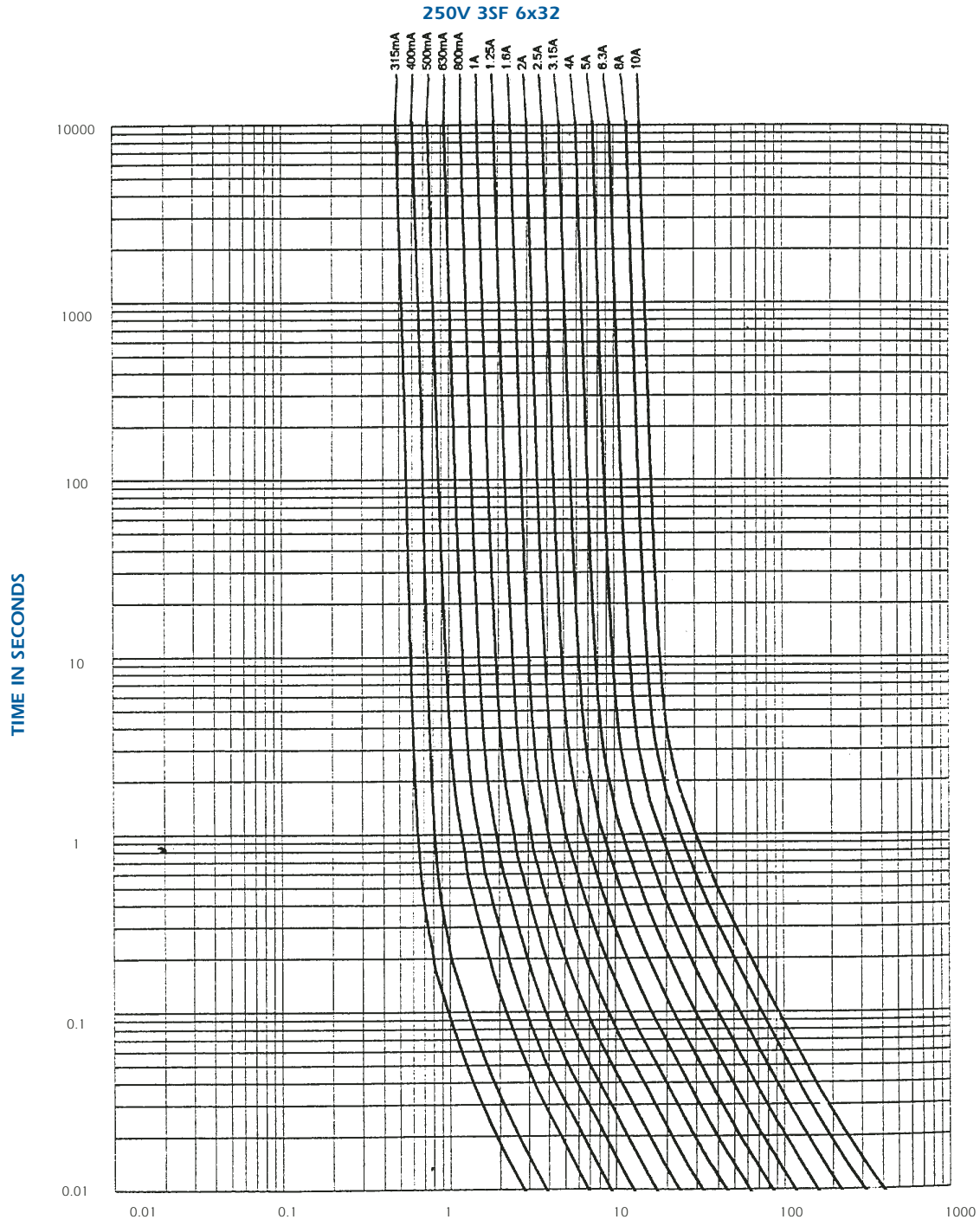
* approval voltage.
** no standard rating.

IEC Fuses
6x32 low breaking capacity
3SF Fast Acting

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In
50 –> 100 mA	20 s maxi	2 ms mini	200 ms maxi	1 ms mini	30 ms maxi	5 ms maxi
125 mA –> 10 A	20 s maxi	20 ms mini	1500 ms maxi	8 ms mini	400 ms maxi	80 ms maxi

Time-current characteristics

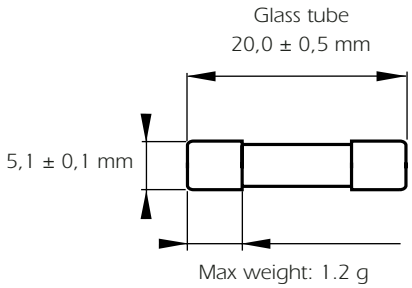


Packaging: in box of 1000 pieces.
in blister of 50 pieces.

Convenience Fuses
5F 5x20 - Fast acting

250 VAC - F: fast acting
from 0.032 to 20 A
size: 5 x 20

Dimensions





Basic Characteristics

Size	U_n Rated Voltage	Breaking Capacity	I_n Rating	Designation	Reference Number	Catalog Number
mm	V		A			
5x20	250	35A 250V	0,032	FUS.CIL.DOM(CRIS.) F5X20 0,032A	D222942	MI5F25V0,032
			0,04	FUS.CIL.DOM(CRIS.) F5X20 0,04A	M200732	MI5F25V0,04
			0,05	FUS.CIL.DOM(CRIS) F5X20 0,05A	B201274	MI5F25V0,05
			0,063	FUS.CIL.DOM(CRIS.) F5X20 0,063A	L201789	MI5F25V0,063
			0,08	FUS.CIL.DOM(CRIS.) F5X20 0,08A	K211011	MI5F25V0,08
			0,1	FUS.CIL.DOM(CRIS.) F5X20 0,1A	L200731	MI5F25V0,1
			0,125	FUS.CIL.DOM(CRIS.) F5X20 0,125A	A201273	MI5F25V0,125
			0,16	FUS.CIL.DOM(CRIS.) F5X20 0,16A	K201788	MI5F25V0,16
			0,2	FUS.CIL.DOM(CRIS.) F5X20 0,2A	J211010	MI5F25V0,2
			0,25	FUS.CIL.DOM(CRIS.) F5X20 0,25A	A211531	MI5F25V0,25
			0,315	FUS.CIL.DOM(CRIS.) F5X20 0,315A	F212042	MI5F25V0,315
			0,4	FUS.CIL.DOM(CRIS.) F5X20 0,4A	B211532	MI5F25V0,4
			0,5	FUS.CIL.DOM(CRIS.) F5X20 0,5A	Y212564	MI5F25V0,5
			0,63	FUS.CIL.DOM(CRIS.) F5X20 0,63A	J213080	MI5F25V0,63
			0,8	FUS.CIL.DOM(CRIS.) F5X20 0,8A	G212043	MI5F25V0,8
			1	FUS.CIL.DOM(CRIS.) F5X20 1A	D213581	MI5F25V1
			1,25	FUS.CIL.DOM(CRIS.) F5X20 1,25A	D214087	MI5F25V1,25
			1,6	FUS.CIL.DOM(CRIS.) F5X20 1,6A	Z212565	MI5F25V1,6
			2	FUS.CIL.DOM(CRIS.) F5X20 2A	J214598	MI5F25V2
			2,5	FUS.CIL.DOM(CRIS.) F5X20 2,5A	Q215110	MI5F25V2,5
			3,15	FUS.CIL.DOM(CRIS.) F5X20 3,15A	R215617	MI5F25V3,15
		10xIn 250V	4	FUS.CIL.DOM(CRIS.) F5X20 4A	Z216130	MI5F25V4
			5	FUS.CIL.DOM(CRIS.) F5X20 5A	W216633	MI5F25V5
			6,3	FUS.CIL.DOM(CRIS.) F5X20 6,3A	H217150	MI5F25V6,3
			8	FUS.CIL.DOM(CRIS.) F5X20 8A	M217660	MI5F25V8
			10	FUS.CIL.DOM(CRIS.) F5X20 10A	X218175	MI5F25V10
			12,5	FUS.CIL.DOM(CRIS.) F5X20 12,5A	K218693	MI5F25V12,5
			16	FUS.CIL.DOM(CRIS.) F5X20 16A	Y219211	MI5F25V16
			20	FUS.CIL.DOM(CRIS.) F5X20 20A	A219742	MI5F25V20

Packaging: 10 boxes x 10 fuses.

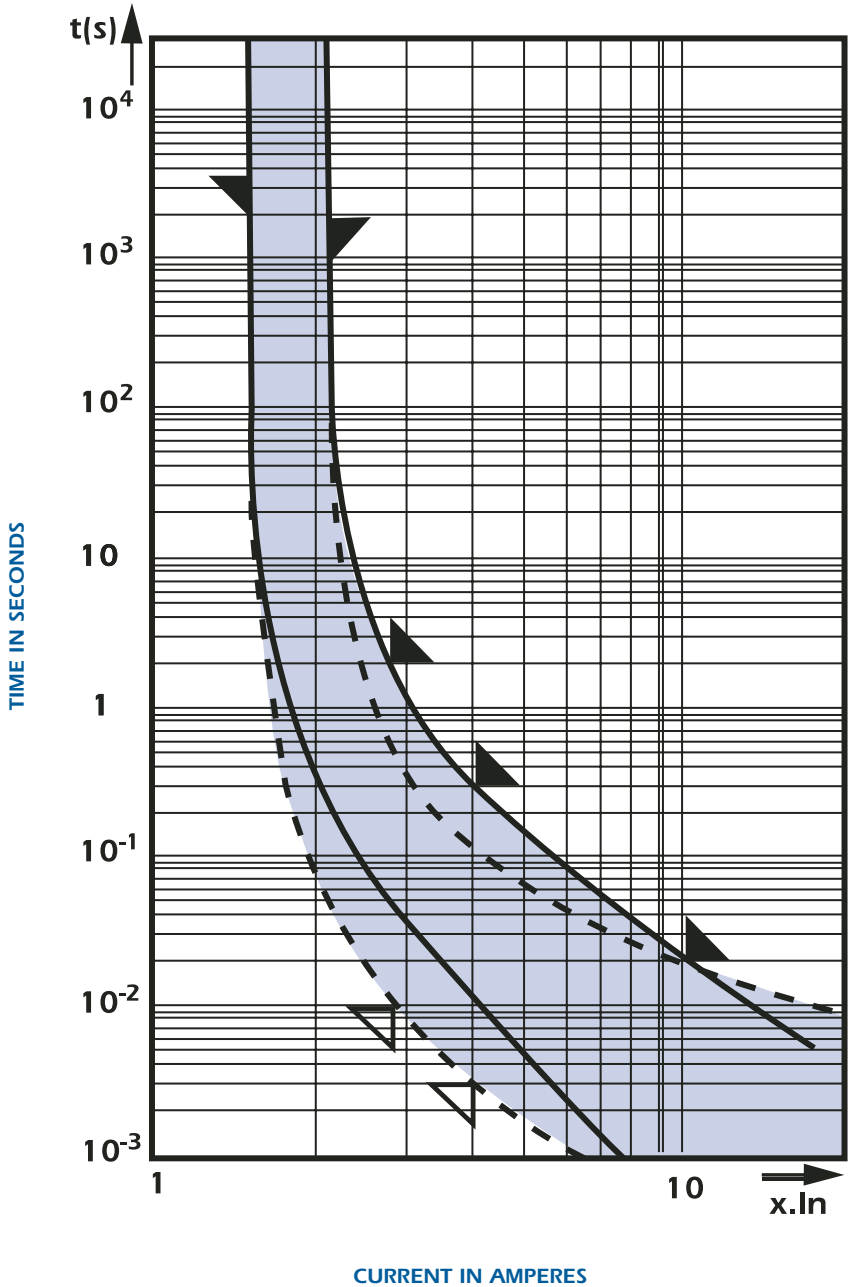
Fuses without approval.

Convenience Fuses
5F 5x20 - Fast acting

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In
0,032 mA –> 100 mA	30 min maxi	10 ms mini	500 ms maxi	3 ms mini	100 ms maxi	20 ms maxi
125 mA –> 20 A	30 min maxi	50 ms mini	2 s maxi	10 ms mini	300 ms maxi	20 ms maxi

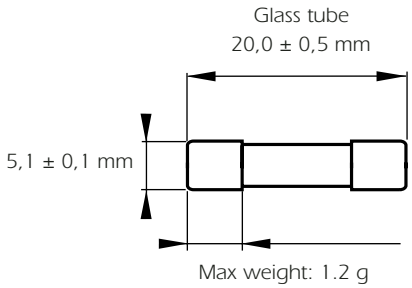
Time-current characteristics



Convenience Fuses
5SM 5x20 - Medium time lag

250 VAC - M: medium time
from 0.032 to 16 A
size: 5 x 20

Dimensions





Basic Characteristics

Size	U_n Rated Voltage	Breaking Capacity	I_n Rating	Designation	Reference Number	Catalog Number
mm	V		A			
5x20	250	80A 250V	0,032	5SM 32MA MITTELTR.	D218158	MI5SM25V0,032
			0,04	5SM 40MA MITTELTR.	Q218675	MI5SM25V0,04
			0,05	5SM 50MA MITTELTR.	D219193	MI5SM25V0,05
			0,063	5SM 63MA MITTELTR.	H219726	MI5SM25V0,063
			0,08	5SM 80MA MITTELTR.	Q222171	MI5SM25V0,08
			0,1	5SM 100MA MITTELTR.	K222925	MI5SM25V0,1
			0,125	5SM 125MA MITTELTR.	T200715	MI5SM25V0,125
			0,16	5SM 160MA MITTELTR.	H201257	MI5SM25V0,16
			0,2	5SM 200MA MITTELTR.	T201773	MI5SM25V0,2
			0,25	5SM 250MA MITTELTR.	K207147	MI5SM25V0,25
			0,315	5SM 315MA MITTELTR.	J211516	MI5SM25V0,315
			0,4	5SM 400MA MITTELTR.	N212026	MI5SM25V0,4
			0,5	5SM 500MA MITTELTR.	F212548	MI5SM25V0,5
			0,63	5SM 630MA MITTELTR.	R213064	MI5SM25V0,63
			0,8	5SM 800MA MITTELTR.	M213566	MI5SM25V0,8
			1	5SM 1A MITTELTR.	L214071	MI5SM25V1
			1,25	5SM 1,25A MITTELTR.	T214584	MI5SM25V1,25
			1,6	5SM 1,6A MITTELTR.	A215096	MI5SM25V1,6
			2	5SM 2A MITTELTR.	A215602	MI5SM25V2
			2,5	5SM 2,5A MITTELTR.	H216115	MI5SM25V2,5
			3,15	5SM 3,15A MITTELTR.	E216618	MI5SM25V3,15
		300A 250V	4	5SM 4A MITTELTR.	R217135	MI5SM25V4
			5	5SM 5A MITTELTR.	E218159	MI5SM25V5
			6,3	5SM 6,3A MITTELTR.	R218676	MI5SM25V6,3
			8	5SM 8A MITTELTR.	E219194	MI5SM25V8
			10	5SM 10A MITTELTR.	J219727	MI5SM25V10
			16	5SM 16A MITTELTR.	R222172	MI5SM25V16

Packaging: 10 boxes x 10 fuses.

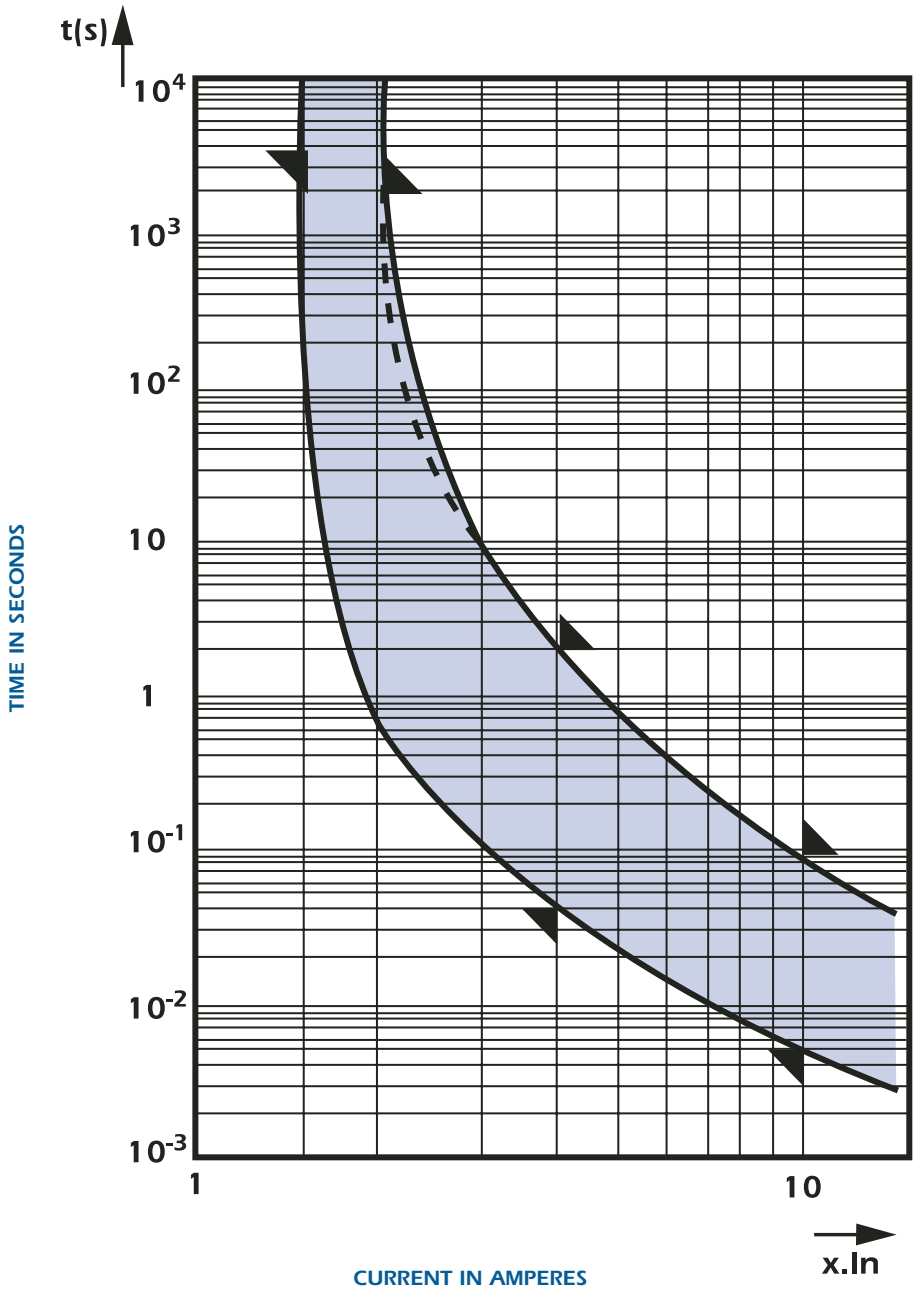
Fuses without approval.

Convenience Fuses
5SM 5x20 - Medium time lag

Melting time limits

Current	210 % x In	400 % x In		1 000 % x In	
32 mA –> 1,25A	10 min maxi	40 ms mini	2 s maxi	5 ms mini	90 ms maxi
1,6A –> 16 A	30 min maxi	40 ms mini	2 s maxi	5 ms mini	90 ms maxi

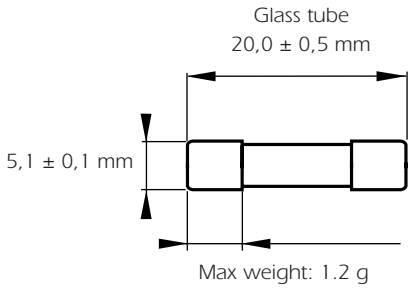
Time-current characteristics



Convenience Fuses
5T 5x20 - Time lag

250 VAC - T: time lag
from 0.032 to 20 A
size: 5 x 20

Dimensions





Basic Characteristics

Size	U_n Rated Voltage	Breaking Capacity	I_n Rating	Designation	Reference Number	Catalog number
mm	V		A			
5x20	250	35A 250V	0,032	FUS.CIL.DOM(CRIS.) T5X20 0,032A	C216639	MI5T25V0,032
			0,04	FUS.CIL.DOM(CRIS.) T5X20 0,04A	P217156	MI5T25V0,04
			0,05	FUS.CIL.DOM(CRIS.) T5X20 0,05A	T217666	MI5T25V0,05
			0,063	FUS.CIL.DOM(CRIS.) T5X20 0,063A	D218181	MI5T25V0,063
			0,08	FUS.CIL.DOM(CRIS.) T5X20 0,08A	R218699	MI5T25V0,08
			0,1	FUS.CIL.DOM(CRIS.) T5X20 0,1A	B216638	MI5T25V0,1
			0,125	FUS.CIL.DOM(CRIS.) T5X20 0,125A	N217155	MI5T25V0,125
			0,16	FUS.CIL.DOM(CRIS.) T5X20 0,16A	S217665	MI5T25V0,16
			0,2	FUS.CIL.DOM(CRIS.) T5X20 0,2A	C218180	MI5T25V0,2
			0,25	FUS.CIL.DOM(CRIS.) T5X20 0,25A	Q218698	MI5T25V0,25
			0,315	FUS.CIL.DOM(CRIS.) T5X20 0,315A	D219216	MI5T25V0,315
			0,4	FUS.CIL.DOM(CRIS.) T5X20 0,4A	E219217	MI5T25V0,4
			0,5	FUS.CIL.DOM(CRIS.) T5X20 0,5A	F219747	MI5T25V0,5
			0,63	FUS.CIL.DOM(CRIS.) T5X20 0,63A	N222192	MI5T25V0,63
			0,8	FUS.CIL.DOM(CRIS.) T5X20 0,8A	G219748	MI5T25V0,8
			1	FUS.CIL.DOM(CRIS.) T5X20 1A	J222947	MI5T25V1
			1,25	FUS.CIL.DOM(CRIS.) T5X20 1,25A	S200737	MI5T25V1,25
			1,6	FUS.CIL.DOM(CRIS.) T5X20 1,6A	P222193	MI5T25V1,6
			2	FUS.CIL.DOM(CRIS.) T 5X20 2A	G201279	MI5T25V2
			2,5	FUS.CIL.DOM(CRIS.) T5X20 2,5A	R201794	MI5T25V2,5
			3,15	FUS.CIL.DOM(CRIS.) T5X20 3,15A	Q211016	MI5T25V3,15
		10xIn 250V	4	FUS.CIL.DOM(CRIS.) T5X20 4A	G211537	MI5T25V4
			5	FUS.CIL.DOM(CRIS.) T5X20 5A	M212048	MI5T25V5
			6,3	FUS.CIL.DOM(CRIS.) T5X20 6,3A	E212570	MI5T25V6,3
			8	FUS.CIL.DOM(CRIS.) T5X20 8A	Q213086	MI5T25V8
			10	FUS.CIL.DOM(CRIS.) T5X20 10A	J213586	MI5T25V10
			12,5	FUS.CIL.DOM(CRIS.) T5X20 12,5A	P214603	MI5T25V12,5
			16	FUS.CIL.DOM(CRIS.) T5X20 16A	X215116	MI5T25V16
			20	FUS.CIL.DOM(CRIS.) T5X20 20A	Y215623	MI5T25V20

Packaging: 10 boxes x 10 fuses.

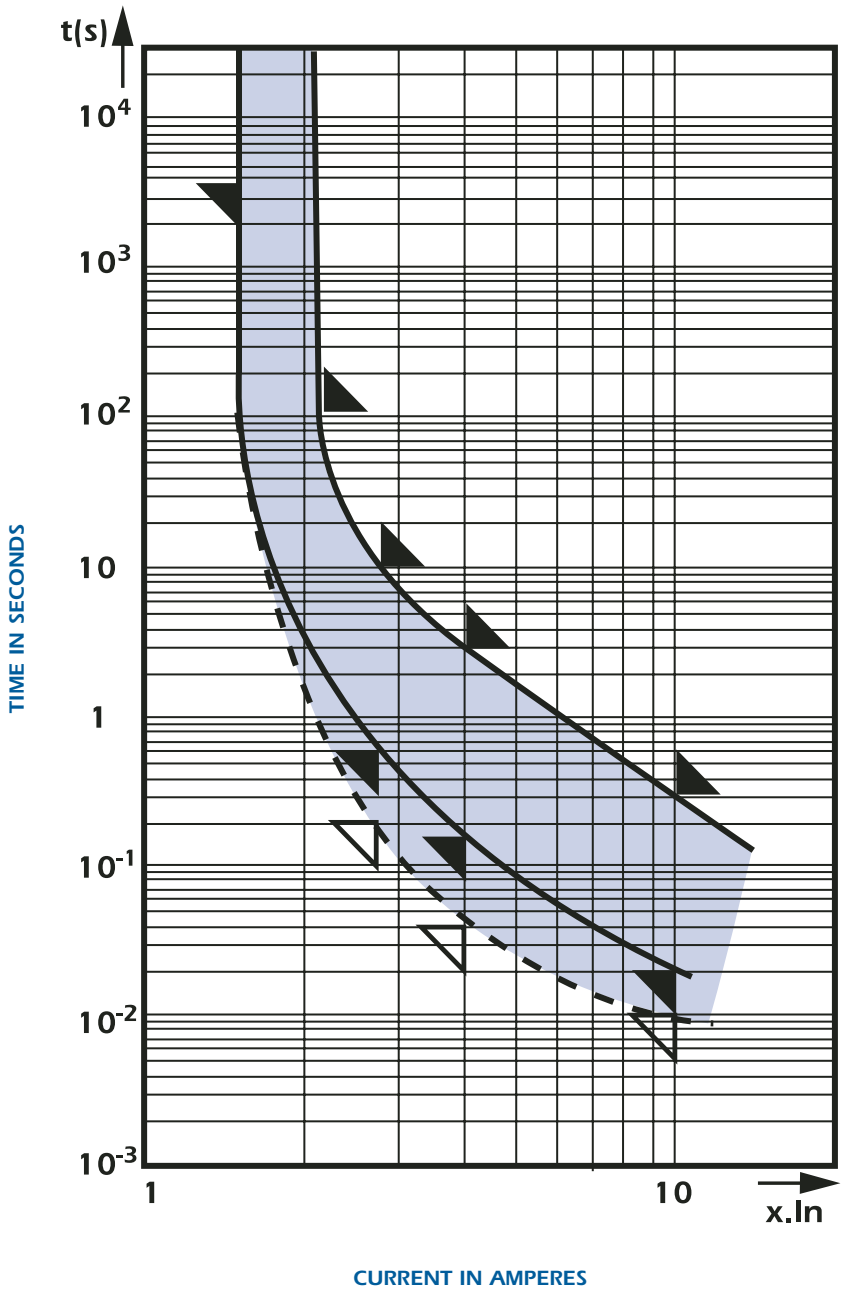
Fuses without approval.

Convenience Fuses
5T 5x20 - Time lag

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In	
0,032 A –> 0,1 A	2 min maxi	200 ms mini	10 s maxi	40 ms mini	3 s maxi	10 ms mini	300 ms maxi
0,125 A –> 20 A	2 min maxi	600 ms mini	10 s maxi	150 ms mini	3 s maxi	20 ms mini	300 ms maxi

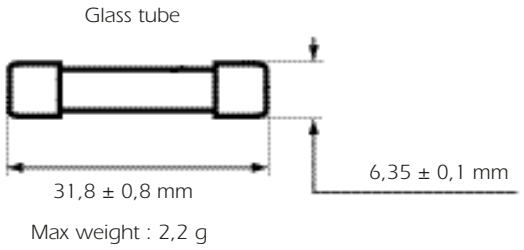
Time-current characteristics



Convenience Fuses
6T 6x32 - Fast Acting

250 VAC - T: time lag
from 0.032 to 25 A
size: 6 x 32

Dimensions



Max weight : 2,2 g



Basic Characteristics

Size	U_n Rated Voltage	Breaking Capacity	I_n Rating	Designation	Reference Number	Catalog Number
mm	V		A			
6x32	250	35A 250V	0,032	FUS.CIL.DOM(CRIS.) T6X32 0,032A	H216138	MI6T25V0,032
			0,04	FUS.CIL.DOM(CRIS.) T6X32 0,04A	F216642	MI6T25V0,04
			0,05	FUS.CIL.DOM(CRIS.) T6X32 0,05A	S217159	MI6T25V0,05
			0,063	FUS.CIL.DOM(CRIS.) T6X32 0,063A	X217669	MI6T25V0,063
			0,08	FUS.CIL.DOM(CRIS.) T6X32 0,08A	G218184	MI6T25V0,08
			0,1	FUS.CIL.DOM(CRIS.) T6X32 0,1A	M214095	MI6T25V0,1
			0,125	FUS.CIL.DOM(CRIS.) T6X32 0,125A	Q214604	MI6T25V0,125
			0,16	FUS.CIL.DOM(CRIS.) T6X32 0,16A	A215625	MI6T25V0,16
			0,2	FUS.CIL.DOM(CRIS.) T6X32 0,2A	G216137	MI6T25V0,2
			0,25	FUS.CIL.DOM(CRIS.) T6X32 0,25A	E216641	MI6T25V0,25
			0,315	FUS.CIL.DOM(CRIS.) T6X32 0,315A	R217158	MI6T25V0,315
			0,4	FUS.CIL.DOM(CRIS.) T6X32 0,4A	V218702	MI6T25V0,4
			0,5	FUS.CIL.DOM(CRIS.) T6X32 0,5A	W217668	MI6T25V0,5
			0,63	FUS.CIL.DOM(CRIS.) T6X32 0,63A	F218183	MI6T25V0,63
			0,8	FUS.CIL.DOM(CRIS.) T6X32 0,8A	H219220	MI6T25V0,8
			1	FUS.CIL.DOM(CRIS.) T6X32 1A	T218701	MI6T25V1
			1,25	FUS.CIL.DOM(CRIS.) T6X32 1,25A	G219219	MI6T25V1,25
			1,6	FUS.CIL.DOM(CRIS.) T6X32 1,6A	K219751	MI6T25V1,6
			2	FUS.CIL.DOM(CRIS.) T6X32 2A	J219750	MI6T25V2
			2,5	FUS.CIL.DOM(CRIS.) T6X32 2,5A	R222195	MI6T25V2,5
			3,15	FUS.CIL.DOM(CRIS.) T6X32 3,15A	M222950	MI6T25V3,15
		10xIn 250V	4	FUS.CIL.DOM(CRIS.) T6X32 4A	W200740	MI6T25V4
			5	FUS.CIL.DOM(CRIS.) T6X32 5A	K201282	MI6T25V5
			6,3	FUS.CIL.DOM(CRIS.) T6X32 6,3A	Q212051	MI6T25V6,3
			8	FUS.CIL.DOM(CRIS.) T6X32 8A	H212573	MI6T25V8
			10	FUS.CIL.DOM(CRIS.) T6X32 10A	S213088	MI6T25V10
			12,5	FUS.CIL.DOM(CRIS.) T6X32 12,5A	L213588	MI6T25V12,5
			16	FUS.CIL.DOM(CRIS.) T6X32 16A	N214096	MI6T25V16
			20	FUS.CIL.DOM(CRIS.) T6X32 20A	R214605	MI6T25V20
			25	FUS.CIL.DOM(CRIS.) T6X32 25A	Z215118	MI6T25V25

Packaging: 10 boxes x 10 fuses.

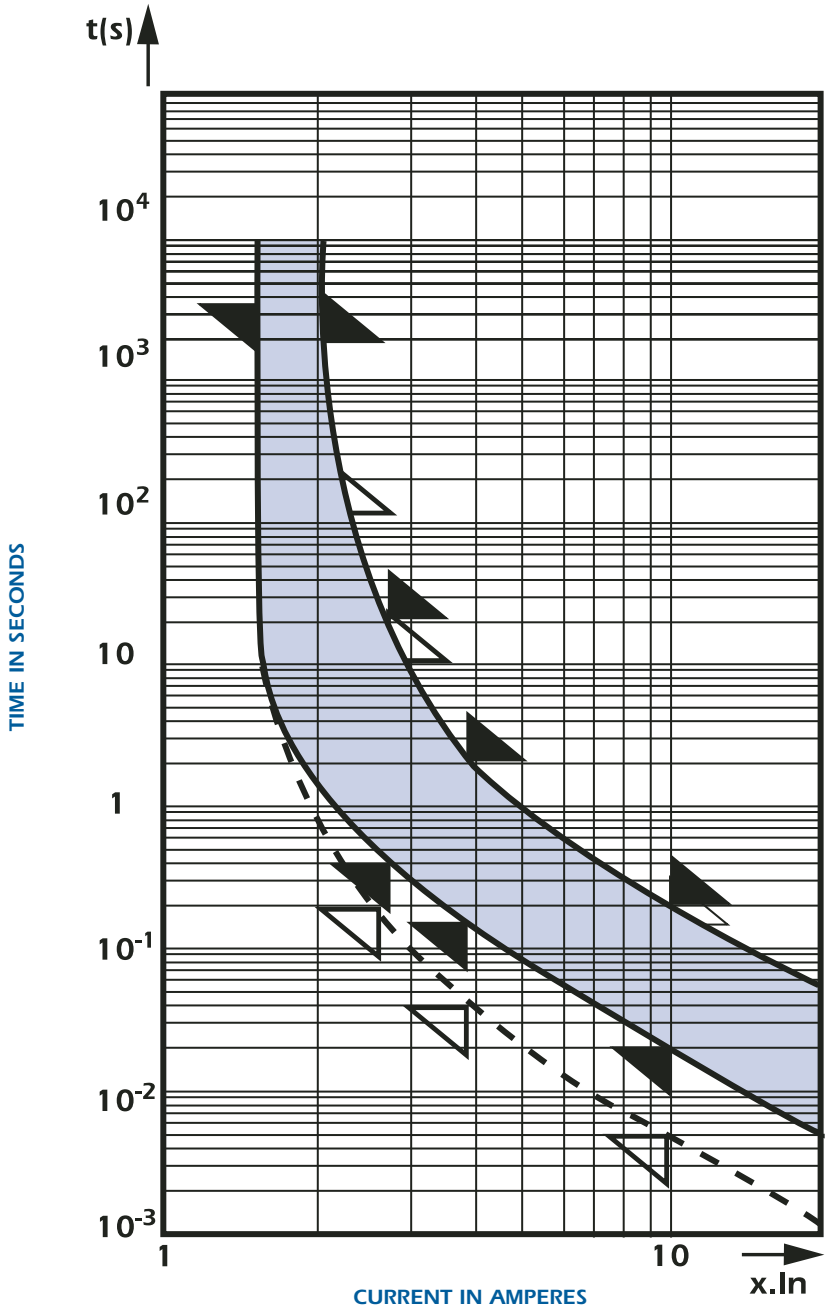
Fuses without approval.

Convenience Fuses
6T 6x32 - Fast Acting

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In	
32 –> 100 mA	2 min maxi	0,2 ms mini	10 ms maxi	40 ms mini	1s maxi	5 s min	150 ms maxi
125 mA –> 25 A	30 min maxi	0,40 ms mini	20 ms maxi	150 ms mini	2s maxi	20 s min	200 ms maxi

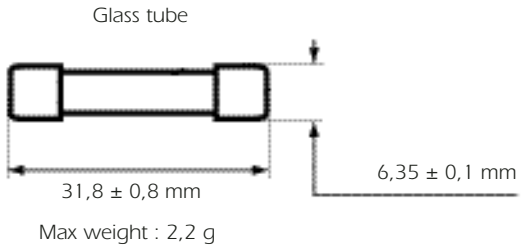
Time-current characteristics



Convenience Fuses
6F 6x32 - Time lag

250 VAC - F: fast acting
from 0.032 to 25 A
size: 6 x 32

Dimensions



Max weight : 2,2 g



Basic Characteristics

Size	U_n Rated Voltage	Breaking Capacity	I_n Rating	Designation	Reference Number	Catalog Number
mm	V		A			
6x32	250	35A 250V	0,032	FUS.CIL.DOM(CRIS.) F6X32 0,032A	B219214	MI6F25V0,032
			0,04	FUS.CIL.DOM(CRIS.) F6X32 0,04A	D219745	MI6F25V0,04
			0,05	FUS.CIL.DOM(CRIS.) F6X32 0,05A	L222190	MI6F25V0,05
			0,063	FUS.CIL.DOM(CRIS.) F6X32 0,063A	G222945	MI6F25V0,063
			0,08	FUS.CIL.DOM(CRIS.) F6X32 0,08A	Q200735	MI6F25V0,08
			0,1	FUS.CIL.DOM(CRIS.) F6X32 0,1A	K217152	MI6F25V0,1
			0,125	FUS.CIL.DOM(CRIS.) F6X32 0,125A	P217662	MI6F25V0,125
			0,16	FUS.CIL.DOM(CRIS.) F6X32 0,16A	Z218177	MI6F25V0,16
			0,2	FUS.CIL.DOM(CRIS.) F6X32 0,2A	M218695	MI6F25V0,2
			0,25	FUS.CIL.DOM(CRIS.) F6X32 0,25A	A219213	MI6F25V0,25
			0,315	FUS.CIL.DOM(CRIS.) F6X32 0,315A	C219744	MI6F25V0,315
			0,4	FUS.CIL.DOM(CRIS.) F6X32 0,4A	E201277	MI6F25V0,4
			0,5	FUS.CIL.DOM(CRIS.) F6X32 0,5A	K222189	MI6F25V0,5
			0,63	FUS.CIL.DOM(CRIS.) F6X32 0,63A	F222944	MI6F25V0,63
			0,8	FUS.CIL.DOM(CRIS.) F6X32 0,8A	P201792	MI6F25V0,8
			1	FUS.CIL.DOM(CRIS.) F6X32 1A	P200734	MI6F25V1
			1,25	FUS.CIL.DOM(CRIS.) F6X32 1,25A	D201276	MI6F25V1,25
			1,6	FUS.CIL.DOM(CRIS.) F6X32 1,6A	N211014	MI6F25V1,6
			2	FUS.CIL.DOM(CRIS.) F6X32 2A	N201791	MI6F25V2
			2,5	FUS.CIL.DOM(CRIS.) F6X32 2,5A	M211013	MI6F25V2,5
			3,15	FUS.CIL.DOM(CRIS.) F6X32 3,15A	J212045	MI6F25V3,15
		10xIn 250V	4	FUS.CIL.DOM(CRIS.) F6X32 4A	B212567	MI6F25V4
			5	FUS.CIL.DOM(CRIS.) F6X32 5A	M213083	MI6F25V5
			6,3	FUS.CIL.DOM(CRIS.) F6X32 6,3A	G214090	MI6F25V6,3
			8	FUS.CIL.DOM(CRIS.) F6X32 8A	L214600	MI6F25V8
			10	FUS.CIL.DOM(CRIS.) F6X32 10A	T215113	MI6F25V10
			12,5	FUS.CIL.DOM(CRIS.) F6X32 12,5A	V215620	MI6F25V12,5
			16	FUS.CIL.DOM(CRIS.) F6X32 16A	Z216636	MI6F25V16
			20	FUS.CIL.DOM(CRIS.) F6X32 20A	Q217663	MI6F25V20
			25	FUS.CIL.DOM(CRIS.) F6X32 25A	A218178	MI6F25V25

Packaging: 10 boxes x 10 fuses.

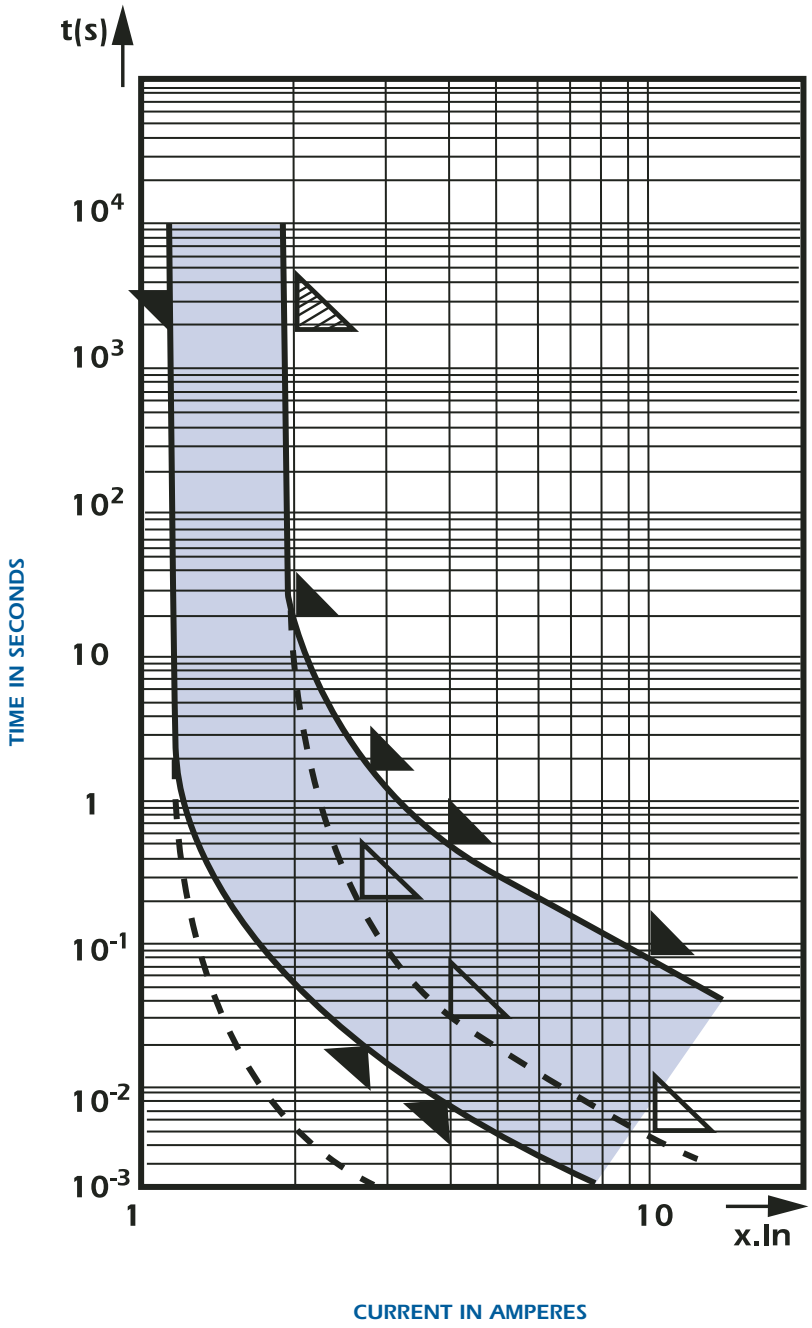
Fuses without approval.

Convenience Fuses
6F 6x32 - Time lag

Melting time limits

Current	210 % x In	275 % x In		400 % x In		1 000 % x In
32 –> 100 mA	20 s maxi	2 ms mini	200 ms maxi	1 ms mini	30 ms maxi	5 ms maxi
125 mA –> 25 A	20 s maxi	20 ms mini	1500 ms maxi	8 ms mini	500 ms maxi	80 ms maxi

Time-current characteristics

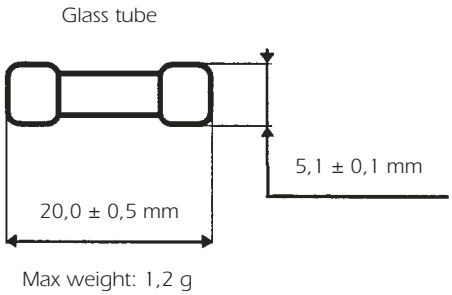


UL Fuses
5x20
5MF Fast Blow

Complying with UL / CSA 248-14

250 VAC/ 125 VAC
FROM 0.08 TO 8 A

Dimensions



Max weight: 1,2 g



Basic Characteristics

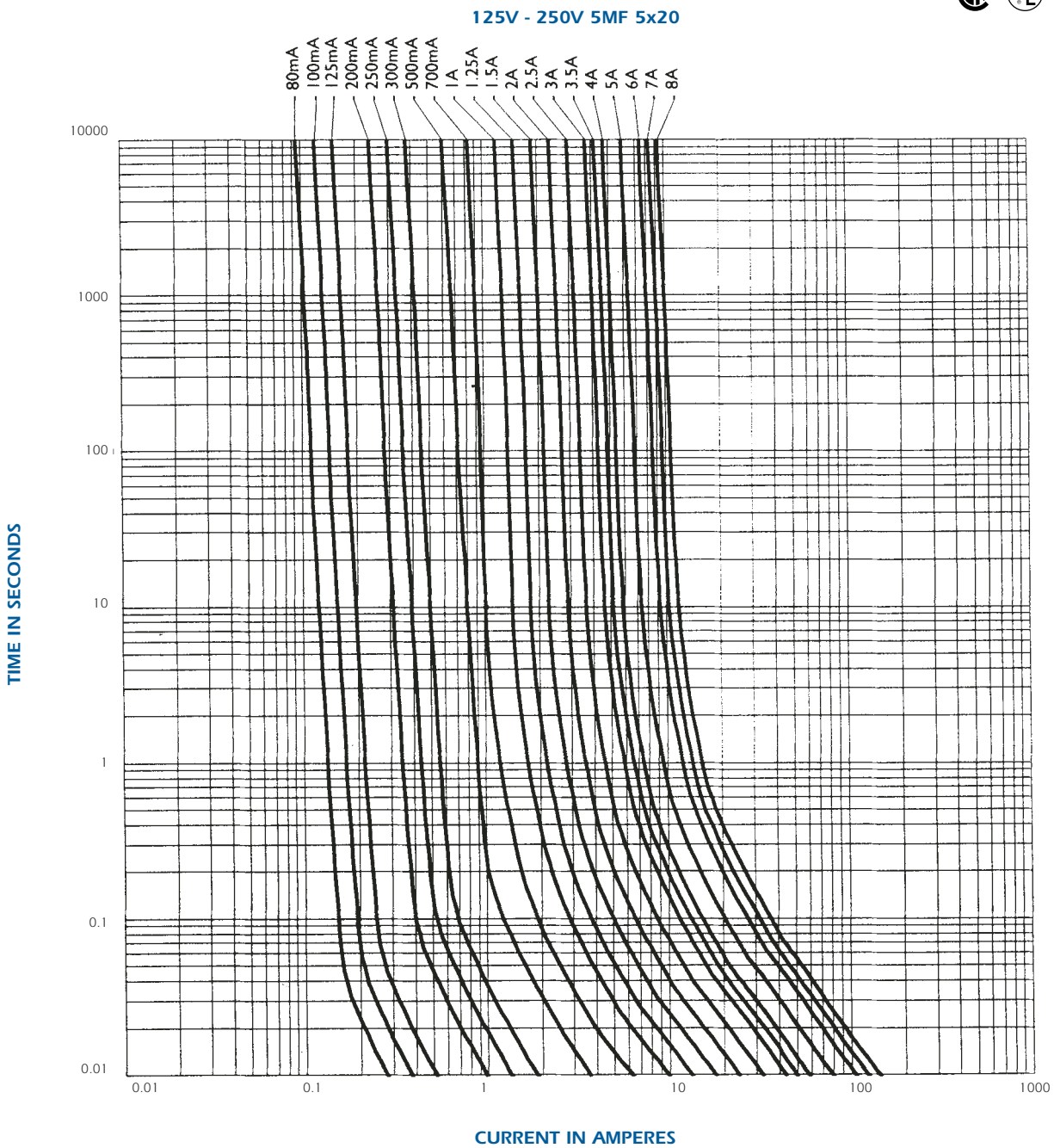
Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Breaking Capacity under 125 VAC	Max power dissip	Max voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	A	W	V			
5 x 20	250	0,080	200	10 000	0,32	3,05	250V 5MF 0,08 A 5 x 20	Q208601	MI5MF25V0,08
		0,100			0,35	2,65	250V 5MF 0,100 A 5 x 20	F207511	MI5MF25V0,1
		0,125			0,6	3,64	250V 5MF 0,125 A 5 x 20	G207512	MI5MF25V0,125
		0,200			0,72	2,76	250V 5MF 0,200 A 5 x 20	H207513	MI5MF25V0,2
		0,250			0,79	2,40	250V 5MF 0,250 A 5 x 20	J207514	MI5MF25V0,25
		0,300			0,84	2,09	250V 5MF 0,300 A 5 x 20	K207515	MI5MF25V0,3
		0,400					250V 5MF 0,400 A 5 x 20	L207516	MI5MF25V0,4
		0,500			1,04	1,58	250V 5MF 0,500 A 5 x 20	V206236	MI5MF25V0,5
		0,600					250V 5MF 0,600 A 5 x 20	W206237	MI5MF25V0,6
		0,700			0,20	0,22	250V 5MF 0,700 A 5 x 20	M207517	MI5MF25V0,7
		0,750					250V 5MF 0,750 A 5 x 20	X206238	MI5MF25V0,75
		0,800					250V 5MF 0,800 A 5 x 20	N207518	MI5MF25V0,8
		1,000			0,26	0,2	250V 5MF 1 A 5 x 20	Y206239	MI5MF25V1
		1,250			0,31	0,19	250V 5MF 1,25 A 5 x 20	Z206240	MI5MF25V1,25
		1,500			0,36	0,18	250V 5MF 1,5 A 5 x 20	A206241	MI5MF25V1,5
		1,600				0,18	250V 5MF 1,6 A 5 x 20	P207519	MI5MF25V1,6
		2,000			0,44	0,17	250V 5MF 2 A 5 x 20	B206242	MI5MF25V2
		2,500			0,52	0,16	250V 5MF 2,5 A 5 x 20	C206243	MI5MF25V2,5
		3,000			0,59	0,15	250V 5MF 3 A 5 x 20	D206244	MI5MF25V3
	125	4,000	_		0,73	0,14	125V 5MF 4 A 5 x 20	E206245	MI5MF12,5V4
		5,000			0,86	0,13	125V 5MF 5 A 5 x 20	F206246	MI5MF12,5V5
		6,000			0,98	0,12	125V 5MF 6 A 5 x 20	G206247	MI5MF12,5V6
		7,000			1,1	0,12	125V 5MF 7 A 5 x 20	H206248	MI5MF12,5V7
		8,000			1,22	0,12	125V 5MF 8 A 5 x 20	J206249	MI5MF12,5V8

UL Fuses
5x20
5MF Fast Blow

Melting time limits

Current	100 % x In	135 % x In	200 % x In
0,08 –> 8 A	4 h mini	1 h maxi	5 s maxi

Time-current characteristics



Packaging: in box of 1000 pieces.
in blister of 50 pieces.

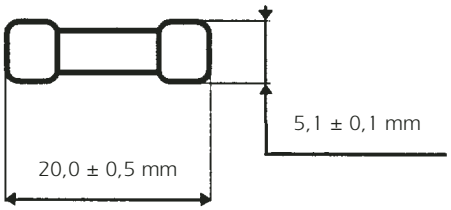
UL Fuses
5x20
5TT Slow Blow

Complying with UL / CSA 248-14

250 VAC / 125 VAC
FROM 0.08 TO 10 A

Dimensions

Glass tube ≤ 5A. Ceramic tube ≥ 6A



Max weight: 1.2 g





Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Breaking Capacity under 125 VAC	Max power dissip	Max voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	A	W	V			
5 x 20	250	0,080*	100	10 000			250V 5TT 0,080 A 5 x 20	N207564	MI5TT 25V0,08
		0,100			0,45	2,8	250V 5TT 0,100 A 5 x 20	P207565	MI5TT 25V0,1
		0,125			0,48	2,3	250V 5TT 0,125 A 5 x 20	Q207566	MI5TT 25V0,125
		0,200			0,55	1,7	250V 5TT 0,200 A 5 x 20	R207567	MI5TT 25V0,2
		0,250			0,58	1,4	250V 5TT 0,250 A 5 x 20	S207568	MI5TT 25V0,25
		0,300			0,62	1,2	250V 5TT 0,300 A 5 x 20	T207569	MI5TT 25V0,3
		0,400			0,66	1,0	250V 5TT 0,400 A 5 x 20	V207570	MI5TT 25V0,4
		0,500			0,70	0,86	250V 5TT 0,500 A 5 x 20	W207571	MI5TT 25V0,5
		0,600					250V 5TT 0,600 A 5 x 20	X207572	MI5TT 25V0,6
		0,700					250V 5TT 0,700 A 5 x 20	Y207573	MI5TT 25V0,7
		0,750			0,79	0,64	250V 5TT 0,750 A 5 x 20	Z207574	MI5TT 25V0,75
		0,800					250V 5TT 0,800 A 5 x 20	A207575	MI5TT 25V0,8
		1,000			0,85	0,52	250V 5TT 1 A 5 x 20	B207576	MI5TT 25V1
		1,250			0,91	0,44	250V 5TT 1,25 A 5 x 20	C207577	MI5TT 25V1,250
		1,500					250V 5TT 1,5 A 5 x 20	D207578	MI5TT 25V1,5
		1,600			0,97	0,37	250V 5TT 1,6 A 5 x 20	E207579	MI5TT 25V1,6
		2,000			1,03	0,32	250V 5TT 2 A 5 x 20	F207580	MI5TT 25V2
		2,500			1,1	0,27	250V 5TT 2,5 A 5 x 20	G207581	MI5TT 25V2,5
		3,000			1,17	0,23	250V 5TT 3 A 5 x 20	H207582	MI5TT 25V3
	125	4,000	—		1,25	0,19	125V 5TT 4 A 5 x 20	J207606	MI5TT 12,5V4
		5,000			1,33	0,16	125V 5TT 5 A 5 x 20	K207607	MI5TT 12,5V5
		6,000			1,23	0,12	125V 5TT 6 A 5 x 20	L207608	MI5TT 12,5V6
		7,000					125V 5TT 7 A 5 x 20	M207609	MI5TT 12,5V7
		8,000			1,31	0,10	125V 5TT 8 A 5 x 20	N207610	MI5TT 12,5V8
		10,000		1000	1,40	0,09	125V 5TT 10 A 5 x 20	F208937	MI5TT 12,5V10

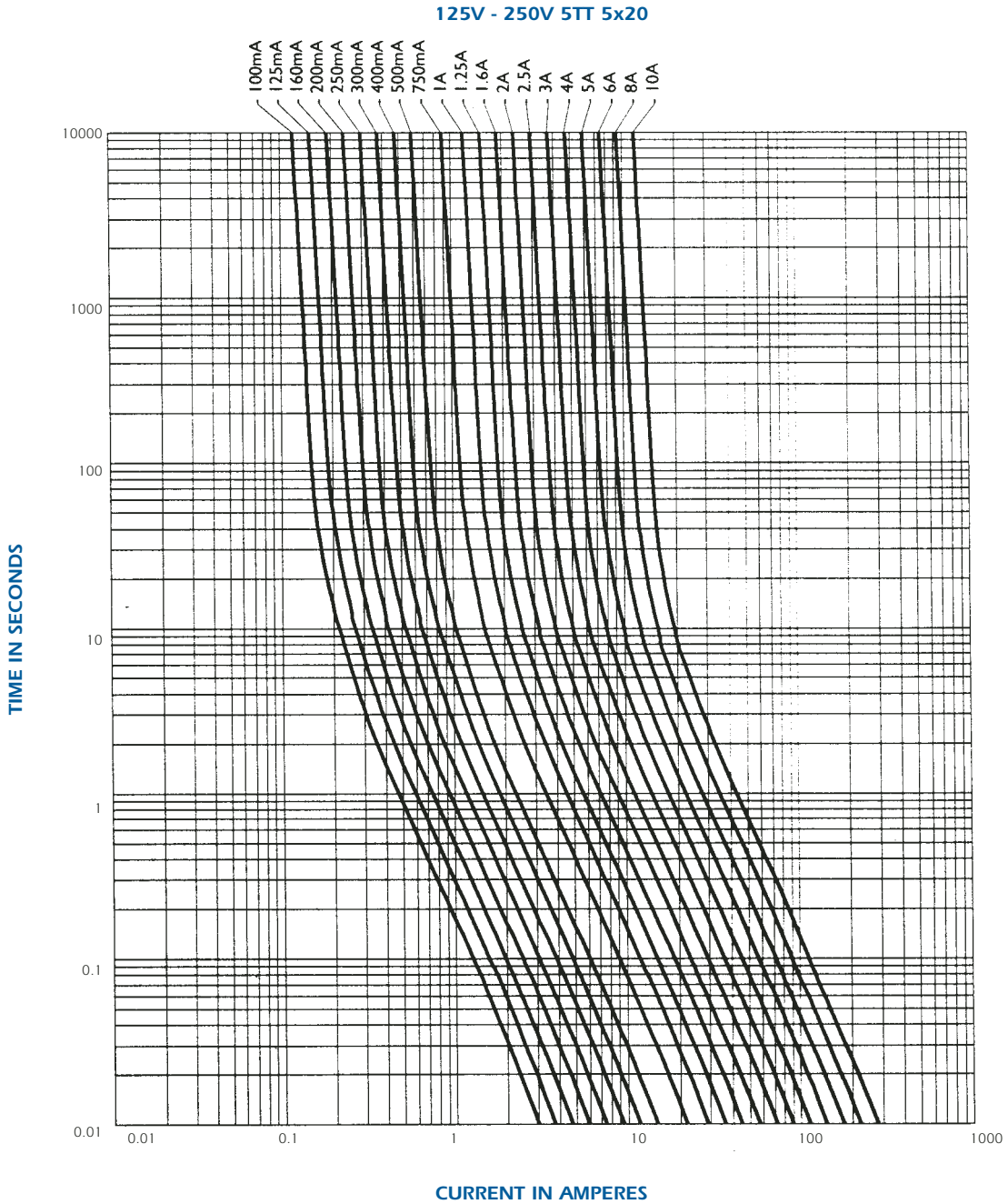
* Non approval rating

UL Fuses
5x20
5TT Slow Blow

Melting time limits

Current	100 % x In	135 % x In	200 % x In	
0,08 –> 3 A	4 h mini	1 h maxi	5s mini	30s maxi
4 A –> 10 A	4h mini	1 h maxi	3s mini	30s maxi

Time-current characteristics



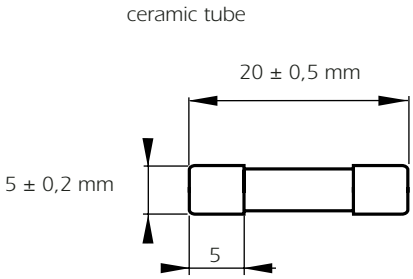
Packaging: in box of 1000 pieces.
in blister of 50 pieces.

UL Fuses
5x20
SU Medium time Lag

Complying with UL 198-G and CSA 22-2
Approvals: UL Listed E 90660 - CSA certified LR 49184.3

250 VAC
FROM 1,25 TO 12,5 A

Dimensions





Max weight: 1.5 g

Basic Characteristics

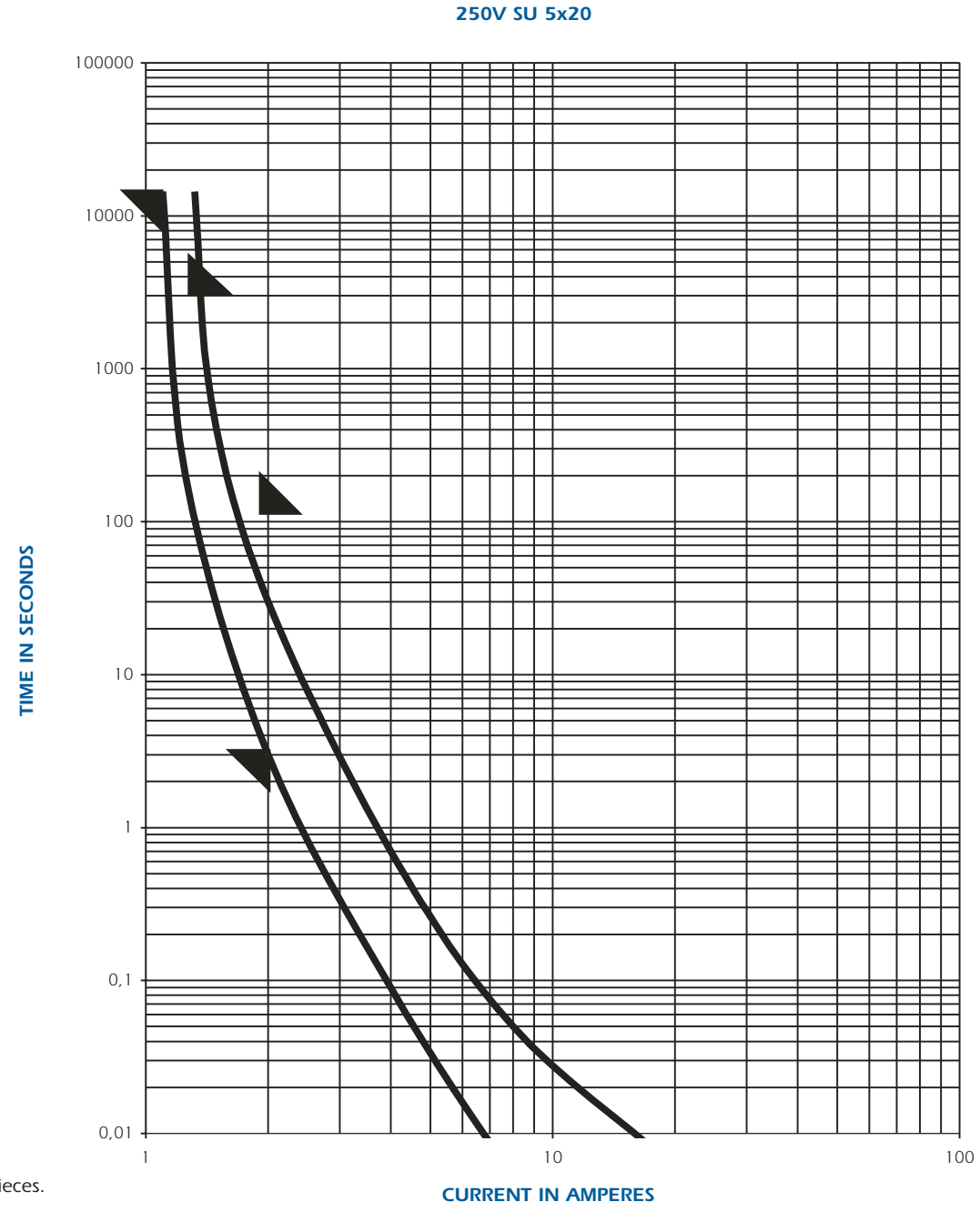
Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Max voltage drop	Designation	Reference Number	Catalog Number
mm	V	A	A	V			
5 x 20	250	1,25	10 000 Cos φ = 0,7 à 0,8	0,60	250V SU 1,25A 5x20	G087498	MI5SU25V1,25
		1,6		0,50	250V SU 1,60A 5x20	H087499	MI5SU25V1,6
		2		0,40	250V SU 2,00A 5x20	J087500	MI5SU25V2
		2,5		0,35	250V SU 2,50A 5x20	K087501	MI5SU25V2,5
		3,15		0,29	250V SU 3,15A 5x20	L087502	MI5SU25V3,15
		4		0,24	250V SU 4,00A 5x20	M087503	MI5SU25V4
		5		0,20	250V SU 5,00A 5x20	N087504	MI5SU25V5
		6,3		0,17	250V SU 6,30A 5x20	P087505	MI5SU25V6,3
		8		0,15	250V SU 8,00A 5x20	Q087506	MI5SU25V8
		10		0,14	250V SU 10,00A 5x20	R087507	MI5SU25V10
		12,5		0,12	250V SU 12,50A 5x20	S087508	MI5SU25V12,5

UL Fuses
5x20
SU Medium time Lag

Melting time limits

Current	110 % In	135 % x In	200 % x In	
1,25 → 15 A	4 h mini	1 h maxi	3 s mini	120 s maxi

Time-current characteristics



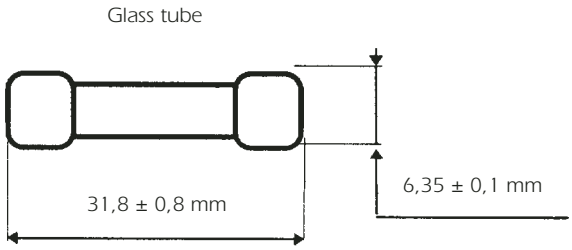
Packaging: in blister of 50 pieces.

UL Fuses
6x32
3AG Fast Blow

Complying with UL / CSA STD 248-14

250 VAC / 125 VAC
FROM 0,1 TO 15 A

Dimensions



Max weight: 2,1 g



Basic Characteristics

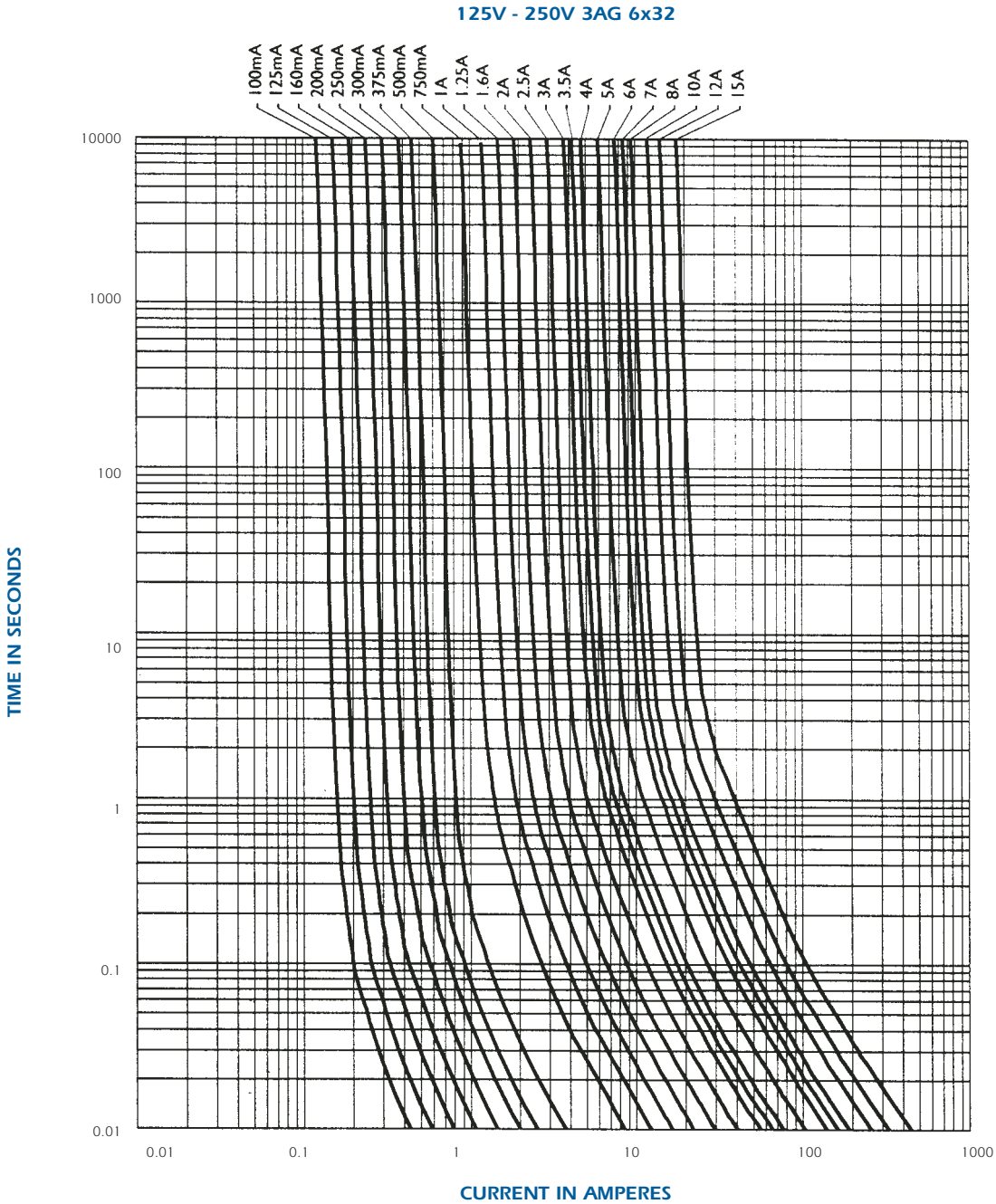
Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Breaking Capacity under 125 VAC	Max power dissip	Max voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	A	W	V			
6 x 32	250	0,100	200	10 000	0,59	4,5	250V 3AG 0,100 A 6 x 32	D085701	MI6AG25V0,1
		0,125			0,80	4,5	250V 3AG 0,125 A 6 x 32	E085702	MI6AG25V0,125
		0,150			0,94	4,3	250V 3AG 0,150 A 6 x 32	F085703	MI6AG25V0,15
		0,175			0,96	4,1	250V 3AG 0,175 A 6 x 32	G085704	MI6AG25V0,175
		0,200			1,10	3,9	250V 3AG 0,200 A 6 x 32	H085705	MI6AG25V0,2
		0,250			1,29	3,6	250V 3AG 0,250 A 6 x 32	J085706	MI6AG25V0,25
		0,300			1,51	3,4	250V 3AG 0,300 A 6 x 32	K085707	MI6AG25V0,3
		0,375			1,64	3,2	250V 3AG 0,375 A 6 x 32	L085708	MI6AG25V0,375
		0,500			0,25	2,9	250V 3AG 0,500 A 6 x 32	M085709	MI6AG25V0,5
		0,600			0,30	0,21	250V 3AG 0,600 A 6 x 32	N085710	MI6AG25V0,6
		0,750			0,30	0,24	250V 3AG 0,750 A 6 x 32	P085711	MI6AG25V0,75
		1,000			0,37	0,23	250V 3AG 1,000 A 6 x 32	Q085712	MI6AG25V1
		1,250			0,44	0,21	250V 3AG 1,250 A 6 x 32	R085713	MI6AG25V1,25
		1,500			0,51	0,2	250V 3AG 1,500 A 6 x 32	S085714	MI6AG25V1,5
		2,000			0,59	0,18	250V 3AG 2,000 A 6 x 32	T085715	MI6AG25V2
		2,500			0,7	0,17	250V 3AG 2,500 A 6 x 32	V085716	MI6AG25V2,5
		3,000			0,83	0,162	250V 3AG 3,000 A 6 x 32	W085717	MI6AG25V3
		4,000			1	0,154	250V 3AG 4,000 A 6 x 32	X085718	MI6AG25V4
		5,000			1,2	0,146	250V 3AG 5,000 A 6 x 32	Y085719	MI6AG25V5
		6,000			1,4	0,139	250V 3AG 6,000 A 6 x 32	Z085720	MI6AG25V6
		7,000			1,6	0,135	250V 3AG 7,000 A 6 x 32	A085721	MI6AG25V7
		8,000			1,7	0,132	250V 3AG 8,000 A 6 x 32	B085722	MI6AG25V8
		10,000			2	0,125	250V 3AG 10,00 A 6 x 32	C085723	MI6AG25V10
	125	12,000	-		2,4	0,12	125V 3AG 12,00 A 6 x 32	D207509	MI6AG12,5V12
		15,000	-		2,8	0,114	125V 3AG 15,00 A 6 x 32	E207510	MI6AG12,5V15

UL Fuses
6x32
3AG Fast Blow

Melting time limits

Current	100 % x In	135 % x In	200 % x In
0,1 –> 15 A	4 h mini	1 h maxi	5 s maxi

Time-current characteristics



Packaging: in box of 1000 pieces.
in blister of 50 pieces.

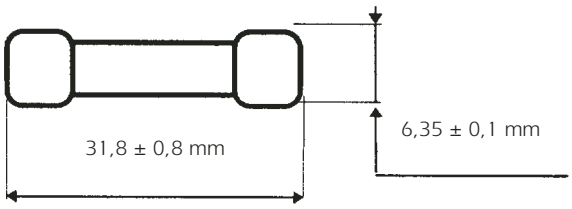
UL Fuses
6x32
3SB Slow Blow

Complying with UL / CSA STD 248-14

250 VAC / 125 VAC
FROM 0,062 TO 15 A

Dimensions

Glass tube



Max weight: 2.2 g



Basic Characteristics

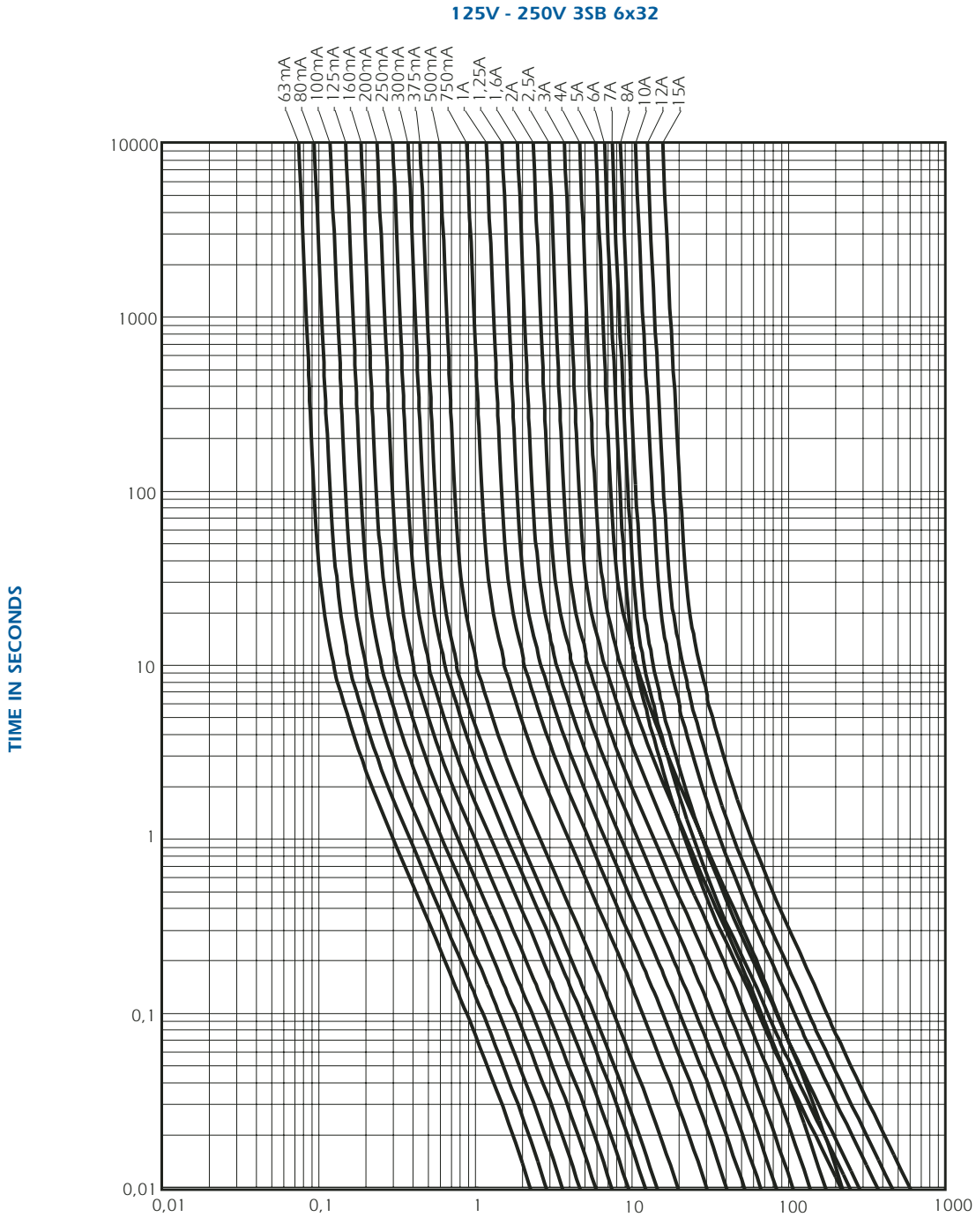
Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Breaking Capacity under 125 VAC	Max power dissip	Max voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	A	W	V			
6 x 32	250	0,063	35 A	10 000	0,71	6,9	250V 3SB 0,062 A 6 x 32	B207507	MI6SB25V0,062
		0,08			0,74	5,7	250V 3SB 0,08 A 6 x 32	C207508	MI6SB25V0,08
		0,1			0,54	3,3	250V 3SB 0,1 A 6 x 32	D085724	MI6SB25V0,1
		0,125			0,56	2,7	250V 3SB 0,125 A 6 x 32	E085725	MI6SB25V0,125
		0,15			0,59	2,3	250V 3SB 0,15 A 6 x 32	F085726	MI6SB25V0,15
		0,175			0,60	2,2	250V 3SB 0,175 A 6 x 32	G085727	MI6SB25V0,175
		0,2			0,61	1,9	250V 3SB 0,2 A 6 x 32	H085728	MI6SB25V0,2
		0,25			0,64	1,6	250V 3SB 0,25 A 6 x 32	J085729	MI6SB25V0,25
		0,3			0,68	1,3	250V 3SB 0,3 A 6 x 32	K085730	MI6SB25V0,3
		0,375			0,71	1,1	250V 3SB 0,375 A 6 x 32	V087510	MI6SB25V0,375
		0,4			0,73	1	250V 3SB 0,4 A 6 x 32	X087512	MI6SB25V0,4
		0,5			0,75	0,9	250V 3SB 0,5 A 6 x 32	Y 087513	MI6SB25V0,5
		0,6			0,8	0,8	250V 3SB 0,6 A 6 x 32	Z087514	MI6SB25V0,6
		0,75			0,83	0,7	250V 3SB 0,75 A 6 x 32	A087515	MI6SB25V0,75
		1	100 A		0,88	0,5	250V 3SB 1 A 6 x 32	B087516	MI6SB25V1
		1,25			0,9	0,5	250V 3SB 1,25 A 6 x 32	C087517	MI6SB25V1,25
		1,5			1	0,38	250V 3SB 1,5 A 6 x 32	D087518	MI6SB25V1,5
		1,8			1	0,34	250V 3SB 1,8 A 6 x 32	E087519	MI6SB25V1,8
		2			1	0,32	250V 3SB 2 A 6 x 32	F087520	MI6SB25V2
		2,5			1,1	0,27	250V 3SB 2,5 A 6 x 32	G087521	MI6SB25V2,5
		3			1,1	0,22	250V 3SB 3 A 6 x 32	H087522	MI6SB25V3
		4	200 A		1,2	0,19	250V 3SB 4 A 6 x 32	J087523	MI6SB25V4
		5			1,3	0,16	250V 3SB 5 A 6 x 32	K087524	MI6SB25V5
		6			1,6	0,16	250V 3SB 6 A 6 x 32	L087525	MI6SB25V6
		7			1,8	0,16	250V 3SB 7 A 6 x 32	M087526	MI6SB25V7
		8			1,9	0,15	250V 3SB 8 A 6 x 32	Q087529	MI6SB25V8
	125	10	–		2,3	0,14	125V 3SB 10 A 6 x 32	Y207619	MI6SB12,5V10
		12			2,6	0,13	125V 3SB 12 A 6 x 32	Z207620	MI6SB12,5V12
		15			3	0,12	125V 3SB 15 A 6 x 32	A207621	MI6SB12,5V15

UL Fuses
6x32
3SB Slow Blow

Melting time limits

Current	100 % x In	135 % x In	200 % x In	
0,063 –> 15 A	4 h mini	1 h maxi	5 s mini	30 s maxi

Time-current characteristics



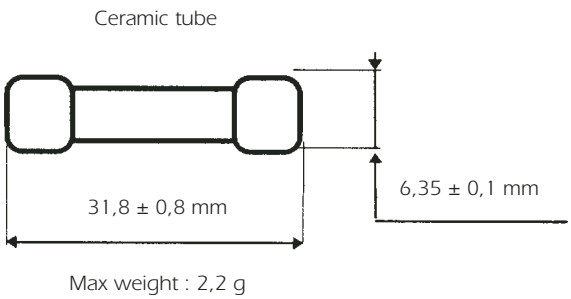
Packaging: in box of 1000 pieces.
in blister of 50 pieces.

UL Fuses
6x32
3AB Fast Blow

Complying with UL / CSA STD 248-14

250 VAC
FROM 0.1 TO 15 A

Dimensions



Max weight : 2,2 g



Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 VAC	Breaking Capacity under 125 VAC	Max power dissip	Max voltage drop	Designation	Reference Number	Catalog Number
mm	VAC	A	A	A	W	V			
6 x 32	250	0,1 A	35 A	10 000	0,59	4,5	250V 3AB 0,1 A 6 x 32	R208602	MI6AB25V0,100
		0,125 A			0,74	4,5	250V 3AB 0,125 A 6 x 32	S208603	MI6AB25V0,125
		0,16 A			0,87	4,2	250V 3AB 0,16 A 6 x 32	T208604	MI6AB25V0,160
		0,2 A			1,02	3,9	250V 3AB 0,2 A 6 x 32	V208605	MI6AB25V0,200
		0,25 A			1,19	3,6	250V 3AB 0,25 A 6 x 32	W208606	MI6AB25V0,250
		0,3 A			1,4	3,4	250V 3AB 0,3 A 6 x 32	X208607	MI6AB25V0,3
		0,375 A			1,58	3,2	250V 3AB 0,375 A 6 x 32	Y208608	MI6AB25V0,375
		0,5 A			1,92	2,9	250V 3AB 0,5 A 6 x 32	L206251	MI6AB25V0,5
		0,75 A			0,3	0,2	250V 3AB 0,75 A 6 x 32	N206253	MI6AB25V0,75
		1 A			0,37	0,23	250V 3AB 1 A 6 x 32	P206254	MI6AB25V1
		1,5 A	100 A		0,5	0,2	250V 3AB 1,5 A 6 x 32	R206256	MI6AB25V1,5
		2 A			0,59	0,18	250V 3AB 2 A 6 x 32	S206257	MI6AB25V2
		2,5 A			0,7	0,17	250V 3AB 2,5 A 6 x 32	T206258	MI6AB25V2,5
		3 A			0,83	0,162	250V 3AB 3 A 6 x 32	V206259	MI6AB25V3
		3,5 A			0,91	0,157	250V 3AB 3,5 A 6 x 32	M206252	MI6AB25V3,5
		4 A	200 A		1	0,154	250V 3AB 4 A 6 x 32	W206260	MI6AB25V4
		4,5 A			1,1	0,150	250V 3AB 4,5 A 6 x 32	Q206255	MI6AB25V4,5
		5 A			1,2	0,146	250V 3AB 5 A 6 x 32	X206261	MI6AB25V5
		6 A			1,4	0,139	250V 3AB 6 A 6 x 32	Y206262	MI6AB25V6
		7 A			1,6	0,135	250V 3AB 7 A 6 x 32	Z206263	MI6AB25V7
		8 A			1,7	0,132	250V 3AB 8 A 6 x 32	A206264	MI6AB25V8
		10 A			2	0,125	250V 3AB 10 A 6 x 32	B206265	MI6AB25V10
		12 A*	–		2,2	0,120	250V 3AB 12 A 6 x 32	C206266	MI6AB25V12
		15 A*			2,5	0,114	250V 3AB 15 A 6 x 32	D206267	MI6AB25V15

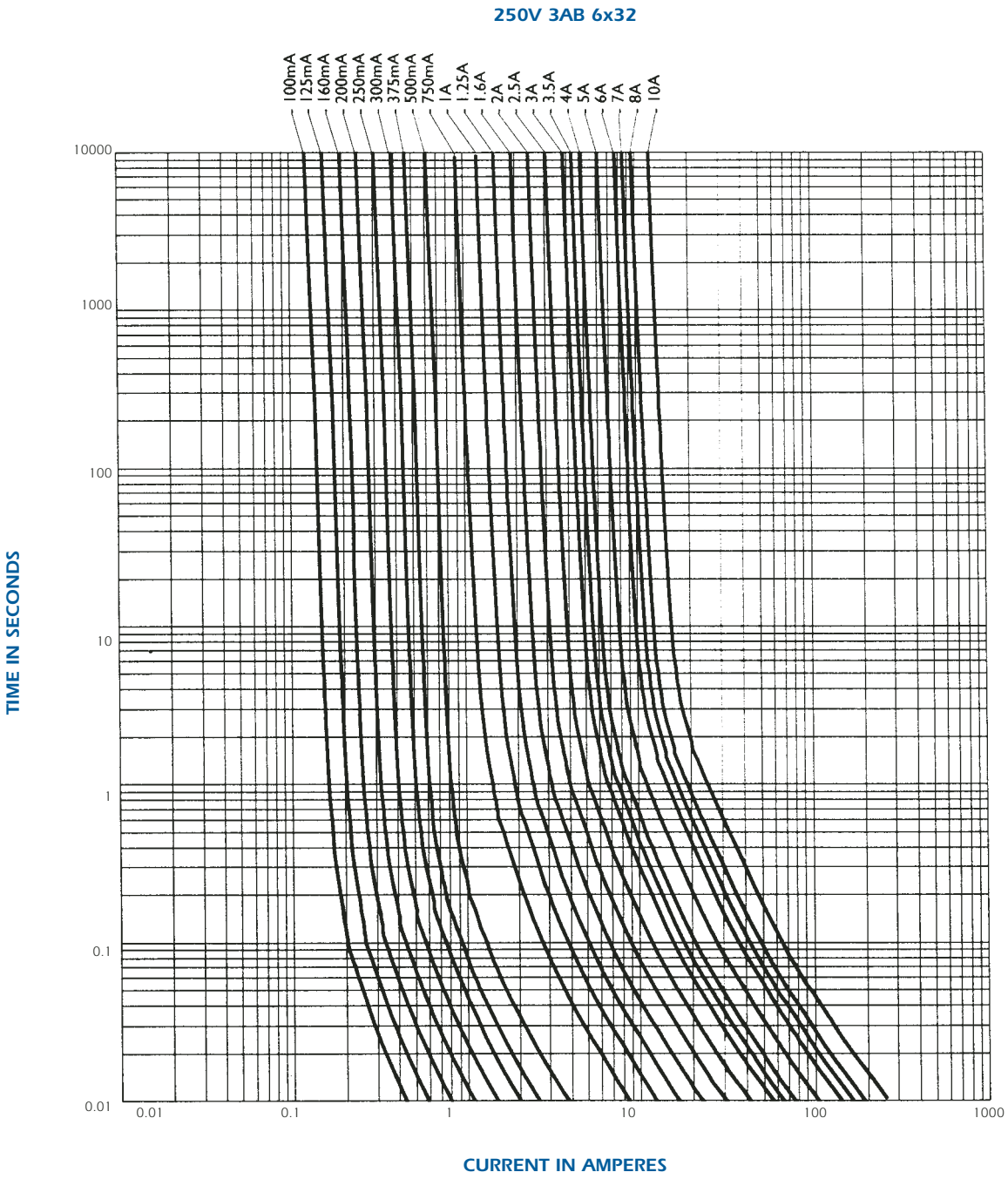
* Non approval rating.

UL Fuses
6x32
3AB Fast Blow

Melting time limits

Current	100 % x In	135 % x In	200 % x In
0,1 –> 15 A	4 h mini	1 h maxi	5 s maxi

Time-current characteristics



Packaging: in box of 1000 pieces.
in blister of 50 pieces.

Multi-Meter fuses
10x35 -10x38
FSM - 1000 V AC/DC

Ferraz Shawmut has developed a true 1000V AC/DC fuse designed to protect both analog and digital multi-meters.

These fuses cover all the industry's multi-meter requirements in three easy to use amperage ratings. Good for 1000 volts AC and DC, the FSM line of Ferraz Shawmut fuses are designed for the power electronics metering and controls market.



Features/Benefits

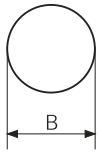
- For the protection of multi-meters
- 1000V AC/DC for full range protection
- 100% Current Rated for continuous current carrying capability
- Glass melamine body and plated terminals provide superior reliability and performance

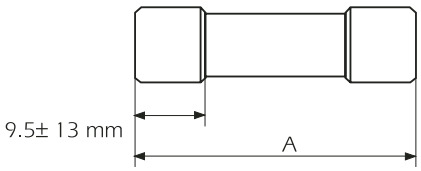
Highlights:

- Fast-Acting
- 1000 Volts AC/DC
- 20,000A Interrupting Rating @ 1000V AC/DC for all ratings
- (3) Ampere Ratings 44/100A, 11A, 15A
- Current-Limiting
- UL Recognized Component

Dimensions:

Catalog No.	A	B
FSM44/100	1.375"/35 mm	0.406
FSM11	1.500"/38 mm	0.406"
FSM15	1.500"/38 mm	0.406"





Standard Fuse Ampere Ratings, Catalog Numbers

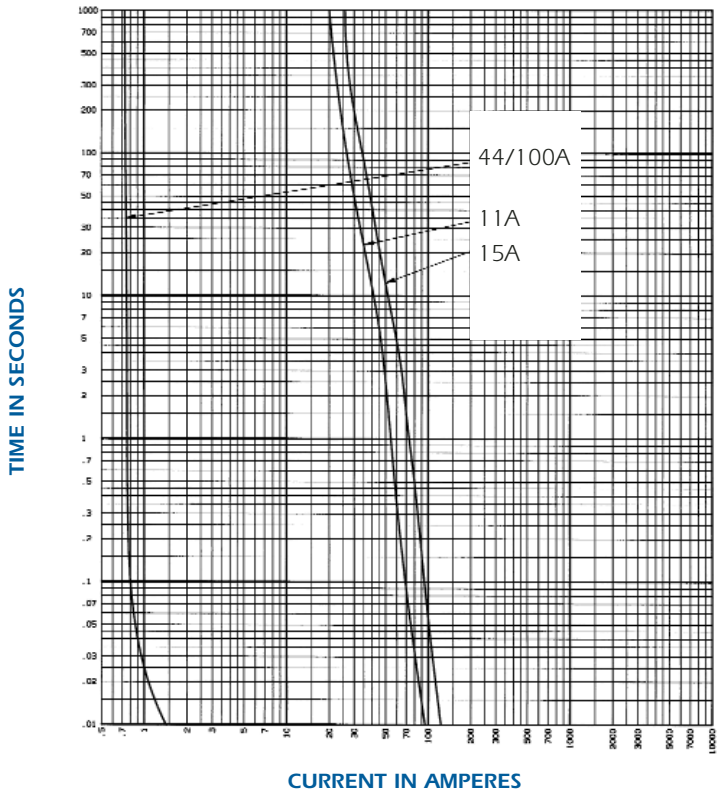
Ampere Rating	Catalog Number	Reference Number
44/100	FSM44/100	W232480
11	FSM11	X232481
15	FSM15	Y232482

Cross Reference

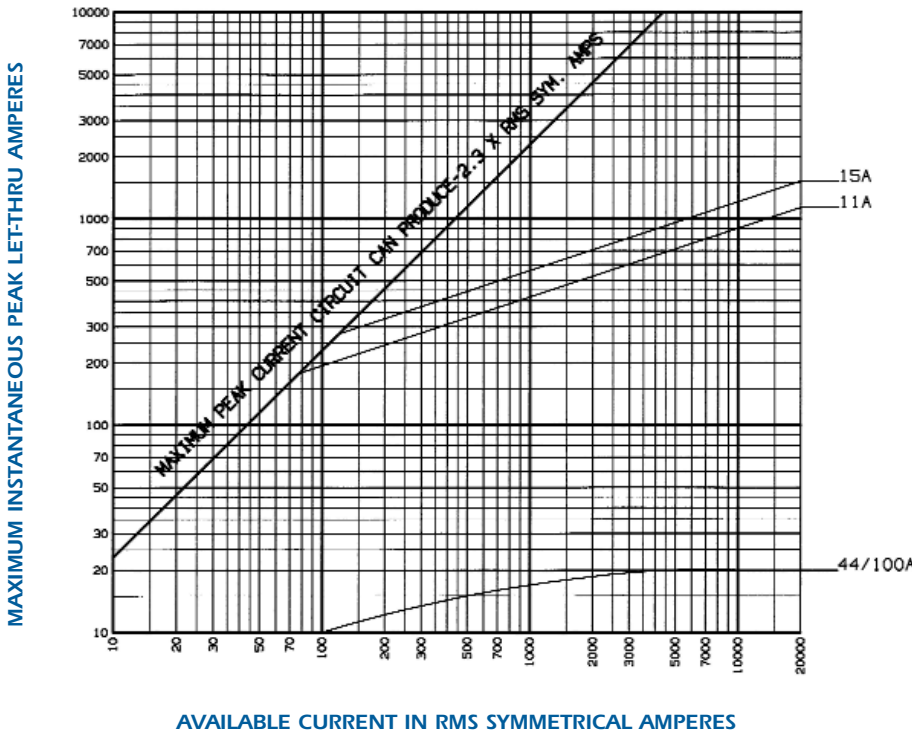
Ferraz Shawmut **FSM** replaces the
Bussmann: DMM-B
Littelfuse: FLU

Multi-Meter fuses
10x35 -10x38
FSM - 1000 V AC/DC

Melting current data



Peak Let-Thru current data

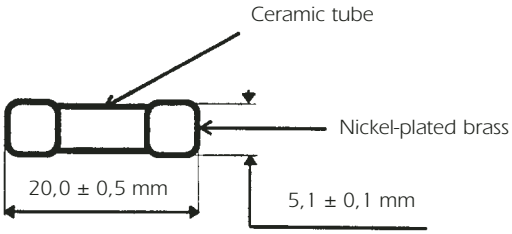


Very HRC Fuses
5x20
125V to 250V - FA/FB Very Fast Acting

Approvals UL recognized E 90660

FROM 0,04 TO 20A

Dimensions



FA,FB: fuses with filler
Max weight: 1.2 g



Basic Characteristics

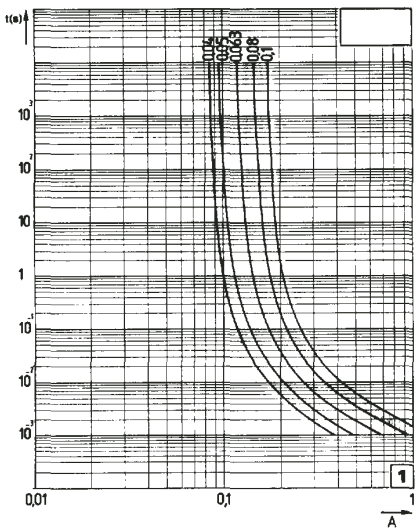
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A^2 s		V			
5 x 20	250	0,040*	250 VAC 4 kA cos φ≥ 0,7	0,00013	0,0004	1,5	250V FB 0,040 A 5x20	K084051	MI5FB25V1,26
		0,050*		0,00020	0,0006	1,5	250V FB 0,050 A 5x20	Q080468	MI5FB25V0,05
		0,063*		0,00041	0,0012	1,3	250V FB 0,063 A 5x20	N084054	MI5FB25V0,063
		0,080*		0,00077	0,0022	1,1	250V FB 0,080 A 5x20	P080467	MI5FB25V0,08
		0,100*		0,00131	0,0037	1,1	250V FB 0,100 A 5x20	L084052	MI5FB25V0,1
		0,125	250 VAC 30 kA cos φ≥ 0,2 for approvals (UL 198G) Ic = 10 kA under 250 VAC cos φ≥ 0,7	0,00077	0,0021	1,7	250V FA 0,125 A 5x20	L084029	MI5FA25V0,125
		0,160		0,0020	0,006	1,3	250V FA 0,160 A 5x20	F084001	MI5FA25V0,16
		0,200		0,0046	0,013	1,1	250V FA 0,200 A 5x20	Y084017	MI5FA25V0,2
		0,250		0,009	0,025	1,0	250V FA 0,250 A 5x20	G084002	MI5FA25V0,25
		0,315		0,016	0,045	0,90	250V FA 0,315 A 5x20	Z084018	MI5FA25V0,315
		0,400		0,03	0,085	0,85	250V FA 0,400 A 5x20	A084019	MI5FA25V0,4
		0,500		0,05	0,15	0,80	250V FA 0,500 A 5x20	H084003	MI5FA25V0,5
		0,630		0,12	0,35	0,70	250V FA 0,630 A 5x20	X084016	MI5FA25V0,63
		0,800		0,25	0,72	0,60	250V FA 0,800 A 5x20	C084021	MI5FA25V0,8
		1,000		0,11	0,25	0,46	250V FA 1,000 A 5x20	J084004	MI5FA25V1
		1,250		0,26	0,65	0,36	250V FA 1,250 A 5x20	K084005	MI5FA25V1,25
		1,600		0,39	0,9	0,42	250V FA 1,600 A 5x20	L084006	MI5FA25V1,6
		2,000		0,81	1,9	0,37	250V FA 2,000 A 5x20	M084007	MI5FA25V2
		2,500		1,44	3,2	0,34	250V FA 2,500 A 5x20	N084008	MI5FA25V2,5
		3,150		2,46	5,5	0,33	250V FA 3,150 A 5x20	P084009	MI5FA25V3,15
		4,000		4,6	10	0,31	250V FA 4,000 A 5x20	Q084010	MI5FA25V4
		5,000		11	25	0,24	250V FA 5,000 A 5x20	R084011	MI5FA25V5
		6,300		23	50	0,20	250V FA 6,300 A 5x20	S084012	MI5FA25V6,3
		8		2,5	40	0,10	250V FA 8,000 A 5x20	T084013	MI5FA25V8
		10		4,5	70	0,095	250V FA 10,00 A 5x20	V084014	MI5FA25V10
		# 12,5		8,1	120	0,090	250V FA 12,50 A 5x20	W084015	MI5FA25V12,5
	125	# 16*	10 kA 125 V cos φ ≥ 0,7	25	160	0,062	125V FA 16,00 A 5x20	R084034	MI5FA12,5V16
		# 20*		51	330	0,056	125V FA 20,00 A 5x20	D084022	MI5FA12,5V20

* Non-certified rating.
For these ratings, heating within fuse holders must be checked.

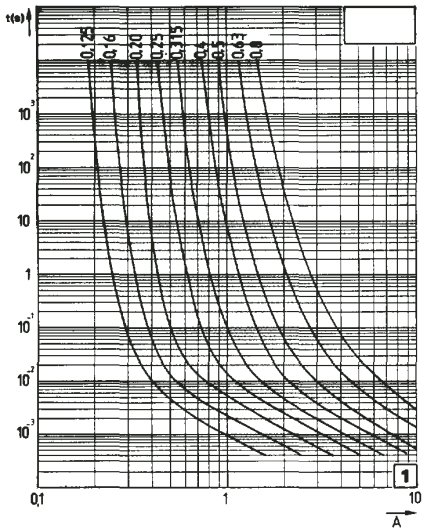
Very HRC Fuses
5x20
125V to 250V - FA/FB Very Fast Acting

Time-current characteristics

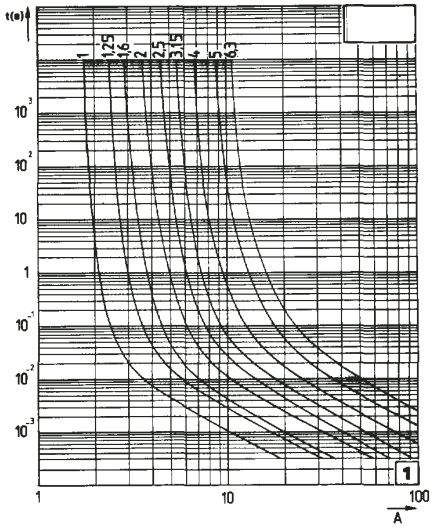
250 V FB 5 x 20



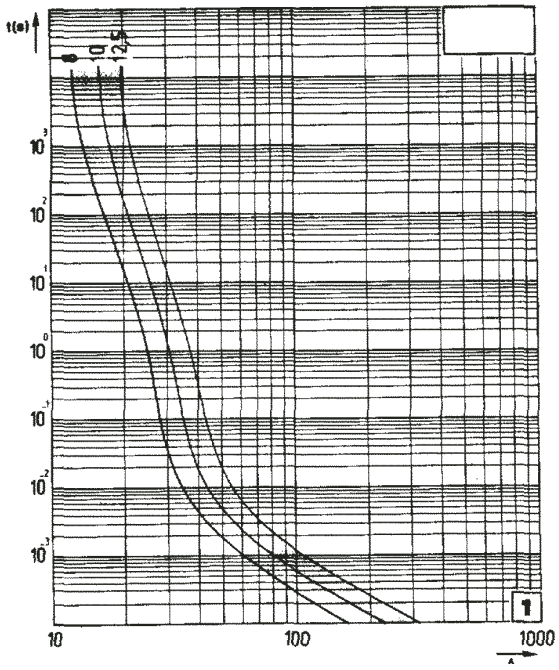
250 V FA 5 x 20



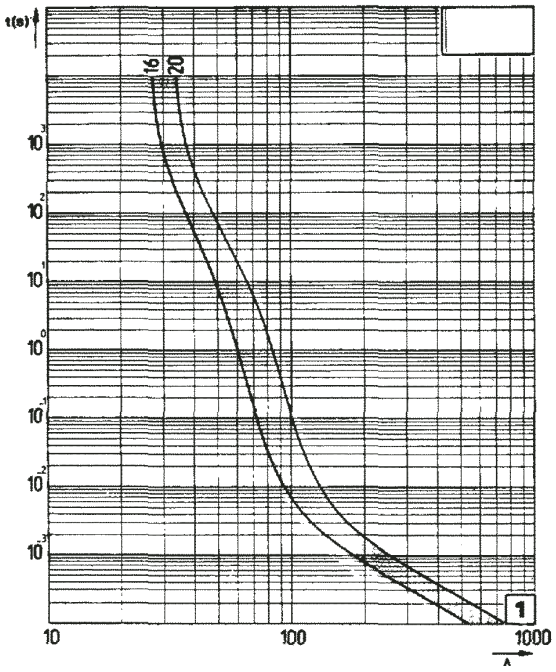
250 V FA 5 x 20



250 V FA 5 x 20



125 V FA 5 x 20



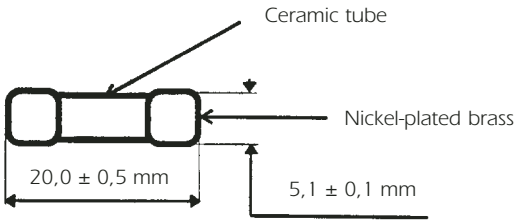
I tolerance ± 12 %. Actual pre-arcing time (s). R.M.S. Value of prearcing current (A).

Packaging: in blister of 50 pieces.
Ask us about boxes of 1000 pieces.

Very HRC Fuses
5x20
125V to 250V - SA/SB Medium Time Lag

FROM 0,04 TO16A

Dimensions





Fuses with filler.
Max weight: 1.2 g

Basic Characteristics

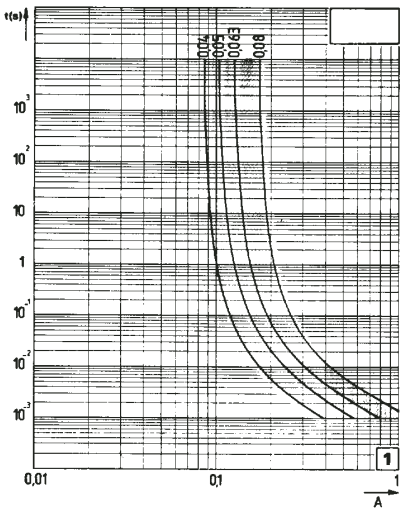
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A² s		V			
5 x 20	250	0,040	250 VAC 4 kA cos φ≥ 0,7	0,00013	0,0004	1,5	250V SB 0,040 A 5x20	C080479	MI5SB25V0,04
		0,050		0,00029	0,00082	1,2	250V SB 0,050 A 5x20	R080469	MI5SB25V0,05
		0,063		0,00057	0,0016	1	250V SB 0,063 A 5x20	F080482	MI5SB25V0,063
		0,080		0,00131	0,0037	0,8	250V SB 0,080 A 5x20	B080478	MI5SB25V0,08
		0,100		0,00077	0,0021	1,4	250V SA 0,100 A 5x20	M084122	MI5SA25V0,1
		0,125	250 VAC 10 kA cos φ≥ 0,7	0,002	0,006	1,1	250V SA 0,125 A 5x20	L084121	MI5SA25V0,125
		0,160		0,0046	0,013	0,9	250V SA 0,160 A 5x20	P084101	MI5SA25V0,16
		0,200		0,009	0,025	0,8	250V SA 0,200 A 5x20	G084117	MI5SA25V0,2
		0,250		0,016	0,045	0,75	250V SA 0,250 A 5x20	Q084102	MI5SA25V0,25
		0,315		0,030	0,085	0,7	250V SA 0,315 A 5x20	H084118	MI5SA25V0,315
		0,400		0,050	0,15	0,68	250V SA 0,400 A 5x20	J084119	MI5SA25V0,4
		0,500		0,12	0,35	0,55	250V SA 0,500 A 5x20	R084103	MI5SA25V0,5
		0,630		0,11	0,25	0,26	250V SA 0,630 A 5x20	F084116	MI5SA25V0,63
		0,800		0,17	0,38	0,26	250V SA 0,800 A 5x20	K084120	MI5SA25V0,8
		1,000		0,26	0,65	0,26	250V SA 1,000 A 5x20	S084104	MI5SA25V1
		1,250		0,55	1,2	0,2	250V SA 1,250 A 5x20	T087164	MI5SA25V1,25
		1,600		1,44	3,2	0,16	250V SA 1,600 A 5x20	D087173	MI5SA25V1,6
		2,000		2,46	5,5	0,15	250V SA 2,000 A 5x20	M087020	MI5SA25V2
		2,500		4,6	10	0,14	250V SA 2,500 A 5x20	N087021	MI5SA25V2,5
		3,150		11	25	0,11	250V SA 3,150 A 5x20	P087022	MI5SA25V3,15
		4,000		23	50	0,1	250V SA 4,000 A 5x20	Q087023	MI5SA25V4
		5,000		41	90	0,1	250V SA 5,000 A 5x20	R087024	MI5SA25V5
		6,300		15,7	50	0,11	250V SA 6,300 A 5x20	S087025	MI5SA25V6,3
		8		27,5	85	0,11	250V SA 8,000 A 5x20	T087026	MI5SA25V8
		10		53	160	0,1	250V SA 10,00 A 5x20	V087027	MI5SA25V10
		12,5*		63	200	0,095	250V SA 12,50 A 5x20	W087028	MI5SA25V12,5
	125	16*	10 kA 125 VAC cos φ ≥ 0,7	163	350	0,11	125V SA 16,00 A 5x20	W086338	MI5SA12,5V16

* For these ratings, heating within fuse holder must be checked.

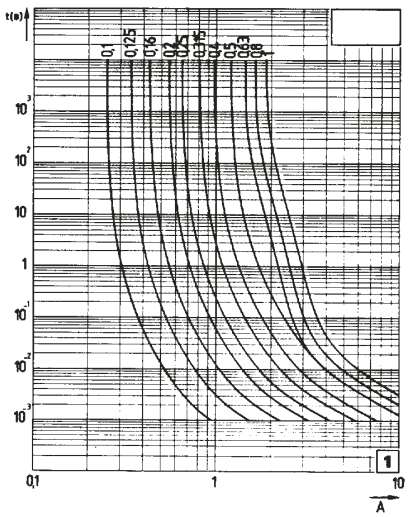
Very HRC Fuses
5x20
125V to 250V - SA/SB Medium Time Lag

Time-current characteristics

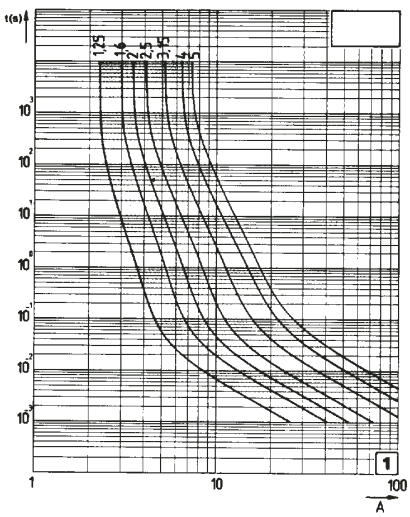
250 V SB 5 x 20



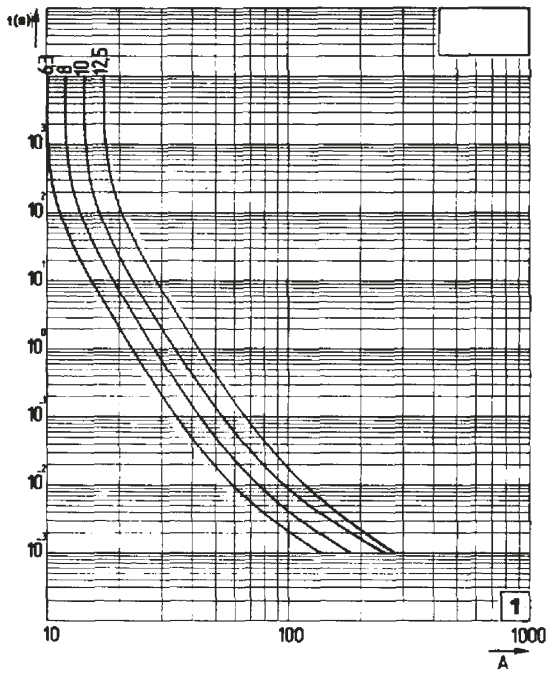
250 V SA 5 x 20



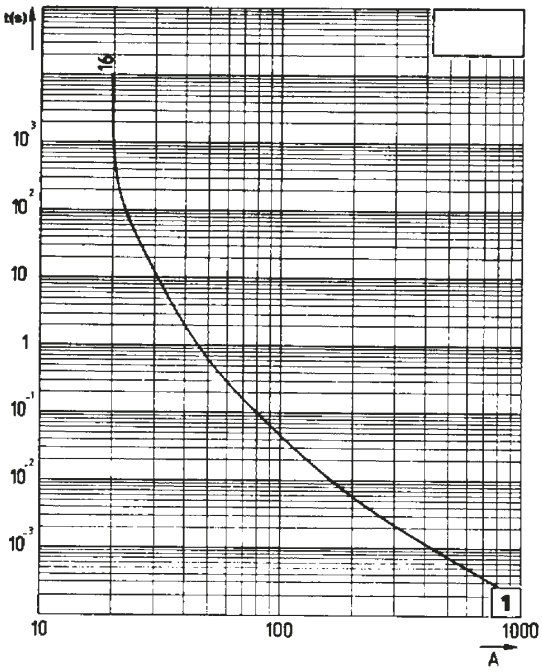
250 V SA 5 x 20



250 V SA 5 x 20



125 V SA 16 A



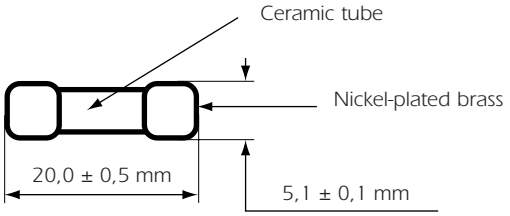
I tolerance ± 12 %. Actual pre-arcing time (s). R.M.S. Value of pre-arcing current (A).

Packaging: in blister of 50 pieces.
Ask us about boxes of 1000 pieces.

Very HRC Fuses
5x20
400V - FA Very Fast Acting

FROM 0,1 TO 4A

Dimensions





Fuses with filler
Max weight : 1,2 g

Basic Characteristics

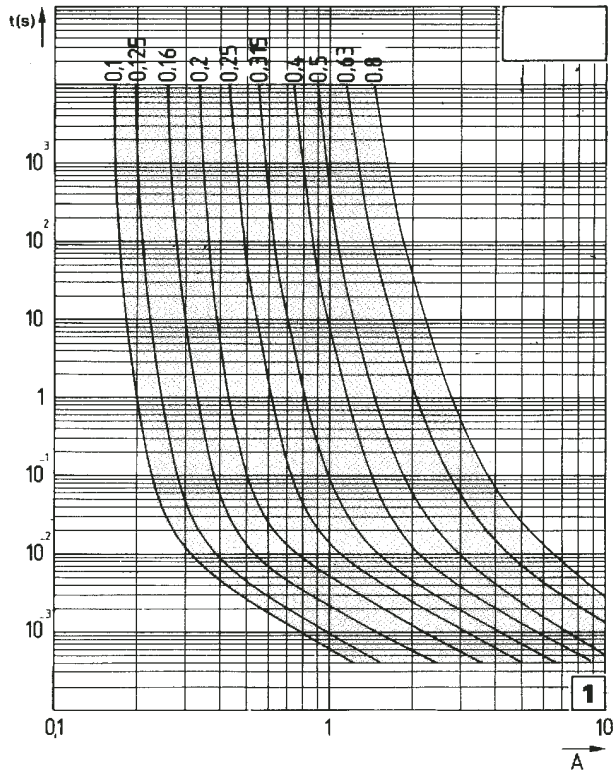
Size	Rated Voltage	Rated Current	Breaking Capacity under 400 V AC	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		$A^2 s$		V			
5 x 20	400	0,100	10 kA cos φ ≥ 0,7	0,00057	0,0033	1,8	400V FA 0,100 A 5x20	T093305	MI5FA40V0,1
		0,125		0,00077	0,0045	1,7	400V FA 0,125 A 5x20	W093307	MI5FA40V0,125
		0,160		0,0020	0,0123	1,3	400V FA 0,160 A 5x20	Y093309	MI5FA40V0,16
		0,200		0,0046	0,0275	1,1	400V FA 0,200 A 5x20	P095992	MI5FA40V0,2
		0,250		0,009	0,054	1,0	400V FA 0,250 A 5x20	E093315	MI5FA40V0,25
		0,315		0,016	0,095	0,90	400V FA 0,315 A 5x20	Q093348	MI5FA40V0,315
		0,400		0,03	0,18	0,85	400V FA 0,400 A 5x20	G093317	MI5FA40V0,4
		0,500		0,05	0,3	0,80	400V FA 0,500 A 5x20	H093318	MI5FA40V0,5
		0,630		0,12	0,73	0,70	400V FA 0,630 A 5x20	J093319	MI5FA40V0,63
		0,800		0,25	1,52	0,60	400V FA 0,800 A 5x20	L093321	MI5FA40V0,8
		1,000		0,11	0,45	0,46	400V FA 1,000 A 5x20	F093270	MI5FA40V1
		1,250		0,26	1,1	0,36	400V FA 1,250 A 5x20	M093322	MI5FA40V1,25
		1,600		0,39	1,6	0,42	400V FA 1,600 A 5x20	N093323	MI5FA40V1,6
		2,000		0,81	3,3	0,37	400V FA 2,000 A 5x20	P093324	MI5FA40V2
		2,500		1,44	5,8	0,34	400V FA 2,500 A 5x20	M093345	MI5FA40V2,5
		3,150		2,46	10	0,33	400V FA 3,150 A 5x20	N093346	MI5FA40V3,15
		4,000		4,6	18,7	0,31	400V FA 4,000 A 5x20	P093347	MI5FA40V4

Ratings lower than 0,1A : please enquire.

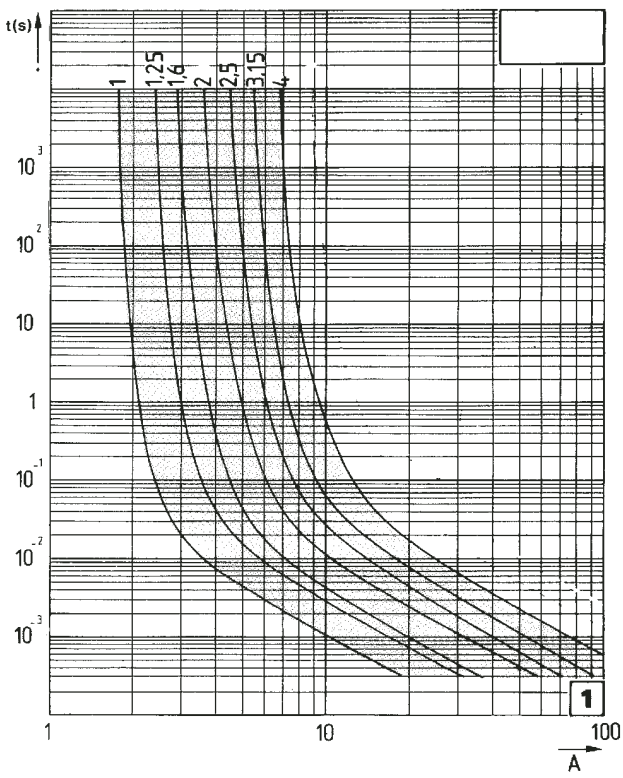
Very HRC Fuses
5x20
400V - FA Very Fast Acting

Time-current characteristics

400V FA 5x20



400V FA 5x20



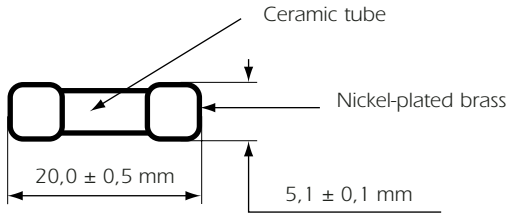
I margin ± 12 %. Actual prearcing time(s). R.M.S. Value of prearcing current (A).

Packaging: Blister per 50 pièces.
For a 1000 pieces box packaging consult us.

Very HRC Fuses
5x20
400V - SA Medium Time Lag

FROM 0,1 TO 3,15A

Dimensions





Fuses with filler
Max weight : 1,2 g

Basic Characteristics

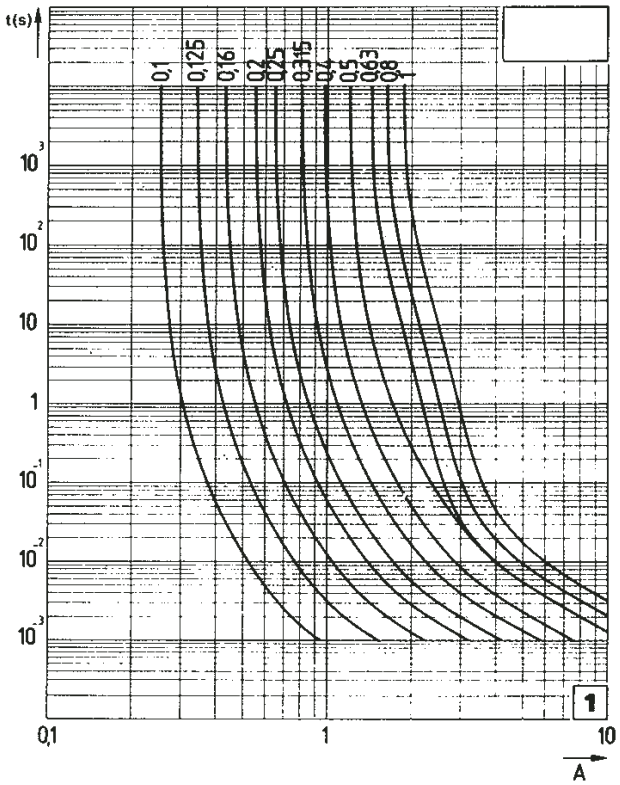
Size	Rated Voltage	Rated Current	Breaking Capacity under 400 V AC	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A^2 s		V			
5 x 20	400	0,100	10 kA cos φ ≥ 0,7	0,00077	0,0045	1,4	400V SA 0,100 A 5x20	C095429	MI5SA40V0,1
		0,125		0,002	0,00123	1,1	400V SA 0,125 A 5x20	T078930	MI5SA40V0,125
		0,160		0,0046	0,0275	0,9	400V SA 0,160 A 5x20	Q095993	MI5SA40V0,16
		0,200		0,009	0,054	0,8	400V SA 0,200 A 5x20	R095994	MI5SA40V0,2
		0,250		0,016	0,095	0,75	400V SA 0,250 A 5x20	E095431	MI5SA40V0,25
		0,315		0,030	0,18	0,70	400V SA 0,315 A 5x20	A095450	MI5SA40V0,315
		0,400		0,050	0,30	0,68	400V SA 0,400 A 5x20	S095995	MI5SA40V0,4
		0,500		0,12	0,73	0,55	400V SA 0,500 A 5x20	E095477	MI5SA40V0,5
		0,630		0,11	0,45	0,26	400V SA 0,630 A 5x20	T095996	MI5SA40V0,63
		0,800		0,17	0,71	0,26	400V SA 0,800 A 5x20	G095479	MI5SA40V0,8
		1,000		0,26	1,1	0,26	400V SA 1,000 A 5x20	J095481	MI5SA40V1
		1,250		0,55	2,25	0,20	400V SA 1,250 A 5x20	Y095494	MI5SA40V1,25
		1,600		1,44	6	0,16	400V SA 1,600 A 5x20	Z095495	MI5SA40V1,6
		2,000		2,46	10	0,15	400V SA 2,000 A 5x20	A095496	MI5SA40V2
		2,500		4,6	20	0,14	400V SA 2,500 A 5x20	B095497	MI5SA40V2,5
		3,150		11	45	0,11	400V SA 3,150 A 5x20	C095498	MI5SA40V3,15

Ratings lower than 0,1A : please enquire.

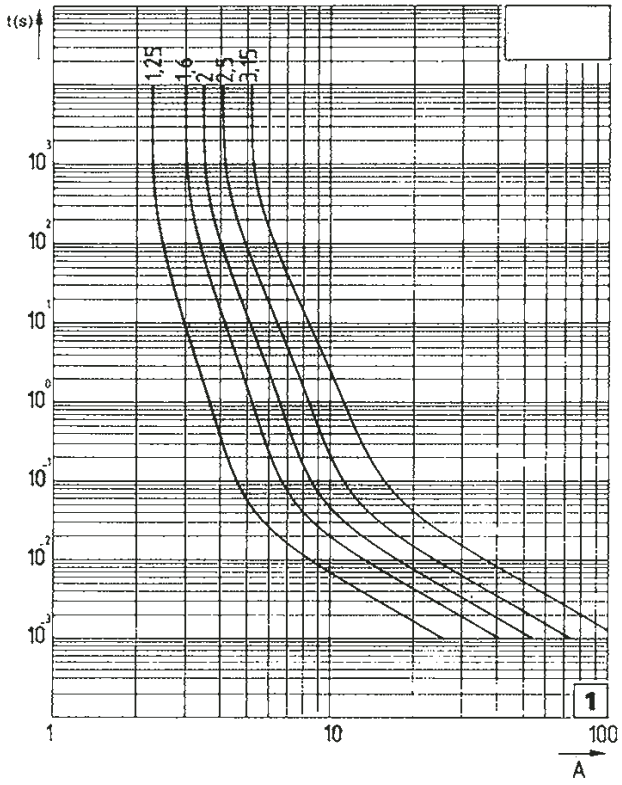
Very HRC Fuses
5x20
400V - SA Medium Time Lag

Time-current characteristics

400V SA 5x20



400V SA 5x20



I margin ± 12 %. Actual prearcing time(s). R.M.S. Value of prearcing current (A).

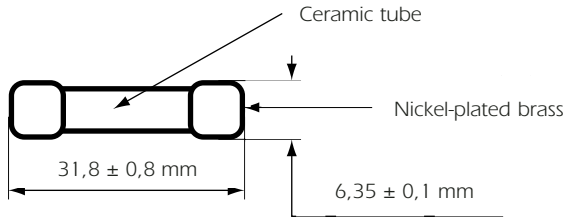
Packaging: Blister per 50 pièces.
For a 1000 pieces box packaging consult us.

Very HRC Fuses
6x32
125V to 250V - FA Very Fast Acting

Approvals UL recognized E 76491

FROM 0,1 TO 30A

Dimensions





Fuses with filler
Max weight : 2,5 g

Basic Characteristics

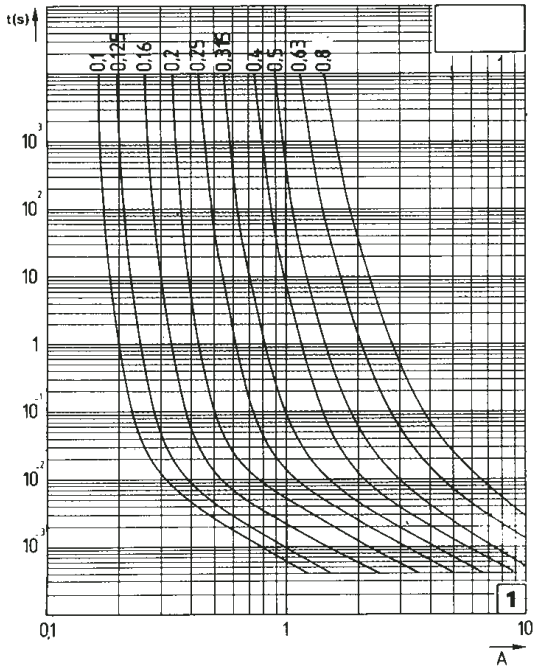
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A² s		V			
6,3 x 32	250	0,100	200 kA 250 VAC cos φ ≥ 0,2	0,00057	0,0011	2,75	250 V FA 0,100 A 6x32	R094315	MI6FA25V0,1
		0,125		0,00077	0,0015	2,60	250 V FA 0,125 A 6x32	F084323	MI6FA25V0,125
		0,160		0,002	0,004	2	250 V FA 0,160 A 6x32	G084301	MI6FA25V0,16
		0,200		0,0046	0,009	1,7	250 V FA 0,200 A 6x32	C084320	MI6FA25V0,2
		0,250		0,009	0,018	1,55	250 V FA 0,250 A 6x32	H084302	MI6FA25V0,25
		0,315		0,016	0,032	1,45	250 V FA 0,315 A 6x32	D084321	MI6FA25V0,315
		0,400		0,03	0,06	1,4	250 V FA 0,400 A 6x32	E084322	MI6FA25V0,4
		0,500		0,05	0,1	1,4	250 V FA 0,500 A 6x32	J084303	MI6FA25V0,5
		0,630		0,12	0,24	1,15	250 V FA 0,630 A 6x32	B084319	MI6FA25V0,63
		0,800		0,25	0,5	1	250 V FA 0,800 A 6x32	G084324	MI6FA25V0,8
		1,000		0,11	0,2	0,71	250 V FA 1,000 A 6x32	K084304	MI6FA25V1
		1,250		0,26	0,5	0,55	250 V FA 1,250 A 6x32	L084305	MI6FA25V1,25
		1,600		0,39	0,7	0,65	250 V FA 1,600 A 6x32	M084306	MI6FA25V1,6
		2,000		0,81	1,4	0,55	250 V FA 2,000 A 6x32	N084307	MI6FA25V2
		2,500		1,44	2,5	0,52	250 V FA 2,500 A 6x32	P084308	MI6FA25V2,5
		3,150		2,46	4,3	0,53	250 V FA 3,150 A 6x32	Q084309	MI6FA25V3,15
		4,000		4,6	8	0,48	250 V FA 4,000 A 6x32	R084310	MI6FA25V4
		5,000		11	20	0,37	250 V FA 5,000 A 6x32	S084311	MI6FA25V5
		6,300		23	40	0,31	250 V FA 6,300 A 6x32	T084312	MI6FA25V6,3
		8		1,5	25	0,19	250 V FA 8,000 A 6x32	V084313	MI6FA25V8
		10		2,5	42	0,19	250 V FA 10,00 A 6x32	W084314	MI6FA25V10
		12,5		3,8	60	0,2	250 V FA 12,50 A 6x32	X084315	MI6FA25V12,5
		16		7,1	115	0,15	250 V FA 16,00 A 6x32	Z084317	MI6FA25V16
		20		12,7	200	0,14	250 V FA 20,00 A 6x32	A084318	MI6FA25V20
	125	25	100 kA 125 VAC cos φ ≥ 0,2	32,5	200	0,14	125 V FA 25,00 A 6x32	H084325	MI6FA12,5V25
		30		61,5	400	0,12	125 V FA 30,00 A 6x32	J084326	MI6FA12,5V30

Ratings lower than 0,1A : please enquire.

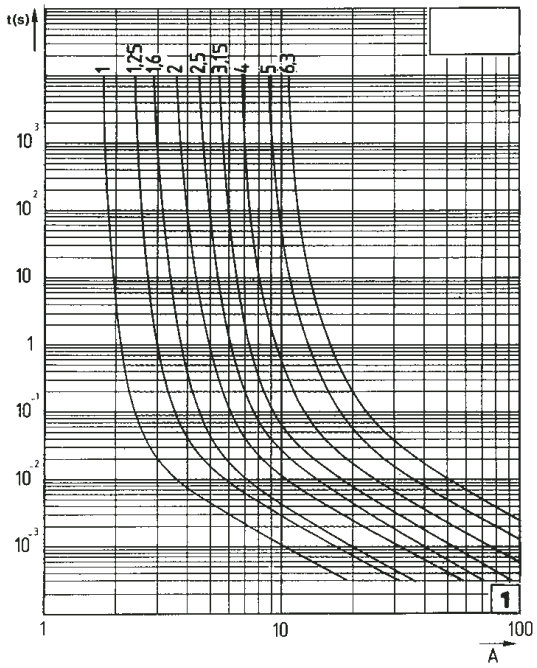
Very HRC Fuses
6x32
125V to 250V - FA Very Fast Acting

Time-current characteristics

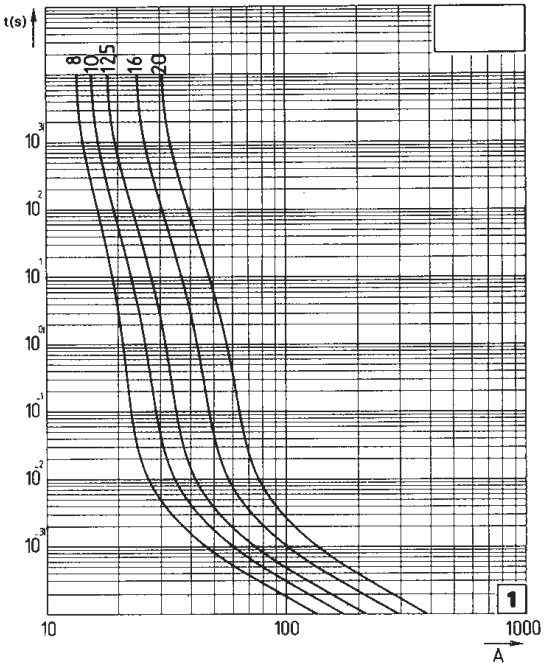
250V FA 6x32



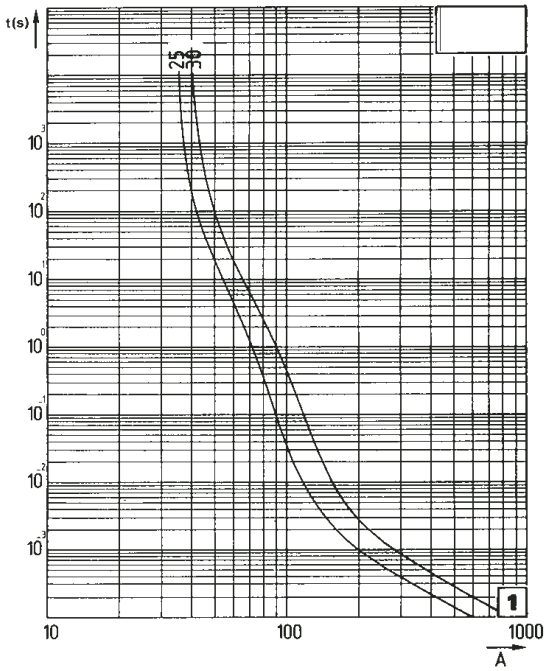
250V FA 6x32



250V FA 6x32



125V FA 6x32



I margin ± 12 %. Actual prearcing time(s). R.M.S. Value of prearcing current (A).

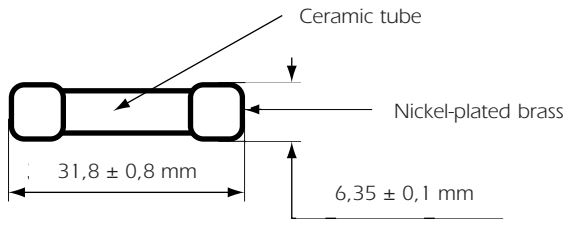
Packaging: Blister per 50 pièces.
For a 500 pieces box packaging consult us.

Very HRC Fuses
6x32
125V to 250V - SA Medium Time Lag

Approvals UL recognized E 76491

FROM 0,1 TO 30A

Dimensions





Fuses with filler
Max weight : 2,5 g

Basic Characteristics

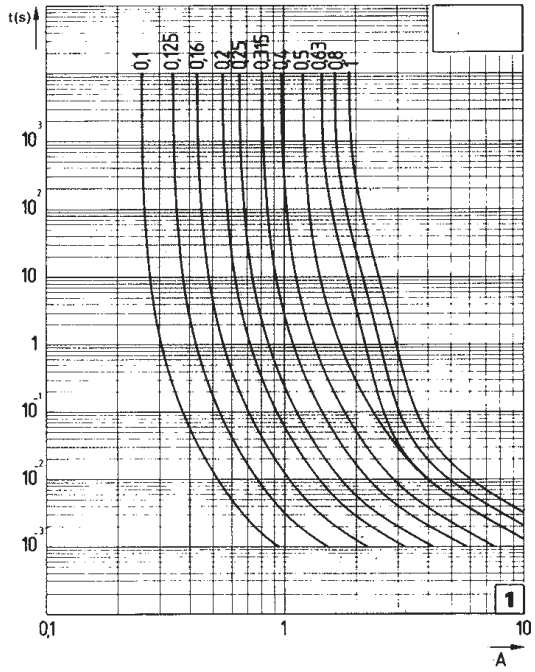
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A² s		V			
6,3 x 32	250	0,100	200 kA 250 VAC cos φ ≥ 0,2	0,00077	0,0015	2	250 V SA 0,100 A 6x32	Q084424	MI6SA25V0,1
		0,125		0,002	0,0025	1,5	250 V SA 0,125 A 6x32	C086367	MI6SA25V0,125
		0,160		0,0046	0,009	1,3	250 V SA 0,160 A 6x32	Q084401	MI6SA25V0,16
		0,200		0,009	0,018	1,2	250 V SA 0,200 A 6x32	L084420	MI6SA25V0,2
		0,250		0,016	0,032	1,1	250 V SA 0,250 A 6x32	R084402	MI6SA25V0,25
		0,315		0,03	0,06	1	250 V SA 0,315 A 6x32	M084421	MI6SA25V0,315
		0,400		0,05	0,1	1	250 V SA 0,400 A 6x32	N084422	MI6SA25V0,4
		0,500		0,12	0,24	0,8	250 V SA 0,500 A 6x32	S084403	MI6SA25V0,5
		0,630		0,11	0,2	0,4	250 V SA 0,630 A 6x32	K084419	MI6SA25V0,63
		0,800		0,17	0,31	0,4	250 V SA 0,800 A 6x32	P084423	MI6SA25V0,8
		1,000		0,26	0,5	0,4	250 V SA 1,000 A 6x32	T084404	MI6SA25V1
		1,250		0,55	1	0,35	250 V SA 1,250 A 6x32	V084405	MI6SA25V1,25
		1,600		1,44	2,5	0,26	250 V SA 1,600 A 6x32	W084406	MI6SA25V1,6
		2,000		2,46	4,3	0,25	250 V SA 2,000 A 6x32	X084407	MI6SA25V2
		2,500		4,6	8	0,23	250 V SA 2,500 A 6x32	Y084408	MI6SA25V2,5
		3,150		11	20	0,16	250 V SA 3,150 A 6x32	Z084409	MI6SA25V3,15
		4,000		23	40	0,16	250 V SA 4,000 A 6x32	A084410	MI6SA25V4
		5,000		15,7	70	0,13	250 V SA 5,000 A 6x32	B084411	MI6SA25V5
		6,300		28	120	0,13	250 V SA 6,300 A 6x32	C084412	MI6SA25V6,3
		8		52,9	230	0,12	250 V SA 8,000 A 6x32	H093364	MI6SA25V8
		10		98,4	420	0,11	250 V SA 10,000 A 6x32	E084414	MI6SA25V10
		12,5		141	410	0,12	250 V SA 12,500 A 6x32	F084415	MI6SA25V12,5
		16		252	720	0,13	250 V SA 16,000 A 6x32	H084417	MI6SA25V16
		20		252	720	0,12	250 V SA 20,000 A 6x32	J084418	MI6SA25V20
	125	25	100 kA 125 VAC cos φ ≥ 0,2	700	1 500	0,09	125 V SA 25,000 A 6x32	T084427	MI6SA12,5V25
		30		1 090	2 350	0,09	125 V SA 30,000 A 6x32	V084428	MI6SA12,5V30

Ratings lower than 0,1A : please enquire.

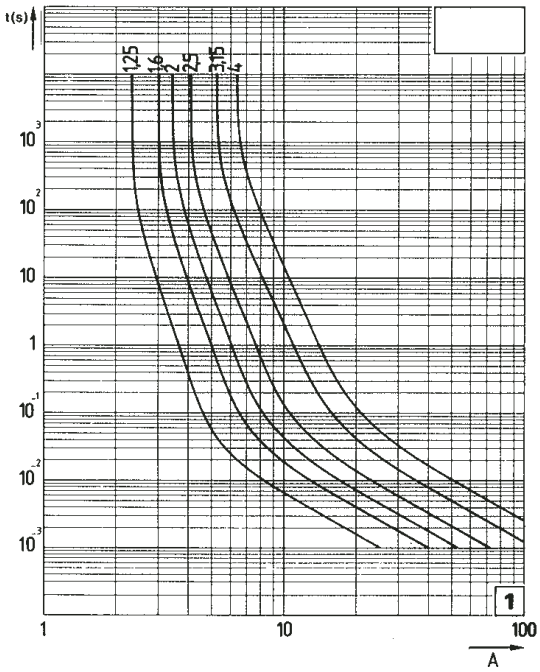
Very HRC Fuses
6x32
125V to 250V - SA Medium Time Lag

Time-current characteristics

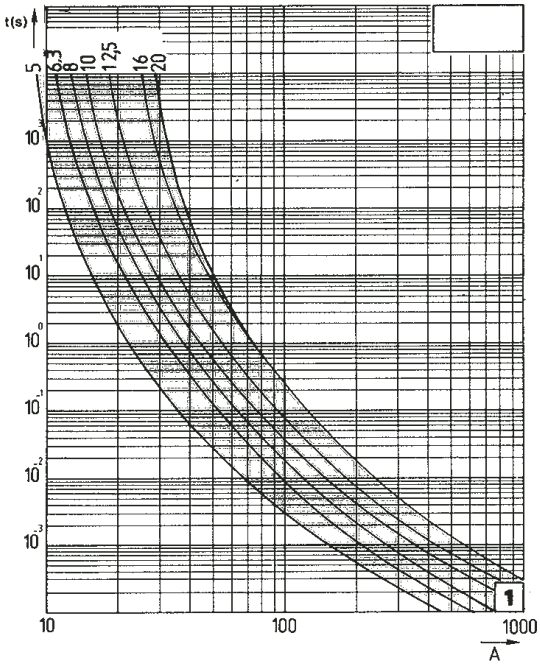
250V SA 6x32



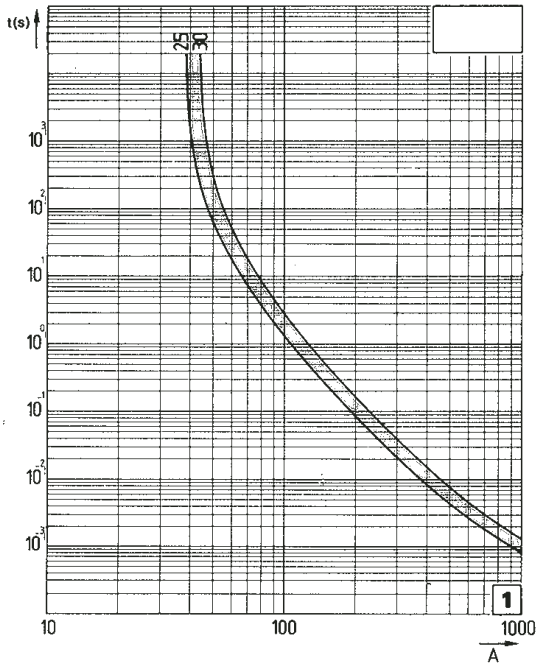
250V SA 6x32



250V SA 6x32



125V SA 6x32



I margin ± 12 %. Actual prearcing time(s). R.M.S. Value of prearcing current (A).

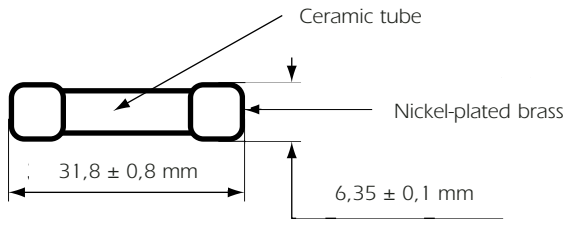
Packaging: Blister per 50 pièces.
For a 500 pieces box packaging consult us.

Very HRC Fuses
6x32
400V - FA/FB Very Fast Acting

Approvals UL recognized E 76491

FROM 0,1 TO 20A

Dimensions





Fuses with filler
Max weight : 2,5 g

Basic Characteristics

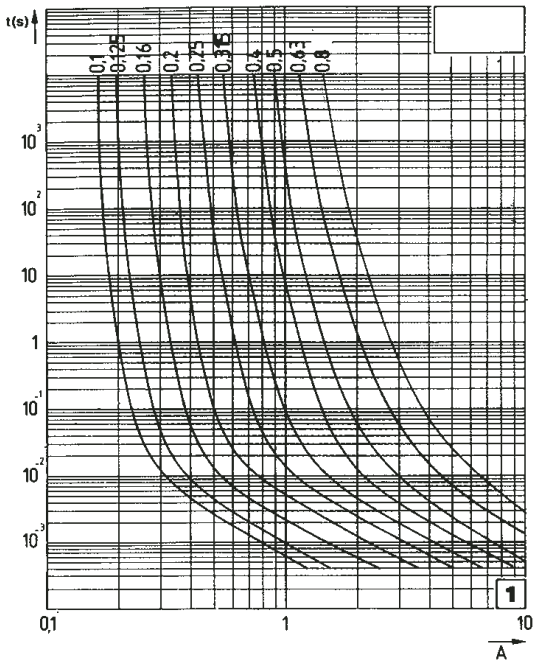
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A² s		V			
6,3 x 32	400	0,100	200 kA 400 VAC cos φ ≥ 0,2	0,00057	0,0016	2,75	400 V FA 0,100 A 6x32	H078920	MI6FA40V0,1
		0,125		0,00077	0,0021	2,60	400 V FA 0,125 A 6x32	F084369	MI6FA40V0,125
		0,160		0,002	0,006	2	400 V FA 0,160 A 6x32	M084352	MI6FA40V0,16
		0,200		0,0046	0,013	1,7	400 V FA 0,200 A 6x32	G084370	MI6FA40V0,2
		0,250		0,009	0,025	1,55	400 V FA 0,250 A 6x32	N084353	MI6FA40V0,25
		0,315		0,016	0,045	1,45	400 V FA 0,315 A 6x32	D084367	MI6FA40V0,315
		0,400		0,03	0,085	1,4	400 V FA 0,400 A 6x32	H084371	MI6FA40V0,4
		0,500		0,05	0,15	1,4	400 V FA 0,500 A 6x32	P084354	MI6FA40V0,5
		0,630		0,12	0,35	1,15	400 V FA 0,630 A 6x32	E084368	MI6FA40V0,63
		0,800		0,25	0,72	1	400 V FA 0,800 A 6x32	L084351	MI6FA40V0,8
		1,000		0,11	0,25	0,71	400 V FA 1,000 A 6x32	Q084355	MI6FA40V0,1
		1,250		0,26	0,6	0,55	400 V FA 1,250 A 6x32	R084356	MI6FA40V1,25
		1,600		0,39	0,9	0,65	400 V FA 1,600 A 6x32	S084357	MI6FA40V1,6
		2,000		0,81	1,9	0,55	400 V FA 2,000 A 6x32	T084358	MI6FA40V2
		2,500		1,44	3,2	0,52	400 V FA 2,500 A 6x32	V084359	MI6FA40V2,5
		3,150		2,46	5,5	0,53	400 V FA 3,150 A 6x32	W084360	MI6FA40V3,15
		4,000		4,6	10	0,48	400 V FA 4,000 A 6x32	X084361	MI6FA40V4
		5,000	150 kA 400 VAC cos φ ≥ 0,2	11	25	0,37	400 V FA 5,000 A 6x32	Y084362	MI6FA40V5
		6,300		1,1	12	0,22	400 V FA 6,300 A 6x32	Z084363	MI6FA40V6,3
		8		2	21	0,22	400 V FA 8,000 A 6x32	A084364	MI6FA40V8
		10		3,1	35	0,20	400 V FA 10,000 A 6x32	B084365	MI6FA40V10
		12,5		4,5	47	0,22	400 V FA 12,500 A 6x32	C084366	MI6FA40V12,5
		16*		5,3	55	0,29	400 V FB 16,000 A 6x32	K084373	MI6FB40V16
		20*				654	400 V FA 20,000 A 6x32	H203350	MI6FA40V20

*Rating out of standards.
Ratings lower than 0,1A : please enquire.

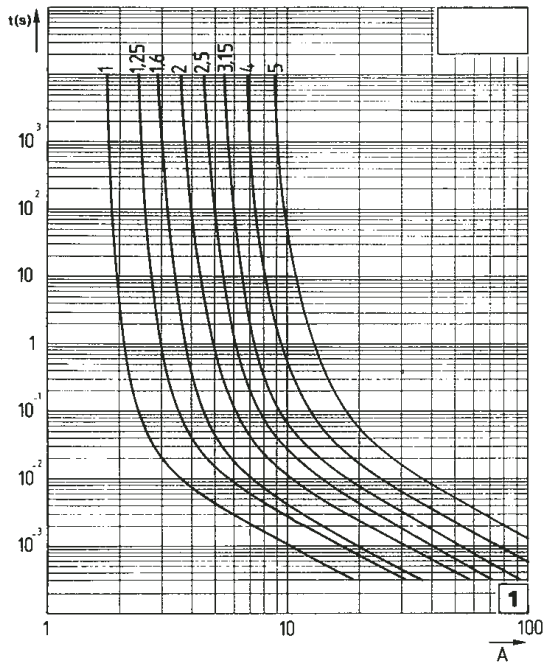
Very HRC Fuses
6x32
400V - FA/FB Very Fast Acting

Time-current characteristics

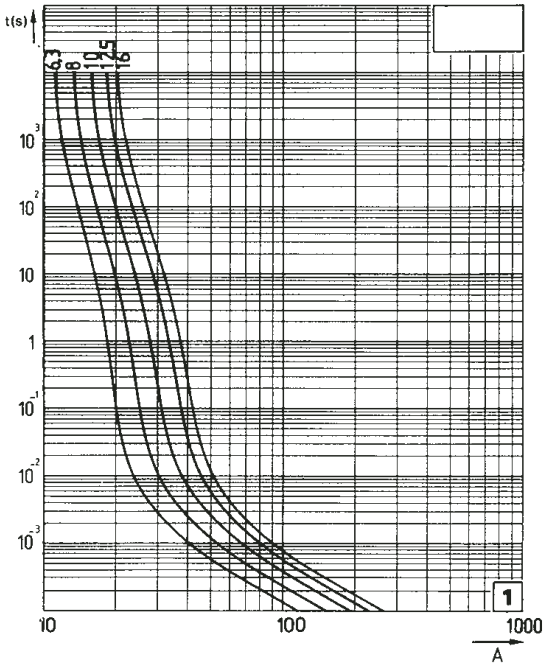
400V FA 6x32



400V FA 6x32



400V FA 6x32



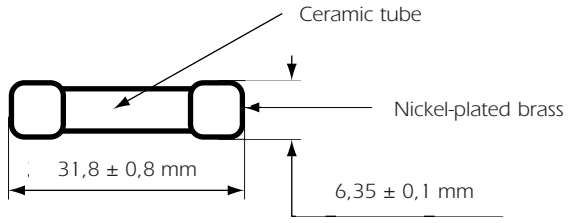
I margin ± 12 %. Actual prearcing time(s). R.M.S. Value of prearcing current (A).

Packaging: Blister per 50 pièces.
For a 500 pieces box packaging consult us.

Very HRC Fuses
6x32
400V - SA Medium Time Lag

FROM 0,1 TO 10A

Dimensions





Fuses with filler
Max weight : 2,5 g

Basic Characteristics

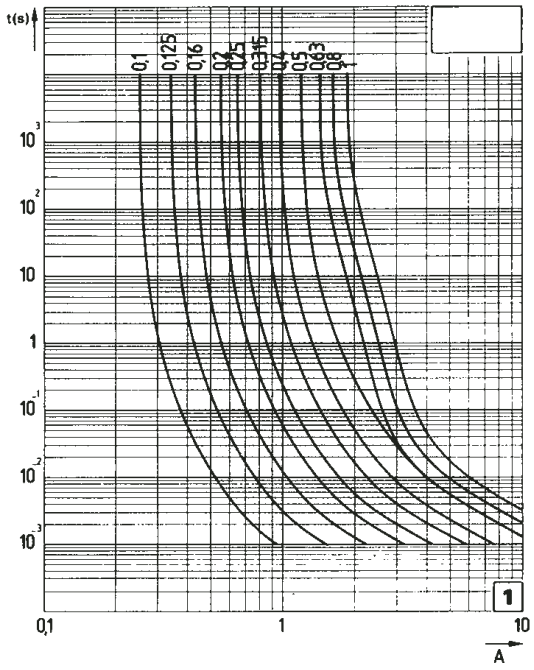
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		$A^2 s$		V			
6,3 x 32	400	0,100	50 kA 400 VAC cos φ ≥ 0,2	0,00077	0,0021	2	400 V SA 0,100 A 6x32	M078901	MI6SA40V0,1
		0,125		0,002	0,0037	1,5	400 V SA 0,125 A 6x32	N078902	MI6SA40V0,125
		0,160		0,0046	0,013	1,3	400 V SA 0,160 A 6x32	P078903	MI6SA40V0,16
		0,20		0,009	0,025	1,2	400 V SA 0,200 A 6x32	Q078904	MI6SA40V0,2
		0,25		0,016	0,045	1,1	400 V SA 0,250 A 6x32	R078905	MI6SA40V0,25
		0,315		0,03	0,085	1	400 V SA 0,315 A 6x32	S078906	MI6SA40V0,315
		0,40		0,05	0,15	1	400 V SA 0,400 A 6x32	D094418	MI6SA40V0,4
		0,50		0,12	0,35	0,8	400 V SA 0,500 A 6x32	T078907	MI6SA40V0,5
		0,63		0,11	0,25	0,4	400 V SA 0,630 A 6x32	V078908	MI6SA40V0,63
		0,80		0,17	0,38	0,4	400 V SA 0,800 A 6x32	W078909	MI6SA40V0,8
		1,00		0,26	0,60	0,4	400 V SA 1,000 A 6x32	X078910	MI6SA40V1
		1,25		0,55	1,2	0,35	400 V SA 1,250 A 6x32	Y078911	MI6SA40V1,25
		1,60		1,44	3,2	0,26	400 V SA 1,600 A 6x32	S095029	MI6SA40V1,6
		2,00		2,46	5,5	0,25	400 V SA 2,000 A 6x32	M078993	MI6SA40V2
		2,50		4,6	10	0,23	400 V SA 2,500 A 6x32	Z078912	MI6SA40V2,5
		3,15		11	25	0,16	400 V SA 3,150 A 6x32	M098244	MI6SA40V3,15
		4,0		23	50	0,16	400 V SA 4,000 A 6x32	R098248	MI6SA40V4
		5,0		15,7	70	0,14	400 V SA 5,000 A 6x32	S098249	MI6SA40V5
		6,3		28	120	0,14	400 V SA 6,300 A 6x32	A099107	MI6SA40V6,3
		8		35,4	155	0,12	400 V SA 8,000 A 6x32	C098258	MI6SA40V8
		10		52,9	230	0,12	400 V SA 10,000 A 6x32	B095037	MI6SA40V10

Ratings lower than 0,1A : please enquire.

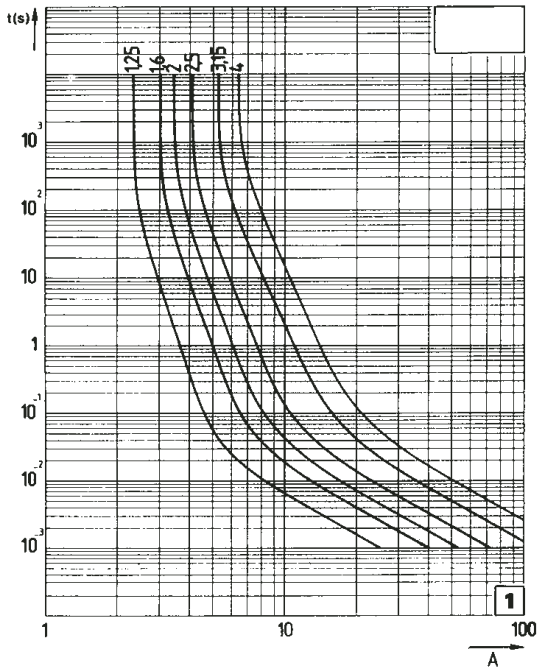
Very HRC Fuses
6x32
400V - SA Medium Time Lag

Time-current characteristics

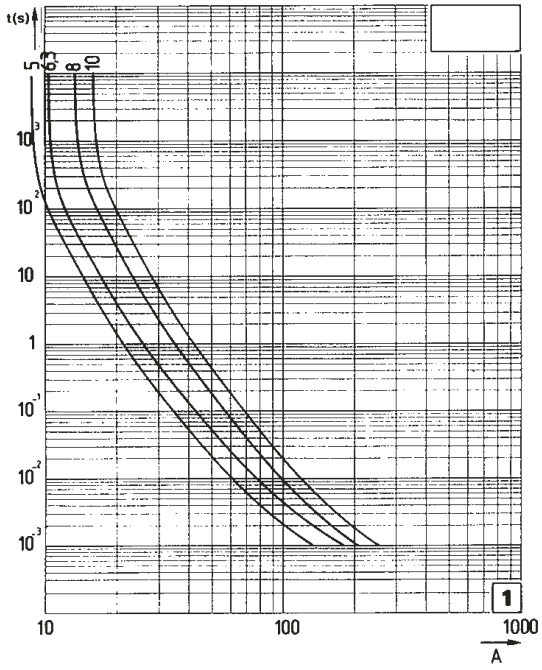
400V SA 6x32



400V SA 6x32



400V SA 6x32



I margin ± 12 %. Actual prearcing time(s). R.M.S. Value of prearcing current (A).

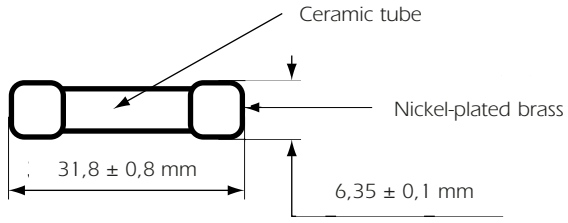
Packaging: Blister per 50 pièces.
For a 500 pieces box packaging consult us.

Very HRC Fuses
6x32
500V - FA Very Fast Acting

Approvals UL recognized E 76491

FROM 0,1 TO 16A

Dimensions





Fuses with filler
Max weight : 2,5 g

Basic Characteristics

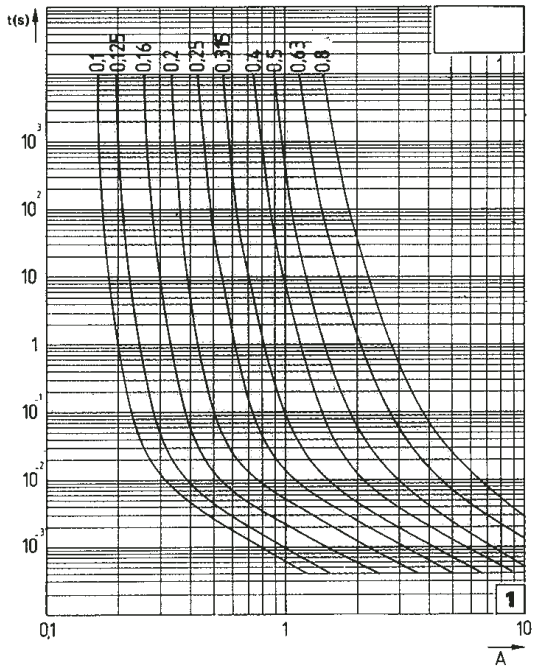
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A² s		V			
6,3 x 32	500	0,100	200 kA 500 VAC cos φ ≥ 0,2	0,00057	0,002	2,75	500 V FA 0,100 A 6x32	L080464	MI6FA50V0,1
		0,125		0,00077	0,003	2,60	500 V FA 0,125 A 6x32	M084214	MI6FA50V0,125
		0,160		0,002	0,008	2	500 V FA 0,160 A 6x32	Y084201	MI6FA50V0,16
		0,200		0,0046	0,017	1,7	500 V FA 0,200 A 6x32	N084215	MI6FA50V0,2
		0,250		0,009	0,035	1,55	500 V FA 0,250 A 6x32	Z084202	MI6FA50V0,025
		0,315		0,016	0,060	1,45	500 V FA 0,315 A 6x32	A084203	MI6FA50V0,315
		0,400		0,03	0,11	1,4	500 V FA 0,400 A 6x32	P084216	MI6FA50V0,4
		0,500		0,05	0,20	1,4	500 V FA 0,500 A 6x32	B084204	MI6FA50V0,5
		0,630		0,12	0,45	1,15	500 V FA 0,630 A 6x32	C084205	MI6FA50V0,63
		0,800		0,25	0,92	1	500 V FA 0,800 A 6x32	L084213	MI6FA50V0,8
		1,000		0,11	0,30	0,71	500 V FA 1,000 A 6x32	D084206	MI6FA50V1
		1,250		0,26	0,75	0,55	500 V FA 1,250 A 6x32	E084207	MI6FA50V1,25
		1,600		0,39	1,1	0,65	500 V FA 1,600 A 6x32	F084208	MI6FA50V1,6
		2,000		0,81	2,2	0,55	500 V FA 2,000 A 6x32	G084209	MI6FA50V2
		2,500		1,44	4	0,52	500 V FA 2,500 A 6x32	H084210	MI6FA50V2,5
		3,150		2,46	7	0,53	500 V FA 3,150 A 6x32	X085442	MI6FA50V3,15
		4,000		4,6	14	0,48	500 V FA 4,000 A 6x32	Y085443	MI6FA50V4
		5,000	20 kA 500 VAC cos φ ≥ 0,2	11	30	0,37	500 V FA 5,000 A 6x32	Z085444	MI6FA50V5
		6,300		1,1	20	0,22	500 V FA 6,300 A 6x32	A085445	MI6FA50V6,3
		8		2	35	0,22	500 V FA 8,000 A 6x32	B085446	MI6FA50V8
		10		3,1	50	0,20	500 V FA 10,000 A 6x32	C085447	MI6FA50V10
		12,5		4,5	75	0,22	500 V FA 12,500 A 6x32	D085448	MI6FA50V12,5
		16		5,3	85	0,29	500 V FA 16,000 A 6x32	E085449	MI6FA50V16

Ratings lower than 0,1A : please enquire.

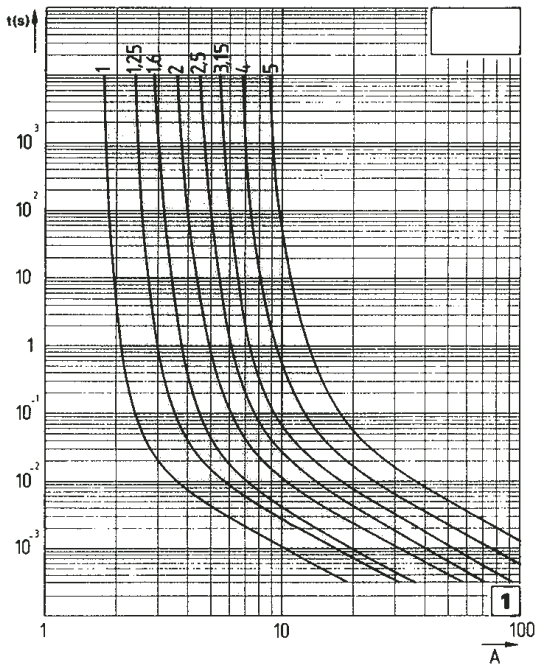
Very HRC Fuses
6x32
500V - FA Very Fast Acting

Time-current characteristics

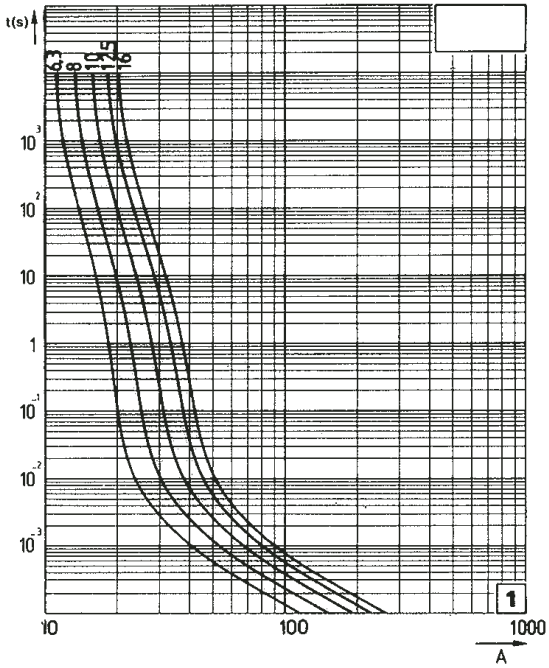
500V FA 6x32



500V FA 6x32



500V FA 6x32



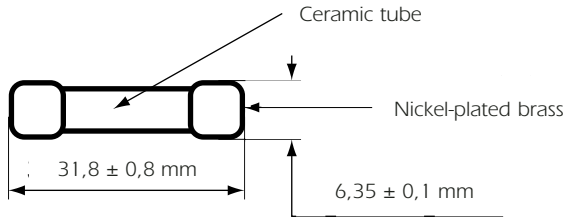
I margin ± 12 %. Actual prearcing time(s). R.M.S. Value of prearcing current (A).

Packaging: Blister per 50 pièces.
For a 500 pieces box packaging consult us.

Very HRC Fuses
6x32
500V - SA Medium Time Lag

FROM 0,1 TO 10A

Dimensions





Fuses with filler
Max weight : 2,5 g

Basic Characteristics

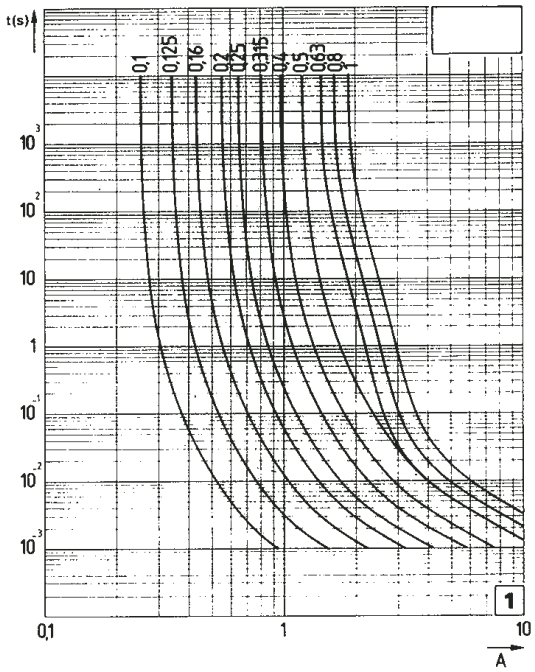
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A² s		V			
6,3 x 32	500	0,100	50 kA 500 VAC cos φ ≥ 0,2	0,00077	0,003	2	500 V SA 0,100 A 6x32	C078869	MI6SA50V0,1
		0,125		0,002	0,008	1,5	500 V SA 0,125 A 6x32	C098120	MI6SA50V0,125
		0,160		0,0046	0,017	1,3	500 V SA 0,160 A 6x32	D098121	MI6SA50V0,16
		0,20		0,009	0,035	1,2	500 V SA 0,200 A 6x32	D078870	MI6SA50V0,2
		0,25		0,016	0,060	1,1	500 V SA 0,250 A 6x32	E098122	MI6SA50V0,25
		0,315		0,03	0,11	1	500 V SA 0,315 A 6x32	F098123	MI6SA50V0,315
		0,40		0,05	0,2	1	500 V SA 0,400 A 6x32	G098124	MI6SA50V0,4
		0,50		0,12	0,45	0,8	500 V SA 0,500 A 6x32	H098125	MI6SA50V0,5
		0,63		0,11	0,3	0,4	500 V SA 0,630 A 6x32	J098126	MI6SA50V0,63
		0,80		0,17	0,5	0,4	500 V SA 0,800 A 6x32	K098127	MI6SA50V0,8
		1,00		0,26	0,75	0,4	500 V SA 1,000 A 6x32	L098128	MI6SA50V1
		1,25		0,55	1,5	0,35	500 V SA 1,250 A 6x32	M098129	MI6SA50V1,25
		1,60		1,44	4	0,26	500 V SA 1,600 A 6x32	N098130	MI6SA50V1,6
		2,00		2,46	7	0,25	500 V SA 2,000 A 6x32	P098131	MI6SA50V2
		2,50	10 kA 500 VAC cos φ ≥ 0,2	4,6	14	0,23	500 V SA 2,500 A 6x32	Y098208	MI6SA50V2,5
		3,15		11	30	0,16	500 V SA 3,150 A 6x32	F085450	MI6SA50V3,15
		4,0		23	60	0,16	500 V SA 4,000 A 6x32	G085451	MI6SA50V4
		5,0		15,7	80	0,14	500 V SA 5,000 A 6x32	E085610	MI6SA50V5
		6,3		28	150	0,14	500 V SA 6,300 A 6x32	F085611	MI6SA50V6,3
		8		35,4	180	0,12	500 V SA 8,000 A 6x32	G085612	MI6SA50V8
		10		52,9	265	0,12	500 V SA 10,000 A 6x32	H085613	MI6SA50V10

Ratings lower than 0,1A : please enquire.

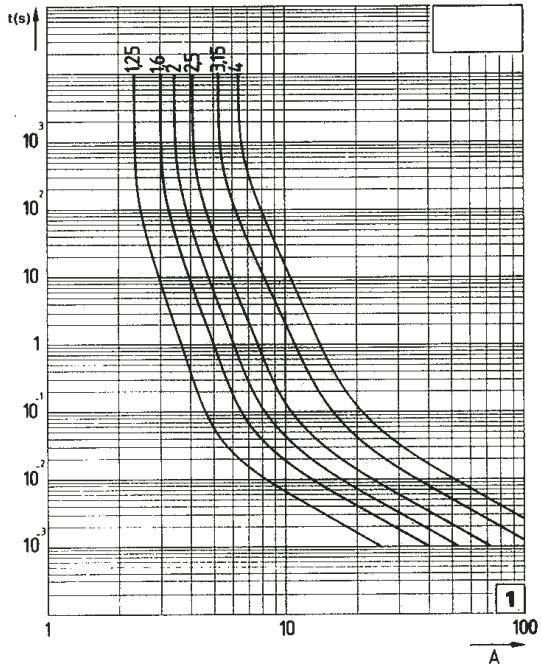
Very HRC Fuses
6x32
500V - SA Medium Time Lag

Time-current characteristics

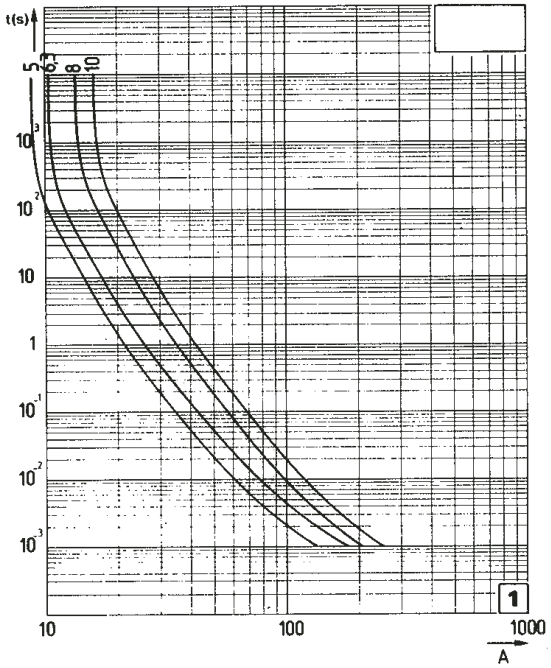
500V SA 6x32



500V SA 6x32



500V SA 6x32



I margin ± 12 %. Actual prearcing time(s). R.M.S. Value of prearcing current (A).

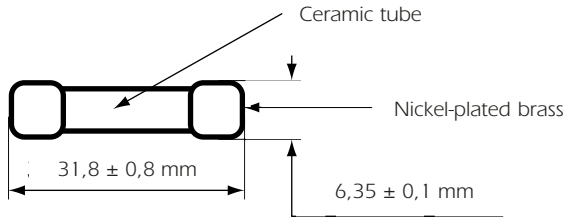
Packaging: Blister per 50 pièces.
For a 500 pieces box packaging consult us.

Very HRC Fuses
6x32
690V - FA Very Fast Acting

Approvals UL recognized E 76491

FROM 0,1 TO 2A

Dimensions





Fuses with filler
Max weight : 2,5 g

Basic Characteristics

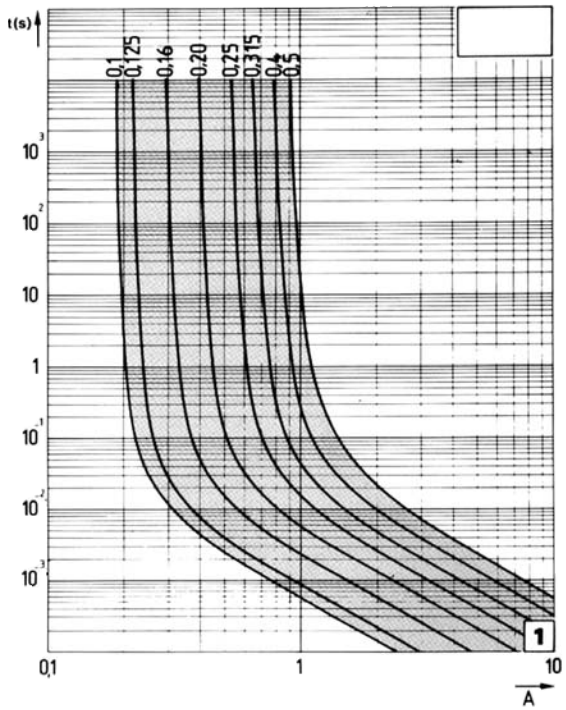
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation		Reference Number	Catalog Number
mm	VAC	A		A^2 s		V				
6,3 x 32	690	0,100	30 kA 690 V cos φ ≥ 0,2	0,00057	0,0037	2,75	690 V FA	0,100 A 6x32	Q093279	MI6FA69V0,1
		0,125		0,00077	0,005	2,60	690 V FA	0,125 A 6x32	S093281	MI6FA69V0,125
		0,160		0,002	0,014	2	690 V FA	0,160 A 6x32	V086452	MI6FA69V0,160
		0,200		0,0046	0,030	1,7	690 V FA	0,200 A 6x32	T086474	MI6FA69V0,200
		0,250		0,009	0,060	1,55	690 V FA	0,250 A 6x32	V093283	MI6FA69V0,250
		0,315		0,016	0,10	1,45	690 V FA	0,315 A 6x32	X093285	MI6FA69V0,315
		0,400		0,03	0,20	1,4	690 V FA	0,400 A 6x32	W086476	MI6FA69V0,400
		0,500		0,05	0,33	1,4	690 V FA	0,500 A 6x32	D086483	MI6FA69V0,500
		0,630		0,12	0,8	1,15	690 V FA	0,630 A 6x32	Z093287	MI6FA69V0,630
		0,800		0,18	1,2	1,15	690 V FA	0,800 A 6x32	D086437	MI6FA69V0,800
		1,000		0,11	0,48	0,71	690 V FA	1,000 A 6x32	H093295	MI6FA69V1
		1,250		0,17	0,76	0,7	690 V FA	1,250 A 6x32	B093289	MI6FA69V1,25
		1,600		0,39	1,7	0,65	690 V FA	1,600 A 6x32	D093291	MI6FA69V1,6
		2,000		0,81	3,5	0,55	690 V FA	2,000 A 6x32	F093293	MI6FA69V2

Ratings lower than 0,1A : please enquire.

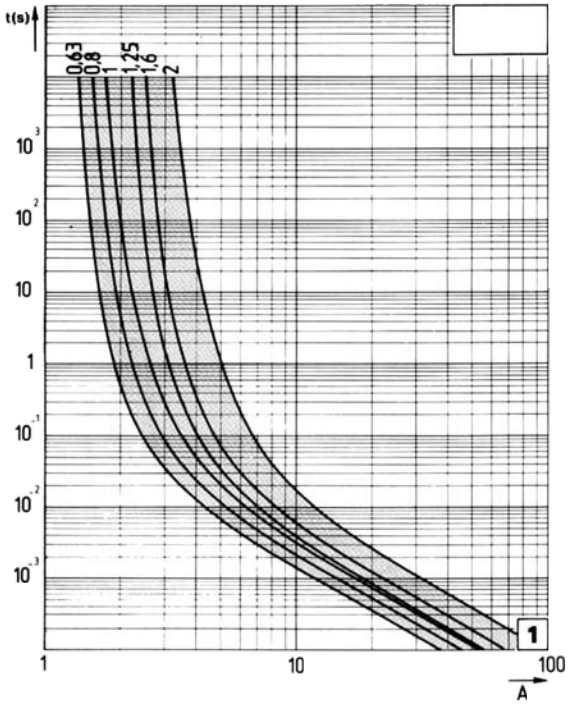
Very HRC Fuses
6x32
690V - FA Very Fast Acting

Time-current characteristics

690V FA 6x32



690V FA 6x32



I margin ± 12 %. Actual prearcing time(s). R.M.S. Value of prearcing current (A).

Packaging: Blister per 50 pièces.
For a 500 pieces box packaging consult us.

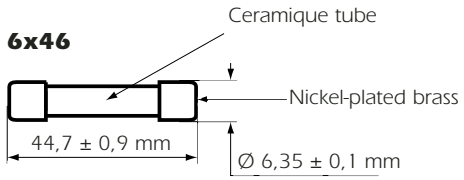
Very HRC Fuses
6x46
1000V - FA Very Fast Acting

Ferraz-Shawmut speciality

FROM 0,1 TO 1A

Approvals UL recognized E 76491
FERRAZ speciality

Dimensions



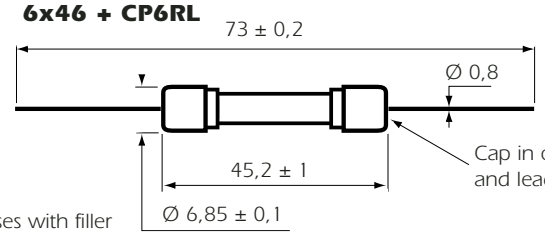


Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under Un	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	6x46 References Number	Catalog Number
mm	VAC	A		A^2 s		V			
6,3 x 46	1 000	0.100	30 kA 1000 VAC cos φ ≥ 0,2	0.0002	0.001	6.5	1 000 V FA 0,100A 6 x 46	G076458	MI6FA100V0,1
		0.125		0.0006	0.003	4.4	1 000 V FA 0,125A 6 x 46	H076459	MI6FA100V0,125
		0.160		0.0014	0.006	3.6	1 000 V FA 0,160A 6 x 46	J076460	MI6FA100V0,16
		0.200		0.0022	0.01	3.5	1 000 V FA 0,200A 6 x 46	K076461	MI6FA100V0,2
		0.250		0.004	0.02	3.2	1 000 V FA 0,250A 6 x 46	L076462	MI6FA100V0,25
		0.315		0.008	0.04	2.9	1 000 V FA 0,315A 6 x 46	M076463	MI6FA100V0,315
		0.400		0.017	0.08	2.5	1 000 V FA 0,400A 6 x 46	N076464	MI6FA100V0,4
		0.500		0.036	0.16	2.2	1 000 V FA 0,500A 6 x 46	P076465	MI6FA100V0,5
		0.630		0.59	0.35	1.3	1 000 V FA 0,630A 6 x 46	Q076466	MI6FA100V0,63
		0.800		0.110	0.6	1.2	1 000 V FA 0,800A 6 x 46	R076467	MI6FA100V0,8
		1.000		0.230	1.25	1	1 000 V FA 1,000A 6 x 46	P075660	MI6FA100V1

Ratings lower than 0,1A : please enquire.

6x46 + CP6RL



Fuses with filler
Max weight : 2,5 g



Basic Characteristics

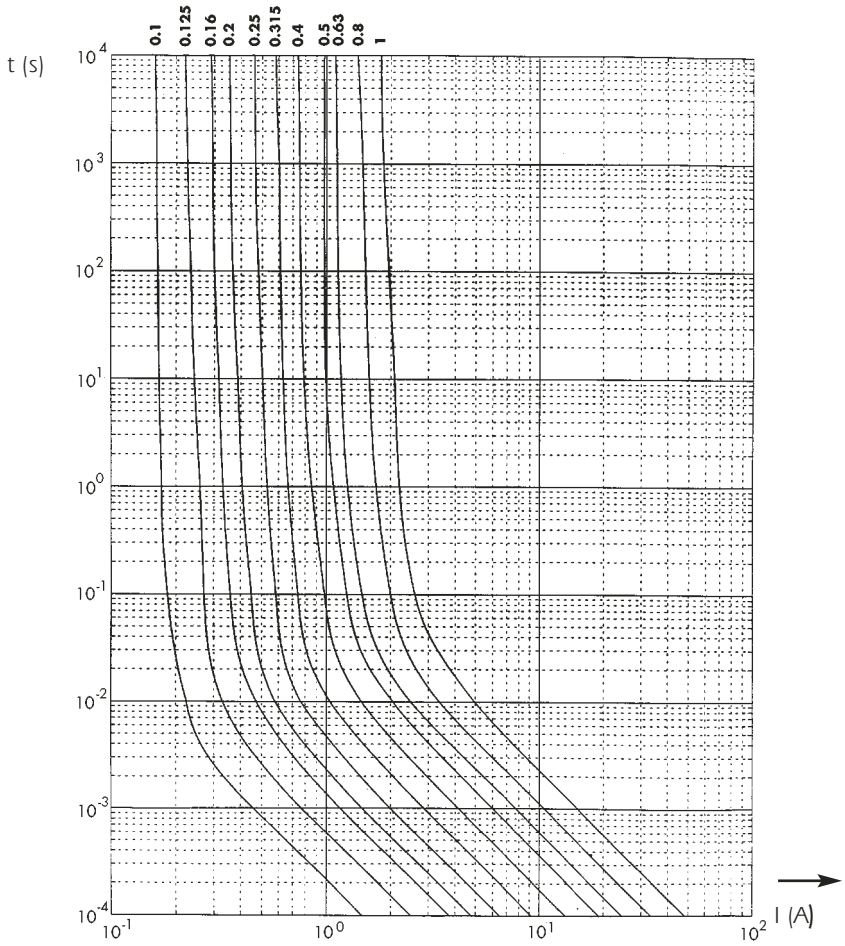
Size	Rated Voltage	Rated Current	Breaking Capacity under Un	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation 6x46 + CP6RL	Reference Number	Catalog Number
mm	VAC	A		A^2 s		V			
6,3 x 46	1 000	0.100	30 kA 1000 VAC cos φ ≥ 0,2	0.0002	0.001	6.5	1 000 V FA 0,100A 6 x 46	W209733	MI6FAP100V0,1
		0.125		0.0006	0.003	4.4	1 000 V FA 0,125A 6 x 46	X209734	MI6FAP100V0,125
		0.160		0.0014	0.006	3.6	1 000 V FA 0,160A 6 x 46	Y209735	MI6FAP100V0,16
		0.200		0.0022	0.01	3.5	1 000 V FA 0,200A 6 x 46	Z209736	MI6FAP100V0,2
		0.250		0.004	0.02	3.2	1 000 V FA 0,250A 6 x 46	A209737	MI6FAP100V0,25
		0.315		0.008	0.04	2.9	1 000 V FA 0,315A 6 x 46	B209738	MI6FAP100V0,315
		0.400		0.017	0.08	2.5	1 000 V FA 0,400A 6 x 46	C209739	MI6FAP100V0,4
		0.500		0.036	0.16	2.2	1 000 V FA 0,500A 6 x 46	D209740	MI6FAP100V0,5
		0.630		0.59	0.35	1.3	1 000 V FA 0,630A 6 x 46	E209741	MI6FAP100V0,63
		0.800		0.110	0.6	1.2	1 000 V FA 0,800A 6 x 46	F209742	MI6FAP100V0,8
		1.000		0.230	1.25	1	1 000 V FA 1,000A 6 x 46	V209617	MI6FAP100V1

Ratings lower than 0,1A : please enquire.

Very HRC Fuses
6x46
1000V - FA Very Fast Acting

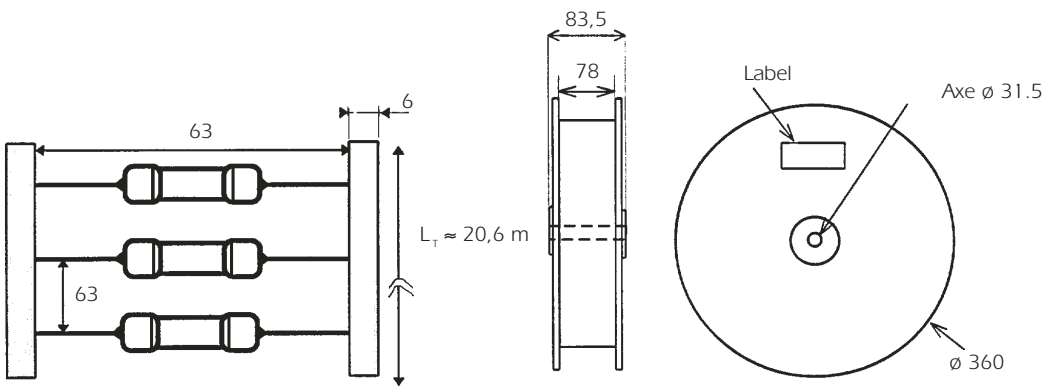
Time-current characteristics

1000V FA 6x46



Tolerance for the mean pre-arcing current ± 12%.
These curves indicate, for each rated current, the pre-arcing time vs. the R.M.S. pre-arcing current

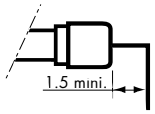
Packaging - Mounting: 6x46 plactic box 10 pieces (55x42x19). For a 500 pieces box packaging consult us.
6x46 + CP6RL in tape per 1500 pièces.



Installation instructions on PC board.

Soldering heat resistance :
according to IEC 68-2-20 / 260°C for 10 seconds.

Leads bending

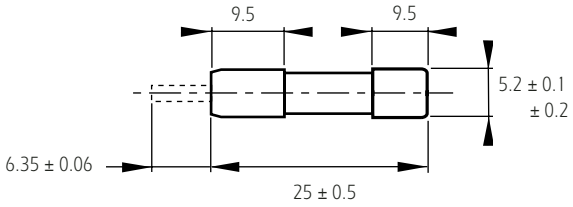


Very HRC Fuses
5x25/6x32 Fuses with striker
250V - F&M 5x25

Ferraz-Shawmut speciality

Approvals UL recognized E 76491

250V F
250V M





250VAC F 5x25 with trip-indicator Fast-acting
Very High breaking capacity

Approvals	Voltage rating Un (VAC)	Rating (A)	Reference Number	Weight (g)	Pack.	Catalog Number
	250	1	D077812	2,5	20	MI5F25V1P
	250	1,6	T078999	2,5	20	MI5F25V1,6P
	250	2	V079000	2,5	20	MI5F25V2P
	250	2,5	W079001	2,5	20	MI5F25V2,5P

Approvals	Voltage rating Un (VAC)	Rating (A)	Reference Number	Weight (g)	Pack.	Catalog Number
	250	4	X079002	2,5	20	MI5F25V4P
	250	5	B076844	2,5	20	MI5F25V5P
	250	6,3	Y079003	2,5	20	MI5F25V6,3P
	250	10	E077813	2,5	20	MI5F25V10P

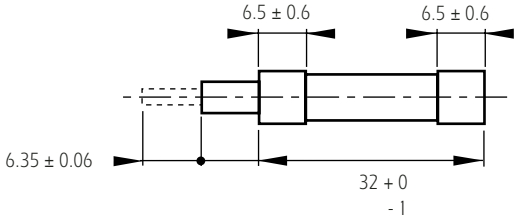
250VAC M 5x25 with trip-indicator Medium Time lag
Very High breaking capacity

Approvals	Voltage rating Un (VAC)	Rating (A)	Reference Number	Weight (g)	Pack.	Catalog Number
ᵠᵠ	250	1	L079015	2,5	20	MI5M25V1P
ᵠᵠ	250	1,25	M079016	2,5	20	MI5M25V1,25P
ᵠᵠ	250	1,6	N079017	2,5	20	MI5M25V1,6P
ᵠᵠ	250	2	P079018	2,5	20	MI5M25V2P
ᵠᵠ	250	2,5	Q079019	2,5	20	MI5M25V2,5P

Approvals	Voltage rating Un (VAC)	Rating (A)	Reference Number	Weight (g)	Pack.	Catalog Number
ᵠᵠ	250	3,15	R079020	2,5	20	MI5M25V3,15P
ᵠᵠ	250	4	S079021	2,5	20	MI5M25V4 P
	250	6,3	T079022	2,5	20	MI5M25V6,3P
	250	10	Q075684	2,5	20	MI5M25V10P

Very HRC Fuses
5x25/6x32 Fuses with striker
125V to 400V - FA/FB & SA 6x32





125-400VAC FA/FB 6x32
with trip-indicator Very Fast-acting Very High breaking capacity

Voltage rating Un (VAC)	Rating (A)	Reference Number	Weight (g)	Pack.	Catalog Number
400	0,8	J078921	3,5	10	MI6FA40V0,8P
400	1	J080393	3,5	10	MI6FA40V1P
400	1,25	A094415	3,5	10	MI6FA40V1,25P
400	1,6	K078922	3,5	10	MI6FA40V1,6P
400	2	K080394	3,5	10	MI6FA40V2P
400	2,5	W093169	3,5	10	MI6FA40V2,5P
400	3,15	D080641	3,5	10	MI6FA40V3,15P
400	4	D080917	3,5	10	MI6FA40V4P
400	5	H079771	3,5	10	MI6FA40V5P
400	6,3	C080916	3,5	10	MI6FA40V6,3P
400	8	B080915	3,5	10	MI6FA40V8P
400	10	X093170	3,5	10	MI6FA40V10P
400	12,5	Y093171	3,5	10	MI6FA40V12,5P
400	16	M080626	3,5	10	MI6FB40V16P
250	20	L098105	3,5	10	MI6FA25V20P
125	25	X098000	3,5	10	MI6FA12,5V25P
125	30	K081038	3,5	10	MI6FA12,5V30P

400VAC SA 6x32
with trip-indicator Medium-Time lag Very High breaking capacity

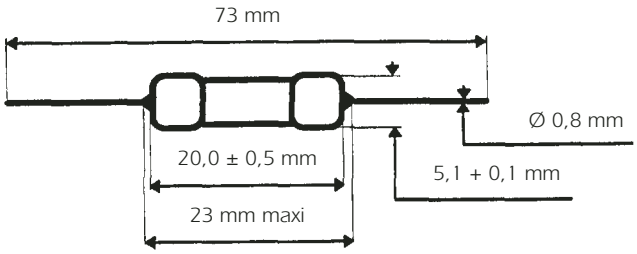
Voltage rating Un (VAC)	Rating (A)	Reference Number	Weight (g)	Pack.	Catalog Number
400	0,8	G099251	3,5	10	MI6SA40V0,8P
400	1	A079764	3,5	10	MI6SA40V1P
400	1,25	H094261	3,5	10	MI6SA40V1,25P
400	1,6	K094263	3,5	10	MI6SA40V1,6P
400	2	J089455	3,5	10	MI6SA40V2P
400	2,5	L094264	3,5	10	MI6SA40V2,5P
400	3,15	K089456	3,5	10	MI6SA40V3,15P
400	4	M094265	3,5	10	MI6SA40V4P
400	5	P094267	3,5	10	MI6SA40V5P
400	6,3	Z093172	3,5	10	MI6SA40V6,3P
400	8	Q094268	3,5	10	MI6SA40V8P
400	10	Y081027	3,5	10	MI6SA40V10P
250	12,5	T094271	3,5	10	MI6SA25V12,5P
250	16	W094273	3,5	10	MI6SA25V16P
250	20	X099472	3,5	10	MI6SA25V20P
125	25	X094274	3,5	10	MI6SA12,5V25P
125	30	J094285	3,5	10	MI6SA12,5V30P

Axial leads
5x20
250V - FC "AL" Fast Acting

Electricals characteristics :
according to IEC 127-2 Standard Sheet 1

BETWEEN 0,16 TO 10A

Dimensions



Sand-filled fuses
Max weight : 1,5 g



Basic Characteristics

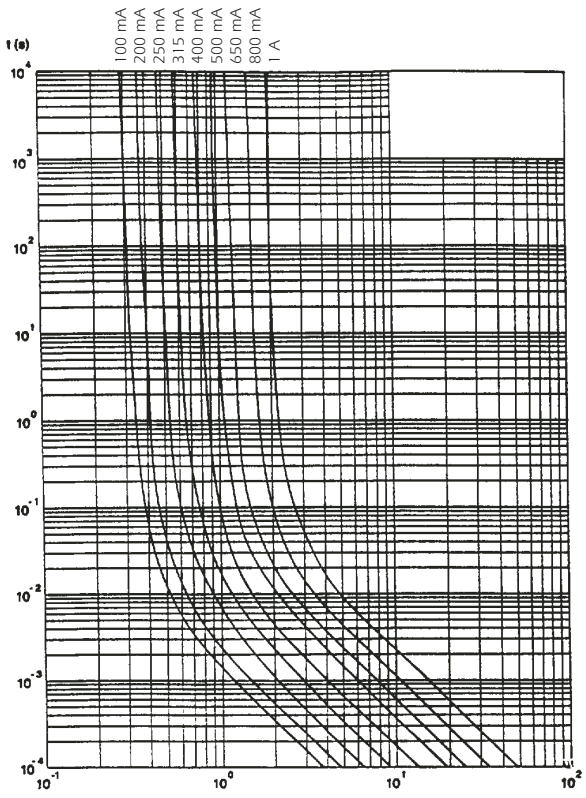
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at 250 V	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A^2 s		V			
5 x 20	250	0,160	Along IEC 127 1500 A @ 250 VAC cos φ ≥ 0,7	0,0011	0,0025	1,6	250V FC 0,160 A 5x20 AL	L205032	MI5FCP25V0,16
		0,200		0,0018	0,004	1,45	250V FC 0,200 A 5x20 AL	M205033	MI5FCP25V0,20
		0,250		0,0035	0,008	1,3	250V FC 0,250 A 5x20 AL	N205034	MI5FCP25V0,25
		0,315		0,0072	0,016	1,15	250V FC 0,315 A 5x20 AL	E206061	MI5FCP25V0,31
		0,400		0,015	0,032	1,1	250V FC 0,400 A 5x20 AL	F206062	MI5FCP25V0,4
		0,500		0,032	0,066	1	250V FC 0,500 A 5x20 AL	P205035	MI5FCP25V0,5
		0,630		0,052	0,082	0,45	250V FC 0,630 A 5x20 AL	H206064	MI5FCP25V0,63
		0,800		0,098	0,16	0,4	250V FC 0,800 A 5x20 AL	G206063	MI5FCP25V0,8
		1,000		0,2	0,32	0,37	250V FC 1,000 A 5x20 AL	Q205036	MI5FCP25V1
		1,250		0,11	0,35	0,55	250V FC 1,250 A 5x20 AL	R205037	MI5FCP25V1,25
		1,600	Along IEC 269.1 and 269.3 6 kA @ 250 VAC cos φ ≥ 0,2	0,28	0,55	0,42	250V FC 1,600 A 5x20 AL	S205038	MI5FCP25V1,6
		2,000		0,55	1,2	0,38	250V FC 2,000 A 5x20 AL	T205039	MI5FCP25V2
		2,500		1,1	2,4	0,34	250V FC 2,500 A 5x20 AL	V205040	MI5FCP25V2,5
		3,150		2,5	5	0,28	250V FC 3,150 A 5x20 AL	W205041	MI5FCP25V3,15
		4,000		6,1	12	0,23	250V FC 4,000 A 5x20 AL	X205042	MI5FCP25V4
		5,000		11	22	0,21	250V FC 5,000 A 5x20 AL	Y205043	MI5FCP25V5
		6,300		25	45	0,18	250V FC 6,300 A 5x20 AL	Z205044	MI5FCP25V6,3
		8		72	130	0,13	250V FC 8,000 A 5x20 AL	A205045	MI5FCP25V8
		10		150	270	0,11	250V FC 10,00 A 5x20 AL	B205046	MI5FCP25V10

These fuses are not SEMKO approved. IEC 127 doesn't take into account 5x20 fuses with axial leads.

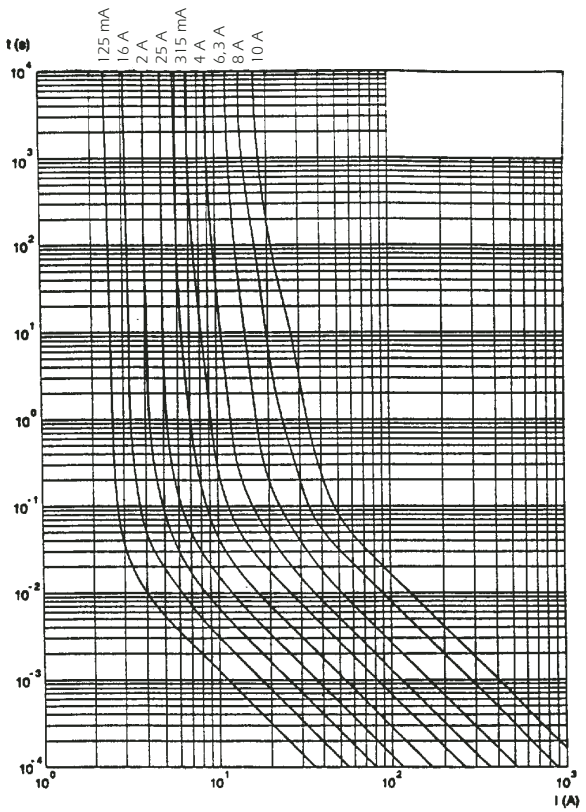
Axial leads
5x20
250V - FC "AL" Fast Acting

Time-current characteristics

250V FC 5x20 AL

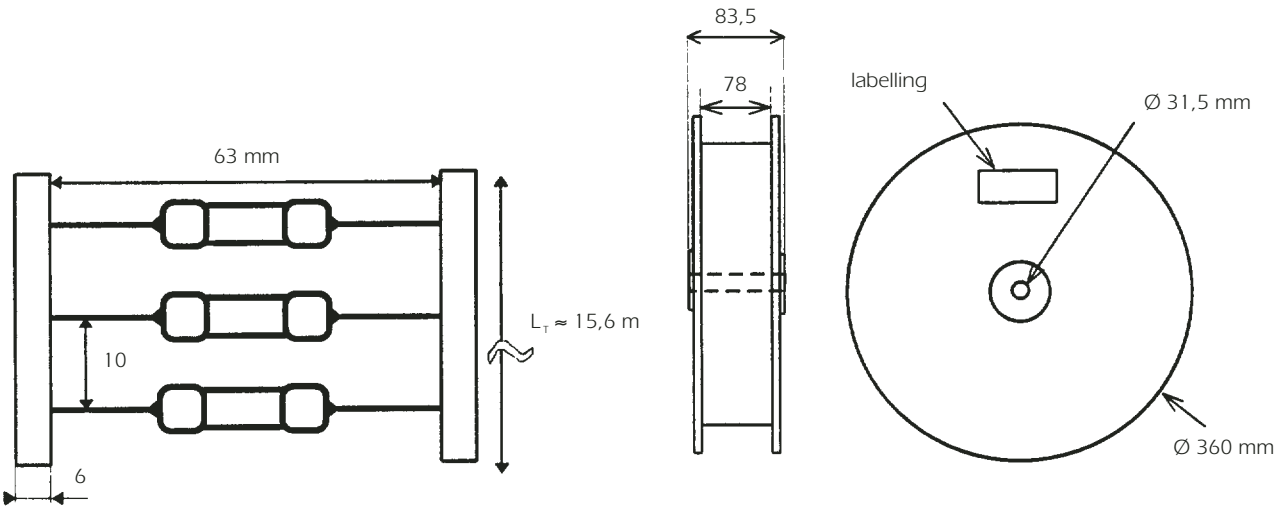


250V FC 5x20 AL



I margin ± 12 %. Actual prearcing time(s). R.M.S. Value of prearcing current (A).

Packaging: in tape per 2000 pieces



Installation instruction

Soldering heat resistance : according IEC 68-2-20 / 260°C for 10 seconds.

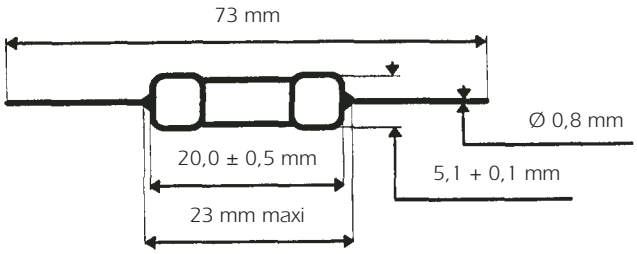
Material:
Body: ceramic tube
Connection: Tin plated copper

Axial leads
5x20
250V - FA/FB "AL" Very Fast Acting

Approvals UL recognized E 90660

BETWEEN 0,04 TO 6,3 A

Dimensions



Sand-filled fuses
Max weight : 1,5 g



Basic Characteristics

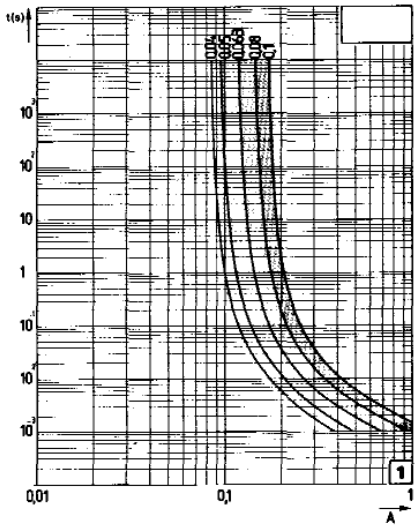
Size	Rated Voltage	Rated Current	Breaking Capacity	[I²t] Pre-arcing	[I²t] Total clearing at 250 V	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		$A^2 s$		V			
5 x 20	250	0,040*	250 VAC 4 kA cos φ ≥ 0,7	0,00013	0,0004	1,5	250V FB 0,040 A 5 x 20AL	Z204883	MI5FBP25V0,04
		0,050*		0,00020	0,0006	1,5	250V FB 0,050 A 5 x 20AL	S206901	MI5FBP25V0,05
		0,063*		0,00041	0,0012	1,3	250V FB 0,063 A 5 x 20AL	K205031	MI5FBP25V0,063
		0,080*		0,00077	0,0022	1,1	250V FB 0,080 A 5 x 20AL	C207899	MI5FBP25V0,08
		0,100*		0,00131	0,0037	1,1	250V FB 0,100 A 5 x 20AL	B206472	MI5FBP25V0,1
		0,125	250 VAC 30 kA cos φ ≥ 0,2	0,00077	0,0021	1,7	250V FA 0,125 A 5 x 20AL	M205907	MI5FAP25V0,125
		0,160		0,0020	0,006	1,3	250V FA 0,160 A 5 x 20AL	H208249	MI5FAP25V0,16
		0,200		0,0046	0,013	1,1	250V FA 0,200 A 5 x 20AL	J208250	MI5FAP25V0,2
		0,250		0,009	0,025	1,0	250V FA 0,250 A 5 x 20AL	L205906	MI5FAP25V0,25
		0,315		0,016	0,045	0,90	250V FA 0,315 A 5 x 20AL	K208251	MI5FAP25V0,315
		0,400	for approvals Ic = 10 kA under 250 VAC cos φ ≥ 0,7	0,03	0,085	0,85	250V FA 0,400 A 5 x 20AL	L208252	MI5FAP25V0,4
		0,500		0,05	0,15	0,80	250V FA 0,500 A 5 x 20AL	M208253	MI5FAP25V0,5
		0,630		0,12	0,35	0,70	250V FA 0,630 A 5 x 20AL	N208254	MI5FAP25V0,63
		0,800		0,25	0,72	0,60	250V FA 0,800 A 5 x 20AL	P208255	MI5FAP25V0,8
		1,000		0,11	0,25	0,46	250V FA 1,000 A 5 x 20AL	Q208256	MI5FAP25V1
		1,250		0,26	0,65	0,36	250V FA 1,250 A 5 x 20AL	R208257	MI5FAP25V1,25
		1,600		0,39	0,9	0,42	250V FA 1,600 A 5 x 20AL	S208258	MI5FAP25V1,6
		2,000		0,81	1,9	0,37	250V FA 2,000 A 5 x 20AL	T208259	MI5FAP25V2
		2,500		1,44	3,2	0,34	250V FA 2,500 A 5 x 20AL	V208260	MI5FAP25V2,5
		3,150		2,46	5,5	0,33	250V FA 3,150 A 5 x 20AL	W208261	MI5FAP25V3,15
		4,000		4,6	10	0,31	250V FA 4,000 A 5 x 20AL	X208262	MI5FAP25V4
		5,000		11	25	0,24	250V FA 5,000 A 5 x 20AL	Y208263	MI5FAP25V5
		6,300		23	50	0,20	250V FA 6,300 A 5 x 20AL	Y208033	MI5FAP25V6,3

*Rating non approval

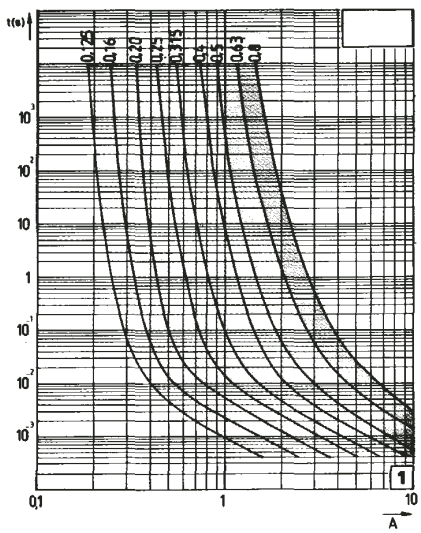
Axial leads
5x20
250V - FA/FB "AL" Very Fast Acting

Time-current characteristics

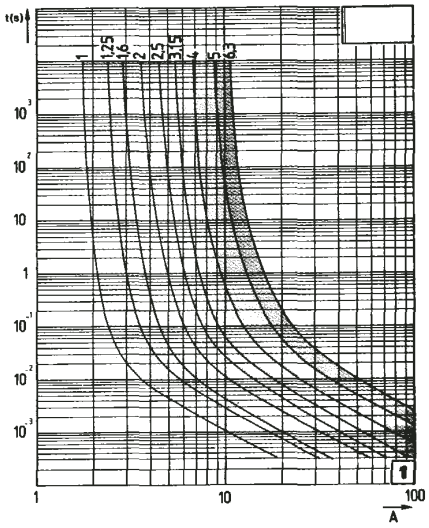
250V FB 5x20 AL



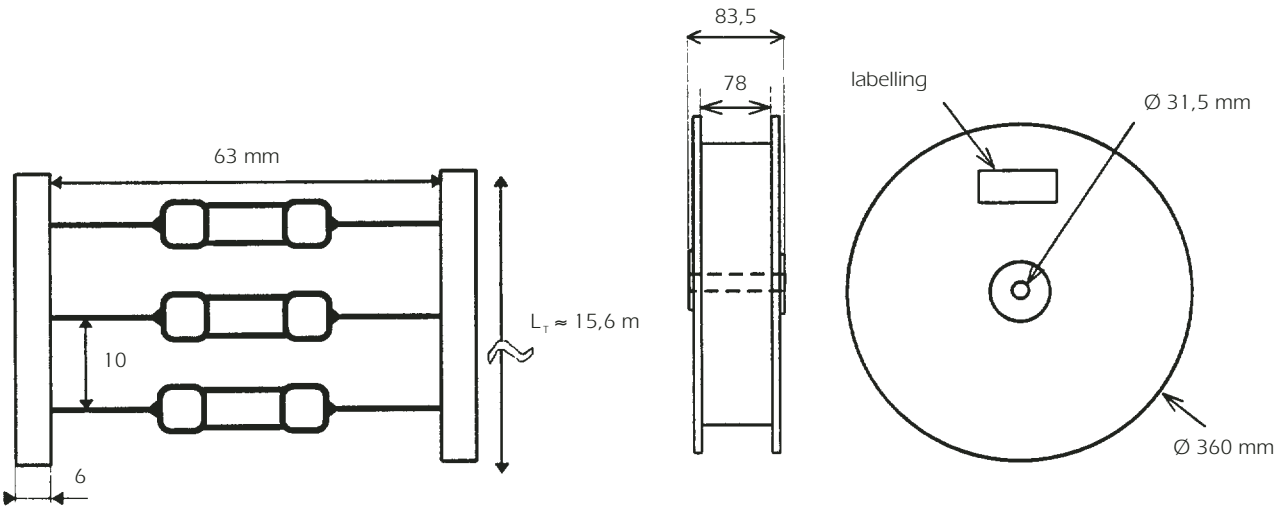
250V FA 5x20 AL



250V FA 5x20 AL



Packaging: in tape per 2000 pieces



Installation instruction

Soldering heat resistance : according IEC 68-2-20 / 260°C for 10 seconds.

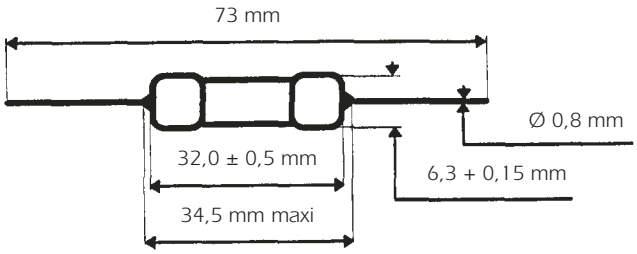
Material:
Body: ceramic tube
Connection: Tin plated copper

Axial leads
6x32
250V - FA "AL" Very Fast Acting

Approvals UL recognized E 76491

BETWEEN 0,1 TO 6,3 A

Dimensions



Max weight : 2,5 g



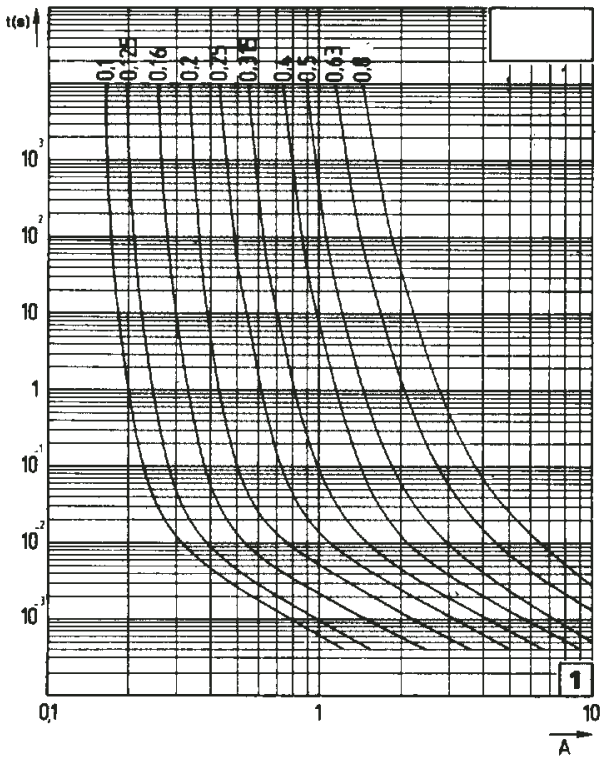
Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 V AC	[I²t] Pre-arcing	[I²t] Total clearing at 250 V	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A² s		V			
6,3 x 32	250	0,100	200 kA cos φ ≥ 0,2	0,00057	0,0011	2,75	250V FA 0,100 A 6.32 AL	M208138	MI6FAP25V0,1
		0,125		0,00077	0,0015	2,6	250V FA 0,125 A 6.32 AL	N208139	MI6FAP25V0,125
		0,160		0,0020	0,004	2,0	250V FA 0,160 A 6.32 AL	P208140	MI6FAP25V0,16
		0,200		0,0046	0,009	1,7	250V FA 0,200 A 6.32 AL	Q208141	MI6FAP25V0,2
		0,250		0,009	0,018	1,55	250V FA 0,250 A 6.32 AL	R208142	MI6FAP25V0,25
		0,315		0,016	0,032	1,45	250V FA 0,315 A 6.32 AL	S208143	MI6FAP25V0,315
		0,400		0,03	0,06	1,40	250V FA 0,400 A 6.32 AL	T208144	MI6FAP25V0,4
		0,500		0,05	0,10	1,40	250V FA 0,500 A 6.32 AL	V208145	MI6FAP25V0,5
		0,630		0,12	0,24	1,15	250V FA 0,630 A 6.32 AL	W208146	MI6FAP25V0,63
		0,800		0,25	0,50	1,00	250V FA 0,800 A 6.32 AL	X208147	MI6FAP25V0,8
		1,000		0,11	0,20	0,71	250V FA 1,000 A 6.32 AL	Y208148	MI6FAP25V1
		1,250		0,26	0,50	0,55	250V FA 1,250 A 6.32 AL	Z208149	MI6FAP25V1,25
		1,600		0,39	0,7	0,65	250V FA 1,600 A 6.32 AL	C208152	MI6FAP25V1,6
		2,000		0,81	1,4	0,55	250V FA 2,000 A 6.32 AL	D208153	MI6FAP25V2
		2,500		1,44	2,5	0,52	250V FA 2,500 A 6.32 AL	E208154	MI6FAP25V2,5
		3,150		2,46	4,3	0,53	250V FA 3,150 A 6.32 AL	F208155	MI6FAP25V3,15
		4,000		4,6	8	0,48	250V FA 4,000 A 6.32 AL	G208156	MI6FAP25V4
		5,000		11	20	0,37	250V FA 5,000 A 6.32 AL	H208157	MI6FAP25V5
		6,300		23	40	0,31	250V FA 6,300 A 6.32 AL	Z208034	MI6FAP25V6,3

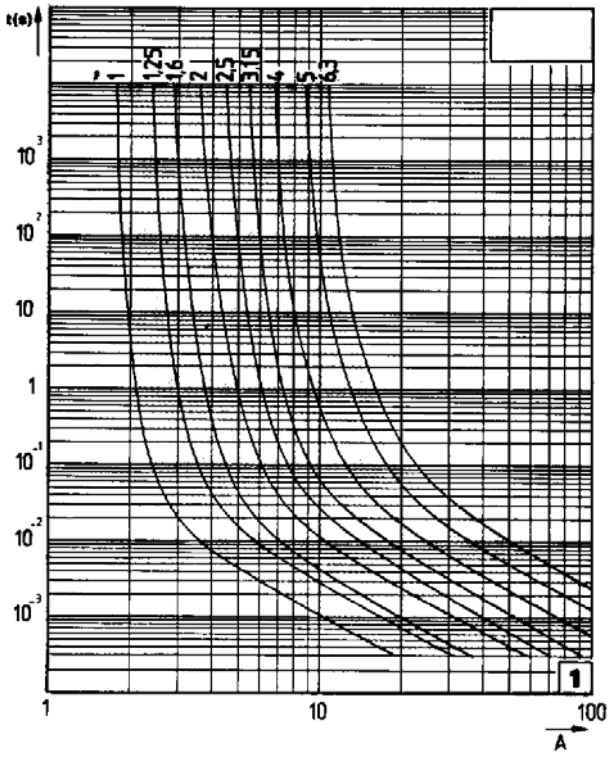
Axial leads
6x32
250V - FA "AL" Very Fast Acting

Time-current characteristics

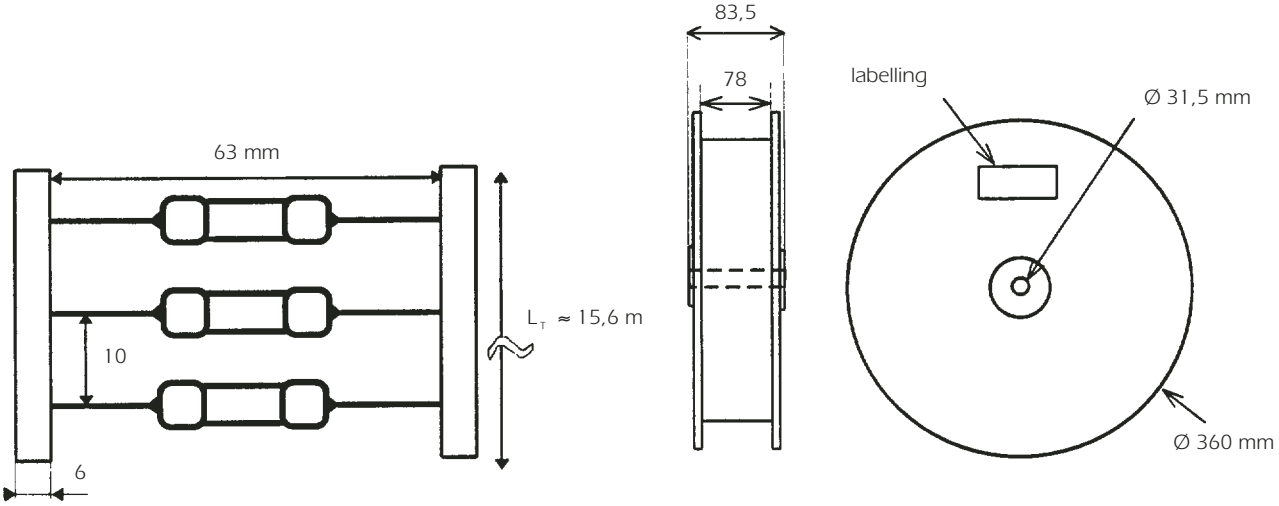
250V FA 6,3 x 32 AL



250V FA 6,3 x 32 AL



Packaging: in tape per 1500 pieces



Installation instruction

Soldering heat resistance : according IEC 68-2-20 / 260°C for 10 seconds.

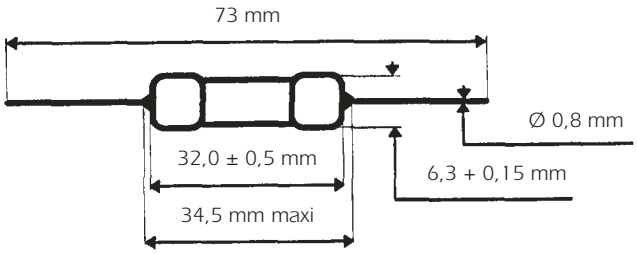
Material:
Body: ceramic tube
Connection: Tin plated copper

Axial leads
6x32
250V - SA "AL" Medium Time Lag

Approvals UL recognized E 76491

BETWEEN 0,1 TO 6,3 A

Dimensions



Max weight : 2,8 g



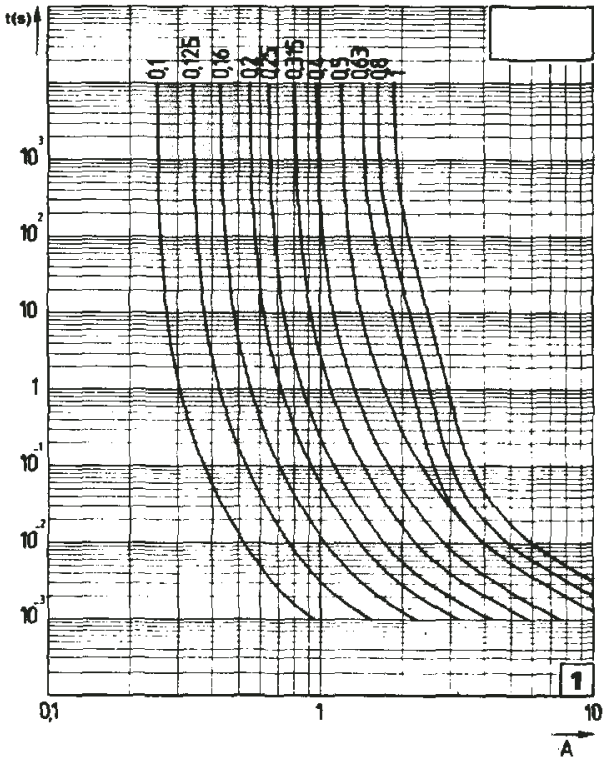
Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 250 V AC	[I²t] Pre-arcing	[I²t] Total clearing at 250 V	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A^2 s		V			
6,3 x 32	250	0,100	200 kA cos φ ≥ 0,2	0,00077	0,0015	2,0	250V SA 0,100 A 6.32 AL	N208231	MI6SAP25V0,1
		0,125		0,002	0,0025	1,5	250V SA 0,125 A 6.32 AL	P208232	MI6SAP25V0,125
		0,160		0,0046	0,009	1,3	250V SA 0,160 A 6.32 AL	Q208233	MI6SAP25V0,16
		0,200		0,009	0,018	1,2	250V SA 0,200 A 6.32 AL	R208234	MI6SAP25V0,2
		0,250		0,016	0,032	1,1	250V SA 0,250 A 6.32 AL	S208235	MI6SAP25V0,25
		0,315		0,03	0,06	1,0	250V SA 0,315 A 6.32 AL	T208236	MI6SAP25V0,315
		0,400		0,05	0,10	1,0	250V SA 0,400 A 6.32 AL	V208237	MI6SAP25V0,4
		0,500		0,12	0,24	0,80	250V SA 0,500 A 6.32 AL	W208238	MI6SAP25V0,5
		0,630		0,11	0,20	0,40	250V SA 0,630 A 6.32 AL	X208239	MI6SAP25V0,63
		0,800		0,17	0,31	0,40	250V SA 0,800 A 6.32 AL	Y208240	MI6SAP25V0,8
		1,000		0,26	0,50	0,40	250V SA 1,000 A 6.32 AL	Z208241	MI6SAP25V1
		1,250		0,55	1,0	0,35	250V SA 1,250 A 6.32 AL	A208242	MI6SAP25V1,25
		1,600		1,44	2,5	0,26	250V SA 1,600 A 6.32 AL	B208243	MI6SAP25V1,6
		2,000		2,46	4,3	0,25	250V SA 2,000 A 6.32 AL	C208244	MI6SAP25V2
		2,500		4,6	8	0,23	250V SA 2,500 A 6.32 AL	D208245	MI6SAP25V2,5
		3,150		11	20	0,16	250V SA 3,150 A 6.32 AL	E208246	MI6SAP25V3,15
		4,000		23	40	0,16	250V SA 4,000 A 6.32 AL	F208247	MI6SAP25V4
		5,000		15,7	70	0,13	250V SA 5,000 A 6.32 AL	G208248	MI6SAP25V5
		6,300		28	120	0,13	250V SA 6,300 A 6.32 AL	E208039	MI6SAP25V6,3

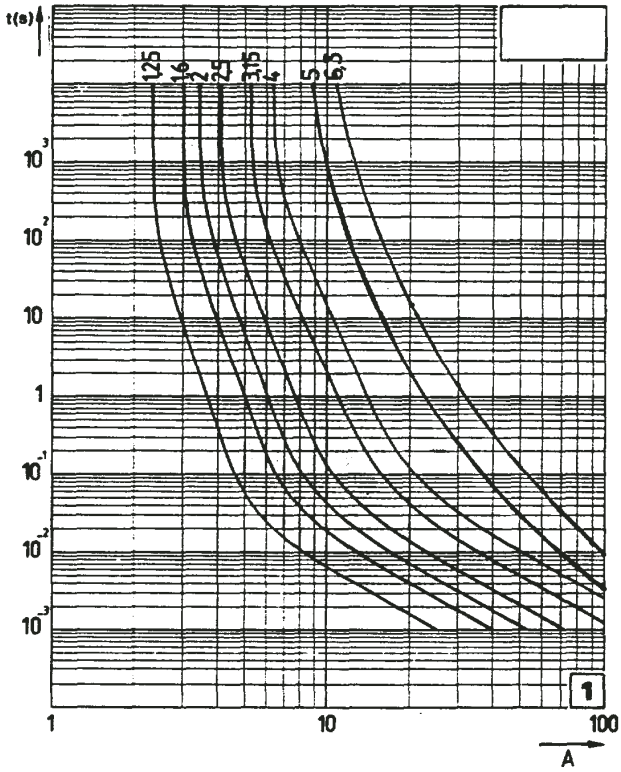
Axial leads
6x32
250V - SA "AL" Medium Time Lag

Time-current characteristics

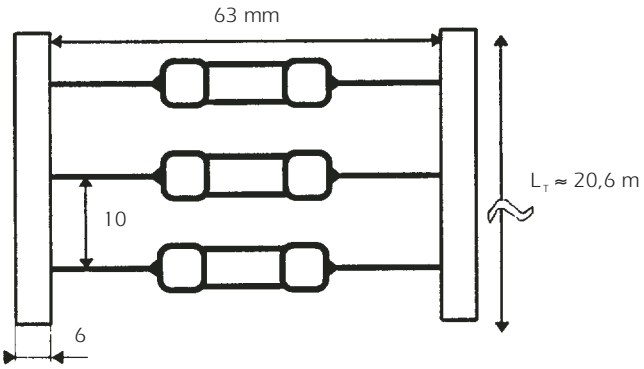
250V SA 6,3x32 AL

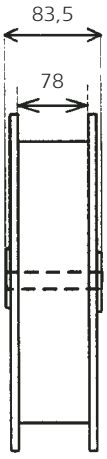


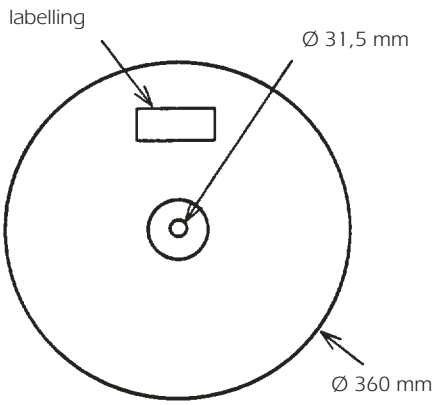
250V SA 6,3x32 AL



Packaging: in tape per 1500 pieces







Installation instruction

Soldering heat resistance : according IEC 68-2-20 / 260°C for 10 seconds.

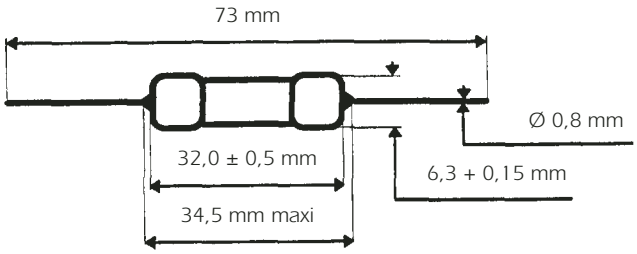
Material:
Body: ceramic tube
Connection: Tin plated copper

Axial leads
6x32
400V - FA "AL" Very Fast Acting

Approvals UL recognized E 76491

BETWEEN 0,1 TO 6,3 A

Dimensions



Max weight : 2,8 g



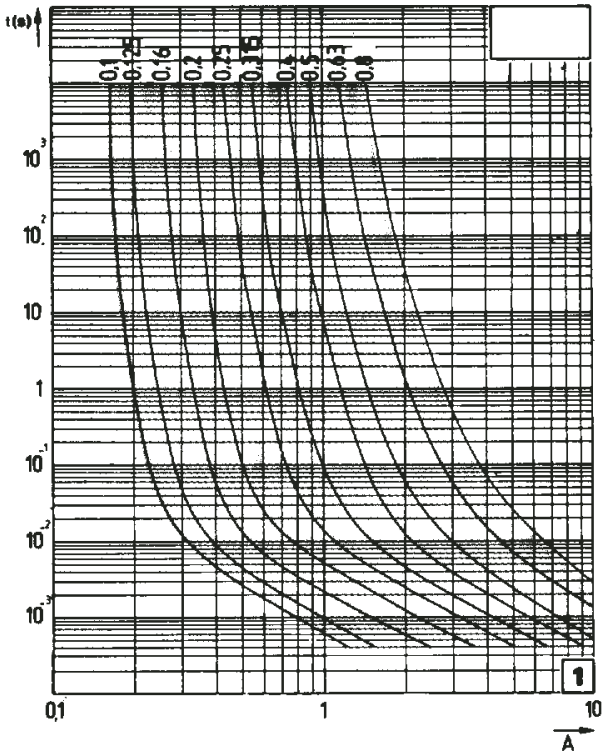
Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 400 V AC	[I²t] Pre-arcing	[I²t] Total clearing at 400 V	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A^2 s		V			
6,3 x 32	400	0,100	200 kA cos φ ≥ 0,2	0,00057	0,0016	2,75	400V FA 0,100 A 6.32 AL	E208177	MI6FA40V0,1
		0,125		0,00077	0,0021	2,6	400V FA 0,125 A 6.32 AL	F208178	MI6FAP40V0,125
		0,160		0,002	0,006	2,0	400V FA 0,160 A 6.32 AL	G208179	MI6FAP40V0,16
		0,200		0,0046	0,013	1,7	400V FA 0,200 A 6.32 AL	H208180	MI6FAP40V0,2
		0,250		0,009	0,025	1,55	400V FA 0,250 A 6.32 AL	J208181	MI6FAP40V0,25
		0,315		0,016	0,045	1,45	400V FA 0,315 A 6.32 AL	K208182	MI6FAP40V0,31
		0,400		0,03	0,085	1,40	400V FA 0,400 A 6.32 AL	L208183	MI6FAP40V0,4
		0,500		0,05	0,15	1,40	400V FA 0,500 A 6.32 AL	M208184	MI6FAP40V0,5
		0,630		0,12	0,35	1,15	400V FA 0,630 A 6.32 AL	N208185	MI6FAP40V0,63
		0,800		0,25	0,72	1,0	400V FA 0,800 A 6.32 AL	P208186	MI6FAP40V0,8
		1,000		0,11	0,25	0,71	400V FA 1,000 A 6.32 AL	Q208187	MI6FAP40V1
		1,250		0,26	0,6	0,55	400V FA 1,250 A 6.32 AL	R208188	MI6FAP40V1,25
		1,600		0,39	0,9	0,65	400V FA 1,600 A 6.32 AL	S208189	MI6FAP40V1,6
		2,000		0,81	1,9	0,55	400V FA 2,000 A 6.32 AL	T208190	MI6FAP40V2
		2,500		1,44	3,2	0,52	400V FA 2,500 A 6.32 AL	V208191	MI6FAP40V2,5
		3,150		2,46	5,5	0,53	400V FA 3,150 A 6.32 AL	W208192	MI6FAP40V3,15
		4,000		4,6	10	0,48	400V FA 4,000 A 6.32 AL	X208193	MI6FAP40V4
		5,000	150 kA	11	25	0,37	400V FA 5,000 A 6.32 AL	Y208194	MI6FAP40V5
		6,300	cos φ ≥ 0,2	1,1	12	0,22	400V FA 6,300 A 6.32 AL	A208035	MI6FAP40V6,3

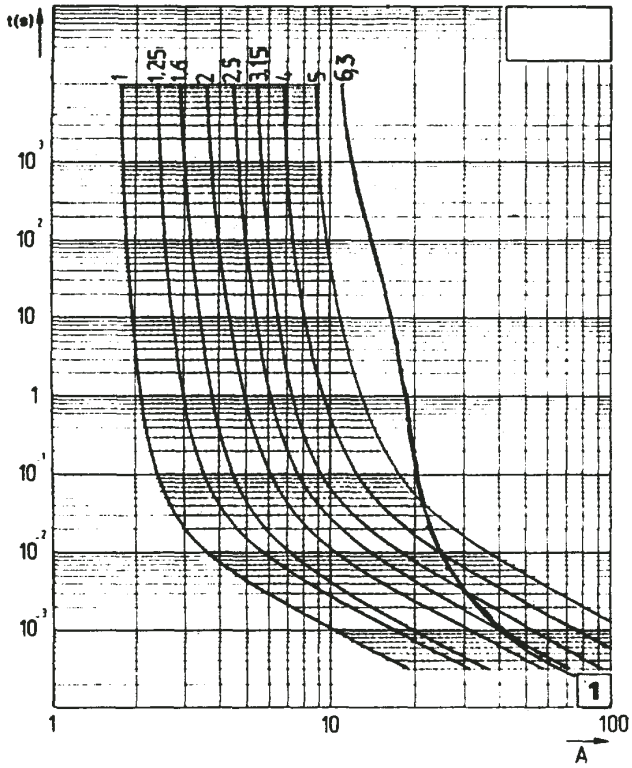
Axial leads
6x32
400V - FA "AL" Very Fast Acting

Time-current characteristics

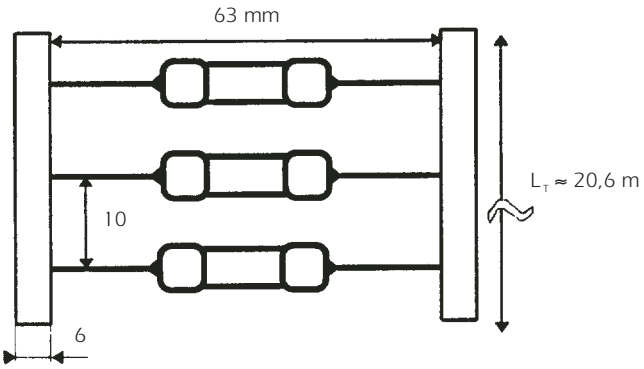
400V FA 6,3x32 AL

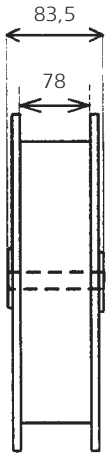


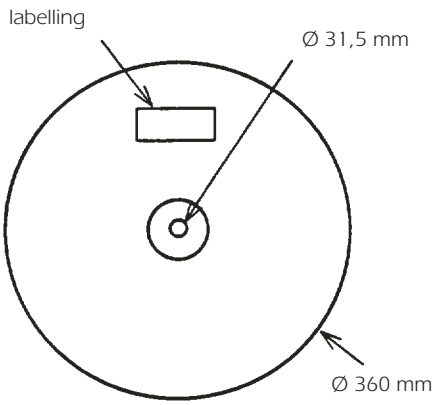
400V FA 6,3x32 AL



Packaging: in tape per 1500 pieces







Installation instruction

Soldering heat resistance : according IEC 68-2-20 / 260°C for 10 seconds.

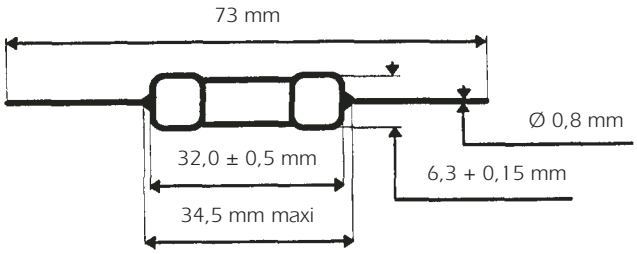
Material:
Body: ceramic tube
Connection: Tin plated copper

Axial leads
6x32
500V - FA "AL" Very Fast Acting

Approvals UL recognized E 76491

BETWEEN 0,1 TO 6,3 A

Dimensions



Max weight : 2,8 g



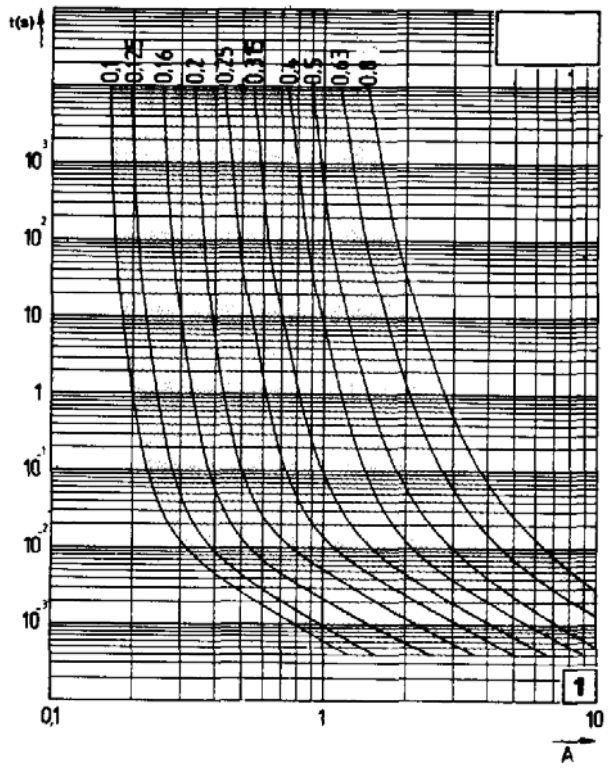
Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 500 V AC	[I²t] Pre-arcing	[I²t] Total clearing at 500 V	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A^2 s		V			
6,3 x 32	500	0,100	200 kA cos φ ≥ 0,2	0,00057	0,002	2,75	500V FA 0,100 A 6.32 AL	A208196	MI6FAP50V0,1
		0,125		0,00077	0,003	2,6	500V FA 0,125 A 6.32 AL	B208197	MI6FAP50V0,125
		0,160		0,002	0,008	2,0	500V FA 0,160 A 6.32 AL	C208198	MI6FAP50V0,16
		0,200		0,0046	0,017	1,7	500V FA 0,200 A 6.32 AL	D208199	MI6FAP50V0,2
		0,250		0,009	0,035	1,55	500V FA 0,250 A 6.32 AL	E208200	MI6FAP50V0,25
		0,315		0,016	0,060	1,45	500V FA 0,315 A 6.32 AL	F208201	MI6FAP50V0,315
		0,400		0,03	0,11	1,40	500V FA 0,400 A 6.32 AL	G208202	MI6FAP50V0,4
		0,500		0,05	0,20	1,40	500V FA 0,500 A 6.32 AL	H208203	MI6FAP50V0,5
		0,630		0,12	0,45	1,15	500V FA 0,630 A 6.32 AL	J208204	MI6FAP50V0,63
		0,800		0,25	0,92	1,0	500V FA 0,800 A 6.32 AL	K208205	MI6FAP50V0,8
		1,000		0,11	0,30	0,71	500V FA 1,000 A 6.32 AL	N207104	MI6FAP50V1
		1,250		0,26	0,75	0,55	500V FA 1,250 A 6.32 AL	M208207	MI6FAP50V1,25
		1,600		0,39	1,1	0,65	500V FA 1,600 A 6.32 AL	N208208	MI6FAP50V1,6
		2,000		0,81	2,2	0,55	500V FA 2,000 A 6.32 AL	P208209	MI6FAP50V2
		2,500		1,44	4	0,52	500V FA 2,500 A 6.32 AL	Q208210	MI6FAP50V2,5
		3,150		2,46	7	0,53	500V FA 3,150 A 6.32 AL	R208211	MI6FAP50V3,15
		4,000		4,6	14	0,48	500V FA 4,000 A 6.32 AL	S208212	MI6FAP50V4
		5,000	20 kA cos φ ≥ 0,2	11	30	0,37	500V FA 5,000 A 6.32 AL	T208213	MI6FAP50V5
		6,300		1,1	20	0,22	500V FA 6,300 A 6.32 AL	C208037	MI6FAP50V6,3

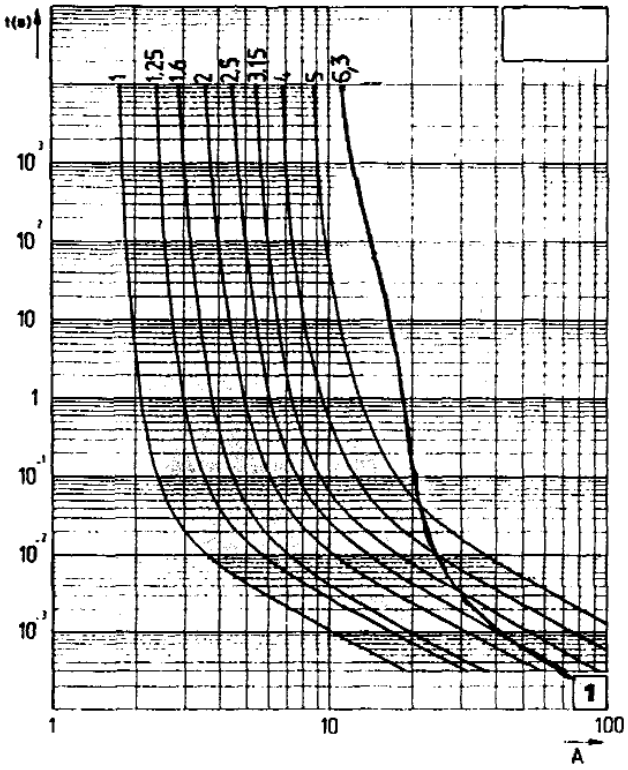
Axial leads
6x32
500V - FA "AL" Very Fast Acting

Time-current characteristics

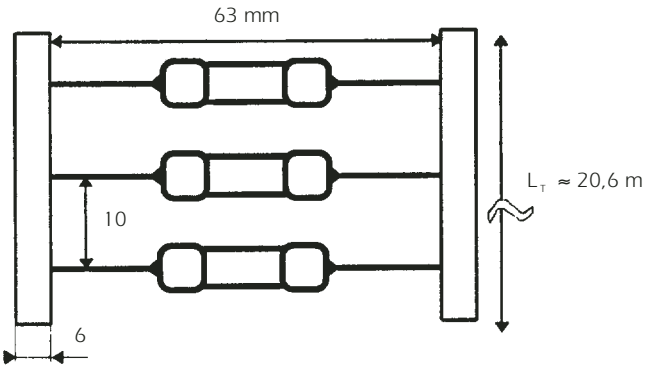
500V FA 6x32 AL

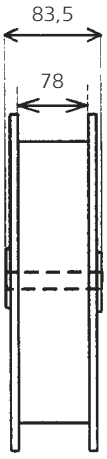


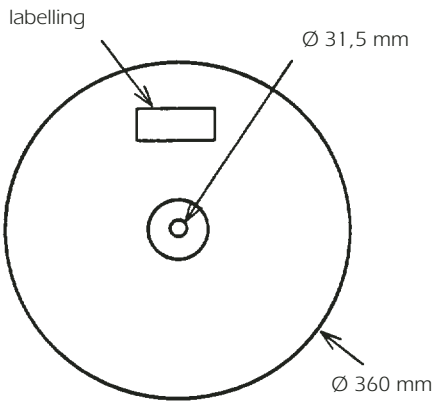
500V FA 6x32 AL



Packaging: in tape per 1500 pieces







Installation instruction

Soldering heat resistance : according IEC 68-2-20 / 260°C for 10 seconds.

Material:
Body: ceramic tube
Connection: Tin plated copper

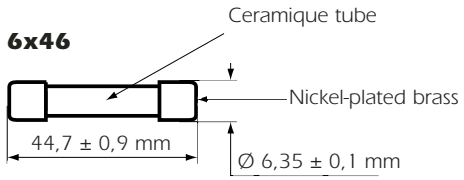
Very HRC Fuses
6x46
1000V - FA Very Fast Acting

Ferraz-Shawmut speciality

FROM 0,1 TO 1A

Approvals UL recognized E 76491
FERRAZ speciality

Dimensions



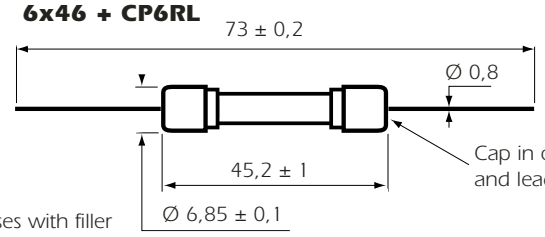


Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under Un	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation	6x46 References Number	Catalog Number
mm	VAC	A		A^2 s		V			
6,3 x 46	1 000	0.100	30 kA 1000 VAC cos φ ≥ 0,2	0.0002	0.001	6.5	1 000 V FA 0,100A 6 x 46	G076458	MI6FA100V0,1
		0.125		0.0006	0.003	4.4	1 000 V FA 0,125A 6 x 46	H076459	MI6FA100V0,125
		0.160		0.0014	0.006	3.6	1 000 V FA 0,160A 6 x 46	J076460	MI6FA100V0,16
		0.200		0.0022	0.01	3.5	1 000 V FA 0,200A 6 x 46	K076461	MI6FA100V0,2
		0.250		0.004	0.02	3.2	1 000 V FA 0,250A 6 x 46	L076462	MI6FA100V0,25
		0.315		0.008	0.04	2.9	1 000 V FA 0,315A 6 x 46	M076463	MI6FA100V0,315
		0.400		0.017	0.08	2.5	1 000 V FA 0,400A 6 x 46	N076464	MI6FA100V0,4
		0.500		0.036	0.16	2.2	1 000 V FA 0,500A 6 x 46	P076465	MI6FA100V0,5
		0.630		0.59	0.35	1.3	1 000 V FA 0,630A 6 x 46	Q076466	MI6FA100V0,63
		0.800		0.110	0.6	1.2	1 000 V FA 0,800A 6 x 46	R076467	MI6FA100V0,8
		1.000		0.230	1.25	1	1 000 V FA 1,000A 6 x 46	P075660	MI6FA100V1

Ratings lower than 0,1A : please enquire.

6x46 + CP6RL



Fuses with filler
Max weight : 2,5 g



Basic Characteristics

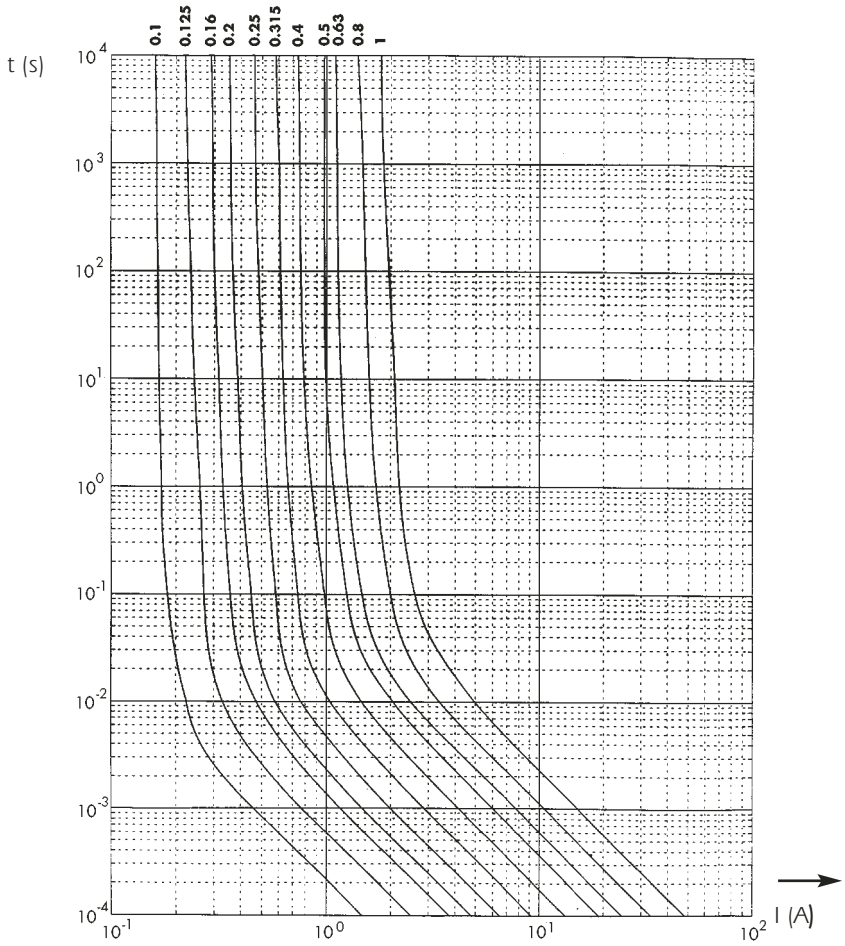
Size	Rated Voltage	Rated Current	Breaking Capacity under Un	[I²t] Pre-arcing	[I²t] Total clearing at Un	Max voltage drop at In	Designation 6x46 + CP6RL	Reference Number	Catalog Number
mm	VAC	A		A^2 s		V			
6,3 x 46	1 000	0.100	30 kA 1000 VAC cos φ ≥ 0,2	0.0002	0.001	6.5	1 000 V FA 0,100A 6 x 46	W209733	MI6FAP100V0,1
		0.125		0.0006	0.003	4.4	1 000 V FA 0,125A 6 x 46	X209734	MI6FAP100V0,125
		0.160		0.0014	0.006	3.6	1 000 V FA 0,160A 6 x 46	Y209735	MI6FAP100V0,16
		0.200		0.0022	0.01	3.5	1 000 V FA 0,200A 6 x 46	Z209736	MI6FAP100V0,2
		0.250		0.004	0.02	3.2	1 000 V FA 0,250A 6 x 46	A209737	MI6FAP100V0,25
		0.315		0.008	0.04	2.9	1 000 V FA 0,315A 6 x 46	B209738	MI6FAP100V0,315
		0.400		0.017	0.08	2.5	1 000 V FA 0,400A 6 x 46	C209739	MI6FAP100V0,4
		0.500		0.036	0.16	2.2	1 000 V FA 0,500A 6 x 46	D209740	MI6FAP100V0,5
		0.630		0.59	0.35	1.3	1 000 V FA 0,630A 6 x 46	E209741	MI6FAP100V0,63
		0.800		0.110	0.6	1.2	1 000 V FA 0,800A 6 x 46	F209742	MI6FAP100V0,8
		1.000		0.230	1.25	1	1 000 V FA 1,000A 6 x 46	V209617	MI6FAP100V1

Ratings lower than 0,1A : please enquire.

Very HRC Fuses
6x46
1000V - FA Very Fast Acting

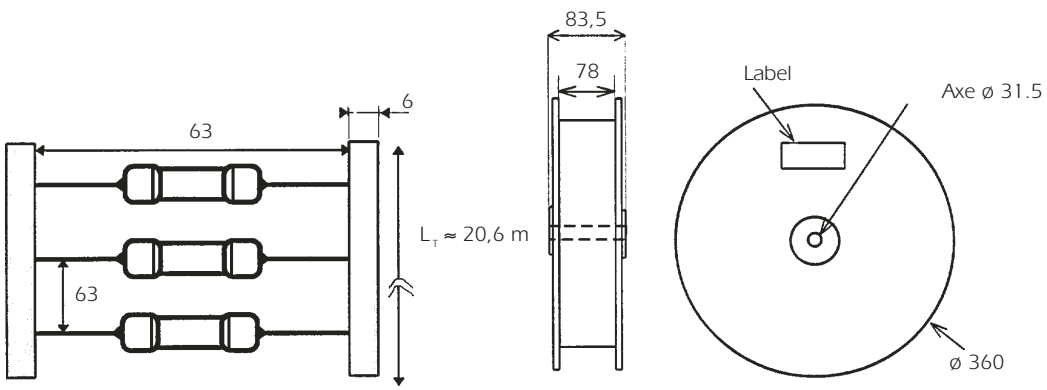
Time-current characteristics

1000V FA 6x46



Tolerance for the mean pre-arcing current ± 12%.
These curves indicate, for each rated current, the pre-arcing time vs. the R.M.S. pre-arcing current

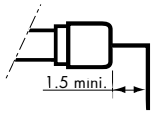
Packaging - Mounting: 6x46 plactic box 10 pieces (55x42x19). For a 500 pieces box packaging consult us.
6x46 + CP6RL in tape per 1500 pièces.



Installation instructions on PC board.

Soldering heat resistance :
according to IEC 68-2-20 / 260°C for 10 seconds.

Leads bending

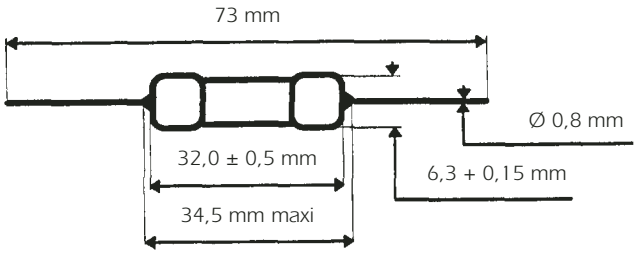


Axial leads
6x32
690V - FA "AL" Very Fast Acting

Approvals UL recognized E 76491

BETWEEN 0,1 TO 2 A

Dimensions



Max weight : 2,8 g



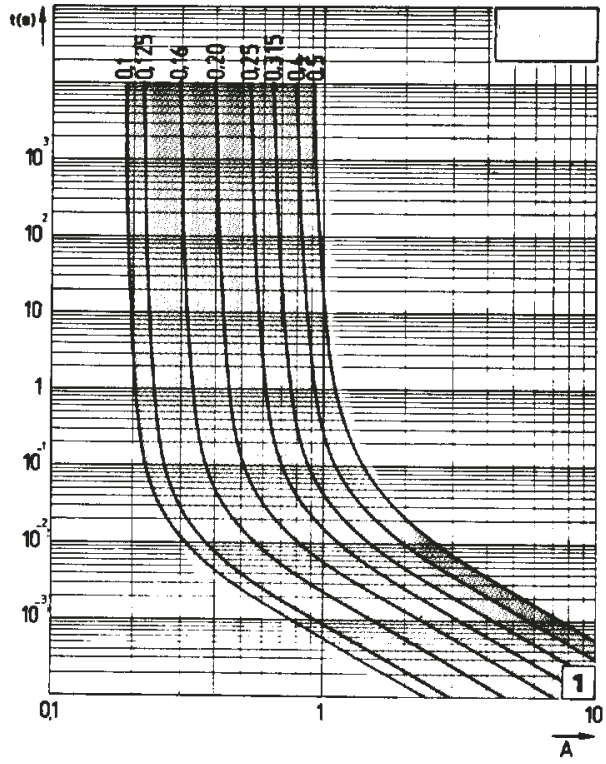
Basic Characteristics

Size	Rated Voltage	Rated Current	Breaking Capacity under 660 V AC	[I²t] Pre-arcing	[I²t] Total clearing at 660 V	Max voltage drop at In	Designation	Reference Number	Catalog Number
mm	VAC	A		A^2 s		V			
6,3 x 32	690	0,100	30 kA cos φ ≥ 0,2	0,00057	0,0037	2,75	690V FA 0,100 A 6.32 AL	V208214	MI6FAP69V0,1
		0,125		0,00077	0,005	2,6	690V FA 0,125 A 6.32 AL	W208215	MI6FAP69V0,125
		0,160		0,002	0,014	2,0	690V FA 0,160 A 6.32 AL	X208216	MI6FAP69V0,16
		0,200		0,0046	0,030	1,7	690V FA 0,200 A 6.32 AL	Y208217	MI6FAP69V0,2
		0,250		0,009	0,060	1,55	690V FA 0,250 A 6.32 AL	Z208218	MI6FAP69V0,25
		0,315		0,016	0,10	1,45	690V FA 0,315 A 6.32 AL	A208219	MI6FAP69V0,315
		0,400		0,03	0,20	1,40	690V FA 0,400 A 6.32 AL	B208220	MI6FAP69V0,4
		0,500		0,05	0,33	1,40	690V FA 0,500 A 6.32 AL	C208221	MI6FAP69V0,5
		0,630		0,12	0,8	1,15	690V FA 0,630 A 6.32 AL	D208222	MI6FAP69V0,63
		0,800		0,18	1,2	1,15	690V FA 0,800 A 6.32 AL	E208223	MI6FAP69V0,8
		1,000		0,11	0,48	0,75	690V FA 1,000 A 6.32 AL	F208224	MI6FAP69V1
		1,250		0,17	0,76	0,70	690V FA 1,250 A 6.32 AL	G208225	MI6FAP69V1,25
		1,600		0,39	1,7	0,65	690V FA 1,600 A 6.32 AL	Y206285	MI6FAP69V1,6
		2,000		0,81	3,5	0,55	690V FA 2,000 A 6.32 AL	D208038	MI6FAP69V2

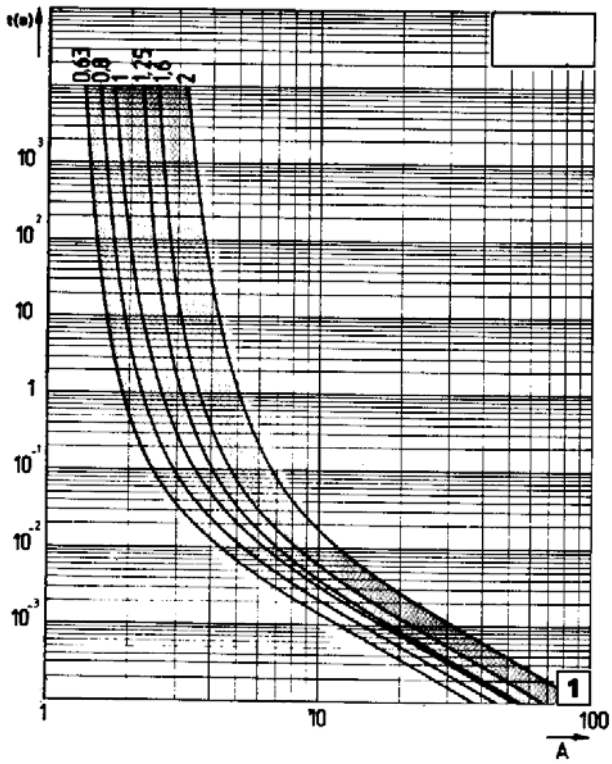
Axial leads
6x32
690V - FA "AL" Very Fast Acting

Time-current characteristics

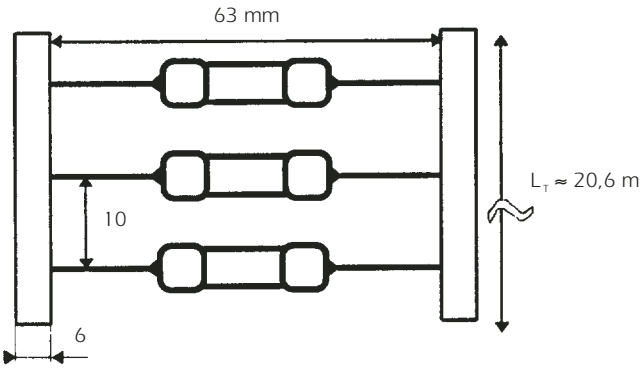
660V FA 6,3x32 AL

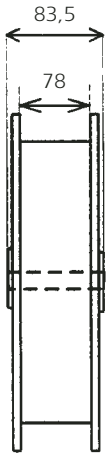


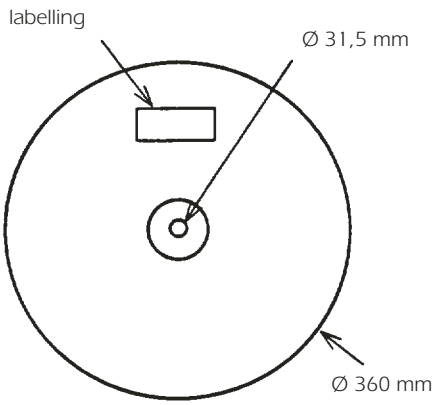
660V FA 6,3x32 AL



Packaging: in tape per 1500 pieces







Installation instruction

Soldering heat resistance : according IEC 68-2-20 / 260°C for 10 seconds.

Material:
Body: ceramic tube
Connection: Tin plated copper

American Round Fuses
Form 101 Range
A15QS



Semiconductor Protection Fuses

A15QS Amp-trap® Form 101 Semiconductor Protection fuses were designed for the specific protection of diodes and other semiconductor devices rated 150VAC/DC. The A15QS product line's compact design is perfect for those applications that have limitations on available space.

Features/Benefits

- Low I^2t minimizes damage to protected components on short circuit
- Controlled arc voltage reduces stress to circuit components during fuse clearing
- Choice of mounting types provides options for unique termination requirements

Ratings

- AC: 1-6000A 150VAC, 100kA I.R.
- DC: 1-6000A 150VDC, 100kA I.R.

Approvals

- UL Recognized Component
- AC: UL Guide No. JFHR2 (1-4000A)
- DC Tested to UL Standard 198L parameters (1-4000A)

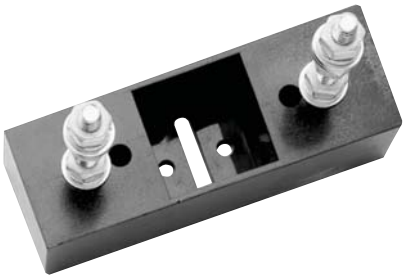
Highlights

- Fast Acting
- Current Limiting
- Low I^2t
- Indicator Options Available

Applications

- Protection of heavy duty devices such as electrochemical rectifiers

Single Pole Fuse Blocks for A15QS Fuses



Fuse Ampere Rating	Fuse block Catalog Number	Reference Number
1-30	30311	A212405
31-60	60306J	J211884
61-100	P243D	C219560
101-200	P243D	C219560
201-450	P243D	C219560
500-600	P243G	H222762

Catalog Numbering System

A 15 QS 400 - 4 TI

Amp-trap® Fuse — A

Rated Volts - 150 — 15

Style — QS

Amperes* — 400

Mounting Types*
- Ferrule — 1
- Ferrule, midget dims. (1-1/2" x 13/32") — 2
- Blades, bolt-in — 4
- Hockey puck, bolt-in — 128

Integral Blown-Fuse Indicator
- Trigger Indicator — TI
- Trigger Actuator — IL

** For ampere ratings and types not listed, consult the factory.*

American Round Fuses
Form 101 Range
A15QS

Semiconductor Protection Fuses

I²t Data-150VAC

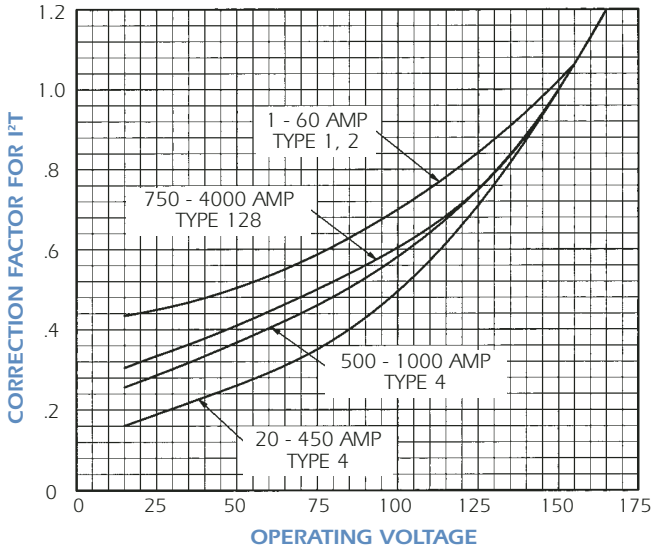
Ampere Rating	Melting (A²s X 10³) Body Style Type 2	Type 1	Type 4	Max Clearing I²t @ 150VAC (A²s X 10³)
1	0.0001			0.0002
2	0.0007			0.001
3	0.002			0.003
4	0.005			0.007
5	0.008			0.012
6	0.015			0.022
7	0.001			0.011
8	0.001			0.015
10	0.002			0.019
12	0.003			0.030
15	0.005			0.042
20	0.009			0.072
25	0.017			0.14
30	0.032			0.25
35		0.045		0.21
40		0.060		0.28
45		0.074		0.34
50		0.10		0.47
60		0.18		0.80
20			0.01	0.10
25			0.02	0.16
30			0.03	0.21
35			0.04	0.29
40			0.05	0.39
45			0.06	0.47
50			0.08	0.64
60			0.12	0.94
70			0.16	2.0
80			0.21	2.5
90			0.27	3.1
100			0.33	3.6

Ampere Rating	Melting (A²s X 10³) Body Style Type 4	Type 128	Max Clearing I²t @ 150VAC (A²s X 10³)
125	0.49		5.0
130	0.53		5.3
150	0.72		6.8
175	1.0		9.0
200	1.3		11
225	1.7		14
250	1.9		15
275	2.4		19
300	2.9		22
350	4.1		32
400	5.1		40
450	6.4		50
500	15		90
550	18		108
600	20		130
700	25		220
800	34		290
900	46		400
1000	58		520
750		40	300
800		46	340
1000		72	540
1200		90	680
1500		160	1200
1600		160	1200
1800		202	1500
2000		250	1900
2500		422	3200
3000		640	4800
3500		1200	6500
4000		1400	8500

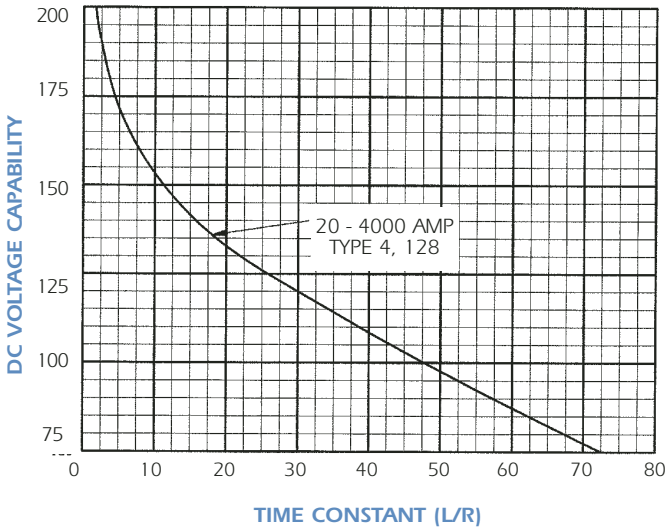
I²Data-150VDC ; L/R=10ms

Ampere Rating	Clearing I²t @ 150 VDC L/R =10ms (A²s X 10³) Type 4	Type 128
20	0.07	
25	0.11	
30	0.15	
35	0.20	
40	0.27	
45	0.33	
50	0.45	
60	0.66	
70	1.4	
80	1.8	
90	2.2	
100	2.5	
125	3.5	
130	3.7	
150	4.7	
175	6.3	
200	7.7	
225	9.8	
250	11	
275	13	
300	15	
350	22	
400	28	
450	35	
500	63	
550	76	
600	91	
700	150	
750		210
800	200	240
900	280	
1000	360	380
1200		470
1500		840
1600		840
1800		1000
2000		1300
2500		2200
3000		3400
3500		5200
4000		6800

Clearing I²t vs Working Voltage



DC Voltage vs Time Constant (L/R)



American Round Fuses
Form 101 Range
A15QS

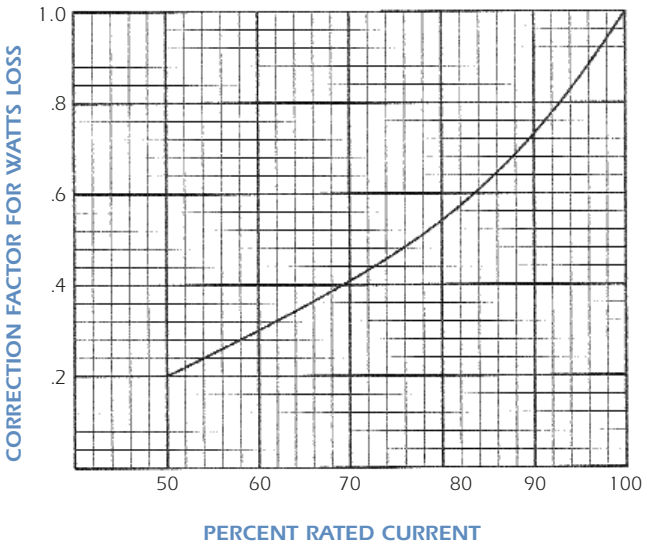
Semiconductor Protection Fuses

Watts Loss @ Rated Current

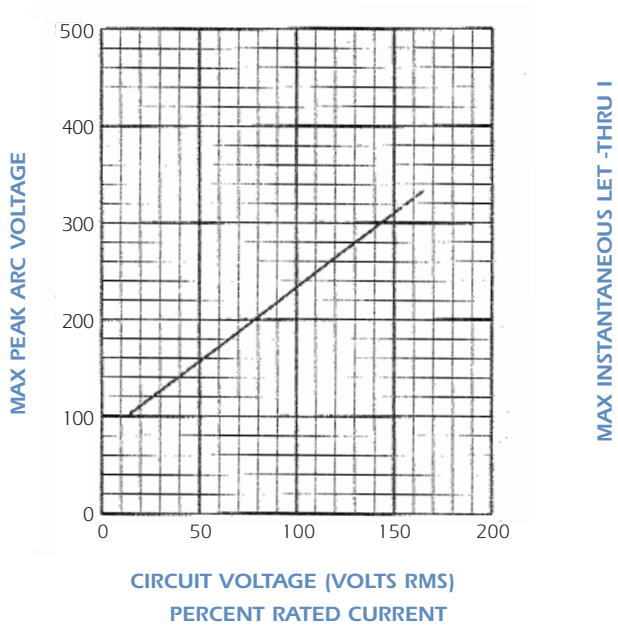
Ampere Rating	Watts Loss @ Rated Current (W)		
	Type 2	Type 1	Type 4
1	0.68		
2	1.3		
3	1.7		
4	2.1		
5	2.8		
6	3.1		
7	2.2		
8	2.5		
10	2.6		
12	3.0		
15	3.0		
20	4.0		
25	5.2		
30	5.6		
35		9	
40		10	
45		12	
50		13	
60		14	
20			1.5
25			2.0
30			2.2
35			2.6
40			3.1
45			3.4
50			4.0
60			4.7
70			5.6
80			8.0
90			9.0

Ampere Rating	Watts Loss @ Rated Current (W)	
	Type 4	Type 128
100	10	
125	13	
130	14	
150	16	
175	20	
200	22	
225	25	
250	27	
275	30	
300	33	
350	40	
400	45	
450	50	
500	30	
550	33	
600	35	
700	50	
750		66
800	57	71
900	67	
1000	75	88
1200		100
1500		130
1600		132
1800		149
2000		165
2500		195
3000		240
3500		260
4000		270

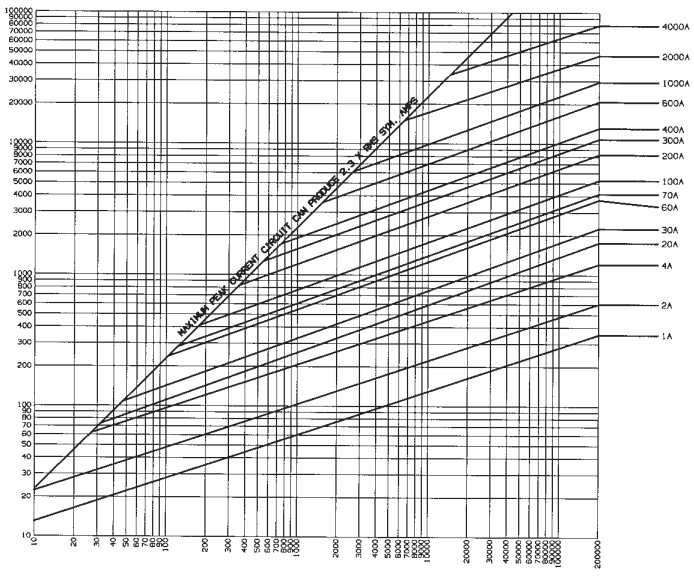
Watts Loss vs % Rated Current



Max ARC Voltage vs System Voltage



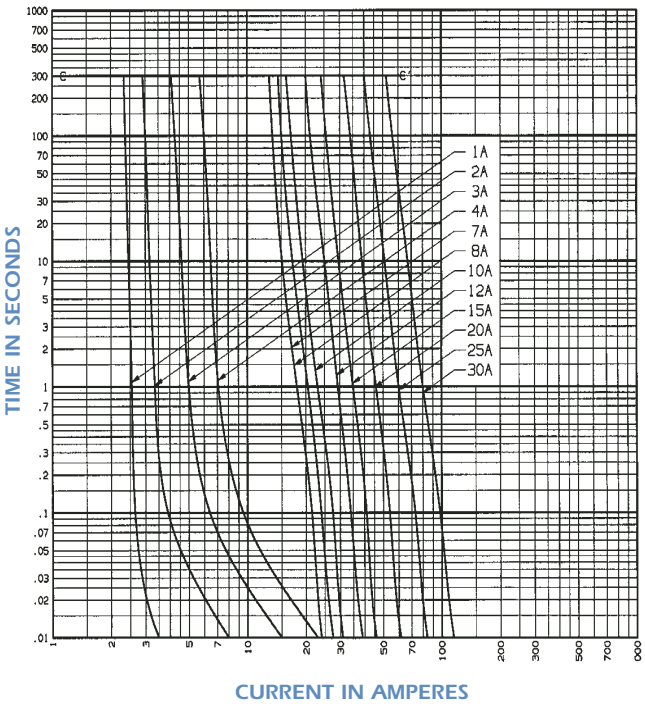
Peak Let Thru Data A15QS 1 to 4000



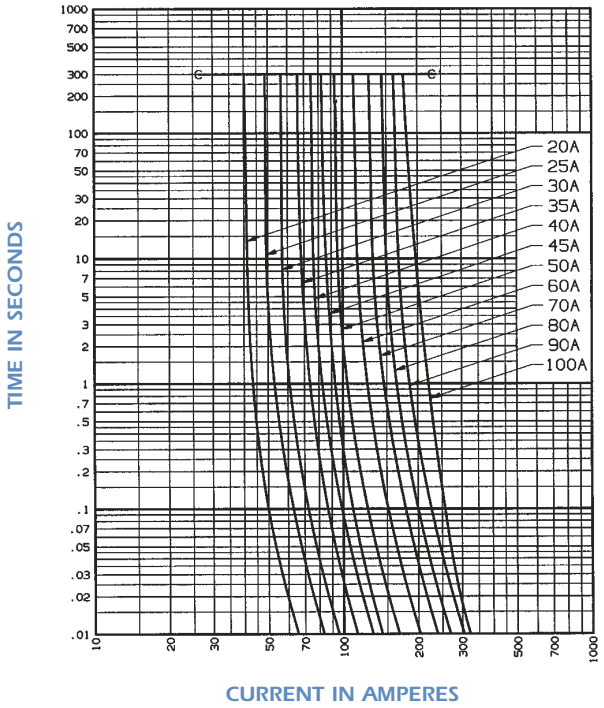
American Round Fuses
Form 101 Range
A15QS

Semiconductor Protection Fuses

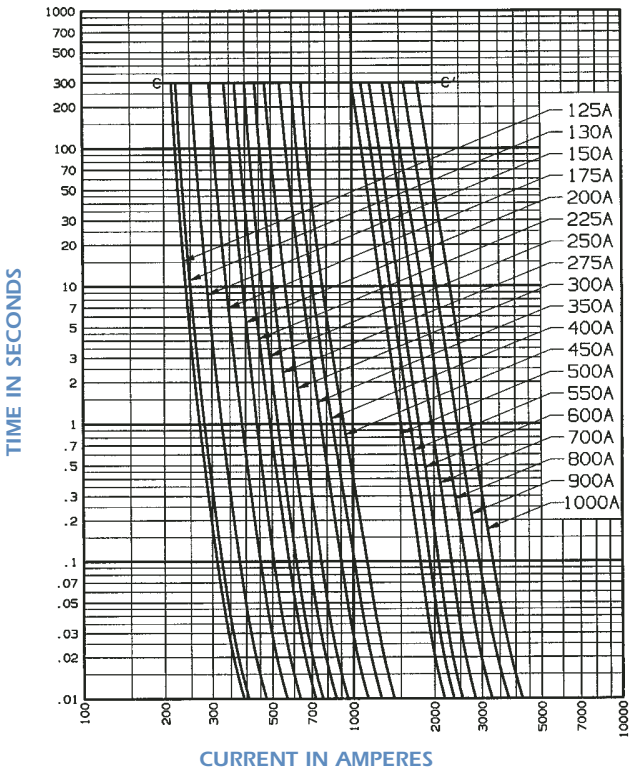
Melt Time - Current Data A15QS 1 to 30



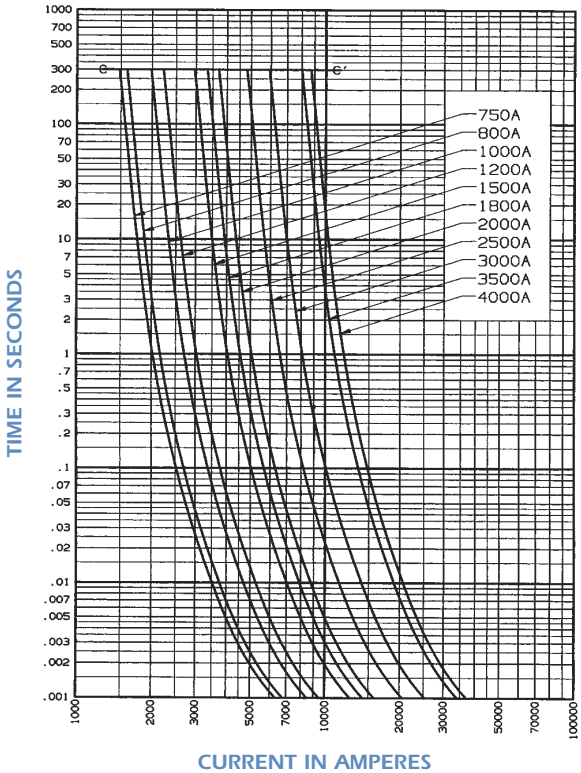
Melt Time - Current Data A15QS 20 to 100



Melt Time - Current Data A15QS 125 to 1000



Melt Time - Current Data A15QS 750 to 4000



American Round Fuses
Form 101 Range
A15QS

Semiconductor Protection Fuses
Standard Fuse Ampere Ratings, Catalog Numbers

Ampere Rating	Catalog Number	Ref Number	Outline Fig.	Ampere Rating	Catalog Number	Ref Number	Outline Fig.	Ampere Rating	Catalog Number	Ref Number	Outline Fig.
1	A15QS1-2	D230072J	1	90	A15QS90-4	F232282J	2	2500	A15QS2500-128	R232361A	6
2	A15QS2-2	E230073J	1	100	A15QS100-4	J232285J	2	3000	A15QS3000-128	T232363C	6
3	A15QS3-2	F230074J	1	125	A15QS125-4	M232288J	2	3500	A15QS3500-128	W232365A	6
4	A15QS4-2	G230075J	1	130	A15QS130-4	Q232291J	2	4000	A15QS4000-128	Y232367A	6
5	A15QS5-2	H230076J	1	150	A15QS150-4	T232294J	2	5000	A15QS5000-128	B232370A	6
6	A15QS6-2	J230077J	1	200	A15QS200-4	Z232299J	2	6000	A15QS6000-128	A232369A	6
7	A15QS7-2	K230078J	1	250	A15QS250-4	C232302J	2				
8	A15QS8-2	L230079J	1	300	A15QS300-4	D232303J	2				
10	A15QS10-2	N230081J	1	400	A15QS400-4	V232318J	2				
12	A15QS12-2	P230082J	1	450	A15QS450-4	Y232321J	2				
15	A15QS15-2	Q230083J	1	500	A15QS500-4	B232324E	2				
20	A15QS20-2	R230084J	1	600	A15QS600-4	H232330E	2				
25	A15QS25-2	S230085J	1	700	A15QS700-4	L232333E	2				
30	A15QS30-2	T230086J	1	800	A15QS800-4	R232338E	2				
35	A15QS35-1	V230087J	1	900	A15QS900-4	X232343E	2				
40	A15QS40-1	W230088J	1	1000	A15QS1000-4	A232346E	2				
45	A15QS45-1	X230089J	1	750	A15QS750-128	P232336A	6				
50	A15QS50-1	Y230090J	1	800	A15QS800-128	V232341A	6				
55	A15QS55-1	Z230091J	1	1000	A15QS51000-128	D232349A	6				
60	A15QS60-1	A230092J	1	1200	A15QS1200-128	F232351A	6				
70	A15QS70-4	Z230076J	2	1500	A15QS1500-128	H232353A	6				
80	A15QS80-4	C230079J	2	2000	A15QS2000-128	P232359A	6				

For Trigger Indicator (TI) and Trigger Actuator (IL) versions, please call us.

For Ampere Rating and styles not listed, call Technical Services

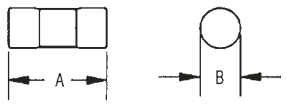


Figure 1

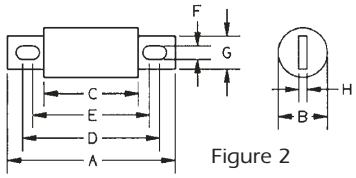


Figure 2

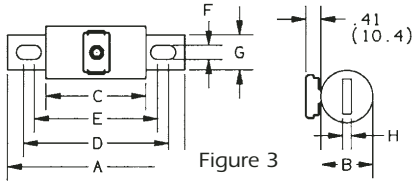


Figure 3

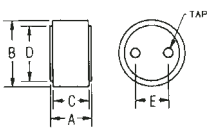


Figure 4

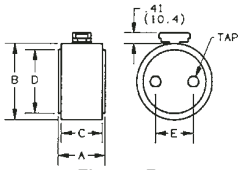


Figure 5

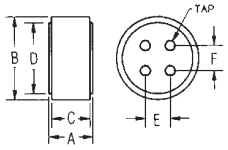


Figure 6

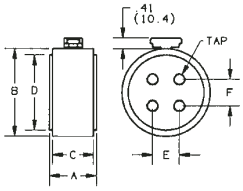


Figure 7

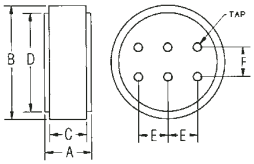


Figure 8

Dimensions

Outline Ref.	Mounting Type	Fig.	Dimensions - Inches (mm) A	B	C	D	E	F	G	H	Tap
A15QS1 to 30	2	1	1.50 (38.1)	.41 (10.4)	- -	- -	- -	- -	- -	- -	- -
A15QS35 to 60	1	1	2.00 (50.8)	.81 (20.6)	- -	- -	- -	- -	- -	- -	- -
A15QS70 to 450	4, 4TI*, 4IL*	2, 3*	2.66 (67.6)	1.13 (28.7)	1.16 (29.5)	2.19 (55.6)	1.91 (48.5)	.31 (7.9)	.74 (22.4)	.13 (4.8)	- -
A15QS500 to 1000	4, 4TI*, 4IL*	2, 3*	3.50 (88.9)	1.50 (38.1)	1.25 (31.8)	2.56 (65.0)	1.94 (49.3)	.41 (10.4)	1.00 (25.4)	.25 (6.4)	- -
A15QS750 to 2000	128, 128IL*	4, 5*	1.88 (47.8)	2.00 (50.8)	1.63 (41.4)	1.75 (44.5)	1.00 (25.4)	- -	- -	- -	3/8-24-1/2 Deep -
A15QS2500 to 3000	128, 128IL*	4, 5*	1.88 (47.88)	3.00 (76.2)	1.63 (41.4)	2.50 (63.5)	1.50 (38.1)	- -	- -	- -	1/2-20-1/2 Deep -
A15QS3500 to 4000	128, 128IL*	6, 7*	1.88 (47.88)	3.50 (88.9)	1.63 (41.4)	3.00 (76.2)	1.06 (27.0)	1.06 (27.0)	- -	- -	1/2-20-1/2 Deep -
A15QS5000 to 6000	128	8	2.38 (60.5)	5.75 (146)	1.88 (47.7)	5.00 (127)	1.50 (38.1)	1.50 (38.1)	- -	- -	1/2-20-1/2 Deep -

* Optional Trigger Actuator (IL)

American Round Fuses
Form 101 Range
A30QS



Semiconductor Protection Fuses

A30QS Amp-Trap® Semiconductor Protection fuses are intended for the protection of Power Semiconductors such as Diodes, Phase Control SCR's and other Power Semiconductor devices. The A30QS is recommended for new applications providing solutions for your critical protection needs at 300V and less semiconductors.

Features/Benefits

- Low I^2t minimizes damage to protected components on short circuit
- Controlled arc voltage reduces stress to circuit components during fuse clearing
- Choice of mounting types helps in equipment design

Ratings

- AC: 1-4500A 300VAC, 200kA I.R.
- DC: 300VDC, 100kA I.R. L/R= 10ms

c UL us

Approvals

- UL Recognized Component
- AC: UL Guide No. JFHR2 (35-4500A) CSA

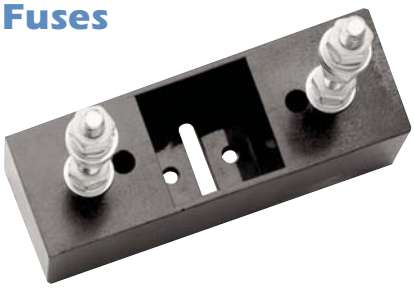
Highlights

- Fast Acting
- Current Limiting
- Low I^2t
- Indicator Options Available
- Superior DC Capabilities

Applications

- Protection of 300 volts (or less)heavy duty rectifiers and similar heavy duty power supplies

Single Pole Fuse Blocks for A30QS Fuses



Fuse Ampere Rating	Fuse block	
	Catalog Number	Reference Number
1-30	70316	B223308
31-60	P243G	H222762
61-100	P243	T218517
101-200	P243	T218517
201-400	P243G	H222762
401-700	P243G	H222762

Catalog Numbering System

A 30 QS 600 - 4 TI

Amp-trap® Fuse — A

Rated Volts - 300 — 30

Style — QS

Amperes* — 600

Mounting Types*
- Ferrule — 1
- Blades, bolt-in — 4
- Hockey puck, bolt-in — 128

Integral Blown-Fuse Indicator
- Trigger Indicator — TI
- Trigger Actuator — IL

* For ampere ratings and types not listed, call Technical services.

American Round Fuses
Form 101 Range
A30QS

Semiconductor Protection Fuses

Standard Fuse Ampere Ratings, Catalog Numbers

Ampere Rating	Catalog Number	Ref Number	Outline Fig.	Ampere Rating	Catalog Number	Ref Number	Outline Fig.	Ampere Rating	Catalog Number	Ref Number	Outline Fig.
1	A30QS1-1	A230000	1	125	A30QS125-4	L226905	3	1600	A30QS1600-128	W226914	6
2	A30QS2-1	B230001	1	130	A30QS130-4	N226907	3	1800	A30QS1800-128	N230265	6
3	A30QS3-1	C230002	1	150	A30QS150-4	Q226909	3	2000	A30QS2000-128	D226921	6
4	A30QS4-1	D230003	1	175	A30QS175-4	Y226916	3	2500	A30QS2500-128	L226928	6
5	A30QS5-1	E230004	1	200	A30QS200-4	A226918	3	3000	A30QS3000-128	Q226932	6
6	A30QS6-1	F230005	1	225	A30QS225-4	F226923	3	3500	A30QS3500-128	V226936	6
7	A30QS7-1	G230006	1	250	A30QS250-4	H226925	3	4000	A30QS4000-128	B226942	6
8	A30QS8-1	H230007	1	275	A30QS275-4	A230276	3	4500	A30QS4500-128	F226946	6
10	A30QS10-1	K230009	1	300	A30QS300-4	W226937	3	5000	A30QS5000-128	G226970	6
12	A30QS12-1	L230010	1	350	A30QS350-4	S226934	3				
15	A30QS15-1	M230011	1	400	A30QS400-4	Y226939	3				
20	A30QS20-1	N230012	1	450	A30QS450-4	N226953	3				
25	A30QS25-1	P230013	1	500	A30QS500-4	H226948	3				
30	A30QS30-1	Q230014	1	550	A30QS550-4	L226948	3				
35	A30QS35-4	R230015	2	600	A30QS600-4	D226944	3				
40	A30QS40-4	S230016	2	700	A30QS700-4	V226959	3				
50	A30QS50-4	T230017	2	800	A30QS800-4	C226966	3				
60	A30QS60-4	V230018	2	700	A30QS700-128	T226958	5				
70	A30QS70-4	R226956	3	800	A30QS800-128	A226964	5				
80	A30QS80-4	Y226962	3	1000	A30QS1000-128	G226901	5				
90	A30QS90-4	E226968	3	1200	A30QS1200-128	J226903	5				
100	A30QS100-4	D226898	3	1500	A30QS1500-128	T226912	6				

For Trigger Indicator (TI) and Trigger Actuator (TA) versions, please call us.

For Ampere Rating and styles not listed, call Technical Services

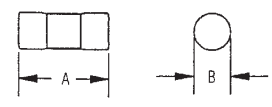


Figure 1

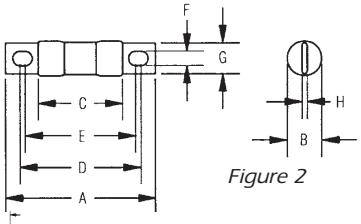


Figure 2

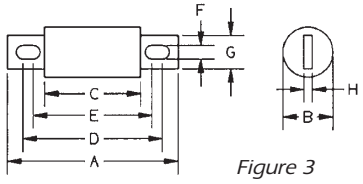


Figure 3

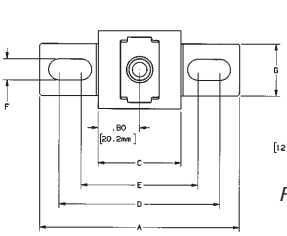


Figure 4

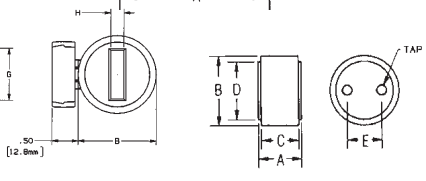


Figure 5

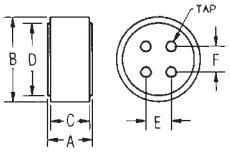


Figure 6

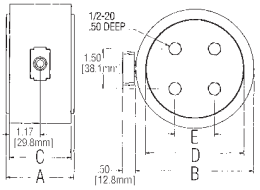


Figure 7

Dimensions

Outline Ref.	Mounting Type	Fig.	Dimensions - Inches (mm) A	B	C	D	E	F	G	H	Tap
A30QS1 to 30	1		2.00 (51)	0.56 (14)	- -	- -	- -	- -	- -	- -	- -
A30QS35 to 60	4	2	3.19 (81)	.081 (21)	1.63 (41)	2.50 (64)	2.25 (58)	0.34 (9)	.72 (18)	0.13 (3)	- -
A30QS70 to 800	4	3	3.13 (80)	1.22 (31)	1.63 (41)	2.44 (62)	2.31 (59)	0.31 (8)	1.00 (3)	0.19 (5)	- -
A30QS225 70 700	4, 4IL*	3,4*	3.84 (98)	1.50 (38)	1.59 (40)	2.91 (74)	2.28 (58)	0.41 (10)	1.00 (25)	0.25 (6)	- -
A30QS700 to 1200	128	5	2.59 (66)	3.00 (76)	2.34 (59)	2.50 (64)	1.50 (38)	- -	- -	- -	3/8-24-1/2 Deep (2) -
A30QS1500 to 2500	128, 128IL*	6, 7*	2.59 (66)	3.50 (89)	2.34 (59)	3.00 (76)	1.50 (38)	1.50 (38)	- -	- -	3/8-24-1/2 Deep (4) -
A30QS3000 to 4500	128, 128IL*	6, 7*	2.59 (66)	4.50 (114)	2.34 (59)	3.75 (95)	1.50 (38)	1.50 (38)	- -	- -	1/2-20-1/2 Deep (4) -

** Optional (IL) Actuator*

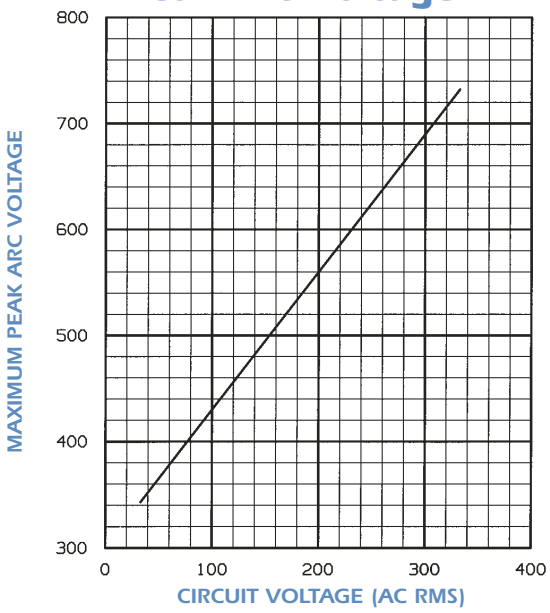
American Round Fuses
Form 101 Range
A30QS

I²t Data

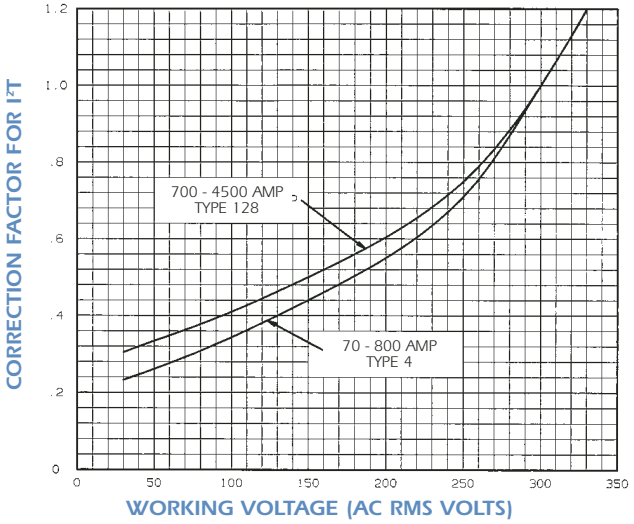
Ampere Rating	Melting I²t (A²s X 10³)	Max Clearing I²t @ 250VAC (A²s X 10³)	Max Clearing I²t @ 300VAC (A²s X 10³)
1	0.0001	0.0002	0.0003
2	0.0004	0.0009	0.001
3	0.001	0.0018	0.002
4	0.002	0.0035	0.004
5	0.004	0.007	0.008
6	0.001	0.007	0.010
7	0.001	0.007	0.010
8	0.002	0.010	0.013
10	0.003	0.013	0.018
12	0.004	0.018	0.025
15	0.006	0.032	0.045
20	0.009	0.053	0.075
25	0.017	0.09	0.13
30	0.027	0.15	0.21
35	0.09	0.61	0.90
40	0.13	0.83	1.2
45	0.15	1.0	1.5
50	0.21	1.4	2.0
60	0.29	1.9	2.7
70	0.24	1.2	1.6
80	0.42	1.9	2.6
90	0.53	2.3	3.2
100	0.74	3.0	4.1
125	1.2	4.6	6.3
130	1.2	4.6	6.3
150	1.9	6.8	9.3

Ampere Rating	Melting I²t (A²s X 10³)	Max Clearing I²t @ 250VAC (A²s X 10³)	Max Clearing I²t @ 300VAC (A²s X 10³)
175	2.1	7.6	10
200	3.0	11	15
225	3.6	16	22
250	4.4	19	25
275	5.6	23	31
300	6.9	27	37
350	12	45	62
400	16	61	83
450	25	95	130
500	30	120	160
550	36	140	190
600	47	170	230
700	50	190	260
800	67	240	330
900	83	290	380
1000	100	350	460
1200	200	680	880
1500	330	1100	1400
1600	390	1300	1690
1800	450	1500	2000
2000	590	2000	2600
2500	920	3100	4000
3000	1200	3600	4700
3500	1700	5000	6500
4000	2200	6600	8600
4500	2800	8400	11000

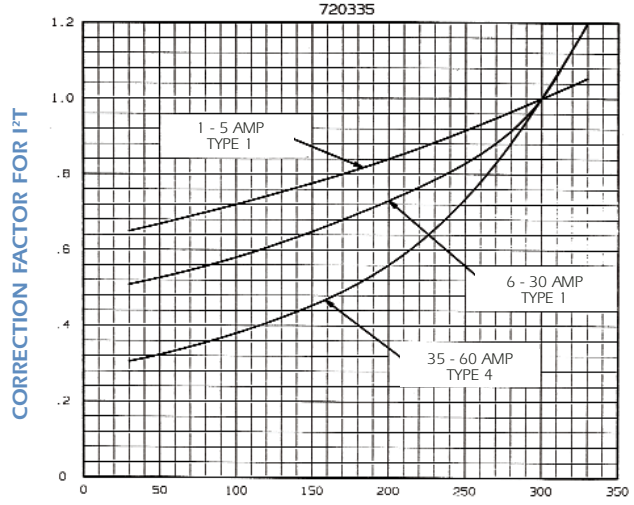
Peak Arc Voltage



I²t vs. Working Voltage



I²t vs. Working Voltage



American Round Fuses
Form 101 Range
A30QS

Semiconductor Protection Fuses

Watts Loss at Rated Current

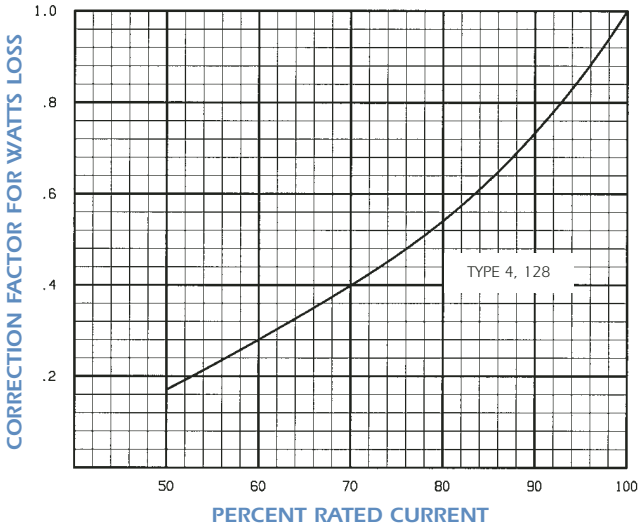
Ampere Rating	Watts Loss (W)	
	Type 1	Type 4
1	0.9	
2	1.0	
3	1.4	
4	1.7	
5	2.0	
6	2.3	
7	2.6	
8	3.0	
10	4.0	
12	4.9	
15	6.4	
20	8.8	
25	10.5	
30	12.4	
35		6.4
40		7.0
45		9.0
50		9.9
60		11.6
70		11
80		11
90		13
100		13
125		16
130		16
150		19

Ampere Rating	Watts Loss (W)	
	Type 4	Type 128
175	27	
200	30	
225	33	
250	41	
275	44	
300	47	
350	49	
400	56	
450	53	
500	59	
550	65	
600	69	
700	90	73
800	108	84
900		94
1000		105
1200		110
1500		140
1600		150
1800		170
2000		190
2500		230
3000		340
3500		380
4000		450
4500		500

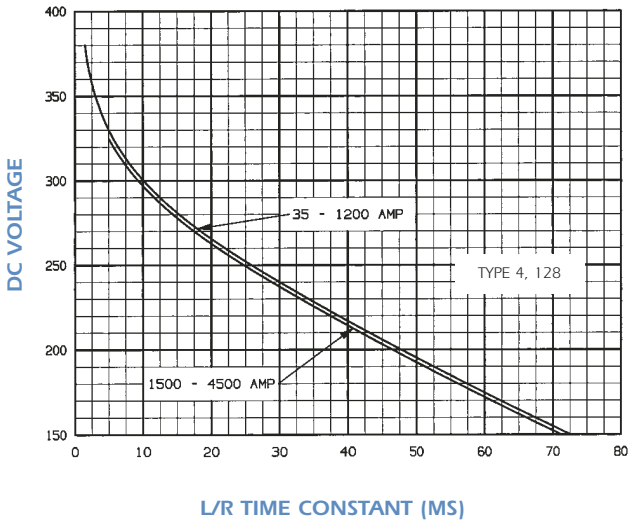
Clearing I²t at 300VDC, 100kA, L/R = 10ms

Ampere Rating	Clearing I²t (A²s X 10³)	Ampere Rating	Clearing I²t (A²s X 10³)
35	0.45	450	100
40	0.58	500	130
50	0.96	550	150
60	1.3	600	190
70	1.3	700	200
80	2.1	800	260
90	2.5	900	300
100	3.3	1000	360
125	5.0	1200	710
130	5.0	1500	1200
150	7.5	1600	1400
175	8.3	1800	1600
200	12	2000	2100
225	18	2500	3300
250	20	3000	4300
275	25	3500	5900
300	29	4000	7700
350	50	4500	9900
400	66		

Watts loss vs. Percent Rated Current



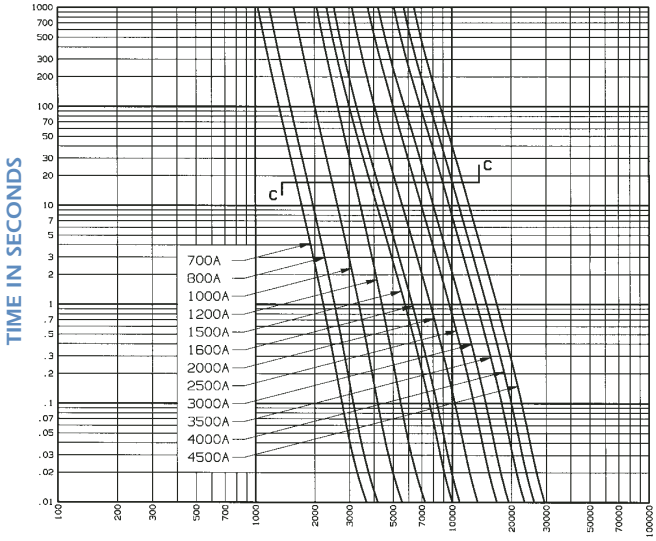
DC Voltage Capability vs. Circuit Time Constant (ms)



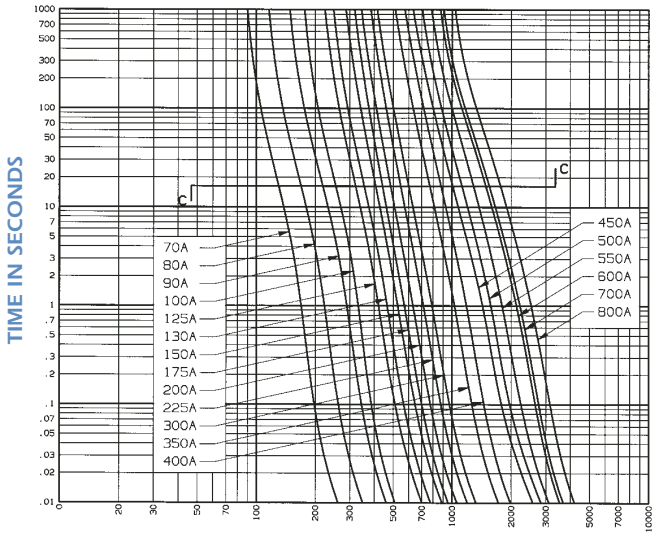
American Round Fuses
Form 101 Range
A30QS

Semiconductor Protection Fuses

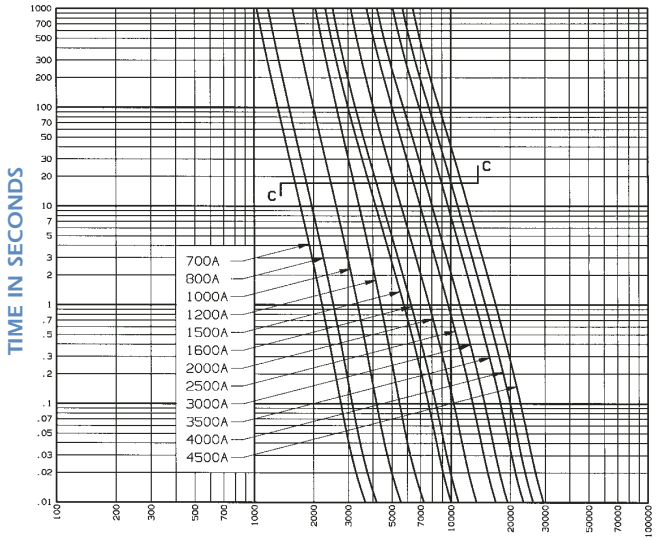
Melting Time - Current Data A30QS 1 to 60



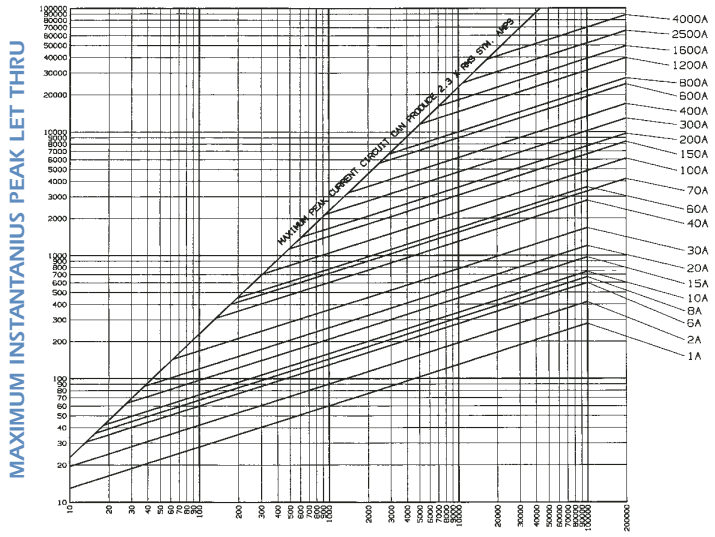
Melting Time - Current Data A30QS 70 to 800



Melting Time - Current Data A30QS 700 to 4500



Peak Let Thru Data



American Round Fuses
Form 101 Range
A50QS



Semiconductor Protection Fuses

A50QS Amp-trap® Form 101 fuses grew out of the need to improve the overall performance of semiconductor fuses in response to new equipment requirements. The A50QS encompasses the best protection features - lower I^2t to provide better protection for equipment, longer life when subjected to cyclic loading and lower watts loss. A50QS is today's best choice for the protection of dynamic solid state equipment such as motor drives, inverters, UPS, etc

Features/Benefits

- Lowest I^2t for greatest protection of semiconductor circuits
- low watt loss for cooler operation
- Superior cycling ability gives an equipment design advantage
- State of the art protection for 500 volt equipment
- ultra compact sizes allow down-sizing of existing equipment

Ratings

- AC: 35-60A
  500VAC, 200kA I.R.

70-1200A
500VAC, 200kA I.R.

- DC: 35-1200A
  500VDC, 100kA I.R.

Approvals

- UL Recognized Component
- AC: UL Guide No. JFHR2
- DC Tested to UL Standard 198L parameters (70-1200A)
- CSA Certified LR12636

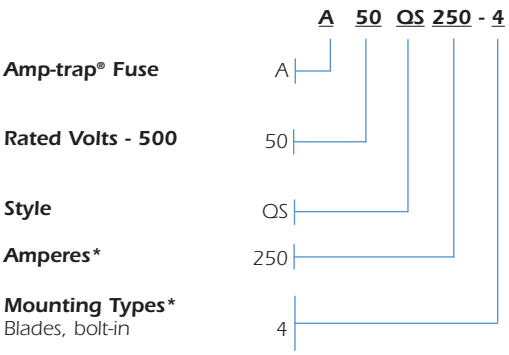
Highlights

- 500V AC/DC Rated
- Lowest I^2t
- Low Watts Loss
- Superior Cycling Ability

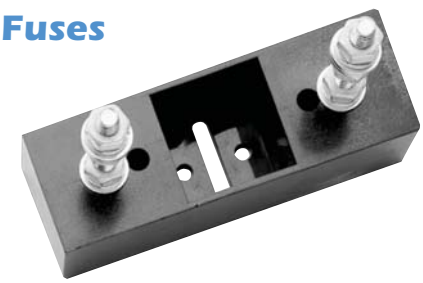
Applications

- Protection of 500V or less motor drives, UPS, inverters, etc.

Catalog Numbering System



Single Pole Fuse Blocks for A50QS Fuses



Fuse Ampere Rating	Mounting type	Fuse block	
		Catalog Number	Reference Number
35-200	4	P243E	X222016
225-600	4	P266C	K212897

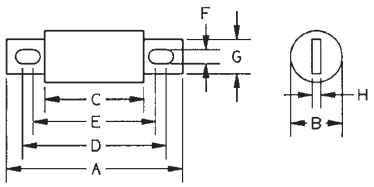
** For ampere ratings and types not listed, call Technical services.*

American Round Fuses
Form 101 Range
A50QS

Semiconductor Protection Fuses

Standard Fuse Ampere Ratings, Catalog Numbers

Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
35	A50QS35-4	Q214834	250	A50QS250-4	W211251
40	A50QS40-4	Y215853	300	A50QS300-4	D212799
50	A50QS50-4	W217392	350	A50QS350-4	T215343
60	A50QS60-4	A218937	400	A50QS400-4	B216362
70	A50QS70-4	B222664	450	A50QS450-4	E216871
80	A50QS80-4	L201513	500	A50QS500-4	L218418
90	A50QS90-4	X211252	600	A50QS600-4	Q219457
100	A50QS100-4	A216361	700	A50QS700-4	N223181
125	A50QS125-4	K218417	800	A50QS800-4	C202287
150	A50QS150-4	P219456	900	A50QS900-4	R212282
175	A50QS175-4	A222663	1000	A50QS1000-4	V217391
200	A50QS200-4	T200968	1200	A50QS1200-4	C217904
225	A50QS225-4	K201512			

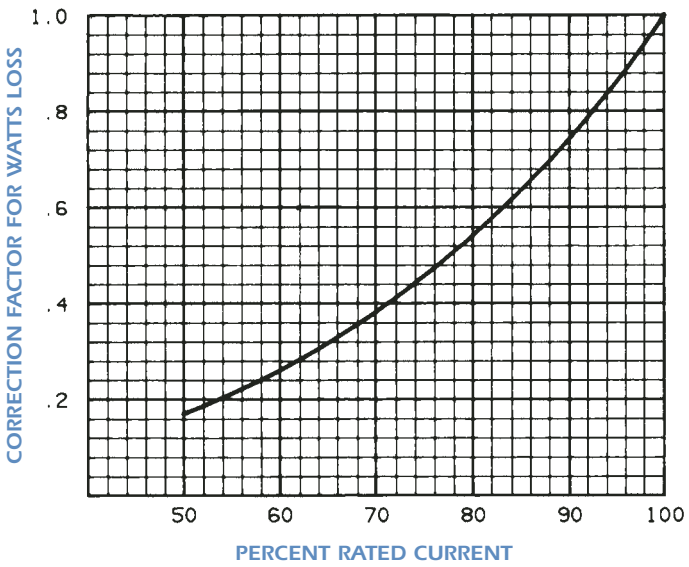


For ampere ratings and styles not listed, call Technical Services.

Dimensions

Catalog Number	Mounting Type	Dimensions - Inches (mm)							
		A	B	C	D	E	F	G	H
A50QS35 to 100	4	3.63 (92.2)	1.00 (25.4)	2.13 (54.1)	2.94 (74.7)	2.75 (69.9)	0.31 (7.9)	0.75 (19.1)	0.13 (3.3)
A50QS125 to 200	4	3.63 (92.2)	1.22 (31.0)	2.13 (54.1)	2.94 (74.7)	2.81 (71.4)	0.31 (7.9)	1.00 (25.4)	0.19 (4.8)
A50QS225 to 400	4	4.34 (110)	1.50 (38.1)	2.09 (53.1)	3.41 (86.6)	2.78 (70.6)	0.41 (10.4)	1.00 (25.4)	0.25 (6.4)
A50QS450 to 600	4	4.47 (114)	2.00 (50.8)	2.22 (56.4)	3.53 (89.7)	2.91 (73.9)	0.41 (10.4)	1.50 (38.1)	0.25 (6.4)
A50QS700 to 800	4	6.47 (164.3)	2.50 (63.5)	2.22 (56.4)	5.00 (127.0)	3.44 (87.3)	.53 (13.5)	1.50 (38.1)	.25 (6.4)
A50QS900 to 1200	4	6.97 (177.0)	3.00 (76.2)	3.22 (81.8)	5.47 (138.9)	4.47 (113.5)	.63 (15.9)	2.38 (60.3)	.44 (11.1)

Watts Loss vs. Percent Rated Current



Watts Loss at Rated Current

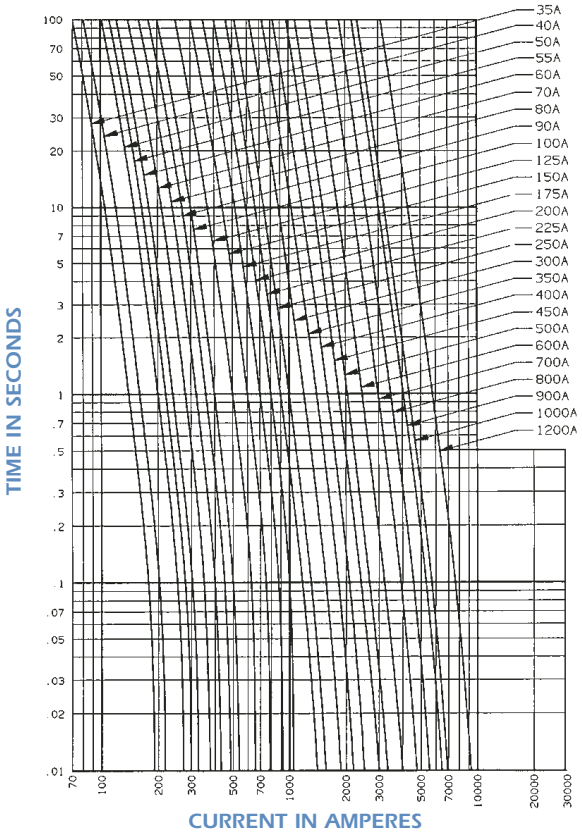
Ampere Rating	Watts Loss (W)	Ampere Rating	Watts Loss (W)
35	6	250	41
40	7	300	49
50	8	350	57
60	10	400	65
70	12	450	69
80	14	500	77
90	15	600	92
100	17	700	110
125	21	800	130
150	25	900	140
175	29	1000	160
200	33	1200	175
225	37		

Correction factor example:
At 80% rated current, watts loss equals .
54 times watts loss at rated current.

American Round Fuses
Form 101 Range
A50QS

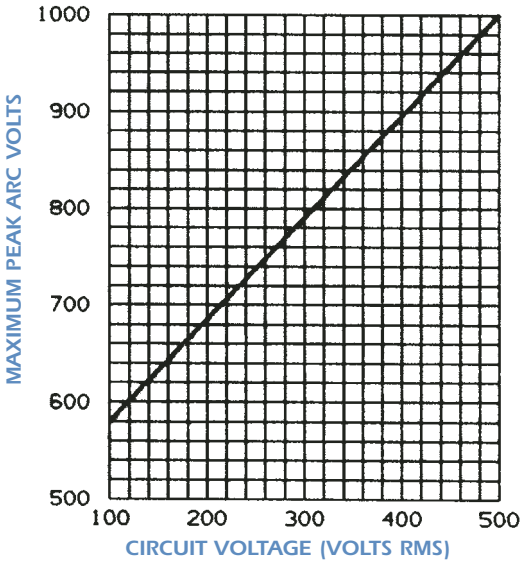
Semiconductor Protection Fuses

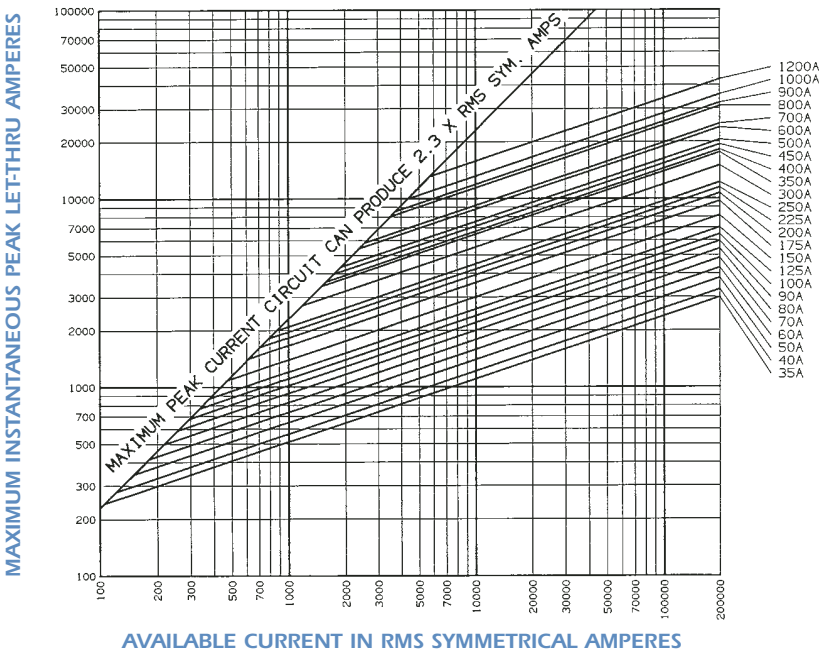
A50QS35 to 1200
Melting Time – Current Data, 500V Fuses



Peak Let-Thru Current Data – A50QS35 to 1200, 500 Volts AC

Maximum Arc Volts vs. System Voltage





American Round Fuses
Form 101 Range
A50QS

Semiconductor Protection Fuses

I²t Data – 500 Volts AC

Fuse Ampere Rating	Melting I²t (A²s X 10³)	I²t data	
		Max Clearing I²t @ 500 VAC	
		1 fuse (fig A) (A²s X 10³)	2 Fuses in series (A²s X 10³)(fig B)
35	.09	.56	.34
40	.11	.69	.4
50	.18	1.1	.68
60	.25	1.6	.94
70	.31	1.9	1.1
80	.43	2.6	1.5
90	.57	3.6	2.1
100	.74	4.4	2.7
125	.94	5.6	3.4
150	1.5	9	5.4
175	2.5	15	9
200	3.3	20	12
225	4.1	25	15
250	4.9	29	18
300	9.2	55	33
350	15	88	53
400	16	98	59
450	21	130	76
500	26	160	94
600	37	220	130
700	53	270	160
800	72	360	220
900	98	500	300
1000	112	560	330
1200	200	930	550

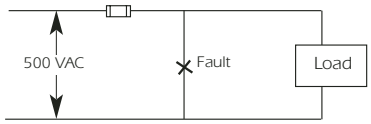


Fig. A

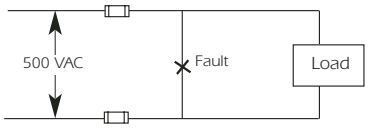
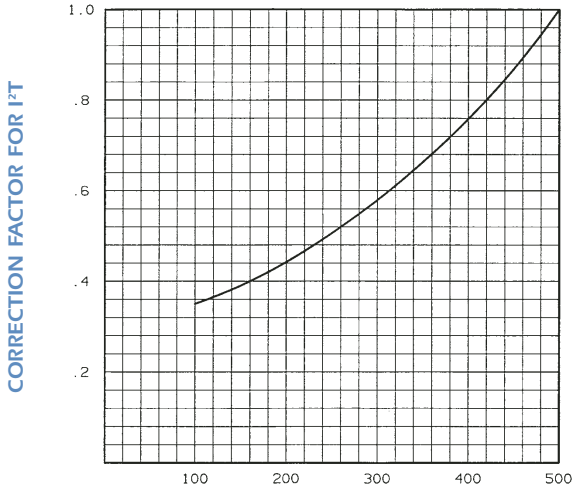


Fig. B

Clearing I²t vs. AC Operating Voltage

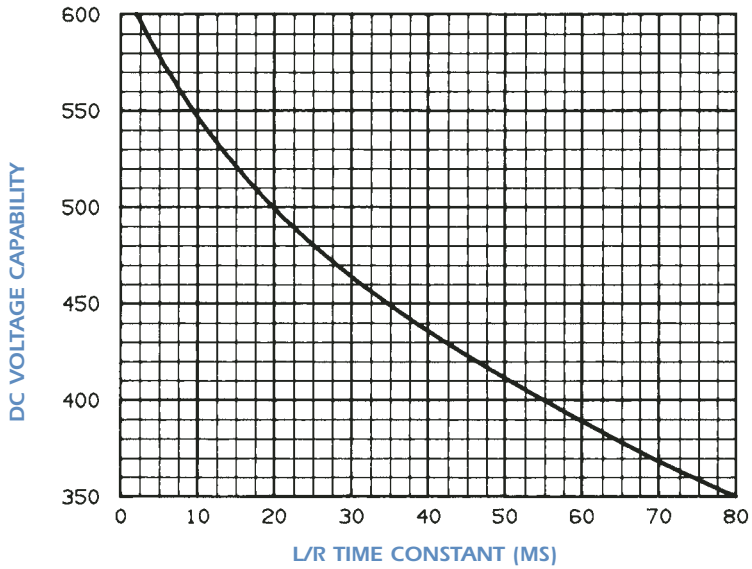


Clearing I²t at 500V DC, 100kA, L/R = 10 ms

Ampere Rating	Clearing I²t (A²s X 10³)	Ampere Rating	Clearing I²t (A²s X 10³)
35	.48	250	25
40	.58	300	47
50	1.0	350	75
60	1.3	400	83
70	1.6	450	110
80	2.2	500	130
90	3.0	600	190
100	3.8	700	220
125	4.8	800	260
150	7.7	900	350
175	13	1000	430
200	17	1200	660

DC Application: A50QS Fuses have been designed for both AC and DC operation. A50QS fuses (70-600) have UL Component Recognition at 500V DC and have been tested to circuit parameters as defined in Standard 198L.

DC Voltage Capability vs. Time Constant



American Round Fuses
Form 101 Range
A50P



Semiconductor Protection Fuses

A50P Amp-trap® Form 101 Semiconductor Protection fuses were developed for DC drives, uninterruptable power supplies and similar applications requiring better protection (lower I^2t) and superior reliability. The A50P is typically used for replacement.

Features/Benefits

- Low I^2t minimizes damage to protected components on short circuit
- Controlled arc voltage reduces stress to circuit components during fuse clearing
- Choice of mounting types provides helps in equipment design

Ratings

- AC: 10-1200A 500VAC, 100kA I.R.
- DC: 35-1000A 450VDC,79kA I.R. L/R = 10ms

Approvals

- UL Recognized Component
- AC: UL Guide No. JFHR2 (10-800A)
- DC : UL Guide No.JFHR2 (35-800A)

Highlights

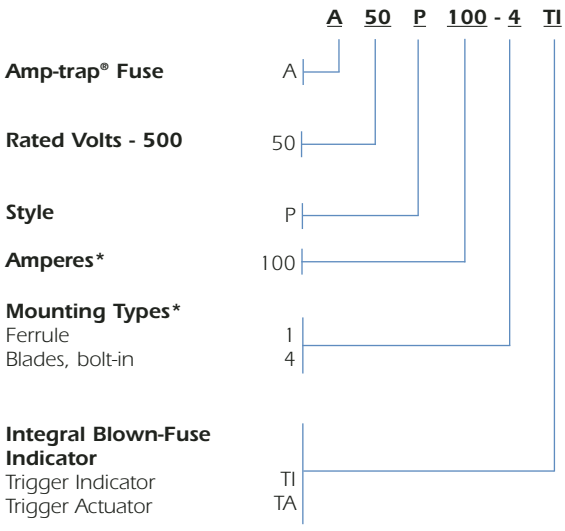
- Very Fast Acting
- Current Limiting
- Lowest I^2t
- Indicator Options Available

Applications

- Protection of DC drives, UPS and other equipment of 500 volts or less

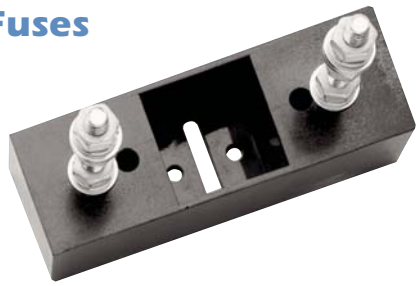
* Contact technical services for applications data.

Catalog Numbering System



* For ampere ratings and types not listed, consult the factory.

Single Pole Fuse Blocks for A50P Fuses



Fuse Ampere Rating	Mounting type	Fuse block	
		Catalog Number	Reference Number
10-30	1	70306	W219071
35-60	4	P243G	H222762
70-200	4	P243E	X222016
225-600	4	P266C	K212897

American Round Fuses
Form 101 Range
A50P

Semiconductor Protection Fuses
Standard Fuse Ampere Ratings, Catalog Numbers

Ampere Rating	Catalog Number	Ref Number	Outline Fig.
10	A50P10-1	C216869	1
15	A50P15-1	B217903	1
20	A50P20-1	Y218935	1
25	A50P25-1	G219978	1
30	A50P30-1	Z222662	1
35	A50P35-4	W202281	2
40	A50P40-4	E211765	2
50	A50P50-4	C212798	2
60	A50P60-4	P214833	2

For ampere ratings from 70 to 1200 see A50QS series

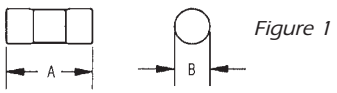


Figure 1

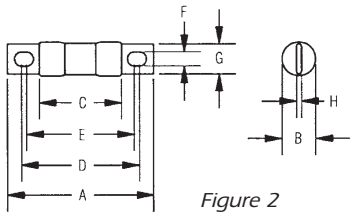


Figure 2

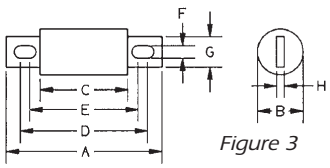


Figure 3

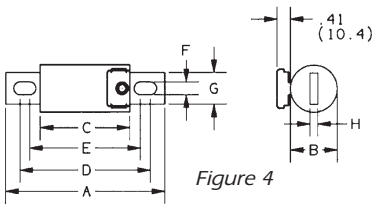


Figure 4

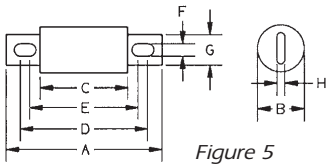


Figure 5

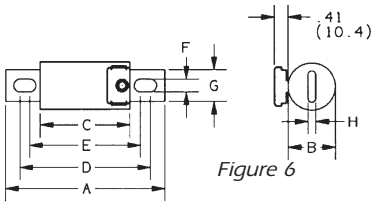


Figure 6

Dimensions

Catalog Number	Mounting Type	Fig.	Dimensions - Inches (mm)							
			A	B	C	D	E	F	G	H
A50P10 to 30	1	1	2.00 (50.8)	0.56 (14.2)	- -	- -	- -	- -	- -	- -
A50P35 to 60	1DS*	1	2.25 (57.2)	0.81 (20.6)	- -	- -	- -	- -	- -	- -
A50P35 to 60	4	2	3.19 (81.0)	0.81 (20.6)	1.63 (41.4)	2.50 (63.5)	2.25 (57.2)	0.34 8.6)	0.72 (18.3)	0.13 (3.3)
A50P70 to 100	4	3	3.63 (92.2)	1.00 (25.4)	2.13 (54.1)	2.94 (74.7)	2.81 (71.4)	0.31 (7.9)	0.75 (19.1)	0.13 (3.3)
A50P125 to 200	4, 4TA**	3, 4**	3.63 (92.2)	1.22 (31.0)	2.13 (54.1)	2.94 (74.7)	2.81 (71.4)	0.31 (7.9)	1.00 (25.4)	0.19 (4.8)
A50P225 to 400	4, 4TA**	3, 4**	4.34 (110)	1.50 (38.1)	2.09 (53.1)	3.41 (86.6)	2.78 (70.6)	0.41 (10.4)	1.00 (25.4)	0.25 (6.4)
A50P450 to 600	4, 4TA**	3, 4**	4.47 (114)	2.00 (50.8)	2.22 (56.4)	3.53 (89.7)	2.91 (73.9)	0.41 (10.4)	1.50 (38.1)	0.25 (6.4)
A50P700 to 800	4, 4TA**	5, 6**	6.47 (164)	2.50 (63.5)	2.22 (56.4)	4.63 (118)	4.31 (109)	0.53 (13.5)	2.00 (50.8)	0.38 (9.7)
A50P900 to 1200	4	3	6.97 (177)	3.00 (76.2)	3.22 (81.8)	4.97 (126)	*** ***	0.63 (16.0)	2.38 (60.5)	0.44 (11.1)

* *Use with 60306J fuse block.*
** *Optional Trigger Actuator (TA)*
*** *Mounting hole is round, diameter F.*

American Round Fuses
Form 101 Range
A60Q



Semiconductor Protection Fuses

A60Q Amp-trap® Form 101 Semiconductor Protection fuses feature the only 600 volt AC/DC rating in the industry of similar size (1-1/2" x 13/32") fuses protecting semiconductors. A60Q also has the lowest I^2t of all similar fuses and excellent cycling ability. Applications include inverters and small equipment requiring extremely fast response to faults, without the need to carry sustained heavy overloads.

Features/Benefits

- Lowest I^2t of any fuse this size for greater protection
- Excellent cycling ability gives advantage in equipment design
- 600V AC/DC rated

Ratings

- AC: 5-40A 600VAC, 200kA I.R.
- DC: 5-40A 600VDC,100kA I.R. L/R = 10ms

Approvals

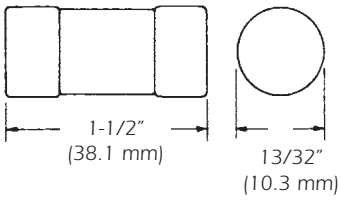
- UL Recognized Component
- AC: UL Guide JFHR2 File E60314
- DC : UL File E60314

Highlights

- 600VAC/DC Rated
- Extremely Fast Acting
- Current Limiting
- Lowest I^2t
- Excellent Cycling Ability

Applications

- Protection of small inverters and drives, and equipment requiring the highest degree of protection



Catalog Numbering System

A 60 Q 30 - 2

Amp-trap® Fuse	A
Rated Volts - 600	60
Style	Q
Amperes*	30
Mounting Types* Ferrule, midget dims. (1-1/2" X 13/32") (10,3 X 38 mm)	2

Fuse holders for A60Q fuses

USM Series .Ultrasafe™ Fuse Holders
303 Series .Midget Fuse Blocks

American Round Fuses
Form 101 Range
A60Q

Semiconductor Protection Fuses

I²t at 600VDC, 100kA, L/R = 10 ms

Ampere Rating	Clearing I²t (A²s)
5	40
8	42
10	70
12	90
15	110
20	200
25	260
30	520
35	780
40	1100

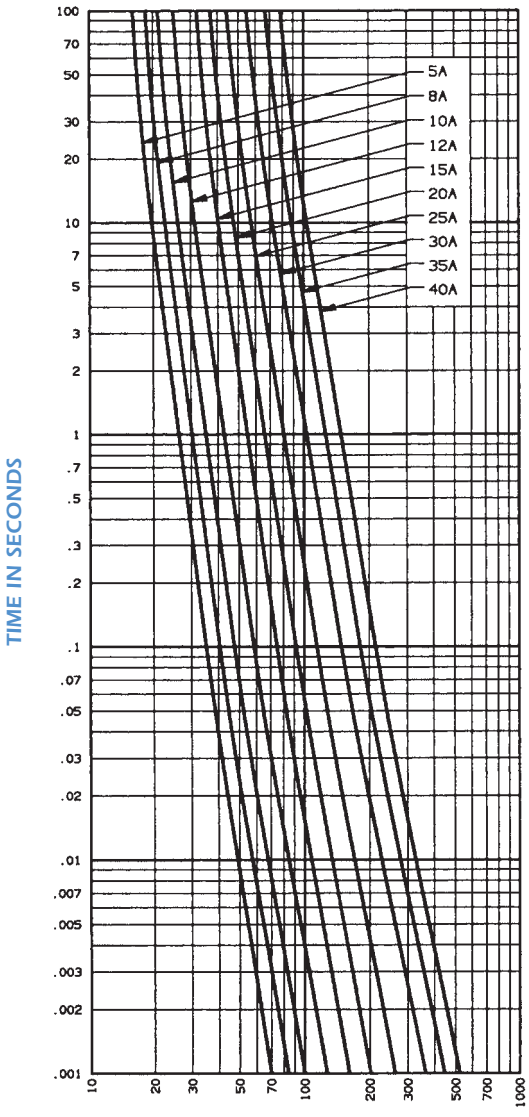
I²t at 600VAC, 100kA

Ampere Rating	Melting I²t (A²s)	Clearing I²t (A²s)
5	5	60
8	6.5	70
10	10	110
12	17	150
15	26	180
20	41	330
25	69	440
30	132	860
35	197	1300
40	276	1800

Watts Loss Data

Ampere Rating	Watts Loss @ 80% Rating (W)	Watts Loss @ 100%Rating (W)
5	0.5	0.7
8	0.7	1.1
10	0.9	1.5
12	1.3	2.0
15	1.9	3.0
20	2.6	4.4
25	2.9	5.3
30	3.0	5.8
35	3.3	6.4
40	3.6	7.0

5 to 40A Melting Time – Current Data, 600V Fuses

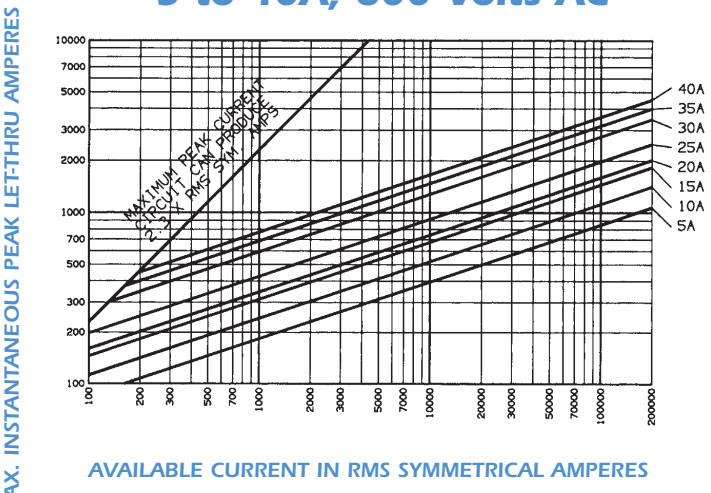


Standard Fuse Ampere ratings, catalog and reference Numbers

Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
5	A60Q5-2	E217400	20	A60Q20-2	B214338
6	A60Q6-2	E217913	25	A60Q25-2	Z214842
8	A60Q8-2	T218425	30	A60Q30-2	E215859
10	A60Q10-2	Z212289	35	A60Q35-2	J216369
12	A60Q12-2	M212807	40	A60Q40-2	E218879
15	A60Q15-2	X213322			

For ampere ratings and styles not listed, ask sales agent

Peak Let-Thru Current Data – 5 to 40A, 600 Volts AC



American Round Fuses
Form 101 Range
A60X



Semiconductor Protection Fuses

A60X Amp-trap® Form 101 Semiconductor Protection fuses are popular for the protection of higher voltage heavy rectifiers such as traction rectifiers. They can carry long sustained overloads common with heavy duty apparatus. 700A through 2000A sizes are of compact, hockey-puck design, able to provide high power protection in a small space.

Features/Benefits

- Low I^2t minimizes damage to protected components on short circuit
- Controlled arc voltage reduces stress to circuit components during fuse clearing
- Choice of mounting types helps in equipment design

Ratings

- AC: 1-2000A 600V, 100kA I.R.

Approvals

- UL Recognized Component
- AC: UL Guide No.JFHR2 (35-800A)

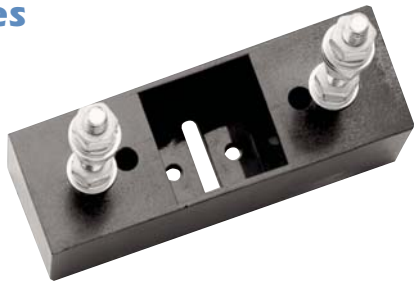
Highlights

- Fast Acting
- Current Limiting
- Low I^2t
- Indicator Options Available

Applications

- Protection of heavy traction and electro chemical as well as rectifiers and other heavy-duty equipment

Single Pole Fuse Blocks for A60X Fuses



Fuse Ampere Rating	Fuse block	
	Catalog Number	Reference Number
1-30	60306	V211871
31-60	P243C	M219040
61-100	P243C	M219040
101-200	P243C	M219040
201-400	P266A	Y212380
401-600	P266A	Y212380

Catalog Numbering System

A 60 X 600 - 4 TI

Amp-trap® Fuse	A
Rated Volts - 600	60
Style	X
Amperes*	600
Mounting Types*	
Ferrule	1
Blades, bolt-in	4
Hockey puck,bolt-in	128
Integral Blown-Fuse Indicator	
Trigger Indicator	TI
Trigger Actuator	TA

* For ampere ratings and types not listed, consult the factory.

American Round Fuses
Form 101 Range
A60X

Semiconductor Protection Fuses

Standard Fuse Ampere Ratings, Catalog Numbers

Ampere Rating	Catalog Number	Ref Number	Outline Fig.	Ampere Rating	Catalog Number	Ref Number	Outline Fig.	Ampere Rating	Catalog Number	Ref Number	Outline Fig.
1	A60X1-1	R201518	1	70	A60X70-4	Y214335	3	400	A60X400-4	B215856	3
2	A60X2-1	Y212288	1	80	A60X80-4	B217397	3	400	A60X400-4TA	A217396	4
3	A60X3-1	P213821	1	80	A60X80-4TA	Q218422	4	450	A60X450-4	P218421	3
4	A60X4-1	A215349	1	90	A60X90-4	Q201517	3	450	A60X450-4TA	V219461	4
5	A60X5-1	L217912	1	100	A60X100-4	D202288	3	500	A60X500-4	E222667	3
6	A60X6-1	Q219986	1	100	A60X100-4TA	G211767	4	500	A60X500-4TA	P201516	4
7	A60X7-1	C200976	1	125	A60X125-4	S214836	3	600	A60X600-4	K211770	3
8	A60X8-1	S201519	1	125	A60X125-4TA	D216364	4	600	A60X600-4TA	J212804	4
10	A60X10-1	D202633	1	150	A60X150-4	G216873	3	700	A60X700-4	G216367	5
12	A60X12-1	D211258	1	150	A60X150-4TA	N218420	4	700	A60X700-128	C215857	7
15	A60X15-1	M211772	1	175	A60X175-4	Q223183	3	800	A60X800-4	T223186	5
20	A60X20-1	L212806	1	200	A60X200-4	H211768	3	800	A60X800-4TA	A200974	6
25	A60X25-1	W213321	1	200	A60X200-4TA	G212802	4	800	A60X800-128	F218942	7
30	A60X30-1	A214337	1	225	A60X225-4	T214837	3	1000	A60X1000-128	S212283	8
35	A60X35-4	Y214841	2	250	A60X250-4	Z217395	3	1200	A60X1200-128	Q213316	8
40	A60X40-4	M216878	2	250	A60X250-4TA	D218940	4	1500	A60X1500-128	C218939	8
45	A60X45-4	D217399	2	300	A60X300-4	N201515	3	1600	A60X1600-128	L219982	8
50	A60X50-4	S218424	2	300	A60X300-4TA	V212285	4	1800	A60X1800-128	Z211254	8
55	A60X55-4	Y219464	2	350	A60X350-4	X214334	3	2000	A60X2000-128	K213817	8
60	A60X60-4	G222669	2	350	A60X350-4TA	X215346	4				

For ampere ratings and styles not listed, call Technical Services.

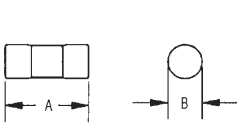


Figure 1

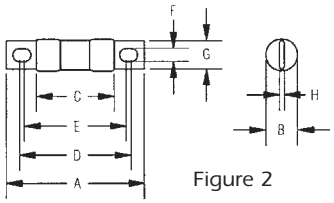


Figure 2

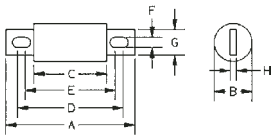


Figure 3

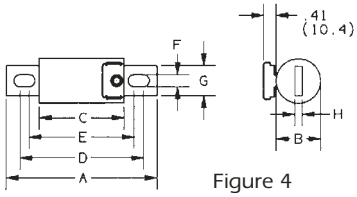


Figure 4

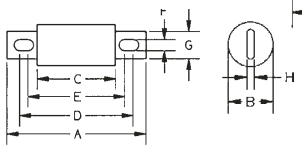


Figure 5

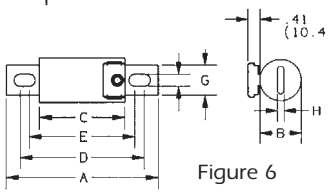


Figure 6

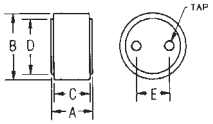


Figure 7

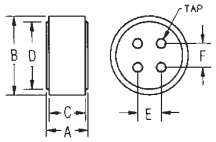


Figure 8

Dimensions

Outline Rerence.	Mounting Type	Fig.	Dimensions - Inches (mm)								Tap
			A	B	C	D	E	F	G	H	
A60X1 to 30	1	1	5.00 (127)	.81 (20.6)	- -	- -	- -	- -	- -	– -	-
A60X35 to 60	4	2	4.38 (111)	.81 (20.6)	2.78 (70.6)	3.69 (93.7)	3.44 (87.4)	.34 (8.6)	.72 (18.3)	.13 (3.3)	- -
A60X70 to 100	4, 4TI*, 4TA	3, 4*	4.41 (112)	1.00 (25.4)	2.91 (73.9)	3.72 (94.5)	3.59 (91.2)	.31 (7.9)	.75 (19.1)	.13 (3.3)	- -
A60X125 to 200	4, 4TI*, 4TA	3, 4*	4.41 (112)	1.22 (31.0)	2.91 (73.9)	3.72 (94.5)	3.59 (91.2)	.31 (7.9)	1.00 (25.4)	.19 (4.8)	- -
A60X225 to 400	4, 4TI*, 4TA	3, 4*	5.13 (130)	1.50 (38.1)	2.88 (73.2)	4.19 (106)	3.56 (90.4)	.41 (10.4)	1.00 (25.4)	.25 (6.4)	- -
A60X450 to 600	4, 4TI*, 4TA	3, 4*	5.13 (130)	2.00 (50.8)	2.88 (73.2)	4.06 (103)	3.69 (93.7)	.41 (10.4)	1.50 (38.1)	.25 (6.4)	- -
A60X700 to 800	4, 4TA*	5, 6*	7.25 (184)	2.50 (63.5)	3.00 (76.2)	5.94 (151)	4.56 (116)	.53 (13.5)	2.00 (50.8)	.38 (9.7)	- -
A60X700 to 800	128	7	4.00 (102)	3.00 (76.2)	3.75 (95.3)	2.50 (63.5)	1.50 (38.1)	- -	- -	- -	3/8-24-1/2 Deep -
A60X1000 to 1200	128	8	4.00 (102)	3.50 (88.9)	3.75 (95.3)	3.00 (76.2)	1.50 (38.1)	1.50 (38.1)	- -	- -	3/8-24-1/2 Deep -
A60X1500 to 2000	128	8	4.00 (102)	4.50 (114)	3.75 (95.3)	3.75 (95.3)	1.50 (38.1)	1.50 (38.1)	- -	- -	3/8-20-1/2 Deep -

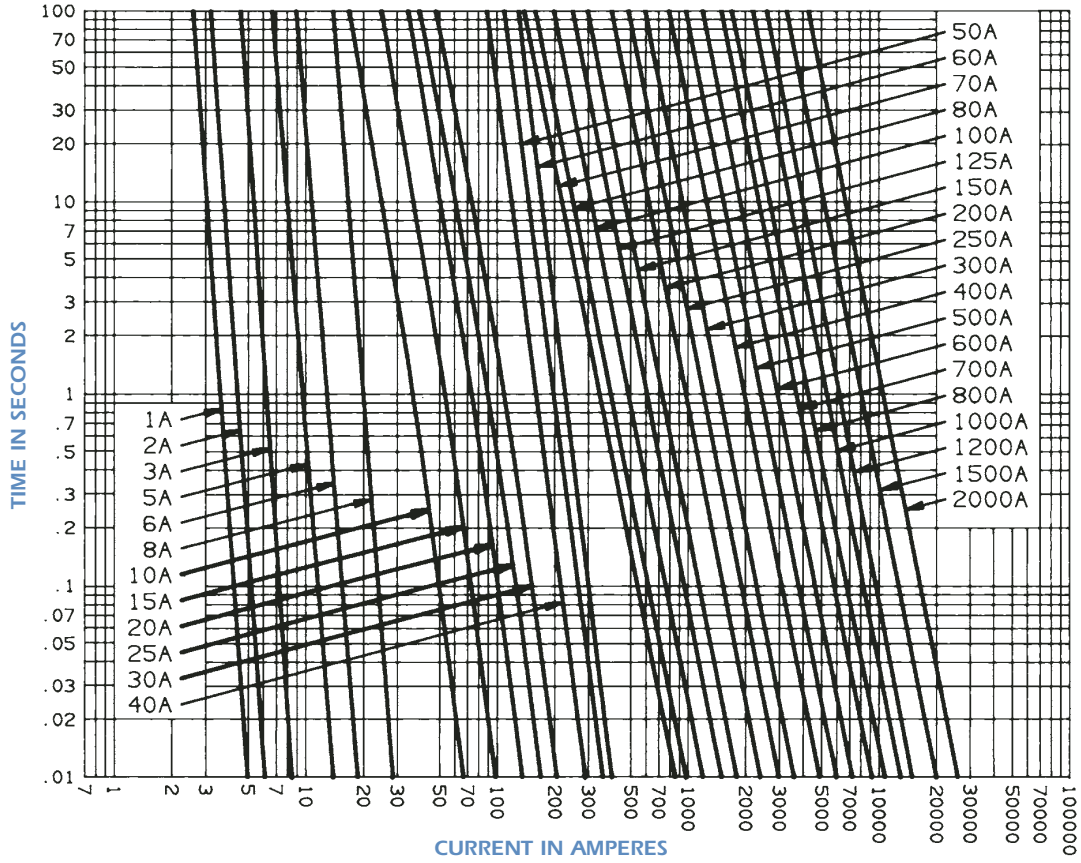
* Optional Trigger Actuator (TA)

American Round Fuses
Form 101 Range
A60X

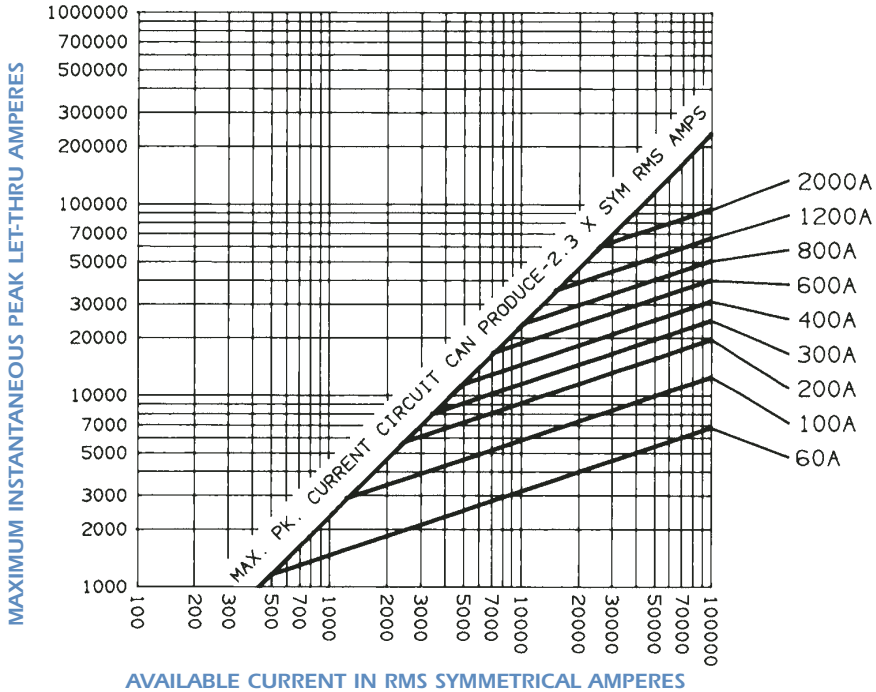
Semiconductor Protection Fuses

A60X1 to 2000

Melting Time – Current Data, 600V Fuses



Peak Let-Thru Current Data – A60X60 to 2000, 600 Volts AC



American Round Fuses
Form 101 Range
A60X

Semiconductor Protection Fuses

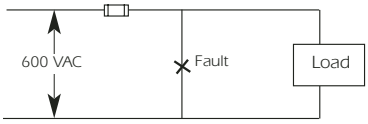


Fig. A

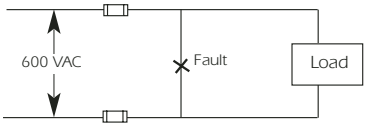


Fig. B

I²t Data – 600 Volts AC, 100kA

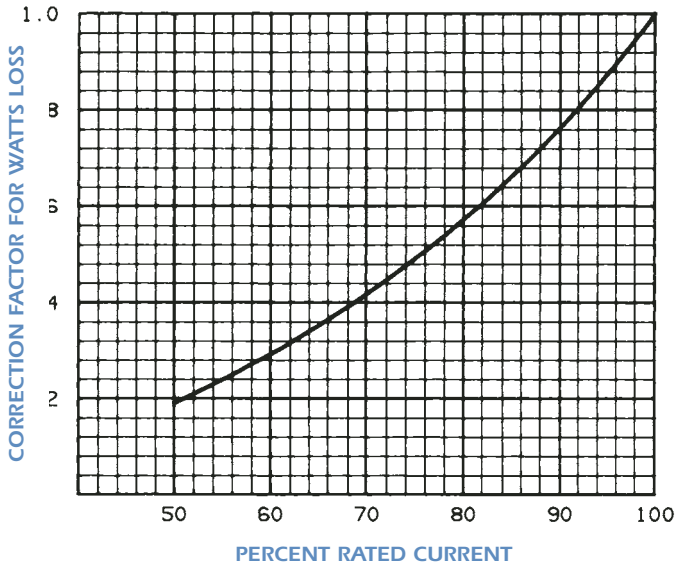
Fuse Ampere Rating	Melting (A²s)	I²t data Clearing at 600V	
		1 Fuse (Fig. A) (A²s)	2 Fuses in series(Fig. B) (A²s)
1	.06	.11	.09
2	.22	.45	.36
3	.50	1.0	.80
4	.90	1.8	1.4
5	1.4	2.8	2.2
6	2.0	4.0	3.2
7	2.7	5.4	4.3
8	3.6	7.1	5.7
10	16	40	30
12	22	64	48
15	35	100	70
20	60	170	130
25	95	275	210
30	140	400	290
35	270	1,800	1,200
40	350	2,400	1,600
45	450	3,000	2,000
50	550	3,600	2,400
60	800	5,400	3,600
70	4,000	13,000	9,800
80	5,300	17,000	13,000
90	6,700	22,000	16,000
100	8,300	27,000	20,000
125	13,000	42,000	31,000
150	19,000	60,000	45,000
175	25,000	80,000	61,000
200	33,000	110,000	80,000
225	42,000	140,000	100,000
250	52,000	170,000	125,000
300	75,000	240,000	180,000
350	100,000	340,000	240,000
400	130,000	490,000	320,000
450	170,000	620,000	400,000
500	210,000	770,000	500,000
600	300,000	1,100,000	720,000
700	430,000	1,700,000	1,000,000
800	560,000	2,250,000	1,400,000
1000	875,000	3,500,000	2,200,000
1200	1,250,000	5,000,000	3,100,000
1500	2,000,000	7,900,000	4,900,000
1600	2,200,000	9,000,000	5,600,000
1800	2,800,000	11,000,000	7,100,000
2000	3,500,000	14,000,000	8,900,000

Watts Loss @ Rated Current

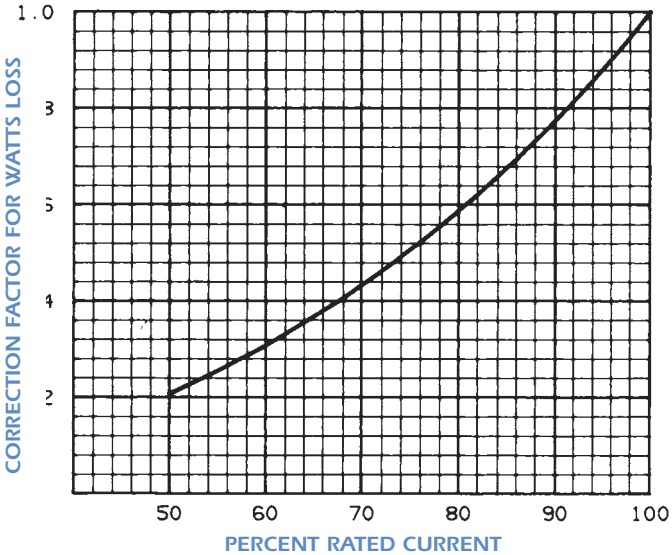
Ampere Rating	Watts Loss (W)	Ampere Rating	Watts Loss (W)	Ampere Rating	Watts Loss (W)
10	3.8	100	11	700*	57
15	4.5	125	12	700**	52
20	4.0	150	14	800*	67
25	7.3	175	16	800**	59
30	8.7	200	19	1000	72
35	5.2	225	21	1200	86
40	6.3	300	29	1500	107
50	7.4	350	35	1600	117
60	9.1	400	37	1800	133
70	7.6	450	42	2000	148
80	8.9	500	47	2500	183
90	9.7	600	56		

*Type 4 **Type 128

Watts Loss vs. % Rated Current (Types 1 & 4)



Watts Loss vs. % Rated Current (Type 128)



American Round Fuses
Form 101 Range
A70QS



French Cylindrical Semiconductor Protection Fuses

These Premium Amp-trap® French Cylindrical Semiconductor Fuses are an extension of the popular A7OQS product line. They are solid-fill 14mm and 22mm fuses, IEC rated 690VAC, 200kA Interrupting and 700VDC, 100kA interrupting at 10ms time constant. In addition, these fuses have an 890 VDC rating for capacitor discharge applications up to 2.5ms time constant. All ampere ratings are available with a striker. Applications include small inverter drives and UPS systems, with superior I^2t for improved protection and performance.

Features/Benefits

- International 14x51mm (2"x9/16") and 22x58mm (2-1/4"x13/16") sizes for worldwide acceptance
- Ferrule mount up to 100A for design versatility
- Very low I^2t for improved semiconductor protection
- 690V IEC rated, tested at 760VAC; can be used up to 750VAC in U.S.
- 700VDC rated for dc protection of equipment with L/R ≤10ms/c
- Superior cycling ability for longer life on difficult cyclic loading applications
- aR characteristic for semiconductor short- circuit protection

Ratings

- AC: 10-100A 690VAC, 200kA I.R.
- IEC tested at 760VAC
- DC: 700VDC, 100kA I.R L/R=10ms
  890VDC, 127kA I.R. L/R=2.5ms

Approvals

- UL Recognized Component
- CSA Certified
- IEC 269-4 Compliance

Highlights

- 14 x 51 and 22 x 58 sizes
- 690VAC IEC Rated (760VAC Max.)
- 700VDC rated
- Superior Cycling Ability
- Low Watts Loss
- Optional Striker forVisual/Remote Indication

Applications

- Small inverters, UPS systems, motor drives and similar 700V or less equipment

Mounting:

- US14 or US22 "finger-safe" IP 20 grade holders, DIN rail or screw mount, with striker actuated microswitch indication available.
- 703 Series open fuse blocks

Catalog Numbering System

A70 QS 20 14F I

- **Amp-trap® Fuse Family**
- **Style/Design**
- **Amperes***
- **Size:** 14F = 14 x 51 mm, 22F = 22 x 58 mm
- **Optional Striker I**

American Round Fuses
Form 101 Range
A70QS

French Cylindrical
Semiconductor Protection Fuses

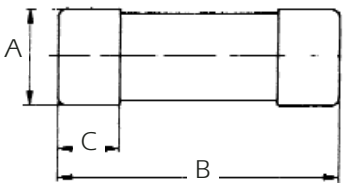
Ratings and Application Data

Body Size (mm)	Ampere Rating (A)	Melting I^2t (A^2s X 10^3)	Max. Clearing I^2t @ 700VAC (A^2s X 10^3)	Watts Loss @ Rated Current (W)	Catalog Number	
					No Striker	With Striker
14 x 51	6	0.0013	0.017	2.0	A70QS6-14F	A70QS6-14FI
	8	0.0024	0.027	2.8	A70QS8-14F	A70QS18-14FI
	10	0.0043	0.04	3.5	A70QS10-14F	A70QS10-14FI
	12	0.0054	0.06	4.4	A70QS12-14F	A70QS12-14FI
	16	0.0132	0.10	4.8	A70QS16-14F	A70QS16-14FI
	20	0.027	0.16	5.2	A70QS20-14F	A70QS20-14FI
	25	0.053	0.27	5.8	A70QS25-14F	A70QS25-14FI
	32	0.098	0.50	7.0	A70QS32-14F	A70QS32-14FI
	40	0.13	0.70	10.7	A70QS40-14F	A70QS40-14FI
	50	0.28	1.50	11.6	A70QS50-14F	A70QS50-14FI
22 x 58	10	0.0043	0.025	4.0	A70QS10-22F	A70QS10-22FI
	15	0.008	0.049	6.2	A70QS15-22F	A70QS15-22FI
	20	0.013	0.076	8.0	A70QS20-22F	A70QS20-22FI
	25	0.02	0.125	10.0	A70QS25-22F	A70QS25-22FI
	32	1.04	0.27	11.0	A70QS32-22F	A70QS32-22FI
	40	1.09	0.48	13.0	A70QS40-22F	A70QS40-22FI
	50	0.16	0.80	14.9	A70QS50-22F	A70QS50-22FI
	63	0.35	1.85	16.0	A70QS63-22F	A70QS63-22FI
	70	0.52	2.80	16.5	A70QS70-22F	A70QS70-22FI
	80	0.73	3.80	17.8	A70QS80-22F	A70QS80-22FI
	90	1.10	5.64	17.0	A70QS90-22F	A70QS90-22FI
	100	1.56	8.00	19.0	A70QS100-22F	A70QS100-22FI

*100kA, L/R = 11.6ms

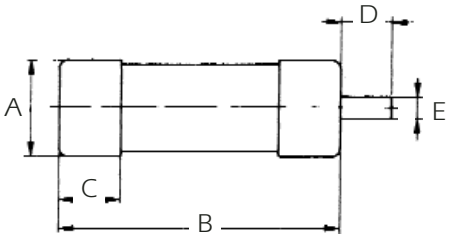
No Striker

Fuse Size	Dimensions-mm		
	A	B	C
14 X 51	14	51	14
22 X 58	22	58	16



With Striker

Fuse Size	Dimensions-mm				
	A	B	C	D	E
14 X 51	14	51	14	7.5	3.8
22 X 58	22	58	16	7.5	3.8

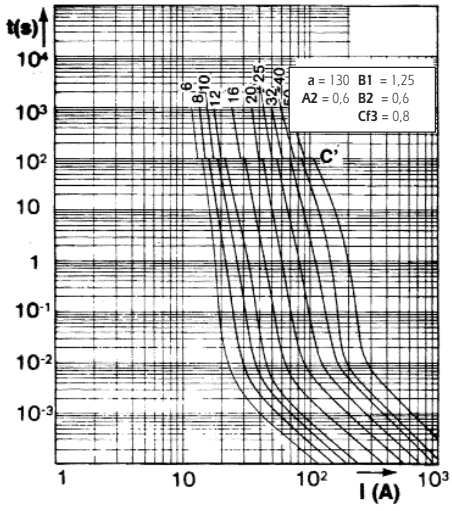


American Round Fuses
Form 101 Range
A70QS

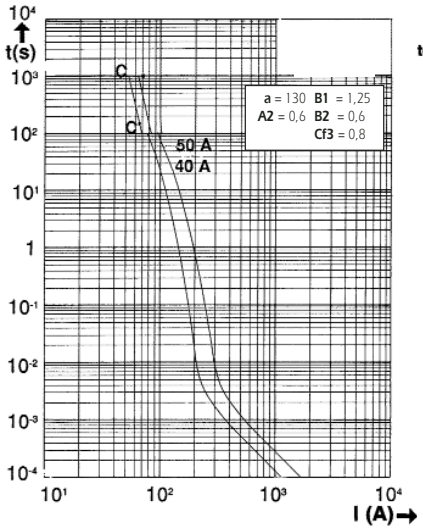
French Cylindrical
Semiconductor Protection Fuses

Melting Time-Current Data

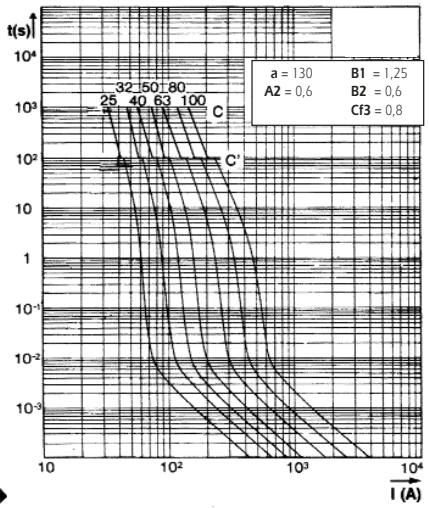
A70QS6 TO 50 (14F, 14FI)



A70QS50 TO 60 (14FI)



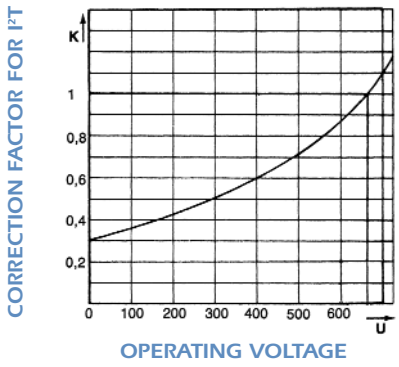
A70QS25 TO 100 (22F, 22FI)



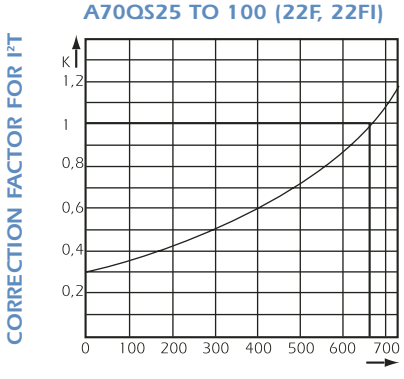
These curves indicate, for each rated current, the pre-arcing (melting) time vs. the R.M.S. current.

Clearing I²t vs. Operating Voltage

A70QS6 TO 60 (14F, 14FI)

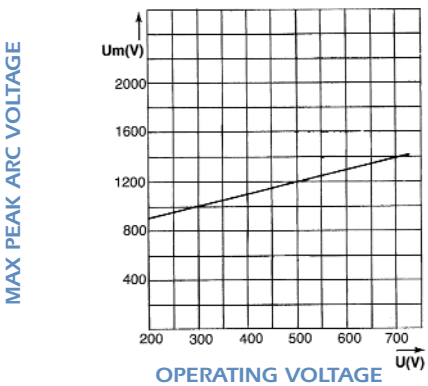


A70QS25 TO 100 (22F, 22FI)

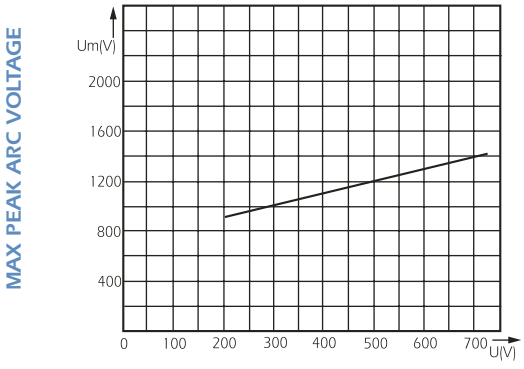


Peak arc voltage vs. Operating Voltage

A70QS6 TO 60 (14F, 14FI)



A70QS25 TO 100 (22F, 22FI)



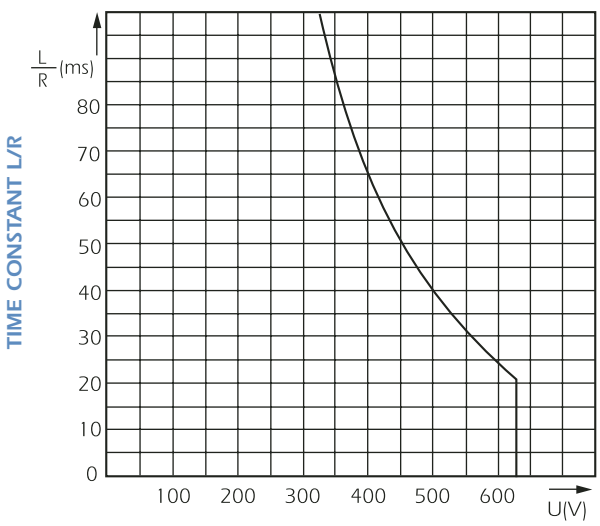
American Round Fuses
Form 101 Range
A70QS

French Cylindrical
Semiconductor Protection Fuses

D.C. Applications Data

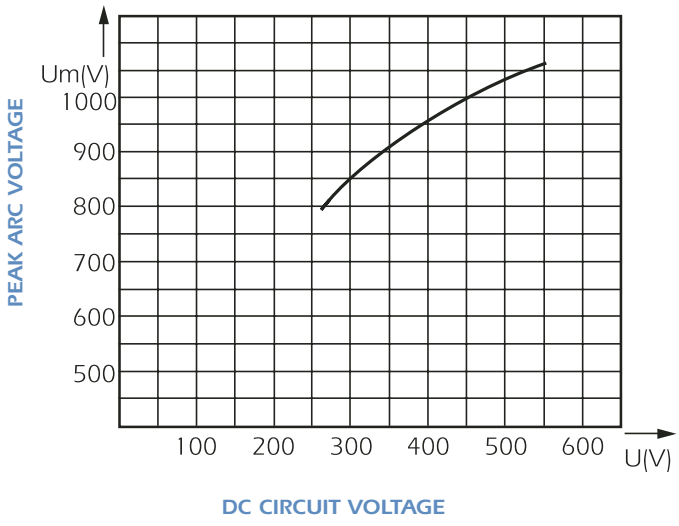
DC Voltage Capabilities vs. Time Constant

A70QS6 TO 60 (14F, 14FI)



Peak Arc voltage vs. DC circuit voltage

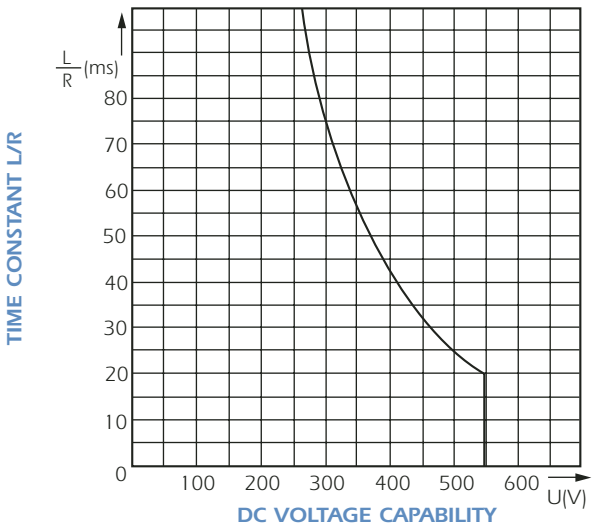
A70QS6 TO 60 (14F, 14FI)



SEE MELTING-TIME CURRENT DATA FOR MINIMUM BREAKING CURRENT.

DC Voltage Capabilities vs. Time Constant

A70QS25 TO 100 (22F, 22FI)

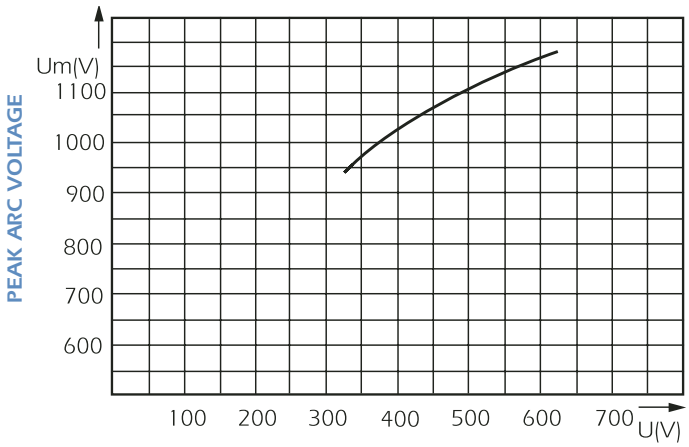


These curves provide the DC voltage capability of the fuse as a function of circuit time constant.

(L/R ratio)

Peak Arc voltage vs. DC circuit voltage

A70QS25 TO 100 (22F, 22FI)



These curves show the peak value Um of the arc voltage which appears across the fuse link as a function of the operating voltage U.

American Round Fuses
Form 101 Range
A70QS



Semiconductor Protection Fuses

A70QS Amp-trap® Semiconductor Protection fuses were developed in response to the need for improved overall performance of 700 volt semiconductor fuses for new equipment requirements. A70QS fuses have lower I^2t for better protection, longer life when subjected to cyclic loading, plus lower watts loss. A70QS is the best choice to protect dynamic solid state equipment such as motor drives, UPS, etc.

Features/Benefits

- Very Low I^2t for improved protection of equipment
- Superior cycling ability for long,reliable life on high cyclic loading
- Low watts loss for cooler operation
- 700V AC/DC rating gives greater design versatility
- Ultra compact sizes allow down-sizing of existing equipment

Ratings

- AC: 35-800A 700VAC, 200kA I.R.
- DC: 35-800A 700VDC, 100kA I.R. L/R = 10ms

Approvals

- UL Recognized Component AC/DC
- AC: GuideNo.JFHR2
- DC: Tested to UL Standard 198L Parameters (35-800A)
- CSA Certified File LR 12636

Highlights

- 700V AC/DC Rated
- Very low I^2t
- Low Watts Loss
- Superior Cycling Ability

Applications

- Protection of 700V less motor drives, UPS, inverters, etc.

Single Pole Fuse Blocks for A70QS Fuses



Fuse Ampere Rating	Fuse block	
	Catalog Number	Reference Number
35-200	P243C	M219040
225-600	P266A	Y212380
700-800	15C 375	

Catalog Numbering System

A 70 QS 150 - 4

Amp-trap® Fuse	A
Rated Volts - 700	70
Style	QS
Amperes*	150
Mounting Types* Blades, bolt-in.	4,4K

* for ampere ratings and types not listed, consult the factory.

American Round Fuses
Form 101 Range
A70QS

Semiconductor Protection Fuses

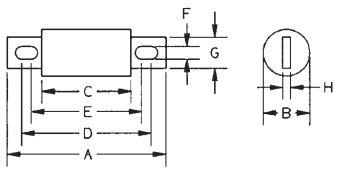
Standard Fuse Ampere Ratings, Catalog and ReferenceNumbers

Ampere Rating	Catalog Number	Ref. Number	Ampere Rating	Catalog Number	Ref. Number	Ampere Rating	Catalog Number	Ref. Number	Ampere Rating	Catalog Number	Ref. Number
35	A70QS35-4	D202748	100	A70QS100-4	G214343	200	A70QS200-4	V212814	450	A70QS450-4K	H215356
40	A70QS40-4	Y213829	125	A70QS125-4	L215865	200	A70QS200-4K	E213329	500	A70QS500-4	A218431
50	A70QS50-4	T217919	125	A70QS125-4K	Q216375	250	A70QS250-4	L217406	500	A70QS500-4K	R218952
60	A70QS60-4	H219473	150	A70QS150-4	P218950	300	A70QS300-4	Q218951	600	A70QS600-4	Y219993
70	A70QS70-4	B201527	150	A70QS150-4K	F219471	350	A70QS350-4	M211266	600	A70QS600-4K	P222676
80	A70QS80-4	X212816	175	A70QS175-4	A223192	400	A70QS400-4	J214345	700	A70QS700-4	E202772
90	A70QS90-4	K214346	175	A70QS175-4K	J200982	450	A70QS450-4	F214848	800	A70QS800-4	Z213830

For ampere ratings and styles not listed, ask sales agent. Mounting Type 4; note exception 4k

Dimensions

Catalog Number	Mounting Type	Dimensions - Inches (mm)							
		A	B	C	D	E	F	G	H
A70QS35 to 100	4	4.38 (111)	1.00 (25.4)	2.88 (73.0)	3.69 (93.6)	3.50 (88.9)	0.31 (7.9)	0.75 (19.0)	0.13 (3.2)
A70QS125 to 200	4	4.38 (111)	1.22 (31.0)	2.88 (73.0)	3.69 (93.6)	3.56 (90.5)	0.31 (7.9)	1.00 (25.4)	0.19 (4.8)
A70QS125 to 200	4K	5.09 (129)	1.22 (31.0)	2.88 (73.0)	4.19 (106)	3.50 (88.0)	0.41 (10.3)	1.00 (25.4)	0.19 (4.8)
A70QS225 to 400	4	5.09 (129)	1.50 (38.1)	2.84 (72.2)	4.16 (106)	3.53 (89.7)	0.40 (10.3)	1.50 (38.1)	0.25 (6.4)
A70QS450 to 600	4	5.09 (129)	2.00 (50.8)	2.84 (72.2)	4.16 (106)	3.53 (89.7)	0.41 (10.3)	1.50 (38.1)	0.25 (6.4)
A70QS450 to 600	4K	7.09 (180)	2.00 (50.8)	2.84 (72.2)	6.16 (156)	3.53 (89.7)	0.53 (13.5)	1.50 (38.1)	0.25 (6.4)
A70QS700 to 800	4	7.09 (180)	2.50 (63.5)	2.84 (72.2)	5.28 (134)	4.91 (125)	0.53 (13.5)	2.00 (50.8)	0.38 (9.5)



I²t Data – 700 Volts AC, 100kA

Fuse Ampere Rating	I²t data		
	Melting	clearing at 700V AC	
		1 Fuse (Fig. A)	2 Fuses in series(Fig. B)
	x 10³A²s	x 10³A²s	x 10³A²s
35	0.13	0.47	0.27
40	0.16	0.58	0.33
50	0.24	0.86	0.49
60	0.32	1.2	0.69
70	0.50	1.8	1.0
80	0.65	2.3	1.3
90	0.83	3.0	1.7
100	1.0	3.6	2.1
125	2.1	6.9	4.0
150	3.3	11	6.3
175	4.2	14	8.0
200	5.9	19	11
225	9.0	30	17
250	12.6	42	24
300	16.7	55	32
350	21.5	72	41
400	29.7	99	57
450	36.7	125	72
500	47.1	160	92
600	65.2	222	127
700	103.6	332	190
800	135.3	433	248

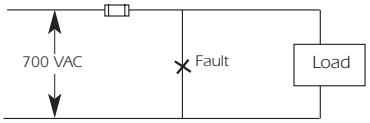


Fig. A

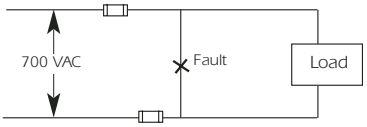
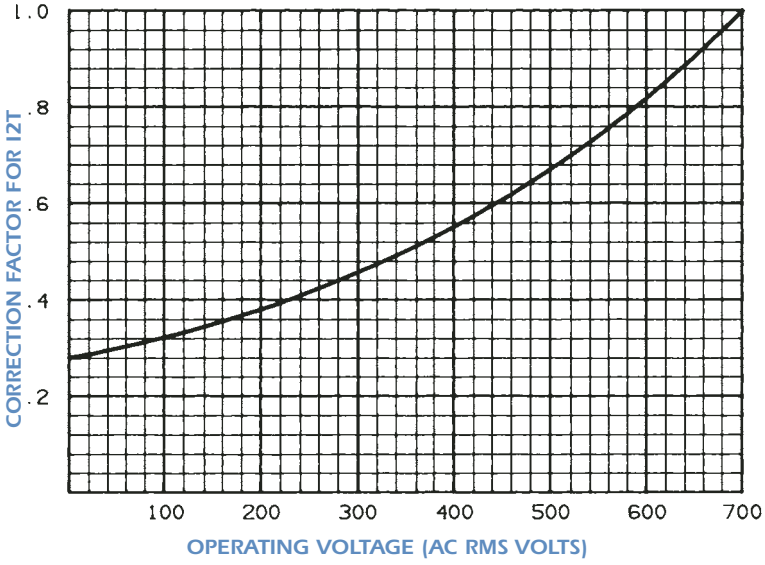


Fig. B

Clearing I²t vs. AC Operating Voltage

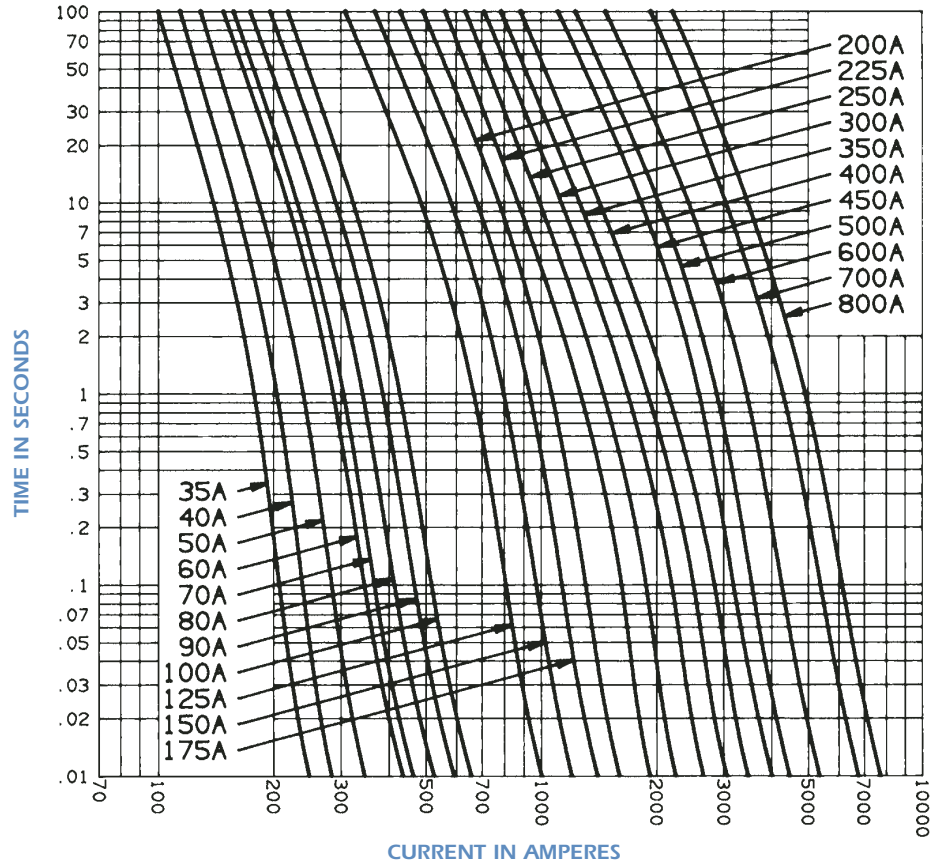


American Round Fuses
Form 101 Range
A70QS

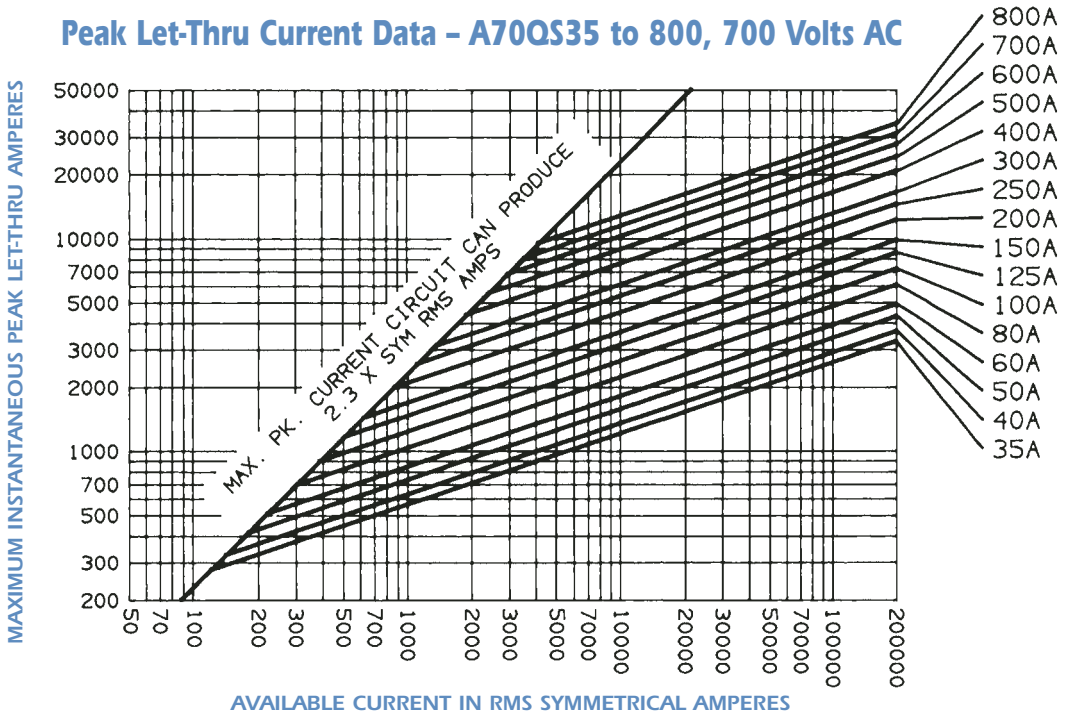
Semiconductor Protection Fuses

A70QS35 to 800

Melting Time – Current Data, 700V Fuses



Peak Let-Thru Current Data – A70QS35 to 800, 700 Volts AC



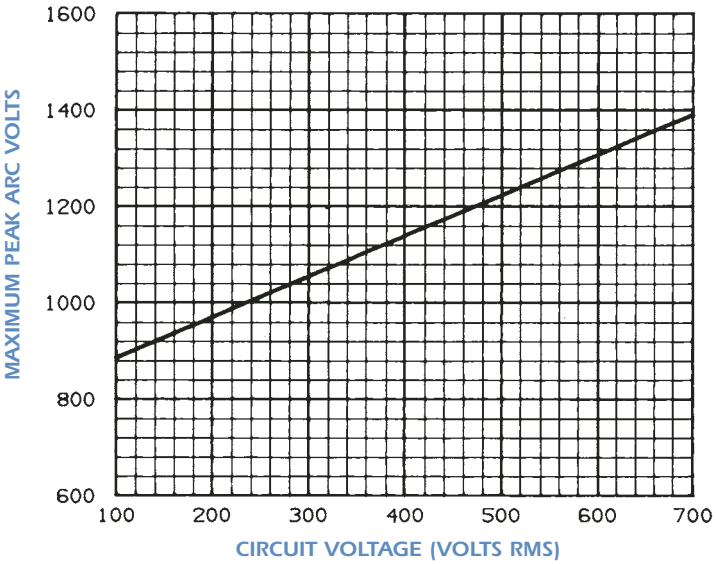
American Round Fuses
Form 101 Range
A70QS

Semiconductor Protection Fuses

Clearing I²t at 700V DC, 100kA, L/R = 10 ms

Ampere Rating	Clearing I²t ($A^2s \times 10^3$)
35	0.25
40	0.35
50	0.60
70	1.3
80	1.8
90	2.4
100	3.1
125	5.3
150	8.1
175	12
200	16
225	21.5
250	27.5
300	42
350	63
400	85
450	115
500	150
600	201
700	325
800	450

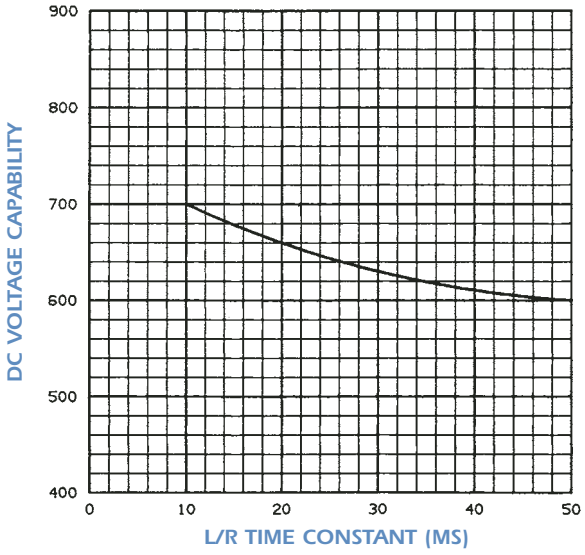
Maximum Arc Volts vs. System Voltage



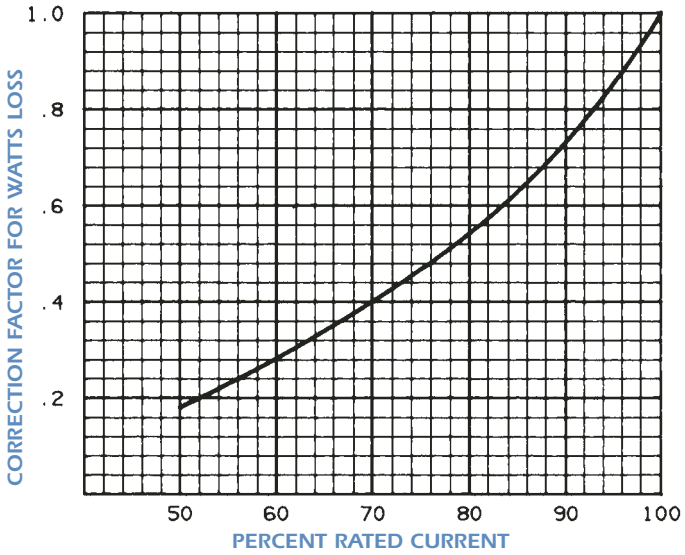
Watts Loss at Rated Current

Ampere Rating	Watts Loss (W)	Ampere Rating	Watts Loss (W)
35	6.2	200	41
40	7.5	225	37
50	9.8	250	42
60	12	300	53
70	15	350	64
80	18	400	75
90	20	450	78
100	24	500	92
125	22	600	116
150	29	700	125
175	35	800	143

DC Voltage Capability vs. Time Constant



Watts Loss vs. % Rated Current



American Round Fuses
Form 101 Range
A70P



Semiconductor Protection Fuses

A70P Amp-trap® Form 101 Semiconductor Protection fuses were developed for higher voltage AC and DC drives, UPS systems, reduced voltage motor starters and similar applications where lower I^2t and superior reliability were needed. A70P is a very popular fuse, available in a wide range of ratings.

Features/Benefits

- Low I^2t minimizes damage to protected components on short circuit
- Controlled arc voltage reduces stress to circuit components during fuse clearing
- Choice of mounting types helps in equipment design

Ratings

- AC: 10-1000A 700VAC, 100kA I.R.
- DC: 10-800A 650VDC, 100kA I.R. L/R = 10ms

Approvals

- UL Recognized Component
- AC: GuideNo.JFHR2 (10-1000A)
- DC: Tested to UL Standard 198L Parameters (10-800A)

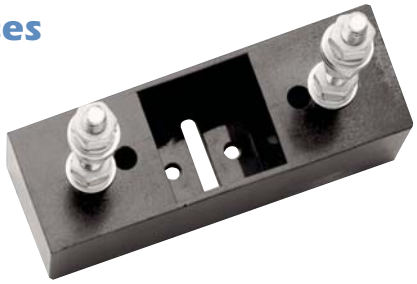
Highlights

- Very Fast Acting
- Current Limiting
- Low I^2t
- Indicator Options Available

Applications

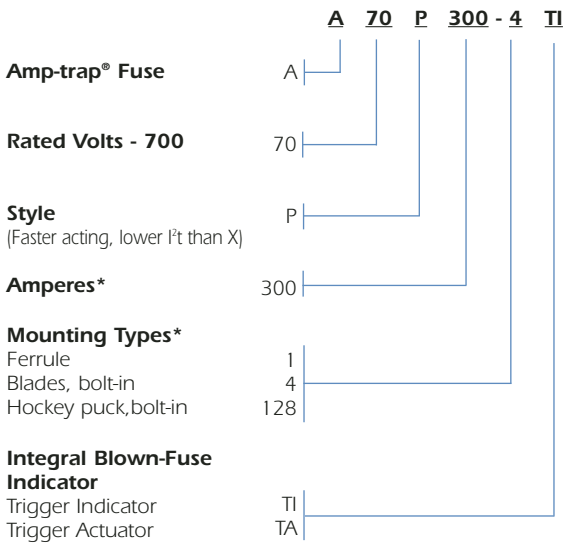
- Protection of 700V or less DC drives, UPS,inverters, reduced voltage starters, etc.

Single Pole Fuse Blocks for A70P Fuses



Fuse Ampere Rating	Fuse block	
	Catalog Number	Reference Number
10-30 (Type 1)	70316	B223308
31-60	P243C	M219040
61-100	P243C	M219040
101-200	P266A	Y212380
201-400	P266A	Y212380
401-600	P266F	S213410
601-800	1SC375	Q210579B

Catalog Numbering System



* For ampere ratings and types not listed, ask sales agent.

American Round Fuses
Form 101 Range
A70P

Semiconductor Protection Fuses
Standard Fuse Ampere Ratings

Ampere Rating	Catalog Number	Ref Number	Outline Fig.	Ampere Rating	Catalog Number	Ref Number	Outline Fig.	Ampere Rating	Catalog Number	Ref Number	Outline Fig.
10	A70P10-1	R212811	1	80	A70P80-4	V219990	3	300	A70P300-4	P212809	3
10	A70P10-4	B213326	2	80	A70P80-4TA	L222673	4	350	A70P350-4	C215351	3
15	A70P15-1	F214342	1	80	A70P80-4TI	Z223191	3	400	A70P400-4	L218947	3
15	A70P15-4	C214845	2	90	A70P90-4	J211263	3	400	A70P400-4TA	Y223190	4
20	A70P20-1	D215352	1	100	A70P100-4	J218945	3	400	A70P400-4TI	F200979	3
25	A70P25-1	N216373	1	100	A70P100-4TA	R219987	4	450	A70P450-4	W201522	3
25	A70P25-4	S216883	2	125	A70P125-4	P211774	3	500	A70P500-4	H211262	3
30	A70P30-1	J217404	1	125	A70P125-4TA	N212808	4	600	A70P600-4	H215862	3
30	A70P30-4	R217917	2	150	A70P150-4	A214843	3	600	A70P600-4TA	M216372	4
35	A70P35-4	D214340	3	150	A70P150-4TA	B215350	4	600	A70P600-4TI	R216882	3
40	A70P40-4	Q216881	3	150	A70P150-4TI	F215860	3	700	A70P700-4	M218948	5
40	A70P40-4TA	P217915	4	175	A70P175-4	N217914	3	700	A70P700-4TI	C219468	5
40	A70P40-4TI	W218427	3	200	A70P200-4	K218946	3	800	A70P800-4	G200980	5
50	A70P50-4	W202695	3	200	A70P200-4TA	A219466	4	800	A70P800-4TI	X202696	5
60	A70P60-4	A213325	3	200	A70P200-4TI	S219988	3	900	A70P900-4	D212293	6
60	A70P60-4TA	S213824	4	225	A70P225-4	E200978	3	1000	A70P1000-4	D200977	6
60	A70P60-4TI	E214341	3	250	A70P250-4	V201521	3	1200	A70P1200-4	F211260	7
70	A70P70-4	H217403	3	250	A70P250-4TA	G211261	4				
70	A70P70-4TI	Q217916	3	250	A70P250-4TI	Q211775	3				

For ampere ratings and styles not listed, call Technical Services.

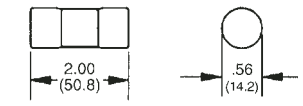


Figure 1

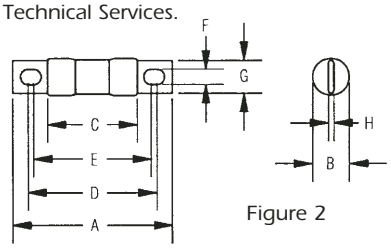


Figure 2

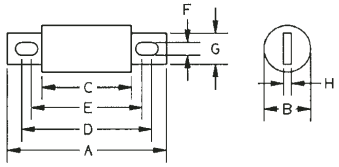


Figure 3

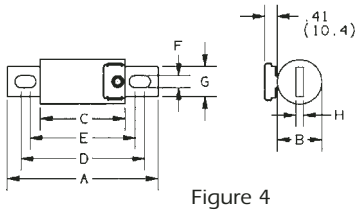


Figure 4

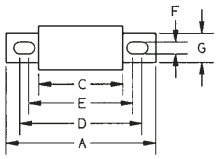


Figure 5

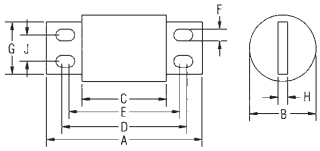


Figure 6

Dimensions

Outline Reference.	Mounting Type	Fig.	Dimensions - Inches (mm)									
			A	B	C	D	E	F	G	H	J	K
A70P10 to 30	1	1	2.00 (50.8)	.56 (14.2)	- -	- -	- -	- -	- -	- -	- -	
A70P10 to 30	4	2	2.88 (73.2)	.56 (14.2)	1.88 (47.8)	2.50 (63.5)	- -	.27 (6.9)	.41 (10.4)	- -	- -	
A70P35 to 60	4, 4TA*, 4TI	3, 4*	4.38 (111)	1.00 (25.4)	2.88 (73.2)	3.69 (93.7)	3.56 (90.4)	.31 (7.9)	.75 (19.1)	.06 (1.5)	- -	
A70P70 to 100	4, 4TA*, 4TI	3, 4*	4.38 (111)	1.22 (31.0)	2.88 (73.2)	3.69 (93.7)	3.56 (90.4)	.31 (7.9)	1.00 (25.4)	.19 (4.8)	- -	
A70P125 to 200	4, 4TA*, 4TI	3, 4*	5.09 (129)	1.50 (38.1)	2.84 (72.1)	4.16 (106)	3.53 (89.7)	.41 (10.4)	1.00 (25.4)	.25 (6.4)	- -	
A70P225 to 400	4, 4TA*, 4TI	3, 4*	5.09 (129)	2.00 (50.8)	2.84 (72.1)	4.16 (106)	3.53 (89.7)	.41 (10.4)	1.50 (38.1)	.24 (6.4)	- -	
A70P450 to 600	4, 4TA*, 4TI	3, 4*	7.09 (180)	2.50 (63.5)	2.84 (72.1)	5.25 (133)	4.94 (125)	.53 (13.5)	2.00 (50.8)	.38 (9.7)	- -	
A70P700 to 800	4, 4TI	5	6.81 (173)	2.88 (73.2)	3.31 (84.1)	5.31 (135)	- -	.63 (16.0)	2.00 (50.8)	.38 (9.7)	.31 (7.9)	
A70P900 to 1000	4, 4TI	6	7.59 (193)	3.50 (88.9)	3.84 (97.5)	5.97 (152)	5.22 (133)	.63 (16.0)	2.75 (69.9)	.50 (12.7)	1.38 (35.1)	
A70P1200	4	7	10.84 (275.4)	4.5 (114.3)	3.84 (97.6)	6.84 (173.7)	5.84 (148.3)	9.34 (237.3)	9.59 (243.6)	3.5 (88.9)	.63 (15.9)	.75 (19.1)

* Optional Trigger Actuator (TA)

American Round Fuses
Form 101 Range
A70Q



Semiconductor Protection Fuses

A70Q Amp-trap® Semiconductor Protection fuses were developed for inverter applications requiring extremely low I²t. A70Q fuses provide the most responsive protection for applications not required to sustain heavy overloads.

Features/Benefits

- Lowest I²t of any fuse in this voltage rating for best overall protection
- 700V AC, 650V DC rating allows protection of greater variety of circuits
- Solid fill technology for extra reliability in performance

Ratings

- AC: 35-600A 700VAC, 100kA I.R.
- DC: 35-600A 650VDC, 100kA I.R. L/R = 10ms

Approvals

- UL Recognized Component
- AC: GuideNo.JFHR2
- DC: Tested to UL Standard 198L Parameters (35-600A)

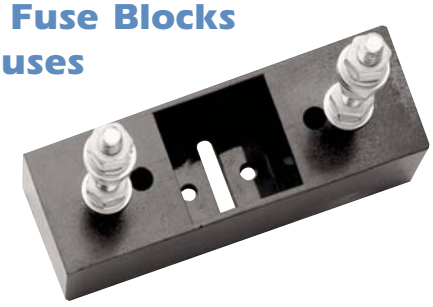
Highlights

- Extremely Fast Acting
- Current Limiting
- Lowest I²t

Applications

- Protection of inverters and other equipment requiring the best AC or DC protection in this voltage range

Single Pole Fuse Blocks for A70Q Fuses



Fuse Ampere Rating	Fuse block	
	Catalog Number	Reference Number
35-100	P243C	M219040
125-400	P266A	Y212380
450-600	P266F	S213410

Catalog Numbering System

A 70 Q 500 - 4

Amp-trap® Fuse	A
Rated Volts - 700	70
Style	Q
Amperes*	500
Mounting Types* Blades, bolt-in	4

* For ampere ratings and types not listed, ask sales agent.

American Round Fuses
Form 101 Range
A70Q

Semiconductor Protection Fuses

Standard Fuse Ampere Ratings

Ampere Rating	Catalog Number	Reference Number
35	A70Q35-4	D214846
40	A70Q40-4	T216884
50	A70Q50-4	N218949
60	A70Q60-4	W219991
70	A70Q70-4	R202714
80	A70Q80-4	K211264
90	A70Q90-4	V211779
100	A70Q100-4	Y218429
125	A70Q125-4	D219469
150	A70Q150-4	H200981
175	A70Q175-4	Y202697
200	A70Q200-4	T211778
250	A70Q250-4	S212812
300	A70Q300-4	V213826
350	A70Q350-4	E215353
400	A70Q400-4	K217405
450	A70Q450-4	S217918
500	A70Q500-4	E219470
600	A70Q600-4	M222674

For ampere ratings and styles not listed, call Technical Services.

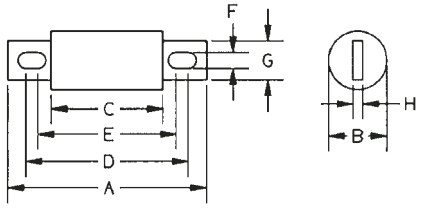


Figure 1

Dimensions

Catalog Number	Mounting Type	Dimensions - Inches (mm)							
			A	B	C	D	E	F	G
A70Q35 to 60	4	4.37 (111)	1.22 (31.0)	1.96 (49.8)	3.69 (93.7)	2.91 (73.9)	.34 (8.6)	1.00 (25.4)	.19 (4.8)
A70Q70 to 100	4	4.37 (111)	1.22 (31.0)	1.96 (49.8)	3.69 (93.7)	2.91 (73.9)	.41 (10.4)	1.00 (25.4)	.19 (4.8)
A70Q125 to 200	4	5.09 (129)	1.50 (38.1)	1.96 (49.8)	4.16 (106)	2.91 (73.9)	.41 (10.4)	1.00 (25.4)	.25 (6.4)
A70Q250 to 400	4	5.09 (129)	2.00 (50.8)	1.96 (49.8)	4.00 (102)	2.94 (74.7)	.56 (14.2)	1.50 (38.1)	.25 (6.4)
A70Q450 to 600	4	7.09 (180)	2.50 (63.5)	1.96 (49.8)	5.72 (145)	3.25 (82.6)	.56 (14.2)	2.00 (50.8)	.38 (9.7)

American Round Fuses
Form 101 Range
A100P



Semiconductor Protection Fuses

A100P Amp-trap® Form 101 Semiconductor Protection fuses are rated 1000V, extending the range of protection for UPS systems, AC and DC drives, reduced voltage motor starters and similar applications where lower I^2t and superior reliability are needed. With ratings from 15 through 1000 amperes, a wide range of high voltage applications can be served.

Features/Benefits

- Low I^2t minimizes damage to protected components on short circuit
- Controlled arc voltage reduces stress to circuit components during fuse clearing
- Wide range of ampere ratings

Ratings

- AC: 15-30A
  1000VAC, 100kA I.R.
  35-1000A
  1000VAC, 100kA I.R.
- DC: 15-1000A
  750VDC, 100kA I.R.

Approvals

- UL Recognized Component
- AC: UL Guide No. JFHR2 (60-800A)
- DC: Ferraz Shawmut Certified

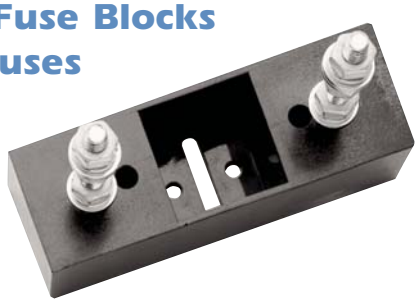
Highlights

- Fast Acting
- Current Limiting
- Low I^2t
- Optional Trigger Indicator

Applications

- Protection of UPS systems AC/DC drives,reduced voltage motor starters and other 1000V or less semiconductor devices
- Spare markets only for new installations,refer to PC range

Single Pole Fuse Blocks for A100P Fuses



Fuse Ampere Rating	Fuse block	
	Catalog Number	Reference Number
35-100	P266G	Z214428
125-400	P266L	J215955

Catalog Numbering System

A 100 P 80 - 4 TI

- **Amp-trap® Fuse** — A
- **Rated Volts - 1000** — 100
- **Style** (Faster acting, lower I^2t than X) — P
- **Amperes*** — 80
- **Mounting Types*** — Ferrule: 1; Blades, bolt-in: 4
- **Integral Blown-Fuse Indicator** Trigger Indicator — TI

* For ampere ratings and types not listed, ask sales agent.

American Round Fuses
Form 101 Range
A100P

Semiconductor Protection Fuses

Standard Fuse Ampere Ratings, Catalog and Reference Numbers

Ampere Rating	Catalog Number	Ref Number	Outline Fig.	Ampere Rating	Catalog Number	Ref Number	Outline Fig.	Ampere Rating	Catalog Number	Ref Number	Outline Fig.
15	A100P15-1	D222643	1	80	A100P80-4TI	Y202191	2	350	A100P350-4	Q201494	2
20	A100P20-1	Y212265	1	100	A100P100-4	A215832	2	350	A100P350-4TI	X202190	2
25	A100P25-1	J216852	1	100	A100P100-4TI	E216342	2	400	A100P400-4	Z212266	2
30	A100P30-1	E218918	1	125	A100P125-4	D218917	2	400	A100P400-4TI	Y213300	2
35	A100P35-4	S223162	2	125	A100P125-4TI	-	2	500	A100P500-4	W214816	3
40	A100P40-4	A211232	2	150	A100P150-4	R223161	2	500	A100P500-4TI	C215834	3
50	A100P50-4	Q213799	2	150	A100P150-4TI	Y200949	2	600	A100P600-4	A217373	3
50	A100P50-4TI	Y214312	2	200	A100P200-4	J212781	2	600	A100P600-4TI	Q218399	3
60	A100P60-4	G216344	2	200	A100P200-4TI	X213299	2	650	A100P650-4	F218919	4
60	A100P60-4TI	K216853	2	225	A100P225-4	F216343	2	700	A100P700-4	T223163	4
65	A100P65-4	-	2	250	A100P250-4	Z217372	2	800	A100P800-4	B211233	4
70	A100P70-4TI	-	2	300	A100P300-4	T219437	2	800	A100P800-4TI	L212783A	4
80	A100P80-4	R201495	2	300	A100P300-4TI	E222644	2	1000	A100P1000-4	Y217371	5

For ampere ratings and styles not listed, ask sales agent. All of these catalog and reference numbers are without TI

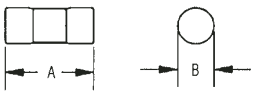


Figure 1

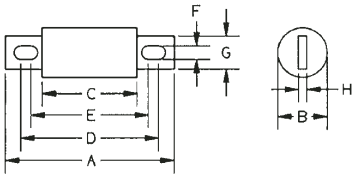


Figure 2

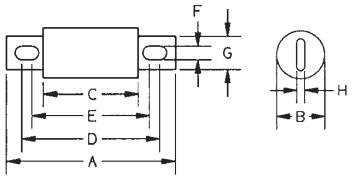


Figure 3

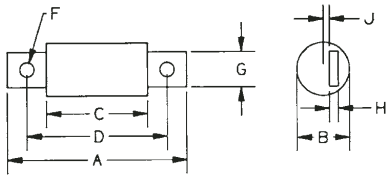


Figure 4

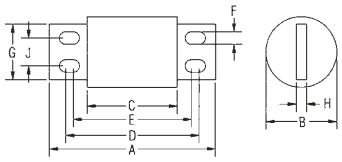


Figure 5

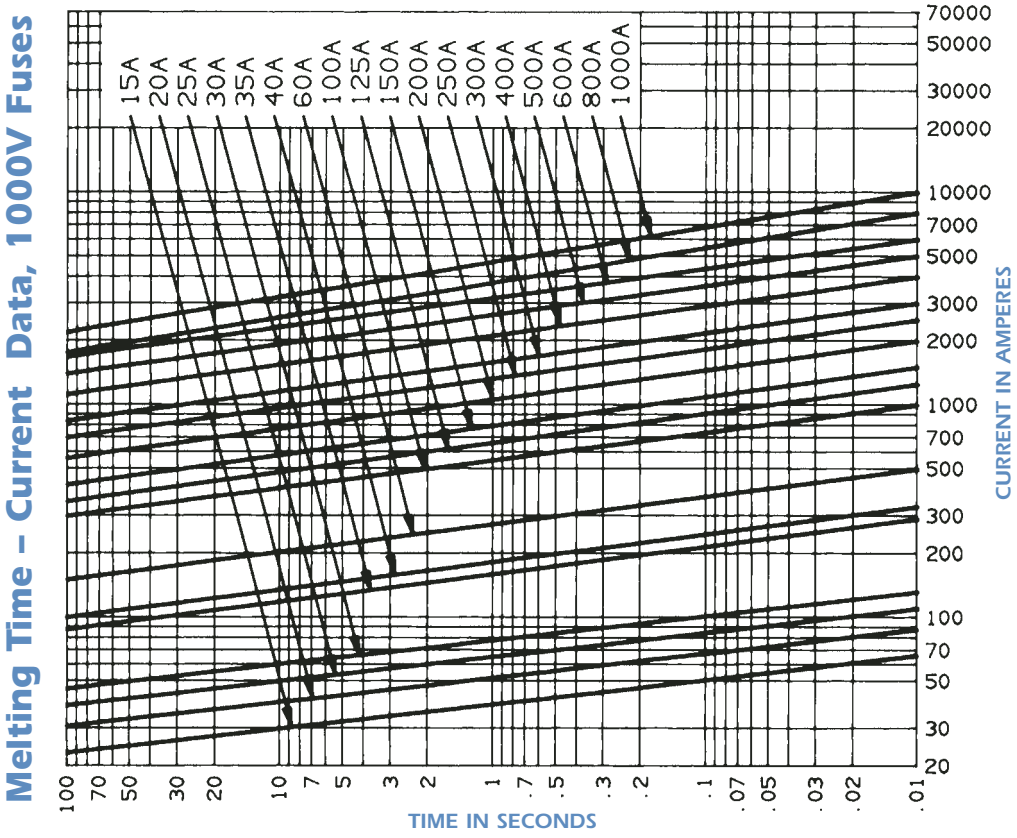
Dimensions

Catalog Number	Mounting Type	Fig.	Dimensions - Inches (mm)								
			A	B	C	D	E	F	G	H	J
A100P15 to 30	1	1	2.63 (66.8)	0.56 (14.2)	- -	- -	- -	- -	- -	- -	- -
A100P35 to 60	4, 4TI	2	5.00 (127)	1.00 (25.4)	3.50 (173)	4.31 (109)	4.19 (106)	0.31 (7.9)	0.75 (19.1)	0.13 (3.3)	- -
A100P65 to 100	4, 4TI	2	5.00 (127)	1.22 (31.0)	3.50 (173)	4.31 (109)	4.19 (106)	0.31 (7.9)	1.00 (25.4)	0.19 (4.8)	- -
A100P125 to 200	4, 4TI	2	5.72 (145)	2.00 (38.1)	3.47 (88.1)	4.78 (121)	4.16 (106)	0.41 (10.4)	1.00 (25.4)	0.25 (6.4)	- -
A100P225 to 400	4, 4TI	2	5.72 (145)	2.00 (50.8)	3.47 (88.1)	4.78 (121)	4.16 (106)	0.41 (10.4)	1.50 (25.4)	0.25 (6.4)	- -
A100P500 to 600	4, 4TI	3	7.72 (196)	2.50 (63.5)	3.47 (88.1)	5.88 (149)	5.56 (141)	0.53 (13.5)	2.00 (50.8)	0.38 (9.7)	- -
A100P650 to 800	4, 4TI	4	7.44 (189)	2.88 (73.2)	3.94 (100)	5.94 (151)	- -	0.63 (16.0)	2.00 (50.8)	0.38 (9.7)	0.31 (7.9)
A100P1000	4	5	8.22 (209)	3.50 (88.9)	4.47 (114)	6.59 (167)	5.84 (148)	0.63 (16.0)	2.75 (69.9)	0.50 (12.7)	1.38 (35.1)

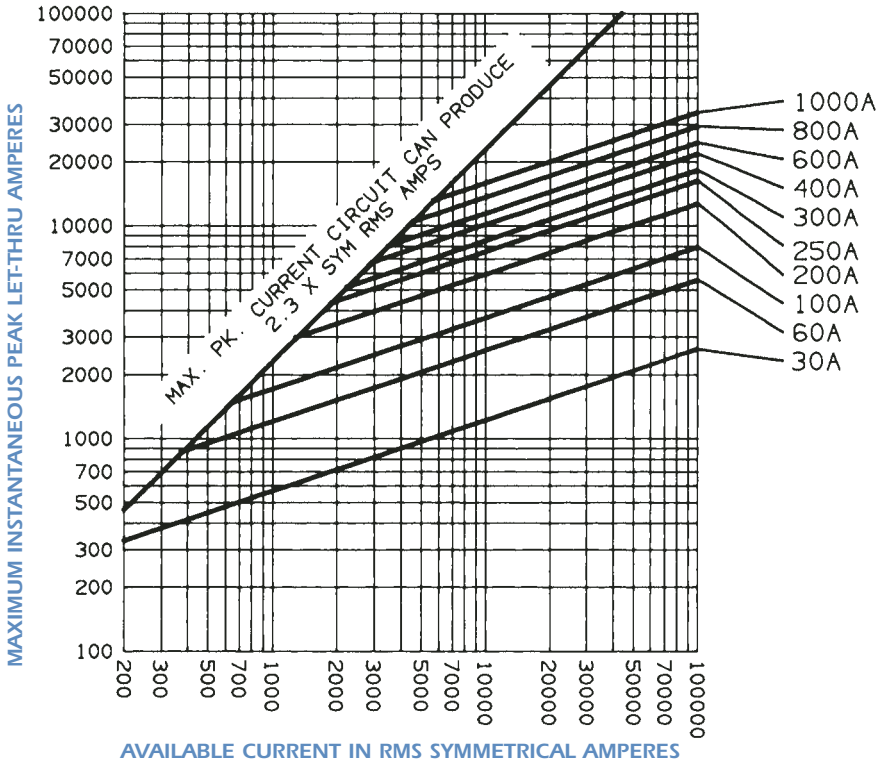
American Round Fuses
Form 101 Range
A100P

Semiconductor Protection Fuses

A100P15 to 1000



Peak Let-Thru Current Data – A100P30 to 1000, 1000 Volts AC



American Round Fuses
Form 101 Range
A100P

Semiconductor Protection Fuses

I²t Data – 1000 Volts AC, 100kA

Ampere Rating	I²t Data	
	Melting (A^2 x10^3)	Clearing @1000VAC (fig A) (A^2 x10^3)
15	.023	.6
20	.03	.8
25	.047	1.3
30	.057	1.5
35	.29	2.2
40	.38	2.9
50	.60	4.5
60	.86	6.5
65	1.0	7.6
70	1.2	8.8
80	1.5	12
100	2.4	18
125	3.8	28
150	5.4	41
200	9.6	72
225	12	91
250	15	110
300	22	160
350	29	220
400	38	290
500	600	450
600	86	650
650	100	760
700	120	880
800	150	1,200
1,000	240	1,900

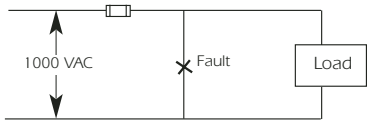
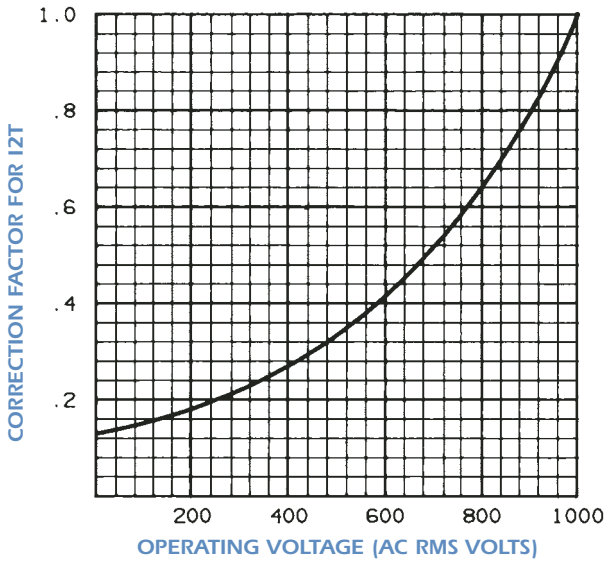


Fig. A

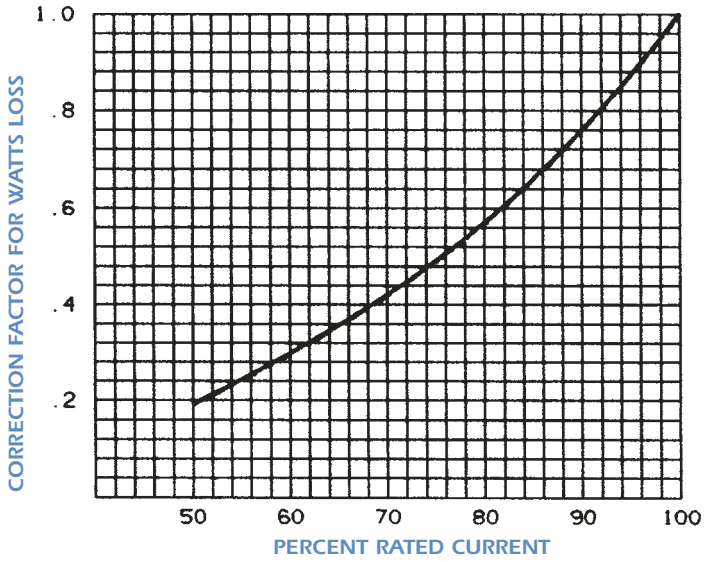
Clearing I²t vs. AC Operating Voltage



Watts Loss at Rated Current

Ampere Rating	Watts Loss (W)	Ampere Rating	Watts Loss (W)
15	3.4	225	40
20	5.9	250	45
25	9	300	55
30	12.8	350	65
35	7.3	400	70
40	8.3	500	90
50	11	600	110
60	13	650	120
70	13	700	125
80	14	800	140
100	18	1000	190
125	23		
150	28		
200	36		

Watts Loss vs. % Rated Current



American Round Fuses
Form 101 Range
A120X



Semiconductor Protection Fuses

A120X Amp-trap® Form 101 Semiconductor Protection fuses, rated 1/2A through 30A, 1200VAC are popular for use in traction drive auxiliary circuits and similar applications. A120X fuses are also suitable for use on 1000VDC auxiliary circuits with low time constants.

Features/Benefits

- 1000 Volt DC rated for wide range of circuits
- Compact size fits in where competitive sizes will not fit

Ratings

- AC: 1/2-30A 1200VAC, 100kA I.R.
- DC: 1/2-30A 1000VDC, 100kA I.R. L/R = 10ms

Approvals

- Ferraz Shawmut Certified

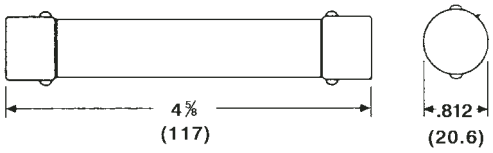
Highlights

- Fast Acting
- Current Limiting
- Low I^2t
- Compact Size

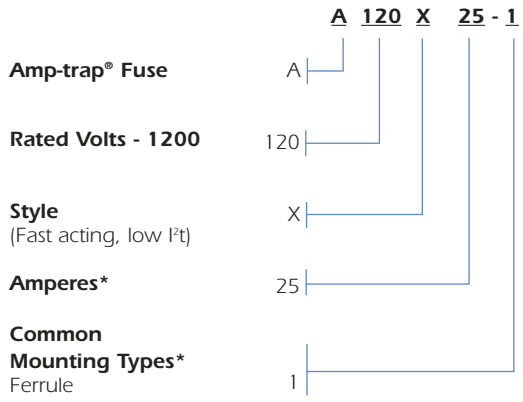
Applications

- Protection of traction drive auxiliary circuits, etc.

Dimensions - In (mm)



Catalog Numbering System



* For ampere ratings and types not listed, ask sales agent.

Single Pole Fuse Blocks for A120X Fuses

Fuse Ampere Rating	Fuse block	
	Catalog Number	Reference Number
1/2-30	P292	T216976

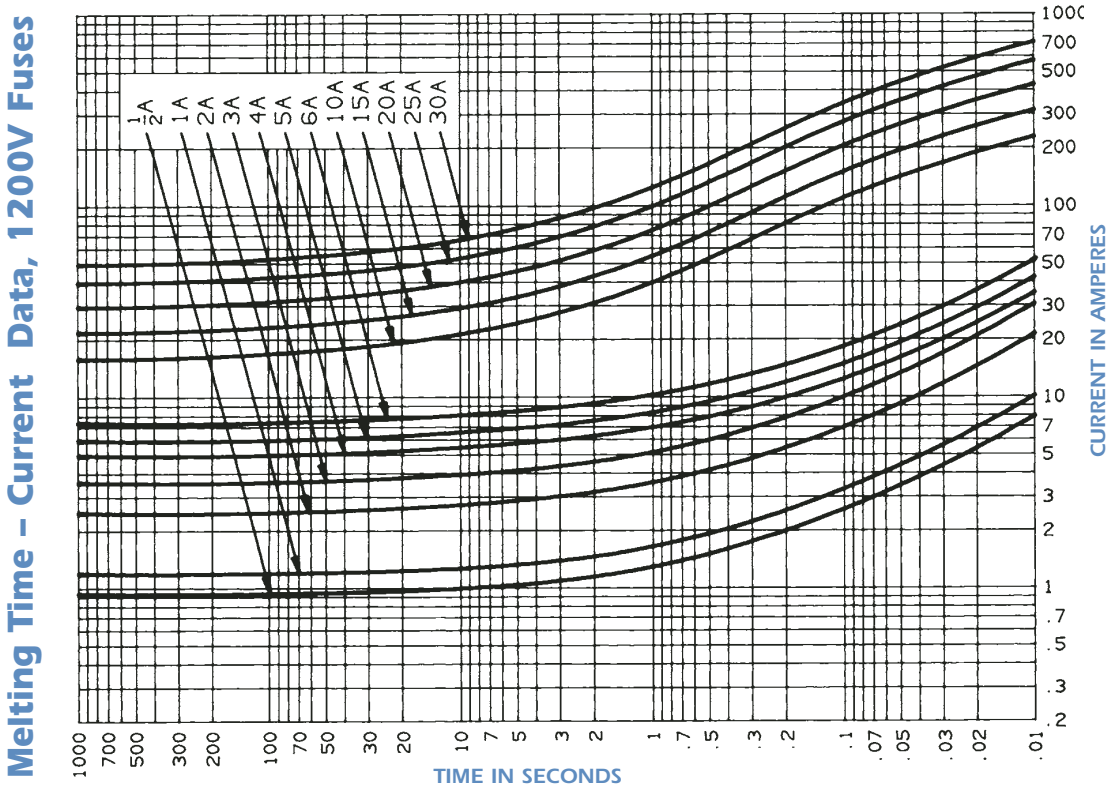
Standard Fuse Ampere Ratings, Catalog and Reference Numbers

Ampere Rating	Catalog Number	Reference Number	Ampere Rating	Catalog Number	Reference Number
1/2	A120X1/2-1	T218954	6	A120X6-1	W216380
1	A120X1-1	C218433	10	A120X10-1	K219475
2	A120X2-1	E223196	15	A120X15-1	R222678
3	A120X3-1	P211268	20	A120X20-1	M200985
4	A120X4-1	Z212818	25	A120X25-1	E202864
5	A120X5-1	J214851	30	A120X30-1	Z211783

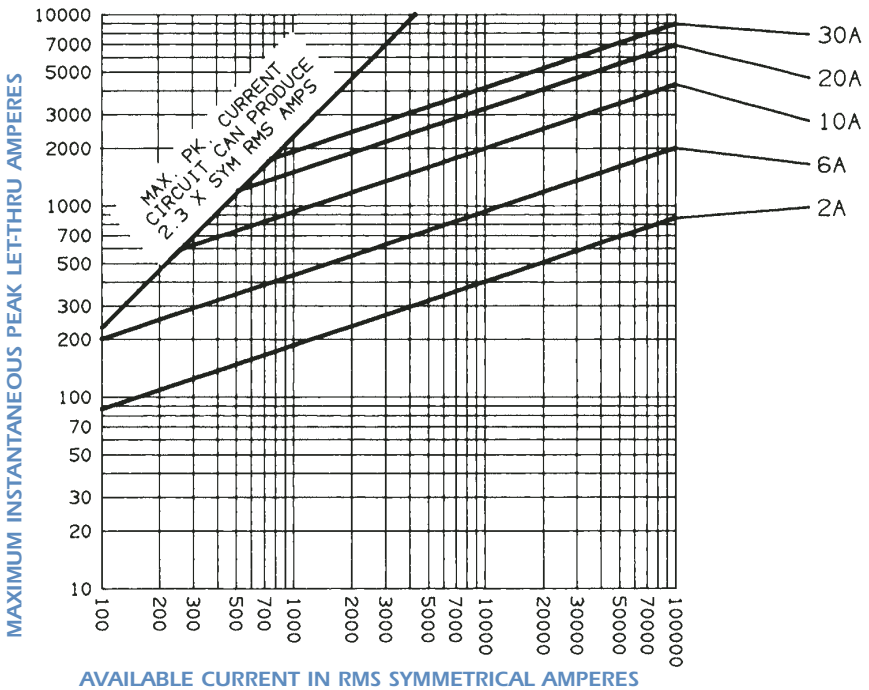
American Round Fuses
Form 101 Range
A120X

Semiconductor Protection Fuses

A120X1/2 to 30



Peak Let-Thru Current Data – A120X2 to 30, 1200 Volts AC



I²t at 1200VAC, 100kA

Fuse Ampere Rating	I²t data	
	Melting (A²s)	Clearing (A²s)
1/2	.10	1.9
1	.40	7.5
2	4.3	30
3	8.9	69
4	10	120
5	18	190
6	29	280
10	500	970
15	1100	2100
20	2000	3700
25	3100	5700
30	4400	8300

American Round Fuses
Other American Fuses
A25Z-2



Semiconductor Protection Fuses

A25Z "Type 2" Amp-trap® midget fuses are primarily used for semiconductor protection. They have a 300 volt rating and are highly current-limiting fuses, with midget dimensions. (Not for Branch Circuit Protection).

Features/Benefits

- Extremely fast acting for upgrades of existing circuit protection
- Low I^2t for semiconductor protection
- Can be used with ULTRASAFE™ fuse holders

Ratings

- AC: 1-30A 300VAC, 100kA I.R.

Approvals

- Ferraz Shawmut Certified

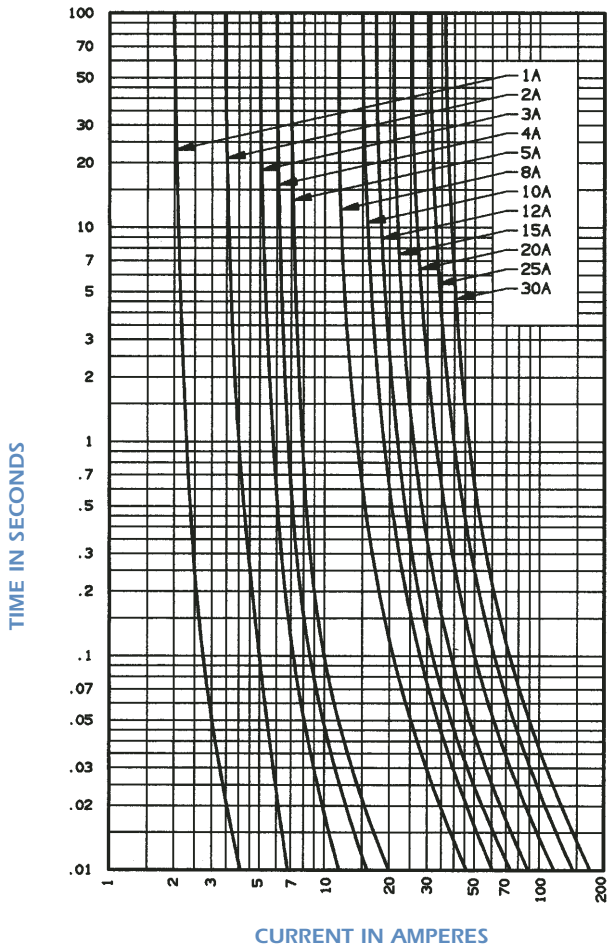
Highlights

- 300 Volt Rated
- Current Limiting
- I^2t Rated

Applications

- Semiconductor Protection

Melting Time – Current Data 1 - 30 Amperes, 300 Volts AC



Standard Fuse Ampere Ratings, Clearing I^2t

Ampere Rating	Catalog Number	Reference Number	Clearing I^2t AT 250V
1	A25Z1-2	S211133	.27
2	A25Z2-2	R213202	1.5
3	A25Z3-2	S214721	3.4
4	A25Z4-2	A215740	6.9
5	A25Z5-2	G216252	8.7
8	A25Z8-2	E216756	26
10	A25Z10-2	J211654	40
12	A25Z12-2	Q212166	58
15	A25Z15-2	G212687	90
20	A25Z20-2	J213701	160
25	A25Z25-2	P214212	250
30	A25Z30-2	W215230	360

American Round Fuses
Other American Fuses
A070gRB



Semiconductor Protection Fuses

The A070gRB is a fast acting, full range fuse utilized in the protection of inverters, UPS and other discrete semi-conductor devices

Features/Benefits

- International 10 X 38 mm (1 1/2 X 13/32) size for woldwide acceptance
- Ferrule mount 1 to 30A for design versatility
- Low I^2t for improved semiconductor protection
- gR Class according to VDE 636-23 and IEC 269.4

Ratings

- AC: 1-30A 160kA, 700V
- DC: 550VDC, L/R = 10mS

Approvals

- UL Recognized Component
- IEC 269-4 Compliance
- AC: UL Guide No. JFHR2

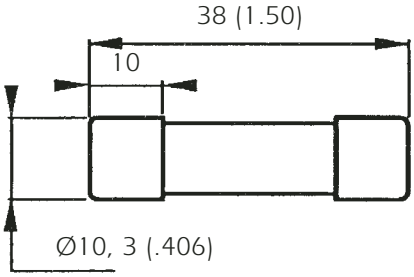
Highlights

- Extremely Fast Acting
- Current Limiting
- Low I^2t
- Excellent Cycling Capability
- gR

Applications

- Protection of small inverters, UPS systems, motor drives and similar 700v or less equipment

Dimensions



Fuse holders for A070gRB fuses

USM Series . . . . . .ULTRASAFE™ Fuse Holders
303 Series . . . . . .Midget Fuse Blocks

Note: Fuses labels have both European and American references.

American Round Fuses
Other American Fuses
A070gRB

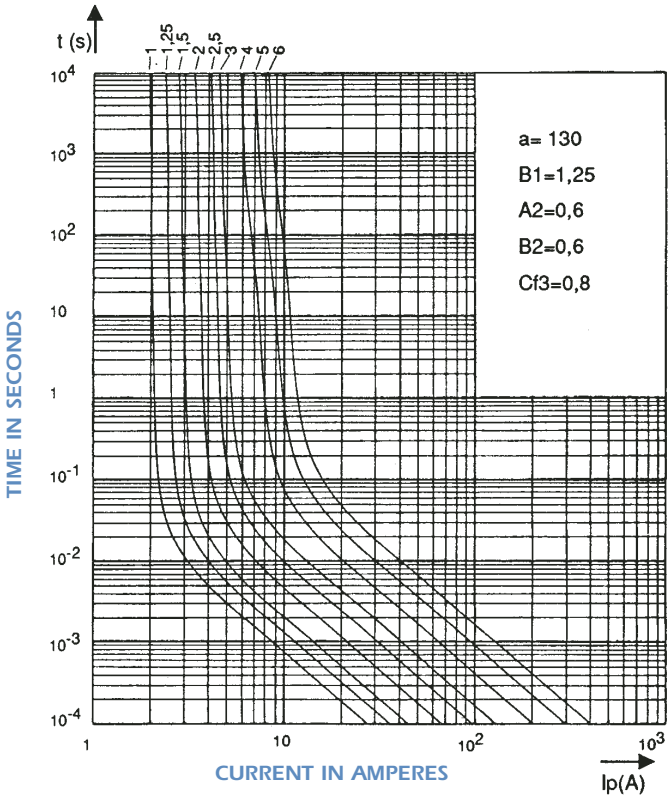
Semiconductor Protection Fuses

Body Size (mm)	Ampere Rating	Rated Voltage (VAC)	Melting I^2t (A^2s)	Clearing I^2t @ Rated Voltage (A^2s)	Watts Loss @ 80% Rated Current	Watts Loss @ 100% Rated Current	Catalog Number	Reference Number
10 X 38	1	700	0.066	0.32	0.57	1	A070GRB01T13	W330000
	1.25		0.115	0.4	0.7	1.25	A070GRB1.25T13	X330001
	1.5		0.185	0.63	0.81	1.5	A070GRB1.5T13	Y330002
	2		0.42	1.43	1.1	2	A070GRB2T13	Z330003
	2.5		0.88	3	1.15	2.1	A070GRB02.5T13	A330004
	3		1.55	5.1	1.25	2.3	A070GRB03T13	B330005
	4		4	13.2	1.35	2.6	A070GRB04T13	C330006
	5		8.6	27.5	1.4	2.7	A070GRB05T13	D330007
	6		15	48.5	1.5	2.9	A070GRB06T13	E330008
	8		3.3	36.3	1.35	2.4	A070GRB08T13	F330009
	10		5.4	60.5	1.85	3.4	A070GRB10T13	G330010
	12.5		8.5	90.2	1.9	3.4	A070GRB12.5T13	H330011
	16		16	160	2.3	4.1	A070GRB16T13	J330012
	20		30	275	2.4	4.3	A070GRB20T13	K330013
	25		58	520	2.7	4.7	A070GRB25T13	L330014
	30		96	815	2.9	5	A070GRB30T13	M330015

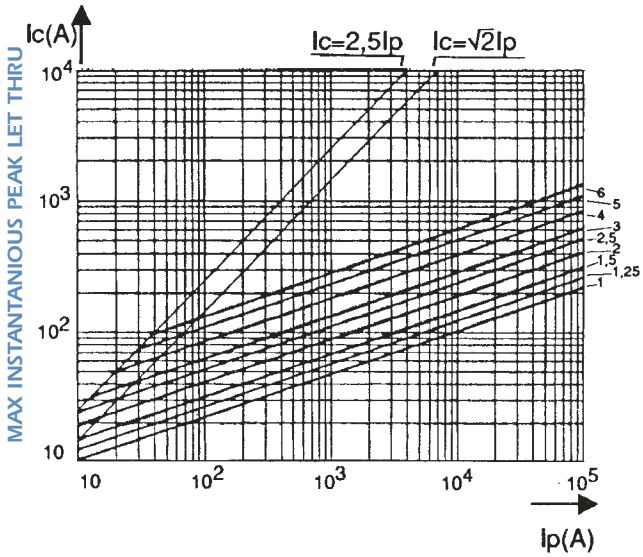
American Round Fuses
Other American Fuses
A070gRB

Semiconductor Protection Fuses

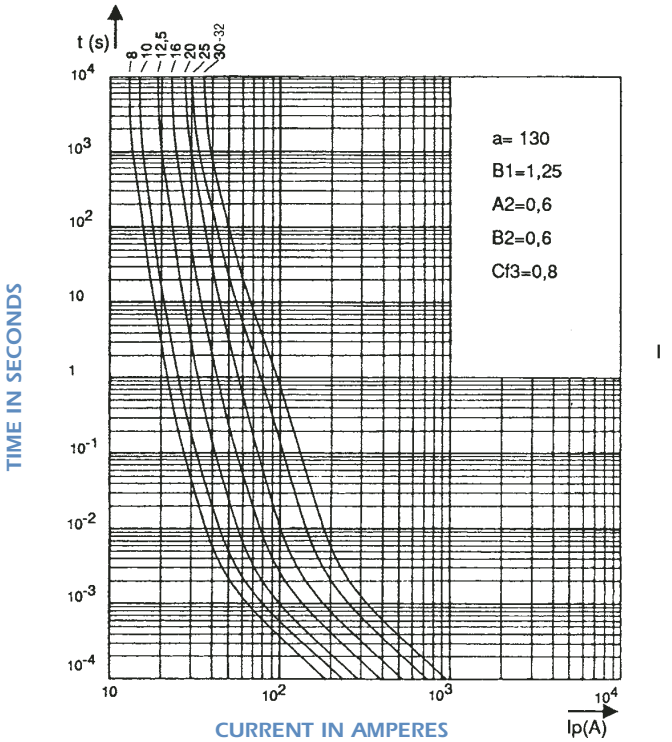
Melting Time Current Data (1 to 6A)



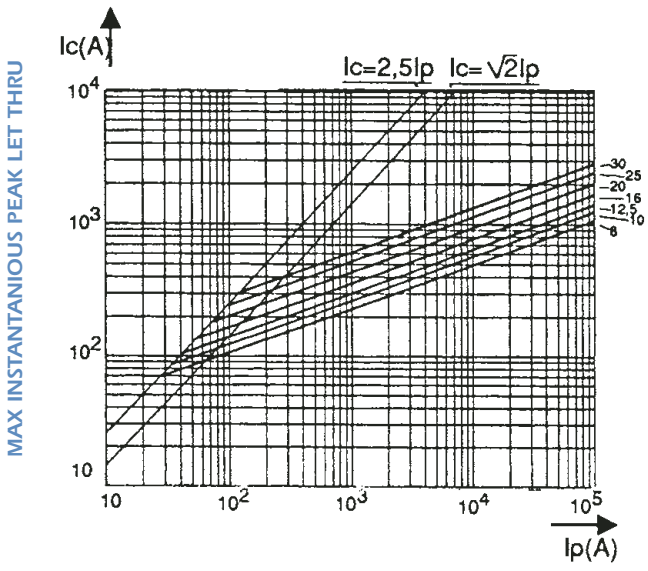
Peak Let Thru Current Data (1 to 6A)



Melting Time Current Data (8 to 30A)



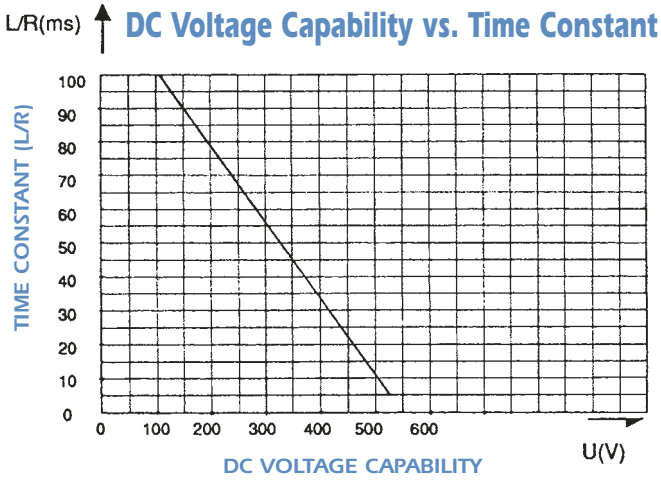
Peak Let Thru Current Data (8 to 30A)



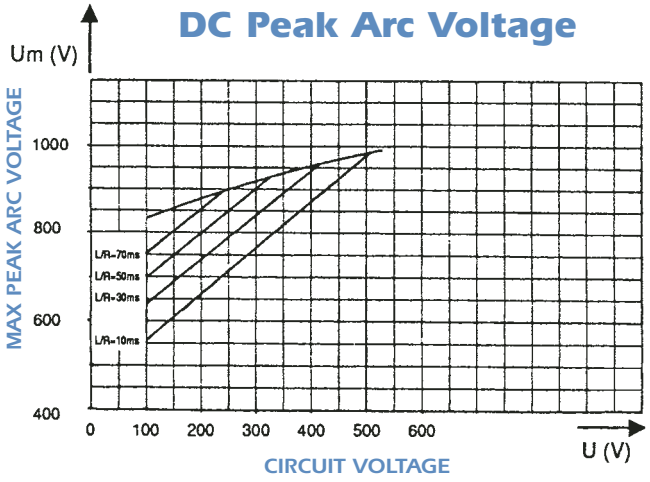
American Round Fuses
Other American Fuses
A070gRB

Semiconductor Protection Fuses

DC Voltage Capability vs. Time Constant

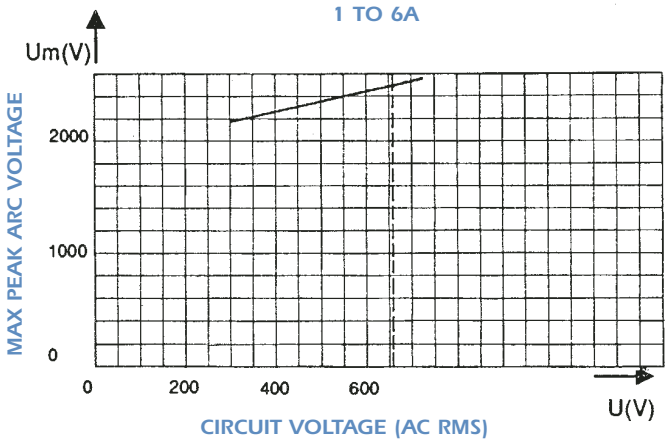


DC Peak Arc Voltage

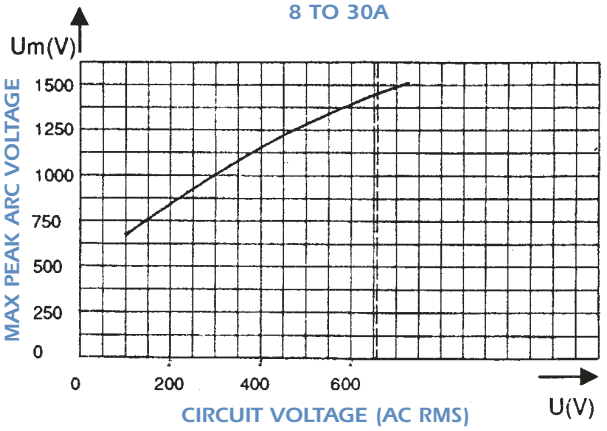


Maximum Arc Volts vs. System Voltage

1 TO 6A



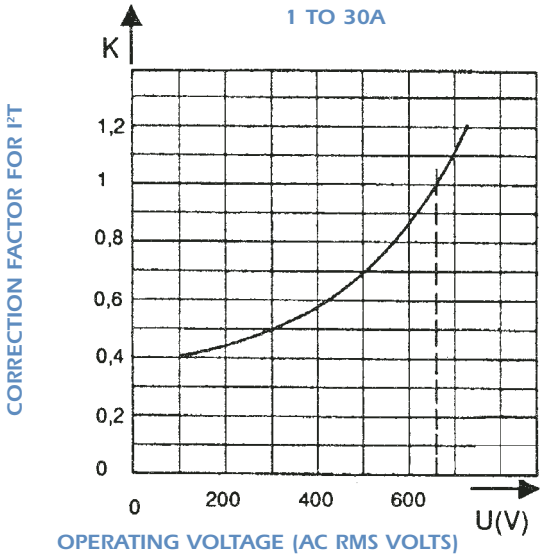
8 TO 30A



Determines the peak arc voltage across fuse terminals as a function of applied voltage

Clearing I²t vs. AC operating voltage

1 TO 30A



Correction factor to determine clearing I²t of a fuse below its related voltage.

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
gR/aR - 500 to 690 VAC DIN 000

GERMAN STANDARD
gRB - URB from 20 to 400 A
Size: 000

- EXTREMELY HIGH BREAKING CAPACITY FUSES: PROTECTION OF POWER SEMICONDUCTORS ACCORDING TO IEC 60269-1 and 4
- 690V VOLTAGE RATING (RATING 20 TO 400 A)
- gR CLASS (gRB RATINGS 20 TO 125 A) ACCORDING TO VDE 636-23
- CLEARING ALL OVERLOADS
- IMPROVING SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION WITH ALL FUSES
- aR CLASS (URB RATINGS 80 TO 400 A) ACCORDING TO VDE 636-23 AND IEC 60269.4
- ALL MODELS COMPLYING WITH DIN 43653-00C ARE WITH OR WITHOUT BLOWN FUSE INDICATION WITH TRIP INDICATOR
- MODEL COMPLYING WITH DIN 43620 (00C) STANDARD WITH BLOWN FUSE INDICATION - WITH TRIP INDICATOR







Main Characteristics

Voltage rating U_N(VAC)	Class	Current rating IN (A)	Pre-arcing I^2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t @ 660V I^2tt (A^2s)	Watts loss 0.8 IN	Watts loss IN	Tested Breaking Capacity	Estimated Breaking Capacity
690	gRB	16	8,2	60	-	5,6	200 k A @ 690 V	300 k A @ 690 V
		20	12	80	3.8	7		
		25	20	150	5.0	9		
		32	39	270	5.5	10		
		40	70	460	6.6	12		
		50	102	730	7.7	14		
		63	210	1500	8.8	16		
		80	475	2900	9.9	18		
		100	970	6000	11	20		
		125	1900	11800	11.6	21		
690	URB	80	390	2500	11.6	21	200 k A @ 690 V	300 k A @ 690 V
		100	690	4200	12.7	23		
		125	1300	8900	14.3	26		
		160	2700	16000	17.0	31		
		200	5250	31500	19.8	36		
		250	9900	52000	24.8	45		
		315	15500	82000	31.9	58		
500	URB	350	22400	110000*	31.9	58	120 k A @ 500 V	
		400	33200	160000*	36.3	66		

* @ U_n

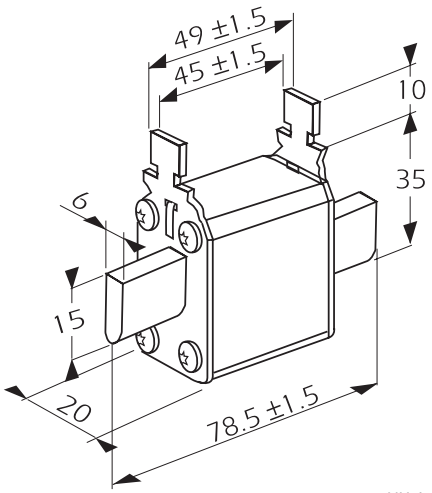
Minimum operating voltage for blown fuse indicator: 20 V

Minimum operating voltage for trip-indicator: 20 V

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
gR/aR - 500 to 690 VAC DIN 000

German standard blade-type DIN 43620 with trip-indicator

Current rating	Designation	Ref. Number	I/I_N*	Catalog Number
16	6,9 GRB 000 PV016	Y210609	1	PC000GB69V16PV
20	6,9 GRB 000 PV020	Z210610	1	PC000GB69V20PV
25	6,9 GRB 000 PV025	A210611	1	PC000GB69V25PV
32	6,9 GRB 000 PV032	B210612	1	PC000GB69V32PV
40	6,9 GRB 000 PV040	C210613	1	PC000GB69V40PV
50	6,9 GRB 000 PV050	D210614	1	PC000GB69V50PV
63	6,9 GRB 000 PV063	E210615	1	PC000GB69V63PV
80	6,9 GRB 000 PV080	F210616	1	PC000GB69V80PV
100	6,9 GRB 000 PV100	G210617	1	PC000GB69V100PV
125	6,9 GRB 000 PV125	H210618	0,9	PC000GB69V125PV



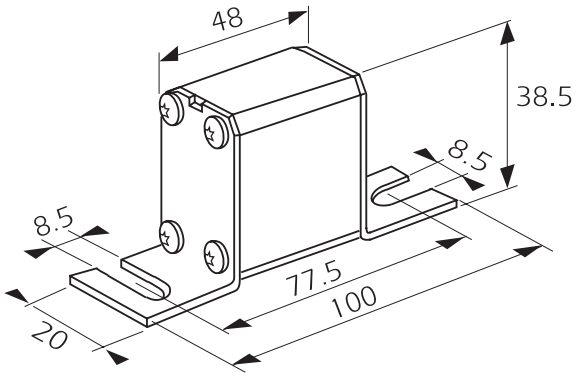
Microswitches
MS 4L 2-5 B6 + PRES Ref. F210156
MS 4L 2-5 B2 + PRES Ref. G210157

Weight: 150g
Packaging: 3 pieces

* Fuse base: 00-EP Ref Number F215170
Pull out grip handle: Ref Number K217244

German standard without blown fuse indicator

Current rating	Designation	Ref. Number	I/I_N*	Catalog Number
16	6,9 GRB 000 D08/016	L330060	1	DN000GB69V16
20	6,9 GRB 000 D08/020	D330030	1	DN000GB69V20
25	6,9 GRB 000 D08/025	E330031	1	DN000GB69V25
32	6,9 GRB 000 D08/032	F330032	1	DN000GB69V32
40	6,9 GRB 000 D08/040	G330033	1	DN000GB69V40
50	6,9 GRB 000 D08/050	H330034	1	DN000GB69V50
63	6,9 GRB 000 D08/063	J330035	1	DN000GB69V63
80	6,9 GRB 000 D08/080	A330073	1	DN000GB69V80
100	6,9 GRB 000 D08/100	S330112	1	DN000GB69V100
125	6,9 GRB 000 D08/125	T330113	0,9	DN000GB69V125
80	6,9 URB 000 D08/080	K330036	1	DN000UB69V80
100	6,9 URB 000 D08/100	L330037	1	DN000UB69V100
125	6,9 URB 000 D08/125	M330038	0,9	DN000UB69V125
160	6,9 URB 000 D08/160	N330039	0,85	DN000UB69V160
200	6,9 URB 000 D08/200	P330040	0,85	DN000UB69V200
250	6,9 URB 000 D08/250	Q330041	0,8	DN000UB69V250
315	6,9 URB 000 D08/315	R330042	0,7	DN000UB69V315
350	5 URB 000 D08/350	V330114	0,7	DN000UB50V350
400	5 URB 000 D08/400	D330191	0,65	DN000UB50V400



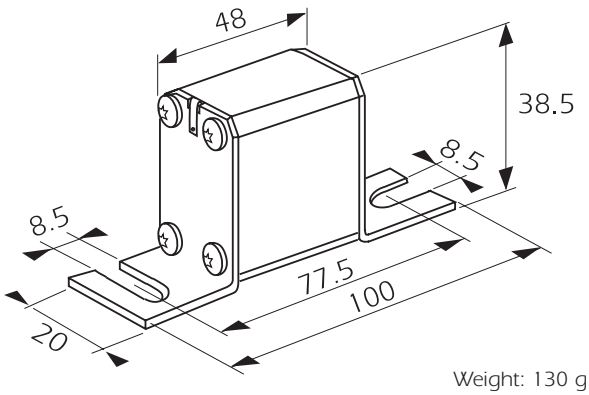
* Fuse base: SI 000 DIN 80
Ref. Number: C220710

Weight: 130 g
Packaging: 6 pieces

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
gR/aR - 500 to 690 VAC DIN 000

German standard with blown fuse indicator

Current rating	Designation	Ref. Number	I/I_N* fuse base	Catalog Number
16	6,9 gRB 000 D08V/016	C330190	1	DN000GB69V16V
20	6,9 gRB 000 D08V/020	P330017	1	DN000GB69V20V
25	6,9 gRB 000 D08V/025	Q330018	1	DN000GB69V25V
32	6,9 gRB 000 D08V/032	R330019	1	DN000GB69V32V
40	6,9 gRB 000 D08V/040	S330020	1	DN000GB69V40V
50	6,9 gRB 000 D08V/050	T330021	1	DN000GB69V50V
63	6,9 gRB 000 D08V/063	V330022	1	DN000GB69V63V
80	6,9 gRB 000 D08V/080	G330102	1	DN000GB69V80V
100	6,9 gRB 000 D08V/100	Q330110	1	DN000GB69V100V
125	6,9 gRB 000 D08V/125	R330111	0,9	DN000GB69V125V
80	6,9 URB 000 D08V/080	W330023	1	DN000UB69V80V
100	6,9 URB 000 D08V/100	X330024	1	DN000UB69V100V
125	6,9 URB 000 D08V/125	Y330025	0,95	DN000UB69V125V
160	6,9 URB 000 D08V/160	Z330026	0,85	DN000UB69V160V
200	6,9 URB 000 D08V/200	A330027	0,85	DN000UB69V200V
250	6,9 URB 000 D08V/250	B330028	0,8	DN000UB69V250V
315	6,9 URB 000 D08V/315	C330029	0,7	DN000UB69V315V
350	5 URB 000 D08V/350	W330115	0,7	DN000UB69V350V
400	5 URB 000 D08V/400	E330192	0,65	DN000UB69V400V

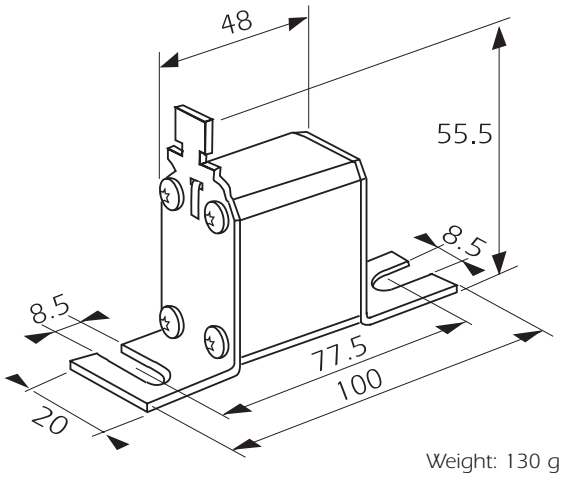


Weight: 130 g
Packaging: 6 pieces

Fuse base: SI 000 DIN 80 Ref. Number : C 20710

German standard with trip-indicator

Current rating	Designation	Ref. Number	I/I_N* fuse base	Catalog Number
16	6,9 gRB 000 D08L/016	X330277	1	DN000GB69V16L
20	6,9 gRB 000 D08L/020	J330173	1	DN000GB69V20L
25	6,9 gRB 000 D08L/025	K330174	1	DN000GB69V25L
32	6,9 gRB 000 D08L/032	L330175	1	DN000GB69V32L
40	6,9 gRB 000 D08L/040	M330176	1	DN000GB69V40L
50	6,9 gRB 000 D08L/050	N330177	1	DN000GB69V50L
63	6,9 gRB 000 D08L/063	P330178	1	DN000GB69V63L
80	6,9 gRB 000 D08L/080	Q330179	1	DN000GB69V80L
100	6,9 gRB 000 D08L/100	R330180	1	DN000GB69V100L
125	6,9 gRB 000 D08L/125	S330181	0,9	DN000GB69V125L
80	6,9 URB 000 D08L/080	T330182	1	DN000UB69V80L
100	6,9 URB 000 D08L/100	V330183	1	DN000UB69V100L
125	6,9 URB 000 D08L/125	W330184	0,95	DN000UB69V125L
160	6,9 URB 000 D08L/160	X330185	0,85	DN000UB69V160L
200	6,9 URB 000 D08L/200	Y330186	0,85	DN000UB69V200L
250	6,9 URB 000 D08L/250	Z330187	0,8	DN000UB69V250L
315	6,9 URB 000 D08L/315	A330188	0,7	DN000UB69V315L
350	5 URB 000 D08L/350	B330189	0,7	DN000UB69V350L
400	5 URB 000 D08L/400	F330193	0,65	DN000UB69V400L

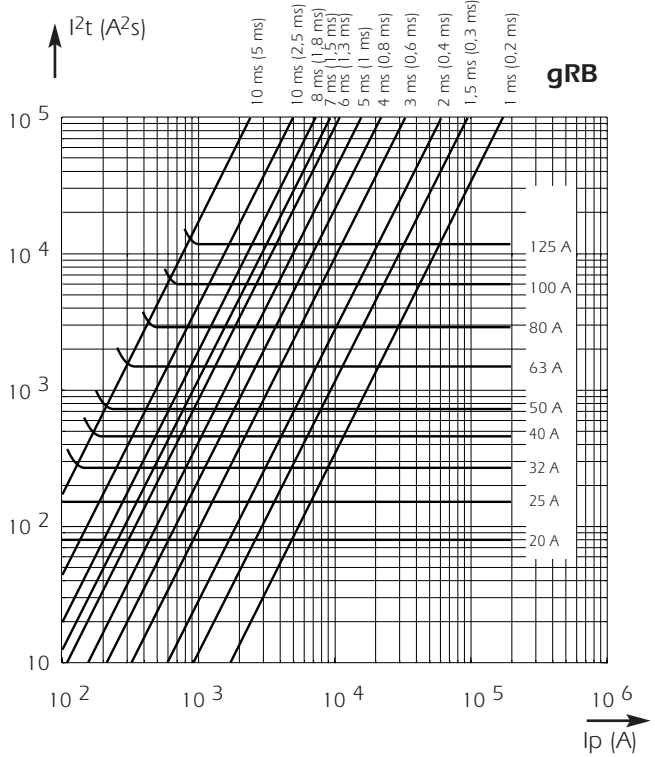


Weight: 130 g
Packaging: 6 pieces

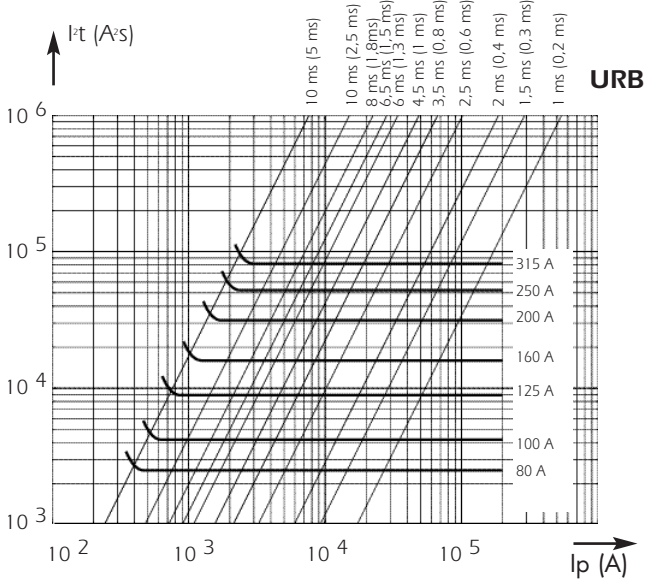
Microswitch
MC 4L 2-5 B6 + PRES Ref. Number : F210156
MC 4L 2-5 B2 + PRES Ref. Number : G210157
Fuse base: SI 000 DIN 80 Ref. Number : C 20710

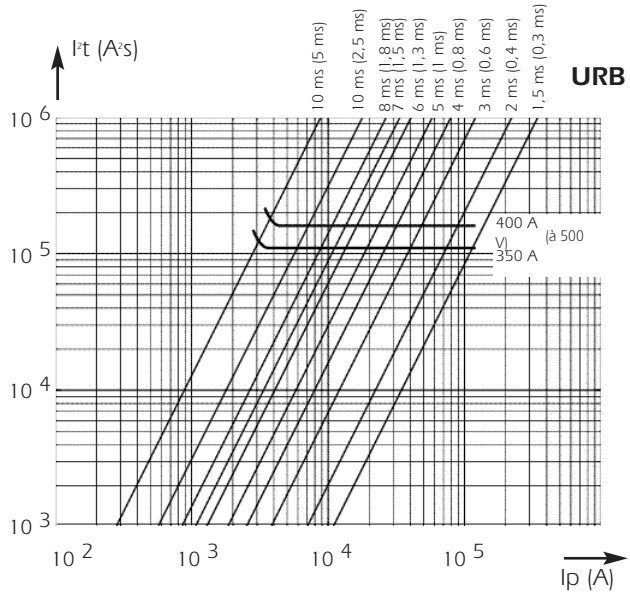
Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
gR/aR - 500 to 690 VAC DIN 000

Total clearing I²t

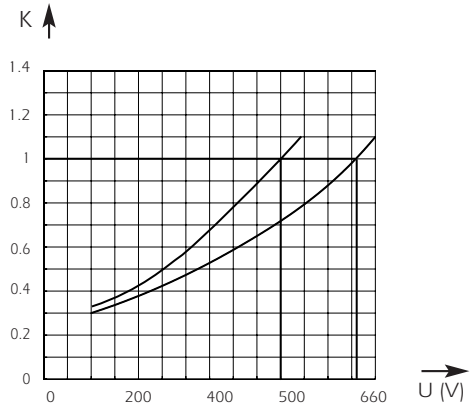


Above: Horizontal curves show, for each rated current, values of total clearing I2t (I2tt) as a function of prospective current Ip. @ UN with cosj = 0.15. Oblique lines indicate total clearing duration Tt, with associated pre-arcing duration in brackets.



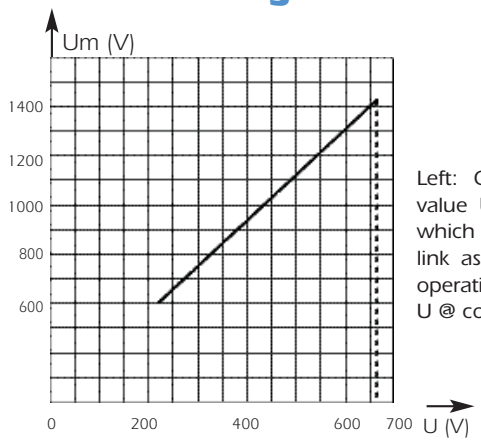


I²t corrective factor



Above: Mean curves show variation of total clearing time (I2tt) and total clearing duration Tt as a function of operating voltage U.

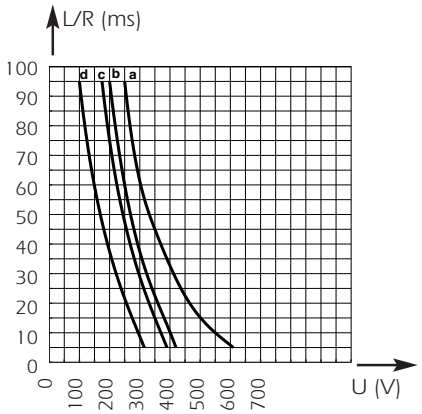
Peak arc voltage



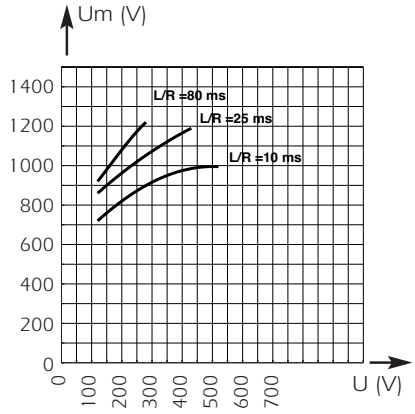
Left: Curve shows peak value Um of arc voltage which appears across fuse link as a function of the operating voltage
U @ cos φ = 0.15

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
gR/aR - 500 to 690 VAC DIN 000

DC Application data



Above: Curves indicate permissible value of time constant L/R as a function of DC working voltage.
Curve a: Ratings from 20 to 160 A
Curve b: Rating 200 A
Curve c: Ratings from 250 to 315 A
Curve d: Ratings from 350 to 400 A

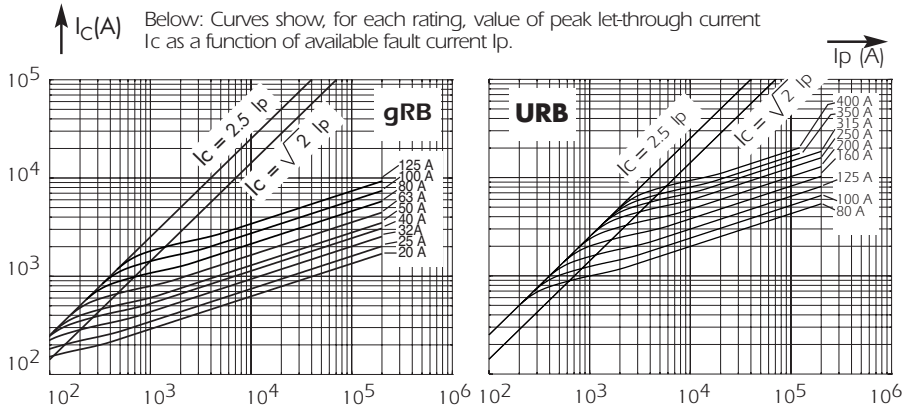


Above: Curves indicates peak arc voltage Um which may appear across fuse terminals at working voltage U.

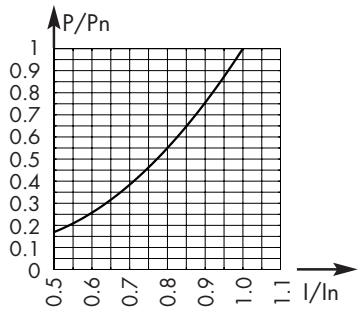
Rated current (A)	Curve	Ipm (A)
20	a	60
25	a	65
32	a	90
40	a	120
50	a	150
63	a	200
80	a	270
100	a	370
125	a	500
160	a	700
200	b	1200
250	c	1800
315	c	2200
350	d	2600
400	d	3100

Ipm values give minimum DC interrupting current in amps.

Current limitation curves

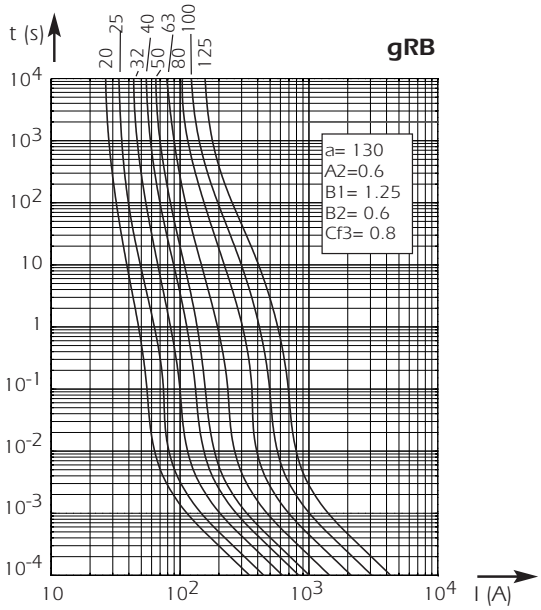


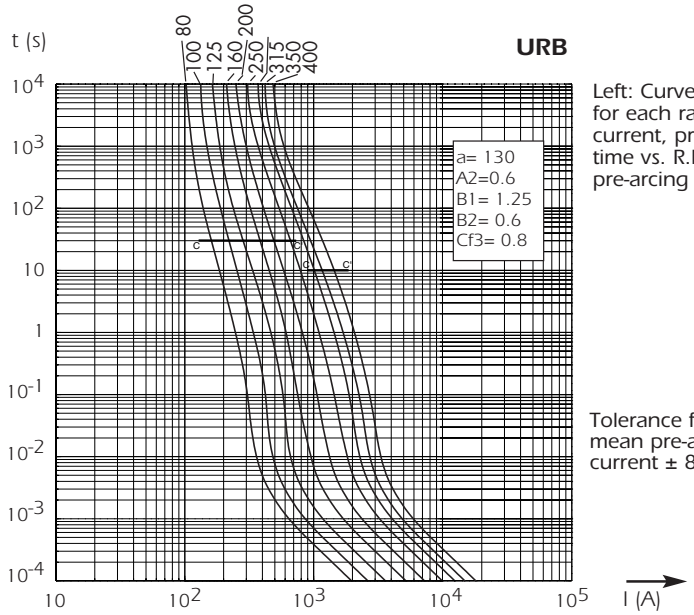
Watts loss



Above: Curve enables computation of power losses P for a IN-rated fuse as a function of R.M.S. current I (as a multiple of IN for steady state operation)

Time vs current characteristics





Left: Curves show, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

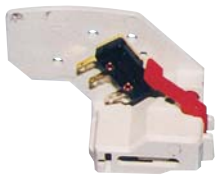
Tolerance for mean pre-arcing current ± 8%.

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
Microswitches for PSC sizes 000/00 and NH Fuses

MICROSWITCH SYSTEMS ADAPTED TO THE FOLLOWING FUSES:

- PSC sizes 000/00 (brackets) DIN43653
- NH Fuses (plain blades) see details in "General Purpose IEC Fuses" section
- NH plain blades 690 VAC Protistor square-body Fuses

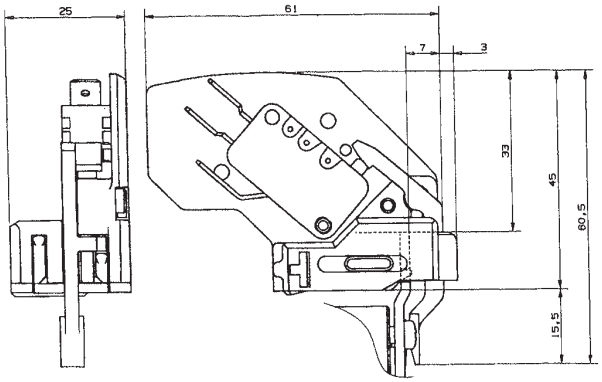
MS 4L 2-5

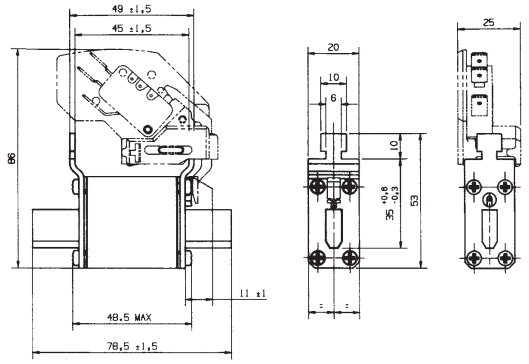


Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit			Inductive circuit : L/R = 25ms			AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
					30V	110V	250V	30V	110V	250V			
MS 4L 2-5 B2	1000 V	20 V	5 A	50 Hz	4A	4A	5A	-	5A	5 A	12 kV	16 kV	V0
+ Pres		100 mA		DC	-	-	-	-	2 A	0,4 A	8 kV	13 kV	
MS 4L 2-5 B6	1000 V	20 V	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8 kV	10 kV	V0
+ Pres		50 mA		DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A			

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals





Designation	Ref. Number	Weight (g)	Pack.	Catalog Number
MS 4L 2-5 B6 + PRES (Fig. 1) (1)	F210156	30	3	MS 4L2-5B6PRES
MS 4L 2-5 B2 + PRES (Fig. 2) (2)	G210157	26	3	MS 4L2-5B2PRES

Automatically resettable, these microswitch systems indicate fuse presence (PRES) and proper mounting.
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)

Fig.1

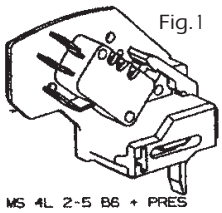
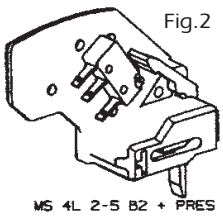


Fig.2



(1) 6.3 mm clips
(2) 2.8 mm clips

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
gR/aR - 600 to 690 VAC DIN 00

gRB-URB from 16 to 450 A
Size: 00



EXTREMELY HIGH BREAKING CAPACITY FUSES:
PROTECTION OF POWER SEMICONDUCTORS
AS PER IEC STANDARD 60269.1 AND 4

690 V VOLTAGE RATING

gR CLASS (gRB RATINGS 16 to 160 A) AS PER VDE 636-23
- CLEARING ALL OVERLOADS
- IMPROVING SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION WITH ALL FUSES

aR CLASS (URB RATINGS 16 TO 450 A) ACCORDING TO
VDE 636-23 AND IEC 60269-4

CONNECTIONS ACCORDING TO
- DIN 43653/00 80 AND 110 mm BETWEEN AXES
- DIN 43620/00 SOLID BLADES

WITH AN INDICATING PAWL ACTIVATING A MICROSWITCH IF NEEDED

Main Characteristics

Voltage rating U_N(V)	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t total@ UN I^2tt (A^2s)	Watts loss 0.8 IN	Watts loss IN	Tested Breaking Capacity	Estimated Breaking Capacity
690	gRB	16	8	61	2.7	5	200 k A @ 690 V	300 k A @ 690 V
		20	12	86	3.3	6		
		25	18	140	4.4	8		
		32	39	250	6.0	11		
		40	68	450	7.1	13		
		50	116	750	8.8	16		
		63	210	1400	9.9	18		
		80	525	3000	10.5	19		
		100	970	5400	10.7	19.5		
		125	1710	9600	13.2	24		
		160	4270	22400	13.7	25		
	URB	16	7	52	3.8	7	200 k A @ 690 V	300 k A @ 690 V
		20	10	75	5.0	9		
		25	15	120	6.0	11		
		32	32	210	8.2	15		
		40	61	400	9.9	18		
		50	102	700	11.5	21		
		63	177	1200	12.6	23		
		80	390	2200	13.8	25		
		100	692	3900	15.4	28		
		125	1170	6600	18.1	33		
		160	2680	14 000	19.8	36		
		200	4690	24 000	23.1	42		
		250	8300	42 500	27.5	50		
		315	17 520	81 000	31.9	58		
		350 ▪	25 450	118 000	33.0	60		
		400 ▪	33 200	150 000	38.5	70		
600	URB	450 **	51 850	196 000	40.7	74	200 k A @ 600 V	300 k A @ 600 V

NOTE: voltage rating of 350-400-450 A rated fuses is defined with a CC' curve at 1 second limited by minimum breaking current.

▪ Voltage rating: 690 V with CC' at 1s - 450 V with CC' at 10 s
** Voltage rating: 600 V with CC' at 1s - 450 V with CC' at 10 s

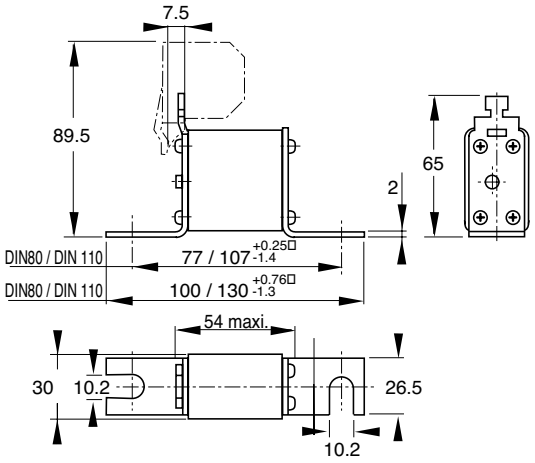
Minimum operating voltage for trip indicator = 20 V

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
gR/aR - 600 to 690 VAC DIN 00

German standard as per DIN43653/00C - DIN 80 & 110

gRB - DIN 80

Current rating	Designation	Ref. Number	I/I_N* fuse base	Catalog Number
16	6,9 gRB 00 D08L 016	S330273	1	DN00GB69V16L
20	6,9 gRB 00 D08L 020	S330227	1	DN00GB69V20L
25	6,9 gRB 00 D08L 025	T330228	1	DN00GB69V25L
32	6,9 gRB 00 D08L 032	V330229	1	DN00GB69V32L
40	6,9 gRB 00 D08L 040	W330230	1	DN00GB69V40L
50	6,9 gRB 00 D08L 050	X330231	1	DN00GB69V50L
63	6,9 gRB 00 D08L 063	Y330232	1	DN00GB69V63L
80	6,9 gRB 00 D08L 080	Z330233	1	DN00GB69V80L
100	6,9 gRB 00 D08L 100	A330234	1	DN00GB69V100L
125	6,9 gRB 00 D08L 125	B330235	0.9	DN00GB69V125L
160	6,9 gRB 00 D08L 160	C330236	0.9	DN00GB69V160L



Weight: 140 g(D08) - 190 g(D11)
Packaging: 3 pieces
Microswitches: MC 4L 2.5 B6 + PRES - Ref. Number: F210156
MC 4L 2.5 B2 + PRES - Ref. Number: G210157

Fuse-base: SI 00 DIN 80 - Ref. Number: Q098040

URB - DIN 80

Current rating	Designation	Ref. Number	I/I_N* fuse base	Catalog Number
16	6,9 URB 00 D08L 016	V330275	1	DN00UB69V16L
20	6,9 URB 00 D08L 020	T330274	1	DN00UB69V20L
25	6,9 URB 00 D08L 025	M330268	1	DN00UB69V25L
32	6,9 URB 00 D08L 032	N330269	1	DN00UB69V32L
40	6,9 URB 00 D08L 040	P330270	1	DN00UB69V40L
50	6,9 URB 00 D08L 050	Q330271	1	DN00UB69V50L
63	6,9 URB 00 D08L 063	R330272	1	DN00UB69V63L
80	6,9 URB 00 D08L 080	D330237	1	DN00UB69V80L
100	6,9 URB 00 D08L 100	E330238	1	DN00UB69V100L
125	6,9 URB 00 D08L 125	F330239	0.9	DN00UB69V125L
160	6,9 URB 00 D08L 160	G330240	0.85	DN00UB69V160L
200	6,9 URB 00 D08L 200	H330241	0.85	DN00UB69V200L
250	6,9 URB 00 D08L 250	J330242	0.80	DN00UB69V250L
315	6,9 URB 00 D08L 315	K330243	0.75	DN00UB69V315L
350	6,9 URB 00 D08L 350	L330244	0.75	DN00UB69V350L
400	6,9 URB 00 D08L 400	M330245	0.70	DN00UB69V400L
450	6 URB 00 D08L 450	N330246	0.65	DN00UB60V450L

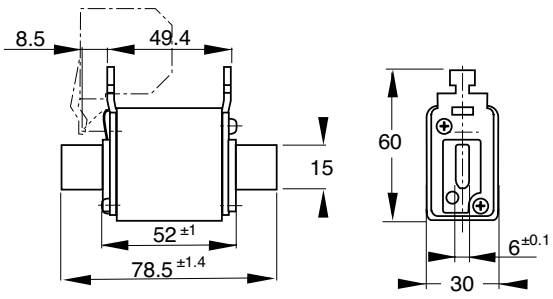
gRB - DIN 110

16	6,9 gRB 00 D11L 016	W330276	1	DN00GB69V16D1L
20	6,9 gRB 00 D11L 020	P330247	1	DN00GB69V20D1L
25	6,9 gRB 00 D11L 025	Q330248	1	DN00GB69V25D1L
32	6,9 gRB 00 D11L 032	R330249	1	DN00GB69V32D1L
40	6,9 gRB 00 D11L 040	S330250	1	DN00GB69V40D1L
50	6,9 gRB 00 D11L 050	T330251	1	DN00GB69V50D1L
63	6,9 gRB 00 D11L 063	V330252	1	DN00GB69V63D1L
80	6,9 gRB 00 D11L 080	W330253	1	DN00GB69V80D1L
100	6,9 gRB 00 D11L 100	X330254	1	DN00GB69V100D1L
125	6,9 gRB 00 D11L 125	Y330255	0.9	DN00GB69V125D1L
160	6,9 gRB 00 D11L 160	Z330256	0.9	DN00GB69V160D1L

URB - DIN 110

80	6,9 URB 00 D11L 80	A330257	1	DN00UB69V80D1L
100	6,9 URB 00 D11L 100	B330258	1	DN00UB69V100D1L
125	6,9 URB 00 D11L 125	C330259	0.9	DN00UB69V125D1L
160	6,9 URB 00 D11L 160	D330260	0.85	DN00UB69V160D1L
200	6,9 URB 00 D11L 200	E330261	0.85	DN00UB69V200D1L
250	6,9 URB 00 D11L 250	F330262	0.80	DN00UB69V250D1L
315	6,9 URB 00 D11L 315	G330263	0.75	DN00UB69V315D1L
350	6,9 URB 00 D11L 350	H330264	0.75	DN00UB69V350D1L
400	6,9 URB 00 D11L 400	J330265	0.70	DN00UB69V400D1L
450	6 URB 00 D11L 450	K330266	0.65	DN00UB60V450D1L

German standard as per DIN43620/00



Weight: 210 g
Packaging: 3 pieces
Microswitches: MC 4L 2.5 B2 + PRES - Ref Number: G210157 or
MC 4L 2.5 B6 + PRES - Ref Number: F210156

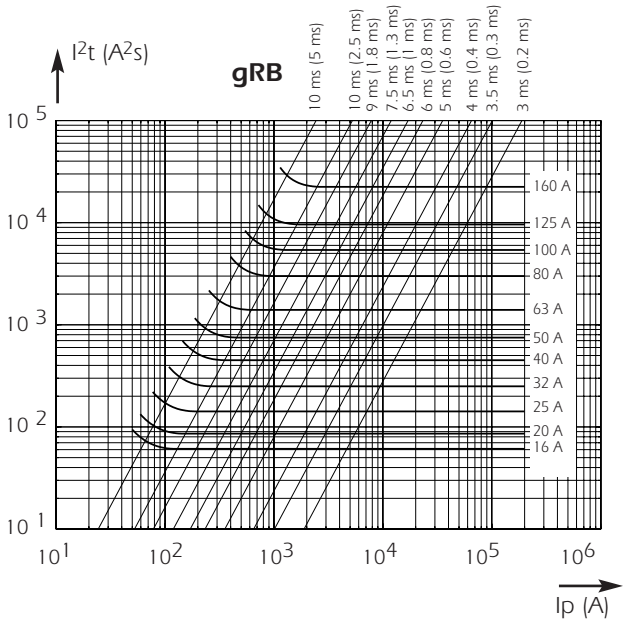
Fuse-base: 00EP - Ref. Number : F215170

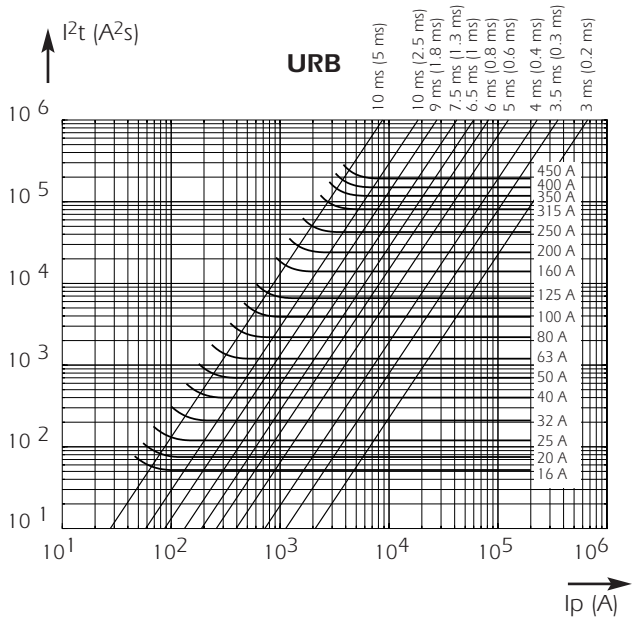
Current rating	Designation	Ref. Number	I/I_N* fuse base	Catalog Number
16	6,9 gRB 00 PV/016	L330267	1	PC00GB69V16PV
20	6,9 gRB 00 PV/020	W330207	1	PC00GB69V20PV
25	6,9 gRB 00 PV/025	X330208	1	PC00GB69V25PV
32	6,9 gRB 00 PV/032	Y330209	1	PC00GB69V32PV
40	6,9 gRB 00 PV/040	Z330210	1	PC00GB69V40PV
50	6,9 gRB 00 PV/050	A330211	1	PC00GB69V50PV
63	6,9 gRB 00 PV/063	B330212	0.90	PC00GB69V63PV
80	6,9 gRB 00 PV/080	C330213	0.90	PC00GB69V80PV
100	6,9 gRB 00 PV/100	D330214	0.90	PC00GB69V100PV
125	6,9 gRB 00 PV/125	E330215	0.85	PC00GB69V125PV
160	6,9 gRB 00 PV/160	F330216	0.85	PC00GB69V160PV

For curves see pages
I/IN : Ratio RMS steady current / current rating for fuses in base.

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
gR/aR - 600 to 690 VAC DIN 00

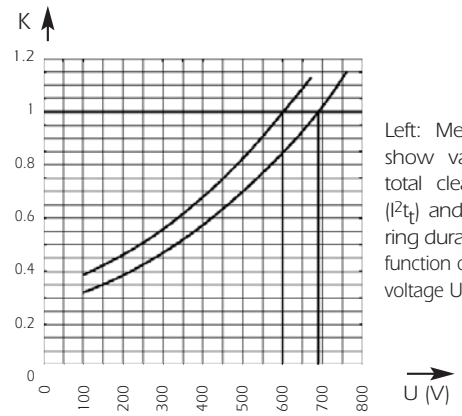
Total clearing I²t





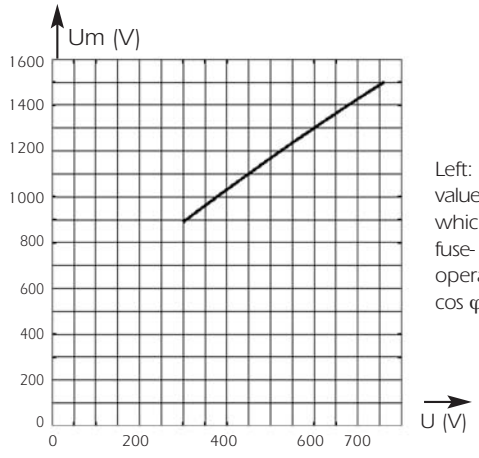
Above: horizontal curves show, for each rated current, maximum values of total clearing I²t (I^2t_t) as a function of prospective current Ip. @ UN with cosφ = 0.15.
Oblique lines indicate total clearing duration Tt, with associated pre-arcing duration shown in brackets.

I²t corrective factor



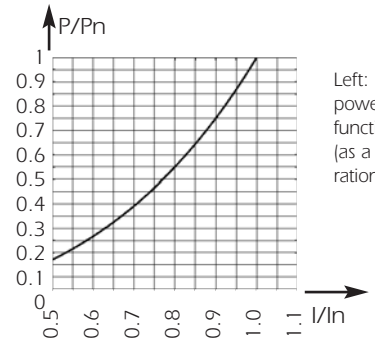
Left: Mean curves show variation of total clearing time (I^2t_t) and total clearing duration Tt as a function of operating voltage U.

Peak arc voltage



Left: Curve shows peak value Um of the arc voltage which appears across fuse- link as a function of operating voltage U @ cos φ = 0.15

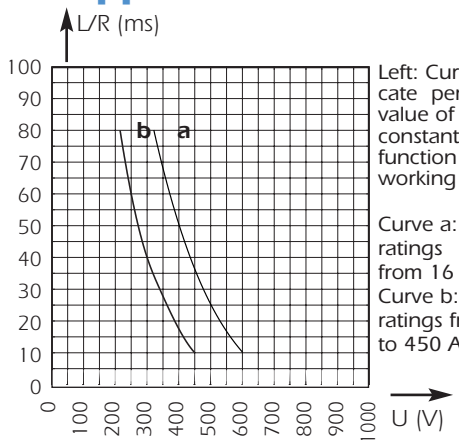
Watts loss



Left: Curve enables computation of power losses P for a I_N-rated fuse as a function of R.M.S. current I
(as a multiple of I_N for steady state operation)

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
gR/aR - 600 to 690 VAC DIN 00

DC Application data

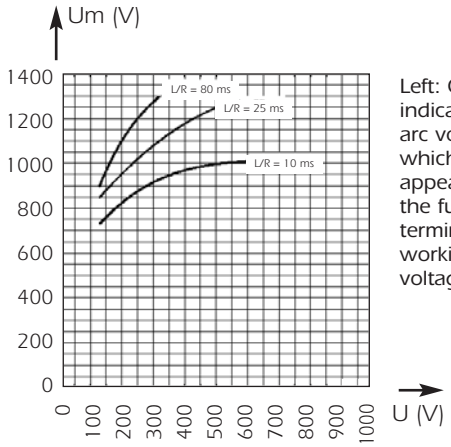


Left: Curves indicate permissible value of time constant L/R as a function of DC working voltage.

Curve a: for ratings from 16 to 250 A
Curve b: for ratings from 315 to 450 A

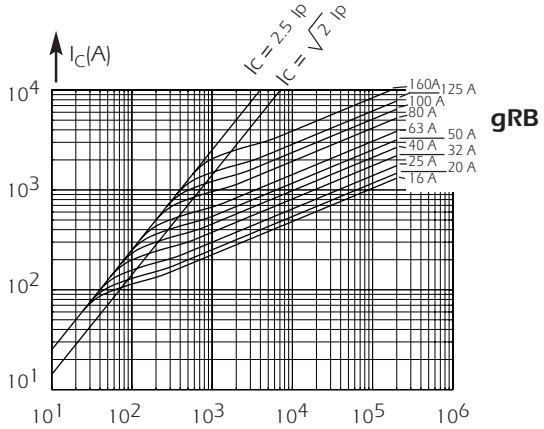
Rated current	Curve	Ipm (A) gRB	Ipm (A) URB
16	a	32	32
20	a	40	40
25	a	50	50
32	a	64	64
40	a	80	80
50	a	100	100
63	a	126	126
80	a	160	170
100	a	200	220
125	a	250	280
160	a	320	390
200	a		510
250	a		650
315	b		840
350	b		1770
400	b		2040
450	b		2250

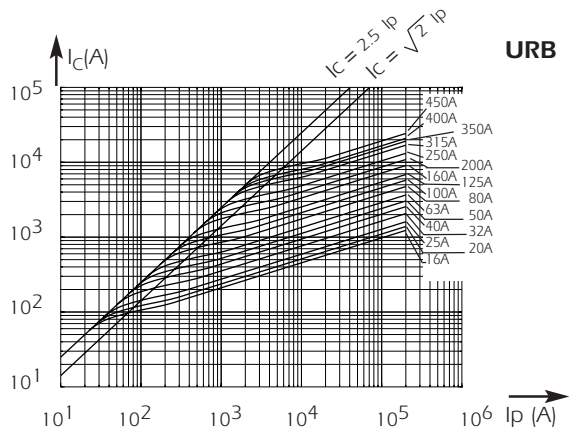
Ipm values give minimum DC interrupting current in amps.



Left: Curves indicate peak arc voltage Um which may appear across the fuse terminals at working voltage U.

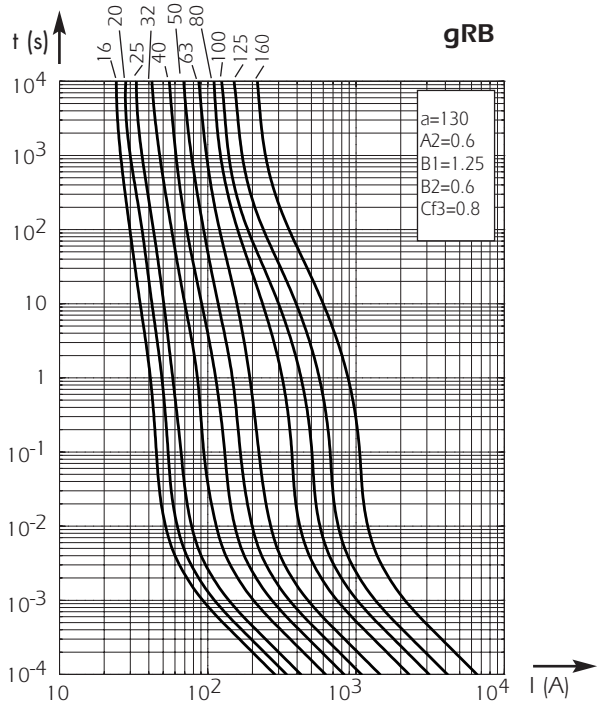
Current limitation curves

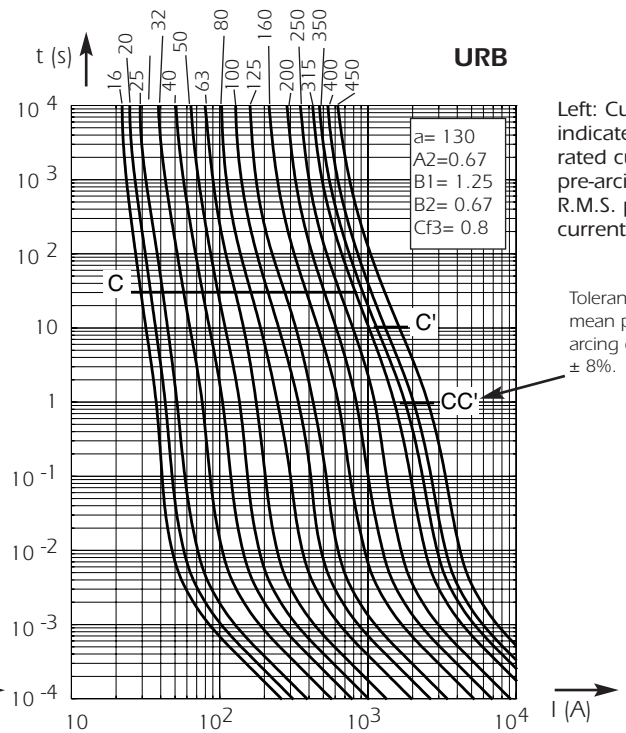




Above: Curves show, for each rating, value of peak let-through current Ic as a function of available fault current Ip.

Time vs current characteristics





Left: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

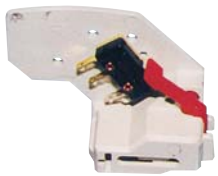
Tolerance for mean pre-arcing current ± 8%.

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
Microswitches for PSC sizes 000/00 and NH Fuses

MICROSWITCH SYSTEMS ADAPTED TO THE FOLLOWING FUSES:

- PSC sizes 000/00 (brackets) DIN43653
- NH Fuses (plain blades) see details in "General Purpose IEC Fuses" section
- NH plain blades 690 VAC Protistor square-body Fuses

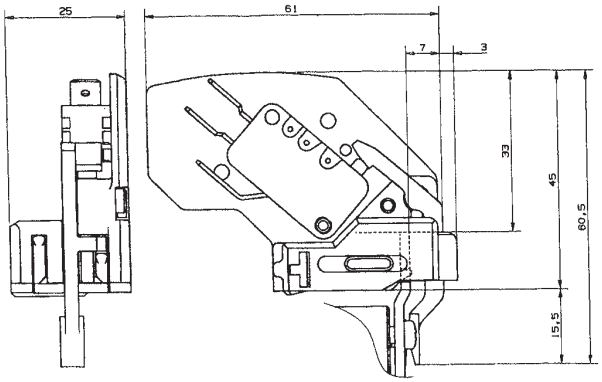
MS 4L 2-5

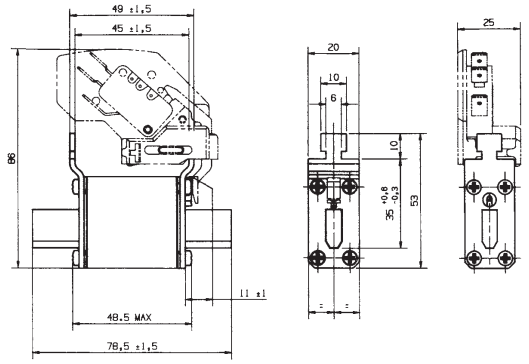


Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit			Inductive circuit : L/R = 25ms			AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
					30V	110V	250V	30V	110V	250V			
MS 4L 2-5 B2	1000 V	20 V	5 A	50 Hz	4A	4A	5A	-	5A	5 A	12 kV	16 kV	V0
+ Pres		100 mA		DC	-	-	-	-	2 A	0,4 A	8 kV	13 kV	
MS 4L 2-5 B6	1000 V	20 V	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8 kV	10 kV	V0
+ Pres		50 mA		DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A			

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals





Designation	Ref. Number	Weight (g)	Pack.	Catalog Number
MS 4L 2-5 B6 + PRES (Fig. 1) (1)	F210156	30	3	MS 4L2-5B6PRES
MS 4L 2-5 B2 + PRES (Fig. 2) (2)	G210157	26	3	MS 4L2-5B2PRES

Automatically resettable, these microswitch systems indicate fuse presence (PRES) and proper mounting.
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)

Fig.1

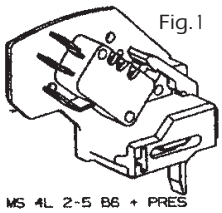
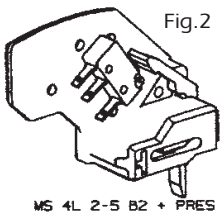


Fig.2



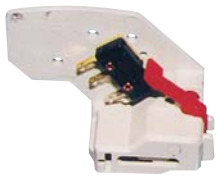
(1) 6.3 mm clips
(2) 2.8 mm clips

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
Microswitches for PSC sizes 000/00 and NH Fuses

MICROSWITCH SYSTEMS ADAPTED TO THE FOLLOWING FUSES:

- PSC sizes 000/00 (brackets) DIN43653
- NH Fuses (plain blades) see details in "General Purpose IEC Fuses" section
- NH plain blades 690 VAC Protistor square-body Fuses

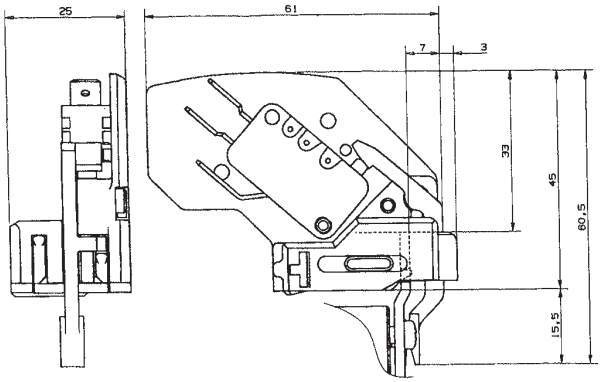
MS 4L 2-5

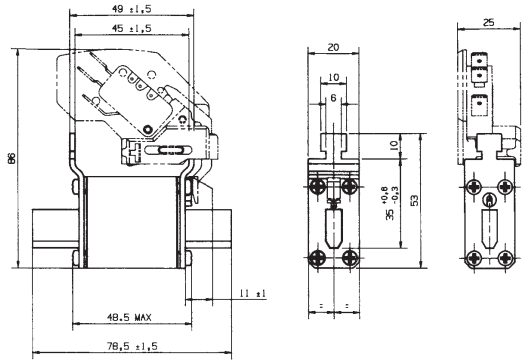


Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit			Inductive circuit : L/R = 25ms			AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
					30V	110V	250V	30V	110V	250V			
MS 4L 2-5 B2	1000 V	20 V	5 A	50 Hz	4A	4A	5A	-	5A	5 A	12 kV	16 kV	V0
+ Pres		100 mA		DC	-	-	-	-	2 A	0,4 A	8 kV	13 kV	
MS 4L 2-5 B6	1000 V	20 V	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8 kV	10 kV	V0
+ Pres		50 mA		DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A			

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals





Designation	Ref. Number	Weight (g)	Pack.	Catalog Number
MS 4L 2-5 B6 + PRES (Fig. 1) (1)	F210156	30	3	MS 4L2-5B6PRES
MS 4L 2-5 B2 + PRES (Fig. 2) (2)	G210157	26	3	MS 4L2-5B2PRES

Automatically resettable, these microswitch systems indicate fuse presence (PRES) and proper mounting.
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)

Fig.1

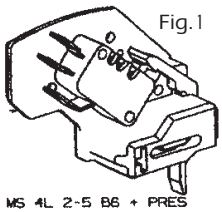
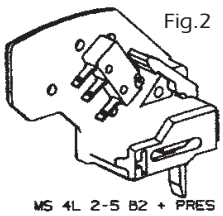


Fig.2

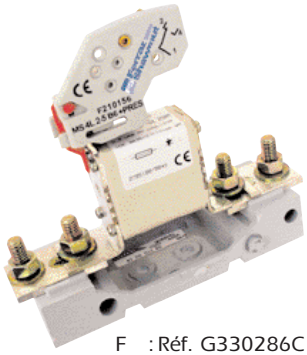


(1) 6.3 mm clips
(2) 2.8 mm clips

Protistor® Square-body Fuses
PSC gGR sizes 000/00
gGR - 690 VAC DIN 00/000 (full range)



F : Réf. D302108
MC: Réf. F210156C



F : Réf. G330286C
PF : Réf. Q098040C
MC: Réf. F210156C

gGr: two functions

A combination of:
Power supply cable protection (gG curve)

- Compliance with the standardized gate values for gG curves as per EN 60269-2,
- Low power dissipation, similar to a gG fuse, no current derating in holders,
- No derating for variable currents,
- Good withstand to overloads,
- Same thermal definition as a gG curve,
- Unnecessary to dimension the cable cross sectional area large in comparison to UR protection,
- Range designed for the new voltage of 690V ± 10%.

Power semi-conductor protection (Fast R curve)

- Fast curve for fault currents and short-circuit currents under 20 In,
- Tested breaking capacity 100 kA (00) or 170 kA (000) at 690 V,
- Very current limiting, which in turn limits electrodynamic forces in the circuit downstream,
- Low I^2t
- Compact footprint: only one fuse instead of two or a relay plus a fuse,
- DC performances 360 to 550V for I/R = 10 ms,
  Semi-conductor protection checked in the same way as a fuse.

Applications: "off-board" protection

- AC and DC speed governor,
- Soft starter,
- Static relay,
- Current regulator,
- Inverter (IGBT module disconnector in parallel),

Battery.

Connection technologies offered

- Solid blades (as per DIN 43620) with visual blown fuse indicator and striker to actuate a micros-witch, MS4L2-5B + PRES (ref. F210156C or G210157C),
- DIN 80 brackets (as per DIN 43653) with visual blown fuse indicator and striker indicator to actuate a microswitch, MS4L2-5B + PRES.
- With these two technologies the designer can choose a fuse according to the types of holders desired.

Protistor® Square-body Fuses
PSC gGR sizes 000/00
gGR - 690 VAC DIN 00/000 (full range)

- EN 60269-2-1 compliant
- Compliance with gG gate values on melting and not melting
- Low dissipated power
- No derating for variable current
- Good withstand to repeated overloading
- Withstand to exceptional overloads (same as Protistor fuses)
- Cable protection



Functionalities

Two functions:
- to protect cables from overloads,
- to protect semi-conductors from short-circuits.

Electrical characteristics

Size 000

Voltage Rating (VAC)	Size	Current Rating In (A)	Prearcing I²t @ 1 ms I²tp (A²s)	Total I²t (A²s)		Power losses @ In (W)	Tested breaking capacity	Estimated breaking capacity
				@ Un	@ 400V			
		16	45	280	230	2.5		
		20	60	380	310	3		
		25	130	830	700	3.5		
		32	210	1350	1150	4	170 kA	200 kA
690	000	40	350	2200	1900	5	@	@
		50	550	3500	3000	6	690 V	690 V
		63	1000	6100	5150	7		
		80	1700	11000	9200	8		
		100	3900	25000	21000	9		

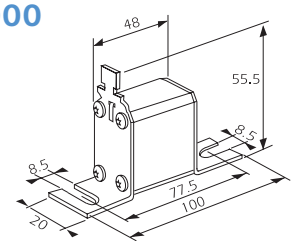
Size 00

Voltage Rating (VAC)	Size	Current Rating In (A)	Prearcing I²t @ 1 ms I²tp (A²s)	Total I²t (A²s)		Power losses @ In (W)	Tested breaking capacity	Estimated breaking capacity
				@ Un	@ 400V			
		16	45	280	230	2.5		
		20	60	390	290	3.2		
		25	120	750	560	4		
		32	240	1550	1150	5		
		40	350	2250	1680	5.5		
		50	540	3500	2600	6.5	100 kA	200 kA
690	00	63	1060	6750	5000	7.6	@	@
		80	1900	12100	9000	9.5	690 V	690 V
		100	3900	24150	18000	11		
		125	6950	45000	33500	13		
		160	13500	82000	61000	16		
		200	27600	160000	120000	18		

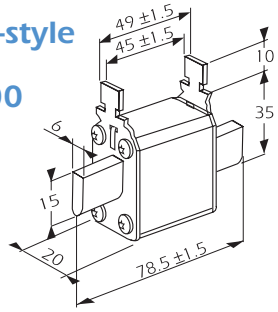
Protistor® Square-body Fuses
PSC gGR sizes 000/00
gGR - 690 VAC DIN 00/000 (full range)

Size 000

German standard DIN 43653/000 DIN 80

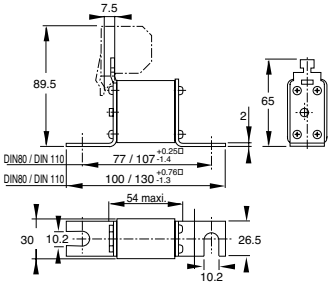


German blade-style fuse standard DIN 43620/000

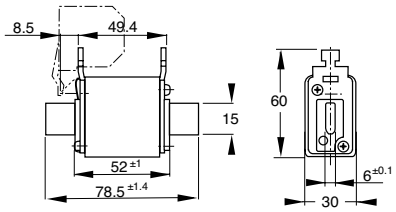


Size 00

German standard 43653/00 - DIN 80



German blade-style fuse standard 43620/00



No derating:
I/In = Irms of use/fuse rating
In the different holders = no derating

Microswitches:
Ref. F210156: 6.3 mm clips
Ref. G210156: 2.8 mm clips

Current (A)	Designation	Ref. Number	I/In*	Weight (g)	Pack.	Catalog Number
16	6,9 gGR 000 D08L 016	H302112	1	120	3	DN000GR69V16L
20	6,9 gGR 000 D08L 020	J302113	1	120	3	DN000GR69V20L
25	6,9 gGR 000 D08L 025	K302114	1	120	3	DN000GR69V25L
32	6,9 gGR 000 D08L 032	L302115	1	120	3	DN000GR69V32L
40	6,9 gGR 000 D08L 040	M302116	1	120	3	DN000GR69V40L
50	6,9 gGR 000 D08L 050	N302117	1	120	3	DN000GR69V50L
63	6,9 gGR 000 D08L 063	P302118	1	120	3	DN000GR69V63L
80	6,9 gGR 000 D08L 080	Q302119	1	120	3	DN000GR69V80L
100	6,9 gGR 000 D08L 100	R302120	1	120	3	DN000GR69V100L
Microswitch		F210156				MS4L2-5B6PRES
		G210157				MS4L2-5B2PRES
16	6,9 gGR 000 PV 016	X302102	1	150	3	NH000GR69V16PV
20	6,9 gGR 000 PV 020	Y302103	1	150	3	NH000GR69V20PV
25	6,9 gGR 000 PV 025	Z302104	1	150	3	NH000GR69V25PV
32	6,9 gGR 000 PV 032	A302105	1	150	3	NH000GR69V32PV
40	6,9 gGR 000 PV 040	B302106	1	150	3	NH000GR69V40PV
50	6,9 gGR 000 PV 050	C302107	1	150	3	NH000GR69V50PV
63	6,9 gGR 000 PV 063	D302108	1	150	3	NH000GR69V63PV
80	6,9 gGR 000 PV 080	E302109	1	150	3	NH000GR69V80PV
100	6,9 gGR 000 PV 100	F302110	1	150	3	NH000GR69V100PV
Microswitch		F210156				MS4L2-5B6PRES
		G210157				MS4L2-5B2PRES
Extractor handle		P215592			1	NH HANDLE
20	6,9 gGR 00 D08L 020	T330297	1	140	3	DN00GR69V20L
25	6,9 gGR 00 D08L 025	V330298	1	140	3	DN00GR69V25L
32	6,9 gGR 00 D08L 032	W330299	1	140	3	DN00GR69V32L
40	6,9 gGR 00 D08L 040	X330300	1	140	3	DN00GR69V40L
50	6,9 gGR 00 D08L 050	Y330301	1	140	3	DN00GR69V50L
63	6,9 gGR 00 D08L 063	G330286	1	140	3	DN00GR69V63L
80	6,9 gGR 00 D08L 080	H330287	1	140	3	DN00GR69V80L
100	6,9 gGR 00 D08L 100	J330288	1	140	3	DN00GR69V100L
125	6,9 gGR 00 D08L 125	K330289	1	140	3	DN00GR69V125L
160	6,9 gGR 00 D08L 160	L330290	1	140	3	DN00GR69V160L
200	6,9 gGR 00 D08L 200	M330291	1	140	3	DN00GR69V200L
Microswitch		F210156				MS4L2-5B6PRES
		G210157				MS4L2-5B2PRES
20	6,9 gGR 00 PV 020	N330292	1	210	3	NH00GR69V20PV
25	6,9 gGR 00 PV 025	P330293	1	210	3	NH00GR69V25PV
32	6,9 gGR 00 PV 032	Q330294	1	210	3	NH00GR69V32PV
40	6,9 gGR 00 PV 040	R330295	1	210	3	NH00GR69V40PV
50	6,9 gGR 00 PV 050	S330296	1	210	3	NH00GR69V50PV
63	6,9 gGR 00 PV 063	A330280	1	210	3	NH00GR69V63PV
80	6,9 gGR 00 PV 080	B330281	1	210	3	NH00GR69V80PV
100	6,9 gGR 00 PV 100	C330282	1	210	3	NH00GR69V100PV
125	6,9 gGR 00 PV 125	D330283	1	210	3	NH00GR69V125PV
160	6,9 gGR 00 PV 160	E330284	1	210	3	NH00GR69V160PV
200	6,9 gGR 00 PV 200	F330285	1	210	3	NH00GR69V200PV
Microswitch		F210156 (only)				MS4L2-5B6PRES
Extractor handle		P215592			1	NH HANDLE

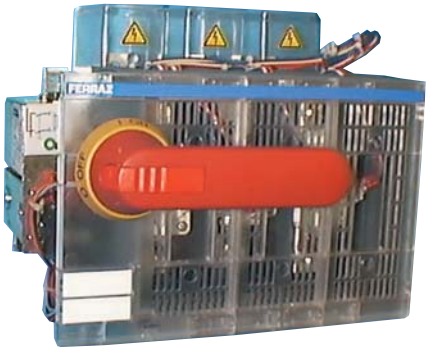
690 V gGR fuse holders and supports

Type of fuse	Nb. poles	References for mounting on 35 mm DIN rail	References for panel mounting
Solid blades size 000/00 IPXX	1	R216192	F215170
	2	F218758	A217212
	3	V219277	F217723
	4	Z223007	S219275
Solid blades size 000/00 IP20 w/o microswitch	1	S218240	-
	3	S229119	-
DIN 80 bracket size 000 IPXX	1	-	C220710
DIN 80 bracket size 00 IPXX	1	-	Q098040
DIN 80 blades size 000 IP20 w/o microswitch	1	B227218	
DIN 80 blades size 000 IP20 for microswitch	1	C227219	-
DIN 80 blades size 00 IP20 w/o microswitch	1	V227672	-
DIN 80 blades size 00 IP20 for microswitch	1	W227673	-
ITCP range	1		

Protistor® Square-body Fuses
PSC gGR sizes 000/00
gGR - 690 VAC DIN 00/000 (full range)



F : Réf. D302108C
MC: Réf. F210156C



F : Réf. G330286C
PF : Réf. Q098040C
MC: Réf. F210156C

ITCP : Réf. G210410A
F : Réf. M330291C

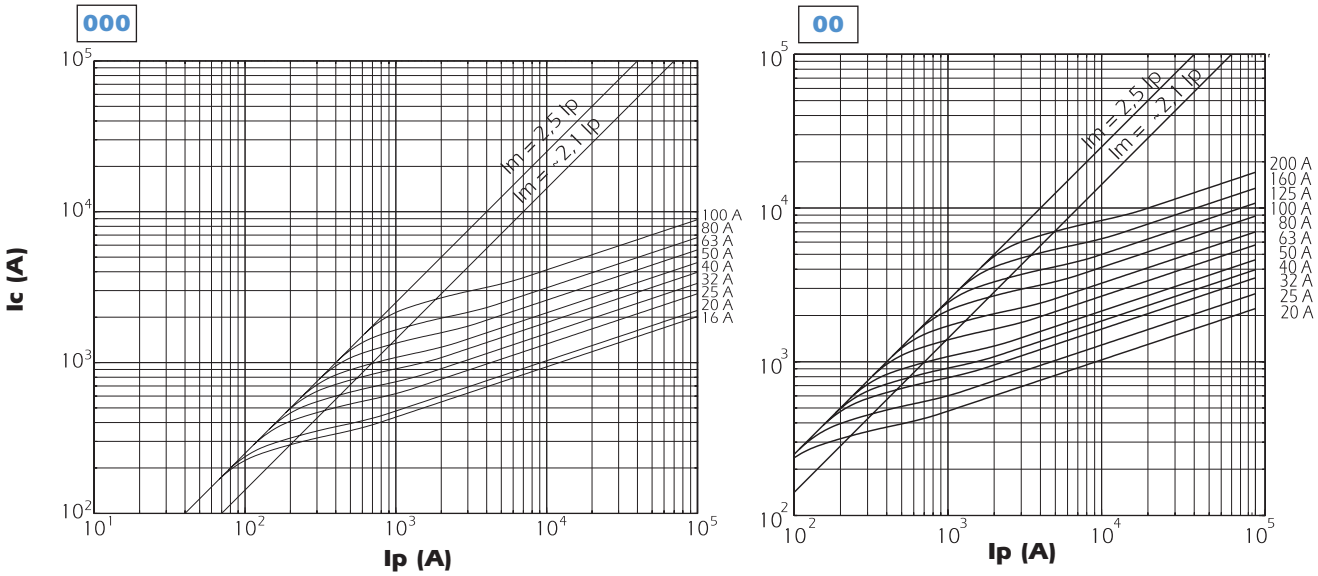
Choice and references of gGR fuse holders

	Type of support	Characteristics	Nb. Poles	Solid blade size 000/00		DIN 80 bracket		Fuse microswitch (2)
				Reference Number	Fuse extraction handle	Size 000	Size 00	
CEI 60269-2	Fuse holders	No protection (1) Screw connection for eye lug or bar for 35 mm DIN rail	1 2 3 4	R216192 F218758 V219277 Z223007	P215592			F2101546 or G210157
		No protection (1) Screw connection for eye lug or bar on panels	1 2 3 4	F215170 A217212 F217723 S219275	P215592	C220710	Q098040	F210156 or G210157
		Protect led to **IP20** Screw connection for eye lug or bar for DIN rail	1 3	S218240 S229119	P215592	W/o microswitch B227218	C227219	
			1			For microswitch V227672	W227673	
CEI 60947-3	Switch disconnector	Horizontal Linocur AC23	2 3	N216626 N222882 B218685 C201781 Y212035 W213574	P215592 P215592 P215592			F210156 or G210157
	Switch with front control handle	ITC 160M III 00 Front handle Inside/outside Complete	3	K227824	P215592			
		ITC 250 III 00 front Handle	3	F210409	P215592			
	Switch with side control handle	ITC 160M III 00 Side handle Outside Complete	3	J227823	P215592			
	ITCP	ITCP	3		P215592	G210410	G210410	

(1) No protection against accidental contact with live parts IPXX.
(2) F210156C microswitch: 6.3 mm clips
G210157C microswitch: 2.8 mm clips

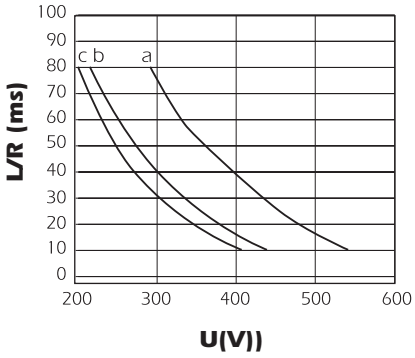
Protistor® Square-body Fuses
PSC gGR sizes 000/00
gGR - 690 VAC DIN 00/000 (full range)

Amplitude of current interrupted



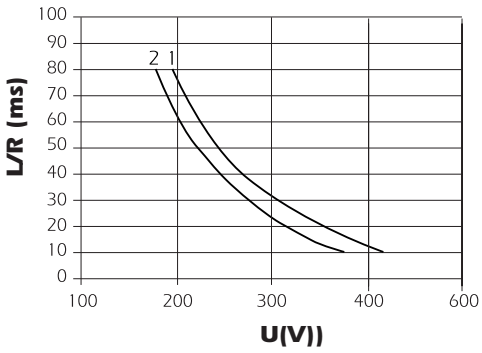
DC working voltage possibilities

Size 00



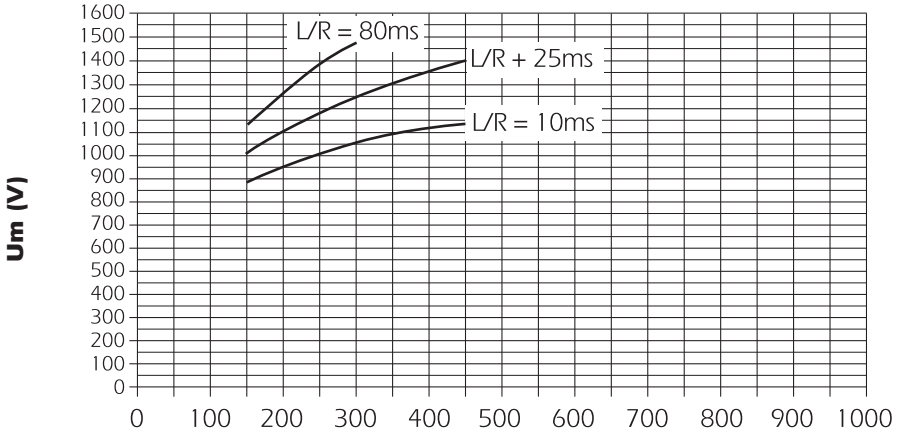
In	Curve
16 A	a
20 A	a
25 A	a
32 A	a
40 A	a
50 A	a
63 A	a
80 A	b
100 A	c
125 A	c
160 A	b
200 A	c

Size 000



In	Curve
16 A	1
20 A	1
25 A	1
32 A	1
40 A	1
50 A	1
63 A	2
80 A	2
100 A	2

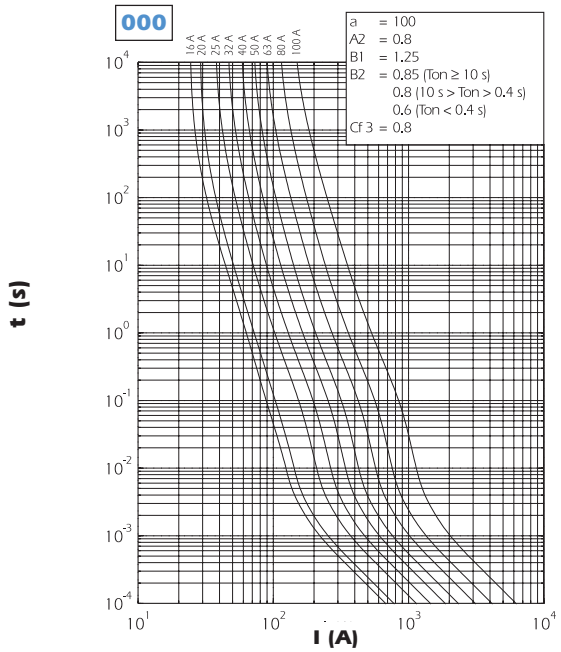
Size 00 and Size 000

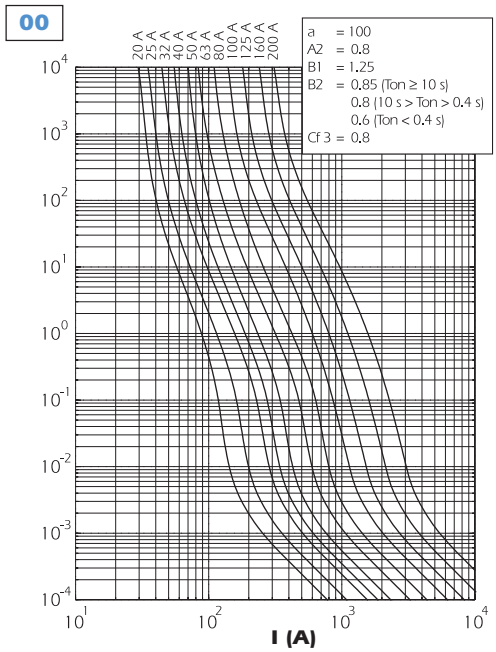


Protistor® Square-body Fuses
PSC gGR sizes 000/00
gGR - 690 VAC DIN 00/000 (full range)

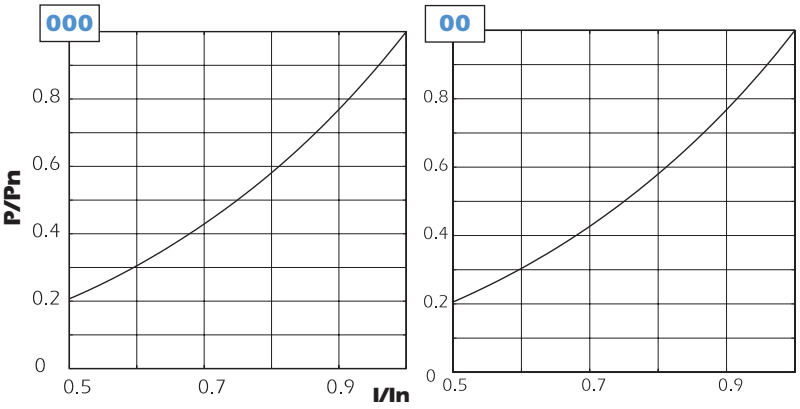
Time/current characteristics

TOLERANCE ON PRE-ARCING CURRENT +/- 8%

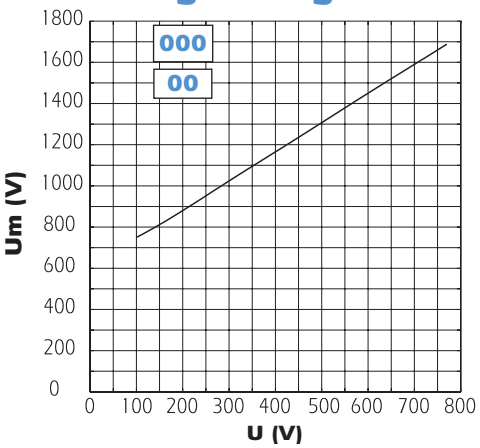




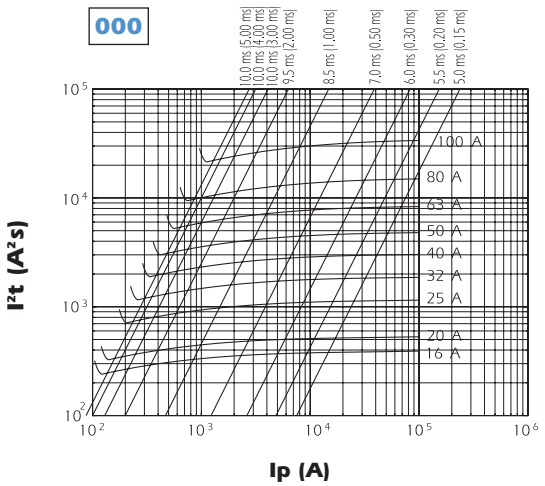
Dissipated power

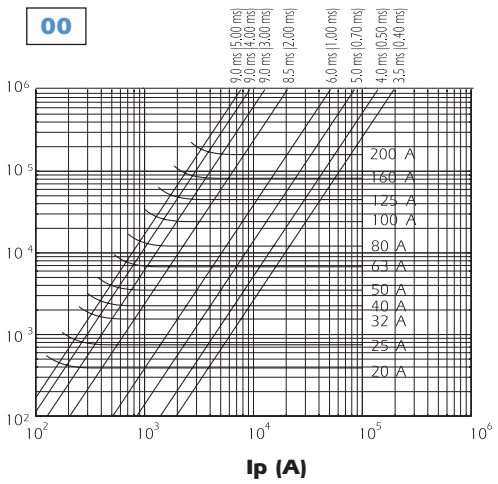


Breaking voltage



Maximum total operating I²t and total operating time





Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
Microswitches for PSC sizes 000/00 and NH

MICROSWITCH SYSTEMS ADAPTED TO THE FOLLOWING FUSES:

- PSC sizes 000/00 (brackets) DIN43653
- NH Fuses (palin blades) see details in "General Purpose IEC Fuses" section
- NH plain blades 690 VAC Protistor square-body Fuses

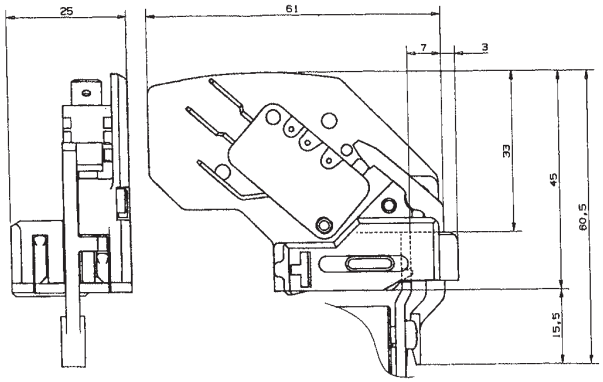
MS 4L 2-5

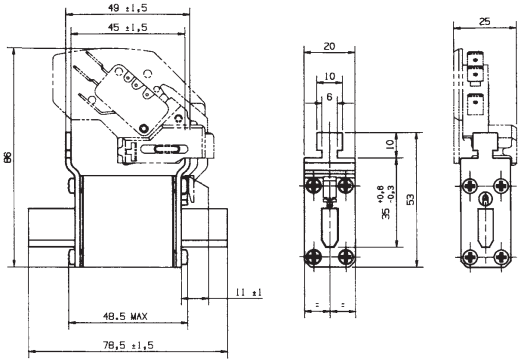


Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit			Inductive circuit : L/R = 25ms			AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
					30V	110V	250V	30V	110V	250V			
MS 4L 2-5 B2	1000 V	20 V	5 A	50 Hz	4A	4A	5A	-	5A	5 A	12 kV	16 kV	V0
+ Pres		100 mA		DC	-	-	-	-	2 A	0,4 A	8 kV	13 kV	
MS 4L 2-5 B6	1000 V	20 V	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8 kV	10 kV	V0
+ Pres		50 mA		DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A			

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals





Designation	Ref. Number	Weight (g)	Pack.	Catalog Number
MS 4L 2-5 B6 + PRES (Fig. 1) (1)	F210156	30	3	MS 4L2-5B6PRES
MS 4L 2-5 B2 + PRES (Fig. 2) (2)	G210157	26	3	MS 4L2-5B2PRES

Automatically resettable, these microswitch systems indicate fuse presence (PRES) and proper mounting.
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)

Fig.1

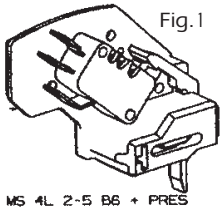
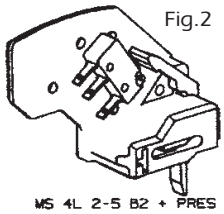


Fig.2

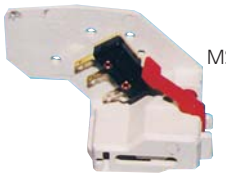


(1) 6.3 mm clips
(2) 2.8 mm clips

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
Microswitches for PSC sizes 000/00 for NH

MICROSWITCH SYSTEMS ADAPTED TO THE FOLLOWING FUSES:

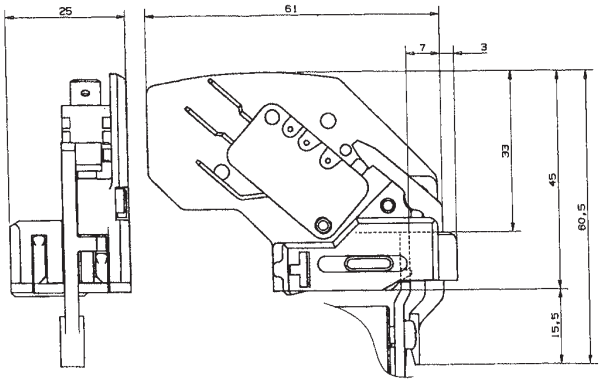
- PSC sizes 000/00 (brackets) DIN43653
- NH Fuses (plain blades) see details in "General Purpose IEC Fuses" section
- NH plain blades 690 VAC Protistor square-body Fuses

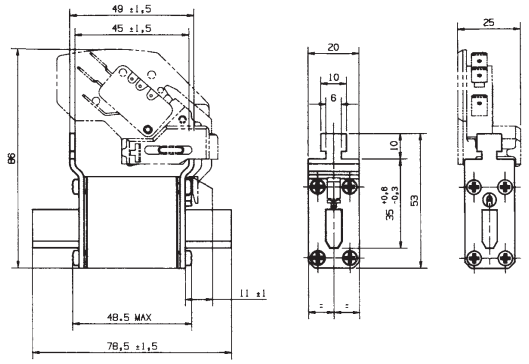

MS 4L 2-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit			Inductive circuit : L/R = 25ms			AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
					30V	110V	250V	30V	110V	250V			
MS 4L 2-5 B2	1000 V	20 V	5 A	50 Hz	4A	4A	5A	-	5A	5 A	12 kV	16 kV	V0
+ Pres		100 mA		DC	-	-	-	-	2 A	0,4 A	8 kV	13 kV	
MS 4L 2-5 B6	1000 V	20 V	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8 kV	10 kV	V0
+ Pres		50 mA		DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A			

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals





Designation	Ref. Number	Weight (g)	Pack.	Catalog Number
MS 4L 2-5 B6 + PRES (Fig. 1) (1)	F210156	30	3	MS 4L2-5B6PRES
MS 4L 2-5 B2 + PRES (Fig. 2) (2)	G210157	26	3	MS 4L2-5B2PRES

Automatically resettable, these microswitch systems indicate fuse presence (PRES) and proper mounting.
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)

Fig.1

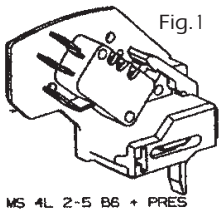
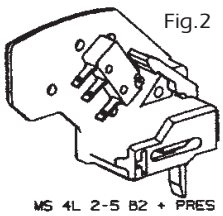


Fig.2



(1) 6.3 mm clips
(2) 2.8 mm clips

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

450 TO 700VAC / 63 TO 2800A

Recognized

Exceptionally low I^2T, Watt losses.
Non-magnetic construction,
Highly reliable low voltage
Trip-indicator system, conformity to UL,
IEC, DIN and VDE standards.
Increased technical performance

- Highter ratings
- Reduction in volume and weight





This fuse preselection table indicates, for each size:

- rated current (or rating) In
- pre-arcing I^2t (I^2tp) at 1 ms
- total operating I^2t (I^2tt) at 660 V, f=50Hz cos φ=0.15, and for a total operating time from 8 to 10 ms
- dissipated power Pn at the rated current In, and at 0.8 In, in steady state
- breaking capacity at various voltages, checked by tests
  made in accordance with IEC and American standards.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

Estimated breaking capacity: 300kA

Size	Nominal Voltage (VAC)		Ampere Rating (A)	Pre-arcing I²t @ 1ms (kA²s)	Total I²t @ 660V (*) @ Un (kA²s)	Power Pn (W)		Tested Breaking capacity (kA)	
	IEC	USA				End contact	Blades	IEC @ 690V (*) @ Un	USA @ 700V (*) @ Un
30	690	700	50	0,116	0,62	9	9	200	200
			63	0,2	1,1	14	14		
			80	0,33	1,8	19	19		
			100	0,47	2,5	26	26		
			125	0,85	4,5	30	30		
			160	1,6	8,5	37	37		
			200	3	15,5	42	43		
			250	5,8	30	48	50		
			315	12	62	53	55		
			350	15,5	80	57	60		
			400	23	120	60	65		
			450	26	150	80	88		
			500	41	240	80	88		
			550	52	300	80	90		
	600	650	630	84	450(*)	85	95	200(*)	200(*)
31	690	700	160	1,3	7	35	35	200	200
			200	2,6	13,5	45	45		
			250	4,7	25	52	52		
			315	7,5	40	65	65		
			350	10,5	55	67	67		
			400	19	100	68	68		
			450	26,5	140	70	70		
			500	37	195	70	72		
			550	52	280	70	75		
			630	75	390	75	85		
			700	95	490	85	95		
			800	140	800	105	120		
32	690	700	315	5,2	28,9	71	71	200	200
			350	8,9	48,8	71	74		
			400	15	80	72	75		
			450	22	115	77	80		
			500	28	145	85	90		
			550	37	195	90	95		
			630	54	280	95	105		
			700	76	400	100	110		
			800	115	600	110	120		
			900	170	900	110	125		
			1000	240	1250	115	135		
	600	650	1100	270	1450(*)	140	165	160(*)	160(*)
	550	600	1250	410	1950(*)	150	180	150(*)	150(*)
	500	550	1400	555	2300(*)	160	200	130(*)	130(*)
			1600	870	3600(*)	165	205		
	450	500	1800	1050	3700(*)	195	230	110(*)	110(*)
33	690	700	450	13,45	74,1	84	88	200	200
			500	19	100	105	105		
			550	27	140	105	110		
			630	40	210	110	120		
			700	55	300	115	125		
			800	95	490	120	130		
			900	135	700	120	135		
			1000	170	900	135	155		
			1100	240	1260	135	160		
			1250	350	1850	150	180		
			1400	480	2500	160	200		
	600	650	1500	500	2500(*)	210	240	160(*)	160(*)
			1600	555	2900(*)	210	240		
			1800	720	3870(*)	225	260		
	550	600	2000	950	4500(*)	250	290	150(*)	150(*)
	500	550	2250	1250	5160(*)	280	320	130(*)	130(*)
	450	500	2500	1870	6540(*)	280	330	110(*)	110(*)
2X32	690	700	800	60	320	144		200	200
			1000	110	590	165			
			1250	220	1100	190			
			1400	300	1600	200			
			1600	450	2400	220			
			1800	700	3500	225			
			2000	950	5000	235			
	550	600	2200	1100	5250(*)	280		150(*)	150(*)
2x33	690	700	1000	76	395	220		170	170
			1250	160	850	230			
			1400	225	1200	240			
			1600	375	1900	250			
			1800	530	2800	250			
	600	650	2000	700	3100(*)	280		160(*)	160(*)
			2200	950	4400(*)	280			
			2500	1400	6600(*)	310			
			2800	1900	8800(*)	330			

For others Ampere ratings consult us

12/04

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

450 TO 700VAC / 63 TO 2800A

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- total operating I^2t (I^2tt) at 660 V, f=50Hz cos φ=0.15, and for a total operating time from 8 to 10 ms
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- breaking capacity at various voltages, checked by tests
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Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

Estimated breaking capacity: 300kA

Size	Nominal Voltage (VAC)		Ampere Rating (A)	Pre-arcing I²t @ 1ms (kA²s)	Total I²t @ 660V (*) @ Un (kA²s)	Power Pn (W)		Tested Breaking capacity (kA)	
	IEC	USA				End contact	Blades	IEC @ 690V (*) @ Un	USA @ 700V (*) @ Un
30	690	700	50	0,116	0,62	9	9	200	200
			63	0,2	1,1	14	14		
			80	0,33	1,8	19	19		
			100	0,47	2,5	26	26		
			125	0,85	4,5	30	30		
			160	1,6	8,5	37	37		
			200	3	15,5	42	43		
			250	5,8	30	48	50		
			315	12	62	53	55		
			350	15,5	80	57	60		
			400	23	120	60	65		
			450	26	150	80	88		
			500	41	240	80	88		
			550	52	300	80	90		
	600	650	630	84	450(*)	85	95	200(*)	200(*)
31	690	700	160	1,3	7	35	35	200	200
			200	2,6	13,5	45	45		
			250	4,7	25	52	52		
			315	7,5	40	65	65		
			350	10,5	55	67	67		
			400	19	100	68	68		
			450	26,5	140	70	70		
			500	37	195	70	72		
			550	52	280	70	75		
			630	75	390	75	85		
			700	95	490	85	95		
			800	140	800	105	120		
32	690	700	315	5,2	28,9	71	71	200	200
			350	8,9	48,8	71	74		
			400	15	80	72	75		
			450	22	115	77	80		
			500	28	145	85	90		
			550	37	195	90	95		
			630	54	280	95	105		
			700	76	400	100	110		
			800	115	600	110	120		
			900	170	900	110	125		
			1000	240	1250	115	135		
	600	650	1100	270	1450(*)	140	165	160(*)	160(*)
	550	600	1250	410	1950(*)	150	180	150(*)	150(*)
	500	550	1400	555	2300(*)	160	200	130(*)	130(*)
			1600	870	3600(*)	165	205		
	450	500	1800	1050	3700(*)	195	230	110(*)	110(*)
33	690	700	450	13,45	74,1	84	88	200	200
			500	19	100	105	105		
			550	27	140	105	110		
			630	40	210	110	120		
			700	55	300	115	125		
			800	95	490	120	130		
			900	135	700	120	135		
			1000	170	900	135	155		
			1100	240	1260	135	160		
			1250	350	1850	150	180		
			1400	480	2500	160	200		
	600	650	1500	500	2500(*)	210	240	160(*)	160(*)
			1600	555	2900(*)	210	240		
			1800	720	3870(*)	225	260		
	550	600	2000	950	4500(*)	250	290	150(*)	150(*)
	500	550	2250	1250	5160(*)	280	320	130(*)	130(*)
	450	500	2500	1870	6540(*)	280	330	110(*)	110(*)
2X32	690	700	800	60	320	144		200	200
			1000	110	590	165			
			1250	220	1100	190			
			1400	300	1600	200			
			1600	450	2400	220			
			1800	700	3500	225			
			2000	950	5000	235			
	550	600	2200	1100	5250(*)	280		150(*)	150(*)
2x33	690	700	1000	76	395	220		170	170
			1250	160	850	230			
			1400	225	1200	240			
			1600	375	1900	250			
			1800	530	2800	250			
	600	650	2000	700	3100(*)	280		160(*)	160(*)
			2200	950	4400(*)	280			
			2500	1400	6600(*)	310			
			2800	1900	8800(*)	330			

For others Ampere ratings consult us

12/04

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
American Terminals - 30 - 33 End contacts



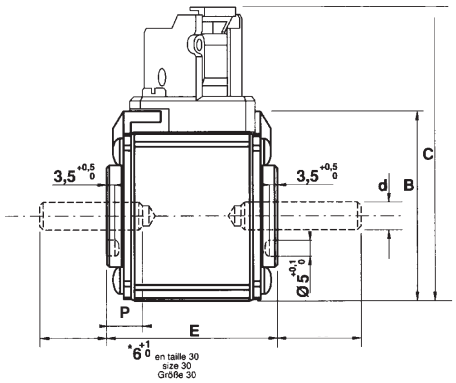
Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
30	A070 URD 30 TTI 0050	V302744	245	3	A070UD30TTI 50
	A070 URD 30 TTI 0063	A301967			A070UD30TTI 63
	A070 URD 30 TTI 0080	V301962			A070UD30TTI 80
	A070 URD 30 TTI 0100	W300744			A070UD30TTI100
	A070 URD 30 TTI 0125	G300708			A070UD30TTI125
	A070 URD 30 TTI 0160	N300576			A070UD30TTI160
	A070 URD 30 TTI 0200	P300577			A070UD30TTI200
	A070 URD 30 TTI 0250	Q300578			A070UD30TTI250
	A070 URD 30 TTI 0315	R300579			A070UD30TTI315
	A070 URD 30 TTI 0350	S300580			A070UD30TTI350
	A070 URD 30 TTI 0400	T300581			A070UD30TTI400
	A070 URD 30 TTI 0450	V300582			A070UD30TTI450
	A070 URD 30 TTI 0500	W300583			A070UD30TTI500
	A070 URD 30 TTI 0550	X300584			A070UD30TTI550
	A065 URD 30 TTI 0630	A302703			A065UD30TTI630
31	A070 URD 31 TTI 0160	-	370	3	
	A070 URD 31 TTI 0200	A300472			A070UD31TTI200
	A070 URD 31 TTI 0250	B300473			A070UD31TTI250
	A070 URD 31 TTI 0315	C300474			A070UD31TTI315
	A070 URD 31 TTI 0350	D300475			A070UD31TTI350
	A070 URD 31 TTI 0400	E300476			A070UD31TTI400
	A070 URD 31 TTI 0450	F300477			A070UD31TTI450
	A070 URD 31 TTI 0500	G300478			A070UD31TTI500
	A070 URD 31 TTI 0550	H300479			A070UD31TTI550
	A070 URD 31 TTI 0630	J300480			A070UD31TTI630
	A070 URD 31 TTI 0700	K300481			A070UD31TTI700
	A070 URD 31 TTI 0800	L300482			A070UD31TTI800
32	A070 URD 32 TTI 0315	-	510	3	
	A070 URD 32 TTI 0350	-			
	A070 URD 32 TTI 0400	Q300463			A070UD32TTI400
	A070 URD 32 TTI 0450	N300461			A070UD32TTI450
	A070 URD 32 TTI 0500	P300462			A070UD32TTI500
	A070 URD 32 TTI 0550	R300464			A070UD32TTI550
	A070 URD 32 TTI 0630	S300465			A070UD32TTI630
	A070 URD 32 TTI 0700	T300466			A070UD32TTI700
	A070 URD 32 TTI 0800	V300467			A070UD32TTI800
	A070 URD 32 TTI 0900**	W300468			A070UD32TTI900
	A070 URD 32 TTI 1000**	X300469			A070UD32TTI1000
	A065 URD 32 TTI 1100**	M301081			A065UD32TTI1100
	A060 URD 32 TTI 1250**	N301082			A060UD32TTI1250
	A055 URD 32 TTI 1400**	P301083	600	3	A055UD32TTI1400
	A055 URD 32 TTI 1600**	Q301084			A055UD32TTI1600
	A050 URD 32 TTI 1800**	R301085			A050UD32TTI1800
33	A070 URD 33 TTI 0450	X302171	790	3	A070UD33TTI450
	A070 URD 33 TTI 0500	X300446			A070UD33TTI500
	A070 URD 33 TTI 0550	Y300447			A070UD33TTI550
	A070 URD 33 TTI 0630	Z300448			A070UD33TTI630
	A070 URD 33 TTI 0700	A300449			A070UD33TTI700
	A070 URD 33 TTI 0800	T300443			A070UD33TTI800
	A070 URD 33 TTI 0900	B300450			A070UD33TTI900
	A070 URD 33 TTI 1000	C300451			A070UD33TTI1000
	A070 URD 33 TTI 1100	D300452			A070UD33TTI1100
	A070 URD 33 TTI 1250**	E300453			A070UD33TTI1250
	A070 URD 33 TTI 1400**	F300454			A070UD33TTI1400
	A065 URD 33 TTI 1500**	F302064			A065UD33TTI1500
	A065 URD 33 TTI 1600**	S301086			A065UD33TTI1600
	A065 URD 33 TTI 1800**	T301087	910	3	A065UD33TTI1800
	A060 URD 33 TTI 2000**	V301088			A060UD33TTI2000
	A055 URD 33 TTI 2250**	W301089			A055UD33TTI2250
	A050 URD 33 TTI 2500**	Y300838			A050UD33TTI2500

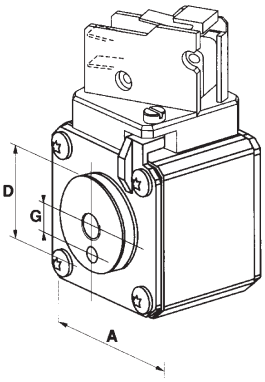
Rated Voltage as per American standard

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
American Terminals - 30 - 33 End contacts

Size	A	B	C	D	$E^{\pm 1}$	d	$G^{\pm 0.1}$	$P^{\pm 0.1}$
30	40 1-19/32"	46.5 1-27/32"	82 3-7/32"	26 1"	50.6 2"	5/16"-18	9 23/64"	6 15/64"
31	51 2"	56.5 2-7/32"	91 3-37/64"	30 1-3/16"	50.6 2"	5/16"-18	9 23/64"	9 23/64"
32	60 2-3/8"	65.5 2-37/64"	100 3-15/16"	38 ; (42 **) 1-1/2" ; (1-21/32" **)	50.6 2"	3/8"-16	15 19/32"	9 23/64"
33	74.5 2-15/16"	79.5 3-1/8"	114 4-1/2"	46 ; (52 **) 1-13/16" ;(2-1/16 **)	50.6 2"	1/2"-13	15 19/32"	9 23/64"

Note:
dimensions in mm
dimensions in inches



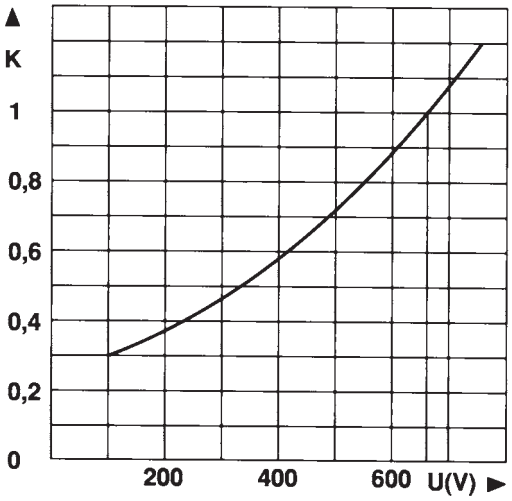


Microswitches are supplied separately see microswitches PSC 3x & 7x section

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

I²t Multiplier coefficient



Mean curve indicating variation of total I²t (I^2t_t) and total operating time T_t in accordance with working voltage U.

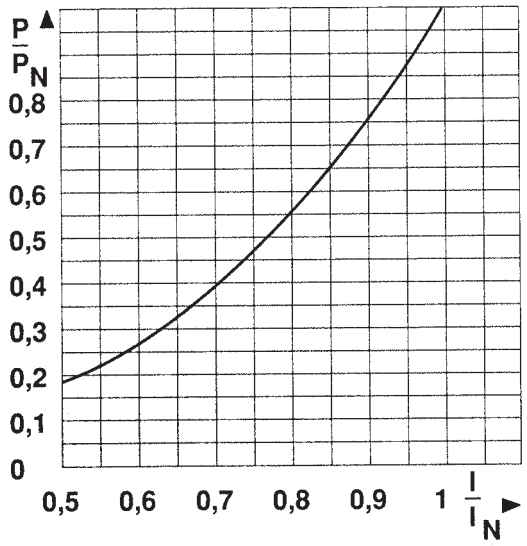
Example:

Fuse 350 A in size 30.
I_p = 10 000 A U = 500 V

At 660 V
I^2t_t = 80 000 A²s T_t = 6 ms

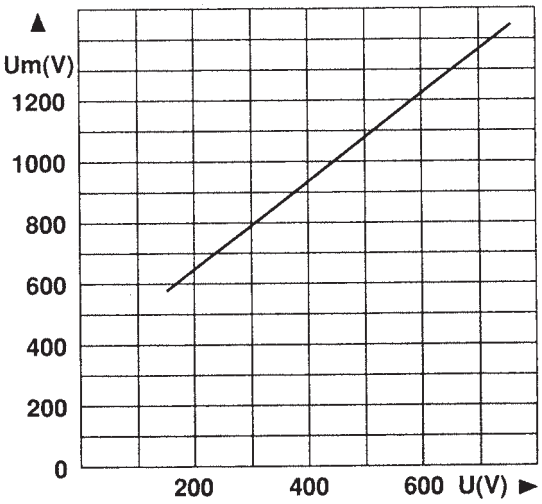
At 500 V
I^2t_t = 80 000 x 0.72 = 57 600 A²s
T_t = 6 x 0.72 = 4.3 ms

Dissipated power



Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in a steady state.

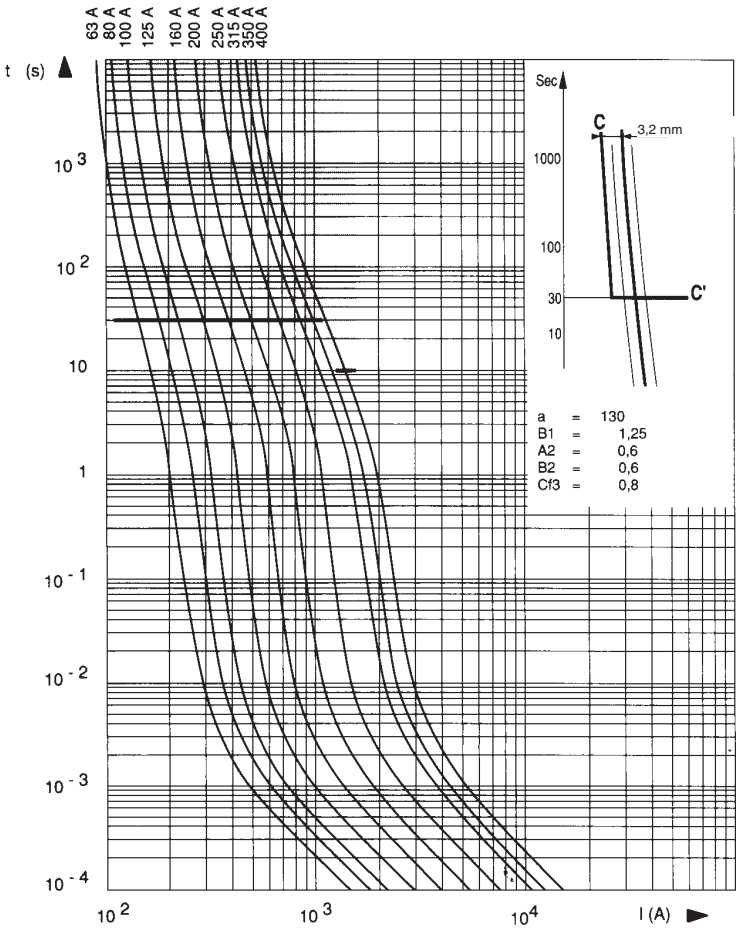
Arc voltage



Curve indicating peak arc voltage Um which may appear across fuse terminals as function of working voltage U at cos φ = 0.15

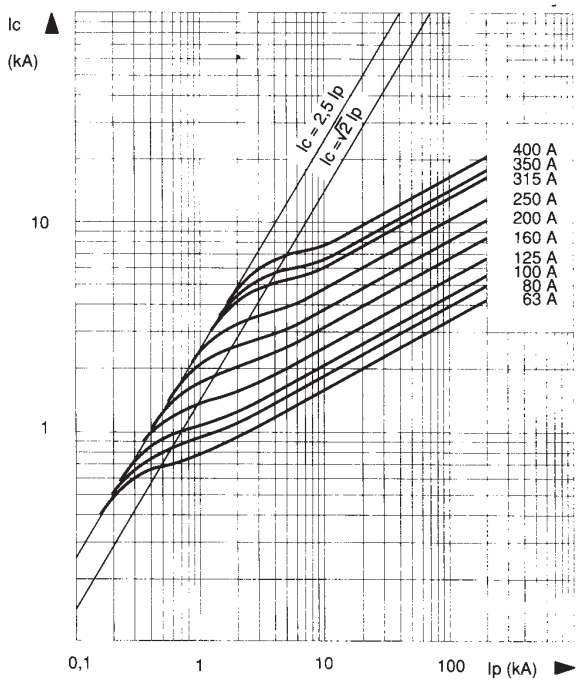
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

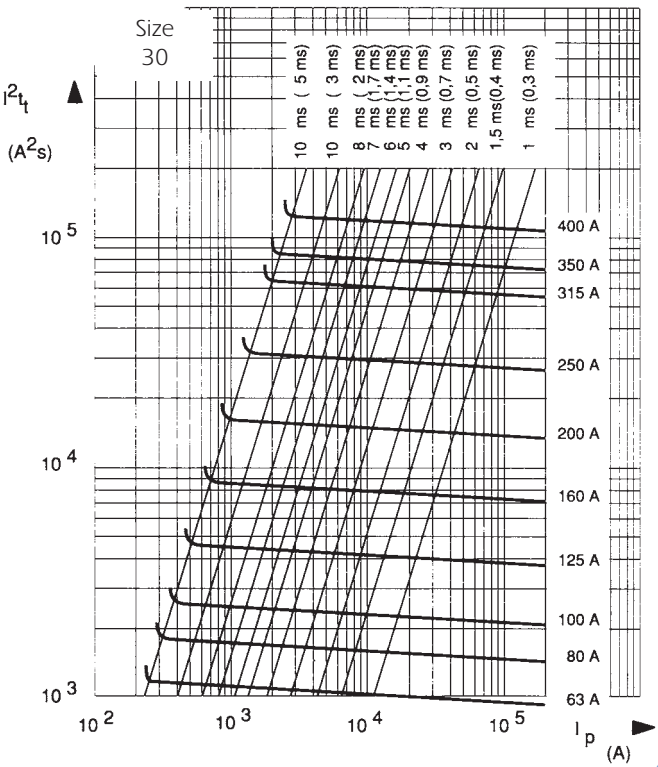
Size 30



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

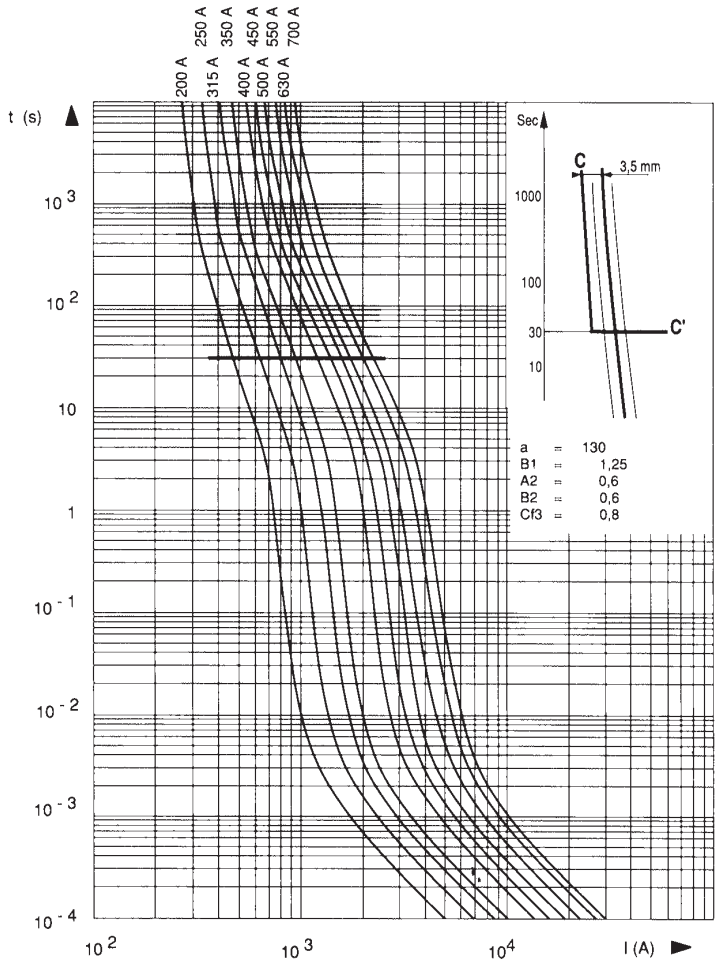
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

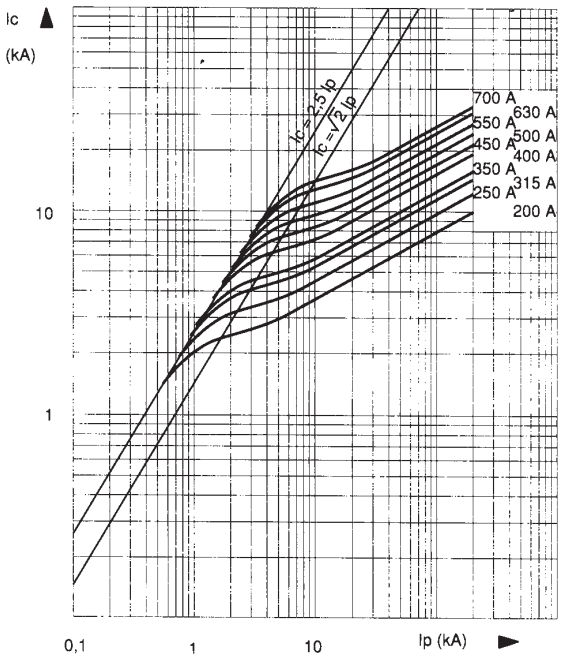
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

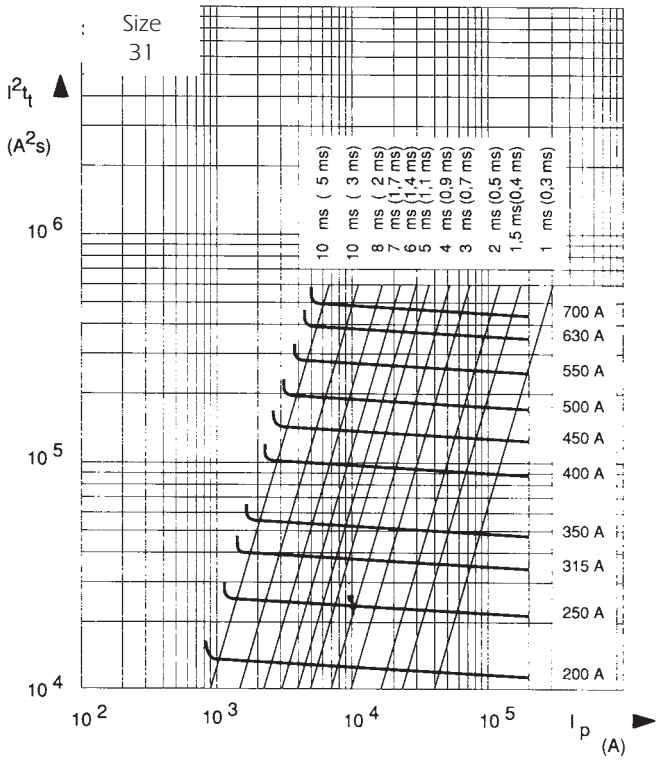
Size 31



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_C that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

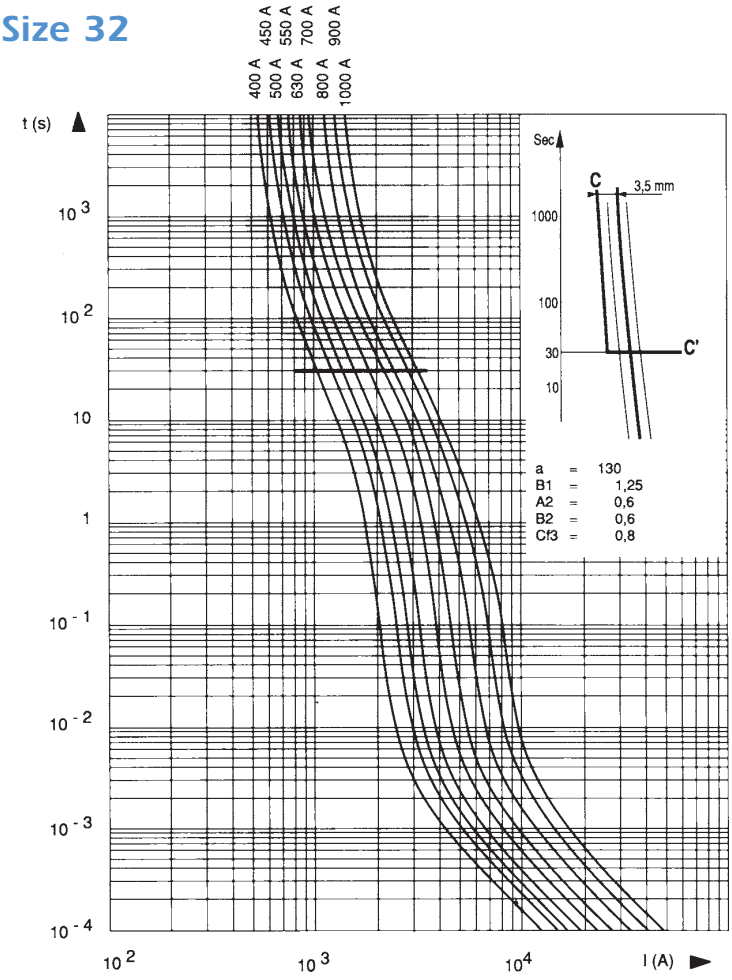
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

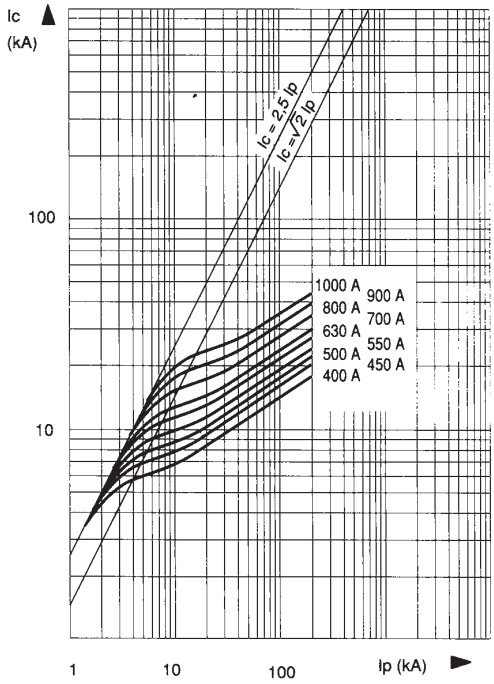
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

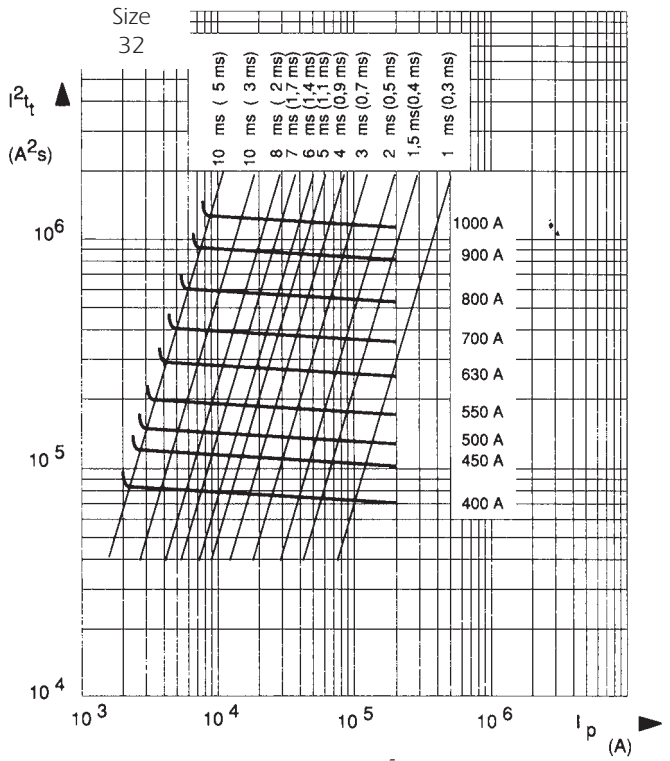
Size 32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_C that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

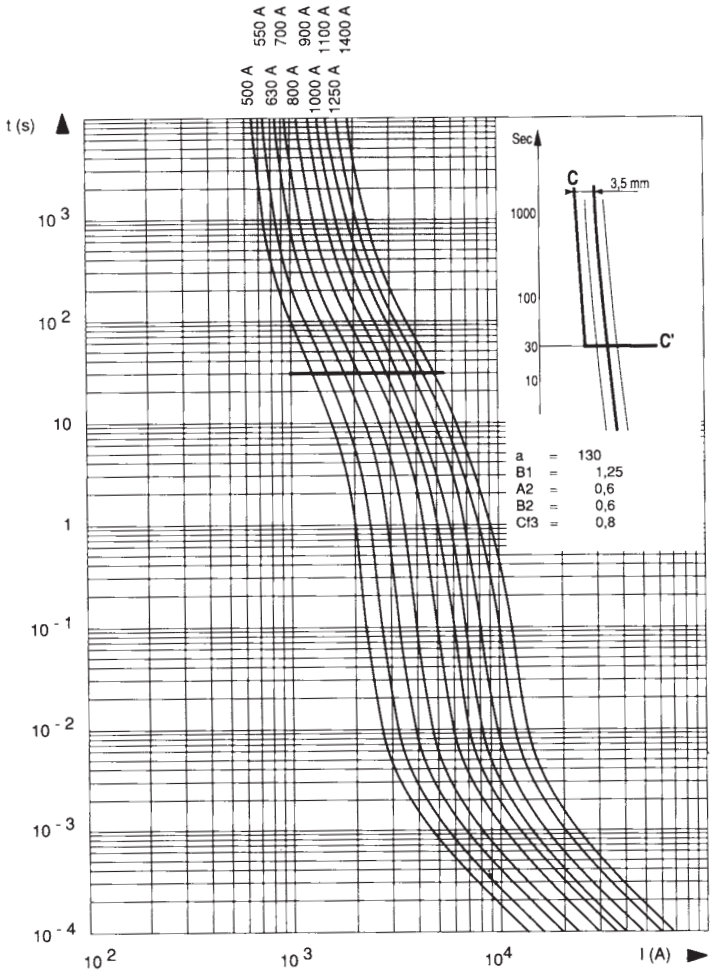
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

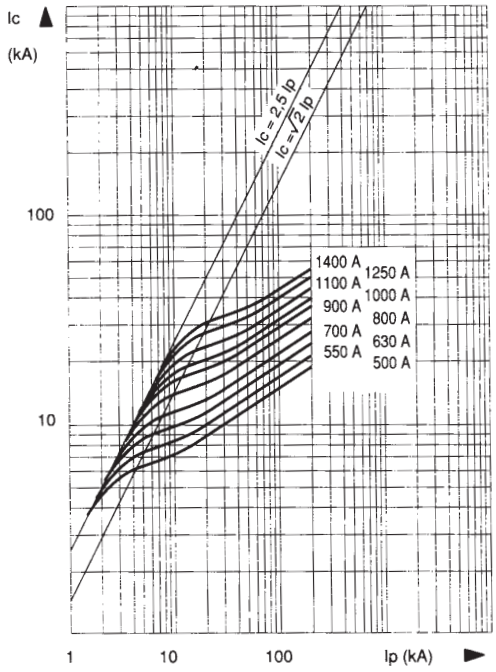
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

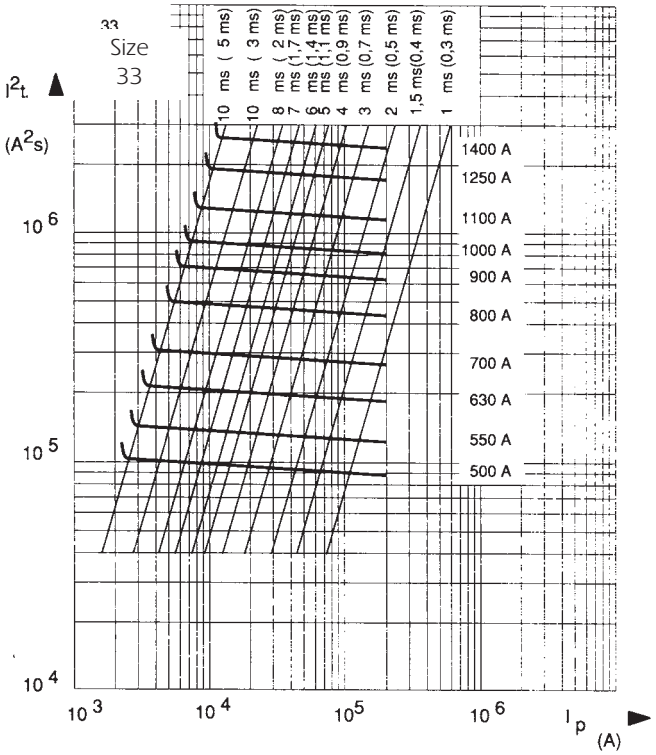
Size 33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

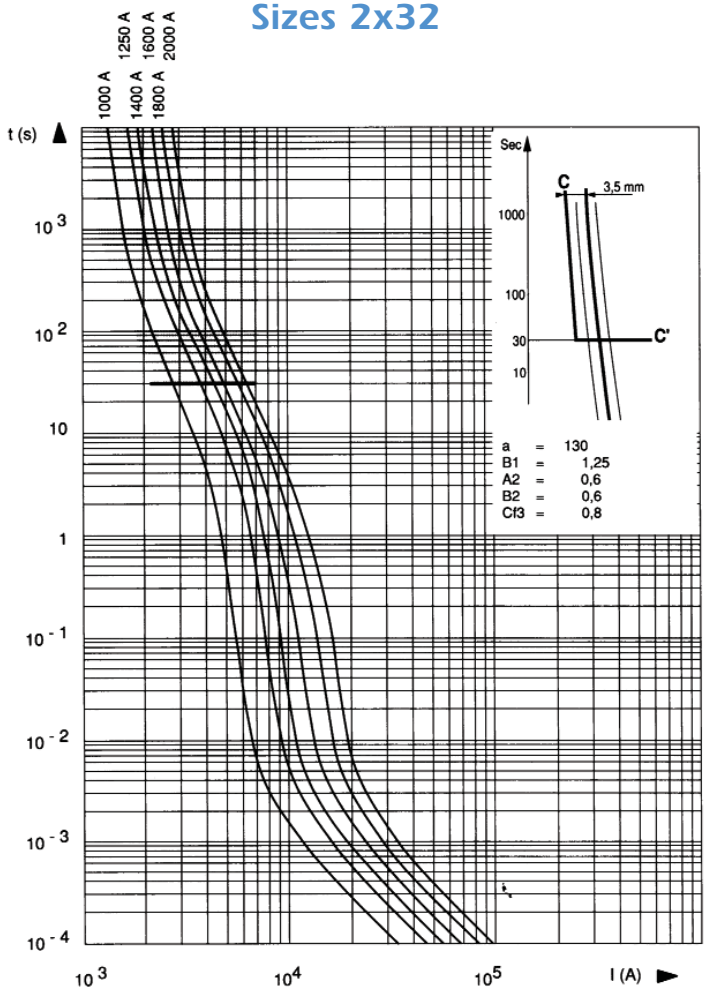
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

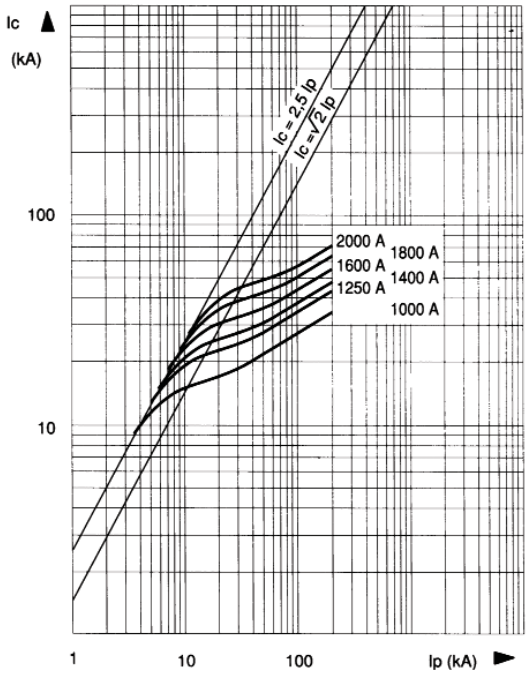
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

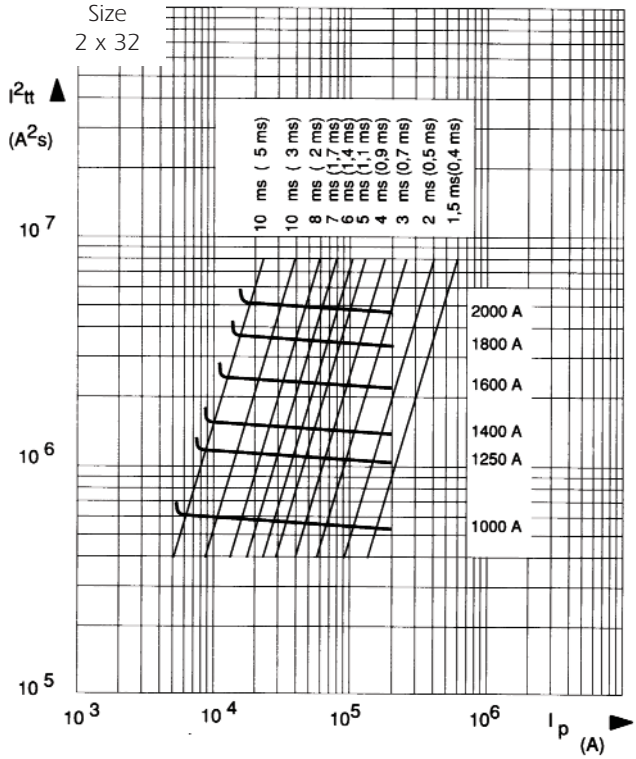
Sizes 2x32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

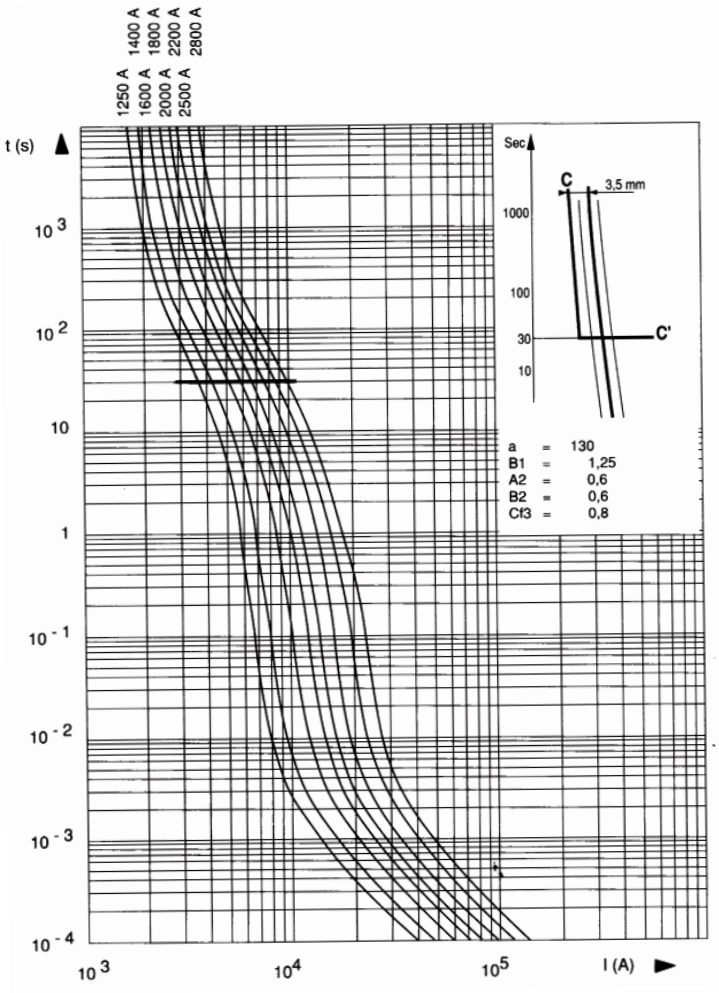
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

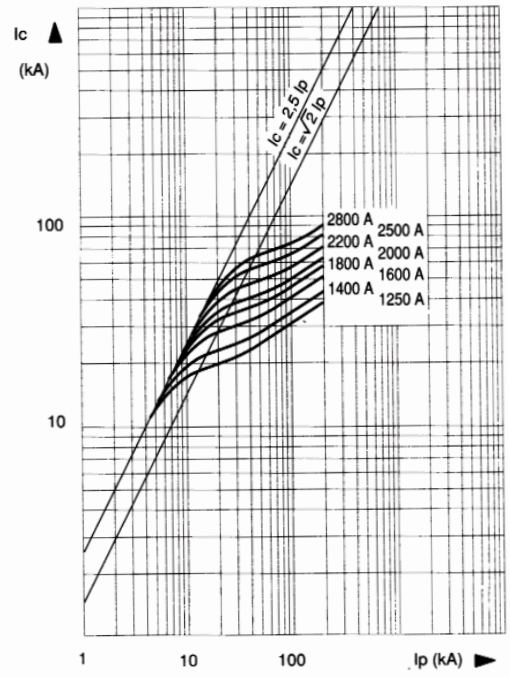
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

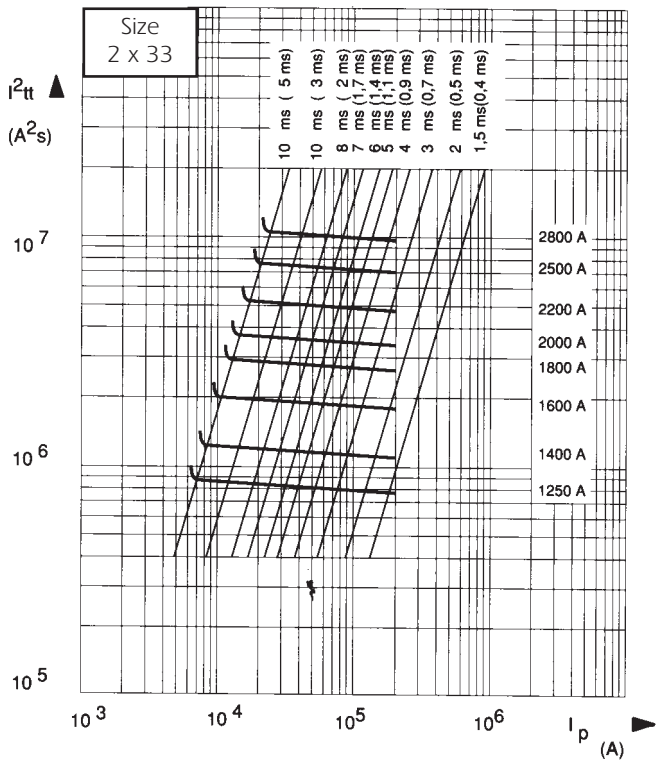
Size 2x33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

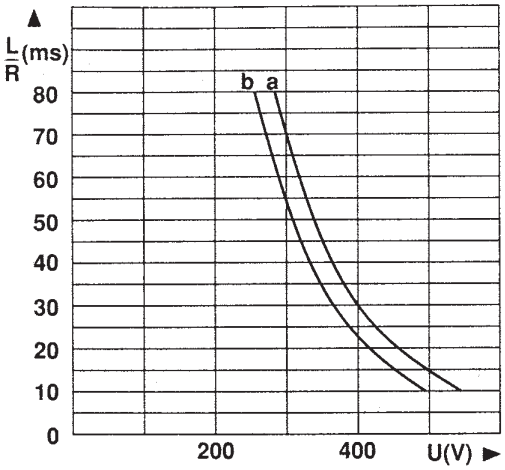
Maximum values of total operating I²t and total operating times

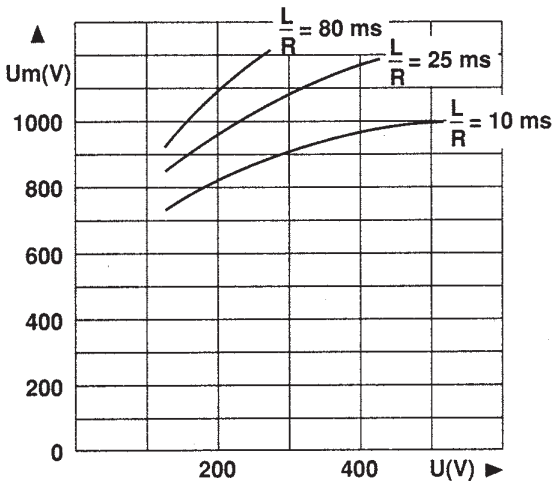
Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

DC working voltage possibilities





Rated current In (A)	Curves (*) and Ipm (1) corresponding to the rating					
	30 * Ipm (A)	31 * Ipm (A)	32 * Ipm (A)	33 * Ipm (A)	2 x 32 * Ipm (A)	2 x33 * Ipm (A)
63	a 230					
80	a 300					
100	a 360					
125	a 460					
160	a 650					
200	a 880	a 850				
250	a 1300	a 1150				
315	a 1700	a 1450				
350	a 1900	a 1600				
400	a 2300	a 2200	a 2000			
450		a 2500	a 2300			
500		a 3000	a 2600	a 2300		
550		a 3400	a 3150	a 2500		
630		a 5000	a 3700	a 3250		
700		a 5600	a 4300	a 3900		
800			a 5300	a 4800		
900			a 7800	a 5600		
1000			b 9000	a 6600	a 5200	
1100				a 7700		
1250				b 11000	a 7400	a 6500
1400				b 12500	a 8600	a 7800
1600					a 10600	a 9600
1800					a 15600	a 11200
2000					b 18000	a 13200
2200						a 15400
2500						b 22000
2800						b 25000

Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark:
When the fault current di/dt is very large, this condition can be exceeded. This is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

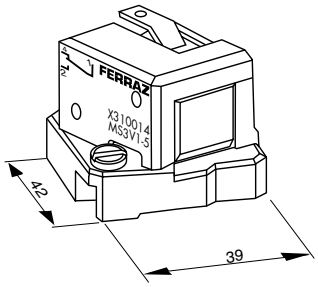
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

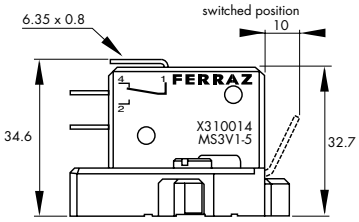
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



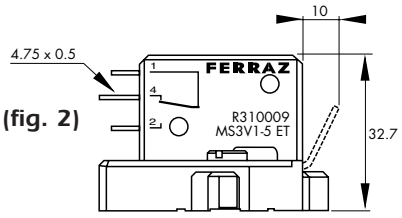
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

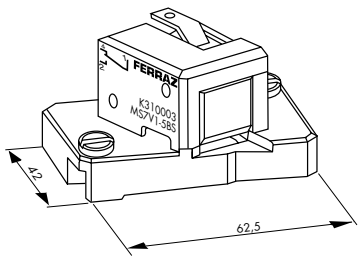
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

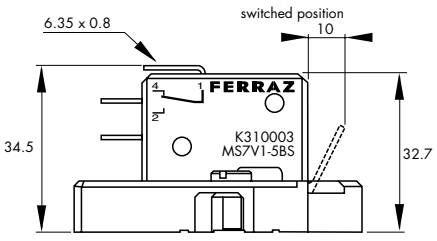
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

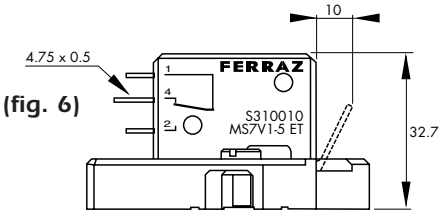


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Metric-studs

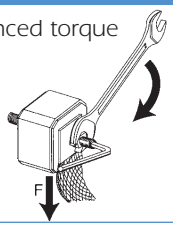
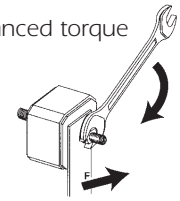
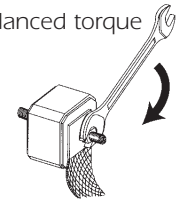
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STUM8x30M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STUM10x30M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STUM12x35M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STUM10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STUM12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

450 TO 700VAC / 63 TO 2800A

Recognized

Exceptionally low I^2T, Watt losses.
Non-magnetic construction,
Highly reliable low voltage
Trip-indicator system, conformity to UL,
IEC, DIN and VDE standards.
Increased technical performance

- Highter ratings
- Reduction in volume and weight





This fuse preselection table indicates, for each size:

- rated current (or rating) In
- pre-arcing I^2t (I^2tp) at 1 ms
- total operating I^2t (I^2tt) at 660 V, f=50Hz cos φ=0.15, and for a total operating time from 8 to 10 ms
- dissipated power Pn at the rated current In, and at 0.8 In, in steady state
- breaking capacity at various voltages, checked by tests
  made in accordance with IEC and American standards.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

Estimated breaking capacity: 300kA

Size	Nominal Voltage (VAC)		Ampere Rating (A)	Pre-arcing I²t @ 1ms (kA²s)	Total I²t @ 660V (*) @ Un (kA²s)	Power Pn (W)		Tested Breaking capacity (kA)	
	IEC	USA				End contact	Blades	IEC @ 690V (*) @ Un	USA @ 700V (*) @ Un
30	690	700	50	0,116	0,62	9	9	200	200
			63	0,2	1,1	14	14		
			80	0,33	1,8	19	19		
			100	0,47	2,5	26	26		
			125	0,85	4,5	30	30		
			160	1,6	8,5	37	37		
			200	3	15,5	42	43		
			250	5,8	30	48	50		
			315	12	62	53	55		
			350	15,5	80	57	60		
			400	23	120	60	65		
			450	26	150	80	88		
			500	41	240	80	88		
			550	52	300	80	90		
	600	650	630	84	450(*)	85	95	200(*)	200(*)
31	690	700	160	1,3	7	35	35	200	200
			200	2,6	13,5	45	45		
			250	4,7	25	52	52		
			315	7,5	40	65	65		
			350	10,5	55	67	67		
			400	19	100	68	68		
			450	26,5	140	70	70		
			500	37	195	70	72		
			550	52	280	70	75		
			630	75	390	75	85		
			700	95	490	85	95		
			800	140	800	105	120		
32	690	700	315	5,2	28,9	71	71	200	200
			350	8,9	48,8	71	74		
			400	15	80	72	75		
			450	22	115	77	80		
			500	28	145	85	90		
			550	37	195	90	95		
			630	54	280	95	105		
			700	76	400	100	110		
			800	115	600	110	120		
			900	170	900	110	125		
			1000	240	1250	115	135		
	600	650	1100	270	1450(*)	140	165	160(*)	160(*)
	550	600	1250	410	1950(*)	150	180	150(*)	150(*)
	500	550	1400	555	2300(*)	160	200	130(*)	130(*)
			1600	870	3600(*)	165	205		
	450	500	1800	1050	3700(*)	195	230	110(*)	110(*)
33	690	700	450	13,45	74,1	84	88	200	200
			500	19	100	105	105		
			550	27	140	105	110		
			630	40	210	110	120		
			700	55	300	115	125		
			800	95	490	120	130		
			900	135	700	120	135		
			1000	170	900	135	155		
			1100	240	1260	135	160		
			1250	350	1850	150	180		
			1400	480	2500	160	200		
	600	650	1500	500	2500(*)	210	240	160(*)	160(*)
			1600	555	2900(*)	210	240		
			1800	720	3870(*)	225	260		
	550	600	2000	950	4500(*)	250	290	150(*)	150(*)
	500	550	2250	1250	5160(*)	280	320	130(*)	130(*)
	450	500	2500	1870	6540(*)	280	330	110(*)	110(*)
2X32	690	700	800	60	320	144		200	200
			1000	110	590	165			
			1250	220	1100	190			
			1400	300	1600	200			
			1600	450	2400	220			
			1800	700	3500	225			
			2000	950	5000	235			
	550	600	2200	1100	5250(*)	280		150(*)	150(*)
2x33	690	700	1000	76	395	220		170	170
			1250	160	850	230			
			1400	225	1200	240			
			1600	375	1900	250			
			1800	530	2800	250			
	600	650	2000	700	3100(*)	280		160(*)	160(*)
			2200	950	4400(*)	280			
			2500	1400	6600(*)	310			
			2800	1900	8800(*)	330			

For others Ampere ratings consult us

12/04

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
American Terminals - 30 - 33 Blades



Rated voltage as per American standard.

Size	Designation	Reference Number K	Weight (g)	Pack.	Catalog Number
30	A 070 URD 30 KI 0050	E301925	290	3	A070UD30KI050
	A 070 URD 30 KI 0063	B300128			A070UD30KI63
	A 070 URD 30 KI 0080	C300129			A070UD30KI080
	A 070 URD 30 KI 0100	D300130			A070UD30KI100
	A 070 URD 30 KI 0125	E300131			A070UD30KI125
	A 070 URD 30 KI 0160	F300132			A070UD30KI160
	A 070 URD 30 KI 0200	G300133			A070UD30KI200
	A 070 URD 30 KI 0250	H300134			A070UD30KI250
	A 070 URD 30 KI 0315	J300135			A070UD30KI315
	A 070 URD 30 KI 0350	K300136			A070UD30KI350
	A 070 URD 30 KI 0400	L300137			A070UD30KI400
	A 070 URD 30 KI 0450	T301064			A070UD30KI450
	A 070 URD 30 KI 0500	V301065			A070UD30KI500
	A 070 URD 30 KI 0550	W301066			A070UD30KI550
	A 065 URD 30 KI 0630	-			
31	A 070 URD 31 KI 0160	F300385	430	3	A070UD31KI160
	A 070 URD 31 KI 0200	S300028			A070UD31KI200
	A 070 URD 31 KI 0250	T300029			A070UD31KI250
	A 070 URD 31 KI 0315	V300030			A070UD31KI315
	A 070 URD 31 KI 0350	R300050			A070UD31KI350
	A 070 URD 31 KI 0400	W300031			A070UD31KI400
	A 070 URD 31 KI 0450	X300032			A070UD31KI450
	A 070 URD 31 KI 0500	Y300033			A070UD31KI500
	A 070 URD 31 KI 0550	Z300034			A070UD31KI550
	A 070 URD 31 KI 0630	A300035			A070UD31KI630
	A 070 URD 31 KI 0700	B300036			A070UD31KI700
	A 070 URD 31 KI 0800	A301070			A070UD31KI800
32	A 070 URD 32 KI 0400	Z300195	590	3	A070UD32KI400
	A 070 URD 32 KI 0450	A300196			A070UD32KI450
	A 070 URD 32 KI 0500	B300197			A070UD32KI500
	A 070 URD 32 KI 0550	C300198			A070UD32KI550
	A 070 URD 32 KI 0630	D300199			A070UD32KI630
	A 070 URD 32 KI 0700	E300200			A070UD32KI700
	A 070 URD 32 KI 0800	F300201			A070UD32KI800
	A 070 URD 32 KI 0900	G300202			A070UD32KI900
	A 070 URD 32 KI 1000	H300203			A070UD32KI1000
	A 065 URD 32 KI 1100	-			
	A 060 URD 32 KI 1250	-	660		
	A 055 URD 32 KI 1400	-			
	A 055 URD 32 KI 1600	-			
	A 050 URD 32 KI 1800	-			
33	A 070 URD 33 KI 0500	W300238	860	3	A070UD33KI500
	A 070 URD 33 KI 0550	X300239			A070UD33KI550
	A 070 URD 33 KI 0630	Y300240			A070UD33KI630
	A 070 URD 33 KI 0700	Z300241			A070UD33KI700
	A 070 URD 33 KI 0800	A300242			A070UD33KI800
	A 070 URD 33 KI 0900	B300243			A070UD33KI900
	A 070 URD 33 KI 1000	C300244			A070UD33KI1000
	A 070 URD 33 KI 1100	D300245			A070UD33KI1100
	A 070 URD 33 KI 1250	E300246			A070UD33KI1250
	A 070 URD 33 KI 1400	F300247			A070UD33KI1400
	A 065 URD 33 KI 1600	E302063			A065UD33KI1600
	A 065 URD 33 KI 1800	-			
	A 060 URD 33 KI 2000	-			
	A 055 URD 33 KI 2250	-			
	A 050 URD 33 KI 2500	-	1070		

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
American Terminals - 30 - 33 Blades



Rated voltage as per American standard.

Size	Designation	Reference Number L	Weight (g)	Pack.	Catalog Number
30	A 070 URD 30 LI 0050	A301921	290	3	A070UD30LI050
	A 070 URD 30 LI 0063	M300138			A070UD30LI63
	A 070 URD 30 LI 0080	N300139			A070UD30LI080
	A 070 URD 30 LI 0100	P300140			A070UD30LI100
	A 070 URD 30 LI 0125	Q300141			A070UD30LI125
	A 070 URD 30 LI 0160	R300142			A070UD30LI160
	A 070 URD 30 LI 0200	S300143			A070UD30LI200
	A 070 URD 30 LI 0250	T300144			A070UD30LI250
	A 070 URD 30 LI 0315	V300145			A070UD30LI315
	A 070 URD 30 LI 0350	W300146			A070UD30LI350
	A 070 URD 30 LI 0400	X300147			A070UD30LI400
	A 070 URD 30 LI 0450	K300527			A070UD30LI450
	A 070 URD 30 LI 0500	L300528			A070UD30LI500
	A 070 URD 30 LI 0550	M300529			A070UD30LI550
	A 060 URD 30 LI 0630	P302003			A060UD30LI630
31	A 070 URD 31 LI 0160	D301924	430	3	A070UD31LI160
	A 070 URD 31 LI 0200	V300697			A070UD31LI200
	A 070 URD 31 LI 0250	W300698			A070UD31LI250
	A 070 URD 31 LI 0315	X300699			A070UD31LI315
	A 070 URD 31 LI 0350	Y300700			A070UD31LI350
	A 070 URD 31 LI 0400	Z300701			A070UD31LI400
	A 070 URD 31 LI 0450	A300702			A070UD31LI450
	A 070 URD 31 LI 0500	B300703			A070UD31LI500
	A 070 URD 31 LI 0550	C300704			A070UD31LI550
	A 070 URD 31 LI 0630	D300705			A070UD31LI630
	A 070 URD 31 LI 0700	E300706			A070UD31LI700
	A 070 URD 31 LI 0800	F300707			A070UD31LI800
32	A 070 URD 32 LI 0400	J300204	590	3	A070UD32LI400
	A 070 URD 32 LI 0450	K300205			A070UD32LI450
	A 070 URD 32 LI 0500	L300206			A070UD32LI500
	A 070 URD 32 LI 0550	M300207			A070UD32LI550
	A 070 URD 32 LI 0630	N300208			A070UD32LI630
	A 070 URD 32 LI 0700	P300209			A070UD32LI700
	A 070 URD 32 LI 0800	Q300210			A070UD32LI800
	A 070 URD 32 LI 0900	R300211			A070UD32LI900
	A 070 URD 32 LI 1000	S300212			A070UD32LI1000
	A 065 URD 32 LI 1100	B301071			A065UD32LI1100
	A 060 URD 32 LI 1250	C301072	660		A060UD32LI1250
	A 055 URD 32 LI 1400	D301073			A055UD32LI1400
	A 055 URD 32 LI 1600	E301074			A055UD32LI1600
	A 050 URD 32 LI 1800	F301075			A050UD32LI1800
33	A 070 URD 33 LI 0500	K300228	860	3	A070UD33LI500
	A 070 URD 33 LI 0550	L300229			A070UD33LI550
	A 070 URD 33 LI 0630	M300230			A070UD33LI630
	A 070 URD 33 LI 0700	N300231			A070UD33LI700
	A 070 URD 33 LI 0800	P300232			A070UD33LI800
	A 070 URD 33 LI 0900	Q300233			A070UD33LI900
	A 070 URD 33 LI 1000	R300234			A070UD33LI1000
	A 070 URD 33 LI 1100	S300235			A070UD33LI1100
	A 070 URD 33 LI 1250	T300236			A070UD33LI1250
	A 070 URD 33 LI 1400	V300237			A070UD33LI1400
	A 065 URD 33 LI 1600	G301076			A065UD33LI1600
	A 065 URD 33 LI 1800	H301077			A065UD33LI1800
	A 060 URD 33 LI 2000	J301078			A060UD33LI2000
	A 055 URD 33 LI 2250	K301079			A055UD33LI2250
	A 050 URD 33 LI 2500	L301080	1070		A050UD33LI2500

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
American Terminals - 30 - 33 Blades



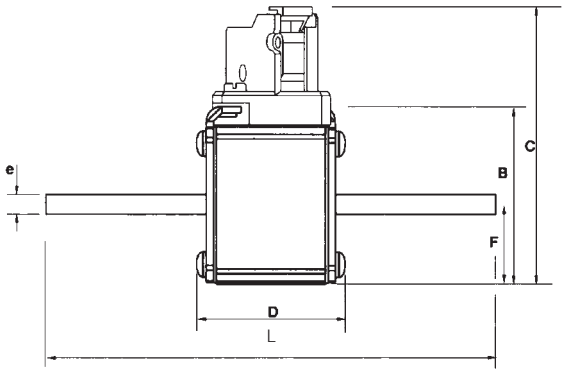
Rated voltage as per American standard.

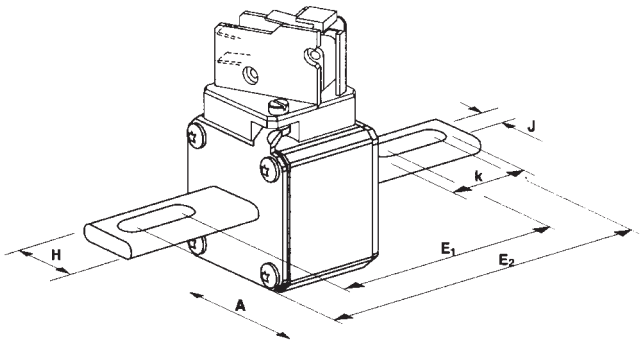
Size	Designation	Reference Number	Weight (g)	Pack.	Catalog Number
		LL			
31	A 070 URD 31 LLI 0160	C301923	290		A070UD31LLI160
	A 070 URD 31 LLI 0200	J300158			A070UD31LLI200
	A 070 URD 31 LLI 0250	K300159			A070UD31LLI250
	A 070 URD 31 LLI 0315	L300160			A070UD31LLI315
	A 070 URD 31 LLI 0350	M300161			A070UD31LLI350
	A 070 URD 31 LLI 0400	N300162			A070UD31LLI400
	A 070 URD 31 LLI 0450	P300163			A070UD31LLI450
	A 070 URD 31 LLI 0500	Q300164			A070UD31LLI500
	A 070 URD 31 LLI 0550	R300165			A070UD31LLI550
	A 070 URD 31 LLI 0630	S300166			A070UD31LLI630
	A 070 URD 31 LLI 0700	T300167			A070UD31LLI700
	A 070 URD 31 LLI 0800	J300526			A070UD31LLI800

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
American Terminals - 30 - 33 Blades

	Size	A	B	C	D	$E_1^{\pm 1,1}$	$E_2^{\pm 1,1}$	F	H	J	K	L	e
K	30	40 1-19/32"	46,5 1-27/32"	82 3-7/32"	47,5 1-7/8"	68 2-11/16"	107 4-7/32"	21 53/64"	25 1"	10,5 13/32"	30 1-3/16"	129 5-5/64"	6 15/64"
	31	51 2"	56,5 2-7/32"	91 3-37/64"	47,5 1-7/8"	68 2-11/16"	107 4-7/32"	25,5 1"	25 1"	10,5 13/32"	30 1-3/16"	129 5-5/64"	6 15/64"
	32	60 2-3/8"	65,5 2-37/64"	100 3-15/16"	47,5 1-7/8"	74,5 2-59/64"	109 4-9/32"	30 1-3/16"	32 1-1/4"	14,6 9/16"	32 1-1/4"	134 5-9/32"	6 15/64"
	33	74,5 2-15/16"	79,5 3-1/8"	114 4-1/2"	48,5 1-29/32"	75,4 2-31/32"	107,6 4-15/64"	37,2 1-15/32"	40 1-9/16"	15,9 5/8"	32 1-1/4"	134 5-9/32"	6 15/64"
L	30	40 1-19/32"	46,5 1-27/32"	82 3-7/32"	47,5 1-7/8"	87,6 3-7/16"	126,6 5"	21 53/64"	25 1"	10,5 13/32"	30 1-3/16"	148,5 5-27/32"	6 15/64"
	31	51 2"	56,5 2-7/32"	91 3-37/64"	47,5 1-7/8"	91,6 3-19/32"	122,4 4-13/16"	25,5 1"	25 1"	14,6 9/16"	30 1-3/16"	148,6 5-27/32"	6 15/64"
	32	60 2-3/8"	65,5 2-37/64"	100 3-15/16"	47,5 1-7/8"	94,2 3-45/64"	129 5-5/64"	30 1-3/16"	32 1-1/4"	14,6 9/16"	32 1-1/4"	153 5-9/32"	6 15/64"
	33	74,5 2-15/16"	79,5 3-1/8"	114 4-1/2"	48,5 1-29/32"	94,4 3-23/32"	126,6 5"	37,2 1-15/32"	40 1-9/16"	15,9 5/8"	32 1-1/4"	153 6"	6 15/64"
LL	31	51 2"	56,5 2-7/32"	91 3-37/64"	47,5 1-7/8"	87,6 3-7/16"	126,6 5"	25,5 1"	25 1"	10,5 13/32"	30 1-3/16"	148,6 5-27/32"	6 15/64"

Note:
dimensions in mm
dimensions in inches



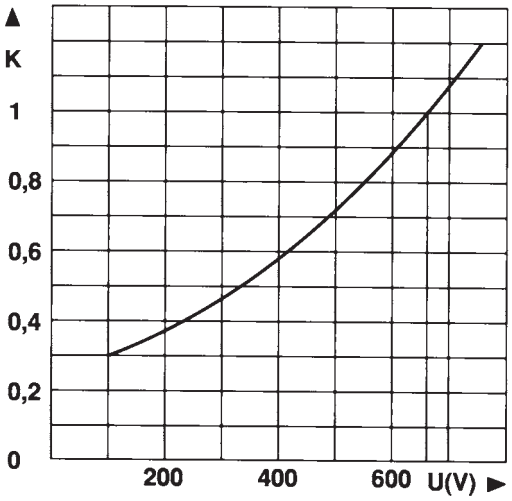


Microswitches supplied separately see microswitches for PSC 3x & 7x section

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

I²t Multiplier coefficient



Mean curve indicating variation of total I²t (I^2t_t) and total operating time T_t in accordance with working voltage U.

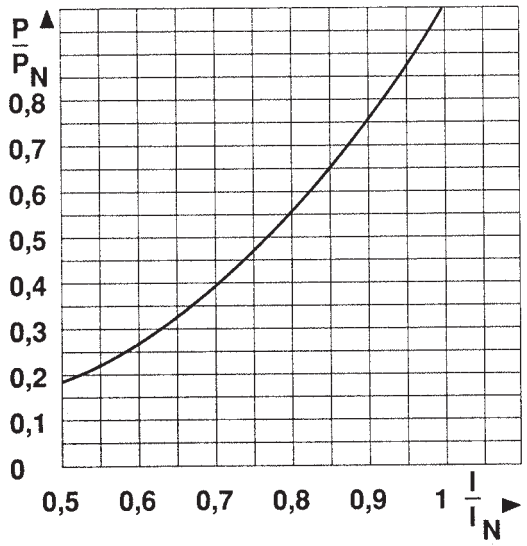
Example:

Fuse 350 A in size 30.
I_p = 10 000 A U = 500 V

At 660 V
I^2t_t = 80 000 A²s T_t = 6 ms

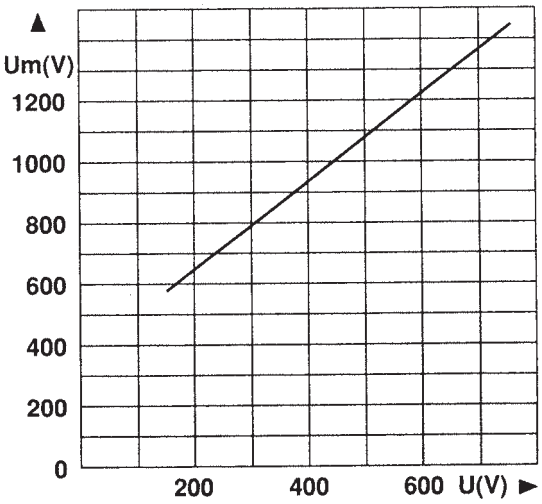
At 500 V
I^2t_t = 80 000 x 0.72 = 57 600 A²s
T_t = 6 x 0.72 = 4.3 ms

Dissipated power



Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in a steady state.

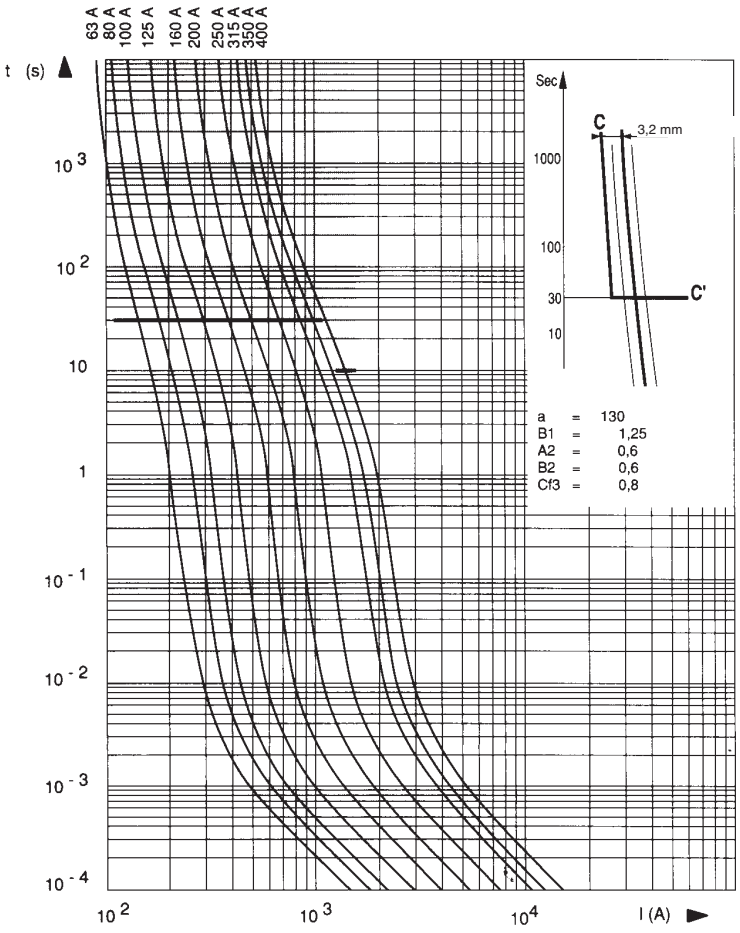
Arc voltage



Curve indicating peak arc voltage Um which may appear across fuse terminals as function of working voltage U at cos φ = 0.15

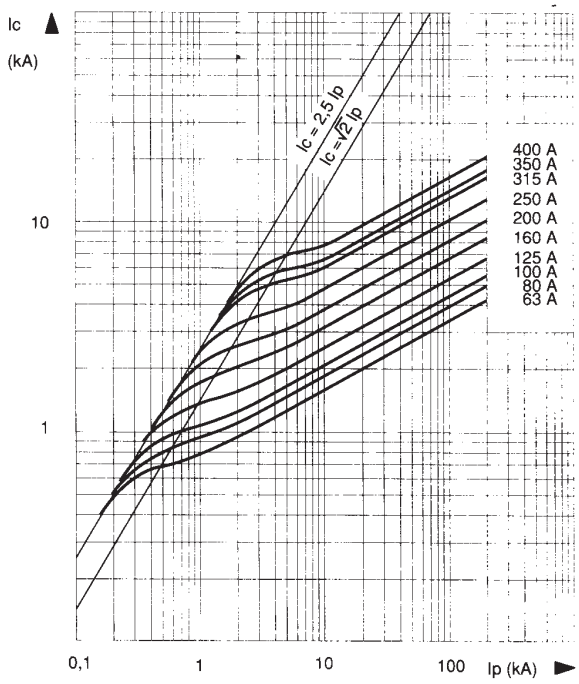
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

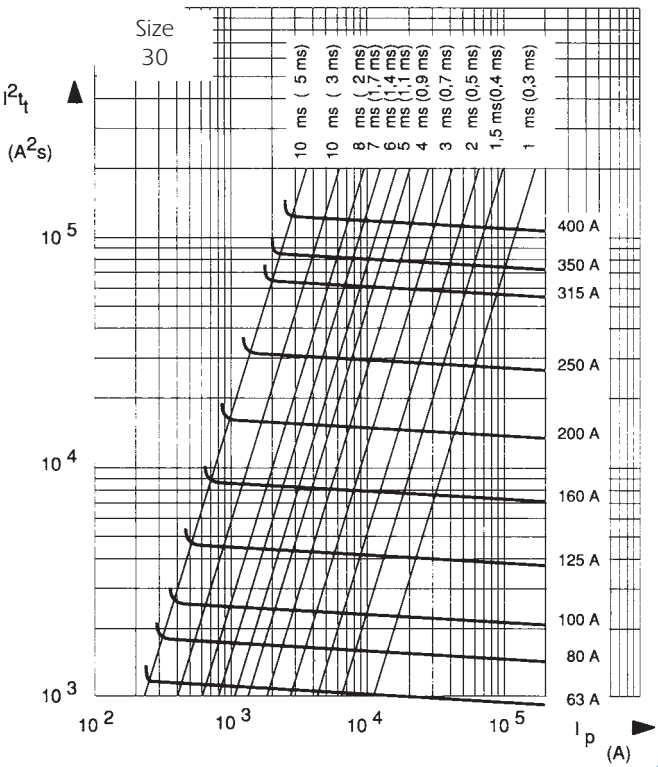
Size 30



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

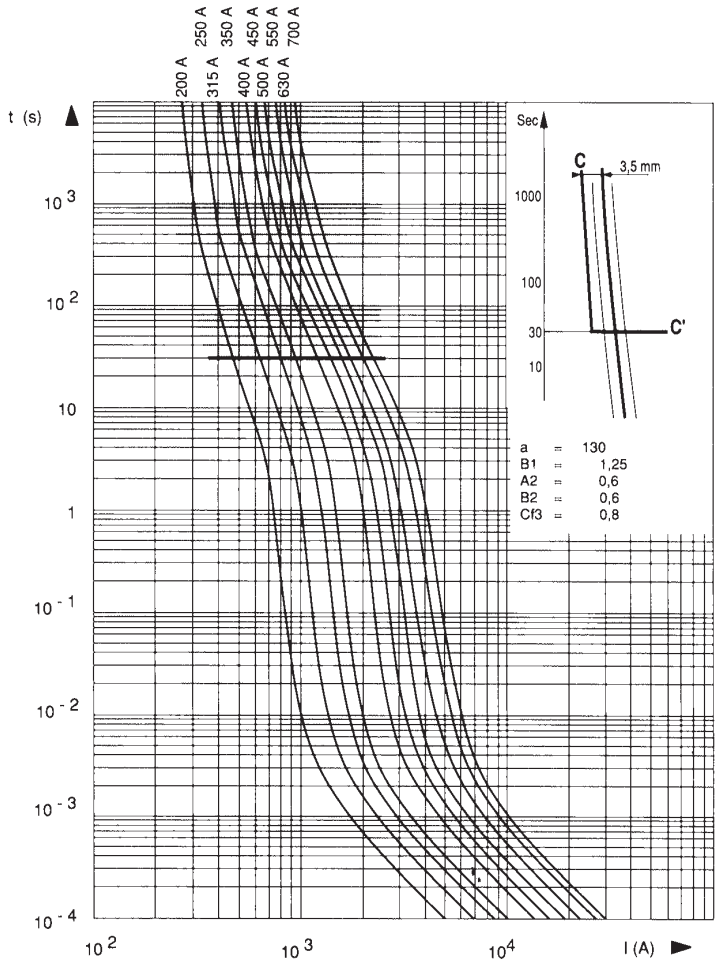
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

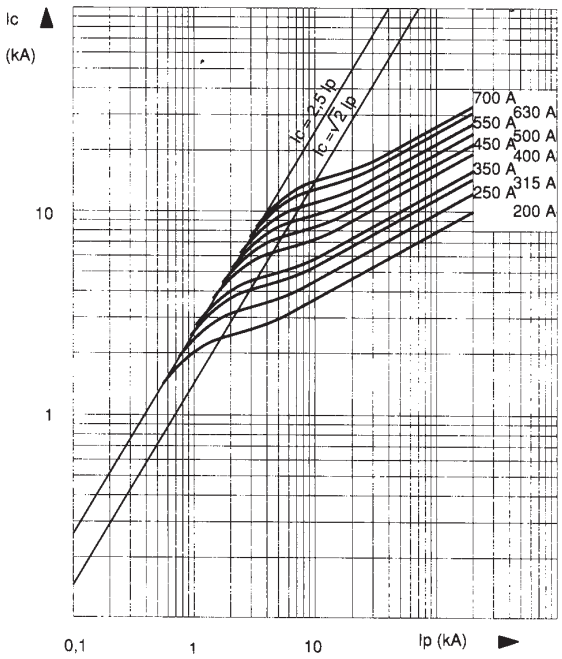
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

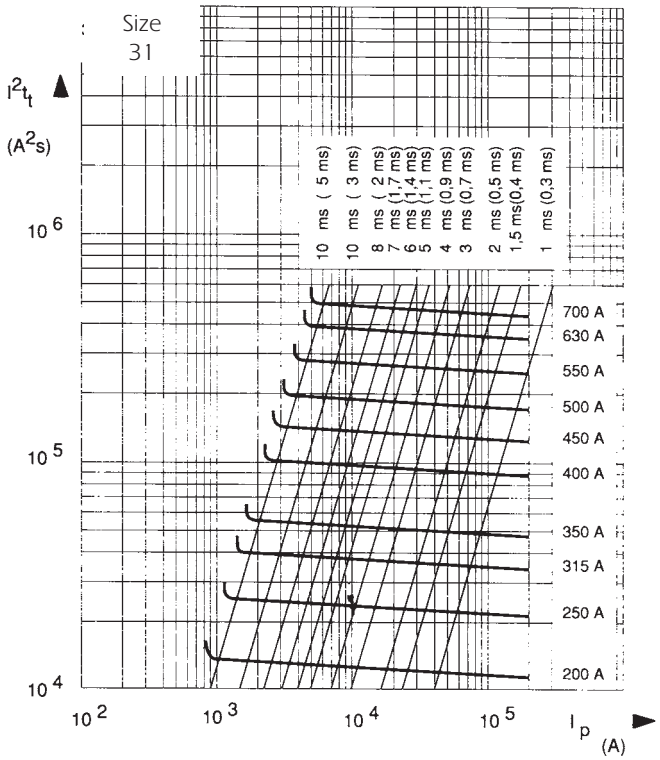
Size 31



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_C that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

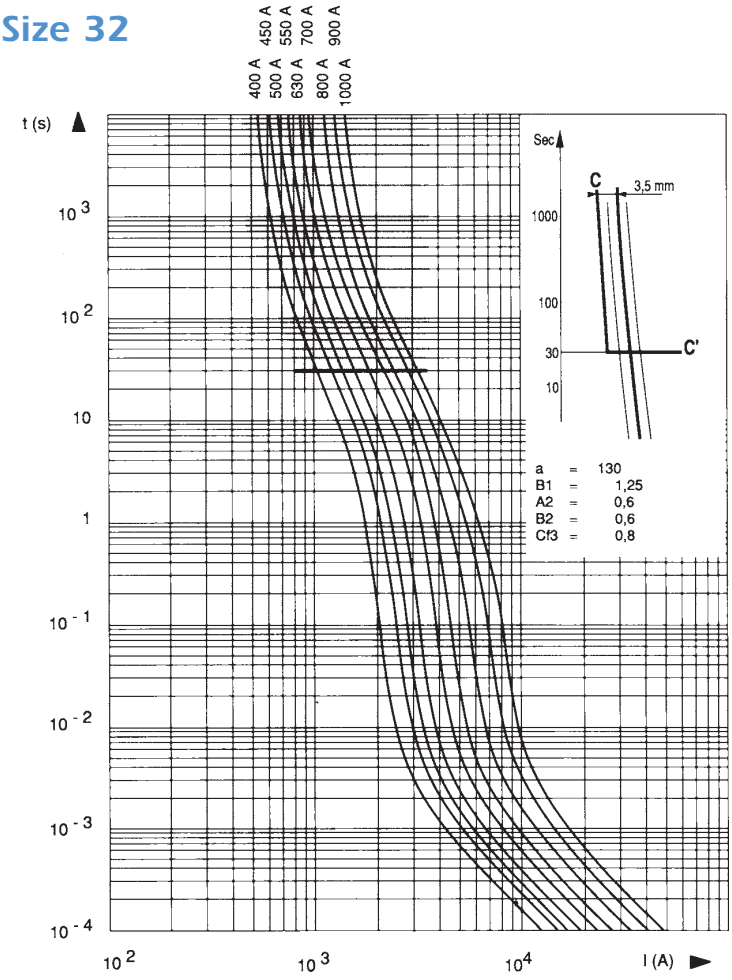
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

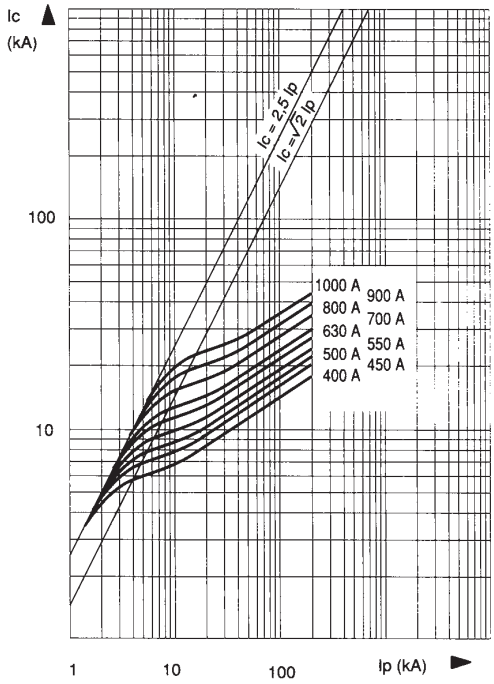
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

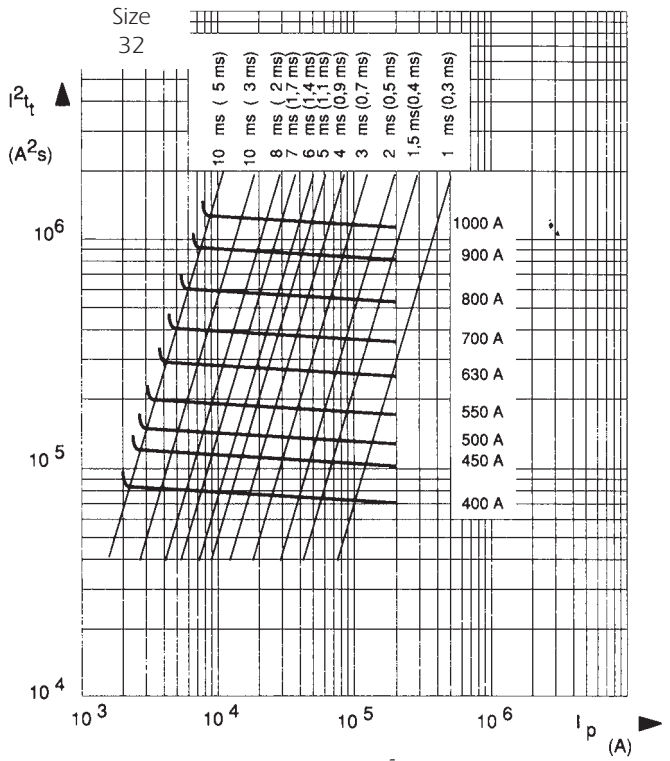
Size 32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_C that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

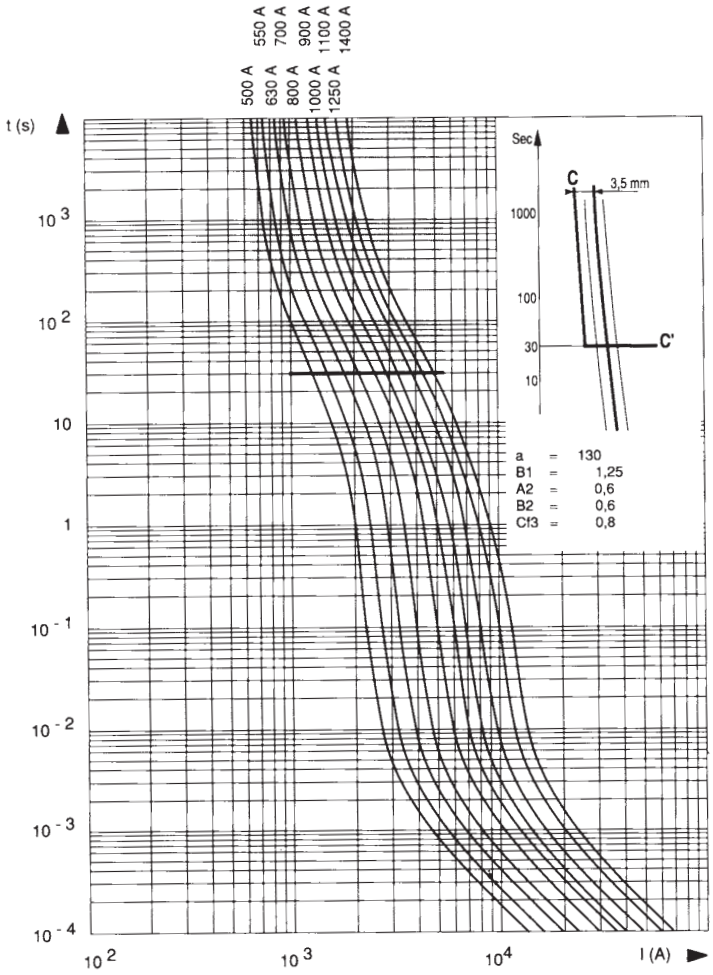
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

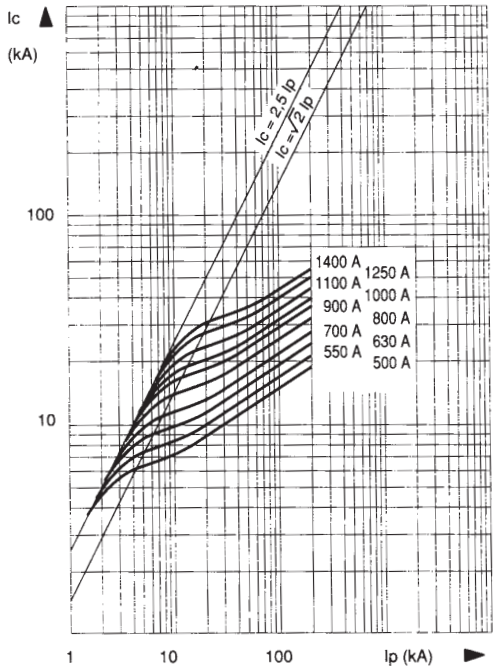
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

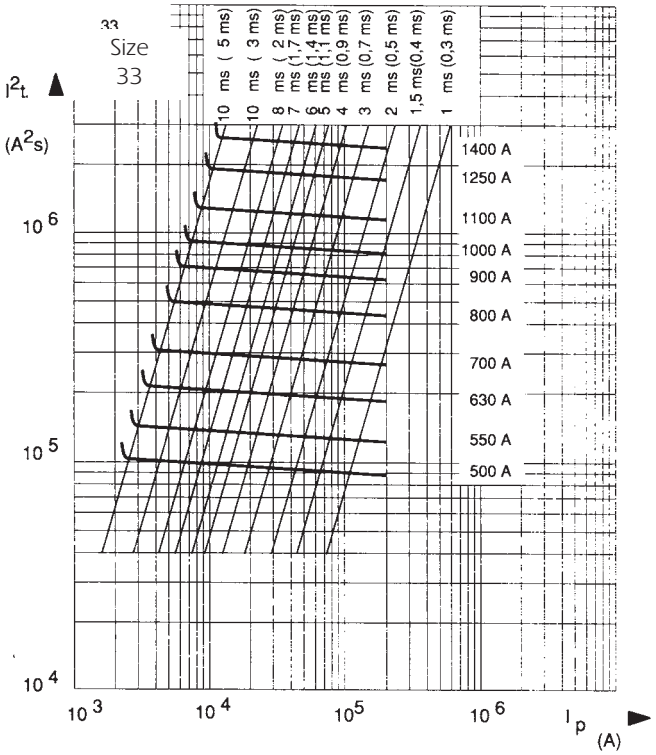
Size 33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

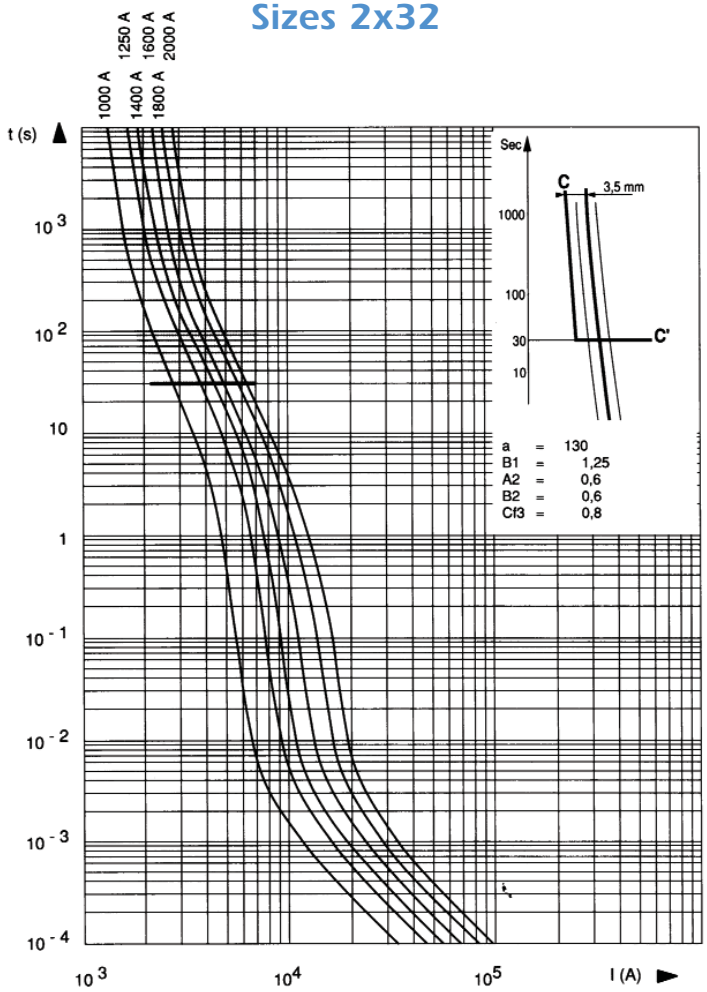
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

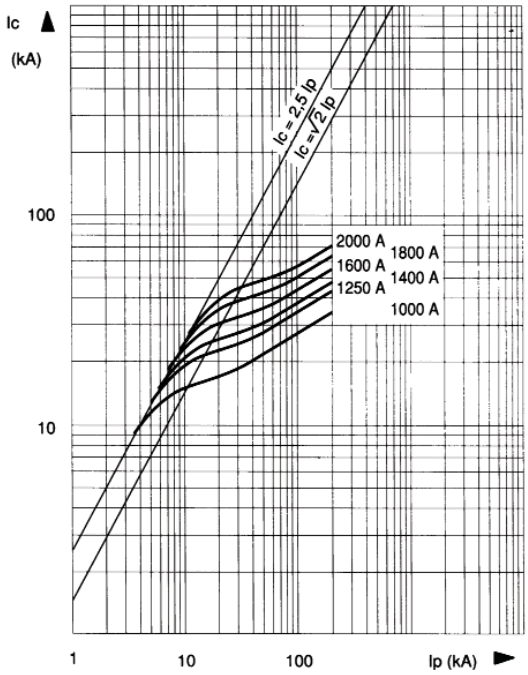
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

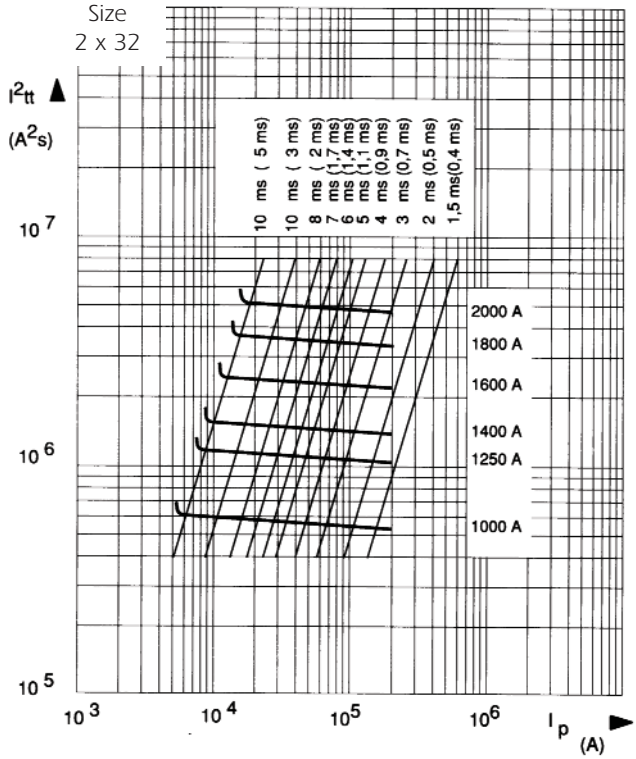
Sizes 2x32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

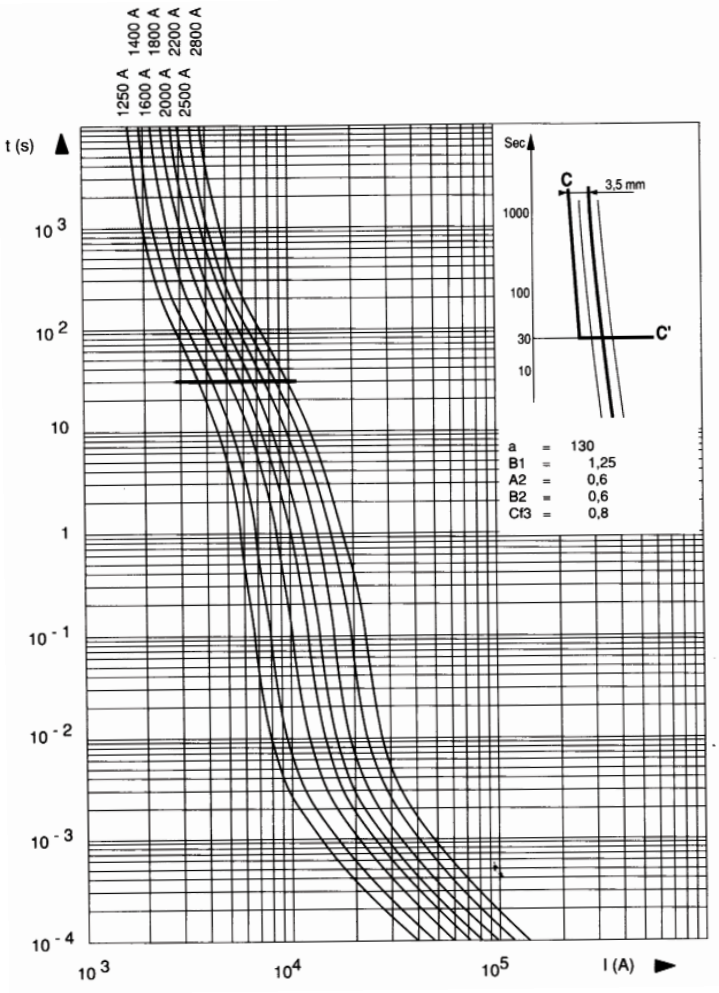
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

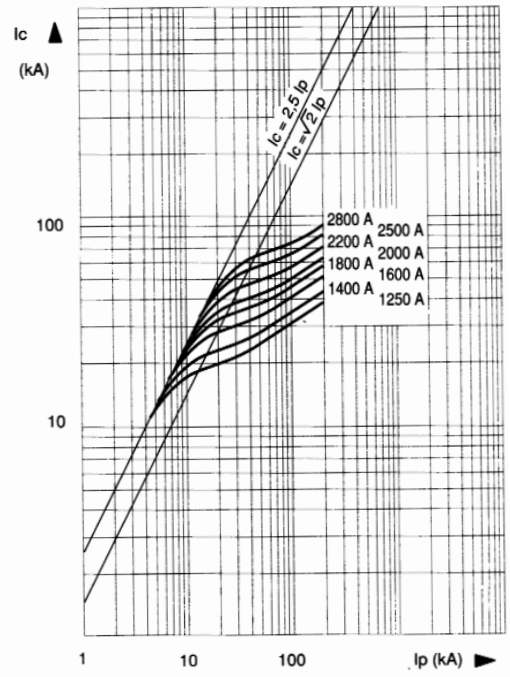
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

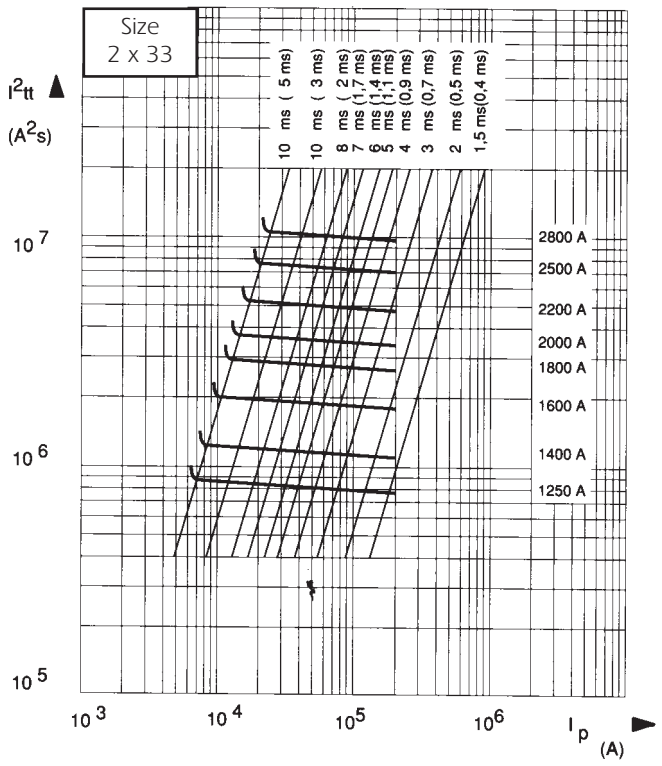
Size 2x33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

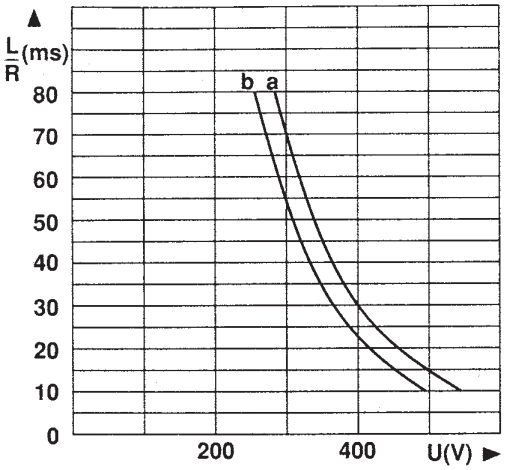
Maximum values of total operating I²t and total operating times

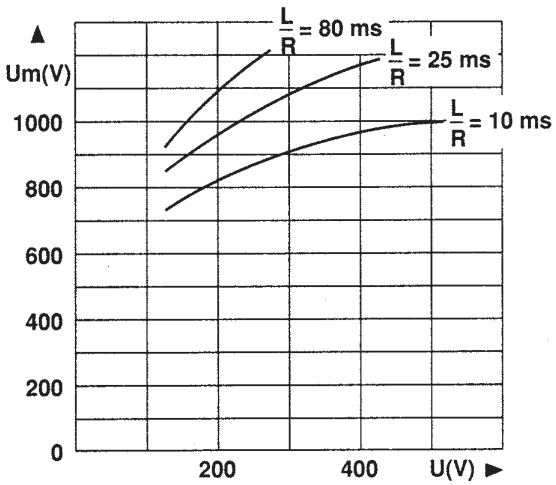
Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

DC working voltage possibilities





Rated current In (A)	Curves (*) and Ipm (1) corresponding to the rating					
	30 * Ipm (A)	31 * Ipm (A)	32 * Ipm (A)	33 * Ipm (A)	2 x 32 * Ipm (A)	2 x33 * Ipm (A)
63	a 230					
80	a 300					
100	a 360					
125	a 460					
160	a 650					
200	a 880	a 850				
250	a 1300	a 1150				
315	a 1700	a 1450				
350	a 1900	a 1600				
400	a 2300	a 2200	a 2000			
450		a 2500	a 2300			
500		a 3000	a 2600	a 2300		
550		a 3400	a 3150	a 2500		
630		a 5000	a 3700	a 3250		
700		a 5600	a 4300	a 3900		
800			a 5300	a 4800		
900			a 7800	a 5600		
1000			b 9000	a 6600	a 5200	
1100				a 7700		
1250				b 11000	a 7400	a 6500
1400				b 12500	a 8600	a 7800
1600					a 10600	a 9600
1800					a 15600	a 11200
2000					b 18000	a 13200
2200						a 15400
2500						b 22000
2800						b 25000

Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark:
When the fault current di/dt is very large, this condition can be exceeded. This is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

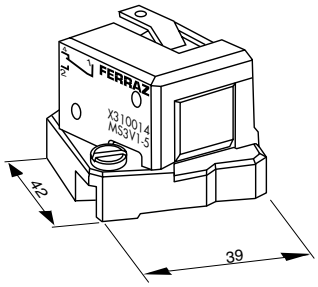
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

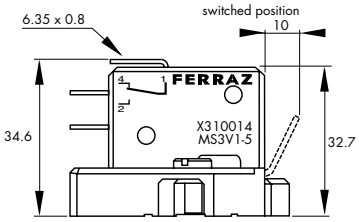
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



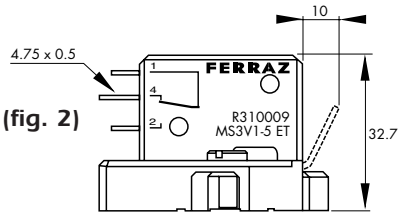
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

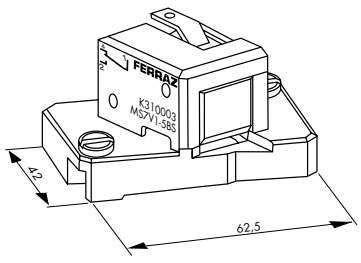
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

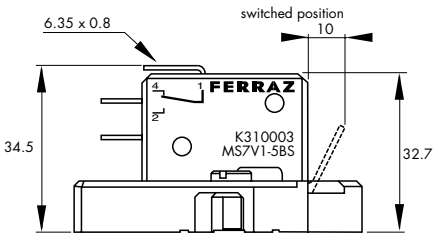
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

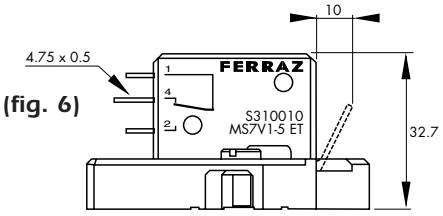


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Metric-studs

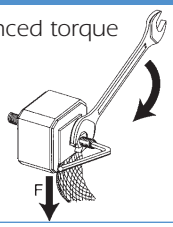
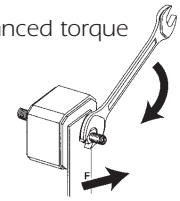
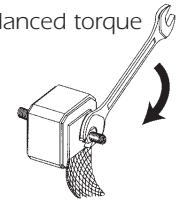
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STUM8x30M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STUM10x30M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STUM12x35M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STUM10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STUM12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

450 TO 700VAC / 63 TO 2800A

Recognized

Exceptionally low I^2T, Watt losses.
Non-magnetic construction,
Highly reliable low voltage
Trip-indicator system, conformity to UL,
IEC, DIN and VDE standards.
Increased technical performance

- Highter ratings
- Reduction in volume and weight





This fuse preselection table indicates, for each size:

- rated current (or rating) In
- pre-arcing I^2t (I^2tp) at 1 ms
- total operating I^2t (I^2tt) at 660 V, f=50Hz cos φ=0.15, and for a total operating time from 8 to 10 ms
- dissipated power Pn at the rated current In, and at 0.8 In, in steady state
- breaking capacity at various voltages, checked by tests
  made in accordance with IEC and American standards.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

Estimated breaking capacity: 300kA

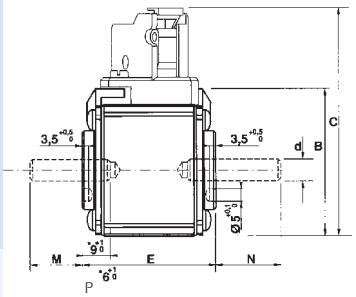
Size	Nominal Voltage (VAC)		Ampere Rating (A)	Pre-arcing I²t @ 1ms (kA²s)	Total I²t @ 660V (*) @ Un (kA²s)	Power Pn (W)		Tested Breaking capacity (kA)	
	IEC	USA				End contact	Blades	IEC @ 690V (*) @ Un	USA @ 700V (*) @ Un
30	690	700	50	0,116	0,62	9	9	200	200
			63	0,2	1,1	14	14		
			80	0,33	1,8	19	19		
			100	0,47	2,5	26	26		
			125	0,85	4,5	30	30		
			160	1,6	8,5	37	37		
			200	3	15,5	42	43		
			250	5,8	30	48	50		
			315	12	62	53	55		
			350	15,5	80	57	60		
			400	23	120	60	65		
			450	26	150	80	88		
			500	41	240	80	88		
			550	52	300	80	90		
	600	650	630	84	450(*)	85	95	200(*)	200(*)
31	690	700	160	1,3	7	35	35	200	200
			200	2,6	13,5	45	45		
			250	4,7	25	52	52		
			315	7,5	40	65	65		
			350	10,5	55	67	67		
			400	19	100	68	68		
			450	26,5	140	70	70		
			500	37	195	70	72		
			550	52	280	70	75		
			630	75	390	75	85		
			700	95	490	85	95		
			800	140	800	105	120		
32	690	700	315	5,2	28,9	71	71	200	200
			350	8,9	48,8	71	74		
			400	15	80	72	75		
			450	22	115	77	80		
			500	28	145	85	90		
			550	37	195	90	95		
			630	54	280	95	105		
			700	76	400	100	110		
			800	115	600	110	120		
			900	170	900	110	125		
			1000	240	1250	115	135		
	600	650	1100	270	1450(*)	140	165	160(*)	160(*)
	550	600	1250	410	1950(*)	150	180	150(*)	150(*)
	500	550	1400	555	2300(*)	160	200	130(*)	130(*)
			1600	870	3600(*)	165	205		
	450	500	1800	1050	3700(*)	195	230	110(*)	110(*)
33	690	700	450	13,45	74,1	84	88	200	200
			500	19	100	105	105		
			550	27	140	105	110		
			630	40	210	110	120		
			700	55	300	115	125		
			800	95	490	120	130		
			900	135	700	120	135		
			1000	170	900	135	155		
			1100	240	1260	135	160		
			1250	350	1850	150	180		
			1400	480	2500	160	200		
	600	650	1500	500	2500(*)	210	240	160(*)	160(*)
			1600	555	2900(*)	210	240		
			1800	720	3870(*)	225	260		
	550	600	2000	950	4500(*)	250	290	150(*)	150(*)
	500	550	2250	1250	5160(*)	280	320	130(*)	130(*)
	450	500	2500	1870	6540(*)	280	330	110(*)	110(*)
2X32	690	700	800	60	320	144		200	200
			1000	110	590	165			
			1250	220	1100	190			
			1400	300	1600	200			
			1600	450	2400	220			
			1800	700	3500	225			
			2000	950	5000	235			
	550	600	2200	1100	5250(*)	280		150(*)	150(*)
2x33	690	700	1000	76	395	220		170	170
			1250	160	850	230			
			1400	225	1200	240			
			1600	375	1900	250			
			1800	530	2800	250			
	600	650	2000	700	3100(*)	280		160(*)	160(*)
			2200	950	4400(*)	280			
			2500	1400	6600(*)	310			
			2800	1900	8800(*)	330			

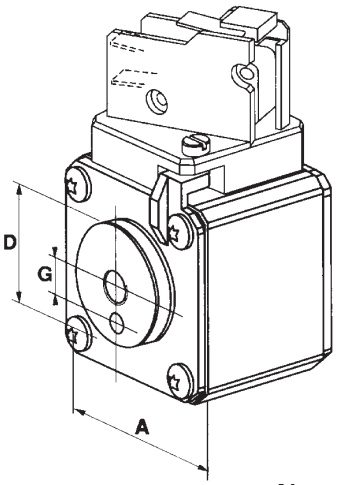
For others Ampere ratings consult us

12/04

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
IEC Terminals French - 30 - 33 End contacts

Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
30	6,9 URD 30 TTF 0050	S300373	245	3	PC30UD69V50TF
	6,9 URD 30 TTF 0063	M300000			PC30UD69V63TF
	6,9 URD 30 TTF 0080	S300051			PC30UD69V80TF
	6,9 URD 30 TTF 0100	T300052			PC30UD69V100TF
	6,9 URD 30 TTF 0125	V300053			PC30UD69V125TF
	6,9 URD 30 TTF 0160	W300054			PC30UD69V160TF
	6,9 URD 30 TTF 0200	X300055			PC30UD69V200TF
	6,9 URD 30 TTF 0250	Y300056			PC30UD69V250TF
	6,9 URD 30 TTF 0315	Z300057			PC30UD69V315TF
	6,9 URD 30 TTF 0350	A300058			PC30UD69V350TF
	6,9 URD 30 TTF 0400	B300059			PC30UD69V400TF
	6,9 URD 30 TTF 0450	V300398			PC30UD69V450TF
	6,9 URD 30 TTF 0500	W300399			PC30UD69V500TF
	6,9 URD 30 TTF 0550	X300400			PC30UD69V550TF
	6 URD 30 TTF 0630	L301770			PC30UD60V630TF
31	6,9 URD 31 TTF 0160	M300299	370	3	PC31UD69V160TF
	6,9 URD 31 TTF 0200	N300001			PC31UD69V200TF
	6,9 URD 31 TTF 0250	P300002			PC31UD69V250TF
	6,9 URD 31 TTF 0315	Q300003			PC31UD69V315TF
	6,9 URD 31 TTF 0350	M300046			PC31UD69V350TF
	6,9 URD 31 TTF 0400	R300004			PC31UD69V400TF
	6,9 URD 31 TTF 0450	S300005			PC31UD69V450TF
	6,9 URD 31 TTF 0500	T300006			PC31UD69V500TF
	6,9 URD 31 TTF 0550	V300007			PC31UD69V550TF
	6,9 URD 31 TTF 0630	W300008			PC31UD69V630TF
	6,9 URD 31 TTF 0700	X300009			PC31UD69V700TF
	6,9 URD 31 TTF 0800	Y300401			PC31UD69V800TF
32	6,9 URD 32 TTF 0315	M302162	510	3	PC32UD69V315TF
	6,9 URD 32 TTF 0350	N302163			PC32UD69V350TF
	6,9 URD 32 TTF 0400	H300065			PC32UD69V400TF
	6,9 URD 32 TTF 0450	J300066			PC32UD69V450TF
	6,9 URD 32 TTF 0500	K300067			PC32UD69V500TF
	6,9 URD 32 TTF 0550	L300068			PC32UD69V550TF
	6,9 URD 32 TTF 0630	M300069			PC32UD69V630TF
	6,9 URD 32 TTF 0700	N300070			PC32UD69V700TF
	6,9 URD 32 TTF 0800	P300071			PC32UD69V800TF
	6,9 URD 32 TTF 0900 **	Q300072			PC32UD69V900TF
	6,9 URD 32 TTF 1000 **	S300074			PC32UD69V1000TF
	6 URD 32 TTF 1100 **	M300759			PC32UD60V1100TF
	5,5 URD 32 TTF 1250 **	P301060			PC32UD55V1250TF
	5 URD 32 TTF 1400 **	Q301061	600	3	PC32UD50V1400TF
	5 URD 32 TTF 1600 **	H300893			PC32UD50V1600TF
	4,5 URD 32 TTF 1800 **	R301062			PC32UD45V1800TF
33	6,9 URD 33 TTF 0450	W302170	790	3	PC33UD69V450TF
	6,9 URD 33 TTF 0500	V300076			PC33UD69V500TF
	6,9 URD 33 TTF 0550	W300077			PC33UD69V550TF
	6,9 URD 33 TTF 0630	X300078			PC33UD69V630TF
	6,9 URD 33 TTF 0700	Y300079			PC33UD69V700TF
	6,9 URD 33 TTF 0800	Z300080			PC33UD69V800TF
	6,9 URD 33 TTF 0900	A300081			PC33UD69V900TF
	6,9 URD 33 TTF 1000	B300082			PC33UD69V1000TF
	6,9 URD 33 TTF 1100	C300083			PC33UD69V1100TF
	6,9 URD 33 TTF 1250 **	D300084			PC33UD69V1250TF
	6,9 URD 33 TTF 1400 **	E300085			PC33UD69V1400TF
	6 URD 33 TTF 1500 **	Y300585			PC33UD60V1500TF
	6 URD 33 TTF 1600 **	Z300586		3	PC33UD60V1600TF
	6 URD 33 TTF 1800 **	A300587			PC33UD60V1800TF
	5,5 URD 33 TTF 2000 **	B300588	910		PC33UD55V2000TF
	5 URD 33 TTF 2250 **	K300757			PC33UD50V2250TF
	4,5 URD 33 TTF 2500 **	L300758			PC33UD45V2500TF





Note:
dimensions in mm
dimensions in inches

Threaded studs and microswitches supplied separately see microswitchesPSC 3x & 7x and Metric studs sections

Size	A	B	C	D	M±	N±	E±1	d	G±0.1	P
30	40 1-9/16"	46,5 1-27/32"	82 3-7/32"	26 1-1/64"	22	27	50,6 2"	M8	9 23/64"	6 15/64"
31	51 2"	56,5 2-7/32"	91 3-37/64"	30 1-3/16"	19	24	50,6 2"	M8	9 23/64"	9 23/64"
32	60 2-3/8"	65,5 2-37/64"	100 3-15/16"	38 ; (42mm **) 1-1/2" ; (1-21/32" **)	19	39	50,6 2"	M10	15 19/32"	9 23/64"
33	74,5 2-15/16"	79,5 3-1/8"	114 4-1/2"	46 ; (52mm **) 1-13/16" ; (2-1/16" **)	24	39	50,6 2"	M12	15 19/32"	9 23/64"

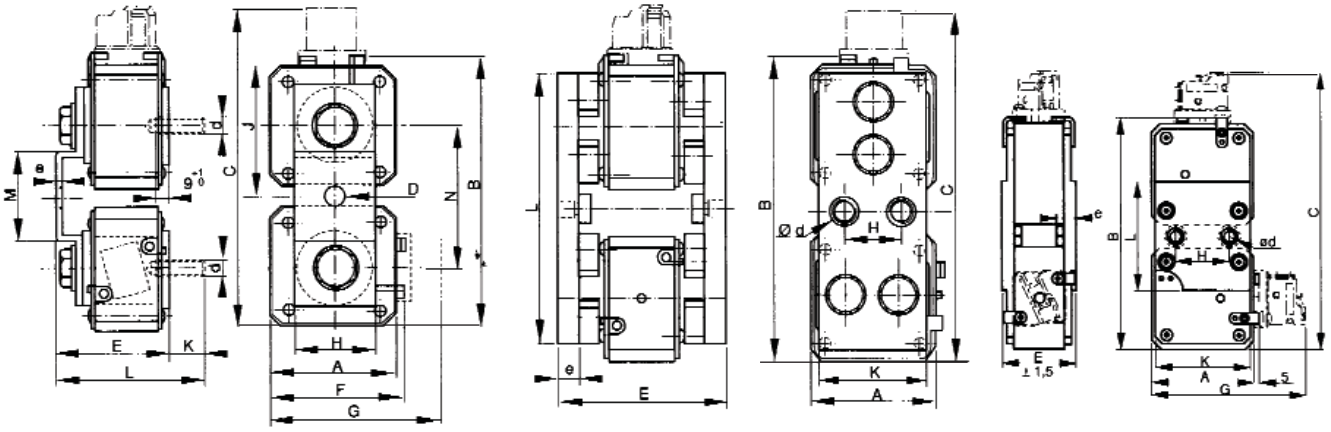
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
IEC Terminals French - 30 - 33 End contacts

Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
2 x 32	6,9 URD 232 TTF 0800	T300305			PC232UD69V8CTF
	6,9 URD 232 TTF 1000	T300213			PC232UD69V10CTF
	6,9 URD 232 TTF 1250	V300214	1240		PC232UD69V13CTF
	6,9 URD 232 TTF 1400	G300087		1	PC232UD69V14CTF
	6,9 URD 232 TDF 1600	W300215			PC232UD69V16CTD
	6,9 URD 232 TDF 1800	X300216	3300		PC232UD69V18CTD
	6,9 URD 232 TDF 2000	Y300217			PC232UD69V20CTD
	5,5 URD 232 TDF 2200	D301993			PC232UD55V22CTD
2 x 33	6,9 URD 233 TTF 1000	B301186			PC233UD69V10CTF
	6,9 URD 233 TTF 1250	D300268			PC233UD69V13CTF
	6,9 URD 233 TTF 1400	E300269	1900		PC233UD69V14CTF
	6,9 URD 233 TTF 1600	F300270			PC233UD69V16CTF
	6,9 URD 233 PLAF 1800	B300427			PC36UD69V18CP11
	6 URD 233 PLAF 2000	R302235			PC36UD60V20CP11
	6 URD 233 PLAF 2200	Q302234			PC36UD60V22CP11
	6 URD 233 PLAF 2500	P302233		1	PC36UD60V25CP11
	6 URD 233 PLAF 2800	N302232			PC36UD60V28CP11
	5,5 URD 233 PLAF 3000*	L301977			PC36UD55V30CP11
	5,5 URD 233 PLAF 3200*	M301978	2000		PC36UD55V32CP11
	5 URD 233 PLAF 3600*	N301979			PC36UD50V36CP11
	5 URD 233 PLAF 4000*	P301980			PC36UD50V40CP11
	4 URD 233 PLAF 4500*	Q301981			PC36UD40V45CP11
	4 URD 233 PLAF 5000*	R301982			PC36UD40V50CP11

*Consult us

Size	A	B	C	D	E	F	G	H	J	K	d	e	L	M	N
2x32 TT	60	138,5	172	11	67,6	66,5	100	35	61	40	M 10	4	107,5	48	72
2x33 TT	74,5	167	200	13	67,6	81	114	50	80	40	M 12	4	107,5	54	86
2x32 TD	65,5	147	182	-	91,5	-	-	30	-	60	M 10	12	140	-	-
2x33 PLAF	75	171,5	207	-	55,5	-	115	40	-	71	M 10	15	81	-	-

TT **TD** **PLAF**

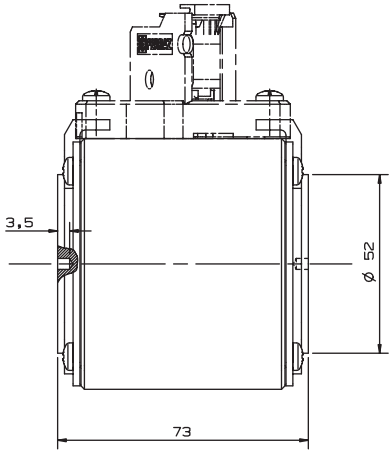


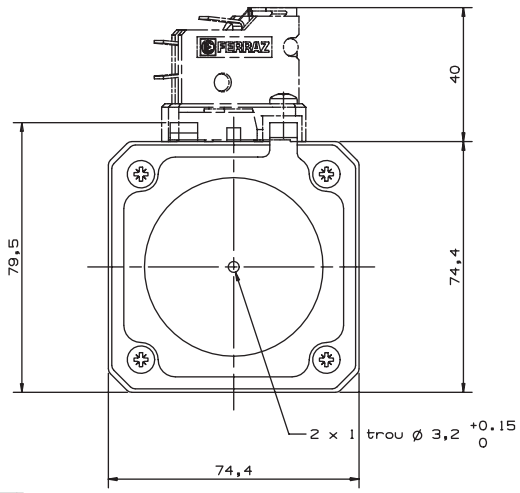
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
IEC Terminals French - 30 - 33 End contacts

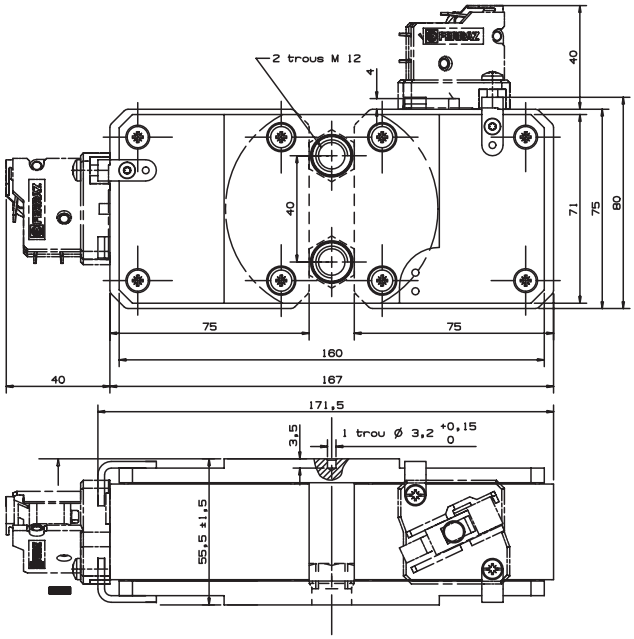
33 PPAF Standard Press-Pack

Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
33	6,9 URD 33 PPAF 1250	D301855	910	3	PC33UD69V13CPP
	6,9 URD 33 PPAF 1400	E301856			PC33UD69V14CPP
	6 URD 33 PPAF 1600	G301927			PC33UD60V16CPP
2x33	6,9 URD 233 PPAF 1800	R300694	2450	1	PC36UD69V18CP12
	6 URD 233 PPAF 2000	H302250			PC36UD60V20CP12
	6 URD 233 PPAF 2200	K302252			PC36UD60V22CP13
	6 URD 233 PPAF 2500	M302254			PC36UD60V25CP12
	6 URD 233 PPAF 2800	L302253			PC36UD60V28CP13
	5,5 URD 233 PPAF 3000	to be given - contact us			to be given - contact us
	5,5 URD 233 PPAF 3200	V301985			PC36UD55V32CP12
	5,5 URD 233 PPAF 3600	to be given - contact us			to be given - contact us
	5 URD 233 PPAF 4000	X301987			PC36UD50V40CP12
	4,5 URD 233 PPAF 4500	to be given - contact us			to be given - contact us
	4 URD 233 PPAF 5000	M301932			PC36UD40V50CP12

Studs and microswitches supplied separately



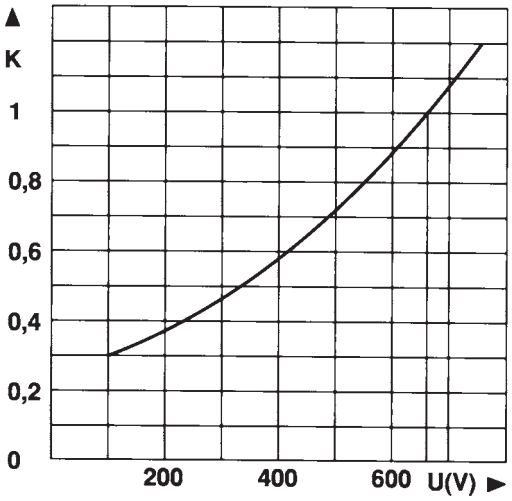




Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

I²t Multiplier coefficient



Mean curve indicating variation of total I²t (I^2t_t) and total operating time T_t in accordance with working voltage U.

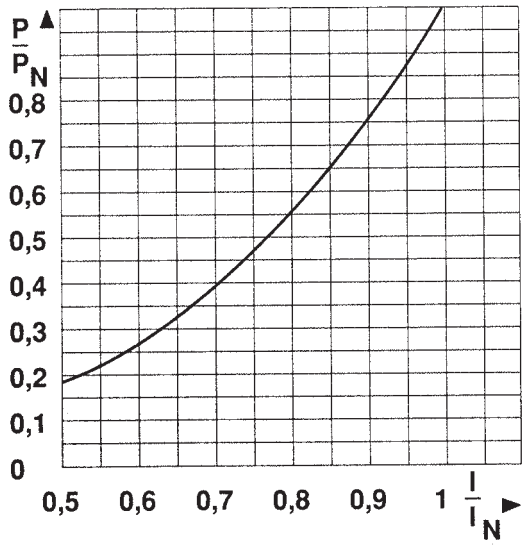
Example:

Fuse 350 A in size 30.
I_p = 10 000 A U = 500 V

At 660 V
I^2t_t = 80 000 A²s T_t = 6 ms

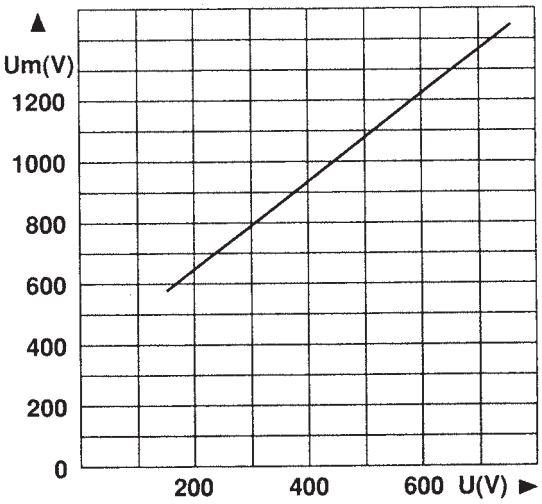
At 500 V
I^2t_t = 80 000 x 0.72 = 57 600 A²s
T_t = 6 x 0.72 = 4.3 ms

Dissipated power



Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in a steady state.

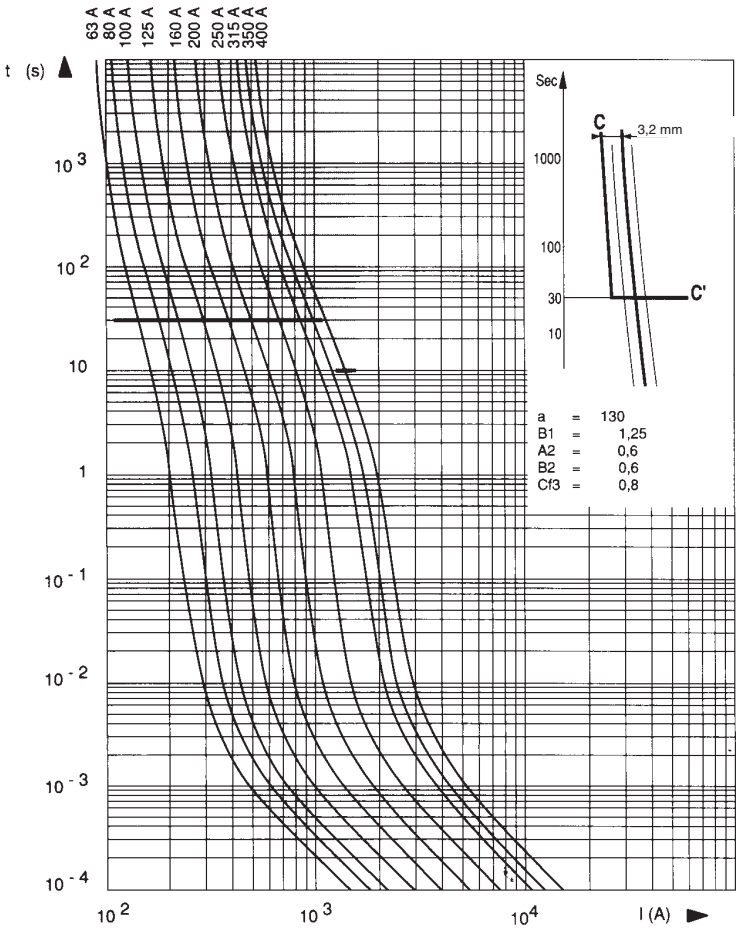
Arc voltage



Curve indicating peak arc voltage Um which may appear across fuse terminals as function of working voltage U at cos φ = 0.15

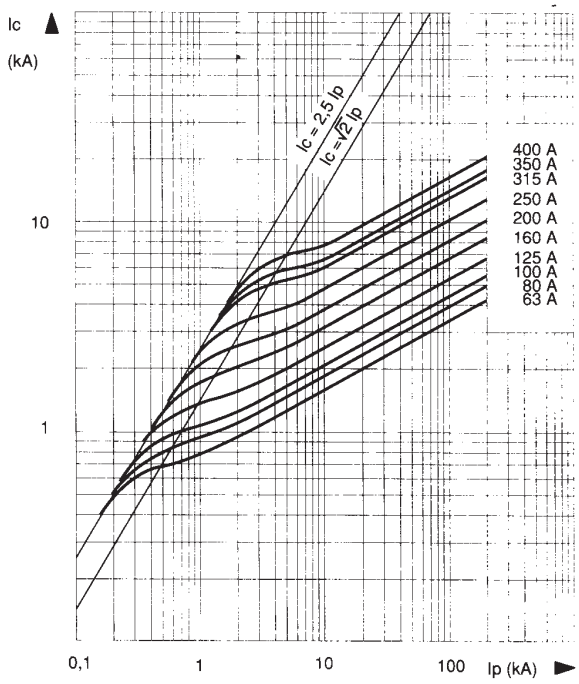
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

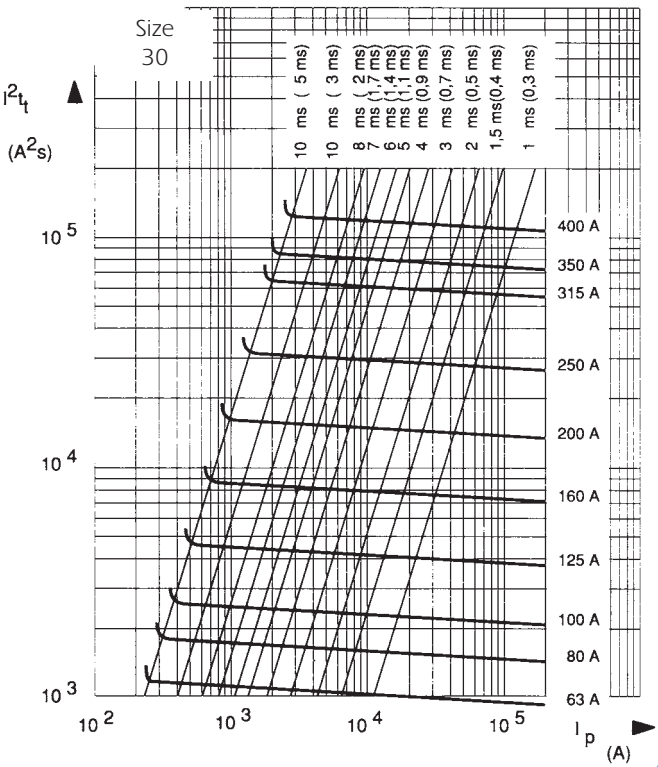
Size 30



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

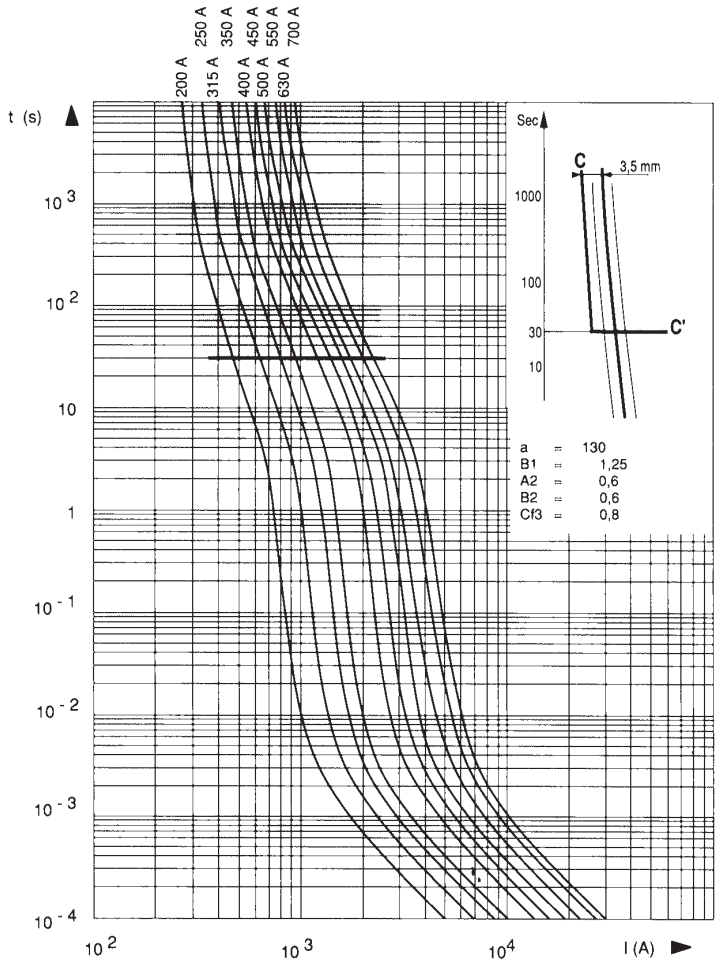
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

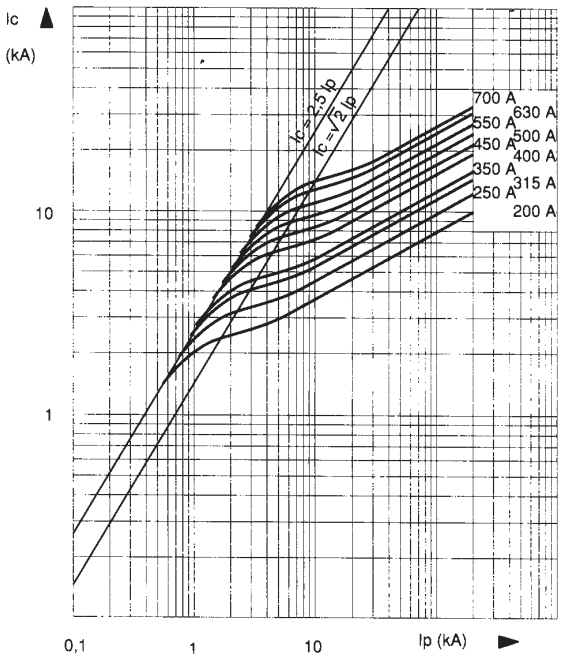
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

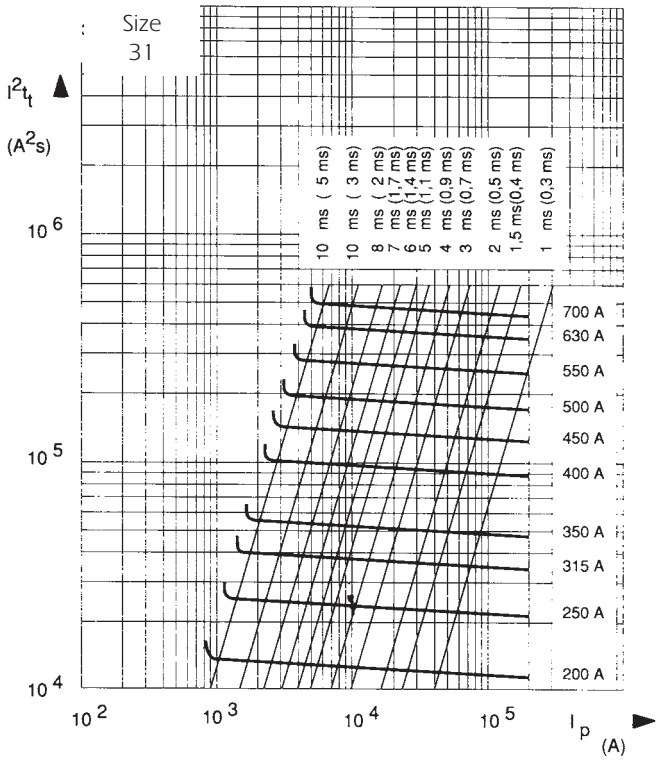
Size 31



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_C that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

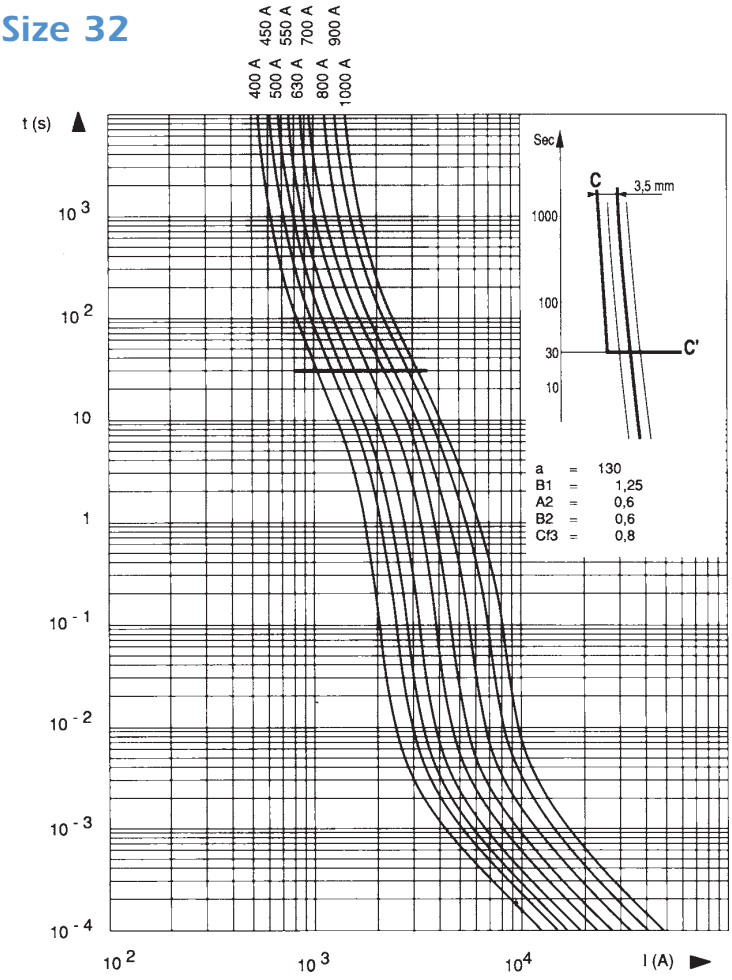
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

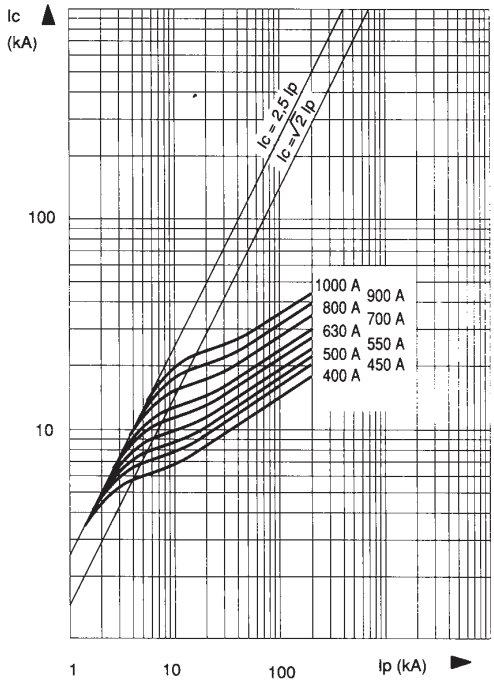
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

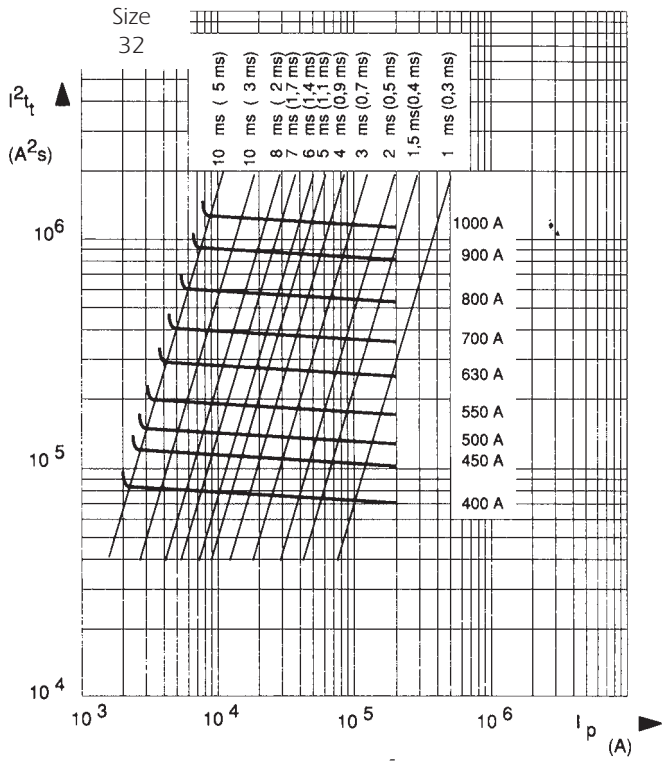
Size 32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_C that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

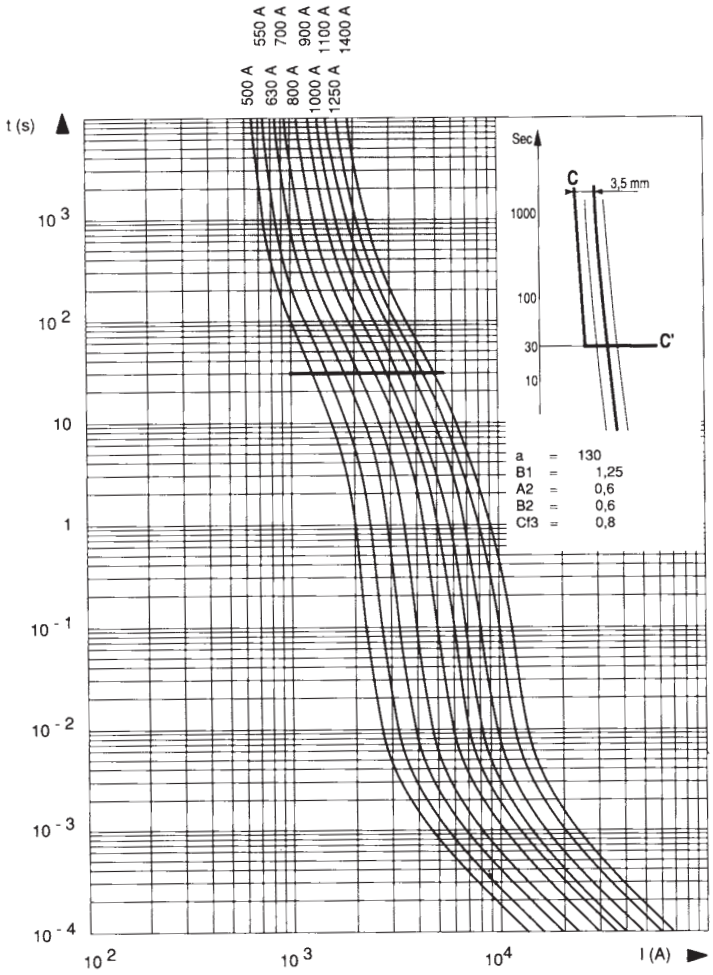
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

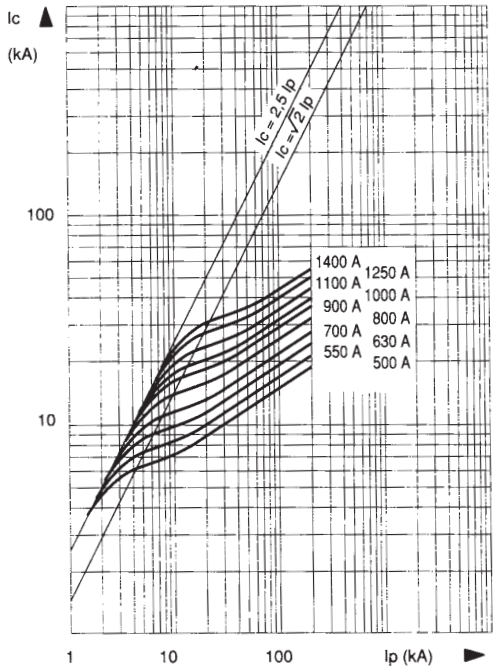
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

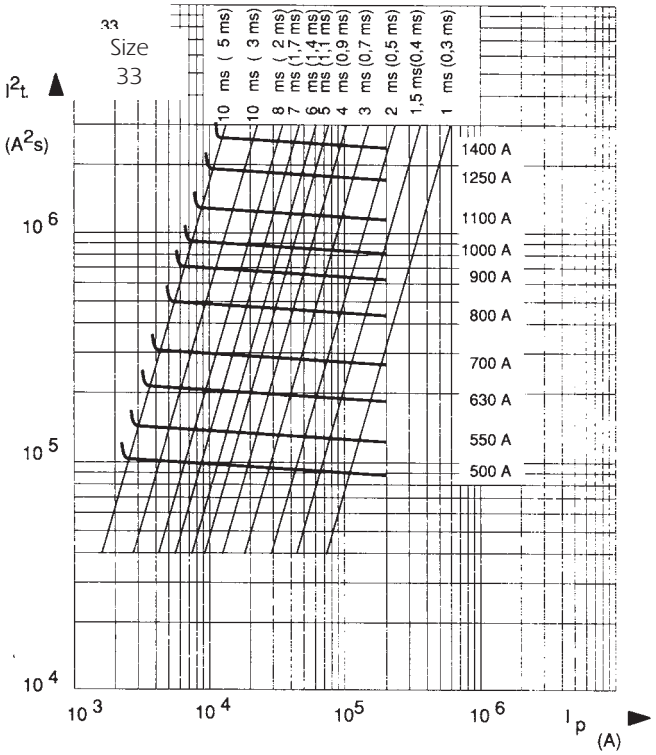
Size 33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

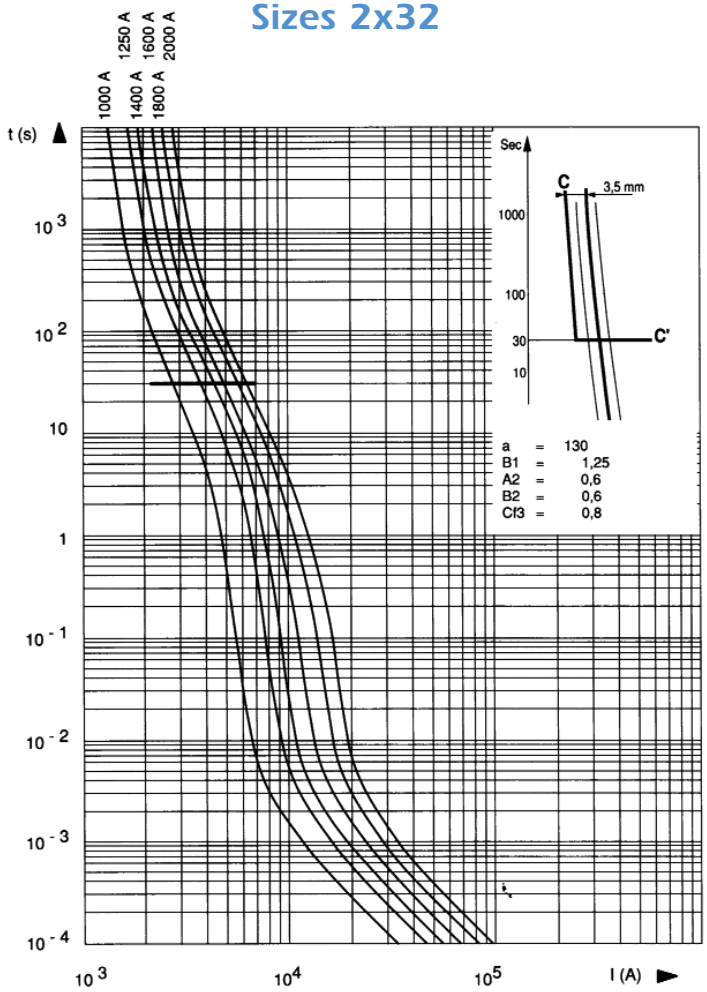
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

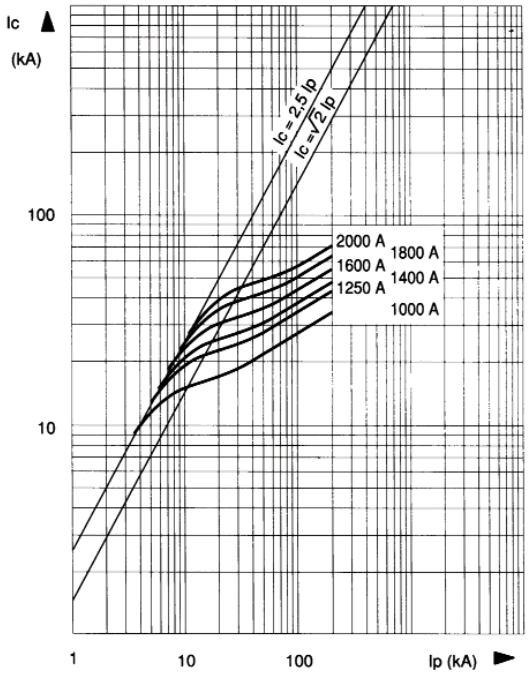
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

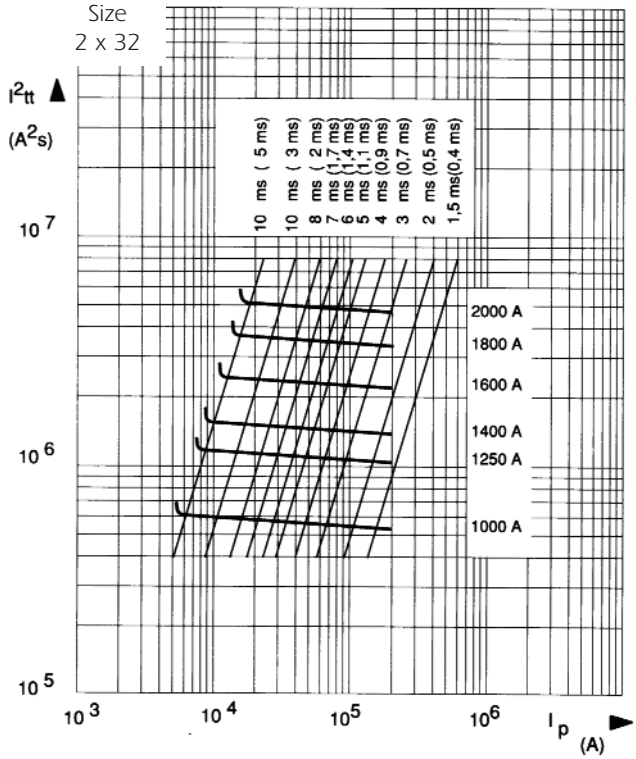
Sizes 2x32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

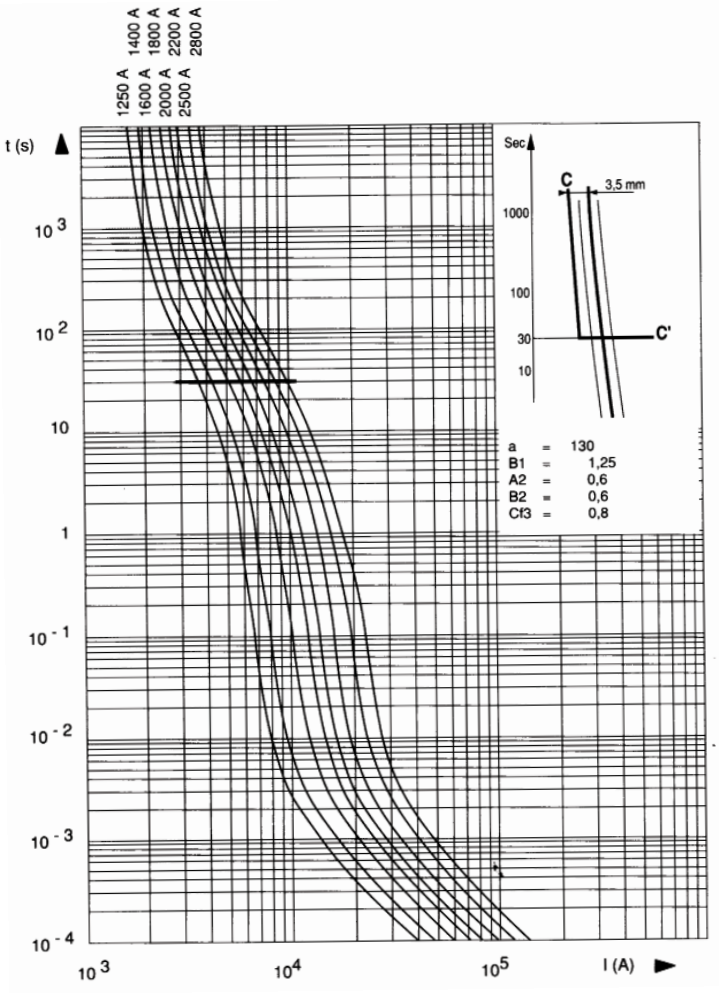
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

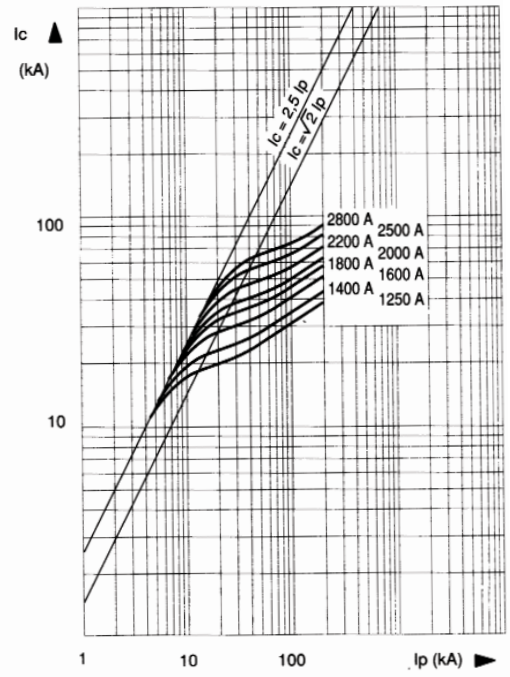
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

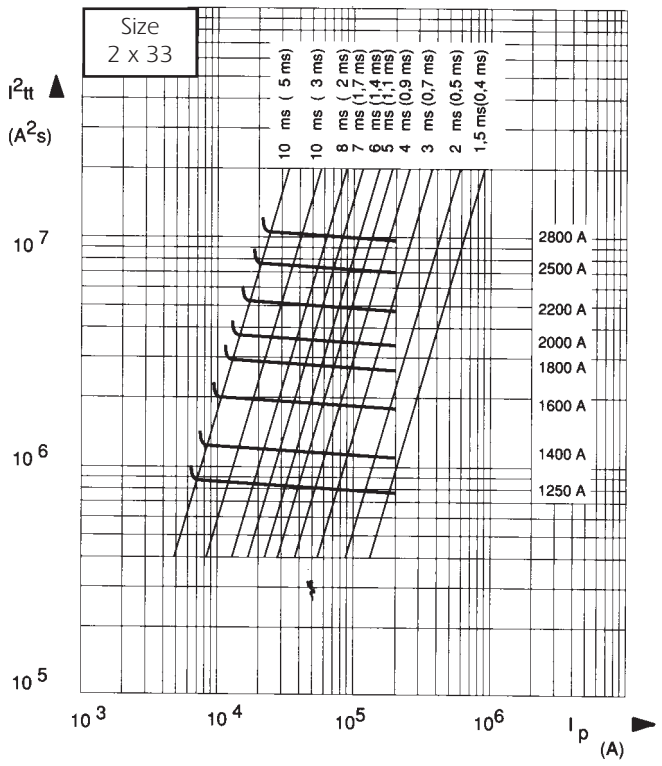
Size 2x33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

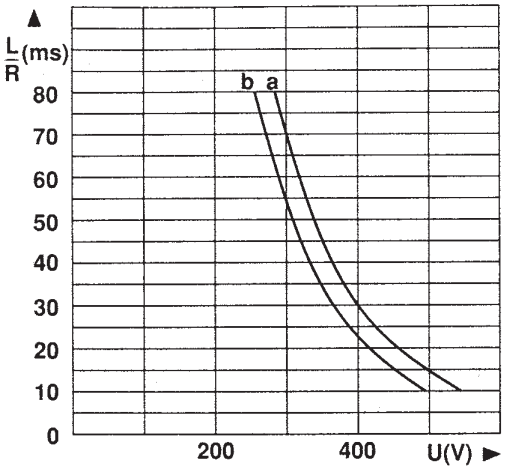
Maximum values of total operating I²t and total operating times

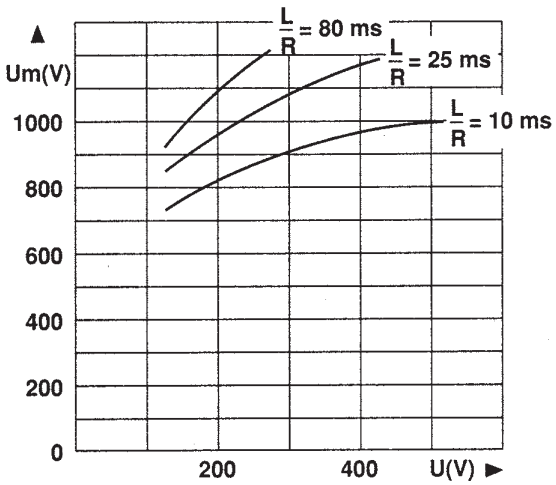
Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

DC working voltage possibilities





Rated current In (A)	Curves (*) and Ipm (1) corresponding to the rating					
	30 * Ipm (A)	31 * Ipm (A)	32 * Ipm (A)	33 * Ipm (A)	2 x 32 * Ipm (A)	2 x33 * Ipm (A)
63	a 230					
80	a 300					
100	a 360					
125	a 460					
160	a 650					
200	a 880	a 850				
250	a 1300	a 1150				
315	a 1700	a 1450				
350	a 1900	a 1600				
400	a 2300	a 2200	a 2000			
450		a 2500	a 2300			
500		a 3000	a 2600	a 2300		
550		a 3400	a 3150	a 2500		
630		a 5000	a 3700	a 3250		
700		a 5600	a 4300	a 3900		
800			a 5300	a 4800		
900			a 7800	a 5600		
1000			b 9000	a 6600	a 5200	
1100				a 7700		
1250				b 11000	a 7400	a 6500
1400				b 12500	a 8600	a 7800
1600					a 10600	a 9600
1800					a 15600	a 11200
2000					b 18000	a 13200
2200						a 15400
2500						b 22000
2800						b 25000

Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark:
When the fault current di/dt is very large, this condition can be exceeded. This is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

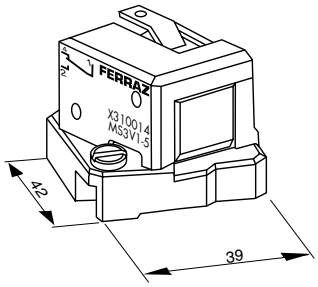
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

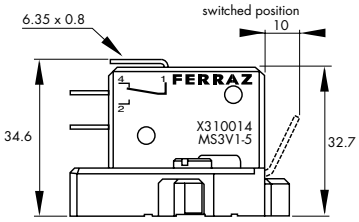
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



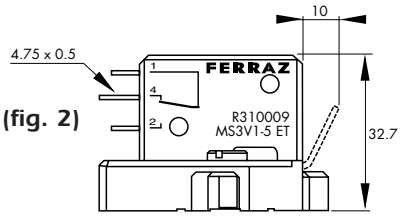
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

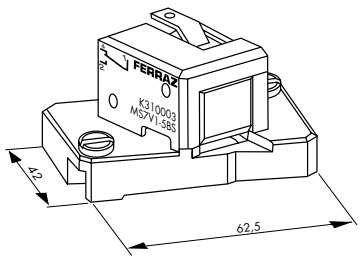
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

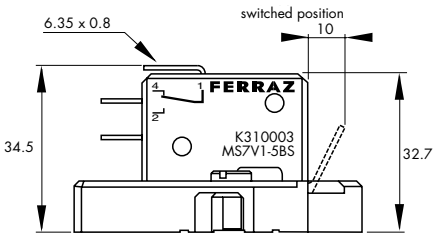
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

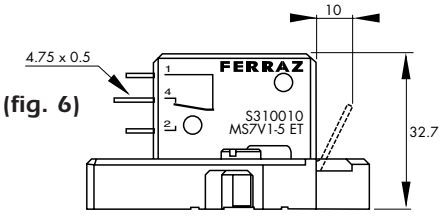


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Metric-studs

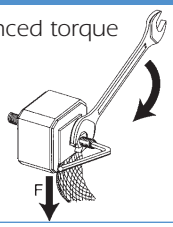
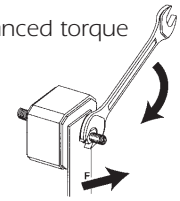
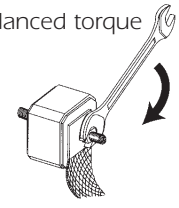
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STUM8x30M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STUM10x30M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STUM12x35M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STUM10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STUM12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

450 TO 700VAC / 63 TO 2800A

Recognized

Exceptionally low I^2T, Watt losses.
Non-magnetic construction,
Highly reliable low voltage
Trip-indicator system, conformity to UL,
IEC, DIN and VDE standards.
Increased technical performance

- Highter ratings
- Reduction in volume and weight





This fuse preselection table indicates, for each size:

- rated current (or rating) In
- pre-arcing I^2t (I^2tp) at 1 ms
- total operating I^2t (I^2tt) at 660 V, f=50Hz cos φ=0.15, and for a total operating time from 8 to 10 ms
- dissipated power Pn at the rated current In, and at 0.8 In, in steady state
- breaking capacity at various voltages, checked by tests
  made in accordance with IEC and American standards.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

Estimated breaking capacity: 300kA

Size	Nominal Voltage (VAC)		Ampere Rating (A)	Pre-arcing I²t @ 1ms (kA²s)	Total I²t @ 660V (*) @ Un (kA²s)	Power Pn (W)		Tested Breaking capacity (kA)	
	IEC	USA				End contact	Blades	IEC @ 690V (*) @ Un	USA @ 700V (*) @ Un
30	690	700	50	0,116	0,62	9	9	200	200
			63	0,2	1,1	14	14		
			80	0,33	1,8	19	19		
			100	0,47	2,5	26	26		
			125	0,85	4,5	30	30		
			160	1,6	8,5	37	37		
			200	3	15,5	42	43		
			250	5,8	30	48	50		
			315	12	62	53	55		
			350	15,5	80	57	60		
			400	23	120	60	65		
			450	26	150	80	88		
			500	41	240	80	88		
			550	52	300	80	90		
	600	650	630	84	450(*)	85	95	200(*)	200(*)
31	690	700	160	1,3	7	35	35	200	200
			200	2,6	13,5	45	45		
			250	4,7	25	52	52		
			315	7,5	40	65	65		
			350	10,5	55	67	67		
			400	19	100	68	68		
			450	26,5	140	70	70		
			500	37	195	70	72		
			550	52	280	70	75		
			630	75	390	75	85		
			700	95	490	85	95		
			800	140	800	105	120		
32	690	700	315	5,2	28,9	71	71	200	200
			350	8,9	48,8	71	74		
			400	15	80	72	75		
			450	22	115	77	80		
			500	28	145	85	90		
			550	37	195	90	95		
			630	54	280	95	105		
			700	76	400	100	110		
			800	115	600	110	120		
			900	170	900	110	125		
			1000	240	1250	115	135		
	600	650	1100	270	1450(*)	140	165	160(*)	160(*)
	550	600	1250	410	1950(*)	150	180	150(*)	150(*)
	500	550	1400	555	2300(*)	160	200	130(*)	130(*)
			1600	870	3600(*)	165	205		
	450	500	1800	1050	3700(*)	195	230	110(*)	110(*)
33	690	700	450	13,45	74,1	84	88	200	200
			500	19	100	105	105		
			550	27	140	105	110		
			630	40	210	110	120		
			700	55	300	115	125		
			800	95	490	120	130		
			900	135	700	120	135		
			1000	170	900	135	155		
			1100	240	1260	135	160		
			1250	350	1850	150	180		
			1400	480	2500	160	200		
	600	650	1500	500	2500(*)	210	240	160(*)	160(*)
			1600	555	2900(*)	210	240		
			1800	720	3870(*)	225	260		
	550	600	2000	950	4500(*)	250	290	150(*)	150(*)
	500	550	2250	1250	5160(*)	280	320	130(*)	130(*)
	450	500	2500	1870	6540(*)	280	330	110(*)	110(*)
2X32	690	700	800	60	320	144		200	200
			1000	110	590	165			
			1250	220	1100	190			
			1400	300	1600	200			
			1600	450	2400	220			
			1800	700	3500	225			
			2000	950	5000	235			
	550	600	2200	1100	5250(*)	280		150(*)	150(*)
2x33	690	700	1000	76	395	220		170	170
			1250	160	850	230			
			1400	225	1200	240			
			1600	375	1900	250			
			1800	530	2800	250			
	600	650	2000	700	3100(*)	280		160(*)	160(*)
			2200	950	4400(*)	280			
			2500	1400	6600(*)	310			
			2800	1900	8800(*)	330			

For others Ampere ratings consult us

12/04

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
IEC Terminals French - 30 - 33 Blades

Size	Designation	Reference Number	Weight (g)	Packaging	Base	I/I_N*	Catalog Number
30	6,9 URD 30 E F 0050	R300372	290	3	SP30	1	PC30UD69V50EF
	6,9 URD 30 E F 0063	H300088				1	PC30UD69V63EF
	6,9 URD 30 E F 0080	J300089				1	PC30UD69V80EF
	6,9 URD 30 E F 0100	K300090				1	PC30UD69V100EF
	6,9 URD 30 E F 0125	L300091				1	PC30UD69V125EF
	6,9 URD 30 E F 0160	M300092				0,95	PC30UD69V160EF
	6,9 URD 30 E F 0200	N300093				0,90	PC30UD69V200EF
	6,9 URD 30 E F 0250	P300094				0,85	PC30UD69V250EF
	6,9 URD 30 E F 0315	Q300095				0,80	PC30UD69V315EF
	6,9 URD 30 E F 0350	R300096				0,80	PC30UD69V350EF
	6,9 URD 30 E F 0400	S300097				0,75	PC30UD69V400EF
31	6,9 URD 31 E F 0160	B301922	430	3	SE31	1	PC31UD69V160EF
	6,9 URD 31 E F 0200	C300037				1	PC31UD69V200EF
	6,9 URD 31 E F 0250	D300038				1	PC31UD69V250EF
	6,9 URD 31 E F 0315	E300039				0,95	PC31UD69V315EF
	6,9 URD 31 E F 0350	N300047				0,95	PC31UD69V350EF
	6,9 URD 31 E F 0400	F300040				0,95	PC31UD69V400EF
	6,9 URD 31 E F 0450	G300041				0,95	PC31UD69V450EF
	6,9 URD 31 E F 0500	H300042				0,95	PC31UD69V500EF
	6,9 URD 31 E F 0550	J300043				0,90	PC31UD69V550EF
	6,9 URD 31 E F 0630	K300044				0,90	PC31UD69V630EF
	6,9 URD 31 E F 0700	L300045				0,85	PC31UD69V700EF
32	6,9 URD 32 E F 0400	V300168	590	3	SE32	0,95	PC32UD69V400EF
	6,9 URD 32 E F 0450	W300169				0,95	PC32UD69V450EF
	6,9 URD 32 E F 0500	X300170				0,90	PC32UD69V500EF
	6,9 URD 32 E F 0550	Y300171				0,90	PC32UD69V550EF
	6,9 URD 32 E F 0630	Z300172				0,85	PC32UD69V630EF
	6,9 URD 32 E F 0700	A300173				0,85	PC32UD69V700EF
	6,9 URD 32 E F 0800	B300174				0,80	PC32UD69V800EF
	6,9 URD 32 E F 0900	C300175				0,80	PC32UD69V900EF
	6,9 URD 32 E F 1000	D300176				0,80	PC32UD69V1000EF
33	6,9 URD 33 E F 0500	Z300218	860	3	SF33	0,95	PC33UD69V500EF
	6,9 URD 33 E F 0550	A300219				0,95	PC33UD69V550EF
	6,9 URD 33 E F 0630	B300220				0,90	PC33UD69V630EF
	6,9 URD 33 E F 0700	C300221				0,90	PC33UD69V700EF
	6,9 URD 33 E F 0800	D300222				0,90	PC33UD69V800EF
	6,9 URD 33 E F 0900	E300223				0,85	PC33UD69V900EF
	6,9 URD 33 E F 1000	F300224				0,85	PC33UD69V1000EF
	6,9 URD 33 E F 1100	G300225				0,80	PC33UD69V1100EF
	6,9 URD 33 E F 1250	H300226				0,80	PC33UD69V1250EF
	6,9 URD 33 E F 1400	J300227				0,80	PC33UD69V1400EF



*I/In: Ratio "maximum continuous permissible RMS current In" for a fuse fitted into the bases.

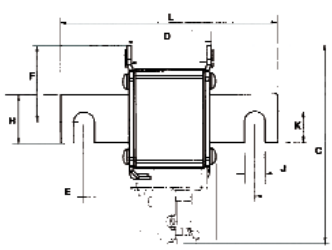
Connections defined as per IEC 60269-1 and for a calm ambience of 30°C.

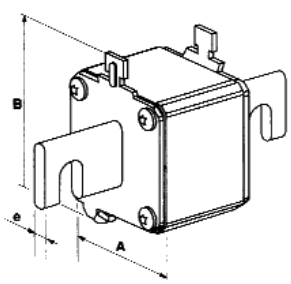
Use the pullout grip PM3 (T097675) for fuse sizes 30, 31, 32.

Fuse holders and microswitches supplied separately.(see Fuse Holders an microswitches PSC 3x & 7x sections)

Size	A	B	C	D	$E^{\pm 1,1}$	L	F	H	J	K	e
30	40	62	96	44,6	76,6	100	38	18	9	11	6
31	51	69	103	44,6	86,6	110	39	25	10,5	16	6
32	60	78	112	44,6	91	126	43	32	13	21,2	6
33	74,5	92,5	127	44,6	91	126	57	40	13	19,5	6

Dimensions in mm

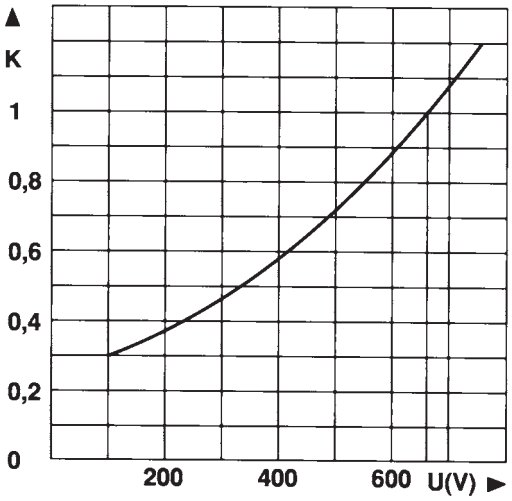




Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

I²t Multiplier coefficient



Mean curve indicating variation of total I²t (I^2t_t) and total operating time T_t in accordance with working voltage U.

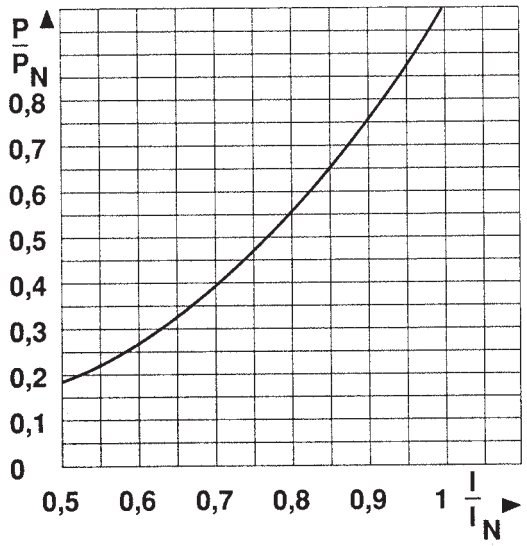
Example:

Fuse 350 A in size 30.
I_p = 10 000 A U = 500 V

At 660 V
I^2t_t = 80 000 A²s T_t = 6 ms

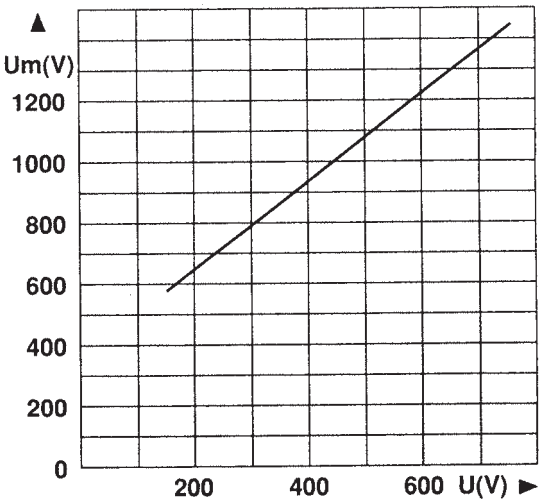
At 500 V
I^2t_t = 80 000 x 0.72 = 57 600 A²s
T_t = 6 x 0.72 = 4.3 ms

Dissipated power



Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in a steady state.

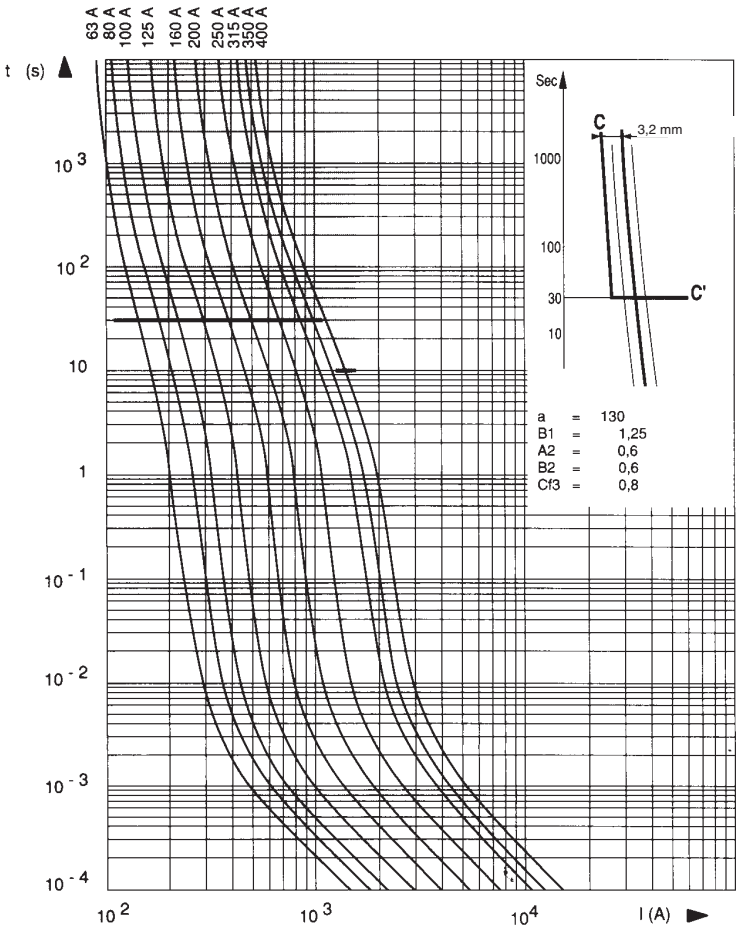
Arc voltage



Curve indicating peak arc voltage Um which may appear across fuse terminals as function of working voltage U at cos φ = 0.15

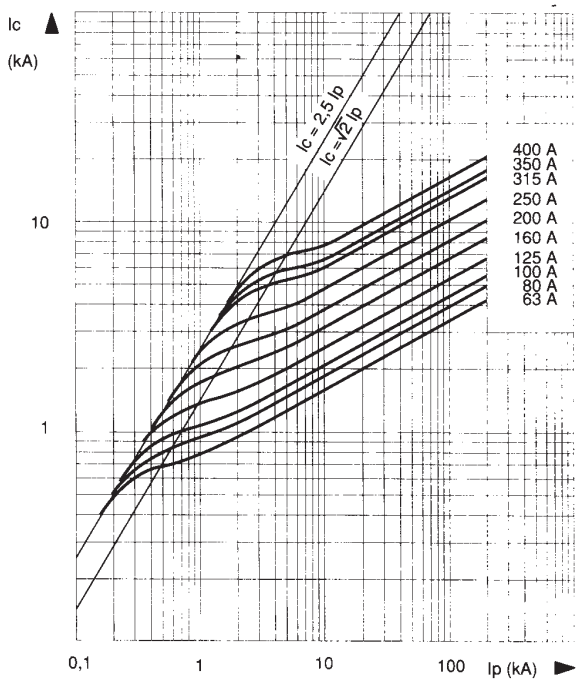
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

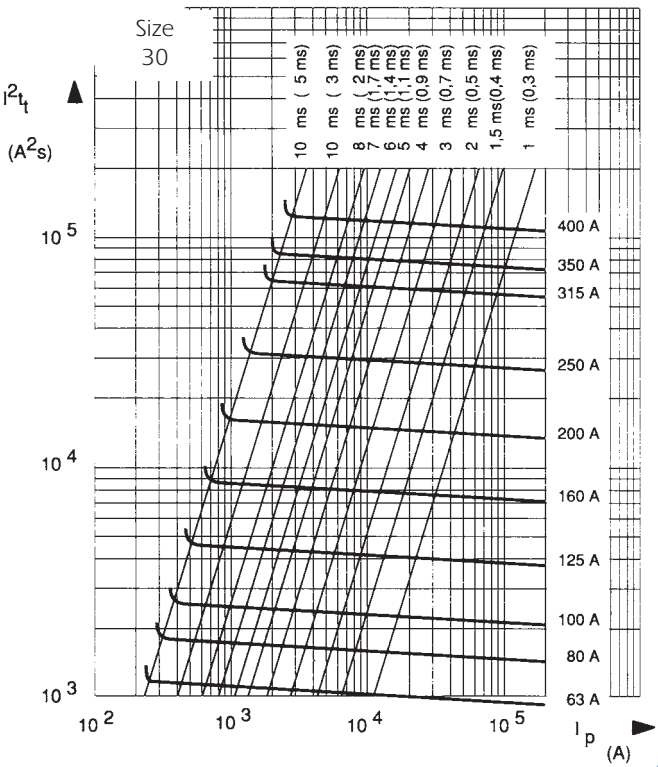
Size 30



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

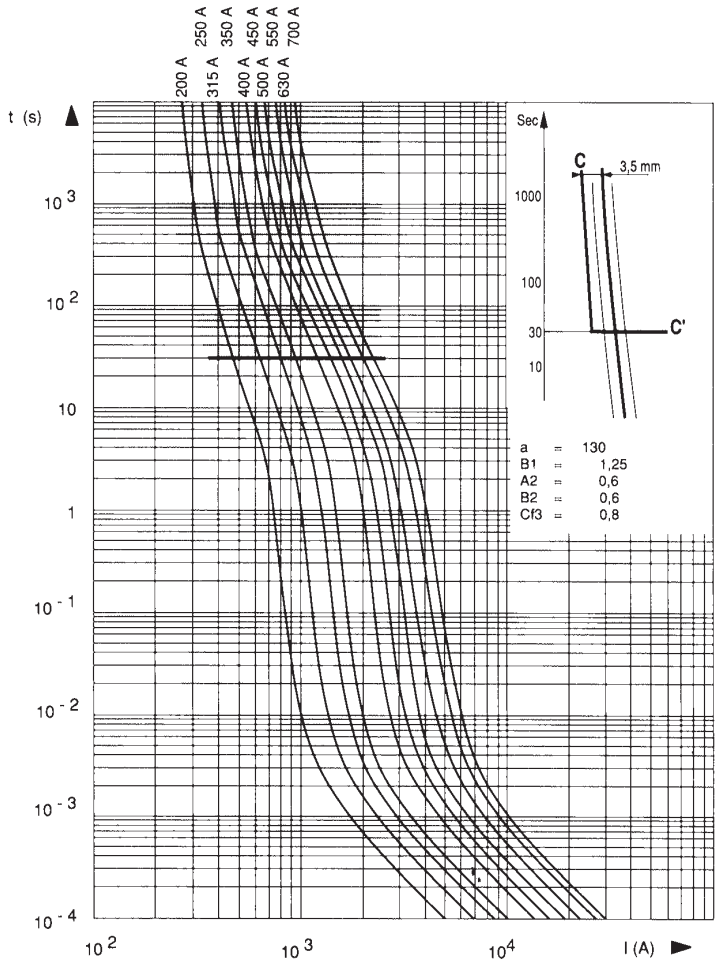
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

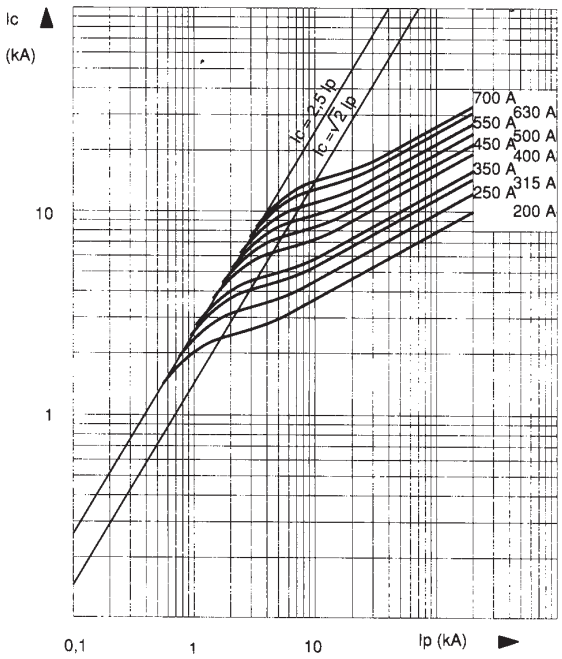
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

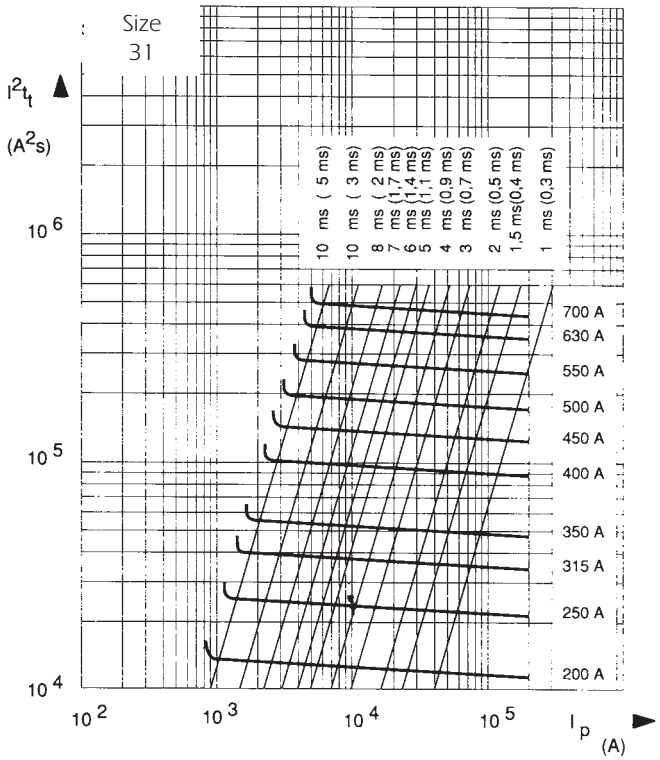
Size 31



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_C that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

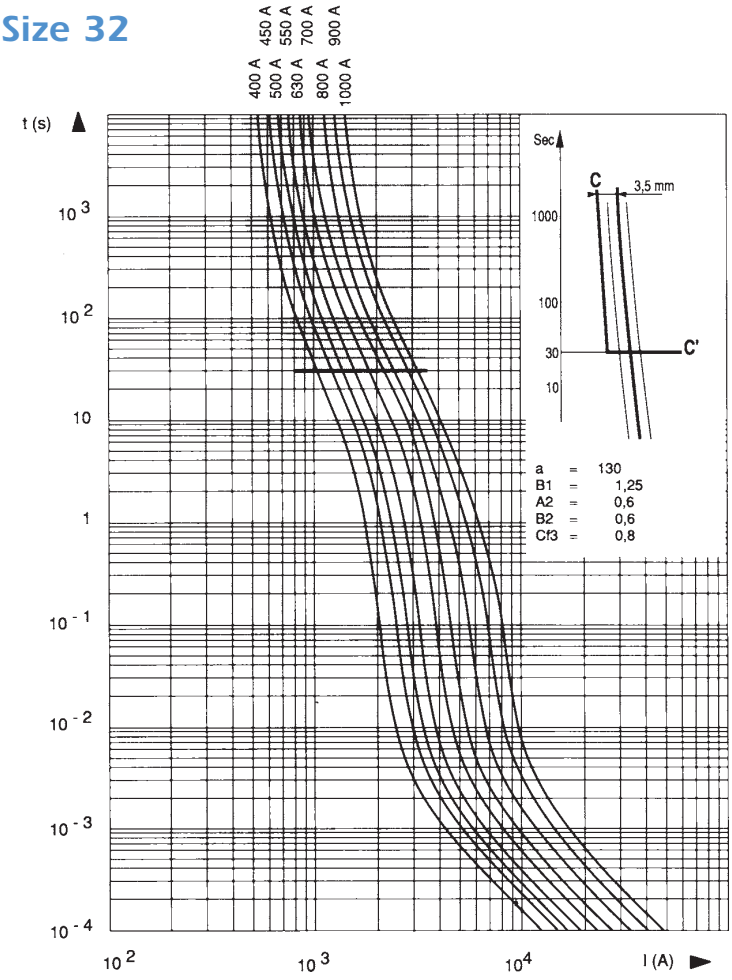
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

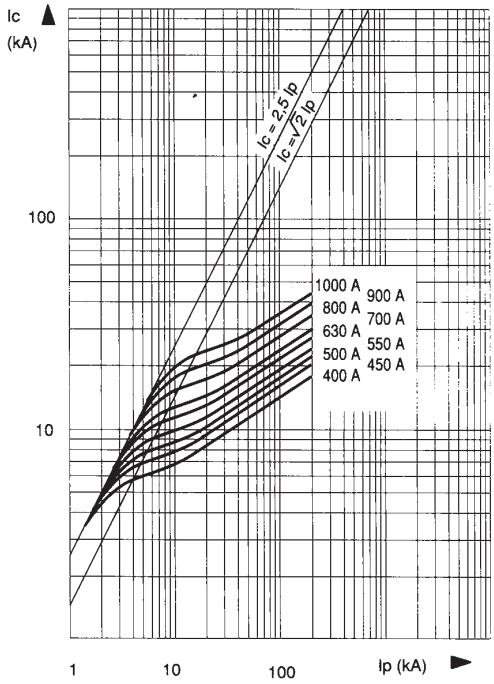
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

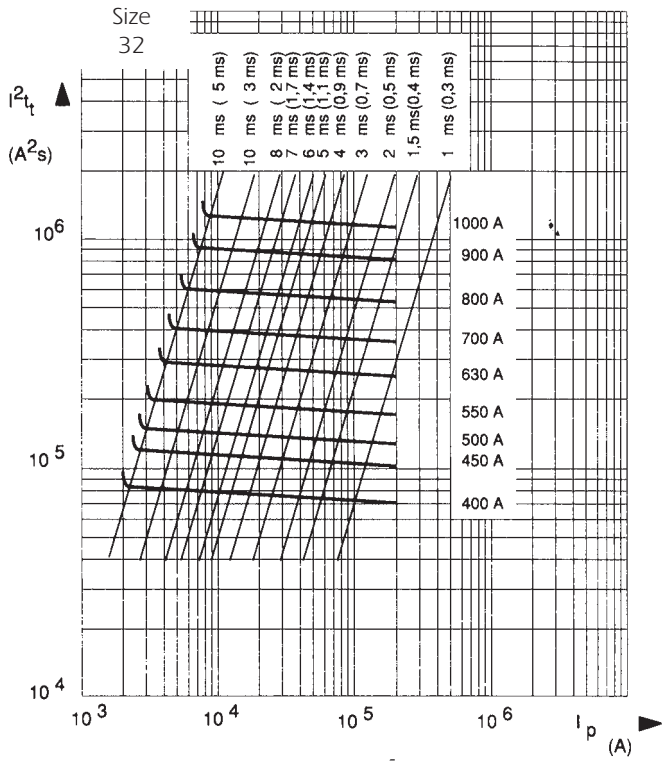
Size 32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_C that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

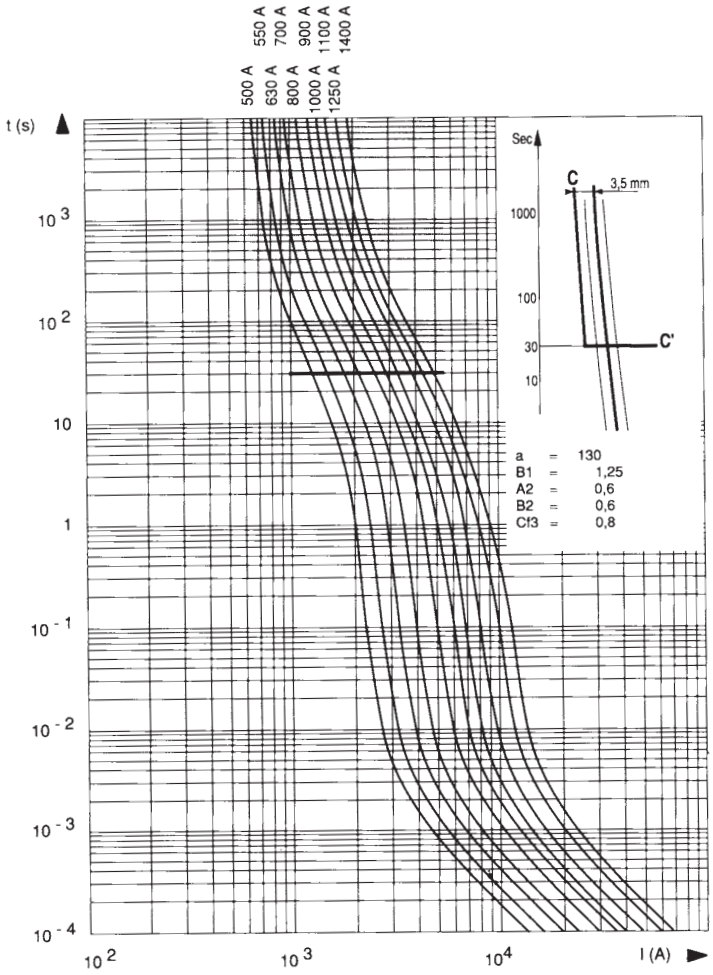
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

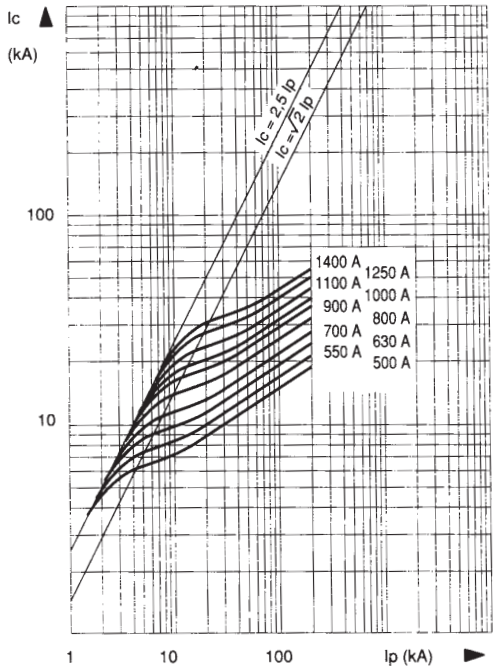
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

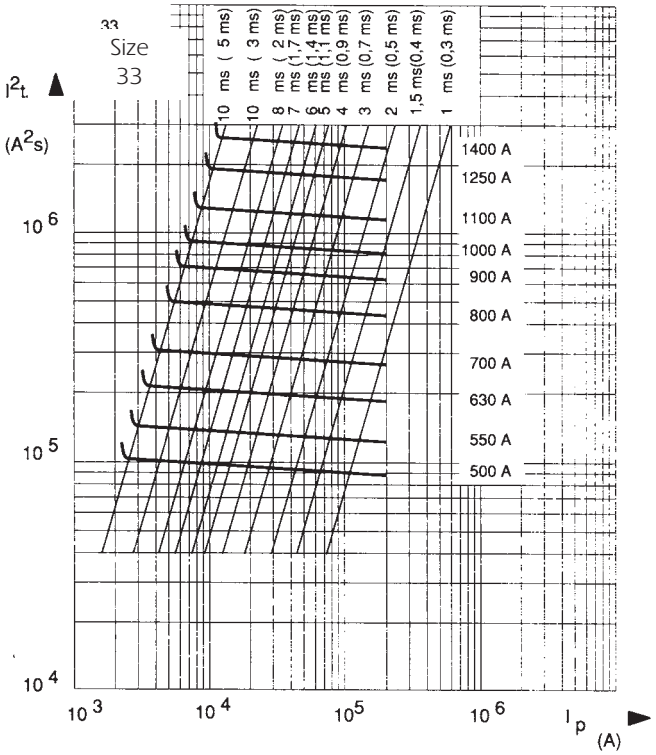
Size 33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

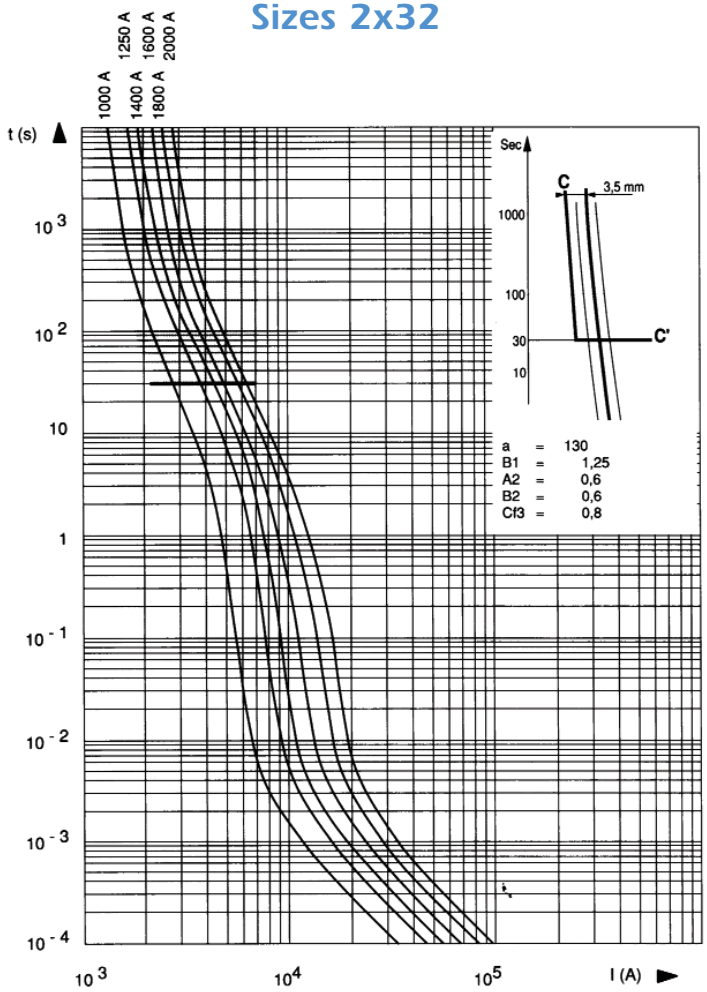
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

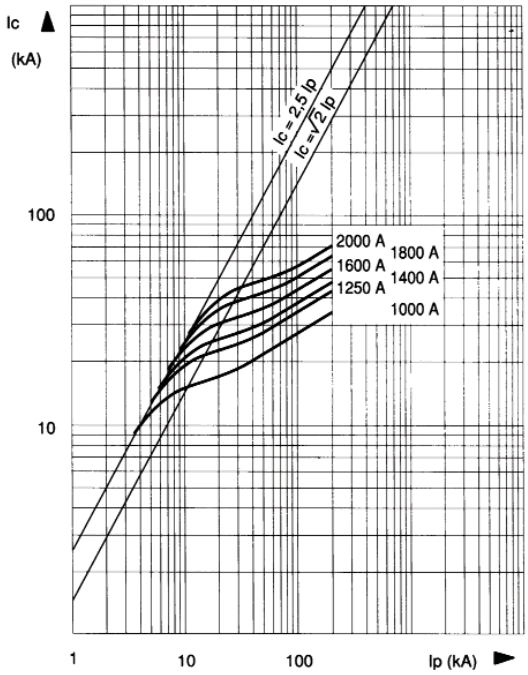
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

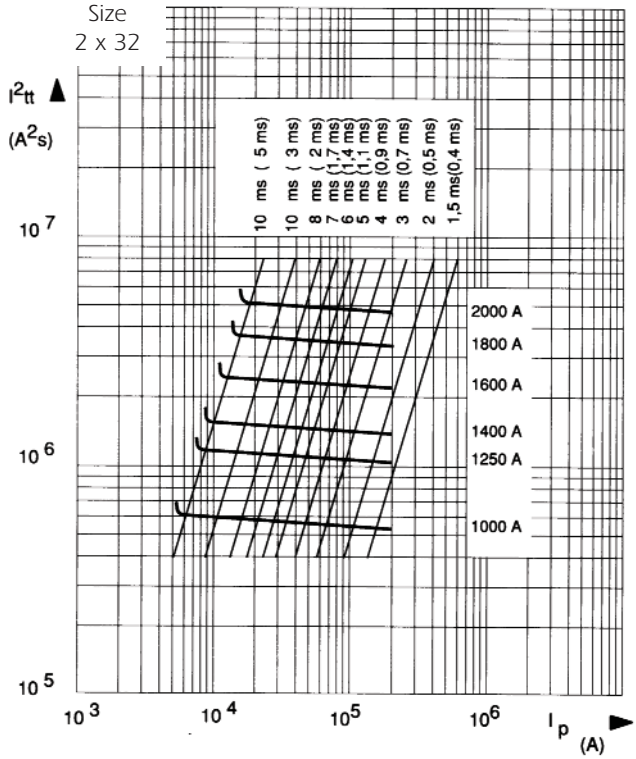
Sizes 2x32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

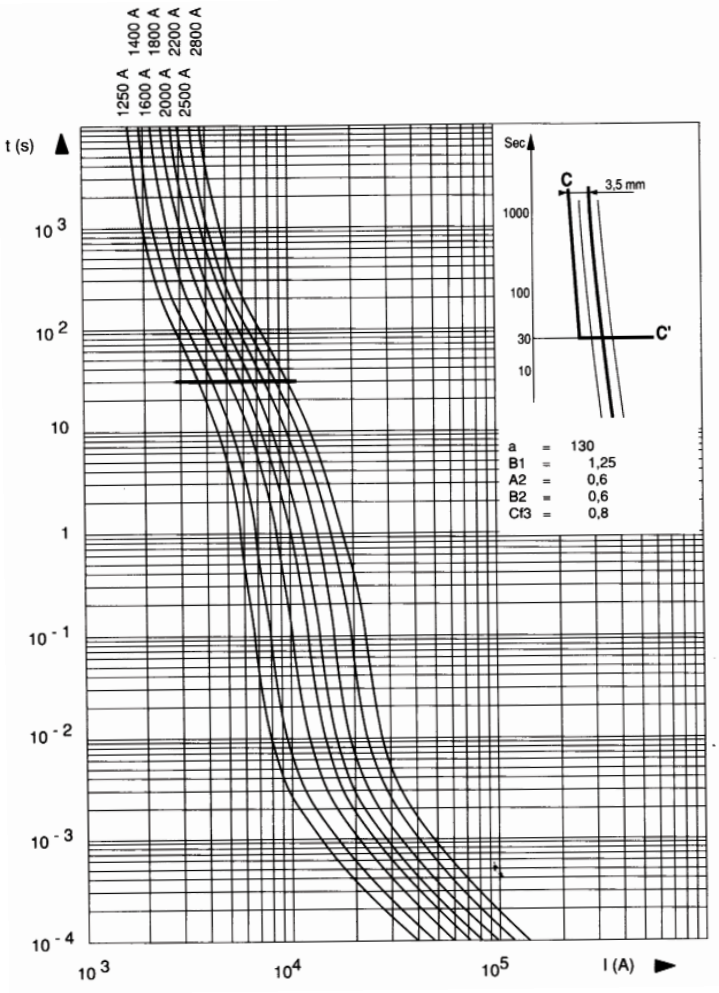
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

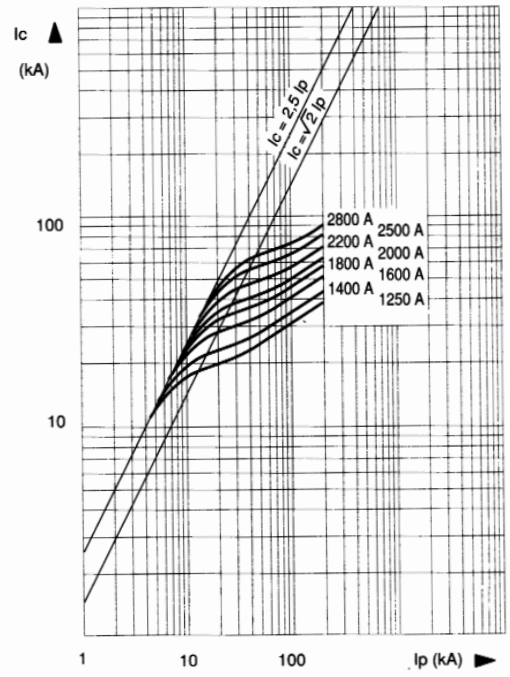
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

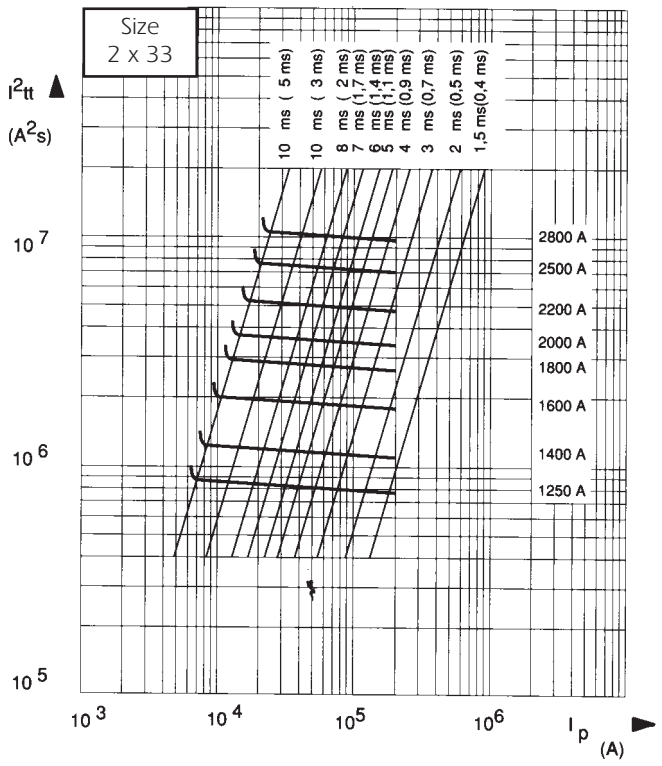
Size 2x33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

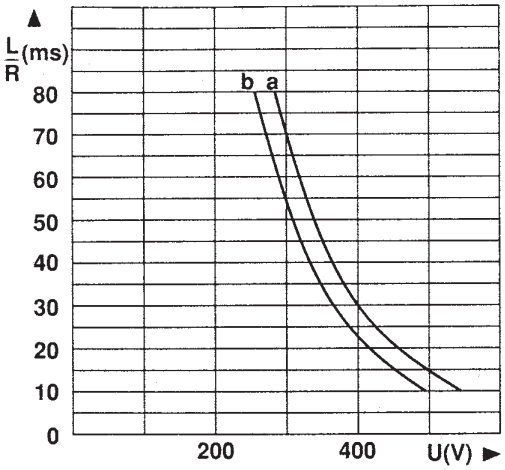
Maximum values of total operating I²t and total operating times

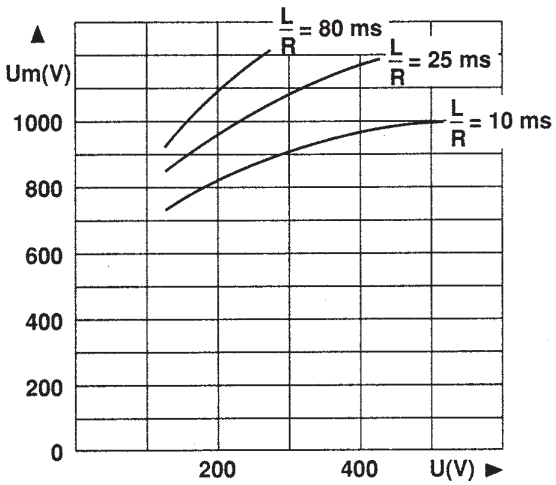
Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

DC working voltage possibilities





Rated current In (A)	Curves (*) and Ipm (1) corresponding to the rating					
	30 * Ipm (A)	31 * Ipm (A)	32 * Ipm (A)	33 * Ipm (A)	2 x 32 * Ipm (A)	2 x33 * Ipm (A)
63	a 230					
80	a 300					
100	a 360					
125	a 460					
160	a 650					
200	a 880	a 850				
250	a 1300	a 1150				
315	a 1700	a 1450				
350	a 1900	a 1600				
400	a 2300	a 2200	a 2000			
450		a 2500	a 2300			
500		a 3000	a 2600	a 2300		
550		a 3400	a 3150	a 2500		
630		a 5000	a 3700	a 3250		
700		a 5600	a 4300	a 3900		
800			a 5300	a 4800		
900			a 7800	a 5600		
1000			b 9000	a 6600	a 5200	
1100				a 7700		
1250				b 11000	a 7400	a 6500
1400				b 12500	a 8600	a 7800
1600					a 10600	a 9600
1800					a 15600	a 11200
2000					b 18000	a 13200
2200						a 15400
2500						b 22000
2800						b 25000

Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark:
When the fault current di/dt is very large, this condition can be exceeded. This is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

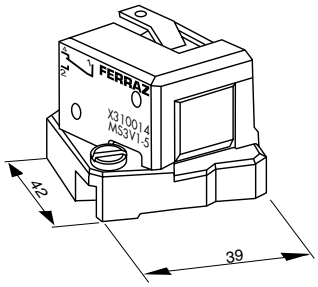
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

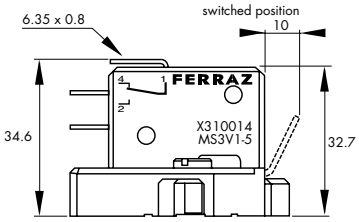
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



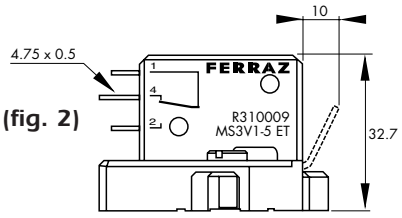
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

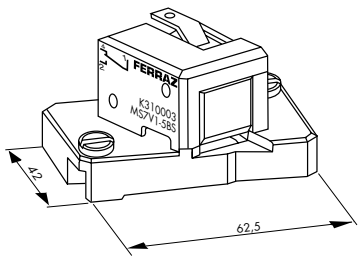
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

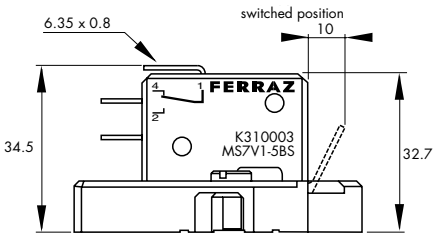
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

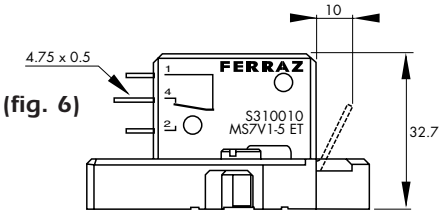


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Metric-studs

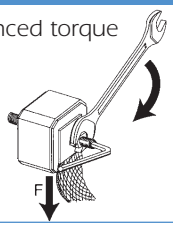
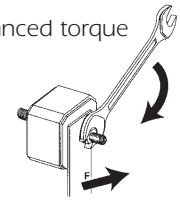
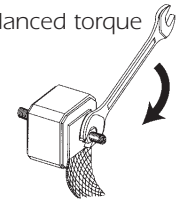
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STUM8x30M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STUM10x30M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STUM12x35M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STUM10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STUM12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

450 TO 700VAC / 63 TO 2800A

Recognized

Exceptionally low I^2T, Watt losses.
Non-magnetic construction,
Highly reliable low voltage
Trip-indicator system, conformity to UL,
IEC, DIN and VDE standards.
Increased technical performance

- Highter ratings
- Reduction in volume and weight





This fuse preselection table indicates, for each size:

- rated current (or rating) In
- pre-arcing I^2t (I^2tp) at 1 ms
- total operating I^2t (I^2tt) at 660 V, f=50Hz cos φ=0.15, and for a total operating time from 8 to 10 ms
- dissipated power Pn at the rated current In, and at 0.8 In, in steady state
- breaking capacity at various voltages, checked by tests
  made in accordance with IEC and American standards.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Main characteristics

Estimated breaking capacity: 300kA

Size	Nominal Voltage (VAC)		Ampere Rating (A)	Pre-arcing I²t @ 1ms (kA²s)	Total I²t @ 660V (*) @ Un (kA²s)	Power Pn (W)		Tested Breaking capacity (kA)	
	IEC	USA				End contact	Blades	IEC @ 690V (*) @ Un	USA @ 700V (*) @ Un
30	690	700	50	0,116	0,62	9	9	200	200
			63	0,2	1,1	14	14		
			80	0,33	1,8	19	19		
			100	0,47	2,5	26	26		
			125	0,85	4,5	30	30		
			160	1,6	8,5	37	37		
			200	3	15,5	42	43		
			250	5,8	30	48	50		
			315	12	62	53	55		
			350	15,5	80	57	60		
			400	23	120	60	65		
			450	26	150	80	88		
			500	41	240	80	88		
			550	52	300	80	90		
	600	650	630	84	450(*)	85	95	200(*)	200(*)
31	690	700	160	1,3	7	35	35	200	200
			200	2,6	13,5	45	45		
			250	4,7	25	52	52		
			315	7,5	40	65	65		
			350	10,5	55	67	67		
			400	19	100	68	68		
			450	26,5	140	70	70		
			500	37	195	70	72		
			550	52	280	70	75		
			630	75	390	75	85		
			700	95	490	85	95		
			800	140	800	105	120		
32	690	700	315	5,2	28,9	71	71	200	200
			350	8,9	48,8	71	74		
			400	15	80	72	75		
			450	22	115	77	80		
			500	28	145	85	90		
			550	37	195	90	95		
			630	54	280	95	105		
			700	76	400	100	110		
			800	115	600	110	120		
			900	170	900	110	125		
			1000	240	1250	115	135		
	600	650	1100	270	1450(*)	140	165	160(*)	160(*)
	550	600	1250	410	1950(*)	150	180	150(*)	150(*)
	500	550	1400	555	2300(*)	160	200	130(*)	130(*)
			1600	870	3600(*)	165	205		
	450	500	1800	1050	3700(*)	195	230	110(*)	110(*)
33	690	700	450	13,45	74,1	84	88	200	200
			500	19	100	105	105		
			550	27	140	105	110		
			630	40	210	110	120		
			700	55	300	115	125		
			800	95	490	120	130		
			900	135	700	120	135		
			1000	170	900	135	155		
			1100	240	1260	135	160		
			1250	350	1850	150	180		
			1400	480	2500	160	200		
	600	650	1500	500	2500(*)	210	240	160(*)	160(*)
			1600	555	2900(*)	210	240		
			1800	720	3870(*)	225	260		
	550	600	2000	950	4500(*)	250	290	150(*)	150(*)
	500	550	2250	1250	5160(*)	280	320	130(*)	130(*)
	450	500	2500	1870	6540(*)	280	330	110(*)	110(*)
2X32	690	700	800	60	320	144		200	200
			1000	110	590	165			
			1250	220	1100	190			
			1400	300	1600	200			
			1600	450	2400	220			
			1800	700	3500	225			
			2000	950	5000	235			
	550	600	2200	1100	5250(*)	280		150(*)	150(*)
2x33	690	700	1000	76	395	220		170	170
			1250	160	850	230			
			1400	225	1200	240			
			1600	375	1900	250			
			1800	530	2800	250			
	600	650	2000	700	3100(*)	280		160(*)	160(*)
			2200	950	4400(*)	280			
			2500	1400	6600(*)	310			
			2800	1900	8800(*)	330			

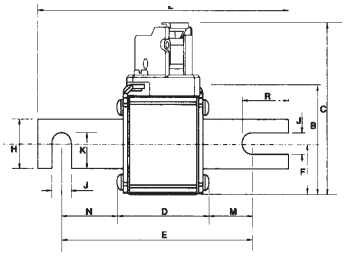
For others Ampere ratings consult us

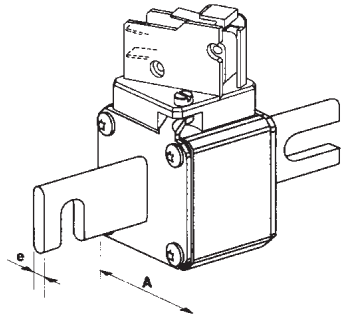
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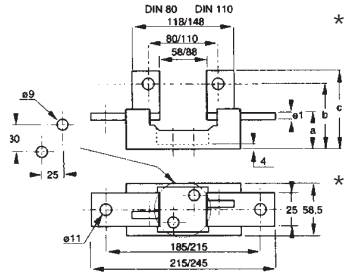
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
IEC Terminals German - 30 - 33 Blades (Din 80)

Size	Designation	Reference Number DIN 80	Weight (g)	I/IN Base L98772 F98031	I/IN Base F98560 L91941	Catalog Number DIN 80
30	6,9 URD 30 D08A 0050	F301926	290	1	1	PC30UD69V50A
	6,9 URD 30 D08A 0063	E300108		1	1	PC30UD69V63A
	6,9 URD 30 D08A 0080	F300109		1	1	PC30UD69V80A
	6,9 URD 30 D08A 0100	G300110		1	1	PC30UD69V100A
	6,9 URD 30 D08A 0125	H300111		1	1	PC30UD69V125A
	6,9 URD 30 D08A 0160	J300112		1	1	PC30UD69V160A
	6,9 URD 30 D08A 0200	K300113		1	1	PC30UD69V200A
	6,9 URD 30 D08A 0250	L300114		1	1	PC30UD69V250A
	6,9 URD 30 D08A 0315	M300115		1	1	PC30UD69V315A
	6,9 URD 30 D08A 0350	N300116		1	1	PC30UD69V350A
	6,9 URD 30 D08A 0400	P300117		1	1	PC30UD69V400A
	6,9 URD 30 D08A 0450	A300403		0,95	1	PC30UD69V450A
	6,9 URD 30 D08A 0500	B300404		0,95	1	PC30UD69V500A
	6,9 URD 30 D08A 0550	C300405		0,95	1	PC30UD69V550A
31	6,9 URD 31 D08A 0160	M300322	430	1	1	PC31UD69V160A
	6,9 URD 31 D08A 0200	Y300010		1	1	PC31UD69V200A
	6,9 URD 31 D08A 0250	Z300011		1	1	PC31UD69V250A
	6,9 URD 31 D08A 0315	A300012		1	1	PC31UD69V315A
	6,9 URD 31 D08A 0350	Q300049		1	1	PC31UD69V350A
	6,9 URD 31 D08A 0400	B300013		1	1	PC31UD69V400A
	6,9 URD 31 D08A 0450	C300014		1	1	PC31UD69V450A
	6,9 URD 31 D08A 0500	D300015		1	1	PC31UD69V500A
	6,9 URD 31 D08A 0550	E300016		1	1	PC31UD69V550A
	6,9 URD 31 D08A 0630	F300017		1	1	PC31UD69V630A
	6,9 URD 31 D08A 0700	G300018		0,95	1	PC31UD69V700A
	6,9 URD 31 D08A 0800	D300406		0,85	0,90	PC31UD69V800A
32	6,9 URD 32 D08A 0315	H302158	590	1	1	PC32UD69V315A
	6,9 URD 32 D08A 0350	K302160		1	1	PC32UD69V350A
	6,9 URD 32 D08A 0400	E300177		1	1	PC32UD69V400A
	6,9 URD 32 D08A 0450	F300178		1	1	PC32UD69V450A
	6,9 URD 32 D08A 0500	G300179		1	1	PC32UD69V500A
	6,9 URD 32 D08A 0550	H300180		0,95	1	PC32UD69V550A
	6,9 URD 32 D08A 0630	J300181		0,95	1	PC32UD69V630A
	6,9 URD 32 D08A 0700	K300182		0,90	1	PC32UD69V700A
	6,9 URD 32 D08A 0800	L300183		0,90	0,95	PC32UD69V800A
	6,9 URD 32 D08A 0900	M300184		0,90	0,95	PC32UD69V900A
	6,9 URD 32 D08A 1000	N300185		0,85	0,95	PC32UD69V1000A
	6 URD 32 D08A 1100	W302101		0,80	0,85	PC32UD60V1100A
	5 URD 32 D08A 1250	G300409		0,80	0,85	PC32UD50V1250A
33	6,9 URD 33 D08A 0450	T302168	860	0,95	1	PC33UD69V450A
	6,9 URD 33 D08A 0500	G300248		0,95	1	PC33UD69V500A
	6,9 URD 33 D08A 0550	H300249		0,90	1	PC33UD69V550A
	6,9 URD 33 D08A 0630	J300250		0,90	0,95	PC33UD69V630A
	6,9 URD 33 D08A 0700	K300251		0,90	0,95	PC33UD69V700A
	6,9 URD 33 D08A 0800	L300252		0,85	0,95	PC33UD69V800A
	6,9 URD 33 D08A 0900	M300253		0,85	0,95	PC33UD69V900A
	6,9 URD 33 D08A 1000	N300254		0,80	0,90	PC33UD69V1000A
	6,9 URD 33 D08A 1100	P300255		0,80	0,90	PC33UD69V1100A
	6,9 URD 33 D08A 1250	Q300256		0,75	0,85	PC33UD69V1250A
	6,9 URD 33 D08A 1400	R300257		0,75	0,80	PC33UD69V1400A
	6 URD 33 D08A 1600	X301803		0,70	0,75	PC33UD60V1600A









Fuse holders and microswitches supplied separately (see page , and Fuse Blocks and Fuse Holders section)

Dimensions in mm

Fuse Size	A	B	C	D	E	F	G	H	J	K	d	e	L	M
30 DIN 80	40	46,5	82	47,5	77	21	25	10,5	17,7	110	11,5	18,5	25,2	6
31 DIN 80	51	56,5	91	47,5	77	25,5	25	10,5	17,7	110	11,5	18,5	25,2	6
32 DIN 80	60	65,5	100	47,5	77	30	32	10,5	21,2	110	11,5	18,5	25,2	6
33 DIN 80	74,5	79,5	114	48,5	77	37,2	40	10,5	25,2	110	11	18	25,2	6

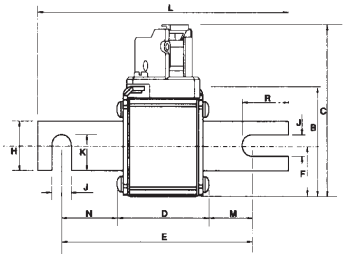
Fuse holders	Ref. Number	a	b	c	e1	x	y	Weight (g) *
SI DIN 80 630 A	L098772	40	68	82	5	185	215	660
SI DIN 80 1250 A	F098560	45	73	87	10	185	215	890

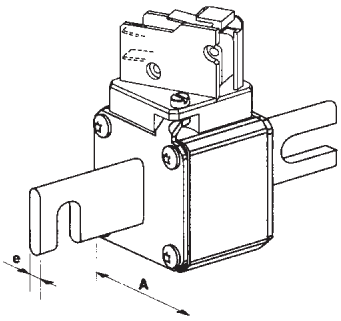
Use the pullout grip PM3 (T097675) for fuse sizes 30, 31, 32

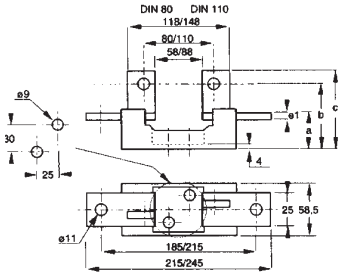
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
IEC Terminals German - 30 - 33 Blades (Din110)

Size	Designation	Reference Number DIN 110	Weight (g)	I/IN Base L98772 F98031	I/IN Base F98560 L91941	Catalog Number DIN 110
30	6,9 URD 30 D11A 0050	G301191	290	1	1	PC30UD69V50D1A
	6,9 URD 30 D11A 0063	Q300118		1	1	PC30UD69V63D1A
	6,9 URD 30 D11A 0080	R300119		1	1	PC30UD69V80D1A
	6,9 URD 30 D11A 0100	S300120		1	1	PC30UD69V100D1A
	6,9 URD 30 D11A 0125	T300121		1	1	PC30UD69V125D1A
	6,9 URD 30 D11A 0160	V300122		1	1	PC30UD69V160D1A
	6,9 URD 30 D11A 0200	W300123		1	1	PC30UD69V200D1A
	6,9 URD 30 D11A 0250	X300124		1	1	PC30UD69V250D1A
	6,9 URD 30 D11A 0315	Y300125		1	1	PC30UD69V315D1A
	6,9 URD 30 D11A 0350	Z300126		1	1	PC30UD69V350D1A
	6,9 URD 30 D11A 0400	A300127		1	1	PC30UD69V400D1A
	6,9 URD 30 D11A 0450	S300695		0,95	1	PC30UD69V450D1A
	6,9 URD 30 D11A 0500	Y301091		0,95	1	PC30UD69V500D1A
	6,9 URD 30 D11A 0550	Z301092		0,95	1	PC30UD69V550D1A
31	6,9 URD 31 D11A 0160	-	430	1	1	
	6,9 URD 31 D11A 0200	H300019		1	1	PC31UD69V200D1A
	6,9 URD 31 D11A 0250	J300020		1	1	PC31UD69V250D1A
	6,9 URD 31 D11A 0315	K300021		1	1	PC31UD69V315D1A
	6,9 URD 31 D11A 0350	P300048		1	1	PC31UD69V350D1A
	6,9 URD 31 D11A 0400	L300022		1	1	PC31UD69V400D1A
	6,9 URD 31 D11A 0450	M300023		1	1	PC31UD69V450D1A
	6,9 URD 31 D11A 0500	N300024		1	1	PC31UD69V500D1A
	6,9 URD 31 D11A 0550	P300025		1	1	PC31UD69V550D1A
	6,9 URD 31 D11A 0630	Q300026		1	1	PC31UD69V630D1A
	6,9 URD 31 D11A 0700	R300027		0,95	1	PC31UD69V700D1A
	6,9 URD 31 D11A 0800	H300709		0,85	0,90	PC31UD69V800D1A
32	6,9 URD 32 D11A 0315	K302160	590	1	1	
	6,9 URD 32 D11A 0350	L302161		1	1	PC32UD69V350D1A
	6,9 URD 32 D11A 0400	P300186		1	1	PC32UD69V400D1A
	6,9 URD 32 D11A 0450	Q300187		1	1	PC32UD69V450D1A
	6,9 URD 32 D11A 0500	R300188		1	1	PC32UD69V500D1A
	6,9 URD 32 D11A 0550	S300189		0,95	1	PC32UD69V550D1A
	6,9 URD 32 D11A 0630	T300190		0,95	1	PC32UD69V630D1A
	6,9 URD 32 D11A 0700	V300191		0,90	1	PC32UD69V700D1A
	6,9 URD 32 D11A 0800	W300192		0,90	0,95	PC32UD69V800D1A
	6,9 URD 32 D11A 0900	X300193		0,90	0,95	PC32UD69V900D1A
	6,9 URD 32 D11A 1000	Y300194		0,85	0,95	PC32UD69V10CD1A
	6 URD 32 D11A 1100	-		0,80	0,85	
	5 URD 32 D11A 1250	-		0,80	0,85	
33	6,9 URD 33 D11A 0450	V302169	860	0,95	1	PC33UD69V450D1A
	6,9 URD 33 D11A 0500	S300258		0,95	1	PC33UD69V500D1A
	6,9 URD 33 D11A 0550	T300259		0,90	1	PC33UD69V550D1A
	6,9 URD 33 D11A 0630	V300260		0,90	0,95	PC33UD69V630D1A
	6,9 URD 33 D11A 0700	W300261		0,90	0,95	PC33UD69V700D1A
	6,9 URD 33 D11A 0800	X300262		0,85	0,95	PC33UD69V800D1A
	6,9 URD 33 D11A 0900	Y300263		0,85	0,95	PC33UD69V900D1A
	6,9 URD 33 D11A 1000	Z300264		0,80	0,90	PC33UD69V10CD1A
	6,9 URD 33 D11A 1100	A300265		0,80	0,90	PC33UD69V11CD1A
	6,9 URD 33 D11A 1250	B300266		0,75	0,85	PC33UD69V12CD1A
	6,9 URD 33 D11A 1400	C300267		0,75	0,80	PC33UD69V14CD1A
	6 URD 33 D11A 1600	Z301437		0,70	0,75	PC33UD60V16CD1A









Fuse holders and microswitches supplied separately (see Fuse Holders and microswitches 3x & 7x sections)

Dimensions in mm

fuse Size	A	B	C	D	E	F	G	H	J	K	d	e	L	M
30 DIN 110	40	46,5	82	47,5	101,6	21	25	10,5	17,7	134,6	23,8	30,8	25,2	6
31 DIN 110	51	56,5	91	47,5	101,6	25,5	25	10,5	17,7	134,6	23,8	30,8	25,2	6
32 DIN 110	60	65,5	100	47,5	101,6	30	32	10,5	21,2	134,6	23,8	30,8	25,2	6
33 DIN 110	74,5	79,5	114	48,5	101,6	37,2	40	10,5	25,2	134,6	23,3	30,3	25,2	6

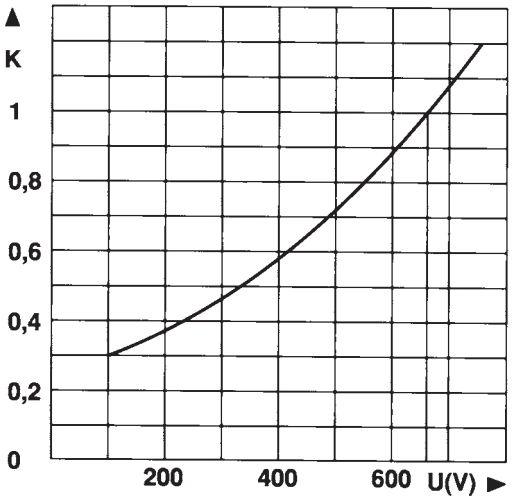
Fuse holders	Ref. Number	a	b	c	e1	x	y	Weight (g)
SI DIN 110 630 A	F098031	40	68	82	5	215	245	1060
SI DIN 110 1250 A	L091941	45	73	87	10	215	245	1320

Use the pullout grip PM3 (T097675) for fuse sizes 30, 31, 32

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

I²t Multiplier coefficient



Mean curve indicating variation of total I²t (I^2t_t) and total operating time T_t in accordance with working voltage U.

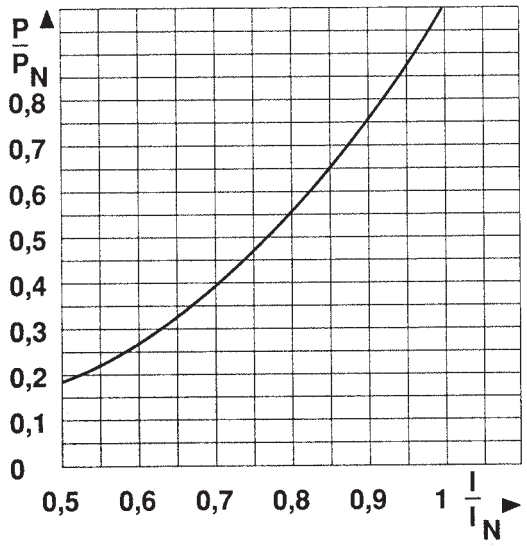
Example:

Fuse 350 A in size 30.
I_p = 10 000 A U = 500 V

At 660 V
I^2t_t = 80 000 A²s T_t = 6 ms

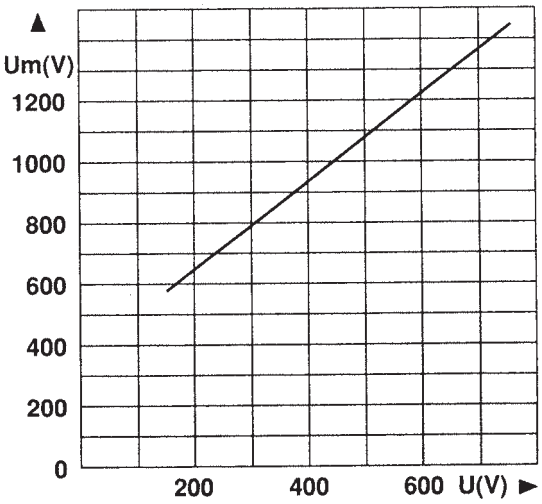
At 500 V
I^2t_t = 80 000 x 0.72 = 57 600 A²s
T_t = 6 x 0.72 = 4.3 ms

Dissipated power



Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in a steady state.

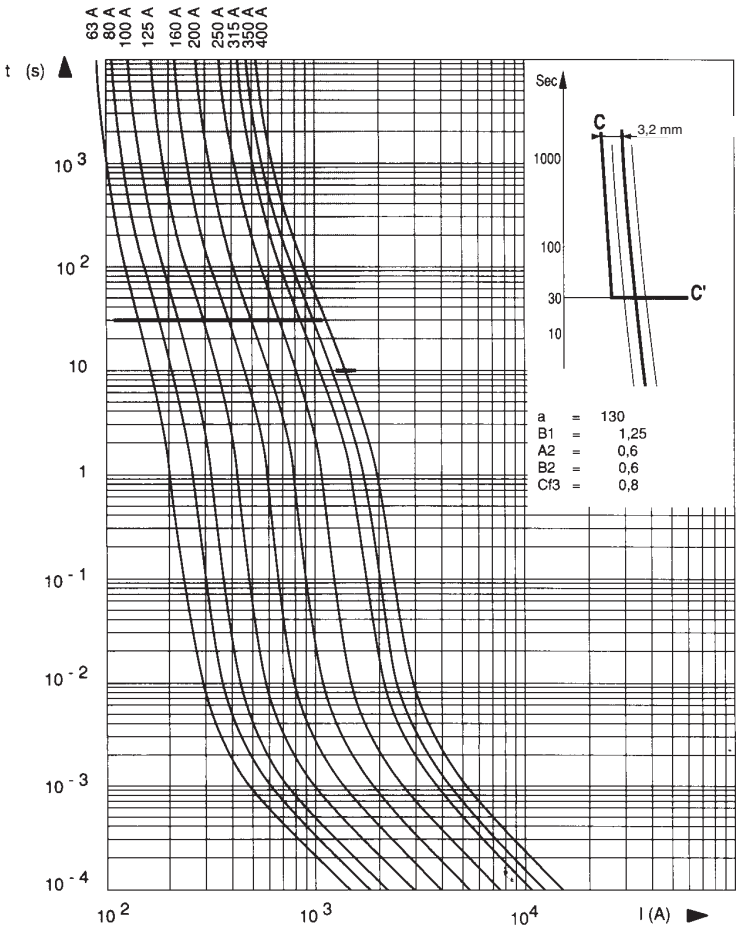
Arc voltage



Curve indicating peak arc voltage Um which may appear across fuse terminals as function of working voltage U at cos φ = 0.15

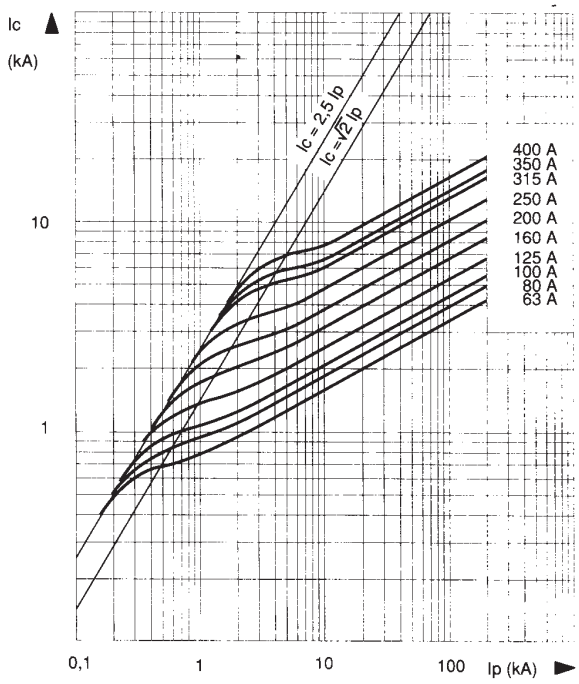
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

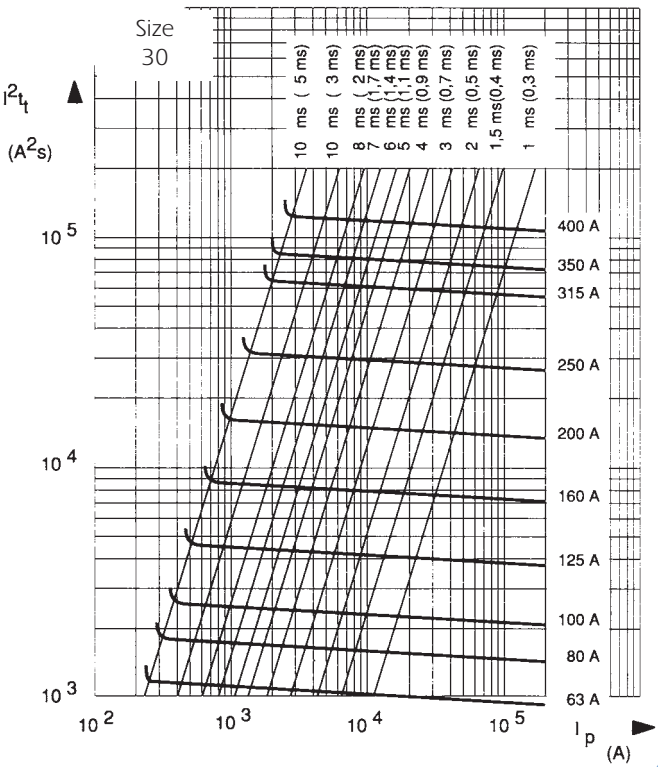
Size 30



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

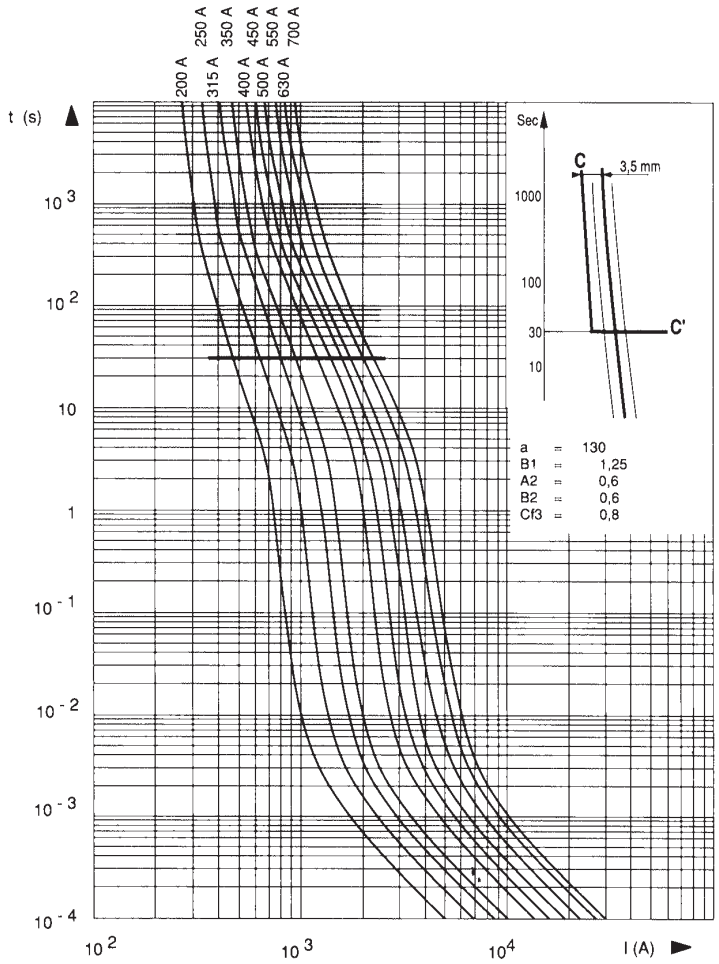
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

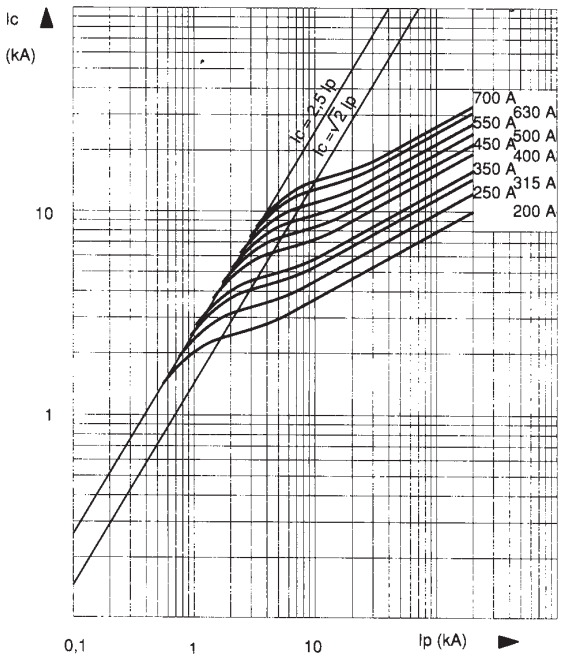
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

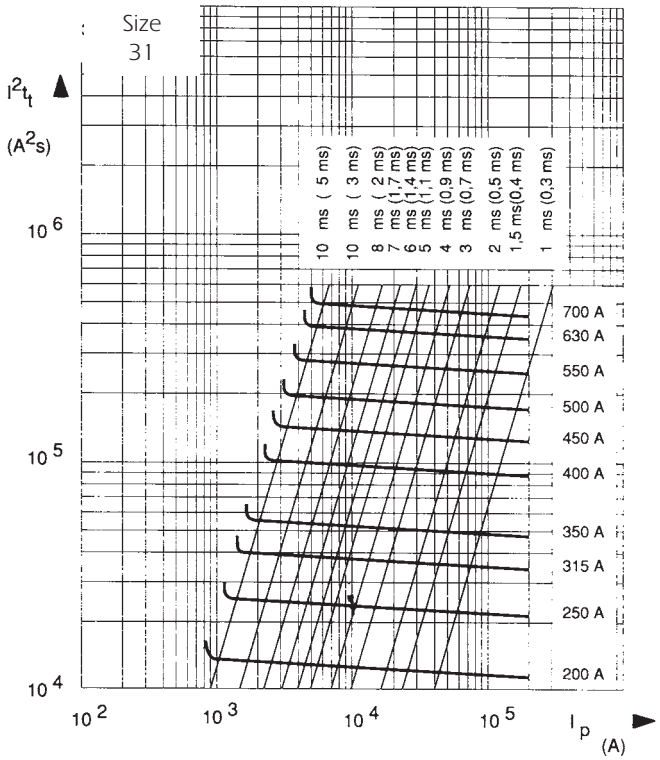
Size 31



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_C that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

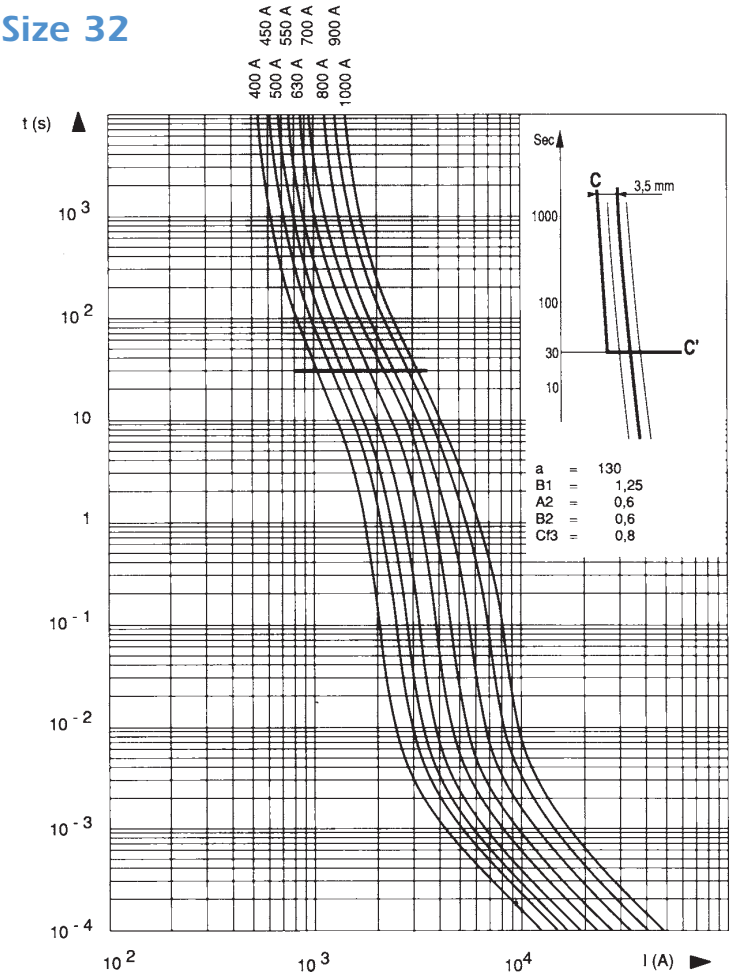
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

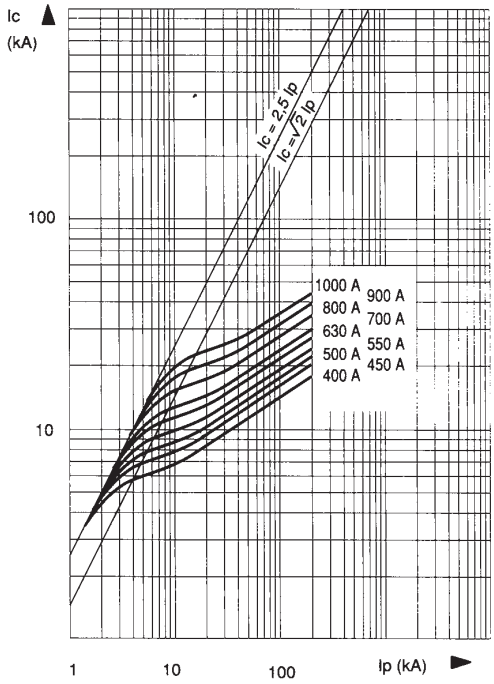
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

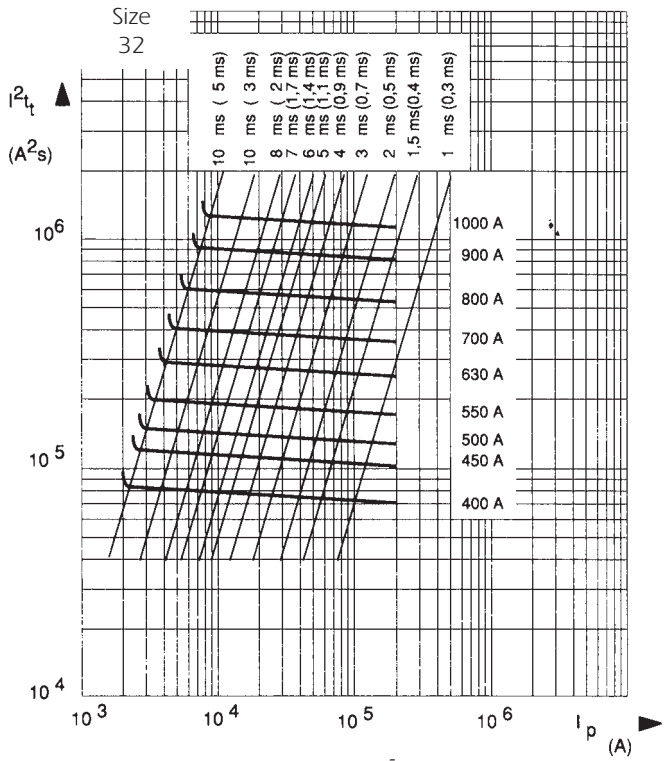
Size 32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_C that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

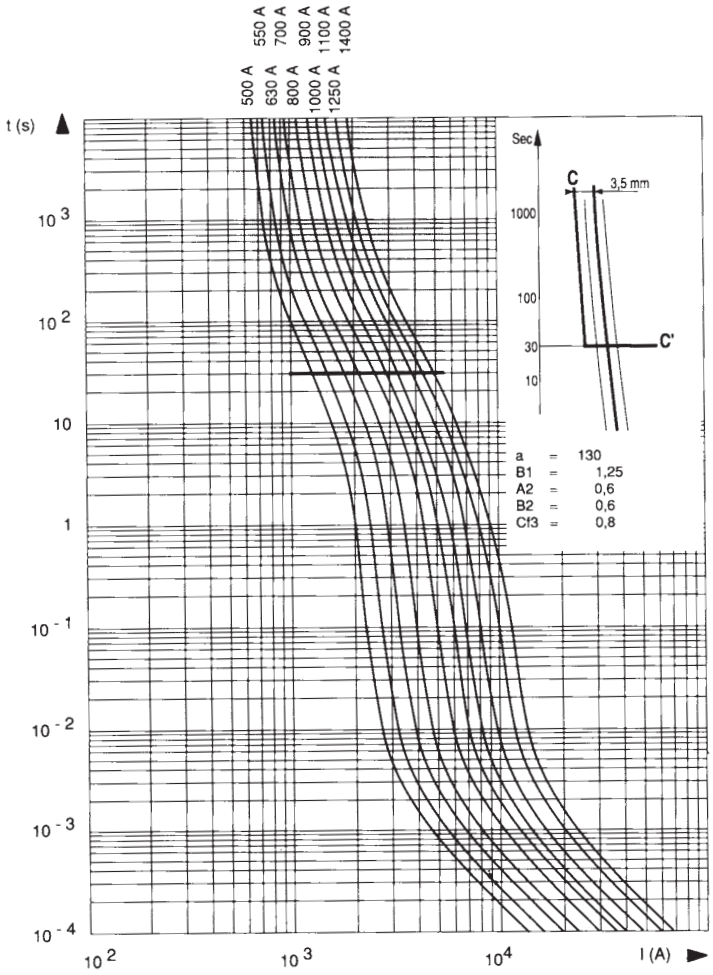
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

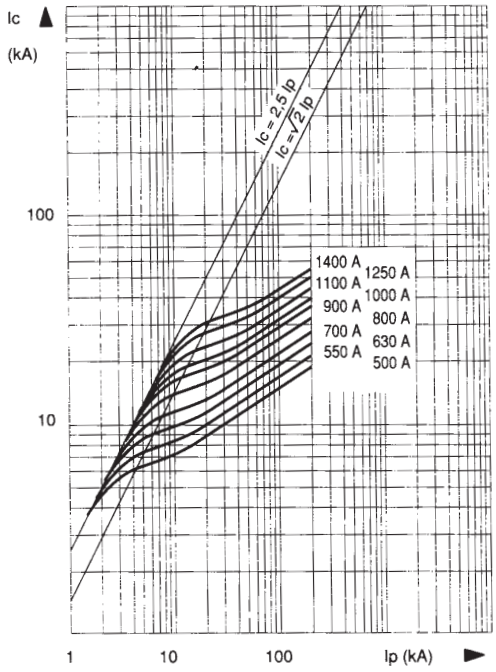
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

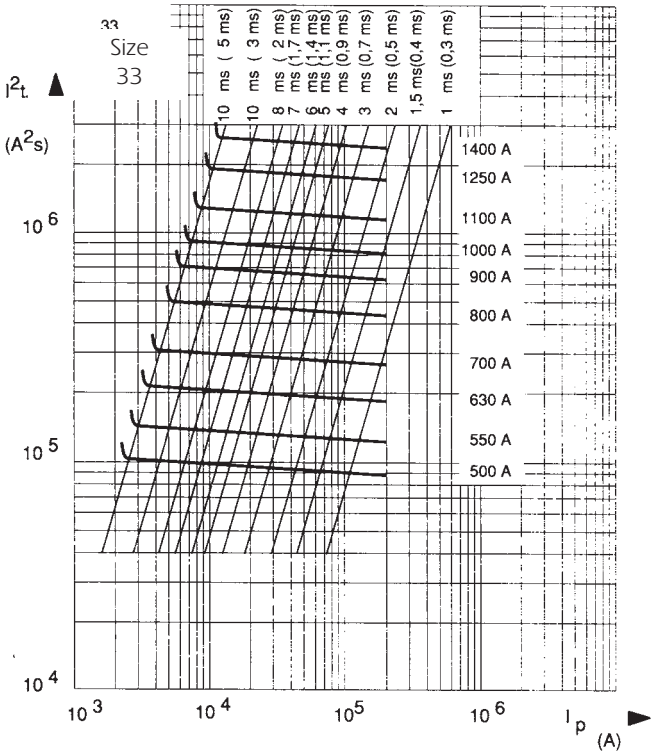
Size 33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

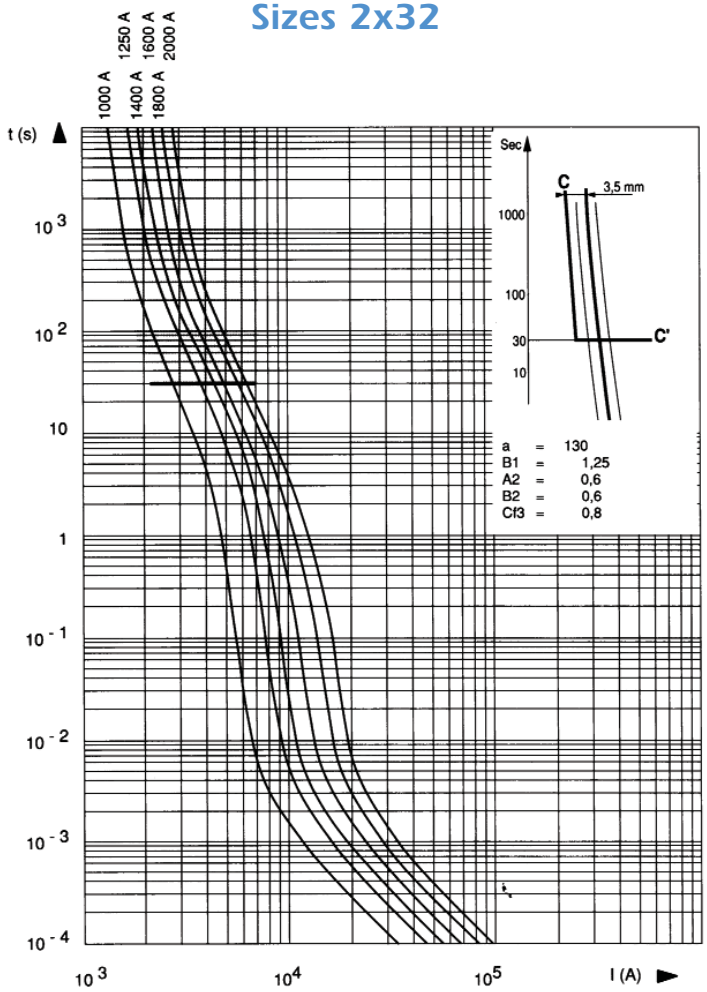
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

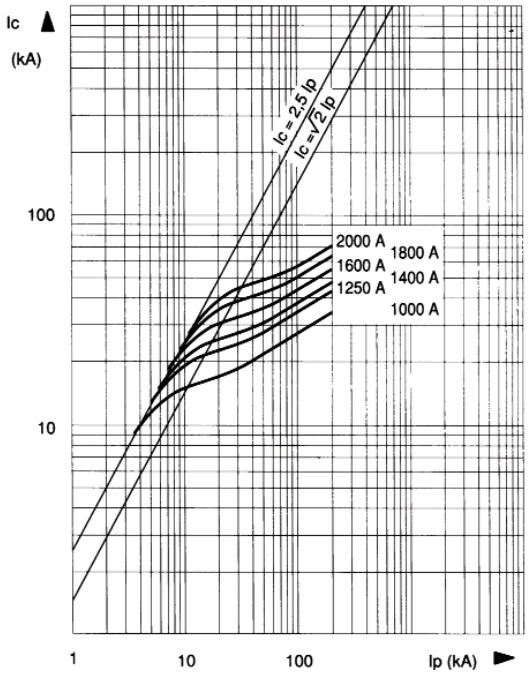
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

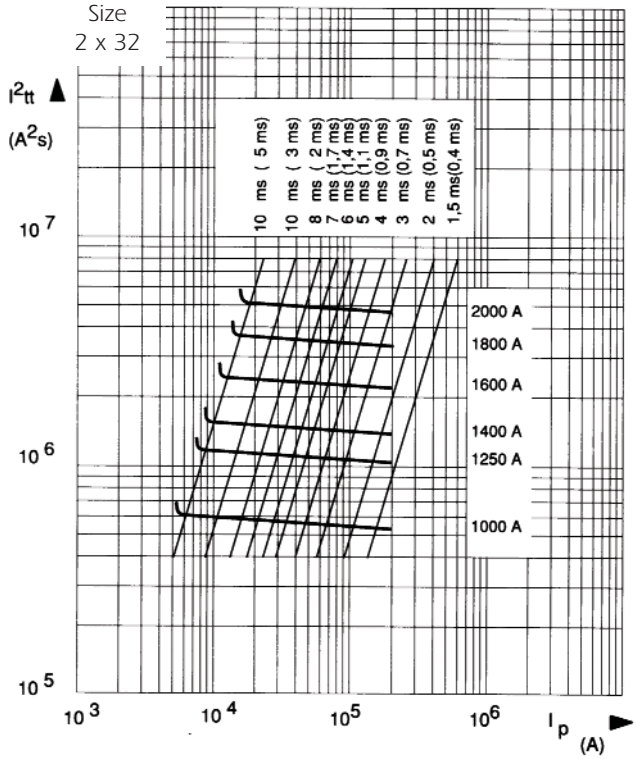
Sizes 2x32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

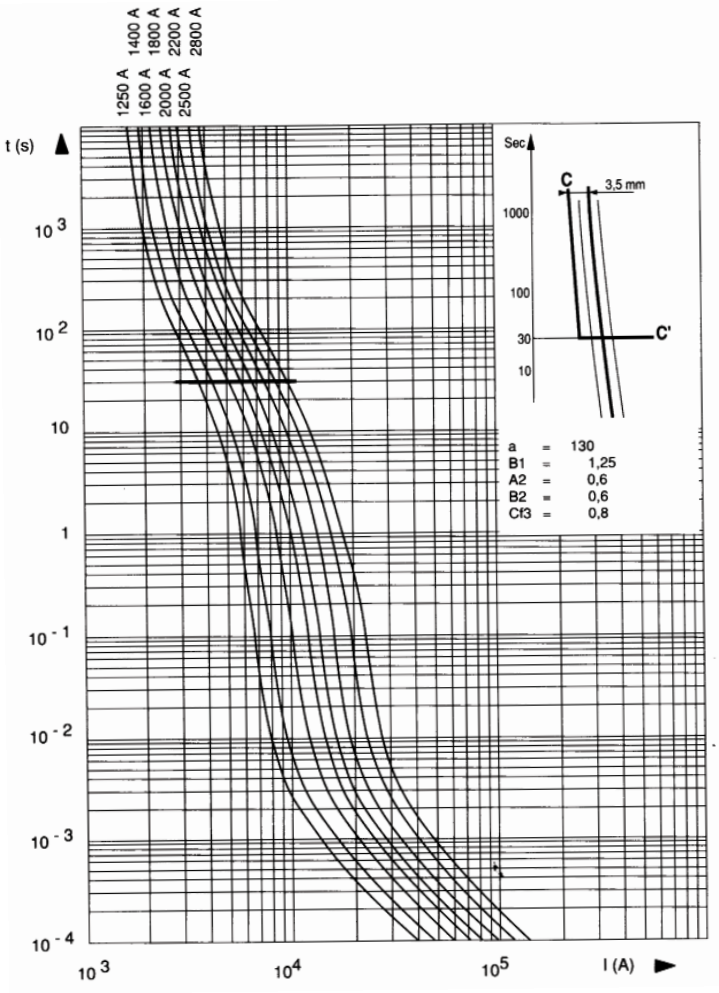
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

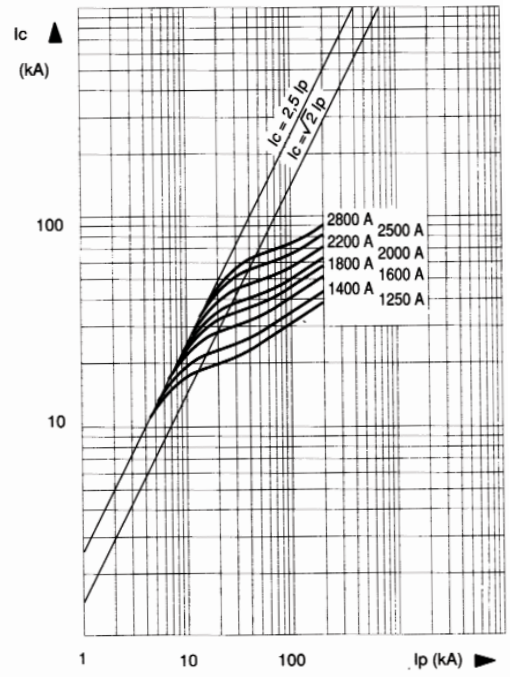
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

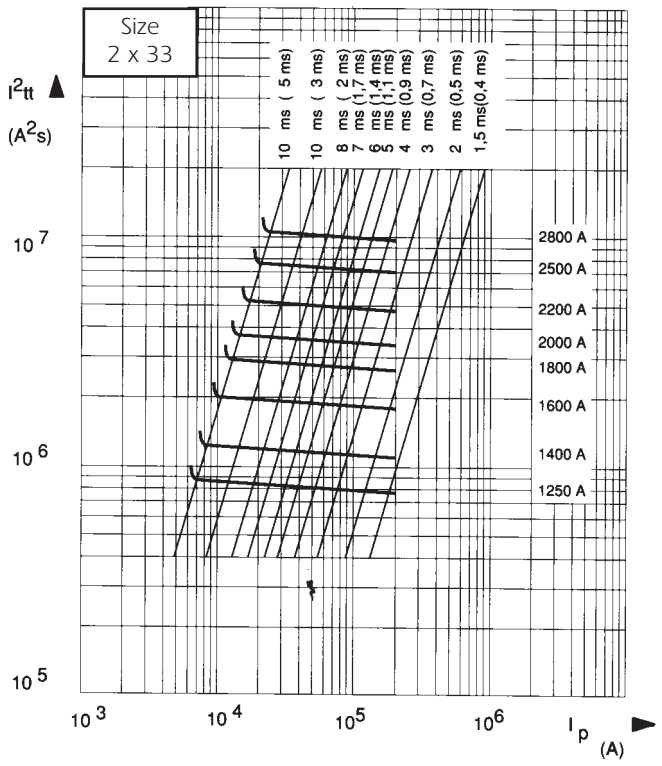
Size 2x33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

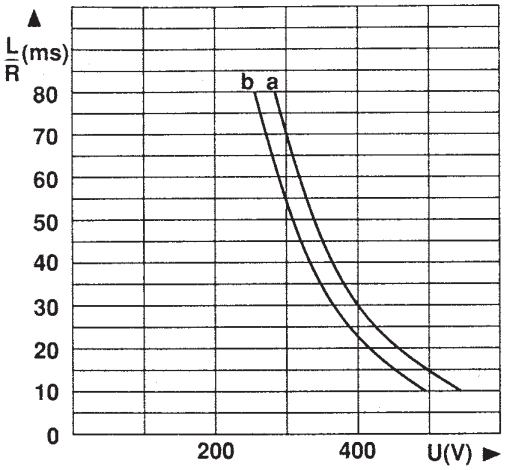
Maximum values of total operating I²t and total operating times

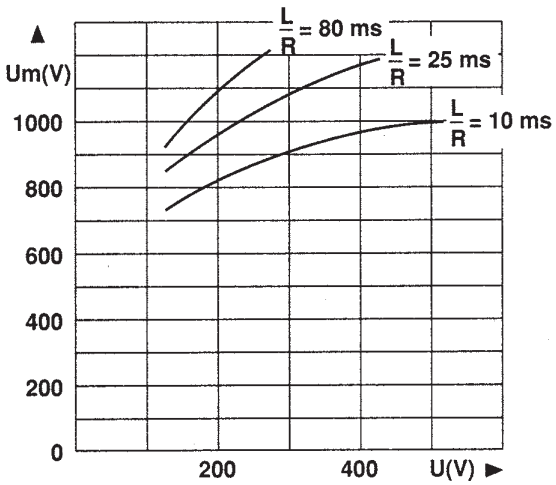
Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

DC working voltage possibilities





Rated current In (A)	Curves (*) and Ipm (1) corresponding to the rating					
	30 * Ipm (A)	31 * Ipm (A)	32 * Ipm (A)	33 * Ipm (A)	2 x 32 * Ipm (A)	2 x33 * Ipm (A)
63	a 230					
80	a 300					
100	a 360					
125	a 460					
160	a 650					
200	a 880	a 850				
250	a 1300	a 1150				
315	a 1700	a 1450				
350	a 1900	a 1600				
400	a 2300	a 2200	a 2000			
450		a 2500	a 2300			
500		a 3000	a 2600	a 2300		
550		a 3400	a 3150	a 2500		
630		a 5000	a 3700	a 3250		
700		a 5600	a 4300	a 3900		
800			a 5300	a 4800		
900			a 7800	a 5600		
1000			b 9000	a 6600	a 5200	
1100				a 7700		
1250				b 11000	a 7400	a 6500
1400				b 12500	a 8600	a 7800
1600					a 10600	a 9600
1800					a 15600	a 11200
2000					b 18000	a 13200
2200						a 15400
2500						b 22000
2800						b 25000

Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark:
When the fault current di/dt is very large, this condition can be exceeded. This is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

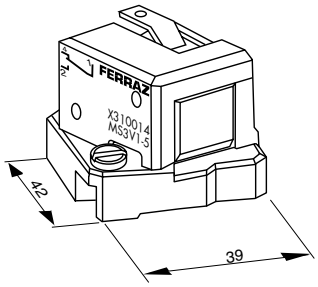
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

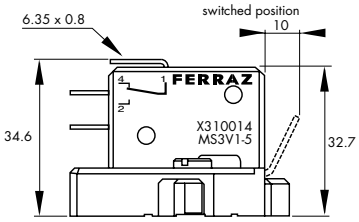
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



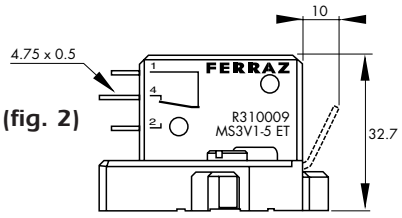
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

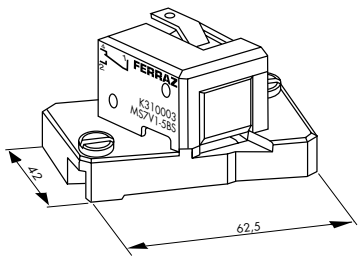
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

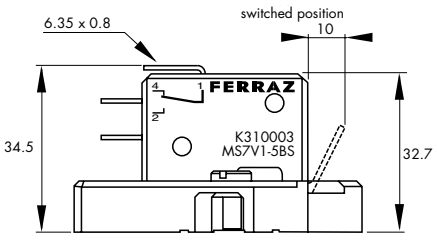
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

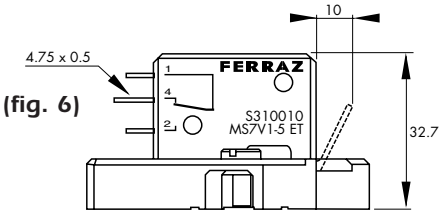


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Metric-studs

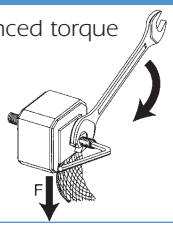
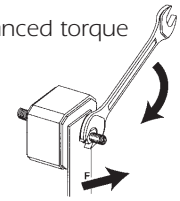
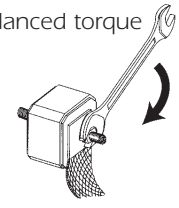
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STUM8x30M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STUM10x30M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STUM12x35M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STUM10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STUM12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

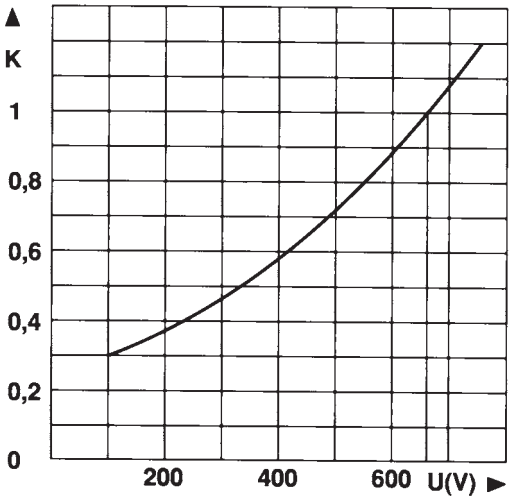
Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

I²t Multiplier coefficient



Mean curve indicating variation of total I²t (I^2t_t) and total operating time T_t in accordance with working voltage U.

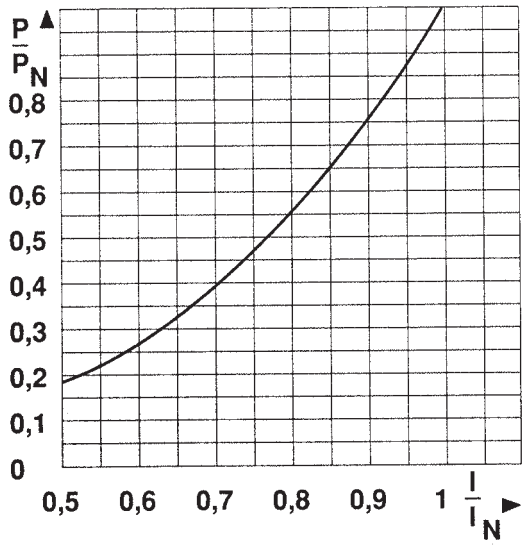
Example:

Fuse 350 A in size 30.
I_p = 10 000 A U = 500 V

At 660 V
I^2t_t = 80 000 A²s T_t = 6 ms

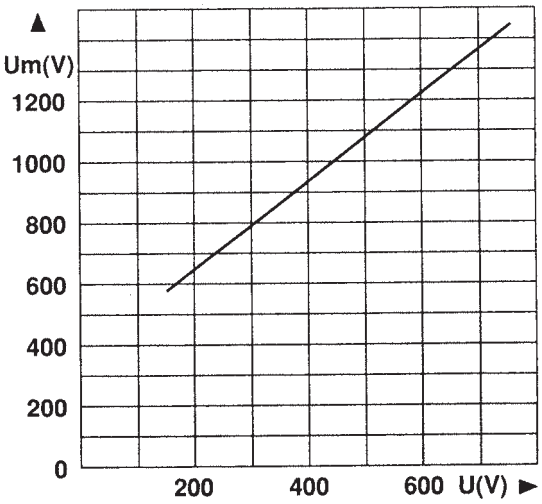
At 500 V
I^2t_t = 80 000 x 0.72 = 57 600 A²s
T_t = 6 x 0.72 = 4.3 ms

Dissipated power



Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in a steady state.

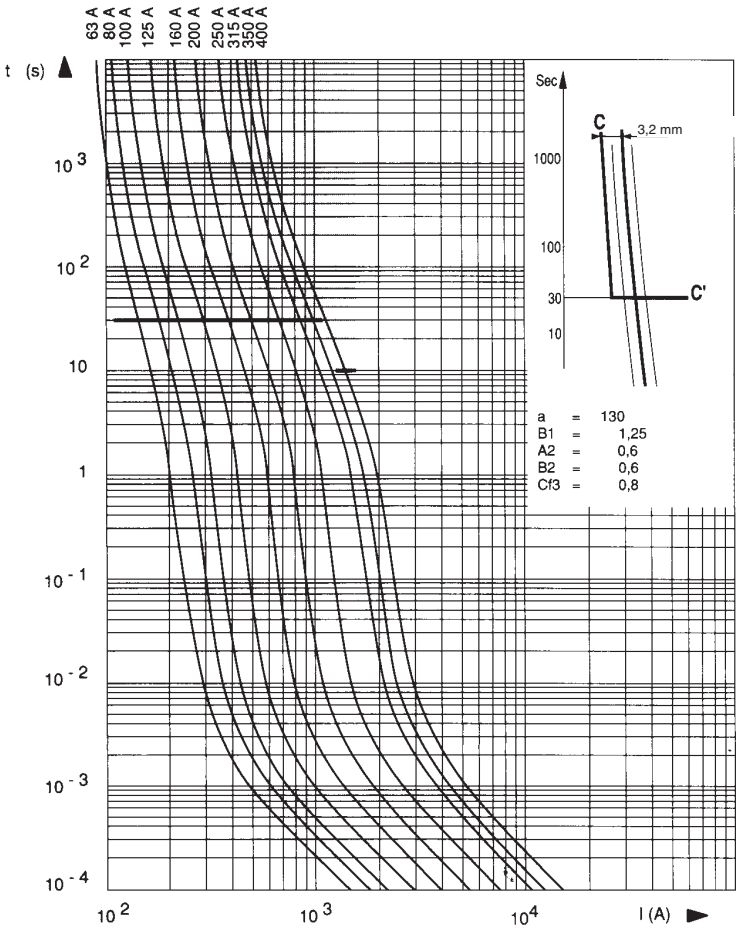
Arc voltage



Curve indicating peak arc voltage Um which may appear across fuse terminals as function of working voltage U at cos φ = 0.15

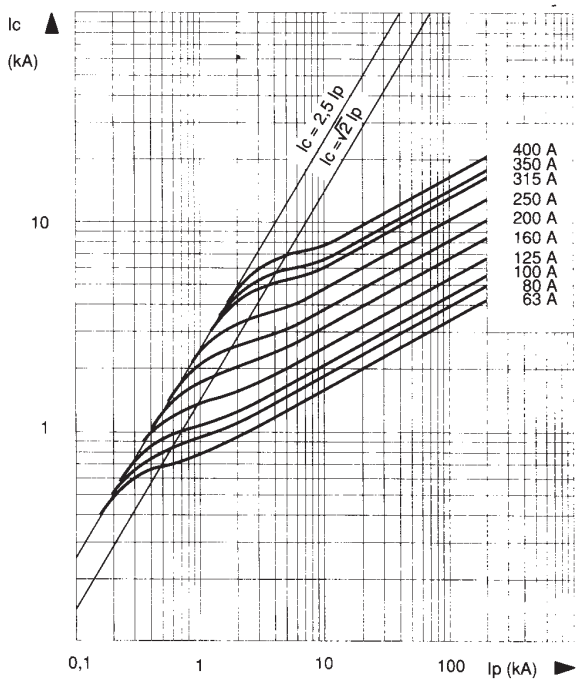
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

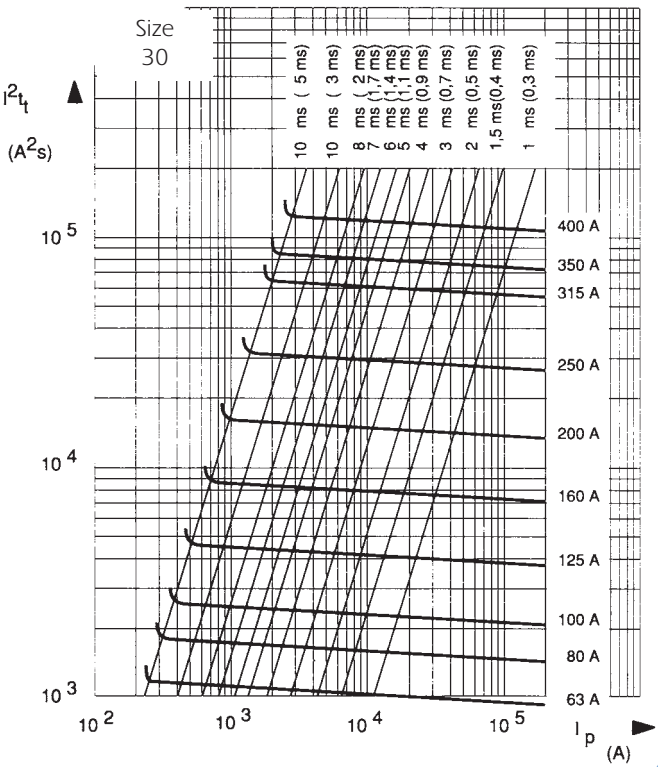
Size 30



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

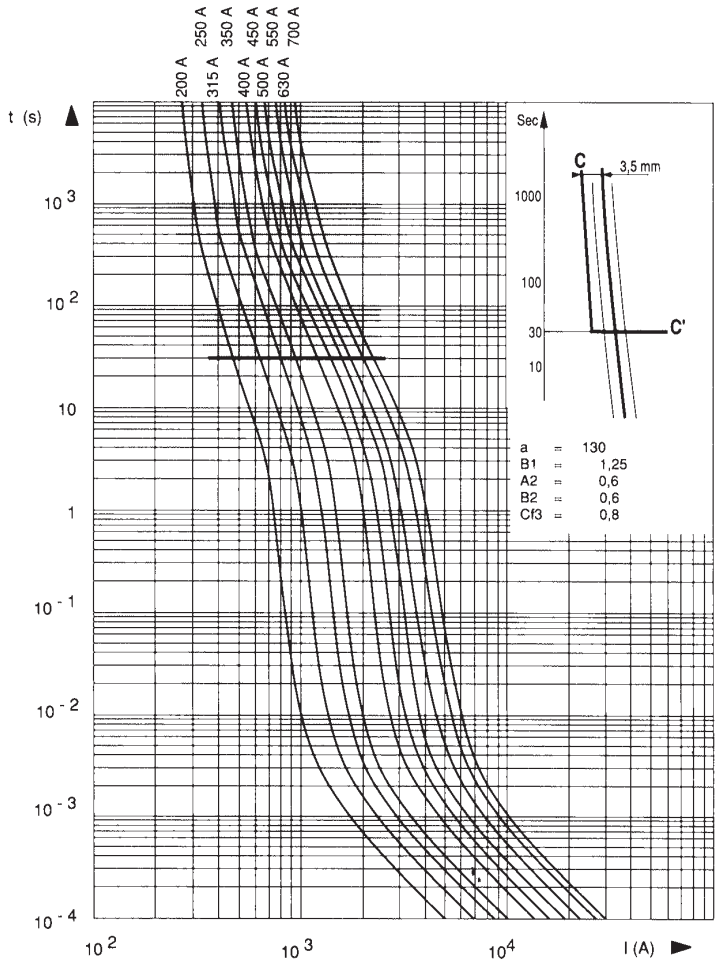
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

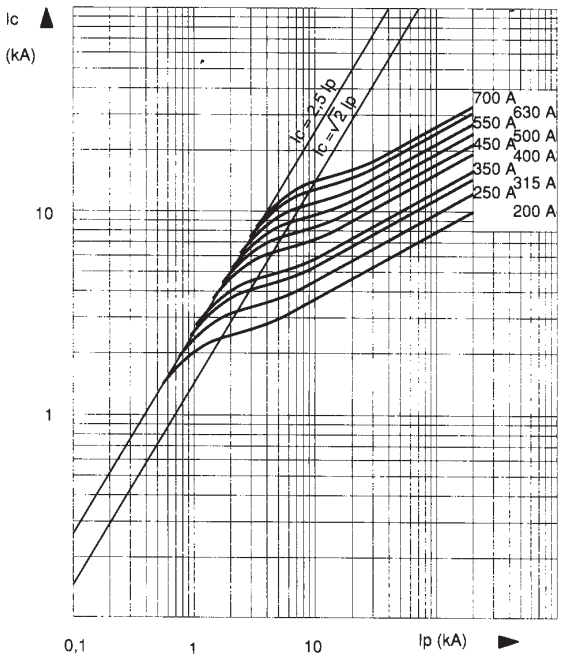
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

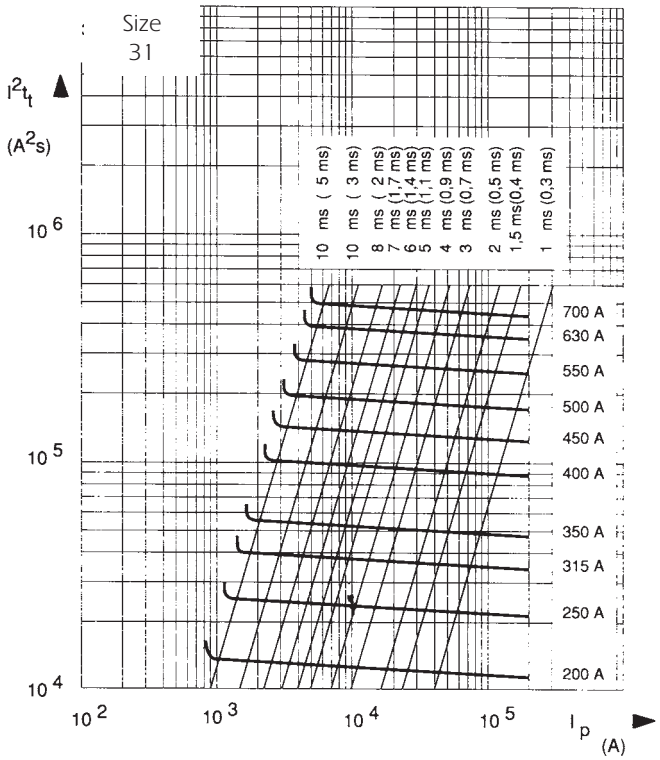
Size 31



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_C that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

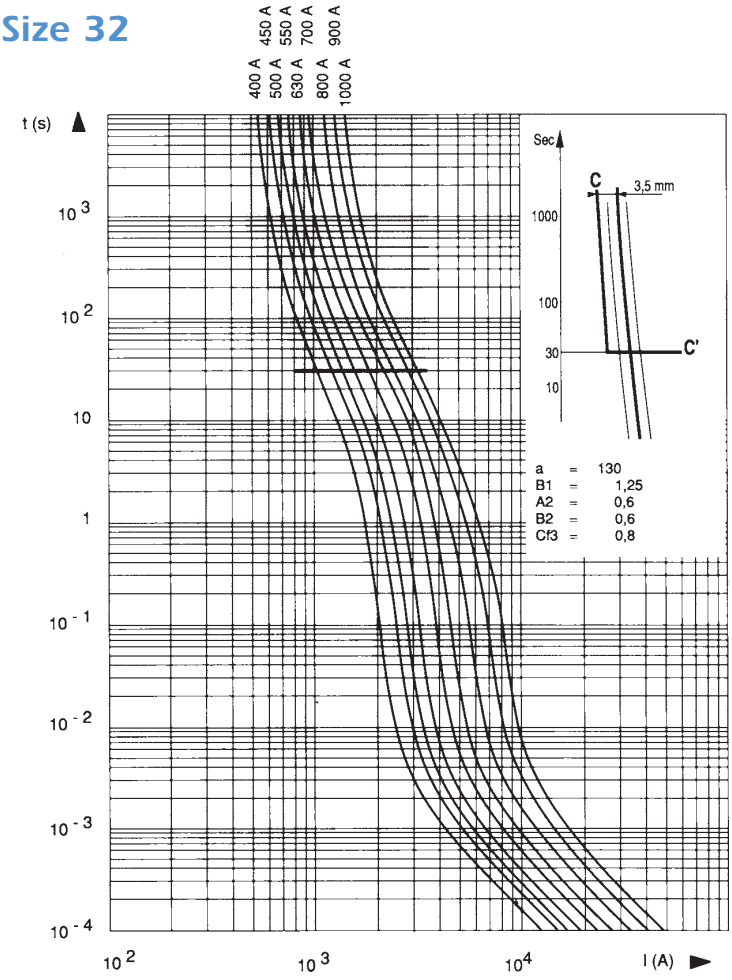
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

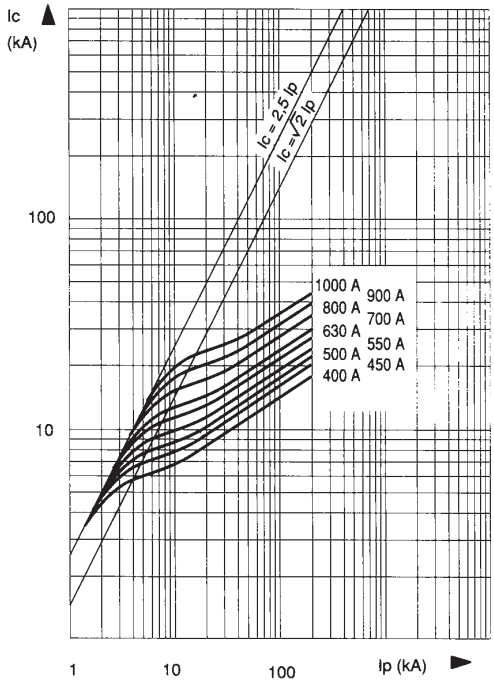
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

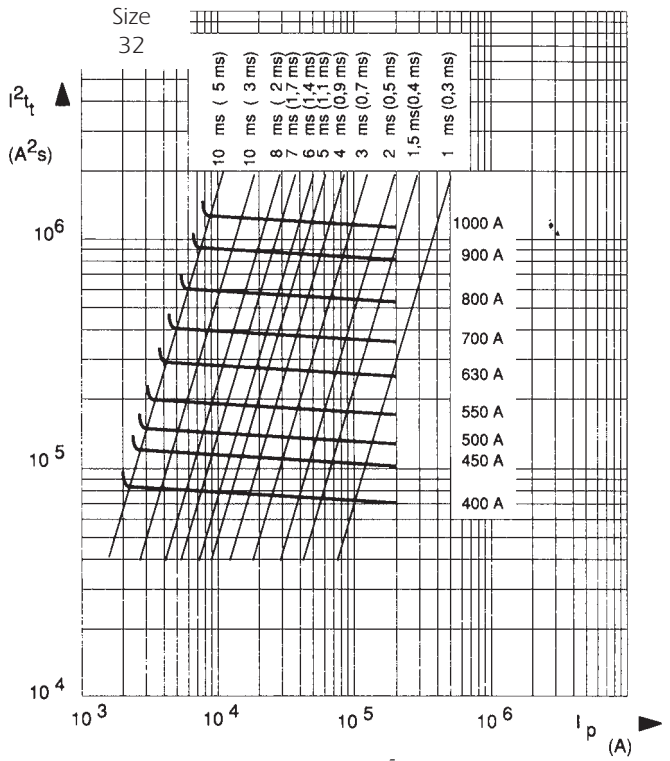
Size 32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_C that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

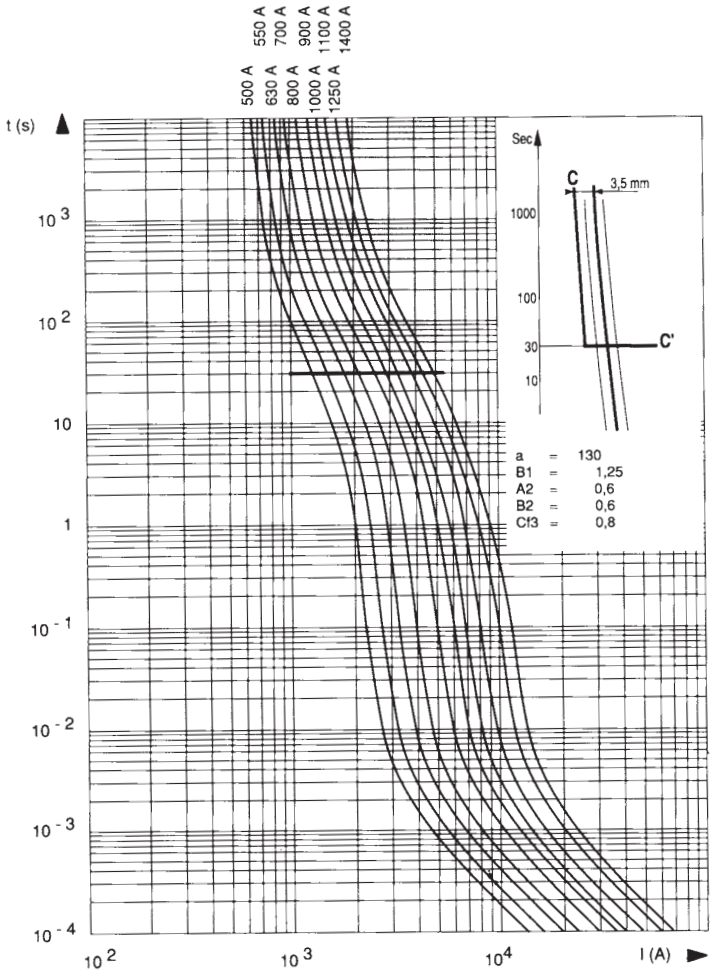
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

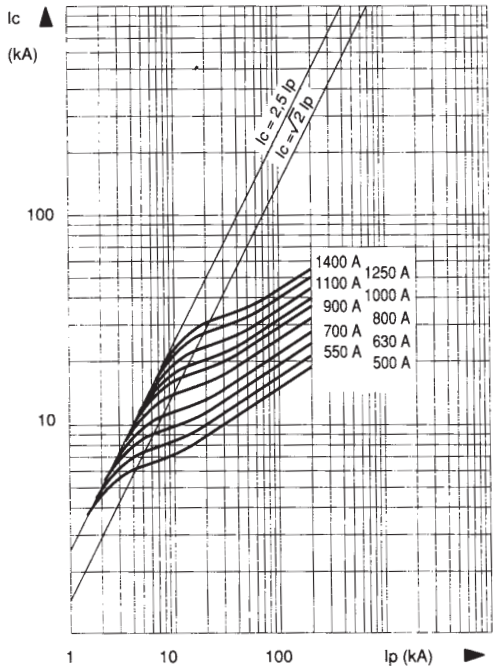
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

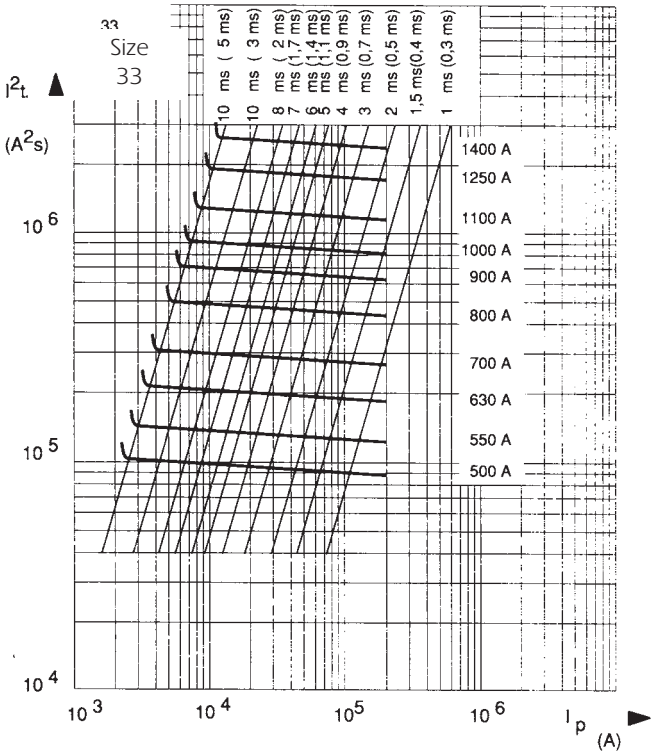
Size 33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

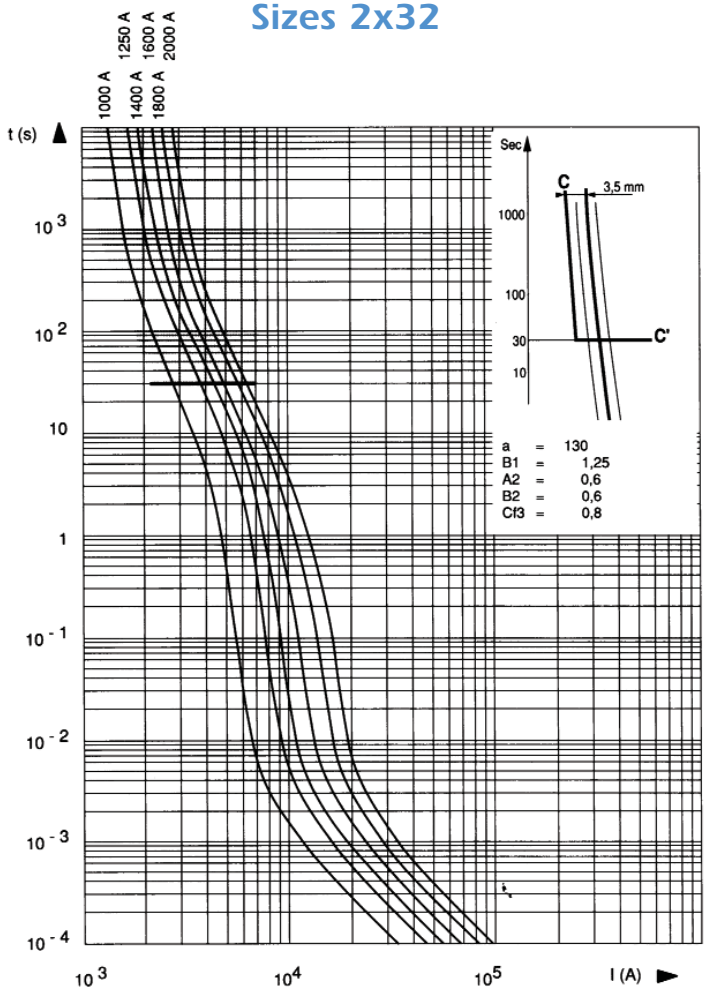
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

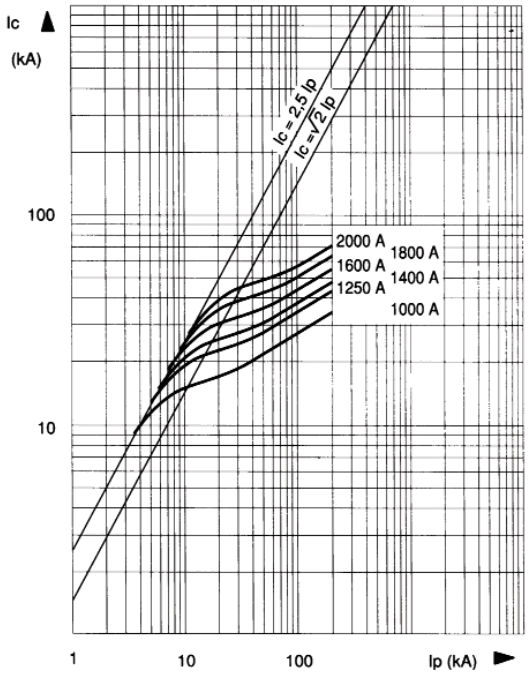
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

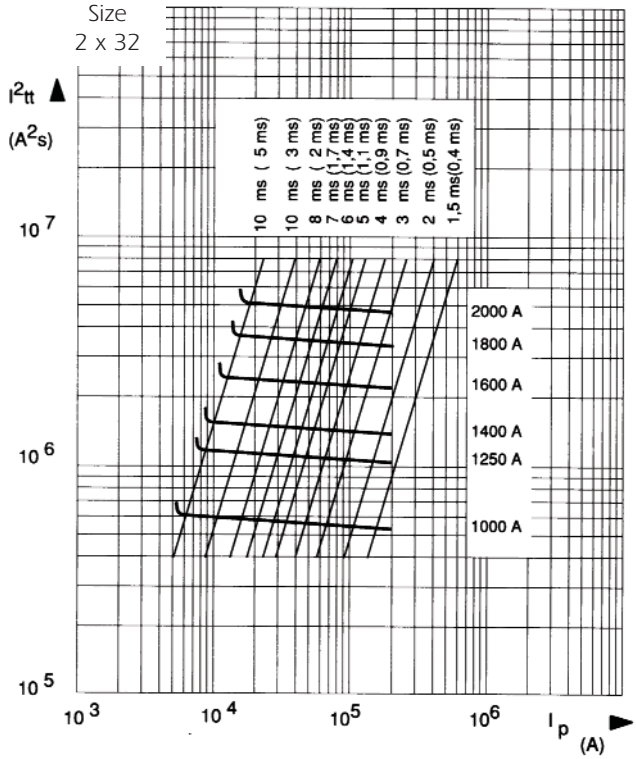
Sizes 2x32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

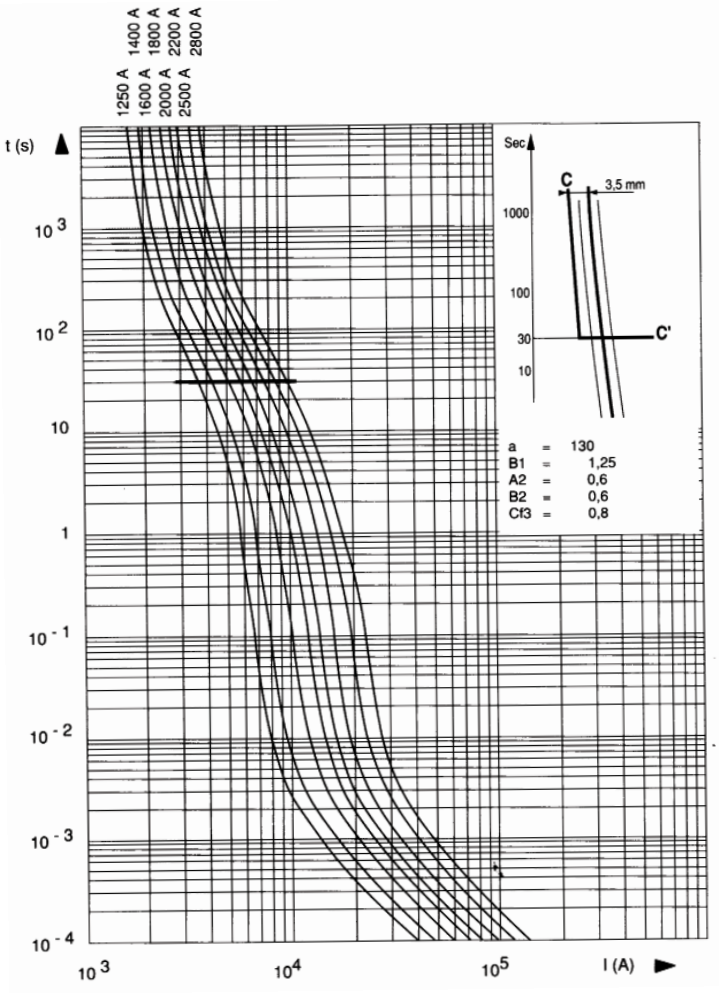
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

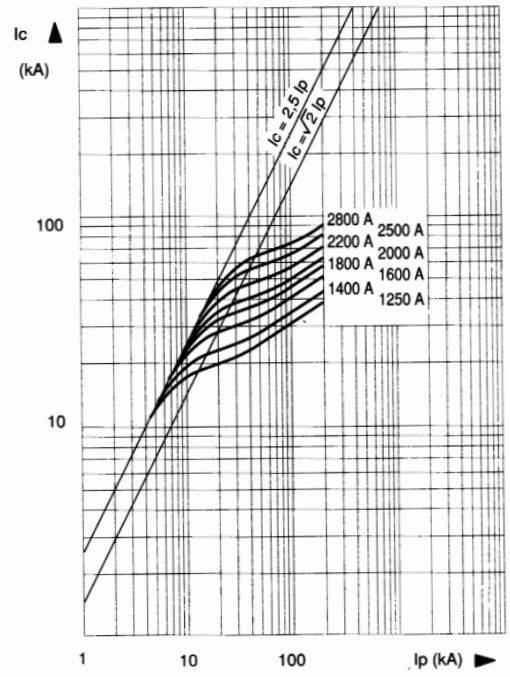
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

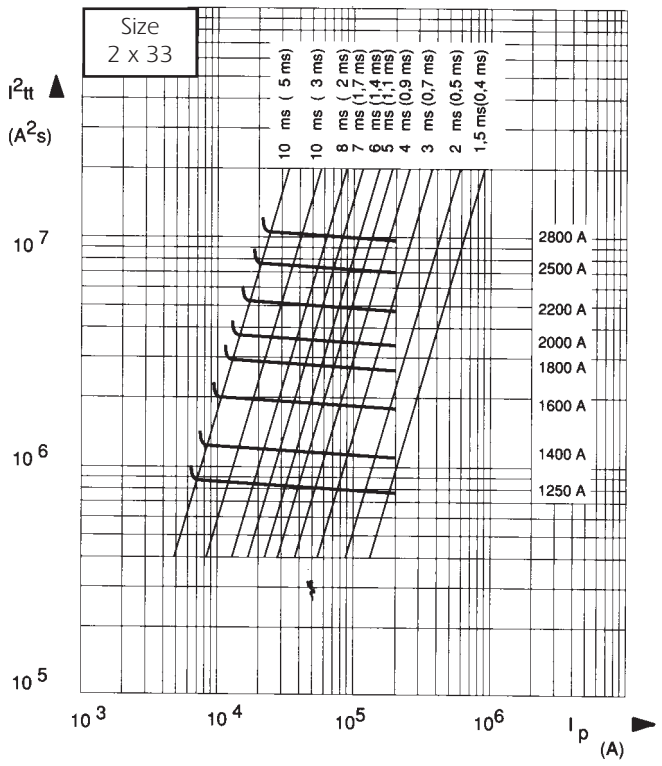
Size 2x33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

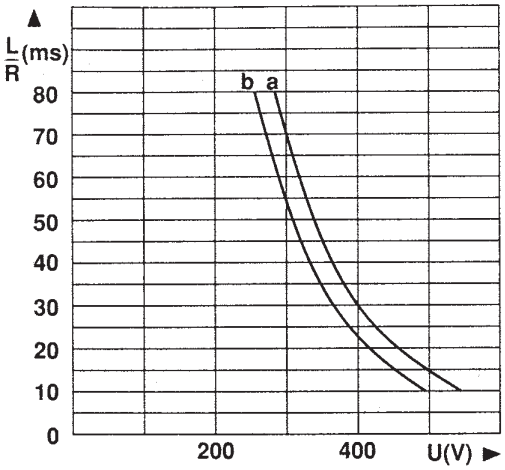
Maximum values of total operating I²t and total operating times

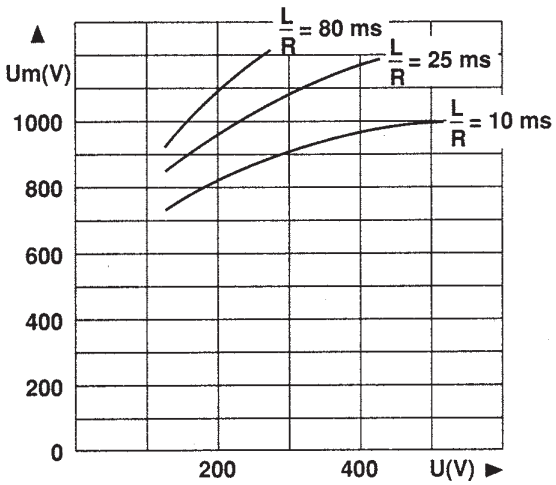
Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

DC working voltage possibilities





Rated current In (A)	Curves (*) and Ipm (1) corresponding to the rating					
	30 * Ipm (A)	31 * Ipm (A)	32 * Ipm (A)	33 * Ipm (A)	2 x 32 * Ipm (A)	2 x33 * Ipm (A)
63	a 230					
80	a 300					
100	a 360					
125	a 460					
160	a 650					
200	a 880	a 850				
250	a 1300	a 1150				
315	a 1700	a 1450				
350	a 1900	a 1600				
400	a 2300	a 2200	a 2000			
450		a 2500	a 2300			
500		a 3000	a 2600	a 2300		
550		a 3400	a 3150	a 2500		
630		a 5000	a 3700	a 3250		
700		a 5600	a 4300	a 3900		
800			a 5300	a 4800		
900			a 7800	a 5600		
1000			b 9000	a 6600	a 5200	
1100				a 7700		
1250				b 11000	a 7400	a 6500
1400				b 12500	a 8600	a 7800
1600					a 10600	a 9600
1800					a 15600	a 11200
2000					b 18000	a 13200
2200						a 15400
2500						b 22000
2800						b 25000

Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark:
When the fault current di/dt is very large, this condition can be exceeded. This is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

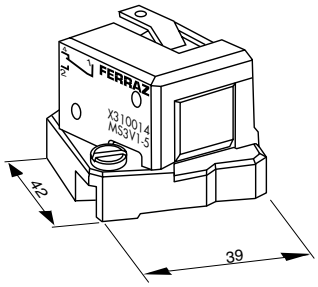
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

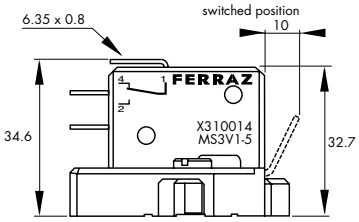
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



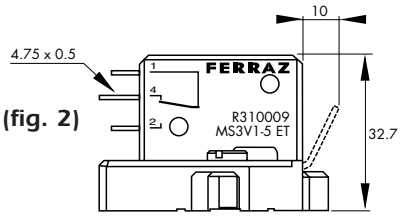
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

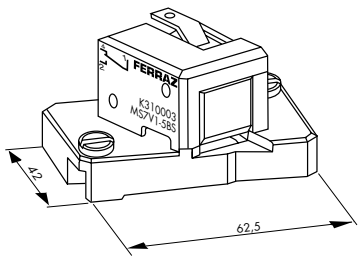
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

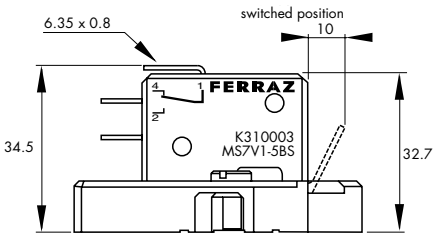
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

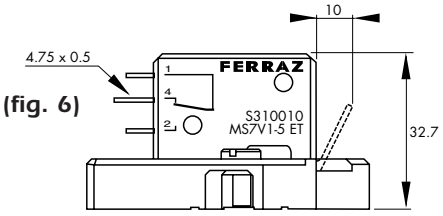


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Metric-studs

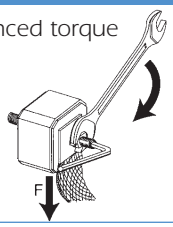
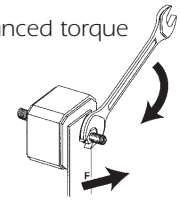
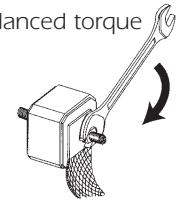
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STUM8x30M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STUM10x30M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STUM12x35M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STUM10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STUM12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

NH Solid Blades 690 VAC sizes 000 to 3

gS-class Protistor® NH 690 VAC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment. This range is a fast acting, engineered to provide state of the art protection for power semiconductors in drives.
These solid blades square body fuse-links are available in various body sizes with a broad range of ampere ratings allowing the greatest flexibility in equipment design.
They have pure silver fuse elements embedded in bound sand which provides optimized I^2t and high breaking capacity.
All contact surfaces are silver plated and all hardware non-magnetic.
These products comply with the RoHS European Directive.
All fuses are standard with a low voltage dual blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly on to the fuse in service.



The first gS-class range in the marketplace!

Features/Benefits
Broad range of ampere ratings in each body size for design flexibility IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Ratings
AC: up to 630 A - 690 VAC - 160 kA IR
DC: up to 510 V L/R 10ms
for high di/dt (capacitor discharges), consult us

Approvals
AC: Tested to IEC 269.4 at 690V +10%
UL/CSA recognized pending

Features
- Ultra fast acting
- Highly current limiting.
- High breaking capacities
- Very low I^2t
- Reduced power losses
- No derating in standard NH fusegear (ref. to page 9)
- Worldwide mounting acceptance.
- Superior cycling ability.
- High widstanding in rush current and overloads

Applications
Protection of rectifiers, inverters, static switch, AC & DC drives and UPS systems.

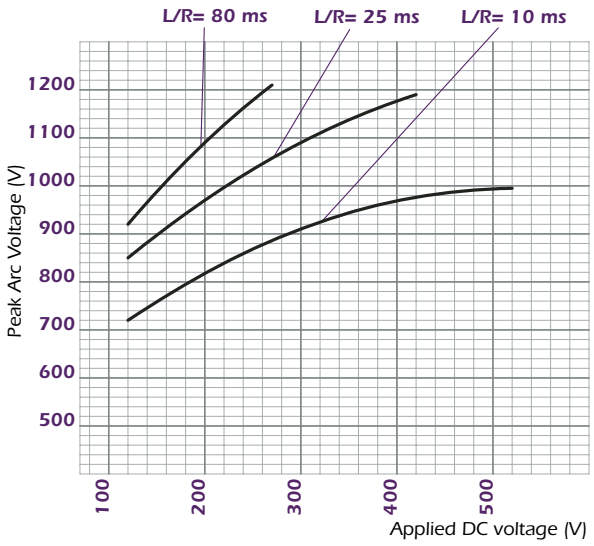
Innovations
The first gs-class range in the market

Electrical characteristics

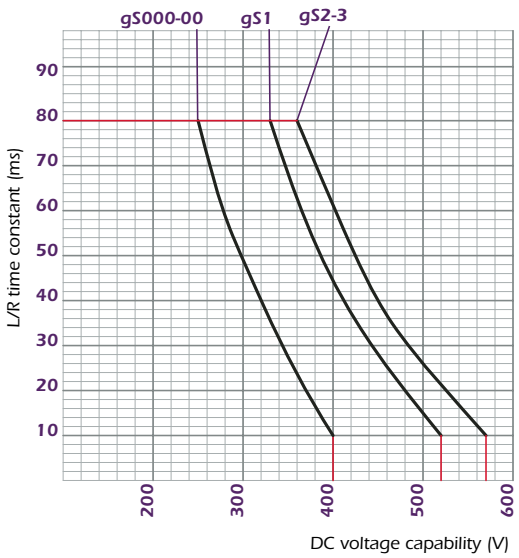
Voltage	Size	Type	Rating In (A)	Pre-Arcing I²t @ 1ms (A²s)	Total I²t @ 690 V (A²s)	Pn: Power losses (W) PV 43620 0,8In	Breaking capacities @ Un kA
690V IEC 700V UL	000	gS	25	17,1	96	7	160
	000	gS	32	38,7	218	8	160
	000	gS	40	68,7	386	9	160
	000	gS	50	136	764	10	160
	000	gS	63	275	1540	11	160
	000	gS	80	543	3050	13	160
	000	gS	100	1064	5980	14	160
	00	gS	125	2170	10850	16	160
	00	gS	160	4269	21340	19	160
	1	gS	125	1712	8560	21	160
	1	gS	160	3858	19290	23	160
	1	gS	200	7560	37800	26	160
	1	gS	250	15432	77160	29	160
	1	gS	280	18663	93310	33	160
	2	gS	250	12482	62410	33	160
	2	gS	315	27952	139760	36	160
	2	gS	350	38280	191400	38	160
	2	gS	400	54252	271260	41	160
	2	gS	450	81092	405460	43	160
	3	gS	315	19531	97650	42	160
	3	gS	350	28132	140660	44	160
	3	gS	400	42050	210250	47	160
	3	gS	450	58674	293370	50	160
	3	gS	500	87028	435140	52	160
	3	gS	550	111808	559040	56	160
	3	gS	630	149889	749440	63	160

DC working voltage possibilities

Peak Arc Voltage vs Applied DC voltage

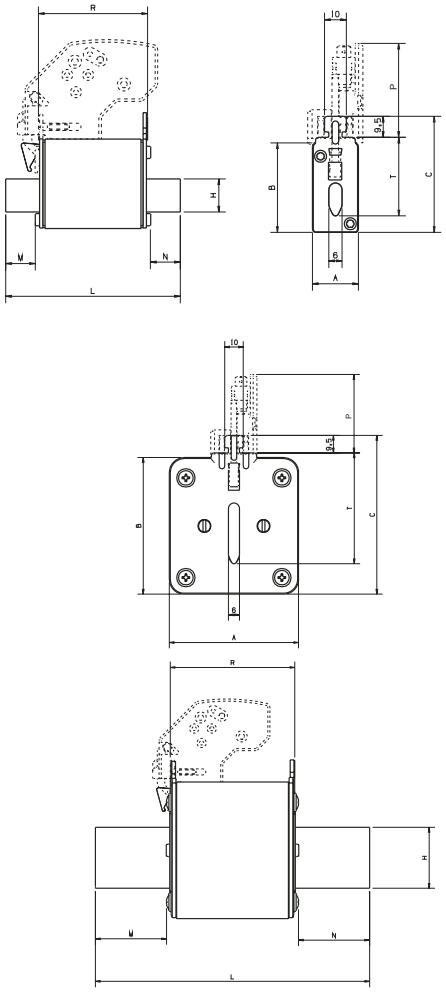


L/R Time constant vs DC voltage capability



Main dimensions and references

Size	Cat Number	Reference	Weight [kg]	Pack [pcs]
000	NH000GS69V25PV	S322039C	135	3
000	NH000GS69V32PV	X322043C	135	3
000	NH000GS69V40PV	B322047C	135	3
000	NH000GS69V50PV	F322051C	135	3
000	NH000GS69V63PV	K322055C	135	3
000	NH000GS69V80PV	P322059C	135	3
000	NH000GS69V100PV	T322063C	135	3
00	NH00GS69V125PV	E322165C	200	3
00	NH00GS69V160PV	J322169C	200	3
1	NH1GS69V125PV	X322365C	250	3
1	NH1GS69V160PV	B322369C	250	3
1	NH1GS69V200PV	D322371C	250	3
1	NH1GS69V250PV	H322375C	250	3
1	NH1GS69V280PV	L302897C	250	3
2	NH2GS69V250PV	R322475C	430	3
2	NH2GS69V315PV	W322479C	430	3
2	NH2GS69V350PV	X322480C	430	3
2	NH2GS69V400PV	A322483C	430	3
2	NH2GS69V450PV	C322485C	430	3
3	NH3GS69V315PV	E322579A	600	1
3	NH3GS69V350PV	F322580A	600	1
3	NH3GS69V400PV	J322583A	600	1
3	NH3GS69V450PV	L322585A	600	1
3	NH3GS69V500PV	N322587A	600	1
3	NH3GS69V550PV	P322588A	600	1
3	NH3GS69V630PV	Q322589A	600	1



Microswitches

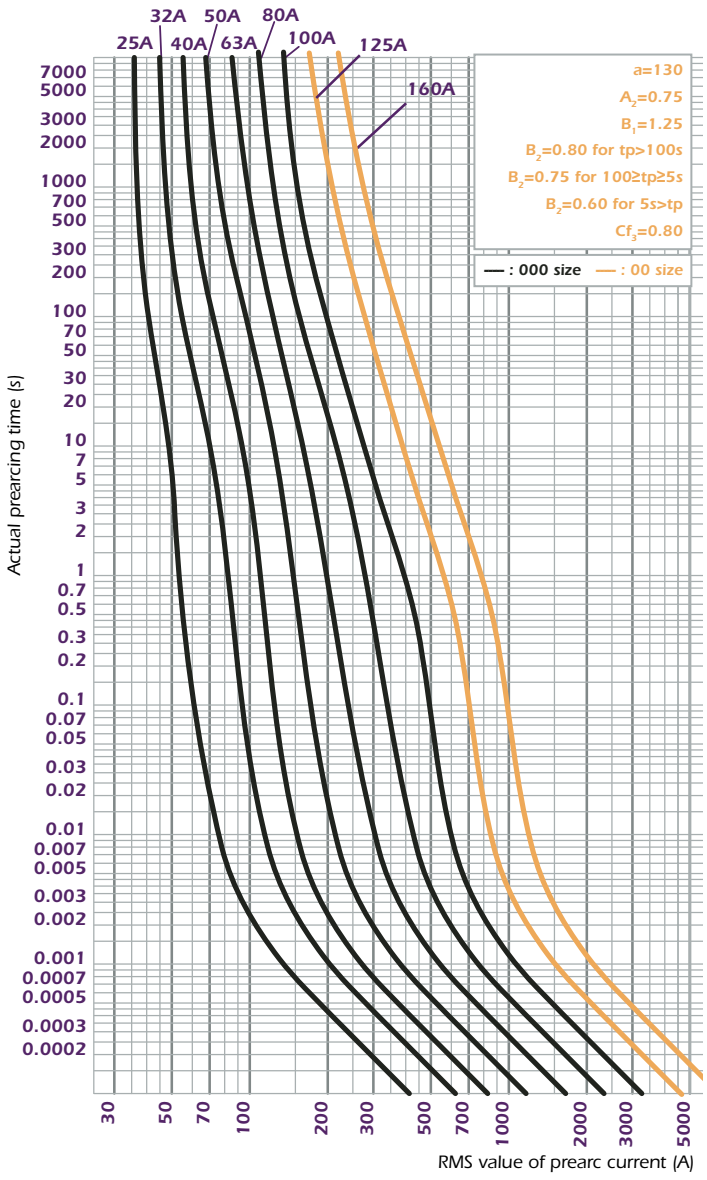
MSNHB6 + PRES: consult us (6,3mm clips)
MSNHB2 + PRES: consult us (2.8 mm clips)

Automatically resetable, these microswitch systems indicate fuse presence (PRES) and proper mounting

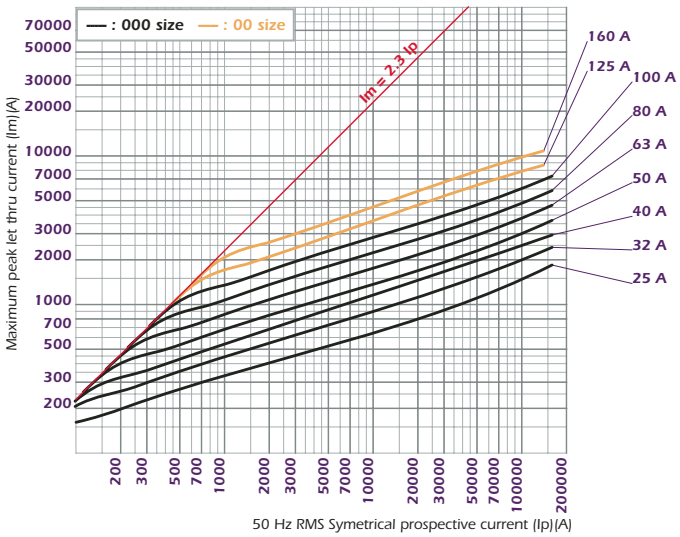
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)

Size	A	B	C	H	L	M	N	P	R	T
000	20,8	40,5	52,5	15	79	13,5	13,5	43,4	49,5	35
000	0.82"	1.59"	2.07"	0.59"	3.11"	0.53"	0.53"	1.71"	1.95"	1.38"
00	29,5	47,5	59,5	15	79	13,1	13,1	43,4	50	35
00	1.16"	1.87"	2.34"	0.59"	3.11"	0.52"	0.52"	1.71"	1.97"	1.38"
1	39,5	52,5	64,5	20	135	32,1	32,1	43,4	68	40
1	1.56"	2.07"	2.54"	0.79"	5.32"	1.26"	1.26"	1.71"	2.68"	1.57"
2	51	60	72	26	150	38,85	38,85	43,4	68	48
2	2.01"	2.36"	2.85"	1.02"	5.91"	1.53"	1.53"	1.71"	2.68"	1.89"
3	70	74	86	33	150	38,85	38,85	43,4	68	60
3	2.76"	2.91"	3.39"	1.30"	5.91"	1.53"	1.53"	1.71"	2.68"	2.36"

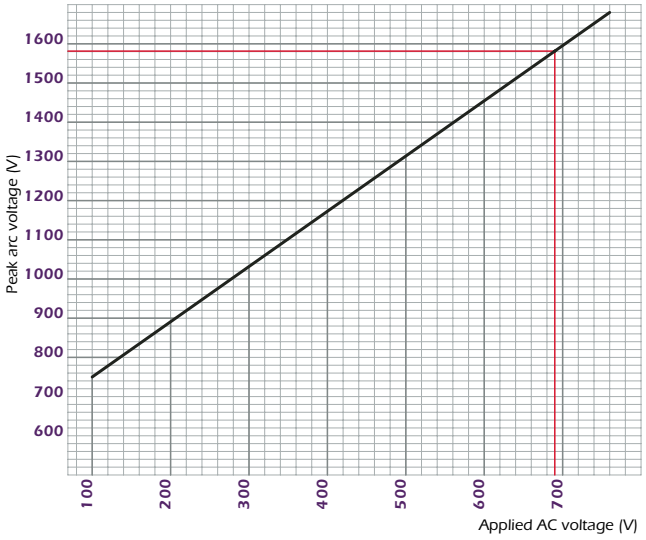
Times/Current Characteristics size 000-00



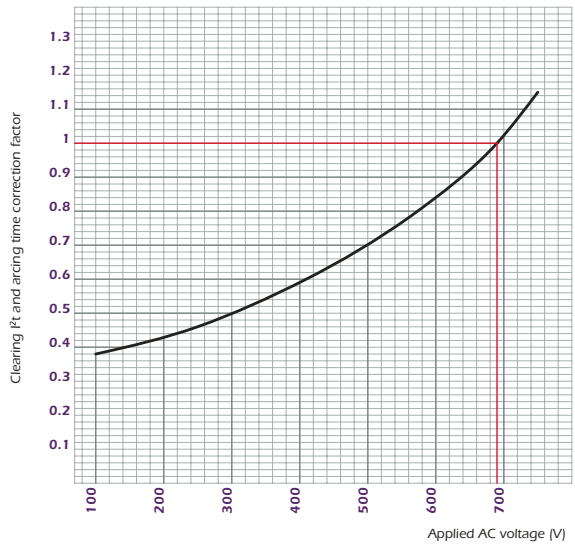
Cut off characteristics - Peak let thru current - size 000-00



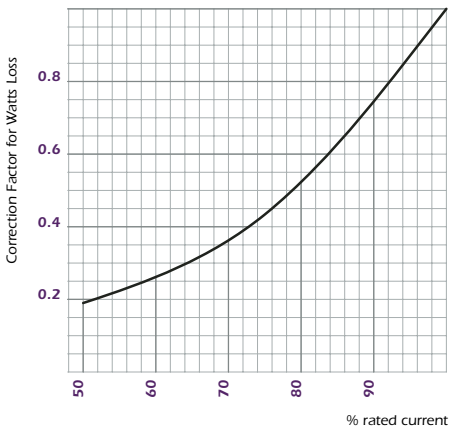
Peak arc voltage vs applied AC voltage size 000



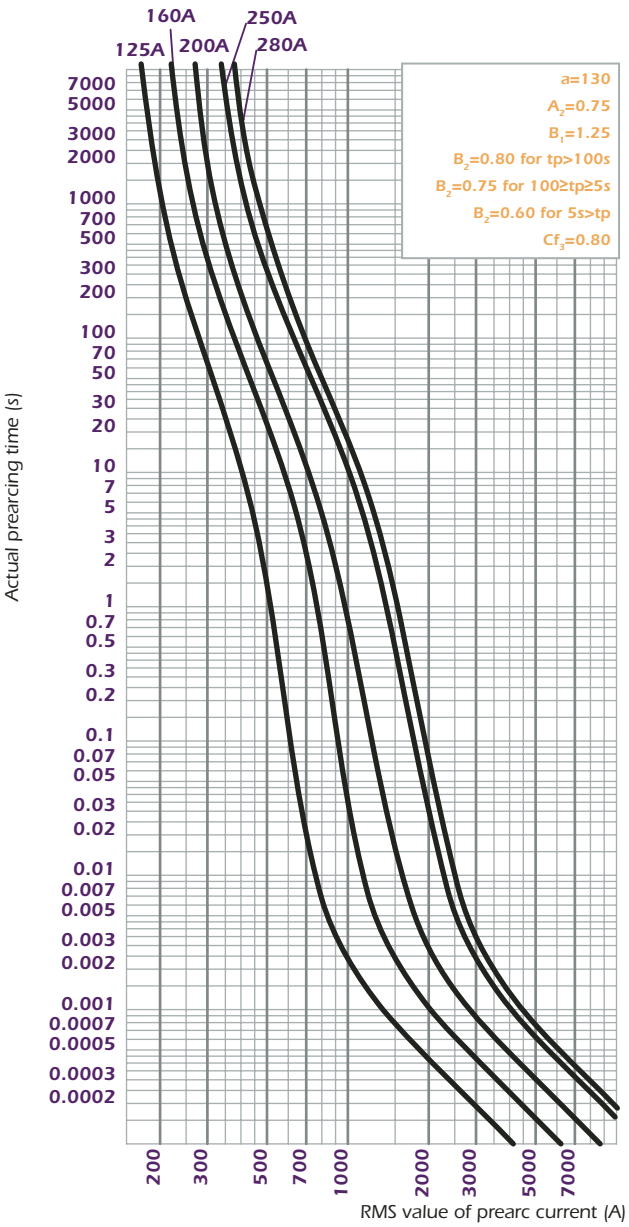
Clearing I²t and arcing time correction factor vs Applied AC voltage size 000-00



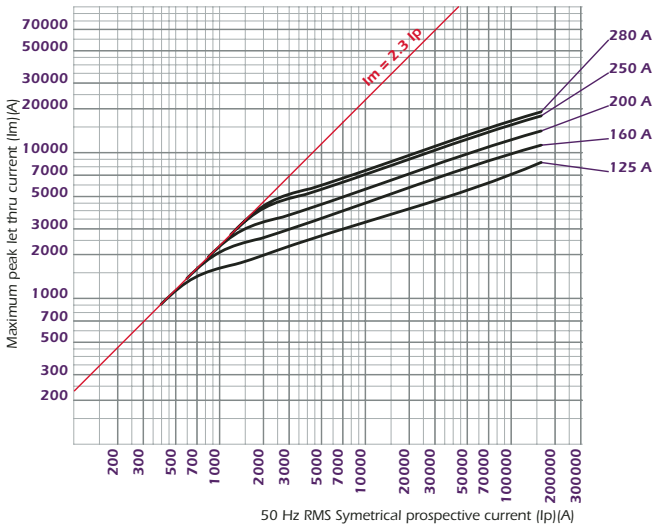
Watts loss vs % rated current size 000-00



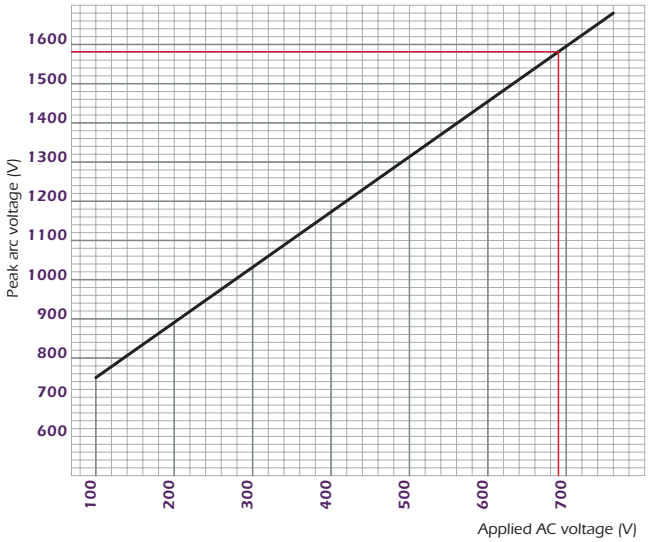
Times/Current Characteristics size 1



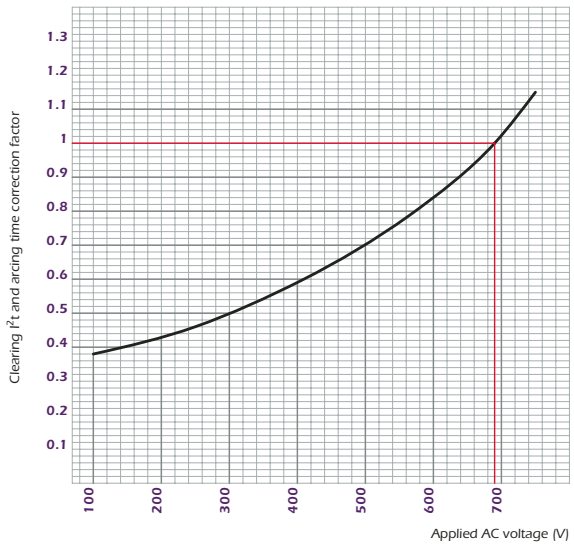
Cut off characteristics - Peak let thru current - size 1



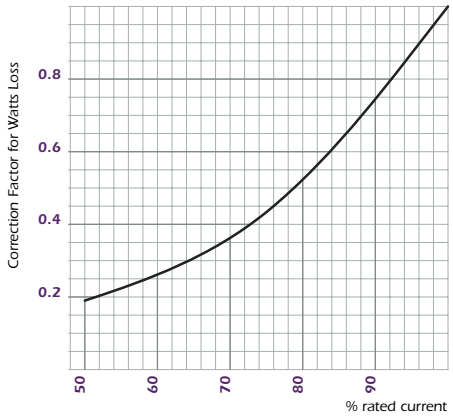
Peak arc voltage vs applied AC voltage size 1



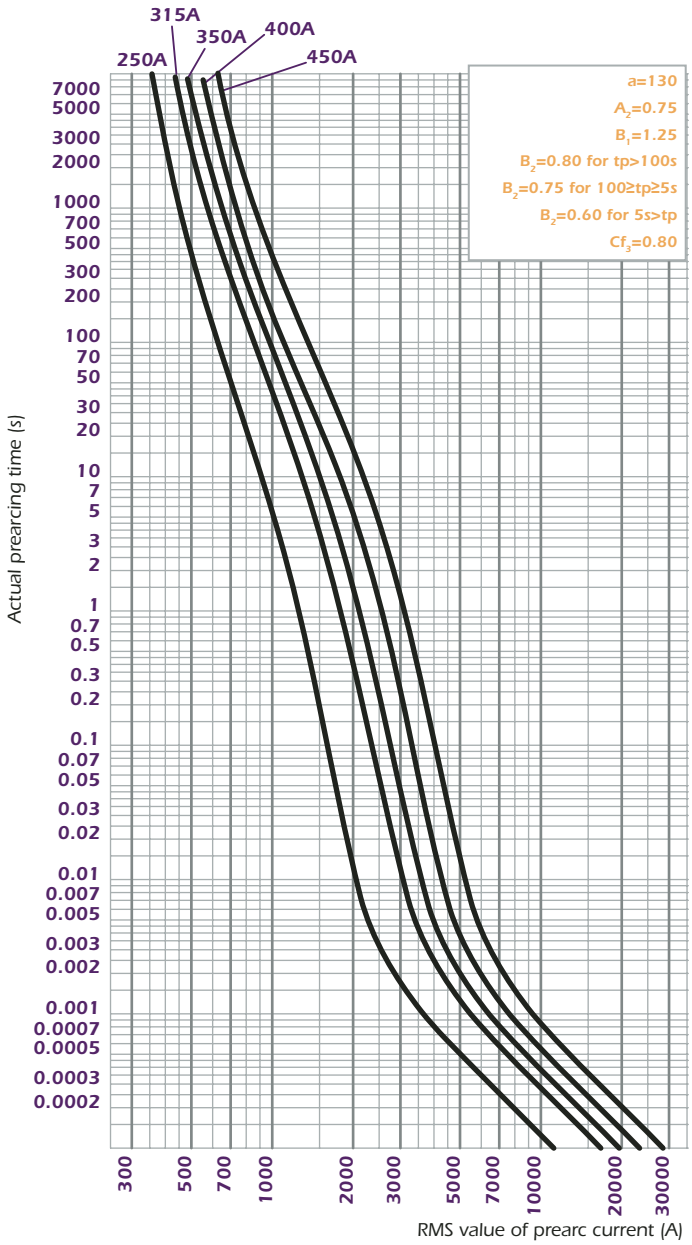
Clearing I²t and arcing time correction factor vs Applied AC voltage size 1



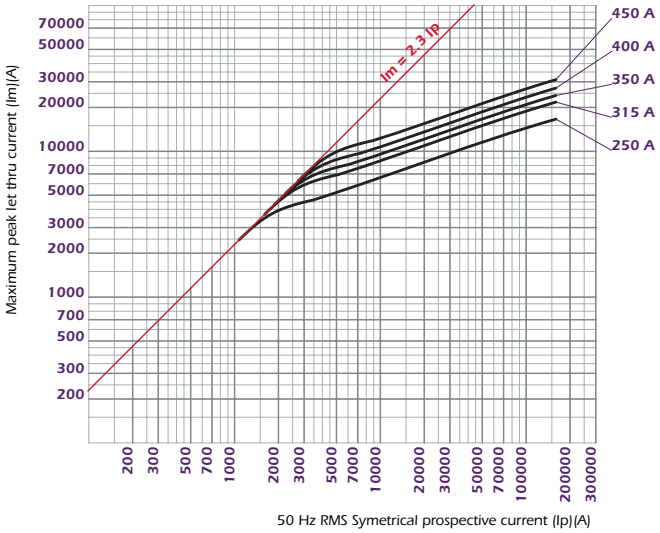
Watts loss vs % rated current size 1



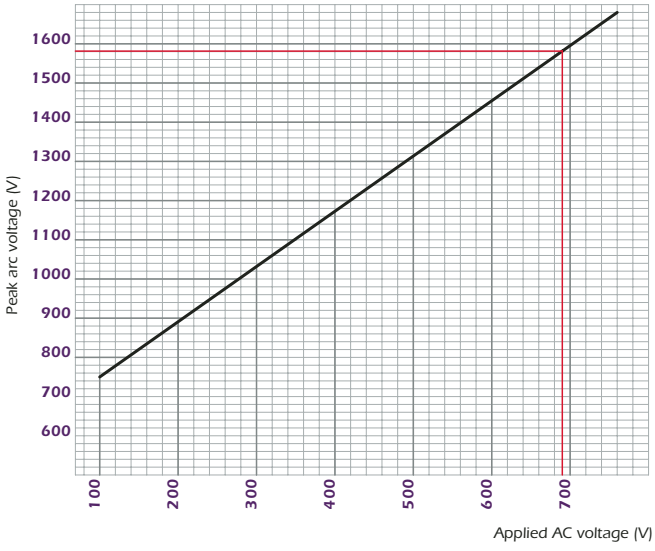
Times/Current Characteristics size 2



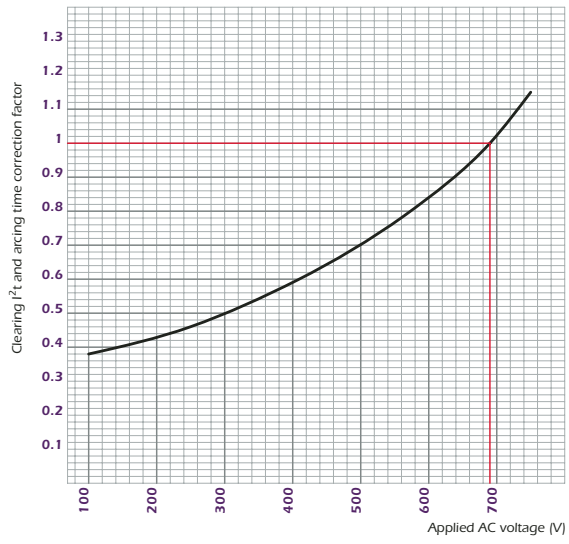
Cut off characteristics - Peak let thru current - size 2



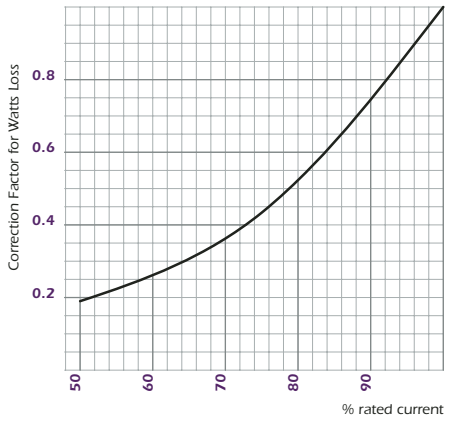
Peak arc voltage vs applied AC voltage size 2



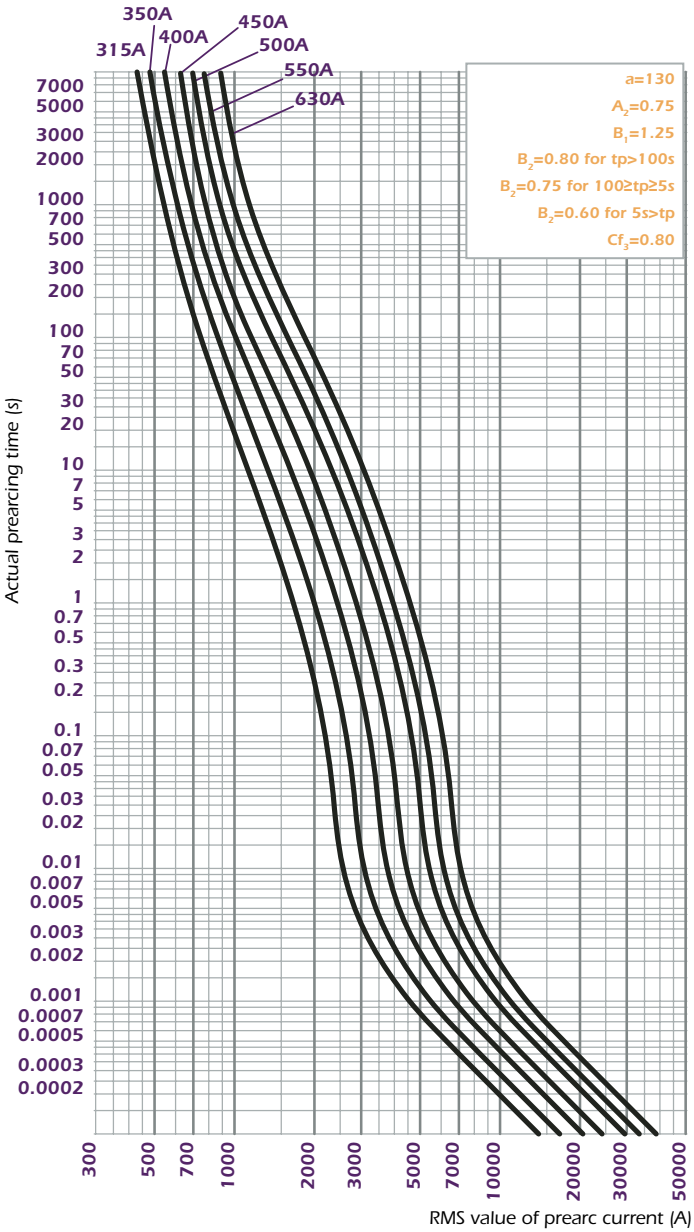
Clearing I²t and arcing time correction factor vs Applied AC voltage size 2



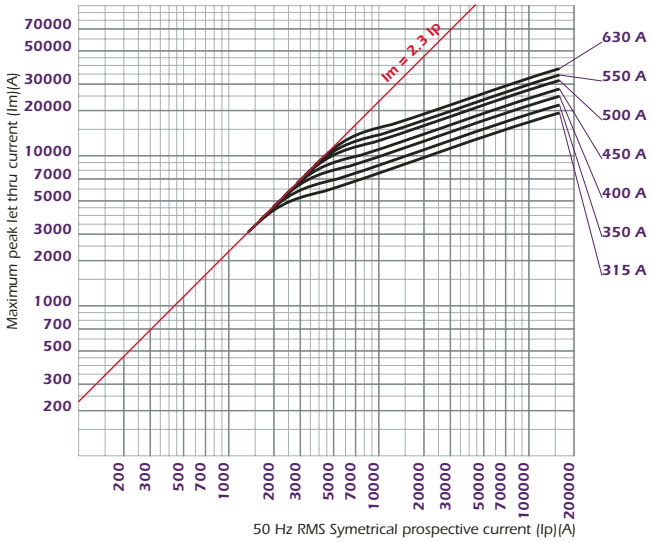
Watts loss vs % rated current size 2



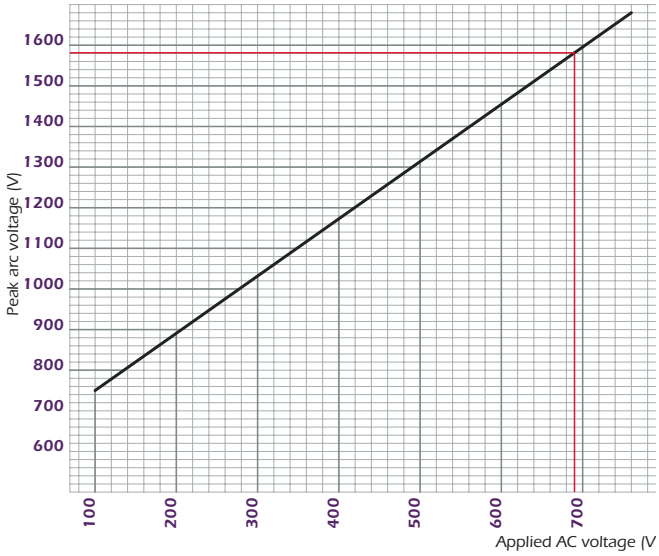
Times/Current Characteristics size 3



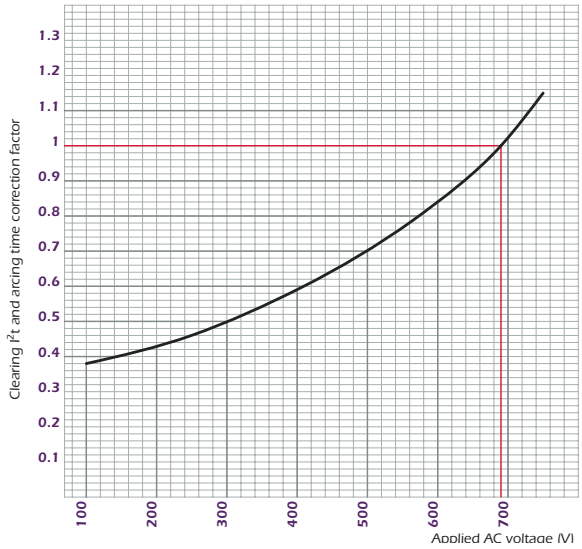
Cut off characteristics - Peak let thru current - size 3



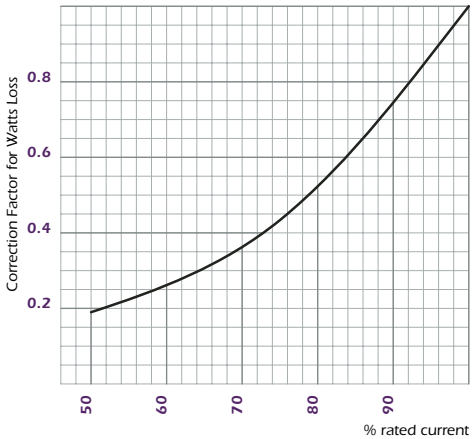
Peak arc voltage vs applied AC voltage size 3



Clearing I²t and arcing time correction factor vs Applied AC voltage size 3



Watts loss vs % rated current size 3



Fuse holders and switch-disconnectors



Fuse holder unprotect



Fuse holder finger safe





Switch Disconnector



Fuse switch Disconnector fast handle

Type	Characteristics	Poles	Size 000/00	Size 1	Size 2	Size 3	Mounting
Fuse holder	Unprotected [4]	1	**R216192**	**A223008**	E211075	X213644	DIN Rail
Fuse holder	screw connection	2	F218758	G200796	V211595	B214154	DIN Rail
Fuse holder	for hole and bar terminals	3	**V229121**	**Y201340**	D212109	F214664	DIN Rail
Fuse holder	for 35mm Din rail	4	Z223007	H201855	R212627	K215174	DIN Rail
Fuse holder	Unprotected [4]	1	**F215170**	**E218757**	F201853	W213643	Screw
Fuse holder	screw connection	2	A217212	F222484	S211593	D214662	Screw
Fuse holder	for holes or bar terminals	3	**W229122**	**Y223006**	B212107	H215172	Screw
Fuse holder	for panels	4	S219275	X201339	C213143	L215681	Screw
Fuse holder	Finger Safe Protected	1	S218240	P226724	R226726	T226728	DIN Rail
Fuse holder	for DIN rail	3	S229119	Q226725	S226727	V226729	DIN Rail
		3	T229120				Screw
Switch disconnector Linocur	2xM8	1	N216626				
Switch disconnector Linocur	S/BL	1	N222882				
Switch disconnector Linocur	Horizontal 2xM8	2	B218685				
Switch disconnector Linocur	S/BL	2	C201781				
Switch disconnector Linocur	2xM8	3	Y212035				
Switch disconnector Linocur	S/BL	3	W213574				
Multibloc	clamp connection	3	J229295				Screw
Multibloc	screw connection	3	H229294	S229878			Screw
Fused switch discon. front handle	ITC 63 III complete[5]	3	M235347				
Fused switch discon. front handle	ITC 160 III complete[5]	3	T235353				
Fused switch discon. front handle	ITC 250 III complete[5]	3		A235359 + Y210770[3]			
Fused switch discon. front handle	ITC 400 III complete[5]	3			N235371 + Y210770[3]		
Fused switch discon. front handle	ITC 630 III complete[5]	3				B235383 + Y210770[3]	
Fused switch discon. front handle	ITC 800 III complete[5]	3				W229674 + Y210770[3]	

(3) Necessary heighten for the use of microswitch (MSNHB2 or MSNHB6)
(4) Unprotected against accidental contact-not finger safe
(5) Finger safe (IP20)

"Warning : for all holders, please check maximum fuse and fuse holder operating limit".

Derating

size 00 Max I_{RMS} 110A for the 125A model
size 00 Max I_{RMS} 140A for the 160A model
size 000 Max I_{RMS} 95A for the 100A model

no derating for other models

Fuse monitoring

The most suitable and reliable solution for monitoring the Protistor® NH gS fuses.

No need of microswitch !!

Snap-on mounting on ITC switch disconnectors and screw mounting on NH bases

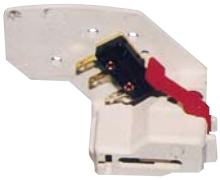
For technical data, refer to GP009 Fuse Monitoring brochure.



on NH base



on ITC 250



Microswitches

Main Characteristics

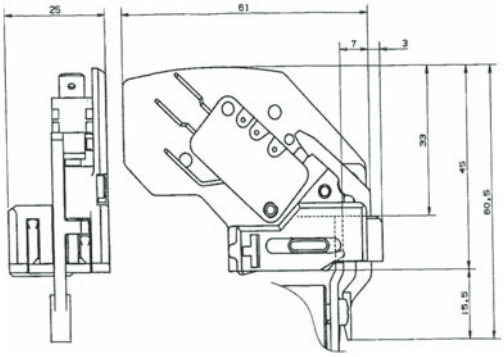
Catalog Number	AC Insulation voltage rating (***)	Positive operating voltage/ current	Current rating (A)	Current	Interrupting rating Non inductive circuit Inductive circuit : L/R = 25ms 30V	110V	250V	30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/ 50 µs (**)	Fire class according to UL 94
MSNHB2	1000 V	20V 100 mA	5A	50Hz DC	4A -	4A -	5A -	- -	5A 2A	5A 0,4A	12 kV 8 kV	16 kV 13 kV	V0
MSNHB6	1000 V	20V 50 mA	10A	50/60Hz DC	10A 8A	10A 0,4A	10A 0,2A	10A 4A	10A 0,2A	10A 0,1A	8 kV	10 kV	V0

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)

** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1

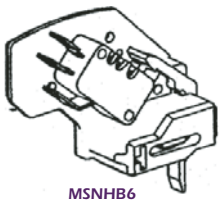
*** Between power circuit and microswitch terminals

Catalog Number	Ref. Number	Weight	Pack.
MSNHB2	Consult us	30	3
MSNHB6	Consult us	26	3



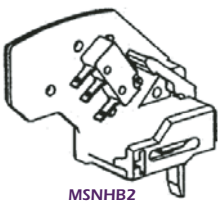
Automatically resettable, these microswitch systems indicate fuse presence (PRES) and proper mounting.

In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)



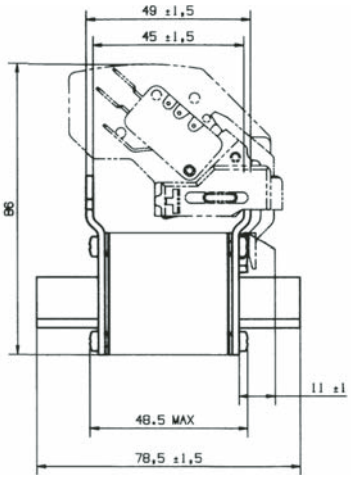
MSNHB6

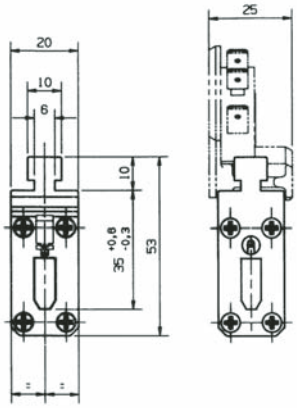
6.3 mm clips



MSNHB2

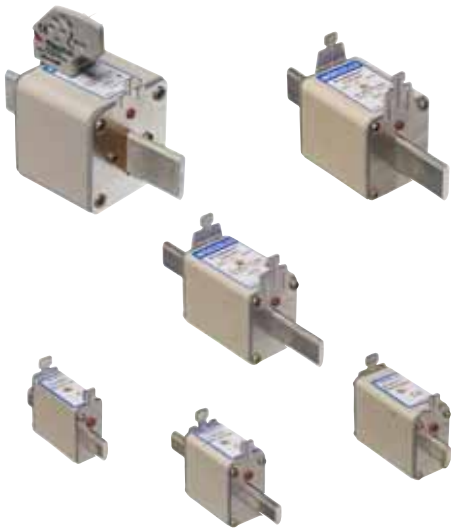
2.8 mm clips





Protistor® Square-body Fuses
NH Plain Blades - 690 VAC
aR - 690 VAC sizes 000 to 3

Ferraz Shawmut PSC-URD 690 VAC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment. This range is a fast acting, engineered to provide state of the art protection for power semiconductors such as diodes, thyristors.
These square body fuse-links are available in various body sizes with a broad range of ampere ratings allowing the greatest flexibility in equipment design.
They have pure silver fuse elements embedded in solidified sand which provides optimized I^2t and high breaking capacity.
All contact surfaces are plated and all hardware non-magnetic.
All fuses are standard with a low voltage blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly on to the fuse in service.



Features/Benefits

Broad range of ampere ratings in each body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications



Beige melted



Red non melted

Ratings

AC: up to 1000 A
500 - 690 VAC
80-170 kA IR
DC: Consult Factory

Approvals

AC: Tested to IEC 269.4

Features

- Ultra fast acting
- Highly current limiting.
- High breaking capacities
- Very low I^2t
- Worldwide mounting acceptance.
- Superior cycling ability.
- High widstanding in rush current and overloads

Applications

Protection of rectifiers, inverters, static switch, AC & DC drives and UPS systems.

Inovations

- Double indicator(Visual and mechanical).
- Largest range of the market
- Connexion improvement between trip indicator - Micro switch
- Cd / Pb free
- Low voltage indicator - 50V

Protistor® Square-body Fuses
NH Plain Blades - 690 VAC
aR - 690 VAC sizes 000 to 3

Voltage	Size	Type	Rating In (A)	Pre-Arcing I²t @ 1ms (A²s)	Total I²t @ 690 V (A²s)	Pn: Power losses (W) PV 43620 0,8In	Breaking capacities @ Un kA
690 V CEI 700V UL	000	URD	16	10	48	1,0	80
		URD	20	15	90	1,5	
		URD	25	22	130	2,0	
		URD	32	45	270	2,5	
		URD	40	69	400	4,0	
		URD	50	107	630	5,0	
		URD	63	220	1 300	6,0	
		URD	80	350	2 000	8,0	
		URD	100	720	4 300	9,5	
		URD	125	1 400	8 200	10,5	
		URD	160	2 100	12 200	15,0	
		URD	200	3 900	22 700	18,0	
		URD	250	7 600	44 400	22,0	
500V CEI 550V UL		URD	315	15 400	90 700	30,0	
690 V CEI 700V UL	00	URD	20	15	90	1,5	170
		URD	25	22	130	2,0	
		URD	32	45	270	2,5	
		URD	40	69	400	4,0	
		URD	50	110	630	5,0	
		URD	63	220	1 300	6,0	
		URD	80	350	2 000	8,0	
		URD	100	720	4 300	8,5	
		URD	125	1 390	8 200	10,0	
		URD	160	2 100	12 200	14,0	
		URD	200	3 900	22 700	17,0	
		URD	250	7 600	44 400	20,0	
690 V CEI 700V UL	0	URD	315	15 400	90 700	29,0	170
		URD	32	32	170	9,5	
		URD	40	53	280	10,0	
		URD	50	87	470	10,5	
		URD	63	130	700	11,5	
		URD	80	180	970	12,5	
		URD	100	390	2 080	15,0	
		URD	125	720	3 890	18,0	
		URD	160	1 550	8 320	22,0	
		URD	200	2 950	15 900	27,0	
		URD	250	5 560	29 900	33,0	
		URD	315	11 600	62 300	40,0	

Time/current characteristics
Cut off characteristics
Total I²t and total operating time
Other curves
Fuse holder derating

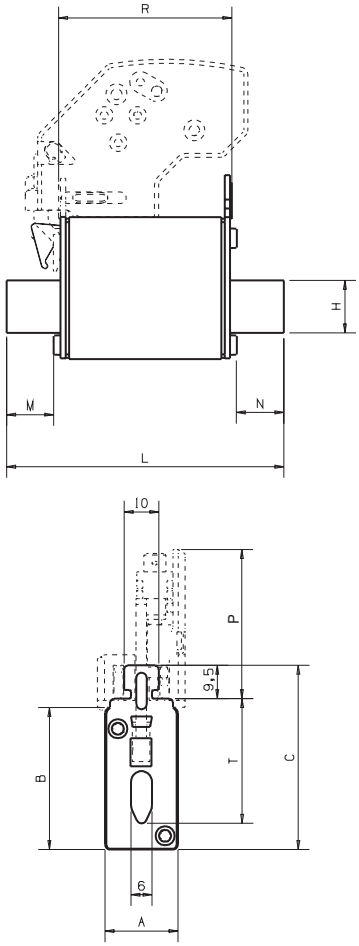
} *See following pages*

Protistor® Square-body Fuses
NH Plain Blades - 690 VAC
aR - 690 VAC sizes 000 to 3

Voltage	Size	Type	Rating In (A)	Pre-Arcing I²t @ 1ms (A²s)	Total I²t @ 690 V (A²s)	Pn: Power losses (W) PV 43620 0,8In	Breaking capacities @ Un kA
690 V CEI 700V UL	1	URD	63	130	700	18	170
		URD	80	220	1 170	21,5	
		URD	100	290	1 570	23,0	
		URD	125	620	3 320	26,0	
		URD	160	1 170	6 270	29,0	
		URD	200	2 470	13 300	33,0	
		URD	250	4 670	25 100	37,0	
		URD	315	9 570	51 400	42,0	
		URD	350	13 400	72 300	44,0	
		URD	400	19 500	105 000	48,0	
690 V CEI 700V UL	2	URD	160	960	5 180	38	170
		URD	200	1 710	9 220	42	
		URD	250	3 480	18 700	46,5	
		URD	315	6 860	36 900	54,0	
		URD	350	9 570	51 400	58,0	
		URD	400	13 400	72 300	62,5	
		URD	450	21 000	113 000	69,0	
		URD	500	27 400	147 000	73,0	
		URD	550	38 300	206 000	78,0	
		URD	630	58 700	315 000	85,0	
		URD	700	78 100	420 000	87,0	
690 V CEI 700V UL	3	URD	315	5 251	28 200	57,0	170
		URD	350	7 562	40 600	58,0	
		URD	400	10 500	56 500	65,5	
		URD	450	15 700	84 300	70,0	
		URD	500	22 200	119 000	75,0	
		URD	550	30 200	163 000	80,0	
		URD	630	42 000	226 000	89,0	
		URD	700	61 700	332 000	100,0	
		URD	800	88 900	478 000	112,0	
		URD	900	123 900	666 000	125,0	
		URD	1000	178 400	959 000	140,0	

Protistor® Square-body Fuses
NH Plain Blades - 690 VAC
aR - 690 VAC sizes 000 to 3

Size	Designation	Reference Number	Catalog Number	Weight	Pack. (g)
000	6,9 URD 000 PV 0016	P320035	NH000UD 69V 16PV	135	3
	6,9 URD 000 PV 0020	R320037	NH000UD 69V 20PV		
	6,9 URD 000 PV 0025	T320039	NH000UD 69V 25PV		
	6,9 URD 000 PV 0032	Y320043	NH000UD 69V 32PV		
	6,9 URD 000 PV 0040	C320047	NH000UD 69V 40PV		
	6,9 URD 000 PV 0050	G320051	NH000UD 69V 50PV		
	6,9 URD 000 PV 0063	L320055	NH000UD 69V 63PV		
	6,9 URD 000 PV 0080	Q320059	NH000UD 69V 80PV		
	6,9 URD 000 PV 0100	V320063	NH000UD 69V 100PV		
	6,9 URD 000 PV 0125	X320065	NH000UD 69V 125PV		
	6,9 URD 000 PV 0160	B320069	NH000UD 69V 160PV		
	6,9 URD 000 PV 0200	D320071	NH000UD 69V 200PV		
	6,9 URD 000 PV 0250	H320075	NH000UD 69V 250PV		
	5 URD 000 PV 0315	M320079	NH000UD 50V 315PV		
	Neutral	Z218269			10
	Extraction puller	P215592	NH HANDLE		1
00	6,9 URD 00 PV 0020	A320137	NH00UD 69V 20PV	200	3
	6,9 URD 00 PV 0025	C320139	NH00UD 69V 25PV		
	6,9 URD 00 PV 0032	G320143	NH00UD 69V 32PV		
	6,9 URD 00 PV 0040	L320147	NH00UD 69V 40PV		
	6,9 URD 00 PV 0050	Q320151	NH00UD 69V 50PV		
	6,9 URD 00 PV 0063	V320155	NH00UD 69V 63PV		
	6,9 URD 00 PV 0080	Z320159	NH00UD 69V 80PV		
	6,9 URD 00 PV 0100	D320163	NH00UD 69V 100PV		
	6,9 URD 00 PV 0125	F320165	NH00UD 69V 125PV		
	6,9 URD 00 PV 0160	K320169	NH00UD 69V 160PV		
	6,9 URD 00 PV 0200	M320171	NH00UD 69V 200PV		
	6,9 URD 00 PV 0250	R320175	NH00UD 69V 250PV		
	6,9 URD 00 PV 0315	W320179	NH00UD 69V 315PV		
	Neutral	Z218269			10
	Extraction puller	P215592	NH HANDLE		1
0	6,9 URD 0 PV 0032	Q320243	NH0UD 69V 32PV	250	3
	6,9 URD 0 PV 0040	V320247	NH0UD 69V 40PV		
	6,9 URD 0 PV 0050	Z320251	NH0UD 69V 50PV		
	6,9 URD 0 PV 0063	D320255	NH0UD 69V 63PV		
	6,9 URD 0 PV 0080	H320259	NH0UD 69V 80PV		
	6,9 URD 0 PV 0100	M320263	NH0UD 69V 100PV		
	6,9 URD 0 PV 0125	P320265	NH0UD 69V 125PV		
	6,9 URD 0 PV 0160	T320269	NH0UD 69V 160PV		
	6,9 URD 0 PV 0200	W320271	NH0UD 69V 200PV		
	6,9 URD 0 PV 0250	A320275	NH0UD 69V 250PV		
	6,9 URD 0 PV 0315	E320279	NH0UD 69V 315PV		
	Neutral	Z219304			10
	Extraction puller	P215592	NH HANDLE		1



Microswitches

MS 4L 2-5 B6 + PRES	F210156	(6,3mm clips)
MS 4L 2-5 B2 + PRES	G210157	(2.8 mm clips)

Automatically resetable, these microswitch systems indicate fuse presence (PRES) and proper mounting
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)

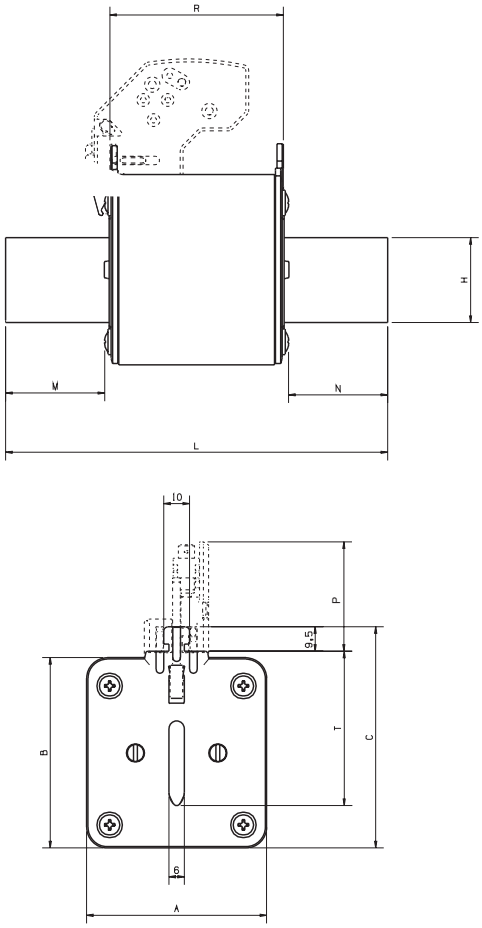
Microswitches supplied seperately

Size	A	B	C	H	L	M	N	P	R	T
000	20,8	40,5	52,5	15	79	13,5	13,5	43,4	49,5	35
	0.82"	1.59"	2.07"	0.59"	3.11"	0.53"	0.53"	1.71"	1.95"	1.38"
00	29,5	47,5	59,5	15	79	13,1	13,1	43,4	50	35
	1.16"	1.87"	2.34"	0.59"	3.11"	0.52"	0.52"	1.71"	1.97"	1.38"
0	29,5	47,5	59,5	15	125	29,1	29,1	43,4	66	35
	1.16"	1.87"	2.34"	0.59"	4.92"	1.15"	1.15"	1.71"	2.60"	1.38"

Fuse holder solution, see Gear and Fuse gear section.

Protistor® Square-body Fuses
NH Plain Blades - 690 VAC
aR - 690 VAC sizes 000 to 3

Size	Designation	Reference Number	Catalog Number	Weight	Pack. (g)
1	6,9 URD 1 PV 0063	M320355	NH1UD 69V 63PV	430	3
	6,9 URD 1 PV 0080	K320399	NH1UD 69V 80PV		
	6,9 URD 1 PV 0100	W320363	NH1UD 69V 100PV		
	6,9 URD 1 PV 0125	Y320365	NH1UD 69V 125PV		
	6,9 URD 1 PV 0160	C320369	NH1UD 69V 160PV		
	6,9 URD 1 PV 0200	E320371	NH1UD 69V 200PV		
	6,9 URD 1 PV 0250	J320375	NH1UD 69V 250PV		
	6,9 URD 1 PV 0315	N320379	NH1UD 69V 315PV		
	6,9 URD 1 PV 0350	P320380	NH1UD 69V 350PV		
	6,9 URD 1 PV 0400	S320383	NH1UD 69V 400PV		
	Neutral	A219834			5
	Extraction puller	P215592	NHHANDLE		1
2	6,9 URD 2 PV 0160	L320469	NH2UD 69V 160PV	600	3
	6,9 URD 2 PV 0200	N320471	NH2UD 69V 200PV		
	6,9 URD 2 PV 0250	S320475	NH2UD 69V 250PV		
	6,9 URD 2 PV 0315	X320479	NH2UD 69V 315PV		
	6,9 URD 2 PV 0350	Y320480	NH2UD 69V 350PV		
	6,9 URD 2 PV 0400	B320483	NH2UD 69V 400PV		
	6,9 URD 2 PV 0450	D320485	NH2UD 69V 450PV		
	6,9 URD 2 PV 0500	F320487	NH2UD 69V 500PV		
	6,9 URD 2 PV 0550	G320488	NH2UD 69V 550PV		
	6,9 URD 2 PV 0630	H320489	NH2UD 69V 630PV		
	6,9 URD 2 PV 0700	J320490	NH2UD 69V 700PV		
	Neutral	N222514			5
	Extraction puller	P215592	NHHANDLE		1
3	6,9 URD 3 PV 0315	F320579	NH3UD 69V 315PV	750	3
	6,9 URD 3 PV 0350	G320580	NH3UD 69V 350PV		
	6,9 URD 3 PV 0400	K320583	NH3UD 69V 400PV		
	6,9 URD 3 PV 0450	M320585	NH3UD 69V 450PV		
	6,9 URD 3 PV 0500	P320587	NH3UD 69V 500PV		
	6,9 URD 3 PV 0550	Q320588	NH3UD 69V 550PV		
	6,9 URD 3 PV 0630	R320589	NH3UD 69V 630PV		
	6,9 URD 3 PV 0700	S320590	NH3UD 69V 700PV		
	6,9 URD 3 PV 0800	T320591	NH3UD 69V 800PV		
	6,9 URD 3 PV 0900	V320592	NH3UD 69V 900PV		
	6,9 URD 3 PV 1000	W320593	NH3UD 69V 1000PV		
	Neutral	E223035			51
	Extraction puller	P215592	NHHANDLE		



Microswitches

MS 4L 2-5 B6 + PRES	F210156	(6,3mm clips)
MS 4L 2-5 B2 + PRES	G210157	(2.8 mm clips)

Automatically resetable, these microswitch systems indicate fuse presence (PRES) and proper mounting
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)

Microswitches supplied seperately

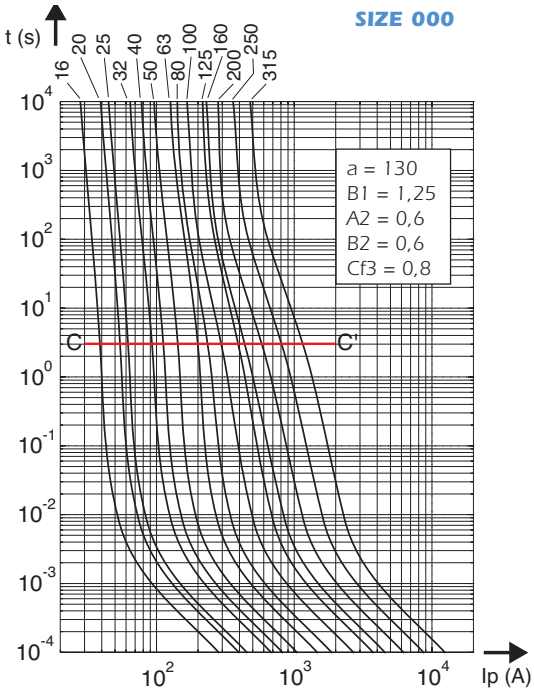
Size	A	B	C	H	L	M	N	P	R	T
1	39,5	52,5	64,5	20	135	32,1	32,1	43,4	68	40
	1.56"	2.07"	2.54"	0.79"	5.32"	1.26"	1.26"	1.71"	2.68"	1.57"
2	51	60	72	26	150	38,85	38,85	43,4	68	48
	2.01"	2.36"	2.85"	1.02"	5.91"	1.53"	1.53"	1.71"	2.68"	1.89"
3	70	74	86	33	150	38,85	38,85	43,4	68	60
	2.76"	2.91"	3.39"	1.30"	5.91"	1.53"	1.53"	1.71"	2.68"	2.36"

Fuse holder solution, see Gear and Fuse gear section.

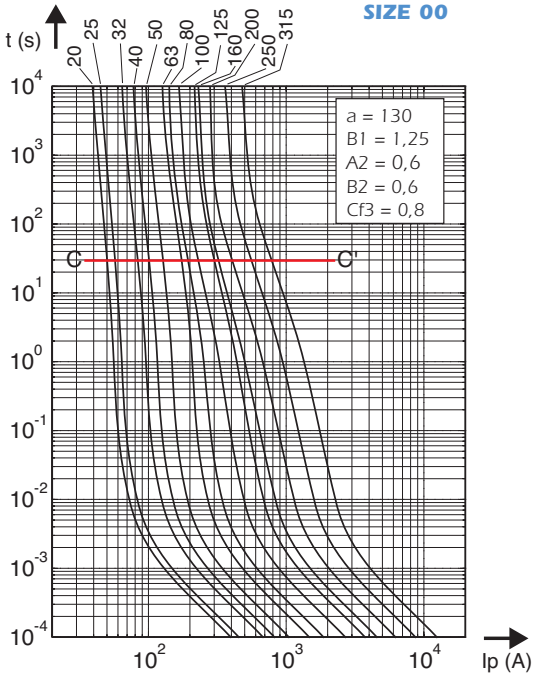
Protistor® Square-body Fuses
NH Plain Blades - 690 VAC
aR - 690 VAC sizes 000 to 3

Times/Current Characteristics

SIZE 000

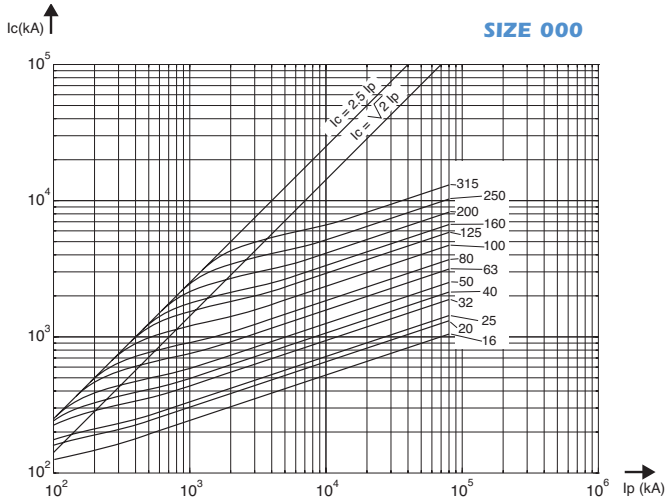


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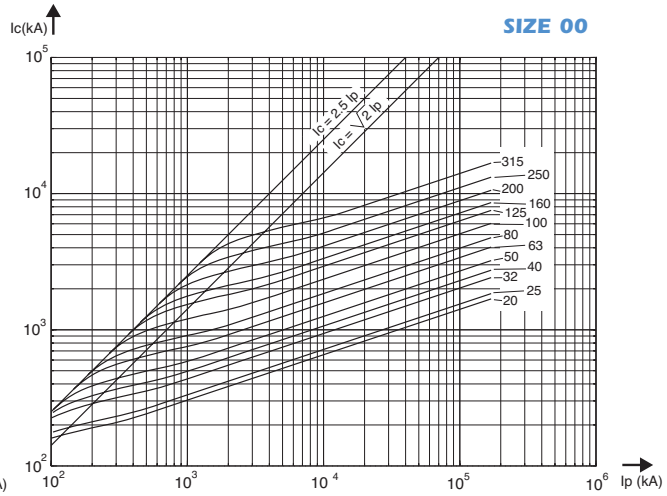


Cut off characteristics - Peak let thru current

SIZE 000

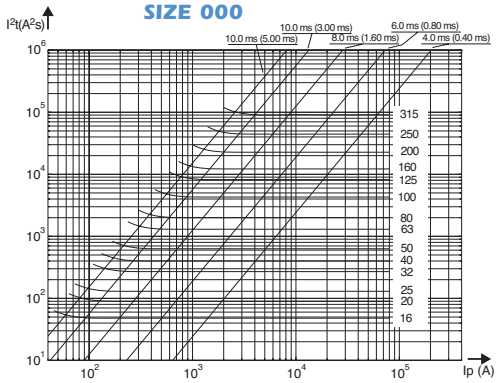


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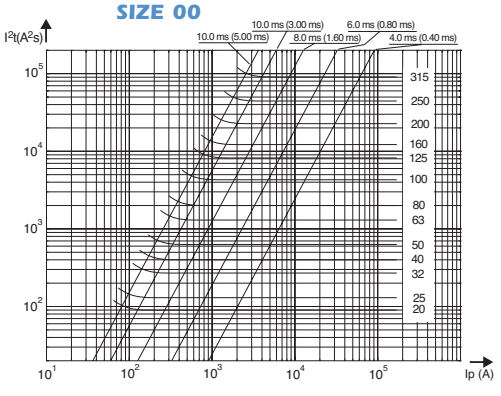
Total I²t and total operating time @ 690 V

SIZE 000



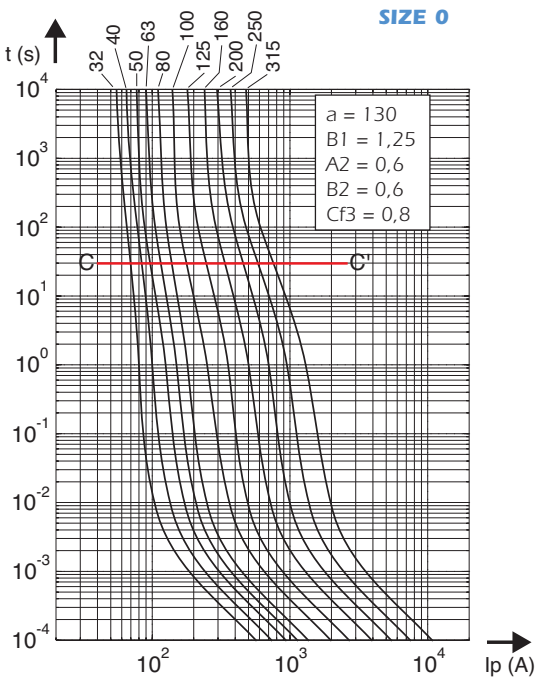
Value between parentheses pertain to prearcing I²t

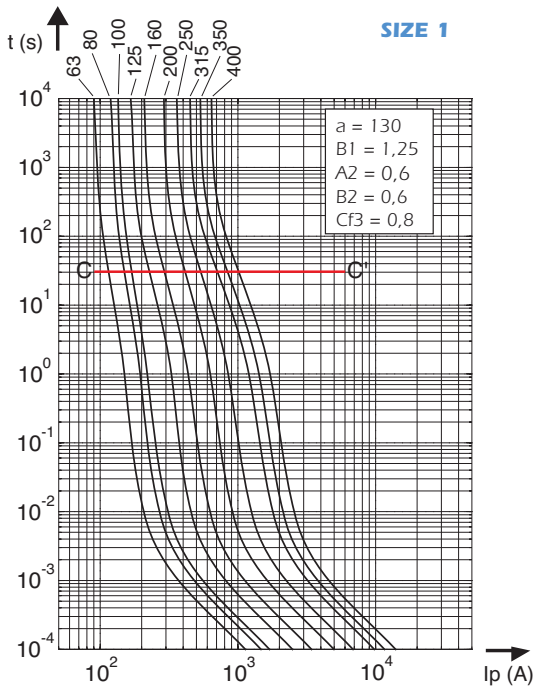
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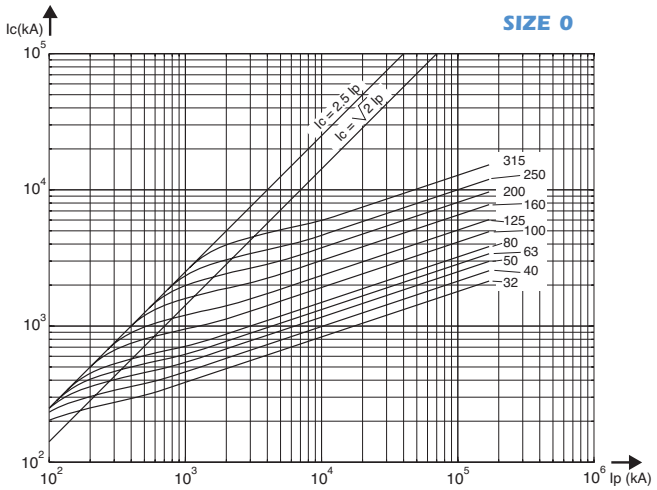
Protistor® Square-body Fuses
NH Plain Blades - 690 VAC
aR - 690 VAC sizes 000 to 3

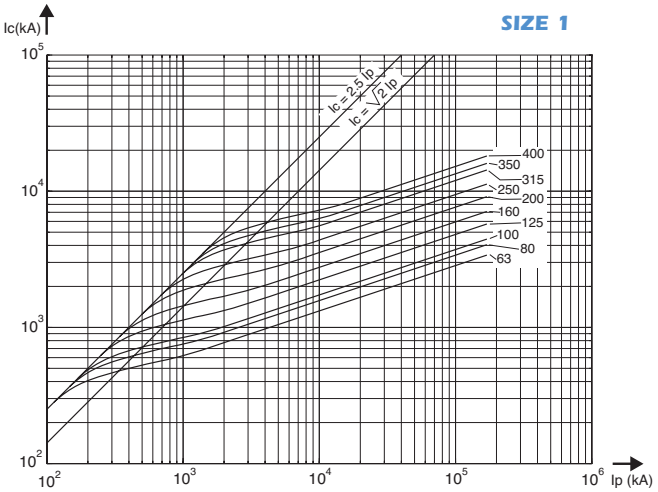
Times/Current Characteristics



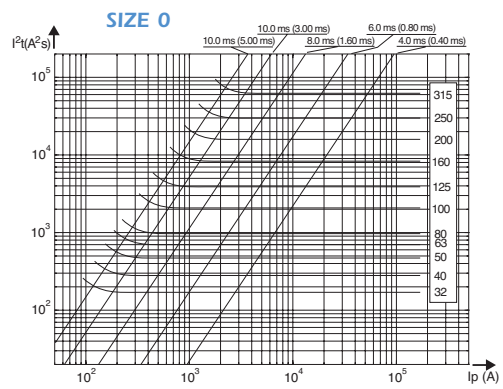


Cut off characteristics - Peak let thru current

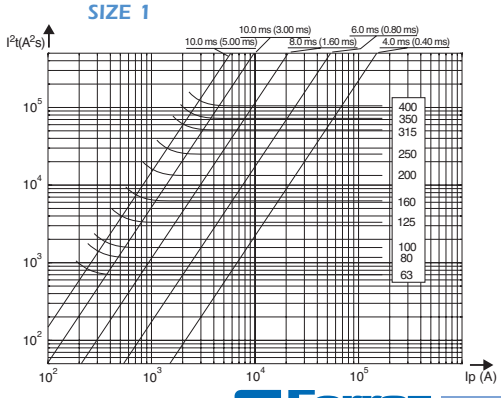




Total I²t and total operating time @ 690 V

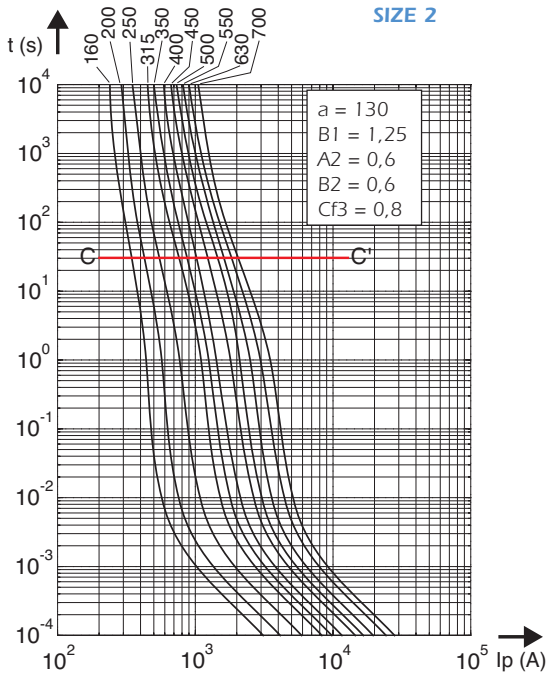


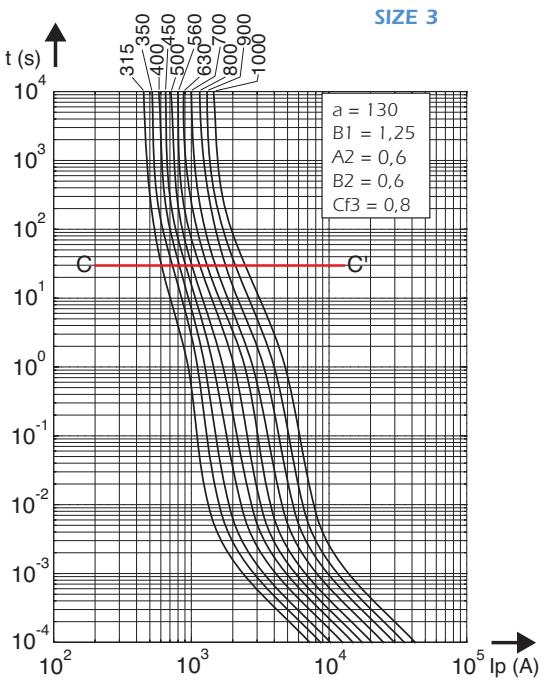
Value between parentheses pertain to prearcing I²t



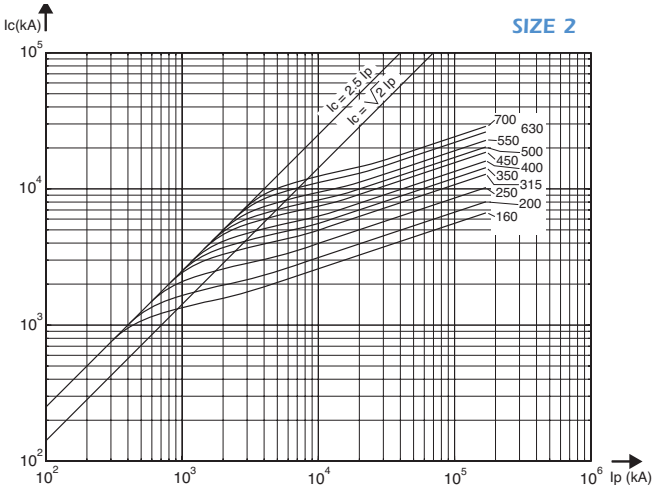
Protistor® Square-body Fuses
NH Plain Blades - 690 VAC
aR - 690 VAC sizes 000 to 3

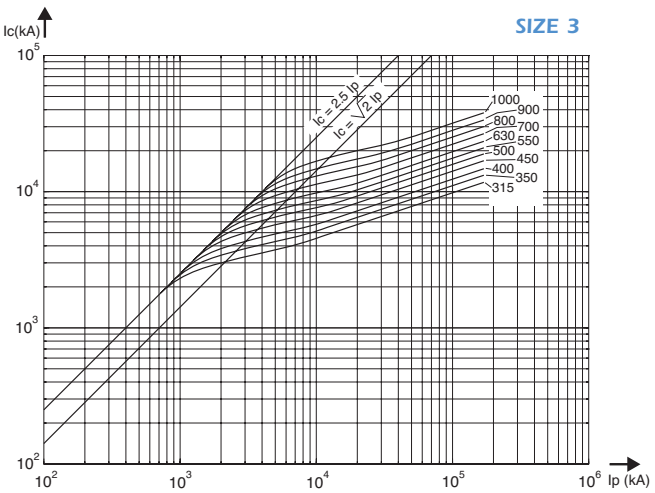
Times/Current Characteristics



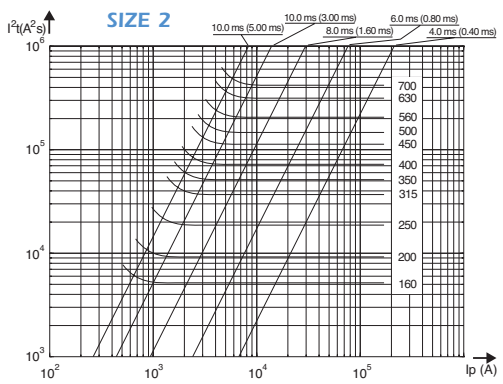


Cut off characteristics - Peak let thru current

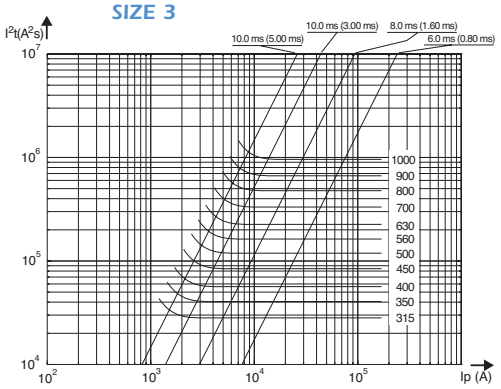




Total I²t and total operating time @ 690 V

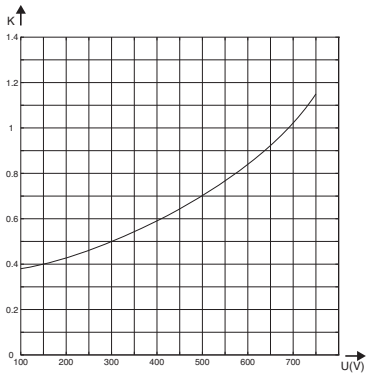


Value between parentheses pertain to prearcing I²t

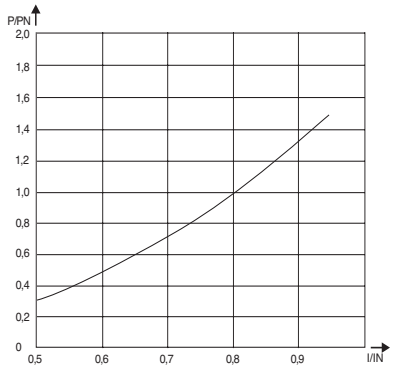


Protistor® Square-body Fuses
NH Plain Blades - 690 VAC
aR - 690 VAC sizes 000 to 3

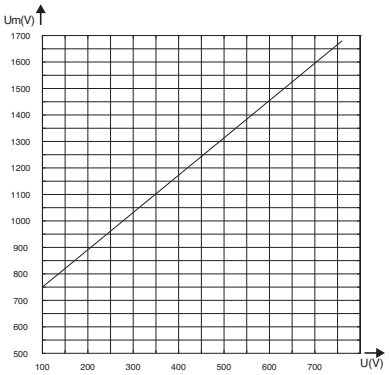
k=f(U)
Multiplier coefficient to calculate total I²t and total operating time



P/PN
Multiplier coefficient to calculate the power losses at various currents



Peak arc voltage



Derating in fuse holders

- **1**- Derating for fuse holder improtected
- **2**- Derating for finger safe fuseholders and switch disconnector Linocur
- **3**- Derating for fused switch-disconnectors ITC
- **4**- Derating for fused switch-disconnectors ITC with finger safe protection

	In	1	2	3	4
Size 000	16	1,00	1,00	1,00	1,00
	20	1,00	1,00	1,00	1,00
	25	1,00	1,00	1,00	1,00
	32	1,00	1,00	1,00	1,00
	40	1,00	1,00	1,00	1,00
	50	1,00	1,00	0,90	0,90
	63	1,00	1,00	0,90	0,90
	80	1,00	0,90	0,75	0,75
	100	1,00	0,90	0,75	0,75
	125	1,00	0,85	0,70	0,70
	160	0,90	0,75	0,60	0,60
	200	0,85	0,70	0,55	0,55
	250	0,75	0,60	0,50	0,50
	315	0,70	0,55	0,45	0,45
Size 00	20	1,00	1,00	1,00	1,00
	25	1,00	1,00	1,00	1,00
	32	1,00	1,00	1,00	1,00
	40	1,00	1,00	1,00	1,00
	50	1,00	1,00	1,00	1,00
	63	1,00	1,00	1,00	1,00
	80	1,00	0,95	0,95	0,95
	100	1,00	0,90	0,90	0,90
	125	1,00	0,85	0,85	0,85
	160	0,90	0,75	0,75	0,75
	200	0,85	0,70	0,70	0,70
	250	0,80	0,65	0,65	0,65
	315	0,70	0,55	0,55	0,55
Size 0	32	1,00			
	40	1,00			
	50	1,00			
	63	1,00			
	80	0,95			
	100	0,95			
	125	0,85			
	160	0,85			
	200	0,80			
	250	0,75			
	315	0,65			

	In	1	2	3	4
Size 1	63	1,00	0,95	1,00	1,00
	80	0,95	0,85	0,95	0,90
	100	0,85	0,75	0,85	0,80
	125	0,85	0,75	0,85	0,80
	160	0,80	0,70	0,80	0,75
	200	0,80	0,70	0,80	0,70
	250	0,75	0,70	0,75	0,70
	315	0,75	0,65	0,75	0,70
	350	0,70	0,65	0,70	0,65
	400	0,65	0,60	0,65	0,60
Size 2	160	0,90	0,80	0,90	0,85
	200	0,85	0,75	0,85	0,80
	250	0,85	0,70	0,80	0,75
	315	0,75	0,65	0,70	0,65
	350	0,70	0,65	0,70	0,65
	400	0,70	0,60	0,70	0,60
	450	0,70	0,60	0,65	0,60
	500	0,70	0,60	0,65	0,60
	550	0,65	0,60	0,65	0,60
	630	0,65	0,55	0,65	0,60
	700	0,60	0,55	0,60	0,55
Size 3	315	0,85	0,75	0,80	0,75
	350	0,85	0,75	0,80	0,75
	400	0,80	0,70	0,75	0,70
	450	0,80	0,70	0,75	0,70
	500	0,75	0,65	0,75	0,70
	550	0,75	0,65	0,75	0,70
	630	0,70	0,60	0,70	0,65
	700	0,70	0,60	0,65	0,60
	800	0,65	0,55	0,60	0,55
	900	0,60	0,50	0,60	0,55
	1000	0,60	0,50	0,55	0,50

Protistor® Square-body Fuses
NH Plain Blades - 690 VAC
aR - 690 VAC sizes 000 to 3

Fuse holders and switch-disconnector



Fuse holder unprotect



Fuse holder finger safe





Switch Disconnector



Fuse switch Disconnector fast handle

Type	Characteristics	Poles	Size 000/00	Size 0	Sie 1	Size 2	Size 3
Fuse holder	Unprotected (4) screw connection for hole and bar terminals for 35mm Din rail	1	R216192	T218241	A223008	E211075	X213644
		2	F218758	G218759	G200796	V211595	B214154
		3	V219277	W219278	Y201340	D212109	F214664
		4	Z223007	H222486	H201855	R212627	K215174
	Unprotected (4) screw connection for holes or bar terminals for panels	1	F215170	N216695	E218757	F201853	W213643
		2	A217212	B217213	F222484	S211593	D214662
		3	F217723	G217724	Y223006	B212107	H215172
		4	S219275	R218239	X201339	C213143	L215681
	Finger Safe Protected screw connection for hole and bar terminals for DIN rail	1	S218240	G226717	P226724	R226726	T226728
		3	G222485	J226719A	Q226725	S226727	V226729
Switch-disconnector	Horizontal Linocur AC23	1	N216626 N222882				
		2	B218685 C201781				
		3	Y212035 W213574				
Fused switch-disconnector front handle	ITCP 160 III(4)	3	F210409				
	ITC 63 III complete (5)	3	G210824				
	ITC 160 III complete (5)	3	K227824				
	ITC 250 III complete (5)	3			N210830 + Y210770 (3)		
	ITC 400 III complete(5)	3				Q210832 + Y210770 (3)	
	ITC 630 III complete(5)	3					P210831 + Y210770 (3)
	ITC 800 III complete(5)	3					W229674 + Y210770 (3)

(1) Impossible to use microswitch
(2) The axis of operation must be fragmented if the heighten (Y210770A) is not used - Internal or external control.
(3) Necessary heighten for the use of microswitch (F210156C or G210157C)
(4) Unprotected against accidental contact-not finger safe
(5) Finger safe
*"**Warning** : for all holders, please check maximum fuse and fuse holder operating limit".*

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
Microswitches for PSC sizes 000/00 for NH

MICROSWITCH SYSTEMS ADAPTED TO THE FOLLOWING FUSES:

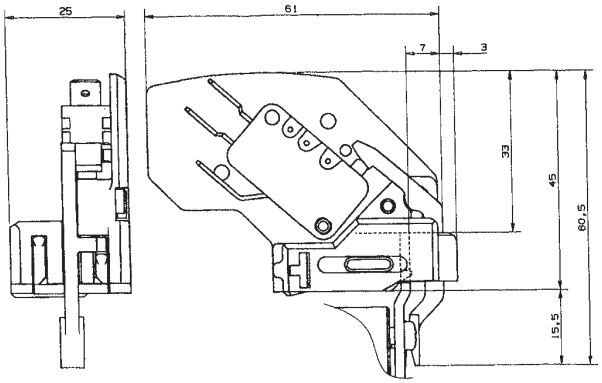
- PSC sizes 000/00 (brackets) DIN43653
- NH Fuses (plain blades) see details in "General Purpose IEC Fuses" section
- NH plain blades 690 VAC Protistor square-body Fuses

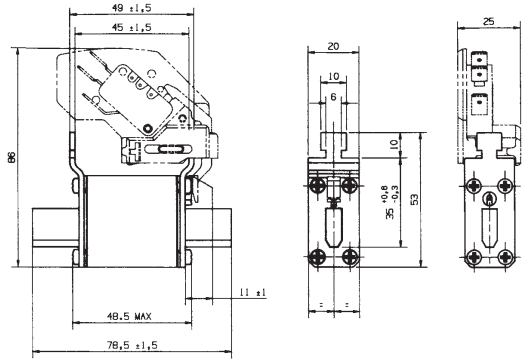

MS 4L 2-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit			Inductive circuit : L/R = 25ms			AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
					30V	110V	250V	30V	110V	250V			
MS 4L 2-5 B2	1000 V	20 V	5 A	50 Hz	4A	4A	5A	-	5A	5 A	12 kV	16 kV	V0
+ Pres		100 mA		DC	-	-	-	-	2 A	0,4 A	8 kV	13 kV	
MS 4L 2-5 B6	1000 V	20 V	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8 kV	10 kV	V0
+ Pres		50 mA		DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A			

* *Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)*
** *Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1*
*** *Between power circuit and microswitch terminals*





Designation	Ref. Number	Weight (g)	Pack.	Catalog Number
MS 4L 2-5 B6 + PRES (Fig. 1) (1)	F210156	30	3	MS 4L2-5B6PRES
MS 4L 2-5 B2 + PRES (Fig. 2) (2)	G210157	26	3	MS 4L2-5B2PRES

Automatically resettable, these microswitch systems indicate fuse presence (PRES) and proper mounting.
In case of improper mounting or fuse melting, this is indicated (terminal 1-4 closed)

Fig.1

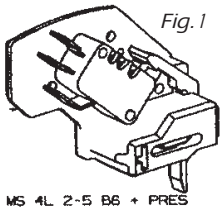
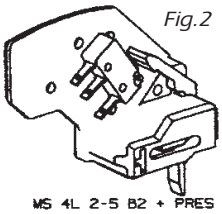


Fig.2

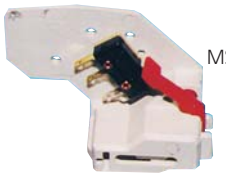


(1) 6.3 mm clips
(2) 2.8 mm clips

Protistor® Square-body Fuses
PSC gR/aR sizes 000/00
Microswitches for PSC sizes 000/00 for NH

MICROSWITCH SYSTEMS ADAPTED TO THE FOLLOWING FUSES:

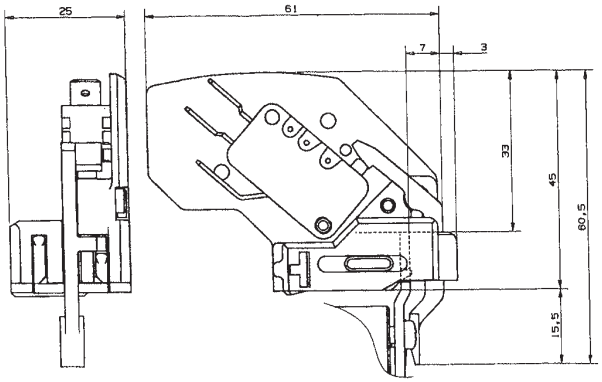
- PSC sizes 000/00 (brackets) DIN43653
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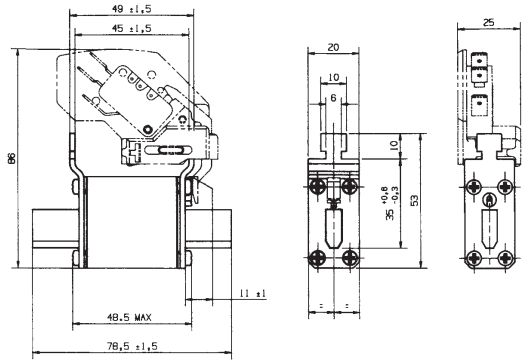

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MS 4L 2-5 B2	1000 V	20 V	5 A	50 Hz	4A	4A	5A	-	5A	5 A	12 kV	16 kV	V0
+ Pres		100 mA		DC	-	-	-	-	2 A	0,4 A	8 kV	13 kV	
MS 4L 2-5 B6	1000 V	20 V	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8 kV	10 kV	V0
+ Pres		50 mA		DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A			

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
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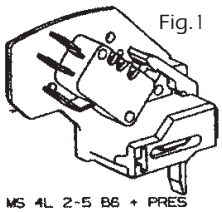
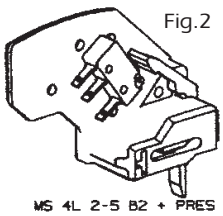


Fig.2



(1) 6.3 mm clips
(2) 2.8 mm clips

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics



6,9 gRB 71 PA 200



6,9 gRB 73 TTF 1000
+ MS7V1-5 UR

Ferraz Shawmut PSC-gRB 690 VAC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment.
This range is a fast acting, full range fuses engineered to provide state of the art protection for power semiconductors such as diodes, thyristors.
These square body fuse-links are available in various body sizes with a broad range of ampere ratings allowing the greatest flexibility in equipment design.
They have pure silver fuse elements embedded in solidified sand which provides optimized I^2t and high breaking capacity. All contact surfaces are plated and all hardware non-magnetic.
All fuses are standard with a low voltage blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly on to the fuse in service.



6,9 gRB 70 EF 400



6,9 gRB 73 DIIA 1000

Feature

- Full range (gR curve), fast acting
- Highly current limiting.
- High breaking capacities
- Very low I^2t
- Worldwide mounting acceptance.
- Superior cycling ability.
- High widstanding in rush current and overloads

Ratings

AC: up to 1000 A 690 VAC
150 kA IR
DC: Consult Factory

Applications

Protection of rectifiers, inverters, static switch, AC & DC drives and UPS systems.

AC: Tested to IEC 60269.4

approvals

Features/Benefits

Wide range of mounting styles

Broad range of ampere ratings in each body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics

Voltage	Size	Type	Rating In (A)	Pre-Arcing I²t @ 1ms kA²s	Total I²t @ 690V kA²s	PN: Power losses (W)				Breaking capacities (kA)
						End contacts		Blades		
						0,8 In	In	0,8In	In	
690V	70	gRB	50	0,12	0,7	9	17	9	17	150
		gRB	63	0,27	1,6	9	18	9	18	
		gRB	80	0,47	2,8	11	22	11	22	
		gRB	100	1,06	6,2	12	23	12	23	
		gRB	125	1,9	11,2	13	26	13	26	
		gRB	160	4,2	25	15	29	15	29	
		gRB	200	7,5	44	17	33	17	34	
		gRB	250	13,5	79	20	39	20	40	
		gRB	315	24	142	23	46	24	47	
		gRB	350	41	240	23	46	24	47	
	71	gRB	125	1,06	6,2	18	35	18	35	
		gRB	160	2,4	14	19	38	19	38	
		gRB	200	5	29,5	21	41	21	42	
		gRB	250	9,5	56	23	46	24	48	
		gRB	315	18,5	108	27	53	27	54	
		gRB	350	23	140	29	58	30	60	
		gRB	400	38	225	30	59	31	61	
		gRB	450	62	360	30	59	31	61	
		gRB	500	78	460	32	64	34	67	
	72	gRB	200	4,2	25	23	45	23	45	
		gRB	250	8,5	50	25	49	25	50	
		gRB	315	17	100	28	55	29	57	
		gRB	350	23	140	29	58	30	60	
		gRB	400	34	200	32	63	33	65	
		gRB	450	47	280	34	67	35	70	
		gRB	500	68	400	35	69	36	72	
		gRB	550	84	495	38	75	39	78	
		gRB	630	124	730	41	81	43	86	
		gRB	700	155	910	45	89	48	95	
	73	gRB	315	12	69	33	66	34	67	
		gRB	350	17	100	34	68	35	69	
		gRB	400	27	160	36	71	37	73	
		gRB	450	34	200	40	79	41	82	
		gRB	500	47	280	42	84	43	86	
		gRB	550	68	400	42	84	44	87	
		gRB	630	102	600	45	89	47	94	
		gRB	700	139	820	47	94	50	100	
		gRB	800	227	1330	48	96	52	104	
		gRB	900	280	1640	55	109	60	119	
		gRB	1000	385	2270	58	115	64	127	

Time/current characteristics
Cut off characteristics
Total I²t and total operating time
Other curves

see following pages

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics



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They have pure silver fuse elements embedded in solidified sand which provides optimized I^2t and high breaking capacity. All contact surfaces are plated and all hardware non-magnetic.
All fuses are standard with a low voltage blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly on to the fuse in service.



6,9 gRB 70 EF 400



6,9 gRB 73 DIIA 1000

Feature

- Full range (gR curve), fast acting
- Highly current limiting.
- High breaking capacities
- Very low I^2t
- Worldwide mounting acceptance.
- Superior cycling ability.
- High widstanding in rush current and overloads

Ratings

AC: up to 1000 A 690 VAC
150 kA IR
DC: Consult Factory

Applications

Protection of rectifiers, inverters, static switch, AC & DC drives and UPS systems.

AC: Tested to IEC 60269.4

approvals

Features/Benefits

Wide range of mounting styles

Broad range of ampere ratings in each body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics

Voltage	Size	Type	Rating In (A)	Pre-Arcing I²t @ 1ms kA²s	Total I²t @ 690V kA²s	PN: Power losses (W)				Breaking capacities (kA)
						End contacts		Blades		
						0,8 In	In	0,8In	In	
690V	70	gRB	50	0,12	0,7	9	17	9	17	150
		gRB	63	0,27	1,6	9	18	9	18	
		gRB	80	0,47	2,8	11	22	11	22	
		gRB	100	1,06	6,2	12	23	12	23	
		gRB	125	1,9	11,2	13	26	13	26	
		gRB	160	4,2	25	15	29	15	29	
		gRB	200	7,5	44	17	33	17	34	
		gRB	250	13,5	79	20	39	20	40	
		gRB	315	24	142	23	46	24	47	
		gRB	350	41	240	23	46	24	47	
	71	gRB	125	1,06	6,2	18	35	18	35	
		gRB	160	2,4	14	19	38	19	38	
		gRB	200	5	29,5	21	41	21	42	
		gRB	250	9,5	56	23	46	24	48	
		gRB	315	18,5	108	27	53	27	54	
		gRB	350	23	140	29	58	30	60	
		gRB	400	38	225	30	59	31	61	
		gRB	450	62	360	30	59	31	61	
		gRB	500	78	460	32	64	34	67	
	72	gRB	200	4,2	25	23	45	23	45	
		gRB	250	8,5	50	25	49	25	50	
		gRB	315	17	100	28	55	29	57	
		gRB	350	23	140	29	58	30	60	
		gRB	400	34	200	32	63	33	65	
		gRB	450	47	280	34	67	35	70	
		gRB	500	68	400	35	69	36	72	
		gRB	550	84	495	38	75	39	78	
		gRB	630	124	730	41	81	43	86	
		gRB	700	155	910	45	89	48	95	
	73	gRB	315	12	69	33	66	34	67	
		gRB	350	17	100	34	68	35	69	
		gRB	400	27	160	36	71	37	73	
		gRB	450	34	200	40	79	41	82	
		gRB	500	47	280	42	84	43	86	
		gRB	550	68	400	42	84	44	87	
		gRB	630	102	600	45	89	47	94	
		gRB	700	139	820	47	94	50	100	
		gRB	800	227	1330	48	96	52	104	
		gRB	900	280	1640	55	109	60	119	
		gRB	1000	385	2270	58	115	64	127	

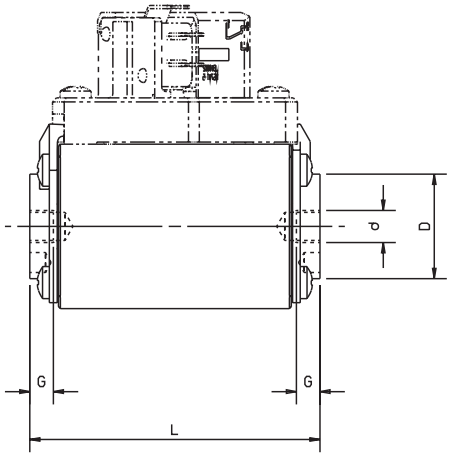
Time/current characteristics
Cut off characteristics
Total I²t and total operating time
Other curves

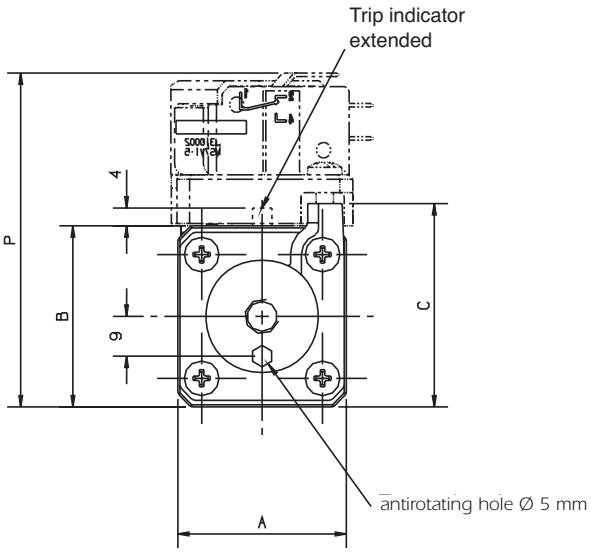
see following pages

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
French 70-73 End contacts

Size	Designation	Reference Number	Weight (g)	Catalog Number
	6,9 gRB 70 TTF 050	C301279		PC70GB69V50TF
	6,9 gRB 70 TTF 063	D301280		PC70GB69V63TF
	6,9 gRB 70 TTF 080	E301281		PC70GB69V80TF
	6,9 gRB 70 TTF 100	F301282		PC70GB69V100TF
	6,9 gRB 70 TTF 125	G301283		PC70GB69V125TF
70	6,9 gRB 70 TTF 160	L301310	340	PC70GB69V160TF
	6,9 gRB 70 TTF 200	M301311		PC70GB69V200TF
	6,9 gRB 70 TTF 250	N301312		PC70GB69V250TF
	6,9 gRB 70 TTF 315	P301313		PC70GB69V315TF
	6,9 gRB 70 TTF 350			
	6,9 gRB 71 TTF 125	Q301314		PC71GB69V125TF
	6,9 gRB 71 TTF 160	R301315		PC71GB69V160TF
	6,9 gRB 71 TTF 200	S301316		PC71GB69V200TF
	6,9 gRB 71 TTF 250	T301317		PC71GB69V250TF
71	6,9 gRB 71 TTF 315	N301427	520	PC71GB69V315TF
	6,9 gRB 71 TTF 350	V301318		PC71GB69V350TF
	6,9 gRB 71 TTF 400	W301319		PC71GB69V400TF
	6,9 gRB 71 TTF 450	X301320		PC71GB69V450TF
	6,9 gRB 71 TTF 500	S301707		PC71GB69V500TF
	6,9 gRB 72 TTF 200	F301328		PC72GB69V200TF
	6,9 gRB 72 TTF 250	G301329		PC72GB69V250TF
	6,9 gRB 72 TTF 315	H301330		PC72GB69V315TF
	6,9 gRB 72 TTF 350	W301710		PC72GB69V350TF
	6,9 gRB 72 TTF 400	J301331		PC72GB69V400TF
72	6,9 gRB 72 TTF 450	X301711	810	PC72GB69V450TF
	6,9 gRB 72 TTF 500	K301332		PC72GB69V500TF
	6,9 gRB 72 TTF 550	L301333		PC72GB69V550TF
	6,9 gRB 72 TTF 630	M301334		PC72GB69V630TF
	6,9 gRB 72 TTF 700	Y301712		PC72GB69V700TF
	6,9 gRB 73 TTF 315	W301342		PC73GB69V315TF
	6,9 gRB 73 TTF 350	B301715		PC73GB69V350TF
	6,9 gRB 73 TTF 400	X301343		PC73GB69V400TF
	6,9 gRB 73 TTF 450	Y301344		PC73GB69V450TF
	6,9 gRB 73 TTF 500	C301716		PC73GB69V500TF
73	6,9 gRB 73 TTF 550	Z301345	1220	PC73GB69V550TF
	6,9 gRB 73 TTF 630	A301346		PC73GB69V630TF
	6,9 gRB 73 TTF 700	B301347		PC73GB69V700TF
	6,9 gRB 73 TTF 800	D301717		PC73GB69V800TF
	6,9 gRB 73 TTF 900	S301638		PC73GB69V900TF
	6,9 gRB 73 TTF 1000	F301719		PC73GB69V10CTF

Packaging: 3 pieces sizes 70 and 71 / 1 piece size 72 and 73





Threaded studs :

M8 x 20 mm: Réf.V099171
M10 x 30 mm: Réf.M099946
M12 x 35 mm: Réf.J099966
exists in other length

Microswitches:

MS 7V 1-5	Réf.J310002	Standard NO-NC
MS 7V 1-5 UR	Réf.Z310039	Standard NO-NC
MS 7V 1-5 BS	Réf.K310003	Low level NO-NC
MS 7V 1-9 BS	Réf.P310007	Double pole NO-NC-low level
MS 7V 1-5 ET	Réf.S310010	Low level NO-NC-IP 50

Threaded studs and Microswitches supplied seperately

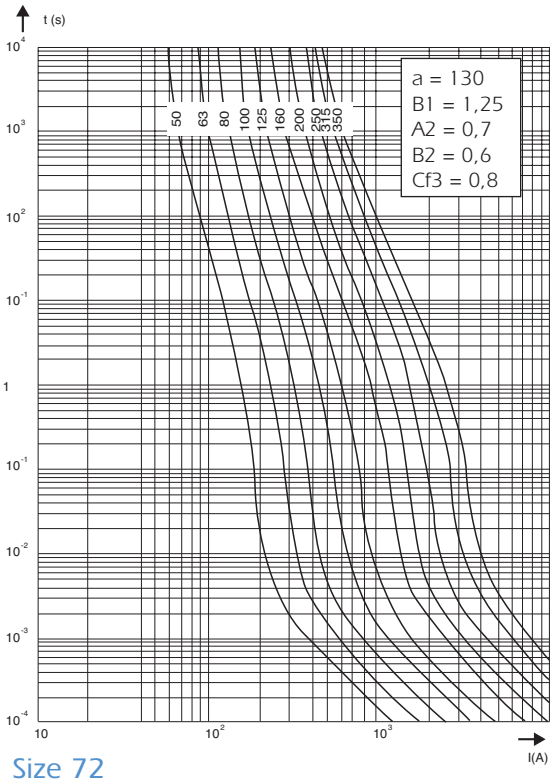
Size	A	B	C	D	L	d	G*	P
70	39,8	41,8	46,5	26	74	M 8	6	81,8
	1.57"	1.65"	1.83"	1.02"	2.91"		0.24"	3.22"
71	51	51	56,5	30	74	M 8	9	85.5
	2.00"	2.00"	2.22"	1.18"	2.91"		0.35"	3.37"
72	60	60	65.5	38	74	M 10	9	93.6
	2.36"	2.36"	2.58"	1.50"	2.91"		0.35"	3.69"
73	74,4	74,4	78,5	46	74	M 12	9	107.6
	2.93"	2.93"	3.09"	1.81"	2.91"		0.35"	4.24"

Fuse holder solution, see Fuse gear section.

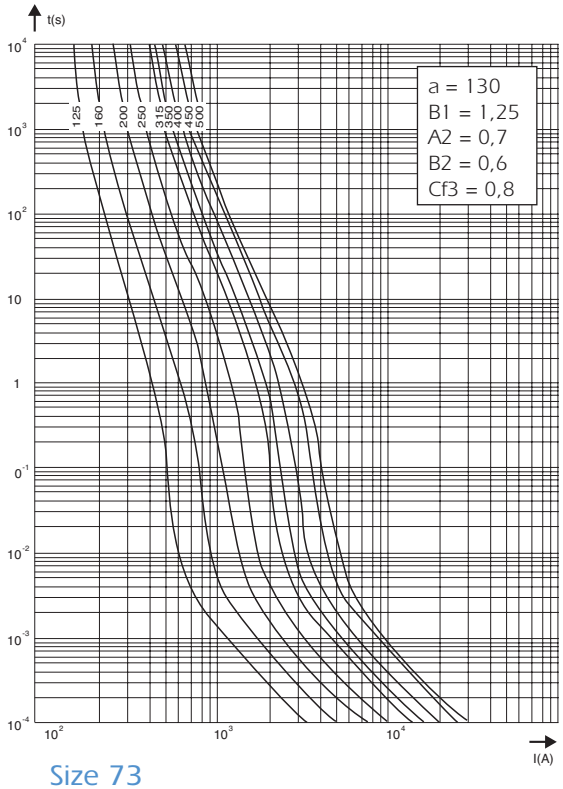
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Times/Current Characteristics

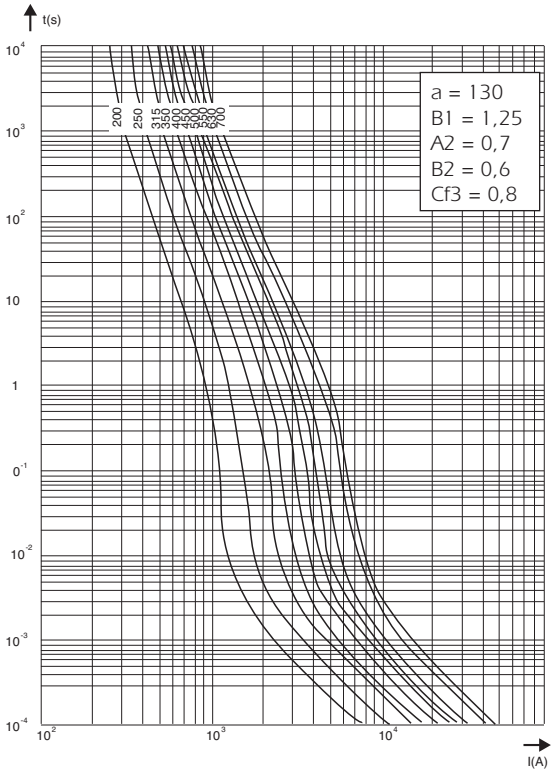
Size 70



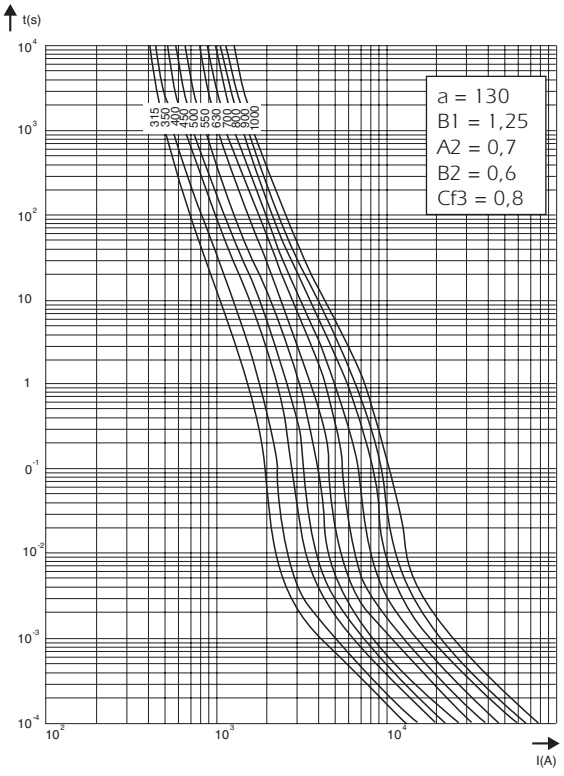
Size 71



Size 72



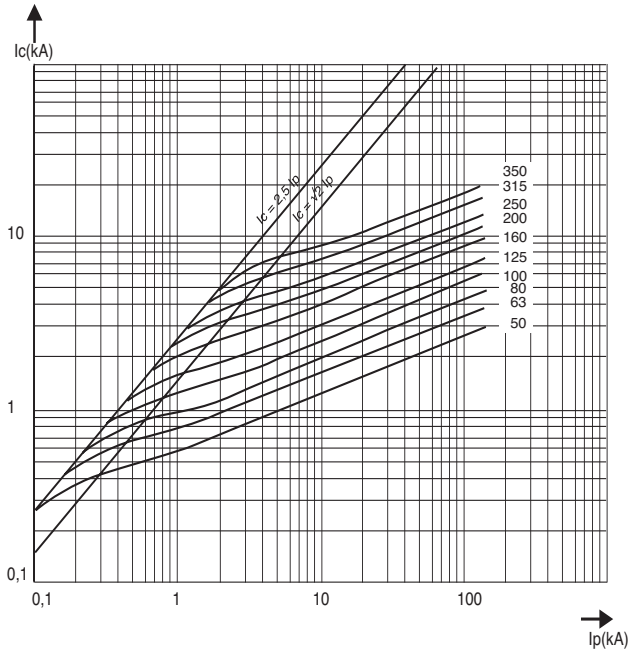
Size 73



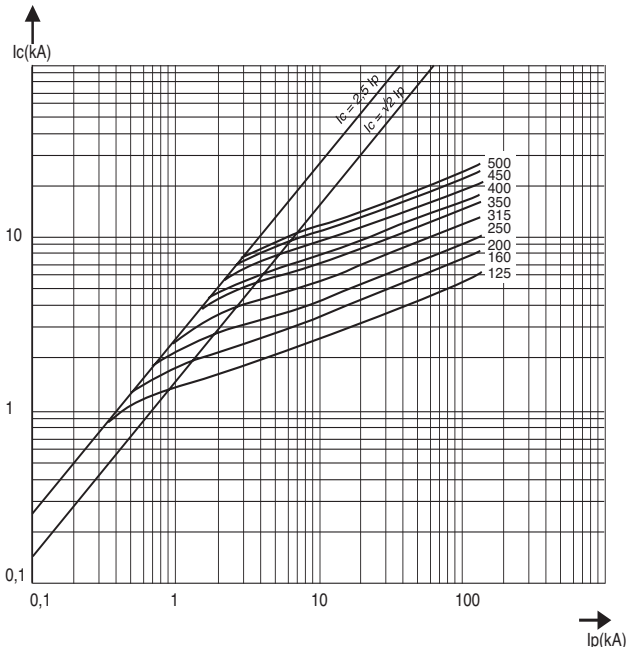
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Cut off characteristics
Peak let thru current

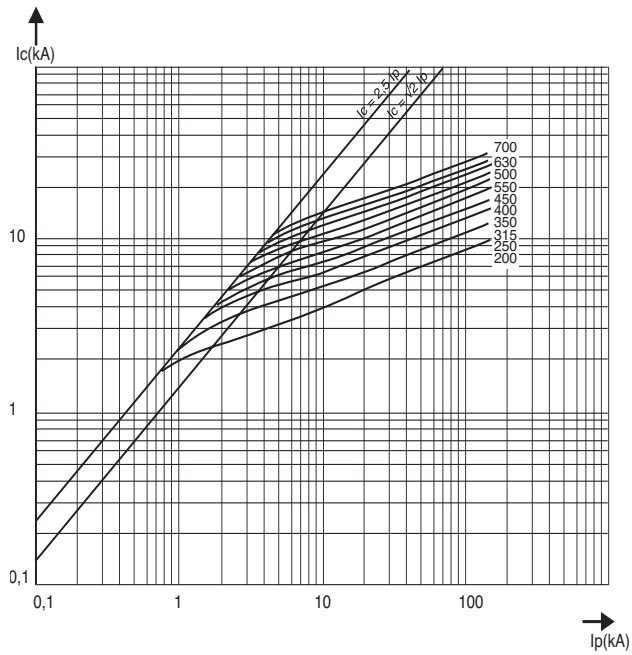
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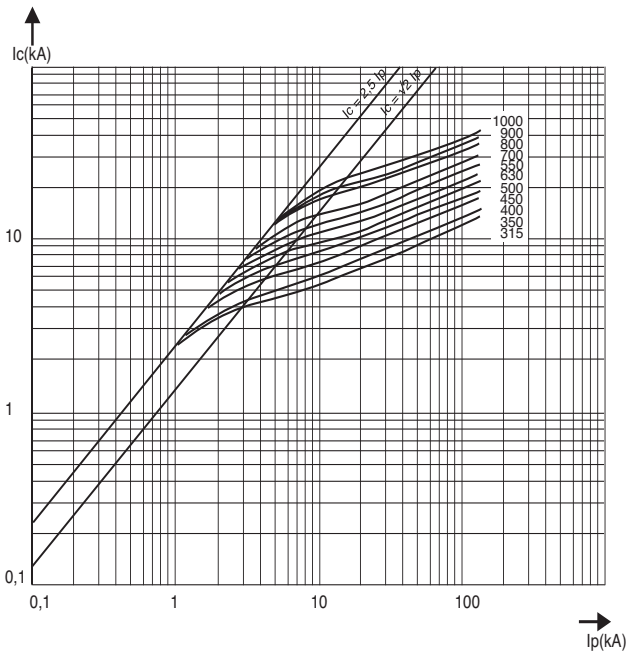
Size 71



Size 72



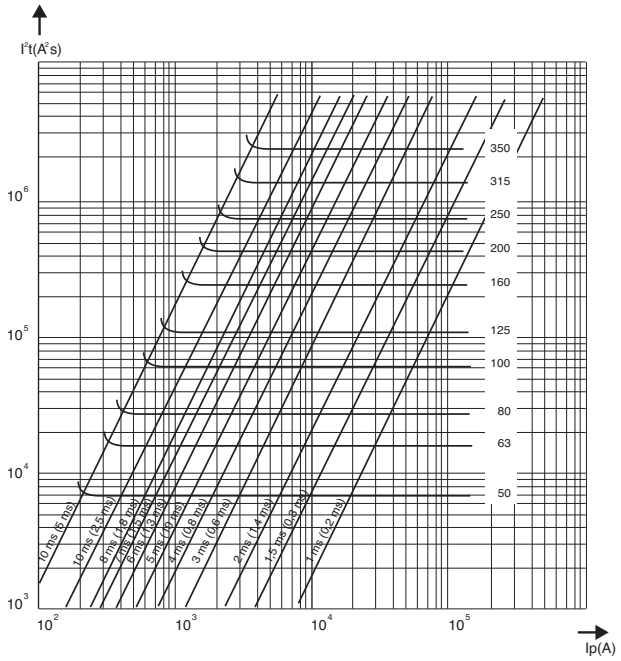
Size 73



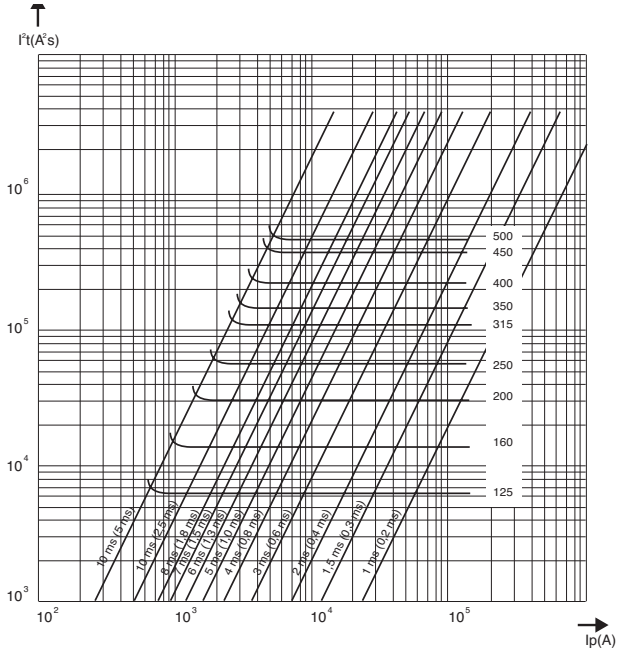
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Total I²t and total operating time @ 690 V

Size 70

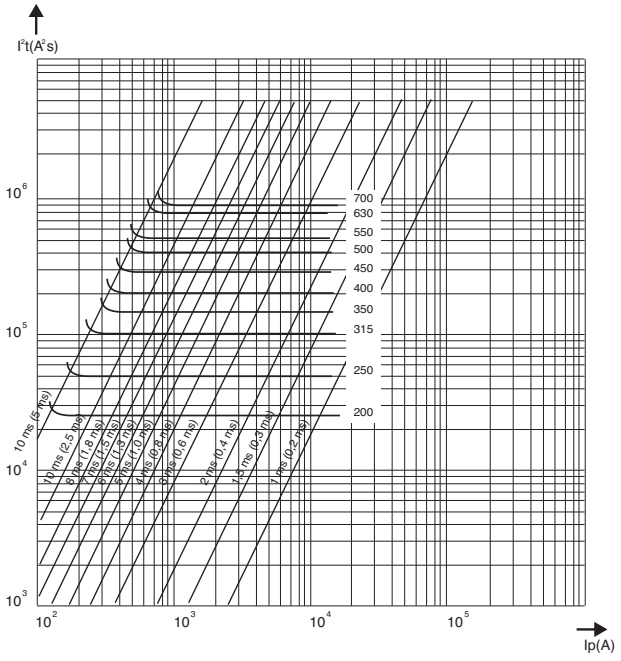


Size 71

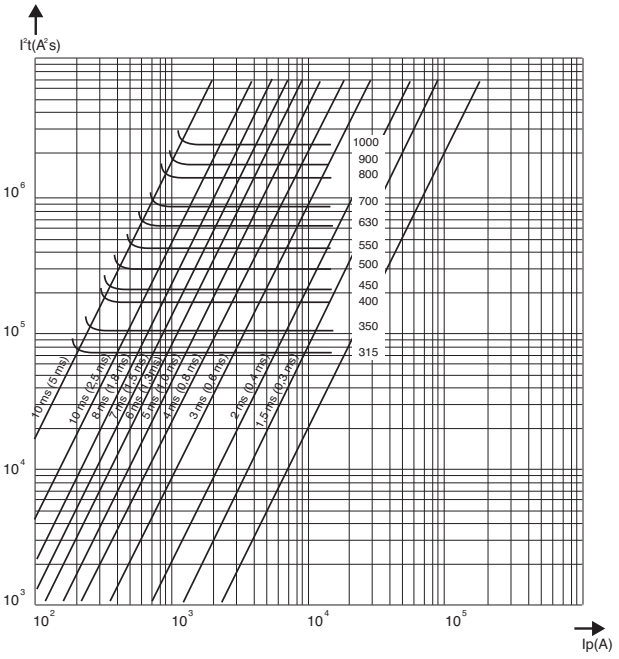


Value between parentheses pertain to prearcing I²t

Size 72



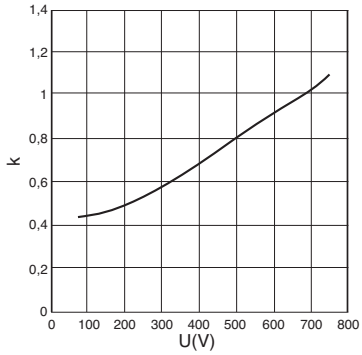
Size 73



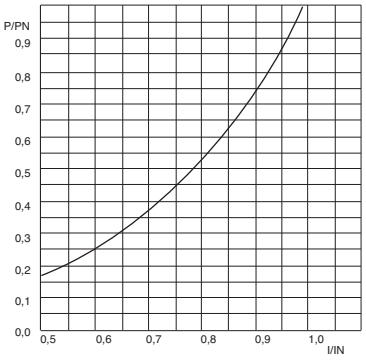
Value between parentheses pertain to prearcing I²t

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

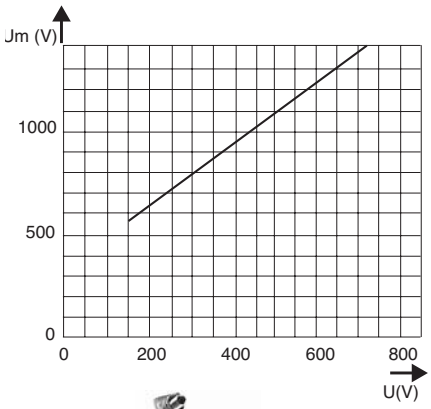
k=f(U)
Multiplier coefficient
to calculate total I^2t
and total operating time



P/PN
Multiplier coefficient
to calculate the power
losses at various currents



Peak arc voltage



PA terminals fuse holder

Size	1 pole	2 poles	3 poles	4 poles	wall	separators	fuse shields
70	T218241	G218759	W219278	H222486	Z213669	V216724	K200822
71	A223008	G200796	Y201340	H201855	J214690	N217753	M222513
72	E211075	V211595	D212109	R212627	J214690	N217753	Y211621
73	X213644	B214154	F214664	K215174	Q215708	M218787	X212655



End contacts TTF terminal fuse holders

Size	1 pole
70/71	C301233
72/73	E301235



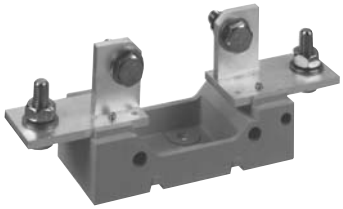
French blades EF terminal fuse holders

Size	SP/SE/SF
70	F096099
71	V098711
72	W098712
73	C209187



Din blades 110 mm DI N 43653 terminal fuse holders

Size	Fuses holders
70/71/72/73	L091941



Warning: for all holders, please check maximum fuse and fuse holders operating limit. in Gear and Fuse gear section
Tightning torque see Gear and Fuse gear section.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

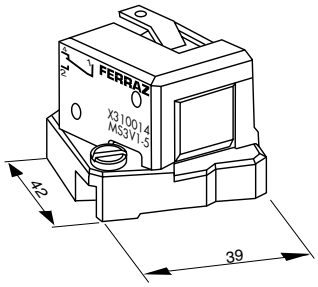
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

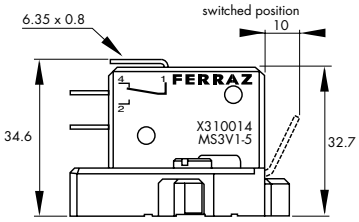
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



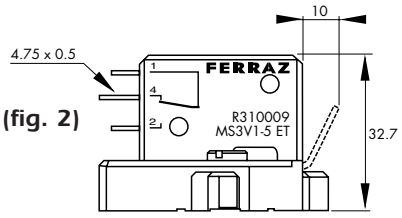
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

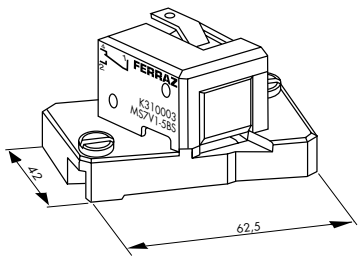
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

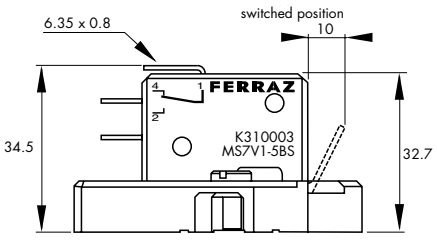
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

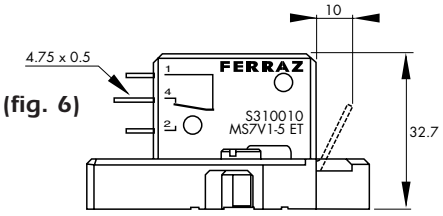


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

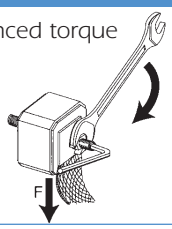
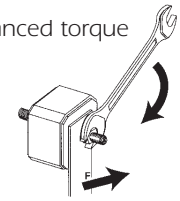
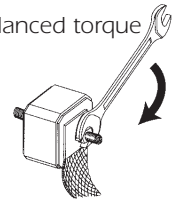
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics



6,9 gRB 71 PA 200



6,9 gRB 73 TTF 1000
+ MS7V1-5 UR

Ferraz Shawmut PSC-gRB 690 VAC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment.
This range is a fast acting, full range fuses engineered to provide state of the art protection for power semiconductors such as diodes, thyristors.
These square body fuse-links are available in various body sizes with a broad range of ampere ratings allowing the greatest flexibility in equipment design.
They have pure silver fuse elements embedded in solidified sand which provides optimized I^2t and high breaking capacity. All contact surfaces are plated and all hardware non-magnetic.
All fuses are standard with a low voltage blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly on to the fuse in service.



6,9 gRB 70 EF 400



6,9 gRB 73 DIIA 1000

Feature

- Full range (gR curve), fast acting
- Highly current limiting.
- High breaking capacities
- Very low I^2t
- Worldwide mounting acceptance.
- Superior cycling ability.
- High widstanding in rush current and overloads

Ratings

AC: up to 1000 A 690 VAC
150 kA IR
DC: Consult Factory

Applications

Protection of rectifiers, inverters, static switch, AC & DC drives and UPS systems.

AC: Tested to IEC 60269.4

approvals

Features/Benefits

Wide range of mounting styles

Broad range of ampere ratings in each body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics

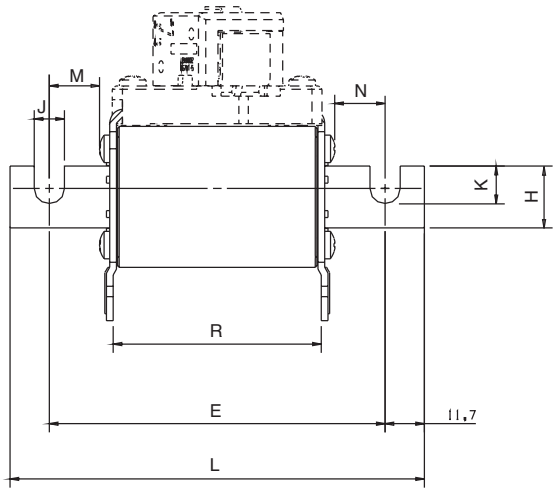
Voltage	Size	Type	Rating In (A)	Pre-Arcing I²t @ 1ms kA²s	Total I²t @ 690V kA²s	PN: Power losses (W)				Breaking capacities (kA)
						End contacts		Blades		
						0,8 In	In	0,8In	In	
690V	70	gRB	50	0,12	0,7	9	17	9	17	150
		gRB	63	0,27	1,6	9	18	9	18	
		gRB	80	0,47	2,8	11	22	11	22	
		gRB	100	1,06	6,2	12	23	12	23	
		gRB	125	1,9	11,2	13	26	13	26	
		gRB	160	4,2	25	15	29	15	29	
		gRB	200	7,5	44	17	33	17	34	
		gRB	250	13,5	79	20	39	20	40	
		gRB	315	24	142	23	46	24	47	
		gRB	350	41	240	23	46	24	47	
	71	gRB	125	1,06	6,2	18	35	18	35	
		gRB	160	2,4	14	19	38	19	38	
		gRB	200	5	29,5	21	41	21	42	
		gRB	250	9,5	56	23	46	24	48	
		gRB	315	18,5	108	27	53	27	54	
		gRB	350	23	140	29	58	30	60	
		gRB	400	38	225	30	59	31	61	
		gRB	450	62	360	30	59	31	61	
		gRB	500	78	460	32	64	34	67	
	72	gRB	200	4,2	25	23	45	23	45	
		gRB	250	8,5	50	25	49	25	50	
		gRB	315	17	100	28	55	29	57	
		gRB	350	23	140	29	58	30	60	
		gRB	400	34	200	32	63	33	65	
		gRB	450	47	280	34	67	35	70	
		gRB	500	68	400	35	69	36	72	
		gRB	550	84	495	38	75	39	78	
		gRB	630	124	730	41	81	43	86	
		gRB	700	155	910	45	89	48	95	
	73	gRB	315	12	69	33	66	34	67	
		gRB	350	17	100	34	68	35	69	
		gRB	400	27	160	36	71	37	73	
		gRB	450	34	200	40	79	41	82	
		gRB	500	47	280	42	84	43	86	
		gRB	550	68	400	42	84	44	87	
		gRB	630	102	600	45	89	47	94	
		gRB	700	139	820	47	94	50	100	
		gRB	800	227	1330	48	96	52	104	
		gRB	900	280	1640	55	109	60	119	
		gRB	1000	385	2270	58	115	64	127	

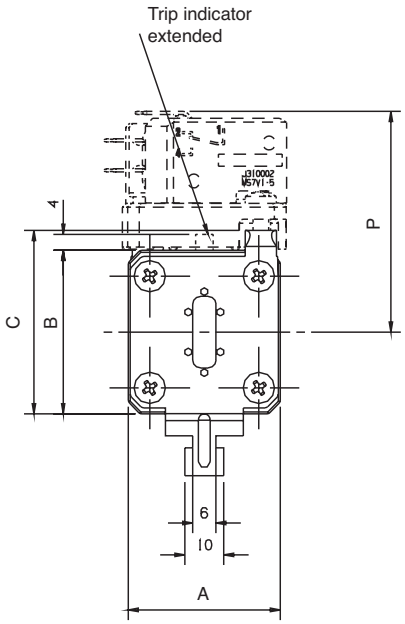
Time/current characteristics
Cut off characteristics
Total I²t and total operating time
Other curves

see following pages

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
French 70-73 Blades

Size	Designation	Reference Number	Weight (g)	Catalog Number
	6,9 gRB 70 EF 050	P301405		PC70GB69V50EF
	6,9 gRB 70 EF 063	Q301406		PC70GB69V63EF
	6,9 gRB 70 EF 080	R301407		PC70GB69V80EF
	6,9 gRB 70 EF 100	S301408		PC70GB69V100EF
	6,9 gRB 70 EF 125	T301409		PC70GB69V125EF
70	6,9 gRB 70 EF 160	V301410	370	PC70GB69V160EF
	6,9 gRB 70 EF 200			
	6,9 gRB 70 EF 250			
	6,9 gRB 70 EF 315			
	6,9 gRB 70 EF 350			
	6,9 gRB 71 EF 125	Y301321		PC71GB69V125EF
	6,9 gRB 71 EF 160	Z301322		PC71GB69V160EF
	6,9 gRB 71 EF 200	A301323		PC71GB69V200EF
	6,9 gRB 71 EF 250	B301324		PC71GB69V250EF
71	6,9 gRB 71 EF 315		540	
	6,9 gRB 71 EF 350	C301325		PC71GB69V350EF
	6,9 gRB 71 EF 400	D301326		PC71GB69V400EF
	6,9 gRB 71 EF 450	E301327		PC71GB69V450EF
	6,9 gRB 71 EF 500	G301858		PC71GB69V500EF
	6,9 gRB 72 EF 200	N301335		PC72GB69V200EF
	6,9 gRB 72 EF 250	P301336		PC72GB69V250EF
	6,9 gRB 72 EF 315	Q301337		PC72GB69V315EF
	6,9 gRB 72 EF 350			
	6,9 gRB 72 EF 400	R301338		PC72GB69V400EF
72	6,9 gRB 72 EF 450		810	
	6,9 gRB 72 EF 500	S301339		PC72GB69V500EF
	6,9 gRB 72 EF 550	T301340		PC72GB69V550EF
	6,9 gRB 72 EF 630	V301341		PC72GB69V630EF
	6,9 gRB 72 EF 700			
	6,9 gRB 73 EF 315	C301348		PC73GB69V315EF
	6,9 gRB 73 EF 350			
	6,9 gRB 73 EF 400	D301349		PC73GB69V400EF
	6,9 gRB 73 EF 450	E301350		PC73GB69V450EF
	6,9 gRB 73 EF 500			
73	6,9 gRB 73 EF 550	F301351	1150	PC73GB69V550EF
	6,9 gRB 73 EF 630	G301352		PC73GB69V630EF
	6,9 gRB 73 EF 700	H301353		PC73GB69V700EF
	6,9 gRB 73 EF 800			
	6,9 gRB 73 EF 900			
	6,9 gRB 73 EF 1000			





Packaging: 3 pieces sizes 70 and 71 / 1 piece size 72 and 73

Microswitches:	MS 7V 1-5	Réf.J310002	Standard NO-NC
	MS 7V 1-5 UR	Réf.Z310039	Standard NO-NC
	MS 7V 1-5 BS	Réf.K310003	Low level NO-NC
	MS 7V 1-9 BS	Réf.P310007	Double pole NO-NC-low level
	MS 7V 1-5 ET	Réf.S310010	Low level NO-NC-IP 50

Microswitches supplied seperately

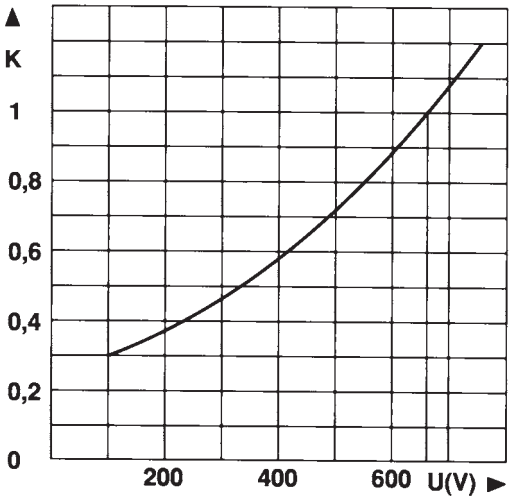
Size	A	B	C	E±1,3	H	J	K	L±1,5	M	N	P	R
70	39,8	41,8	46,5	100	18	9	11	123,4	28,2	28,2	77	68
	1.57"	1.65"	1.83"	3.94"	0.71"	0.35"	0.43"	4.86"	1.11"	1.11"	3.03"	2.68"
71	51	51	56,5	110	25	10,5	16	133,4	32,7	32,7	91	68
	2.00"	2.00"	2.22"	4.33"	0.98"	0.41"	0.63"	5.25"	1.29"	1.29"	3.58"	2.68"
72	60	60	65,5	114,4	32	13	21,2	149,4	40,7	40,7	100	68
	2.36"	2.36"	2.58"	4.50"	1.26"	0.51"	0.83"	5.88"	1.60"	1.60"	3.93"	2.68"
73	74,4	74,4	78,5	114,4	40	13	19,5	149,4	40,7	40,7	114,4	68
	2.93"	2.93"	3.09"	4.50"	1.58"	0.51"	0.77"	5.88"	1.60"	1.60"	4.50"	2.68"

Reinforced and longuer knifes available under designation ESF
Fuse holder solution, see Fuse gear section.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

I²t Multiplier coefficient



Mean curve indicating variation of total I²t (I^2t_t) and total operating time T_t in accordance with working voltage U.

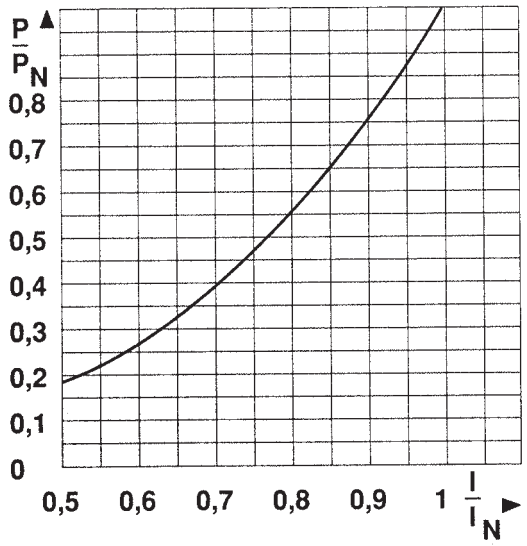
Example:

Fuse 350 A in size 30.
I_p = 10 000 A U = 500 V

At 660 V
I^2t_t = 80 000 A²s T_t = 6 ms

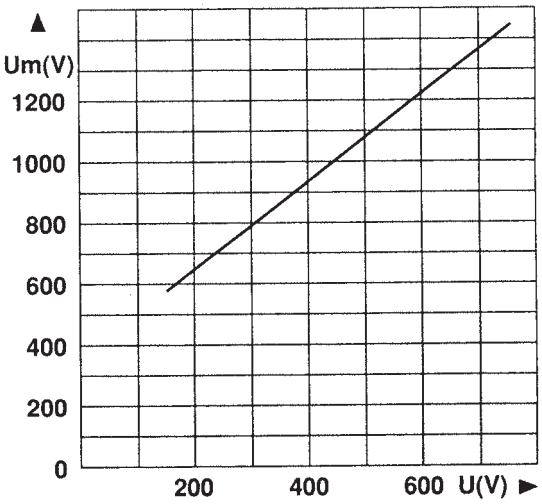
At 500 V
I^2t_t = 80 000 x 0.72 = 57 600 A²s
T_t = 6 x 0.72 = 4.3 ms

Dissipated power



Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in a steady state.

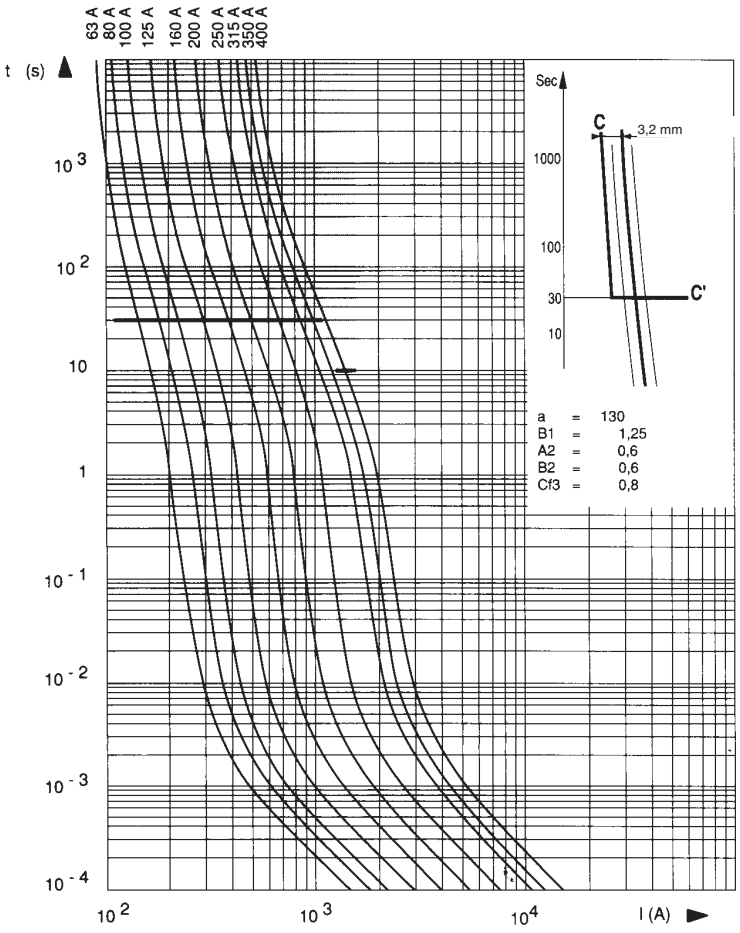
Arc voltage



Curve indicating peak arc voltage Um which may appear across fuse terminals as function of working voltage U at cos φ = 0.15

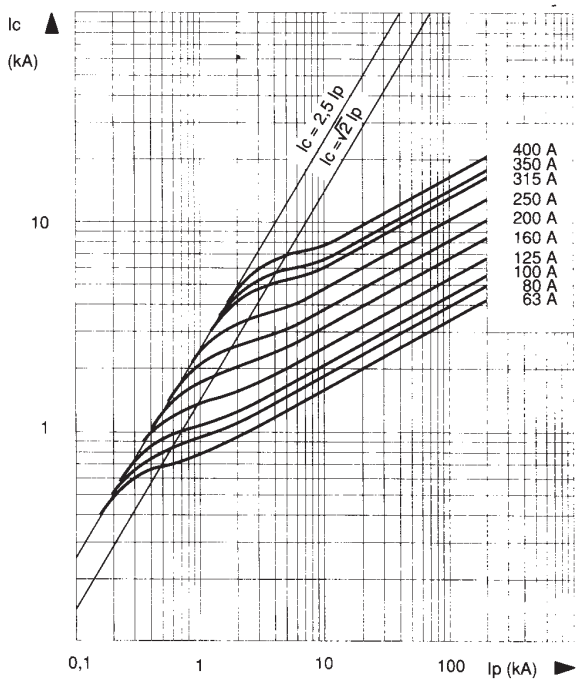
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

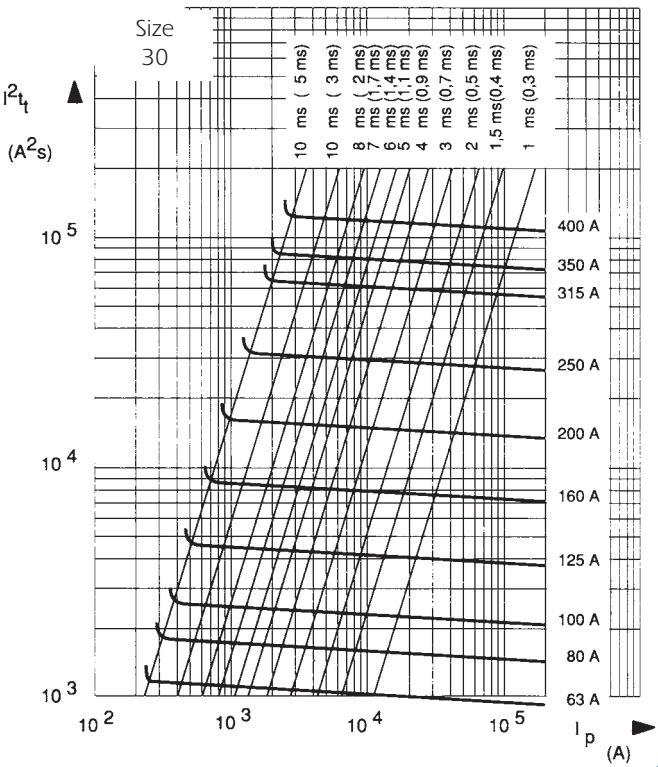
Size 30



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

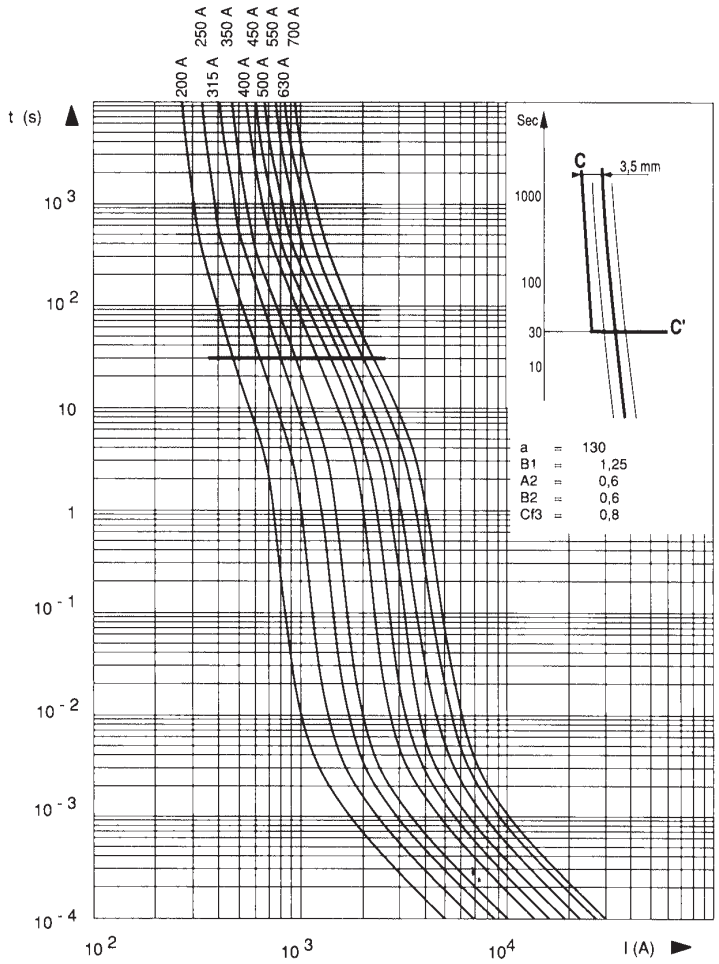
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

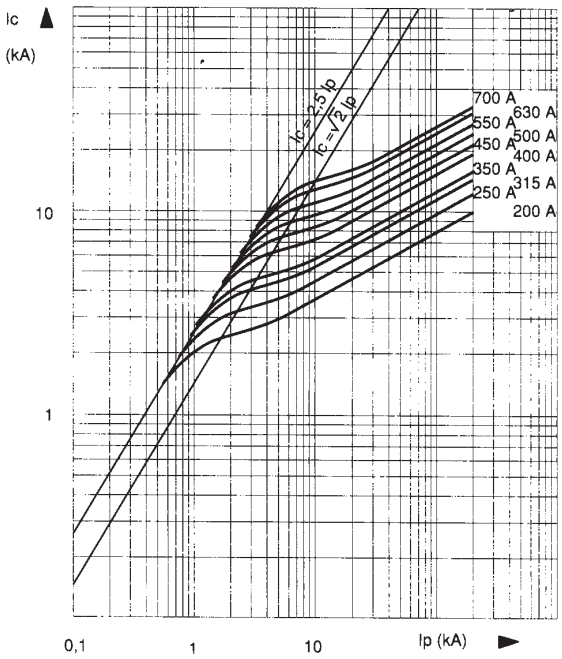
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

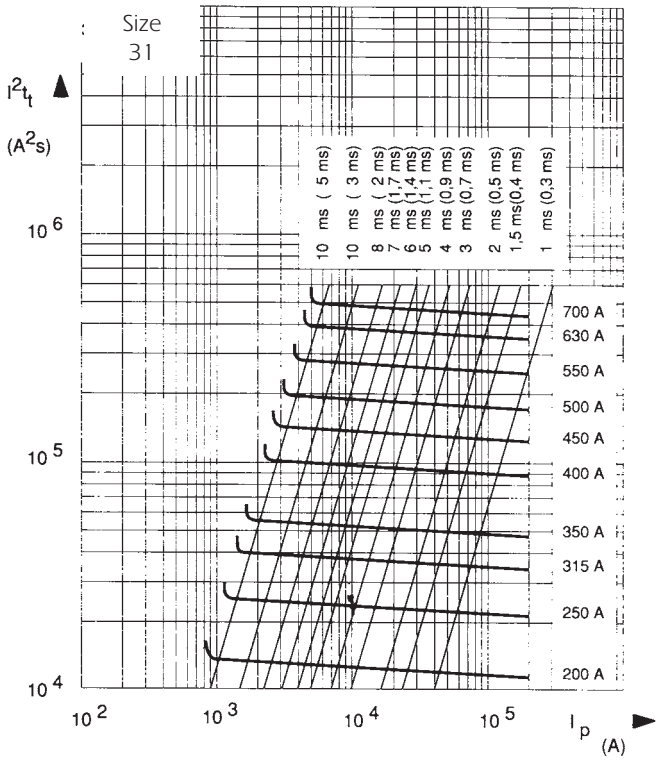
Size 31



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_C that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

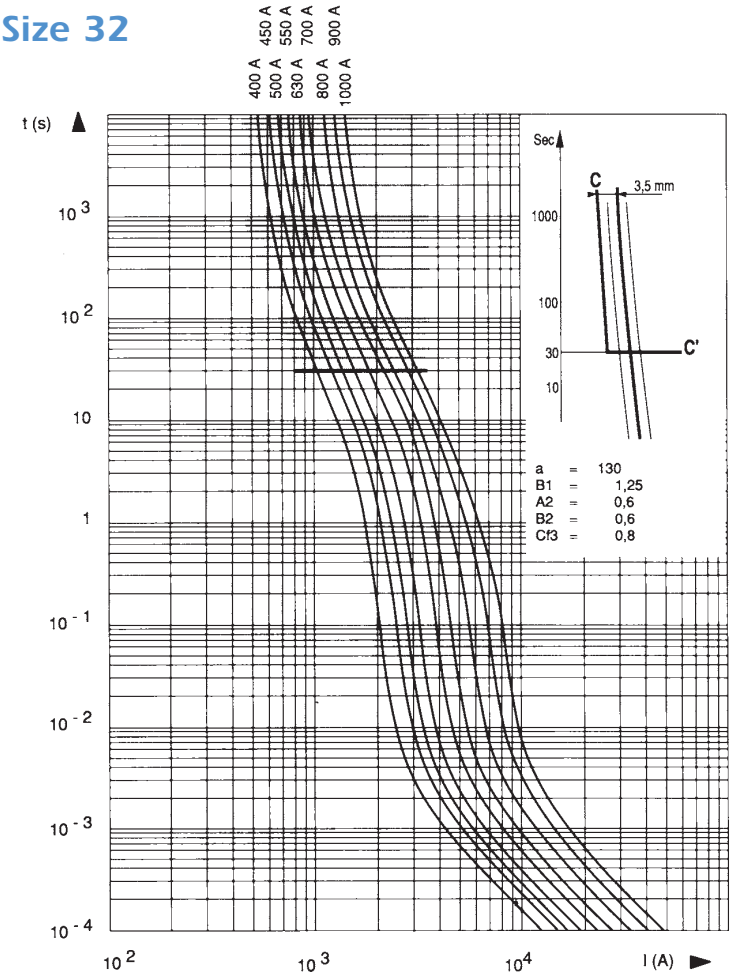
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

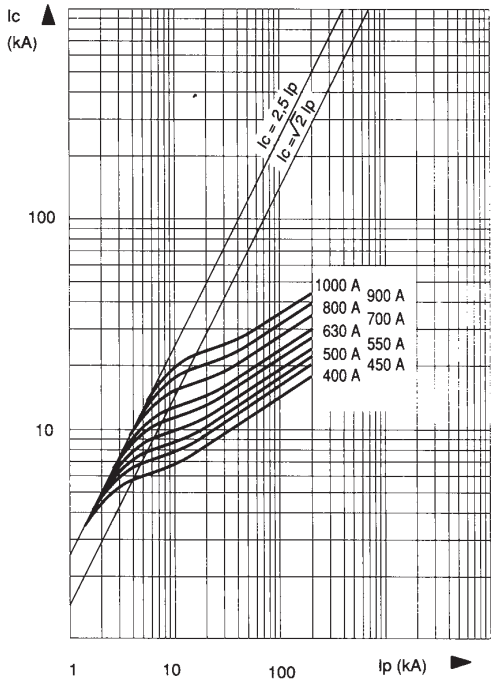
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

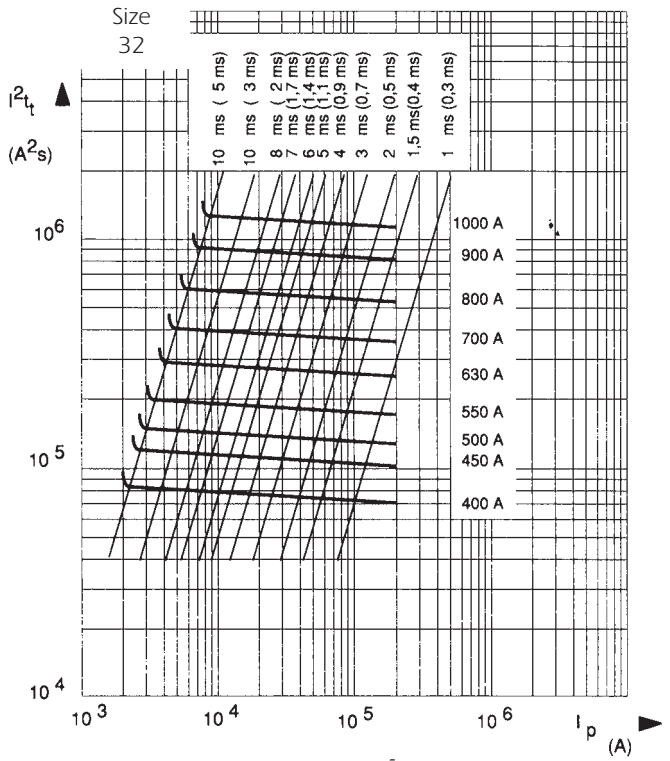
Size 32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_C that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

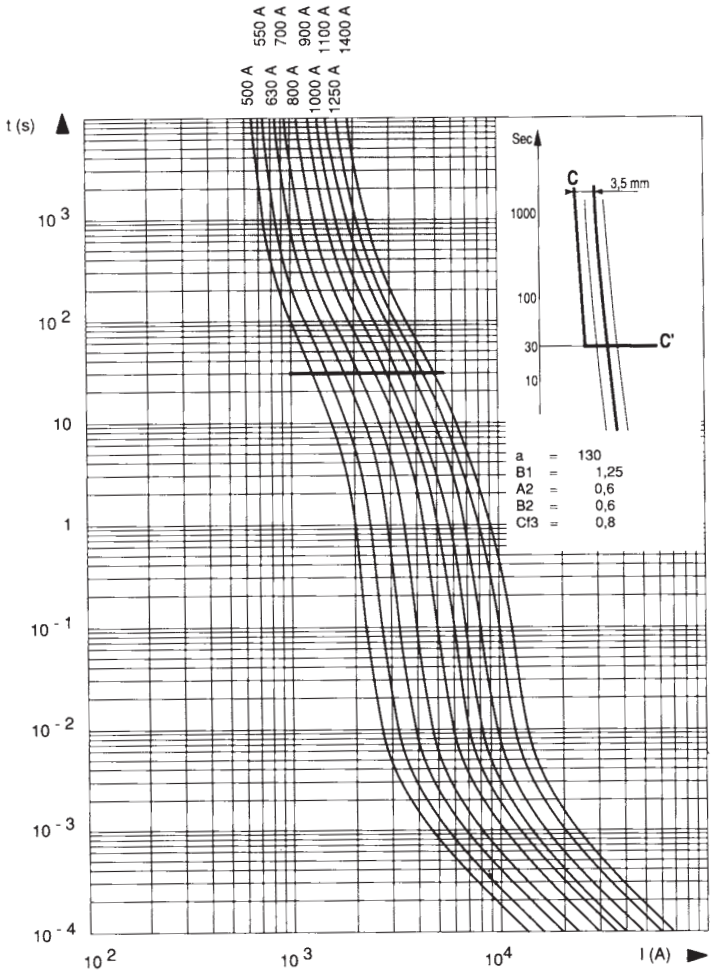
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

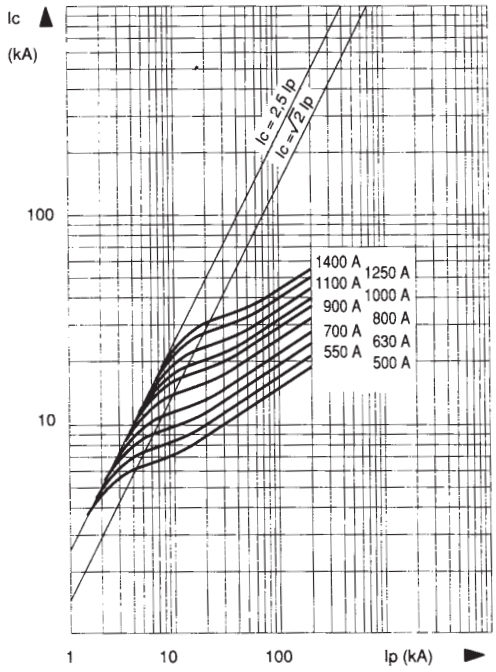
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

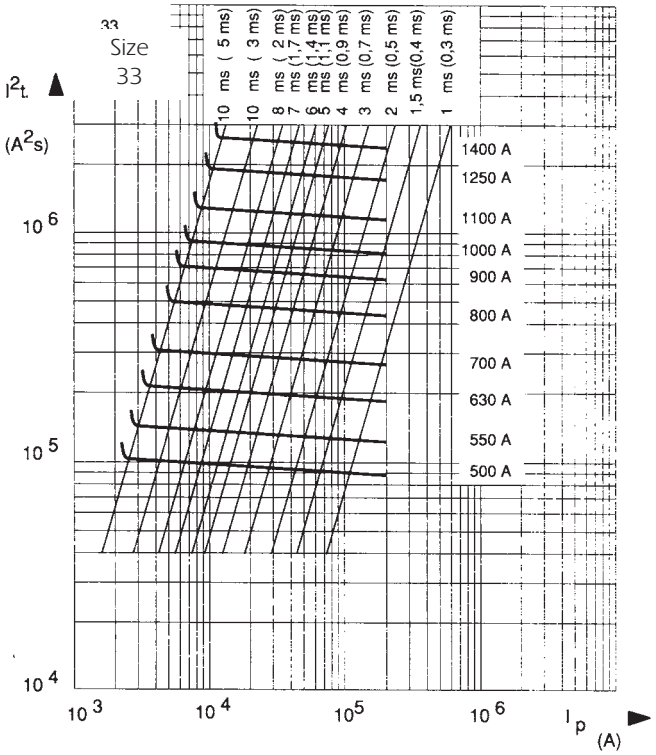
Size 33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

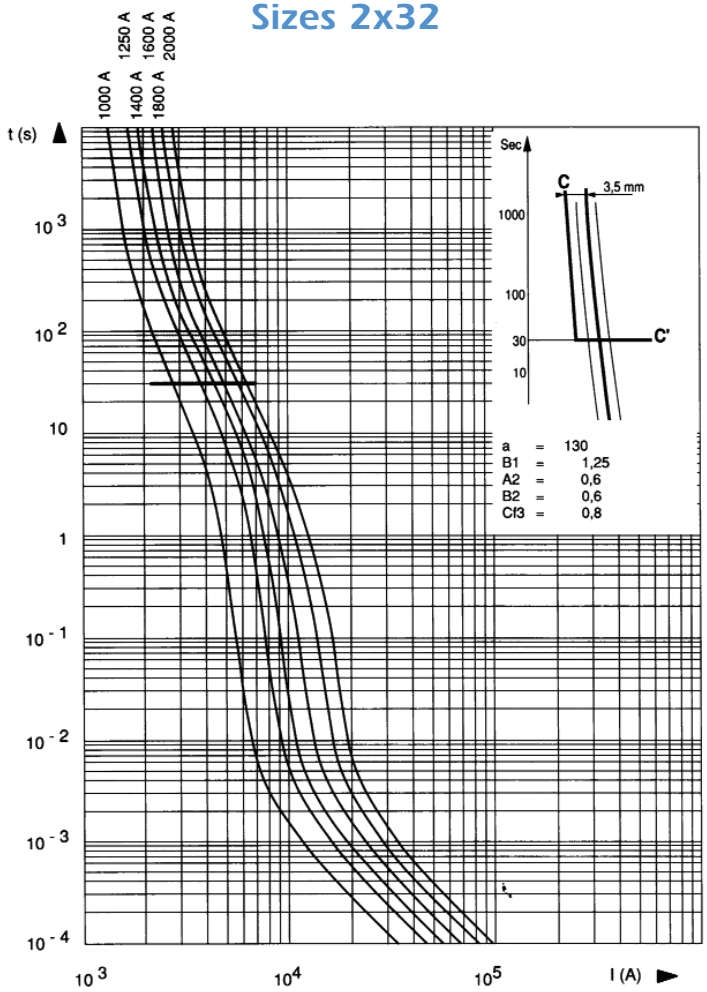
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

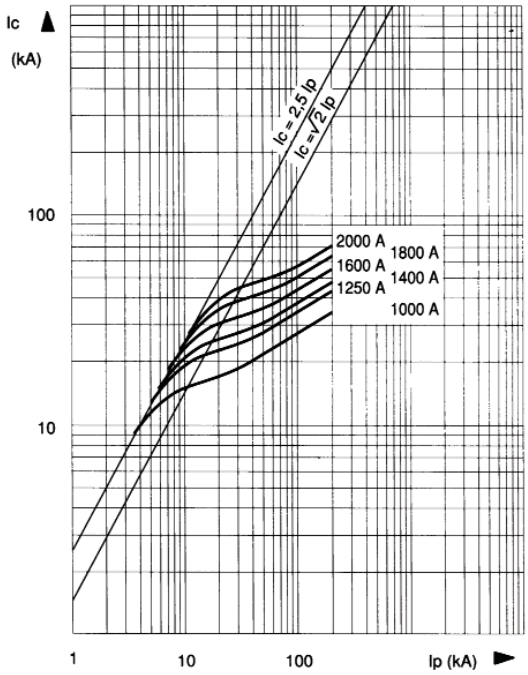
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

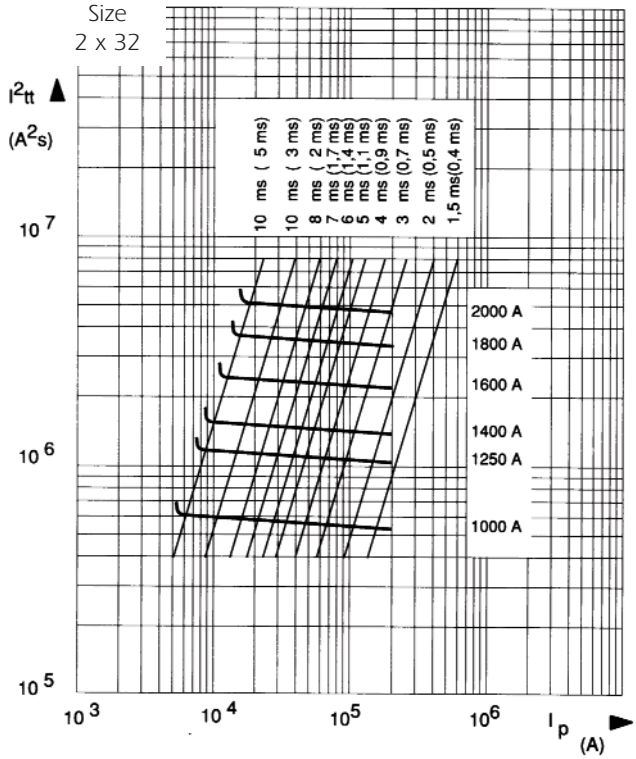
Sizes 2x32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

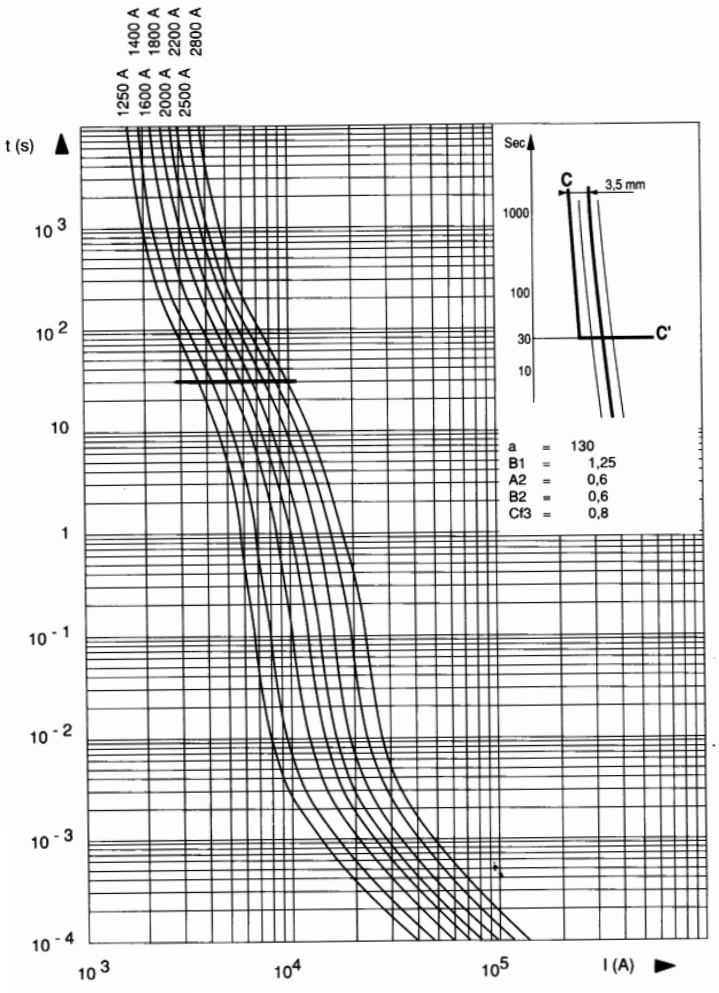
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

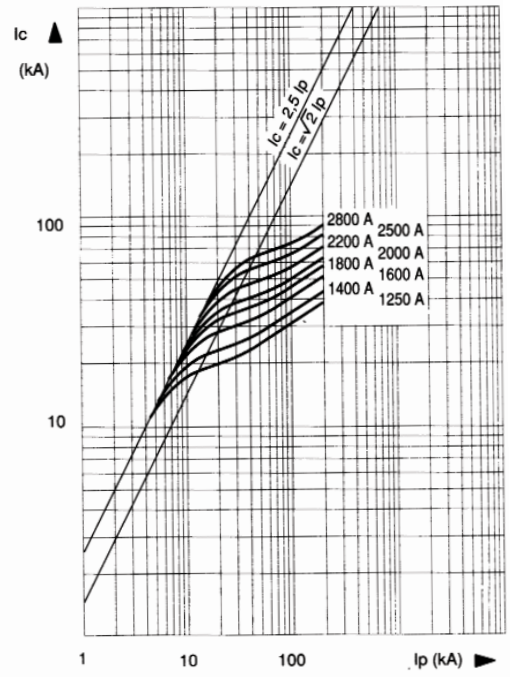
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

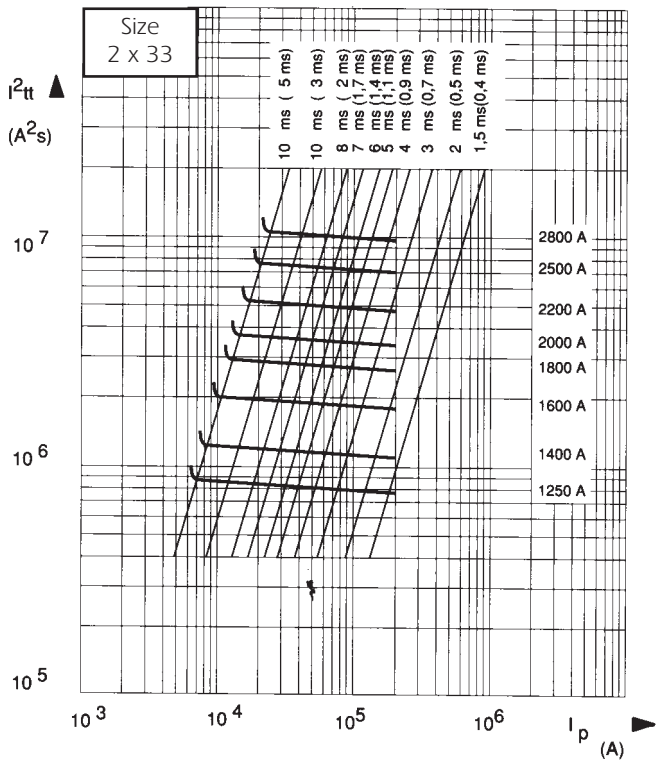
Size 2x33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

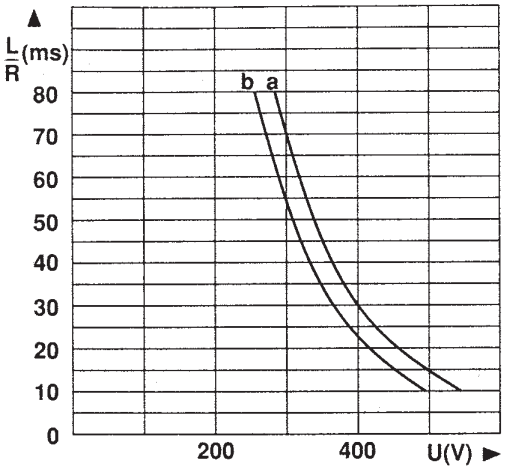
Maximum values of total operating I²t and total operating times

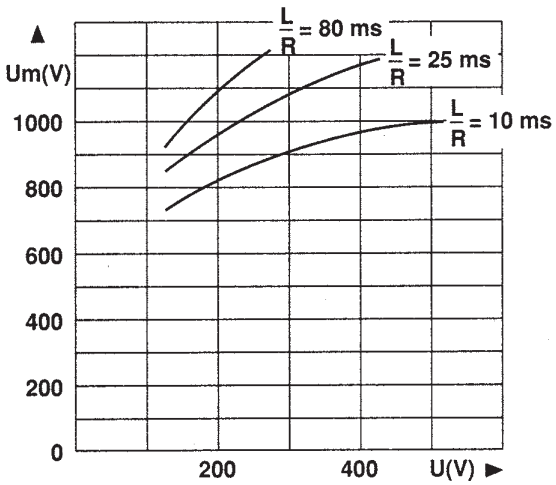
Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

DC working voltage possibilities





Rated current In (A)	Curves (*) and Ipm (1) corresponding to the rating					
	30 * Ipm (A)	31 * Ipm (A)	32 * Ipm (A)	33 * Ipm (A)	2 x 32 * Ipm (A)	2 x33 * Ipm (A)
63	a 230					
80	a 300					
100	a 360					
125	a 460					
160	a 650					
200	a 880	a 850				
250	a 1300	a 1150				
315	a 1700	a 1450				
350	a 1900	a 1600				
400	a 2300	a 2200	a 2000			
450		a 2500	a 2300			
500		a 3000	a 2600	a 2300		
550		a 3400	a 3150	a 2500		
630		a 5000	a 3700	a 3250		
700		a 5600	a 4300	a 3900		
800			a 5300	a 4800		
900			a 7800	a 5600		
1000			b 9000	a 6600	a 5200	
1100				a 7700		
1250				b 11000	a 7400	a 6500
1400				b 12500	a 8600	a 7800
1600					a 10600	a 9600
1800					a 15600	a 11200
2000					b 18000	a 13200
2200						a 15400
2500						b 22000
2800						b 25000

Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark:
When the fault current di/dt is very large, this condition can be exceeded. This is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

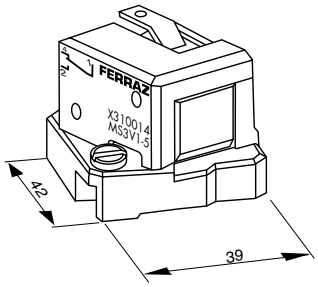
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

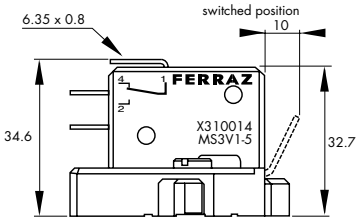
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



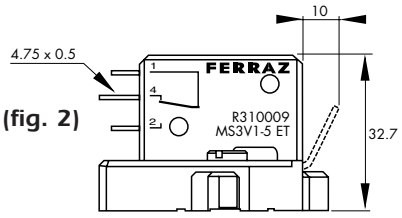
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

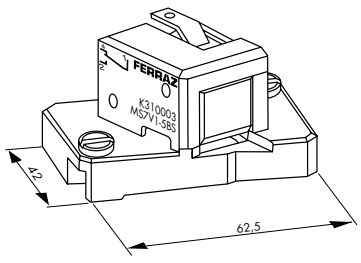
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

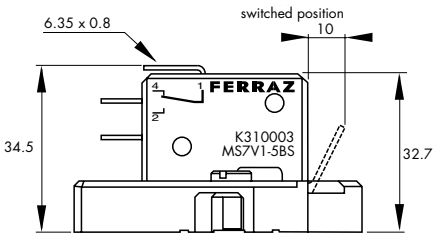
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

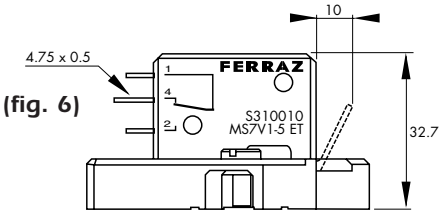


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

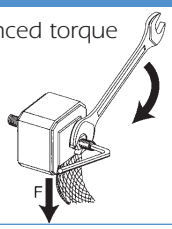
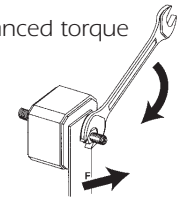
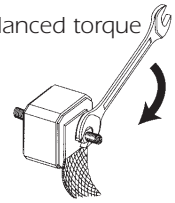
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics



6,9 gRB 71 PA 200



6,9 gRB 73 TTF 1000
+ MS7V1-5 UR

Ferraz Shawmut PSC-gRB 690 VAC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment.
This range is a fast acting, full range fuses engineered to provide state of the art protection for power semiconductors such as diodes, thyristors.
These square body fuse-links are available in various body sizes with a broad range of ampere ratings allowing the greatest flexibility in equipment design.
They have pure silver fuse elements embedded in solidified sand which provides optimized I^2t and high breaking capacity. All contact surfaces are plated and all hardware non-magnetic.
All fuses are standard with a low voltage blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly on to the fuse in service.



6,9 gRB 70 EF 400



6,9 gRB 73 DIIA 1000

Feature

- Full range (gR curve), fast acting
- Highly current limiting.
- High breaking capacities
- Very low I^2t
- Worldwide mounting acceptance.
- Superior cycling ability.
- High widstanding in rush current and overloads

Ratings

AC: up to 1000 A 690 VAC
150 kA IR
DC: Consult Factory

Applications

Protection of rectifiers, inverters, static switch, AC & DC drives and UPS systems.

AC: Tested to IEC 60269.4

approvals

Features/Benefits

Wide range of mounting styles

Broad range of ampere ratings in each body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics

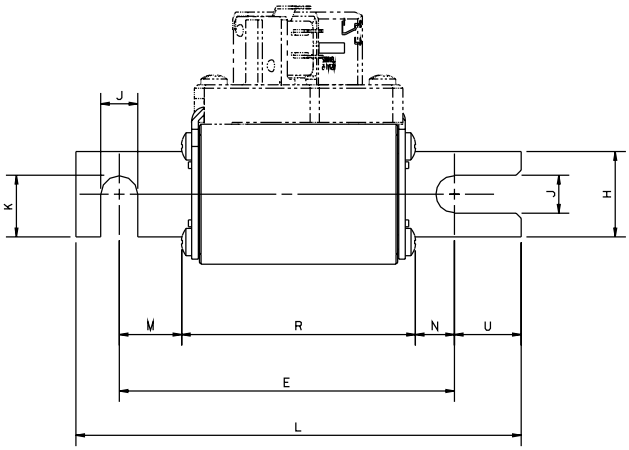
Voltage	Size	Type	Rating In (A)	Pre-Arcing I²t @ 1ms kA²s	Total I²t @ 690V kA²s	PN: Power losses (W)				Breaking capacities (kA)
						End contacts		Blades		
						0,8 In	In	0,8In	In	
690V	70	gRB	50	0,12	0,7	9	17	9	17	150
		gRB	63	0,27	1,6	9	18	9	18	
		gRB	80	0,47	2,8	11	22	11	22	
		gRB	100	1,06	6,2	12	23	12	23	
		gRB	125	1,9	11,2	13	26	13	26	
		gRB	160	4,2	25	15	29	15	29	
		gRB	200	7,5	44	17	33	17	34	
		gRB	250	13,5	79	20	39	20	40	
		gRB	315	24	142	23	46	24	47	
		gRB	350	41	240	23	46	24	47	
	71	gRB	125	1,06	6,2	18	35	18	35	
		gRB	160	2,4	14	19	38	19	38	
		gRB	200	5	29,5	21	41	21	42	
		gRB	250	9,5	56	23	46	24	48	
		gRB	315	18,5	108	27	53	27	54	
		gRB	350	23	140	29	58	30	60	
		gRB	400	38	225	30	59	31	61	
		gRB	450	62	360	30	59	31	61	
		gRB	500	78	460	32	64	34	67	
	72	gRB	200	4,2	25	23	45	23	45	
		gRB	250	8,5	50	25	49	25	50	
		gRB	315	17	100	28	55	29	57	
		gRB	350	23	140	29	58	30	60	
		gRB	400	34	200	32	63	33	65	
		gRB	450	47	280	34	67	35	70	
		gRB	500	68	400	35	69	36	72	
		gRB	550	84	495	38	75	39	78	
		gRB	630	124	730	41	81	43	86	
		gRB	700	155	910	45	89	48	95	
	73	gRB	315	12	69	33	66	34	67	
		gRB	350	17	100	34	68	35	69	
		gRB	400	27	160	36	71	37	73	
		gRB	450	34	200	40	79	41	82	
		gRB	500	47	280	42	84	43	86	
		gRB	550	68	400	42	84	44	87	
		gRB	630	102	600	45	89	47	94	
		gRB	700	139	820	47	94	50	100	
		gRB	800	227	1330	48	96	52	104	
		gRB	900	280	1640	55	109	60	119	
		gRB	1000	385	2270	58	115	64	127	

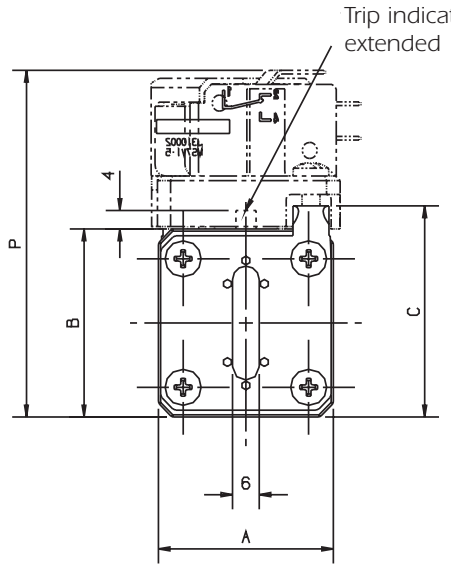
Time/current characteristics
Cut off characteristics
Total I²t and total operating time
Other curves

see following pages

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
German 70-73 End contacts

Size	Designation	Reference Number	Weight (g)	Catalog Number
	6,9 gRB 70 D11A 050			
	6,9 gRB 70 D11A 063			
	6,9 gRB 70 D11A 080			
	6,9 gRB 70 D11A 100	Q302027		PC70GB69V100D1A
	6,9 gRB 70 D11A 125			
70*	6,9 gRB 70 D11A 160	R301591	370	PC70GB69V160D1A
	6,9 gRB 70 D11A 200	S301592		PC70GB69V200D1A
	6,9 gRB 70 D11A 250	Z301943		PC70GB69V250D1A
	6,9 gRB 70 D11A 315	J301584		PC70GB69V315D1A
	6,9 gRB 70 D11A 350	W302124		PC70GB69V350D1A
	6,9 gRB 71 D11A 125	B302658		PC71GB69V125D1A
	6,9 gRB 71 D11A 160	C302659		PC71GB69V160D1A
	6,9 gRB 71 D11A 200	C302682		PC71GB69V200D1A
	6,9 gRB 71 D11A 250	R302143		PC71GB69V250D1A
71*	6,9 gRB 71 D11A 315			
	6,9 gRB 71 D11A 350	T302214	540	PC71GB69V350D1A
	6,9 gRB 71 D11A 400			
	6,9 gRB 71 D11A 450	R301637		PC71GB69V450D1A
	6,9 gRB 71 D11A 500	A301737		PC71GB69V500D1A
	6,9 gRB 72 D11A 200			
	6,9 gRB 72 D11A 250	T302697		
	6,9 gRB 72 D11A 315	V302698		
	6,9 gRB 72 D11A 350	E302500		PC72GB69V350D1A
	6,9 gRB 72 D11A 400	V302215		PC72GB69V400D1A
72**	6,9 gRB 72 D11A 450	Q302671	800	PC72GB69V450D1A
	6,9 gRB 72 D11A 500			
	6,9 gRB 72 D11A 550	L301724		PC72GB69V550D1A
	6,9 gRB 72 D11A 630			
	6,9 gRB 72 D11A 700			
	6,9 gRB 73 D11A 315			
	6,9 gRB 73 D11A 350			
	6,9 gRB 73 D11A 400			
	6,9 gRB 73 D11A 450			
	6,9 gRB 73 D11A 500	W302216		PC73GB69V500D1A
73**	6,9 gRB 73 D11A 550	R302672	1150	PC73GB69V550D1A
	6,9 gRB 73 D11A 630			
	6,9 gRB 73 D11A 700	F301765		PC73GB69V700D1A
	6,9 gRB 73 D11A 800			
	6,9 gRB 73 D11A 900			
	6,9 gRB 73 D11A 1000	S302673		PC73GB69V10CD1A





Packaging: *3 pieces
** 1 piece

Microswitches:

MS 7V 1-5	Réf.J310002	Standard NO-NC
MS 7V 1-5 UR	Réf.Z310039	Standard NO-NC
MS 7V 1-5 BS	Réf.K310003	Low level NO-NC
MS 7V 1-9 BS	Réf.P310007	Double pole NO-NC-low level
MS 7V 1-5 ET	Réf.S310010	Low level NO-NC-IP 50

Microswitches supplied seperately

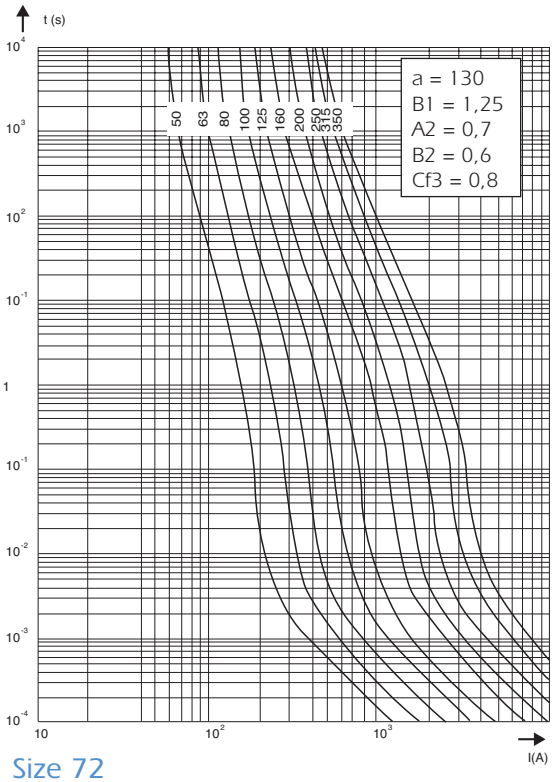
Size	A	B	C	E± 1,3	H	J	K	L	M	N	P	R
70	39,8	41,8	46,5	100,4	25	10,5	17,7	133,4	18,5	11,5	81,4	70,4
	1.57"	1.65"	1.83"	3.95"	0.98"	0.41"	0.70"	5.25"	0.73"	0.43"	3.20"	2.77"
71	51	51	56,5	100,4	25	10,5	17,7	133,4	18,5	11,5	91	70,4
	2.00"	2.00"	2.22"	3.95"	0.98"	0.41"	0.70"	5.25"	0.73"	0.45"	3.68"	2.77"
72	60	60	65,5	100,4	32	11,1	21,2	133,4	18,5	11,5	93,6	70,4
	2.36"	2.36"	2.58"	3.95"	1.26"	0.44"	0.83"	5.25"	0.73"	0.45"	3.69"	2.77"
73	74,4	74,4	78,5	100,4	40	10,5	25,2	133,4	18	11	114,4	70,4
	2.93"	2.93"	3.09"	3.95"	1.58"	0.41"	1.00"	5.25"	0.71"	0.43"	4.50"	2.77"

Fuse holder solution, see Fuse gear section.

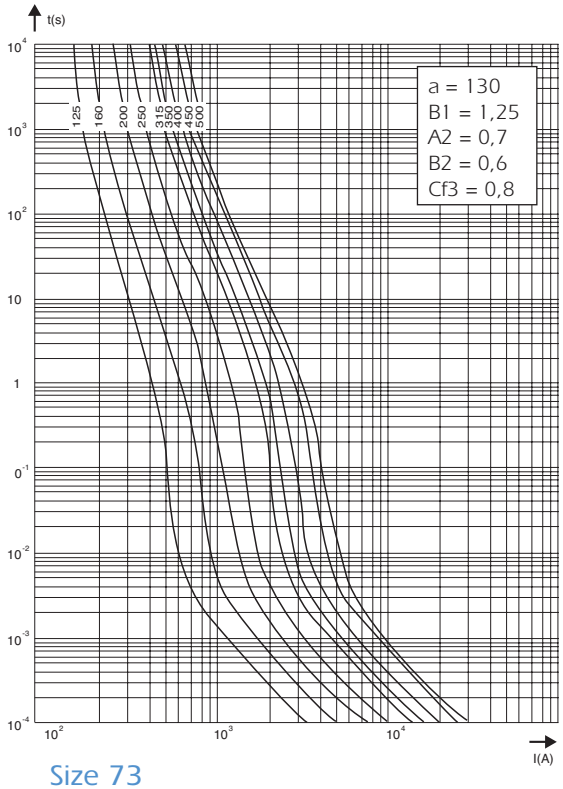
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Times/Current Characteristics

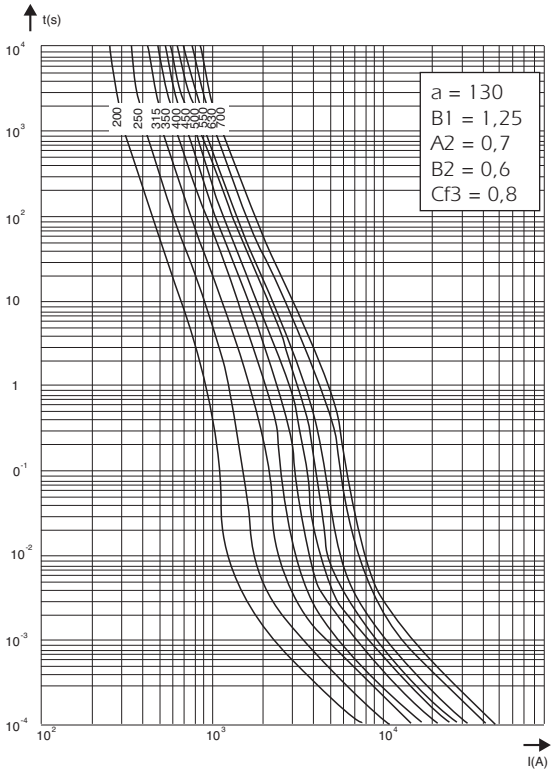
Size 70



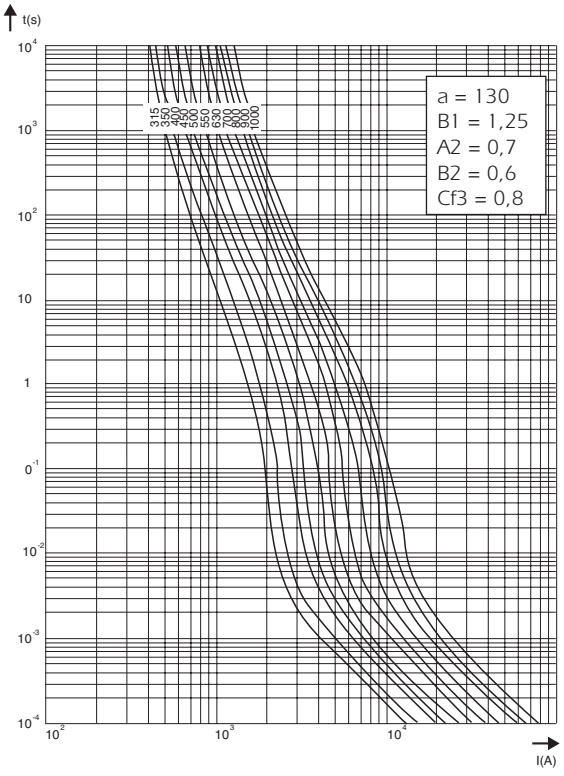
Size 71



Size 72



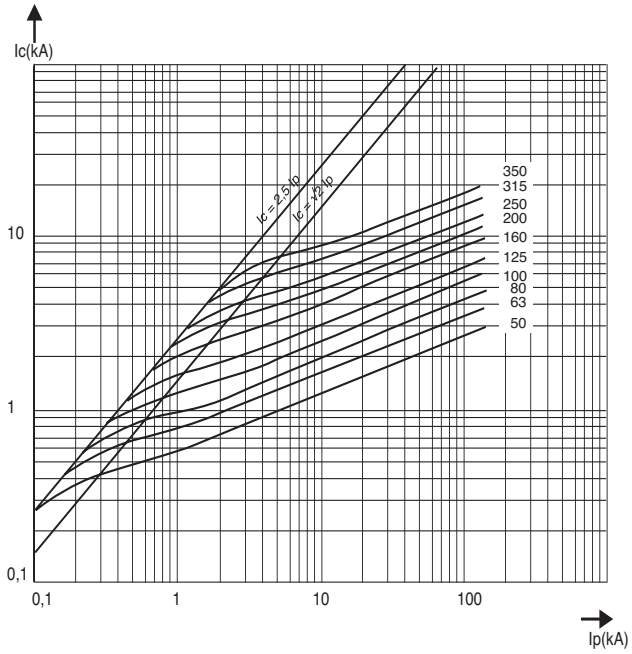
Size 73



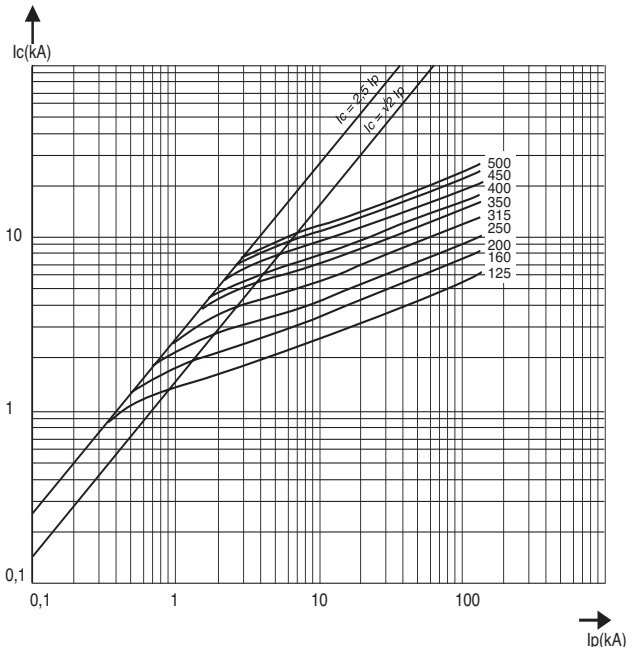
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Cut off characteristics
Peak let thru current

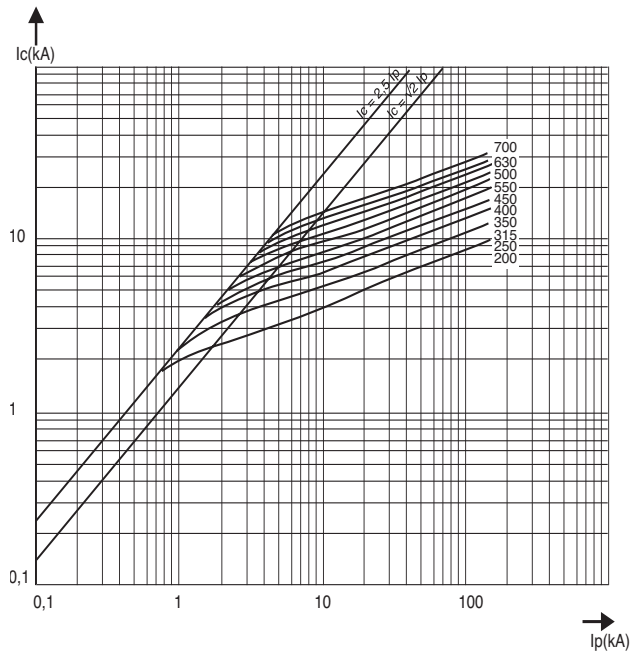
Size 70



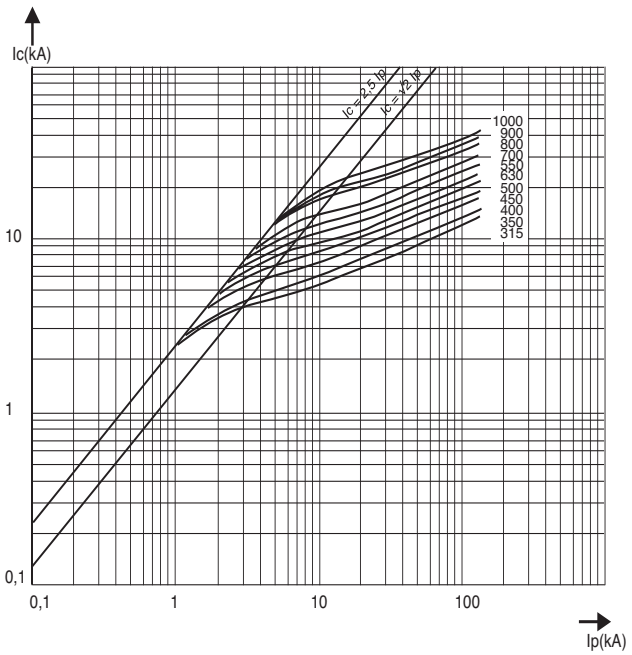
Size 71



Size 72



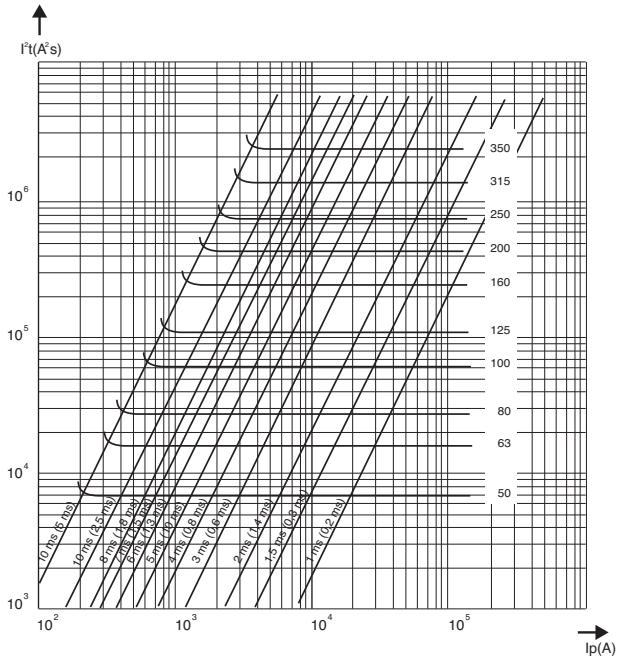
Size 73



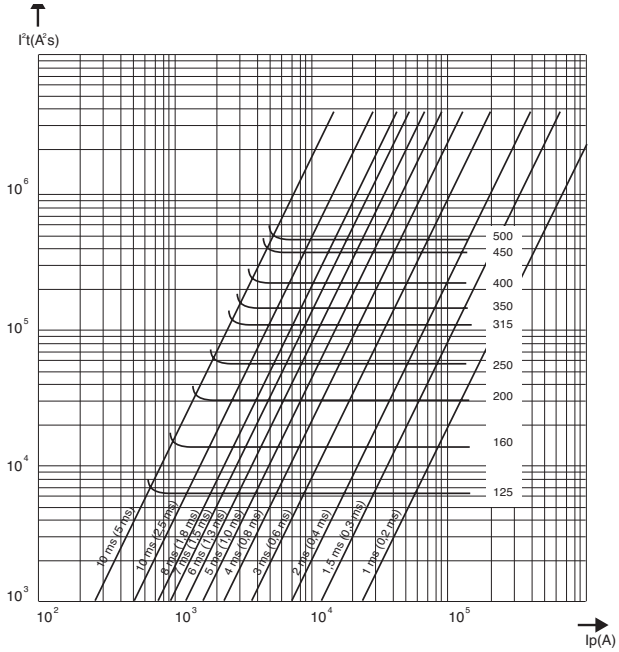
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Total I²t and total operating time @ 690 V

Size 70

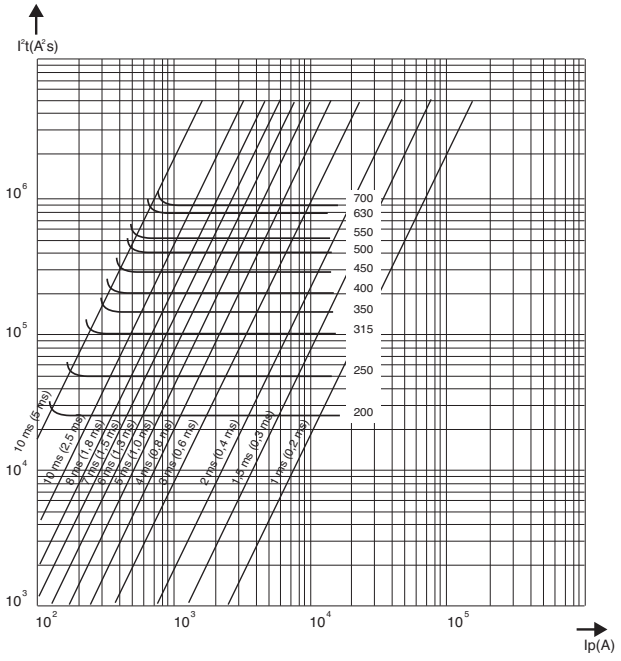


Size 71

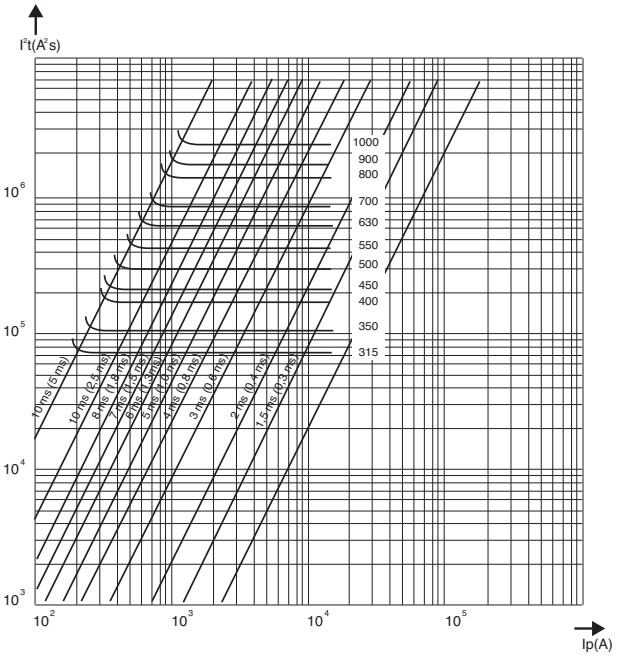


Value between parentheses pertain to prearcing I²t

Size 72



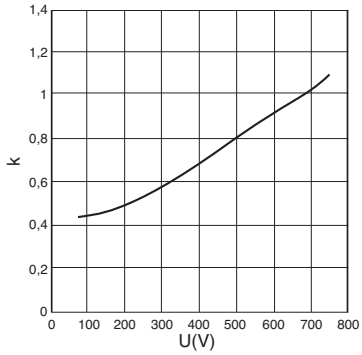
Size 73



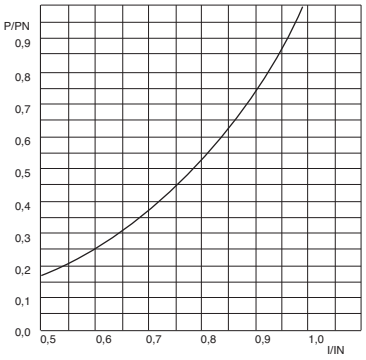
Value between parentheses pertain to prearcing I²t

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

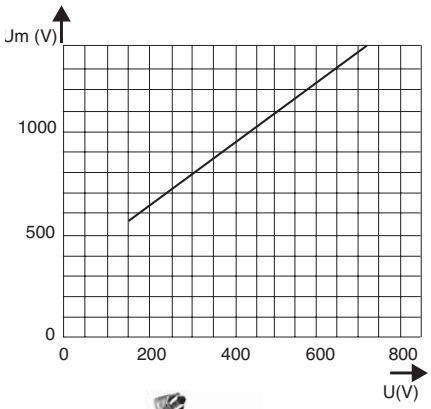
k=f(U)
Multiplier coefficient
to calculate total I^2t
and total operating time



P/PN
Multiplier coefficient
to calculate the power
losses at various currents



Peak arc voltage



PA terminals fuse holder

Size	1 pole	2 poles	3 poles	4 poles	wall	separators	fuse shields
70	T218241	G218759	W219278	H222486	Z213669	V216724	K200822
71	A223008	G200796	Y201340	H201855	J214690	N217753	M222513
72	E211075	V211595	D212109	R212627	J214690	N217753	Y211621
73	X213644	B214154	F214664	K215174	Q215708	M218787	X212655



End contacts TTF terminal fuse holders

Size	1 pole
70/71	C301233
72/73	E301235



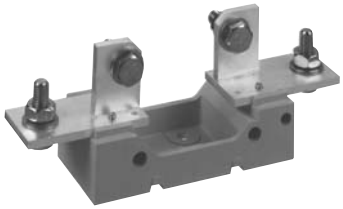
French blades EF terminal fuse holders

Size	SP/SE/SF
70	F096099
71	V098711
72	W098712
73	C209187



Din blades 110 mm DI N 43653 terminal fuse holders

Size	Fuses holders
70/71/72/73	L091941



Warning: for all holders, please check maximum fuse and fuse holders operating limit. in Gear and Fuse gear section
Tightning torque see Gear and Fuse gear section.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

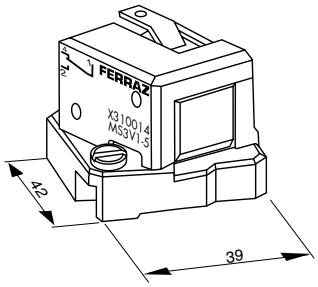
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

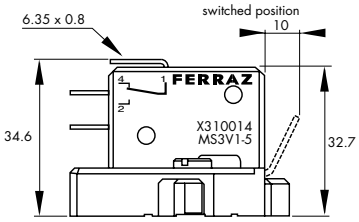
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



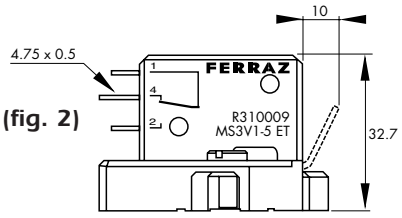
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

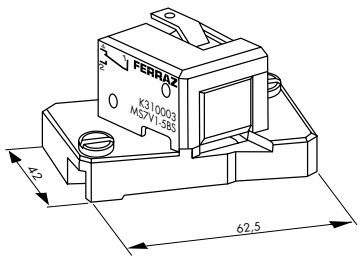
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

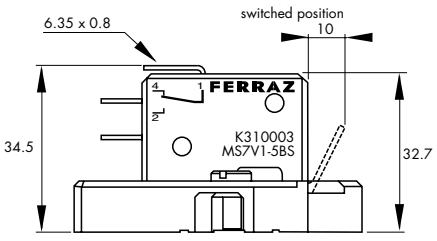
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

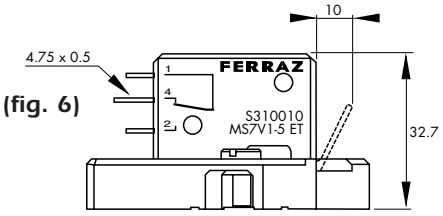


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

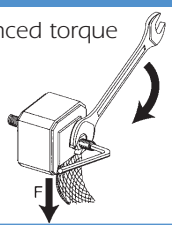
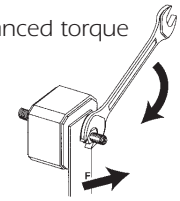
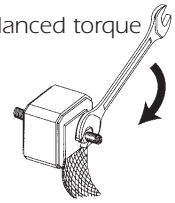
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics



6,9 gRB 71 PA 200



6,9 gRB 73 TTF 1000
+ MS7V1-5 UR

Ferraz Shawmut PSC-gRB 690 VAC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment.
This range is a fast acting, full range fuses engineered to provide state of the art protection for power semiconductors such as diodes, thyristors.
These square body fuse-links are available in various body sizes with a broad range of ampere ratings allowing the greatest flexibility in equipment design.
They have pure silver fuse elements embedded in solidified sand which provides optimized I^2t and high breaking capacity. All contact surfaces are plated and all hardware non-magnetic.
All fuses are standard with a low voltage blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly on to the fuse in service.



6,9 gRB 70 EF 400



6,9 gRB 73 DIIA 1000

Feature

- Full range (gR curve), fast acting
- Highly current limiting.
- High breaking capacities
- Very low I^2t
- Worldwide mounting acceptance.
- Superior cycling ability.
- High widstanding in rush current and overloads

Ratings

AC: up to 1000 A 690 VAC
150 kA IR
DC: Consult Factory

Applications

Protection of rectifiers, inverters, static switch, AC & DC drives and UPS systems.

AC: Tested to IEC 60269.4

approvals

Features/Benefits

Wide range of mounting styles

Broad range of ampere ratings in each body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics

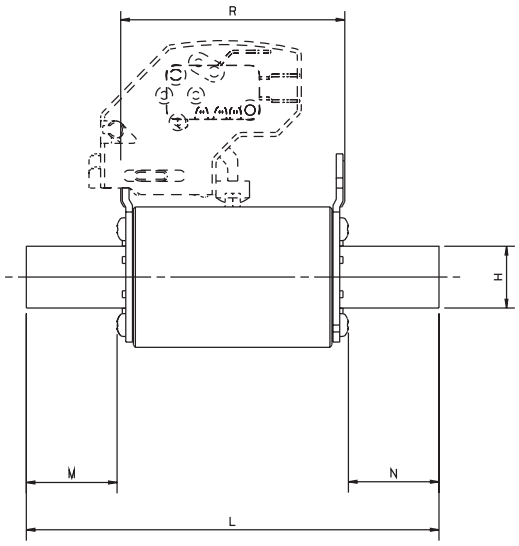
Voltage	Size	Type	Rating In (A)	Pre-Arcing I²t @ 1ms kA²s	Total I²t @ 690V kA²s	PN: Power losses (W)				Breaking capacities (kA)
						End contacts		Blades		
						0,8 In	In	0,8In	In	
690V	70	gRB	50	0,12	0,7	9	17	9	17	150
		gRB	63	0,27	1,6	9	18	9	18	
		gRB	80	0,47	2,8	11	22	11	22	
		gRB	100	1,06	6,2	12	23	12	23	
		gRB	125	1,9	11,2	13	26	13	26	
		gRB	160	4,2	25	15	29	15	29	
		gRB	200	7,5	44	17	33	17	34	
		gRB	250	13,5	79	20	39	20	40	
		gRB	315	24	142	23	46	24	47	
		gRB	350	41	240	23	46	24	47	
	71	gRB	125	1,06	6,2	18	35	18	35	
		gRB	160	2,4	14	19	38	19	38	
		gRB	200	5	29,5	21	41	21	42	
		gRB	250	9,5	56	23	46	24	48	
		gRB	315	18,5	108	27	53	27	54	
		gRB	350	23	140	29	58	30	60	
		gRB	400	38	225	30	59	31	61	
		gRB	450	62	360	30	59	31	61	
		gRB	500	78	460	32	64	34	67	
	72	gRB	200	4,2	25	23	45	23	45	
		gRB	250	8,5	50	25	49	25	50	
		gRB	315	17	100	28	55	29	57	
		gRB	350	23	140	29	58	30	60	
		gRB	400	34	200	32	63	33	65	
		gRB	450	47	280	34	67	35	70	
		gRB	500	68	400	35	69	36	72	
		gRB	550	84	495	38	75	39	78	
		gRB	630	124	730	41	81	43	86	
		gRB	700	155	910	45	89	48	95	
	73	gRB	315	12	69	33	66	34	67	
		gRB	350	17	100	34	68	35	69	
		gRB	400	27	160	36	71	37	73	
		gRB	450	34	200	40	79	41	82	
		gRB	500	47	280	42	84	43	86	
		gRB	550	68	400	42	84	44	87	
		gRB	630	102	600	45	89	47	94	
		gRB	700	139	820	47	94	50	100	
		gRB	800	227	1330	48	96	52	104	
		gRB	900	280	1640	55	109	60	119	
		gRB	1000	385	2270	58	115	64	127	

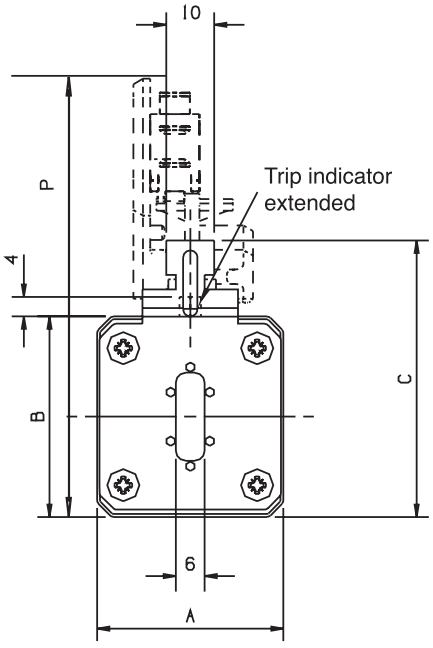
Time/current characteristics
Cut off characteristics
Total I²t and total operating time
Other curves

see following pages

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
IEC Terminals 70-73 Blades

Size	Designation	Reference Number	Weight (g)	Catalog Number
70*	6,9 gRB 70 PA 050	Q301245	340	PC70GB69V50PA
	6,9 gRB 70 PA 063	R301246		PC70GB69V63PA
	6,9 gRB 70 PA 080	S301247		PC70GB69V80PA
	6,9 gRB 70 PA 100	T301248		PC70GB69V100PA
	6,9 gRB 70 PA 125	T301179		PC70GB69V125PA
	6,9 gRB 70 PA 160	F301190		PC70GB69V160PA
	6,9 gRB 70 PA 200	S301178		PC70GB69V200PA
	6,9 gRB 70 PA 250	V301249		PC70GB69V250PA
	6,9 gRB 70 PA 315	W301250		PC70GB69V315PA
	6,9 gRB 70 PA 350	X301251		PC70GB69V350PA
71*	6,9 gRB 71 PA 125	Y301252	550	PC71GB69V125PA
	6,9 gRB 71 PA 160	Z301253		PC71GB69V160PA
	6,9 gRB 71 PA 200	A301254		PC71GB69V200PA
	6,9 gRB 71 PA 250	B301255		PC71GB69V250PA
	6,9 gRB 71 PA 315	R301177		PC71GB69V315PA
	6,9 gRB 71 PA 350	E301258		PC71GB69V350PA
	6,9 gRB 71 PA 400	V301226		PC71GB69V400PA
	6,9 gRB 71 PA 450	C301256		PC71GB69V450PA
	6,9 gRB 71 PA 500	D301257		PC71GB69V500PA
72*	6,9 gRB 72 PA 200	F301259	820	PC72GB69V200PA
	6,9 gRB 72 PA 250	G301260		PC72GB69V250PA
	6,9 gRB 72 PA 315	H301261		PC72GB69V315PA
	6,9 gRB 72 PA 350	J301262		PC72GB69V350PA
	6,9 gRB 72 PA 400	K301263		PC72GB69V400PA
	6,9 gRB 72 PA 450	L301264		PC72GB69V450PA
	6,9 gRB 72 PA 500	M301265		PC72GB69V500PA
	6,9 gRB 72 PA 550	N301266		PC72GB69V550PA
	6,9 gRB 72 PA 630	P301267		PC72GB69V630PA
	6,9 gRB 72 PA 700	Q301268		PC72GB69V700PA
73**	6,9 gRB 73 PA 315	R301269	1120	PC73GB69V315PA
	6,9 gRB 73 PA 350	S301270		PC73GB69V350PA
	6,9 gRB 73 PA 400	T301271		PC73GB69V400PA
	6,9 gRB 73 PA 450	V301272		PC73GB69V450PA
	6,9 gRB 73 PA 500	W301273		PC73GB69V500PA
	6,9 gRB 73 PA 550	N301404		PC73GB69V550PA
	6,9 gRB 73 PA 630	X301274		PC73GB69V630PA
	6,9 gRB 73 PA 700	Y301275		PC73GB69V700PA
	6,9 gRB 73 PA 800	Z301276		PC73GB69V800PA
	6,9 gRB 73 PA 900	A301277		PC73GB69V900PA
	6,9 gRB 73 PA 1000	B301278		PC73GB69V1000PA





Packaging: *3 pieces - ** 1 piece

Size Fuses	Microswitches		
70	MS PA 2-5T70	Réf.T210398	OF Standard
	MS PA 2-9T70	Réf.V210399	Double OF side by side
	MS PA 2-5 B2T70	Réf.W210400	OF Terminals 2.8 mm
71-72-73	MS PA 2-5	Réf.H210158	OF Standard
	MS PA 2-9V	Réf.J210159	Double OF side by side
	MS PA 2-5 B2	Réf.C210160	OF Terminals 2.8 mm

Microswitches supplied seperately

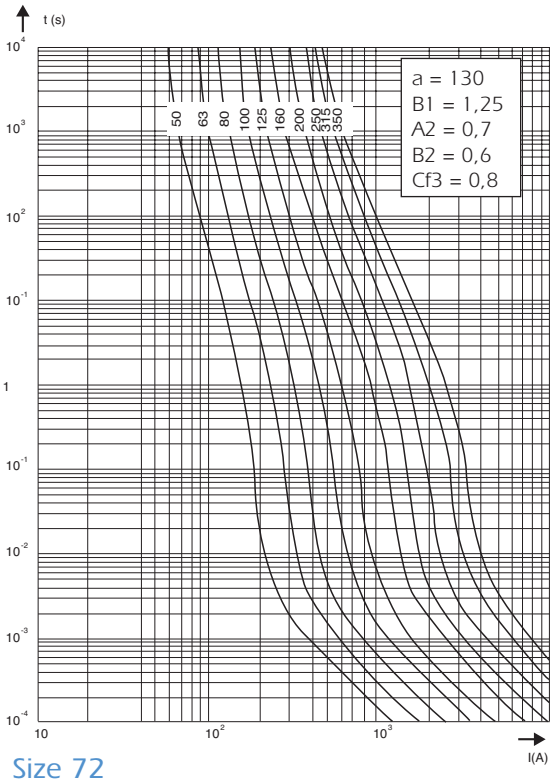
Size	A	B	C	H	L±1,5	M	N	P	R
70	39,8	41,8	57	18	123,4	26,2	26,2	90	67
	1.57"	1.65"	2.24"	0.71"	4.86"	1.03"	1.03"	3.54"	2.64"
71	51	51	63	25	133,4	26,2	26,2	96	68
	2.00"	2.00"	2.48"	0.98"	5.25"	1.03"	1.03"	3.79"	2.68"
72	60	60	72	32	149,4	39,2	39,2	105	68
	2.36"	2.36"	2.84"	1.26"	5.88"	1.54"	1.54"	4.15"	2.68"
73	74,4	74,4	87,5	40	149,4	39,2	39,2	121	68
	2.93"	2.93"	3.45"	1.58"	5.88"	1.54"	1.54"	4.76"	2.68"

180° position trip indicator available under PV designation but no microswitch possible Fuse holder solution, see Gear and Fuse gear section

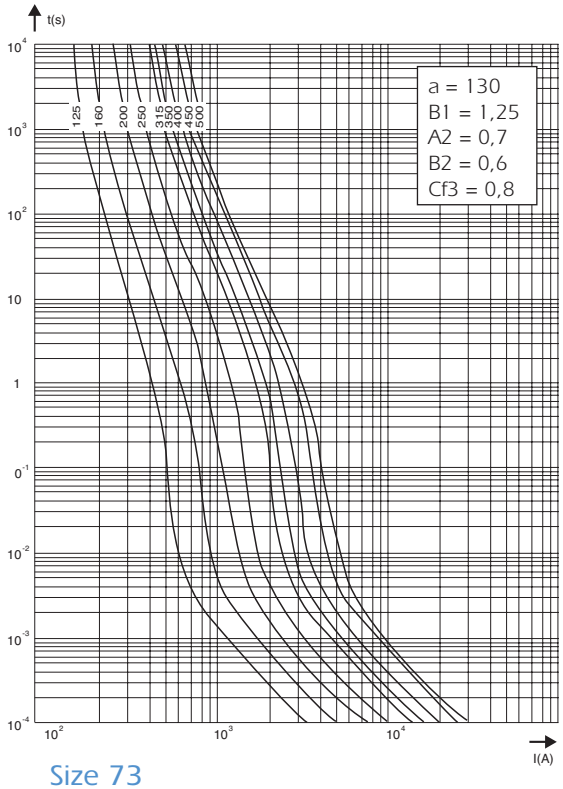
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Times/Current Characteristics

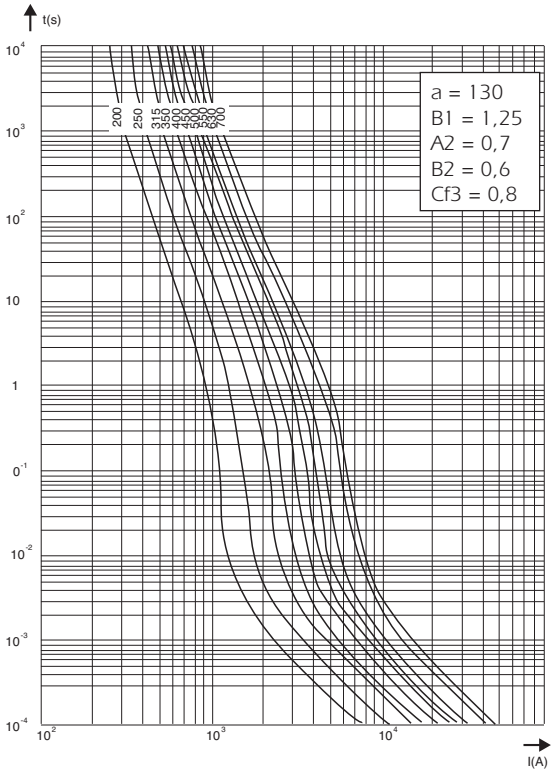
Size 70



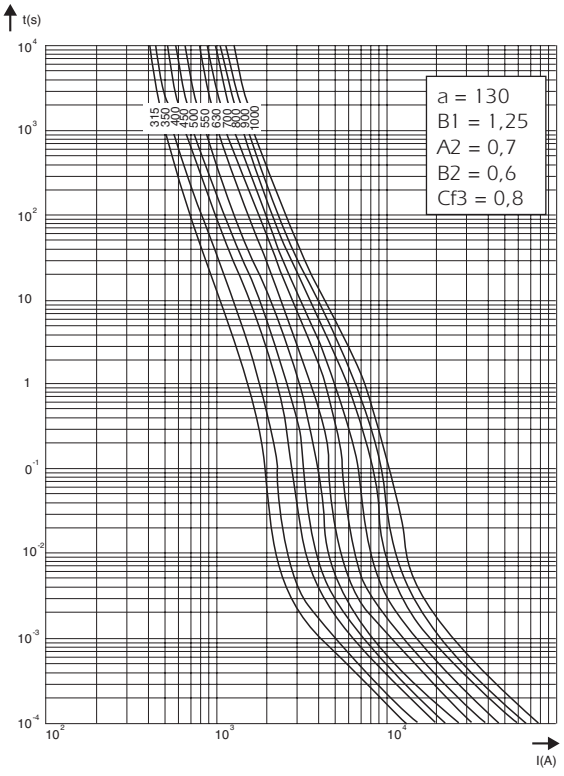
Size 71



Size 72



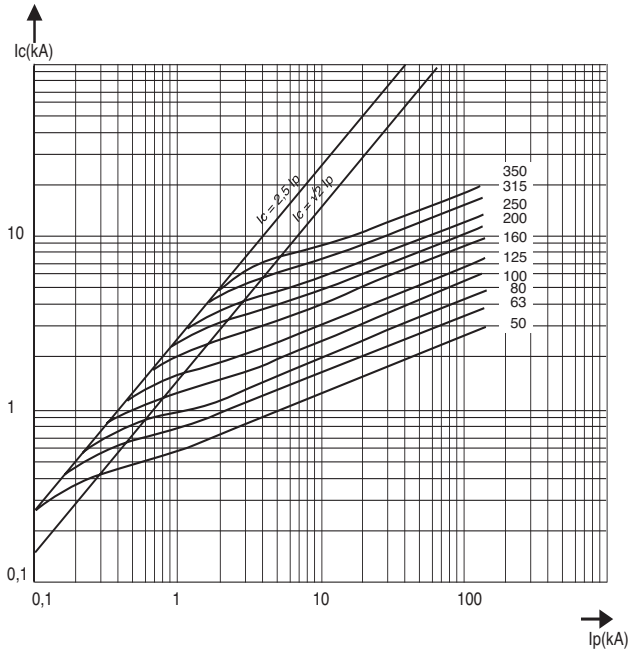
Size 73



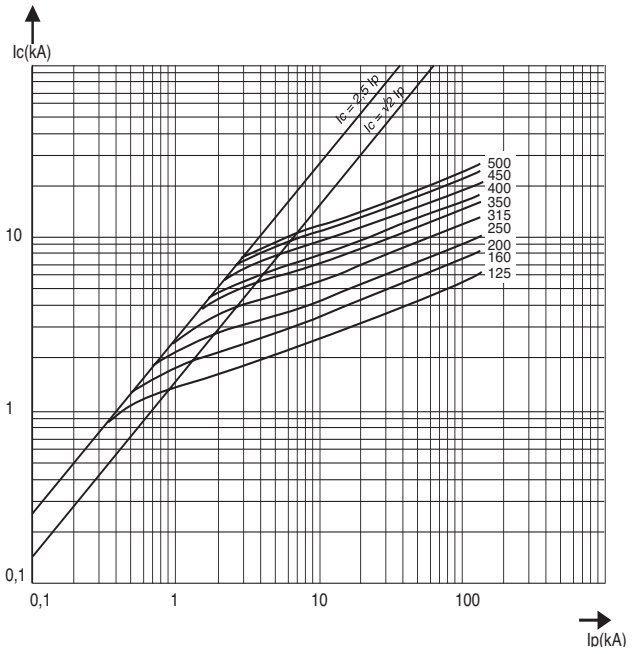
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Cut off characteristics
Peak let thru current

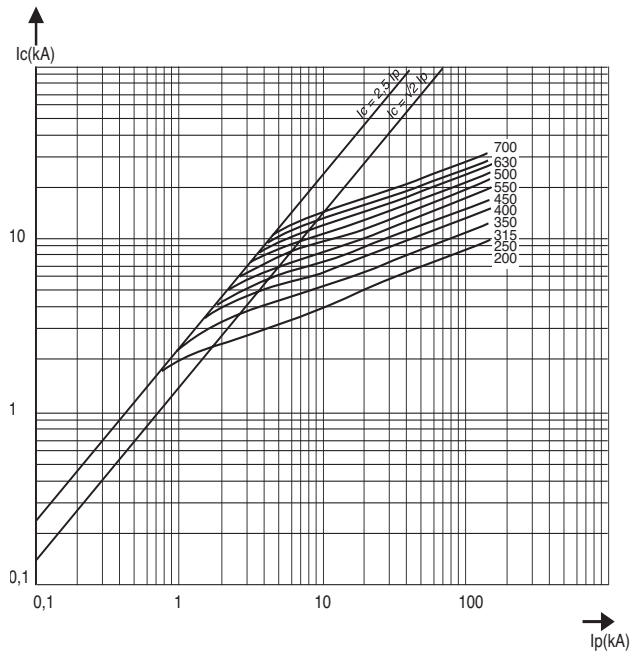
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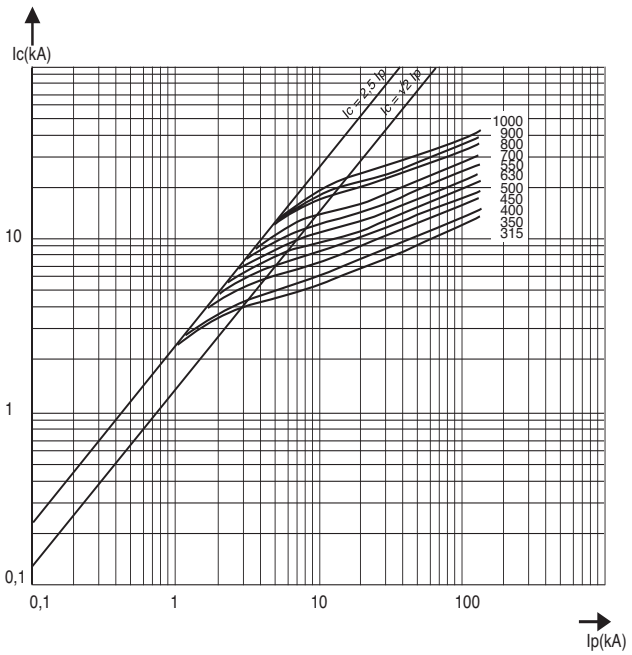
Size 71



Size 72



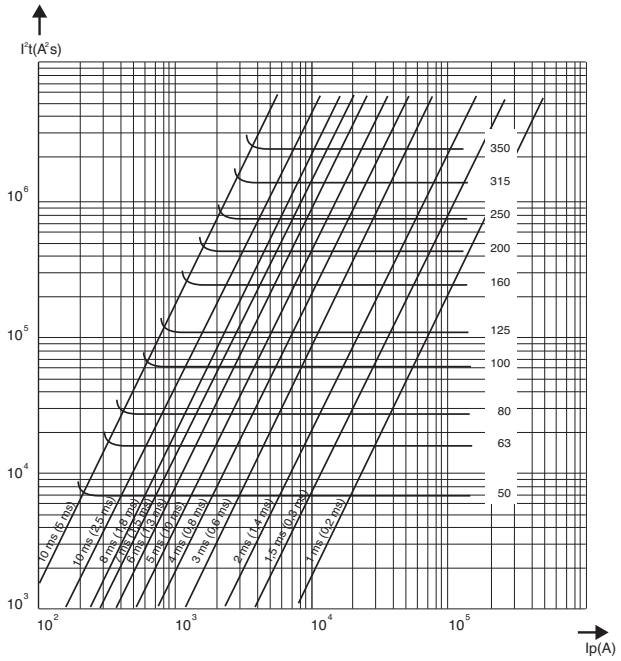
Size 73



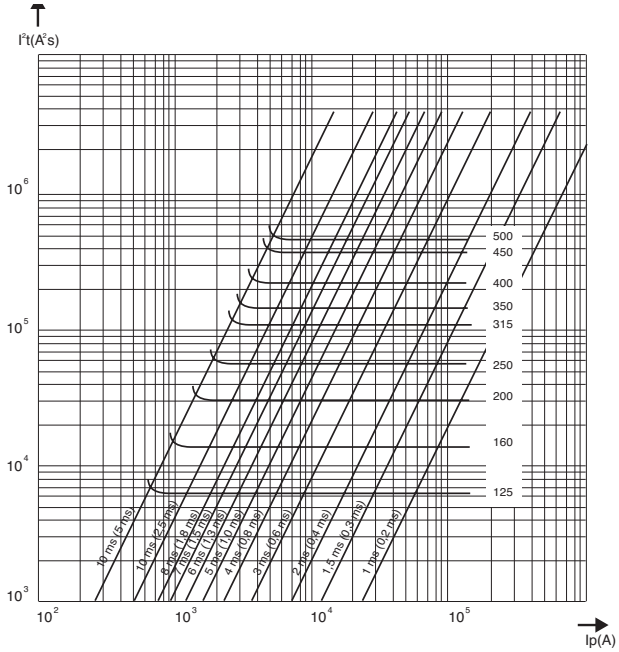
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Total I²t and total operating time @ 690 V

Size 70

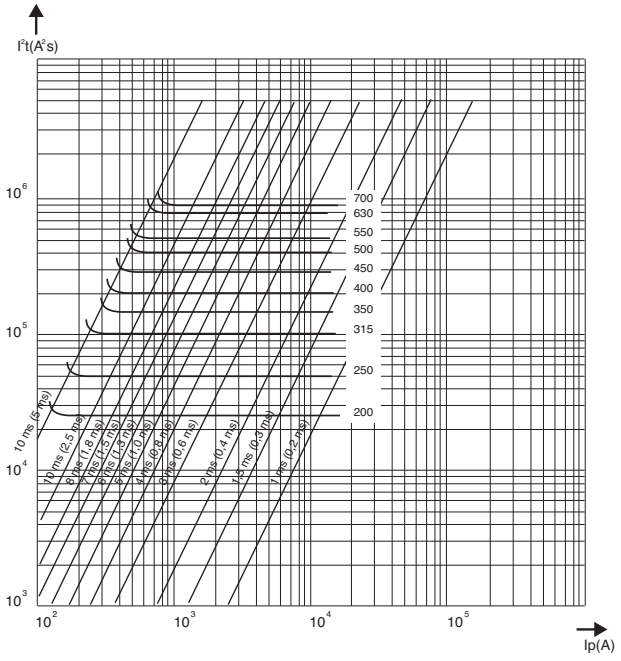


Size 71

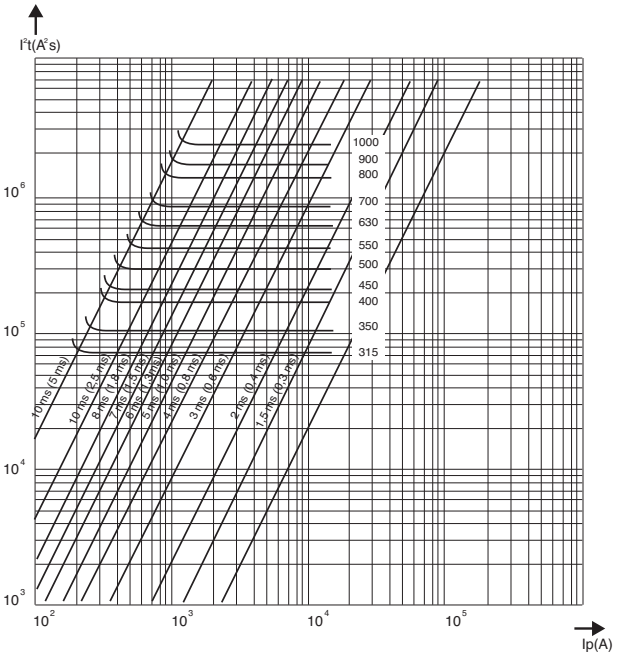


Value between parentheses pertain to prearcing I²t

Size 72



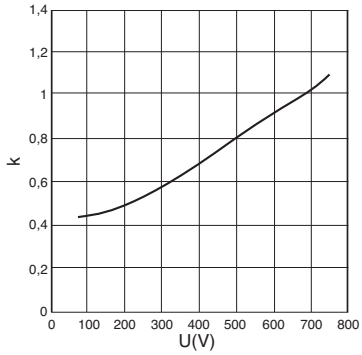
Size 73



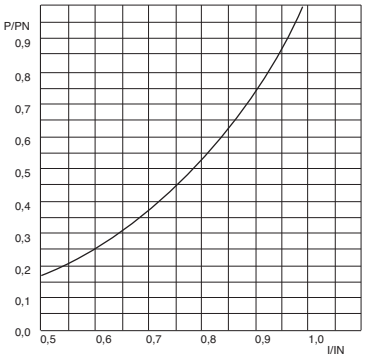
Value between parentheses pertain to prearcing I²t

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

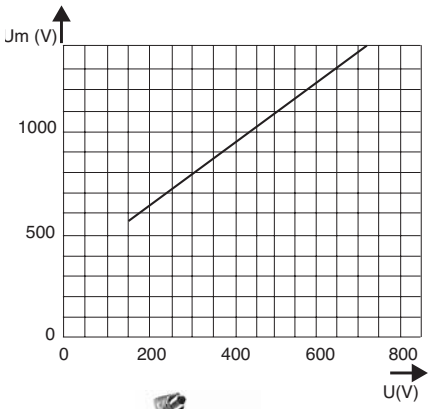
k=f(U)
Multiplier coefficient
to calculate total I^2t
and total operating time



P/PN
Multiplier coefficient
to calculate the power
losses at various currents



Peak arc voltage



PA terminals fuse holder

Size	1 pole	2 poles	3 poles	4 poles	wall	separators	fuse shields
70	T218241	G218759	W219278	H222486	Z213669	V216724	K200822
71	A223008	G200796	Y201340	H201855	J214690	N217753	M222513
72	E211075	V211595	D212109	R212627	J214690	N217753	Y211621
73	X213644	B214154	F214664	K215174	Q215708	M218787	X212655



End contacts TTF terminal fuse holders

Size	1 pole
70/71	C301233
72/73	E301235



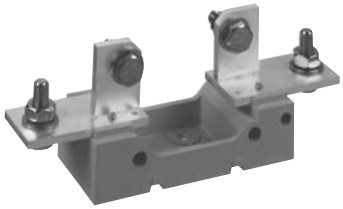
French blades EF terminal fuse holders

Size	SP/SE/SF
70	F096099
71	V098711
72	W098712
73	C209187



Din blades 110 mm DI N 43653 terminal fuse holders

Size	Fuses holders
70/71/72/73	L091941



Warning: for all holders, please check maximum fuse and fuse holders operating limit. in Gear and Fuse gear section
Tightning torque see Gear and Fuse gear section.

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity						AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
					Non inductive circuit			Inductive circuit : L/R = 25ms					
					30V	110V	250V	30V	110V	250V			
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

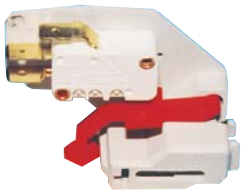
Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Microswitches for PSC 70-73 Plain blades

MICROSWITCH SYSTEMS ADAPTED TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:

PSC sizes 70, 71, 72, 73 PLAIN BLADES (PA)

MS PA 2-5



Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit			Inductive circuit : L/R = 25ms			AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
					30V	110V	250V	30V	110V	250V			
MS PA 2-5	1500 V	20 V	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	9 kV	13 kV	V0
MS PA 2-9		50 mA		DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A			
MS PA 2-5 B2	1500 V	20 V/100 mA	5 A	50 Hz	4 A	4 A	5 A	-	5 A	5 A	12 kV	16 kV	V0

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

MS PA...

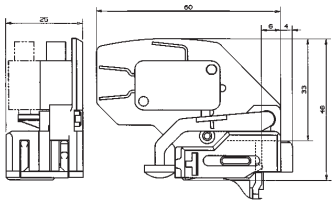
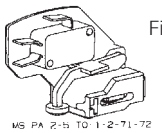


Fig.7



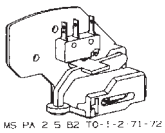


Fig.8

Exclusive "MS PA" indication systems are automatically resettable

Fuse size	Code	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
71-72-73	MS PA 2-5	H210158	OF Standard (fig. 7)	32,5	1	MSPA 2-5
	MS PA 2-9V	J210159	Double (fig.7) 0F side by side	39,5	1	MSPA 2-9
	MS PA 2-5 B2	C210360	0F Terminals 2,8 (fig. 8)	27	1	MSPA 2-5B2
70	MS PA 2-5	T210398	0F Standard (fig.7)	31	1	MSPA 2-5T70
	MS PA 2-9	V210399	Double (fig.7) 0F side by side	37	1	MSPA 2-9T70
	MS PA 2-5 B2	W210400	0F Terminals 2,8 (fig.8)	27	1	MSPA 2-5B2T70

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

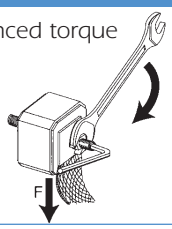
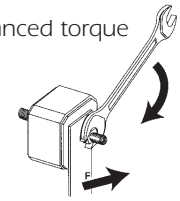
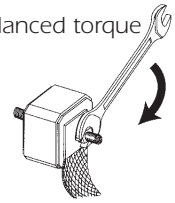
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

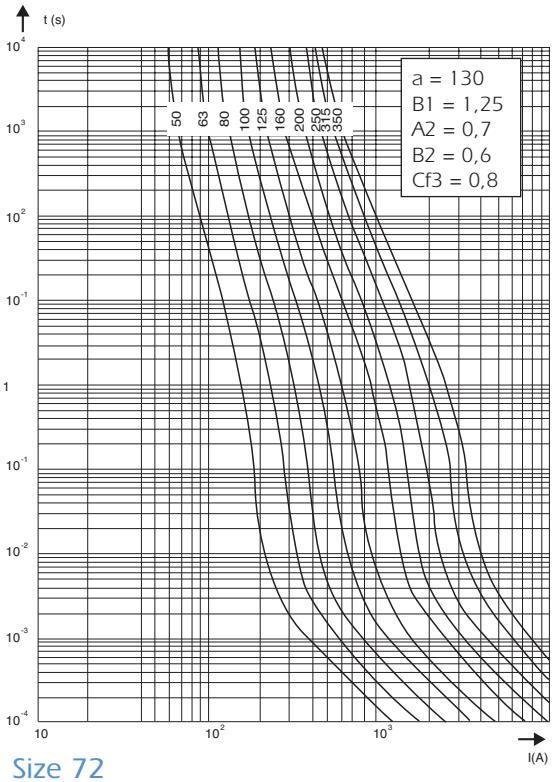
Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

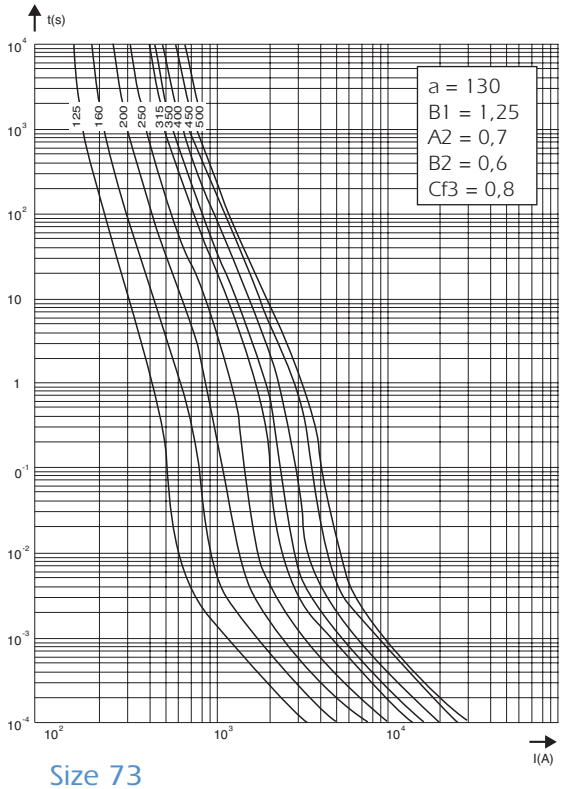
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Times/Current Characteristics

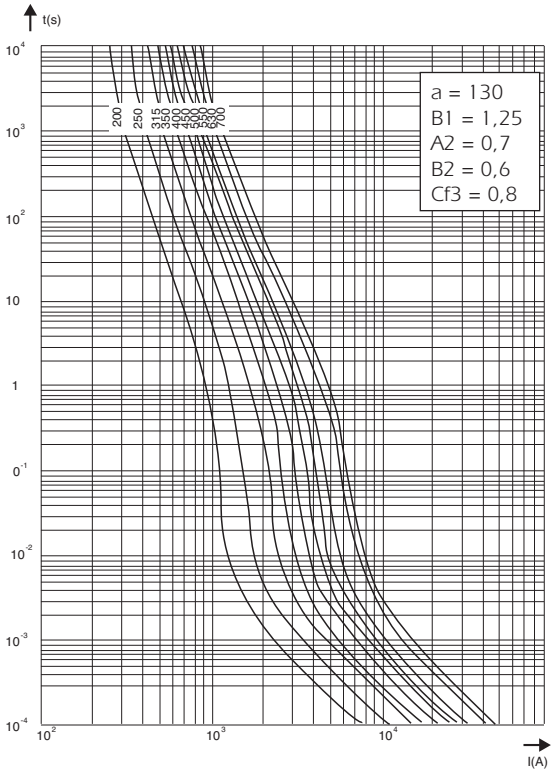
Size 70



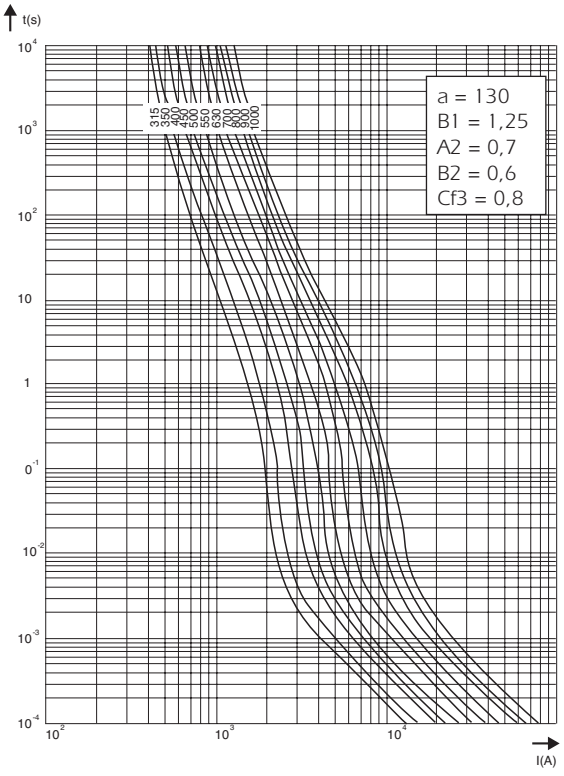
Size 71



Size 72



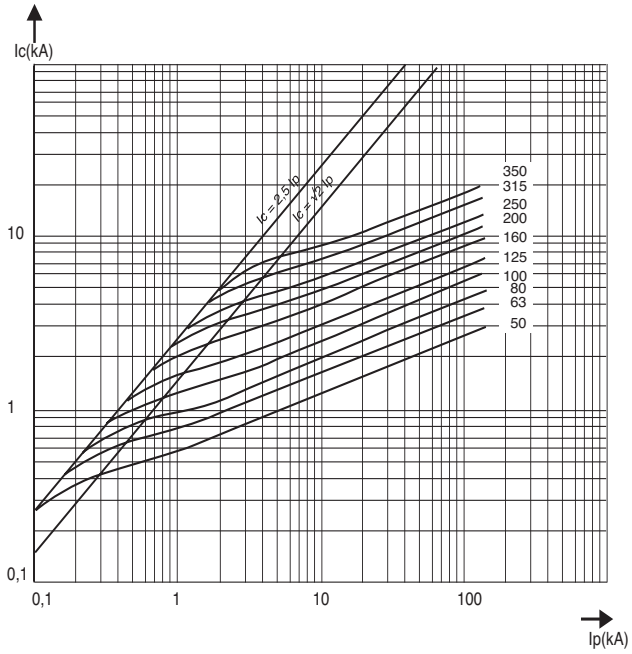
Size 73



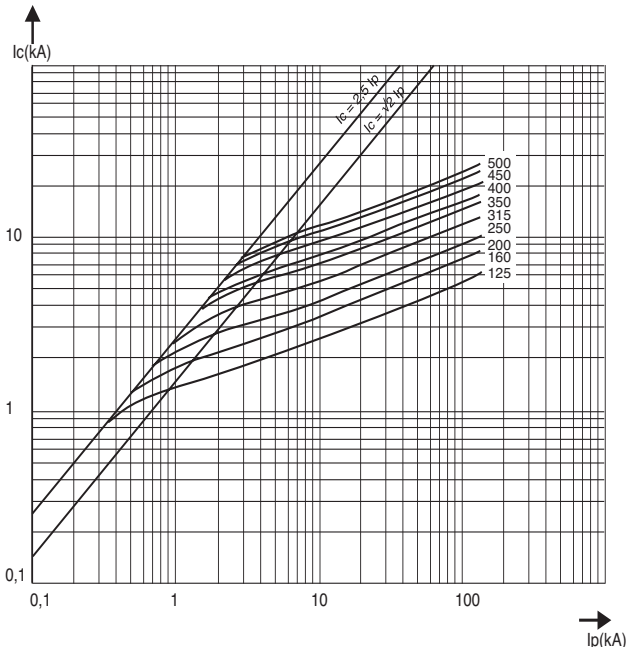
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Cut off characteristics
Peak let thru current

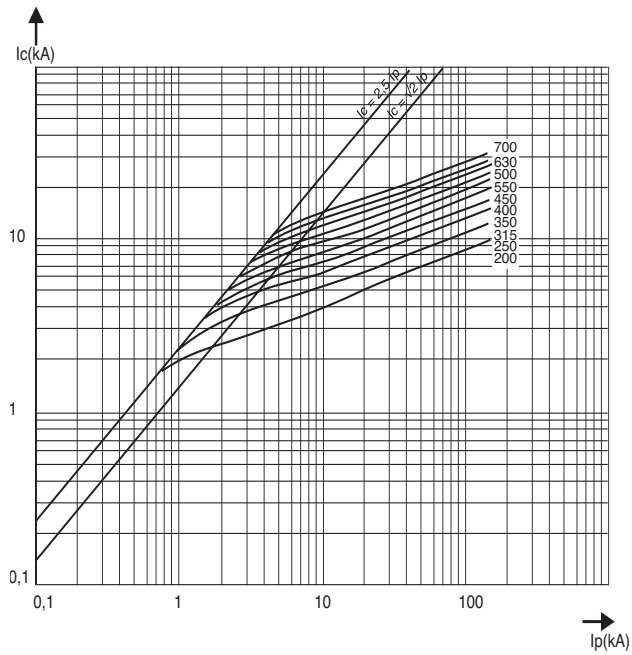
Size 70



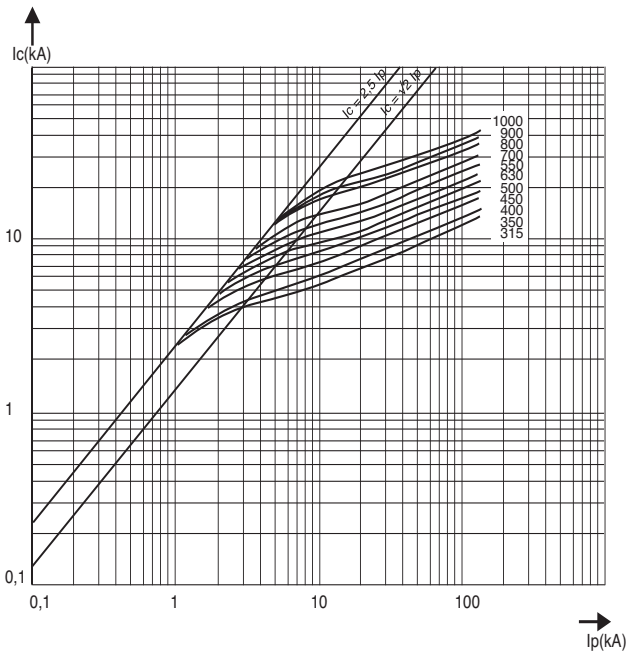
Size 71



Size 72



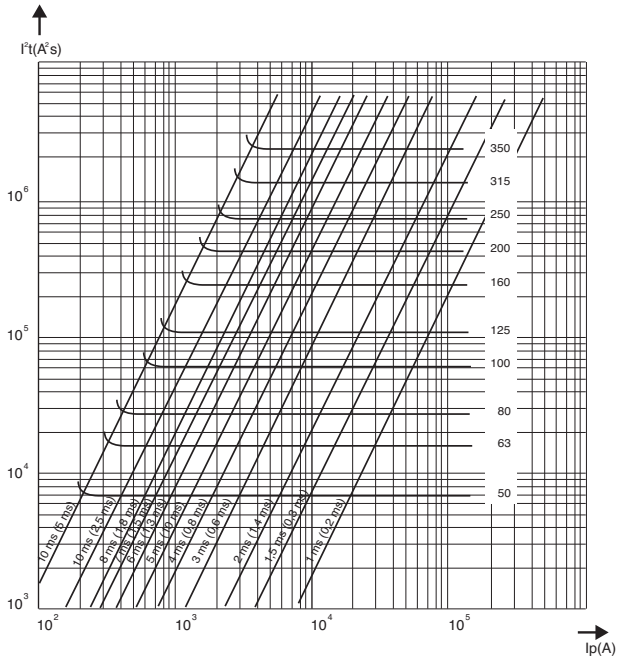
Size 73



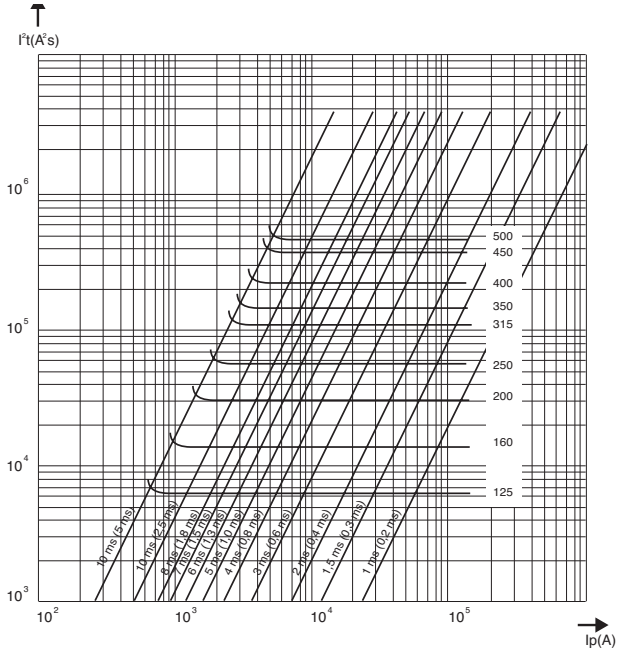
Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

Total I²t and total operating time @ 690 V

Size 70

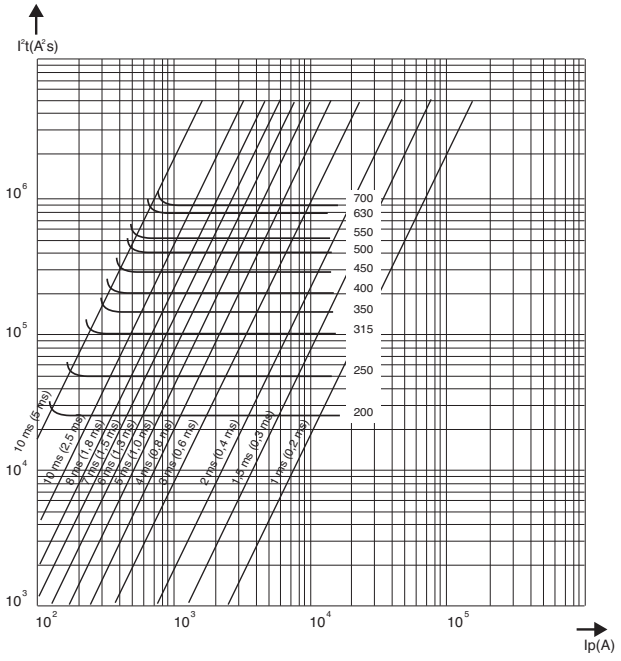


Size 71

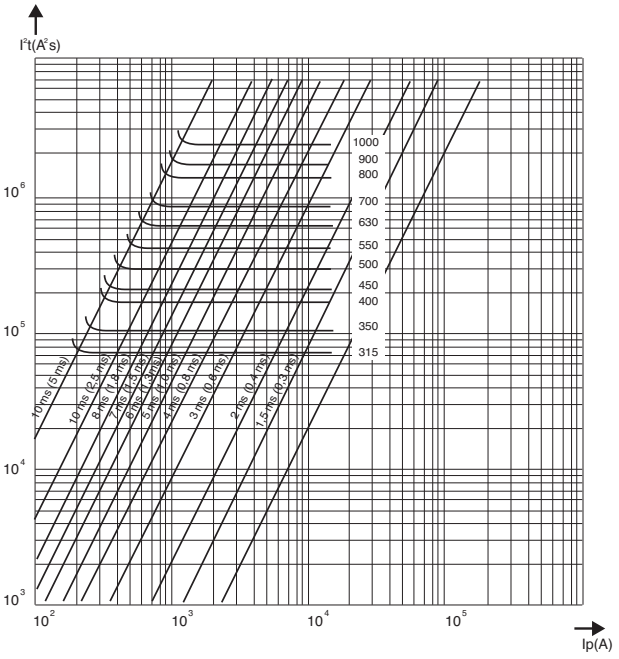


Value between parentheses pertain to prearcing I²t

Size 72



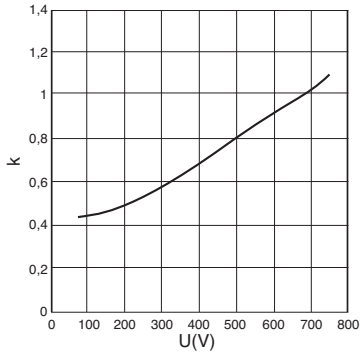
Size 73



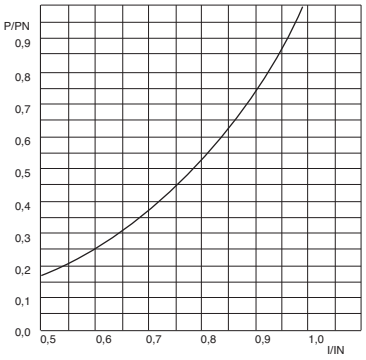
Value between parentheses pertain to prearcing I²t

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Curves set

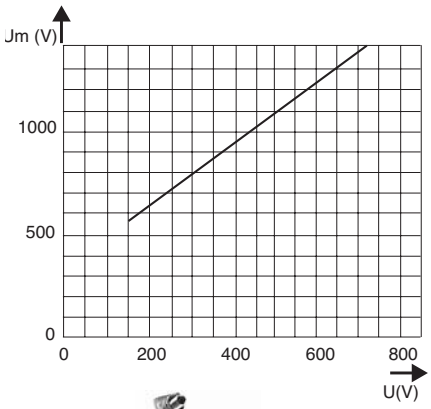
k=f(U)
Multiplier coefficient
to calculate total I^2t
and total operating time



P/PN
Multiplier coefficient
to calculate the power
losses at various currents



Peak arc voltage



PA terminals fuse holder

Size	1 pole	2 poles	3 poles	4 poles	wall	separators	fuse shields
70	T218241	G218759	W219278	H222486	Z213669	V216724	K200822
71	A223008	G200796	Y201340	H201855	J214690	N217753	M222513
72	E211075	V211595	D212109	R212627	J214690	N217753	Y211621
73	X213644	B214154	F214664	K215174	Q215708	M218787	X212655



End contacts TTF terminal fuse holders

Size	1 pole
70/71	C301233
72/73	E301235



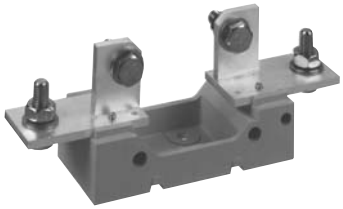
French blades EF terminal fuse holders

Size	SP/SE/SF
70	F096099
71	V098711
72	W098712
73	C209187



Din blades 110 mm DI N 43653 terminal fuse holders

Size	Fuses holders
70/71/72/73	L091941



Warning: for all holders, please check maximum fuse and fuse holders operating limit. in Gear and Fuse gear section
Tightning torque see Gear and Fuse gear section.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

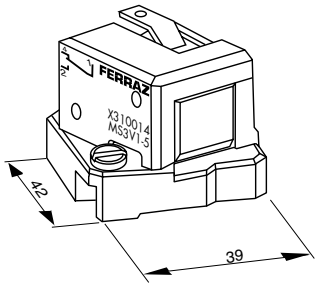
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

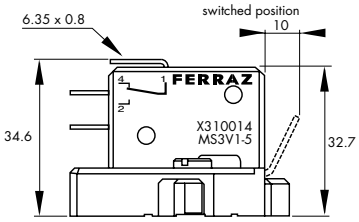
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



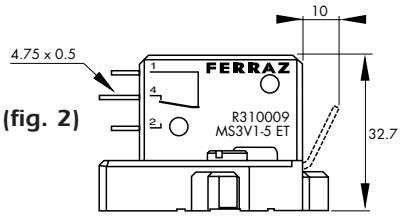
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

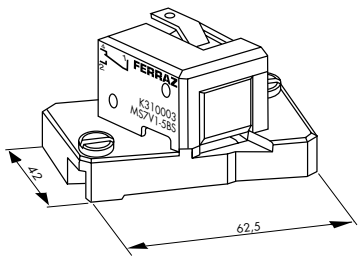
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

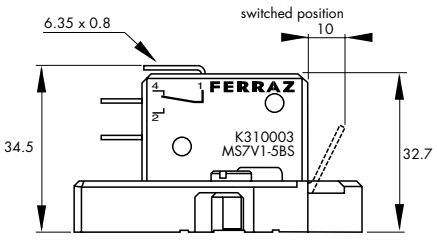
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

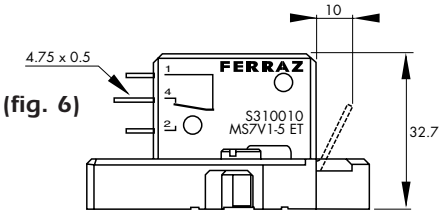


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





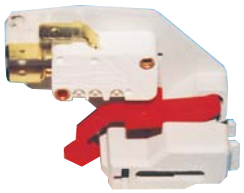
(fig. 6)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Microswitches for PSC 70-73 Plain blades

MICROSWITCH SYSTEMS ADAPTED TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:

PSC sizes 70, 71, 72, 73 PLAIN BLADES (PA)

MS PA 2-5



Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit			Inductive circuit : L/R = 25ms			AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
					30V	110V	250V	30V	110V	250V			
MS PA 2-5	1500 V	20 V	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	9 kV	13 kV	V0
MS PA 2-9		50 mA		DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A			
MS PA 2-5 B2	1500 V	20 V/100 mA	5 A	50 Hz	4 A	4 A	5 A	-	5 A	5 A	12 kV	16 kV	V0

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

MS PA...

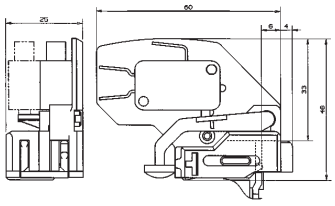
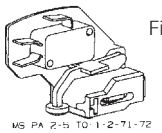


Fig.7



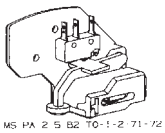


Fig.8

Exclusive "MS PA" indication systems are automatically resettable

Fuse size	Code	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
71-72-73	MS PA 2-5	H210158	OF Standard (fig. 7)	32,5	1	MSPA 2-5
	MS PA 2-9V	J210159	Double (fig.7) 0F side by side	39,5	1	MSPA 2-9
	MS PA 2-5 B2	C210360	0F Terminals 2,8 (fig. 8)	27	1	MSPA 2-5B2
70	MS PA 2-5	T210398	0F Standard (fig.7)	31	1	MSPA 2-5T70
	MS PA 2-9	V210399	Double (fig.7) 0F side by side	37	1	MSPA 2-9T70
	MS PA 2-5 B2	W210400	0F Terminals 2,8 (fig.8)	27	1	MSPA 2-5B2T70

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

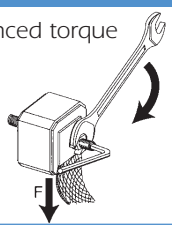
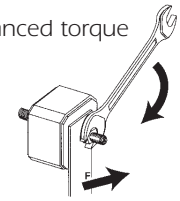
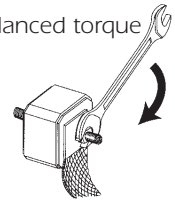
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

Recognized

650 to 1300VAC / 63 to 2800A.

- Exceptionally low I^2T, Watt losses.
- Non-magnetic construction, highly reliable low voltage.
- Indicator system.
- Conformity to UL, CSA investigated, IEC, DIN and VDE standards.
- Increased technical performance
- Higher ratings.
- Reduction in volume and weight.
- This fuse preselection table indicates, for each size:
  -rated current (or rating) In
  - pre-arcing I^2t (I^2tp) at 1 ms
  - total operating I^2t (I^2t_t) at 1000 V and 850V(I)f=50Hz, cos φ =0.15, and for a total operating time from 8 to 10 ms
  - dissipated power Pn at
  the rated current In, and
  at 0.8 In, in steady state
  - breaking capacity at various voltages, checked by tests made in accordance with IEC and American standards.



Estimated breaking capacity: 300 kA

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity	
	IEC	UL				End contacts	Blades	IEC	USA
70	1250	1300	50	0,116	0,7	16	16	100kA @ 1250V	100kA @ 1300V
			63	0,210	1,2	26	26		
			80	0,470	2,7	27	27		
			100	0,830	4,8	30	30		
			125	1,30	7,5	38	38		
			160	2,55	15	45	45		
			200	4,7	27	54	56		
			250	9,6	55	58	61		
	1200	1300	280	14	82	61	64	100kA @ 1200V	100kA @ 1300V
			315	20	115	66	72		
	1100	1200	350	28	158	68	75	150kA @ 1100V	150kA @ 1200V
			400	39	224	81	90		
			450	62	356	82	82		
	1000	1100	500	84	483	83	83	120kA @ 1000V	120kA @ 1100V
	800	900	550	128	576(*)	83	83	100kA @ 800V	100kA @ 900V
	750	800	630	176	730(*)	91	91	100kA @ 750V	100kA @ 800V
71	1250	1300	160	2,6	15	46	46	100kA @ 1250V	100kA @ 1300V
			200	4,7	27	54	54		
			250	8,9	51	61	61		
			280	12	68	68	70		
			315	16	92	73	76		
			350	22	127	76	80		
			400	38	220	76	80		
			450	47	270	87	95		
		1300 (TTI)	500	68	390	90	X		150kA @ 1300V
	1100	1200	500	68	390	X	100	150kA @ 1100V	150kA @ 1200V
			550	84	485	98	112		
			630	125	725	105	X		
	1000	1100	630	125	725	X	120	150kA @ 1000V	150kA @ 1100V
			700	180	1040	105	105		
	900	950	800	290	1540(*)	116	116	100kA @ 900V	100kA @ 950V
	800	850	900	446	2010(*)	120	120	100kA @ 800V	100kA @ 850V

(1) at 850 V
(2) does not exist with blades

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity Estimated B.C 300 kA	
	IEC	UL				End contacts	Blades	IEC	USA
72	1250	1300	280 315 350 400 450 500 550 630	10 15 21 32,5 44 57 68 105	60 87 120 190 255 330 390 610	72 76 77 80 87 94 110 113	72 76 77 80 89 98 120 X	100kA @ 1250V	100kA @ 1300V
	1100	1200	630 700 800	105 145 215	610 815 1240	X 122 125	125 140 146	150kA @ 1100V	150kA à 1200V
	1000	1100	700 800 900	145 215 312	815 1240 1800	X X 130	140 146 152	150kA @ 1000V	150kA @ 1100V
	850	900	1000	439	2150(*)	136	136	100kA @ 850V	100kA @ 900V
73	1250	1300	315 350 375 400 450 500 550 630 700 800	12 17 19 25 35,5 44 57 84 110 190	68 100 110 145 205 255 330 485 640 1090	84 86 93 99 110 116 125 135 136	84 86 93 100 112 120 132 X X	100kA @ 1250V	100kA @ 1300V
	1200	1300	700 900	110 250	640 1090	X 150	146 X	100kA @ 1200V	100kA @ 1300V
	1100	1200	800	190	1090	X	148	150kA @ 1100V	150kA @ 1200V
	1000	1100	900 1000 1100	250 370 445	1440 2130 2555	X 152 168	170 168 208	150kA @ 1000V	150kA @ 1100V
	950	1000	1100	445	2430(*)	168	X	150kA @ 950V	150kA @ 1000V
	900	1000	1000 1100 1250 1400	370 445 585 755	1920(*) 2280(*) 3080(*) 4100(*)	X X 186 210	174 208 X X	150kA @ 900V	150kA @ 1000V
	850	900	1400	755	3700(*)	210	X	150kA @ 850V	150kA @ 900V
	690	700	1500 1600	1180 1430	4750(*) 5740(*)	200 203	X X	180kA @ 690V	180kA @ 700V
	600	650	1800	2040	7150(*)	206	X	120kA @ 600V	120kA @ 650V
2 x 72	1250		630 700 800 900 1000 1100	60 84 130 176 228 272	348 480 760 1020 1320 1560	160 162 168 183 197 231		100kA @ 1250V	
	1100		1250 1400	426 568	2440 3260	237 256		100kA @ 1100V	
	1000		1600	860	4895	262		100kA @ 1000V	
	900		1800	1250	6350(*)	275		100kA @ 900V	
	750		2000	1760	7570(*)	285		100kA @ 750V	
	650		2200 2500	2410 3470	8350(*) 12000(*)	320 340		100kA @ 650V	
2 x 73	1250		800 900 1000 1100 1250	100 142 176 228 336	580 820 1000 1300 1900	195 208 231 244 262		100kA@ 1250V	
	1100		1400 1600 1800	440 760 1000	2600 4400 5800	283 286 315		100kA @ 1100V	
	1000		2000	1480	8500	319		120kA @ 1000V	
	950		2200	1780	9632(*)	353		100kA @ 950V	
	900		2500	2340	12075(*)	390		110kA @ 900V	
	850		2800	3000	15000(*)	440		100kA @ 850V	
	600		3000 3200	4980 5720	15700(*) 19030(*)	405 426		200kA @ 600V	
	550		3600	8160	25200(*)	430		200kA @ 550V	

(1) at 850 V

(2) does not exist with blades

12/04

Ferraz Shawmut

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

Recognized

650 to 1300VAC / 63 to 2800A.

- Exceptionally low I^2T, Watt losses.
- Non-magnetic construction, highly reliable low voltage.
- Indicator system.
- Conformity to UL, CSA investigated, IEC, DIN and VDE standards.
- Increased technical performance
- Higher ratings.
- Reduction in volume and weight.
- This fuse preselection table indicates, for each size:
  -rated current (or rating) In
  - pre-arcing I^2t (I^2tp) at 1 ms
  - total operating I^2t (I^2t_t) at 1000 V and 850V(I)f=50Hz, cos φ =0.15, and for a total operating time from 8 to 10 ms
  - dissipated power Pn at
  the rated current In, and
  at 0.8 In, in steady state
  - breaking capacity at various voltages, checked by tests made in accordance with IEC and American standards.



Estimated breaking capacity: 300 kA

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity	
	IEC	UL				End contacts	Blades	IEC	USA
70	1250	1300	50	0,116	0,7	16	16	100kA @ 1250V	100kA @ 1300V
			63	0,210	1,2	26	26		
			80	0,470	2,7	27	27		
			100	0,830	4,8	30	30		
			125	1,30	7,5	38	38		
			160	2,55	15	45	45		
			200	4,7	27	54	56		
			250	9,6	55	58	61		
	1200	1300	280	14	82	61	64	100kA @ 1200V	100kA @ 1300V
			315	20	115	66	72		
	1100	1200	350	28	158	68	75	150kA @ 1100V	150kA @ 1200V
			400	39	224	81	90		
			450	62	356	82	82		
	1000	1100	500	84	483	83	83	120kA @ 1000V	120kA @ 1100V
	800	900	550	128	576(*)	83	83	100kA @ 800V	100kA @ 900V
	750	800	630	176	730(*)	91	91	100kA @ 750V	100kA @ 800V
71	1250	1300	160	2,6	15	46	46	100kA @ 1250V	100kA @ 1300V
			200	4,7	27	54	54		
			250	8,9	51	61	61		
			280	12	68	68	70		
			315	16	92	73	76		
			350	22	127	76	80		
			400	38	220	76	80		
			450	47	270	87	95		
		1300 (TTI)	500	68	390	90	X		150kA @ 1300V
	1100	1200	500	68	390	X	100	150kA @ 1100V	150kA @ 1200V
			550	84	485	98	112		
			630	125	725	105	X		
	1000	1100	630	125	725	X	120	150kA @ 1000V	150kA @ 1100V
			700	180	1040	105	105		
	900	950	800	290	1540(*)	116	116	100kA @ 900V	100kA @ 950V
	800	850	900	446	2010(*)	120	120	100kA @ 800V	100kA @ 850V

(1) at 850 V
(2) does not exist with blades

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity Estimated B.C 300 kA	
	IEC	UL				End contacts	Blades	IEC	USA
72	1250	1300	280 315 350 400 450 500 550 630	10 15 21 32,5 44 57 68 105	60 87 120 190 255 330 390 610	72 76 77 80 87 94 110 113	72 76 77 80 89 98 120 X	100kA @ 1250V	100kA @ 1300V
	1100	1200	630 700 800	105 145 215	610 815 1240	X 122 125	125 140 146	150kA @ 1100V	150kA à 1200V
	1000	1100	700 800 900	145 215 312	815 1240 1800	X X 130	140 146 152	150kA @ 1000V	150kA @ 1100V
	850	900	1000	439	2150(*)	136	136	100kA @ 850V	100kA @ 900V
73	1250	1300	315 350 375 400 450 500 550 630 700 800	12 17 19 25 35,5 44 57 84 110 190	68 100 110 145 205 255 330 485 640 1090	84 86 93 99 110 116 125 135 136	84 86 93 100 112 120 132 X X	100kA @ 1250V	100kA @ 1300V
	1200	1300	700 900	110 250	640 1090	X 150	146 X	100kA @ 1200V	100kA @ 1300V
	1100	1200	800	190	1090	X	148	150kA @ 1100V	150kA @ 1200V
	1000	1100	900 1000 1100	250 370 445	1440 2130 2555	X 152 168	170 168 208	150kA @ 1000V	150kA @ 1100V
	950	1000	1100	445	2430(*)	168	X	150kA @ 950V	150kA @ 1000V
	900	1000	1000 1100 1250 1400	370 445 585 755	1920(*) 2280(*) 3080(*) 4100(*)	X X 186 210	174 208 X X	150kA @ 900V	150kA @ 1000V
	850	900	1400	755	3700(*)	210	X	150kA @ 850V	150kA @ 900V
	690	700	1500 1600	1180 1430	4750(*) 5740(*)	200 203	X X	180kA @ 690V	180kA @ 700V
	600	650	1800	2040	7150(*)	206	X	120kA @ 600V	120kA @ 650V
2 x 72	1250		630 700 800 900 1000 1100	60 84 130 176 228 272	348 480 760 1020 1320 1560	160 162 168 183 197 231		100kA @ 1250V	
	1100		1250 1400	426 568	2440 3260	237 256		100kA @ 1100V	
	1000		1600	860	4895	262		100kA @ 1000V	
	900		1800	1250	6350(*)	275		100kA @ 900V	
	750		2000	1760	7570(*)	285		100kA @ 750V	
	650		2200 2500	2410 3470	8350(*) 12000(*)	320 340		100kA @ 650V	
2 x 73	1250		800 900 1000 1100 1250	100 142 176 228 336	580 820 1000 1300 1900	195 208 231 244 262		100kA@ 1250V	
	1100		1400 1600 1800	440 760 1000	2600 4400 5800	283 286 315		100kA @ 1100V	
	1000		2000	1480	8500	319		120kA @ 1000V	
	950		2200	1780	9632(*)	353		100kA @ 950V	
	900		2500	2340	12075(*)	390		110kA @ 900V	
	850		2800	3000	15000(*)	440		100kA @ 850V	
	600		3000 3200	4980 5720	15700(*) 19030(*)	405 426		200kA @ 600V	
	550		3600	8160	25200(*)	430		200kA @ 550V	

(1) at 850 V

(2) does not exist with blades

12/04

Ferraz Shawmut

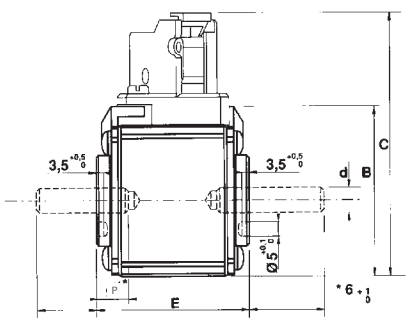
Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
American Terminals - 70 - 73 End contacts

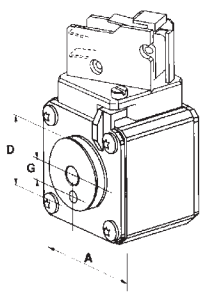
Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
70	A130URD 70 TTI 0063	Q301015	350	3	A130UD70TTI63
	A130URD 70 TTI 0080	R301016			A130UD70TTI80
	A130URD 70 TTI 0100	S301017			A130UD70TTI100
	A130URD 70 TTI 0125	T301018			A130UD70TTI125
	A130URD 70 TTI 0160	V301019			A130UD70TTI160
	A130URD 70 TTI 0200	W301020			A130UD70TTI200
	A130URD 70 TTI 0250	X301021			A130UD70TTI250
	A130URD 70 TTI 0280	Y301022			A130UD70TTI280
	A130URD 70 TTI 0315	Z301023			A130UD70TTI315
	A120URD 70 TTI 0350	A301024			A120UD70TTI350
71	A130URD 71 TTI 0160	B301025	500	3	A130UD71TTI160
	A130URD 71 TTI 0200	C301026			A130UD71TTI200
	A130URD 71 TTI 0250	D301027			A130UD71TTI250
	A130URD 71 TTI 0280	E301028			A130UD71TTI280
	A130URD 71 TTI 0315	F301029			A130UD71TTI315
	A130URD 71 TTI 0350	G301030			A130UD71TTI350
	A130URD 71 TTI 0400	H301031			A130UD71TTI400
	A130URD 71 TTI 0450	J301032			A130UD71TTI450
	A130URD 71 TTI 0500	K301033			A130UD71TTI500
	A120URD 71 TTI 0550	L301034			A120UD71TTI550
	A120URD 71 TTI 0630	M301035			A120UD71TTI630
72	A130URD 72 TTI 0280	N301036	850	3	A130UD72TTI280
	A130URD 72 TTI 0315	P301037			A130UD72TTI315
	A130URD 72 TTI 0350	Q301038			A130UD72TTI350
	A130URD 72 TTI 0400	R301039			A130UD72TTI400
	A130URD 72 TTI 0450	S301040			A130UD72TTI450
	A130URD 72 TTI 0500	T301041			A130UD72TTI500
	A130URD 72 TTI 0550	V301042			A130UD72TTI550
	A130URD 72 TTI 0630	W301043			A130UD72TTI630
	A120URD 72 TTI 0700	X301044			A120UD72TTI700
	A120URD 72 TTI 0800	Y301045			A120UD72TTI800
73	A130URD 73 TTI 0315	Z301046	1250	3	A130UD73TTI315
	A130URD 73 TTI 0350	A301047			A130UD73TTI350
	A130URD 73 TTI 0400	B301048			A130UD73TTI400
	A130URD 73 TTI 0450	C301049			A130UD73TTI450
	A130URD 73 TTI 0500	D301050			A130UD73TTI500
	A130URD 73 TTI 0550	E301051			A130UD73TTI550
	A130URD 73 TTI 0630	F301052			A130UD73TTI630
	A130URD 73 TTI 0700	G301053			A130UD73TTI700
	A130URD 73 TTI 0800	H301054			A130UD73TTI800
	A130URD 73 TTI 0900 **	J301055			A130UD73TTI900
	A110URD 73 TTI 1000 **	K301056			A110UD73TTI1000
	A100URD 73 TTI 1100 **	L301057			A100UD73TTI1100
	A100URD 73 TTI 1250 **	M301058			A100UD73TTI1250
	A090URD 73 TTI 1400 **	N301059			A090UD73TTI1400
	A070URD 73 TTI 1600 **	Q300877			A070UD73TTI1600
	A065URD 73 TTI 1800 **	R300878			A065UD73TTI1800

Size	A	B	C	D	E±1	d	G±0.1	P±0.1
70	40 1-9/16"	46,5 1-27/32"	82 3-7/32"	26 1-1/64"	74 2-29/32"	5/16"-18	9 23/64"	6 15/64"
71	51 2"	56,5 2-7/32"	91 3-37/64"	30 1-3/16"	74 2-29/32"	5/16"-18	9 23/64"	9 23/64"
72	60 2-3/8"	65,5 2-37/64"	100 3-15/16"	38 ; (42mm **) 1-1/2" ; (1-21/32" **)	74 2-29/32"	3/8"-16	15 19/32"	9 23/64"
73	74,5 2-15/16"	79,5 3-1/8"	114 4-1/2"	46 ; (52mm **) 1-13/16" ; (2-1/16" **)	74 2-29/32"	1/2"-13	15 19/32"	9 23/64"

Note:
Dimensions in mm
Dimensions in inches

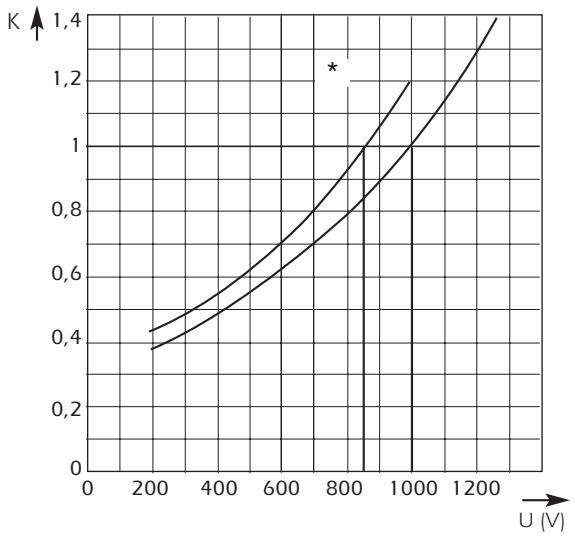
Microswitches and threaded studs supplied separately





Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Multiplier coefficient



Left: Mean curve indicating variation of total I^2t (I^2t_t) and total operating time T_t in accordance with working voltage U.

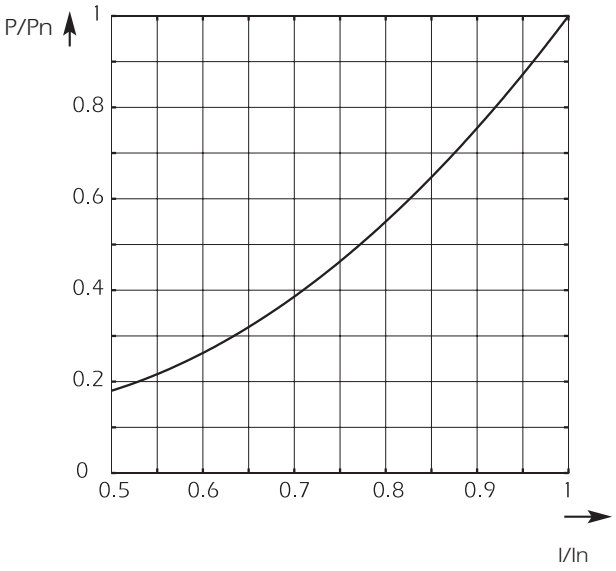
Example:
Fuse 350 A in size 70.
I_p = 10 000 A U = 1100 V

At 1000 V
I^2t_t = 115 000 A^2s T_t = 7 ms

At 1100 V
I^2t_t = 115 000 x 1.13 = 130 000 A^2s
T_t = 7 x 1.13 = 7.9 ms

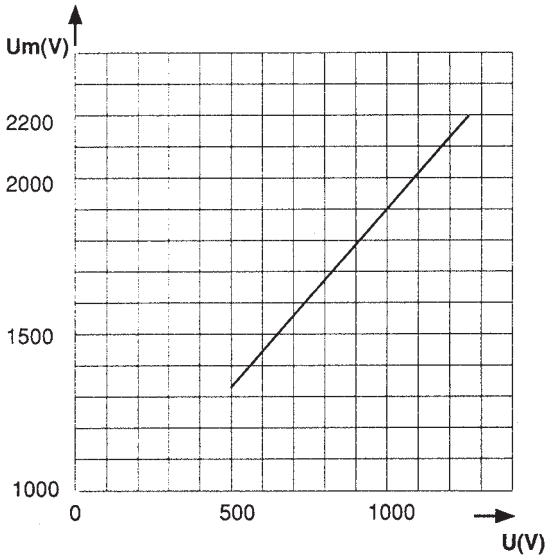
* curve for fuses with I^2t published at 850VAC

Dissipated power



Above left: Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in steady state.

Arc voltage



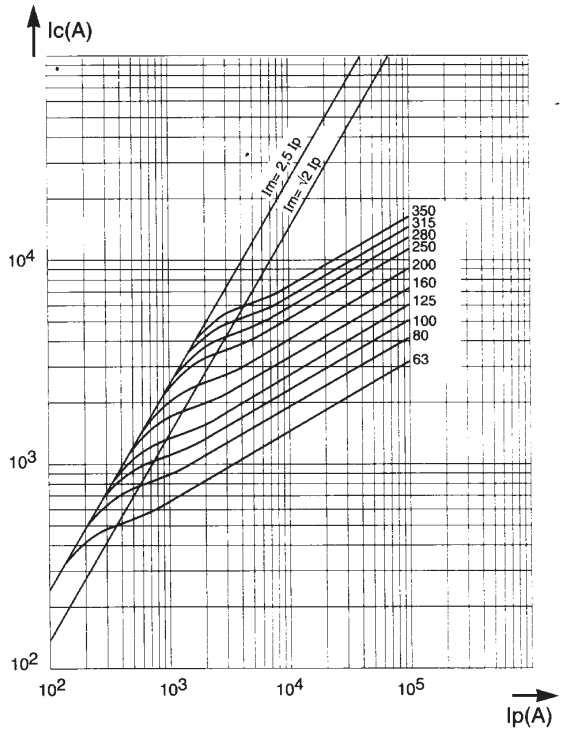
Above right: Curve indicating peak arc voltage Um which may appear across fuse terminals as a function of working voltage U at cos φ = 0.15

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 70

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



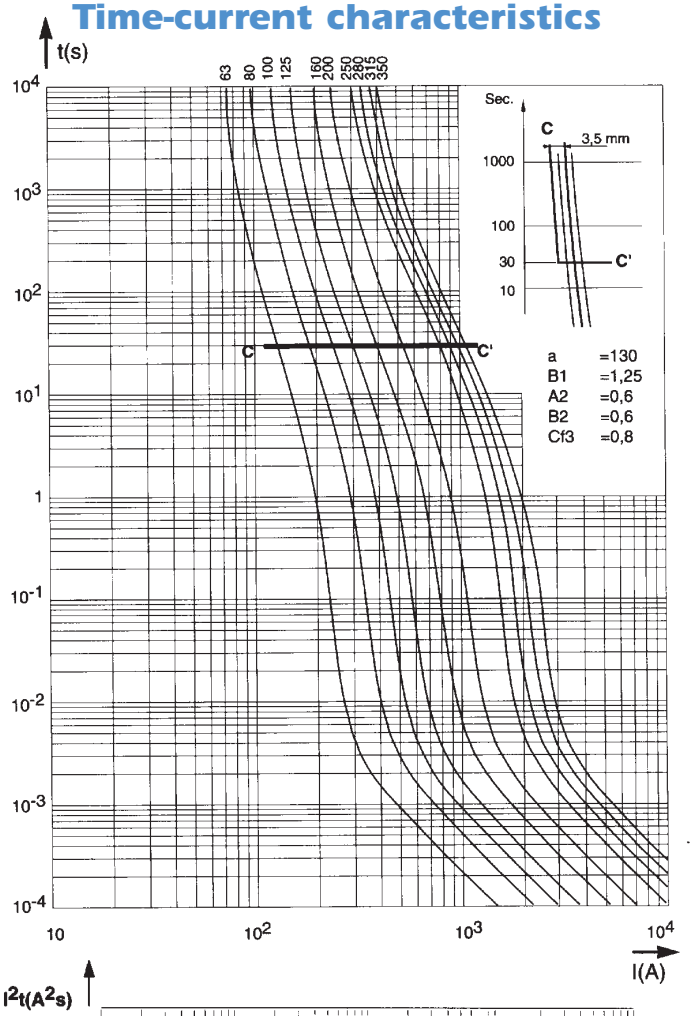
Time-current characteristics

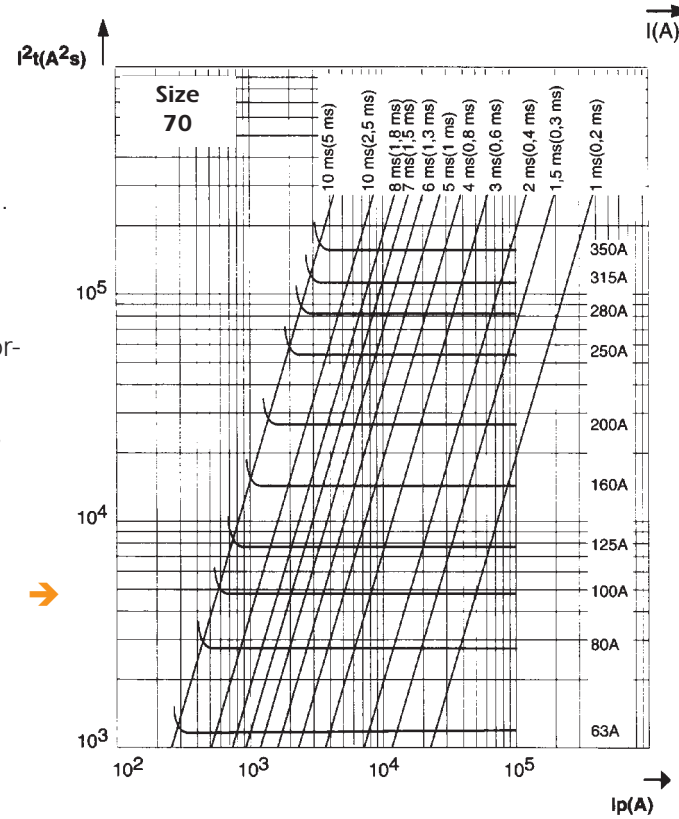
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

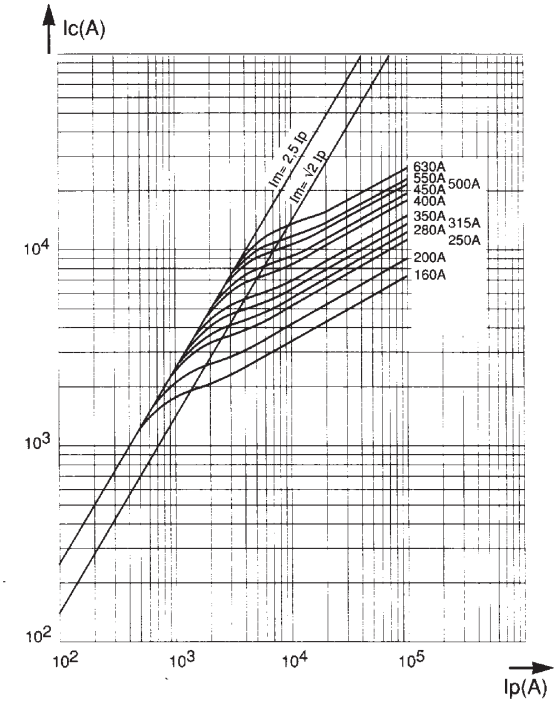




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

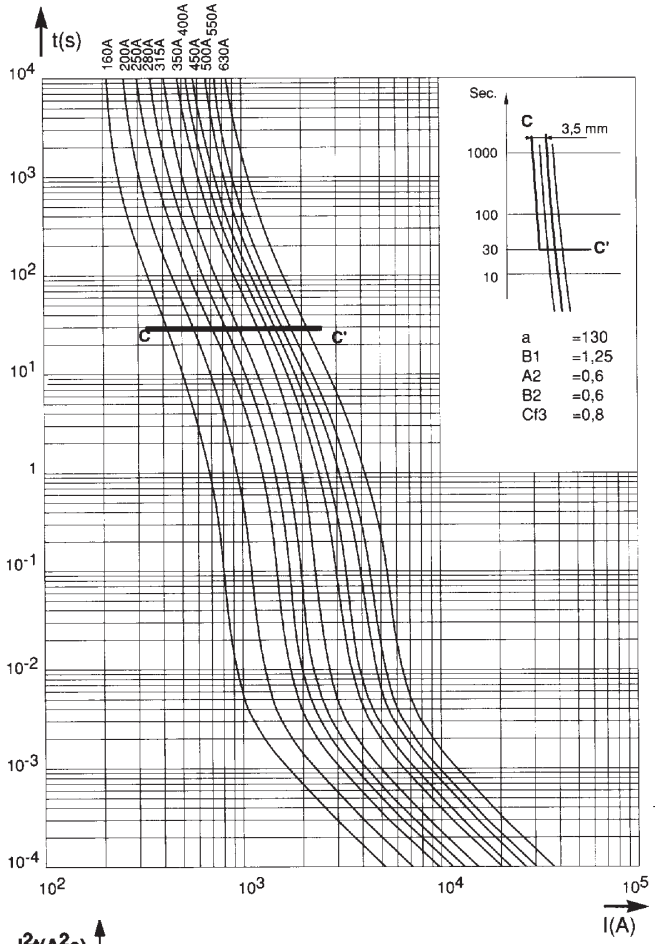
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

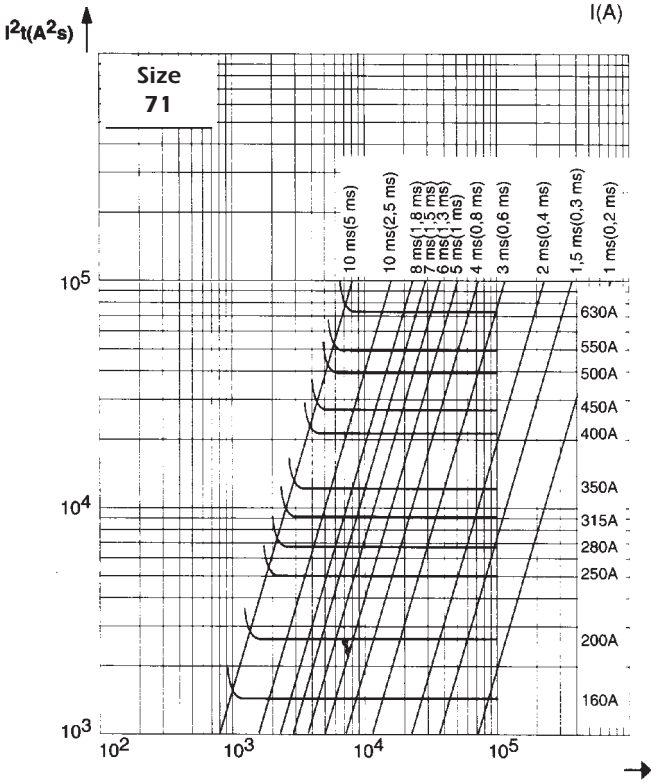
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 71
Time-current characteristics



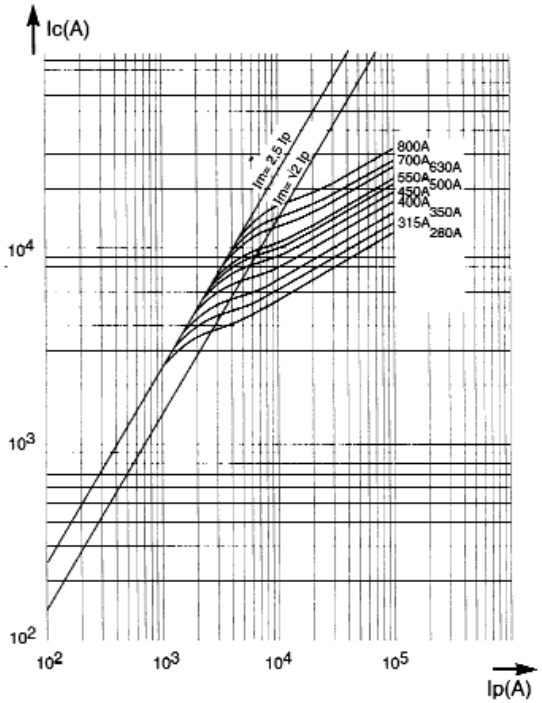


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 72

Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



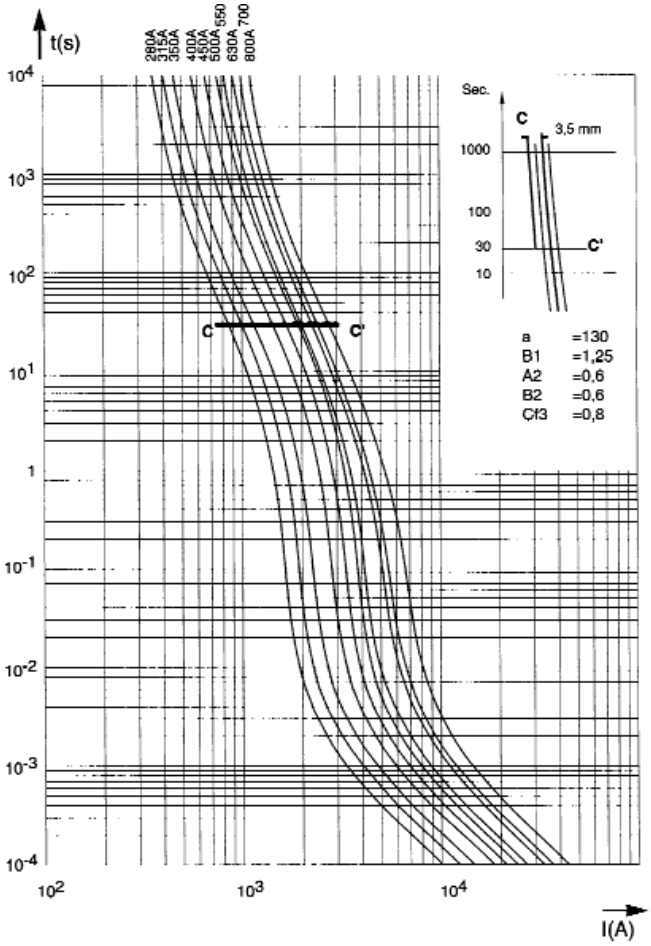
Time-current characteristics

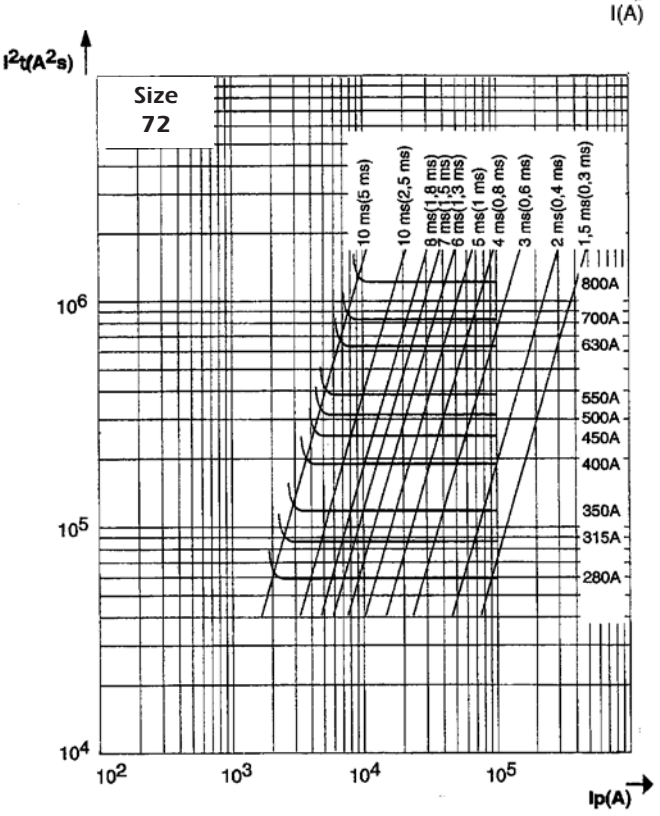
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



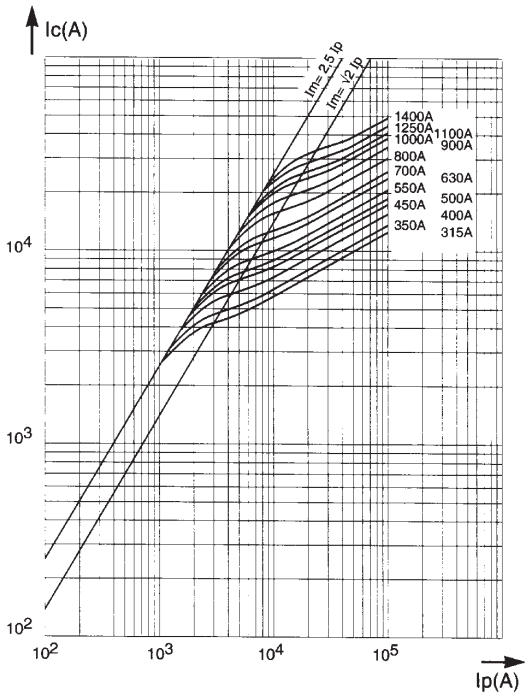


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 73

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



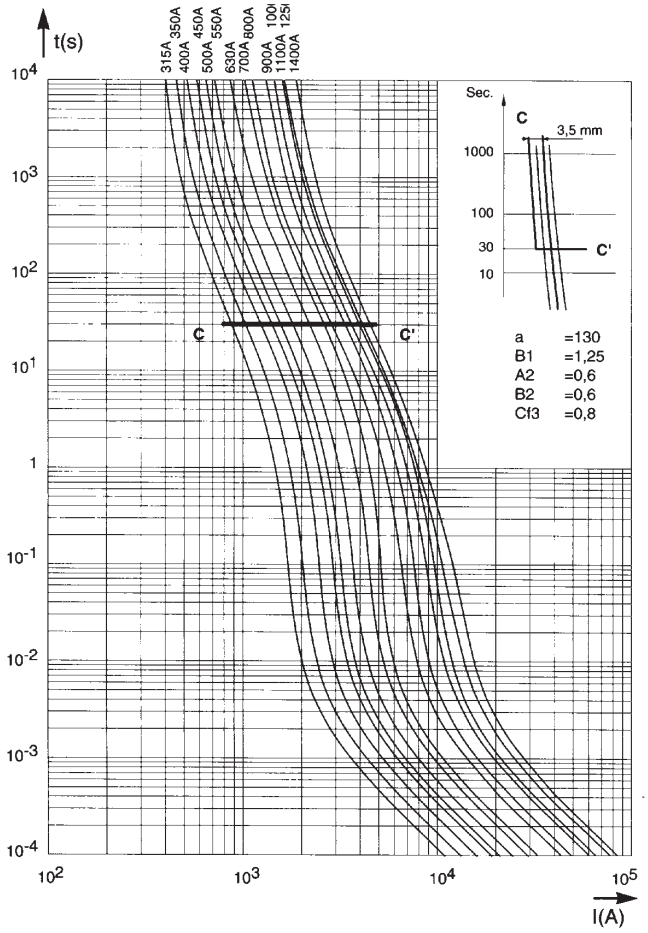
Time-current characteristics

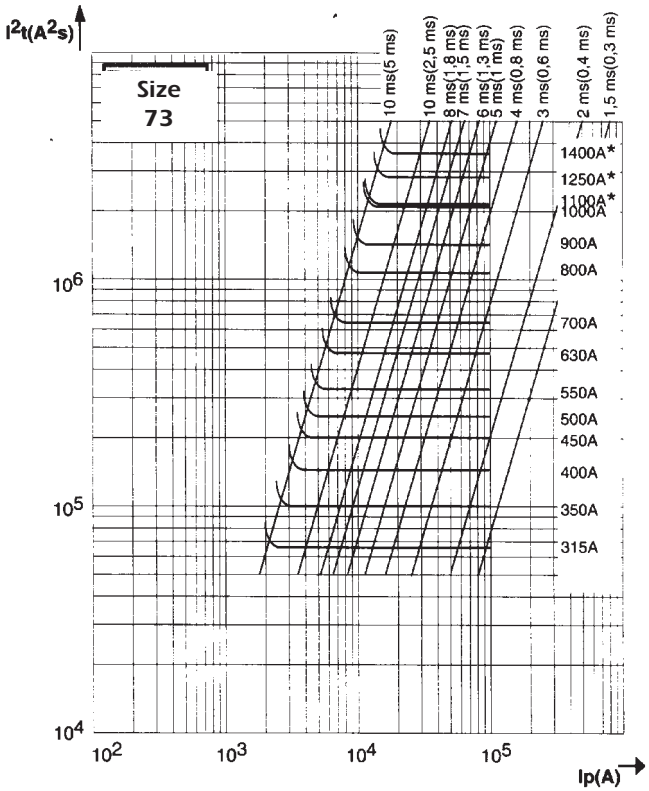
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



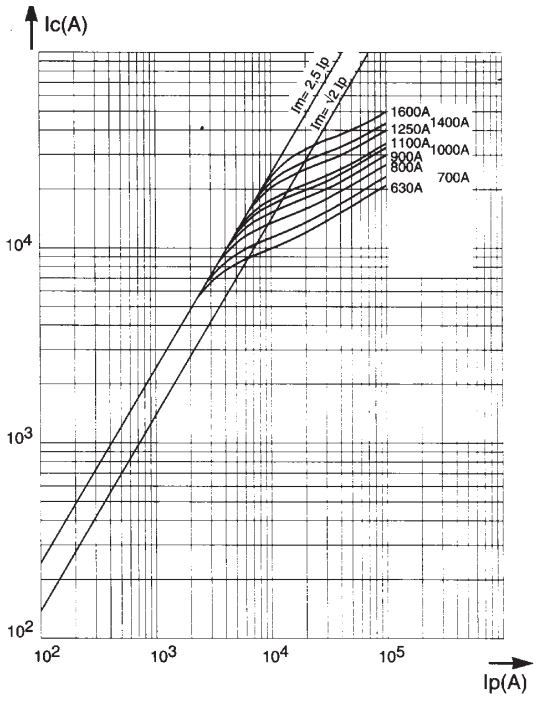


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 2x72

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



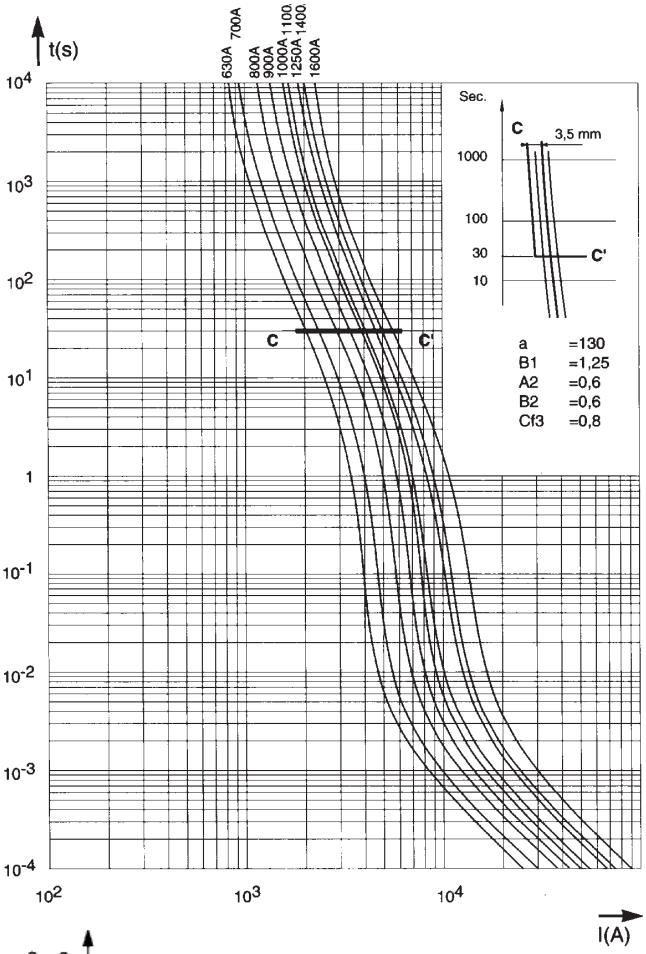
Time-current characteristics

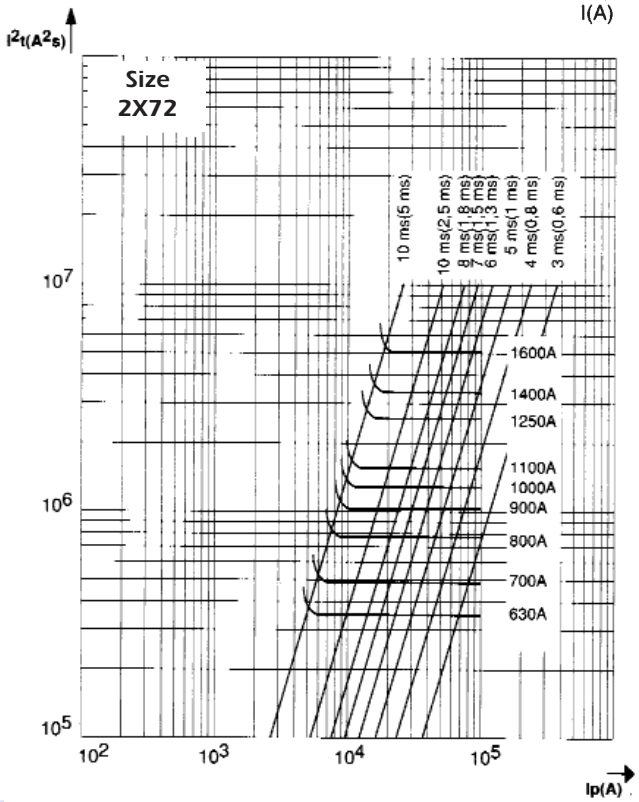
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

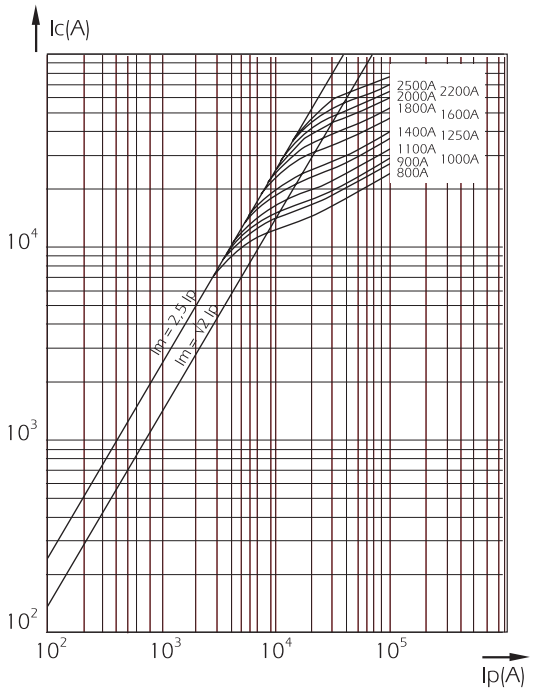




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

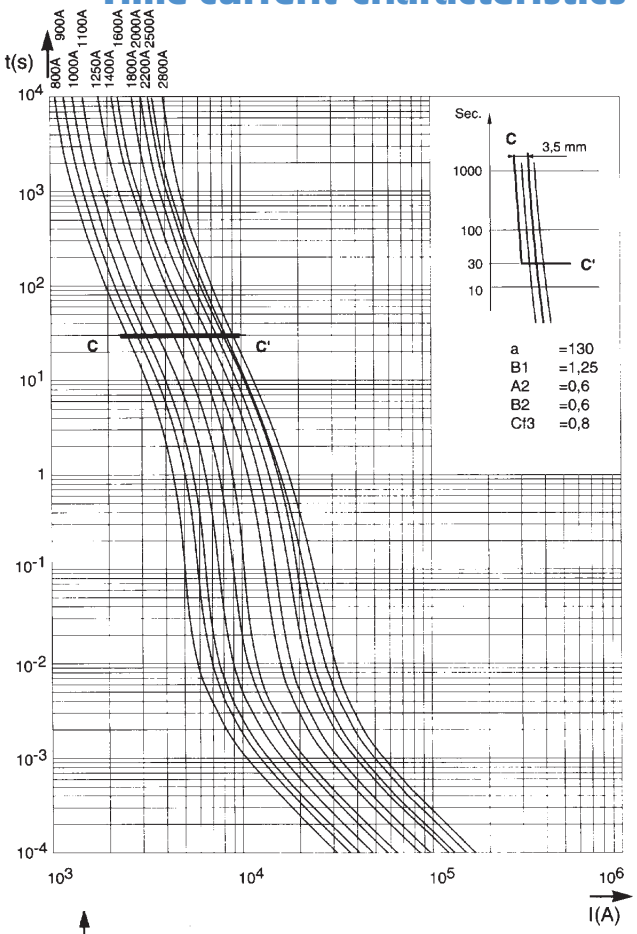
Maximum values of total operating I²t and total operating times

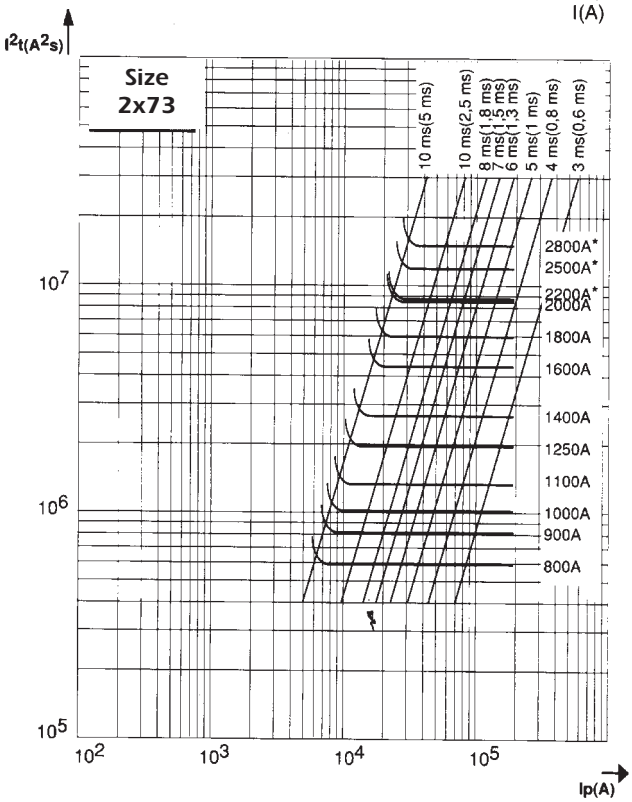
Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.

The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 2x72

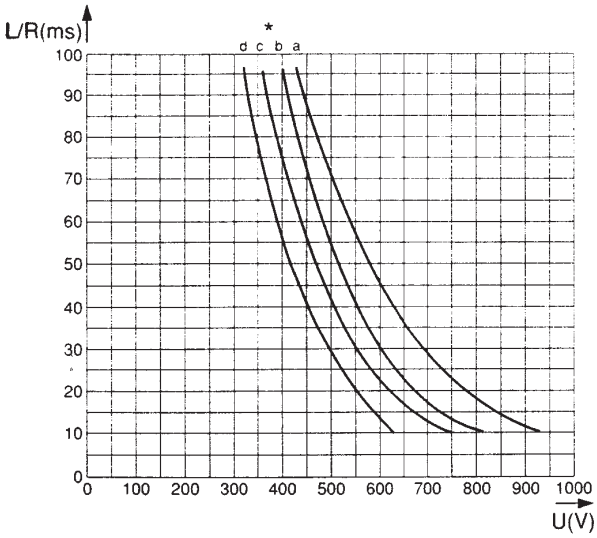
Time-current characteristics

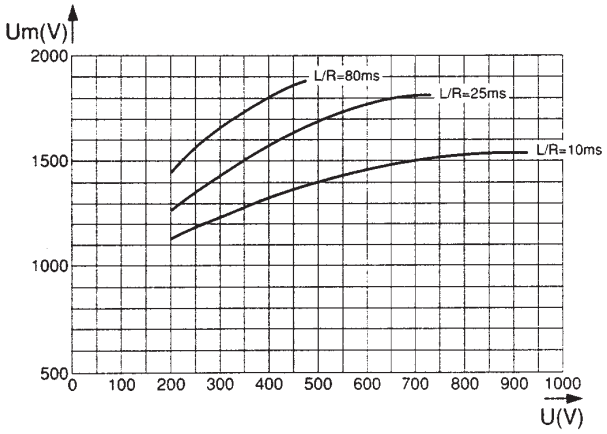




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

DC working voltage possibilities





Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U, for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark: When the fault current di/dt is very large, this condition can be exceeded. It is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Rated current I_N(A)	Curves (*) and Ipm (1) corresponding to the rating											
	70		71		72		73		2x72		2x73	
	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)
63	a	270										
80	a	400										
100	a	520										
125	a	700										
160	a	950	a	950								
200	a	1300	a	1300								
250	a	1800	a	1800								
280	b	2200	a	2000	a	1800						
315	b	2600	a	2300	a	2200	a	2000				
350	c	3000	a	2700	a	2600	a	2400				
400			b	3500	a	3200	a	3000				
450			b	4000	a	3800	a	3500				
500			c	4800	a	4600	a	3900				
550			c	5200	b	5000	a	4400				
630			c	6400	b	6200	a	5300	a	4400		
700					c	6800	a	6000	a	5200		
800					c	8000	b	8000	a	6400	a	6000
900							b	9000	a	7600	a	7000
1000							c	11000	a	9200	a	7800
1100							c	12000	b	10000	a	8800
1250							c	13500	b	12400	a	10600
1400							c	15000	c	13600	a	12000
1600									c	16000	b	16000
1800											b	18000
2000											c	22000
2200											c	24000
2500											d	27000
2800											d	30000

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

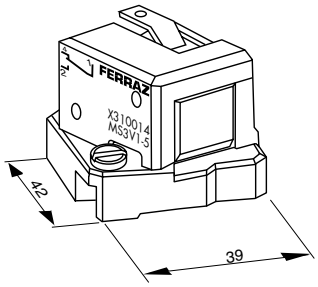
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

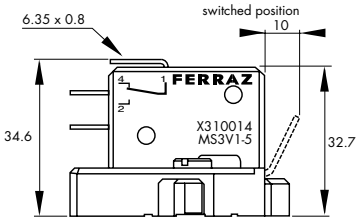
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



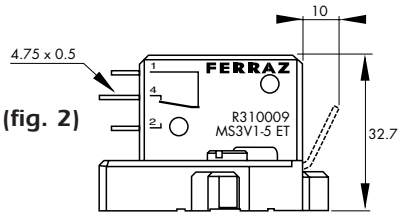
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

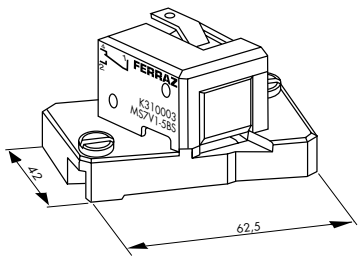
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

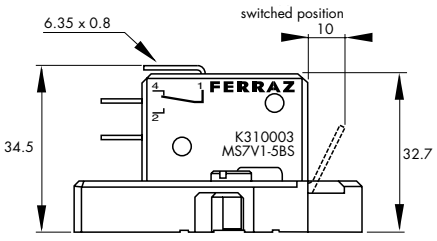
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

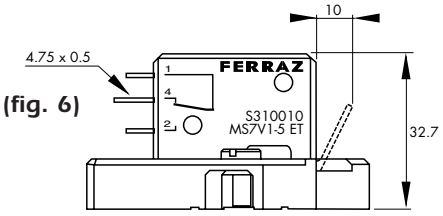


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

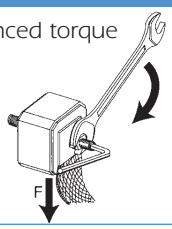
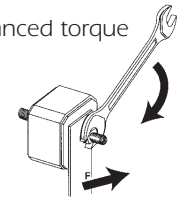
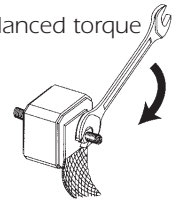
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

Recognized

650 to 1300VAC / 63 to 2800A.

- Exceptionally low I^2T, Watt losses.
- Non-magnetic construction, highly reliable low voltage.
- Indicator system.
- Conformity to UL, CSA investigated, IEC, DIN and VDE standards.
- Increased technical performance
- Higher ratings.
- Reduction in volume and weight.
- This fuse preselection table indicates, for each size:
  -rated current (or rating) In
  - pre-arcing I^2t (I^2tp) at 1 ms
  - total operating I^2t (I^2t_t) at 1000 V and 850V(I)f=50Hz, cos φ =0.15, and for a total operating time from 8 to 10 ms
  - dissipated power Pn at
  the rated current In, and
  at 0.8 In, in steady state
  - breaking capacity at various voltages, checked by tests made in accordance with IEC and American standards.



Estimated breaking capacity: 300 kA

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity	
	IEC	UL				End contacts	Blades	IEC	USA
70	1250	1300	50	0,116	0,7	16	16	100kA @ 1250V	100kA @ 1300V
			63	0,210	1,2	26	26		
			80	0,470	2,7	27	27		
			100	0,830	4,8	30	30		
			125	1,30	7,5	38	38		
			160	2,55	15	45	45		
			200	4,7	27	54	56		
			250	9,6	55	58	61		
	1200	1300	280	14	82	61	64	100kA @ 1200V	100kA @ 1300V
			315	20	115	66	72		
	1100	1200	350	28	158	68	75	150kA @ 1100V	150kA @ 1200V
			400	39	224	81	90		
			450	62	356	82	82		
	1000	1100	500	84	483	83	83	120kA @ 1000V	120kA @ 1100V
	800	900	550	128	576(*)	83	83	100kA @ 800V	100kA @ 900V
	750	800	630	176	730(*)	91	91	100kA @ 750V	100kA @ 800V
71	1250	1300	160	2,6	15	46	46	100kA @ 1250V	100kA @ 1300V
			200	4,7	27	54	54		
			250	8,9	51	61	61		
			280	12	68	68	70		
			315	16	92	73	76		
			350	22	127	76	80		
			400	38	220	76	80		
			450	47	270	87	95		
		1300 (TTI)	500	68	390	90	X		150kA @ 1300V
	1100	1200	500	68	390	X	100	150kA @ 1100V	150kA @ 1200V
			550	84	485	98	112		
			630	125	725	105	X		
	1000	1100	630	125	725	X	120	150kA @ 1000V	150kA @ 1100V
			700	180	1040	105	105		
	900	950	800	290	1540(*)	116	116	100kA @ 900V	100kA @ 950V
	800	850	900	446	2010(*)	120	120	100kA @ 800V	100kA @ 850V

(1) at 850 V
(2) does not exist with blades

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity Estimated B.C 300 kA	
	IEC	UL				End contacts	Blades	IEC	USA
72	1250	1300	280 315 350 400 450 500 550 630	10 15 21 32,5 44 57 68 105	60 87 120 190 255 330 390 610	72 76 77 80 87 94 110 113	72 76 77 80 89 98 120 X	100kA @ 1250V	100kA @ 1300V
	1100	1200	630 700 800	105 145 215	610 815 1240	X 122 125	125 140 146	150kA @ 1100V	150kA à 1200V
	1000	1100	700 800 900	145 215 312	815 1240 1800	X X 130	140 146 152	150kA @ 1000V	150kA @ 1100V
	850	900	1000	439	2150(*)	136	136	100kA @ 850V	100kA @ 900V
73	1250	1300	315 350 375 400 450 500 550 630 700 800	12 17 19 25 35,5 44 57 84 110 190	68 100 110 145 205 255 330 485 640 1090	84 86 93 99 110 116 125 135 136	84 86 93 100 112 120 132 X X	100kA @ 1250V	100kA @ 1300V
	1200	1300	700 900	110 250	640 1090	X 150	146 X	100kA @ 1200V	100kA @ 1300V
	1100	1200	800	190	1090	X	148	150kA @ 1100V	150kA @ 1200V
	1000	1100	900 1000 1100	250 370 445	1440 2130 2555	X 152 168	170 168 208	150kA @ 1000V	150kA @ 1100V
	950	1000	1100	445	2430(*)	168	X	150kA @ 950V	150kA @ 1000V
	900	1000	1000 1100 1250 1400	370 445 585 755	1920(*) 2280(*) 3080(*) 4100(*)	X X 186 210	174 208 X X	150kA @ 900V	150kA @ 1000V
	850	900	1400	755	3700(*)	210	X	150kA @ 850V	150kA @ 900V
	690	700	1500 1600	1180 1430	4750(*) 5740(*)	200 203	X X	180kA @ 690V	180kA @ 700V
	600	650	1800	2040	7150(*)	206	X	120kA @ 600V	120kA @ 650V
2 x 72	1250		630 700 800 900 1000 1100	60 84 130 176 228 272	348 480 760 1020 1320 1560	160 162 168 183 197 231		100kA @ 1250V	
	1100		1250 1400	426 568	2440 3260	237 256		100kA @ 1100V	
	1000		1600	860	4895	262		100kA @ 1000V	
	900		1800	1250	6350(*)	275		100kA @ 900V	
	750		2000	1760	7570(*)	285		100kA @ 750V	
	650		2200 2500	2410 3470	8350(*) 12000(*)	320 340		100kA @ 650V	
2 x 73	1250		800 900 1000 1100 1250	100 142 176 228 336	580 820 1000 1300 1900	195 208 231 244 262		100kA@ 1250V	
	1100		1400 1600 1800	440 760 1000	2600 4400 5800	283 286 315		100kA @ 1100V	
	1000		2000	1480	8500	319		120kA @ 1000V	
	950		2200	1780	9632(*)	353		100kA @ 950V	
	900		2500	2340	12075(*)	390		110kA @ 900V	
	850		2800	3000	15000(*)	440		100kA @ 850V	
	600		3000 3200	4980 5720	15700(*) 19030(*)	405 426		200kA @ 600V	
	550		3600	8160	25200(*)	430		200kA @ 550V	

(1) at 850 V

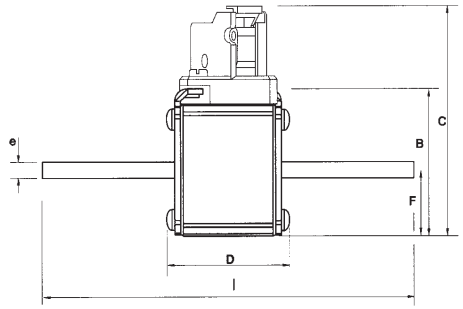
(2) does not exist with blades

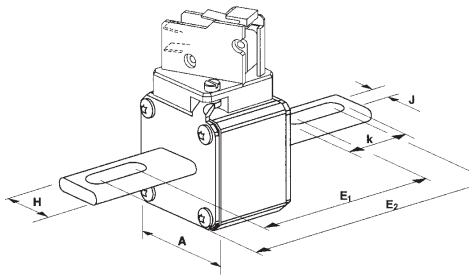
12/04

Ferraz Shawmut

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
American Terminals - 70 - 73 Blades

Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
70	A 130 URD 70 LI 0050	-	380	3	-
	A 130 URD 70 LI 0063	W300652			A130UD70LI063
	A 130 URD 70 LI 0080	X300653			A130UD70LI080
	A 130 URD 70 LI 0100	Y300654			A130UD70LI100
	A 130 URD 70 LI 0125	Z300655			A130UD70LI125
	A 130 URD 70 LI 0160	A300656			A130UD70LI160
	A 130 URD 70 LI 0200	B300657			A130UD70LI200
	A 130 URD 70 LI 0250	C300658			A130UD70LI250
	A 130 URD 70 LI 0280	Q300716			A130UD70LI280
	A 130 URD 70 LI 0315	D300659			A130UD70LI315
	A 120 URD 70 LI 0350	E300660			A120UD70LI350
71	A 130 URD 71 LLI0160	E300752	630	3	A130UD71LLI160
	A 130 URD 71 LLI0200	F300661			A130UD71LLI200
	A 130 URD 71 LLI0250	G300662			A130UD71LLI250
	A 130 URD 71 LLI0280	R300717			A130UD71LLI280
	A 130 URD 71 LLI0315	H300663			A130UD71LLI315
	A 130 URD 71 LLI0350	J300664			A130UD71LLI350
	A 130 URD 71 LLI0400	K300665			A130UD71LLI400
	A 130 URD 71 LLI0450	L300666			A130UD71LLI450
	A 120 URD 71 LLI0500	M300667			A120UD71LLI500
	A 120 URD 71 LLI0550	N300668			A120UD71LLI550
	A 110 URD 71 LLI0630	P300669			A110UD71LLI630
72	A 130 URD 72 LI 0280	Q300670	860	3	A130UD72LI280
	A 130 URD 72 LI 0315	R300671			A130UD72LI315
	A 130 URD 72 LI 0350	S300672			A130UD72LI350
	A 130 URD 72 LI 0400	T300673			A130UD72LI400
	A 130 URD 72 LI 0450	V300674			A130UD72LI450
	A 130 URD 72 LI 0500	W300675			A120UD72LI500
	A 130 URD 72 LI 0550	X300676			A130UD72LI550
	A 120 URD 72 LI 0630	Y300677			A120UD72LI630
	A 110 URD 72 LI 0700	Z300678			A110UD72LI700
	A 110 URD 72 LI 0800	A300679			A110UD72LI800
73	A 130 URD 73 LI 0315	B300680	1250	1-3	A130UD73LI315
	A 130 URD 73 LI 0350	C300681			A130UD73LI350
	A 130 URD 73 LI 0400	D300682			A130UD73LI400
	A 130 URD 73 LI 0450	E300683			A130UD73LI450
	A 130 URD 73 LI 0500	F300684			A120UD73LI500
	A 130 URD 73 LI 0550	G300685			A130UD73LI550
	A 130 URD 73 LI 0630	H300686			A130UD73LI630
	A 130 URD 73 LI 0700	J300687			A130UD73LI700
	A 120 URD 73 LI 0800	K300688			A120UD73LI800
	A 110 URD 73 LI 0900	L300689			A110UD73LI900
	A 100 URD 73 LI 1000	M300690			A100UD73LI1000
	A 100 URD 73 LI 1100	N300691			A100UD73LI1100
	A 100 URD 73 LI 1250	J301193			A100UD73LI1250
	A 90 URD 73 LI 1400	K301194			A90UD73LI1400





Rated voltage 900 V to 1300 V as per American standard.

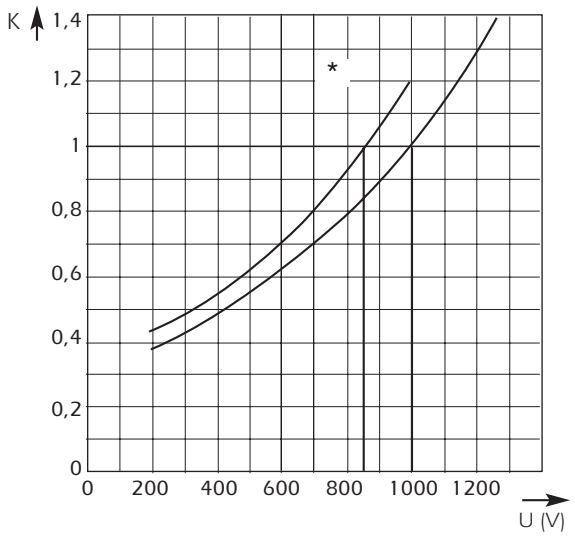
Microswitches supplied separately

Size	A	B	C	D	E1±1,3	E2±1,3	F	H	J	k	l±1,5	e
70	40 1-9/16"	46,5 1-27/32"	82 3-7/32"	71 2-5/32"	91,4 3-13/32"	130,4 5-1/8"	21 53/64"	25 1"	10,5 13/32"	30 1-3/16"	152,4 6"	6 15/64"
71	51 2"	56,5 2-7/32"	91 3-37/64"	71 2-25/32"	91,4 3-19/32"	130,4 5-1/8"	25,5 1"	25 1"	10,5 13/32"	30 1-3/16"	152,4 6"	6 15/64"
72	60 2-23/64"	65,5 2-37/64"	100 3-15/16"	71 2-25/32"	97,6 3-23/32"	132,4 5-13/64	30 1-3/16"	32 1-1/4"	14,6 9/16"	32 1-1/4"	157,4 6-3/16"	6 15/64"
73	74,5 2-15/16"	79,5 3-1/8"	114 4-1/2"	72 2-53/64" (2-15/16")	98,8 3-57/64"	131,4 5-11/64"	37,2 1-15/32"	40 1-9/16"	15,9 5/8"	32 1-1/4"	157,4 6-3/16"	6 15/64"

Note:
Dimensions in mm
Dimensions in inches

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Multiplier coefficient



Left: Mean curve indicating variation of total I^2t (I^2t_t) and total operating time T_t in accordance with working voltage U.

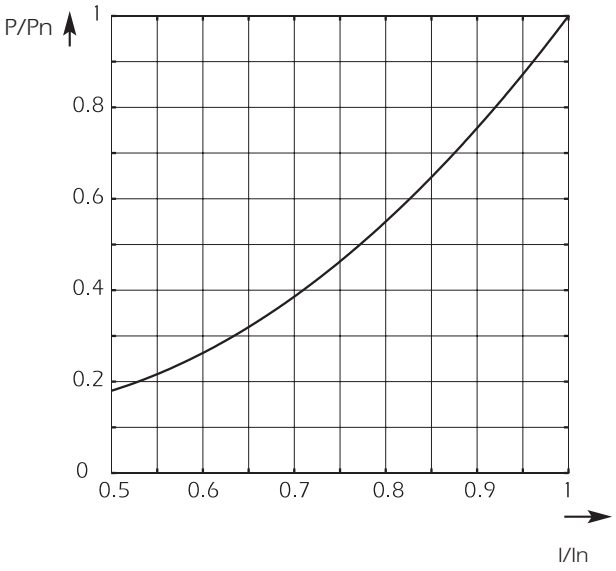
Example:
Fuse 350 A in size 70.
I_p = 10 000 A U = 1100 V

At 1000 V
I^2t_t = 115 000 A^2s T_t = 7 ms

At 1100 V
I^2t_t = 115 000 x 1.13 = 130 000 A^2s
T_t = 7 x 1.13 = 7.9 ms

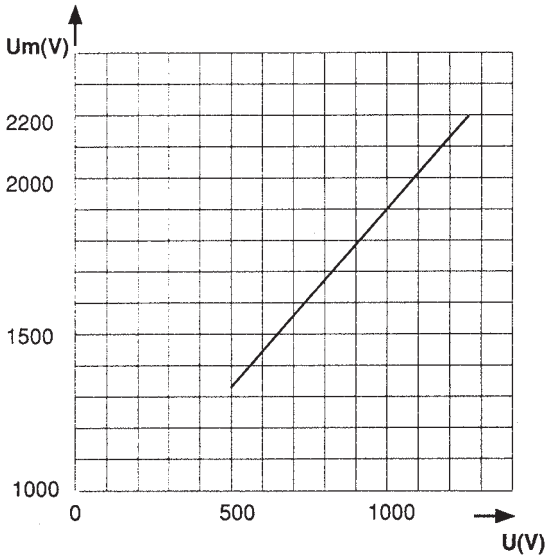
* curve for fuses with I^2t published at 850VAC

Dissipated power



Above left: Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in steady state.

Arc voltage



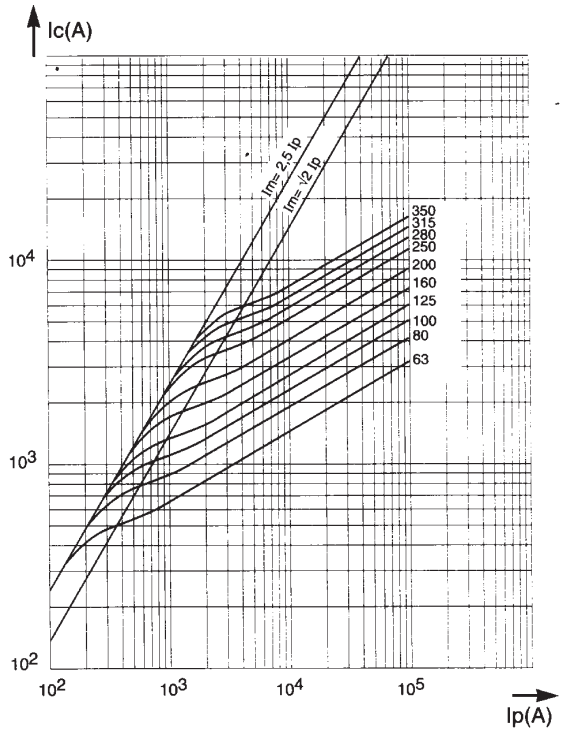
Above right: Curve indicating peak arc voltage Um which may appear across fuse terminals as a function of working voltage U at cos φ = 0.15

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 70

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



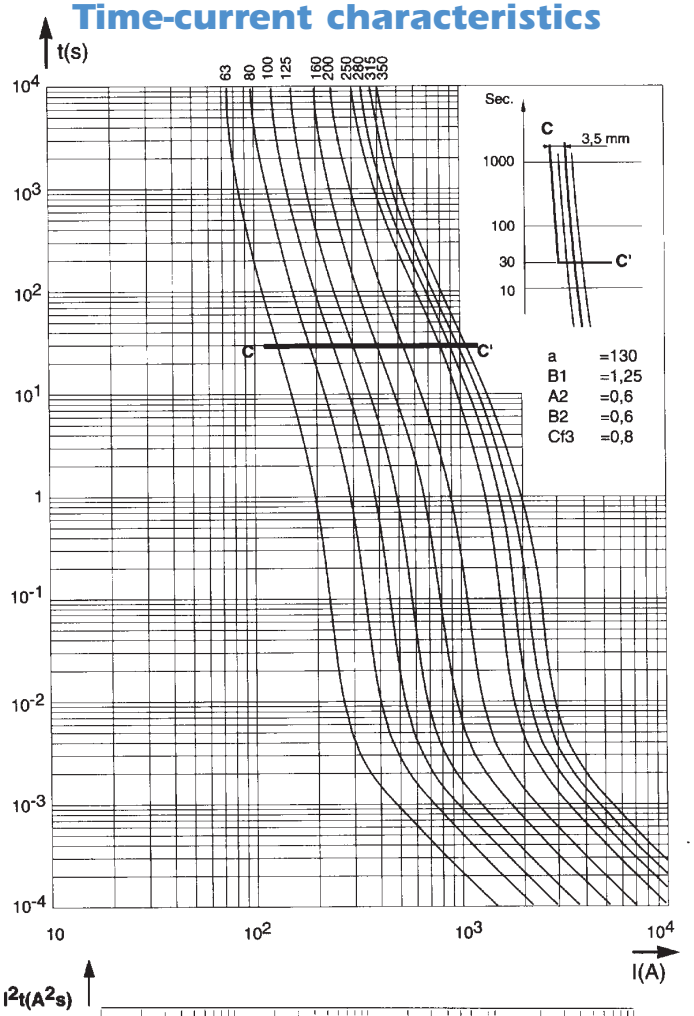
Time-current characteristics

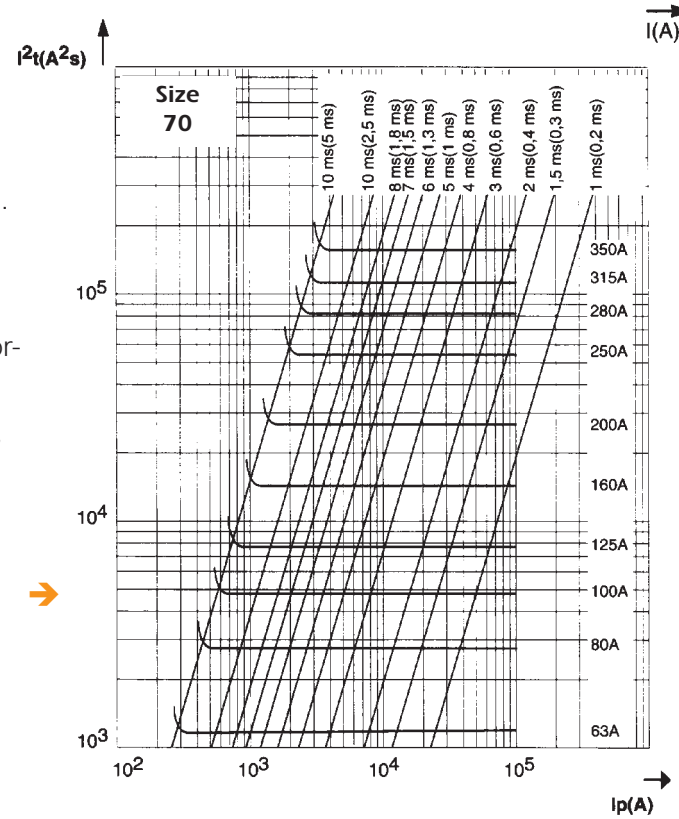
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

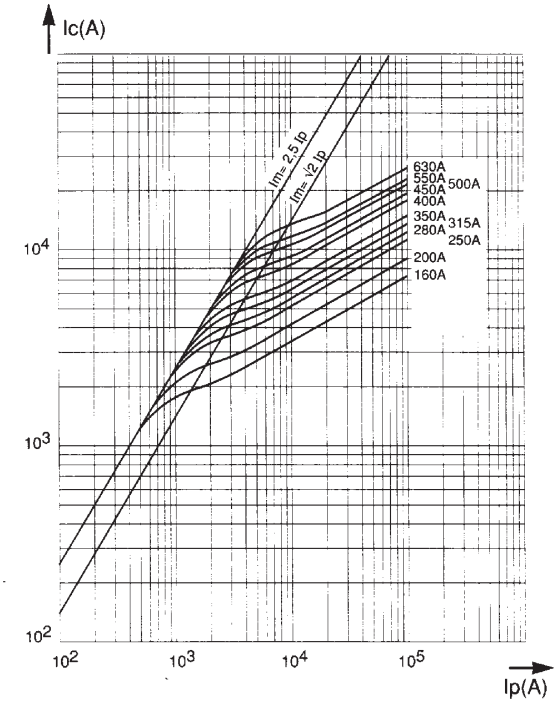




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

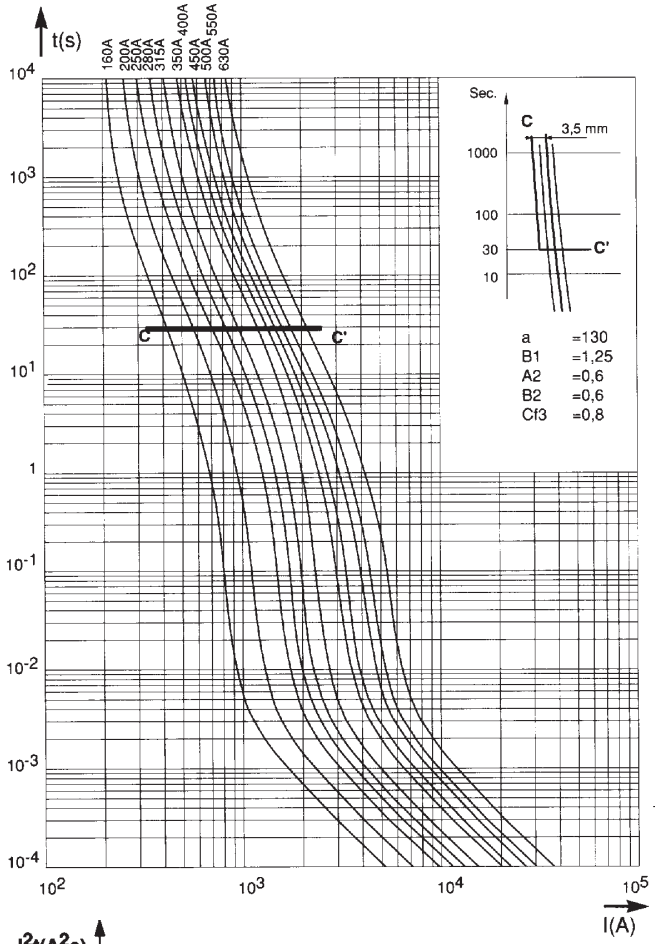
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

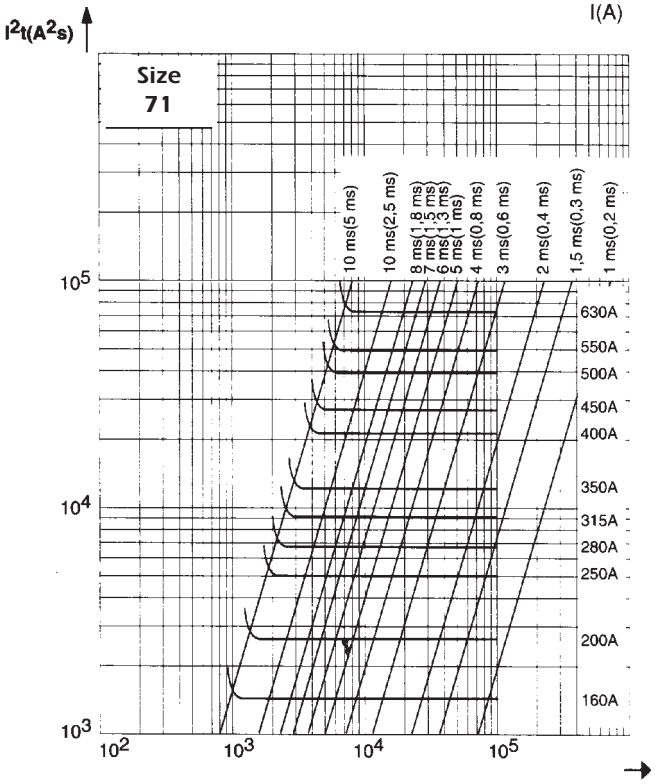
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 71
Time-current characteristics



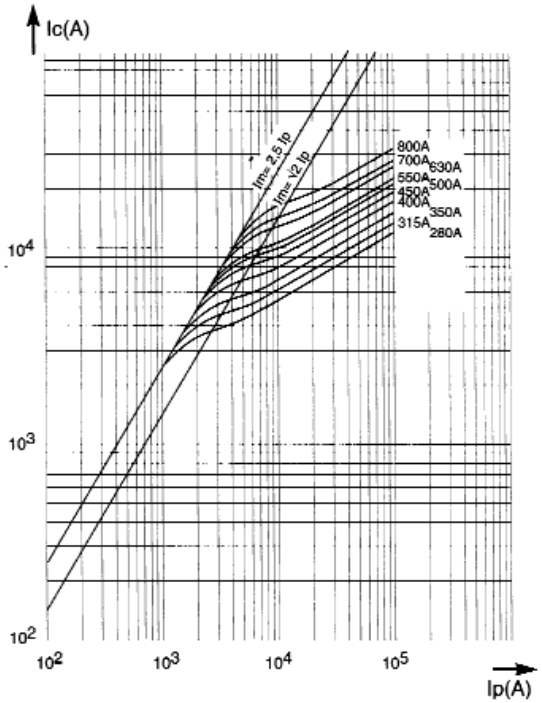


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 72

Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



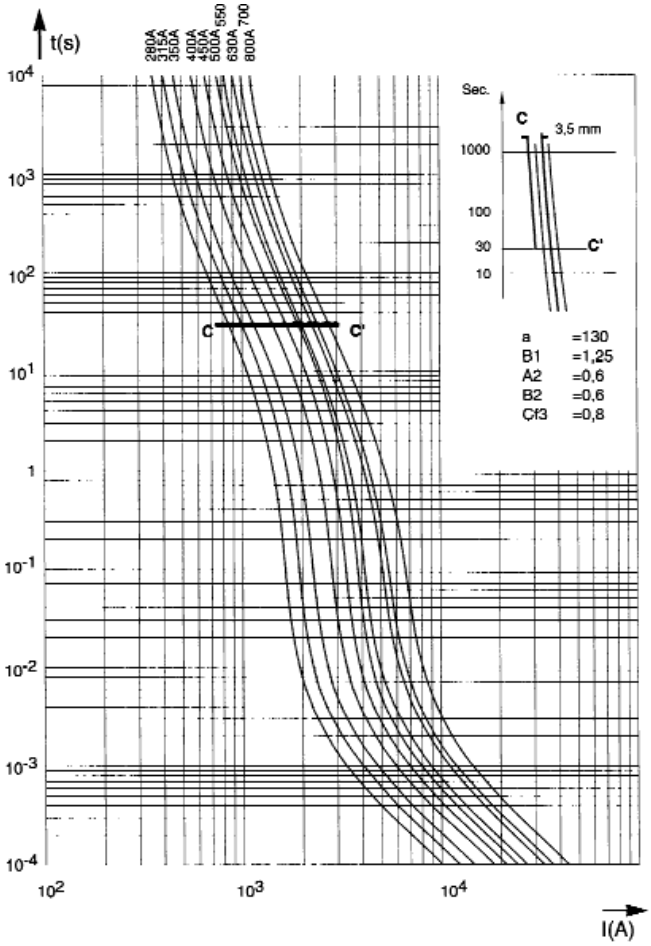
Time-current characteristics

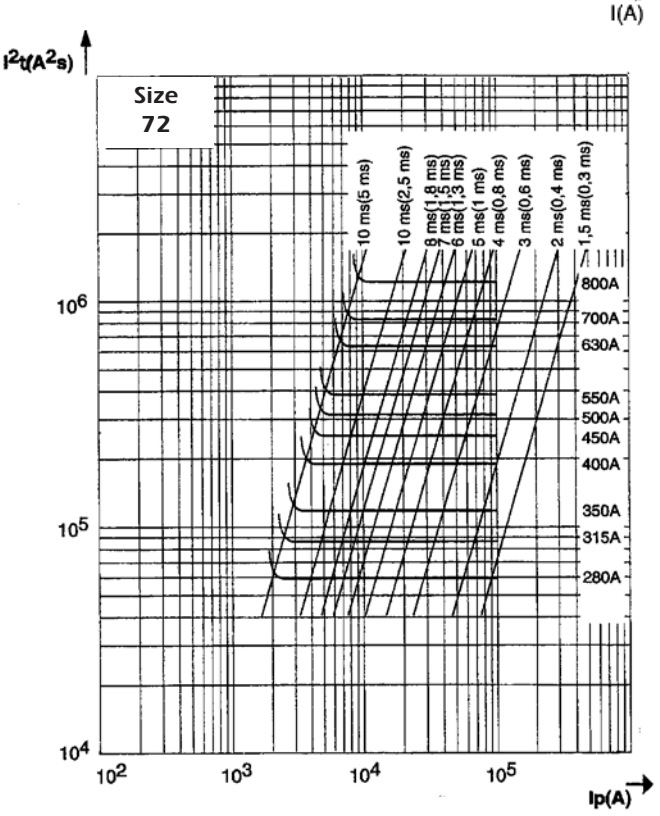
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



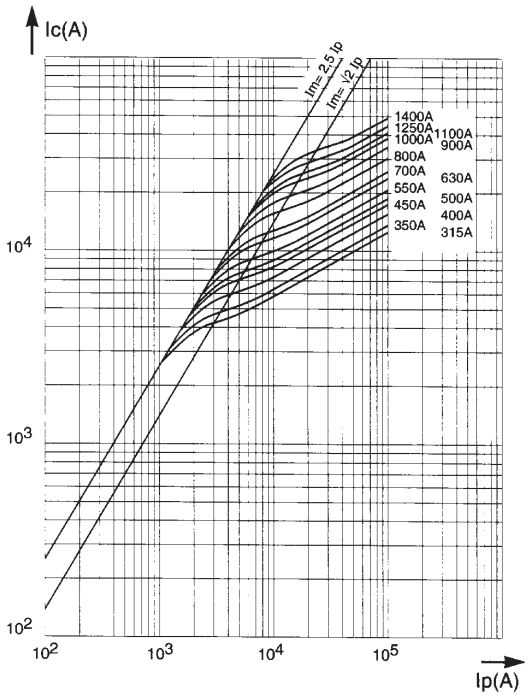


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 73

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



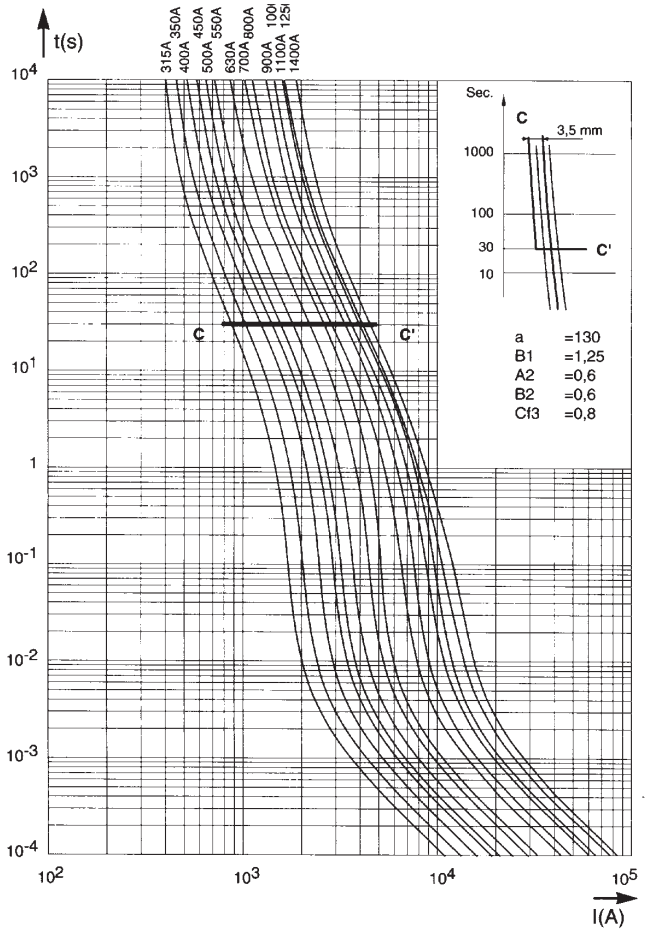
Time-current characteristics

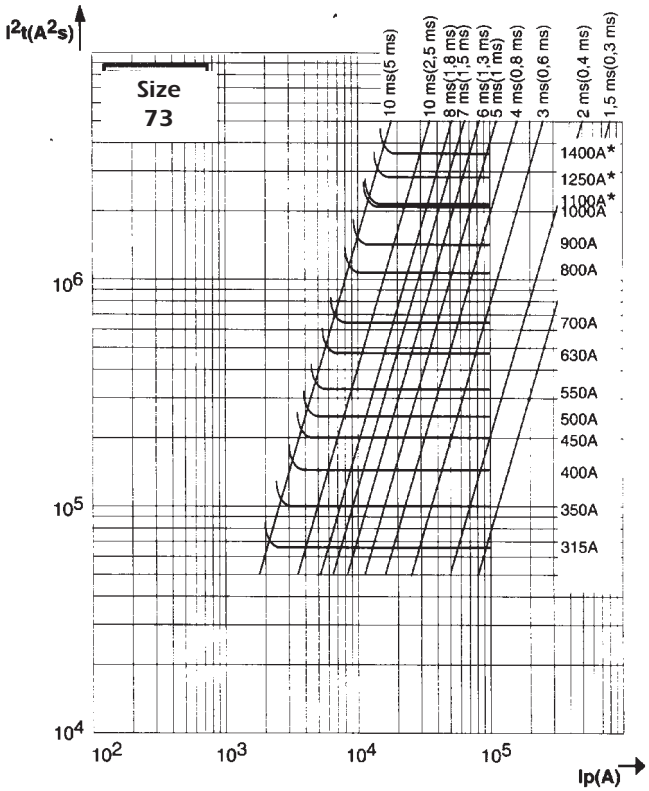
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



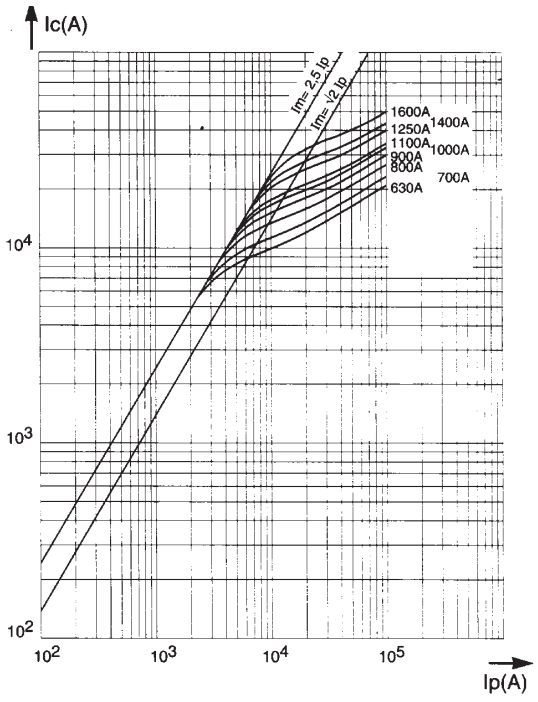


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 2x72

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



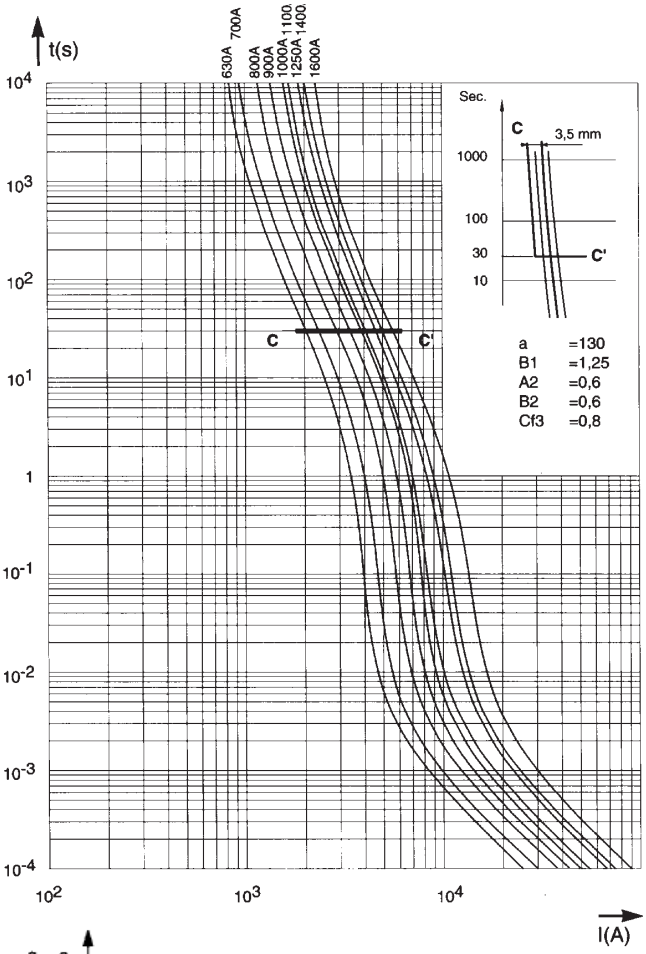
Time-current characteristics

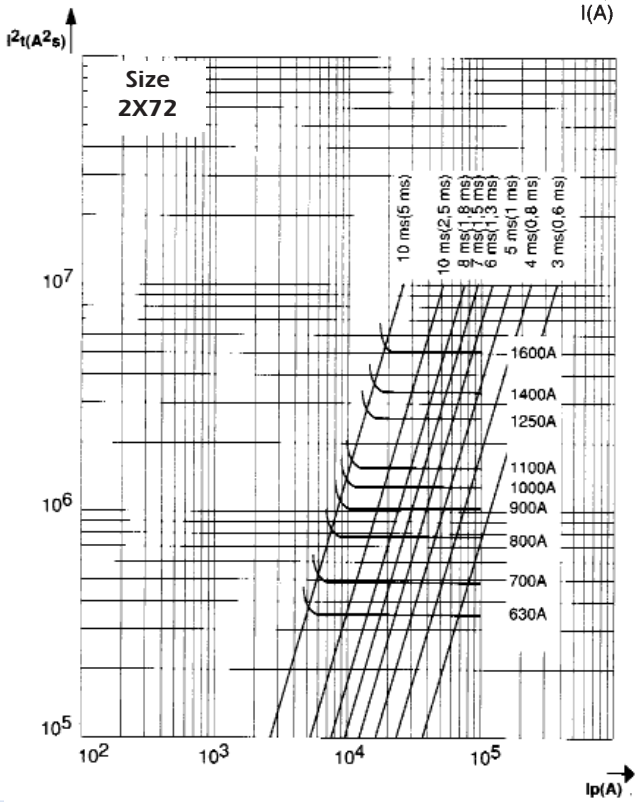
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

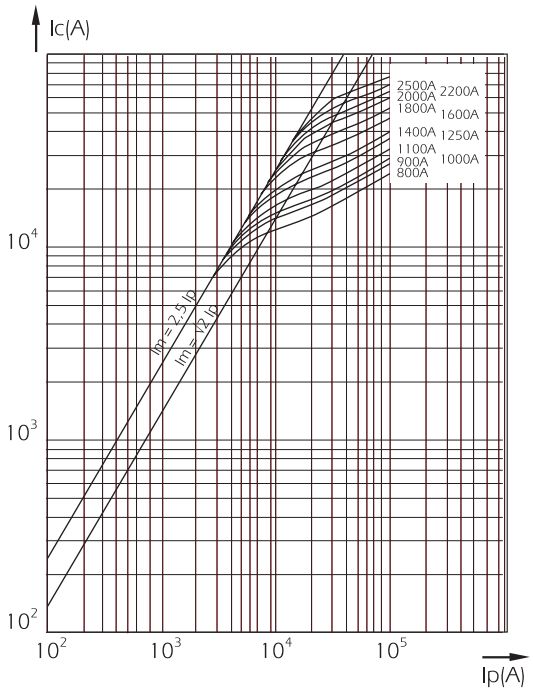




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

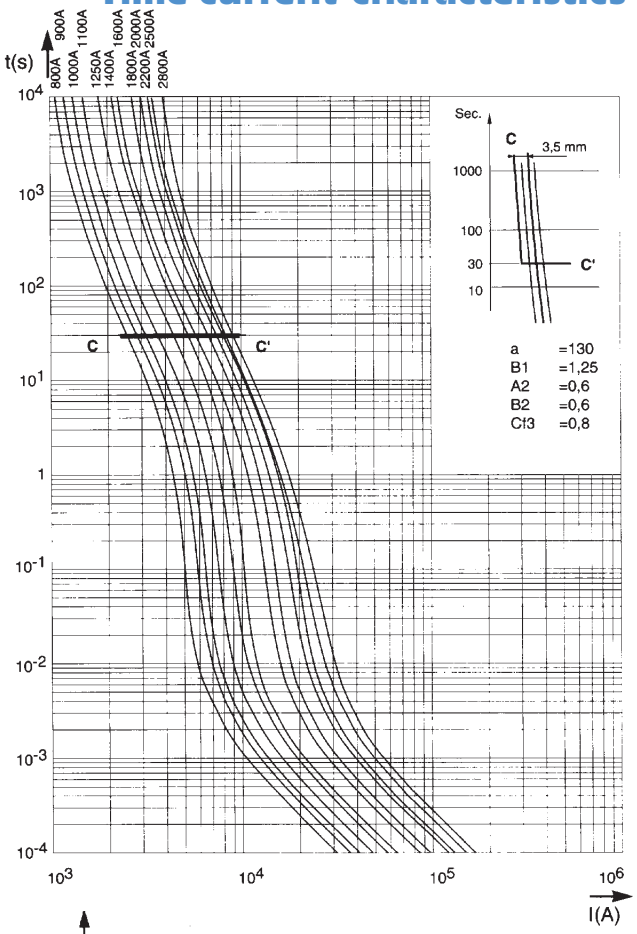
Maximum values of total operating I²t and total operating times

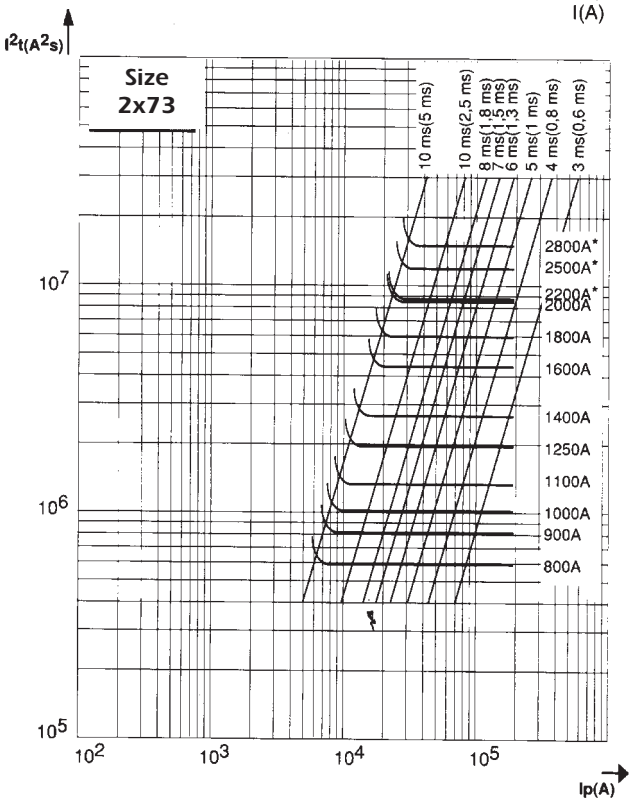
Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.

The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 2x72

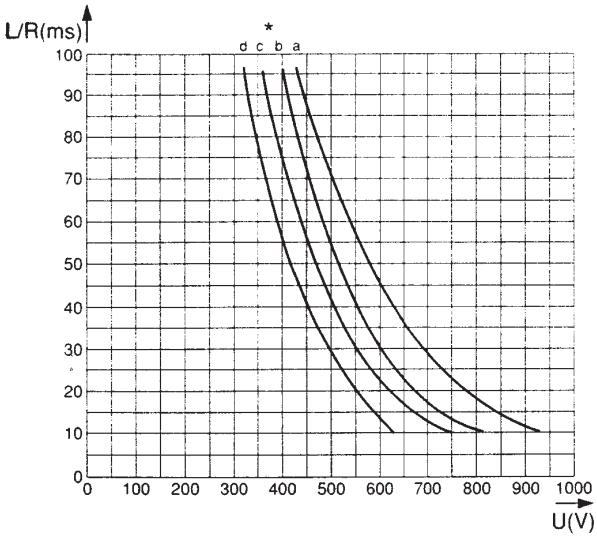
Time-current characteristics

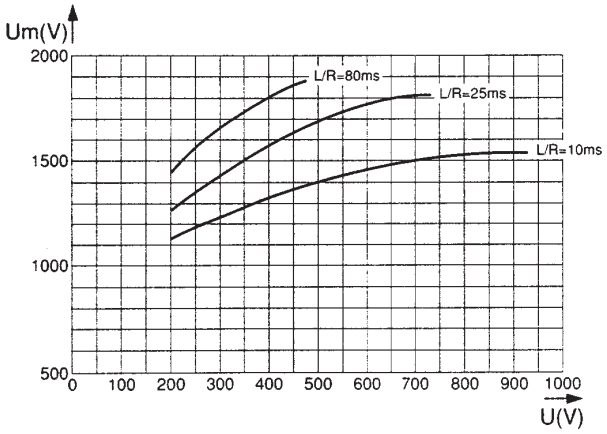




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

DC working voltage possibilities





Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U, for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark: When the fault current di/dt is very large, this condition can be exceeded. It is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Rated current I_N(A)	Curves (*) and Ipm (1) corresponding to the rating											
	70		71		72		73		2x72		2x73	
	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)
63	a	270										
80	a	400										
100	a	520										
125	a	700										
160	a	950	a	950								
200	a	1300	a	1300								
250	a	1800	a	1800								
280	b	2200	a	2000	a	1800						
315	b	2600	a	2300	a	2200	a	2000				
350	c	3000	a	2700	a	2600	a	2400				
400			b	3500	a	3200	a	3000				
450			b	4000	a	3800	a	3500				
500			c	4800	a	4600	a	3900				
550			c	5200	b	5000	a	4400				
630			c	6400	b	6200	a	5300	a	4400		
700					c	6800	a	6000	a	5200		
800					c	8000	b	8000	a	6400	a	6000
900							b	9000	a	7600	a	7000
1000							c	11000	a	9200	a	7800
1100							c	12000	b	10000	a	8800
1250							c	13500	b	12400	a	10600
1400							c	15000	c	13600	a	12000
1600									c	16000	b	16000
1800											b	18000
2000											c	22000
2200											c	24000
2500											d	27000
2800											d	30000

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

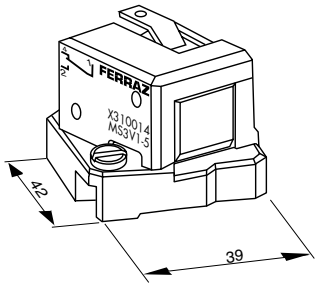
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

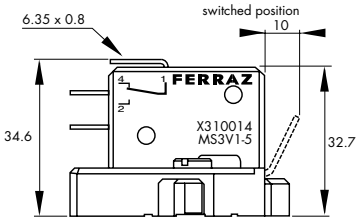
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



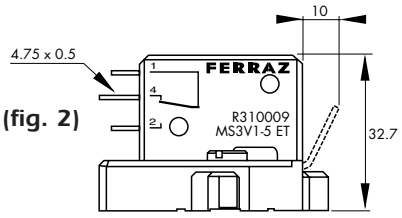
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

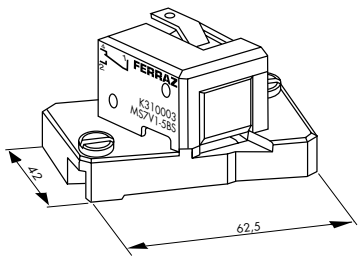
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

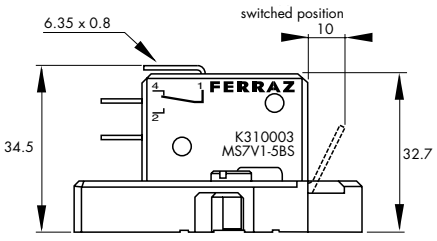
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

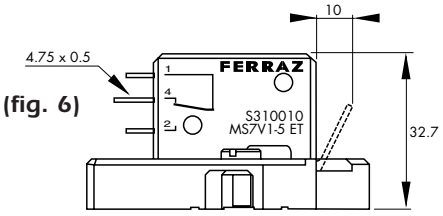


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

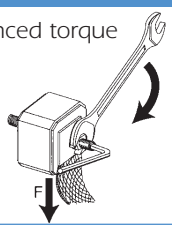
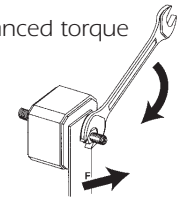
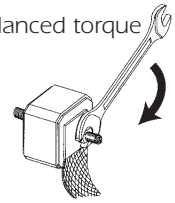
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

Recognized

650 to 1300VAC / 63 to 2800A.

- Exceptionally low I^2T, Watt losses.
- Non-magnetic construction, highly reliable low voltage.
- Indicator system.
- Conformity to UL, CSA investigated, IEC, DIN and VDE standards.
- Increased technical performance
- Higher ratings.
- Reduction in volume and weight.
- This fuse preselection table indicates, for each size:
  -rated current (or rating) In
  - pre-arcing I^2t (I^2tp) at 1 ms
  - total operating I^2t (I^2t_t) at 1000 V and 850V(I)f=50Hz, cos φ =0.15, and for a total operating time from 8 to 10 ms
  - dissipated power Pn at
  the rated current In, and
  at 0.8 In, in steady state
  - breaking capacity at various voltages, checked by tests made in accordance with IEC and American standards.



Estimated breaking capacity: 300 kA

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity	
	IEC	UL				End contacts	Blades	IEC	USA
70	1250	1300	50	0,116	0,7	16	16	100kA @ 1250V	100kA @ 1300V
			63	0,210	1,2	26	26		
			80	0,470	2,7	27	27		
			100	0,830	4,8	30	30		
			125	1,30	7,5	38	38		
			160	2,55	15	45	45		
			200	4,7	27	54	56		
			250	9,6	55	58	61		
	1200	1300	280	14	82	61	64	100kA @ 1200V	100kA @ 1300V
			315	20	115	66	72		
	1100	1200	350	28	158	68	75	150kA @ 1100V	150kA @ 1200V
			400	39	224	81	90		
			450	62	356	82	82		
	1000	1100	500	84	483	83	83	120kA @ 1000V	120kA @ 1100V
	800	900	550	128	576(*)	83	83	100kA @ 800V	100kA @ 900V
	750	800	630	176	730(*)	91	91	100kA @ 750V	100kA @ 800V
71	1250	1300	160	2,6	15	46	46	100kA @ 1250V	100kA @ 1300V
			200	4,7	27	54	54		
			250	8,9	51	61	61		
			280	12	68	68	70		
			315	16	92	73	76		
			350	22	127	76	80		
			400	38	220	76	80		
			450	47	270	87	95		
		1300 (TTI)	500	68	390	90	X		150kA @ 1300V
	1100	1200	500	68	390	X	100	150kA @ 1100V	150kA @ 1200V
			550	84	485	98	112		
			630	125	725	105	X		
	1000	1100	630	125	725	X	120	150kA @ 1000V	150kA @ 1100V
			700	180	1040	105	105		
	900	950	800	290	1540(*)	116	116	100kA @ 900V	100kA @ 950V
	800	850	900	446	2010(*)	120	120	100kA @ 800V	100kA @ 850V

(1) at 850 V
(2) does not exist with blades

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity Estimated B.C 300 kA	
	IEC	UL				End contacts	Blades	IEC	USA
72	1250	1300	280 315 350 400 450 500 550 630	10 15 21 32,5 44 57 68 105	60 87 120 190 255 330 390 610	72 76 77 80 87 94 110 113	72 76 77 80 89 98 120 X	100kA @ 1250V	100kA @ 1300V
	1100	1200	630 700 800	105 145 215	610 815 1240	X 122 125	125 140 146	150kA @ 1100V	150kA à 1200V
	1000	1100	700 800 900	145 215 312	815 1240 1800	X X 130	140 146 152	150kA @ 1000V	150kA @ 1100V
	850	900	1000	439	2150(*)	136	136	100kA @ 850V	100kA @ 900V
73	1250	1300	315 350 375 400 450 500 550 630 700 800	12 17 19 25 35,5 44 57 84 110 190	68 100 110 145 205 255 330 485 640 1090	84 86 93 99 110 116 125 135 136	84 86 93 100 112 120 132 X X	100kA @ 1250V	100kA @ 1300V
	1200	1300	700 900	110 250	640 1090	X 150	146 X	100kA @ 1200V	100kA @ 1300V
	1100	1200	800	190	1090	X	148	150kA @ 1100V	150kA @ 1200V
	1000	1100	900 1000 1100	250 370 445	1440 2130 2555	X 152 168	170 168 208	150kA @ 1000V	150kA @ 1100V
	950	1000	1100	445	2430(*)	168	X	150kA @ 950V	150kA @ 1000V
	900	1000	1000 1100 1250 1400	370 445 585 755	1920(*) 2280(*) 3080(*) 4100(*)	X X 186 210	174 208 X X	150kA @ 900V	150kA @ 1000V
	850	900	1400	755	3700(*)	210	X	150kA @ 850V	150kA @ 900V
	690	700	1500 1600	1180 1430	4750(*) 5740(*)	200 203	X X	180kA @ 690V	180kA @ 700V
	600	650	1800	2040	7150(*)	206	X	120kA @ 600V	120kA @ 650V
2 x 72	1250		630 700 800 900 1000 1100	60 84 130 176 228 272	348 480 760 1020 1320 1560	160 162 168 183 197 231		100kA @ 1250V	
	1100		1250 1400	426 568	2440 3260	237 256		100kA @ 1100V	
	1000		1600	860	4895	262		100kA @ 1000V	
	900		1800	1250	6350(*)	275		100kA @ 900V	
	750		2000	1760	7570(*)	285		100kA @ 750V	
	650		2200 2500	2410 3470	8350(*) 12000(*)	320 340		100kA @ 650V	
2 x 73	1250		800 900 1000 1100 1250	100 142 176 228 336	580 820 1000 1300 1900	195 208 231 244 262		100kA@ 1250V	
	1100		1400 1600 1800	440 760 1000	2600 4400 5800	283 286 315		100kA @ 1100V	
	1000		2000	1480	8500	319		120kA @ 1000V	
	950		2200	1780	9632(*)	353		100kA @ 950V	
	900		2500	2340	12075(*)	390		110kA @ 900V	
	850		2800	3000	15000(*)	440		100kA @ 850V	
	600		3000 3200	4980 5720	15700(*) 19030(*)	405 426		200kA @ 600V	
	550		3600	8160	25200(*)	430		200kA @ 550V	

(1) at 850 V

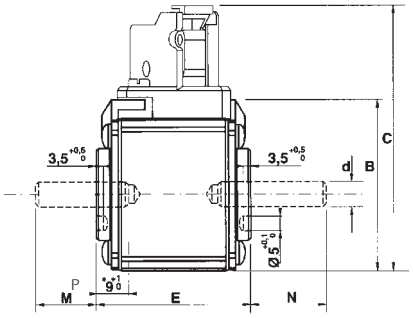
(2) does not exist with blades

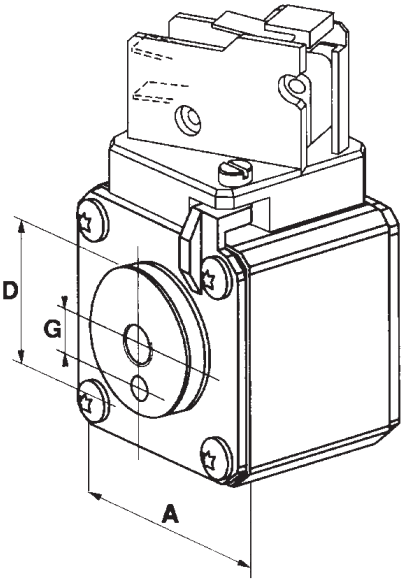
12/04

Ferraz Shawmut

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
IEC Terminals - French 70 - 73 End contacts

Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
70	12,5 URD 70 TT F 0050	C301095	350	3	PC70UD13C50TF
	12,5 URD 70 TT F 0063	M300483			PC70UD13C63TF
	12,5 URD 70 TT F 0080	N300484			PC70UD13C80TF
	12,5 URD 70 TT F 0100	P300485			PC70UD13C100TF
	12,5 URD 70 TT F 0125	Q300486			PC70UD13C125TF
	12,5 URD 70 TT F 0160	R300487			PC70UD13C160TF
	12,5 URD 70 TT F 0200	S300488			PC70UD13C200TF
	12,5 URD 70 TT F 0250	T300489			PC70UD13C250TF
	12 URD 70 TT F 0280	N300714			PC70UD12C280TF
	12 URD 70 TT F 0315	V300490			PC70UD12C315TF
	11 URD 70 TT F 0350	W300491			PC70UD11C350TF
	11 URD 70 TT F 0400	E300867			PC70UD11C400TF
	11 URD 70 TT F 0450	H301284			PC70UD11C450TF
	10 URD 70 TT F 0500	J301285			PC70UD10C500TF
	8 URD 70 TT F 0550	K301286			PC70UD80V550TF
71	12,5 URD 71 TT F 0160	B300749	520	3	PC71UD13C160TF
	12,5 URD 71 TT F 0200	Z300517			PC71UD13C200TF
	12,5 URD 71 TT F 0250	A300518			PC71UD13C250TF
	12,5 URD 71 TT F 0280	P300715			PC71UD13C280TF
	12,5 URD 71 TT F 0315	B300519			PC71UD13C315TF
	12,5 URD 71 TT F 0350	C300520			PC71UD13C350TF
	12,5 URD 71 TT F 0400	D300521			PC71UD13C400TF
	12,5 URD 71 TT F 0450	E300522			PC71UD13C450TF
	11 URD 71 TT F 0500	F300523			PC71UD11C500TF
	11 URD 71 TT F 0550	G300524			PC71UD11C550TF
	11 URD 71 TT F 0630	H300525			PC71UD11C630TF
	10 URD 71 TT F 0700	M301288			PC71UD10C700TF
	9 URD 71 TT F 0800	Z300862			PC71UD90V800TF
	8 URD 71 TT F 0900	N301289			PC71UD80VC900TF
72	12,5 URD 72 TT F 0250	X301573	800	3	PC72UD13C250TF
	12,5 URD 72 TT F 0280	Y300493			PC72UD13C280TF
	12,5 URD 72 TT F 0315	Z300494			PC72UD13C315TF
	12,5 URD 72 TT F 0350	A300495			PC72UD13C350TF
	12,5 URD 72 TT F 0400	B300496			PC72UD13C400TF
	12,5 URD 72 TT F 0450	C300497			PC72UD13C450TF
	12,5 URD 72 TT F 0500	D300498			PC72UD13C500TF
	12,5 URD 72 TT F 0550	E300499			PC72UD13C550TF
	12,5 URD 72 TT F 0630	F300500			PC72UD13C630TF
	11 URD 72 TT F 0700**	G300501			PC72UD11C700TF
	11 URD 72 TT F 0800**	H300502			PC72UD11C800TF
	10 URD 72 TT F 0900**	G300869			PC72UD10C900TF
	8,5 URD 72 TT F 1000**	T301294			PC72UD85V1000TF
73	12,5 URD 73 TT F 0315	J300503	1250	1	PC73UD13C315TF
	12,5 URD 73 TT F 0350	K300504			PC73UD13C350TF
	12,5 URD 73 TT F 0400	L300505			PC73UD13C400TF
	12,5 URD 73 TT F 0450	M300506			PC73UD13C450TF
	12,5 URD 73 TT F 0500	N300507			PC73UD13C500TF
	12,5 URD 73 TT F 0550	P300508			PC73UD13C550TF
	12,5 URD 73 TT F 0630	Q300509			PC73UD13C630TF
	12,5 URD 73 TT F 0700	R300510			PC73UD13C700TF
	12,5 URD 73 TT F 0800	S300511			PC73UD13C800TF
	12 URD 73 TT F 0900**	T300512			PC73UD12C900TF
	10 URD 73 TT F 1000**	V300513			PC73UD10C1000TF
	9,5 URD 73 TT F 1100**	W300514			PC73UD95V800TFB
	9 URD 73 TT F 1250**	T300696			PC73UD90V13CTF
	8,5 URD 73 TT F 1400**	S300718			PC73UD85C14CTF
	6,9 URD 73 TT F 1600**	B301301			PC73UD69V16CTF
	6 URD 73 TT F 1800**	C301302			PC73UD60V18CTF





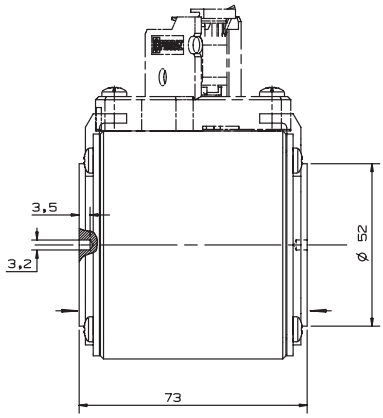
Microswitches and threaded studs supplied separately

Note:
Dimensions in mm
Dimensions in inches

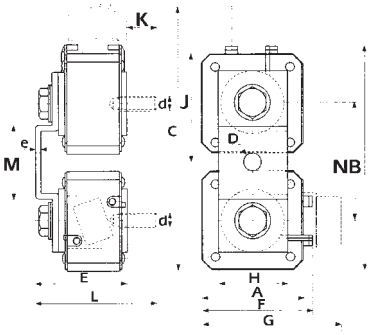
Size	A	B	C	D	M±	N±	E±1	d	G±0.1	P±0.1
70	40 1-9/16"	46,5 1-27/32"	82 3-7/32"	26 1-1/64"	22	27	74 2-29/32"	M8	9 23/64"	6 15/64"
71	51 2"	56,5 2-7/32"	91 3-37/64"	30 1-3/16"	19	24	74 2-29/32"	M8	9 23/64"	9 23/64"
72	60 2-3/8"	65,5 2-37/64"	100 3-15/16"	38 ; (42mm **) 1-1/2" ; (1-21/32" **)	19	39	74 2-29/32"	M10	15 19/32"	9 23/64"
73	74,5 2-15/16"	79,5 3-1/8"	114 4-1/2"	46 ; (52mm **) 1-13/16" ; (2-1/16" **)	24	39	74 2-29/32"	M12	15 19/32"	9 23/64"

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
IEC Terminals - French 272 - 273 End contacts

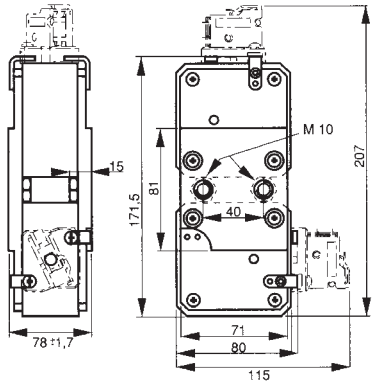
Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
73	12,5 URD 73 PPAF 0315	H300640	1250	1	PC73UD13C315PP4
	12,5 URD 73 PPAF 0350	J300641			PC73UD13C350PP4
	12,5 URD 73 PPAF 0400	K300642			PC73UD13C405PP4
	12,5 URD 73 PPAF 0450	L300643			PC73UD13C450PP4
	12,5 URD 73 PPAF 0500	M300644			PC73UD13C500PP4
	12,5 URD 73 PPAF 0550	N300645			PC73UD13C550PP4
	12,5 URD 73 PPAF 0630	P300646			PC73UD13C630PP4
	12,5 URD 73 PPAF 0700	Q300647			PC73UD13C700PP4
	12,5 URD 73 PPAF 0800	R300648			PC73UD13C800PP4
	12 URD 73 PPAF 0900	S300649			PC73UD12C900PP4
	10 URD 73 PPAF 1000	T300650			PC73UD10C10CPP4
	9,5 URD 73 PPAF 1100	V300651			PC73UD95V11CPP4
	9 URD 73 PPAF 1250	T300719			PC73UD90V13CPP4
	8,5 URD 73 PPAF 1400	V300720			PC73UD85V14CPP4
2 x 72	12,5 URD 272 TTF 0630	W300721	1900	1	PC272UD13C630TF
	12,5 URD 272 TTF 0700	X300722			PC272UD13C700TF
	12,5 URD 272 TTF 0800	Y300723			PC272UD13C800TF
	12,5 URD 272 TTF 0900	Z300724			PC272UD13C900TF
	12,5 URD 272 TTF 1000	A300725			PC272UD13C10CTF
	12,5 URD 272 TTF 1100	B300726			PC272UD13C11CTF
	11 URD 272 TTF 1250	M302231			PC272UD11C13CTF
	11 URD 272 TTF 1400	D300728			PC272UD11C14CTF
	10 URD 272 TTF 1600	L302230			PC272UD10C16CTF
	9 URD 272 TTF 1800	E301994			PC272UD90V18CTF
	7,5 URD 272 TTF 2000	F301995			PC272UD75V20CTF
	6,5 URD 272 TTF 2200	G301996			PC272UD65V22CTF
	6,5 URD 272 TTF 2500	H301997			PC272UD65V25CTF
2 x 73	12,5 URD 273 TTF 0800	F300730	2600	1	PC273UD13C800TF
	12,5 URD 273 TTF 0900	G300731			PC273UD13C900TF
	12,5 URD 273 TTF 1000	H300732			PC273UD13C10CTF
	12,5 URD 273 TTF 1100	J300733			PC273UD13C11CTF
	12,5 URD 273 TTF 1250	K300734			PC273UD13C13CTF
	11 URD 273 TTF 1400	K302229			PC273UD11C14CTF
	11 URD 273 TTF 1600	J302228			PC273UD11C16CTF
	11 URD 273 TTF 1800	S302236			PC273UD11C18CTF
	10 URD 273 TTF 2000	P300738			PC273UD10C20CTF
	9,5 URD 273 TTF 2200	Q300739			PC273UD95V22CTF
	9,5 URD 273 PLAF 2200	M301909	3100	1	PC76UD95V22CP11
	9 URD 273 PLAF 2500	R300740			PC76UD90V25CP11
	8,5 URD 273 PLAF 2800	S300741			PC76UD85V28CP11
	6 URD 273 PLAF 3000	K301999			PC76UD60V30CP11
	6 URD 273 PLAF 3200	M302001			PC76UD60V32CP11
	5,5 URD 273 PLAF 3600	N302002			PC76UD55V36CP11



73 PPAF



272 &273 TTF



273 PLAF

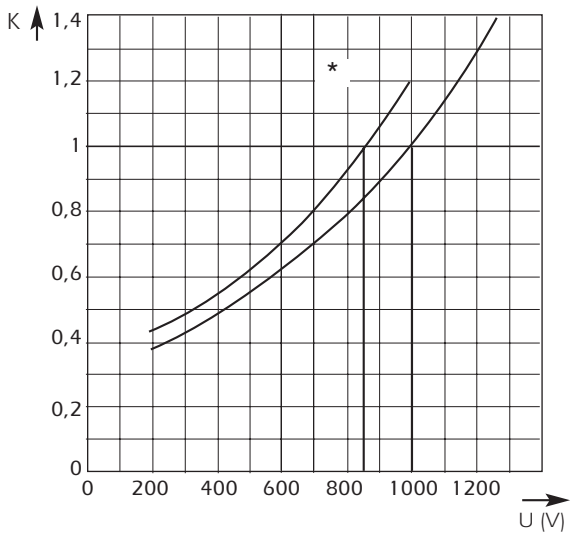
Microswitches and threaded studs supplied separately

	A	B	C	D	E	F	G	H	J	K	d	e	L	M	N
2 x 72 TTF	60	138,5	172	11	91	65,5	100	35	66	39	M 10	4	131	48	72
2 x 73 TTF	74,5	167	200	13	91	79,5	114	50	80	39	M 12	4	131	54	86

Note:
Dimensions in mm

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Multiplier coefficient



Left: Mean curve indicating variation of total I^2t (I^2t_t) and total operating time T_t in accordance with working voltage U.

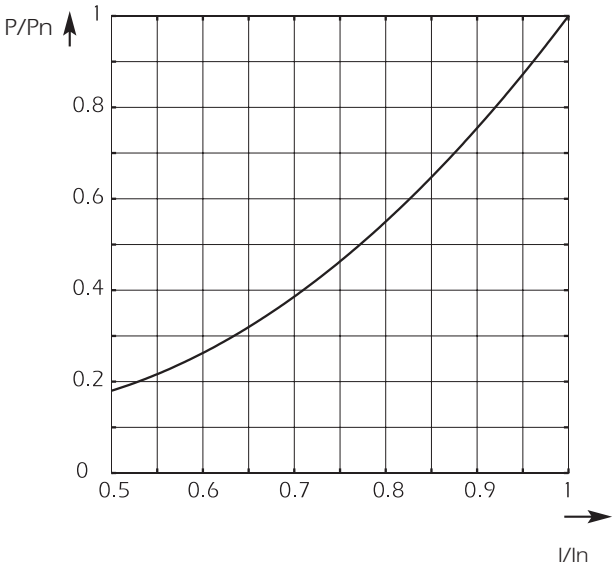
Example:
Fuse 350 A in size 70.
I_p = 10 000 A U = 1100 V

At 1000 V
I^2t_t = 115 000 A^2s T_t = 7 ms

At 1100 V
I^2t_t = 115 000 x 1.13 = 130 000 A^2s
T_t = 7 x 1.13 = 7.9 ms

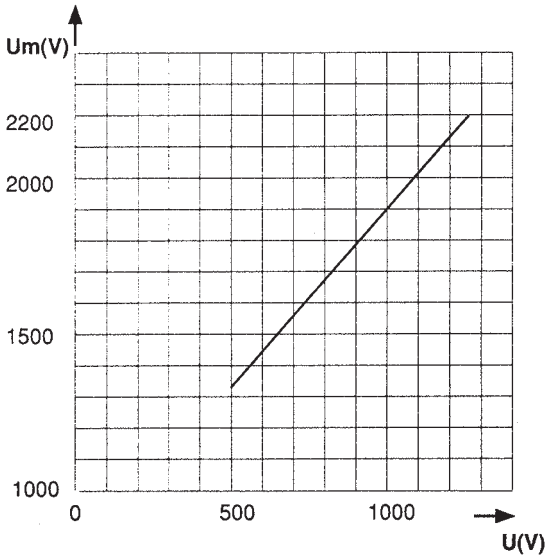
* curve for fuses with I^2t published at 850VAC

Dissipated power



Above left: Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in steady state.

Arc voltage



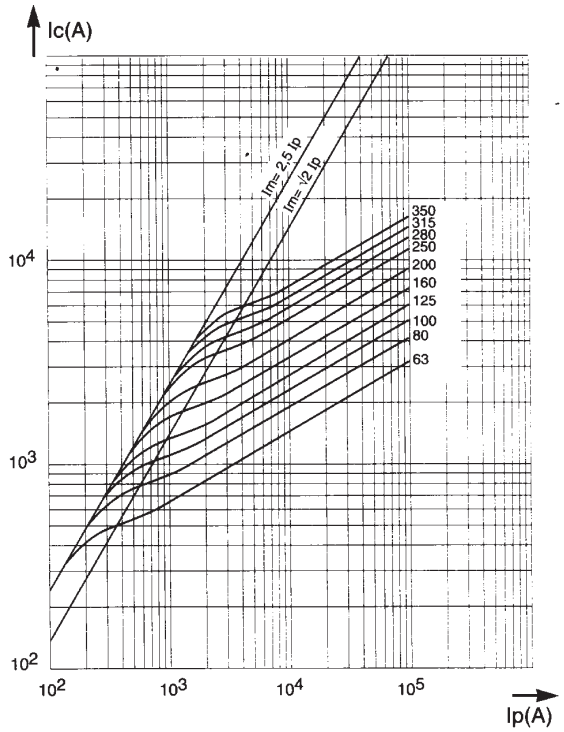
Above right: Curve indicating peak arc voltage Um which may appear across fuse terminals as a function of working voltage U at cos φ = 0.15

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 70

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



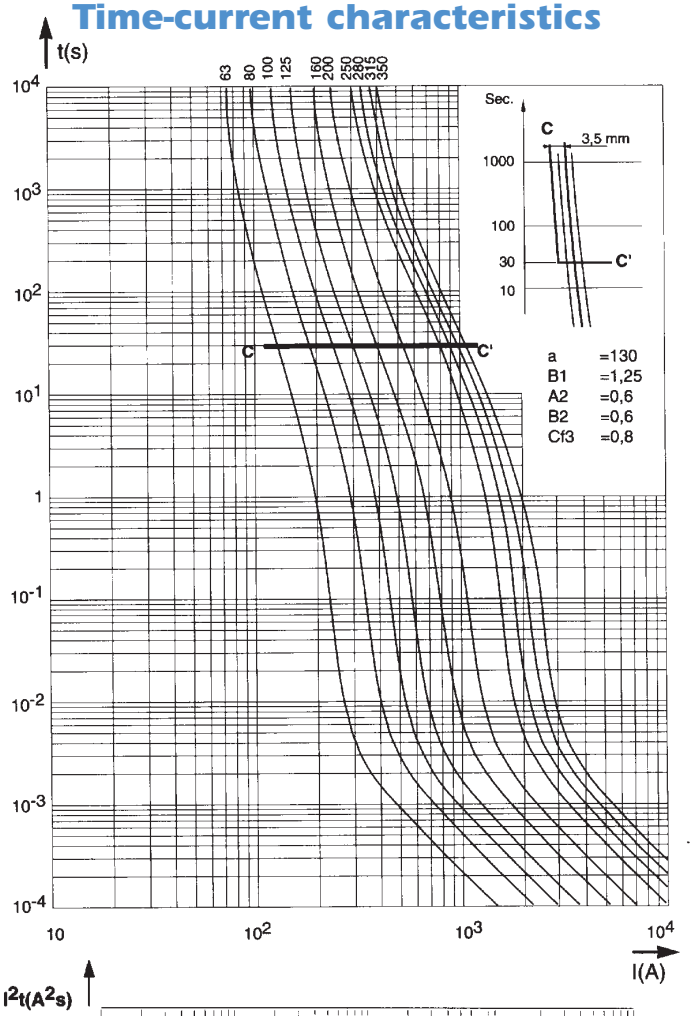
Time-current characteristics

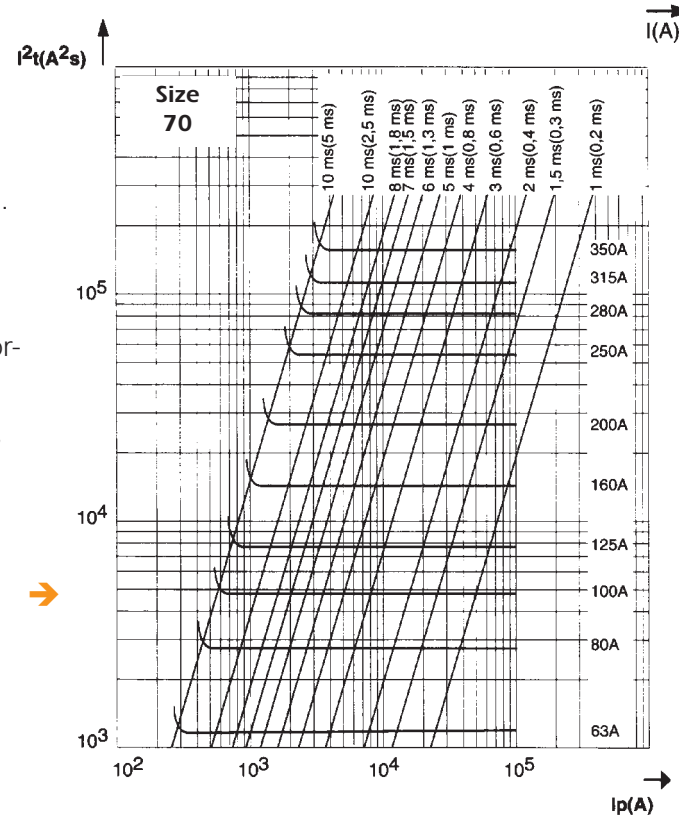
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

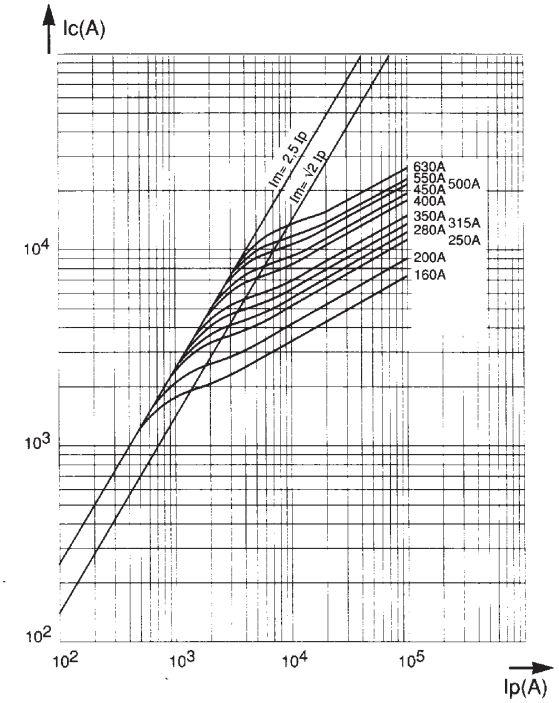




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

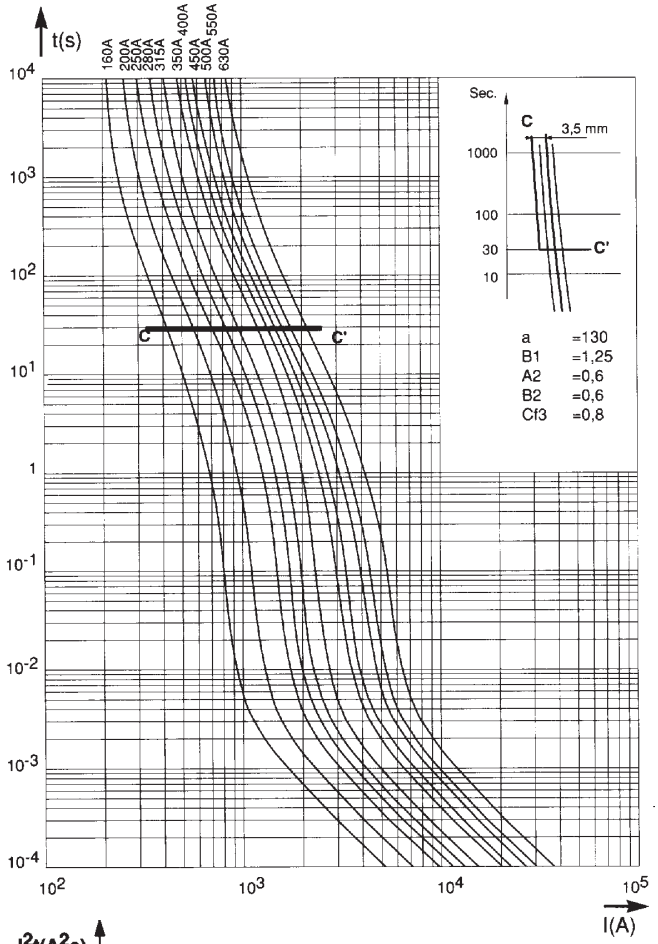
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

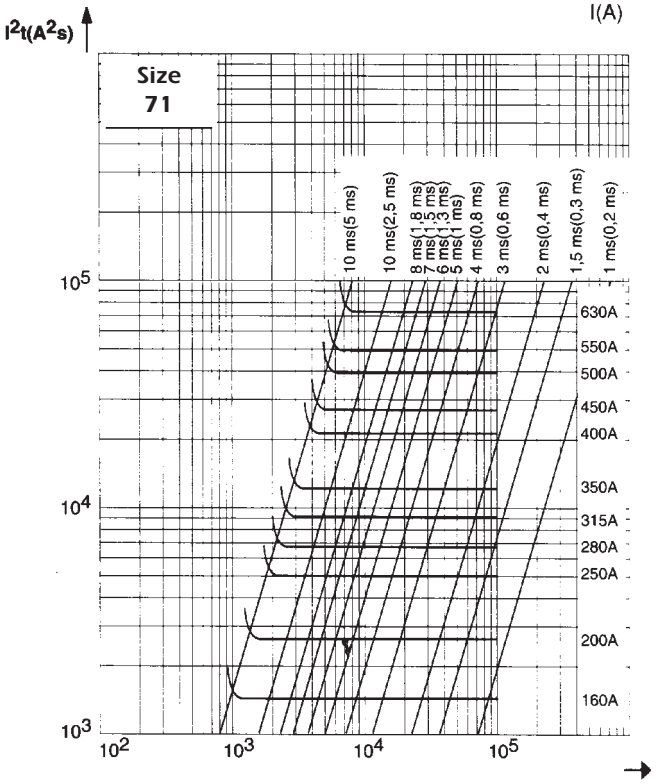
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 71
Time-current characteristics



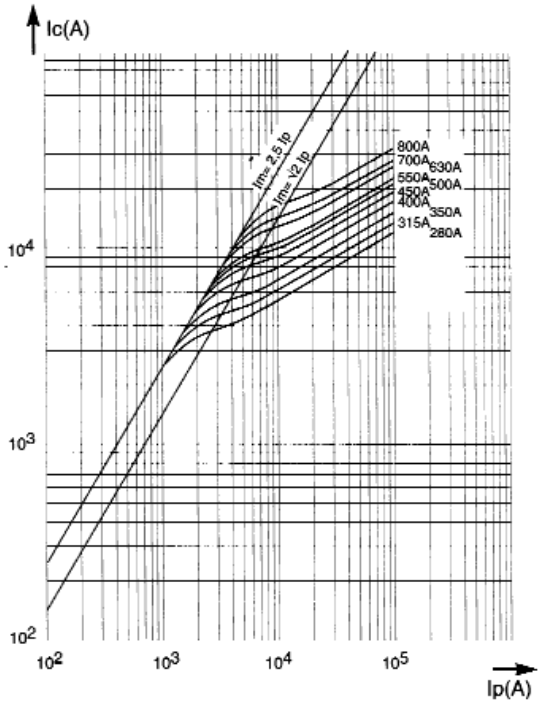


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 72

Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



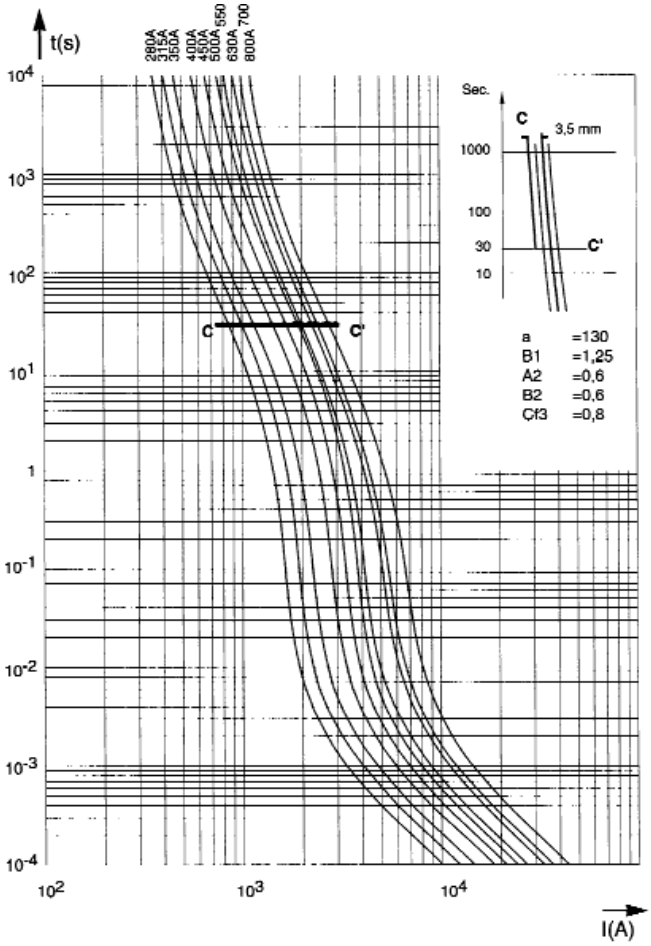
Time-current characteristics

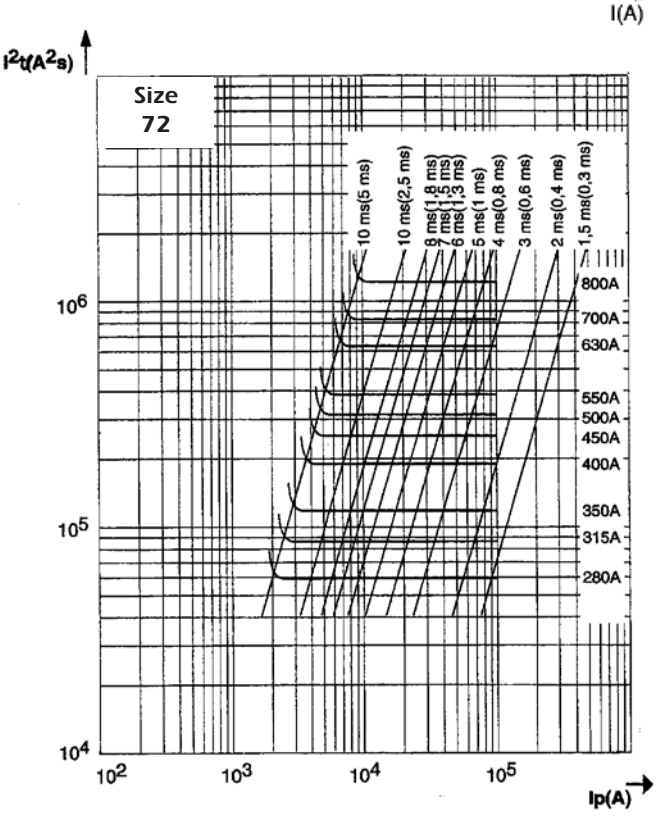
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



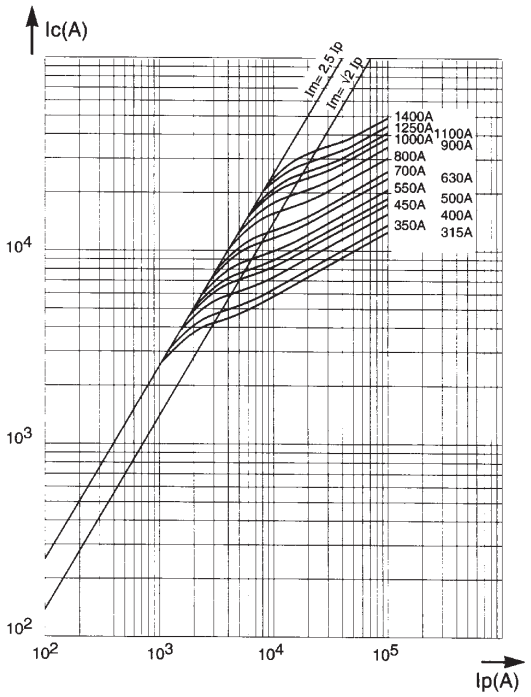


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 73

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



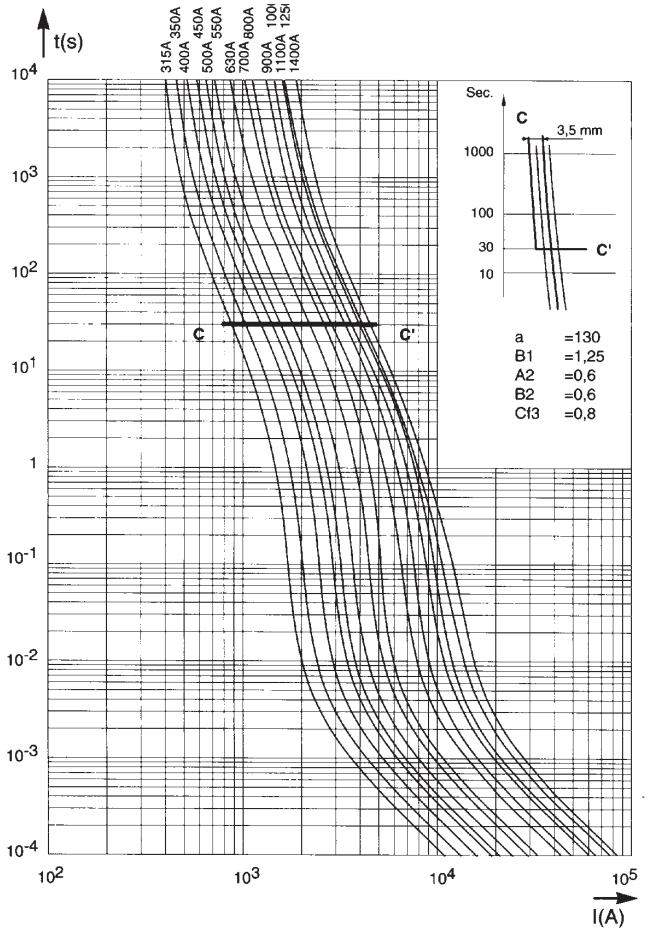
Time-current characteristics

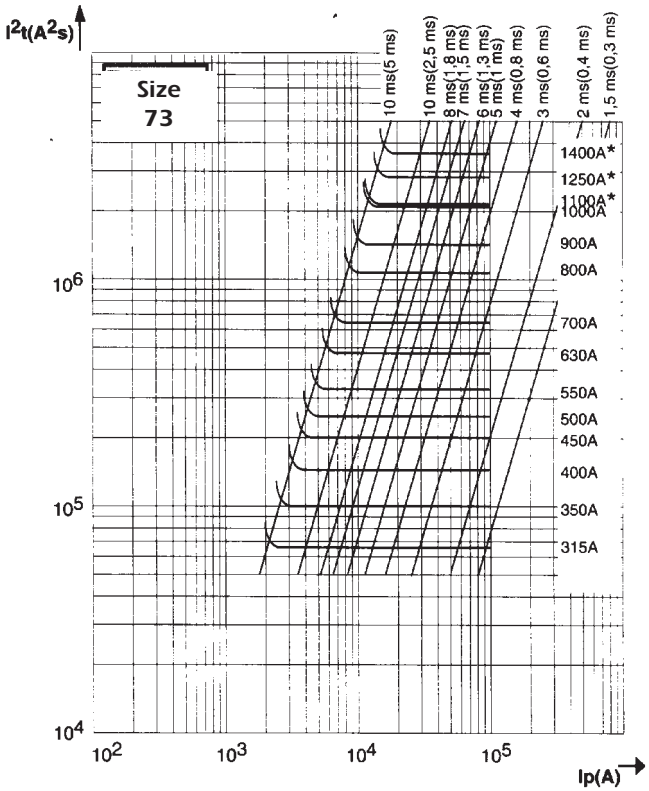
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



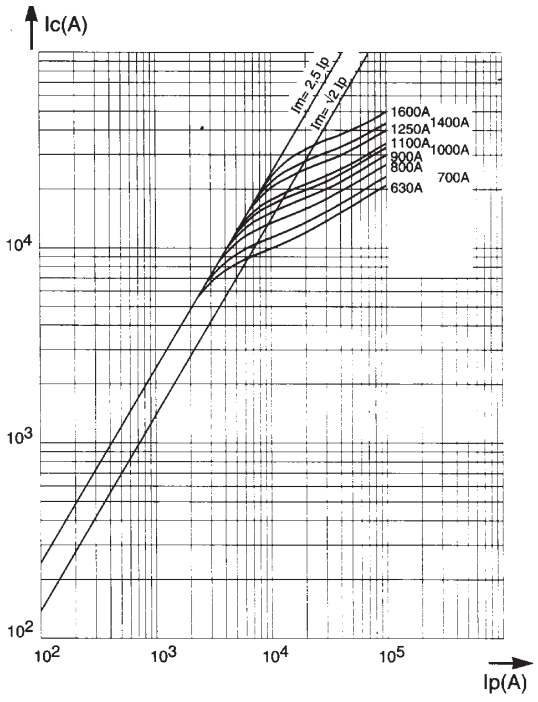


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 2x72

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



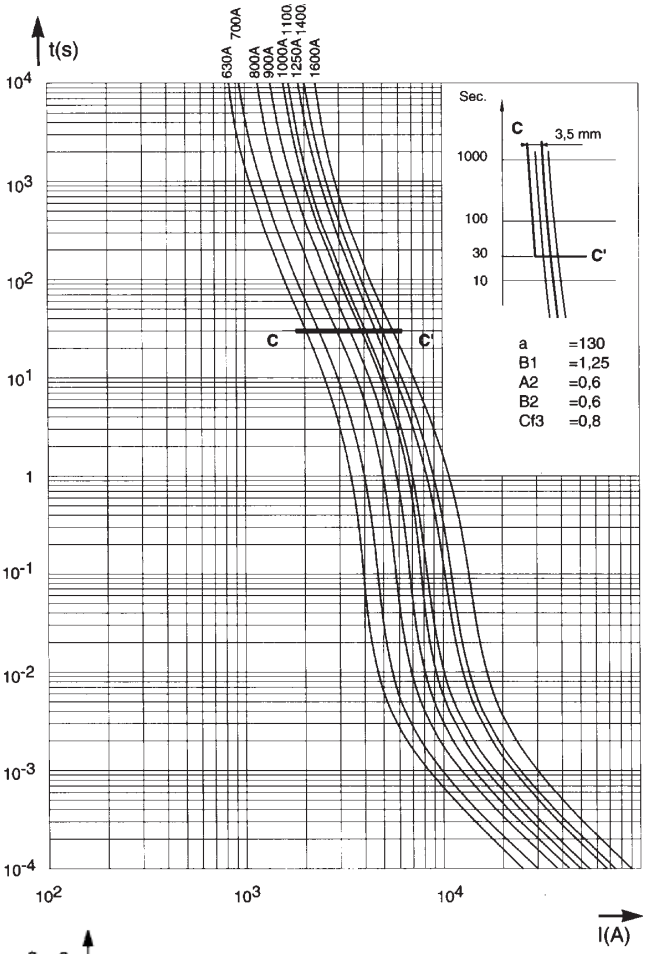
Time-current characteristics

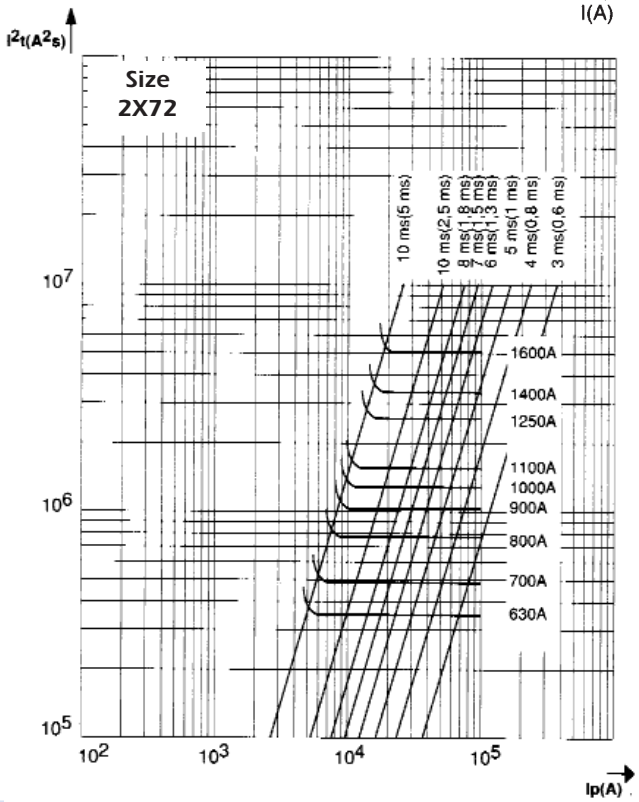
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

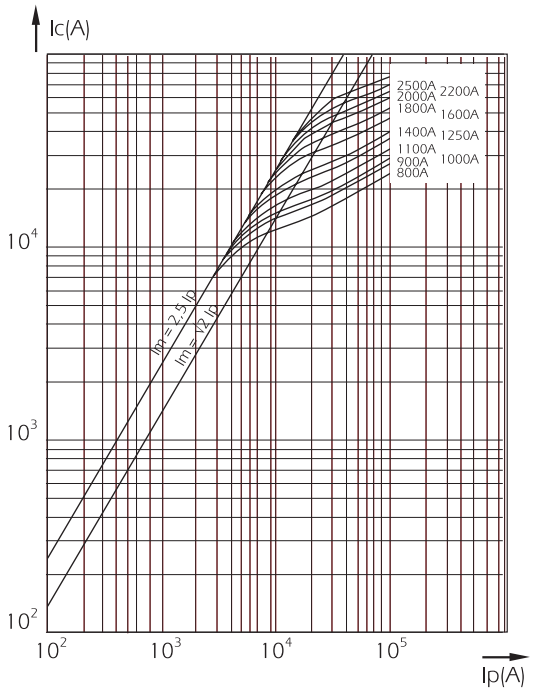




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

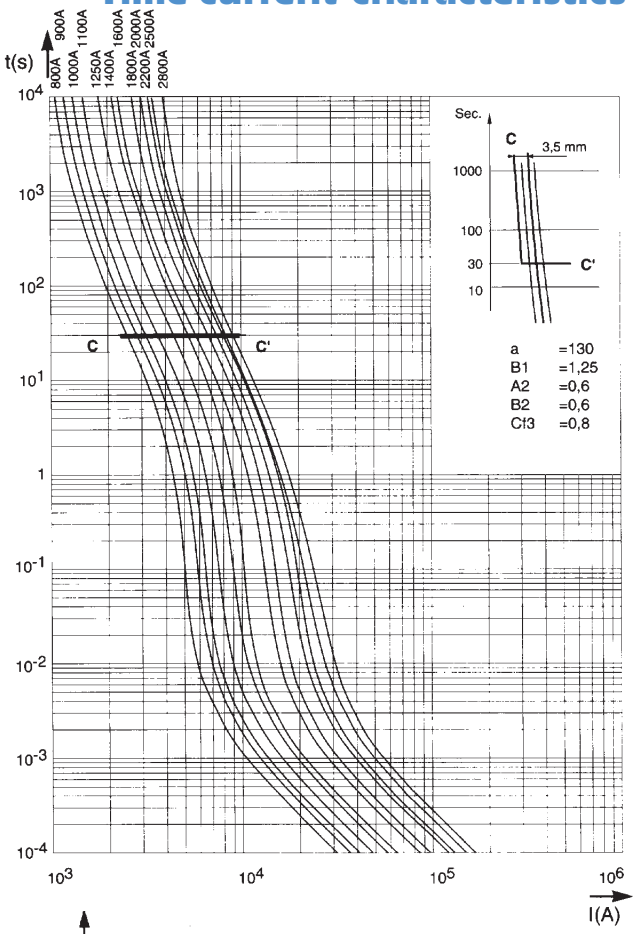
Maximum values of total operating I²t and total operating times

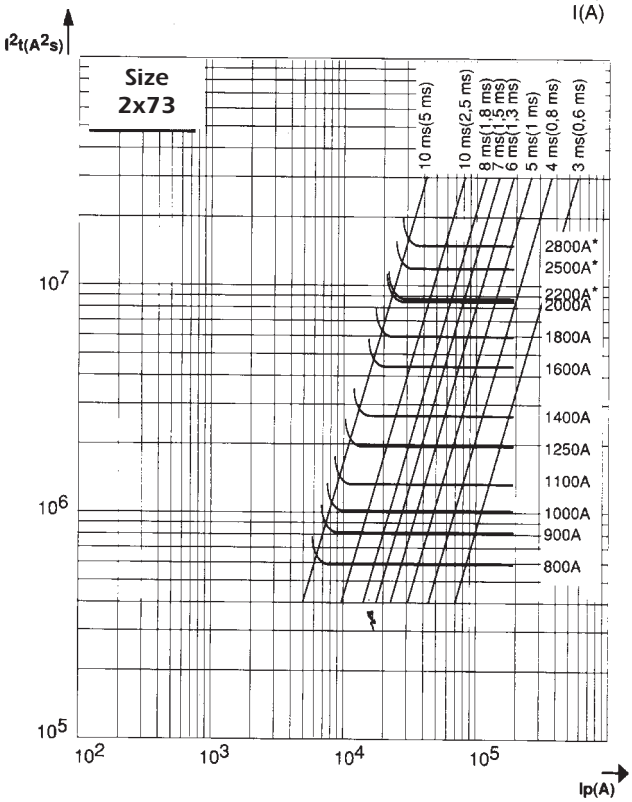
Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.

The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 2x72

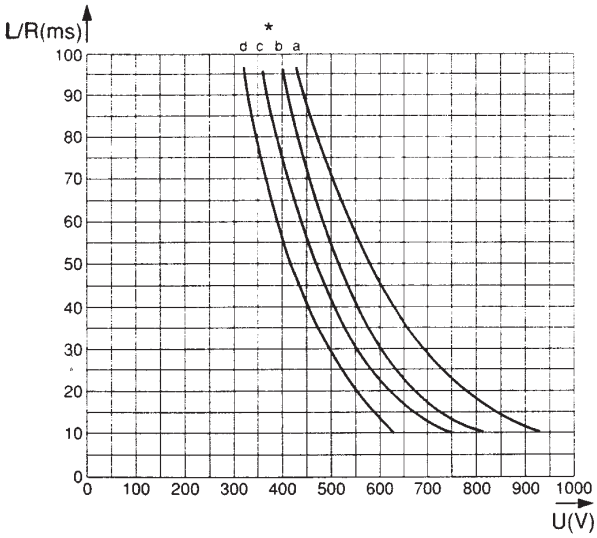
Time-current characteristics

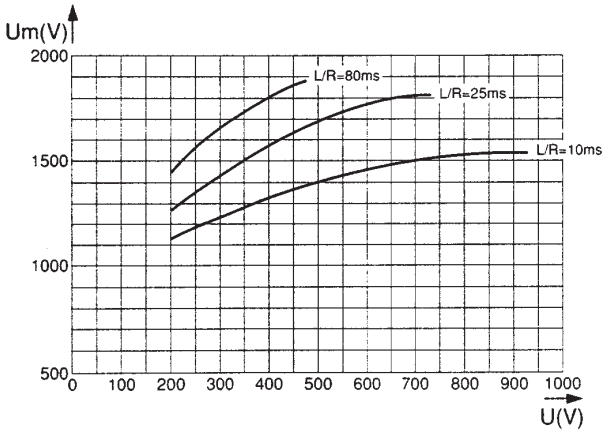




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

DC working voltage possibilities





Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U, for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark: When the fault current di/dt is very large, this condition can be exceeded. It is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Rated current I_N(A)	Curves (*) and Ipm (1) corresponding to the rating											
	70		71		72		73		2x72		2x73	
	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)
63	a	270										
80	a	400										
100	a	520										
125	a	700										
160	a	950	a	950								
200	a	1300	a	1300								
250	a	1800	a	1800								
280	b	2200	a	2000	a	1800						
315	b	2600	a	2300	a	2200	a	2000				
350	c	3000	a	2700	a	2600	a	2400				
400			b	3500	a	3200	a	3000				
450			b	4000	a	3800	a	3500				
500			c	4800	a	4600	a	3900				
550			c	5200	b	5000	a	4400				
630			c	6400	b	6200	a	5300	a	4400		
700					c	6800	a	6000	a	5200		
800					c	8000	b	8000	a	6400	a	6000
900							b	9000	a	7600	a	7000
1000							c	11000	a	9200	a	7800
1100							c	12000	b	10000	a	8800
1250							c	13500	b	12400	a	10600
1400							c	15000	c	13600	a	12000
1600									c	16000	b	16000
1800											b	18000
2000											c	22000
2200											c	24000
2500											d	27000
2800											d	30000

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

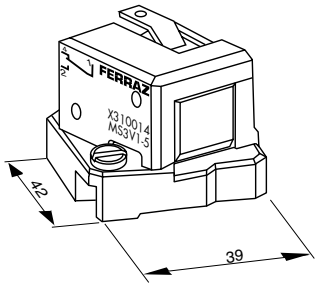
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

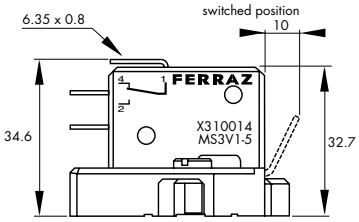
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



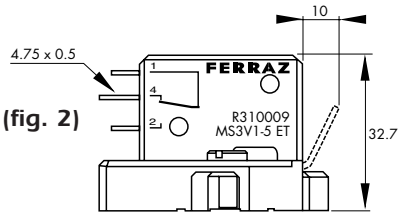
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

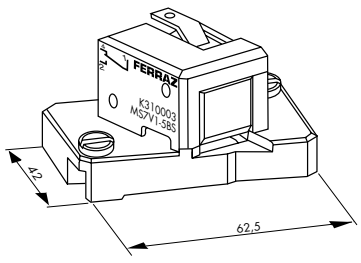
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

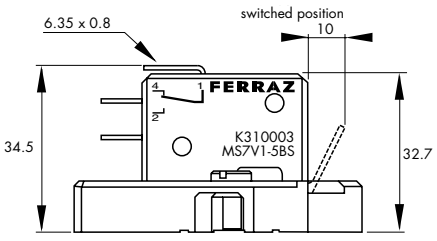
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

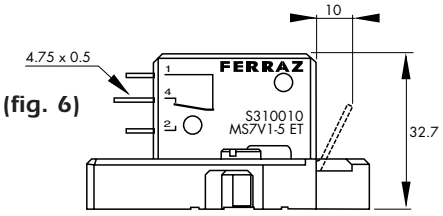


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

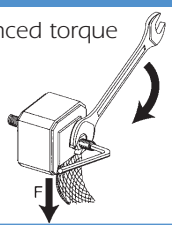
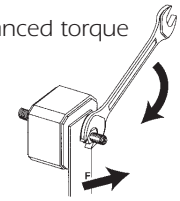
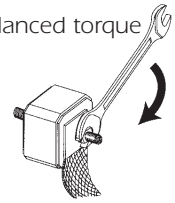
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics



6,9 gRB 71 PA 200



6,9 gRB 73 TTF 1000
+ MS7V1-5 UR

Ferraz Shawmut PSC-gRB 690 VAC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment.
This range is a fast acting, full range fuses engineered to provide state of the art protection for power semiconductors such as diodes, thyristors.
These square body fuse-links are available in various body sizes with a broad range of ampere ratings allowing the greatest flexibility in equipment design.
They have pure silver fuse elements embedded in solidified sand which provides optimized I^2t and high breaking capacity. All contact surfaces are plated and all hardware non-magnetic.
All fuses are standard with a low voltage blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly on to the fuse in service.



6,9 gRB 70 EF 400



6,9 gRB 73 DIIA 1000

Feature

- Full range (gR curve), fast acting
- Highly current limiting.
- High breaking capacities
- Very low I^2t
- Worldwide mounting acceptance.
- Superior cycling ability.
- High widstanding in rush current and overloads

Ratings

AC: up to 1000 A 690 VAC
150 kA IR
DC: Consult Factory

Applications

Protection of rectifiers, inverters, static switch, AC & DC drives and UPS systems.

AC: Tested to IEC 60269.4

approvals

Features/Benefits

Wide range of mounting styles

Broad range of ampere ratings in each body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Main characteristics

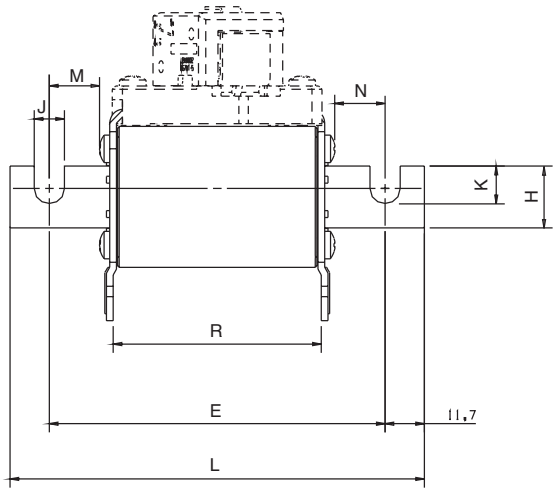
Voltage	Size	Type	Rating In (A)	Pre-Arcing I²t @ 1ms kA²s	Total I²t @ 690V kA²s	PN: Power losses (W)				Breaking capacities (kA)
						End contacts		Blades		
						0,8 In	In	0,8In	In	
690V	70	gRB	50	0,12	0,7	9	17	9	17	150
		gRB	63	0,27	1,6	9	18	9	18	
		gRB	80	0,47	2,8	11	22	11	22	
		gRB	100	1,06	6,2	12	23	12	23	
		gRB	125	1,9	11,2	13	26	13	26	
		gRB	160	4,2	25	15	29	15	29	
		gRB	200	7,5	44	17	33	17	34	
		gRB	250	13,5	79	20	39	20	40	
		gRB	315	24	142	23	46	24	47	
		gRB	350	41	240	23	46	24	47	
	71	gRB	125	1,06	6,2	18	35	18	35	
		gRB	160	2,4	14	19	38	19	38	
		gRB	200	5	29,5	21	41	21	42	
		gRB	250	9,5	56	23	46	24	48	
		gRB	315	18,5	108	27	53	27	54	
		gRB	350	23	140	29	58	30	60	
		gRB	400	38	225	30	59	31	61	
		gRB	450	62	360	30	59	31	61	
		gRB	500	78	460	32	64	34	67	
	72	gRB	200	4,2	25	23	45	23	45	
		gRB	250	8,5	50	25	49	25	50	
		gRB	315	17	100	28	55	29	57	
		gRB	350	23	140	29	58	30	60	
		gRB	400	34	200	32	63	33	65	
		gRB	450	47	280	34	67	35	70	
		gRB	500	68	400	35	69	36	72	
		gRB	550	84	495	38	75	39	78	
		gRB	630	124	730	41	81	43	86	
		gRB	700	155	910	45	89	48	95	
	73	gRB	315	12	69	33	66	34	67	
		gRB	350	17	100	34	68	35	69	
		gRB	400	27	160	36	71	37	73	
		gRB	450	34	200	40	79	41	82	
		gRB	500	47	280	42	84	43	86	
		gRB	550	68	400	42	84	44	87	
		gRB	630	102	600	45	89	47	94	
		gRB	700	139	820	47	94	50	100	
		gRB	800	227	1330	48	96	52	104	
		gRB	900	280	1640	55	109	60	119	
		gRB	1000	385	2270	58	115	64	127	

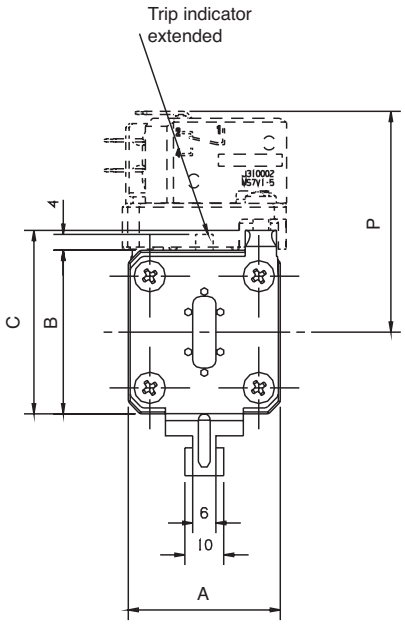
Time/current characteristics
Cut off characteristics
Total I²t and total operating time
Other curves

see following pages

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
French 70-73 Blades

Size	Designation	Reference Number	Weight (g)	Catalog Number
	6,9 gRB 70 EF 050	P301405		PC70GB69V50EF
	6,9 gRB 70 EF 063	Q301406		PC70GB69V63EF
	6,9 gRB 70 EF 080	R301407		PC70GB69V80EF
	6,9 gRB 70 EF 100	S301408		PC70GB69V100EF
	6,9 gRB 70 EF 125	T301409		PC70GB69V125EF
70	6,9 gRB 70 EF 160	V301410	370	PC70GB69V160EF
	6,9 gRB 70 EF 200			
	6,9 gRB 70 EF 250			
	6,9 gRB 70 EF 315			
	6,9 gRB 70 EF 350			
	6,9 gRB 71 EF 125	Y301321		PC71GB69V125EF
	6,9 gRB 71 EF 160	Z301322		PC71GB69V160EF
	6,9 gRB 71 EF 200	A301323		PC71GB69V200EF
	6,9 gRB 71 EF 250	B301324		PC71GB69V250EF
71	6,9 gRB 71 EF 315		540	
	6,9 gRB 71 EF 350	C301325		PC71GB69V350EF
	6,9 gRB 71 EF 400	D301326		PC71GB69V400EF
	6,9 gRB 71 EF 450	E301327		PC71GB69V450EF
	6,9 gRB 71 EF 500	G301858		PC71GB69V500EF
	6,9 gRB 72 EF 200	N301335		PC72GB69V200EF
	6,9 gRB 72 EF 250	P301336		PC72GB69V250EF
	6,9 gRB 72 EF 315	Q301337		PC72GB69V315EF
	6,9 gRB 72 EF 350			
	6,9 gRB 72 EF 400	R301338		PC72GB69V400EF
72	6,9 gRB 72 EF 450		810	
	6,9 gRB 72 EF 500	S301339		PC72GB69V500EF
	6,9 gRB 72 EF 550	T301340		PC72GB69V550EF
	6,9 gRB 72 EF 630	V301341		PC72GB69V630EF
	6,9 gRB 72 EF 700			
	6,9 gRB 73 EF 315	C301348		PC73GB69V315EF
	6,9 gRB 73 EF 350			
	6,9 gRB 73 EF 400	D301349		PC73GB69V400EF
	6,9 gRB 73 EF 450	E301350		PC73GB69V450EF
	6,9 gRB 73 EF 500			
73	6,9 gRB 73 EF 550	F301351	1150	PC73GB69V550EF
	6,9 gRB 73 EF 630	G301352		PC73GB69V630EF
	6,9 gRB 73 EF 700	H301353		PC73GB69V700EF
	6,9 gRB 73 EF 800			
	6,9 gRB 73 EF 900			
	6,9 gRB 73 EF 1000			





Packaging: 3 pieces sizes 70 and 71 / 1 piece size 72 and 73

Microswitches:	MS 7V 1-5	Réf.J310002	Standard NO-NC
	MS 7V 1-5 UR	Réf.Z310039	Standard NO-NC
	MS 7V 1-5 BS	Réf.K310003	Low level NO-NC
	MS 7V 1-9 BS	Réf.P310007	Double pole NO-NC-low level
	MS 7V 1-5 ET	Réf.S310010	Low level NO-NC-IP 50

Microswitches supplied seperately

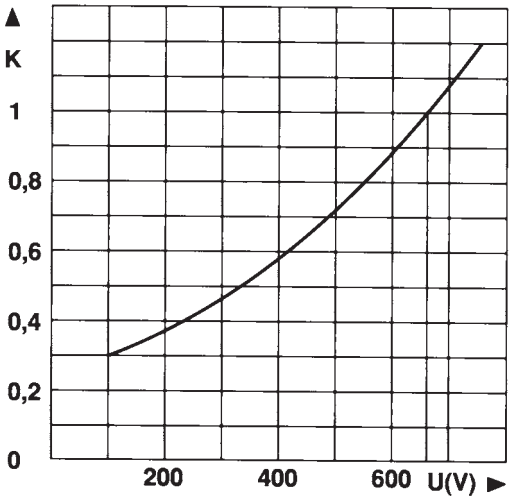
Size	A	B	C	E±1,3	H	J	K	L±1,5	M	N	P	R
70	39,8	41,8	46,5	100	18	9	11	123,4	28,2	28,2	77	68
	1.57"	1.65"	1.83"	3.94"	0.71"	0.35"	0.43"	4.86"	1.11"	1.11"	3.03"	2.68"
71	51	51	56,5	110	25	10,5	16	133,4	32,7	32,7	91	68
	2.00"	2.00"	2.22"	4.33"	0.98"	0.41"	0.63"	5.25"	1.29"	1.29"	3.58"	2.68"
72	60	60	65,5	114,4	32	13	21,2	149,4	40,7	40,7	100	68
	2.36"	2.36"	2.58"	4.50"	1.26"	0.51"	0.83"	5.88"	1.60"	1.60"	3.93"	2.68"
73	74,4	74,4	78,5	114,4	40	13	19,5	149,4	40,7	40,7	114,4	68
	2.93"	2.93"	3.09"	4.50"	1.58"	0.51"	0.77"	5.88"	1.60"	1.60"	4.50"	2.68"

Reinforced and longuer knifes available under designation ESF
Fuse holder solution, see Fuse gear section.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

I²t Multiplier coefficient



Mean curve indicating variation of total I²t (I^2t_t) and total operating time T_t in accordance with working voltage U.

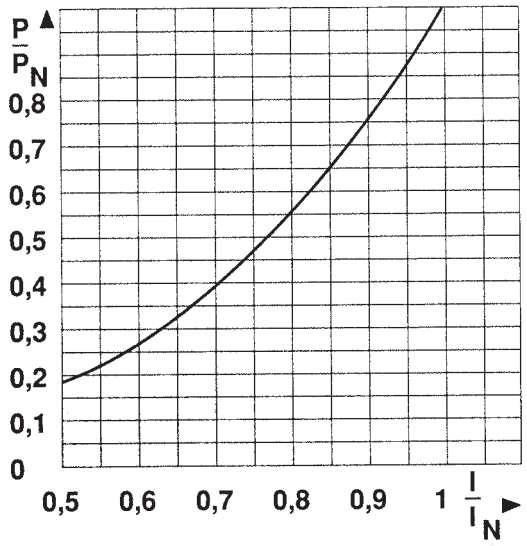
Example:

Fuse 350 A in size 30.
I_p = 10 000 A U = 500 V

At 660 V
I^2t_t = 80 000 A²s T_t = 6 ms

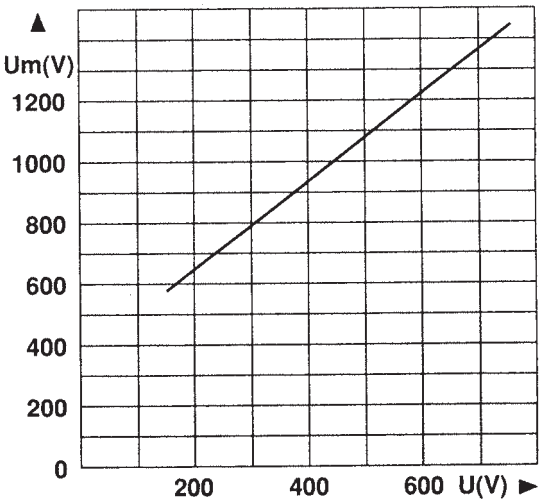
At 500 V
I^2t_t = 80 000 x 0.72 = 57 600 A²s
T_t = 6 x 0.72 = 4.3 ms

Dissipated power



Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in a steady state.

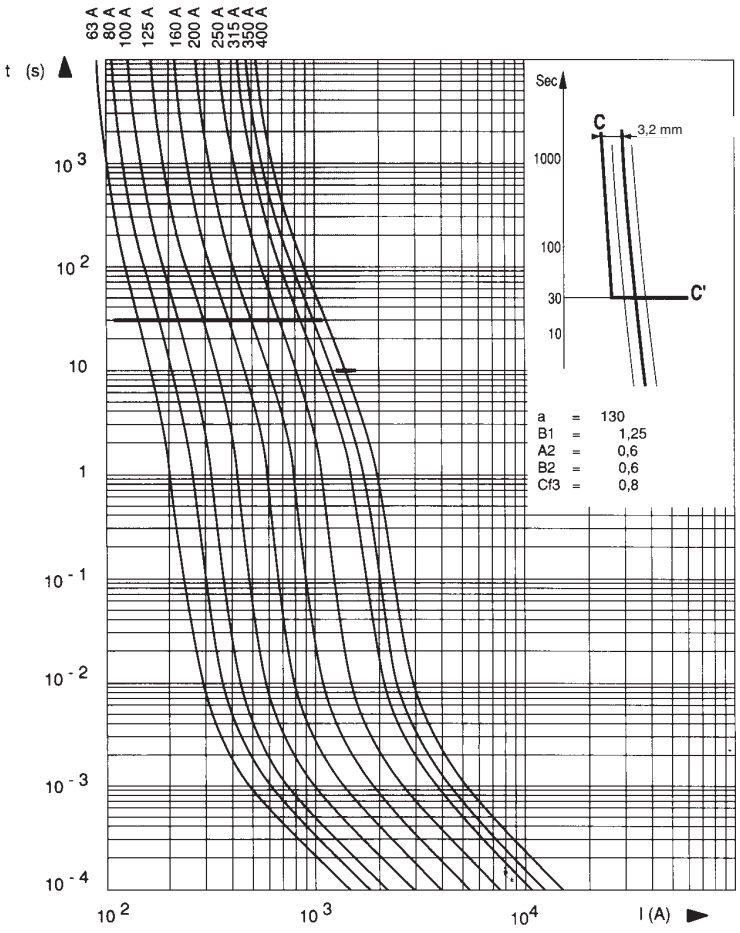
Arc voltage



Curve indicating peak arc voltage Um which may appear across fuse terminals as function of working voltage U at cos φ = 0.15

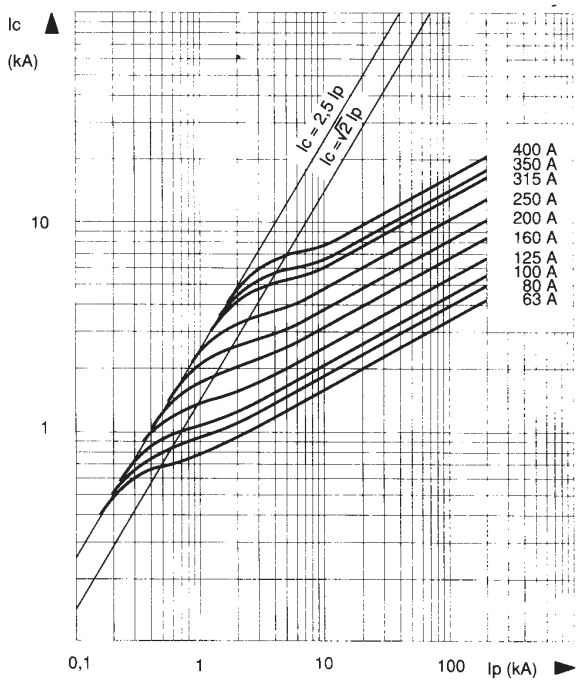
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

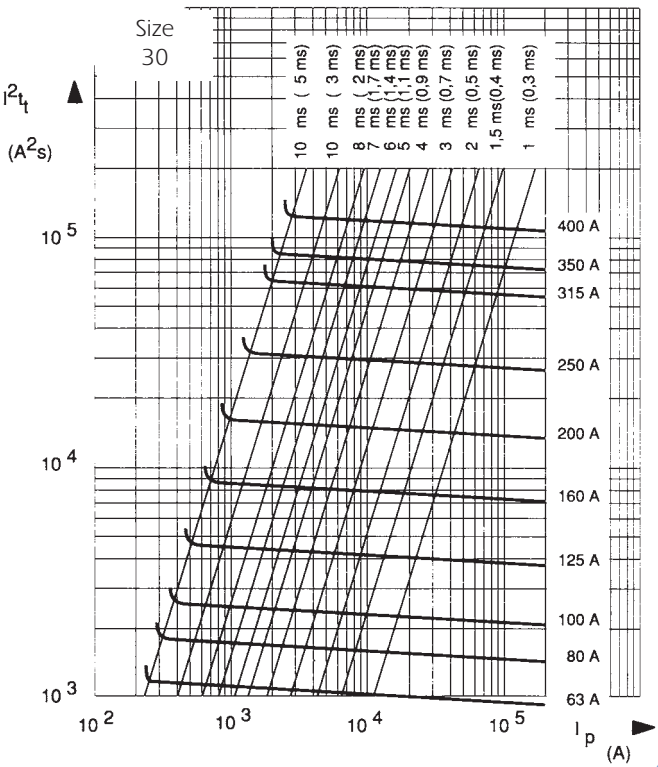
Size 30



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

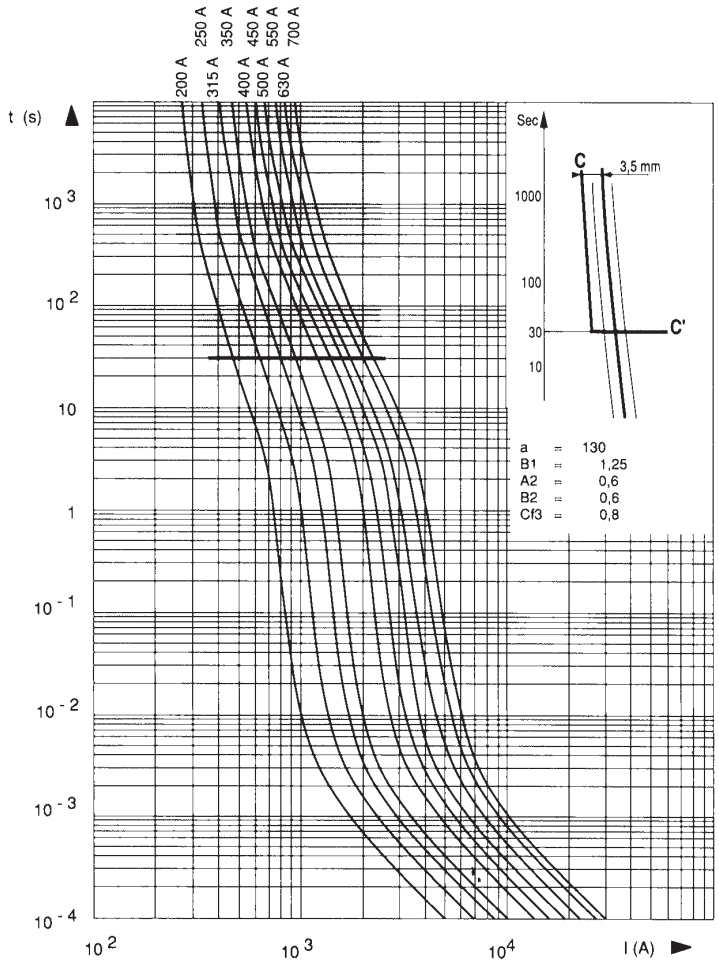
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

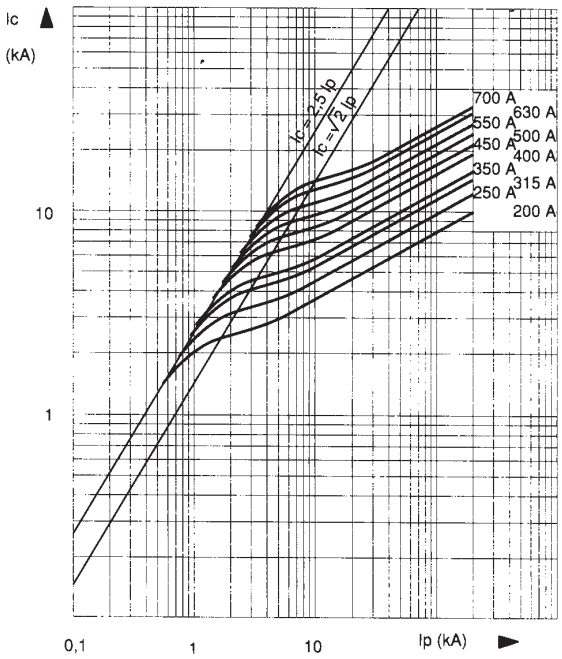
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

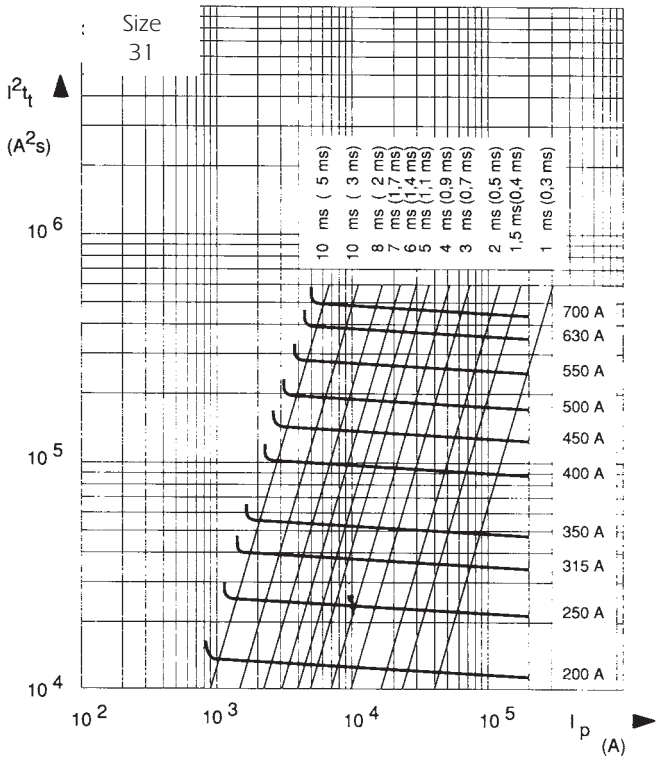
Size 31



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_C that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

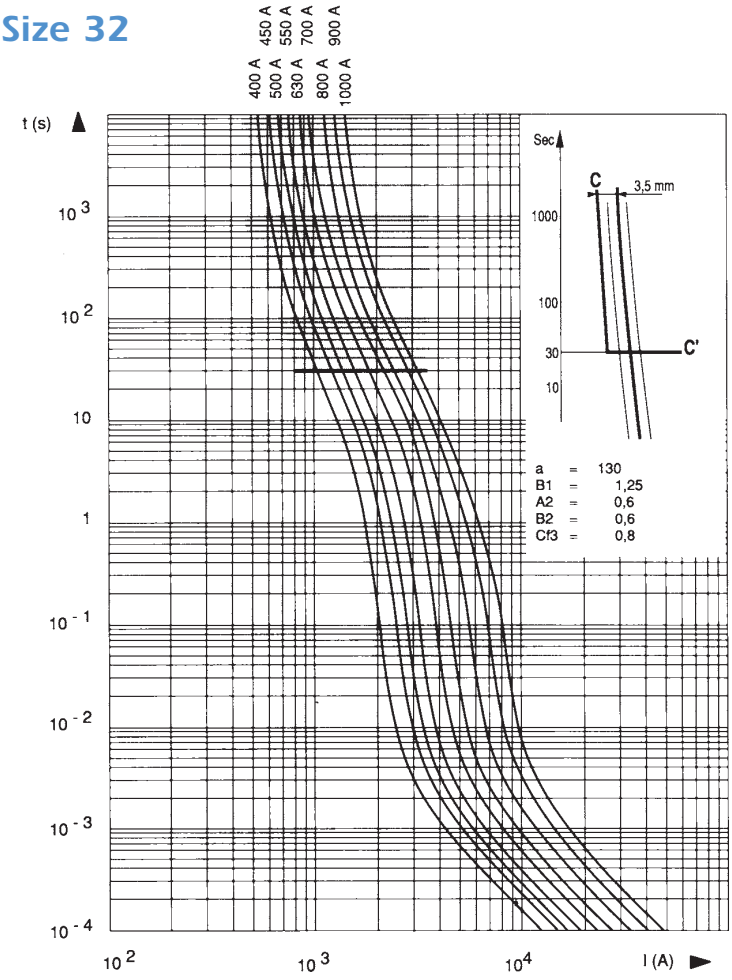
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I^2t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

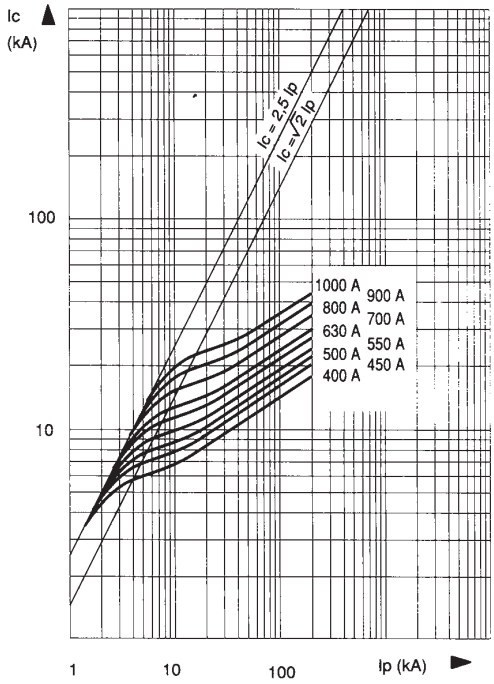
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

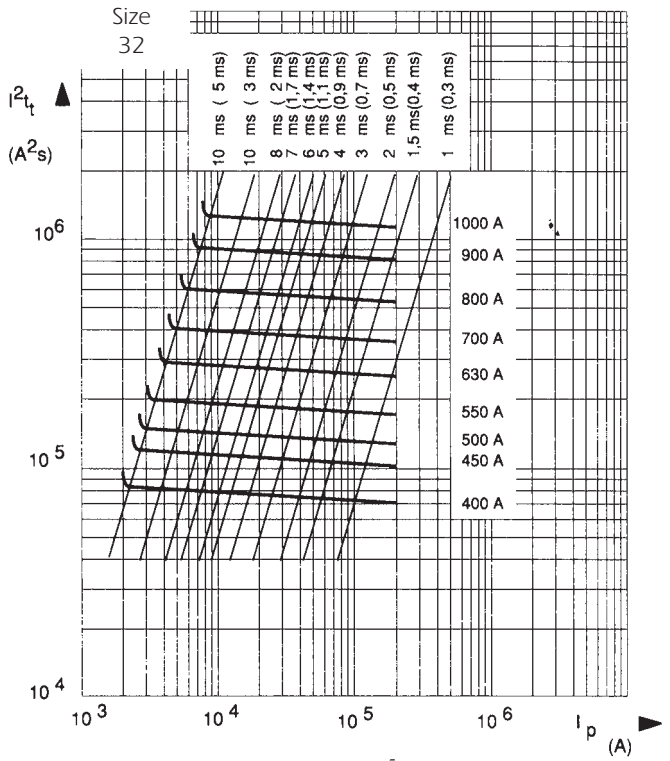
Size 32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_C that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

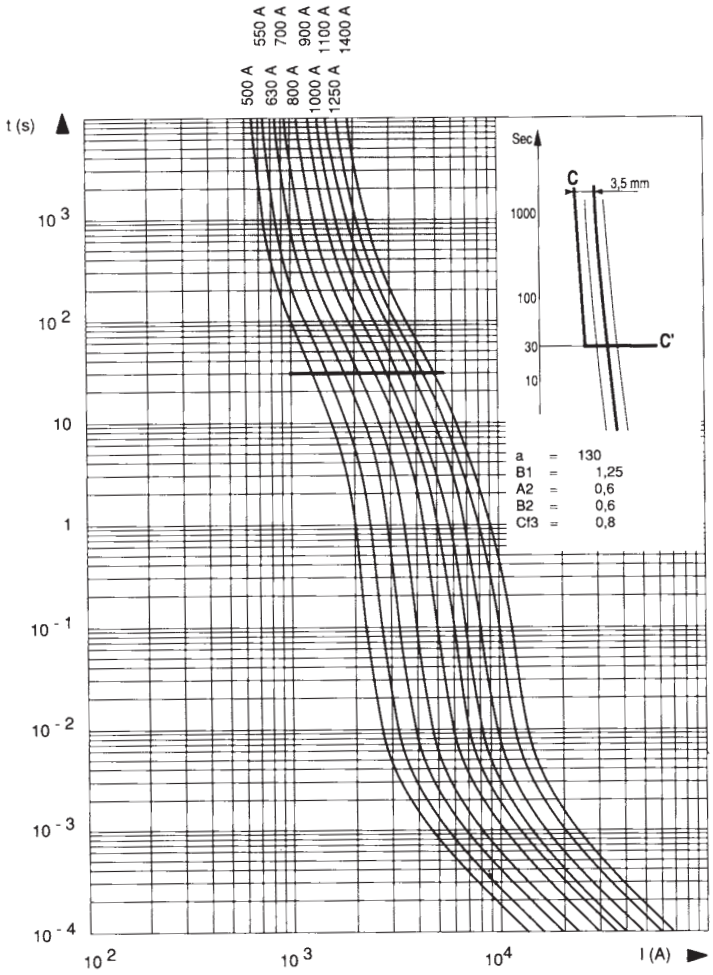
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

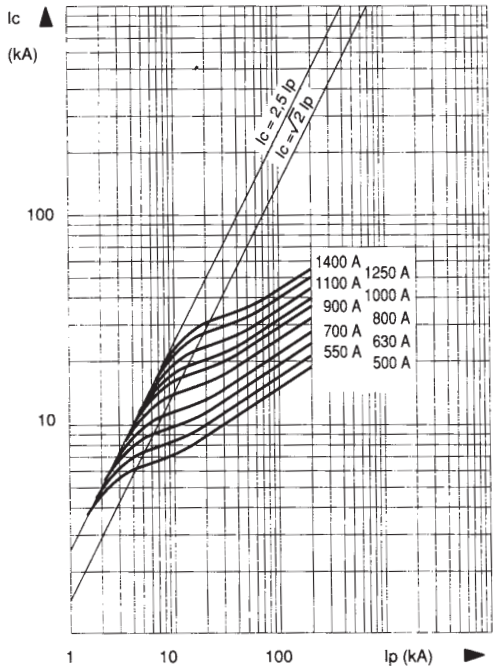
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

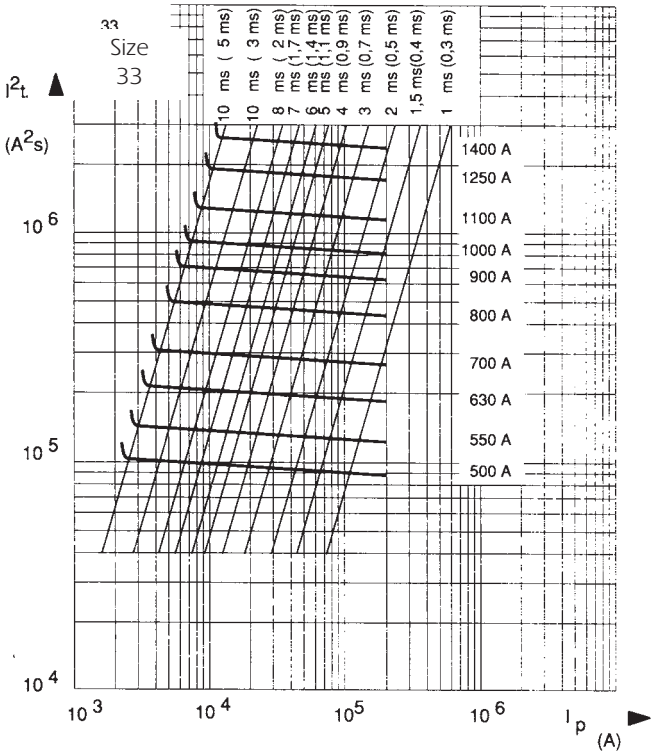
Size 33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

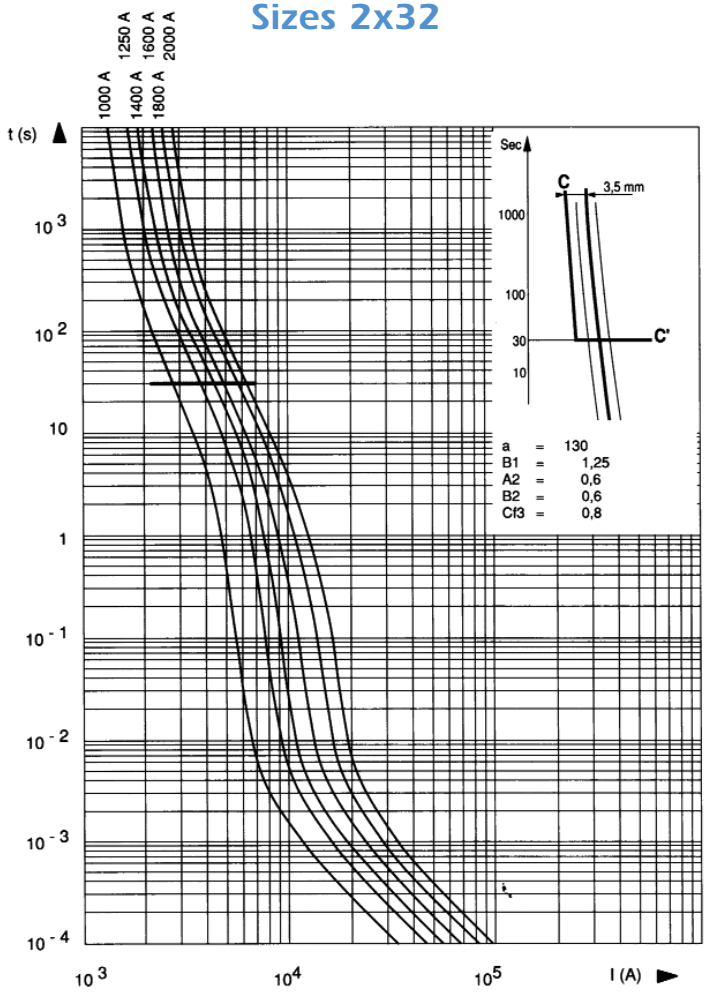
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

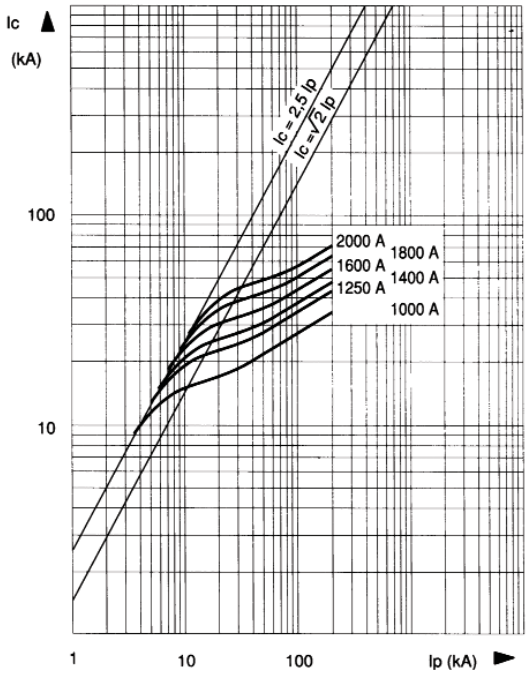
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

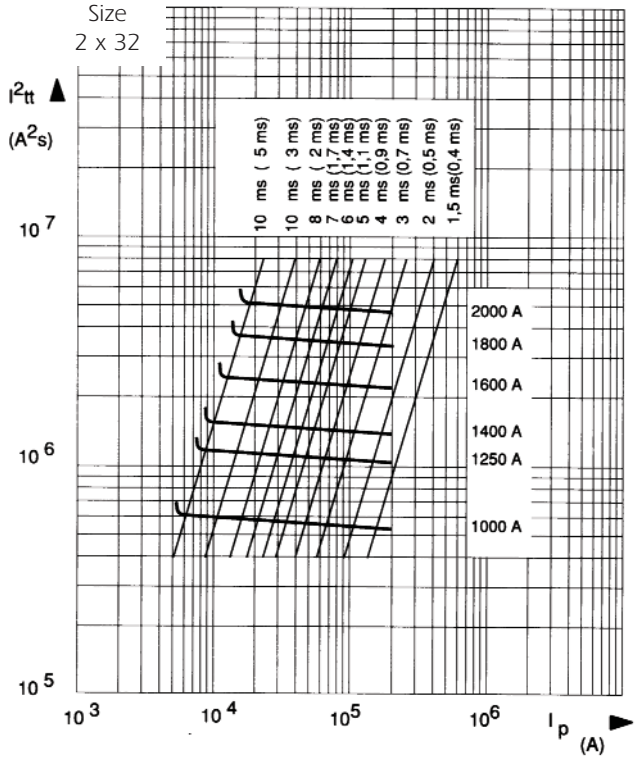
Sizes 2x32



Cut-off characteristics

Below, right: Curves indicating for each rated-current the peak value I_c that the current may reach as a function of the prospective fault current Ip.





Time-current characteristics

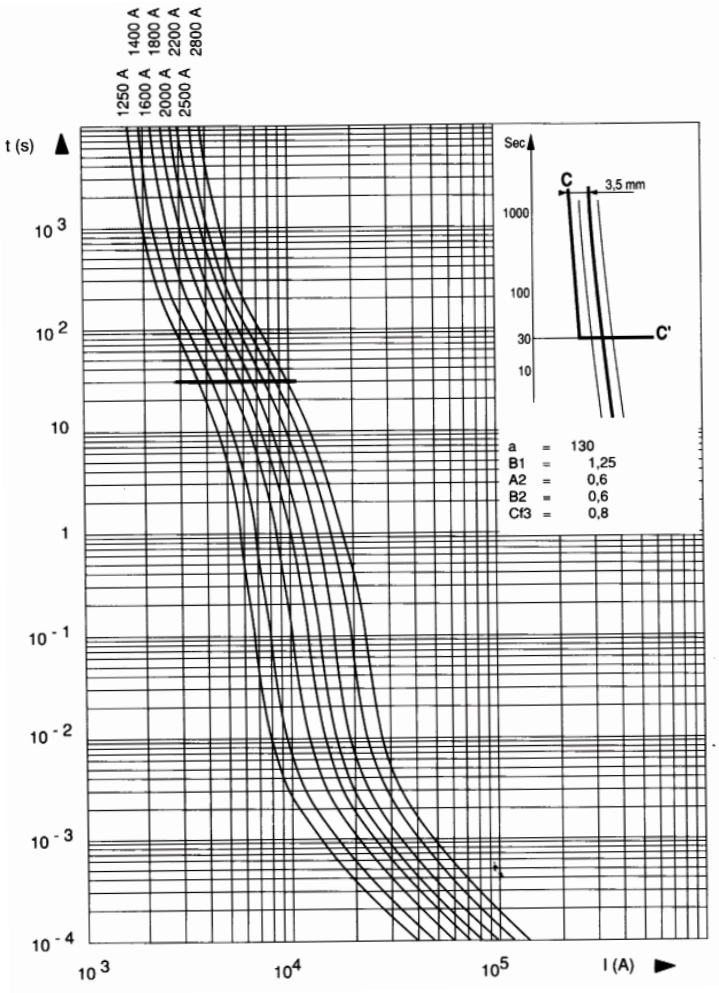
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

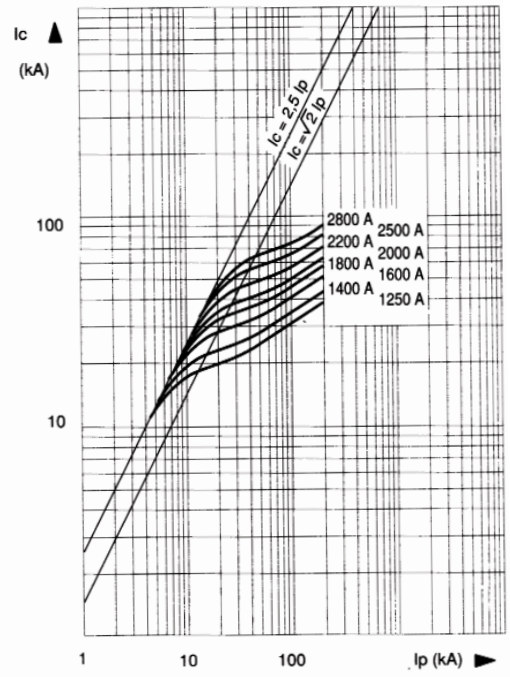
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

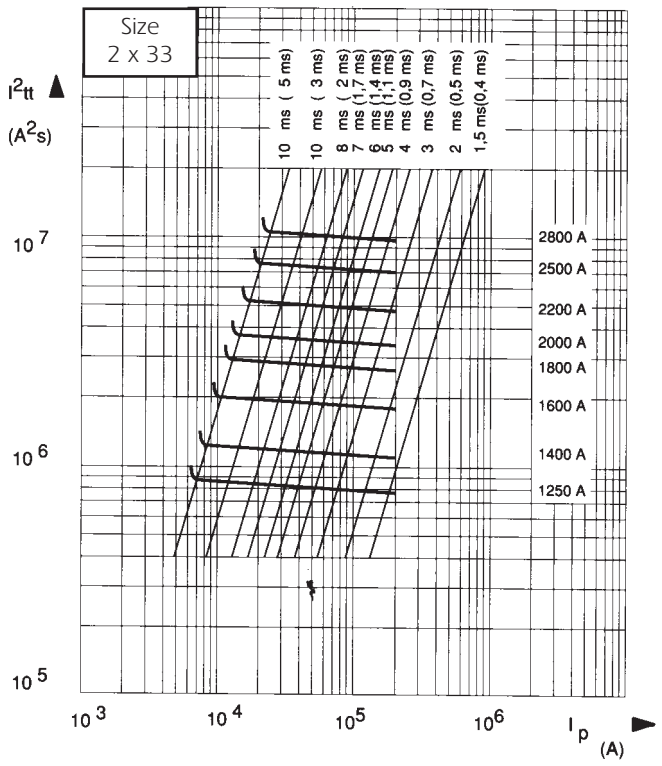
Size 2x33



Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.





Time-current characteristics

Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec or 10 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current Ipm of the fuse.

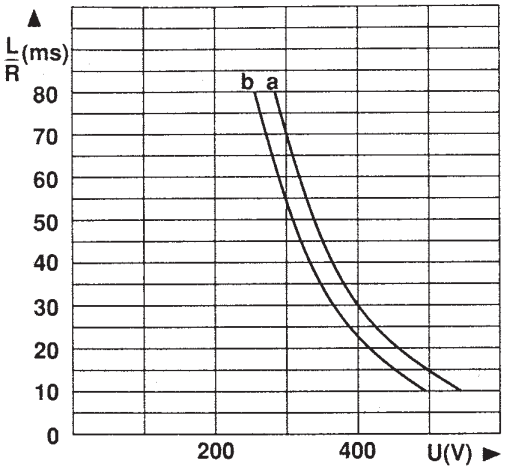
Maximum values of total operating I²t and total operating times

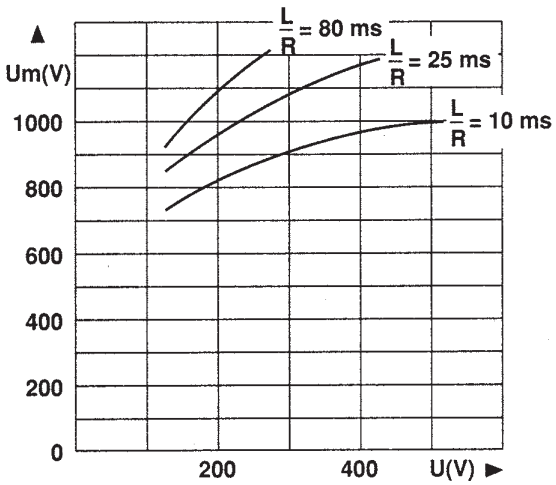
Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 660 V, cos φ = 0.15. The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Curves set

Sizes 30 - 31 - 32 - 33

DC working voltage possibilities





Rated current In (A)	Curves (*) and Ipm (1) corresponding to the rating					
	30 * Ipm (A)	31 * Ipm (A)	32 * Ipm (A)	33 * Ipm (A)	2 x 32 * Ipm (A)	2 x33 * Ipm (A)
63	a 230					
80	a 300					
100	a 360					
125	a 460					
160	a 650					
200	a 880	a 850				
250	a 1300	a 1150				
315	a 1700	a 1450				
350	a 1900	a 1600				
400	a 2300	a 2200	a 2000			
450		a 2500	a 2300			
500		a 3000	a 2600	a 2300		
550		a 3400	a 3150	a 2500		
630		a 5000	a 3700	a 3250		
700		a 5600	a 4300	a 3900		
800			a 5300	a 4800		
900			a 7800	a 5600		
1000			b 9000	a 6600	a 5200	
1100				a 7700		
1250				b 11000	a 7400	a 6500
1400				b 12500	a 8600	a 7800
1600					a 10600	a 9600
1800					a 15600	a 11200
2000					b 18000	a 13200
2200						a 15400
2500						b 22000
2800						b 25000

Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark:
When the fault current di/dt is very large, this condition can be exceeded. This is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

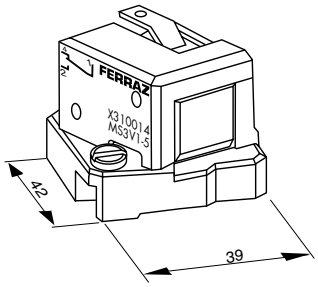
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

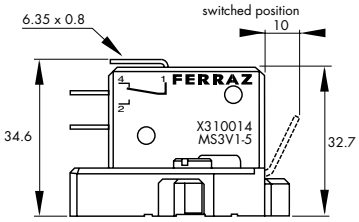
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



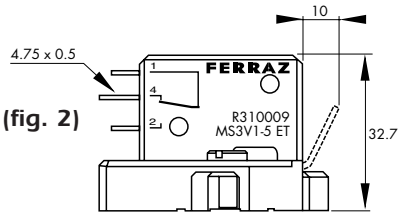
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

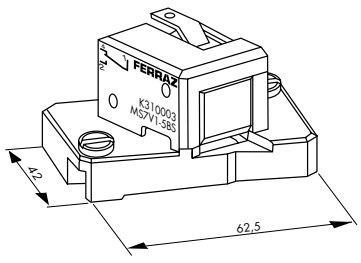
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

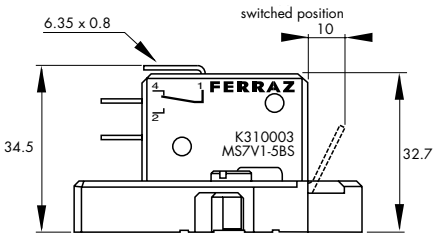
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

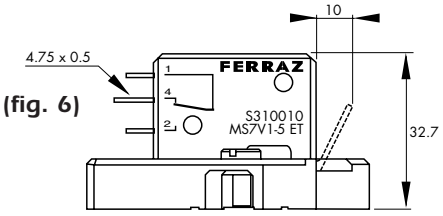


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

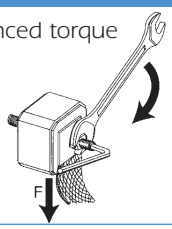
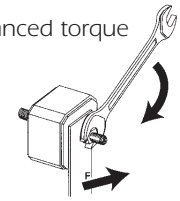
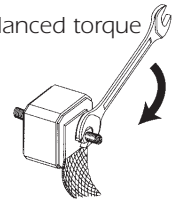
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

Recognized

650 to 1300VAC / 63 to 2800A.

- Exceptionally low I^2T, Watt losses.
- Non-magnetic construction, highly reliable low voltage.
- Indicator system.
- Conformity to UL, CSA investigated, IEC, DIN and VDE standards.
- Increased technical performance
- Higher ratings.
- Reduction in volume and weight.
- This fuse preselection table indicates, for each size:
  -rated current (or rating) In
  - pre-arcing I^2t (I^2tp) at 1 ms
  - total operating I^2t (I^2t_t) at 1000 V and 850V(I)f=50Hz, cos φ =0.15, and for a total operating time from 8 to 10 ms
  - dissipated power Pn at
  the rated current In, and
  at 0.8 In, in steady state
  - breaking capacity at various voltages, checked by tests made in accordance with IEC and American standards.



Estimated breaking capacity: 300 kA

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity	
	IEC	UL				End contacts	Blades	IEC	USA
70	1250	1300	50	0,116	0,7	16	16	100kA @ 1250V	100kA @ 1300V
			63	0,210	1,2	26	26		
			80	0,470	2,7	27	27		
			100	0,830	4,8	30	30		
			125	1,30	7,5	38	38		
			160	2,55	15	45	45		
			200	4,7	27	54	56		
			250	9,6	55	58	61		
	1200	1300	280	14	82	61	64	100kA @ 1200V	100kA @ 1300V
			315	20	115	66	72		
	1100	1200	350	28	158	68	75	150kA @ 1100V	150kA @ 1200V
			400	39	224	81	90		
			450	62	356	82	82		
	1000	1100	500	84	483	83	83	120kA @ 1000V	120kA @ 1100V
	800	900	550	128	576(*)	83	83	100kA @ 800V	100kA @ 900V
	750	800	630	176	730(*)	91	91	100kA @ 750V	100kA @ 800V
71	1250	1300	160	2,6	15	46	46	100kA @ 1250V	100kA @ 1300V
			200	4,7	27	54	54		
			250	8,9	51	61	61		
			280	12	68	68	70		
			315	16	92	73	76		
			350	22	127	76	80		
			400	38	220	76	80		
			450	47	270	87	95		
		1300 (TTI)	500	68	390	90	X		150kA @ 1300V
	1100	1200	500	68	390	X	100	150kA @ 1100V	150kA @ 1200V
			550	84	485	98	112		
			630	125	725	105	X		
	1000	1100	630	125	725	X	120	150kA @ 1000V	150kA @ 1100V
			700	180	1040	105	105		
	900	950	800	290	1540(*)	116	116	100kA @ 900V	100kA @ 950V
	800	850	900	446	2010(*)	120	120	100kA @ 800V	100kA @ 850V

(1) at 850 V
(2) does not exist with blades

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Main characteristics

PSC 650 to 1300VAC US and European standard

Size	Nominal Voltage U_N (VAC)		Ampere Rating (A)	Pre-arcing I^2t @ 1ms (kA_2s)	Total I^2t @ 1000V (*) @ Un (kA_2s)	Power (W)		Tested Breaking capacity Estimated B.C 300 kA	
	IEC	UL				End contacts	Blades	IEC	USA
72	1250	1300	280 315 350 400 450 500 550 630	10 15 21 32,5 44 57 68 105	60 87 120 190 255 330 390 610	72 76 77 80 87 94 110 113	72 76 77 80 89 98 120 X	100kA @ 1250V	100kA @ 1300V
	1100	1200	630 700 800	105 145 215	610 815 1240	X 122 125	125 140 146	150kA @ 1100V	150kA à 1200V
	1000	1100	700 800 900	145 215 312	815 1240 1800	X X 130	140 146 152	150kA @ 1000V	150kA @ 1100V
	850	900	1000	439	2150(*)	136	136	100kA @ 850V	100kA @ 900V
73	1250	1300	315 350 375 400 450 500 550 630 700 800	12 17 19 25 35,5 44 57 84 110 190	68 100 110 145 205 255 330 485 640 1090	84 86 93 99 110 116 125 135 136	84 86 93 100 112 120 132 X X	100kA @ 1250V	100kA @ 1300V
	1200	1300	700 900	110 250	640 1090	X 150	146 X	100kA @ 1200V	100kA @ 1300V
	1100	1200	800	190	1090	X	148	150kA @ 1100V	150kA @ 1200V
	1000	1100	900 1000 1100	250 370 445	1440 2130 2555	X 152 168	170 168 208	150kA @ 1000V	150kA @ 1100V
	950	1000	1100	445	2430(*)	168	X	150kA @ 950V	150kA @ 1000V
	900	1000	1000 1100 1250 1400	370 445 585 755	1920(*) 2280(*) 3080(*) 4100(*)	X X 186 210	174 208 X X	150kA @ 900V	150kA @ 1000V
	850	900	1400	755	3700(*)	210	X	150kA @ 850V	150kA @ 900V
	690	700	1500 1600	1180 1430	4750(*) 5740(*)	200 203	X X	180kA @ 690V	180kA @ 700V
	600	650	1800	2040	7150(*)	206	X	120kA @ 600V	120kA @ 650V
2 x 72	1250		630 700 800 900 1000 1100	60 84 130 176 228 272	348 480 760 1020 1320 1560	160 162 168 183 197 231		100kA @ 1250V	
	1100		1250 1400	426 568	2440 3260	237 256		100kA @ 1100V	
	1000		1600	860	4895	262		100kA @ 1000V	
	900		1800	1250	6350(*)	275		100kA @ 900V	
	750		2000	1760	7570(*)	285		100kA @ 750V	
	650		2200 2500	2410 3470	8350(*) 12000(*)	320 340		100kA @ 650V	
2 x 73	1250		800 900 1000 1100 1250	100 142 176 228 336	580 820 1000 1300 1900	195 208 231 244 262		100kA@ 1250V	
	1100		1400 1600 1800	440 760 1000	2600 4400 5800	283 286 315		100kA @ 1100V	
	1000		2000	1480	8500	319		120kA @ 1000V	
	950		2200	1780	9632(*)	353		100kA @ 950V	
	900		2500	2340	12075(*)	390		110kA @ 900V	
	850		2800	3000	15000(*)	440		100kA @ 850V	
	600		3000 3200	4980 5720	15700(*) 19030(*)	405 426		200kA @ 600V	
	550		3600	8160	25200(*)	430		200kA @ 550V	

(1) at 850 V

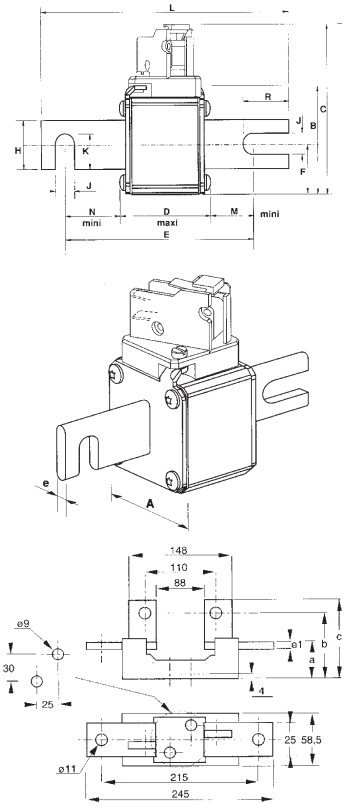
(2) does not exist with blades

12/04

Ferraz Shawmut

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
IEC Terminals - German 70 - 73 Blades (DIN 110)

Size	Designation	Reference Number	Weight (g)	Pack.	*I/In Base		Catalog Number
					F098031	L091941	
70	12,5 URD 70 D 11 A 0063	V300536	380	3	1	1	PC70UD13C63D1A
	12,5 URD 70 D 11 A 0080	W300537			1	1	PC70UD13C80D1A
	12,5 URD 70 D 11 A 0100	X300538			1	1	PC70UD13C100D1A
	12,5 URD 70 D 11 A 0125	Y300539			1	1	PC70UD13C125D1A
	12,5 URD 70 D 11 A 0160	Z300540			1	1	PC70UD13C160D1A
	12,5 URD 70 D 11 A 0200	A300541			1	1	PC70UD13C200D1A
	12,5 URD 70 D 11 A 0250	B300542			1	1	PC70UD13C250D1A
	12 URD 70 D 11 A 0280	J300710			1	1	PC70UD12C280D1A
	12 URD 70 D 11 A 0315	C300543			1	1	PC70UD12C315D1A
	11 URD 70 D 11A 0350	D300544			1	1	PC70UD11C350D1A
71	12,5 URD 71 D 11 A 0160	D300751	570	3	1	1	PC71UD13C160D1A
	12,5 URD 71 D 11 A 0200	E300545			1	1	PC71UD13C200D1A
	12,5 URD 71 D 11A 0250	F300546			1	1	PC71UD13C250D1A
	12,5 URD 71 D 11A 0280	K300711			1	1	PC71UD12C280D1A
	12,5 URD 71 D 11 A 0315	G300547			1	1	PC71UD12C315D1A
	12,5 URD 71 D 11 A 0350	H300548			1	1	PC71UD13C350D1A
	12,5 URD 71 D 11 A 0400	J300549			1	1	PC71UD13C400D1A
	12,5 URD 71 D 11 A 0450	K300550			0,95	1	PC71UD13C450D1A
	11 URD 71 D 11 A 0500	L300551			0,95	1	PC71UD11C500D1A
	11 URD 71 D 11 A 0550	M300552			0,90	1	PC71UD13C550D1A
	10 URD 71 D 11 A 0630	N300553			0,90	0,95	PC71UD10C630D1A
72	12,5 URD 72 D 11 A 0280	P300554	800	3	1	1	PC72UD13C280D1A
	12,5 URD 72 D 11 A 0315	Q300555			1	1	PC72UD13C315D1A
	12,5 URD 72 D 11 A 0350	R300556			1	1	PC72UD13C350D1A
	12,5 URD 72 D 11 A 0400	S300557			1	1	PC72UD13C400D1A
	12,5 URD 72 D 11 A 0450	T300558			1	1	PC72UD13C450D1A
	12,5 URD 72 D 11 A 0500	V300559			0,95	1	PC72UD13C500D1A
	12,5 URD 72 D 11 A 0550	W300560			0,90	0,95	PC72UD13C550D1A
	11 URD 72 D 11 A 0630	X300561			0,90	0,95	PC72UD11C630D1A
	10 URD 72 D 11 A 0700	Y300562			0,85	0,90	PC72UD10C700D1A
	10 URD 72 D 11 A 0800	Z300563			0,85	0,90	PC72UD10C800D1A
73	12,5 URD 73 D 11 A 0315	A300564	1150	3	1	1	PC73UD13C315D1A
	12,5 URD 73 D 11 A 0350	B300565			1	1	PC73UD13C350D1A
	12,5 URD 73 D 11 A 0400	C300566			0,95	1	PC73UD13C400D1A
	12,5 URD 73 D 11 A 0450	D300567			0,95	1	PC73UD13C450D1A
	12,5 URD 73 D 11 A 0500	E300568			0,90	1	PC73UD13C500D1A
	12,5 URD 73 D 11 A 0550	F300569			0,90	0,95	PC73UD13C550D1A
	12,5 URD 73 D 11 A 0630	G300570			0,85	0,95	PC73UD13C630D1A
	12 URD 73 D 11 A 0700	H300571			0,85	0,90	PC73UD12C700D1A
	11 URD 73 D 11 A 0800	J300572			0,85	0,90	PC73UD11C800D1A
	10 URD 73 D 11 A 0900	K300573			0,80	0,85	PC73UD10C900D1A
	9 URD 73 D 11 A 1000	L300574			0,80	0,85	PC73UD90V10CD1A
	9 URD 73 D 11 A 1100	M300575			0,75	0,80	PC73UD90V11CD1A



Pull out grip PM7
(V097676)
in size 70-71-72

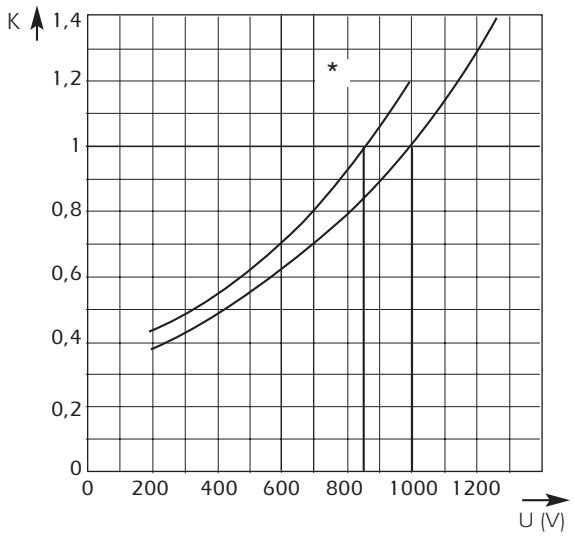
Microswitches
supplied separately

	A	B	C	D	E±1,1	F	H	J	K	L±1,5	M	N	R	e
70	40	46,5	82	71	100,4	21	25	10,5	17,7	133,4	11,5	18,5	25,2	6
71	51	56,5	91	71	100,4	25,5	25	10,5	17,7	133,4	11,5	18,5	25,2	6
72	60	65,5	100	71	100,4	30	32	10,5	21,2	133,4	11,5	18,5	25,2	6
73	74,5	79,5	114	72	100,4	37,2	40	10,5	25,2	133,4	11	18	25,2	6

Fuse holders	Ref. N°	Cat. N°	a	b	c	e1	Weight (g)
SI DIN 110 630 A	F098031	SIDN110630A	40	68	82	5	1060
SI DIN 110 1250 A	L091941	SIDN1101250A	45	73	87	10	1320

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Multiplier coefficient



Left: Mean curve indicating variation of total I^2t (I^2t_t) and total operating time T_t in accordance with working voltage U.

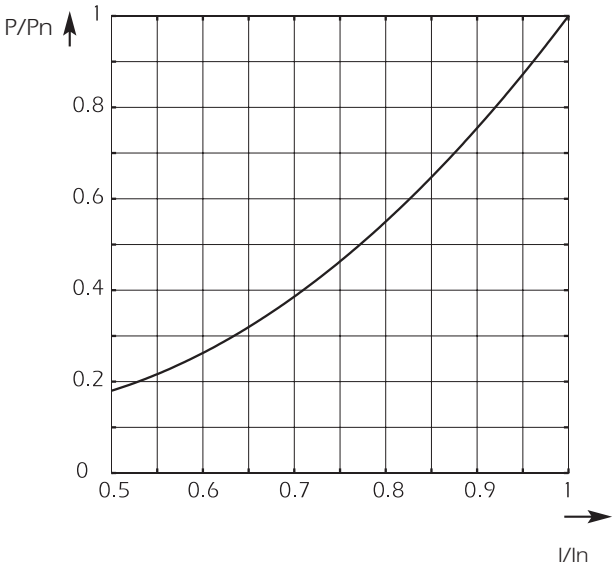
Example:
Fuse 350 A in size 70.
I_p = 10 000 A U = 1100 V

At 1000 V
I^2t_t = 115 000 A^2s T_t = 7 ms

At 1100 V
I^2t_t = 115 000 x 1.13 = 130 000 A^2s
T_t = 7 x 1.13 = 7.9 ms

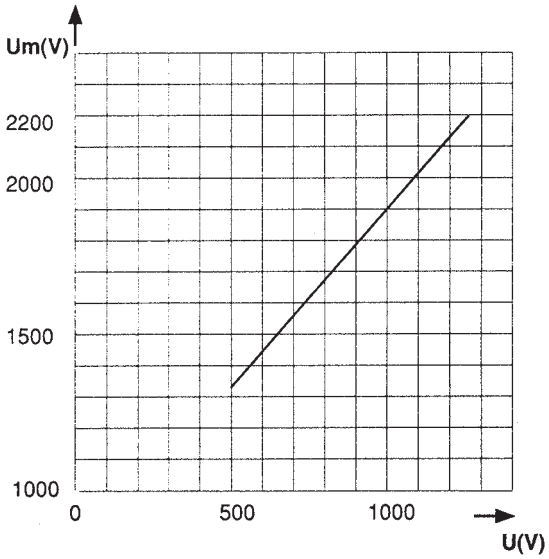
* curve for fuses with I^2t published at 850VAC

Dissipated power



Above left: Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in steady state.

Arc voltage



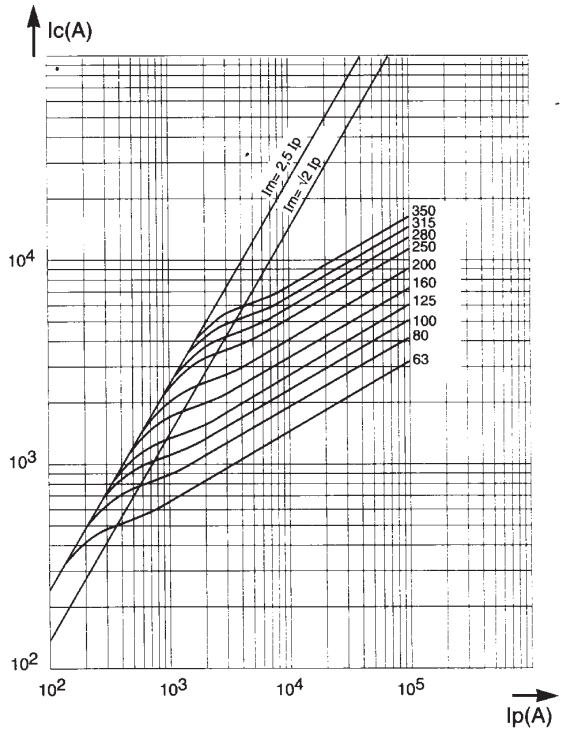
Above right: Curve indicating peak arc voltage Um which may appear across fuse terminals as a function of working voltage U at cos φ = 0.15

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 70

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



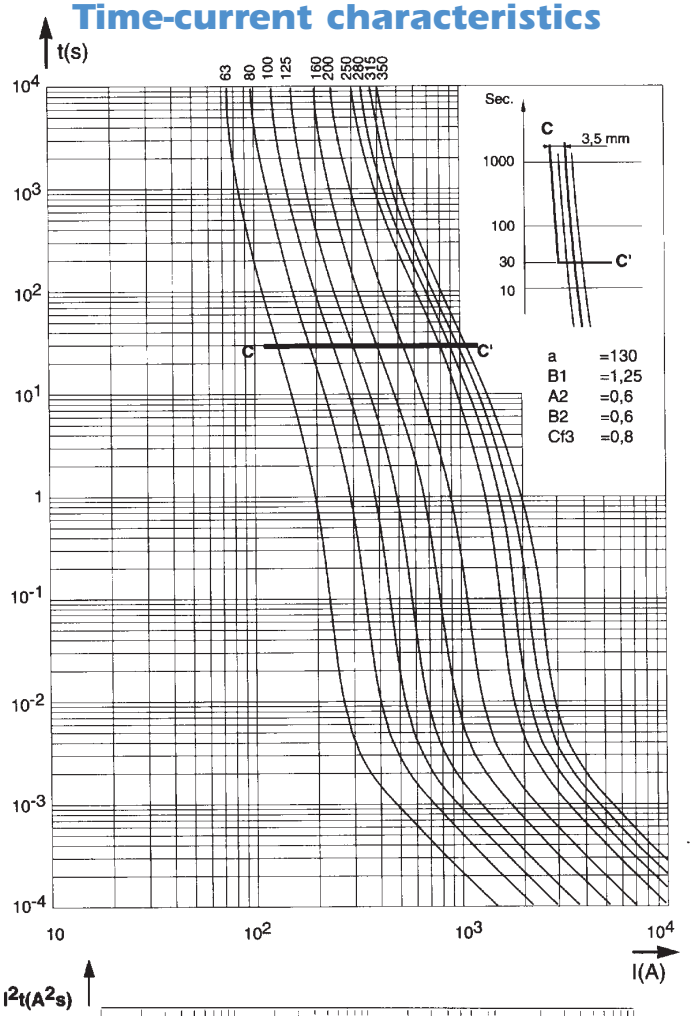
Time-current characteristics

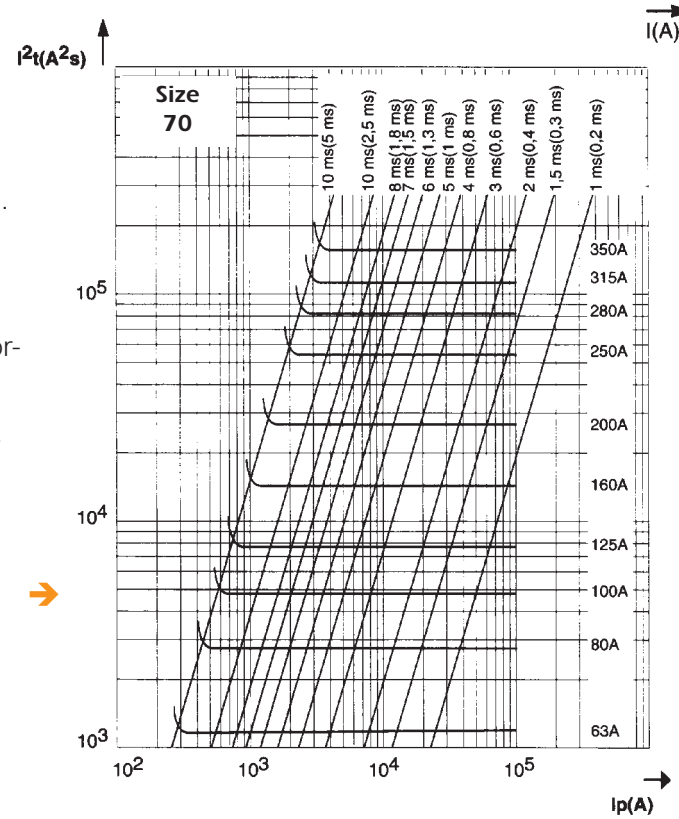
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

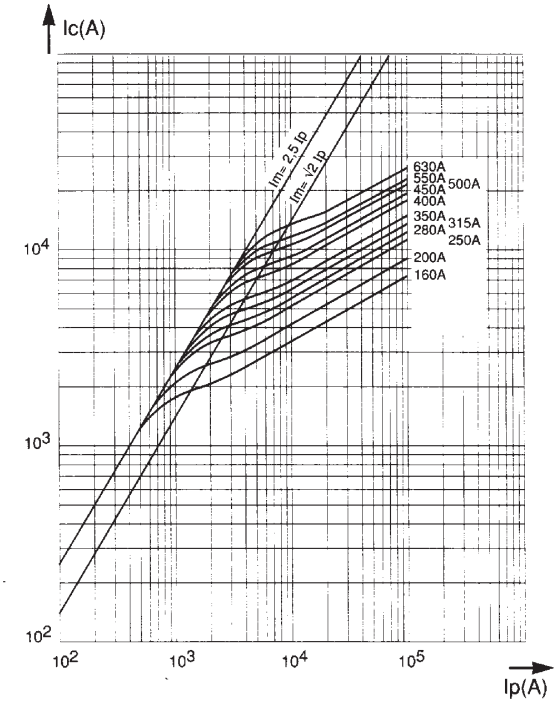




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

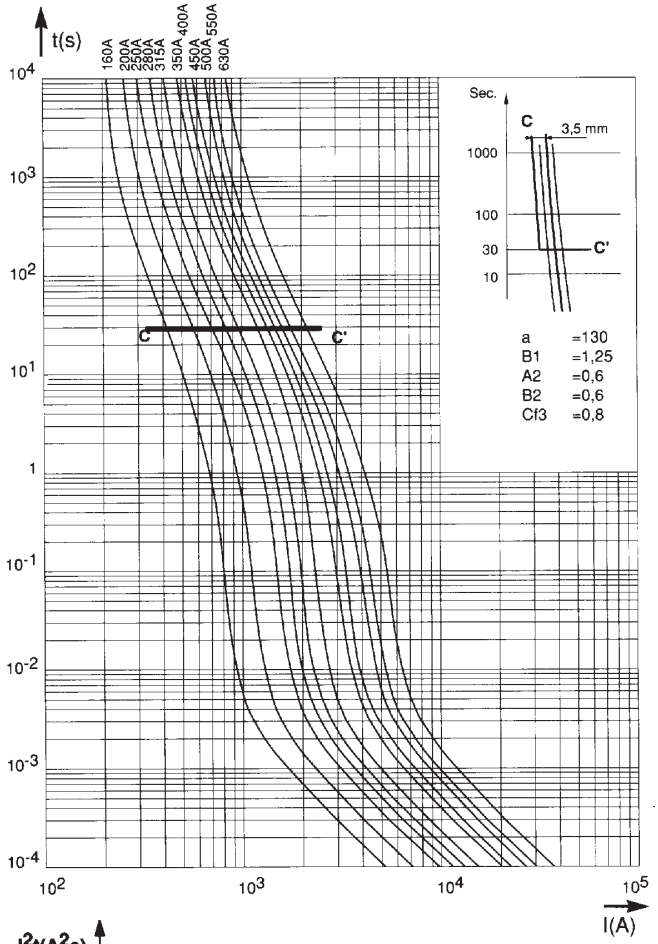
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

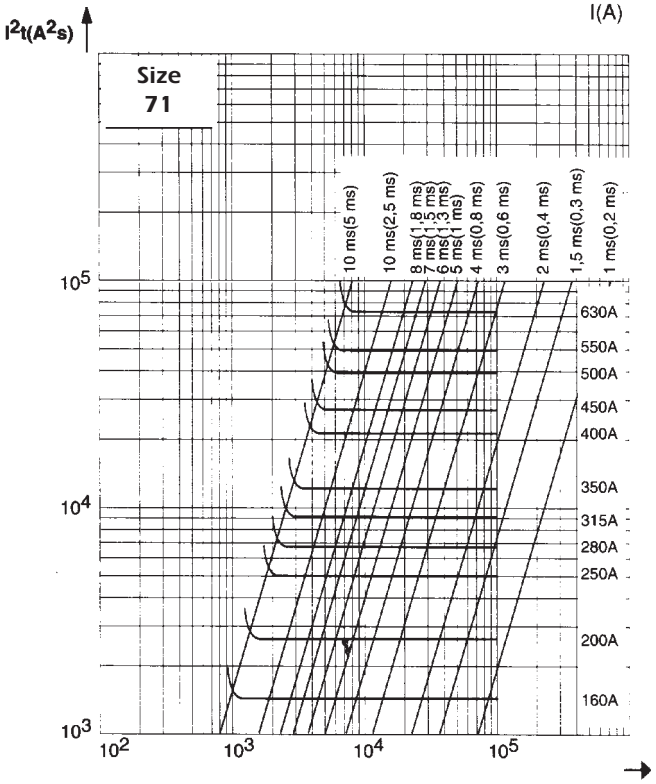
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 71
Time-current characteristics



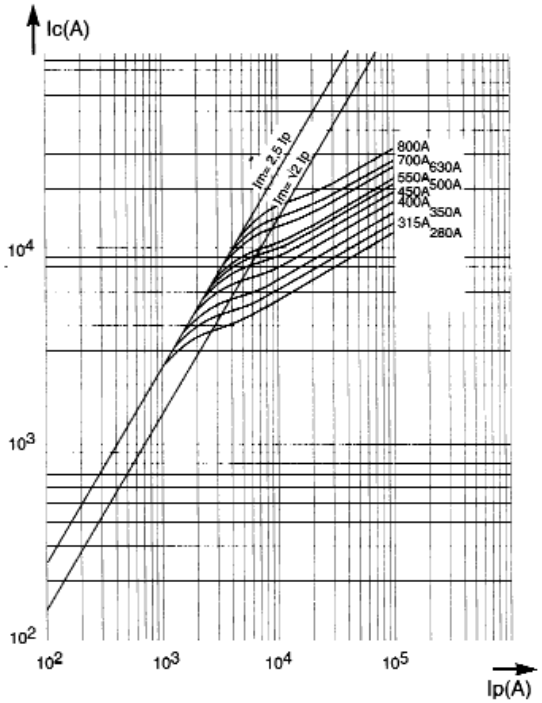


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 72

Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



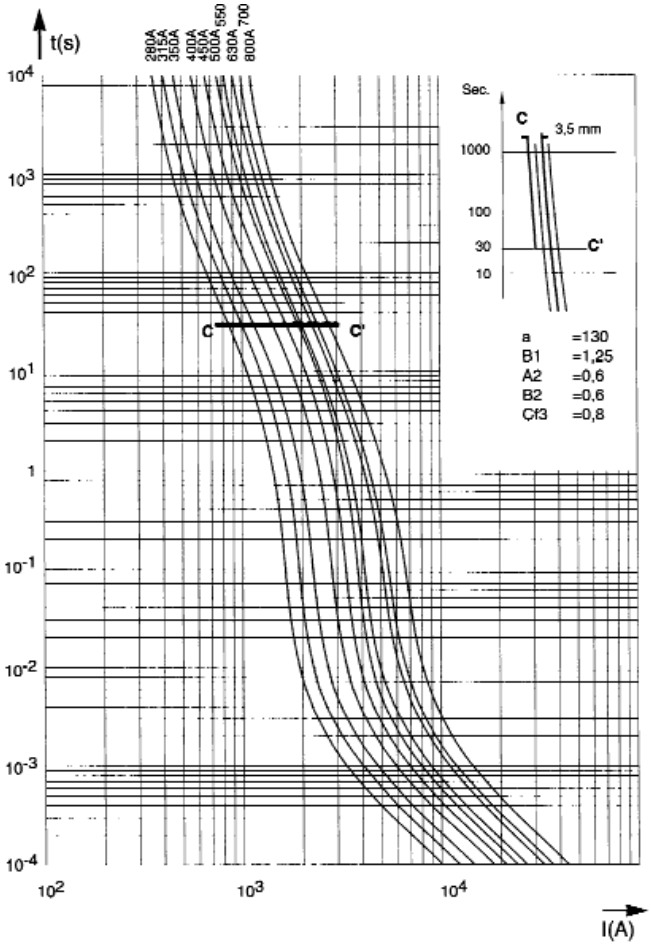
Time-current characteristics

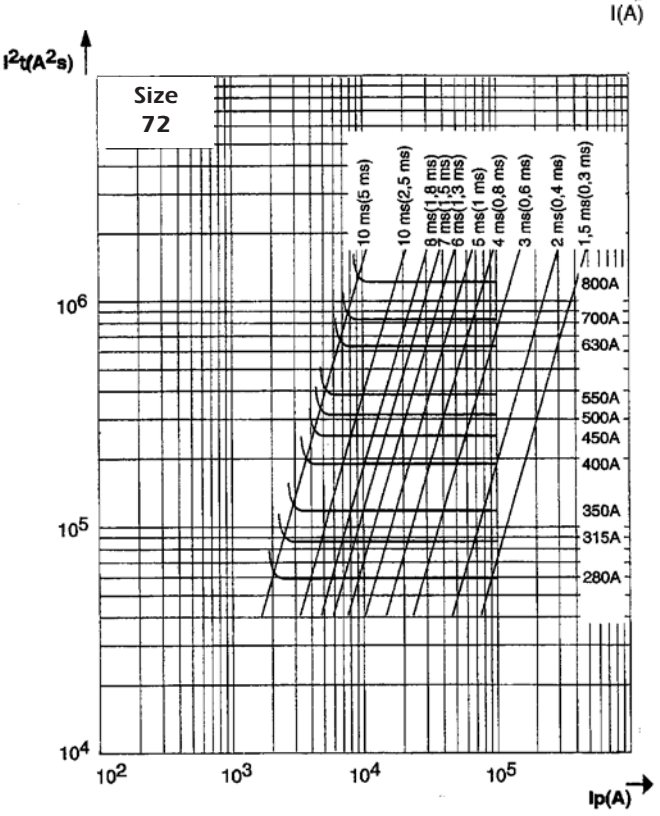
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



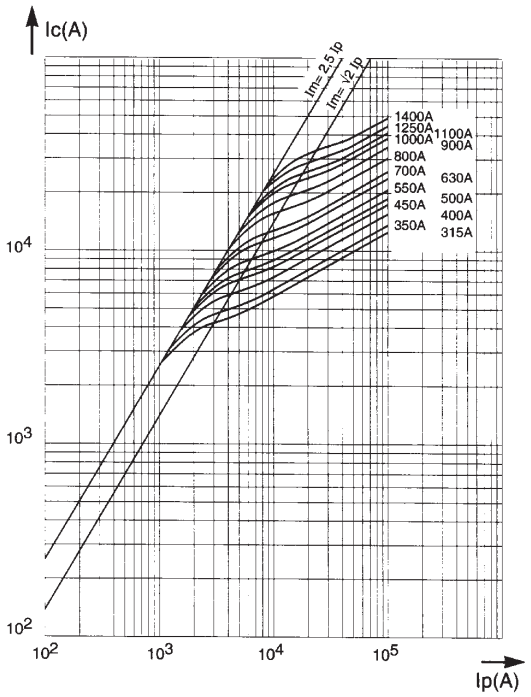


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 73

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



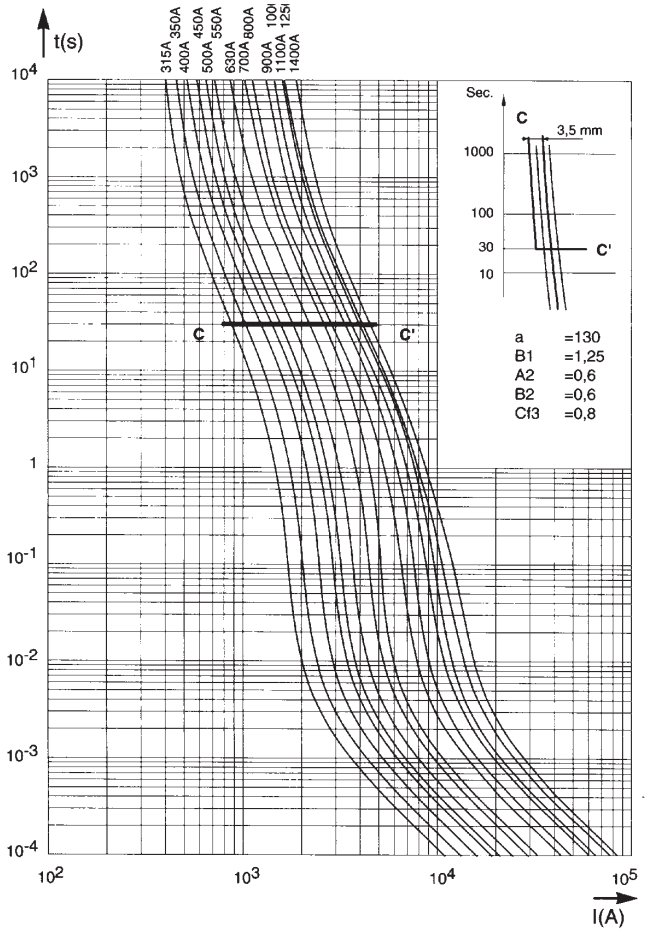
Time-current characteristics

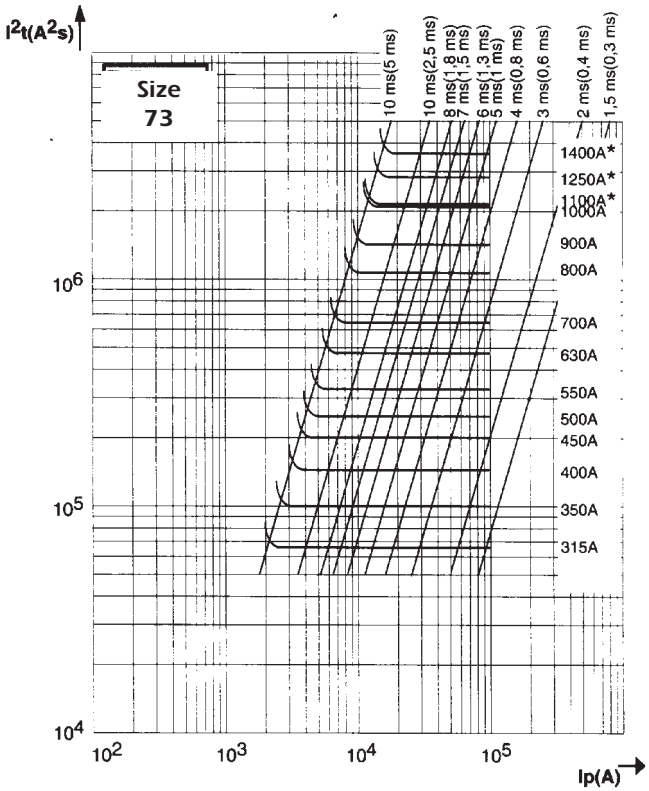
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



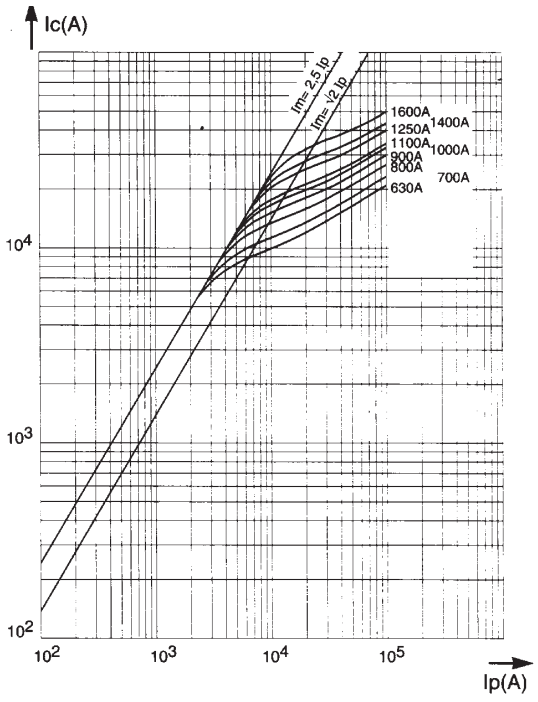


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 2x72

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



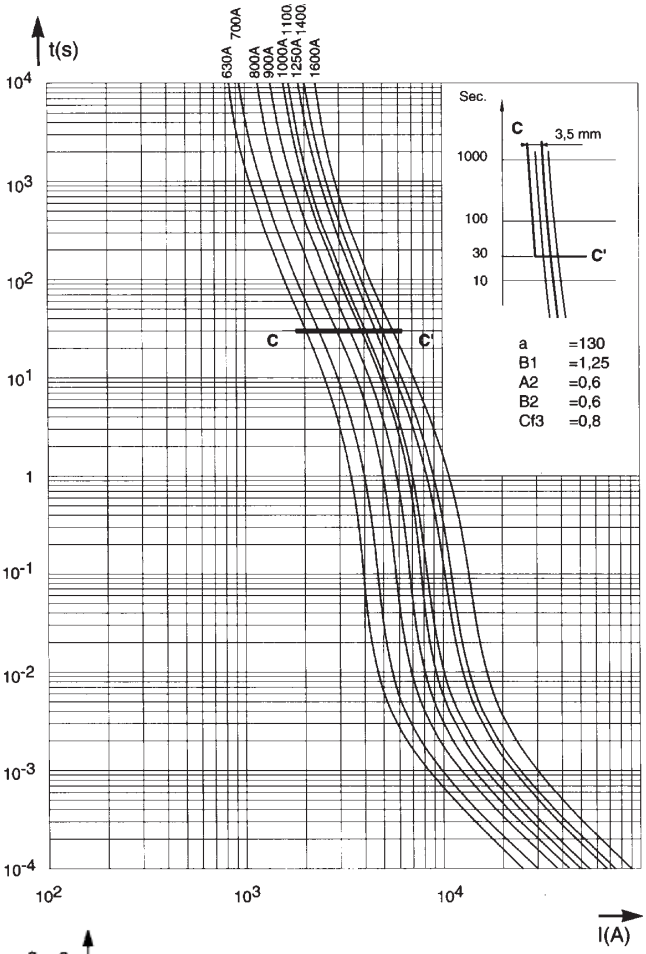
Time-current characteristics

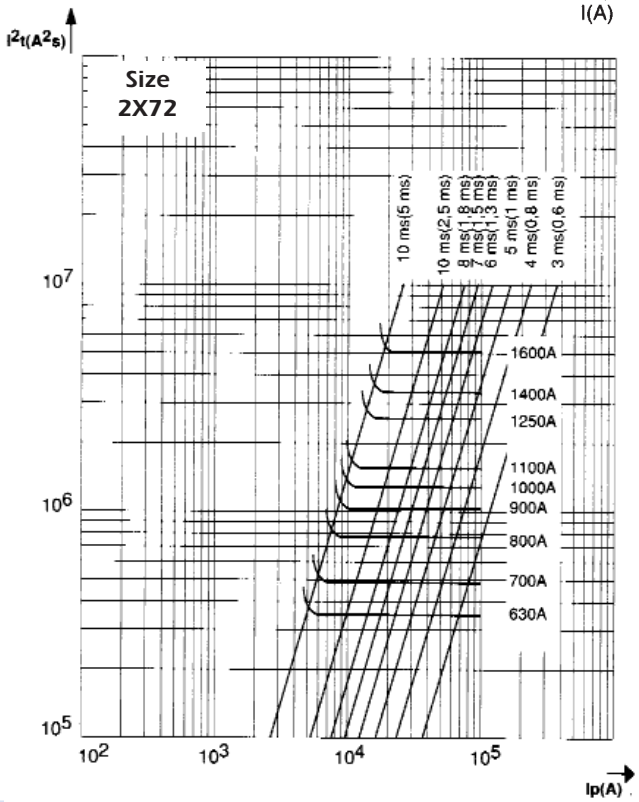
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

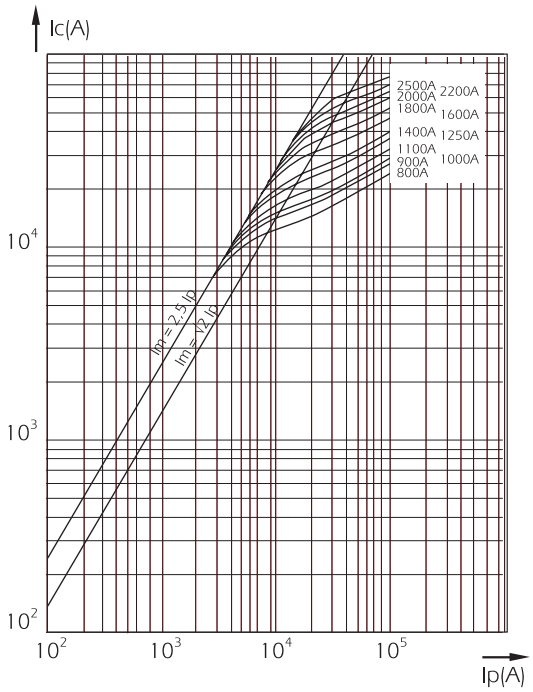




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

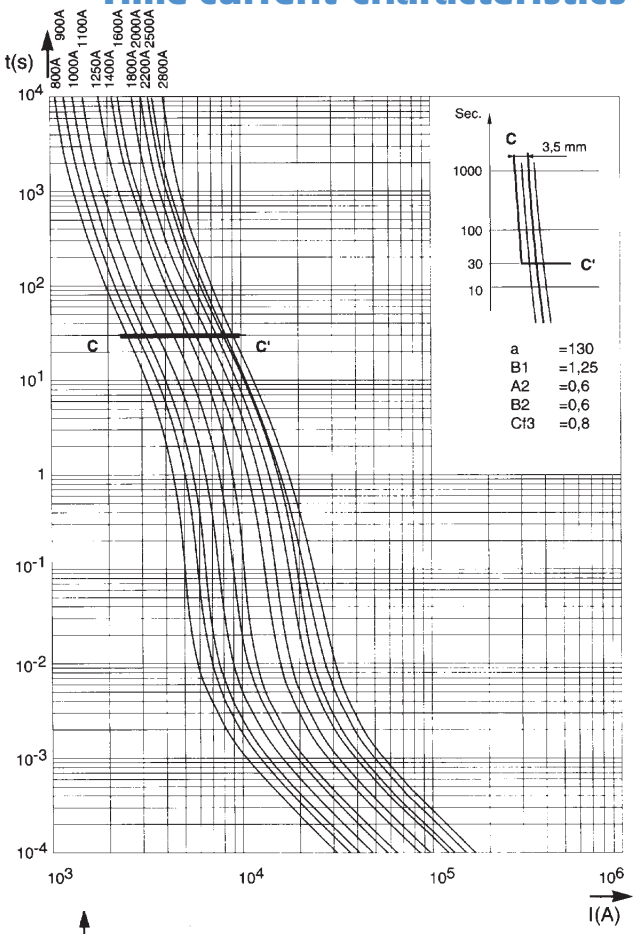
Maximum values of total operating I²t and total operating times

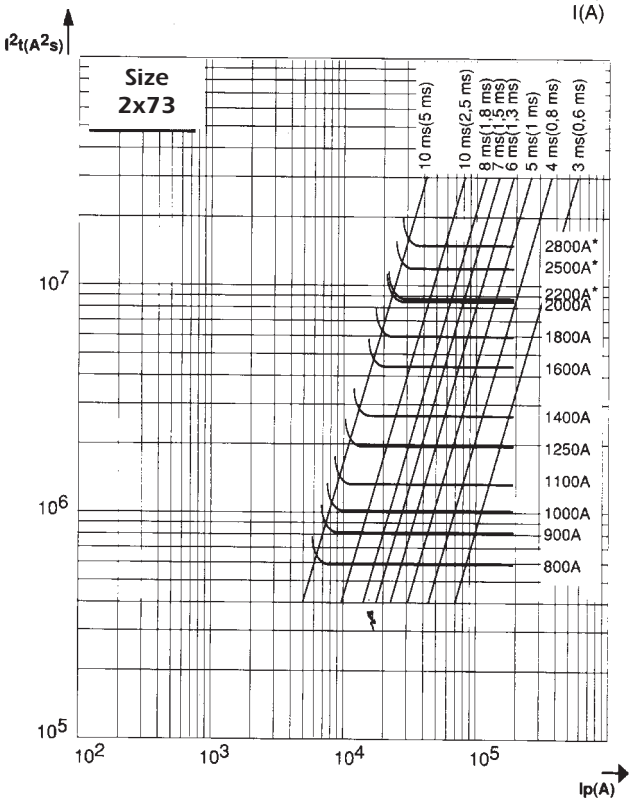
Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.

The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 2x72

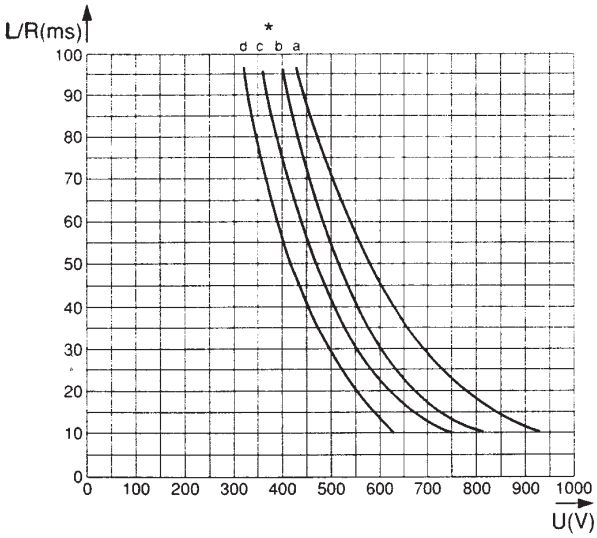
Time-current characteristics

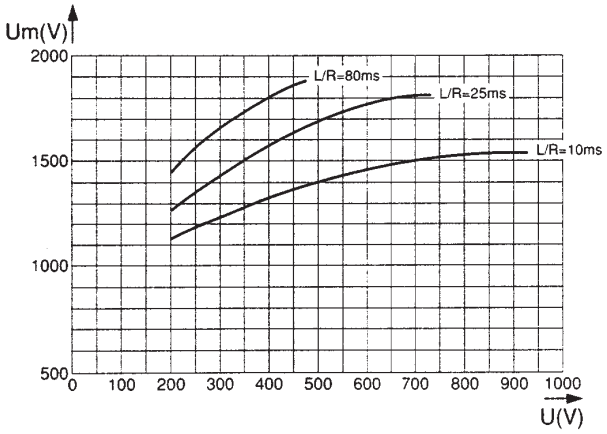




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

DC working voltage possibilities





Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U, for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark: When the fault current di/dt is very large, this condition can be exceeded. It is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Rated current I_N(A)	Curves (*) and Ipm (1) corresponding to the rating											
	70		71		72		73		2x72		2x73	
	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)
63	a	270										
80	a	400										
100	a	520										
125	a	700										
160	a	950	a	950								
200	a	1300	a	1300								
250	a	1800	a	1800								
280	b	2200	a	2000	a	1800						
315	b	2600	a	2300	a	2200	a	2000				
350	c	3000	a	2700	a	2600	a	2400				
400			b	3500	a	3200	a	3000				
450			b	4000	a	3800	a	3500				
500			c	4800	a	4600	a	3900				
550			c	5200	b	5000	a	4400				
630			c	6400	b	6200	a	5300	a	4400		
700					c	6800	a	6000	a	5200		
800					c	8000	b	8000	a	6400	a	6000
900							b	9000	a	7600	a	7000
1000							c	11000	a	9200	a	7800
1100							c	12000	b	10000	a	8800
1250							c	13500	b	12400	a	10600
1400							c	15000	c	13600	a	12000
1600									c	16000	b	16000
1800											b	18000
2000											c	22000
2200											c	24000
2500											d	27000
2800											d	30000

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

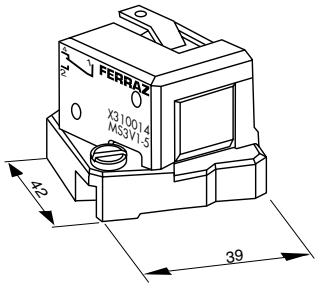
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

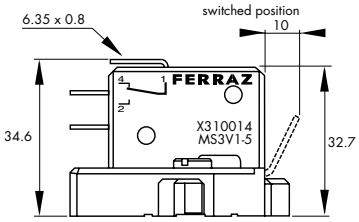
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



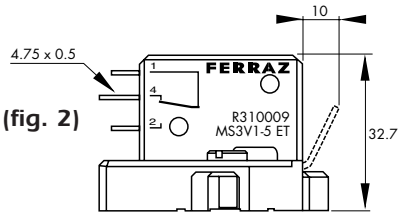
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

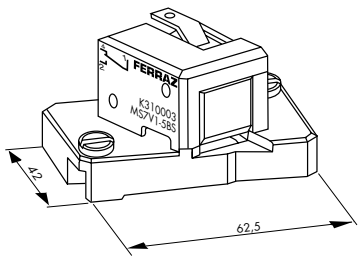
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

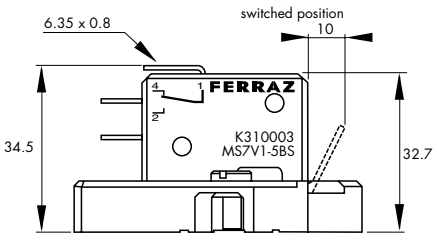
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

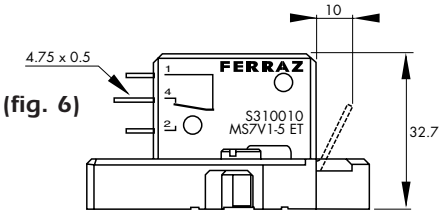


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC gR sizes 7x - 690 VAC
Metric-studs

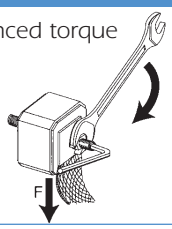
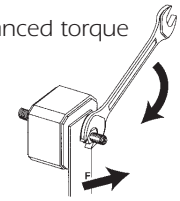
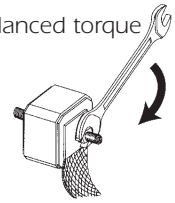
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

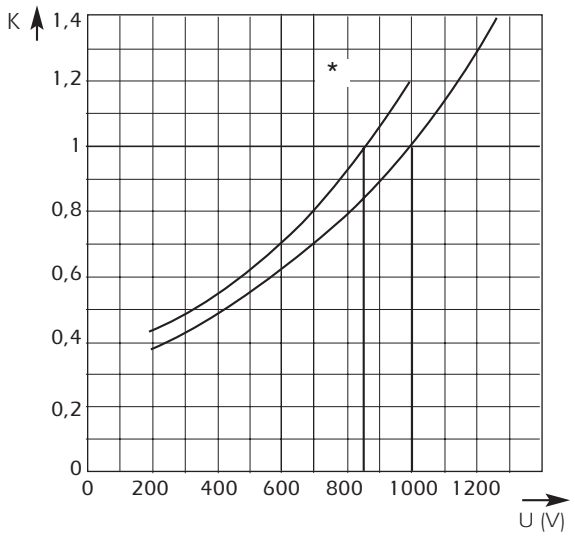
Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Multiplier coefficient



Left: Mean curve indicating variation of total I^2t (I^2t_t) and total operating time T_t in accordance with working voltage U.

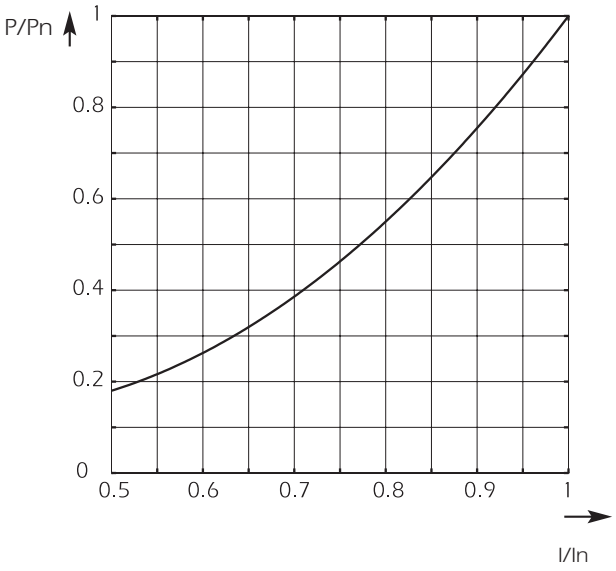
Example:
Fuse 350 A in size 70.
I_p = 10 000 A U = 1100 V

At 1000 V
I^2t_t = 115 000 A^2s T_t = 7 ms

At 1100 V
I^2t_t = 115 000 x 1.13 = 130 000 A^2s
T_t = 7 x 1.13 = 7.9 ms

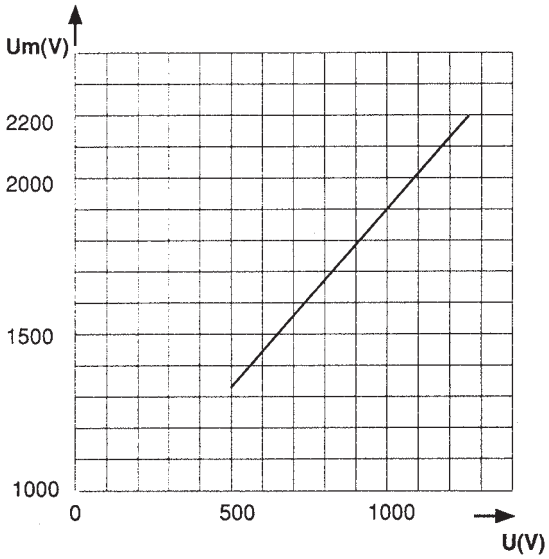
* curve for fuses with I^2t published at 850VAC

Dissipated power



Above left: Curve enabling calculation of dissipated power P by a fuse rated I_N, as a function of the RMS current I, in multiples of I_N, in steady state.

Arc voltage



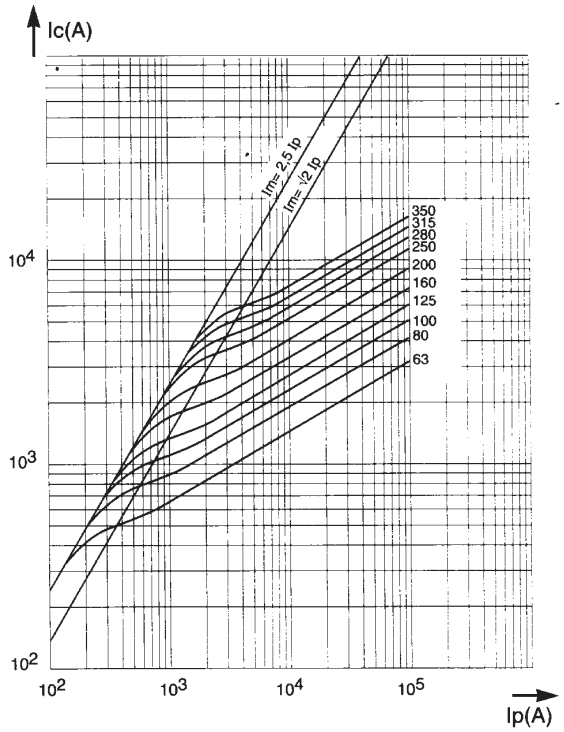
Above right: Curve indicating peak arc voltage Um which may appear across fuse terminals as a function of working voltage U at cos φ = 0.15

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 70

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



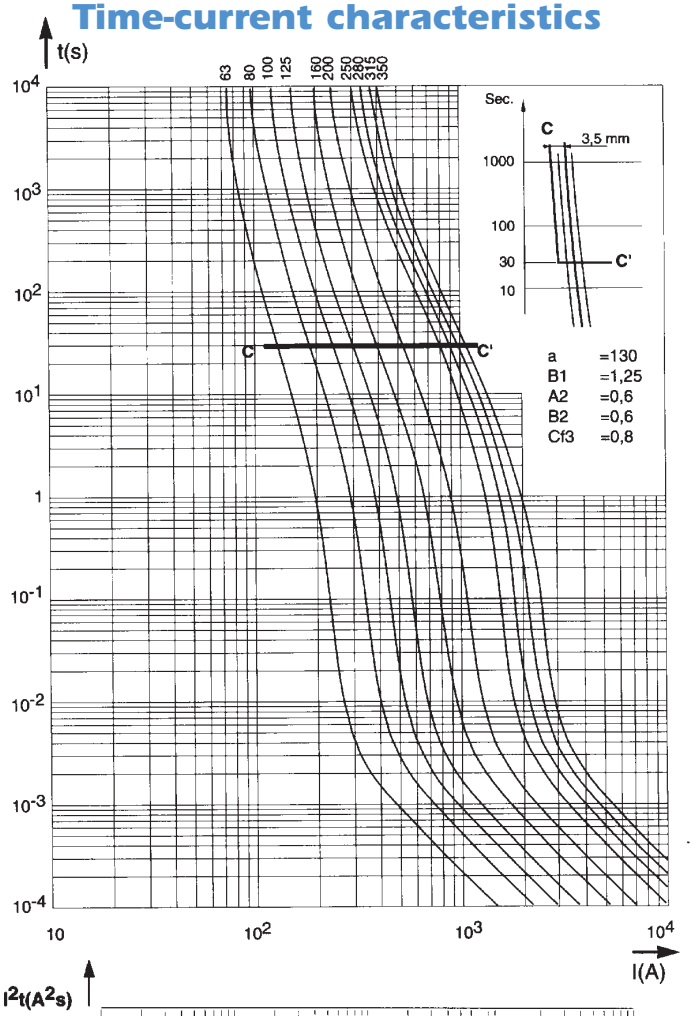
Time-current characteristics

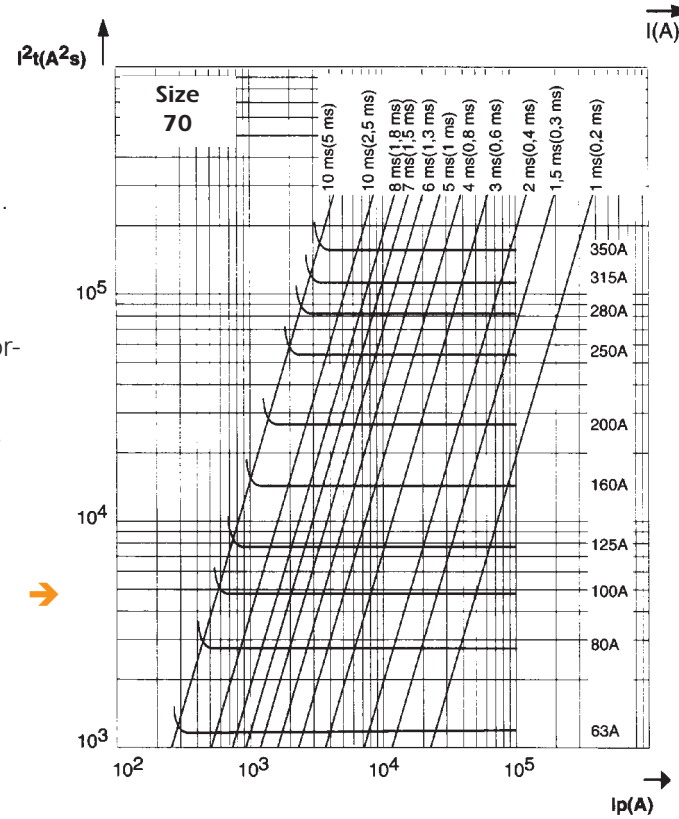
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

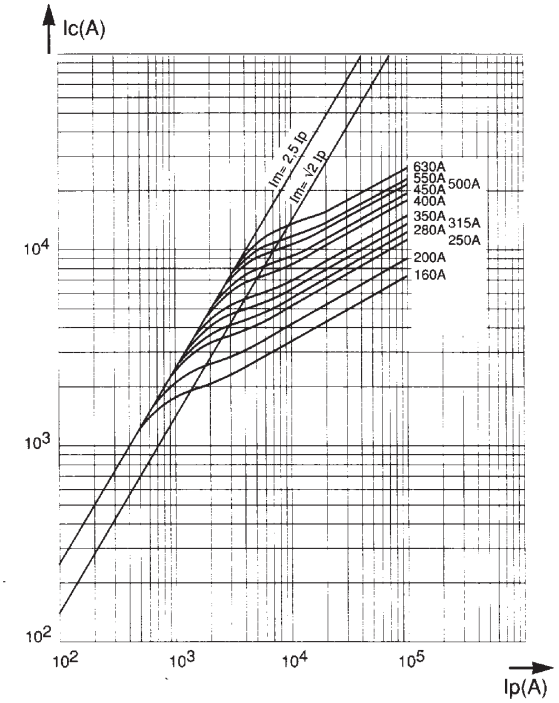




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

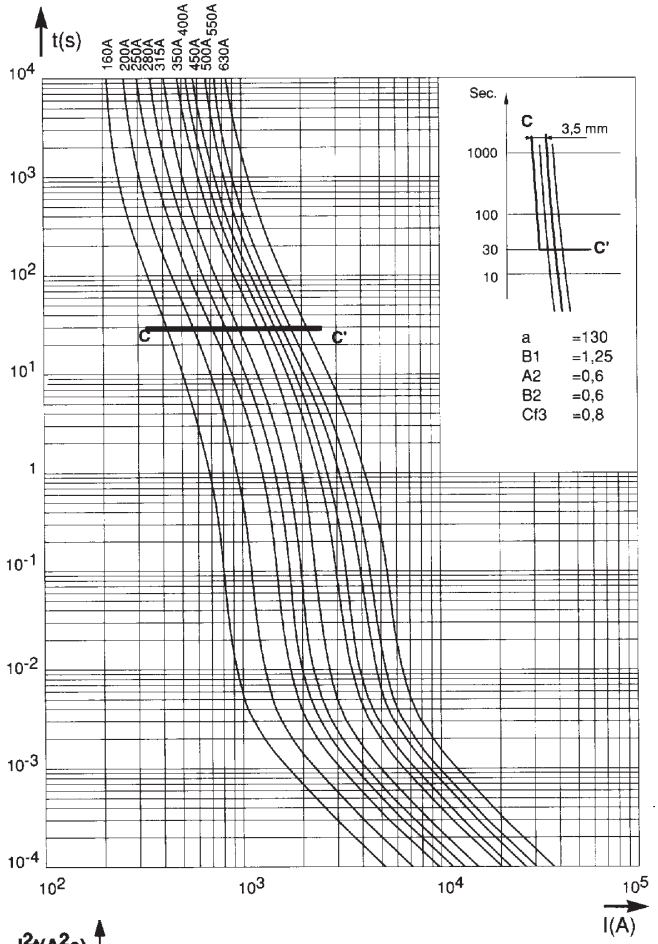
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

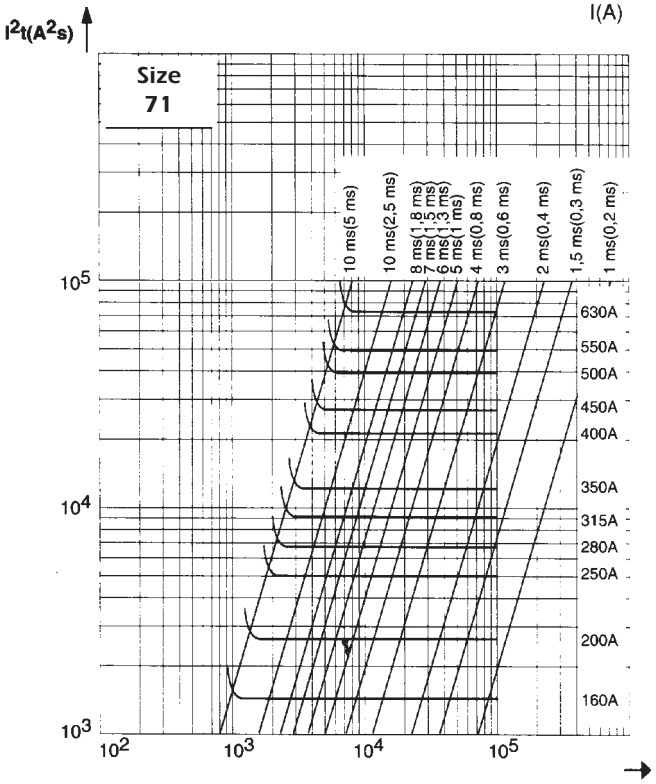
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 71
Time-current characteristics



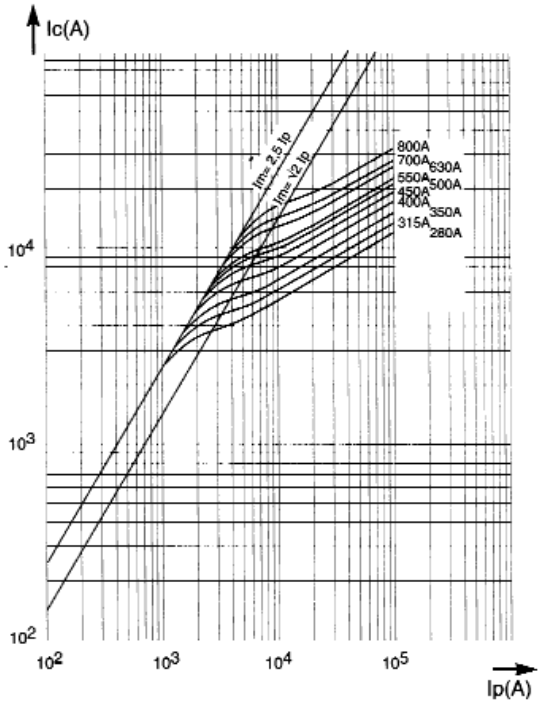


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 72

Cut-off characteristics

Below, right: Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



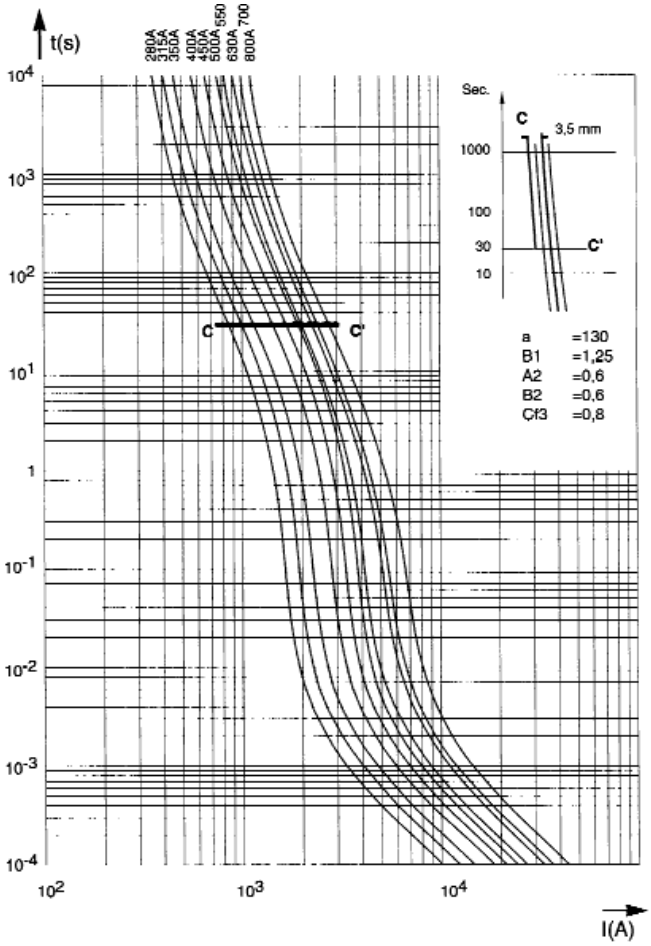
Time-current characteristics

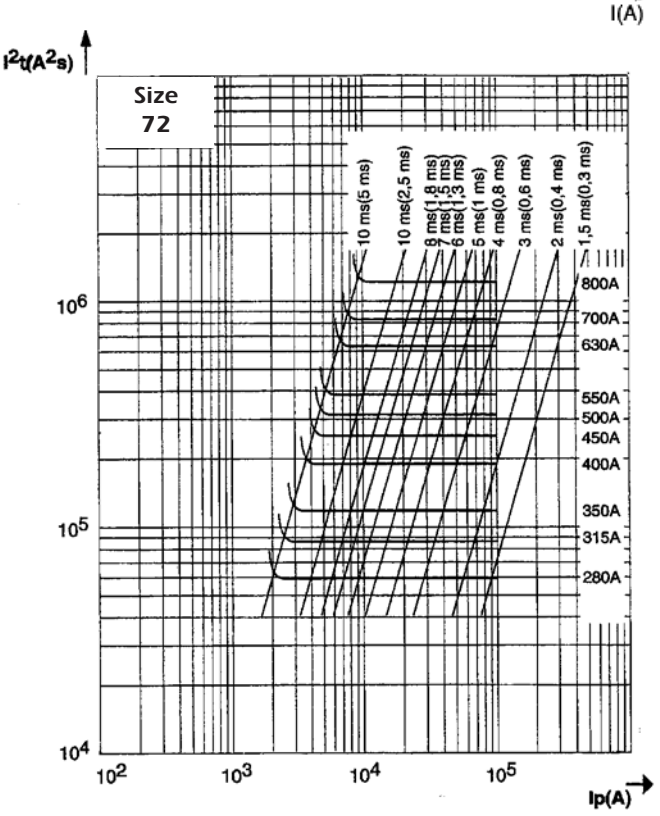
Above, left: Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Left: Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



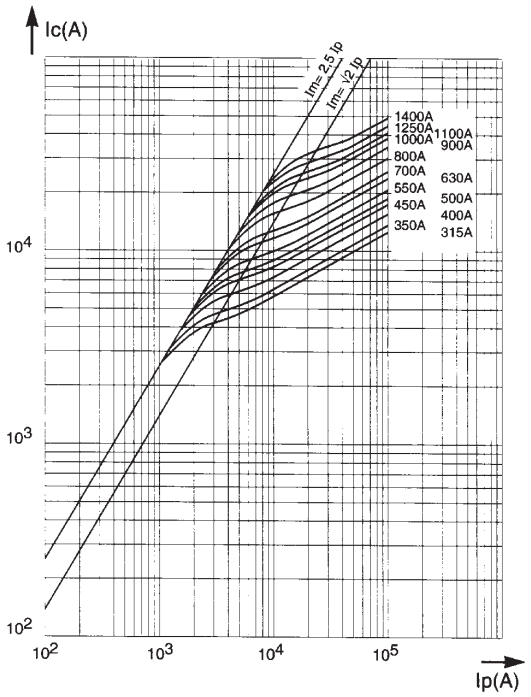


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 73

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



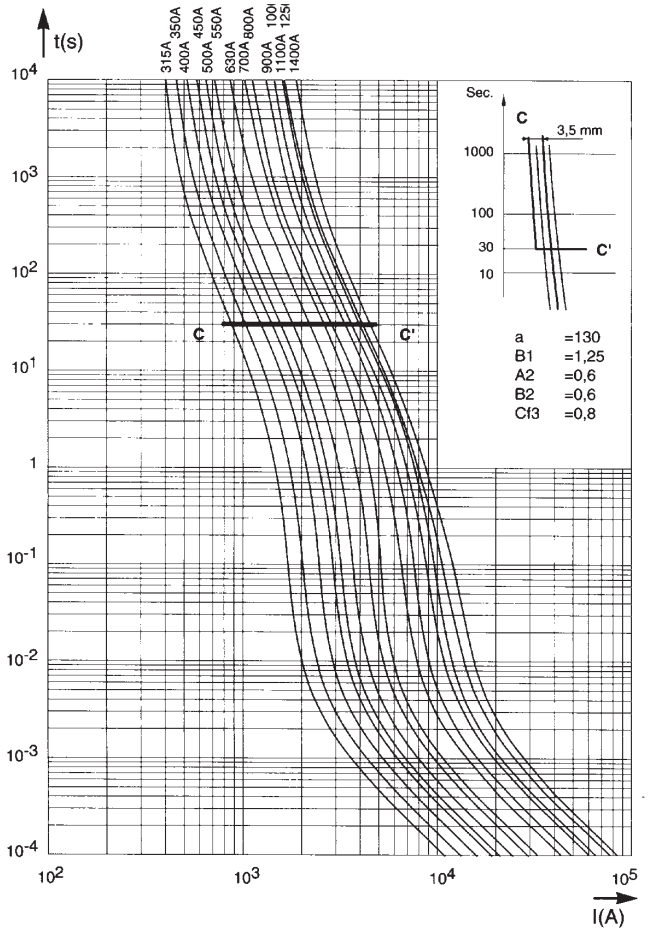
Time-current characteristics

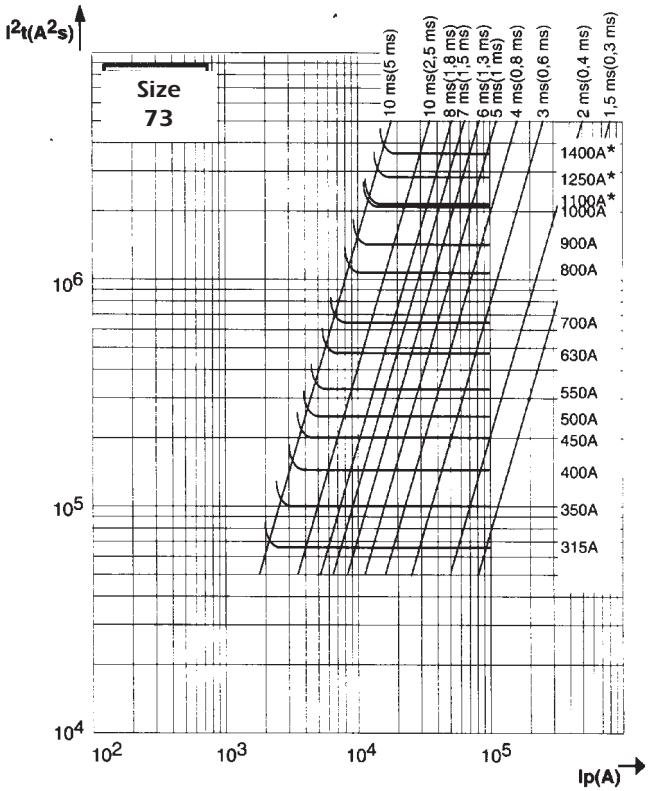
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics



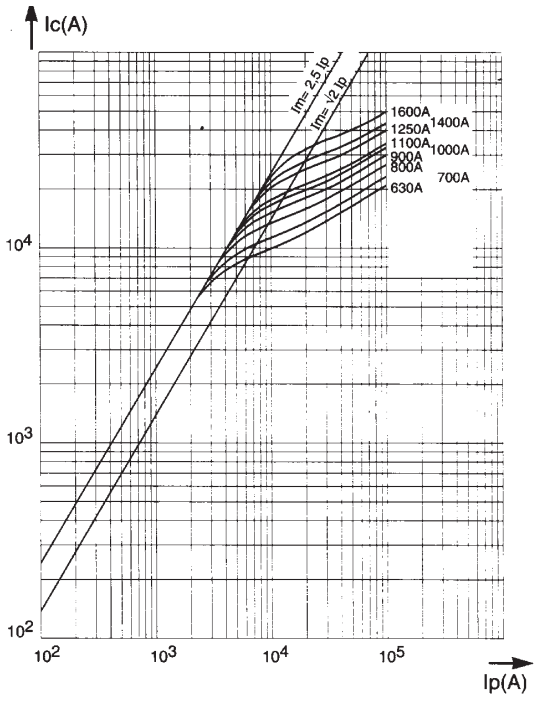


Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Size 2x72

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



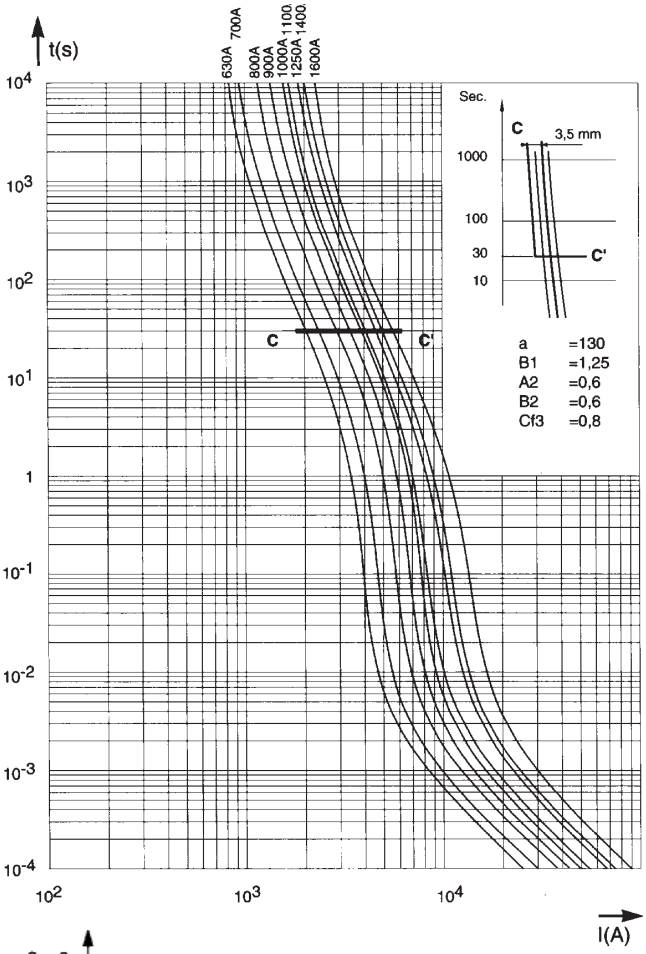
Time-current characteristics

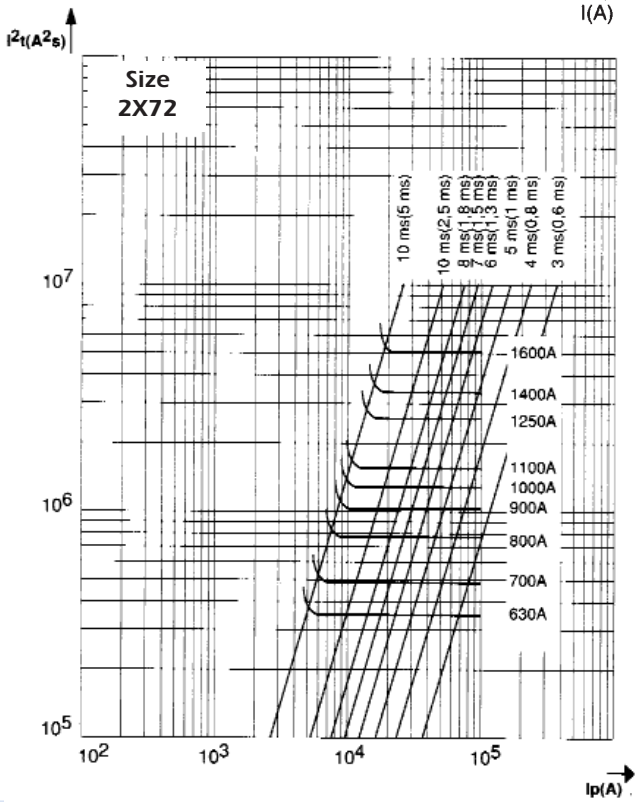
Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.
- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

Maximum values of total operating I²t and total operating times

Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.
The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Time-current characteristics

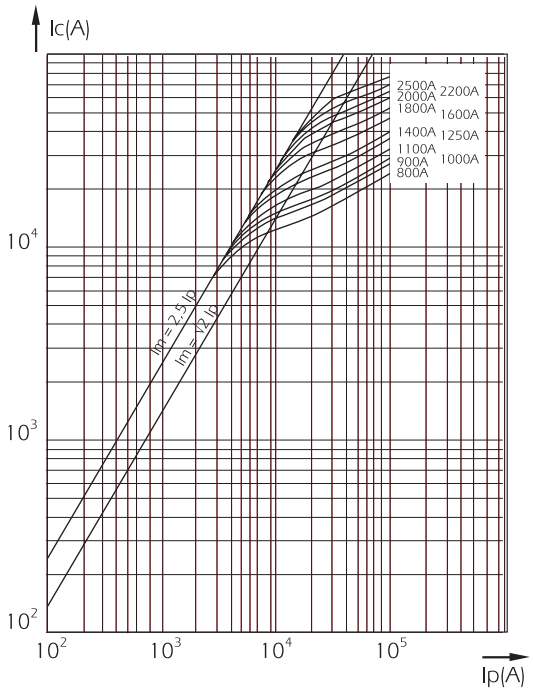




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

Cut-off characteristics

Curves indicating for each rated current the peak value I_c that the current may reach as a function of the prospective fault current I_p.



Time-current characteristics

Curves indicating pre-arcing time for each rated current as a function of RMS value of pre-arcing current I.

- Tolerances on this current ± 8 %.
- Beyond 30 sec, small overloads must be eliminated by another device.
- Curve CC' represents the maximum times taken by the associated device to clear small overloads; only its horizontal line is represented. Its oblique line must be plotted according to sketch, top right corner.
- The intersection of the fuse and CC' curves indicates the minimum breaking current I_{pm} of the fuse.

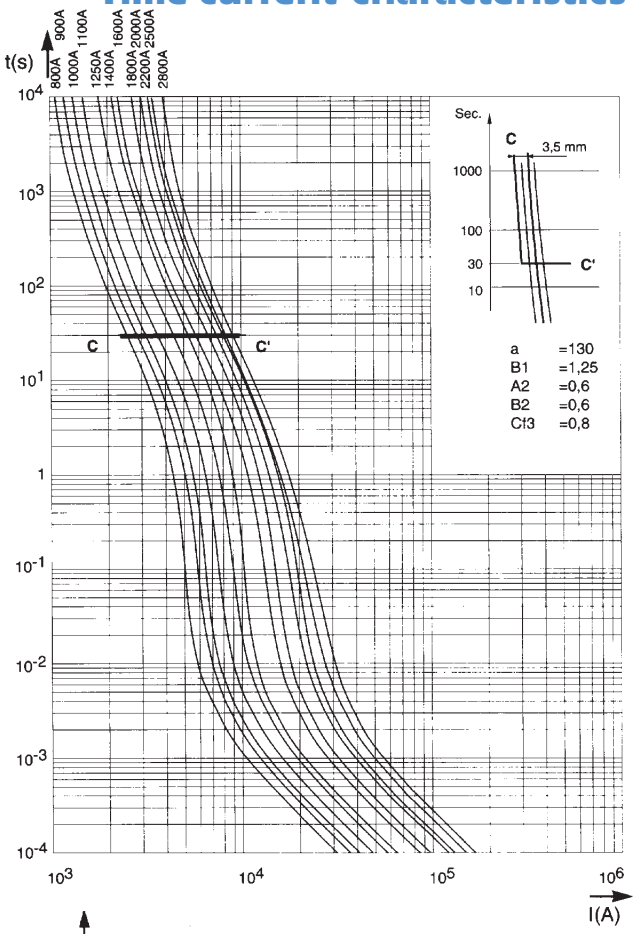
Maximum values of total operating I²t and total operating times

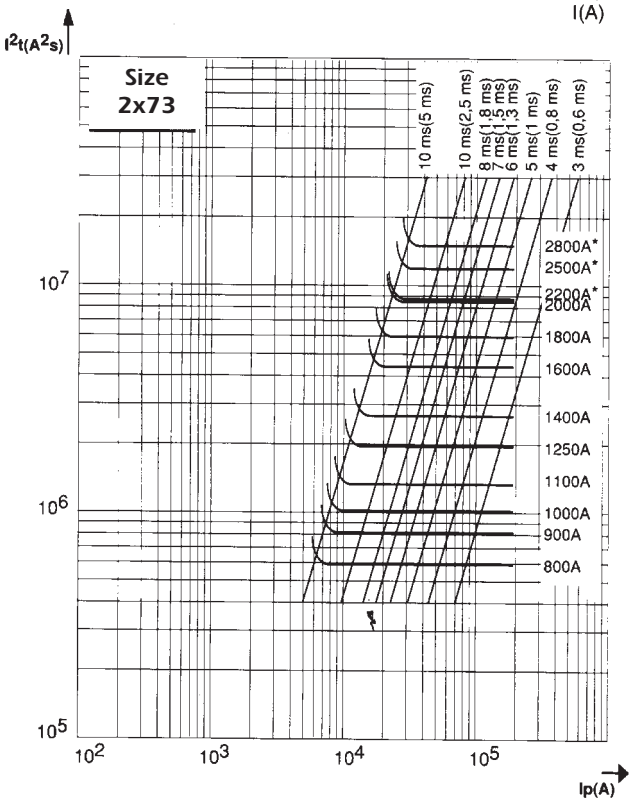
Horizontal curves indicating the maximum values of total operating I²t (I^2t_t) as function of the prospective current I_p at 1000V or 850 V(*), cos φ = 0.15.

The oblique lines indicate the corresponding total operating time T_t, with pre-arcing time in brackets.

Size 2x72

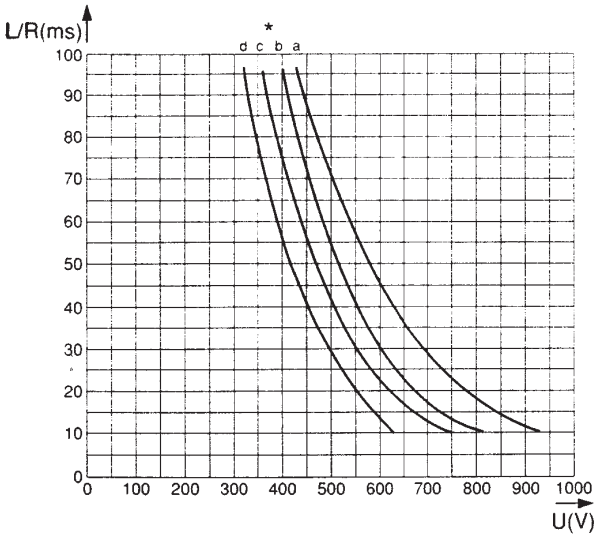
Time-current characteristics

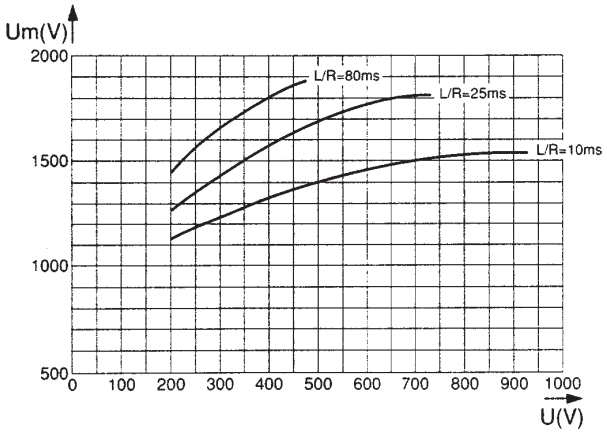




Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Curves set

DC working voltage possibilities





Top: Curves indicating the maximum time constant L/R of the fault path as a function of the DC voltage U, for the rated currents in the sizes indicated in the table.

Ipm (1) values indicate the minimum breaking current in Amperes (A).

Remark: When the fault current di/dt is very large, this condition can be exceeded. It is the case for faults occurring in voltage commutated inverters.

Below: Curves indicating peak arc voltage Um which may appear across fuse terminals as a function of the DC working voltage U, for various time constant L/R of fault path.

Rated current I_N(A)	Curves (*) and Ipm (1) corresponding to the rating											
	70		71		72		73		2x72		2x73	
	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)	*Ipm	(A)
63	a	270										
80	a	400										
100	a	520										
125	a	700										
160	a	950	a	950								
200	a	1300	a	1300								
250	a	1800	a	1800								
280	b	2200	a	2000	a	1800						
315	b	2600	a	2300	a	2200	a	2000				
350	c	3000	a	2700	a	2600	a	2400				
400			b	3500	a	3200	a	3000				
450			b	4000	a	3800	a	3500				
500			c	4800	a	4600	a	3900				
550			c	5200	b	5000	a	4400				
630			c	6400	b	6200	a	5300	a	4400		
700					c	6800	a	6000	a	5200		
800					c	8000	b	8000	a	6400	a	6000
900							b	9000	a	7600	a	7000
1000							c	11000	a	9200	a	7800
1100							c	12000	b	10000	a	8800
1250							c	13500	b	12400	a	10600
1400							c	15000	c	13600	a	12000
1600									c	16000	b	16000
1800											b	18000
2000											c	22000
2200											c	24000
2500											d	27000
2800											d	30000

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches PSC 3x &7x

- MICROSWITCH SYSTEMS ADAPTED
  TO THE FOLLOWING FERRAZ SHAWMUT FUSES ONLY:
- PSC sizes 30, 31, 32, 33, 2x32, 2x33 / 70, 71, 72, 73, 272, 273
  except plain blades
- PSC LR sizes 33, 233, 73, 273
- PERMANENT INDICATION OF FUSE STATE: CONDUCTIVE
  BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- BS TYPE FOR USE IN CORROSIVE ATMOSPHERE
- MS 3V 1-5 UR AND MS 7V 1-5 UR TYPE UL ARE RECOGNIZED



MS 7V 1-5

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Breaking Capacity Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MS 3V 1-5 MS 3V 1-5 UR	1000 V	20 V 50 mA	10 A	50/60 Hz	10 A	10 A	10 A	10 A	10 A	10 A	8,5 kV	14 kV	H.B
MS 7V 1-5 MS 7V 1-5 UR	1500V			DC	8 A	0,4 A	0,2 A	4 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 BS MS 3V 1-9 BS	1000 V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 BS MS 7V 1-9 BS	1500V			DC	3 A	0,5 A	0,25 A	3 A	0,2 A	0,1 A	12 kV	20 kV	
MS 3V 1-5 ET	1000V	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A	8,5 kV	14 kV	
MS 7V 1-5 ET	1500V			DC	3 A	0,5 A	-	2 A	0,2 A	-	12 kV	20 kV	

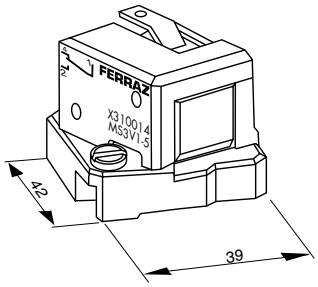
* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 60947-1
*** Between power circuit and microswitch terminals

Warning: microswitch systems exclusively designed for FERRAZ SHAWMUT.
PSC Fuses fitted a petented trip-indicator, saving use of EDV

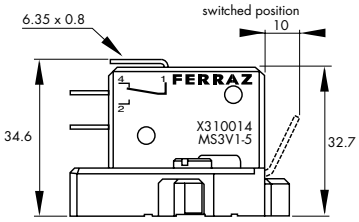
Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Microswitches for PSC 3x &7x

Indication systems for PSC Fuse sizes 30 to 73

MS 3V...



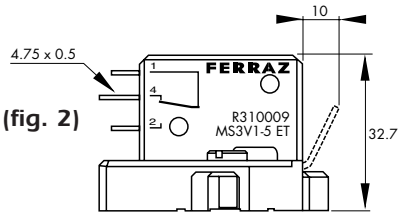
(fig. 1)



These patented indication systems are exclusively hand resettable.

Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
30, 31	MS 3V 1-5 (fig.1)	X310014	Standard NO-NC	34	3 pieces	MS3 V1-5
	MS 3V 1-5 UR	Y310038				MS3 V1-5UR
	MS 3V 1-5 BS (3)	K310013	Low level NO-NC	34	3 pieces	MS3-V1-5BS
32, 33	MS 3V 1-9 BS (4)	P310011	Double pole Low level	44	3 pieces	MS3V1-9BS
	MS 3V 1-5 ET (fig.2)	S310009	Low level NO-NC IP 50 (9)	34	3 pieces	MS3V1-5 ETANCHE

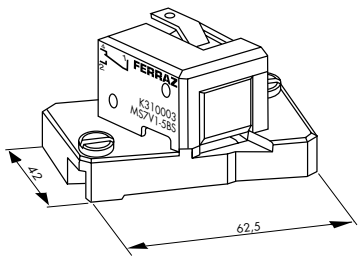
(3) Same as fig.1
(4) Same dimensions as figure 1 but with 2 microswitches side by side
(9) Watertightness class



(fig. 2)

MS 7V...

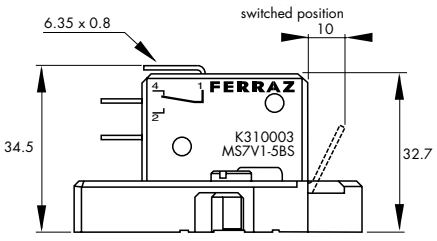
Fuse size	Designation	Ref. Number	Indication style	Weight (g)	Pack.	Catalog Number
70, 71	MS 7V 1-5 (fig.5)	J310002	Standard NO-NC	45	3 pieces	MS7 V1-5
	MS 7V 1-5 UR	Z310039				MS7 V1-5UR
	MS 7V 1-5 BS (3)	K310003	Low level NO-NC	45	3 pieces	MS7-V1-5BS
72, 73	MS 7V 1-9 BS (4)	P310007	Double pole Low level	55	3 pieces	MS7V1-9BS
	MS 7V 1-5 ET (fig.6)	S310010	Low level NO-NC IP 50 (9)	55	3 pieces	MS7V1-5 ETANCHE

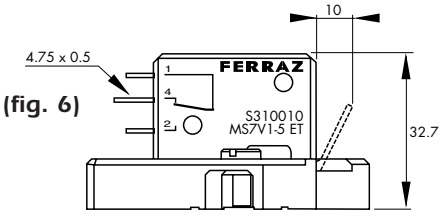


(fig. 5)

(7) Same as fig. 5
(8) Same dimensions as figure 5 but with 2 microswitches side by side
(9) Watertightness class

Warning: Microswitch systems exclusively designed for FERRAZ SHAWMUT PSC fuses fitted with a patented trip-indicator, saving use of EDV.





(fig. 6)

Protistor® Square-body Fuses
PSC aR sizes 7x - 650 V to 1300 VAC
Metric-studs

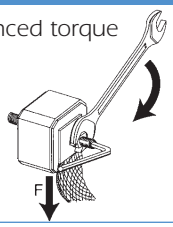
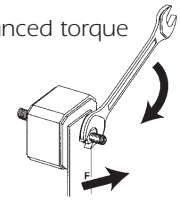
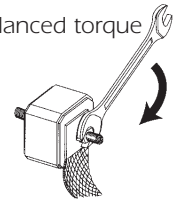
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M112x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Main characteristics





Ferraz Shawmut 1500 V PSC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment. These square body fuse-links are available in three different body sizes, each size having four world-wide acceptable mounting styles. The different mounting styles and body sizes along with a broad range of ampere ratings allow greatest flexibility in equipment design.
The Ferraz Shawmut PSC fuses have been engineered to provide state-of-the-art protection for SCR's, diodes, thyristors, GTO's and IGBT devices. They have pure silver die-cut elements embedded in solidified sand which helps control arcing characteristics for low I^2t and high breaking capacity. All contact surfaces are silver plated and all hardware is non-magnetic.
All fuse links are equipped with a low voltage trip-indicator. This trip-indicator can operate a field mountable microswitch which is easily mounted directly on to the fuse even while in service.

Highlights

- Extremely Fast Acting
- Current Limiting
- Very Low I^2t
- Worldwide Acceptability
- Superior Cycling Ability

Applications

Protection of rectifiers, inventers, DC drives, UPS Systems, reduced voltage motor starters, and other equipment in globally accepted applications

Ratings

AC: 100 - 1500A
1500 VAC
200 KA IR
DC: Consult us

Approvals

C: Tested to IEC 60269.4 at UN +10 %

Features/Benefits

Choice of mounting styles gives wide choice for equipment design
Broad range of ampere ratings in a given body size for design flexibility
IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Main characteristics

Voltage (V)	Size	Type	Rating (A)	Maximum I²t under 1500V (kA²S)	Power losses in watts				Breaking capacities kA
					End contacts		Blades		
					0,8 In	In	0,8 In	In	
1 500 V	91	URF	100	10	18,5	35	18,5	35	1 500 V 200 kA
		URF	125	15	23	43	23	43	
		URF	160	24,5	29	55	29	55	
		URF	180	32,5	33	62	33	63	
		URG	200	50	27,5	52	28	53,5	
		URK	225	78	31	58,5	31	59	
		URH	250	246	25	47	25	47	
		URH	315	384	31	59	31	59	
		URH	350	466	35	66	35	66	
	92	URF	200	40	36,5	69	37,5	71	
		URG	250	84	37,5	73	39	76	
		URK	315	144	46	91	46,5	95	
		URK	350	200	51	101	52	106	
		URH	400	669	41,5	83	44	90	
		URH	500	983	50,5	101	53,5	109	
		URH	550	1 190	57,5	115	61	124	
	93	URF	250	60	48	95	49,5	98	
		URF	315	94	61	120	62	123	
		URF	350	135	67	133	69	137	
		URG	375	185	62	125	64,5	130	
		URK	400	240	60	122	61,5	128	
		URK	450	305	67	137	69	144	
		URK	500	375	77	158	79	165	
		URH	630	1 570	62,5	125	67	136	
		URJ	700	2 500	67	131	73	143	
		URB	750	3 000	73	143	80	156	
	2X92	URG	500	335	77,5	152			
		URK	630	576	93	190			
		URK	700	800	104	212			
		URH	800	2 680	87	177			
		URH	1 000	3 930	106	216			
		URH	1 100	4 760	120	246			
	2X93	URG	750	740	129	260			
		URK	800	960	122	256			
		URK	900	1 220	138	288			
		URK	1 000	1 500	160	332			
		URH	1 250	6 280	131	268			
		URJ	1 400	10 000	143	280			
		URB	1 500	12 000	148	310			

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Main characteristics





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1500 VAC
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Features/Benefits

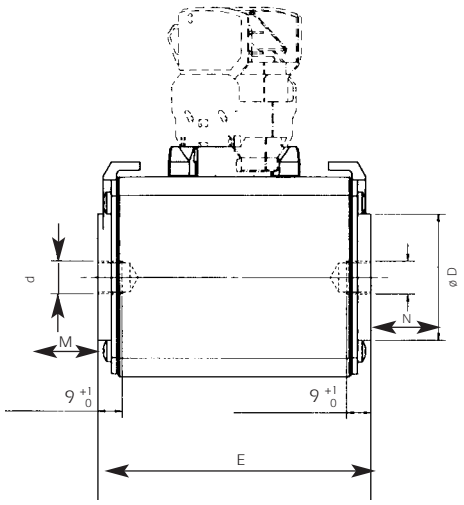
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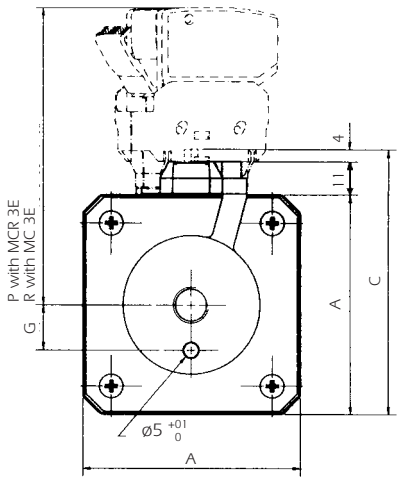
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Main characteristics

Voltage (V)	Size	Type	Rating (A)	Maximum I²t under 1500V (kA²S)	Power losses in watts				Breaking capacities kA
					End contacts		Blades		
					0,8 In	In	0,8 In	In	
1 500 V	91	URF	100	10	18,5	35	18,5	35	1 500 V 200 kA
		URF	125	15	23	43	23	43	
		URF	160	24,5	29	55	29	55	
		URF	180	32,5	33	62	33	63	
		URG	200	50	27,5	52	28	53,5	
		URK	225	78	31	58,5	31	59	
		URH	250	246	25	47	25	47	
		URH	315	384	31	59	31	59	
		URH	350	466	35	66	35	66	
	92	URF	200	40	36,5	69	37,5	71	
		URG	250	84	37,5	73	39	76	
		URK	315	144	46	91	46,5	95	
		URK	350	200	51	101	52	106	
		URH	400	669	41,5	83	44	90	
		URH	500	983	50,5	101	53,5	109	
		URH	550	1 190	57,5	115	61	124	
	93	URF	250	60	48	95	49,5	98	
		URF	315	94	61	120	62	123	
		URF	350	135	67	133	69	137	
		URG	375	185	62	125	64,5	130	
		URK	400	240	60	122	61,5	128	
		URK	450	305	67	137	69	144	
		URK	500	375	77	158	79	165	
		URH	630	1 570	62,5	125	67	136	
		URJ	700	2 500	67	131	73	143	
		URB	750	3 000	73	143	80	156	
	2X92	URG	500	335	77,5	152			
		URK	630	576	93	190			
		URK	700	800	104	212			
		URH	800	2 680	87	177			
		URH	1 000	3 930	106	216			
		URH	1 100	4 760	120	246			
	2X93	URG	750	740	129	260			
		URK	800	960	122	256			
		URK	900	1 220	138	288			
		URK	1 000	1 500	160	332			
		URH	1 250	6 280	131	268			
		URJ	1 400	10 000	143	280			
		URB	1 500	12 000	148	310			

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
French End contacts

Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
91	15 URF 91 TTF 0100	W 076 149	650	1	PC91UF15C100TF
	15 URF 91 TTF 0125	X 076 150			PC91UF15C125TF
	15 URF 91 TTF 0160	Y 076 151			PC91UF15C160TF
	15 URG 91 TTF 0200	A 076 153			PC91UG15C200TF
	15 URK 91 TTF 0225	B 076 154			PC91UK15C225TF
	15 URH 91 TTF 0250	C 076 155			PC91UH15C250TF
	15 URH 91 TTF 0315	D 076 156			PC91UH15C315TF
	15 URH 91 TTF 0350	E 076 157			PC91UH15C350TF
92	15 URF 92 TTF 0200	F 076 158	900	1	PC92UF15C200TF
	15 URG 92 TTF 0250	G 076 159			PC92UG15C250TF
	15 URK 92 TTF 0315	H 076 160			PC92UK15C315TF
	15 URK 92 TTF 0350	J 076 161			PC92UK15C350TF
	15 URH 92 TTF 0400	K 076 162			PC92UH15C400TF
	15 URK 92 TTF 0400	M 076 003			PC92UK15C400TF
	15 URH 92 TTF 0500	V 076 194			PC92UH15C500TF
	15 URH 92 TTF 0550	L 076 163			PC92UH15C550TF
93	15 URF 93 TTF 0230	L 097 829	1250	1	PC93UF15C230TF
	15 URF 93 TTF 0250	M 076 164			PC93UF15C250TF
	15 URF 93 TTF 0315	N 076 165			PC93UF15C315TF
	15 URF 93 TTF 0350	P 076 166			PC93UF15C350TF
	15 URG 93 TTF 0375	Q 076 167			PC93UG15C375TF
	15 URK 93 TTF 0400	R 076 168			PC93UK15C400TF
	15 URK 93 TTF 0450	J 076 092			PC93UK15C450TF
	15 URK 93 TTF 0500	T 076 170			PC93UK15C500TF
	15 URH 93 TTF 0630	V 076 171			PC93UH15C630TF
	15 URJ 93 TTF 0700	W 076 172			PC93UJ15C700TF
	15 URB 93 TTF 0750	X 076 173			PC93UB15C750TF





Microswitches : MC3E1-5N - Ref. D310020
MC3E1-5NBS - Ref. E310021
MC3E1-9NBS - Ref. F310022
MC3E1-5NET - Ref. L310027
For operating voltage 1250 VAC - DC max.

MCR3E1-5N - Ref. G310023
MCR3E1-5NBS - Ref. P310030
MCR3E1-9NBS - Ref. H310024
MCR3E1-5NET - Ref. Q310031
Insulation voltage 2200 VAC - DC

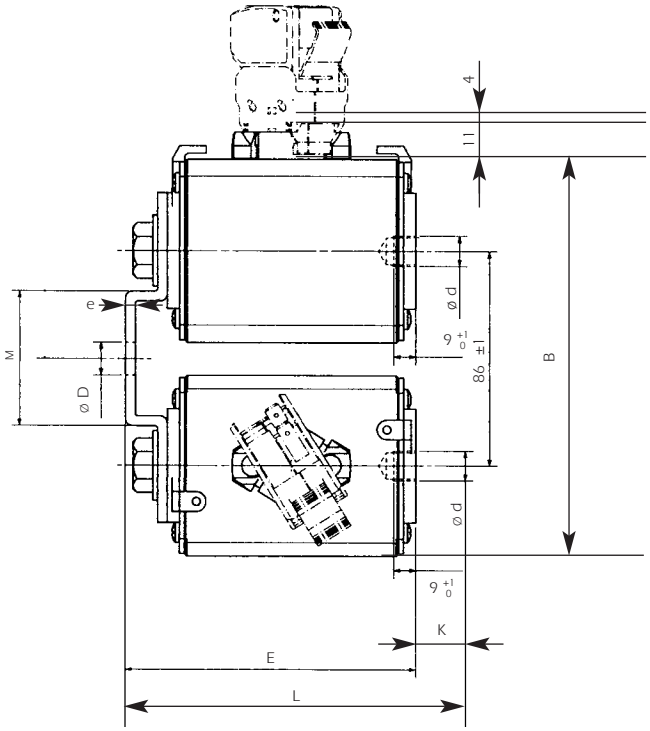
Threaded studs and microswitches supplied separately

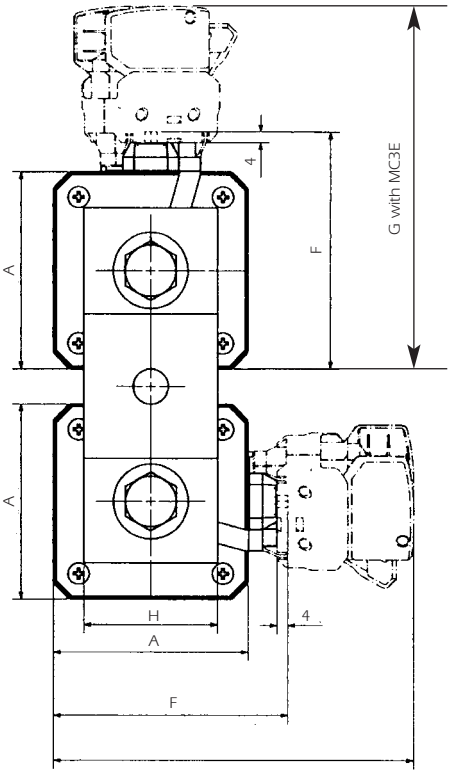
Size	A	C	D	M±	N±	E±1,7	d	G±0,1	P	R
91	51	66	30	19	24	101	M8	9	87,5	72,5
	2"	2,6"	1-3/16"			3,98"		23/64"	3,45"	2,85"
92	60	74	38	19	39	101	M10	15	91,5	76,5
	2-3/8"	2,95"	1-1/2"			3,98"		19/32"	3,6"	3"
93	74,5	88	46	24	39	101	M12	15	98,5	83,5
	2-15/16"	3,5"	1-13/16"			3,98"		19/32"	3,9"	3,29"

Note : dimensions in mm and inches
M and N dimensions are with Metric studs Ref. Number S098801 for size 91 T098802 for size 92 and V098803 for size 93.
Maximum balanced nut tightning torque: 13,5 Nm (M8) - 26 Nm (M10)
46 Nm (M12)

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
French End contacts

Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
2x92	15 URG 292 TTF 0500	Y 076 174	2460	1	PC292UG15C500TF
	15 URK 292 TTF 0630	Z 076 175			PC292UK15C630TF
	15 URK 292 TTF 0700	A 076 176			PC292UK15C700TF
	15 URH 292 TTF 0800	B 076 177			PC292UH15C800TF
	15 URH 292 TTF 1000	C 076 178			PC292UH15C10CTF
	15 URH 292 TTF 1100	D 076 179			PC292UH15C11CTF
2x93	15 URG 293 TTF 0750	P 081 755	3450	1	PC293UG15C750TF
	15 URK 293 TTF 0800	F 076 181			PC293UK15C800TF
	15 URK 293 TTF 0900	G 076 182			PC293UK15C900TF
	15 URK 293 TTF 1000	Q 081 756			PC293UK15C10CTF
	15 URH 293 TTF 1250	R 081 757			PC293UH15C13CTF
	15 URJ 293 TTF 1400	S 081 758			PC293UJ15C14CTF
	15 URB 293 TTF 1500	X 081 854			PC293UB15C15CTF





G with MC 3E

Threaded studs and microswitches supplied separately

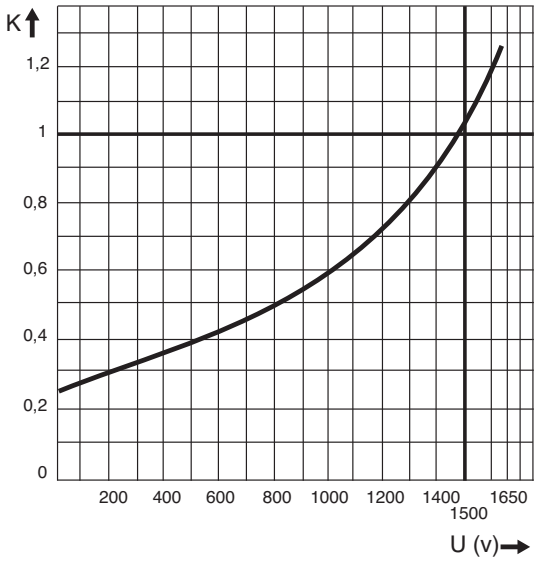
Size	A	B	D	E±1,7	F	G	H	K	d	e	L	M	N
2x92 TT	60	147	11	118	74	106,5	35	40	M10	4	158	48	72
2x93 TT	74,5	164	13	118	88	121	50	40	M12	4	158	54	86

Dimensions in mm
K dimensions are with studs Ref. Number W098804 in size 2x92 and X098805 in size 2x93.
Maximum balanced nut tightning torque: 26 Nm (M10) and 46 Nm - (M12)

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

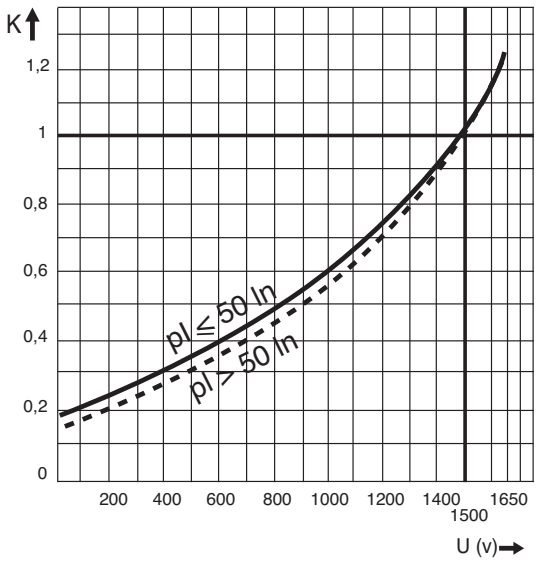
I²t corrective K factor

URF/URG/URK



U: R.M.S. working voltage V
K: I²t corrective coefficient versus U

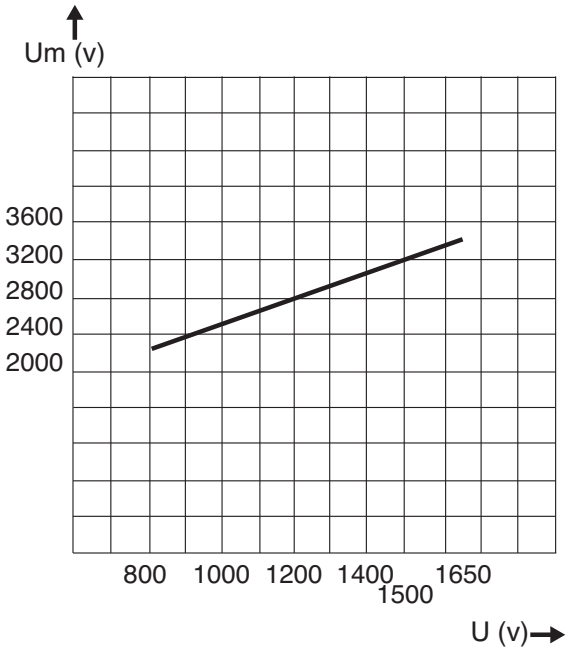
URB/URH/URJ



pI: Prospective Current in the fuse

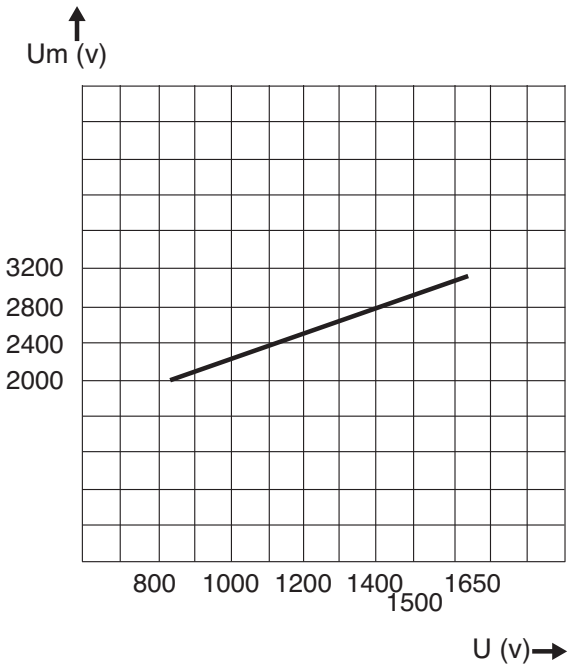
Arc voltage

URF/URG/URK



Um: arc voltage
U: R.M.S. working voltage V

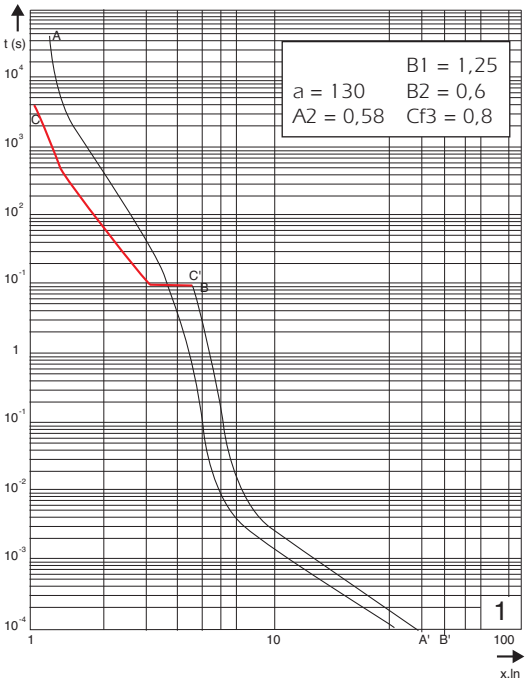
URB/URH/URJ



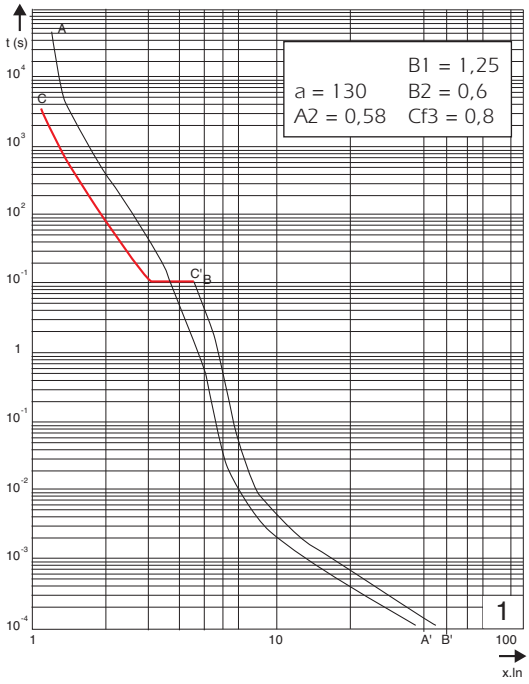
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

Times/Current Characteristics

URF

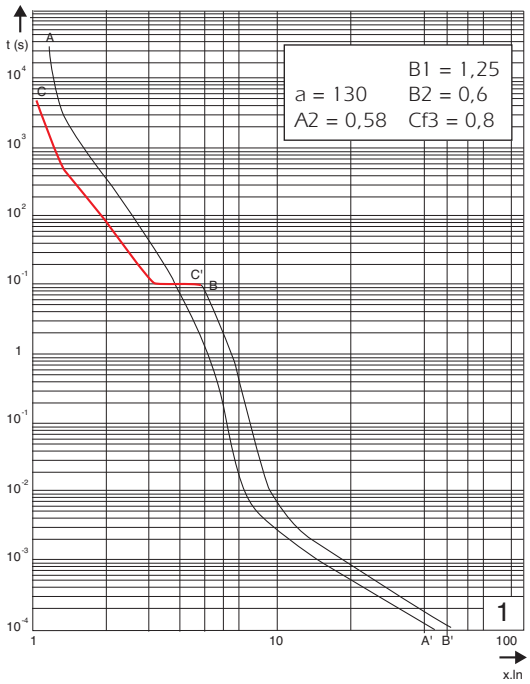


URG



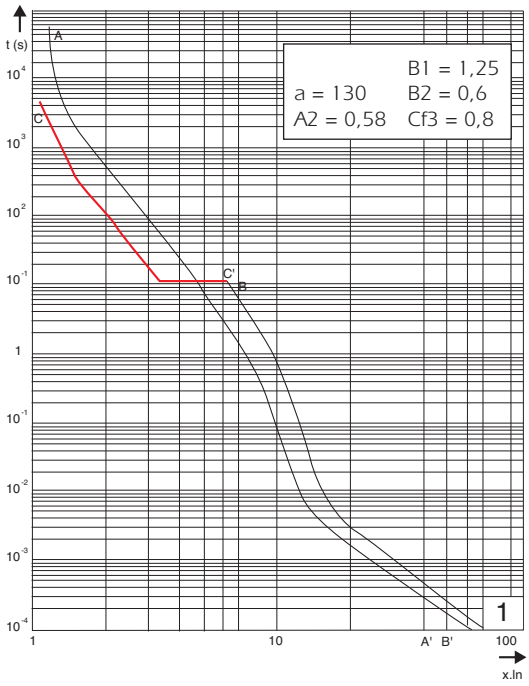
t: actual prearcing time (s) (average value)
x:In: R.M.S. value of prearc current in multiples of rated current

URK

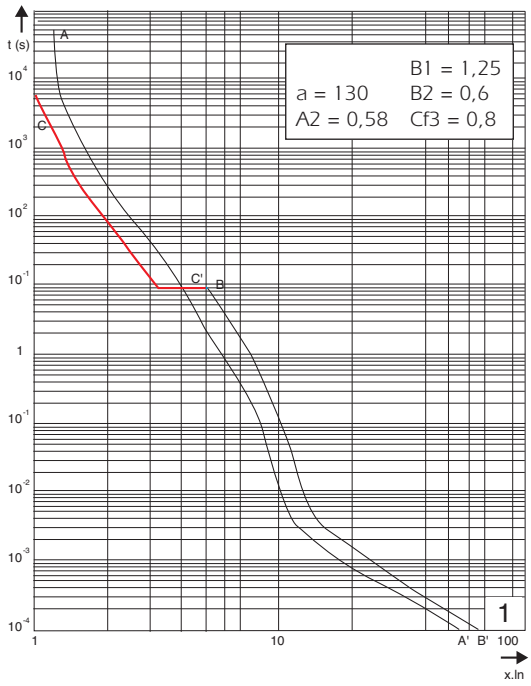


Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

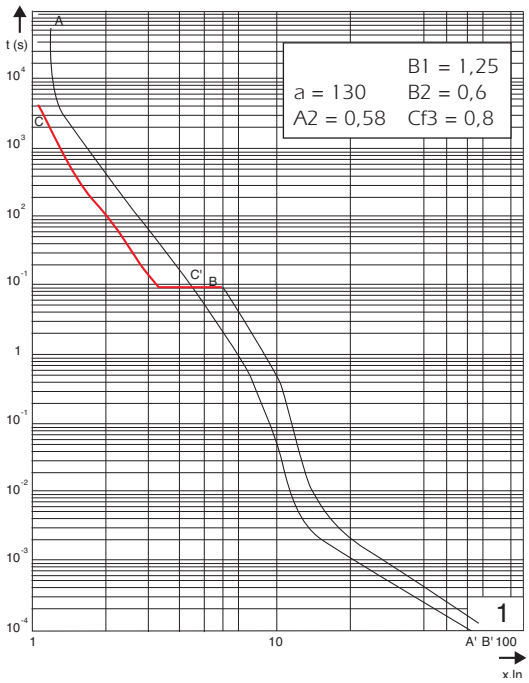
URB



URH



URJ



Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Microswitches for other square-body Protistor®



- REMOTE SIGNALING SYSTEMS FOR FITTING ON FERRAZ SHAWMUT FUSES EQUIPPED WITH MICROSWITCH SUPPORT: all square-body sizes 44 / 8X / 9X / 12X / 17X / 30X and 60X

- PERMANENT INDICATION OF FUSE STATE
  - CONDUCTIVE
  - BLOWN

- MANUAL RESETTING

- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS

- VAPOR AND WATERTIGHT MODEL FOR USE IN CORROSIVE ATMOSPHERE

Main Characteristics

Type	Designation	AC or DC Insulation voltage rating Ui (V)	AC voltage withstand test (*)	Impulse voltage test Uimp1,2/50 µs (**)	Positive operating min.voltage /min.current	Current rating	Interrupting rating					
							Current	Non-inductive circuit			Inductive circuit; L/R = 25ms	
								30V	110V	250V	30V	110V	250V
Standard	MC3E 1-5N	1250V	15 kV	20 kV	20 V 50 mA	5 A	50/60 Hz	10 A	10 A	7 A			6 A
	MCR3E 1-5N	2200	20 kV	30 kV			DC	5 A	0.5 A			1,6 A	0,3 A
Low level	MC3E 1-5NBS MC3E 1-9NBS	1250 V	15 kV	20 kV	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A
	MCR3E 1-5NBS MCR3E 1-9NBS	2200 V	20 kV (1) 23 kV (2)	30 kV			DC	3 A	0.5 A	0,25A	3 A	0,2 A	0.1 A
	MC2R3E 1-5NBS MC2R3E 1-9NBS	6000 V	24 kV (1) 26 kV (2) 32 kV (3)	40 kV									
Watertight IP 50	MC3E 1-5NET	1250 V	11 kV	16 kV	10 V 10 mA	3 A	50 Hz		3 A	3 A		1 A	1 A
	MCR3E 1-5NET	2200 V	20 kV (1)	30 kV									
	MC2R3E 1-5NET	6000 V	24 kV (2)	40 kV			DC		0.5 A			0,2 A	

Catalog Numbering system: MC3E 1-5 single pole microswitch - MC3E 1-9 double pole microswitch - MCR, MC2R reinforced insulation microswitch.

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air).

** Between power circuit and microswitch terminals Uimp: impulse voltage according to IEC 947-1.

*** Between power circuit and microswitch terminals

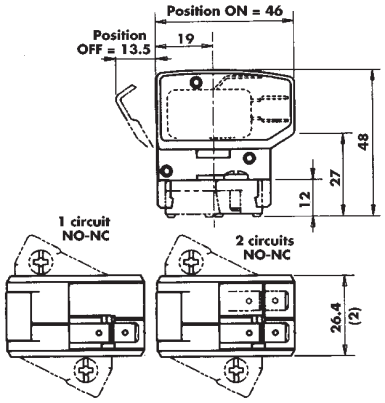
(1) fitting sizes 44 - 70 - 71 - 72 - 73 - 83 - 84 fuses.

(2) fitting sizes 91 - 92 - 93 - 94 -120 - 121 - 122 - 123 - 124 fuses.

(3) fitting sizes 171 - 172 - 173 - 174 - 300 - 302 - 600 - 602 fuses.

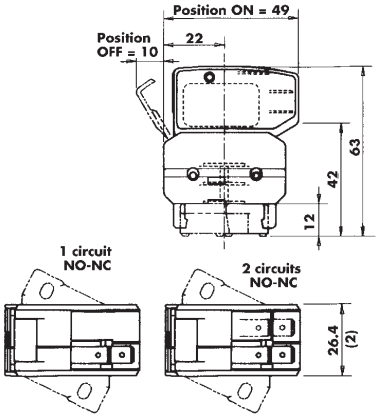
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Microswitches for other square-body Protistor®

Remote signaling with 1250 V AC/DC insulation voltage



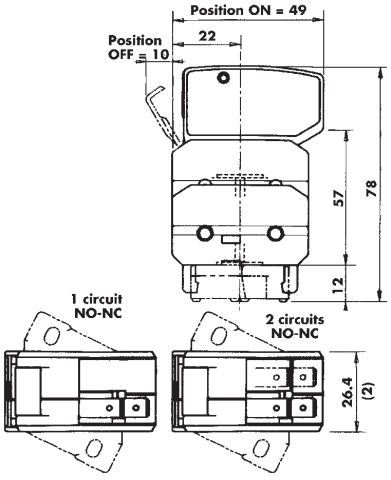
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MC3E 1-5N	D310020	39.5	3	MC3E1-5N
1	low level	MC3E 1-5NBS	E310021	39.5	3	MC3E1-5NBS
2	low level	MC3E 1-9NBS	F310022	45.7	3	MC3E1-9NBS
1	watertight	MC3E 1-5NET	L310027	40.2	3	MC3E1-5N ETANCHE

Remote signaling with insulation voltage up to 2200 V AC/DC



Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MCR3E 1-5N	G310023	51.7	1	MCR3E1-5N
1	low level	MCR3E 1-5NBS	P310030	51.7	1	MCR3E1-5NBS
2	low level	MCR3E 1-9NBS	H310024	58.0	1	MCR3E1-9NBS
1	watertight	MCR3E 1-5NET	Q310031	52.5	1	MCR3E1-5N ETANCHE

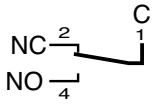
Remote signaling with insulation voltage up to 6000 V AC/DC



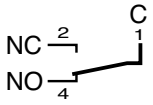
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	low level	MC2R3E 1-5NBS	J310025	64.0	1	MC2R3E1-5NBS
1	watertight	MC2R3E 1-5NET	N310029	64.8	1	MC2R3E1-5NET
2	low level	MC2R3E 1-9NBS	K310026	70.3	1	MC2R3E1-9NBS

NOTE (2): The 26.4 dimension is the same with 1 or 2 separated circuits NO-NC.

Electrical diagram of each microswitch circuit



Non-blown fluse
Microswitch ON



Blown fluse
Microswitch OFF

All of these signalling systems are hand resettable and fitted with silver-plated 3-terminal microswitch C, NO and NC.
The C terminal is on the top and connection is made via 6.35 mm clips except for watertight models whose clips are 4.8 mm wide.

Tests with sine vibrations carried out at ambient with scanning of the three main holder axes.
Spectrum: 1st segment (2 to 16 Hz) constant trip x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration g = 5 g peak.
Exponential scanning speed : 1 octave per minute.
Duration: 2 hours per axis.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Metric-studs

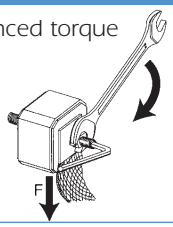
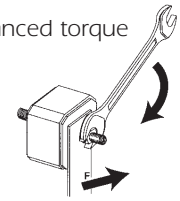
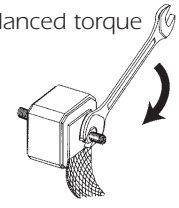
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STUM8x30M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STUM10x30M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STUM12x35M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STUM10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STUM12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Main characteristics





Ferraz Shawmut 1500 V PSC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment. These square body fuse-links are available in three different body sizes, each size having four world-wide acceptable mounting styles. The different mounting styles and body sizes along with a broad range of ampere ratings allow greatest flexibility in equipment design.
The Ferraz Shawmut PSC fuses have been engineered to provide state-of-the-art protection for SCR's, diodes, thyristors, GTO's and IGBT devices. They have pure silver die-cut elements embedded in solidified sand which helps control arcing characteristics for low I^2t and high breaking capacity. All contact surfaces are silver plated and all hardware is non-magnetic.
All fuse links are equipped with a low voltage trip-indicator. This trip-indicator can operate a field mountable microswitch which is easily mounted directly on to the fuse even while in service.

Highlights

- Extremely Fast Acting
- Current Limiting
- Very Low I^2t
- Worldwide Acceptability
- Superior Cycling Ability

Applications

Protection of rectifiers, inventers, DC drives, UPS Systems, reduced voltage motor starters, and other equipment in globally accepted applications

Ratings

AC: 100 - 1500A
1500 VAC
200 KA IR
DC: Consult us

Approvals

C: Tested to IEC 60269.4 at UN +10 %

Features/Benefits

Choice of mounting styles gives wide choice for equipment design
Broad range of ampere ratings in a given body size for design flexibility
IEC 60269-4 compliance for fuses for worldwide semiconductor applications

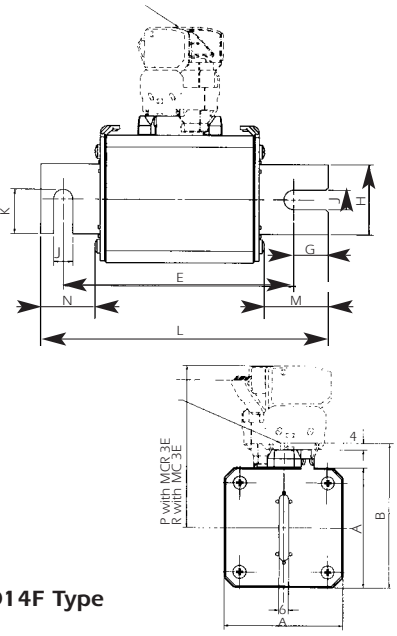
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Main characteristics

Voltage (V)	Size	Type	Rating (A)	Maximum I²t under 1500V (kA²S)	Power losses in watts				Breaking capacities kA
					End contacts		Blades		
					0,8 In	In	0,8 In	In	
1 500 V	91	URF	100	10	18,5	35	18,5	35	1 500 V 200 kA
		URF	125	15	23	43	23	43	
		URF	160	24,5	29	55	29	55	
		URF	180	32,5	33	62	33	63	
		URG	200	50	27,5	52	28	53,5	
		URK	225	78	31	58,5	31	59	
		URH	250	246	25	47	25	47	
		URH	315	384	31	59	31	59	
		URH	350	466	35	66	35	66	
	92	URF	200	40	36,5	69	37,5	71	
		URG	250	84	37,5	73	39	76	
		URK	315	144	46	91	46,5	95	
		URK	350	200	51	101	52	106	
		URH	400	669	41,5	83	44	90	
		URH	500	983	50,5	101	53,5	109	
		URH	550	1 190	57,5	115	61	124	
	93	URF	250	60	48	95	49,5	98	
		URF	315	94	61	120	62	123	
		URF	350	135	67	133	69	137	
		URG	375	185	62	125	64,5	130	
		URK	400	240	60	122	61,5	128	
		URK	450	305	67	137	69	144	
		URK	500	375	77	158	79	165	
		URH	630	1 570	62,5	125	67	136	
		URJ	700	2 500	67	131	73	143	
		URB	750	3 000	73	143	80	156	
	2X92	URG	500	335	77,5	152			
		URK	630	576	93	190			
		URK	700	800	104	212			
		URH	800	2 680	87	177			
		URH	1 000	3 930	106	216			
		URH	1 100	4 760	120	246			
	2X93	URG	750	740	129	260			
		URK	800	960	122	256			
		URK	900	1 220	138	288			
		URK	1 000	1 500	160	332			
		URH	1 250	6 280	131	268			
		URJ	1 400	10 000	143	280			
		URB	1 500	12 000	148	310			

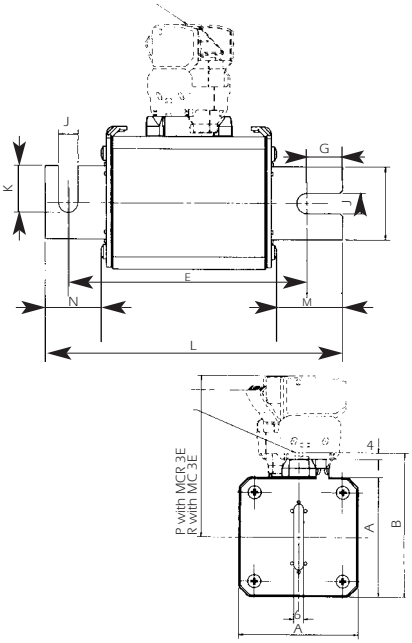
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
German Blades (DIN 140)

Size	Designation	Reference Number	Weight (g)	Packaging	Catalog Number
91	15 URF 91 D14F 0100	Z 076 060	800	1	PC91UH15C100D4F
	15 URF 91 D14F 0125	A 076 061			PC91UF15C125D4F
	15 URF 91 D14F 0160	B 076 062			PC91UF15C160D4F
	15 URF 91 D14F 0180	C 076 063			PC91UF15C180D4F
	15 URG 91 D14F 0200	D 076 064			PC91UG15C200D4F
	15 URH 91 D14F 0250	T 076 101			PC91UH15C250D4F
	15 URH 91 D14F 0315	V 076 102			PC91UH15C315D4F
	15 URH 91 D14F 0350	W 076 103			PC91UH15C350D4F
	15 URF 91 D14A 0100	V 221 232*			PC91UF15C100D4A
	15 URF 91 D14A 0125	M 210 737*			PC91UF15C125D4A
	15 URF 91 D14A 0160	L 077 037*			PC91UF15C160D4A
	15 URF 91 D14A 0180	-			
	15 URG 91 D14A 0200	A 221 214*			PC91UG15C200D4A
	15 URH 91 D14A 0250	D 221 309*			PC91UH15C250D4A
	15 URH 91 D14A 0315	-			
	15 URH 91 D14A 0350	-			
92	15 URF 92 D14F 0200	F 076 066	1100	1	PC92UF15C200D4F
	15 URG 92 D14F 0250	G 076 067			PC92UG15C250D4F
	15 URK 92 D14F 0315	H 076 068			PC92UK15C315D4F
	15 URK 92 D14F 0350	J 076 069			PC92UK15C350D4F
	15 URH 92 D14F 0400	X 076 104			PC92UH15C400D4F
	15 URH 92 D14F 0500	Y 076 105			PC92UH15C500D4F
	15 URH 92 D14F 0550	Z 076 106			PC92UH15C550D4F
	15 URF 92 D14A 0200	-			
	15 URG 92 D14A 0250	-			
	15 URK 92 D14A 0315	C 097 959*			PC92UK15C315D4A
	15 URK 92 D14A 0350	-			
	15 URH 92 D14A 0400	-			
	15 URH 92 D14A 0500	-			
	15 URH 92 D14A 0550	K 078 278*			PC92UH15C550D4A
93	15 URF 93 D14F 0250	K 076 070	1800	1	PC93UF15C250D4F
	15 URF 93 D14F 0315	L 076 071			PC93UF15C315D4F
	15 URF 93 D14F 0350	M 076 072			PC93UF15C350D4F
	15 URG 93 D14F 0375	N 076 073			PC93UG15C375D4F
	15 URK 93 D14F 0400	P 076 074			PC93UK15C400D4F
	15 URK 93 D14F 0450	Q 076 075			PC93UK15C450D4F
	15 URK 93 D14F 0500	R 076 076			PC93UK15C500D4F
	15 URH 93 D14F 0630	A 076 107			PC93UH15C630D4F
	15 URJ 93 D14F 0700	B 076 108			PC93UJ15C700D4F
	15 URB 93 D14F 0750	S 076 123			PC93UB15C750D4F
	15 URF 93 D14A 0250				
	15 URF 93 D14A 0315	-			
	15 URF 93 D14A 0350	-			
	15 URG 93 D14A 0375				
	15 URK 93 D14A 0400	-			
	15 URK 93 D14A 0450	J078277			PC93UK15C450D4A
	15 URK 93 D14A 0500				

*** D14A Type**



D14F Type



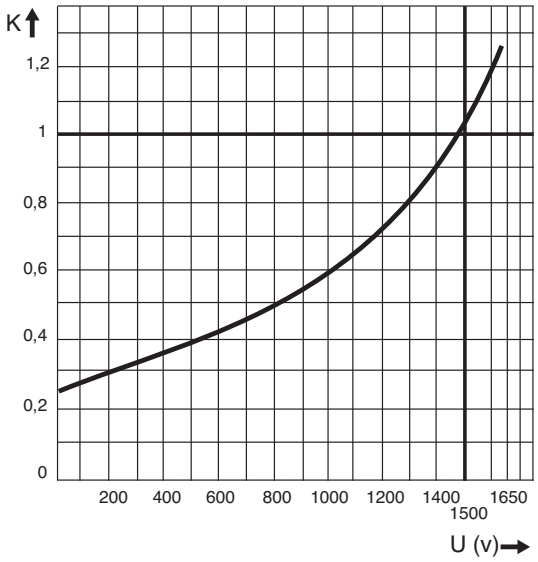
Fuse Size	A	B	E±2	H	J	K	L±2	M	N	P	R
91 DIN 140	51	66	133-145	25	11,1	17,7	166	37,2	31,6	87,5	72,5
92 DIN 140	60	74	133-145	32	11,1	21,5	166	37,2	31,6	91,5	76,5
93 DIN 140	74,5	88	133-145	40	11,1	25,5	166	36,7	31,1	98,3	83,5

For other terminals: "US blades" ; "D17A" ; D17F ; "D21A" ; "D21F" consult us.
Microswitches supplied separately

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

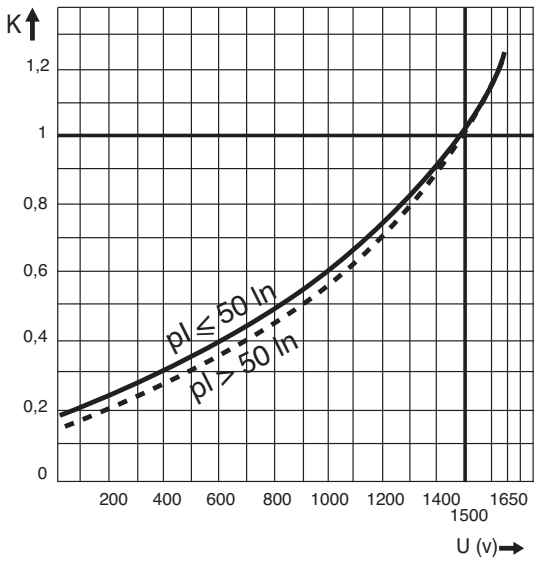
I²t corrective K factor

URF/URG/URK



U: R.M.S. working voltage V
K: I²t corrective coefficient versus U

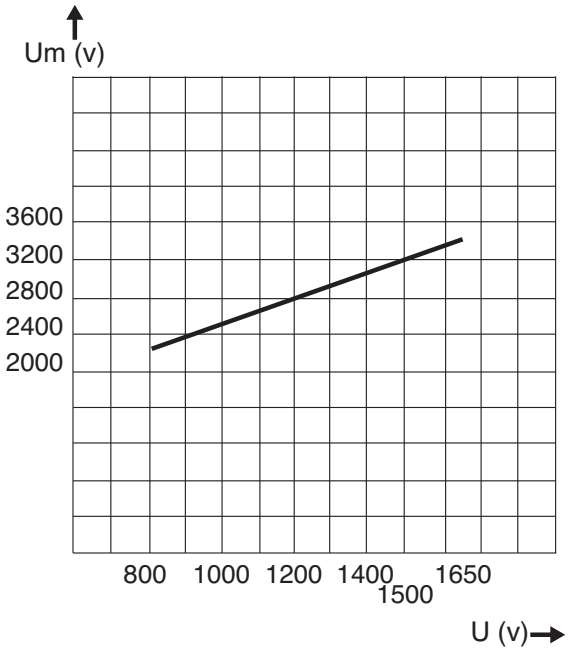
URB/URH/URJ



pI: Prospective Current in the fuse

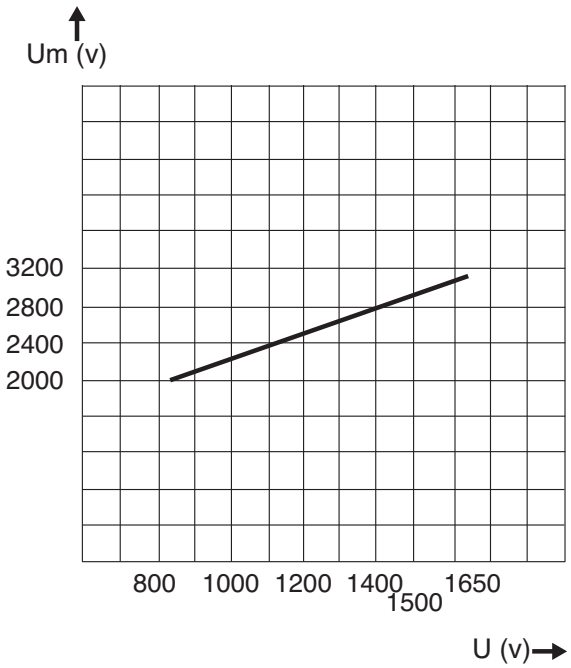
Arc voltage

URF/URG/URK



Um: arc voltage
U: R.M.S. working voltage V

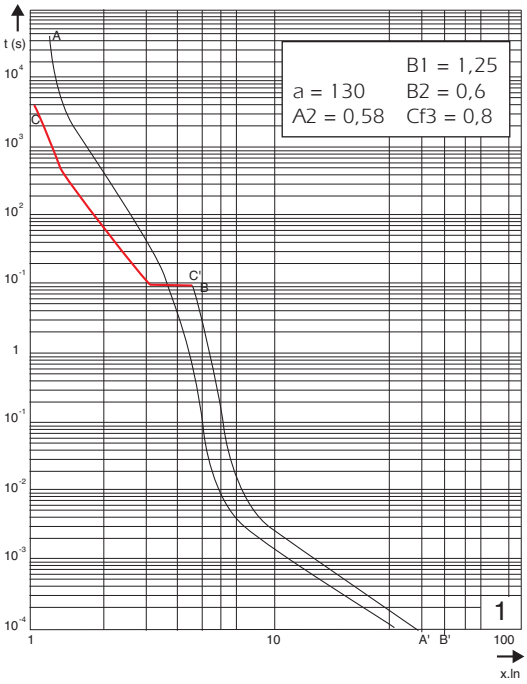
URB/URH/URJ



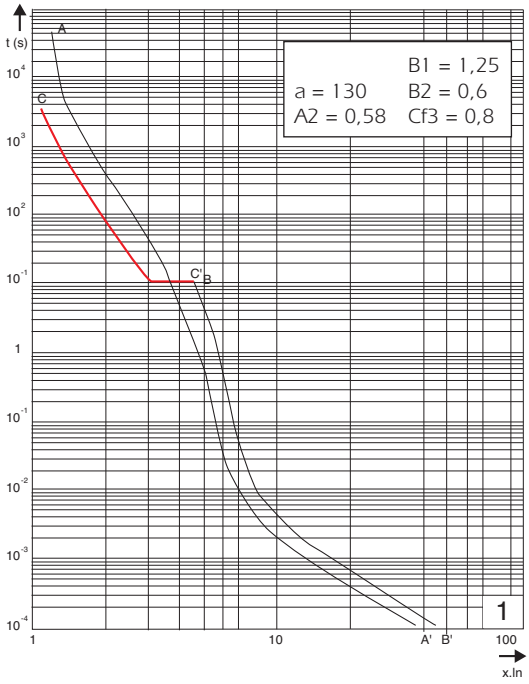
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

Times/Current Characteristics

URF

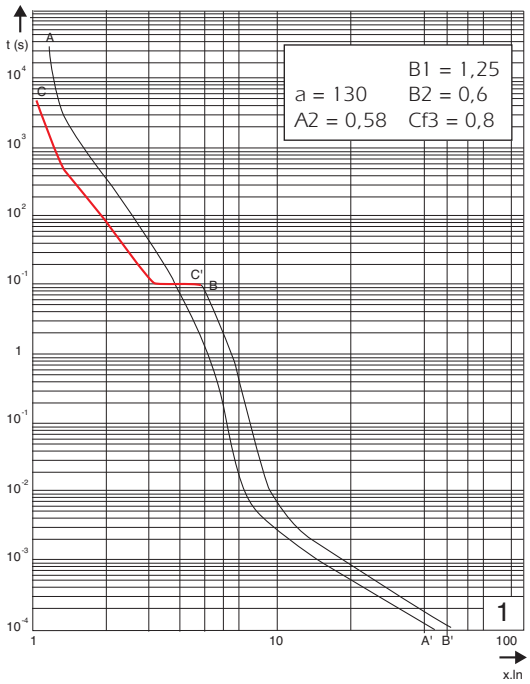


URG



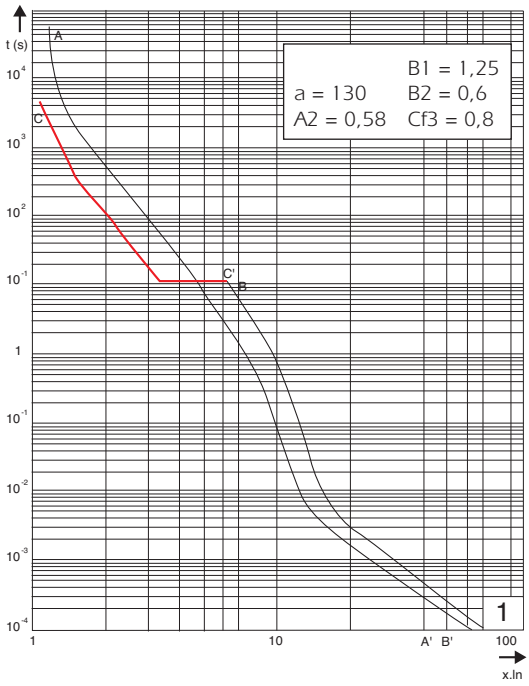
t: actual prearcing time (s) (average value)
x:In: R.M.S. value of prearc current in multiples of rated current

URK

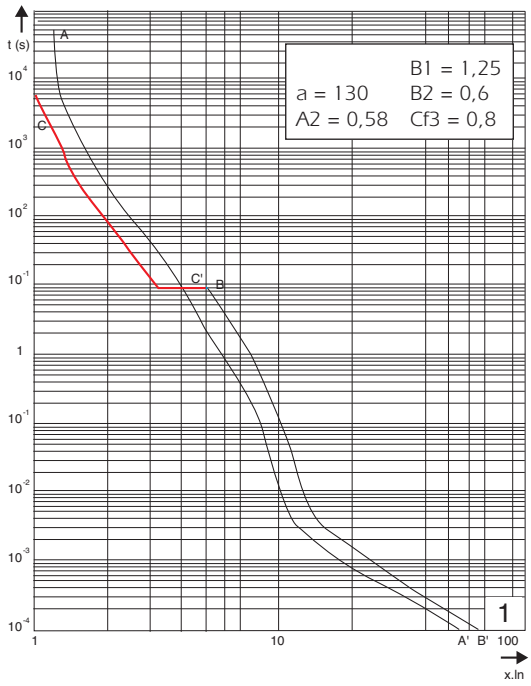


Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

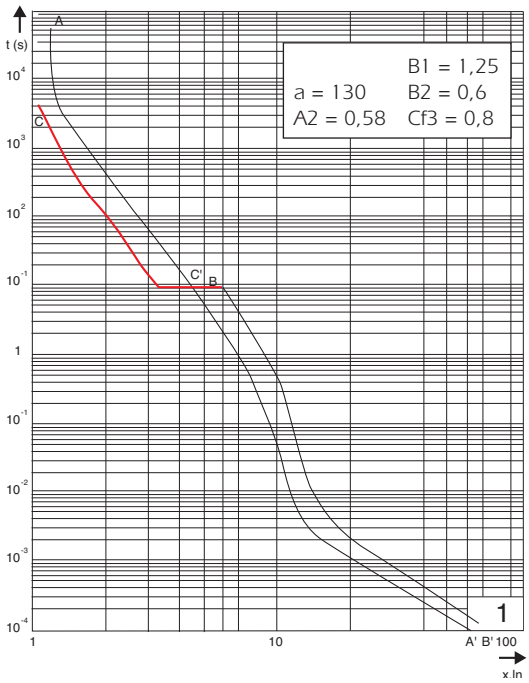
URB



URH



URJ



Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Microswitches for other square-body Protistor®



- REMOTE SIGNALING SYSTEMS FOR FITTING ON FERRAZ SHAWMUT FUSES EQUIPPED WITH MICROSWITCH SUPPORT: all square-body sizes 44 / 8X / 9X / 12X / 17X / 30X and 60X

- PERMANENT INDICATION OF FUSE STATE
  - CONDUCTIVE
  - BLOWN

- MANUAL RESETTING

- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS

- VAPOR AND WATERTIGHT MODEL FOR USE IN CORROSIVE ATMOSPHERE

Main Characteristics

Type	Designation	AC or DC Insulation voltage rating Ui (V)	AC voltage withstand test (*)	Impulse voltage test Uimp1,2/50 µs (**)	Positive operating min.voltage /min.current	Current rating	Interrupting rating					
							Current	Non-inductive circuit			Inductive circuit; L/R = 25ms	
								30V	110V	250V	30V	110V	250V
Standard	MC3E 1-5N	1250V	15 kV	20 kV	20 V 50 mA	5 A	50/60 Hz	10 A	10 A	7 A			6 A
	MCR3E 1-5N	2200	20 kV	30 kV			DC	5 A	0.5 A			1,6 A	0,3 A
Low level	MC3E 1-5NBS MC3E 1-9NBS	1250 V	15 kV	20 kV	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A
	MCR3E 1-5NBS MCR3E 1-9NBS	2200 V	20 kV (1) 23 kV (2)	30 kV			DC	3 A	0.5 A	0,25A	3 A	0,2 A	0.1 A
	MC2R3E 1-5NBS MC2R3E 1-9NBS	6000 V	24 kV (1) 26 kV (2) 32 kV (3)	40 kV									
Watertight IP 50	MC3E 1-5NET	1250 V	11 kV	16 kV	10 V 10 mA	3 A	50 Hz		3 A	3 A		1 A	1 A
	MCR3E 1-5NET	2200 V	20 kV (1)	30 kV									
	MC2R3E 1-5NET	6000 V	24 kV (2)	40 kV			DC		0.5 A			0,2 A	

Catalog Numbering system: MC3E 1-5 single pole microswitch - MC3E 1-9 double pole microswitch - MCR, MC2R reinforced insulation microswitch.

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air).

** Between power circuit and microswitch terminals Uimp: impulse voltage according to IEC 947-1.

*** Between power circuit and microswitch terminals

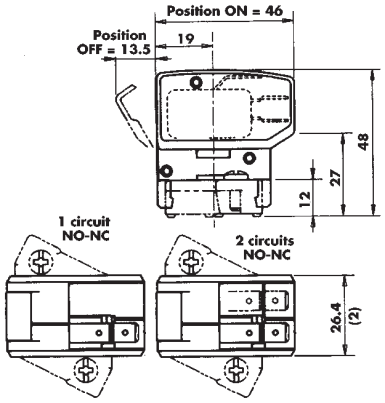
(1) fitting sizes 44 - 70 - 71 - 72 - 73 - 83 - 84 fuses.

(2) fitting sizes 91 - 92 - 93 - 94 -120 - 121 - 122 - 123 - 124 fuses.

(3) fitting sizes 171 - 172 - 173 - 174 - 300 - 302 - 600 - 602 fuses.

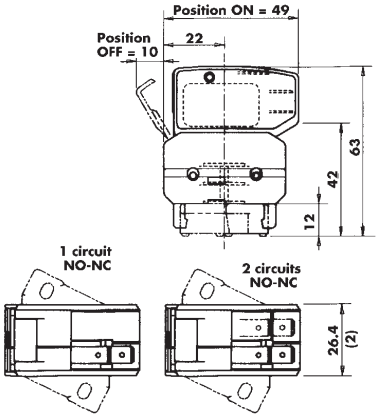
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Microswitches for other square-body Protistor®

Remote signaling with 1250 V AC/DC insulation voltage



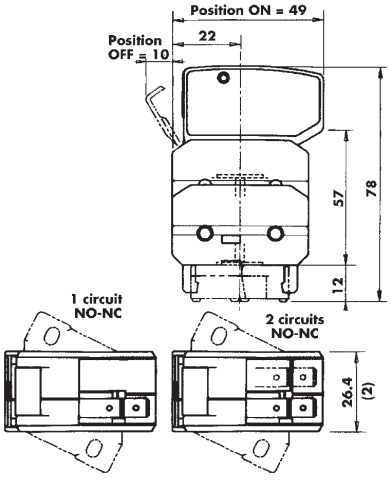
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MC3E 1-5N	D310020	39.5	3	MC3E1-5N
1	low level	MC3E 1-5NBS	E310021	39.5	3	MC3E1-5NBS
2	low level	MC3E 1-9NBS	F310022	45.7	3	MC3E1-9NBS
1	watertight	MC3E 1-5NET	L310027	40.2	3	MC3E1-5N ETANCHE

Remote signaling with insulation voltage up to 2200 V AC/DC



Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MCR3E 1-5N	G310023	51.7	1	MCR3E1-5N
1	low level	MCR3E 1-5NBS	P310030	51.7	1	MCR3E1-5NBS
2	low level	MCR3E 1-9NBS	H310024	58.0	1	MCR3E1-9NBS
1	watertight	MCR3E 1-5NET	Q310031	52.5	1	MCR3E1-5N ETANCHE

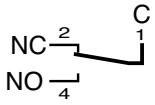
Remote signaling with insulation voltage up to 6000 V AC/DC



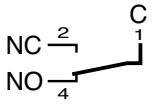
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	low level	MC2R3E 1-5NBS	J310025	64.0	1	MC2R3E1-5NBS
1	watertight	MC2R3E 1-5NET	N310029	64.8	1	MC2R3E1-5NET
2	low level	MC2R3E 1-9NBS	K310026	70.3	1	MC2R3E1-9NBS

NOTE (2): The 26.4 dimension is the same with 1 or 2 separated circuits NO-NC.

Electrical diagram of each microswitch circuit



Non-blown fluse
Microswitch ON



Blown fluse
Microswitch OFF

All of these signalling systems are hand resettable and fitted with silver-plated 3-terminal microswitch C, NO and NC.
The C terminal is on the top and connection is made via 6.35 mm clips except for watertight models whose clips are 4.8 mm wide.

Tests with sine vibrations carried out at ambient with scanning of the three main holder axes.
Spectrum: 1st segment (2 to 16 Hz) constant trip x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration g = 5 g peak.
Exponential scanning speed : 1 octave per minute.
Duration: 2 hours per axis.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Metric-studs

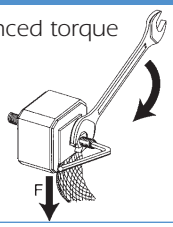
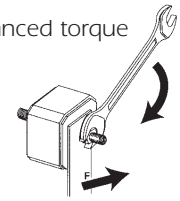
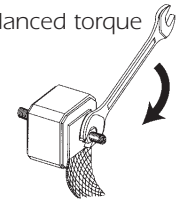
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STUM8x30M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STUM10x30M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STUM12x35M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STUM10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STUM12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

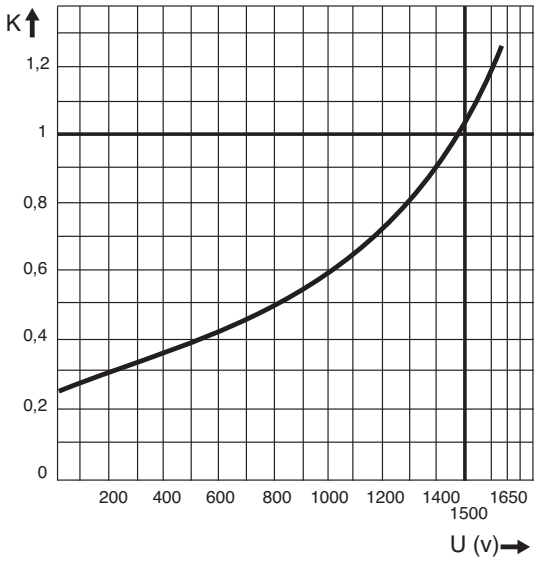
Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

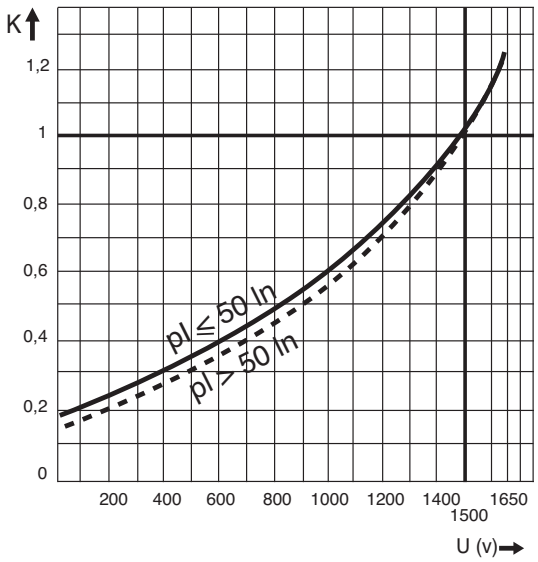
I²t corrective K factor

URF/URG/URK



U: R.M.S. working voltage V
K: I²t corrective coefficient versus U

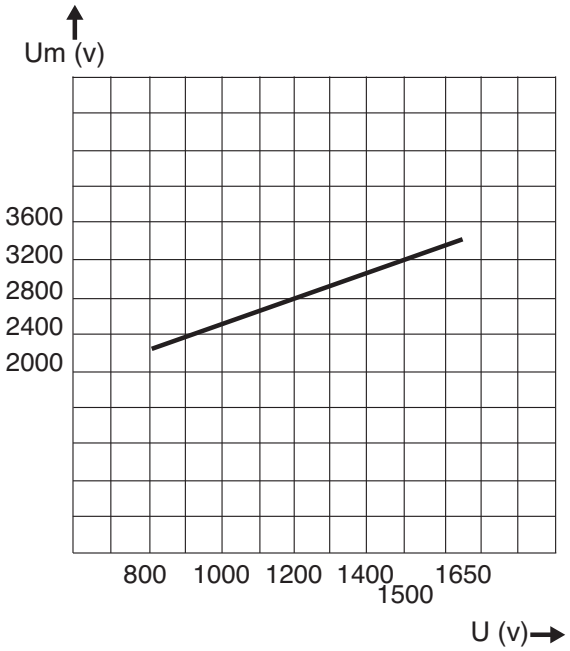
URB/URH/URJ



pI: Prospective Current in the fuse

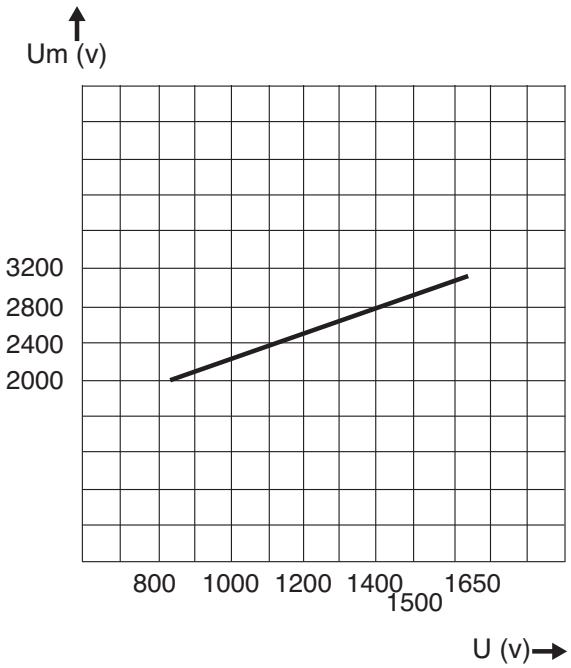
Arc voltage

URF/URG/URK



Um: arc voltage
U: R.M.S. working voltage V

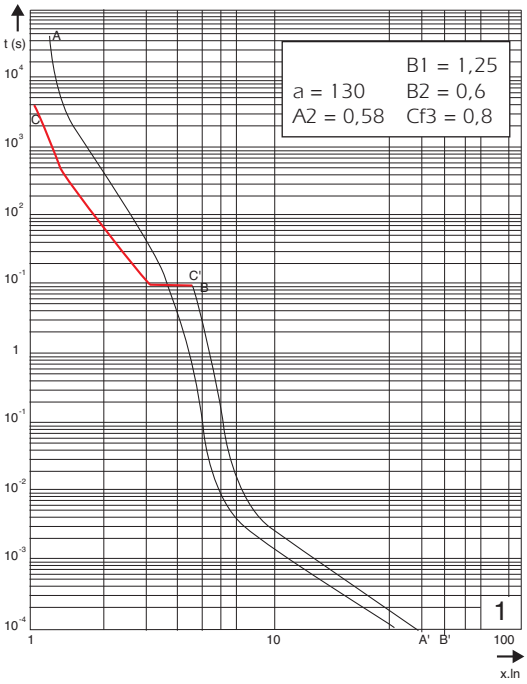
URB/URH/URJ



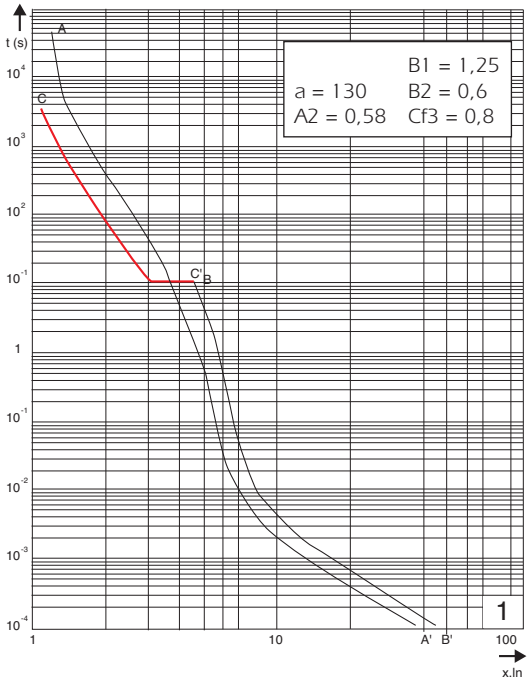
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

Times/Current Characteristics

URF

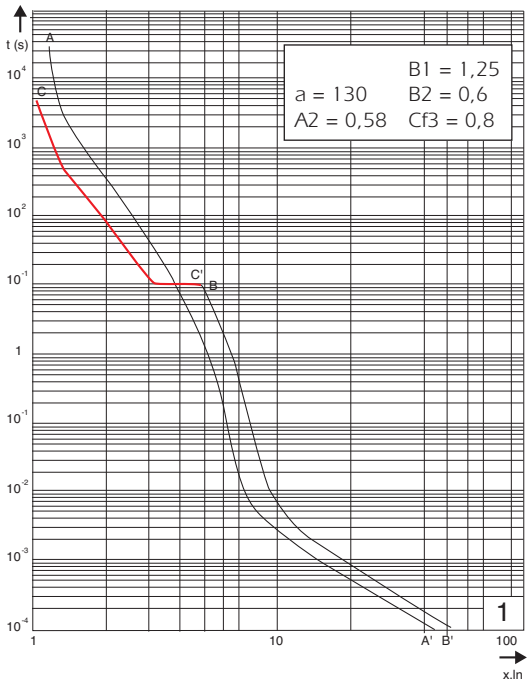


URG



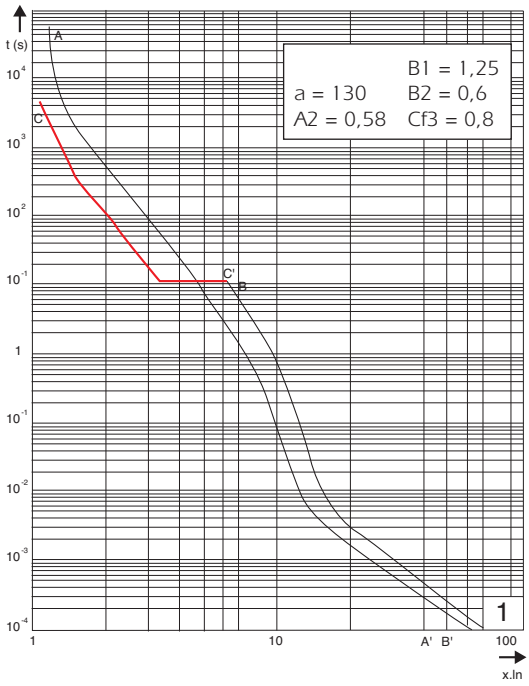
t: actual prearcing time (s) (average value)
x:In: R.M.S. value of prearc current in multiples of rated current

URK

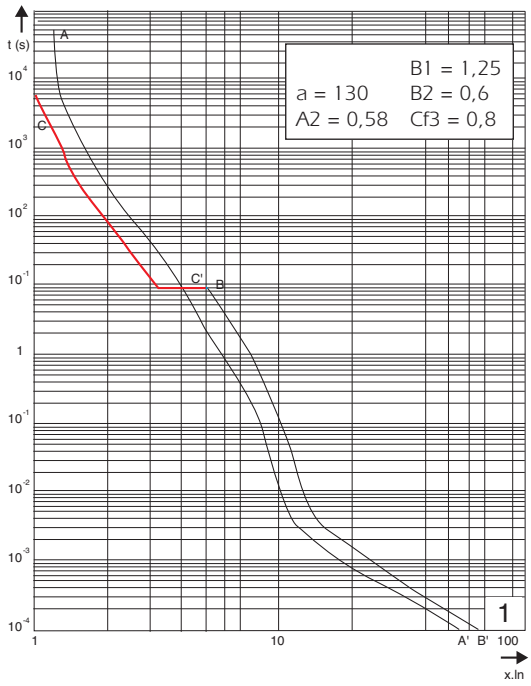


Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

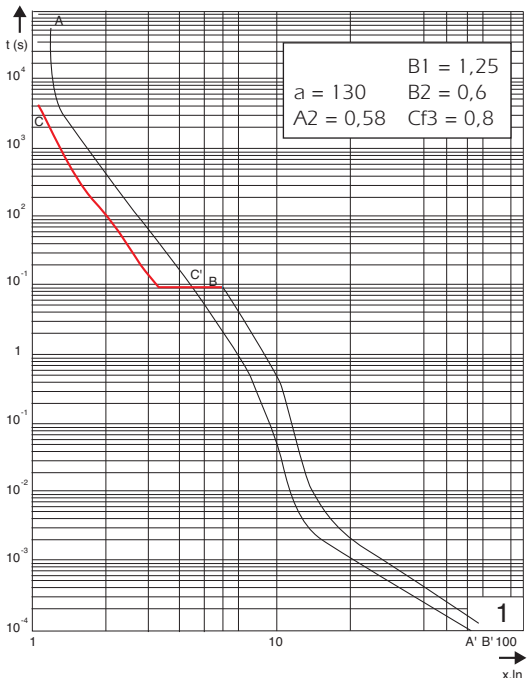
URB



URH



URJ

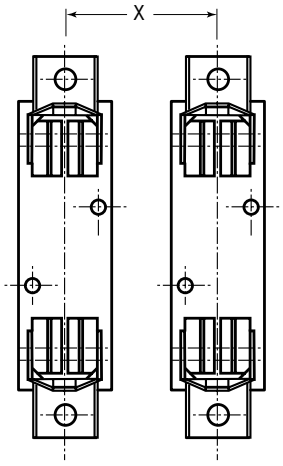


Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Fuses bases for German Blades (DIN 140)

Fuse Holders

For D14F size 91 use fuse holder SE 43-91 Ref Number X226179
For D14F sizes 92 and 93 use fuse holder SE 43 92 Ref Number Y226180
For D14F size 93 use fuse holder SF 50-93 Ref X209090
These fuse holders are usable with D14F fuses and MC3E1-. N.microswitches.

For D14A size 91 use fuse holder SE 43-91 Ref Number X226179
For D14A size 92 and 93 use fuse holder SE 43-92 Ref Number Y226180
For D14A size 93 use fuse holder SF 50-93 Ref. X209090
These fuses D14A are usable with all MC3E1-.N.and MCR 3E1-.N microswitches on all fuses holders.

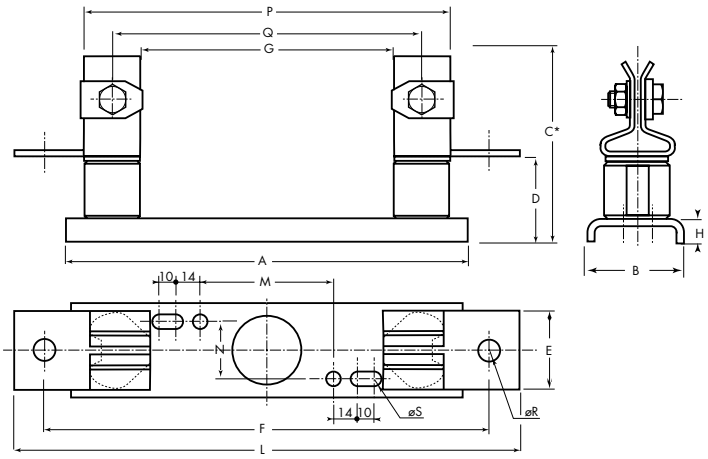


Distance "X" between poles axes (without partition)				
Fuses bases		Operating Voltage		
		1000 V	1250 V	1500 V
SE 43-91	X226179	71	76	79
SE 43-92	Y226180	80	85	88
SF 50-93	X209090	94,5	99,5	102,5

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Fuses bases for German Blades (DIN 140)

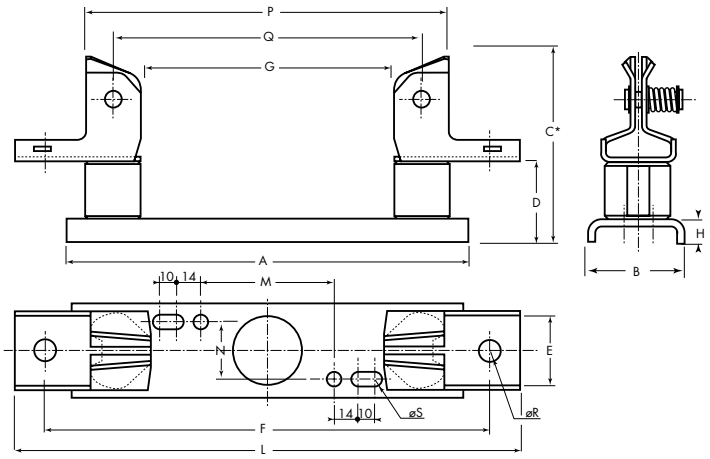
"SF" BOLTED TIGHTENING (SF 50-93)

fig. 1



"SE" ELASTIC TIGHTENING (SE 43-91 ; SE 43-92)

fig. 2



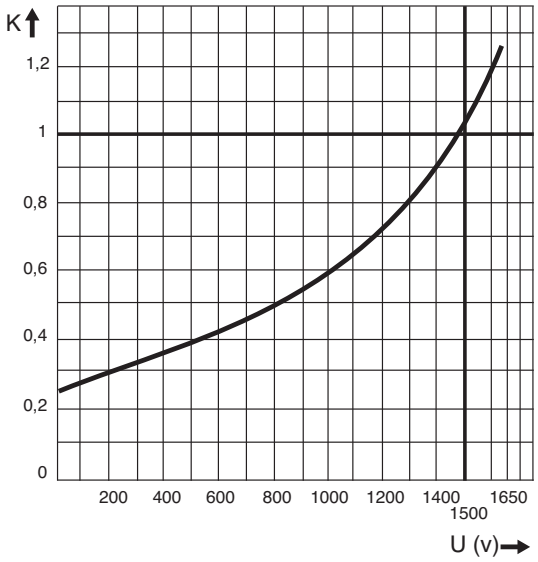
Reference Number	Designation	Drawing#	Catalog Number	A	B	C*	D	E	F	G	H	L	M	N	P	Q	ØR	ØS
X226179	SE 43-91	2	SE43-91	174	42	121	53	32	209	111	10	241	86	28	161	136	10,5	5,5
Y226180	SE 43-92	2	SE43-92	176	54	131	55	42	230	106	15	266	23	35	176	141	12,5	8,5
X209090	SF 50-93	1	SF50-93	200	60	176	70	40	236	106	15	276	47	35	176	141	18	8,5

* C are the dimensions to the top of the "D14F" fuses

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

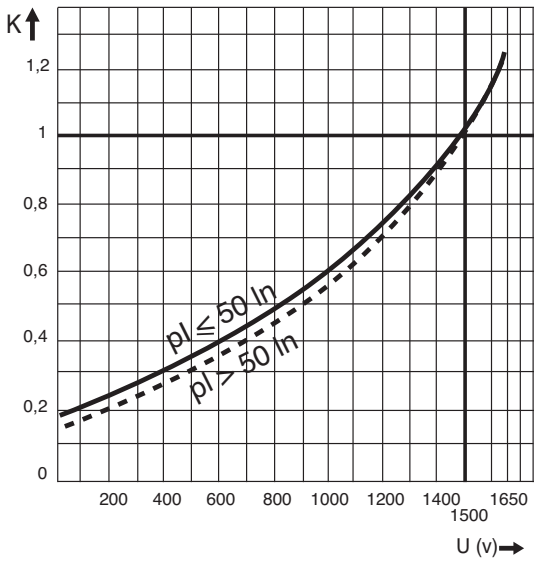
I²t corrective K factor

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U: R.M.S. working voltage V
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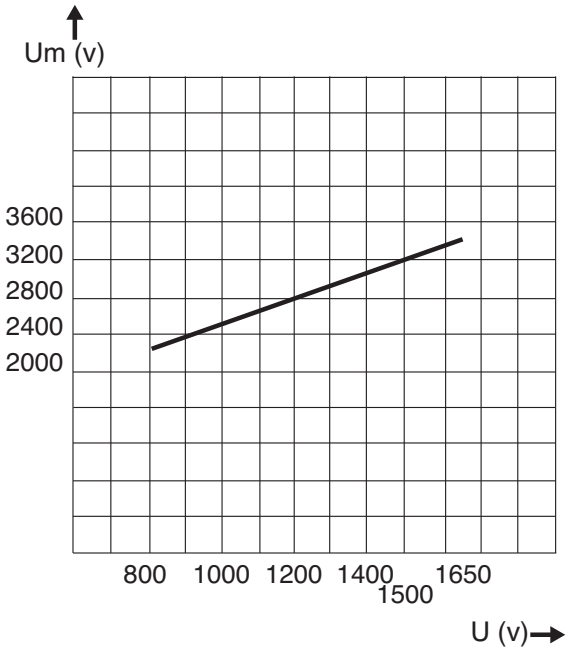
URB/URH/URJ



pI: Prospective Current in the fuse

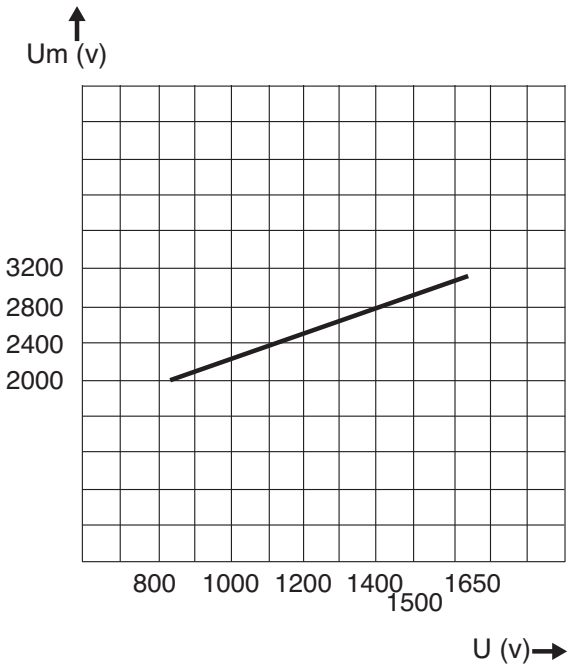
Arc voltage

URF/URG/URK



Um: arc voltage
U: R.M.S. working voltage V

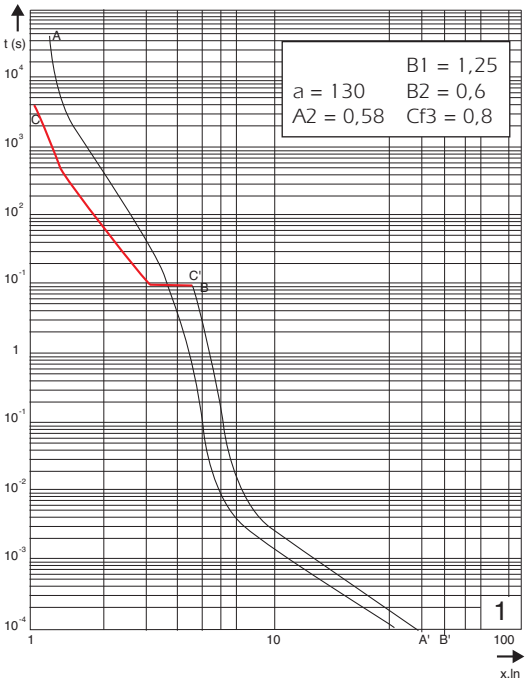
URB/URH/URJ



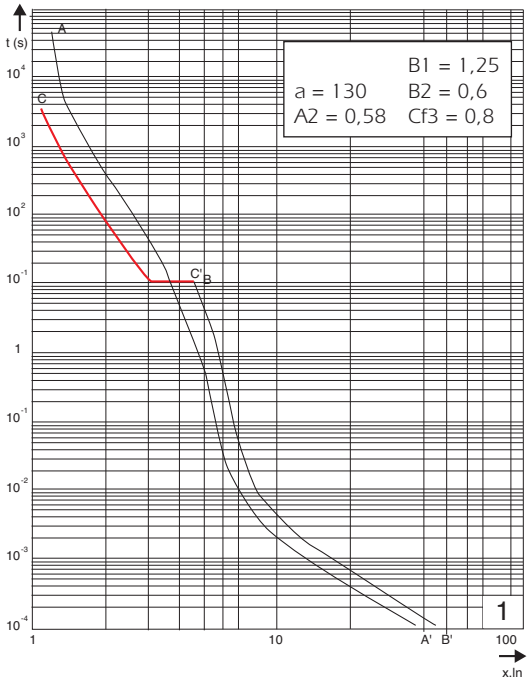
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

Times/Current Characteristics

URF

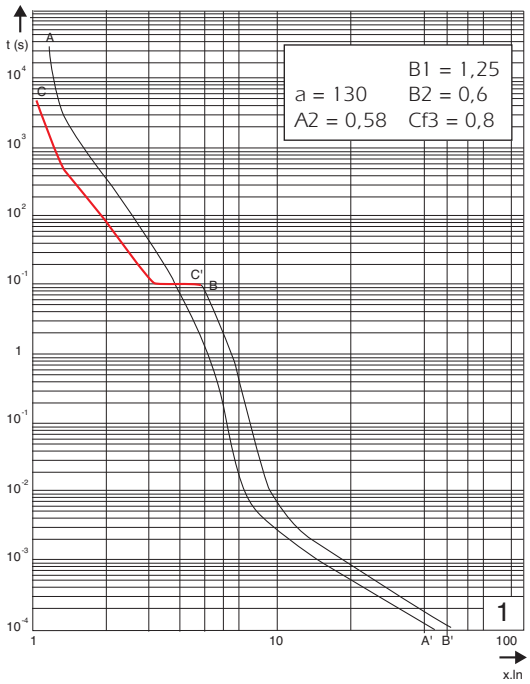


URG



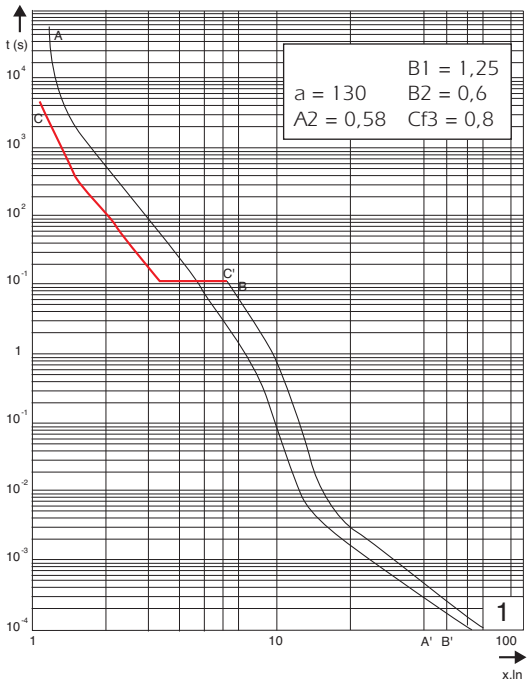
t: actual prearcing time (s) (average value)
x:In: R.M.S. value of prearc current in multiples of rated current

URK

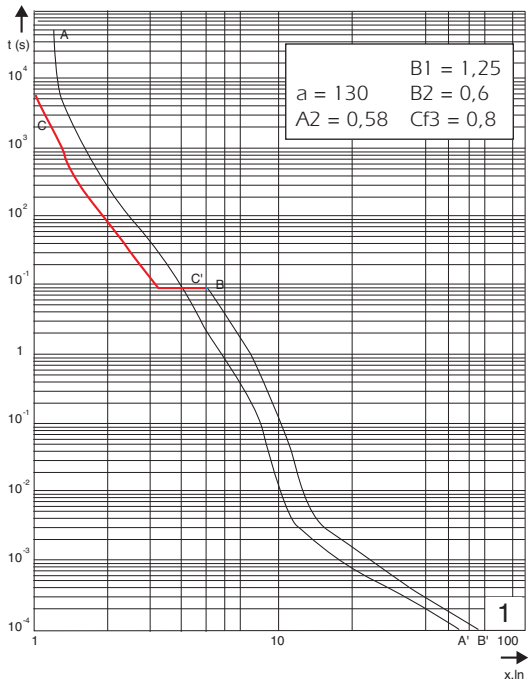


Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Curves set

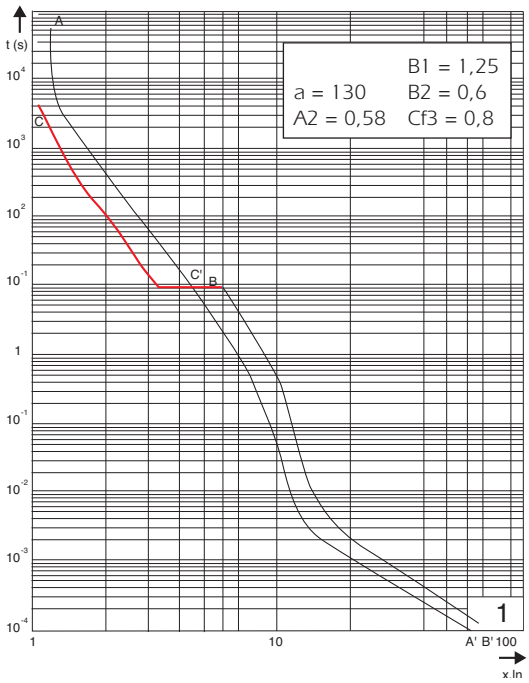
URB



URH



URJ



Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Microswitches for other square-body Protistor®



- REMOTE SIGNALING SYSTEMS FOR FITTING ON FERRAZ SHAWMUT FUSES EQUIPPED WITH MICROSWITCH SUPPORT: all square-body sizes 44 / 8X / 9X / 12X / 17X / 30X and 60X

- PERMANENT INDICATION OF FUSE STATE
  - CONDUCTIVE
  - BLOWN

- MANUAL RESETTING

- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS

- VAPOR AND WATERTIGHT MODEL FOR USE IN CORROSIVE ATMOSPHERE

Main Characteristics

Type	Designation	AC or DC Insulation voltage rating Ui (V)	AC voltage withstand test (*)	Impulse voltage test Uimp1,2/50 µs (**)	Positive operating min.voltage /min.current	Current rating	Interrupting rating					
							Current	Non-inductive circuit			Inductive circuit; L/R = 25ms	
								30V	110V	250V	30V	110V	250V
Standard	MC3E 1-5N	1250V	15 kV	20 kV	20 V 50 mA	5 A	50/60 Hz	10 A	10 A	7 A			6 A
	MCR3E 1-5N	2200	20 kV	30 kV			DC	5 A	0.5 A			1,6 A	0,3 A
Low level	MC3E 1-5NBS MC3E 1-9NBS	1250 V	15 kV	20 kV	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A
	MCR3E 1-5NBS MCR3E 1-9NBS	2200 V	20 kV (1) 23 kV (2)	30 kV			DC	3 A	0.5 A	0,25A	3 A	0,2 A	0.1 A
	MC2R3E 1-5NBS MC2R3E 1-9NBS	6000 V	24 kV (1) 26 kV (2) 32 kV (3)	40 kV									
Watertight IP 50	MC3E 1-5NET	1250 V	11 kV	16 kV	10 V 10 mA	3 A	50 Hz		3 A	3 A		1 A	1 A
	MCR3E 1-5NET	2200 V	20 kV (1)	30 kV									
	MC2R3E 1-5NET	6000 V	24 kV (2)	40 kV			DC		0.5 A			0,2 A	

Catalog Numbering system: MC3E 1-5 single pole microswitch - MC3E 1-9 double pole microswitch - MCR, MC2R reinforced insulation microswitch.

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air).

** Between power circuit and microswitch terminals Uimp: impulse voltage according to IEC 947-1.

*** Between power circuit and microswitch terminals

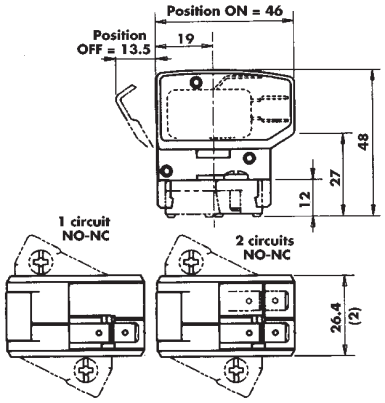
(1) fitting sizes 44 - 70 - 71 - 72 - 73 - 83 - 84 fuses.

(2) fitting sizes 91 - 92 - 93 - 94 -120 - 121 - 122 - 123 - 124 fuses.

(3) fitting sizes 171 - 172 - 173 - 174 - 300 - 302 - 600 - 602 fuses.

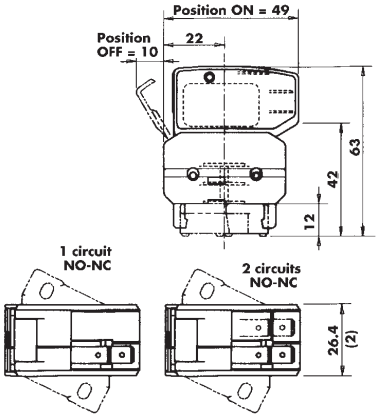
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Microswitches for other square-body Protistor®

Remote signaling with 1250 V AC/DC insulation voltage



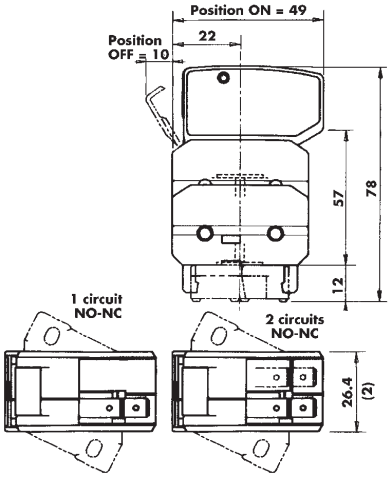
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MC3E 1-5N	D310020	39.5	3	MC3E1-5N
1	low level	MC3E 1-5NBS	E310021	39.5	3	MC3E1-5NBS
2	low level	MC3E 1-9NBS	F310022	45.7	3	MC3E1-9NBS
1	watertight	MC3E 1-5NET	L310027	40.2	3	MC3E1-5N ETANCHE

Remote signaling with insulation voltage up to 2200 V AC/DC



Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MCR3E 1-5N	G310023	51.7	1	MCR3E1-5N
1	low level	MCR3E 1-5NBS	P310030	51.7	1	MCR3E1-5NBS
2	low level	MCR3E 1-9NBS	H310024	58.0	1	MCR3E1-9NBS
1	watertight	MCR3E 1-5NET	Q310031	52.5	1	MCR3E1-5N ETANCHE

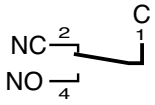
Remote signaling with insulation voltage up to 6000 V AC/DC



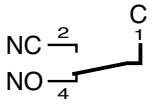
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	low level	MC2R3E 1-5NBS	J310025	64.0	1	MC2R3E1-5NBS
1	watertight	MC2R3E 1-5NET	N310029	64.8	1	MC2R3E1-5NET
2	low level	MC2R3E 1-9NBS	K310026	70.3	1	MC2R3E1-9NBS

NOTE (2): The 26.4 dimension is the same with 1 or 2 separated circuits NO-NC.

Electrical diagram of each microswitch circuit



Non-blown fluse
Microswitch ON



Blown fluse
Microswitch OFF

All of these signalling systems are hand resettable and fitted with silver-plated 3-terminal microswitch C, NO and NC.
The C terminal is on the top and connection is made via 6.35 mm clips except for watertight models whose clips are 4.8 mm wide.

Tests with sine vibrations carried out at ambient with scanning of the three main holder axes.
Spectrum: 1st segment (2 to 16 Hz) constant trip x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration g = 5 g peak.
Exponential scanning speed : 1 octave per minute.
Duration: 2 hours per axis.

Protistor® Square-body Fuses
PSC aR sizes 3x - 450V to 700 VAC
Metric-studs

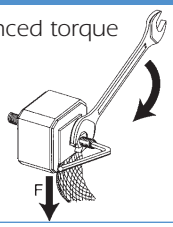
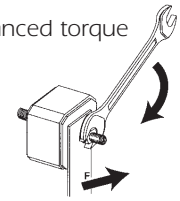
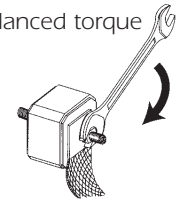
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STUM8x30M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STUM10x30M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STUM12x35M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STUM10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STUM12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Microswitches for other square-body Protistor®



- REMOTE SIGNALING SYSTEMS FOR FITTING ON FERRAZ SHAWMUT FUSES EQUIPPED WITH MICROSWITCH SUPPORT: all square-body sizes 44 / 8X / 9X / 12X / 17X / 30X and 60X

- PERMANENT INDICATION OF FUSE STATE
  - CONDUCTIVE
  - BLOWN

- MANUAL RESETTING

- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS

- VAPOR AND WATERTIGHT MODEL FOR USE IN CORROSIVE ATMOSPHERE

Main Characteristics

Type	Designation	AC or DC Insulation voltage rating Ui (V)	AC voltage withstand test (*)	Impulse voltage test Uimp1,2/50 µs (**)	Positive operating min.voltage /min.current	Current rating	Interrupting rating					
							Current	Non-inductive circuit			Inductive circuit; L/R = 25ms	
								30V	110V	250V	30V	110V	250V
Standard	MC3E 1-5N	1250V	15 kV	20 kV	20 V 50 mA	5 A	50/60 Hz	10 A	10 A	7 A			6 A
	MCR3E 1-5N	2200	20 kV	30 kV			DC	5 A	0.5 A			1,6 A	0,3 A
Low level	MC3E 1-5NBS MC3E 1-9NBS	1250 V	15 kV	20 kV	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A
	MCR3E 1-5NBS MCR3E 1-9NBS	2200 V	20 kV (1) 23 kV (2)	30 kV			DC	3 A	0.5 A	0,25A	3 A	0,2 A	0.1 A
	MC2R3E 1-5NBS MC2R3E 1-9NBS	6000 V	24 kV (1) 26 kV (2) 32 kV (3)	40 kV									
Watertight IP 50	MC3E 1-5NET	1250 V	11 kV	16 kV	10 V 10 mA	3 A	50 Hz		3 A	3 A		1 A	1 A
	MCR3E 1-5NET	2200 V	20 kV (1)	30 kV									
	MC2R3E 1-5NET	6000 V	24 kV (2)	40 kV			DC		0.5 A			0,2 A	

Catalog Numbering system: MC3E 1-5 single pole microswitch - MC3E 1-9 double pole microswitch - MCR, MC2R reinforced insulation microswitch.

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air).

** Between power circuit and microswitch terminals Uimp: impulse voltage according to IEC 947-1.

*** Between power circuit and microswitch terminals

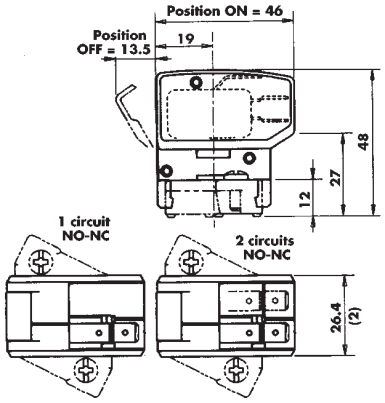
(1) fitting sizes 44 - 70 - 71 - 72 - 73 - 83 - 84 fuses.

(2) fitting sizes 91 - 92 - 93 - 94 -120 - 121 - 122 - 123 - 124 fuses.

(3) fitting sizes 171 - 172 - 173 - 174 - 300 - 302 - 600 - 602 fuses.

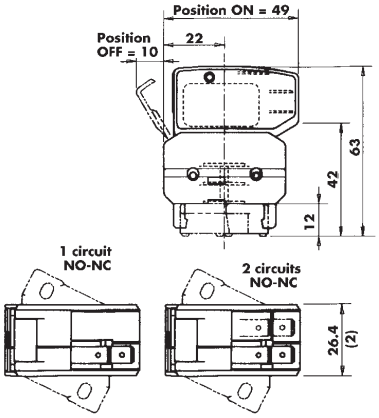
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Microswitches for other square-body Protistor®

Remote signaling with 1250 V AC/DC insulation voltage



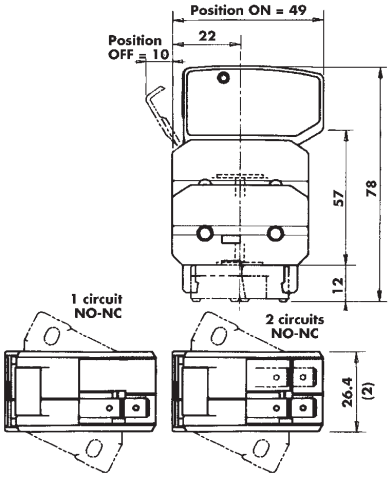
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MC3E 1-5N	D310020	39.5	3	MC3E1-5N
1	low level	MC3E 1-5NBS	E310021	39.5	3	MC3E1-5NBS
2	low level	MC3E 1-9NBS	F310022	45.7	3	MC3E1-9NBS
1	watertight	MC3E 1-5NET	L310027	40.2	3	MC3E1-5N ETANCHE

Remote signaling with insulation voltage up to 2200 V AC/DC



Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MCR3E 1-5N	G310023	51.7	1	MCR3E1-5N
1	low level	MCR3E 1-5NBS	P310030	51.7	1	MCR3E1-5NBS
2	low level	MCR3E 1-9NBS	H310024	58.0	1	MCR3E1-9NBS
1	watertight	MCR3E 1-5NET	Q310031	52.5	1	MCR3E1-5N ETANCHE

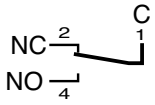
Remote signaling with insulation voltage up to 6000 V AC/DC



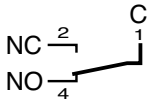
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	low level	MC2R3E 1-5NBS	J310025	64.0	1	MC2R3E1-5NBS
1	watertight	MC2R3E 1-5NET	N310029	64.8	1	MC2R3E1-5NET
2	low level	MC2R3E 1-9NBS	K310026	70.3	1	MC2R3E1-9NBS

NOTE (2): The 26.4 dimension is the same with 1 or 2 separated circuits NO-NC.

Electrical diagram of each microswitch circuit



Non-blown fluse
Microswitch ON



Blown fluse
Microswitch OFF

All of these signalling systems are hand resettable and fitted with silver-plated 3-terminal microswitch C, NO and NC.
The C terminal is on the top and connection is made via 6.35 mm clips except for watertight models whose clips are 4.8 mm wide.

Tests with sine vibrations carried out at ambient with scanning of the three main holder axes.
Spectrum: 1st segment (2 to 16 Hz) constant trip x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration g = 5 g peak.
Exponential scanning speed : 1 octave per minute.
Duration: 2 hours per axis.

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Metric-studs

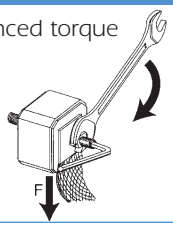
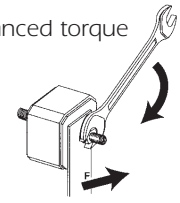
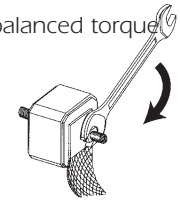
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC - LR (large rectifer)
PSC - LR ranges



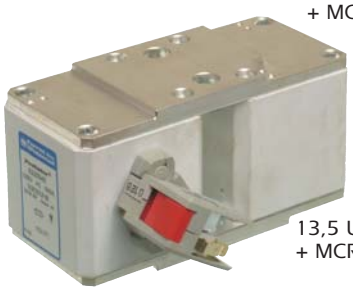
25 URD 123 TTF 630



4 URD TDF 1000



9,5 URD 94 PPASF 3800
+ MC3E 1-5N



13,5 URD 283 PLAF 1600
+ MCR3E 1-5NBS

Ferraz Shawmut PSC-LR fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment. These square body fuse-links are available in various body sizes with a broad range of ampere ratings allowing the greatest flexibility in equipment design.
The Ferraz Shawmut PSC-LR fuse range has been engineered to provide state of the art protection for high power semiconductors such as diodes, thyristors, GTO's, IGCT's and IGBT's.
They have pure silver fuse elements embedded in solidified sand which provides optimized I^2t and high interrupting rating. All contact surfaces are plated and all hardware non-magnetic.
All fuses are standard with a low voltage blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly onto the fuse in service.

Features/Benefits

Customized terminals
available under request

Wide range of mounting styles

Broad range of ampere ratings in each body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Highlights

- Highly current limiting.
- Isolating fuse
- High breaking capacities
- High capability of selection in case of external fault
- Worldwide acceptance.
- Superior cycling ability.
- High withstanding in rush current and overloads
- Optimized coordination ratio

Applications

Protection of large rectifiers, inverters, static transfer switch, AC & DC drives and UPS systems.



13,5 URD 294 TDSFF 3400
+ MCR3E 1-5NBS

Ratings

AC: up to 10 000A
130 V - 3 800V
100 - 240 kA IR
DC: Consult Factory

Approvals

AC: Tested to IEC 60269-4



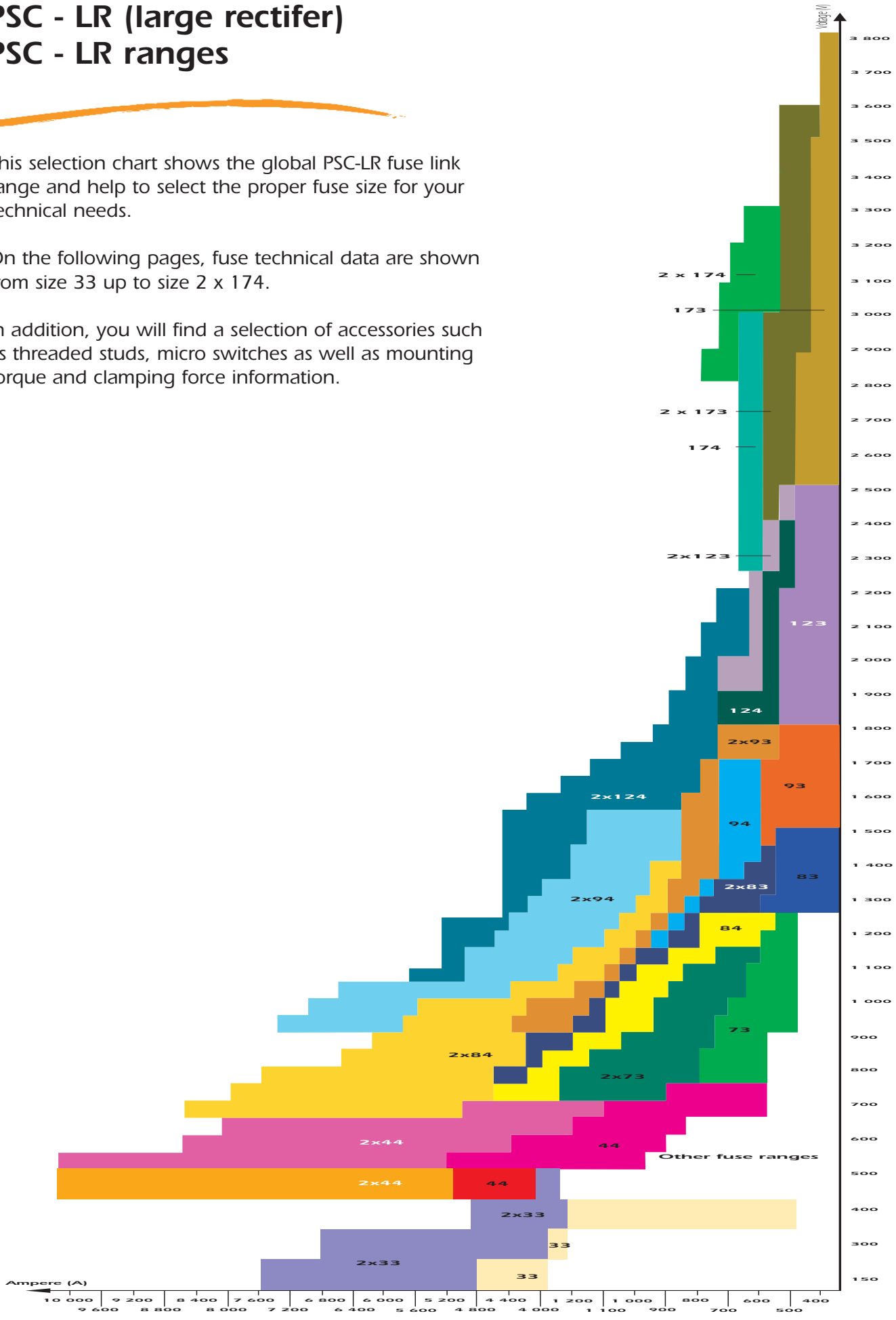
13 URD 84 TQFPLA 0900

Protistor® Square-body Fuses
PSC - LR (large rectifer)
PSC - LR ranges

This selection chart shows the global PSC-LR fuse link range and help to select the proper fuse size for your technical needs.

On the following pages, fuse technical data are shown from size 33 up to size 2 x 174.

In addition, you will find a selection of accessories such as threaded studs, micro switches as well as mounting torque and clamping force information.



Protistor® Square-body Fuses
PSC - LR (large rectifer)
Microswitches for other Square-body Protistor®

Microswitch system for round and square-body fuses (except PSC line)



- REMOTE SIGNALING SYSTEMS FOR FITTING ON FERRAZ SHAWMUT FUSES EQUIPPED WITH MICROSWITCH SUPPORT: all square-body sizes 44 / 8X / 9X / 12X / 17X / 30X and 60X

- PERMANENT INDICATION OF FUSE STATE
  - CONDUCTIVE
  - BLOWN

- MANUAL RESETTING

- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS

- VAPOR AND WATERTIGHT MODEL FOR USE IN CORROSIVE ATMOSPHERE

Main Characteristics

Type	Designation	AC or DC Insulation voltage rating Ui (V)	AC voltage withstand test (*)	Impulse voltage test Uimp1,2/50 µs (**)	Positive operating min.voltage /min.current	Current rating	Interrupting rating					
							Current	Non-inductive circuit			Inductive circuit; L/R = 25ms	
								30V	110V	250V	30V	110V	250V
Standard	MC3E 1-5N	1250V	15 kV	20 kV	20 V 50 mA	5 A	50/60 Hz	10 A	10 A	7 A			6 A
	MCR3E 1-5N	2200	20 kV	30 kV			DC	5 A	0.5 A			1,6 A	0,3 A
Low level	MC3E 1-5NBS MC3E 1-9NBS	1250 V	15 kV	20 kV	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A
	MCR3E 1-5NBS MCR3E 1-9NBS	2200 V	20 kV (1) 23 kV (2)	30 kV			DC	3 A	0.5 A	0,25A	3 A	0,2 A	0.1 A
	MC2R3E 1-5NBS MC2R3E 1-9NBS	6000 V	24 kV (1) 26 kV (2) 32 kV (3)	40 kV									
Watertight IP 50	MC3E 1-5NET	1250 V	11 kV	16 kV	10 V 10 mA	3 A	50 Hz		3 A	3 A		1 A	1 A
	MCR3E 1-5NET	2200 V	20 kV (1)	30 kV			DC		0.5 A			0,2 A	
	MC2R3E 1-5NET	6000 V	24 kV (2)	40 kV									

Catalog Numbering system: MC3E 1-5 single pole microswitch - MC3E 1-9 double pole microswitch - MCR, MC2R reinforced insulation microswitch.

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air).

** Between power circuit and microswitch terminals Uimp: impulse voltage according to IEC 947-1.

*** Between power circuit and microswitch terminals

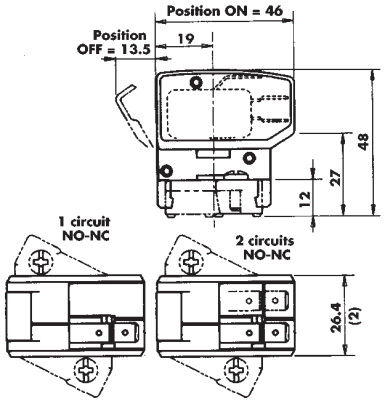
(1) fitting sizes 44 - 70 - 71 - 72 - 73 - 83 - 84 fuses.

(2) fitting sizes 91 - 92 - 93 - 94 -120 - 121 - 122 - 123 - 124 fuses.

(3) fitting sizes 171 - 172 - 173 - 174 - 300 - 302 - 600 - 602 fuses.

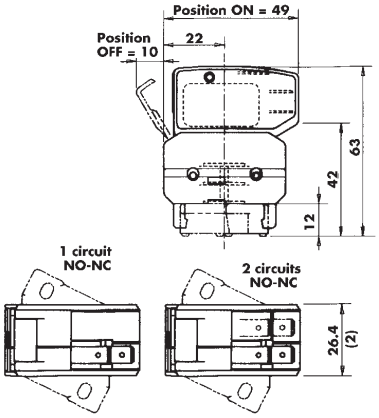
Protistor® Square-body Fuses
PSC - LR (large rectifer)
Microswitches for other Square-body Protistor®

Remote signaling with 1250 V AC/DC insulation voltage



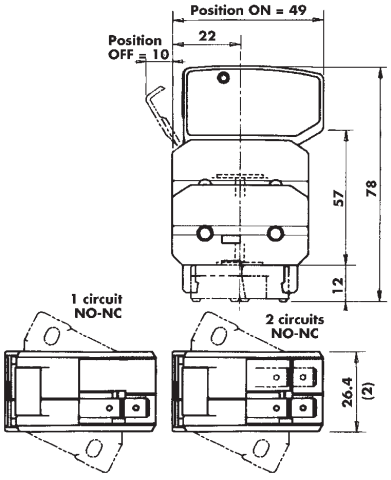
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MC3E 1-5N	D310020	39.5	3	MC3E1-5N
1	low level	MC3E 1-5NBS	E310021	39.5	3	MC3E1-5NBS
2	low level	MC3E 1-9NBS	F310022	45.7	3	MC3E1-9NBS
1	watertight	MC3E 1-5NET	L310027	40.2	3	MC3E1-5N ETANCHE

Remote signaling with insulation voltage up to 2200 V AC/DC



Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MCR3E 1-5N	G310023	51.7	1	MCR3E1-5N
1	low level	MCR3E 1-5NBS	P310030	51.7	1	MCR3E1-5NBS
2	low level	MCR3E 1-9NBS	H310024	58.0	1	MCR3E1-9NBS
1	watertight	MCR3E 1-5NET	Q310031	52.5	1	MCR3E1-5N ETANCHE

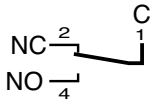
Remote signaling with insulation voltage up to 6000 V AC/DC



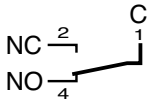
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	low level	MC2R3E 1-5NBS	J310025	64.0	1	MC2R3E1-5NBS
1	watertight	MC2R3E 1-5NET	N310029	64.8	1	MC2R3E1-5NET
2	low level	MC2R3E 1-9NBS	K310026	70.3	1	MC2R3E1-9NBS

NOTE (2): The 26.4 dimension is the same with 1 or 2 separated circuits NO-NC.

Electrical diagram of each microswitch circuit



Non-blown fluse
Microswitch ON



Blown fluse
Microswitch OFF

All of these signalling systems are hand resettable and fitted with silver-plated 3-terminal microswitch C, NO and NC.
The C terminal is on the top and connection is made via 6.35 mm clips except for watertight models whose clips are 4.8 mm wide.

Tests with sine vibrations carried out at ambient with scanning of the three main holder axes.
Spectrum: 1st segment (2 to 16 Hz) constant trip x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration g = 5 g peak.
Exponential scanning speed : 1 octave per minute.
Duration: 2 hours per axis.

Protistor® Square-body Fuses
PSC - LR (large rectifer)
Metric-studs

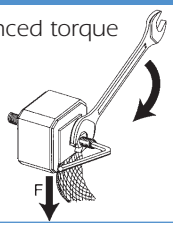
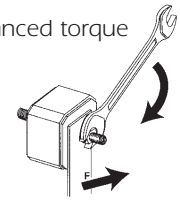
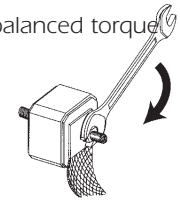
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Microswitches for other square-body Protistor®



- REMOTE SIGNALING SYSTEMS FOR FITTING ON FERRAZ SHAWMUT FUSES EQUIPPED WITH MICROSWITCH SUPPORT: all square-body sizes 44 / 8X / 9X / 12X / 17X / 30X and 60X

- PERMANENT INDICATION OF FUSE STATE
  - CONDUCTIVE
  - BLOWN

- MANUAL RESETTING

- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS

- VAPOR AND WATERTIGHT MODEL FOR USE IN CORROSIVE ATMOSPHERE

Main Characteristics

Type	Designation	AC or DC Insulation voltage rating Ui (V)	AC voltage withstand test (*)	Impulse voltage test Uimp1,2/50 µs (**)	Positive operating min.voltage /min.current	Current rating	Interrupting rating					
							Current	Non-inductive circuit			Inductive circuit; L/R = 25ms	
								30V	110V	250V	30V	110V	250V
Standard	MC3E 1-5N	1250V	15 kV	20 kV	20 V 50 mA	5 A	50/60 Hz	10 A	10 A	7 A			6 A
	MCR3E 1-5N	2200	20 kV	30 kV			DC	5 A	0.5 A			1,6 A	0,3 A
Low level	MC3E 1-5NBS MC3E 1-9NBS	1250 V	15 kV	20 kV	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A
	MCR3E 1-5NBS MCR3E 1-9NBS	2200 V	20 kV (1) 23 kV (2)	30 kV			DC	3 A	0.5 A	0,25A	3 A	0,2 A	0.1 A
	MC2R3E 1-5NBS MC2R3E 1-9NBS	6000 V	24 kV (1) 26 kV (2) 32 kV (3)	40 kV									
Watertight IP 50	MC3E 1-5NET	1250 V	11 kV	16 kV	10 V 10 mA	3 A	50 Hz		3 A	3 A		1 A	1 A
	MCR3E 1-5NET	2200 V	20 kV (1)	30 kV									
	MC2R3E 1-5NET	6000 V	24 kV (2)	40 kV			DC		0.5 A			0,2 A	

Catalog Numbering system: MC3E 1-5 single pole microswitch - MC3E 1-9 double pole microswitch - MCR, MC2R reinforced insulation microswitch.

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air).

** Between power circuit and microswitch terminals Uimp: impulse voltage according to IEC 947-1.

*** Between power circuit and microswitch terminals

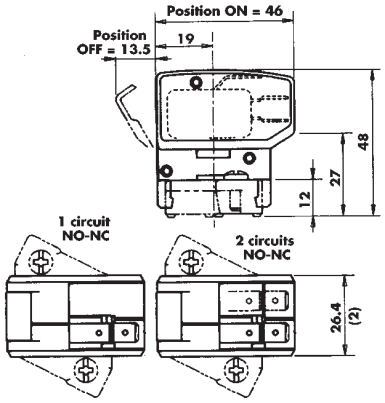
(1) fitting sizes 44 - 70 - 71 - 72 - 73 - 83 - 84 fuses.

(2) fitting sizes 91 - 92 - 93 - 94 -120 - 121 - 122 - 123 - 124 fuses.

(3) fitting sizes 171 - 172 - 173 - 174 - 300 - 302 - 600 - 602 fuses.

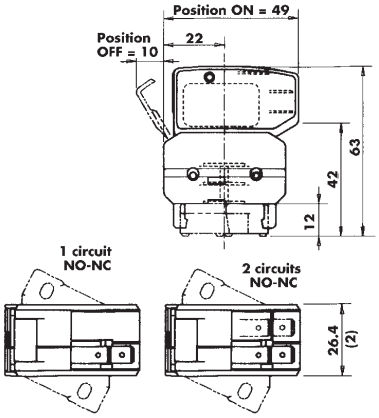
Protistor® Square-body Fuses
PSC aR sizes 9x - 1500 VAC
Microswitches for other square-body Protistor®

Remote signaling with 1250 V AC/DC insulation voltage



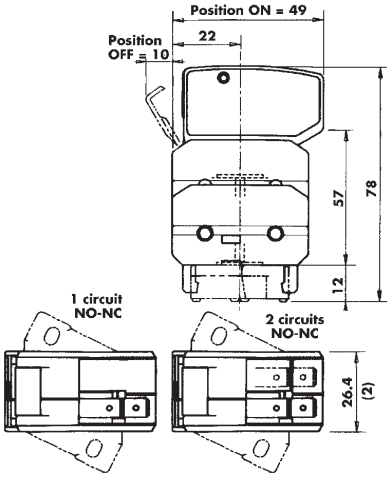
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MC3E 1-5N	D310020	39.5	3	MC3E1-5N
1	low level	MC3E 1-5NBS	E310021	39.5	3	MC3E1-5NBS
2	low level	MC3E 1-9NBS	F310022	45.7	3	MC3E1-9NBS
1	watertight	MC3E 1-5NET	L310027	40.2	3	MC3E1-5N ETANCHE

Remote signaling with insulation voltage up to 2200 V AC/DC



Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MCR3E 1-5N	G310023	51.7	1	MCR3E1-5N
1	low level	MCR3E 1-5NBS	P310030	51.7	1	MCR3E1-5NBS
2	low level	MCR3E 1-9NBS	H310024	58.0	1	MCR3E1-9NBS
1	watertight	MCR3E 1-5NET	Q310031	52.5	1	MCR3E1-5N ETANCHE

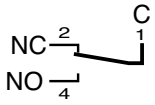
Remote signaling with insulation voltage up to 6000 V AC/DC



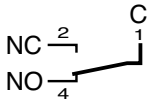
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	low level	MC2R3E 1-5NBS	J310025	64.0	1	MC2R3E1-5NBS
1	watertight	MC2R3E 1-5NET	N310029	64.8	1	MC2R3E1-5NET
2	low level	MC2R3E 1-9NBS	K310026	70.3	1	MC2R3E1-9NBS

NOTE (2): The 26.4 dimension is the same with 1 or 2 separated circuits NO-NC.

Electrical diagram of each microswitch circuit



Non-blown fluse
Microswitch ON



Blown fluse
Microswitch OFF

All of these signalling systems are hand resettable and fitted with silver-plated 3-terminal microswitch C, NO and NC.
The C terminal is on the top and connection is made via 6.35 mm clips except for watertight models whose clips are 4.8 mm wide.

Tests with sine vibrations carried out at ambient with scanning of the three main holder axes.
Spectrum: 1st segment (2 to 16 Hz) constant trip x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration g = 5 g peak.
Exponential scanning speed : 1 octave per minute.
Duration: 2 hours per axis.

Protistor® Square-body Fuses
PSC - LR (large rectifer)
Metric-studs

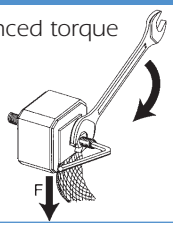
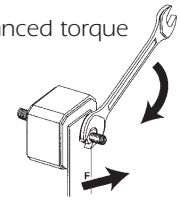
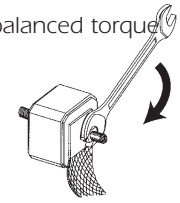
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

Other Protistor® Fuses
Ferrule Fuses
10x38 gRB - 690VAC

690V AC
gRB - from 1 up to 30 A
Size: 10x38



The fuse preselection table below indicates:

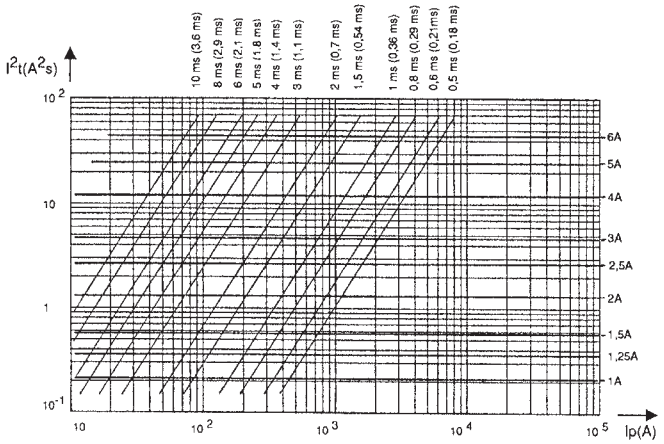
- rated current (or rating) I_N
- pre-arcing I^2t (I^2t_D) at 1 ms
- total operating I^2t (I^2tt) at 690V, cos φ=0.15, and for a total operating time from 8 to 10 ms
- dissipated power P_N at the rated current I_N, and at 0.8 I_N, in steady state
- Nominal breaking capacity, checked by tests made in accordance with IEC standard.

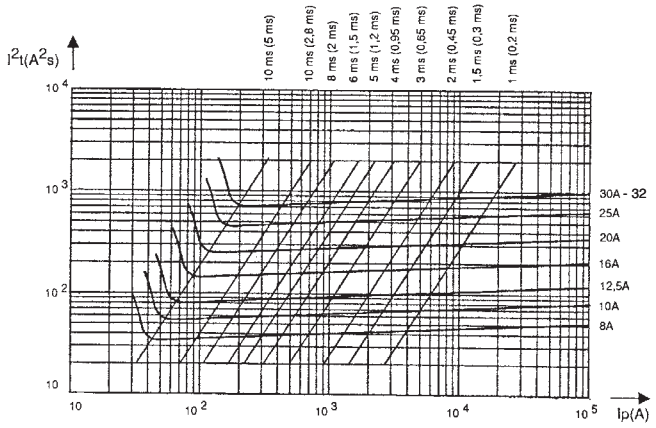
Voltage Rating (VAC)	Rated current In (A)	Pre-arcing I^2t I^2tp (A2s)	Total I^2t at 660VAC I^2tt (A2s)	Dissipated power at In (W)	Dissipated power at 0.8 In (W)	Peak arc voltage (V)	Breaking capacity I (kA)
690	1	0,075	0,28	0,9	0,52	2500	160 kA 690 V (IEC)
	1,25	0,115	0,36	1,25	0,7		
	1,5	0,185	0,57	1,5	0,81		
	2	0,42	1,3	2	1,1		
	2,5	0,88	2,7	2,1	1,15		
	3	1,55	4,6	2,3	1,25		
	4	4	12	2,6	1,35		
	5	8,6	25	2,7	1,4		
	6	15	44	2,9	1,5		
	8	3,3	33	2,4	1,35	1450	
	10	5,4	55	3,4	1,85		
	12,5	8,5	82	3,4	1,9		
	16	16	145	4,1	2,3		
	20	230	250	4,3	2,4		
	25	58	470	4,7	2,7		
	30 (32*)	96	740	5	2,9		

* Non approval rating

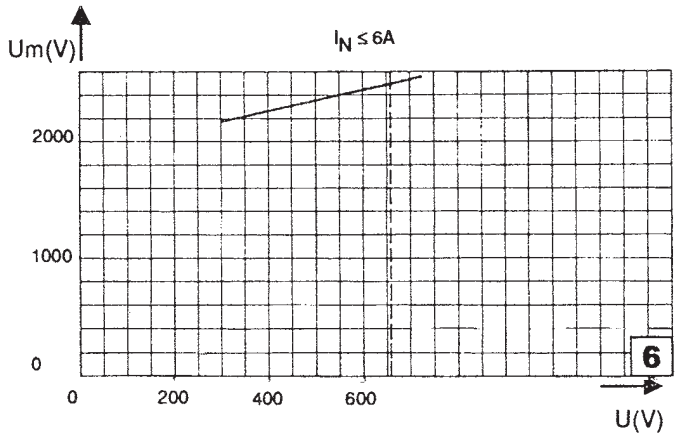
Other Protistor® Fuses
French Ferrule
10x38 gRB - 690VAC

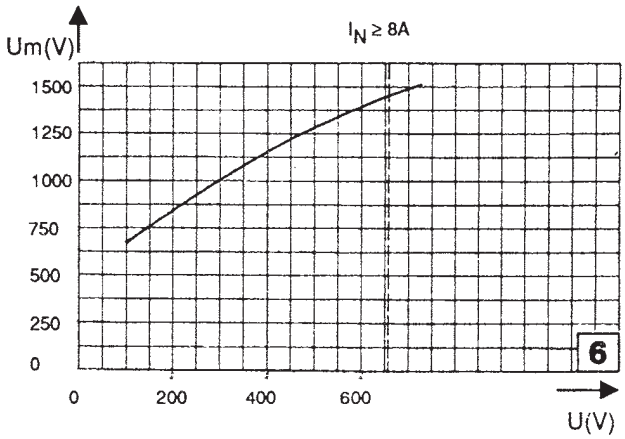
Maximum values of total operating I²t and total operating times



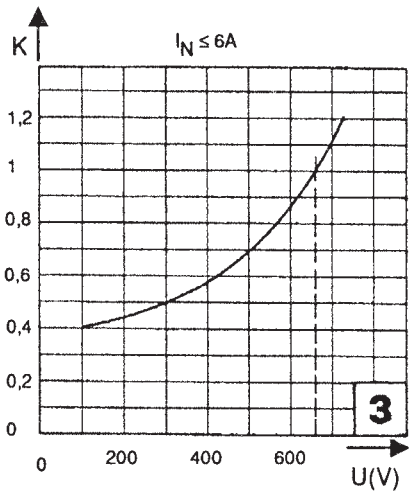


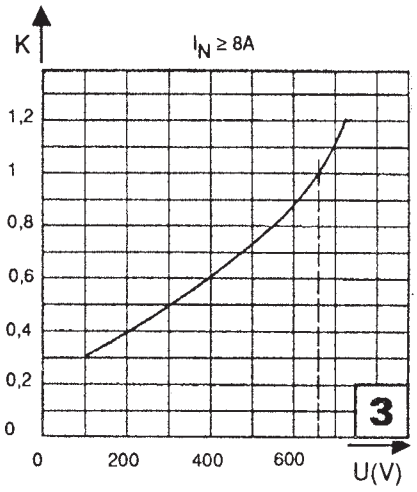
Arc voltage





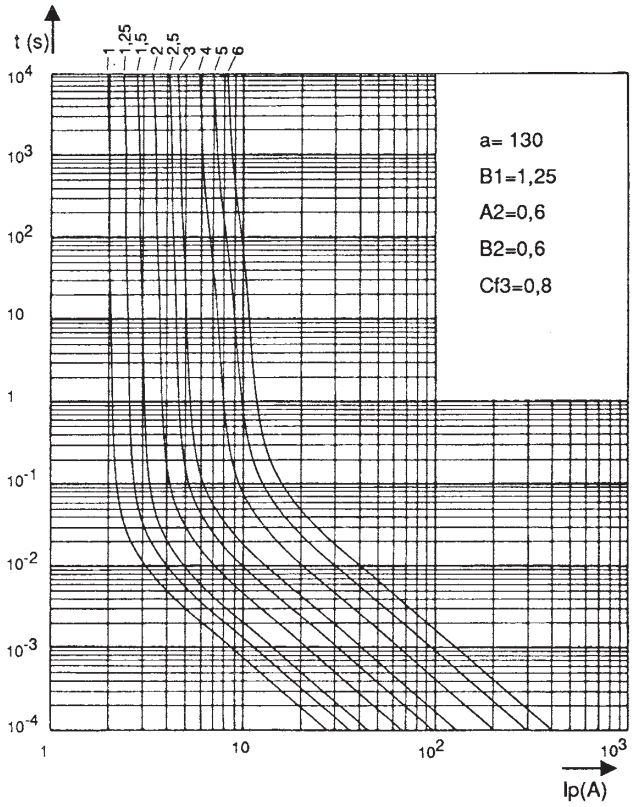
Multiplier coefficient



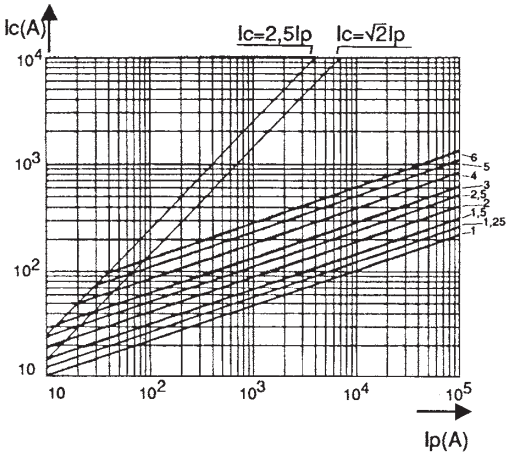


Other Protistor® Fuses
Ferrule Fuses
10x38 gRB - 690VAC

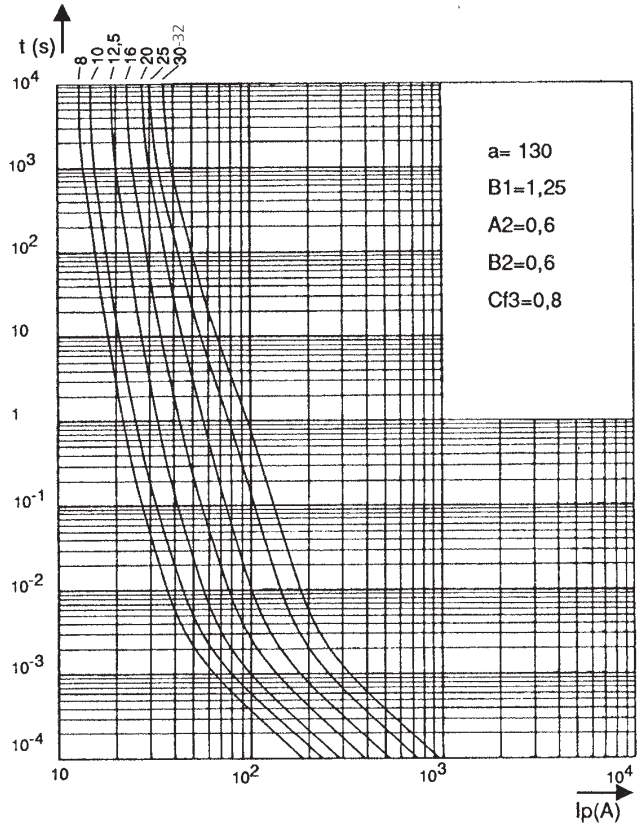
Time-current characteristics (1 to 6 A)



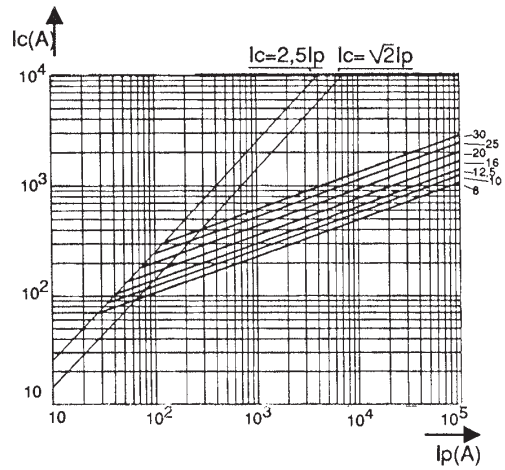
Cut-off characteristics



Time-current characteristics (8 to 30 A)



Cut-off characteristics



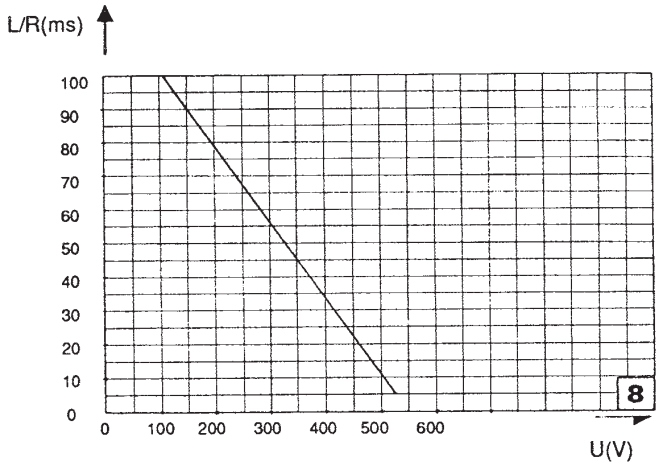
Other Protistor® Fuses
Ferrule Fuses
10x38 gRB - 690VAC

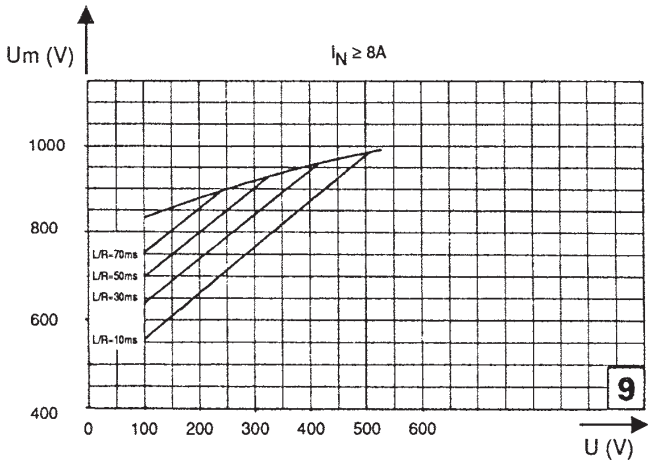
Dimensions / Reference / Ref. No.

Rating (A)	Designation	Ref. Number	Catalog Number
1	6,9 gRC 10-01 - A070 gRC 01 T13	Z330279	FR10GB69V1
1,25	6,9 gRB 10-1,25 - A070 gRB 1.25 T13	X330001	FR10GB69V1.25
1,5	6,9 gRB 10-1,5 - A070 gRB 1.5 T13	Y330002	FR10GB69V1.5
2	6,9 gRB 10-02 - A070 gRB 02 T13	Z330003	FR10GB69V2
2,5	6,9 gRB 10-2,5 - A070 gRB 2.5 T13	A330004	FR10GB69V2.5
3	6,9 gRB 10-03 - A070 gRB 03 T13	B330005	FR10GB69V3
4	6,9 gRB 10-04 - A070 gRB 04 T13	C330006	FR10GB69V4
5	6,9 gRB 10-05 - A070 gRB 05 T13	D330007	FR10GB69V5
6	6,9 gRB 10-06 - A070 gRB 06 T13	E330008	FR10GB69V6
8	6,9 gRB 10-08 - A070 gRB 08 T13	F330009	FR10GB69V8
10	6,9 gRB 10-10 - A070 gRB 10 T13	G330010	FR10GB69V10
12,5	6,9 gRB 10-12,5 - A070 gRB 12.5 T13	H330011	FR10GB69V12.5
16	6,9 gRB 10-16 - A070 gRB 16 T13	J330012	FR10GB69V16
20	6,9 gRB 10-20 - A070 gRB 20 T13	K330013	FR10GB69V20
25	6,9 gRB 10-25 - A070 gRB 25 T13	L330014	FR10GB69V25
30	6,9 gRB 10-30 - A070 gRB 30T13	M330015	FR10GB69V30
32*	6,9 gRB 10-32 - A070 gRB 32T13	Y330278	FR10GB69V32

* Non approval rating

DC working voltage possibilities





↑ Above: Curve indicating the maximum time constant L/R of the fault path as a function of the DC voltage U, for the rated currents from 1 to 30 A of this range.

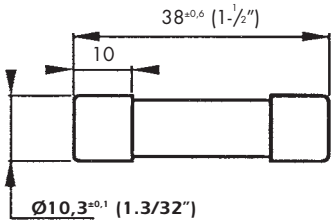
Time-current characteristics: Curves indicate, for each rated current, pre-arcing time as a function of RMS value of pre-arcing current I.

Tolerances on this current:
±10% = ratings from 1 to 6 A
±9% = ratings from 8 to 30 A

Fuses with "gR" characteristics can eliminate all overloads. They do not show any minimum breaking capacity but limit currents of non-operation or operation in compliance with standard VDE 636/23.

Cut off characteristics: Curves indicate, for each rated current, the peak value Ic that the current may reach as a function of prospective fault current Ip.

Without trip-indicator
Max. weight 10g
Packaging: per 10 pieces



Other Protistor® Fuses
Ferrule Fuses
10x38 URB/URD/URL - 500 to 600 VAC



Extremely high breaking capacity fuses:
Protection of power semiconductors complying with IEC standard 60269.1 and 4.

500 - 600 VAC voltage rating

aR-CLASS according to VDE 636-23 IEC 60269-4

Without blown fuse indication 0.10 up to 0,80 A**

With trip-indicator (1 to 30 A), a Ferraz Shawmut speciality*

Main Characteristics

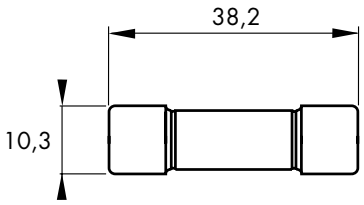
Voltage rating U_N(VAC)	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t @ U_N I^2tt (A^2s)	Watts loss 0.8 I_N	Watts loss I_N	Tested breaking capacity
600 V without blown fuse indicator	URD **	100 mA 125 mA 160 mA 200 mA 250 mA 315 mA 400 mA 500 mA 630 mA 800 mA		$1.2\ 10^{-3}$ $2.3\ 10^{-3}$ $5.2\ 10^{-3}$ $8\ 10^{-3}$ $18\ 10^{-3}$ $33\ 10^{-3}$ $56\ 10^{-3}$ 0.100 0.18 0.44	0.23 0.25 0.28 0.34 0.35 0.42 0.46 0.46 0.52 0.58	0.4 0.44 0.48 0.58 0.60 0.73 0.80 0.80 0.90 1	200 kA @ 600 V
500 V with trip-indicator	URD	1 A 1.25 A 1.6 A 2 A 2.5 A 3.15 A 4 A 5 A	0.40 0.13 0.31 0.65 1.65 2.80 5.30 12.7	3.6 1.7 2.2 3.1 5.9 9 16 36	2.8 0.52 0.58 0.63 0.63 0.86 1.1 1.1	0.5 0.91 1 1.1 1.1 1.5 1.8 1.8	50 kA @ 500 V
	URD	6 A 8 A 10 A 12 A 16 A 20 A	1.3 2.3 3.6 5.25 9.30 16	47 80 110 150 200 290	0.73 0.,83 1 1.3 1.7 1.7	1.35 1.55 1.9 2.3 3.1 3.2	50 kA @ 500 V
	URL	25 A 30 A	37 58	580 900	2.9 3.5	4.25 5.1	50 kA @ 500 V

* minimum operating voltage for trip-indicator: 20 V
** higher ratings without blown fuse indicator see 10x38gRB - 690 VAC

Other Protistor® Fuses
Ferrule Fuses
10x38 URB/URD - 500 to 600 VAC

10.3x38 - Without blown fuse indicator

Current Rating	Designation	Ref. Number	Catalog Number
100 mA	A 060 URD 0.100T13	H077632	A060UD0.100T13
125 mA	A 060 URD 0.125T13	J077633	A060UD0.125T13
160 mA	A 060 URD 0.160T13	K077634	A060UD0.160T13
200 mA	A 060 URD 0.200T13	L077635	A060UD0.200T13
250 mA	A 060 URD 0.250T13	M077636	A060UD0.250T13
315 mA	A 060 URD 0.315T13	N077637	A060UD0.315T13
400 mA	A 060 URD 0.400T13	P077638	A060UD0.400T13
500 mA	A 060 URD 0.500T13*	Q077639	A060UD0.500T13
630 mA	A 060 URD 0.630T13*	R077640	A060UD0.630T13
800 mA	A 060 URD 0.800T13*	S077641	A060UD0.800T13

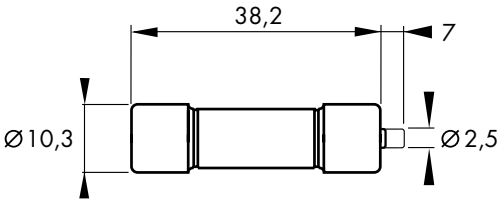


*** UL Recognized**

Fuses mounted in clips or fuse disconnectors

10.3x38 - With trip-indicator

Current Rating	Designation	Ref. Number	Catalog Number
1 A	A 050 URD 001 T13 I	P076925	A050URD1T13I
1.25 A	A 050 URD 001.2 T13 I	H076597	A050URD1.2T13I
1.6 A	A 050 URD 001.6 T13 I	G076596	A050URD1.6T13I
2 A	A 050 URD 002 T13 I	Q076926	A050URD2T13I
2.5 A	A 050 URD 002.5 T13 I	F076595	A050URD2.5T13I
3.15 A	A 050 URD 003 T13 I	R076927	A050URD3T13I
4 A	A 050 URD 004 T13 I	S076928	A050URD4T13I
5 A	A 050 URD 005 T13 I	T076929	A050URD5T13I
6 A	A 050 URB 006 T13 I	V076930	A050URB6T13I
8 A	A 050 URB 008 T13 I	W076931	A050URB8T13I
10 A	A 050 URB 010 T13 I	X076932	A050URB10T13I
12 A	A 050 URB 012 T13 I	Y076933	A050URB12T13I
16 A	A 050 URB 016 T13 I	Z076934	A050URB16T13I
20 A	A 050 URB 020 T13 I	A076935	A050URB20T13I
25 A	A 050 URL 025 T13 I	B076936	A050URL25T13I
30 A	A 050 URL 030 T13 I	C076937	A050URL30T13I



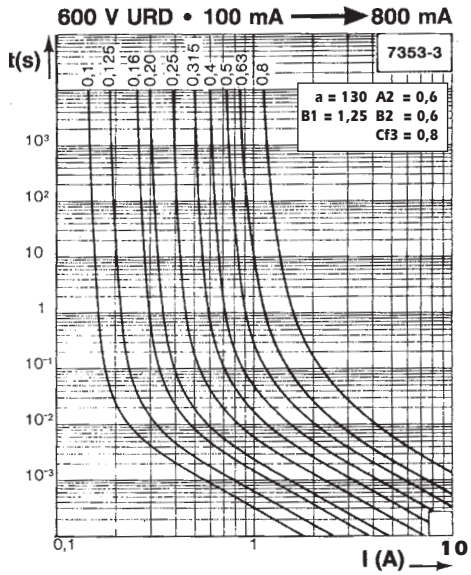
Fuses with trip indicator mounted in clips

Other Protistor® Fuses
Ferrule Fuses
10x38 URB/URD - 500 to 600 VAC

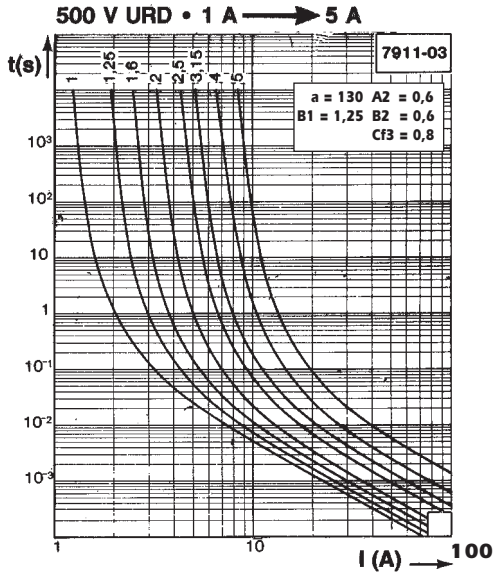
Electrical characteristics

Time vs current characteristics

WITHOUT BLOWN FUSE INDICATOR

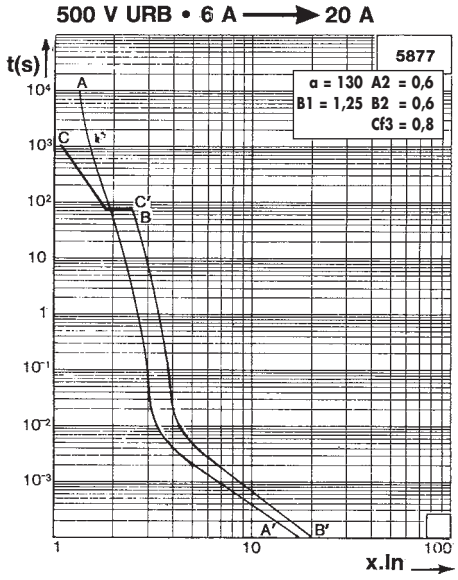


WITH TRIP INDICATOR

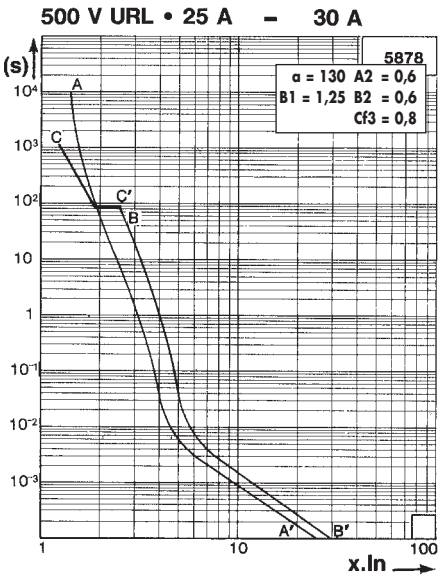


These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.
Tolerance for mean pre-arcing current ± 10%

WITH TRIP INDICATOR



WITH TRIP INDICATOR

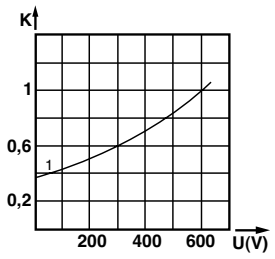


These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.
as a multiple of current rating.

Other Protistor® Fuses
Ferrule Fuses
10x38 URB/URD - 500 to 600 VAC

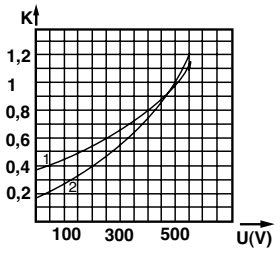
Corrective factor - Peak arc voltage

Corrective factor



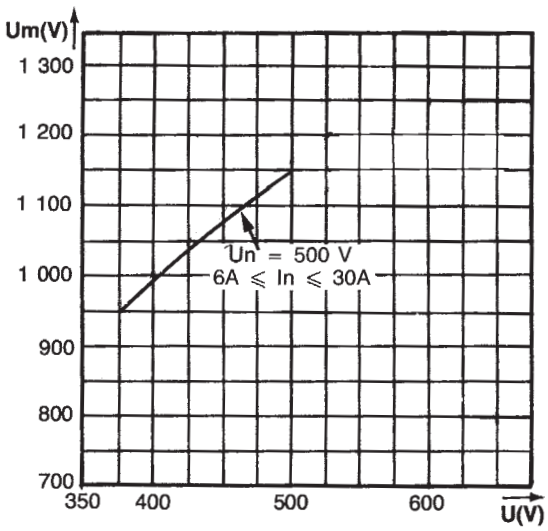
600 V UR
1 : 0.1 up to 0.8 A

These mean curves show the variation of the total clearing time (I^2t_t) and the total clearing duration t_t as a function of operating voltage U.



500 V UR
1 : 1 up to 5 A
2 : 6 up to 30 A

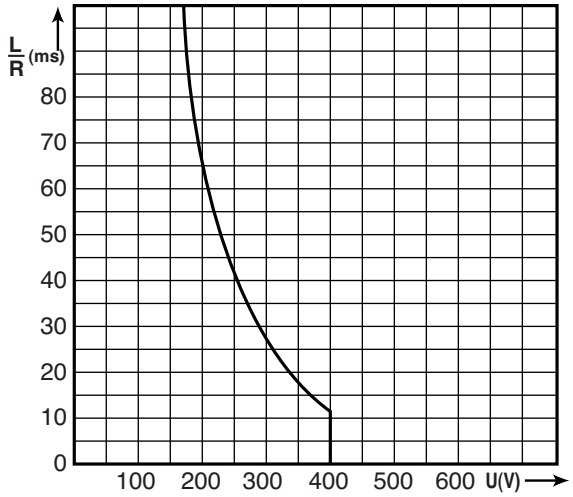
Peak arc voltage



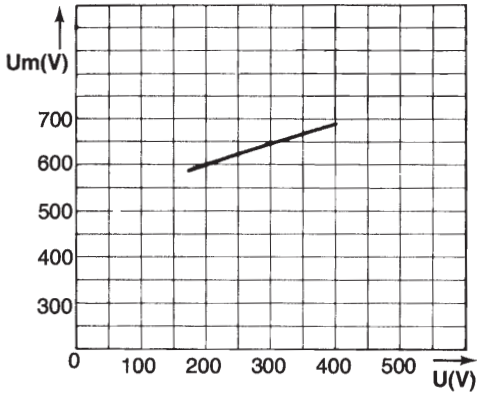
This curve shows the peak value Um of the arc voltage which appears across the fuse link as a function of the operating voltage U @ cos φ = 0.15.

D.C. Application data for fuses with trip indicator

500 V URD IN ≥ 6A



500 V URD IN ≥ 6A



This curve shows the peak value Um of the arc voltage which appears across the fuse link as a function of the operating voltage U.

Other Protistor® Fuses
Ferrule Fuses
14x51 gRC(URC) - 600 V to 690 VAC



600 - 690 V ~
gRC - URC from1 to 63 A
Size: 14 x 51

EXTREMELY HIGH BREAKING CAPACITY FUSES: PROTECTION OF SEMICONDUCTORS COMPLYING WITH IEC STANDARD 60269.1 AND 4

600V - 690 V VOLTAGE RATING (CURRENT RATING 1 TO 50 A)
AS PER IEC 33

gR CLASS (CURRENT RATING 1 TO 50 A) AS PER VDE 636-23
- CLEARING ALL OVERLOADS
- IMPROVED SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION AMONG ALL DISTRIBUTION CIRCUIT FUSES

aR CLASS (CURRENT RATING 63 A) ACCORDING TO VDE 636-23 AND IEC 60269.4

TWO MODELS: WITH OR WITHOUT TRIP-INDICATOR

gRC fuses FROM 8 TO 50 A are 700VAC-DC UL Recognized c UL us

Main Characteristics

Voltage rating U_N U_V	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t @ U_N I^2tt (A^2s)	Watts loss 0.8 I_N	Watts loss I_N	Tested Breaking capacity	Estimated Breaking capacity
690	gRC	1 2 4 6 8 10 12 16 20 25 32 40 50	0.8/0.31* 1.5/1* 7.2/6.7* 1.4 2.4 4.3 5.4 13 27 53 97 210 390	3.5/1.4* 6.7/4.3* 33/30* 19 30 44 65 110 175 300 550 1210 2250	0.17 0.33 0.77 1.3 1.5 1.75 2.25 2.5 2.75 3.0 3.5 4.5 5.0	0.35 0.60 1.4 2.5 3.0 3.3 4.25 4.8 5.25 5.8 7.0 8.8 10	100k A @ 690 V	300k A @ 690 V
600	URC	63	440	2200	8.0	16	100k A @ 600 V	300k A @ 600 V

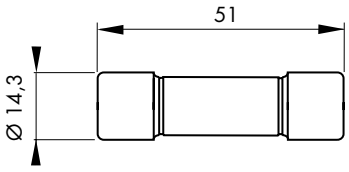
* I^2t values for fuses without trip-indicator.
Minimum operating voltage for the trip-indicator : 20 V

See Gears and Fuse gears section

Other Protistor® Fuses
Ferrule Fuses
14x51 gRC(URC) - 600 V to 690 VAC

14 X 51 Without trip-indicator

Current Rating	Designation	Ref. Number	Catalog Number
1	6.900 Cp gRC 14.51 1	E221080	FR14GC69V1
2	6.900 Cp gRC 14.51 2	H081473	FR14GC69V2
4	6.900 Cp gRC 14.51 4	J081474	FR14GC69V4
6	6.900 Cp gRC 14.51 6	T220909	FR14GC69V6
8	6.900 Cp gRC 14.51 8	S220908	FR14GC69V8
10	6.900 Cp gRC 14.51 10	R220907	FR14GC69V10
12	6.900 Cp gRC 14.51 12	Q220906	FR14GC69V12
16	6.900 Cp gRC 14.51 16	P220905	FR14GC69V16
20	6.900 Cp gRC 14.51 20	E220735	FR14GC69V20
25	6.900 Cp gRC 14.51 25	N220904	FR14GC69V25
32	6.900 Cp gRC 14.51 32	W220819	FR14GC69V32
40	6.900 Cp gRC 14.51 40	M220903	FR14GC69V40
50	6.900 Cp gRC 14.51 50	L220902	FR14GC69V50

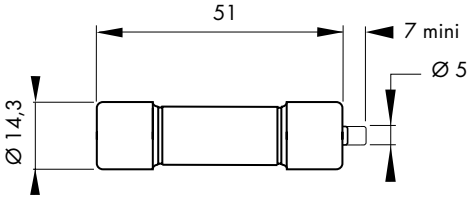


Weight: 18 g
Packaging: 10 pieces

14 X 51 With trip-indicator

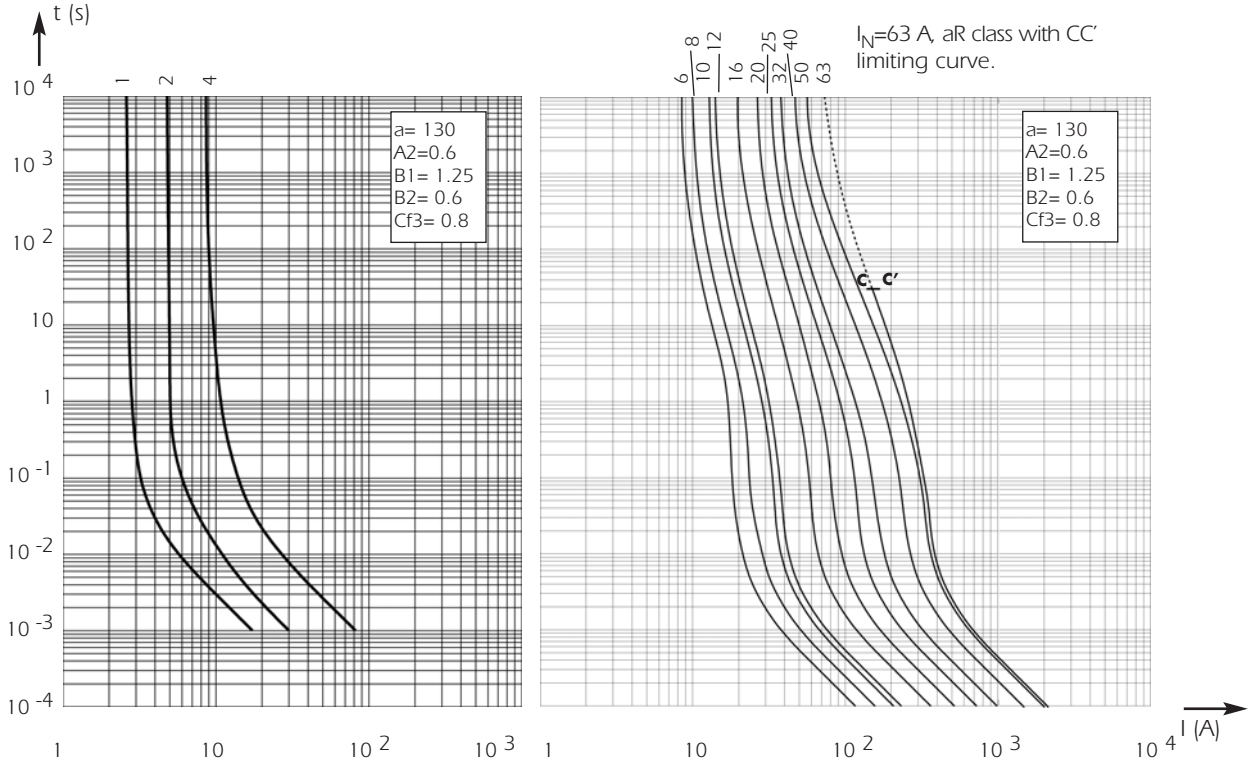
1	6.921 Cp gRC 14.51 1	F221081	FR14GC69V1T
2	6.921 Cp gRC 14.51 2	L081476	FR14GC69V2T
4	6.921 Cp gRC 14.51 4	F081517	FR14GC69V4T
6	6.921 Cp gRC 14.51 6	B220939	FR14GC69V6T
8	6.921 Cp gRC 14.51 8	A220938	FR14GC69V8T
10	6.921 Cp gRC 14.51 10	Z220937	FR14GC69V10T
12	6.921 Cp gRC 14.51 12	Y220936	FR14GC69V12T
16	6.921 Cp gRC 14.51 16	X220935	FR14GC69V16T
20	6.921 Cp gRC 14.51 20	W220934	FR14GC69V20T
25	6.921 Cp gRC 14.51 25	V220933	FR14GC69V25T
32	6.921 Cp gRC 14.51 32	V220818	FR14GC69V32T
40	6.921 Cp gRC 14.51 40	M220949	FR14GC69V40T
50	6.921 Cp gRC 14.51 50	N220950	FR14GC69V50T
63	621 Cp URC 14.51 63	V220910	FR14UC60V63T

except 1 to 6 and 63A rating



Weight: 18 g
Packaging: 10 pieces

Time vs current characteristics



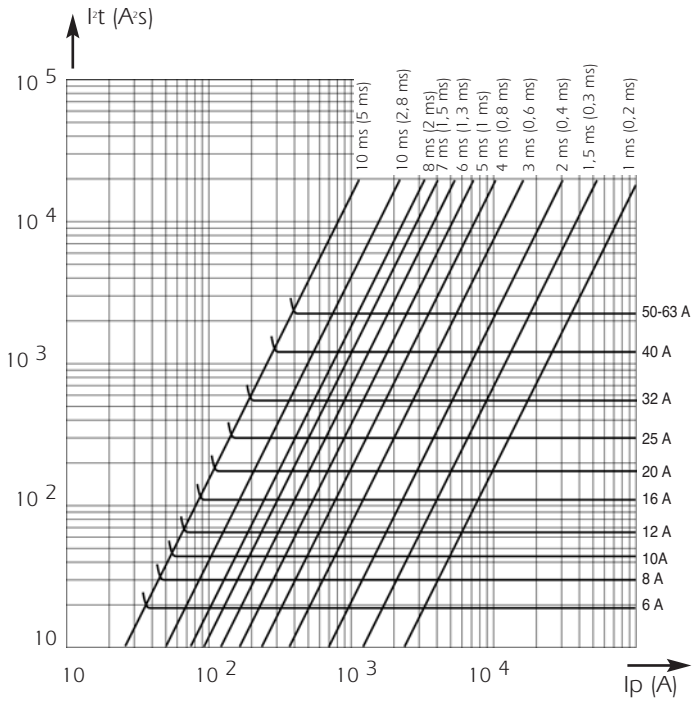
I_N=63 A, aR class with CC' limiting curve.

These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

Tolerance for mean pre-arcing current
± 10% for current rating 1, 2, 4 A
± 8% for current rating 6 to 63 A

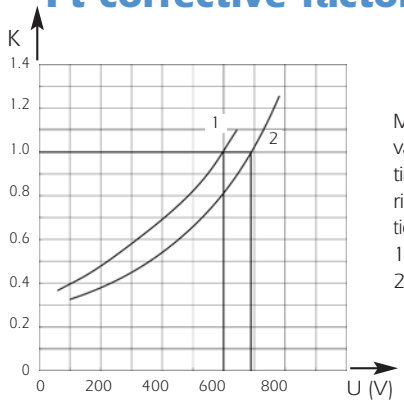
Other Protistor® Fuses
Ferrule Fuses
14x51 gRC(URC) - 600 V to 690 VAC

Total clearing I²t



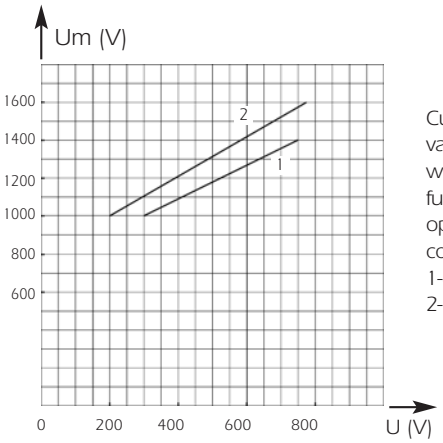
Horizontal curves show maximum values of total clearing I²t (I^2t_t) for each rated current as a function of prospective current Ip @ 690 V. cosφ = 0.15 (for 63 A @ 600 V. cosφ = 0.15).
Oblique lines indicate total clearing duration Tt, with associated pre-arcing duration in brackets.

I²t corrective factor



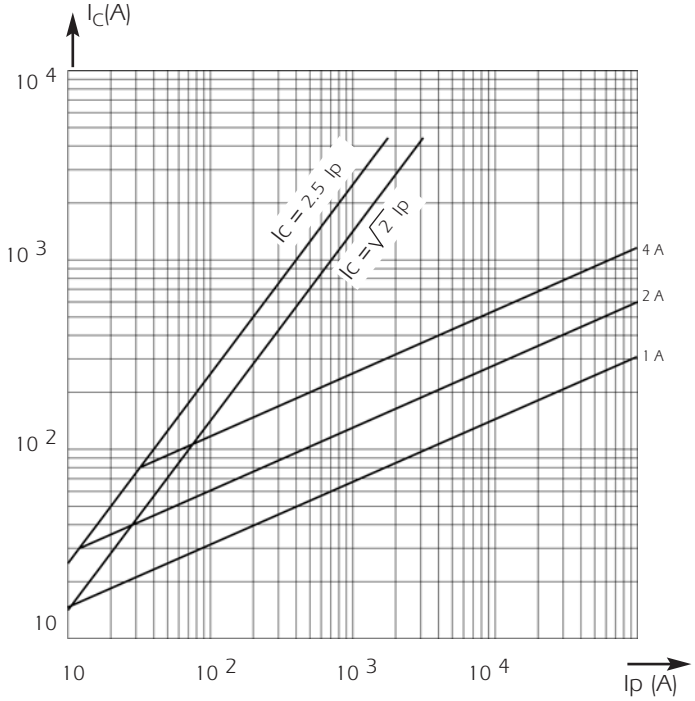
Mean curves showing variation of total clearing time (I^2t_t) and total clearing duration Tt as a function of operating voltage U.
1- 63 A rating - 600 V
2- 1 to 50 A rating - 690 V

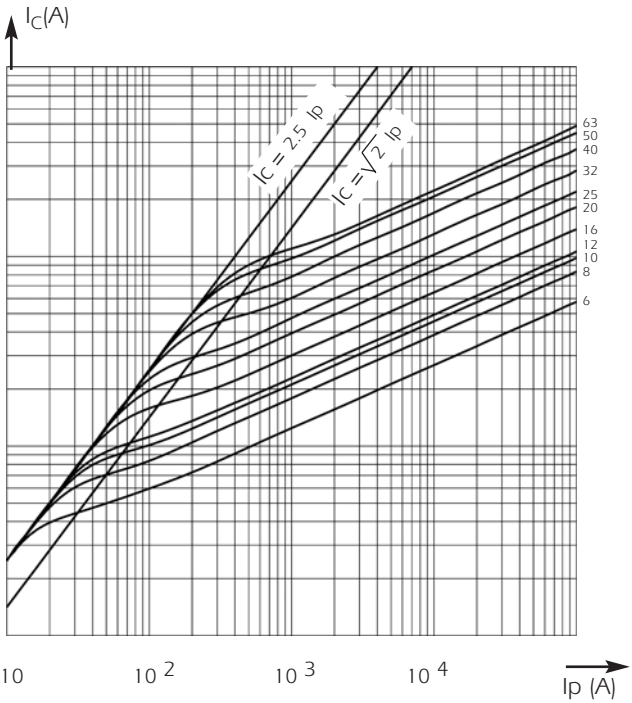
Peak arc voltage



Curves showing peak value Um of arc voltage which appears across fuse-link as a function of operating voltage U @ cos φ = 0.15
1-63A rating 600V
2-1 to 50A rating 690V

Current limitation curves

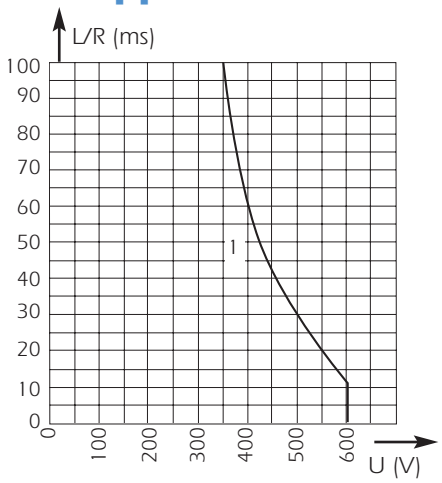


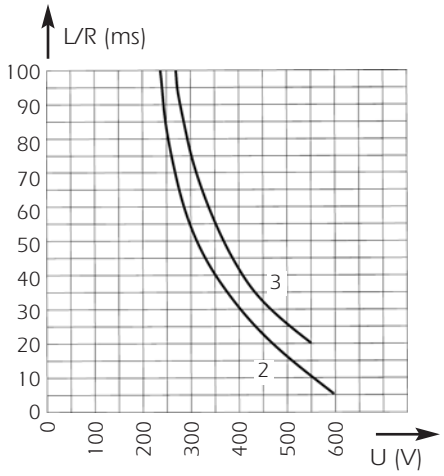


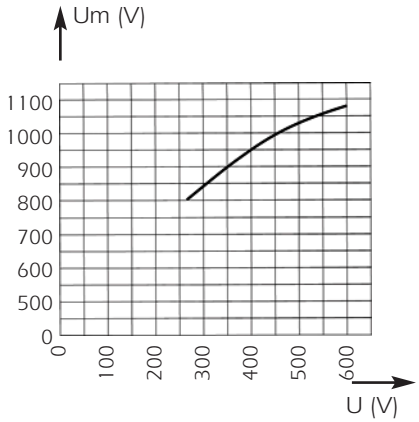
Curves show, for each rating, value of peak let-through current IC as a function of available fault current Ip.

Other Protistor® Fuses
Ferrule Fuses
14x51 gRC(URC) - 600 V to 690 VAC

DC Application data







Above. left and center: Curves indicate the permissible value of time constant L/R as a function of DC working voltage:

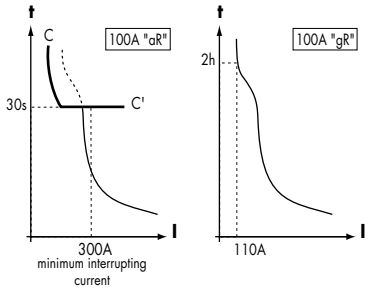
1- For rating 1,2 and 4 A (gRC) Ip ≥ 1,6 I_N
2- Ip ≥ 1,6 I_N for gRC only (rating 6 to 50 A)
3- Ip ≥ 2,5 I_N for gRC and URC (rating 6 to 63 A)

Above, right: Curve indicates peak arc voltage Um which may appear across fuse terminals at working voltage U.

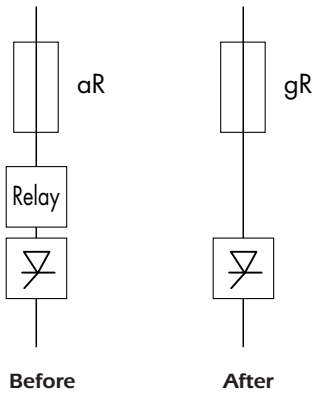
NEW gR-CLASS

OPTIMAL PROTECTION OF POWER EQUIPMENT

Thanks to recent technological developments, Ferraz Shawmut today markets gR-class PROTISTOR® fuses capable of clearing all types of overloads, from low multiples of current ratings up to very high short-circuit currents. Enhanced performance enables these fuses to provide solutions to many previously unsolved problems in power electronics: protection of cables without the use of additional components, protection of equipment from fire hazards, selective coordination of different fuses within a single power distribution installation...



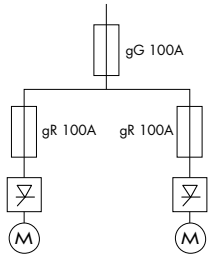
Example:
100A aR vs. 100A gR



SELECTIVE COORDINATION

gR-class semiconductor fuses can be utilized in association with gI and gG-class low voltage power distribution fuses of the same current rating, installed upstream. In a "selectively coordinated" distribution installation, melting is limited to the fuse associated with the faulted circuit, while upstream fuses remain intact. This prevents unnecessary down-time due to power blackouts in non-faulted branches.

Example of selective coordination



aR-CLASS vs. gR-CLASS

aR-class fuses feature a high minimum interrupting current as compared with their current rating. The primary time-current characteristic of aR-class fuses is the CC' curve, above which another protection device must be associated. The gR-class fuse represents considerably improved performance in semiconductor protection

FERRAZ SHAWMUT EXPERTISE

gR-class fuses should be used in the design of low voltage equipment and in the protection of power electronics equipment. Designers can often substitute a gR-class fuse for an aR-class fuse (10x38, 14x51, 22x58, PSC 000 and 17x49 DIN80 or BS 88-4) but the reverse is not true: an aR fuse can never replace a gR fuse. Start protecting your new equipment with gR-class fuses today. The application of gR class fuses, with current ratings less than 100 Amps, offers enhanced protection, safety and reliability, along with reduced risk of replacement errors and assembly costs.

Other Protistor® Fuses
Ferrule Fuses
22x58 gRC (URD) - 600 V to 690 VAC

EXTREMELY BREAKING CAPACITY RATING FUSES: PROTECTION OF SEMICONDUCTORS
IN COMPLIANCE WITH IEC STANDARD 60269.1 AND 4

600 - 690 V VOLTAGE RATING (CURRENT RATING 12 TO 135 A)
AS PER IEC 33

gR CLASS (CURRENT RATING 12 TO 100 A) ACCORDING TO VDE 636-23
- CLEARING ALL OVERLOADS
- IMPROVED SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION AMONG ALL DISTRIBUTION CIRCUIT FUSES

aR CLASS (CURRENT RATING 125 AND 135 A) AS PER VDE 636-23 AND IEC 60269.4

TWO MODELS COMPLYING WITH NF C 63210 AND 63211
WITH OR WITHOUT TRIP-INDICATOR

gRC FUSES ARE 700VAC-DC UL RECOGNIZED



Main Characteristics

Voltage rating U_N(V)	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t @ U_N I^2tt (A^2s)	Watts loss 0.8 I_N	Watts loss I_N	Tested Breaking capacity	Estimated Breaking capacity
690	gRC	20 25 32 40 50 63 80 100	17 39 72 118 242 430 970 2080	125 280 490 785 1390 2460 5565 11950	4.0 4.5 5.0 5.5 7.0 8.0 9.0 10	6.5 7.5 9.0 10 11.5 13.5 15.5 17	100k A @ 690 V	300k A @ 690 V
600	URD	125 135	2900 3360	14000 17700	14 15	22 25	100k A @ 600 V	300k A @ 600 V

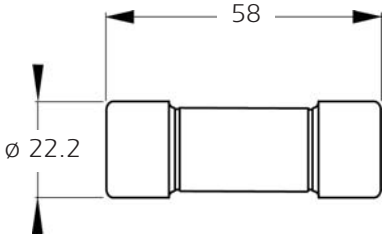
Minimum operating voltage for the trip-indicator: 20 V

See Fuse Blocks and Fuse Holders section

Other Protistor® Fuses
Ferrule Fuses
22x58 gRC (URD) - 600 V to 690 VAC

22 X 58 Without trip-indicator

Current rating	Designation	Ref. Number	Catalog Number
12	6,900 CP gRC 22.58 12	F232719	FR22GC69V12
16	6,900 CP gRC 22.58 16	G232720	FR22GC69V16
20	6,900 CP gRC 22.58 20	C220940	FR22GC69V20
25	6,900 CP gRC 22.58 25	B220916	FR22GC69V25
32	6,900 CP gRC 22.58 32	A220915	FR22GC69V32
40	6,900 CP gRC 22.58 40	Z220914	FR22GC69V40
50	6,900 CP gRC 22.58 50	Y220913	FR22GC69V50
63	6,900 CP gRC 22.58 63	X220912	FR22GC69V63
80	6,900 CP gRC 22.58 80	Y220821	FR22GC69V80
100	6,900 CP gRC 22.58 100	W220911	FR22GC69V100

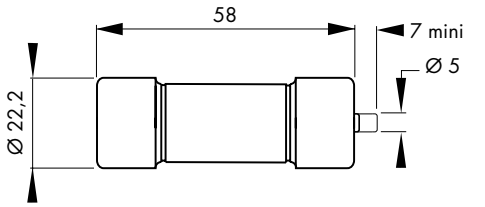


Weight: 57 g
Packaging: 10 pieces

22 X 58 With trip-indicator

20	6,921 CP gRC 22.58 20	D220734	FR22GC69V20T
25	6,921 CP gRC 22.58 25	G220921	FR22GC69V25T
32	6,921 CP gRC 22.58 32	F220920	FR22GC69V32T
40	6,921 CP gRC 22.58 40	E220919	FR22GC69V40T
50	6,921 CP gRC 22.58 50	D220918	FR22GC69V50T
63	6,921 CP gRC 22.58 63	C220733	FR22GC69V63T
80	6,921 CP gRC 22.58 80	X220820	FR22GC69V80T
100	6,921 CP gRC 22.58 100	C220917	FR22GC69V100T
125	621 CP URD 22.58 125	A220708	FR22UD60V125T
135	621 CP URD 22.58 135	B220709	FR22UD60V135T

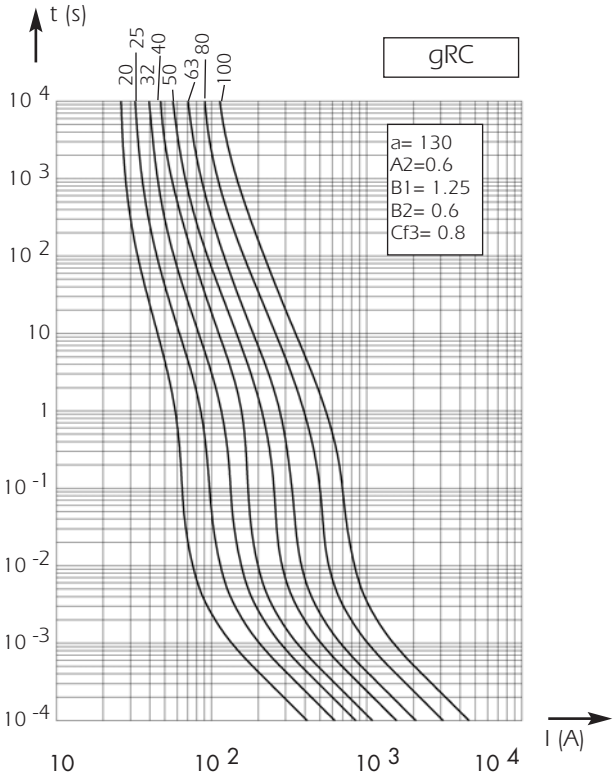
except 125 and 135A rating



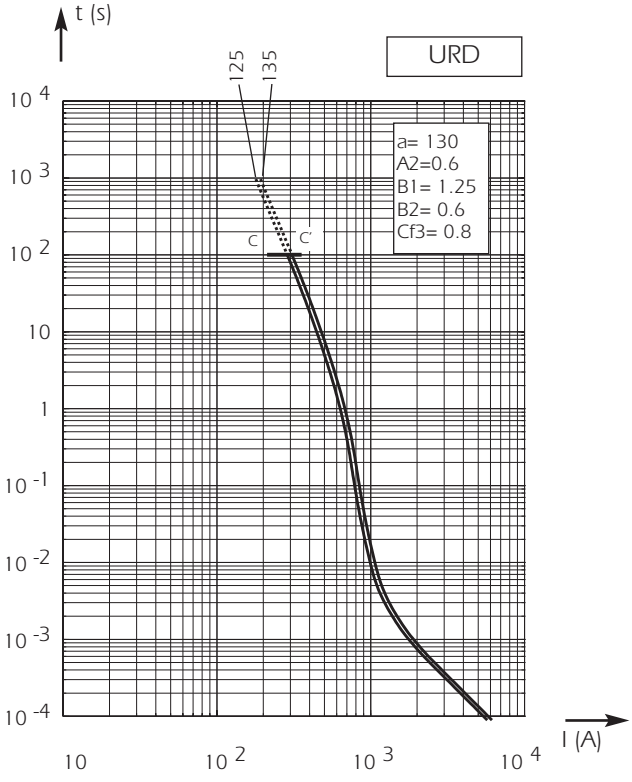
Weight: 57 g
Packaging: 10 pieces

Electrical characteristics

Time vs current characteristics



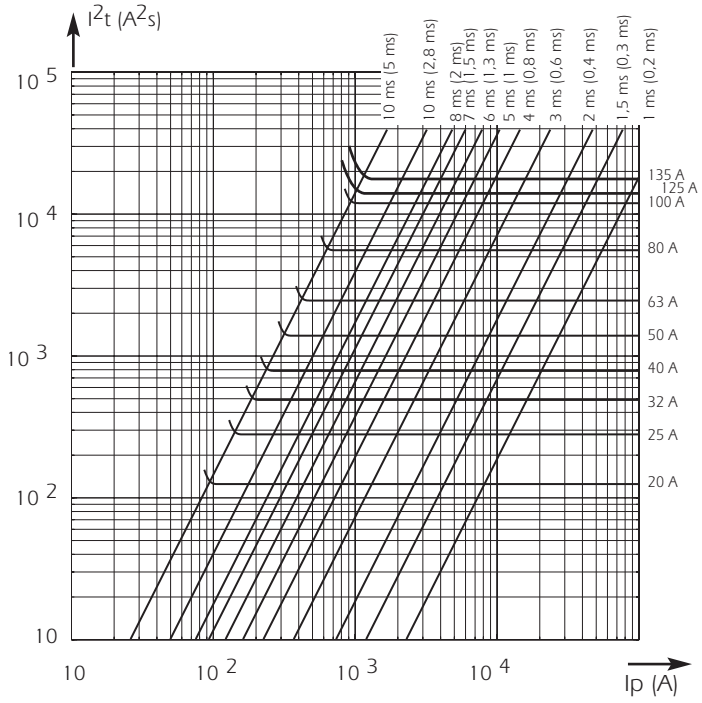
These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current



Tolerance for mean pre-arcing current
± 9% for all current ratings

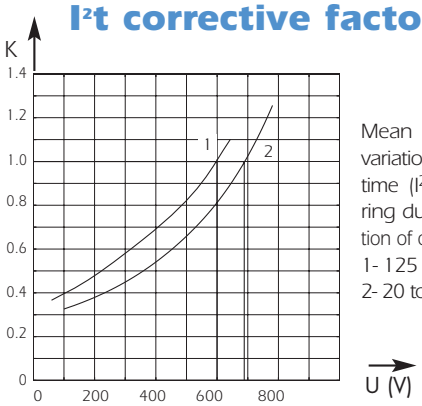
Other Protistor® Fuses
Ferrule Fuses
22x58 gRC (URD) - 600 V to 690 VAC

Total clearing I²t



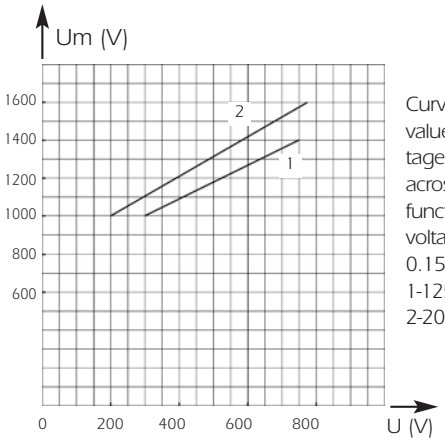
Above: Horizontal curves show, for each rated current, maximum values of total clearing I²t (I^2t_t) as a function of prospective current Ip @ 690 V. cosφ = 0.15 (125-135 A @ 600 V.cosφ = 0.15)
Oblique lines indicate total clearing duration Tt with associated pre-arcing duration in brackets.

I²t corrective factor



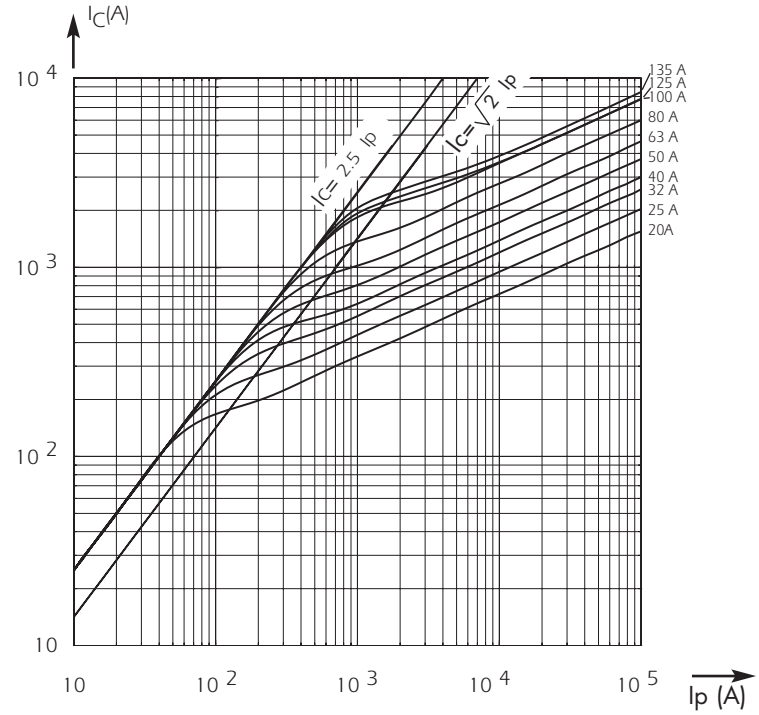
Mean curves showing variation of total clearing time (I^2t_t) and total clearing duration Tt as a function of operating voltage U.
1- 125 and 135 A rating
2- 20 to100 A rating

Peak arc voltage



Curve showing peak value Um of arc voltage which appears across fuse-link as a function of operating voltage U @ cos φ = 0.15
1-125 and 135A rating
2-20 to 100A rating

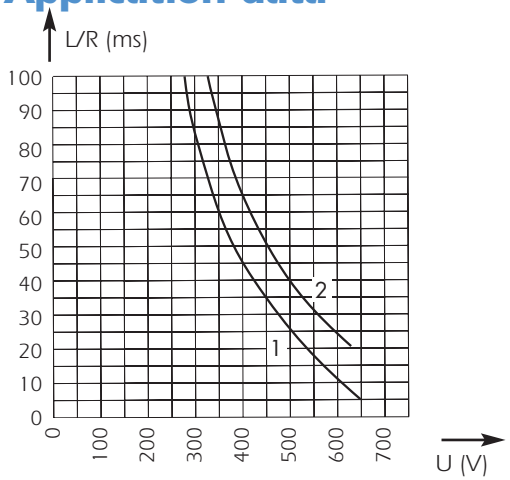
Current limitation curves



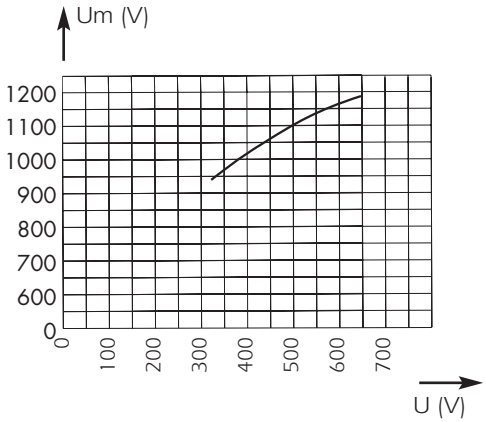
Left: Curves show value of peak let-through current IC as a function of the available fault current Ip.

Other Protistor® Fuses
Ferrule Fuses
22x58 gRC (URD) - 600 V to 690 VAC

DC Application data



Ces courbes indiquent la constante de temps L/R maximale admissible en fonction de la tension d'utilisation
Courbe 1 : $I_p \geq 1{,}6\ I_N$ pour fusibles gRC uniquement (calibres de 12 à 100 A)
Courbe 2 : $I_p \geq 2{,}5\ I_N$ pour fusibles gRC et URD

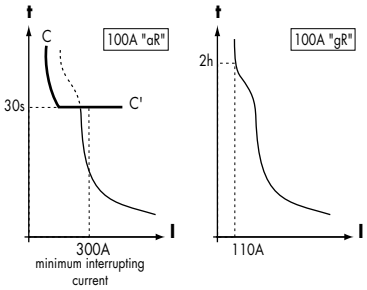


Above: Curve indicates peak arc voltage Um which may appear across fuse terminals at working voltage U.

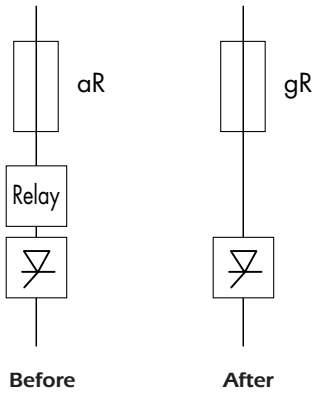
NEW gR-CLASS

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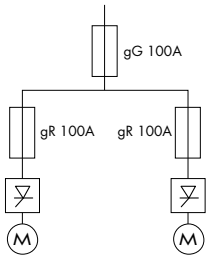
Example:
100A aR vs. 100A gR



SELECTIVE COORDINATION

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Example of selective coordination



aR-CLASS vs. gR-CLASS

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FERRAZ SHAWMUT EXPERTISE

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Other Protistor® Fuses
Ferrule Fuses
14x51 & 22x58 URC / URD - 600 to 690 VAC





EXTREMELY BREAKING CAPACITY RATING FUSES:
PROTECTION OF POWER SEMI CONDUCTORS COMPLYING WITH IEC STANDARD 60269.1 AND 4

600 - 690 V AC VOLTAGE RATING

aR-CLASS ACCORDING TO VDE 636-23 AND IEC 60269.4

WITH AND WITHOUT TRIP-INDICATOR FOR SIZES 14 x 51 AND 22 x 58

UL RECOGNIZED (EXCEPT 6 A)*

Main Characteristics

Voltage rating U_N(VAC)	Size	Class	Current rating I_N (A)	Pre-arcing 2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t @ (A^2s)		Watts loss 0.8 I_N	Watts loss I_N	Breaking Capacity
690 V	14 x 51	URC	6	1.3	17.5* @ 660V		1.1	2	100 kA @ 690 V
			8	2.4	27.5@ 660V		1.6	2.8	
			10	4.3	40@ 660V		2	3.5	
			12	5.4	60@ 660V		2.45	4.4	
			16	13.2	100@ 660V		2.7	4.8	
			20	27	160@ 660V		2.9	5.2	
			25	53	275@ 660V		3.2	5.8	
			32	98	500@ 660V		3.9	7	
			40 (1)	130	700@ 660V		6	10.7	
			50 (1)	280	1500@ 660V		6.3	11.6	
690 V	14 x 51	URD			7 IN < Ip < 30 IN	Ip ≥ 30 IN			
			40 (2)	130	850@660V	700@660V	6	10.7	100 kA @ 690 V
			50 (2)	280	1850@660V	1500@660V	6.3	11.6	
690 V	22 x 58	URD	25	22	125@ 660V		5.2	10	100 kA @ 690 V
			32	49	275@ 660V		5.7	11	
			40	88	480@ 660V		6.8	13	
			50	155	800@ 660V		7.8	14.9	
			63	350	1850@ 660V		8.4	16	
			80	730	3800@ 660V		9.4	17,8	
			100	1560	8000@ 660V		10	19	
600 V	22X58	URD	125	2900	14000@600V		14	22	100 kA @ 600 V
			130	3360	17700@600V		15	25	

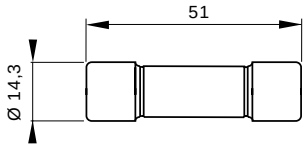
** Without trip-indicator I^2t : 15 A^2s.*
(1) No trip-indicator available for this model.
(2) Models available only with trip-indicator.

Other Protistor® Fuses
Ferrule Fuses
14x51 & 22x58 URC / URD - 600 to 690 VAC

*All the fuses presented on this page are (except 6 A)**

14x51 - Without blown fuse indication

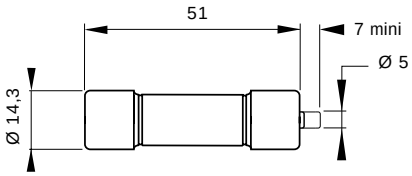
Current Rating	Designation	Ref. Number	Catalog Number
6 A	6.900 CP URC 14.51/6*	K081475	FR14UC69V6
8 A	6.900 CP URC 14.51/8	S093902	FR14UC69V8
10 A	6.900 CP URC 14.51/10	T093903	FR14UC69V10
12 A	6.900 CP URC 14.51/12	V093904	FR14UC69V12
16 A	6.900 CP URC 14.51/16	W093905	FR14UC69V16
20 A	6.900 CP URC 14.51/20	X093906	FR14UC69V20
25 A	6.900 CP URC 14.51/25	Y093907	FR14UC69V25
32 A	6.900 CP URC 14.51/32	Z093908	FR14UC69V32
40 A	6.900 CP URC 14.51/40	A093909	FR14UC69V40
50 A	6.900 CP URC 14.51/50	B093910	FR14UC69V50



Weight : 18g
Packaging : 10 pieces

14x51 - With trip-indicator

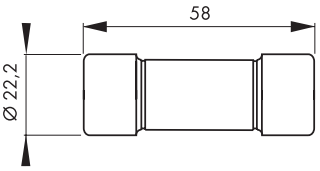
Current Rating	Designation	Ref. Number	Catalog Number
6 A	6.921 CP URC 14.51/6*	G081518	FR14UC69V6T
8 A	6.921 CP URC 14.51/8	C093911	FR14UC69V8T
10 A	6.921 CP URC 14.51/10	D093912	FR14UC69V10T
12 A	6.921 CP URC 14.51/12	E093913	FR14UC69V12T
16 A	6.921 CP URC 14.51/16	F093914	FR14UC69V16T
20 A	6.921 CP URC 14.51/20	G093915	FR14UC69V20T
25 A	6.921 CP URC 14.51/25	H093916	FR14UC69V25T
32 A	6.921 CP URC 14.51/32	J093917	FR14UC69V32T
40 A	6.921 CP URD 14.51/40	T100136	FR14UD69V40T
50 A	6.921 CP URD 14.51/50	V100137	FR14UD69V50T



Weight : 18g
Packaging : 10 pieces

22x58 - Without blown fuse indication

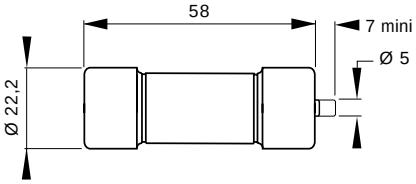
Current Rating	Designation	Ref. Number	Catalog Number
25 A	6.900 CP URD 22x58/25	B093956	FR22UD69V25
32 A	6.900 CP URD 22x58/32	Z094828	FR22UD69V32
40 A	6.900 CP URD 22x58/40	S094822	FR22UD69V40
50 A	6.900 CP URD 22x58/50	W094779	FR22UD69V50
63 A	6.900 CP URD 22x58/63	T094823	FR22UD69V63
80 A	6.900 CP URD 22x58/80	A094829	FR22UD69V80
100 A	6.900 CP URD 22x58/100	Y094827	FR22UD69V100



Weight: 57 g
Packaging: 10 pieces

22x58 - With trip-indicator

Current Rating	Designation	Ref. Number	Catalog Number
25 A	6,921 CP URD 22x58/ 25	H093801	FR22UD69V25T
32 A	6,921 CP URD 22x58/ 32	C093957	FR22UD69V32T
40 A	6,921 CP URD 22x58/ 40	J093802	FR22UD69V40T
50 A	6,921 CP URD 22x58/ 50	D093958	FR22UD69V50T
63 A	6,921 CP URD 22x58/ 63	K093803	FR22UD69V63T
80 A	6,921 CP URD 22x58/ 80	E093959	FR22UD69V80T
100 A	6,921 CP URD 22x58/100	F093960	FR22UD69V100T
125 A	621 CP URD 22x58/125	A220708	FR22UD60V125T
135 A	621 CP URD 22x58/135	B220709	FR22UD60V135T



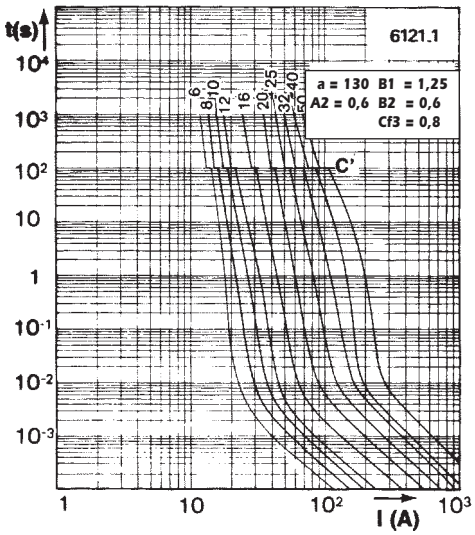
Weight: 57 g
Packaging: 10 pieces

Fuseholder Solution: See Gears and Fuse gears section

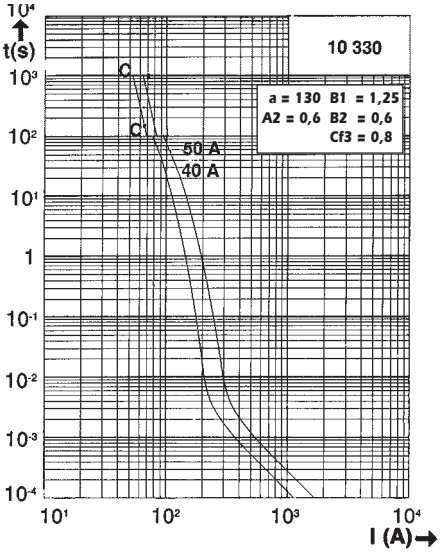
Other Protistor® Fuses
Ferrule Fuses
14x51 & 22x58 URC / URD - 600 to 690 VAC

Time vs current characteristics

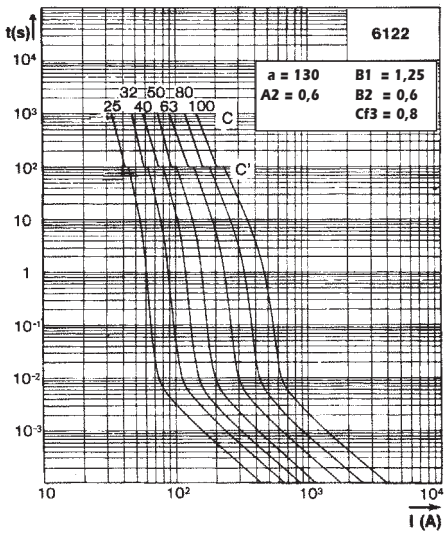
14x51 URC



14x51 URD



22x58 URD



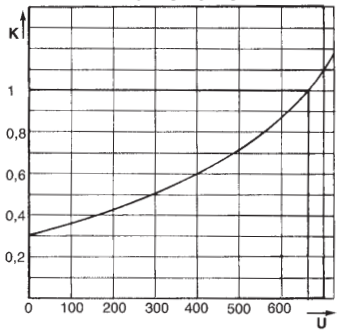
These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

Tolerance for mean pre-arcing current ± 10%

Corrective factor - Peak arc voltage

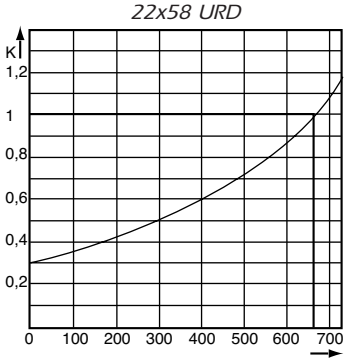
Corrective factor

14x51 URC - URD



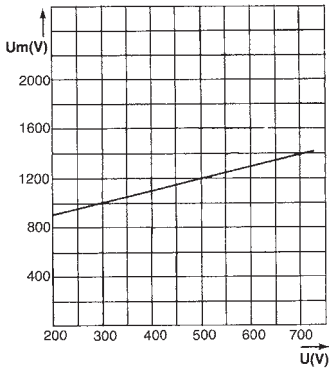
The mean curves show the variation of the total clearing I^2t_t and the total clearing duration t_t as a function of operating voltage U.

22x58 URD



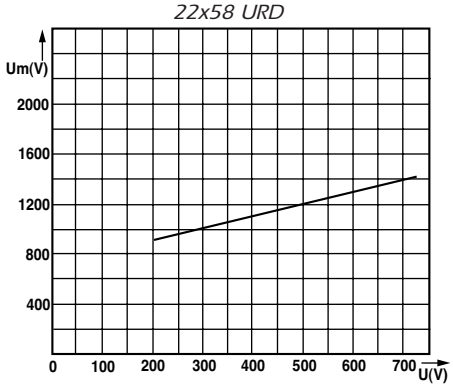
Peak arc voltage

14x51 URC - URD



This curve shows the peak value Um of the arc voltage which appears across the fuse-link as a function of the operating voltage U @ cos j = 0.15.

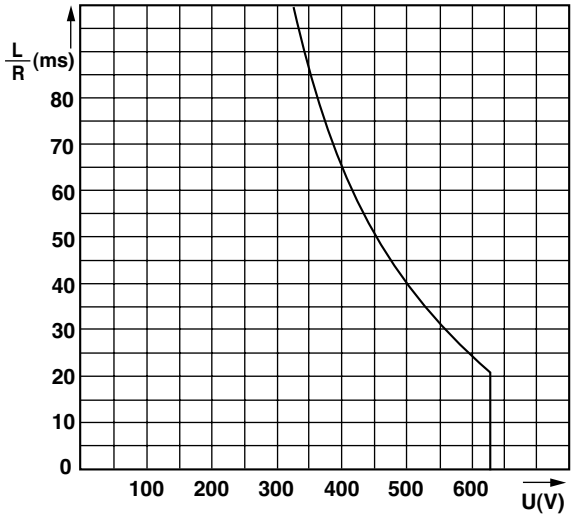
22x58 URD



Other Protistor® Fuses
Ferrule Fuses
14x51 & 22x58 URC / URD - 600 to 690 VAC

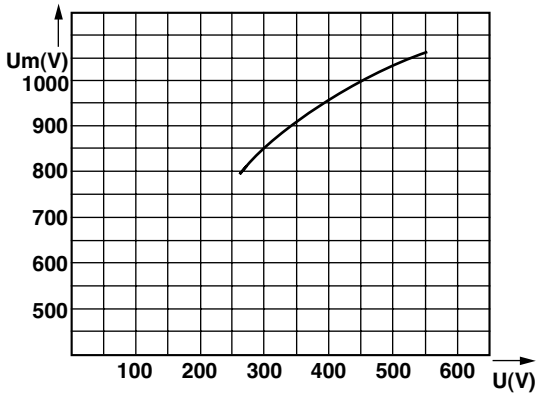
DC Application data

14x51 URC - URD



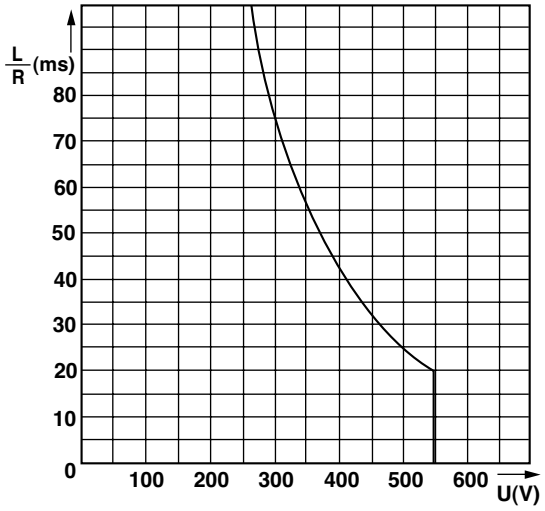
This curve indicates the permissible value of time constant L/r as a function of DC working voltage

14x51 URC - URD



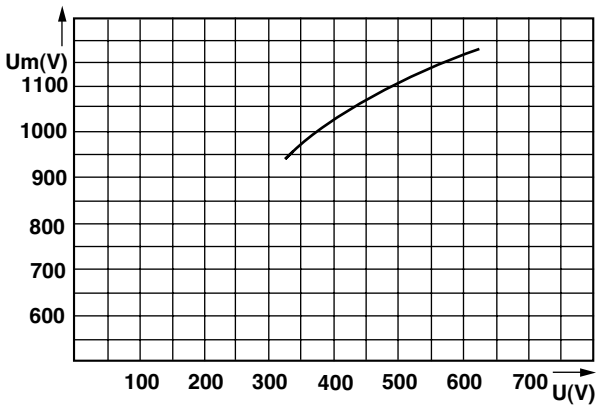
Minimum breaking current: see time-current characteristics

22x58 URD



This curve indicates the permissible value of time constant L/r as a function of DC working voltage

22x58 URD



This curve shows the peak value Um of the arc voltage which appears across the fuse-link as a function of the operating voltage U.

Other Protistor® Fuses
Ferrule Fuses
14x51 URGB & 22x58 URGA - 600 V to 690 VAC



EXTREMELY HIGH BREAKING CAPACITY FUSES:
PROTECTION OF POWER SEMICONDUCTORS AS PER IEC STANDARD 60269.1 AND 4

600 V - 690 V AC VOLTAGE RATING

aR CLASS AS PER VDE 636-23 AND IEC 60269.4

WITH AND WITHOUT TRIP-INDICATOR
FOR SIZES 14 x 51 AND 22 x 58

Main Characteristics

Voltage rating U_N(VAC)	Size	Class	Current rating I_N (A)	Pre-arcing I^2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t @ A^2s 660 V		Watts loss		Tested Breaking capacity
					$I_p \leq 30\ I_N$	$I_p > 30\ I_N$	0,8 I_N	I_N	
690 V	14 x 51	URGB	8	3.3	20	17	1.45	2.7	200 kA @ 690 V
			10	6.0	37	30	1.85	3.4	
			12	9.3	75	60	2.5	4.6	
			16	15.6	95	75	3.4	6.2	
			20	30.0	175	145	4	7.4	
			25	53.5	300	250	4.7	8.6	
			32	100	550	460	5.7	10.6	
			40	214	1150	940	6.2	11.5	
			50	480	2550	2070	7	13	
	22 x 58	URGA	25	45	210		4.7	8.5	200 kA @ 690 V
			32	84	400		5.7	10.3	
			40	150	700		7.1	12.8	
			50	270	1270		8.7	15.7	
			63	595	2770		9.8	17.7	
			80	1165	5500		12	21.7	
							14.2	25.6	
600* - 690 V	22 x 58	URGA	100*	2150	9000*		14.2	25.6	200 kA @600 V

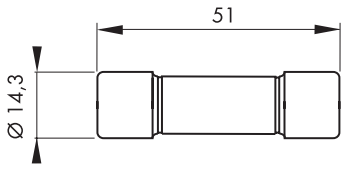
*Operating voltage limited to 600 V for the model with blown fuse trip-indicator / Total clearing I^2t @ 600 V = 9000 A^2s
Minimum operating voltage for built-in trip-indicator: 20 V

Other Protistor® Fuses
Ferrule Fuses
14x51 URGB & 22x58 URGA - 600 V to 690 VAC

References

14x51 - Without blown fuse trip-indicator

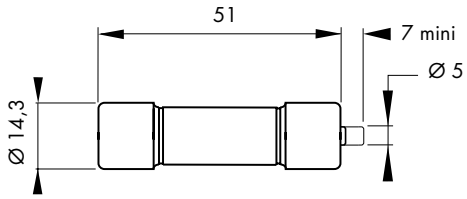
Current Rating	Designation	Ref. Number	Catalog Number
8 A	6.900 CP URGB 14.51/8	T078033	FR14UB69V8
10 A	6.900 CP URGB 14.51/10	V078034	FR14UB69V10
12 A	6.900 CP URGB 14.51/12	W078035	FR14UB69V12
16 A	6.900 CP URGB 14.51/16	X078036	FR14UB69V16
20 A	6.900 CP URGB 14.51/20	Y078037	FR14UB69V20
25 A	6.900 CP URGB 14.51/25	Z078038	FR14UB69V25
32 A	6.900 CP URGB 14.51/32	A078039	FR14UB69V32
40 A	6.900 CP URGB 14.51/40	B078040	FR14UB69V40
50 A	6.900 CP URGB 14.51/50	C078041	FR14UB69V50



Weight: 18 g
Packaging: 10 pieces

14x51 - With trip-indicator

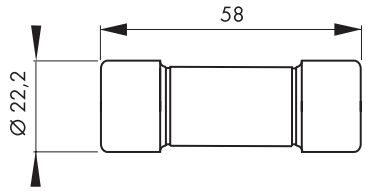
Current Rating	Designation	Ref. Number	Catalog Number
8 A	6.921 CP URGB 14.51/8	D078042	FR14UB69V8T
10 A	6.921 CP URGB 14.51/10	E078043	FR14UB69V10T
12 A	6.921 CP URGB 14.51/12	F078044	FR14UB69V12T
16 A	6.921 CP URGB 14.51/16	G078045	FR14UB69V16T
20 A	6.921 CP URGB 14.51/20	H078046	FR14UB69V20T
25 A	6.921 CP URGB 14.51/25	J078047	FR14UB69V25T
32 A	6.921 CP URGB 14.51/32	K078048	FR14UB69V32T
40 A	6.921 CP URGB 14.51/40	L078049	FR14UB69V40T
50 A	6.921 CP URGB 14.51/50	M078050	FR14UB69V50T



Weight: 18 g
Packaging: 10 pieces

22x58 - Without blown fuse trip-indicator

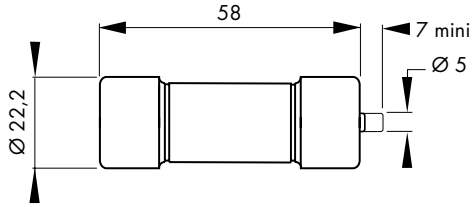
Current Rating	Designation	Ref. Number	Catalog Number
25 A	6.900 CP URGA 22.58/25	C095245	FR22UA69V25
32 A	6.900 CP URGA 22.58/32	D095246	FR22UA69V32
40 A	6.900 CP URGA 22.58/40	E095247	FR22UA69V40
50 A	6.900 CP URGA 22.58/50	F095248	FR22UA69V50
63 A	6.900 CP URGA 22.58/63	G095249	FR22UA69V63
80 A	6.900 CP URGA 22.58/80	H095250	FR22UA69V80
100 A	6.900 CP URGA 22.58/100	N078051	FR22UA69V100



Weight: 57 g
Packaging: 10 pieces

22x58 - With trip-indicator

Current Rating	Designation	Ref. Number	Catalog Number
25 A	6.921 CP URGA 22.58/25	T095260	FR22UA69V25T
32 A	6.921 CP URGA 22.58/32	V095261	FR22UA69V32T
40 A	6.921 CP URGA 22.58/40	W095262	FR22UA69V40T
50 A	6.921 CP URGA 22.58/50	X095263	FR22UA69V50T
63 A	6.921 CP URGA 22.58/63	Y095264	FR22UA69V63T
80 A	6.921 CP URGA 22.58/80	Z095265	FR22UA69V80T
100 A	621 CP URGA 22.58/100	N098222	FR22UA60V100T



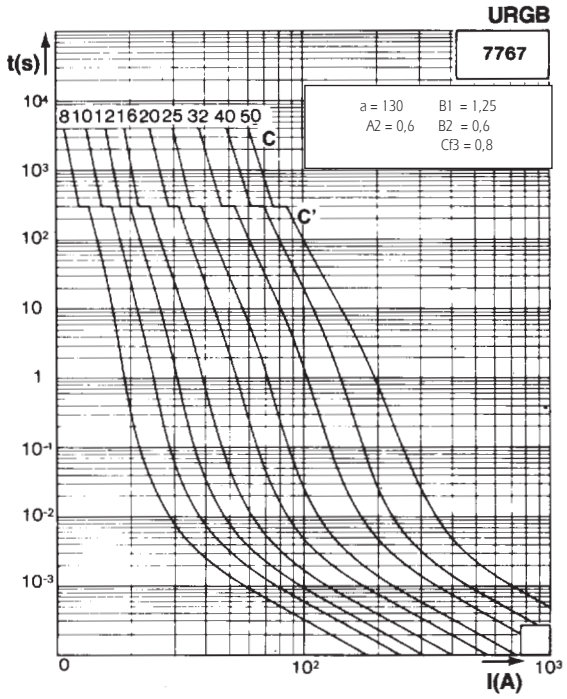
Weight: 57 g
Packaging: 10 pieces

See Gears and Fuse gears section

Other Protistor® Fuses
Ferrule Fuses
14x51 URGB & 22x58 URGA - 600 V to 690 VAC

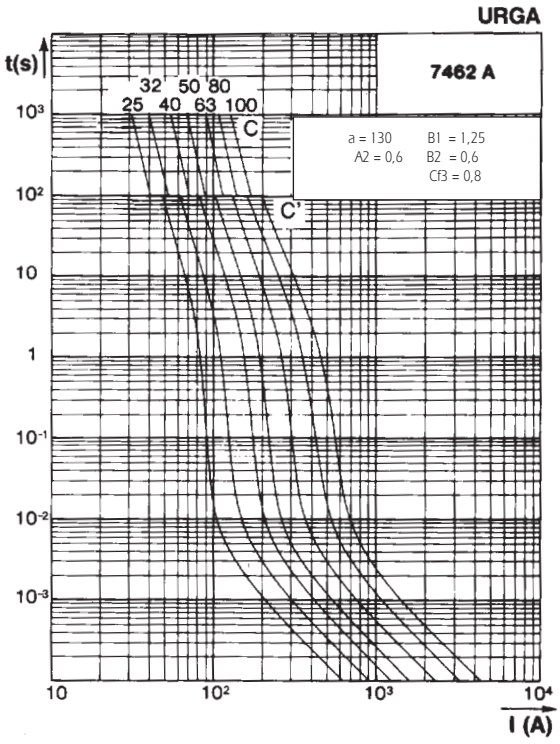
Electrical Characteristics

Time vs current characteristics



TOLERANCE OF MEAN PRE-ARCING CURRENT ± 10%

These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.



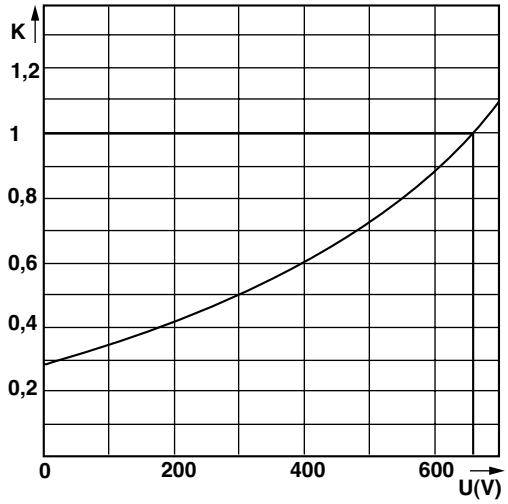
TOLERANCE FOR MEAN PRE-ARCING CURRENT ± 8%.

Other Protistor® Fuses
Ferrule Fuses
14x51 URGB & 22x58 URGA - 600 V to 690 VAC

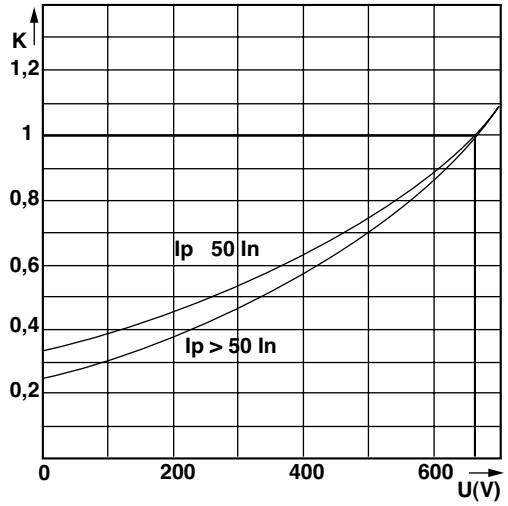
Corrective factor - Peak arc voltage

Corrective factor

URGB



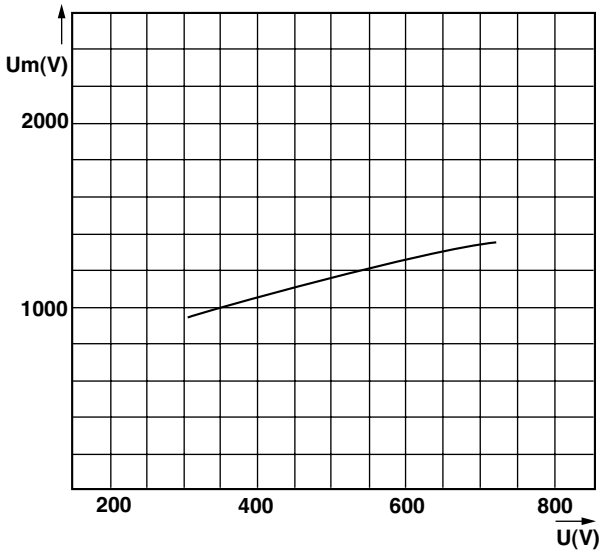
URGA



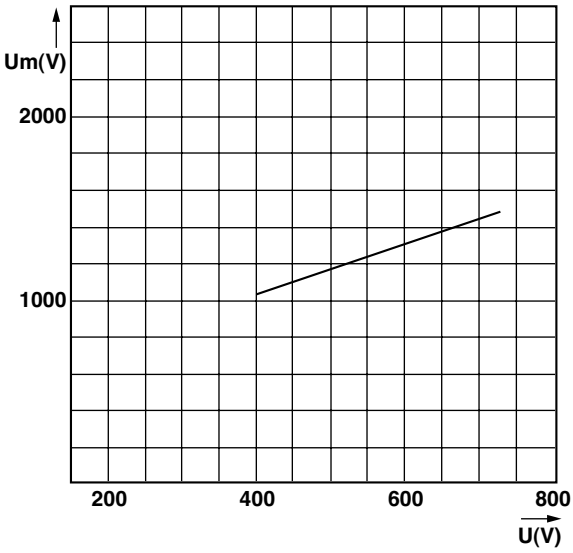
These mean curves show the variation of the total clearing time (I^2t_t) and the total clearing duration t_t as a function of operating voltage U.

Peak arc voltage

URGB



URGA

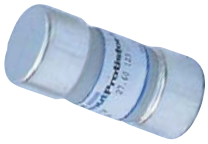


This curve shows the peak value Um of the arc voltage which appears across the fuse link as a function of operating voltage U @ cos φ = 0.15.

Other Protistor® Fuses
Ferrule Fuses
27x60 gRB - 800 VAC

800 VAC
gRB from 8 to 110 A
Size: 27 x 60

EXTREMELY HIGH BREAKING CAPACITY FUSES: PROTECTION OF POWER SEMICONDUCTORS
COMPLYING WITH IEC STANDARDS 60269-1 AND 4

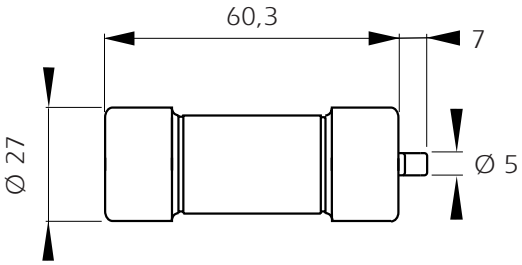


800 V VOLTAGE RATING ACCORDING TO IEC 33

gR CLASS AS PER IEC 60269-4
- CLEARING ALL OVERLOADS
- IMPROVED SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION WITH OTHER FUSES

WITH TRIP INDICATOR

Dimensions



Unit weight
78 g

Trip indicator force: 4.5N at 0mm - 2.5N at 7mm

Main Characteristics

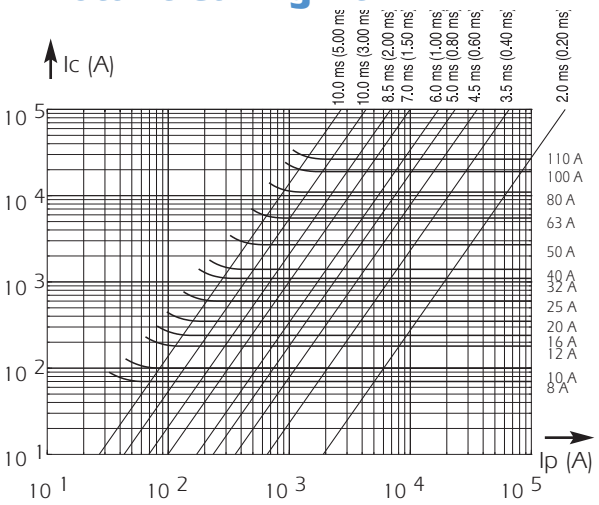
Voltage rating U_N(V)	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2tp (A2s)	Total clearing I^2t @ UN I^2tt (A2s)	Watts loss 0.8 I_N	Watts loss I_N	Tested Breaking capacity	Designation	Ref. Number	Pack	Catalog Number
		8	4.25	70	1.2	2.0		821 CP GRB27.60 8	R221436	10	FR27GB80V 8T
		10	8.0	100	1.3	2.3		821 CP GRB27.60 10	S221437	10	FR27GB80V 10T
		12	17.0	180	1.4	2.5	175 k A	821 CP GRB27.60 12	T221438	10	FR27GB80V 12T
		16	26.5	250	1.9	3.5	@ 700V	821 CP GRB27.60 16	V221439	10	FR27GB80V 16T
		20	38.5	350	2.4	4.0		821 CP GRB27.60 20	W221440	10	FR27GB80V 20T
800	gRB	25	73.0	600	2.8	5.0		821 CP GRB27.60 25	X221441	10	FR27GB80V 25T
		32	130	1000	3.5	6.0	90 kA	821 CP GRB27.60 32	Y221442	10	FR27GB80V 32T
		40	195	1400	4.7	8.0	@ 800V	821 CP GRB27.60 40	Z221443	10	FR27GB80V 40T
		50	430	2700	4.8	8.5		821 CP GRB27.60 50	A221444	10	FR27GB80V 50T
		63	965	5500	5.6	10		821 CP GRB27.60 63	B221445	10	FR27GB80V 63T
		80	1890	11000	6.4	11.5		821 CP GRB27.60 80	C221446	10	FR27GB80V 80T
		100	3480	19000	7.4	13		821 CP GRB27.60 100	D221447	10	FR27GB80V 100T
		110	4670	27000	7.7	14		821 CP GRB27.60 110	E221448	10	FR27GB80V 110T

Minimum operating voltage for trip-indicator: 20 V

See Gears and Fuse gears

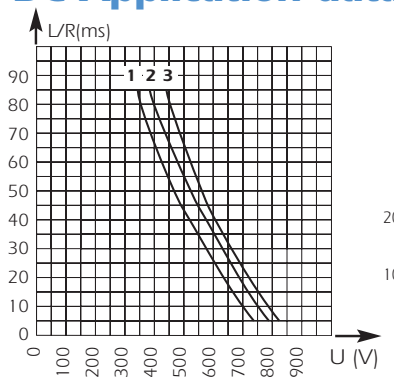
Other Protistor® Fuses
Ferrule Fuses
27x60 gRB - 800 VAC

Total clearing I²t

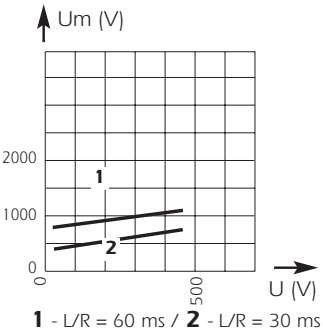


Above: Horizontal curves show maximum values of total clearing I^2t (I^2t_t) as function of prospective current Ip. @ U_N with cosφ = 0.15. Oblique lines indicate total clearing duration Tt and associated pre-arcing duration in brackets.

DC Application data



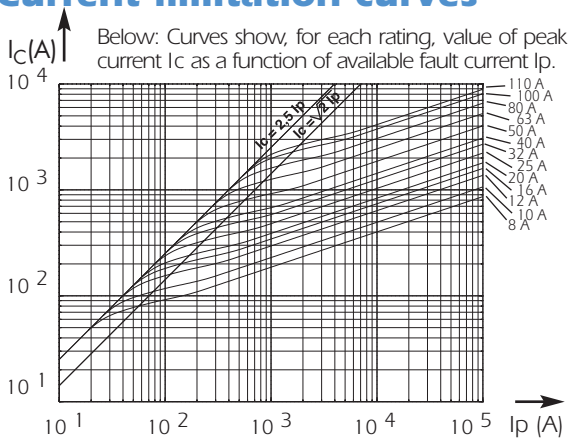
Above: Curves indicate permissible value of time constant L/R as a function of DC working voltage.
1 - I_N from 80 to 110 A / **2** - I_N from 25 to 63 A
3 - I_N from 8 to 12 A



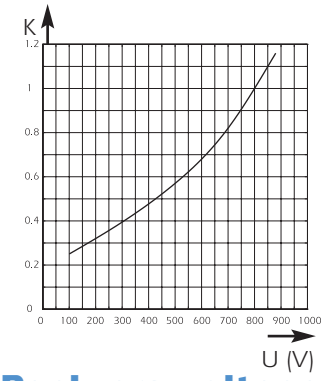
1 - L/R = 60 ms / **2** - L/R = 30 ms

Above: Curve indicates peak arc voltage Um which may appear across fuse terminals at working voltage U, for different values of time constant L/R of the fault circuit.

Current limitation curves

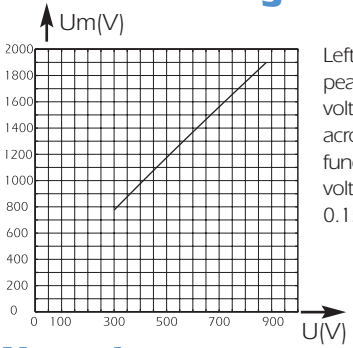


I²t corrective factor



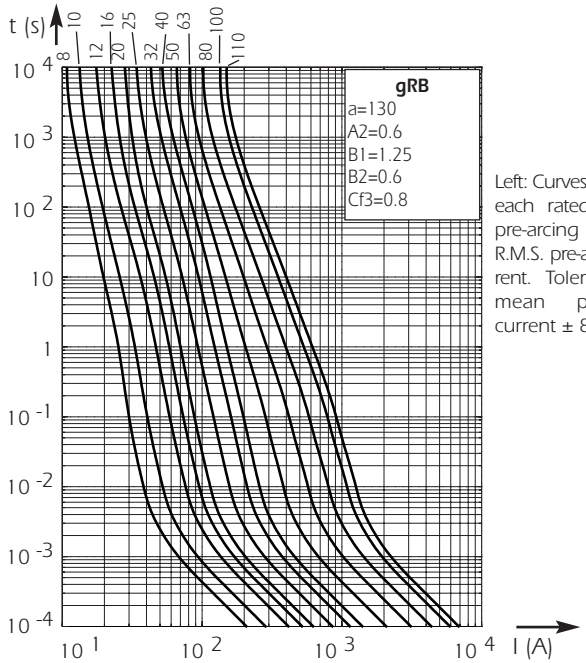
Left: Mean curve shows variation of total clearing time (I^2t_t) and total clearing duration Tt as a function of operating voltage U.

Peak arc voltage



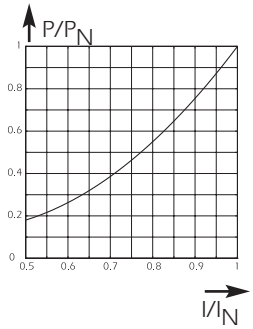
Left: Curve shows peak value Um of arc voltage which appears across the fuse link as a function of oper-ating voltage U @ cos φ = 0.15

Time vs current characteristics



Left: Curves show, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current. Tolerance for mean pre-arcing current ± 8%.

Watts loss



Left: Curve enables computation of power losses P for a I_N-rated fuse as a function of the R.M.S. current I (as a multiple of I_N for steady state operation)

Other Protistor® Fuses
Ferrule Fuses
27x60 URGD - 600 V to 690 VAC



EXTREMELY BREAKING CAPACITY RATING FUSES:
PROTECTION OF POWER SEMICONDUCTORS ACCORDING TO IEC STANDARD 60269.1 AND 4

600 V - 690 V AC VOLTAGE RATING

aR- CLASS ACCORDING TO VDE 636-23 AND IEC 60269.4

Main Characteristics

Voltage rating U_N(VAC)	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2t_p (A^2s)	Total clearing I^2t I^2t_t (A^2s)	Watts loss 0.8 I_N	Watts loss I_N	Tested Breaking capaciy
690 V	URGD	63 80 100 125 160 200	405 860 1620 3425 6480 13700	1840 @ 660 V 3750 @ 660 V 6800 @ 660 V 13600 @ 660 V 24600 @ 660 V 61500 @ 660 V	12 13.5 15 16 17 18.5	22 24.6 27 29.5 32.5 35.7	200 kA @ 690 V
600 V	URGD	250	29600	107000 @ 600 V	21	40	200 kA @ 600 V

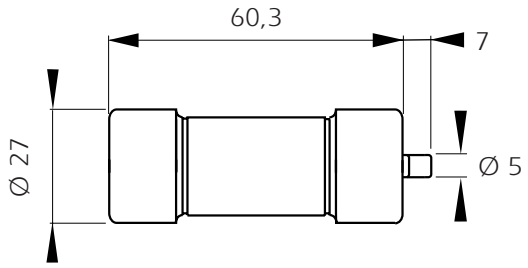
Minimum operating voltage for trip-indicator: 20 V

Ref. Numbers

27x60 - With trip-indicator

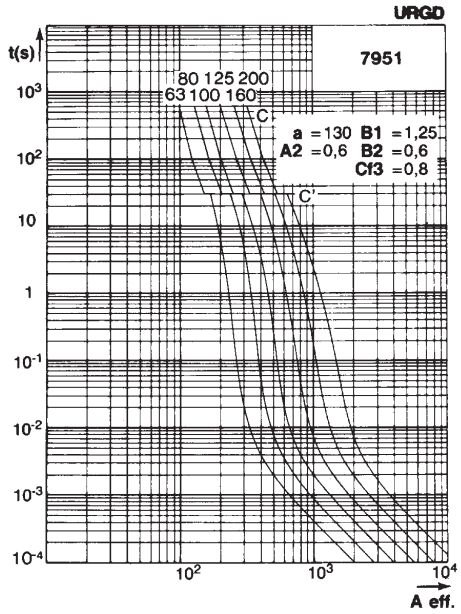
Type	Voltage	Current rating	Designation	Ref. Number	Catalog Number
URGD	690 V	63 A	6.921 CP URGD 27x60/ 63	A076820	FR27UD69V63T
		80 A	6.921 CP URGD 27x60/ 80	B076821	FR27UD69V80T
		100 A	6.921 CP URGD 27x60/100	C076822	FR27UD69V100T
		125 A	6.921 CP URGD 27x60/125	D076823	FR27UD69V125T
		160 A	6.921 CP URGD 27x60/160	E076824	FR27UD69V160T
		200 A	6.921 CP URGD 27x60/200	F076825	FR27UD69V200T
URGD	600 V	250 A	621 CP URGD 27x60/250	W076264	FR27UD60V250T

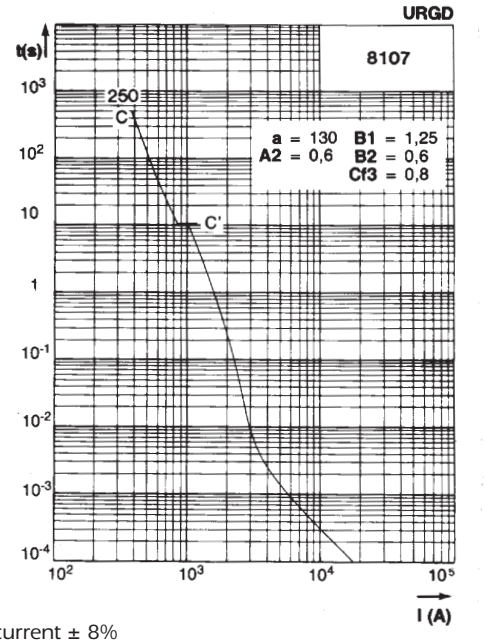
See Gears and Fuse gears section



Other Protistor® Fuses
Ferrule Fuses
27x60 URGD - 600 V to 690 VAC

Time vs current characteristics



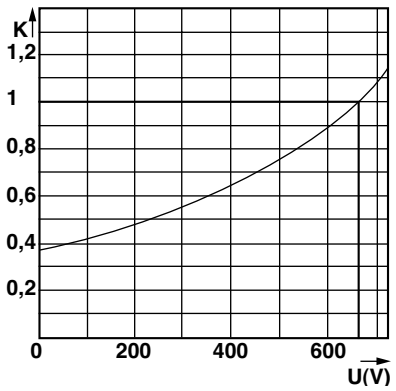


Tolerance for mean pre-arcing current ± 8%

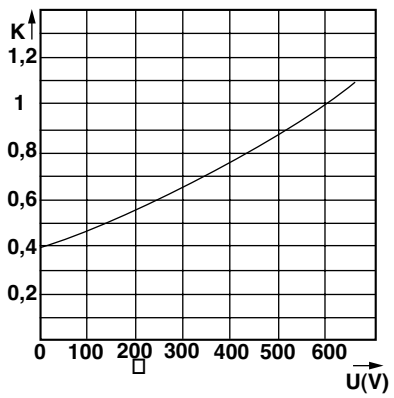
These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

Corrective factor

63 to 200A URGD



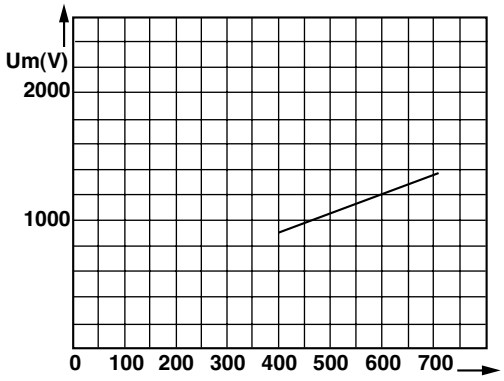
250A URGD



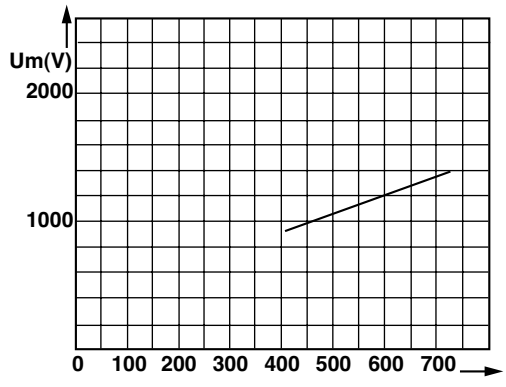
Left: Mean curves showing variation of total clearing time (I^2t_t) and the total clearing duration t_t as a function of the operating voltage U .

Peak arc voltage

63 to 200A URGD



250A URGD



Left: Curves show peak value Um of arc voltage which appears across the fuse-link as a function of operating voltage U @ cos φ = 0.15.

Other Protistor® Fuses
Ferrule Fuses
27x60 URQ/URS/URB - 690 V to 1000 VAC



EXTREMELY HIGH IBREAKING CAPACITY FUSES:

PROTECTION OF POWER SEMI CONDUCTORS ACCORDING TO IEC STANDARD 60269.1 AND 4

690 V - 1000 V AC VOLTAGE RATING

aR-CLASS ACCORDING TO VDE 636-23 AND IEC 60269.4

690V URQ and 1000V URB are UL RECOGNIZED

Main Characteristics

Voltage rating U_N(VAC)	Class	Current rating I_N (A)	Pre-arcing I^2t @ 1 ms I^2t_p (A^2s)	Total clearing I^2t I^2t_t (A^2s)	Watts loss 0,8 I_N	Watts loss I_N	Tested Breaking capacity
690 V	URQ	50	110	610 @ 660 V	8.4	16	200 kA @ 690 V
		63	155	860 @ 660 V	11.1	21	
		80	350	1880 @ 660 V	12.6	24	
		100	625	3210 @ 660 V	14.2	27	
		125	1400	6970 @ 660 V	15.7	30	
		160	3150	15000 @ 660 V	17.7	34	
		200	6580	30000 @ 660 V	19.4	38	
		250	15570	63000 @ 660 V	22.6	45	
690 V	URS	125	2790	13000 @ 660 V	14.5	25	200 kA @ 690 V
		160	5500	24000 @ 660 V	17.5	30	
1000 V	URB	32	33	250 @ 1000 V	7.4	14.5	100 kA @ 1000 V
		40	60	450 @ 1000 V	8.7	17	
		50	110	840 @ 1000 V	9.7	19	
		63	200	1470 @ 1000 V	11.3	22	
		80	435	3300 @ 1000 V	12.3	24	
		100	975	6000 @ 1000 V	14	27	
		125	1910	12500 @ 1000 V	16	31	
		160	3890	26700 @ 1000 V	18	35	
		170	4710	36000 @ 1000 V	19	37	

* Minimum operating voltage for trip-indicator: 20 V

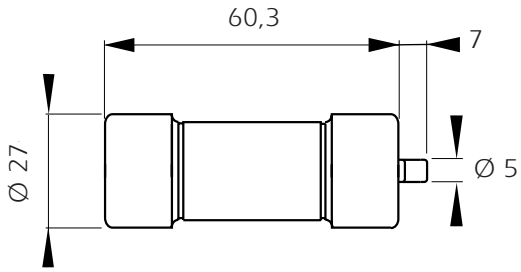
Other Protistor® Fuses
Ferrule Fuses
27x60 URQ/URS/URB - 690 V to 1000 VAC

27x60 - With trip-indicator

Except 125 and 160A URS

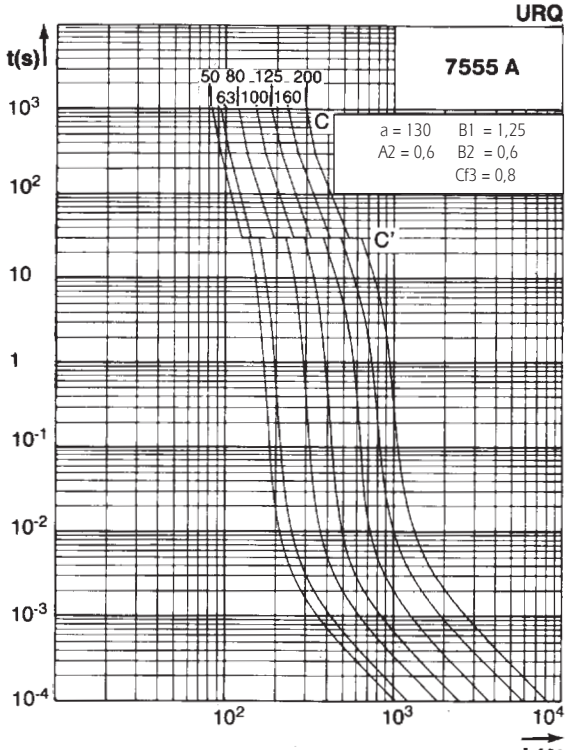
Type	Voltage	Current rating	Designation	Ref. Number	Catalog Number
URQ	690 V	50 A	6.921 CP URQ 27x60/ 50	N075958	FR27UQ69V50T
		63 A	6.921 CP URQ 27x60/ 63	V076309	FR27UQ69V63T
		80 A	6.921 CP URQ 27x60/ 80	W076310	FR27UQ69V80T
		100 A	6.921 CP URQ 27x60/100	R078330	FR27UQ69V100T
		125 A	6.921 CP URQ 27x60/125	S078331	FR27UQ69V125T
		160 A	6.921 CP URQ 27x60/160	X076311	FR27UQ69V160T
		200 A	6.921 CP URQ 27x60/200	T078332	FR27UQ69V200T
		250 A	6.921 CP URQ 27x60/250	T076308	FR27UQ69V250T
URS	690 V	125 A	6.921 CP URS 27x60/125	P209865	FR27US69V125T
		160 A	6.921 CP URS 27x60/160	Q209866	FR27US69V160T
URB	1000 V	32 A	1021 CP URB 27x60/ 32	S081298	FR27UB10C32T
		40 A	1021 CP URB 27x60/ 40	R081297	FR27UB10C40T
		50 A	1021 CP URB 27x60/ 50	Q081296	FR27UB10C50T
		63 A	1021 CP URB 27x60/ 63	P081295	FR27UB10C63T
		80 A	1021 CP URB 27x60/ 80	N081294	FR27UB10C80T
		100 A	1021 CP URB 27x60/100	M081293	FR27UB10C100T
		125 A	1021 CP URB 27x60/125	L081292	FR27UB10C125T
		160 A	1021 CP URB 27x60/160	K081291	FR27UB10C160T
		170 A	1021 CP URB 27x60/170	Z080338	FR27UB10C170T

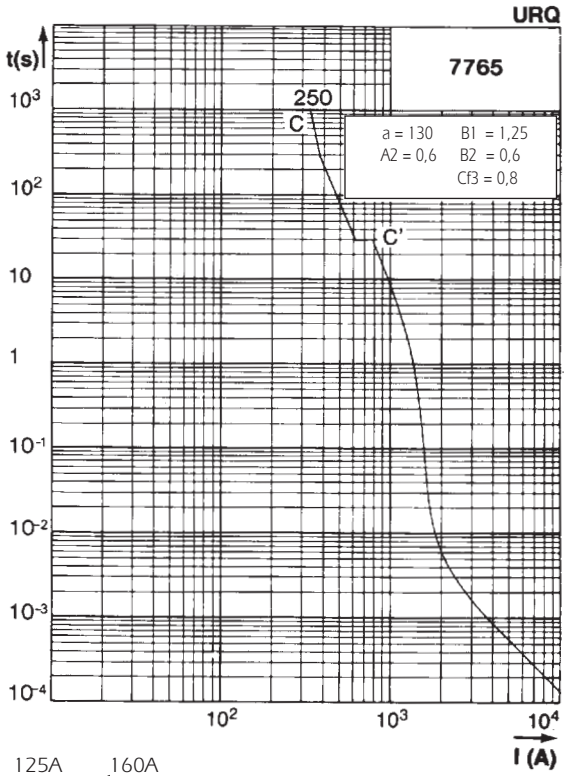
See Gears and Fuse gears section

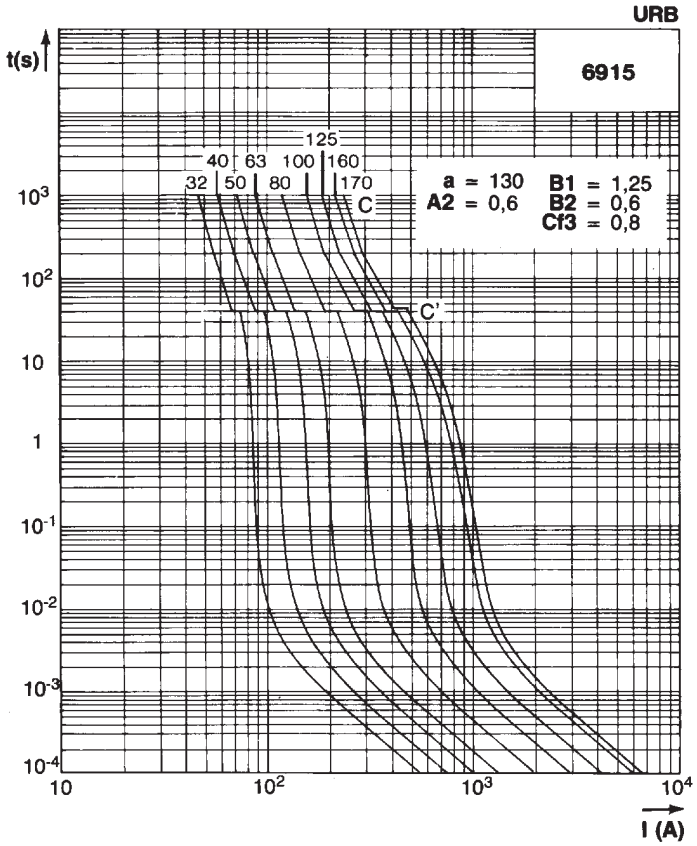


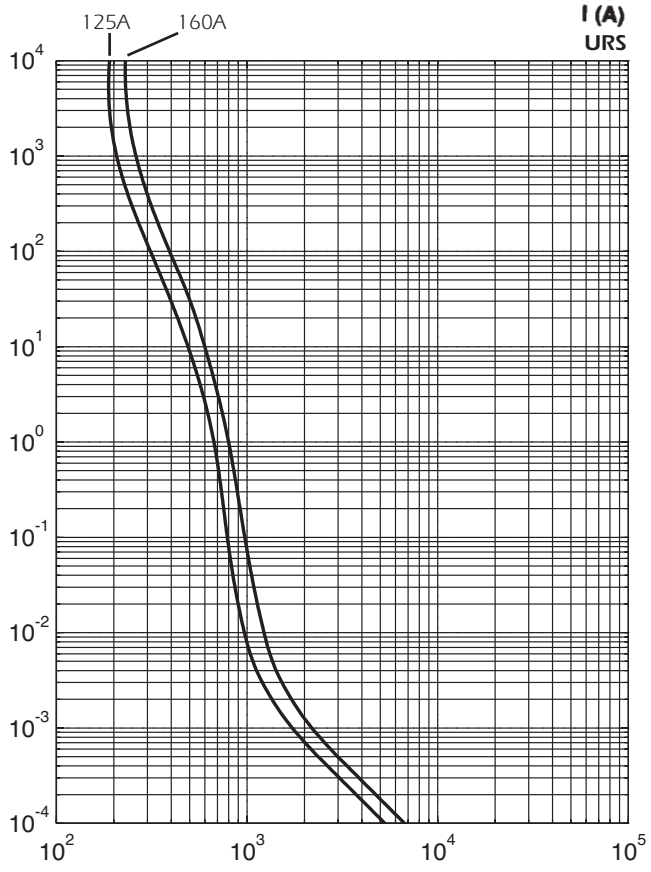
Other Protistor® Fuses
Ferrule Fuses
27x60 URQ/URS/URB - 690 V to 1000 VAC

Time vs current characteristics







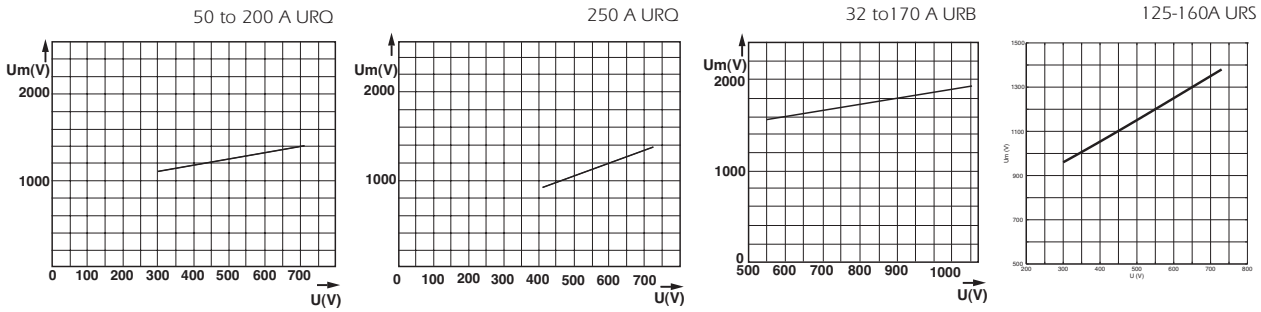


These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

Tolerance for mean pre-arcing current ± 8%.

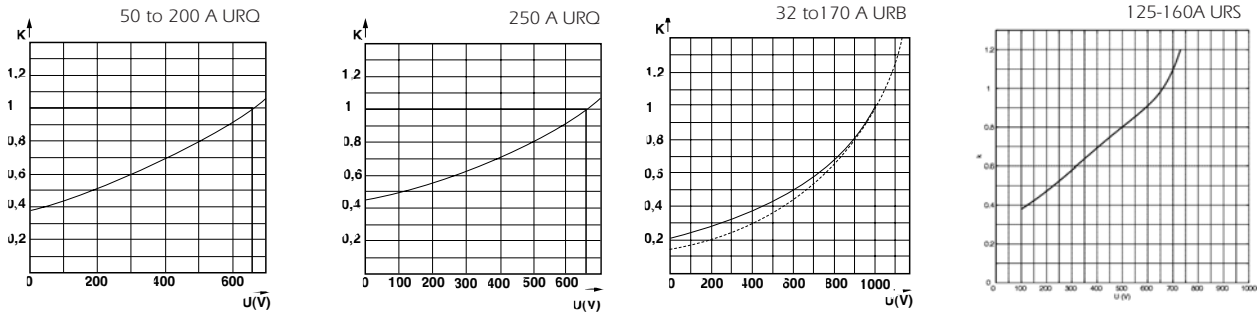
Other Protistor® Fuses
Ferrule Fuses
27x60 URQ/URS/URB - 690 V to 1000 VAC

Peak arc voltage



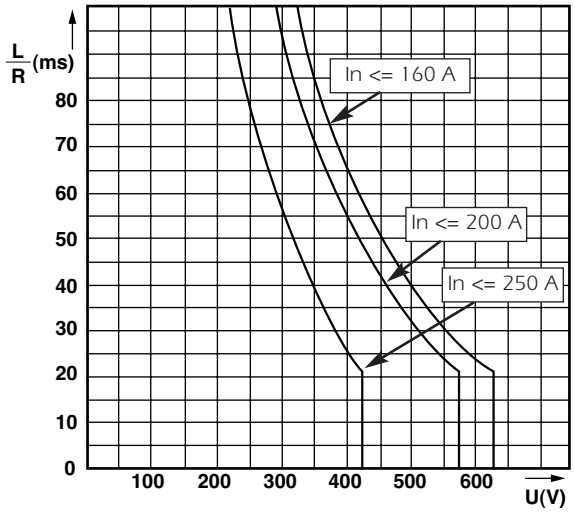
These curves show peak value Um of arc voltage which appears across the fuse-link as a function of operating voltage U @ cos φ = 0.15.

Corrective factor



Above: Mean curves show variation of total clearing time (I^2tt) and total clearing duration tt as a function of operating voltage U.

DC Application data



Left: Curves indicate permissible value of time constant L/r as a function of the DC working voltage

Other Protistor® Fuses
DIN Bracket Ferrule Fuses
17x49 gRB/URB - 690 VAC



EXTREMELY HIGH BREAKING CAPACITY FUSES:
PROTECTION OF SEMICONDUCTORS
AS PER IEC STANDARD 60269.1 AND 4

690 V VOLTAGE RATING AS PER IEC 33

gR CLASS (CURRENT RATING 12 TO 90 A) AS PER VDE 636-23
- CLEARING ALL OVERLOADS
- IMPROVED SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION WITH ALL FUSES WITHIN DISTRIBUTION CIRCUIT

aR CLASS (CURRENT RATING 100 A) ACCORDING TO VDE 636-23 AND IEC 60269.4

CONNECTION AS PER:
- GERMAN STANDARD DIN 43653/00C
- BRITISH STANDARD BS 88-4

These fuses are UL Recognized c UL us

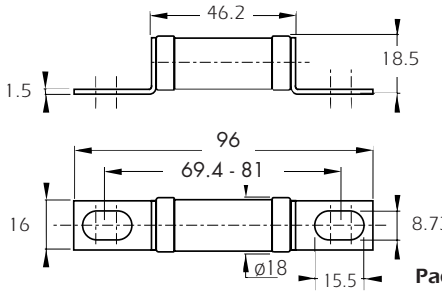
Main Characteristics

Voltage rating U_N(V)	Class	Current rating I_N(A)	pre-arcing I^2t @ 1 ms I^2tp (A2s)	Total clearing I^2t @ U_N I^2tt (A^2s)	Watts loss 0.8 I_N	Watts loss I_N	Tested Breaking capacity	Estimated Breaking capacity
690	gRB	12	4.2	30	1.95	3.5	200 k A @ 690 V	300 k A @ 690 V
		16	9.6	65	2.2	4.0		
		20	17.1	110	3.0	5.5		
		25	26.8	170	4.4	8.0		
		32	52.5	330	5.0	9.0		
		35	69	430	5.2	9.5		
		40	96	610	5.8	10.5		
		45	130	820	6.3	11.5		
		50	154	970	7.2	13		
		55	210	1320	7.4	13.5		
		63	310	1950	8.0	14.5		
		75	520	3250	8.8	16		
		80	620	3900	9.4	17		
		90	840	5300	11	20		
690	URB	100	965	6150	13	23.5	200 k A @ 690 V	300 k A @ 690 V

Minimum operating voltage for separate trip-indicator: 20 V

Other Protistor® Fuses
DIN Bracket Ferrule Fuses
17x49 gRB/URB - 690 VAC

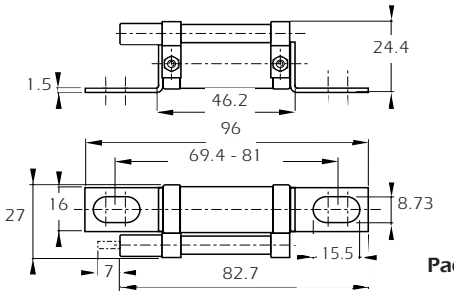
German standard without blown fuse indication



Weight: 42 g
Packaging: 10 pieces

Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17 D08/12	M220972	DN17GB69V12
16	6,9 gRB 17 D08/16	N220973	DN17GB69V16
20	6,9 gRB 17 D08/20	P220974	DN17GB69V20
25	6,9 gRB 17 D08/25	Q220975	DN17GB69V25
32	6,9 gRB 17 D08/32	R220976	DN17GB69V32
35	6,9 gRB 17 D08/35	S220977	DN17GB69V35
40	6,9 gRB 17 D08/40	T220978	DN17GB69V40
45	6,9 gRB 17 D08/45	V220979	DN17GB69V45
50	6,9 gRB 17 D08/50	W220980	DN17GB69V50
55	6,9 gRB 17 D08/55	X220981	DN17GB69V55
63	6,9 gRB 17 D08/63	Y220982	DN17GB69V63
75	6,9 gRB 17 D08/75	Z220983	DN17GB69V75
80	6,9 gRB 17 D08/80	A220984	DN17GB69V80
90	6,9 gRB 17 D08/90	B220985	DN17GB69V90
100	6,9 URB 17 D08/100	C220986	DN17UB69V100

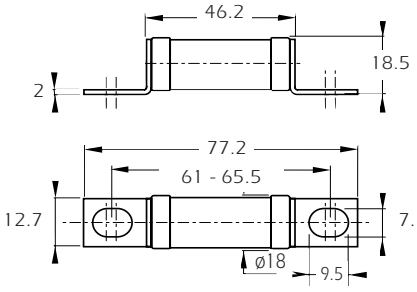
German standard with separate trip-indicator DIN 43623/00C



Weight: 55 g
Packaging: 10 pieces

Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17 D08P 12	X221004	DN17GB69V12P
16	6,9 gRB 17 D08P 16	Y221005	DN17GB69V16P
20	6,9 gRB 17 D08P 20	Z221006	DN17GB69V20P
25	6,9 gRB 17 D08P 25	A221007	DN17GB69V25P
32	6,9 gRB 17 D08P 32	B221008	DN17GB69V32P
35	6,9 gRB 17 D08P 35	C221009	DN17GB69V35P
40	6,9 gRB 17 D08P 40	D221010	DN17GB69V40P
45	6,9 gRB 17 D08P 45	E221011	DN17GB69V45P
50	6,9 gRB 17 D08P 50	F221012	DN17GB69V50P
55	6,9 gRB 17 D08P 55	G221013	DN17GB69V55P
63	6,9 gRB 17 D08P 63	H221014	DN17GB69V63P
75	6,9 gRB 17 D08P 75	J221015	DN17GB69V75P
80	6,9 gRB 17 D08P 80	K221016	DN17GB69V80P
90	6,9 gRB 17 D08P 90	L221017	DN17GB69V90P
100	6,9 URB 17 D08P 100	M221018	DN17UB69V100P

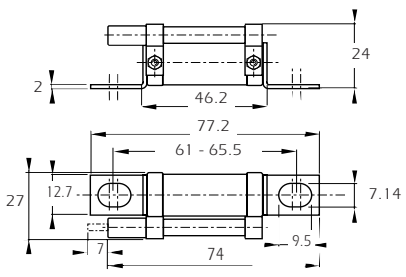
British standard without blown fuse indication



Weight: 40 g
Packaging: 10 pieces

Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17/12	W220957	BS17GB69V12
16	6,9 gRB 17/16	X220958	BS17GB69V16
20	6,9 gRB 17/20	Y220959	BS17GB69V20
25	6,9 gRB 17/25	Z220960	BS17GB69V25
32	6,9 gRB 17/32	A220961	BS17GB69V32
35	6,9 gRB 17/35	B220962	BS17GB69V35
40	6,9 gRB 17/40	C220963	BS17GB69V40
45	6,9 gRB 17/45	D220964	BS17GB69V45
50	6,9 gRB 17/50	E220965	BS17GB69V50
55	6,9 gRB 17/55	F220966	BS17GB69V55
63	6,9 gRB 17/63	G220967	BS17GB69V63
75	6,9 gRB 17/75	H220968	BS17GB69V75
80	6,9 gRB 17/80	J220969	BS17GB69V80
90	6,9 gRB 17/90	K220970	BS17GB69V90
100	6,9 URB 17/100	L220971	BS17UB69V100

British standard with separate trip-indicator BS 88-4

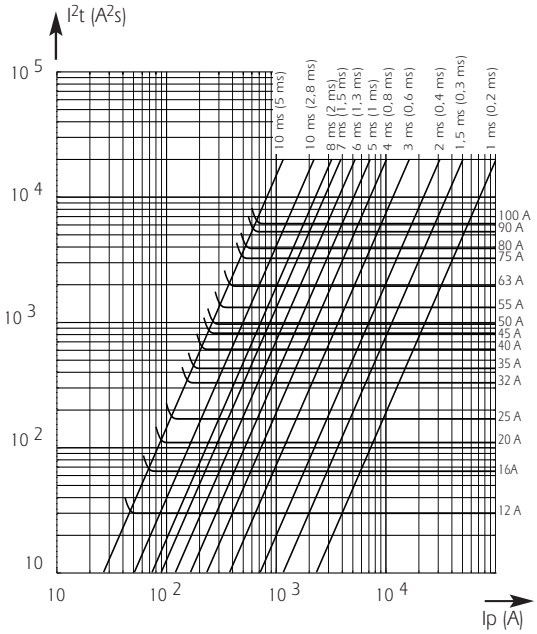


Weight: 60 g
Packaging: 3 pieces

Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17P12	D220987	BS17GB69V12P
16	6,9 gRB 17P16	E220988	BS17GB69V16P
20	6,9 gRB 17P20	F220989	BS17GB69V20P
25	6,9 gRB 17P25	G220990	BS17GB69V25P
32	6,9 gRB 17P32	H220991	BS17GB69V32P
35	6,9 gRB 17P35	J220992	BS17GB69V35P
40	6,9 gRB 17P40	K220993	BS17GB69V40P
45	6,9 gRB 17P45	L220994	BS17GB69V45P
50	6,9 gRB 17P50	M220995	BS17GB69V50P
55	6,9 gRB 17P55	N220996	BS17GB69V55P
63	6,9 gRB 17P63	P220997	BS17GB69V63P
75	6,9 gRB 17P75	Q220998	BS17GB69V75P
80	6,9 gRB 17P80	R220999	BS17GB69V80P
90	6,9 gRB 17P90	S221000	BS17GB69V90P
100	6,9 URB 17P100	T221001	BS17UB69V100P

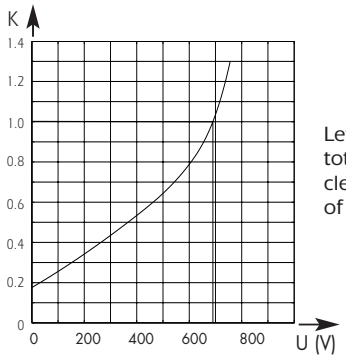
Other Protistor® Fuses
DIN Bracket Ferrule Fuses
17x49 gRB/URB - 690 VAC

Total clearing I²t



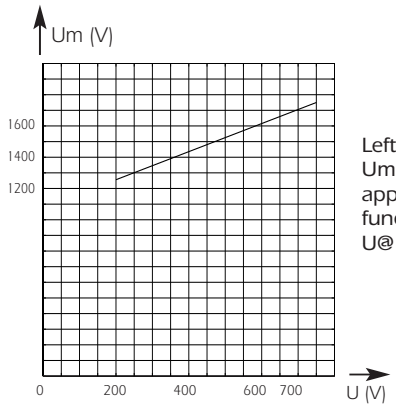
Above: Horizontal curves show for each rated current maximum values of total clearing I^2t (I^2t_t) as a function of prospective current I_p. @ 690 V.
cos φ = 0.15.
Oblique lines indicate total clearing duration Tt and associated pre-arcing duration in brackets.

I²t corrective factor



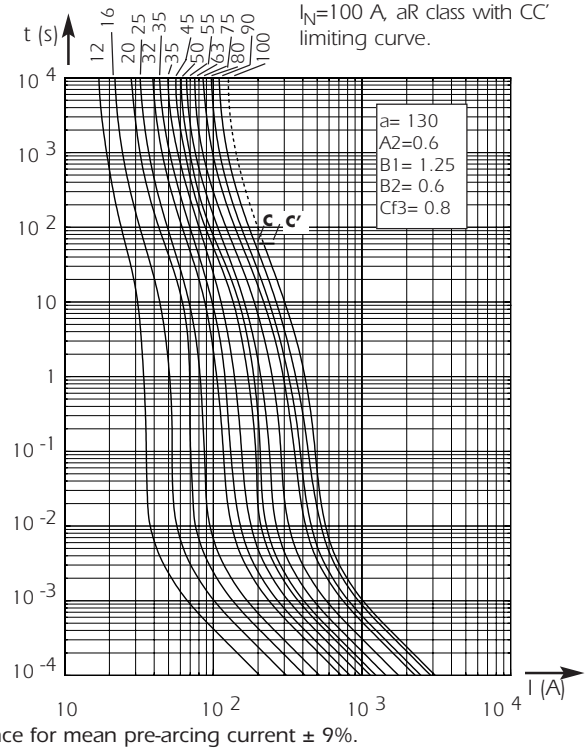
Left: Curve shows variation of total clearing time (I^2t_t) and total clearing duration T_t as a function of operating voltage U.

Peak arc voltage



Left: Curve shows peak value Um of arc voltage which appears across fuse-link as a function of operating voltage U@ cos φ = 0.15

Time vs current characteristics

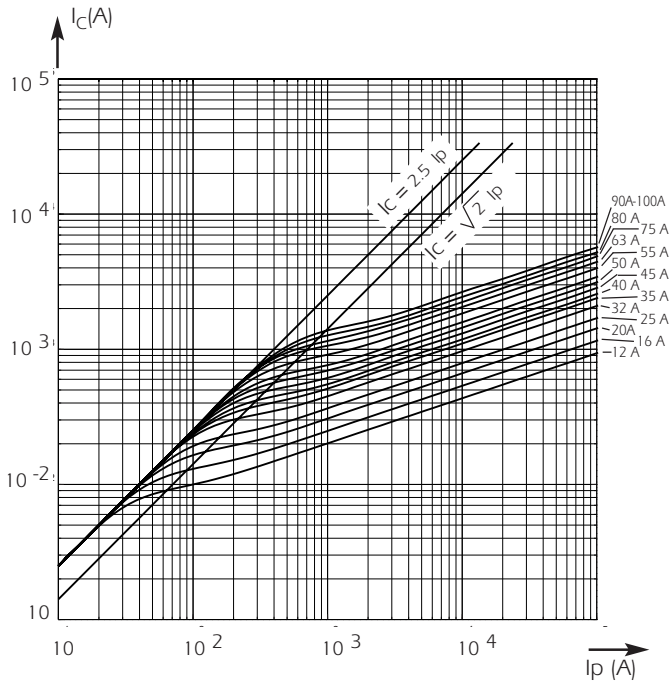


I_N=100 A, aR class with CC' limiting curve.

Tolerance for mean pre-arcing current ± 9%.

Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

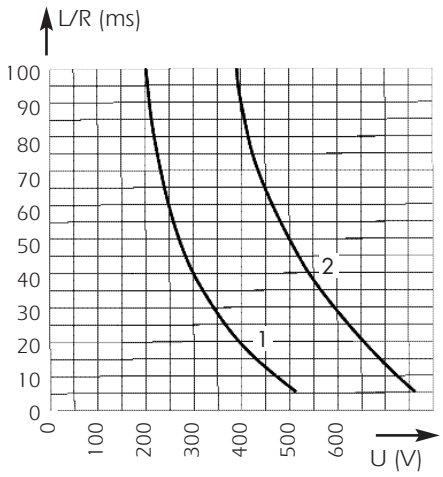
Current limitation curves



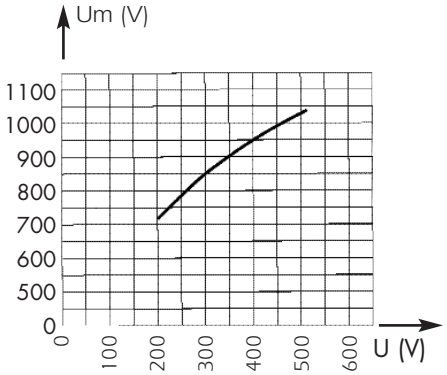
Above: Curves show, for each rating, value of peak let-through current IC as a function of available fault current Ip.

Other Protistor® Fuses
DIN Bracket Ferrule Fuses
17x49 gRB/URB - 690 VAC

DC Application data

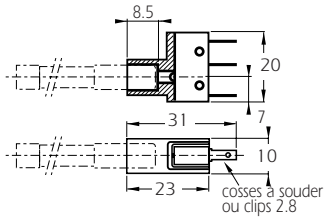


Above: Curves indicate permissible value of time constant L/R as a function of DC working voltage.
Curve 1: Ip ≥ 1,6 IN only for fuses gRB (current rating from 12 to 50 A)
Curve 2: Ip ≥ 8 IN for fuses gRB et URB



Curve indicates peak arc voltage Um which may appear across the fuse terminals at working voltage U.

Microswitch



Designation	Ref. Num.	Weight	Pack.
MC 6,3 GR 2.5	Y 310015	10 g	3 pieces

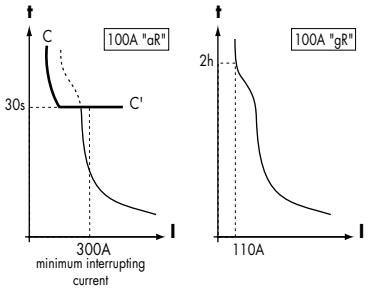
Electrical characteristics:
I_N = 3 A - U_N = 250 VAC
I_N = 2 A - U_N = 30 VDC

Certain minimum operating voltage/current
20 V-100 mA

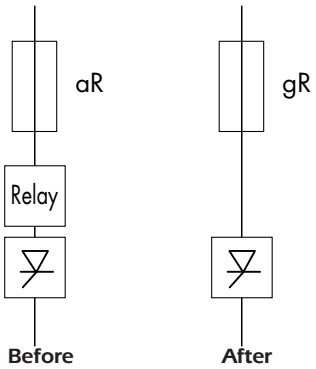
NEW gR-CLASS

OPTIMAL PROTECTION OF POWER EQUIPMENT

Thanks to recent technological developments, Ferraz Shawmut today markets gR-class PROTISTOR® fuses capable of clearing all types of overloads, from low multiples of current ratings up to very high short-circuit currents. Enhanced performance enables these fuses to provide solutions to many previously unsolved problems in power electronics: protection of cables without the use of additional components, protection of equipment from fire hazards, selective coordination of different fuses within a single power distribution installation...



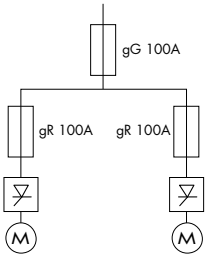
Example:
100A aR vs. 100A gR



SELECTIVE COORDINATION

gR-class semiconductor fuses can be utilized in association with gI and gG-class low voltage power distribution fuses of the same current rating, installed upstream. In a "selectively coordinated" distribution installation, melting is limited to the fuse associated with the faulted circuit, while upstream fuses remain intact. This prevents unnecessary down-time due to power blackouts in non-faulted branches.

Example of selective coordination



aR-CLASS vs. gR-CLASS

aR-class fuses feature a high minimum interrupting current as compared with their current rating. The primary time-current characteristic of aR-class fuses is the CC' curve, above which another protection device must be associated. The gR-class fuse represents considerably improved performance in semiconductor protection.

FERRAZ SHAWMUT EXPERTISE

gR-class fuses should be used in the design of low voltage equipment and in the protection of power electronics equipment. Designers can often substitute a gR-class fuse for an aR-class fuse (10x38, 14x51, 22x58, PSC 000 and 17x49 DIN80 or BS 88-4) but the reverse is not true: an aR fuse can never replace a gR fuse. Start protecting your new equipment with gR-class fuses today. The application of gR class fuses, with current ratings less than 100 Amps, offers enhanced protection, safety and reliability, along with reduced risk of replacement errors and assembly costs.

Other Protistor® Fuses
BS88-4 Fuses
10x28, 17x27 - 250 VAC

BRITISH STANDARD
250 VAC - URE - URGS - URZ
From 5 to 180 A
Sizes 10x28 - 17x27

Extremely high breaking capacity fuses:
protection of power semiconductors as per IEC standard 60269.1 and 4

250 V voltage rating complying with IEC 33

gr class (ratings from 5 to 32 a)
AS PER VDE 636-23 AND IEC 60269.4

aR CLASS (RATINGS FROM 7 to 180 A) COMPLYING WITH VDE 636-23 AND IEC 60269.4

TWO MODELS COMPLYING WITH BS 88-4
- WITHOUT INDICATOR
- WITH SEPARATE TRIP-INDICATOR (SIZE 17x27)

17x27 URGS are UL Recognized



Main Characteristics

Voltage rating U_N(V)	Size	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t @ U_N A^2s		Watts loss		Tested breaking capacity
					$Ip \le 30I_N$	$Ip > 30I_N$	0.8 I_N	I_N	
	10 x28	URE	5	1.3	10	11	0.6	1	160k A @ 250 V
			6	1.8	13	15	0.7	1.2	
			10	2.4	18	20	1.2	2.1	
			12	4.3	28	33	1.6	2.8	
			15	6.7	41	48	2.0	3.5	
			20	15.0	85	100	2.2	4.0	
			25	27.0	135	160	2.6	4.7	
			32	53.0	240	280	3.0	5.4	
250V	17x27	URGS	7	1.3	8,5	9,8	0.56	1	160k A @ 250 V
			10	4.5	21	23,8	0.84	1.5	
			12	5.9	27	31	1.1	2.0	
			16	11.2	50	59	1.7	3.0	
			20	15.6	80	100	2.2	3.9	
			25	30.0	130	160	2.7	4.8	
			30	45.0	195	235	3.2	5.6	
			35	63.0	270	330	3.7	6.5	
			50	180.0	7890	940	4.9	8.8	
			60	250.0	1100	1310	5.8	10.4	
			75	380.0	1670	1990	7.2	13.6	
			80	480.0	2100	2530	7.25	13.7	
		URZ	100	730.0	3350	4060	6.5	11.5	160k A @ 250 V
			125	850.0	5720	6920	6.7	12.3	
			150	1250.0	7930	9590	7.4	13.6	
			160	1730.0	9600	11700	8.8	15.6	
			180	2090.0	14500	17500	9.5	17	

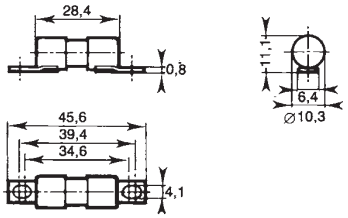
Minimum Operating voltage for separate trip indicator = 20 V

Other Protistor® Fuses
BS88-4 Fuses
10x28, 17x27 - 250 VAC

CP 10x28 - Without trip-indicator

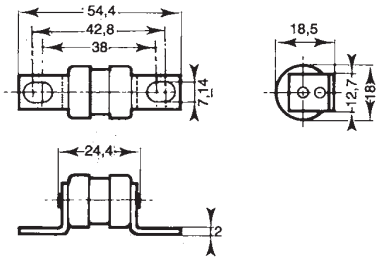
Size	Designation	Ref. Number	Pack.	Catalog Number
	2.5 URE 10/5	M082489		BS10UE25V5
	2.5 URE 10/6	E097478		BS10UE25V6
	2.5 URE 10/10	L082488		BS10UE25V10
	2.5 URE 10/12	P097487	10	BS10UE25V12
10x28	2.5 URE 10/15	K082487	(11g)	BS10UE25V15
	2.5 URE 10/20	J082486		BS10UE25V20
	2.5 URE 10/25	X097494		BS10UE25V25
	2.5 URE 10/32	N081984		BS10UE25V32

**BBS 88 part 4 requires respectively Ø8.7 and 8.8



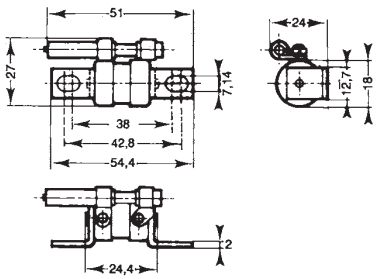
CP 17x27 - Without trip-indicator

Size	Designation	Ref. Number	Pack.	Catalog Number
	2.5 URGS 17/7	M076647		BS17US25V7
	2.5 URGS 17/10	N076648		BS17US25V10
	2.5 URGS 17/12	P076649		BS17US25V12
	2.5 URGS 17/16	Q076650		BS17US25V16
	2.5 URGS 17/20	L097507		BS17US25V20
	2.5 URGS 17/25	R076651		BS17US25V25
	2.5 URGS 17/30	S076652	10	BS17US25V30
17x27	2.5 URGS 17/35	T076653	(30g)	BS17US25V35
	2.5 URGS 17/50	V076654		BS17US25V50
	2.5 URGS 17/60	W076655		BS17US25V60
	2.5 URGS 17/75	X076656		BS17US25V75
	2.5 URGS 17/80	Z085559		BS17US25V80
	2.5 URZ 17/100	Y085558		BS17UZ25V100
	2.5 URZ 17/125	G097526		BS17UZ25V125
	2.5 URZ 17/150	W085556		BS17UZ25V150
	2.5 URZ 17/160	H097527		BS17UZ25V160
	2.5 URZ 17/180	N097532		BS17UZ25V180



CP 17x27 - With separated trip-indicatorBS88-4

Size	Designation	Ref. Number	Pack.	Catalog Number
	2.5 URGS 17P7	P097533		BS17US25V7P
	2.5 URGS 17P10	Q097534		BS17US25V10P
	2.5 URGS 17P12	S097536		BS17US25V12P
	2.5 URGS 17P16	X097540		BS17US25V16P
	2.5 URGS 17P20	B097544		BS17US25V20P
	2.5 URGS 17P25	D097546		BS17US25V25P
	2.5 URGS 17P30	E097547	10	BS17US25V30P
17x27	2.5 URGS 17P35	F097548	(40g)	BS17US25V35P
	2.5 URGS 17P50	J097551		BS17US25V50P
	2.5 URGS 17P60	H081082		BS17US25V60P
	2.5 URGS 17P75	K097552		BS17US25V75P
	2.5 URGS 17P80	L097553		BS17US25V80P
	2.5 URZ 17P100	P097556		BS17UZ25V100P
	2.5 URZ 17P125	Q097557		BS17UZ25V125P
	2.5 URZ 17P150	R097558		BS17UZ25V150P
	2.5 URZ 17P160	S097559		BS17UZ25V160P
	2.5 URZ 17P180	T097560		BS17UZ25V180P



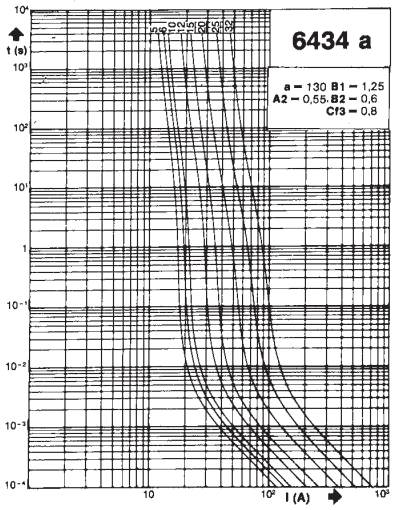
Microswitch MC6.3 GR 2-5N Ref: Y301015

Other Protistor® Fuses
BS88-4 Fuses
10x28, 17x27 - 250 VAC

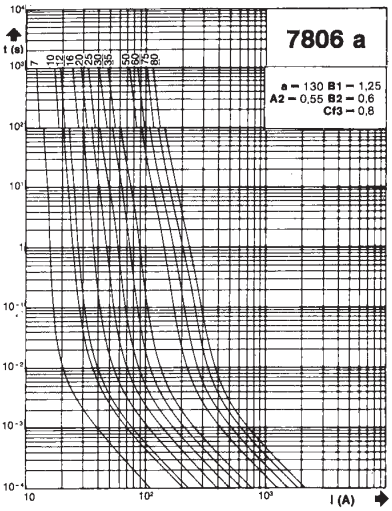
Electrical characteristics

Times vs current characteristics

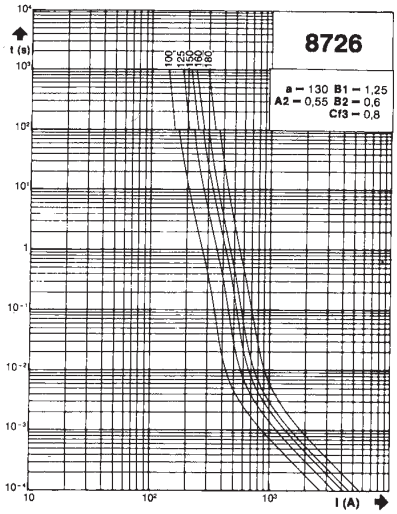
URE



URGS



URZ



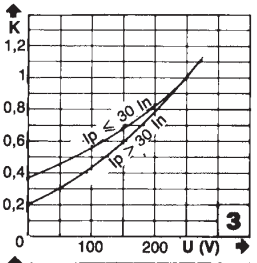
* These curves indicate, for each rated current, the pearcing time vs. the R.M.S. pre-arcing current.

* Tolerance for the mean pre-arcing current ± 10%

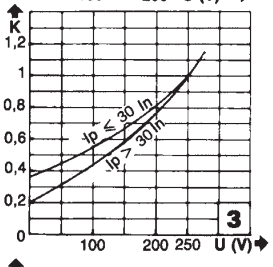
Corrective factor - Peak arc voltage

Corrective factor

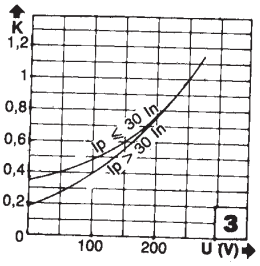
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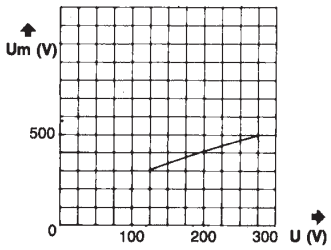
URGS

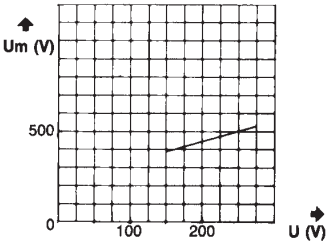


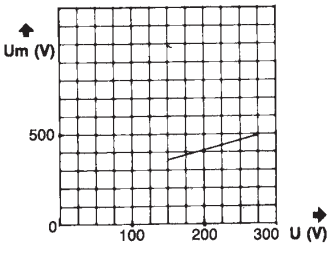
URZ



Peak arc voltage





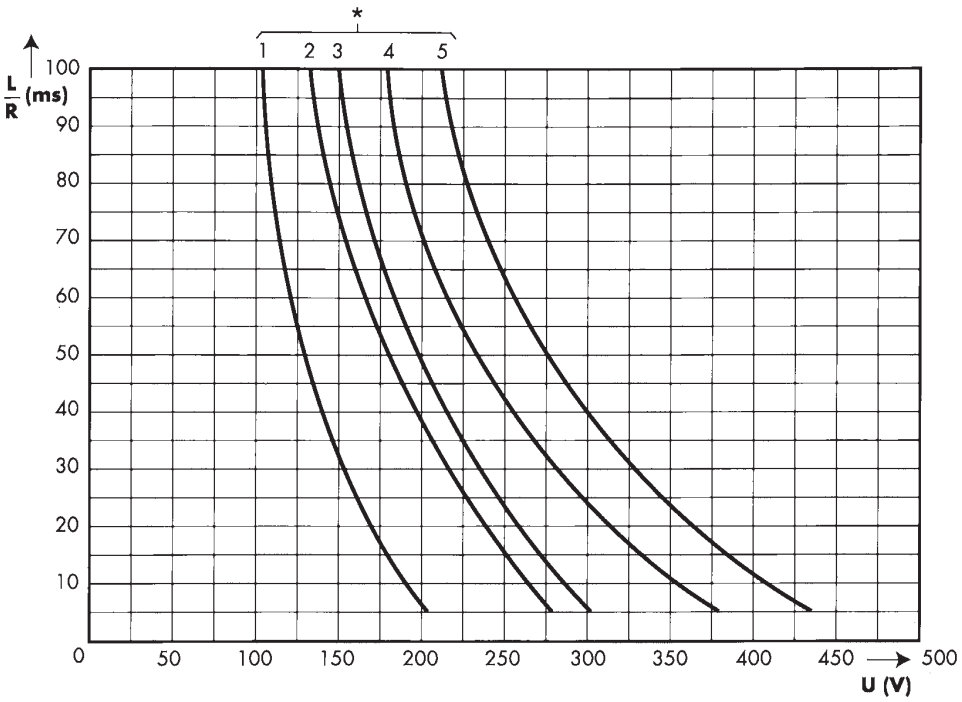


* The mean curves show the variation of the total clearing time (I^2t_t) and the total clearing duration t_t as a function of operating voltage U

This curve show the peak value Um of the arc voltage which appears across the fuse link as a function of the operating voltage U @ cos φ = 0.15.

Other Protistor® Fuses
BS88-4 Fuses
10x28, 17x27 - 250 VAC

D.C Applications data



- These curve indicate the permissible value of time constant L/R as a function of the D.C. working voltage.

- These Ipm values give the minimum DC interrupting current in amps.

Curves # and Ipm for each rating			
Class	Rated current	*	I_{pm}(A)
URE	5	5	40
	6	5	50
	10	5	55
	12	5	80
	15	5	100
	20	5	130
	25	5	175
	32	5	255
URGS	7	5	40
URZ	100	4	190
	125	3	250
	150	2	300
	160	2	330
	180	1	400

for URGS class fuses, consult us.

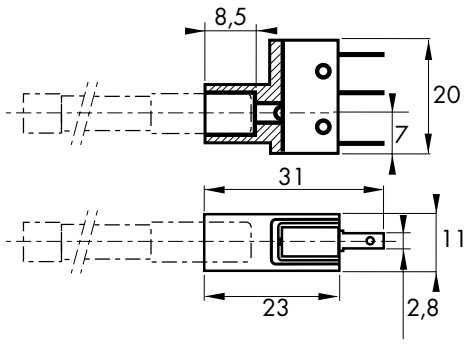
Other Protistor® Fuses
BS88-4 Fuses
Microswitches for BS88-4 Protistor®

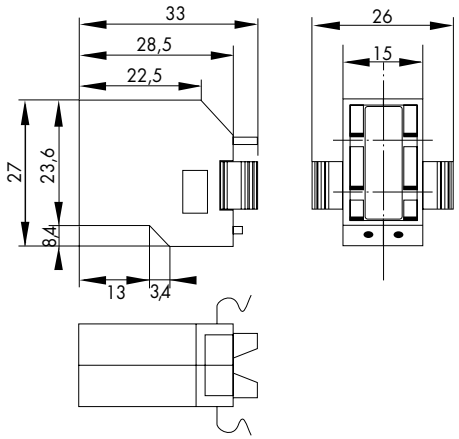
MICROSWITCH SYSTEMS ADAPTED
TO THE FOLLOWING FUSES:
- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MC 6,3 GR 2-5 N	1000 V	20 V	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
		100 mA		DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	
		100 mA		DC	4 A	0.4 A	-	2 A	0.4 A				

* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1
*** Between power circuit and microswitch terminals

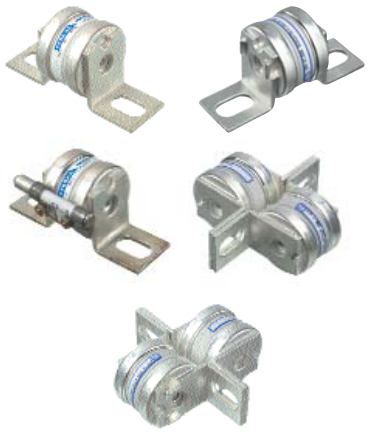




Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

Other Protistor® Fuses
BS88-4 Fuses
36x27, 2X36x27, - 250 VAC



Extremely high breaking capacity fuses:
protection of power semiconductors as per IEC standard 60269.1 and 4

250 V voltage rating COMPLYING WITH IEC 33

gr class (ratings from 50 to 350 a URGG - 300 to 700 A URGH) AS PER VDE 636-23 AND IEC 60269.4

aR CLASS (RATINGS FROM 400 to 525 A URGG - 800 to 1050 A URGH) COMPLYING WITH VDE 636-23 AND IEC 60269.4

TWO MODELS COMPLYING WITH BS 88-4
- WITHOUT INDICATOR
- WITH SEPARATE TRIP-INDICATOR

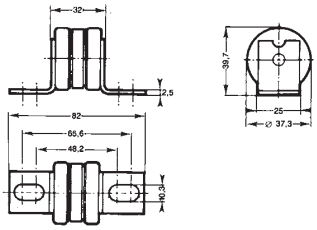
Main Characteristics

Voltage rating U_N(V)	Size	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t @ U_N A^2s	Watts loss 0.8 I_N	Watts loss I_N	Tested Breaking capacity
250V	36x27	URGG	50	120	500	4.75	9.5	100k A @ 250 V
			75	330	1380	6.3	12.6	
			100	745	3060	7.8	15.7	
			125	1340	5500	9.1	18.2	
			150	1930	7950	10.8	21.6	
			200	4020	16400	13.5	27.0	
			250	5350	30000	16.3	32.6	
			300	7290	49600	18.6	37.2	
			350	18000	74000	21	42.0	
			400	25100	128000	23.4	46.7	
			450	33500	170000	27.1	54.1	
			500	43000	219000	30.4	60.8	
			525	48200	245000	33.2	66.4	
	2x36x27	URGH	300	7700	31800	21.6	43.2	100k A @ 250 V
			350	11500	48700	24.3	48.6	
			400	16000	65600	27	54.0	
			500	29100	120000	32.6	65.2	
			600	48200	198500	37.2	74.4	
			700	72000	276000	42.0	84.0	
			800	100000	512000	46.7	93.4	
			900	134000	680000	54.1	108.2	
			1000	172000	876000	60.8	121.6	
			1050	193000	980000	66.4	132.8	

Minimum operating voltage for separate or integrated trip indicator = 20 V

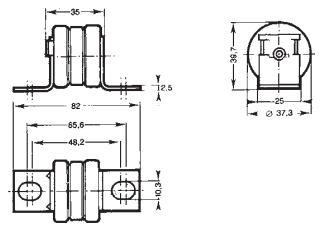
Other Protistor® Fuses
BS88-4 Fuses
36x27, 2X36x27, - 250 VAC

CP 36x27
Without trip-indicator



Size	Designation			Ref. Number	Pack.	Catalog Number
	2.5	URGG	36/50	J080945		BS36UG25V50
	2.5	URGG	36/75	K080946		
	2.5	URGG	36/100	L080947		BS36UG25V100
	2.5	URGG	36/125	R082470		BS36UG25V125
	2.5	URGG	36/150	Q082469		BS36UG25V150
	2.5	URGG	36/200	P082468	3	BS36UG25V200
36x27	2.5	URGG	36/250	N082467	(170g)	BS36UG25V250
	2.5	URGG	36/300	M082466		BS36UG25V300
	2.5	URGG	36/350	L082465		BS36UG25V350
	2.5	URGG	36/400	G075538		BS36UG25V400
	2.5	URGG	36/450	H075539		BS36UG25V450
	2.5	URGG	36/500	J075540		BS36UG25V500
	2.5	URGG	36/525	K075541		BS36UG25V525

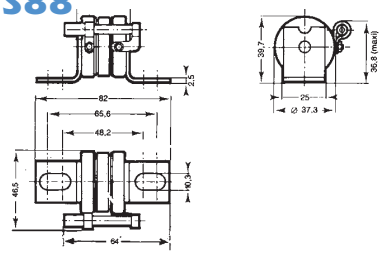
CP 36x27
With built-in trip-indicator



Size	Designation			Ref. Number	Pack.	Catalog Number
	2.5	URGG	36T50	F080942		BS36UG25V50T
	2.5	URGG	36T75	G080943		BS36UG25V75T
	2.5	URGG	36T100	H080944		BS36UG25V100T
	2.5	URGG	36T125	W082382		BS36UG25V125T
	2.5	URGG	36T150	V082381		BS36UG25V150T
	2.5	URGG	36T200	T082380	3	BS36UG25V200T
36x27	2.5	URGG	36T250	S082379	(170g)	BS36UG25V250T
	2.5	URGG	36T300	R082378		BS36UG25V300T
	2.5	URGG	36T350	Q082377		BS36UG25V350T
	2.5	URGG	36T400	L075542		BS36UG25V400T
	2.5	URGG	36T450	M075543		BS36UG25V450T
	2.5	URGG	36T500	N075544		BS36UG25V500T
	2.5	URGG	36T525	P075545		BS36UG25V525T

Microswitch MC 36 GR 2.5 - Ref. P 092496

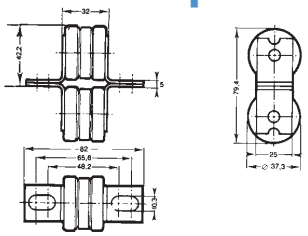
CP 36x27
With separated trip-indicator BS88



Size	Designation			Ref. Number	Pack.	Catalog Number
	2.5	URGG	36P50	C080939		BS36UG25V50P
	2.5	URGG	36P75	D080940		BS36UG25V75P
	2.5	URGG	36P100	E080941		BS36UG25V100P
	2.5	URGG	36P125	Y081004		BS36UG25V125P
	2.5	URGG	36P150	X081003		BS36UG25V150P
	2.5	URGG	36P200	W081002	3	BS36UG25V200P
36x27	2.5	URGG	36P250	V081001	(185g)	BS36UG25V250P
	2.5	URGG	36P300	T081000		BS36UG25V300P
	2.5	URGG	36P350	S080999		BS36UG25V350P
	2.5	URGG	36P400	V075504		BS36UG25V400P
	2.5	URGG	36P450	W075505		BS36UG25V450P
	2.5	URGG	36P500	X075506		BS36UG25V500P
	2.5	URGG	36P525	Y075507		BS36UG25V525P

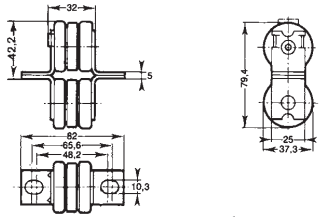
Microswitch MC 36 GR 2.5 N - Ref. Y 310005

CP 2x36x27
Without trip-indicator



Size	Designation			Ref. Number	Pack.	Catalog Number
	2.5	URGH	236/300	K082464		BS236UH25V300
	2.5	URGH	236/350	J082463		BS236UH25V350
	2.5	URGH	236/400	H082462		BS236UH25V400
	2.5	URGH	236/500	G082461		BS236UH25V500
	2.5	URGH	236/600	F082460		BS236UH25V600
	2.5	URGH	236/700	E082459	3	BS236UH25V700
2x36x27	2.5	URGH	236/800	Q075546	(290g)	BS236UH25V800
	2.5	URGH	236/900	R075547		BS236UH25V900
	2.5	URGH	236/1000	S075548		BS236UH25V1000
	2.5	URGH	236/1050	T075549		BS236UH25V1050

CP 2x36x27
With built-in trip-indicator

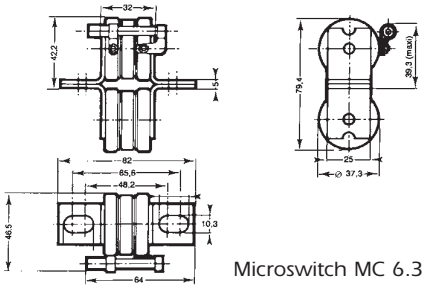


Size	Designation			Ref. Number	Pack.	Catalog Number
	2.5	URGH	236T300	P082376		BS236UH25V300T
	2.5	URGH	236T350	N082375		BS236UH25V350T
	2.5	URGH	236T400	M082374		BS236UH25V400T
	2.5	URGH	236T500	L082373		BS236UH25V500T
	2.5	URGH	236T600	K082372		BS236UH25V600T
2x36x27	2.5	URGH	236T700	J082371	3	BS236UH25V700T
	2.5	URGH	236T800	V075550	(290g)	BS236UH25V800T
	2.5	URGH	236T900	R075501		BS236UH25V900T
	2.5	URGH	236T1000	S075502		BS236UH25V1000T
	2.5	URGH	236T1050	T075503		BS236UH25V1050T

Microswitch MC 36 GR 2.5 N - Ref. P 092496

Other Protistor® Fuses
BS88-4 Fuses
36x27, 2X36x27, - 250 VAC

CP 36x27
With separated trip-indicator
BS88



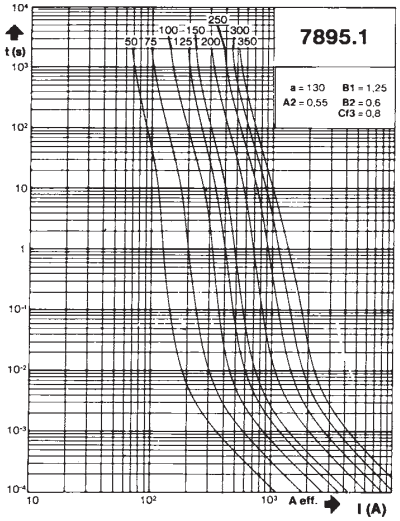
Microswitch MC 6.3 GR 2.5 N - Ref. Y 310005

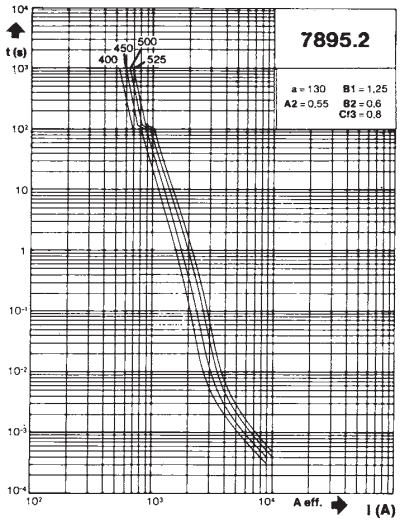
Size	Designation	Ref. Number	Pack.	Catalog Number
	2.5 URGH 236P300	R080998		BS236UH25V300P
	2.5 URGH 236P350	Q080997		BS236UH25V350P
	2.5 URGH 236P400	P080996		BS236UH25V400P
	2.5 URGH 236P500	N080995		BS236UH25V500P
	2.5 URGH 236P600	M080994	3	BS236UH25V600P
2x36x27	2.5 URGH 236P700	L080993	(900g)	BS236UH25V700P
	2.5 URGH 236P800	Z075508		BS236UH25V800P
	2.5 URGH 236P900	A075509		BS236UH25V900P
	2.5 URGH 236P1000	B075510		BS236UH25V1000P
	2.5 URGH 236P1050	C075511		BS236UH25V1050P

Electrical characteristics

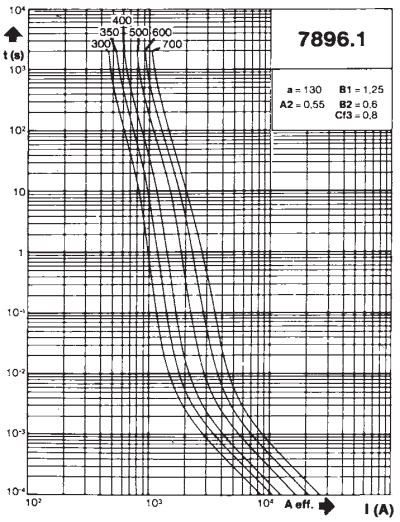
Times vs current characteristics

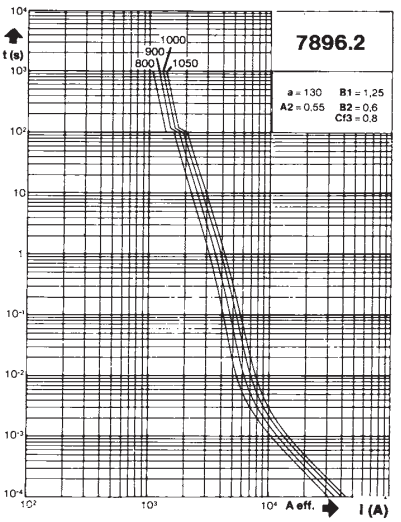
URGG





URGH



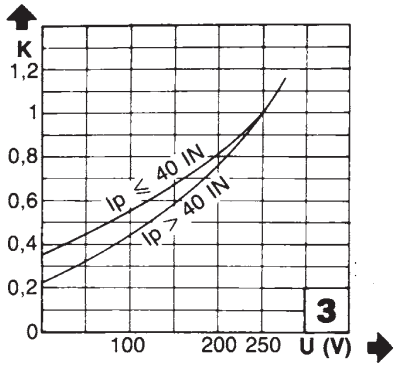


- These curves indicate, for each rated current, the pre-arcing time vs. the R/M.S. pre-arcing current.
- Tolerance for the mean pre-arcing current ± 10%

Other Protistor® Fuses
BS88-4 Fuses
36x27, 2X36x27, - 250 VAC

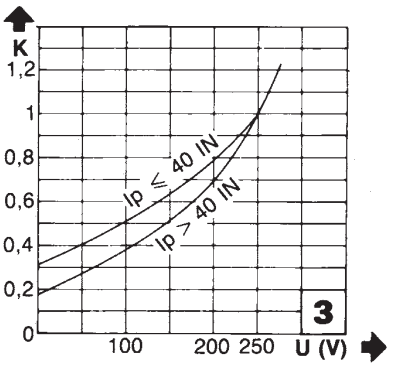
Corrective factor - Peak arc voltage

Corrective factor



URGG
From 50 to 350 A

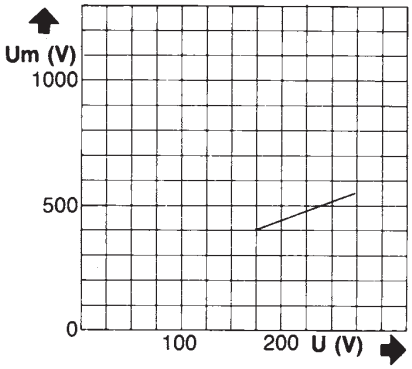
URGH
From 300 to 700 A

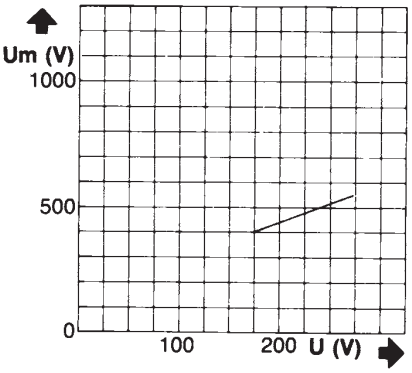


URGG
From 400 to 525 A

URGH
From 800 to 1050 A

Peak arc voltage





Corrective factor

* The mean curves show the variation of the total clearing time (I^2t_t) and the total clearing duration t_t as a function of operating voltage U

Peak arc voltage

This curve show the peak value Um of the arc voltage which appears across the fuse link as a function of the operating voltage U @ cos φ = 0.15.

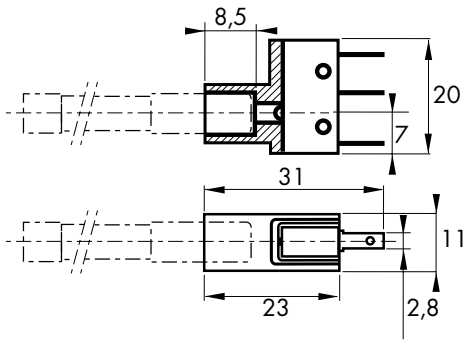
Other Protistor® Fuses
BS88-4 Fuses
Microswitches for BS88-4 Protistor®

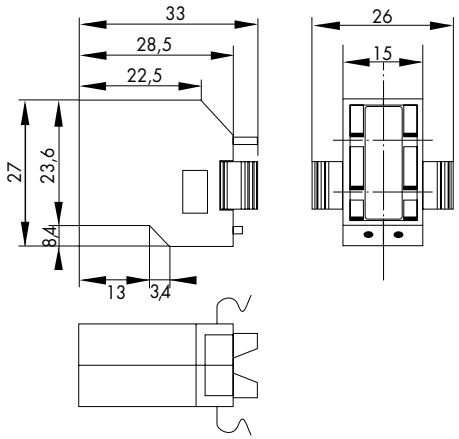
MICROSWITCH SYSTEMS ADAPTED
TO THE FOLLOWING FUSES:
- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MC 6,3 GR 2-5 N	1000 V	20 V	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
		100 mA		DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	
		100 mA		DC	4 A	0.4 A	-	2 A	0.4 A				

* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1
*** Between power circuit and microswitch terminals





Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

Other Protistor® Fuses
BS88-4 Fuses
10x51, 17x49, 2X17x49, - 690 VAC



EXTREMELY HIGH BREAKING CAPACITY FUSES: PROTECTION OF POWER SEMICONDUCTORS AS PER IEC STANDARD 60269.1 AND 4

690 V VOLTAGE RATING COMPLYING WITH IEC 33

GR CLASS (RATINGS FROM 5 TO 160 A) AS PER VDE 636-23 AND IEC 60269.4

TWO MODELS COMPLYING WITH BS 88-4
- WITHOUT INDICATOR
- WITH SEPARATE TRIP-INDICATOR
(SIZES 17x49 AND 2x17x49)

17x49 URS fuses are UL Recognized c UL us

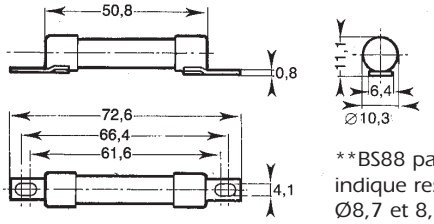
Main Characteristics

Voltage rating U_N(V)	Size	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t @ 660 V A^2s		Watts loss		Tested Breaking capacity
					Ip ≤ 30I_N	Ip > 30I_N	0.8 I_N	I_N	
690V	10 x51	URE	5	1.3	10	15	1.05	2	200k A @ 690 V
			6	1.3	13.5	20.5	1.3	2.5	
			10	3.3	25	35	2.2	4.1	
			12	5.5	40	58	2.3	4.3	
			15	9.7	70	100	2.4	4.4	
			20	19.4	120	200	3.1	5.8	
	17x49	URS	16	9.7	75	107	2.7	4.8	200k A @ 690 V
			20	17.3	130	185	2.9	5.3	
			25	27	200	285	3.7	6.7	
			32	53	400	570	4.7	8.6	
			35	70	510	725	5.2	9.6	
			40	98	760	1080	5.7	10.5	
			45	130	900	1280	6.2	11.4	
			50	156	1000	1420	6.8	12.6	
			55	210	1380	1970	7.2	13.3	
			63	315	2000	2850	7.5	13.9	
			75	525	3350	4630	7.8	14.4	
			80	625	3900	5700	8.5	15.8	
	2x17x49	URT	65	210	1590	2270	9.5	17.4	200k A @ 690 V
			75	310	2300	3280	10.9	20	
			85	430	3050	4350	11.9	21.9	
			90	252	3600	5130	12.4	22.8	
			110	850	5500	7840	13.8	26.5	
			145	1730	11000	15700	15.5	28.5	
			150	2090	13400	18500	15.6	28.7	
			160	2500	15600	22800	16.9	31.5	

Minimum operating voltage for separate trip indicator = 20 V

Other Protistor® Fuses
BS88-4 Fuses
10x51, 17x49, 2X17x49, - 690 VAC

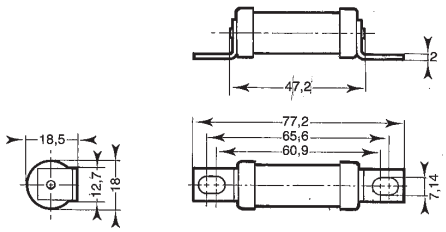
CP 10x51
Without trip-indicator



**BS88 part 4 indique respectivement Ø8,7 et 8,8

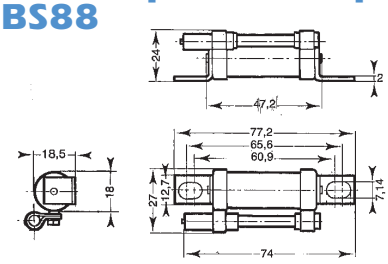
Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URE 10/5	D082458		BS10UE69V5
	6,9 URE 10/6	X097057		BS10UE69V6
	6,9 URE 10/10	C082457	10	BS10UE69V10
10x51	6,9 URE 10/12	Z097059	(13g)	BS10UE69V12
	6,9 URE 10/15	B082456		BS10UE69V15
	6,9 URE 10/20	A082455		BS10UE69V20

CP 17x49
Without trip-indicator



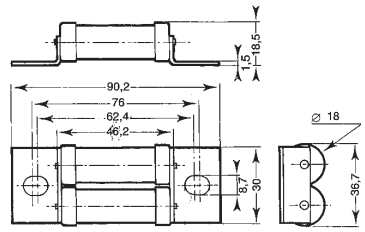
Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URS 17/16	G075883		BS17US69V16
	6,9 URS 17/20	H075884		BS17US69V20
	6,9 URS 17/25	J075885		BS17US69V25
	6,9 URS 17/32	K075886		BS17US69V32
	6,9 URS 17/35	L075887		BS17US69V35
	6,9 URS 17/40	M075888	10	BS17US69V40
17x49	6,9 URS 17/45	N075889	(51g)	BS17US69V45
	6,9 URS 17/50	P075890		BS17US69V50
	6,9 URS 17/55	Q075891		BS17US69V55
	6,9 URS 17/63	R075892		BS17US69V63
	6,9 URS 17/75	S075893		BS17US69V75
	6,9 URS 17/80	T075894		BS17US69V80

CP 17x49
With separated trip-indicator
BS88



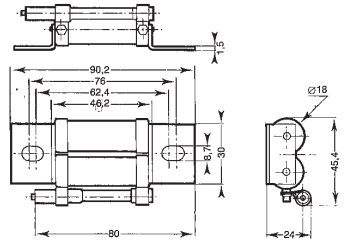
Size	Designation	Ref. Number	Pack.	Catalog Number
	6,6 URS 17P16	V075895		BS17US69V16P
	6,9 URS 17P20	W075896		BS17US69V20P
	6,9 URS 17P25	X075897		BS17US69V25P
	6,9 URS 17P32	Y075898		BS17US69V32P
	6,9 URS 17P35	Z075899		BS17US69V35P
	6,9 URS 17P40	A075900	10	BS17US69V40P
17x49	6,9 URS 17P45	B075901	(61g)	BS17US69V45P
	6,9 URS 17P50	K081084		BS17US69V50P
	6,9 URS 17P55	C075902		BS17US69V55P
	6,9 URS 17P63	D075903		BS17US69V63P
	6,9 URS 17P75	E075904		BS17US69V75P
	6,9 URS 17P80	F075905		BS17US69V80P

CP 2x17x49
Without trip-indicator



Size	Designation	Ref. Number	Pack.	Catalog Number
	6,6 URT 217/65	G075906		BS217UT69V65
	6,9 URT 217/75	F099572		BS217UT69V75
	6,9 URT 217/85	H075907		BS217UT69V85
	6,9 URT 217/90	A099958		BS217UT69V90
	6,9 URT 217/110	B099959	5	BS217UT69V110
	6,9 URT 217/140	J075908	(82g)	BS217UT69V140
2x17x49	6,9 URT 217/150	C099960		BS217UT69V150
	6,9 URT 217/160	K075909		BS217UT69V160

CP 2x17x49
With separated trip-indicator

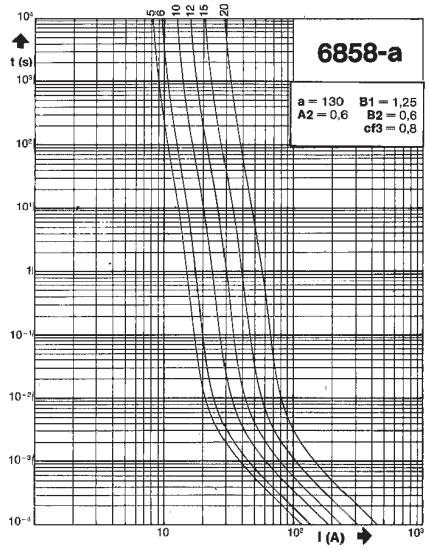


Size	Designation	Ref. Number	Pack.	Catalog Number
	6,6 URT 217P65	L075910		BS217UT69V65P
	6,9 URT 217P75	M075911		BS217UT69V75P
	6,9 URT 217P85	N075912		BS217UT69V85P
	6,9 URT 217P90	P075913		BS217UT69V90P
	6,9 URT 217P110	Q075914		BS217UT69V110P
2x17x49	6,9 URT 217P140	R075915	5	BS217UT69V140P
	6,9 URT 217P150	S075916	(95g)	BS217UT69V150P
	6,9 URT 217P160	T075917		BS217UT69V160P

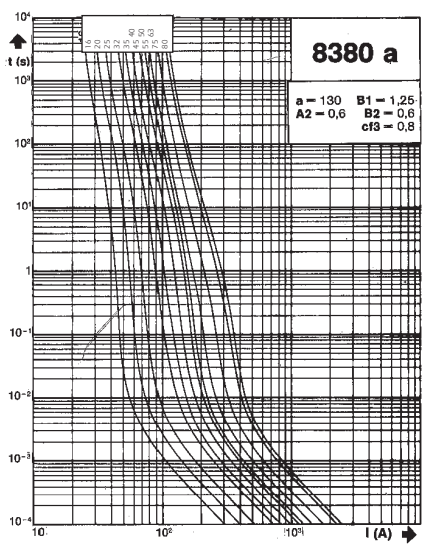
Other Protistor® Fuses
BS88-4 Fuses
10x51, 17x49, 2X17x49, - 690 VAC

Times vs current characteristics

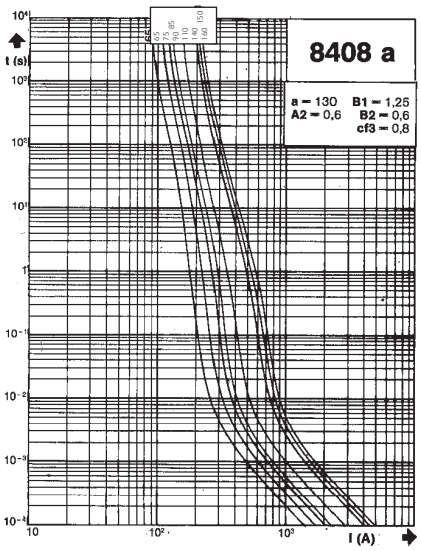
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URS



URT

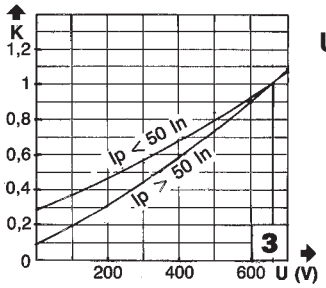


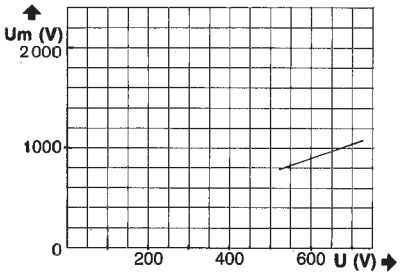
- These curves indicate, for each rated current, the pre-arcing time vs. the R/M.S. pre-arcing current.
- Tolerance for the mean pre-arcing current ± 10%

Corrective factor - Peak arc voltage

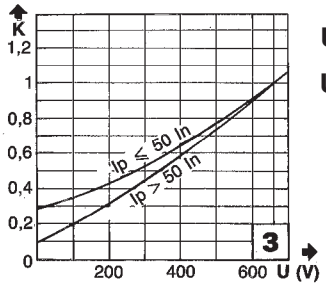
Corrective factor

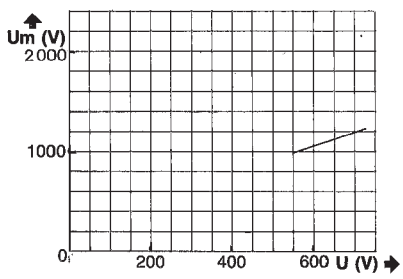
URE





URS
URT





Peak arc voltage

Corrective factor

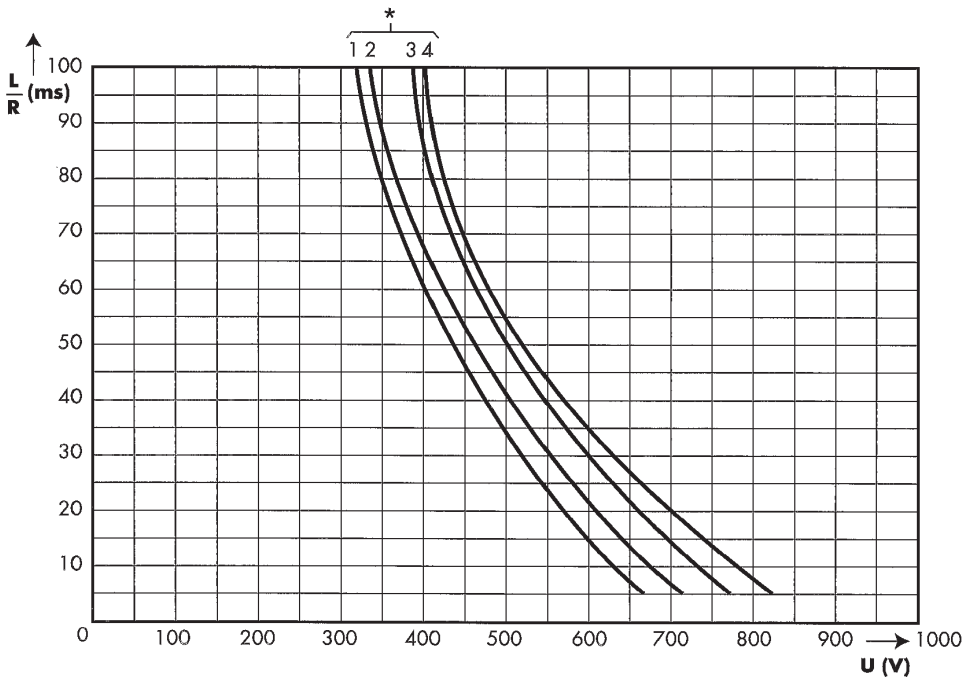
* The mean curves show the variation of the total clearing time (I^2t_t) and the total clearing duration t_t as a function of operating voltage U

Peak arc voltage

This curve show the peak value Um of the arc voltage which appears across the fuse link as a function of the operating voltage U @ cos φ = 0.15.

Other Protistor® Fuses
BS88-4 Fuses
10x51, 17x49, 2X17x49, - 690 VAC

D.C Applications data



- These curve indicate the permissible value of time constant L/R as a function of the D.C. working voltage.

- These Ipm values give the minimum DC interrupting current in amps.

Curves and Ipm for each rating			
Class	Rated current	*	I_{pm}(A)
URE	5	4	40
	6	4	48
	10	4	60
	12	4	84
	15	4	112
	20	4	140
URS	16	3	96
	20	3	140
	25	3	175
	32	3	255
	35	3	300
	40	3	320
	45	3	335
	50	3	350
	55	3	365
	63	3	390
	75	2	425
	80	1	440
URT	65	3	510
	75	3	550
	85	3	590
	90	3	610
	110	3	685
	140	3	800
	150	2	840
	160	1	880

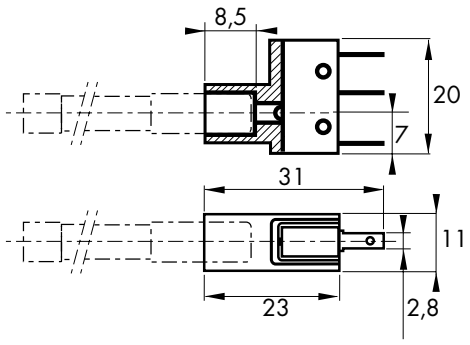
Other Protistor® Fuses
BS88-4 Fuses
Microswitches for BS88-4 Protistor®

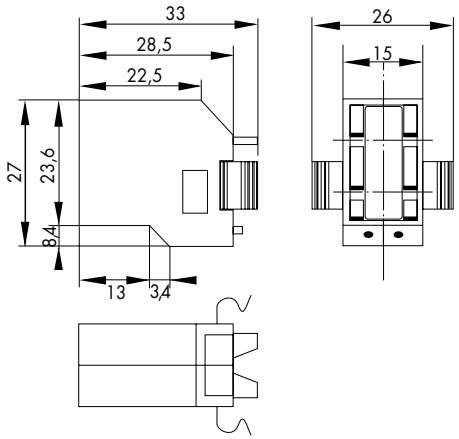
MICROSWITCH SYSTEMS ADAPTED
TO THE FOLLOWING FUSES:
- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MC 6,3 GR 2-5 N	1000 V	20 V	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
		100 mA		DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	
		100 mA		DC	4 A	0.4 A	-	2 A	0.4 A				

* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1
*** Between power circuit and microswitch terminals





Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

Other Protistor® Fuses
BS88-4 Fuses
000 BS88 - 500 V to 690 VAC





EXTREMELY HIGH BREAKING CAPACITY FUSES: PROTECTION OF POWER SEMICONDUCTORS AS PER IEC STANDARD 60269.1 AND 4, AND EN 60269-1 AND 4

500- 690 V VOLTAGE RATING (RATING 20 TO 400 A)

gR CLASS (gRB RATINGS 20 TO 125 A) ACCORDING TO VDE 636-23
- CLEARING ALL OVERLOADS
- IMPROVED SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION WITH ALL FUSES

aR CLASS (URB RATINGS 75 TO 400 A) ACCORDING TO VDE 636-23 AND IEC 269.4

TWO MODELS ACCORDING TO BS 88-4 AND EN 60 269 .4 STANDARDS; Z3 DRAWING (74 mm BETWEEN AXES) WITHOUT BLOWN FUSE
INDICATION - WITH SEPARATE TRIP INDICATOR

These fuses are UL Recognized c UL us

Main Characteristics

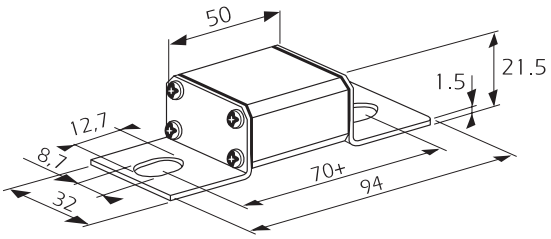
Voltage rating U_N(V)	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2t_p (A^2s)	Total clearing I^2t (A^2s)	Watts loss 0.8 I_N	Watts loss I_N	Tested Breaking capacity	Estimated Breaking capacity
690 V	gRB	20	12	80 @ 660 V	3.8	7	200k A @ 690 V	300k A @ 690 V
		25	20	150 @ 660 V	5.0	9		
		32	39	270 @ 660 V	5.5	10		
		40	70	460 @ 660 V	6.6	12		
		50	102	730 @ 660 V	7.7	14		
		63	210	1500 @ 660 V	8.8	16		
		80	475	2900 @ 660 V	9.9	18		
		100	970	6000 @ 660 V	11	20		
		125	1900	11800 @ 660 V	11.6	21		
690 V	URB	75	350	2250 @ 660 V	11.2	20.5	200k A @ 690 V	300k A @ 690 V
		80	390	2500 @ 660 V	11.6	21		
		100	690	4200 @ 660 V	12.7	23		
		110	950	6800 @ 660 V	13.5	24.5		
		125	1300	8900 @ 660 V	14.3	26		
		160	2700	16000 @ 660 V	17.0	31		
		200	5250	31500 @ 660 V	19.8	36		
		250	9900	52000 @ 660 V	24.8	45		
		315	15500	82000 @ 660 V	31.9	58		
500 V	URB	350	22400	110000 @ 500 V	31.9	58	120k A @ 500 V	
		400	33200	160000 @ 500 V	36.3	66		

Minimum operating voltage for separate trip indicator = 20 V

Other Protistor® Fuses
BS88-4 Fuses
000 BS88 - 500 V to 690 VAC

References
British standard without blown fuse indicator

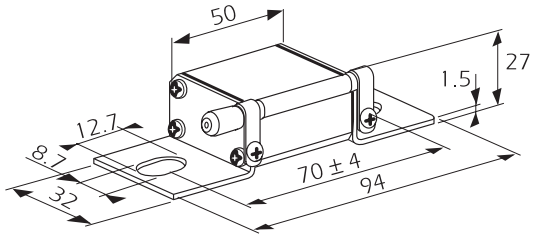
Current rating	Designation	Ref. Number	Catalog Number
20	6,9 gRB 000 BS88/020	T330044	BS000GB69V20
25	6,9 gRB 000 BS88/025	V330045	BS000GB69V25
32	6,9 gRB 000 BS88/032	W330046	BS000GB69V32
40	6,9 gRB 000 BS88/040	X330047	BS000GB69V40
50	6,9 gRB 000 BS88/050	Z330049	BS000GB69V50
63	6,9 gRB 000 BS88/063	A330050	BS000GB69V63
80	6,9 gRB 000 BS88/080	N330108	BS000GB69V80
100	6,9 gRB 000 BS88/100	H330103	BS000GB69V100
125	6,9 gRB 000 BS88/125	P330109	BS000GB69V125
75	6,9 URB 000 BS88/075	B330051	BS000UB69V75
80	6,9 URB 000 BS88/080	C330052	BS000UB69V80
100	6,9 URB 000 BS88/100	D330053	BS000UB69V100
110	6,9 URB 000 BS88/110	E330100	BS000UB69V110
125	6,9 URB 000 BS88/125	E330054	BS000UB69V125
150	6,9 URB 000 BS88/150	F330101	BS000UB69V150
160	6,9 URB 000 BS88/160	F330055	BS000UB69V160
200	6,9 URB 000 BS88/200	G330056	BS000UB69V200
250	6,9 URB 000 BS88/250	H330057	BS000UB69V250
315	6,9 URB 000 BS88/315	J330058	BS000UB69V315
350	5 URB 000 BS88/350	X330116	BS000UB50V350
400	5 URB 000 BS88/400	G330194	BS000UB50V400



Weight: 125 g
Packaging: 3 pieces

British standard with separate blown fuse trip-indicator

Current rating	Designation	Ref. Number	Catalog Number
20	6,9 gRB 000 BS88P020	Y330117	BS000GB69V20P
25	6,9 gRB 000 BS88P025	Z330118	BS000GB69V25P
32	6,9 gRB 000 BS88P032	A330119	BS000GB69V32P
40	6,9 gRB 000 BS88P040	B330120	BS000GB69V40P
50	6,9 gRB 000 BS88P050	C330121	BS000GB69V50P
63	6,9 gRB 000 BS88P063	D330122	BS000GB69V63P
80	6,9 gRB 000 BS88P080	E330123	BS000GB69V80P
100	6,9 gRB 000 BS88P100	F330124	BS000GB69V100P
125	6,9 gRB 000 BS88P125	G330125	BS000GB69V125P
75	6,9 URB 000 BS88P075	H330126	BS000UB69V75P
80	6,9 URB 000 BS88P080	J330127	BS000UB69V80P
100	6,9 URB 000 BS88P100	K330128	BS000UB69V100P
110	6,9 URB 000 BS88P110	L330129	BS000UB69V110P
125	6,9 URB 000 BS88P125	M330130	BS000UB69V125P
150	6,9 URB 000 BS88P150	N330131	BS000UB69V150P
160	6,9 URB 000 BS88P160	P330132	BS000UB69V160P
200	6,9 URB 000 BS88P200	Q330133	BS000UB69V200P
250	6,9 URB 000 BS88P250	R330134	BS000UB69V250P
315	6,9 URB 000 BS88P315	S330135	BS000UB69V315P
350	5 URB 000 BS88P350	T330136	BS000UB50V350P
400	5 URB 000 BS88P400	H330195	BS000UB50V400P

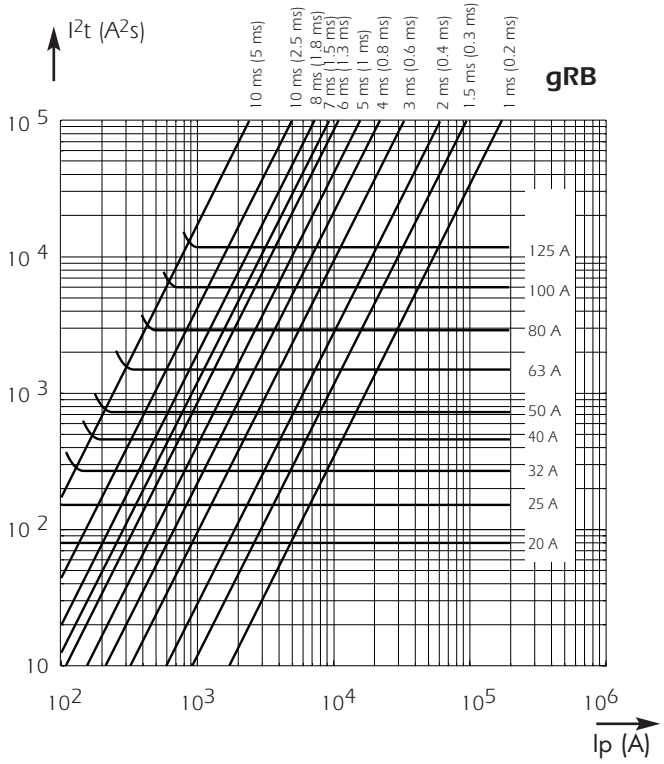


Weight: 135 g
Packaging: 3 pieces

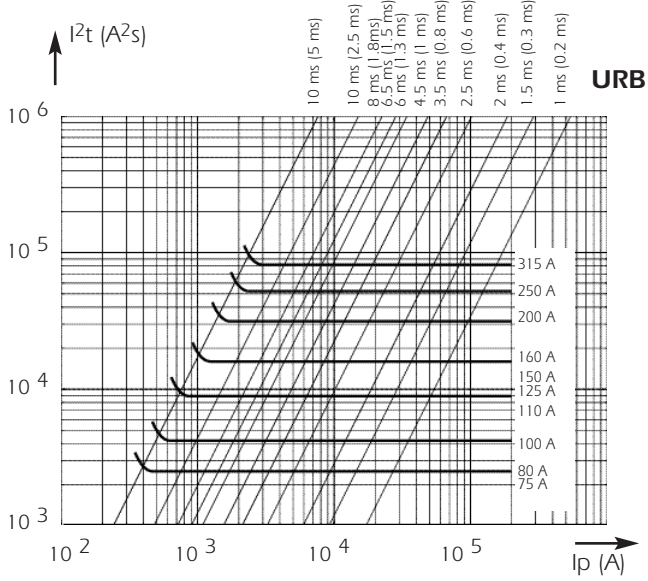
The use of MC 6.3 GR 2-5N blown fuse remote sensing microswitch is possible.
Ref. Number : Y 310015 mounted on separate trip-indicator.
See Microswitch section

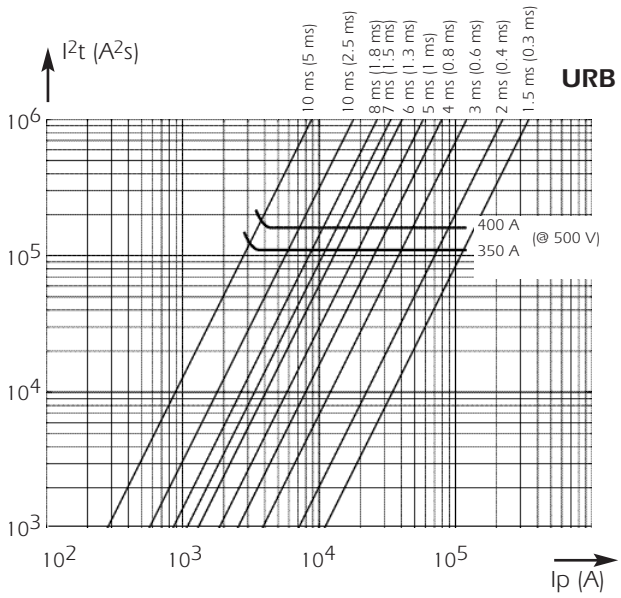
Other Protistor® Fuses
BS88-4 Fuses
000 BS88 - 500 V to 690 VAC

Total clearing I²t

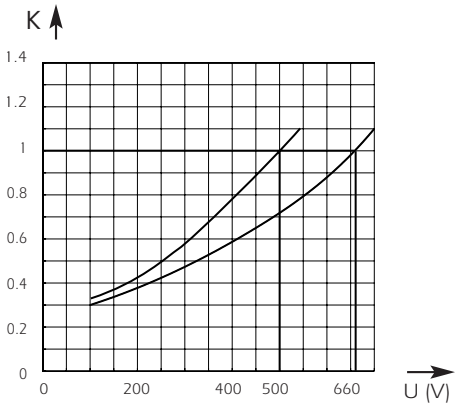


Above: Horizontal curves show, for each rated current, maximum values of total clearing I^2t (I^2t_t) as a function of prospective current Ip. @ UN with cos φ = 0.15.
Oblique lines indicate total clearing duration Tt, with associated pre-arcing duration in brackets.



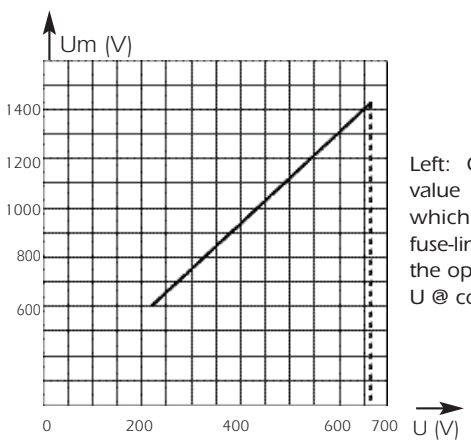


I²t corrective factor



Above: Mean curves show variation of total clearing time (I²tt) and total clearing duration Tt as a function of operating voltage U.

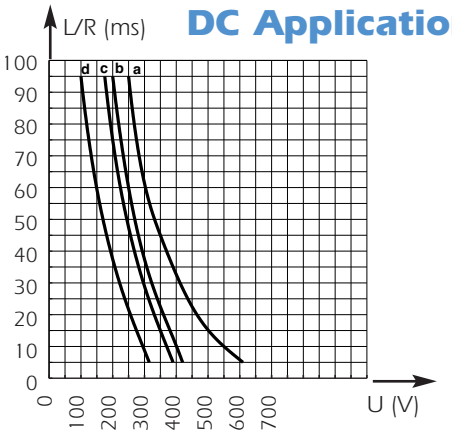
Peak arc voltage



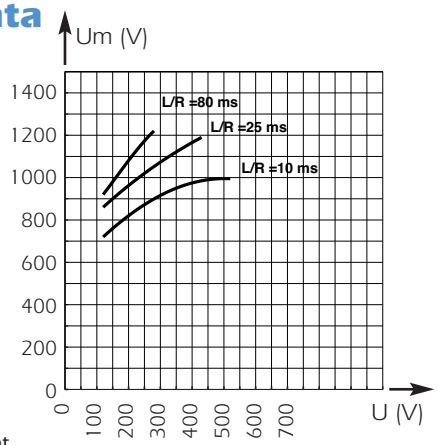
Left: Curve shows peak value Um of arc voltage which appears across fuse-link as a function of the operating voltage U @ cos φ = 0.15

Other Protistor® Fuses
BS88-4 Fuses
000 BS88 - 500 V to 690 VAC

DC Application data



Above: curves indicate permissible value of time constant L/R as a function of DC working voltage.
Curve a: for ratings from 20 to 160 A
Curve b : for ratings from 180 to 200 A
Curve c : for ratings from 250 to 315 A
Curve d : for ratings from 350 to 400 A



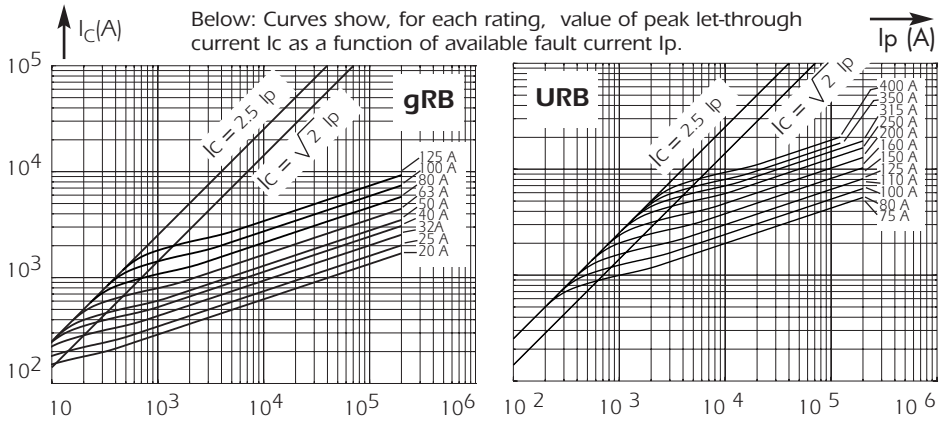
Above: Curves indicate peak arc voltage Um which may appear across the fuse terminals at working voltage U.

Rated current	Curve	Ipm (A)
20	a	60
25	a	65
32	a	90
40	a	120
50	a	150
63	a	200
80	a	270
100	a	370
125	a	500
160	a	700
200	b	1200
250	c	1800
315	c	2200
350	d	2600
400	d	3100

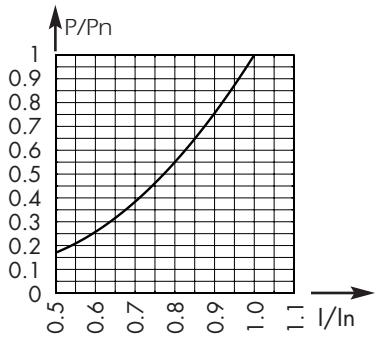
Ipm values give minimum DC interrupting current in amps.

Current limitation curves

Below: Curves show, for each rating, value of peak let-through current Ic as a function of available fault current Ip.

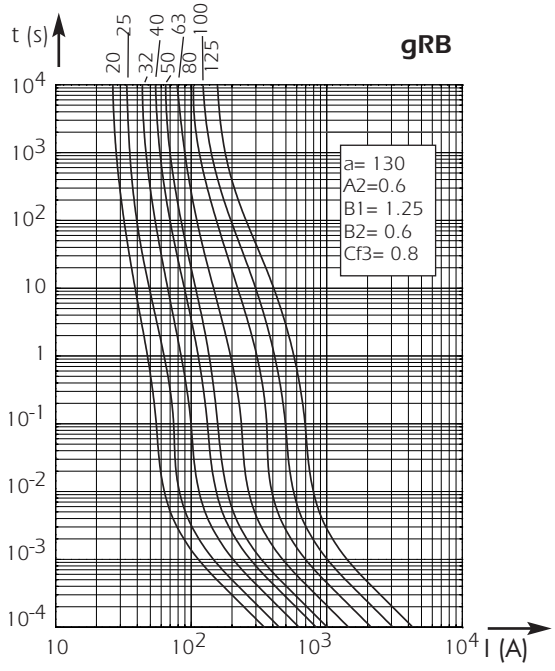


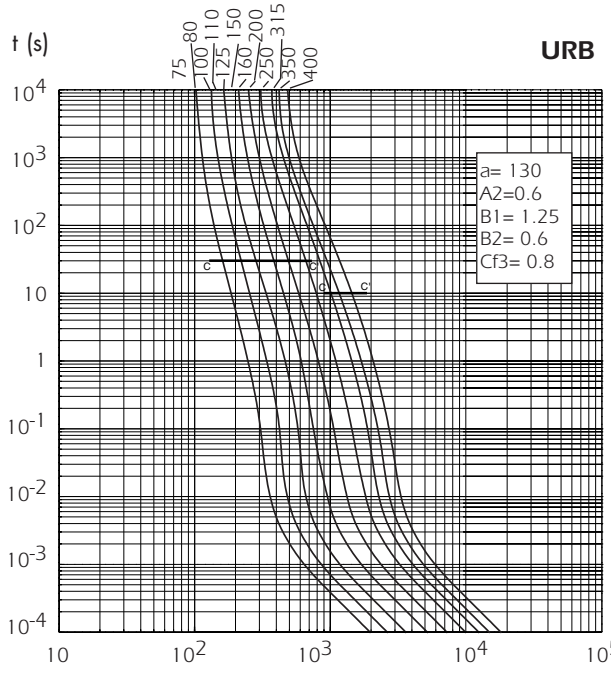
Watts loss



Above: Curve enables computation of power losses P for a IN-rated fuse as a function of the R.M.S. current I (as a multiple of IN for steady state operation)

Time vs current characteristics





Left: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

Tolerance for mean pre-arcing current ± 8%.

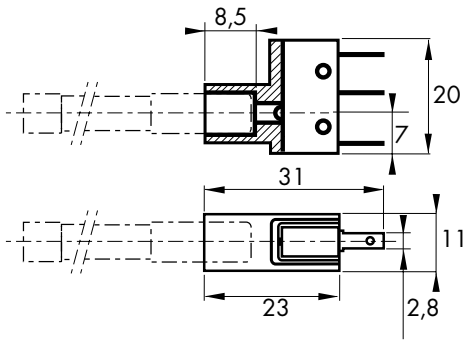
Other Protistor® Fuses
BS88-4 Fuses
Microswitches for BS88-4 Protistor®

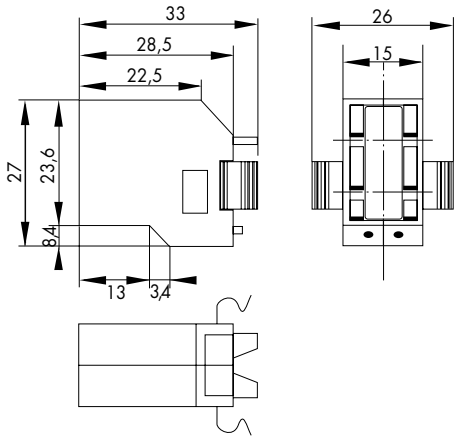
MICROSWITCH SYSTEMS ADAPTED
TO THE FOLLOWING FUSES:
- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MC 6,3 GR 2-5 N	1000 V	20 V	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
		100 mA		DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	
		100 mA		DC	4 A	0.4 A	-	2 A	0.4 A				

* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1
*** Between power circuit and microswitch terminals



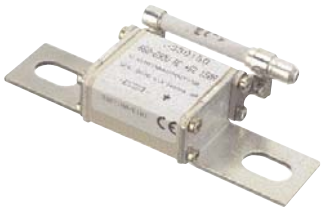


Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

Other Protistor® Fuses
BS88-4 Fuses
000, 2.000 BS88Z - 690 VAC





EXTREMELY HIGH BREAKING CAPACITY FUSES: PROTECTION OF POWER SEMICONDUCTORS AS PER IEC STANDARD 60269.1 AND 4

690 V VOLTAGE RATING (RATINGS 50 TO 500 A)

gR CLASS (gRB RATINGS 50 AND 65 A) COMPLYING WITH VDE 636-23
- CLEARING ALL OVERLOADS
- IMPROVED SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION WITH ALL FUSES

aR CLASS (URC AND URD RATINGS 75 TO 500 A) ACCORDING TO VDE 636-23 AND IEC 60269.4

FOUR MODELS: SINGLE AND TWIN BODY AS PER BS 88-4 STANDARD ; Z2 DRAWING (92 mm BETWEEN AXES) WITHOUT BLOWN FUSE INDICATOR - WITH SEPARATE TRIP-INDICATOR

These fuses are UL Recognized c UL us

Main Characteristics

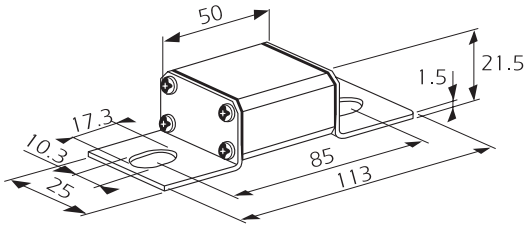
Voltage rating U_N (V)	Size	Class	Current rating I_N (A)	Pre-arcing I^2t @ 1 ms I^2t_p (A^2s)	Total clearing I^2t @ 660 V I^2t_t (A^2s)	Watts loss 0.8 I_N	Watts loss I_N	Tested Breaking capacity	Estimated Breaking capacity
690	000	gRB	50	102	730	7.7	14		
			65	210	1500	8.8	16		
		URC URD	75	390	2500	9.4	17	200 k A @ 690 V	300 k A @ 690 V
			85	540	3300	10.5	19		
			90	690	4200	13.2	24		
			110	1300	8900	13.8	25		
			150	2700	16000	14.3	26		
			180	5250	31500	14.9	27		
			200	9900	52000	15.4	28		
			250	15500	82000	17.6	32		
			280	15500	82000	23.7	43		
	2.000	URC URD	175	2760	16800	18.2	33	200 k A @ 690 V	300 k A @ 690 V
			200	3800	25000	20.4	37		
			235	5200	35600	24.2	44		
			300	10800	64000	28.6	52		
			325	15400	92400	29.1	53		
			355	21000	126000	29.7	54		
			400	39600	208000	30.8	56		
			450	40000	210000	33	60		
			500	62000	328000	35.2	64		

Minimum operating voltage for separate trip-indicator: 20 V

Other Protistor® Fuses
BS88-4 Fuses
000, 2.000 BS88Z - 690 VAC

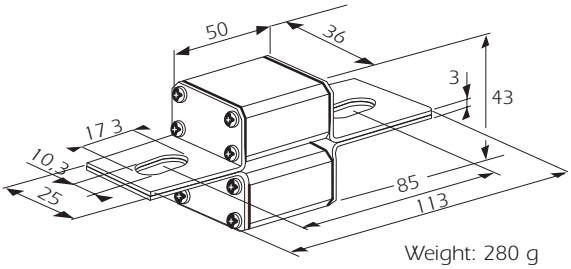
British standard without blown fuse indicator

Current rating	Designation	Ref. Number	Catalog Number
50	6,9 gRB 000 BS88Z/050	V330137	BZ000GB69V50
65	6,9 gRB 000 BS88Z/065	W330138	BZ000GB69V65
75	6,9 URC 000 BS88Z/075	X330139	BZ000UC69V75
85	6,9 URC 000 BS88Z/085	Y330140	BZ000UC69V85
90	6,9 URC 000 BS88Z/090	Z330141	BZ000UC69V90
110	6,9 URC 000 BS88Z/110	A330142	BZ000UC69V110
150	6,9 URC 000 BS88Z/150	B330143	BZ000UC69V150
180	6,9 URC 000 BS88Z/180	C330144	BZ000UC69V180
200	6,9 URD 000 BS88Z/200	D330145	BZ000UD69V200
250	6,9 URD 000 BS88Z/250	E330146	BZ000UD69V250
280	6,9 URC 000 BS88Z/280	F330147	BZ000UC69V280



Weight: 140 g
Packaging: 3 pieces

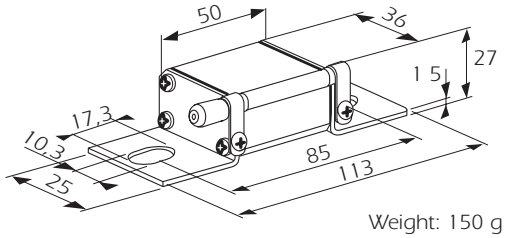
175	6,9 URC 2000 BS88Z/175	P330155	BZ2000UC69V175
200	6,9 URC 2000 BS88Z/200	Q330156	BZ2000UC69V200
235	6,9 URC 2000 BS88Z/235	R330157	BZ2000UC69V235
300	6,9 URC 2000 BS88Z/300	S330158	BZ2000UC69V300
325	6,9 URC 2000 BS88Z/325	T330159	BZ2000UC69V325
355	6,9 URC 2000 BS88Z/355	V330160	BZ2000UC69V355
400	6,9 URD 2000 BS88Z/400	W330161	BZ2000UD69V400
450	6,9 URC 2000 BS88Z/450	X330162	BZ2000UC69V450
500	6,9 URD 2000 BS88Z/500	Y330163	BZ2000UD69V500



Weight: 280 g
Packaging: 3 pieces

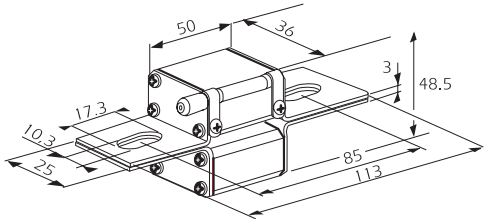
British standard with separate trip-indicator

Current rating	Designation	Ref. Number	Catalog Number
90	6,9 URC 000 BS88ZP090	G330148	BZ000UC69V90P
110	6,9 URC 000 BS88ZP110	H330149	BZ000UC69V110P
150	6,9 URC 000 BS88ZP150	J330150	BZ000UC69V150P
180	6,9 URC 000 BS88ZP180	K330151	BZ000UC69V180P
200	6,9 URD 000 BS88ZP200	L330152	BZ000UD69V200P
250	6,9 URD 000 BS88ZP250	M330153	BZ000UD69V250P
280	6,9 URC 000 BS88ZP280	N330154	BZ000UC69V280P



Weight: 150 g
Packaging: 3 pieces

175	6,9 URC 2000 BS88ZP175	Z330164	BZ2000UC69V175P
200	6,9 URC 2000 BS88ZP200	A330165	BZ2000UC69V200P
235	6,9 URC 2000 BS88ZP235	B330166	BZ2000UC69V235P
300	6,9 URC 2000 BS88ZP300	C330167	BZ2000UC69V300P
325	6,9 URC 2000 BS88ZP325	D330168	BZ2000UC69V325P
355	6,9 URC 2000 BS88ZP355	E330169	BZ2000UC69V355P
400	6,9 URD 2000 BS88ZP400	F330170	BZ2000UD69V400P
450	6,9 URC 2000 BS88ZP450	G330171	BZ2000UC69V450P
500	6,9 URD 2000 BS88ZP500	H330172	BZ2000UD69V500P

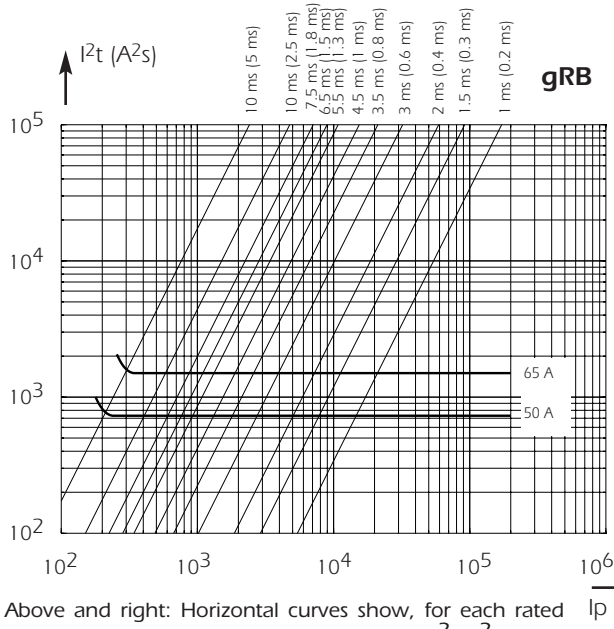


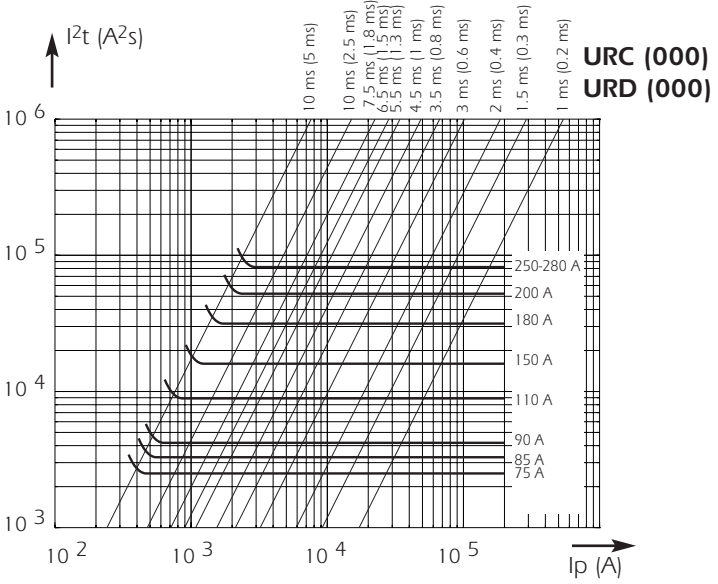
Weight: 290 g
Packaging: 3 pieces

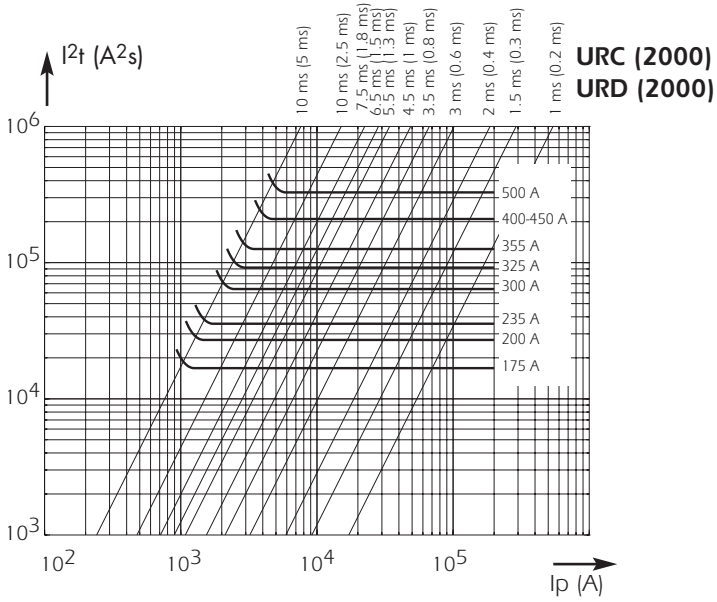
The use of MC 6.3 GR 2-5N blown fuse remote sensing microswitch is possible.
Ref. Number: Y 310015 mounted on separate trip-indicator.

Other Protistor® Fuses
BS88-4 Fuses
000, 2.000 BS88Z - 690 VAC

Total clearing I²t

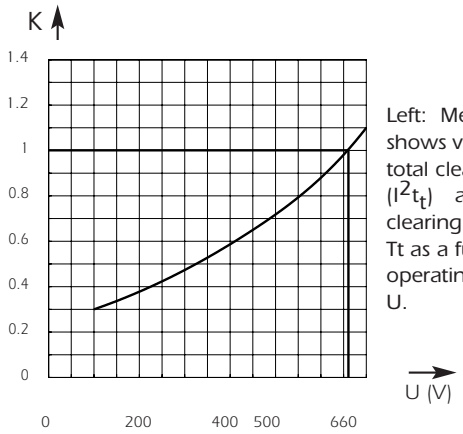






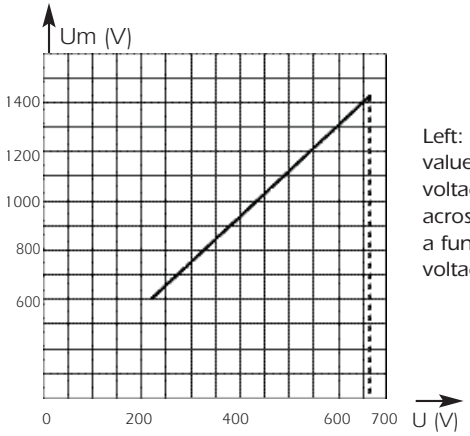
Above and right: Horizontal curves show, for each rated current, maximum values of total clearing I²t (I^2t_t) as a function of prospective current Ip @ UN with cos φ = 0.15. Oblique lines indicate total clearing duration Tt, with associated pre-arcing duration in brackets.

I²t corrective factor



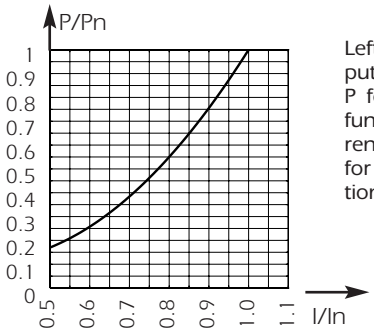
Left: Mean curve shows variation of total clearing time (I^2t_t) and total clearing duration Tt as a function of operating voltage U.

Peak arc voltage



Left: Curve shows peak value Um of the arc voltage which appears across fuse-link as a function of operating voltage U @ cos φ = 0.15

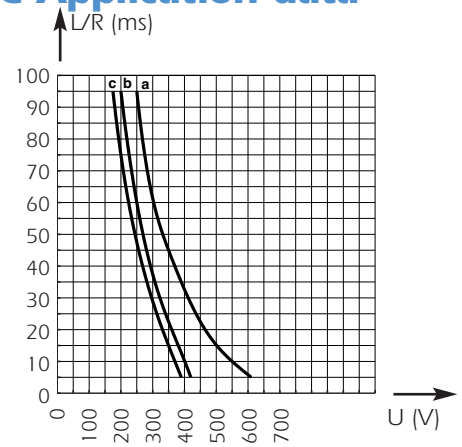
Watts loss



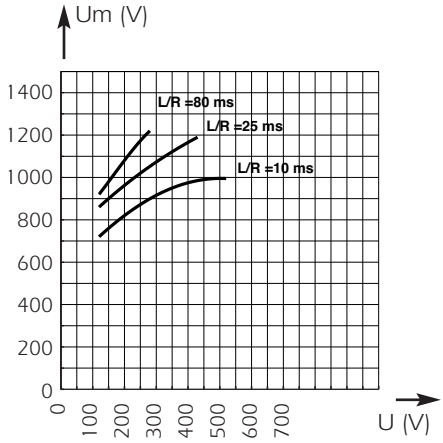
Left: Curve enables computation of power losses P for IN-rated fuse as a function of R.M.S. current I (as a multiple of IN for steady state operation)

Other Protistor® Fuses
BS88-4 Fuses
000, 2.000 BS88Z - 690 VAC

DC Application data



Above: Curves indicate permissible value of time constant L/R as a function of DC working voltage.
Curve a: Ratings from 175 to 300 A
Curve b: Rating 325 A
Curve c: Ratings from 355 to 500 A



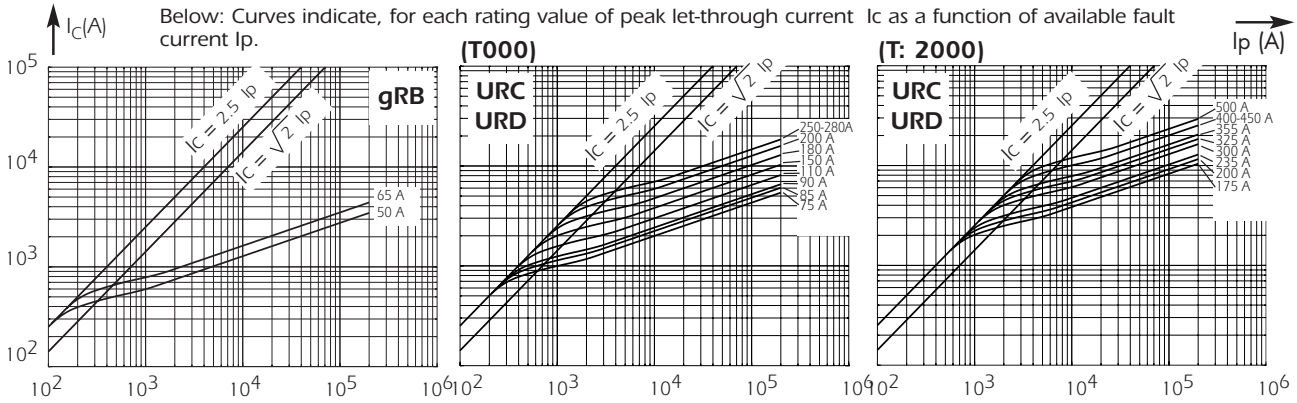
Above: Curves indicate peak arc voltage Um which may appear across fuse terminals at working voltage U.

Rated current	Curve	Ipm (A)
50	a	150
65	a	200
75	a	270
85	a	350
90	a	370
110	a	500
150	a	700
180	b	1200
200	c	1800
250	c	2200
280	c	2200
175	a	740
200	a	870
235	a	1000
300	a	1400
325	b	1900
355	b	2400
400	c	3600
450	c	4400
500	c	4400

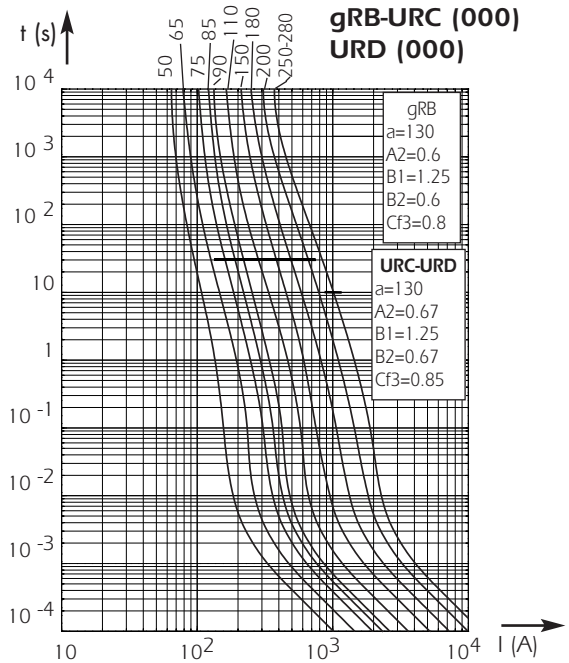
Ipm values give minimum DC interrupting current in amps.

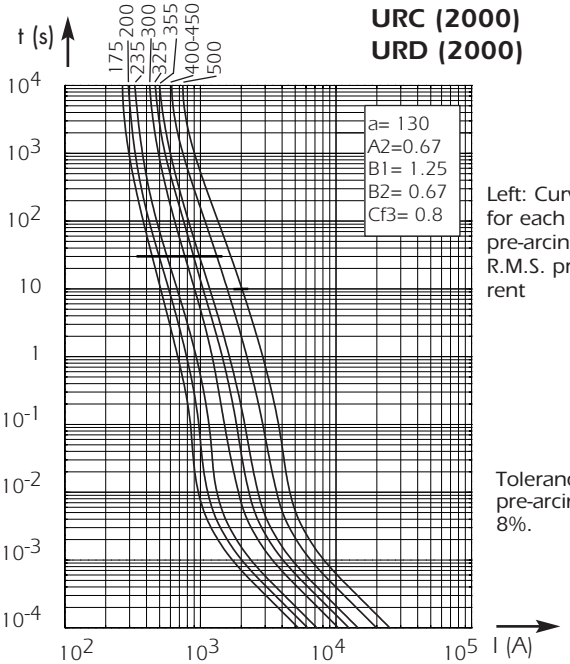
Current limitation curves

Below: Curves indicate, for each rating value of peak let-through current Ic as a function of available fault current Ip.



Time vs current characteristics





Left: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

Tolerance for mean pre-arcing current ± 8%.

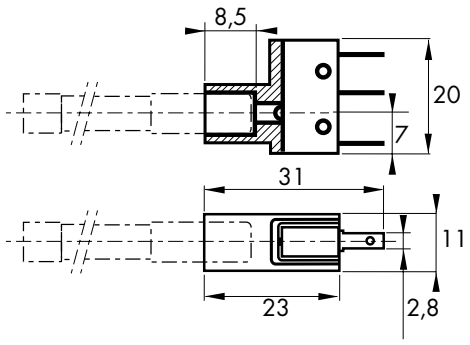
Other Protistor® Fuses
BS88-4 Fuses
Microswitches for BS88-4 Protistor®

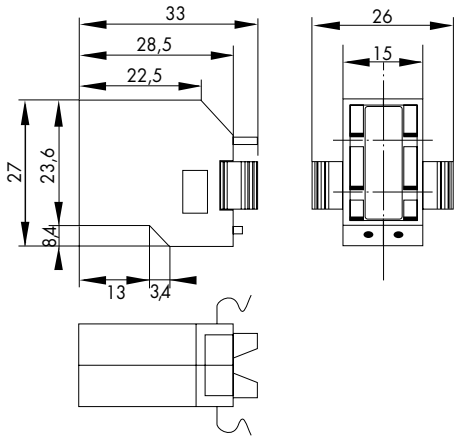
MICROSWITCH SYSTEMS ADAPTED
TO THE FOLLOWING FUSES:
- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MC 6,3 GR 2-5 N	1000 V	20 V	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
		100 mA		DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	
		100 mA		DC	4 A	0.4 A	-	2 A	0.4 A				

* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1
*** Between power circuit and microswitch terminals





Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

Other Protistor® Fuses
BS88-4 Fuses
36x55, 2x36x55 - 690 VAC







EXTREMELY HIGH BREAKING CAPACITY FUSES:
PROTECTION OF POWER SEMICONDUCTORS AS PER IEC STANDARD 60269.1 AND 4

690 V VOLTAGE RATING COMPLYING WITH IEC 33

AR CLASS (RATINGS FROM 75 TO 800 A) AS PER VDE 636-23 AND IEC 60269.4

THREE MODELS COMPLYING WITH BS 88-4
- WITHOUT INDICATOR
- WITH SEPARATE TRIP-INDICATOR
- WITH BUILT-IN TRIP-INDICATOR

Main Characteristics

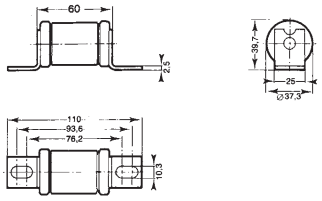
Voltage rating U_N(V)	Size	Class	Current rating I_N(A)	Pre-arcing I^2t @ 1 ms I^2tp (A^2s)	Total clearing I^2t @ 660 V A^2s		Watts loss		Tested Breaking capacity
					$Ip \leq 50\ I_N$	$Ip > 50\ I_N$	0.8 I_N	I_N	
690V	36x55	URR	75	350	1800	2000	9.7	19.5	200k A @ 690 V
			110	1180	6000	67000	11.3	22.8	
			200	3900	18500	20500	21.8	41.4	
			250	8760	41000	46000	23.6	44.1	
		URGL	50	180	860	990	7.3	14.0	200k A @ 690 V
			65	335	1600	1840	8.8	17.1	
			85	480	3450	4000	12.2	23.5	
			90	720	41000	4700	13.2	25.5	
			150	2880	12600	14500	18..9	35.3	
			180	5350	22500	25500	19.1	35.7	
			200	9510	40000	46000	17.7	33.1	
			250	21400	97000	11000	18.7	34.5	
			280	29100	125000	145000	20.3	38.0	
			315	38100	157000	180000	222.77	42.6	
			355	48200	190000	215000	25.9	48.5	
			400	72000	265000	305000	26.7	50.0	
	2x36x55	URU	200	4700	24000	27000	18.4	33.0	200k A @ 690 V
			235	6920	34500	39000	21.0	37.6	
			400	21200	100000	110000	34.8	62.3	
			500	35000	164000	184000	47.2	88.2	
			630	97300	515000	575000	41.1	73.2	
		URGM	175	2880	13800	16000	24.7	47.6	200k A @ 690 V
			300	13700	660000	68000	31.5	59.0	
			325	21400	900000	102000	30.0	54.0	
			355	25200	106000	120000	33.1	62.0	
			450	65600	300000	340000	34.6	63.8	
			500	85600	390000	440000	37.44	69.0	
			630	152000	630000	720000	45.4	85.2	
			710	193000	760000	860000	51.8	97.0	
			800	282000	1.22 10^6	1.22 10^6	53.4	100.0	

Minimum operating voltage for built-in and separate trip indicator = 20 V

Other Protistor® Fuses
BS88-4 Fuses
36x55, 2x36x55 - 690 VAC

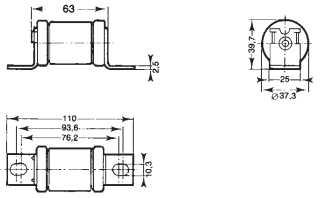
Ref. Numbers

CP 36x55
without trip-indicator



Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URGL 36/50	X097103		BS36UL69V50
	6,9 URGL 36/65	H097113		BS36UL69V65
	6,9 URR 36/75	H097136		BS36UR69V75
	6,9 URGL 36/85	M097163		BS36UL69V85
	6,9 URGL 36/90	N097164		BS36UL69V90
	6,9 URR 36/110	P097165	6	BS36UR69V110
	6,9 URGL 36/150	Q097166	(220g)	BS36UL69V150
36x55	6,9 URGL 36/180	R097167		BS36UL69V180
	6,9 URR 36/200	S097168		BS36UR69V200
	6,9 URGL 36/200	T097169		BS36UL69V200
	6,9 URR 36/250	V097170		BS36UR69V250
	6,9 URGL 36/250	W097171		BS36UL69V250
	6,9 URGL 36/280	A097175		BS36UL69V280
	6,9 URGL 36/315	B097176		BS36UL69V315
	6,9 URGL 36/355	C097177		BS36UL69V355
	6,9 URGL 36/400	D097178		BS36UL69V400

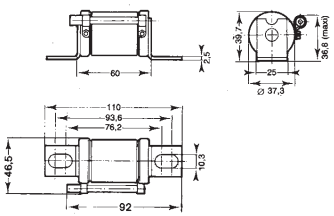
CP 36x55
with built-in trip-indicator



Microswitch MC 36 GR 2.5 - Ref. P 092496

Size	Designation	Ref. Number	Pack.	Catalog Number
	6,6 URGL 36T50	N097210		BS36UL69V50T
	6,9 URGL 36T65	K097230		BS36UL69V65T
	6,9 URR 36T75	H099965		BS36UR69V75T
	6,9 URGL 36T85	M097255		BS36UL69V85T
	6,9 URGL 36T90	N097256		BS36UL69V90T
	6,9 URR 36T110	R099973	6	BS36UR69V110T
	6,9 URGL 36T150	Z082178	(220g)	BS36UL69V150T
36x55	6,9 URGL 36T180	P097257		BS36UL69V180T
	6,9 URR 36T200	A085560		BS36UR69V200T
	6,9 URGL 36T200	R097259		BS36UL69V200T
	6,9 URR 36T250	W097263		BS36UR69V250T
	6,9 URGL 36T250	X097264		BS36UL69V250T
	6,9 URGL 36T280	Y097265		BS36UL69V280T
	6,9 URGL 36T315	Z097266		BS36UL69V315T
	6,9 URGL 36T355	A097267		BS36UL69V355T
	6,9 URGL 36T400	C097269		BS36UL69V400T

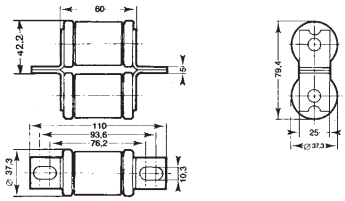
CP 36x55
with separated trip-indicator
BS88-4



Microswitch MC 36 GR 2.5 - Ref. Y 310015

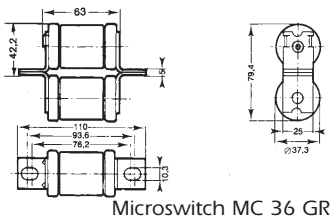
Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URGL 36P90	H097182		BS36UL69V90P
	6,9 URR 36P110	J097183		BS36UR69V110P
	6,9 URGL 36P150	K097184		BS36UL69V150P
	6,9 URGL 36P180	L097185		BS36UL69V180P
	6,9 URR 36P200	M097186		BS36UR69V200P
	6,9 URGL 36P200	N097187	6	BS36UL69V200P
	6,9 URR 36P250	P097188	(230g)	BS36UR69V250P
36x55	6,9 URGL 36P250	Q097189		BS36UL69V250P
	6,9 URGL 36P280	R097190		BS36UL69V280P
	6,9 URGL 36P315	V097193		BS36UL69V315P
	6,9 URGL 36P355	Y097196		BS36UL69V355P
	6,9 URGL 36P400	M097209		BS36UL69V400P

CP 2x36x55
without trip-indicator



Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URGM 236/175	D097270		BS236UM69V175
	6,9 URU 236/200	F097272		BS236UU69V200
	6,9 URU 236/235	J097275		BS236UU69V235
	6,9 URGM 236/300	K097276		BS236UM69V300
	6,9 URGM 236/325	R097282		BS236UM69V325
	6,9 URGM 236/355	S097283	3	BS236UM69V355
	6,9 URU 236/400	T097284	(400g)	BS236UU69V400
2x36x55	6,9 URGM 236/450	Y097288		BS236UM69V450
	6,9 URGM 236/500	Z097289		BS236UM69V500
	6,9 URU 236/500	A097290		BS236UU69V500
	6,9 URGM 236/630	B097291		BS236UM69V630
	6,9 URU 236/630	R097351		BS236UU69V630
	6,9 URGM 236/710	S097352		BS236UM69V710
	6,9 URGM 236/800	Y097357		BS236UM69V800

CP 2x36x55
with built-in trip-indicator

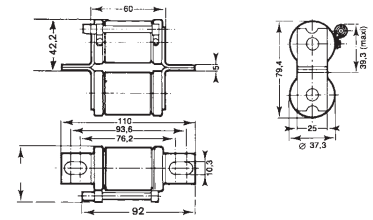


Microswitch MC 36 GR 2.5 - Ref. P 092496

Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URGM 236T175	F097456		BS236UM69V175T
	6,9 URU 236T200	G097457		BS236UU69V200T
	6,9 URU 236T235	A082179		BS236UU69V235T
	6,9 URGM 236T300	S085553		BS236UM69V300T
	6,9 URGM 236T325	J097459		BS236UM69V325T
	6,9 URGM 236T355	N097463	3	BS236UM69V355T
	6,9 URU 236T400	P097464	(400g)	BS236UU69V400T
2x36x55	6,9 URGM 236T450	Q097465		BS236UM69V450T
	6,9 URGM 236T500	R097466		BS236UM69V500T
	6,9 URU 236T500	S097467		BS236UU69V500T
	6,9 URGM 236T630	V097469		BS236UM69V630T
	6,9 URU 236T630	W097470		BS236UU69V630T
	6,9 URGM 236T710	C097476		BS236UM69V710T
	6,9 URGM 236T800	D097477		BS236UM69V800T

Other Protistor® Fuses
BS88-4 Fuses
36x55, 2x36x55 - 690 VAC

CP 2x36x55
with separated trip-indicator
BS88-4

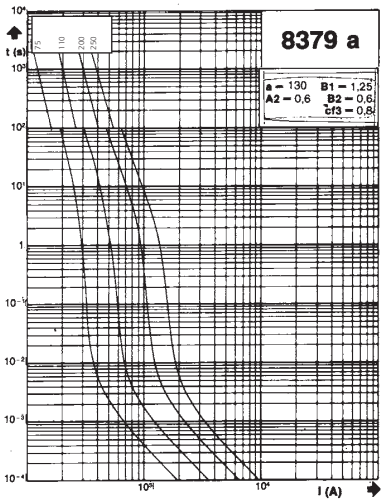


Microswitch MC 6,3 GR 2.5 - Ref. Y 310015

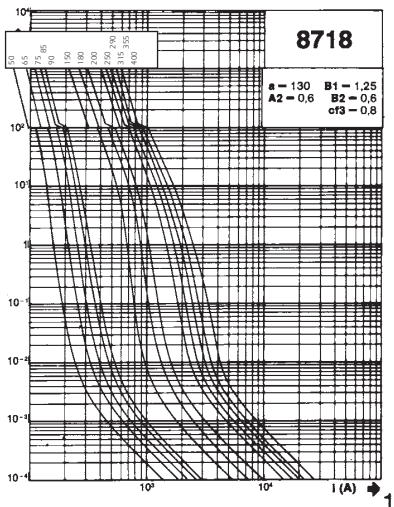
Size	Designation	Ref. Number	Pack.	Catalog Number
	6,9 URGM 236P175	A097359		BS236UM69V175P
	6,9 URU 236P200	E097363		BS236UU69V200P
	6,9 URU 236P235	F097364		BS236UU69V235P
	6,9 URGM 236P300	G097365		BS236UM69V300P
	6,9 URGM 236P325	Q097373		BS236UM69V325P
	6,9 URGM 236P355	R097374	3	BS236UM69V355P
	6,9 URU 236P400	S097375	(410g)	BS236UU69V400P
2x36x55	6,9 URGM 236P450	T097376		BS236UM69V450P
	6,9 URU 236P500	V097377		BS236UU69V500P
	6,9 URGM 236P500	E097386		BS236UM69V500P
	6,9 URU 236P630	J097390		BS236UU69V630P
	6,9 URGM 236P630	P097395		BS236UM69V630P
	6,9 URGM 236P710	B097452		BS236UM69V710P
	6,9 URGM 236P800	E097455		BS236UM69V800P

Electrical characteristics
Times vs current characteristics

690 V URR

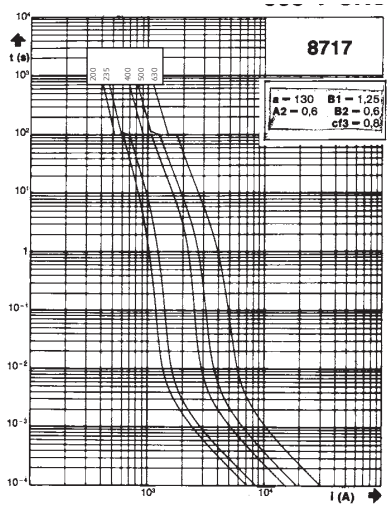


690 V URGL

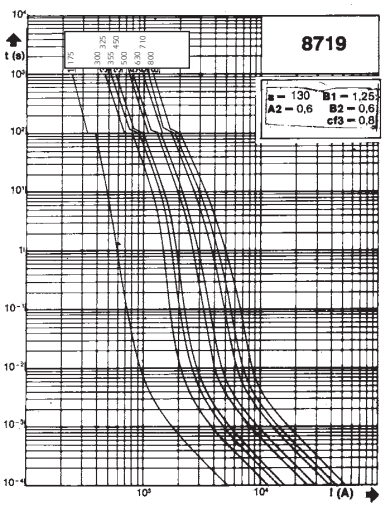


13

690 V URU



690 V URGM

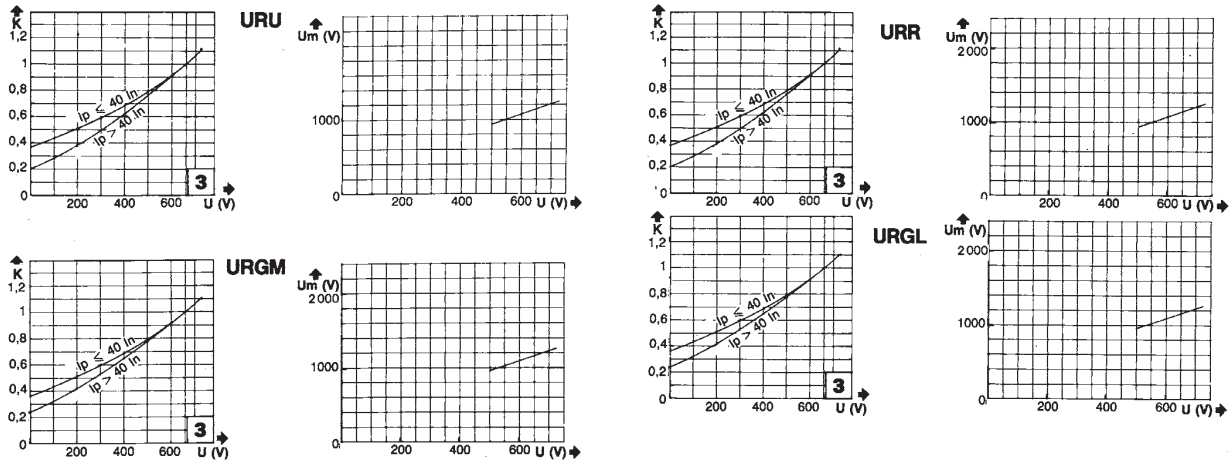


- These curves indicate, for each rated current, the pre-arcing time vs. the R/M.S. pre-arcing current.
- Tolerance for the mean pre-arcing current ± 10%

Other Protistor® Fuses
BS88-4 Fuses
36x55, 2x36x55 - 690 VAC

Corrective factor - Peak arc voltage

Corrective factor | Peak arc voltage | Corrective factor | Peak arc voltage



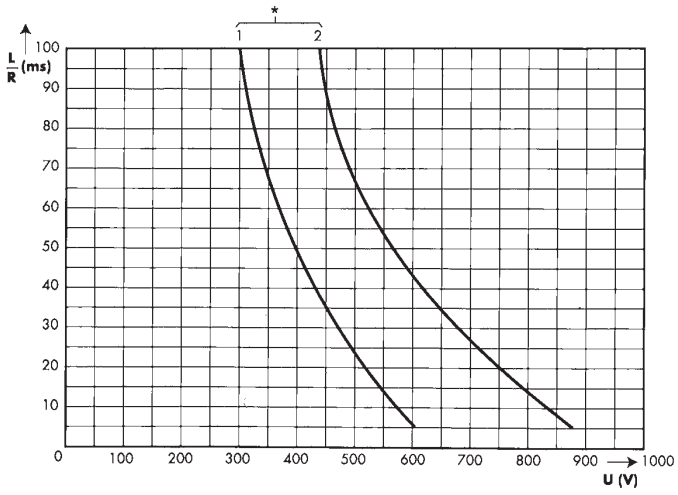
Corrective factor

The mean curves shows the variation of total clearing time (I^2t_t) and total clearing duration T_t as a function of operating voltage U.

Peak arc voltage

This curve shows peak value Um of the arc voltage which appears across the fuse-link as a function of the operating voltage U @ cos j = 0.15

DC Application data



Curves and Ipm for each rating			
Class	Rated current	Curve*	I_{pm} (A)
URR	75	2	225
	110	2	330
	200	2	600
	250	2	750
URU	200	2	600
	235	2	700
	400	2	1200
	500	2	1500
	630	1	1890

- This curves indicate the permissible value of time constant L/R as a function of DC working voltage
- Ipm values give the minimum DC interrupting current in amps.

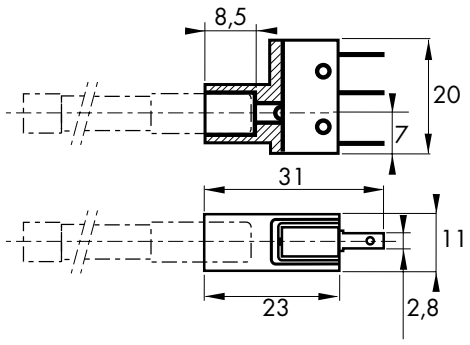
Other Protistor® Fuses
BS88-4 Fuses
Microswitches for BS88-4 Protistor®

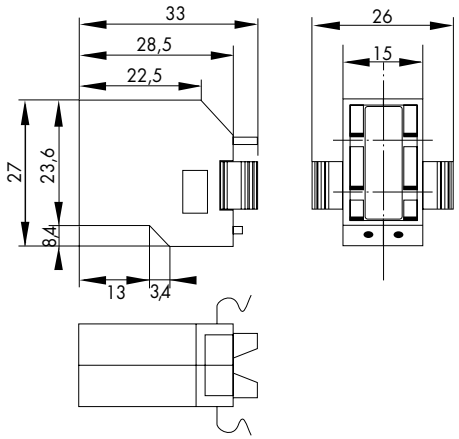
MICROSWITCH SYSTEMS ADAPTED
TO THE FOLLOWING FUSES:
- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MC 6,3 GR 2-5 N	1000 V	20 V	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
		100 mA		DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	
		100 mA		DC	4 A	0.4 A	-	2 A	0.4 A				

* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1
*** Between power circuit and microswitch terminals





Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

Other Protistor® Fuses
BS88-4 Fuses
17x49 gRB/URB - 690 VAC



EXTREMELY HIGH BREAKING CAPACITY FUSES:
PROTECTION OF SEMICONDUCTORS
AS PER IEC STANDARD 60269.1 AND 4

690 V VOLTAGE RATING AS PER IEC 33

gR CLASS (CURRENT RATING 12 TO 90 A) AS PER VDE 636-23
- CLEARING ALL OVERLOADS
- IMPROVED SAFETY AND PROTECTION
- ENABLING SELECTIVE COORDINATION WITH ALL FUSES WITHIN DISTRIBUTION CIRCUIT

aR CLASS (CURRENT RATING 100 A) ACCORDING TO VDE 636-23 AND IEC 60269.4

CONNECTION AS PER:
- GERMAN STANDARD DIN 43653/00C
- BRITISH STANDARD BS 88-4

These fuses are UL Recognized c UL us

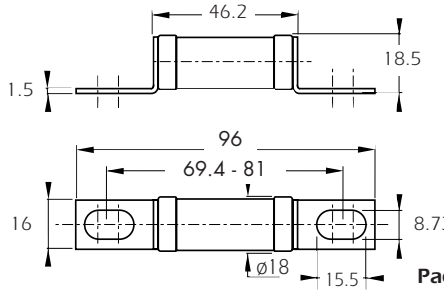
Main Characteristics

Voltage rating U_N(V)	Class	Current rating I_N(A)	pre-arcing I^2t @ 1 ms I^2tp (A2s)	Total clearing I^2t @ UN I^2tt (A^2s)	Watts loss 0.8 I_N	Watts loss I_N	Tested Breaking capacity	Estimated Breaking capacity
690	gRB	12 16 20 25 32 35 40 45 50 55 63 75 80 90	4.2 9.6 17.1 26.8 52.5 69 96 130 154 210 310 520 620 840	30 65 110 170 330 430 610 820 970 1320 1950 3250 3900 5300	1.95 2.2 3.0 4.4 5.0 5.2 5.8 6.3 7.2 7.4 8.0 8.8 9.4 11	3.5 4.0 5.5 8.0 9.0 9.5 10.5 11.5 13 13.5 14.5 16 17 20	200 k A @ 690 V	300 k A @ 690 V
690	URB	100	965	6150	13	23.5	200 k A @ 690 V	300 k A @ 690 V

Minimum operating voltage for separate trip-indicator: 20 V

Other Protistor® Fuses
BS88-4 Fuses
17x49 gRB/URB - 690 VAC

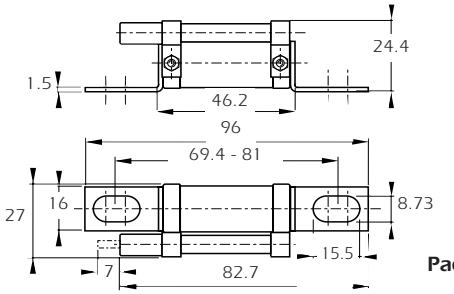
German standard without blown fuse indication



Weight: 42 g
Packaging: 10 pieces

Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17 D08/12	M220972	DN17GB69V12
16	6,9 gRB 17 D08/16	N220973	DN17GB69V16
20	6,9 gRB 17 D08/20	P220974	DN17GB69V20
25	6,9 gRB 17 D08/25	Q220975	DN17GB69V25
32	6,9 gRB 17 D08/32	R220976	DN17GB69V32
35	6,9 gRB 17 D08/35	S220977	DN17GB69V35
40	6,9 gRB 17 D08/40	T220978	DN17GB69V40
45	6,9 gRB 17 D08/45	V220979	DN17GB69V45
50	6,9 gRB 17 D08/50	W220980	DN17GB69V50
55	6,9 gRB 17 D08/55	X220981	DN17GB69V55
63	6,9 gRB 17 D08/63	Y220982	DN17GB69V63
75	6,9 gRB 17 D08/75	Z220983	DN17GB69V75
80	6,9 gRB 17 D08/80	A220984	DN17GB69V80
90	6,9 gRB 17 D08/90	B220985	DN17GB69V90
100	6,9 URB 17 D08/100	C220986	DN17UB69V100

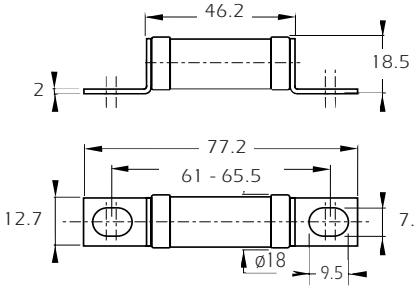
German standard with separate trip-indicator DIN 43623/00C



Weight: 55 g
Packaging: 10 pieces

Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17 D08P 12	X221004	DN17GB69V12P
16	6,9 gRB 17 D08P 16	Y221005	DN17GB69V16P
20	6,9 gRB 17 D08P 20	Z221006	DN17GB69V20P
25	6,9 gRB 17 D08P 25	A221007	DN17GB69V25P
32	6,9 gRB 17 D08P 32	B221008	DN17GB69V32P
35	6,9 gRB 17 D08P 35	C221009	DN17GB69V35P
40	6,9 gRB 17 D08P 40	D221010	DN17GB69V40P
45	6,9 gRB 17 D08P 45	E221011	DN17GB69V45P
50	6,9 gRB 17 D08P 50	F221012	DN17GB69V50P
55	6,9 gRB 17 D08P 55	G221013	DN17GB69V55P
63	6,9 gRB 17 D08P 63	H221014	DN17GB69V63P
75	6,9 gRB 17 D08P 75	J221015	DN17GB69V75P
80	6,9 gRB 17 D08P 80	K221016	DN17GB69V80P
90	6,9 gRB 17 D08P 90	L221017	DN17GB69V90P
100	6,9 URB 17 D08P 100	M221018	DN17UB69V100P

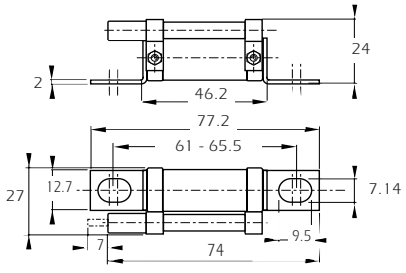
British standard without blown fuse indication



Weight: 40 g
Packaging: 10 pieces

Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17/12	W220957	BS17GB69V12
16	6,9 gRB 17/16	X220958	BS17GB69V16
20	6,9 gRB 17/20	Y220959	BS17GB69V20
25	6,9 gRB 17/25	Z220960	BS17GB69V25
32	6,9 gRB 17/32	A220961	BS17GB69V32
35	6,9 gRB 17/35	B220962	BS17GB69V35
40	6,9 gRB 17/40	C220963	BS17GB69V40
45	6,9 gRB 17/45	D220964	BS17GB69V45
50	6,9 gRB 17/50	E220965	BS17GB69V50
55	6,9 gRB 17/55	F220966	BS17GB69V55
63	6,9 gRB 17/63	G220967	BS17GB69V63
75	6,9 gRB 17/75	H220968	BS17GB69V75
80	6,9 gRB 17/80	J220969	BS17GB69V80
90	6,9 gRB 17/90	K220970	BS17GB69V90
100	6,9 URB 17/100	L220971	BS17UB69V100

British standard with separate trip-indicator BS 88-4

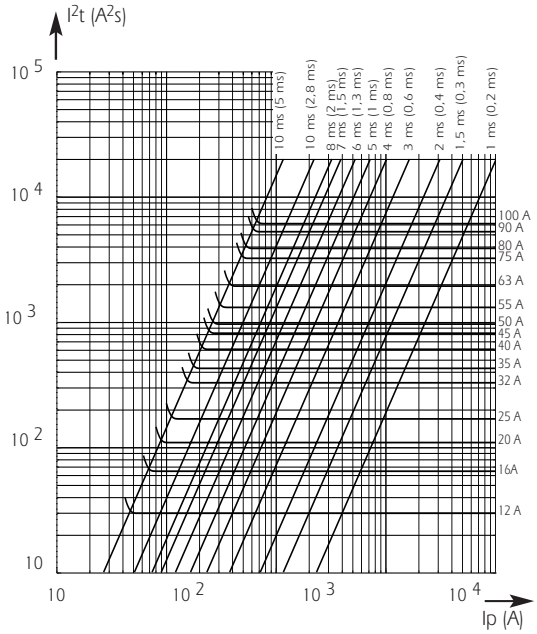


Weight: 60 g
Packaging: 3 pieces

Current rating	Designation	Ref. Number	Catalog Number
12	6,9 gRB 17P12	D220987	BS17GB69V12P
16	6,9 gRB 17P16	E220988	BS17GB69V16P
20	6,9 gRB 17P20	F220989	BS17GB69V20P
25	6,9 gRB 17P25	G220990	BS17GB69V25P
32	6,9 gRB 17P32	H220991	BS17GB69V32P
35	6,9 gRB 17P35	J220992	BS17GB69V35P
40	6,9 gRB 17P40	K220993	BS17GB69V40P
45	6,9 gRB 17P45	L220994	BS17GB69V45P
50	6,9 gRB 17P50	M220995	BS17GB69V50P
55	6,9 gRB 17P55	N220996	BS17GB69V55P
63	6,9 gRB 17P63	P220997	BS17GB69V63P
75	6,9 gRB 17P75	Q220998	BS17GB69V75P
80	6,9 gRB 17P80	R220999	BS17GB69V80P
90	6,9 gRB 17P90	S221000	BS17GB69V90P
100	6,9 URB 17P100	T221001	BS17UB69V100P

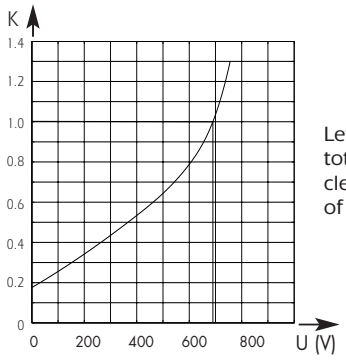
Other Protistor® Fuses
BS88-4 Fuses
17x49 gRB/URB - 690 VAC

Total clearing I²t



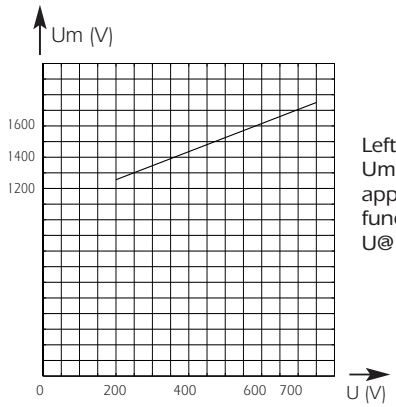
Above: Horizontal curves show for each rated current maximum values of total clearing I²t (I^2t_t) as a function of prospective current I_p. @ 690 V.
cos φ = 0.15.
Oblique lines indicate total clearing duration Tt and associated pre-arcing duration in brackets.

I²t corrective factor



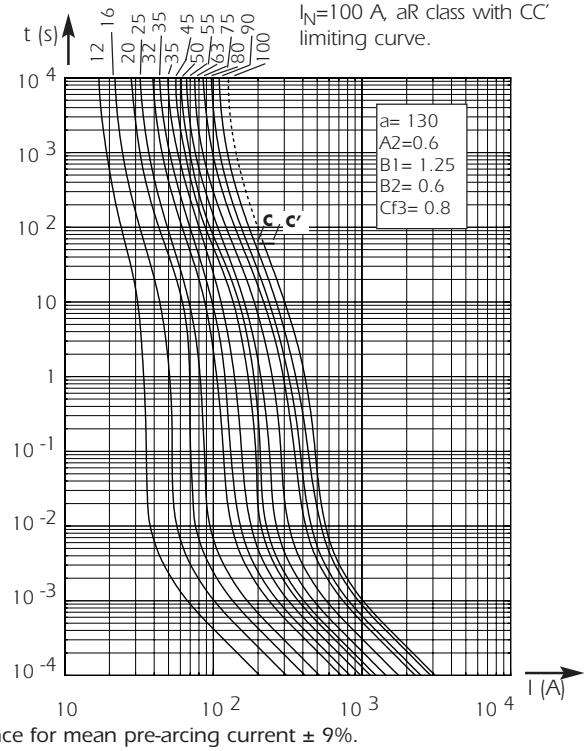
Left: Curve shows variation of total clearing time (I^2t_t) and total clearing duration T_t as a function of operating voltage U.

Peak arc voltage



Left: Curve shows peak value Um of arc voltage which appears across fuse-link as a function of operating voltage U@ cos φ = 0.15

Time vs current characteristics

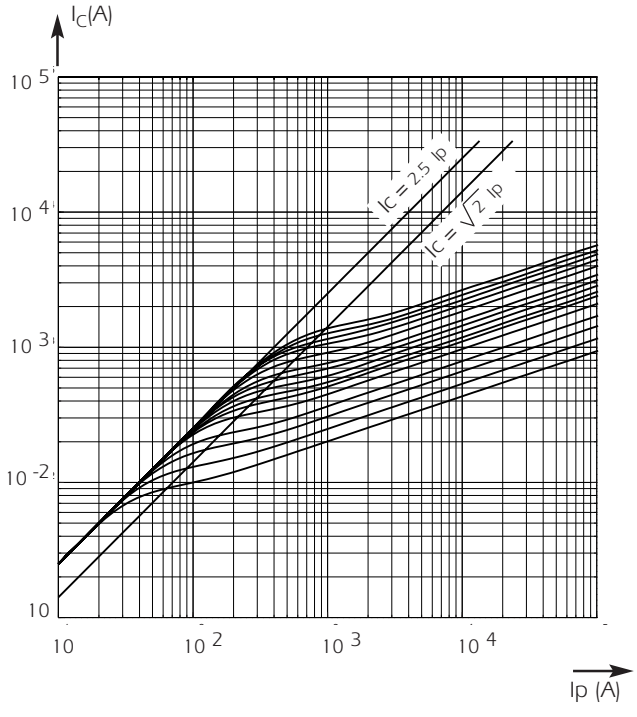


I_N=100 A, aR class with CC' limiting curve.

Tolerance for mean pre-arcing current ± 9%.

Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

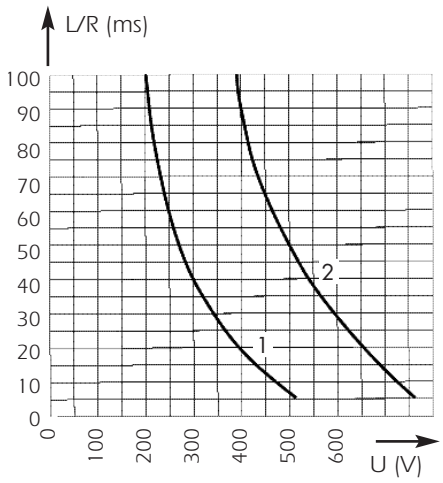
Current limitation curves



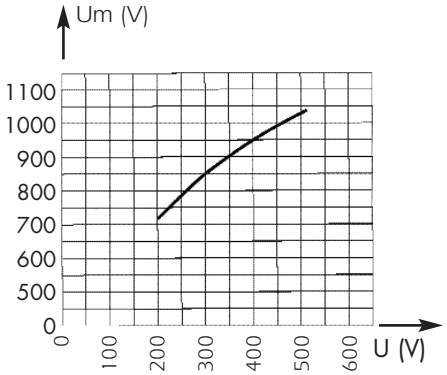
Above: Curves show, for each rating, value of peak let-through current IC as a function of available fault current Ip.

Other Protistor® Fuses
BS88-4 Fuses
17x49 gRB/URB - 690 VAC

DC Application data

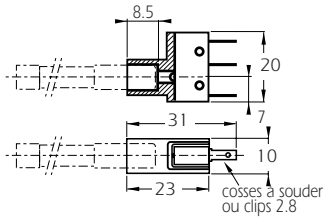


Above: Curves indicate permissible value of time constant L/R as a function of DC working voltage.
Curve 1: Ip ≥ 1,6 IN only for fuses gRB (current rating from 12 to 50 A)
Curve 2: Ip ≥ 8 IN for fuses gRB et URB



Curve indicates peak arc voltage Um which may appear across the fuse terminals at working voltage U.

Microswitch



Designation	Ref. Num.	Weight	Pack.
MC 6,3 GR 2.5	Y 310015	10 g	3 pieces

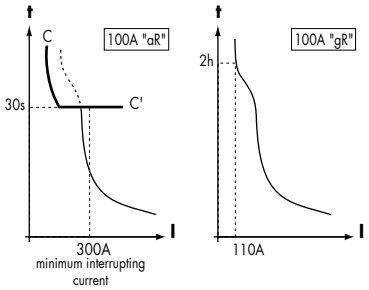
Electrical characteristics:
I_N = 3 A - U_N = 250 VAC
I_N = 2 A - U_N = 30 VDC

Certain minimum operating voltage/current
20 V-100 mA

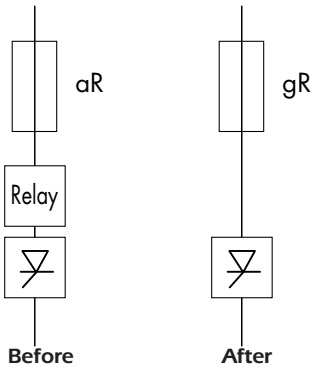
NEW gR-CLASS

OPTIMAL PROTECTION OF POWER EQUIPMENT

Thanks to recent technological developments, Ferraz Shawmut today markets gR-class PROTISTOR® fuses capable of clearing all types of overloads, from low multiples of current ratings up to very high short-circuit currents. Enhanced performance enables these fuses to provide solutions to many previously unsolved problems in power electronics: protection of cables without the use of additional components, protection of equipment from fire hazards, selective coordination of different fuses within a single power distribution installation...



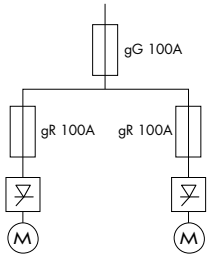
Example:
100A aR vs. 100A gR



SELECTIVE COORDINATION

gR-class semiconductor fuses can be utilized in association with gI and gG-class low voltage power distribution fuses of the same current rating, installed upstream. In a "selectively coordinated" distribution installation, melting is limited to the fuse associated with the faulted circuit, while upstream fuses remain intact. This prevents unnecessary down-time due to power blackouts in non-faulted branches.

Example of selective coordination



aR-CLASS vs. gR-CLASS

aR-class fuses feature a high minimum interrupting current as compared with their current rating. The primary time-current characteristic of aR-class fuses is the CC' curve, above which another protection device must be associated. The gR-class fuse represents considerably improved performance in semiconductor protection.

FERRAZ SHAWMUT EXPERTISE

gR-class fuses should be used in the design of low voltage equipment and in the protection of power electronics equipment. Designers can often substitute a gR-class fuse for an aR-class fuse (10x38, 14x51, 22x58, PSC 000 and 17x49 DIN80 or BS 88-4) but the reverse is not true: an aR fuse can never replace a gR fuse. Start protecting your new equipment with gR-class fuses today. The application of gR class fuses, with current ratings less than 100 Amps, offers enhanced protection, safety and reliability, along with reduced risk of replacement errors and assembly costs.

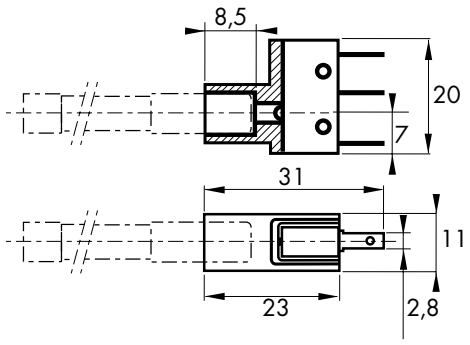
Other Protistor® Fuses
BS88-4 Fuses
Microswitches for BS88-4 Protistor®

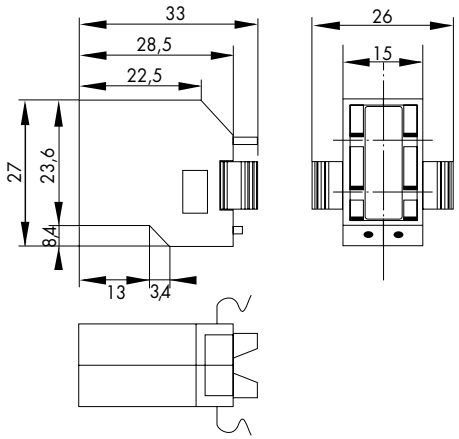
MICROSWITCH SYSTEMS ADAPTED
TO THE FOLLOWING FUSES:
- BS88 - 4 separated trip-indicator
- BS88 - 4 built-in trip-indicator

Main Characteristics

Code	AC Insulation voltage rating (***)	Positive operating voltage/current	Current rating	Current	Interrupting rating Non inductive circuit 30V	110V	250V	Inductive circuit : L/R = 25ms 30V	110V	250V	AC voltage withstand test (*)	Impulse voltage test Uimp1.2/50 µs (**)	Fire class according to UL 94
MC 6,3 GR 2-5 N	1000 V	20 V	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
		100 mA		DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	
		100 mA		DC	4 A	0.4 A	-	2 A	0.4 A				

* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1
*** Between power circuit and microswitch terminals





Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

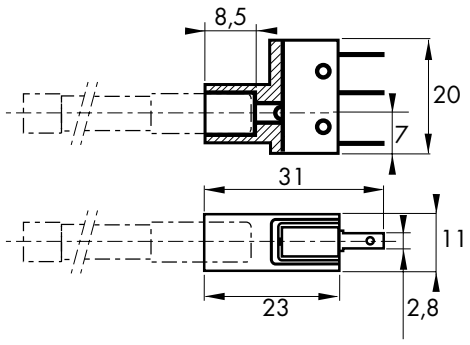
Other Protistor® Fuses
BS88-4 Fuses
Microswitches for BS88-4 Protistor®

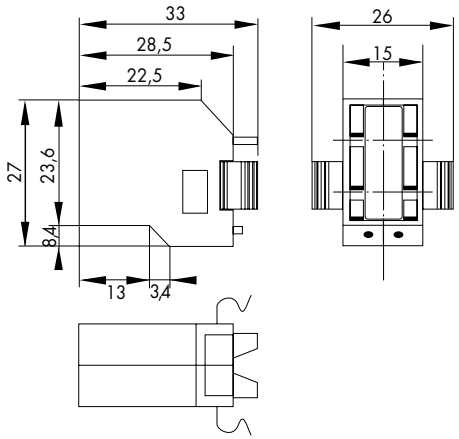
MICROSWITCH SYSTEMS ADAPTED
TO THE FOLLOWING FUSES:
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Main Characteristics

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MC 6,3 GR 2-5 N	1000 V	20 V	5 A	50/60 Hz	-	5 A	0,3 A	-	3 A	2 A	3.5 kV	-	H.B.
		100 mA		DC	4 A	0.4 A	-	3 A	0.4 A	-			
MC 36 GR 2-5	1000 V	20 V	5 A	50/60 Hz	-	5 A	5 A	-	5 A	5 A	7.5 kV	-	
		100 mA		DC	4 A	0.4 A	-	2 A	0.4 A				

* Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60 Hz 1 min duration in dry air)
** Between power circuit and microswitch terminals Uimp: impulse voltage as per IEC 947-1
*** Between power circuit and microswitch terminals





Catalog Number	Ref. Number	Weight (g)	Pack.
MC 6,3 GR 2-5 N (for separate trip-indicator)	Y 310015	10	3

Catalog Number	Ref. Number	Weight (g)	Pack.
MC 36 GR 2-5 (for built-in trip-indicator)	P 092496	10	3

DIN Recticur fuses
D - Type gR Fuses (DIAZED)

RECTICUR - D
Fuse links "ultra rapide"

Specifications : IEC 60 269-4
DIN-VDE 0636 Part 23 and Part 33
DIN 43653
DIN 49515
DIN 49522
DIN 43620

RECTICUR-type ultra-rapid fuses are used to protect semiconductor components in power converters. D fuse links are designed for rated voltages of 500 V AC with rated currents extending from 2 to 100A.

Technical Notes

RECTICUR fuse links are equipped with fuse elements made of fine silver. The number and shape of their reductions in cross-section ensure satisfactory disconnection and optimum operating characteristics.
The design of the fuse element determines the characteristic curve and the remaining electrical properties of this fuse link.
Fuse links with gR characteristic provide total protection against overloading and against short-circuit currents.

Breaking Capacity

The switching reliability of RECTICUR semiconductor fuses has been verified in numerous tests extending up to the highest short-circuit currents. Rated braking capacity is 100 kA (RMS) for D-fuse links.

RECTICUR D Fuse bases
RECTICUR D fuse links can be fitted in all normal fuse-bases of the D system, using all usual accessories such as screw-cap and adaptor sleeve.

1 - This indicates the following maximum loadings for the various individual fuse links :

63-A fuse link : Imax = 63 A x 0.7 = 44A
50-A fuse link : Imax = 50 A x 0.7 = 35A
35-A fuse link : Imax = 35 A x 0.7 = 25A
25-A fuse link : Imax = 25 A x 0.9 = 22.5A
20-A fuse link : Imax = 20 A x 0.9 = 18A
16-A fuse link : Imax = 16 A x 1 = 16A
10-A fuse link : Imax = 10 A x 1 = 10A
6-A fuse link : Imax = 6 A x 1 = 6A

2 - The following additional reduction-factors must be used in installation sites with ambient temperatures > 25°C

Ambient temp. (°C) T	T ≤ 25	25 < T ≤ 30	30 < T ≤ 35	35 < T ≤ 40	40 < T ≤ 45	45 < T ≤ 50	50 < T ≤ 55
Max. loading of fuse link (%)	100	94	88	82	75	67	58

DIN Recticur fuses
D - Type Gr Fuses (DIAZED)

RECTICUR - D
Fuse links "ultra rapide"

RECTITUR D-Fuse links can be used in all fuse bases of the D-system using the usual accessories such as screw caps and gauge pieces.

RECTITUR D

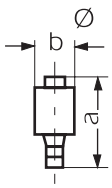
Fuse links
500 VAC - 400 VDC
size D II, D III, D IV, operating class gR

Main characteristics

For base	Rated current (A)	Pre-arcing I^2t value (A^2s)	Total I^2t value at 380V (RMS) (A^2s)	Total I^2t value at 500V (RMS) (A^2s)	Power loss (W)	Kg/100 pcs.
D II	2	1	2	3	1,8	3,1
	4	2	4	5	3,1	3,1
	6	4	6	9	3,2	3,1
	10	10	14	20	5,0	3,1
	16	26	40	55	5,8	3,1
	20	40	60	85	8,0	3,1
	25	95	140	200	12,2	3,1
D III	35	490	790	1100	14	5,3
	50	900	1480	2050	16	5,3
	63	1580	2400	3200	19	5,3
D IV	80	3200	5200	7300	35	11,0
	100	5600	10100	14000	41	11,0

Dimensions

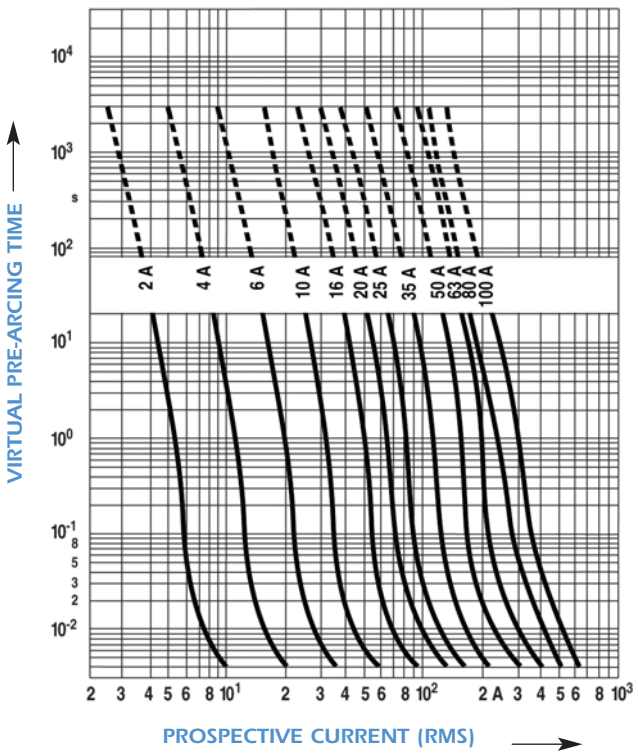
Dimensions	a	bØ
D II	50	22
DIII	50	27
DIV	57	33

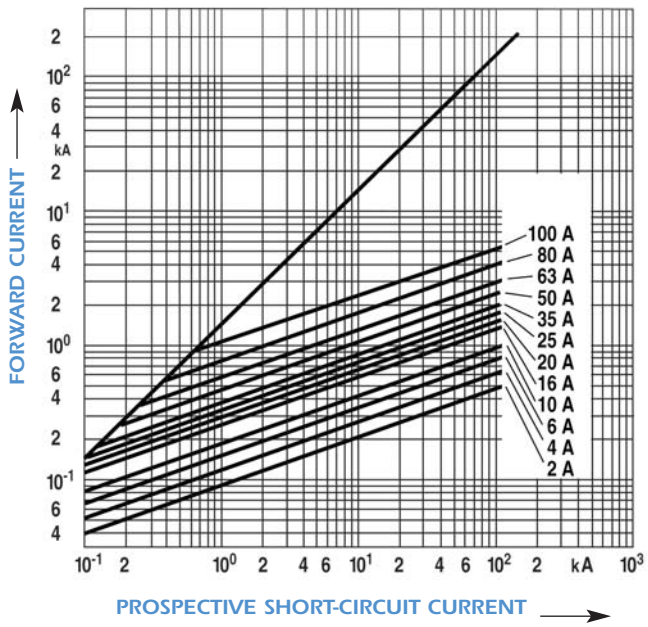


DIN Recticur fuses
D - Type gR Fuses (DIAZED)

RECTICUR - D
Fuse links "ultra rapide"

Size	Intensité (A)	Tension (VAC)	Reference	Previous Ref.	Catalog Number
D II	2	500VAC/ 400 VDC	Z212542	5970028	DIIGR50V2
D II	4	500VAC/ 400 VDC	K213058	5970048	DIIGR50V4
D II	6	500VAC/ 400 VDC	E214065	5970068	DIIGR50V6
D II	10	500VAC/ 400 VDC	M214578	5970108	DIIGR50V10
D II	16	500VAC/ 400 VDC	T215090	5970168	DIIGR50V16
D II	20	500VAC/ 400 VDC	T215596	5970208	DIIGR50V20
D II	25	500VAC/ 400 VDC	B216109	5970258	DIIGR50V25
D II	30	500VAC/ 400 VDC	Y216612	5970308	DIIGR50V30
D III	35	500VAC/ 400 VDC	K217129	5980358	DIIIGR50V35
D III	50	500VAC/ 400 VDC	Q217640	5980508	DIIIGR50V50
D III	63	500VAC/ 400 VDC	Y218153	5980638	DIIIGR50V63
D IV	80	500VAC/ 400 VDC	B201251	5980808	DIVGR50V80
D IV	100	500VAC/ 400 VDC	M201767	5981008	DIVGR50V100
D V	125	500VAC/ 400 VDC	J207054	5961258	DIVGR50V125
D V	160	500VAC/ 400 VDC	C211510	5961608	DIVGR50V160
D.V	200	500VAC/ 400 VDC	G212020	5962008	DIVGR50V200





DIN Recticur fuses
D0 - Type Gr Fuses (DIAZED)

RECTICUR - DO
Fuse links "ultra rapide"

Specifications : IEC 60 269-4
DIN-VDE 0636 Part 23 and Part 33
DIN 43653
DIN 49515
DIN 49522
DIN 43620

RECTICUR-type ultra-rapid fuses are used to protect semiconductor components in power converters. DO fuse links have a rated voltage of 440 V AC and are available within the rated current range extending form 2 to 100A.

Technical Notes

RECTICUR fuse links are equipped with fuse elements made of fine silver. The number and shape of their reductions in cross-section ensure satisfactory disconnection and optimum operating characteristics.
The design of the fuse element determines the characteristic curve and the remaining electrical properties of this fuse link.
Fuse links with gR characteristic provide total protection against overloading and against short-circuit currents.

Breaking Capacity

The switching reliability of RECTICUR semiconductor fuses has been verified in numerous tests extending up to the highest short-circuit currents. Rated braking capacity is 160 kA (RMS) for DO fuse links.

RECTICUR DO Fuse links
RECTICUR DO fuse links can be fitted in all normal fuse-bases of the DO system, using all usual accessories such as screw-cap and adaptor sleeve.

Fitting of LINOCUR switch-disconnector-fuse with RECTICUR DO Fuse Links
This means that the use of DO fuse links in combination with the LINOCUR switch-disconnector-fuse is subject to certain conditions.

1 - This indicates the following maximum loadings for the various individual fuse links :

63-A fuse link : Imax = 63 A x 0.7 = 44A
50-A fuse link : Imax = 50 A x 0.7 = 35A
35-A fuse link : Imax = 35 A x 0.7 = 25A
25-A fuse link : Imax = 25 A x 0.9 = 22.5A
20-A fuse link : Imax = 20 A x 0.9 = 18A
16-A fuse link : Imax = 16 A x 1 = 16A
10-A fuse link : Imax = 10 A x 1 = 10A
6-A fuse link : Imax = 6 A x 1 = 6A

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Ambient temp. (°C) T	T ≤ 25	25 < T ≤ 30	30 < T ≤ 35	35 < T ≤ 40	40 < T ≤ 45	45 < T ≤ 50	50 < T ≤ 55
Max. loading of fuse link (%)	100	94	88	82	75	67	58

DIN Recticur fuses
D0 - Type Gr Fuses (DIAZED)

RECTICUR - DO
Fuse links "ultra rapide"

RECTITUR DO

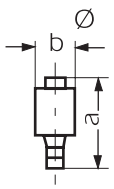
Fuse links
440 VAC up to 100 A
size D0 1, D0 2, D0 3, operating class gR

Main characteristics

For base	Rated current (A)	Pre-arcing I^2t value (A^2s)	Total I^2t value at 440V (RMS) (A^2s)	Power loss (W)	Kg/100 pcs.
D01	2	3	3	1,5	0,62
	4	4	5	2,0	0,62
	6	5	10	2,3	0,62
	10	12	25	2,2	0,62
	16	40	75	3,3	0,62
D02	20	60	110	4,3	1,40
	25	90	180	6,0	1,40
	35	210	410	8,4	1,40
	50	830	1650	10,0	1,40
	63	1300	2500	13,9	1,40
D03	80	2100	4300	17,6	3,70
	100	3300	6600	21,0	4,10

Dimensions

Dimensions	a	bØ
D02	36	11
D03	36	15,3
D04	43	22,5

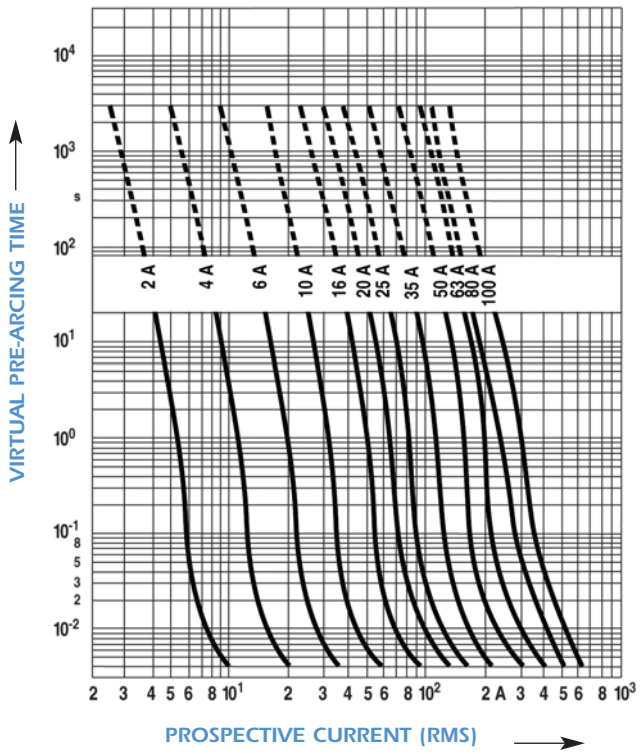


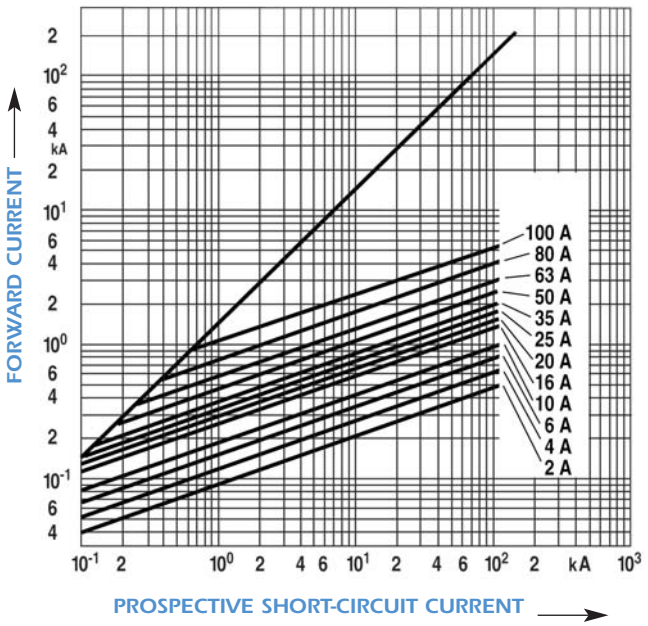
DIN Recticur fuses
D0 - Type Gr Fuses (DIAZED)

RECTICUR - DO
Fuse links "ultra rapide"

Size	Intensité (A)	Tension (VAC)	Reference	Previous Ref.	Catalog Number
D01	2	440V	M215038	17000026	D01GR44V2
D01	4	440V	N218673	17000046	D01GR44V4
D01	6	440V	B219191	17000066	D01GR44V6
D01	10	440V	F219724	17000106	D01GR44V10
D01	16	440V	N222169	17000166	D01GR44V16
D02	20	440V	H222923	17010206	D02GR44V20
D02	25	440V	R200713	17010256	D02GR44V25
D02	35	440V	F201255	17010356	D02GR44V35
D02	50	440V	R201771	17010506	D02GR44V50
D02	63	440V	Y207113	17010636	D02GR44V63
D03	80	440V	G211514	17020806	D03GR44V80
D03	100	440V	L212024	17021006	D03GR44V100

Packaging: D01 50 pieces
D02 25 pieces
D03 10 pieces

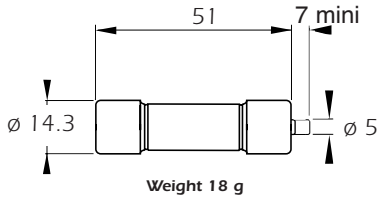




DC Ferrule Fuses
14x51, 22x58, 27x60
gLB 440V DC

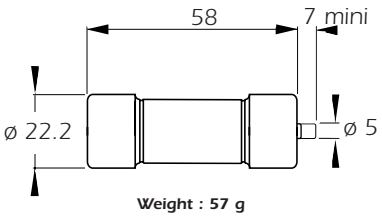
gLB from 2 to 160 A

Dimensions

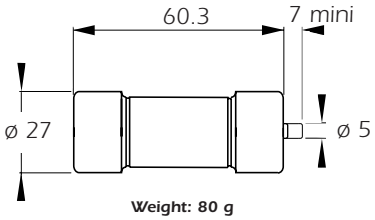


Weight 18 g





Weight : 57 g



Weight: 80 g

Trip force: 4.5N at 0 mm - 2.5N at 7mm

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Reference Number	Catalog Number
14x51	2	@ 440 V DC 100 kA L/R = 30 ms	0.29	0.5	CC 4.421 CP gLB 14x51/2	E075720	FD14GB44V2T
	6		0.74	1.3	CC 4.421 CP gLB 14x51/6	Q094084	FD14GB44V6T
	8		1.1	1.8	CC 4.421 CP gLB 14x51/8	F075721	FD14GB44V8T
	10		1.1	1.9	CC 4.421 CP gLB 14x51/10	G075722	FD14GB44V10T
	12		1.2	2.0	CC 4.421 CP gLB 14x51/12	R094085	FD14GB44V12T
	16		1.2	2.1	CC 4.421 CP gLB 14x51/16	H075723	FD14GB44V16T
	20		1.4	2.5	CC 4.421 CP gLB 14x51/20	L221132	FD14GB44V20T
	25		1.6	2.8	CC 4.421 CP gLB 14x51/25	J075724	FD14GB44V25T
	32		2.4	4.2	CC 4.421 CP gLB 14x51/32	S098410	FD14GB44V32T
	40		2.9	5.0	CC 4.421 CP gLB 14x51/40	T098687	FD14GB44V40T
	50		3.3	5.7	CC 4.421 CP gLB 14x51/50	H076620	FD14GB44V50T
22x58	50	@ 440 V DC 100 kA L/R = 30 ms	3.9	6.7	CC 4.421 CP gLB 22x58/50	L076968	FD22GB44V50T
	63		4.9	8.5	CC 4.421 CP gLB 22x58/63	M221133	FD22GB44V63T
	80		6.2	10.8	CC 4.421 CP gLB 22x58/80	J098563	FD22GB44V80T
	100		7.5	13.2	CC 4.421 CP gLB 22x58/100	K099507	FD22GB44V100T
27x60	125	@ 440 V DC 100 kA L/R = 30 ms	12.6	22	CC 4.421 CP gLB 27x60/125	H098562	FD27GB44V125T
	160		13.8	24.2	CC 4.421 CP gLB 27x60/160	M075704	FD27GB44V160T

Minimum trip indicator operating voltage: 20 V

See Fuse Blocks, Fuse Holders and Fuse clips

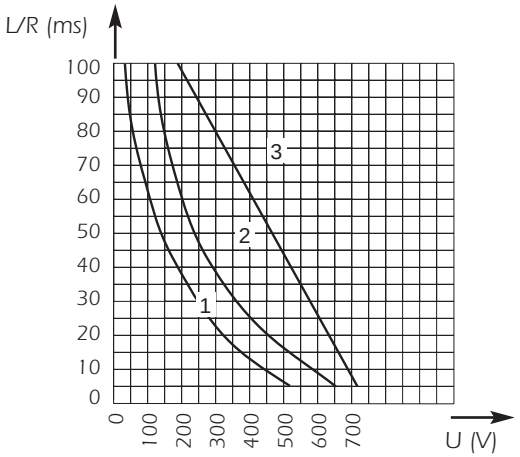
Pack: *10 pieces*

DC Ferrule Fuses
14x51, 22x58, 27x60
gLB 440V DC

gLB from 2 to 160 A

Electrical characteristics

DC applications data

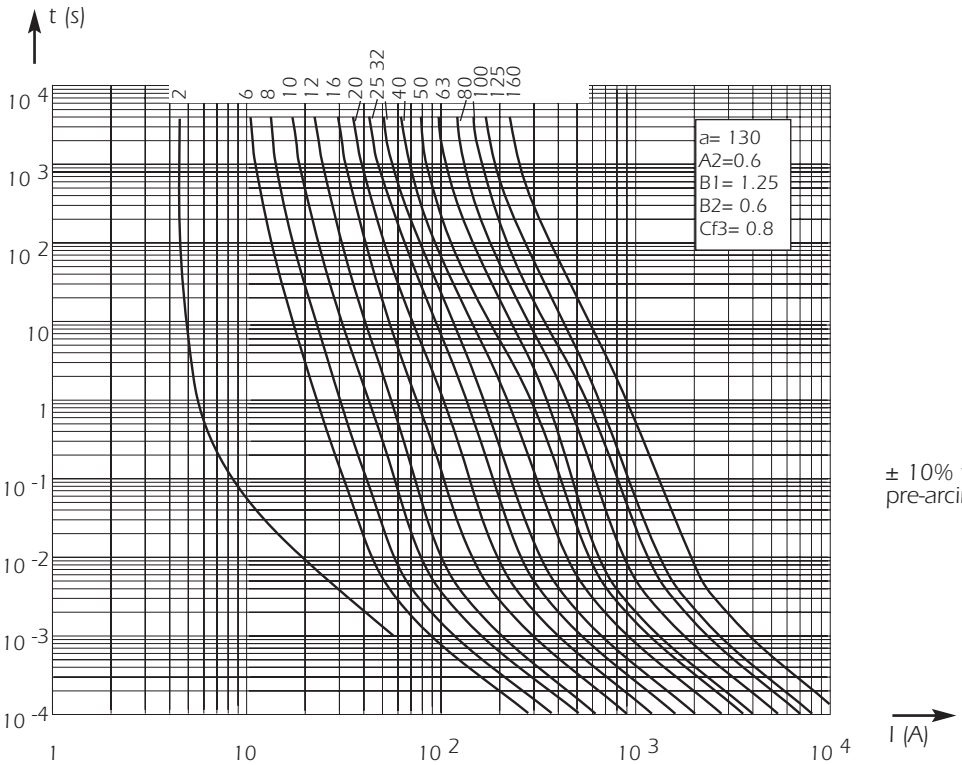


Left: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

1- Size 14x51
2- Size 22x58
3- Size 27x60

Max. AC voltage (50/60 Hz): 500 V with breaking capacity of 100 kA

Time vs. current characteristics



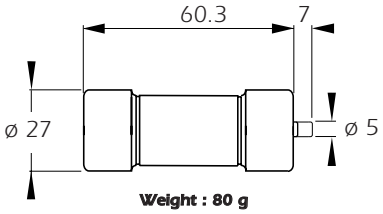
± 10% tolerance for mean pre-arcing current

Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

DC Ferrule Fuses
27x60
gRB 660V DC

gRB from 0.8 to 110 A

Dimensions





Trip force: 4.5N at 0 mm - 2.5N at 7 mm

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Reference Number	Catalog Number
27x60	0.8	@ 660 V DC 50 kA L/R = 15 ms	0.25	0.4	CC 6.621 CP gRB 27x60/0.8	H098585	FD27GRB66V0,8T
	1		0.25	0.4	CC 6.621 CP gRB 27x60/1	J098586	FD27GRB66V1T
	1.5		0.35	0.6	CC 6.621 CP gRB 27x60/1.5	K098587	FD27GRB66V1,5T
	2		0.4	0.7	CC 6.621 CP gRB 27x60/2	P098591	FD27GRB66V2T
	3.15		0.6	1	CC 6.621 CP gRB 27x60/3.15	Q098592	FD27GRB66V3,15T
	4		0.6	1	CC 6.621 CP gRB 27x60/4	R098593	FD27GRB66V4T
	5		0.7	1.1	CC 6.621 CP gRB 27x60/5	T098595	FD27GRB66V5T
	6.3		0.8	1.3	CC 6.621 CP gRB 27x60/6.3	Z098600	FD27GRB66V6,3T
	8		1.2	2	CC 6.621 CP gRB 27x60/8	L076301	FD27GRB66V8T
	10		1.3	2.3	CC 6.621 CP gRB 27x60/10	M076302	FD27GRB66V10T
	12		1.4	2.4	CC 6.621 CP gRB 27x60/12	L075703	FD27GRB66V12T
	16		1.9	3.3	CC 6.621 CP gRB 27x60/16	N076303	FD27GRB66V16T
	20		2.4	4.1	CC 6.621 CP gRB 27x60/20	C077006	FD27GRB66V20T
	25		2.8	4.7	CC 6.621 CP gRB 27x60/25	M075635	FD27GRB66V25T
	32		3.5	6	CC 6.621 CP gRB 27x60/32	P076304	FD27GRB66V32T
	40		4.7	8	CC 6.621 CP gRB 27x60/40	Q076305	FD27GRB66V40T
	50		4.8	8.3	CC 6.621 CP gRB 27x60/50	R076306	FD27GRB66V50T
	63		5.6	9.6	CC 6.621 CP gRB 27x60/63	P079961	FD27GRB66V63T
	80		6.4	11.2	CC 6.621 CP gRB 27x60/80	S079964	FD27GRB66V80T
	100		7.4	12.9	CC 6.621 CP gRB 27x60/100	T099400	FD27GRB66V100T
	110		7.7	13.7	CC 6.621 CP gRB 27x60/110	S076307	FD27GRB66V110T

Minimum trip indicator operating voltage: 20 V

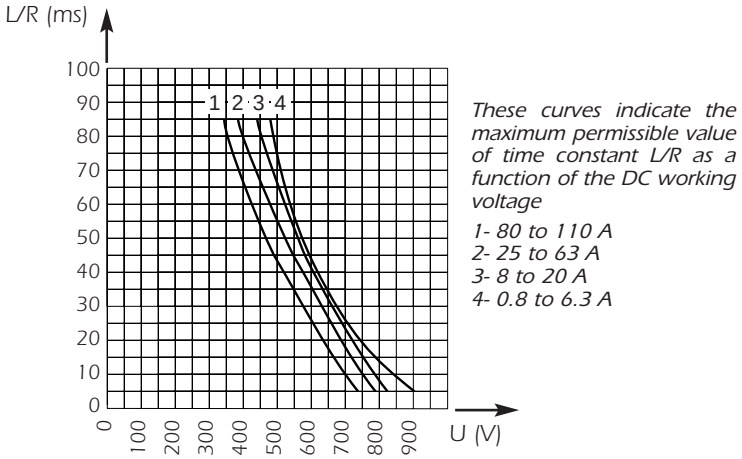
See Fuse Blocks, Fuse Holders and Fuse clips

Pack: *3 and 10 pieces*

DC Ferrule Fuses
27x60
gRB 660V DC

gRB from 0.8 to 110 A

Electrical characteristics
DC applications data

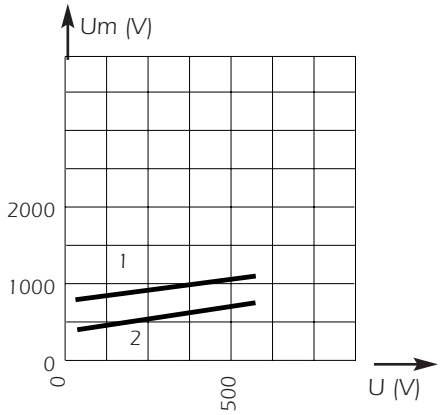


These curves indicate the maximum permissible value of time constant L/R as a function of the DC working voltage

1- 80 to 110 A
2- 25 to 63 A
3- 8 to 20 A
4- 0.8 to 6.3 A

Max. AC voltage (50/60 Hz):
660 V with 50 kA breaking capacity for $I_N \leq 6.3A$
660 V with 200 kA breaking capacity for $I_N > 6.3A$

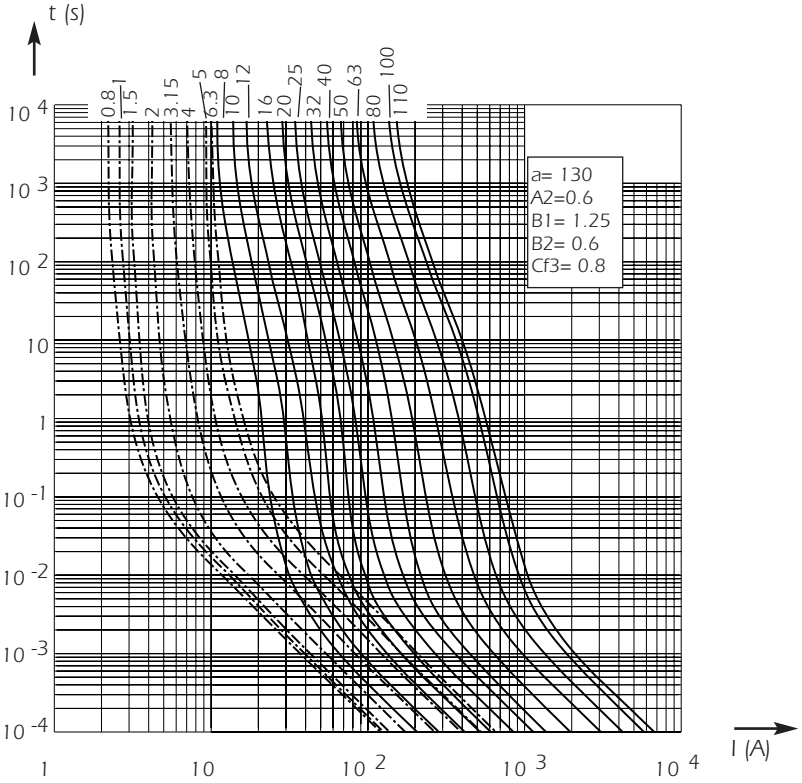
Peak arc voltage
vs. working voltage



1- L/R = 60 ms
2- L/R = 30 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



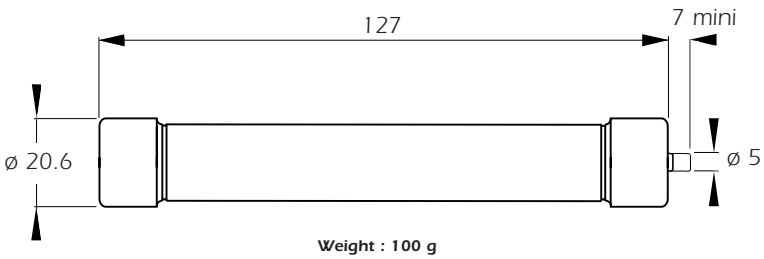
± 10% tolerance for mean pre-arcing current

Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

DC Ferrule Fuses
20x127
gR 1000V DC

gRB-gRC from 6 to 63A

Dimensions



Weight : 100 g



Trip force: 4.5N at 0 mm - 2.5N at 7 mm

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Reference Number	Catalog Number
20x127	6	@ 1000 V DC 100 kA L/R = 20 ms	2.0	3.5	CC 1051 CP gRB 20x127/6 D 100 gRB 006 VI	Z088020	FD20GB100V6T
	8		2.2	3.8	CC 1051 CP gRB 20x127/8 D 100 gRB 008 VI	T088774	FD20GB100V8T
	10		2.4	4.2	CC 1051 CP gRB 20x127/10 D 100 gRB 010 VI	A089493	FD20GB100V10T
	12		3.0	5.3	CC 1051 CP gRB 20x127/12 D 100 gRB 012 VI	B089494	FD20GB100V12T
	16		3.7	6.6	CC 1051 CP gRB 20x127/16 D 100 gRB 016 VI	C089495	FD20GB100V16T
	20		4.4	7.7	CC 1051 CP gRB 20x127/20 D 100 gRB 020 VI	D089496	FD20GB100V20T
	25		5.1	9	CC 1051 CP gRB 20x127/25 D 100 gRB 025 VI	E089497	FD20GB100V25T
	32		6.0	10.5	CC 1051 CP gRB 20x127/32 D 100 gRB 032 VI	F089498	FD20GB100V32T
	40		7.3	13.2	CC 1051 CP gRC 20x127/40 D 100 gRC 040 VI	S086795	FD20GC100V40T
	50		8.5	15.5	CC 1051 CP gRC 20x127/50 D 100 gRC 050 VI	F086186	FD20GC100V50T
	63*		9.6	17.4	CC 1051 CP gRC 20x127/63* D 100 gRC 063 VI*	F083656*	FD20GC100V63T

Minimum trip indicator operating voltage: 50 V

** Use R.M.S. current less than 56 A when mounting in Fuse-disconnector*
See Fuse Blocks, Fuse Holders and Fuse clips

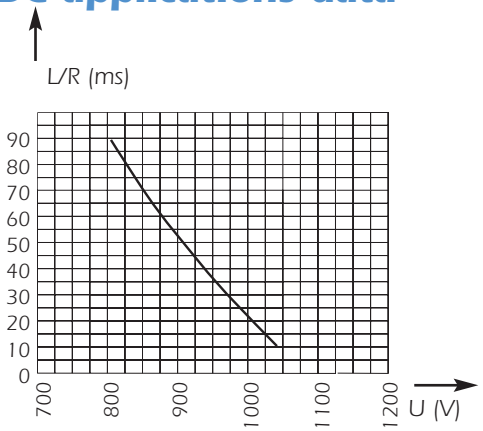
Pack: *3 and 10 pieces*

DC Ferrule Fuses
20x127
gR 1000V DC

gRB-gRC from 6 to 63A

Electrical characteristics

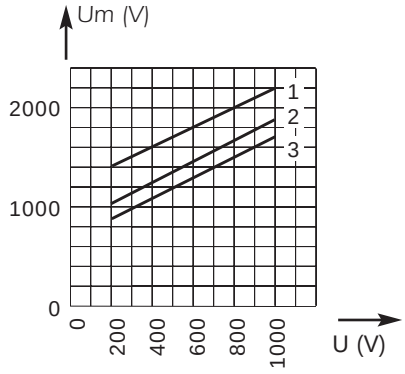
DC applications data



Above: Curve indicates the maximum permissible value of time constant L/R as a function of the DC working voltage

Max. AC voltage (50/60 Hz): 1500 V with breaking capacity of 100 kA

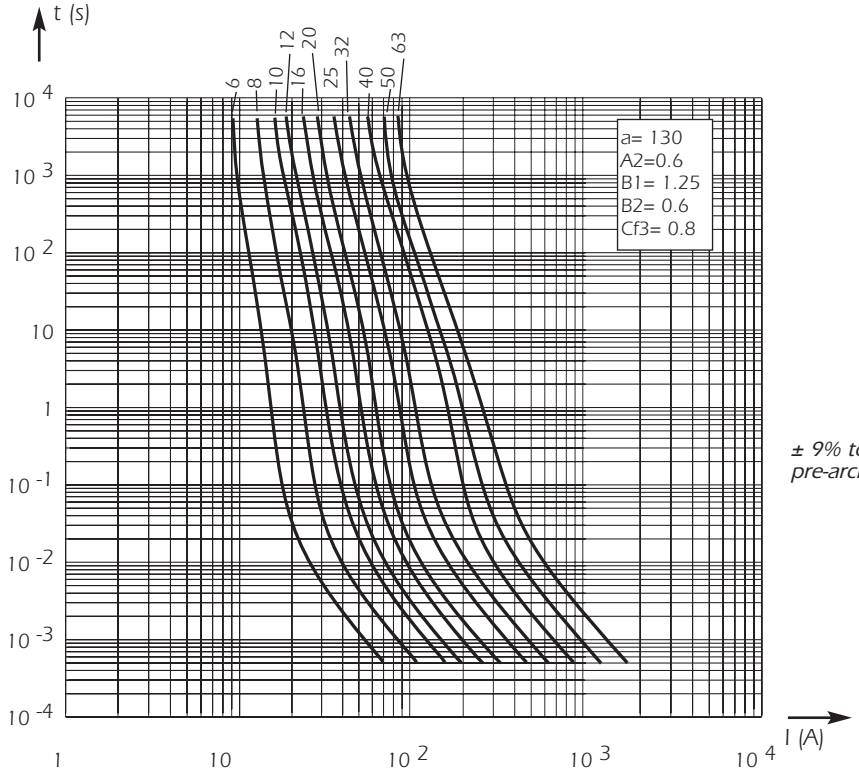
Peak arc voltage vs. working voltage



1- L/R = 50 ms
2- L/R = 25 ms
3- L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage, which may appear accross the fuse terminals, vs. DC working voltage

Time vs. current characteristics



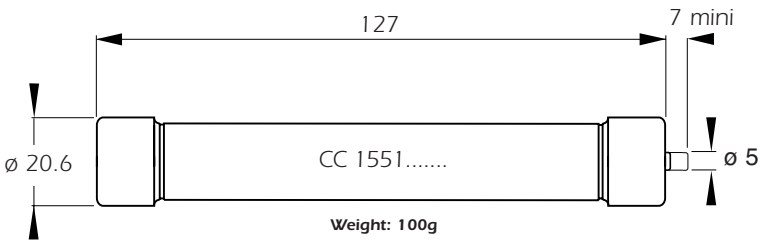
± 9% tolerance for mean pre-arcing current

Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

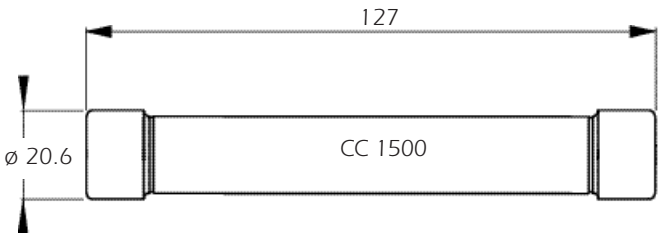
DC Ferrule Fuses 20x127 gR 1500V DC

gRB - gRD from 0.8 to 25 A

Dimensions



Trip force: 4.5N at 0 mm - 2.5N at 7 mm





Main Characteristics

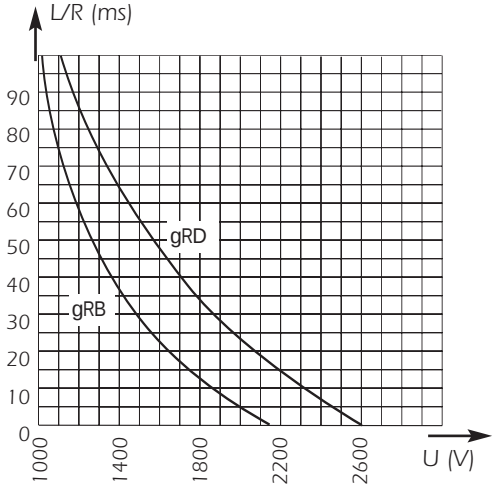
Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Ref. Number	Catalog Number
20x127	0.8	@ 1000 V DC 100 kA L/R = 100 ms	0.5	0.9	CC 1551 CP gRB 20x127/0.8	D 150 gRB 0.8 VI(1)	E075743	FD20GB150V0,8T
	1		0.5	0.9	CC 1551 CP gRB 20x127/1	D 150 gRB 001 VI(1)	F075744	FD20GB150V1T
	1.5		0.8	1.4	CC 1551 CP gRB 20x127/1.5	D 150 gRB 01.5 VI(1)	G075745	FD20GB150V1,5T
	2		0.9	1.6	CC 1551 CP gRB 20x127/2	D 150 gRB 002 VI(1)	B088367	FD20GB150V2T
	3.15		1.2	2.1	CC 1551 CP gRB 20x127/3.15	D 150 gRB 3.15VI(1)	H075746	FD20GB150V3,15T
	4		1.3	2.1	CC 1551 CP gRB 20x127/4	D 150 gRB 004 VI(1)	J075747	FD20GB150V4T
	5		1.4	2.3	CC 1551 CP gRB 20x127/5	D 150 gRB 005 VI(1)	C088368	FD20GB150V5T
	0.8	@ 1500 V DC 30 kA L/R = 20 ms	0.5	0.9	CC 1500 CP gRB 20x127/0.8	D 150 gRB 0.8 V	J081842	FD20GB150V0,8
	1		0.5	0.9	CC 1500 CP gRB 20x127/1	D 150 gRB 001 V	R079894	FD20GB150V1
	1.5		0.8	1.4	CC 1500CP gRB 20x127/1.5	D 150 gRB 01.5 V	K081843	FD20GB150V1,5
	2		0.9	1.6	CC 1500 CP gRB 20x127/2	D 150 gRB 002 V	Y099243	FD20GB150V2
	3.15		1.2	2.1	CC 1500 CP gRB 20x127/3.15	D 150 gRB 3.15 V	L081844	FD20GB150V3,15
	4		1.3	2.1	CC 1500CP gRB 20x127/4	D 150 gRB 004 V	Z099244	FD20GB150V4
	5		1.4	2.3	CC 1500 CP gRB 20x127/5	D 150 gRB 005 V	A099245	FD20GB150V5
	6	@ 1500 V DC 30 kA L/R = 55 ms	3.4	6.3	CC 1500 CP gRD 20x127/6	D 150 gRD 006 V	E082804	FD20GD150V6
	8		3.3	6.0	CC 1500 CP gRD 20x127/8	D 150 gRD 008 V	Z080867	FD20GD150V8
	10		3.5	6.1	CC 1500 CP gRD 20x127/10	D 150 gRD 010 V	F081655	FD20GD150V10
	12		3.9	6.8	CC 1500 CP gRD 20x127/12	D 150 gRD 012 V	B080593	FD20GD150V12
	16		5	8.9	CC 1500 CP gRD 20x127/16	D 150 gRD 016 V	Q081457	FD20GD150V16
	20		5.3	9.6	CC 1500 CP gRD 20x127/20	D 150 gRD 020 V	D082803	FD20GD150V20
	25		6.6	12	CC 1500 CP gRD 20x127/25	D 150 gRD 025 V	A080431	FD20GD150V25

Minimum trip indicator operating voltage: 50 V
(1) Rating 0,8 to 5A with trip indicator arc. UL Recognized
See Fuse Blocks, Fuse Holders and Fuse clips
Pack: *3 and 10 pieces*

DC Ferrule Fuses
20x127
gR 1500V DC

gRB - gRD from 0.8 to 25 A

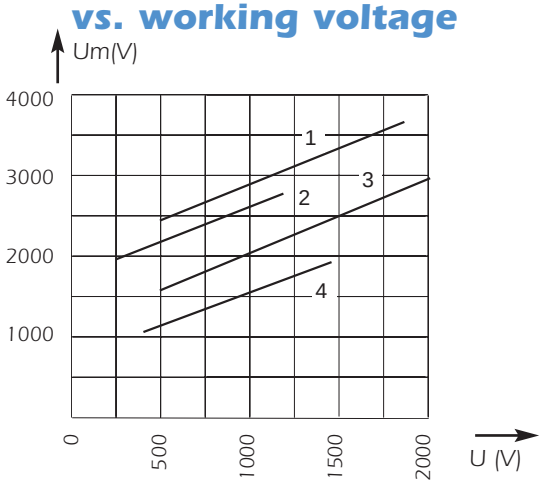
Electrical characteristics
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
2500 V with breaking capacity of 50 kA

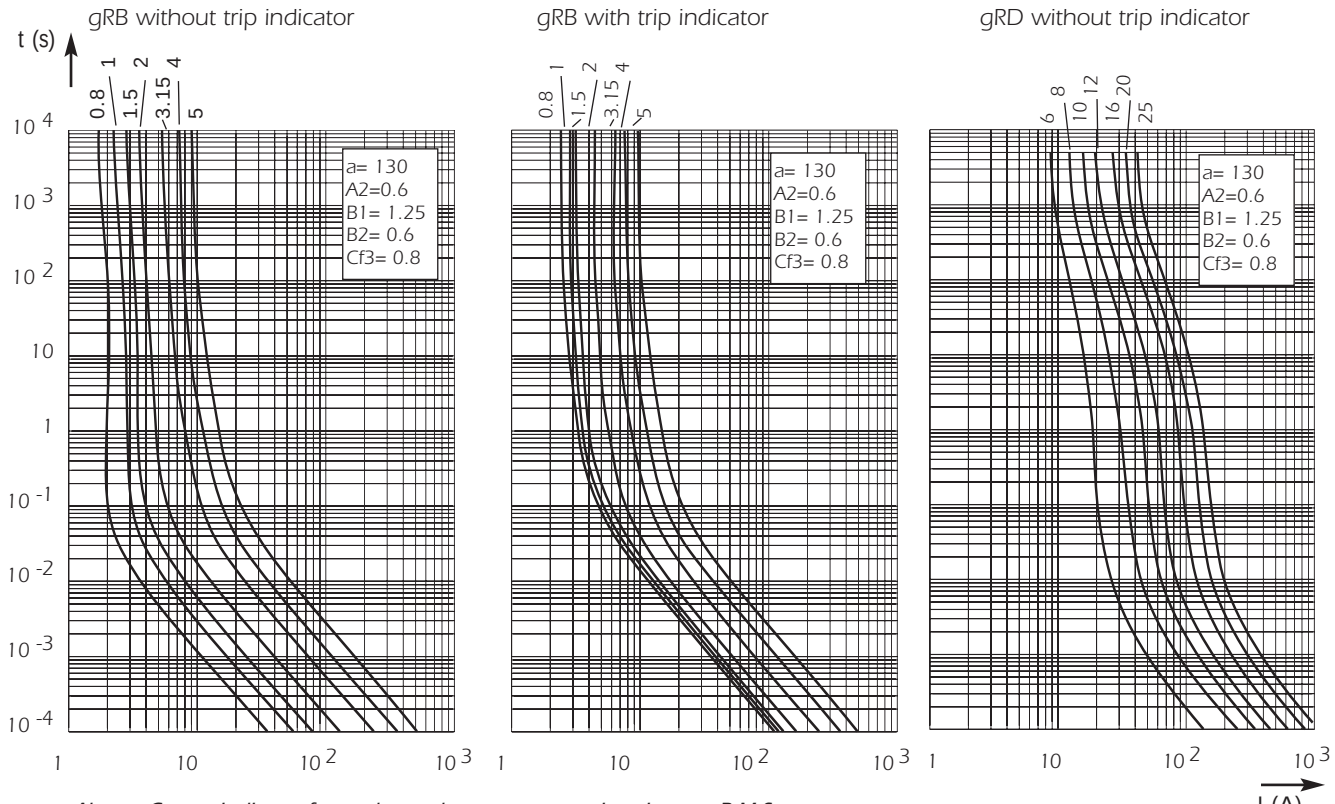
Peak arc voltage vs. working voltage



Curve 1: gRD @ L/R = 30 ms
Curve 2: gRB @ L/R = 60 ms
Curve 3: gRD @ L/R = 15 ms
Curve 4: gRB @ L/R = 30 ms

Above: Curves indicate for various time constants L/R peak arc voltage which may appear across the fuse terminals, vs. DC working voltage

Time vs. current characteristics



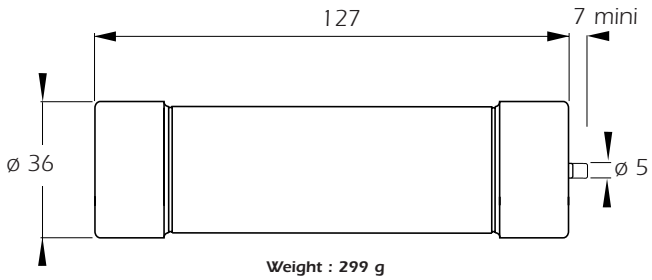
Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

± 9% tolerance for mean pre-arcing current

DC Ferrule Fuses
36x127
gR 1000V DC

1000 V DC
gRB-gRC from 25 to 100 A
Size 36x127

Dimensions



Weight : 299 g



Trip force: 4.5N at 0 mm - 2.5N at 7 mm

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Reference Number	Catalog Number
36x127	25	1000 V 100 kA 20 ms	5.3	9.4	CC 1051 CP gRB 36x127/25	H 083980	FD36GB100V25T
	32		6.4	11.5	CC 1051 CP gRB 36x127/32	R 086495	FD36GB100V32T
	40		6.5	11.6	CC 1051 CP gRB 36x127/40	G 089499	FD36GB100V40T
	50		8.7	15.4	CC 1051 CP gRB 36x127/50	H 089500	FD36GB100V50T
	63	1000 V 100 kA 20 ms	10.5	18.8	CC 1051 CP gRC 36x127/63	J 089501	FD36GC100V63T
	80		11.9	21.5	CC 1051 CP gRC 36x127/80	A 083651	FD36GC100V80T
	100		13.2	24.1	CC 1051 CP gRC 36x127/100	Z 083650	FD36GC100V100T

Minimum trip indicator operating voltage: 50 V

See Fuse Blocks, Fuse Holders and Fuse clips

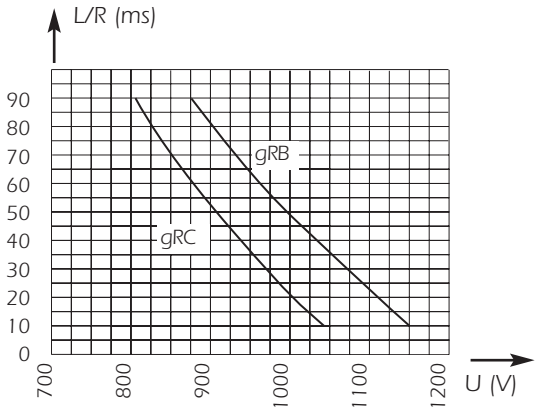
Pack: *3 pieces*

DC Ferrule Fuses
36x127
gR 1000V DC

gRB-gRC from 25 to 100 A

Electrical characteristics

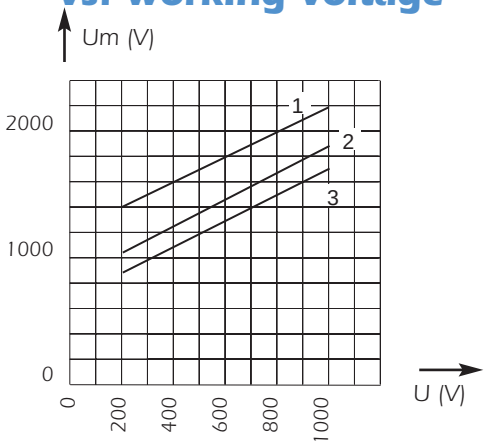
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1500 V with breaking capacity of 100 kA

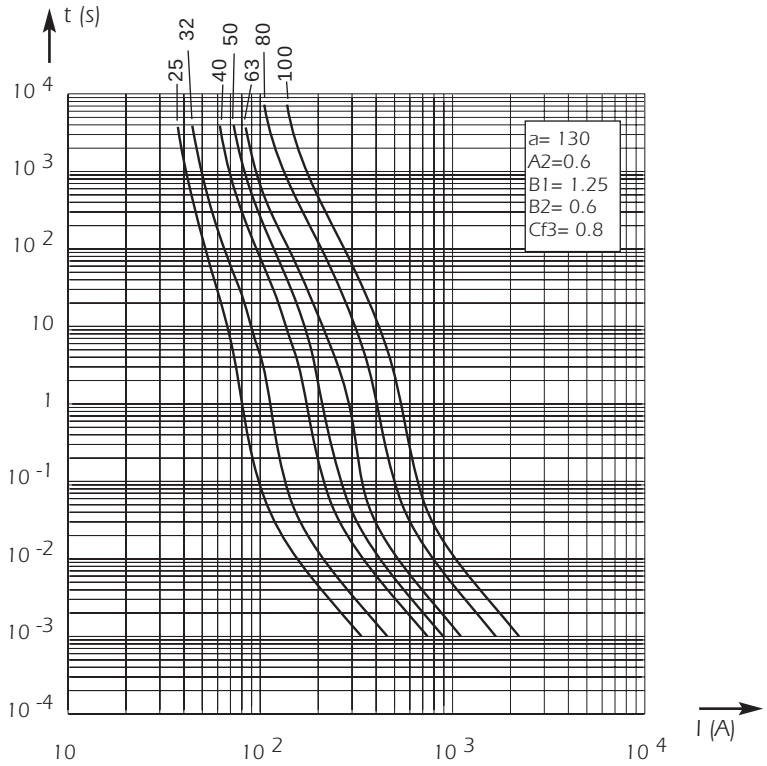
Peak arc voltage vs. working voltage



1- L/R = 50 ms
2- L/R = 25 ms
3- L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



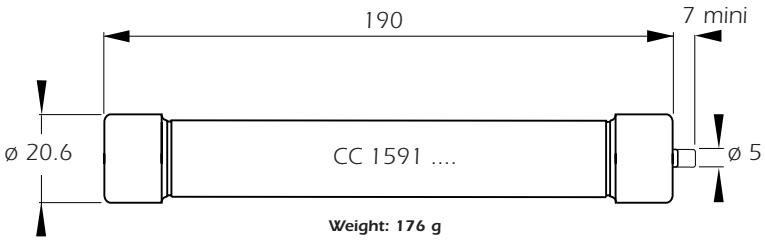
±7% tolerance for mean pre-arcing current

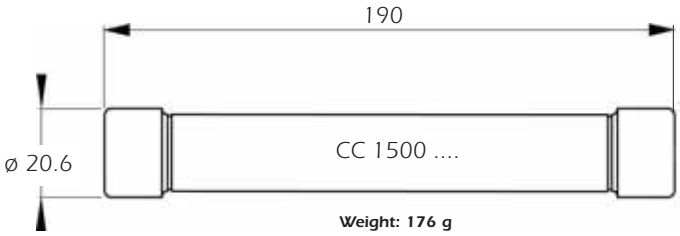
Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Ferrule Fuses
20x190
gR 1500V DC

gRC from 6 to 32 A

Dimensions







Trip force: 4.5N at 0 mm - 2.5N at 7 mm

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Reference Number	Catalog Number
20x190	6	@ 1500 V DC 60 kA L/R = 40 ms	4.8	7.8	CC 1591 CP gRC 20x190/6	D083102	FD20GC150V6T
	8		5.3	8.8	CC 1591 CP gRC 20x190/8	V083738	FD20GC150V8T
	10		6.5	10.5	CC 1591 CP gRC 20x190/10	G087245	FD20GC150V10T
	12		7.0	11.5	CC 1591 CP gRC 20x190/12	Y080429	FD20GC150V12T
	16		8.0	13	CC 1591 CP gRC 20x190/16	N088378	FD20GC150V16T
	20		9.5	15	CC 1591 CP gRC 20x190/20	Q087345	FD20GC150V20T
	25		12	19.5	CC 1591 CP gRC 20x190/25	Z080430	FD20GC150V25T
	32		16	26	CC 1591 CP gRC 20x190/32	G085911	FD20GC150V32T
	6		4.8	7.8	CC 1500 CP gRC 20x190/6	Z089469	FD20GC150V6
	8		5.3	8.8	CC 1500 CP gRC 20x190/8	A089470	FD20GC150V8
	10		6.5	10.5	CC 1500 CP gRC 20x190/10	B089471	FD20GC150V10
	12		7.0	11.5	CC 1500 CP gRC 20x190/12	C089472	FD20GC150V12
	16		8.0	13	CC 1500 CP gRC 20x190/16	D089473	FD20GC150V16
	20		9.5	15	CC 1500 CP gRC 20x190/20	E089474	FD20GC150V20
	25		12	19.5	CC 1500 CP gRC 20x190/25	F089475	FD20GC150V25
	32		16	26	CC 1500 CP gRC 20x190/32	G089476	FD20GC150V32

Minimum trip indicator operating voltage: 90 V

See Fuse Blocks, Fuse Holders and Fuse clips

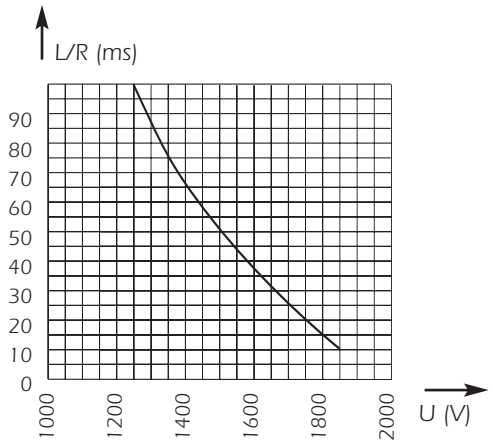
Pack: *1 piece*

DC Ferrule Fuses
20x190
gR 1500V DC

gRC from 6 to 32 A

Electrical characteristics

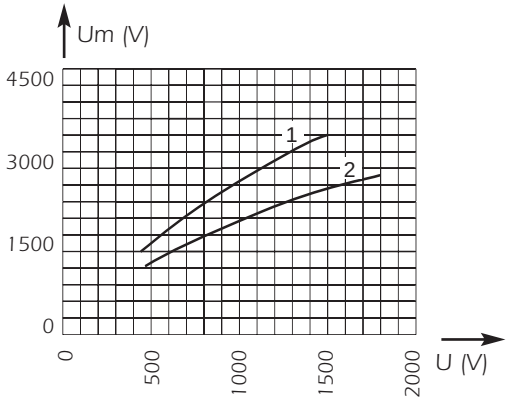
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3000 V with breaking capacity of 50 kA

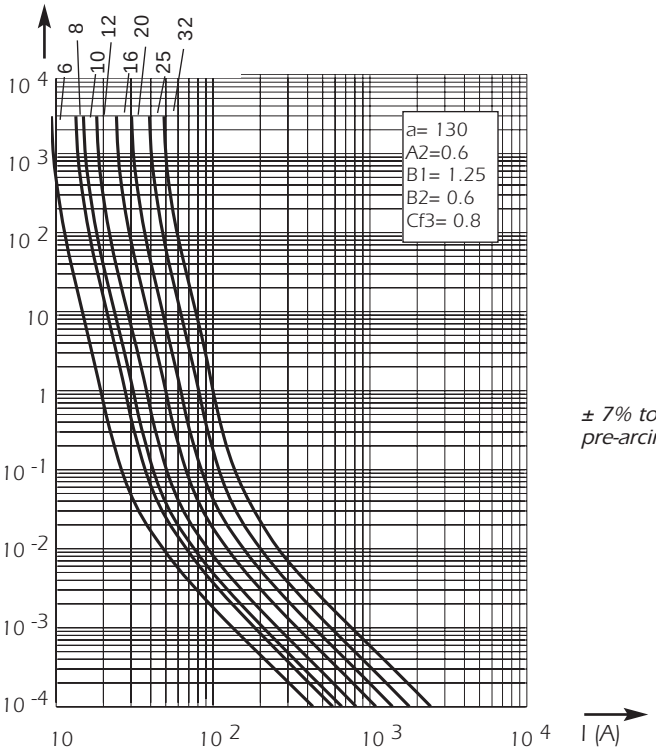
Peak arc voltage vs. working voltage



1- L/R = 45 ms
2- L/R = 15 ms

Above: Curves indicate for various time constants L/R peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



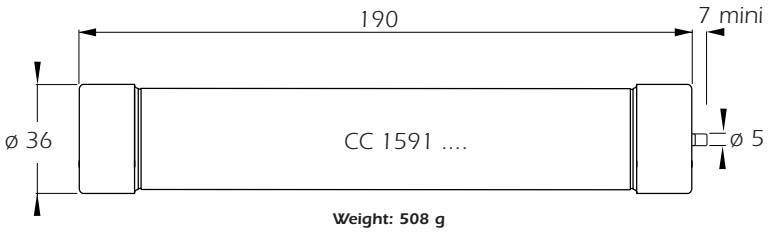
± 7% tolerance for mean pre-arcing current

Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

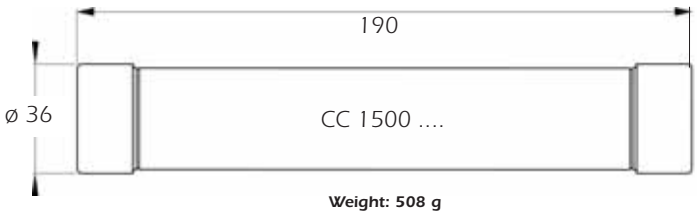
DC Ferrule Fuses
36x190
gR 1500V DC

gRC - gRD from 40 to 100 A

Dimensions



Weight: 508 g



Weight: 508 g

Trip force: 4.5N at 0 mm - 2.5N at 7 mm



Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Reference Number	Catalog Number
36x190	40	@ 1500 V DC 60 kA L/R = 60 ms	14	26	CC 1591 CP gRC 36x190/40	M 080419	FD36GC150V40T
	50		16.5	30	CC 1591 CP gRC 36x190/50	N 080420	FD36GC150V50T
	63		20.6	38	CC 1591 CP gRC 36x190/63	P 080421	FD36GC150V63T
	80		18	33	CC 1591 CP gRD 36x190/80	N 221134	FD36GD150V80T
	100		23	42	CC 1591 CP gRD 36x190/100	Y 220154	FD36GD150V100T
	40	@ 1500 V DC 100 kA L/R = 30 ms	14	26	CC 1500 CP gRC 36x190/40	H 089477	FD36GC150V40
	50		16.5	30	CC 1500 CP gRC 36x190/50	J 089478	FD36GC150V50
	63		20.6	38	CC 1500 CP gRC 36x190/63	K 089479	FD36GC150V63
	80		18	33	CC 1500 CP gRD 36x190/80	Q 078007	FD36GD150V80
	100		23	42	CC 1500 CP gRD 36x190/100	K 078025	FD36GD150V100

Minimum trip indicator operating voltage: 90 V

See Fuse Blocks, Fuse Holders and Fuse clips

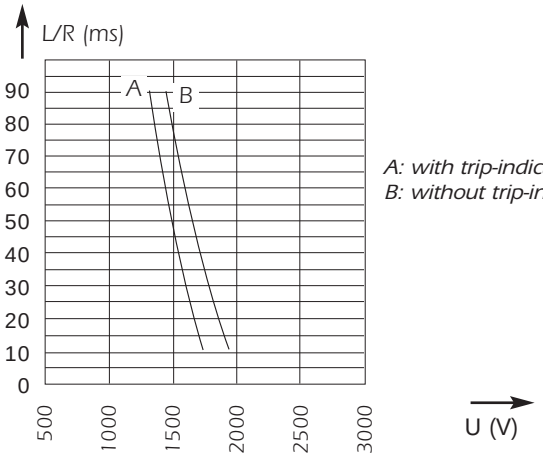
Pack: *1 piece*

DC Ferrule Fuses
36x190
gR 1500V DC

gRC - gRD from 40 to 100 A

Electrical characteristics

DC applications data

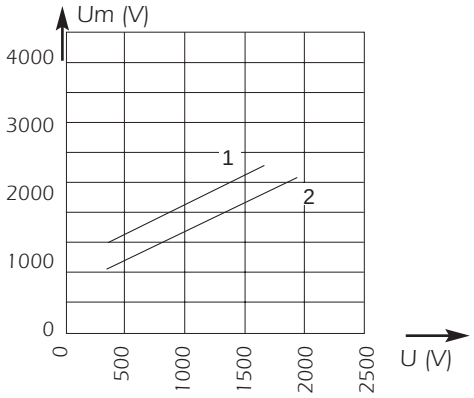


A: with trip-indicator
B: without trip-indicator

Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3000 V with breaking capacity of 50 kA

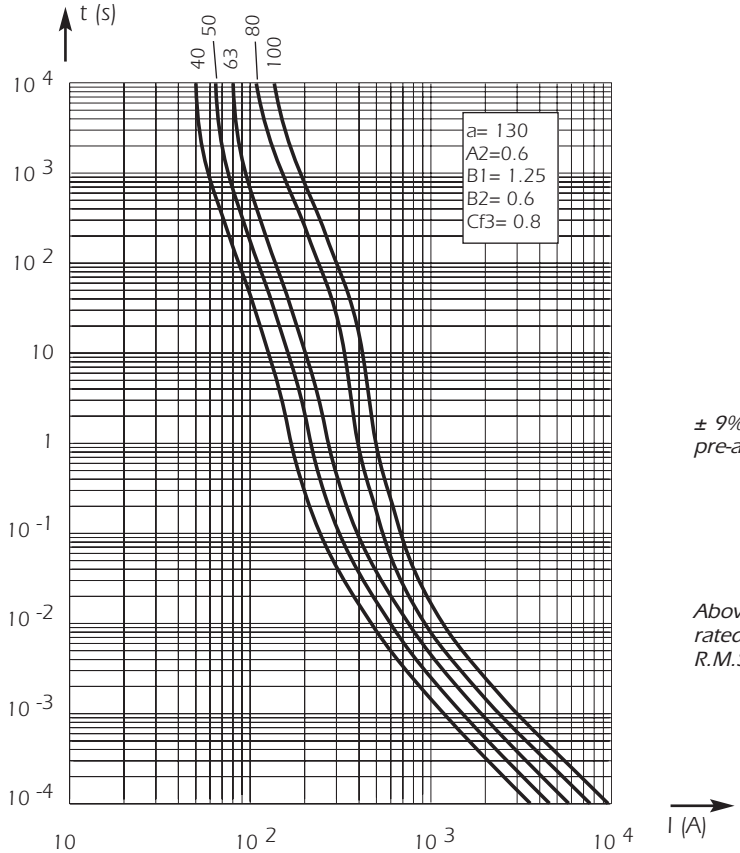
Peak arc voltage vs. working voltage



1- L/R = 45 ms
2- L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



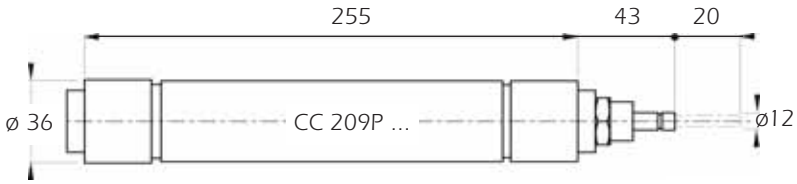
± 9% tolerance for mean pre-arcing current

Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Ferrule Fuses 36x250 gR 2000V DC

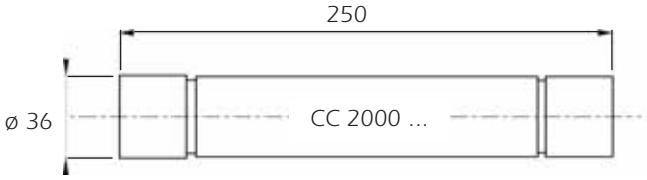
gRB from 0.8 to 40 A

Dimensions

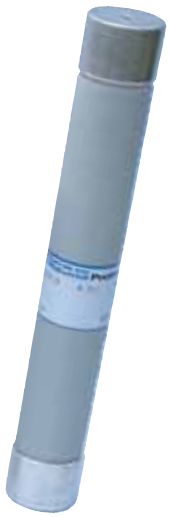


Weight 667 g

Trip force: 15 N at 20 mm



Weight 610 g



Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Reference Number	Catalog Number
	0.8		1	1.8	CC 2000 CP gRB 36x250/0.8	P 221135	FD36GB200V0,8
	1		1.1	2	CC 2000 CP gRB 36x250/1	R 093096	FD36GB200V1
	1.5		1.8	3	CC 2000 CP gRB 36x250/1.5	S 093097	FD36GB200V1,5
	2		2	3.3	CC 2000 CP gRB 36x250/2	T 093098	FD36GB200V2
	3.15		2.8	5	CC 2000 CP gRB 36x250/3.15	V 093099	FD36GB200V3,15
	4		4	7	CC 2000 CP gRB 36x250/4	N 084951	FD36GB200V4
	5		5	8.8	CC 2000 CP gRB 36x250/5	Q 221136	FD36GB200V5
	6		5.3	9	CC 2000 CP gRB 36x250/6	S 084955	FD36GB200V6
	8		6	10	CC 2000 CP gRB 36x250/8	V 090339	FD36GB200V8
	10		7	12	CC 2000 CP gRB 36x250/10	H 093157	FD36GB200V10
	12	@ 2000 V DC	7.6	13	CC 2000 CP gRB 36x250/12	W 093100	FD36GB200V12
36x250	16	30 kA	10.5	18	CC 2000 CP gRB 36x250/16	X 093101	FD36GB200V16
	20	L/R = 20 ms	10	17.5	CC 2000 CP gRB 36x250/20	H 086257	FD36GB200V20
	25		12	21	CC 2000 CP gRB 36x250/25	Y 081441	FD36GB200V25
	32		15.2	26	CC 2000 CP gRB 36x250/32	X 081440	FD36GB200V32
	40		19.6	33.6	CC 2000 CP gRB 36x250/40	W 081439	FD36GB200V40
	10		7.0	12	CC 209P CP gRB 36x250/10	L 084949	FD36GB200V10K
	12		7.6	13	CC 209P CP gRB 36x250/12	M 098497	FD36GB200V12K
	20		10	17.5	CC 209P CP gRB 36x250/20	M 084950	FD36GB200V20K
	25		12	21	CC 209P CP gRB 36x250/25	R 087461	FD36GB200V25K
	32		15.2	26	CC 209P CP gRB 36x250/32	L 081131	FD36GB200V32K
	40		19.6	33.6	CC 209P CP gRB 36x250/40	W 087373	FD36GB200V40K

Minimum trip indicator operating voltage: 90 V

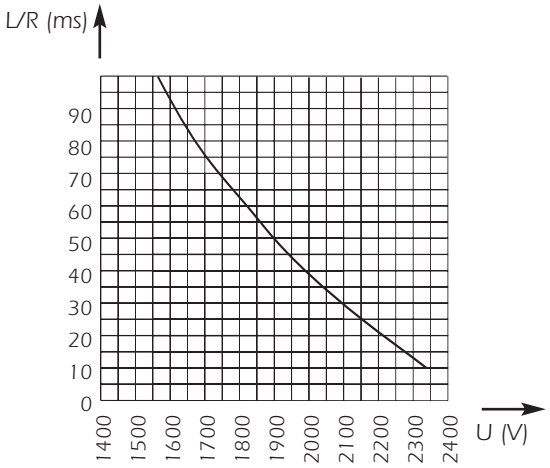
See Fuse Blocks, Fuse Holders and Fuse clips

Pack: *1 piece*

DC Ferrule Fuses
36x250
gR 2000V DC

gRB from 0.8 to 40 A

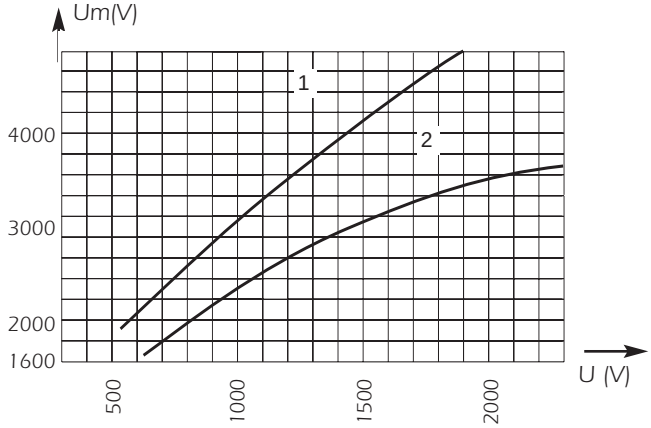
Electrical characteristics
DC applications data



Above: Curve indicates the maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3000 V with breaking capacity of 50 kA

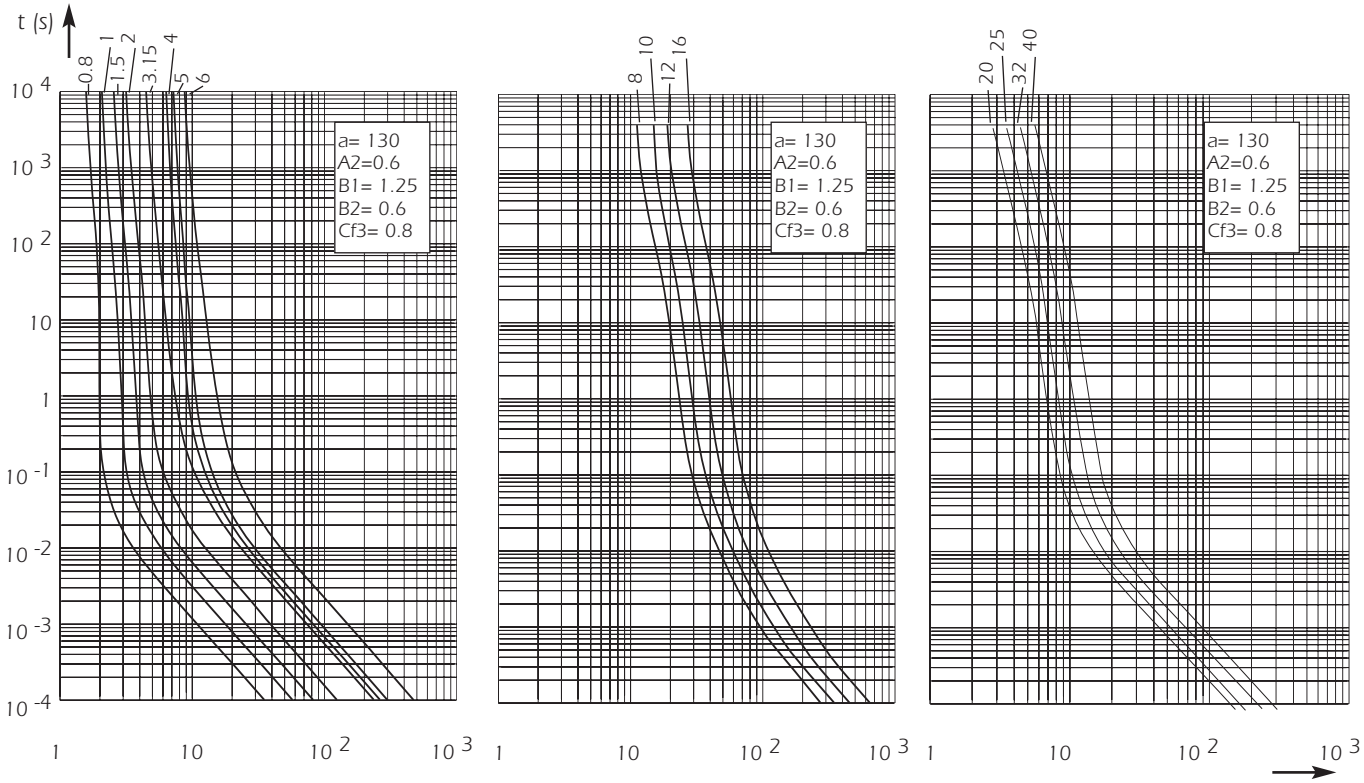
Peak arc voltage
vs. working voltage



1 : L/R = 45 ms
2 : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



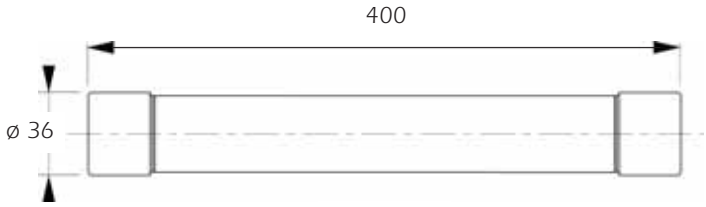
Above: These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

± 10% tolerance for mean pre-arcing current

DC Ferrule Fuses 36x400 gR 4000V DC

gRC from 0.8 to 20 A

Dimensions



Weight: 840 g



Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Reference Number	Catalog Number
36x400	0.8	@ 4000 V DC 30 kA L/R = 20 ms	1.5	2.5	CC 4000 CP gRC 36x400/0.8	Z 220293	FD36GC400V0,8
	1		1.6	2.7	CC 4000 CP gRC 36x400/1	R 221137	FD36GC400V1
	1.5		2.4	4.1	CC 4000 CP gRC 36x400/1.5	S 221138	FD36GC400V1,5
	2		3.0	5.0	CC 4000 CP gRC 36x400/2	Z 089423	FD36GC400V2
	3.15		3.9	6.4	CC 4000 CP gRC 36x400/3.15	T 221139	FD36GC400V3,15
	4		6.0	10	CC 4000 CP gRC 36x400/4	A 089424	FD36GC400V4
	5		9.6	16	CC 4000 CP gRC 36x400/5	Y 098461	FD36GC400V5
	6		11	19	CC 4000 CP gRC 36x400/6	E 099847	FD36GC400V6
	8*		12	22	CC 4000 CP gRC 36x400/8	V 221140	FD36GC400V8
	10*		13	23	CC 4000 CP gRC 36x400/10	G 098469	FD36GC400V10
	12*		15	26	CC 4000 CP gRC 36x400/12	C 098396	FD36GC400V12
	16*		15	27	CC 4000 CP gRC 36x400/16	Z 083052	FD36GC400V16
	20*		18.6	33	CC 4000 CP gRC 36x400/20	F 099848	FD36GC400V20

See Fuse Blocks, Fuse Holders and Fuse clips

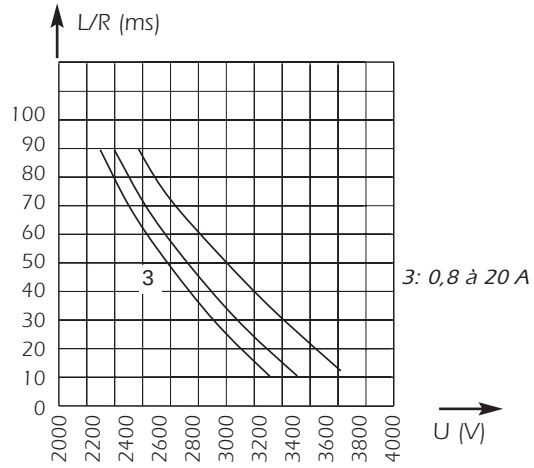
** Minimum breaking current = 5 IN*

Pack: *1 piece*

DC Ferrule Fuses
36x400
gR 4000V DC

gRC from 0.8 to 20 A

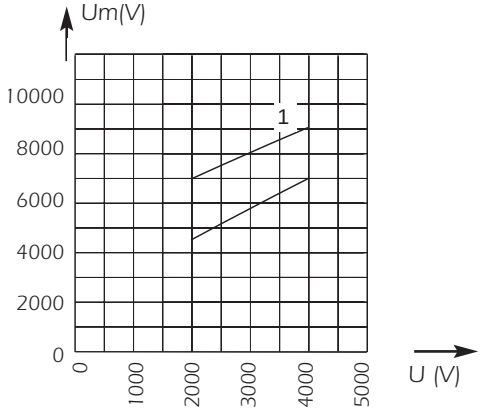
Electrical characteristics
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz): *4000 V with breaking capacity of 50 kA*

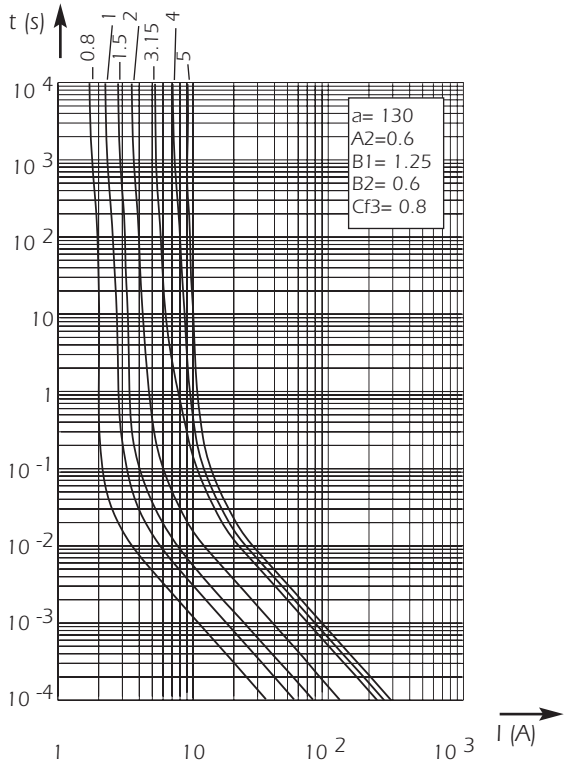
Peak arc voltage
vs. working voltage

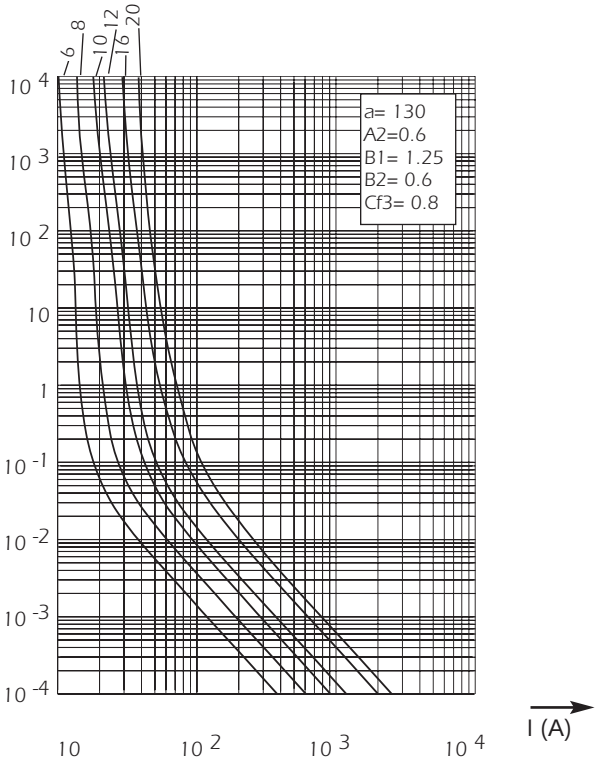


1 : L/R = 30 ms

Above: Curves indicate for various time constants L/R the peak arc voltage, which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics





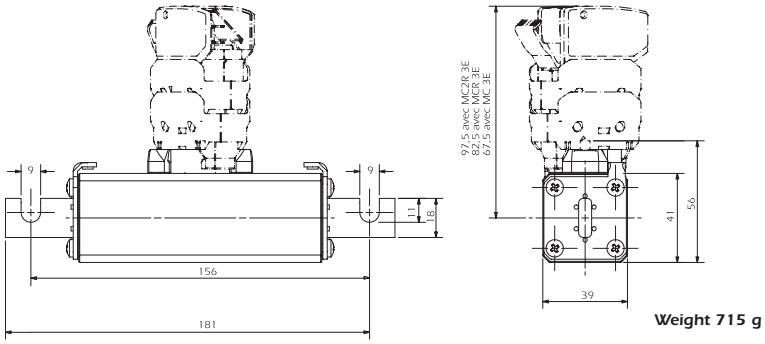
Above, left and right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

± 10% tolerance for mean pre-arcing current

DC Square-body Fuses
Sizes 120 to 123
gR 750V DC

Size 120
gRC from 200 to 250 A

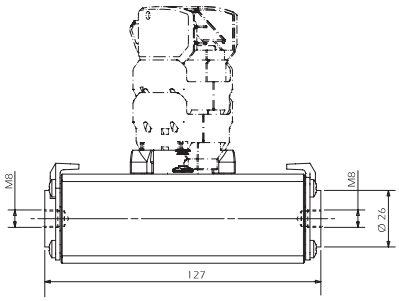
Dimensions

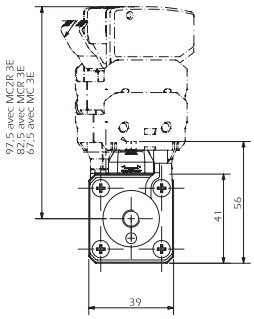


Weight 715 g









Weight 650 g

Main Characteristics

Size	Current rating I_N (A)	Breaking capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 900 V = L/R 40 ms IP = 10 I_N (A^2S)	Max. I^2t @ 900 V = L/R 40 ms IP = 50 I_N (A^2S)	Designation	Ref. Number	Catalog Number
120	50	@ 750 V= 100k A L/R = 100 ms	4.4	8.1	42500	8500	CC 7,5 gRC 120 EF 0050	Y084776	D120GC75V50EF
	63		5.7	10.4	75500	15000	CC 7,5 gRC 120 EF 0063	R085207	D120GC75V63EF
	80		7.3	13.4	125000	24500	CC 7,5 gRC 120 EF 0080	Q085206	D120GC75V80EF
	100		9.1	16.7	200000	40000	CC 7,5 gRC 120 EF 0100	P085205	D120GC75V100EF
	125		11.5	21	315000	62500	CC 7,5 gRC 120 EF 0125	R086242	D120GC75V125EF
	160		15	27	485000	100000	CC 7,5 gRC 120 EF 0160	N085204	D120GC75V160EF
	50	@ 900 V= 100k A L/R = 40 ms	4.4	8.1	42500	8500	CC 7,5 gRC 120 TTF 0050	B220824	D120GC75V50TF
	63		5.7	10.4	75500	15000	CC 7,5 gRC 120 TTF 0063	Q082400	D120GC75V63TF
	80		7.3	13.4	125000	24500	CC 7,5 gRC 120 TTF 0080	Z090435	D120GC75V80TF
	100		9.1	16.7	200000	40000	CC 7,5 gRC 120 TTF 0100	R082401	D120GC75V100TF
	125		11.5	21	315000	62500	CC 7,5 gRC 120 TTF 0125	P085251	D120GC75V125TF
	160		15	27	485000	100000	CC 7,5 gRC 120 TTF 0160	R085253	D120GC75V160TF

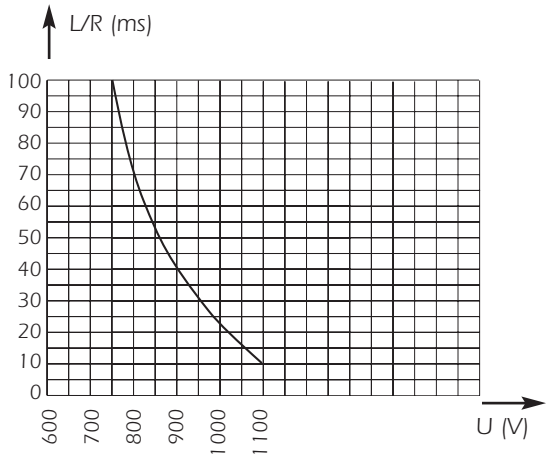
Microswitch: MC 3E 1-5N Ref. Number: D310020

Pack: *1 piece*

DC Square-body Fuses
Sizes 120 to 123
gR 750V DC

size 120
gRC from 200 to 250 A

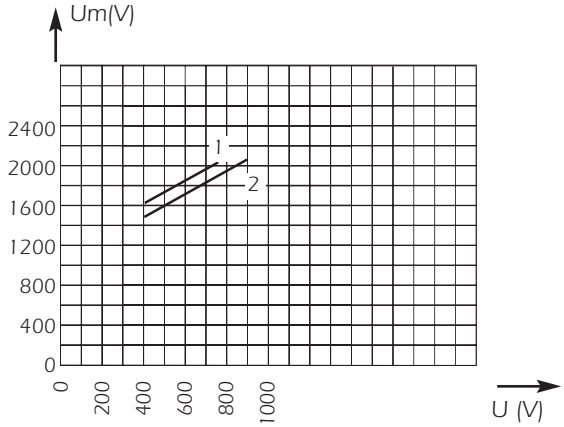
Electrical characteristics
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1250 V with breaking capacity of 170 kA

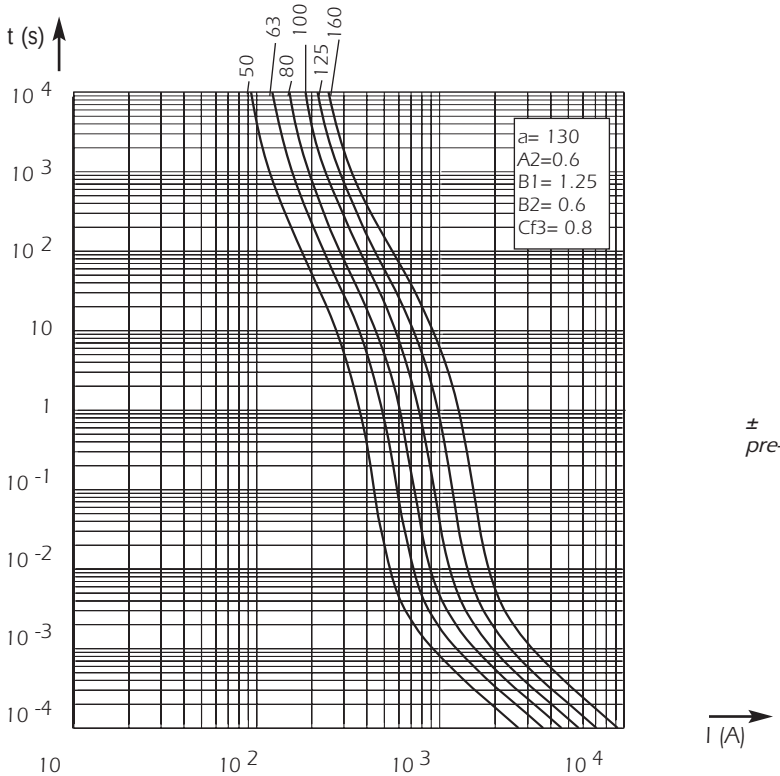
Peak arc voltage vs. working voltage



1 : L/R = 100 ms
2 : L/R = 40 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



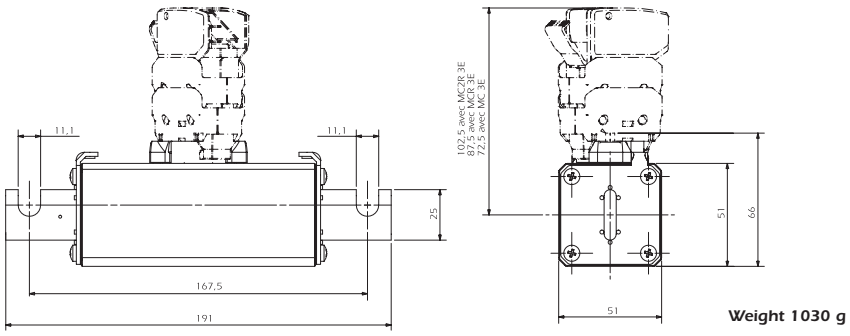
± 7% tolerance for mean pre-arcing current

Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 120 to 123
gR 750V DC

Sizes 121
gRC from 200 to 250 A

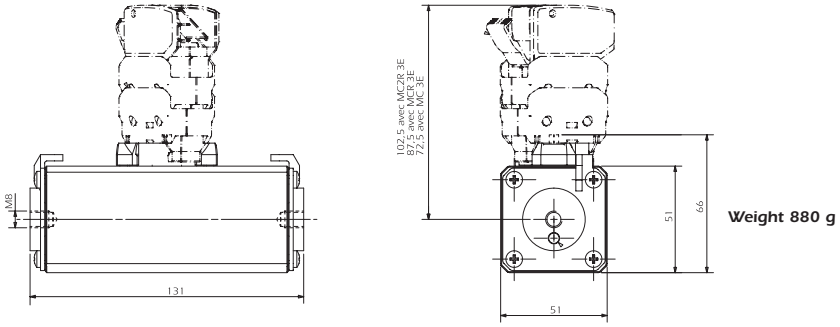
Dimensions



Weight 1030 g







Weight 880 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 900 V = L/R 40 ms IP = 10 I_N (A^2S)	Max. I^2t @ 900 V = L/R 40 ms IP = 50 I_N (A^2S)	Designation	Ref. Number	Catalog Number
121	200	@750 V DC 100 kA L/R = 100 ms	20.5	37.5	755000	150000	CC 7,5 gRC 121 EF 0200	A086710	D121GC75V200EF
	250		25.5	46.7	1250000	250000	CC 7,5 gRC 121 EF 0250	M085203	D121GC75V250EF
	200	@ 900 V DC 100 kA L/R = 40 ms	20.5	37.5	755000	150000	CC 7,5 gRC 121 TTF 0200	N085250	D121GC75V200TF
	250		25.5	46.7	1250000	250000	CC 7,5 gRC 121 TTF 0250	Q085252	D121GC75V250TF

Microswitch: MC 3E 1-5N Ref. Number: D310020

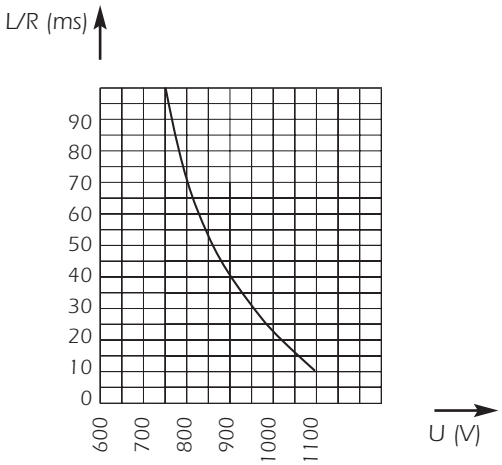
Pack: *1 piece*

DC Square-body Fuses
Sizes 120 to 123
gR 750V DC

Sizes 121
gRC from 200 to 250 A

Electrical characteristics

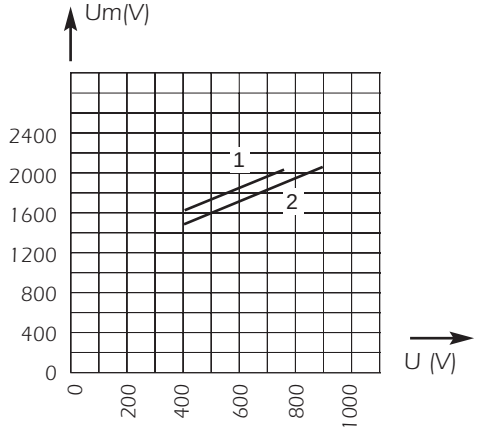
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1250 V with breaking capacity of 170 kA

Peak arc voltage vs. working voltage

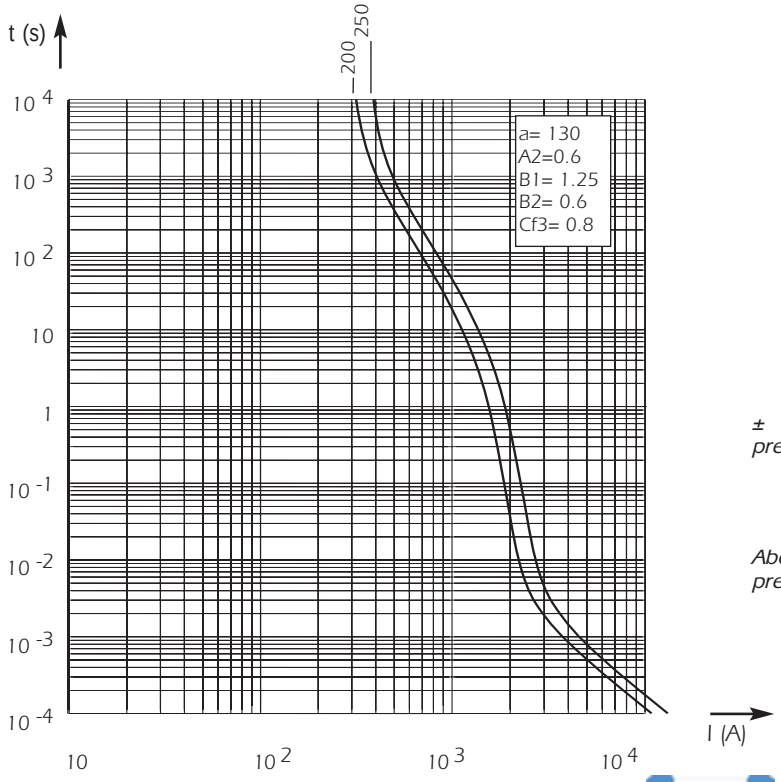


1 : L/R = 100 ms

2 : L/R = 40 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



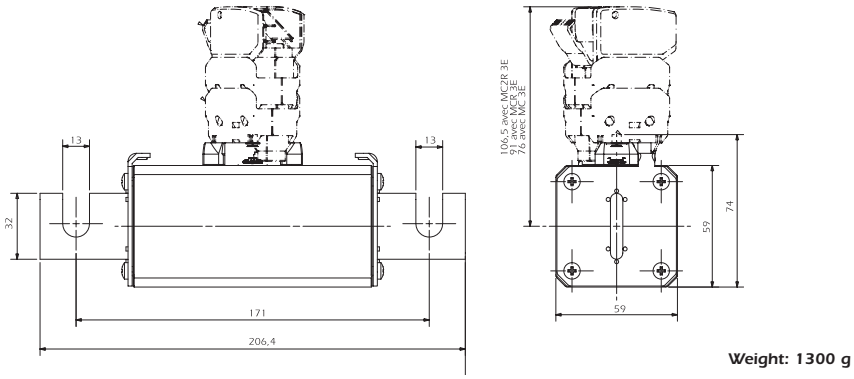
± 7% tolerance for mean pre-arcing current

Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 120 to 123
gR 750V DC

Size 122
gRC-gRD from 250 to 500 A

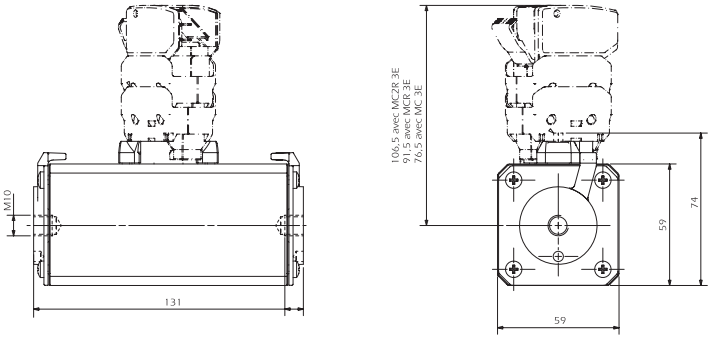
Dimensions



Weight: 1300 g







Weight: 1150 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 900 V = L/R 40 ms IP = 10 I_N (A^2S)	Max. I^2t @ 900 V = L/R 40 ms P = 50 I_N (A^2S)	Designation	Ref. Number	Catalog Number
122	250	@750 V DC 100 kA L/R = 100 ms @ 900 V DC 100 kA L/R = 40 ms	25.5	46.7	1.25 10^6	250,000	CC 7,5 gRC 122 EF 0250	A087331	D122GC75V250EF
	315		31.5	58	2 10^6	400,000	CC 7,5 gRC 122 EF 0315	B087332	D122GC75V315EF
	350		35	64.5	2.5 10^6	500,000	CC 7,5 gRC 122 EF 0350	W221141	D122GC75V350EF
	400		40.5	74.5	3.1 10^6	600,000	CC 7,5 gRC 122 EF 0400	L089388	D122GC75V400EF
	450		49	90	4 10^6	800,000	CC 7,5 gRD 122 EF 0450	P220951	D122GD75V450EF
	500*		52	95	6.2 10^{6*}	1.2 10^{6*}	CC 7,5 gRD 122 EF 0500*	Q220952	D122GD75V500EF
	250		25.5	46.7	1.25 10^6	250,000	CC 7,5 gRC 122 TTF 0250	B090437	D122GC75V250TF
	315		31.5	58	2 10^6	400,000	CC 7,5 gRC 122 TTF 0315	M085249	D122GC75V315TF
	350		35	64.5	2.5 10^6	500,000	CC 7,5 gRC 122 TTF 0350	G220898	D122GC75V350TF
	400		40.5	74.5	3.1 10^6	600,000	CC 7,5 gRC 122 TTF 0400	C090438	D122GC75V400TF
	450		49	90	4 10^6	800,000	CC 7,5 gRD 122 TTF 0450	R220953	D122GD75V450TF
	500*		52	95	6.2 10^{6*}	1.2 10^{6*}	CC 7,5 gRD 122 TTF 0500*	S220954	D122GD75V500TF

** Max. I2t @ 800 V=, L/R=40 ms and Breaking capacity = 100 kA @ 750VDC/50ms*

Microswitch: MC 3E 1-5N Ref. Number: D310020

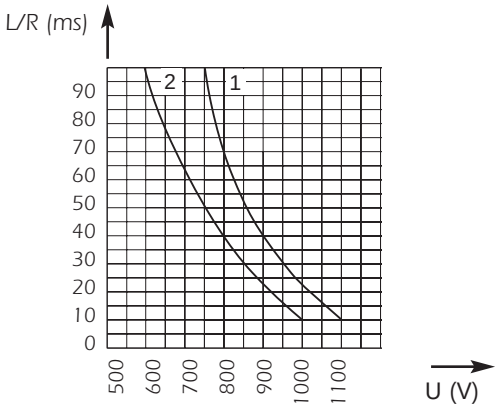
Pack: *1 piece*

DC Square-body Fuses
Sizes 120 to 123
gR 750V DC

Size 122
gRC-gRD from 250 to 500 A

Electrical characteristics

DC applications data

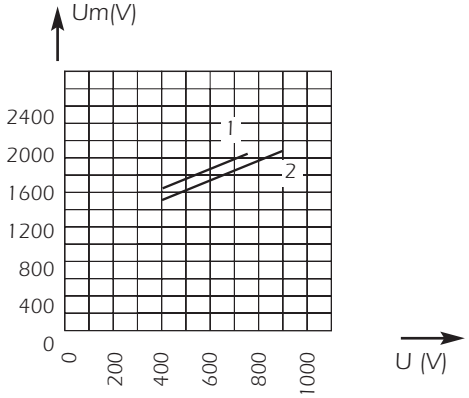


1: curve gRC - gRD 450A
2: curve gRD 500A

Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1250 V with breaking capacity of 170 kA

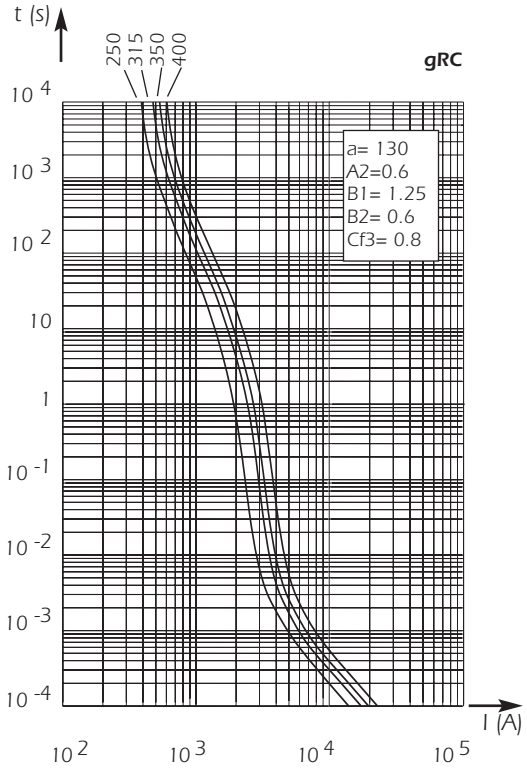
Peak arc voltage vs. working voltage



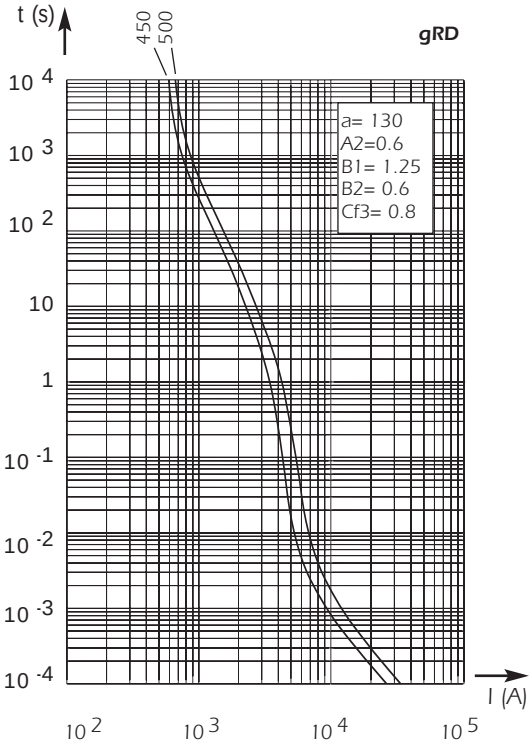
1: L/R = 100 ms
2: L/R = 40 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

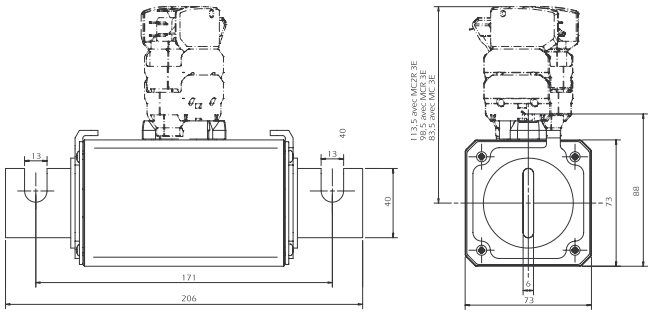


± 7% tolerance for mean pre-arcing current

DC Square-body Fuses
Sizes 120 to 123
gR 750V DC

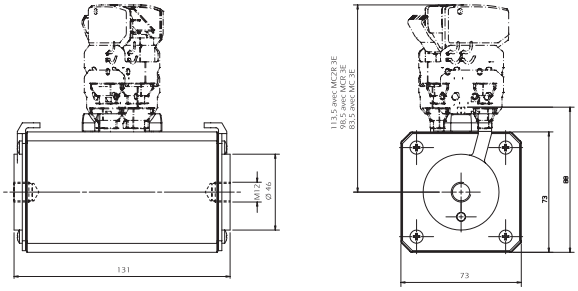
Size 123
gRB-gRC-gRD from 500 to 800 A

Dimensions



Weight: 2100 g





Weight: 1900 g



Main Characteristics

Size	Current rating I_N (A)	Breaking capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 900 V = L/R 40 ms IP = 10 I_N (A^2S)	Max. I^2t @ 900 V = L/R 40 ms P = 50 I_N (A^2S)	Designation	Ref. Number	Catalog Number
123	500	@ 750 V DC 100 kA L/R = 100 ms	51	93.5	5 10^6	1 10^6	CC 7,5 gRC 123 EF 0500	M089389	D123GC75V500EF
	500	@ 900 V DC 100 kA L/R = 40 ms	51	93.5	5 10^6	1 10^6	CC 7,5 gRC 123 TTF 0500	D090439	D123GC75V500TF
					maximum I^2t (A^2s) @ 800 V = L/R 40 ms $I_P = 10\ I_N$	$I_P = 50\ I_N$			
	630	@ 750 V DC 100 kA L/R = 50 ms	74	See max. operating current next page	7.5 10^6	1.5 10^6	CC 7,5 gRB 123 EF 0630	B098556	D123GB75V630EF
	700		82		10 10^6	2 10^6	CC 7,5 gRB 123 EF 0700	Q078191	D123GB75V700EF
	750		82		10 10^6	2 10^6	CC 7,5 gRD 123 EF 0750	F220943	D123GD75V750EF
	630		74		7.5 10^6	1.5 10^6	CC 7,5 gRB 123 TTF 0630	C098557	D123GB75V630TF
	700		82		10 10^6	2 10^6	CC 7,5 gRB 123 TTF 0700	F090441	D123GB75V700TF
	750		82		10 10^6	2 10^6	CC 7,5 gRD 123 TTF 0750	H220945	D123GB75V750TF
					maximum I^2t (A^2s) @ 660 V = L/R 30 ms $I_P = 10\ I_N$	$I_P = 50\ I_N$			
	800	@ 660 V DC 100 kA L/R = 50 ms	90		12.15 10^6	2.6 10^6	CC 6.6 gRB 123 EF 0800	G220944	D123GB66V800EF
	800		90		12.15 10^6	2.6 10^6	CC 6.6 gRB 123 TTF 0800	J220946	D123GB66V800TF

Microswitch: MC 3E 1-5N Ref. Number: D310020

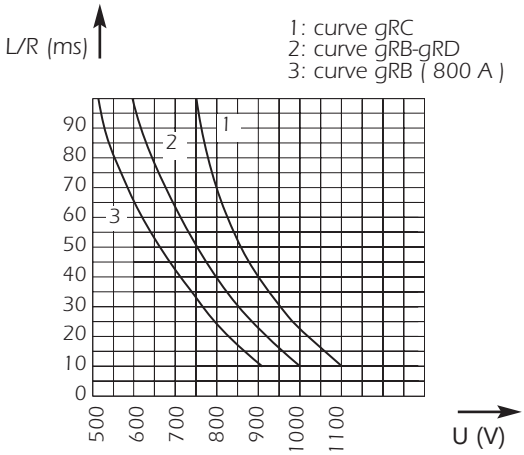
Pack: *1 piece*

DC Square-body Fuses
Sizes 120 to 123
gR 750V DC

Size 123
gRB-gRC-gRD from 500 to 800 A

Electrical characteristics

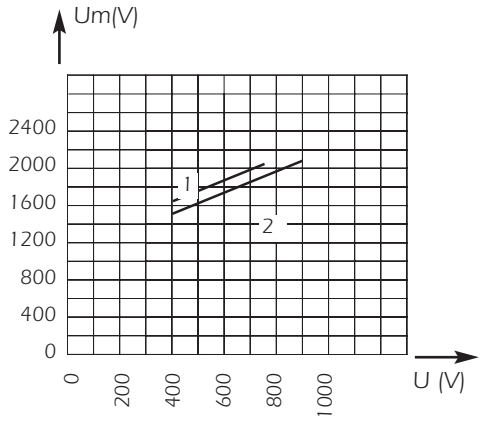
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1250 V with breaking capacity of 170 kA

Peak arc voltage vs. working voltage

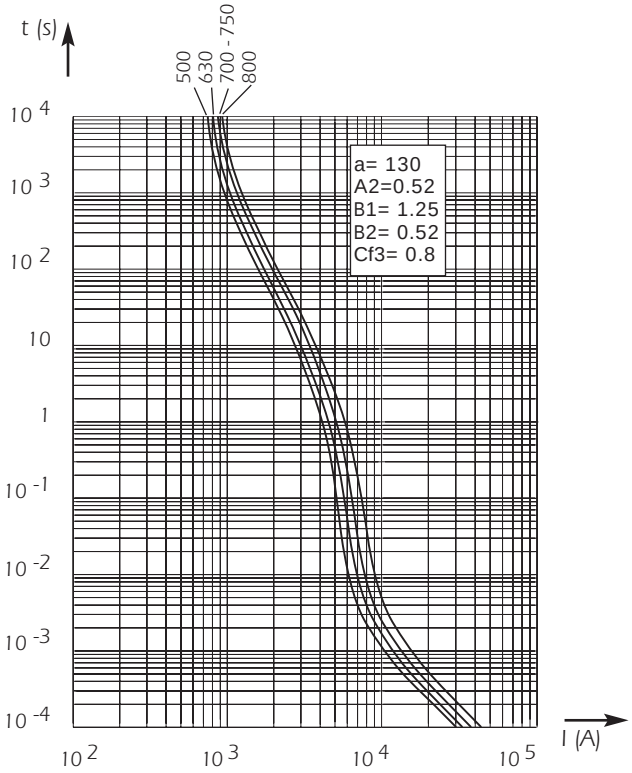


1: L/R = 100 ms

2: L/R = 40 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



Current rating (A)		Maximum operating current (A)	
	630		550
	700		600
	750		600
	800		650

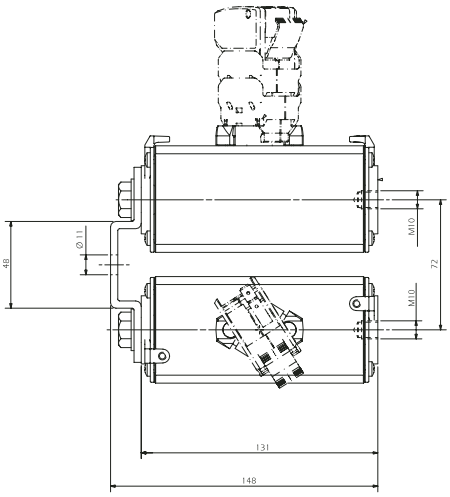
± 7% tolerance for mean pre-arcing current

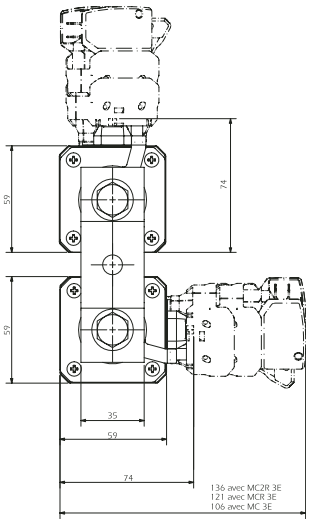
Above: curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

DC Square-body Fuses
Sizes 2x122 - 2x123
gR 750V DC

Size 2x122
gRC - gRD from 500 to 1000 A

Dimensions







Weight: 2825 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 900 V = L/R 40 ms IP = 10 I_N (A^2S)	Max. I^2t @ 900 V = L/R 40 ms P = 50 I_N (A^2S)	Designation	Ref. Number	Catalog Number
2x122	500	@ 900V DC 100 kA L/R = 40 ms	51	94	5 10^6	1 10^6	CC 7,5 gRC 2122 TTF 0500	Q 090473	D2122GC75V500TF
	630		63	116	8 10^6	1.6 10^6	CC 7,5 gRC 2122 TTF 0630	R 090474	D2122GC75V630TF
	800		81	149	12.4 10^6	2.4 10^6	CC 7,5 gRC 2122 TTF 0800	S 090475	D2122GC75V800TF
	900		98	180	16 10^6	3.2 10^6	CC 7,5 gRD 2122 TTF 0900	T 220955	D2122GD75V900TF
		@ 750 V DC 100 kA L/R = 100 ms			maximum I^2t (A^2s) @ 800 V = L/R 40 ms I_P = 10 I_N	I_P = 50 I_N			
	1000*		104	190	25 10^6*	4.8 10^6*	CC 7,5 gRD 2122 TTF 1000*	V 220956	D2122GD75V10CTF

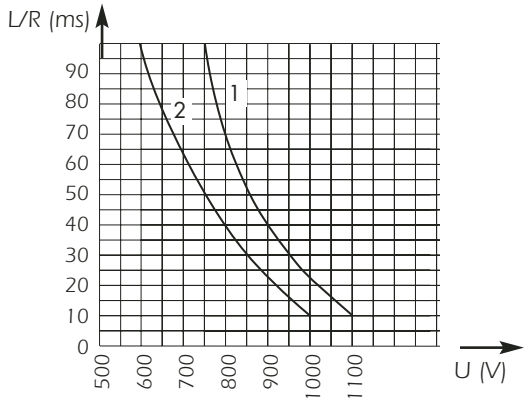
Microswitch: MC 3E 1-5N Ref. Number: D310020
* Max I^2t @ 800V = 750 VDC 100 kA L/R = 50 ms and breaking capacity @750 VDC 100 kA L/R = 50 ms

Pack: 1 piece

DC Square-body Fuses
Sizes 2x122 - 2x123
gR 750V DC

Size 2x122
gRC - gRD from 500 to 1000 A

Electrical characteristics
DC applications data

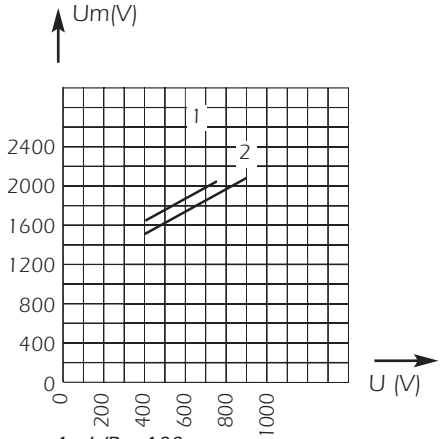


1 : curve gRC - gRD 900
2 : curve gRD 1000

Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1250 V with breaking capacity of 170 kA

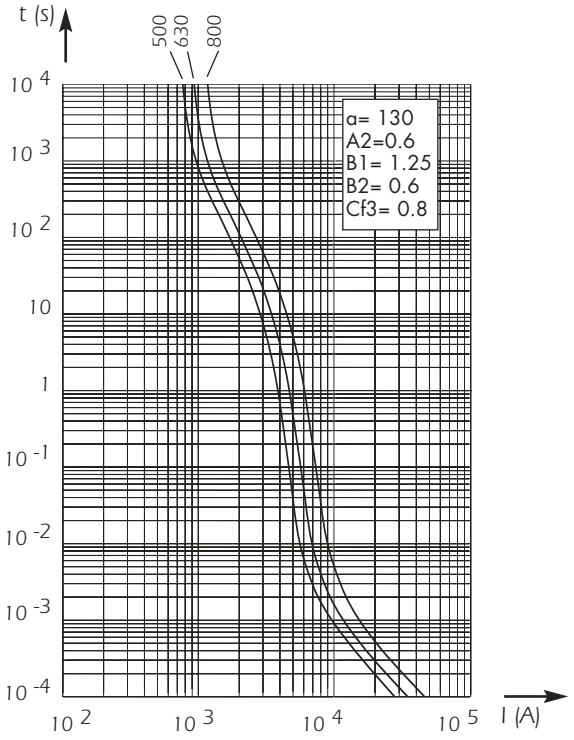
Peak arc voltage
vs. working voltage



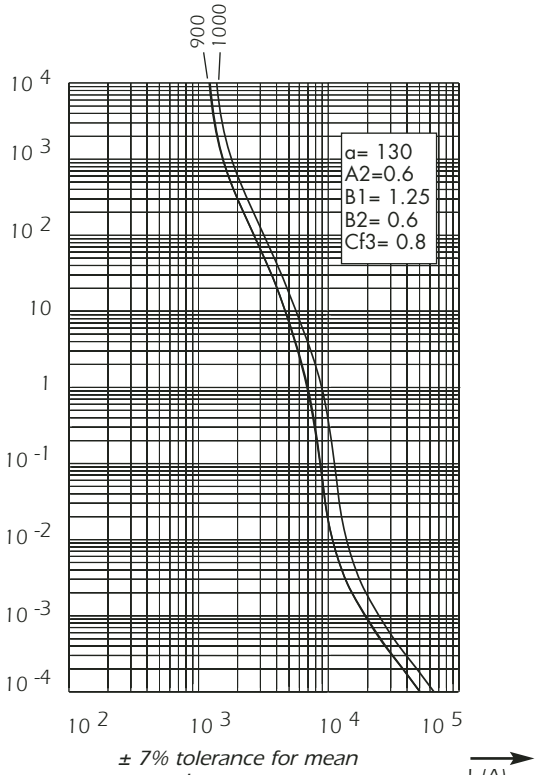
1 : L/R = 100 ms
2 : L/R = 40 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



Above, left and right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

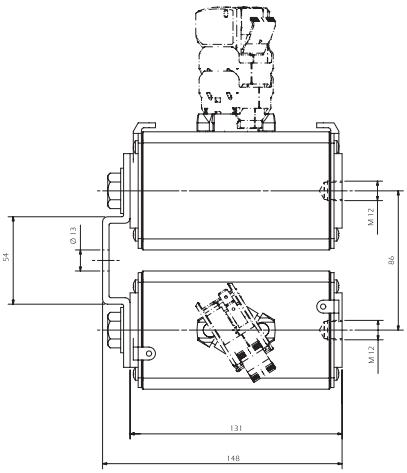


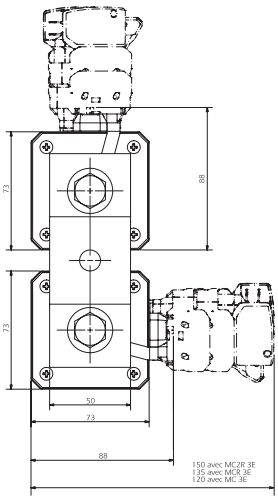
± 7% tolerance for mean pre-arcing current

DC Square-body Fuses
Sizes 2x122 - 2x123
gR 750V DC

Size 2x123
gRC-gRB-gRD from 1000 to 1600 A

Dimensions







Weight: 4190 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 900 V = L/R 40 ms IP = 10 I_N (A^2S)	Max. I^2t @ 900 V = L/R 40 ms P = 50 I_N (A^2S)	Designation	Ref. Number	Catalog Number
2x123	1000	@ 750 V DC 100 kA L/R = 100 ms @ 900 V DC 100 kA L/R = 40 ms	102	187	20 10^6	4 10^6	CC 7,5 gRC 2123 TTF 1000	Z 090481	D2123GC75V10CTF
					maximum I^2t (A^2s) @ 800 V = L/R 40 ms $I_P = 10\ I_N$	$I_P = 50\ I_N$			
	1250	@ 750 V DC 100 kA L/R = 50 ms	148	See max. operating current next page	30 10^6	6 10^6	CC 7,5 gRB 2123 TTF 1250	D 098558	D2123GB75V12CTF
	1400		164		40 10^6	8 10^6	CC 7,5 gRB 2123 TTF 1400	B 090483	D2122GB75V14CTF
	1500		164		40 10^6	8 10^6	CC 7,5 gRD 2123 TTF 1500	K 220947	D123GD75V1500TF
			74		maximum I^2t (A^2s) @ 660 V = L/R 30 ms $I_P = 10\ I_N$	$I_P = 50\ I_N$			
			82						
	1600	@ 660 V DC 100 kA L/R = 50 ms	82		48.6 10^6	10.10^6	CC 6.6 gRB 2123 TTF 1600	L 220948	D123GB66V1600TF

Microswitch: MC 3E 2-5N Reference Number: D310020

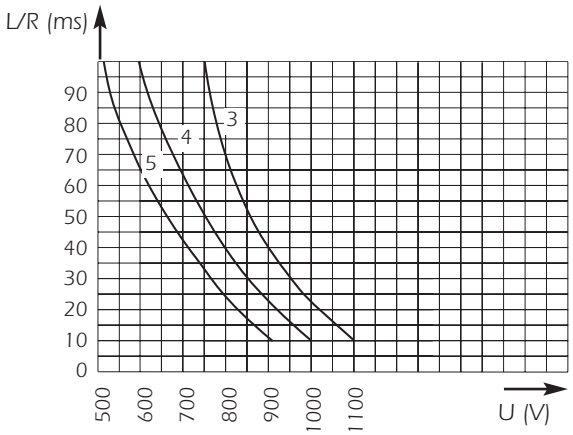
Pack: *1 piece*

DC Square-body Fuses
Sizes 2x122 - 2x123
gR 750V DC

Size 2x123
gRC-gRB-gRD from 1000 to 1600 A

Electrical characteristics

DC applications data

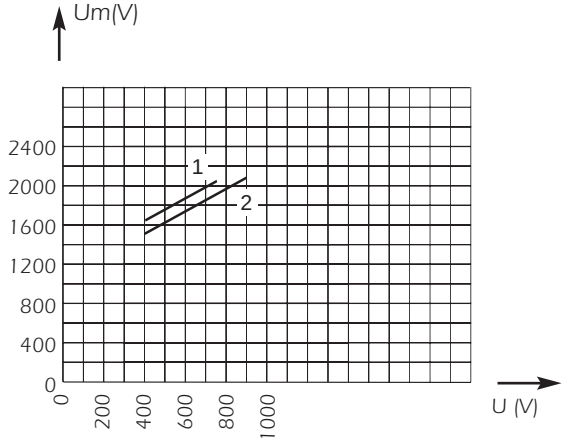


3: curve gRC
4: curve gRD
5: curvee gRB 1600 A

Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage.

Max. AC voltage (50/60 Hz):
1250 V with breaking capacity of 170 kA

Peak arc voltage vs. working voltage



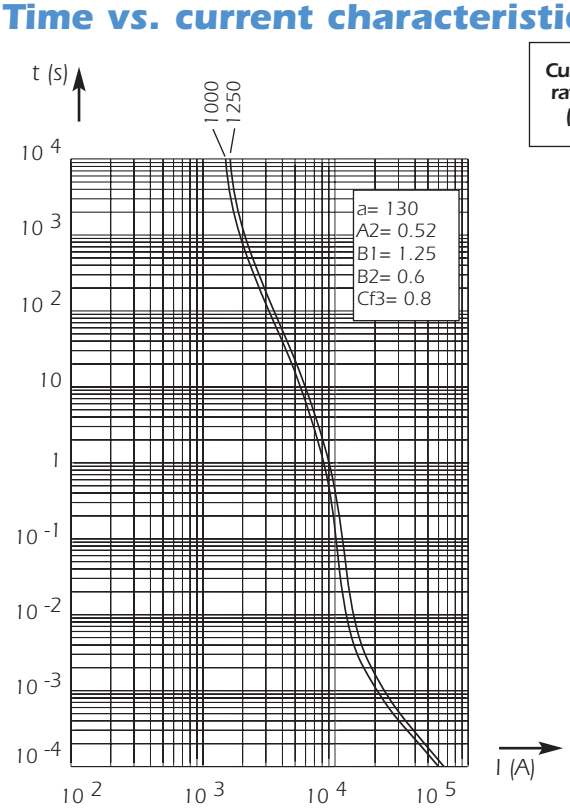
1: L/R = 100 ms

2: L/R = 40 ms

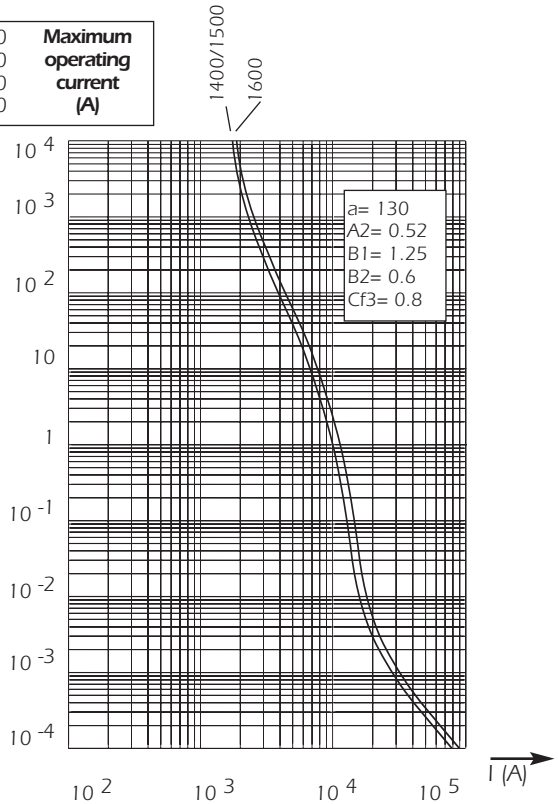
Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics

Current rating (A)			Maximum operating current (A)
	1250	1100	
	1400	1200	
	1500	1200	
	1600	1300	



Above, left and right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

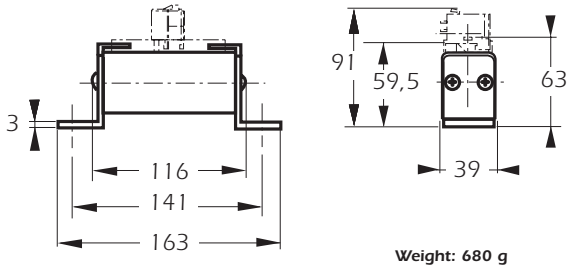


± 7% tolerance for mean pre-arcing current

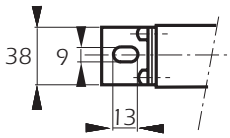
DC Square-body Fuses
Sizes 70- 72 - 2x72
SR 1200V DC

Size 70
SRF from 20 to 215 A

Dimensions



Weight: 680 g





Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 1000 V L/R = 15 ms (A^2S)	Max. I^2t @ 1000 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
70	20	@ 1200 V DC 100 kA L/R = 15 ms	4.5	10	180	310	CC 12 SRF 70 QF 0020	C076638	D70SF120V20QF
	25		7	15.5	180	310	CC 12 SRF 70 QF 0025	S079435	D70SF120V25QF
	32		8.5	18.5	350	610	CC 12 SRF 70 QF 0032	T079436	D70SF120V32QF
	40		10	22	580	1000	CC 12 SRF 70 QF 0040	V079437	D70SF120V40QF
	50		12	26	1030	1800	CC 12 SRF 70 QF 0050	W079438	D70SF120V50QF
	63		15	33	1600	2800	CC 12 SRF 70 QF 0063	X079439	D70SF120V63QF
	80		18.5	37.5	3100	5400	CC 12 SRF 70 QF 0080	Y079440	D70SF120V80QF
	100		21.5	44.5	5800	10000	CC 12 SRF 70 QF 0100	Z079441	D70SF120V100QF
	125		28	54	9200	16000	CC 12 SRF 70 QF 0125	A079442	D70SF120V125QF
	160		34	64	19200	33200	CC 12 SRF 70 QF 0160	B079443	D70SF120V160QF
	200		35	65.5	45000	78500	CC 12 SRF 70 QF 0200	C079444	D70SF120V200QF
	215		46	89	55000	95000	CC 12 SRF 70 QF 0215	D079445	D70SF120V215QF

Microswitch: MC 3E 1-5N Ref. Number : D310020

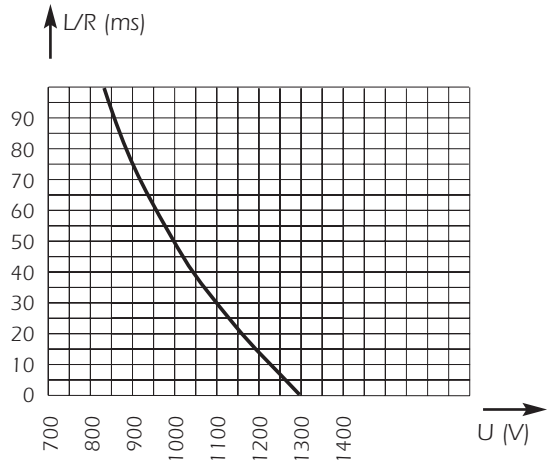
Pack: *1 piece*

DC Square-body Fuses
Sizes 70- 72 - 2x72
SR 1200V DC

Size 70
SRF from 20 to 215 A

Electrical characteristics

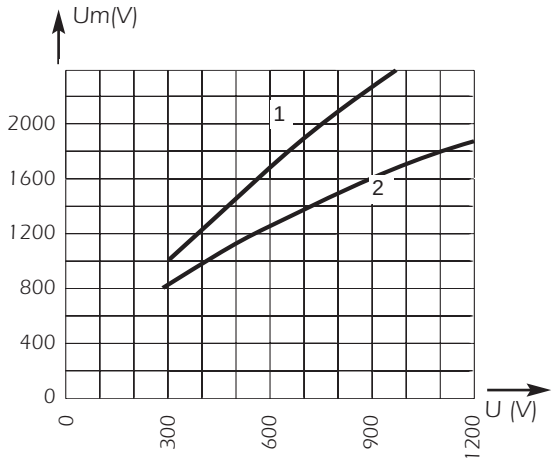
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
900 V with breaking capacity of 100 kA

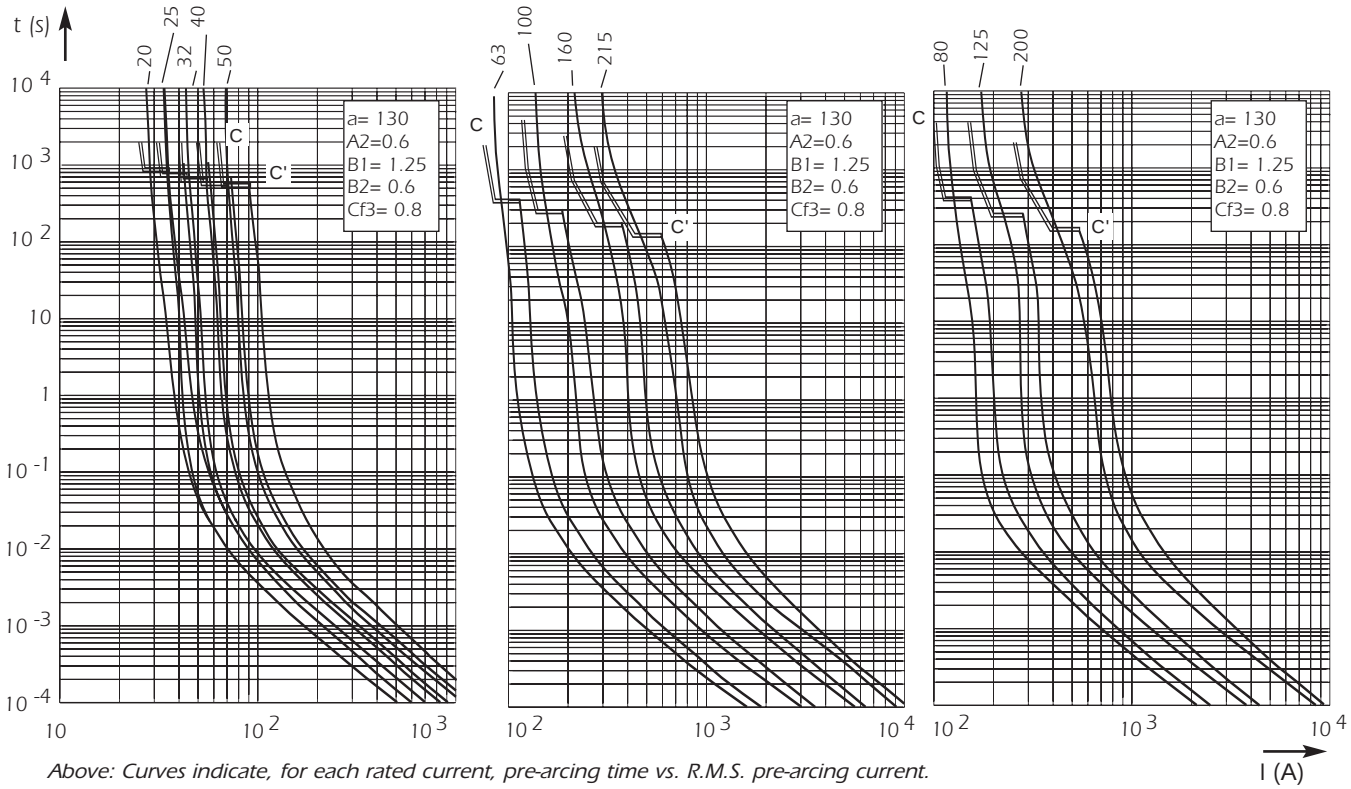
Peak arc voltage vs. working voltage



1 : L/R = 45 ms
2 : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage,which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics

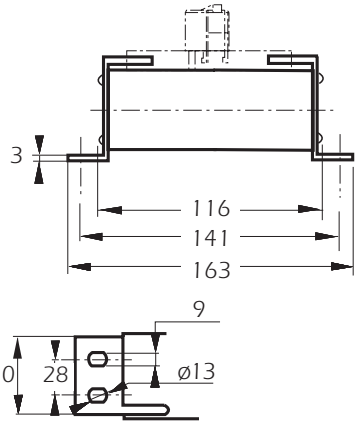


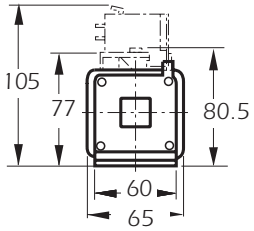
Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 70- 72 - 2x72
SR 1200V DC

Size 72
SRG from 160 to 420 A

Dimensions





weight : 1151 g



Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 1000 V L/R = 15 ms (A^2S)	Max. I^2t @ 1000 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
72	160	@ 1200 V DC 100 kA L/R = 15 ms	41	77.5	12000	20000	CC 12 SRG 72 QF 0160	K079428	D72SG120V160QF
	200		48	88	21000	36000	CC 12 SRG 72 QF 0200	L079429	D72SG120V200QF
	250		57	96	45500	78500	CC 12 SRG 72 QF 0250	M079430	D72SG120V250QF
	315		60	110	90000	154000	CC 12 SRG 72 QF 0315	N079431	D72SG120V315QF
	400		66	129	182000	314000	CC 12 SRG 72 QF 0400	P079432	D72SG120V400QF
	420		67	131	220000	380000	CC 12 SRG 72 QF 0420	Q079433	D72SG120V420QF

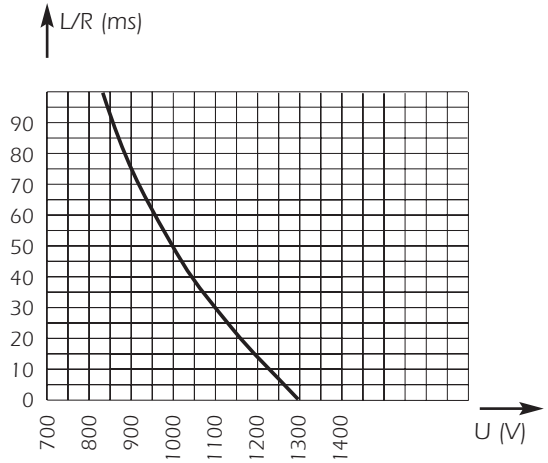
Microswitch: MC 3E 1-5N Ref. Number: D310020

Pack: *1 piece*

DC Square-body Fuses
Sizes 70- 72 - 2x72
SR 1200V DC

Size 72
SRG from 160 to 420 A

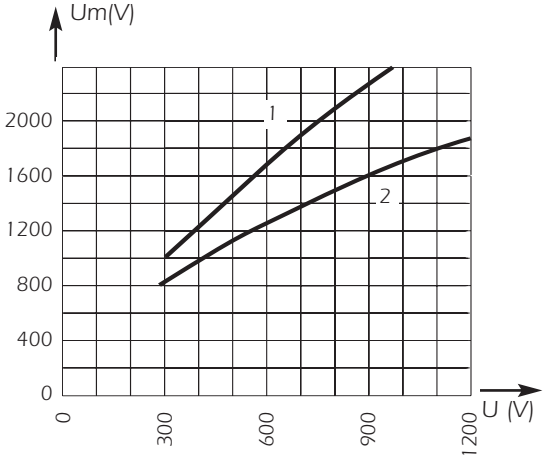
Electrical characteristics
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltag

Max. AC voltage (50/60 Hz):
900 V with breaking capacity of 100 kA

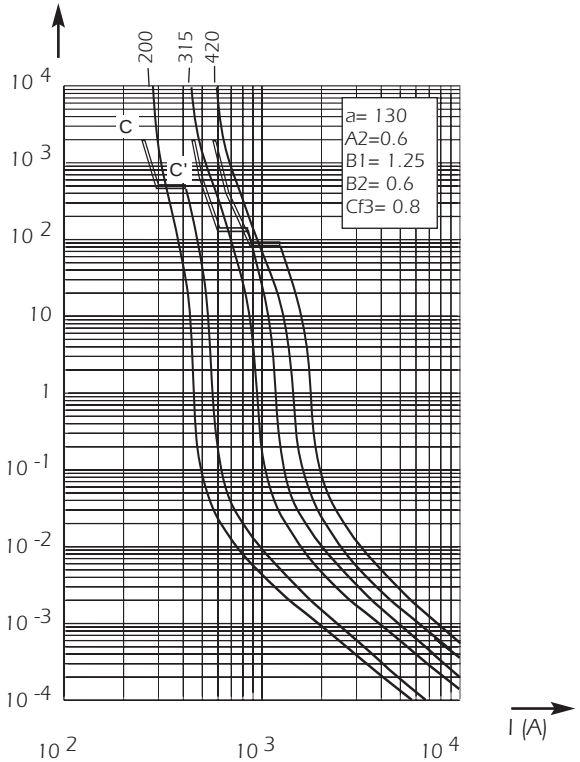
Peak arc voltage vs. working voltage

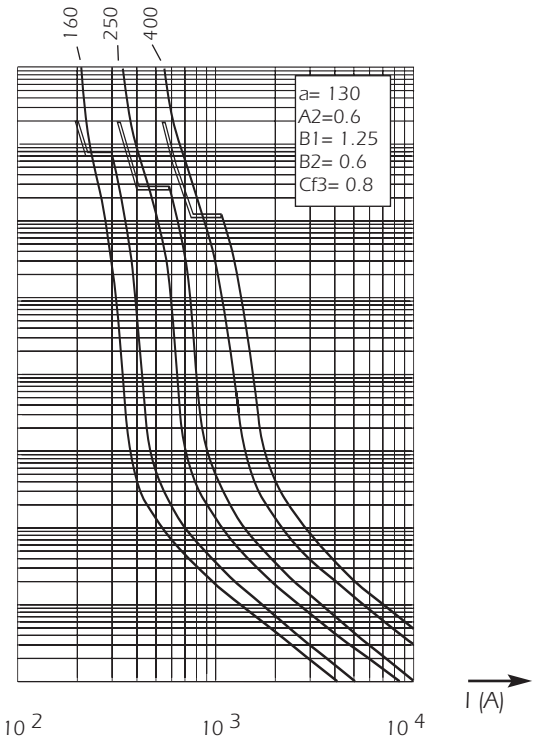


1 : L/R = 45 ms
2 : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across the fuse terminals, vs. DC working voltage

Time vs. current characteristics



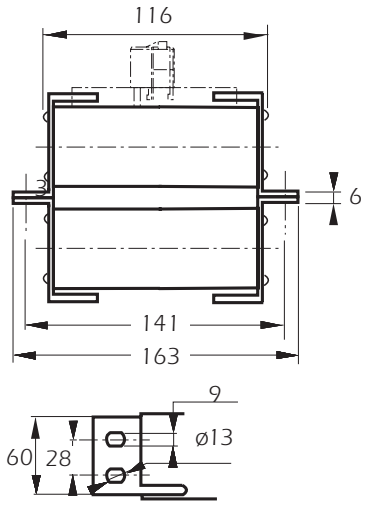


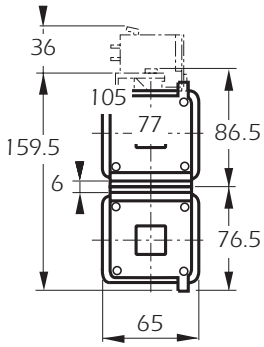
Above, left and right: These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 70- 72 - 2x72
SR 1200V DC

Size 2x72
SRG from 500 to 840 A

Dimensions





weight : 2400 g



Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 1000 V L/R = 15 ms (A^2S)	Max. I^2t @ 1000 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
	500		120	202	182000	314000	CC 12 SRG 272 QF 500	P077983	D 272 SG 120V 500 QF
	630	@ 1200 V DC	126	230	360000	616000	CC 12 SRG 272 QF 630	F079447	D 272 SG 120V 630 QF
2x72	800	100 kA	139	270	728000	$1.25\ 10^6$	CC 12 SRG 272 QF 800	G079448	D 272 SG 120V 800 QF
	840	L/R = 15 ms	142	275	880000	$1.53\ 10^6$	CC 12 SRG 272 QF 840	H079449	D 272 SG 120V 840 QF

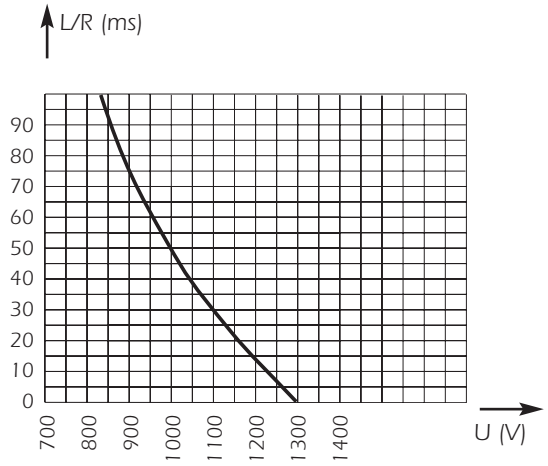
Microswitch: MC 3E 1-5N Ref. Number: D310020

Pack: *1 piece*

DC Square-body Fuses
Sizes 70- 72 - 2x72
SR 1200V DC

Size 2x72
SRG from 500 to 840 A

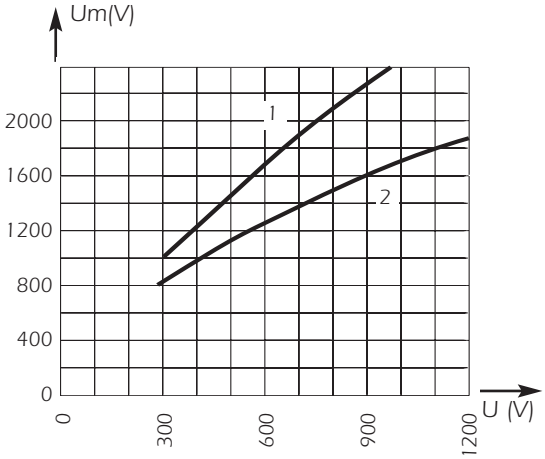
Electrical characteristics
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltag

Max. AC voltage (50/60 Hz):
900 V with breaking capacity of 100 kA

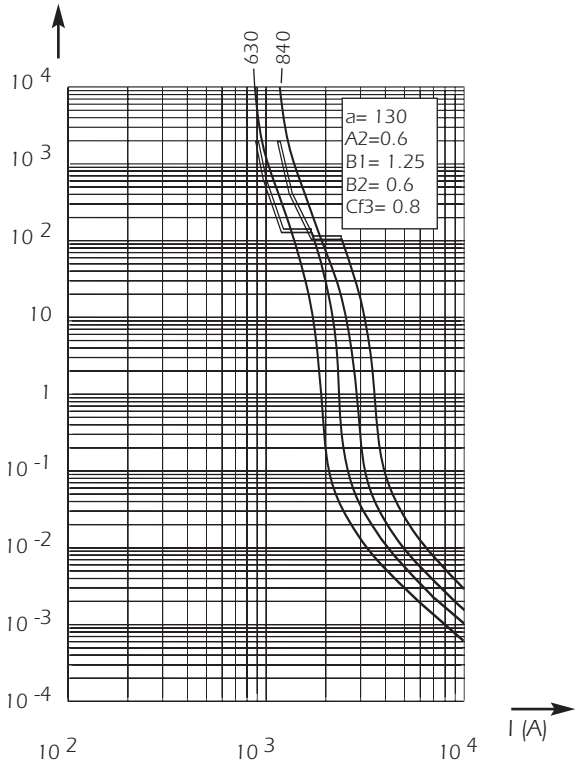
Peak arc voltage vs. working voltage

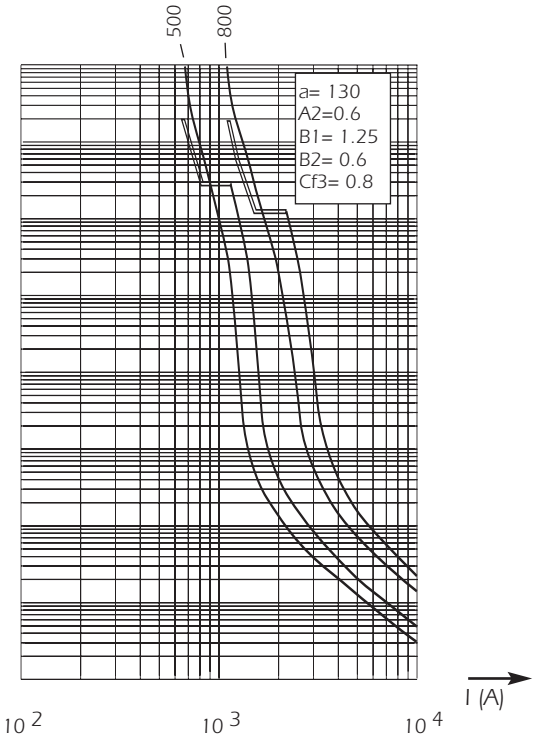


1 : L/R = 45 ms
2 : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across the fuse terminals, vs. DC working voltage

Time vs. current characteristics



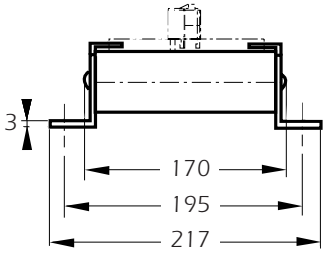


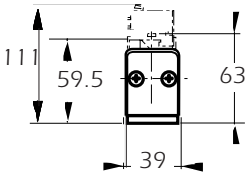
Above, left and right: These curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 120- 122 - 2x122
SR 2000V DC

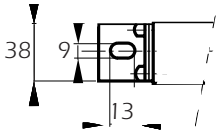
Size 120
SRC from 20 to 215 A

Dimensions









Weight : 900 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 1600 V L/R = 15 ms (A^2S)	Max. I^2t @ 1600 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
120	20	@ 2000 V= 100 kA L/R = 15 ms	8	16	180	310	CC 20 SRC 120 QF 0020	J079450	D120SC20C20QF
	25		12.5	25	180	310	CC 20 SRC 120 QF 0025	K079451	D120SC20C25QF
	32		14.5	29.5	350	610	CC 20 SRC 120 QF 0032	L079452	D120SC20C32QF
	40		17.5	36	580	1000	CC 20 SRC 120 QF 0040	M079453	D120SC20C40QF
	50		20.5	42	1030	1800	CC 20 SRC 120 QF 0050	N079454	D120SC20C50QF
	63		26	53.5	1600	2800	CC 20 SRC 120 QF 0063	P079455	D120SC20C63QF
	80		30	61.5	3100	5400	CC 20 SRC 120 QF 0080	Q079456	D120SC20C80QF
	100		35	70.5	5800	10000	CC 20 SRC 120 QF 0100	R079457	D120SC20C100QF
	125		43	87.5	9200	16000	CC 20 SRC 120 QF 0125	S079458	D120SC20C125QF
	160		49	99	19200	33200	CC 20 SRC 120 QF 0160	T079459	D120SC20C160QF
	200		49.5	101	45000	78500	CC 20 SRC 120 QF 0200	V079460	D120SC20C200QF
	215		52	106	55000	95000	CC 20 SRC 120 QF 0215	W079461	D120SC20C215QF

Microswitch: MCR 3E 1-5N BS Ref. Number : G310023

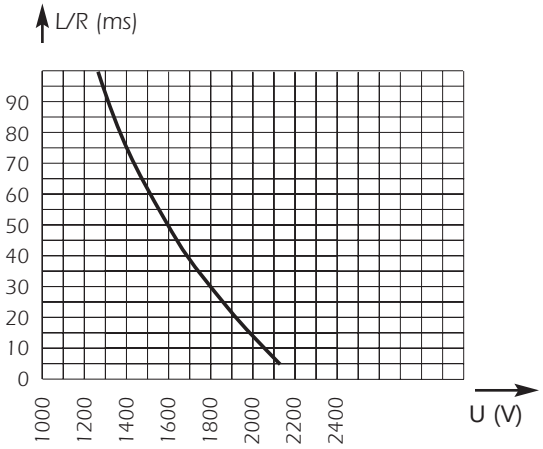
Pack: *1 piece*

DC Square-body Fuses
Sizes 120- 122 - 2x122
SR 2000V DC

Size 120
SRC from 20 to 215 A

Electrical characteristics

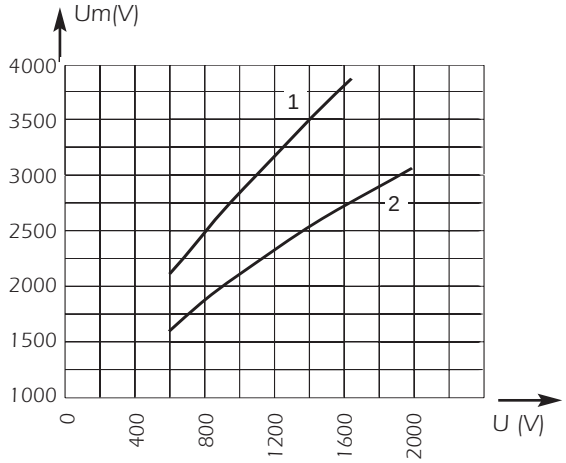
DC applications data



Above: Curve indicates the maximum permissible value of time constant L/R as a function of the DC working voltage

Max. AC voltage (50/60 Hz):
1500 V with breaking capacity of 100 kA

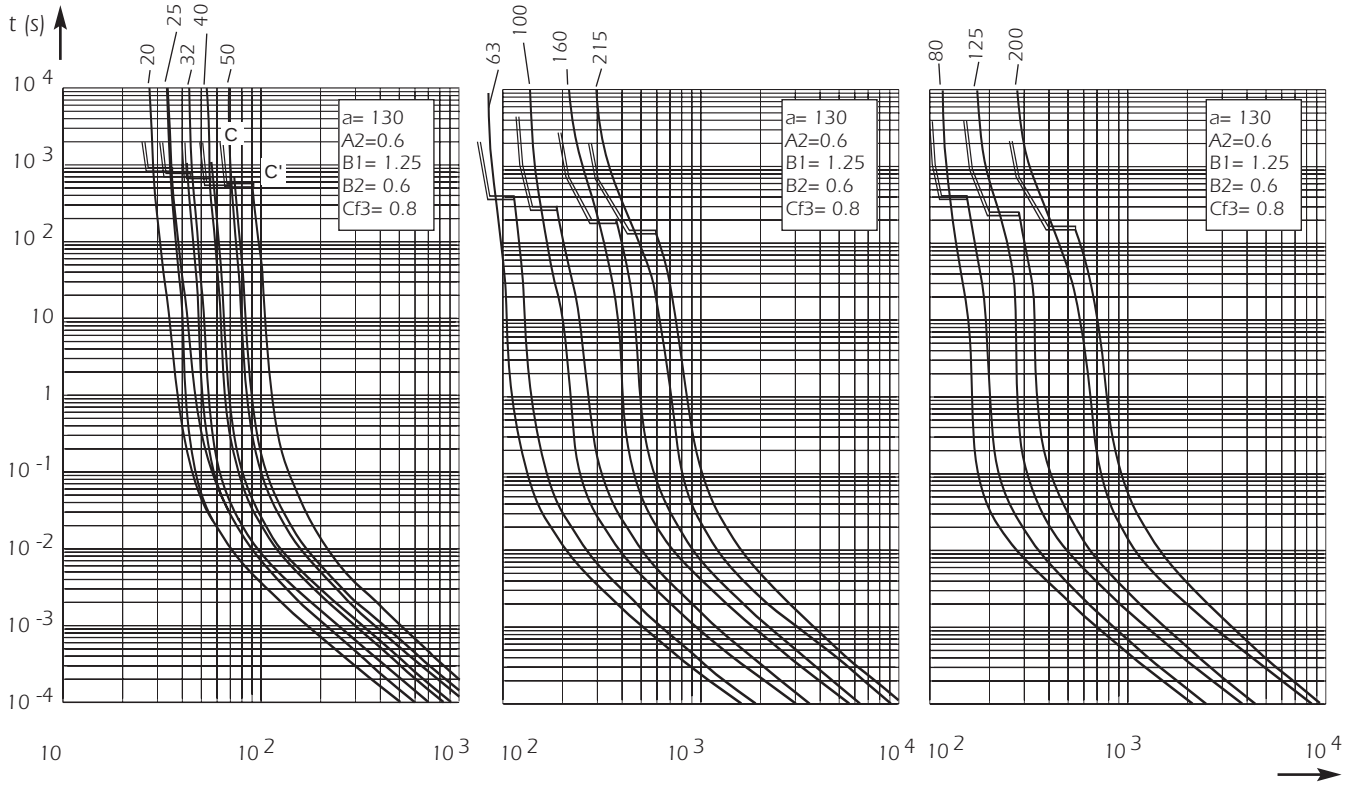
Peak arc voltage vs. working voltage



1 : L/R = 45 ms
2 : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across the fuse terminals, vs. DC working voltage

Time vs. current characteristics

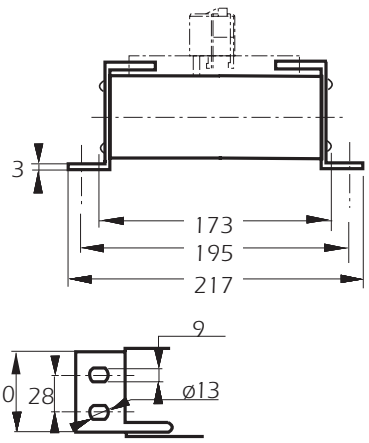


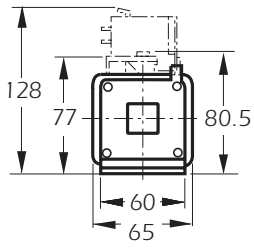
Above, left to right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

DC Square-body Fuses
Sizes 120- 122 - 2x122
SR 2000V DC

Size 122
SRD from 160 to 400 A

Dimensions







Weight : 1810 g

Main Characteristics

Size	Current rating I_N (A)	Breaking capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 1600 V L/R = 15 ms (A^2S)	Max. I^2t @ 1600 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
		@ 1800 V DC							
	60	100 kA	52.5	100	15000	25000	CC 20 SRD 122 QF 0160	D076639	D122SD20C160QF
	200	L/R = 30 ms	61.5	118	26000	44000	CC 20 SRD 122 QF 0200	X079462	D122SD20C200QF
122	250	@ 2000 V	69	131	50000	87000	CC 20 SRD 122 QF 0250	Y079463	D122SD20C250QF
	315	DC	74	150	117000	200000	CC 20 SRD 122 QF 0315	Z079464	D122SD20C315QF
	400	100k A	87	175	219000	380000	CC 20 SRD 122 QF 0400	A079465	D122SD20C400QF
		L/R = 15 ms							

Microswitch: MCR 3E 1-5N BS Ref. Number : G310023

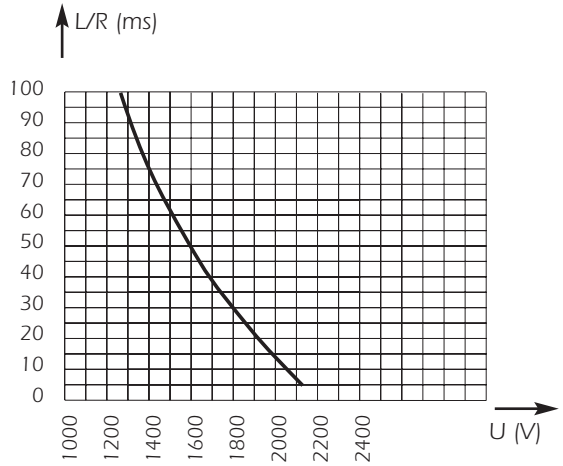
Pack: *1 piece*

DC Square-body Fuses
Sizes 120- 122 - 2x122
SR 2000V DC

Size 122
SRD from 160 to 400 A

Electrical characteristics

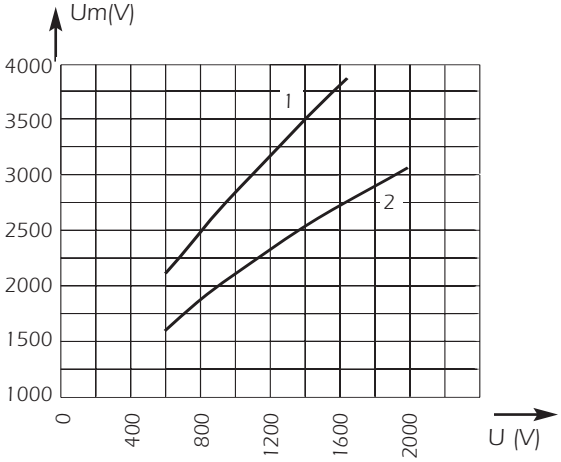
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1500 V with breaking capacity of 100 kA

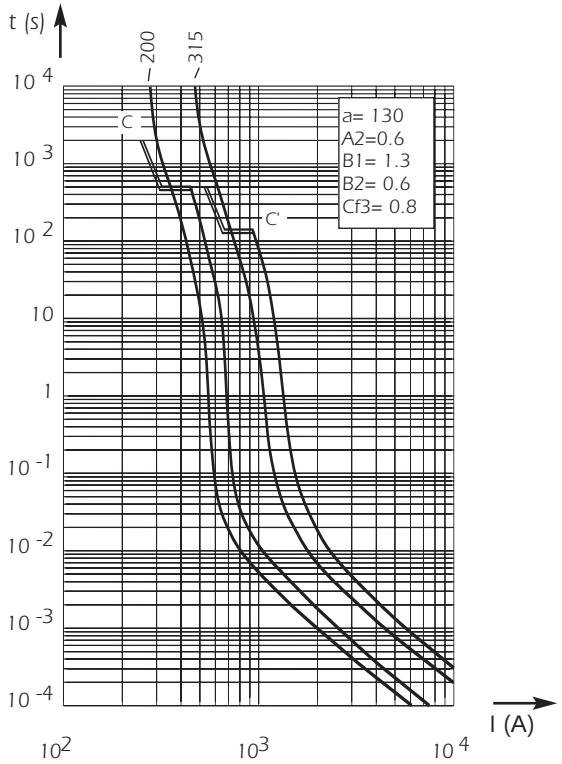
Peak arc voltage vs. working voltage

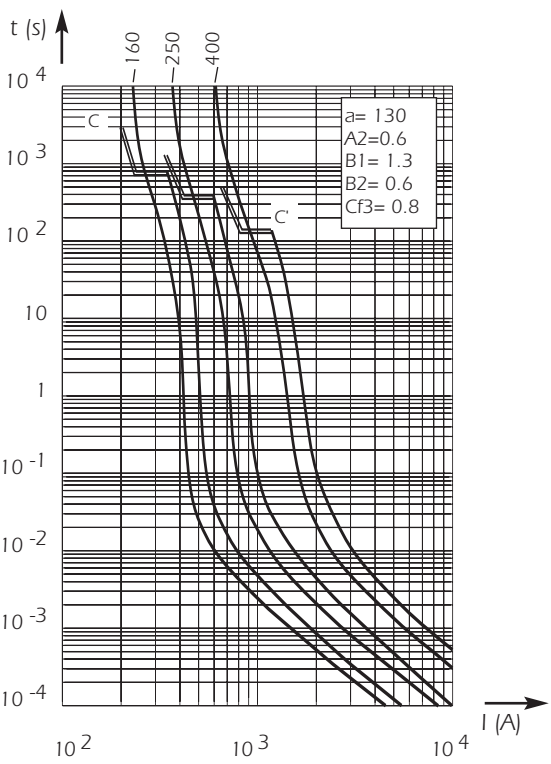


1 : L/R = 45 ms
2 : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



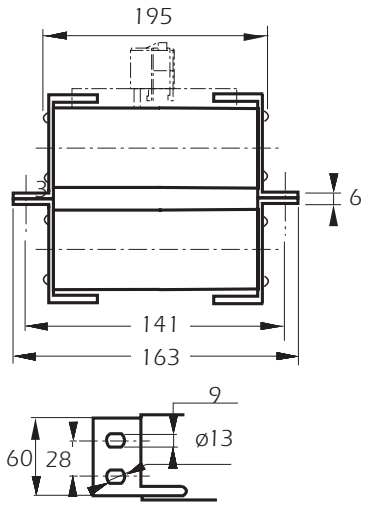


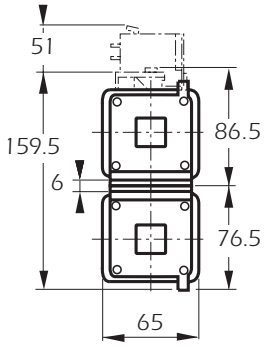
Above, left and right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 120- 122 - 2x122
SR 2000V DC

Size 2x122
SRD from 500 to 800 A

Dimensions





Weight : 3350 g



Main Characteristics

Size	Current rating I_N (A)	Breaking capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 1600 V L/R = 15 ms (A^2S)	Max. I^2t @ 1600 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
2x122	500	@ 1800 V DC 100 kA L/R = 30 ms @ 2000 V DC 100k A L/R = 15 ms	145	274	200000	348000	CC 20 SRD 2122 QF 500	E076640	D2122SD20C500QF
	630		155	314	468000	800000	CC 20 SRD 2122 QF 630	F076641	D2122SD20C630QF
	800		182	367	876000	1.520000	CC 20 SRD 2122 QF 800	V096066	D2122SD20C800QF

Microswitch: MCR 3E 1-5N BS Ref. Number : G310023

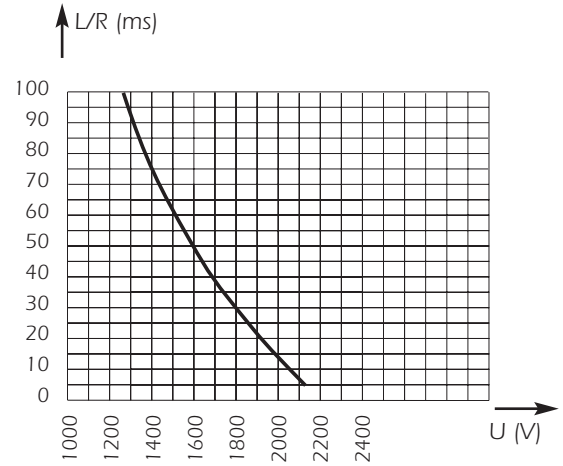
Pack: *1 piece*

DC Square-body Fuses
Sizes 120- 122 - 2x122
SR 2000V DC

Size 2x122
SRD from 500 to 800 A

Electrical characteristics

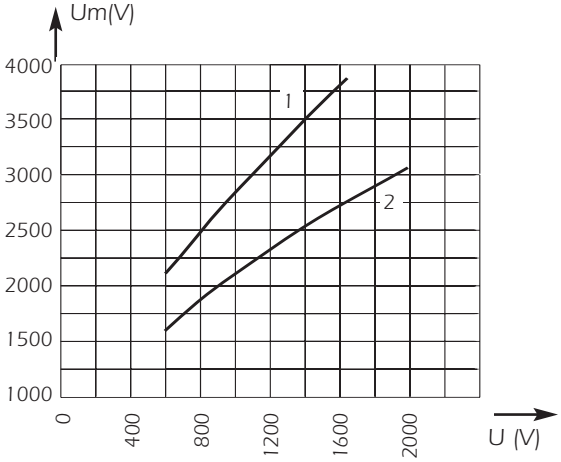
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1500 V with breaking capacity of 100 kA

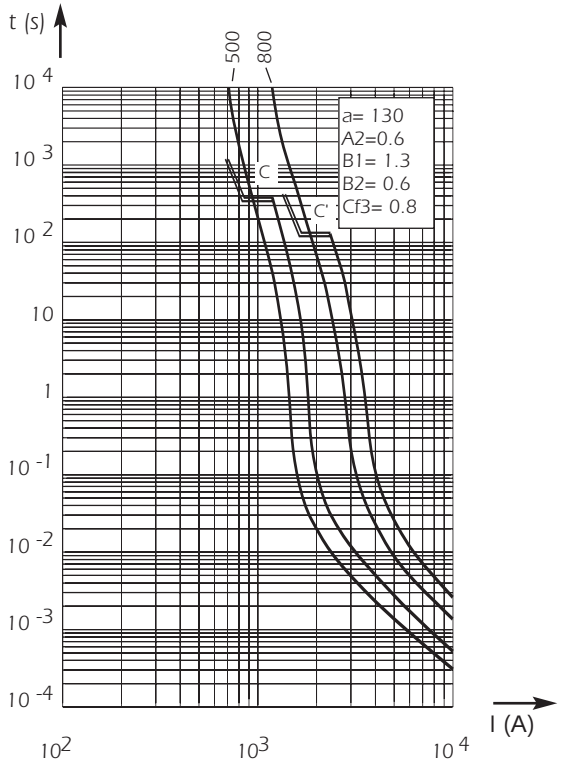
Peak arc voltage vs. working voltage

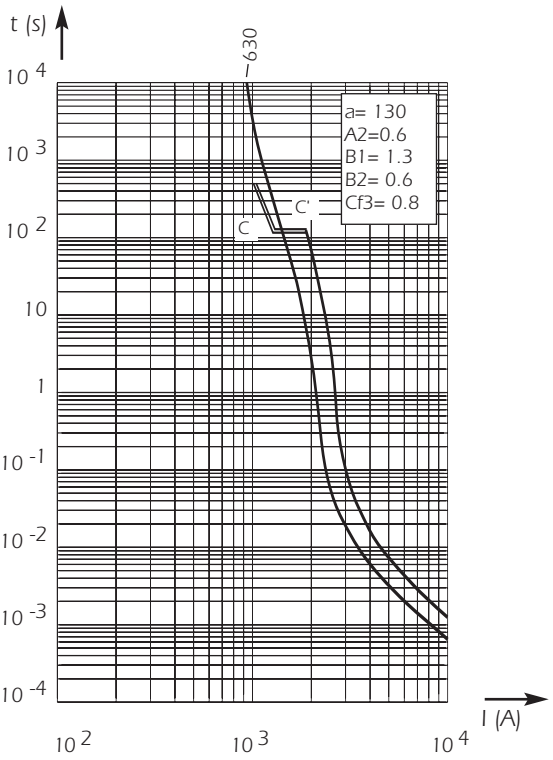


1 : L/R = 45 ms
2 : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



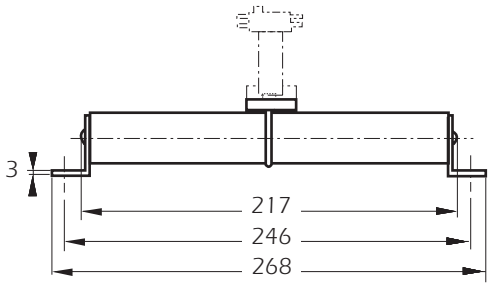


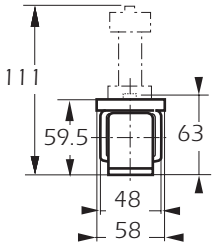
Above, left and right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 300 - 302 - 2x302
gR Brackets size 300 - 1750 to 2000V DC

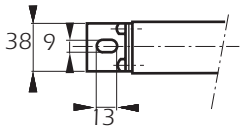
gRC-gRE from 6 to 125 A

Dimensions









Weight: 1150 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Ref. Number	Catalog Number
300	6	@ 1750 V DC 30 kA L/R = 30 ms	3.4	6	CC 17,5 gRC 300 QF 0006	P083733	D300GC17C6QF
	8		4.4	8	CC 17,5 gRC 300 QF 0008	Q083734	D300GC17C8QF
	10		5.8	10.6	CC 17,5 gRC 300 QF 0010	M089435	D300GC17C10QF
	12		6	11	CC 17,5 gRC 300 QF 0012	R087898	D300GC17C12QF
	16		6.7	12	CC 17,5 gRC 300 QF 0016	N089436	D300GC17C16QF
	20	@ 2000 V DC 30 kA L/R = 30 ms	7.9	14	CC 20 gRC 300 QF 0020	R086932	D300GC20C20QF
	25		10	18	CC 20 gRC 300 QF 0025	S086933	D300GC20C25QF
	32		13.5	24	CC 20 gRC 300 QF 0032	T086934	D300GC20C32QF
	40		16	29	CC 20 gRC 300 QF 0040	V086935	D300GC20C40QF
	50		19	34	CC 20 gRC 300 QF 0050	W086936	D300GC20C50QF
	63		23.5	42.5	CC 20 gRC 300 QF 0063	X086937	D300GC20C63QF
	80		28.5	51.5	CC 20 gRC 300 QF 0080	Y086938	D300GC20C80QF
	80	@ 2000 V DC 30 kA L/R = 14 ms	22	40	CC 20 gRE 300 QF 0080	P075752	D300GE20C80QF
	100		28	50	CC 20 gRE 300 QF 0100	Q075753	D300GE20C100QF
	125	@ 1800 V= 100 kA L/R = 20 ms	30	55	CC 20 gRE 300 QF 0125	R075754	D300GE20C125QF

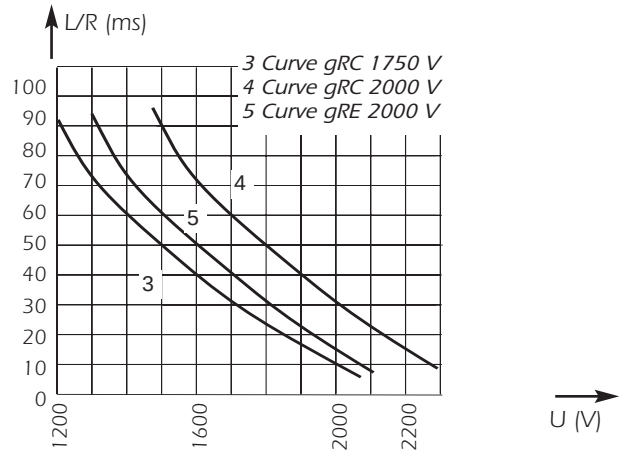
Microswitch: MC R 3E 1-5N Ref. Number: G310023

Pack: *1 piece*

DC Square-body Fuses
Sizes 300 - 302 - 2x302
gR Brackets size 300 - 1750 to 2000V DC

gRC-gRE from 6 to 125 A

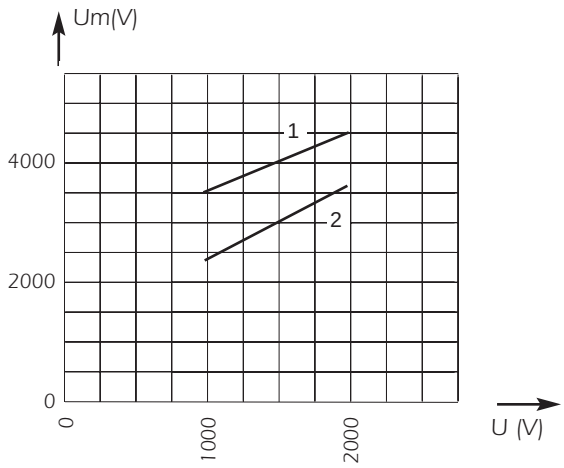
Electrical characteristics
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1,700 V with breaking capacity of 80 kA

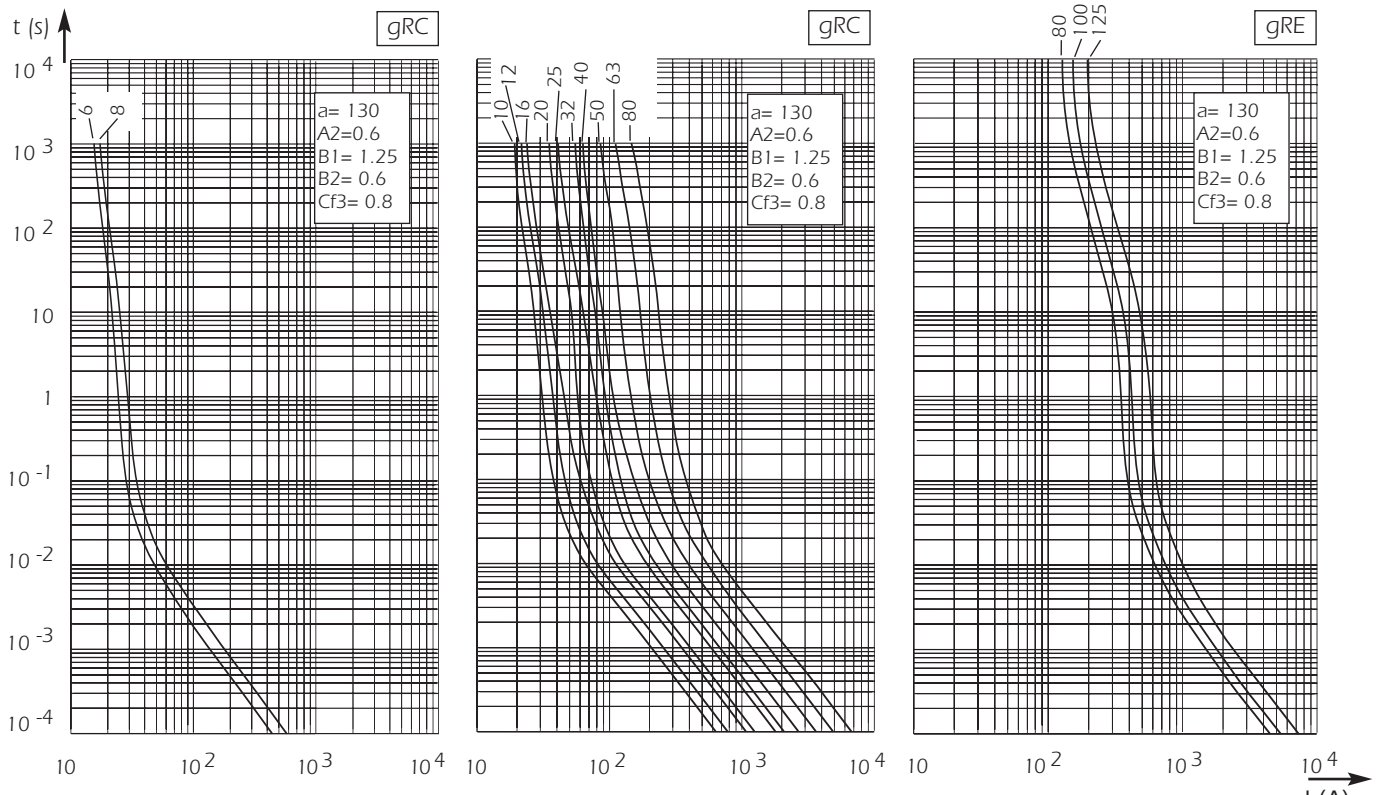
Peak arc voltage
vs. working voltage



1 Curve gRC : L/R = 30 ms
2 Curve gRE : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



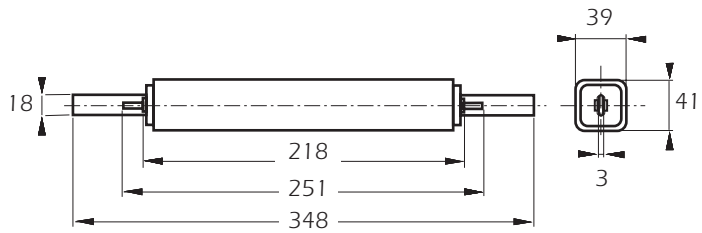
Above, left to right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

± 10% tolerance for mean pre-arcing current

DC Square-body Fuses
Sizes 300 - 302 - 2x302
gR Blades size 300 - 1750 to 2000V DC

Size 300
gRC from 10 to 80 A

Dimensions





Weigth: 1050 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Ref. Number	Catalog Number
300	10	@ 1750 V DC	5.8	10.6	CC 17000 CV3 gRC 300PSP 10	Y088870	D 300 GC 17C 10P
	12	30 kA	6	11	CC 17000 CV3 gRC 300PSP 12	X081026	D 300 GC 17C 12P
	16	L/R = 30 ms	6.7	12	CC 17000 CV3 gRC 300PSP 16	L086996	D 300 GC 17C 16P
	20		7.9	14	CC 20000 CV3 gRC 300PSP 20	K086995	D 300 GC 20C 20P
	25		10	18	CC 20000 CV3 gRC 300PSP 25	Q081894	D 300 GC 20C 25P
	32	@ 2000 V DC	13.5	24	CC 20000 CV3 gRC 300PSP 32	J086994	D 300 GC 20C 32P
	40	30 kA	16	29	CC 20000 CV3 gRC 300PSP 40	M086997	D 300 GC 20C 40P
	50	L/R = 30 ms	19	34	CC 20000 CV3 gRC 300PSP 50	G086992	D 300 GC 20C 50P
	63		23.5	42.5	CC 20000 CV3 gRC 300PSP 63	F086991	D 300 GC 20C 63P
	80		28.5	51.5	CC 20000 CV3 gRC 300PSP 80	E086990	D 300 GC 20C 80P

Pack: *1 piece*

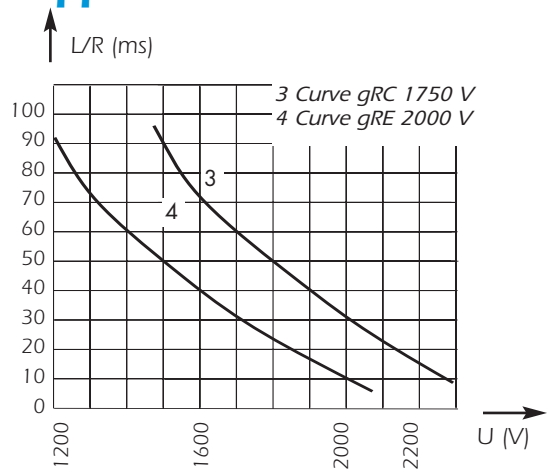
Microswitch MC 2R 3E 1-5N BS Reference number: J310025

DC Square-body Fuses
Sizes 300 - 302 - 2x302
gR Blades size 300 - 1750 to 2000V DC

Size 300
gRC-gRE from 200 to 560 A

Electrical characteristics

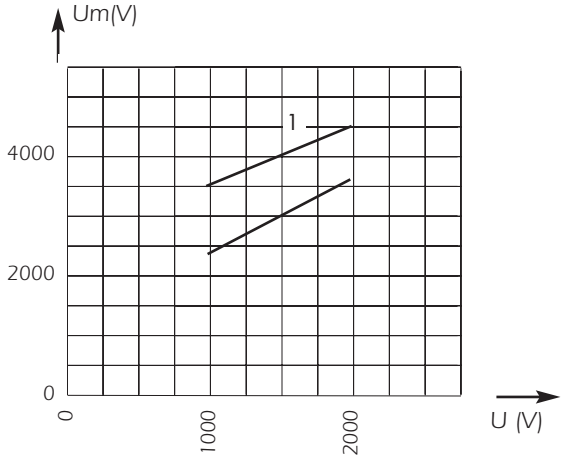
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1700 V with breaking capacity of 80 kA

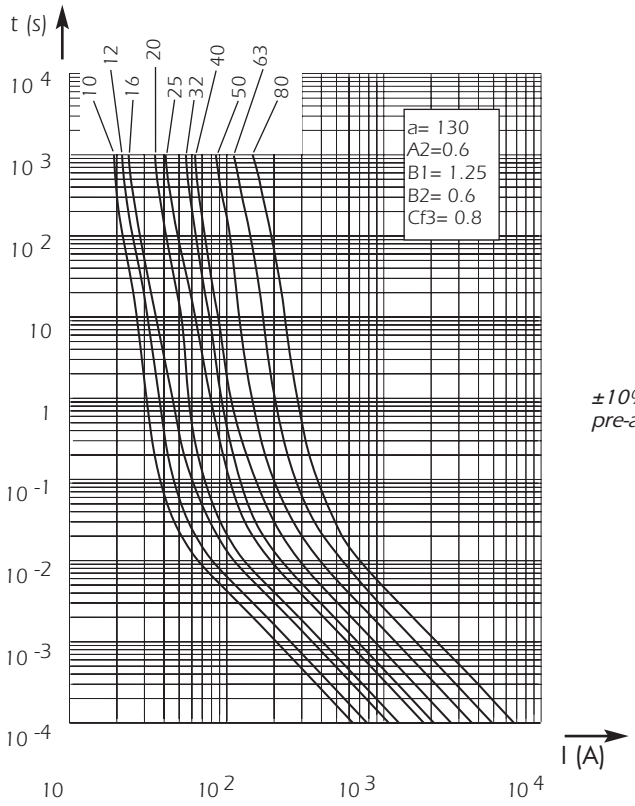
Peak arc voltage vs. working voltage



1 Curve gRC : L/R = 30 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across the fuse terminals, vs. DC working voltage

Time vs. current characteristics



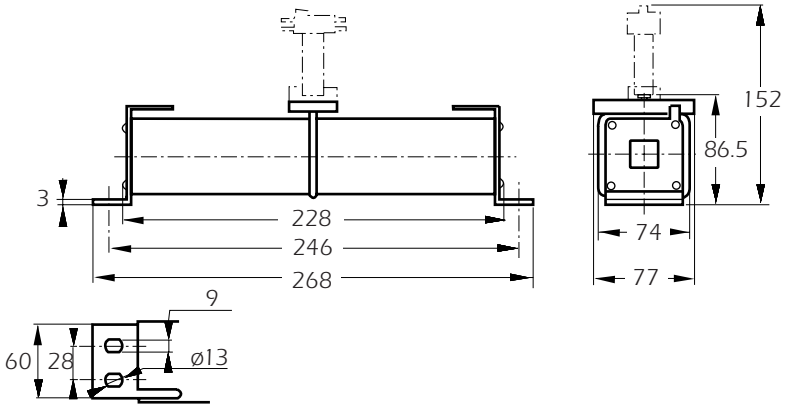
±10% tolerance for mean pre-arcing current

Above, left and right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

DC Square-body Fuses
Sizes 300 - 302 - 2x302
gR Brackets size 302 - 2000V DC

gRC-gRE from 100 to 280 A

Dimensions





Weigth: 2200 g

Main Characteristics

Size	Current rating I_N(A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Ref. Number	Catalog Number
	100	@ 2000 V DC	30	58.5	CC 20 gRC 302 QF 0100	N086929	D302GC20C100QF
	125	30 kA	37	72	CC 20 gRC 302 QF 0125	P086930	D302GC20C125QF
	160	L/R = 30 ms	47.5	93	CC 20 gRC 302 QF 0160	Q086931	D302GC20C160QF
302	160	@ 2000 V DC	42	70	CC 20 gRE 302 QF 0160	S075755	D302GE20C160QF
	200	30 kA	48	80	CC 20 gRE 302 QF 0200	T075756	D302GE20C200QF
	250	L/R = 14 ms	57	95	CC 20 gRE 302 QF 0250	V075757	D302GE20C250QF
	280	@ 1800 V DC	60	100	CC 20 gRE 302 QF 0280	W075758	D302GE20C280QF
		100 kA					
		L/R = 20 ms					

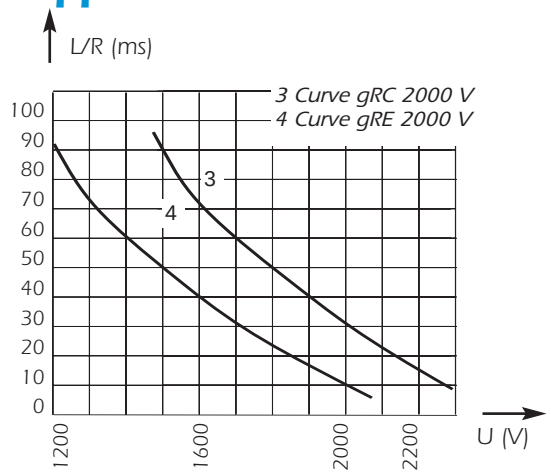
Microswitch MC 2R 3E 1-5N BS Reference number: J310025

DC Square-body Fuses
Sizes 300 - 302 - 2x302
gR Brackets size 302 - 2000V DC

gRC-gRE from 100 to 280 A

Electrical characteristics

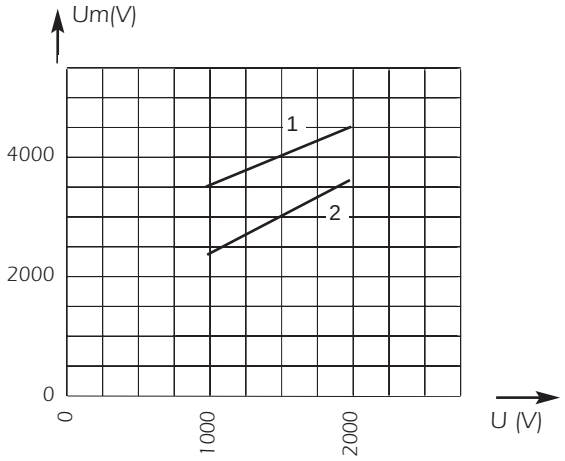
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1700 V with breaking capacity of 80 kA

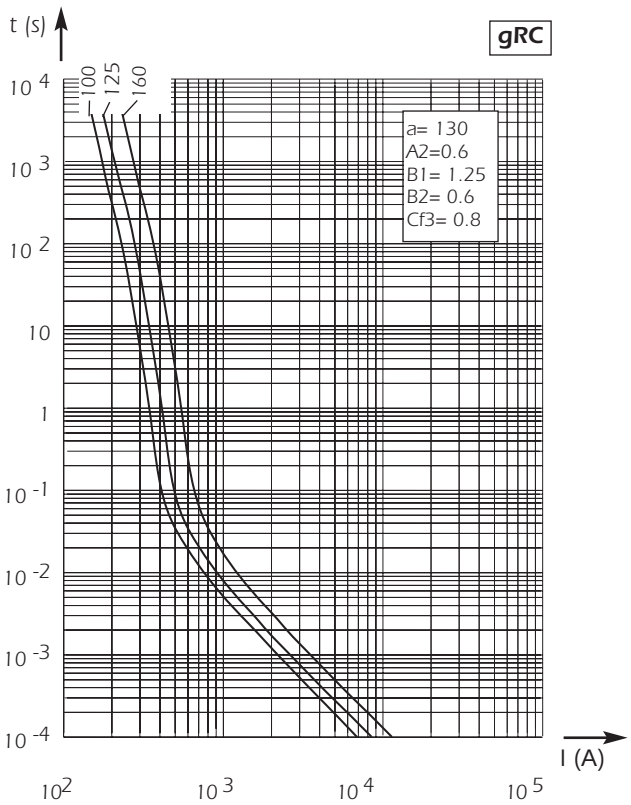
Peak arc voltage vs. working voltage



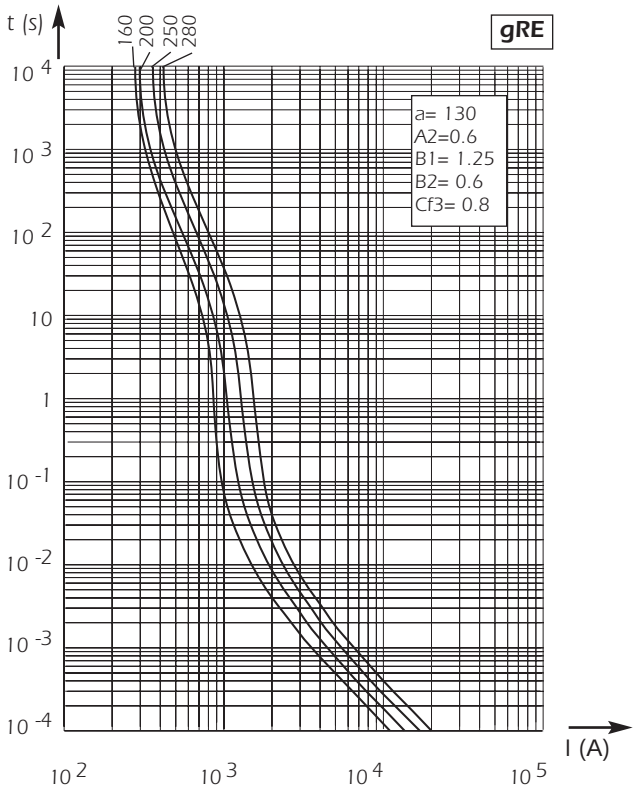
1 Curve gRC : L/R = 30 ms
2 Curve gRE : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across the fuse terminals, vs. DC working voltage

Time vs. current characteristics



Above, left and right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

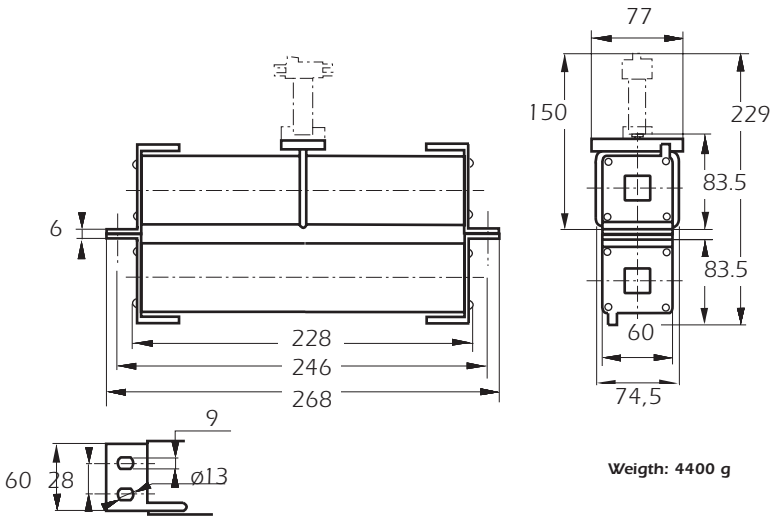


±10% tolerance for mean pre-arcing current

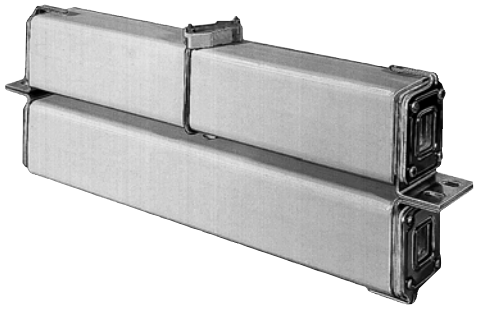
DC Square-body Fuses
Sizes 300 - 302 - 2x302
gR Blades size 2x302 - 2000V DC

gRC-gRE from 200 to 560 A

Dimensions



Weigth: 4400 g



Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Ref. Number	Catalog Number
2x302	200	@ 2000 V DC 30 kA L/R = 30 ms	60	117	CC 20 gRC 2302 QF 200	B079903	D2302GC20C200QF
	250		74	144	CC 20 gRC 2302 QF 250	C079904	D2302GC20C250QF
	315	@ 2000 V DC 30 kA L/R = 14 ms	84	140	CC 20 gRE 2302 QF 315	X075759	D2302GE20C315QF
	400		96	160	CC 20 gRE 2302 QF 400	Y075760	D2302GE20C400QF
	500		115	190	CC 20 gRE 2302 QF 500	Z075761	D2302GE20C500QF
	560	@ 1800 V DC 100 kA L/R = 20 ms	120	200	CC 20 gRE 2302 QF 560	A075762	D2302GE20C560QF

Pack: *1 piece*

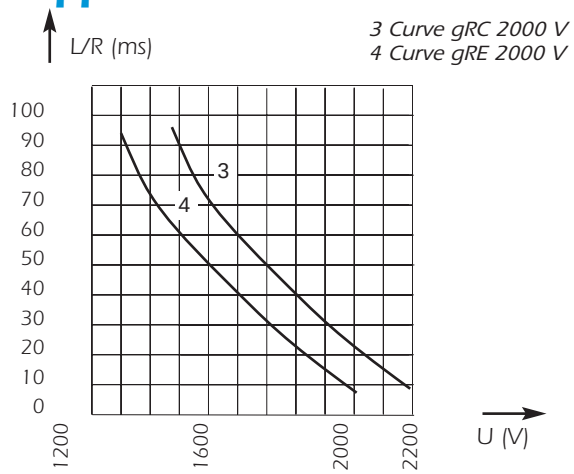
Microswitch MC 2R 3E 1-5N BS Reference number: J310025

DC Square-body Fuses
Sizes 300 - 302 - 2x302
gR Blades size 2x302 - 2000V DC

gRC-gRE from 200 to 560 A

Electrical characteristics

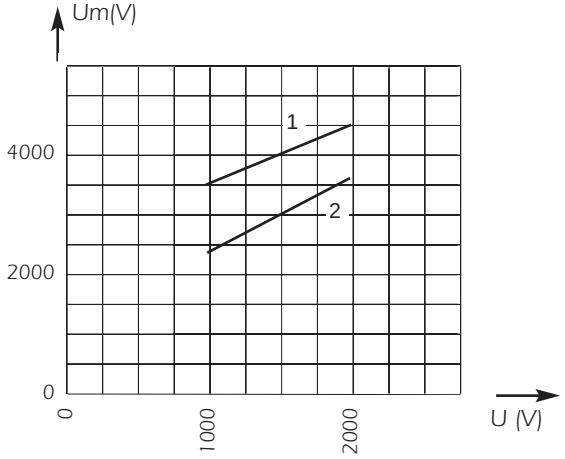
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
1700 V with breaking capacity of 80 kA

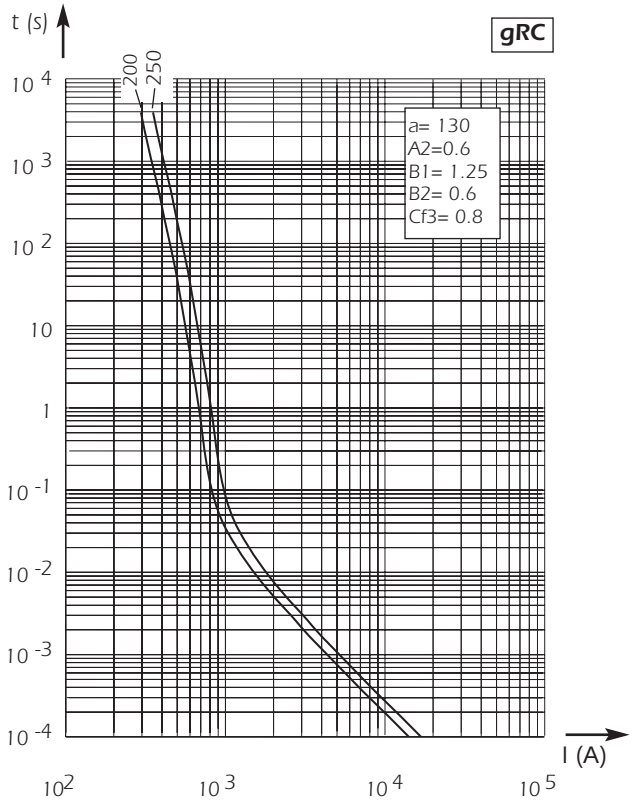
Peak arc voltage vs. working voltage



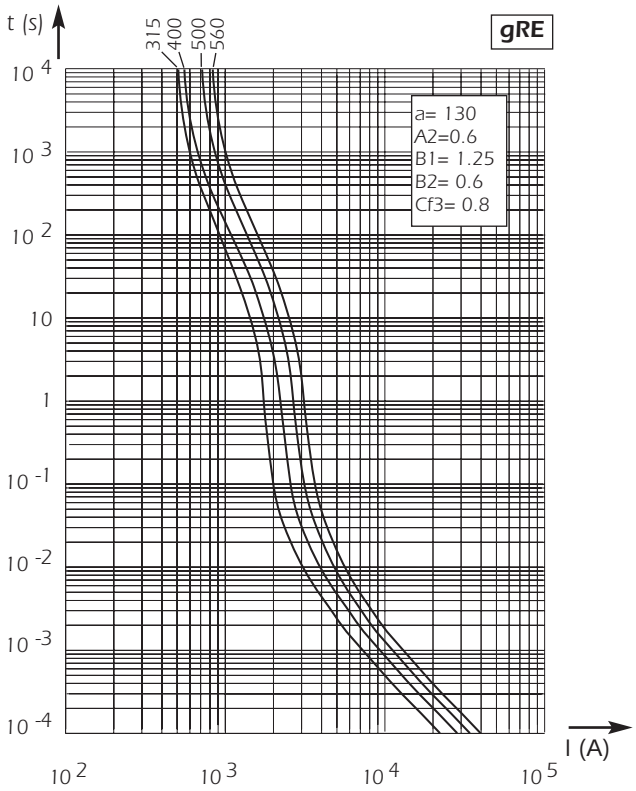
1 Curve gRC : L/R = 30 ms
2 Curve gRE : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across the fuse terminals, vs. DC working voltage

Time vs. current characteristics



Above, left and right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

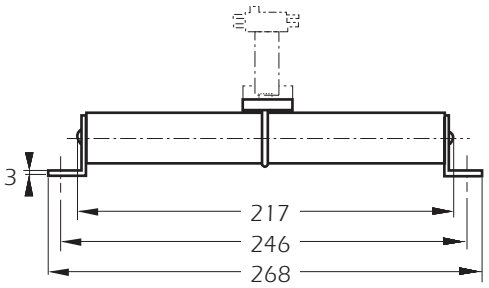


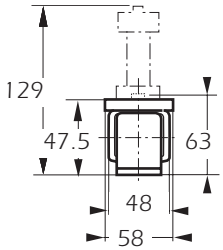
±10% tolerance for mean pre-arcing current

DC Square-body Fuses
Sizes 300 - 302 - 2x302
SR Brackets size 300 - 2400V DC

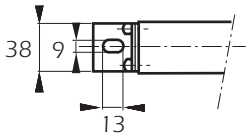
SRE from 20 to 180 A

Dimensions









Weight: 1150 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 2000 V L/R = 15 ms (A^2S)	Max. I^2t @ 2000 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
300	20	@ 2400 V DC 100 kA L/R = 15 ms @ 2000 V DC 100 kA L/R = 45 ms	18	36	150	260	CC 24 SRE 300 QF 0020	X075299	D300SE24C20QF
	25		21	42	260	460	CC 24 SRE 300 QF 0025	W075298	D300SE24C25QF
	32		22	43	310	540	CC 24 SRE 300 QF 0032	G079471	D300SE24C32QF
	40		26	51	530	920	CC 24 SRE 300 QF 0040	H079472	D300SE24C40QF
	50		32	62	750	1300	CC 24 SRE 300 QF 0050	J079473	D300SE24C50QF
	63		35	69	1650	2900	CC 24 SRE 300 QF 0063	K079474	D300SE24C63QF
	80		38	75	3700	6500	CC 24 SRE 300 QF 0080	L079475	D300SE24C80QF
	100		41	80	8000	14000	CC 24 SRE 300 QF 0100	M079476	D300SE24C100QF
	125		49	95	14000	25000	CC 24 SRE 300 QF 0125	N079477	D300SE24C125QF
	160		50	96	34000	60000	CC 24 SRE 300 QF 0160	P079478	D300SE24C160QF
	180		51	98	57000	100000	CC 24 SRE 300 QF 0180	Q079479	D300SE24C180QF

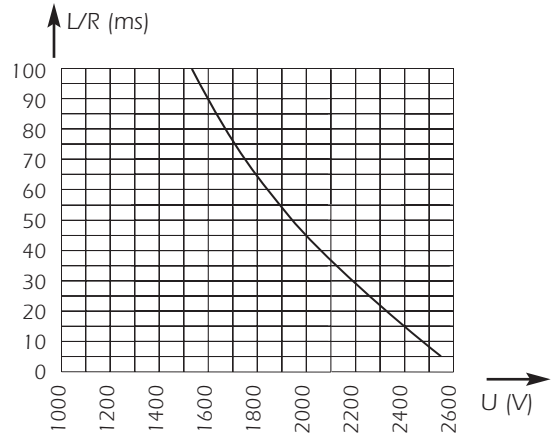
Pack: *1 piece*

Microswitch MC 2R 3E 1-5N BS Ref. Number: J310025

DC Square-body Fuses
Sizes 300 - 302 - 2x302
SR Brackets size 300 - 2400V DC

SRE from 20 to 180 A

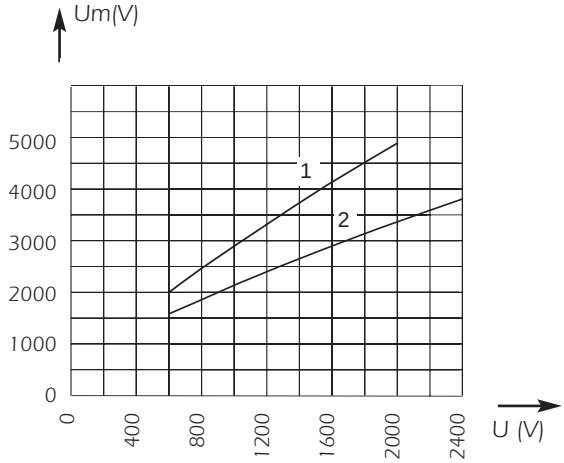
Electrical characteristics
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
2000 V with breaking capacity of 80 kA

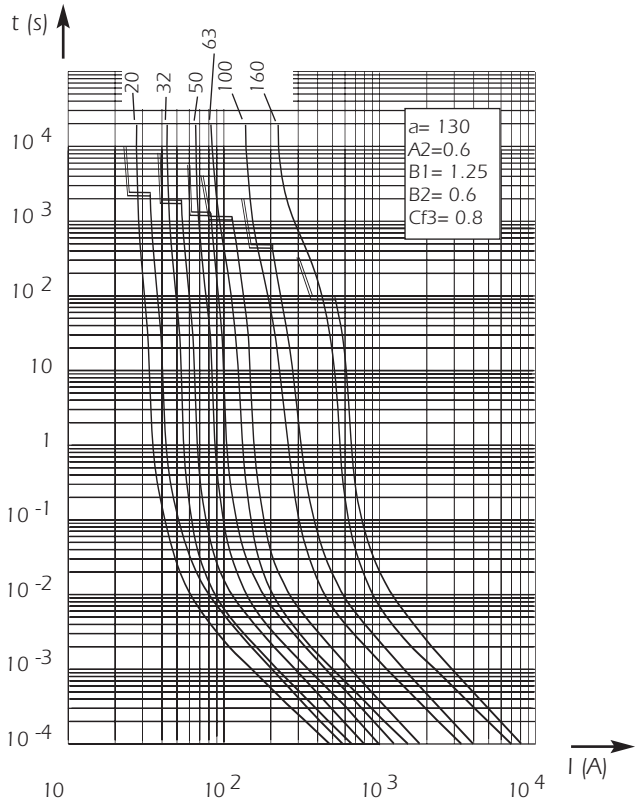
Peak arc voltage
vs. working voltage

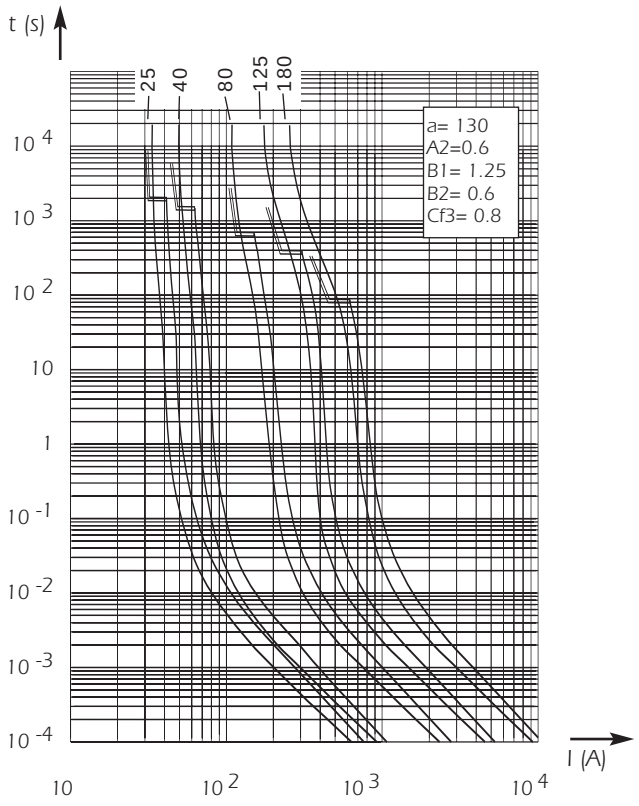


1 : L/R = 45 ms
2 : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



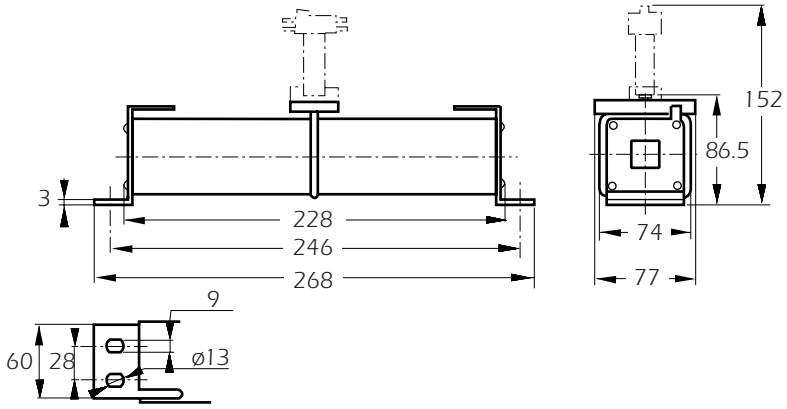


Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 300 - 302 - 2x302
SR Brackets size 302 - 2400V DC

SRD - SRF from 160 to 400 A

Dimensions





Weigth: 1830 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 2000 V L/R = 15 ms (A^2S)	Max. I^2t @ 2000 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
302	160	@ 2400 V DC	71	142	18,500	32,000	CC 24 SRD 302 QF 0160	J 076644	D302SD24C160QF
	200	100 kA	76	149	38,000	66,000	CC 24 SRD 302 QF 0200	R079480	D302SD24C200QF
	250	L/R = 15 ms	90	179	68,000	120,000	CC 24 SRD 302 QF 0250	S079481	D302SD24C250QF
	315		94	186	150,000	250,000	CC 24 SRD 302 QF 0315	T079482	D302SD24C315QF
	350	@ 2000 V DC	95	187	230,000	400,000	CC 24 SRD 302 QF 0350	V079483	D302SD24C350QF
	400	100 kA	96	188	195,000	325,000	CC 24 SRF 302 QF 0400	V075297	D302SF24C400QF
		L/R = 45 ms							

Microswitch MC 2R 3E 1-5N BS Ref. Number: J310025

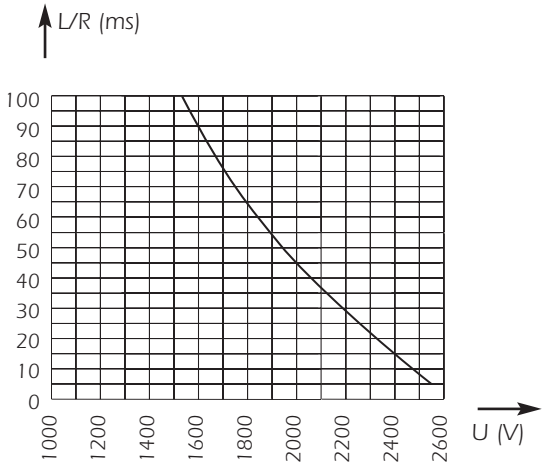
Pack: *1 piece*

DC Square-body Fuses
Sizes 300 - 302 - 2x302
SR Brackets size 302 - 2400V DC

SRD - SRF from 160 to 400 A

Electrical characteristics

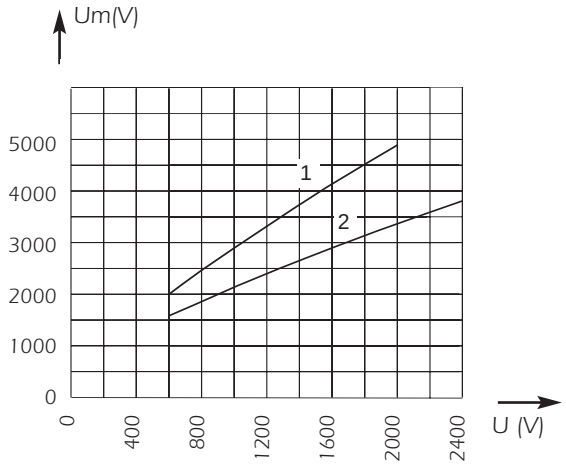
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
2000 V with breaking capacity of 80 kA

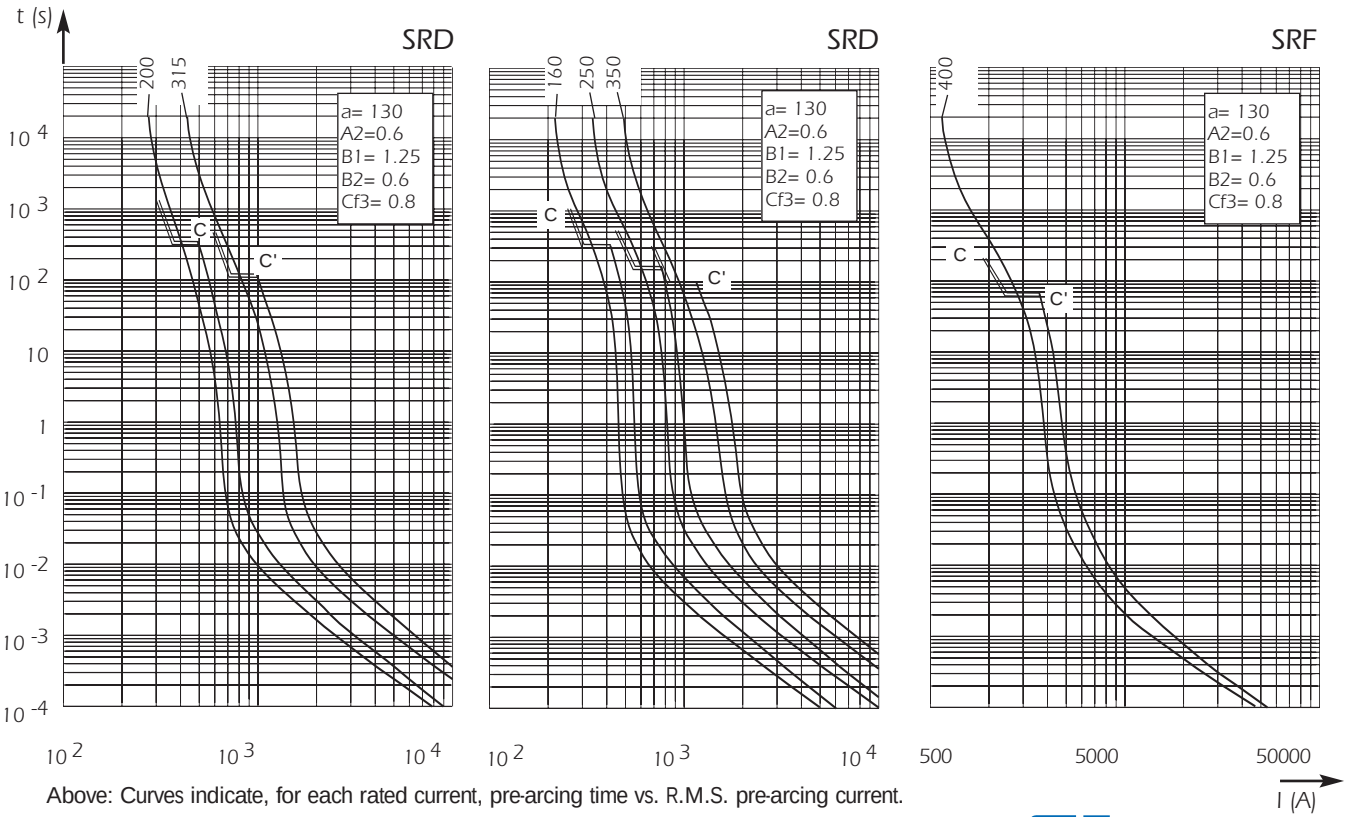
Peak arc voltage vs. working voltage



1 : L/R = 45 ms
2 : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics

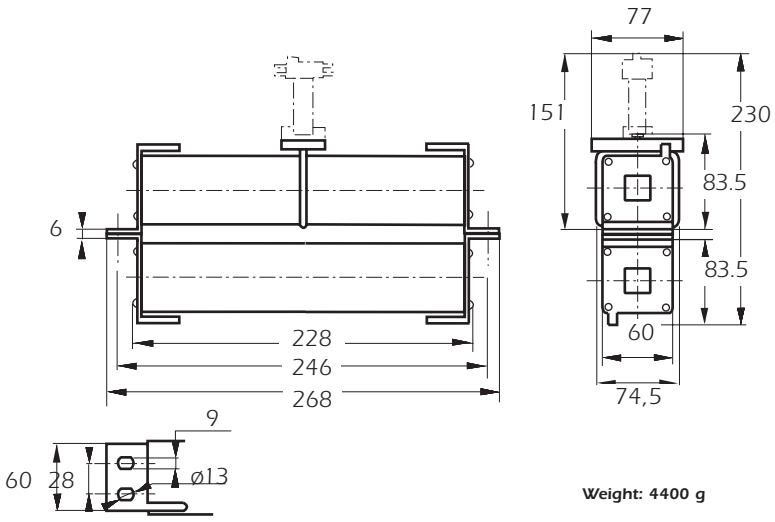


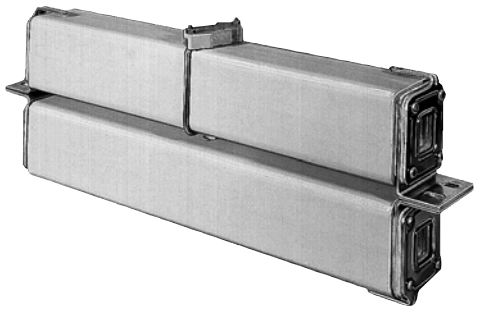
Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 300 - 302 - 2x302
SR size 2x302 - 2400V DC

SRD - SRF from 400 to 800 A

Dimensions





Weight: 4400 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 2000 V L/R = 15 ms (A^2S)	Max. I^2t @ 2000 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
2x302	400	@ 2400 V DC	160	313	155,000	265,000	CC 24 SRD 2302 QF 400	K084925	D2302SD24C400QF
	500	100 kA	189	376	275,000	480,000	CC 24 SRD 2302 QF 500	L084926	D2302SD24C500QF
	630	L/R = 15 ms	197	390	600,000	10^6	CC 24 SRD 2302 QF 630	M084927	D2302SD24C630QF
	700	@ 2000 V DC	200	393	920,000	1.6 10^6	CC 24 SRD 2302 QF 700	N084928	D2302SD24C700QF
	800	100 kA L/R = 45 ms	205	395	780,000	1.3 10^6	CC 24 SRF 2302 QF 800	T075296	D2302SF24C800QF

Microswitch MC 2R 3E 1-5N BS Ref. Number: J310025

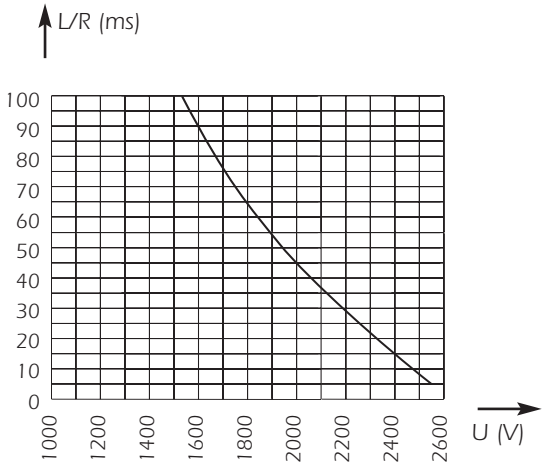
Pack: *1 piece*

DC Square-body Fuses
Sizes 300 - 302 - 2x302
SR size 2x302 - 2400V DC

SRD - SRF from 400 to 800 A

Electrical characteristics

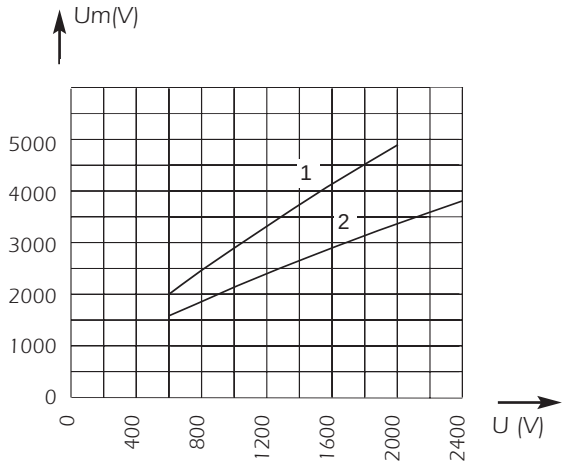
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
2000 V with breaking capacity of 80 kA

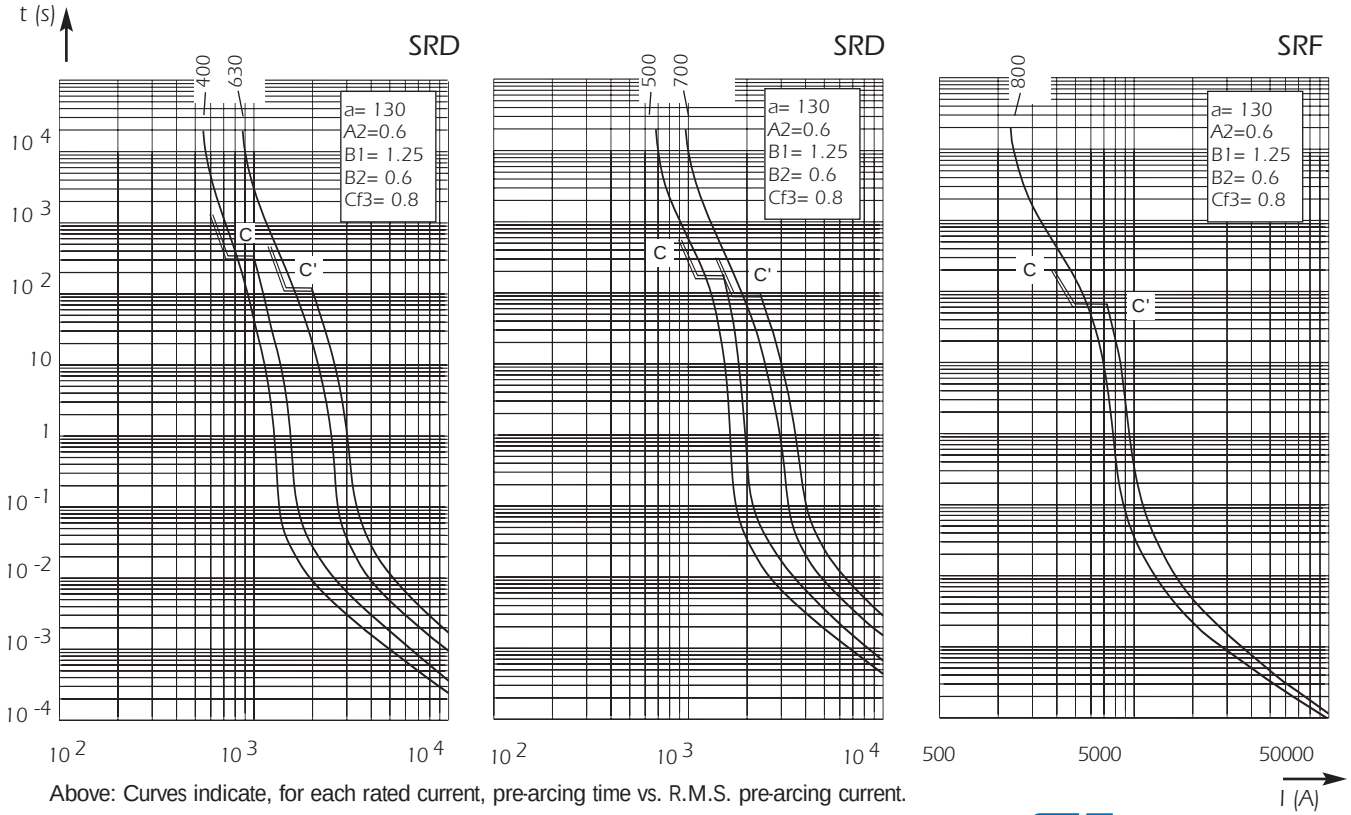
Peak arc voltage vs. working voltage



1 : L/R = 45 ms
2 : L/R = 15 ms

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics

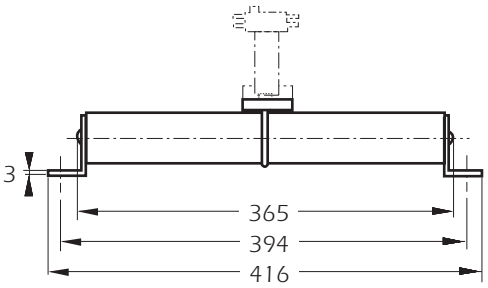


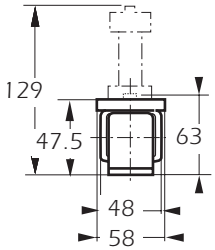
Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 600 - 602 - 2x602
gR Brackets size 600 - 3500 to 4000 V DC

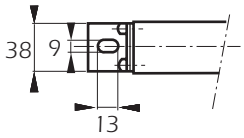
gRB-gRD from 6 to 125 A

Dimensions









Weight: 1920 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Ref. Number	Catalog Number
600	6	@ 3500 V DC 30 kA L/R = 30 ms	5.3	9.5	CC 35 gRB 600 QF 0006	S083736	D600GB35C6QF
	8		7	12.7	CC 35 gRB 600 QF 0008	R083735	D600GB35C8QF
	10		10.2	18.5	CC 35 gRB 600 QF 0010	N089390	D600GB35C10QF
	12		11	20	CC 35 gRB 600 QF 0012	V082220	D600GB35C12QF
	16		13.1	24	CC 35 gRB 600 QF 0016	P089391	D600GB35C16QF
	20		14	25.4	CC 35 gRB 600 QF 0020	Q089392	D600GB35C20QF
	25		18	32.5	CC 35 gRB 600 QF 0025	R089393	D600GB35C25QF
	32	@ 4000 V DC 30 kA L/R = 30 ms	25.5	46	CC 40 gRB 600 QF 0032	A086963	D600GB40C32QF
	40		35	63	CC 40 gRB 600 QF 0040	B086964	D600GB40C40QF
	50		29	52	CC 40 gRB 600 QF 0050	C086965	D600GB40C50QF
	63		42	76.5	CC 40 gRB 600 QF 0063	D086966	D600GB40C63QF
	80		51	92	CC 40 gRB 600 QF 0080	E086967	D600GB40C80QF
	80	@ 4000 V DC 30 kA L/R = 15 ms	39	67	CC 40 gRD 600 QF 0080	B075763	D600GD40C80QF
	100		50.5	88	CC 40 gRD 600 QF 0100	C075764	D600GD40C100QF
	125		63	110	CC 40 gRD 600 QF 0125	D075765	D600GD40C125QF

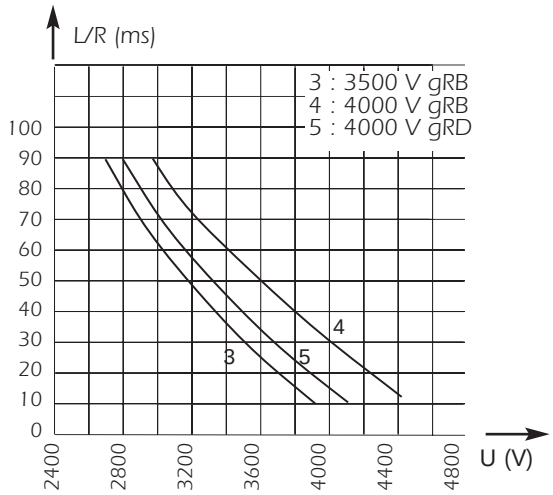
Pack: *1 piece*

Microswitch MC 2R 3E 1-5NBS Ref. Number: J310025

DC Square-body Fuses
Sizes 600 - 602 - 2x602
gR Brackets size 600 - 3500 to 4000 V DC

gRB-gRD from 6 to 125 A

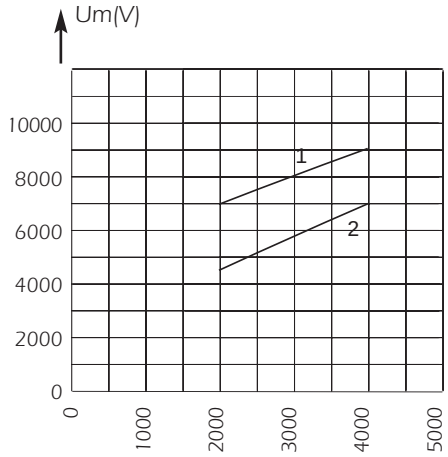
Electrical characteristics
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3600 V with breaking capacity of 30 kA

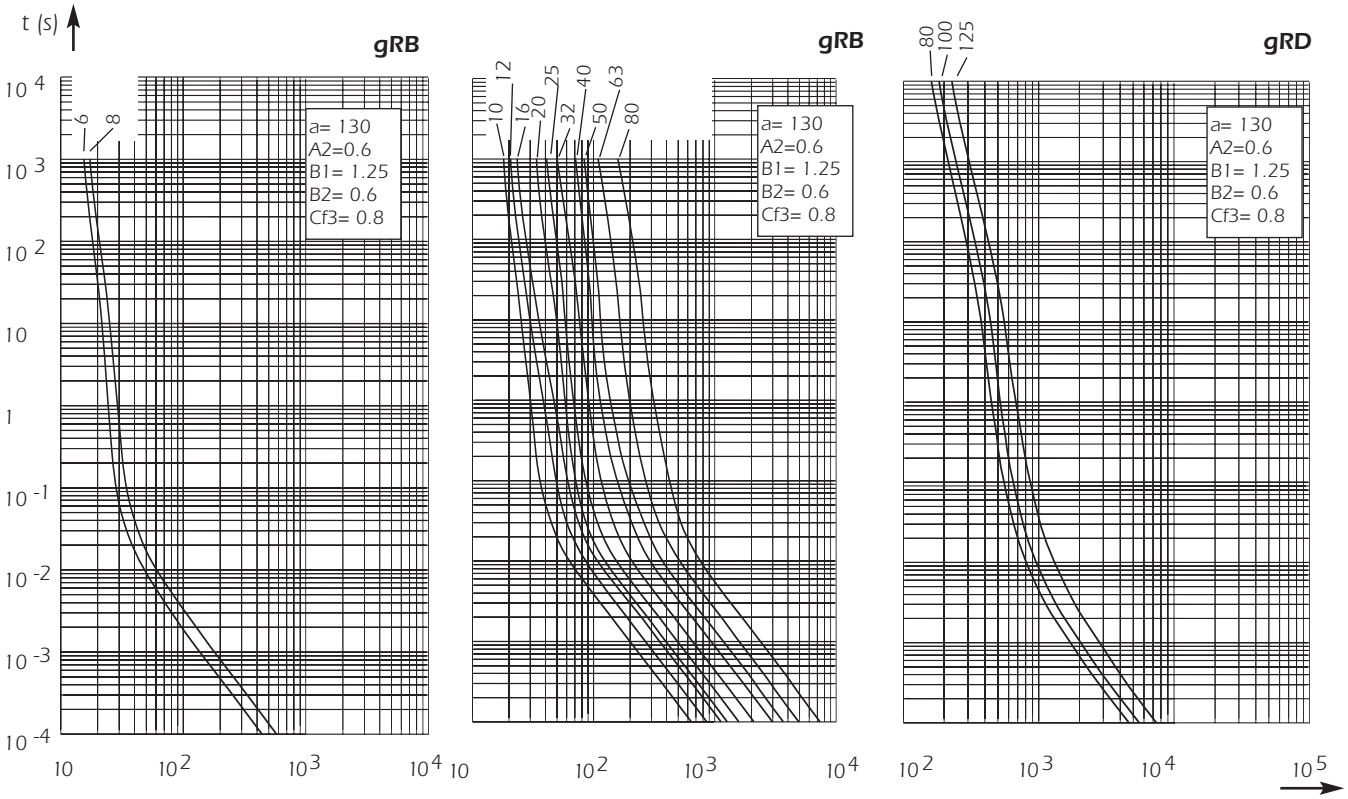
Peak arc voltage
vs. working voltage



1: L/R = 30 ms-3500-4000 V gRB
2: L/R = 15 ms 4000 V gRD

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



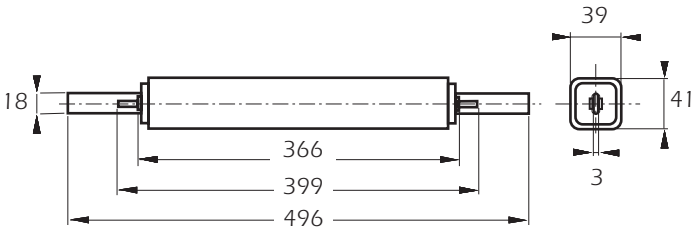
Above: Curves indicate, for each rated current, the pre-arcing time vs. the R.M.S. pre-arcing current.

± 10% tolerance for mean pre-arcing current

DC Square-body Fuses
Sizes 600 - 602 - 2x602
gR Blades size 600 - 3500 to 4000 V DC

gRB from 10 to 80 A

Dimensions





Weigth: 1424 g

Main Characteristics

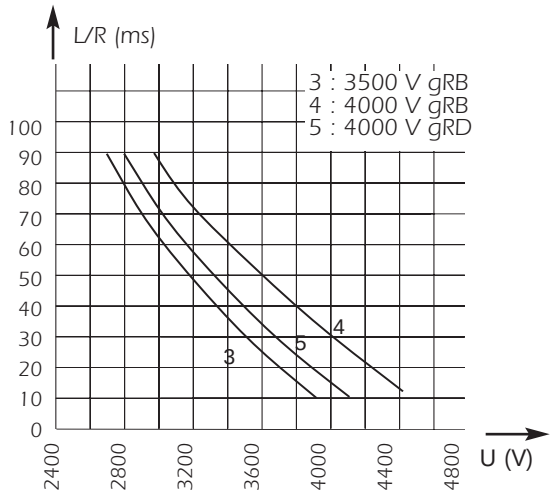
Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Ref. Number	Catalog Number
600	10	@ 3500 V DC 30 kA L/R = 30 ms	10.2	18.5	CC 35000 CV3 gRB 600 PSP 10	K088145	D 600 GB 35 C10 P
	12		11	20	CC 35000 CV3 gRB 600 PSP 12	T081023	D 600 GB 35 C12 P
	16		13.1	24	CC 35000 CV3 gRB 600 PSP 16	D086989	D 600 GB 35 C16 P
	20		14	25.4	CC 35000 CV3 gRB 600 PSP 20	N087481	D 600 GB 35 C20 P
	25		18	32.5	CC 35000 CV3 gRB 600 PSP 25	E086783	D 600 GB 35 C25 P
	32	@ 4000 V DC 30 kA L/R = 30 ms	25.5	46	CC 40000 CV3 gRB 600 PSP 32	A086986	D 600 GB 40 C32 P
	40		35	63	CC 40000 CV3 gRB 600 PSP 40	Z086985	D 600 GB 40 C40 P
	50		29	52	CC 40000 CV3 gRB 600 PSP 50	Y086984	D 600 GB 40 C50 P
	63		42	76.5	CC 40000 CV3 gRB 600 PSP 63	X086983	D 600 GB 40 C63 P
	80		51	92	CC 40000 CV3 gRB 600 PSP 80	W086982	D 600 GB 40 C80 P

Pack: *1 piece*

DC Square-body Fuses
Sizes 600 - 602 - 2x602
gR Blades size 600 - 3500 to 4000 V DC

gRB-gRD from 10 to 80 A

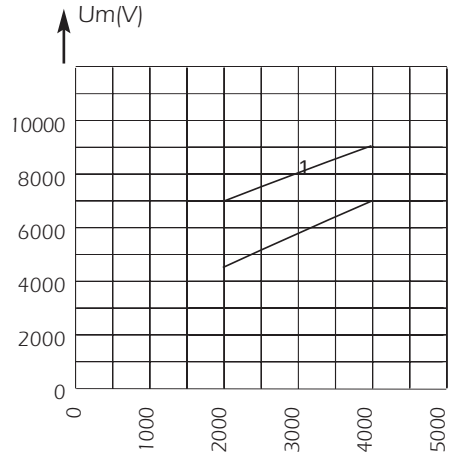
Electrical characteristics
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3600 V with breaking capacity of 30 kA

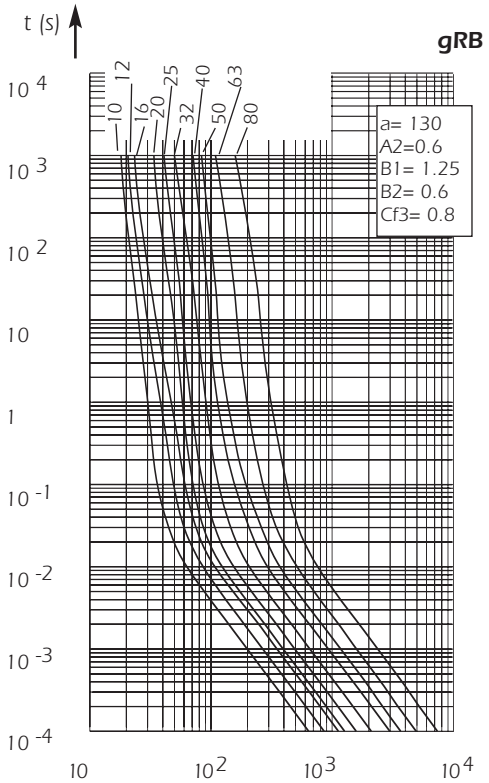
Peak arc voltage
vs. working voltage



1: L/R = 30 ms-3500-4000 V gRB
2: L/R = 15 ms 4000 V gRD

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



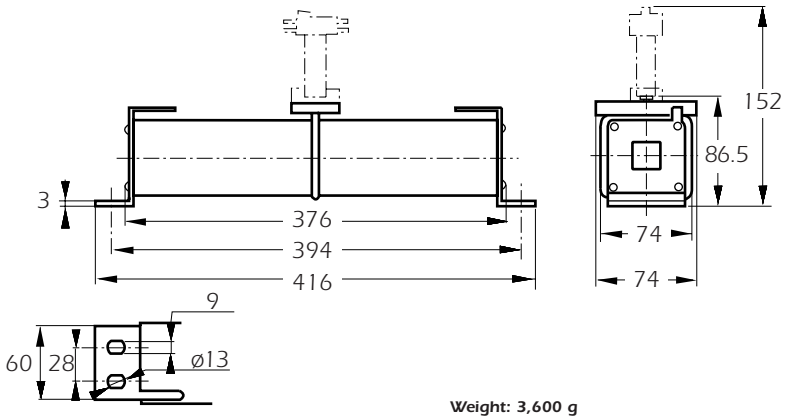
± 8% tolerance for mean pre-arcing current

Above: Curves indicate, for each rated current, the pre-arcing time vs. the R.M.S. pre-arcing current.

DC Square-body Fuses
Sizes 600 - 602 - 2x602
gR Brackets size 602 - 4000 V DC

gRB-gRD from 100 to 280 A

Dimensions





Weight: 3,600 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Ref. Number	Catalog Number
602	100	@ 4000 V DC	55.6	100.8	CC 40 gRB 602 QF 0100	V086958	D602GB40C100QF
	125	30 kA	72.4	131.1	CC 40 gRB 602 QF 0125	W086959	D602GB40C125QF
	160	L/R = 30 ms	84.8	153.6	CC 40 gRB 602 QF 0160	X086960	D602GB40C160QF
	160	@ 4000 V DC	58	101	CC 40 gRD 602 QF 0160	E075766	D602GD40C160QF
	200	30 kA	76.5	141	CC 40 gRD 602 QF 0200	F075767	D602GD40C200QF
	250	L/R = 15 ms	95	174	CC 40 gRD 602 QF 0250	G075768	D602GD40C250QF
	280		108	198	CC 40 gRD 602 QF 0280	H075769	D602GD40C280QF

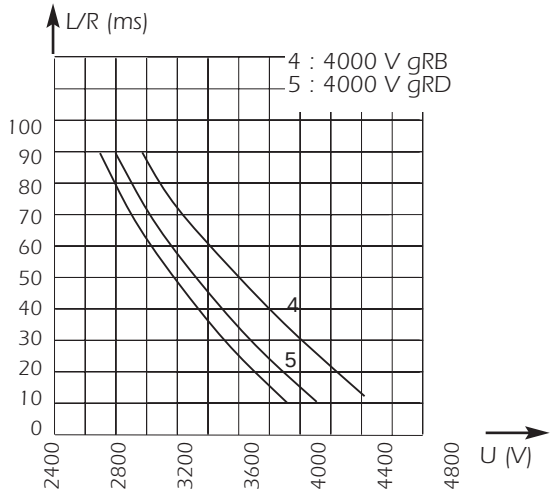
Pack: *1 piece*

Microswitch MC 2R 3E 1-5NBS Ref. Number: J310025

DC Square-body Fuses
Sizes 600 - 602 - 2x602
gR Brackets size 602 - 4000 V DC

gRB-gRD from 100 to 280 A

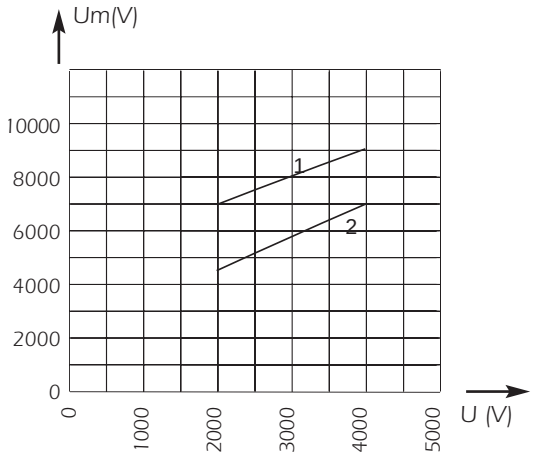
Electrical characteristics
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3600 V with breaking capacity of 30 kA

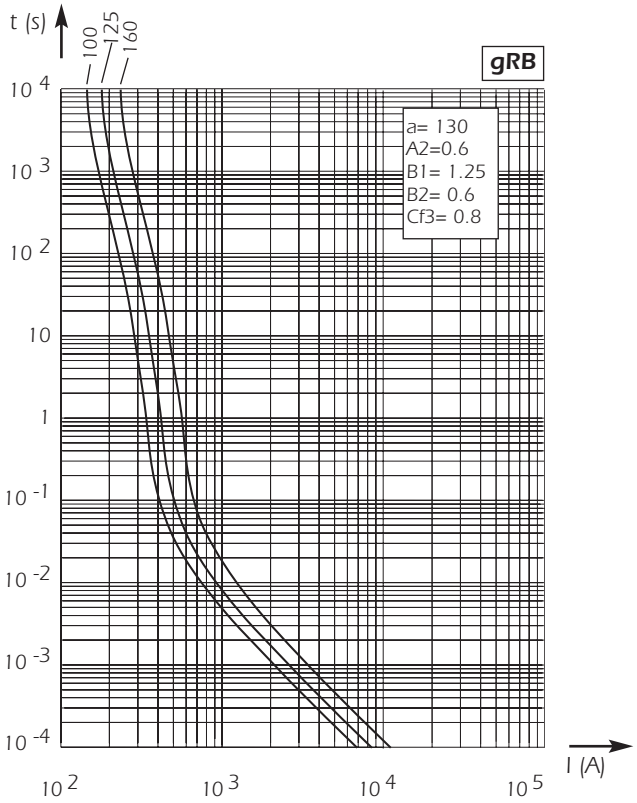
Peak arc voltage
vs. working voltage

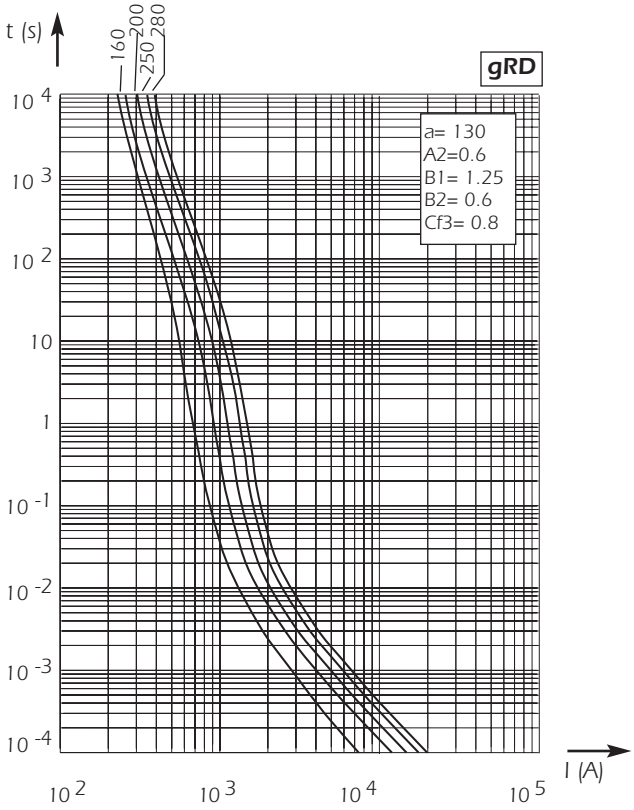


1 : L/R = 30 ms 4000 V gRB
2 : L/R = 15 ms 4000 V gRD

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics





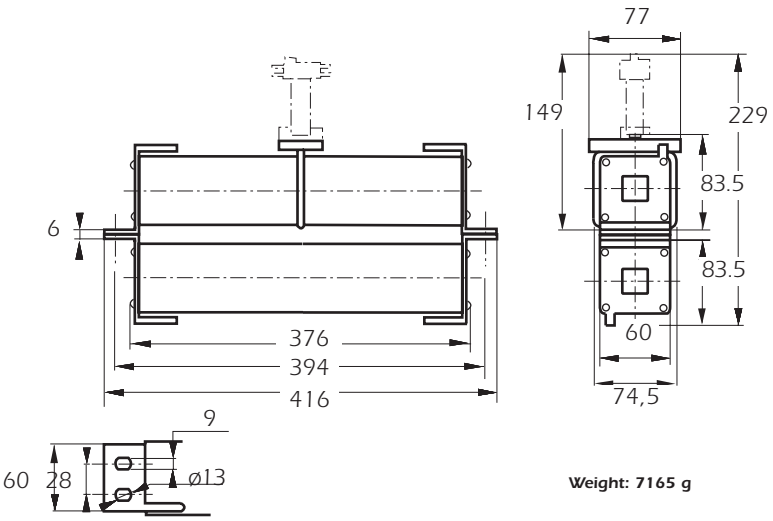
Above, left and right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

± 10% tolerance for mean pre-arcing current

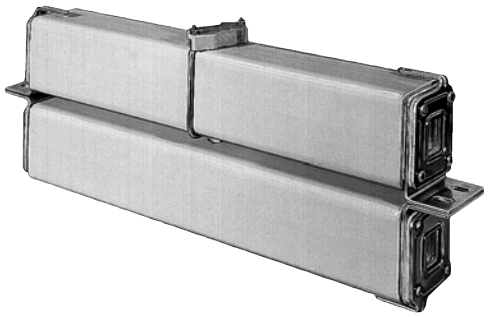
DC Square-body Fuses
Sizes 600 - 602 - 2x602
gR Brackets size 2x302 - 4000 V DC

gRB-gRD from 200 to 560 A

Dimensions



Weight: 7165 g



Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Designation	Ref. Number	Catalog Number
2x602	200	@ 4000 V DC	109	200	CC 40 gRB 2x602 QF 200M	R086955	D2602GB40C200QF
	250	30 kA	138	254	CC 40 gRB 2x602 QF 250M	S086956	D2602GB40C250QF
		L/R = 30 ms					
	315		126	231	CC 40 gRD 2x602 QF 315M	J075770	D2602GD40C315QF
	400	@ 4000 V DC	153	282	CC 40 gRD 2x602 QF 400M	K075771	D2602GD40C400QF
	500	30 kA	190	348	CC 40 gRD 2x602 QF 500M	L075772	D2602GD40C500QF
	560	L/R = 15 ms	216	396	CC 40 gRD 2x602 QF 560M	M075773	D2602GD40C560QF

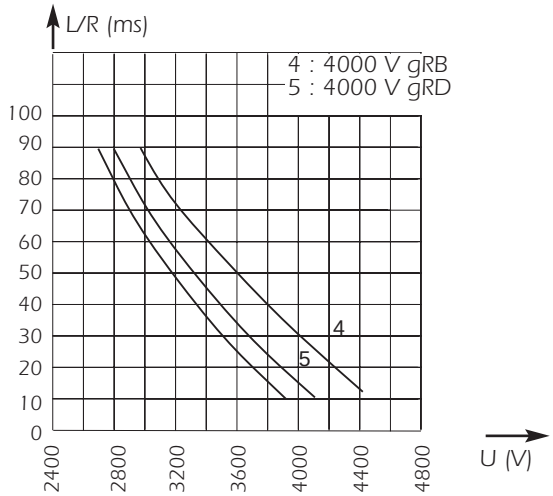
Pack: *1 piece*

Microswitch MC 2R 3E 1-5NBS Ref. Number: J310025

DC Square-body Fuses
Sizes 600 - 602 - 2x602
gR Brackets size 2x302 - 4000 V DC

gRB-gRD from 200 to 560 A

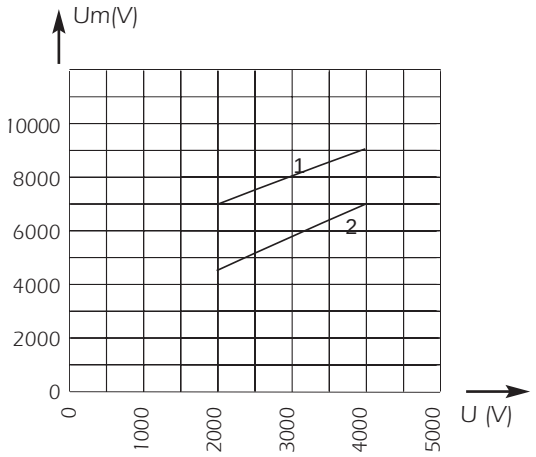
Electrical characteristics
DC applications data



Above: Curves indicate maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3600 V with breaking capacity of 30 kA

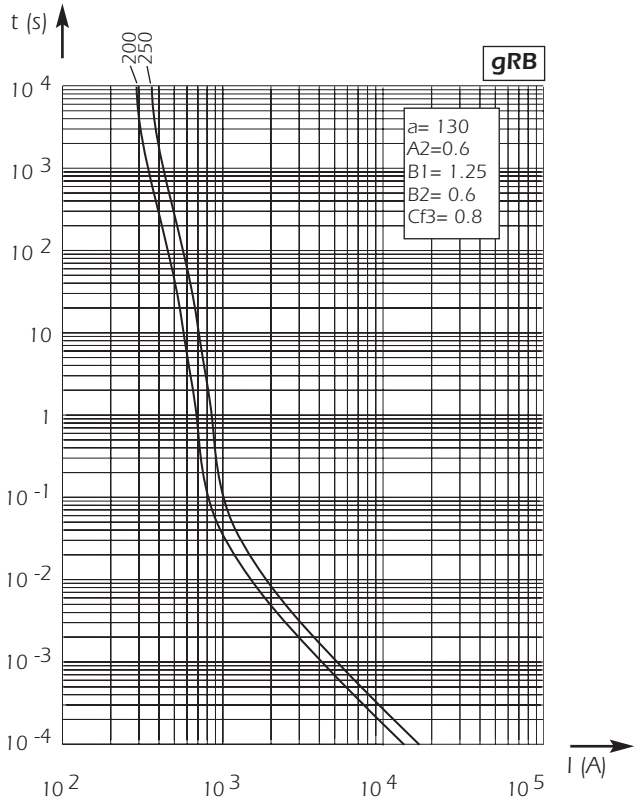
Peak arc voltage
vs. working voltage

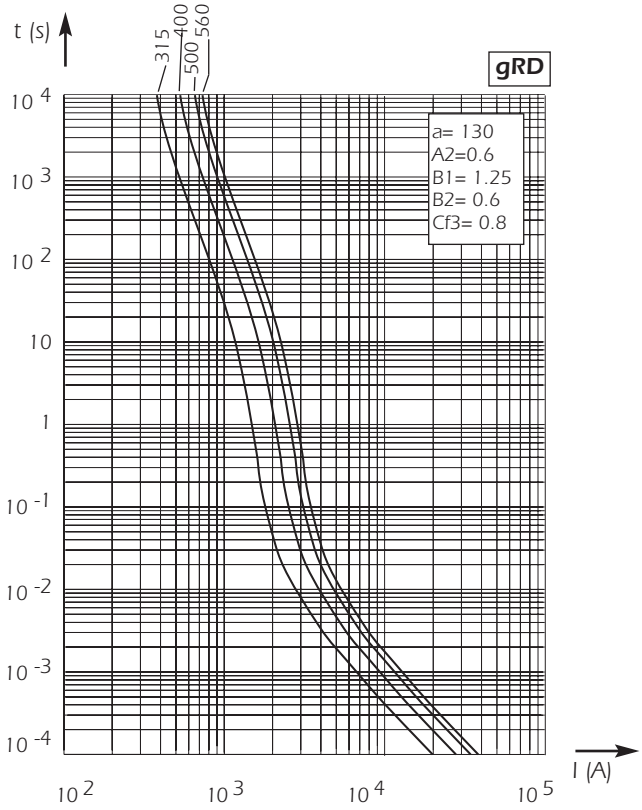


1 : L/R = 30 ms 4000 V gRB
2 : L/R = 15 ms 4000 V gRD

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics





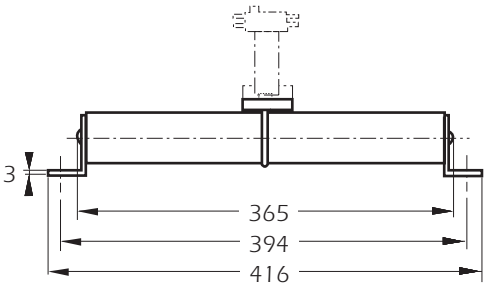
Above, left and right: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

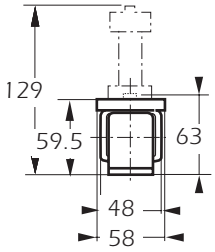
± 10% tolerance for mean pre-arcing current

DC Square-body Fuses
Sizes 600 - 602 - 2x602
SR Brackets size 600 - 3500 to 4200 V DC

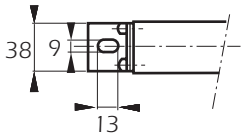
3500 - 4000 VDC
SRB from 10 to 32 A

Dimensions









Weight: 1920 kg

Main Characteristics

Size	Current rating I_N (A)	Breaking capacity	Watts loss 0.8 I_N	Watts loss I_N	Designation	Ref. Number	Catalog Number
600		under 3500 V					
	10	= 60 kA	5.5	12	CC 35 SRB 600 QF 0010	E089405	D600SB35C10QF
	16	L/R = 25 ms	8.2	18	CC 35 SRB 600 QF 0016	F089406	D600SB35C16QF
	20		10.5	23	CC 40 SRB 600 QF 0020	G086946	D600SB40C20QF
	25	under 4000 V: 60 kA	13.3	29	CC 40 SRB 600 QF 0025	H086947	D600SB40C25QF
	32	L/R = 25 ms	16.5	36	CC 40 SRB 600 QF 0032	J086948	D600SB40C32QF

Pack: *1 piece*

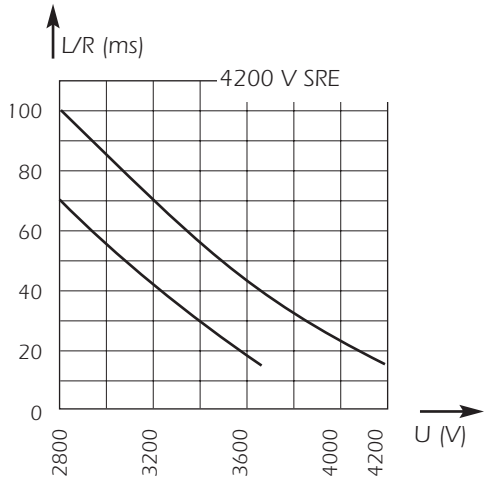
Microswitch MC 2R 3E 1-5NBS Ref. Number: J310025

DC Square-body Fuses
Sizes 600 - 602 - 2x602
SR Brackets size 600 - 3500 to 4200 V DC

SRB from 10 to 32 A
Size 600

Electrical characteristics

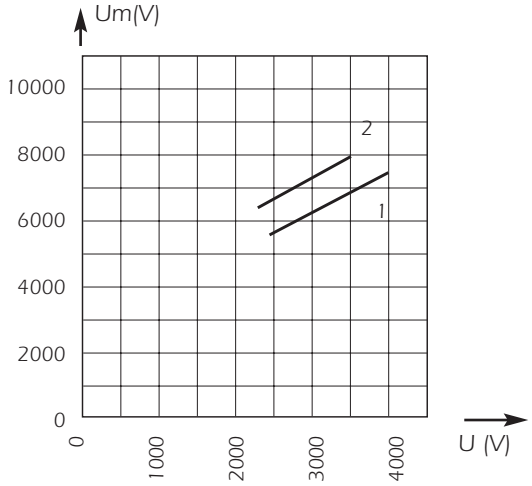
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3800 V with breaking capacity of 50 kA

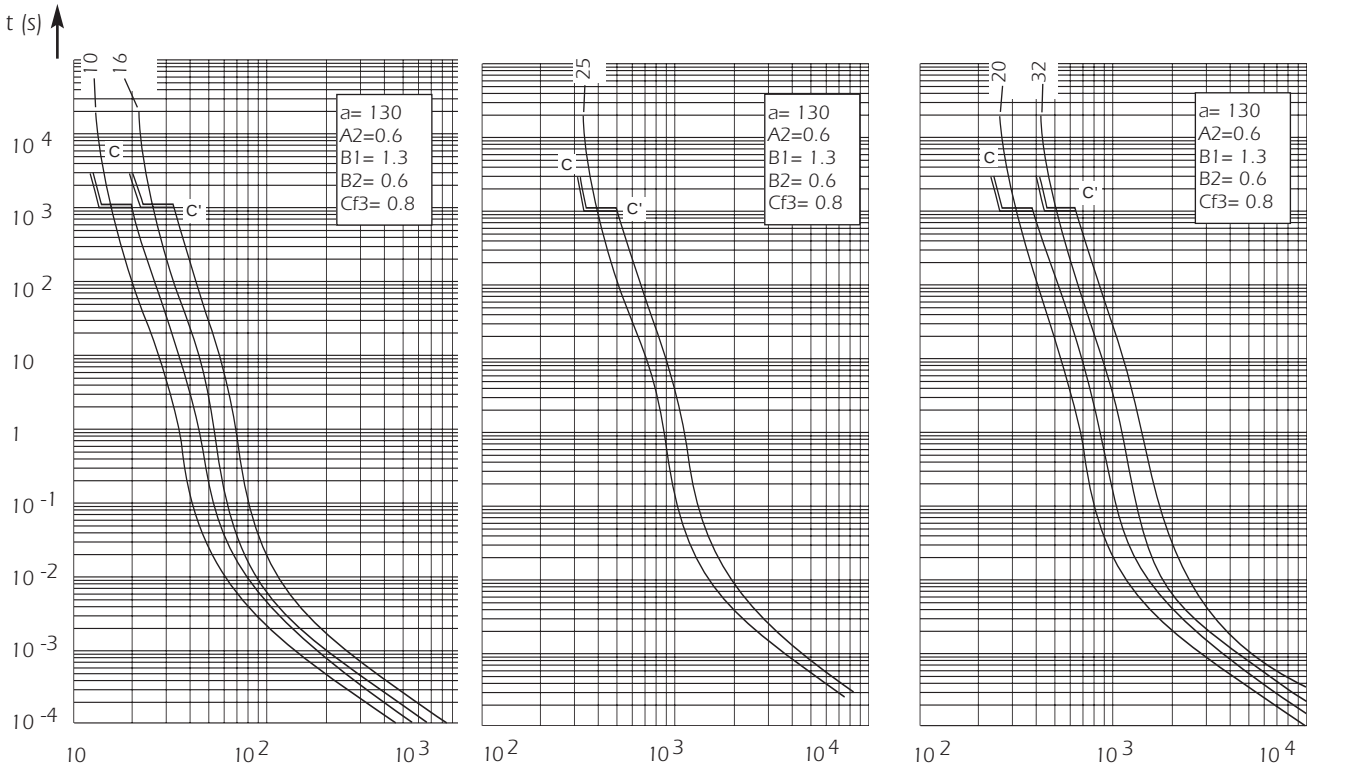
Peak arc voltage vs. working voltage



1 : L/R = 15 ms 4200 V SRE
2 : L/R = 45 ms 4200 V SRE

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics

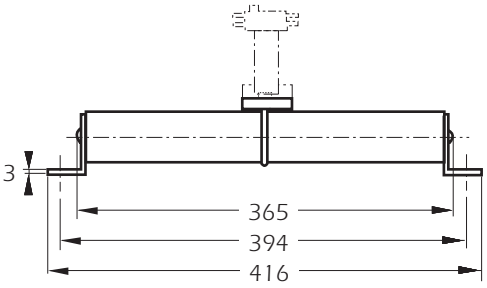


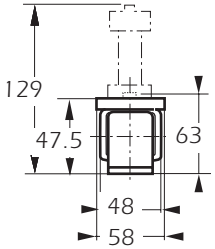
Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

DC Square-body Fuses
Sizes 600 - 602 - 2x602
SR Brackets size 600 - 3500 to 4200 V DC

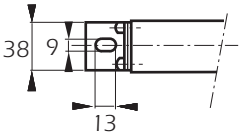
4000-4200 V DC
SRE from 40 to 150 A

Dimensions









Weight: 1920 g

Main Characteristics

Size	Current rating I_N (A)	Breaking Capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 3500 V L/R = 15 ms (A^2S)	Max. I^2t @ 3500 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
600	40	@ 4000 V DC 60 kA L/R = 25 ms	50	100	480	850	CC 42 SRE 600 QF 0040	C079490	D600SE42C40QF
	50	@ 4200 V DC 60 kA L/R = 15 ms	52	103	1050	800	CC 42 SRE 600 QF 0050	D079491	D600SE42C50QF
	63		57	114	2100	3500	CC 42 SRE 600 QF 0063	E079492	D600SE42C63QF
	80		65	128	3500	6000	CC 42 SRE 600 QF 0080	F079493	D600SE42C80QF
	100		70	140	8000	13500	CC 42 SRE 600 QF 0100	G079494	D600SE42C100QF
	125		75	147	16500	28000	CC 42 SRE 600 QF 0125	H079495	D600SE42C125QF
	150		78	155	31000	55000	CC 42 SRE 600 QF 0150	V079667	D600SE42C150QF

Microswitch MC 2R 1-5NBS Ref. Number: J310025

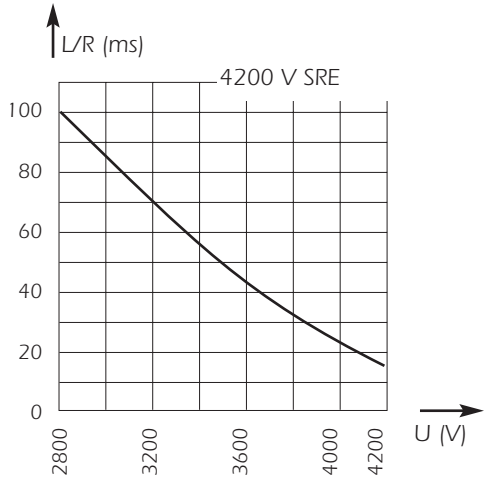
Pack: *1 piece*

DC Square-body Fuses
Sizes 600 - 602 - 2x602
SR Brackets size 600 - 3500 to 4200 V DC

4000-4200 V DC
SRE from 40 to 150 A

Electrical characteristics

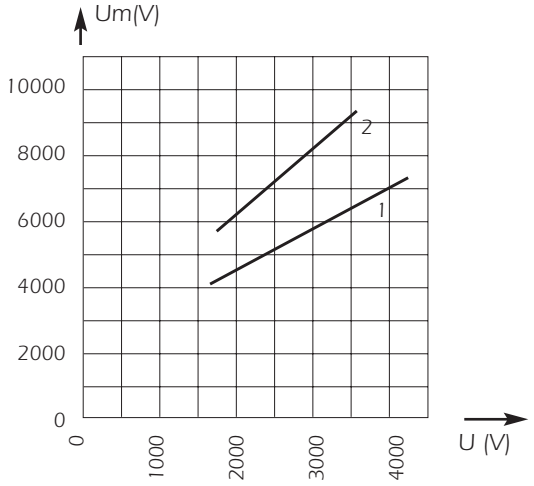
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3800 V with breaking capacity of 50 kA

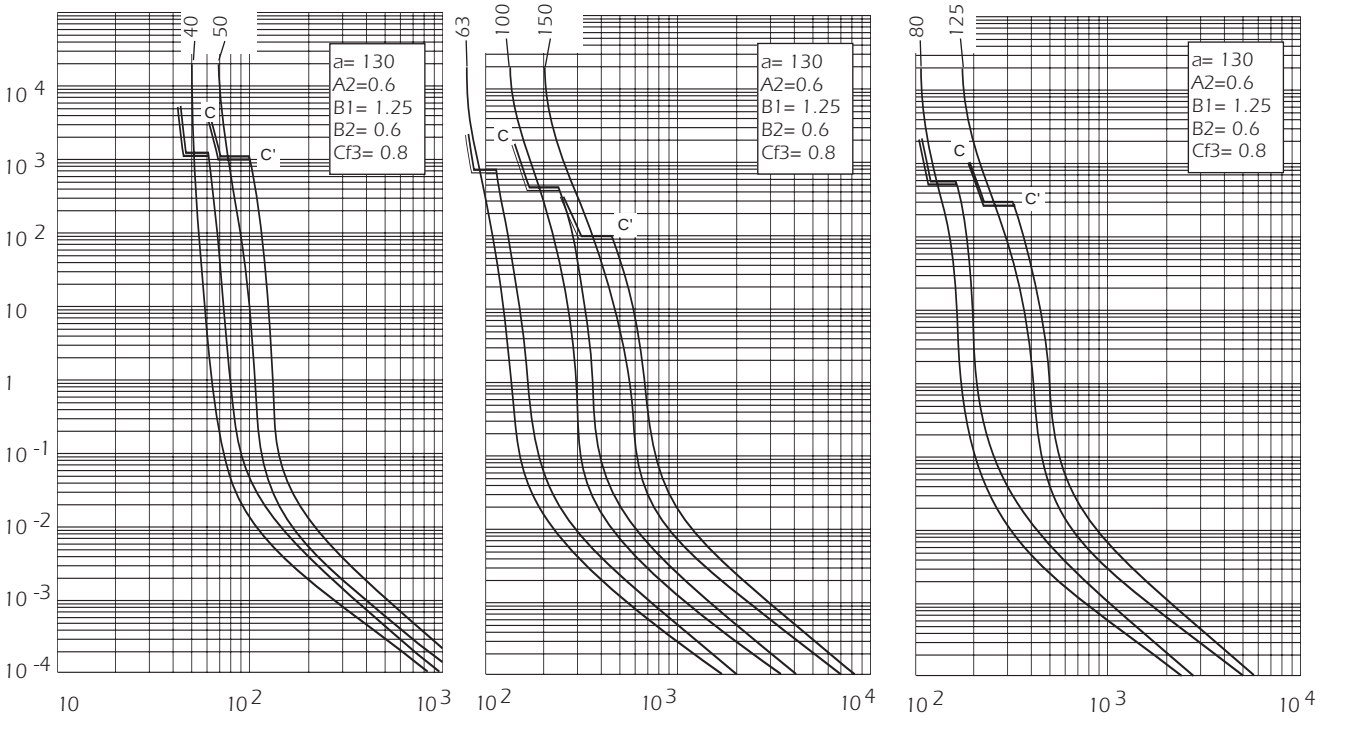
Peak arc voltage vs. working voltage



1 : L/R = 15 ms 4200 V SRE
2 : L/R = 45 ms 4200 V SRE

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics

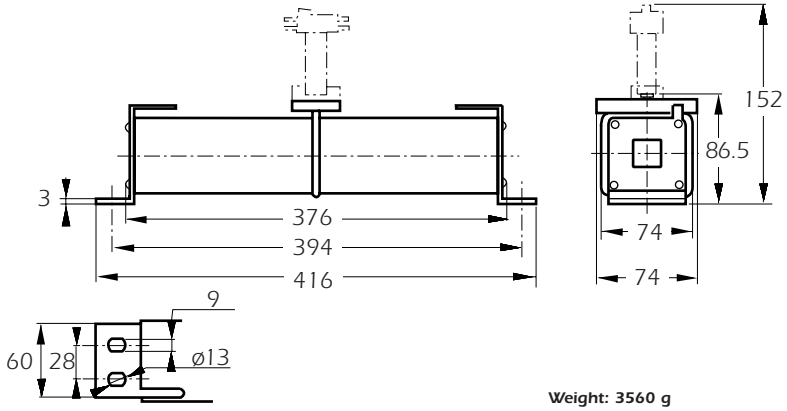


Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

DC Square-body Fuses
Sizes 600 - 602 - 2x602
SR Bracket size 602 - 4200 V DC

SRF-SRH from 200 to 375 A

Dimensions





Weight: 3560 g

Main Characteristics

Size	Current rating I_N (A)	Breaking capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 3500 V L/R = 15 ms (A^2S)	Max. I^2t @ 3500 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
	200	@ 4200 V DC	119	228	45000	80000	CC 42 SRF 602 QF 0200	J079496	D602SF42C200QF
602	250	60 kA	122	232	100000	180000	CC 42 SRF 602 QF 0250	K079497	D602SF42C250QF
	315	L/R = 15 ms	128	245	220000	375000	CC 42 SRF 602 QF 0315	L079498	D602SF42C315QF
	375		147	280	195000	325000	CC 42 SRH 602 QF 0375	H076643	D602SH42C375QF

Pack: *1 piece*

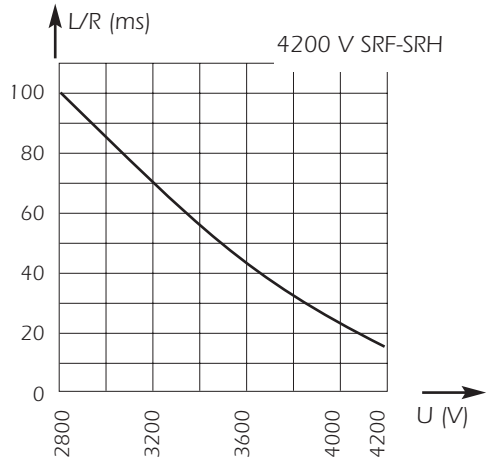
Microswitch MC 2R 3E 1-5NBS Ref. Number: J310025

DC Square-body Fuses
Sizes 600 - 602 - 2x602
SR Bracket size 602 - 4200 V DC

SRF-SRH from 200 to 375 A

Electrical characteristics

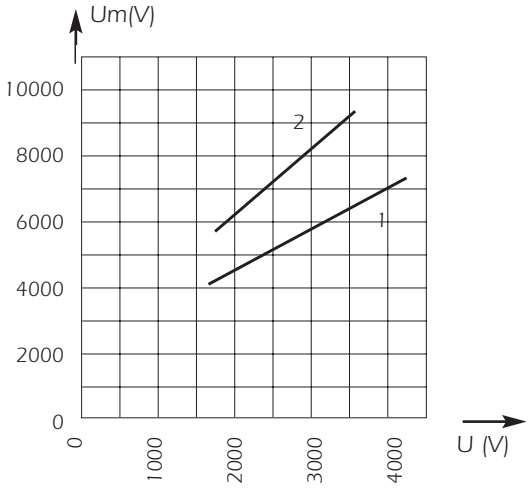
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3,800 V with breaking capacity of 50 kA

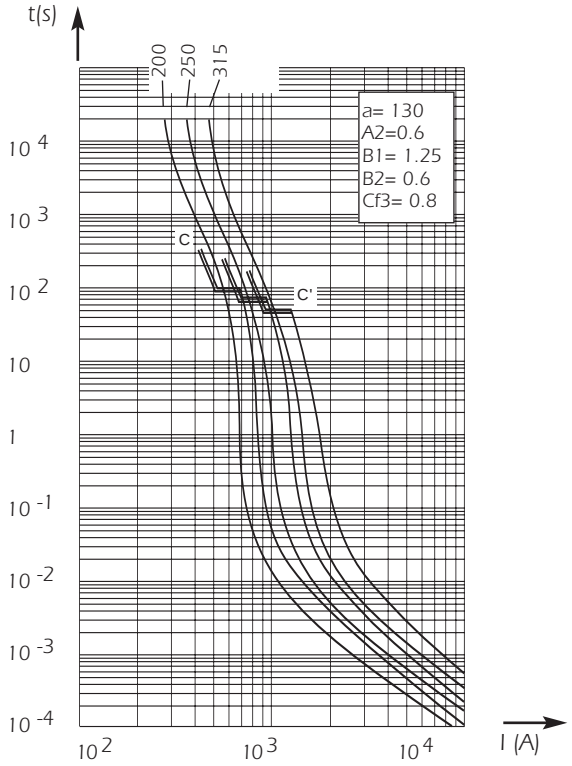
Peak arc voltage vs. working voltage

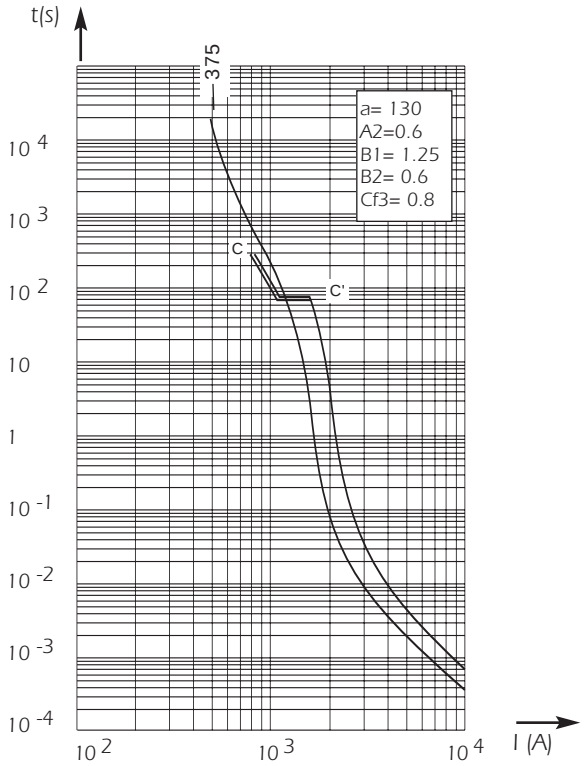


1 : L/R = 15 ms 4200 V SRF-SRH
2 : L/R = 45 ms 4200 V SRF-SRH

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



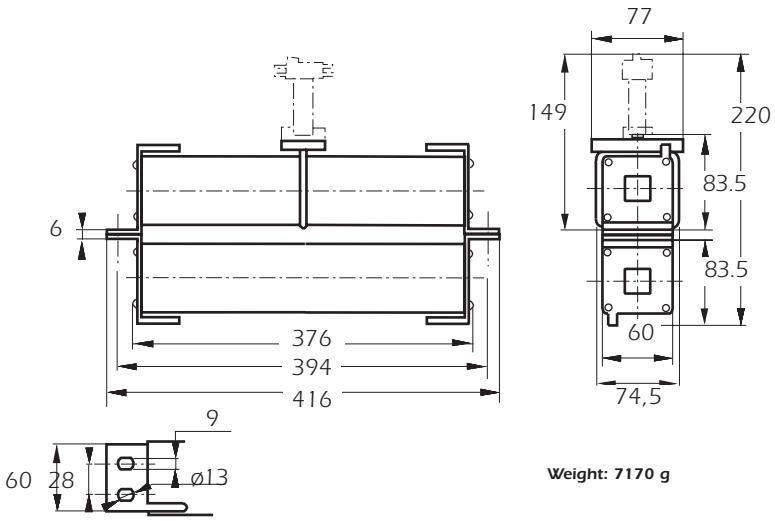


Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

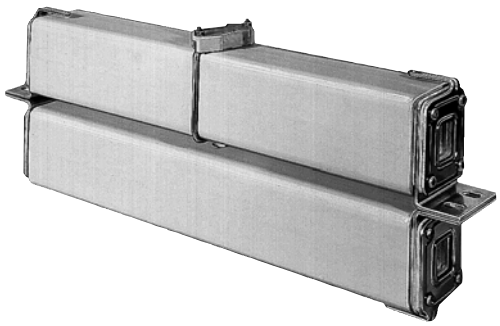
DC Square-body Fuses
Sizes 600 - 602 - 2x602
SR Brackets size 2x602 - 4200 V DC

SRF-SRH from 400 to 750 A

Dimensions



Weight: 7170 g



Main Characteristics

Size	Current rating I_N (A)	Breaking capacity	Watts loss 0.8 I_N (W)	Watts loss I_N (W)	Max. I^2t @ 3500 V L/R = 15 ms (A^2S)	Max. I^2t @ 3500 V L/R = 45 ms (A^2S)	Designation	Ref. Number	Catalog Number
	400	@ 4200 V DC	250	480	180000	320000	CC 42 SRF 2602 QF 400	M079499	D2602SF42C400QF
2x602	500	60 kA	256	487	400000	720000	CC 42 SRF 2602 QF 500	N079500	D2602SF42C500QF
	630	L/R = 15 ms	270	515	880000	1500000	CC 42 SRF 2602 QF 630	H079541	D2602SF42C630QF
	750		310	590	780000	1300000	CC 42 SRH 2602 QF 750	N078143	D2602SH42C750QF

Pack: *1 piece*

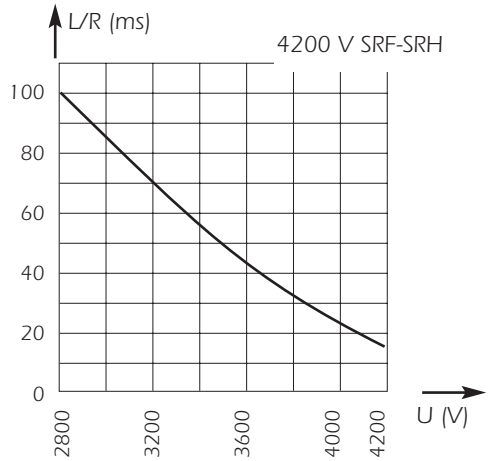
Microswitch MC 2R 3E 1-5NBS Ref. Number: J310025

DC Square-body Fuses
Sizes 600 - 602 - 2x602
SR Brackets size 602 - 4200 V DC

SRF-SRH from 400 to 750 A
Size 2x602

Electrical characteristics

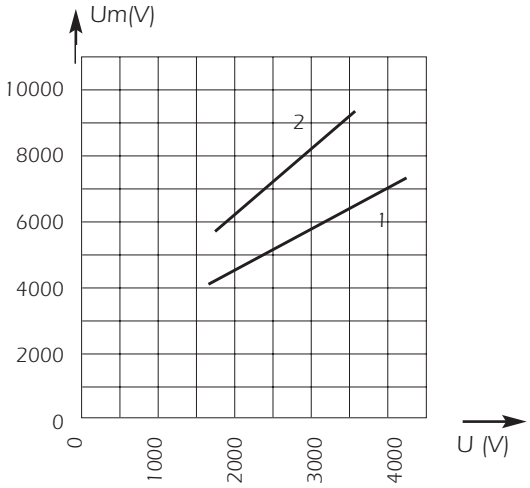
DC applications data



Above: Curve indicates maximum permissible value of time constant L/R as a function of DC working voltage

Max. AC voltage (50/60 Hz):
3,800 V with breaking capacity of 50 kA

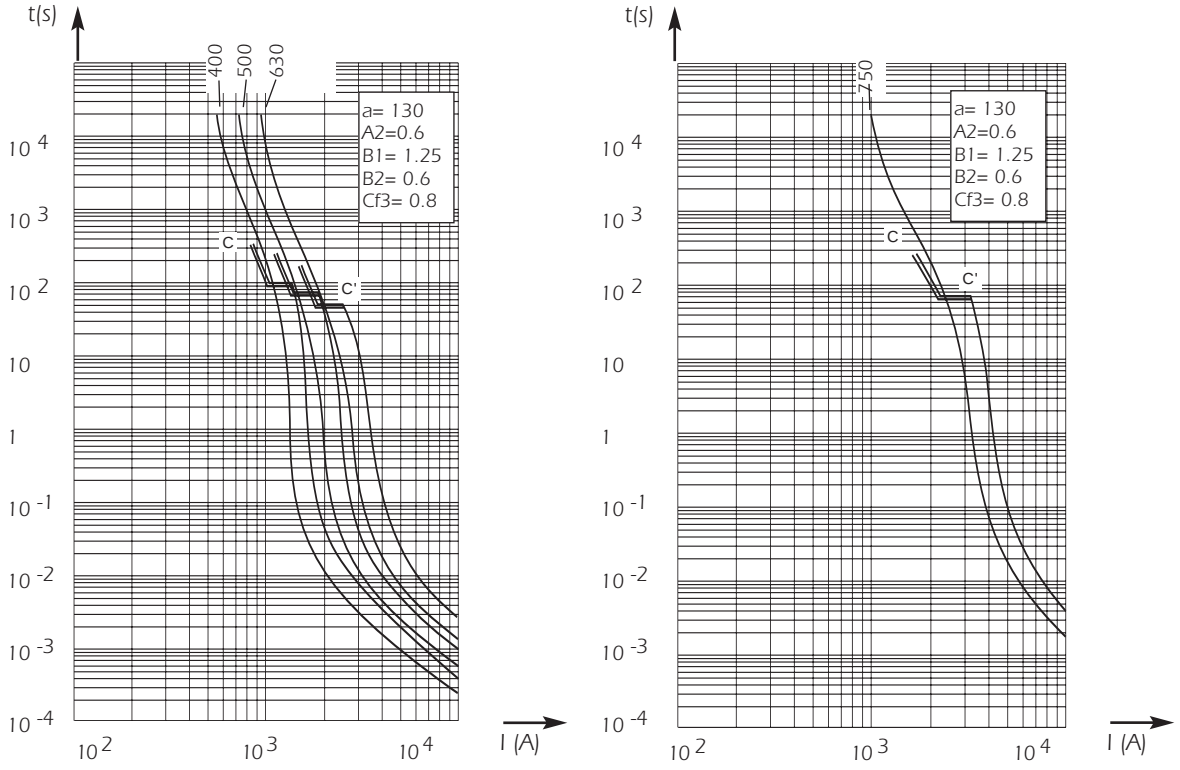
Peak arc voltage vs. working voltage



1 : L/R = 15 ms 4200 V SRF-SRH
2 : L/R = 45 ms 4200 V SRF-SRH

Above: Curves indicate for various time constants L/R the peak arc voltage which may appear across fuse terminals, vs. DC working voltage

Time vs. current characteristics



Above: Curves indicate, for each rated current, pre-arcing time vs. R.M.S. pre-arcing current

DC Square-body Fuses
Microswitches & metric Studs
Microswitches for other square-body Protistor®

- REMOTE SIGNALING SYSTEMS FOR FITTING ON
  FERRAZ SHAWMUT FUSES EQUIPED WITH MICROSWITCH SUPPORT:
  All square-body sizes AC 44 / 8X / 9X / 12X / 17X / 20X / 30X
  and DC 7X / 12X / 17X / 30X / 60X
- PERMANENT INDICATION OF FUSE STATE:
  - CONDUCTIVE
  - BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- VAPOR AND WATER TIGHT TYPE FOR USE IN CORROSIVE ATMOSPHERE



Main Characteristics

Type	Designation	AC or DC Insulation voltage rating Ui (V)	AC voltage withstand test (*)	Impulse voltage test Uimp1,2/50 µs (**)	Positive operating min.voltage /min.current	Current rating	Interrupting rating					
							Current	Non-inductive circuit			Inductive circuit: L/R = 25ms	
								30V	110V	250V	30V	110V	250V
Standard	MC3E 1-5N	1250V	15 kV	20 kV	20 V 50 mA	5 A	50/60 Hz	10 A	10 A	7 A			6 A
	MCR3E 1-5N	2200	20 kV	30 kV			DC	5 A	0.5 A			1,6 A	0,3 A
Low level	MC3E 1-5NBS MC3E 1-9NBS	1250 V	15 kV	20 kV	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A
	MCR3E 1-5NBS MCR3E 1-9NBS	2200 V	20 kV (1) 23 kV (2)	30 kV			DC	3 A	0.5 A	0,25A	3 A	0,2 A	0.1 A
	MC2R3E 1-5NBS MC2R3E 1-9NBS	6000 V	24 kV (1) 26 kV (2) 32 kV (3)	40 kV									
Watertight IP 50	MC3E 1-5NET	1250 V	11 kV	16 kV	10 V 10 mA	3 A	50 Hz		3 A	3 A		1 A	1 A
	MCR3E 1-5NET	2200 V	20 kV (1)	30 kV									
	MC2R3E 1-5NET	6000 V	24 kV (2)	40 kV			DC		0.5 A			0,2 A	

Catalog Numbering system: MC3E 1-5 single pole microswitch - MC3E 1-9 double pole microswitch - MCR, MC2R reinforced insulation microswitch.

* *Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air).*

** *Between power circuit and microswitch terminals Uimp: impulse voltage according to IEC 947-1.*

*** *Between power circuit and microswitch terminals*

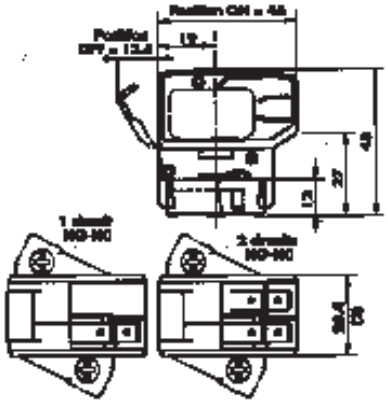
(1) fitting sizes 44 - 70 - 71 - 72 - 73 - 83 - 84 fuses.

(2) fitting sizes 91 - 92 - 93 - 94 -120 - 121 - 122 - 123 - 124 fuses.

(3) fitting sizes 171 - 172 - 173 - 174 - 200 - 203 - 300 - 302 - 600 - 602 fuses.

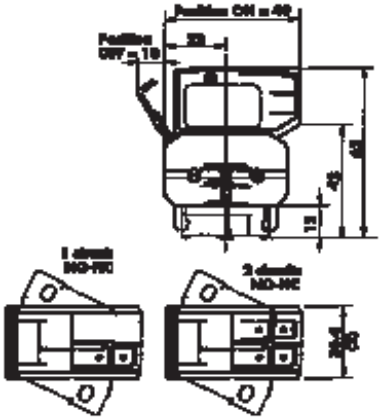
DC Square-body Fuses
Microswitches & metric Studs
Microswitches for other square-body Protistor®

Remote signaling with 1250 V AC/DC insulation voltage



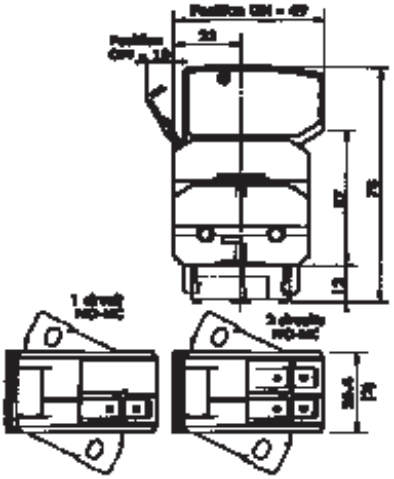
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MC3E 1-5N	D310020	39.5	3	MC3E1-5N
1	low level	MC3E 1-5NBS	E310021	39.5	3	MC3E1-5NBS
2	low level	MC3E 1-9NBS	F310022	45.7	3	MC3E1-9NBS
1	watertight	MC3E 1-5NET	L310027	40.2	3	MC3E1-5N ETANCHE

Remote signaling with insulation voltage up to 2200 V AC/DC



Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MCR3E 1-5N	G310023	51.7	1	MCR3E1-5N
1	low level	MCR3E 1-5NBS	P310030	51.7	1	MCR3E1-5NBS
2	low level	MCR3E 1-9NBS	H310024	58.0	1	MCR3E1-9NBS
1	watertight	MCR3E 1-5NET	Q310031	52.5	1	MCR3E1-5N ETANCHE

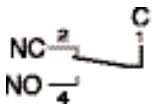
Remote signaling with insulation voltage up to 6000 V AC/DC



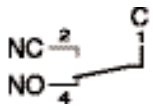
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	low level	MC2R3E 1-5NBS	J310025	64.0	1	MC2R3E1-5NBS
1	watertight	MC2R3E 1-5NET	N310029	64.8	1	MC2R3E1-5NET
2	low level	MC2R3E 1-9NBS	K310026	70.3	1	MC2R3E1-9NBS

NOTE (2): The 26.4 dimension is the same with 1 or 2 separated circuits NO-NC.

Electrical diagram of each microswitch circuit



Non-blown fluse
Microswitch ON



Blown fluse
Microswitch OFF

All of these signalling systems are hand resettable and fitted with silver-plated 3-terminal microswitch C, NO and NC.
The C terminal is on the top and connection is made via 6.35 mm clips except for watertight models whose clips are 4.8 mm wide.

Tests with sine vibrations carried out at ambient with scanning of the three main holder axes.
Spectrum: 1st segment (2 to 16 Hz) constant trip x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration g = 5 g peak.
Exponential scanning speed : 1 octave per minute.
Duration: 2 hours per axis.

DC Square-body Fuses
Microswitches & metric Studs
Metric-Studs

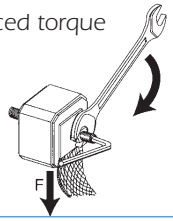
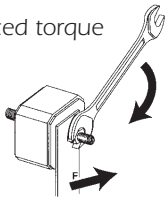
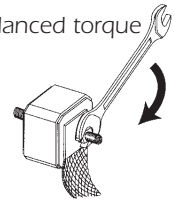
Metric studs for threaded terminal fuses



Type and fuse size		Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
	Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
	Size 2	HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
	Size 3	HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
	Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
	Size 3	HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightning torque (Nm) (1)	Maximum nut tightning torque (Nm) (1)
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Balanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46
Unbalanced torque 	M8x30 & M8x35 M10x30 & M10x50 M12x35 & M12x50	10 15 15	13.5 26 46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)

HV Back-up Fuse-Links according to IEC 60 282-1



HV fuse-links have been used for reliable protection in medium-voltage switchgear and controlgear and systems for decades.
They protect apparatus and equipment against the thermal and dynamic effects of short-circuits. The outstanding features of Limitor HV fuse-links from Ferraz Shawmut are:

- High breaking capacity
- High current limitation
- Low switching voltage
- Quick breaking
- Non-ageing

Limitor HV fuse-links conform to the following standards:

- IEC 60 282-1: High-voltage fuse-links “current limiting fuse-links”. This international standard is identical to the German standard VDE 0670 T4.
- IEC 60 787: Application guide for the selection of fuse-links of high-voltage fuse-links for transformer circuit applications
- VDE 0670 T303/IEC 60 420: High-voltage alternating current switch-fuse combinations
- DIN 43 625: High-voltage fuse-links, rated voltages 3,6 to 36kV (fuse-link dimensions)
- DIN 43 624: High-voltage fuse-links, rated voltages 3/3,6 to 30/36kV (single-pole fuse-link bases)

The quality management system of Ferraz Shawmut is certified to the international standard DIN ISO 9001 (EN 29001).
Ferraz Shawmut operates a certified environment management system. Ferraz Shawmut manufactures HV fuse-links with dimensions conforming to DIN 43 625 with striker for indoor and outdoor use, where the striker serves for actuating a tripfree mechanism as well as an indicator due to its red colour. In addition to the HV fuse-links shown in this brochure, Ferraz Shawmut also manufactures a wide range of special fuse-links in special dimensions. If you have a particular application that requires special fuse-link protection problems, simply ask the Ferraz Shawmut team, we are there for you.

General charateristics

Back-up fuse-links

Back-up fuse-links have a “rated minimum breaking current”from which the fuse-links are able to interrupt current. Backup fuse-links are not supposed to operate below their“minimum breaking current” (below I3). Their operating range is from I3 to the maximum rated breaking current (I1).For the assignment of back-up fuse-links, it is important to note that the lowest short circuit current is higher at the site of theHV back-up fuse-link than I3 (IKmin > I3).
If the short circuit current is lower than the minimum breaking current, additional protection must be provided.

Striker

The striker of HV fuse-links in this product list has an effective length of 30 mm and is a «medium» type. This classification results from the energy released by the striker between the points A and B (within the first 20 mm of the operating
distance. The initial force is about 80N, the force at the end of free movement is about 15N.
The striker serves for actuation of the trip-free mechanism of the switch

Rated voltage range

It is important for HV fuse-links that they must be operated at the voltage for which they have been rated. Accordingly, the operating voltage corresponds to the maximum rated voltage of the fuse-link. Owing to the switching voltage occurring during arcing, the fuse-link cannot be used at lower voltages without limitation. A lower operating voltage at which the fuselink can still be used without exceeding the system insulation level during extinction must therefore be taken into account. From these two values results the permissible voltage range of the fuse-link, which is shown on the fuse-links or in the technical data, e.g. 10/24kV.

Breaking capacity I1
The breaking capacity is also referred to as the “rated maximum breaking current”. This clearly indicates that this is the maximum current which can be interrupted by the fuselink. I1 of the fuse-link must be greater than the maximum short circuit current at the site of the fuse-link (I1 > IKmax).

Minimum breaking current I3
The minimum breaking current is referred to as the “rated minimum breaking current”. This value must be specified for back-up fuse-links. From this current, back-up fuse-links are capable to breaking fault currents. The fuse-links must be assigned to the system so that no fault current below I3 can occur at the site of the fuse-link (due to the system parameters or other protective devices).

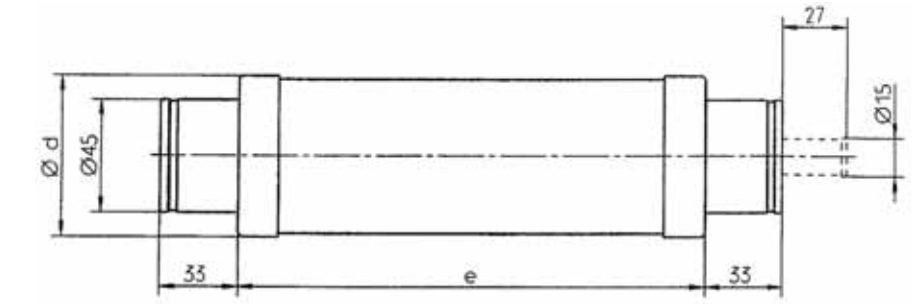
Power dissipation of a fuse-link Pwarm
The power dissipation of a HV fuse-link is specified at the rated current of the fuse-link. For protection with HV fuse-links, it should be noted that the operating current is normally half the rated current. Because of the physical relationships, the actual power dissipation is less than a quarter of the value Pwarm for HV fuse-links shown in the technical data table.

Time-current characteristic (I/t characteristic)
The time-current characteristic shows the correlation between current and time up to the melting of a fuse-element. The virtual time (tvs) is specified to enable a comparison of the I/t characteristics of fuse-links below 100ms. For co-ordination with other protective devices, e.g. load interrupter switches or circuit breakers, the melting integral I2t must be referred to for melting times below 100ms.

Current limitation
At high short circuit currents, HV fuse-links interrupt current within several milliseconds that means, the sinusoidal current does not reach its peak value and that HV fuse-links are current limiting devices. This is a significant advantage compared to mechanical switches whose contacts take longer to open and interrupt currents at natural zero. During this time, the peak short-circuit current is able to freely develop its dynamic force. By using HV fuse-links, this surge current is limited within several ms to a fraction of its peak value and the design of the subsequent system can be reduced in terms of dynamic forces.

Switching voltage
So that HV fuse-links perform a current-limiting action, the short circuit current must be limited and reduced as it increases.
This requires a switching voltage that exceeds the driving system voltage and forces the current to zero. This switching voltage must not exceed the specified permissible value of 2.2 times the peak value of the maximum rated voltage. Limitor HV fuse-links are within this limit.

Dimension



HV Back-up Fuse-Links according to IEC 60 282-1



Current (A)	Voltage (kV)	L (mm)	D (mm)	Cat.Number	Ref. number	Pack.
2	3/7,2	192	56	**45DB72V2P**	N1000098A	1
4	3/7,2	192	56	**45DB72V4P**	P1000099A	1
6,3	3/7,2	192	56	**45DB72V6,3PD**	S209293A	1
10	3/7,2	192	56	**45DB72V10PD**	T209294A	1
16	3/7,2	192	56	**45DB72V16PD**	V209295A	1
20	3/7,2	192	56	**45DB72V20PD**	W209296A	1
25	3/7,2	192	56	**45DB72V25PD**	X209297A	1
31,5	3/7,2	192	56	**45DB72V32PD**	Y209298A	1
40	3/7,2	192	56	**45DB72V40PD**	Z209299A	1
50	3/7,2	192	56	**45DB72V50PD**	A209300A	1
63	3/7,2	192	65	**45DB72V63P**	B209301A	1
80	3/7,2	192	65	**45DB72V80P**	C209302A	1
100	3/7,2	192	65	**45DB72V100P**	D209303A	1
125	3/7,2	192	88	**45DB72V125PD**	Q1000100A	1
160	3/7,2	192	88	**45DB72V160P**	R1000101A	1
200	3/7,2	192	88	**45DB72V200P**	S1000102A	1
1	6/12	292	56	**45DB120V1P**	T1000103A	1
2	6/12	292	56	**45DB120V2P**	V1000104A	1
4	6/12	292	56	**45DB120V4P**	W1000105A	1
6,3	6/12	292	56	**45DB120V6,3P**	F209305A	1
10	6/12	292	56	**45DB120V10P**	G209306A	1
16	6/12	292	56	**45DB120V16P**	H209307A	1
20	6/12	292	56	**45DB120V20P**	J209308A	1
25	6/12	292	56	**45DB120V25P**	K209309A	1
31,5	6/12	292	56	**45DB120V32P**	L209310A	1
40	6/12	292	56	**45DB120V40P**	M209311A	1
50	6/12	292	56	**45DB120V50P**	N209312A	1
63	6/12	292	56	**45DB120V63P**	P209313A	1
80	6/12	292	65	**45DB120V80P**	Q209314A	1
100	6/12	292	65	**45DB120V100P**	R209315A	1
125	6/12	292	88	**45DB120V125P**	X1000106A	1
160	6/12	292	88	**45DB120V160P**	Y1000107A	1
200	6/12	292	88	**45DB120V200P**	Z1000108A	1
6,3	10/17,5	367	56	**45DB175V6,3P**	V1000564A	1
10	10/17,5	367	56	**45DB175V10P**	W1000565A	1
16	10/17,5	367	56	**45DB175V16P**	X1000566A	1
20	10/17,5	367	56	**45DB175V20P**	Y1000567A	1
25	10/17,5	367	56	**45DB175V25P**	Z1000568A	1
31,5	10/17,5	367	56	**45DB175V32P**	A1000569A	1
40	10/17,5	367	56	**45DB175V40P**	B1000570A	1
50	10/17,5	367	56	**45DB175V50P**	C1000571A	1
63	10/17,5	367	56	**45DB175V63P**	D1000572A	1
80	10/17,5	367	65	**45DB175V80P**	E1000573A	1
100	10/17,5	367	88	**45DB175V100P**	F1000574A	1
1	10/24	442	56	**45DB240V1P**	A1000109A	1
2	10/24	442	56	**45DB240V2P**	B1000110A	1
4	10/24	442	56	**45DB240V4P**	C1000111A	1
6,3	10/24	442	56	**45DB240V6,3P**	S209339A	1
10	10/24	442	56	**45DB240V10P**	T209340A	1
16	10/24	442	56	**45DB240V16P**	V209341A	1
20	10/24	442	56	**45DB240V20P**	W209342A	1
25	10/24	442	56	**45DB240V25P**	X209343A	1
31,5	10/24	442	56	**45DB240V32P**	Y209344A	1
40	10/24	442	56	**45DB240V40P**	Z209345A	1
50	10/24	442	56	**45DB240V50P**	A209346A	1
63	10/24	442	56	**45DB240V63P**	B209347A	1
80	10/24	442	65	**45DB240V80P**	C209348A	1
100	10/24	442	78	**45DB240V100P**	D209349A	1
125	10/24	442	88	**45DB240V125P**	D1000112A	1
160	10/24	442	88	**45DB240V160P**	E1000113A	1
200	10/24	442	88	**45DB240V200P**	F1000114A	1
2	20/36	537	56	**45DB360V2P**	G1000115A	1
4	20/36	537	56	**45DB360V4P**	H1000116A	1
6,3	20/36	537	56	**45DB360V6,3PD**	S209362A	1
10	20/36	537	56	**45DB360V10PD**	T209363A	1
16	20/36	537	56	**45DB360V16PD**	V209364A	1
20	20/36	537	56	**45DB360V20PD**	W209365A	1
25	20/36	537	56	**45DB360V25PD**	X209366A	1
31,5	20/36	537	65	**45DB360V32PD**	Y209367A	1
40	20/36	537	65	**45DB360V40PD**	Z209368A	1
50	20/36	537	88	**45DB360V50PD**	J1000117A	1
63	20/36	537	88	**45DB360V63PD**	K1000118A	1



HV back-up fuse-links acc. to IEC 60282-1 with controlled power dissipation

Current (A)	Voltage (kV)	L (mm)	D (mm)	Cat.Number	Ref. number	Pack.
1	6/12	292	56	**45DB120V1PT**	L1000119A	1
2	6/12	292	56	**45DB120V2PT**	M1000120A	1
4	6/12	292	56	**45DB120V4PT**	N1000121A	1
6,3	6/12	292	56	**45DB120V6,3PT**	P1000122A	1
10	6/12	292	56	**45DB120V10PT**	Q1000123A	1
16	6/12	292	56	**45DB120V16PT**	R1000124A	1
20	6/12	292	56	**45DB120V20PT**	S1000125A	1
25	6/12	292	56	**45DB120V25PT**	T1000126A	1
31,5	6/12	292	56	**45DB120V32PT**	V1000127A	1
40	6/12	292	56	**45DB120V40PT**	W1000128A	1
50	6/12	292	56	**45DB120V50PT**	X1000129A	1
63	6/12	292	56	**45DB120V63PT**	Y1000130A	1
80	6/12	292	65	**45DB120V80PT**	Z1000131A	1
100	6/12	292	65	**45DB120V100PT**	A1000132A	1
125	6/12	292	88	**45DB120V125PT**	B1000133A	1
160	6/12	292	88	**45DB120V160PT**	C1000134A	1
200	6/12	292	88	**45DB120V200PT**	D1000135A	1
1	10/24	442	56	**45DB240V1PT**	E1000136A	1
2	10/24	442	56	**45DB240V2PT**	F1000137A	1
4	10/24	442	56	**45DB240V4PT**	G1000138A	1
6,3	10/24	442	56	**45DB240V6,3PT**	H1000139A	1
10	10/24	442	56	**45DB240V10PT**	J1000140A	1
16	10/24	442	56	**45DB240V16PT**	K1000141A	1
20	10/24	442	56	**45DB240V20PT**	L1000142A	1
25	10/24	442	56	**45DB240V25PT**	M1000143A	1
31,5	10/24	442	56	**45DB240V32PT**	N1000144A	1
40	10/24	442	56	**45DB240V40PT**	P1000145A	1
50	10/24	442	56	**45DB240V50PT**	Q1000146A	1
63	10/24	442	56	**45DB240V63PT**	R1000147A	1
80	10/24	442	65	**45DB240V80PT**	S1000148A	1
100	10/24	442	78	**45DB240V100PT**	T1000149A	1
125	10/24	442	88	**45DB240V125PT**	V1000150A	1

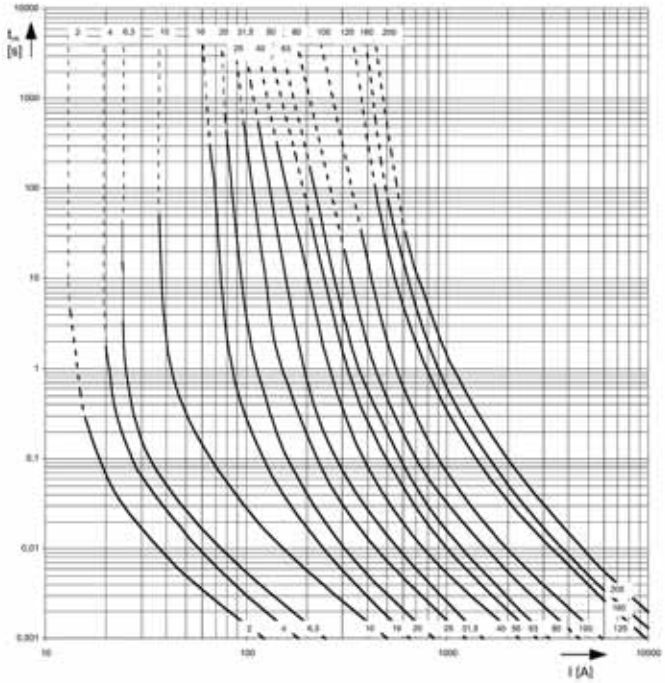


HV General Purpose fuse-links acc. to IEC 60282-1

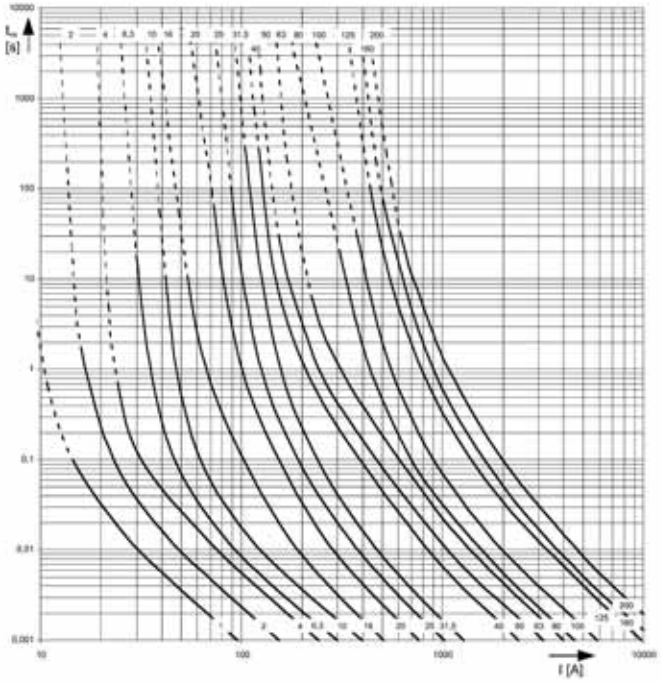
Current (A)	Voltage (kV)	L (mm)	D (mm)	Cat.Number	Ref. number	Pack.
6,3	6/12	292	65	**45DG120V6,3P**	W1000151A	1
10	6/12	292	65	**45DG120V10P**	X1000152A	1
16	6/12	292	65	**45DG120V16P**	Y1000153A	1
25	6/12	292	65	**45DG120V25P**	Z1000154A	1
40	6/12	292	78	**45DG120V40P**	A1000155A	1
50	6/12	292	88	**45DG120V50P**	B1000156A	1
4	10/24	442	78	**45DG240V4P**	C1000157A	1
6,3	10/24	442	78	**45DG240V6,3P**	D1000158A	1
10	10/24	442	78	**45DG240V10P**	E1000159A	1
16	10/24	442	78	**45DG240V16P**	F1000160A	1
25	10/24	442	88	**45DG240V25P**	G1000161A	1



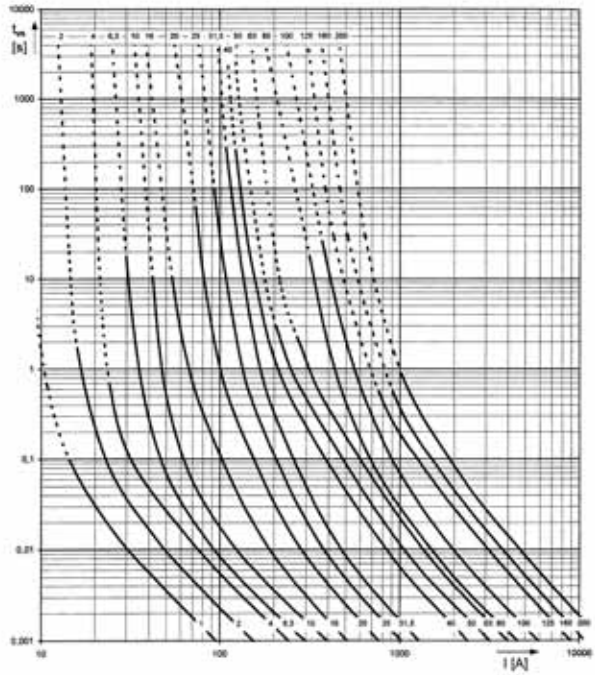
Time current characteristics



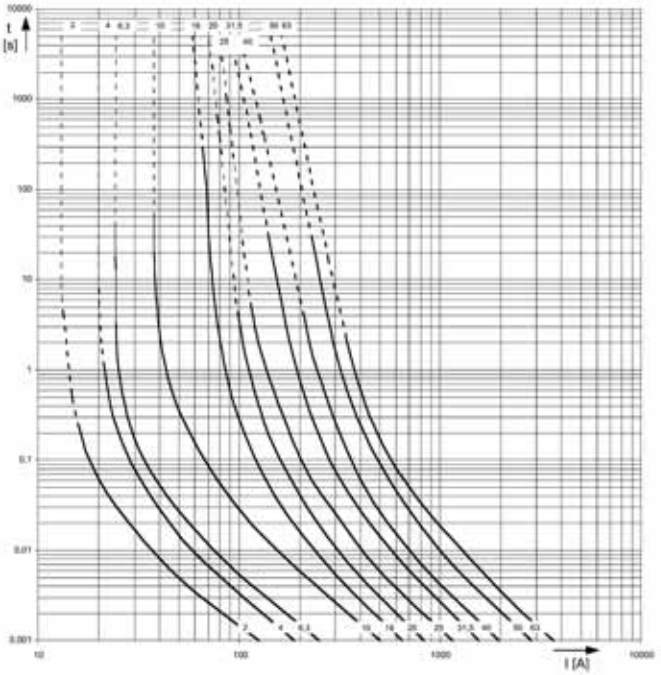
3/7,2 kV



6/12 kV



10/24 kV



20/36 kV

Application

Limitor HV fuse-links type CPD meet the requirements of IEC 60282-1 and were specifically developed to be installed in compact sized enclosed SF6 insulated substations.
In these substations HV fuse-links are enclosed in narrow fuse compartments which on the one hand prevent efficient cooling of the fuse-links and on the other hand have a limited thermal power acceptance themselves. Overheating of fuse compartments in such enclosures is, however, not to be expected, if the fuse-links have been properly selected by their rated current according to the transformer to be protected (see table 3) and if the melting elements of the fuselins are in faultless condition (Fig. 8).
One or more of the melting elements connected in parallel may, however, be interrupted by transient currents caused by transformer inrush or lightning strikes.
Fuse-links having one or more of the paralleled melting elements interrupted, dissipate significantly more heat than faultless fuse-links. There is a certain risk that the limited power acceptance of fuse compartments may be exceeded at or even below rated transformer current. HV back-up fuse-links type CPD prevent such potential overheating when installed in conjunction with a transformer switch having trip-free mechanism.

Function mode

The CPD striker system controls the power dissipation of the fuse according to Ohm's law (CPD means controlled power dissipation). The striker pin is released depending on the voltage drop across the fuse and, therefore depending on the power dissipation. The release voltage of the CPD striker system has been selected so that the fuse carrying the operating current IB does not exceed the limiting value. The CPD striker system controls the power dissipation of the fuse and releases the transformer switch before the permissible power acceptance of the fuse compartment will be exceeded (Fig. 8).

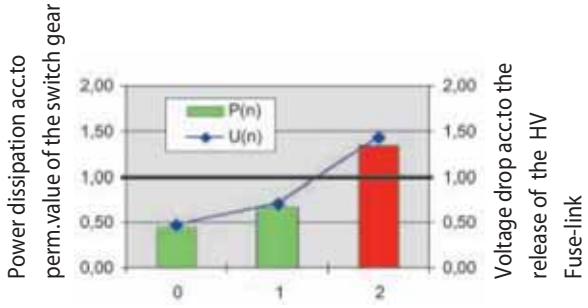


Fig. 8: Controlled power dissipation

High-voltage alternating current switch-fuse combinations acc. to IEC 62 271-105

In order to increase the utilization range of a switch, it is combined with current limiting HV fuse-links. This combination unit offers short-circuit protection in addition to load switching capacity. HV fuse-links provide short-circuit protection, while the switch interrupts the currents below the take-over current of the combination unit.
In addition to the inrush current, short-circuit current on secondary terminal short-circuits and low voltage selectivity,
the following switch characteristics should be taken into account:
– Rated transfer current (Itransfer)
– Fuse-initiated opening time of the switch (t0)
Fig. 9 shows the rated transfer current (Itransfer) as a vertical line.
The fuse-initiated opening time (t0) must be multiplied by 0,9 (procedure according to IEC 62 271-105) and a horizontal line be drawn. This results in an intersection that is characteristic to the switch and must be established for each switch individually.

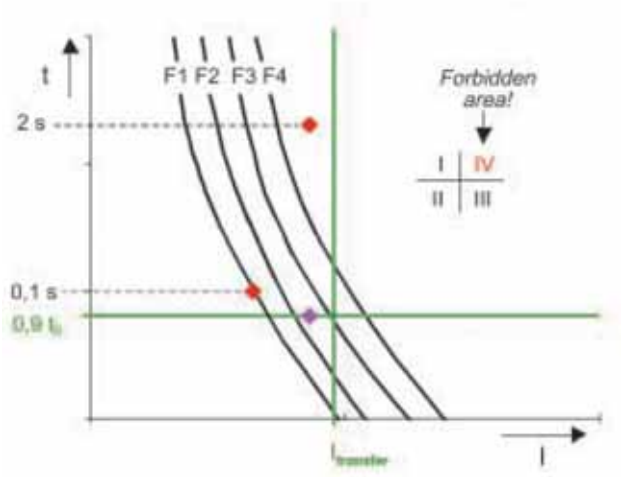


Fig. 9 : Selection of HV fuse-links acc. to IEC 62 271-105

This switch intersection divides the sheet into four quadrants (see Fig. 9).
Suitable for the switch-fuse combination are HV fuse-links only with a time-current characteristic that does not pass through quadrant IV ("forbidden area").
Generally suitable for use in switch-fuse combinations according to IEC 62 271-105 are all HV fuse-links with striker which meet this criterion.
Ferraz Shawmut has assigned HV fuse-links to the switch-fuse combination and the transformers of all major manufactures. These documents are available on request.

Clips

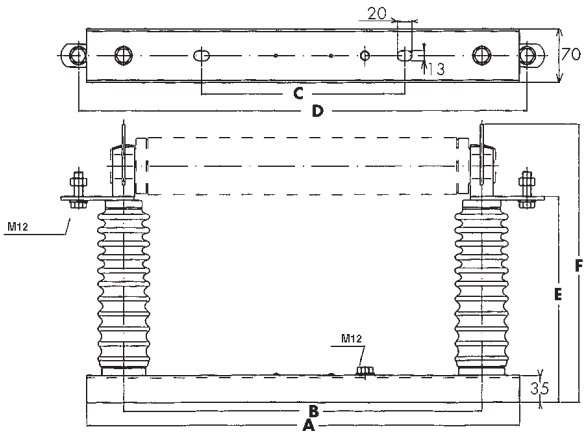
Size	Reference.Number	Catalog Number	Packaging
MR 45 + spring	L096472A	MR45R	1
MR 45 without connection lug	S210236B	MR55R	2

Bases

Voltage (kV)	Size	Use	Reference.Number	Catalog Number	Packaging
7,2	SI 7,2/192	Indoor	G209421A	SI72V192	1
12	SI 12/292	Indoor	H209422A	SI120V292	1
17,5	SI 17,5/292	Indoor	J209423A	SI175V292	1
24	SI 24/442	Indoor	K209424A	SI 240V442	1
36	SI 36/537	Indoor	M209426A	SI360V537	1
12	SE 12/292	Outdoor	S210328A	SE120V292	1
17,5	SE 17,5/292	Outdoor	T210329A	SE175V292	1
24	SE 24/442	Outdoor	V210330A	SE240V442	1
36	SE 36/537	Outdoor	W210331A	SE360V537	1

Bases with signalling

Voltage (kV)	Number of contacts	Reference.Number	Catalog Number	Packaging
12/36	1 NO/NF	E092855A	MC1-5NFLEXQS500	1
12/36	2 NO/NF	F092856A	MC1-9NFLEXQS500	1





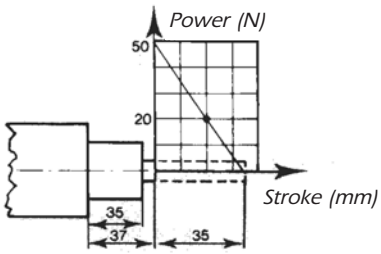
Voltage (kV)	Length of fuse L (mm)	Size	Dielectric withstand (phase to ground) 50Hz-1mn Kv Rms	Dielectric withstand (phase to ground) 1,2/50µs peak voltage	Dimensions (mm) A	B	C	D	E	F	Weight (kg)
7,2	192	SI 7,2/192	20	60	400	226	322	347	175	270	3,8
12	292	SI 12/292	28	75	424	324	200	445	175	270	4,1
17,5	292	SI 17,5/292	38	95	424	324	200	445	220	315	5,1
24	442	SI 24/442	50	125	576	476	270	597	270	365	5,5
36	537	SI 36/537	70	170	670	570	350	691	354	449	7,7
12	292	SE 12/292	28	75	424	324	200	445	261	356	7,5
17,5	292	SE 17,5/292	38	95	424	324	200	445	261	356	7,5
24	442	SE 24/442	50	125	576	476	270	597	309	404	8,8
36	537	SE 36/537	70	170	670	570	350	691	381	476	13,2

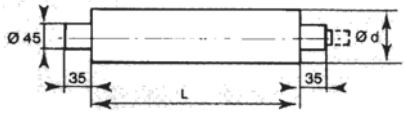
European Fuses
DIN Fuses for Motor
3.6kV to 12kV - Type aSJB/D



According to standard IEC 2.82.1, DIN 43625 and IEC application requirements Publication 644

Characteristics of trip-indicators



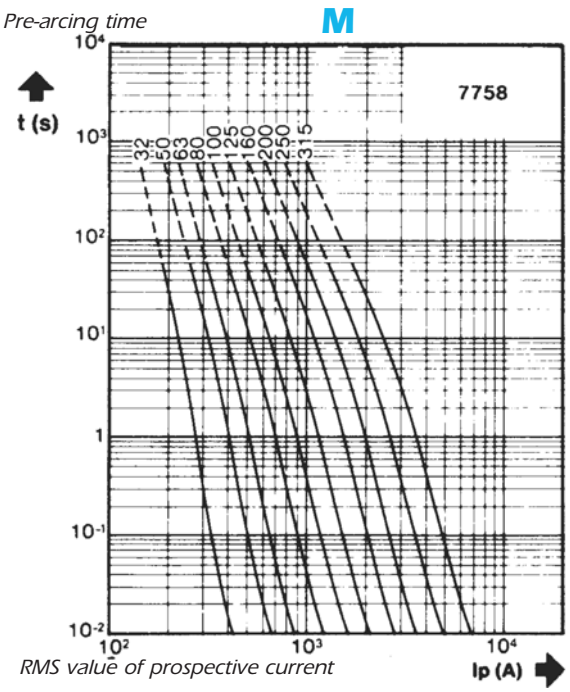


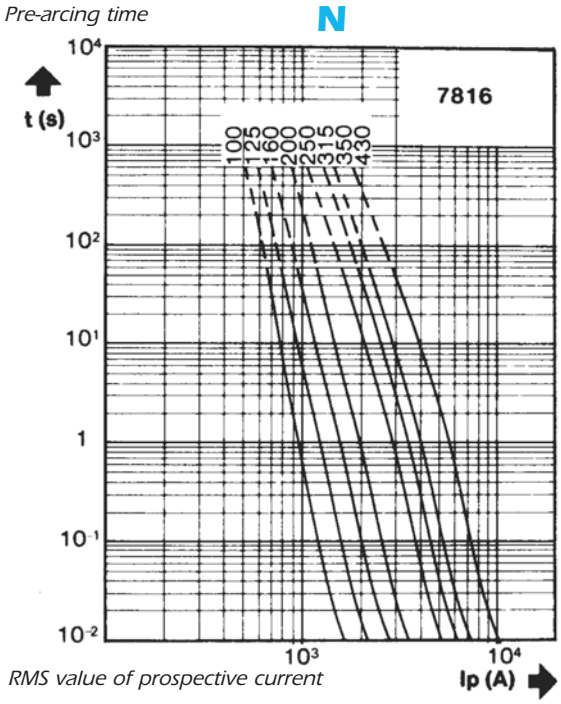
Rated Voltage (kV)	L (mm)	Rating I_n (A)	Designation	Reference Number	Diameter (mm)	Weight (Kg)	Catalog Number
3,6	192	32	369 P CP aSJB 45/50,8x192 32	S076468	50,8	1,0	45ASB36V32P-1
		50	369 P CP aSJB 45/50,8x192 50	T076469	50,8	1,0	45ASB36V50P-1
		63	369 P CP aSJB 45/50,8x192 63	V076470	50,8	1,0	45ASB36V63P-1
		80	369 P CP aSJB 45/50,8x192 80	W076471	50,8	1,0	45ASB36V80P-1
		100	369 P CP aSJB 45/50,8x192 100	X076472	50,8	1,0	45ASB36V100P-1
		125	369 P CP aSJB 45/50,8x192 125	Y076473	50,8	1,0	45ASB36V125P-1
		160	369 P CP aSJB 45/67x192 160	Z076474	67	1,7	45ASB36V160P-1
		200	369 P CP aSJB 45/67x192 200	A076475	67	1,7	45ASB36V200P-1
		250	369 P CP aSJB 45/76x192 250	B076476	76	2,2	45ASB36V250P-1
		315	369 P CP aSJB 45/90x192 315	C076477	88	3,0	45ASB36V315P-1
	292	100	369 P CP aSJB 45/50,8x292 100	N075521	50,8	1,6	45ASB36V100P-2
		125	369 P CP aSJB 45/50,8x292 125	P075522	50,8	1,6	45ASB36V125P-2
		160	369 P CP aSJB 45/50,8x292 160	Q075523	50,8	1,6	45ASB36V160P-2
		200	369 P CP aSJB 45/67x292 200	R075524	67	2,5	45ASB36V200P-2
		250	369 P CP aSJB 45/67x292 250	S075525	67	2,5	45ASB36V250P-2
		315	369 P CP aSJB 45/76x292 315	E075582	76	3,2	45ASB36V315P-2
		350	369 P CP aSJB 45/76x292 350	F075583	76	3,2	45ASB36V350P-2
		430	369 P CP aSJB 45/90x292 430	G075584	88	4,3	45ASB36V430P-2
7,2	292	32	729 P CP aSJB 45/50,8x292 32	J078162	50,8	1,6	45ASB72V32P-2
		50	729 P CP aSJB 45/50,8x292 50	K078163	50,8	1,6	45ASB72V50P-2
		63	729 P CP aSJB 45/50,8x292 63	L078164	50,8	1,6	45ASB72V63P-2
		80	729 P CP aSJB 45/50,8x292 80	M078165	50,8	1,6	45ASB72V80P-2
		100	729 P CP aSJB 45/50,8x292 100	N078166	50,8	1,6	45ASB72V100P-2
		125	729 P CP aSJB 45/67x292 125	P078167	67	2,5	45ASB72V125P-2
		160	729 P CP aSJB 45/67x292 160	Q078168	67	2,5	45ASB72V160P-2
		200	729 P CP aSJB 45/90x292 200	H093709	88	4,3	45ASB72V200P-2
		250	729 P CP aSJB 45/90x292 250	R078169	88	4,3	45ASB72V250P-2
	442	100	729 P CP aSJB 45/50,8x442 100	Y085581	50,8	2,8	45ASD72V100P-3
		125	729 P CP aSJB 45/50,8x442 125	Z085582	50,8	2,8	45ASD72V125P-3
		160	729 P CP aSJB 45/50,8x442 160	A085583	50,8	2,8	45ASD72V160P-3
		200	729 P CP aSJB 45/76x442 200	Q085620	76	4,8	45ASD72V200P-3
		250	729 P CP aSJB 45/76x442 250	R085621	76	4,8	45ASD72V250P-3
		315	729 P CP aSJB 45/90x442 315	S085622	88	6,8	45ASD72V315P-3
		400	729 P CP aSJB 45/90x442 400	V085624	88	6,8	45ASD72V400P-3
12	442	32	1209 P CP aSJB 45/50,8x442 32	D076478	50,8	2,8	45ASB120V32P-3
		50	1209 P CP aSJB 45/50,8x442 50	E076479	50,8	2,8	45ASB120V50P-3
		63	1209 P CP aSJB 45/50,8x442 63	F076480	50,8	2,8	45ASB120V63P-3
		80	1209 P CP aSJB 45/50,8x442 80	G076481	50,8	2,8	45ASB120V80P-3
		100	1209 P CP aSJB 45/50,8x442 100	H076482	50,8	2,8	45ASB120V100P-3
		125	1209 P CP aSJB 45/67x442 125	J076483	67	3,7	45ASB120V125P-3
		160	1209 P CP aSJB 45/67x442 160	K076484	67	3,7	45ASB120V160P-3
		200	1209 P CP aSJB 45/76x442 200	L076485	76	5,5	45ASB120V200P-3
		250	1209 P CP aSJB 45/90x442 250	M076486	88	6,2	45ASB120V250P-3

Note: These fuses are systematically equipped with a trip-indicator

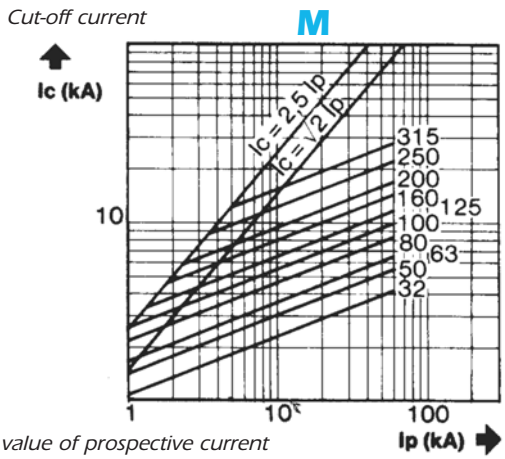
European Fuses
DIN Fuses for Motor
3.6kV to 12kV - Type aSJB/D

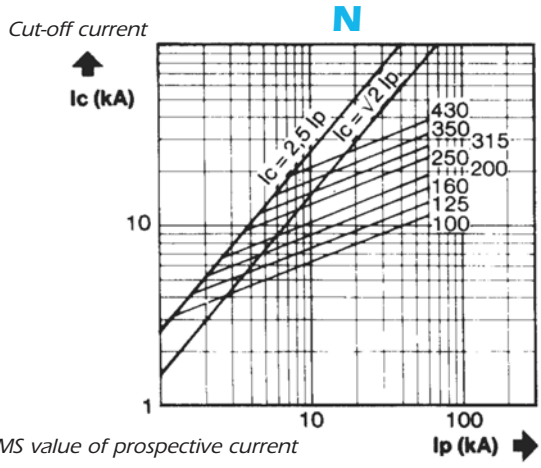
Times vs. current characteristics





Cut-off characteristics



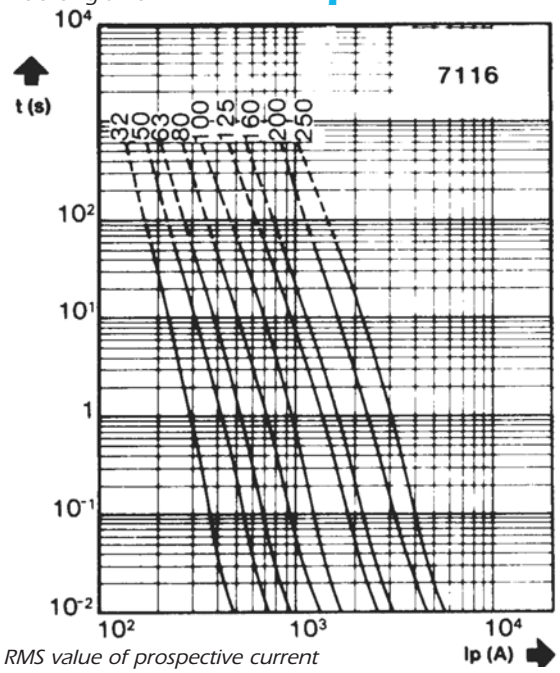


Rated Voltage (kV)	L (mm)	Rating I_n	Breaking Capacity (kA)	Peak arc Voltage (kV)	Minimum Breaking Current (A)	Power dissipation for 0,7 I_n (W)	Total operating I^2t at the rated voltage (10^3 A^2S)
3,6	192 M	32	60	6,8	180	6	4
		50	60	6,8	260	9	9
		63	60	6,8	310	11	15
		80	60	6,8	400	13	35
		100	60	6,8	490	15	60
		125	60	6,8	600	20	95
		160	60	6,8	800	27	160
		200	60	6,8	1000	32	340
		250	60	6,8	1200	35	540
		315	60	6,8	1600	41	1000
	292 N	100	60	6,8	700	16	88
		125	60	6,8	830	20	160
		160	60	6,8	1000	27	280
		200	60	6,8	1250	33	370
		250	60	6,8	1750	37	720
		315	60	6,8	2100	45	1200
		350	60	6,8	2400	47	1700
		430	60	6,8	3300	51	3200

European Fuses
DIN Fuses for Motor
3.6kV to 12kV - Type aSJB/D

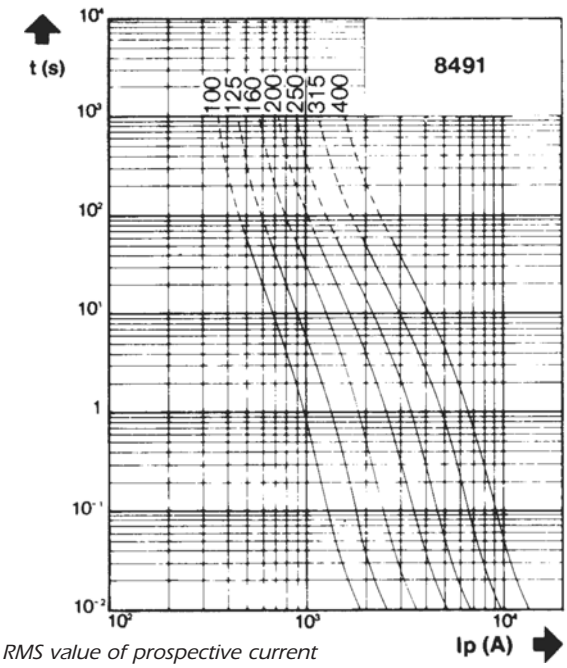
Times vs. current characteristics

Pre-arcing time **P**



RMS value of prospective current

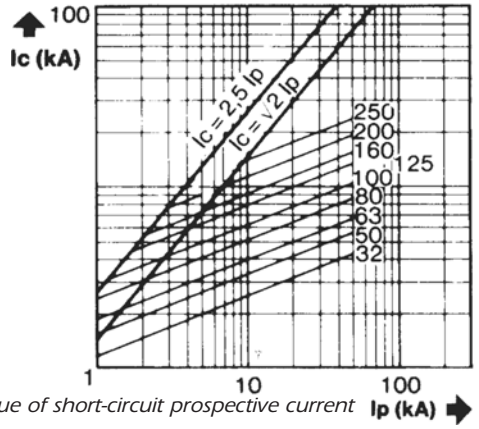
Pre-arcing time **Q**



RMS value of prospective current

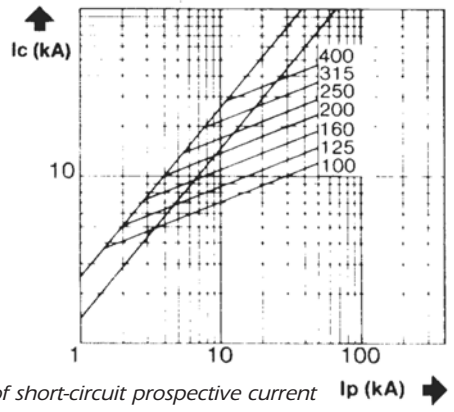
Cut-off characteristics

Cut-off current **P**



RMS value of short-circuit prospective current

Cut-off current **Q**



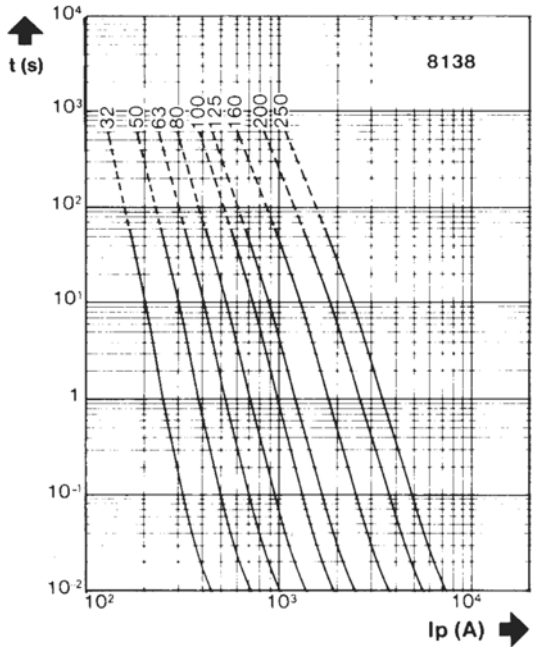
RMS value of short-circuit prospective current

Rated Voltage (kV)	L (mm)	Rating I_n	Breaking Capacity (kA)	Peak arc Voltage (kV)	Minimum Breaking Current (A)	Power dissipation for 0,7 I_n (W)	Total operating I^2t at the rated voltage (10^3 A^2S)
7,2	292 P	32	50	13	180	10	7
		50	50	13	220	14	16
		63	50	13	300	18	26
		80	50	13	380	20	60
		100	50	13	510	25	105
		125	50	13	700	29	195
		160	50	13	840	37	340
		200	50	13	1200	41	650
		250	50	13	1600	49	1100
	442 Q	100	50	15	500	30	78
		125	50	15	630	37	150
		160	50	15	880	41	290
		200	50	15	1100	47	560
		250	50	15	1400	52	1000
		315	50	15	1900	60	2000
		400	50	15	2700	69	4100

European Fuses
DIN Fuses for Motor
3.6kV to 12kV - Type aSJB/D

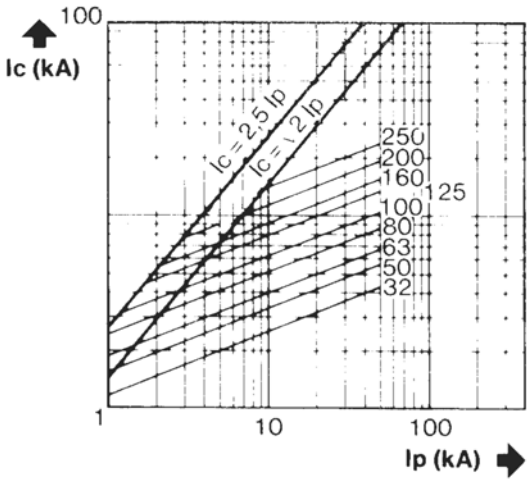
Times vs. current characteristics

Pre-arcing time **R**



RMS value of prospective current

Cut-off current **R**



RMS value of prospective current

Rated Voltage (kV)	L (mm)	Rating I_n	Breaking Capacity (kA)	Peak arc Voltage (kV)	Minimum Breaking Current (A)	Power dissipation for 0,7 I_n (W)	Total operating I^2t at the rated voltage (10^3 A^2S)
12	442 R	32	50	20	160	21	5
		50	50	20	240	31	12
		63	50	20	310	35	24
		80	50	20	410	41	48
		100	50	20	560	45	85
		125	50	20	650	53	150
		160	50	20	930	55	320
		200	50	20	1300	62	720
		250	50	20	1800	74	1280

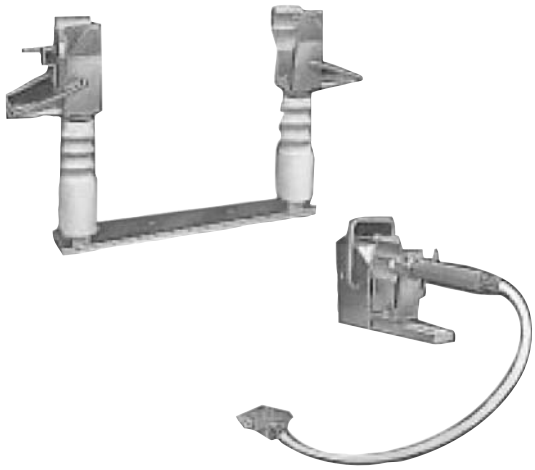
European Fuses
DIN Fuses for Motor
3.6kV to 12kV - Type aSJB/D

Use of motor fuses

Motor				Fuses Run up time							
kW	CV - HP	Operating voltage (kV)	Rated voltage (kV)	6		10		15		30	
70	95	3	3,6	45 x 192	32	45 x 192	32	45 x 192	32	45 x 192	50
		3,3	3,6	45 x 192	32	45 x 192	32	45 x 192	32	45 x 192	32
100	136	3	3,6	45 x 192	50	45 x 192	50	45 x 192	50	45 x 192	63
		3,3	3,6	45 x 192	50	45 x 192	50	45 x 192	50	45 x 192	50
		5,5	7,2	45 x 292	32	45 x 292	32	45 x 292	32	45 x 292	32
130	177	3	3,6	45 x 192	63	45 x 192	63	45 x 192	63	45 x 192	80
		3,3	3,6	45 x 192	63	45 x 192	63	45 x 192	63	45 x 192	80
		5,5	7,2	45 x 292	32	45 x 292	32	45 x 292	32	45 x 292	50
		6	7,2	45 x 292	32	45 x 292	32	45 x 292	32	45 x 292	32
180	245	3	3,6	45 x 192	80	45 x 292	80	45 x 192	100	45 x 192	100
		3,3	3,6	45 x 192	80	45 x 292	80	45 x 192	80	45 x 192	100
		5,5	7,2	45 x 292	50	45 x 292	50	45 x 292	50	45 x 292	63
		6	7,2	45 x 292	50	45 x 292	50	45 x 292	50	45 x 292	63
		6,6	7,2	45 x 292	32	45 x 292	50	45 x 292	50	45 x 292	50
220	300	3	3,6	45 x 192	100	45 x 192	100	45 x 192	125	45 x 192	125
		3,3	3,6	45 x 192	100	45 x 192	100	45 x 192	100	45 x 192	125
		5,5	7,2	45 x 292	63	45 x 292	63	45 x 292	63	45 x 292	80
		6	7,2	45 x 292	50	45 x 292	63	45 x 292	63	45 x 292	80
		6,6	7,2	45 x 292	50	45 x 292	50	45 x 292	63	45 x 292	63
250	340	3	3,6	45 x 192	100	45 x 192	125	45 x 192	125	45 x 192	160
		3,3	3,6	45 x 192	100	45 x 192	100	45 x 192	125	45 x 192	125
		5,5	7,2	45 x 292	63	45 x 292	80	45 x 292	80	45 x 292	80
		6	7,2	45 x 292	63	45 x 292	63	45 x 292	80	45 x 292	80
		6,6	7,2	45 x 292	63	45 x 292	63	45 x 292	63	45 x 292	80
		10	12	45 x 442	32	45 x 442	50	45 x 442	50	45 x 442	50
		11	12	45 x 442	32	45 x 442	32	45 x 442	50	45 x 442	50
315	430	3	3,6	45 x 192	160	45 x 192	160	45 x 192	160	45 x 192	200
		3,3	3,6	45 x 192	125	45 x 192	125	45 x 192	160	45 x 192	160
		5,5	7,2	45 x 292	80	45 x 292	80	45 x 292	80	45 x 292	100
		6	7,2	45 x 292	80	45 x 292	80	45 x 292	80	45 x 292	80
		6,6	7,2	45 x 292	80	45 x 292	80	45 x 292	80	45 x 292	80
		10	12	45 x 442	50	45 x 442	50	45 x 442	50	45 x 442	63
		11	12	45 x 442	50	45 x 442	50	45 x 442	50	45 x 442	50
420	570	3	3,6	45 x 192	160	45 x 192	200	45 x 192	200	45 x 192	250
		3,3	3,6	45 x 192	160	45 x 192	200	45 x 192	200	45 x 192	250
		5,5	7,2	45 x 292	100	45 x 292	100	45 x 292	125	45 x 292	125
		6	7,2	45 x 292	80	45 x 292	100	45 x 292	100	45 x 292	125
		6,6	7,2	45 x 292	80	45 x 292	80	45 x 292	100	45 x 292	125
		10	12	45 x 442	63	45 x 442	63	45 x 442	63	45 x 442	80
		11	12	45 x 442	63	45 x 442	63	45 x 442	63	45 x 442	63
560	760	3	3,6	45 x 192	250	45 x 192	250	45 x 192	250	45 x 192	315
		3,3	3,6	45 x 192	200	45 x 192	250	45 x 192	250	45 x 192	315
		5,5	7,2	45 x 292	125	45 x 292	125	45 x 292	160	45 x 292	160
		6	7,2	45 x 292	125	45 x 292	125	45 x 292	125	45 x 292	160
		6,6	7,2	45 x 292	100	45 x 292	100	45 x 292	125	45 x 292	160
		10	12	45 x 442	80	45 x 442	80	45 x 442	80	45 x 442	100
		11	12	45 x 442	80	45 x 442	80	45 x 442	80	45 x 442	80
700	950	3	3,6	45 x 192	250	45 x 192	315	45 x 192	315	45 x 292	315
		3,3	3,6	45 x 192	250	45 x 192	250	45 x 192	315	45 x 292	315
		5,5	7,2	45 x 292	160	45 x 292	160	45 x 292	160	45 x 292	200
		6	7,2	45 x 292	125	45 x 292	160	45 x 292	160	45 x 292	200
		6,6	7,2	45 x 292	125	45 x 292	125	45 x 292	160	45 x 292	160
		10	12	45 x 442	100	45 x 442	100	45 x 442	100	45 x 442	125
		11	12	45 x 442	80	45 x 442	100	45 x 442	100	45 x 442	100
1000	1360	3	3,6	45 x 192	350	45 x 292	350	45 x 292	430	45 x 292	430
		3,3	3,6	45 x 192	315	45 x 292	350	45 x 292	350	45 x 292	430
		5,5	7,2	45 x 292	200	45 x 292	200	45 x 292	250	45 x 292	250
		6	7,2	45 x 292	200	45 x 292	200	45 x 292	250	45 x 292	250
		6,6	7,2	45 x 292	200	45 x 292	200	45 x 292	200	45 x 292	250
		10	12	45 x 442	125	45 x 442	125	45 x 442	160	45 x 442	160
		11	12	45 x 442	125	45 x 442	125	45 x 442	125	45 x 442	160
1300	1770	3	3,6	45 x 292	430	45 x 292	430	*2 x 45 x 292	500	*2 x 45 x 292	630
		3,3	3,6	45 x 292	430	45 x 292	430	45 x 292	430	*2 x 45 x 292	630
		5,5	7,2	45 x 292	250	45 x 292	250	45 x 442	315	45 x 442	315
		6	7,2	45 x 292	250	45 x 292	250	45 x 292	250	45 x 442	315
		6,6	7,2	45 x 292	200	45 x 292	250	45 x 292	250	45 x 442	315
		10	12	45 x 442	160	45 x 442	160	45 x 442	160	45 x 442	200
		11	12	45 x 442	160	45 x 442	160	45 x 442	160	45 x 442	200
1600	2175	5,5	7,2	45 x 442	315	45 x 442	315	45 x 442	400	45 x 442	400
		6	7,2	45 x 292	250	45 x 442	315	45 x 442	315	45 x 442	400
		6,6	7,2	45 x 292	250	45 x 292	250	45 x 442	315	45 x 442	400
		10	12	45 x 442	160	45 x 442	200	45 x 442	315	45 x 442	200
		11	12	45 x 442	160	45 x 442	160	45 x 442	200	45 x 442	200
2000	2720	6	7,2	45 x 442	315	45 x 442	400	45 x 442	400	45 x 442	400
		6,6	7,2	45 x 442	315	45 x 442	315	45 x 442	400	45 x 442	400
		10	12	45 x 442	200	45 x 442	200	45 x 442	250	45 x 442	250
		11	12	45 x 442	200	45 x 442	200	45 x 442	200	45 x 442	250
2500	3400	6	7,2	45 x 442	400	45 x 442	400	*2 x 45 x 442	500	*2 x 45 x 442	630
		6,6	7,2	45 x 442	315	45 x 442	400	45 x 442	400	*2 x 45 x 442	630
		10	12	45 x 442	250	45 x 442	250	45 x 442	250	45 x 442	400
		11	12	45 x 442	200	45 x 442	200	45 x 442	250	*2 x 45 x 442	320

The notation 2 x 45 x 292 or 2 cx 45 x 442 indicates that ratings 320 A, 500 A or 600 A consist of two fuses in parallel.
The rating of each fuse body is then 160 A, 250 A or 315 A.

European Fuses
DIN Fuses for Motor
3.6kV to 12kV - Type aSJB/D



Indoor type equipment.
According to standard DIN 43624

Fuse-base

Rated Voltage (kV)	Fuse length L(mm)	Designation	Reference Number	Withstand voltage to earth		Weight (kg)	Catalog Number
				50 Hz - 1 mn (kV RMS)	1,2/50µS (kV peak)		
3,6 / 7,2	192	SI 130 45x192	R091187	27	60	2,6	SI130-45-192
	292	SI 130 45x292	P092818	27	60	2,8	SI130-45-292
	442	SI 130 45x442	Q092819	27	60	3	SI130-45-442
12	442	SI 175 45x442	Q075569	45	95	3,8	SI175-45-442

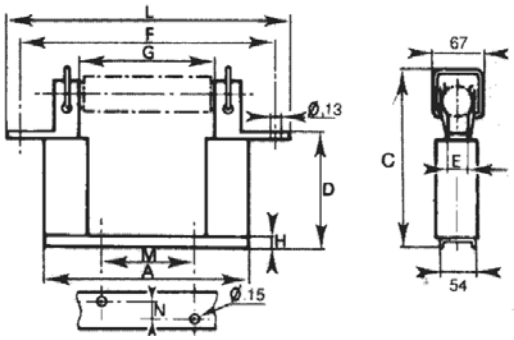
The clip MR 45 reference L 096 472 be supplied separately.

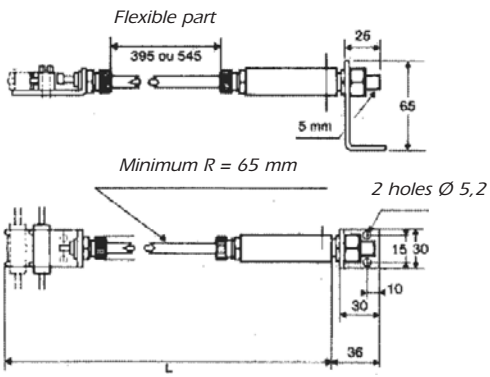
Reference Number	A (mm)	C (mm)	D (mm)	F (mm)	H (mm)	L (mm)	M (mm)	N (mm)
R091187	287	252	157	363	11	403	55	35
P092818	387	256	161	463	15	503	180	0
Q092819	538	256	161	613	15	653	300	0
Q075569	538	311	216	613	15	653	300	0

Indicating device

Rated Voltage of corresponding fuse-base (kV)	Designation	Reference Number	Number of microswitches	Length of flexible part (mm)	L (mm)	Weight (kg)	Catalog Number
7,2	MC 1-5 Flex Q	E092694	1	395	560	0,205	MC1-5NFLEXQ
7,2	MC 1-9 Flex Q	F092695	2	395	560	0,215	MC1-9NFLEXQ
12 to 36	MC 1-5 Flex Q 640	T092615	1	545	710	0,220	MC1-5NFLEXQ640
12 to 36	MC 1-9 Flex Q 640	K078945	2	545	710	0,230	MC1-9NFLEXQ640

The indicating device enables electrical actuating of the opening mechanism for a circuit or triggering of an indicator during the melting of a fuse equipped with a trip-indicator. This very robust and original device means freedom for any mechanical system and offers the advantage of being able to incorporate a microswitch unit or units according to the equipment configuration.





European Fuses
NF/UTE Fuses
7,2kV - 36kV Type FR



FR TYPE
RATED VOLTAGES 7.2, 12, 24 AND 36 kV
CURRENT RATINGS 6.3 TO 63 A

HIGH VOLTAGE FUSES FOR TRANSFORMER PROTECTION

SUPERIOR MECHANICAL STRENGTH

OUTSTANDING WITHSTAND TO OPERATING STRESSES

FOR INDOOR USE

100% SYNTHETIC STRUCTURE

UTE C 62110, UTE C 64200, UTE C 64203 AND IEC 282-1 COMPLIANT

MODEL WITH STRIKER IEC 420 COMPLIANT

Presentation

FR-type fuses are designed to protect HV/LV power distribution transformers. Designed to be coordinated with other equipment, these current-limiting fuses interrupt fault currents before they reach their peak. The fault current is interrupted inside the fuse body and although this is very fast there is no sign of it outside.
The main elements in these fuses are:

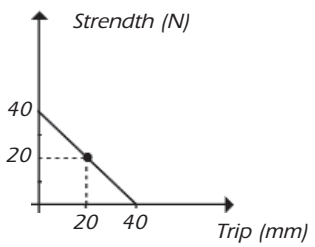
- a barrel of class F insulating synthetic material
- nickel plated aluminum end contacts
- very pure silver fuse elements
- composite material fuse element holder to withstand high temperatures

Thanks to their structure, based on a synthetic material, FR fuses are the perfect answer to the stresses involved in use inside HV bays and fuse chambers.

Technical characteristics

Rated voltage Un 7.7 to 36 kV
Current rating In 6.3 – 10 – 16 – 20 – 25 – 32 – 43 – 63 A
depending on voltage
Minimum interrupting current **I**3 as per chart page over
Breaking capacity **I**1 12,500 A
Temperature of use -25°C to +40°C
Striker: minimum force 0.5 Joules for minimum stroke 20 mm.

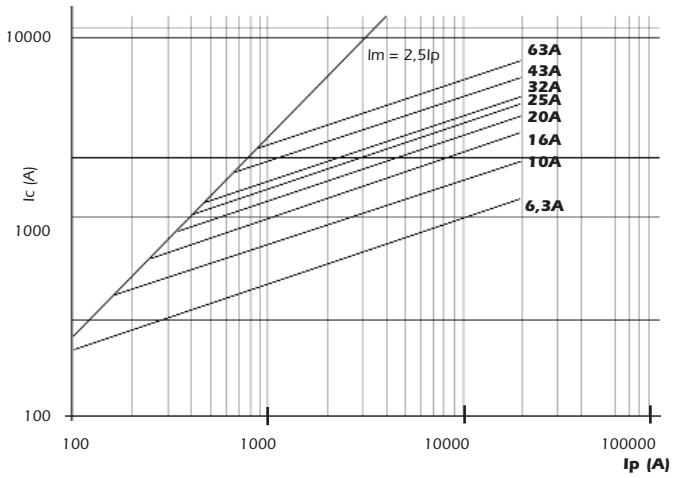
CHARACTERISTICS OF TRIP INDICATOR



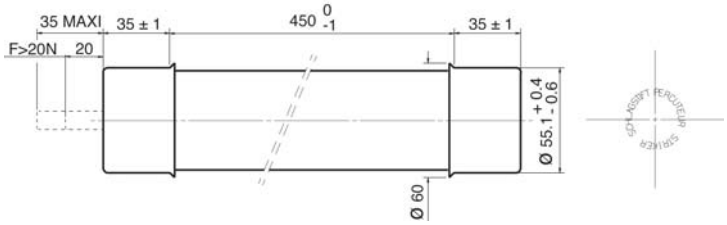
European Fuses
NF/UTE Fuses
7,2kV - 36kV Type FR

Rated voltage Un (kV)	Current rating I_n (A)	Dimensions L (mm)	Dimensions D (mm)	Minimum interrupting current (A)	Breaking capacity (kA)	Peak interrupting voltage (kV)	Power dissipation at In (W)	Total operating I^2t at Un (10^3A^2s)	Weight (kg)
7,2	6,3	520	55	31,5	12,5	20	12	0,3	2,1
7,2	16	520	55	80	12,5	20	26	1,6	2,1
7,2	32	520	55	160	12,5	20	44	6	2,1
7,2	43	520	55	215	12,5	20	61	12	2,1
7,2	63	520	55	315	12,5	20	71	24	2,1
12	6,3	520	55	31,5	12,5	34	25	0,3	2,1
12	16	520	55	80	12,5	34	53	1,6	2,1
12	32	520	55	160	12,5	34	89	6	2,1
12	43	520	55	215	12,5	34	123	12	2,1
12	63	520	55	315	12,5	34	142	24	2,1
24	6,3	520	55	31,5	12,5	58	25	0,63	2,1
24	16	520	55	80	12,5	58	53	3,3	2,1
24	32	520	55	160	12,5	58	89	13	2,1
24	43	520	55	215	12,5	58	123	25	2,1
24	63	520	55	315	12,5	58	142	50	2,1
36	6,3	520	55	31,5	12,5	-	-	-	2,1
36	10	520	55	50	12,5	-	-	-	2,1
36	16	520	55	80	12,5	-	-	-	2,1
36	20	520	55	100	12,5	-	-	-	2,1
36	25	520	55	125	12,5	-	-	-	2,1
36	32	520	55	160	12,5	-	-	-	2,1

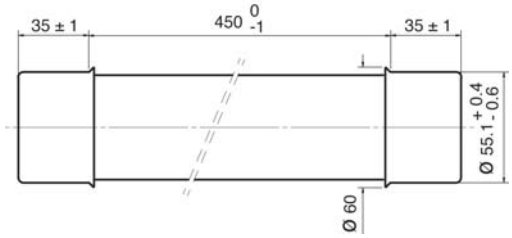
Amplitude of current interrupted 15 262 A



Dimension drawings with striker



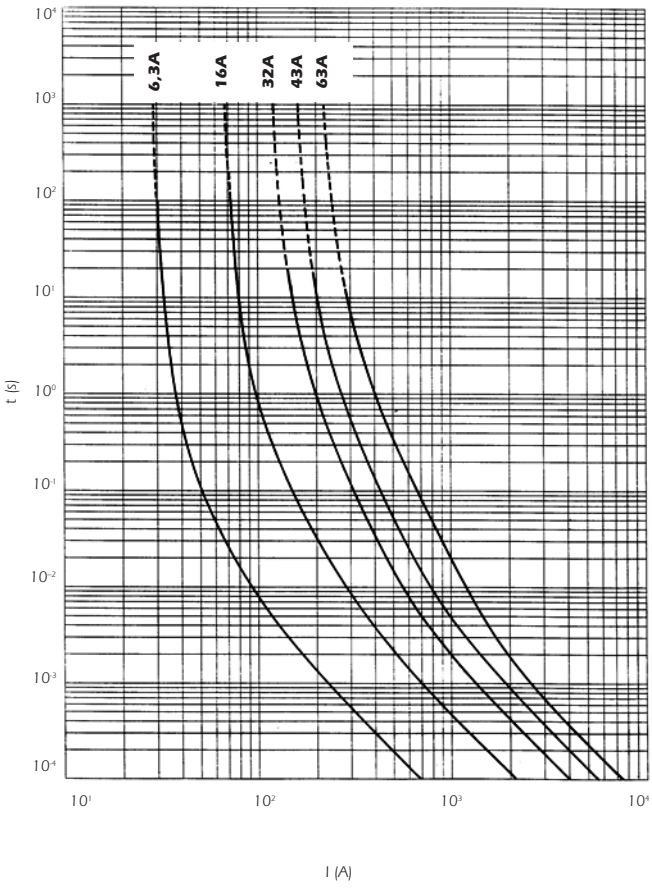
Dimension drawings w/o striker



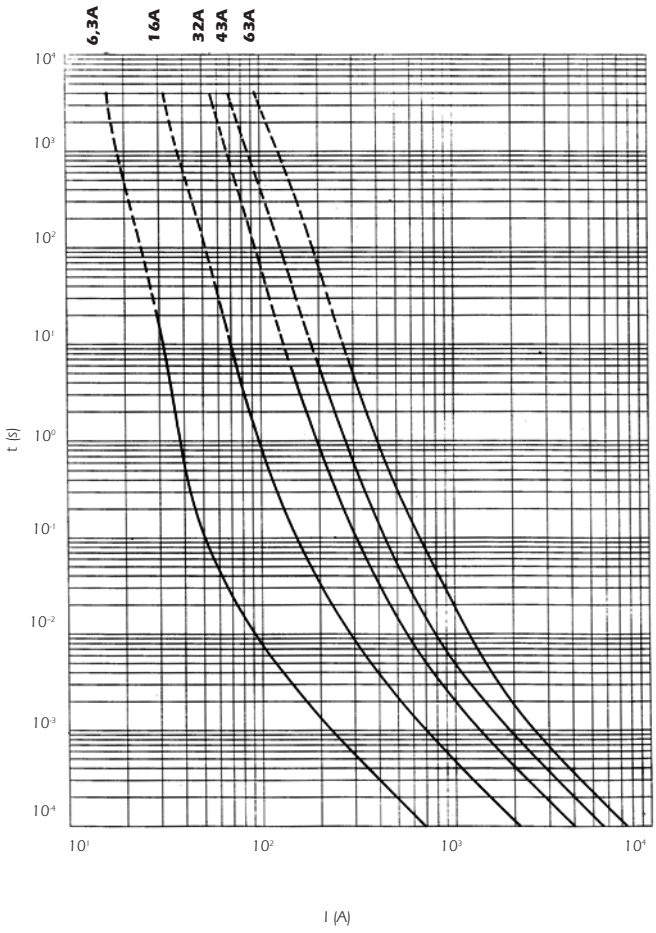
European Fuses
NF/UTE Fuses
7kV - 36kV Type FR

Time/current data

FR 7.2/36 type w/o striker



FR 7.2/36 type with striker



Guidelines for use

Rated network voltage (kV)	EDF recommendations Rated transformer power						
	50	100	160	250	400	630	1000
10	6,3	16	32	32	63	63	
15	6,3	16	16	16	43	43	63
20	6,3	6,3	16	16	43	43	43*

** Use of a 63 A fuse instead of a 43 A fuse is accepted when installed in an oil-tight compartment.*

European Fuses
NF/UTE Fuses
7kV - 36kV Type FR

Rated network voltage (kV)	C 13100 recommendations Rated transformer power																
	25	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250
5,5	6,3	16	16	16	32	32	32	63	63	63	63	63					
10	6,3	6,3	6,3	6,3	16	16	16	32	32	32	63	63	63	63			
15	6,3	6,3	6,3	6,3	6,3	16	16	16	16	16	43	43	43	43	43	63	
20	6,3	6,3	6,3	6,3	6,3	6,3	6,3	16	16	16	16	43	43	43	43	43	63
30	Pending																

Reference and catalog number

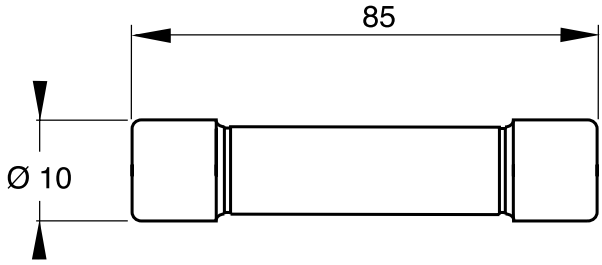
Rated voltage Un (kV)	Current Rating I_n (A)	Without trip-indicator				With trip-indicator		
		Designation	EDF parts list number (3 fuses)	Reference Number	Catalog Number	Designation	Reference Number	Catalog Number
7,2	6,3	FR 7,2/6,3		Z227584	FR72V6,3	FR 7,2/6,3 P	E227589	FR72V6,3P
7,2	16	FR 7,2/16		A227585	FR72V16	FR 7,2/16 P	F227590	FR72V16P
7,2	32	FR 7,2/32		B227586	FR72V32	FR 7,2/32 P	G227591	FR72V32P
7,2	43	FR 7,2/43		C227587	FR72V43	FR 7,2/43 P	H227592	FR72V43P
7,2	63	FR 7,2/63		D227588	FR72V63	FR 7,2/63 P	J227593	FR72V63P
12	6,3	FR 12/6,3		X210240	FR120V6,3	FR 12/6,3 P	D210246	FR120V6,3P
12	16	FR 12/16	73.02.136	Y210241	FR120V16	FR 12/16 P	E210247	FR120V16P
12	32	FR 12/32	73.02137	Z210242	FR120V32	FR 12/32 P	F210248	FR120V32P
12	43	FR 12/43		A210243	FR120V43	FR 12/43 P	G210249	FR120V43P
12	63	FR 12/63	73.02.138	B210244	FR120V63	FR 12/63 P	H210250	FR120V63P
24	6,3	FR 24/6,3	73.02.132	A210795	LOT-FR240V6,3	FR 24/6,3 P	G227430	LOT-FR240V6,3P
24	16	FR 24/16	73.02.133	B210796	LOT-FR240V16	FR 24/16 P	H227431	LOT-FR240V16P
24	32	FR 24/32		G226234	LOT-FR240V32	FR 24/32 P	J227432	LOT-FR240V32P
24	43	FR 24/43	73.02.134	C210797	LOT-FR240V43	FR 24/43 P	K227433	LOT-FR240V43P
24	63	FR 24/63	73.02.135	D210798	LOT-FR240V63	FR 24/63 P	L227434	LOT-FR240V63P
36	6,3	FR 36/6,3		K227594	FR360V6,3	FR 36/6,3 P	J227616	FR360V6,3P
36	10	FR 36/10		L227595	FR360V10	FR 36/10 P	K227617	FR360V10P
36	16	FR 36/16		M227596	FR360V16	FR 36/16 P	L227618	FR360V16P
36	20	FR 36/20		N227597	FR360V20	FR 36/20 P	M227619	FR360V20P
36	25	FR 36/25		P227598	FR360V25	FR 36/25 P	N227620	FR360V25P
36	32	FR 36/32		Q227599	FR360V32	FR 36/32 P	P227621	FR360V32P

European Fuses
MV Intermediate Fuses (Lighting)
1.5kV - 10 x 85



Rated Voltage (V)	Size	Rating (A)	Reference Number	Catalog Number
		0,125	S093327	10GC15V0,125
		0,16	T093328	10GC15V0,16
		0,25	V093329	10GC15V0,25
		0,315	W093330	10GC15V0,315
		0,4	X093331	10GC15V0,4
		0,5	Z093333	10GC15V0,5
		0,63	A093334	10GC15V0,63
1500	10x85	0,8	B093335	10GC15V0,8
		1	A093426	10GC15V1
		1,6	B093427	10GC15V1,6
		2	C093428	10GC15V2
		3,15	D093429	10GC15V3,15
		4	E093430	10GC15V4
		5	Y093654	10GC15V5
		6,3	Z093655	10GC15V6,3
		8	A093656	10GC15V8
		10	B093657	10GC15V10
		12	C093658	10GC15V12
		16	F093431	10GC15V16

Packaging 10



European Fuses
MV Intermediate Fuses (lighting)
3.2kV and 5.5kV



Rated Voltage (kV)	Dimensions (mm)	Rating I_n (A)	Fuse without trip-indicator		Fuse with trip-indicator		Weight (kg)	Catalog Number
			Designation	Ref. Number	Designation	Ref. Number		
3,2	10 x 180 (figure 1)	0,16	3200 CP gLB 10.180/0,16	E081838	-	-	0,03	10GB32V0,16
		0,315	3200 CP gLB 10.180/0,315	F081839	-	-	0,03	10GB32V0,315
		0,5	3200 CP gLB 10.180/0,5	G081840	-	-	0,03	10GB32V0,5
		0,8	3200 CP gLB 10.180/0,8	H081841	-	-	0,03	10GB32V0,8
		1	3200 CP gLB 10.180/1	P089621	-	-	0,03	10GB32V1
		1,25	3200 CP gLB 10.180/1,25	R078744	-	-	0,03	10GB32V1,25
		1,6	3200 CP gLB 10.180/1,6	N081409	-	-	0,03	10GB32V1,6
		2	3200 CP gLB 10.180/2	Q089622	-	-	0,03	10GB32V2
		2,5	3200 CP gLB 10.180/2,5	S078745	-	-	0,03	10GB32V2,5
		3,15	3200 CP gLB 10.180/3,15	M081845	-	-	0,03	10GB32V3,15
		4	3200 CP gLB 10.180/4	R089623	-	-	0,03	10GB32V4
		5	3200 CP aLB 10.180/5	M087733	-	-	0,03	10GB32V5
		6	3200 CP aLB 10.180/6	S089624	-	-	0,03	10AB32V6
		8	3200 CP aLB 10.180/8	T089625	-	-	0,03	10AB32V8
		10	3200 CP aLB 10.180/10	V089626	-	-	0,03	10AB32V10
		12	3200 CP aLB 10.180/12	W089627	-	-	0,03	10AB32V12
	36 x 190 (figure 2)	2	3200 CP gLD 36.190/2	P081801	-	-	0,4	36GD32V2
		3,15	3200 CP gLD 36.190/3,15	Q081802	-	-	0,4	36GD32V3,15
		4	3200 CP gLD 36.190/4	R081803	-	-	0,4	36GD32V4
		5	3200 CP gLD 36.190/5	S081804	-	-	0,4	36GD32V5
		6	3200 CP gLD 36.190/6	T081805	329 CP gLD 36.190/6	K081797	0,4	36GD32V6,3
		8	3200 CP gLD 36.190/8	V081806	329 CP gLD 36.190/8	J081796	0,4	36GD32V8
		10	3200 CP gLD 36.190/10	W081807	329 CP gLD 36.190/10	H081795	0,4	36GD32V10
		12	3200 CP gLD 36.190/12	X081808	329 CP gLD 36.190/12	G081794	0,4	36GD32V12
		16	3200 CP gLD 36.190/16	Y081809	329 CP gLD 36.190/16	F081793	0,4	36GD32V16
		20	3200 CP gLD 36.190/20	Z081810	329 CP gLD 36.190/20	E081792	0,4	36GD32V20
		25	3200 CP gLD 36.190/25	A081811	329 CP gLD 36.190/25	D081791	0,4	36GD32V25
		32	3200 CP gLD 36.190/32	B081812	329 CP gLD 36.190/32	C081790	0,4	36GD320V32
		40	3200 CP gLD 36.190/40	C081813	329 CP gLD 36.190/40	B081789	0,4	36GD32V40
		50	3200 CP gLD 36.190/50	D081814	329 CP gLD 36.190/50	A081788	0,4	36GD32V50
		63	3200 CP gLD 36.190/63	L081798	329 CP gLD 36.190/63	Z081787	0,4	36GD32V63
		80	3200 CP gLD 36.190/80	M081799	329 CP gLD 36.190/80	Y081786	0,4	36GD32V80
		100	3200 CP gLD 36.190/100	N081800	329 CP gLD 36.190/100	X081785	0,4	36GD32V100
5,5	10 x 180 (figure 1)	0,16	5500 CP gLB 10.180/0,16	A093035	-	-	0,03	10GB55V0,16
		0,315	5500 CP gLB 10.180/0,315	B093036	-	-	0,03	10GB55V0,315
		0,5	5500 CP gLB 10.180/0,5	W081140	-	-	0,03	10GB55V0,5
		0,8	5500 CP gLB 10.180/0,8	V081139	-	-	0,03	10GB55V0,8
		1	5500 CP gLB 10.180/1	T081138	-	-	0,03	10GB55V1
		1,25	5500 CP gLB 10.180/1,25	N093162	-	-	0,03	10GB55V1,25
		1,6	5500 CP gLB 10.180/1,6	S081137	-	-	0,03	10GB55V1,6
		2	5500 CP gLB 10.180/2	R081136	-	-	0,03	10GB55V2
		2,5	5500 CP gLB 10.180/2,5	P093163	-	-	0,03	10GB55V2,5
		3,15	5500 CP gLB 10.180/3,15	Q081135	-	-	0,03	10GB55V3,15
		4	5500 CP gLB 10.180/4	N081133	-	-	0,03	10GB55V4
	36 x 250 (figure 3)	2	5500 CP gLB 36.250/2	V081622	-	-	0,5	36GB55V2
		3,15	5500 CP gLB 36.250/3,15	A081397	-	-	0,5	36GB55V20
		4	5500 CP gLB 36.250/4	T081621	-	-	0,5	36GB55V4
		5	5500 CP gLB 36.250/5	S081620	-	-	0,5	36GB55V5
		6	5500 CP gLB 36.250/6	R081619	559 CP gLB 36.250/6	G081610	0,5	36GB55V6
		8	5500 CP gLB 36.250/8	Q081618	559 CP gLB 36.250/8	F081609	0,5	36GB55V8
		10	5500 CP gLB 36.250/10	P081617	559 CP gLB 36.250/10	E081608	0,5	36GB55V10
		12	5500 CP gLB 36.250/12	N081616	559 CP gLB 36.250/12	D081607	0,5	36GB55V12
		16	5500 CP gLB 36.250/16	M081615	559 CP gLB 36.250/16	C081606	0,5	36GB55V16
		20	5500 CP gLJB 36.250/20	L081614	559 CP gLJB 36.250/20	E078802	0,5	36GJB55V20
		25	5500 CP gLJB 36.250/25	Q078789	559 CP gLJB 36.250/25	F078803	0,5	36GJB55V25
		32	5500 CP gLJB 36.250/32	R078790	559 CP gLJB 36.250/32	G078804	0,5	36GJB55V32
		40	5500 CP gLJB 36.250/40	S078791	559 CP gLJB 36.250/40	H078805	0,5	36GJB55V40
		50	5500 CP gLJB 36.250/50	T078792	559 CP gLJB 36.250/50	J078806	0,5	36GJB55V50
		63	5500 CP aLJB 36.250/63	V078793	559 CP aLJB 36.250/63	K078807	0,5	36AJB55V63
		75	5500 CP aLJB 36.250/75	W078794	559 CP aLJB 36.250/75	L078808	0,5	36AJB55V75
	55 x 259 (figure 4)	2	5500 CP gLD 55.259/2	S081505	-	-	1,4	55GD55V2
		3,15	5500 CP gLD 55.259/3,15	S081390	-	-	1,4	55GD55V3,15
		4	5500 CP gLD 55.259/4	R081504	-	-	1,4	55GD55V4
		5	5500 CP gLD 55.259/5	Q081503	-	-	1,4	55GD55V5
		6	5500 CP gLD 55.259/6	P081502	559 CP gLD 55.259/6	A081489	1,4	55GD55V6
		8	5500 CP gLD 55.259/8	N081501	559 CP gLD 55.259/8	Z081488	1,4	55GD55V8
		10	5500 CP gLD 55.259/10	M081500	559 CP gLD 55.259/10	Y081487	1,4	55GD55V10
		12	5500 CP gLD 55.259/12	L081499	559 CP gLD 55.259/12	X081486	1,4	55GD55V12
		16	5500 CP gLD 55.259/16	K081498	559 CP gLD 55.259/16	W081485	1,4	55GD55V16
		20	5500 CP gLD 55.259/20	J081497	559 CP gLD 55.259/20	V081484	1,4	55GD55V20
		25	5500 CP gLD 55.259/25	H081496	559 CP gLD 55.259/25	T081483	1,4	55GD55V25
		32	5500 CP gLD 55.259/32	G081495	559 CP gLD 55.259/32	S081482	1,4	55GD55V32
		40	5500 CP gLD 55.259/40	F081494	559 CP gLD 55.259/40	R081481	1,4	55GD55V40
		50	5500 CP gLD 55.259/50	E081493	559 CP gLD 55.259/50	Q081480	1,4	55GD55V50
		63	5500 CP gLD 55.259/63	D081492	559 CP gLD 55.259/63	P081479	1,4	55GD55V63
		80	5500 CP gLD 55.259/80	C081491	559 CP gLD 55.259/80	N081478	1,4	55GD55V80
		100	5500 CP gLD 55.259/100	B081490	559 CP gLD 55.259/100	M081477	1,4	55GD55V100

European Fuses
MV Intermediate Fuses (lighting)
3.2kV and 5.5kV

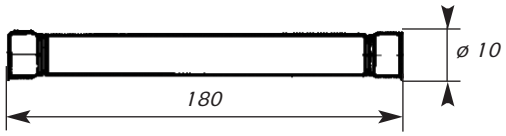
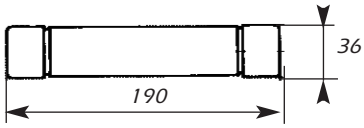
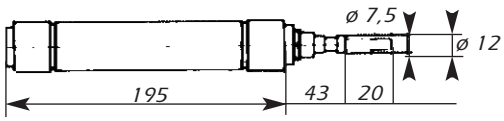


FIGURE 1

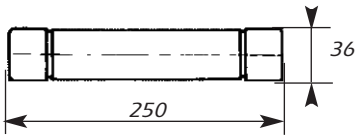


Without trip-indicator

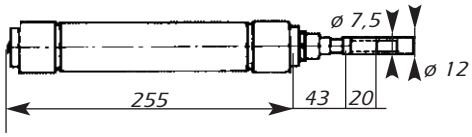


With trip-indicator

FIGURE 2

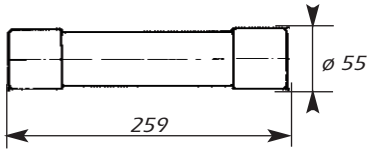


Without trip-indicator

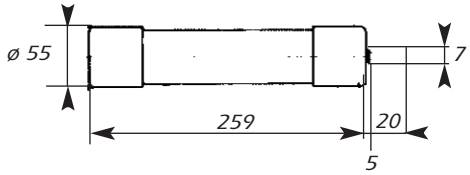


With trip-indicator

FIGURE 3



Without trip-indicator



With trip-indicator

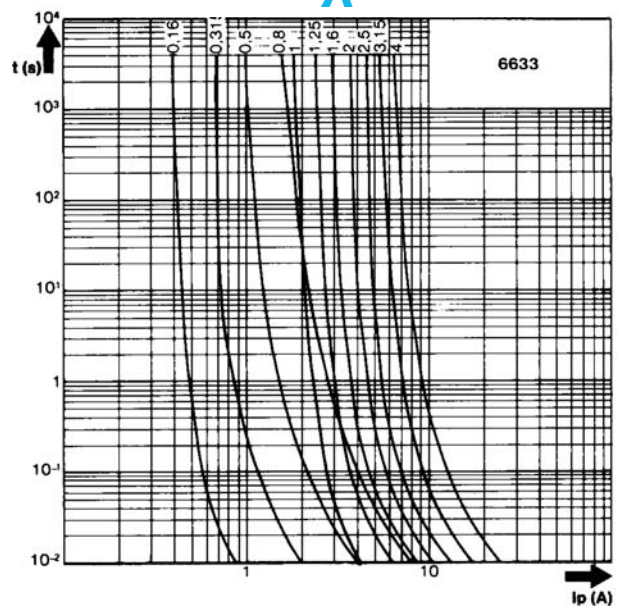
FIGURE 4

European Fuses
MV Intermediate Fuses (lighting)
3.2kV and 5.5kV

Time/Current characteristics

Pre-arcing time

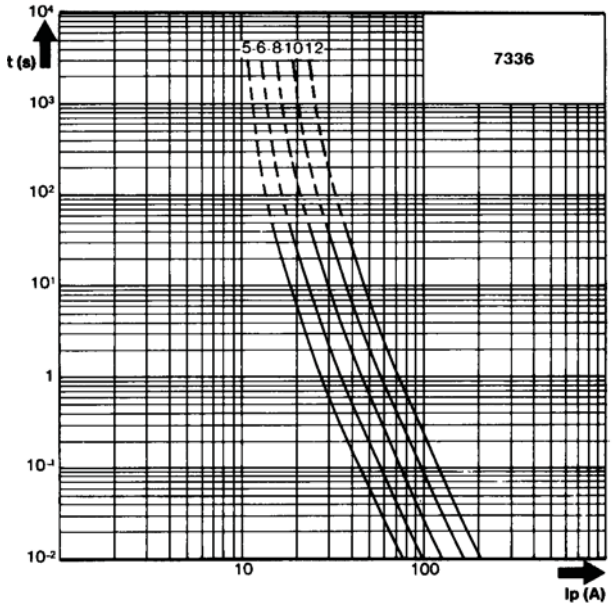
A



RMS value of short-circuit prospective current

Pre-arcing time

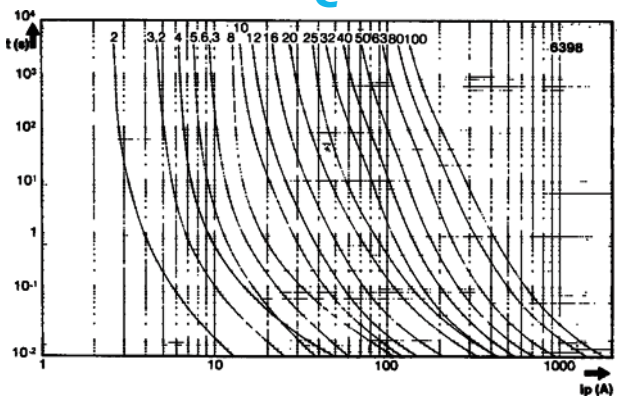
B



RMS value of short-circuit prospective current

Pre-arcing time

C

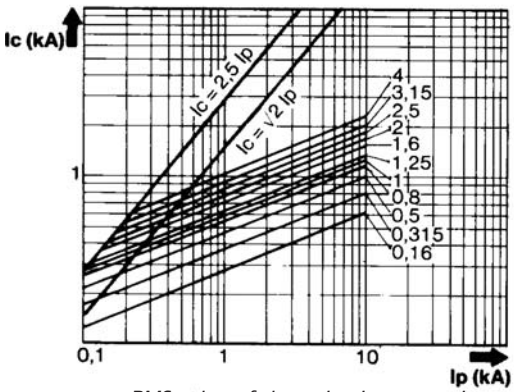


RMS value of short-circuit prospective current

European Fuses
MV Intermediate Fuses (lighting)
3.2kV and 5.5kV

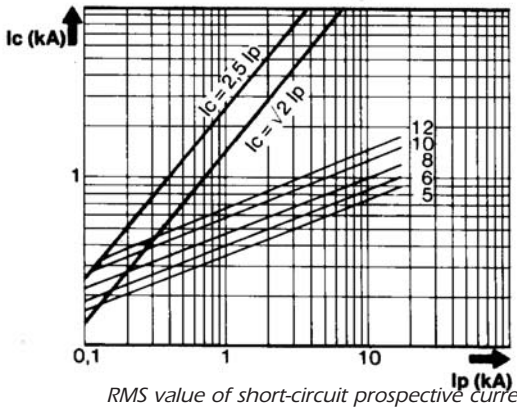
Cut-off characteristics

Cut-off current **A**



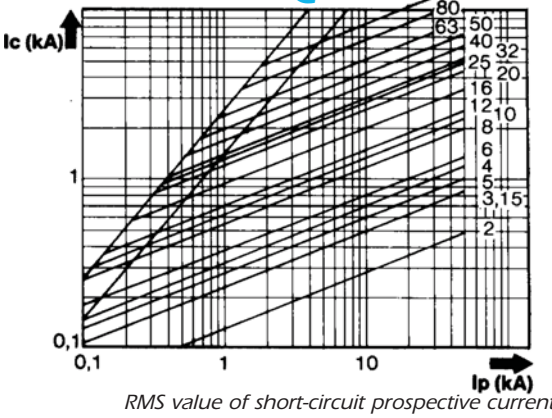
RMS value of short-circuit prospective current

Cut-off current **B**



RMS value of short-circuit prospective current

Cut-off current **C**



RMS value of short-circuit prospective current

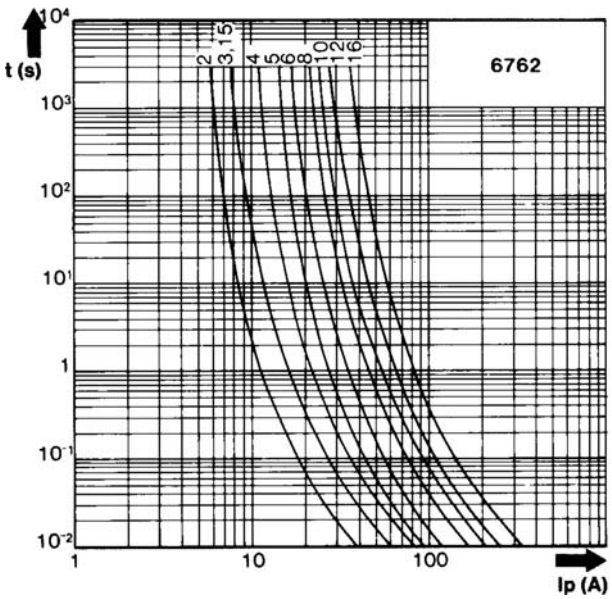
Rated Voltage (kV)	Dimenssions (mm)	Rating (A)	Breaking Capacity (kA)	Peak arc voltage (kV)	Minimum Breaking Current (A)	Power Dissipation at I_n (W)
3,2	10x180 **A B**	0,16	15	12		
		0,315	15	12		
		0,5	15	12		
		0,8	15	12		
		1	15	12		
		1,25	15	12		
		1,6	15	12		
		2	15	12		
		2,5	15	12		
		3,15	15	12		
		4	15	12		
		5	17,5	8	14	2
		6	17,5	8	18	2,5
		8	17,5	8	21	3,7
		10	17,5	8	30	4
		12	17,5	8	36	4,8
	36x190 **C**	2	50	15		
		3,15	50	15		
		4	50	15		
		6	50	15		
		8	50	15		
		10	50	15		14
		12	50	15		17
		16	50	15		19
		20	50	15		20
		25	50	15		25
		32	50	7,2		17
		40	50	7,2		19
		50	50	7,2		23
		63	50	7,2		25
		80	50	7,2		25
		100	50	7,2		30

European Fuses
MV Intermediate Fuses (lighting)
3.2kV and 5.5kV

Time/Current characteristics

Pre-arcing time

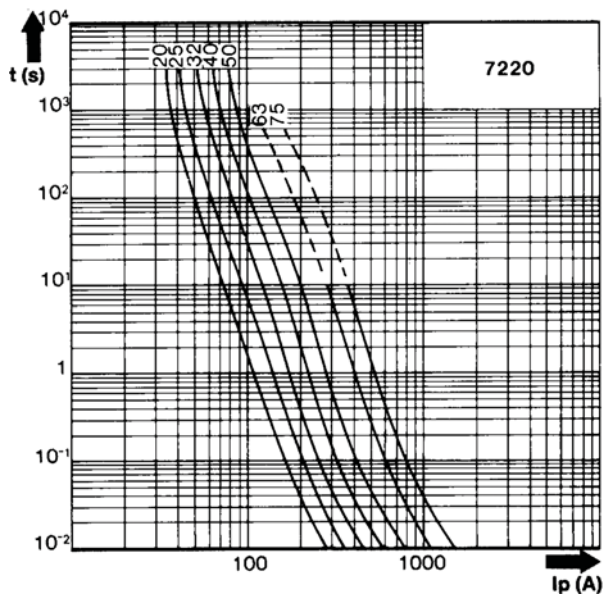
D



RMS value of short-circuit prospective current

Pre-arcing time

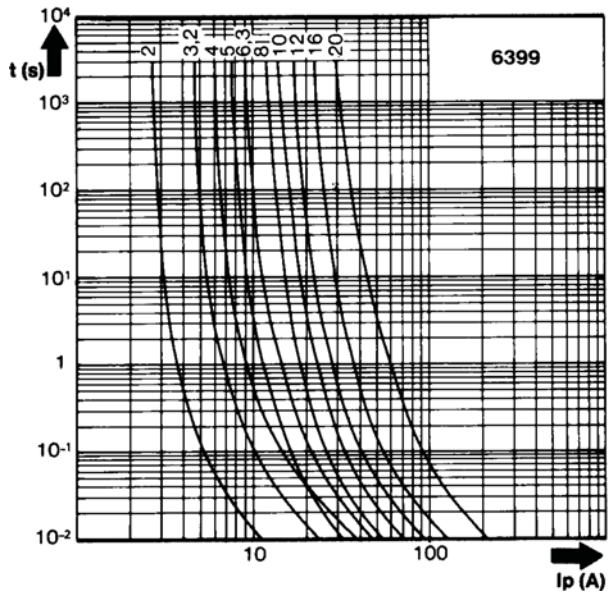
E



RMS value of short-circuit prospective current

Pre-arcing time

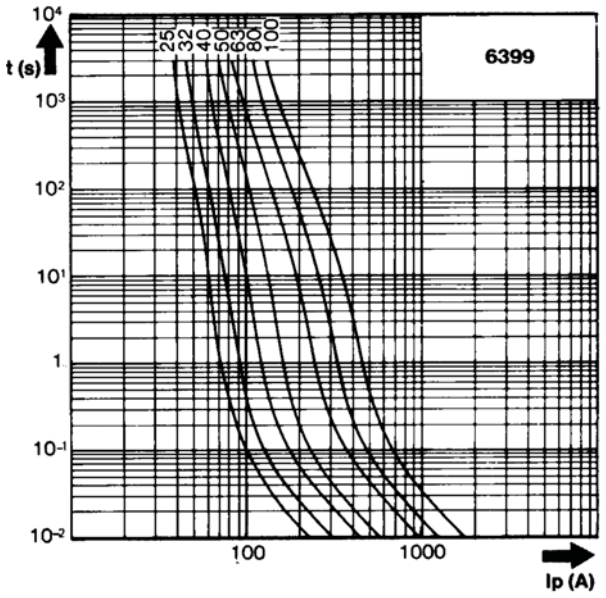
F



RMS value of short-circuit prospective current

Pre-arcing time

G

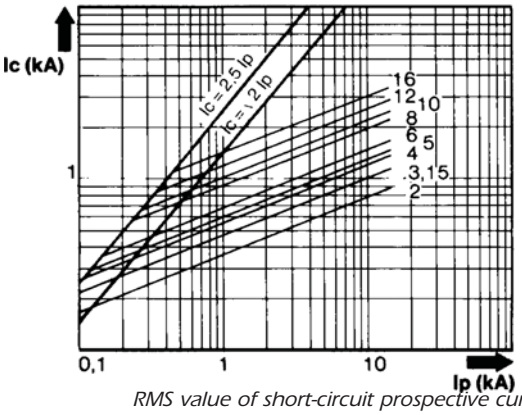


RMS value of short-circuit prospective current

European Fuses
MV Intermediate Fuses (lighting)
3.2kV and 5.5kV

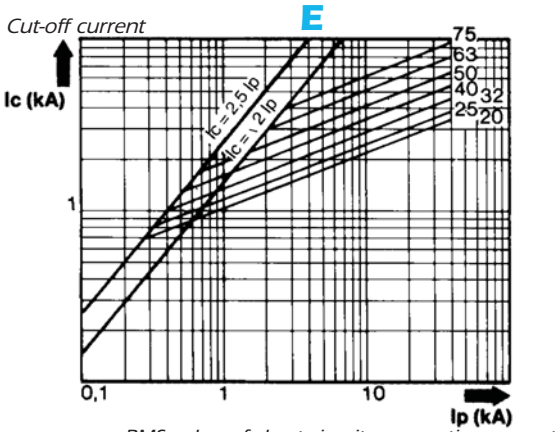
Cut-off characteristics

Cut-off current **D**



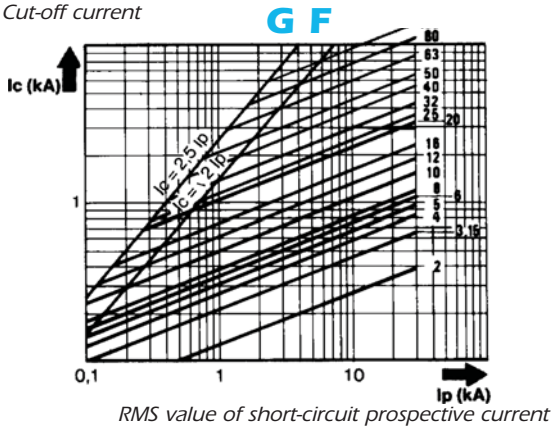
RMS value of short-circuit prospective current

Cut-off current **E**



RMS value of short-circuit prospective current

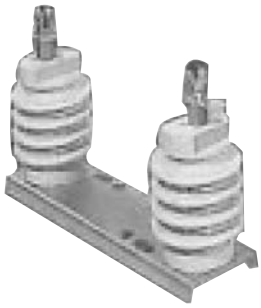
Cut-off current **G F**

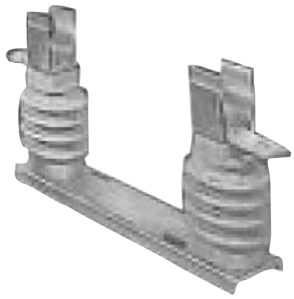


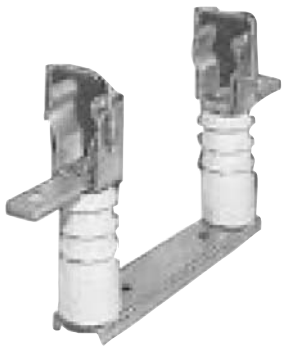
RMS value of short-circuit prospective current

Rated Voltage (kV)	Dimenssions (mm)	Rating (A)	Breaking Capacity (kA)	Peak arc voltage (kV)	Minimum Breaking Current (A)	Power Dissipation at I_n (W)
5,5	10x180 **A**	0,16	10	12		
		0,315	10	12		
		0,5	10	12		
		0,8	10	12		
		1	10	12		
		1,25	10	12		
		1,6	10	12		
		2	10	12		
		2,5	10	12		
		3,15	10	12		
		4	10	12		
	36x250 **D E**	2	15	15		1,5
		3,15	15	15		2
		4	15	15		2,3
		5	15	15		2,8
		6	15	15		4
		8	15	15		5
		10	15	15		8
		12	15	15		9
		16	15	15		14
		20	40	12		16
		25	40	12		20
		32	40	12		24
		40	40	12		30
		50	40	12		35
		63	40	12		38
		75	40	12		40
	55x259 **F G**	2	30	18		
		3,15	30	18		
		4	30	18		
		5	30	18		
		6	30	18		
		8	30	18		
		10	30	18		
		12	30	18		
		16	30	18		
		20	30	18		
		25	30	12		25
		32	30	12		30
		40	30	12		34
		50	30	12		40
		63	30	12		40
		80	30	12		50
		100	30	12		55

European Fuses
MV Intermediate Fuses (lighting)
3.2kV and 5.5kV







Fuse holder

Rated voltage (kV)	Withstand Voltage to earth		Designation	Figure	Reference Number	Weight (kg)	Catalog Number
	50 Hz - 1 mn (kV RMS)	1,2/50µS (kV peak)					
3,6	21	45	SI 50 10x180	5	S092706	0,22	SI50-10-180
7,2	27	60	SI 85 36x190	6	C092738	1,05	SI85-36-190TRA
7,2	27	60	SI 85 10x180	7	D092693	0,27	SI85-10-180
7,2	27	60	SI 85 36x250	8	P092864	1,15	SI85-36-250
7,2	27	60	SI 120 55x259	9	X092227	3,9	SI130-55-259

The clips MR 10, MR 36 and MR 55 can be supplied separately

Indicating device

Designation	Reference Number	Number of microswitches	Type of fuse that can be equipped	Length of flexible part (mm)	Weight (kg)	Catalog Number
MC 1-5 Flex	E098674	1	Figure 2&3	395	0,110	MC1-5NFLEX
MC 1-9 Flex	F098675	2	Figure 2&3	395	0,120	MC1-9NFLEX
MC 1-5 Flex Q	E092694	1	Figure 4	395	0,205	MC1-5NFLEXQ
MC 1-9 Flex Q	F092695	2	Figure 4	395	0,215	MC1-9NFLEXQ

The electrical data of microswitches is given

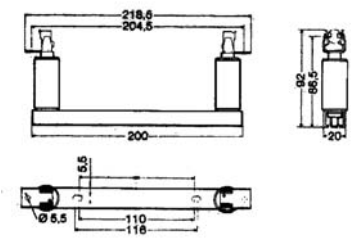


FIGURE 5

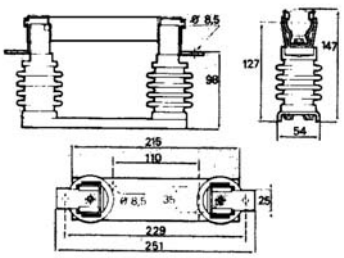


FIGURE 6

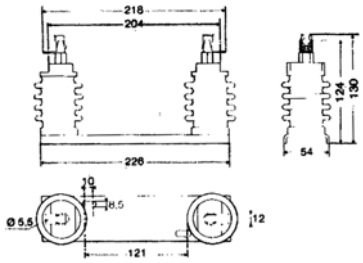


FIGURE 7

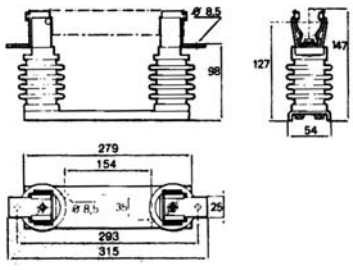


FIGURE 8

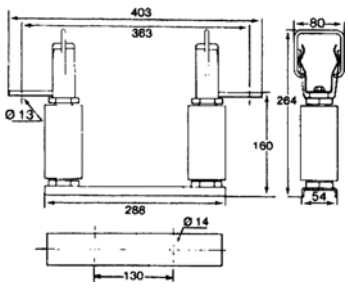


FIGURE 9

European Fuses
Potential Transformer Fuses
5.5kV to 25.5kV - 20x127 to 20x340

Fuses for the protection of low power receptors

Complying with IEC 282-1 standard
Interior equipment





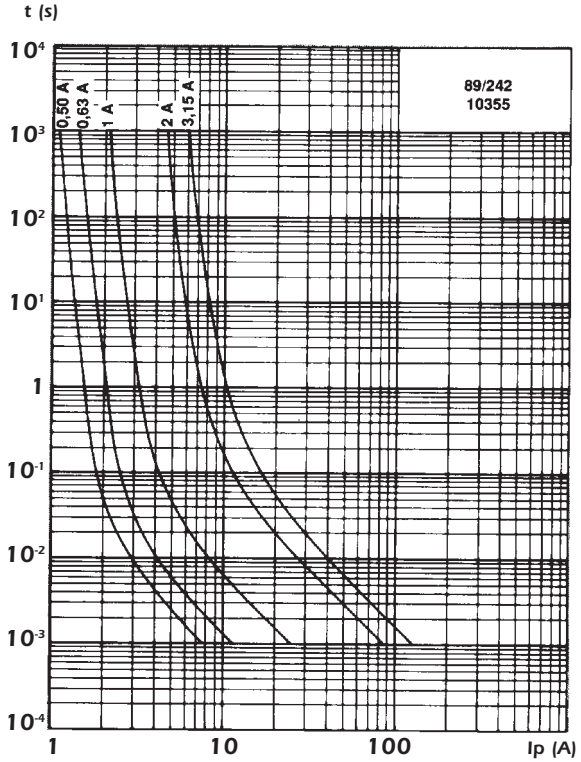
Rated voltage (kV)	L (mm)	Rating In (A)	Designation	Reference Number	Weight (kg)	Catalog number
5,5	127	0,63	5 500 CP gL 20x127/0,63	F076802	0,08	20GG55V0,63
		1	5 500 CP gL 20x127 /1	G076803	0,08	20GG55V1
		2	5 500 CP gL 20x127 /2	J076805	0,08	20GG55V2
		3,15	5 500 CP gL 20x127/3,15	K076806	0,08	20GG55V3,15
7,2	190	0,63	7 200 CP gL 20x190/0,63	V077850	0,12	20GF72V0,63
		1	7 200 CP gL 20x190 /1	W077851	0,12	20GF72V1
		2	7 200 CP gL 20x190 /2	Y077853	0,12	20GF72V2
		3,15	7 200 CP gL 20x190/3,15	Z077854	0,12	20GF72V3,15
8,25	190	0,63	8 250 CP gL 20x190/0,63	D095775	0,12	20GC82,5V0,63
		1	8 250 CP gL 20x190 /1	E095776	0,12	20GC82,5V1
		2	8 250 CP gL 20x190 /2	G095778	0,12	20GC82,5V2
		3,15	8 250 CP gL 20x190/3,15	H095779	0,12	20GC82,5V3,15
12	254	0,63	12 000 CP gL 20x254/0,63	L076807	0,16	20GC120V0,63
		1	12 000 CP gL 20x254 /1	M076808	0,16	20GC120V1
		2	12 000 CP gL 20x254 /2	P076810	0,16	20GC120V2
		3,15	12 000 CP gL 20x254/3,15	Q076811	0,16	20GC120V3,15
15,5	254	0,63	15 500 CP gL 20x254/0,63	K095827	0,16	20GC155V0,63
		1	15 500 CP gL 20x254 /1	V097814	0,16	20GC155V1
		2	15 500 CP gL 20x254 /2	W097815	0,16	20GC155V2
		3,15	15 500 CP gL 20x254/3,15	H220025	0,16	20GC155V3,15
24	340	0,63	24 000 CP gL 20x340/0,63	N078235	0,215	20GLC240V0,63
25,5	340	0,5	25 500 CP gL 20x340/0,5	D099915	0,215	20GC255V0,5

Note: These fuses are never equipped with a trip-indicator. Connecting clips MR 20,6.

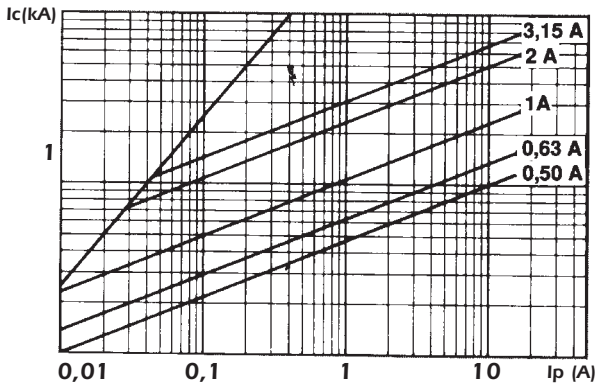
European Fuses
Potential Transformer Fuses
5.5kV to 25.5kV - 20x127 to 20x340

Electrical data on fuses for the protection of low power receptors

Time-current characteristics



Cut-off characteristics



Ip = RMS value of short-circuit prospective current
t(s)= Pre-arcing time
Ic = Cut-off current

Rated voltage (kV)	L (mm)	Rating I_n (A)	Breaking capacity (kA)	Peak arc voltage (kV)	Power dissipation at I_n (W)
5,5	127	0,63	20	22	1,6
		1	20	22	1,8
		2	20	22	2,5
		3,15	20	22	4,1
7,2 / 8,25	190	0,63	20	25 /33	1,9 / 2,5
		1	20	25 /33	2,2 / 2,9
		2	20	25 /33	3,1 / 4,1
		3,15	20	25 /33	6,0 / 6,7
12 / 15,5	254	0,63	20 /16	42 / 62	3,2 / 4,8
		1	20 / 16	42 /62	3,6 / 5,6
		2	20 / 16	42 / 62	5,2 / 7,8
		3,15	20 / 16	42 / 62	8,6 / 13
24	340	0,63	16	84	6,7
25,5	340	0,5	16	102	11,8

Ferraz Shawmut
Current-Limiting Power Fuses
formally GE Current-Limiting Power Fuses



Ferraz Shawmut

Ferraz Shawmut LLC acquired General Electric's Power Fuse operations from GE Consumer & Industrial on December 3rd, 2007. Since then, all Current-Limiting Power Fuses, Fuse Supports, Fuse Disconnect Switches and Spare Parts offered by GE are now available from Ferraz Shawmut. While the present catalog contains the majority of these GE products, other publications or technical information can be obtained from the factory or Ferraz Shawmut website regarding products or data not included in this document. For information regarding the Ferraz Shawmut Medium Voltage Fuse line, please consult our Advisor, our website or contact the factory.

9F60 series, EJ-2 type (Motor Starters) (U/L Recognized)

Backup current-limiting power fuses designed to provide short circuit protection of individual motors. These fuses are designed to interrupt current from 100 times the R-rating up to 50kA rms symmetrical at rated voltage. The elements of these fuses are designed to withstand the cyclic motor-starting application.



9F60 series, EJ-5 / EJO-5 type (Capacitor)

Special-purpose fuses designed for individual capacitor protection. The EJ-5 is designed for use indoors or inside an enclosure only. The EJO-5 models can be used outdoors. The major purposes of such fusing are: (a) to protect the systems from failed capacitor units, and (b) to prevent damage to adjacent capacitors and associated equipment.



9F60 series, EJ-1 / EJO-1 type (Power Distribution)

Current limiting power fuses designed not only to interrupt the high-fault currents but also to interrupt low-fault currents down to approximately 3 times their continuous rating. The EJO-1 models can be used outdoors without any protecting enclosure.



9F62 series, EJO-1 type (General Purpose) (U/L Listed)

General Purpose current-limiting fuses designed to interrupt the high-fault currents and also the low-fault currents down to approximately 1.6 times their continuous current rating. These fuses can be used outdoors without any protecting enclosure.



9F61 series, EK-1 / EKO-1 (Fuse Supports)

Mountings of the non-disconnecting type are available. They are used primarily in potential transformer circuits, or where there is some other disconnecting or isolating device in series with the fuse in the circuit. Fuse supports can be mounted vertically or horizontally. The EKO-1 models are designed to be installed outdoors.



9F61 series, EK-3 / EKO-3 (Fuse Disconnect Switches)

These devices have the additional feature of serving as disconnecting switches to isolate the equipment they protect. It should be noted that the disconnecting switches are not load-breaking devices, therefore the circuit must be open prior to the fuse disconnection. The EKO-3 models are designed to be installed outdoors.

9F59U series, ETP type (Distribution Applications)

Backup current-limiting fuses designed to protect external transformers are used in series with another protective device (such as an expulsion fuse). This combination limits the high-fault current to a safe level, thus providing protection through the complete range.



9F59T series, OSP type (Distribution Applications)

Backup current-limiting fuses are designed to be used in series with another protective device (such as an expulsion fuse) to give protection through the complete range. OSP stands for Oil Submerged Protector. These fuses are sealed against the ingress of oil. Each fuse is given a helium mass spectrometer leak test to prove the integrity of the seal.



Current-Limiting Power Fuses



Application

Medium-voltage distribution systems that supply industrial plants, shopping centers, hospitals, schools, office buildings and underground residential service often require special types of overcurrent protection. This is of particular importance because, in the event of a fault, these types of systems frequently produce high short-circuit currents that may result in damage to busway, motors, switches and other equipment. Current-limiting power fuses are widely used in these applications because they afford excellent over-current protection and noiseless operation, and because they can be used in confined spaces. The amount of damage in the faulted area and the mechanical stress and strain on busway, switches and other apparatus carrying the fault current is proportional to the square of the current and to the length of time the fault persists. By limiting the let through energy at the fault, properly applied current-limiting fuses assist in limiting or preventing short-circuit damage to busway, circuit breakers, switches, and other electrical components. Current-limiting power fuses are manufactured in ratings ranging from 0.6 kV through 38 kV and in continuous current ratings from 0.5 amperes through 900 amperes. Various designs are available for use with motors, transformers, capacitors, and circuit-protection equipment.

Product Features

Current-limiting power fuses offer significant advantages for protecting electrical power systems and equipment. Advantages include:

—High interrupting capacity
—Noiseless operation, since the interruption is totally contained
—Fast current-limiting operation when troublesome high available fault currents are encountered
—No pressure build-up, therefore, no vents or special reinforced compartments are required



Capacitor Fuses

9F60 Series
EJO-5 9F60
Suitable for use indoors or outdoors

Product Description

Backup Capacitor current-limiting fuses are designed for individual capacitor protection. The EJO-5 can be used in any location (indoor or outdoor). The major purposes of such fusing are: (a) to protect the systems from failed capacitor units, and (b) to prevent damage to adjacent capacitors and associated equipment.

12" Clip Centers Clip-in Mounting[1] Indoor or Outdoor

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/max GES	Product Number	List Price Prod. ID MVCAP
5.5	25	1	YES	C/2.08"/14.00"	50kA	8118/8119	9F60RJD025	
5.5	40	1	YES	C/2.08"/14.00"	50kA	8118/8119	9F60RJD040	
5.5	80	1	YES	C/2.08"/14.00"	50kA	8120/8121	9F60RJD080	
9.52	15	1	YES	C/2.08"/14.00"	50kA	8118/8119	9F60RJF015	
9.52	25	1	YES	C/2.08"/14.00"	50kA	8120/8121	9F60RJF025	
9.52	40	1	YES	C/2.08"/14.00"	50kA	8120/8121	9F60RJF040	

[1]EJO-5 capacitor fuses are typically mounted directly on the capacitor. No supports, disconnect switches, or live parts are available.

General Purpose Fuses

9F62 Series
EJO-1 General Purpose
UL Listed
Suitable for use indoors or outdoors



Product Description

General Purpose current-limiting fuses are designed to interrupt the high-fault currents and also the low-fault currents down to approximately 1.6 to 2.2 times their continuous current rating. This fuse is defined in the IEEE Std C37.40 -1993 (3.1.57) as "A fuse capable of interrupting all currents from the rated interrupting current down to the current that causes melting of the fusible element in no less than one hour." These fuses can be used outdoors without any protecting enclosure. Available from 5.5 to 15.5kV and 20 to 900A.

12" Clip Centers Clip-in Mounting Indoor or Outdoor

Max kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
5.5	25	1	YES	C/2"/14.18"	50 kA	8134/8135	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F62HCB025	
5.5	30	1	YES	C/2"/14.18"	50 kA	8134/8135	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F62HCB030	
5.5	40	1	YES	C/2"/14.18"	50 kA	8134/8135	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F62HCB040	
5.5	50	1	YES	C/2"/14.18"	50 kA	8134/8135	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F62HCB050	
5.5	65	1	YES	C/2"/14.18"	50 kA	8134/8135	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F62HCB065	
5.5	80	1	YES	D/3"/15.88"	50 kA	8134/8135	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F62DCB080	
5.5	100	1	YES	D/3"/15.88"	50 kA	8134/8135	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F62DCB100	
5.5	125	1	YES	D/3"/15.88"	50 kA	8134/8135	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F62DCB125	
5.5	150	1	YES	D/3"/15.88"	50 kA	8134/8135	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F62DCB150	
5.5	175	1	YES	D/3"/15.88"	50 kA	8134/8135	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F62DCB175	
5.5	200	1	YES	D/3"/15.88"	50 kA	8134/8135	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F62DCB200	
5.5	250	2	YES	DD/(2) 3"/15.88"	50 kA	8134/8135	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F62FCB250	
5.5	300	2	YES	DD/(2) 3"/15.88"	50 kA	8134/8135	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F62FCB300	
5.5	350	2	YES	DD/(2) 3"/15.88"	50 kA	8134/8135	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F62FCB350	
5.5	400	2	YES	DD/(2) 3"/15.88"	50 kA	8134/8135	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F62FCB400	
5.5	450	2	YES	DD/(2) 3"/15.88"	50 kA	8134/8135	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F62FCB450	
8.3	20	1	YES	C/2"/14.18"	50 kA	8136/8137	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F62HCC020	
8.3	25	1	YES	C/2"/14.18"	50 kA	8136/8137	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F62HCC025	
8.3	30	1	YES	C/2"/14.18"	50 kA	8136/8137	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F62HCC030	
8.3	40	1	YES	C/2"/14.18"	50 kA	8136/8137	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F62HCC040	
8.3	50	1	YES	C/2"/14.18"	50 kA	8136/8137	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F62HCC050	
8.3	65	1	YES	D/3"/15.88"	50 kA	8136/8137	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F62DCC065	
8.3	80	1	YES	D/3"/15.88"	50 kA	8136/8137	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F62DCC080	
8.3	100	1	YES	D/3"/15.88"	50 kA	8136/8137	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F62DCC100	
8.3	125	1	YES	D/3"/15.88"	50 kA	8136/8137	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F62DCC125	
8.3	150	1	YES	D/3"/15.88"	50 kA	8136/8137	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F62DCC150	
8.3	175	2	YES	DD/(2) 3"/15.88"	50 kA	8136/8137	9F61AEG401	9F61CEF409	9F61AEG405	9F61CEF410	9F62FCC175	
8.3	200	2	YES	DD/(2) 3"/15.88"	50 kA	8136/8137	9F61AEG401	9F61CEF409	9F61AEG405	9F61CEF410	9F62FCC200	
8.3	250	2	YES	DD/(2) 3"/15.88"	50 kA	8136/8137	9F61AEG401	9F61CEF409	9F61AEG405	9F61CEF410	9F62FCC250	

Current-Limiting Power Fuses

Bolted End Fittings Indoor or Outdoor

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/ max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
5.5	500	4	YES	DDDD/(4) 3"/see outline drawing for dimensions	50 kA	8134/8135	9F61AKB001	9F61CKF009	–	–	9F62KCB500	
5.5	600	4	YES	DDDD/(4) 3"/see outline drawing for dimensions	50 kA	8134/8135	9F61AKB001	9F61CKF009	–	–	9F62KCB600	
5.5	700	4	YES	DDDD/(4) 3"/see outline drawing for dimensions	50 kA	8134/8135	9F61AKB001	9F61CKF009	–	–	9F62KCB700	
5.5	800	4	YES	DDDD/(4) 3"/see outline drawing for dimensions	50 kA	8134/8135	9F61AKB001	9F61CKF009	–	–	9F62KCB800	
5.5	900	4	YES	DDDD/(4) 3"/see outline drawing for dimensions	50 kA	8134/8135	9F61AKB001	9F61CKF009	–	–	9F62KCB900	

Current-Limiting Power Fuses

15”Clip Centers Clip-in Mounting Indoor or Outdoor

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/ max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
15.5	20	1	YES	C/2”/17.20”	50 kA	8138/8139	9F61AGG201 (13.8kV nominal 95 kV BIL), 9F61AGJ201 (14.4kV nominal 110 kV BIL)	9F61CGL209	9F61AGG205 (13.8kV nominal 95 kV BIL), 9F61AGJ205 (14.4kV nominal 110 kV BIL)	9F61CGL210	9F62HDD020	
15.5	25	1	YES	C/2”/17.20”	50 kA	8138/8139	9F61AGG201 (13.8kV nominal 95 kV BIL), 9F61AGJ201 (14.4kV nominal 110 kV BIL)	9F61CGL209	9F61AGG205 (13.8kV nominal 95 kV BIL), 9F61AGJ205 (14.4kV nominal 110 kV BIL)	9F61CGL210	9F62HDD025	
15.5	30	1	YES	C/2”/17.20”	50 kA	8138/8139	9F61AGG201 (13.8kV nominal 95 kV BIL), 9F61AGJ201 (14.4kV nominal 110 kV BIL)	9F61CGL209	9F61AGG205 (13.8kV nominal 95 kV BIL), 9F61AGJ205 (14.4kV nominal 110 kV BIL)	9F61CGL210	9F62HDD030	
15.5	50	1	YES	D/3”/18.88”	50 kA	8138/8139	9F61AGG301 (13.8kV nominal 95 kV BIL), 9F61AGJ301 (14.4kV nominal 110 kV BIL)	9F61CGL309	9F61AGG305 (13.8kV nominal 95 kV BIL), 9F61AGJ305 (14.4kV nominal 110 kV BIL)	9F61CGL310	9F62DDD050	
15.5	65	1	YES	D/3”/18.88”	50 kA	8138/8139	9F61AGG301 (13.8kV nominal 95 kV BIL), 9F61AGJ301 (14.4kV nominal 110 kV BIL)	9F61CGL309	9F61AGG305 (13.8kV nominal 95 kV BIL), 9F61AGJ305 (14.4kV nominal 110 kV BIL)	9F61CGL310	9F62DDD065	
15.5	80	1	YES	D/3”/18.88”	50 kA	8138/8139	9F61AGG30 (13.8kV nominal 95 kV BIL), 9F61AGJ301 (14.4kV nominal 110 kV BIL)	9F61CGL309	9F61AGG305 (13.8kV nominal 95 kV BIL), 9F61AGJ305 (14.4kV nominal 110 kV BIL)	9F61CGL310	9F62DDD080	
15.5	100	1	YES	D/3”/18.88”	50 kA	8138/8139	9F61AGG301 (13.8kV nominal 95 kV BIL), 9F61AGJ301 (14.4kV nominal 110 kV BIL)	9F61CGL309	9F61AGG305 (13.8kV nominal 95 kV BIL), 9F61AGJ305 (14.4kV nominal 110 kV BIL)	9F61CGL310	9F62DDD100	
15.5	125	2	YES	DD/(2)3”/18.88”	50 kA	8138/8139	9F61AGG401 (13.8kV nominal 95 kV BIL), 9F61AGJ401 (14.4kV nominal 110 kV BIL)	9F61CGL409	9F61AGG405 (13.8kV nominal 95 kV BIL), 9F61AGJ405 (14.4kV nominal 110 kV BIL)	9F61CGL410	9F62FDD125	
15.5	150	2	YES	DD/(2)3”/18.88”	50 kA	8138/8139	9F61AGG401 (13.8kV nominal 95 kV BIL), 9F61AGJ401 (14.4kV nominal 110 kV BIL)	9F61CGL409	9F61AGG405 (13.8kV nominal 95 kV BIL), 9F61AGJ405 (14.4kV nominal 110 kV BIL)	9F61CGL410	9F62FDD150	
15.5	175	2	YES	DD/(2)3”/18.88”	50 kA	8138/8139	9F61AGG401 (13.8kV nominal 95 kV BIL), 9F61AGJ401 (14.4kV nominal 110 kV BIL)	9F61CGL409	9F61AGG405 (13.8kV nominal 95 kV BIL), 9F61AGJ405 (14.4kV nominal 110 kV BIL)	9F61CGL410	9F62FDD175	
15.5	200	2	YES	DD/(2)3”/18.88”	50 kA	8138/8139	9F61AGG401 (13.8kV nominal 95 kV BIL), 9F61AGJ401 (14.4kV nominal 110 kV BIL)	9F61CGL409	9F61AGG405 (13.8kV nominal 95 kV BIL), 9F61AGJ405 (14.4kV nominal 110 kV BIL)	9F61CGL410	9F62FDD200	

Bolted End Fittings Indoor or Outdoor

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
15.5	300	4	YES	DDDD/(4) 3”/see outline drawing for dimensions	50 kA	8138/8139	9F61AHG001 (13.8KV nominal, 95 KV BIL), 9F61AHJ001 (14.4KV nominal, 110 KV BIL)	9F61CHL009	N/A	N/A	9F62KED300	

Current-Limiting Power Fuses

Power Distribution Fuses

9F60 Series, “E” Rated

EJ-1

Suitable for use indoors or in an enclosure only



Product Description

Power distribution current-limiting fuses are designed not only to interrupt the high-fault currents but also to interrupt lowfault currents down to approximately 3 times their continuous rating.

7”Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/ max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
2.75	1E	1	YES	C/2”/9.18”	38kA	8106/8107	9F61AAB201	-	9F61AAB205	-	9F60CCB001	
2.75	2E	1	YES	C/2”/9.18”	38kA	8106/8107	9F61AAB201	-	9F61AAB205	-	9F60CCB002	
2.75	3E	1	YES	C/2”/9.18”	38kA	8106/8107	9F61AAB201	-	9F61AAB205	-	9F60CCB003	
2.75	5E	1	YES	C/2”/9.18”	38kA	8106/8107	9F61AAB201	-	9F61AAB205	-	9F60CCB005	
2.75	7E	1	YES	C/2”/9.18”	38kA	8106/8107	9F61AAB201	-	9F61AAB205	-	9F60CCB007	
2.75	10E	1	YES	C/2”/9.18”	38kA	8106/8107	9F61AAB201	-	9F61AAB205	-	9F60CCB010	
2.75	15E	1	YES	C/2”/9.18”	38kA	8106/8107	9F61AAB201	-	9F61AAB205	-	9F60CCB015	
2.75	20E	1	YES	C/2”/9.18”	38kA	8106/8107	9F61AAB201	-	9F61AAB205	-	9F60CCB020	
2.75	25E	1	YES	C/2”/9.18”	38kA	8106/8107	9F61AAB201	-	9F61AAB205	-	9F60CCB025	
2.75	30E	1	YES	D/3”/10.88”	38kA	8106/8107	9F61AAB301	-	9F61AAB305	-	9F60CCB030	
2.75	40E	1	YES	D/3”/10.88”	38kA	8106/8107	9F61AAB301	-	9F61AAB305	-	9F60CCB040	
2.75	50E	1	YES	D/3”/10.88”	38kA	8106/8107	9F61AAB301	-	9F61AAB305	-	9F60CCB050	
2.75	65E	1	YES	D/3”/10.88”	38kA	8106/8107	9F61AAB301	-	9F61AAB305	-	9F60CCB065	
2.75	80E	1	YES	D/3”/10.88””	38kA	8106/8107	9F61AAB301	-	9F61AAB305	-	9F60CCB080	
2.75	100E	1	YES	D/3”/10.88”	38kA	8106/8107	9F61AAB301	-	9F61AAB305	-	9F60CCB100	
2.75	125E	1	YES	DD/(2) 3”/10.88”	38kA	8106/8107	9F61AAB401	-	9F61AAB405	-	9F60CCB125	
2.75	150E	1	YES	DD/(2) 3”/10.88”	38kA	8106/8107	9F61AAB401	-	9F61AAB405	-	9F60CCB150	
2.75	200E	1	YES	DD/(2) 3”/10.88”	38kA	8106/8107	9F61AAB401	-	9F61AAB405	-	9F60CCB200	

9” Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/ max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
2.75	1E	1	YES	C/2”/11.18”	38kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CEB001	
2.75	2E	1	YES	C/2”/11.18”	38kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CEB002	
2.75	3E	1	YES	C/2”/11.18”	38kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CEB003	
2.75	5E	1	YES	C/2”/11.18”	38kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CEB005	
2.75	7E	1	YES	C/2”/11.18”	38kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CEB007	
2.75	10E	1	YES	C/2”/11.18”	38kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CEB010	
2.75	15E	1	YES	C/2”/11.18”	38kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CEB015	
2.75	20E	1	YES	C/2”/11.18”	38kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CEB020	
2.75	25E	1	YES	C/2”/11.18”	38kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CEB025	
5.5	0.5E	1	YES	C/2”/11.18”	63kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CED905	
5.5	1E	1	YES	C/2”/11.18”	63kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CED001	
5.5	2E	1	YES	C/2”/11.18”	63kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CED002	
5.5	3E	1	YES	C/2”/11.18”	63kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CED003	
5.5	5E	1	YES	C/2”/11.18”	63kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CED005	
5.5	7E	1	YES	C/2”/11.18”	63kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CED007	
5.5	10E	1	YES	C/2”/11.18”	63kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CED010	
5.5	15E	1	YES	C/2”/11.18”	63kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CED015	
5.5	20E	1	YES	C/2”/11.18”	63kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CED020	
5.5	25E	1	YES	C/2”/11.18”	63kA	8106/8107	9F61ACB201	-	9F61ACB205	-	9F60CED025	

Power Distribution Fuses

9F60 Series, "E" Rated
EJ-1
Suitable for use indoors or in an enclosure only

12" Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/ max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
15.5	2E	1	YES	C/2"/14.18"	82kA	8104/8105	9F61AEG201	-	9F61AEG205	-	9F60CJH002	
15.5	3E	1	YES	C/2"/14.18"	82kA	8104/8105	9F61AEG201	-	9F61AEG205	-	9F60CJH003	
15.5	5E	1	YES	C/2"/14.18"	82kA	8104/8105	9F61AEG201	-	9F61AEG205	-	9F60CJH005	
15.5	7E	1	YES	C/2"/14.18"	82kA	8104/8105	9F61AEG201	-	9F61AEG205	-	9F60CJH007	
15.5	10E	1	YES	C/2"/14.18"	82kA	8104/8105	9F61AEG201	-	9F61AEG205	-	9F60CJH010	

14" Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/Length	I/C Sym.	TCC min/ max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
15	125E	2	YES	EE/(2) 4.00"/19.12"	38kA	8104/8105	9F61AFG501 (13.8 kV, 95 BIL), 9F61AFJ501 (14.4 kV 110 BIL)	N/A for Outdoor Mounting	N/A	N/A for Outdoor Mounting	9F60KLH125	
15	150E	2	YES	EE/(2) 4.00"/19.12"	31kA	8104/8105	9F61AFG501 (13.8 kV, 95 BIL), 9F61AFJ501 (14.4 kV 110 BIL	N/A for Outdoor Mounting	N/A	N/A for Outdoor Mounting	9F60KLH150	
15	175E	2	YES	EE/(2) 4.00"/19.12"	31kA	8104/8105	9F61AFG501 (13.8 kV, 95 BIL), 9F61AFJ501 (14.4 kV 110 BIL	N/A for Outdoor Mounting	N/A	N/A for Outdoor Mounting	9F60KLH175	

15" Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/ max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
25.8	0.5E	1	YES	C/2"/17.20"	82kA	8114/8115	Consult Factory	N/A for Outdoor Mounting	Consult Factory	N/A for Outdoor Mounting	9F60CMJ905	
25.8	1E	1	YES	C/2"/17.20"	82kA	8114/8115	Consult Factory	N/A for Outdoor Mounting	Consult Factory	N/A for Outdoor Mounting	9F60CMJ001	
25.8	2E	1	YES	C/2"/17.20"	82kA	8114/8115	Consult Factory	N/A for Outdoor Mounting	Consult Factory	N/A for Outdoor Mounting	9F60CMJ002	

Current-Limiting Power Fuses

Power Distribution Fuses

9F60 Series, "E" Rated
EJO-1
Suitable for use indoors and outdoors



Product Description

Power distribution current-limiting fuses are designed not only to interrupt the high-fault currents but also to interrupt low-fault currents down to approximately 3 times their continuous rating. The EJO-1 models can be used outdoors without any protecting enclosure.

12" Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
2.75	1E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJB001	
2.75	2E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJB002	
2.75	3E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJB003	
2.75	5E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJB005	
2.75	7E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJB007	
2.75	10E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJB010	
2.75	15E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJB015	
2.75	20E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJB020	
2.75	25E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJB025	
2.75	30E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJB030	
2.75	40E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJB040	
2.75	50E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJB050	
2.75	65E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJB065	
2.75	80E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJB080	
2.75	100E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJB100	
2.75	125E	2	YES	DD/(2) 3"/15.88"	50kA	8106/8107	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F60HJB125	
2.75	150E	2	YES	DD/(2) 3"/15.88"	50kA	8106/8107	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F60HJB150	
2.75	200E	2	YES	DD/(2) 3"/15.88"	50kA	8106/8107	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F60HJB200	
5.5	0.5E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJD905	
5.5	1E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJD001	
5.5	2E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJD002	
5.5	3E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJD003	
5.5	5E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJD005	
5.5	7E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJD007	
5.5	10E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJD010	
5.5	15E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJD015	
5.5	20E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJD020	
5.5	25E	1	YES	C/2"/14.18"	50kA	8106/8107	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJD025	
5.5	30E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJD030	
5.5	40E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJD040	
5.5	50E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJD050	
5.5	65E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJD065	
5.5	80E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJD080	
5.5	100E	1	YES	D/3"/15.88"	50kA	8106/8107	9F61AEB301	9F61CEF309	9F61AEB305	9F61CEF310	9F60FJD100	
5.5	125E	2	YES	DD/(2) 3"/15.88"	50kA	8106/8107	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F60HJD125	
5.5	150E	2	YES	DD/(2) 3"/15.88"	50kA	8106/8107	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F60HJD150	
5.5	200E	2	YES	DD/(2) 3"/15.88"	50kA	8106/8107	9F61AEB401	9F61CEF409	9F61AEB405	9F61CEF410	9F60HJD200	
8.25	0.5E	1	YES	C/2"/14.18"	50kA	8112/8113	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJE905	
8.25	1E	1	YES	C/2"/14.18"	50kA	8112/8113	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJE001	
8.25	2E	1	YES	C/2"/14.18"	50kA	8112/8113	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJE002	
8.25	3E	1	YES	C/2"/14.18"	50kA	8112/8113	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJE003	
8.25	5E	1	YES	C/2"/14.18"	50kA	8112/8113	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJE005	
8.25	7E	1	YES	C/2"/14.18"	50kA	8112/8113	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJE007	
8.25	10E	1	YES	C/2"/14.18"	50kA	8112/8113	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJE010	
8.25	15E	1	YES	C/2"/14.18"	50kA	8112/8113	9F61AEG201	9F61CEF209	9F61AEG205	9F61CEF210	9F60DJE015	
8.25	20E	1	YES	D/3"/15.88"	50kA	8112/8113	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F60FJE020	
8.25	25E	1	YES	D/3"/15.88"	50kA	8112/8113	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F60FJE025	
8.25	30E	1	YES	D/3"/15.88"	50kA	8112/8113	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F60FJE030	
8.25	40E	1	YES	D/3"/15.88"	50kA	8112/8113	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F60FJE040	
8.25	50E	1	YES	D/3"/15.88"	50kA	8112/8113	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F60FJE050	
8.25	65E	1	YES	D/3"/15.88"	50kA	8112/8113	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F60FJE065	
8.25	80E	1	YES	D/3"/15.88"	50kA	8112/8113	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F60FJE080	
8.25	100E	1	YES	D/3"/15.88"	50kA	8112/8113	9F61AEG301	9F61CEF309	9F61AEG305	9F61CEF310	9F60FJE100	
8.25	125E	2	YES	DD/(2) 3"/15.88"	50kA	8112/8113	9F61AEG401	9F61CEF409	9F61AEG405	9F61CEF410	9F60HJE125	
8.25	150E	2	YES	DD/(2) 3"/15.88"	50kA	8112/8113	9F61AEG401	9F61CEF409	9F61AEG405	9F61CEF410	9F60HJE150	
8.25	200E	2	YES	DD/(2) 3"/15.88"	50kA	8112/8113	9F61AEG401	9F61CEF409	9F61AEG405	9F61CEF410	9F60HJE200	

Power Distribution Fuses

9F60 Series, "E" Rated
EJO-1
Suitable for use indoors and outdoors

15" Clip Centers Clip-in Mounting Indoor or Outdoor

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
15.5	0.5E	1	YES	C/2"/17.20"	120kA	8104/8105	9F61AGG201 (13.8 kV nominal 95 kV BIL), 9F61AGJ201 (14.4 kV nominal 110 BIL)	9F61CGL209	9F61AGG205 (13.8 kV nominal 95 kV BIL), 9F61AGJ205 (14.4 kV nominal 110 BIL)	9F61CGL210	9F60DMH905	
15.5	1E	1	YES	C/2"/17.20"	120kA	8104/8105	9F61AGG201 (13.8 kV nominal 95 kV BIL), 9F61AGJ201 (14.4 kV nominal 110 BIL)	9F61CGL209	9F61AGG205 (13.8 kV nominal 95 kV BIL), 9F61AGJ205 (14.4 kV nominal 110 BIL)	9F61CGL210	9F60DMH001	
15.5	2E	1	YES	C/2"/17.20"	120kA	8104/8105	9F61AGG201 (13.8 kV nominal 95 kV BIL), 9F61AGJ201 (14.4 kV nominal 110 BIL)	9F61CGL209	9F61AGG205 (13.8 kV nominal 95 kV BIL), 9F61AGJ205 (14.4 kV nominal 110 BIL)	9F61CGL210	9F60DMH002	
15.5	3E	1	YES	C/2"/17.20"	120kA	8104/8105	9F61AGG201 (13.8 kV nominal 95 kV BIL), 9F61AGJ201 (14.4 kV nominal 110 BIL)	9F61CGL209	9F61AGG205 (13.8 kV nominal 95 kV BIL), 9F61AGJ205 (14.4 kV nominal 110 BIL)	9F61CGL210	9F60DMH003	
15.5	5E	1	YES	C/2"/17.20"	82kA	8104/8105	9F61AGG201 (13.8 kV nominal 95 kV BIL), 9F61AGJ201 (14.4 kV nominal 110 BIL)	9F61CGL209	9F61AGG205 (13.8 kV nominal 95 kV BIL), 9F61AGJ205 (14.4 kV nominal 110 BIL)	9F61CGL210	9F60DMH005	
15.5	7E	1	YES	C/2"/17.20"	82kA	8104/8105	9F61AGG201 (13.8 kV nominal 95 kV BIL), 9F61AGJ201 (14.4 kV nominal 110 BIL)	9F61CGL209	9F61AGG205 (13.8 kV nominal 95 kV BIL), 9F61AGJ205 (14.4 kV nominal 110 BIL)	9F61CGL210	9F60DMH007	
15.5	10E	1	YES	C/2"/17.20"	82kA	8104/8105	9F61AGG201 (13.8 kV nominal 95 kV BIL), 9F61AGJ201 (14.4 kV nominal 110 BIL)	9F61CGL209	9F61AGG205 (13.8 kV nominal 95 kV BIL), 9F61AGJ205 (14.4 kV nominal 110 BIL)	9F61CGL210	9F60DMH010	
15.5	15E	1	YES	D/3"/18.88"	38kA	8104/8105	9F61AGG301 (13.8 kV nominal 95 kV BIL), 9F61AGJ301 (14.4 kV nominal 110 BIL)	9F61CGL309	9F61AGG305 (13.8 kV nominal 95 kV BIL), 9F61AGJ305 (14.4 kV nominal 110 BIL)	9F61CGL310	9F60FMH015	
15.5	20E	1	YES	D/3"/18.88"	38kA	8104/8105	9F61AGG301 (13.8 kV nominal 95 kV BIL), 9F61AGJ301 (14.4 kV nominal 110 BIL)	9F61CGL309	9F61AGG305 (13.8 kV nominal 95 kV BIL), 9F61AGJ305 (14.4 kV nominal 110 BIL)	9F61CGL310	9F60FMH020	
15.5	25E	1	YES	D/3"/18.88"	38kA	8104/8105	9F61AGG301 (13.8 kV nominal 95 kV BIL), 9F61AGJ301 (14.4 kV nominal 110 BIL)	9F61CGL309	9F61AGG305 (13.8 kV nominal 95 kV BIL), 9F61AGJ305 (14.4 kV nominal 110 BIL)	9F61CGL310	9F60FMH025	
15.5	30E	1	YES	D/3"/18.88"	38kA	8104/8105	9F61AGG301 (13.8 kV nominal 95 kV BIL), 9F61AGJ301 (14.4 kV nominal 110 BIL)	9F61CGL309	9F61AGG305 (13.8 kV nominal 95 kV BIL), 9F61AGJ305 (14.4 kV nominal 110 BIL)	9F61CGL310	9F60FMH030	

Power Distribution Fuses

9F60 Series, "E" Rated
EJO-1
Suitable for use indoors and outdoors

15" Clip Centers Clip-in Mounting Indoor or Outdoor (Continued)

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/ max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconncting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
15.5	40E	1	YES	D/3"/18.88"	38kA	8104/8105	9F61AGG301 (13.8 kV nominal 95 kV BIL), 9F61AGJ301 (14.4 kV nominal 110 BIL)	9F61CGL309	9F61AGG305 (13.8 kV nominal 95 kV BIL), 9F61AGJ305 (14.4 kV nominal 110 BIL)	9F61CGL310	9F60FMH040	
15.5	50E	1	YES	D/3"/18.88"	38kA	8104/8105	9F61AGG301 (13.8 kV nominal 95 kV BIL), 9F61AGJ301 (14.4 kV nominal 110 BIL)	9F61CGL309	9F61AGG305 (13.8 kV nominal 95 kV BIL), 9F61AGJ305 (14.4 kV nominal 110 BIL)	9F61CGL310	9F60FMH050	
15.5	65E	2	YES	DD/(2) 3"/18.88"	38kA	8104/8105	9F61AGG401 (13.8 kV nominal 95 kV BIL), 9F61AGJ401 (14.4 kV nominal 110 BIL)	9F61CGL409	9F61AGG405 (13.8 kV nominal 95 kV BIL), 9F61AGJ405 (14.4 kV nominal 110 BIL)	9F61CGL410	9F60HMH065	
15.5	80E	2	YES	DD/(2) 3"/18.88"	38kA	8104/8105	9F61AGG401 (13.8 kV nominal 95 kV BIL), 9F61AGJ401 (14.4 kV nominal 110 BIL)	9F61CGL409	9F61AGG405 (13.8 kV nominal 95 kV BIL), 9F61AGJ405 (14.4 kV nominal 110 BIL)	9F61CGL410	9F60HMH080	
15.5	100E	2	YES	DD/(2) 3"/18.88"	38kA	8104/8105	9F61AGG401 (13.8 kV nominal 95 kV BIL), 9F61AGJ401 (14.4 kV nominal 110 BIL)	9F61CGL409	9F61AGG405 (13.8 kV nominal 95 kV BIL), 9F61AGJ405 (14.4 kV nominal 110 BIL)	9F61CGL410	9F60HMH100	

21" Clip Centers Clip-in Mounting Indoor or Outdoor

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/ max GES	Fuse Support, Indoor	Fuse Sup- port, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
25.8	0.5E	1	YES	C/2"/23.18"	45kA	8114/8115	9F61AHM201	9F61CHM209	9F61AHM205	9F61CHM210	9F60DNJ905	
25.8	1E	1	YES	C/2"/23.18"	45kA	8114/8115	9F61AHM201	9F61CHM209	9F61AHM205	9F61CHM210	9F60DNJ001	
25.8	2E	1	YES	C/2"/23.18"	45kA	8114/8115	9F61AHM201	9F61CHM209	9F61AHM205	9F61CHM210	9F60DNJ002	
25.8	3E	1	YES	C/2"/23.18"	45kA	8114/8115	9F61AHM201	9F61CHM209	9F61AHM205	9F61CHM210	9F60DNJ003	
25.8	5E	1	YES	C/2"/23.18"	45kA	8114/8115	9F61AHM201	9F61CHM209	9F61AHM205	9F61CHM210	9F60DNJ005	
25.8	7E	1	YES	C/2"/23.18"	45kA	8114/8115	9F61AHM201	9F61CHM209	9F61AHM205	9F61CHM210	9F60DNJ007	
25.8	10E	1	YES	C/2"/23.18"	45kA	8114/8115	9F61AHM201	9F61CHM209	9F61AHM205	9F61CHM210	9F60DNJ010	
25.8	15E	1	YES	D/3"/24.81"	25kA	8114/8115	9F61AHM301	9F61CHM309	9F61AHM305	9F61CHM310	9F60FNJ015	
25.8	20E	1	YES	D/3"/24.81"	25kA	8114/8115	9F61AHM301	9F61CHM309	9F61AHM305	9F61CHM310	9F60FNJ020	
25.8	25E	1	YES	D/3"/24.81"	25kA	8114/8115	9F61AHM301	9F61CHM309	9F61AHM305	9F61CHM310	9F60FNJ025	
25.8	30E	1	YES	D/3"/24.81"	25kA	8114/8115	9F61AHM301	9F61CHM309	9F61AHM305	9F61CHM310	9F60FNJ030	
25.8	40E	1	YES	D/3"/24.81"	25kA	8114/8115	9F61AHM301	9F61CHM309	9F61AHM305	9F61CHM310	9F60FNJ040	
25.8	50E	1	YES	D/3"/24.81"	25kA	8114/8115	9F61AHM301	9F61CHM309	9F61AHM305	9F61CHM310	9F60FNJ050	
25.8	65E	2	YES	DD/(2) 3"/24.88"	25kA	8114/8115	9F61AHM401	9F61CHM409	9F61AHM405	9F61CHM410	9F60HNJ065	
25.8	80E	2	YES	DD/(2) 3"/24.88"	25kA	8114/8115	9F61AHM401	9F61CHM409	9F61AHM405	9F61CHM410	9F60HNJ080	
25.8	100E	2	YES	DD/(2) 3"/24.88"	25kA	8114/8115	9F61AHM401	9F61CHM409	9F61AHM405	9F61CHM410	9F60HNJ100	

Power Distribution Fuses

9F60 Series, "E" Rated
EJO-1
Suitable for use indoors and outdoors

27" Clip Centers Clip-in Mounting Indoor or Outdoor

Max. kV	Amp Rating	No. of Barrels	Indicating	Size/Diam/ Length	I/C Sym.	TCC min/max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting, Switch, Outdoor	Product Number	List Price Prod. ID MVEG
38	1E	1	YES	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK001	
38	2E	1	YES	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK002	
38	3E	1	YES	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK003	
38	5E	1	YES	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK005	
38	7E	1	YES	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK007	
38	10E	1	YES	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK010	
38	15E	1	YES	D/3"/30.81"	13kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK015	
38	20E	1	YES	D/3"/30.81"	13kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK020	
38	25E	1	YES	D/3"/30.81"	13kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK025	
38	30E	1	YES	D/3"/30.81"	13kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK030	
38	40E	1	YES	D/3"/30.81"	13kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPK040	
38	50E	2	YES	DD/(2) 3"/30.88"	13kA	8116/8117	–	9F61CJN409	–	9F61CJN410	9F60HPK050	
38	65E	2	YES	DD/(2) 3"/30.88"	13kA	8116/8117	–	9F61CJN409	–	9F61CJN410	9F60HPK065	
38	80E	2	YES	DD/(2) 3"/30.88"	13kA	8116/8117	–	9F61CJN409	–	9F61CJN410	9F60HPK080	
38	1E	1	NO	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT001	
38	2E	1	NO	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT002	
38	3E	1	NO	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT003	
38	5E	1	NO	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT005	
38	7E	1	NO	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT007	
38	10E	1	NO	D/3"/30.81"	45kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT010	
38	15E	1	NO	D/3"/30.81"	13kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT015	
38	20E	1	NO	D/3"/30.81"	13kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT020	
38	25E	1	NO	D/3"/30.81"	13kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT025	
38	30E	1	NO	D/3"/30.81"	13kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT030	
38	40E	1	NO	D/3"/30.81"	13kA	8116/8117	–	9F61CJN309	–	9F61CJN310	9F60FPT040	
38	50E	2	NO	DD/(2) 3"/30.81"	13kA	8116/8117	–	9F61CJN409	–	9F61CJN410	9F60HPT050	
38	65E	2	NO	DD/(2) 3"/30.81"	13kA	8116/8117	–	9F61CJN409	–	9F61CJN410	9F60HPT065	
38	80E	2	NO	DD/(2) 3"/30.81"	13kA	8116/8117	–	9F61CJN409	–	9F61CJN410	9F60HPT080	

Potential Transformer

9F60 Series, "E" Rated
EJ-1
Suitable for use indoors or in an enclosure



Product Description

Current-limiting fuses are designed to interrupt the high-fault currents and also the low-fault currents down to approximately 3 times their continuous current rating. Available from 0.625 to 15kV, from 0.5 to 3 Amps.

4.25" Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Size[1]/Diam Length	I/C Sym.	TCC min/max GES	Fuse Support, Indoor	Fuse Support, Outdoor	Disconnecting Switch, Indoor	Disconnecting Switch, Outdoor	Product Number	List Price Prod. ID MVEG
0.625	3E	1	YES	A/0.812"/4.625"	100kA	8108/8109	–	–	–	–	9F60AAA003	
0.625	5E	1	YES	A/0.812"/4.625"	100kA	8108/8109	–	–	–	–	9F60AAA005	
2.75	1E	1	YES	A/0.812"/4.625"	60kA	8108/8109	–	–	–	–	9F60AAB001	
2.75	2E	1	YES	A/0.812"/4.625"	60kA	8108/8109	–	–	–	–	9F60AAB002	

[1]Size A fuses are normally mounted directly on potential transformers. No supports, disconnect switches, or live parts are available for separate mounting.

6" Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Spare Parts (Live Parts)	Spare Parts (Clips)	Size/Diam/Length	I/C Sym.	TCC min/max GES	Product Number	List Price Prod. ID MVEG
2.75	1E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/7.375"	60kA	8110/8111	9F60BBB001	
2.75	2E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/7.375"	60kA	8110/8111	9F60BBB002	
2.75	3E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/7.375"	60kA	8110/8111	9F60BBB003	
5.5	0.5E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/7.375"	80kA	8110/8111	9F60BBD905	
5.5	1E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/7.375"	80kA	8110/8111	9F60BBD001	
5.5	2E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/7.375"	80kA	8110/8111	9F60BBD002	
5.5	3E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/7.375"	80kA	8110/8111	9F60BBD003	
5.5	0.5E	1	NO	9F61BNW450	9F61BWW460	B/1.625"/7.375"	80kA	8110/8111	9F60BBN905	
5.5	1E	1	NO	9F61BNW450	9F61BWW460	B/1.625"/7.375"	80kA	8110/8111	9F60BBN001	
5.5	2E	1	NO	9F61BNW450	9F61BWW460	B/1.625"/7.375"	80kA	8110/8111	9F60BBN002	
5.5	3E	1	NO	9F61BNW450	9F61BWW460	B/1.625"/7.375"	80kA	8110/8111	9F60BBN003	

8.12" Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Spare Parts (Live Parts)	Spare Parts (Clips)	Size/Diam/ Length	I/C Sym.	TCC min/max GES	Fuse Support, Indoor	Product Number	List Price Prod. ID MVEG
2.75	1E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	60kA	8110/8111	9F61ABB101	9F60BDB001	
2.75	2E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	60kA	8110/8111	9F61ABB101	9F60BDB002	
2.75	3E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	60kA	8110/8111	9F61ABB101	9F60BDB003	
5.5	0.5E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	80kA	8110/8111	9F61ABB101	9F60BDD905	
5.5	1E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	80kA	8110/8111	9F61ABB101	9F60BDD001	
5.5	2E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	80kA	8110/8111	9F61ABB101	9F60BDD002	
5.5	3E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	80kA	8110/8111	9F61ABB101	9F60BDD003	
8.25	0.5E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	80kA	8110/8111	9F61ABG101	9F60BDE905	
8.25	1E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	80kA	8110/8111	9F61ABG101	9F60BDE001	
8.25	2E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	80kA	8110/8111	9F61ABG101	9F60BDE002	
8.25	3E	1	YES	9F61BNW450	9F61BWW460	B/1.625"/9.50"	80kA	8110/8111	9F61ABG101	9F60BDE003	

Potential Transformer

9F60 Series, “E” Rated

EJ-1

Suitable for use indoors or in an enclosure

11.5” Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Spare Parts (Live Parts)	Spare Parts (Clips)	Size/Diam/Length	I/C Sym.	TCC min/max GES	Fuse support, Indoor	Product Number	List Price Prod. ID MVEG
15.5	0.5E	1	YES	9F61BNW450	9F61BWW460	B/1.625”/12.875”	120kA	8110/8111	9F61ADG101 (13.8kV, 95kV BIL), 9F61ADJ101 (14.4kV, 110kV BIL)	9F60BHH905	
15.5	1E	1	YES	9F61BNW450	9F61BWW460	B/1.625”/12.875”	120kA	8110/8111	9F61ADG101 (13.8kV, 95kV BIL), 9F61ADJ101 (14.4kV, 110kV BIL)	9F60BHH001	
15.5	2E	1	YES	9F61BNW450	9F61BWW460	B/1.625”/12.875”	120kA	8110/8111	9F61ADG101 (13.8kV, 95kV BIL), 9F61ADJ101 (14.4kV, 110kV BIL)	9F60BHH002	
15.5	3E	1	YES	9F61BNW450	9F61BWW460	B/1.625”/12.875”	120kA	8110/8111	9F61ADG101 (13.8kV, 95kV BIL), 9F61ADJ101 (14.4kV, 110kV BIL)	9F60BHH003	

Motor Starter Fuses

9F60 Series, "R" Rated
EJ-2[1]
Suitable for use indoors or in an enclosure



Product Description

Backup motor starter current-limiting power fuses are designed to provide short-circuit protection of individual motors. These fuses are designed to interrupt current from 100 times the R-rating up to 50kA rms symmetrical at rated voltage. The element of these fuses is designed to withstand the cyclic motor-starting application. By definition, a back-up current-limiting fuse is "A fuse capable of interrupting all currents from the rated maximum interrupting current down to the rated minimum interrup ing current." Standard IEEE C.37.40-1993 (3.1.8). Available from 2.54 to 7.20kV, From 70 to 700A (2 to 50R).

7" Clip Centers Clip-in Mounting UL Recognized Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Spare Parts (Live Parts)	Spare Parts (Clips)	Max. Continuous Curr. (Amps)	Size/Diam/Length	I/C Sym.	TCC min/max GES	Product Number	List Price Prod. ID MVRG
2.54	2R	1	YES	9F61BNW750	9F61BWW459	70	D/3.00"/10.88"	50kA	8132/8133	9F60LCB502	
2.54	3R	1	YES	9F61BNW750	9F61BWW459	100	D/3.00"/10.88"	50kA	8132/8133	9F60LCB503	
2.54	4R	1	YES	9F61BNW750	9F61BWW459	130	D/3.00"/10.88"	50kA	8132/8133	9F60LCB504	
2.54	6R	1	YES	9F61BNW750	9F61BWW459	170	D/3.00"/10.88"	50kA	8132/8133	9F60LCB506	
2.54	9R	1	YES	9F61BNW750	9F61BWW459	200	D/3.00"/10.88"	50kA	8132/8133	9F60LCB509	
2.54	12R	1	YES	9F61BNW750	9F61BWW459	230	D/3.00"/10.88"	50kA	8132/8133	9F60LCB512	
2.54	18R	2	YES	9F61BNW751	–	390	DD/(2) 3.00"/10.88"	50kA	8132/8133	9F60MCB518	
2.54	24R	2	YES	9F61BNW751	–	450	DD/(2) 3.00"/10.88"	50kA	8132/8133	9F60MCB524	
2.54	2R	1	NO	9F61BNW750	9F61BWW459	70	D/3.00"/10.88"	50kA	8132/8133	9F60LCL302	
2.54	3R	1	NO	9F61BNW750	9F61BWW459	100	D/3.00"/10.88"	50kA	8132/8133	9F60LCL303	
2.54	4R	1	NO	9F61BNW750	9F61BWW459	130	D/3.00"/10.88"	50kA	8132/8133	9F60LCL304	
2.54	6R	1	NO	9F61BNW750	9F61BWW459	170	D/3.00"/10.88"	50kA	8132/8133	9F60LCL306	
2.54	9R	1	NO	9F61BNW750	9F61BWW459	200	D/3.00"/10.88"	50kA	8132/8133	9F60LCL309	
2.54	12R	1	NO	9F61BNW750	9F61BWW459	230	D/3.00"/10.88"	50kA	8132/8133	9F60LCL312	
2.54	18R	2	NO	9F61BNW751	–	390	DD/(2) 3.00"/10.88"	50kA	8132/8133	9F60MCL318	
2.54	24R	2	NO	9F61BNW751	–	450	DD/(2) 3.00"/10.88"	50kA	8132/8133	9F60MCL324	

Bolted End Fittings Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Max. Continuous Curr. (Amps)	Size/Diam/Length	I/C Sym.	TCC min/max GES	Fuse Support, Indoor	Product Number	List Price Prod. ID MVRG
2.54	42R	2	NO	600	KK (2) 3.45"/13.76"	50kA	8122/8123	–	9F60TQB600	
2.54	50R	2	NO	700	KK (2) 3.45"/13.76"	50kA	8122/8123	–	9F60TQB700	

12" Clip Centers Clip-in Mounting UL Recognized Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Spare Parts (Live Parts)	Spare Parts (Clips)	Max. Continuous Curr. (Amps)	Size/Diam/Length	I/C Sym.	TCC min/max GES	Product Number	List Price Prod. ID MVRG
5.08	2R	1	YES	9F61BNW750	9F61BWW459	70	D/3.00"/15.97"	50kA	8132/8133	9F60LJD502	
5.08	3R	1	YES	9F61BNW750	9F61BWW459	100	D/3.00"/15.97"	50kA	8132/8133	9F60LJD503	
5.08	4R	1	YES	9F61BNW750	9F61BWW459	130	D/3.00"/15.97"	50kA	8132/8133	9F60LJD504	
5.08	6R	1	YES	9F61BNW750	9F61BWW459	170	D/3.00"/15.97"	50kA	8132/8133	9F60LJD506	
5.08	9R	1	YES	9F61BNW750	9F61BWW459	200	D/3.00"/15.97"	50kA	8132/8133	9F60LJD509	
5.08	12R	1	YES	9F61BNW750	9F61BWW459	230	D/3.00"/15.97"	50kA	8132/8133	9F60LJD512	
5.08	18R	2	YES	9F61BNW751	–	390	DD/(2) 3.00"/15.97"	50kA	8132/8133	9F60MJD518	
5.08	24R	2	YES	9F61BNW751	–	450	DD/(2) 3.00"/15.97"	50kA	8132/8133	9F60MJD524	
5.08	2R	1	NO	9F61BNW750	9F61BWW459	70	D/3.00"/15.97"	50kA	8132/8133	9F60LJN302	
5.08	3R	1	NO	9F61BNW750	9F61BWW459	100	D/3.00"/15.97"	50kA	8132/8133	9F60LJN303	
5.08	4R	1	NO	9F61BNW750	9F61BWW459	130	D/3.00"/15.97"	50kA	8132/8133	9F60LJN304	
5.08	6R	1	NO	9F61BNW750	9F61BWW459	170	D/3.00"/15.97"	50kA	8132/8133	9F60LJN306	
5.08	9R	1	NO	9F61BNW750	9F61BWW459	200	D/3.00"/15.97"	50kA	8132/8133	9F60LJN309	
5.08	12R	1	NO	9F61BNW750	9F61BWW459	230	D/3.00"/15.97"	50kA	8132/8133	9F60LJN312	
5.08	18R	2	NO	9F61BNW751	–	390	DD/(2) 3.00"/15.97"	50kA	8132/8133	9F60MJN318	
5.08	24R	2	NO	9F61BNW751	–	450	DD/(2) 3.00"/15.97"	50kA	8132/8133	9F60MJN324	

[1]EJ-2 Motor starter fuses are typically mounted on medium voltage starters. No supports or disconnect switches available.

Motor Starter Fuses

9F60 Series, "R" Rated
EJ-2[1]
Suitable for use indoors or in an enclosure

14" Clip Centers Clip-in Mounting Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Spare Parts (Live Parts)	Spare Parts (Clips)	Max. Continuous Curr. (Amps)	Size/Diam/Length	I/C Sym.	TCC min/ max GES	Fuse Support, Indoor	Product Number	List Price Prod. ID MVRG
5.08	30R	2	YES	9F61BNW452	–	550	EE/(2) 4"/19.12"	50kA	8132/8133	9F61AFB501	9F60NLD830	
5.08	36R	2	YES	9F61BNW452	–	650	EE/(2) 4"/19.12"	50kA	8132/8133	9F61AFB501	9F60NLD836	

Bolted End Fittings Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Max. Continuous Curr. (Amps)	Size/Diam/Length	I/C Sym.	TCC min/max GES	Fuse Support Indoor	Product Number	List Price Prod. ID MVRG
5	42R	2	YES	600	KK (2) 3.45"/18.76"	50kA	8122/8123	–	9F60TRD600	
5	50R	2	YES	700	KK (2) 3.45"/18.76"	50kA	8122/8123	–	9F60TRD700	

Bolted End Fuses, request outline drawing from factory.

12" Clip Centers Clip-in Mounting "A" Rated Indoor or Enclosure

Max. kV	Amp Rating	No. of Barrels	Indicating	Spare Parts (Live Parts)	Spare Parts (Clips)	Max. Continuous Curr. (Amps)	Size/Diam/Length	I/C Sym.	TCC min/max GES	Product Number	List Price Prod. ID MVRG
7.2	2A	1	YES	–	–	70	D/3.00"/15.97"	50kA	8150/8151	9F60LJE502	
7.2	3A	1	YES	–	–	100	D/3.00"/15.97"	50kA	8150/8151	9F60LJE503	
7.2	4A	1	YES	–	–	130	D/3.00"/15.97"	50kA	8150/8151	9F60LJE504	
7.2	6A	1	YES	–	–	170	D/3.00"/15.97"	50kA	8150/8151	9F60LJE506	
7.2	9A	1	YES	–	–	200	D/3.00"/15.97"	50kA	8150/8151	9F60LJE509	
7.2	12A	1	YES	–	–	230	D/3.00"/15.97"	50kA	8150/8151	9F60LJE512	
7.2	18A	2	YES	–	–	390	DD/(2) 3.00"/15.97"	50kA	8150/8151	9F60MJE518	
7.2	24A	2	YES	–	–	450	DD/(2) 3.00"/15.97"	50kA	8150/8151	9F60MJE524	

Table R, Max. Continuous Current for "R/A" Fuses

Fuse "R/A" Designation	Max. Con. Current (Amps)
2	70
3	100
4	130
6	170
9	200
12	230
18	390
24	450
30	550
36	650
42	600
50	700

Fuse Supports and Disconnecting Switches

9F61 Series
EK-1, EKO-1, EK-3, EKO-3



Product Description

Fuse supports, non-disconnecting, are used primarily in potential transformer circuits, or where there is some other disconnecting or isolating device in series with the fuse in the circuit. Fuse supports can be mounted vertically or horizontally. The EKO-1 models are designed to be installed outdoors. Disconnecting switch devices have the additional feature of serving to isolate the equipment they protect. It should be noted that disconnecting switches are not load-breaking devices, therefore, the circuit must be open prior to the fuse disconnection. The EKO-3 models are designed to be installed outdoors.

Fuse Support - EK-1 Indoor

Max. kV	Ferrule Size/ Diam.	Clip Centers	Spare Parts (Live Parts)	Spare Parts (Clips)	Insulaor Rating - Class/NEMA Nominal Sys. (kV)	Insulator Rating - BIL (kV)	Insulator Rating - Class/NEMA Tech Ref.	Product Number	List Price Prod. ID MVACC
2.75/5.5	B/1.56”	8.12”	9F61BNW450	9F61BWW460	4.8	60	A-20	9F61ABB101	
8.25	B/1.56”	8.12”	9F61BNW450	9F61BWW460	13.8	95	A-20	9F61ABG101	
15.5	B/1.56”	11.5”	9F61BNW450	9F61BWW460	13.8	95	A-20	9F61ADG101	
15.5	B/1.56”	11.5”	9F61BNW450	9F61BWW460	14.4	110	A-20	9F61ADJ101	
2.75	C/2.00”	7”	9F61BNW451	9F61BWW457	4.8	60	A-20	9F61AAB201	
5.5	C/2.00”	9”	9F61BNW451	9F61BWW457	4.8	60	A-20	9F61ACB201	
15.5	C/2.00”	12”	9F61BNW451	9F61BWW457	13.8	95	A-20	9F61AEG201	
15.5	C/2.00”	15”	9F61BNW451	9F61BWW457	13.8	95	A-20	9F61AGG201	
15.5	C/2.00”	15”	9F61BNW451	9F61BWW457	14.4	110	A-20	9F61AGJ201	
25.8	C/2.00”	21”	9F61BNW743	9F61BWW457	23	150	A-20	9F61AHM201	
2.75	D/3.00”	7”	9F61BNW750	9F61BWW459	4.8	60	A-20	9F61AAB301	
2.75/5.5	D/3.00”	12”	9F61BNW750	9F61BWW459	4.8	60	A-20	9F61AEB301	
8.25	D/3.00”	12”	9F61BNW750	9F61BWW459	13.8	95	A-20	9F61AEG301	
15.5	D/3.00”	15”	9F61BNW750	9F61BWW459	13.8	95	A-20	9F61AGG301	
15.5	D/3.00”	15”	9F61BNW750	9F61BWW459	14.4	110	A-20	9F61AGJ301	
25.8	D/3.00”	21”	9F61BNW744	9F61BWW459	23	150	A-20	9F61AHM301	
2.75	DD/3.00”	7”	9F61BNW751	–	4.8	60	A-20	9F61AAB401	
2.75/5.5	DD/3.00”	12”	9F61BNW751	–	4.8	60	A-20	9F61AEB401	
8.25	DD/3.00”	12”	9F61BNW751	–	13.8	95	A-20	9F61AEG401	
15.5	DD/3.00”	15”	9F61BNW751	–	13.8	95	A-20	9F61AGG401	
15.5	DD/3.00”	15”	9F61BNW751	–	14.4	110	A-20	9F61AGJ401	
25.8	DD/3.00”	21”	9F61AWW738	–	23	150	A-20	9F61AHM401	
5.08	EE/4.00”	14.12”	9F61BNW452	–	4.8	60	A-20	9F61AFB501	
15	EE/4.00”	14.12”	9F61BNW452	–	13.8	95	A-20	9F61AFG501	
15	EE/4.00”	14.12”	9F61BNW452	–	14.4	110	A-20	9F61AFJ501	
	DDDD			For Bolted-end Fuses refer to drawings.				9F61AHG001	
	DDDD			For Bolted-end Fuses refer to drawings.				9F61AHJ001	
	DDDD			For Bolted-end Fuses refer to drawings.				9F61AKB001	

Refer to drawings for specific dimensions.

Fuse Supports and Disconnecting Switches

9F61 Series

EK-1, EKO-1, EK-3, EKO-3

Disconnect Switch - EK-3 Indoor

Max. kV	Ferrule Size/ Diam.	Clip Centers	Spare Parts (Live Parts)	Spare Parts (Clips)	Insulator Rating - Nominal Sys. (kV)	Insulator Rating - BIL (kV)	Insulator Rating - Class/NEMA Tech Ref.	Product Number	List Price Prod. ID MVACC
2.75	C/2.00"	7"	9F61BNW731	9F61BWW457	4.8	60	A-20	9F61AAB205	
5.5	C/2.00"	9"	9F61BNW731	9F61BWW457	4.8	60	A-20	9F61ACB205	
15.5	C/2.00"	12"	9F61BNW731	9F61BWW457	13.8	95	A-20	9F61AEG205	
15.5	C/2.00"	15"	9F61BNW731	9F61BWW457	13.8	95	A-20	9F61AGG205	
15.5	C/2.00"	15"	9F61BNW731	9F61BWW457	14.4	110	A-20	9F61AGJ205	
25.8	C/2.00"	21"	9F61BNW746	9F61BWW457	23	150	A-20	9F61AHM205	
2.75	D/3.00"	7"	9F61BNW732	9F61BWW459	4.8	60	A-20	9F61AAB305	
2.75/5.5	D/3.00"	12"	9F61BNW732	9F61BWW459	4.8	60	A-20	9F61AEB305	
8.25	D/3.00"	12"	9F61BNW732	9F61BWW459	13.8	95	A-20	9F61AEG305	
15.5	D/3.00"	15"	9F61BNW732	9F61BWW459	13.8	95	A-20	9F61AGG305	
15.5	D/3.00"	15"	9F61BNW732	9F61BWW459	14.4	110	A-20	9F61AGJ305	
25.8	D/3.00"	21"	9F61BNW747	9F61BWW459	23	150	A-20	9F61AHM305	
2.75	DD/3.00"	7"	9F61BNW461	–	4.8	60	A-20	9F61AAB405	
2.75/5.5	DD/3.00"	12"	9F61BNW461	–	4.8	60	A-20	9F61AEB405	
8.25	DD/3.00"	12"	9F61BNW461	–	13.8	95	A-20	9F61AEG405	
15.5	DD/3.00"	15"	9F61BNW461	–	13.8	95	A-20	9F61AGG405	
15.5	DD/3.00"	15"	9F61BNW461	–	14.4	110	A-20	9F61AGJ405	
25.8	DD/3.00"	21"	9F61BNW748	–	23	150	A-20	9F61AHM405	

Refer to drawings for specific dimensions.

Fuse Support - EKO-1 Outdoor

Max. kV	Ferrule Size/Diam.	Clip Centers	Spare Parts (Live Parts)	Spare Parts (Clips)	Insulator Rating - Nominal Sys. (kV)	Insulator Rating - BIL (kV)	Insulator Rating - Class/NEMA Tech Ref.	Product Number	List Price Prod. ID MVACC
2.75/5.5/8.25	C/2.00"	12"	9F61BNW743	9F61BWW457	7.5	95	202	9F61CEF209	
15.5	C/2.00"	15"	9F61BNW743	9F61BWW457	15	110	205	9F61CGL209	
25.8	C/2.00"	21"	9F61BNW743	9F61BWW457	23	150	208	9F61CHM209	
2.75/5.5/8.25	D/3.00"	12"	9F61BNW744	9F61BWW459	7.5	95	202	9F61CEF309	
15.5	D/3.00"	15"	9F61BNW744	9F61BWW459	15	110	205	9F61CGL309	
25.8	D/3.00"	21"	9F61BNW744	9F61BWW459	23	150	208	9F61CHM309	
38	D/3.00"	27"	9F61BNW744	9F61BWW459	34.5	200	210	9F61CJN309	
2.75/5.5/8.25	DD/3.00"	12"	9F61AWW738	–	7.5	95	202	9F61CEF409	
15.5	DD/3.00"	15"	9F61AWW738	–	15	110	205	9F61CGL409	
25.8	DD/3.00"	21"	9F61AWW738	–	23	150	208	9F61CHM409	
38	DD/3.00"	27"	9F61AWW738	–	34.5	200	210	9F61CJN409	
	DDDD	–	–	–	–	–	–	9F61CHL009	
	DDDD	–	–	–	–	–	–	9F61CKF009	

Refer to drawings for specific dimensions.

Fuse Supports and Disconnecting Switches

9F61 Series

EK-1, EKO-1, EK-3, EKO-3

Disconnect Switch - EKO-3 Outdoor

Max. kV	Ferrule Size/Diam.	Clip Centers	Spare Parts (Live Parts)	Spare Parts (Clips)	Insulator Rating - Nominal Sys. (kV)	Insulator Rating - BIL (kV)	Insulator Rating - Class/NEMA Tech Ref.	Product Number	List Price Prod. ID MVACC
2.75/5.5/8.25	C/2.00"	12"	9F61BNW746	9F61BWW457	7.5	95	202	9F61CEF210	
15.5	C/2.00"	15"	9F61BNW746	9F61BWW457	15	110	205	9F61CGL210	
25.8	C/2.00"	21"	9F61BNW746	9F61BWW457	23	150	208	9F61CHM210	
2.75/5.5/8.25	D/3.00"	12"	9F61BNW747	9F61BWW459	7.5	95	202	9F61CEF310	
15.5	D/3.00"	15"	9F61BNW747	9F61BWW459	15	110	205	9F61CGL310	
25.8	D/3.00"	21"	9F61BNW747	9F61BWW459	23	150	208	9F61CHM310	
38	D/3.00"	27"	9F61BNW747	9F61BWW459	34.5	200	210	9F61CJN310	
2.75/5.5/8.25	DD/3.00"	12"	9F61BNW748	–	7.5	95	202	9F61CEF410	
15.5	DD/3.00"	15"	9F61BNW748	–	15	110	205	9F61CGL410	
25.8	DD/3.00"	21"	9F61BNW748	–	23	150	208	9F61CHM410	
38	DD/3.00"	27"	9F61BNW748	–	34.5	200	210	9F61CJN410	

Refer to drawings for specific dimensions.
IMPORTANT: When selecting a mounting for a current-limiting fuse, it is necessary that the clip centers and size agree with the fuse selected.
Prices of fuse supports and disconnecting switches include live parts for both ends.

Hinge Trunions and Operating Eyes for Use on Disconnecting Switches

Fuse Size	Hinge Trunion Model No.	Operating Eye Model No.
C	9F61BJW397	9F61BFW394
D	9F61BKW398	9F61AWW612
DD	9F61BLW399	9F61AWW612

Conversion Kit - D to DD for Use on Fuse Supports

Model No.	Used on Live Parts
9F61BNW402	9F61BNW751 (indoor)
	9F61AWW738 (outdoor)

Spare Parts - Fuse Supports/Disconnect Switches

9F61 Series

Live Parts/Fuse Clips

Spare Parts (Live Parts/Fuse Clips) - Fuse Supports and Disconnect Switches

Fuse Supports and Disconnect Switches	Spare Live Parts[1]	Spare Fuse Clips[2]
9F61AAB201	9F61BNW451	9F61BWW457
9F61AAB205	9F61BNW731	9F61BWW457
9F61AAB301	9F61BNW750	9F61BWW459
9F61AAB305	9F61BNW732	9F61BWW459
9F61AAB401	9F61BNW751	N/A
9F61AAB405	9F61BNW461	N/A
9F61ABB101	9F61BNW450	9F61BWW460
9F61ABG101	9F61BNW450	9F61BWW460
9F61ACB201	9F61BNW451	9F61BWW457
9F61ACB205	9F61BNW731	9F61BWW457
9F61ADG101	9F61BNW450	9F61BWW460
9F61ADJ101	9F61BNW450	9F61BWW460
9F61AEB301	9F61BNW750	9F61BWW459
9F61AEB305	9F61BNW732	9F61BWW459
9F61AEB401	9F61BNW751	N/A
9F61AEB405	9F61BNW461	N/A
9F61AEG201	9F61BNW451	9F61BWW457
9F61AEG205	9F61BNW731	9F61BWW457
9F61AEG301	9F61BNW750	9F61BWW459
9F61AEG305	9F61BNW732	9F61BWW459
9F61AEG401	9F61BNW751	N/A
9F61AEG405	9F61BNW461	N/A
9F61AFB501	9F61BNW452	N/A
9F61AFG501	9F61BNW452	N/A
9F61AFJ501	9F61BNW452	N/A
9F61AGG201	9F61BNW451	9F61BWW457
9F61AGG205	9F61BNW731	9F61BWW457
9F61AGG301	9F61BNW750	9F61BWW459
9F61AGG305	9F61BNW732	9F61BWW459
9F61AGG401	9F61BNW751	N/A
9F61AGG405	9F61BNW461	N/A
9F61AGJ201	9F61BNW451	9F61BWW457
9F61AGJ205	9F61BNW731	9F61BWW457
9F61AGJ301	9F61BNW750	9F61BWW459
9F61AGJ305	9F61BNW732	9F61BWW459
9F61AGJ401	9F61BNW751	N/A
9F61AGJ405	9F61BNW461	N/A

Spare Parts (Live Parts/Fuse Clips) - Fuse Supports and Disconnect Switches (Continued)

Fuse Supports and Disconnect Switches	Spare Live Parts[1]	Spare Fuse Clips[2]
9F61AHM201	9F61BNW743	9F61BWW457
9F61AHM205	9F61BNW746	9F61BWW457
9F61AHM301	9F61BNW744	9F61BWW459
9F61AHM305	9F61BNW747	9F61BWW459
9F61AHM401	9F61AWW738	N/A
9F61AHM405	9F61BNW748	N/A
9F61CEF209	9F61BNW743	9F61BWW457
9F61CEF210	9F61BNW746	9F61BWW457
9F61CEF309	9F61BNW744	9F61BWW459
9F61CEF310	9F61BNW747	9F61BWW459
9F61CEF409	9F61AWW738	N/A
9F61CEF410	9F61BNW748	N/A
9F61CGL209	9F61BNW743	9F61BWW457
9F61CGL210	9F61BNW746	9F61BWW457
9F61CGL309	9F61BNW744	9F61BWW459
9F61CGL310	9F61BNW747	9F61BWW459
9F61CGL409	9F61AWW738	N/A
9F61CGL410	9F61BNW748	N/A
9F61CHM209	9F61BNW743	9F61BWW457
9F61CHM210	9F61BNW746	9F61BWW457
9F61CHM309	9F61BNW744	9F61BWW459
9F61CHM310	9F61BNW747	9F61BWW459
9F61CHM409	9F61AWW738	N/A
9F61CHM410	9F61BNW748	N/A
9F61CJN309	9F61BNW744	9F61BWW459
9F61CJN310	9F61BNW747	9F61BWW459
9F61CJN409	9F61AWW738	N/A
9F61CJN410	9F61BNW748	N/A

[1]LIVE PARTS: Order (1) Live Parts for each Fuse Support and Disconnecting Switch (includes live parts for both ends).

[2]FUSE CLIPS: Order (2) Fuse Clips for each Fuse Support and order (1) Fuse Clip for each Disconnecting Switch.

Spare Parts (Live Parts/Fuse Clips) - Potential Transformer Fuses

Potential Tranformer Product Number	Spare Live Parts[1]	Spare Fuse Clips[2]
9F60AAA___	N/A	N/A
9F60AAB___	N/A	N/A
9F60BBB___	9F61BNW450	9F61BWW460
9F60BBD___	9F61BNW450	9F61BWW460
9F60BBN___	9F61BNW450	9F61BWW460
9F60BDB___	9F61BNW450	9F61BWW460
9F60BDD___	9F61BNW450	9F61BWW460
9F60BDE___	9F61BNW450	9F61BWW460
9F60BHH___	9F61BNW450	9F61BWW460

Spare Parts (Live Parts/Fuse Clips) - Motor Starter Fuses

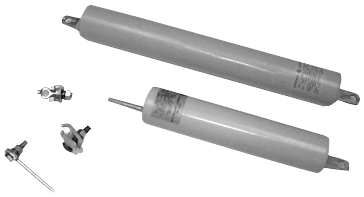
Motor Starter Product Number	Spare Live Parts[1]	Spare Fuse Clips[2]
9F60LCB5__	9F61BNW750	9F61BWW459
9F60LCL3__	9F61BNW750	9F61BWW459
9F60LJD5__	9F61BNW750	9F61BWW459
9F60LJN3__	9F61BNW750	9F61BWW459
9F60MCB5__	9F61BNW751	N/A
9F60MCL3__	9F61BNW751	N/A
9F60MJD5__	9F61BNW751	N/A
9F60MJN3__	9F61BNW751	N/A
9F60NLD8__	9F61BNW452	N/A
9F60TQB___	N/A	N/A
9F60TRD___	N/A	N/A

[1]LIVE PARTS: Order (1) Live Parts for each Fuse Support and Disconnecting Switch (includes live parts for both ends).

[2]FUSE CLIPS: Order (2) Fuse Clips for each Fuse Support and order (1) Fuse Clip for each Disconnecting Switch.

External Transformer Protection (ETP) Fuses

9F59U Series



Product Description

Backup current-limiting fuses designed to protect transformers are used in series with another protective device (such as an expulsion fuse). This combination limits the high-fault current to a safe level, thus providing protection through the complete range. As its name implies, the "ETP" is for External Transformer Protection. For conventional transformers protected by expulsion-fuse cutouts, the ETP can be installed in series with the cutout. For self-protected transformers, the ETP can be applied on the high-voltage bushing in series with the internal transformerexpulsion fuse. From 8.3kV to 23kV and from 8T to 80K. Interrupting rating 50 kA Sym.

SURE GUARD

ETP Rating	ETP Hardware	Minimum kV Class	Recommended Max. Expulsion	Max. Total I^2T	I.C. Amperes	Min. Melt Curve	Total Clear Curve	Let-through Curve	Product Number	List Price Prod. ID MVETP
8.3, Spade & Stud	Without Hardware	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC101	
8.3, Spade & Stud	(1) Adapter	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC111	
8.3, Spade & Stud	(1) Eyebolt Terminal	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC121	
8.3, Spade & Stud	(1) Parallel Groove	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC131	
8.3, Spade & Spade	Without Hardware	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC201	
8.3, Spade & Spade	(1) Adapter	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC211	
8.3, Spade & Spade	(1) Eyebolt Terminal	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC221	
8.3, Spade & Spade	(1) Parallel Groove	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC231	
8.3, Spade & Spade	Adapter & eyebolt terminal	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC241	
8.3, Spade & Spade	Adapter & parallel groove	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC251	
8.3, Spade & Spade	Eyebolt terminal & parallel groove	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC261	
8.3, Spade & Spade	(2) Eyebolt terminals	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC271	
8.3, Spade & Spade	(2) Parallel groove	15	8T or 12K	16000	440	GES-8228A	GES-8229A	GET-6693A	9F59UBC281	
8.3, Spade & Stud	Without Hardware	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC102	
8.3, Spade & Stud	(1) Adapter	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC112	
8.3, Spade & Stud	(1) Eyebolt Terminal	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC122	
8.3, Spade & Stud	(1) Parallel Groove	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC132	
8.3, Spade & Spade	Without Hardware	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC202	
8.3, Spade & Spade	(1) Adapter	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC212	
8.3, Spade & Spade	(1) Eyebolt Terminal	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC222	
8.3, Spade & Spade	(1) Parallel Groove	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC232	
8.3, Spade & Spade	Adapter & eyebolt terminal	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC242	
8.3, Spade & Spade	Adapter & parallel groove	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC252	
8.3, Spade & Spade	Eyebolt terminal & parallel groove	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC262	
8.3, Spade & Spade	(2) Eyebolt terminals	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC272	

External Transformer Protection (ETP) Fuses
9F59U Series

SURE GUARD (Continued)

ETP Rating	ETP Hardware	kV Class	Recommended Max. Expulsion	Minimum Max. Total I^2T	I.C. Amperes	Min. Melt Curve	Total Clear Curve	Let-through Curve	Product Number	List Price Prod. ID MVETP
8.3, Spade & Spade	(2) Parallel groove	15	15T or 25K	50000	450	GES-8228A	GES-8229A	GET-6693A	9F59UBC282	
8.3, Spade & Stud	Without Hardware	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC104	
8.3, Spade & Stud	(1) Adapter	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC114	
8.3, Spade & Stud	(1) Eyebolt Terminal	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC124	
8.3, Spade & Stud	(1) Parallel Groove	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC134	
8.3, Spade & Spade	Without Hardware	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC204	
8.3, Spade & Spade	(1) Adapter	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC214	
8.3, Spade & Spade	(1) Eyebolt Terminal	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC224	
8.3, Spade & Spade	(1) Parallel Groove	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC234	
8.3, Spade & Spade	Adapter & eyebolt terminal	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC244	
8.3, Spade & Spade	Adapter & parallel groove	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC254	
8.3, Spade & Spade	Eyebolt terminal & parallel groove	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC264	
8.3, Spade & Spade	(2) Eyebolt terminals	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC274	
8.3, Spade & Spade	(2) Parallel groove	15	25T or 40K	140000	560	GES-8228A	GES-8229A	GET-6693A	9F59UBC284	
8.3, Spade & Spade	Without Hardware	15	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBC208	
8.3, Spade & Spade	(1) Adapter	15	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBC218	
8.3, Spade & Spade	(1) Eyebolt Terminal	15	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBC228	
8.3, Spade & Spade	(1) Parallel Groove	15	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBC238	
8.3, Spade & Spade	Adapter & eyebolt terminal	15	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBC248	
8.3, Spade & Spade	Adapter & parallel groove	15	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBC258	
8.3, Spade & Spade	Eyebolt terminal & parallel groove	15	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBC268	
8.3, Spade & Spade	(2) Eyebolt terminals	15	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBC278	
8.3, Spade & Spade	(2) Parallel groove	15	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBC288	
15.5, Spade & Stud	Without Hardware	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD101	
15.5, Spade & Stud	(1) Adapter	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD111	
15.5, Spade & Stud	(1) Eyebolt Terminal	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD121	
15.5, Spade & Stud	(1) Parallel Groove	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD131	
15.5, Spade & Spade	Without Hardware	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD201	
15.5, Spade & Spade	(1) Adapter	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD211	
15.5, Spade & Spade	(1) Eyebolt Terminal	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD221	
15.5, Spade & Spade	(1) Parallel Groove	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD231	
15.5, Spade & Spade	Adapter & eyebolt terminal	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD241	
15.5, Spade & Spade	Adapter & parallel groove	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD251	
15.5, Spade & Spade	Eyebolt terminal & parallel groove	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD261	
15.5, Spade & Spade	(2) Eyebolt terminals	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD271	
15.5, Spade & Spade	(2) Parallel groove	25	8T or 12K	16000	510	GES-8228A	GES-8229A	GET-6693A	9F59UBD281	

External Transformer Protection (ETP) Fuses

9F59U Series

SURE GUARD (Continued)

ETP Rating	ETP Hardware	kV Class	Recommended Max. Expulsion	Max. Total I^2T	Minimum I.C. Amperes	Min. Melt Curve	Total Clear Curve	Let-through Curve	Product Number	List Price Prod. ID MVETP
15.5, Spade & Stud	Without Hardware	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD102	
15.5, Spade & Stud	(1) Adapter	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD112	
15.5, Spade & Stud	(1) Eyebolt Terminal	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD122	
15.5, Spade & Stud	(1) Parallel Groove	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD132	
15.5, Spade & Spade	Without Hardware	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD202	
15.5, Spade & Spade	(1) Adapter	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD212	
15.5, Spade& Spade	(1) Eyebolt Terminal	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD222	
15.5, Spade & Spade	(1) Parallel Groove	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD232	
15.5, Spade & Spade	Adapter & eyebolt terminal	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD242	
15.5, Spade & Spade	Adapter & parallel groove	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD252	
15.5, Spade & Spade	Eyebolt terminal & parallel groove	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD262	
15.5, Spade & Spade	(2) Eyebolt terminals	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD272	
15.5, Spade & Spade	(2) Parallel groove	25	15T or 25K	50000	480	GES-8228A	GES-8229A	GET-6693A	9F59UBD282	
15.5, Spade & Stud	Without Hardware	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD104	
15.5, Spade & Stud	(1) Adapter	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD114	
15.5, Spade& Stud	(1) Eyebolt Terminal	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD124	
15.5, Spade & Stud	(1) Parallel Groove	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD134	
15.5, Spade & Spade	Without Hardware	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD204	
15.5, Spade & Spade	(1) Adapter	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD214	
15.5, Spade & Spade	(1) Eyebolt Terminal	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD224	
15.5, Spade & Spade	(1) Parallel Groove	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD234	
15.5, Spade & Spade	Adapter & eyebolt terminal	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD244	
15.5, Spade & Spade	Adapter & parallel groove	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD254	
15.5, Spade & Spade	Eyebolt terminal & parallel groove	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD264	
15.5, Spade& Spade	(2) Eyebolt terminals	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD274	
15.5, Spade & Spade	(2) Parallel groove	25	25T or 40K	140000	890	GES-8228A	GES-8229A	GET-6693A	9F59UBD284	
15.5, Spade & Spade	Without Hardware	25	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBD208	
15.5, Spade & Spade	(1) Adapter	25	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBD218	
15.5, Spade & Spade	(1) Eyebolt Terminal	25	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBD228	
15.5, Spade & Spade	(1) Parallel Groove	25	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBD238	
15.5, Spade & Spade	Adapter & eyebolt terminal	25	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBD248	
15.5, Spade & Spade	Adapter & parallel groove	25	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBD258	
15.5, Spade & Spade	Eyebolt terminal & parallel groove	25	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBD268	
15.5, Spade & Spade	(2) Eyebolt terminals	25	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBD278	
15.5, Spade & Spade	(2) Parallel groove	25	50T or 80K	88000	1200	GES-8228A	GES-8229A	GET-6693A	9F59UBD288	
23.0, Spade & Stud	Without Hardware	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE101	

External Transformer Protection (ETP) Fuses
9F59U Series

SURE GUARD (Continued)

ETP Rating	ETP Hardware	kV Class	Recommended Max. Expulsion	Max. Total I²T	Minimum I.C. Amperes	Min. Melt Curve	Total Clear Curve	Let-through Curve	Product Number	List Price Prod. ID MVETP
23.0, Spade & Stud	(1) Adapter	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE111	
23.0, Spade & Stud	(1) Eyebolt Terminal	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE121	
23.0, Spade & Stud	(1) Parallel Groove	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE131	
23.0, Spade & Spade	Without Hardware	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE201	
23.0, Spade & Spade	(1) Adapter	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE211	
23.0, Spade & Spade	(1) Eyebolt Terminal	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE221	
23.0, Spade & Spade	(1) Parallel Groove	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE231	
23.0, Spade & Spade	Adapter & eyebolt terminal	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE241	
23.0, Spade & Spade	Adapter & parallel groove	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE251	
23.0, Spade & Spade	Eyebolt terminal & parallel groove	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE261	
23.0, Spade & Spade	(2) Eyebolt terminals	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE271	
23.0, Spade & Spade	(2) Parallel groove	35	8T or 12K	16000	280	GES-8228A	GES-8229A	GET-6693A	9F59UBE281	
23.0, Spade & Stud	Without Hardware	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE102	
23.0, Spade & Stud	(1) Adapter	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE112	
23.0, Spade & Stud	(1) Eyebolt Terminal	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE122	
23.0, Spade & Stud	(1) Parallel Groove	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE132	
23.0, Spade & Spade	Without Hardware	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE202	
23.0, Spade & Spade	(1) Adapter	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE212	
23.0, Spade & Spade	(1) Eyebolt Terminal	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE222	
23.0, Spade & Spade	(1) Parallel Groove	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE232	
23.0, Spade & Spade	Adapter & eyebolt terminal	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE242	
23.0, Spade & Spade	Adapter & parallel groove	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE252	
23.0, Spade & Spade	Eyebolt terminal & parallel groove	35	15T or 25K	7000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE262	
23.0, Spade & Spade	(2) Eyebolt terminals	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE272	
23.0, Spade & Spade	(2) Parallel groove	35	15T or 25K	70000	460	GES-8228A	GES-8229A	GET-6693A	9F59UBE282	

Hardware Options

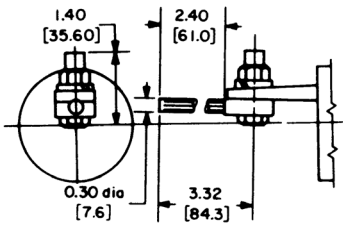


Fig. 1. Adapter only
9F59AAW007

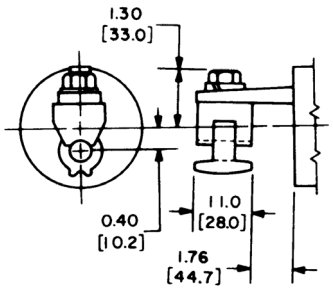


Fig. 2. Eyebolt only,
for 6-2/0 cable
9F59AAW008

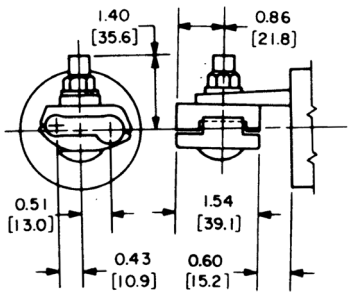


Fig. 3. Parallel groove only,
for 2/0 to 250MCM cable
9F59AAW009

Product Nos. Suitable for Parallel Application

Product Number	Max kV
9F59UBC208	8.3
9F59UBC218	8.3
9F59UBC228	8.3
9F59UBC238	8.3
9F59UBC248	8.3
9F59UBC258	8.3
9F59UBC268	8.3
9F59UBC278	8.3
9F59UBC288	8.3
9F59UBD208	15.5
9F59UBD218	15.5
9F59UBD228	15.5
9F59UBD238	15.5
9F59UBD248	15.5
9F59UBD258	15.5
9F59UBD268	15.5
9F59UBD278	15.5
9F59UBD288	15.5

Domestic USA General Terms and Conditions of Sale

1. Scope: The following terms and conditions constitute the full and final contract for the sale of products or services by Ferraz Shawmut LLC to the Buyer and supersede all prior written or oral communications between Ferraz Shawmut, or its representatives, and the Buyer. No modifications to these terms and conditions shall be binding on Ferraz Shawmut unless they are in writing and signed by an executive officer of Ferraz Shawmut. Notwithstanding any contrary language in the Buyer's purchase order, correspondence, or other form of communication, Buyer shall be bound by these Terms and Conditions when it sends a purchase order, accepts delivery from Ferraz Shawmut of product or service or otherwise indicates acceptance of this contract. Any differing or additional terms and conditions proposed by the Buyer are rejected by Ferraz Shawmut unless expressly agreed to in writing by an authorized executive of Ferraz Shawmut.

2. Prices: All prices and terms are subject to change without notice. Prices shall be those in effect at the time of shipment.

3. Order Acceptance: All orders and contracts must be approved by an official of Ferraz Shawmut at Headquarters, Newburyport, MA. Orders may be accepted in whole or in part.

4. Terms of Payment: Terms of payment for authorized Distributors are 2%, 15th proximo, net 25th proximo, from date of invoice. Terms of payment for all other classification of Buyers are net, 25th proximo, from the date of invoice. If the financial condition of the Buyer at the time the merchandise is ready for shipment does not justify the terms of payment specified, the Buyer may be called upon, before shipment, to arrange terms of payment satisfactory to Ferraz Shawmut. If at any time the Buyer fails to make any payment to Ferraz Shawmut when due, Ferraz Shawmut shall be entitled, among other things, to: deny any further extensions of credit to the Buyer; declare all unpaid amounts at the time outstanding from the Buyer to be immediately due and payable; and otherwise exercise all rights and remedies against the Buyer that may be available under the Buyer's arrangements with Ferraz Shawmut or at law. The Buyer shall pay to Ferraz Shawmut any and all reasonable expenses incurred by Ferraz Shawmut for collection from the Buyer due and unpaid, including reasonable interest, attorneys' fees and all related costs.

5. Minimum Billing: Orders less than $150 net value, one shipment, are subject to shipping and handling charges of $75.00.

6. Shipment: All shipments shall be made F.O.B. at the point of shipment. Ferraz Shawmut shall not be liable for any delay in shipment. The contract of sale shall in no event be subject to cancellation by the Buyer, due either to delay in delivery or to any other cause, except by mutual written agreement. Ferraz Shawmut shall select shipping method. Any cost associated with the Buyer's request for special shipping; packaging, handling, method or other shall be paid by the Buyer in total.

7. Delivery: Ferraz Shawmut reserves the right to make partial shipments. Delay in a balance of order shall not relieve Buyer from it's obligation to accept delivery of the balance of the order. Delivery dates provided in quotations or order acknowledgments are approximate and not guaranteed.

8. Termination: Orders shall not be subject to termination without written consent of Ferraz Shawmut. In such an event the Buyer shall forthwith pay Ferraz Shawmut the contract price for all finished units and a sum, which shall be determined by mutual agreement, in consideration of work in process and of commitments made by Ferraz Shawmut, or in absence of such an agreement, a sum representing (1) actual expenditures made by Ferraz Shawmut in connection with the uncompleted portion of the order, including reasonable cancellation charges paid by Ferraz Shawmut on account of commitments under the order and (2) reasonable estimated profits on the uncompleted portion of the order multiplied by the percentage of completion of the uncompleted portion of the order.

9. Returns: All returns must be approved in advance by Ferraz Shawmut headquarters, Newburyport, MA. Only standard stock products will be considered for return. Obsolete and non-stock products are not returnable. Returned material must be in new condition. Material must have been purchased by Buyer directly from Ferraz Shawmut. A restocking charge may apply.

10. Taxes: Any present or future sales, use, occupation, or other tax, which may be imposed is not included in the price and shall be paid by the Buyer.

11. Title and Risk of Loss: Title and right to possession of any material remain with Ferraz Shawmut until all payments are made in full. Buyer agrees to do all acts necessary to protect such right and title. Risk of loss however shall pass to Buyer at the time of delivery to the common carrier or licensed truckers.

12. Credit: Ferraz Shawmut reserves the right at any time to revoke any credit extended to Buyer if Buyer fails to pay for any shipments when due or if in Ferraz Shawmut's opinion there is a material change in Buyer's financial condition. Ferraz Shawmut may, at its option, hold or cancel any accepted order if Buyer fails to pay any invoice when due.

13. Defective Material and Workmanship Warranty: Should latent defects in materials and workmanship develop within one year from date of shipment, Ferraz Shawmut will either repair the defective part or parts, free of charge, F.O.B. point of shipment, or supply a new part or parts, free of charge, F.O.B point of shipment; provided Ferraz Shawmut is given opportunity to confirm the existence of defects. Ferraz Shawmut is not liable for contingent or consequential damage or expense in connection with the operation, repair, or replacement of the defective part or parts.

14. Limitation on Warranty: The foregoing warranty are exclusive. Ferraz Shawmut disclaims all other warranties including merchantability and fitness for a particular purpose. Correction of non-conformities listed herein shall constitute Ferraz Shawmut's sole liability and Buyer's exclusive remedy for failure of Ferraz Shawmut to meet its warranty obligations, whether claims of the Buyer are based in contract, in tort (including negligence or strict liability), or otherwise.

15. Liquidated Damages: Contracts which include liquidated damages clauses are not acceptable to, or binding on Ferraz Shawmut unless such clauses are specifically accepted in writing by an executive officer from Ferraz Shawmut headquarters.

16. Patents: Ferraz Shawmut agrees that it will at its own expense defend any suit which may be brought against the Buyer based on a claim that any apparatus or part furnished under contract constitutes an infringement of any United States letters patent (provided Ferraz Shawmut is notified promptly of such suit and copies of all papers therein are delivered to Ferraz Shawmut); and Ferraz Shawmut agrees to pay all judgments and costs recovered in any such suit. In case such apparatus or any part is held to constitute infringement and the use of the apparatus or part is enjoined, Ferraz Shawmut shall at its own expense, either procure for the Buyer the right to continue using the apparatus or part, or replace with non-infringing apparatus; or modify it so it becomes non-infringing; or remove the apparatus and refund the purchase price and the transportation and installation cost thereof. The foregoing states the entire liability of Ferraz Shawmut for patent infringement by apparatus or any part thereof. Ferraz Shawmut assumes no liability whatsoever for patent infringement of any goods or part thereof designed by Buyer.

17. Limitations of Liability: Neither Ferraz Shawmut or its suppliers shall be liable, whether in contract, warranty, failure of a remedy to achieve its intended or essential purpose, tort (including negligence or strict liability) indemnity or any other legal theory, for loss of use, revenue or profit, or for cost of capital or of substitute use or performance, or for indirect, special, liquidated, incidental or consequential damages, or for any other loss or cost of a similar type, or for claims by Buyer for damages of Buyer's customers. Ferraz Shawmut's liability for any claim of any kind shall not exceed the purchase price of the goods or services, or portion thereof, which gives rise to the claim. Ferraz Shawmut and Buyer agree that the exclusions and limitations set forth in this article are separate and independent from any remedies the Buyer may have hereunder, or elsewhere, and shall be given full force and effect whether or not any and all such remedies shall be deemed to have failed of their essential purpose.

18. Force Majeure: Ferraz Shawmut shall not be liable for any delay or failure to perform its obligations under this agreement, resulting due to any fire, flood, acts of God, acts of Buyer, acts of government or other civil or military authorities, strikes or other labor disputes, accidents, epidemics, war, riot, embargoes, delays in transportation, lack of or inability to obtain raw materials, components, labor, fuel, or supplies, or other circumstances beyond Ferraz Shawmut's reasonable control. If Ferraz Shawmut elects, the time for performance shall be extended by a period reasonably necessary to overcome the effect of such delay.

19. Governing Law: The agreement shall in all respects be construed and governed by the internal laws of the Commonwealth of Massachusetts, without regard to conflicts of law rules.

20. Assignment: Buyer shall not assign this contract in total or in part, without the written consent of Ferraz Shawmut LLC

A relentless pursuit of protection for electrical components, systems—and the people who use them.

Ferraz Shawmut is an international company manufacturing the widest range of circuit protection solutions in the electrical industry. Drawing on a century of experience—and an ongoing commitment to critical research in electrical safety—we provide industrial, commercial, and OEM customers with innovative products and technical support teams to increase effectiveness, simplify applications, and enhance productivity. Learn more about our circuit protection solutions at us.ferrazshawmut.com.

For more information,
visit our website at
us.ferrazshawmut.com.

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BR-GECAT-001

American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series



5kV, 8 kV and 15kV Ferrule mounted fuses

Amp-trap CS-3 E-rated 5kV, 8kV and 15kV fuses have either 2" or 3" diameter barrels with ferrules and are mounted in spring reinforced clips. They are UL listed as "general purpose current-limiting fuses" and are for use indoors (or outdoors in a weatherproof enclosure). The unique time-current characteristic of Ferraz Shawmut E-rated fuses allows them to be closely sized to transformer full-load rated current, as recommended by IEEE guidelines, without being affected by normal magnetizing inrush current. CS-3 fuses are typically sized at transformer rated current of 133%, thereby providing superior overall protection.

Features/Benefits

- UL Listed for compatibility with UL listed equipment
- Ferrule mounting for standard clips and interchangeability with other brands of fuses
- Current Limiting for superior equipment protection
- Blown-fuse indicator gives positive identification of open fuse
- Non-venting for silent operation

Ratings

A055F
AC: 5E to 450E
5.5kV, 63kA I.R. Sym.

A825X
AC: 10E to 200E
8.25kV, 50kA I.R. Sym.

A155F
AC: 5E TO 200E
15.5kV, 50kA I.R. Sym.

Highlights

- E-Rated
- UL Listed
- Complies with ANSI C37.46

Applications

Protection for 5.5, 8.25 or 15.5kV transformers or distribution systems

Definitions

E-rating
E-rated fuses operate as follows:
100E or less - must melt in 300 seconds (5 mins.) on 200 to 240% of E (ampere) rating.
Over 100E - must melt in 600 seconds (10 mins.) on 220 to 264% of E (ampere) rating.

Example - A 100E fuse must melt in 300 seconds with an applied current of 200 to 240 amperes.

General Purpose Current-Limiting Fuse
A general purpose current-limiting power fuse is one that is capable of interrupting all currents from its rated interrupting rating down to the current that causes melting of the fusible element in one hour.

Spring-Reinforced Clips for CS-3 Fuses:
228-700-530 (One pair of clips)
For 3" diameter, 2 barrels max.

Approvals

UL Listed to JEEG, "Fuses Over 600 Volts"
File # E 143362

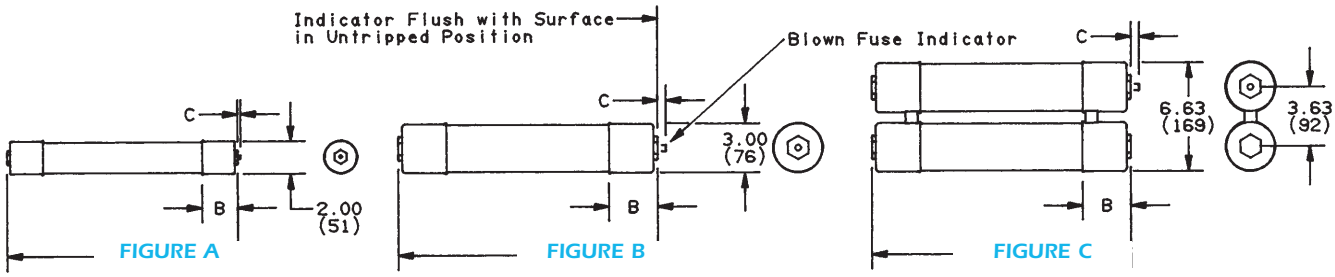
American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

5.5kV Ferrule Mounted

CATALOG NUMBERING SYSTEM

A 0 5 5 F 1 D 0 R 0 - 1 0 0 E

- A: Amp-trap Fuse
- 055: Max. Voltage Rating (055=5.5kV)
- F: Style (F=Ferrule Mount)
- 1: No. of Barrels
- D: Diameter (C=2", D=3")
- 0: Special Features
- R0: Revision/No.
- 100E: Ampere Rating

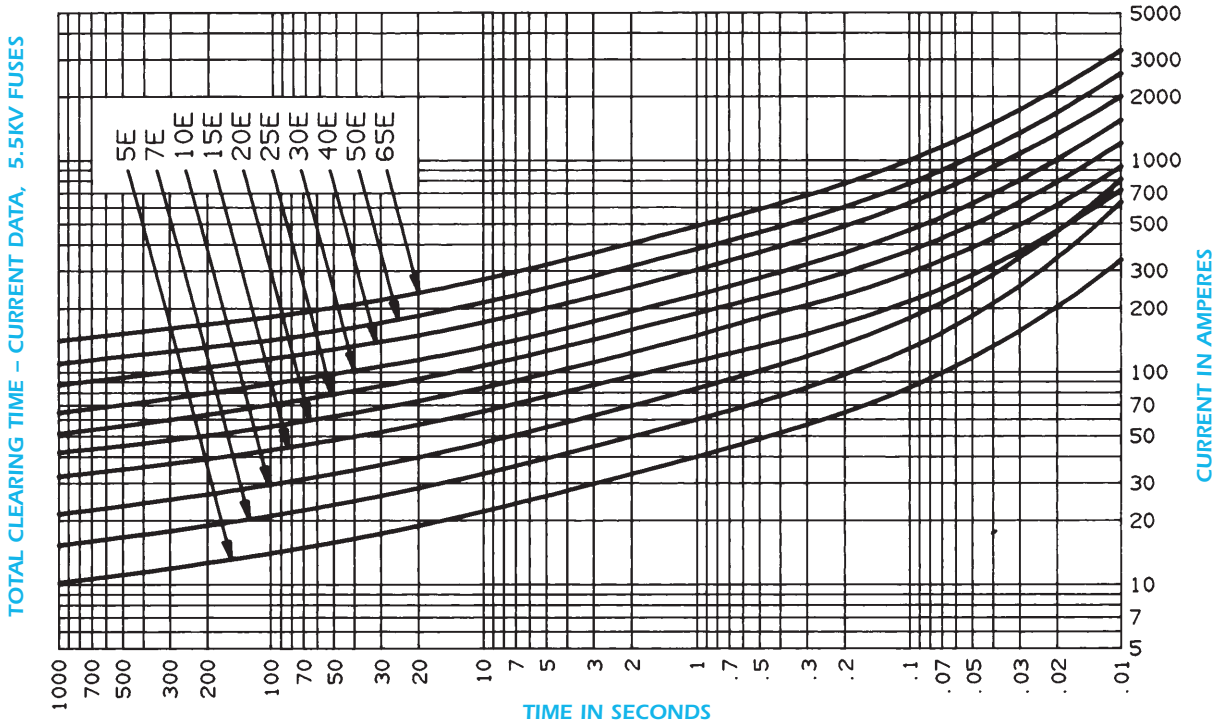


Reference Numbers, Ratings, Dimensions, CS-3 Series, 5.5kV

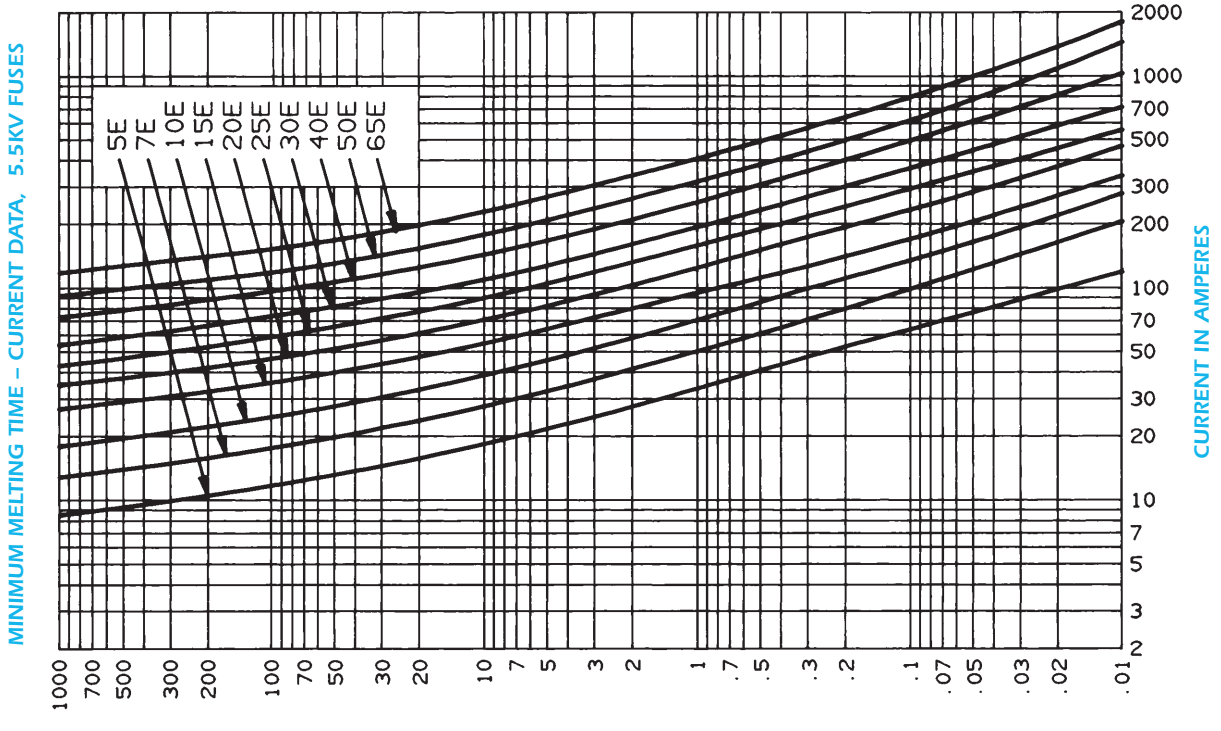
Catalog Number	Reference Number	Ampere Rating	Number of Barrels	Fig.	Dimensions Inches (mm) A	B	C	Interrupting Rating RMS SYM.*Amp.
5.5kV Max. – Ferrule Mounted Style – 12″ (305mm) Clip Centers – 2″ (50.8mm) Barrel Diameter								
A055F1CORO-5E	S213364	5E	1	A	14.11 (358)	2.2 (56)	.19 (4.8) Tripped Force 1 lb.	63,000
A055F1CORO-7E	T214377	7E						
A055F1CORO-10E	A222709	10E						
A055F1CORO-15E	P223228	15E						
A055F1CORO-20E	E201047	20E						
A055F1CORO-25E	N201561	25E						
A055F1CORO-30E	H203557	30E						
A055F1CORO-40E	V212331	40E						
A055F1CORO-50E	J212850	50E						
A055F1CORO-65E	J213862	65E						
5.5kV Max. – Ferrule Mounted Style – 12″ (305mm) Clip Centers – 3″ (76.2mm) Barrel Diameter								
A055F1DORO-10E	T214883	10E	1	B	15.88 (403)	3.0 (76)	0.5 (13) Tripped Force 2 lbs.	63,000
A055F1DORO-15E	M218465	15E						
A055F1DORO-20E	T221967	20E						
A055F1DORO-25E	C222711	25E						
A055F1DORO-30E	Q223229	30E						
A055F1DORO-40E	G201049	40E						
A055F1DORO-50E	Q201563	50E						
A055F1DORO-65E	V203591	65E						
A055F1DORO-80E	A211301	80E						
A055F1DORO-100E	V214378	100E						
A055F1DORO-125E	Y217440	125E						
A055F1DORO-150E	G217954	150E						
A055F1DORO-175E	F218988	175E						
A055F1DORO-200E	Y219510	200E						
A055F2DORO-250E	G218989	250E						
A055F2DORO-300E	Z219511	300E	2	C				
A055F2DORO-350E	V221968	350E						
A055F2DORO-400E	D222712	400E						
A055F2DORO-450E	R223230	450E						

American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

A055F1CORO – 5E to 65E

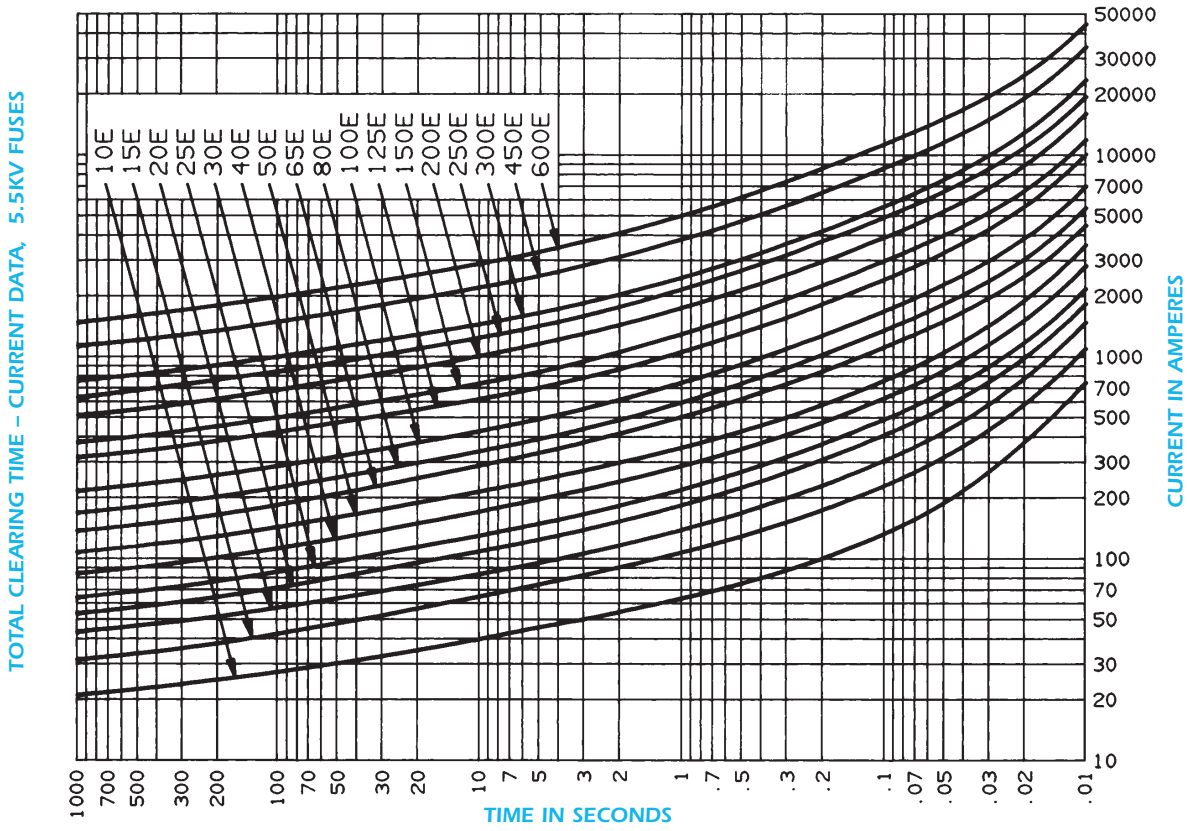


A055F1CORO – 5E to 65E

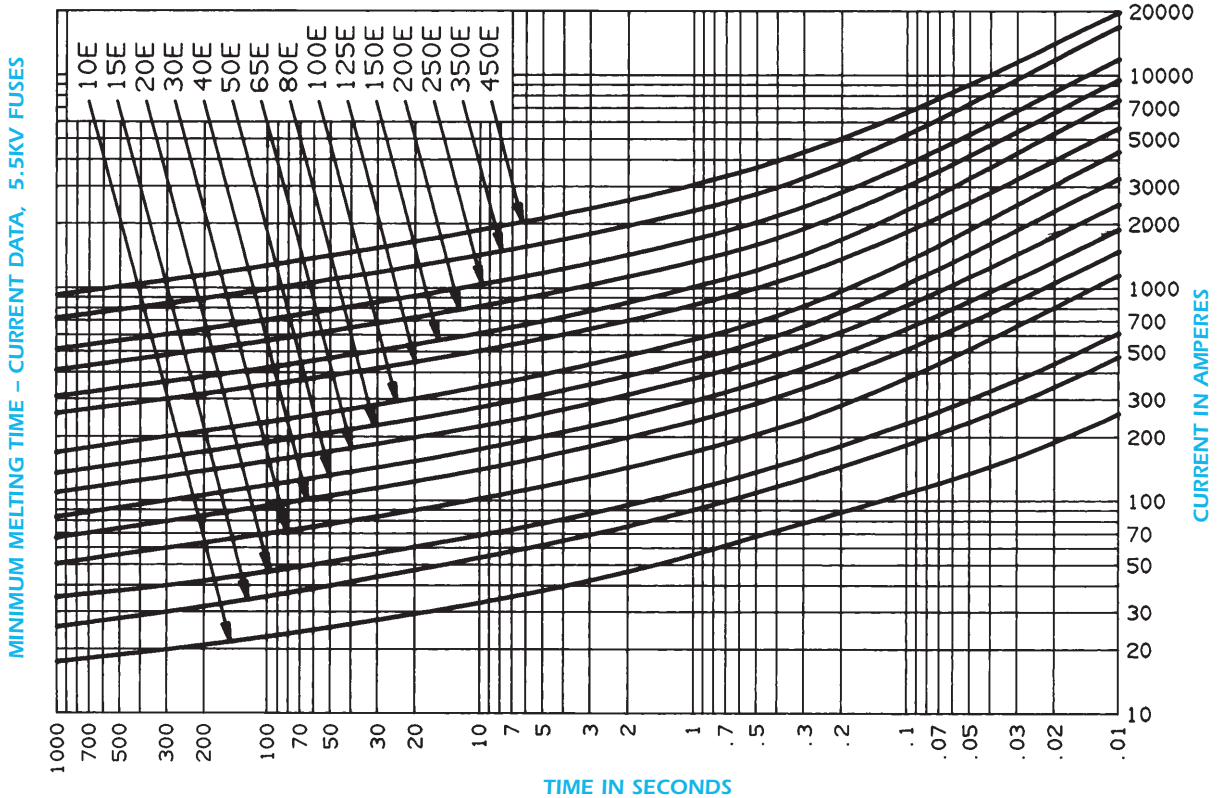


American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

A055F1DORO – 10E to 200E and A055F2DORO – 250E to 450E

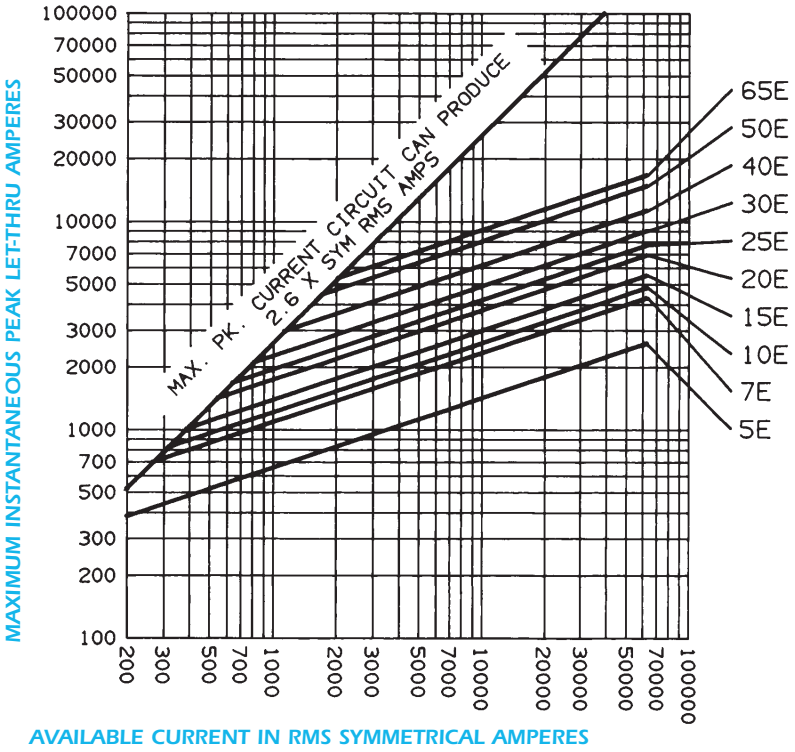


A055F1DORO – 10E to 200E and A055F2DORO – 250E to 450E

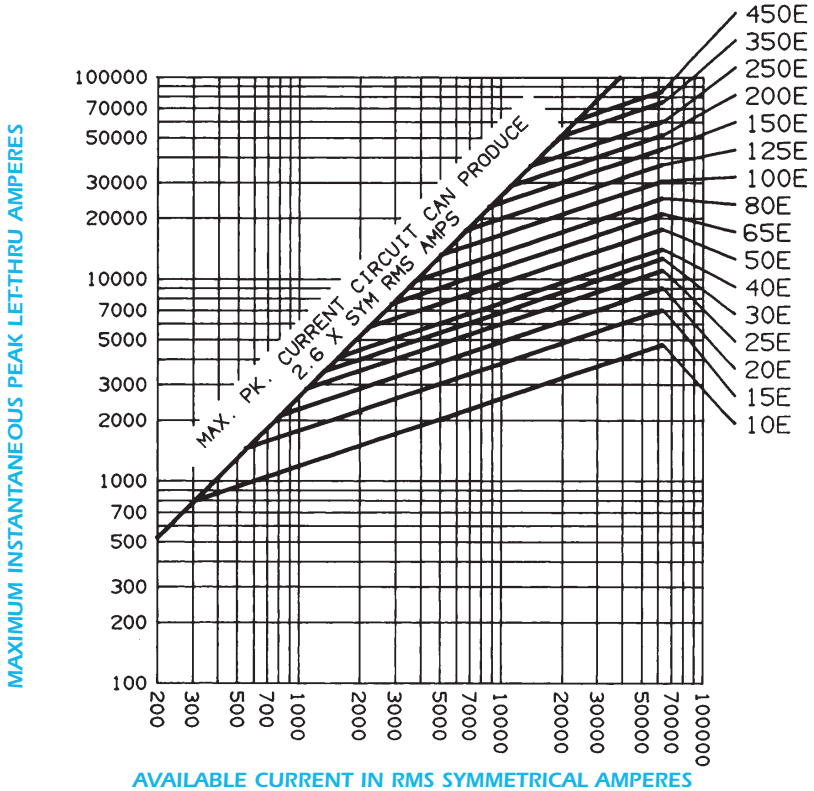


American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

A055F1CORO – 5E to 65E
Peak Let-Thru Current Data, 5.5kV CS-3 Fuses



A055F1DORO – 10E to 200E and A055F2DORO – 250E to 450E
Peak Let-Thru Current Data, 5.5kV CS-3 Fuses



American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

8.25kV Ferrule Mounted

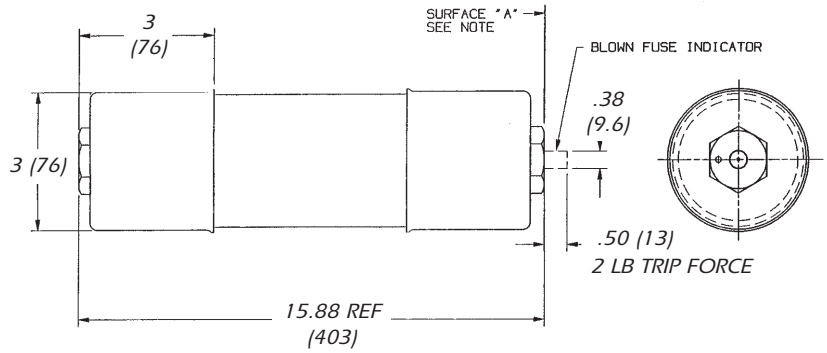


FIGURE A

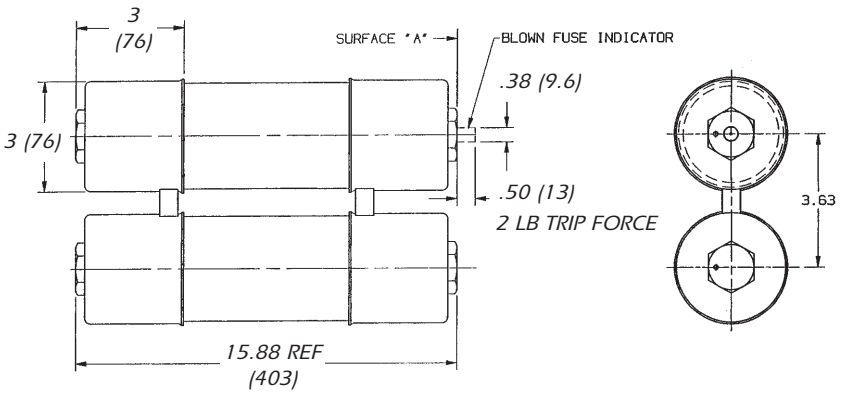


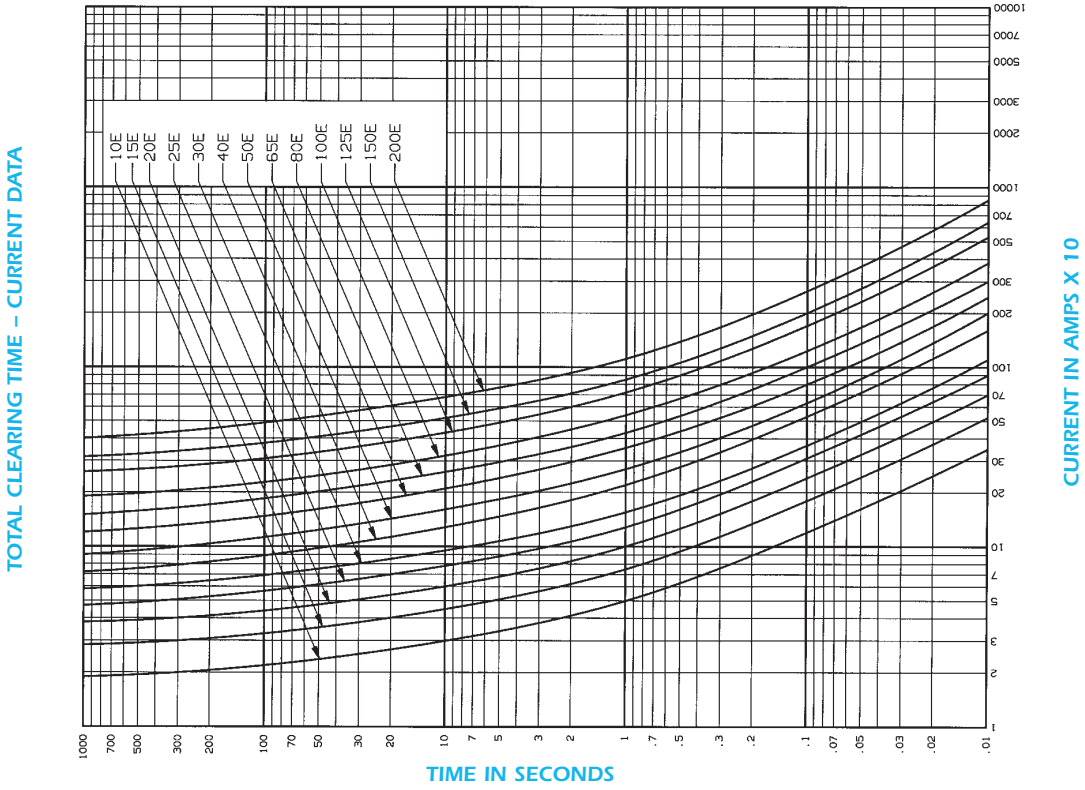
FIGURE B

Catalog Number	Reference Number	Ampere Rating	Number of Barrels	Figure SYM. Amperes*	Interrupting Rating RMS
8.25kV Max. – Ferrule Mounted Style – 12" (305mm) Clip Center – 3" (76.2mm) Barrel Diameter					
A825X10E-1	-	10E	1	A	
A825X15E-1	-	15E	1	A	
A825X20E-1	C215903	20E	1	A	
A825X25E-1	G216413	25E	1	A	
A825X30E-1	P216926	30E	1	A	50,000
A825X40E-1	L217958	40E	1	A	
A825X50E-1	R218469	50E	1	A	
A825X65E-1	K218992	65E	1	A	
A825X80E-1	C219514	80E	1	A	
A825X100E-1	M211818	100E	1	A	
A825X125E-1	A212336	125E	2	B	
A825X150E-1	N213866	150E	2	B	50,000
A825X200E-1	X214886	200E	2	B	

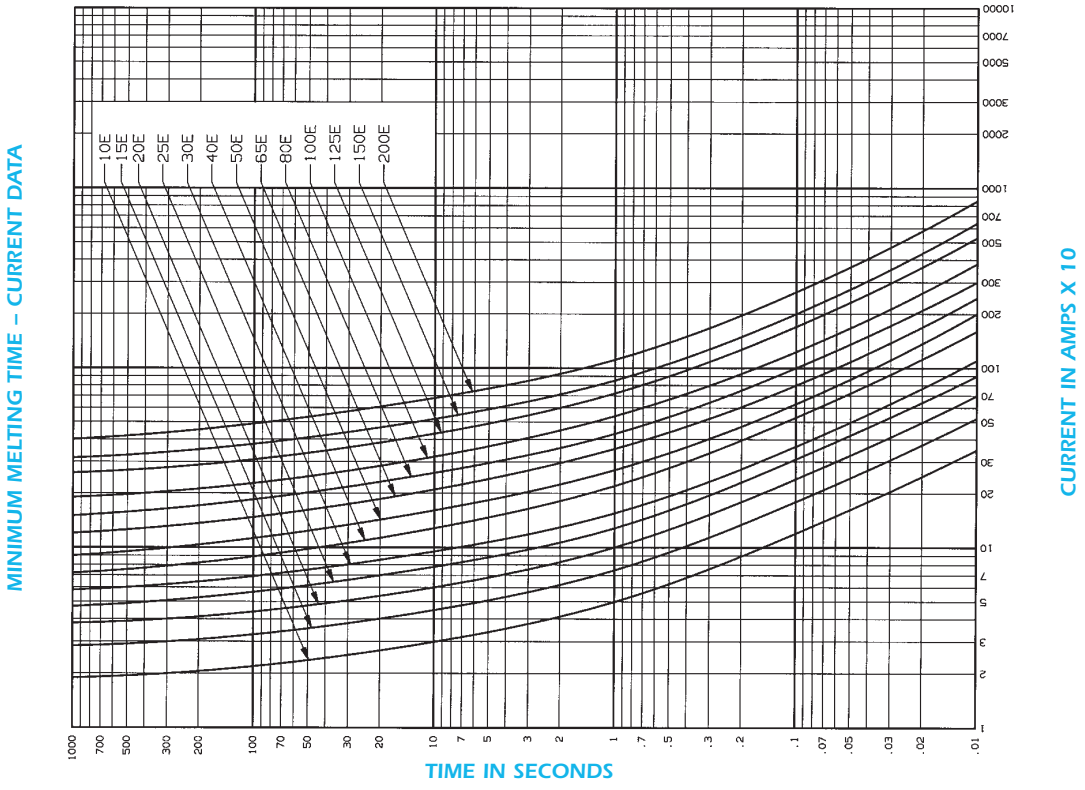
** RMS ASYM. AMPS = RMS SYM. AMPERES x 1.6*

American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

A825X (10E to 200E) -1

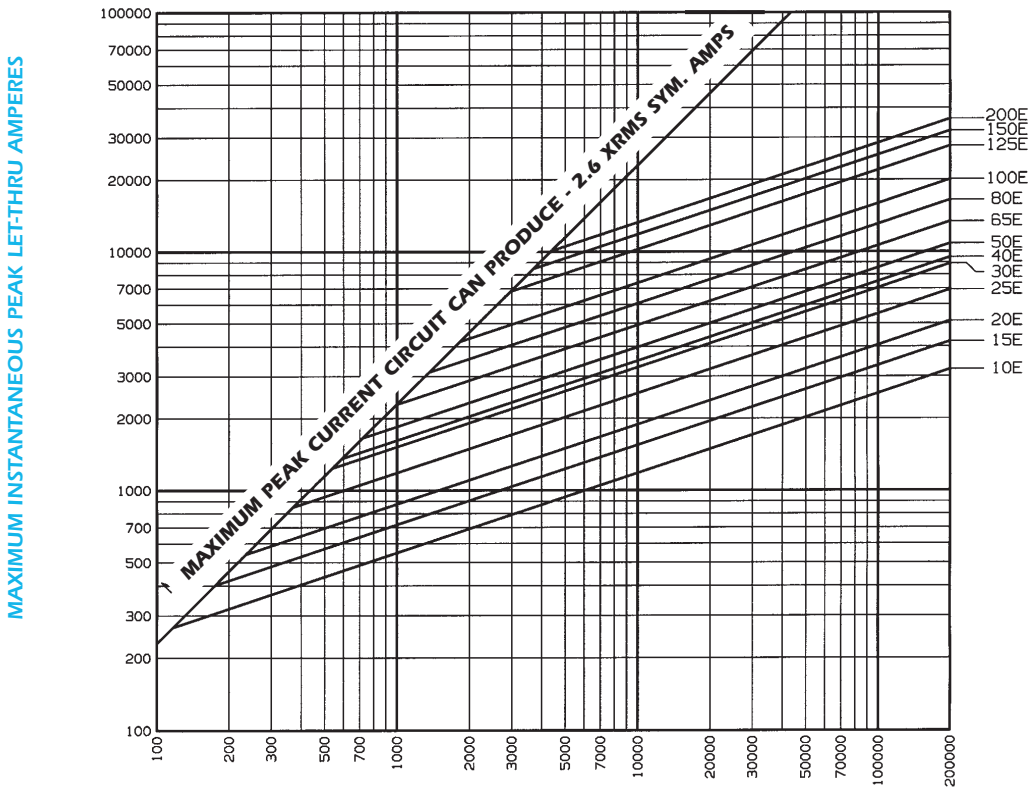


A825X (10E to 200E) -1



American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

A825X (10E to 200E) -1
Peak Let-Thru Current Data, E-Rated Fuses



American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

15.5kV Ferrule Mounted

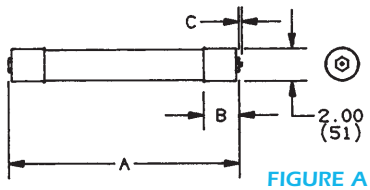


FIGURE A

CATALOG NUMBERING SYSTEM

A 1 5 5 F 1 D 0 R 0 - 1 0 0 E

- A: Amp-trap Fuse
- 155: Max. Voltage Rating (155=15.5kV)
- F: Style (F=Ferrule Mount)
- 1: No. of Barrels
- D: Diameter (C=2", D=3")
- 0: Special Features
- R0: Revision/No.
- 100E: Ampere Rating

Indicator Flush with Surface in Untripped Position

Blown Fuse Indicator

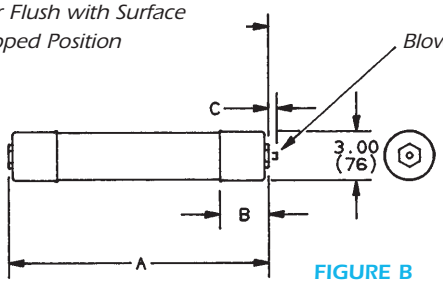


FIGURE B

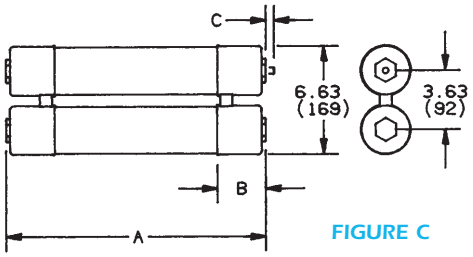


FIGURE C

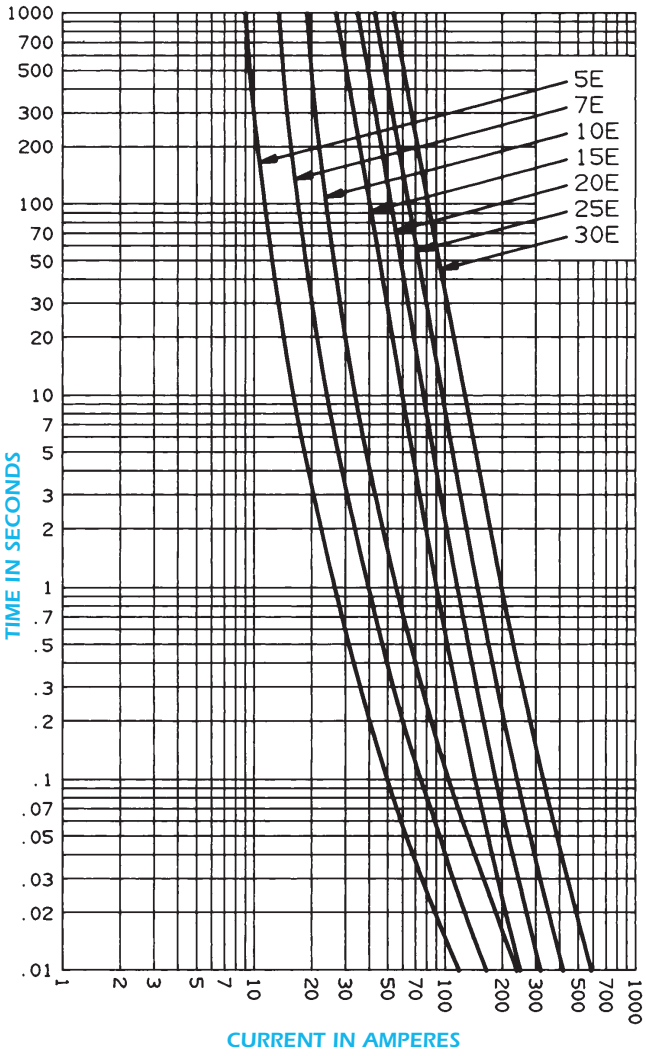
Catalog Numbering System, Ratings, Dimensions, CS-3 Series, 15.5kV

Catalog Number	Reference Number	Ampere Rating	Number of Barrels	Fig.	Dimensions Inches (mm) A	B	C	Interrupting Rating RMS SYM.*Amp.
15.5kV Max. – Ferrule Mounted Style – 15" (381 mm) Clip Centers – 2" (50.8mm) Barrel Diameter								
A155F1CORO - 5E	E218E987	5E	1	A	17.03 (433)	2.2 (56)	.19 (4.8) Tripped Force 1 lb.	50,000
7E	X219509	7E						
10E	S214882	10E						
15E	X215392	15E						
20E	L216923	20E						
25E	F217953	25E						
30E	L218464	30E						
15.5kV Max. – Ferrule Mounted Style – 15" (381mm) Clip Centers – 3" (76.2mm) Barrel Diameter								
A155F1DORO - 10E	E216411	10E	1	B	18.87 (479)	3.0 (76)	0.5 (13) Tripped Force 2 lbs.	50,000
15E	A217442	15E						
20E	J217956	20E						
25E	P218467	25E						
30E	H218990	30E						
40E	A219512	40E						
50E	W221969	50E						
A155F2DORO - 65E	Q218468	65E	2	C				
80E	J218991	80E						
100E	B215902	100E						
15.5kV Max. – Ferrule Mounted Style – 18" (457mm) Clip Centers – 3" (76.2mm) Barrel Diameter								
A155F1DORO - 65E	S223231	65E	1	B	21.75 (552)	3.0 (76)	0.5 (13) Tripped Force 2 lbs.	50,000
80E	J201051	80E						
100E	A215901	100E						
A155F2DORO - 125E	F216412	125E	2	C				
150E	N216925	150E						
175E	B217443	175E						
200E	K217957	200E						

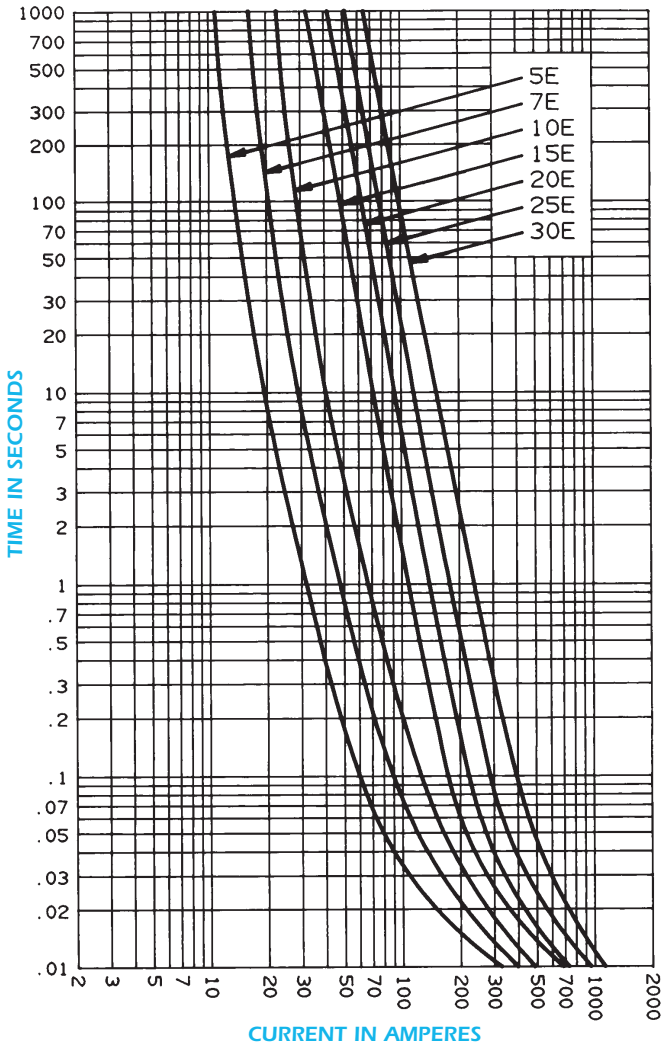
** RMS ASYM. AMPERES = RMS SYM. AMPERES x 1.6*

American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

A155F1CORO – 5E to 30E
Minimum Melting Time – Current Data, 15.5kV Fuses

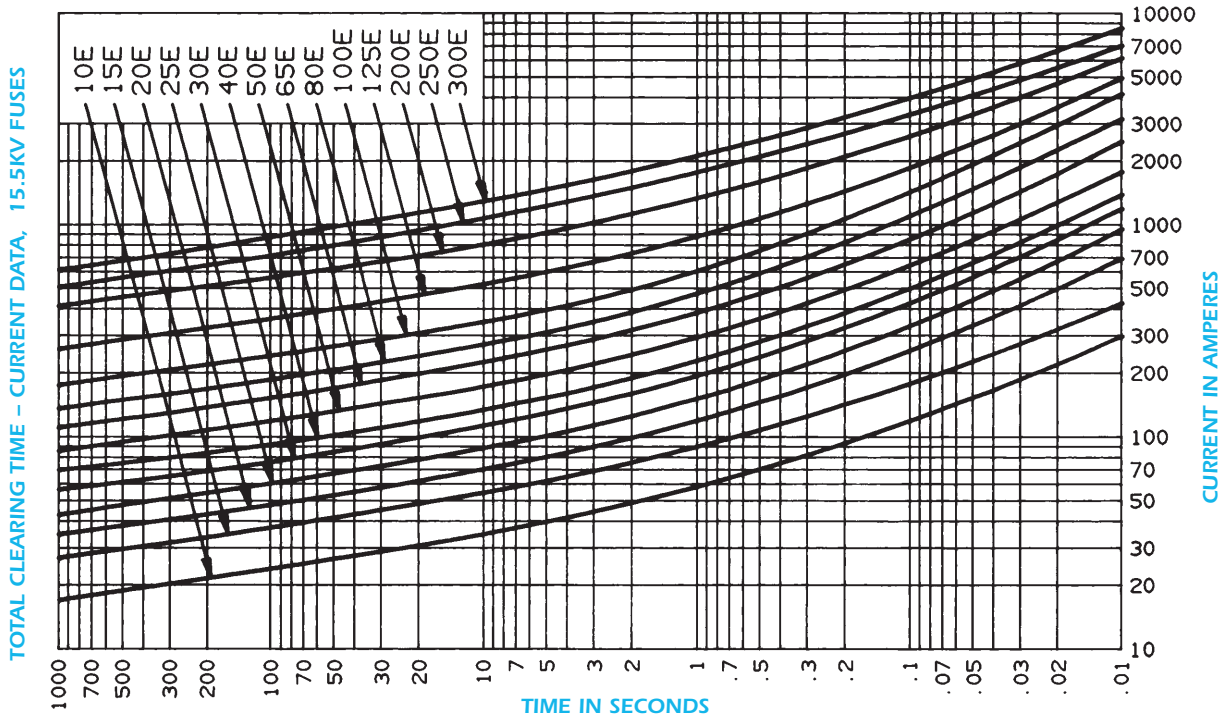


A155F1CORO – 5E to 30E
Total Clearing Time – Current Data, 15.5kV Fuses

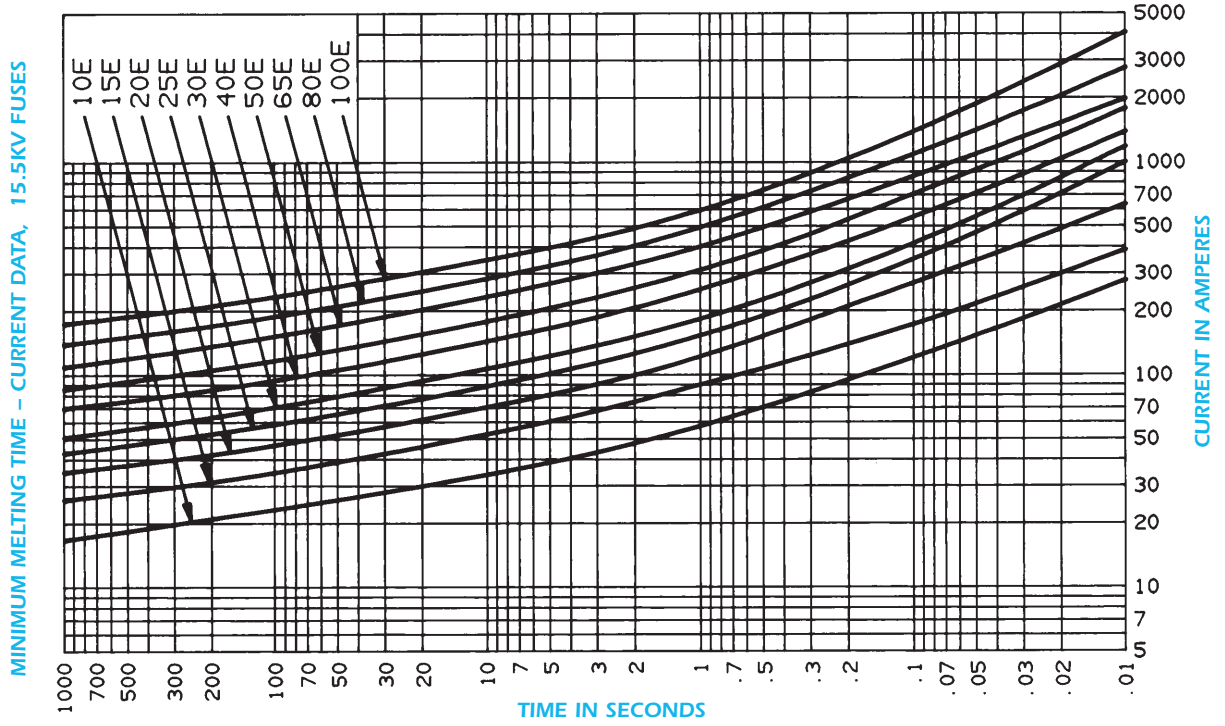


American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

A155F1DORO – 10E to 50E and A155F2DORO – 65E to 100E

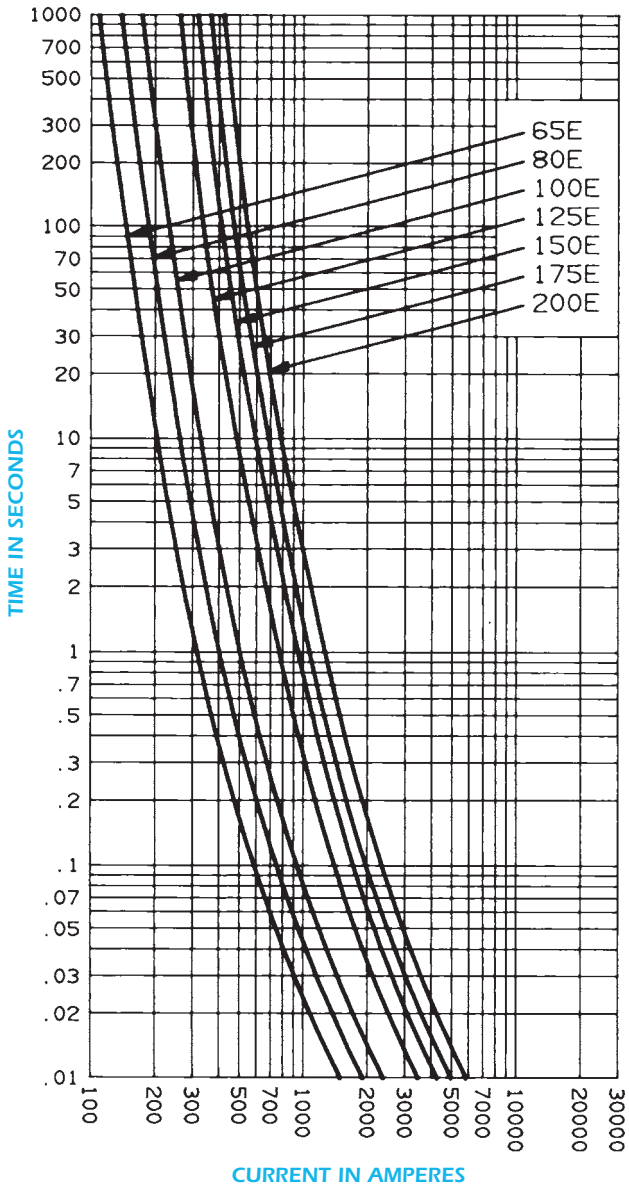


A155F1DORO – 10E to 50E and A155F2DORO – 65E to 100E

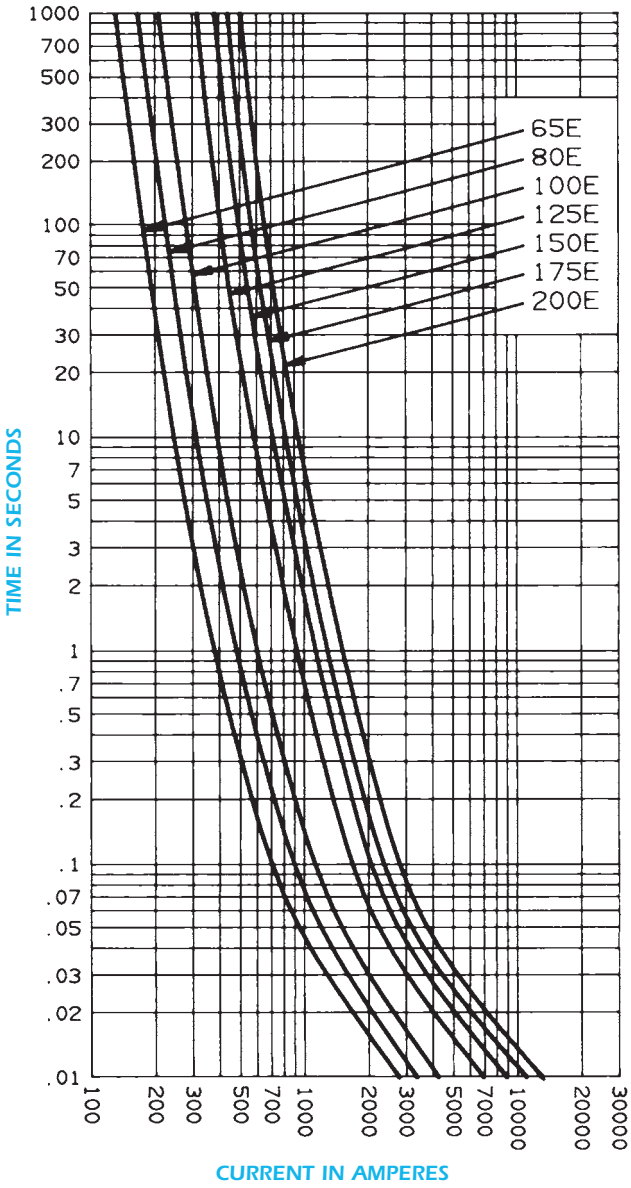


American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

A155F1DORO – 65E to 100E and A155F2DORO – 125E to 200E Minimum Melting Time – Current Data, 15.5kV Fuses

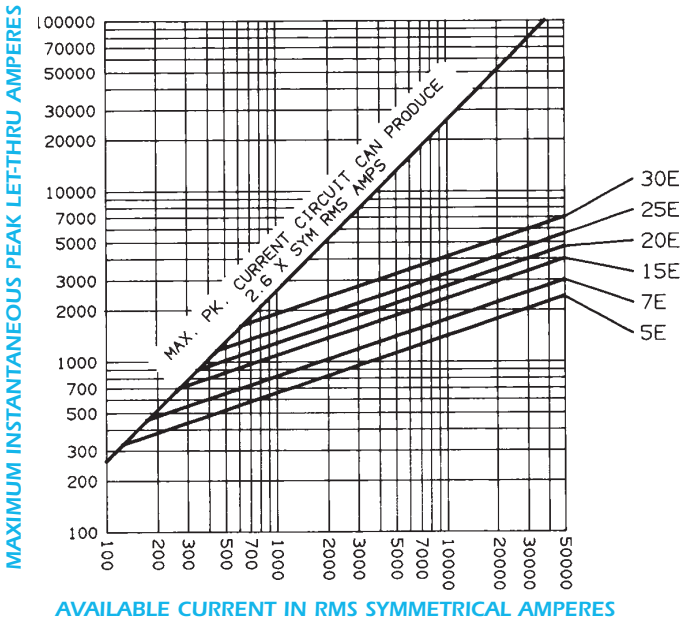


A155F1DORO – 65E to 100E and A155F2DORO – 125E to 200E Total Clearing Time – Current Data, 15.5kV Fuses

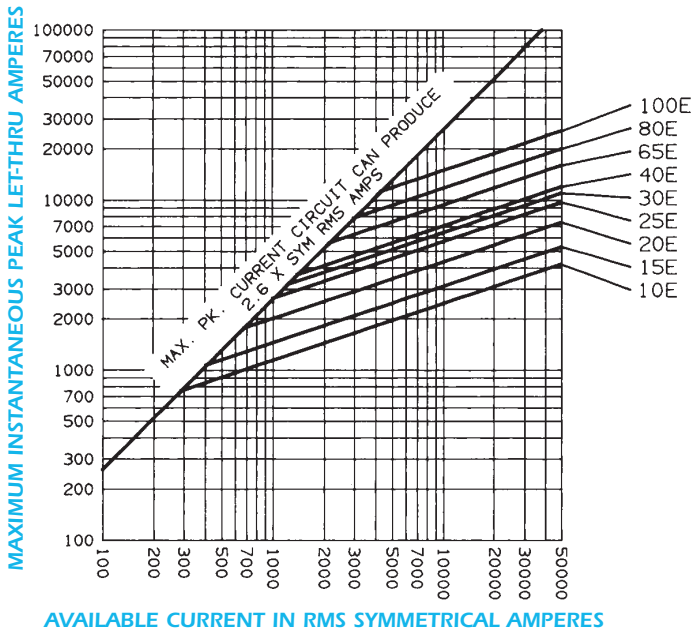


American Fuses
E-Rated
5.5kV, 8.25kV and 15.5kV - CS 3 Series

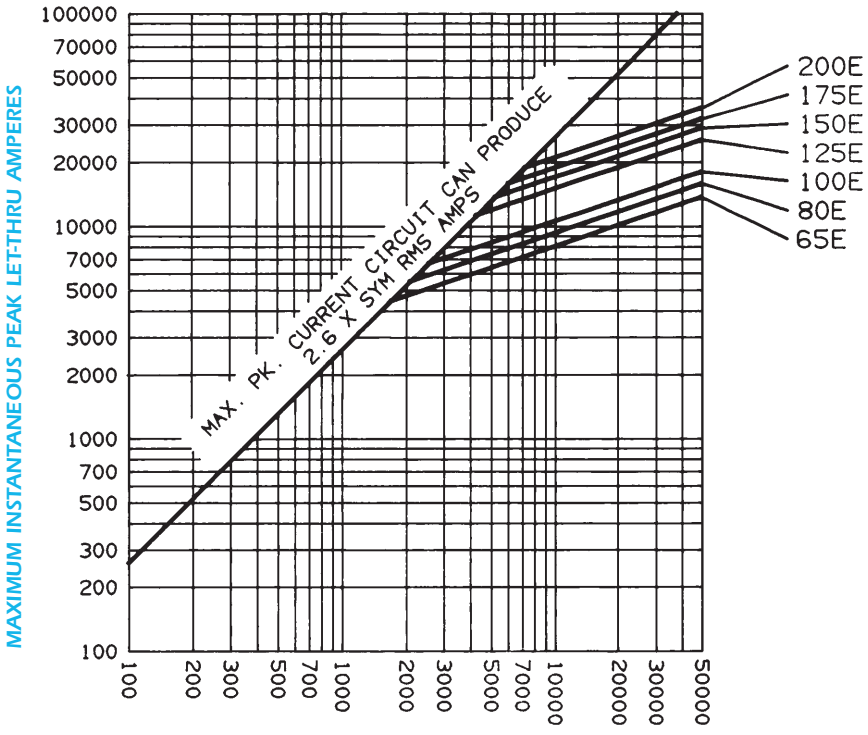
A155F1CORO – 5E to 30E
Peak Let-Thru Current Data, 15.5kV CS-3 Fuses



A155F1DORO – 10E to 50E
A155F2DORO – 65E to 100E
Peak Let-Thru Current Data, 15.5kV CS-3 Fuses



A155F1DORO – 65E to 100E
A155F2DORO – 125E to 200E
Peak Let-Thru Current Data, 15.5kV CS-3 Fuses



American Fuses
E-Rated
5.5kV - Bolt-in Series



5kV Bolt-in fuses

Amp-trap Bolt-in Series E-rated fuses are single, double or triple barrel (3" diam.) with end mounts designed for bolting directly to equipment bus or terminal pads. They are UL listed and are for use indoors (or outdoors in a weatherproof enclosure). The unique time-current characteristic of Ferraz Shawmut E-rated fuses allows them to be closely sized to transformer full load rated current, as recommended by IEEE guidelines, without being affected by normal magnetizing inrush current. Bolt-in fuses are typically sized at transformer rated current of 133%, thereby providing superior overall protection.

Features/Benefits

- **UL Listed** for compatibility with UL listed equipment
- **Bolt-in mounting** for direct connection to bus or terminals
- **Current Limiting** for superior equipment protection
- **Blown-fuse indicator** gives positive identification of open fuse
- **Non-venting** for silent operation
- **Metal Embossed Catalog Number** and manufacturing date for lasting identification

Ratings

A055B

AC: 10E to 900E
5500V max, 63kA I.R. Sym.

Approvals

- UL Listed to JEEG, "Fuses Over 600 Volts"
- UL File # E143362

Highlights

- E-Rated
- UL Listed
- Complies with ANSI C37.46

Applications

- Protection for 5.5kV transformers or distribution systems

Definitions

E-rating
E-rated fuses operate as follows:
Over 100E - must melt in 600 seconds (10 mins.) on 220 to 264% of E (ampere) rating.
Example - A 750E fuse must melt in 600 seconds with an applied current of 1650 to 1980 amperes.

General Purpose Current-Limiting Fuse
A general purpose current-limiting power fuse is one that is capable of interrupting all currents from its rated interrupting rating down to the current that causes melting of the fusible element in one hour.

American Fuses
E-Rated
5.5kV - Bolt-in Series

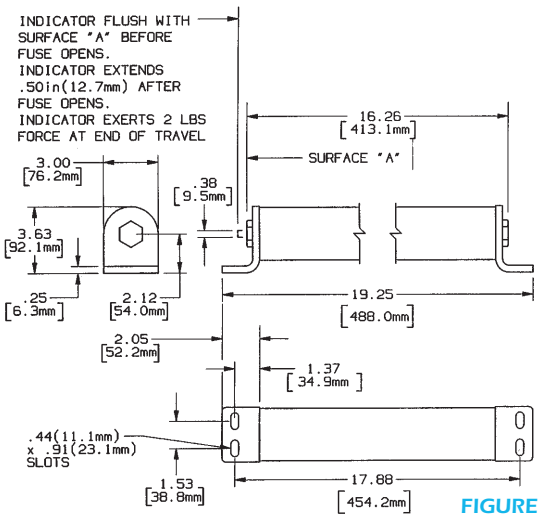


FIGURE A

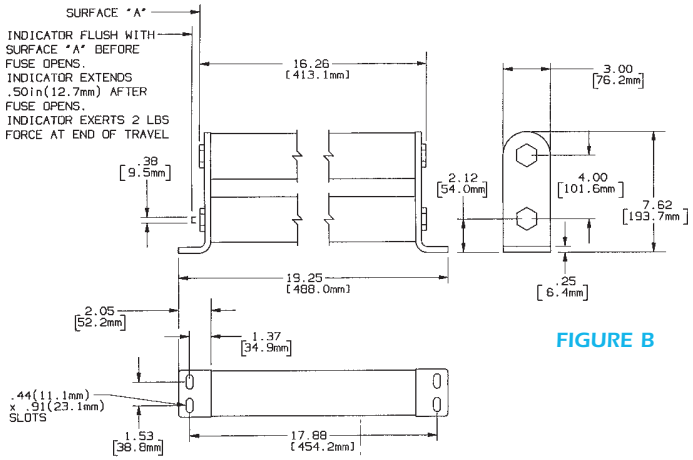


FIGURE B

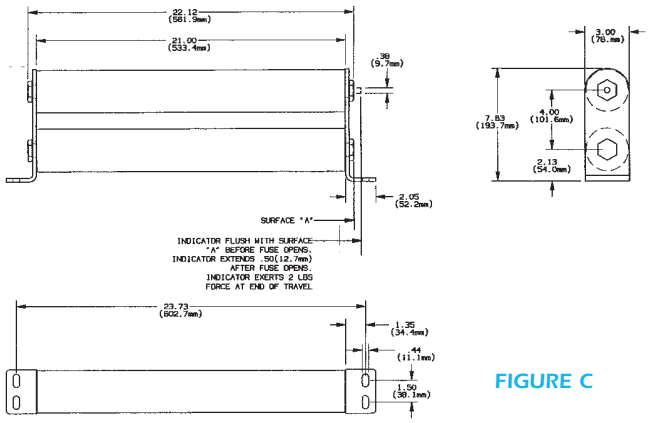


FIGURE C

CATALOG NUMBERING SYSTEM

A 0 5 5 B 1 D A R 0 - 5 0 E

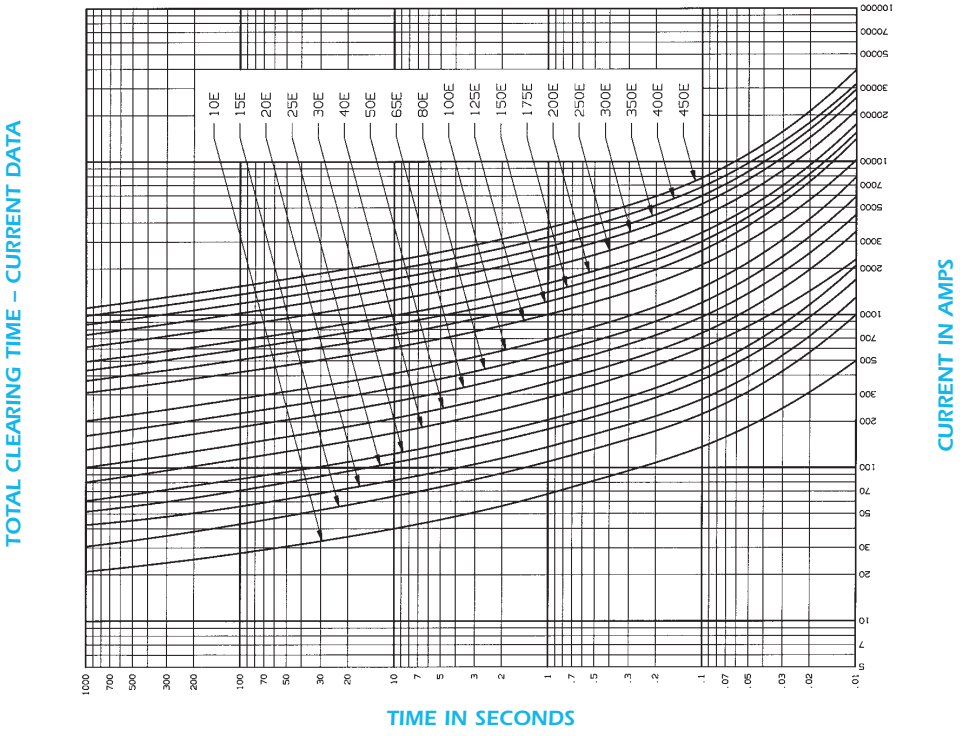
- Amp-trap Fuse
- Max. Voltage Rating (055=5.5kV)
- Style (B= Bolt-in Mount)
- No. of Barrels
- Diameter (D=3")
- Special Features
- Revision/No.
- Ampere Rating

Designation	Reference Number	Ampere Rating	Number Of Barrels	Figure	Interrupting Rating RMS SYM. Amperes*
5.5kV Max. – Bolt-in Style – 17.88" (454mm) Hole Centers – 3" (76.2mm) Barrel Diameter					
A055B1DARO-10E		10E	1	A	
A055B1DARO-15E		15E	1	A	
A055B1DARO-20E		20E	1	A	
A055B1DARO-25E		25E	1	A	
A055B1DARO-30E		30E	1	A	
A055B1DARO-40E		40E	1	A	
A055B1DARO-50E		50E	1	A	
A055B1DARO-65E		65E	1	A	63,000
A055B1DARO-80E		80E	1	A	
A055B1DARO-100E		100E	1	A	
A055B1DARO-125E		125E	1	A	
A055B1DARO-150E		150E	1	A	
A055B1DARO-175E		175E	1	A	
A055B1DARO-200E		200E	1	A	
5.5kV Max. – Bolt-in Style – 17.88" (454mm) Hole Centers – 3" (76.2mm) Barrel Diameter					
A055B2DARO-250E	S221966	250E	2	B	
A055B2DARO-300E	B222710	300E	2	B	
A055B2DARO-350E	F201048	350E	2	B	63,000
A055B2DARO-400E	P201562	400E	2	B	
A055B2DARO-450E	W212332	450E	2	B	
5.5kV Max. – Bolt-in Style – 23.73 (602,7mm) Hole Centers – 3" (76.2mm) Barrel Diameter					
A055B2DORO-450E		450E	2	C	
A055B2DORO-500E		500E	2	C	63,000
A055B2DORO-600E		600E	2	C	

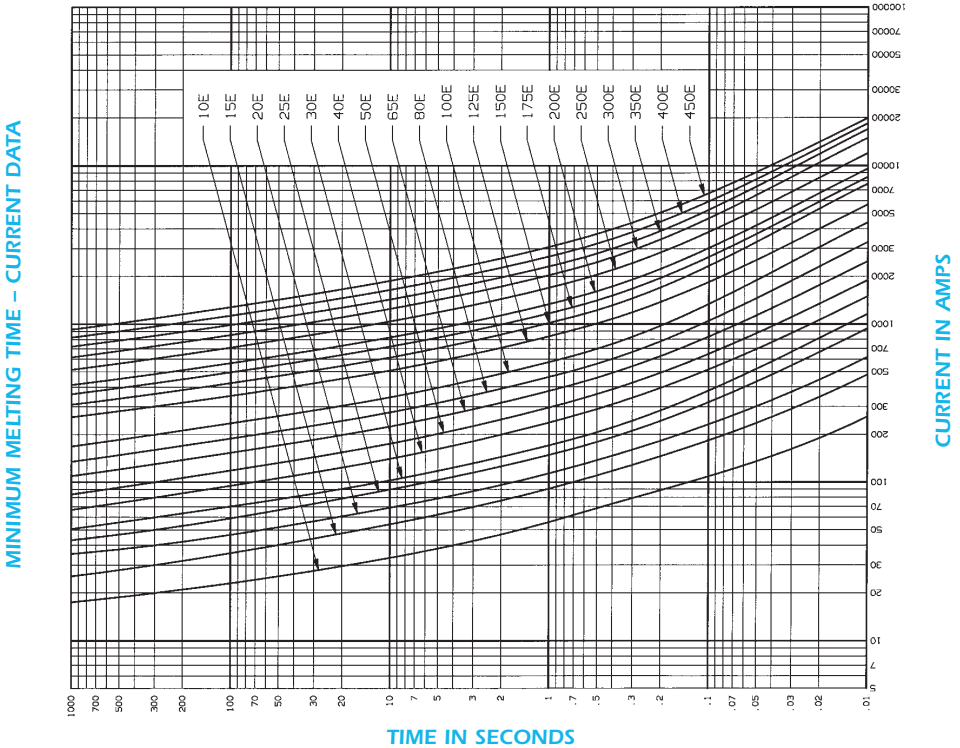
** RMS ASYM. AMPS = RMS SYM. AMPERES x 1.6*

American Fuses
E-Rated
5.5kV - Bolt-in Series

A055B1DARO - 10E to 200E - A055B2DARO - 250E to 450E

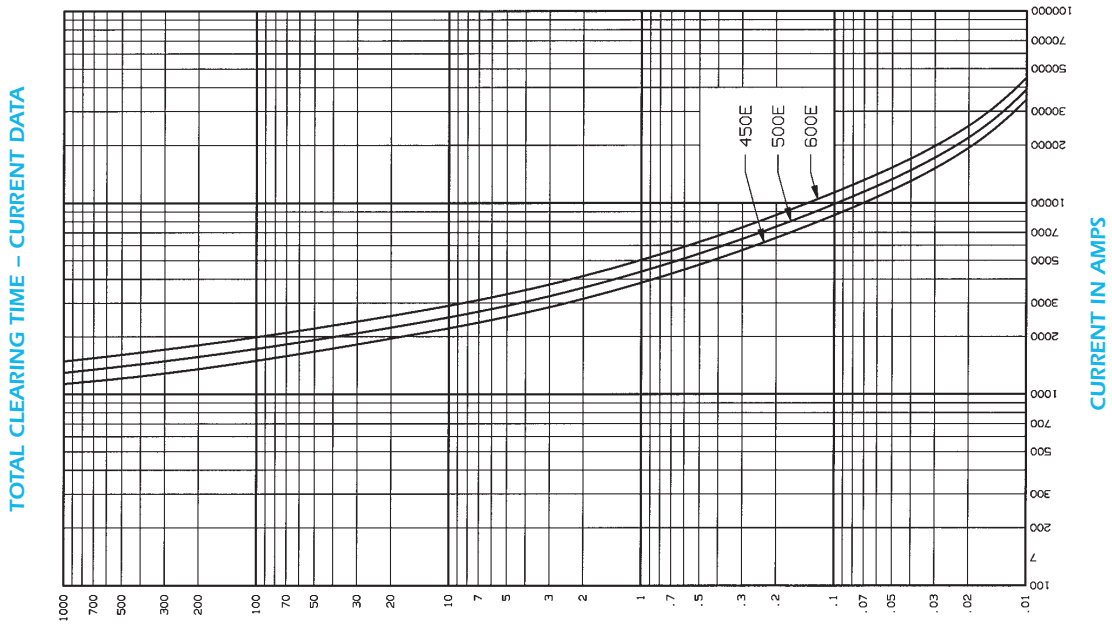


A055B1DARO - 10E to 200E - A055B2DARO - 250E to 450E

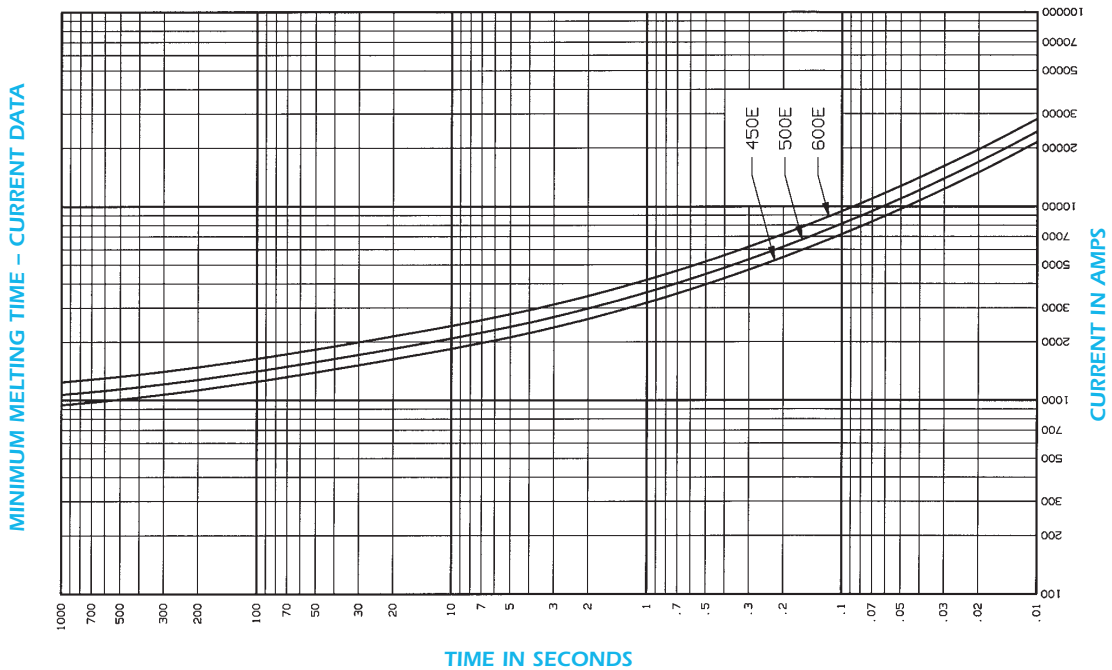


American Fuses
E-Rated
5.5kV - Bolt-in Series

A055B2D0RO - 450E to 600E

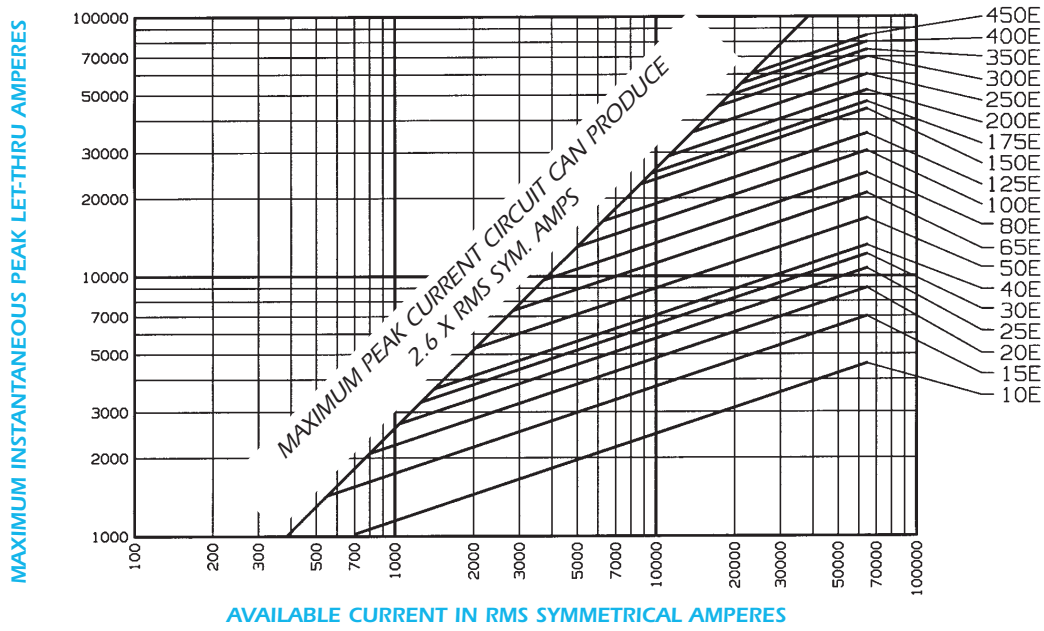


A055B2D0RO - 450E to 600E

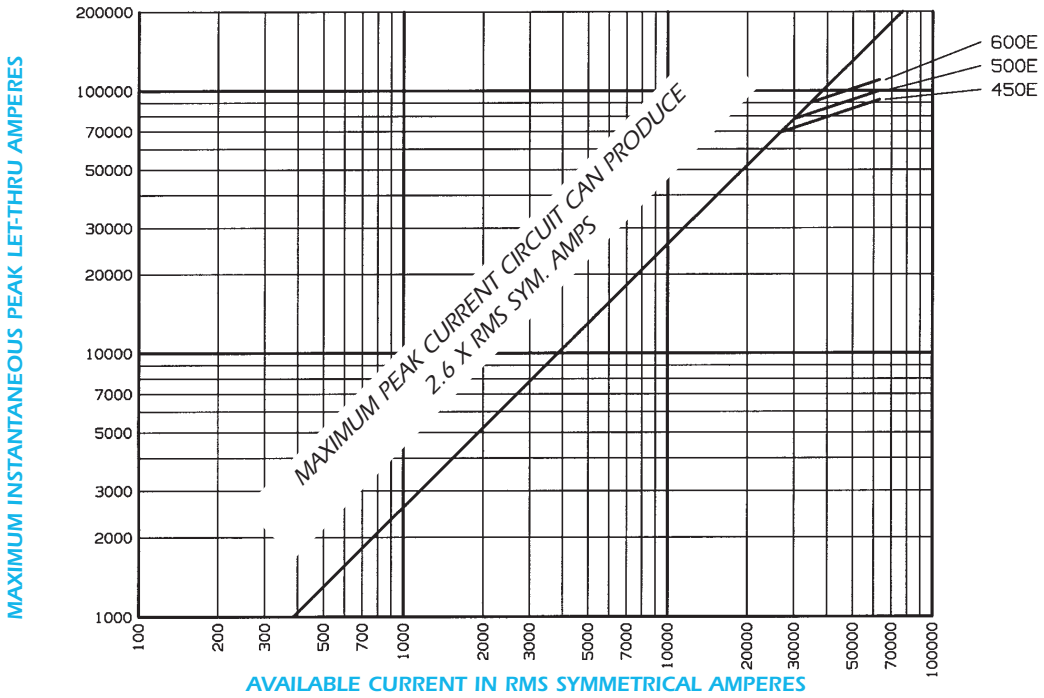


American Fuses
E-Rated
5.5kV - Bolt-in Series

A055B1DARO - 10E to 200E - A055B2DARO - 250E to 450E
Peak Let-Thru Current Data, E-Rated Fuses



A055B2D0RO - 450E to 600E
Peak Let-Thru Current Data, E-Rated Fuses



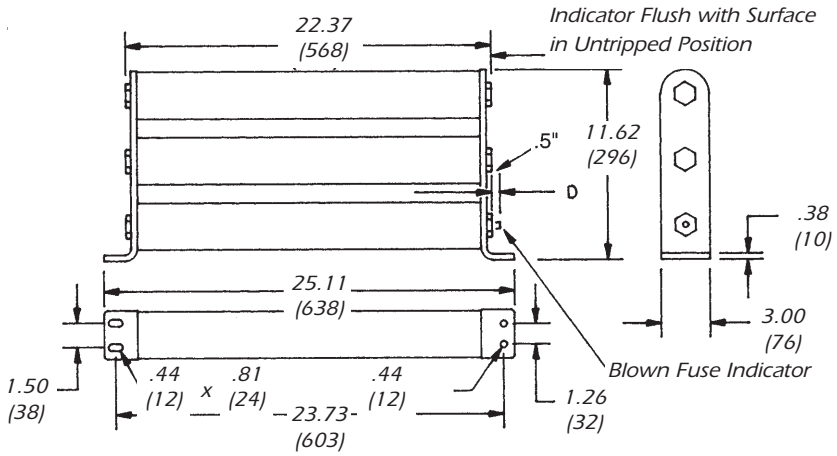
American Fuses
E-Rated
5.5kV - Bolt-in Series

5.5kV Bolt-in

CATALOG NUMBERING SYSTEM

A 0 5 5 B 3 D 0 R 0 - 9 0 0 E

- A — Amp-trap Fuse
- 055 — Max. Voltage Rating (055=5.5kV)
- B — Style (C= Bolt-in Mount)
- 3 — No. of Barrels
- D — Diameter (D=3")
- 0 — Special Features
- R0 — Revision/No.
- 900E — Ampere Rating



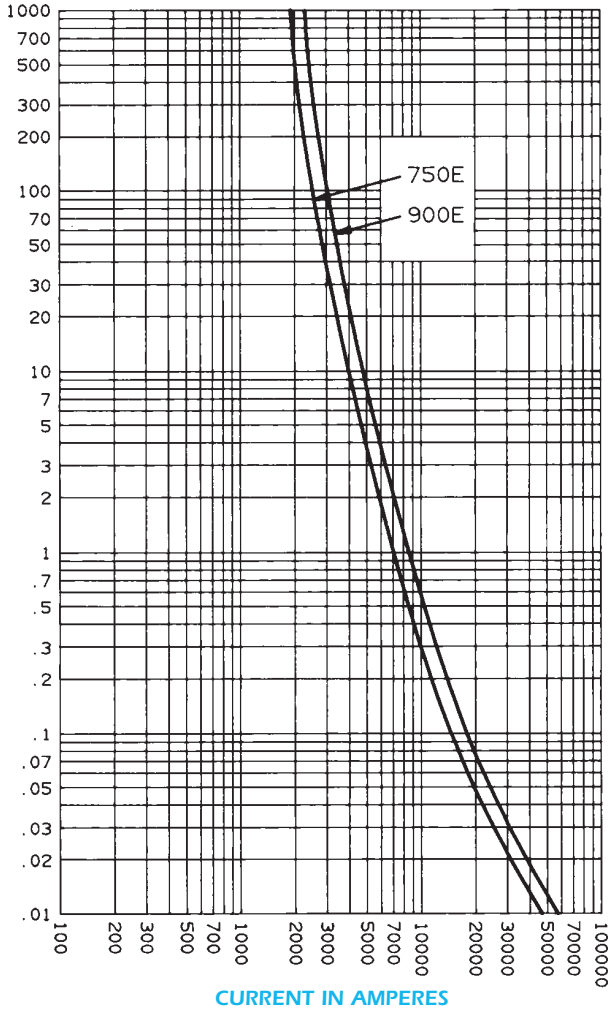
Catalog Numbers, Ratings, Dimensions, Bolt-in Series, 5.5kV

Designation	Reference Number	Old Catalog Number	Ampere Rating	Number of Barrels	Interrupting Rating RMS SYM.* Amperes
5.5kV Max. – Bolt-in Style – 23.73" (603mm) Hole Centers – 3" (76.2mm) Barrel Diameter					
A055B3DORO-750E 900E	K212851 T213365	A550X750E-4 900E-4	750E 900E	3	63,000

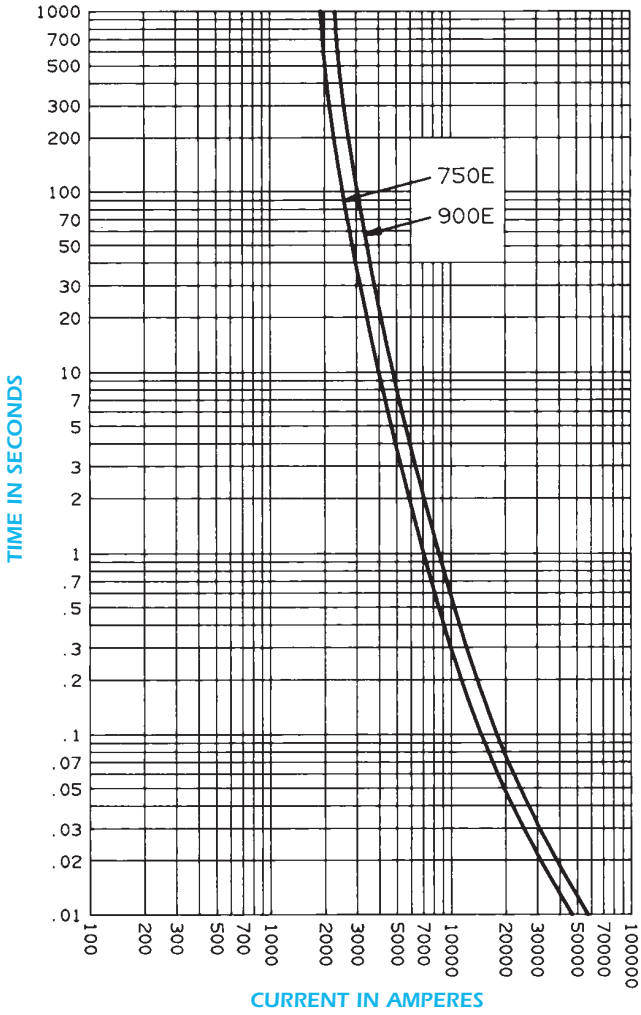
** RMS ASYM. AMPERES = RMS SYM. AMPERES x 1.6*

American Fuses
E-Rated
Bolt-in Series

A055B3DORO – 750E to 900E
Minimum Melting Time – Current Data, 5.5kV Fuses

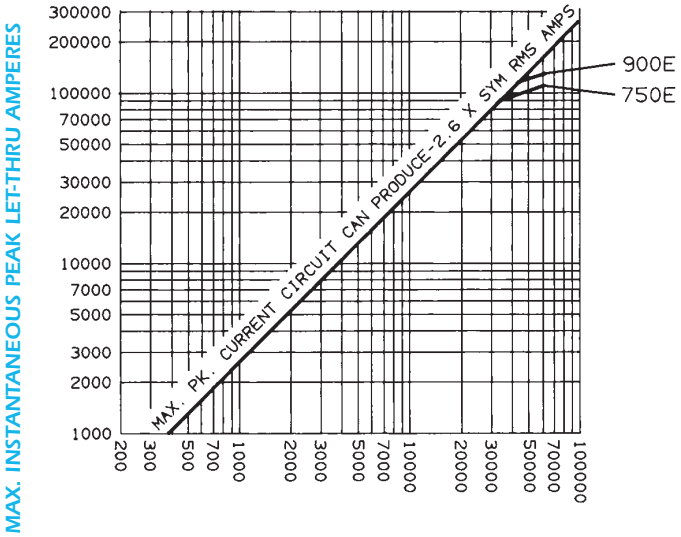


A055B3DORO – 750E to 900E
Total Clearing Time – Current Data, 5.5kV Fuses



A055B3DORO – 750E to 900E

PEAK LET-THRU CURRENT
DATA – 5.5KV BOLT-IN FUSES



American Fuses
E-Rated
5.5kV - 15.5kV CL-14 series



5kv and 15kV Clip-Lock Mounted Fuses

Amp-trap CL-14 E-rated 5kV and 15kV fuses have 3" diameter barrels and mount in unique cam-locking clips, for superior connections as well as easy installation and replacement. They are UL listed as "general purpose current-limiting fuses" and are for use indoors (or outdoors in a weatherproof enclosure). The unique time-current characteristic of Ferraz Shawmut E-rated fuses allows them to be closely sized to transformer full load rated current, as recommended by IEEE guidelines, without being affected by normal magnetizing inrush current. CL-14 fuses are typically sized at transformer rated current of 133%, thereby providing superior overall protection.

Features/Benefits

- **UL Listed** for compatibility with UL listed equipment
- **Clip-Lock mounting** for reliable high integrity connection into circuit
- **Current limiting** for superior equipment protection
- **Blown-fuse indicator** gives positive identification of open fuse
- **Non-venting** for silent operation
- **Metal Embossed Catalog Number** and manufacturing date for lasting identification

Ratings

A055C
AC: 10E to 600E
5.5kV, 63kA I.R. Sym.

A155C
AC: 10E TO 300E
15.5kV, 50kA I.R. Sym

Highlights

- E-Rated
- UL Listed 5.5kV
- Complies with ANSI C37.46

Applications

Protection for 5.5kV or 15.5kV transformers or distribution systems

Approvals

- UL Listed to JEEG, "Fuses Over 600 Volts"
- UL File # E143362

Definitions

E-rating
E-rated fuses operate as follows:
100E or less - must melt in 300 seconds (5 mins.) at 200 to 240% of E (ampere) rating.
Over 100E - must melt in 600 seconds (10 mins.) at 220 to 264% of E (ampere) rating.
Example - A 100E fuse must melt in 300 seconds with an applied current of 200 to 240 amperes.

General Purpose Current-Limiting Fuse

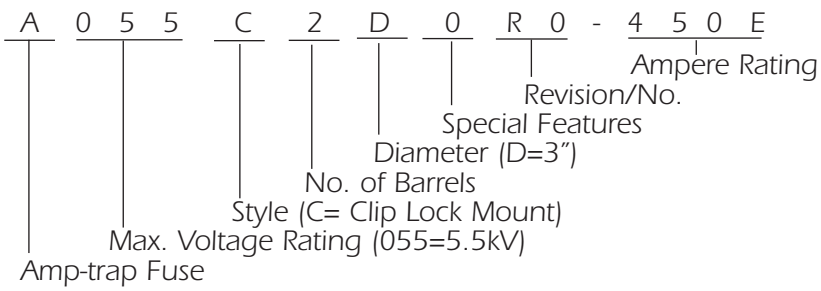
A general purpose current-limiting power fuse is one that is capable of interrupting all currents from its rated interrupting rating down to the current that causes melting of the fusible element in one hour.

Clip-Lock Clips for CL-14 Fuses:
228-700-520 (One pair of clips)

American Fuses
E-Rated
5.5kV - 15.5kV CL-14 series

5.5kV Clip-Lock Mounted

CATALOG NUMBERING SYSTEM



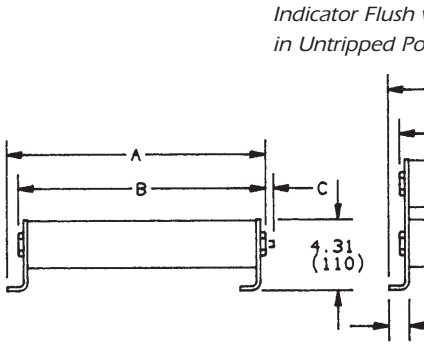


FIGURE A

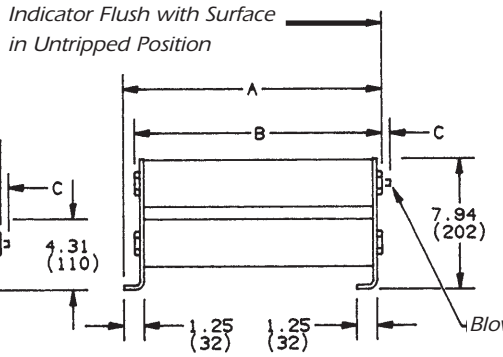


FIGURE B

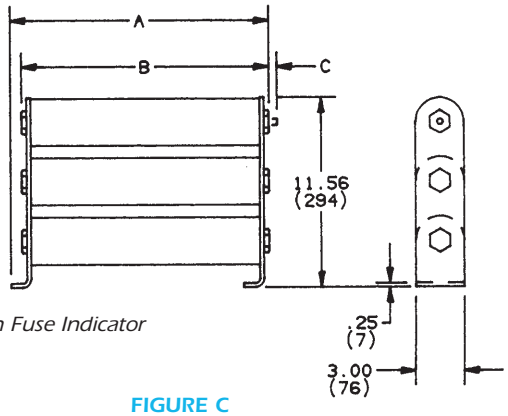


FIGURE C

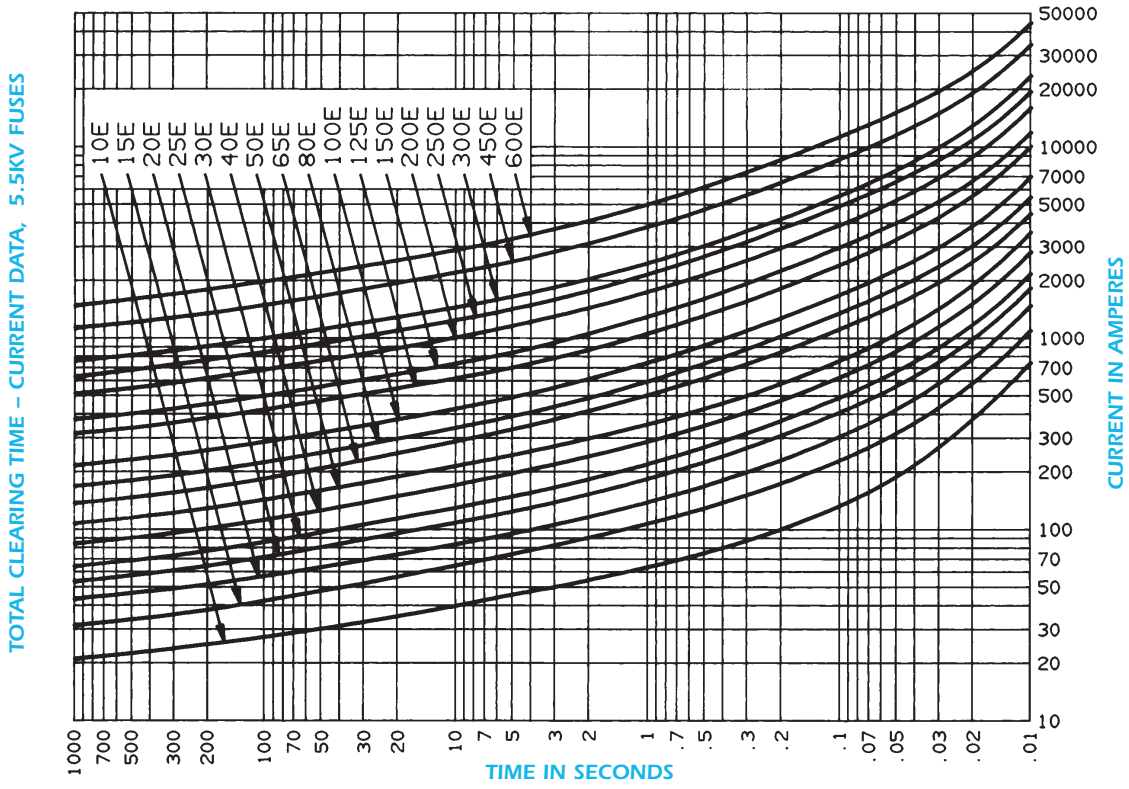
Catalog Numbers, Ratings, Dimensions, CL-14 Series, 5.5kV

New Catalog Number	Reference Number	Old catalog Number	Ampere Rating	Number of Barrels	Fig.	Dimensions Inches (mm) A	Dimensions Inches (mm) B	Dimensions Inches (mm) C	Interrupting Rating RMS SYM Amperes
5.5kV Max. – Clip-Lock Style – 15.25" (387mm) Clip Centers – 3" (76.2mm) Barrel Diameter									
A055C1DORO-10E	R213363	225-007-937	10E	1	A	16.81 (427)	16.12 (410)	0.5 (13) Tripped Force 2 lbs.	63,000
15E	Q214880	938	15E						
20E	X215898	939	20E						
25E	J216921	940	25E						
30E	D217951	941	30E						
40E	C218985	942	40E						
50E	V219507	943	50E						
65E	Q221964	944	65E						
80E	Z222708	945	80E						
100E	G212848	946	100E						
125E	G213860	947	125E						
150E	R214375	948	150E						
5.5kV Max. – Clip Lock Style – 21.25" (540mm) Clip Centers – 3" (76.2mm) Barrel Diameter									
A055C1DORO-200E	V215390	225-007-949	200E	1	A	22.81 (580)	22.12 (562)	0.5 (13) Tripped Force 2 lbs.	63,000
250E	B216408	950	250E						
300E	W217438	951	300E						
400E	J218462	952	400E						
A055C2DORO-450E	N223227	953	450E	2	B				
500E	D201046	954	500E						
600E	M201560	955	600E						

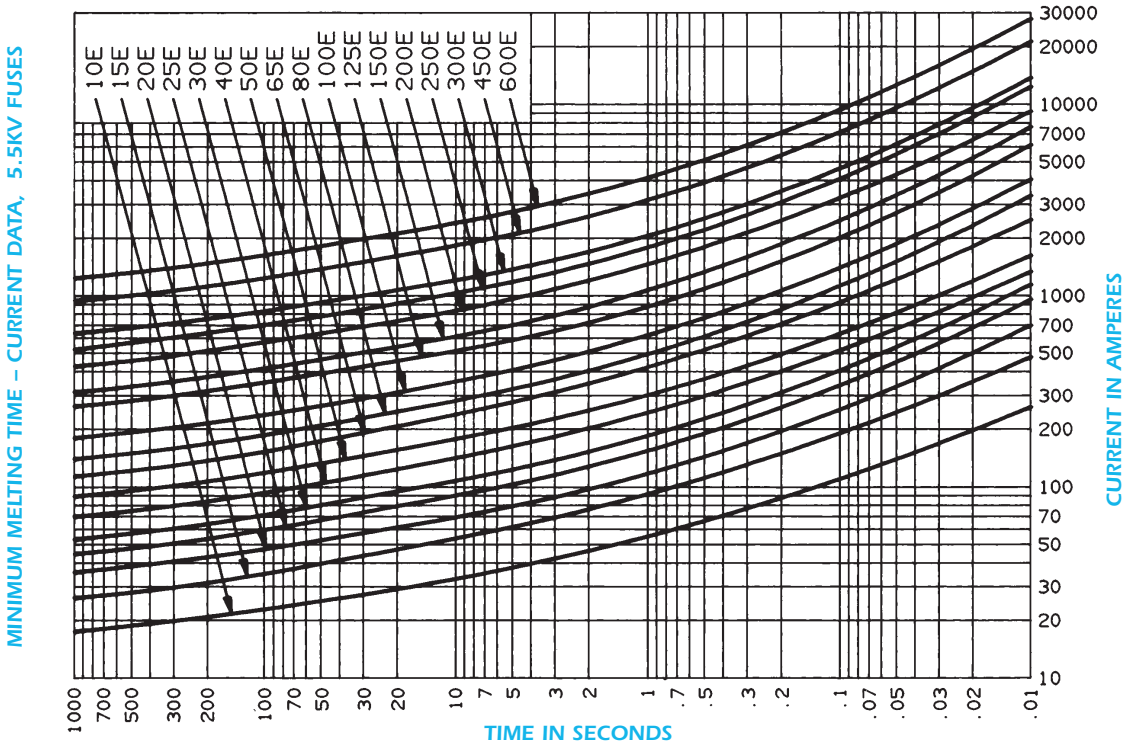
** RMS ASYM. Amperes = RMS SYM. Amperes x 1.6*

American Fuses
E-Rated
5.5kV - 15.5kV CL-14 series

A055C1DORO – 10E to 400E and A055C2DORO – 450E to 600E

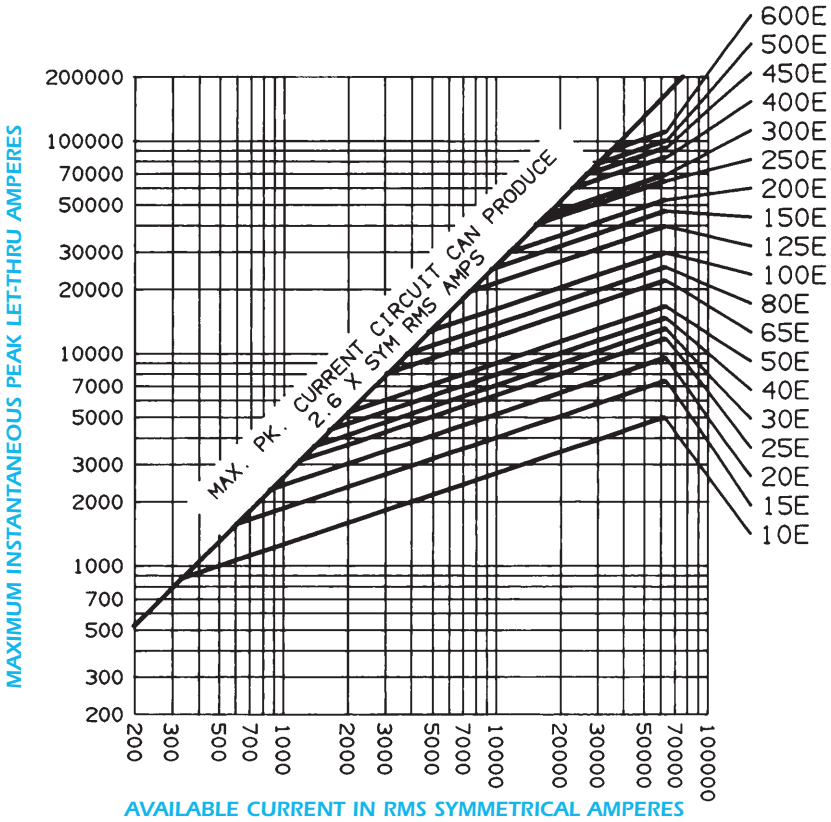


A055C1DORO – 10E to 400E and A055C2DORO – 450E to 600E



American Fuses
E-Rated
Bolt-in Series

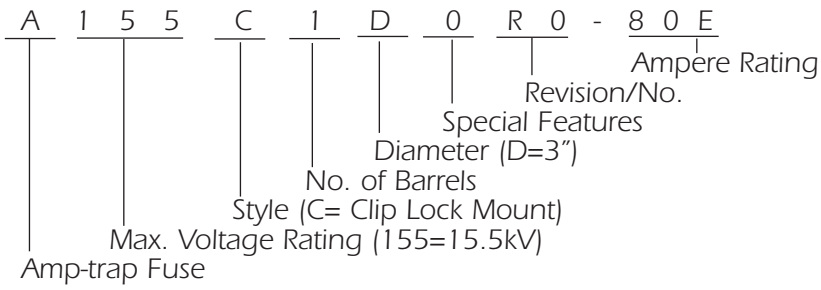
A055C1DORO – 10E to 400E and A055C2DORO – 450E to 600E
Peak Let-Thru Current Data, 5.5kV CL-14 Fuses



American Fuses
E-Rated
5.5kV - 15.5kV CL-14 series

15.5kV Clip-Lock Mounted

CATALOG NUMBERING SYSTEM



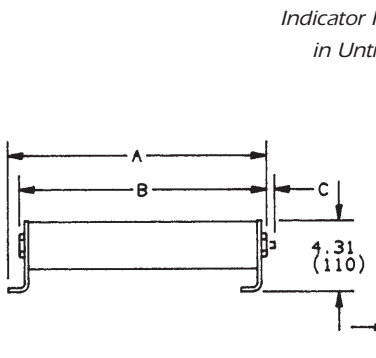


FIGURE A

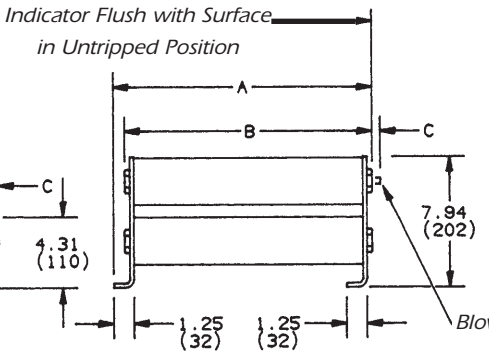


FIGURE B

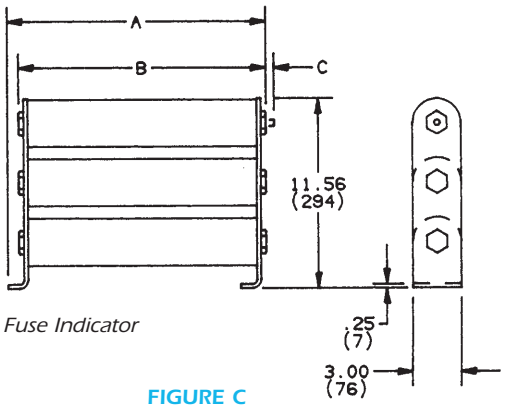


FIGURE C

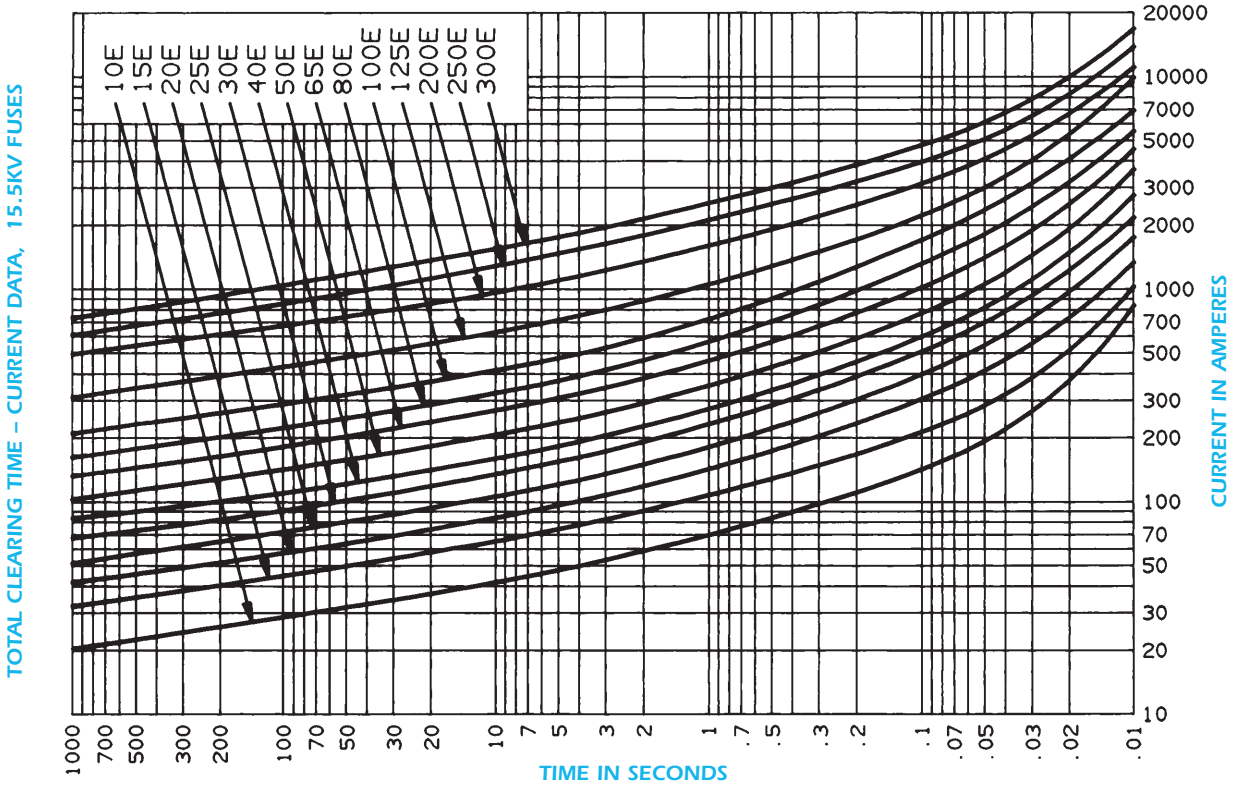
Reference and Catalog Numbers, Ratings, Dimensions, CL-14 Series, 15.5kV

New Catalog Number	Reference Number	Old catalog Number	Ampere Rating	Number of Barrels	Fig.	Dimensions Inches (mm) A	B	C	Interrupting Rating RMS SYM Amperes
15.5kV Max. – Clip-Lock Style – 18.25" (464mm) Clip Centers – 3" (76.2mm) Barrel Diameter									
A155C1DORO-10E	Z211300	225-007-967	10E						
15E	T212330	968	15E						
20E	H212849	969	20E			19.81	19.12	0.5	
25E	H213861	970	25E	1	A	(504)	(486)	(13)	50,000
30E	S214376	971	30E					Tripped	
40E	R214881	972	40E					Force	
50E	W215391	973	50E					2 lbs.	
15.5kV Max. – Clip-Lock Style – 21.25" (540mm) Clip Centers – 3" (76.2mm) Barrel Diameter									
A155C1DORO-65E	Y215899	225-007-974	65E						
80E	C216409	975	80E	1	A	22.81	22.12	0.5	50,000
100E	F203463	976	100E			(580)	(562)	(13)	
A155C2DORO-125E	K216922	977	125E	2	B				
A155C3DORO-150E	K218463	978	150E					Tripped	
200E	D218986	979	200E					Force .	
250E	W219508	980	250E	3	C			2 lbs	
300E	R221965	981	300E						

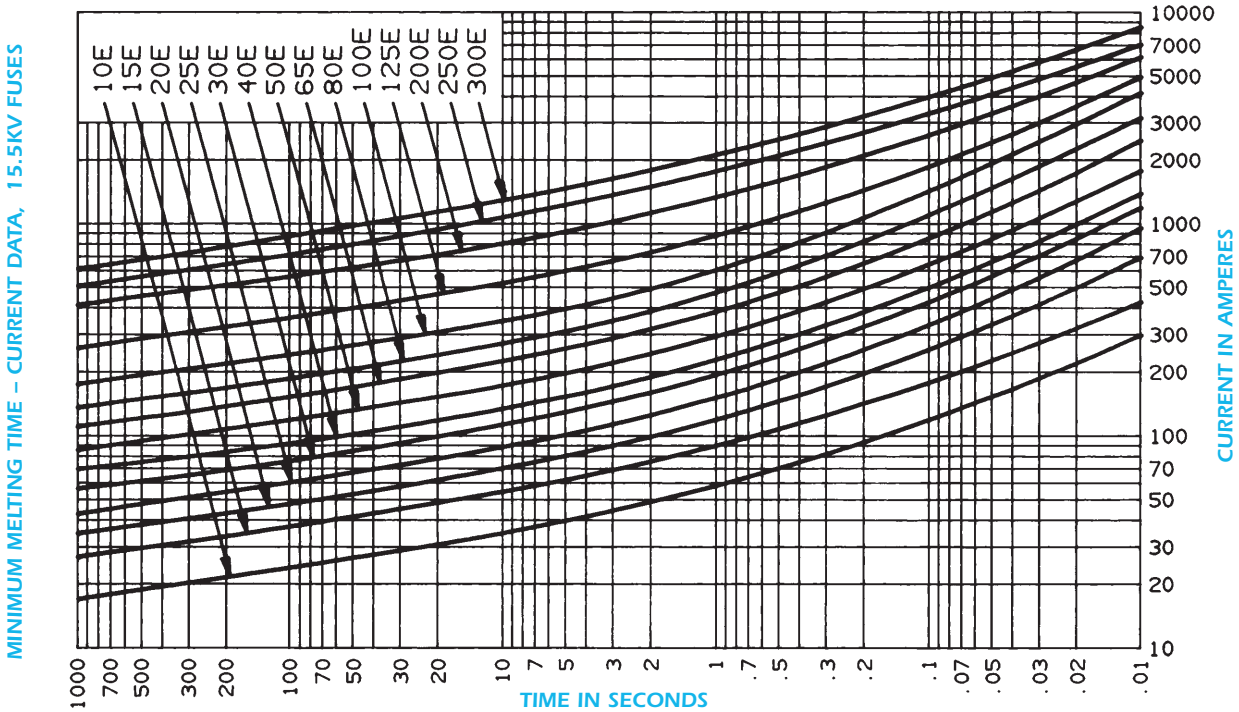
** RMS ASYM. Amperes = RMS SYM. Amperes x 1.6*

American Fuses
E-Rated
5.5kV - 15.5kV CL-14 series

A155C1DORO – 10E to 100E / A155C2DORO - 125E
A155C3DORO – 150E to 300E

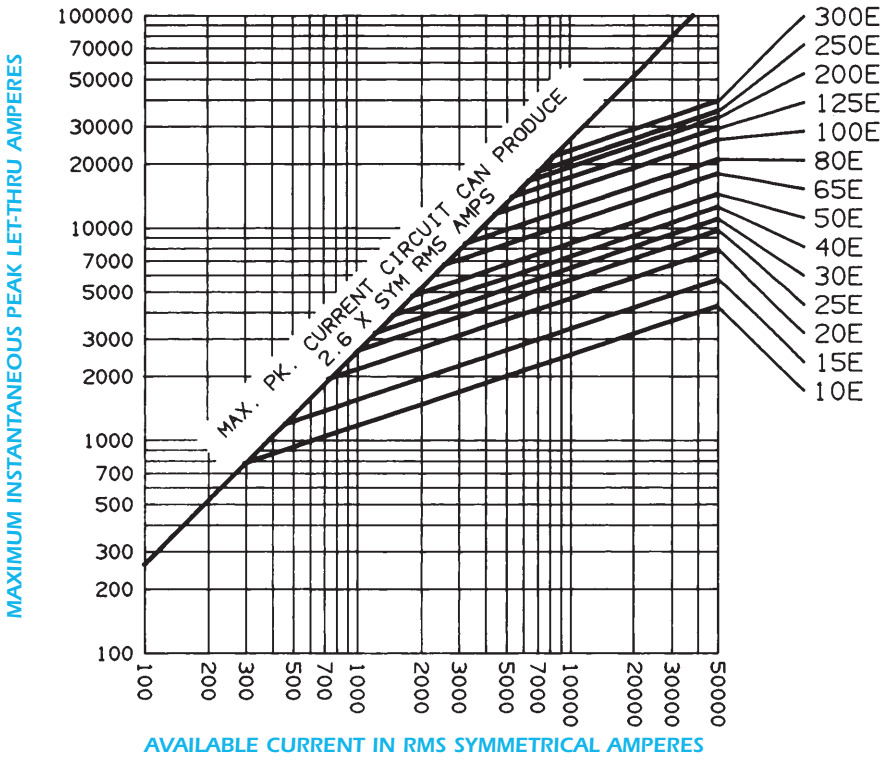


A155C1DORO – 10E to 100E / A155C2DORO - 125E
A155C3DORO – 150E to 300E



American Fuses
E-Rated
5.5kV - 15.5kV CL-14 series

A155C1DORO – 10E to 100E - A155C2DORO – 125E
A155C3DORO – 150E to 300E
Peak Let-Thru Current Data, 15.5kV CL-14 Fuses



American Fuses
R-Rated
2.4kV - 4.8kV/7.2kV - A 240R/A 480R/A 072F/A 072B



R-RATED MOTOR STARTER FUSES

Amp-trap® R-rated fuses are current-limiting, high interrupting rating fuses intended for the short-circuit protection of medium voltage motors and motor controllers. R-rated fuses have a minimum interrupting rating and must be coordinated with overload relays in combination motor starters. The motor starter manufacturer generally specifies the R-rated fuse size. Amp-trap R-rated fuses are-rated 2R to 36R, at 2.4, 4.8, and 7.2kV. 4.8 and 7.2kV fuses are UL Recognized. The 4.8kV (A480R) is available with hookeye tab. The 7.2kV (A072F) series has the same dimensions as the 4.8kV (A480R), allowing smaller 7.2kV equipment or 4.8kV upgrades. The A072B is a bolt-in 7.2kV fuse.

Features/Benefits

- **Ferrule mounting** for standard clips and interchangeability with other brands of fuses.
- **7.2kV** series has the same dimensions as 4.8kV fuses, allowing compact, higher voltage-rated equipment designs.
- **7,2kV** bolt-in design for improved design flexibility.
- Optional hookeye on 4.8 kV for non load-break isolation by hookstick.

Ratings

A240R

AC: 2R to 36R
2750V, 45kA I.R. Sym.

A480R

AC: 2R to 36R
5500V, 63kA I.R. Sym.

A072F - A072B

AC: 2R to 24R
7200V, 50kA I.R. Sym.

Back-up type Current-Limiting Fuse:

A current limiting fuse which can interrupt any current between it's rated minimum interrupting current and it's maximum interrupting current. Backup fuses are not designed or intended to open under overload conditions.

Highlights

- R-Rated
- UL Recognized in 4.8 and 7,2 kV ratings

Applications

Short circuit protection of medium voltage motors and motor controllers

Approvals

- Ferraz Shawmut certified
  - A240R @ 2750V, 45kA Sym.
- UL Recognized Component
  - A480R @ 5080V, 50kA, Sym.
  - A072F @ 7200V, 50kA, Sym.
  - A072B @ 7200V, 50kA, Sym.
- UL file # E93367

Spring-reinforced clips

- 228-700-530 (one pair of clips)For 3" diameter, 2 barrels max.

American Fuses
R-Rated
2.4kV - 4.8kV/7.2kV - A 240R/A 480R/A 072F/A 072B

A240R 2.4kV Ferrule Style

Indicator flush with surface
2 lb. Force (Tripped)

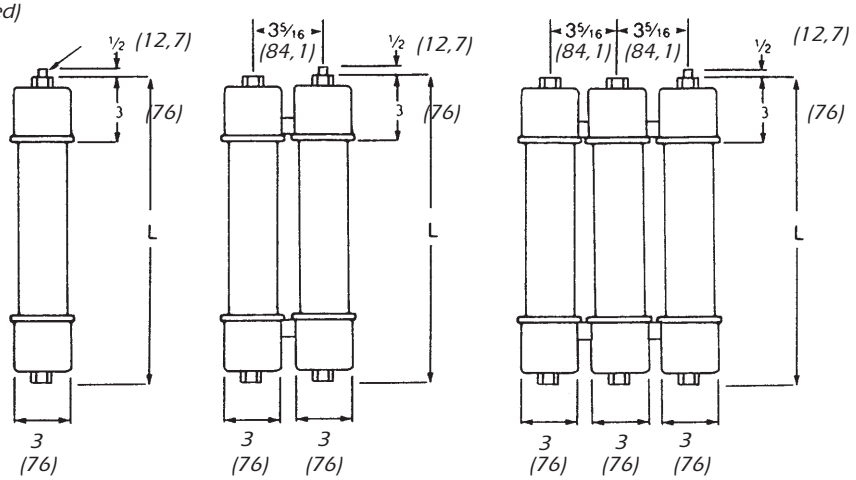


FIGURE A FIGURE B FIGURE C

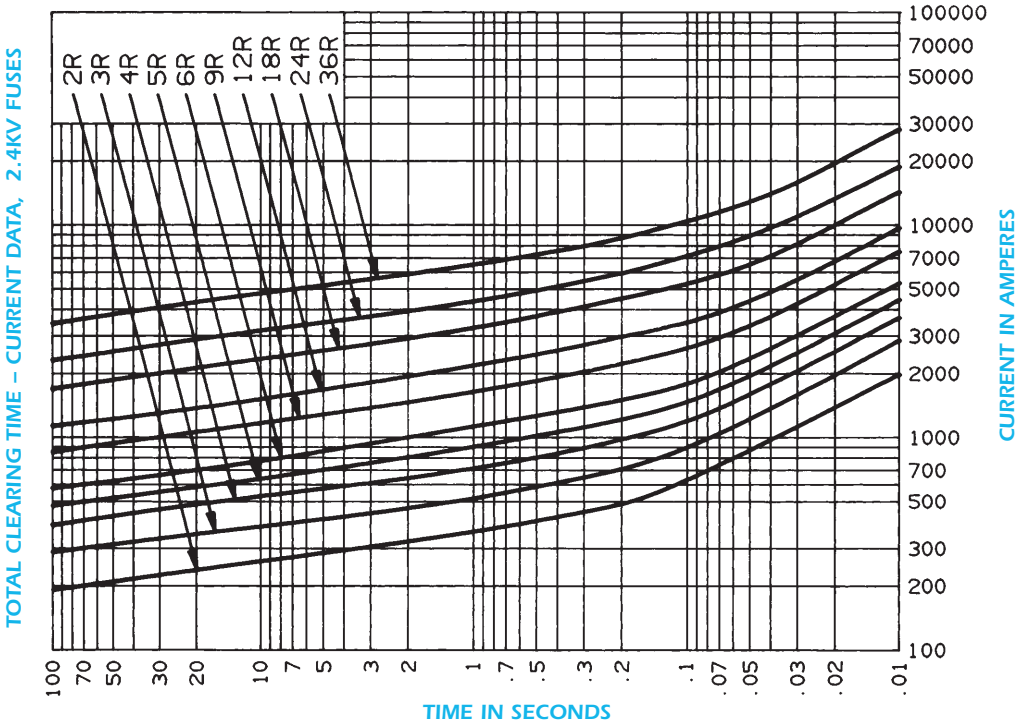
Catalog and Reference Numbers, Ratings, Dimensions, 2.4kV

Fig.	Catalog Number	Reference Number	Size	Continous Ampere Rating at 40˚	Dim. L	Minimum Interrupting Rating Rms Amperes	Maximum Tested	
	Standard						RMS Asym	RMS Sym
A240R								
	A240R2R	J201557	2R	70		170		
	A240R3R	F211812	3R	100		250		
A	A240R4R	E212846	4R	130		340		
	A240R6R	E213858	6R	170	10-7/8	500	70kA	45kA
	A240R9R	P214373	9R	200	(276mm)	760	@	@
	A24OR12R	R219504	12R	230		1000	2750V	2750V
B	A24OR18R	N221962	18R	390		1500		
	A240R24R	L223225	24R	450		1950		
C	A240R36R	W211297	36R**	650		2900		

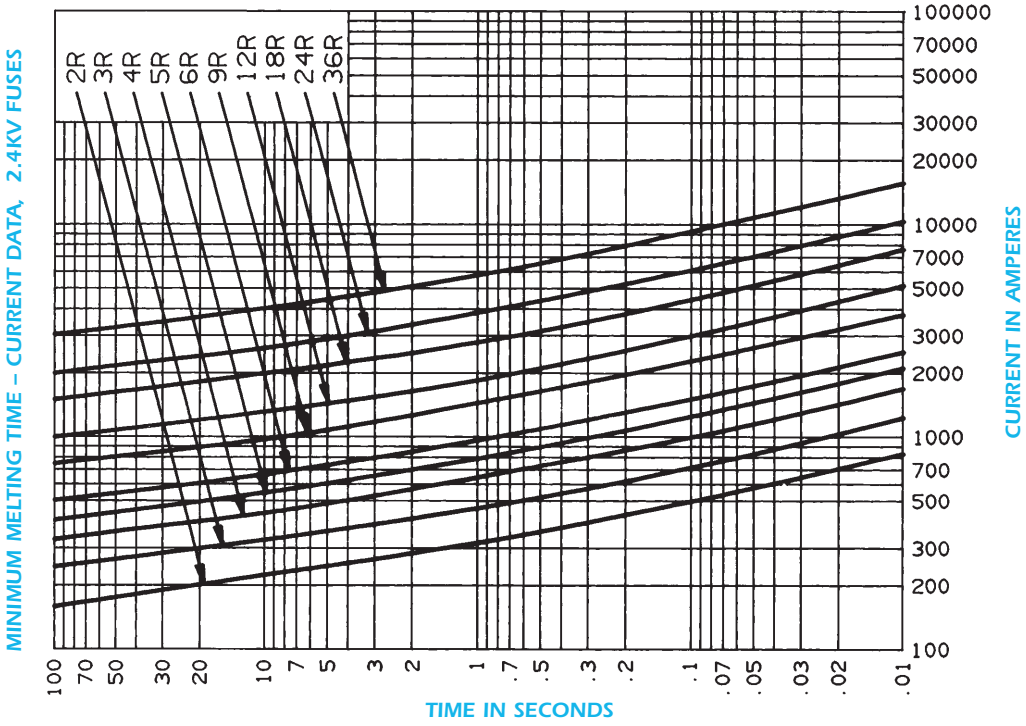
** This rating defines the fuse's long-term thermal capability per ANSI C37 46-1981 and should not be the sole factor for selecting a specific R-rating.*
*** Not recommended for use in fuse clips which grasp only one barrel.*

American Fuses
R-Rated
2.4kV - 4.8kV/7.2kV - A 240R/A 480R/A 072F/A 072B

A240R2R to 36R, 2400 Volts

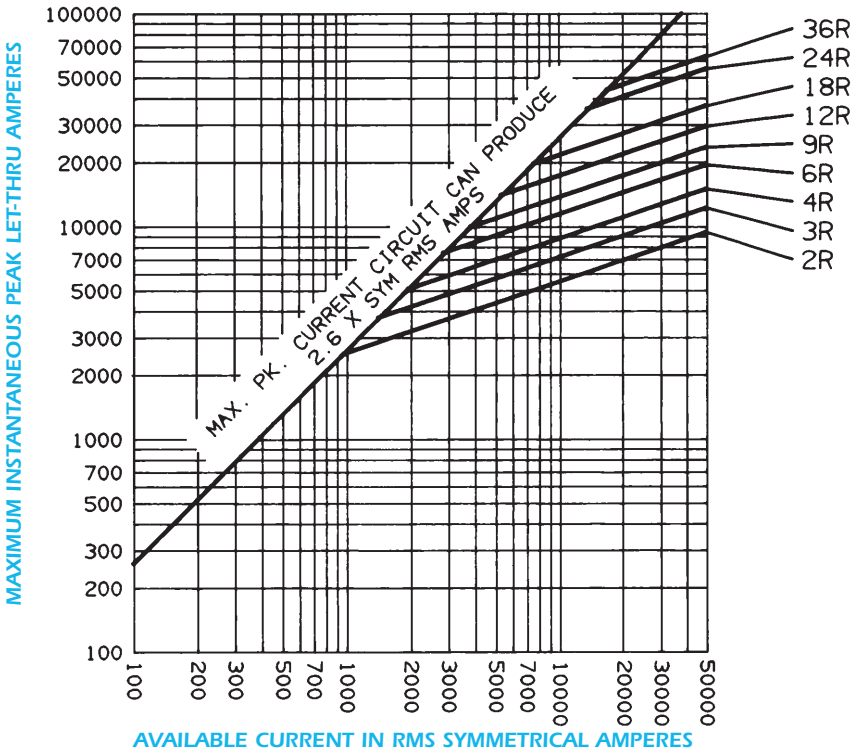


A240R2R to 36R, 2400 Volts



American Fuses
R-Rated
2.4kV - 4.8kV/7.2kV - A 240R/A 480R/A 072F/A 072B

A240R2R to 36R, 2400 Volts
Peak Let-Thru Current Data, R-Rated Fuses



American Fuses
R-Rated
2.4kV - 4.8kV/7.2kV - A 240R/A 480R/A 072F/A 072B

A480R 4.8kV Ferrule Style

Indicator flush with surface
2 lb. Force (Tripped)

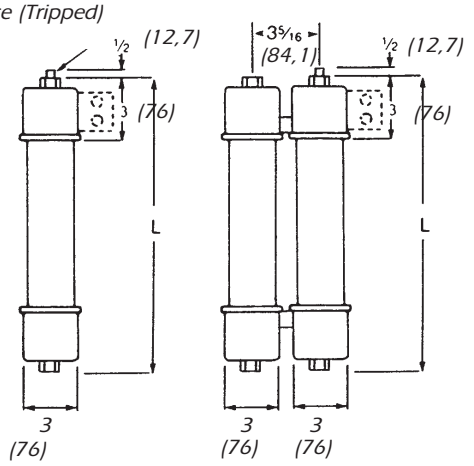
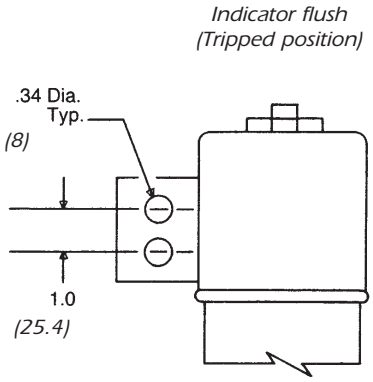


FIGURE A FIGURE B FIGURE C



Hookeye illustration

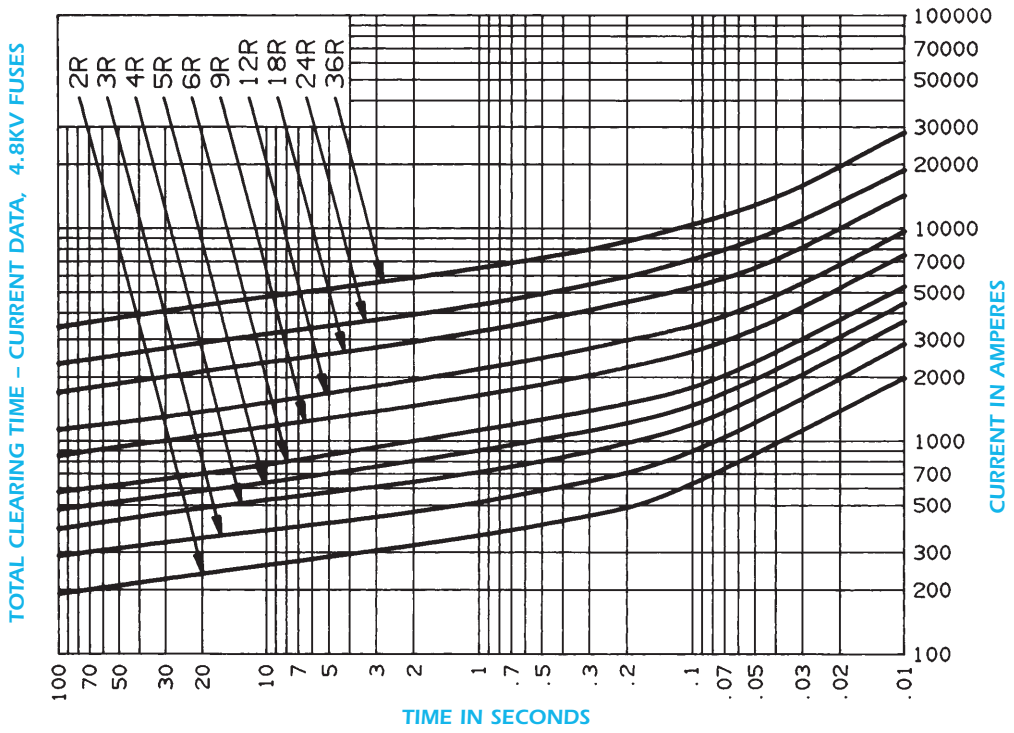
Catalog and Reference Numbers, Ratings, Dimensions, 4.8kV

Fig.	Catalog Number	Reference Number	Size	Continous Ampere Rating at 40˚	Dim. L	Minimum Interrupting Rating Rms Amperes	1 Phase Interrupting Rating			
	Standard						UL Component Recognition		Maximum Tested	
							RMS Asym	RMS Sym	RMS Asym	RMS Sym
A480R-1										
A	A480R2R-1	P221963	a2R	70	15-7/8 (403mm)	190	80kA @ 5080V	50kA @ 5080V	100kA @ 5500V	63kA @ 5500V
	A480R3R-1	K201558	3R	100		225				
	A480R4R-1	G211813	4R	130		330				
	A480R5R-1	Q213362	5R	150		400				
	A480R6R-1	Q214374	6R	170		500				
	A480R9R-1	W215897	9R	200		740				
	A480R12R-1	N214878	12R	230		955				
B	A480R18R-1	Z216406	18R	390		1440				
	A480R24R-1	H218461	24R	450		1910				
C	A480R36R-1	C201045	36R**	650		2810				
A480R-1HE with hookeye										
A	A480R2R-1HE	X222706	2R	70	16-1/8 (410mm)	190	80kA @ 5080V	50kA @ 5080V	100kA @ 5500V	63kA @ 5500V
	A480R3R-1HE	S203428	3R	100		225				
	A480R4R-1HE	R212328	4R	130		330				
	A480R5R-1HE	F213859	5R	150		400				
	A480R6R-1HE	P214879	6R	170		500				
	A480R9R-1HE	A216407	9R	200		740				
	A480R12R-1HE	S215388	12R	230		955				
B	A480R18R-1HE	G216919	18R	390		1440				
	A480R24R-1HE	A218983	24R	450		1910				

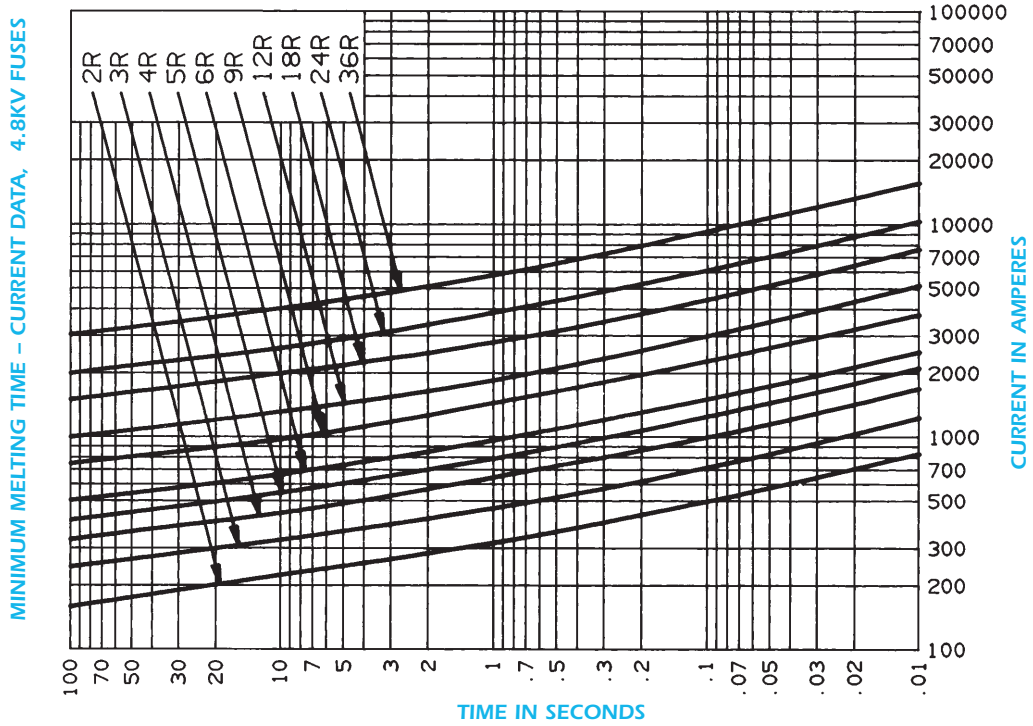
** This rating defines the fuse's long-term thermal capability per ANSI C37 46-1981 and should not be the sole factor for selecting a specific R-rating.*
*** Not recommended for use in fuse clips which grasp only one barrel.*

American Fuses
R-Rated
2.4kV - 4.8kV/7.2kV - A 240R/A 480R/A 072F/A 072B

A480R-1, and A480R-1HE, 4800 Volts

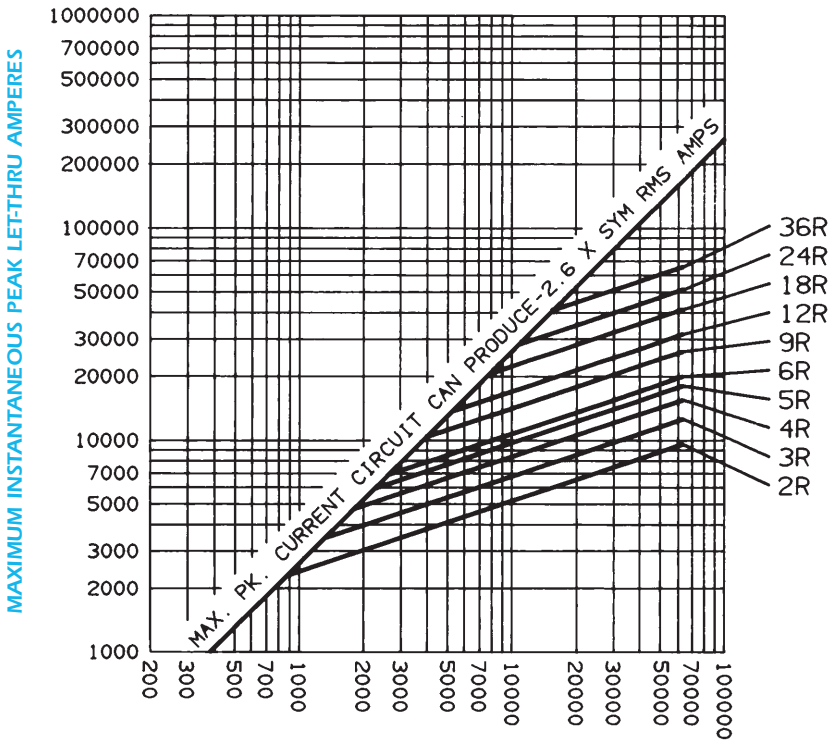


A480R-1, and A480R-1HE, 4800 Volts



American Fuses
R-Rated
2.4kV - 4.8kV/7.2kV - A 240R/A 480R/A 072F/A 072B

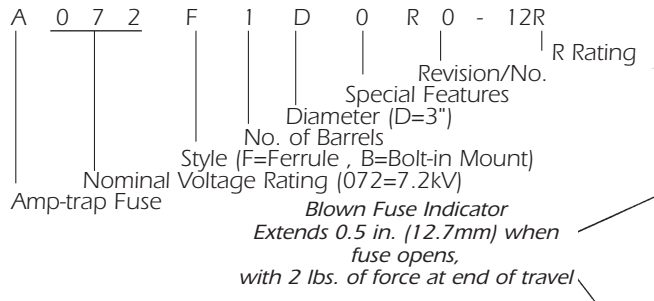
A480R-1 and A480R-1HE, 4800 Volts
Peak Let-Thru Current Data, R-Rated Fuses



American Fuses
R-Rated
2.4kV - 4.8kV/7.2kV - A 240R/A 480R/A 072F/A 072B

7.2kV Ferrule & Bolt-in Types

CATALOG NUMBERING SYSTEM



Blown Fuse Indicator Extends 0.5 in. (12.7mm) when fuse opens, with 2 lbs. of force at end of travel

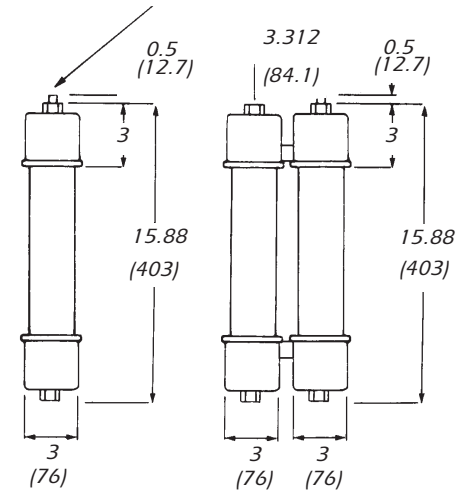


FIGURE A FIGURE B

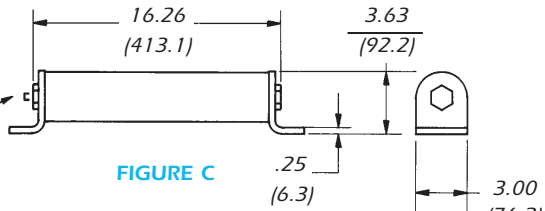


FIGURE C

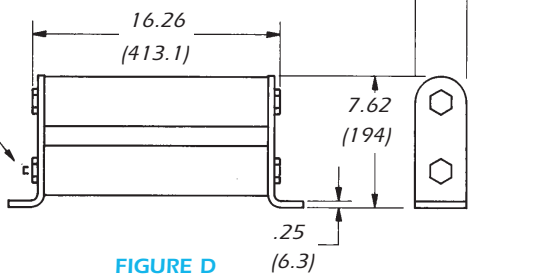
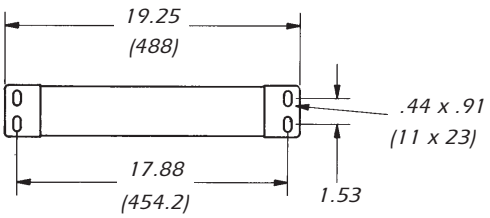


FIGURE D

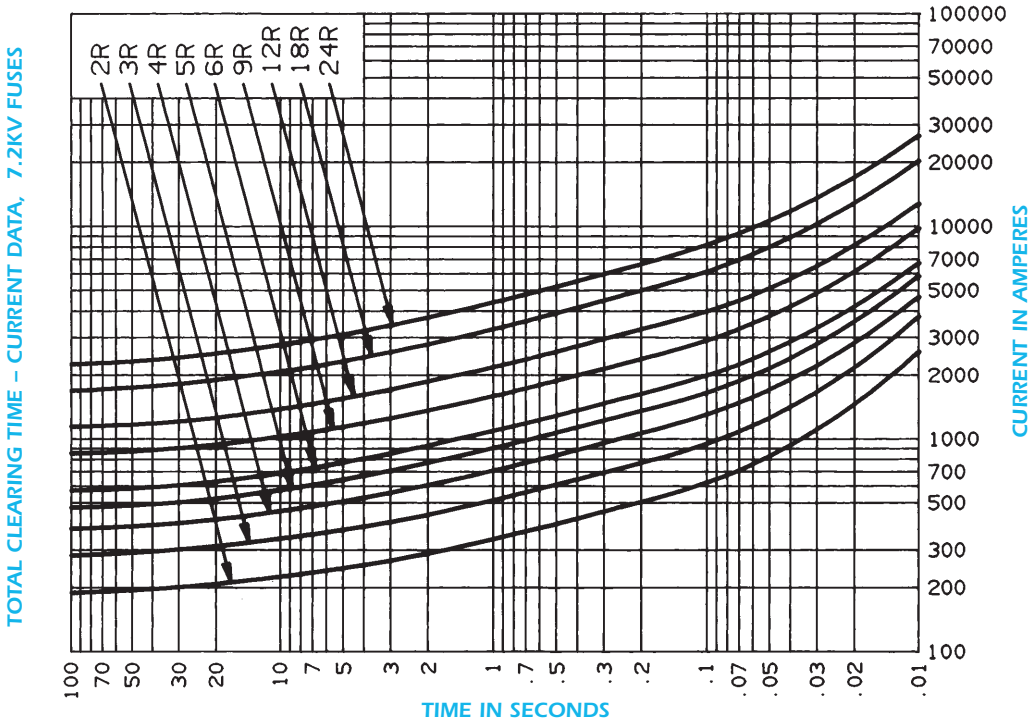


Reference and Catalog Numbers, Ratings, Dimensions, 7.2kV

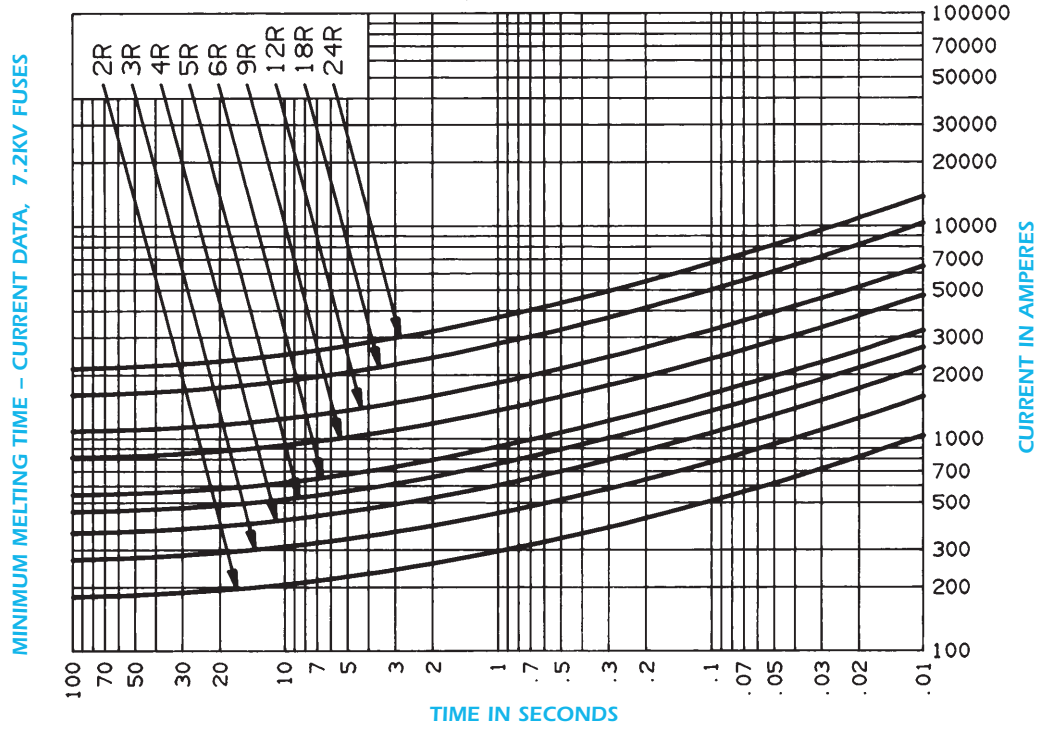
Figure	Catalog Number	Reference Number	Rating	Allowable Continuous Ampere Rating at 40˚C	Minimum Interrupting Rating RMS Amperes	1 Phase Interrupting Rating UL Component Recognition	
						RMS Asym.	RMS Sym.
Ferrule Type							
A	A072F1DORO-2R	M214877	2R	70	190	80kA @ 7200V	50kA @ 7200V
	A072F1DORO-3R	R215387	3R	100	225		
	A072F1DORO-4R	T215895	4R	130	330		
	A072F1DORO-5R	Y216405	5R	150	400		
	A072F1DORO-6R	F216918	6R	170	500		
	A072F1DORO-9R	T217436	9R	200	740		
	A072F1DORO-12R	N214372	12R	230	955		
B	A072F2DORO-18R	G218460	18R	390	1440		
	A072F2DORO-24R	Z218982	24R	450	1910		
Bolt-in Type							
C	A072B1DARO-2R	H201556	2R	70	190	80kA @ 7200V	50kA @ 7200V
	A072B1DARO-3R	R203427	3R	100	225		
	A072B1DARO-4R	V211296	4R	130	330		
	A072B1DARO-5R	E211811	5R	150	400		
	A072B1DARO-6R	P212326	6R	170	500		
	A072B1DARO-9R	D212845	9R	200	740		
	A072B1DARO-12R	B201044	12R	230	955		
D	A072B2DARO-18R	N213360	18R	390	1440		
	A072B2DARO-24R	D213857	24R	450	1910		

American Fuses
R-Rated
2.4kV - 4.8kV/7.2kV - A 240R/A 480R/A 072F/A 072B

A072F and A072B, 7200 Volts

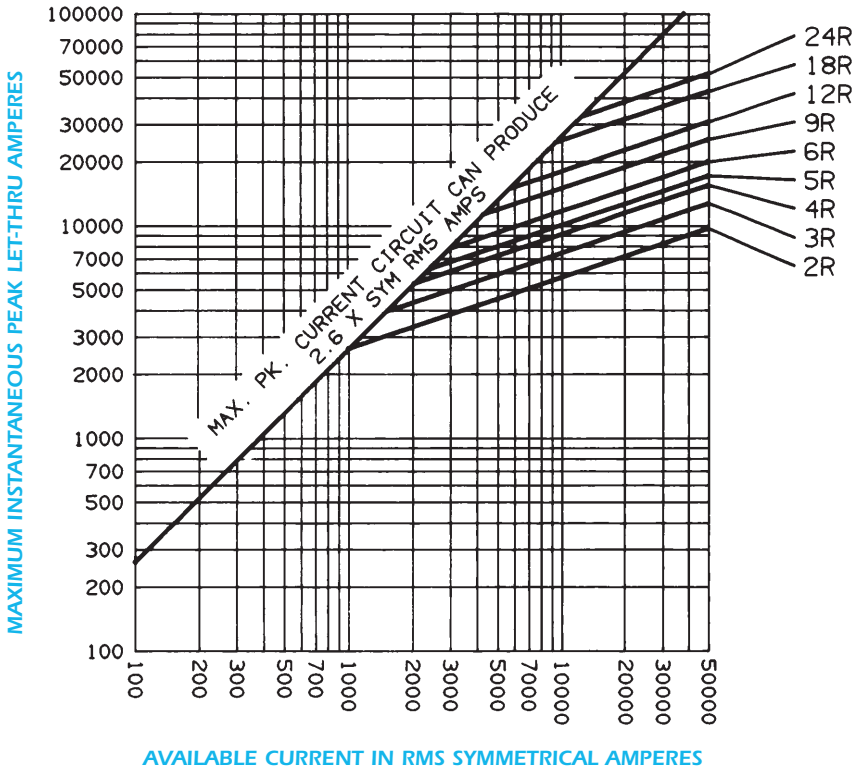


A072F2 and A072B, 7200 Volts



American Fuses
R-Rated
2.4kV - 4.8kV/7.2kV - A 240R/A 480R/A 072F/A 072B

AO72F and A072B2, 7200 Volts
Peak Let-Thru Current Data, R-Rated Fuses



American Fuses
R-Rated
3.3kV/5.3kV/7.2kV - A 033D1/A055D1/A072D1



R-RATED IEC DIN Style MV FUSES

Amp-trap R-rated DIN style fuses are current limiting, high interrupting rating fuses, intended for the short circuit protection of medium voltage motors and motor controllers. This product range offers North American R-rated performance in the IEC 282-1 DIN mounting configuration of 442mm. R-rated fuses are applied as back up fuses that have a minimum interrupting rating, and must be coordinated with overload relays in combination motor starters. Amp-trap R-rated, DIN type fuses are offered in voltage ratings of 3.3kV, 5.3kV and 7.2kV in ratings from 2R to 19R. All fuses within this product group are ULcomponent recognized.

Features/Benefits

- **Clip Mount DIN 45:** R-rated fuses with North American ANSI characteristics in a standard DIN 442mm size.

Ratings

A033D1

AC: 2R to 19R*
3300V max, 65kA I.R. Sym.

A055D1

AC: 2R to 19R*
5300V max, 65kA I.R. Sym.

A072D1

AC: 2R to 19R*
7200V max, 65kA I.R. Sym.

Back-up type Current-Limiting Fuse:

A current limiting fuse which can interrupt any current between it's rated minimum interrupting current and it's maximum interrupting current. Backup fuses are not designed or intended to open under overload conditions.

Highlights

- R-Rated
- UL Recognized

* **Note:** *Ratings above 19R may be achieved by paralleling fuses. Please consult factory for details.*

Applications

Short circuit protection of medium voltage motors and motor controllers

Approvals

- UL Recognized Component
- UL file # E93367

Spring-reinforced clips

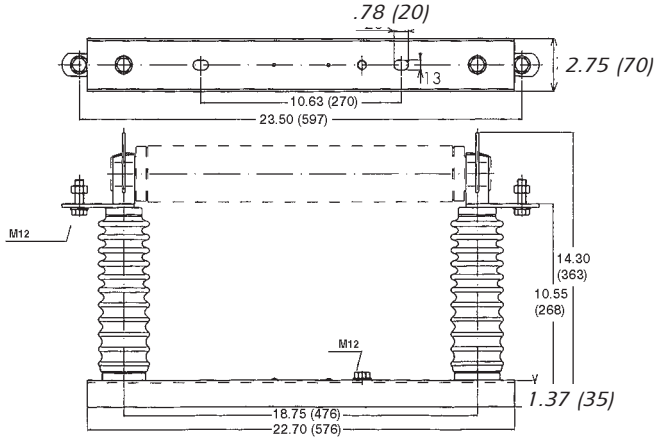
- MR45 & Spring ref.# L096472

Fuse-Holder

- SI 24/442 Ref # K209425
  In compliance with IEC 282-1, DIN standard 43625.

Definitions

R-Rating:
An "R" rated fuse will melt in the range of 15 to 35 seconds at a value of current equal to 100 times the "R" rating.



American Fuses
R-Rated
3.3kV/5.3kV/7.2kV - A 033D1/A055D1/A072D1

Indicator flush with surface before fuse opens.
Indicator extends 1.0"(25.4mm) after fuse opens.
Indicator exerts 4.5 LB force at end of travel.

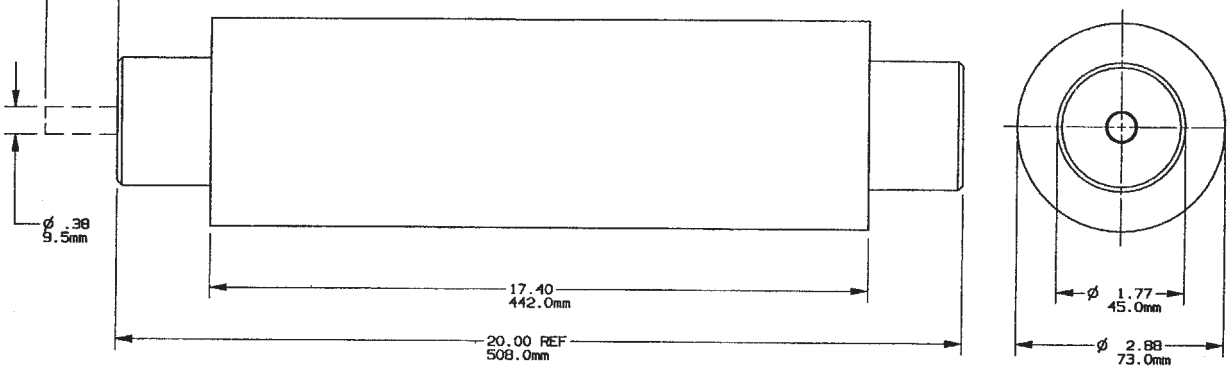


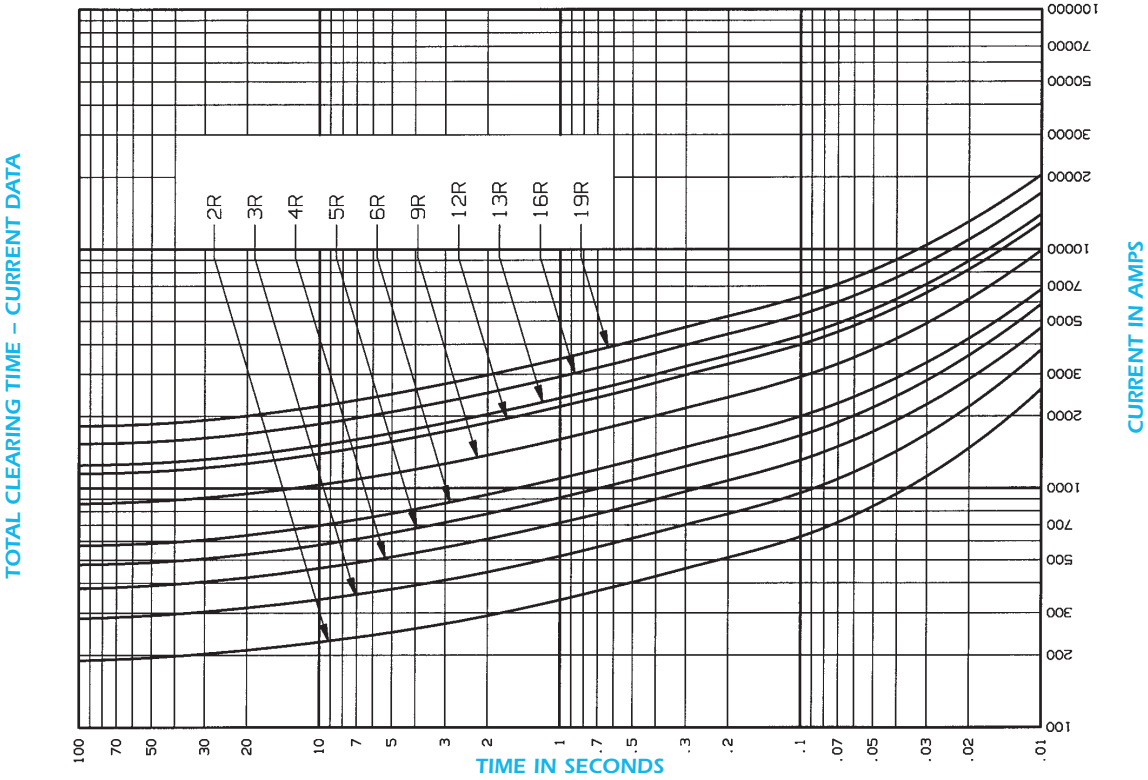
FIGURE A

Fig.	Designation	Reference Number	Size	Continuous Amp Rating at 55°C**	Continuous Amp Rating at 40°C**	Minimum Inter. Rating RMS Amperes	1 Phase InterRupting Rating Maximum Tested	
							RMS Asym	RMS sym
3.3kV Max. DIN IEC Style 442 mm								
	A033D1DSRO-2R		2R	63	70	180		
	A033D1DSRO-3R		3R	90	100	270		
	A033D1DSRO-4R		4R	115	130	355		
	A033D1DSRO-5R		5R	135	150	450		
A	A033D1DSRO-6R		6R	150	170	550	100kA	65kA
	A033D1DSRO-9R		9R	180	200	710	@	@
	A033D1DSRO-12R		12R	210	230	1100	3300V	3300V
	A033D1DSRO-13R		13R*	230	260	1200		
	A033D1DSRO-16R		16R*	270	300	1500		
	A033D1DSRO-19R		19R*	280	310	1700		
5.5kV Max. DIN IEC Style 442 mm								
	A055D1DSRO-2R		2R	63	70	180		
	A055D1DSRO-3R		3R	90	100	270		
	A055D1DSRO-4R		4R	115	130	355		
	A055D1DSRO-5R		5R	135	150	450		
A	A055D1DSRO-6R		6R	150	170	550	100kA	65kA
	A055D1DSRO-9R		9R	180	200	710	@	@
	A055D1DSRO-12R		12R	210	230	1100	5500V	5500V
	A055D1DSRO-13R		13R*	230	260	1200		
	A055D1DSRO-16R		16R*	270	300	1500		
	A055D1DSRO-19R		19R*	280	310	1700		
7.2kV Max. DIN IEC Style 442 mm								
	A072D1DSRO-2R		2R	63	70	180		
	A072D1DSRO-3R		3R	90	100	270		
	A072D1DSRO-4R		4R	115	130	355		
	A072D1DSRO-5R		5R	135	150	450		
A	A072D1DSRO-6R		6R	150	170	550	100kA	65kA
	A072D1DSRO-9R		9R	180	200	710	@	@
	A072D1DSRO-12R		12R	210	230	1100	7200V	7200V
	A072D1DSRO-13R		13R*	230	260	1200		
	A072D1DSRO-16R		16R*	270	300	1500		
	A072D1DSRO-19R		19R*	280	310	1700		

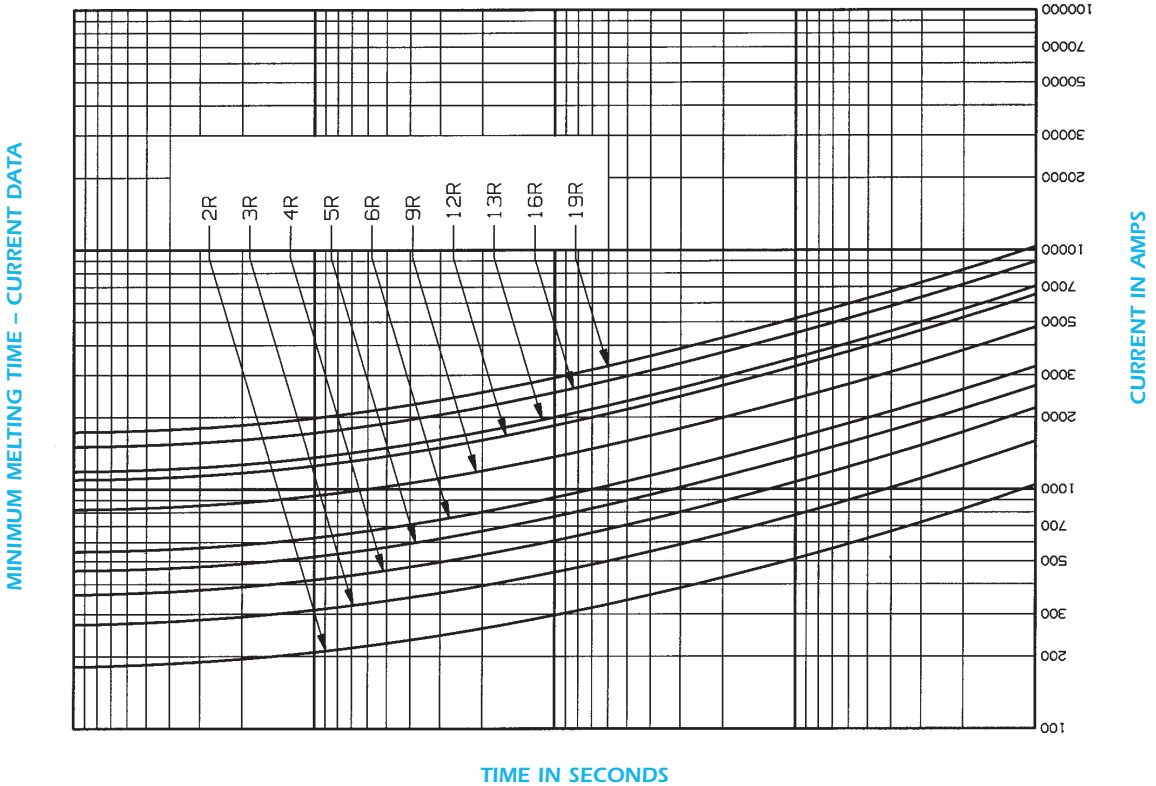
** 13R, 16R and 19R are not standard ratings defined in ANSI C37.46.*
*** This rating defines the thermal capability of the fuse per ANSI 37.46 and should not be the sole factor in fuse selection.*

American Fuses
R-Rated
3.3kV/5.3kV/7.2kV - A 033D1/A055D1/A072D1

A033D1, 3300 Volts - A055D1, 5300 Volts - A072D1, 7200 Volts

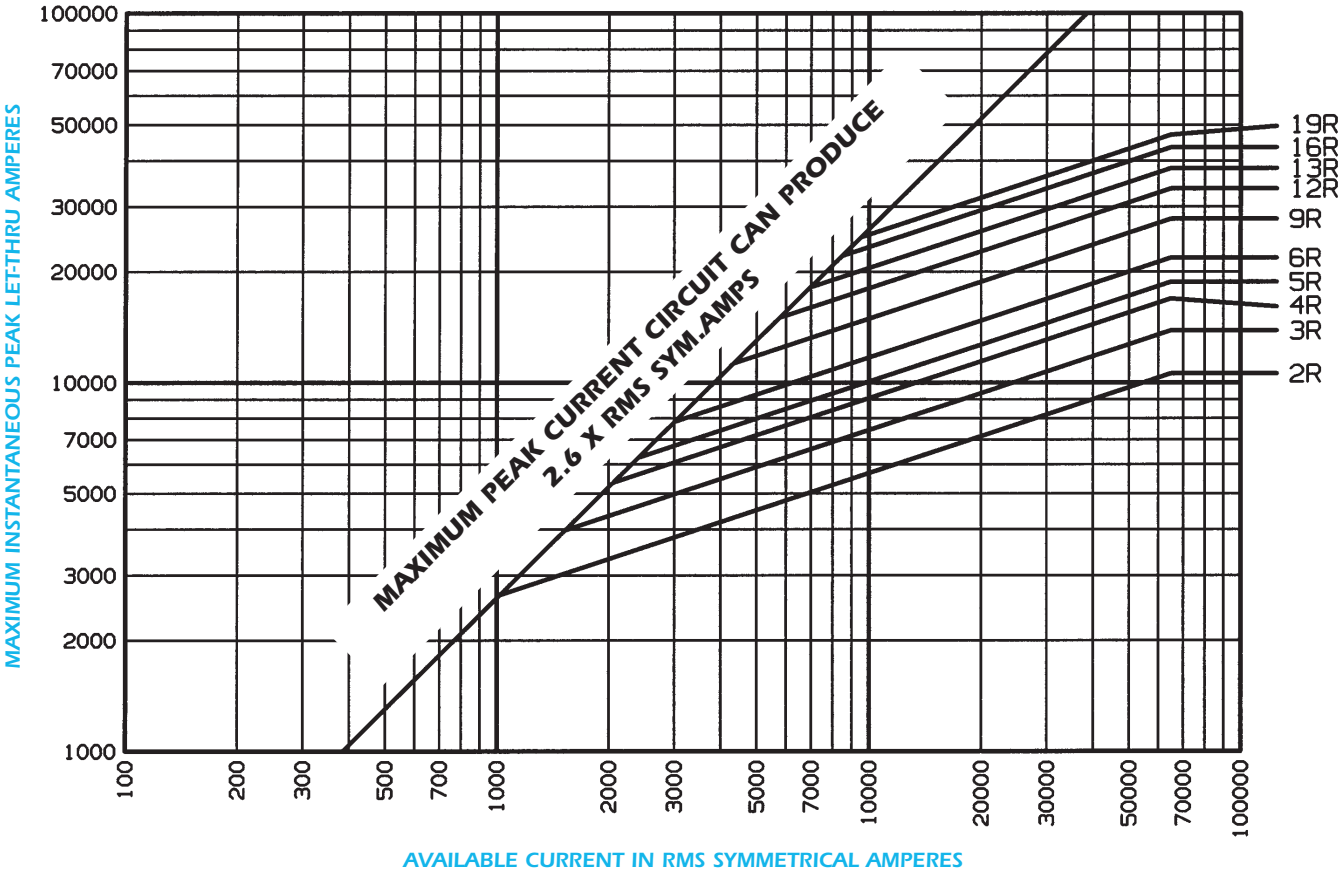


A033D1, 3300 Volts - A055D1, 5300 Volts - A072D1, 7200 Volts



American Fuses
R-Rated
3.3kV/5.3kV/7.2kV - A 033D1/A055D1/A072D1

A033D1, 3300 Volts - A055D1, 5300 Volts - A072D1, 7200 Volts
Peak Let-Thru Current Data, R-Rated Fuses



American Fuses
Potential Transformer Fuses (E-Rated)
2.4kV to 7.2 kV - A240T / A480T / A500 / A072T



POTENTIAL TRANSFORMER FUSES

Ferraz Shawmut E-rated PT fuses are current limiting fuses with high interrupting rating, used for primary winding-protection of potential transformers. They are small dimension, ferrule-type fuses and mounted in standard clips. Ratings are 1/2E to 5E at 2.4, 4.8, and 5.0 kV at 7,2kV rating are 1/2E to 3E

Features/Benefits

- Current limiting protection for transformers
- Ferrule mounting for ease of installation in standard clips
- Compact size saves valuable mounting space
- Fiberglass body provides dimensional stability in harsh industrial environments
- Metal embossed catalog number for lasting identification

Highlights

- E-Rated
- Current-Limiting

Applications

Primary protection for 2.4, 4.8, 5.0 or 7.2kV potential transformer

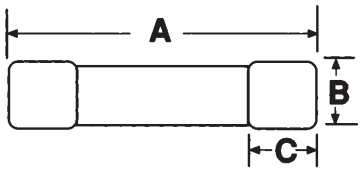
Ratings

A240T
AC: 1/2E to 5E
2400VAC, 50kA I.R. Sym.

A480T
AC: 1/2E to 5E
4800VAC, 50kA I.R. Sym.

A500T
AC: 1/2E to 5E
5000VAC, 50kA I.R. Sym.

A720T
AC: 1E to 3E
7200VAC, 50kA I.R. Sym.



Dimensions

Catalog Number Prefix	Dimensions - inches			Fuse Clips*	
	A	B	C	Centers	Cat. NO.
A240T	4-5/8	13/16	5/8	4.0"	CO8917P
A480T	5-5/8	13/16	5/8	5.0"	CO8917P
A500T	5-5/8	1	9/16	5.0"	-
A720T	9-1/2	13/16	5/8	8.88"	CO8917P

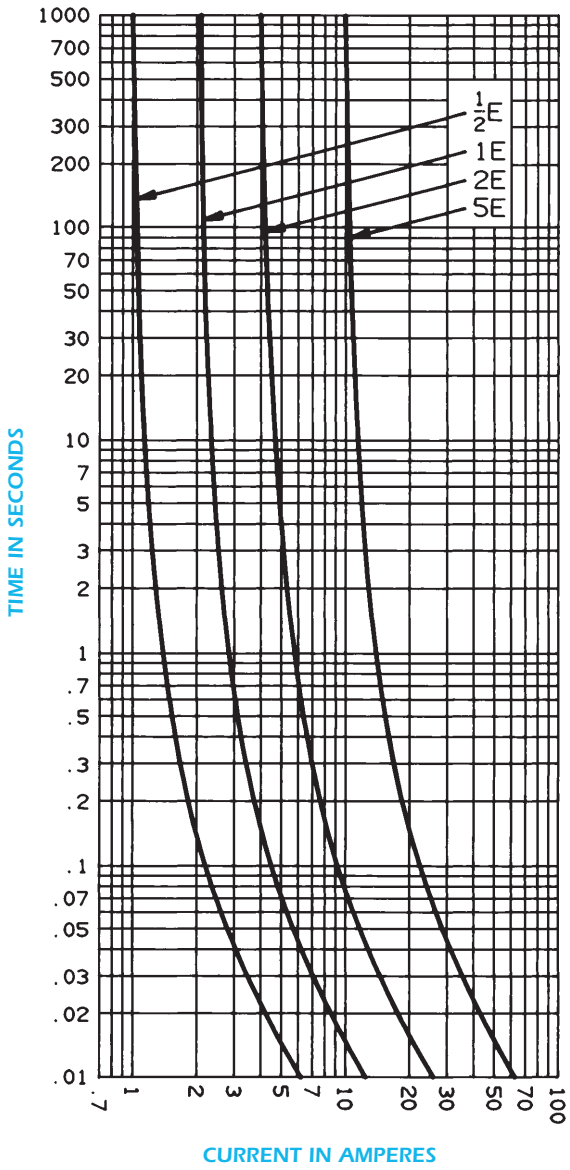
Standard Fuse Ampere Ratings, Catalog and Reference Numbers

E-Rating	Catalog Number				Reference Number			
	2400V	4800V	5000V	7200V	2400V	4800V	5000V	7200V
1/2E	A240T1/2E	A480T1/2E	A500T1/2E-1	A720T1/2E-1	P212855	C215397	S218470	Z203710
1E	A240T1E	A480T1E	A500T1E-1	A720T1E-1	P213867	D215904	D219515	E211305
2E	A240T2E	A480T2E	A500T2E-1	A720T2E-1	A214383	H216414	X221970	P211820
3E	-	A480T3E	A500T3E-1	A720T3E-1	-	Q216927	G222715	C212338
4E	-	A480T4E	A500T4E-1	-	-	C217444	W223234	-
5E	A240T5E	A480T5E	A500T5E-1	-	Y214887	M217959	W201568	-

American Fuses
Potential Transformer Fuses (E-Rated)
2.4kV to 7.2 kV - A240T / A480T / A500 / A072T

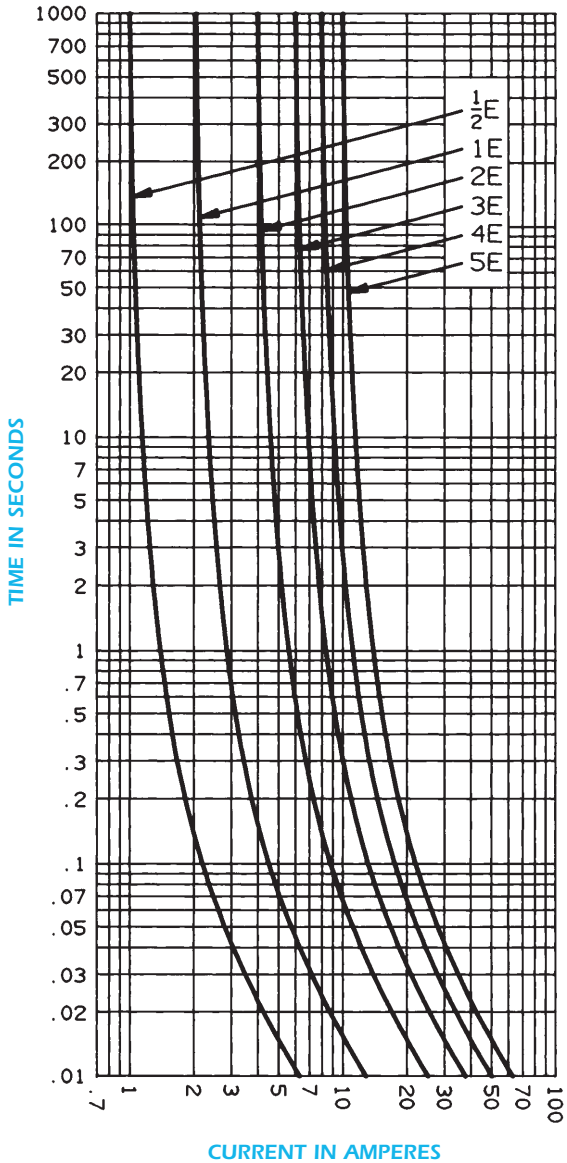
A240T1/2E to 5E

MELTING TIME – CURRENT DATA - PT FUSES - 2400V



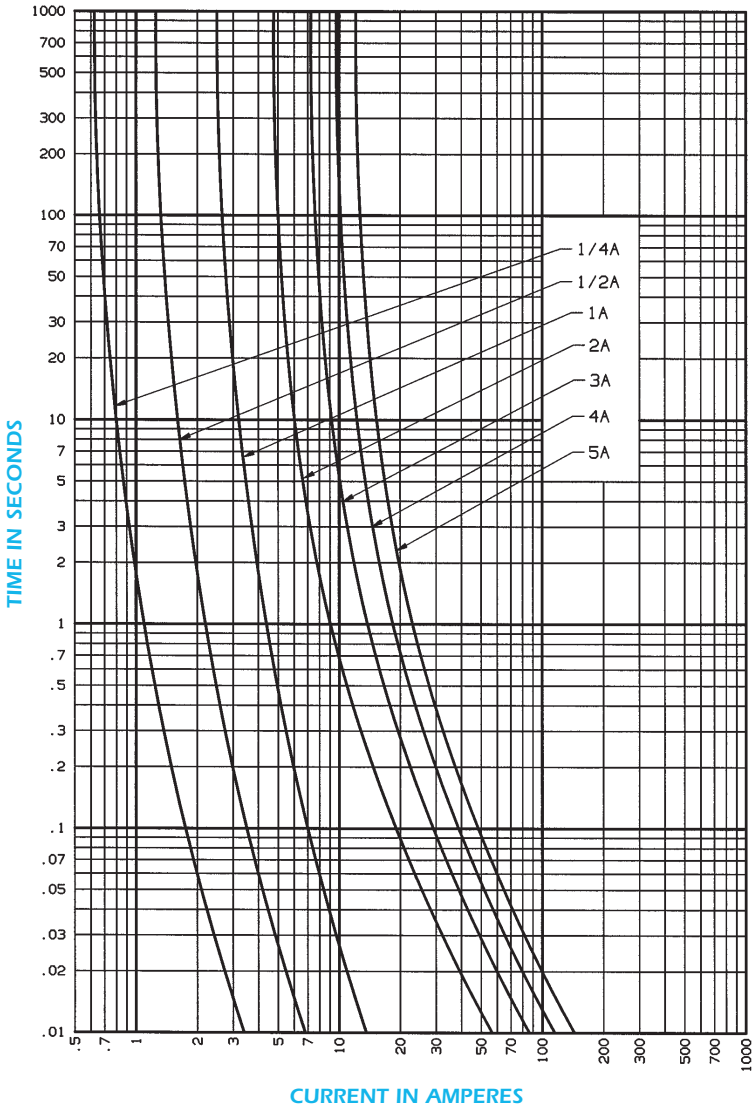
A480T1/2E to 5E

MELTING TIME – CURRENT DATA - PT FUSES - 4800V

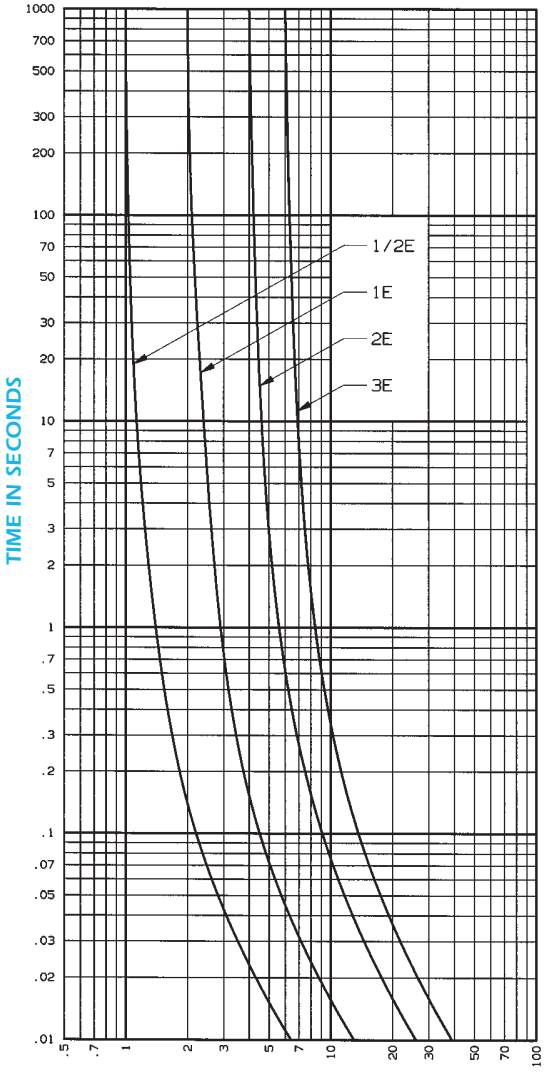


American Fuses
Potential Transformer Fuses (E-Rated)
2.4kV to 7.2 kV - A240T / A480T / A500 / A072T

A500T1/2E-1 to 5E-1 Melting Time Current Data - PT Fuses - 5000V



A720T1E-1 and A720T2E-1 Melting Time – Current Data PT Fuses - 7200V



American Fuses Capacitor



As a complement to the wide variety of fuse lines developed by Ferraz Shawmut for every market and application type, we also offer a line of capacitor fuses ranging from 600 VAC to 5500 VAC. The Ferraz Shawmut capacitor fuse range offers many models with the same electrical ratings but with various blade, studs, or end-contact designs in order to satisfy specific customer needs.

Features/Benefits

- Cartridge type
- Full range operation
- Indicator for most types
- Direct mounting on capacitor
- Prevent rupture of failed capacitor
- Special mounting brackets available

Ratings

600VAC to 5500VAC
6A to 300A

Ratings Table

Ampere Rating	Voltage Rating Range					
	600V	1500V	2400V	3000V	4300V	5500V
6 to 25 Amps	■				■	■
30 to 50 Amps	■			■	■	■
60 to 95 Amps	■	■	■	■	■	■
100 to 150 Amps	■	■	■	■	■	
160 to 300 Amps	■	■	■	■		

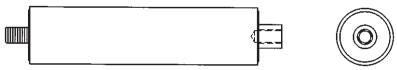
Mounting Configurations

Please consult factory for mounting configurations availability

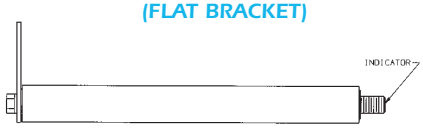
TYPE 10 - INNER THREAD TO SCREW



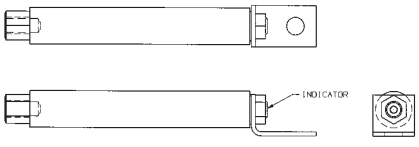
TYPE 15 - EXTERNAL FEMALE TO BOLT



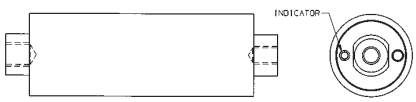
TYPE 20 - SCREW TO BOLT (FLAT BRACKET)



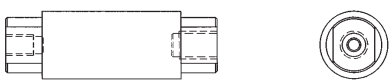
TYPE 30 - EXTERNAL FEMALE TO BOLT (L BRACKET)



TYPE 40 - EXTERNAL FEMALE TO EXTERNAL FEMALE



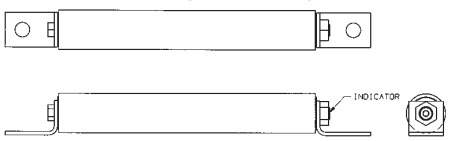
TYPE 121 - EXTERNAL FEMALE TO EXTERNAL FEMALE



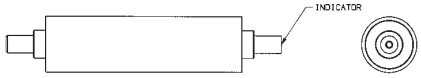
TYPE 50 - SCREW TO BOLT (L BRACKET)



TYPE 60 - BOLT (L BRACKET) TO BOLT (L BRACKET)



TYPE 70 TUBE TO TUBE



MV Fault Indicator IDT10 and IDT20



Type IDT 10 FOR HIGH VOLTAGE OVERHEAD NETWORKS

INDICATES INSULATION FAULTS BY DETECTION OF CURRENTS IN GROUND CIRCUITS
USABLE ON ALL HIGH VOLTAGE DISTRIBUTION NETWORKS REGARDLESS OF NEUTRAL RATES
CONNECTS DIRECTLY TO THE GROUNDCABLE OF THE POLES
MAY BE RESET AFTER OPERATION
OPERATES AUTONOMOUSLY, WITHOUT BATTERIES
RESISTANT TO TOUGH WEATHER CONDITIONS
INSENSITIVE TO LIGHTNING AND OPERATING CURRENTS
DETECTS DAMAGE TO LIGHTNING ARRESTERS, TRANSFORMERS AND INSULATORS

Presentation

The insulation fault indicator is presented in the form of a compact case made of a highly sturdy synthetic material. A window on the front enables the viewing of a red warning light in case of operation. This signal may be seen from 10 meters away, across a 120 ° sector.
The IDT20 Comp counts current pulses due to lightning - A6- digits electromechanical meter indicate the number of lightning strikes.

Two conductive contacts on the front allow the indicator to be reset.

The case contains a 16 mm diameter hole for the passage of a ground cable. The indicator is delivered with an 80 cm cable section and two crimping sleeves to prevent the ground circuit from being cut during installation. Two openings on the back enable the device to be attached to the pole by metal strip.

Operation

Ground currents caused by insulation faults are measured by an integrated current transformer. An electronic panel processes the transformer output signal and controls the operation of the warning light in the event it exceeds a preset threshold. The signal is maintained even after power on the line has been disconnected, enabling the operator to quickly detect the fault location.

Resetting and testing of the indicator are ensured by an IDT 101 type reset device.

Before fault



After fault



MV Fault Indicator
IDT 10 and IDT 20

Technical characteristics

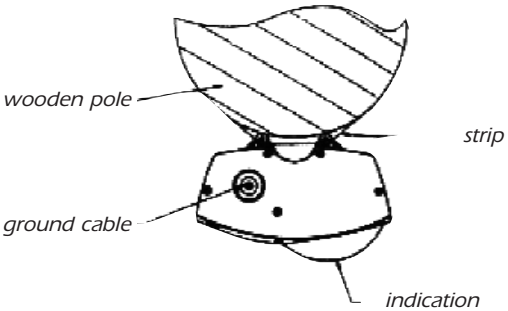
	IDT 10	IDT 20	IDT 20 Com
Reference numbers	D210223	W229099	V225970
- Detection currents: 50 Hz	15A / 500ms	15A / 100ms	15A / 100ms
50 Hz	10A / 143ms	10A / 110ms	10A / 110ms
- Minimum detection currents:	9A	4A	4A
- Sensitivity to 3 waves 5ms (EDF specification)	50A	no	no
- Non detection current: 2ms rectangular wave	150A	250A	250A
- Non detection current: wave 4/10µs	100kA	100kA	100kA
- Resetting unit	E210753	F229867	F229867
- Weight	0.950kg	1kg	1.2kg
- Counting lightning current pulses	No counter		
- Minimum operating current for the counter. Ipeak:			400A wave 8/20µs
- Maximum operating current for the counter. Ipeak:			100kA wave 4/10µs
- Insensitivity of the counter: - 1/2 sinusoid wave Ipeak:			300A / for 3.1ms
- 50Hz, Ipeak:			300A / for ≤700 ms
- Power supply	Completely independent power supply		
- Isolated from pole @	(no batteries) 2kV 50Hz and 5kV wave 1.2/50µs		
- Climatic conditions	-25 to +70°C / Relative humidity 100%		
- Protection rating / impact withstand	IP 56 / IK 07		

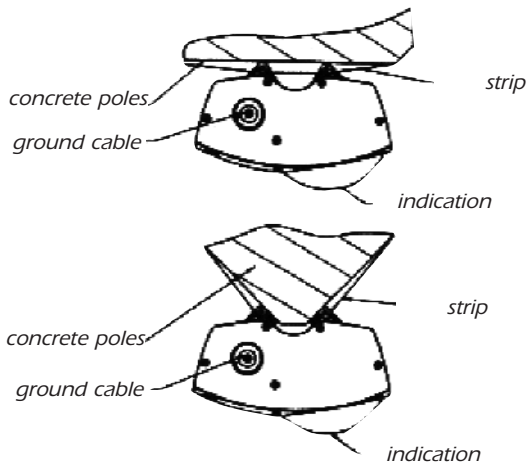
A/ Fixing indicator to electric pole

- The indicator is installed in a horizontal position, facing in either direction.
- The indicator may be attached to a wooden or concrete pole.
- On concrete poles, the indicator may be placed either on flat side or in a corner.

The different configurations are described below.

- Two openings located at the back of the case are designed to accommodate a stainless steel strip, 20 mm wide and 0.4 mm thick, in order to fix the indicator to the post by hooping.
- The hole in the indicator case must be positioned as closely as possible to the ground cable.
  WARNING: During attachment, the strip must pass between the ground cable and the post in order to prevent the cable from being tightened against the post during hooping.



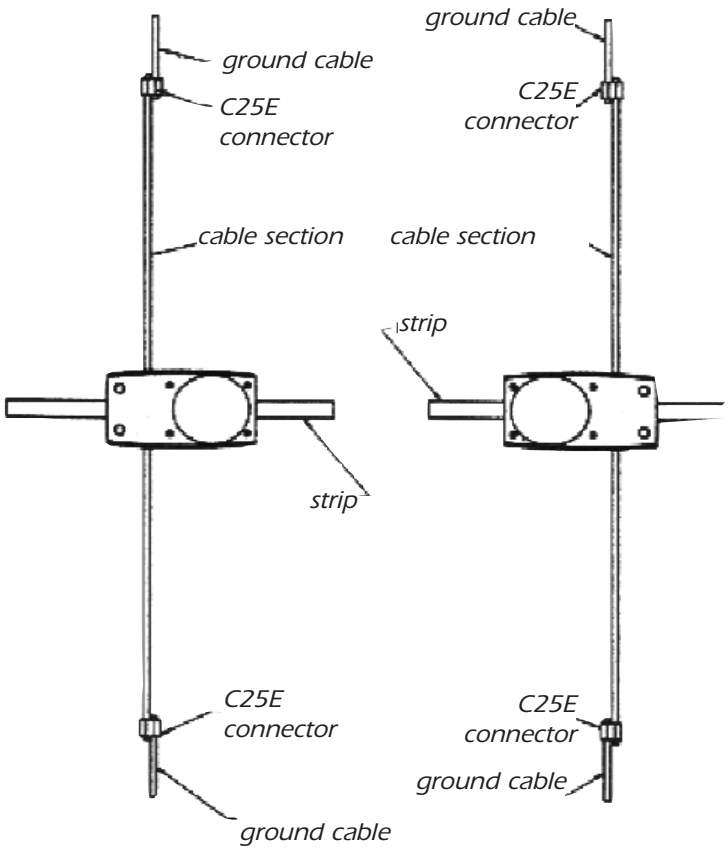


MV Fault Indicator
IDT10 and IDT20

B/ Connecting the ground cable

Once the indicator is attached to the pole:

- Introduce the cable section into the case via the 16 mm hole
- Approximately center the cable section within the case
- Place and crimp a C25 E connector to attach the upper end of the cable section to the ground cable
- Place and crimp the second C25 E connector to attach
- Ensure that both connections are properly completed
- Cut the ground cable just below the upper connector and just above the lower connector
- Remove the piece of ground cable shunted by the cable section



MV Fault Indicator Cabletroll 2500



EARTH FAULT CURRENT SENSING SYSTEM

FAULT SENSING IN FAULTY SECTIONS OF
underground NETWORKS
FOR INDOOR OR OUTDOOR CABLES
UP TO 36KV
PROGRAMMABLE trip level
increased visibility through high intensity led
or optional xenon flash unit
easy-to-install
uv-stabilized POLYCARBONATE housing

Designation	Reference Number	Ground fault signalling	Light sensitivity reset	Indication		Catalog Number
Cabletroll 2500/2510	J208641	Fixed levels of 40, 80, 120 A or continuously adjustable from 5-120 A	1/ Timer reset temporisation (off, 2, 4, 8, 16 or 32 hours) 2/ 15 seconds after a successful repowering	A pair of relay contacts (N. O.) 120 V DC/ 1A gives a 1-second impulse	LED and (or optional Xénon flash unit	CT2500-2510

Cabletroll 2500 fault detectors have been designed for use outdoors or in sheltered areas.

Normal operating conditions:

- Ambient temperature from – 40°C to + 70°C
- Lithium battery lifetime: 10 years for LED application at 20°C ambient or 2,500 hour operation.
- Weight: 750 g

MV Fault Indicator Cabletroll 2500

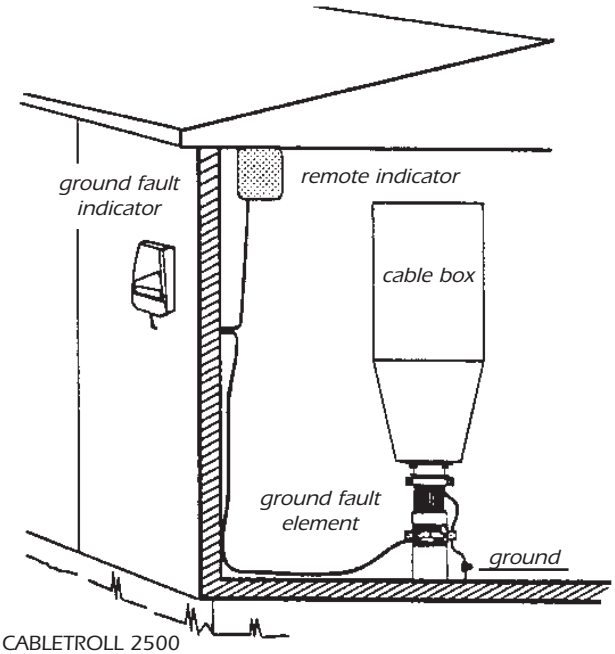
Overview

Cabletroll 2500 is a ground fault sensing system. It consists of a Ground Fault Element and Ground Fault Indicator. It can be mounted in high voltage underground cable distribution networks with system voltage from 6 to 36 kV.

The sealed Ground Fault Element mounts on most widely used cable types, while the weatherproof indicator is well suited for outdoor mounting (See fig. 1).

The indicator is fitted with a high intensity LED for local indication and an optional Xenon flash unit. It is also equipped with a pair of relay contacts for connection to remote indicators, which communicate via cable and/or radio.

The trip level for ground fault can be set on-site to fixed values of 40A, 80A or 120A. It is factory set to 40A. In addition, the trip level can be continuously adjusted in the ranges 5-40A, 8-80A or 12-120A.



CABLETROLL 2500

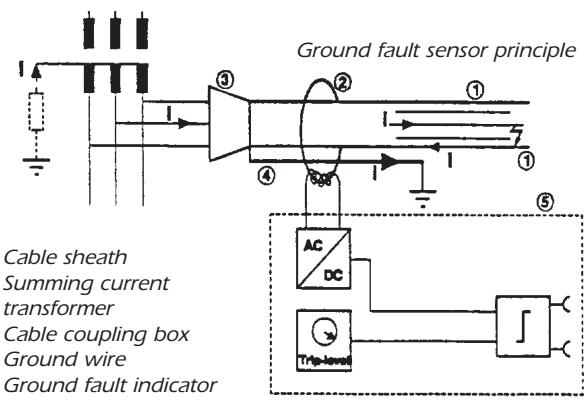
Functional description

Ground faults in general

In networks with directly earthed zero-point, a ground fault is equivalent to a phase-to-ground short circuit. In that case the current magnitude will be somewhat less than in the case of a phase-to-phase short circuit. For networks that do not have directly earthed zero-point, the magnitude of the singular ground fault current is ruled by the size of the galvanically interconnected network, voltage level, type of cable and the zero-point equipment.

Ground Fault Element

The Ground Fault Element is a summing current transformer (CT) which generates a current when the vectorial sum of the 3 phase currents becomes different from zero, i.e. during ground fault. With no ground fault, the vectorial sum is approximately zero.



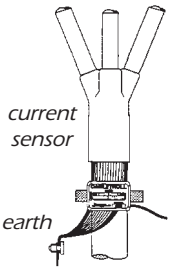
Ground fault sensor principle

1 Cable sheath
2 Summing current transformer
3 Cable coupling box
4 Ground wire
5 Ground fault indicator

Mounting

Ground faults in Element

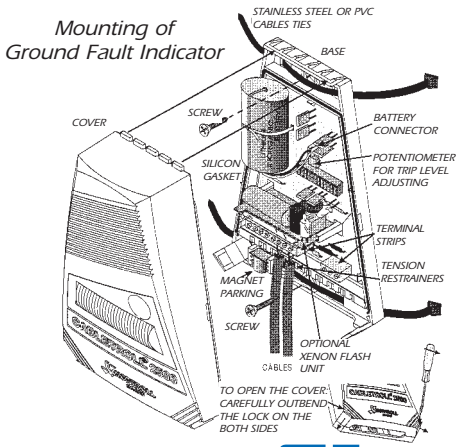
The element connects to the indicator via its ready-mounted cable (2.0 m). Multi-core cable: The element is mounted on the screened part of the cable, below the stripback point, according to the mounting instructions. The screen is turned back underneath the flexible CT-core and terminated at the ground point. The principle is shown in figure opposite.



Ground Fault Element: Screen turnback

Ground faults Indicator

The Indicator should be mounted in a readily visible location. It can be mounted on a pole or a wall with the two enclosed self-threading screws. The Indicator is also suited for mounting with stainless steel or PVC cable ties. Both options are illustrated in figure above. Remove the front cover of the indicator to access holes for screws/ties. See figure for further details.



MV Fault Indicator Cabletroll 2700



Save time and money!
Let CABLETROLL 2700 track down your faulty sections and save you the guess work and time involved in traditional methods of switching during faults

Microcontroller based indicator
Programmable function in software
Separate indication of ground fault and shorT circuit faults
Indication of phase and fault type remote signaling outputs
Multiple power supply alternatives
Multi-reset function: Manually, programmable, timer, remote and by voltage return
Response time adaptable to relay protection

System description

Cabletroll 2700 is a complete system for indication of earth-fault and short circuit faults in an underground 6-36V cable network.

The system consist of three different modules:

- Ground fault element with a split core for sensing the imbalance during ground faults
- 2 (or3) sensors for detecting short-circuits
- Processing unit including power supply and indication unit with flashing LED's for local indication and relay contacts for remote signalling, controlled by a microcontroller.

Trip level for ground fault is continuously adjustable within the range of 5-240A. Short circuit trip level is adjustable within the range of 300-1000A.

The system has separate indicators for ground fault and short-circuit faults.
Three LED's show which phases are involved in the short circuit.

For remote signaling, two pairs of relay contacts are available; ground fault and short circuit.

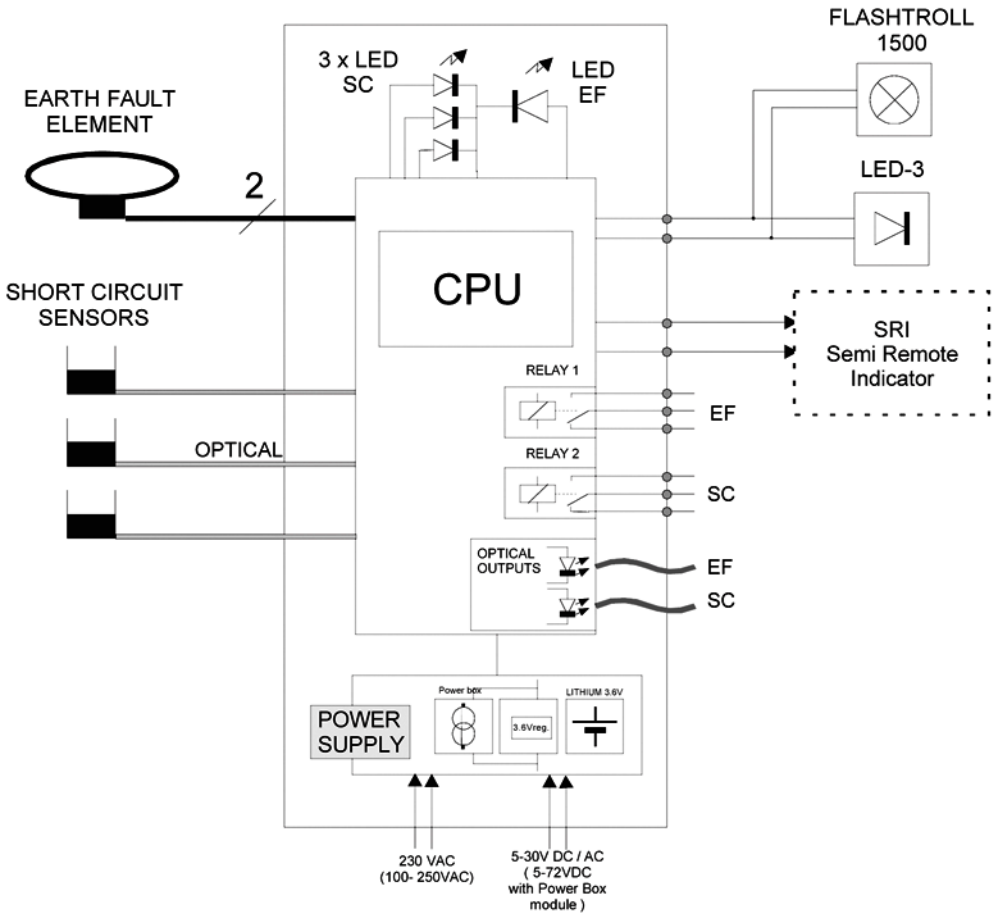
Operating mode

Functions are controlled by a microprocessor and all time delays and operation of the indication unit are programmed in software, making it very easy to adapt to different requirements.

Different operating modes are available:

- Immediate indication of both permanent and transient faults
- Immediate local and remote indication of both permanent and transient faults causing circuit breaker tripping
- Postponed operation of relay contacts, allowing closing-cycles to finish before remote-indication is activated Indication of permanent faults only
- Both timer and voltage reset can be enabled or disabled independently

MV Fault Indicator
Cabletroll 2700



Technical specifications

Trip levels

- Ground fault: 40, 80,105, 120, 1601 210 and 240A (fixed levels) or continuously adjustable from 5-240A.
- Short Circuit: Adjustable in the range 300 - 1000 A

Response time

- Independant adjustable time delays for ground fault and short circuit faults.

Indication

- Visual by 4 internal LED's
- External LED / Xenon flash (optional)
- 0utputs for remote indication

Inputs

- Ground Fault Element
- 3 x Short-Circuit Element (AMP fiber optic connector)
- External power 230V AC
- External 5-30 (72V) DC/AC -power
- External reset

Outputs

- LED-3 / FlashTroll 1500 (for indication outside the kiosk by LED or Xenon-flash)
- Relay 1: Volt free NO / NC for ground fault indication
- Relay 2: Volt free NO / NC for short-circuit indication
- Signal output to communication module
- Optical output (AMP) ground fault indication (Optional)
- Optical output (AMP) for short-circuit indication(Optional)

MV Fault Indicator Cabletroll 2700

Test/reset

- Magnet contacts for activating test/reset without opening housing.
- Internal push-button for test/reset.
- Remote reset (closed contact)
- External reset 230V AC
- Reset from internal timer: 2, 4, 8, 12, 16, 24 and 32 hours.

Power supply alternatives

- Internal lithium battery
- Internal sealed lead rechargable battery (giving 50 hrs back-up)
- External 230 VAC
- External 5 - 30 V DC / AC
- By using a Power Box-DC/DC-converter, external power can be in the range of 5-72 V DC/ AC, and the CT 2700 will be galvanic insulated from power source.

Power consumption

Surveillance mode: < 50 mA (minimum 7 years operation with Lithium-battery providing 2hrs activation 10 times year).
Alarm mode:< 50 mA depending on external indication.
Temperature range: -40 / +70 deg.

Function:-

Function can easily be adpated to different conditions by setting parameters in software, such as response time, reset timing, operation of relays etc.

Basic modes

Mode 0:	Immediate local and remote indication. Voltage reset enabled. Timer reset disabled. Indication of both permanent and transient fault.
Mode 1:	Immediate local and remote indication. Voltage reset disabled. Timer reset enabled. Indication of both permanent and transient fault.
Mode 2:	Immediate local and remote indication Voltage reset enabled. Timer reset enabled. Indication of both permanent and transient fault causing circuit breaker tripping.
Mode 3:	Postponed operation of relay contacts, allowing reclosing-cycles to finish before remote-indication is activated. Reset functions as for Mode 2. Indication of permanent faults only.
Battery : change	Every 2500 hours of indication, normally every 7 years.
EMC:	The indicator is designed according to current EMC-standards for immunity and emission.

MV Fault Indicator Cabletroll 3600



Directional fault current indicator for underground systems

Presentation

CABLETROLL 3600 directional Fault Current Indicators (FCI) are designed to help the operator locate faults on underground lines. They detect both single phase-to-ground (PTG) and phase-to-phase (PTP) faults in systems with 300A impedance or compensated neutral grounding. And they use a brand-new detection technique that offers significant advantages over the conventional technique of existing detectors working on current thresholds. That new technology means that unlike conventional detectors, they can operate on systems with high capacitive current (combined overhead/underground networks with a high proportion of cable, very long underground networks).

The CABLETROLL 3600 FCI is capable of discriminating between PTP and PTG faults, and indicating the direction of the latter type.

It can be used on networks from 6 to 36 kV for the following applications:

CABLETROLL 3600 LDAC:

installed on strategic points in the network (switching points, branching points), it assists the operator by visually signaling the passage of a PTG or PTP fault current.

CABLETROLL 3600 LDAC LV:

when used in combination with remote-controlled switchgear, it assists the operator in remote control by providing contacts that alert the remote control system to the passage of a PTG or PTP fault current.

CABLETROLL 3600 LDAU:

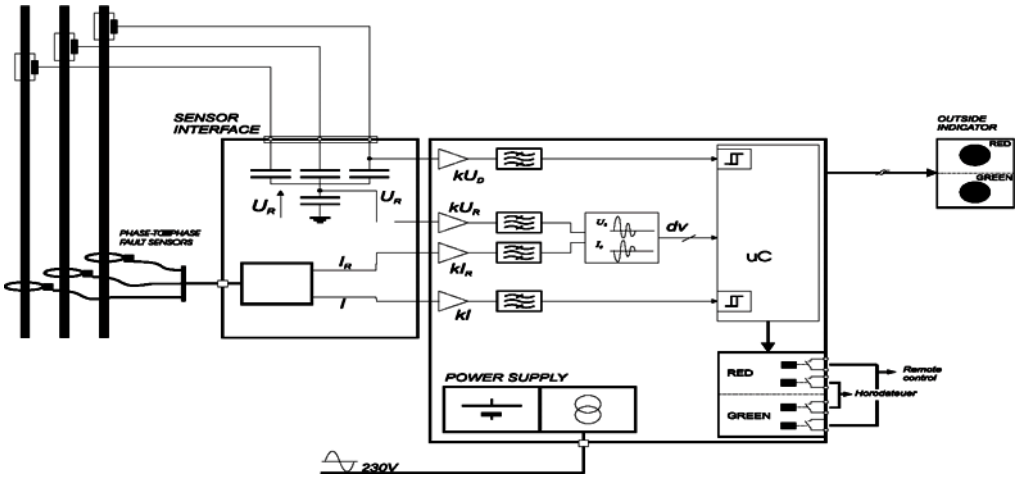
installed temporarily on a disturbed network, it identifies what sections are responsible for faults and gives a time and date system the data required to analyze faults, whether persistent or transient.

MV Fault Indicator Cabletroll 3600

Description and working principle

The CABLETROLL 3600 works on the principle of directional fault indication described in EDF patent 9209549.

The following block diagram shows the CABLETROLL 3600 indicator's main circuits.



In the initial milliseconds after a PTG fault, voltage and current transients are generated on the system. Using a microprocessor to interpret the phase displacement between residual voltage and residual current, the circuit can indicate in which direction the PTG fault is located (up-line or down-line of the indicator's pick-up coils).

For PTP faults the working principle is that of an ammeter (current threshold).

There are 6 standard models:

Function	Power supply	Outside connections	Designations	References number	Catalog number
Assistance in autonomous operation	Batteries (power for 4 years in operation)	None	CABLETROLL 3600 LDAC	S 210765	CT3600LDAC
Assistance in autonomous operation with counter Requires remote control unit COMTROLL 3600 W210768	Batteries (power for 4 years in operation)	None	CABLETROLL 3600 LDAC counter	W 210998	CT3600LDAC-CP
Assistance in operation with LV power supply	230 VAC	Outside contacts provided to transmit indicator light data	CABLETROLL 3600 LDAC BT	T 210766	CT3600LDACBT
Assistance in autonomous operation with counter Requires remote control unit COMTROLL 3600 W210768	230 VAC	Outside contacts provided to transmit indicator light data	CABLETROLL 3600 LDAC BT Counter	X 210999	CT3600LDACBT-CP
Autonomous diagnosis Requires remote control unit COMTROLL 3600 W210768	Batteries (power for 4 years in operation)	Connection to a time and date system provided	CABLETROLL 3600 LDAU	Y 211000	CT3600LDAU
Diagnosis with LV power supplyRequires remote control unit COMTROLL 3600 W210768	230 VAC	Connection to a time and date system provided	CABLETROLL 3600 LDAU BT	V 210767	CT3600LDAUBT

MV Fault Indicator Cabletroll 3600

Application of a CABLETROLL 3600 FCI

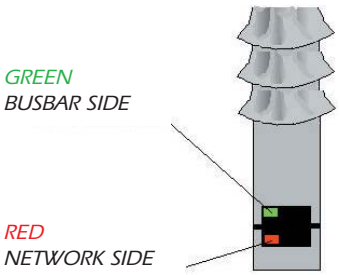
General

When a CABLETROLL 3600 detects a fault current, it alerts the operator either visually with a signal light or through contacts (CABLETROLL 3600 AC LV or AU).
As soon as the existence of a fault is confirmed, the signal light on the CABLETROLL 3600 lights up and stays lit until one of the following events occurs:

- Forward voltage returns to the HV line (voltage reset).
- The internal 2 hour time delay ends (timer reset).
- The indicator is reset by the operator using either the reset button on the front of the main box or the COMTROLL infrared remote control unit (manual reset).

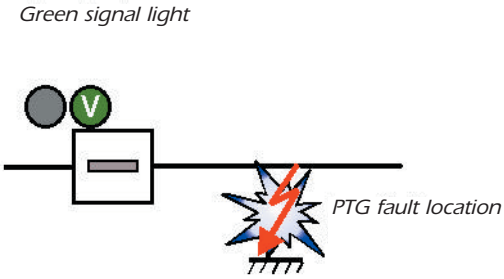
PTG fault indication

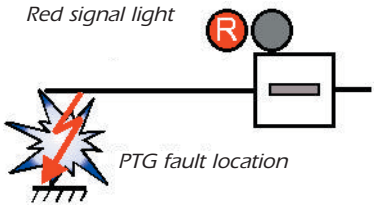
The principle of directional PTG fault indication is to locate what part of the line is the origin of a PTG fault. To do this each pick-up coil has a GREEN signal and a RED signal. The coils must be mounted in such a way that the GREEN signal is on the BUSBAR side and the RED signal is on the NETWORK side.



If the GREEN signal light is lit up, the fault is on the GREEN side, i.e. the BUSBAR side.

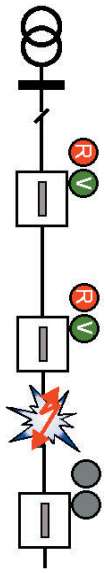
If the RED signal light is lit up, the fault is on the RED side, i.e. the NETWORK side.





PTP fault indication

In this case the CABLETROLL 3600 FCI works like a conventional fault indicator and no direction is indicated. All the fault indicators between the feeding substation and the fault flash the green signal light and the red signal light alternately (once every second).



MV Fault Indicator Cabletroll 3600

Fault indication characteristics

PTG faults

Any PTG fault characterized by a residual current over 60A peak + 10A and a residual voltage of 9kV + 2kV is detected.

Once those thresholds are exceeded, the fault indicator waits 40 ms to detect a residual voltage Vr greater than 3.5kV ± 0.5kV before indicating that there is indeed a fault.

Double PTG faults

A fault considered as a "double PTG fault" consists of a simultaneous PTG fault on two different phases in a system powered by the same HV transformer but grounded at two geographically distant points.

The two faults may be located on the same feeder or on two different feeders. In this case any fault characterized by a residual current over 250Arms ± 50A is detected.

PTP faults

Any PTP fault characterized by a current over 450Arms + 80A is detected.

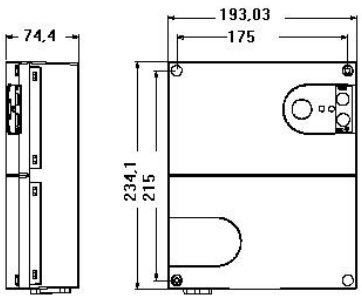
Return of forward voltage

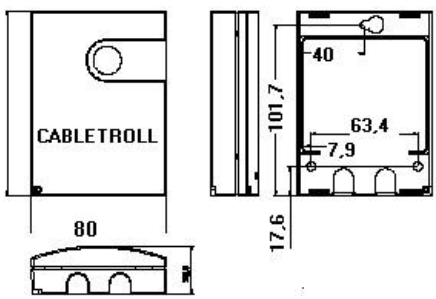
The return of forward HV voltage (resetting the FCI) is accepted when voltage on the system is at least 10kVrms + 2kV.

FCI construction

The CABLETROLL 3600 FCI consists of six parts:

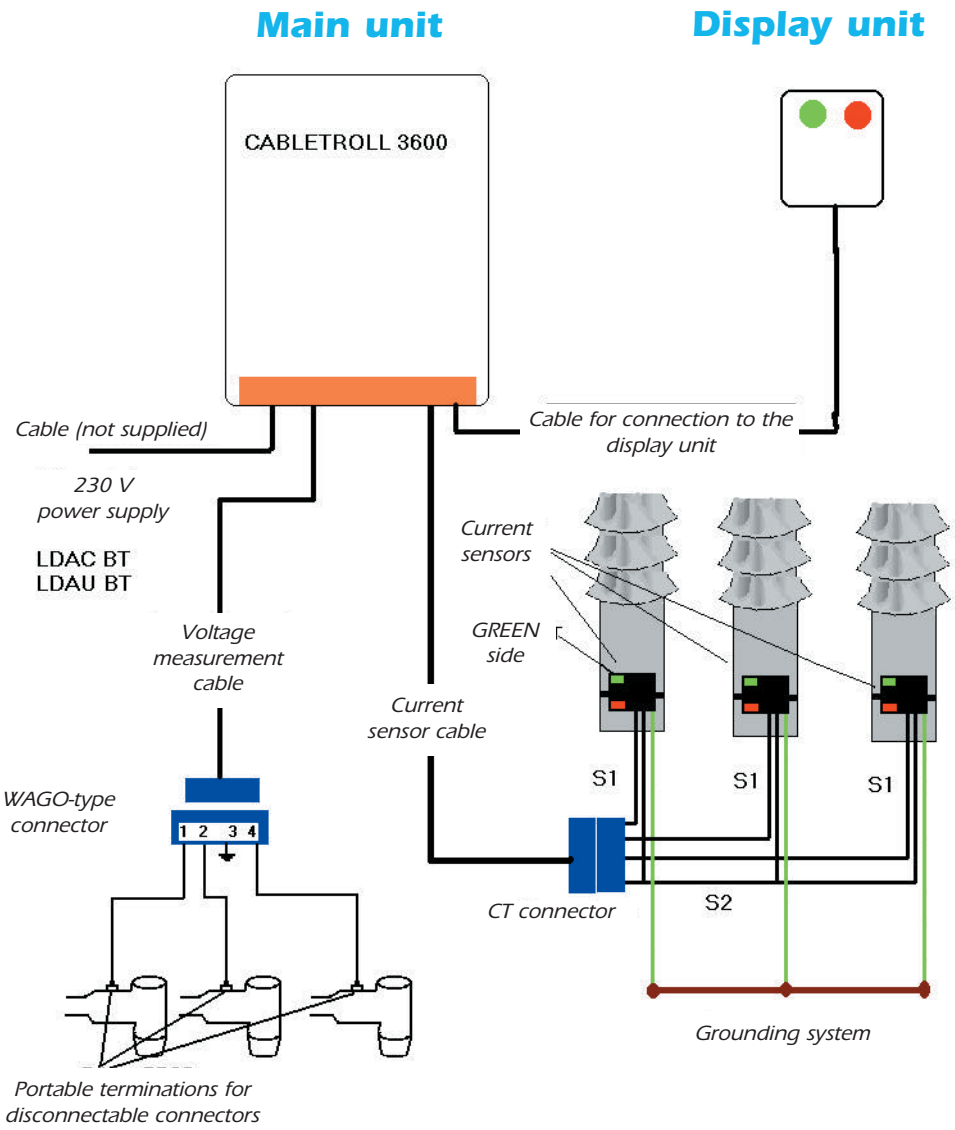
- **Voltage measurement:**
  subassembly consisting of a male WAGO-type termination ref. 723-604/000-042 (see connection diagram) connected to a 7 m (or optional 12 m) cable. This cable is then connected to the terminal block on the main unit of the FCI. The male connector is connected to a female part (not supplied with the FCI) that leads to the portable terminations for disconnectable connectors (not supplied with the indicator).
- **Current measurement:**
  subassembly consisting of three current sensors, each with a detection element with its own cable and a collar to fasten the sensor on the HV cables. The three cables running out from the sensors are fitted with a current transformer (CT) connector (see connection diagram) that must be connected to the current sensor cable (see hereafter).
- **Current sensor cable:**
  7 m (or optional 12 m) cable connected to a connector. One end of this cable must be connected via CT connectors to the current sensors and the other to the terminal block of the main FCI unit.
- **Multi-core cable:**
  7 m (or optional 12 m) cable to connect the display unit to the main FCI unit.
- **Main unit containing:**
  the electronic board, the power supply, the TEST and RESET buttons and the terminal blocks for connection to outside elements.





- Display unit consisting of a weatherproof and impact resistant casing containing the green and red signal lights. This unit must be installed outside the substation or the cubicle.

MV Fault Indicator
Cabletroll 3600



MV Fault Indicator Linetroll 111K



POLE-MOUNTED FAULT INDICATORS

Fault sensing in faulty sections of overhead networks
OUTDOOR use for 6 to 66 kV networks
Programmable and fitted to any configuration
Easy-to-install
Increased visibility through Xenon flash indication

Main characteristics

Catalog Number	Reference Number	Maximum sensitivity		Recommended distance between link and indicator	Indication		Catalog Number
		Ground fault	Short-circuit fault		Permanent fault	Transient fault	
Linetroll 111K	Z208126	ISET ≥ 4A Adjustable on 7 15 or 50 A	ISC > 2 times I load line	3 to 5 m	Programmable Xenon Flash 1,5 - 12 H	LED Diode Storage up to 24 h	LT111K

Linetroll 111K indicators are designed for outdoor installation.

Normal operating conditions:

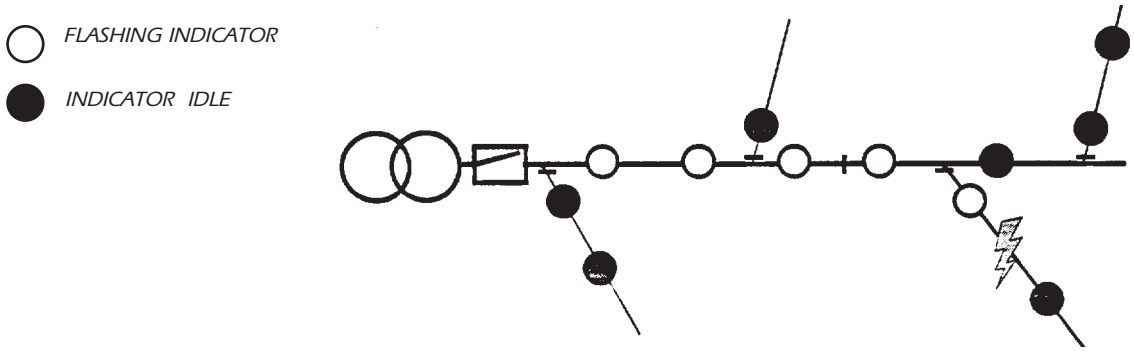
- Ambient temperature between – 40°C and + 70°C
- Lithium battery lifespan: 5 to 10 years depending on ambient temperature or every 500 hours of operations
- Weight: 750 g

MV Fault Indicator Linetroll 111K

Overview

Linetroll® 111K indicators are used to locate short-circuit and earth faults in overhead power distribution networks. Linetroll 111K is a 3-phase unit fully covering the different types of potential fault configurations.

Indicators are placed at strategic locations along the line, such as after branching points and sectionalisers. The indicator may be pole-mounted, 3-5 meters below the conductors, by means of screws or wrapping-bands. Live line mounting is done safely, easily and rapidly.

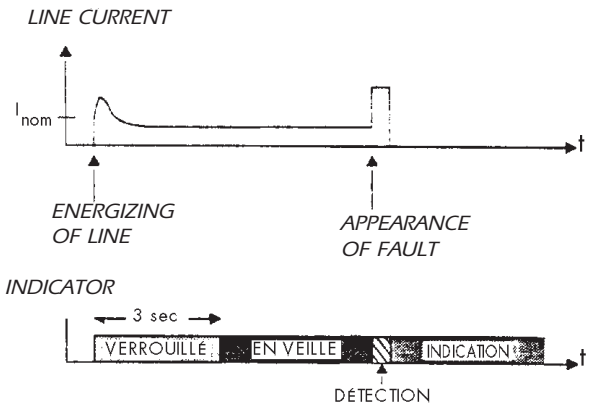


Upon detection of a line fault, the indicator gives off an intermittant Xenon gas flash. This flash can be seen at up to 200 - 300 metres distance in full daylight and 2 - 3 km at night. The indicator lens allows for uniform 360 degree monitoring. Upon fault sensing, all indicators installed between the feeding substation and the fault will operate. Indicators place behind the fault remain idle.

Functional description

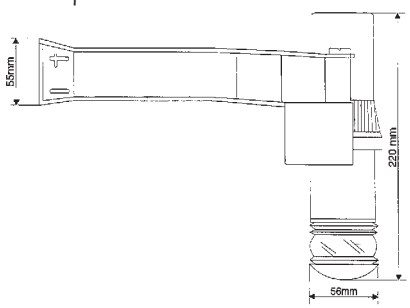
Linetroll® 111Ks fault sensing is based on detection of the electromagnetic field below the conductors. The unit is fully self-contained; no external transformers or connections of any kind is required.
To determine whether or not the line is faulted, the indicator looks for a specific sequence in the line conditions before it starts flashing. The general sequence is as follows.

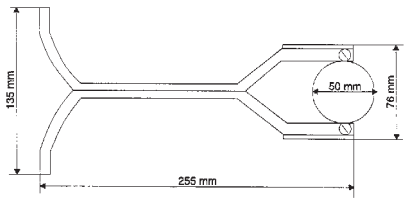
1. The line should be energized for at least 3 seconds.
2. The line current should increase rapidly above the value set by the user (the nominal trip level).
3. The line should be de-energized.However, the user may program the operating criteria to suit local requirements by manipulating a bank of microswitches inside the indicator.



Mounting

Linetroll 111K mounts with screws (included) or wrapping bands. This enables installation on either wood or concrete poles.





MV Fault Indicator Linetroll 3500



DIRECTIONAL FAULT CURRENT INDICATOR FOR OVERHEAD LINES

Presentation

LINETROLL® 3500 is a pole-mounted intelligent Fault Current Indicator (FCI) for use in electrical power networks. It uses brand-new detection technology that provides major benefits over previous FCI technology. LT3500 aims at tracking down the fault site rather than monitoring the exact fault current level.

FCIs contribute to improving the quality of supply in electrical distribution networks by providing instant information about fault sites. Based on this information, power rerouting and repair work can commence quickly. Outage duration and the use of manpower for fault-searching can be reduced by as much as 75%, a substantial saving potential for any utility.

For Distribution Automation (DA) purposes, or in combination with remote-controlled switchgear, FCIs used as in-formation sources represent a good alternative to automatic reclosers and sectionalisers. Reconnection of faulted lines as well as disconnection of healthy lines is avoided. Wear and tear of personnel and equipment is reduced.

Strategic application (large numbers) of FCIs represents an important tool in the search for optimum electrical energy supply quality and price. For any utility, the use of FCIs translates to increased earnings and improved goodwill and credibility among customers.

LINETROLL® 3500 is designed for application on 1- or 3-phase overhead distribution lines at voltages from 6-132 kV. It is able to discriminate between phase-to-phase (PTP) faults and phase-to-ground (PTG) faults and offers direc-tional capabilities on PTG faults, pointing towards the fault site.

LT 3500 represents a breakthrough in FCI performance and is applicable in networks of any neutral earthing method. The basic version of the unit exhibits 1 out of 2 available factory default characteristics, exclusively tailored for service in the following types of network: solid earthing versus impedance earthing or isolated networks.

It is designed to flawlessly meet the challenges of networks that undergo extensions and/or modifications, power re-routing and heavy load variations. All of this without the need for time-consuming network capacitance and fault current magnitude calculations, saving a lot of expensive time. The trick is that, contrary to earlier fault indicator generations, LT3500's performance remains uninfluenced by capacitive discharge currents when applied in isolated or impedance earthed networks.

Unmatched application flexibility and product lifetime is achieved through modular hardware design and software upgradeability.

Several methods of fault detection can be utilised simultaneously, offering many possibilities for adapting the function of the unit to some of the protection relay characteristics.

Maintenance requirements are very low thanks to sophisticated power management and a selection of power supply packs of adequate capacity.

MV Fault Indicator Linetroll 3500

APPLICATION OF LINETROLL® 3500

When LT3500 detects a fault current, it will indicate this by flashing lights or by other means (optional). The unit is able to discriminate between PTG and PTP faults on any kind of network with regard to the earthing method in use.

The fault indicator light will keep flashing until a pre-determined automatic reset condition is fulfilled. Such an automatic reset condition can be the return of voltage to the line (voltage reset), time lapsed since fault occurred (timer reset) or other.

Manual reset can be carried out on-site by rotating the display unit to the RESET position, either by hand or by use of a special TEST/RESET TOOL. The test/reset tool must be used when the indicator cannot be reached from the ground.

Performance in coil- (Petersen), coil+ resistor-, resistor earthed networks and isolated networks.

PTG faults

All LT3500s mounted in the network supplied from the same feeder will indicate, flashing a single-color light, red or green. The color determines the relative direction to the fault site.

When approaching the front of the indicator, i.e. when you see the indicator in front of the pole:

a) if the indication color is red; turn back along the line, the fault site is in the opposite direction
b) if the indication color is green; continue forward along the line, the fault site lies ahead

PTP faults

LT3500s mounted along the fault current path between the feeder and the fault site will indicate, flashing alternating red and green lights.

Bi-colored alternating indication means that a PTP fault has occurred downstream from the indicator.

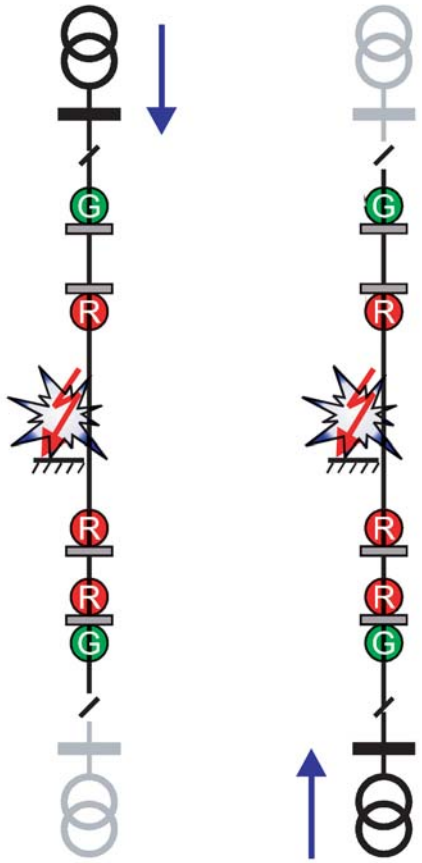


Figure 0-1.

LT3500 delivers directional performance on PTG faults. Different feeding directions do not affect the indication pattern.



Figure 0-2.

How to interpret network diagrams:
Bird's eye view of pole with indicator, indication alternatives and fault site(s).

MV Fault Indicator Linetroll 3500

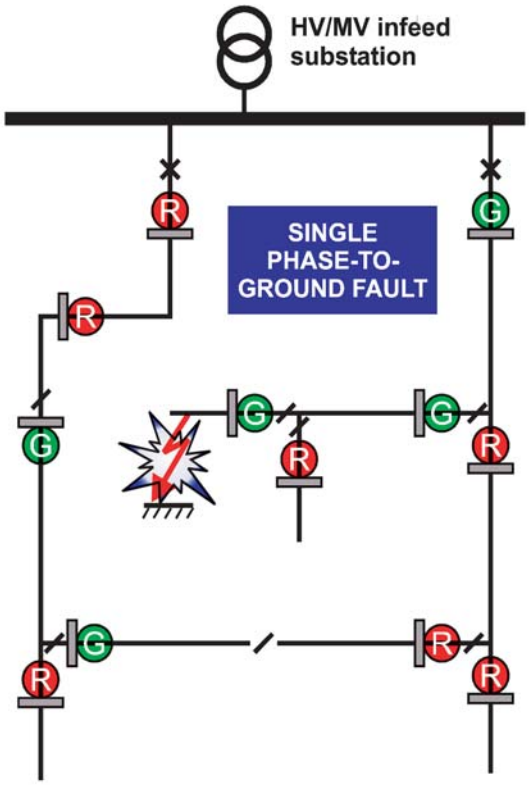


Figure 0-3.

Single PTG fault results in uncomplicated indication pattern and fault site tracking.

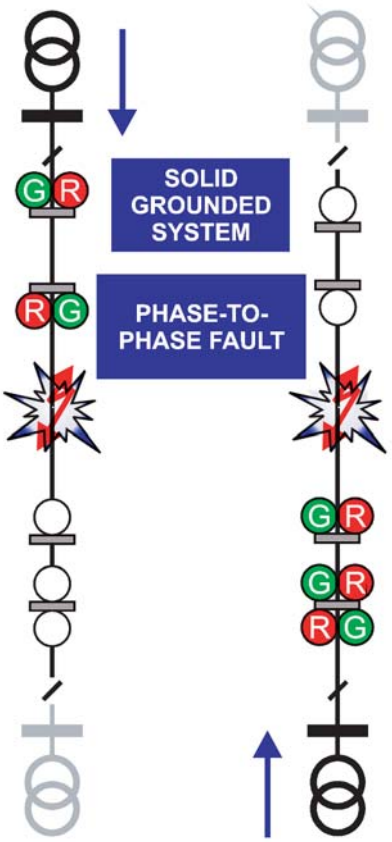


Figure 0-4.

LT3500 performance on PTP faults. Different feeding directions give different indication patterns.

Performance in solid earthed networks

PTG faults and PTP faults are indicated equally.

The criteria for detection and indication of PTG and PTP faults can be programmed individually, comprising a combination of di/dt and overcurrent techniques.

Only LT3500s mounted along a fault current path between a feeder and the fault site will indicate by flashing lights.

Inversely, a fault site should be located downstream from a flashing FCI. More precisely, the fault site should be located between the last flashing FCI and the first idle FCI.

MV Fault Indicator
Linetroll 3500

Operation

LT3500 is the result of several years of research, development and testing aimed at setting new standards for re-liability and functionality of FCIs.

A few hints

The unit continuously monitors the electromagnetic field on site. It looks for particular sequences of field changes to take place. Upon recognition of such a sequence, the unit samples and stores information in memory for immediate analysis. Based on analysis, the unit either indicates a faulted line or resumes trivial surveillance. The exact sensitivity to fault current magnitude is not critical for correct operation.

Fault category display

Phase-to-Ground and Phase-to-Phase faults can be indicated individually, as can transient faults versus permanent faults. For on-site monitoring, faults are indicated by flashing lamps in the display unit. The flashing pattern defines what kind of fault the unit has detected. The display unit can be rotated horizontally to allow easy monitoring from any position.

Directionality

A great advantage to LT3500 is its directional capability. In impedance earthed or isolated networks the unit is able to tell its relative position to a phase-to-ground fault site.

Maintenance

Maintenance of FCIs normally involves replacing the batteries. A range of battery packs is available for LT3500, allowing some flexibility with respect to service intervals.

Optional extras

IR programming unit

RTU interface and/or
external power supply connector card

Solar power pack

VHF radio + solar power pack

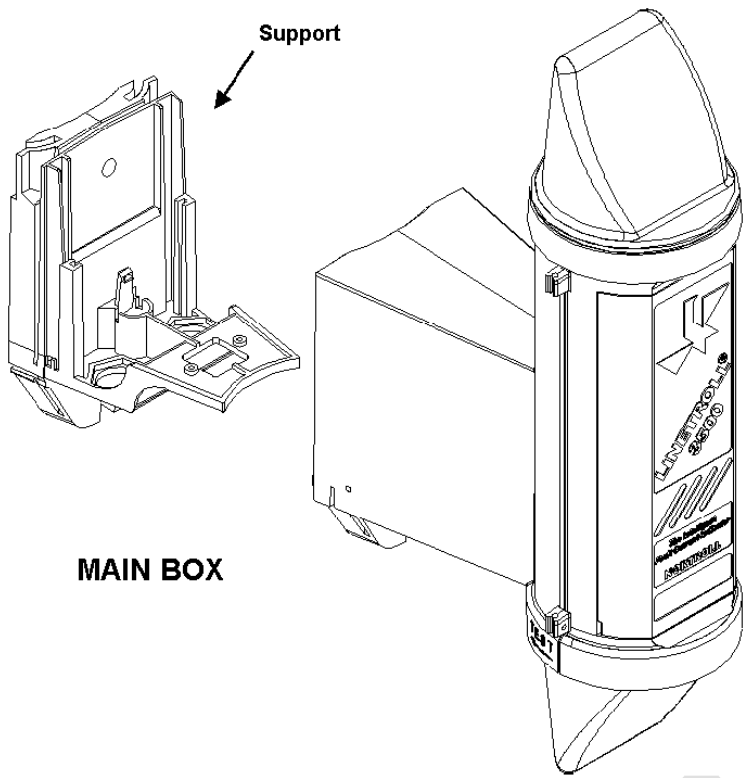
UHF radio + solar power pack

Xenon display unit

Test/reset tool

Battery packs

Mounting



MV Fault Indicator Linetroll 3600



Directional fault current indicator for overhead lines

Présentation

LINETROLL 3600 directional Fault Current Indicators (FCI) are designed to help the operator locate faults on overhead lines. They detect both single phase-to-ground (PTG) and phase-to-phase (PTP) faults in systems with 300A impedance or compensated neutral grounding. And they use a brand-new detection technique that offers significant advantages over the conventional technique of existing detectors working on current thresholds. That new technology means that unlike conventional detectors, they can operate on systems with high capacitive current (combined overhead/underground networks with a high proportion of cable).

The LINETROLL 3600 FCI is capable of discriminating between PTP and PTG faults, and indicating the direction of the latter type.

It can be used on networks from 6 to 132 kV for the following applications:

LINETROLL 3600 PDAC: installed on strategic points in the network (switching points, branching points), it assists the operator by visually signaling the passage of a single- or multi-phase fault current.

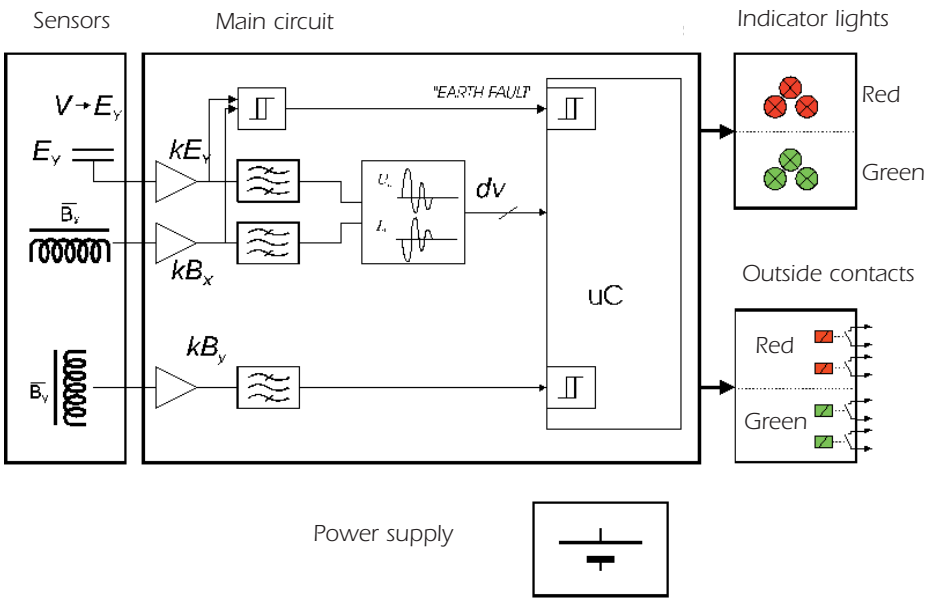
LINETROLL 3600 PDAT: when used in combination with remote-controlled switchgear, it assists the operator in remote control by providing contacts that alert the remote control system to the passage of a PTG or PTP fault current.

LINETROLL 3600 PDAU: installed temporarily on a disturbed network, it identifies what sections are responsible for faults and gives a time and date system the data required to analyze faults, whether persistent or transient.

MV Fault Indicator Linetroll 3600

Description and working principle

The LINETROLL 3600 works on the principle of directional fault indication described in EDF patent 9209549. The following block diagram shows the LINETROLL 3600 indicator's main circuits.



In the initial milliseconds after a PTG fault, voltage and current transients are generated on the system. Using a microprocessor to interpret the phase displacement between residual voltage and residual current, the circuit can indicate in which direction the PTG fault is located (up-line or down-line of the support the pole is strapped to).
For PTP faults the working principle is that of an ammeter (current threshold).

There are 5 standard models:

Function	Power supply	Outside connections	Designations	References number	Catalog number
Assistance in operation	Batteries (power for 4 years in operation)	None	LINETROLL 3600 PDAC	P 210762	LT3600PDAC
Assistance in operation with counter Requires remote control unit COMTROLL 360 W210768	Batteries (power for 4 years in operation)	None	LINETROLL 3600 PDAC counter	V 210997	LT3600PDAC-CP
Assistance in remote operation	12 VDC	Outside contacts provided to transmit indicator light data	LINETROLL 3600 PDAT	Q 210763	LT3600PDAT
Assistance in operation with counter Requires remote control unit COMTROLL 360 W210768	12 VDC	Outside contacts provided to transmit indicator light data	LINETROLL 3600 PDAT Counter	T 210996	LT3600PDAT-CP
Diagnosis Requires remote control unit COMTROLL 360 W210768	Batteries (power for 4 years in operation)	Connection to a time and date system provided	CABLETROLL 3600 PDAU	R 210764	LT3600PDAU

MV Fault Indicator Linetroll 3600

Application of a LINETROLL 3600 FCI

General

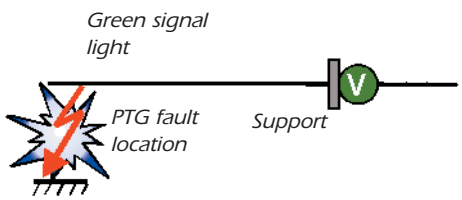
When a LINETROLL 3600 detects a fault current, it alerts the operator either visually with a signal light or through contacts (LINETROLL 3600 AT or AU).
As soon as the existence of a fault is confirmed, the signal light on the LINETROLL 3600 lights up and stays lit until one of the following events occurs:

- Forward voltage returns to the HV line (voltage reset).
- The internal 2 hour time delay ends (timer reset).
- The operator resets the fault indicator using either the "manual" system on the box or the COMTROLL infrared remote control unit (manual reset). The device can be reset manually by turning the display unit to the signal light reset position and then turning it back to its original position.

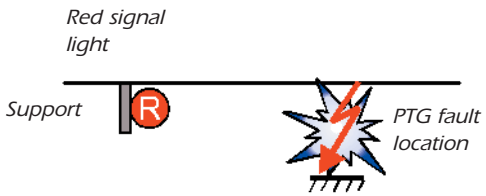
PTG fault indication

The principle of directional PTG fault indication is to locate what part of the line is the origin of a PTG fault. To do this, the LINETROLL 3600 PTG fault indicator has two signal lights:
- A Red light on the front of the box
- A Green light on the back, on the side where the device is supported.

If the GREEN signal light is lit up, the fault is on the GREEN side, i.e. the side of the support.

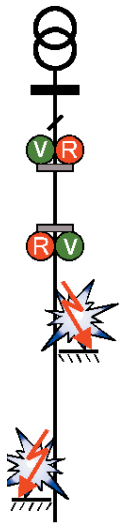


If the RED signal light is lit up, the fault is on the RED side, i.e. the side opposite the support.



PTP fault indication

In this case the LINETROLL 3600 FCI works like a conventional fault indicator and no direction is indicated. All the fault indicators between the feeding substation and the fault flash the green signal light and the red signal light alternately (once every second).



MV Fault Indicator Linetroll 3600

Fault indication characteristics

Sensitivities are defined in the reference set-up shown below. Please inquire for any other set-up desired.

PTG faults

Any PTG fault characterized by a residual current over 60A peak + 10A and a residual voltage of 9kV + 2kV is detected.Once those thresholds are exceeded, the fault indicator waits 40 ms to detect a residual voltage Vr greater than 3.5kV + 0.5kV before indicating that there is indeed a fault.

PTP faults

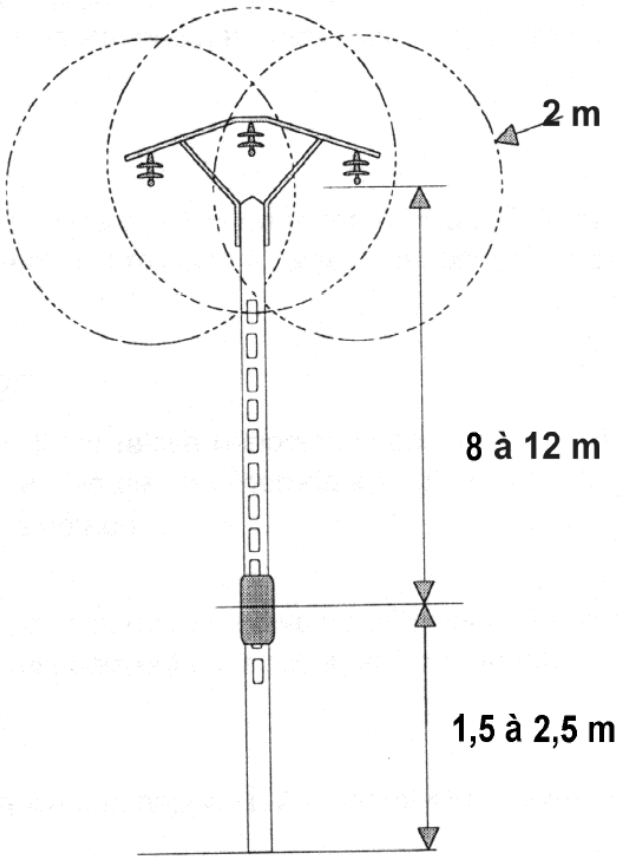
Any PTP fault characterized by a current over 450Arms + 80A is detected.

Double PTG faults

A fault considered as a "double PTG fault" consists of a simultaneous PTG fault on two different phases in a system powered by the same HV transformer but grounded at two geographically distant points. The two faults may be located on the same feeder or on two different feeders. In this case any fault characterized by a residual current over 250Arms + 50A is detected.

Return of forward voltage

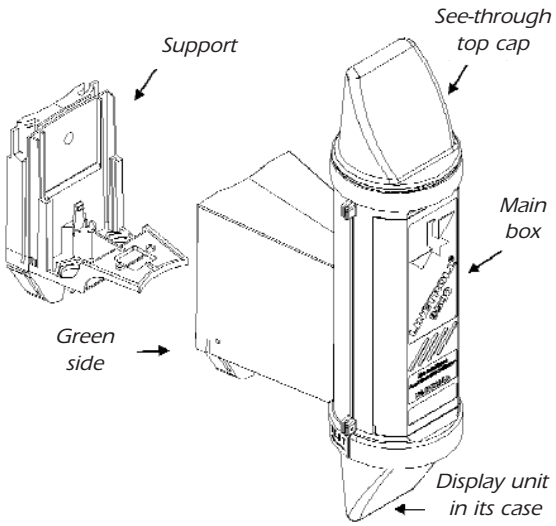
The return of forward HV voltage (resetting the FCI) is accepted when voltage on the system is at least 10kVrms + 2kV.



FCI construction

The LINETROLL 3600 FCI consists of four parts:

- A support to be strapped on the pole with a metal strip. That support may have openings for wiring to connect the device to other equipment and a connection to a time and date system.
- A main box containing the sensors, the electronic boards and the batteries.
- A display unit on the bottom of the box. That display unit may be rotated 90° to improve visibility if required. It is also used to reset and test the fault indicator.
- A top cap screwed onto the main box. That cap may be equipped with an optional solar panel to power the FCI.



European Fuses
Residential Fuses
gF/gG

Reference Numbers, Ratings – gF/gG (Optional Blown-Fuse Indicator)


J218186


X213092


V214608

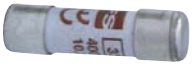

B200745


Q222953


D215122


W217162


P211544


Z201801

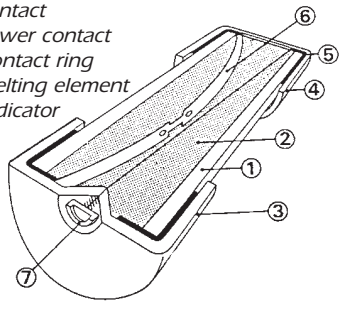

Y217164

Size (mm x mm)	Rated In Current (A)	Rated Voltage	Previous Ref. w/o Indicator	Previous Ref. w/Indicator	Reference Number w/o Indicator	Reference Number w/Indicator	Breaking capacity	Catalog Number w/o Indicator	Catalog Number w/Indicator
6 X 23	2	250V	10013	-	N213590	-	6kA - 250V	FR623GF25V2	
	4		10019	-	Q214098	-		FR623GF25V4	
	(NF) 6*		10023	-	T214607	-		FR623GF25V6	
	10		10031	-	D215628	-		FR623GF25V10	
8.5 X 23	2	250V	10213	12213	K216140	N211543	6kA - 250V	FR823GF25V2	FR823GF25V2I
	4		10219	12219	H216644	V212055		FR823GF25V4	FR823GF25V4I
	6		10223	12223	V217161	M212577		FR823GF25V6	FR823GF25V6I
	(NF) 10*		10231	12231	J218186	X213092		FR823GF25V10	FR823GF25V10
	15		10235	12235	K219222	Q213592		FR823GF25V16	IFR823GF25V16I
10.3 X 25.8	6	250V	10423	12423	M219753	S214100	6kA - 250V	FR1025GF25V6	FR1025GF25V6I
	10		10431	12431	V222198	W214609		FR1025GF25V10	FR1025GF25V10I
	(NF) 16*		10435	12435	Q222953	D215122		FR1025GF25V16	FR1025GF25V16I
8.5 x 31.5	0.5	380V	10609	12609	N201285		20kA - 400V	FR831GF38V0.5	
	1		10611	12611	Y201800			FR831GF38V1	
	2		10613	12613	V211020	K216646		FR831GF38V2	FR831GF38V2I
	4		10619	12619	M211542	X217163		FR831GF38V4	FR831GF38V4I
	6		10623	12623	T212054	B217673		FR831GF38V6	FR831GF38V6I
	8		10627	12627	L212576	L218188		FR831GF38V8	FR831GF38V8I
	10		10631	12631	W213091	Z218706		FR831GF38V10	FR831GF38V10I
	12		10633	12633	P213591	M219224		FR831GF38V12	FR831GF38V12I
	16		10635	12635	R214099	X222200		FR831GF38V16	FR831GF38V16I
	(NF) 20*		10637	12637	V214608	B200745		FR831GF38V20	FR831GF38V20I
	25		10639	12639	E215629	Q201287		FR831GF38V25	FR831GF38V25I
10.3 x 31.5	16	380V	10835	12835	L216141	A201802	20kA - 400V	FR1031GF38V16	FR1031GF38V16I
	20		10837	12837	J216645	X211022		FR1031GF38V20	FR1031GF38V20I
	(NF) 25*		10839	12839	W217162	P211544		FR1031GF38V25	FR1031GF38V25I
8.5 x 36	2	380V	11013	13013	A217672	N212578	20kA - 400V	FR836GF38V2	FR836GF38V2I
	4		11019	13019	K218187	Y213093		FR836GF38V4	FR836GF38V4I
	6		11023	13023	Y218705	R213593		FR836GF38V6	FR836GF38V6I
	10		11031	13031	L219223	T214101		FR836GF38V10	FR836GF38V10I
	16		11035	13035	N219754	X214610		FR836GF38V16	FR836GF38V16I
	20		11037	13037	W222199	E215123		FR836GF38V20	FR836GF38V20I
	25		11039	13039	R222954	G215631		FR836GF38V25	FR836GF38V25I
	32		11043	13043	A200744	N216143		FR836GF38V32	FR836GF38V32I
10.3 x 38	25	380V	11239	13239	P201286	L216647	20kA - 400V	FR1038GF38V25	FR1038GF38V25I
	(NF) 32*		11243	13243	Z201801	Y217164		FR1038GF38V32	FR1038GF38V32I

** Produits homologués*

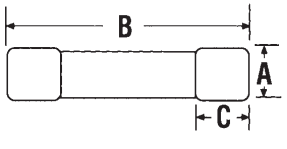
Packaging: *10 pieces*

1 Ceramic body
2 Sand
3 Indicator contact
4 Lower contact
5 Contact ring
6 Melting element
7 Indicator



Dimensions

Fuze Size (mm x mm)	A	B	C
6.3 x 23	6.3	23	5
8.5 x 23	8.5	23	5
10.3 x 25.8	10.3	25.8	6.3
8.5 x 31.5	8.5	31.5	6.3
10.3 x 31.5	10.3	31.5	10
8.5 x 36	8.5	36	6.3
10.3 x 38	10.3	38	10



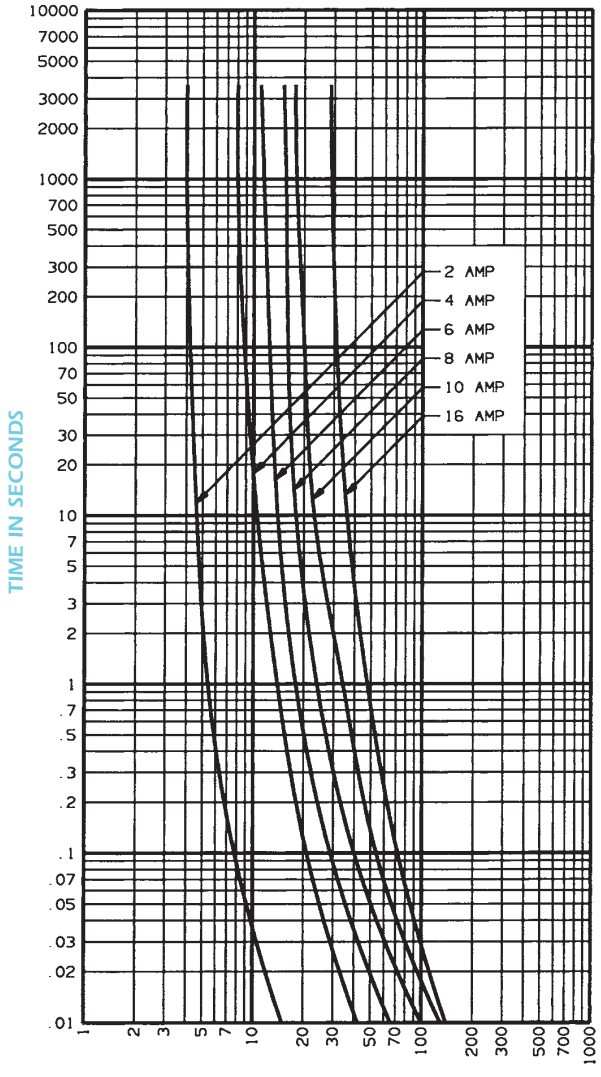
Blown-Fuse Indicator



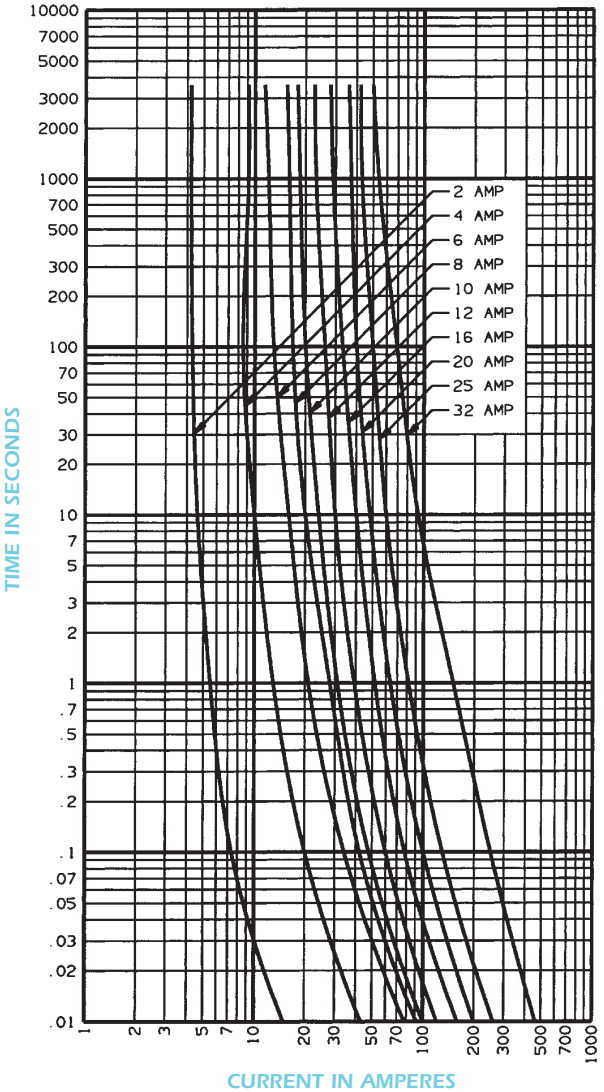
Before *After*

European Fuses
Residential Fuses
gF/gG

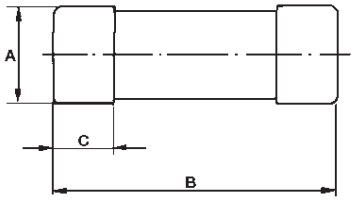
MELTING TIME - CURRENT DATA – 2-16 AMPERES, 250V



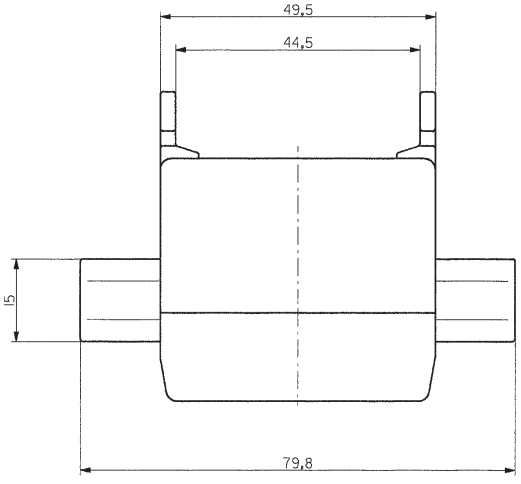
MELTING TIME - CURRENT DATA – 2-32 AMPERES, 380V

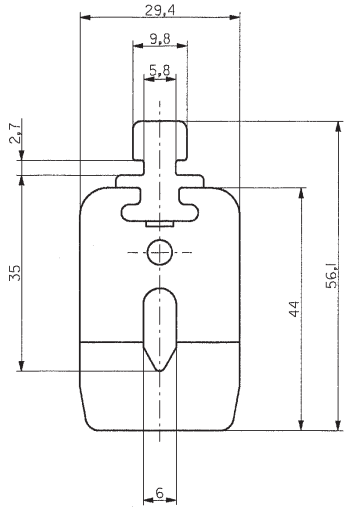


European Fuses
Residential Fuses
aD



	10 x 38	14 x 51	22 x 58
A	10,3	14,3	22,2
B	38	51	58
C	10,5	13,8	16,2





Size	In (A)	Previous Ref	Ref. Number	Icc-Vn	Pack.	Cat. Number
AD: In max: 90A; Vn max: 440V						
10 x 38	AD 15	16134	V216149	20KA-440V	10	10AD44V15
14 x 51	AD 15 AD 30	17134 17141	E222966 M200755	32KA-440V 32KA-440V	10	14AD44V15 14AD44V30
22 x 58	AD 15 AD 30 AD 45 AD 60	18134 18141 18149 18153	M222973 V200762 K201305 T201819	32KA-440V	10	22AD44V15 22AD44V30 22AD44V45 22AD44V60
00	AD 15 AD 30 AD 45 AD 60 AD 90	37134 37141 37149 37153 37161	- - J223430 P223435 X223442	32KA-440V	10	00AD44V45 00AD44V60 00AD44V90
10 x 38 14 x 51 22 x 58		19100	R211569 L228032 M228033		10	FRN1038 FRN1451 FRN2258
00			W216058		10	NH00NEUTRAL



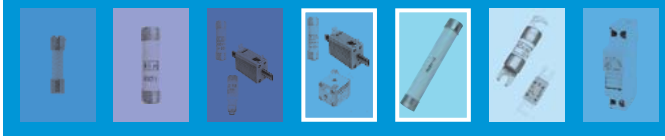
K201305



Neutral

P223435

Standards: EDF HN 62-S-83



Fusibles à couteaux taille 2 avec entraxes 115 et 160

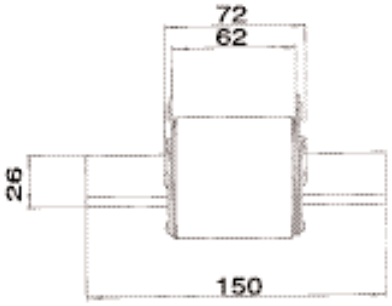
Tension (V)	Taille	Intensité (A)	Référence Entraxe 115	Référence Entraxe 160	Conditionnement
	2	63	C 201850 C	D 217721 C	
	2	80	Z 211070 C	N 218236 C	
	2	100	X 214150 C	B 218754 C	
	2	125	A 214659 C	Q 219273 C	
440	2	160	E 215169 C	R 219803 C	3
	2	200	H 215678 C	C 222481 C	
	2	250	N 216189 C	V 223003 C	
	2	315	L 216693 C	B 200791 C	
	2	400	T 225647 C	T 201336 C	
	2	Neutre	P 223780 E	Q 223781 E	5

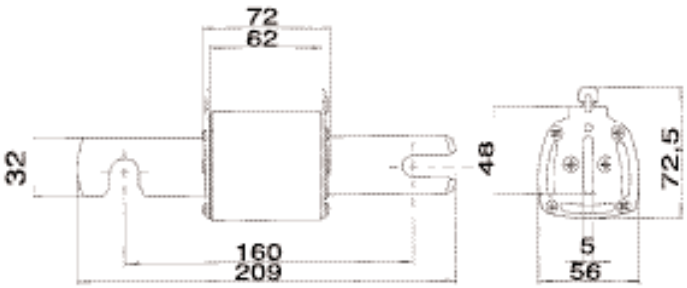


H215678C

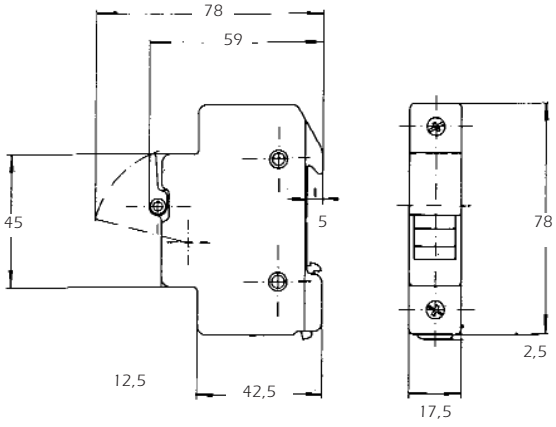


V223003C





European Fuses
Residential Fuses Disconnector
MSD Disconnector



- Blown-fuse indicator (120/690V)
- Cable size:
  - Unipolar: 1 x 16 mm²
  - Unipolar + neutral: 1 x 10 mm²
- IP20

MSD: in maxi. 32A - Vn maxi. 400 V

Poles	Size	Previous Ref.		Reference Number		In-Vn	Catalog Number	
		Standard	+ Indicator	Standard	+ Indicator		Standard	+ Indicator
1	8 x 23	13502	13504	C217674	A218707	10A-250V	MSD8231	MSD8231I
	10 x 25	13602	13604	R201288	Y211023	16A-250V	MSD10251	MSD10251I
	8 x 31	13702	13704	V214102	F215124	20A-400V	MSD8311	MSD8311I
	10 x 31	13802	13804	N218190	P219226	25A-400V	MSD10311	MSD1031I
	10 x 38	13902	13904	S201289	Z211024	32A-400V	MSD10381	MSD1038I
	N	14000		W214103			MSDN	
1+N (1 mod.)	8 x 23	13506	13508	N219225	T222956	10A-250V	MSD8231N	MSD8231NI
	10 x 25	13606	13608	Q211545	Z213094	16A-250V	MSD10251N	MSD10251NI
	8 x 31	13706	13708	H215632	Z217165	20A-400V	MSD8311N	MSD8311NI
	10 x 31	13806	13808	R219757	V222957	25A-400V	MSD10311N	MSD10311NI
	10 x 38	13906	13908	R211546	A213095	32A-400V	MSD10381N	MSD10381NI

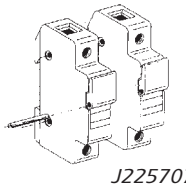

P219226


N219225

Packaging: *12 pieces*

Assembly pin

N. Mod.	Previous Ref.	Reference Number	Catalog Number
2	14030	G215125	MSCMSDMAASS2
3	14031	Q216145	MSCMSDMAASS3
4	14032	A217166	MSCMSDMAASS4


J225707

Packaging: *10 pieces*

Approvals: *IEC 269-3-1, NFC 61.201*
Approvals: *NF/USE (MSD)*

European Fuses
DIN Forklift Fuses
CNN DIN, CNL



Ferraz Shawmut is launching a brand-new range of fuses for protecting batteries. It had been developed for meeting very severe uses.
These fuses are packaged by 5 in carton box.
They can be fitted on FBT fuse bases as per DIN 43 560 fuse dimensions

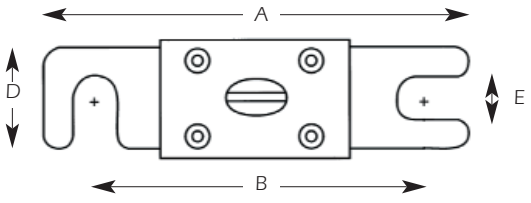
Voltage (V)	Current (A)	Reference Number	Catalog Number
	35	T216332	CNL35 DIN
	40	L217360	CNL40 DIN
	50	A218385	CNL50 DIN
	60	E219424	CNL60 DIN
	80	Y219947	CNL80 DIN
	100	K201995	CNL100 DIN
	125	K211218	CNL125 DIN
	130	A211738	CNL130 DIN
80VAC/DC	150	J212252	CNL150 DIN
Breaking capacity	175	W212769	CNL175 DIN
= 2500A	200	J213287	CNL200 DIN
	225	A213785	CNL225 DIN
	250	J214299	CNL250 DIN
	275	J214805	CNL275 DIN
	300	L215313	CNL300 DIN
	325	P215822	CNL325 DIN
	350	X216841	CNL350 DIN
	400	T217873	CNL400 DIN
	500	Q218905	CNL500 DIN
Fuse base		A092092	SFBT

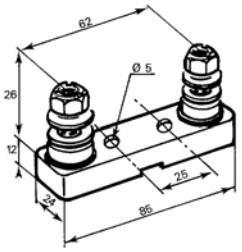
Voltage (V)	Rating (A)	Reference Number	Catalog Number
	10	E228831	CNN10 DIN
	35	F228832	CNN35 DIN
	40	G228833	CNN40 DIN
	50	H228834	CNN50 DIN
	60	J228835	CNN60 DIN
	80	K228836	CNN80 DIN
	90	L228837	CNN90 DIN
	100	M228838	CNN100 DIN
130VAC/AC	125	N228839	CNN125 DIN
75VDC	150	P228840	CNN150 DIN
Breaking capacity	175	Q228841	CNN175 DIN
2500A@75V DC	180	N229874	CNN180 DIN
	200	R228842	CNN200 DIN
	225	S228843	CNN225 DIN
	250	T228844	CNN250 DIN
	275	V228845	CNN275 DIN
	300	W228846	CNN300 DIN
	325	X228874	CNN325 DIN
	350	Y228848	CNN350 DIN
130V AC	400	Z228849	CNN400 DIN
48V DC	500	A228850	CNN500 DIN
Breaking capacity	600	B228851	CNN600 DIN
2500A @ 48V DC	700	C228852	CNN700 DIN
	800	D228853	CNN800 DIN
Fuse base		A092092	SFBT

Dimensions

	A mm	B mm	C mm	D mm	E mm
CNLDIN CNNDIN	82	60	23 max	20	11

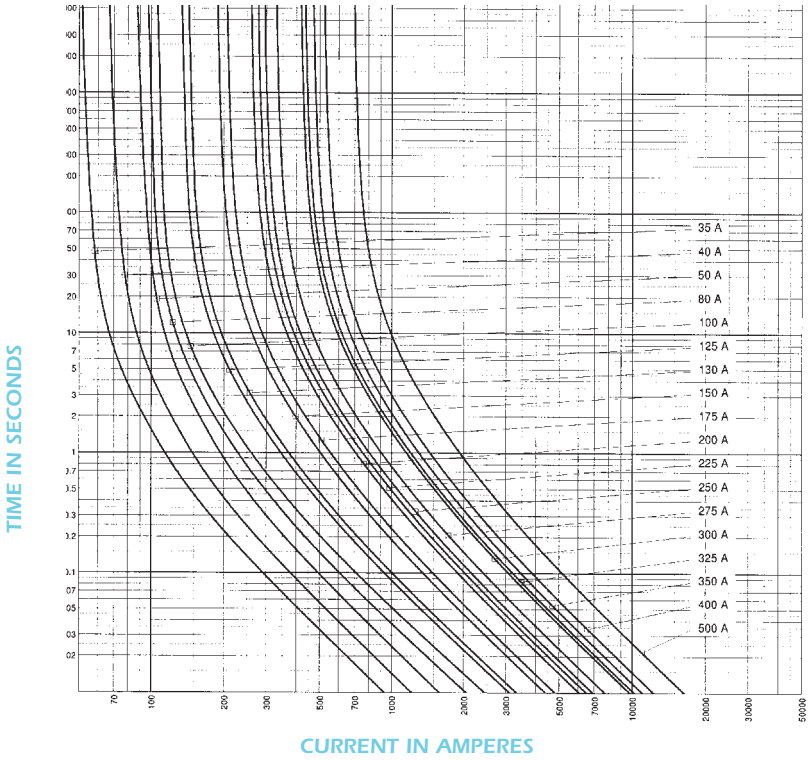
** Thickness: 11 mm max*



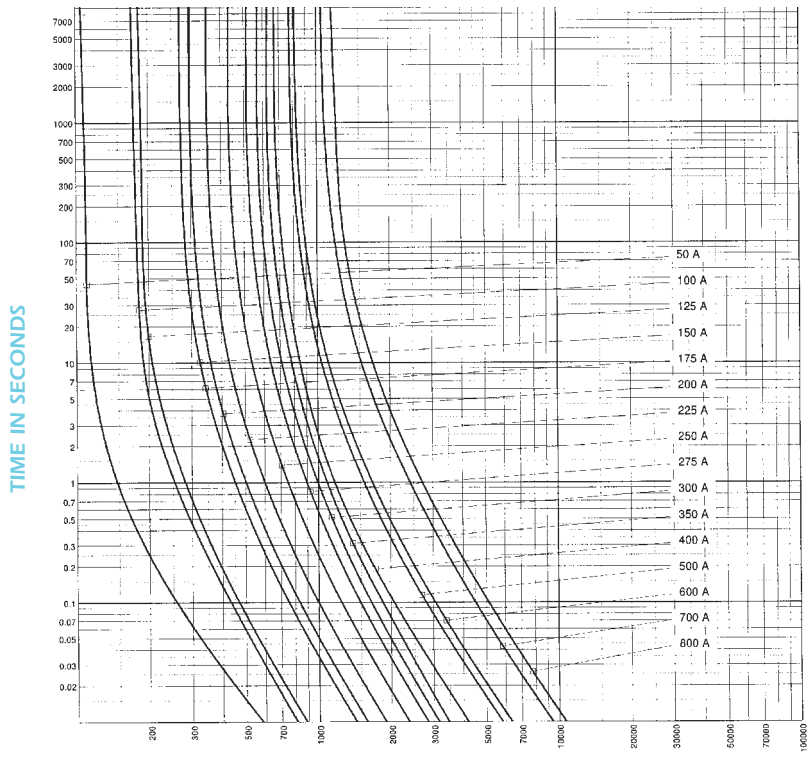


European Fuses
DIN Forklift Fuses
CNN DIN, CNL

MELTING TIME – CURRENT DATA – CNL35–500



MELTING TIME – CURRENT DATA – CNN10–800



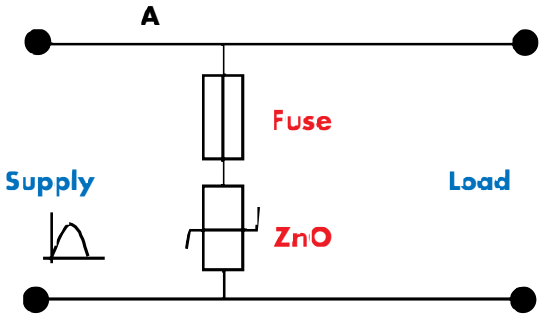
European Fuses
Surge Suppression Fuses

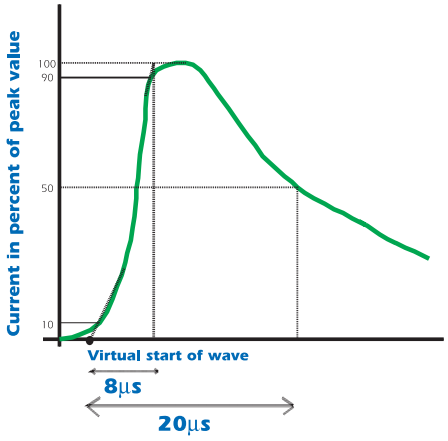
PROTECTION AGAINST LOW VOLTAGE ARRESTER FAILURE

When an arrester fails (it can no longer contain overvoltage and thus short circuits), a fuse is needed to prevent its explosion. If the fuse is equipped with a trip-indicator, the user will be aware that the arrester must be replaced.

In order to match a wider market demand, Ferraz-SHAWMUT also offers the fuse alone plus its corresponding accessories, holder and microswitch which allows a remote signalling. The attached list provides a selection of "Isolating fuses" able to withstand once the max peak permissible current Imax. As a matter of principle the selected fuse automatically withstands 20 times the lower peak current I2(and 3 times the I3, former lower peak current in old standards).

PROTECTION CIRCUIT





DEFINITION OF THE STANDARD 8/20MS WAVE

Sometimes the fuse could also be located in A. In this case verify that the load current is compatible with the fuse current rating.

European Fuses
Surge Suppression Fuses

Isolating fuse list

Imax (kA) one pulse	Designation	Reference Number	Voltage rating (V)	Current rating (A)	Breaking capacity	Catalog Number
1	250V FC 6,3A - 5x20	E 205 785	250	6.3	250V-6kA	MI5FC 25V 6,3
1	250V FC 6,3A - 5x20 AL	Z 205 044	250	6.3	250V-6kA	MI5FCP 25V 6,3
2.5	250V FC 10A - 5x20	T 205 683	250	10	250V-6kA	MI5FC 25V 10
2.5	250V FC 10A - 5x20 AL	B 205 046	250	10	250V-6kA	MI5FCP 25V 10
3	250V SA 20A - 6x32	J 084 418	250	20	250V-200kA	MI6SA 25V 20
4.5	Fus. cil. ind. GI 10x38 S/I 20A	D211028	500	20	500V-120kA	FR10GG 50V 20
4.5	6,921 Cp gRC 14x51 - 50A	N 220 950	690	50	690V-300kA	FR14GC 69V 50T
5	Fus. cil. ind. GI 10x38 S/I 25A	E 213099	500	25	500V-120kA	FR10GG 50V 25
5	621 Cp URC 14x51-63A	V 220 910	600	63	600V-100kA	FR14UC 60V 63T
6.5	Fus. cil. ind. GI 10x38 S/I 32A	A 214107	400	32	400V-120kA	FR10GG 40V 32
6.5	6,921 Cp gRC 22x58-80	X 220 820	690	80	690V-300kA	FR22GC 69V 80T
8-10	Fus. cil. ind. GI 14x51 S/I 32A	W 216656	500	32	500V-120kA	FR14GG 50V 32
8-10	Fus. Cp 14x51 GGP 32A	P 200757	500	32	500V-120kA	FR14GG 50V 32P
8-10	6,921 Cp gRC 22x58-100	C 220 917	690	100	690V-300kA	FR22GC 69V 100T
15	Fus. cil. ind. GI 14x51 S/I 40A	X 218198	500	40	500V-120kA	FR14GG 50V 40
15	Fus. Cp 14x51 GGP 40A	P 201815	500	40	500V-120kA	FR14GG 50V 40P
15	621 Cp URD 22x58-135	B 220 709	600	135	600V-300kA	FR22UD 60V 135T
20	Fus. cil. ind. GI 22x58 S/I 63A	Y 215646	690	63	690V-80kA	FR22GG 69V 63
20	Fus. Cp 22x58 GGP 63A	S 214629	500	63	500V-120kA	FR22GG 50V 63P
25	Fus. cil. ind. GI 22x58 S/I 80A	Q 217180	690	80	690V-80kA	FR22GG 69V 80
25	Fus. Cp 22x58 GGP 80A	F 216159	500	80	500V-120kA	FR22GG 50V 80P
35-40	Fus. cil. ind. GI 22x58 S/I 100A	E 218 205	500	100	500V-120kA	FR22GG 50V 100
35-40	Fus. Cp 22x58 GGP 100A	T 217183	500	100	500V-120kA	FR22GG 50V 100P
50-60	Fus. cil. ind. GI 22x58 S/I 125A	J 219773	400	125	400V-100kA	FR22GG 40V 125
50-60	Fus. Cp 22x58 GGP 125	H 218208	400	125	400V-120kA	FR22GG 40V 125P
65	gG 00 L 160	D 098 305	500	160	500V-100kA	NH00GG 50V 160-3
65	gG 1/160 P	G 095 594	500	160	500V-100kA	NH1GG 50V 160-4
65	Fus. GI NH1 C/P 160A	Z 222478	690	160	690V-80kA	NH1GG 69V 160P-2
75-100	gG 0 L/200	H 095 020	500	200	500V-100kA	NH0GG 50V 200-3
75-100	gG 1/200P	H 095 595	500	200	500V-100kA	NH1GG 50V 200-4
75-100	Fus. GI NH1 C/P 200A	R 223000	690	200	690V-80kA	NH1GG 69V 200P-2
75-100	6,9 URD 32 TTF 0900	Q 300 072	690	900	690V-200kA	PC32UD 69V 900TF
75-100	6,9 URD 32 D11A 0900	X 300 193	690	900	690V-200kA	PC32UD 69V 900 D 1A
120	gG 1 L/250	Z 095 035	500	250	500V-100kA	NH1GG 50V 250-3
120	gG 1/250 P	K 095 597	500	250	500V-100kA	NH1GG 50V 250-4
120	Fus. GI NH2 C/P 250A	T 214147	690	250	690V-80kA	NH2GG 69V 250P-2
120	6,9 URD 32 TTF 1000	S 300 074	690	1,000	690V-200kA	PC32UD 69V 1000 TF
120	6,9 URD 32 D11A 1000	Y 300 194	690	1,000	690V-200kA	PC32 UD 69V 10CD 1A

European Fuses
Rotating Fuses
C1G Range

Ferraz Shawmut rotating fuses are specially designed for with standing very high mechanical accelerations, up to 6000g. They are perfectly suited to protecting rectifying diodes used in rotating excitors of power producing alternators. Ferraz Shawmut provides every type of mechanical connection required by worldwide manufacturers of rotating excitors.





Features / Benefits

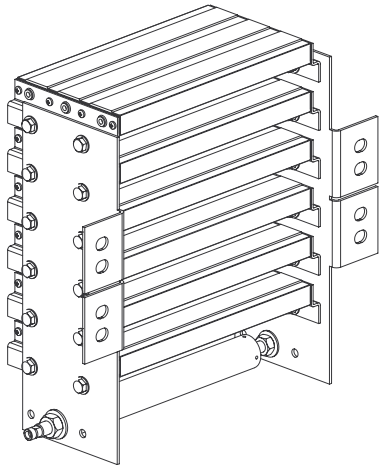
- Glass fiber body for reinforced mechanical withstand and stable dimensions.
- Internal reinforcement by alumina spacer for withstanding very high accelerations.
- Fuse elements are selected to comply with different turbogenerator applications (DSS - WSS - MSS).

Voltage	Ratings
300 V	200 to 550 A
400 V	1000 A
500 V	400 A
600 V	250 A to 950 A
700 V	400 A to 950 A
750 V	610 A to 800 A
800 V	500 A to 1200 A
850 V	500 A to 1340 A
1000 V	15 A to 400 A

Ask us for further details

European Fuses
CV4 Flat Fuses
250V to 7.2kVDC - 3.6kV to 10kVAC

Ferraz Shawmut FLAT FUSE range



High technology Ultra Fast fuses for protection of:
- Voltage commutated inverters (UPS and drives) (from 250 Vdc to 7200 Vdc)
- Medium Voltage drives or softstarters (from 3.6 kVac to 10 kVac)

Flat fuse bodies offer you:

- A wide range of rated voltages: these flat body fuse links are available in various body sizes
providing protection for high power semiconductors such as diodes, thyristors, GTOs, IGBTs,
built into various devices. Thanks to their long flat bodies, nominal voltage can reach 10 kVac
(CV4 technology size "2 x 15 x 27").
This is a very good solution for Medium Voltage drive or softstarter protection.
Flat fuses have been designed to provide protection solutions for difficult applications (these flat fuses give low I^2t responses and have extremely high breaking capacities).
- Easy assembly of several bodies connected in parallel to reach a sufficient rating.
for example:
325A (one body "2x15x27" 5kV CV4) / 1800A (6 bodies "2x15x27" 5kV CV4 in parallel)
250A (one body "2x15x27" 7.2KV CV4) / 1190A (5 bodies "2x15x27" 7.2KV CV4 in parallel)
- Significant improvement of the current carrying capability of the fuse thanks to the possibility of forced air cooling.
- Low circuit inductance: (from 10 to 50 nH depending on shape and mounting)

Electrical benefits

In nominal conditions, Flat Fuses add a minimum inductance (necessary in a fast switching converter: they can be used in Voltage commutated inverters).
In case of a fault, the Flat Fuses are able to ensure total protection of a GTO or rupturing case protection of an IGBT (Flat Fuses avoid IGBT case explosion and keep the busbar safe).
Also, they are able to ensure quick disconnection of a damaged module in an inverter.

Mechanical benefits

They are easy to install on a busbar and maintenance is also easy.
This is only an outline of the Ferraz Shawmut Flat Fuse's possibilities.
Technical Support helps you make the best choice both technically and economically speaking.

For more information on Flat Fuse range, please contact Ferraz Shawmut Technical Support.

American Fuses
Cable Protectors
CP & CPH



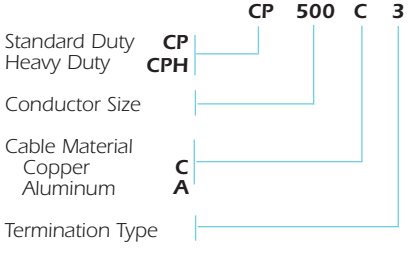
Ferraz Shawmut CP Cable Protectors are special purpose limiters which are crimped or bolted to cables to clear and isolate faults quickly, increasing the reliability of service entrance and distribution runs. They are current limiting with a 200,000A interrupting rating, yet will carry low cable overloads which are handled by standard protective devices. Cable Protectors are rated in terms of cable size and material (Al or Cu). Heavier duty CPH Cable Protectors are available on special order. Heat shrinkable (HS) tubing can be specified for field installation. Refer to the Application Information Section for more information.

Reference Numbers

Description			Copper		Aluminium	
Type	Termination	Cable size*	Catalog Number	Reference Number	Catalog Number	Reference Number
1	Cable to cable	2	CP2C1	E217814	-	-
		1/0	CP1/0C1	B200883	-	-
		2/0	CP2/0C1	A201940	-	-
		4/0	CP4/0C1	Y214243	CP4/0A1	N212716
		250kcmil	CP250C1	X213230	CP250A1	R211684
		350kcmil	CP350C1	W223096	CP350A1	C218847
		500kcmil	CP500C1	D200885	CP500A1	D218848
		750kcmil	CP750C1	M216280	CP750A1	A212198
3	Cable to offset bus	2	CP2C3	Q218330	-	-
		1/0	CP1/0C3	N201423	-	-
		2/0	CP2/0C3	Y211161	-	-
		4/0	CP4/0C3	E215261	CP4/0A3	Y213231
		250kcmil	CP250C3	X214242	CP250A3	X212195
		350kcmil	CP350C3	P201424	CP350A3	R219366
		400kcmil	CP400C3	R218331	-	-
		500kcmil	CP500C3	T211686	CP500A3	S219367
		750kcmil	CP750C3	D217307	CP750A3	A214245
5	Straight bus to offset bus	4/0	CP4/0C5	K216278	CP4/0C5	K216278
		250kcmil	CP250C5	Z214750	CP250C5	Z214750
		350kcmil	CP350C5	Z211162	CP350C5	Z211162
		500kcmil	CP500C5	Z214244	CP500C5	Z214244
		750kcmil	CP750C5	T218333	CP750C5	T218333
6	Mole to cable	4/0	CP4/0C6	B217305	CP4/0A6	P213729
		250kcmil	CP250C6	E215767	CP250A6	M212715
		350kcmil	CP350C6	S211685	CP350A6	E222575
		500kcmil	CP500C6	F215262	CP500A6	F222576
		750kcmil	CP750C6	F218850	CP750A6	G215769
8	Mole to offset bus	4/0	CP4/0C8	F217815	CP4/0C8	F217815
		250kcmil	CP250C8	K216784	CP250C8	K216784
		350kcmil	CP350C8	Y212196	CP350C8	Y212196
		500kcmil	CP500C8	L216279	CP500C8	L216279
		750kcmil	CP750C8	V219369	CP750C8	V219369

** kcmil = MCM*

Catalog Numbering System



Approvals

- Ferraz Shawmut Certified

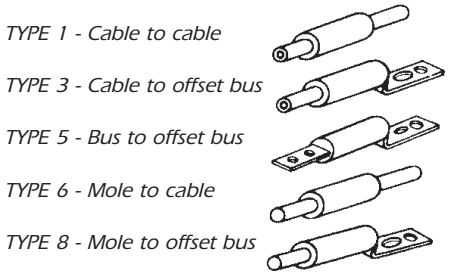
Features/Benefits

- Fiberglass bodies for dimensional stability in harsh environments
- Catalog number stamped into terminal for permanent identification
- Crimp terminals for aluminum cable include oxide inhibitor
- Molded rubber boots or heat shrinkable tubing available for insulation and protection

Ratings

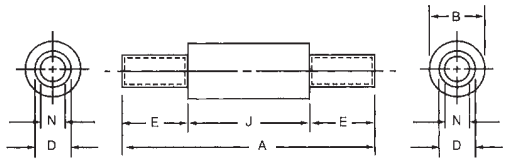
- Sizes: #2 to 750kcmil copper
  4/0 to 750kcmil aluminium
  600VAC, 200kA I.R.

American Fuses
Cable Protectors
CP & CPH

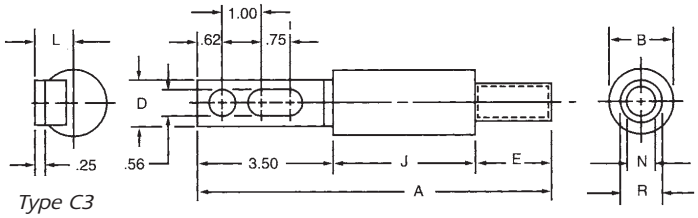


Type C1 – Dimensions

Catalog Number	Reference Number	Cable* size	Dimensions-Inches (mm)					
			A	B	D	E	J	N
CP2C1	E217814	#2	7.12 (180)	1.44 (37)	.42 (11)	1.75 (44)	3.62 (92)	.31 (7.9)
CP1/0C1	B200883	1/0	7.12 (180)	1.44 (37)	.52 (13)	1.75 (44)	3.62 (92)	.39 (9.9)
CP2/0C1	A201940	2/0	7.12 (180)	1.44 (37)	.56 (14)	1.75 (44)	3.62 (92)	.44 (11)
CP4/0C1	Y214243	4/0	7.12 (180)	1.44 (37)	.68 (17)	1.75 (44)	3.62 (92)	.55 (14)
CP250C1	X213230	250kcmil	7.38 (188)	1.44 (37)	.75 (19)	1.88 (48)	3.62 (92)	.62 (16)
CP350C1	W223096	350kcmil	7.62 (194)	1.62 (41)	.88 (22)	2.00 (51)	3.62 (92)	.71 (18)
CP500C1	D200885	500kcmil	9.38 (238)	1.88 (48)	1.05 (27)	2.88 (73)	3.62 (92)	.85 (22)
CP750C1	M216280	750kcmil	9.51 (242)	2.50 (64)	1.32 (34)	2.88 (73)	3.75 (95)	1.06 (27)



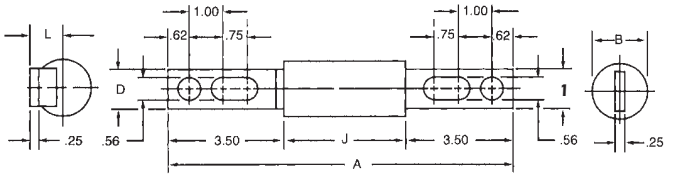
Type C1



Type C3

Type C3 – Dimensions

Catalog Number	Reference Number	Cable* size	Dimensions-Inches (mm)							
			A	B	D	E	J	L	N	R
CP2C3	Q218330	#2	8.87 (225)	1.44 (37)	1.12 (28)	1.75 (44)	3.62 (92)	.96 (24)	.31 (7.9)	.42 (11)
CP1/0C3	N201423	1/0	8.87 (225)	1.44 (37)	1.12 (28)	1.75 (44)	3.62 (92)	.96 (24)	.39 (9.9)	.52 (13)
CP2/0C3	Y211161	2/0	8.87 (225)	1.44 (37)	1.12 (28)	1.75 (44)	3.62 (92)	.96 (24)	.44 (11)	.56 (14)
CP4/0C3	E215261	4/0	8.87 (225)	1.44 (37)	1.12 (28)	1.75 (44)	3.62 (92)	.96 (24)	.55 (14)	.68 (17)
CP250C3	X214242	250kcmil	9.00 (229)	1.44 (37)	1.12 (28)	1.88 (48)	3.62 (92)	.96 (24)	.62 (16)	.75 (19)
CP350C3	P201424	350kcmil	9.12 (232)	1.62 (41)	1.12 (28)	2.00 (51)	3.62 (92)	.96 (24)	.71 (18)	.88 (22)
CP400C3	R218331	400kcmil	9.12 (232)	1.62 (41)	1.12 (28)	2.00 (51)	3.62 (92)	.96 (24)	.75 (19)	.88 (22)
CP500C3	T211686	500kcmil	10 .00 (254)	1.88 (48)	1.62 (41)	2.88 (73)	3.62 (92)	1.19 (30)	.85 (22)	1.05 (27)
CP750C3	D217307	750kcmil	10.13 (257)	2.50 (64)	2.00 (51)	2.88 (73)	3.75 (95)	1.31 (33)	1.06 (27)	1.32 (34)



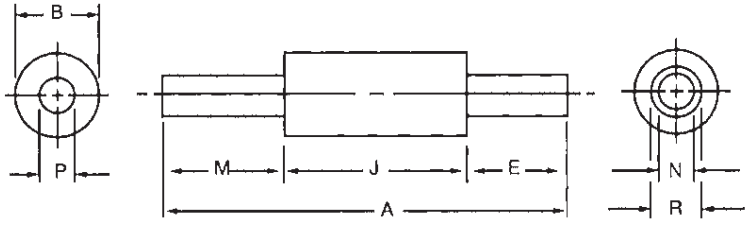
Type C5

Type C5 – Dimensions

Catalog Number	Reference Number	Cable* size	Dimensions-Inches (mm)					
			A	B	D	J	L	M
CP4/0C5	K216278	4/0	10.37 (263)	1.44 (37)	1.12 (28)	3.62 (92)	.96 (24)	1.12 (28)
CP250C5	Z214750	250kcmil	10.37 (263)	1.44 (37)	1.12 (28)	3.62 (92)	.96 (24)	1.12 (28)
CP350C5	Z211162	350kcmil	10.37 (263)	1.62 (41)	1.12 (28)	3.62 (92)	.96 (24)	1.12 (28)
CP500C5	Z214244	500kcmil	10.37 (263)	1.88 (48)	1.62 (41)	3.62 (92)	1.19 (30)	1.50 (38)
CP750C5	T218333	750kcmil	10.50 (267)	2.50 (64)	2.00 (51)	3.75 (95)	1.31 (33)	2.00 (51)

** kcmil = MCM*

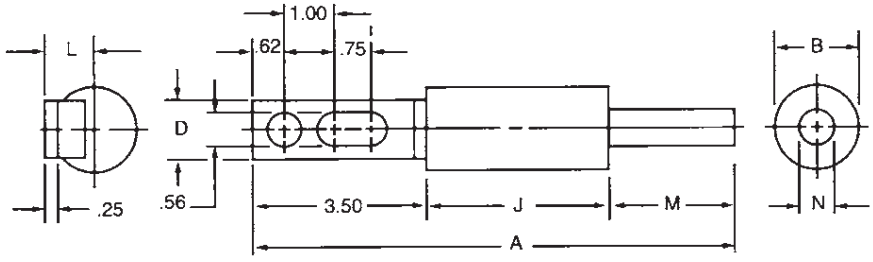
American Fuses
Cable Protectors
CP & CPH



Type C6

Type C6 – Dimensions

Catalog Number	Reference Number	Cable* size	Dimensions-Inches (mm)							
			A	B	E	J	M	N	P	R
CP4/0C6	B217305	4/0	7.87 (200)	1.44 (37)	1.75 (44)	3.62 (92)	2.50 (64)	.55 (14)	.52 (13)	.68 (17)
CP250C6	E215767	250kcmil	8.00 (203)	1.44 (37)	1.88 (48)	3.62 (92)	2.50 (64)	.62 (16)	.58 (14)	.75 (19)
CP350C6	S211685	350kcmil	8.12 (206)	1.62 (41)	2.00 (51)	3.62 (92)	2.50 (64)	.71 (18)	.68 (17)	.88 (22)
CP500C6	F215262	500kcmil	9 .38 (238)	1.88 (48)	2.88 (73)	3.62 (92)	2.88 (73)	.85 (22)	.81 (21)	1.05 (27)
CP750C6	F218850	750kcmil	9.51 (427)	2.50 (64)	2.88 (73)	3.75 (95)	2.88 (73)	1.06 (27)	1.00 (25)	1.32 (34)



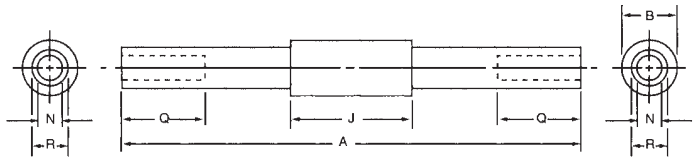
Type C8

Type C8 – Dimensions

Catalog Number	Reference Number	size	Cable* Dimensions-Inches (mm)						
			A	B	D	J	L	M	N
CP4/0C8	F217815	4/0	9.62 (244)	1.44 (37)	1.12 (28)	3.62 (92)	.96 (24)	2.50 (64)	.52 (13)
CP250C8	K216784	250kcmil	9.62 (244)	1.44 (37)	1.12 (28)	3.62 (92)	.96 (24)	2.50 (64)	.58 (14)
CP350C8	Y212196	350kcmil	9.62 (244)	1.62 (41)	1.12 (28)	3.62 (92)	.96 (24)	2.50 (64)	.68 (17)
CP500C8	L216279	500kcmil	10.00 (254)	1.88 (48)	1.62 (41)	3.62 (92)	1.19 (30)	2.88 (73)	.81 (21)
CP750C8	V219369	750kcmil	10.13 (257)	2.50 (64)	2.00 (51)	3.75 (95)	1.31 (33)	2.88 (73)	1.00 (25)

** kcmil = MCM*

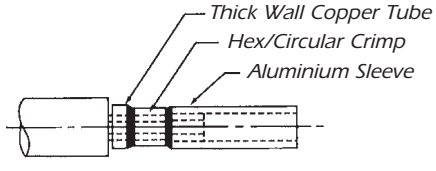
American Fuses
Cable Protectors
CP & CPH



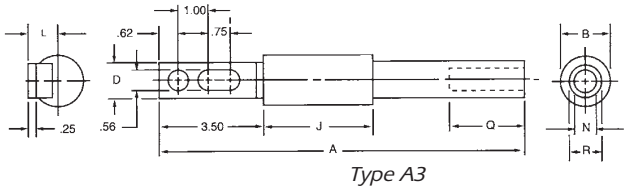
Type A1

Type A1 – Dimensions

Catalog Number	Reference Number	Cable* size	Dimensions-Inches (mm)					
			A	B	J	N	Q	R
CP4/0A1	N212716	4/0	13.88 (353)	1.44 (37)	3.62 (92)	.55 (14)	2.50 (64)	.85 (22)
CP250A1	R211684	250kcmil	13.88 (353)	1.44 (37)	3.62 (92)	.59 (15)	2.50 (64)	.94 (24)
CP350A1	C218847	350kcmil	13.88 (353)	1.62 (41)	3.62 (92)	.71 (18)	2.50 (64)	1.13 (29)
CP500A1	D218848	500kcmil	15.38 (391)	1.88 (48)	3.62 (92)	.85 (22)	2.88 (73)	1.33 (34)
CP750A1	A212198	750kcmil	15.50 (394)	2.50 (64)	3.75 (95)	1.06 (27)	2.88 (73)	1.62 (41)



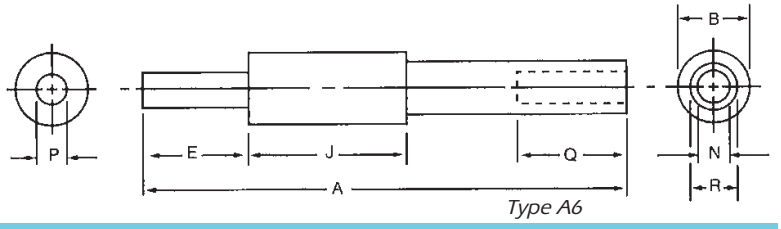
Typical Terminal Assembly Details



Type A3

Type A3 – Dimensions

Catalog Number	Reference Number	Cable* size	Dimensions-Inches (mm)							
			A	B	D	J	L	N	Q	R
CP4/0A3	Y213231	4/0	12.25 (311)	1.44 (37)	1.12 (28)	3.62 (92)	.96 (24)	.55 (14)	2.50 (64)	.85 (22)
CP250A3	X212195	250kcmil	12.25 (311)	1.44 (37)	1.12 (28)	3.62 (92)	.96 (24)	.59 (15)	2.50 (64)	.94 (24)
CP350A3	R219366	350kcmil	12.25 (311)	1.62 (41)	1.12 (28)	3.62 (92)	.96 (24)	.71 (18)	2.50 (64)	1.13 (29)
CP500A3	S219367	500kcmil	13.00 (330)	1.88 (48)	1.62 (41)	3.62 (92)	1.19 (30)	.85 (22)	2.88 (73)	1.33 (34)
CP750A3	A214245	750kcmil	13.12 (333)	2.50 (64)	2.00 (51)	3.75 (95)	1.31 (33)	1.06 (27)	2.88 (73)	1.62 (41)



Type A6

Type A6 – Dimensions

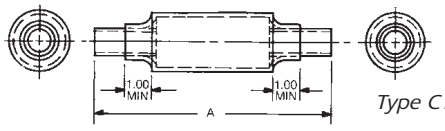
Catalog Number	Reference Number	Cable* size	Dimensions-Inches (mm)							
			A	B	E	J	N	P	Q	R
CP4/0A6	P213729	4/0	11.25 (286)	1.44 (37)	2.50 (64)	3.62 (92)	.55 (14)	.52 (13)	2.50 (64)	.85 (22)
CP250A6	M212715	250kcmil	11.25 (286)	1.44 (37)	2.50 (64)	3.62 (92)	.59 (15)	.58 (14)	2.50 (64)	.94 (24)
CP350A6	E222575	350kcmil	11.25 (286)	1.62 (41)	2.50 (64)	3.62 (92)	.71 (18)	.68 (17)	2.50 (64)	1.13 (29)
CP500A6	F222576	500kcmil	12.38 (314)	1.88 (48)	2.88 (73)	3.62 (92)	.85 (22)	.81 (21)	2.88 (73)	1.33 (34)
CP750A6	G215769	750kcmil	12.50 (318)	2.50 (64)	2.88 (73)	3.75 (95)	1.06 (27)	1.00 (25)	2.88 (73)	1.59 (41)

** kcmil = MCM*
Note: Inside surface of sleeve ends is coated with oxide inhibitor and capped.

Type 5 – Use Copper Cable Protectors Type C5
Type 8 – Use Copper Cable Protectors Type C8

American Fuses
Cable Protectors
CP & CPH

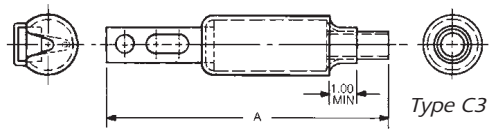
Copper Cable Protectors with Heat Shrinkable Tubing*



Type C1

Type C1, Copper Cable – Dimensions

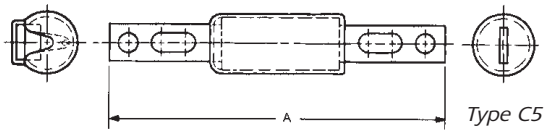
Cable size	A		Cable protector with heat shrinkable tubing	
	Inches	mm	Cat. Number	Ref. Number
4/0	7.12	(180)	CP4/0C1-HS	A214751
250kcmil	7.38	(188)	CP250C1-HS	N213728
350kcmil	7.62	(194)	CP350C1-HS	C200884
500kcmil	9.38	(238)	CP500C1-HS	C201942
750kcmil	9.51	(242)	CP750C1-HS	N216787



Type C3

Type C3, Copper Cable – Dimensions

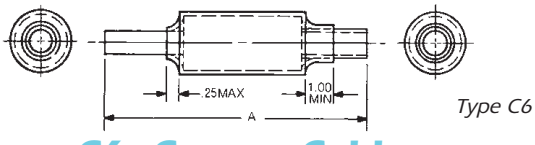
Cable size	A		Cable protector with heat shrinkable tubing	
	Inches	mm	Cat. Number	Ref. Number
4/0	8.87	(225)	CP4/0C3-HS	Z230367
250kcmil	9.00	(229)	CP250C3-HS	L230355
350kcmil	9.12	(232)	CP350C3-HS	B201941
500kcmil	10.00	(254)	CP500C3-HS	P212717
750kcmil	10.13	(257)	CP750C3-HS	H217817



Type C5

Type C5, Copper Cable – Dimensions

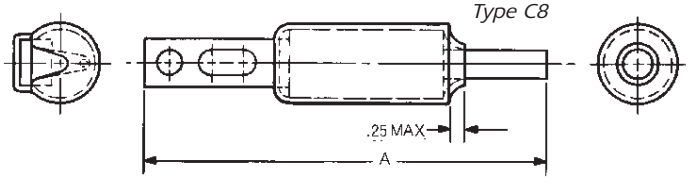
Cable size	A		Cable protector with heat shrinkable tubing	
	Inches	mm	Cat. Number	Ref. Number
4/0	10.37	(263)	CP4/0C5-HS	A230368
250kcmil	10.37	(263)	CP250C5-HS	D215260
350kcmil	10.37	(263)	CP350C5-HS	R230360
500kcmil	10.37	(263)	CP500C5-HS	B214752
750kcmil	10.50	(267)	CP750C5-HS	Q230382



Type C6

Type C6, Copper Cable – Dimensions

Cable size	A		Cable protector with heat shrinkable tubing	
	Inches	mm	Cat. Number	Ref. Number
4/0	7.87	(200)	CP4/0C6-HS	B230369
250kcmil	8.00	(203)	CP250C6-HS	M230356
350kcmil	8.12	(206)	CP350C6-HS	S230361
500kcmil	9.38	(238)	CP500C6-HS	L230378
750kcmil	9.51	(242)	CP750C6-HS	R230383



Type C8

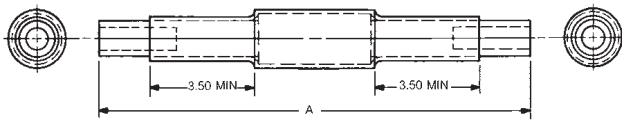
Type C8, Copper Cable – Dimensions

Cable size	A		Cable protector with heat shrinkable tubing	
	Inches	mm	Cat. Number	Ref. Number
4/0	9.62	(244)	CP4/0C8-HS	C230370
250kcmil	9.62	(244)	CP250C8-HS	A217304
350kcmil	9.62	(244)	CP350C8-HS	V230363
500kcmil	10.00	(254)	CP500C8-HS	M216786
750kcmil	10.13	(257)	CP750C8-HS	S230384

** Transparent heat shrinkable tubing is supplied separately with -**HS** Catalog No. Maximum curing conditions: 5 seconds at 450˚F.*

American Fuses
Cable Protectors
CP & CPH

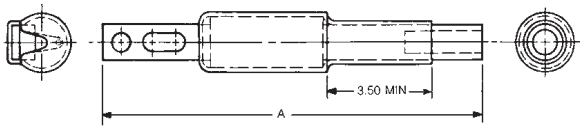
Aluminum Cable Protectors with Heat Shrinkable Tubing*



Type A1

Type A1, Copper Cable – Dimensions

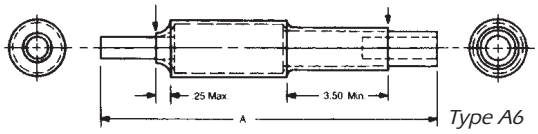
Cable size	A		Cable protector with heat shrinkable tubing	
	Inches	mm	Cat. Number	Ref. Number
4/0	13.88	(353)	CP4/0A1-HS	W230364
250kcmil	13.88	(353)	CP250A1-HS	G230351
350kcmil	13.88	(353)	CP350A1-HS	N230357
500kcmil	15.38	(391)	CP500A1-HS	F230373
750kcmil	15.50	(394)	CP750A1-HS	Q212718



Type A3

Type A3, Copper Cable – Dimensions

Cable size	A		Cable protector with heat shrinkable tubing	
	Inches	mm	Cat. Number	Ref. Number
4/0	12.25	(311)	CP4/0A3-HS	X230365
250kcmil	12.25	(311)	CP250A3-HS	H230352
350kcmil	12.25	(311)	CP350A3-HS	N219892
500kcmil	13.00	(330)	CP500A3-HS	G230374
750kcmil	13.12	(333)	CP750A3-HS	N230380



Type A6

Type A6, Copper Cable – Dimensions

Cable size	A		Cable protector with heat shrinkable tubing	
	Inches	mm	Cat. Number	Ref. Number
4/0	11.25	(286)	CP4/0A6-HS	Y230366
250kcmil	11.25	(286)	CP250A6-HS	J230353
350kcmil	11.25	(286)	CP350A6-HS	P230358
500kcmil	12.38	(314)	CP500A6-HS	H230375
750kcmil	12.50	(318)	CP750A6-HS	P230381

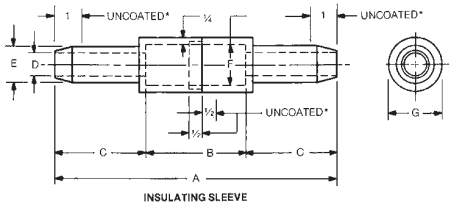
Type 5 – Use Copper Cable Protectors Type C5
Type 8 – Use Copper Cable Protectors Type C8

** Transparent heat shrinkable tubing is supplied separately with -HS Catalog Numbers. Maximum curing conditions: 5 seconds at 450˚F.*

Molded Rubber Insulating Sleeves**

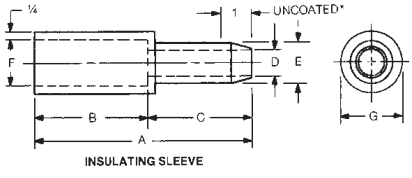
For Type C1 Copper Cable Protectors – Dimensions

Catalog Number	Reference Number	Cable* size	Dimensions-Inches (mm)						
			A	B	C	D	E	F	G
4/0CCR	D213236	4/0	10.44 (265)	3.69 (94)	3.38 (86)	.83 (21)	1.33 (33)	1.50 (38)	2.00 (51)
500CCR	E214755	500kcmil	14.19 (360)	3.69 (94)	5.25 (133)	1.31 (33)	1.81 (46)	1.94 (49)	2.44 (62)



For Type C3 Copper Cable Protectors – Dimensions

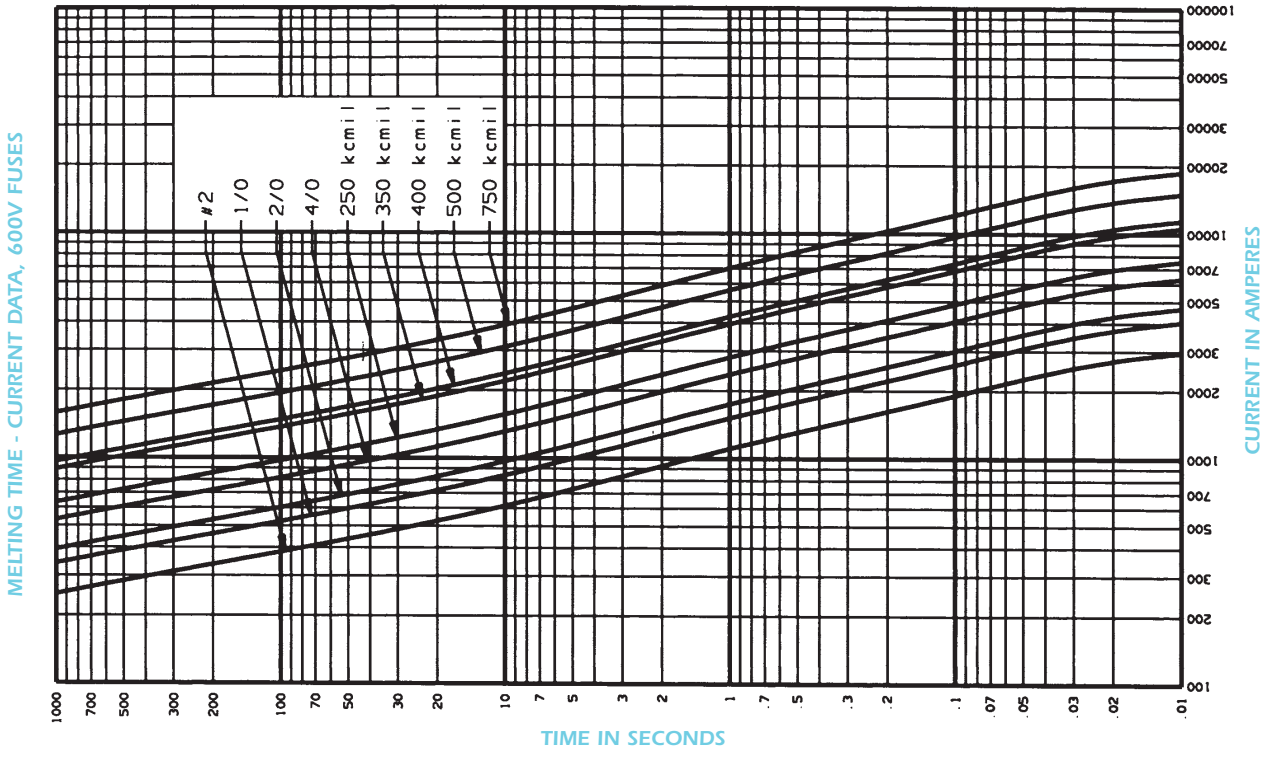
Catalog Number	Reference Number	Cable* size	Dimensions-Inches (mm)						
			A	B	C	D	E	F	G
4/0CBR	D212201	4/0	7.06 (179)	3.69 (94)	3.38 (86)	.83 (21)	1.33 (33)	1.50 (38)	2.00 (51)
500CBR	V213734	500kcmil	8.94 (227)	3.69 (94)	5.25 (133)	1.31 (33)	1.81 (46)	1.94 (49)	2.44 (62)



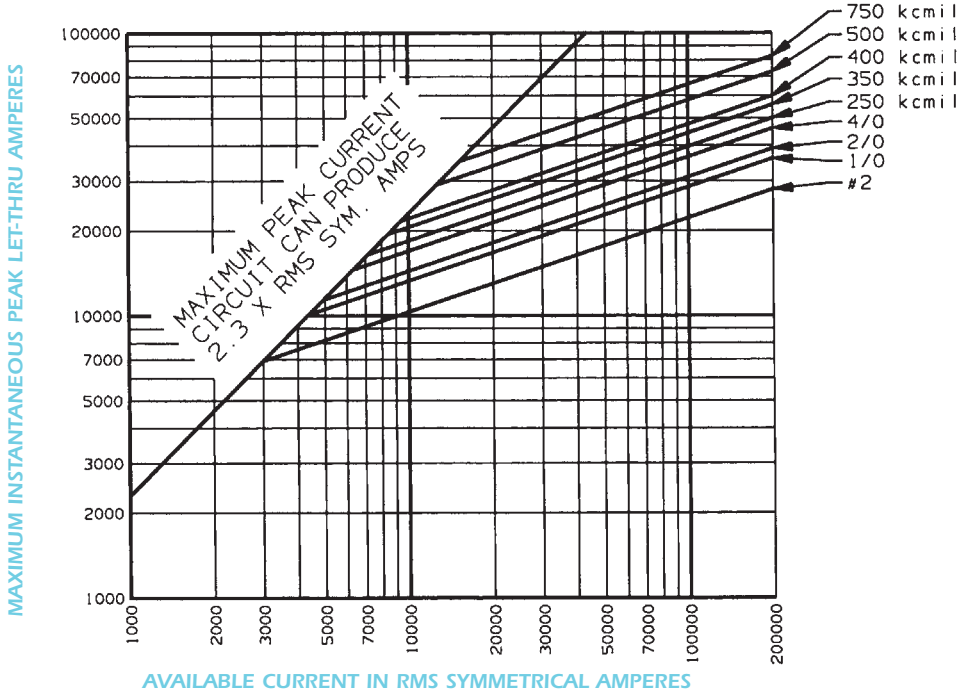
*** Molded rubber insulating sleeves are ordered by their own catalog numbers, and not as suffixes to the cable protector catalog numbers. Neoprene coated except as noted.*

American Fuses
Cable Protectors
CP & CPH

Copper & Aluminum Cable Protectors - #2-750kcmil



Peak Let-Thru Current Data
Copper & Aluminum Cable Protectors - #2-750kcmil - 600V



American Fuses
Cable Protectors
CP & CPH

Recommended Tooling For Installing CP Cable Protectors on Copper & Aluminum Cables

Circular Crimp – Copper Cable

Cable** Size	Burndy Hypress & Die Set				
	Y34A	Y35	Y39	Y46*	Y48B
4/0	A28R	U28RT	U28RT	U28RT	C28R
250kcmil	A29R	U29RT	U29RT	U29RT	C29R
350kcmil	A31R	U31RT	U31RT	U31RT	C31R
500kcmil	A34R	U34RT	U34RT	U34RT	C34R
750kcmil	-	-	U39RT	U39RT	C39R

Circular Crimp – Aluminum Cable

4/0	-	U28ART	U28ART	U28ART	C28AR
250kcmil	-	U29ART	U29ART	U29ART	C29AR
350kcmil	-	U31ART	U31ART	U31ART	C31AR
500kcmil	-	U34ART	U34ART	U34ART	C34AR
750kcmil	-	-	U39ART	U39ART	C39AR

Hex/Circular Crimp – Copper Cable

Cable** Size	T & B Installing Tools				
	TBMB Tool	13642 Head		TBM 15 Head	
	Die	Die		Die	
	Cat. Number	Cat. Number	Code Number	Cat. Number	Code Number
4/0	13463	11740	54	15511	54H
250kcmil	13463	11771	62	15510	62
350kcmil	13466	11743	71H	15514	71H
500kcmil	13468	11746	87H	15506	87H
750kcmil	-	11749	106H	15515	106H

Hex/Circular Crimp – Aluminum Cable

4/0	13465	11742	66H	15534	66
250kcmil	13466	11743	71H	15514	71H
350kcmil	13468	11746	87H	15506	87H
500kcmil	-	11749	106H	15515	106H
750kcmil	-	-	-	15603	125H

Hex/Circular Crimp – Copper Cable

Cable** Size	Homac Tools UT 15 Head Die	
	Cat. Number	Code. Number
4/0	15511	54H
250kcmil	15510	62
350kcmil	15514	71H
500kcmil	15587	87H
750 kcmil	15500	106H

Hex/Circular Crimp – Aluminum Cable

4/0	15534	66
250kcmil	15514	71H
350kcmil	15506	87H
500kcmil	15515	106H
750 kcmil	15603	125H

Note: Crimping tools suitable for standard splicing sleeves are also suitable for CP cable protectors for copper and aluminum cables because Ferraz Shawmut uses standard commercial dimensions on both inside and outside diameters.

** with adapter P-U-ADP*
*** kcmil = MCM*
12/04

American Fuses
Welder Protectors
A4BX



WELDER PROTECTORS

Ferraz Shawmut Welder Protectors are special purpose limiters used to provide isolation of faulted welding equipment and protection for the cable drop supplying the welder. Welder Protectors have a high thermal capacity and are less affected by high ambient temperatures and extended weld times than similar size Class J or K fuses*. Welder Protectors should only be applied for isolation of short circuited welding circuits. Overload protection must be provided for by other means.

** Contact us for Class L sizes and rating*

Standard Fuse Ampere Ratings, Reference Numbers

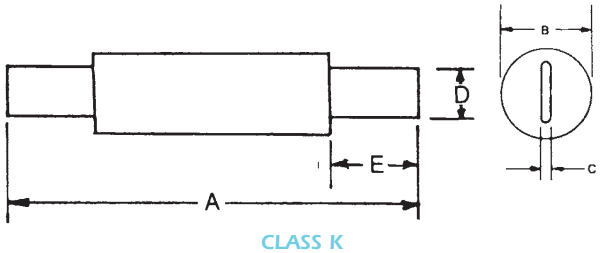
Catalog Number			Reference Number	
Ampere Rating	Class K Dimension	Class J Dimension	Class K Dimension	Class J Dimension
100	A4BX100-150	-	J218876	-
125	A4BX125-150	-	D212224	-
150	A4BX150-150	-	S212743	-
200	A4BX200-150	A4BX200-150J	H217334	M217844
225	A4BX225-150	-	G211192	-
300	A4BX300-150	A4BX300-150J	J215288	K215795
400	A4BX400-150	A4BX400-150J	N217845	Y218360
500	A4BX500-150	-	M222605	-
600	A4BX600-150	-	F201968	-

Ratings

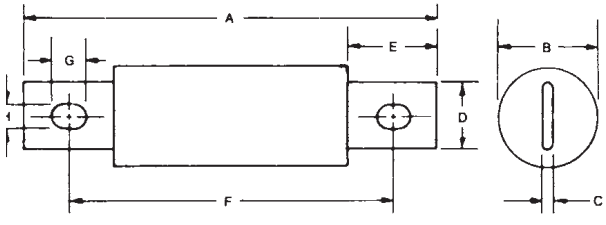
- 600VAC, 200kA I.R.

Approvals

- Ferraz Shawmut Certified



CLASS K



CLASS J

A4BX ( ) - 150; Class K Dimensions

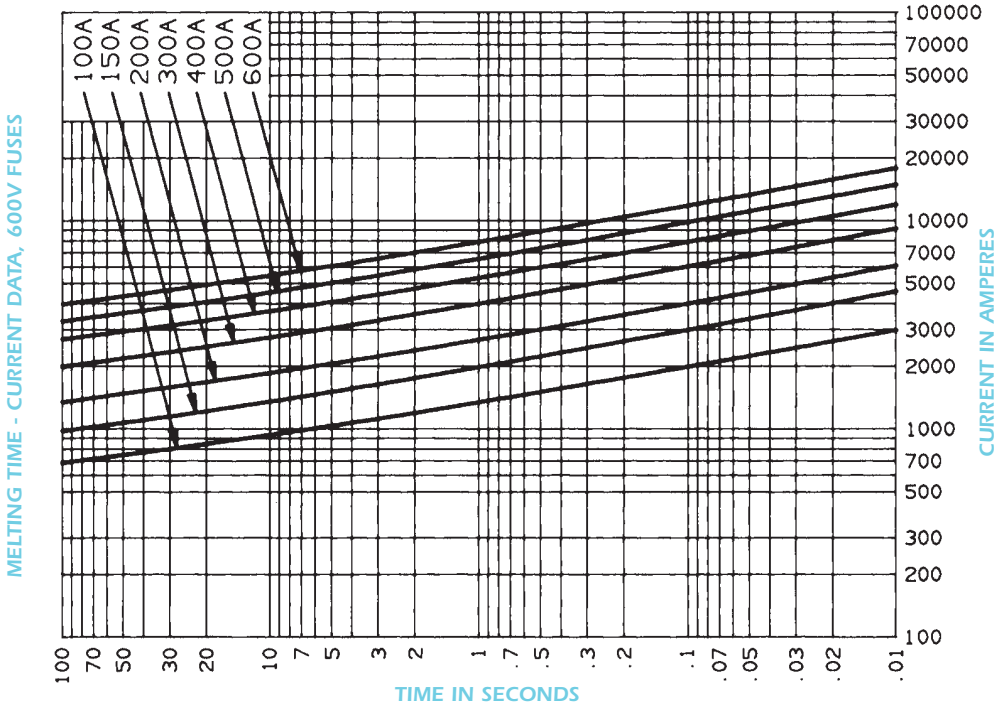
Ampere Rating	Inches							
	A	B	C	D	E	F	G	H
100	7-7/8	1	1/8	23/32	2-5/8	-	-	-
125-200	9-5/8	1-1/2	3/16	1-1/8	3-7/16	-	-	-
225-400	11-5/8	2	1/4	1-5/8	4-7/16	-	-	-
500-600	13-3/8	2-1/2	1/4	2	5-5/16	-	-	-

A4BX ( ) - 150J; Class J Dimensions

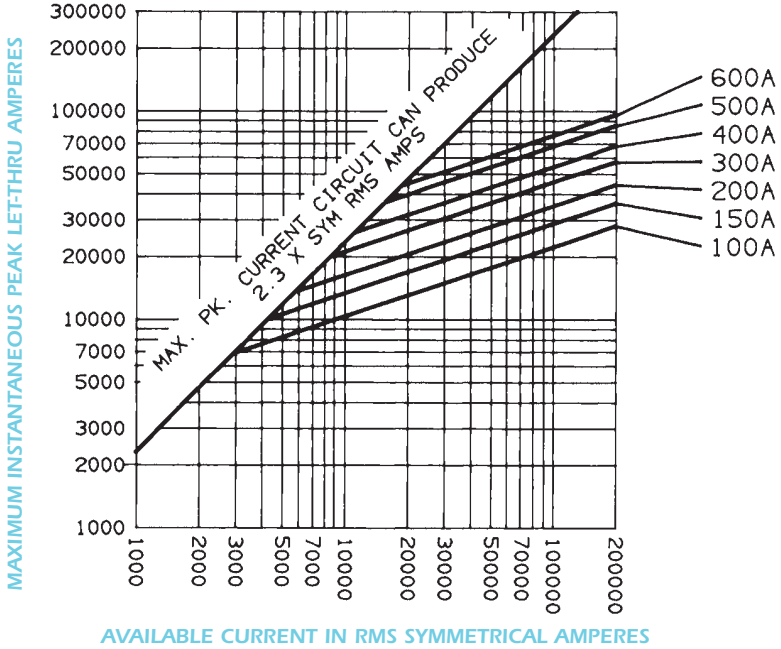
125-200	5-3/4	1-1/2	3/16	1-1/8	1-1/2	4-3/8	3/8	9/32
225-400	7-1/8	2	1/4	1-5/8	2-3/16	5-1/4	17/32	13/32

American Fuses
Welder Protectors
A4BX

A4BX100 to 600 Types 150, 150J



Peak Let-Thru Current Data – A4BX100 to 600, 600 Volts AC



American Fuses
Form 600
A2Y, A6Y



FORM 600 FUSES

Ferraz Shawmut Form 600 fuses were the original current-limiting fuses, pre-dating all the standards. Their 500V DC rating (through 600A) is a useful feature for special applications. Form 600 fuses provide a high degree of current limitation in AC and DC applications. Types 1 and 3 are dimensionally interchangeable with Class H and K fuses. Types 4 and 5 have unique rejection dimensions and are not interchangeable.

Ratings

- AC: A2Y 1-600A
  250VAC, 200kA I.R.
  A6Y 10-8A
  500VAC, 200kA I.R.
  A6Y 10-1200A
  600VAC, 200kA I.R.
- DC: A2Y 1-600A
  500VDC, 100kA I.R.
  A6Y 1-8A
  500VDC, 100kA I.R.
  A6Y 10-600A
  500VDC, 100kA I.R.

Approvals

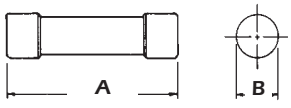
- AC: Guide No. JFHR2 (1-600A)
- DC Tested to UL198L Parameters (1-600A)
- UL Recognized Component File E60314

A2Y –Standard Fuse Ampere Ratings, Reference Numbers

Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number
1	A2Y1-1	W222613	30	A2Y30-1	N213268	80	A2Y80-4	F218367	175	A2Y175-4	B212751	400	A2Y400-4	B219927
2	A2Y2-1	P201976	35	A2Y35-1	E213766	90	A2Y90-3	H219404	200	A2Y200-3	L213266	450	A2Y450-3	V222612
3	A2Y3-1	P212234	40	A2Y40-1	N214280	90	A2Y90-4	C219928	200	A2Y200-4	D213765	450	A2Y450-4	J223131
5	A2Y5-1	R215295	45	A2Y45-1	N214786	100	A2Y100-3	S218884	250	A2Y250-3	Q215294	500	A2Y500-3	R200920
6	A2Y6-1	Y216313	50	A2Y50-1	T215803	100	A2Y100-4	F219402	250	A2Y250-4	S215802	500	A2Y500-4	E201461
8	A2Y8-1	G218368	60	A2Y60-1	B216822	125	A2Y125-3	Q200919	300	A2Y300-3	A216821	500	A2Y500-5	N201975
10	A2Y10-1	K223132	70	A2Y70-3	C212752	125	A2Y125-4	D201460	300	A2Y300-4	R217342	600	A2Y600-3	P211199
15	A2Y15-1	F201462	70	A2Y70-4	M213267	150	A2Y150-3	M201974	350	A2Y350-3	W217852	600	A2Y600-4	F211720
20	A2Y20-1	Q211200	70	A2Y70-5	M214279	150	A2Y150-4	N211198	350	A2Y350-4	T218885	600	A2Y600-5	N212233
25	A2Y25-1	G211721	80	A2Y80-3	X217853	175	A2Y175-3	M212232	400	A2Y400-3	G219403			

A6Y –Standard Fuse Ampere Ratings, Reference Numbers

Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number
1	A6Y1-1	H216828	70	A6Y70-4	J212758	200	A6Y200-4	N223135	450	A6Y450-4	X215300
2	A6Y2-1	Z200927	80	A6Y80-3	L213772	200	A6Y200-5	W200924	450	A6Y450-5	Z215808
3	A6Y3-1	W214793	80	A6Y80-4	V214286	225	A6Y225-3	V211204	500	A6Y500-3	X217347
5	A6Y5-1	R219412	90	A6Y90-3	A215809	225	A6Y225-4	T212238	500	A6Y500-4	M218373
6	A6Y6-1	A200928	90	A6Y90-3	A215809	225	A6Y225-5	G212756	500	A6Y500-5	B218892
8	A6Y8-1	Q211729	100	A6Y100-4	Z222616	250	A6Y250-3	S213272	600	A6Y600-3	Q223137
10	A6Y10-1	N218374	100	A6Y100-3	F219931	250	A6Y250-4	S214284	600	A6Y600-4	L201467
15	A6Y15-1	K219935	125	A6Y125-4	F212755	250	A6Y250-5	S214790	600	A6Y600-5	W201982
20	A6Y20-1	Y211207	125	A6Y125-3	S212237	300	A6Y300-3	Y215807	650	A6Y650-4	X211206
25	A6Y25-1	W213275	125	A6Y125-5	R213271	300	A6Y300-4	F216826	650	A6Y650-4	X211206
30	A6Y30-1	F216320	150	A6Y150-3	R214283	300	A6Y300-5	W217346	800	A6Y800-4	V214792
35	A6Y35-1	F217861	150	A6Y150-4	R214789	350	A6Y350-3	A218891	800	A6Y800-5	Y215301
40	A6Y40-1	P218375	150	A6Y150-5	V215298	350	A6Y350-4	H219933	1000	A6Y1000-4	M223134
45	A6Y45-1	D218894	175	A6Y175-3	B217857	400	A6Y400-3	W211205	1000	A6Y1000-5	V200923
50	A6Y50-1	S223139	175	A6Y175-4	K218371	400	A6Y400-4	V212239	1200	A6Y1200-4	T211203
60	A6Y60-1	Z211208	175	A6Y175-5	Z218890	400	A6Y400-5	H212757	1200	A6Y1200-5	K211724
70	A6Y70-3	W212240	200	A6Y200-3	A222617	450	A6Y450-3	T214791			



Type 1, 1-60 Amperes Class K

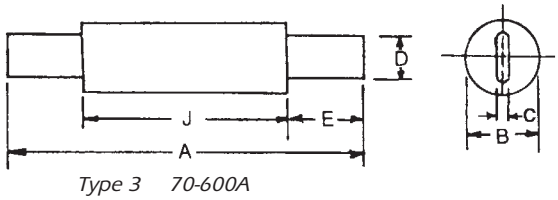
Dimensions

Ampere Rating	Inches	
	A	B
A2Y - 1-60A		
1-30	2	9/16
35-60	3	13/16
A6Y - 1-60A		
1-30	5	13/16
35-60	5-1/2	1-1/16

American Fuses
Form 600
A2Y, A6Y

Type 3, 70-600 Amperes, Class K - Dimensions

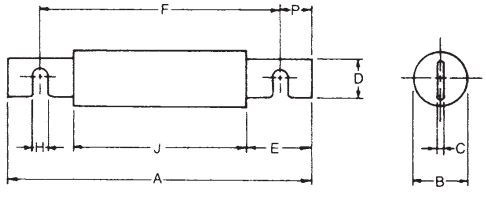
Ampere Rating	Inches					
	A	B	C	D	E	J
250 VAC/500 VDC - A2Y (Amp) - 3						
70-100	5-7/8	1	1/8	23/32	1-5/8	2-21/32
125-200	7-1/8	1-1/2	3/16	1-1/8	2-3/16	2-25/32
225-400	8-5/8	2	1/4	1-5/8	2-15/16	2-25/32
450-600	10-3/8	2-1/2	1/4	2	3-13/16	2-25/32
600 VAC/500 VDC - A6Y (Amp) - 3						
70-100	7-7/8	1	1/8	23/32	2-5/8	2-21/32
110-200	9-5/8	1-1/2	3/16	1-1/8	3-7/16	2-25/32
225-400	11-5/8	2	1/4	1-5/8	4-7/16	2-25/32
450-600	13-3/8	2-1/2	1/4	2	5-5/16	2-25/32



Type 3 70-600A

Type 4, 70-600 Amperes – Dimensions

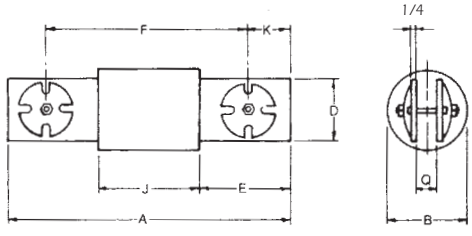
Ampere Rating	Inches								
	A	B	C	D	E	F	H	J	P
250 VAC/500 VDC - A2Y (Amp) - 4									
70-100	5-7/8	1	1/8	23/32	1-5/8	4-7/8	13/64	2-21/32	1/2
125-200	7-1/8	1-1/2	3/16	1-1/8	2-3/16	5-3/4	17/64	2-25/32	11/16
225-400	8-5/8	2	1/4	1-5/8	2-15/16	6-3/4	21/64	2-25/32	15/16
450-600	10-3/8	2-1/2	1/4	2	3-13/16	8-1/8	25/64	2-25/32	1-1/8
600 VAC/500 VDC - A6Y (Amp) - 4									
70-100	7-7/8	1	1/8	23/32	2-5/8	6-7/8	13/64	2-21/32	1/2
125-200	9-5/8	1-1/2	3/16	1-1/8	3-7/16	8-1/4	17/64	2-25/32	11/16
225-400	11-5/8	2	1/4	1-5/8	4-7/16	9-3/4	21/64	2-25/32	15/16
450-600	13-3/8	2-1/2	1/4	2	5-5/16	11-1/8	25/64	2-25/32	1-1/8



Type 4 70-600A

Type 4, 650-1200 Amperes - Dimensions

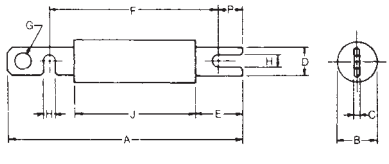
Ampere Rating	Inches							
	A	B	D	E	F	J	K	Q
600 VAC only - A6Y (Amp) - 4								
650-1200	10-1/2	3	2	3-3/8	7-7/8	3-3/4	1-5/16	5/8



Type 4 650-1200A

Type 5, 125-600 Amperes/Hinge Disconnect type – Dimensions

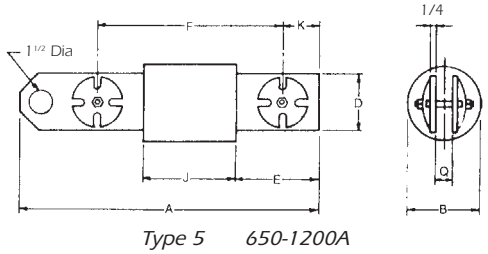
Ampere Rating	Inches									
	A	B	C	D	E	F	G	H	J	P
600 VAC/500 VDC - A6Y (Amp) - 5										
125-200	10-3/4	1-1/2	3/16	1-1/8	3-7/16	8-1/4	3/4	17/64	2-25/32	11/16
225-400	13-1/4	2	1/4	1-5/8	4-7/16	9-3/4	7/8	21/64	2-25/32	15/16
450-600	15-3/16	2-1/2	1/4	2	5-5/16	11-1/8	1	25/64	2-25/32	1



Type 5 125-600A

Type 5, 650-1200 Amperes/Hinge Disconnect Type – Dimensions

Ampere Rating	Inches							
	A	B	D	E	F	J	K	Q
600 VAC only - A6Y (Amp) - 5								
650-1200	12-1/8	3	2	3-3/8	7-7/8	3-3/4	1-5/16	5/8

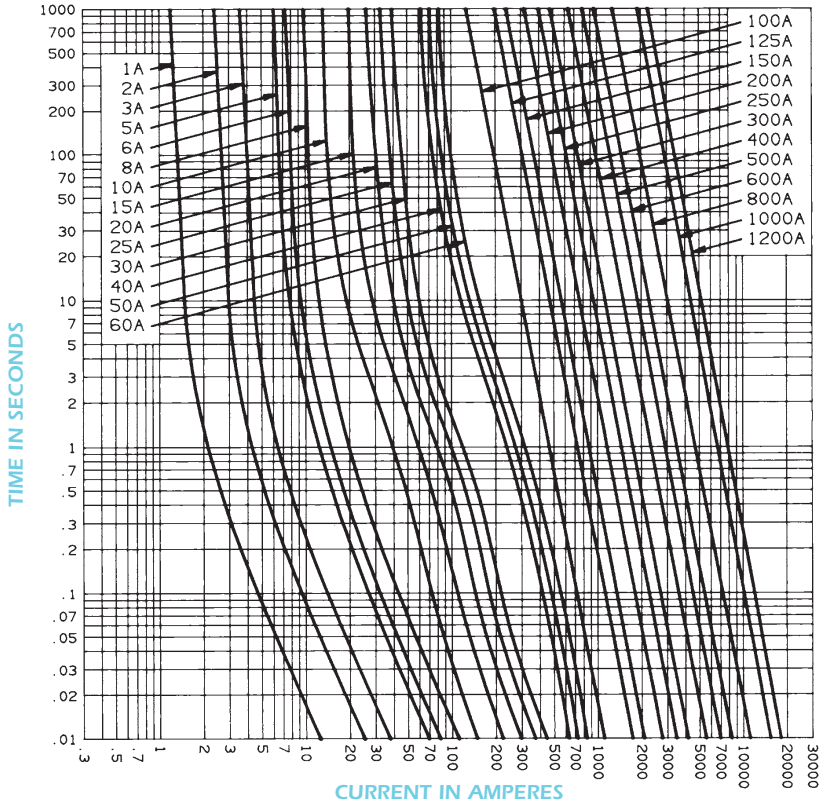


Type 5 650-1200A

American Fuses
Form 600
A2Y, A6Y

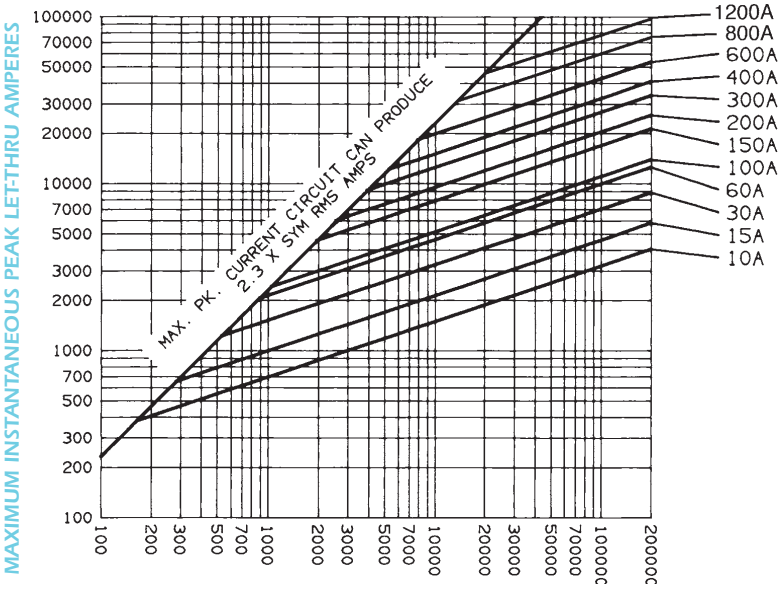
1-600 Amperes, 250 or 600 Volts - Types 1, 3 or 5
800-1200 Amperes, 600 Volts - Types 4 or 5

MELTING TIME - CURRENT DATA



10-600 Amperes, 250 or 600 Volts
800-1200 Amperes, 600 Volts only

PEAK LET-THRU CURRENT DATA



DC Capability

Cat No. Prefix	Ampere Rating	DC Voltage Rating*
A2Y	1-600	500
A6Y	1-600	500

**Consult factory for specifics regarding circuit time constants and DC interrupting rating.*

Recommended Fuse Blocks With Box Connectors For Form 600 Types 1 & 3 Fuses

Ampere Rating	250V		600V	
	1 Pole	3 pole	1 Pole	3 pole
Catalog Number				
1-30	20306	20308	60306	60308
31-60	20606	20608	60606	60608
61-100	21036	21038	61036	61038
101-200	22001	22003	62001	62003
201-400	24001	24003	64001	64003
401-600	2631	2633	6631	6633
Reference Number				
1-30	Z212381	F215446	V211871	X213920
31-60	N211865	C214431	X211873	Z213922
61-100	S201105	Q211867	K201627	S211363
101-200	Y213415	E214433	M212393	H213424
201-400	T219046	-	H218530	T219575
401-600	F214434	K215450	Z216475	W217507

A variety of pole configurations and termination provisions is available. Refer to Fuse Blocks and Fuse Holders section for details.

American Fuses
Plug Fuses



PLUG FUSES: G/GP/TD/GW /GTL/GT/GSL

Ferraz Shawmut Plug Fuses are for industrial and residential applications.
Standard non-time delay fuses are for receptacle and lighting circuits. Standard time delay fuses are for motor loads. For Canadian requirements, a type "P" fuse is used for non-motor loads and type "D" fuses are used for electric heating and cycling loads circuits. Both fuses have low melting-point temperature elements. Low-Temp time delay plug fuses have thermal sensitivity are also for cycling loads and motor circuits. Type "S" plug fuses are time delay and tamper-resistant.

Ratings

- 125V AC, 10kA I.R.
- 3 to 30 Amperes
- Choice of Edison Base, Types "P", "D", or "S"

Approvals

- UL Listed
  Guide JEFV, File E76208
- CSA Certified
  Class 142301, File 15525

Plug Fuses – Standard Fuse Ampere Ratings, Reference Numbers

Ampere Rating	Edison Base						Type S
	Non-Time Delay UL	Non-Time Delay CSA	Time Delay UL	"P" Type Non Time-Delay CSA	low-Temp Time-Delay UL	"D" Type Time-Delay CSA	rejection* Time-Delay UL
Catalog Number							
3	GW3	G3	-	-	-	-	-
6	GW6	G6	-	-	-	-	-
10	GW10	G10	-	-	-	-	-
15	GW15	-	GTL15	GP15	GT15	TD15	GSL15
20	GW20	-	GTL20	GP20	GT20	TD20	GSL20
25	GW25	-	GTL25	GP25	GT25	TD25	GSL25
30	GW30	-	GTL30	GP30	GT30	TD30	GSL30
Reference Number							
3	G214389	V218472	-	-	-	-	-
6	K215404	N218995	-	-	-	-	-
10	K212345	N217960	-	-	-	-	-
15	V212860	-	K219521	-	K217451	P201056	C213373
20	D213374	-	N222721	Y223236	T217965	R211822	F214388
25	X213874	-	T201060	F211306	A218477	T213871	J215403
30	G214895	-	B203804	T212859	S218999	H215908	Q216421

** Must be used with an SAG adaptator to fit an Edison base fuse holder*

FR15, FR20 Rejector Rings
FRW Rejection tool

Type S Plug Fuses adaptators

Cat. Number/Rating	ref Number	Fuse range - amps
SAG3-2/10	Z216935	1-8/10 - 3-2/10
SAG6-1/4	P230427	3-1/2 - 6-1/4
SAG6-3/10	V217966	2-1/2 - 6-1/4
SAG15	M215912	7 - 15
SAG20	R216422	20
SAG30	L217452	25 - 30

Type S adaptors screw into the Edison base and allow Type S fuses to be installed.
Type S adaptors prevent the wrong ampere size fuse from being used.





American Fuses
In line Fuse
SLR - SMF - SHR

Ferraz Shawmut SLR and SMF in-line fuses are used to protect fluorescent lighting fixtures and ballasts. The SLR is a fast-acting fuse. SMF is a time-delay fuse. Both used to protect individual 300V fixtures. Ferraz Shawmut SHR fuse holder has an integral clip for panel mounting to meet this requirement. The holder fits into a standard 7/8" knock-out or keyhole punch that provides anti-rotation. The SHR is available in a single or double wire version. The single wire version (SHR-1) allows insertion of #18 AWG ballast leads directly into the holder.

SLR FUSES

Ratings

- 300VAC, 100A I.R.
  125VAC, 10kA I.R.
  1/2 to 15A

Approvals

- UL Listed
  File No. E10480
  CSA Certified

Highlights:

- Fast Acting
- Integral fuse
  & insulating cap

SMF FUSES

Ratings

- 300VAC, 100A I.R.
  125VAC, 10kA I.R.
  3/10 to 10A

Approvals

- UL Listed
  File No. E10480
  CSA Certified

Highlights:

- Time-Delay
- Integral fuse & insulating cap
- Designed specifically to handle ballast inrush currents

SHR FUSE HOLDERS

Ratings

- 300VAC: 15A
  Withstand Rating: 10kA I.R.
  Dielectric Strength: 2,000 V

Approvals

- UL Recognized Component
  Guide IZLT2, UL File
  No. E52283

Highlights:

- Superior wire retention
- Thermoplastic Insulator
  - 150° C RTI
- Single and two wire versions
- Two load plug-in ports available
- Integral mounting clip - 0.062" thick panel
- Integral wire retention clip to hold #18 wire
- Tin plated, insulated #18 solid copper wire leads, 6" length

American Fuses
In line Fuse
SLR - SMF - SHR

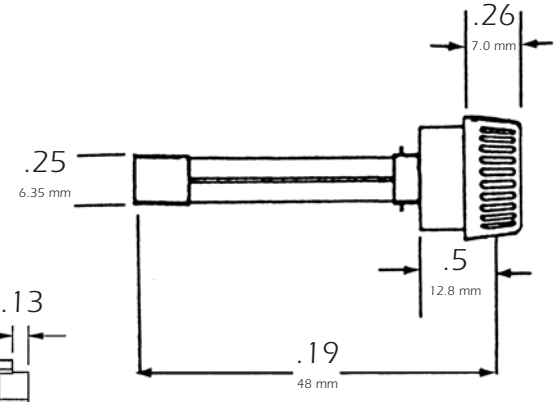
Ampere Ratings, Reference Numbers

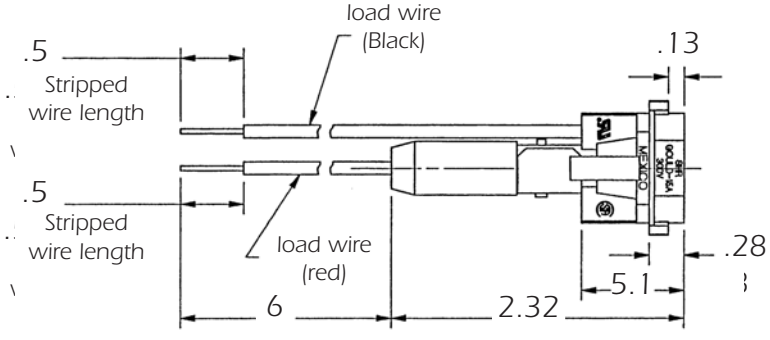
Ampere Rating	Catalog Number		Reference Number	
300mA		SMF3/10		
500mA	SLR1/2	SMF1/2	M215521	R211937
600mA		SMF6/10		E215008
800mA		SMF8/10		R216537
1A	SLR1	SMF1	Q211936	Y201685
1-1/4A		SMF1-1/4		P205702
1-1/2A	SLR1-1/2		C212453	
1-6/10A	SLR1-6/10	SMF1-6/10	T213986	P211429
2A	SLR2	SMF2	Q217571	D212454
2-1/2A	SLR2-1/2	SMF2-1/2	X218083	M212968
2-8/10A		SMF2-8/10		W213482
3A	SLR3	SMF3	A218592	V213987
3-2/10A		SMF3-2/10		D214501
4A	SLR4	SMF4	T219115	
5A	SLR5	SMF5	P219640	
6A	SLR6		A222088	
61/4A		SMF61/4		
7A	SLR7	SMF7	N222836	
8A	SLR8	SMF8	A223353	
9A	SLR9		T201175	
10A	SLR10	SMF10	V216034	
12A	SLR12		Q216536	
15A	SLR15		F217056	

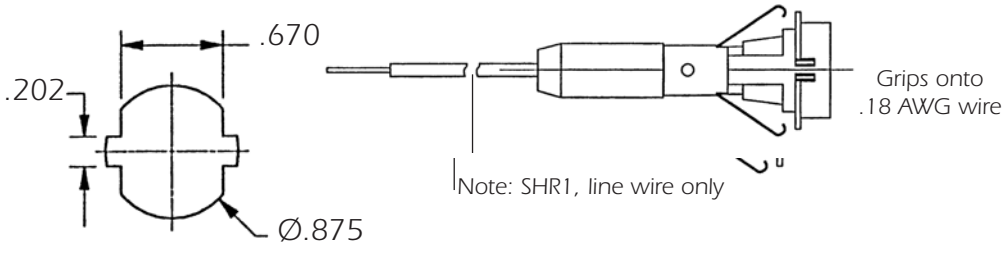
Fuse Holders

Single wire	Two wire
SHR-1	SHR

Note: Both holders are compatible with all fluorescent light fuses







American Fuses
Surge Suppresion Fuses
VSP

Ferraz Shawmut surge suppression fuses are specially designed to address the protection of TVSS systems. Surge suppression fuses have been specially designed to withstand 8x20 mSec surge pulses without opening, allowing the TVSS system to react to the surge. All surge suppression fuses have a 8x20 mSec surge rating, not a continuous current rating. Under AC short circuit conditions these surge suppression fuses are very current limiting.



Features/Benefits

- VSP fuses rated 600 VAC, 200kA I.R.
- Surge Ratings of 5-100kA 8x20 µ sec capacity
- Designed to help meet UL1449 Second Edition Requirements
- Various Mounting Configurations: ferrules, blade, bolt-in, pc board mount

Ratings

- 5-100 kA 8x20 µSec Weveform 600 VAC, 200 kA I.R.

Approvals

- UL Recognized Component
- File E60314, Vol.3 Special Purpose MOV Protector

Aplications:

- Protection of TVSS Devices
- Coordination with other protection devices

Catalog Number	Reference Number	Voltage Rating (AC)	8x20 µsec Surge Rating	Melting I^2t (A^2S)	Clearing I^2t (A^2S)	Ipeak@ 100KA (60 Hz (A)
VSP5-2,R,-H,-S	G219886	600V	5,000	341	936	3,652
VSP10-2,R,-H,-S	X217807	600V	10,000	1,541	3,744	5,794
VSP15-2,R,-H,-S-	L227572	600V	15,000	3,072	8,424	7,591
VSP20-2,R,-H,-S	W218841	600V	20,000	4,992	14,400	9,194
VSP30-2	X230457	600V	30,000	12,507	33,696	12,044
VSP40-2	J211677	600V	40,000	19,543	59,904	14,588
VSP50-2	W232250	600V	50,000	32,020	93,600	16,925
VSP60-2	F212709	600V	60,000	42,808	134,784	19,110
VSP70-2	G213722	600V	70,000	61,152	183,456	21,176
VSP80-2	S214744	600V	80,000	79,872	239,616	23,146
VSP90-2	X232251	600V	90,000	99,000	303,264	25,034
VSP100-2	F201416	480V	100,000	121,500	374,400	26,854
VSP100-XL	L230447	600V	100,000	121,500	374,400	26,854

Recommended Fuse Blocks for VSP Fuses

VSP(5-20)-2 Catalog Number

Number of poles	Box	Screw	Pressure plate
Adder	30310	30320	30350
1	30311	30321	30351
2	30312	30322	30352
3	30313	30323	30353

VSP(30-100)-2 Catalog Number

Number of poles	Box	Screw	Pressure plate
Adder	60305J	60315J	60325J
1	60306J	60316J	60326J
2	60307J	60317J	60327J
3	60308J	60318J	60328J

VSP(5-20)-2 Reference Number

Number of poles	Box	Screw	Pressure plate
Adder	N211888	S218033	F214457
1	A212405	Y218544	G214964
2	E214456	K222787	L216486
3	F214963	B201642	Z217004

VSP(30-100)-2 Reference Number

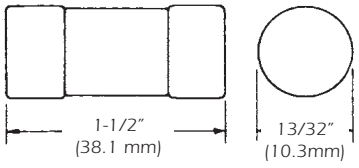
Number of poles	Box	Screw	Pressure plate
Adder	K204893	N218029	Y212403
1	J211884	P219065	T213434
2	S213433	Y222040	B214453
3	A214452	V223302	F215469

American Fuses
Surge Suppresion Fuses
VSP

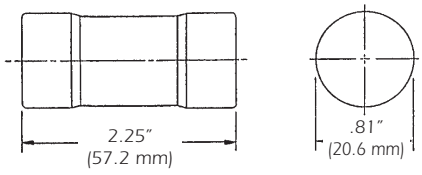
Dimensions

VSP (5-20)-2,R,H,S

-2

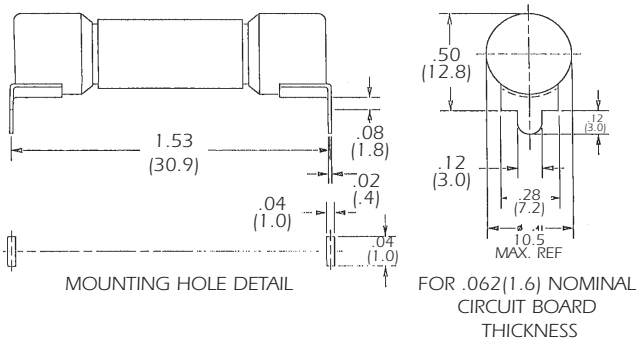


VSP (30-100)-2

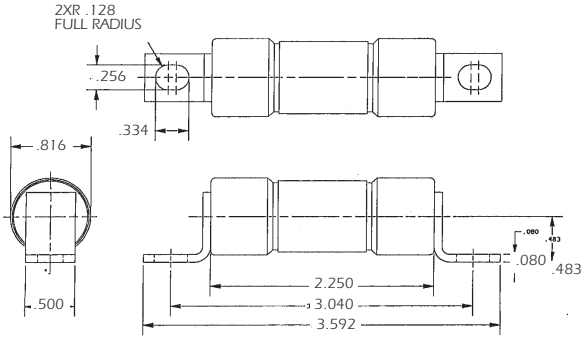


PC BOARD MOUNTING

-R

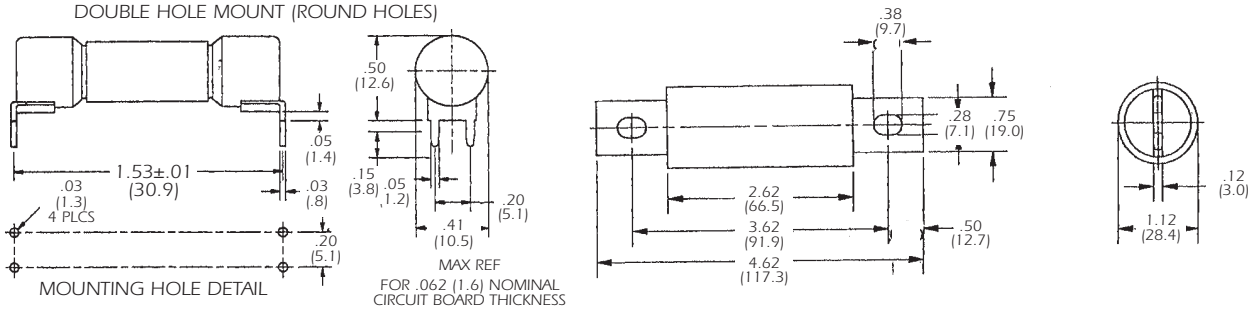


VSP30-100

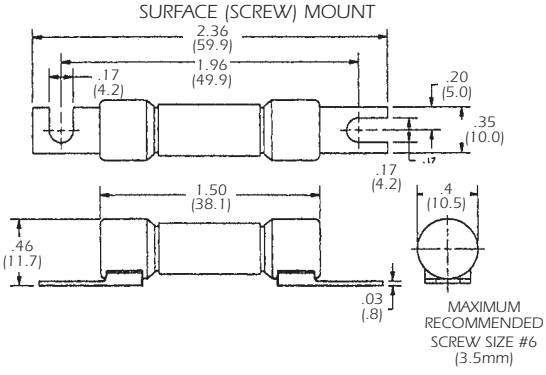


VSP100-XL

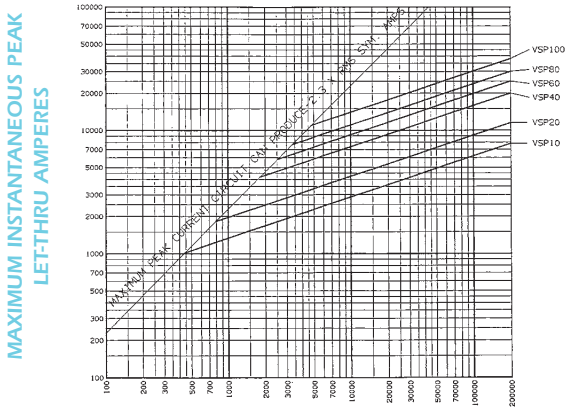
-H



-S



Peak Let-Thru Current data



American Fuses
Surge Suppresion Fuses
TPMOV



Thermally protected mov

The Ferraz Shawmut Thermally Protected MOV has been developed to assist in eliminating the failure characteristics of Metal-Oxide-Varistors. The TPMOV is a fail-safe device. It is composed of a voltage clamping device and a disconnecting apparatus that monitors the status of the metal-oxide disk. In the event that the disk is approaching breakdown it is effectively disconnected from system power. The TPMOV is rated for 40ka of 8/20us surge current. The TPMOV ratings are available from 150V to 550V. The TPMOV has been designed with two built in isolated indicating features. The first is a visual indicator. When the unit has disconnected from system power, two isolated pins will be noticed atop the TPMOV enclosure. The second feature is a remote indicator composed of a N/O micro-switch. In the event that the TPMOV has disconnected system power the switch will change status. These features lower costly engineering time that would be required for traditional MOV products.

Ratings

- 150V to 550VAC/100KA I.R.
- 40ka 8/20µs Withstand

Approvals

- UL 1449 2nd Edition Recognized

Features/Benefits

- High Energy Capacity
- Consistent footprint with 25–40mm MOV's
- Built-In Visual/Remote Indication
- Fail-Safe Operation

Application:

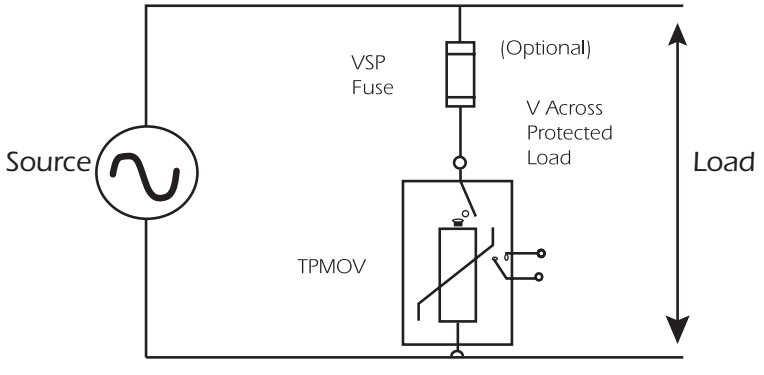
- Transient Voltage Surge Suppressors
- AC/DC Distribution Systems
- High Voltage Power Supplies
- Telecommunications Equipment
- Motor Control Systems
- Computer Related Products
- PLC Applications
- Power Transfer Switches

Layout

The TPMOV footings are similar* to that of equivalent voltage ratings of traditional 25 to 40mm MOV's. The TPMOV can be utilized on existing systems that utilize traditional MOV's without costly board redesigns.

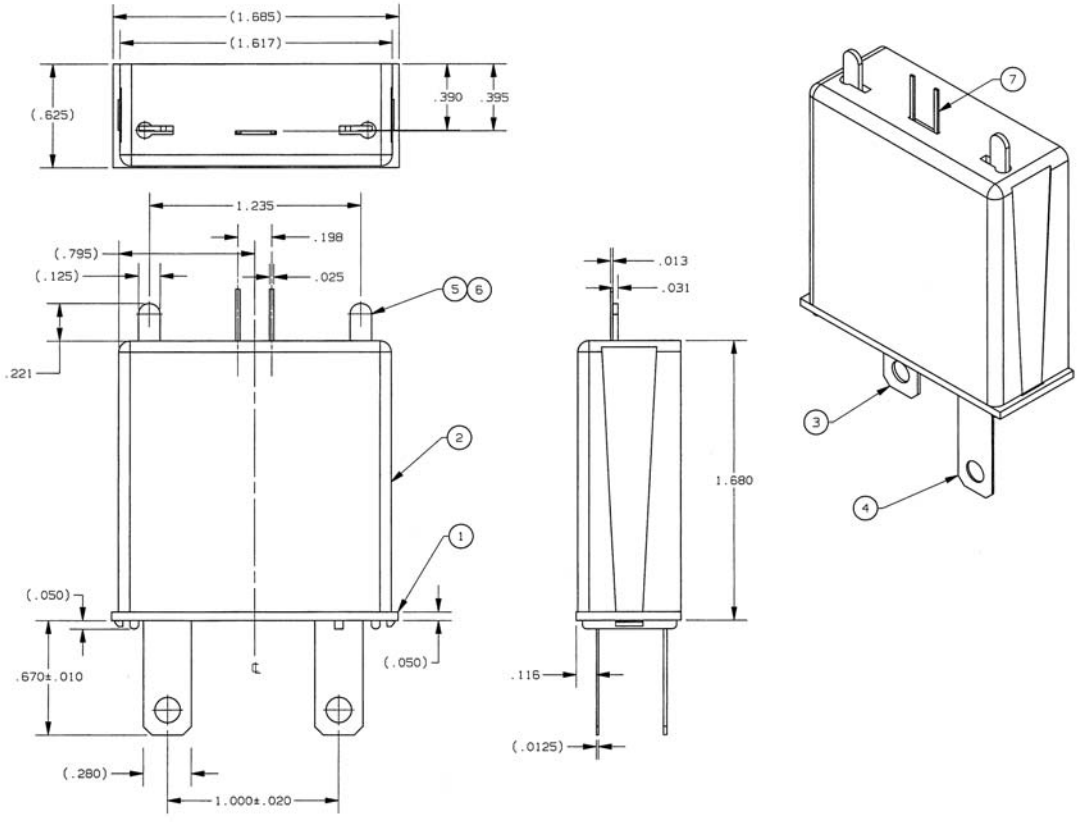
*refer to dimensional drawings on next page.

Typical Application



American Fuses
Surge Suppresion Fuses
TPMOV

Dimensions



Reference Number	catalog Number	safety standards Recognition	maximum rating AC	maximum rating DC	peak current 1 pulse 8/20us	TPMOV voltage @ 1mA Vmin	TPMOV voltage @ 1mA Vmax
X230595	150TPMOV	UL1449	150V	200V	40,000A	212V	259V
-	250TPMOV	UL1449	250V	330V	40,000A	354V	432V
Z230597	270TPMOV	UL1449	270V	360V	40,000A	382V	466V
A230598	320TPMOV	UL1449	320V	420V	40,000A	453V	553V
B230599	420TPMOV	UL1449	420V	550V	40,000A	594V	725V
C230600	510TPMOV	UL1449	510V	675V	40,000A	722V	881V
D230601	550TPMOV	UL1449	550V	700V	40,000A	778V	950V

American Fuses
Forklift Fuses
ACK, ACL, ALS



FORKLIFT TRUCK FUSES

Ferraz Shawmut forklift truck and battery isolator fuses are specially designed for the heavy duty loads associated with DC battery powered equipment such as forklift trucks, hand trucks, motorized work platforms, and other DC battery operated systems. Rugged construction and stud mounted bolt-in design assure long life in adverse conditions for these fuses.This expanded line of Forklift Truck Fuses can fulfill virtually all of your heavy duty circuit protection needs up to 125V AC or DC. The round body ACK, ACL and ALS fuses combine higher voltage ratings and more ampere ratings with higher breaking capacity. The flat CNL and CNN style fuses have a lower voltage rating but are also AC and DC, more space saving and have visual "see-thru" indication to show when they have operated.

Features/Benefits

- All fuses are AC and DC rated
- Expanded Ampere Ratings
- Time Delay and General Purpose types
- Link is visible through window (CNL/CNN)

Highlights:

- AC/DC Ratings
- Embossed Catalog Nos.
- Stud Mounted
- Time Delay - ACK
- General Purpose - ACL,ALS

Applications:

- Forklift Trucks
- Battery Hand Trucks
- Motorized Work Platforms
- Battery Systems

Approvals

- UL Recognized Components (All Products) File E60314

Ratings

- ACK: 1-400 Amperes
  125VAC, 10kA I.R.
  125VDC, 10kA I.R.
- ACL: 30-120 Amperes
  125VAC, 10kA I.R.
  125VDC, 10kA I.R.
- ALS: 100-500 Amperes
  125VAC, 10kA I.R.
  125VDC, 10kA I.R.
- CNL*
- CNN*

see section "European DIN forklift fuses

Forklift Truck Fuse - Cross Reference

Part Number	Competitor name	Gould
ACK	Bussmann	ACK
ACL	Bussmann	ACL
ALS	Bussmann	ALS
ANL	Bussmann	CNL
ANN	Bussmann	CNN
AOK	Edison	ALS
CCK	Littelfuse	ACK
CCL	Litttelfuse	ACL
ECK	Edison	ACK
ECL	Edison	ACL
ENLE	Edison	CNL
ENNE	Edison	CNN

Forklift Truck Fuse - Fuse Blocks

Fuse	Fuse Block
ACK(70-100)	P243C
ACL(70-120)	P243E

American Fuses
Forklift Fuses
ACK, ACL, ALS

ACK Fuse

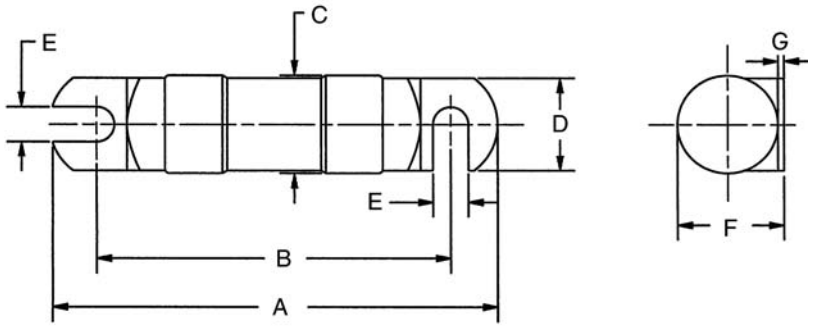
Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number
1A	ACK1	B219421	20A	ACK20	T212767	70A	ACK70	P222630	160A	ACK160	H211216
2A	ACK2	G212250	25A	ACK25	G214297	80A	ACK80	Z201479	175A	ACK175	Y211736
3A	ACK3	J215311	30A	ACK30	M215820	90A	ACK90	J201994	200A	ACK200	G213285
5A	ACK5	Y218383	35A	ACK35	V216839	100A	ACK100	N222629	225A	ACK225	Y213783
6A	ACK6	C219422	40A	ACK40	J217358	120A	ACK120	C223148	250A	ACK250	G214803
10A	ACK10	V219944	50A	ACK50	N218903	140A	ACK140	J200936	300A	ACK300	R216330
15A	ACK15	Y201478	60A	ACK60	W219945	150A	ACK150	H201993	400A	ACK400	R217871

ACL Fuse

Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number
30A	ACL30	H212251	70A	ACL70	H214804
35A	ACL35	V212768	80A	ACL80	N215821
40A	ACL40	H213286	90A	ACL90	S216331
50A	ACL50	Z213784	100A	ACL100	J211217
60A	ACL60	H214298	120A	ACL120	Z211737

ALS Fuse

Ampere Rating	Cat. Number	Ref. Number	Ampere Rating	Cat. Number	Ref. Number
100A	ALS100	W216840	300A	ALS300	X219946
150A	ALS150	K217359	350A	ALS350	Q222631
175A	ALS175	S217872	400A	ALS400	E223150
200A	ALS200	Z218384	450A	ALS450	K200937
225A	ALS225	P218904	500A	ALS500	A201480
250A	ALS250	D219423	–	–	–

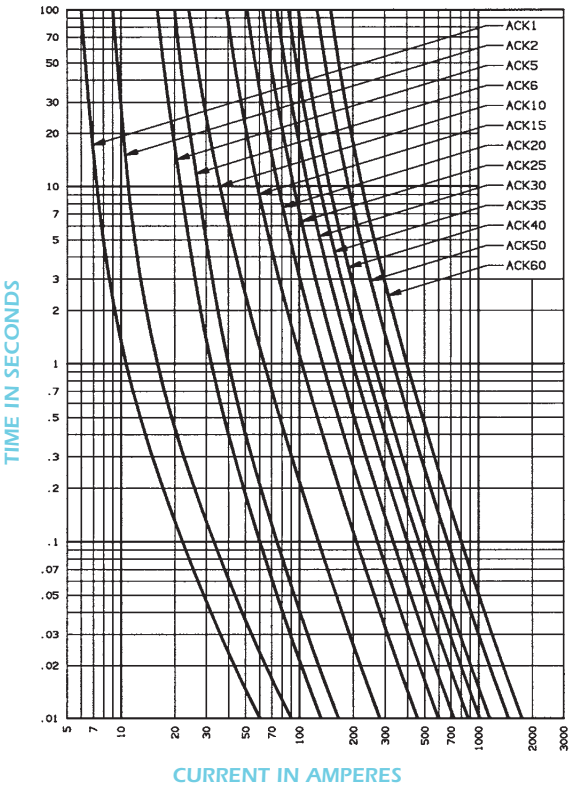


Dimensions

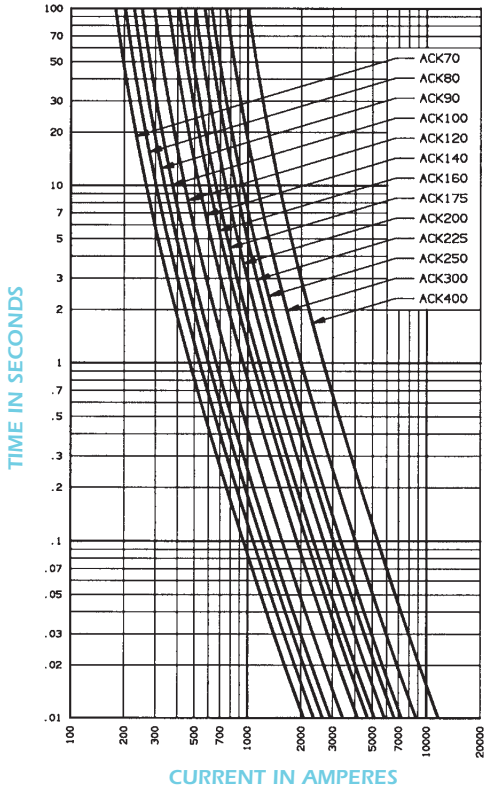
Catalog Number	Outline Figure	A	B	C	D	E	F	G
		In. (mm)	In. (mm)	In. (mm)	In. (mm)	In. (mm)	In. (mm)	In. (mm)
ACK 1-30	1	3.07 (77.9)	2.5 (63.5)	.56 (14.3)	.5 (12.7)	.28 (7.1)	.593 (15)	.03 (.8)
ACK 35-60	1	3.74 (95)	3 (76.2)	.81 (20.6)	.75 (19.1)	.34 (8.7)	.86 (21.8)	.047 (1.2)
ACK 70-100	1	4.46 (113.4)	3.5 (88.9)	1.06 (26.9)	1 (25.4)	.38 (9.5)	1.12 (28.5)	.06 (1.6)
ACK 120-200	1	4.72 (119.8)	3.75 (95.4)	1.06 (26.9)	1 (25.4)	.38 (9.5)	1.12 (28.5)	.06 (1.6)
ACK 225-400	1	4.71 (119.7)	3.75 (95.4)	1.06 (26.9)	1 (25.4)	.38 (9.5)	1.12 (28.5)	.06 (1.6)
ACL 30-60	1	3.07 (77.9)	2.5 (63.5)	.56 (14.3)	.5 (12.7)	.28 (7.1)	.593 (15)	.03 (.8)
ACL 70-120	1	3.49 (88.6)	2.75 (69.9)	.81 (20.6)	.75 (19.1)	.34 (8.7)	.86 (21.8)	.047 (1.2)
ALS 100-500	1	4.71 (119.7)	3.75 (95.4)	1.06 (26.9)	1 (25.4)	.38 (9.5)	1.12 (28.5)	.06 (1.6)

American Fuses
Forklift Fuses
ACK, ACL, ALS

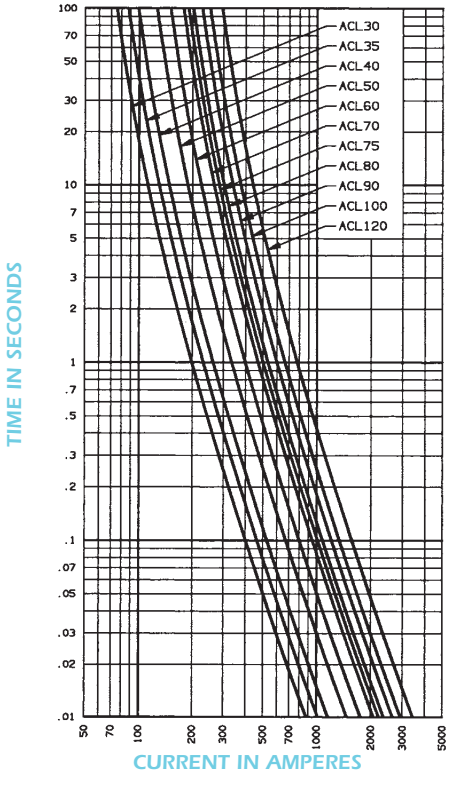
MELTING TIME – CURRENT DATA – ACK1–60



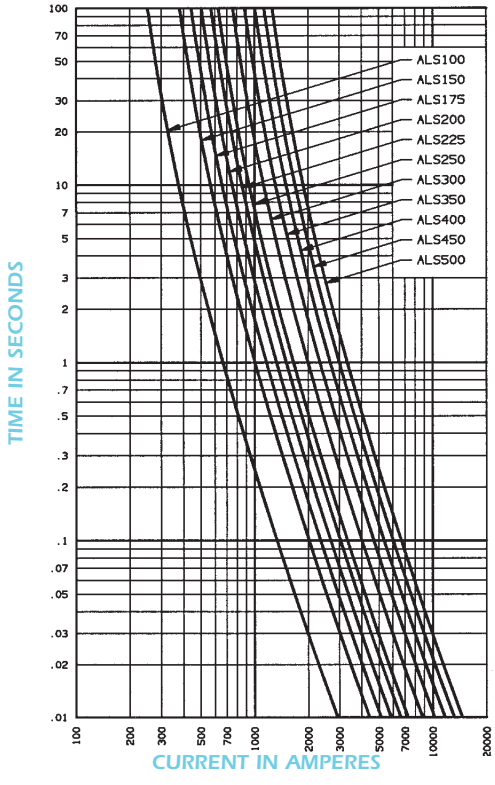
MELTING TIME – CURRENT DATA – ACK70–400



MELTING TIME – CURRENT DATA – ACL30–120



MELTING TIME – CURRENT DATA – ALS100–500



American Fuses
Telecom Fuses
70 series

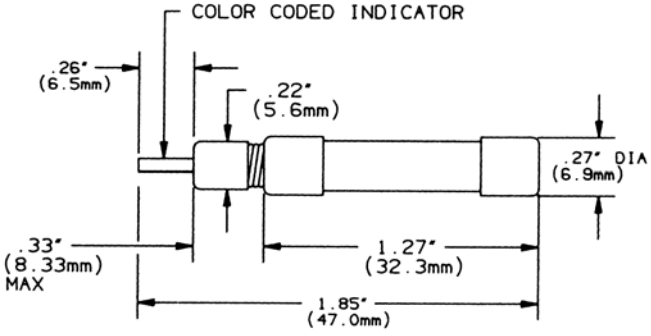


70 SERIES

- Color Coded tip
- Rated 125V AC, 300V DC
- UL Recognized 125 VAC, 1000A I.R.; 300V DC, 1000A I.R. Guide JDYX2, File E39265
- Continuous rated current is 80% of 10 minute rating (shown in table).
  100% rating 10 minutes minimum

70 series alarm indicating telecommunications fuses

Ferraz Shawmut 70 Series Alarm Indicating fuses are used in telecommunications equipment. Each ampere rating has aspecific color-coded tip for easy visual identification.



Reference Numbers, Ampere Ratings, Certifications

10 minute Ampere Rating	Catalog Number	Reference Number	Color Code
100mA	70P	G201555	Gray-White
150mA	70R	R203404	Red-White
180mA	70E	Z217947	Yellow
200mA	70X	D211810	Black
250mA	70F	E218458	Violet
250mA	70K	T222703	Violet-White
350mA	70S	T211295	Gray
500mA	70G	X218980	Red
750mA	70H	P219502	Brown
1.33A	70A	R215893	White
2A	70B	W216403	Orange
3A	70C	D216916	Blue
3.5A	70J	L221960	Black-White
5A	70D	R217434	Green-Black
8A	70M	J223223	Tan-White
10A	70N	A201043	Yellow-Purple

American Fuses
Telecom Fuses
GMS





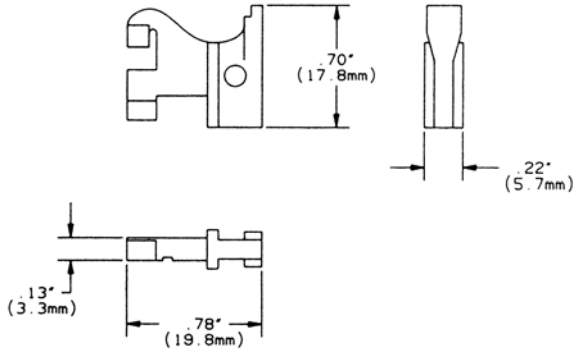
GMS/GMSC/GMSD

- Safety Covers
- Color Coded
- Lubricated
- Ryton Body Material
- Rated 125V AC, 125V DC
- UL Recognized 125 V AC, 300A I.R.; 125V DC, 300A I.R. Guide JDYX2, File E39265
- Carry 100% load - 10 minutes, min.
  clear 150% load - 5 minutes, max.

GMS series alarm indicating telecommunications fuses

Ferraz Shawmut GMS Series Alarm Indicating fuses are used in telecommunications equipment or other applications. A color coded flag indicates a circuit problem which caused the fuse to blow. Nineteen ampere ratings/colors fill every replacement need.

GMS: Alarm indicating telecommunications fuse
GMSC: Safety cover for GMS fuse (not shown)
GMSD: Dummy fuse to protect unused circuits



Reference Numbers, Ampere Ratings, Certifications

Ampere Rating	Catalog Number	Reference Number	Volts	Color Code
180mA	GMS 18/100	Z215509	125	Yellow
200mA	GMS2/10	S217044	125	Black-Red
250mA	GMS1/4	S212444	125	Violet
500mA	GMS1/2	E211926	125	Red
650mA	GMS65/100	F211927	125	Black
750mA	GMS3/4	N218581	125	Brown
1A	GMS1	L201674	125	Gray
1.33A	GMS1-1/3	C211418	125	White
1.5A	GMS1-1/2	V205477	125	White-Yellow
2A	GMS2	G216022	125	Orange
2.5A	GMS2-1/2	C216524	125	White-Orange
3A	GMS3	C217559	125	Blue
3.5A	GMS3-1/2	J218071	125	White-Blue
4A	GMS4	B219628	125	White-Brown
5A	GMS5	R222080	125	Green
7.5A	GMS7-1/2	T212445	125	Black-White
10A	GMS10	C212959	125	Red-White
12A	GMS12	G213975	125	Yellow-Green
15A	GMS15	S214491	125	Red-Blue

American Fuses
Telecom Fuses
TGL - TGN - TGS



Ferraz Shawmut telecommunications fuses are specially designed for the protection of telecommunications equipment which includes telephone switching equipment, rectifiers, distribution switching panels, battery back-up modules, power supplies and switching sub-stations.

The telecom fuses are available from 1 to 800 amperes rated at 170VDC with an interrupting rating of 100,000 amps to fulfill your circuit protection needs. The telecom fuses have high current limiting capabilities to provide a better degree of circuit protection to traditional telecommunications equipment. These fuses consist of a blue and white label for easy identification of their DC voltage capability.

Features/Benefits

- All fuses rated 170VDC, 100kA I.R.
- Extremely current limiting
- Blue & white labels for easy identification
- Various mounting configurations

Highlights

- DC Rated
- Highly Current Limiting
- Fast Acting
- Rejection Style

Applications

- Distribution Switching Panels
- Battery Back-up Systems
- Power Supplies
- Switching Substations
- Telephone Switching Rectifiers

Ratings

- TGL: 70-800 A 170VDC, 100kA I.R.
- TGN: 1-600 A 170VDC, 100kA I.R.
- TGS: 1-70 A 170VDC, 100kA I.R.

Approvals

- UL Recognized Components File #E60314

Telecom fuse Cross Reference

Competitor Part Number	Ferraz Part Number
TPL	TGL
TPN	TGN
TPS	TGS

Recommended Fuse Holder Catalog Number

Fuse	Ampere	1 Pole	3 Pole
TGL	70-250	P243D	
	300-800	P243G	
TGN	0-30	20306R	20308R
	31-60	20606R	20608R
	61-100	21036R	21038R
	101-200	22001R	22003R
	201-400	24001R	24003R
	401-600	2631R	2633R
TGS	0-70A	30656T	30658T

Recommended Fuse Holder Reference Number

Fuse	Ampere	1 Pole	3 Pole
TGL	70-250	C219560	
	300-800	H222762	
TGN	0-30	T213411	K215956
	31-60	B213383	E214939
	61-100	D201621	M212899
	101-200	R213915	G214941
	201-400	J219566	D222022
	401-600	H214942	P215960
TGS	0-70A	X219049	G222 025

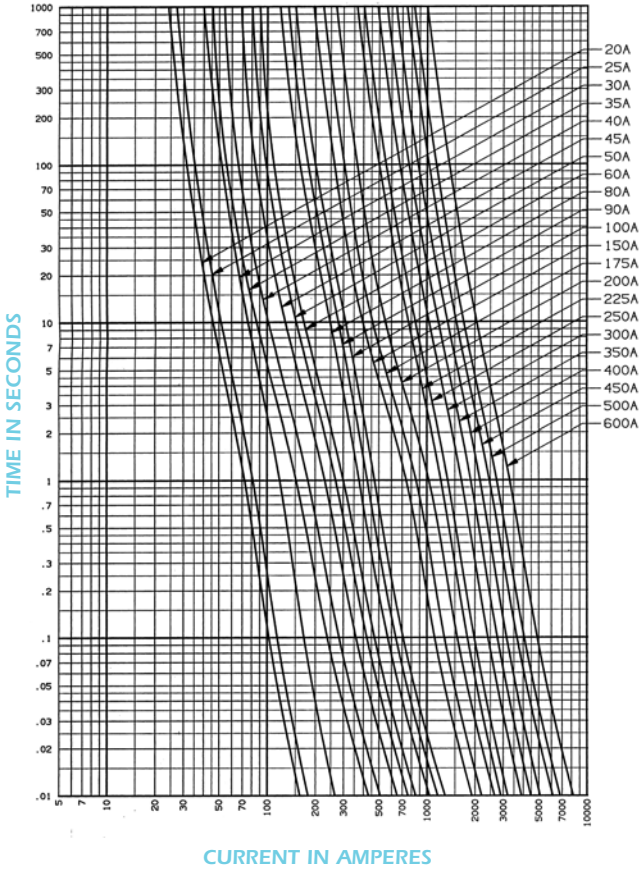
American Fuses
Telecom Fuses
TGL - TGN - TGS

TGN

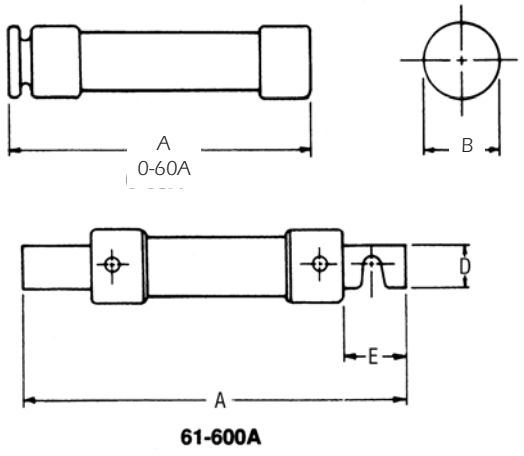
Catalog Numbers, Standard Ampere Rating

Catalog Number	Reference Number	Ampere rating	Catalog Number	Reference Number	Ampere rating	Catalog Number	Reference Number	Ampere rating
TGN1	F216849	1A	TGN40	M213796	40A	TGN175	J219957	175A
TGN3	X211229	3A	TGN45	S214813	45A	TGN200	P223159	200A
TGN5	Z215831	5A	TGN50	D216341	50A	TGN225	W200947	225A
TGN6	X217370	6A	TGN60	F217884	60A	TGN250	Q202161	250A
TGN10	W217369	10A	TGN70	C218916	70A	TGN300	W212263	300A
TGN15	B218915	15A	TGN80	R219435	80A	TGN350	V213297	350A
TGN20	B222641	20A	TGN90	K219958	90A	TGN400	V214309	400A
TGN25	M201491	25A	TGN100	E217883	100A	TGN450	W215322	450A
TGN30	M211749	30A	TGN110	L218395	110A	TGN500	G216850	500A
TGN35	G212779	35A	TGN150	Q219434	150A	TGN600	M218396	600A

Melting Time - Current Data



Dimensions



61-600A

170 VDC TGN Fuses

Ampere Rating	A		B		C		D		E	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
0-30	2	51	9/16	14						
31-60	3	76	13/16	21						
61-100	5-7/8	149	1-1/16	27	1/8	3	3/4	19	1	25
101-200	7-1/8	181	1-9/16	40	3/16	5	3/4	19	1-3/8	35
201-400	8-5/8	219	2-1/16	53	1/4	6	1-5/8	41	1-7/8	48
401-600	10-3/8	264	2-9/16	66	1/4	6	2	51	2-1/4	57

American Fuses
Telecom Fuses
TGL - TGN - TGS

TGL

Catalog Numbers, Standard Ampere Rating

Catalog Number	Reference Number	Ampere rating	Catalog Number	Reference Number	Ampere rating
TGL-BA	A218914	70A	TGL-BL	L211748	250A
TGL-BB	P219433	80A	TGL-CN	V212262	300A
TGL-BC	H219956	90A	TGL-CO	T213296	350A
TGL-BD	A222640	100A	TGL-CR	L213795	400A
TGL-BE	N223158	125A	TGL-CU	T214308	450A
TGL-BF	V200946	150A	TGL-CV	R214812	500A
TGL-BG	L201490	175A	TGL-CZ	V215321	600A
TGL-BH	T202118	200A	TGL-CZH	Y215830	800A
TGL-BK	W211228	225A			

Dimensions

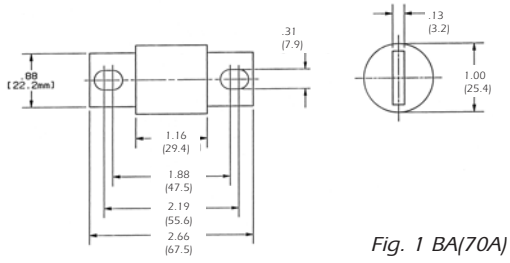


Fig. 1 BA(70A) – BL(250A)

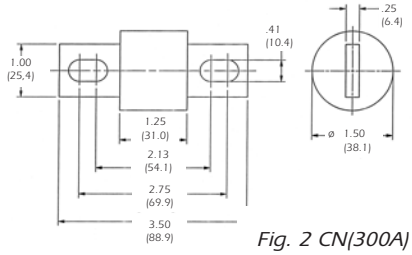
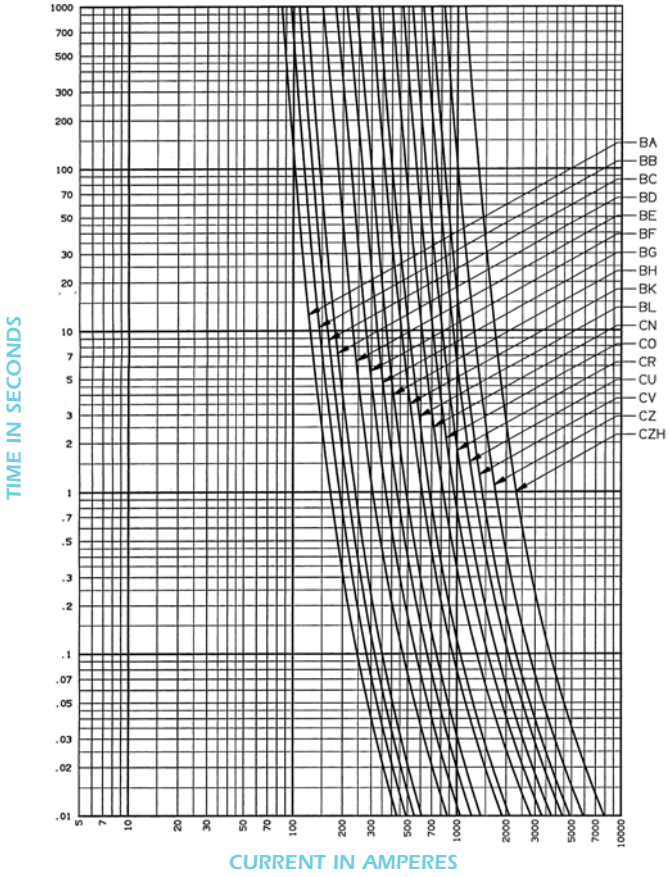


Fig. 2 CN(300A) – CZH(800A)

Melting Time - Current Data

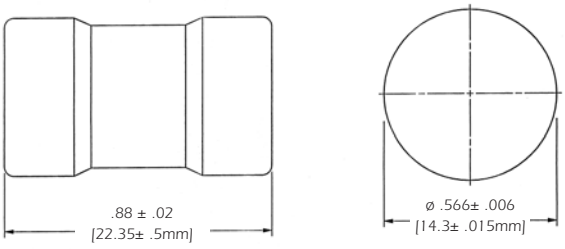


American Fuses
Telecom Fuses
TGL - TGN - TGS

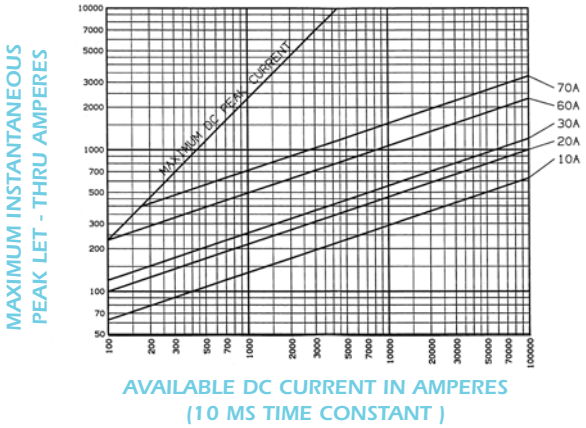
TGS
Catalog Numbers, Standard Ampere Rating

Catalog Number	Reference Number	Ampere rating	Catalog Number	Reference Number	Ampere rating
TGS1	C222642	1A	TGS20	D202173	20A
TGS2	N201492	2A	TGS25	Y211230	25A
TGS3	N211750	3A	TGS30	X212264	30A
TGS5	W213298	5A	TGS40	H212780	40A
TGS6	W214310	6A	TGS50	N213797	50A
TGS10	Q223160	10A	TGS60	T214814	60A
TGS15	X200948	15A	TGS70	X215323	70A

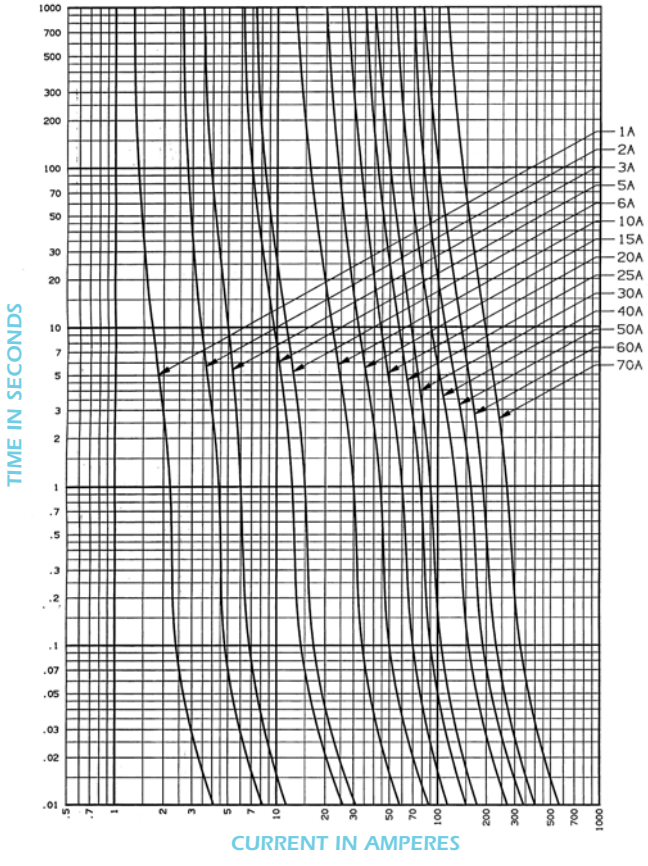
Dimensions



Peak Let - Thru Current Data



Melting Time - Current Data



American General Purpose Fuses
UltraSafe Range
US3J, US6J - Class J Fuses



Ultrasafe Modular Fuse Holders

Ferraz Shawmut ULTRASAFE™ modular 600 volt Fuse Holders for Class J fuses introduce a new level of safety and ease for installing or replacing Class J fuses. ULTRASAFE holders qualify as "finger safe" to an IP20 grade of protection under IEC standards. The US3J accommodates 30A Class J or 22 x 58 mm French Ferrule* fuses. The US6J is for 60A Class J fuses. ULTRASAFE holders are available in compact 1, 2, or 3 pole units, with or without blown-fuse indicators in each pole. Multi-pole units can also be made up in the field by using the multiple-pole Assembly Kits. All units have provisions for locking in the open position for safety during fuse changeouts or equipment servicing. US3J and US6J holders can be snap-mounted to 35 mm DIN rail and they have a unique latch which will stay open to allow re-positioning of the holder in the future. Ultrasafe body material is tough and durable polyamide.
*Holder not UL listed with these fuses

Ratings

- 600VAC: 30A & 60A
- Withstand rating: 200kA I.R.
- Min. voltage to operate indicator light:90VAC, 115VDC[Less than 0.7 mA leakage current at 600V]

Approvals

- All Ultrasafe Fuse Holders meet the requirements of UL512
- UL Listed Guide IZLT, File E52283
- CSA Certified Class 6225 File 32169
- IEC 60269-2

Highlights

- Finger Safe
- Optional Indicator Lights
- DIN Rail Mount
- Compact Footprint
- Quick, Easy Fuse Change

Applications:

- 600 volt motors, transformers, lighting, heating, control circuits, general loads
- Non-load disconnect

Recommended fuse usage

US3J, US6J use with AJT, A4J

American General Purpose Fuses
UltraSafe Range
US3J, US6J - Class J Fuses

Ultrasafe Modular Fuse Holders

Catalog and Reference Numbers & Descriptions For use with 30A Class J Fuses

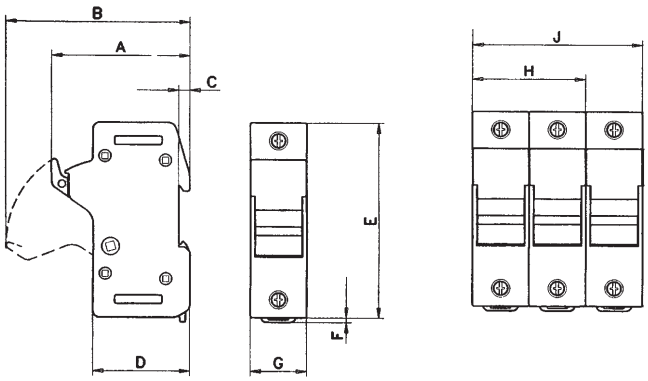
Cat. Number	Ref. Number	Description
US3J1	E212409	1 Pole
US3J2	A213440	2 Pole
US3J3	J214460	3 Pole
US3J1I	M212922	1 Pole with Indicator
US3J2I	W213942	2 Pole with Indicators
US3J3I	K214967	3 Pole with Indicators
US3JN	N215476	1 Pole - Neutral
US3J2PAK	R215985	2 Pole Assembling Kit
US3J3PAK	C217007	3 Pole Assembling Kit
US3J4PAK	X218037	4 Pole Assembling Kit

Catalog and Reference Numbers & Descriptions For use with 60A Class J Fuses

Cat. Number	Ref. Number	Description
US6J1	M219592	1 Pole
US6J2	P222791	2 Pole
US6J3	V205017	3 Pole
US6J1I	F222047	1 Pole with Indicator
US6J2I	D223310	2 Pole with Indicators
US6J3I	M211381	3 Pole with Indicators
US6JN	N212923	1 Pole - Neutral
US6J2PAK	T201129	2 Pole Assembling Kit
US6J3PAK	T211893	3 Pole Assembling Kit
US6J4PAK	F212410	4 Pole Assembling Kit

Dimensions

Dimension	US3J		US6J	
	mm	In	mm	In
A	80	3.15	89	3.50
B	106	4.17	115	4.53
C	6.5	0.26	6.5	0.26
D	56	2.20	62	2.44
E	114	4.49	122	4.80
F	3	0.12	3	0.12
G	32.5	1.28	40	1.57
H	65	2.56	80	3.15
J	97.5	3.84	120	4.72



Terminal screws: Phillips/slot head
Suggested screw torque: 30A - 35 in-lbs. (4 N.m)
60A - 45 in-lbs. (5.2 N.m)
Connector type: Pressure plate
Wire range: 2 mm² to 30 mm² - #2 to #14 (solid/stranded Cu)
Load-break disconnect: No

American General Purpose Fuses
UltraSafe Range
USCC - USM - for Class CC and Midget Fuses

Ultrasafe Modular Fuse Holders



Ferraz Shawmut ULTRASAFE™ modular 24, 48 and 600 volt Fuse Holders introduce a new level of safety for Class CC (USCC) and Midget 1-1/2" x 13/32" (USM) as well as DC rated fuses up to 30 amperes. ULTRASAFE holders qualify as "finger safe" under IEC and DIN standards to an IP20 grade of protection, including fuse changing (with the flick of a finger). ULTRASAFE holders are available in 1, 2, 3 or 4 poles, with or without blown-fuse indicators in each pole. AC indicators are orange and DC are red. The multi-pole units can also be made up by ordering pin-tie handles for field assembly.

ULTRASAFE holders save up to 15% mounting space and any combination can be snapped onto 35mm DIN rail for extra savings in panel building time.

ULTRASAFE holders with Class CC fuses chosen for Type "2" protection give one of the safest protection packages in the industry. Ultrasafe body material is tough and durable polyamide, with exceptional insulating properties.

Approvals

- All Ultrasafe Fuse Holders meet the requirements of UL512
- UL Listed Class CC Guide IZLT, File E52283
- UL Recognized, Component, Midget, Guide IZLT2, File E52283
- CSA Certified Class CC & Midget, C22.2, Class 6225 File 32169
- IEC 60269 690VAC, 32A Midget version only.

Ratings

- USCC: 600VAC/30A
  USM: - 800VAC/1000VDC 30A as per UL 512
  - 690VAC/32A as per IEC 60269-2
  - 750VAC/32A as per CSA 22-2
- Special Indicator for 24VDC, 30A
- Special Indicator for 48VDC, 30A
- Withstand rating:
  Class CC 200kA I.R.
  Midget Fuse 100kA I.R.
- Min. voltage to operate indicator light: 90VAC (less than 0.7 mA leakage current at 600V

Highlights

- Finger Safe
- Optional Indicator Lights
- DIN Rail Mount
- Compact Footprint
- Quick, Easy Fuse Change

Applications:

- All circuits up to 600 volts for motors, control circuits, transformers, etc.
- Non-load disconnect
- 12, 24 and 48 volt DC circuits

Recommendes fuse usage

- USCC use with ATDR*, ATMR, ATQR
- USM use with ATQ, ATM*, A6Y-2B, A25Z-2, TRM, OTM, A13X-2, GFN, GGU, A60Q-2

** Recommended for DC Applications*

American General Purpose Fuses
UltraSafe Range
USCC - USM - for Class CC and Midget Fuses

Ultrasafe Modular Fuse Holders
For use with Class CC Fuses

Cat. Number	Ref. Number	Description
USCC1	B213441	1 pole
USCC1I	X213943	1 pole with indicator
USCC2	P216489	2 pole
USCC2I	D217008	2 pole with indicators
USCC3	M217522	3 pole
USCC3I	Y218038	3 pole with indicators
USCC3IN	N219593	3 pole with indicators and a 4th neutral pole
USCC3N	G222048	3 pole with a 4th neutral pole
USCC4	Q222792	4 pole
USCC4I	E223311	4 pole with indicators

For use with Midget (1-1/2" x 13/32") Fuses

Cat. Number	Ref. Number	Description
USM1	Y213944	1 pole
USM1I	L214462	1 pole with indicator
USM2	N217523	2 pole
USM2I	Z218039	2 pole with indicators
USM3	C218548	3 pole
USM3I	Y219073	3 pole with indicators
USM3IN	P219594	3 pole with indicators and a 4th neutral pole
USM3N	H222049	3 pole with a 4th neutral pole
USM4	R222793	4 pole
USM4I	F223312	4 pole with indicators

Special Indicator Options For use with Low Voltage DC Rated Class CC & Midget Fuses

Catalog Number	Reference Number	Indicator type	operating Voltage	leakage Current
USM1I-DC24	T215987	LED	12 to 24 VDC	10mA max.(@24vdc)
USM1I-DC24P	Q216490	LED	20 to 24 VDC	1mA max.(@24vdc)
USM1I-DC48	E217009	LED	35 to 48 VDC	10mA max.(@48vdc)
USCC1I-DC24	P215477	LED	12 to 24 VDC	10mA max.(@24vdc)
USCC1I-DC48	S215986	LED	35 to 48 VDC	10mA max.(@48vdc)

Neutral Link Pole

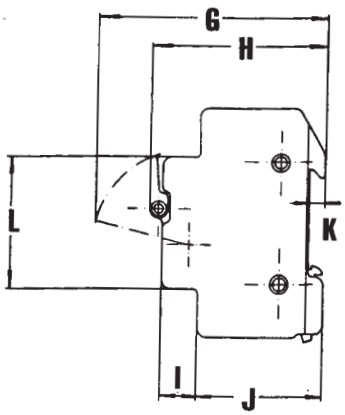
Cat. Number	Ref. Number	Description
USN	W201131	1 Pole with Integral Neutral Link

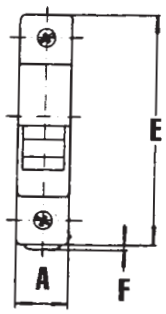
Accessories

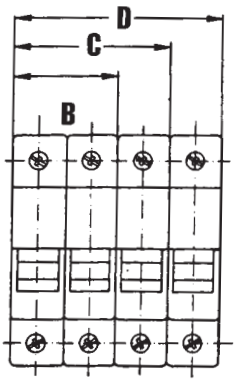
Cat. Number	Ref. Number	Description
USPTH2	F201646	Pin-tie handle for 2 poles
USPTH3	C205047	Pin-tie handle for 3 poles
USPTH4	P211383	Pin-tie handle for 4 poles

Dimensions

Dimension	mm	In
A	17.5	0.69
B	35.0	1.38
C	52.5	2.07
D	70.0	2.76
E	78.0	3.07
F	2.5	0.10
G	78.0	3.07
H	59.0	2.32
I	12.5	0.49
J	42.5	1.67
K	5.0	0.20
L	45.0	1.77







Terminal screws: Phillips/slot head
Suggested screw torque: 14.75 in-lbs. (2N.m)
Connector type: Pressure plate
Wire range: 2mm² to 10 mm² - #6 to #14 (solid/stranded Cu)
Load-break disconnect: No



American General Purpose Fuses
UltraSafe Range
Highlights

The brand-new innovative and comprehensive "MODULOSTAR®" range of Ferraz Shawmut Modular Fuseholders and Fuse disconnectors is global and designed to accommodate a multitude of fuses from around the world, including - UL class CC, Midget - Special protection class (UR, gR, gD) in 4 sizes:
10x38, 14x51, 22x58 and 27x60 mm.
All MODULOSTAR® products are manufactured in accordance with IEC 60269-2, IEC 60947 - 1 & 3, UL512 and CSA 22-2 Standards.

General charateristics

- **Impulse withstand voltages :**
  - The range is tested at respectivly Uimp= 6KV and 8KV according to part 8.3.3.4.1 of IEC 60947-1 between neighboring poles, between phase and wires, between phase and microswitch. Insulation voltage rating Ui = 690VAC and 800VAC
  - The blown fuse light indicators are available for 24VDC to 700VDC and 110VAC to 690-700VAC
- **European RoHS Directive:**
  Modulostar® product range is develop in accordance with European Directive 2002/95/CE dated 27 January 2003, as free of halogene (PBB, PBDE), chlorine, mercury, cadmium and lead.
- **Environmental aspects**
  Modulostar® range is design following "ecoconception" method, with sofware tool EIME (Environmental Information & Management Explorer), which takes into account the following criteria: Water Toxicity, Water Eutrophication, Hazardous Waste Production, Raw Material Depletion, Energy Depletion, Water Depletion, Global Warming, Air Toxicity, Photochemical Ozone Creation, Air Acidification
- **Plastic material used are UL 94 V0 to V2 with UL Recognized Yellow card**
  RTI (Relative Thermal Index) > 120°C
  CTI (Comparative Tracking Index) > 350V
  Bodies are in Polyamide 6 with 20% reinforced material
  Handles are in Polyamide 6.6 with 25% reinforced material or in Thermodur BMC
- **Homologations:** CB report according IEC 60269-2 and IEC 60947-3 standards
  UL CSA Listed (600V AC) for class CC products ranges, UL CSA recognition (800V AC - 1000V DC) for Midget and IEC products
- **Vibration withstand:**
  Tests with sine vibrations carried out at ambiant temperature with scanning each of the three main axis of the holder .
  Spectrum: 1st segment (2 to 16Hz) constant displacement x=5mm peak
  2nd segment (16 to 250 Hz) constant acceleration γ= 5g peak
  Exponential scanning speed: 1 octave per minute.
  Duration : 2 hours per axis.
- **Climatic usage conditions:** Modulostar® is designed for temperate climates . For more severe climates we recommend the following:

Maximum temperature	20°C	30°C	40°C	50°C
Maximum relative humidity	95%	90%	80%	50%
Curent derating	1	0.95	0.9	0.8

American General Purpose Fuses
UltraSafe Range
Highlights





Fuse ranges used in Ferraz Shawmut fusegear

Class \ Size	10.3 x 38 / CC	14 x 51	22 x 58	27 x 60
600V Class J Time delay			AJT 1 to 30A	AJT 31 to 60A
600V Class J Fast acting			A4J 1 to 30A	A4J 31 to 60A
600V Midget fast acting	6JX, ATM, SBS 0.25 to 30A			
600V Class CC Time delay	ATDR, ATQR, ATMR 1/4 to 30A			
600V Class RK5 Time delay		TR 1 to 30A		
250V Class RK1 Fast acting		A2K 1 to 30A		
250V Class K-5		OT, OTN 1 to 30A		
250V Class RK1 Time delay		A2D, 1 to 30A		
500V Midget Time delay	ATQ 0.1 to 10A			
250V-300V Midget	OTM, TRM, A25Z-2 0.1 to 30A			
125V Midget Fast acting	GGU, GFN 3 to 30A			
aM	400V 25 to 32A 500V 0.16 to 20A 690V 0.16 to 12 or20A*	500V 32 to 50A 690V 0.25 to 40A	500V 100 to 125A 690V 1 to 80A	
gG	400V 32A 500V 0.5 to 25A 690V 0.5 to 12 or 20A*	400V 50A 500V 32 to 40A 690V 1 to 32A	400V 125A 500V 100A 690V 4 to 80A	
60gD		600V 10 to 30A	600V 35 to 60A	600V 65 to 100A
gG with striker	400V 2 to 32A	400V 50A 500V 2 to 40A 690V 2 to 32A*	400V 125A 500V 80 to 100A 690V 4 to 80A*	690V 63 to 160A*
aM with striker	400V 2 to 32A	500V 1 to 15A 690V 10 to 40A*	500V 63 to 100A 690V 1 to 80A*	690V 63 to 160A*
UR	600V 0.1 to 0.8	690V 6 to 50A	690V 25 to 100A	
gR	690V 1 to 32A	690V 1 to 50A	690V 25 to 100A	
UR with striker	500V 1 to 30A	690V 6 to 50A	690V 25 to 100A	690V 63 to 250V 1000V 32 to 170A
gR with striker		690V 1 to 50A	690V 25 to 100A	800V 8 to 110A
I_n maxi	32A	50A	125A	170A

** development in progress*

UL fuse holders: USCC

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7			Cable wire section (mm^2) recommanded
					ATDR	ATM	ATMR	
600V AC	6 kV	30 A	3 W	≤20	20	20	20	2.5
600V AC	6 kV	30 A	3 W	25	25	25	25	4
600V AC	6 kV	30 A	3 W	30	30	30	30	6

ULTRASAFE™ Fuse holders for Class CC fuse links



ULTRASAFE™ Fuse holder without fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**USCC1**	H305033	1	12	
2	**USCC2**	K305035	2	6	
3	**USCC3**	L305036	3	4	
4	**USCC4**	N305038	4	3	
2	**USCC1N**	J305034	2	6	
4	**USCC3N**	M305037	4	3	

ULTRASAFE™ Fuse holder with fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**USCC1I**	P305039	1	12	
2	**USCC2I**	R305041	2	6	
3	**USCC3I**	S305042	3	4	
4	**USCC4I**	V305044	4	3	
2	**USCC1NI**	Q305040	2	6	
4	**USCC3NI**	T305043	4	3	

Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**CMS810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

IEC fuse holders: US10

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7				Cable wire section (mm^2) recommanded
					6Jx	ATM,SBS, GNF,GGU	ATQ, OTM TMR	URD / gRB	
	6 kV	30 A	3 W	≤16	16	16	16	16	2.5
690V AC	6 kV	30 A	3 W	20	20	20	20	19	2.5
AC20B	6 kV	30 A	3 W	25	25	25	25	22	4
	6 kV	30 A	3 W	30	30	30	30	25	6
	6 kV	30 A	3 W	32				25	6

Note: UL recognized Voltage are 800V AC and 1000V DC
** Datas for ambiante temperature = 20°C.*
Wire range : Rigid wire = 1- 16 mm^2(18 - 6 AWG) Multistrand wire = 0,75 - 10 mm^2 (18 - 8 AWG)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm)
Maximum Tightening Torque : 2.5 Nm (22lb-in)
IR for fuses : 120KA @ 500V IEC - 80KA @ 690V IEC - 80 KA @ 700V UL

MODULOSTAR® Fuse holders for Midget and 10 x 38 fuse links

MODULOSTAR® Fuse holder without fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US10N**	H305056	1	12	
1	**US101**	B305050	1	12	
2	**US101N**	C305051	2	6	
2	**US102**	D305052	2	6	
3	**US103**	E305053	3	4	
4	**US103N**	F305054	4	3	
4	**US104**	G305055	4	3	



MODULOSTAR® Fuse holder with fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US101I**	J305057	1	12	
2	**US101NI**	K305058	2	6	
2	**US102I**	L305059	2	6	
3	**US103I**	M305060	3	4	
4	**US103NI**	N305061	4	3	
4	**US104I**	P305062	4	3	

Accessories

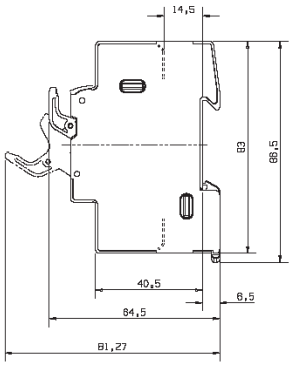
Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**US810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

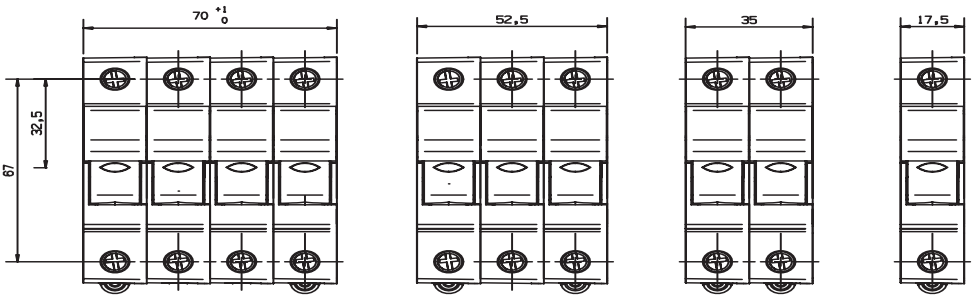
*Note *: It is possible to use a rigid cable 16 mm^2 with a jumping bar 1.5 mm thick.*

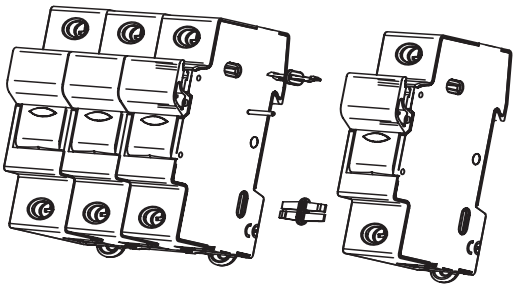
UL fuse holders: USCC & US10



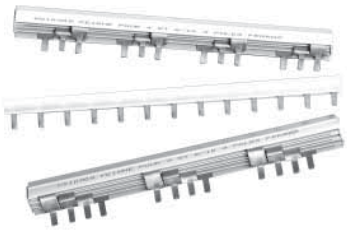
Dimensions











Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**CMS810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

USFM10 - USFMM

Three poles fuse holders and fuse disconnectors: USFM10 - USFMM

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7 6Jx	ATM,SBS, GNF,GGU	ATQ, OTM TMR	URD / gRB	Cable wire section (mm^2) recommanded
690 V IEC 600V UL AC20B	6 kV	32 A	3 W	≤12	80%			≤12	2.5
				16				16	2.5
				20				19	2.5
				25				22	4
				30				25	6
				32				26	6

** Datas for ambiante temperature = 20°C.*
Wire range : Rigid and Multistrand wire = 1- 4 mm² (18 - 10 AWG) - Multistrand wire 6 mm² (9 AWG) with strands repartition between each part of screw
Maximum multistrand wire for each open lug = 2.6 mm² (12 AWG)
Maximum Tightening Torque : 1.5 Nm (13 lb-in)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 0.8 mm (maximum diameter 6 mm)
IR with fuses : 120KA @ 500V IEC - 80KA @ 690V IEC - 80 KA @ 700V UL

MODULOSTAR® USFM10 for IEC 10x38 fuse links

MODULOSTAR® USFM Fuse holder and Fuse disconnector

Nb of Pole/Width	Cat. Number	Ref. Number	Fuse Holder	Fuse Disconnector	Pack	Sur Condi
3 poles	**USFM10**	S302765A	w/o Indicator		1	
system /	**USFM10M**	T302766A		w/o Indicator	1	
45 mm	**USFM10I**	W302768A	with Indicator		1	
width	**USFM10MI**	V302767A		with Indicator	1	

Fuse holder is without Prebreaking Microswitch (see accessories)
Fuse disconnector is with mounted Prebreaking Microswitch



ULTRASAFE™ USFMM for Midget and IEC 10x38 fuse links

Nb of Pole/Width	Cat. Number	Ref. Number	Fuse Holder	Fuse Disconnector	Pack	Sur Condi
3 poles	**USFMM**	D302775A	w/o Indicator		1	
system /	**USFMMM**	E302776A		w/o Indicator	1	
45 mm	**USFMMI**	G302778A	with Indicator		1	
width	**USFMMMI**	F302777A		with Indicator	1	

Fuse holder is without Prebreaking Microswitch (see accessories)
Fuse disconnector is with mounted Prebreaking Microswitch

Accessories

Description	Cat. Number	Ref. Number	Nb of Sytem interconnected	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Lock	**LOCK**	M223525				1	
Microswitch	**USFMAC11**	C302797	1		3	1	
Additional Neutral			1				
Jumping bars 3 phases			4		3		
Lateral incoming power supply	**TBB23C**	G210318		90		50	
Axial incoming power supply	**TBB23A**	F210317		90		50	
Interconnexion with SEI 30A Contactor			1		3		
Interconnexion with Rockwell 30A Contactor			1		3		
Interconnexion with SIEMENS 30A Contactor			1		3		
Interconnexion with ABB 30A Contactor			1		3		
Interconnexion with GE 30A Contactor			1		3		

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

UL three poles fuse holders: USFMCC

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7			Cable wire section (mm^2) recommanded
					ATDR	ATM	ATMR	
600V AC	8 kV	30 A	3 W	≤20	20	20	20	
600V AC	8 kV	30 A	3 W	25	25	25	25	4
600V AC	8 kV	30 A	3 W	30	30	30	30	6

** Datas for ambiante temperature = 20°C.*

Wire range : Rigid and Multistrand wire = 1- 4 mm² (18 - 10 AWG) - Multistrand wire 6 mm² (9 AWG) with strands repartition between each part of screw
Maximum multistrand wire for each open lug = 2.6 mm² (12 AWG)
Maximum Tightening Torque : 1.5 Nm (13 lb-in)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 0.8 mm (maximum diameter 6 mm)
IR with UL Class CC fuse links : 200KA @ 600V

ULTRASAFE™ USFMCC for Class CC fuse links



ULTRASAFE™ USFM Fuse holder and Fuse disconnector

Nb of Pole/Width	Cat. Number	Ref. Number	Fuse Holder	Fuse Disconnector	Pack	Sur Condi
3 poles	**USFMCC**	P302762A	w/o Indicator		1	
system /	**USFMCCM**	B302796A		w/o Indicator	1	
45 mm	**USFMCCI**	Q302763A	with Indicator		1	
width	**USFMCCMI**	R302764A		with Indicator	1	

Fuse holder is without Prebreaking Microswitch (see accessories)
Fuse disconnector is with mounted Prebreaking Microswitch

Accessories

Description	Cat. Number	Ref. Number	Nb of Sytem interconnected	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Lock	**LOCK**	M223525				1	
Microswitch	**USFMAC11**	C302797	1		3	1	
Additional Neutral			1				
Jumping bars 3 phases			4		3		
Lateral incoming power supply	**TBB23C**	G210318		90		50	
Axial incoming power supply	**TBB23A**	F210317		90		50	
Interconnexion with SEI 30A Contactor			1		3		
Interconnexion with Rockwell 30A Contactor			1		3		
Interconnexion with SIEMENS 30A Contactor			1		3		
Interconnexion with ABB 30A Contactor			1		3		
Interconnexion with GE 30A Contactor			1		3		

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

USFM10, USFMM, USFMCC

Ferraz Shawmut Fuse usable in USFM* for Motors protection

P . Motor	Motor Voltage	Ie Motor	AM IEC fuse links	CC UL listed	GD UL recognized	JTD UL Listed≤ 60A
4 kW	400/415V	9A	50 aM 10.10*	CC 15*	60 gD 14.12	AJT17.5
4 kW	500V	7A	50 aM 10.8*	CC 12*	60 gD 14.10	AJT15
4 kW	690V	5A	69 aM 10.6,3*	-	-	AJT10
5.5 kW	400/415V	12	50 aM 10.16*	CC 20*	60 gD 14.18	AJT20
5.5 kW	500V	10	50 aM 10.12*	CC 17*	60 gD 14.15	AJT17.5
5.5 kW	690V	7	69 aM 10.8*	-	-	AJT15
7.5 kW	400/415V	16	50 aM 10.20*	CC 25*	60 gD 14.25	AJT25
7.5 kW	500V	14	50 aM 10.16*	CC 25*	60 gD 14.20	AJT20
7.5 kW	690V	9	69 aM 10.10*	-	-	AJT17.5
11 kW	400/415V	23	50 aM 10.25*	-	60 gD 14.30	AJT40
13 kW	500V	20	50 aM 10.25*	CC 30*	60 gD 14.28	AJT35
10 kW	690V	12	69 aM 14.12	-	-	AJT20
15 kW	400/415V	30	40 aM 10.32	-	60 gD 22.35	AJT60
15 kW	500V	25	50 aM 10.25	-	60 gD 14.30	AJT45
15 kW	690V	18	69 aM 14.20	-	-	AJT30
18 to 20 kW	400/415V	37	50 aM 14.40	-	60 gD 22.55	-
18 to 20 kW	500V	30	50 aM 14.32	-	60 gD 14.45	AJT60
18 to 20 kW	90V	21	69 aM 14.25	-	-	AJT335
22 kW	400/415V	43	50 aM 14.50	-	60 gD 22.60	-
25 kW	500V	38	50 aM 14.40	-	60 gD 22.50	-
22 kW	690V	25	69 aM 14.32	-	-	AJT45
28 kW	400/415V	54	50 aM 22.63	-	60 gD 27.80	-
32 kW	500V	47	50 aM 22.50	-	60 gD 22.60	-
28 kW	690V	30	69 aM 14.40	-	-	AJT60
32 kW	400/415V	60	50 aM 22.80	-	60 gD 27.100	-
37 kW	500V	55	50 aM 22.63	-	60 gD 27.80	-
32 kW	690V	34	69 aM 14.40	-	-	AJT60
40 kW	400/415V	72	50 aM 22.80	-	60 gD 27.100	-
45 kW	500V	67	50 aM 22.80	-	-	-
40 kW	690V	42	69 aM 14.50	-	-	-
45 kW	400/415V	85	50 aM 22.100	-	-	-
55 kW	500V	80	50 aM 22.100	-	-	-
55 kW	690V	49	69 aM 14.63	-	-	-

UL fuse holders: US 14

Electrical characteristics

Rated insulation voltage Ui AC/DC	Rated impulse withstand voltage Uimp	Rated current	Max. power dissipation per fuse	Fuse rating	Maximum current in use for 1, 2, 3 et 3+N poles with FS-fuses. for 4, 5 and 6 poles, multiply by 0.8 for 7, 8, 9 x 0.7 and for ≥ 10 x 0.6							Cable wire section (mm^2) recommanded
					gG	60gD	aM	URD - URC	URGA URGB	gRB	gLB	
750 V	8 kV	50 A	4,7 W	≤ 20		20	≤ 20	18	18	18	≤ 16	≤ 16
750 V	8 kV	50 A	4,7 W	≤ 25		25	25	20	20	20	20	20
750 V	8 kV	50 A	4,7 W	≤ 30	≤ 20	30		18	18	18	25	25
750 V	8 kV	50 A	4,7 W	32	≤ 25		32	25	25	25	32	32
750 V	8 kV	50 A	4,7 W	40	≤ 30		40	30	30	30	40	40
750 V	8 kV	50 A	4,7 W	50			50	35	35	35	45	45
750 V	8 kV	50 A	4,7 W	63				38				

** Values shown for 20°C ambient temperature.*
Wiring: Rigid wire = 1.5 - 35 mm² (16 - 3 AWG) - Multistrand wire: Maximum 25 mm² (4 AWG)
Tightening torque: 3.5 Nm max / 30 lbs.in
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm).

ULTRASAFE™ US 14 fuse disconnectors for 14x51 fuses with no striker, or with indicator light or with striker

Model without indicator light ready for accessories

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**US14N**	S227900	1.5	6	
1	**US141**	Z331153F	3	6	
1 + N	**US141N**	D331157C	3	3	
2	**US142**	G331137C	4.5	3	
3	**US143**	N331143B	6	2	
3 + N	**US143N**	X331151A	6	1	
4	**US144**		6	1	



Model with indicator light ready for auxiliary contact

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US141I**	A331154F	3	6	
1 + N	**US141NI**	Z227906	3	3	
2	**US142I**	H331138C	4.5	3	
3	**US143I**	P331144B	6	2	
3 + N	**US143NI**	R227922	6	1	
4	**US144I**		6	1	

ULTRASAFE™ US 14 fuse disconnectors for 14x51 fuses with no striker, or with indicator light or with striker

Model with indicator light ready for auxiliary contact



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US141M**	W227903	1.5	6	
1 + N	**US141NM**	A227907	3	3	
2	**US142M**	E227911	3	3	
2*	**US142M2**	G227913	3	3	
3	**US143M**	L227917	4.5	2	
3*	**US143M2**	N227919	4.5	2	
3 + N	**US143NM**	S227923	6	1	
3 + N*	**US143NM2**	V227925	6	1	
4	**US144M**		6	1	
4*	**US144M2**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Model fitted with auxiliary contact & indicator light



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US141MI**	C331156F	1.5	6	
1 + N	**US141NMI**	B227908	3	3	
2	**US142MI**	K331140C	3	3	
2*	**US142M2I**	M331142C	3	3	
3	**US143MI**	S331147B	4.5	2	
3*	**US143M2I**	W331150B	4.5	2	
3 + N	**US143NMI**	T227924	6	1	
3 + N*	**US143NM2I**	W227926	6	1	
4	**US14MI**		6	1	
4*	**US144M2I**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Accessories



Auxiliary contact kit



Enlargement pin for auxiliary contact



Auxiliary contact assembly pin

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Pack	Sur Condi
Auxiliary contact kit 1 pole US 14	**USMSW1**	Y227928	1.5	1	
Auxiliary contact kit 3 poles US 14	**USMSW2**	Z227929	4.5	1	
2 auxiliary contact kit 3 poles US 14	**USMSW3**	A227930	4.5	1	
Auxiliary contact assembly pin (between 2 kits)	**US1422PTH**	J214138		10*	
Enlargement pin for auxiliary contact	**US1422BP**	F213629		10*	
Multi-pole assembly kit	**US14PAK**	X227927		10*	
Indicator light kit	**CMS1422LHI**	A225653		1	
Lock	**LOCK**	M223525		1	

** 10 per bag*

UL fuse holders: US 22

Electrical characteristics

Rated insulation voltage Ui AC/DC	Rated impulse withstand voltage Uimp	Rated current	Max. power dissipation per fuse	Fuse rating	Maximum current in use for 1, 2, 3 et 3+N poles with FS-fuses. for 4, 5 and 6 poles, multiply by 0.8 for 7, 8, 9 x 0.7 and for ≥ 10 x 0.6							Cable wire section (mm^2) recommanded
					gG	60gD	aM	URD - URC	URGA URGB	gRB	gLB	
750 V	8 kV	125 A	9.5 W	≤ 16	≤ 16		≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	2.5/12
750 V	8 kV	125 A	9.5 W	20	20		20	20	20	20	20	4/10
750 V	8 kV	125 A	9.5 W	25	25		25	25	25	25	25	6/10
750 V	8 kV	125 A	9.5 W	32-35	32	35	32	29	29	29	32	10/8
750 V	8 kV	125 A	9.5 W	40	40	40	40	35	35	35	40	10/8
750 V	8 kV	125 A	9.5 W	50	50	50	50	40	40	40	50	10/8
750 V	8 kV	125 A	9.5 W	60/63	60	60	63	52	51	52	63	10/6
750 V	8 kV	125 A	9.5 W	80			80	65	64	75	75	25/4
750 V	8 kV	125 A	9.5 W	100			100	76	74	76	85	35/2
750 V	8 kV	125 A	9.5 W	125			100	85				35/2

** Values shown for 20°C ambient temperature.*
Wiring: Rigid wire = 1.5 - 50 mm² (16 - 1 AWG) - Multistrand wire: Maximum 35 mm² (3 AWG).
Tightening torque: max. 4.5 Nm - 45 lbs.in
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 6.5 x 1.2 mm (maximum diameter 7 mm).

ULTRASAFE™ US 22 fuse disconnectors for 22x58 fuses with no striker, or with indicator light or with striker

Model without indicator light ready for accessories

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**US22N**	B227931	1.5	6	
1	**US221**	E331158F	1.5	6	
1 + N	**US221N**	H331161C	3	3	
2	**US222**	K331163C	3	3	
3	**US223**	R331169B	4.5	2	
3 + N	**US223N**	X331174A	6	1	
4	**US224**		6	1	



Model with indicator light ready for auxiliary contact

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US221I**	F331159F	1.5	6	
1 + N	**US221NI**	H227937	3	3	
2	**US222I**	L331164C	3	3	
3	**US223I**	S331170B	4.5	2	
3 + N	**US223NI**	A227953	6	1	
4	**US224I**		6	1	

ULTRASAFE™ US 22 fuse disconnectors for 14x51 fuses with no striker, or with indicator light or with striker

Model with indicator light ready for auxiliary contact



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US221M**	G331160F	1.5	6	
1 + N	**US221NM**	J331162C	3	3	
2	**US222M**	M331165C	3	3	
2*	**US222M2**	P331167C	3	3	
3	**US223M**	T331171B	4.5	2	
3*	**US223M2**	W331173B	4.5	2	
3 + N	**US223NM**	B227954	6	1	
3 + N*	**US223NM2**	D227956	6	1	
4	**US224M**		6	1	
4*	**US224M2**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Model fitted with auxiliary contact & indicator light



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US221MI**	F227935	1.5	6	
1 + N	**US221NMI**	K227939	3	3	
2	**US222MI**	N331166C	3	3	
2*	**US222M2I**	R227945	3	3	
3	**US223MI**	V331172B	4.5	2	
3*	**US223M2I**	Y227951	4.5	2	
3 + N	**US223NMI**	C227955	6	1	
3 + N*	**US223NM2I**	E227957	6	1	
4	**US22MI**		6	1	
4*	**US224M2I**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Accessories



Auxiliary contact kit





Enlargement pin for auxiliary contact



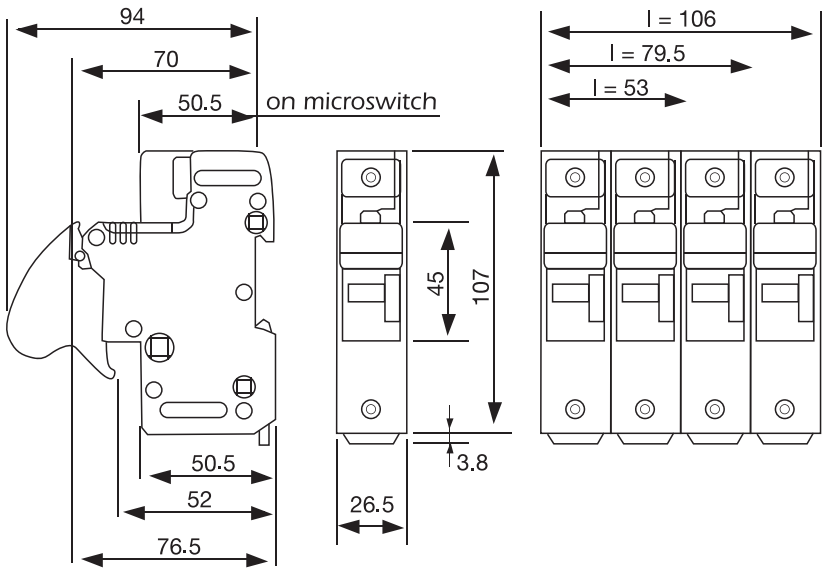
Auxiliary contact assembly pin

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Pack	Sur Condi
Auxiliary contact kit 1 pole US 22	**USMSW4**	G227959	1.5	1	
Auxiliary contact kit 3 poles US 22	**USMSW5**	H227960	4.5	1	
2 auxiliary contact kit 3 poles US 22	**USMSW6**	J227961	4.5	1	
Auxiliary contact assembly pin (between 2 kits)	**US1422PTH**	J214138		10*	
Enlargement pin for auxiliary contact	**US1422BP**	F213629		10*	
Multi-pole assembly kit	**US22PAK**	F227958		10*	
Indicator light kit	**CMS1422LHI**	A225653		1	
Lock	**LOCK**	M223525		1	

** 10 per bag*

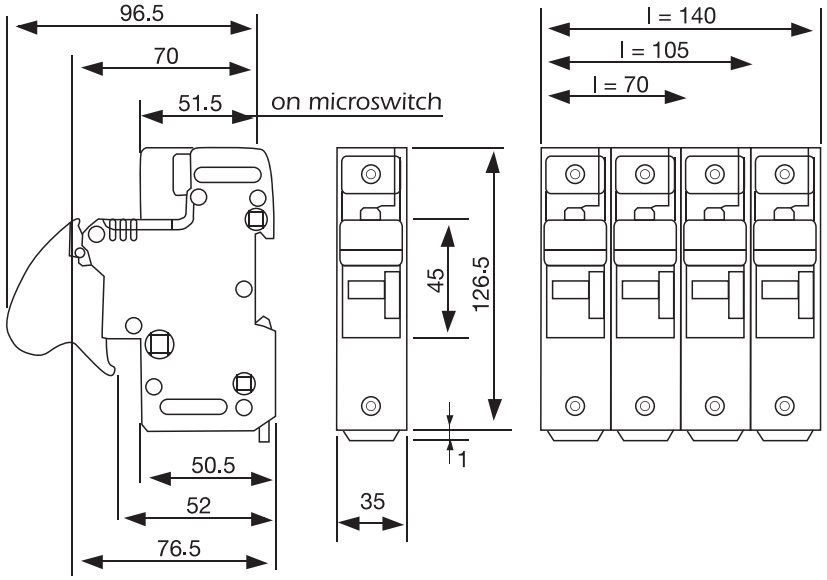
Mecanics for CMS/US 14 & 22

Dimensions of CMS 14 and US 14 products



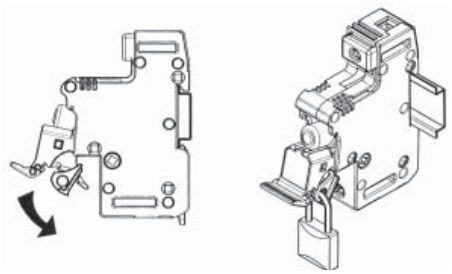
Width depending on nb. of 17.5 mm modules	Nb poles	1	2	3	4	5	6
	Nb of modules	1.5	3	4.5	6	7.5	9
	mm	26.5	53	79.5	106	132.5	159

Dimensions of CMS 22 and US 22 products



Width depending on nb. of 17.5 mm modules	Nb poles	1	2	3	4	5	6
	Nb of modules	2	4	6	8	10	12
	mm	35	70	105	140	175	210

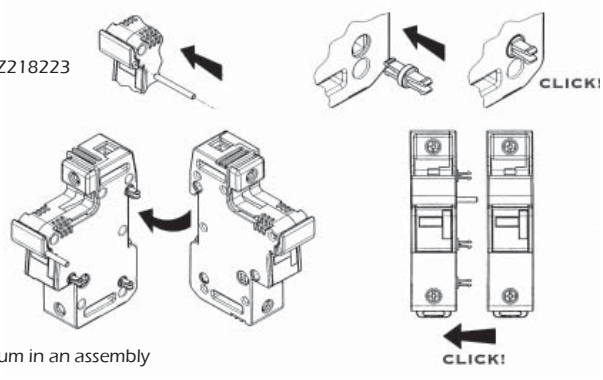
Locking system



Locking reference: M223525

Multipole assembly

Assembly kit
CMS14 & CMS 22: Z218223

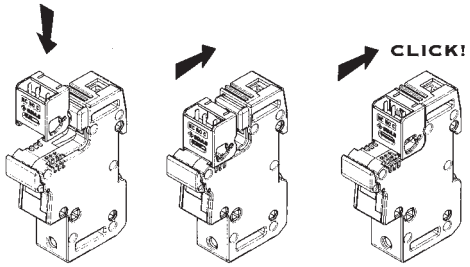


Assembly kit
US 14: X227927
US 22: F227958

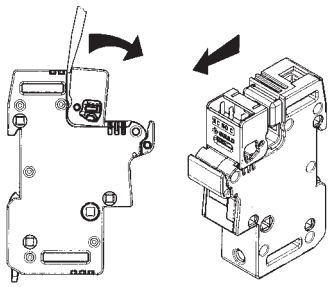
NB: 6 poles maximum in an assembly

Each bag of kits is sufficient for:
- 10 multipole assemblies
- 10 two-pole assemblies
- 5 three-pole assemblies
- 3 four-pole assemblies

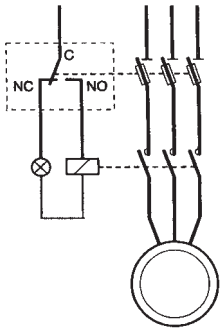
Mounting auxiliary microswitches



Dismounting auxiliary microswitches



Auxiliary microswitch functions



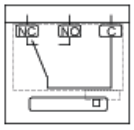
Fuse melting: A fuse holder containing a fuse with a striker sends out a signal when the fuse element melts
Pre-isolation: When the fuse holder opens
Presence: Sends a signal when the holder is closed with no fuse in it

Characteristics of the auxiliary microswitch

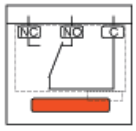
Min. voltage and current for operation 10VAC-DC -100mA

	6A	AC 12
Rated current	3A	AC 13
and breaking capacity (1) at 250V	0,3A	AC 14
	0,1A	DC 12/13/14
	6A	DC 12/DC13
Rated current and breaking capacity (1) at 2 and 24 V	5A	AC 13
	2A	AC 14/DC 13
	0,6A	DC 14

(1) as per standard IEC 947-5



With the fuse in the handle closed state.

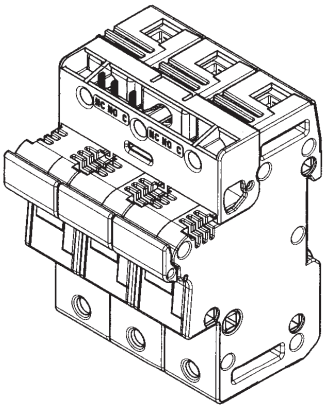


No fuse
Fuse blown Handle open

Microswitch options

Auxiliary microswitches can only be mounted on previously prepared fuse disconnectors.
Use of the auxiliary microswitch for fuse melting requires the use of fuses with strikers.

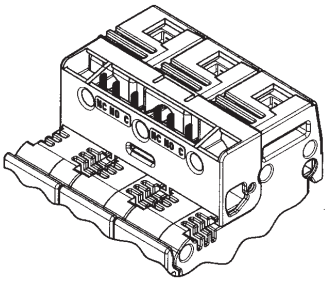
1 auxiliary microswitch



CMS 14 (C219261) - US14 (Z227929)
CMS 22 (L212093) - US 22 (H227960)

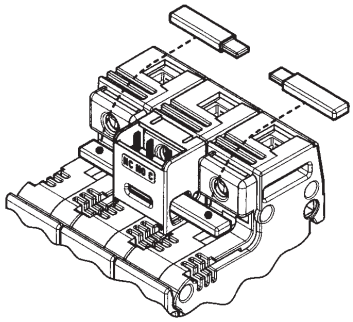
or

2 auxiliary microswitches



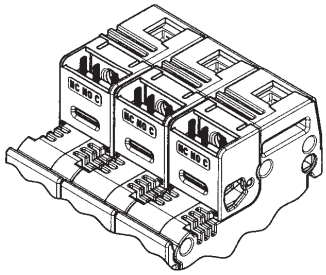
CMS 14 (D219791) - US14 (A227930)
CMS 22 (B212613) - US 22 (J227961)

1 auxiliary microswitch



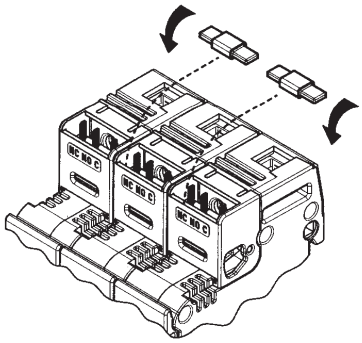
CMS 14 (M218741+F213629)
CMS 22 (E211581+F213629)
US 14 (Y227928+F213629)
US 22 (G229759+F213629)

3 independent auxiliary microswitches



CMS 14 (3 x M218741)
CMS 22 (3 x E211581)
US 14 (3 x Y227928)
US 22 (3 x G227959)

3 mechanically interconnected auxiliary microswitches



CMS 14 (3 x M218741+2 x J214138)
CMS 22 (3 x E211581+2 x J214138)
US 14 (3 x Y227928) + (2 x J214138)
US 22 (3 x G227959) + (2 x J214138)

NOTE: Do not fit with more than 3 microswitches

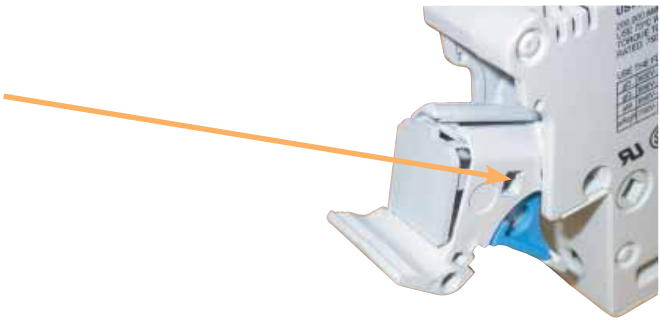
Supply wiring bars and terminals

Description	Cat. Number	Ref. Number	Maxi. acceptable RMS current (A)	Pack	Sur Condi
jumping bar for 4 (CMS 14/US 14) 3 poles	CMS14BB3F4	A210312	100	5	
jumping bar for 6 (CMS 14/US 14) 2 poles	CMS14BB2F6	Z210311	63	5	
jumping bar for 12 (CMS 14/US 14) 1 pole	CMS14BB1F12	Y210310	63	5	
jumping bar for 6 (CMS 22/US 22) 2 poles	CMS22BB2F6	C210314	150	5	
jumping bar for 12 (CMS 22/US 22) 1 pole	CMS22BB1F12	B210313	90	5	
Single-pole terminal, side	TBB1C	E210316	90	50	
2/3-pole terminal, side	TBB23C	G210318	90	50	
Single-pole terminal, axial	TBB1A	D210315	90	50	
2/3-pole terminal, axial	TBB23A	F210317	90	50	

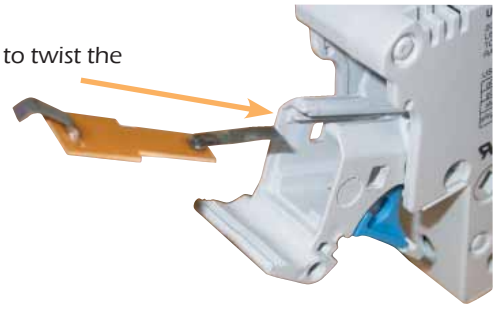
Indicator light kit for CMS/US 14 & 22

With the indicator light a blown fuse can be quickly located if power is still on

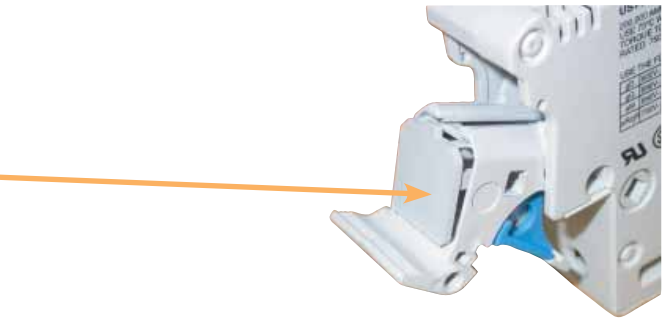
1 Carefully remove the cover with 2 screw drivers.



2 Slip the indicator light's top insert into the rails, being careful not to twist the contact tabs.



3 Put the cover back on



Assembly precautions in multipole assemblies

When fuse holders are side by side or very near each other (less than one module apart), they must be derated again, in addition to derating for temperature

Number of 17.5 mm modules	Derating factor
1-2-3	None = 1
4-5-6	0.8
7-8-9	0.7
> 10	0.6

ULTRASAFE™: US27 Fuse Holder

- Conforms to the standards: UL 512 AND UL 840
  CSA 22-2 N° 39
  EN 60947-1 & 3 (Class : AC20B)

- Rated insulation voltage Ui= 800VAC-DC

- Full protection against accidentally touching live parts.
  Protection degree : IP 2XB in accordance with the IEC standard 60529.

- High performance, conforming to European standards (Attachment to DIN rail - Modular fuse-disconnector).

- The US27 models have c UL us approval.



Designed for 27 x 60 mm (2 3/8 x 1 1/16 In.) ferrule fuses. (800V AC - DC, Ith = 150A)

New Improved Design:
Attractive design and colour

Designed for all 27 x 60 ferrule fuses
- UR curve (class UR)
- gR curve (class gR)
- Class J (UL)

The Only Fuse-Disconnector which Conforms to the Standard
The only fuse-disconnector on the market that respects the pre-isolation time defined by the standard (EN60947-1:t >20 ms), when it is equipped with a microswitch.

Ample Space for Wiring and Connection
Standard wiring with a choice of either :
- One 35 mm² cable (3AWG) flexible or rigid,
- Two 16 mm² flexible cables (6AWG),
- Wiring with B type connection plates for eye lugs (electronic market in the USA and Japan, global traction market).

Blown Fuse Indicator
The blown fuse indicator functions at between 100V and 800V AC and DC and is a standard part of the US 27 range. (Leak current less than 0.5mA)

UL Approval
The US 27 version has c UL us certification.
File Number E113357.
Fire smoke resistance classification : I3F2 in accordance with the standards NFF 16101 and NFF 16102 (US 27 version).

The Only Fuse-Holder With IP 20
- The only fuse-holder/fuse-disconnector on the market that offers certified IP 20B (open and closed)
- The only fuse-holder/fuse-disconnector on the market for this range of fuse (800V AC-DC 150A).

Identification of Terminals
The terminals are easy to identify due to the marker kit provided with the standard product.

Blown Fuse Micro-Switch, Safe Pre-Isolation and fuse presence characteristics for the US 27 version
Rated and minimum use current : In= 5A, Imini= 100 mA
Rated and minimum use voltage : Un= 250V, Umini= 20V
Approvals : UL

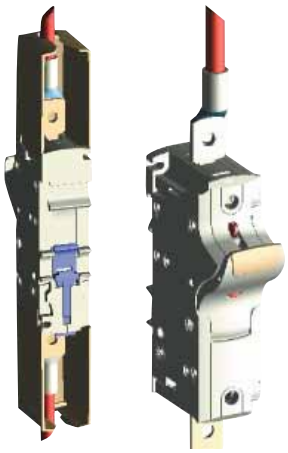


2.8 mm connection terminals

Electric Characteristics

Insulation voltage AC UI in V AC/DC	Impulse withstand voltage Uimp (kV)	Current rating I_N (A)	Fuse current rating I_N (A)	Maxi fuse operating current (A)					Recommended copper wire gauge	
				660V URGD	60gD	660V URQ URS CC	660V-800V gRB	1000V URB	AWG	mm²
800 (CEI) / (US)	8	150	8	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	10	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	12	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	16	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	20	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	25	-	WITHOUT DERATING			-	12	4
800 (CEI) / (US)	8	150	32	32		32	32	29	10	6
800 (CEI) / (US)	8	150	40	40		40	40	36	8	10
800 (CEI) / (US)	8	150	50	50		45	50	42	8	10
800 (CEI) / (US)	8	150	63-65	55	65	55	63	50	6	16
800 (CEI) / (US)	8	150	80	61	80	60	80	60	6	16
800 (CEI) / (US)	8	150	100	75	100	72	96	72	4	25
800 (CEI) / (US)	8	150	110	-		-	102	-	3	30
800 (CEI) / (US)	8	150	125	91		90	-	90	3	35
800 (CEI) / (US)	8	150	160	112		110	-	109	3	35
800 (CEI) / (US)	8	150	170	-		-	-	112	3	35
800 (CEI) / (US)	8	150	200	130		130	-	-	1	50*
800 (CEI) / (US)	8	150	250	138		138	-	-	1	50*

** Busbar and ring lug connection*



Versatile Methods of Mounting

Option of mounting the fuse-holder with phase and neutral poles, as well as micro-switches, due to the connection accessories.

Several Kinds of Attachment

With M4 screws,
- 35 mm or 75 mm symmetric DIN rail*,
- Asymmetric DIN rail with adapter (Ref. Q098500).

** Need of 15 mm distance between DIN rail and panel*

Possibility of Using Connection Plates

For a cable with a diameter greater than either a 35 mm² rigid or flexible cable, or two 16 mm² flexible cables, the connection can be made using ring lug.
Protection covers are provided with this series to safeguard against accidental contact. Connection to connection plates, for cables equipped with ring or fork-type lugs.

Climatic Conditions of Use

This range of products has been designed for use in temperate, tropical and equatorial climates, provided that the following temperature/humidity conditions are not exceeded:

Maximum temperature °C	20	40	50
Maximum relative humidity %	95	80	50

Resistance to Vibrations

Test with sinusoidal vibrations, scanning the three main axes of the holder.
Spectrum :
- 1st segment (2-16Hz) constant displacement
  χ = 5 mm peak
- 2nd segment (16-250Hz) constant acceleration
  γ = 5g peak

Exponential scanning speed : 1 octave per minute.
Duration : 2 hours per axis.

27x60 Fuses used Ranges	U_N	I_N	Applications
(6,621 CP URGD 27.60 ...)	660VAC	63 to 250A	Class aR - Protection of semiconductor equipment,
(6,621 CP URQ, URS 27.60...)	660VAC	32 to 250A	e.g. Soft starters, static relays, or regulators.
(821 CP gRB 27.60...)	800VAC	8 to 110A	Class gR - Protection of cables, semiconductor equipment and AC instrument circuits.
(1021 CP URB 27.60...)	1000VAC	25 to 170A	Class aR - Protection of semiconductor equipment, e.g. Soft starters, static relays, regulators.
(CC 4,421 CP gLB 27.60...)	440VDC	125 to 160A	Protection of DC instrument circuits, traction auxiliary circuits,
(CC 6,621 CP gRB 27.60...)	660VDC	0.8 to 125A	DC fed converters.

Range Without Microswitch

Number of poles	Connections	Cat.Number	Ref. Number	Weight (g)	Pack	Sur Condi
1	By screw, U bolt or connector	**US271I**	J226420C	285	3	
1	By screw, U bolt or connector	**CMS271**	R210580C	290	3	
1	Ring lug connection	**US271RING**	B223515C	340	3	
1 + N	By screw, U bolt or connector	**US271NI**	K226421A	580	1	
1 + N	By screw, U bolt or connector	**CMS271N**	S210581A	570	1	
1 + N	Ring lug connection	**US271NIRING**	E223518A	690	1	
N	By screw, U bolt or connector	**CMS27N**	B210152C	285	3	
N	Ring lug connection	**US27NIRING**	F223519C	340	3	
2	By screw, U bolt or connector	**US272I**	L226422A	580	1	
2	By screw, U bolt or connector	**CMS272**	T210582A	570	1	
2	Ring lug connection	**US272IRING**	C223516A	690	1	
3	By screw, U bolt or connector	**US273I**	M226423A	855	1	
3	By screw, U bolt or connector	**CMS273**	V210583A	870	1	
3	Ring lug connection	**US273IRING**	D223517A	1030	1	
3 + N	By screw, U bolt or connector	**US273NI**	N226424A	1200	1	
3 + N	By screw, U bolt or connector	**CMS273N**	W210584A	1250	1	
Assembly kit		**US27PAK**	H227615	10		
Microswitch*		**US27W1**	E227612	1		

** for US27 version only.*

The ring lug connection, four-pole model does not exist in the configuration (3 + neutral).
The blown fuse indicators are available with the standard US 27 version.
The recognized US 27 equipment uses UL 94 VO plastic materials. The US27range is pre-equipped with blown fuse microswitch and safe pre-isolation accessories, to transform the products into fuse-disconnectors.

Range With Microswitch

Number of poles	Connections	Cat.Number	Ref. Number	Nb of Micro.	Weight (g)	Pack	Sur Condi
1	By screw, U bolt or connector	**US271MI**	R227600C	1	295	3	
1	Ring lug connection	**US271MIRING**	Z227607A	1	355	1	
2	By screw, U bolt or connector	**US272M2I**	T227602A	2	600	1	
2	Ring lug connection	**US272M2IRING**	B227609A	2	710	1	

Range of Accessories

Micro-switches and safe pre-isolation

Number of poles	Catalog Number	Reference number	Packaging	Sur Condi.
1	**US27W1**	E227612	1	

Note : 2 one-pole microswitches need to be purchased for a two-pole assembly (Ph+N or two-phase).

Pole Assembly Kit

Number of poles	Catalog Number	Reference number	Packaging	Sur Condi.
For 2, 3 and 4 poles	**US27PAK**	H227615	1	

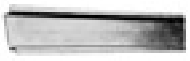
The assembly kit is made up of staples to assemble the poles and pins for the handles.

Neutral Tubes

The neutral poles come with a neutral tube, which is sealed with plastic so that it cannot be removed.

35mm Mounting Rail

Type	Catalog Number	Reference number	Packaging	Sur Condi.
Symmetric		J213172	40 lengths of 2 m	
Symmetric drilled		C213672	40 lengths of 2 m	
Symmetric reinforced		R215203	20 lengths of 2 m	
Adaptor for asymmetric DIN rail	ADAP-RASST	Q098500	50	



Symmetric

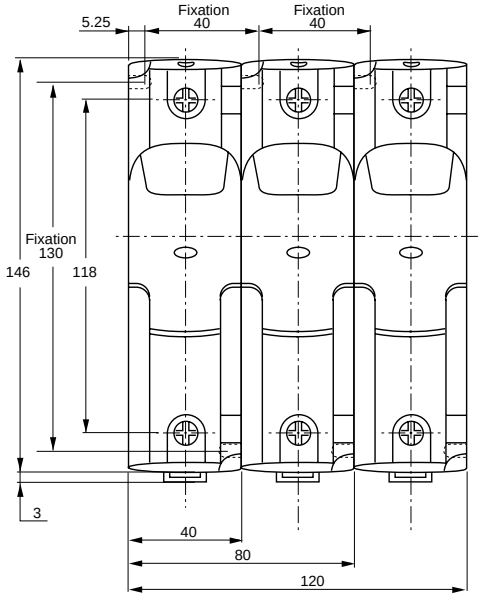


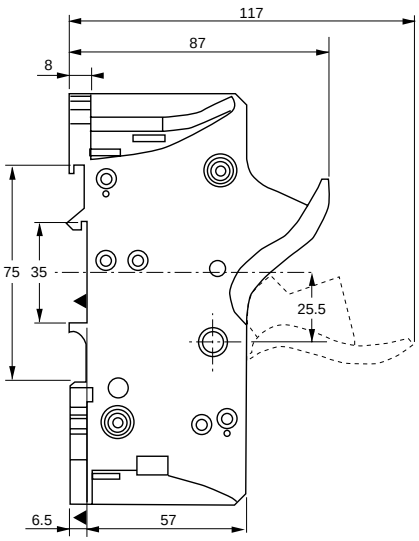
Symmetric drilled



Symmetric reinforced

Dimensions US27





Connection by fixed terminal screw-clamps for wires. Maximum section:

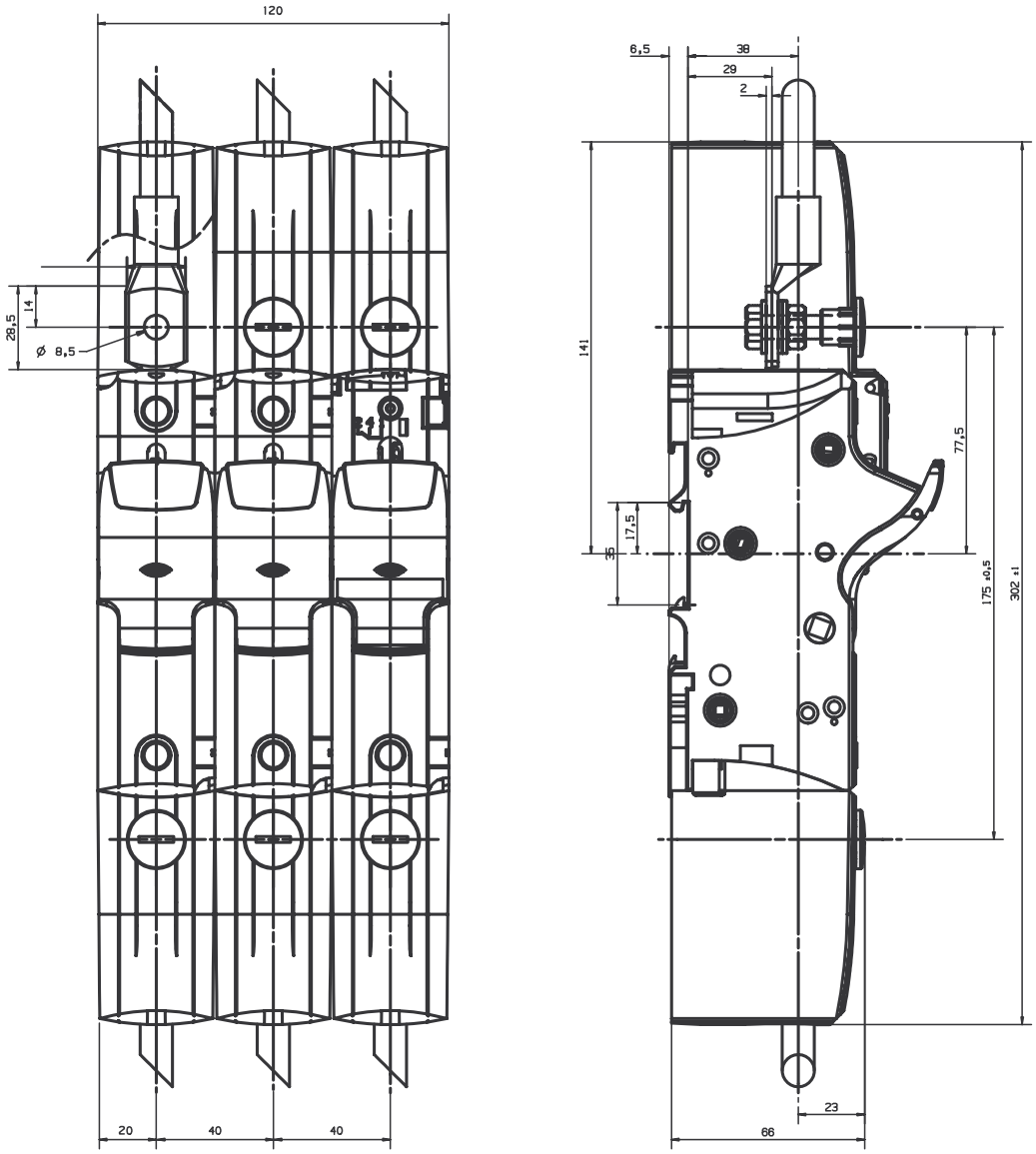
- One conductor, rigid or multistrand : Maximum 35 mm² (3 AWG)
- 2 conductors, multistrand : 16 mm² (6 AWG) or rigid with tightening torque : 2.8 - 3.5 Nm (30 lbs.in)
- Ferraz Shawmut recommands to use screwdrivers PZ 3 or Flat 8 x 1.2 mm (maximum diameter 8 mm).
- Ring lug connection.

Mounting:

- Simple snap mounting on 35 mm symmetric DIN rail (standard EN 50022) and 75 mm with 2 locking positions*.
- Directly onto the board with M4 screws and tightening torque from 1 to 1.2 Nm (11 lbs.in)
- On 35 mm asymmetric DIN rail with adaptor (Ref. Q098500)

** Need of 15 mm distance between DIN rail and panel*

Dimensions US27
for ring lugs connections





American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class J

CLASS J FUSE BLOCKS

Ferraz Shawmut Class J Fuse Blocks accommodate all Class J fuses. A choice of screw, pressure plate, box and special order stud connectors fit a wide range of stranded or solid copper or aluminum wire. Insulators are either molded glass-filled polycarbonate (GFPC) or phenolic with verified dielectric strength in excess of 2500V. 30 and 60A fuse blocks feature a unique adder block which can be snapped onto 1-, 2- or 3-pole blocks to form multi-pole segmented blocks of as many poles as desired. All fuse clips are made of high conductivity tin-plated copper, with a choice of spring reinforced or non-spring reinforced clips in 30A and 60A. Clips 100A and above are spring reinforced.

Ratings

- 600VAC: 30A, 60A, 100A, 200A, 400A, 600A
- Withstand rating: 200kA

Approvals

- All fuse blocks meet the requirements of UL Std. 512
- UL Listed, Guide IZLT, File E52283
- CSA Certified Class 6225, File 32169

Recommendes fuse usage

Class J Blocks (600V) . . .use with AJT, A4J

Clip & Connector Types

30A & 60A CLIPS	CONNECTORS	CONNECTORS	CONNECTORS	CONNECTORS
SPRING REINFORCED	NON-SPRING REINFORCED: 30A & 60A BOX	SPRING REINFORCED: 30A & 60A BOX	SPRING REINFORCED: 100A BOX	SPRING REINFORCED: 400A BOX IN-LINE CLIP
NON-SPRING REINFORCED	30A SCREW	30A SCREW	200A BOX SIDE-CLIP	600A BOX IN-LINE CLIP
	30A PRESSURE PLATE	30A PRESSURE PLATE	400A BOX SIDE-CLIP	

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class J

CLASS J FUSE BLOCKS

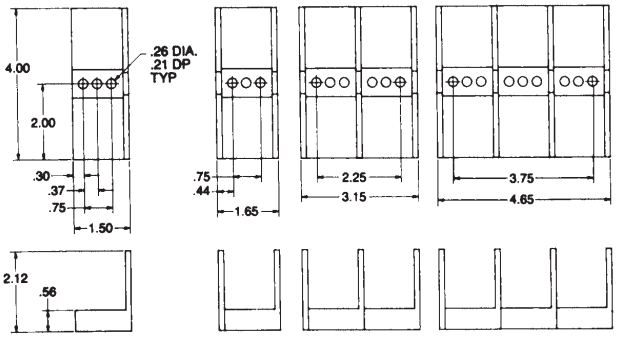


Figure 1

Figure 2

Figure 3

Figure 4

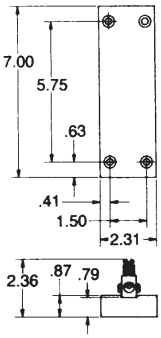


Figure 5

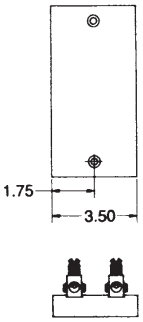


Figure 6

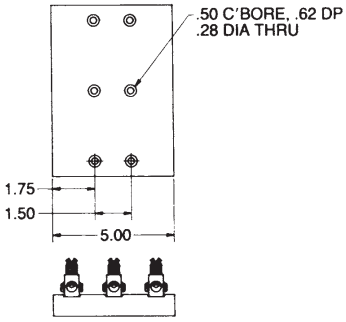


Figure 7

30A and 100A figures are standard dimension fuse blocks. See also 30 A and 100A space-saving "SJ" Series.
Recommended mounting screws for all 30A, 60A and 100A fuse blocks: 1/4" (.250" dia.)

600 Volt, 30, 60 & 100 Ampere Class J Fuse Blocks

Amper Rating	Poles	Connector		Catalog Number Type of clip		Reference Number Type of clip		Fig.	Connector Torque In - lb
		Type	Wire Range	Non-spring Reinforced	Spring Reinforced	Non-spring Reinforced	Spring Reinforced		
30 GFPC INSULATOR	ADDER	BOX	Al/Cu #2-14	60300J	60305J	D219584	K204893	1	35
	1			60301J	60306J	X222039	J211884	2	
	2			60302J	60307J	T223301	S213433	3	
	3			60303J	60308J	W201637	A214452	4	
	ADDER	SCREW PRESSURE PLATE	Cu #10-14	60310J	60315J	E215468	N218029	1	20
	1			60311J	60316J	H215977	P219065	2	
	2			60312J	60317J	T216999	Y222040	3	
	3			60313J	60318J	E217515	V223302	4	
	ADDER			60320J	60325J	X201638	Y212403	1	20
	1			60321J	60326J	N204896	T213434	2	
	2			60322J	60327J	D211373	B214453	3	
	3			60323J	60328J	K211885	F215469	4	
	ADDER	BOX	Cu* #4-14	-	60355J	-	G216482	1	35
	1			-	60356J	-	P218030	2	
	2			-	60357J	-	Q219066	3	
	3			-	60358J	-	Z222041	4	
60 GFPC INSULATOR	ADDER	BOX	Al/Cu #2-14	60600J	60605J	W223303	E211374	1	45
	1			60601J	60606J	M201123	L211886	2	
	2			60602J	60607J	Y201639	Z212404	3	
	3			60603J	60608J	R204899	F212916	4	
	ADDER	BOX	Cu* #4-14	-	60655J	-	G215470	1	45
	1			-	60656J	-	K215979	2	
	2			-	60657J	-	H216483	3	
	3			-	60658J	-	W217001	4	
100 PHENOLIC INSULATOR	1	BOX	Al/Cu 2/0-#6	-	61036J	-	Z201640	5	120
	2			-	61037J	-	F211375	6	
	3			-	61038J	-	G212917	7	
	1	BOX	Cu* 2/0-#12	-	61006J	-	F217516	5	50
	2			-	61007J	-	Q218031	6	
	3			-	61008J	-	W218542	7	

Note: To convert 30A or 60A adder pole to single pole, use end barrier #U09617 (X227513).
**Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class J

CLASS J FUSE BLOCKS

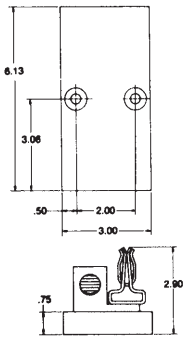


Figure 1

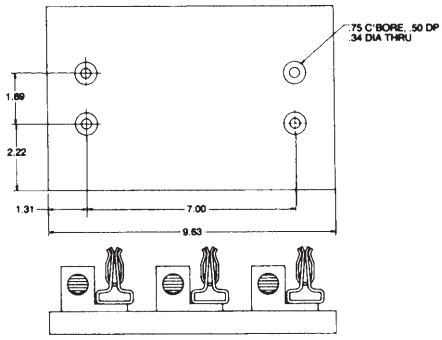


Figure 2

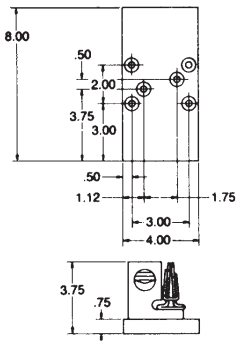


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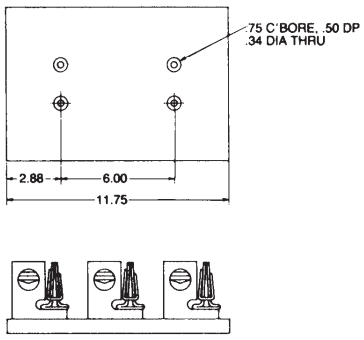


Figure 4

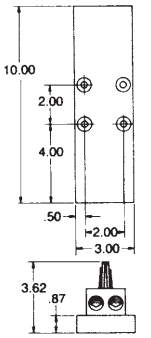


Figure 5

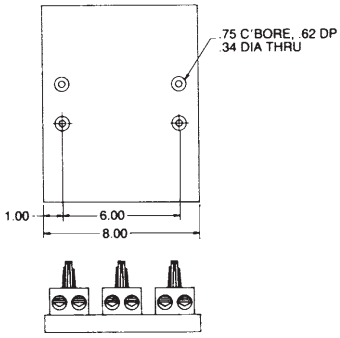


Figure 6

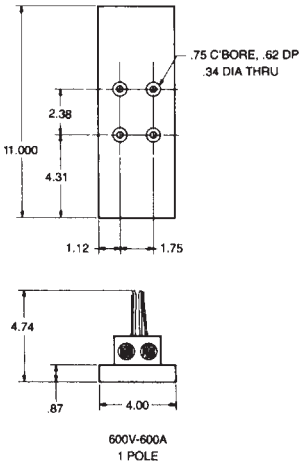


Figure 7

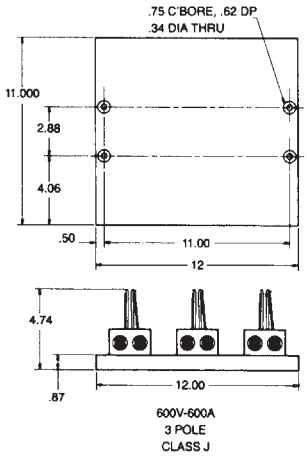


Figure 8

Recommended mounting screws: All 200A, 400A & 600A - 5/16" (.313" dia.)

600 Volt, 200, 400 & 600 Ampere Class J Fuse Blocks

Amper Rating	Poles	Connector Type	Connector Wire Range	Catalog Number Spring Reinforced	Reference Number Spring Reinforced	Fig.	Connector Torque In - lb
200 PHENOLIC INSULATOR	1	BOX	Al/Cu	62001J	D214455	1	375
	3	SIDE-CLIP	350kcmil-#6	62003J	E214962	2	
	1	BOX	Cu**	62051J	J216484	1	275
	3	SIDE-CLIP	350kcmil-#6	62053J	X217002	2	
400 PHENOLIC INSULATOR	1	BOX*	Al/Cu	64001J	G217517	3	375
	3	SIDE-CLIP	1000-250kcmil	64003J	R218032	4	
	1	BOX	Al/Cu	64031J	X218543	5	275
	3	IN-LINE CLIP	(2) 350kcmil-#4	64033J	S219068	6	
	1	BOX*	Cu**	64051J	G219587	3	375
	3	SIDE-CLIP	1000-250kcmil	64053J	A222042	4	
	1	BOX	Cu**	64061J	J222786	5	275
	3	IN-LINE CLIP	(2) 350kcmil-#6	64063J	Y223305	6	
600 PHENOLIC INSULATOR	1	BOX	Al/Cu	6631J	P201125	7	500
	3	IN-LINE CLIP	(2) 500kcmil-#4	6633J	A201641	8	
	1	BOX	Cu**	6661J	J204984	7	375
	3	IN-LINE CLIP	(2) 500kcmil-#4	6663J	G211376	8	

** Not UL Listed or CSA Certified*

***Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class SJ



SPACE-SAVING "SJ" FUSE BLOCKS

Ferraz Shawmut "SJ" Series Fuse Blocks rated 30A and 100A accommodate all 30A and 100A Class J fuses and occupy approximately 25% less mounting space than standard Class J fuse blocks. A patented built-in DIN rail adapter on the 30 ampere SJ block adds further design versatility. A choice of box, screw, or pressure plate connectors fit a wide range of stranded or solid copper or aluminum wire. Insulators are glass-filled polycarbonate with verified dielectric strength in excess of 2500V. The 30 ampere SJ block features a unique adder block which can be snapped onto 1-, 2- or 3-pole blocks to form multi-pole segmented blocks of as many poles as desired. 100A SJ blocks can also be snapped to each other to form multi-poles. All fuse clips are spring reinforced, made of high conductivity tin-plated copper.

Ratings

- 600VAC: 30A, 100A
- Withstand rating: 200kA

Approvals

- All fuse blocks meet the requirements of UL Std. 512
- UL Listed, Guide IZLT, File E52283
- CSA Certified Class 6225, File 32169

Recommendes fuse usage

Class J Blocks (600V) . . . use with AJT, A4J

Clip & Connector Types

30A CLIP	30A CONNECTORS	100A CONNECTOR
SPRING REINFORCED 	SPRING REINFORCED: BOX 	SIDE CLIP 
	SCREW 	
	PRESSURE PLATE 	

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class SJ

SPACE-SAVING "SJ" FUSE BLOCKS

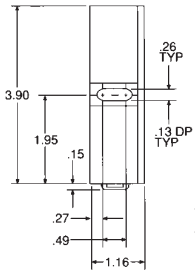


Figure 1

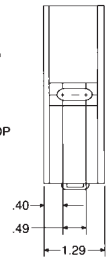


Figure 2

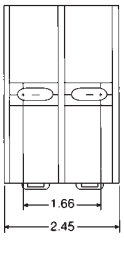


Figure 3

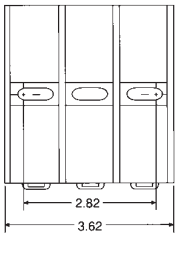
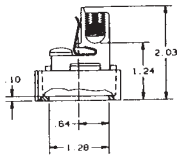
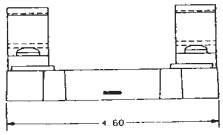


Figure 4





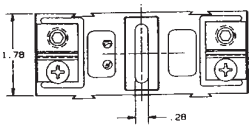


Figure 5

Figure 6

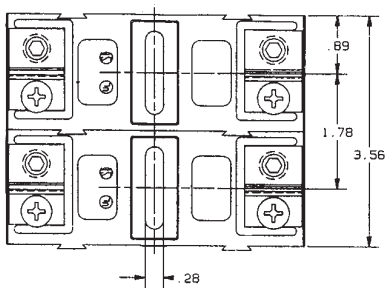
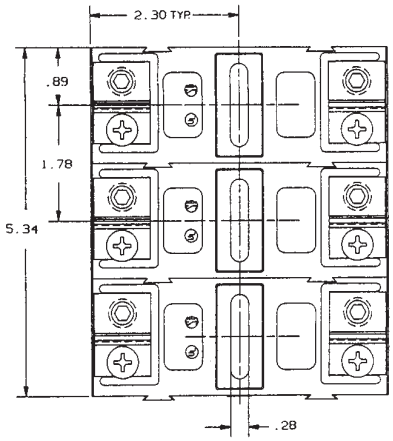


Figure 7



Recommended mounting screws for 30A and 100A fuse blocks: 1/4" (.250" dia.)

600 Volt, 30A & 100A Class J Fuse Blocks

Amper Rating	Poles	Connector Type	Connector Wire Range	Catalog Number	Reference Number	Fig.	Connector Torque In - lb
30 GFPC INSULATOR	ADDER	BOX	Al/Cu #2-14	60305SJ	C211372	1	35
	1			60306SJ	X212402	2	
	2			60307SJ	M213934	3	
	3			60308SJ	B214959	4	
	ADDER	SCREW	Cu #10-14	60315SJ	T218540	1	20
	1			60316SJ	E219585	2	
	2			60317SJ	G222784	3	
	3			60318SJ	L201122	4	
	ADDER	PRESSURE PLATE	Cu #10-14	60325SJ	E212915	1	20
	1			60326SJ	N213935	2	
	2			60327SJ	C214960	3	
	3			60328SJ	J215978	4	
	ADDER	BOX	Cu* #4-14	60355SJ	V217000	1	35
	1			60356SJ	V218541	2	
	2			60357SJ	F219586	3	
	3			60358SJ	H222785	4	
100 GFPC INSULATOR	1	BOX SIDE CLIP	Al/Cu 2/0-#6	61036SJ	B204954	5	120
	2			61037SJ	M211887	6	
	3			61038SJ	Q213937	7	

Note: To convert 30A "SJ" adder pole to single pole, use end barrier #U09372 W227512).
** Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class H, K & R



CLASS H, K AND R FUSE BLOCKS

Ferraz Shawmut Class H, K and R Fuse Blocks accommodate all Class H, K and R 250 and 600V power fuses. A choice of screw, pressure plate, box and special order stud connectors fit a wide range of stranded or solid copper or aluminum wire. Insulators are either molded glass-filled polycarbonate (GFPC) or phenolic with verified dielectric strength in excess of 2500V. 30, 60 and 100A fuse blocks feature a unique adder block which can be snapped onto 1-, 2- or 3-pole blocks to form multi-pole segmented blocks of as many poles as desired. All fuse clips are made of high conductivity tin-plated copper, with a choice of spring reinforced or non-spring reinforced clips in 30A and 60A. Clips 100A and above are spring reinforced.

Ratings

- 250VAC: 30A, 60A, 100A, 200A, 400A, 600A
- 600VAC: 30A, 60A, 100A, 200A, 400A, 600A
- Withstand ratings: 250 & 600VAC, w/classH fuses - 10kA, w/classK fuses - 50kA, w/classR fuses - 200kA

Approvals

- All fuse blocks meet the requirements of UL Std. 512
- UL Listed, Guide IZLT, File E52283
- UL Recognized Component Guide IZLT2, File E52283
- CSA Certified Class 6225, File 32169

Recommendes fuse usage

Class R Blocks (250V) use with A2D-R, A2K-R, TR-R
Class R Blocks (600V) use with A6D-R, A6K-R, TRS-R
Class H & K Blocks (250V) use with OT, RF, A2Y types 1 & 3, OTN, CRN, NRN
Class H & K Blocks (600V) use with OTS, RFS, A6Y types 1 & 3, CRS, NRS

Clip & Connector Types

30A & 60A CLIPS	CONNECTORS	CONNECTORS	CONNECTORS	CONNECTORS
SPRING REINFORCED: CLASS R	NON-SPRING REINFORCED: 30A & 60A BOX	SPRING REINFORCED: 30A & 60A BOX	SPRING REINFORCED: 100A BOX	SPRING REINFORCED: 400A BOX IN-LINE CLIP
CLASS H & K	30A SCREW	30A SCREW (R) 30A SCREW	200A BOX SIDE-CLIP	600A BOX IN-LINE CLIP
NON-SPRING REINFORCED	30A PRESSURE PLATE	30A PRESSURE PLATE	400A BOX SIDE-CLIP	

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class H, K & R

CLASS H, K AND R FUSE BLOCKS

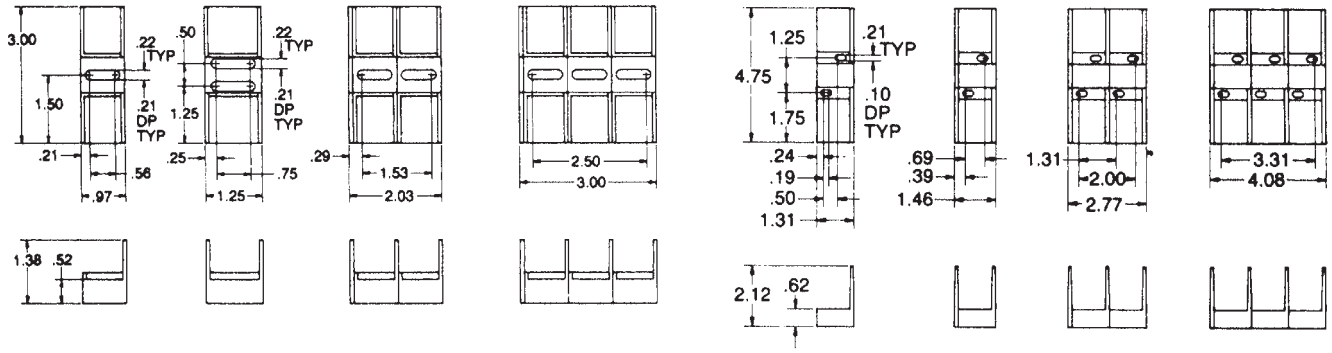


Figure 1 *Figure 2* *Figure 3* *Figure 4* *Figure 5* *Figure 6* *Figure 7* *Figure 8*

Recommended mounting screws for all 30A and 60A fuse blocks: #10 (.190" dia.)

250 Volt, 30 & 60 Ampere Class H, K and R Fuse Blocks

Amper Rating	Poles	Connector Type	Connector Wire Range	Catalog Number. Type of clip: Class H&K Non-spring reinforced	Catalog Number. Type of clip: Class H&K Spring reinforced	Catalog Number. Type of clip: Class R Spring reinforced	Reference Number Type of clip: Class H&K Non-spring reinforced	Reference Number Type of clip: Class H&K Spring reinforced	Reference Number Type of clip: Class R Spring reinforced	Fig	Connector Torque In - lb
30 GFPC INSULATOR	ADDER			20300	20305	20305R	Y223282	E211351	L211863	1	
	1	BOX	Al/Cu	20301*	20306*	20306R*	N201101*	Z212381*	T213411*	2	35
	2		#2-14	20302	20307	20307R	Z201617	A214429	C214937	3	
	3			20303	20308	20308R	C204702	F215446	K215956	4	
	ADDER			20310	20315	20315R	K216462	V218518	P219042	1	
	1	SCREW	Cu	20311*	20316*	20316R*	V216977*	E219562*	Z222018*	2	20
	2		#10-14	20312	20317	20317R	G217494	K222764	Z223283	3	
	3			20313	20318	20318R	P218007	P201102	A201618	4	
	ADDER			20320	20325	20325R	L204710	Q230520	A212382	1	
	1	PRESSURE	Cu	20321*	20326*	20326R*	F211352*	V213412*	N213912*	2	20
	2	PLATE	#10-14	20322	20327	20327R	M211864	F230511	B214430	3	
	3			20323	20328	20328R	E230510	D214938	L215957	4	
	ADDER			-	20355	20355R	-	L216463	W216978	1	
	1	BOX	Cu**	-	20356*	20356R*	-	H217495*	Q218008*	2	35
	2		#4-14	-	20357	20357R	-	W218519	Q219043	3	
	3			-	20358	20358R	-	F219563	A222019	4	
60 GFPC INSULATOR	ADDER			20600	20605	20605R	L222765	L204756	G211353	5	
	1	BOX	Al/Cu	20601	20606	20606R	A223284	N211865	B212383	6	45
	2		#2-14	20602	20607	20607R	Q201103	W213413	P213913	7	
	3			20603	20608	20608R	B201619	C214431	E214939	8	
	ADDER			-	20655	20655R	-	B223285	R201104	5	
	1	BOX	Cu**	-	20656	20656R	-	C201620	M204757	6	45
	2		#4-14	-	20657	20657R	-	H211354	P211866	7	
	3			-	20658	20658R	-	C212384	X213414	8	

Note: To convert 30A adder pole to single pole, use end barrier #U09322 (R227508). To convert 60A adder pole to single pole, use end barrier #U09365 (V227511).

** 1-pole, 30A block does not accept adder pole.*

***Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class H, K & R

CLASS H, K AND R FUSE BLOCKS

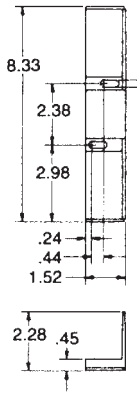


Figure 1

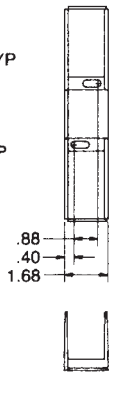


Figure 2

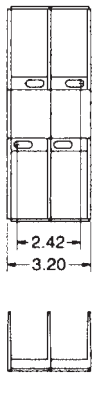


Figure 3

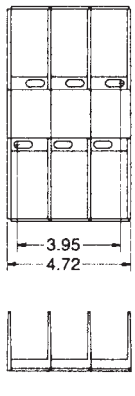


Figure 4

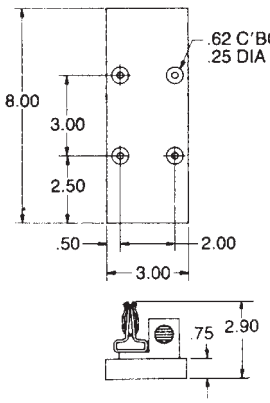


Figure 5

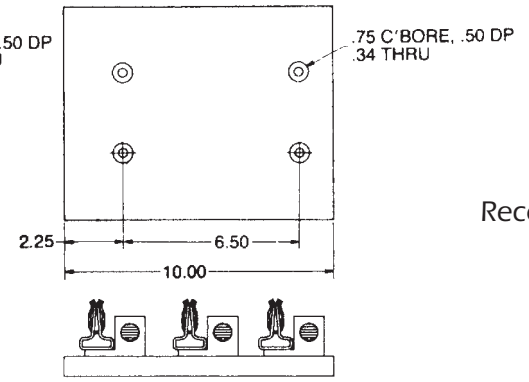


Figure 6

Recommended mounting screws:
All 100A-1/4" (.250" dia.)
200A, 1-pole - #10 (.190" dia.)
200A, 3-pole - 5/16" (.313" dia.)

250 Volt, 100 & 200 Ampere Class H, K and R Fuse Blocks

Amper Rating	Poles	Connector Type	Connector Wire Range	Catalog Number Type of clip: Class H & K Spring Reinforced	Catalog Number Type of clip: Class R Spring Reinforced	Reference Number Type of clip: Class H & K Spring Reinforced	Reference Number Type of clip: Class R Spring Reinforced	Fig.	Connector Torque In - lb
100 GFPC INSULATOR	ADDER	BOX	Al/Cu	21035	21035R	N222767	C223286	1	120
	1			21036	21036R	S201105	D201621	2	
	2		2/0-#6	21037	21037R	N204758	J211355	3	
	3			21038	21038R	Q211867	M212899	4	
	ADDER	BOX	Cu*	21005	21005R	Q213914	D214432	1	50
	1			21006	21006R	F214940	H215448	2	
	2		2/0-#12	21007	21007R	M215958	N216465	3	
	3			21008	21008R	Y216980	J217496	4	
200 PHENOLIC INSULATOR	1	BOX	AL/Cu	22001	22001R	Y213415	R213915	5	375
	3	SIDE-CLIP	350kcmil-#6	22003	22003R	E214433	G214941	6	
	1	BOX	Cu*	22051	22051R	N230472	K217497	5	275
	3	SIDE-CLIP	350kcmil-#6	22053	22053R	T218011	Y218521	6	

Note: To convert 100A adder pole to single pole, use end barrier #U09363 (T227510).

** Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class H, K & R

CLASS H, K AND R FUSE BLOCKS

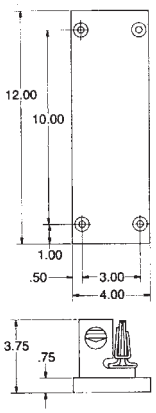


Figure 1

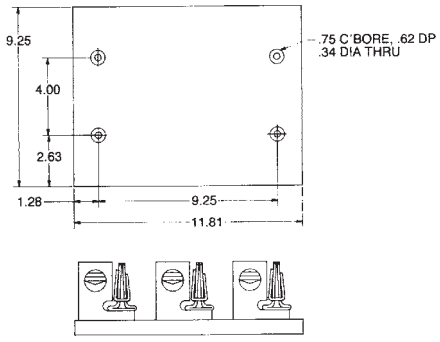


Figure 2

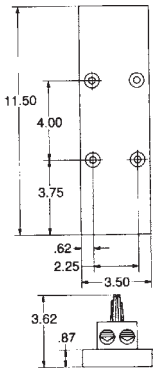


Figure 3

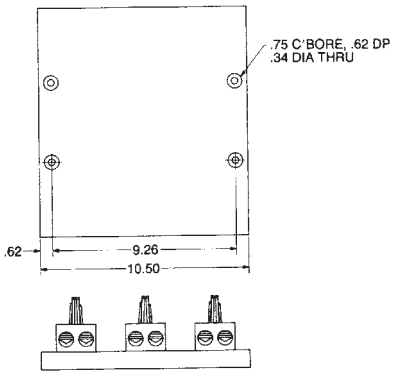
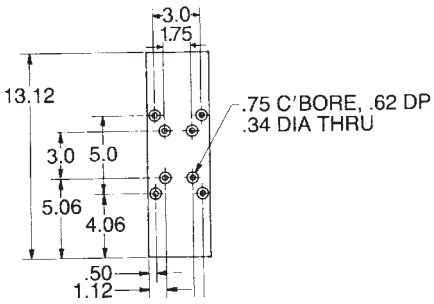


Figure 4



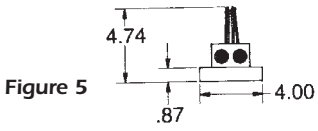


Figure 5

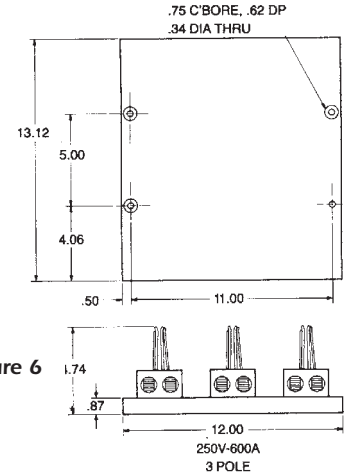


Figure 6

Recommended mounting screws for all 400A and 600A fuse blocks: 5/16 (.313" dia.)

250 Volt, 400 & 600 Ampere Class H, K and R Fuse Blocks

Amper Rating	Poles	Connector Type	Connector Wire Range	Catalog Number Type of clip: Class H & K Spring Reinforced	Catalog Number Type of clip: Class R Spring Reinforced	Reference Number Type of clip: Class H & K Non-spring Reinforced	Reference Number Type of clip: Class R Spring Reinforced	Fig.	Connector Torque In - lb
400 PHENOLIC INSULATOR	1 3	BOX* SIDE-CLIP	Al/Cu 1000 - 250kcmil	24001 24003	24001R 24003R	T219046 P230473	J219566 D222022	1 2	375
	1 3	BOX* SIDE-CLIP	Cu** 1000 - 250kcmil	24051 24053	24051R 24053R	P204759 R211868	K211356 D212385	1 2	375
	1 3	BOX IN-LINE CLIP	Al/Cu (2) 350 kcmil-#4	24031 24033	24031R 24033R	P222768 T201106	D223287 E201622	3 4	275
	1 3	BOX IN-LINE CLIP	Cu** (2) 350 kcmil-#6	24061 24063	24061R 24063R	Q230474 R230475	N212900 Z213416	3 4	275
600 PHENOLIC INSULATOR	1 3	BOX IN-LINE CLIP	Al/Cu (2) 500 kcmil-#4	2631 2633	2631R 2633R	F214434 K215450	H214942 P215960	5 6	500
	1 3	BOX IN-LINE CLIP	Cu** (2) 500 kcmil-#4	2661 2663	2661R 2663R	Q216467 L217498	A216982 V218012	5 6	375

* *Not UL Listed or CSA Certified*

** *Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class H, K & R

CLASS H, K AND R FUSE BLOCKS

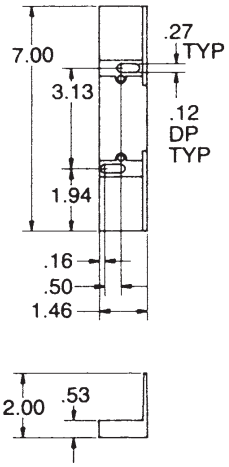


Figure 1

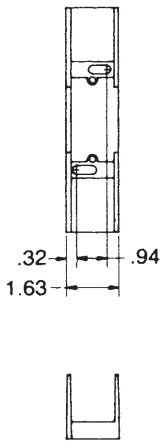


Figure 2

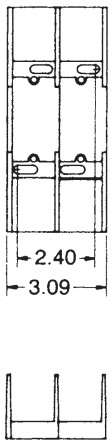


Figure 3

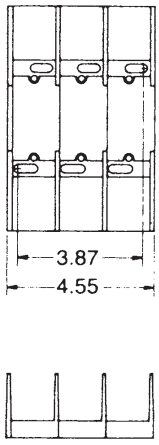


Figure 4

Recommended mounting screws for all 30A and 60A fuse blocks: 1/4" (.250" dia.)

600 Volt, 30 & 60 Ampere Class H, K and R Fuse Blocks

Amper Rating	Poles	Connector Type	Connector Wire Range	Catalog Number. Type of clip Class H&K Non-spring reinforced	Catalog Number. Type of clip Class H&K Spring reinforced	Catalog Number. Type of clip Class R Spring reinforced	Reference Number Type of clip Class H&K Non-spring reinforced	Reference Number Type of clip Class H&K Spring reinforced	Reference Number Type of clip Class R Spring reinforced	Fig	Connector Torque In - lb
30 GFPC INSULATOR	ADDER			60300	60305	60305R	C218525	G223290	N211359	1	
	1	BOX	Al/Cu	60301	60306	60306R	Y219050	V211871	H212389	2	35
	2		#2-14	60302	60307	60307R	N219570	R212903	D213420	3	
	3			60303	60308	60308R	R222770	X213920	K214438	4	
	ADDER			60310	60315	60315R	M214946	Q217502	Z218016	1	
	1	SCREW	Cu	60311	60316	60316R	P215454	D218526	Z219051	2	20
	2		#10-14	60312	60317	60317R	T215964	P219571	H222026	3	
	3			60313	60318	60318R	V216471	S222771	H223291	4	
	ADDER			60320	60325	60325R	Y201110	W211872	J212390	1	
	1	PRESSURE	Cu	60321	60326	60326R	H201625	S212904	E213421	2	20
	2	PLATE	#10-14	60322	60327	60327R	S204785	Y213921	L214439	3	
	3			60323	60328	60328R	P211360	N214947	Q215455	4	
	ADDER			-	60355	60355R	-	V215965	W216472	1	
	1	BOX	Cu*	-	60356	60356R	-	E216986	R217503	2	35
	2		#4-14	-	60357	60357R	-	A218017	E218527	3	
	3			-	60358	60358R	-	A219052	Q219572	4	
60 GFPC INSULATOR	ADDER			60600	60605	60605R	J222027	T204786	Q211361	1	
	1	BOX	Al/Cu	60601	60606	60606R	T222772	X211873	K212391	2	45
	2		#2-14	60602	60607	60607R	Z201111	T212905	F213422	3	
	3			60603	60608	60608R	J201626	Z213922	M214440	4	
	ADDER			-	60655	60655R	-	A201112	V204787	1	
	1	BOX	Cu*	-	60656	60656R	-	R211362	Y211874	2	45
	2		#4-14	-	60657	60657R	-	L212392	G213423	3	
	3			-	60658	60658R	-	A213923	N214441	4	

Note: To convert 30A or 60A adder pole to single pole, use end barrier #U09361 (S227509).

** Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class H, K & R

CLASS H, K AND R FUSE BLOCKS

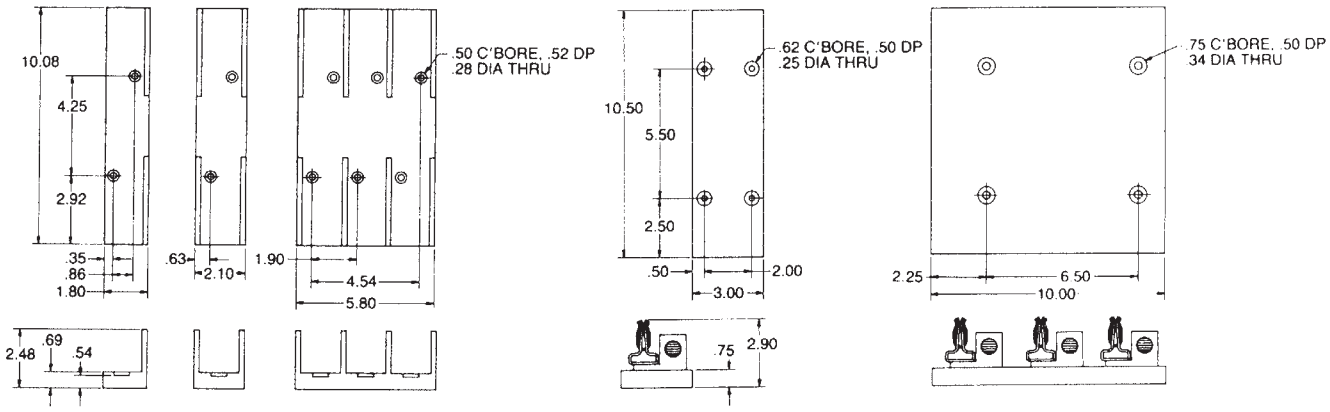


Figure 1 *Figure 2* *Figure 3* *Figure 4* *Figure 5*

Recommended mounting screws:
- All 100A-1/4" (.250" dia.)
- 200A, 1-pole - #10 (.190" dia.)
- 200A, 3-pole - 5/16" (.313" dia.)

600 Volt, 100 & 200 Ampere Class H, K and R Fuse Blocks

Amper Rating	Poles	Connector Type	Connector Wire Range	Catalog Number Type of clip: Class H & K Spring Reinforced	Catalog Number Type of clip: Class R Spring Reinforced	Reference Number Type of clip: Class H & K Non-spring Reinforced	Reference Number Type of clip: Class R Spring Reinforced	Fig.	Connector Torque In - lb
	ADDER			61035	61035R	K223293	B201113	1	
	1	BOX	Al/Cu	61036	61036R	K201627	W204788	2	120
100	3		2/0-#6	61038	61038R	S211363	Z211875	3	
PHENOLIC	ADDER			61005	61005R	Q214949	S215457	1	
INSULATOR	1	BOX	Cu*	61006	61006R	X215967	X216473	2	50
	3		2/0-#12	61008	61008R	G216988	T217505	3	
	1	BOX	AL/Cu	62001	62001R	M212393	V212906	4	375
200	3	SIDE-CLIP	350 kcmil-#6	62003	62003R	H213424	B213924	5	
PHENOLIC									
INSULATOR	1	BOX	Cu*	62051	62051R	Y216474	H216989	4	275
	3	SIDE-CLIP	350 kcmil-#6	62053	62053R	V217506	D218020	5	

Note: Adder poles can only be added to other fuse blocks. There is no end barrier to convert them to single pole fuse blocks.

* *Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class H, K & R

CLASS H, K AND R FUSE BLOCKS

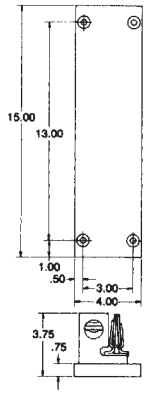


Figure 1

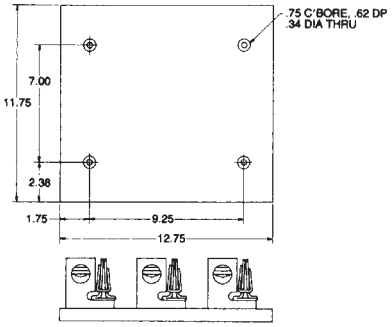


Figure 2

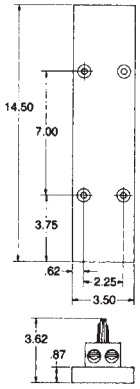


Figure 3

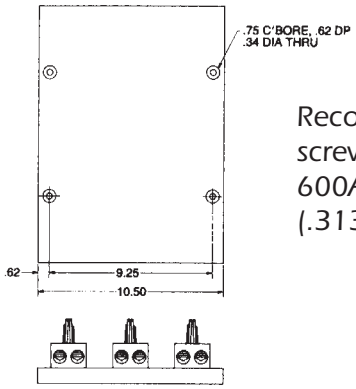


Figure 4

Recommended mounting screws for all 400A and 600A fuse blocks: 5/16 (.313" dia.)

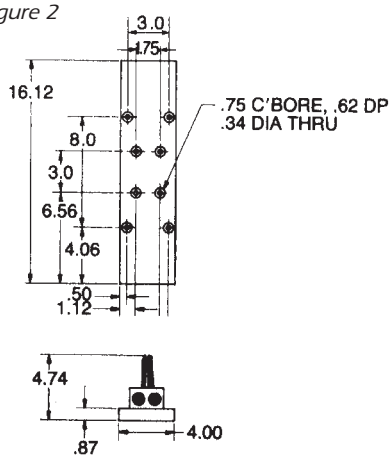


Figure 5

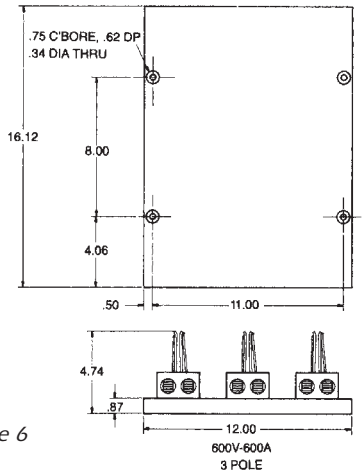


Figure 6

600 Volt, 400 & 600 Ampere Class H, K and R Fuse Blocks

Amper Rating	Poles	Connector Type	Connector Wire Range	Catalog Number Type of clip Class H & K Spring Reinforced	Catalog Number Type of clip Class R Spring Reinforced	Reference Number Type of clip Class H & K Spring Reinforced	Reference Number Type of clip Class R Spring Reinforced	Fig.	Connector Torque In - lb
400 PHENOLIC INSULATOR	1	BOX*	Al/Cu	64001	64001R	H218530	D219055	1	375
	3	SIDE-CLIP	1000 -250kcmil	64003	64003R	T219575	M222030	2	
	1	BOX*	Cu**	64051	64051R	A211876	N212394	1	375
	3	SIDE-CLIP	1000 -250kcmil	64053	64053R	W212907	J213425	2	
	1	BOX	AL/Cu	64031	64031R	C201114	L201628	3	275
	3	IN-LINE CLIP	(2) 350 kcmil-#4	64033	64033R	H204845	T211364	4	
	1	BOX	Cu**	64061	64061R	C213925	Q214443	3	275
	3	IN-LINE CLIP	(2) 350 kcmil-#6	64063	64063R	S214951	V215459	4	
600 PHENOLIC INSULATOR	1	BOX	Al/Cu	6631	6631R	Z216475	J216990	5	500
	3	IN-LINE CLIP	(2) 500 kcmil-#4	6633	6633R	W217507	E218021	6	
	1	BOX	Cu**	6661	6661R	J218531	E219056	5	375
	3	IN-LINE CLIP	(2) 500 kcmil-#4	6663	6663R	V219576	N222031	6	

** Not UL Listed or CSA Certified*

***Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Midget & Class CC Fuse Block



600 VOLT MIDGET AND CLASS CC FUSE BLOCKS

Ferraz Shawmut Midget Fuse Blocks accommodate all 30 ampere 1-1/2" x 13/32" midget fuses. Class CC Fuse Blocks accommodate all 30 ampere Class CC fuses. A choice of box, screw, or pressure-plate connectors fit a wide range of stranded or solid copper wire. Insulators are glass-filled poly-carbonate (GFPC) with verified dielectric strength in excess of 2500V. Fuse blocks feature a unique adder block which can be snapped onto 1-, 2- or 3-pole blocks to form multi-pole segmented blocks of as many poles as desired. All fuse clips are made of high conductivity tin-plated copper alloy.

Ratings

- 600VAC: 30A
- Withstand rating: 200kA using screw, pressure plate or box connections, 10kA using quick connects
- Temperature/flammability: GFPC insulators rated 125˚C, 94V-0 flammability.

Approvals

- All fuse blocks meet the requirements of UL Std. 512
- Midget Block UL Recognized Component Guide IZLT2, File E52283
- CSA Certified Class 6225, File 32169
- Class CC Block UL Listed, Guide IZLT, File E52283
- CSA Certified Class 6225, File 32169

Recommendes fuse usage

Midget Fuse Block .use with ATQ, ATM, A6Y-2B, A25Z-2,TRM, OTM, A13X-2, GFN, GGU, A60Q-2
Class CC Fuse Block use with ATDR, ATMR, ATQR

Clip & Connector Types

30A MIDGET/CC

COPPER BOX CONNECTOR 

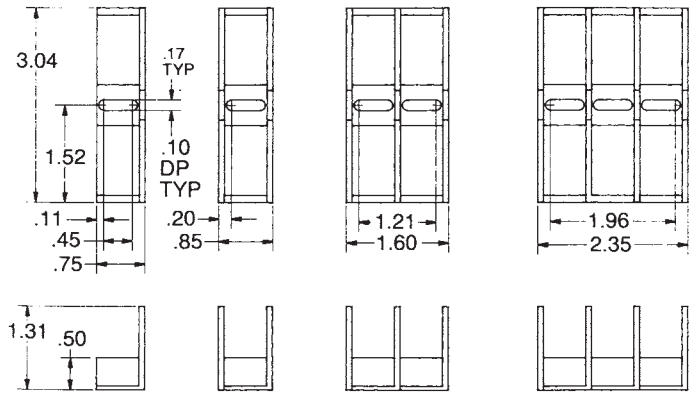
SCREW WITH DOUBLE QUICK-CONNECTS 

PRESSURE PLATE WITH DOUBLE QUICK-CONNECTS 

PRESSURE PLATE WITH DOUBLE QUICK- CONNECTS (CLASS CC REJECTION END) 

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Midget & Class CC Fuse Block

600 VOLT MIDGET AND CLASS CC FUSE BLOCKS



Adder *1 Pole* *2 Pole* *3 Pole*

Recommended mounting screws for all Midget and Class CC fuse blocks: #8 (.164″ dia.)

600 Volt, 30A Midget and Class CC Fuse Blocks

Connector Type	Connector Wire Range	Poles*	Type of Fuse: Midget Cat. Number	Midget Ref. Number	Midget Listing	Class CC Cat. Number	Class CC Ref. Number	Class CC Listing	Connector Torque In-lb (N.m)
Screw w/double quick connects at both ends	Cu #10-14	ADDER	30310	N211888		30310R	W204857		
		1	30311	A212405		30311R	R212397		
		2	30312	E214456	&	30312R	Z212910	&	20 (2.3)
		3	30313	F214963		30313R	M213428		
		4	30314	J215472		30314R	F213928		
Pressure plate (sems) w/double quick connects at both ends	Cu #10-14	ADDER	30320	S218033		30320R	Z217510		
		1	30321	Y218544		30321R	M218534		
		2	30322	K222787	&	30322R	Y219579	&	20 (2.3)
		3	30323	B201642		30323R	B222779		
		4	30324	H211377		30324R	Q201632		
Copper box	Cu #6-14	ADDER	30350	F214457		30350R	N213429		
		1	30351	G214964		30351R	G213929		
		2	30352	L216486	&	30352R	V214447	&	35 (4)
		3	30353	Z217004		30353R	X214955		
		4	30354	J217519		30354R	Z215463		

Note: To convert Midget or Class CC adder pole to single pole, use end barrier #U09301.

** Available in any number of poles. Replace last digit in Catalog Number with number of poles needed. Example: 303112 is a 12-pole screw/double QC connector Midget Fuse Block.*
Total width of N poles = (N x .76) + .08 inches. 12 poles = (12 x .76″) + .08″ = 9.20″.

Note: See fuse block accessories: DFC3M, DFC3LP, DRM

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
DFC Covers for Cylindrical Fuses



DFC DEAD-FRONT FUSE COVERS

Ferraz Shawmut DFC Dead-Front Fuse Covers snap on to individual fuses installed in fuse blocks, covering exposed live clips and terminals and reducing accidental contact by personnel. They are sized to fit Class G, H, J, K, R, CC or Midget fuses for increased safety and (optional) open-fuse indication. All DFC Dead-Front Fuse Covers are reusable when a fuse is replaced – simply detach from the open fuse and re-attach to the new replacement fuse. On indicator models an orange indicator light will illuminate to indicate an open fuse. DFC Fuse Cover ends can be easily cut to accommodate existing wiring, safety switches or special installations. A blank label is provided with each DFC to write in circuit or fuse information.

Features / Benefits

- Innovative design provides dead-front electrical safety to personnel
- Optional orange indicator light shows open fuse
- Many sizes to fit virtually all popular fuses/fuse blocks
- Reusable with no changes or additional cost
- Labels provided for write-in identification
- Thermoplastic flammability rating of UL 94-V2
- Low leakage current <0.6 mA at 600V

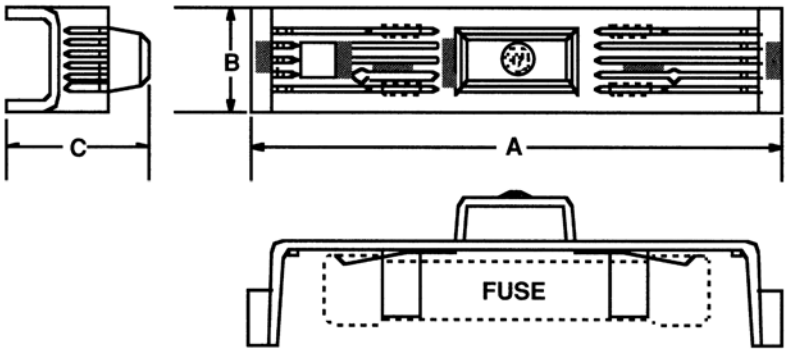
Ratings

- Fit fuses rated 0 to 100A
- Indicating: 90 to 600VAC, 115 to 600VDC
- Non-Indicating: 0 to 600V AC/DC

Approvals

- UL Listed (All except Midget size) Guide JDVS, File E90426
- UL Recognized Component (Midget) Guide JDVS2, File E90426
- CSA Certified Class 6228, File 70159

Reference Numbers – Descriptions – Dimensions



American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
DFC Covers for Cylindrical Fuses

DFC DEAD-FRONT FUSE COVERS

Reference Numbers – Descriptions – Dimensions

Catalog Number		Reference Number		Fuses Accomodated			Dimensions		
Indicating	Non-indicating	Indicating	Non-indicating	Amps	Volts	Class	A	B	C
DFC1I	DFC-1	S222794	J222050	0-30 and 35-60	600 250	J R, K, H	5.02	1.03	1.94
DFC-2I	DFC-2	X201132	G223313	0-30	600	R, K, H	7.03	1.30	2.07
DFC-3I	DFC-3	X205065	G201647	65-100	600	J	7.03	1.30	2.33
DFC-4I	DFC-4	X211896	Q211384	65-100	250	R, K, H	8.20	1.30	2.18
DFC-5I	DFC-5	R212926	J212413	35-60	600	R, K, H	8.20	1.30	2.18
DFC-6I	DFC-6	A213946	E213444	35-60	600	J	4.98	1.17	2.14
DFC-7I	DFC-7	P214971	N214464	0-30	600	Midget, CC	3.82	0.75	1.72
DFC-8I	DFC-8	W215989	S215480	65-100	600	R, K, H	10.38	1.50	2.33
DFC-9I	DFC-9	G217011	S216492	0-30	250	R, K, H	3.82	0.75	1.72

WARNING: *To avoid electrical shock,* **TURN POWER OFF** *before installing, removing or servicing.*

Ferraz Shawmut Fuses and Fuse Blocks for use with DFC

FUSE	FUSE BLOCK	DFC
AG(0-30)	40xxxG	-7I, -7
AJT(0-30)	603xxJ	-1I, -1
AJT(35-60)	606xxJ	-6I, -6
AJT(65-100)	610xxJ	-3I, -3
ATDR(0-30)	303xxR	-7I, -7
ATM(0-30)	303xx	-7I, -7
ATMR(0-30)	303xxR	-7I, -7
ATQ(0-30)	303xx	-7I, -7
ATQR(0-30)	30xxR	-7I, -7
A13X(1-30)-2	303xx	-7I, -7
A2D(0-30)R	203xxR	-9I, -9
A2D(35-60)R	206xxR	-1I, -1
A2D(65-100)R	210xxR	-4I, -4
A2K(0-30)R	203xxR	-9I, -9
A2K(35-60)R	206xxR	-1I, -1
A2K(65-100)R	210xxR	-4I, -4
A2Y(0-30)	203xx	-9I, -9
A2Y(35-60)	206xx	-1I, -1
A2Y(65-100)	210xx	-4I, -4
A25X(1-30)-1	203xx	-9I, -9
25Z(1-30)-2	303xx	-7I, -7
A4J(1-30)	603xxJ	-1I, -1
A4J(35-60)	606xxJ	-6I, -6
A4J(65-100)	610xxJ	-3I, -3
A50P(10-30)	203xx	-9I, -9
A6D(0-30)R	603xxR	-2I, -2
A6D(35-60)R	606xxR	-5I, -5
A6D(65-100)R	610xxR	-8I, -8
A6K(0-30)R	603xxR	-2I, -2
A6K(35-60)R	606xxR	-5I, -5

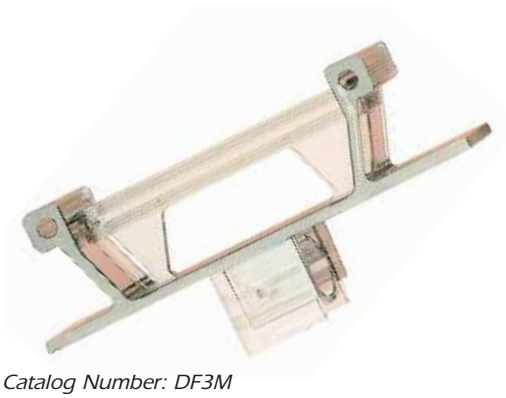
FUSE	FUSE BLOCK	DFC
A6K65-100R	610xxR	-8I, -8
A6Y(0-30)-2B	303xx	-7I, -7
A60Q(0-30)-2	303xx	-7I, -7
A60X(0-30)-1	603xx	-1I, -1
A70P(10-30)-1	203xx	-9I, -9
GFN(0-30)	303xx	-7I, -7
GGU(0-30)	303xx	-7I, -7
OT(0-30)	203xx	-9I, -9
OT(35-60)	206xx	-1I, -1
OT(65-100)	210xx	-4I, -4
OTM(0-30)	303xx	-7I, -7
OTS(0-30)	603xx	-2I, -2
OTS(35-60)	606xx	-5I, -5
OTS(65-100)	610xx	-8I, -8
RF(0-30)	203xx	-9I, -9
RF(35-60)	206xx	-1I, -1
RF(65-100)	210xx	-4I, -4
RFS(0-30)	603xx	-2I, -2
RFS(35-60)	606xx	-5I, -5
RFS(65-100)	610xx	-8I, -8
TR(0-30)R	203xx	-9I, -9
TR(35-60)R	206xx	-1I, -1
TR(65-100)R	210xx	-4I, -4
TRM(0-30)	303xx	-7I, -7
TRS(0-30)R	603xxR	-2I, -2
TRS(35-60)R	606xxR	-5I, -5
TRS(65-100)R	610xxR	-8I, -8
TRS(35-60)RDC	606xxR	-5I, -5
TRS(65-100)RDC	610xxR	-8I, -8

Note: DFC Covers fit single pole blocks and each pole of multi-pole blocks.
Ask sales representative for data sheets on DFC trim instructions for safety switches.

WARNING: *To avoid electrical shock,* **TURN POWER OFF** *before installing, removing or servicing.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
DFC Covers for Cylindrical Fuses

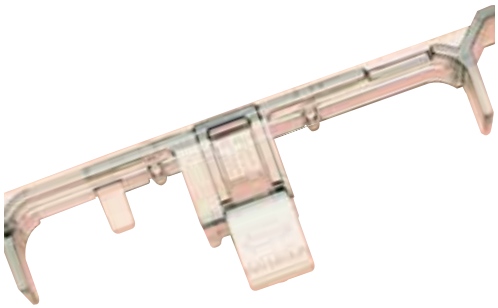
DFC3M / DFC3LP / DRM



Catalog Number: DF3M
Reference Number: B218041

DFC3M safety puller protects personnel, cover live parts.

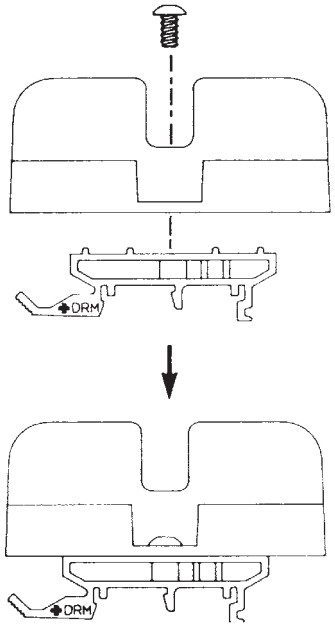
The DFC3M Safety Puller is intended to hold and safely enclose 1-1/2" x 13/32" Midget or Class CC fuses for insertion or removal from fuse clips, making fuse installation easy and safe without the use of a standard fuse puller. The DFC3M is made of clear polycarbonate, so the fuse can be identified when installed in a 303 series fuse block.



Catalog Number: DFC3LP
Reference Number: Q217525

DFC3LP safety puller holds fuse, protects personnel and saves space.

The DFC3LP holds and safely encloses 1-1/2" x 13/32" Midget or Class CC fuse, similar to the DFC3M, but with a lower profile in height so it takes less room where space is restricted. The DFC3LP is made of clear polycarbonate so the fuse can be seen after installation in a fuse block such as the Ferraz Shawmut 303 series.



Catalog Number: DRM
Reference Number: E218550

DRM adapts 303 series midget and class CC fuse blocks to DIN rail.

The DIN rail adapter, DRM, provides quick mounting for all Ferraz Shawmut 303 Series Midget and Class CC fuse blocks to all symmetrical 35mm DIN or asymmetrical 32mm "G" rail. A DRM adapter is attached to each pole with the screw provided. The DRM is molded of black polycarbonate and is mounted or dismounted from the rail simply by depressing the finger pull.

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class T



CLASS T FUSE BLOCKS

Ferraz Shawmut Class T Fuse Blocks accommodate Class T fuses up to 600A. Insulators are either of durable, glass-filled polycarbonate (GFPC) or phenolic with verified dielectric strength in excess of 2500V. Ferraz Shawmut is the only manufacturer to offer Class T blocks with copper connectors.

Features / Benefits

- Unique integral DIN rail adapters for 600V, 30 & 60A blocks
- Full barrier design (30 & 60A) increases pole to pole safety
- Unique adder-block design (30 & 60A) for design flexibility
- Spring reinforcing standard for all 30 & 60A clips
- Features high conductivity copper alloy fuse clips
- Cool running high amperage (100 - 600A) connectors
- Copper connectors available 30 - 600A

Ratings

- 300VAC: 30A, 60A, 100A, 200A, 400A, 600A
- 600VAC: 30A, 60A, 100A, 200A, 400A, 600A
- Withstand Rating: 200,000A Symmetrical

Approvals

- All fuse blocks meet the requirements of UL Std. 512
- UL Listed, Guide IZLT, File E52283
- UL Recognized Component Guide IZLT2, File E52283
- CSA Certified Class 6225, File 32169

Recommendes fuse usage

- Class T Blocks (300V) use with A3T
- Class T Blocks (600V) use with A6T

Clip & Connector Types

SPRING REINFORCED 30A & 60A CLIPS

300V - 30A
600V - 30A



300V - 60A



600V - 60A



CONNECTORS FOR SPRING REINFORCED 30A & 60A CLIPS

30A - 60A
BOX



30A - 60A
SCREW



30A - 60A
PRESSURE PLATE



CONNECTORS

100A BOX
SIDE CLIP



100A BOX



200A BOX

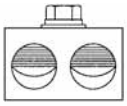


CONNECTORS

400A BOX



600A BOX



American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class T

CLASS T FUSE BLOCKS

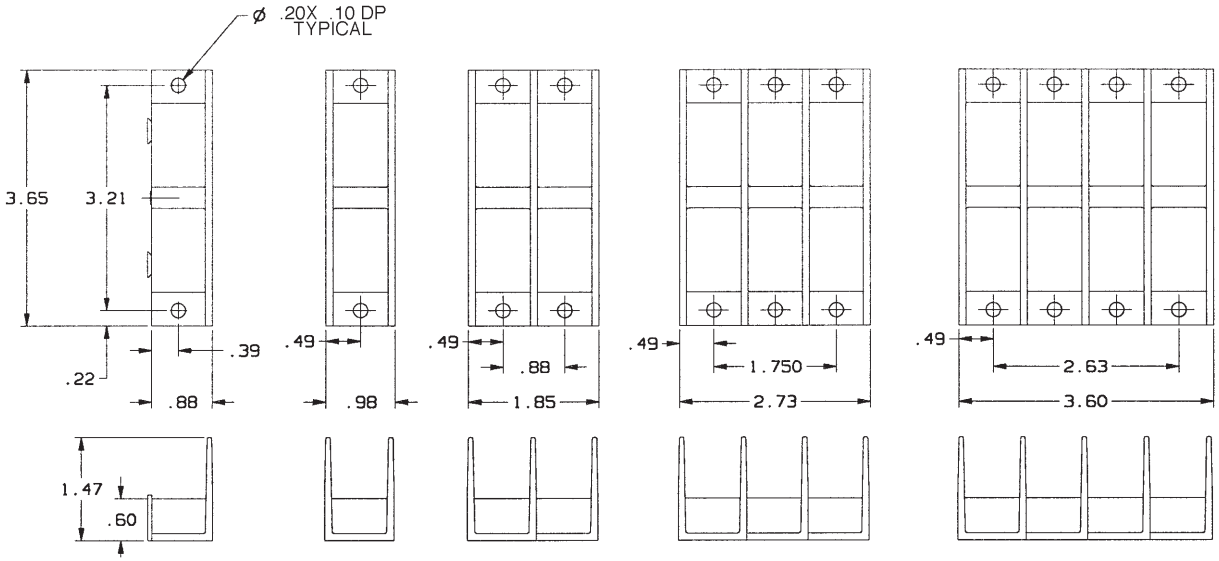


Figure 1 *Figure 2* *Figure 3* *Figure 4* *Figure 5*

Recommended base mounting screws: #10 (.190" dia.)

300 Volt, 30 & 60 Ampere Class T Fuse Blocks

Amper Rating	Poles	Connector Type	Connector Wire Range	Catalog Number Spring Reinforced	Reference Number Spring Reinforced	Fig.	Connector Torque In - lb (N.m)
30 GFPC INSULATOR	ADDER	BOX	Al/Cu #2-14	30305T	J214943	1	35 (4)
	1			30306T	L215451	2	
	2			30307T	Q215961	3	
	3			30308T	R216468	4	
	4			30309T	B216983	5	
	ADDER	SCREW	Cu #10-14	30315T	M217499	1	20 (2.3)
	1			30316T	W218013	2	
	2			30317T	A218523	3	
	3			30318T	W219048	4	
	4			30319T	L219568	5	
	ADDER	PRESSURE PLATE	Cu #10-14	30325T	F222024	1	20 (2.3)
	1			30326T	Q222769	2	
	2			30327T	E223288	3	
	3			30328T	W201108	4	
	4			30329T	F201623	5	
	ADDER	BOX	Cu* #4-14	30355T	H204776	1	35 (4)
	1			30356T	L211357	2	
	2			30357T	S211869	3	
	3			30358T	F212387	4	
	4			30359T	Q212902	5	
60 GFPC INSULATOR	ADDER	SCREW	Cu #10-14	30615T**	R215962**	1	20 (2.3)
	1			30616T**	S216469**	2	
	2			30617T**	C216984**	3	
	3			30618T**	N217500**	4	
	4			30619T**	X218014**	5	
	ADDER	BOX	Al/Cu #2-14	30605T	B213418	1	45 (5)
	1			30606T	V213918	2	
	2			30607T	H214436	3	
	3			30608T	K214944	4	
	4			30609T	M215452	5	
	ADDER	BOX	Cu* #4-14	30655T	B218524	1	45 (5)
	1			30656T	X219049	2	
	2			30657T	M219569	3	
	3			30658T	G222025	4	
	4			30659T	F223289	5	

*Note: *Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*
*** UL Component Recognized*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class T

CLASS T FUSE BLOCKS

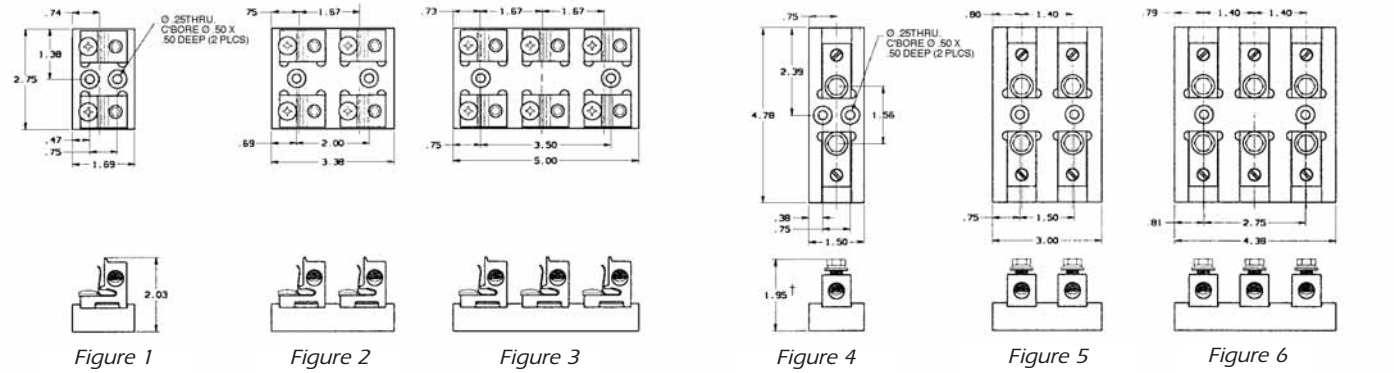


Figure 1 Figure 2 Figure 3 Figure 4 Figure 5 Figure 6

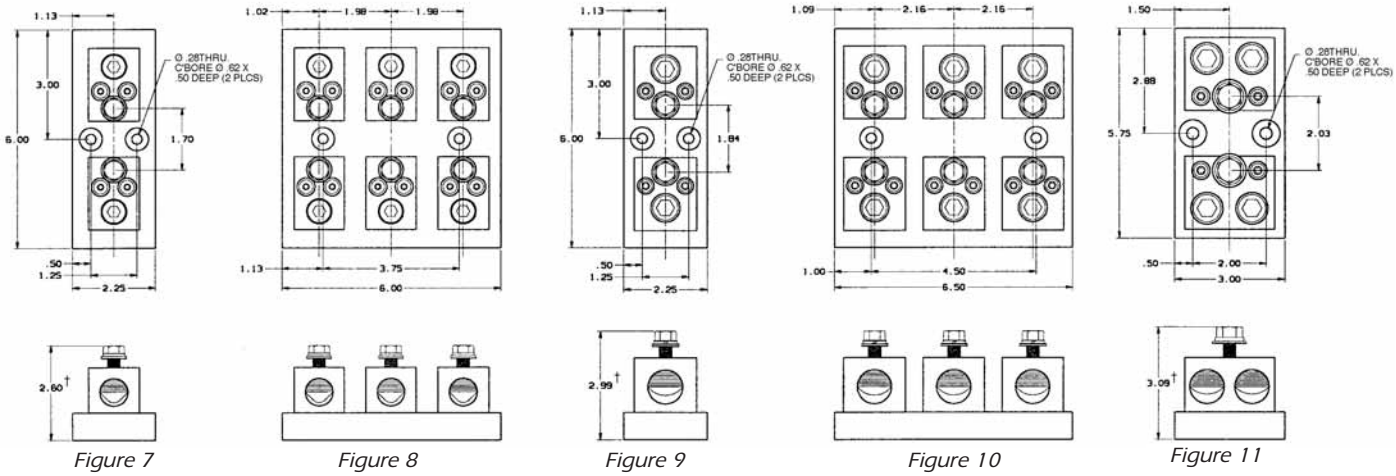


Figure 7 Figure 8 Figure 9 Figure 10 Figure 11

† Note: Height includes nominal fuse blade thickness.Recommended base mounting screws: 100A & 200A, #10 (.190" dia.), 400A & 600A, Zv" (.250" dia.)

300 Volt, 100, 200, 400 & 600 Ampere Class T Fuse Blocks

Ampere Rating	Poles	Connector Type	Connector Wire Range	Cat. Number Spring Reinforced	Ref. Number Spring Reinforced	Fig.	Torque In LBS (N.m) Connector	Torque In LBS (N.m) Fuse Bolt
	1		Al/Cu	31031T	M211358	1		
100	2	BOX	2/0-#6	31032T	T211870	2	120 (13)	–
PHENOLIC	3	SIDE-CLIP		31033T	G212388	3		
INSULATOR	1		Cu*	31001T	X201109	4		
	2	BOX	2/0-#12	31002T	G201624	5	50 (5.6)	72 (8)
	3			31003T	R204784	6		
200	1	BOX	Al/Cu	32031T	C213419	7	275 (31)	132 (15)
PHENOLIC	3		350 kcmil-#6	32033T	W213919	8		
INSULATOR	1	BOX	Cu*	32051T	J214437	7	275 (31)	132 (15)
	3		350 kcmil-#6	32053T	L214945	8		
400	1	BOX	Al/Cu	34031T	N215453	9	600 (68)	228 (26)
PHENOLIC	3		600 kcmil-#2	34033T	S215963	10		
INSULATOR	1	BOX	Cu*	34051T	T216470	9	375 (42)	228 (26)
	3		600 kcmil-#2	34053T	D216985	10		
600	1	BOX	Al/Cu	36031T	P217501	11	600 (68)	360 (40)
PHENOLIC			(2) 600 kcmil-#2					
INSULATOR	1	BOX	Cu*	36051T	Y218015	11	375 (42)	360 (40)
			(2) 600 kcmil-#2					

*Note: * Fuse blocks have copper box connectors and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class T

CLASS T FUSE BLOCKS

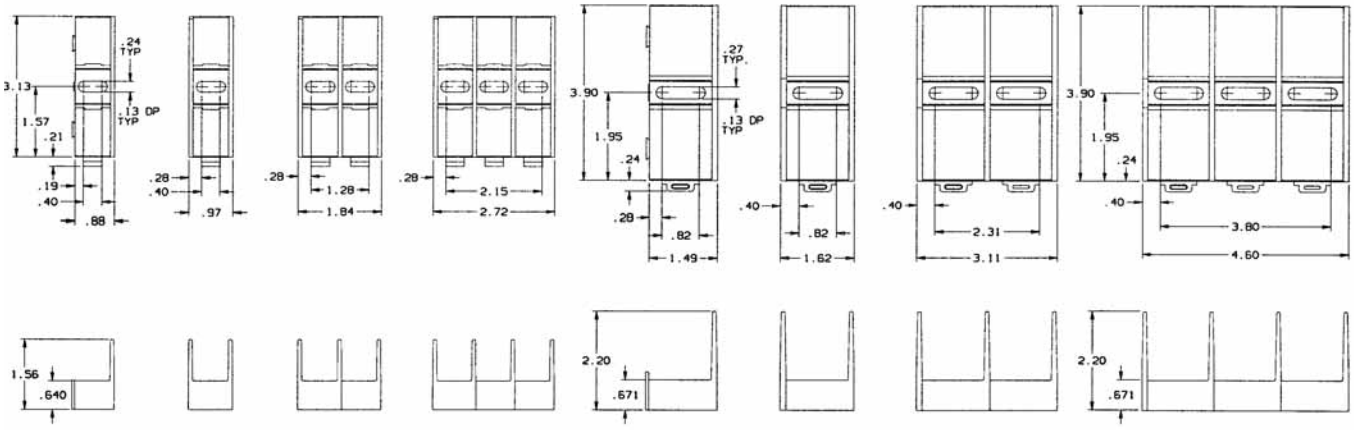


Figure 1 *Figure 2* *Figure 3* *Figure 4* *Figure 5* *Figure 6* *Figure 7* *Figure 8*

Recommended mounting screws: 30A, #10 (.190" dia.), 60A, ⅞" (.250" dia.)

600 Volt, 30 & 60 Ampere Class T Fuse Blocks

Amper Rating	Poles	Connector Type	Connector Wire Range	Catalog Number Spring Reinforced	Reference Number Spring Reinforced	Fig.	Connector Torque In - lb (N.m)
30 GFPC INSULATOR	ADDER	BOX	Al/Cu #2-14	60305T	B211877	1	35 (4)
	1			60306T	P212395	2	
	2			60307T	X212908	3	
	3			60308T	K213426	4	
	ADDER	SCREW	Cu #10-14	60315T	D213926	1	20 (2.3)
	1			60316T	R214444	2	
	2			60317T	T214952	3	
	3			60318T	W215460	4	
	ADDER	PRESSURE PLATE	Cu #10-14	60325T	Z215969	1	20 (2.3)
	1			60326T	A216476	2	
	2			60327T	K216991	3	
	3			60328T	X217508	4	
	ADDER	BOX	Cu* #4-14	60355T	F218022	1	35 (4)
	1			60356T	K218532	2	
	2			60357T	F219057	3	
	3			60358T	W219577	4	
60 GFPC INSULATOR	ADDER	SCREW	Cu #10-14	60615T**	N201630**	5	20 (2.3)
	1			60616T**	N204850**	6	
	2			60617T**	W211366**	7	
	3			60618T**	C211878**	8	
	ADDER	BOX	Al/Cu #2-14	60605T	P222032	5	45 (5)
	1			60606T	Z222777	6	
	2			60607T	N223296	7	
	3			60608T	E201116	8	
	ADDER	BOX	Cu* #4-14	60655T	Q212396	5	45 (5)
	1			60656T	Y212909	6	
	2			60657T	L213427	7	
	3			60658T	E213927	8	

*Note: * Fuse blocks have copper box connectors and clips and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

*** UL Component Recognized*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class T

CLASS T FUSE BLOCKS

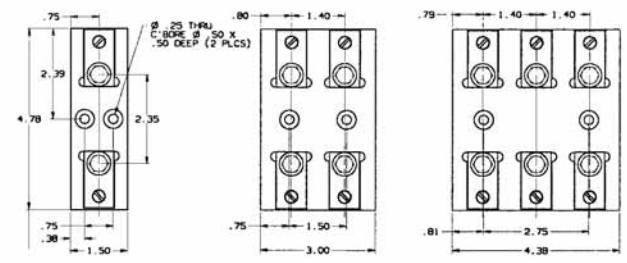


Figure 1 Figure 2 Figure 3

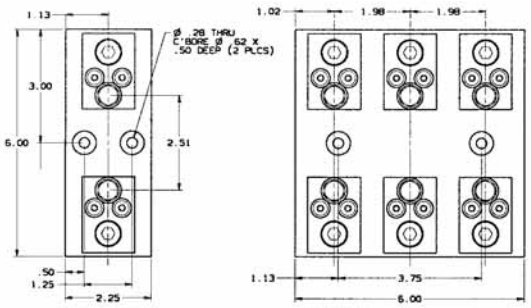


Figure 4 Figure 5

Recommended base mounting screws: 100A & 200A, #10 (.190" dia.), 400A & 600A, Z\v" (.250" dia.)
† Note: Height includes nominal fuse blade thickness

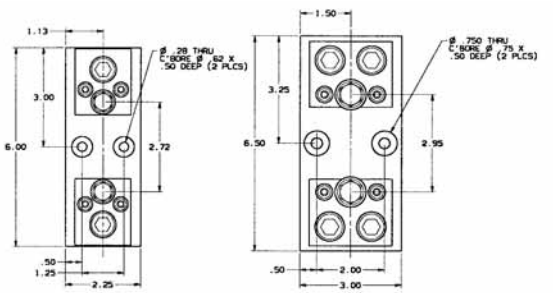


Figure 6 Figure 7

600 Volt, 100, 200, 400 & 600 Ampere Class T Fuse Blocks

Ampere Rating	Poles	Connector Type	Connector Wire Range	Cat. Numer Spring Reinforced	Ref. Number Spring Reinforced	Fig.	Torque In LBS (N.m) Connector	Torque In LBS (N.m) Fuse Bolt
100 PHENOLIC INSULATOR	1	BOX	Al/Cu 2/0-#6	61031T	S214445	1	120 (13)	72 (8)
	2			61032T	V214953	2		
	3			61033T	X215461	3		
	1	BOX	Cu* 2/0-#12	61051T	A215970	1	50 (5.6)	72 (8)
	2			61052T	B216477	2		
	3			61053T	L216992	3		
200 PHENOLIC INSULATOR	1	BOX	Al/Cu 350 kcmil-#6	62031T	Y217509	4	275 (31)	132 (15)
	3			62033T	L218533	5		
	1	BOX	Cu* 350 kcmil-#6	62051T	G219058	4	275 (31)	132 (15)
	3			62053T	X219578	5		
400 PHENOLIC INSULATOR	1	BOX	Al/Cu 600 kcmil-#2	64031T	Q222033	6	600 (68)	228 (26)
	1	BOX	Cu* 600 kcmil-#2	64051T	A222778	6	375 (42)	228 (26)
600 PHENOLIC INSULATOR	1	BOX	Al/Cu (2) 600 kcmil-#2	66031T	P223297	7	600 (68)	360 (40)
	1	BOX	Cu* (2) 600 kcmil-#2	66051T	F201117	7	375 (42)	360 (40)

Note: **Fuse blocks have copper box connectors and are for copper wires only. These are specifically designed with the same coefficient of expansion as copper wire for improved heat cycling and meet or exceed OEM "no aluminum" specifications.*

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class G



CLASS G FUSE BLOCKS

Ferraz Shawmut Class G Fuse Blocks accommodate all 15, 20, 30 and 60 Ampere Class G fuses. A choice of box, screw or pressure-plate connectors fit a wide range of stranded or solid copper wire. Insulators are glass-filled polycarbonate (GFPC) with verified dielectric strength in excess of 2500V. Fuse blocks feature a unique adder block which can be snapped onto 1-, 2-, or 3-pole blocks to form multi-pole segmented blocks of as many poles as desired. All fuse clips are made of high conductivity tin-plated copper alloy.

Features / Benefits

- Unique integral DIN rail adapters for 15, 20 & 30A blocks
- Unique adder-block design (all ampere ratings) for design flexibility
- Spring reinforcing standard for 60A clips
- Features high conductivity copper alloy fuse clips

Ratings

- 600VAC: 15A & 20A
- 480VAC: 30A & 60A
- Withstand Rating:100kA using screw, pressure plate or box connections,10kA using quick connects.
- Temperature/flammability: GFPC insulators rated 125°C RTI, 94V-0 flammability

Approvals

- All fuse blocks meet the requirements of UL Std. 512
- UL Listed Guide IZLT, File E52283
- CSA Certified Class 6225, File 32169

Recommendes fuse usage

- Class G Blocks use with AG

Clip & Connector Types

15, 20, 30, 60A G

COPPER BOX CONNECTOR OR ALUMINUM BOX CONNECTOR



15, 20, 30A G

SCREW WITH DOUBLE QUICK-CONNECTS



15, 20, 30A G

PRESSURE PLATE WITH DOUBLE-QUICK CONNECTS



American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Class G

CLASS G FUSE BLOCKS

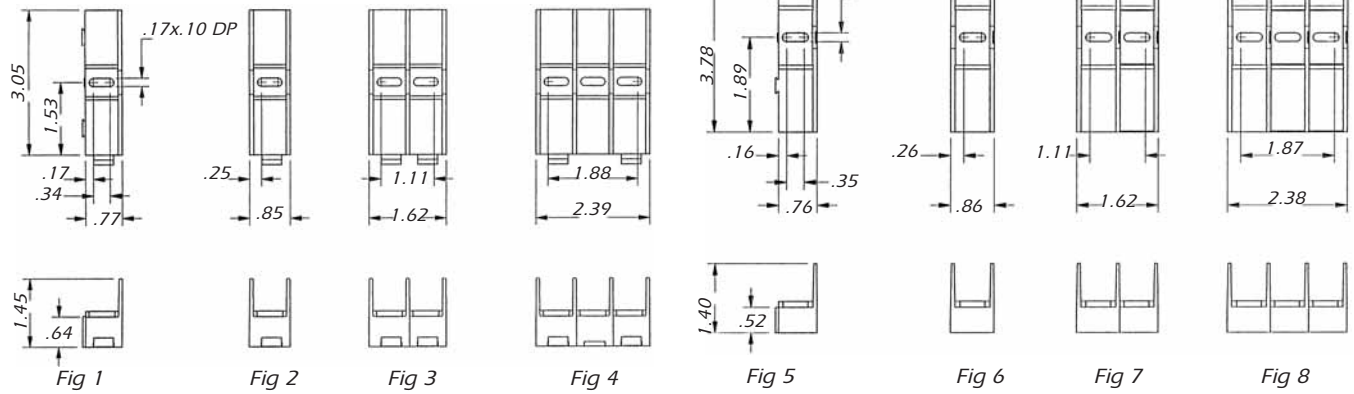


Fig 1 Fig 2 Fig 3 Fig 4 Fig 5 Fig 6 Fig 7 Fig 8

600 Volt, 15 & 20 Ampere; 480 Volt 30 & 60 Ampere Class G Fuse Blocks

Ampere Rating	Poles	Connector Type	Wire Range	Cat. Numer Reinforced	Ref. Number Reinforced	Fig.	Torque In-LB (N.m)
15 GFPC INSULATOR	ADDER	SCREW W/DOUBLE	Cu #10-14	40110G	L219062	1	20 (2.3)
	1	QUICK CONNECTS AT		40111G	B219582	2	
	2	BOTH ENDS		40112G	V222037	3	
	3			40113G	E222782	4	
	ADDER	PRESSURE PLATE	Cu #10-14	40120G	R223299	1	20 (2.3)
	1	(SEMS) W/DOUBLE		40121G	K201121	2	
	2	QUICK CONNECTS AT		40122G	T201635	3	
	3	BOTH ENDS		40123G	Y204882	4	
	ADDER		Cu #6-14	40150G	A211370	1	35 (4)
	1	COPPER		40151G	G211882	2	
	2	BOX		40152G	V212400	3	
	3			40153G	C212913	4	
20 GFPC INSULATOR	ADDER	SCREW W/DOUBLE	Cu #10-14	40210G	Q213431	1	20 (2.3)
	1	QUICK CONNECTS AT		40211G	K213932	2	
	2	BOTH ENDS		40212G	Y214450	3	
	3			40213G	A214958	4	
	ADDER	PRESSURE PLATE	Cu #10-14	40220G	C215466	1	20 (2.3)
	1	(SEMS) W/DOUBLE		40221G	F215975	2	
	2	QUICK CONNECTS AT		40222G	E216480	3	
	3	BOTH ENDS		40223G	R216997	4	
	ADDER		Cu #6-14	40250G	D217514	1	35 (4)
	1	COPPER		40251G	L218027	2	
	2	BOX		40252G	R218538	3	
	3			40253G	M219063	4	
30 GFPC INSULATOR	ADDER	SCREW W/DOUBLE	Cu #10-14	40310G	C219583	1	20 (2.3)
	1	QUICK CONNECTS AT		40311G	W222038	2	
	2	BOTH ENDS		40312G	F222783	3	
	3			40313G	S223300	4	
	ADDER	PRESSURE PLATE	Cu #10-14	40320G	V201636	1	20 (2.3)
	1	(SEMS) W/DOUBLE		40321G	A204884	2	
	2	QUICK CONNECTS AT		40322G	B211371	3	
	3	BOTH ENDS		40323G	H211883	4	
	ADDER		Cu #6-14	40350G	W212401	1	35 (4)
	1	COPPER		40351G	D212914	2	
	2	BOX		40352G	R213432	3	
	3			40353G	L213933	4	
60 GFPC INSULATOR	ADDER		Al/Cu #2-14	40605G	Z214451	5	45 (5)
	1	ALUMINUM		40606G	D215467	6	
	2	BOX		40607G	G215976	7	
	3			40608G	F216481	8	
	ADDER		Cu #4-14	40655G	R230521	5	45 (5)
	1	COPPER		40656G	S216998	6	
	2	BOX		40657G	M218028	7	
	3			40658G	S218539	8	

American General Purpose Fuses Cylindrical & Blade Fuse Blocks In-Line FEB/FEC/FEX/FEY



600 VOLTS

Ferraz Shawmut's complete line of single and dual pole in-line fuse holders accommodate either 1-1/2" x 13/32" (10x38mm) midget or Class CC fuses. The fuse holders are designed for quick installation. Securing nuts or screws are captive thus speeding installation by reducing the need to locate and assemble loose components in the field. Three internal O-rings per pole seal the fuse holder providing a water-resistant compartment for the fuse. The captive O-rings are colored (blue for single pole and red for dual pole) for quick detection. Optional cone shaped insulator boots can be slipped on to provide a watertight seal (breakaway versions come with boots standard). Both single and dual pole versions have an optional breakaway feature which safely disconnects the load in case of a pole knockdown. Fuses remain safely encapsulated within the watertight fuse holder on the load side. Once the pole has been reinstalled the fuse holder can be easily reconnected.

Ratings

- 600 VAC, 30A
- Withstand Rating: Midget Fuse 100kA I.R.,Class CC 200kA I.R.
- Temperature Rating 155°C

Approvals

- UL Listed Class CC, Guide IZLT, File E52283
- UL Recognized Component Midget,Guide IZLT2, File E52283
- CSA Certified Class CC and Midget, Class 6225, File 32169

Highlights

- Breakaway version quickly disconnects line side during pole knockdown in compliance with state and federal highway commission standards
- 3 O-rings per pole for water tight applications
- Colored O-rings for quick detection
- Single and dual poles
- Accepts midget or Class CC fuses
- Wide assortment of terminal variations
- High heat, impact resistant insulator
- Captive nut or screw for quick installations
- Polarized dual pole provides simultaneous disconnection
- Permanently installed neutral versions quickly identified by white nuts
- Tulip fuse clip for improved contact and low losses
- Environmentally friendly-no lead solder used
- Highly visible catalog number even with insulation boots installed
- Wire gage size identified on insulation boots for quick, accurate trimming

Applications:

- Street lighting
- Parking lot lighting
- Traffic signaling
- Sports lighting
- Boats and marinas
- Humid/corrosive environments

Recommended Fuse Usage

- FEB and FEX holders will accomodate these Ferraz Shawmut Fuses: Midget (1-1/2" x 13/32", 10 x 38mm): ATQ, ATM, TRM, OTM, GGU, GFN, A13X2, A25Z-2, A60Q-2, A6Y-2B
- FEC and FEY holders will accomodate these Ferraz Shawmut Fuses: Class CC: ATDR, ATMR, ATQR

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
In-Line FEB/FEC/FEX/FEY

600 VOLTS

Catalog Numbering System

Family	Load Terminal			Line Terminal		Option
	Type		Material	Type	Material	
FEB-	1	-	1	1	1	-BA

Nomenclature Legend

Family		Load or Line Terminal Type							Option
Family	Description	Terminal End View	Terminal	Type	Conductor Size	No. Per Terminal	Solid	Stranded	Description
FEB	Single pole midget		11	Cu Crimp	#8-#12 #12-#14	1 2	Yes Yes	Yes Yes	BA (breakaway version equipped with breakaway stud, breakaway boot, and insulating boots for both line and load sides)
FEC	Single pole Class CC		21	Cu Crimp	#10 #6 #4	2 1 1	Yes Yes Yes	Yes Yes No	
FEX	Dual Pole midget		31	Cu Crimp	#10 #4	2 1	Yes No	Yes Yes	
FEY	Dual pole Class CC		41	Cu Crimp	#6 #2	2 1	Yes No	Yes Yes	
FEBN	Single pole neutral		81	Cu Single Set Screw	#2-#12	1	Yes	Yes	
			91	Cu Double Set Screw	#2-#12	1 each	Yes	Yes	
			82	Al Single Set Screw	#2-#12	1	Yes	Yes	
			92	Al Double Set Screw	#2-#12	1 each	Yes	Yes	

Notes:

1. Non-breakaway units do not include insulator boots. These optional cone shaped boots are available to provide a watertight installation. The insulator boots are designed to form a watertight seal over conductors, but due to varying wire insulation sizes it is suggested that tape wrap be utilized for best results.

   FSB1 = Single conductor boot (used to cover all crimp type & single set screw terminals)
   FSB2 = Double conductor boot (used to cover all double set screw (Y-type) terminals)

   Insulator boot trimming instructions: Locate wire gage size to be utilized marking on the boot and cut just beneath it.
2. Tightening torque for single and double set screw terminations: 35 lbs.-in.
3. Tightening torque for dual pole fastening screw: 10-15 lbs.-in.
4. FEBN versions have a permanently mounted dummy fuse for neutral applications.

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
In-Line FEB/FEC/FEX/FEY

600 VOLTS

Ferraz Shawmut In-Line Fuse Holder Family - Typical Combination Chart

Midget (10x38mm)		Midget (10x38mm) Breakaway		Class CC		Class CC Breakaway	
Cat. Number	Ref. Number	Cat. Number	Ref. Number	Cat. Number	Ref. Number	Cat. Number	Ref. Number
FEB-11-11	S230522	FEB-11-11-BA	T230523	FEC-11-11	M230563	FEC-11-11-BA	N230564
FEB-11-21	V230524	FEB-11-21-BA	W230525	FEC-11-21	P230565	FEC-11-21-BA	Q230566
FEB-11-31	X230526						
FEB-11-41	Y230527	FEB-11-41-BA	Z230528				
		FEB-11-81-BA	A230529				
FEB-11-82	B230530	FEB-11-82-BA	C230531				
FEB-11-91	D230532	FEB-11-91-BA	E230533	FEC-11-91	R230567	FEC-11-91-BA	S230568
FEB-11-92	F230534	FEB-11-92-BA	G230535				
FEB-11-S	H230536						
FEB-21-11	J230537						
FEB-21-21	K230538	FEB-21-21-BA	L230539	FEC-21-21	T230569	FEC-21-21-BA	V230570
FEB-21-91	M230540	FEB-21-91-BA	N230541				
FEB-31-31	P230542	FEB-31-31-BA	Q230543				
FEB-41-41	R230544	FEB-41-41-BA	S230545				
FEB-81-81	T230546	FEB-81-81-BA	V230547	FEC-81-81	W230571	FEC-81-81-BA	X230572
FEB-81-91	W230548	FEB-81-91-BA	X230549				
FEB-81-S	Y230550						
FEB-82-82	Z230551	FEB-82-82-BA	A230552				
FEB-82-92	B230553	FEB-82-92-BA	C230554				
		FEB-91-91-BA	D230555				
FEBN-11-11	E230556	FEBN-11-11-BA	F230557				
FEBN-11-91	G230558	FEBN-11-91-BA	H230559				
FEBN-81-81	J230560	FEBN-81-81-BA	K230561				
FEB-SS	L230562						

Note: Consult factory for other configurations.

Midget (10x38mm) Dual Pole		Midget (10x38mm) Dual Pole Breakaway		Class CC Dual Pole		Class CC Dual Pole Breakaway	
Cat. Number	Ref. Number	Cat. Number	Ref. Number	Cat. Number	Ref. Number	Cat. Number	Ref. Number
FEX-11-11	Y230573	FEX-11-11-BA	G230512	FEY-11-11	F230580	FEY-11-11-BA	L230516
FEX-11-21	Z230574	FEX-11-21-BA	H230513	FEY-11-21	G230581	FEY-11-21-BA	M230517
FEX-11-31	A230575			FEY-11-31	H230582		
FEX-11-41	B230576			FEY-11-41	J230583		
						FEY-11-91-BA	N230518
FEX-21-21	C230577	FEX-21-21-BA	J230514	FEY-21-21	K230584	FEY-21-21-BA	P230519
FEX-81-81	D230578						
FEX-81-91	E230579	FEX-81-91-BA	K230515				

Note: Consult factory for other configurations.

Crimping Tools Reference Chart, The following crimping tools (or equivalent) are recommended:

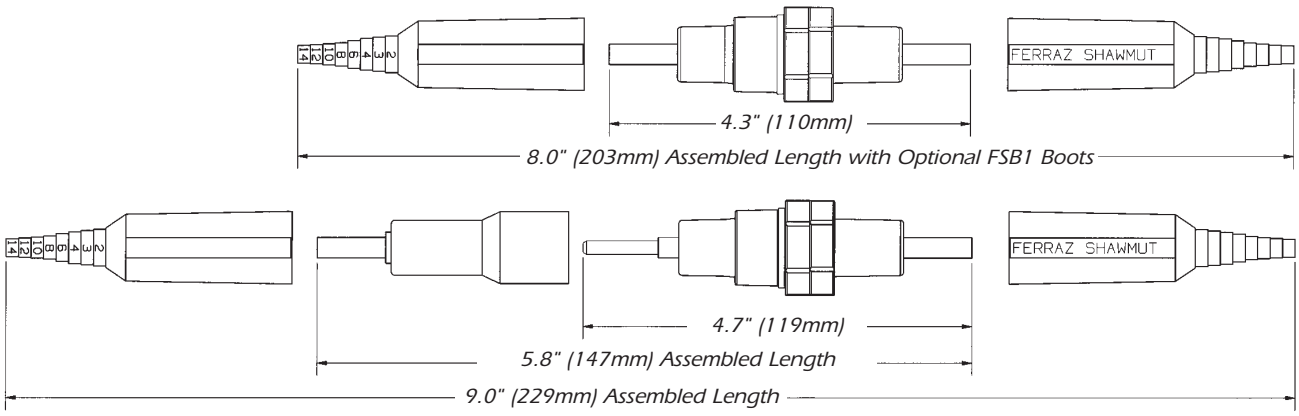
Terminal Type	FCI-Burndy	T&B
1	Y8MRB-1	WT-111M
2	Y2MR	TBM2/TBM5 BLUE DIE, WT-115-A DIE O
3	Y2MR	TBM2/TBM5 GREY DIE, WT-115-A DIE E
4	Y2MR	TBM2/TBM5 BROWN DIE, WT-115-A DIE F

Note: Not supply by Ferraz Shawmut.

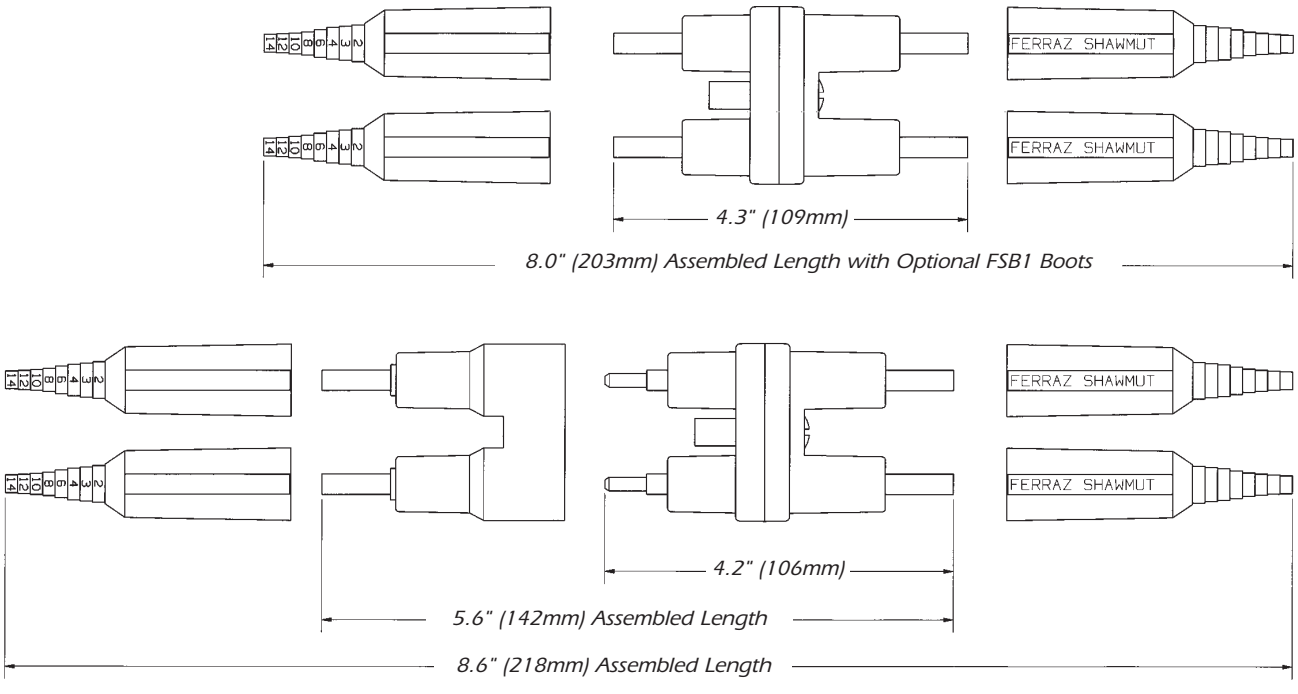
American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
In-Line FEB/FEC/FEX/FEY

600 VOLTS

FEB and FEC, Non-Breakaway and Breakaway Assembly Drawings



FEX and FEY, Non-Breakaway and Breakaway Assembly Drawings



Miniature Fuses
Panel Mount Fuseholders
GPM Series



GPM PANEL MOUNT FUSE HOLDERS

Ferraz Shawmut GPM Panel Mount Fuse Holders are in sizes to accommodate 5mm x 20mm, 1/4" x 1-1/4", Class CC and Midget (1-1/2" x 13/32") fuses. All 30A holders have glass-filled polyester insulators for extra dependability and trouble-free installation. Patented design allows same body to accept screw or bayonet knob. Flange design allows front or rear mounting. The 10A and 15A holders are for front mounting only.

Approvals

- GPM-A, GPM-G: UL Recognized, Guide IZLT2, File E118864
  CSA Certified, Class 908501, File AP82191
- All others: UL Recognized, Guide IZLT2, File E52283
  CSA Certified, Class 6225, File 32169

Recommended Fuse Usage

GPM Fuse Holders will accommodate these Ferraz Shawmut fuses:

GPM-A: GGM, GGA, GSC
GPM-G: GSA, GDL, GGC, GSB, GDG, GAB
GPM-SRR, GPM-BRR, GPM-WTR: ATQR, ATDR, ATMR
GPM-SRR90, GPM-BRR90, GPM-WTR90: ATQR, ATDR, ATMR
GPM-S, GPM-B, GPM-WT:
GPM-S90, GPM-B90, GPM-WT90: } ATQ, ATM, TRM, OTM, GGU, A13X-2, A25Z-2, A60Q-2, A6Y-2B

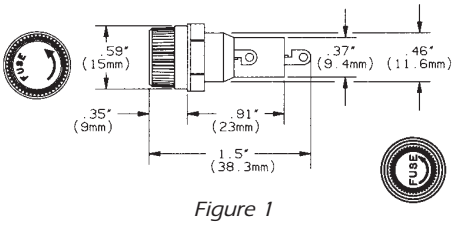


Figure 1

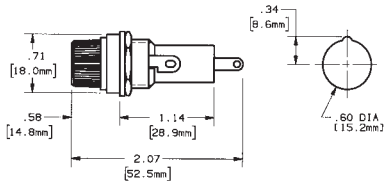


Figure 2

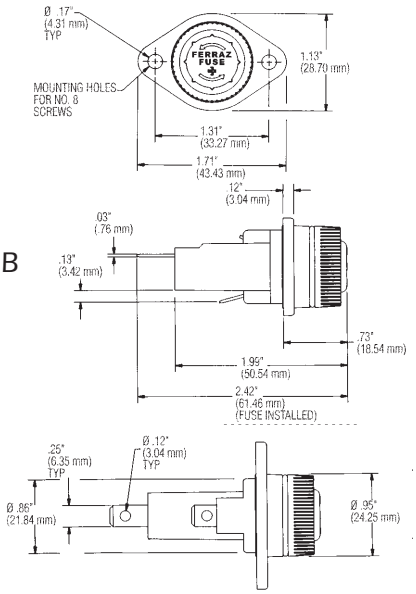


Figure 3

Catalog Numbers & Descriptions

Cat No.	Ref. No.	Fig.	Cap Type	Amps	Volts	Fuse Type	Terminal Type
GPM-A	M213451	1	Screw Knob	10	250	5mm x 20mm	Solder
GPM-G	G213952	2	Screw Knob	15	250	1/4" x 1-1/4"	Solder
GPM-S	M216487	3	Screw Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder
GPM-S90		4	Screw Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder,Right Angle
GPM-SRR	A217005	3	Screw Knob	30	600	Class CC	1/4" Quick-connect/Solder
GPM-SRR90		4	Screw Knob	30	600	Class CC	1/4" Quick-connect/Solder,Right Angle
GPM-B	L215474	3	1/4 Turn Bayonet Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder
GPM-B90		4	1/4 Turn Bayonet Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder,Right Angle
GPM-BRR	P215983	3	1/4 Turn Bayonet Knob	30	600	Class CC	1/4" Quick-connect/Solder
GPM-BRR90		4	1/4 Turn Bayonet Knob	30	600	Class CC	1/4" Quick-connect/Solder,Right Angle
GPM-WT	K217520	3	Water-tight Screw Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder
GPM-WT90		4	Water-tight Screw Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder,Right Angle
GPM-WTR	V218035	3	Water-tight Screw Knob	30	600	Class CC	1/4" Quick-connect/Solder
GPM-WTR90		4	Water-tight Screw Knob	30	600	Class CC	1/4" Quick-connect/Solder,Right Angle

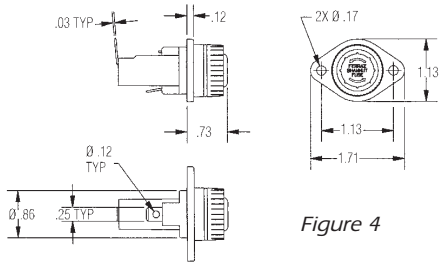


Figure 4

American General Purpose Fuses
Cylindrical & Blade Fuse Blocks
Clips



for Ferrule fuses / pc board
30A & 60A ferrule - fuse clips

Fuse Clips for 30 & 60 Ampere Ferrule-type Fuses

Cat. Num.	Ref. Num.	Fig.	For Fuse Rating/Size: Amps (max.)	Ferrule Dia.	Mounting Details Hole Size	Screw Size
CO8915P	R215479	1	30	13/32"	.172" dia.	#8
CO8919P	P217524	2	30	13/32"	.196" dia.	#10
CO8916P	V215988	3	30	9/16"	.172" dia.	#8
CO8917P	R216491	4	30 or 60	13/16"	.22" x .30"	#10
CO8918P	F217010	5	60	1-1/16"	.22" x .30"	#10

All clips are UL Recognized: Guide IZLT2, File E52283
All clips are tin-plated copper alloy, non-spring reinforced.

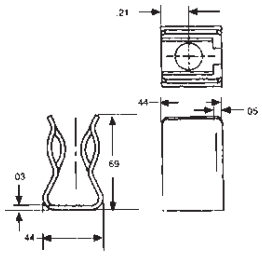


Figure 1

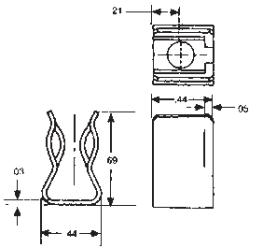


Figure 2

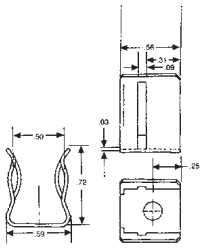


Figure 3

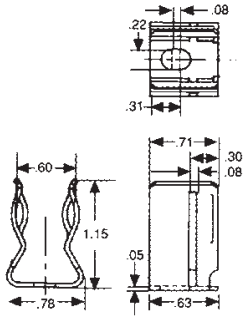


Figure 4

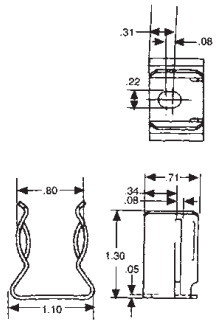
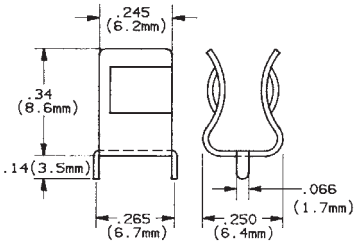


Figure 5

SDC6 - K222051
PC BOARD clips

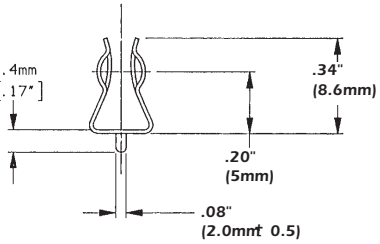
- PC board mount fuse clip
- For 1/4" diameter fuses
- Tin plated hard brass
- 15A max





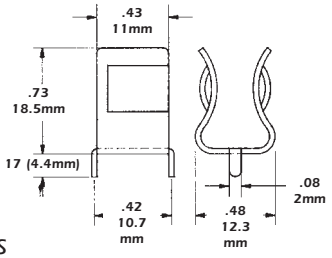
SDC5 - R219596
PC BOARD clips

- PC board mount fuse clip
- For 5mm diameter fuses
- Tin plated hard brass
- 10A max



SDC7 - T222795
PC BOARD clips

- PC board mount fuse clip
- For 13/32" (10mm) diameter fuses
- Tin plated spring brass
- 30A max









American General Purpose Fuses
Power Distribution Blocks
FSPDB

FSPDB IP20
Finger Safe Power Distribution Block

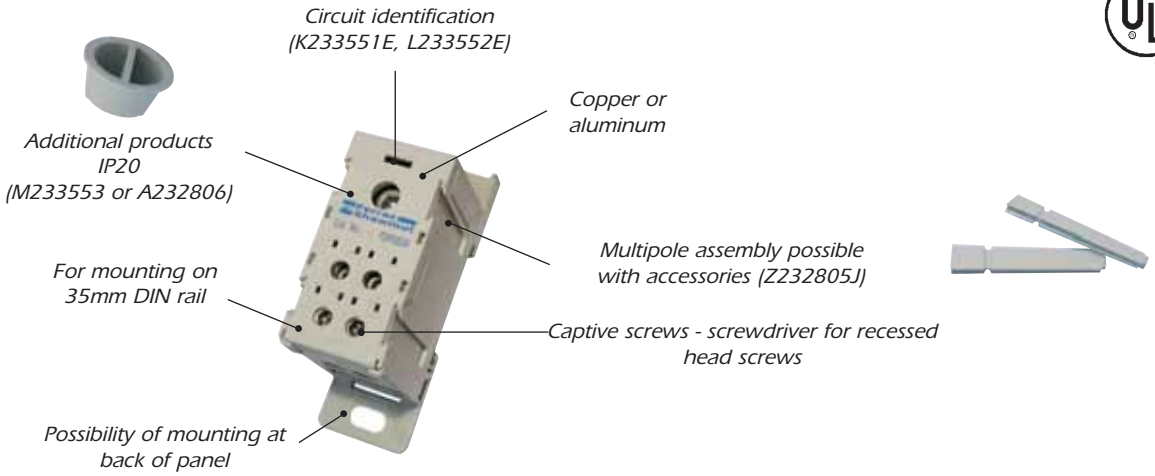
Ferraz Shawmut is launching a whole new concept of safety and easy installation with its new power distribution blocks.
Protection to IP20 standards guarantees safety and eliminates the need for plastic protections.
FSPDBs can be snapped onto a 35mm DIN rail or mounted at the back of a panel, and their modular design makes multipole assemblies easy.
These power distribution blocks offer you a simple way of distributing electricity in cubicles through a wide variety of secondary circuits.

Reference	Designation	Nb. wire inlets	Nb. wire outlets	Materials	Pckg
X232803C	FSPDB4A 335A 1/1 16 to 185mm²	1x 185mm² to 16mm²	1x 185mm² to 16mm²	Aluminum	3
R232798C	FSPDB4C 335A 1/1 16 to 185mm²	1x 185mm² to 16mm²	1x 185mm² to 16mm²	Copper	3
D233545C	FSPDB1A 175A 1/1 2,5 to 70mm²	1x 70mm² to 2,5mm²	1x 70mm² to 2,5mm²	Aluminum	3
N232795C	FSPDB1C 175A 1/1 2,5 to 70mm²	1x 70mm² to 2,5mm²	1x 70mm² to 2,5mm²	Copper	3
Y232804C	FSPDB5A 840A 2/2 25 to 300mm²	2x 300mm² to 25mm²	2x 300mm² to 25mm²	Aluminum	3
S232799C	FSPDB5C 840A 2/2 25 to 300mm²	2x 300mm² to 25mm²	2x 300mm² to 25mm²	Copper	3
V232801C	FSPDB2A 175A 1/4 2,5 to 70mm²	1x 70mm² to 2,5mm²	4x 35mm² to 2,5mm²	Aluminum	3
P232796C	FSPDB2C 175A 1/4 2,5 to 70mm²	1x 70mm² to 2,5mm²	4x 35mm² to 2,5mm²	Copper	3
VV232802C	FSPDB3A 310A 2/8 2,5 to 35mm²	1x 185mm² to 16mm² to 1x 70mm² to 2,5mm²	8x 35mm² to 2,5mm²	Aluminum	3
Q232797C	FSPDB3C 310A 2/8 2,5 to 35mm²	1x 185mm² to 16mm² to 1x 70mm² to 2,5mm²	8x 35mm²to 2,5mm²	Copper	3

Accessories

Reference	Catalog Number	Accessories	Pckg
K233551E	FSCIM1 KITCARD 100 LAB.FSPDB1&2	Labeling accessories for blocks for sizes1&2	5
L233552E	FSCIM2 KITCARD 100 LAB.FSPDB3&5	Labeling accessories for blocks for sizes3&5	5
Z232805J	FSPIN1 PIN MULTIPOLE FSPDB	Multipole assembly accessory	10 (1)
M233553J	FSCAP2 CAP PLUG 35mm² FSPDB	Sealing accessories for sizes 70mm²	10 (1)
A232806J	FSCAP1 CAP PLUG 35mm² FSPDB	Sealing accessories for sizes > 70mm²	10 (1)
N233554A	FSEA END ANCHOR FOR FSPDB	Top	1

(1) bag of 10



American General Purpose Fuses
Power Distribution Blocks
62000 - 69000 Series







Versatile Power distribution blocks for cable terminations

Ferraz Shawmut Power Distribution Blocks afford a safe, convenient way of splicing cables, splitting primary power into a variety of secondary circuits or providing a fixed junction tap-off point. Power block options include single or dual primary connections with up to 30 secondary connections.

Features/Benefits

- Adder Poles: All series have optional adder poles which snap onto the 1, 2 or 3- pole blocks and lock together to form as many total poles as required. Adder poles with a variety of terminations can be combined to match special wire size combinations.
- Wire Connectors: Standard aluminum box connectors accommodate aluminum and copper wire, 1 conductor per opening. Standard copper box connections are for copper wire only, 1 conductor per opening. Connector bars are all 1 piece and tin plated.
- Insulators: Insulators are virtually unbreakable, glass-filled polycarbonate on all series. "See-Through" Safety Covers are available which give greater safety and provide Service Entrance ratings for large and intermediate series blocks.

Ratings

- Ampere ratings from 90 to 1520
- 600V rated

Approvals

- Most sizes are UL Recognized Component - Guide XCFR2, File E73571
- Most sizes are CSA Certified: Series 62, 63, 66, 68 - Class 6228,File 69363 - Series 67, 69 - Class 3211, File 15469

Highlights

- Large - 68000 and 69000 Series
- Intermediate - 66000 and 67000 Series
- Mini - 62000 and 63000 Series

Applications:

- Box, stud and quick-connect terminations for copper and/or aluminum cables.

American General Purpose Fuses
Power Distribution Blocks
62000 - 69000 Series

Mini: 62000 - 63000 Series

Sizes, Ratings – Mini Series 62000 and 63000
Ampere rating based on NEC Table 310-16 for 90° copper wire.
ALUMINUM (90° C Cu/Al wire)

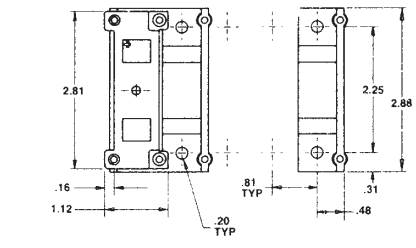
Primary		Secondary		AMP Rating		Catalog Number				Reference Number			
Wire range AWG/kcmiL or stud size*	Openings or studs per pole	Wire range AWG/kcmil or stud size*	Openings or studs per pole	CSA	UL	Adder	1 pole	2 pole	3 pole	Adder	1 pole	2 pole	3 pole
Box to Box													
#4-14	1	#4-14	1	90	95	63100	63101	63102	63103	E222759	V223279	V201613	L204641
			4			63160	63161	63162	63163	L218004	S218516	B219559	W222015
2/0-#14	1	2/0-#14	1	185	195	63150	63151	63152	63153	L213910	X214426	C215443	G215953
		#2-14	2			63190	63191	63192	63193	D211350	K211862	X212379	J212896
		#4-14	4			63130	63131	63132	63133	W214425	Z214934	F215952	F216458
Box to Stud													
2/0-#14	1	1/4-20 x 5/8	1	185	195	63140	63141	63142	63143	V222014	F222760	K201098	W201614
	1	1/4-20 x 1/2 Tapped hole	1			-	-	-	-	-	-	-	-
Stud to Stud													
1/4-20 x 5/8	1	1/4-20 x 5/8	1	240	240	-	-	-	-	-	-	-	-
Box to Quick Connect													
#4-14	1	1/4 x .032QC	4	90	95	-	-	-	-	-	-	-	-

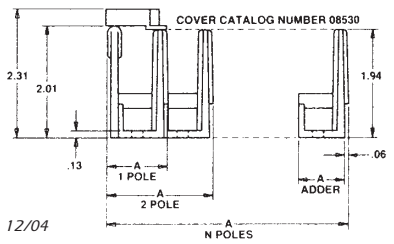
COPPER (90° C Cu wire only)

Box to Box													
#4-14	1	#4-14	1	90	95	62100	62101	62102	62103	X211344	E211857	D212891	K213403
			4			62160	62161	62162	62163	S201611	E204635	G211859	T212376
2/0-#14	1	2/0-#14	1	185	195	62150	62151	62152	62153	G218000	N218512	X219555	R222011
		#2-14	2			62190	62191	62192	62193	S222012	D222758	H201096	T201612
		#4-14	4			62130	62131	62132	62133	R223276	F201094	D204634	Y211345
Box to Stud													
2/0-#14	1	1/4-20 x 5/8	1	185	195	62140	62141	62142	62143	G213906	S214422	Y215439	C215949
	1	1/4-20 x 1/2 Tapped hole	1			62170	62171	62172	62173	T214423	X214932	D215950	D216456
Stud to Stud													
1/4-20 x 5/8	1	1/4-20 x 5/8	1	240	240	62200	62201	62202	62203	H211860	V212377	J213908	V214424
Box to Quick Connect													
#4-14	1	1/4 x .032QC	4	90	95	62210†	62211†	62212†	62213†	E216457†	Q216973†	J218002†	Q218514†

**Studs are furnished with nuts and washers. Recommended stud torque: (1/4-20) - 72 in. lbs.*
†Quick connector, not CSA Certified.
Note: Blocks for 5, 6 and 10 poles are also available. To order, simply modify the Adder catalog number. Example: 63l00 becomes 63106 for 6 poles.

Dimensions – 62000 and 63000 Series Power Distribution Blocks





NUMBER OF POLES	DIMENSION A (Inches)
ADDER	.812
1	1.09
2	1.90
3	2.71
N	(.812 x N) + .273

Example for 10 poles:
A= (.812 x 10) + .273 = 8.39

SAFETY COVER - Cat. number 08530 Ref. number F213445

Polycarbonate safety cover provides dead-front protection to 62000 and 63000 series power distribution blocks. One cover is needed on each pole (1-pole block requires 1 cover, 3-pole requires 3 covers, etc.) Each cover has a test prod hole in the center for circuit checking and each is marked with the reminder "REPLACE AFTER SERVICING EQUIPMENT".
To order, simply determine the total number of poles to be protected and specify the same number of 08530 safety covers. Mounting screws are supplied with cover.
Recommended mounting screws for all 62000-63000 series: #10 (.190" diameter).

END BARRIER - Cat. number U09311 Ref. number Q227507

Polycarbonate end barriers snap on to PDB Adder blocks to form 1-pole blocks. Use one barrier per block.

American General Purpose Fuses
Power Distribution Blocks
62000 - 69000 Series

Intermediate: 66000 - 67000 Series

Sizes, Ratings – Intermediate Series 66000 and 67000
Ampere rating based on NEC Table 310-16 for 75° copper wire.

Primary		Secondary		AMP	Aluminuium (90°C Cu/Ai wire)							
					Catalog Number				Reference Number			
Wire range AWG/kcmiL or stud size*	Openings or studs per pole	Wire range AWG/kcmil or stud size*	Openings or studs per pole	Rating	Adder	1 pole	2 pole	3 pole	Adder	1 pole	2 pole	3 pole
Box to Box												
		2/0-#14	1		67050	67051	67052	67053	Z222731	P223251	E201070	P201585
		#2-14	4		67570	67571	67572	67573	Q216950	C217467	J217979	Q218491
		#2-14	6		67560	67561	67562	67563	W214402	X214909	B215419	D215927
2/0-#14	1	#2-14	8	175	67580	67581	67582	67583	H219013	B219536	W221992	E222736
		#6-14	10		67590	67591	67592	67593	K201075	V201590	C203851	D211327
		#10-14*	12		67110	67111	67112	67113	R221988	A222732	Q223252	F201071
		350-#6	1		67000	67001	67002	67003	V219530	P221986	Y222730	D201069
		2/0-#14	2		67010	67011	67012	67013	N201584	X211321	V212354	E212869
		#2-14	4		67670	67671	67672	67673	W201591	M203860	L211840	A212359
350-#6	1	#2-14	6	310	67660	67661	67662	67663	X221993	F222737	W223257	L201076
		#2-14	8		67630	67631	67632	67633	E215928	H216437	R216951	D217468
		#6-14	10		67650	67651	67652	67653	K217980	R218492	J219014	C219537
		#10-14*	15		67620	67621	67622	67623	M213888	X214403	Y214910	C215420
		500-#4	1		67400	67401	67402	67403	M216947	Z217464	F217976	M218488
		4/0-#6	2		67420	67421	67422	67423	R223253	G201072	R201587	A211324
		4/0-#10	2		-	-	-	-	-	-	-	-
		2/0-#14	4		67410	67411	67412	67413	E219010	Y219533	S221989	B222733
500-#4	1	#2-14	6	380	67460	67461	67462	67463	G217977	N218489	F219011	Z219534
		#2-14	8		67430	67431	67432	67433	G211836	K213886	V214907	Z215417
		#6-14	10		67480	67481	67482	67483	S201588	A203849	B211325	H211837
		#10-14*	18		67490	67491	67492	67493	X212356	G212871	Q213385	L213887
		350-#6	1									
		& #2-14	3		67450	67451	67452	67453	B215925	E216434	N216948	A217465
		2/0-#14	2		67020	67021	67022	67023	R214398	R214904	W215414	Y215922
		#2-14	6		67510	67511	67512	67513	V214401	W214908	A215418	C215926
2/0-#14	2	#2-14	8	350	67610	67611	67612	67613	K211839	Z212358	H212872	R213386
		#6-14	10		67530	67531	67532	67533	P218490	G219012	A219535	V221991
		#10-14*	15		67550	67551	67552	67553	B203850	C211326	J211838	Y212357
4/0-#10	2	4/10-#10	2	460	-	-	-	-	-	-	-	-
4/0-#6	2	4/0-#6	2	460	67520	67521	67522	67523	F216435	P216949	B217466	H217978
		#2-14	6	460	67540	67541	67542	67543	D222735	T223255	J201074	T201589
Box to Stud												
350-#6	1	3/8-16 x 1	1	310	67250	67251	67252	67253	T214906	Y215416	A215924	D216433
500-#4	1	3/8-16 x 1-1/16	1	380	67220	67221	67222	67223	Q201586	Z203848	Z211323	F211835
		1/4-20 x 1-1/16	2	380	67240	67241	67242	67243	W212355	P213384	J213885	T214400
Stud to Stud												
1/4-20 x 1-5/16	1	1/4-20 x 1-5/16	1	155	-	-	-	-	-	-	-	-
3/8-16 x 1-5/16	1	1/4-20 x 1-5/16	1	155	-	-	-	-	-	-	-	-
		3/8-16 x 1-5/16	1	155	-	-	-	-	-	-	-	-
3/8-16 x 1-1/8	1	3/8-16 x 1-1/8	1	400	-	-	-	-	-	-	-	-
		1/4-20 x 1-1/8	2	400	-	-	-	-	-	-	-	-

**Copper wire only*
Stud-type connectors are furnished with nuts and washers. Recommended stud torque: (1/4-20) - 72 in. lbs; (3/8-16) - 228 in. lbs.



American General Purpose Fuses
Power Distribution Blocks
62000 - 69000 Series

Intermediate: 66000 - 67000 Series

Sizes, Ratings – Intermediate Series 66000 and 67000
Ampere rating based on NEC Table 310-16 for 75° copper wire.

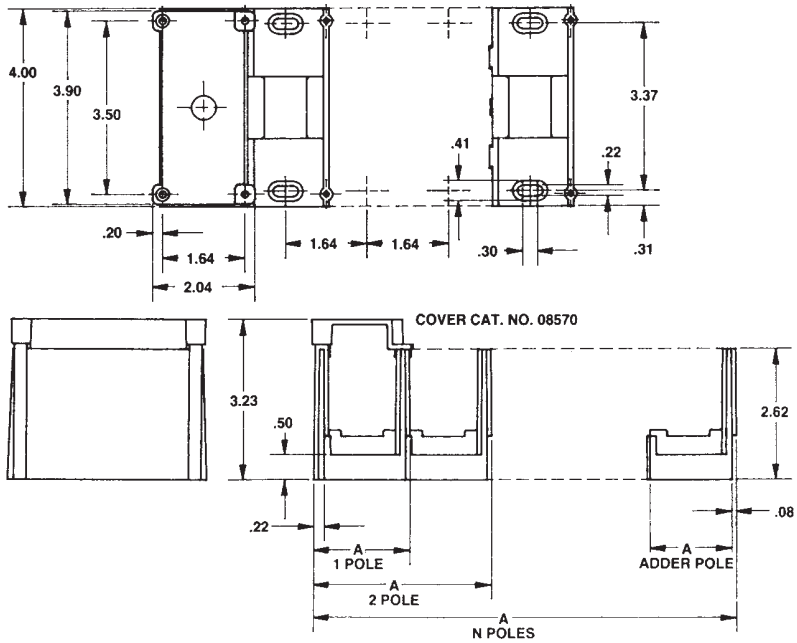
Primary		Secondary		AMP	Copper (75°C Cu wire only)							
					Catalog Number				Reference Number			
Wire range AWG/kcmiL or stud size*	Openings or studs per pole	Wire range AWG/kcmil or stud size*	Openings or studs per pole	Rating	Adder	1 pole	2 pole	3 pole	Adder	1 pole	2 pole	3 pole
Box to Box												
2/0-#14	1	2/0-#14	1	175	66050	66051	66052	66053	T216424	B216937	N217454	X217968
		#2-14	4		66570	66571	66572	66573	W203845	V211319	D211833	T212353
		#2-14	6		66560	66561	66562	66563	W222728	M223249	B201067	L201582
		#2-14	8		66580	66581	66582	66583	D212868	M213382	F213882	P214396
		#6-14	10		66590	66591	66592	66593	P214902	T215412	W215920	Z216429
		#10-14*	12		66110	66111	66112	66113	D218480	V219001	N219524	H221980
350-#6	1	350-#6	1	310	66000	66001	66002	66003	A216936	M217453	W217967	C218479
		2/0-#14	2		66010	66011	66012	66013	M219523	F221978	F223243	W201062
		#2-14	4		66670	66671	66672	66673	W217461	C217973	J218485	B219007
		#2-14	6		66660	66661	66662	66663	V215413	X215921	A216430	J216944
		#2-14	8		66630	66631	66632	66633	C201068	M201583	X203846	W211320
		#6-14	10		66650	66651	66652	66653	E211834	G213883	Q214397	Q214903
		#10-14*	15		66620	66621	66622	66623	T219529	N221985	X222729	N223250
500-#4	1	500-#4	1	380	66400	66401	66402	66403	C213879	L214393	L214899	Q215409
		4/0-#6	2		-	-	-	-	-	-	-	-
		4/0-#10	2		66420	66421	66422	66423	A217971	F218482	X219003	Q219526
		2/0-#14	4		66410	66411	66412	66413	S215917	X216427	E216940	R217457
		#2-14	6		66460	66461	66462	66463	R212351	B212866	K213380	D213880
		#2-14	8		66430	66431	66432	66433	K221982	T222726	K223247	Z201065
		#6-14	10		66480	66481	66482	66483	Y216428	F216941	S217458	B217972
		#10-14*	18		66490	66491	66492	66493	G218483	Y219004	R219527	L221983
		350-#6	1									
		& #2-14	3		66450	66451	66452	66453	J201580	H203833	S211317	B211831
2/0-#14	2	2/0-#14	2	350	66020	66021	66022	66023	F201577	R203818	N211313	X211827
		#2-14	6		66510	66511	66512	66513	V222727	L223248	A201066	K201581
		#2-14	8		66610	66611	66612	66613	H216943	V217460	H218484	A219006
		#6-14	10		66530	66531	66532	66533	C212867	L213381	E213881	N214395
		#10-14*	15		66550	66551	66552	66553	T217459	Z219005	S219528	M221984
4/0-#10	2	4/10-#10	2	460	66520	66521	66522	66523	J203834	T211318	C211832	S212352
4/0-#6	2	4/0-#6	2	460	-	-	-	-	-	-	-	-
		#2-14	6	460	66540	66541	66542	66543	N214901	S215411	V215919	G216942
Box to Stud												
350-#6	1	3/8-16 x 1	1	310	66250	66251	66252	66253	Z217970	E218481	W219002	P219525
500-#4	1	3/8-16 x 1-1/16	1	380	66220	66221	66222	66223	Z212864	H213378	B213878	K214392
		1/4-20 x 1-1/16	2	380	66240	66241	66242	66243	D216939	Q217456	-	-
Stud to Stud												
1/4-20 x 1-5/16	1	1/4-20 x 1-5/16	1	155	66270	66271	66272	66273	R211316	A211830	Q212350	A212865
3/8-16 x 1-5/16	1	1/4-20 x 1-5/16	1	155	66210	66211	66212	66213	-	Q211315	Z211829	P212349
		3/8-16 x 1-5/16	1	155	66200	66201	66202	66203	R222724	H223245	X201063	H201579
3/8-16 x 1-1/8	1	3/8-16 x 1-1/8	1	400	66260	66261	66262	66263	J221981	S222725	J223246	Y201064
		1/4-20 x 1-1/8	2	400	66230	66231	66232	66233	K214898	P215408	R215916	W216426

**Copper wire only*
Stud-type connectors are furnished with nuts and washers. Recommended stud torque: (1/4-20) - 72 in. lbs; (3/8-16) - 228 in. lbs.

American General Purpose Fuses
Power Distribution Blocks
62000 - 69000 Series

Intermediate: 66000 - 67000 Series

Dimensions – 66000 and 67000 Series Power Distribution Blocks



NUMBER OF POLES	DIMENSION A (Inches)
ADDER	1.64
1	1.94
2	3.57
3	5.20
N	(1.635 x N) + .30

Example for 10 poles:
A= (1.635 x 10) + .30 = 16.65 inches

Properties of Materials Used in Power Distribution Blocks

PROPERTY	UNITS	ASTM TEST	POLYCARBONATE
Specific Gravity		D792	1.21
IZOD	ft-lb/in	D256	4-6
Flexural Strength	psi	D790	13,200
Flexural Modulus	psi	D790	325,000
Tensile Strength	psi	D638	9,000
Compressive Strength	psi	D695	12,500
Water Absorption	24 hrs-%	D570	.15
Hardness	Rockwell	D785	M-85
	DuroD	D676	
Dielectric Stength		D149	
60 hertz, 25°C, s/t	vpm		425
60 hertz, 25°C, s/s	vpm		425
Dielectric Constant		D150	
60Hz-dry			3.01
1 Mhz-dry			2.96
Volume Resistivity	ohm-cm	D257	$>10^{16}$
Heat Deflecting	°F	D648	270
(°F@264 psi)			
Flammability (UL 94)			94 V-O

Note: Above data represents approximate values and are for reference only.

SAFETY COVER - Catalog number 08570

Polycarbonate safety cover provides dead-front protection to 66000 and 67000 series power distribution blocks. One cover is needed for each pole (1-pole block requires 1 cover, 3-pole requires 3 covers, etc.) Each cover has a test prod hole in the center for circuit checking and each is marked with the reminder "REPLACE AFTER SERVICING EQUIPMENT". Mounting screws are supplied with cover.
To order, simply determine the total number of poles to be protected and specify the same number of 08570 safety covers.
Recommended mounting screws for all 66000-67000 series: #10 (.190 diameter).

END BARRIER - Catalog number U09705

Polycarbonate end barriers snap on to PDB Adder blocks to form 1-pole blocks. Use one barrier per block.

American General Purpose Fuses
Power Distribution Blocks
62000 - 69000 Series

Large: 68000 - 69000 Series

Sizes, Ratings – Large Series 68000 and 69000
Ampere rating based on NEC Table 310-16 for 75° copper wire.

Primary		Secondary		AMP	Aluminuium (90°C Cu/Ai wire)							
					Catalog Number				Reference Number			
Wire range AWG/kcmiL or stud size*	Openings or studs per pole	Wire range AWG/kcmil or stud size*	Openings or studs per pole	Rating	Adder	1 pole	2 pole	3 pole	Adder	1 pole	2 pole	3 pole
Box to Box												
350-#6	1	2/0-#14	6	310	69170	69171	69172	69173	T222749	X201086	H201602	G203970
		#4-14	12		69150	69151	69152	69153	T216447	D216962	Q217479	X217991
		#10-14*	20		69630**	69631**	69632**	69633**	Y216451**	H216966**	V217483**	B217995**
500-#4	1	500-#4	1	380	69050	69051	69052	69053	B216960	N217477	V217989	V219024
		350-#6	2		69060	69061	69062	69063	R222747	G223267	V201084	F201600
		4/0-#6	4		69510**	69511**	69512**	69513**	S215434**	W215943**	X216450**	G216965**
		4/0-#10	4		-	-	-	-	-	-	-	-
		2/0-#14	6		69070	69071	69072	69073	P203931	P211337	V211848	J212367
		#4-14	12		69080	69081	69082	69083	T212882	B213395	Z213899	J214414
600-#2	1	600-#2	1	420	69640	69641	69642	69643	H218507	B219030	L222006	Y222753
1000-250	1	1000-250	1	545	69000	69001	69002	69003	A216959	M217476	T217988	B218501
		500-#4	2		69010	69011	69012	69013	T219023	M219546	E222000	Q222746
		350-#6	2		69020	69021	69022	69023	F223266	T201083	E201599	N203930
		4/0-#6	4		69300**	69301**	69302**	69303**	S217481**	Z217993**	F218505**	Z219028**
		4/0-#10	4		-	-	-	-	-	-	-	-
		2/0-#14	6		69030	69031	69032	69033	N211336	T211847	S212881	Y213898
		#2-14	10		69530**	69531**	69532**	69533**	A217994**	G218506**	A219029**	S219551**
		#4-14	12		69040	69041	69042	69043	H214413	J214920	M215429	Q215938
#4-14	2	#4-14	12	170	69180	69181	69182	69183	R211339	X211850	W212884	D213397
2/0-#14	2	#4-14	12	350	69160	69161	69162	69163	D218503	X219026	P219548	G222002
		#10-14*	20		69600	69601	69602	69603	Z212887	Q214926	T215435	X215944
350-#6	2	350-#6	2	620	69120	69121	69122	69123	W201085	G201601	D203944	Q211338
		4/0-#6	4		69320**	69321**	69322**	69323**	Z201088**	K201604**	G203993**	S211340**
		4/0-#10	4		-	-	-	-	-	-	-	-
		2/0-#14	6		69130	69131	69132	69133	W211849	K212368	V212883	C213396
		#4-14	12		69140	69141	69142	69143	K214415	L214922	P215431	S215940
500-#4	2	500-#4	2	760	69090	69091	69092	69093	K214921	N215430	R215939	C216961
		4/0-#6	4		69310	69311	69312	69313	R219550	J222004	W222751	K223270
		4/0-#10	4		-	-	-	-	-	-	-	-
		2/0-#14	6		69100	69101	69102	69103	P217478	W217990	C218502	W219025
		#4-14	12		69110	69111	69112	69113	N219547	F222001	S222748	H223268
600-#2	2	600-#2	2	840	69650	69651	69652	69653	M223272	B201090	M201606	G204614
		#14-4 & 3/0-#10	4		69540	69541	69542	69543	K222005	X222752	L223271	A201089
1000-250	2	500-#4	4	1090	-	69561**†	-	-	-	A211853**†	-	-
500-#4	4	#6-14	30	1520	-	69191**†	-	-	-	A213900**†	-	-
		#6-14 &	22									
		2/0-#14	4		-	69521**†	-	-	-	T217482**†	-	-

*Copper wire only

**Not UL Recognized or CSA Certified

†These 1 pole blocks are double width (5.31")

American General Purpose Fuses
Power Distribution Blocks
62000 - 69000 Series

Large: 68000 - 69000 Series

Sizes, Ratings – Large Series 68000 and 69000
Ampere rating based on NEC Table 310-16 for 75° copper wire.

Primary		Secondary		AMP	Copper (75°C Cu wire only)							
					Catalog Number				Reference Number			
Wire range AWG/kcmiL or stud size*	Openings or studs per pole	Wire range AWG/kcmil or stud size*	Openings or studs per pole	Rating	Adder	1 pole	2 pole	3 pole	Adder	1 pole	2 pole	3 pole
Box to Box												
		2/0-#14	6		68170	68171	68172	68173	N212877	X213391	S213893	C214408
350-#6	1	#4-14	12	310	68150	68151	68152	68153	G219541	B221997	K222741	A223261
		#10-14*	20		68630**	68631**	68632**	68633**	-	M211335**	X213897**	G214412**
		500-#4	1		68050	68051	68052	68053	V203867	F211329	N211842	C212361
		350-#6	2		68060	68061	68062	68063	L212875	V213389	Q213891	A214406
		4/0-#6	4		-	-	-	-	-	-	-	-
500-#4	1	4/0-#10	4	380	68510**	68511**	68512**	68513**	A213394**	W213896**	F214411**	G214918**
		2/0-#14	6		68080	68071	68072	68073	V216954	F215423	H215931	L216440
		#4-14	12		68640	68081	68082	68083	H214919	G217471	N217983	V218495
600-#2	1	600-#2	1	420	68640	68641	68642	68643	H214919	L215428	P215937	S216446
		1000-250	1		68000	68001	68002	68003	B212360	K212874	T213388	P213890
		500-#4	2		68010	68011	68012	68013	Z214405	A214912	E215422	G215930
		350-#6	2		68020	68021	68022	68023	K216439	T216953	F217470	M217982
1000-250	1	4/0-#6	4	545	-	-	-	-	-	-	-	-
		4/0-#10	4		68300**	68301**	68302**	68303**	Z213393**	V213895**	E214410**	F214917**
		2/0-#14	6		68030	68031	68032	68033	T218494	L219016	E219539	Z221995
		#2-14	10		68530**	68531**	68532**	68533**	-	N215936**	R216445**	Z216958**
		#4-14	12		68040	68041	68042	68043	H222739	Y223259	N201078	Y201593
#4-14	2	#4-14	12	170	68180	68181	68182	68183	D214915	H215425	K215933	N216442
2/0-#14	2	#4-14	12	350	68160	68160	68162	68163	A201595	A201595	H211331	E212363
		#10-14*	20		68600	68601	68602	68603	E223265	S201082	D201598	Q203909
		350-#6	2		68120	68121	68122	68123	W213390	R213892	B214407	C214914
		4/0-#6	4		-	-	-	-	-	-	-	-
350-#6	2	4/0-#10	4	620	68320**	68321**	68322**	68323**	R219021**	K219544**	C221998**	N222744**
		2/0-#14	6		68130	68131	68132	68133	G215424	J215932	M216441	W216955
		#4-14	12		68140	68141	68142	68143	H217472	P217984	W218496	N219018
		500-#4	2		68090	68091	68092	68093	M219017	F219540	A221996	J222740
		4/0-#6	4		-	-	-	-	-	-	-	-
500-#4	2	4/0-#10	4	760	68310	68311	68312	68313	M215935	Q216444	Z201594	K217474
		2/0-#14	6		68100	68101	68102	68103	Z223260	P201079	Z201594	Y203870
		#4-14	12		68110	68111	68112	68113	G211330	P211843	D212362	M212876
		600-#2	2		-	-	-	-	-	-	-	-
600-#2	2	#14-4 & 3/0-#10	4	840	68540**	68541**	68542**	68543**	-	L217475**	S217987**	A218500**
1000-250	2	500-#4	4	1090	-	68561**†	-	-	-	S219022**†	-	-
		#6-14	30		-	68191**†	-	-	-	X218497**†	-	-
500-#4	4	#6-14 &	22	1520								
		2/0-#14	4		-	68521**†	-	-	-	K215427**†	-	-

*Copper wire only

**Not UL Recognized or CSA Certified

†These 1 pole blocks are double width (5.31")

American General Purpose Fuses
Power Distribution Blocks
62000 - 69000 Series

Large: 68000 - 69000 Series

Sizes, Ratings – Large Series 68000 and 69000 (continued)
Ampere rating based on NEC Table 310-16 for 75° copper wire
ALUMINUM (90° C Cu/Al wire)

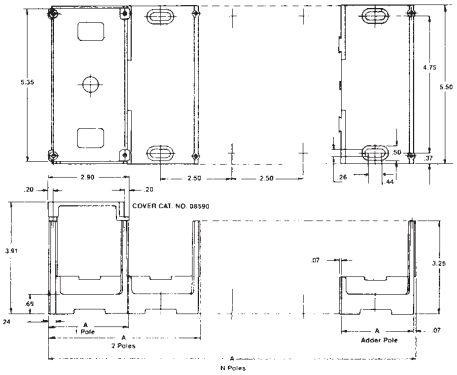
Primary		Secondary		AMP	Copper (75°C Cu wire only)							
					Catalog Number				Reference Number			
Wire range AWG/kcmiL or stud size*	Openings or studs per pole	Wire range AWG/kcmil or stud size*	Openings or studs per pole	Rating	Adder	1 pole	2 pole	3 pole	Adder	1 pole	2 pole	3 pole
Box to Stud												
			1	Cu 380	69210	69211	69212	69213	L214416	M214923	Q215432	T215941
500-#4	1	3/8-16 x 1	2	Al 310	69270	69271	69272	69273	J201603	Q203978	Y211851	L212369
1000-250	1	1/2-13 x 1-3/16	1	Cu 545	69280	69281	69282	69283	X212885	E213398	B213901	N214924
		3/8-16 x 1	2	Al 445	69240	69241	69242	69243	Y217992	E218504	Y219027	Q219549
		2/0-#14	4	545	69260	69261	69262	69263	H222003	V222750	J223269	Y201087
		#4-14	12	545	69290	69291	69292	69293	R215433	V215942	W216449	F216964
1/2-13 x 1	1	2/0-#14	4	1000	-	-	-	-	-	-	-	-
		#4-14	12	1000	-	-	-	-	-	-	-	-
Stud to Stud												
1/2-13 x 1-3/8	1	1/2-13 x 1-3/8	1	400	-	-	-	-	-	-	-	-

COPPER (75° C Cu wire only)

Box to Stud												
			1	Cu 380	68210	68211	68212	68213	W203891	J211332	Q211844	F212364
500-#4	1	3/8-16 x 1	2	Al 310	68270	68271	68272	68273	Y218498	Q219020	J219543	M222743
1000-250	1	1/2-13 x 1-3/16	1	Cu 545	68280	68281	68282	68283	C223263	Q201080	B201596	N203907
		3/8-16 x 1	2	Al 445	68240	68241	68242	68243	P212878	Y213392	T213894	D214409
		2/0-#14	4	545	-	-	-	-	-	-	-	-
		#4-14	12	545	-	-	-	-	-	-	-	-
1/2-13 x 1	1	2/0-#14	4	1000	68260	68261	68262	68263	P216443	X216956	J217473	Q217985
		#4-14	12	1000	68290	68291	68292	68293	K211333	R211845	G212365	Q212879
Stud to Stud												
1/2-13 x 1-3/8	1	1/2-13 x 1-3/8	1	400	68200**	68201**	68202**	68203**	P219019**	H219542**	L222742**	B223262**

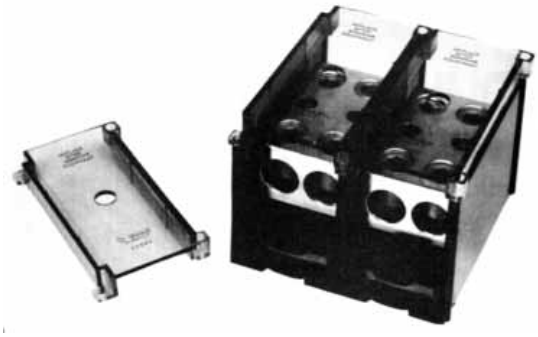
**Stud type connectors are furnished with nuts and washers. Recommended stud torque: (3/8-16) - 228 in. lbs; (1/2-13) - 496 in. lbs.*
***Not UL Recognized or CSA Certified*

Dimensions 68000 and 69000 Series PDB



NUMBER OF POLES	DIMENSION A (Inches)
ADDER	2.50
1	2.81
2	5.31
3	7.81
N	(2.50 x N) + .31

Example for 10 poles:
A= (2.50 x 10) + .31 = 25.31



08590 cover and 69092 PDB with 2-08590 covers installed

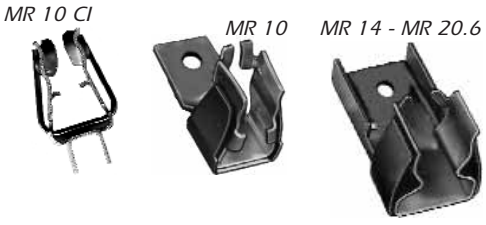
SAFETY COVER - Catalog number 08590

Polycarbonate safety cover provides dead-front protection to 68000 and 69000 series power distribution blocks. One cover is needed for each pole (1-pole block requires 1 cover, 3-pole requires 3 covers, etc.) Each cover has a test prod hole in the center for circuit checking and each is marked with the reminder "REPLACE AFTER SERVICING EQUIPMENT". Mounting screws are supplied with cover.
To order, simply determine the total number of poles to be protected and specify the same number of 08590 safety covers.
Recommended mounting screws for all 68000-69000 series: 1/4" (.250 dia.).

END BARRIER - Catalog number U09911

Polycarbonate end barriers snap on to PDB Adder blocks to form 1-pole blocks. Use one barrier per block.

IEC General Purpose Fuses
Ferrule Fuses
Clips





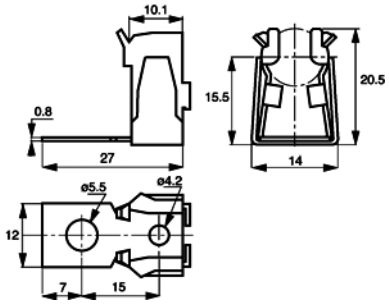
For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36

- SILVER-PLATED COPPER CLIPS: EXTREMELY HIGH THERMAL AND ELECTRIC CONDUCTIVITY
- MOUNTING TYPE:
  - SCREWING ON ISOLATORS
  - SCREWING ON BARS OR INSULATED BARS
  - WELDING ON P.C.B. (MR 10 CI)
- STAINLESS STEEL PRESSURE SPRINGS: HIGHLY RESISTANT TO SALT SPRAY

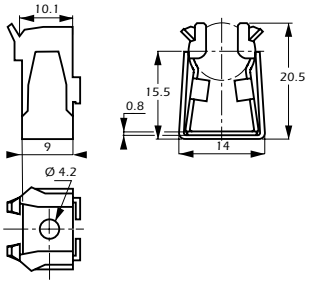
Main Characteristics

Designation	Current rating IN(A)	Maximum R.M.S continuous current through IN - rated current fuses (A)	Recommended copper cable section (mm²)
MR 10	32	32	4
MR 10 CI	32	32	4
MR 14	63	63	10
MR 20	125	125	35
MR 22	135	135	35
MR 27	250	250	120
MR 36	250	250	120

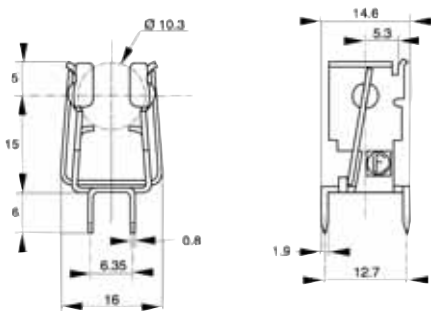
MR 10 - MR 10 CI



Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR10RESSORT	MR 10	B098004	7	20 pieces



Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR10RESSORTSP	MR 10 without connection	C098994	5,7	20 pieces



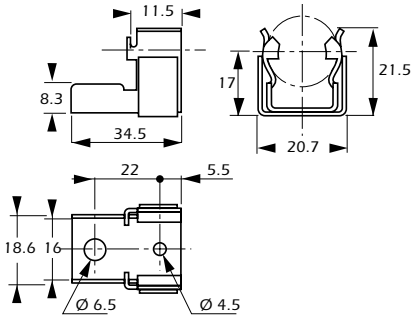
Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR10RESSORTCI	MR 10 CI	Y098507	4,5	200 pieces

IEC General Purpose Fuses
Ferrule Fuses
Clips

For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36

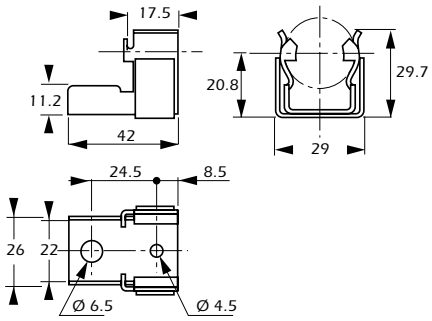
MR 14

Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR14SPRING	MR 14	G098170	16	10 pieces



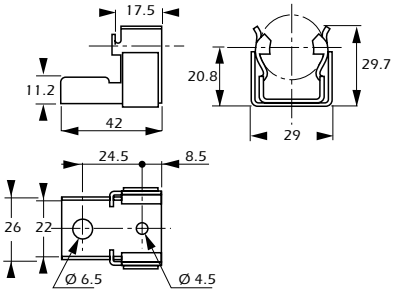
MR 20.6

Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR20RESSORT	MR 20.6	H099988	40	20 pieces



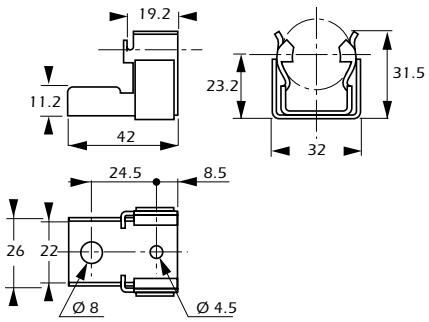
MR 22

Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR22SPRING	MR 22	K098909	40	10 pieces



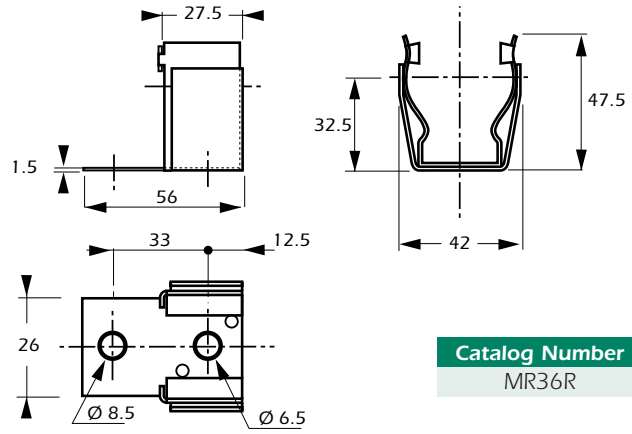
MR 27

Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR27RESSORT	MR 27	Y092734	50	20 pieces



IEC General Purpose Fuses
Ferrule Fuses
Clips

MR 36

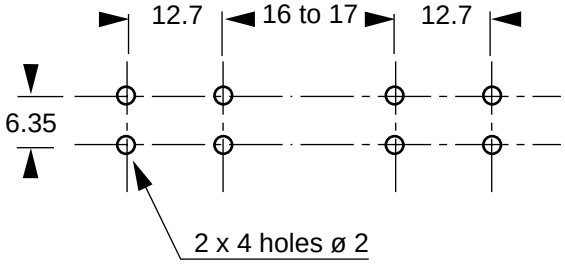


Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR36R	MR 36	M091275	85	1 piece

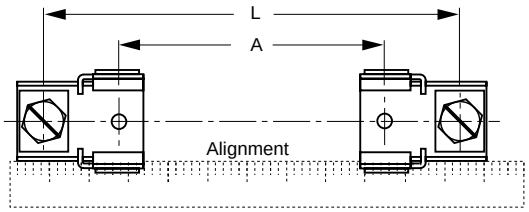
All clips silver-plated copper with stainless steel springs.

Mounting Instructions

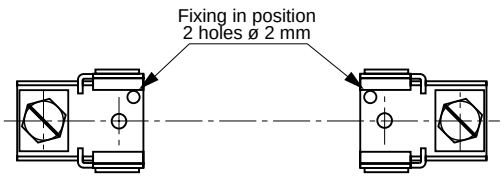
P.C.B. Drilling for MR10 CI clip (10 X 38 Size Fuse)



Clip Mounting



Fuse size	A	L
10 x 38	31	61
14 x 51	42	86
22 x 58	42	91
20 x 51	36	85
20 x 127	113	162
20 x 190	175	224
27 x 60	41	91
36 x 127	100	148
36 x 190	165	231



Mounting of two elastic stop pins of 2 mm dia. for fixing clips in position

IEC General Purpose Fuses
Ferrule Fuses
SI Bases for 14x51, 22x58

SI 14



SI 22



SI with microswitch



For Ferrules-type fuses Ø 14 - 22

- SHOCK-PROOF MODULAR ASSEMBLY COMPLIANT WITH IEC 60269-1 AND NF C 63130
- BASE MOUNTING WITH OR WITHOUT MICROSWITCH AND ISOLATING PARTITION
- PHENOLIC RESIN FOR BASIC APPLICATIONS (BASIC MODEL)
- SELF-EXTINGUISHABLE FIBERGLASS POLYESTER FOR TRACTION AND CORROSIVE ATMOSPHERE APPLICATIONS (SALT SPRAY-PROOF MODEL)

Main Characteristics

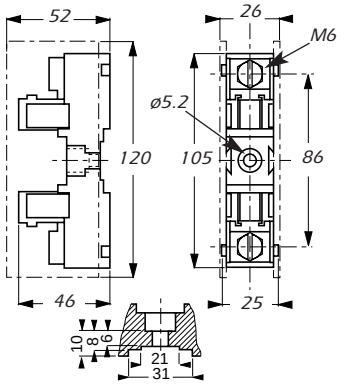
Model	Thermal current rating (Ith)	Maximum power losses	Rated insulation voltage Ui AC or DC according VDE 0110:565 - group C withstand	Dielectric withstand tests	
				R.M.S. voltage 1mn 50-60 Hz	Voltage shock 1.2/50µs Uimp. : impulse voltage as per IEC 60947-1
Phenolic resin (standard) SI 14	63 A	16 W per phase	750 V	8 kV between phase and mass	between phase and mass
SI 22	135 A	26 W per phase			
Salt-spray proof fiber glass polyester SKI 14	63 A	16 W per phase	750 V	3 kV between phases and microswitch	between phases and microswitch
SKI 22	135 A	26 W per phase			
				Tests according to IEC 60060 and 60944 and NF C 64010 Dry atmosphere and new fusegear	

Connecting with 16 mm max. width, 5mm max. thick terminal for SI 14 and 22 mm max. for SI 22
** Only for the base. Accessories (partitions and microswitches) are not classified due to their lightness.*

Basic model
Max. temperature (°C)/Relative Humidity (%): 20 °C/95% - 40°C/80% - 50°C/50%
If Holder must be kept off, a heating system fed during stop periods must be used. Purpose is to keep the temperature of cubicle at a level slightly higher than outdoor.

Salt spray-proof model
Moist tropical and equatorial climate. Corrosive atmosphere.

SI 14 and Partition wall



For direct mounting, screw tightening torque = 0.24 mdaN

Designation	Ref. Number	Catalog Number	Weight (g)
SI 14	V 097124	SI14	85
SKI 14	B 097130	SKI14	100

Pack: *3 pieces*
SI: basic model - SK salt spray-proof model

Partition wall

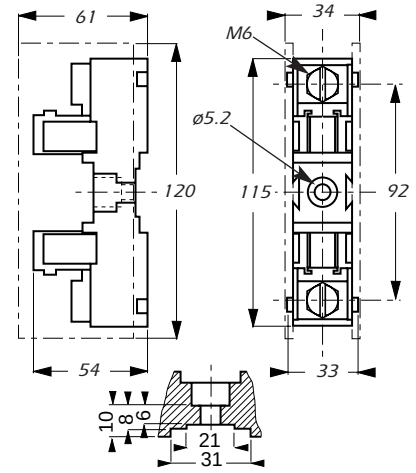
Designation	Ref. Number	Catalog Number	Weight (g)
E 14 - 22	B 097107	E14-22	13

Pack: *2 pieces*

IEC General Purpose Fuses
Ferrule Fuses
SI Bases for 14x51, 22x58

For Ferrules-type fuses Ø 14 - 22

SI 22 and Partition wall



For direct mounting, screw tightening torque = 0.3 mdaN

Designation	Ref. Number	Catalog Number	Weight (g)
SI 22	W097125	SI22	160
SKI 22	C097131	SKI22	190

Pack: *3 pieces*
SI: basic model - SK salt spray-proof model

Partition wall

Designation	Ref. Number	Catalog Number	Weight (g)
E 14 - 22	B 097107	E14-22	13

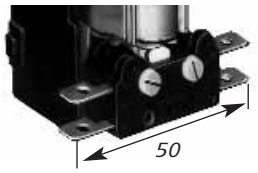
Pack: *2 pieces*

Remote sensing microswitch

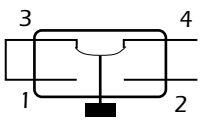
Microswitch type for SI 14	Code	Ref. Number	Catalog Number	Weight (g)
Basic single microswitch	MC 1-5 14 FL 1-5	D 096051	-	20
salt spray-proof single microswitch	MCK 1-5 14 FL 1-5	T 097215	-	20
Basic twin microswitch	MC 1-5 14 FL 1-9	P 096061	-	40

Microswitch type for SI 22	Code	Ref. Number	Catalog Number	Weight (g)
Basic single microswitch	MC 1-5 22 FL 1-5	H096055		24
salt spray-proof single microswitch	MCK 1-5 22 FL 1-5	R097213		22
Basic twin microswitch	MC 1-5 22 FL 1-9	T096065		40

Pack: *1 piece*



POSSIBLE ASSEMBLING AFTER CONNECTING ON MODEL WITHOUT PARTITION WALL



- With manual reset reversing style microswitch 10A - 250V ~ @ cos φ = 0.3
- #1 and 3 terminals must always be connected.

Adapters for DIN-rail mounting

Rail style	Designation	Ref. Number	Cat. Number	Top part	Bottom part	Color	Weight (g)	Pkg.
 Asymmetrical DIN EN 50035	EF 4	L 097047	EF4	vis M 4		blue	4	100
	EF 35	G 097043	EF35	vis M 3	vis M 5	cream	4	100
	EF 46	K 097046	EF46	vis M 4	vis M 6	white	4	100
 Symmetrical DIN EN 50022	Fixoméga FM4	B 092093	MIFIXOMEGAFM4	M 4 center screw		stainless steel	4.4	10

IEC General Purpose Fuses
Ferrule Fuses
CC, CCR

For Ferrule-type Fuses Ø 8-10-14-22

CC 8x31 fuse holder
I_{th} max. 25A - Un 400V

for 8x31 fuses with or without blown-fuse indicator



Nb of Poles	Model with no indicator light screw-on		Model with no indicator light rail mounting		Nb Mod	Pckg
	Ref.Number	Cat. Number	Ref.Number	Cat. Number		
N	Y214634	CC8N	C217697	CC8NR	1	12
1	E215146	CC81	M218212	CC81R	1	12
1+N	G215654	CC81N	Q219250	CC81NR	2	6
2	L216164	CC82	R219780	CC82R	2	6
3	L216670	CC83	C222458	CC83R	3	4
3+N	Z217188	CC83N	V222980	CC83NR	4	3

CC 10x38 fuse holder
I_{th} max. 32A - Un 500V

for 10x38 fuses with or without blown-fuse indicator or striker



Nb of Poles	Model with no indicator light screw-on		Model with no indicator light rail mounting		Nb Mod	Pckg
	Ref.Number	Cat. Number	Ref.Number	Cat. Number		
N	Y211046	CC10N	W214126	CC10NR	1	12
1	S211570	CC101	F215147	CC101R	1	12
1+N	Y212081	CC101N	M216165	CC101NR	2	6
2	N212601	CC102	M216671	CC102R	2	6
3	A213118	CC103	A217189	CC103R	3	4
3+N	S213617	CC103N	D217698	CC103NR	4	3

CC 14x51 fuse holder
I_{th} max. 50A - Un 690V

for 14x51 fuses with or without blown-fuse indicator or striker



Nb of Poles	Model with no indicator light screw-on		Model with no indicator light rail mounting		Nb Mod	Pckg
	Ref.Number	Cat. Number	Ref.Number	Cat. Number		
N	R219251	CC14N	C201827	CC14NR	1,5	12
1	S219781	CC141	Z211047	CC141R	1,5	12
1+N	D222459	CC141N	T211571	CC141NR	3	6
2	W222981	CC142	Z212082	CC142R	3	6
3	D200770	CC143	P212602	CC143R	4,5	4
3+N	V201314	CC143N	B213119	CC143NR	6	3

IEC General Purpose Fuses
Ferrule Fuses
CC, CCR

For Ferrule-type Fuses Ø 8-10-14-22

I_{th} max. 125A - Un 690V

for 22x58 fuses with or without blown-fuse indicator or stiker

Nb of Poles	Model with no indicator light screw-on		Model with no indicator light rail mounting		Nb Mod	Pckg
	Ref.Number	Cat. Number	Ref.Number	Cat. Number		
N	T213618	CC22N	N216672	CC22NR	2	6
1	X214127	CC221	B217190	CC221R	2	6
1+N	A214636	CC221N	E217699	CC221NR	4	3
2	G215148	CC222	P218214	CC222R	4	3
3	J215656	CC223	C218732	CC223R	6	2
3+N	N216166	CC223N	S219252	CC223NR	8	1



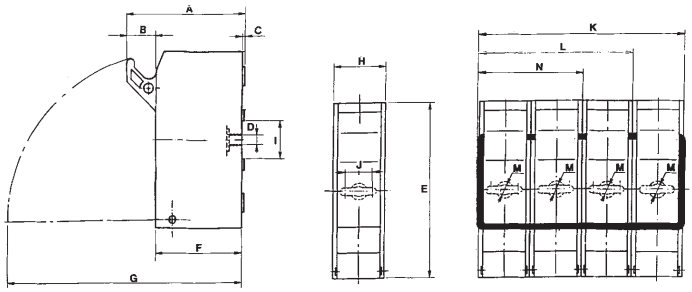
Multi-pole assembly accessories

Nb. of Poles	CC8x31 and CC10x38		CC14x51		CC22x58		Pckg
	Ref.Number	Cat. Number	Ref.Number	Cat. Number	Ref.Number	Cat. Number	
2	E200771	CC810ROASS2	C213120	CC14ROASS2	P216167	CC22ROASS2	10*
3	W201315	CC810ROASS3	V213619	CC14ROASS3	P216673	CC22ROASS3	10*
4	D201828	CC810ROASS4	Y214128	CC14ROASS4	C217191	CC22ROASS4	10*
Adapter for symmetrical rail	A211048	ADAP-RSCC810	F217700	ADAPCC1422	F217700	ADAPCC1422	10*



D201828

Dimensions



	CC8/10	CC.14	CC.22
A	40	62	71
B	9	15,5	16
C	2	1	1
D	5,5	7,25	7,25
E	77,5	94	106
F	33	45,5	55
G	100	127	148
H	7,5	27	34
I	46	20,3	20,3
J	-	15,2	18
K	77,5	112	139
L	60	85	105
M	42,5	6	6
N	-	58	71

- Mounting on symmetrical DIN rail with adapter.
- Wiring cross sections
  - CC8/CC10; 1x10 mm²
  - CC14; 1x25 mm²
  - CC22; 1x50 mm²
- Screw-on mounting in back of panel
- Neutral tubes are systematically built in

- ***Weight of a single-pole model***
  - 8x31 ; 56 g
  - 10x38 ; 48 g
  - 14x51 ; 130 g
  - 22x58 ; 190 g

IEC General Purpose Fuses
Ferrule Fuses
CC, CCR

For Ferrule-type Fuses Ø 8-10

CCR 8x31 fuse holder
I_{th} max. 25A - Un 400V

for 8x31 fuses, with or without blown-fuse indicator



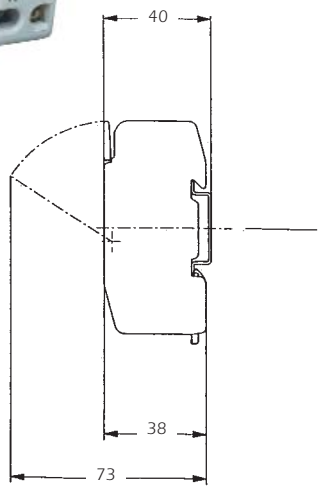
Nb. of Poles	Model with no indicator light			
	Ref.Number	Cat. Number	Nb Mod	Pckg
N	Z214635	CCR810N	1	12
1	C200769	CCR81	1	12
1+N	A218730	CCR81N	1	12
2	V233721	CCR82	2	6
3	W233722	CCR83	3	4

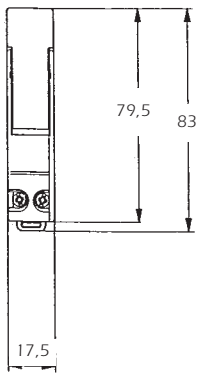
CCR 10x38 fuse holder
I_{th} max. 32A - Un 500V

for 10x38 fuses, with or without indicator or striker



Nb. of Poles	Model with no indicator light			
	Ref.Number	Cat. Number	Nb Mod	Pckg
N	Z214635	CCR810N	1	12
1	N218213	CCR101	1	12
1+N	H215655	CCR1N1M	1	12
2	X233723	CCR102	2	6
3	Y233724	CCR103	3	4





- Direct mounting on symmetrical DIN rail
- Wire cross sections: 1 x 10mm2.
- Compact footprint.
- Insulated to IP 20 standard
- Single-pole weight
  - 8x31 ; 58g
  - 10x38 ; 63g
- Neutral tubes are systematically built in

With the indicator light a blown fuse can be quickly located if power is still on

Assembly accessory

Accessories	Ref.Number	Cat. Number	Pckg
CCR multi-pole assembly kit	Z233725	CMS810PAK	12*

** 12 per bag*

IEC General Purpose Fuses
Ferrule Fuses
MSC 8, MSC 10, USM, USCC

For Ferrule-type Fuses Ø 8 with or without blown-fuse indicator compliance with IEC 60269 -1 & -2

MSC 8 fuse holder
I_{th} max. 25A - Un 400V

Nb of Poles	Model without blown fuse indicator light		Model with blown fuse indicator light		Nb Mod	Pckg
	Ref. Numbrer	Cat. Number	Ref. Numbrer	Cat. Number		
N	Q218215	MSC810N			1	12
1	T219253	MSC81	F222461	MSC81I	1	12
1+N	B211049	MSC81N			2	6
2	R212604	MSC82			2	6
3	W213620	MSC83			3	4
3+N	C214638	MSC83N			4	3
4	Q216168	MSC84			4	3



MSC 8 fuse holder Phase + Neutral (1 mod.)
I_{th} max. 25A - Un 400V

Nb. of Poles	Model without blown fuse indicator light		Nb Mod	Pckg
	Ref. Numbrer	Cat. Numbrer		
1+N	F200772	MSC81N1M	1	12
3+N	J215150	MSC83N3M	3	4



Assembly accessories	Ref. Numbrer	Cat. Numbrer	Pckg
2-pole pin	G215125	MSCMSDMAASS2	10*
3-pole pin	Q216145	MSCMSDMAASS3	10*
4-pole pin	A217166	MSCMSDMAASS4	10*

** 10 per bag*

IEC General Purpose Fuses
Ferrule Fuses
MSC 8, MSC 10, USM, USCC

For Ferrule-type Fuses Ø 10 with or without blown-fuse indicator or striker

MSC 10 fuse holder – no accessories
I_{th} max. 32A - Un 690V
compliance with IEC 60269 -1 & -2



Nb. of Poles	Model without blown fuse indicator light		Model with blown fuse indicator light		Nb Mod	Pckg
	Ref.number	Cat. Number	Ref. Number	Cat. Number		
N	Q218215	MSC810N			1	12
1	Q216674	MSC101	W219784	MSC101I	1	12
1+N	C212085	MSC101N	D232602	MSC101NI	2	6
2	E213122	MSC102	K215151	MSC102I	2	6
3	M215659	MSC103	R226611	MSC103I	3	4
3+N	E217193	MSC103N	E232603	MSC103NI	4	3
4	F218735	MSC104			4	3

MSC 10 fuse holder Phase + Neutral (1 mod.)
I_{th} max. 32A - Un 690V

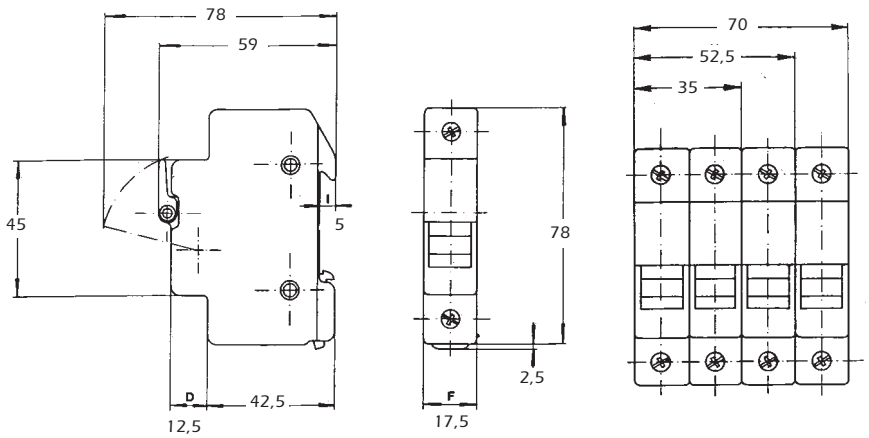


Nb. of Poles	Model without blown fuse indicator light		Model with blown fuse indicator light		Nb Mod	Pckg
	Ref.number	Cat. Number	Ref. Number	Cat. Number		
1+N	Y201317	MSC101N1M	C211050	MSC101N1MI	1	12
3+N	S218217	MSC103N3M	S226612	MSC103N3MI	3	4

Assembly accessories	Ref. Numbrer	Cat. Numbrer	Pckg
2-pole pin	G215125	MSCMSDMAASS2	10*
3-pole pin	Q216145	MSCMSDMAASS3	10*
4-pole pin	A217166	MSCMSDMAASS4	10*

** 10 per bag*

Dimensions



- Direct mounting on symmetrical DIN rail
- Indicator light (120/690V)*
- Wiring cross sections:
  - single-pole: 1 x 16mm²
  - single-pole + neutral: 1 x 10 mm²
- Insulated to IP 20 standard
- Single-pole weight
  - 8x31 ; 63 g
  - 8x31 - Ph + N1M ; 63 g
  - 10x38 ; 63 g
  - 10x38 - Ph + N1M ; 68 g

** With the indicator light a blown fuse can be quickly located if power is still on*

IEC General Purpose Fuses
Ferrule Fuses
MSC 8, MSC 10, USCC, USM

For Ferrule-type Fuses ClassCC or Midget compliance with UL 512 - UL 480 - CSA 22-2

USCC fuse holder

I_{th} max. 30A - Un 600V

for CC class fuses



Nb. of Poles	Model without blown fuse indicator light		Model with blown fuse indicator light			
	Ref.number	Cat. Number	Ref. Number	Cat. Number	Nb Mod	Pckg
N	W201131	USN				12
1	B213441	USCC1	X213943	USCC1I	1	12
2	P216489	USCC2	D217008	USCC2I	2	6
3	M217522	USCC3	Y218038	USCC3I	3	4
3+N	G222048	USCC3N	N219593	USCC3IN	4	3
4	Q222792	USCC4	E223311	USCC4I	4	3

USM 10 fuse holders

I_{th} max. 32A - Un 800VAC - 1000VDC

for 10 x 38 Midget fuses (1-1/2" x 13/32")



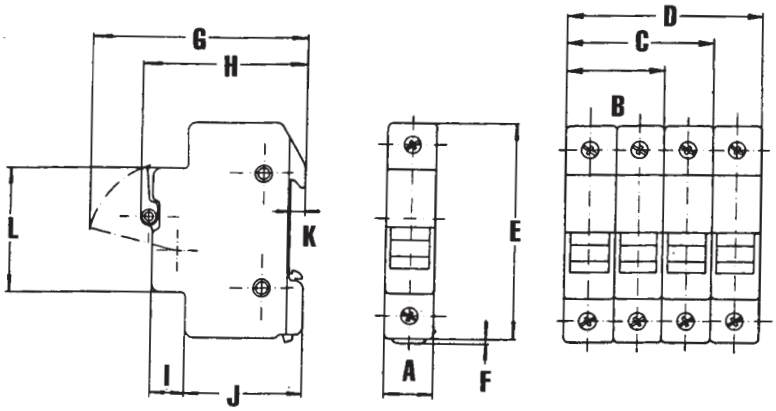
Nb. of Poles	Model without blown fuse indicator light		Model with blown fuse indicator light			
	Ref.number	Cat. Number	Ref. Number	Cat. Number	Nb Mod	Pckg
N	W201131	USN				12
1	Y213944	USM1	L214462	USM1I	1	12
2	N217523	USM2	Z218039	USM2I	2	6
3	C218548	USM3	Y219073	USM3I	3	4
3+N	H222049	USM3N	P219594	USM3IN	4	3
4	R222793	USM4	F223312	USM4I	4	3

Assembly accessories	Ref. Numbrer	Cat. Numbrer	Pckg
2-pole pin	F201646	USPTH2	10*
3-pole pin	C205047	USPTH3	10*
4-pole pin	P211383	USPTH4	10*

** 10 per bag*

Dimensions

DIMENSION	mm	In
A	17.5	0.69
B	35.0	1.38
C	52.5	2.07
D	70.0	2.76
E	78.0	3.07
F	2.5	0.10
G	78.0	3.07
H	59.0	2.32
I	12.5	0.49
J	42.5	1.67
K	5.0	0.20
L	45.0	1.77



- Direct mounting on symmetrical DIN rail
- Single-pole weight
  USCC ; 58g
  USM ; 63g

** With the indicator light a blown fuse can be quickly located if power is still on*

MODULOSTAR® Series



The brand-new innovative and comprehensive «MODULOSTAR®» range of Ferraz Shawmut Modular Fuseholders and Fuse disconnectors is global and designed to accommodate a multitude of fuses from around the world, including - IEC industrial Cylindrical (gG, aM, gD) - UL class CC, Midget - Special protection class (UR, gR, gD) in 5 sizes : 8x32, 10x38, 14x51, 22x58 and 27x60 mm.
All MODULOSTAR® products are manufactured in accordance with IEC 60269-2, IEC 60947 - 1 & 3, UL512 and CSA 22-2 Standards.

General charateristics:

• Impulse withstand voltages:
- The range is tested at respectivly Uimp= 6KV and 8KV according to part 8.3.3.4.1 of IEC60947-1 between neighboring poles, between phase and wires, between phase and microswitch.
Insulation voltage rating Ui = 690VAC and 800VAC
- The blown fuse light indicators are available for 24VDC to 700VDC and 110VAC to 690-700VAC

• European RoHS Directive:
Modulostar® product range is develop in accordance with European Directive 2002/95/CE dated 27 January 2003, as free of halogene (PBB, PBDE), chlorine, mercury, cadmium and lead.

• Environmental aspects:
Modulostar® range is design following «ecoconception» method, with sofware tool EIME (Environmental Information & Management Explorer), which takes into account the following criteria: Water Toxicity, Water Eutrophication, Hazardous Waste Production, Raw Material Depletion, Energy Depletion, Water Depletion, Global Warming, Air Toxicity, Photochemical Ozone Creation, Air Acidification

• Plastic material used are UL 94 V0 to V2 with UL Recognized Yellow card:
- RTI (Relative Thermal Index) > 120°C
- CTI (Comparative Tracking Index) > 350V
- Bodies are in Polyamide 6 with 20% reinforced material
- Handles are in Polyamide 6.6 with 25% reinforced material or in Thermodur BMC

• Homologations:
CB report according IEC 60269-2 and IEC 60947-3 standards UL CSA Listed (600V AC) for class CC products ranges, UL CSA recognition (800V AC - 1000V DC) for Midget and IEC products

• Vibration withstand:
Tests with sine vibrations carried out at ambiant temperature with scanning each of the three main axis of the holder .
Spectrum: 1st segment (2 to 16Hz) constant displacement x=5mm peak
2nd segment (16 to 250 Hz) constant acceleration γ= 5g peak
Exponential scanning speed: 1 octave per minute.
Duration : 2 hours per axis.

• Climatic usage conditions:
Modulostar® is designed for temperate climates . For more severe climates we recommend the following:

Maximum temperature	20°C	30°C	40°C	50°C
Maximum relative humidity	95%	90%	80%	50%
Curent derating	1	0.95	0.9	0.8

Fuse ranges used in Ferraz Shawmut fusegear





Size	10.3 x 38 / CC	14 x 51	22 x 58	27 x 60
600V Class J Time delay			AJT 1 to 30A	AJT 31 to 60A
600V Class J Fast acting			A4J 1 to 30A	A4J 31 to 60A
600V Midget fast acting	6JX, ATM, SBS 0.25 to 30A			
600V Class CC Time delay	ATDR, ATQR, ATMR 1/4 to 30A			
600V Class RK5 Time delay		TR 1 to 30A		
250V Class RK1 Fast acting		A2K 1 to 30A		
250V Class K-5		OT, OTN 1 to 30A		
250V Class RK1 Time delay		A2D, 1 to 30A		
500V Midget Time delay	ATQ 0.1 to 10A			
250V-300V Midget	OTM, TRM, A25Z-2 0.1 to 30A			
125V Midget Fast acting	GGU, GFN 3 to 30A			
aM	400V 25 to 32A 500V 0.16 to 20A 690V 0.16 to 12 or20A*	500V 32 to 50A 690V 0.25 to 40A	500V 100 to 125A 690V 1 to 80A	
gG	400V 32A 500V 0.5 to 25A 690V 0.5 to 12 or 20A*	400V 50A 500V 32 to 40A 690V 1 to 32A	400V 125A 500V 100A 690V 4 to 80A	
60gD		600V 10 to 30A	600V 35 to 60A	600V 65 to 100A
gG with striker	400V 50A 400V 2 to 32A 690V 2 to 32A*	400V 125A 500V 2 to 40A 690V 4 to 80A*	690V 63 to 160A* 500V 80 to 100A	
aM with striker	400V 2 to 32A 690V 10 to 40A*	500V 1 to 15A 690V 1 to 80A*	500V 63 to 100A	690V 63 to 160A*
UR	600V 0.1 to 0.8	690V 6 to 50A	690V 25 to 100A	
gR	690V 1 to 32A	690V 1 to 50A	690V 25 to 100A	
UR with striker	500V 1 to 30A 690V 1 to 50A	690V 6 to 50A	690V 25 to 100A 1000V 32 to 170A	690V 63 to 250V
gR with striker			690V 25 to 100A	800V 8 to 110A
In maxi	32A	50A	125A	170A

** development in progress*

UL fuse holders: USCC

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7			Cable wire section (mm^2) recommanded
					ATDR	ATM	ATMR	
600V AC	6 kV	30 A	3 W	≤20	20	20	20	2.5
600V AC	6 kV	30 A	3 W	25	25	25	25	4
600V AC	6 kV	30 A	3 W	30	30	30	30	6

ULTRASAFE™ Fuse holders for Class CC fuse links



ULTRASAFE™ Fuse holder without fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**USCC1**	H305033	1	12	
2	**USCC2**	K305035	2	6	
3	**USCC3**	L305036	3	4	
4	**USCC4**	N305038	4	3	
2	**USCC1N**	J305034	2	6	
4	**USCC3N**	M305037	4	3	

ULTRASAFE™ Fuse holder with fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**USCC1I**	P305039	1	12	
2	**USCC2I**	R305041	2	6	
3	**USCC3I**	S305042	3	4	
4	**USCC4I**	V305044	4	3	
2	**USCC1NI**	Q305040	2	6	
4	**USCC3NI**	T305043	4	3	

Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**CMS810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

IEC fuse holders: US10

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7				Cable wire section (mm^2) recommanded
					6Jx	ATM,SBS, GNF,GGU	ATQ, OTM TMR	URD / gRB	
	6 kV	30 A	3 W	≤16	16	16	16	16	2.5
690V AC	6 kV	30 A	3 W	20	20	20	20	19	2.5
AC20B	6 kV	30 A	3 W	25	25	25	25	22	4
	6 kV	30 A	3 W	30	30	30	30	25	6
	6 kV	30 A	3 W	32				25	6

Note: UL recognized Voltage are 800V AC and 1000V DC
** Datas for ambiante temperature = 20°C.*
Wire range : Rigid wire = 1- 16 mm^2(18 - 6 AWG) Multistrand wire = 0,75 - 10 mm^2 (18 - 8 AWG)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm)
Maximum Tightening Torque : 2.5 Nm (22lb-in)
IR for fuses : 120KA @ 500V IEC - 80KA @ 690V IEC - 80 KA @ 700V UL

MODULOSTAR® Fuse holders for Midget and 10 x 38 fuse links

MODULOSTAR® Fuse holder without fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US10N**	H305056	1	12	
1	**US101**	B305050	1	12	
2	**US101N**	C305051	2	6	
2	**US102**	D305052	2	6	
3	**US103**	E305053	3	4	
4	**US103N**	F305054	4	3	
4	**US104**	G305055	4	3	



MODULOSTAR® Fuse holder with fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US101I**	J305057	1	12	
2	**US101NI**	K305058	2	6	
2	**US102I**	L305059	2	6	
3	**US103I**	M305060	3	4	
4	**US103NI**	N305061	4	3	
4	**US104I**	P305062	4	3	

Accessories

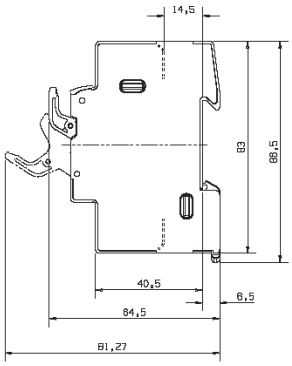
Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**US810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

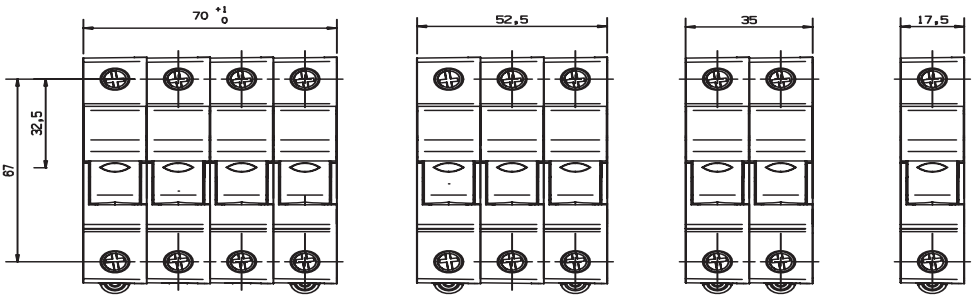
*Note *: It is possible to use a rigid cable 16 mm^2 with a jumping bar 1.5 mm thick.*

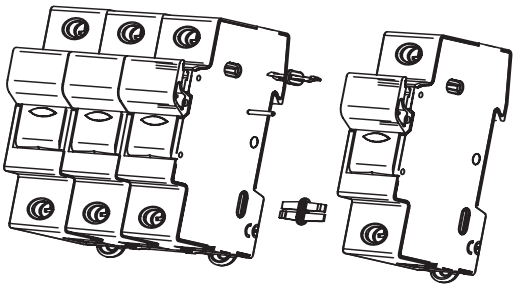
UL fuse holders: USCC & US10



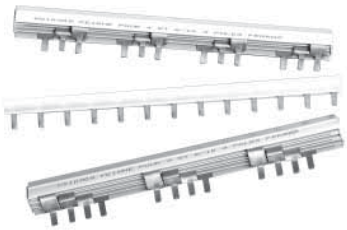
Dimensions











Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**CMS810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

IEC General Purpose Fuses
Ferrule Fuses
Modulostar® USFM10, UltraSafe™ USFMM

Three poles fuse holders and fuse disconnectors: USFM10 / USFMM

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1 Three poles system with FS fuse links. For 2 to 7 Three poles systems x by 0.9				Cable wire section (mm²) recommanded
					6JX	ATM, SBS, GNF, GGU	ATO, OTM, TMR	URD / gRB	
690 V IEC 600V UL AC20B	6 kV	32 A	3 W	≤12	≤12	≤12	≤12	≤12	2.5
				16	16	16	16	16	2.5
				20	20	20	20	20	2.5
				25	25	25	25	25	4
				30			26	30	6
				32	32	32	27		6

** Datas for ambiante temperature = 20°C.*

Wire range : Rigid and Multistrand wire = 1- 4 mm² (18 - 10 AWG) - Maximum multistrand wire for each open lug = 2.6 mm² (12 AWG)
Maximum Tightening Torque : 1.5 Nm (13 lb-in)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 0.8 mm (maximum diameter 6 mm)
IR with fuses : 120KA @ 500V IEC - 80KA @ 690V IEC - 80 KA @ 700V UL

MODULOSTAR® USFM10

for IEC 10x38 fuse links. Fuse holder compliant with IEC 60269-1 & 2, and tested in accordance with IEC 60947-1 & 3 for fuse disconnector usage



Nb of Pole / Width	MODULOSTAR® USFM Fuse holder and Fuse disconnector			Fonction	
	Catalog Number	Ref Number	Description	Fuse holder	Fuse disconnector
3 poles system / 45 mm width	USFM10	S302765	USFM10 FUSE HOL 3P 690V 32A EU	w/o Indicator	
	USFM10M	T302766	USFM10M FUSEHOL+MC3P690V32A EU		w/o Indicator
	USFM10I	W302768	USFM10I FUS.HOL3P+V 690V32A EU	with Indicator	
	USFM10MI	V302767	USFM10MI FUS.HOL3P+MC+V690V EU		with Indicator

Pack: *1 piece*
Fuse holder is without Prebreaking Microswitch (see accessories)
Fuse disconnector is with mounted Prebreaking Microswitch

ULTRASAFE USFMM

for Midget and IEC 10x38 fuse links. Fuse holder UL /CSA Recognized compliant with UL 512 and CSA 22-2 , IEC 60269-1 & 2, and tested in accordance with IEC 60947-1 & 3 for fuse disconnector usage

Nb of Pole / Width	ULTRASAFE™ USFM Fuse holder and Fuse disconnector			Fonction	
	Catalog Number	Ref Number	Description	Fuse holder	Fuse disconnector
3 poles system / 45 mm width	USFMM	D302775	USFMM 3P 600V 30A UL	w/o Indicator	
	USFMMM	E302776	USFMMM 3P 600V 30A +MS UL		w/o Indicator
	USFMMI	G302778	USFMMI 3P 600V 30A +LIGHT UL	with Indicator	
	USFMMMI	F302777	USFMMMI 3P 600V 30A +LI+MS UL		with Indicator

Pack: *1 piece*
Fuse holder is without Prebreaking Microswitch (see accessories)
Fuse disconnector is with mounted Prebreaking Microswitch

Accessories

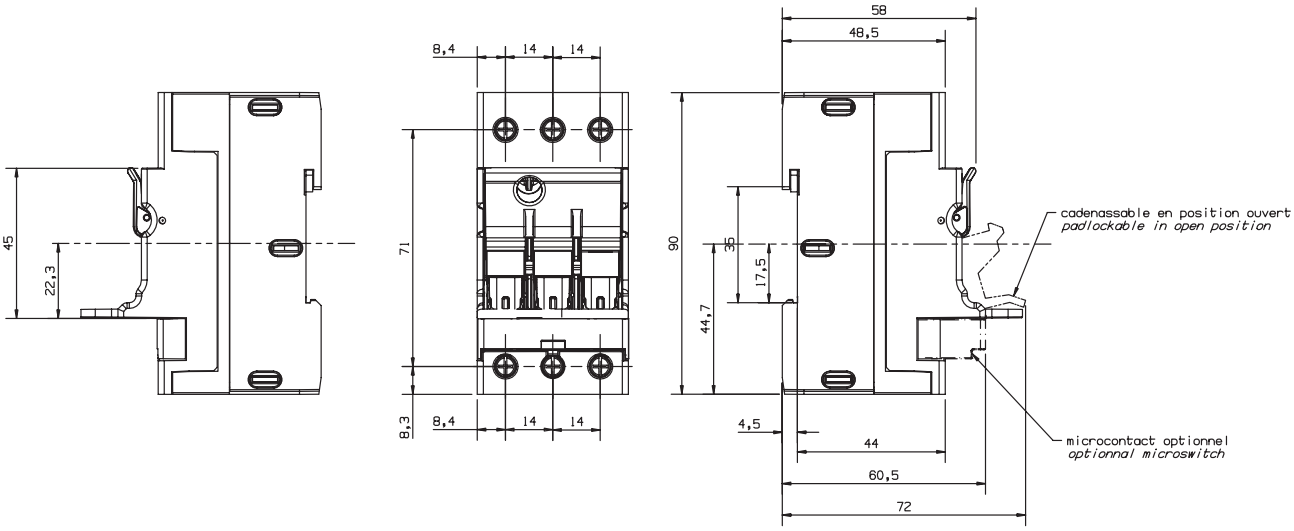
Description	Catalog Number	references Number	Number of systems interconnected	Maxi. RMS current (A)	Number of poles	Pckg
Lock	LOCK	M223525				1
Microswitch	USFMAC11	C302797	1		3	1
Additional Neutral			1			
jumping bars 3 phases			4		3	
Lateral incoming power supply	TBB23C	G210318		90		50
Axial incoming power supply	TBB23A	F210317		90		50
Interconnexion with SEI 30A Contactor			1		3	
Interconnexion with Rockwell 30A Contactor			1		3	
Interconnexion with SIEMENS 30A Contactor			1		3	
Interconnexion with ABB 30A Contactor			1		3	
Interconnexion with GE 30A Contactor			1		3	

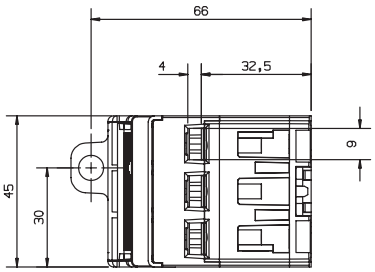
IEC General Purpose Fuses
Ferrule Fuses
Modulostar® USFM10, UltraSafe™ USFMM

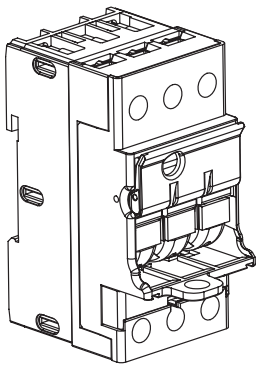


USFM 10 - USFMM

Dimensions







Accessories

Description	Catalog Number	references Number	Number of systems interconnected	Maxi. RMS current (A)	Number of poles	Pckg
Lock	LOCK	M223525				1
Microswitch	USFMAC11	C302797	1		3	1
Additional Neutral			1			
jumping bars 3 phases			2		3	
Lateral incoming power supply	TBB23C	G210318		90		50
Axial incoming power supply	TBB23A	F210317		90		50
Interconnexion with SEI 30A Contactor			1		3	
Interconnexion with Rockwell 30A Contactor			1		3	
Interconnexion with SIEMENS 30A Contactor			1		3	
Interconnexion with ABB 30A Contactor			1		3	
Interconnexion with GE 30A Contactor			1		3	

IEC General Purpose Fuses
Ferrule Fuses
Modulostar® USFM10, UltraSafe™ USFMM

USFM10, USFMM

Ferraz Shawmut Fuse usable in USFM* for Motors protection

P . Motor	Motor Voltage	Ie Motor	AM IEC fuse links	CC UL listed	GD UL recognized	JTD UL Listed≤ 60A
	400/415V	9A	50 aM 10.10*	CC 15*	60 gD 14.12	AJT17.5
4 kW	500V	7A	50 aM 10.8*	CC 12*	60 gD 14.10	AJT15
	690V	5A	69 aM 10.6,3*	—	—	AJT10
	400/415V	12	50 aM 10.16*	CC 20*	60 gD 14.18	AJT20
5.5 kW	500V	10	50 aM 10.12*	CC 17*	60 gD 14.15	AJT17.5
	690V	7	69 aM 10.8*	—	—	AJT15
	400/415V	16	50 aM 10.20*	CC 25*	60 gD 14.25	AJT25
7.5 kW	500V	14	50 aM 10.16*	CC 25*	60 gD 14.20	AJT20
	690V	9	69 aM 10.10*	—	—	AJT17.5
11 kW	400/415V	23	50 aM 10.25*		60 gD 14.30	AJT40
13 kW	500V	20	50 aM 10.25*	CC 30*	60 gD 14.28	AJT35
10 kW	690V	12	69 aM 14.12	—	—	AJT20
	400/415V	30	40 aM 10.32	—	60 gD 22.35	AJT60
15 kW	500V	25	50 aM 10.25	—	60 gD 14.30	AJT45
	690V	18	69 aM 14.20	—	—	AJT30
18 kW	400/415V	37	50 aM 14.40	—	60 gD 22.55	
to	500V	30	50 aM 14.32	—	60 gD 14.45	AJT60
20 kW	690V	21	69 aM 14.25	—	—	AJT335
22 kW	400/415V	43	50 aM 14.50	—	60 gD 22.60	—
25 kW	500V	38	50 aM 14.40	—	60 gD 22.50	—
22 kW	690V	25	69 aM 14.32	—	—	AJT45
28 kW	400/415V	54	50 aM 22.63	—	60 gD 27.80	—
32 kW	500V	47	50 aM 22.50	—	60 gD 22.60	—
28 kW	690V	30	69 aM 14.40	—	—	AJT60
32 kW	400/415V	60	50 aM 22.80	—	60 gD 27.100	—
37 kW	500V	55	50 aM 22.63	—	60 gD 27.80	—
32 kW	690V	34	69 aM 14.40	—	—	AJT60
40 kW	400/415V	72	50 aM 22.80	—	60 gD 27.100	—
45 kW	500V	67	50 aM 22.80	—	—	—
40 kW	690V	42	69 aM 14.50	—	—	—
45 kW	400/415V	85	50 aM 22.100	—	—	—
55 kW	500V	80	50 aM 22.100	—	—	—
55 kW	690V	49	69 aM 14.63	—	—	—

** Respectively in USFM10-USFCC*

UL fuse holders: US 14

Electrical characteristics

Rated insulation voltage Ui AC/DC	Rated impulse withstand voltage Uimp	Rated current	Max. power dissipation per fuse	Fuse rating	Maximum current in use for 1, 2, 3 et 3+N poles with FS-fuses. for 4, 5 and 6 poles, multiply by 0.8 for 7, 8, 9 x 0.7 and for ≥ 10 x 0.6							Cable wire section (mm^2) recommanded
					gG	60gD	aM	URD - URC	URGA URGB	gRB	gLB	
750 V	8 kV	50 A	4,7 W	≤ 20		20	≤ 20	18	18	18	≤ 16	≤ 16
750 V	8 kV	50 A	4,7 W	≤ 25		25	25	20	20	20	20	20
750 V	8 kV	50 A	4,7 W	≤ 30	≤ 20	30		18	18	18	25	25
750 V	8 kV	50 A	4,7 W	32	≤ 25		32	25	25	25	32	32
750 V	8 kV	50 A	4,7 W	40	≤ 30		40	30	30	30	40	40
750 V	8 kV	50 A	4,7 W	50			50	35	35	35	45	45
750 V	8 kV	50 A	4,7 W	63				38				

** Values shown for 20°C ambient temperature.*
Wiring: Rigid wire = 1.5 - 35 mm² (16 - 3 AWG) - Multistrand wire: Maximum 25 mm² (4 AWG)
Tightening torque: 3.5 Nm max / 30 lbs.in
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm).

ULTRASAFE™ US 14 fuse disconnectors for 14x51 fuses with no striker, or with indicator light or with striker

Model without indicator light ready for accessories

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**US14N**	S227900	1.5	6	
1	**US141**	Z331153F	3	6	
1 + N	**US141N**	D331157C	3	3	
2	**US142**	G331137C	4.5	3	
3	**US143**	N331143B	6	2	
3 + N	**US143N**	X331151A	6	1	
4	**US144**		6	1	



Model with indicator light ready for auxiliary contact

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US141I**	A331154F	3	6	
1 + N	**US141NI**	Z227906	3	3	
2	**US142I**	H331138C	4.5	3	
3	**US143I**	P331144B	6	2	
3 + N	**US143NI**	R227922	6	1	
4	**US144I**		6	1	

ULTRASAFE™ US 14 fuse disconnectors for 14x51 fuses with no striker, or with indicator light or with striker

Model with indicator light ready for auxiliary contact



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US141M**	W227903	1.5	6	
1 + N	**US141NM**	A227907	3	3	
2	**US142M**	E227911	3	3	
2*	**US142M2**	G227913	3	3	
3	**US143M**	L227917	4.5	2	
3*	**US143M2**	N227919	4.5	2	
3 + N	**US143NM**	S227923	6	1	
3 + N*	**US143NM2**	V227925	6	1	
4	**US144M**		6	1	
4*	**US144M2**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Model fitted with auxiliary contact & indicator light



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US141MI**	C331156F	1.5	6	
1 + N	**US141NMI**	B227908	3	3	
2	**US142MI**	K331140C	3	3	
2*	**US142M2I**	M331142C	3	3	
3	**US143MI**	S331147B	4.5	2	
3*	**US143M2I**	W331150B	4.5	2	
3 + N	**US143NMI**	T227924	6	1	
3 + N*	**US143NM2I**	W227926	6	1	
4	**US14MI**		6	1	
4*	**US144M2I**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Accessories



Auxiliary contact kit



Enlargement pin for auxiliary contact



Auxiliary contact assembly pin

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Pack	Sur Condi
Auxiliary contact kit 1 pole US 14	**USMSW1**	Y227928	1.5	1	
Auxiliary contact kit 3 poles US 14	**USMSW2**	Z227929	4.5	1	
2 auxiliary contact kit 3 poles US 14	**USMSW3**	A227930	4.5	1	
Auxiliary contact assembly pin (between 2 kits)	**US1422PTH**	J214138		10*	
Enlargement pin for auxiliary contact	**US1422BP**	F213629		10*	
Multi-pole assembly kit	**US14PAK**	X227927		10*	
Indicator light kit	**CMS1422LHI**	A225653		1	
Lock	**LOCK**	M223525		1	

** 10 per bag*

UL fuse holders: US 22

Electrical characteristics

Rated insulation voltage Ui AC/DC	Rated impulse withstand voltage Uimp	Rated current	Max. power dissipation per fuse	Fuse rating	Maximum current in use for 1, 2, 3 et 3+N poles with FS-fuses. for 4, 5 and 6 poles, multiply by 0.8 for 7, 8, 9 x 0.7 and for ≥ 10 x 0.6							Cable wire section (mm^2) recommanded
					gG	60gD	aM	URD - URC	URGA URGB	gRB	gLB	
750 V	8 kV	125 A	9.5 W	≤ 16	≤ 16		≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	2.5/12
750 V	8 kV	125 A	9.5 W	20	20		20	20	20	20	20	4/10
750 V	8 kV	125 A	9.5 W	25	25		25	25	25	25	25	6/10
750 V	8 kV	125 A	9.5 W	32-35	32	35	32	29	29	29	32	10/8
750 V	8 kV	125 A	9.5 W	40	40	40	40	35	35	35	40	10/8
750 V	8 kV	125 A	9.5 W	50	50	50	50	40	40	40	50	10/8
750 V	8 kV	125 A	9.5 W	60/63	60	60	63	52	51	52	63	10/6
750 V	8 kV	125 A	9.5 W	80			80	65	64	75	75	25/4
750 V	8 kV	125 A	9.5 W	100			100	76	74	76	85	35/2
750 V	8 kV	125 A	9.5 W	125			100	85				35/2

** Values shown for 20°C ambient temperature.*
Wiring: Rigid wire = 1.5 - 50 mm² (16 - 1 AWG) - Multistrand wire: Maximum 35 mm² (3 AWG).
Tightening torque: max. 4.5 Nm - 45 lbs.in
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 6.5 x 1.2 mm (maximum diameter 7 mm).

ULTRASAFE™ US 22 fuse disconnectors for 22x58 fuses with no striker, or with indicator light or with striker

Model without indicator light ready for accessories

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**US22N**	B227931	1.5	6	
1	**US221**	E331158F	1.5	6	
1 + N	**US221N**	H331161C	3	3	
2	**US222**	K331163C	3	3	
3	**US223**	R331169B	4.5	2	
3 + N	**US223N**	X331174A	6	1	
4	**US224**		6	1	



Model with indicator light ready for auxiliary contact

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US221I**	F331159F	1.5	6	
1 + N	**US221NI**	H227937	3	3	
2	**US222I**	L331164C	3	3	
3	**US223I**	S331170B	4.5	2	
3 + N	**US223NI**	A227953	6	1	
4	**US224I**		6	1	

ULTRASAFE™ US 22 fuse disconnectors for 14x51 fuses with no striker, or with indicator light or with striker

Model with indicator light ready for auxiliary contact



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US221M**	G331160F	1.5	6	
1 + N	**US221NM**	J331162C	3	3	
2	**US222M**	M331165C	3	3	
2*	**US222M2**	P331167C	3	3	
3	**US223M**	T331171B	4.5	2	
3*	**US223M2**	W331173B	4.5	2	
3 + N	**US223NM**	B227954	6	1	
3 + N*	**US223NM2**	D227956	6	1	
4	**US224M**		6	1	
4*	**US224M2**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Model fitted with auxiliary contact & indicator light



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US221MI**	F227935	1.5	6	
1 + N	**US221NMI**	K227939	3	3	
2	**US222MI**	N331166C	3	3	
2*	**US222M2I**	R227945	3	3	
3	**US223MI**	V331172B	4.5	2	
3*	**US223M2I**	Y227951	4.5	2	
3 + N	**US223NMI**	C227955	6	1	
3 + N*	**US223NM2I**	E227957	6	1	
4	**US22MI**		6	1	
4*	**US224M2I**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Accessories



Auxiliary contact kit





Enlargement pin for auxiliary contact



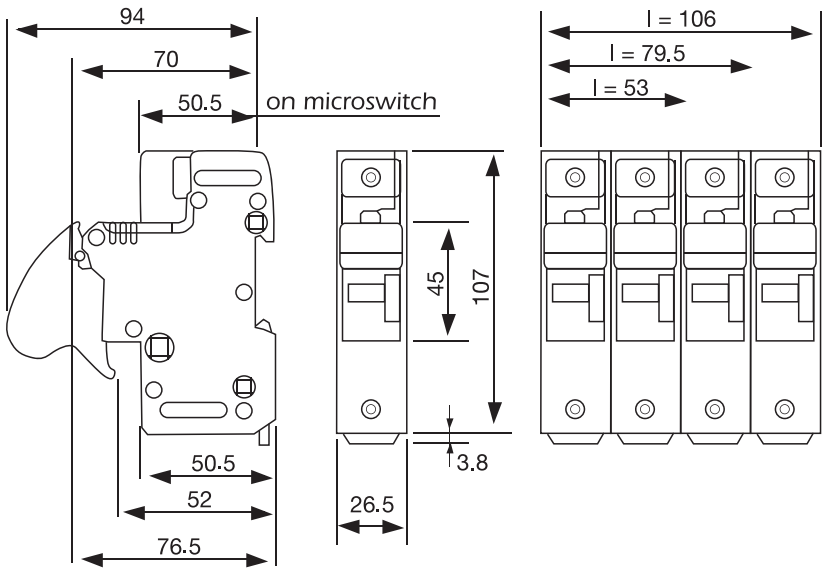
Auxiliary contact assembly pin

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Pack	Sur Condi
Auxiliary contact kit 1 pole US 22	**USMSW4**	G227959	1.5	1	
Auxiliary contact kit 3 poles US 22	**USMSW5**	H227960	4.5	1	
2 auxiliary contact kit 3 poles US 22	**USMSW6**	J227961	4.5	1	
Auxiliary contact assembly pin (between 2 kits)	**US1422PTH**	J214138		10*	
Enlargement pin for auxiliary contact	**US1422BP**	F213629		10*	
Multi-pole assembly kit	**US22PAK**	F227958		10*	
Indicator light kit	**CMS1422LHI**	A225653		1	
Lock	**LOCK**	M223525		1	

** 10 per bag*

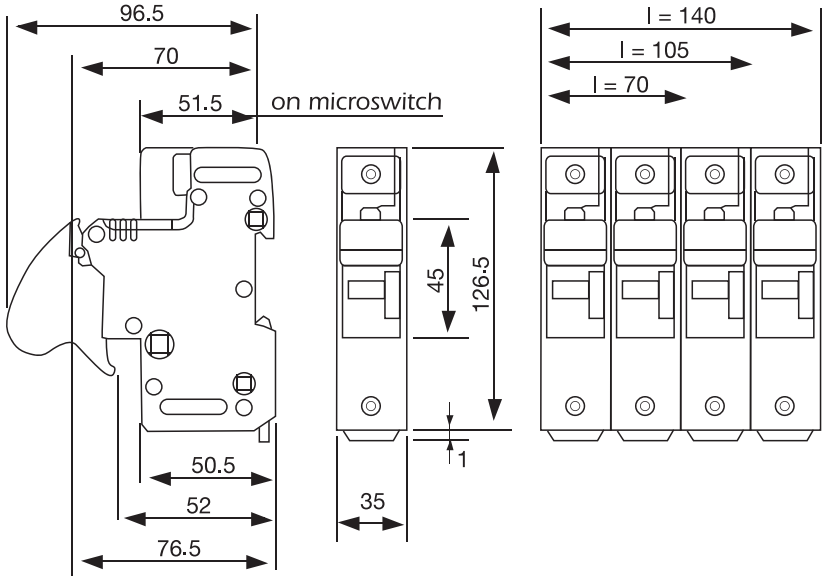
Mecanics for CMS/US 14 & 22

Dimensions of CMS 14 and US 14 products



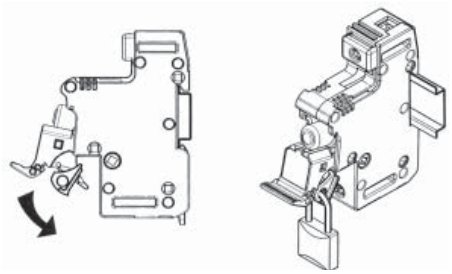
Width depending on nb. of 17.5 mm modules	Nb poles	1	2	3	4	5	6
	Nb of modules	1.5	3	4.5	6	7.5	9
	mm	26.5	53	79.5	106	132.5	159

Dimensions of CMS 22 and US 22 products



Width depending on nb. of 17.5 mm modules	Nb poles	1	2	3	4	5	6
	Nb of modules	2	4	6	8	10	12
	mm	35	70	105	140	175	210

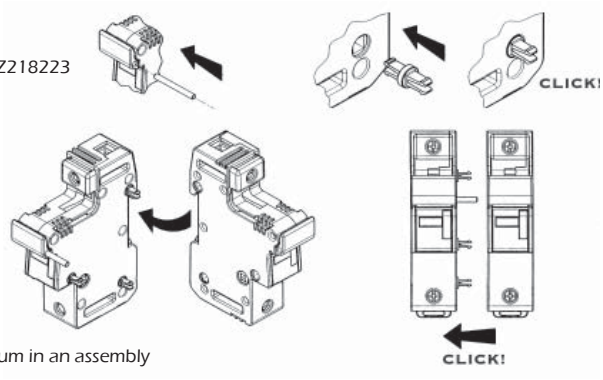
Locking system



Locking reference: M223525

Multipole assembly

Assembly kit
CMS14 & CMS 22: Z218223

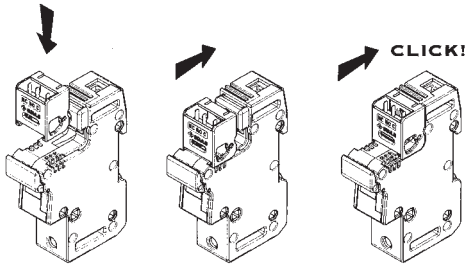


Assembly kit
US 14: X227927
US 22: F227958

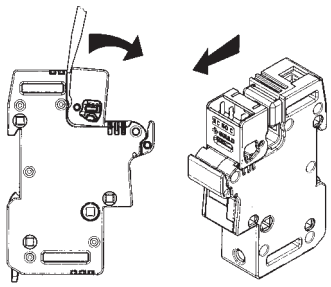
NB: 6 poles maximum in an assembly

Each bag of kits is sufficient for:
- 10 multipole assemblies
- 10 two-pole assemblies
- 5 three-pole assemblies
- 3 four-pole assemblies

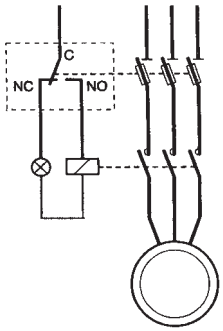
Mounting auxiliary microswitches



Dismounting auxiliary microswitches



Auxiliary microswitch functions



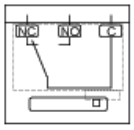
Fuse melting: A fuse holder containing a fuse with a striker sends out a signal when the fuse element melts
Pre-isolation: When the fuse holder opens
Presence: Sends a signal when the holder is closed with no fuse in it

Characteristics of the auxiliary microswitch

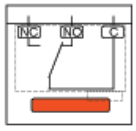
Min. voltage and current for operation 10VAC-DC -100mA

	6A	AC 12
Rated current	3A	AC 13
and breaking capacity (1) at 250V	0,3A	AC 14
	0,1A	DC 12/13/14
	6A	DC 12/DC13
Rated current and breaking capacity (1) at 2 and 24 V	5A	AC 13
	2A	AC 14/DC 13
	0,6A	DC 14

(1) as per standard IEC 947-5



With the fuse in the handle closed state.

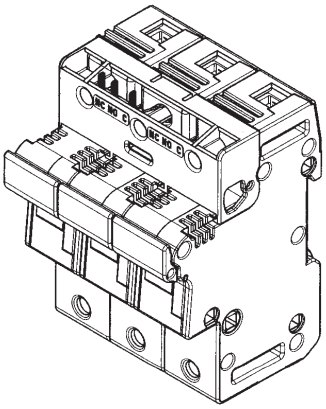


No fuse
Fuse blown Handle open

Microswitch options

Auxiliary microswitches can only be mounted on previously prepared fuse disconnectors.
Use of the auxiliary microswitch for fuse melting requires the use of fuses with strikers.

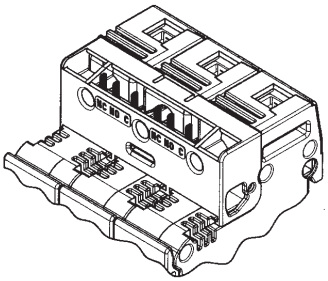
1 auxiliary microswitch



CMS 14 (C219261) - US14 (Z227929)
CMS 22 (L212093) - US 22 (H227960)

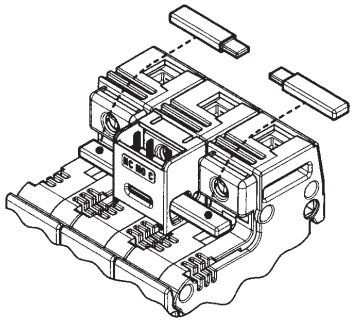
or

2 auxiliary microswitches



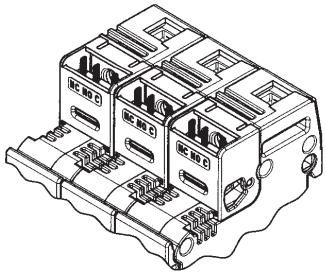
CMS 14 (D219791) - US14 (A227930)
CMS 22 (B212613) - US 22 (J227961)

1 auxiliary microswitch



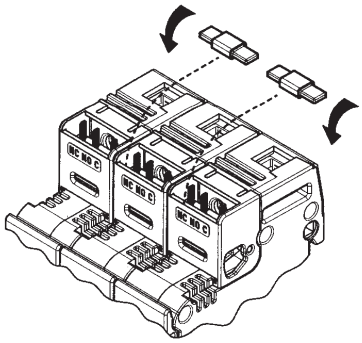
CMS 14 (M218741+F213629)
CMS 22 (E211581+F213629)
US 14 (Y227928+F213629)
US 22 (G229759+F213629)

3 independent auxiliary microswitches



CMS 14 (3 x M218741)
CMS 22 (3 x E211581)
US 14 (3 x Y227928)
US 22 (3 x G227959)

3 mechanically interconnected auxiliary microswitches



CMS 14 (3 x M218741+2 x J214138)
CMS 22 (3 x E211581+2 x J214138)
US 14 (3 x Y227928) + (2 x J214138)
US 22 (3 x G227959) + (2 x J214138)

NOTE: Do not fit with more than 3 microswitches

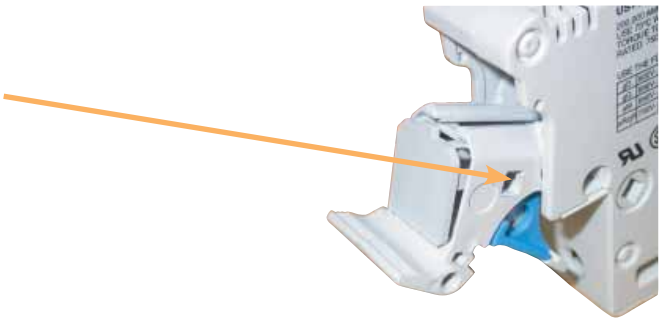
Supply wiring bars and terminals

Description	Cat. Number	Ref. Number	Maxi. acceptable RMS current (A)	Pack	Sur Condi
jumping bar for 4 (CMS 14/US 14) 3 poles	CMS14BB3F4	A210312	100	5	
jumping bar for 6 (CMS 14/US 14) 2 poles	CMS14BB2F6	Z210311	63	5	
jumping bar for 12 (CMS 14/US 14) 1 pole	CMS14BB1F12	Y210310	63	5	
jumping bar for 6 (CMS 22/US 22) 2 poles	CMS22BB2F6	C210314	150	5	
jumping bar for 12 (CMS 22/US 22) 1 pole	CMS22BB1F12	B210313	90	5	
Single-pole terminal, side	TBB1C	E210316	90	50	
2/3-pole terminal, side	TBB23C	G210318	90	50	
Single-pole terminal, axial	TBB1A	D210315	90	50	
2/3-pole terminal, axial	TBB23A	F210317	90	50	

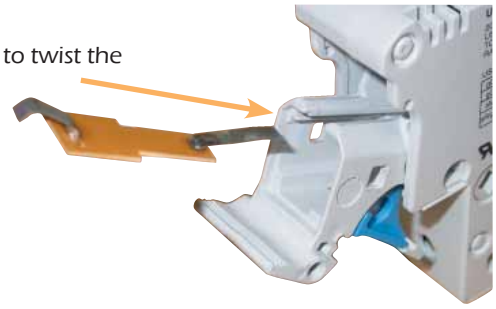
Indicator light kit for CMS/US 14 & 22

With the indicator light a blown fuse can be quickly located if power is still on

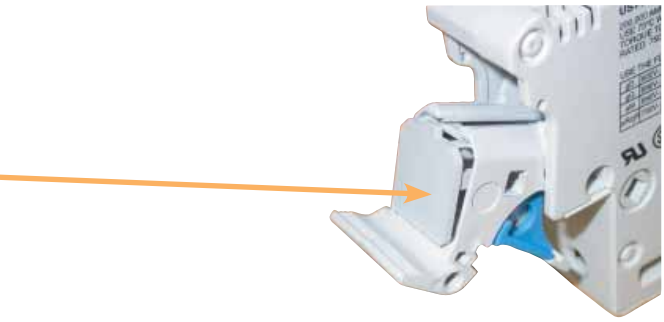
1 Carefully remove the cover with 2 screw drivers.



2 Slip the indicator light's top insert into the rails, being careful not to twist the contact tabs.



3 Put the cover back on



Assembly precautions in multipole assemblies

When fuse holders are side by side or very near each other (less than one module apart), they must be derated again, in addition to derating for temperature

Number of 17.5 mm modules	Derating factor
1-2-3	None = 1
4-5-6	0.8
7-8-9	0.7
> 10	0.6



ST 22

IEC General Purpose Fuses
Ferrule Fuses
ST22

For Ferrule-type Fuses Ø 22

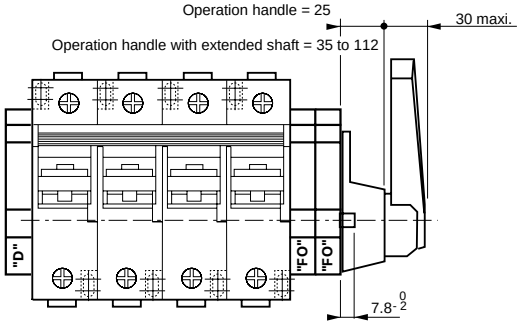
- IN ACCORDANCE WITH IEC 947-3 AND EN 60947-3
  OPERATION CLASS: AC20B
  IMPULSE WITHSTAND VOLTAGE: 6 AND 8 kV (1.2/50 µs wave)
- WITH PRE-ISOLATING AND BLOWN-FUSE INDICATING MICROSWITCHES
- COMPLETE PROTECTION AGAINST TOUCHING OF LIVE PARTS
- PROTECTION DEGREE: IP 2X
- HIGH-PERFORMANCE ST RANGE COMPLIANT WITH THE NEW EUROPEAN VOLTAGE RATINGS (IEC 33) U_N 480-690 V AC/DC I_N UP TO 125 A

Main Characteristics

Size	AC Insulation voltage rating Ui (V) AC/DC	Impulse withstand voltage Uimp(kV)(1)	Current rating I_N(A)	Fuse current rating I_N(A)	Maximum fuse operating current (A)						Recommended copper wire gauge (mm²)	Fire and fumes class NF F 16 -102
					gG	aM	gR/UR			gL		
							URD/URC	URGB/URGA	gRC			
ST 22	690 (CEI) 700 (US)	8	125	25	25	25	25	25	25	25	4	I3-F1
				32	32	32	29	29	29	32	6	
				40	40	40	35	35	35	40	10	
				50	50	50	40	40	40	50	10	
				63	63	63	52	51	52	63	16	
				80	80	80	65	64	65	75	16	
				100	100	100	76	74	76	85	25	
				125	110	125	85				25	
				135			87				35	

All terminals silver-plated copper
(1) Between close phases and phase and mass, between phases and microswitch as per IEC 947-1

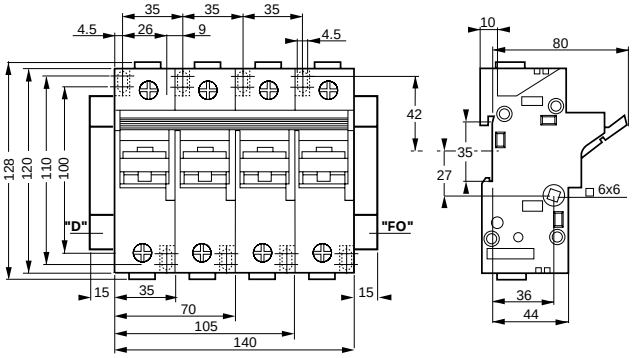
Mounting with a padlocking right side-handle for ST 22



Designation (equipment + handle)	Ref. Number	Qty. of «FO»	Qty. of «D»	Cat. Number
ST22 IIIN FOFOD+CDELAT.D.	M 209633	2	1	
ST22 IIIN FOFO+CDELAT.D.	N 209634	2	0	
ST22 IIIN FOD+CDELAT.D.	P 209635	1	1	
ST22 IIIN FO+CDELAT.D.	Q 209636	1	0	
ST22 III FOFOD+CDELAT.D.	S 209638	2	1	
ST22 III FOFO+CDELAT.D.	R 209637	2	0	
ST22 III FOD+CDELAT.D.	T 209639	1	1	
ST22 III FO+CDELAT.D.	V 209640	1	0	

IEC General Purpose Fuses
Ferrule Fuses
ST22

ST 22 (for 22x58 fuses)



Unmovable screw clamp-type connections for wires:
- one conductor, multistrand or rigid wire: 35 mm²
- two conductors, multistrand wire: 16 mm²
- two conductors, rigid wire : 25 mm²

Minimal section: 2.5 mm²

With tightening torque: 2.8 to 3.5 Nm

Mounting:
- simple snap-mounting on standard symmetrical DIN-rail
- direct on board: two M4 screws with tightening torque 1 to 1.2 Nm

Poles	Symbol	Indication[1]	Predisconnection[2]	Cat. Num	Ref.Num	Approvals	Weight (g)	Pck
1				ST221	F220368		235	12&3
			▪	ST221FO	M220397		260	1
		▪		ST22ID	N220398		285	1
		▪	▪	ST22IFOD	P220399		310	1
1+N				ST221N	D220389		485	6&1
			▪	ST221NFO	E220620		510	1
		▪		ST221ND	D220619		535	1
		▪	▪	ST221NFOD	D220573		560	1
N				ST22N	E220367		250	12&3
2				ST222	B220387		470	6&1
			▪	ST222FO	R220401		495	1
		▪		ST222D	S220402		520	1
		▪	▪	ST222FOD	T220403		545	1
3				ST223	C220388		705	4&1
			▪	ST223FO	W220405		730	1
		▪		ST223D	X220406		755	1
		▪	▪	ST223FOD	Y220407		780	1
3+N				ST223N	E220390		955	3&1
			▪	ST223NFO	A220409		980	1
		▪		ST223ND	B220410		1005	1
		▪	▪	ST223NFOD	C220411		1030	1
4		▪		ST224D	H205926		1030	1

[1] Reversing switch-style blown-fuse indication contacts (D model)
[2] Reversing switch-style preisolating contacts (FO model) enabling control of protection device and opening of off load disconnector.

Preisolating "FO" and blown fuse indication "D" switch characteristics

AC insulation voltage rating (***)	FO or D type	Voltage/ current for certain operating	Current rating	Interrupting rating							AC voltage withstand test (*)	Impulse voltage Uimp1.2/50 µs (**)		1er FO	2ème FO	D
				Current	Non-inductive current			Inductive circuit : L/R = 25ms								
					30V	110V	250V	30V	110V	250V						
690 V	«FO»	20 V/50 mA	10 A	50/60 Hz	10 A	10 A	7 A	10 A	8 A	6 A	7.5 kV	8 kV	ST22			
690 V	«D»	10 V/10 mA	10 A	DC	5 A	0.5 A		1.6 A	0.3 A		7.5 kV	8 kV	open disconnector Connecting with 6.3 clips			

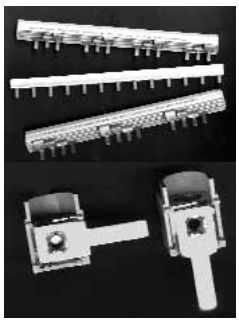
* Between power circuit and microswitch terminals according to IEC 60 and 694 and NFC 64010 (50/60 Hz 1 mn dry air).
** Between power circuit and microswitch terminals Uimp: impulse voltage according to IEC 947-1.
*** Between power circuit and microswitch terminals

Mounting adapter

Blue colored AF adapter (Ref. Number Q 098500) available for mounting on standard assymetrical DIN-rail (EN 50035) and usable for all models.

Supply wiring bars and terminals

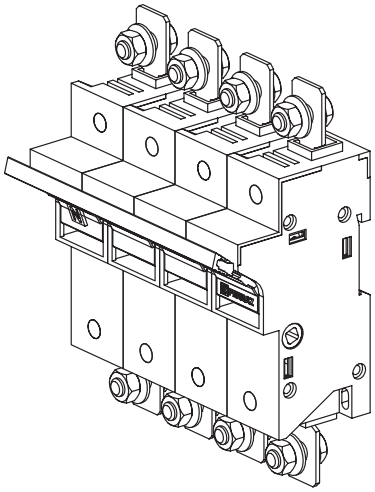
Description	Catalog Number	References	Maximum acceptable RMS current (A)	Pckg
Wiring bar for 6x2 poles Size 22	CMS22BB2F6	C210314	150	5
Wiring bar for 12x1 pole Size 22	CMS22BB1F12	B210313	90	5
Single-pole terminal, side	TBB1C	E210316	90	50
2/3-pole terminal, side	TBB23C	G210318	90	50
Single-pole terminal, axial	TBB1A	D210315	90	50
2/3-pole terminal, axial	TBB23A	F210317	90	50

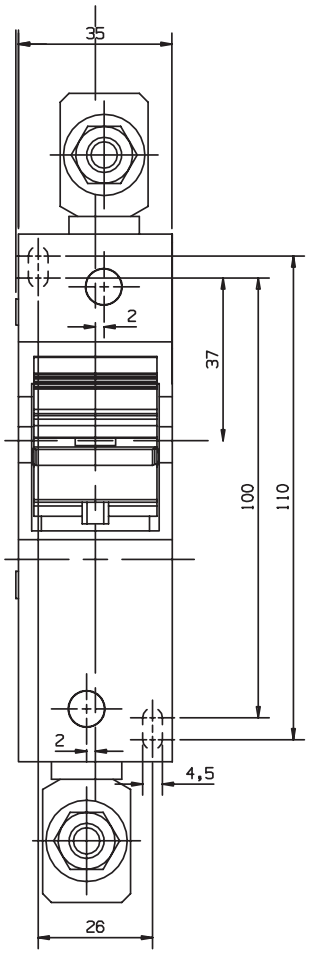


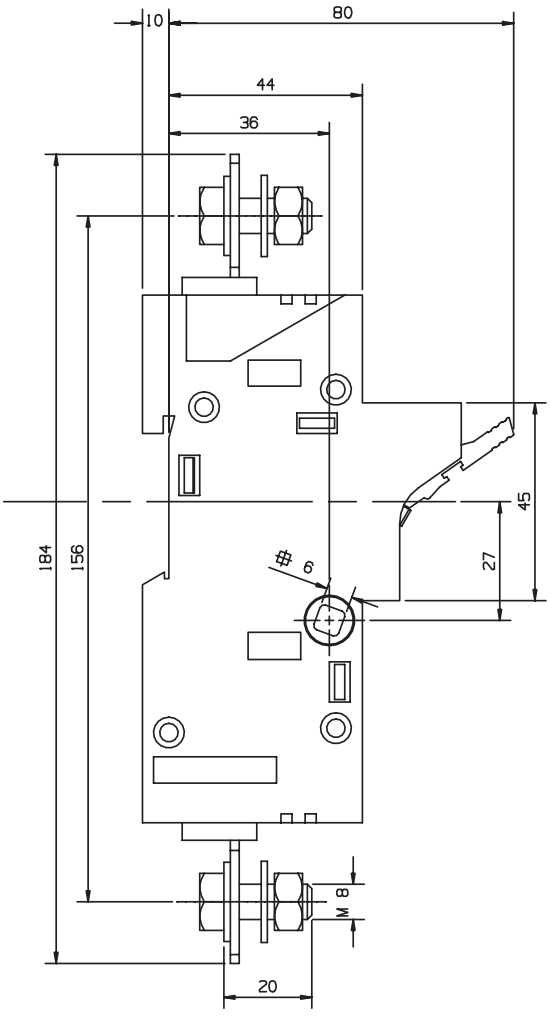
IEC General Purpose Fuses
Ferrule Fuses
ST22

ST22 with ring pug connection

Poles	FO	D	Right Handle	Designation	Reference Number	Catalog Number
1	/	/	No	ST 22 Plage Type B	B228828	ST22RING
	/	1	No	ST 22 D Plage Type B	C229910	ST22DRING
2	/	/	No	ST 22 II Plage Type B	K210873	ST222RING
	2	1		ST 22 II FOFOD Plage Type B	L210874	ST222FOFODRING
	2	1	Yes	ST22 II FOFOD Cde Lat. D Plage Type B	M210875	ST222LHFOFODRIN
3	/	/	No	ST22 III Plage Type B	N210876	ST223RING
	2	1	No	ST22 III FOFOD Plage Type B	P210877	ST223FOFODRING
	2	1	Yes	ST22 III FOFOD Cde Lat. D Plage Type B	Q210878	ST223LHFOFODRIN
4	2	1	Yes	ST 22 IV FOFOD Cde Lat. D Plage Type B"	M227711	ST224LHFOFODRIN







IEC fuse holders: CMS8

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7			Cable wire section (mm^2) recommanded
					gG	aM	gF / gG	
500V AC20B	6 kV	25 A	2.5 W	≤12	≤12	≤12	≤12	2.5
500V AC20B	6 kV	25 A	2.5 W	16	16	16	16	2.5
500V AC20B	6 kV	25 A	2.5 W	20	20	20	20	2.5
500V AC20B	6 kV	25 A	2.5 W	25	25	25	25	4

** Datas for ambiante temperature = 20°C.*
Wire range : Rigid wire = 1- 16 mm² (18 - 6 AWG) Multistrand wire = 0,75 - 10 mm² (18 - 8 AWG)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm)
Maximum Tightening Torque : 2.5 Nm (22lb-in)
IR for fuses : 80KA @ 690V

MODULOSTAR® Fuse holders for 8 x 32 fuse links



MODULOSTAR® Fuse holder without fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS810N**	D305006	1	12	
1	**CMS81**	X305000	1	12	
2	**CMS81N**	Y305001	2	6	
2	**CMS82**	Z305002	2	6	
3	**CMS83**	A305003	3	4	
4	**CMS83N**	B305004	4	3	
4	**CMS84**	C305005	4	3	

MODULOSTAR® Fuse holder with fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS81I**	E305007	1	12	
2	**CMS81NI**	F305008	2	6	
2	**CMS82I**	G305009	2	6	
3	**CMS83I**	H305010	3	4	
4	**CMS83NI**	J305011	4	3	
4	**CMS84I**	K305012	4	3	

Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**CMS810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

IEC fuse holders: CMS10

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7				Cable wire section (mm^2) recommanded
					gG	aM	URD / gRB	6JX	
	6 kV	32 A	3 W	≤12	≤12	≤12	≤12	≤12	2.5
	6 kV	32 A	3 W	16	16	16	16	16	2.5
690 VAC	6 kV	32 A	3 W	20	20	20	20	20	2.5
AC20B	6 kV	32 A	3 W	25	25	25	25	25	4
	6 kV	32 A	3 W	30			30	30	6
	6 kV	32 A	3 W	32	32	32	32		6

** Datas for ambiante temperature = 20°C.*
Wire range : Rigid wire = 1- 16 mm² (18 - 6 AWG) Multistrand wire = 0,75 - 10 mm² (18 - 8 AWG)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm)
Maximum Tightening Torque : 2.5 Nm (22lb-in)
IR for fuses : 120KA @ 500V - 80KA @ 690V

MODULOSTAR® Fuse holders for 10 x 38 fuse links

MODULOSTAR® Fuse holder without fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS810N**	D305006	1	12	
1	**CMS101**	T305020	1	12	
2	**CMS101N**	V305021	2	6	
2	**CMS102**	W305022	2	6	
3	**CMS103**	X305023	3	4	
4	**CMS103N**	Y305024	4	3	
4	**CMS104**	Z305025	4	3	



MODULOSTAR® Fuse holder with fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS101I**	A305026	1	12	
2	**CMS101NI**	B305027	2	6	
2	**CMS102I**	C305028	2	6	
3	**CMS103I**	D305029	3	4	
4	**CMS103NI**	E305030	4	3	
4	**CMS104**	F305031	4	3	

Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**CMS810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

IEC fuse holders: US10

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7				Cable wire section (mm^2) recommanded
					6Jx	ATM,SBS, GNF,GGU	ATQ, OTM TMR	URD / gRB	
	6 kV	30 A	3 W	≤16	16	16	16	16	2.5
690V AC	6 kV	30 A	3 W	20	20	20	20	19	2.5
AC20B	6 kV	30 A	3 W	25	25	25	25	22	4
	6 kV	30 A	3 W	30	30	30	30	25	6

Note: UL recognized Voltage are 800V AC and 1000V DC
** Datas for ambiante temperature = 20°C.*
Wire range : Rigid wire = 1- 16 mm² (18 - 6 AWG) Multistrand wire = 0,75 - 10 mm² (18 - 8 AWG)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm)
Maximum Tightening Torque : 2.5 Nm (22lb-in)
IR for fuses : 120KA @ 500V IEC - 80KA @ 690V IEC - 80 KA @ 700V UL

MODULOSTAR® Fuse holders for Midget and 10 x 38 fuse links



MODULOSTAR® Fuse holder without fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US10N**	H305056	1	12	
1	**US101**	B305050	1	12	
2	**US101N**	C305051	2	6	
2	**US102**	D305052	2	6	
3	**US103**	E305053	3	4	
4	**US103N**	F305054	4	3	
4	**US104**	G305055	4	3	

MODULOSTAR® Fuse holder with fuse light melting indicator

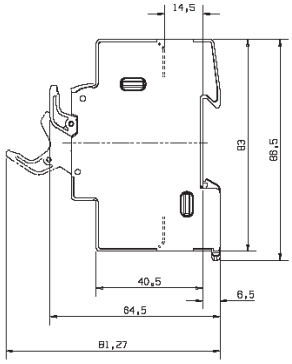
Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US101I**	J305057	1	12	
2	**US101NI**	K305058	2	6	
2	**US102I**	L305059	2	6	
3	**US103I**	M305060	3	4	
4	**US103NI**	N305061	4	3	
4	**US104I**	P305062	4	3	

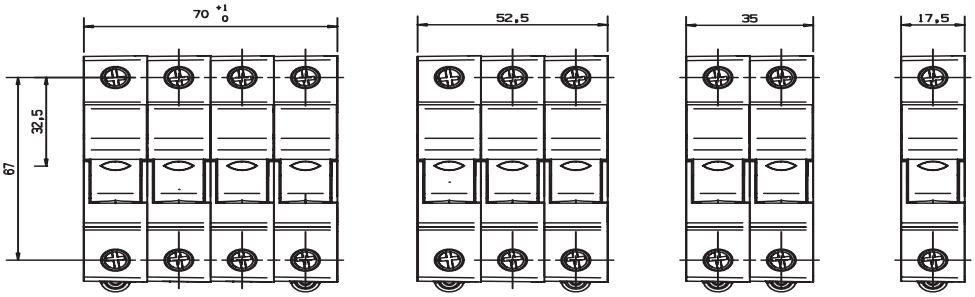
Accessories

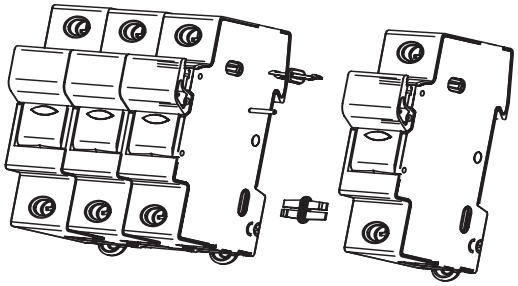
Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**US810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

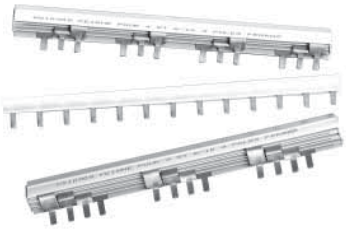
Dimensions











Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**CMS810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

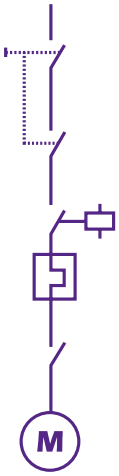
Low Voltage
Modulostar®

Motor Branch 400V - 690V AC

Innovations in MODULOSTAR®
to control energy in motor starters

Already active in the field of motor starters with rated current over 32A per phase, Ferraz Shawmut is innovating with the launch of two new products in the MODULOSTAR range: the CMSFM10 compact three-pole fuse holder and 10.3x38 690V fuses for motor systems.





Fuse system	Protection against short circuits
Contactor Overlaod relay	Power control Protection against overlaods
Switch-disconnector	Safety isolation (close to the motor)
Motor	Motor

In a typical motor starter set-up the advantages to using a fuse rather than a circuit breaker are obvious:
Cost savings on maintenance,
Better safety for workers and equipement with type 2 and 1 coordination as per IEC 947-4.
Outstanding current limitation and very high interrupting rating
MODULOSTAR® is the name of our protection range built to IEC ferrule fuse standard.
MODULOSTAR® means compactness, high performance and innovation. It's a full range.

Coordination in protection against electrical faults

IEC standard 947-4 defines types of coordination:

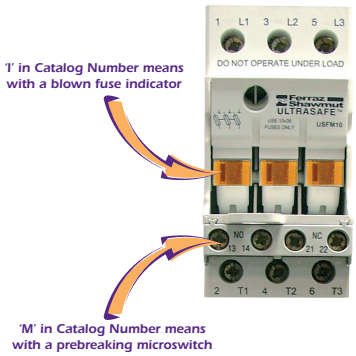
Type 1: the safety of people and property is ensured but there is still a risk of damage to the motor starter

Type 2: the risk of damage is limited to the contacts on the contactors, which may be welded together

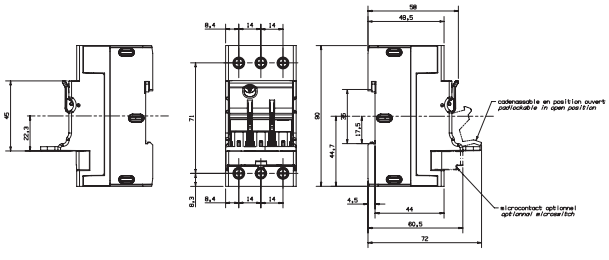
Type 3: total coordination for zero risk

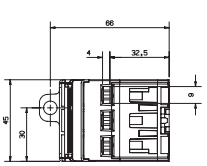
CMSFM10 compact three-pole fuse holder

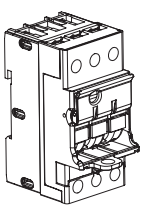
The CMSFM10 is a compact three-pole fuse holder for 10.3x38 ferrule-style fuses, for use with contactors of the same compact size of 45mm (instead of 3x17.5 = 52.5mm for the CMS103).
It is modern in design and made with brand new automatic manufacturing processes.
A complete set of accessories is available. In particular, it is sold with a high performance, multifunctional wiring system.



Cat Number	Ref.Number	U_N	I_N	Power loss in Watts
CMSFM10	S302765A	690	32	3
CMSFM10M	T302766A	690	32	3
CMSFM10I	W302768A	690	32	3
CMSFM10MI	V302767A	690	32	3



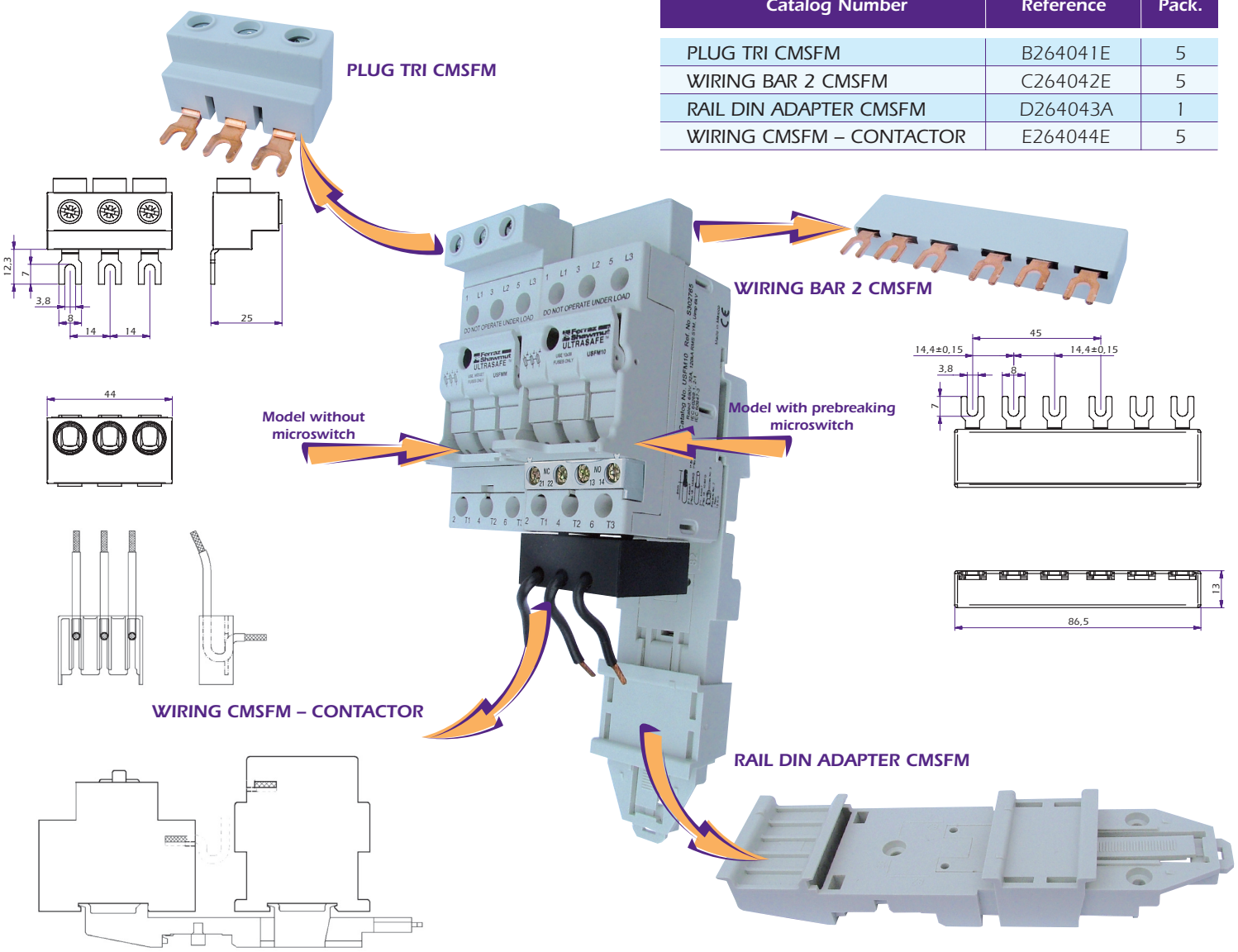




Ferraz Shawmut

Accessories

Catalog Number	Reference	Pack.
PLUG TRI CMSFM	B264041E	5
WIRING BAR 2 CMSFM	C264042E	5
RAIL DIN ADAPTER CMSFM	D264043A	1
WIRING CMSFM – CONTACTOR	E264044E	5



10.3x38 690V aM class fuses

The MODULOSTAR® range of ferrule-style fuses has been enlarged by the addition of 10.3x38 690V models for motors. This is a Ferraz Shawmut innovation. They provide a type-2 coordination as per the IEC 947-4
These fuses are available in ratings up to 16A to provide a fuse solution to needs for electrical protection of motor starters at any power level.

Low Voltage **Modulostar®**



Current In (A)	Un Voltage (V)	Power dissipation at In	Motor power @ Un (Hp)*	Motor power (kW)	I motor (A)	Breaking capacity @ Un (kA)	Cat.Number	Ref.Number
1	690	0.1	0.5	0.37	0.65	80	**FR10AM69V1**	H302779J
2	690	0.16	0.75 to 1.5	0.55 to 1.1	0.75 to 1.6	80	**FR10AM69V2**	J302780J
4	690	0.3	2 to 4	1.5 to 3	2 to 3.8	80	**FR10AM69V4**	K302781J
6	690	0.35	5.4	4	4.9	80	**FR10AM69V6**	L302782J
8	690	0.45	7.5	5	6.6	80	**FR10AM69V8**	M302783J
10	690	0.55	10	7.5	8.9	80	**FR10AM69V10**	N302784J
12	690	0.7	13.5	10	11.5	80	**FR10AM69V12**	P302785J

* 3-phase asynchronous motor 660V 1500 rpm

for Un motor = 400V you have to derate for the same fuse rating use a motor with lower power (factor= 0.58 to 0.65).
The table provides the current rating of fuse for standard starting conditions i.e. 2 starts per day at 6In 2 seconds for a 3-phase motor at 1500 rpm @ new IEC voltages 400V and 690V.
For a 3000 pm motor speed the rating is the one published here with a coefficient factor between 0.8 and 0.95.

IEC fuse holders & fuse disconnectors: CMS 14

IEC fuse holders: CMS 14: Fuse holder compliant with IEC 60269-1 & 2, and tested in accordance with IEC 60947-1 & 3 for fuse disconnector usage
IEC fuse disconnectors: CMS 14 : Fuse disconnectors compliant with IEC 60947-1 & 3 and IEC 60269-1 & 2

Electrical characteristics

Rated insulation voltage Ui AC/DC	Rated impulse withstand voltage Uimp	Rated current	Max. power dissipation per fuse	Fuse rating	Maximum current in use for 1, 2, 3 et 3+N poles with FS-fuses. for 4, 5 and 6 poles, multiply by 0.8 for 7, 8, 9 x 0.7 and for ≥ 10 x 0.6						Cable wire section (mm^2) recommanded
					gG	aM	URD - URC	URGA URGB	gRB	gLB	
690 VAC 20 B	8 kV	50 A	5 W	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	2.5
690 VAC 20 B	8 kV	50 A	5 W	20	20	20	18	18	18	20	2.5
690 VAC 20 B	8 kV	50 A	5 W	25	25	25	20	20	20	25	4
690 VAC 20 B	8 kV	50 A	5 W	32	32	32	25	25	25	32	6
690 VAC 20 B	8 kV	50 A	5 W	40	40	40	30	30	30	40	6
690 VAC 20 B	8 kV	50 A	5 W	50	50	50	35	35	35	45	10
690 VAC 20 B	8 kV	50 A	5 W	63			38				10

** Values shown for 20°C ambient temperature.*
Wiring: Rigid wire = 1.5 - 35 mm²(16 - 3 AWG) - Multistrand wire: Maximum 25 mm² (4 AWG)
Tightening torque: 3.5 Nm max / 30 lbs.in
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm).

CMS 14 fuse holders for 14x51 fuses without striker

Fuse holders without indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**CMS14N**	T331056F	1.5	6	
1	**CMS141**	A331016F	1.5	6	
1 + N	**CMS141N**	T331010C	3	3	
2	**CMS142**	R331031C	3	3	
3	**CMS143**	S331032B	4.5	2	
3 + N	**CMS143N**	D331042A	6	1	
4	**CMS144**	F331021A	6	1	



Fuse holders with indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS141I**	L331049F	1.5	6	
1 + N	**CMS141NI**	M331050C	3	3	
2	**CMS142I**	M331004C	3	3	
3	**CMS143I**	K331071B	4.5	2	
3 + N	**CMS143NI**	Q331007A	6	1	

CMS 14 fuse holders for 14x51 fuses with striker

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS141AC**	F331044F	1.5	6	

Indicator light & blown fuse only



CMS 14 fuse disconnectors for all types of 14x51 fuses



Model without indicator light ready for accessories

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**CMS14N**	T331056F	1.5	6	
1	**CMS141P**	W331058F	1.5	6	
1 + N	**CMS141NP**	X331059C	3	3	
2*	**CMS142P**	G331022C	3	3	
3	**CMS143P**	R331054B	4.5	2	
3 + N	**CMS143NP**	Z331015A	6	1	

Model fitted with auxiliary microswitch

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS141M**	Z331038F	1.5	6	
2*	**CMS142M**	A331062C	3	3	
3	**CMS143M**	F331067B	4.5	2	
3*	**CMS143M2**	H331069B	4.5	2	
3 + N	**CMS143NM**	E331043A	6	1	

Model fitted with auxiliary microswitch & indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS141MI**	S331055F	1.5	6	
2*	**CMS142MI**	X331036C	3	3	
3	**CMS143MI**	P331006B	4.5	2	
3*	**CMS143M2I**	Y331037B	4.5	2	
3 + N	**CMS143NMI**	H331000A	6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers.*

Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Pack	Sur Condi
Auxiliary microswitch kit 1 pole CMS 14	**CMS14W1**	M218741	1.5	1	
Auxiliary microswitch kit 3 poles CMS 14	**CMS14W2**	C219261	4.5	1	
2 auxiliary microswitch kit 3 poles CMS 14	**CMS14W3**	D219791	4.5	1	
Auxiliary microswitch assembly pin (between 2 kits)	**CMS1422PTH**	J214138		10*	
Enlargement pin for auxiliary microswitch	**CMS1422BP**	F213629		10*	
Multi-pole assembly kit	**CMS1422PAK**	Z218223		10*	
Indicator light kit	**CMS1422LHI**	A225653		1	
Lock	**LOCK**	M223525		1	

** 10 per bag*

IEC fuse holders & fuse disconnectors: CMS 22

IEC fuse holders: CMS 22 - Fuse holder compliant with IEC 60269-1 & 2, and tested in accordance with IEC 60947-1 & 3 for fuse disconnector usage
IEC fuse disconnectors: CMS 22 - Fuse disconnectors compliant with IEC 60947-1 & 3 and IEC 60269-1 & 2

Electrical characteristics

Rated insulation voltage Ui AC/DC	Rated impulse withstand voltage Uimp	Rated current	Max. power dissipation per fuse	Fuse rating	Maximum current in use for 1, 2, 3 et 3+N poles with FS-fuses. for 4, 5 and 6 poles, multiply by 0.8 for 7, 8, 9 x 0.7 and for ≥ 10 x 0.6						Cable wire section (mm^2) recommanded
					gG	aM	URD - URC	URGA URGB	gRB	gLB	
690 VAC 20 B	8 kV	125 A	9.5 W	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	2.5
690 VAC 20 B	8 kV	125 A	9.5 W	20	20	20	20	20	20	20	4
690 VAC 20 B	8 kV	125 A	9.5 W	25	25	25	25	25	25	25	6
690 VAC 20 B	8 kV	125 A	9.5 W	32	32	32	29	29	29	32	10
690 VAC 20 B	8 kV	125 A	9.5 W	40	40	40	35	35	35	40	10
690 VAC 20 B	8 kV	125 A	9.5 W	50	50	50	40	40	40	50	16
690 VAC 20 B	8 kV	125 A	9.5 W	63	63	63	52	50	50	63	25
690 VAC 20 B	8 kV	125 A	9.5 W	80	80	80	63	60	65	75	35
690 VAC 20 B	8 kV	125 A	9.5 W	100	100	100	76	65	76	85	35
690 VAC 20 B	8 kV	125 A	9.5 W	125	110	125	85			125	

** Values shown for 20°C ambient temperature.*
Wiring: Rigid wire = 1.5 - 50 mm²(16 - 1 AWG) - Multistrand wire: Maximum 35 mm² (3 AWG).
Tightening torque: max. 4.5 Nm - 45 lbs.in
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 6.5 x 1.2 mm (maximum diameter 7 mm).

CMS 22 fuse holders for 22x58 fuses without striker

Fuse holders without indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**CMS22N**	K331094F	1.5	6	
1	**CMS221**	T331079F	1.5	6	
1 + N	**CMS221N**	H331092C	3	3	
2	**CMS222**	Q331122C	3	3	
3	**CMS223**	E331135B	4.5	2	
3 + N	**CMS223N**	B331109B	6	1	
4	**CMS224**	Q331099A	6	1	



Fuse holders with indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS221I**	B331086F	1.5	6	
1 + N	**CMS221NI**		3	3	
2	**CMS222I**	D331134C	3	3	
3	**CMS223I**	L331095B	4.5	2	
3 + N	**CMS223NI**		6	1	



CMS 22 fuse holders for 22x58 fuses with striker

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS221AC**	V331103F	1.5	6	

Indicator light & blown fuse only

CMS 22 fuse disconnectors for all types of 22x58 fuses



Model without indicator light ready for accessories

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**CMS22N**	K331094F	1.5	6	
1	**CMS221PMAC**	Y331083F	1.5	6	
1 + N	**CMS221NP**		3	3	
2	**CMS222P**		3	3	
3	**CMS223PAC**	V331126B	4.5	2	
3*	**CMS223PAC**	V331126B	6	2	
3 + N	**CMS223NP**		6	1	

Model fitted with auxiliary microswitch

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS221M**	S331078F	1.5	6	
2	**CMS222M**	V331080C	3	3	
3	**CMS223M**	B331109B	4.5	2	
3*	**CMS223M2**	C331087B	6	2	
3 + N	**CMS223NM**	T331102A	6	1	

Model fitted with auxiliary microswitch & indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS221MI**	A216683	1.5	6	
2	**CMS222MI**	N217201	3	3	
3	**CMS222MI**	R217710	4.5	2	
3*	**CMS223M2I**	B218225	6	2	
3 + N	**CMS223NMI**	P218743	6	1	

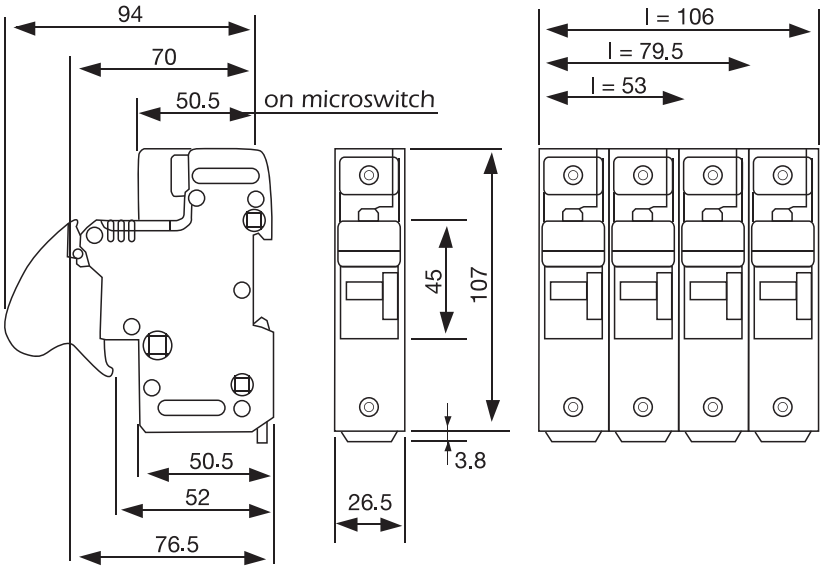
** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers.*

Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Pack	Sur Condi
Auxiliary microswitch kit 1 pole CMS 22	**CMS22W1**	E211581	1.5	1	
Auxiliary microswitch kit 3 poles CMS 22	**CMS22W2**	L212093	4.5	1	
2 auxiliary microswitch kit 3 poles CMS 22	**CMS22W3**	B212613	4.5	1	
Auxiliary microswitch assembly pin (between 2 kits)	**CMS1422PTH**	J214138		10*	
Enlargement pin for auxiliary microswitch	**CMS1422BP**	F213629		10*	
Multi-pole assembly kit	**CMS1422PAK**	Z218223		10*	
Indicator light kit	**CMS1422LHI**	A225653		1	
Lock	**LOCK**	M223525		1	

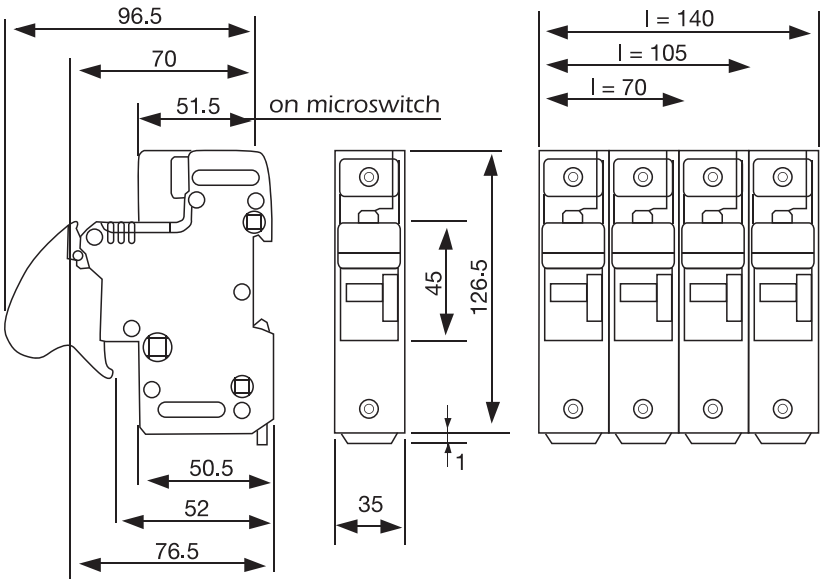
** 10 per bag*

Dimensions of CMS 14 and US 14 products



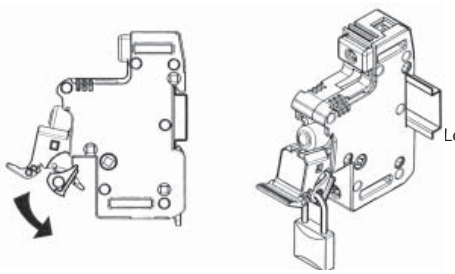
Width depending on nb. of 17.5 mm modules	Nb poles	1	2	3	4	5	6
	Nb of modules	1.5	3	4.5	6	7.5	9
	mm	26.5	53	79.5	106	132.5	159

Dimensions of CMS 22 and US 22 products



Width depending on nb. of 17.5 mm modules	Nb poles	1	2	3	4	5	6
	Nb of modules	2	4	6	8	10	12
	mm	35	70	105	140	175	210

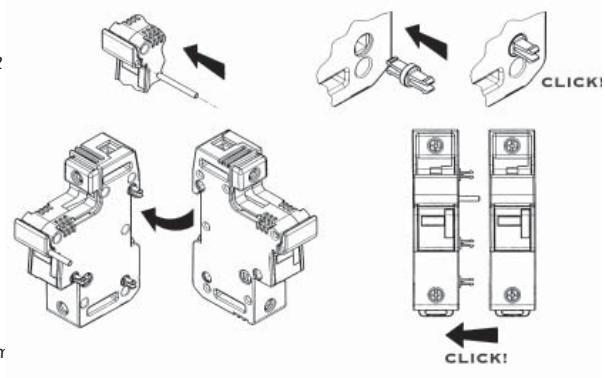
Locking system



Locking reference: M223525

Multipole assembly

Assembly kit
CMS14 & CMS 22: Z2

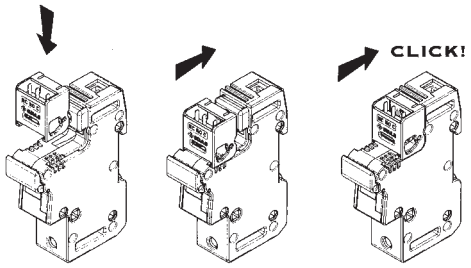


Assembly kit
US 14: X227927
US 22: F227958

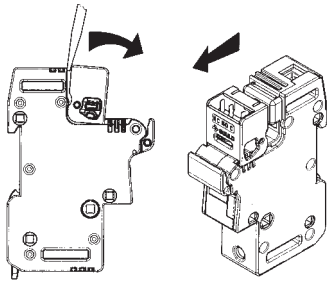
NB: 6 poles maximum

Each bag of kits is sufficient for:
- 10 multipole assemblies
- 10 two-pole assemblies
- 5 three-pole assemblies
- 3 four-pole assemblies

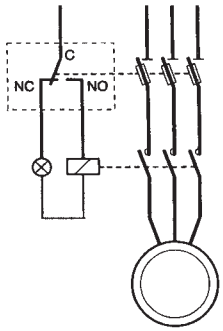
Mounting auxiliary microswitches



Dismounting auxiliary microswitches



Auxiliary microswitch functions



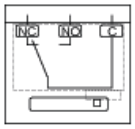
Fuse melting: A fuse holder containing a fuse with a striker sends out a signal when the fuse element melts
Pre-isolation: When the fuse holder opens
Presence: Sends a signal when the holder is closed with no fuse in it

Characteristics of the auxiliary microswitch

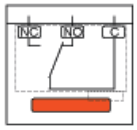
Min. voltage and current for operation 10VAC-DC -100mA

	6A	AC 12
Rated current	3A	AC 13
and breaking capacity (1) at 250V	0,3A	AC 14
	0,1A	DC 12/13/14
	6A	DC 12/DC13
Rated current and breaking capacity (1) at 2 and 24 V	5A	AC 13
	2A	AC 14/DC 13
	0,6A	DC 14

(1) as per standard IEC 947-5



With the fuse in the handle closed state.

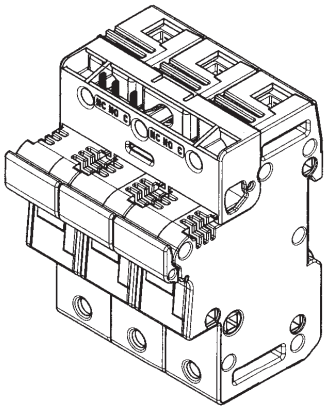


No fuse
Fuse blown Handle open

Microswitch options

Auxiliary microswitches can only be mounted on previously prepared fuse disconnectors.
Use of the auxiliary microswitch for fuse melting requires the use of fuses with strikers.

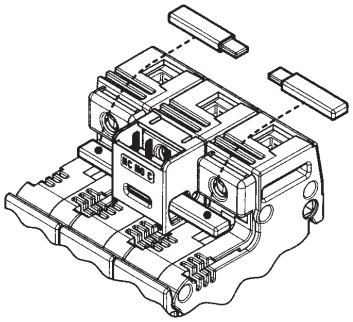
1 auxiliary microswitch



CMS 14 (C219261) - US14 (Z227929)
CMS 22 (L212093) - US 22 (H227960)

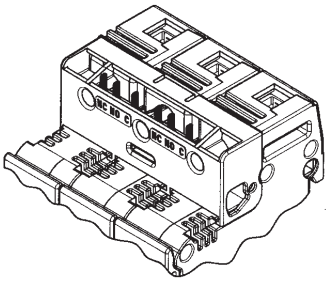
or

1 auxiliary microswitch



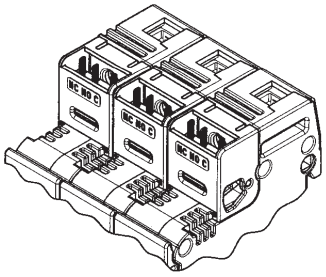
CMS 14 (M218741+F213629)
CMS 22 (E211581+F213629)
US 14 (Y227928+F213629)
US 22 (G229759+F213629)

2 auxiliary microswitches



CMS 14 (D219791) - US14 (A227930)
CMS 22 (B212613) - US 22 (J227961)

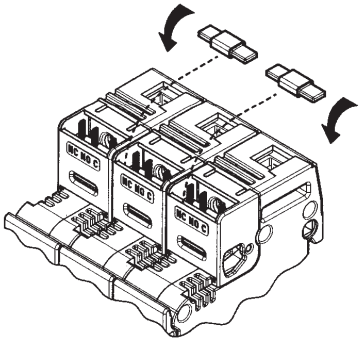
3 independent auxiliary microswitches



CMS 14 (3 x M218741)
CMS 22 (3 x E211581)
US 14 (3 x Y227928)
US 22 (3 x G227959)

NOTE: Do not fit with more than 3 microswitches

3 mechanically interconnected auxiliary microswitches



CMS 14 (3 x M218741+2 x J214138)
CMS 22 (3 x E211581+2 x J214138)
US 14 (3 x Y227928) + (2 x J214138)
US 22 (3 x G227959) + (2 x J214138)

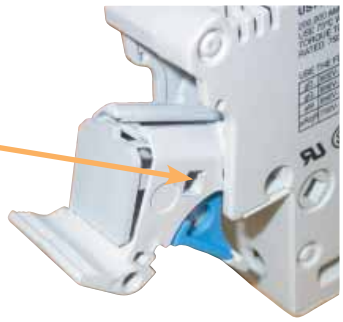
Supply wiring bars and terminals

Description	Cat. Number	Ref. Number	Maxi. acceptable RMS current (A)	Pack	Sur Condi
jumping bar for 4 (CMS 14/US 14) 3 poles	CMS14BB3F4	A210312	100	5	
jumping bar for 6 (CMS 14/US 14) 2 poles	CMS14BB2F6	Z210311	63	5	
jumping bar for 12 (CMS 14/US 14) 1 pole	CMS14BB1F12	Y210310	63	5	
jumping bar for 6 (CMS 22/US 22) 2 poles	CMS22BB2F6	C210314	150	5	
jumping bar for 12 (CMS 22/US 22) 1 pole	CMS22BB1F12	B210313	90	5	
Single-pole terminal, side	TBB1C	E210316	90	50	
2/3-pole terminal, side	TBB23C	G210318	90	50	
Single-pole terminal, axial	TBB1A	D210315	90	50	
2/3-pole terminal, axial	TBB23A	F210317	90	50	

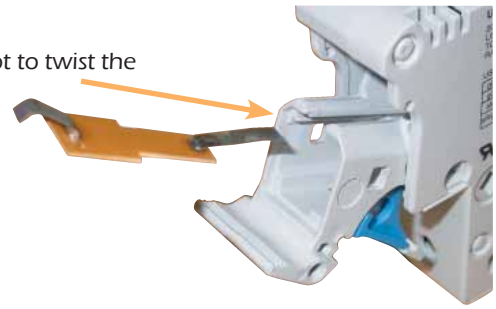
Indicator light kit for CMS 14 & 22

With the indicator light a blown fuse can be quickly located if power is still on

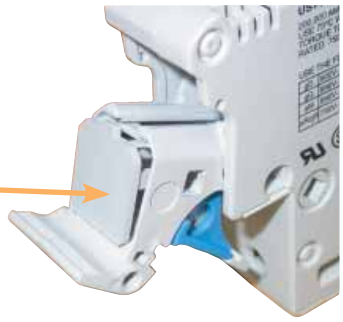
1 Carefully remove the cover with 2 screw drivers.



2 Slip the indicator light's top insert into the rails, being careful not to twist the contact tabs.



3 Put the cover back on



Assembly precautions in multipole assemblies

When fuse holders are side by side or very near each other (less than one module apart), they must be derated again, in addition to derating for temperature

Number of 17.5 mm modules	Derating factor
1-2-3	None = 1
4-5-6	0.8
7-8-9	0.7
> 10	0.6

MODULOSTAR®: CMS27 Fuse Disconnector ULTRASAFE™: US27 Fuse Holder

- Conforms to the standards: UL 512 AND UL 840
  CSA 22-2 N° 39
  EN 60947-1 & 3 (Class : AC20B)



- Rated insulation voltage Ui= 800VAC-DC
- Full protection against accidentally touching live parts.
  Protection degree : IP 2XB in accordance with the IEC standard 60529.
- High performance, conforming to European standards (Attachment to DIN rail - Modular fuse-disconnector).
- The US27 models have c UL us approval.

Designed for 27 x 60 mm (2 3/8 x 1 1/16 In.) ferrule fuses. (800V AC - DC, Ith = 150A)

New Improved Design:
Attractive design and colour

Designed for all 27 x 60 ferrule fuses
- UR curve (class UR)
- gR curve (class gR)
- Class J (UL)

The Only Fuse-Disconnector which Conforms to the Standard
The only fuse-disconnector on the market that respects the pre-isolation time defined by the standard (EN60947-1:t >20 ms), when it is equipped with a microswitch.

Ample Space for Wiring and Connection
Standard wiring with a choice of either :
- One 35 mm² cable (3AWG) flexible or rigid,
- Two 16 mm² flexible cables (6AWG),
- Wiring with B type connection plates for eye lugs (electronic market in the USA and Japan, global traction market).

Blown Fuse Indicator
The blown fuse indicator functions at between 100V and 800V AC and DC and is a standard part of the US 27 range. (Leak current less than 0.5mA)

UL Approval
The US 27 version has c UL us certification.
File Number E113357.
Fire smoke resistance classification : I3F2 in accordance with the standards NFF 16101 and NFF 16102 (US 27 version).

The Only Fuse-Holder With IP 20
- The only fuse-holder/fuse-disconnector on the market that offers certified IP 20B (open and closed)
- The only fuse-holder/fuse-disconnector on the market for this range of fuse (800V AC-DC 150A).

Identification of Terminals
The terminals are easy to identify due to the marker kit provided with the standard product.

Blown Fuse Micro-Switch, Safe Pre-Isolation and fuse presence characteristics for the US 27 version
Rated and minimum use current : In= 5A, Imini= 100 mA
Rated and minimum use voltage : Un= 250V, Umini= 20V
Approvals : UL

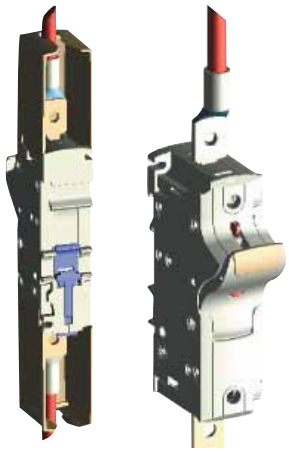


2.8 mm connection terminals

Electric Characteristics

Insulation voltage AC UI in V AC/DC	Impulse withstand voltage Uimp (kV)	Current rating I_N (A)	Fuse current rating I_N (A)	Maxi fuse operating current (A)					Recommended copper wire gauge	
				660V URGD	60gD	660V URQ URS CC	660V-800V gRB	1000V URB	AWG	mm²
800 (CEI) / (US)	8	150	8	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	10	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	12	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	16	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	20	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	25	-	WITHOUT DERATING			-	12	4
800 (CEI) / (US)	8	150	32	32		32	32	29	10	6
800 (CEI) / (US)	8	150	40	40		40	40	36	8	10
800 (CEI) / (US)	8	150	50	50		45	50	42	8	10
800 (CEI) / (US)	8	150	63-65	55	65	55	63	50	6	16
800 (CEI) / (US)	8	150	80	61	80	60	80	60	6	16
800 (CEI) / (US)	8	150	100	75	100	72	96	72	4	25
800 (CEI) / (US)	8	150	110	-		-	102	-	3	30
800 (CEI) / (US)	8	150	125	91		90	-	90	3	35
800 (CEI) / (US)	8	150	160	112		110	-	109	3	35
800 (CEI) / (US)	8	150	170	-		-	-	112	3	35
800 (CEI) / (US)	8	150	200	130		130	-	-	1	50*
800 (CEI) / (US)	8	150	250	138		138	-	-	1	50*

** Busbar and ring lug connection*



Versatile Methods of Mounting

Option of mounting the fuse-holder with phase and neutral poles, as well as micro-switches, due to the connection accessories.

Several Kinds of Attachment

With M4 screws,
- 35 mm or 75 mm symmetric DIN rail*,
- Asymmetric DIN rail with adapter (Ref. Q098500).

** Need of 15 mm distance between DIN rail and panel*

Possibility of Using Connection Plates

For a cable with a diameter greater than either a 35 mm² rigid or flexible cable, or two 16 mm² flexible cables, the connection can be made using ring lug.
Protection covers are provided with this series to safeguard against accidental contact. Connection to connection plates, for cables equipped with ring or fork-type lugs.

Climatic Conditions of Use

This range of products has been designed for use in temperate, tropical and equatorial climates, provided that the following temperature/humidity conditions are not exceeded:

Maximum temperature °C	20	40	50
Maximum relative humidity %	95	80	50

Resistance to Vibrations

Test with sinusoidal vibrations, scanning the three main axes of the holder.
Spectrum :
- 1st segment (2-16Hz) constant displacement
  χ = 5 mm peak
- 2nd segment (16-250Hz) constant acceleration
  γ = 5g peak

Exponential scanning speed : 1 octave per minute.
Duration : 2 hours per axis.

Resistance to Vibrations

27x60 Fuses used Ranges	U_N	I_N	Applications
(6,621 CP URGD 27.60 ...)	660VAC	63 to 250A	Class aR - Protection of semiconductor equipment,
(6,621 CP URQ, URS 27.60...)	660VAC	32 to 250A	e.g. Soft starters, static relays, or regulators.
(821 CP gRB 27.60...)	800VAC	8 to 110A	Class gR - Protection of cables, semiconductor equipment and AC instrument circuits.
(1021 CP URB 27.60...)	1000VAC	25 to 170A	Class aR - Protection of semiconductor equipment, e.g. Soft starters, static relays, regulators.
(CC 4,421 CP gLB 27.60...)	440VDC	125 to 160A	Protection of DC instrument circuits, traction auxiliary circuits,
(CC 6,621 CP gRB 27.60...)	660VDC	0.8 to 125A	DC fed converters.

Range Without Microswitch

Number of poles	Connections	Cat.Number	Ref. Number	Weight (g)	Pack	Sur Condi
1	By screw, U bolt or connector	**US271I**	J226420C	285	3	
1	By screw, U bolt or connector	**CMS271**	R210580C	290	3	
1	Ring lug connection	**US271RING**	B223515C	340	3	
1 + N	By screw, U bolt or connector	**US271NI**	K226421A	580	1	
1 + N	By screw, U bolt or connector	**CMS271N**	S210581A	570	1	
1 + N	Ring lug connection	**US271NIRING**	E223518A	690	1	
N	By screw, U bolt or connector	**CMS27N**	B210152C	285	3	
N	Ring lug connection	**US27NIRING**	F223519C	340	3	
2	By screw, U bolt or connector	**US272I**	L226422A	580	1	
2	By screw, U bolt or connector	**CMS272**	T210582A	570	1	
2	Ring lug connection	**US272IRING**	C223516A	690	1	
3	By screw, U bolt or connector	**US273I**	M226423A	855	1	
3	By screw, U bolt or connector	**CMS273**	V210583A	870	1	
3	Ring lug connection	**US273IRING**	D223517A	1030	1	
3 + N	By screw, U bolt or connector	**US273NI**	N226424A	1200	1	
3 + N	By screw, U bolt or connector	**CMS273N**	W210584A	1250	1	
Assembly kit		**US27PAK**	H227615	10		
Microswitch*		**US27W1**	E227612	1		

** for US27 version only.*

The ring lug connection, four-pole model does not exist in the configuration (3 + neutral).
The blown fuse indicators are available with the standard US 27 version.
The recognized US 27 equipment uses UL 94 VO plastic materials. The US27range is pre-equipped with blown fuse microswitch and safe pre-isolation accessories, to transform the products into fuse-disconnectors.

Range Without Microswitch

Number of poles	Connections	Cat.Number	Ref. Number	Nb of Micro.	Weight (g)	Pack	Sur Condi
1	By screw, U bolt or connector	**US271MI**	R227600C	1	295	3	
1	Ring lug connection	**US271MIRING**	Z227607A	1	355	1	
2	By screw, U bolt or connector	**US272M2I**	T227602A	2	600	1	
2	Ring lug connection	**US272M2IRING**	B227609A	2	710	1	

Range of Accessories

Micro-switches and safe pre-isolation

Number of poles	Catalog Number	Reference number	Packaging	Sur Condi.
1	**US27W1**	E227612	1	

Note : 2 one-pole microswitches need to be purchased for a two-pole assembly (Ph+N or two-phase).

Pole Assembly Kit

Number of poles	Catalog Number	Reference number	Packaging	Sur Condi.
For 2, 3 and 4 poles	**US27PAK**	H227615	1	

The assembly kit is made up of staples to assemble the poles and pins for the handles.

Neutral Tubes

The neutral poles come with a neutral tube, which is sealed with plastic so that it cannot be removed.

35mm Mounting Rail

Type	Catalog Number	Reference number	Packaging	Sur Condi.
Symmetric		J213172	40 lengths of 2 m	
Symmetric drilled		C213672	40 lengths of 2 m	
Symmetric reinforced		R215203	20 lengths of 2 m	
Adaptor for asymmetric DIN rail	ADAP-RASST	Q098500	50	



Symmetric

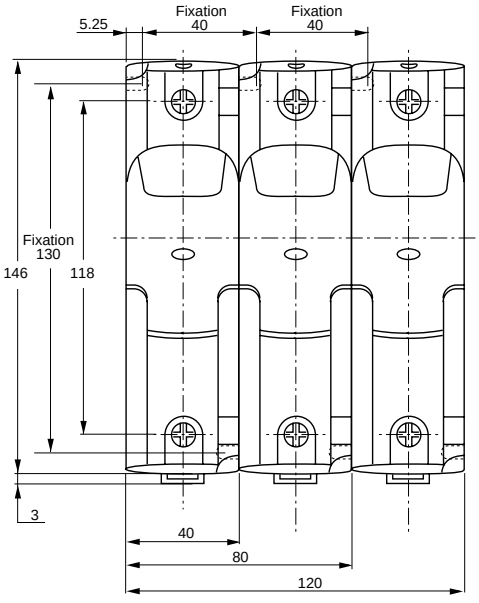


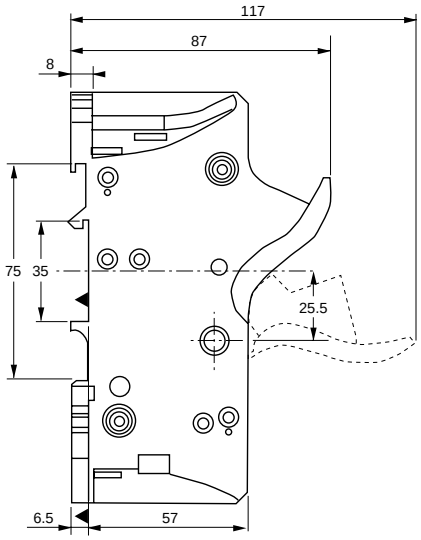
Symmetric drilled



Symmetric reinforced

Dimensions US27





Connection by fixed terminal screw-clamps for wires. Maximum section:

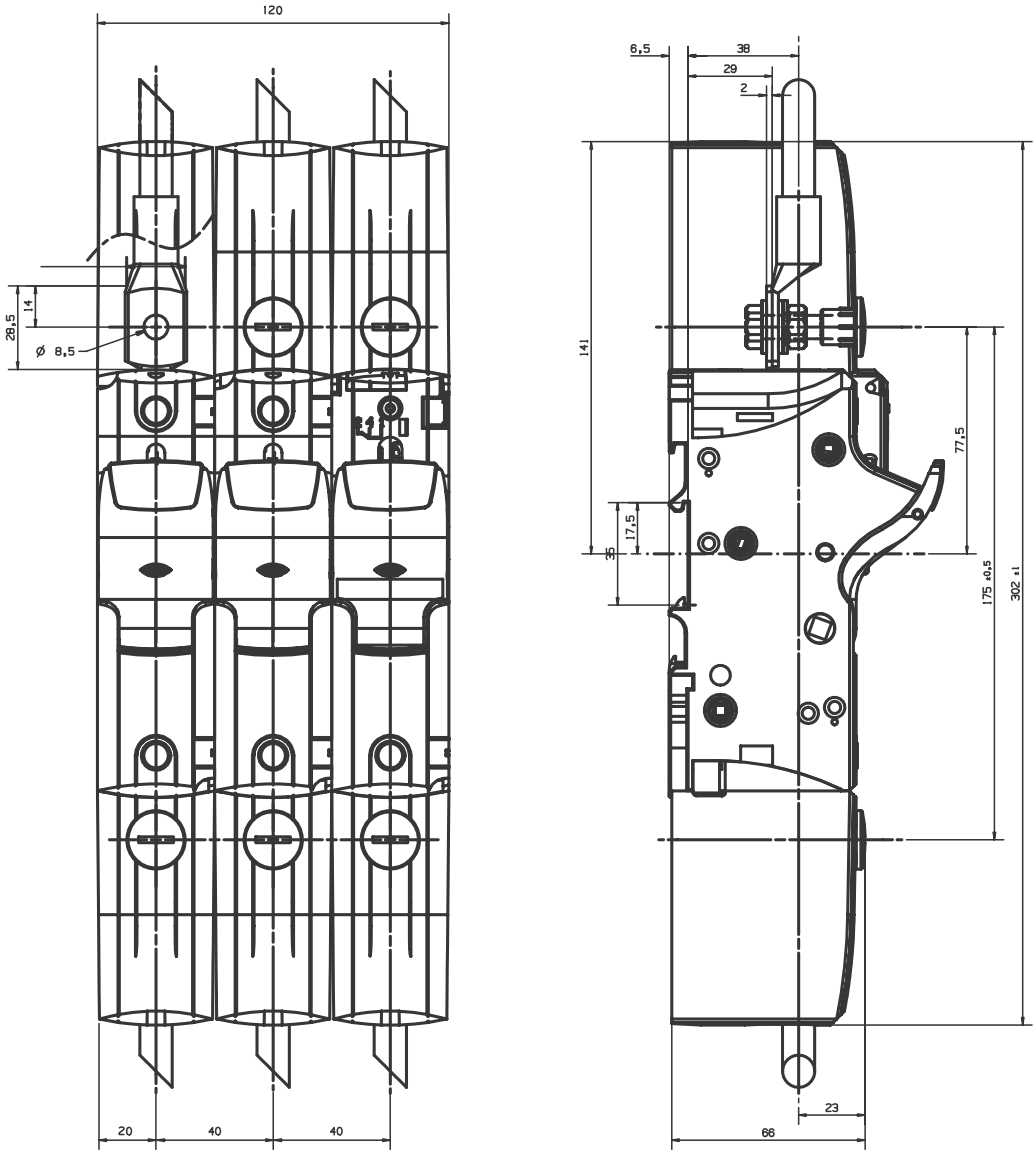
- One conductor, rigid or multistrand : Maximum 35 mm² (3 AWG)
- 2 conductors, multistrand : 16 mm² (6 AWG) or rigid with tightening torque : 2.8 - 3.5 Nm (30 lbs.in)
- Ferraz Shawmut recommands to use screwdrivers PZ 3 or Flat 8 x 1.2 mm (maximum diameter 8 mm).
- Ring lug connection.

Mounting:

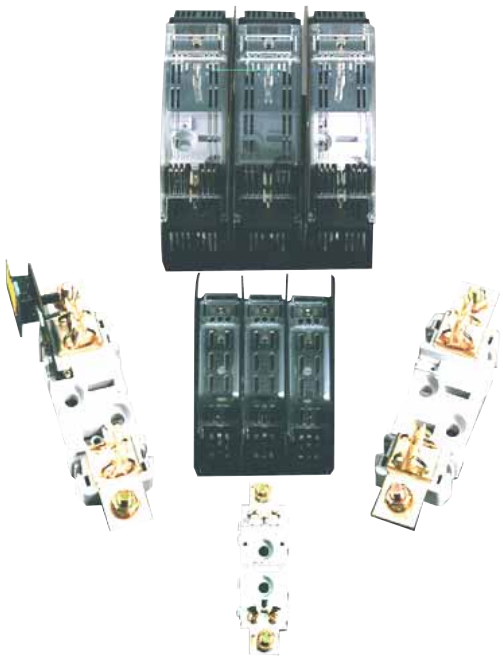
- Simple snap mounting on 35 mm symmetric DIN rail (standard EN 50022) and 75 mm with 2 locking positions*.
- Directly onto the board with M4 screws and tightening torque from 1 to 1.2 Nm (11 lbs.in)
- On 35 mm asymmetric DIN rail with adaptor (Ref. Q098500)

** Need of 15 mm distance between DIN rail and panel*

Dimensions US27
for ring lugs connections



IEC General Purpose Fuses
NH Fuses
Plastic Bases



00-EP/TP

NH fuse bases are designed for fuse-links with rated voltages up to 690 VAC and 440 VDC. They are in compliance with IEC 60269, DIN VDE 0636, part 21, 201 and DIN 43620 (dimensions).

NH fuse bases are available for delivery in single-pole and three-pole designs and can be closely mounted in parallel rows. Each three-pole base is supplied with two phase-partition walls. NH-ISO plug-on covers which clip onto the contact springs can also be supplied for these bases.

Ceramic fuse bases in sizes 00 to 3 are provided with a single-part steatite base, while size 4 has a metal baseplate with 2 ceramic bases. Plastic fuse bases have a single-part plastic base.

The stable silver-plated contact springs are made of electrolytic copper and formed from one piece. Separate springing is provided by highly resilient captive steel springs, making the contact invulnerable to high thermal stress.

Size 4 NH fuse bases are designed for size 4 fuse-links with 8 mm contact blades. Size 4a fuse bases are designed for size 4a fuse-links with 6 mm contact blades.

690V Polyester fuse bases for NH fuse-links

- Polyester insulating bases
- Silver-plated contacts
- High-pressure spring contacts (see picture)
- Screw or rail mount

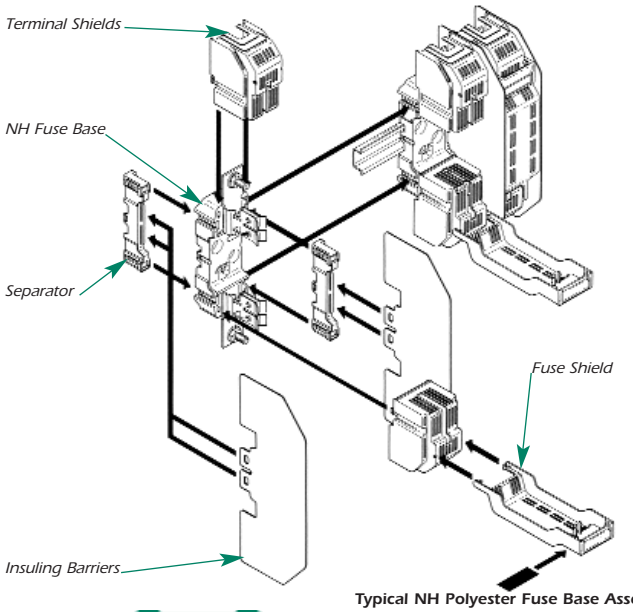


Type EP



Type PP

Connection Detail



Typical NH Polyester Fuse Base Assembly - Exploded View

IEC General Purpose Fuses
NH Fuses
Plastic Bases

00-EP/TP

Characteristics

- Thermoplastic base highly temperature resistant and self-extinguishable
- Silver-plated contacts with high-contact pressure springs
- Multipolar bases possible by direct linkage in 00 size and with separator accessory in sizes 0, 1, 2 and 3
- Variety of options for protecting active parts through use of accessories: separating plates, separator, cover shields and fuse cover
- Dual cable-connection system on 00 size: by screw or clamp
- Connecting cable: 50 mm
- Fixation on rail or by screw

Type 00-EP* – Fuse bases for NH-00 Fuse-links - Power acceptance: 12W

Poles	Previous Ref.				Ref. Number				Cat. Number				Pack.
	Screw Connector		Clamp Connector		Screw Connector		Clamp Connector		Screw Connector		Clamp Connector		
	Screw MT.	Rail MT.	Screw MT.	Rail MT.	Screw MT.	Rail MT.	Screw MT.	Rail MT.	Screw MT.	Rail MT.	Screw MT.	Rail MT.	
1	41002	42002	41102	42102	F215170	R216192	T219805	F200795	NH00BPLSC1PT0	NH00BPLRL1PT0	NH00BPLSC1PT2	NH00BPLRL1PT2	3
2	41012	42012	41112	42112	A217212	F218758	D200793	T211594	BB002EP	EP002R	EPB002	EPB002R	2
3	41014	42014	41114	42114	W229122	V229121	W201338	C212108	NH00BPLSC3PT0	NH00BPLRL3PT0	EPB003	EPB003R	1
4	41019	42019	41119	42119	S219275	Z223007	R211592	M215682	EP004	EP004R	EPB004	EPB004R	1

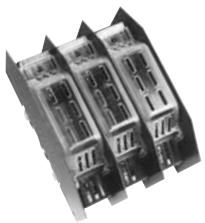
** EP bases have square contacts.*



F215170



W229122

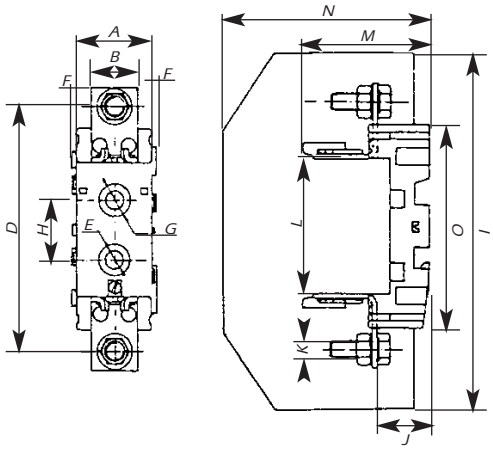


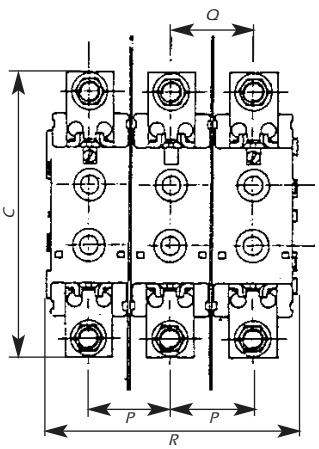
T229120

Type 00-TP - IP20 Fuse bases

Poles	Previous Ref.				Ref. Number				Cat. Number				Pack.
	Screw Connector		Clamp Connector		Screw Connector		Clamp Connector		Screw Connector		Clamp Connector		
	Screw MT.	Rail MT.	Screw MT.	Rail MT.	Screw MT.	Rail MT.	Screw MT.	Rail MT.	Screw MT.	Rail MT.	Screw MT.	Rail MT.	
1	41003	42003	41103	42103	M216694	S218240	X223005	D211074					3
3	41015	42015	41115	42115	T229120	S229119	B211072	J215173					1

Dimensions





	NH 00-E
A	32
B	20
C	117
D	100
E	8
F	2
G	14
H	25
I	145
J	21,5
K	8
L	56
M	52
N	85
O	84
P	34
Q	1
R	104

Connection



SCREW CONNECTOR



CLAMP CONNECTOR

IEC General Purpose Fuses
NH Fuses
Plastic Bases

0-EP - 0 to 3 PP

Type 0-EP* – Fuse Bases for NH-0 Fuse-links - Power acceptance: 25W


S216193

Poles	Previous Ref. Mounting Style		Ref. Num Mounting Style		Cat.Num Mounting Style		Standard Pack
	Screw	Din Rail	Screw	Din Rail	Screw	Din Rail	
1	41202	42202	B213142	S216193	NH0BPLSC1PT0	EP01R	3
2	41212	42212	C214661	P216696	EP02	EP02R	2
3	41214	42214	G215171	C217214	EP03	EP03R	1
4	41219	42219	Q216191	J217726	EP04	EP04R	1

** EP bases have square contacts. PP bases have clips contacts.*

Type 0-PP – Fuse Bases for NH-0 Fuse-links

1	41302	42302	N216695	T218241	PP01	PP01R	3
2	41312	42312	B217213	G218759	PP02	PP02R	2
3	41314	42314	G217724	W219278	PP03	PP03R	1
4	41319	42319	R218239	H222486	PP04	PP04R	1

Type 1-PP – Fuse Bases for NH-1 Fuse-links - Power acceptance: 32W


F222484

1	41402	42402	E218757	A223008	NH1BPLSC1PT0	PP11R	3
2	41412	42412	F222484	G200796	PP12	PP12R	2
3	41414	42414	Y223006	Y201340	PP13	PP13R	1
4	41419	42419	X201339	H201855	PP14	PP14R	1

Type 2-PP – Fuse Bases for NH-2 Fuse-links - Power acceptance: 45W


B212107

1	41502	42502	F201853	E211075	PP21	PP21R	3
2	41512	42512	S211593	V211595	PP22	PP22R	2
3	41514	42514	B212107	D212109	PP23	PP23R	1
4	41519	42519	C213143	R212627	PP24	PP24R	1

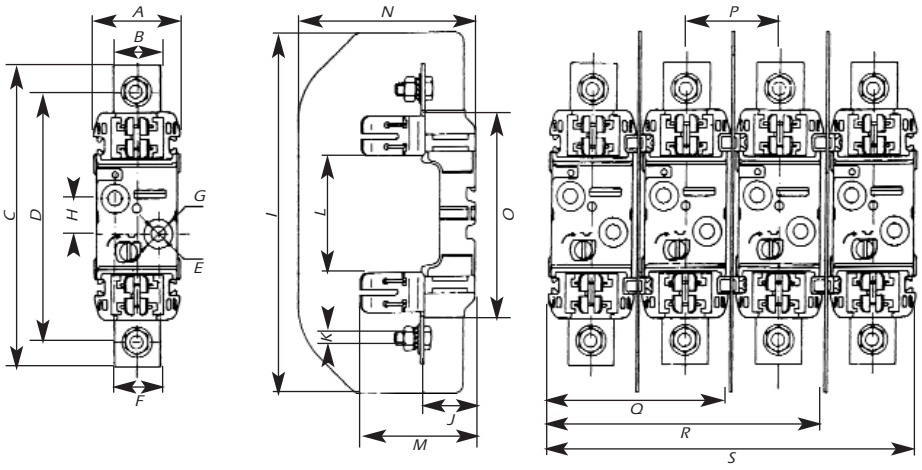
Type 3-PP – Fuse Bases for NH-3 Fuse-links - Power acceptance: 60W


B212107

1	41602	42602	W213643	X213644	NH3BPLSC1PT0	PP31R	3
2	41612	42612	D214662	B214154	PP32	PP32R	2
3	41614	42614	H215172	F214664	PP33	PP33R	1
4	41619	42619	L215681	K215174	PP34	PP34R	1

For NH-4 Fuse Bases, see "5$" section

Dimensions of Polyester Fuse - Bases for NH Fuse-Links



	O-EP	O-PP	1-PP	2-PP	3-PP
A	46	46	60	60	60
B	20	25	32	35	40
C	168	168	209	225	241
D	150.5	150.5	176	201	210
E	7.5	7.5	10.5	10.5	10.5
F	-	-	30	30	30
G	14.5	14.5	20.5	20.5	20.5
H	25	25	25	25	25
I	185	185	250	250	270
J	29	29	35	35	35
K	M8	M8	M10	M10	M12
L	74	75	81	81	81
M	59	61	71	89	103
N	95	95	122.5	122.5	142.5
O	122	122	146	146	146
P	48.5	48.5	65.5	65.5	81.5
Q	94	94	125.5	125.5	141.5
R	142	142	191	191	223
S	190	190	256.5	256.5	304.5

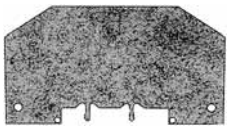
IEC General Purpose Fuses
NH Fuses
Plastic Bases

Sizes 00 to 3

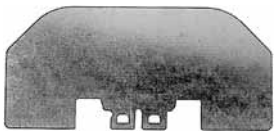
Insulating Barriers for Polyester NH Fuse Bases

Size	Previous Ref.	Reference Number	Catalog Number	Pack
00	44502	W212654	NH00WALL	2
0	44504	Z213669	NH0WALL	2
1-2	44510	J214690	NH1NH2WALL	2
3	44512	Q215708	NH3WALL	2
00* 3 poles	84392	B233865		2

** ref number V229121 and W229122 only*



W212654



J214690

Separators

0	44604	V216724	NH0CONN	2
1-2	44610	N217753	NH1NH2CONN	2
3	44612	M218787	NH3CONN	2



N217753

Fuse Shields

00	44802	G213170	NH00LUGCV	3
00*		B233566		3
0	44804	F214181		3
0*		D233568		3
1-2	44810	K214691	NH1NH2LUGCV	3
1-2*		E233569		3
3	44812	R215709	NH3LUGCV	3
3*		F233570		3

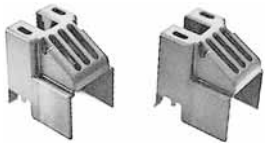
** for use of microswitch*



G213170

Terminal Shields

00	44702	M222513	NH00TERMCV	6
0	44704	K200822	NH0TERMCV	6
1	44708	L201881	NH1TERMCV	6
2	44710	Y211621	NH2TERMCV	6
3	44712	X212655	NH3TERMCV	6



M222513

Complete references for IP2X Fuse Bases (no microswitch possible)
Fixation on rail

Size	Pole	Ref. Num.	Cat. Num	Pack
00	1	S218240		3
	3	S229119		1
0	1	G226717	EP01RIP20	3
	3	J226719	EP03RIP20	1
1	1	P226724	PP11RIP20	3
	3	Q226725	PP13RIP20	1

Size	Pole	Ref. Num.	Cat. Num	Pack
2	1	R226726	PP21FSR	3
	3	S226727	PP23FSR	1
3	1	T226728	PP31RIP20	3
	3	V226729	PP33RIP20	1

Fixation by screw

Size	Pole	Ref. Num.	Cat. Num	Pack
00	1	M216694		3
	3	T229120		1
0	1	X226708		3
	3	Z226710		1
1	1	V219806	PP1IP20	3
	3	B226712		1

Size	Pole	Ref. Num.	Cat. Num	Pack
2	1	C226713	PP24FS	3
	3	D226714		1
3	1	E226715		3
	3	F226716		1

IEC General Purpose Fuses
NH Fuses
Plastic Bases

Sizes 00 to 3

One Cable – Terminal for NH Bases

Base Size	Cable Size(mm) Max.	Cable Size(mm) Min.	Previous Reference	Ref. Number	Catalog Number	Standard Pack
00	50	6	45421	Q217755		60
00-0	95	10	45423	A218270		50
1	150	16	45425	N218788		30
2-3	240	50	45427	A219305		15



N218788

Two Cables – Terminal for NH Bases

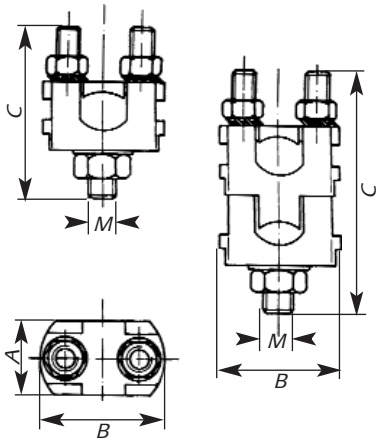
Base Size	Cable1 Size(mm) Max.	Cable1 Size(mm) Min.	Cable1 Size(mm) Max.	Cable1 Size(mm) Min.	Previous Reference	Ref. Number	Catalog Number	Stand. Pack
00	50	6	50	6	45431	B219835		60
00-0	95	10	95	10	45433	P222515		30
1	150	25	150	16	45435	F223036		20
2-3	240	95	240	50	45437	B201366		5



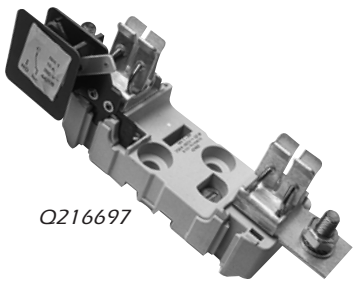
F223036

Dimensions of Terminals

Previous Reference	A	B	C	M
45421	18	26	34	6
45423	24	35	52	8
45425	26	41	58	10
45427	36	53	68	12
45431	18	26	39	6
45433	24	35	82	8
45435	26	41	84	10
45437	36	53	98	12



IEC General Purpose Fuses
NH Fuses
Plastic Bases



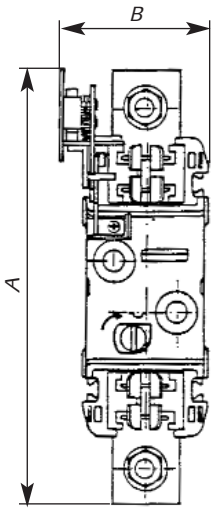
Q216697

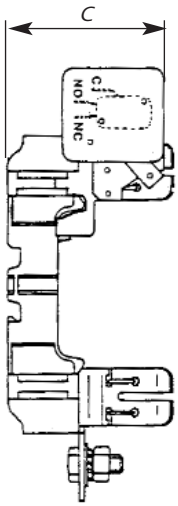
Sizes 00 to 3

Fuse bases 690V for HRC fuse-links NH with striker

- For fuse-links with striker
- Rail or screw fixing

Size	In (A)	Prev. Ref.	Cat. Number	Ref. Number	Packing
0	160	42906		T216194	1
1	250	42908		Q216697	1
2	400	42910		D217215	1
3	630	42912		H218760	1



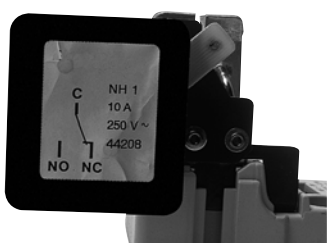


	NH-0	NH-1	NH-2	NH-3
A	192	213	222	233
B	64	93	73	80
C	66	77	82	83

Microswitch (sold separately)

- Microswitch for NH fuse bases in polyester material (screw or rail fixing).
- Microswitch operates when:
  - fuse melts
  - no fuse-link
- Operating voltage: 250 V~
- Rated current: 10 A.
- Terminal size: 6.3 x 0.8 mm.

If you are interested in ordering microswitch and NH fuse base separately: T218241 + X219279 same size as T216194 (size 0)

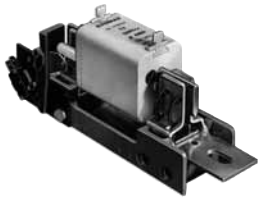


Size	In (A)	Prev. Ref.	Cat. Number	Ref. Number	Packing
0	160	44206		X219279	1
1	250	44208		Y219809	1
2	400	44210		J222487	1
3	630	44212		B223009	1

IEC General Purpose Fuses
NH Fuses
Plastic Bases

5S - 00 to 4

5S I 2



5SI 0



5S III 0



- SHOCK-PROOF ASSEMBLY FOR HIGH THERMAL AND MECHANICAL WITHSTAND
- MOUNTING ON BASE WITH OR WITHOUT MICROSWITCH
- SELF-EXTINGUISHABLE FIBERGLASS POLYESTER BASE, SILVER-PLATED COPPER CLIPS WITH STAINLESS STEEL SPRINGS
- COMPLIANT WITH IEC 60269.2.1 AND DIN 43620 STANDARDS

Main Characteristics

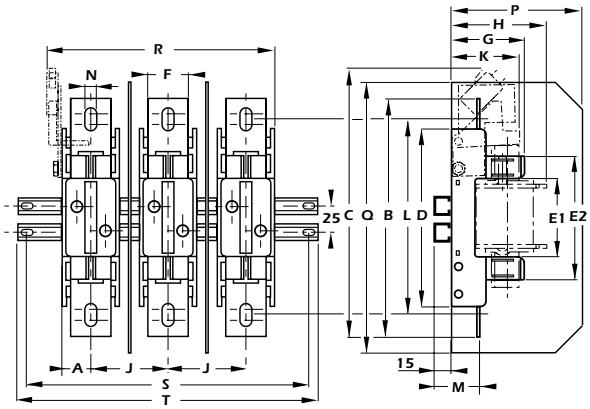
Type and size	Voltage rating UN(V)	Impulse withstand voltage Uimp (kV)	Fuse current rating I_N(A)	Maximum fuse operating current (A)					Recommended copper wire size (mm²)	Fire and fumes class NF F 16 - 101 and 102 and UL
				gG	aM	URGB	690V gRB	690V URB		
			125						50	
5S I 0			160						70	
5S II 0			200				200		95	
5S III 0			250	160	160		240		120	
5S IV 0			315				285		185	L 94 VO
			350				315			
			400					360	240	
			280						150	
			315						185	I3-F3
5S I 1			350						185	
5S II 1			400	315	315				240	
5S III 1			450				450		2x30x5	
5S IV 1			500				475		2x30x5	
			550				495		2x40x5	
			630				570		2x40x5	
			450							
5S I 2	690		500						2x30x5	
5S II 2			550				550		2x40x5	
5S III 2			630	500	500		600		2x40x5	
5S IV 2			700				665		2x50x5	
			800					720	2x50x5	UL 94
			900					810	2x60x5	VO
			500						2x30x5	
			550						2x40x5	
			630						2x40x5	
5S I 3			700						2x50x5	
5S II 3			800	630	630		800		2x50x5	
5S III 3			900				855		2x60x5	I2-F1
5S IV 3			1000				950		2x60x5	
			1100					990		
			1250					1070	2x80x5	
5S I 4			1250	1250	1250				2x80x5	

IEC General Purpose Fuses
NH Fuses
Plastic Bases

5S - 00 to 4

Multipolar Fuse Holders for Blade-style Fuses Sizes 0 -1 - 2 - 3

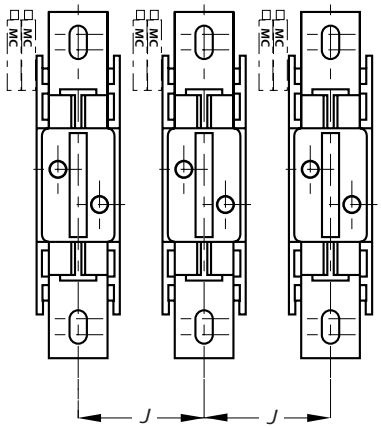
With microswitch



Size	A	B	C	D	E_1	E_2	F	G	H	J	K	L	M	N	P	Q	R			S			T		
																	II	III	IV	II	III	IV	II	III	IV
0	23.5	177	206	133	77	121	25	77	87.5	61.5	85	150	40.5	8.5	90	190	121.5	183	244.5	137	202	252	158	223	273
1	29.5	207	220	181	81.5	135.5	32	81.5	104.5	73.5	85	175	52	11	110	220	145.5	219	292.5	165	242	308	186	263	329
2	29.5	244	256	181	83	134	40	78	108	77.5	80	200	42	11	120	270	149.5	227	304.5	165	242	326	186	263	347
3	29.5	244	256	181	83	134	40	83	117	85	80	210	46.5	11	120	270	157	242	327	179	264	342	200	285	363

Multipolar configurations with one-pole Fuse Holder assembly

With microswitch - Without partition



Size	J (mm)
00	-
0	61.5
1	73.5
2	73.5
3	85
4	120

IEC General Purpose Fuses
NH Fuses
Plastic Bases

5S - 00 to 4

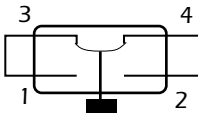
Accessories



Accessory type	Size	Cat. Num.	Ref. Num.	Weight (g)	Packaging
simple microswitch	0	MC 2-5 T0-1	Q 091462	64	1
	1	MC 2-5 T0-1	Q 091462	64	1
	2	MC 2-5 T2-3	R 091463	64	1
	3	MC 2-5 T2-3	R 091463	64	1
twin microswitch	0	MC 2-9 T0-1	S 091464	70	1
	1	MC 2-9 T0-1	S 091464	70	1
	2	MC 2-9 T2-3	T 091465	73	1
	3	MC 2-9 T2-3	T 091465	73	1
isolating partition	0	CI 0	M 091344	37	2
	1	CI 1	N 091345	110	2
	2	CI 2+Ent.	P 091346	83	2
	3	CI 3+Ent.	Q 091347	83	2
pull-out handle	0	PMP	E 097708	160	1
	1				
	2				
	3				

Microswitches

- Microswitches are designed to fit one-pole fuse-holders from size 0 to 4 enabling:
  - blown-fuse indication
  - Fuse presence indication
- Remote-sensing microswitches are single- or twin-reversing models with electrical features 220 V - 10 A - cos φ = 0.3.
- For size 0 to 3 fuse holders, microswitches delivered separately and side-mounted by means of an insert and special screw.
- For size 4 fuse holders, microswitches factory assembled.
- For multipolar fuse holders, a single microswitch is mounted for entire assembly.



With hand-reset style microswitch

#1 and 3 terminals must always be connected

Mounting of screw and insert



Isolating Partitions

- Isolating partitions fit fuse holders sizes 0 - 1 - 2 - 3. No partition is available for size 4.
- Fitting of partitions:
  - by direct snap-mounting for sizes 0 and 1 fuse holders
  - by means of spacers for sizes 2 and 3
- For multipolar assemblies, isolating partitions are mounted between each pole.



Pull-out Handle

For removing fuses, a pull-out handle snaps on the fuse lugs designed for this operation.



IEC General Purpose Fuses
NH Fuses
Plastic Bases

5S - 00 to 4

Fuse holders with indication

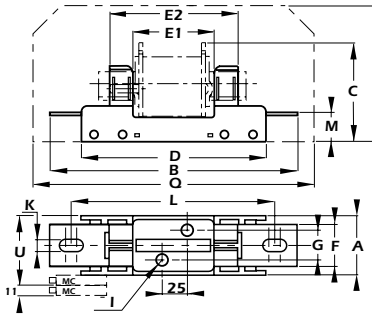
Size and number of poles		Designation	Reference Number	Catalog Number	Weight (g)	Packaging
00	1					3
0	2	5S II 0 MCN	H 091363	5S02MCN	720	1
	3	5S III 0 MCN	N 091368	5S03MCN	975	1
	4	5S IV 0 MCN	T 091373	5S04MCN	1230	1
1	2	5S II 1 MCN	J 091364	5SII1MCN	1370	1
	3	5S III 1 MCN	P 091369	5SIII1MCN	2000	1
	4	5S IV 1 MCN	V 091374	5SIV1MCN	2630	1
2	2	5S II 2 MCN	K 091365	5SII2MCN	2170	1
	3	5S III 2 MCN	Q 091370	5SIII2MCN	2900	1
	4	5S IV 2 MCN	W 091375	5SIV2MCN	3630	1
3	2	5S II 3 MCN	L 091366		3030	1
	3	5S III 3 MCN	R 091371		4170	1
	4	5S IV 3 MCN	X 091376		5310	1
4	1	5S I 4+MC 2-5 T 4	G 091362	5SI4+MC2-5T4	2590	3

** Models supplied in kit form: fuse holder + microswitch*

Fuse holders without indication

Size and number of poles		Designation	Reference Number	Catalog Number	Weight (g)	Packaging
4	1	5S I 4	L091343		2500	1

One-pole Fuse Holders for Blade-style fuses Sizes 00 - 0 -1 - 2 - 3

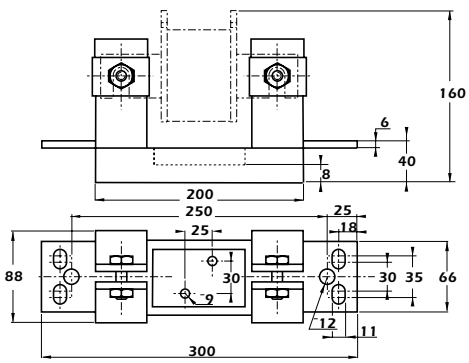


Elastic clamping

Size	A	B	C	D	E_1	E_2	F	G	Ø1	J_1	J_2	J_3	K	L	M	P	Q	U
00	38	128	82	85	58	-	20	0	7.5	40	-	-	9	105	25.5	-	-	-
0	48	177	87.5	133	77	121	25	0	7	50	48	61.5	8.5	150	25.5	95	190	64
1	58.5	207	105	135	81.5	135.5	32	30	9	62	60	73.5	11	175	37	110	220	76
2	58.5	244	108	181	83	134	40	30	9	70	68	73.5	11	200	27	120	270	76
3	58.5	244	117	181	83	134	40	30	9	85	63	85	11	210	31.5	120	270	76

One-pole Fuse Holders for Blade-style fuses Sizes 4

Forced clamping





IEC General Purpose Fuses
NH Fuses
Ceramic Bases

Sizes 00 to 4

Characteristics

- Insulating base of ceramic material
- Silver-plated contacts with high-contact pressure springs
- For size 4, pressure is assured by a special nut.

Size 1 fuse bases accept fuse sizes 0 and 1.
Size 2 fuse bases accept fuses size 1 and 2.
Size 3 fuse bases accept fuses size 1, 2 and 3.
Type EP fuse bases with square contacts.
Type PP fuse bases with clip contacts.

690V Ceramic fuse bases for NH Fuse-links

- Ceramic insulating bases
- Silver plated contacts
- High spring contact pressure
- Screw mounting
- Standards : DIN43620, IEC269-2-1, NFC63210, 63211, 60200, VDE DIN0636

Single-Pole Fuse Bases

Size	Rated Current (A)	Prev. Ref.	Ref. Number	Catalog Number	Standard Pack
00-E	160	40002	Z217211	E001	12
00-EB	160	40003	E217722	EB001	12
0-E	160	40004	P218237	E01	4
0-P	160	40006	C218755	P01	4
1-P	250	40008	R219274	P11	3
2-P	400	40010	S219804		3
3-P	630	40012	D222482	P31	3
4-P	1250	40014	W223004	NH4BCESC1PT0	1



Z217211



C218755

Three-Pole Fuse Bases

Size	Rated Current (A)	Prev. Ref.	Ref. Number	Catalog Number	Standard Pack
00-E	160	40502	D201851	E003	3
00-EB	160	40503	A211071	BB003EB	3
0-E	160	40504	Q211591	E03	1
0-P	160	40506	Z212105	P03	1
1-P	250	40508	T213641	P13	1
2-P	400	40510	Y214151		1
3-P	630	40512	B214660	P33	1

Notes:
Size 1 fuse base will accept size 0 fuses.
Size 2 fuse base will accept size 1 fuses.
Size 3 fuse base will accept size 1 & 2 fuses.
Size 4 has a special nut to assure contact pressure.
Types E have square contacts
Types P have pincer contacts
Type EB have cable connection by clamp.



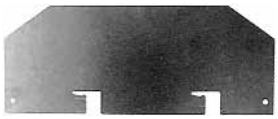
Y214151

IEC General Purpose Fuses
NH Fuses
Ceramic Bases

Sizes 00 to 4

Insulating Barriers for Ceramic NH Fuse Bases

Size	Rated Current(A)	Prev. Ref.	Ref. Number	Catalog Number	Standard Pack
00	100	45102	A201365		10
0	160	45104	M201882		10
1-2	400	45110	K211103		4
3	630	45112	Z211622		2
00	100	45202	G214182		10
0	160	45204	L214692		10
1-2	400	45210	Q215202		4
3	630	45212	S215710		2
4	1250	45214	Y216221		2

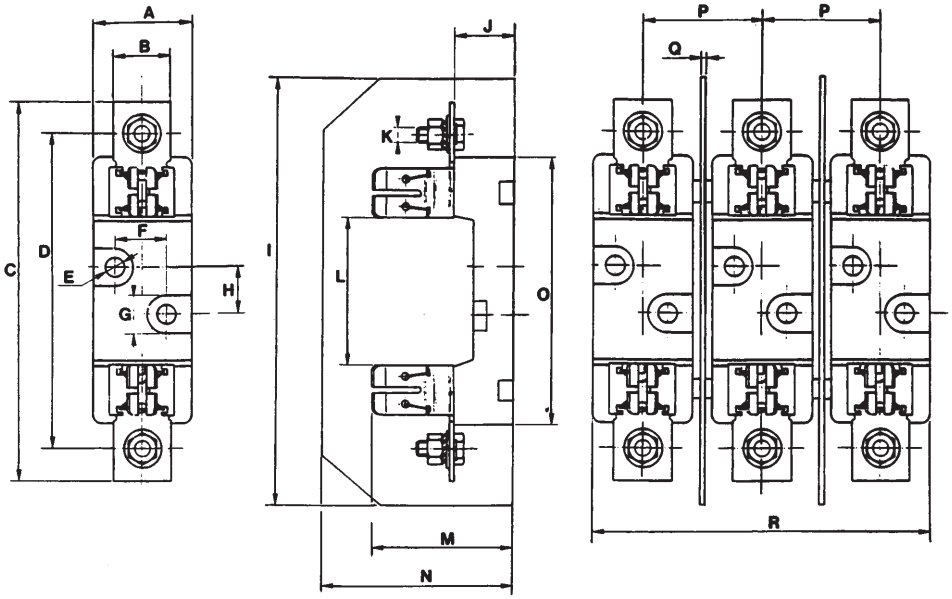


FRICTION FIT
K211103



TAB FASTENED
S215710

Dimensions of Ceramic Fuse Bases for NH Fuse-links



	00-E, EB	0-E	0-P	1-P	2-P	3-P	4-P
A	33	32	32	55	55	55	80
B	20	20	25	32	35	40	45
C	118.5	269	166	210	227	241	312
D	100	151	150	175	200	210	262
E	8	8.5	8.5	11	11	11	11
F	-	-	-	30	30	30	45
G	14.5	14	14	22	22	22	-
H	25	25	25	25	25	25	30
I	145	185	185	250	250	250	-
J	21.5	29	29	35	35	35	45
K	8	8	8	10	10	12	16
L	55	72	74	84	84	84	111
M	52.5	60	60	71	89	103	145
N	80	85	85	100	100	127	-
O	84	120	120	148	148	148	192
P	34	47	47	62	69	82	-
Q	1	2	2	2	2	2	-
R	101	126	126	177	190	213	-

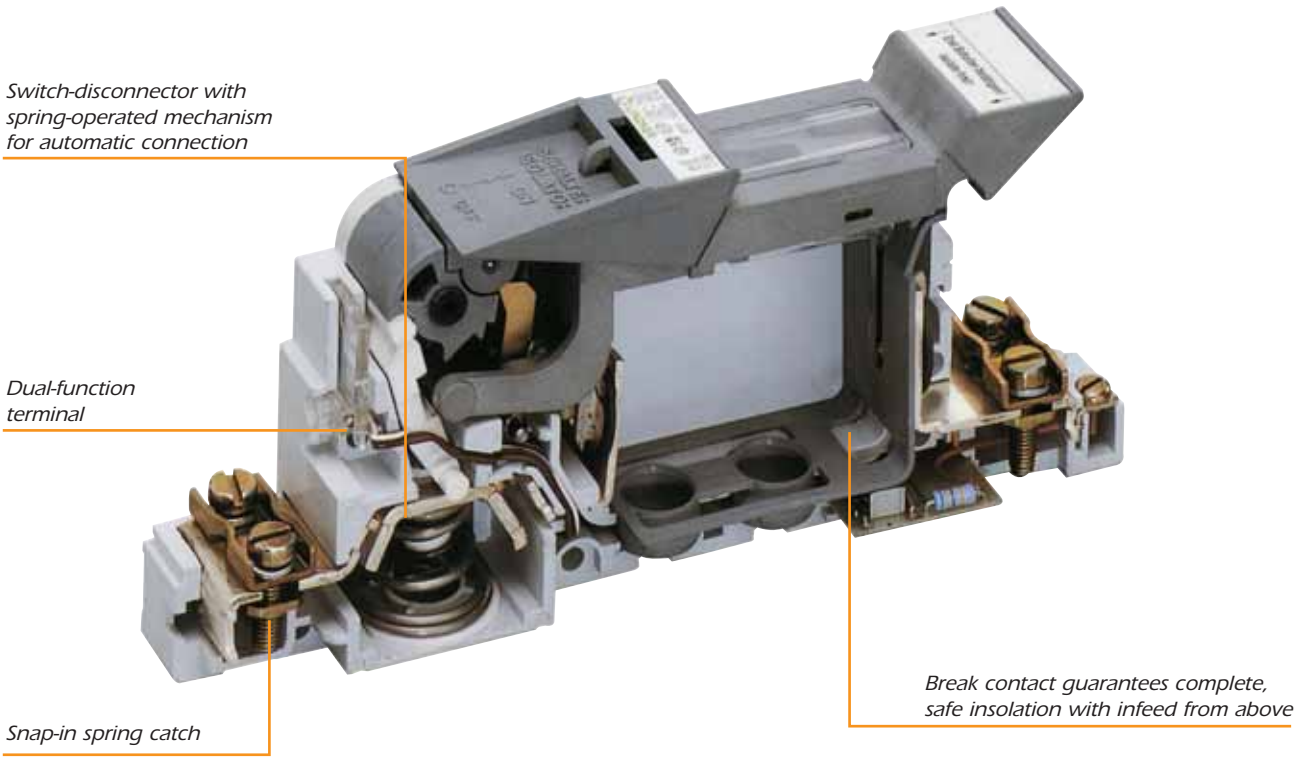
IEC General Purpose Fuses
NH Fuses
Fuse Switch-disconnectors

NH00 - LINOCUR

NH00 LINOCUR is a switch-disconnector for NH00 fuses to a maximum of 125 A. Adapted for the NH system, the Linocur concept is based on proven technology for disconnecting then changing the fuse-link in its voltage-free state.
NH00 LINOCUR provides the optimum complement in the nominal current range up to 125 A to the renowned D0 LINOCUR switch-disconnector for NEOZED fuse-links up to 63 A.
125 , 290/500 VAC, 1 - 3pole
100 A, 400/690 VAC, 1 - 3pole

Standard specifications:
DIN VDE 0660 Part 107
EN 60947-3
IEC 60947-3
VBG 4

Approval symbols: ÖVE, Austria; British Lloyd's Register of Shipping; SEV, Switzerland; German Lloyd; FI Finnland; KEMA KEUR Netherlands



IEC General Purpose Fuses
NH Fuses
Fuse Switch-disconnectors

NH00 - LINOCUR

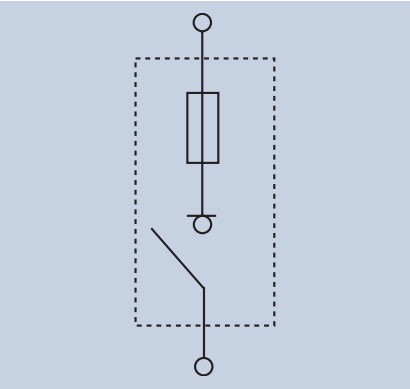
Basic design:

NH00 LINOCUR combines a switch-disconnector as per DIN 0660 part 107 (IEC 60947-3) and an NH fuse-base in one enclosure. It has a load-switching capacity and its disconnector function complies to IEC 60947-3. The unit
design enables clearing, connecting and disconnecting of electric equipment without removing fuse-links.

NH00 LINOCUR has two activating elements:

- Switching lever activates the disconnector for switching electrical appliances under load
- Swivel unit serves to reception and pulling of NH fuse-link

As per IEC 60947-3



NH00 LINOCUR switch-disconnector for NH fuse-links

Rated Current Voltage	Nb of Pole	Terminal type	Previous Reference	Reference Number	Catalog Number
125A 290VAC 100A 400VAC	1	2 x M8	08601.000000	N216626	NHLINC1PT0
125A 290VAC 100A 400VAC	1	Terminal block/ 3 x 10 mm²	08601.220000	N222882	NHLINC1PT7
125A 500VAC 100A 690VAC	2	2 x M8	08602.000000	B218685	NHLINC2PT0
125A 500VAC 100A 690VAC	2	Terminal block/ 3 x 10 mm²	08602.220000	C201781	NHLINC2PT7
125A 500VAC 100A 690VAC	3	2 x M8	08603.000000	Y212035	NHLINC3PT0
125A 500VAC 100A 690VAC	3	Terminal block/ 3 x 10 mm²	08603.220000	W213574	NHLINC3PT7

Pack: *1 piece*



NH00 LINOCUR for DC 2-pole with fuse monitoring

Rated Current Voltage	Nb of Pole	Terminal block	Previous Reference	Reference Number	Catalog Number
125A 130VAC	2	2xM8	08602.000200	S219735	NHLINC2PDCT0
125A 130VAC	2	Terminal block 3 x 10 mm²	08602.220200	M201215	

Pack: *1 piece*

IEC General Purpose Fuses
NH Fuses
Fuse Switch-disconnectors

NH00 - LINOCUR

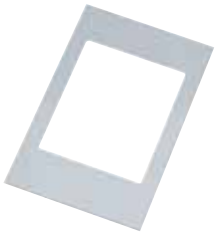
"Work-in-progress" Lock-out block for insertion under switch handle, can be locked with padlock.



For all design

Designation	Prev.Ref	Ref.Number	Catalog Number	Pack
Lock-out block	03860.000000	M212508	NHLINCBLOCK	5

Masking frame trim for flush mounting NH00 LINOCUR



Designation	Prev.Ref	Ref.Number	Catalog Number	Pack
3-pole NH00-LINOCUR	08603.110000	C218686	NHLINCFRAME3P	10
2 x 3-pole NH00-LINOCUR	08603.120000	Q219204	NHLINCFRAME6P	10
3-pole NH00-LINOCUR locked with padlock	08603.130000	W222935	NHLINCFRAME3PS	10

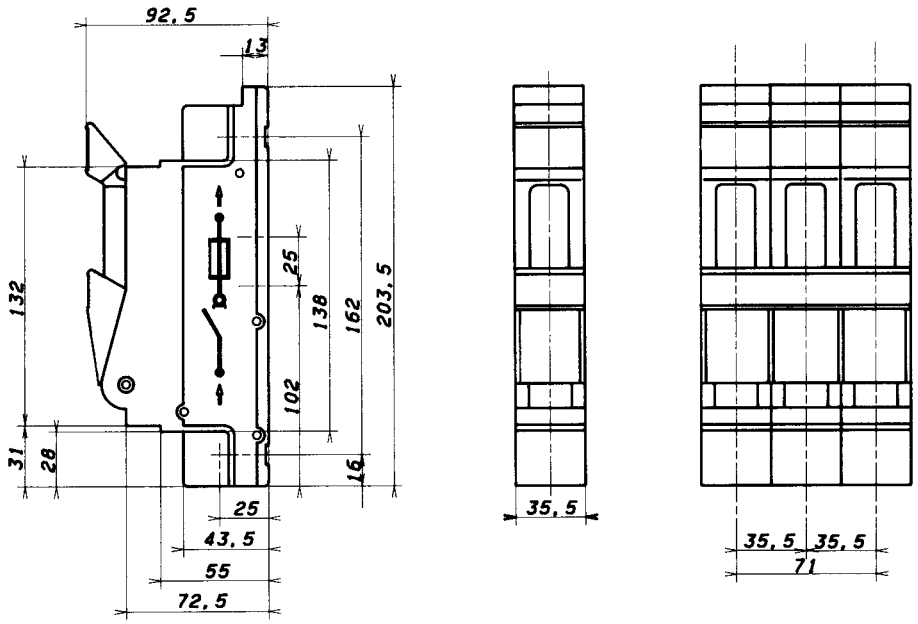
Adapter for NH00 linocur 3 x N216626, 3 x N222882, 1 x Y212035, 1 x W213574



Designation	Prev.Ref	Ref.Number	Catalog Number	Pack
40 mm System 20 x 10	08600.400000	D214593	NHLINCADAP40	1
50 mm System 30 x 10	08600.500000	P216627	NHLINCADAP50	1
60 mm System 30 x 10	08600.600000	F217654	NHLINCADAP60	1

Dimensions

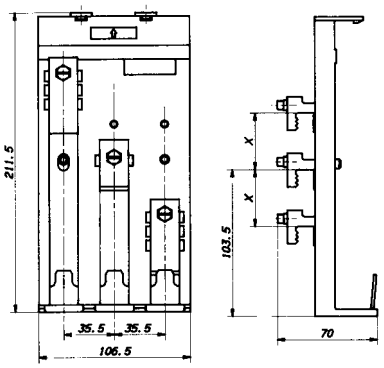
NH00-LINOCUR Switch-disconnector for NH00 Fuse



IEC General Purpose Fuses
NH Fuses
Fuse Switch-disconnectors

NH00 - LINOCUR

Adapter for NH00 LINOCUR



Max. Torque 5 Nm (Fastening by busbar systems)

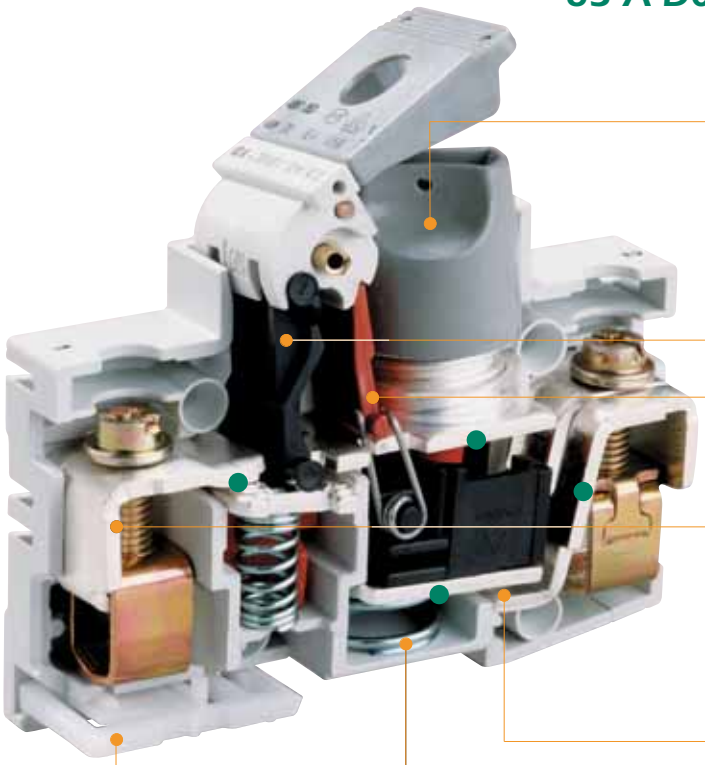
Switch-disconnector for NH00 fuses 125 A 100 A 125 A 100 A
1-pole multiple poles
290 VAC 400 VAC 500 VAC 690 VAC

Main characteristics

Approvals and Standards	
DN -VDE 0660 Part 107	100 A / 690 VAC in AC22 125 A / 500 VAC in AC22
German Lloyd	125 A / 500 VAC in AC22
British Lloyd's Register of Shipping	125 A / 500 VAC in AC22
ÖVE SN 40	125 A / 500 VAC in AC22
NH Fuse applications	NH00 to 125 A gl/gG
Materials	RAL 7035, self-extinguishing, halogen-free
Terminal types input/output	Screw/Screw M 8 Clamp/clamp Clamp/Terminal block 3 x 10 m2
Max. cable sizes	up 70 mm2
Protection against unwanted switching	Lock out Block Catalog Number 3860
Ambient temperature	- 5 °C to 40 °C
Electrical Data	
as paer DIN-VDE 0660 Part 107	
Utilisation category	AC 22
Current type	3 In
Electrical endurance	25
Utilisation category	AC 22
Current type	In
cos j	0,65
Cycles	150
Mechanical endurance	
Cycles	3000
Nominal insulation tension	1000 VAC
Rated short-circuit current	50 kA
Direct current behavior	
Utilisation category	DC 22
Current type	125 A
Max. operating voltage	65 VDC 3 poles in series = 195 VDC
Cycles	5
Fuse monitoring	Electronic fuse-monitoring circuit indicates fuse failure by flashing
Minimum operating voltage required for operation of electronic fuse monitoring circuit	100 V

IEC General Purpose Fuses
DIN Fuses
Fuse Switch-disconnectors

D0 LINOCUR Switch-Disconnector for NEOZED Fuses 63 A D02 230/400 VAC (440VAC)



Specifications

DIN VDE 0638
EN 60947-3
DIN VDE 0660 Part 107
IEC 60947-3
EN 60947-3
VBG4m

D0 LINOCUR combines a fuse base and separately mounted NEOZED 63 A switches in one enclosure. As principle of their operation, both switches are open when the device is disconnected and when the fuse-link is removed.

Approval Symbols

Germany

Austria

Denmark

German Lloyd

Bureau Veritas

British Lloyd's Register of Shipping

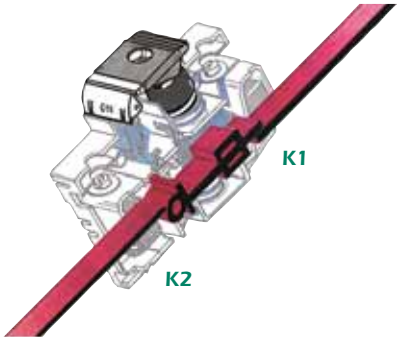
Bureau Veritas

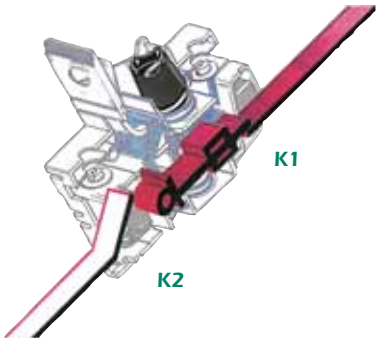
IEC General Purpose Fuses
DIN Fuses
Fuse Switch-disconnectors

D0 LINOCUR Switch-Disconnector for NEOZED Fuses 63 A D02 230/400 VAC (440VAC)

Operating Principle

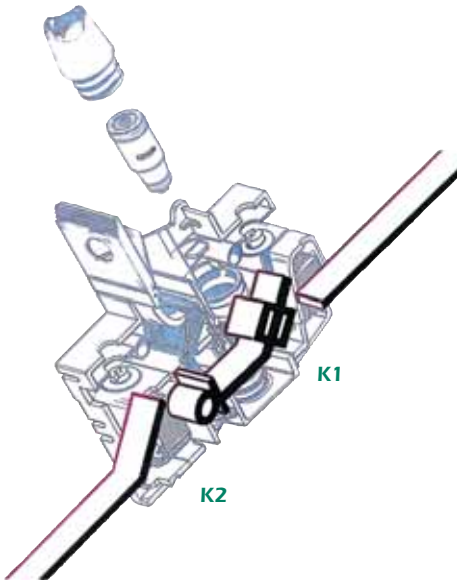
- The D0 LINOCUR combines a fuse base and two separately mounted switches (K1 & K2) in one enclosure.
- As a principle of operation, both switches are open when the device is disconnected and when the fuse-link is removed.
- Switch K1 is a switch-disconnector as per DIN VDE 0660 Part 107, and provides for on-load disconnection of electrical equipment.
- Switch K2 is designed as break contact without load-switching capacity and guarantees complete isolation of the fuse component when infeed is from above and the fuse-link is removed.
- Switch K2 can only be activated when switch-disconnector K1 is open, guaranteeing complete isolation of the device





Connection in Circuit

D0 LINOCUR can only be connected in circuit when the fuse-link (or all fuse-links in multi-pole equipment) is firmly screwed in by its screw cap. Switch K2 closes simultaneously as the fuse-link is screwed in. The fuse component is then live when infeed is from above. On activating the switch knob, the load is connected automatically by a spring-operated mechanism, switch K1 closes and D0 LINOCUR is energized.



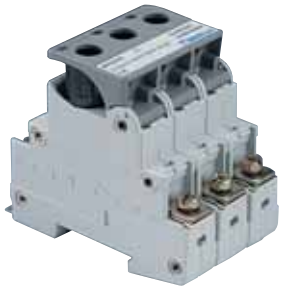
Disconnection and Fuse Changes

Switch-disconnector K1 opens when the switch knob is turned to the "OFF" position.
The electrical load is disconnected on-load from mains and LINOCUR is de-energized.
If a fuse needs to be changed, K2 opens atuomatically as the fuse-link is unscrewed, ensuring that when infeed is from above, the fuse component is fully isolated.

IEC General Purpose Fuses
DIN Fuses
Fuse Switch-disconnectors

D0 LINOCUR Switch-Disconnector for NEOZED Fuses 63 A D02 230/400 VAC (440VAC)

D0 LINOCUR Switch-disconnector 400 VAC, D01



Rated current (A)	Number of poles	Modular spacing	Conductor cross-section mm≈ max.	Prev. Ref.	Ref. Number	Catalog Number	Pack
to 16	1	1	6	02811.016000	V213021		5
to 16	2	2	6	02812.016000	E215560		2
to 16	3	3	6	02813.016000	M216073		1

D0 LINOCUR Switch-disconnector 400 VAC, D02

sealable, with snap-on mounting for top-hat rails as per DIN EN 50022



Rated current (A)	Number of poles	Modular spacing	Conductor cross-section mm≈ max.	Prev. Ref.	Ref. Number	Catalog Number	Pack
to 63*	1	1,5	35	04861.063000	P222883		3
to 63*	1+N	3	35	04861.063100	Z200674		2
to 63*	2	3	35	04862.063000	D215053		2
to 63*	3	4,5	35	04863.063000	T219690		1
to 63*	3+N	6	35	04863.063100	A214544		1
Dummy D02				01825.000000	F215055		1

Dual-function terminals

D0 LINOCUR Switch-disconnector for construction 440 VAC, D02

sealable, with snap-on mounting for top-hat rails as per DIN EN 50022



Rated current (A)	Number of poles	Modular spacing	Conductor cross-section mm≈ max.	Prev. Ref.	Ref. Number	Catalog Number	Pack
to 63*	1	1,5	35	04861.063040	C215052		3
to 63*	2	3	35	04862.063040	N216074		2
to 63*	3	4,5	35	04863.063040	Z211990		2
to 63*	3+N	6	35	04863.063140	P216075		1

Dual-function terminals

** LINOCUR is available on request in 25, 35 and 50 A with permanently fitted and non-interchangeable adapter sleeves.*
In versions 1+N and 3+N, the N-conductor leads when making and lags when breaking.
** NEOZED fuse-links and adaptor sleeves are to be ordered as optional extras.*

IEC General Purpose Fuses
DIN Fuses
Fuse Switch-disconnectors

D0 LINOCUR Switch-Disconnector for NEOZED Fuses 63 A D02 230/400 VAC (440VAC)

Replacement screw-cap D0 LINOCUR insulating with sealing hole

For base	Rated current in A	Thread / ID colour	Prev. Ref.	Ref. Number	Catalog Number	Pack
with testing hole						
D02	63	E18	01715.000220	C214546		10
without testing hole)						
D02	63	E18	01715.000020	Y213024		10
D01	16	E14	00750.000000	V219691		20



Adapter for 40, 50 or 60 mm busbar systems

Version / Cross-section			Prev. Ref.	Ref. Number	Catalog Number	Pack
40 mm System 3 x 63 A						
Mono-A.	adjustable	1	02805.100000	E201783		1
Mono-A.	adjustable	1	03805.400000	W219692		1
Dual-A.	adjustable	2	03807.400000	R212512		1
Dual-A.	adjustable	2 mittig	03806.400000	C201735		1
50 mm System 3 x 63 A						
Mono-A.	adjustable	1	03805.500000	A222134		1
Dual-A.	adjustable	2	03807.500000	Z213025		1
Dual-A.	adjustable.	2 mittig	03806.500000	V206604		1
60 mm System 3 x 63 A						
Mono-A.	adjustable	1	03805.600000	T222887		1
Dual-A.	adjustable	2	03807.600000	X213529		1
Dual-A.	adjustable	2 mittig	03806.600000	Q211476		1
Dual-A.	adjustable	1	03807.610000	D214547		1
Dual-support						
	adjustable	0	03807.630000	G215056		1

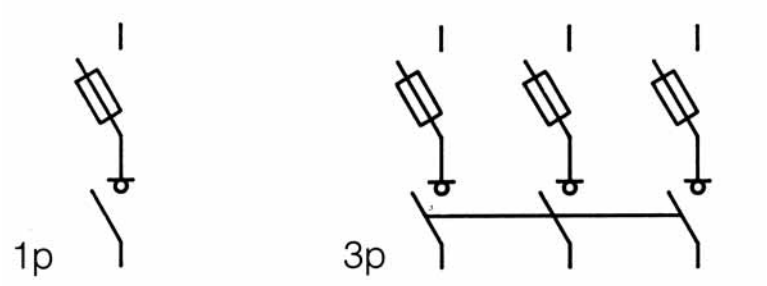


IEC General Purpose Fuses
DIN Fuses
Fuse Switch-disconnectors

D0 LINOCUR

Technical Data

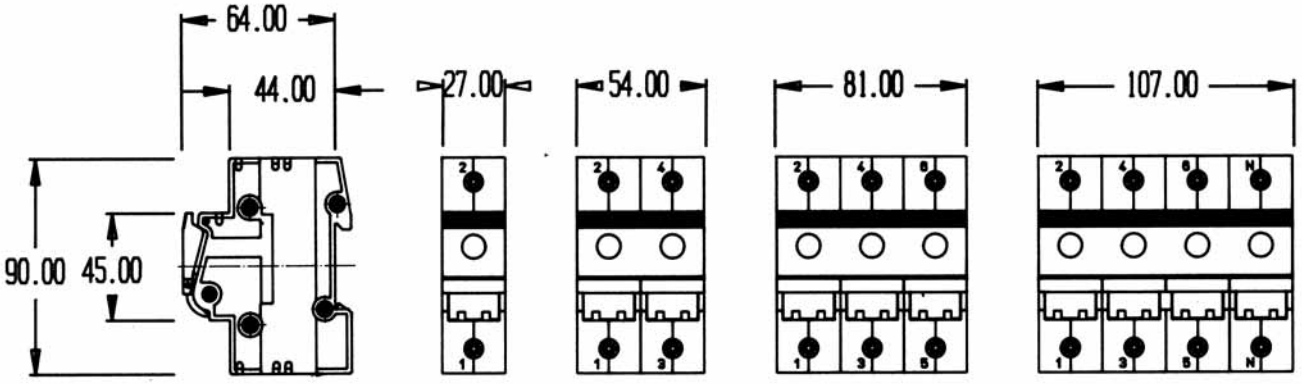
- Classification: Switch-disconnector for fuses to DIN VDE 0660 Part 107
- Specifications: DIN VDE 0660 Part 107, EN 60947, IEC 60947-3,
  DIN VDE 0636 Part 41, IEC 60269-3,
  DIN VDE 0638, DIN VDE 43880
- Sizes: D02
- Number of poles: 1-, 2-, 3-pole
  2-pole (1+N), 4-pole (3+N)
- Utilization categories: gL-gG, aM, gG nur mit Einschränkung
- Nominal current I_n: 2 - 63 A
- Nominal voltage Un: 1-pole: 230 VAC
  2-, 3-, 4-pole: 400 VAC
  Shipbuilding: 400 VAC
  per pole: 65 VDC
- Nominal frequency: 50 - 60 Hz
- Rated short-circuit breaking capacity: 50 kA
- Application category: AC 22 B
  DC 22 B/ 65 VDC /Pol
  AC 23 B/400 VAC 50 A
  AC 23 B/440 VAC 35 A
- Attachment types/cross-sections: D02: 35 mm2 M5 Pozidriv screws covered safe from finger-touch to accident prevention norm VBG 4
- Degree of protection: IP 20
- Attachment method: Snap-on mounting on top-hat rails to DIN EN 50022
  Latch-down snap-on device to busbar system using adaptor
- Materials: Impact-resistant insulating material
  RAL 7035 insulating material, self-extinguishing, halogen-free entspr. DIN VDE 0106 Part 100, VBG 4
- Graphical symbol:



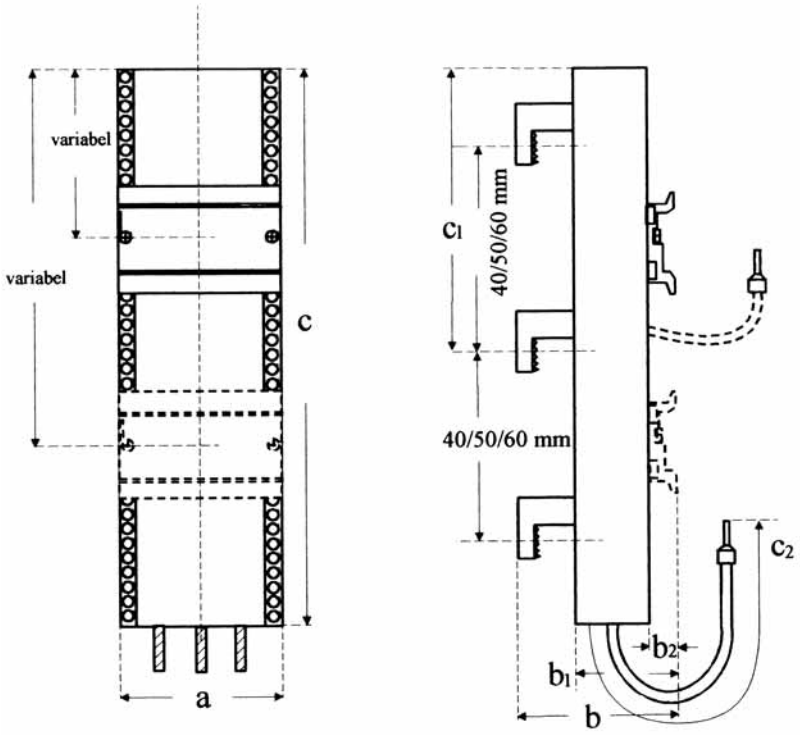
IEC General Purpose Fuses
DIN Fuses
Fuse Switch-disconnectors

D0 LINOCUR

D0 LINOCUR Switch-disconnector 400 VAC



Adapter for 40, 50 or 60 mm busbar systems



IEC General Purpose Fuses
DIN Fuses
Fuse Switch-disconnectors

NEOKIT Switchable Fuse-Base
2 - 16 A, 230/400 VAC

Specifications and test marks:

DIN VDE 0638
DIN VDE 0636
ÖVE SN 40
IEC 947-3
VBG 4, DIN VDE 0106 Part 100
DIN 43880

Approvals

Germany

Austria

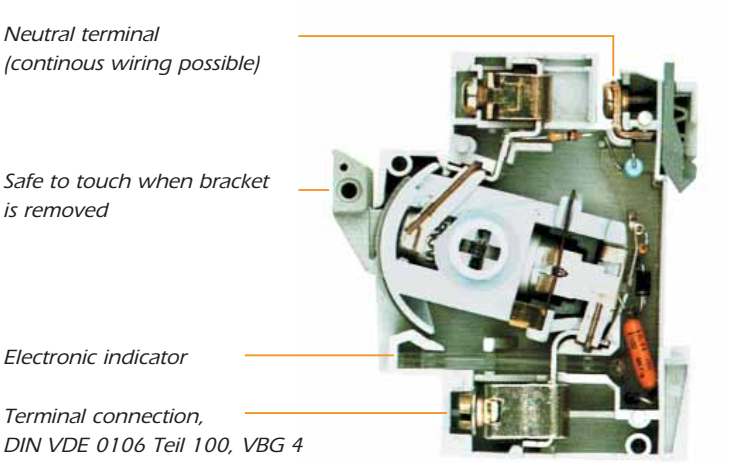
Construction:

NEOKIT is a switch-fuse combination enclosed in a common housing. Both the pitch dimensions of the fixtures and the dimensions of the housing comply with DIN 43880.
The depth dimension for switches is 68 mm. NEOKIT is suitable for snap mounting on DIN-rails in accordance with DIN EN 50022. The terminals on both the ingoing and the outgoing sides are shielded to safe-guard against finger or hand contact.

The NEOKIT system allows the fuse to be changed without danger, while preventing the use of higher current-level fuses.

When replacing NEOZED fuse-links, the fixture is turned off. All accessible metal parts are free of current as prescribed in DIN VDE 0106 part 100.

NEOKIT is available either with or without electronic monitoring of operating readiness. For fixtures with monitoring electronics, the N-conductor must be connected.



IEC General Purpose Fuses
DIN Fuses
Fuse Switch-disconnectors

NEOKIT Switchable Fuse-Base
2 - 16 A, 230/400 VAC

NEOKIT* - Switchable fuse-base D01 230/400 VAC with indicator,
sealable, with snap mounting for DIN-rails as per DIN EN 50022.

Rated current (A)	Number of Poles	Conductor cross-section (mm)	Pevious Ref.	Ref. Number	Catalog Number	Packing
2	1	4	08490.021000	Y218636		10
4	1	4	08490.041000	X219693		10
6	1	4	08490.061000	V222888		10
	2	4	08490.062000	R201219		5
	3	4	08490.063000	W206605		3
10	1	4	08490.101000	A211991		10
	2	4	08490.102000	A213026		5
	3	4	08490.103000	H215057		3
16	1 Terminal clamp	4	08490.161000	H217610		10
	2	4	08490.162000	Q219158		5
	3	4	08490.163000	C222136		3



NEOKIT*- Switchable fuse-base D01 230/400 VAC without indicator,
sealable, with snap mounting for DIN-rails as per DIN EN 50022.

Rated current (A)	Number of Poles	Conductor cross-section (mm)	Pevious Ref.	Ref. Number	Catalog Number	Packing
2	1	4	08490.021100	P219157		10
4	1	4	08490.041100	B222135		10
6	1	4	08490.061100	D200678		10
	2	4	08490.062100	D201736		5
	3	4	08490.063100	R211477		3
10	1	4	08490.101100	S212513		10
	2	4	08490.102100	W214034		5
	3	4	08490.103100	B217098		3
16	1 Terminal clamp	4	08490.161100	N218121		10
	2	4	08490.162100	Y219694		5
	3	4	08490.163100	W222889		3

** Fuse-bases are supplied with NEOZED fuse-links.*



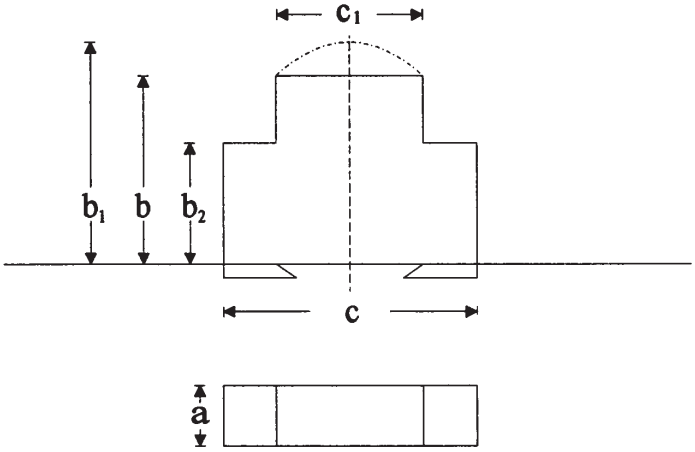
NEOKIT - Cartridge key 2 A to 16 A

Model	Pevious Ref.	Ref. Number	Catalog Number	Packing
2 A, 400VAC, 1pol.	08490.021009	S201220		10
4 A, 400VAC, 1pol.	08490.041009	E201737		10
6 A, 400VAC, 1pol.	08490.061009	S211478		10
3pol.	08490.063009	T212514		10
10 A, 400VAC, 1pol.	08490.101009	B213027		10
3pol.	08490.103009	X214035		10
16 A, 400VAC, 1pol.	08490.161009	E214548		10
3pol.	08490.163009	H215563		10



IEC General Purpose Fuses
DIN Fuses
Fuse Switch-disconnectors

NEOKIT



Poles	a	b	b1	b2	c	c1
1p	17,5	68	58	37	77	45
2p	35,5	68	58	37	77	45
3p	53,5	68	58	37	77	45

Technical specifications

- Classification: Switch-fuse disconnector for fuses as per DIN VDE 0660 Part 107
- Specifications: DIN VDE 0660 Part 107, EN 60947, IEC 947-3,
  DIN VDE 0636 Part 41, IEC 269-3,
  DIN VDE 0638, DIN VDE 43880
- Sizes: D01
- Number of poles: 1-, 2-, 3-pole
- Utilization category: gL-gG
- Nominal current I_n: 2 - 16 A
- Nominal voltage U_n: 1-pole: 230 VAC
  2-, 3-pole: 400 VAC
- Nominal frequency: 45 - 62 Hz
- Nominal short-circuit strength: 50 kA
- Application category: AC 22B
- Admissible ambient temperature: -5 bis +40°C
  Mean value over 24 hours: <35°C
- Attachment types/cross-sections: 4 mm^2 clamp-terminals
  Shielded safe from finger-touch as per accident prevention norm VBG4
- Degree of protection: IP 20
- Attachment method: Snap-fitting to top-hat rails to DIN EN 50022
  Latch-on snap-on fitting
- Materials: Impact-resistant insulating material
  RAL 7035 insulating material, self extinguishing, halogen-free

IEC General Purpose Fuses
DIN Fuses
BusBar System: TRI60

TRI 60 mm busbar system

The TRI 60 busbar system is the ergonomic answer to power distribution up to 630 A.
The TRI 60 system simultaneously combines the mounting and connection (power supply) of power-distribution equipment, saving the user a great deal of time and money in the process.

Besides the advantage of practical power distribution through use of clip-on equipment, the TRI 60 busbar system has well-conceived safety features and last but not least, an attractive and clearly arranged design.

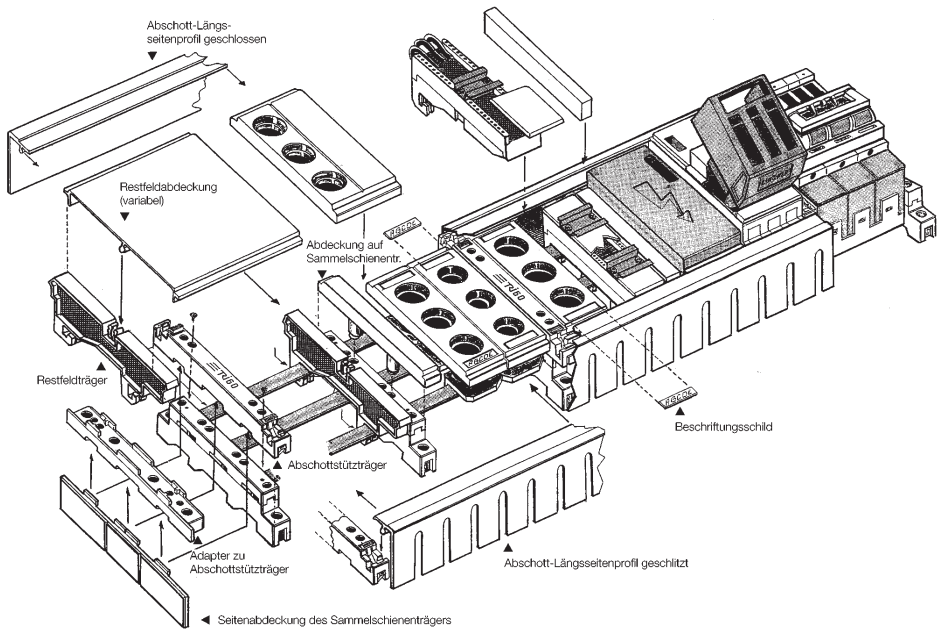
Busbars
Current-carrying capacity mounted in switchgear

35°C ambient temperature
65°C busbar temperature

Dimensions in mm	Continuous current (A)	Rated fuse current (A)*
30 x 10	630	630
25 x 10	580	500
20 x 10	520	500
30 x 5	447	400
15 x 10	447	400
25 x 5	400	400
12 x 10	360	315
20 x 5	320	315
15 x 5	250	250
12 x 5	200	200

** Fuse-links within utilization category gL-gG to DIN VDE 0636.*

Note continuous current if using other upstream protection devices.



IEC General Purpose Fuses
DIN Fuses
BusBar System: TRI60

TRI 60 mm busbar system

Universal busbar support

three-pole, as per VDE 0660,Part 500,**with additional mounting holes outside**, allowing attachment of PE/N busbar supports,
No. 173 and 174
Color: RAL 7035 – Light grey



Version for bars in mm	Previous ref.	Reference Number	Catalog Number	Packing
4 mounting holes 12 x 5 – 10 15 x 5 – 10 20 x 5 – 10 25 x 5 – 10 30 x 5 – 10	00170.000000	B214039		10

Universal busbar support

three-pole, as per VDE 0660, Part 500,
with inside mounting holes,for bus-mounting equipment ranging up to 630 A rated current, with adjustable stop for adaption to E-Cu busbars 12 to 30 mm wide and in 5 to 10 mm gauge;
bar clearance 60 mm, rated voltage up to 660 V, 50/60 Hz to VDE 0660
Color: RAL 7035 – Light grey



Version for bars in mm	Previous ref.	Reference Number	Catalog Number	Packing
2 mounting holes 12 x 5 – 10 15 x 5 – 10 20 x 5 – 10 25 x 5 – 10 30 x 5 – 10	00171.000000	V216080		10

N/PE busbar support

for attachment to busbar support No. 170 for 4-pole and 5-pole systems;
No. 173 can also be used as individual support.

Version for bars in mm	Previous ref.	Reference Number	Catalog Number	Packing
1 mounting hole 12 x 5 – 10 15 x 5 – 10 20 x 5 – 10 25 x 5 30 x 5	00173.000000	E218642		10



No. 174 can only be used together with part 170.

Version for bars in mm	Previous ref.	Reference Number	Catalog Number	Packing
1 mounting hole 12 x 5 – 10 15 x 5 – 10 20 x 5 – 10 25 x 5 30 x 5	00174.000000	B222894		10

IEC General Purpose Fuses
DIN Fuses
BusBar System: TRI60

TRI 60 mm busbar system

NEOZED bus-mounting fuse base,

3-pole, for 60 mm busbar systems.Choice of busbar width from 12 to 30 mm.
Color: RAL 7035 – light grey



Size	Rated Current (A)	Rated voltage (VAC)	Conductor cross-section mm≈ max.	Prev. Ref.	Ref. Number	Cat. Number	Packing
Adapter sleeve system, to DIN VDE 0636 Part 41							
D02	63	400	5 /10	01750.000000	K222143		10
D02	63	400	10	01751.000000	M201744		10

D type bus-mounting fuse base,

3-pole, for 60 mm busbar systems. Choice of busbar width from 12 to 30 mm.
Color: RAL 7035 – light grey



Size	Rated Current (A)	Rated voltage (VAC)	Conductor cross-section mm≈ max.	Prev. Ref.	Ref. Number	Cat. Number	Packing
Adapter ring system							
DII	25	500	5/10	00150.000006	S207430		10
DII	25	500	10	00151.000006	Y211529		10
DIII	63	690	5/10	00160.000006	B213579		10
DIII	63	690	10	00161.000006	B214085		10
Adapter screw system							
DII	25	500	5/10	00152.000006	D212040		10
DII	25	500	10	00153.000006	W212562		10
DIII	63	690	5/10	00162.000006	H214597		10
DIII	63	690	10	00163.000006	N215108		10

Cover for NEOZED fuse base,

3-pole. Color : RAL 7035 – light grey



Size	Version	Prev.ref.	Ref. Number	Cat. Number	Packing
D02	1 -single 27 mm wide	01755.000000	D212523		20
D02	11/3 -fach 36 mm wide	01756.000000	N214556		10
D02	2 -double 54 mm wide	01757.000000	B216592		10

Cover for D-type fuse base,

three-pole. Color: RAL 7035 – light grey



Size	Version	Prev.ref.	Ref. Number	Cat. Number	Packing
DII	1 -single 42 mm wide	00155.000006	G213078		10
DII	2 -double 84 mm wide	00157.000006	B211486		10
DIII	1 -single 57 mm wide	00165.000006	P215615		10
DIII	2 -double 114 mm wide	00167.000006	G218644		10

IEC General Purpose Fuses
DIN Fuses
BusBar System: TRI60

TRI 60 mm busbar system

NH00 LINOCUR

switch-disconnector for NH fuses as per: EN 60947-3, IEC 60947-3, DIN VDE 0660, Part 107

Poles	Connection	Previous ref.	Ref. Number	Catalog Number	Packing
Rated current/voltage: 125A to 500VAC, 100A to 660VAC					
3	Screw M8	08603.000000	Y212035	NHLINC3PT0	1
3	Clamp/3 x 10mm²	08603.220000	W213574	NHLINC3PT7	1



Adapter

suitable for NH00 LINOCUR 8603.2 and 8603.22

Version	max. Cu bars mm	Previous ref.	Ref. Number	Catalog Number	Packing
60 mm System	30 x 10	08600.600000	F217654	NHLINCADAP60	1



NH bus-mounting fuse base,

3-pole for bar gauge 5 to 10 mm, with touch guard

Size	Rated current (A)	Terminal type	conductor cross-section (mm)	Previous ref.	Ref. Number	Catalog Number	Packing
feeders upward							
00	160	screw M8	70	08350.000000	X212563		4
00	160	clamp	70	08350.200000	H213079		4
feeders downward							
1	250	screw M10	120	08351.000000	C213580		1
2	400	screw M10	240	08352.000000	C214086		1

Terminal plate, 3-pole

Bar gauge mm	Conductor cross-section mm	Previous Ref.	Reference Number	Catalog Number	Packing
5	16-120	08355.050000	E212041		1
10	16-120	08355.010000	Z211530		1

terminal compartment 17x16mm



Cover Only

		08358.000000	H218691		1

IEC General Purpose Fuses
DIN Fuses
BusBar System: TRI60

TRI 60 mm busbar system

Universal terminal

as per DIN VDE 0606 for flexible connection of wires, for all busbar widths 5 mm or 10 mm terminal version: terminals always open



Conductor size (mm)	Terminal compartment (mm)	Previous Ref.	Reference Number	Catalog Number	Packing
for 5 mm busbar width					
1,5 – 16	7,5 x 6	01760.050160	K200730		100
4 – 35	10,8 x 7,5	01760.050350	Z201272		50
16 – 70	13 x 13	01760.050700	J201787		25
16 – 120	17 x 15	01760.051200	V207524		25
for 10 mm busbar width					
1,5 – 16	7,5 x 6	01760.010160	W219209		100
4 – 35	10,8 x 7,5	01760.010350	Y219740		50
16 – 70	13 x 13	01760.010700	F222185		25
16 – 120	7,5 x 15	01760.011200	B222940		25

Adapter plate terminals

for connection of flexible copper strips or rigid conductor bars



Conductor size (mm)	Terminal compartment (mm)	Previous Ref.	Reference Number	Catalog Number	Packing
120		01759.201600	M217108		10

All parts of LINDNER TRI 60 shock-hazard protection system are halogen- and clorine-free and may be recycled

Support for compartment side profile

for attachment to busbar support
Color: RAL 7035 – light grey

System height	Previous Ref.	Ref. Number	Cat. Number	Packing
32	00140.000000	H218645		10



Adapter for side profile support (art. no. 140)

System height	Previous Ref.	Ref. Number	Cat. Number	Packing
42	00240.000000	X218129		10

Note: Catalog Numnber 240 can also be mounted under the universal busbar support (Catalog Numnber 170).
Allows the complete busbar system to be lifted at 10 mm.

IEC General Purpose Fuses
DIN Fuses
BusBar System: TRI60

TRI 60 mm busbar system

Compartment side profile
Color: RAL 7035 – light grey

System height		Previous Ref.	Ref. Number	Cat. Number	Packing
32	closed	00142.000000	D222896		5 x 2 m
32	slotted	00143.000000	T215573		5 x 2 m
42	closed	00242.000000	F222898		5 x 2 m
42	slotted	00243.000000	W206743		5 x 2 m



Side cover
for busbar support, attachable to article no. 140 (240) from below
Color: RAL 7035 – light grey

System height	Previous Ref.	Ref. Number	Cat. Number	Packing
32/42	00145.000000	W218128		10



Busbar support cover
Color: RAL 7035 – light grey

System height	Previous Ref.	Ref. Number	Cat. Number	Packing
32	00147.000000	E222897		10
42	00247.000000	N213038		10



Residual field support
Color: RAL 7035 – light grey

System height	Previous Ref.	Ref. Number	Cat. Number	Packing
32	00148.000000	D211488		10
42	00248.000000	W215069		10



Residual field cover
Variable, can be cut to length
Color: RAL 7035 – light grey

System height	Previous Ref.	Ref. Number	Cat. Number	Packing
32/42	00149.000000	F214043		10



IEC General Purpose Fuses
DIN Fuses
BusBar System: TRI60

TRI 60 mm busbar system

Insulating side cover with screws

To cover sides of busbar ends
Color: RAL 7035 – light grey
to be screwed to top section of support no. 170 to 171



System height	Previous Ref.	Ref. Number	Cat. Number	Packing
	00172.000000	D216594		20

Note:
To be used only by TRI 60 bus bar systems without TRI 60 shock-hazard protection system

Adapter

for panel components with DIN-rails as per EN DIN 50022, plastic



Rated Current (A)	Version	Previous Ref.	Ref. Number	Catalog Number	Packing
32	54 mm wide, 1 rail	03800.211000	Y216129		1
32	54 mm wide, 2 rails	03800.221000	V216632		1
63	54 mm wide, 1 rail	03800.311000	G217149		1
63	72 mm wide, 1 rail	03800.312000	L217659		1
63	81 mm wide, 1 rail	03800.313000	W218174		1

Adapter with wire-connection

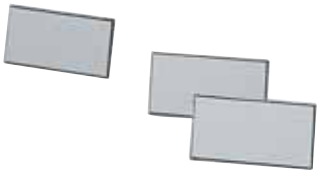
	54 mm wide, 2 rails	03801.021000	J218692		1

Adapter without wire-connection

	54 mm wide	03802.001000	X219210		10
	81 mm wide	03802.003000	Z219741		10

Self-adhesive labelling plates

Color: silver grey
Material: DUOMATT
for non-smudge writing or engraving



Version		Previous Ref.	Ref. Number	Catalog Number	Packing
20 x 10 mm		01754.000000	P213039		252
30 x 10 mm		00154.000000	P200688		162

TRI 60 labelling plates are supplied in specified packaging units on an approximately DIN A4-sized support sheet. These sheets fit easily into normal commercial engraving or plotting machines.
The labelling plates fit exactly into the pockets on the covers of bus-mounting fuse-bases (article no. 1754 fits into all covers for NEOZED bus-mounting fuse-bases, article no. 154 into all covers for D-type bus-mounting fuse-bases, terminal plates and LV HRC 00 bus-mounting fuse switch-disconnectors) and are silver-grey in color to match the TRI 60 design.
Adhesive setting time: approx. 24 hours.
TRI 60 labelling plates can also be used in severe environmental conditions once their adhesive has set (e.g. in the chemical industry).

IEC General Purpose Fuses
DIN Fuses
BusBar System: TRI60

TRI 60 mm busbar system

Distance clip, 9 mm

To enlarge wiring space for NEOZED fuse-bases. For easier mounting, simply plug the DO-base distance clip into busbar. Can be fitted on bars in 5 and 10 mm gauge.
If using these clips,, cover 1756 (36 mm) should also be provided.

Size	Busbar gauge (mm)	Previous Ref.	Ref. Number	Catalog Number	Packing
D0	5 - 10	01752.000000	Q201747		50



NEOZED (DO) and D screw-caps

Material: plastic
Color: grey

Size	Version	Previous Ref.	Ref. Number	Catalog Number	Packing
D02	E 18 without test hole	01715.000000	L206435		20
D02	E 18 with testing hole	01715.000200	P211981		20
for NEOZED D01 fuses with reduction spacer					
D02	E18 with testing hole	01715.890200	M214026		20
DII	E 27 with testing hole	02071.000000	L201720		20
DIII	E 33 with testing hole	02072.000000	E214019		20



Cover trips for individual busbars

Max. bar width 30 mm, PVC
Color: RAL 7035 – light grey

Size	Version	Previous Ref.	Ref. Number	Catalog Number	Packing
	for 5 mm busbars	08356.050000	V218173		1
	for 10 mm busbars	08356.010000	X216128		1



Grip-lug cover

for NH fuse-links, fits NH bases, with touch guard

Size	Version	Previous Ref.	Ref. Number	Catalog Number	Packing
for 1 required for 1 fuse link					
00		08350.900000	G222186		30
for 2 required for 1 fuse link					
1		08351.900000	C222941		30



IEC General Purpose Fuses
DIN Fuses
BusBar System: TRI60

TRI 60 mm busbar system

General information

- Classification: Busbar sytem with 60 mm phase bar clearance
- Spefications: DIN VDE 0660 Part 500, EN 60439-2, IEC 439-2
- Number of poles: 3-, 4- or 5-polig
- Rated uninterrupted current I_n: 630 A
- Rated duty: Continuous duty
- Rated current strength: 100 kA
- Rated short-time current strength: 28.5 kA (1 sec.)
- Rated operational voltage U_e: Max. 660 (690) VAC
- Rated frequency: 45 – 62 Hz
- Permissible ambient temperature: – 25 bis +55 °C
- Storage temperature: – 40 bis +80 °C
- Size of copper bars: 12 x 5 mm to 30 x 10 mm
- Degree of protection: IP 3 x under central covers
  IP 2 x with compartmentalized system

Technical specifications on TRI 60 components

- Classification: Busbar support to DIN VDE 0660, Part 500
- Specifications: DIN VDE 0660 Part 500
- Sizes: 3-pole, 1-pole for PE/N
- Bar dimensions: from 12 x 5 mm to 30 x 10 mm
- Bar centerline clearance: 60 mm
- Electrodynamic strength:
- Conditional short-circuit: up to 100 kA with back-up fuse gL-gG
- Short-time current strength: 28,5 kA (1 sec.)
- Material: high-temperature resistance, self-extinguishing plastic
- Flame retardance: to DIN VDE 0471 Part 1 up to 960 °C
- Maximum tightening torques of connection screws: 5 Nm

TRI 60 labelling system

- Classification: DUOMAT self-adhesive labels
- Material: DUOMAT two-layer material
- Support sheet size: DIN A4
- Adhesive setting time: 24 h

IEC General Purpose Fuses
DIN Fuses
BusBar System: TRI60

TRI 60 mm busbar system

TRI 60 bus-mounting fuse-base

Classification: Fuse-base to DIN VDE 0636
Specifications: DIN VDE 0636 Part 1, 10, 31, 41, 301, IEC 60269-3
Sizes: D02 (NEOZED), DII, DIII
Number of poles: 3-pole
Rated current I_n: 2 – 63 A
Rated voltage U_n: 400 VAC, 500 VAC, 660 VAC, 690 VAC
Rated frequency: 45 – 62 Hz
Rated insulation voltage U_i: 2500 V
Permissible ambient temperature > – 5 °C
Storage temperature Max. 150 °C
Attachment types/cross-sections: DII: 10 mm2 wire clamp connection recessed head screw
DIII: 25 mm2 wire clamp connection recessed head screw
with covering : safe from finger touch to accident norm VBG 4
Position of normal use: Any
Degree of protection: IP 20
Attachment method: Latching on to TRI 60 busbar system
Contacting: Direct low-loss to surface-treated E-Cu bar

TRI 60 compartmentalized system

Classification: Shock-hazard protection to UVV-VBG4
Shock-hazard protection: Protection from front (VBG4) and extending behind
Degree of protection: IP 20
Materials: Flame-retardant, halogen and CFC-free plastics
Flame retardance: As per DIN VDE 0471 Part 2, 650 °C

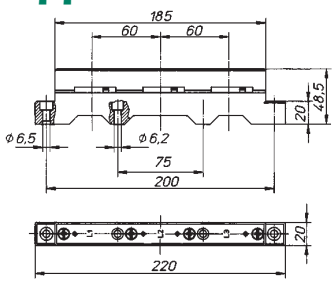
TRI 60 equipment adapter

Classification: Equipment adapter for panal components to DIN 43880
Rated current: 32 A, 63 A
Width: 54 mm, 72 mm, 81 mm
Mounting rail: to DIN EN 50022 plastic
Conductor: AWG 10 = 6 mm^2, AWG 8 = 10 mm^2
Resistance to heat: 105 °C
Size of wire-end ferrule: 32 A: 2,9 x 2,9 mm
63 A: 4,1 x 4,1 mm

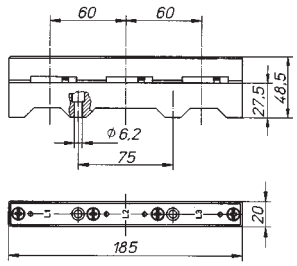
IEC General Purpose Fuses
DIN Fuses
BusBar System: TR60

TRI 60 mm busbar system

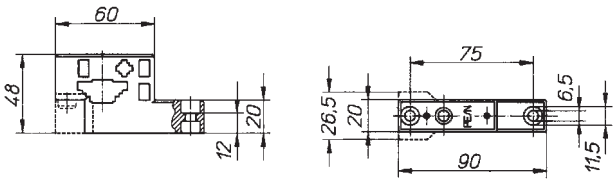
Busbar supports



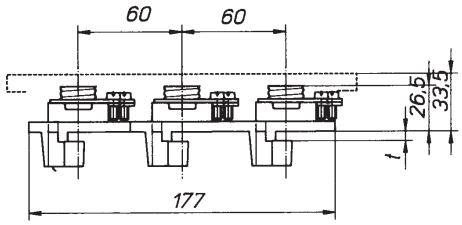
Universal busbar support, three-pole
with additional mounting holes outside



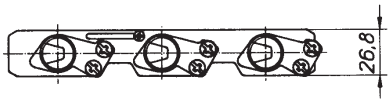
Universal busbar support, three-pole
with inside mounting holes



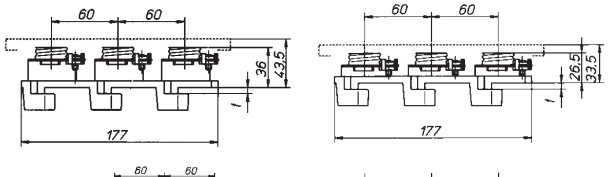
N/PE busbar support



Art.-Nr.	t
1750	5/10
1751	10



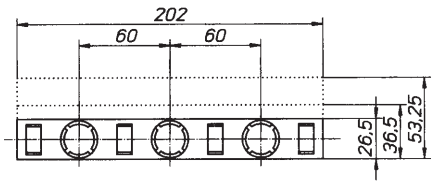
NEOZED bus-mounting fuse base, three-pole,
for 60 mm busbar systems



Art.-Nr.	t	b
150	5	42
160	5	57
151	10	42
161	10	57

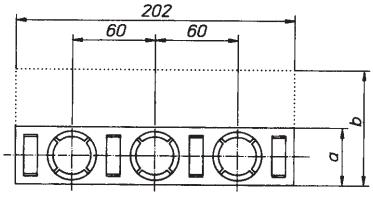
Art.-Nr.	t	b
152	5	42
162	5	57
153	10	42
163	10	57

D-type bus-mounting fuse-base, three-pole
for 60 mm busbar systems



Cover for NEOZED fuse base, three-pole

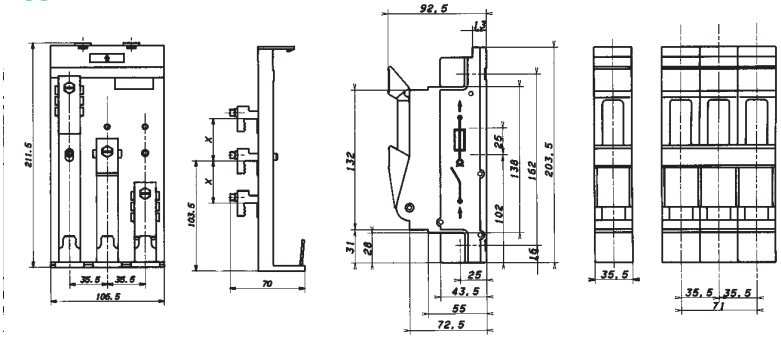
Art.-Nr.	a	b
155	41,75	
157		83,75
165	56,75	
167		113,75



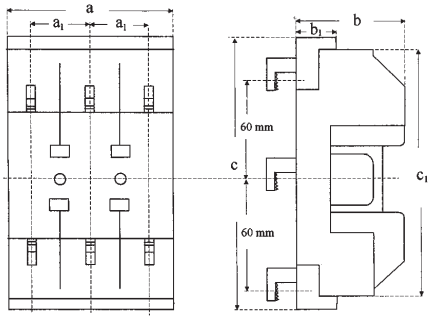
Covers for D-type fuse base, 3-pole

IEC General Purpose Fuses
DIN Fuses
BusBar System: YRI60

TRI 60 mm busbar system
Busbar supports

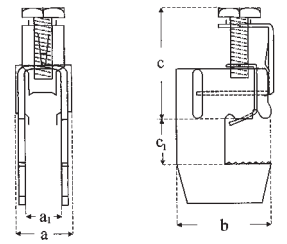


Adapter suitable for NH 00 LINOCUR



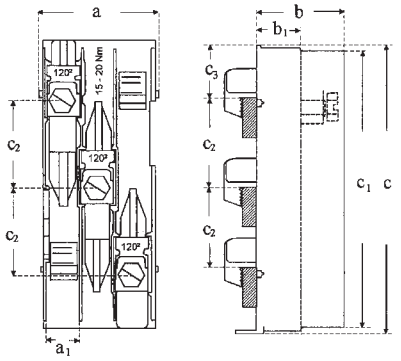
Art.-Nr.	a	a1	b	b1	c	c1
8350	99	33	89	32	202	195
8350.2	99	33	89	32	202	195
8351	195	65	110		200	
8351	195	65	110		200	

NH bus-mounting fuse base, 3-pole



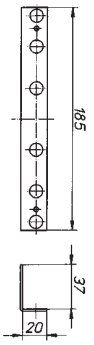
Art.-Nr.	a	a1	b	b1	c	c1
1760.01016	13,5	7,5	24		28	10
1760.01035	18	10,8	28,5		38	10
1760.01070	20	14	30		42	10
1760.01120	25,5	17	36		55	10
1760.05016	13,5	7,5	24		28	5
1760.05070	20	14	300		42	5
1760.05035	18	10,8	28,5		38	5
1760.05120	25,5	17	36		55	5

Universal-Anschlußklemmen

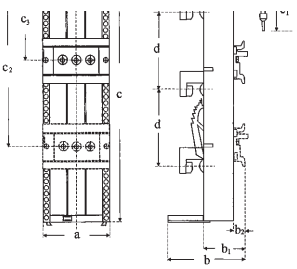


Art.-Nr.	a	a1	b	b1	c	c1	c2	c3
8355.01	84	21	59	32	200	195	60	35
8355.05	84	21	59	32	200	195	60	35
8358	84		59	32	202	195		35

Terminal plate, 3-pole

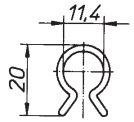


Insulating side cover with screws



Art.-Nr.	a	a1	b1	b2	c	c1	c2	c3	d	d1
3800.211	54	60	32	8,5	182	120	88		60	20
3800.221	54	60	32	8,5	182	120	143	48	60	20
3800.311	54	60	32	8,5	182	120	88		60	20
3800.312	72	60	32	8,5	182	120	88		60	20
3800.313	81	60	32	8,5	182	120	88		60	20
3801.021	54	60	32	8,5	182		143	48	60	20

Adapter without wire-connection



Distance clip, 9 mm

IEC General Purpose Fuses
DIN Fuses
BusBar System: Wiring Bars

Wiring Bars

Fork design

- Wiring bars in fork-type design are ideal for the wiring of modular panel-mounting devices as per DIN 43880 with flat-type, dual-function or single-screw terminals.
- Additional incoming terminals are required when wiring devices with flat-type or single-screw terminals.
- In contrast, devices with dual-function terminals allow bar connection to the top section of the terminal with simultaneous incoming supply in the bottom section.
- The use of end caps on multi-pole wiring bars guarantees optimum shock-hazard protection and prevents arcing at bar ends.

Pin design

- Wiring bars in pin design are ideal for the wiring of modular panel-mounting devices to DIN 43880 with box terminal, frame terminal or two-screw clamp.
- The incoming supply to the wiring-bar system is provided over additional incoming terminals.

The wiring bar maximum current-carrying capacity is obtained by providing the incoming supply at the center of the bars.

Technical data

	One-phase wiring					
Cross-section of bar	10 mm²	12 mm²	16 mm²	20 mm²	24 mm²	36 mm²
Max. bar current Is/Phase A	50 A	55 A	65 A	75 A	85 A	110 A
Max. input current Is/Phase in A at centric input	100 A	110 A	130 A	150 A	170 A	220 A

Mehrphasenverdrahtung		
Schienenquerschnitt	10 mm²	16 mm²
max. Schienenstrom	50 A	65 A
max. Einspeisestrom at centric input	100 A	130 A

Rated voltage:	400 V
High voltage strength:	up to 3 kV
Short-circuit strength:	up to 25 kA at 100 A back-up fuse
Vorschriften:	VDE 0606/9.77
Material of bars:	copper SF-Cu
Material of insulating section:	high temperature resistance low flammability self-extinguishing halogen-free

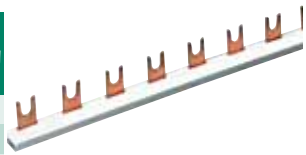
IEC General Purpose Fuses
DIN Fuses
BusBar System: Wiring Bars

Wiring Bars
Fork design

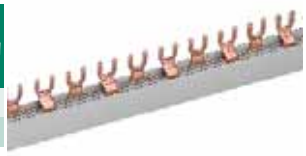
Number of poles (mm)	Division ratio (mm≈)	Cross section (mm)	Length	Circuits	Previous ref.	Ref. Number	Cat.Number	Packing
1	9	10	1000	57	01790.000000	W207387		100
1	9	24	1000	57	01790.240000	W211527		50
1	17,8	12	210	12	02955.000000	F218689		100
1	17,8	12	1000	57	02956.000000	T219207		50
1	27	36	1000	36	01791.000000	H213033		50



Number of poles (mm)	Division ratio (mm≈)	Cross section (mm)	Length	Circuits	Previous ref.	Ref. Number	Cat.Number	Packing
1	17,8	12	210	12	02960.120000	Z222938		50
1	17,8	12	1000	57	02959.120000	W219738		50
1	17,8	20	1000	57	02959.200000	D222183		50
1	27	16	1000	36	01792.160000	B212038		50
1	27	24	1000	36	01792.240000	T212560		50



Number of poles (mm)	Division ratio (mm≈)	Cross section (mm)	Length	Circuits	Previous ref.	Ref. Number	Cat.Number	Packing
2	17,8	16	1000	28	02948.160000	M215613		20
2	27	16	1000	19	02949.160000	V216126		5



Number of poles (mm)	Division ratio (mm≈)	Cross section (mm)	Length	Circuits	Previous ref.	Ref. Number	Cat.Number	Packing
3	17,8	10	210	4	02950.000000[1]	S216630[1]		25
3	17,8	10	1000	19	02951.000000[1]	J217657[1]		20
3	17,8	16	210	4	02950.000000[1]	S216630[1]		25
3	17,8	16	1000	19	02951.000000[1]	J217657[1]		20
3	17,8	16	210	1/3	02946.000000[1] [2]	F214595[1] [2]		25



Number of poles (mm)	Division ratio (mm≈)	Cross section (mm)	Length	Circuits	Previous ref.	Ref. Number	Cat.Number	Packing
3	27	16	1000	12	01797.160000[1]	Z213577[1]		20
3	27	16	1000	12	01795.160000	E213076		20
4	17,8	16	1000	14	02947.160000	L215106		15



[1] *Forks in centric position*

[2] *für einen 4- pol. FI-Schutzschalter und acht 1 -pol. LS-Schalter (N-Pol ausgespart)*

IEC General Purpose Fuses
DIN Fuses
BusBar System: Wiring Bars

Wiring Bars

Utilization

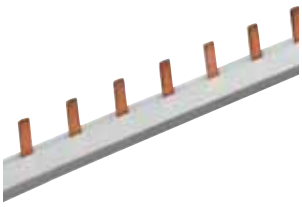
Ref. Number	Cat. Number	LINOCUR D01	LINOCUR D02	NEOZED-base with screw term.	Plastic base LINOZED
W207387		■		■	
W211527		■		■	
F218689		■			
T219207		■			
H213033				■	
Z222938					
W219738					
B212038			■		■
T212560			■		■
M215613		■			
V216126			■		
Z213577		■		■	
E213076			■		
L215106					■

Connection terminals

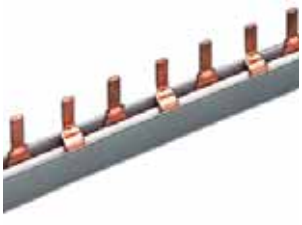
End cap Ref. Number	V219208	B213533	G218690	T218172
	■	■		
	■	■		
	■	■		
	■	■		
	■	■		
E222184	■	■		
H201786				
E222184				
E222184		■	■	
Y201271				

Pin design

Wiring bars



Number of poles (mm)	Division ratio (mm≈)	Cross section (mm)	Length	Circuits	Previous ref.	Ref. Number	Cat.Number	Packing
1	17,8	10	1000	57	02961.000000	H200728		20
1	17,8	16	1000	57	02961.160000	X207388		20
1	27	16	1000	37	02963.000000	M215107		50

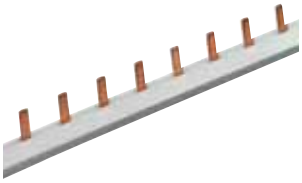


Number of poles (mm)	Division ratio (mm≈)	Cross section (mm)	Length	Circuits	Previous ref.	Ref. Number	Cat.Number	Packing
2	17,8	10	1000	28	02961.002000	X201270		20
2	17,8	16	1000	28	02961.162000	C212039		20



Number of poles (mm)	Division ratio (mm≈)	Cross section (mm)	Length	Circuits	Previous ref.	Ref. Number	Cat.Number	Packing
3	17,8	10	210	4	02964.000000	W216127		25
3	17,8	10	1000	19	02961.003000	G201785		20
3	17,8	16	210	4	02964.160000	T216631		25
3	17,8	16	1000	19	02961.163000	A213578		20
3	27	16	1000	12	02963.003000	N215614		20

End cap



	Previous ref.	Ref. Number	Cat.Number	Packing
16 mm² 2 u. 3-pol.	01796.000000	E222184		10
10 mm² 3-pol.	02952.000000	A222939		10
10 mm² 2-pol.	02953.000000	J200729		10
16 mm² 4-pol.	02954.000000	Y201271		10
for V216126	02965.000000	H201786		10

IEC General Purpose Fuses
DIN Fuses
BusBar System: Wiring Bars

Wiring Bars

Utilization

Ref. Number	Cat. Number	NEOZED base with twin-screw term.	NEOKIT
H200728			■
X207388			■
M215107		■	
X201270		■	
C212039		■	
W216127			■
G201785			■
T216631			■
A213578			■
N215614		■	

Connection terminals

End cap article no.	V219208	F217148	K217658
	■		
	■		
	■	■	
J200729	■		■
E222184	■		■
incl.	■		■
A222939	■		■
incl.	■		■
E222184	■		■
E222184	■	■	

Pin design

Connection terminals for input
Fork design


V219208


B213533

Max. terminal cross section (mm²)	Insulated yes/no	Version short/long	Previous ref.	Ref. Number	Cat.Number	Packing
25	yes	short	02990.000000	V219208		30
35	no	short	02972.000000	B213533		50
35	yes	long	02979.000000	G218690		35


G218690

Connection terminals for input
Pin design


X219739


F217148

Max. terminal cross section (mm²)	Insulated yes/no	Version short/long	Previous ref.	Ref. Number	Cat.Number	Packing
25	yes	short	02991.000000	X219739		30
35	no	short	02976.000000	F217148		50
35	no	long	02977.000000	K217658		50


K217658

Universal terminal
Steg-/Fork design

Max. terminal cross section (mm²)	Insulated yes/no	Version short/long	Previous ref.	Ref. Number	Cat.Number	Packing
35	yes	*	02978.000000	T218172		10

** Terminal must be put on wiring bar superately*


T218172

IEC General Purpose Fuses
DIN Fuses
BusBar System: Wiring Bars

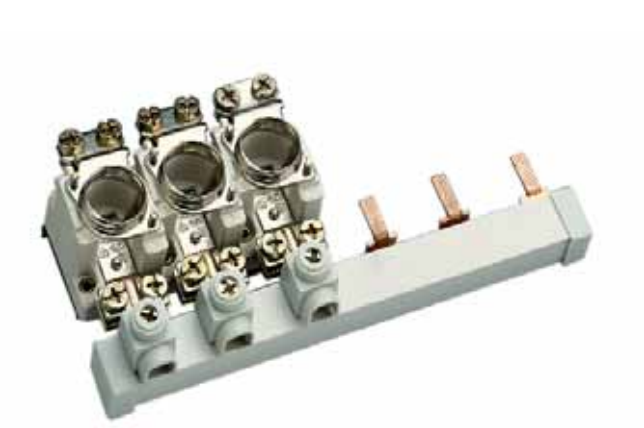
Wiring Bars



NEOZED base D01 and D02
3-pole wiring with E213076
Connection terminals V219208



NEOZED base D01 and D02
3-pole wiring with E213076
Connection terminals G218690

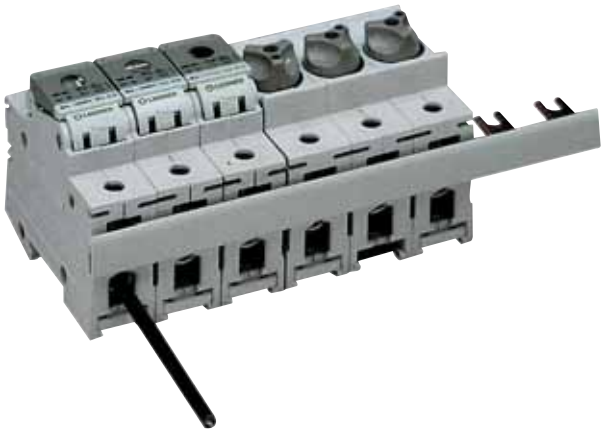


NEOZED base D02
with twin-screw terminal below
3-pole wiring with N215614
Connection terminals X219739

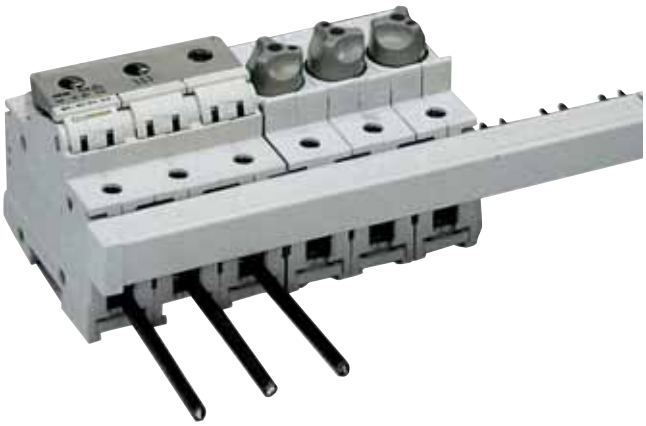
IEC General Purpose Fuses
DIN Fuses
BusBar System: Wiring Bars

Wiring Bars

LINOZED-LINOCUR D02
1-pole wiring with B212038



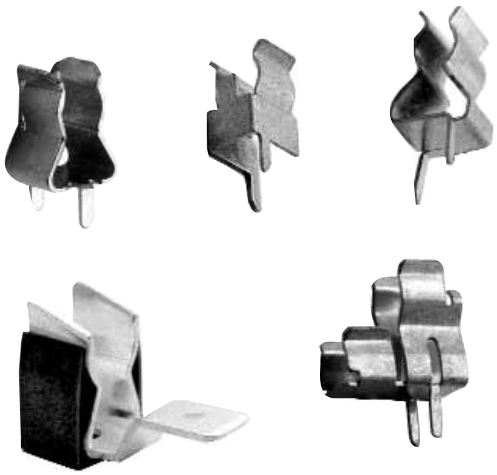
LINOZED-LINOCUR D02
3-pole wiring with Z213577



LINOCUR D02
2-pole wiring with V216126



Miniature Fuses Clips MR



5x20 and 6x32 Fuse sizes

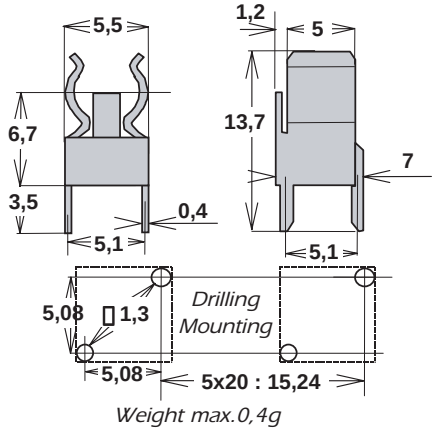
- CLIPS FOR PRINTED CIRCUIT BOARD OR SCREW MOUNTING
- RATED CURRENT BELOW 30A* DEPENDING ON TYPE

Main Characteristics

Size	Rated Current A	Power acceptance W 23°C	End Stops	Monting	Material	Designation	Reference Number	in box of 1000pcs	blister of 50pcs	Catalog Number
5x20	6,3*	1,6	Yes	Printed circuitboard	Brass, Tin plated	MR 5 CI.SP	W202074	Yes	Yes	MIMR5CISP
5x20	6,3*	2	Yes	Printed circuitboard	Brass, Tin plated	MR 5 CI-S	J210550	Yes	Yes	MIMR5CI-S
5x20	6,3*	2,5	Yes	Printed circuitboard	Bronze, Tin plated	MR 5 CI-C	K210551	Yes	Yes	MIMR5CI-C
5x20 &6x32	6,3*	1,6	No	Printed circuitboard	Brass, Nickel plated	MR 5-6	Y098967	Yes	Yes	MIMR5-6
5x20 &6x32	6,3*	1,6	Yes	Printed circuitboard	Brass, Tin plated	MR 5-6.SP	C204955	No	Yes	MIMR5-6SP
6x32	10*	2,5	Yes	Printed circuitboard	Bronze, Tin plated	MR 6 CI-S	H210549	Yes	Yes	MIMR6CIS
6x32	30*	3,5	No	Screw mounting 6,3mm slip-on connector tags	Silver plated copper + stainless steel spring	MR 6 VI	K091480	No	Yes	MIMR6VI

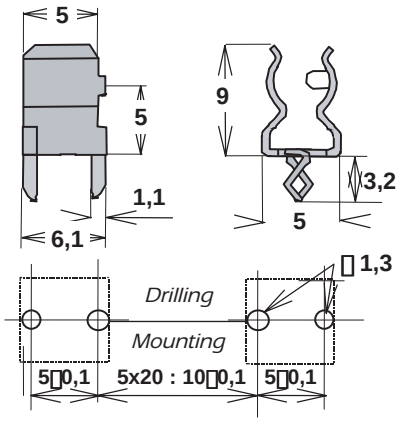
** Depends on fuse cover number for 5x20. L210552P*

MR 5 CI.SP:



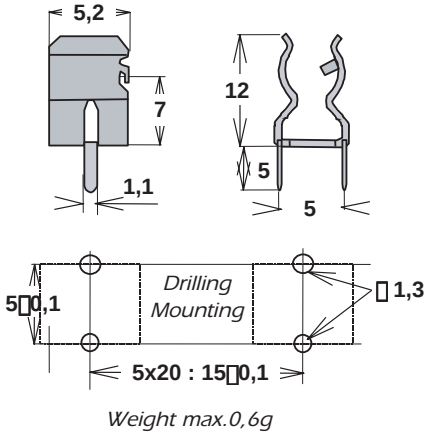
Weight max.0,4g

MR 5 CI.S:



Weight max.0,5g

MR 5 CI.C:

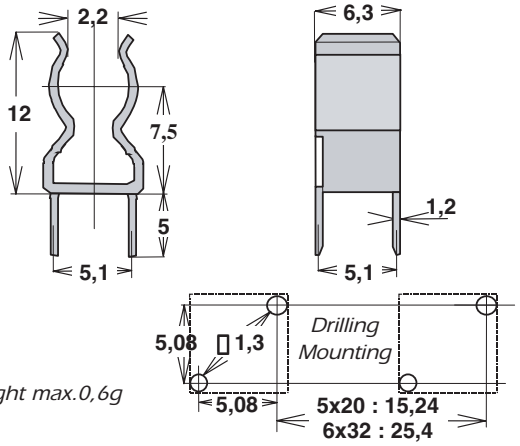


Weight max.0,6g

Miniature Fuses
Clips
MR

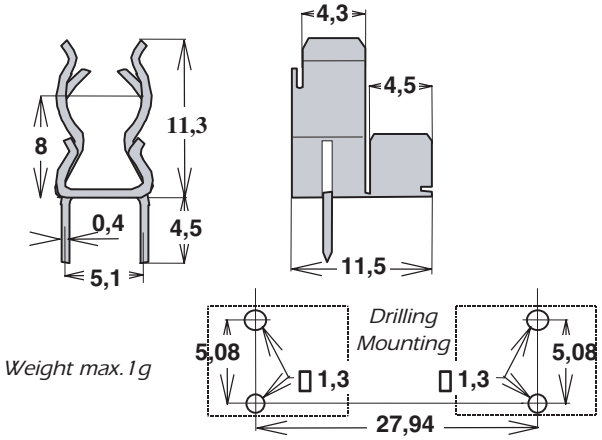
5x20 and 6x32 Fuse sizes

MR 5 - 6:



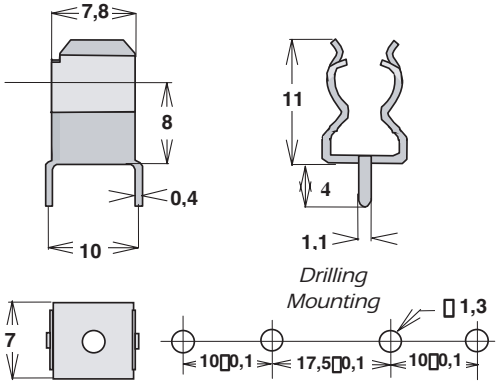
Weight max.0,6g

MR 5 - 6 SP:



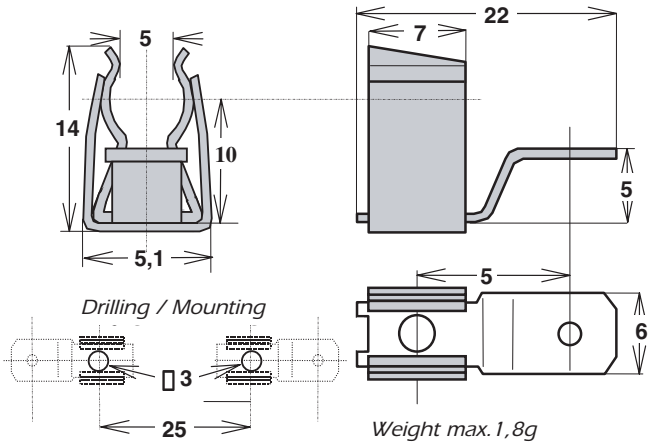
Weight max.1g

MR 6 CI - S:



Weight max.1g

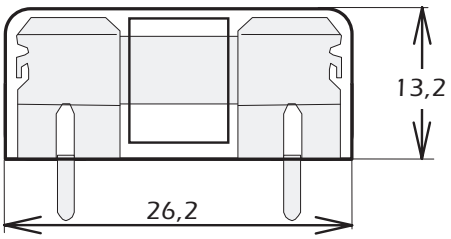
MR 6 VI:



Weight max.1,8g

CPT 5x20 FOR MR5CI-C & MR5-6:

Ref. L210552
Cat. Num MICPT5MR5CI-C



Miniature Fuses
Clips
30A & 60A Ferrules, SDC5-SDC6



30A & 60A ferrule - fuse clips

Fuse Clips for 30 & 60 Ampere Ferrule-type Fuses

Cat. Num.	Ref. Num.	Fig.	For fuse rating/size: Amps (max.)	Ferrule dia.	Mounting details Hole Size	Screw size
CO8915P	R215479	1	30	13/32"	.172" dia.	#8
CO8919P	P217524	2	30	13/32"	.196" dia.	#10
CO8916P	V215988	3	30	9/16"	.172" dia.	#8
CO8917P	R216491	4	30 or 60	13/16"	.22" x .30"	#10
CO8918P	F217010	5	60	1-1/16"	.22" x .30"	#10

All clips are UL Recognized: Guide IZLT2, File E52283
All clips are tin-plated copper alloy, non-spring reinforced.

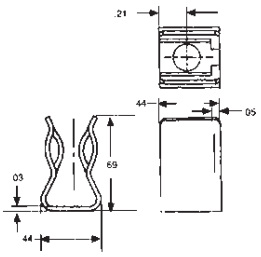


Figure 1

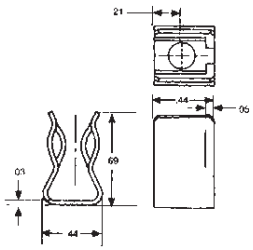


Figure 2

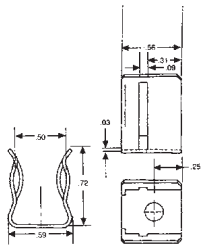


Figure 3

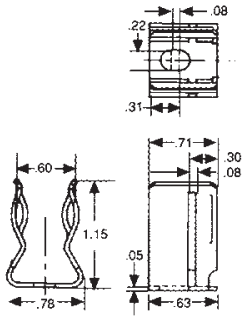


Figure 4

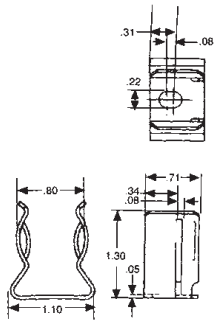


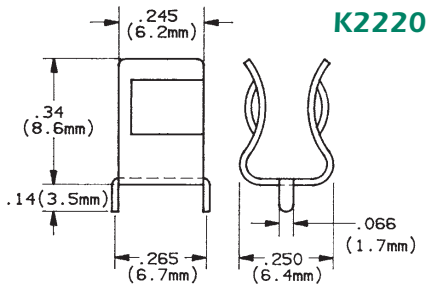
Figure 5



SDC6 PC Boad clips

- PC board mount fuse clip
- For 1/4" diameter fuses
- Tin plated hard brass
- 15A maxi

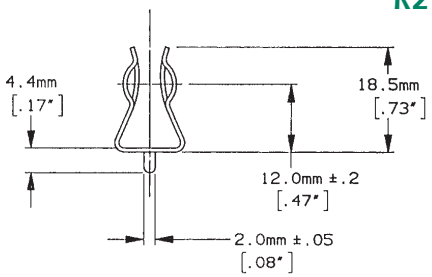
K222051



SDC5 PC Board clips

- PC board mount fuse clip
- For 5mm diameter fuses
- Tin plated hard brass
- 10A maxi

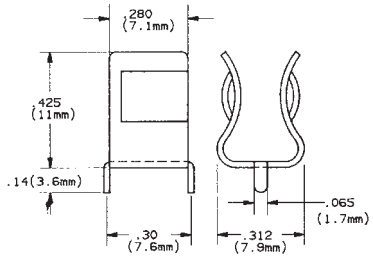
R219596



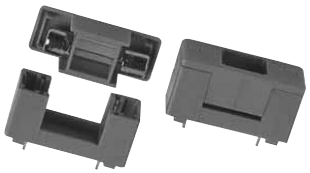
SDC7 PC Board clips

- PC board mount fuse clip
- For 13/32" (10mm) diameter fuses
- Tin plated spring brass
- 30A maxi

T222795



Miniature Fuses
Single-Pole Fuse Blocks
SI PTF



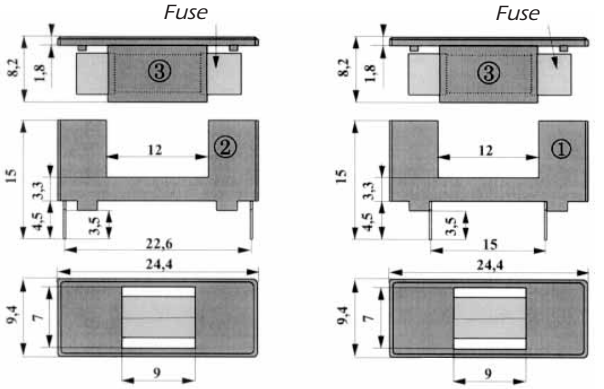
250 V AC 6,3 A
Fuse-base for 5 x 20 Fuses
SI PTF 76 - 78 and CPT BS PTF 76/78

pending pending

Dimensions

K 208 228 + L 208 229
Fuse

J 208 227 + L 208 229
Fuse



Max weight : Base: ① SI PTF 76 réf.: J 208 227 - Cat N° MISIPTF76: 1,5 g – ② SI PTF 78 réf. : K 208 228 - Cat N° MISIPTF78: 1,5 g
Hood: ③ CPT BS 76/78 réf. : L 208 229 - Cat N° MICPTBSPTF76-78: 0,5 g

Main Characteristics

Electrical characteristics:

- Rated voltage: 250V.
- Power dissipation: 1,6W à 40°C.
- Rated current approved : 6,3A.
- Dielectric Strength: > 3KV, 50Hz, 1 min dry.
- Contact resistance: < 5mΩ.
- Impulse withstand voltage: > 6KV (1,2/50µs).

Mounting:

Soldering pins (According. IEC 68-2-20).

Material:

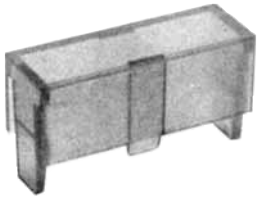
- Holder and Hood: Thermoplastic (polyamide PA6,8) UL 94 V0, Green.
- Metal parts: Copper Alloy (CuZn37H30) corrosion protected (2µm Ni + 5µm Sn).

Packaging:

- 10 and 1000 pieces.



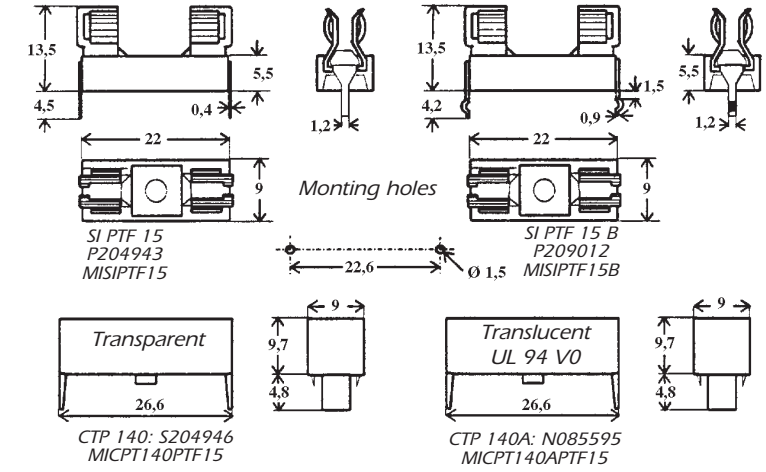




Miniature Fuses
Single-Pole Fuse Blocks
SI PTF

250 V AC 6,3 A
Fuse-base for 5 x 20 Fuses
SI PTF 15 - 15B and CPT 140-140A
Printed circuit board

Dimensions



Max weight: Base: 2 g
Hood: 1,5 g

Main Characteristics

Electrical characteristics:

- Rated voltage: 250V.
- Power dissipation: 1,6W à 40°C.
- Rated current approved : 6,3A.
- Dielectric Strength: > 3KV, 50Hz, 1 min dry.
- Contact resistance: < 5mΩ.
- Insulation resistance:> 100mΩ.

Mounting:

- Soldering pins (According. IEC 68-2-20).
- P.C.B. mounting hole: Ø 1,5mm.

Material:

- Holder: Thermoplastics (PPOM° UL 94 V1, Beige).
- Cover: Thermoplastics transparent (CPT 140 SAM) (CPT 140A PC UL 94 V0).
- Metal parts copper: Copper Alloy (CuZn37H30) corrosion (Ni+Sn).

Shock Safety:

- PC1 (IEC standards 127-6).

Packaging:

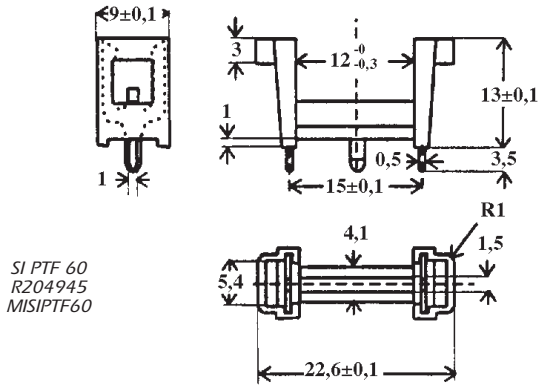
- 10 and 1000 pieces.

Miniature Fuses
Single-Pole Fuse Blocks
SI PTF



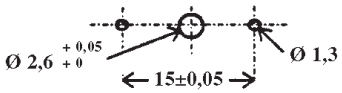
250 V AC 6,3 A
Fuse-base for 5 x 20 Fuses
SI PTF 60
Printed circuit board for automatic equipment

Dimensions



SI PTF 60
R204945
MISIPTF60

Monting holes



Max weight: 1,3 g

Main Characteristics

Electrical characteristics:

- Rated voltage: 250 V.
- Power dissipation: 1,6 W à 40° C.
- Rated current approved: 6,3A.
- Dielectric Strength: > 3 KV, 50 Hz, 1 min. dry.
- Contact resistance: < 5 mΩ.
- Insulation resistance: > 100 MΩ.

Mounting:

Soldering pins (According IEC 68-2-20). P.C.B. mounting hole : 2 x Ø 1,3 mm and 1 x Ø 2,6 mm.

Material:

- Holder: Thermoplastics (PBT) UL 94 V0, White.
- Metal parts copper : Copper Alloy (CuSn7) corrosion proteced (Sn).

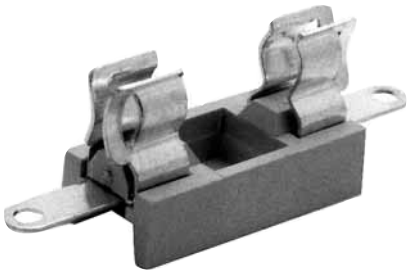
Shock Safety:

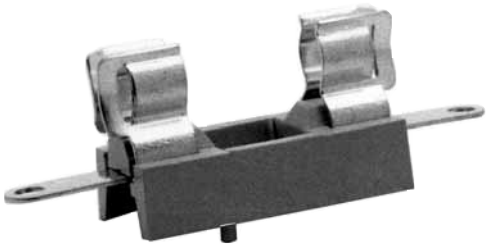
PC1 (IEC standard 127-6).

Packaging:

- 10 and 1000 pieces.

Miniature Fuses
Single-Pole Fuse Blocks
SI PTF

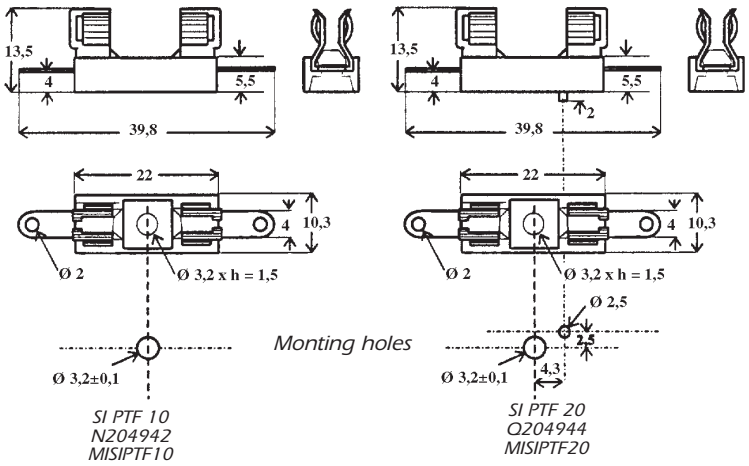




250 V AC 6,3 A
Fuse-base for 5 x 20 Fuses
SI PTF 10 - SI PTF 20
For screw mounting

Dimensions

Piece with anti-rotation



SI PTF 10
N204942
MISIPTF10

SI PTF 20
Q204944
MISIPTF20

Max weight : 2,2 g

Main Characteristics

Electrical characteristics:

- Rated voltage: 250 V.
- Power dissipation: 1,6 W à 40° C.
- Rated current approved: 6,3 A.
- Dielectric Strength: > 3 KV, 50 Hz, 1 min. dry.
- Contact resistance: < 5 mΩ.
- Insulation resistance: > 100 MΩ.

Mounting:

- Screwed M3.
- Mounting hole : Ø 3,3 mm.

Material:

- Holder: Thermoplastics (PPOM) UL 94 V1, Beige.
- Metal parts: Copper Alloy (CuZn37H30) corrosion proteced (Ni+Sn).

Shock Safety:

- PC1 (IEC standard 127-6).

Packaging:

- 10 and 1000 pieces.

Miniature Fuses
Single-Pole Fuse Blocks
Modular Bases 6x32



A low profile fuse block featuring individual barriers which reinforce the fuse clips while providing greater protection against clip damage and electrical shock. The unique design permits self-alignment of clips to fuse cap. This, plus a one-piece clip/terminal assures low contact resistance. Higher current ratings have been attained using spring brass clips. With the exception of the two-pole unit, multiple pole units may be broken apart to obtain desired number of poles.

Specifications

- Dielectric Strength: 1500V., Minimum.
- Clip/Terminals: Tin-Plated Spring Brass.
- Base: Glass reinforced Thermoplastic. (Gray except Anti-Rotation series which is Black). UL 94V0 flammability rating.
- Ambient Temperature: -40°C to +85°C.

Approvals

Recognized under the Components Program of Underwrtiters Laboratories and Certified by CSA up to 300V and at current ratings shown below.

Series	Current Rating U.L.	CSA
6X32000	30A	30A
6X32600	20A	20A
6X32800	20A	20A
6X32900	30A	25A
6X32101	15A	15A

Electrical Specifications

Series	Terminals	Rating
6x32000	Solder	30A, 300V*
6x32600	3/16" Q.C.	20A, 300V
6x32800	1/4" Q.C.	20A, 300V
6x32900	1/4" Q.C.	30A, 300V
6x32101	P.C. Board	15A, 300V

* 30A capability is based on temperature rise with ≠ 10 AWG wire property soldered.

Ordering Information:

CATALOG NUMBER				REFERENCE NUMBER					
Solder Type Terminals	nema style 3/16" QC Terminals	1/4" QC Terminals	nema style 1/4" QC Terminals	Solder Type Terminals	nema style 3/16" QC Terminals	1/4" QC Terminals	nema style 1/4" QC Terminals	number OF POLES	REFERENCE DIMENSION "A"
6X32001	6X32601	6X32801	6X32901	L225732	B225746	Q225759	E225772	1	.50"
6X32002	6X32602	6X32802	6X32902	M225733	C225747	R225760	F225773	2	1.12"
6X32003	6X32603	6X32803	6X32903	N225734	D225748	S225761	G225774	3	1.75"
6X32004	6X32604	6X32804	6X32904	P225735	E225749	T225762	H225775	4	2.38"
6X32005	6X32605	6X32805	6X32905	Q225736	F225750	V225763	J225776	5	3.00"
6X32006	6X32606	6X32806	6X32906	R225737	G225751	W225764	K225777	6	3.63"
6X32007	6X32607	6X32807	6X32907	S225738	H225752	X225765	L225778	7	4.25"
6X32008	6X32608	6X32808	6X32908	T225739	J225753	Y225766	M225779	8	4.88"
6X32009	6X32609	6X32809	6X32909	V225740	K225754	Z225767	N225780	9	5.50"
6X32010	6X32610	6X32810	6X32910	W225741	L225755	A225768	P225781	10	6.13"
6X32011	6X32611	6X32811	6X32911	X225742	M225756	B225769	Q225782	11	6.75"
6X32012	6X32612	6X32812	6X32912	Y225743	N225757	C225770	R225783	12	7.38"
6X32021*	6X32621*	6X32821	6X32921*	Z225744*	P225758*	D225771	S225784*	1	.50"
6X32101	-	-	-	A225745	-	-	-	1	.50"

** With anti-rotation boss*

Miniature Fuses
Single-Pole Fuse Blocks
5x20QC1, 6x32QC1



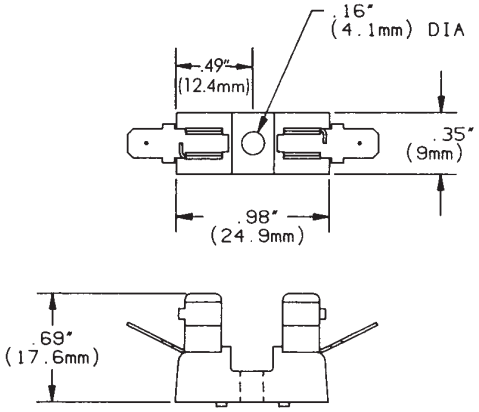
Recommended Fuse Usage

5X20QC1	use with GGM, GGA, GSA, GSB, GDG
6X32QC1	use with GSA, GDL, GGC, GAB

5X20QC1 (Ref. Number: Z219603)

SINGLE-POLE FUSE BLOCK for 5mm x 20mm fuses

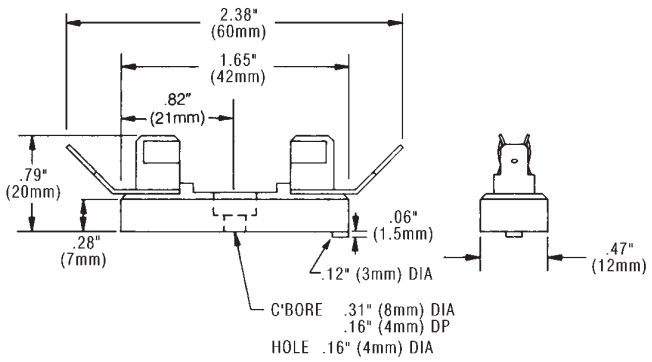
- Tin plated clips
- Polyester insulator
- 3/16" quick-connect terminals
- Rated 15A, 250V
- UL Recognized



6X32QC1 (Ref. Number: R222057)

SINGLE-POLE FUSE BLOCK for 1/4"x 1-1/4" fuses

- Tin-plated phosphor bronze clips
- Phenolic insulator
- 1/4" quick-connect terminals
- Rated 30A, 250V - UL Recognized
- Rated 20A, 250V - CSA Certified



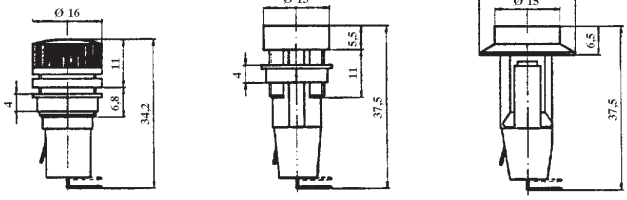
Miniature Fuses
Panel Mount Fuseholders
PU PTF



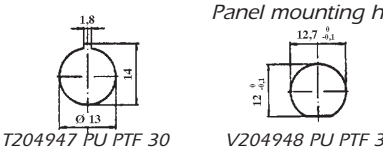
250 V AC 6,3A
SHOCK-SAFE FUSE HOLDER 5 x 20
PU PTF 30 - PU PTF 35 - PU PTF 40

PU PTF 30: non-certified

Dimensions



Panel mounting holes



T204947 PU PTF 30
MIPUPTF30
Weight: 6 g

V204948 PU PTF 35
MIPUPTF35
Weight: 4 g

W204949 PU PTF 40
MIPUPTF40
Weight: 4,5 g

Main Characteristics

Electrical characteristics:

- Rated voltage : 250 V.
- Power dissipation : 2,5 W à 40° C.
- Rated current : 6,3A.
- Dielectric Strenght : > 3 KV, 50 Hz, 1 min. dry.
- Contact resistance : < 5 mΩ.
- Insulation resistance : > 100 MΩ.

Mounting:

	PU PTF 30	PU PTF 35	PU PTF 40
Thickness panel :	1 to 3 mm	1 to 6 mm	0,8 to 2,5 mm
Tightening torque :	max. 1,2 N.m	max. 1,2 N.m	

Connections :

slip-on connectors type 2,8 thickness 0,5 mm can be soldered.

Material:

- Holder: Thermoplastics (PC) UL 94 V0, Black.
- Cover: Thermoplastics (PC) UL 94 V0, Black.
- Metal parts copper: Copper Alloy (CuZn37) corrosion protected (Ni+Sn).

Shock Safety: PC1 (IEC standard 127-6).

Packaging:

- 10 and 1000 pieces.

Miniature Fuses
Panel Mount Fuseholders
PU PTF

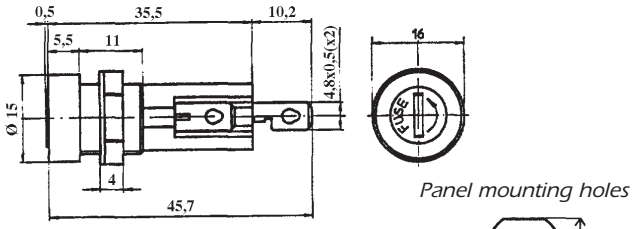




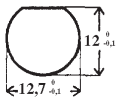
250 V AC 6,3A
SHOCK-SAFE FUSE HOLDER 5 x 20
PU PTF 70 - PU PTF 55

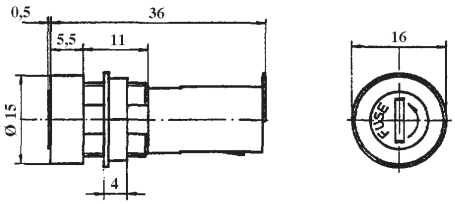
Dimensions

A204953: PU PTF 70 - 250 V AC 10A
MIPUPTF70



Panel mounting holes





Z204952: PU PTF 55 - 250 V AC 6,3A
MIPUPTF55

Max weight: PU PTF 70: 6 g
PU PTF 55: 5,5 g

Main Characteristics

Electrical characteristics:

- Rated voltage: 250 V.
- Power dissipation: 2,5 W à 40° C.
- Rated current: 10A PU PTF 70 - 6,3A PU PTF 55
- Dielectric strength: > 3 KV, 50 Hz, 1 min. dry.
- Contact resistance: < 5 mΩ.
- Insulation resistance: > 100 MΩ.

Mounting:

Front panel thickness from 1 to 6 mm (punched hole : see drawing). Max. tightening torque : 1,2 N.m

Connections:

Slip-on connectors type 4,8 for PU PTF 70 and 2,8 for PU PTF 55, thickness 0,5 mm can be soldered.

Material:

- Holder: Thermoplastics (PBT) UL 94 V0, Black.
- Cover: Thermoplastics (PBT) UL 94 V0, Black.
- Metal parts: Copper Alloy (CuZn37) corrosion protected (Ni+Sn).

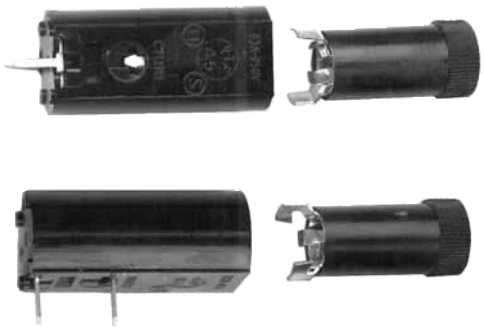
Shock Safety:

- PC1 (IEC standard 127-6).

Packaging:

- 10 and 1000 pieces

Miniature Fuses
Panel Mount Fuseholders
PU PTF

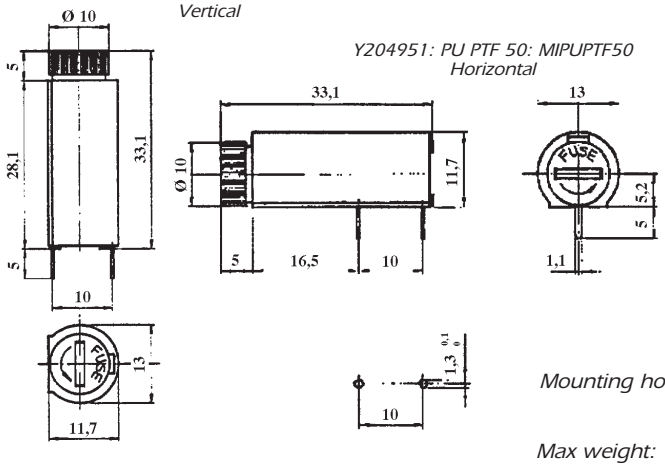


250 V AC 6,3A
SHOCK-SAFE FUSE HOLDER 5 x 20
PU PTF 45 - PU PTF 50
Printed circuit board mounting.
Bayonet cover.

Dimensions

X204950: PU PTF 45: MIPUPTF45
Vertical

Y204951: PU PTF 50: MIPUPTF50
Horizontal



Mounting holes

Max weight: PU PTF 45 : 5 g
PU PTF 50 : 5 g

Main Characteristics

Electrical characteristics:

- Rated voltage: 250 V.
- Power dissipation: 2,5 W à 40° C.
- Rated current : 6,3A.
- Dielectric strength: > 3 KV, 50 Hz, 1 min. dry.
- Contact resistance: < 5 mΩ.
- Insulation resistance: > 100 MΩ.

Mounting & Connections:

- Printed circuit board, vertical (PU PTF 45) or horizontal (PU PTF 50) mount.
- Soldering pins 0,5 x 1,1 mm. Solderability in accordance with IEC 68-2-2.

Material:

- Holder: Thermoplastics (PC) UL 94 V0, Black.
- Cover: Thermoplastics (PBT) UL 94 V0, Black.
- Metal parts: Copper Alloy (CuZn37) corrosion protected (Ni+Sn).

Shock Safety:

- PC1 (IEC standard 127-6).

Packaging:

- 10 and 1000 pieces.

Miniature Fuses
Panel Mount Fuseholders
PU



Receptacle

5x20



Fuse carrier

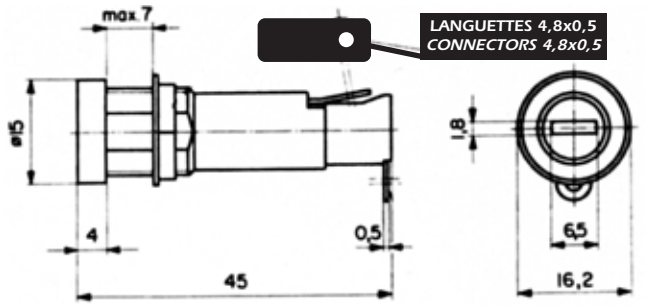
6x32



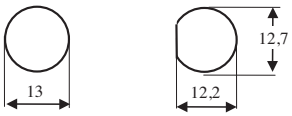
As per standards: IEC 127-6, UL512, IEC257.

250V AC 10A Montage frontal
For 5X20 and 6X32 Fuses
PU PANEL 5-6 à languettes

Dimensions



Panel mounting hole



Max weight :
Receptacle:
T 210 536 : 5g
Fuse carrier:
5x20 X 210 539 : 2,5g
6x32 Y 210 540 : 2,5g

Main Characteristics

Electrical characteristics:

- Rated voltage: 250V.
- Admissible fuse power dissipation: 5X20 fuses 4W ;6x32 fuses 4W at 23°C.
- Rated current approved: 10A according to IEC 127 and 16A according to UL.
- Dielectric strength: 4KV, 50Hz, 1min dry.
- Protection class: PC2 according IEC 127 or IP 40 according EN 60 529.
- Allowable ambient air temperatues Ta for accessible parts : -25°C to +85°C (Derating admissible power acceptance)
- Contact resistance: 5mΩ.
- Isulation resistance (500VDC/1min) : > 100MΩ.

Mounting:

Front panel mounting. Torque/Fixing nut : max. 1,2 Nm
Slip-on connectors type 4,8mm X 0,5mm, can be soldered

Fuse carrier:

with bayonet fixing, screwdriver slot.
5x20 X210539 - Cat n° MIBH5PUS-6
6x32 Y210540 - Cat n° MIBH6PUS-6

Receptacle:

T210536 - Cat n° MIPUP5-6L

Packaging:

10 and 100 pieces.

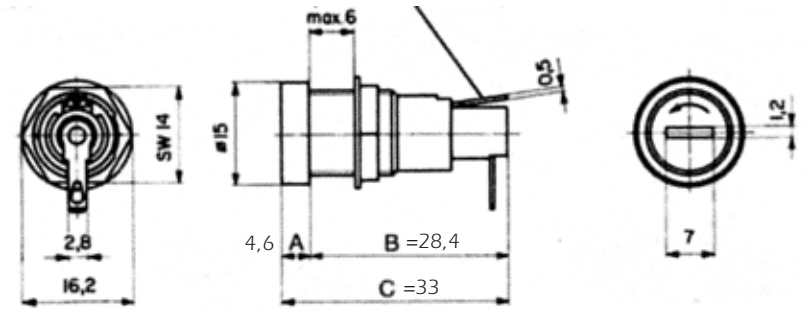
Miniature Fuses
Panel Mount Fuseholders
PU



250V AC 10A IP65
For 5X20 Fuses
PU 5x20 IP65 COMPLET

As per standards: IEC 127-6, UL512, IEC257.

Dimensions



Panel mounting hole



Max weight: Receptacle & Fuse carrier F 210 547: 5g

Main Characteristics

Electrical characteristics:

- Rated voltage: 250V.
- Admissible fuse power dissipation: 2,5W à 23°C.
- Rated current approved: 6,3A according to IEC 127 and 10A as per UL.
- Dielectric strength: 4KV, 50Hz, 1min dry.
- Protection class: PC2 according IEC 127 or IP 65 according EN 60 529.
- Allowable ambient air temperatures for accessible parts: -25°C to +85°C (Derating admissible power acceptance)
- Contact resistance: 5mΩ.
- Isulation resistance (500VDC/1min): > 100MΩ

Mounting:

Front panel mounting. Torque/Fixing nut: max. 1,2 Nm.
Slip-on connectors type 2,8mm X 0,5mm, can be soldered.

Fuse carrier:

screw type, screwdriver slot, torque 0,35NNm.

Receptacle & fuse carrier:

F210547 - Cat n°: MIPU5IP65 COMPL



Fuse carrier 6x32





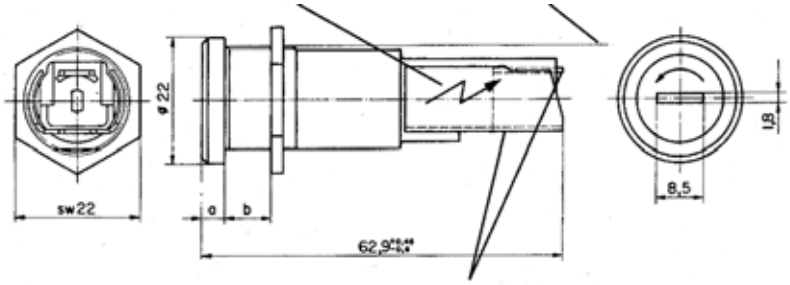
Fuse carrier 5x20

As per standards: IEC 127-6, UL512, IEC257.

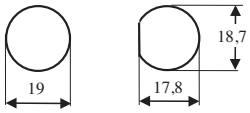
Miniature Fuses
Panel Mount Fuseholders
PU

250V AC 16A IP67
For 5X20 and 6X32 Fuses

Dimensions



Panel mounting hole



Max weight: *Receptacle: A 210 542 : 10g*
Fuse carrier 5x20 C 210 544 : 2,5g
6x32 E 210 546 : 2,5g

Main Characteristics

Electrical characteristics:

- Rated voltage : 250V.
- Admissible fuse power dissipation : 4W à 23°C.
- Rated current approved : 16A according to IEC 127 and 30A according to UL.
- Dielectric strength : 4KV, 50Hz, 1min dry.
- Protection class : PC2 according IEC 127 or IP 67 according EN 60 529.
- Allowable ambient air temperatues Ta for accessible parts : -25°C to +85°C (Derating admissible power acceptance)
- Contact resistance : 3,5mΩ.
- Isulation resistance (500VDC/1min) : > 100MΩ

Mounting:

Front panel mounting. Torque/Fixing nut : max. 2.4 Nm.
Slip-on connectors type 6.3mm X 0.8mm, can be soldered.
Cross-section 6mm≈.

Fuse carrier: screw type, screwdriver slot.

5x20 C210544 - Cat N° MIBH5PU5-6IP67
6x32 E210546 - Cat N° MIBH6PU5-6IP67

Receptacle:

A210542 - Cat N° MIPU5-6IP67

Packaging:

- 10 and 100 pieces.

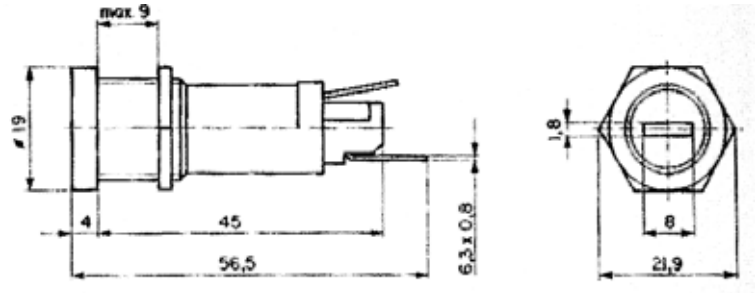
Miniature Fuses
Panel Mount Fuseholders
PU



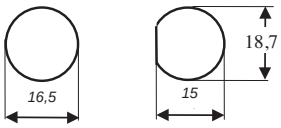
500V AC 10A
For 5X20 and 6X32 Fuses
PU 500V 5-6 à languettes

As per standards: IEC 127-6, UL512, IEC257.

Dimensions



Panel mounting hole



Max weight : Receptacle Z210541 : 5g
Fuse carrier 5x20 B210543 : 2,5g
6x32 D210545 : 2,1g

Main Characteristics

Electrical characteristics:

- Rated voltage: 500V.
- Admissible fuse power dissipation: 4W à 23°C.
- Rated current approved: 10A as per IEC 127 and 20A as per UL.
- Dielectric strengt: 4KV, 50Hz, 1min dry.
- Protection class: PC2 according IEC 127 or IP 40 according EN 60 529.
- Allowable ambient air temperatues Ta for accessible parts: -25°C to +85°C (Derating admissible power acceptance)
- Contact resistance: 5mΩ.
- Isulation resistance (500VDC/1min) : > 100MΩ.

Mounting:

Front panel mounting. Torque/Fixing nut: max. 1,2 Nm.
Slip-on connectors type 6,3mm thickness 0,8mm can be soldered. Cross-section 6mm≈.

Fuse carrier: screw type, screwdriver slot.

5x20 B210543 - Cat N° MIBH5PU500V5-6
6x32 D210545 - Cat N° MIBH6PU500V5-6

Receptacle:

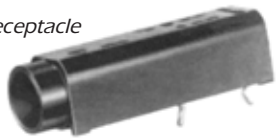
Z210541 - Cat N° MIPU500V5-6L

Packaging:

- 10 and 100 pieces.

Miniature Fuses
Panel Mount Fuseholders
PU

Receptacle



5x20



Fuse carrier

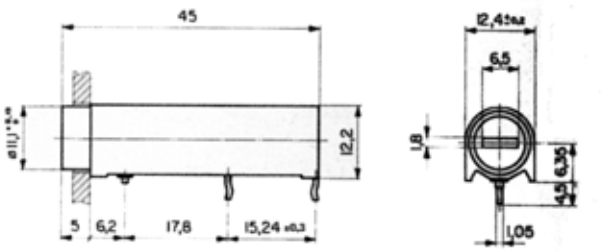
6x32

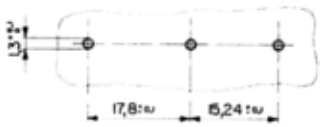


As per standards: IEC 127-6, UL512, IEC257.

250V AC 10A montage horizontal
For 5X20 and 6X32 Fuses
PU CI-H 5-6 picots

Dimensions





Max weight:

Receptacle:
W 210 538 : 5g
Fuse carrier:
5x20 X 210 539 : 2,5g
6x32 Y 210 540 : 2,5g

Main Characteristics

Electrical characteristics:

- Rated voltage: 250V.
- Admissible fuse power dissipation: 5X20 fuses 2,5W ;6x32 fuses 3,2W at 23°C.
- Rated current approved: 10A according to IEC 127 and 16A according to UL.
- Dielectric strength: 4KV, 50Hz, 1min dry.
- Protection class: PC2 according IEC 127 or IP 40 according EN 60 529.
- Allowable ambient air temperatues Ta for accessible parts: -25°C to +85°C (Derating admissible power acceptance)
- Contact resistance: 5mΩ.
- Isulation resistance (500VDC/1min) : > 100MΩ.

Mounting:

PCB mount horizontal.
Solderability 235°C 5s.

Fuse carrier: with bayonet fixing, screwdriver slot.

5x20 X210539 - Cat N° MIBH5PU5-6
6x32 Y210540 - Cat N° MIBH6PU5-6

Receptacle:

W210538 - Cat N° MIPUCI-H5-6P

Packaging:

- 10 and 100 pieces.

Miniature Fuses
Panel Mount Fuseholders
GPM



GPM PANEL MOUNT FUSE HOLDERS

Ferraz Shawmut GPM Panel Mount Fuse Holders are in sizes to accommodate 5mm x 20mm, 1/4" x 1-1/4", Class CC and Midget (1-1/2" x 13/32") fuses. All 30A holders have glass-filled polyester insulators for extra dependability and trouble-free installation. Patented design allows same body to accept screw or bayonet knob. Flange design allows front or rear mounting. The 10A and 15A holders are for front mounting only.

Approvals

- GPM-A, GPM-G: UL Recognized, Guide IZLT2, File E118864
  CSA Certified, Class 908501, File AP82191
- All others: UL Recognized, Guide IZLT2, File E52283
  CSA Certified, Class 6225, File 32169

Recommended Fuse Usage

GPM Fuse Holders will accommodate these Ferraz Shawmut fuses:

GPM-A: GGM, GGA, GSC
GPM-G: GSA, GDL, GGC, GSB, GDG, GAB
GPM-SRR, GPM-BRR, GPM-WTR: ATQR, ATDR, ATMR
GPM-SRR90, GPM-BRR90, GPM-WTR90: ATQR, ATDR, ATMR
GPM-S, GPM-B, GPM-WT:
GPM-S90, GPM-B90, GPM-WT90: } ATQ, ATM, TRM, OTM, GGU, A13X-2, A25Z-2, A60Q-2, A6Y-2B

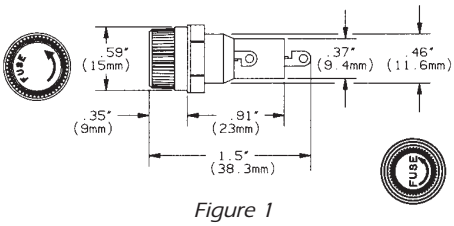


Figure 1

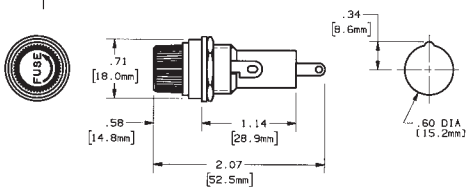


Figure 2

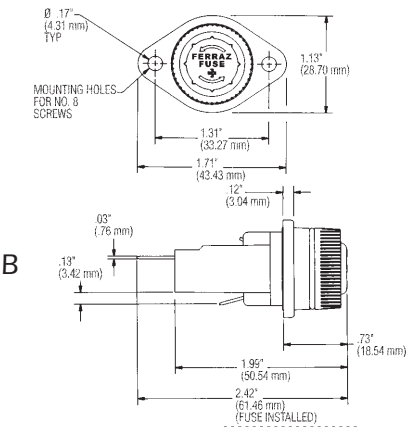


Figure 3

Catalog Numbers & Descriptions

Cat No.	Ref. No.	Fig.	Cap Type	Amps	Volts	Fuse Type	Terminal Type
GPM-A		1	Screw Knob	10	250	5mm x 20mm	Solder
GPM-G		2	Screw Knob	15	250	1/4" x 1-1/4"	Solder
GPM-S		3	Screw Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder
GPM-S90		4	Screw Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder, Right Angle
GPM-SRR		3	Screw Knob	30	600	Class CC	1/4" Quick-connect/Solder
GPM-SRR90		4	Screw Knob	30	600	Class CC	1/4" Quick-connect/Solder, Right Angle
GPM-B		3	1/4 Turn Bayonet Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder
GPM-B90		4	1/4 Turn Bayonet Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder, Right Angle
GPM-BRR		3	1/4 Turn Bayonet Knob	30	600	Class CC	1/4" Quick-connect/Solder
GPM-BRR90		4	1/4 Turn Bayonet Knob	30	600	Class CC	1/4" Quick-connect/Solder, Right Angle
GPM-WT		3	Water-tight Screw Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder
GPM-WT90		4	Water-tight Screw Knob	30	600	1-1/2" x 13/32"	1/4" Quick-connect/Solder, Right Angle
GPM-WTR		3	Water-tight Screw Knob	30	600	Class CC	1/4" Quick-connect/Solder
GPM-WTR90		4	Water-tight Screw Knob	30	600	Class CC	1/4" Quick-connect/Solder, Right Angle

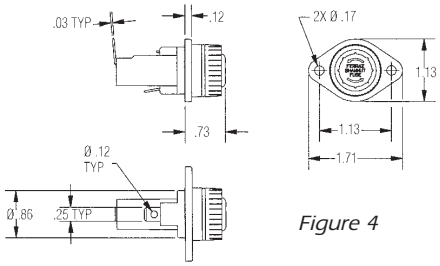


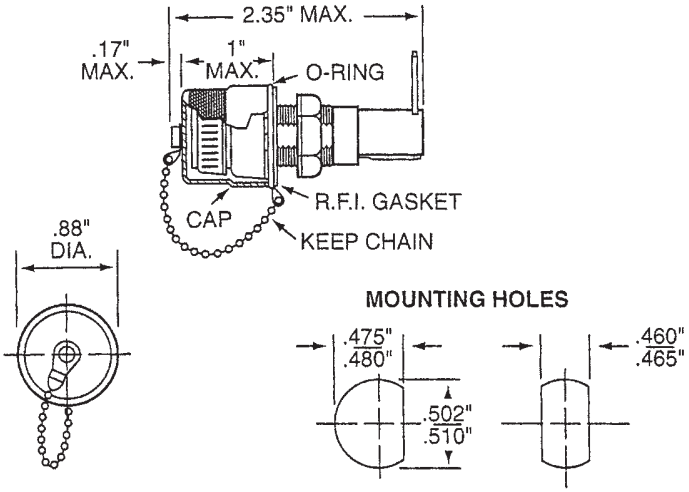
Figure 4

Miniature Fuses
Panel Mount Fuseholders
GPM



GPM-SERIES

RF Shielded/watertight panel mount for 3AG fuses. Radio frequency shielded fuseholders eliminate possible transmission or reception of RF signals through the hole in the chassis in which the fuseholder is mounted. These fuseholders comply with the watertight construction requirement of MIL-F-19207 and the Shock-Safe requirements of IEC 65 and 257. A rubber O-ring and conductive gasket maintain RF shielding and watertight construction.



Catalog Numbers & Descriptions

Catalog Number	Reference Number	Brass Shielding. Cap finish
GPM-RFN	D230509	NICKEL PLATED
GPM-RFB	C230508	DULL BLACK

Miniature Fuses
Panel Mount Fuseholders
GPM



International shock-safe panel mount type Fuses

A complete selection of styles satisfy a wide variety of fuseholder design needs. Designed to eliminate the possibility of electrical shock, as defined in IEC standards 65 and 127. The Universal fuseholder body will accept 3AG, 5x20mm, and 2AG fuse sizes depending on knob selected. Permits inventory reduction of bodies and provides knob interchange versatility. Anti-tease feature eliminates circuit interruption when knob is accidentally depressed. Five fuseholder types assure design flexibility. Available with two knob styles – screwdriver slot or fingertip. Available in two terminal styles – dual purpose for soldering or 3/16" NEMA quick connect; and 1/4" NEMA/DIN quick connect. Quick fuse size identification is provided with color-coded letters on fingergrip knob and color-coded screwdriver slot knobs.

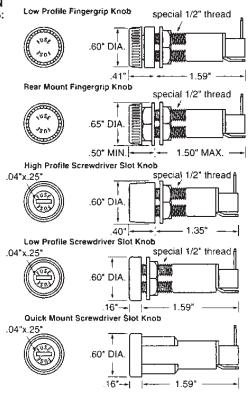
Specifications

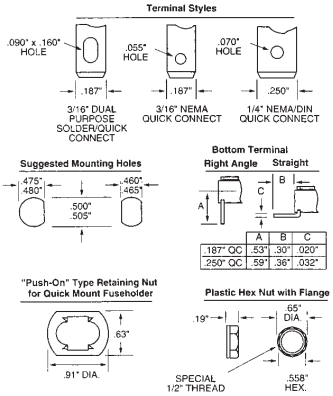
- **Electrical:** Insulation Resistance: 10,000 Megohm minimum at 500 VDC. Contact Resistance: Less than .005 ohms average at currents up to 1 ampere.
- **Mounting:** Threaded styles withstand 15 in.-lb. mounting torque.
  Low profile and High profile panel thickness: .032" min./.310" max.
  Quick mount panel thickness: .012" min./.360" max.
  Rear mount panel thickness: .012" min./.260" max.
- **Molded Parts:** Body material: Black glass-filled thermoplastic (UL 94VO)
  Knob material: Grey, blue or black glass-filled thermoplastic (UL 94V0).
  Hex Nut Material: Black glass-filled thermoplastic.
- **Knob:** Finger-Grip, Fuse Extractor type or Screwdriver Slot, Fuse Extractor type with plated copper alloy contact clips. Spring loaded, locking mechanism provides anti-tease feature and will not vibrate loose.
- **Terminals:** Copper alloy. Tin-plated. Three styles available. A .187" dual purpose terminal accepts wire for soldering or a Quick-Connect receptacle. .187" terminal for NEMA Quick-Connect and .250" terminal for NEMA/DIN Quick-Connect available.
- **Ambient Temperature:** -40°C to +85°C.
- **Hardware:** Threaded style fuseholders are supplied with thermoplastic hex nut unassembled. Quick Mount style fuseholders are supplied with a push-on type retaining nut, black oxide finish, unassembled.

Approvals

	3AG	5x20mm	2AG
ᖇᒐ	20A 250V	10A 250V	10A 250V
CSA	20A 250V	10A 250V	10A 250V
SEMKO	6.3A 250V	10A 250V	-
VDE	10A 250V	10A 250V	-

DIMENSION DRAWINGS:





Miniature Fuses
Panel Mount Fuseholders
GPM

International shock-safe panel mount type Fuses

Ordering Information:

Cap Suffix: -020 / Body Suffix: -010

Example: GPM - A LS 7

Fuse Size	Style	Terminals
M 2AG-.177" x .570"	LF Low Profile Body, Black Fingergrip Knob	1 3/16" (Rt. Angle) Dual Purpose Solder/QC
G 3AG-.250" x 1.250"	RF Rear Mount Body, Black Fingergrip Knob Fingergrip Knob: 2AG-Blue Letters 3AG-White Letters 5x20mm-Red Letters	2 3/16" (Straight) Dual Purpose Solder/QC
A 5 x 20mm-.197" x 787"		3 3/16" (Rt. Angle) NEMA/QC
	HS High Profile Body Screwdriver Slot Knob	4 3/16" (Straight) NEMA/QC
	LS Low Profile Body Screwdriver Slot Knob	7 1/4" (Rt. Angle) NEMA/DIN QC
	QS Quick Mount Body Screwdriver Slot Knob Screwdriver Slot Knob: 2AG-Blue Knob 3AG-Grey Knob 5x20mm-Black Knob	8 1/4" (Straight) NEMA/DIN QC

To Order Knob Only:

Fuse size	Fingergrip knob		screwdriver slot knob	
	Cat. number	Ref. Number	Cat.number	Ref. Number
2AG	GPM-MLF1-020		GPM-MLS1-020	
3AG	GPM-GLF1-020		GPM-GLS1-020	
5x20mm	GPM-ALF1-020		GPM-ALS1-020	

To Order Body Including Nut(s) Only:

Terminal style	Bottom terminal	Low profile Body		High Profile Body		Rear Mount Body		Quick Mount Body	
		Cat.No***	Ref.No	Cat.No	Ref.No	Cat.No	Ref.No	Cat. No	Ref.No
3/16" Dual Purpose	(Rt. Angle)	GPM-ALF1-010		GPM-AHS1-010		GPM-ARF1-010		GPM-AQS1-010	
3/16" Dual Purpose	(Straight)	GPM-ALF2-010		GPM-AHS2-010		GPM-ARF2-010		GPM-AQS2-010	
3/16" NEMA QC	(Rt. Angle)	GPM-ALF3-010		GPM-AHS3-010		GPM-ARF3-010		GPM-AQS3-010	
3/16" NEMA QC	(Straight)	GPM-ALF4-010		GPM-AHS4-010		GPM-ARF4-010		GPM-AQS4-010	
1/4" NEMA/DIN QC	(Rt. Angle)	GPM-ALF7-010		GPM-AHS7-010		GPM-ARF7-010		GPM-AQS7-010	
1/4" NEMA/DIN QC	(Straight)	GPM-ALF8-010		GPM-AHS8-010		GPM-ARF8-010		GPM-AQS8-010	

**** Low profile body will accept either Fingergrip or Screwdriver Slot Knob.*

Note: Consult factory for ordering combined packages with knob and body.

Miniature Fuses
In-Line Fuse-holders
PRF

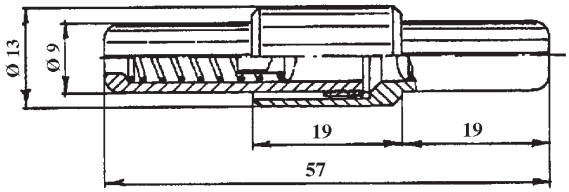


250 V AC 6,3A
Fuse-holders 5 x 20
PRF 5-6 SF - PRF 5-6 AF

Dimensions

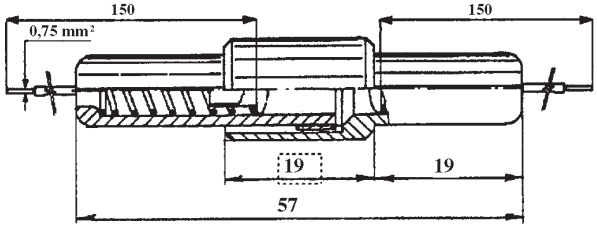
WITHOUT CABLE

M 205 010 PRF 5-6 SF - Cat N°: MIPRF5-6SF



WITH CABLE

W 078 311 PRF 5-6 AF - Cat N°: MIPRF5-65AF



Max weight: *PRF 5-6 SF : 5 g*
PRF 5-6 AF : 8 g

Main Characteristics

Electrical characteristics:

- Rated voltage: 250 V.
- Power dissipation: 1,6 W à 40° C.
- Rated current: 6,3 A.
- Dielectric Strength: > 3 KV, 50 Hz, 1 min. dry.
- Contact resistance: < 5 mΩ.
- Insulation resistance : > 100 MΩ.

Mounting:

- In-line fuseholders.

Connections:

- PRF 5-6 SF crimp rivet printed. PRF 5-6 AF Cable 0,75 mm2.

Material:

- Holder: Thermoplastics (PA 6).
- Cable: copper with black PVC sheath.
- Contacts: Copper alloy.

Shock Safety:

- PC1 (IEC standard 127-6).

Packaging:

- 10 and 1000 pieces.

Miniature Fuses
In-Line Fuse-holders
FEB, FEC, FEX, FEY



Ferraz Shawmut's complete line of single and dual pole in-line fuse holders accommodate either 1-1/2" x 13/32" (10x38mm) midget or Class CC fuses. The fuse holders are designed for quick installation. Securing nuts or screws are captive thus speeding installation by reducing the need to locate and assemble loose components in the field. Three internal O-rings per pole seal the fuse holder providing a water-resistant compartment for the fuse. The captive O-rings are colored (blue for single pole and red for dual pole) for quick detection. Optional cone shaped insulator boots can be slipped on to provide a watertight seal (breakaway versions come with boots standard). Both single and dual pole versions have an optional breakaway feature which safely disconnects the load in case of a pole knockdown. Fuses remain safely encapsulated within the watertight fuse holder on the load side. Once the pole has been reinstalled the fuse holder can be easily reconnected.

Ratings

- 600 VAC, 30A
- Withstand Rating: Midget Fuse 100kA I.R., Class CC 200kA I.R.
- Temperature Rating: 155°C

Approvals

- UL Listed, Class CC, Guide IZLT, File E52283
- UL Recognized Component Midget, Guide IZLT2, File E52283
- CSA Certified, Class CC and Midget, Class 6225, File 32169

Applications:

- Street lighting
- Parking lot lighting
- Traffic signaling
- Sports lighting
- Boats and marinas
- Humid/corrosive environments

Recommendes fuse usage

- FEB and FEX holders will accomodate these Ferraz Shawmut Fuses: Midget (1-1/2" x 13/32", 10 x 38mm): ATQ, ATM, TRM, OTM, GGU, GFN, A13X-2, A25Z-2, A60Q-2, A6Y-2B
- FEC and FEY holders will accomodate these Ferraz Shawmut Fuses: Class CC: ATDR, ATMR, ATQR

Highlights

- Breakaway version quickly disconnects line side during pole knockdown in compliance with state and federal highway commission standards
- 3 O-rings per pole for water tight applications
- Colored O-rings for quick detection
- Single and dual poles
- Accepts midget or Class CC fuses
- Wide assortment of terminal variations
- High heat, impact resistant insulator
- Captive nut or screw for quick installations
- Polarized dual pole provides simultaneous disconnection
- Permanently installed neutral versions quickly identified by white nuts
- Tulip fuse clip for improved contact and low losses
- Environmentally friendly-no lead solder used
- Highly visible catalog number even with insulation boots installed
- Wire gage size identified on insulation boots for quick, accurate trimming

Miniature Fuses
In-Line Fuse-holders
FEB, FEC, FEX, FEY

Catalog Numbering System

Family	Load Terminal Type	Load Terminal Material		Line Terminal Type	Line Terminal Material	Option
FEB-	1	1	-	1	1	-BA

Nomenclature Legend

Family	Family Description	Terminal End View	Terminal	Type	Conductor Size	No. Per Terminal	Solid	Stranded	Option Description
FEB	Single pole midget		11	Cu Crimp	#8-#12 #12-#14	1 2	Yes Yes	Yes Yes	
FEC	Single pole Class CC		21	Cu Crimp	#10 #6 #4	2 1 1	Yes Yes Yes	Yes Yes No	
FEX	Dual Pole midget		31	Cu Crimp	#10 #4	2 1	Yes No	Yes Yes	
FEY	Dual pole Class CC		41	Cu Crimp	#6 #2	2 1	Yes No	Yes Yes	BA (breakaway version equipped with breakaway stud, breakaway boot, and insulating boots for both line and load sides)
FEBN	Single pole neutral		81	Cu Single Set Screw	#2-#12	1	Yes	Yes	
			91	Cu Double Set Screw	#2-#12	1 each	Yes	Yes	
			82	Al Single Set Screw	#2-#12	1	Yes	Yes	
			92	Al Double Set Screw	#2-#12	1 each	Yes	Yes	

Notes:

1. Non-breakaway units do not include insulator boots. These optional cone shaped boots are available to provide a watertight installation. The insulator boots are designed to form a watertight seal over conductors, but due to varying wire insulation sizes it is suggested that tape wrap be utilized for best results.

FSB1 = Single conductor boot (used to cover all crimp type & single set screw terminals)

FSB2 = Double conductor boot (used to cover all double set screw (Y-type) terminals)

Insulator boot trimming instructions: Locate wire gage size to be utilized marking on the boot and cut just beneath it.

2. Tightening torque for single and double set screw terminations: 35 lbs.-in.

3. Tightening torque for dual pole fastening screw: 10-15 lbs.-in.

4. FEBN versions have a permanently mounted dummy fuse for neutral applications.

Miniature Fuses
In-Line Fuse-holders
FEB, FEC, FEX, FEY

Ferraz Shawmut In-Line Fuse Holder Family
Typical Combination Chart

Midget (10x38mm)		Midget (10x38mm) Breakaway		Class CC Breakaway		Class CC	
Cat Num	Ref. Num	Cat Num	Ref. Num	Cat Num	Ref. Num	Cat Num	Ref. Num
FEB-11-11		FEB-11-11-BA		FEC-11-11		FEC-11-11-BA	
FEB-11-21		FEB-11-21-BA		FEC-11-21		FEC-11-21-BA	
FEB-11-31							
FEB-11-41		FEB-11-41-BA					
		FEB-11-81-BA					
FEB-11-82		FEB-11-82-BA					
FEB-11-91		FEB-11-91-BA		FEC-11-91		FEC-11-91-BA	
FEB-11-92		FEB-11-92-BA					
FEB-11-S							
FEB-21-11							
FEB-21-21		FEB-21-21-BA		FEC-21-21		FEC-21-21-BA	
FEB-21-91		FEB-21-91-BA					
FEB-31-31		FEB-31-31-BA					
FEB-41-41		FEB-41-41-BA					
FEB-81-81		FEB-81-81-BA		FEC-81-81		FEC-81-81-BA	
FEB-81-91		FEB-81-91-BA					
FEB-81-S							
FEB-82-82		FEB-82-82-BA					
FEB-82-92		FEB-82-92-BA					
		FEB-91-91-BA					
FEBN-11-11		FEBN-11-11-BA					
FEBN-11-91		FEBN-11-91-BA					
FEBN-81-81		FEBN-81-81-BA					
FEB-SS							

Midget (10x38mm) Dual Pole		Midget (10x38mm) Dual Pole Breakaway		Class CC Dual Pole		Class CC Dual Pole Breakaway	
Cat Num	Ref. Num	Cat Num	Ref. Num	Cat Num	Ref. Num	Cat Num	Ref. Num
FEX-11-11		FEX-11-11-BA		FEY-11-11		FEY-11-11-BA	
FEX-11-21		FEX-11-21-BA		FEY-11-21		FEY-11-21-BA	
FEX-11-31		FEY-11-31					
FEX-11-41				FEY-11-41			
						FEY-11-91-BA	
FEX-21-21		FEX-21-21-BA		FEY-21-21		FEY-21-21-BA	
FEX-81-81							
FEX-81-91		FEX-81-91-BA					

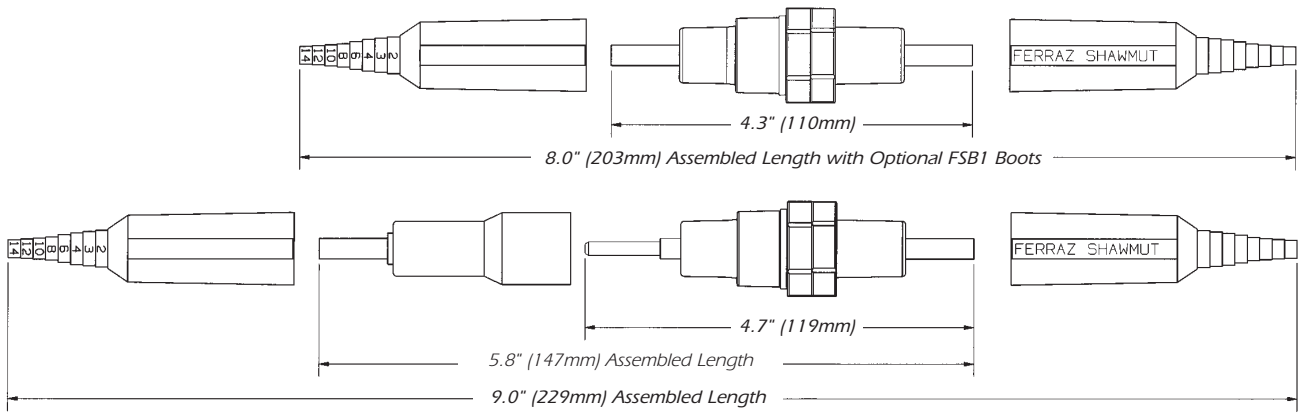
Note: Consult factory for other configurations.

Crimping Tools Reference Chart, The following crimping tools (or equivalent) are recommended:

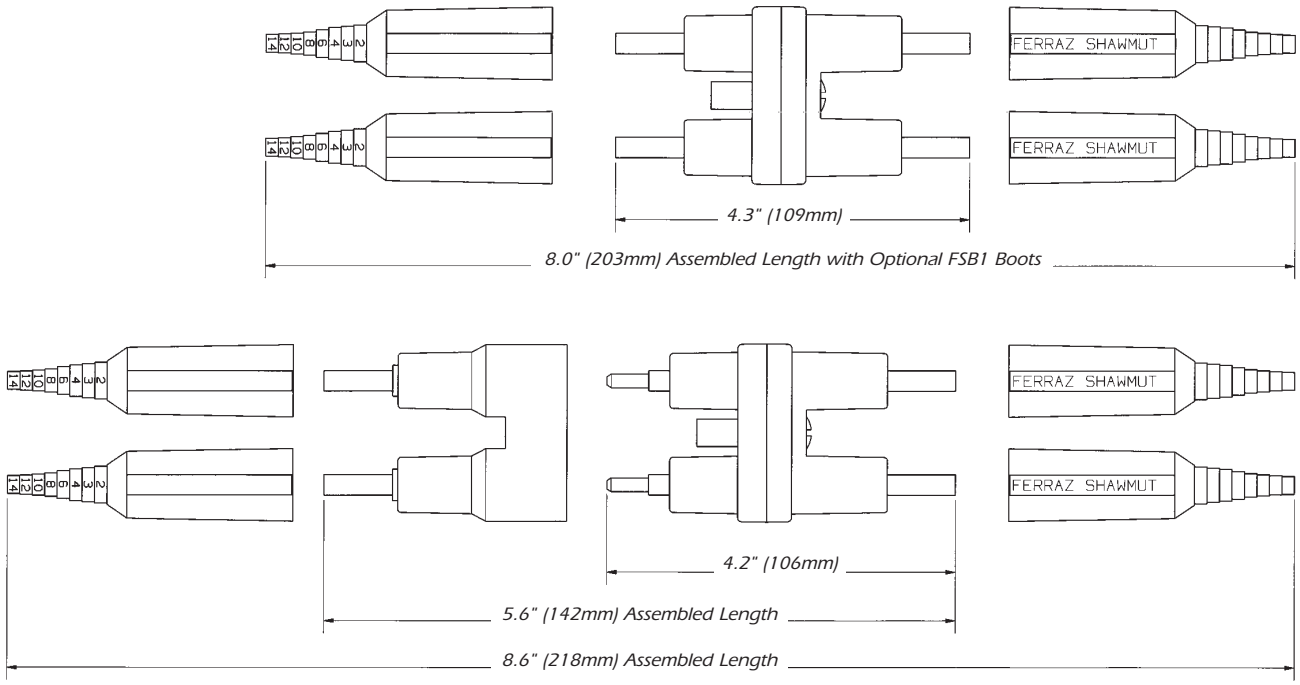
Terminal Type	FCI-Burndy	T&B
1	Y8MRB-1	WT-111M
2	Y2MR	TBM2/TBM5 BLUE DIE, WT-115-A DIE O
3	Y2MR	TBM2/TBM5 GREY DIE, WT-115-A DIE E
4	Y2MR	TBM2/TBM5 BROWN DIE, WT-115-A DIE F

Miniature Fuses
In-Line Fuse-holders
FEB, FEC, FEX, FEY

FEB and FEC, Non-Breakaway and Breakaway Assembly Drawings

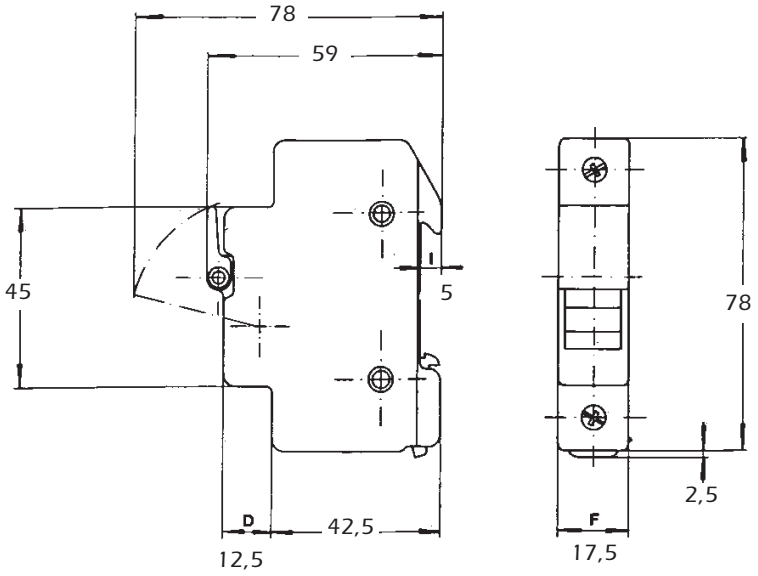


FEX and FEY, Non-Breakaway and Breakaway Assembly Drawings



Miniature Fuses
Fuse Holders and Disconnectors
MSM for 5x20

MSM



- Blown-fuse indicator (120/690V)
- Cable size:
  - Unipolar: 1 x 16 mm2
  - Unipolar + neutral: 1 x 10 mm2
- IP20

MSM

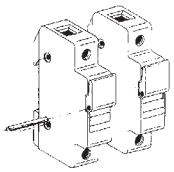
I_n max 16A ; V_n max 250V



J225707

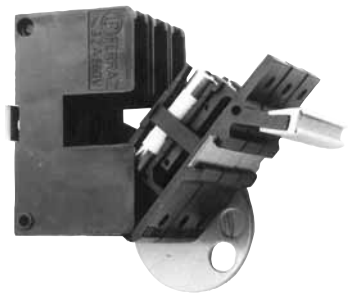
Poles	Size	Previous Ref.	Reference Number	In-Vn	Cat.Number
1	5 x 20	05952	J225707	16A-250V	MIMSM250V16IP
1+N (1 mod.)	5 x 20	05956	K225708	16A-250V	MIMSM250V16IP+N

Assembly pin



N. Mod.	Previous Ref.	Reference Number	Cat.Number
2	14030	G215125	MSCMSDMAASS2
3	14031	Q216145	MSCMSDMAASS3
4	14032	A217166	MSCMSDMAASS4

Miniature Fuses
Fuse Holders and Disconnectors
SI 6.32





For Ferrule-type Fuses 6.3x32

- COMPLIANCE WITH IEC 947-3.
- MOUNTING ON SYMMETRICAL OR ASYMMETRICAL 35 mm DIN-RAIL.
- PROTECTION AGAINST TOUCHING OF LIVE PARTS.
- PROTECTION DEGREE: IP 2X FOR DISCONNECTORS (WHEN DEVICE IS CONNECTED AND CLOSED)
- SILVER-PLATED CLIPS WITH ELASTIC CLAMPING.
- SELF-EXTINGUISHING MATERIAL V0-CLASS AS PER UL94.
- PADLOCKING DEVICE, BLOWN FUSE INDICATION THROUGH L.E.D ON REQUEST.
- SALT SPRAY-PROOF VERSION AVAILABLE ON REQUEST.

Main Characteristics

Insulation voltage: 690 V
Rated conventional current I_{th}: 32 A
Permissible max. power: 3,5 W
Impulse withstand voltage Uimp: 8 kV
Operation class: AC 20 B
Short-circuit withstand current with Ferraz Shawmut fuses: Ic maxi = 4,7 kA.
Power frequency withstand voltage: 2.5 Kv, 50 Hz during 1 min.
Overload current limitation:

- Fuseholders without grip with FERRAZ SHAWMUT fuses: No limitation
- Disconnector with FERRAZ SHAWMUT fuse rated ≤ 10 A: No limitation
- Disconnector with FERRAZ SHAWMUT fuse rated > 10 A: Clearing of overloads longer than 200 s by another protection device (thermal relay or other)

Connections:
CC type: Screw clamp terminals for copper cables with 10 mm2 max. section.
LL type : 6.3 mm clips.
LC type : Upstream clips and downstream screw clamp terminals.
- Recommended tightening torque for clamp terminals: 1.2 Nm to 1.4 Nm.
- Maximum tightening torque for holders: 1.5 to 2 Nm.

Blown fuse indication auxiliary contact:

- Factory mounted and operating only with a 6.3x32 fuse with trip-indicator

	Non inductive load			Inductive load cos φ=0.6 or L/R=2.5 ms		
	30 V	110 V	250 V	30 V	110 V	250 V
AC interrupting rating	.....	5 A	5 A	.....	5 A	5 A
DC interrupting rating	4 A	0.4 A	.....	2 A	0.4 A	.....

- Minimum voltage-current for a certain operating: 24 V 10 mA
- Connection: Soldering or 2.8 mm clips

Blown-fuse LED indication:

- In-factory mounted . DC: 1 LED with polarization + 1 LED with upstream terminal; AC: 2 LEDs.
- Maximum operating voltage according to models: up to 250 V (AC and DC)
- Current after fuse blowing : 1.7 mA to 6 mA.

Miniature Fuses
Fuse Holders and Disconnectors
SI 6.32

For Ferrule-type Fuses 6.3x32

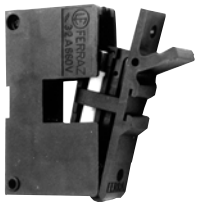
Holders without grip



Ref. Number	Designation	Connecting	Catalog Number
M091482	SI 6.32 CC	Screw clamp	MIS1CC6
Z091746	SI 6.32 LL	6.3 mm clips.	MIS1LL6
J091939	SI 6.32 LC	Upstream clips and downstream screw clamp	MIS1LC6

No protection against live terminals and fuse touching.
Mounting: Directly screwed on base or snapped on DIN-rail an adaptation (refer to accessories).
Packaging: 10 pieces - Weight: 30g

Disconnectors with or without interlocking



Without locking



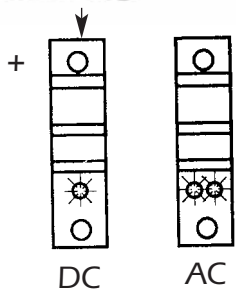
With locking grip

Ref. Number	Designation	Connecting	Catalog Number
N091483	SI 6.32 CC PRE	Screw clamp	MIS1C6P
M091942	SI 6.32 PRE V	Screw clamp with lock	MIS1C6PV
G082990	SI 6.32 CC PRE BS M	Screw clamp	MIS1C6PBSMC
E091728	SI 6.32 LL PRE	6.3 mm clips	MIS1LL6P
Q091945	SI 6.32 LL PRE V	6.3 mm clips with locking	MIS1LL6PV
R091946	SI 6.32 LC PRE	Upstream clips and downstream screw clamp	MIS1LC6P
W091973	SI 6.32 LC PRE V	Upstr. clips and downstr. screw clamp with locking	MIS1LC6PV

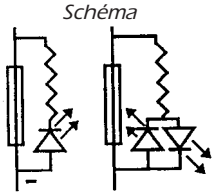
Mounting : Directly screwed on base or snapped on DIN-rail an adaptation (refer to accessories).
Packaging: 10 pieces - Weight: 40g

Disconnectors with led indication





Schéma



Ref. Number	Designation	Connecting	Max voltage of the circuit	Catalog Number
F091982	SI 6.32 CC PRE D 30	Screw clamp	30V DC Upstream terminal at plus	MIS1C6PD3
Q092014	SI 6.32 LL PRE D 30	6.3 mm clips		MIS1LL6PD3
A092046	SI 6.32 LC PRE D 30	Clip upstr./Clamp downstr.		MIS1LC6PD3
G091983	SI 6.32 CC PRE D 50	Screw clamp	50V DC Upstream terminal at plus	MIS1C6PD5
W092019	SI 6.32 LL PRE D 50	6.3 mm clips		MIS1LL6PD5
B092047	SI 6.32 LC PRE D 50	Clip upstr./Clamp downstr.		MIS1LC6PD5
A091954	SI 6.32 CC PRE D 125	Screw clamp	125V DC Upstream terminal at plus	MIS1C6PD12,5
S092016	SI 6.32 LL PRE D 125	6.3 mm clips		MIS1LL6PD12,5
C092048	SI 6.32 LC PRE D 125	Clip upstr./Clamp downstr.		MIS1LC6PD12,5
J091985	SI 6.32 CC PRE D 250	Screw clamp	250V DC Upstream terminal at plus	MIS1C6PD25
T092017	SI 6.32 LL PRE D 250	6.3 mm clips		MIS1LL6PD25
D092049	SI 6.32 LC PRE 2D 250	Clip upstr./Clamp downstr.		MIS1LC6PD25
K091986	SI 6.32 CC PRE 2D 30	Screw clamp	30V AC	MIS1C6P2D3
V092018	SI 6.32 LL PRE 2D 30	6.3 mm clips		MIS1LL6P2D3
E092050	SI 6.32 LC PRE 2D 30	Clip upstr./Clamp downstr.		MIS1LC6P2D3
L091987	SI 6.32 CC PRE 2D 50	Screw clamp	50V AC	MIS1C6P2D5
R092015	SI 6.32 LL PRE 2D 50	6.3 mm clips		MIS1LL6P2D5
F092051	SI 6.32 LC PRE 2D 125	Clip upstr./Clamp downstr.		MIS1LC6P2D5
M091988	SI 6.32 CC PRE 2D 125	Screw clamp	125V AC	MIS1C6P2D12,5
X092020	SI 6.32 LL PRE 2D 125	6.3 mm clips		MIS1LL6P2D12,5
G092052	SI 6.32 LC PRE 2D 125	Clip upstr./Clamp downstr.		MIS1LC6P2D12,5
N091989	SI 6.32 CC PRE 2D 250	Screw clamp	250V AC	MIS1C6P2D25
Y092021	SI 6.32 LL PRE 2D 250	6.3 mm clips		MIS1LL6P2D25
H092053	SI 6.32 LC PRE 2D 250	Clip upstr./Clamp downstr.		MIS1LC6P2D25

Mounting : Directly screwed on base or snapped on DIN-rail an adaptation (refer to accessories).
Packaging: 5 pieces - Weight: 40g

Miniature Fuses
Fuse Holders and Disconnectors
SI 6.32

Disconnectors with auxilliary contact indication



Ref. Number	Designation	Connecting	Catalog Number
T092109	SI 6.32 LL PRE+MC 2,5	6.3 mm clip.	MIS1LL6PMC
P092335	SI 6.32 LC PRE+MC 2,5	Upstream clips and downstream screw clamp	MIS1LC6PMC

Impossible for SI 6.32 CC PRE type disconnector.
Mounting: Directly screwed on base or snapped on DIN-rail an adaptation (refer to accessories).
Packaging: 5 pieces - Weight: 45g

Disconnectors with neutral dummy fuses



Ref. Number	Designation	Connecting	Catalog Number
W092088	SI 6.32 CC PRE + Neutre	Screw clamp	MIS1C6P+N
X092089	SI 6.32 LL PRE + Neutre	6.3 mm clip	MIS1LL6P+N
X085879	SI 6.32 LC PRE + Neutre	Upstream clips and downstream screw clamp	MIS1LC6P+N

Mounting: Directly screwed on base or snapped on DIN-rail adaptation (refer to accessories).
** 6 x 32 neutral dummy fuse Ref. Number : H 047594.*
Packaging: 10 pieces - Weight: 45g

Accessories

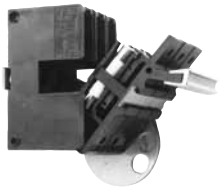
Coupling strips for 2, 3 and 4-pole model mounting



Ref. Number	Designation	Catalog Number
F091867	PROFILE SII 6 X 32 PRE	PROFILE2SI6P
G091868	PROFILE SIII 6 X 32 PRE	PROFILE3SI6P
H091869	PROFILE SIV 6 X 32 PRE	PROFILE4SI6P

Mounting : For slipping on grips. Marking can be slipped on the strip.
Packaging: 10 pieces - Weight: 2,5g

Off-position padlocking devices for 1, 2, 3 and 4-pole models



Ref. Number	Designation	Catalog Number
B092070	DISPOSITIF CAD SI 6 X 32 PRE	MICADSI6P

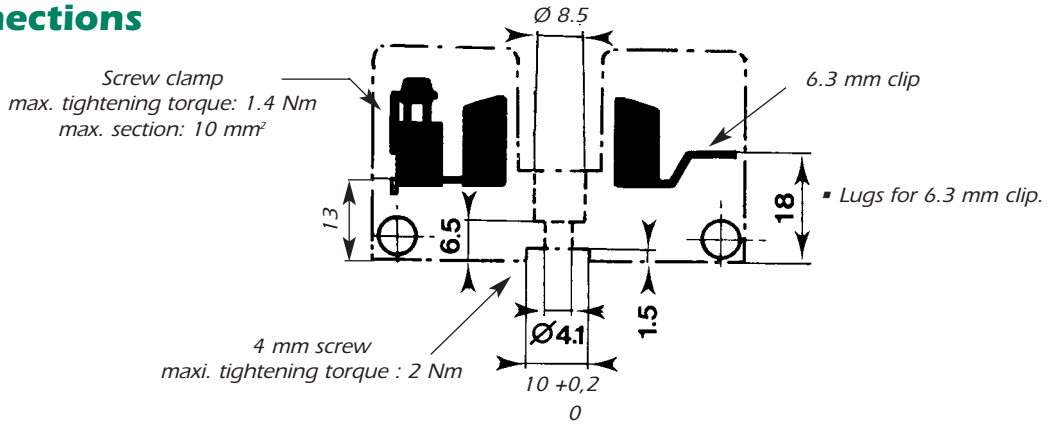
Only one device to be cut according to the number of poles (pre-cut in factory).
Padlocking in off-position by 3 dia. 8mm padlocks.
Packaging: 5 pieces - Weight: 38g

Fixing adapters for DIN-rail mounting

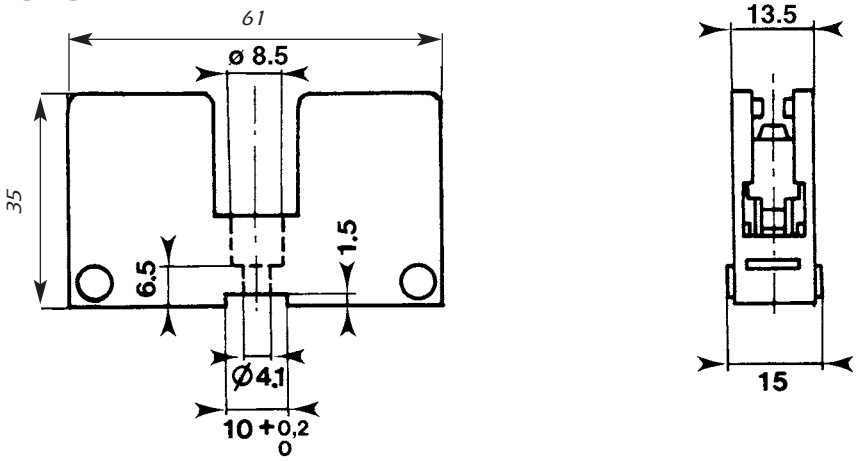
	Rail type	Ref. Number	Designation	Packaging	Weight	Catalog number
	DIN symmetrical EN 50022	B092093	FIXOMEGA FM4	10	1,5g	MIFIXOMEGAFM4
	DIN asymmetrical EN 50035	K097046	EF 46	10 and 100	4g	-

Miniature Fuses
Fuse Holders and Disconnectors
SI 6.32

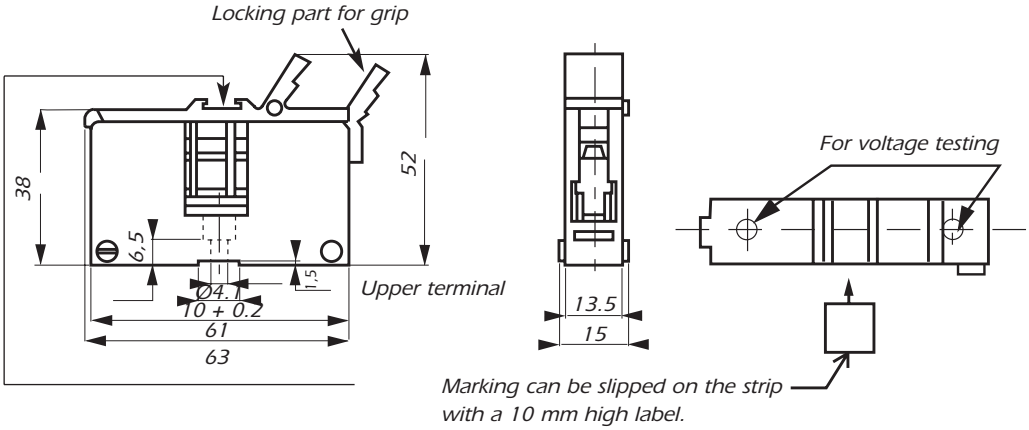
Connections



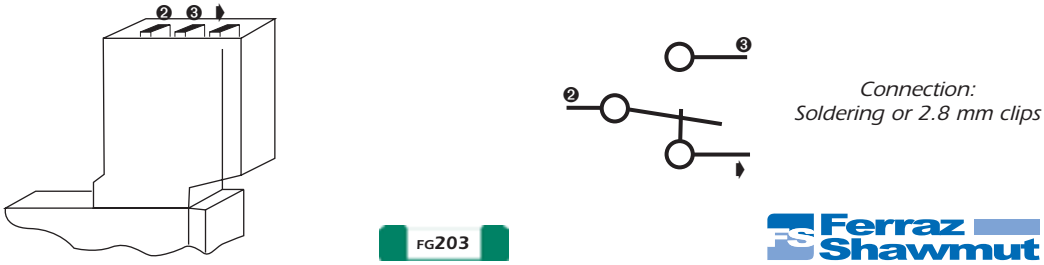
Holder dimensions



Disconnector dimensions



Connecting auxilliary blown-fuse microswitch



Semiconductor Fuses
American Round Body
Fuse Blocks for Form 101 (American Round)



P243/P266/P292

Ferraz Shawmut P243 and P266 series fuse blocks for Form 101 fuses are glass-filled polycarbonate or laminated phenolic insulator blocks with studs to accommodate bolt-in fuses. The P292 series has a laminated phenolic insulator base with fuse clips. All studs, clips and mounting hardware are tin or zinc plated.

Ratings

- 1 to 1000A
- Clip Type: 1200VAC or less
- Stud Type: 1000VAC or less

Approvals

- UL Recognized Component Guide IZLT2, File E52283
- CSA Certified Class 6225, File 32169

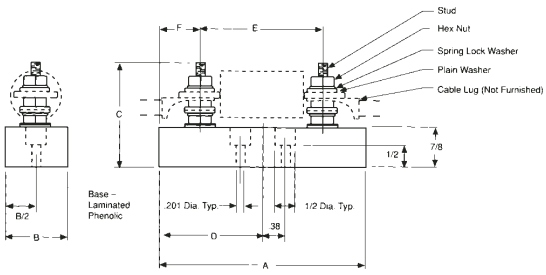


Figure 1

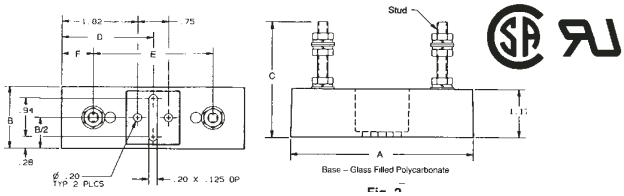


Figure 2

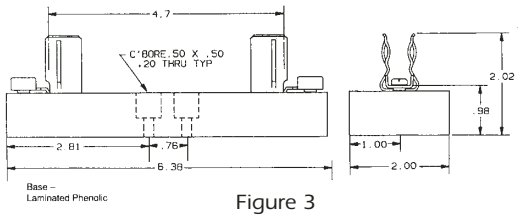


Figure 3

Dimensions

For use with	Amps	Catalog Number	Ref. Number	Dimensions - Inches FIG.	A	B	C	D	E	F	Stud Size	Stud Torque lb-In
A13X, A15QS	70-450	P243D	C219560	2	4.40	1.50	2.79	2.20	2.06	1.17	1/4-20	36
A13X, A15QS	500-600	P243G	H222762	2	4.40	1.50	2.79	2.20	2.44	0.98	5/16-18	84
A25X, A25Z, A30QS	35-60	P243G	H222762	2	4.40	1.50	2.79	2.20	2.44	0.98	5/16-18	84
A25X, A25Z, A30QS	70-200	P243	T218517	1	4.50	1.50	2.50	2.25	2.38	1.06	1/4-20	36
A25X, A25Z, A30QS	225-600	P243G	H222762	2	4.40	1.50	2.79	2.20	2.44	0.98	5/16-18	84
A50P	35-60	P243G	H222762	2	4.40	1.50	2.79	2.20	2.44	0.98	5/16-18	84
A50P, A50QS	70-200	P243E	X222016	2	4.40	1.50	2.79	2.20	2.88	0.76	1/4-20	36
A50P, A50QS	225-600	P266C	K212897	1	6.00	2.00	3.00	3.00	3.28	1.36	3/8-16	144
A60X, A60Z, A70QS	35-200	P243C	M219040	2	4.40	1.50	2.79	2.20	3.62	0.39	1/4-20	36
A60X, A60Z	225-600	P266A	Y212380	1	6.00	2.00	3.00	3.00	4.06	0.97	3/8-16	144
A70P, A70Q	35-100	P243C	M219040	2	4.40	1.50	2.79	2.20	3.62	0.39	1/4-20	36
A70P, A70Q	125-400	P266A	Y212380	1	6.00	2.00	3.00	3.00	4.06	0.97	3/8-16	144
A70P, A70Q	450-600	P266F	S213410	1	8.00	2.50	3.00	4.00	5.09	1.45	3/8-16	144
A100P	35-100	P266G	Z214428	1	6.00	2.00	2.50	3.00	4.25	0.88	1/4-20	36
A100P	125-400	P266L	J215955	1	6.00	2.00	3.00	3.00	4.66	0.67	3/8-16	144
A120X	1-30	P292	T216976	3	-	-	-	-	-	-	-	-
A30QS, A025	700-800	FH25F4	-	1	6.00	2.00	3.00	3.00	2.66	1.67	3/8-16	144
A50QS	700-800	FH50F4	-	1	8.00	2.50	3.00	4.00	4.21	1.84	1/2-13	360l
A50QS	900-1000	FH50F5	-	1	8.00	2.50	3.00	4.50	4.97	1.50	1/2-13	360
A70QS	450-600	FH70F3	-	1	8.00	2.50	3.00	4.00	5.09	1.91	1/2-13	360

Note: FH Blocks are 1" thick.
* Not UL or CSA Certified

Semiconductor Fuses
American Round Body
Modular 1SC/1MSC



1SC/1MSC

Ferraz Shawmut 1SC and 1MSC semiconductor fuse blocks feature modular mounting that offers greater flexibility in adjusting to various fuse lengths. Both stud type and integral box connector versions are offered to allow for user preference of wire terminations. The integeral box connector versions also provide for greater heat dissipation. All modular blocks are supplied in pairs but need to be ordered as two items to suit one fuse. Mounting hardware is supplied with the blocks.

Highlights

- Modular two-piece design
- Compact footprint
- Stud versions
- Heat dissipating integeral box connector versions
- Accommodates a large range of semiconductor fuses
- Rugged phenolic insulators

Ratings

- 600VAC (1MSC)
- 1000 VAC (1SC)
- up to 800 amperes

Approvals

- UL Recognized Component Guide IZLT2, File E171957

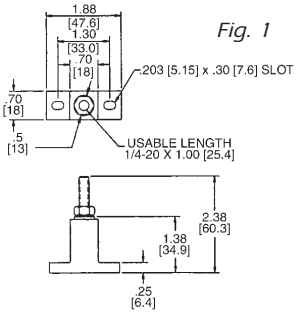


Fig. 1

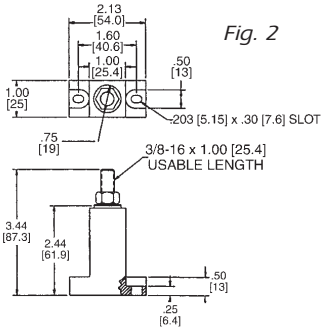


Fig. 2

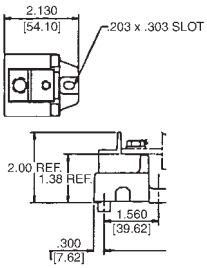


Fig. 3

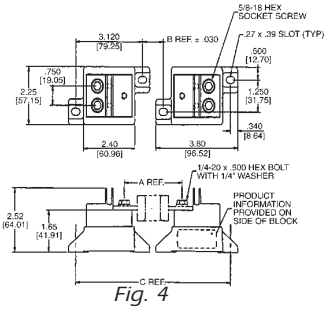


Fig. 4

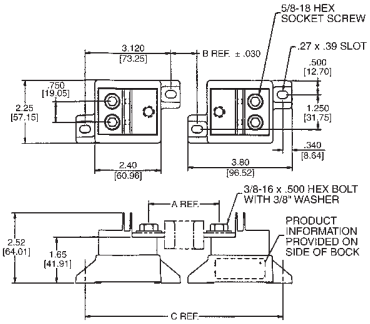


Fig. 5

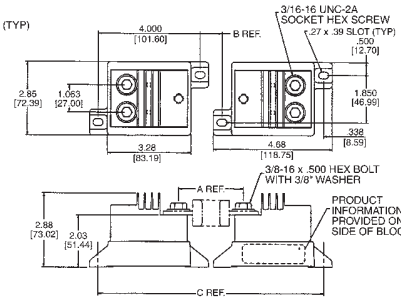


Fig. 6

Dimensions

Catalog Number	Ref. Number	Voltage Rating	Ampere Rating	UR	Connector Type	Connector Wire Range	Hardware Bolt	Hardware Washer	Tightening Torque lb-In Fuse	Tightening Torque lb-In Cable	Fig.
1SC250	H210595	1,000	400	Yes	1/4" Stud	-	-	-	61	61	1
1SC375	Q210579	1,000	800	Yes	3/8" Stud	-	-	-	192	192	2
1MSC101	C234970	600	100	Yes	Al Box	Al/Cu 2/0 - #6	1/4"	0.655"	120	120	3
1MSC102	C234971	600	400	Yes	Al Box	Al/Cu (2) 250kcmil - #6	1/4"	0.655"	275	275	4
1MSC103	M210024	600	400	Yes	Al Box	Al/Cu (2) 250kcmil - #6	3/8"	0.900"	275	275	5
1MSC104	D210890	600	600	Yes	Al Box	Al/Cu (2) 250kcmil - #6	3/8"	0.900"	375	375	6
1MSC108	E234972	2,500	400	No	Al Box	Al/Cu (2) 250kcmil - #6	1/4"	0.655"	275	275	*
1MSC109	F234973	2,500	400	No	Al Box	Al/Cu (2) 250kcmil - #6	3/8"	0.900"	275	275	*
1MSC110	G234974	5,000	400	No	Al Box	Al/Cu (2) 250kcmil - #6	3/8"	0.900"	275	275	*

*Consult Factory

Semiconductor Fuses
American Round Body
Modular 703/U705/U710



703, U705, U710
750V SEMICONDUCTOR FUSE HOLDERS

Ferraz Shawmut Semiconductor Fuse Holders feature open face styles. Each version is rated 750 volts and accommodates 14 x 51 mm or 22 x 58 mm fuses. 703, U705 and U710 holders feature Ferraz Shawmut's unique adder-block design which can be snapped onto 1-, 2-, or 3-pole blocks to form multi-pole segmented blocks of as many poles as desired. A choice of box, screw or pressure plate connectors is offered to fit a wide range of standard or solid copper wire. All versions have verified dielectric strengths in excess of 2500V. A patented built-in DIN rail adapter on the U710 blocks adds further design versatiltiy. All fuse clips are made of high conductivity tin-plated copper with spring reinforced clips.

Ratings

- 750V AC
- 30A (703)
- 50A (U7050)
- 100A (U7100)
- Withstand Rating: 200kA I.R.

Approvals

- UL Recognized Component, Guide IZLT2, File E52283
- CSA Certified, Class 6225, File 32169

Highlights

- Thermoplastic bases
- DIN Rail (U710) or Screw Mount
- Adder block design

Applications:

- All circuits up to 750 volts using semiconductor fuses for protection of small inverters, UPS systems, motor drives, etc.

Recommendes fuse usage

703	use with 14x51mm A70QS, A70P, URD, gD up to 30A
U705	use with 14x51mm A70QS, A70P, URD, gD up to 50A
U710	use with 22x58mm A70QS, URD, up to 100A

Semiconductor Fuses
American Round Body
Modular 703/U705/U710

703, U705, U710
750V SEMICONDUCTOR FUSE HOLDERS

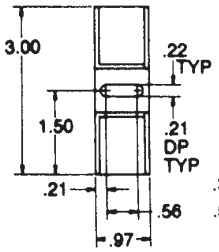


Fig. 1

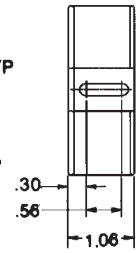


Fig. 2

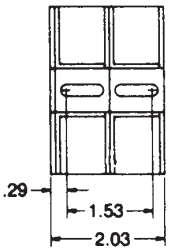


Fig. 3

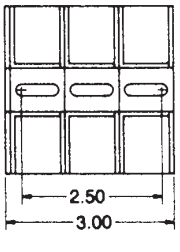


Fig. 4

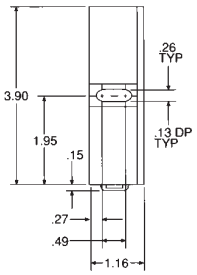


Figure 5

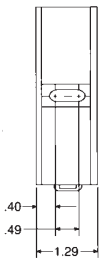


Figure 6

Recommended mounting screws; #10 (.190"dia)

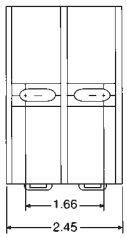
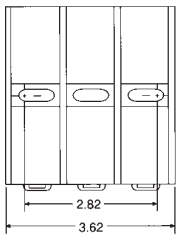


Figure 7

750 Volt Fuse Holders for 14 x 51mm & 22 x 58 mm Fuses

Catalog Number	Reference Number	Fuse Size	Ampacity Rating	Poles	Connector Type	Connector Wire Range	Fig.	Connector Torque (In-lb)
U70505		14 x 51	50	Adder	Box	Al/Cu #2-14	1	35
U70506				1			2	
U70507				2			3	
U70508				3			4	
70315		14 x 51	30	Adder	Screw	Cu #10-14	1	20
70316				1			2	
70317				2			3	
70318				3			4	
70325		14 x 51	30	Adder	Pressure Plate	Cu #10-14	1	20
70326				1			2	
70327				2			3	
70328				3			4	
70355		14 x 51	30	Adder	Box	Cu* #4-14	1	35
70356				1			2	
70357				2			3	
70358				3			4	
U71005		22 x 58	100	Adder	Box	A1/Cu #2-14	5	35
U71006				1			6	
U71007				2			7	
U71008				3			8	



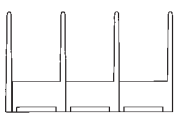
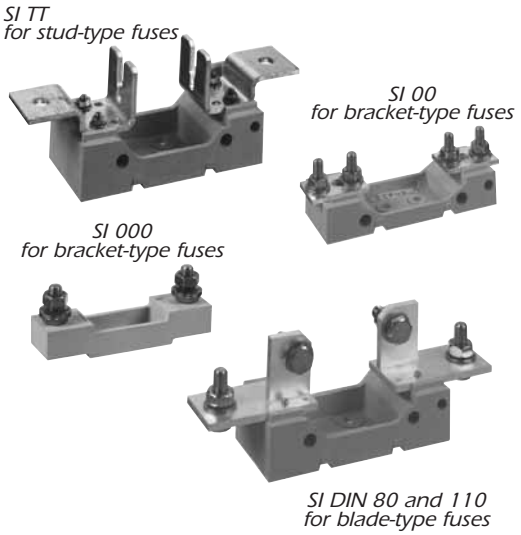


Figure 8

Copper box connectors and clips-for copper wires only.

Note: To convert 30A adder pole to single pole, use end barrier #U09322
100A adder pole to single pole, use end barrier #U09372.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for PSC ranges: SI TT, SI 000/00, SI DIN



STANDARD VERSION SI FUSEHOLDERS FOR STUD-TYPE FUSES, FOR BLADE-TYPE FUSES SI 00 AND SI 000, FOR BRACKET-TYPE FUSESSI DIN 80 AND DIN 110

- MOUNTING IN ONE-POLE FUSEHOLDER SIMPLIFIES FUSE REPLACEMENT FOR INSTALLATIONS CONNECTED WITH CABLES AND BARS
- FOR TTF STUD-TYPE FUSES
  FOR BLADE AND BRACKET-TYPE FUSES AS PER DIN 43653 STANDARD
  SIZES: 000 - 00, 80 MM BETWEEN AXES
  SIZES: 0 - 1 - 2 - 3, 80 AND 110 MM BETWEEN AXES
- FOR TTF VERSION STUDS ARE DELIVERED WITH THE FUSE HOLDER
- FINGER SAFE VERSION AVAILABLE

Main characteristics

Designation	Insulation voltage Ui (AC 50/60 Hz & DC) (V)	Rating Current (A)	Maximum power* (W)	Dielectric withstand test		Fire and fumes class
				RMS voltage 1 mn 50/60 Hz (kV)	Impulse voltage 1.2/50ms (kV)	
SI TT 30/31	1500 V	1000	53 - 75	10	12	UL 94 VO
SI TT 70/71	1500 V	1000	53 - 75	10	12	
SI TT 32/33	1500 V	2500	100	10	12	
SI TT 72/73	1500 V	2500	100	10	12	
SI 000 DIN 80	700 V	400	24	7	8	UL 94 VO
SI 00 DIN 80	700 V	400	28	8	12	UL 94 VO
SI DIN 80 630 (30 to 33)	1500 V	2500	95	10	12	UL 94 VO
SI DIN 110 630 (30 to 33 - 70 to 73)	1500 V	2500	95	10	12	
SI DIN 80 1250 (30 to 33)	1500 V	2500	110	10	12	
SI DIN 110 1250 (30 to 33 - 70 to 73)	1500 V	2500	110	10	12	

Vibration withstand for standard version:

Tests with sine vibrations carried out at ambient with scanning each of the three main axes of the holder.

Spectrum: 1st segment (2 to 16 Hz) constant displacement x = 5 mm peak.

2nd segment (16 to 250 Hz) constant acceleration = 5 g peak.

Exponential scanning speed: 1 octave per minute.

Duration: 2 hours per axis.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for PSC ranges: SI TT, SI 000/00, SI DIN

STANDARD VERSION SI FUSEHOLDERS

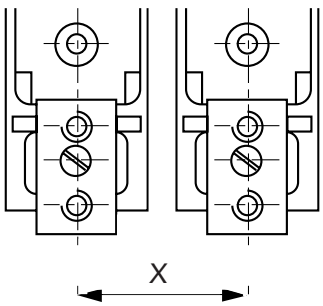
Reference and catalog numbers

Designation	Ref. Number	Weight (g)	Packaging	Catalog Number
SI TT 30/31	B 301232	1 960	1	SITT30/31
SI TT 70/71	C 301233	1 960	1	SITT70/71
SI TT 32/33	D 301234	2 900	1	SITT32/33
SI TT 72/73	E 301235	2 900	1	SITT72/73
SI 000 DIN 80	C 220710	90	12	SI000DN80
SI 00 DIN 80	Q 098040	205	3	SI00DN80
C - CLO*	M 091344	37	2	CLO
SI DIN 80 630	L 098772	625	1	SIDN80630A
SI DIN 110 630	F 098031	625	1	SIDN110630A
SI DIN 80 1250	F 098560	885	1	SIDN801250A
SI DIN 110 1250	L 091941	885	1	SIDN1101250A

** Necessary for SI 00 DIN 80 one-pole mounting.*

Distance "X" Between Poles Axes (Without Partition)

Designation	Fuses sizes	Operating voltage U				
		400V	550V	690V	1000 V	1250 V
SI TT 30/31	30 - 31	58,5	61	65	71	76
SI TT 70/71	70 - 71					
SI TT 32/33	32 - 33	79,5	84,5	88,5	94,5	99,5
SI TT 72/73	72 - 73					
SI 000 DIN 80	000	25	35	39	45	50
SI 00 DIN 80	00	46,5	46,5	46,5	50	55
SI DIN 80	30 - 31	58,5	61	65	71	76
630/1250	32 - 33	79,5	84,5	88,5	94,5	99,5
SI DIN 110	30 - 31 - 70 - 71	58,5	61	65	71	76
630/1250	32 - 33 72 - 73	79,5	84,5	88,5	94,5	99,5

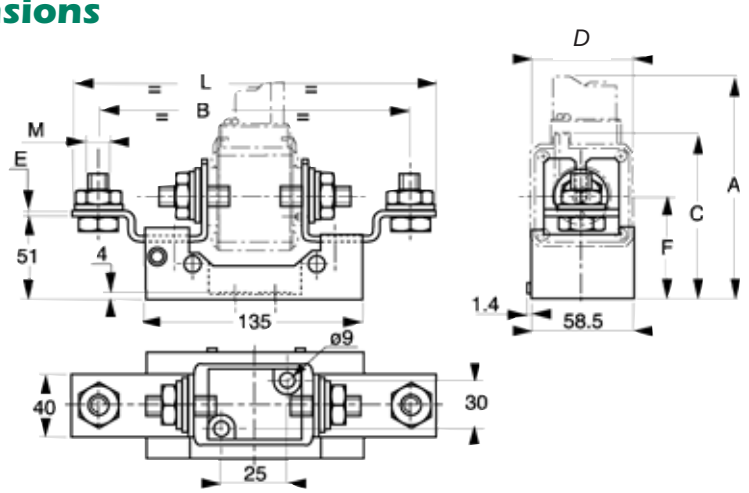


Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for PSC ranges: SI TT, SI 000/00, SI DIN

STANDARD VERSION SI FUSEHOLDERS

Connection dimensions

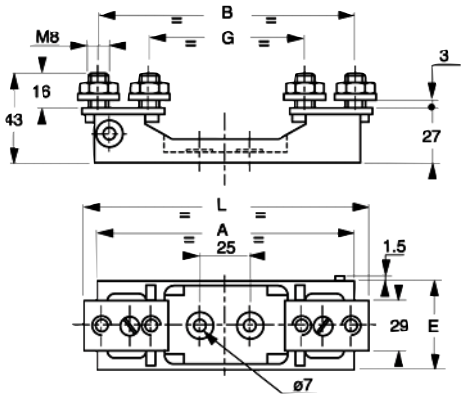
SI TT



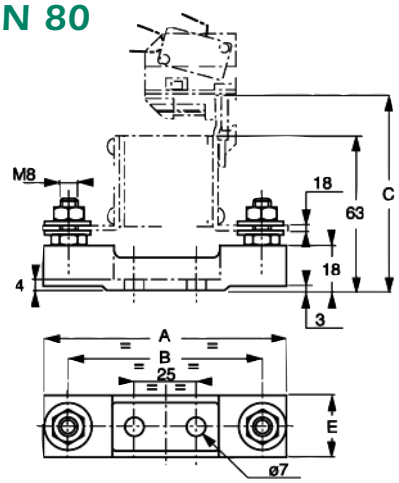
Designation	A	B	C	D	E	G	L	M	F	Catalog Number
SI TT 30/31	118(30) 123(31)	170	83 (30) 88 (31)	42(30) 51(31)	4	50,6	202	M8	57	
SI TT 70/71	118(70) 123(71)	193	83 (70) 88 (71)	42(70) 51(71)	4	74	225	M8	67	
SI TT 32/33	137(32) 145(33)	170	93 (32) 109 (33)	60(32) 75(33)	6	50,6	202	M10 (32) M12 (33)	57	
SI TT 72/73	137(72) 145(73)	193	93 (72) 109 (73)	60(72) 75(73)	6	71	225	M10 (32) M12 (33)	67	

Partition mounting not possible. Panel drilling: 25x30 mm

SI 00 DIN 80



SI 000 DIN 80



Designation	A	B	C	D	E	G	L	Fuse sizes	Catalog Number
SI 000 DIN 80	100	80	80	19	25	80	100	000-17x49-27x60 DIN 80	
SI 00 DIN 80	133	130			46.5	79	148	00-27x60 DIN 80	

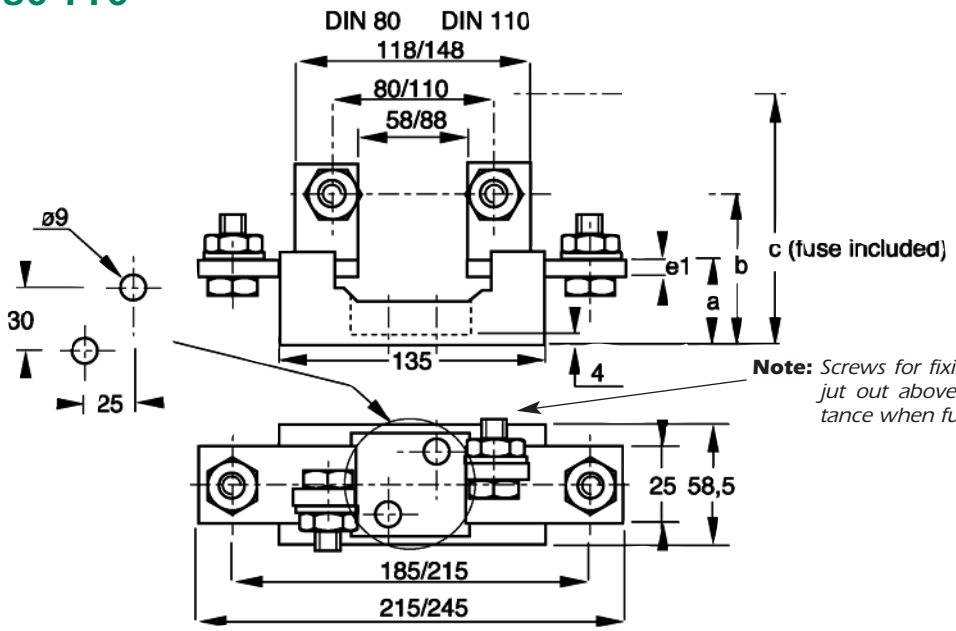
Partition mounting only for SI 00 DIN 80

** Electrical connection of fuse and fuse holder via supplied studs, nuts and washers*
Maximum recommended tightening torque: 13.5 Nm for M8 screws.
26 Nm for M10 screws.
46 Nm for M12 screws.

- Fixing of base on plate or bar via screws not supplied.
M6 for SI 000 and SI 00 Tightening torque 7 ± 15 Nm.
M8 for SI TT Tightening torque 10 ± 2 Nm.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for PSC ranges: SI TT, SI 000/00, SI DIN

STANDARD VERSION SI FUSEHOLDERS
SI DIN 80-110



Note: *Screws for fixing fuse on holder do not jut out above or modify insulation distance when fuse connected.*

Designation	a	e1	b	c	Fuse Size	Catalog Number
SI DIN 80 630	40	5	68	93.5 99.0 103.5 110.3	30 D08 31 D08 32 D08 33 D08	
SI DIN 110 630	40	5	68	93.5 99.0 103.5 110.3	30-70 D11 31-71 D11 32-72 D11 33-73 D11	
SI DIN 80 1 250	45	10	73	98.5 104 108.5 115.3	30 D08 31 D08 32 D08 33 D08	
SI DIN 110 1 250	45	10	73	98.5 104 108.5 115.3	30-70 D11 31-71 D11 32-72 D11 33-73 D11	

Partition mounting impossible

** Electrical connection of fuse and wires by M10x30 screws made in plated steel minimum 8-8 class.*
Screws included.
Maximum recommended tightening torque: 44 $^{+\ 0}_{-\ 8}$ Nm for M10 screw.

- Fixing of base with screws not supplied: M8. Tightening torque 10 ± 2 Nm.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
IP20 Fuse blocks for PSC range 3x, 7x & 000/00









Fusegear, for semiconductor fuse square body

Highlights:

IP20 Touch Safe

- SI Fuse holders for stud-type fuses, for blade-type fuses
- SI 00 and SI 000 for bracket-type fuses
- SI DIN 80 and DIN 110

Applications:

- Mounting in one-pole IP 20 fuseholder simplifies fuse usage outside convertisers for installations connected with cables and bars.
- For TTF stud-type fuses
- For blade and bracket-type fuses as per DIN 43653 standard
  sizes 000 - 00: 80 mm between axes
  sizes 0 - 1 - 2 - 3: 80 and 110 mm between axes
- Suitable with or without microswitches installed on fuses.
- Fixation on rail or by screw.

Main characteristics

IP 20 Fuse blocks	Insulation voltage UI (AC 50/60 Hz & DC)	Current	Maximum Fuse operating current	Dielectric withstand test		Fire and smokes Class
				RMS voltage 1mn 50:60 Hz	Impulse voltage 1,2/50 microsec	
SI TT 30/31	1500 V	1000 A	See following page	10 kV	12 kV	UL 94 VO
SI TT 70/71	1500 V	1000 A		10 kV	12 kV	
SI TT 32/33	1500 V	2500 A		10 kV	12 kV	
SI TT 72/73	1500 V	2500 A		10 KV	12 kV	
SI 000 DIN 80	700 V	400 A		7 kV	8 kV	UL 94 VO
SI 00 DIN 80	700 V	400 A		8 kV	12 kV	UL 94 VO
SI DIN 80/630 (30 TO 33)	1500 V	2500 A		10 kV	12 KV	UL 94 VO
SI DIN 110/630 (30 TO 33-70 TO 73)	1500 V	2500 A		10 kV	12 kV	

Vibration withstand:

Tests with sine vibrations carried out at ambient with scanning each of the three main axes of the holder.

Spectrum :1st segment (2 to 16 Hz) constant displacement x = 5 mm peak.

2nd segment (16 to 250 Hz) constant acceleration g = 5g peak.

Exponential scanning speed : 1 octave per minute.

Duration : 2 hours per axis.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
IP20 Fuse blocks for PSC range 3x, 7x & 000/00

Fusegear, for semiconductor fuse square body

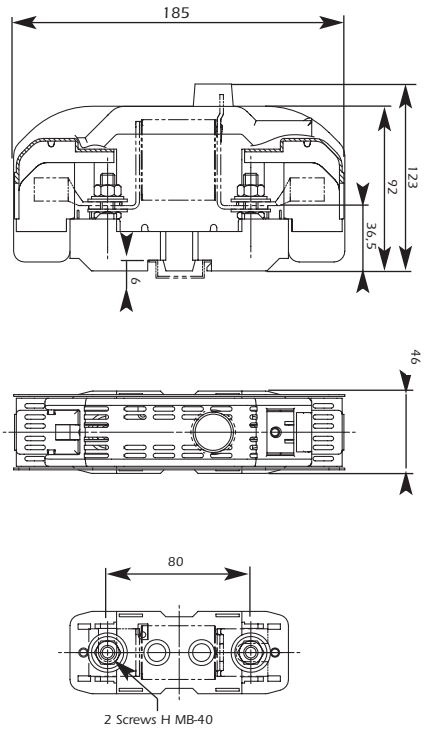
References – Catalog Numbers

Sizes	Impossible to use Micrositch			Micrositch can be used		
	TTF	DIN 80	DIN 110	TTF	DIN 80	DIN 110
000		B227218 ᵁᴸ SI000FS1DN80R			V227672 ᵁᴸ SI000FS1DN80RM	
00		C227219 ᵁᴸ SI00FS1DN80R			W227673 ᵁᴸ SI00FS1DN80RM	
30	N320701 SI30-31FS1TTR	L320745 SI30-32FS1DN80R	X320755 SI0-1-2FS1DN11R	P320725 SI30-31FS1TTRM	E320750 SI3033FS1DN80RM	320760 SI0-3FS1DN11RM
31						
32	S320705 SI32FS1TTR			V320730 SI32-33FS1TTRM		
33	Y320710 SI33FS1TTR	R320750 SI3033FS1DN80RM	C320760 SIO-3FS1DN11RM			
70	D320715 SI70-71FS1TTR		X320755 SI0-1-2FS1DN11R	A320735 SI70-71FS1TTRM		C320760 SI0-3FS1DN11RM
71						
72	J320720 SI72-73FS1TTR		C320760 SIO-3FS1DN11RM	F320740 SI72 73FS1TTRM		
73						

ᵁᴸ *at 690V Ie = 220 Arms (IRMS in application)*
Packaging: 3 pieces.

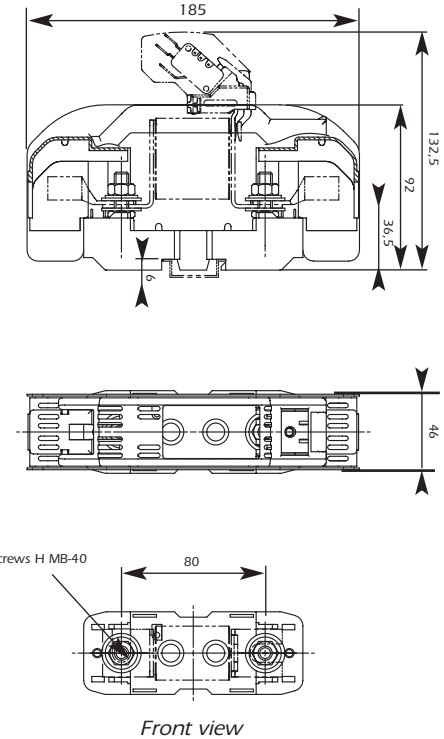
Outlet drawings

SI00FS1DN80R



Front view
without IP 20 Protection

SI00FS1DN80RM

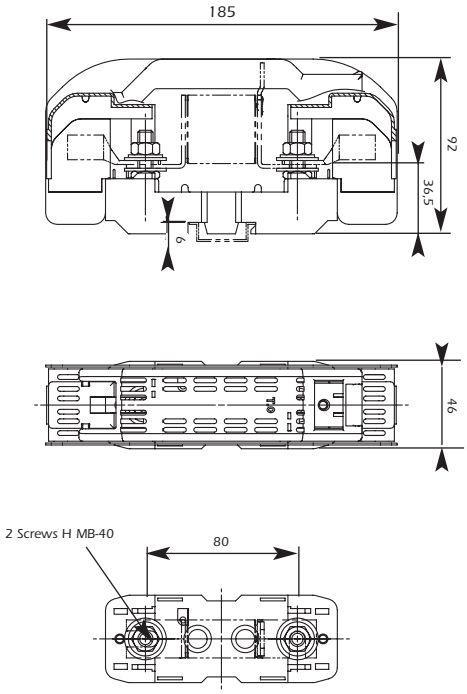


Front view
without IP 20 Protection

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
IP20 Fuse blocks for PSC range 3x, 7x & 000/00

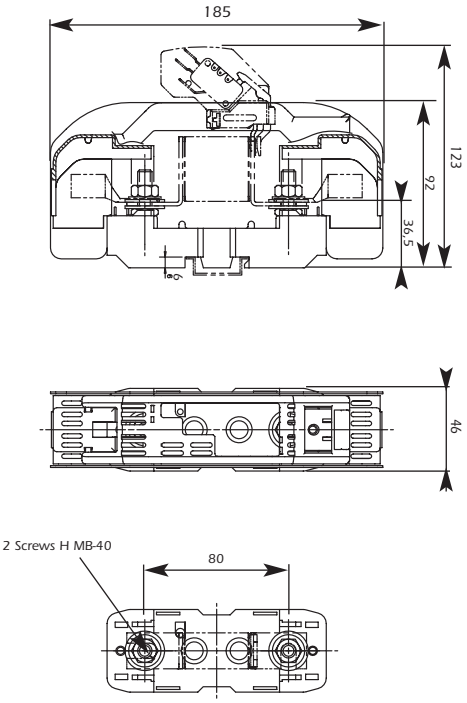
Outlet drawings

SI000FS1DN80R



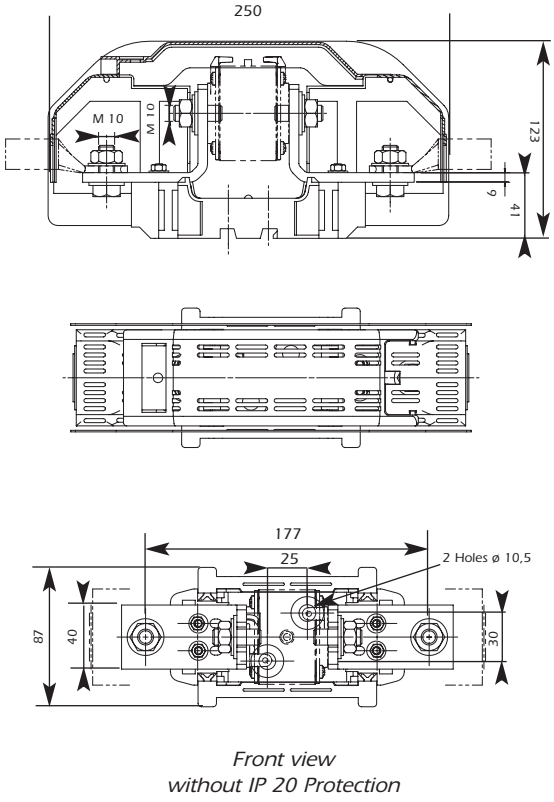
Front view
without IP 20 Protection

SI000FS1DN80RM



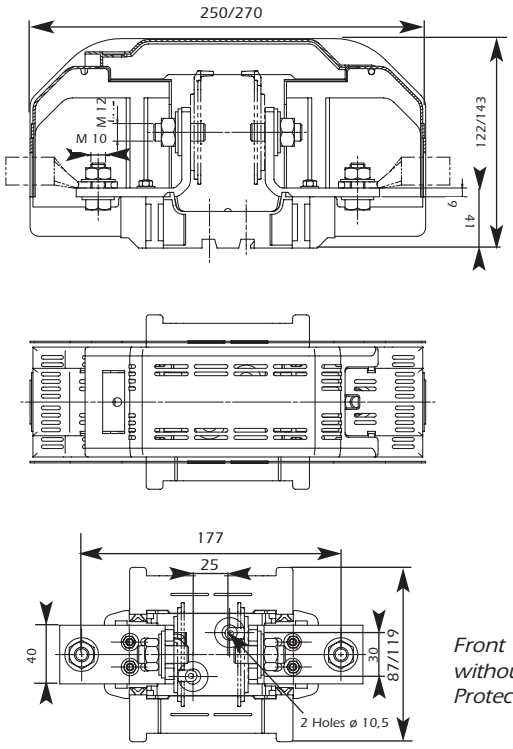
Front view
without IP 20 Protection

SI30-31FS1TTR



Front view
without IP 20 Protection

SI32FS1TTR / SI33-31FS1TTR

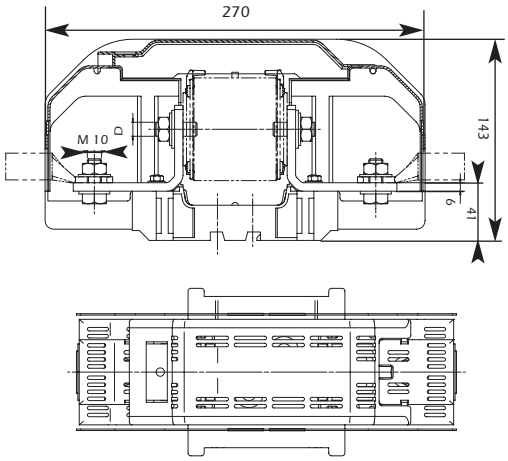


Front view
without IP 20
Protection

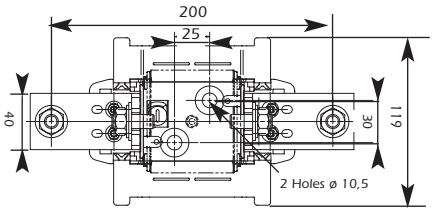
Semiconductor Fuses
AC+DC Square-boby Fuse Bases
IP20 Fuse blocks for PSC range 3x, 7x & 000/00

Outlet drawings

SI72-73FS1TTR

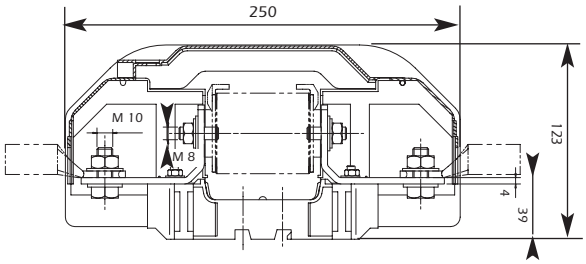


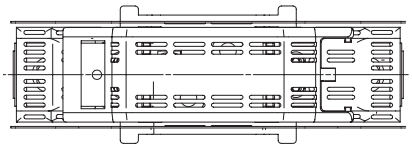
Taille	D
72	M 10
73	M 12

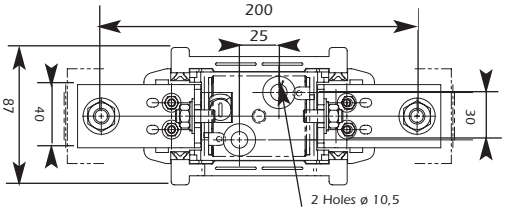


Front view
without IP 20 Protection

SI70-71FS1TTR

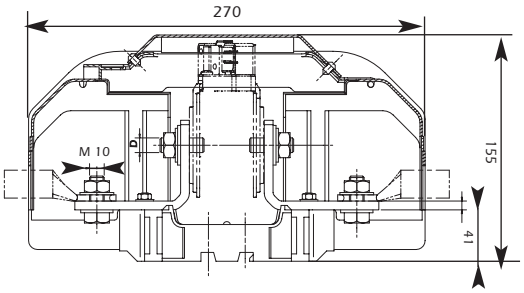


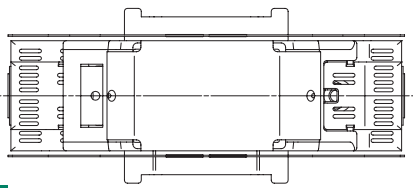




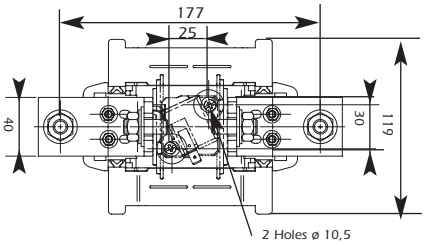
Front view
without IP 20 Protection

SI32-33FS1TTRM



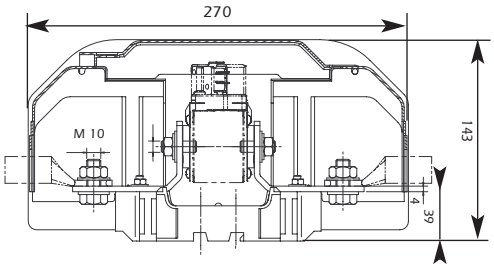


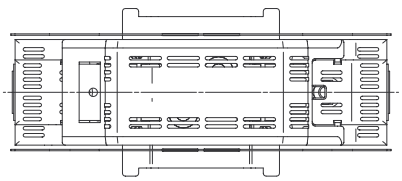
Taille	D
32	M 10
33	M 12

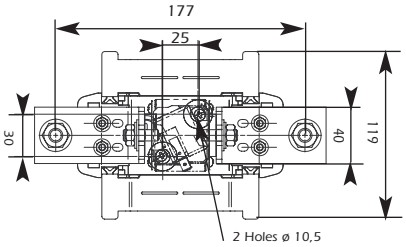


Front view
without IP 20
Protection

SI30-31FS1TTRM





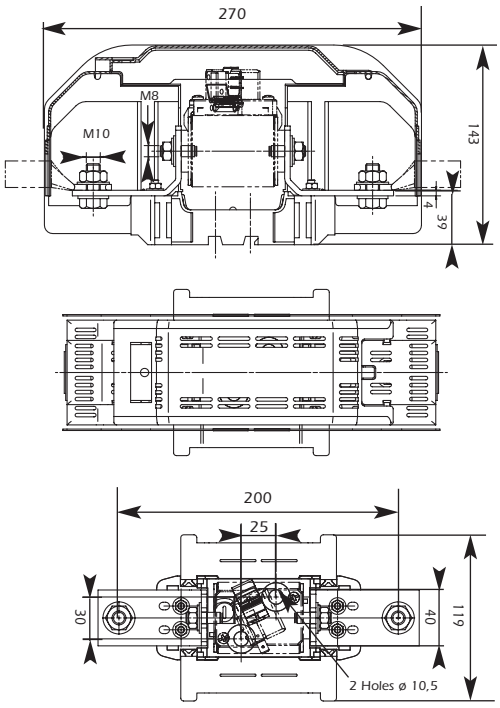


Front view
without IP 20 Protection

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
IP20 Fuse blocks for PSC range 3x, 7x & 000/00

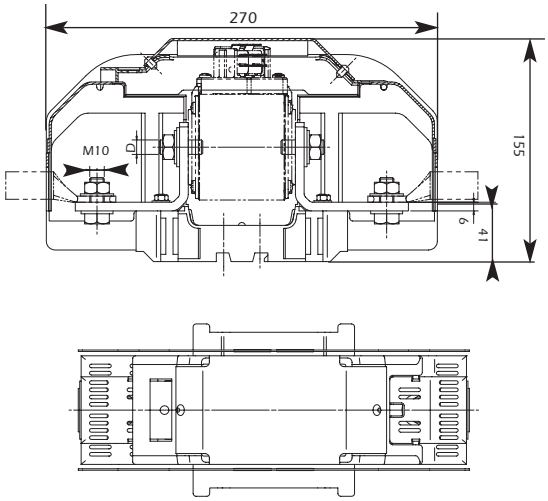
Outlet drawings

SI70-71FS1TTRM

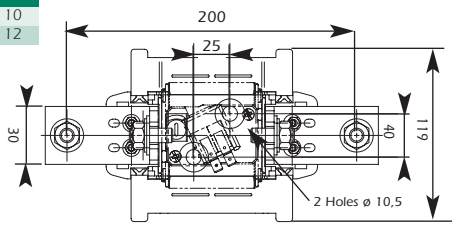


Front view
without IP 20 Protection

SI72-73FS1TTRM

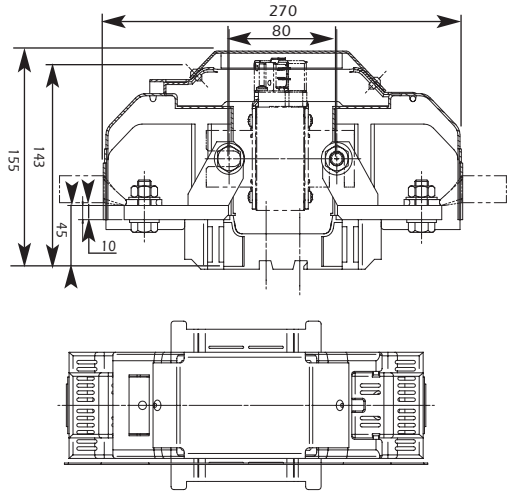


Taille	D
72	M 10
73	M 12

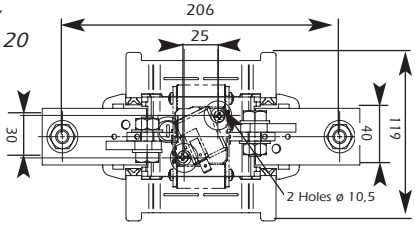


Front view
without IP 20 Protection

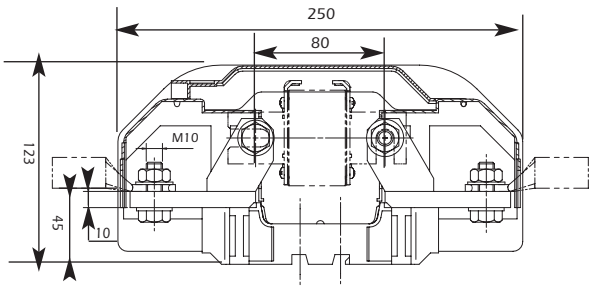
SI30-33-FS1DN80RM

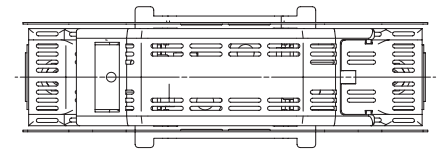


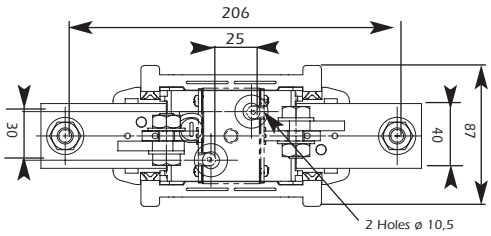
Front view
without IP 20
Protection



SI30-32FS1DN80R





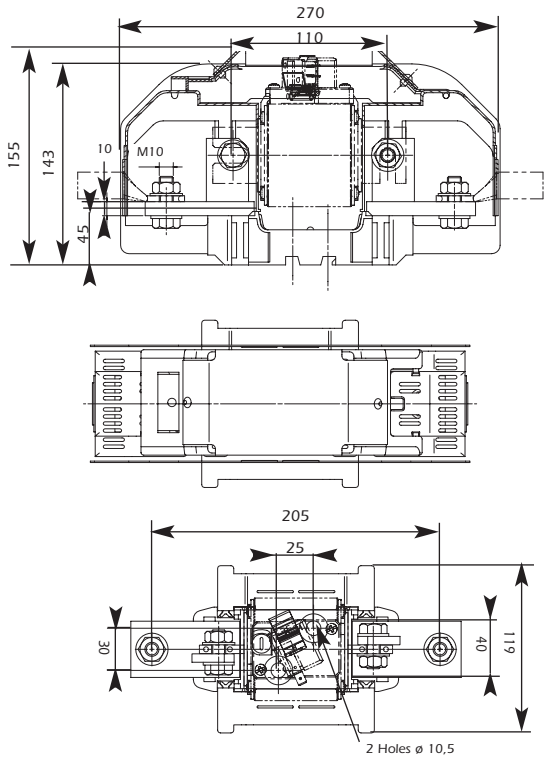


Front view
without IP 20 Protection

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
IP20 Fuse blocks for PSC range 3x, 7x & 000/00

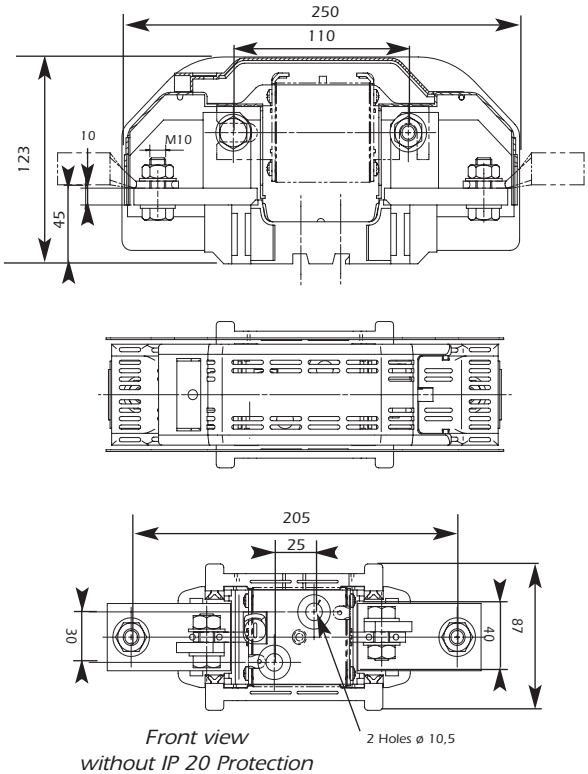
Outlet drawings

SI0-3FS1DN11RM



Front view
without IP 20 Protection

SI0-1-2FS1DN11R



Front view
without IP 20 Protection

Maximum fuse operating current

Derating current for sizes 000 and 00 DIN 80 fuses used on IP 20 fuse holders

Fuse nominal rating I_N (A)	I / I_N Fuse holders			
	Size 000		Size 00	
	690V gRB	690V URB	690V gRB	690V URB
16			1	
20	1		1	
25	1		1	
32	1		1	
40	1		1	
50	1		1	
63	1		1	
80	1	1	1	1
100	1	1	1	1
125	0,90	0,90	0,90	0,90
160		0,85	0,90	0,85
200		0,85		0,85
250		0,8		0,80
315		0,70		0,75
350		0,70		0,75
400		0,65		0,70
450				0,65

Note: ᖵᖜ limited at Ie = 220 Arms (IRMS in application)

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
IP20 Fuse blocks for PSC range 3x, 7x & 000/00

Maximum fuse operating current

Derating current for 690V URD fuses sizes 30, 31, 32, 33 TTF, DIN 80, DIN 110 used on IP 20 fuse holders.

Fuse nominal rating I_N (A)	I / I_N Fuse holders			
	690V URD 30	690V URD 31	690V URD 32	690V URD 33
63	1			
80	1			
100	1			
125	1			
160	1			
200	1	1		
250	1	1		
315	1	0,95		
350	1	0,95		
400	0,95	0,90	0,80	
450	0,70	0,85	0,75	
500	0,70	0,85	0,70	0,60
550	0,65	0,80	0,65	0,55
630		0,70	0,60	0,50
700		0,70	0,55	0,50
800		0,55	0,50	0,45
900			0,50	0,45
1000			0,45	0,40
1100			0,45	0,40
1250			0,30	0,30

Maximum fuse operating current

Derating current for 690V gRB fuses sizes 70, 71, 72, 73 TTF and DIN 110 used on IP 20 fuse holders.

Fuse nominal rating I_N (A)	I / I_N Fuse holders			
	690V gRB 70	690V gRB 71	690V gRB 72	690V gRB 73
50	1			
63	1			
80	1			
100	1			
125	1	1		
160	1	1		
200	1	1	1	
250	1	1	1	
315	1	1	1	0,90
350	1	1	1	0,85
400		1	0,95	0,85
450		1	0,85	0,75
500		0,95	0,85	0,70
550			0,80	0,70
630			0,70	0,65
700			0,65	0,60
800				0,60
900				0,50
1000				0,50

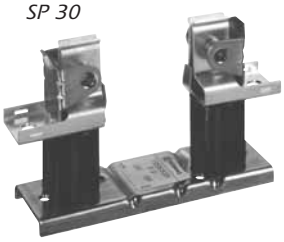
Semiconductor Fuses
AC+DC Square-boby Fuse Bases
IP20 Fuse blocks for PSC range 3x, 7x & 000/00

Maximum fuse operating current

Derating current for 1250V URD fuses size 70, 71, 72, 73, TTF and DIN 110 used on IP20 fuse holders, consult us.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for other Blade Fuses - Size 30 to 123: SE, SP, SF

SP 30



SP 70



SP - SE - SF FUSEHOLDERS FOR "E" BLADE-TYPE FUSES

- MOUNTING IN ONE-POLE FUSEHOLDER SIMPLIFIES REPLACEMENT OF FUSES FOR INSTALLATIONS CONNECTED WITH CABLES AND BARS
- FOR "E" BLADE-TYPE FUSES
  - ELASTIC TIGHTENING FOR SIZES 0 TO 2
  - BOLTED TIGHTENING FOR SIZE 3

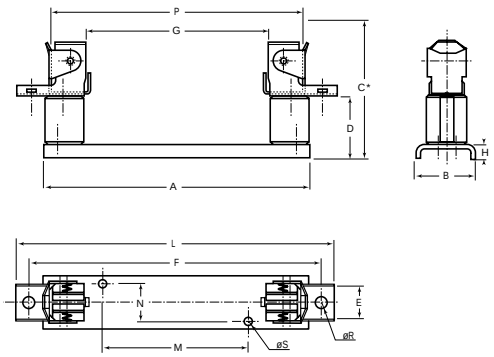
Main Characteristics

Designation	Catalog Number	Insulation voltage (V) Ui (AC 50/60 Hz & DC)	Current (A)	Maximum power* (W)	Dielectric withstand test (kV)	
					RMS voltage 1 mn 50/60 Hz	Impulse voltage 1.2/50µs
SP 30		1 250	550	31	13	20
SP 70		1 500	630	31	13	20
SP 43 120		2 500	200		13	20
SE 31		1 250	800	59	13	20
SE 32		1 250	1 800	95	13	20
SE 71		1 500	1 000	59	13	20
SE 72		1 500	1 250	95	13	20
SE 43-91		2 000	350		13	20
SE 43-92		2 000	500		13	20
SE 43 121		2 500	315		13	20
SE 43 122		2 500	500		13	20
SF 50-33		3 200	2 500	110	24	20
SF 50-73		3 200	1 800	110	24	20
SF 50-93		3 200	1 800		24	20
SF 50-123		3 200	1 800		24	20

** Maximum fuse operating current: see fuses data sheet.*

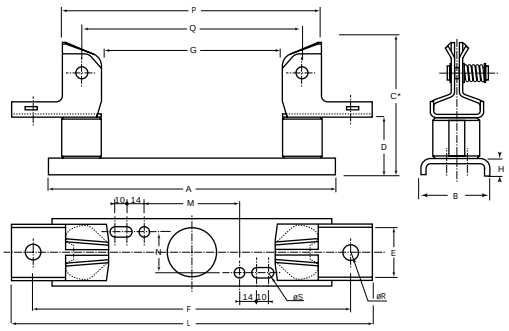
Dimensions

Drawing #1 "SP" elastic tightening

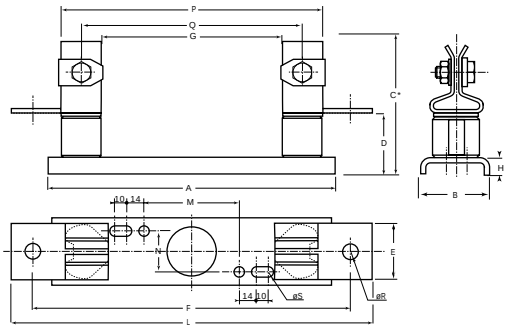


Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for other Blade Fuses - Size 30 to 123: SE, SP, SF

Drawing #2 "SE" elastic tightening



Drawing #3 "SF" bolted tightening



NB: For SF 50-33 types fixing dimension 14 becomes 12.5

Designation	Cat. Number	Drawing #	A	B	C*	D	E	F	G	H	L	M	N	P	Q	Ø R	Ø S
SP 30		1	138	42	109	46	26	134.5	54.5	8.5	155	52	28	98.5		8.5	5.5
SP 70		1	148	42	110.5	47.5	26	168	88	10	188	60	28	138		8.5	5.5
SP 43 120		1	194.5	42	125	54.5	26	214.5	134.5	10	234.5	106.5	28	184		8.5	5.5
SE 31		2	148	42	116	46.5	32	158.5	61.5	8.5	190.5	60	28	111.5	86.6	10.5	5.5
SE 32		2	150	54	126	49	42	180	56	10	216	45	35	126	91	12.5	8.5
SE 71		2	148	42	116	46.5	32	182	85	8.5	214	60	28	135	110	10.5	5.5
SE 72		2	150	54	126	49	42	204	80	10	240	45	35	150	115	12.5	8.5
SE 43-91		2	174	42	123	48	32	209	111	10	241	86	28	161	136	10.5	5.5
SE 43-92		2	176	54	133	50	42	230	106	15	266	23	35	176	141	12.5	8.5
SE 43 121		2	204.5	42	130	54	32	238.5	141.5	10	270.5	116.5	28	191.5	166.5	10.5	5.5
SE 43 122		2	230.5	54	140	60	42	260.5	136.5	15	296.5	77.5	35	206.5	171.5	12.5	8.5
SF 50-33		3	150	60	171	65	40	186	56	15	226	NBfig.3	35	126	91	18	8.5
SF50-73		3	174	60	171	65	40	210	80	15	250	21	35	150	115	18	8.5
SF 50-93		3	200	60	176	70	40	236	106	15	276	47	35	176	141	18	8.5
SF 50-123		3	230.5	60	176	70	40	266.5	136.5	15	306.5	77.5	35	206.5	171.5	18	8.5

** Dimension with fuse.*
– Electrical connection of fuseholder and wires by screws made in plated steel 8-8 class (not supplied).

Maximum recommended tightening torque:
M8 : 22 $^{+0}_{-8}$ Nm
M12 : 76 $^{+0}_{-8}$ Nm
M16 : 100 $^{+0}_{-10}$ Nm

– Fixing of base with screws:
M5 (for sizes 0 and 1) : 7 ± 1,5 Nm
M8 (for sizes 2 and 3) : 22 $^{+0}_{-8}$ Nm

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for other Blade Fuses - Size 30 to 123: SE, SP, SF

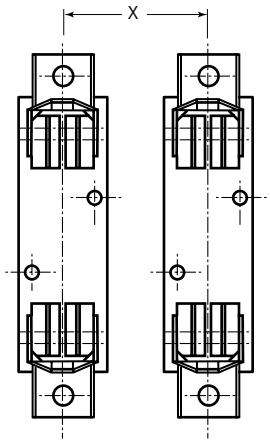
SP - SE - SF FUSEHOLDERS FOR "E" BLADE-TYPE FUSES

References

Designation	Ref. Number	Catalog Number	Weight (g)	Packaging
SP 30	T 096939	SP30	370	1
SP 70	F 096099	SP70	400	1
SP 43 120	W 226247	SP43-120	500	1
SE 31	J 098701	SE31	435	1
SE 32	K 098702	SE32	900	1
SE 71	V 098711	SE71	470	1
SE 72	W 098712	SE72	940	1
SE 43-91	X 226179	SE43-91	955	1
SE 43-92	Y 226180	SE43-92	955	1
SE 43 121	T 226245	SE43-121	540	1
SE 43 122	V 226246	SE43-122	1 026	1
SF 50-33	B 209186	SF50-33	1 550	1
SF 50-73	C 209187	SF50-73	1 590	1
SF 50-93	X 209090	SF50-93	1 625	1
SF 50-123	Y 209091	SF50-123	1 720	1

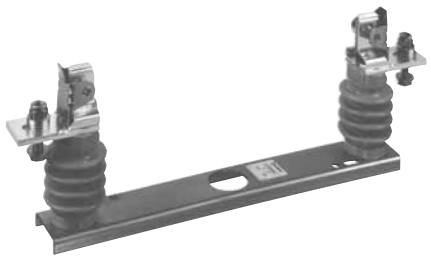
Distance "X" between Pole axes (without partition)

	Designation	Operating voltage U						
		400 V	550 V	690 V	750 V	1 000 V	1 250 V	1 500 V
Without partition	SP 30 SP 70 SP 43 120	45	50	54	55	60	65	68
	SE 31 SE 71 SE 43-91 SE 43-121	56	61	65	66	71	76	79
	SE 32 SE 72 SE 43-92 SE 43-122	65	70	74	75	80	85	88
	SF 50-33 SF 50-73 SF 50-93 SF 50-123	79,5	84,5	88,5	89,5	94,5	99,5	102,5



Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for DC other Blades Fuses - Size 300 & 602: SPV

FUSE HOLDERS FOR BLADE-TYPE CV3 FUSES



- STURDY ASSEMBLY WITH VERY HIGH COLLISION AND TEMPERATURE WITHSTAND
- MOUNTING AS BASES
- FIBER-GLASS POLYESTER OR CERAMIC INSULATORS FOR BASIC APPLICATIONS, IN CORROSIVE ATMOSPHERES OR IN TRACTION
- VERY HIGH COLLISION WITHSTAND FOR TRACTION INTERLOCKING OF REPLACEMENT PART
- COMPLYING WITH IEC 77 STANDARD

Main Characteristics

Designation	Catalog Number	Insulation voltage (V) Ui (AC 50/60 Hz & DC)	Current (A)	Dielectric withstand test (kV)		Fire and fumes class
				RMS voltage 1 mn 50/60 Hz	Impulse voltage 1.2/50µs	
SPV 300		7 200	180	20	40	UL 94 VO
SPV 600		7 200	180	20	40	Ceramic insulator

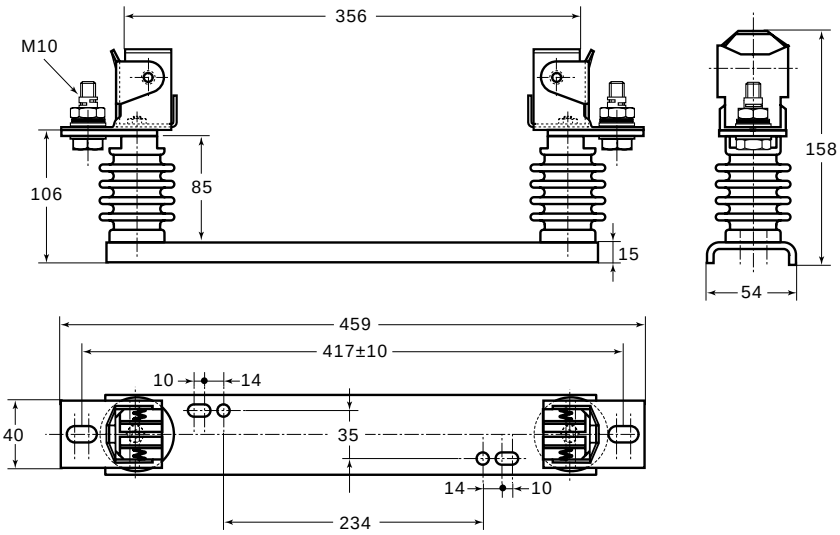
No use limitation for FERRAZ SHAWMUT fuses mounted in the above holders.

Vibration withstand:
Tests with sine vibrations carried out at ambient with scanning each of the three main holder axes.
Spectrum: 1st segment (2 to 16 Hz) constant displacement x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration γ = 5 g peak.
Exponential scanning speed: 1 octave per minute.
Duration: 2 hours per axis.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for DC other Blades Fuses - Size 300 & 602: SPV

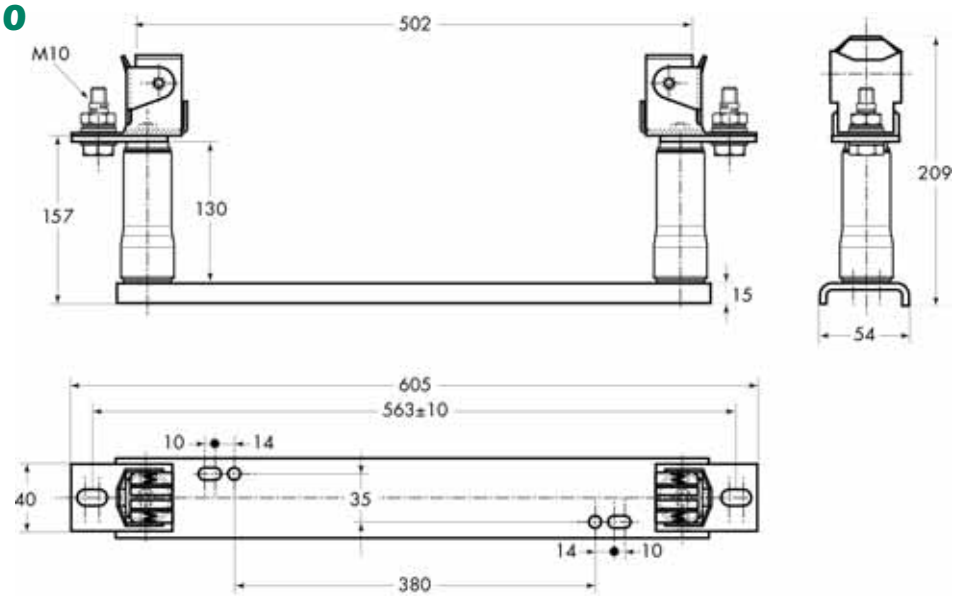
FUSE HOLDERS FOR BLADE-TYPE CV3 FUSES

SPV 300



Designation	Ref. Number	Cat. Number	Weight (g)	Packaging
SPV 300	W 098965	SPV300	1 830	1

SPV 600



Designation	Ref. Number	Cat. Number	Weight (g)	Packaging
SPV 600	T 098963	SPV600	3 100	1

- Electrical connection of fuseholder and wires by screws made in plated steel 8-8 class (supplied with fuseholder). Maximum recommended tightening torque: 44 ± 1 Nm for M10 screw.

- Fixing of base with M8 screws. Tightening torque 10 Nm ± 2.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for other DC Bracket Fuses - Size 70 & 602: SQ

FUSEHOLDERS FOR BRACKET STYLE CV3 FUSES





- MOUNTING IN ONE-POLE FUSEHOLDER SIMPLIFIES REPLACEMENT OF FUSES FOR INSTALLATIONS CONNECTED WITH CABLES AND BARS
- FOR BRACKET-TYPE FUSES BOLTED TIGHTENING
- "TRAC" MODELS WITH VERY HIGH COLLISION WITHSTAND FOR TRACTION COMPLYING WITH IEC 77 STANDARD

Main Characteristics

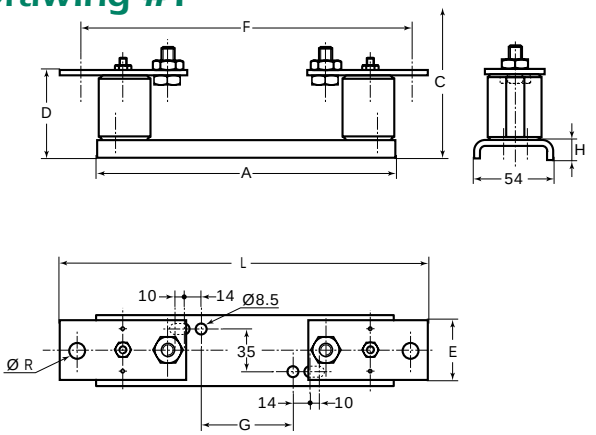
Designation	Catalog Number	Insulation voltage (V) Ui (AC 50/60 Hz & DC)	Current (A)	Dielectric withstand test (kV)		Fire and fumes class
				RMS voltage 1 mn 50/60 Hz	Impulse voltage 1.2/50µs	
SQ 70	SQ70	2 500	215	18 Kv	20 Kv	——
SQ 70 BS TRAC	SQ70BSTRAC	2 500	215	18 Kv	20 Kv	UL 94 VO
SQ 72	SQ72	2 500	400	18 Kv	20 Kv	——
SQ 72 BS TRAC	SQ72BSTRAC.	2 500	400	18 Kv	20 Kv	UL 94 VO
SQ 2 x 72	SQ120	2 500	840	18 Kv	20 Kv	——
SQ 2 x 72 BS TRAC	SQ122	2 500	840	18 Kv	20 Kv	Ceramic insulator
SQ 120	SQ85300	2 500	215	18 Kv	20 Kv	——
SQ 122	SQ85302	2 500	420	18 Kv	20 Kv	——
SQ 2 x 122	SQ130/2X302	2 500	900	18 Kv	20 Kv	Ceramic insulator
SQ 85 300	SQ85600	7 200	180	34 Kv	40 Kv	UL 94 VO
SQ 85 302	SQ85602	7 200	400	34 Kv	40 Kv	UL 94 VO
SQ 120 2 x 302	SQ2X72	7 200	400	34 Kv	40 Kv	Ceramic insulator
SQ 85 600	SQ2X72BSTRAC	7 200	150	34 Kv	40 Kv	UL 94 VO
SQ 85 602	SQ2X122	7 200	375	34 Kv	40 Kv	UL 94 VO
SQ 175 2 x 602	SQ1752X602	12 000	750	32 Kv	40 Kv	Ceramic insulator

No use limitation for FERRAZ SHAWMUT fuses mounted in the above holders.

Vibration withstand:
Tests with sine vibrations carried out at ambient with scanning each of the three main axes of the holder.
Spectrum: 1st segment (2 to 16 Hz) constant displacement x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration γ = 5 g peak.
Exponential scanning speed: 1 octave per minute.
Duration: 2 hours per axis.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for other DC Bracket Fuses - Size 70 & 602: SQ

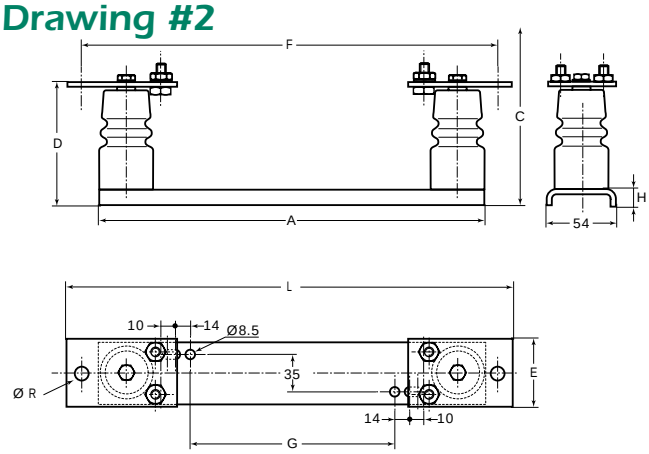
Drawing #1



Designation	Ref. Number	Cat. Number	Weight (g)
SQ 70	G 098975		860
SQ 70 BS TRAC	M 221386		1040
SQ 72	H 098976		990
SQ 72 BS TRAC	T 098986		1065
SQ 120	K 098978		940
SQ 122	L 098979		1050
SQ 85 300	V 098481		1480
SQ 85 302	W 098482		1540
SQ 120 2 x 302	P 098982		2800
SQ 85 600	X 098483		1740
SQ 85 602	Y 098484		1935

Pack: *1 piece*

Drawing #2



Designation	Ref. Number	Cat. Number	Weight (g)
SQ 2 x 72	J 098977		2620
SQ 2 x 72 BS TRAC	X 098989		2840
SQ 2 x 122	M 098980		2700
SQ 175 2 x 602	Q 092244		3620

Pack: *1 piece*

Catalog Number	Drawing #	A	C(1)	D	E	F	G	H	L	Ø R*
SQ 70	1	248	106,5	51	45	293	94	15	323	10,5
SQ 72	2	248	130,5	51	60	298	94	15	333	12,5
SQ 2 x 72	2	272	222,5	148	60	298	119	14	333	12,5
SQ 120	1	302	106,5	51	45	347	148	15	377	10,5
SQ 122	2	302	130,5	51	60	352	148	11	387	12,5
SQ 2 x 122	2	326	227,5	148	60	352	173	15	387	12,5
SQ 85 300	1	377	150	103	45	398	224	15	428	10,5
SQ 85 302	2	377	175	103	60	403	224	15	438	10,5
SQ 120 2 x 302	2	377	225	148	60	403	224	15	438	10,5
SQ 85 600	1	525	150	103	45	546	372	15	576	10,5
SQ 85 602	2	525	265	190	60	551	372	15	586	10,5
SQ 175 2 x 602	2	525	265	190	60	551	372	15	586	10,5

(1) With fuse connected

- Electrical connection of fuse on fuseholder by scews made in plated steel 8-8 class (supplied with fuseholder).

Maximum recommended tightening torque: 22^{+0}_{-8} Nm for M8 screw.

- Fixing of base with M8 screws. Tightening torque 10 Nm ± 2.

** Electrical connection of fuseholder and wires by screws made in plated steel 8-8 class at least (supplied in "TRAC" version and not supplied in standard version.)*

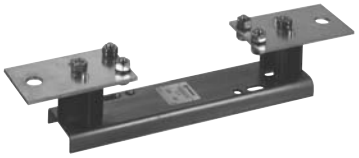
Maximum recommended tightening torque: 22^{+0}_{-8} Nm for M8 screw.

44^{+0}_{-8} Nm for M10 screw.

76^{+0}_{-8} Nm for M12 screw.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for other DC Bracket Fuses - Size 70 & 602: SQ

FUSEHOLDERS FOR BRACKET STYLE CV3 FUSES





- MOUNTING IN ONE-POLE FUSEHOLDER SIMPLIFIES REPLACEMENT OF FUSES FOR INSTALLATIONS CONNECTED WITH CABLES AND BARS
- FOR BRACKET-TYPE FUSES BOLTED TIGHTENING
- "TRAC" MODELS WITH VERY HIGH COLLISION WITHSTAND FOR TRACTION COMPLYING WITH IEC 77 STANDARD

Main Characteristics

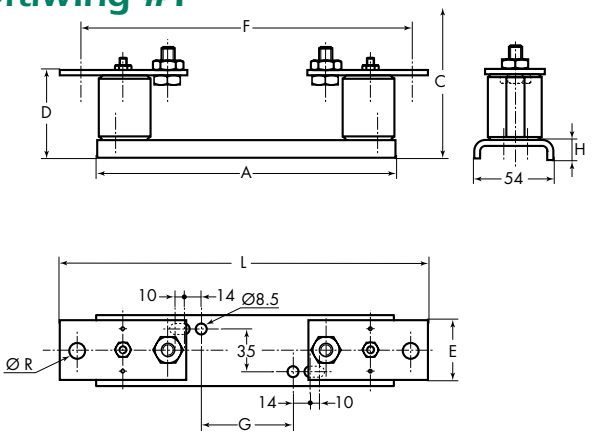
Designation	Catalog Number	Insulation voltage (V) Ui (AC 50/60 Hz & DC)	Current (A)	Dielectric withstand test (kV)		Fire and fumes class
				RMS voltage 1 mn 50/60 Hz	Impulse voltage 1.2/50µs	
SQ 70	SQ70	2 500	215	18 Kv	20 Kv	—
SQ 70 BS TRAC	SQ70BSTRAC	2 500	215	18 Kv	20 Kv	UL 94 VO
SQ 72	SQ72	2 500	400	18 Kv	20 Kv	—
SQ 72 BS TRAC	SQ72BSTRAC.	2 500	400	18 Kv	20 Kv	UL 94 VO
SQ 2 x 72	SQ2X72	2 500	840	18 Kv	20 Kv	—
SQ 2 x 72 BS TRAC	SQ2X72BSTRAC	2 500	840	18 Kv	20 Kv	Ceramic insulator
SQ 120	SQ120	2 500	215	18 Kv	20 Kv	—
SQ 122	SQ122	2 500	420	18 Kv	20 Kv	—
SQ 2 x 122	SQ2X122	2 500	900	18 Kv	20 Kv	Ceramic insulator
SQ 85 300	SQ85300	7 200	180	34 Kv	40 Kv	UL 94 VO
SQ 85 302	SQ85302	7 200	400	34 Kv	40 Kv	UL 94 VO
SQ 130 2X302	SQ130/2X302	7 200	400	34 Kv	40 Kv	Ceramic insulator
SQ 85 600	SQ85600	7 200	150	34 Kv	40 Kv	UL 94 VO
SQ 85 602	SQ85602	7 200	375	34 Kv	40 Kv	UL 94 VO
SQ 175 2 x 602	SQ1752X602	12 000	750	32 Kv	40 Kv	Ceramic insulator

No use limitation for FERRAZ SHAWMUT fuses mounted in the above holders.

Vibration withstand:
Tests with sine vibrations carried out at ambient with scanning each of the three main axes of the holder.
Spectrum: 1st segment (2 to 16 Hz) constant displacement x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration γ = 5 g peak.
Exponential scanning speed: 1 octave per minute.
Duration: 2 hours per axis.

Semiconductor Fuses
AC+DC Square-boby Fuse Bases
Bases for other DC Bracket Fuses - Size 70 & 602: SQ

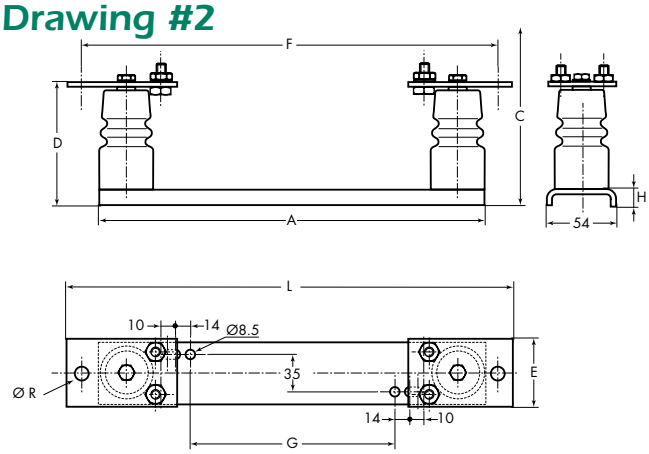
Drawing #1



Designation	Ref. Number	Cat. Number	Weight (g)
SQ 70	G 098975		860
SQ 70 BS TRAC	M 221386		1040
SQ 72	H 098976		990
SQ 72 BS TRAC	T 098986		1065
SQ 120	K 098978		940
SQ 122	L 098979		1050
SQ 85 300	V 098481		1480
SQ 85 302	W 098482		1540
SQ 130 2X302	P 098982		2800
SQ 85 600	X 098483		1740
SQ 85 602	Y 098484		1935

Pack: *1 piece*

Drawing #2



Designation	Ref. Number	Cat. Number	Weight (g)
SQ 2 x 72	J 098977		2620
SQ 2 x 72 BS TRAC	X 098989		2840
SQ 2 x 122	M 098980		2700
SQ 175 2 x 602	Q 092244		3620

Pack: *1 piece*

Catalog Number	Drawing #	A	C(1)	D	E	F	G	H	L	Ø R*
SQ 70	1	248	106,5	51	45	293	94	15	323	10,5
SQ 72	2	248	130,5	51	60	298	94	15	333	12,5
SQ 2 x 72	2	272	222,5	148	60	298	119	14	333	12,5
SQ 120	1	302	106,5	51	45	347	148	15	377	10,5
SQ 122	2	302	130,5	51	60	352	148	11	387	12,5
SQ 2 x 122	2	326	227,5	148	60	352	173	15	387	12,5
SQ 85 300	1	377	150	103	45	398	224	15	428	10,5
SQ 85 302	2	377	175	103	60	403	224	15	438	10,5
SQ 120 2 x 302	2	377	225	148	60	403	224	15	438	10,5
SQ 85 600	1	525	150	103	45	546	372	15	576	10,5
SQ 85 602	2	525	265	190	60	551	372	15	586	10,5
SQ 175 2 x 602	2	525	265	190	60	551	372	15	586	10,5

(1) With fuse connected

- Electrical connection of fuse on fuseholder by scews made in plated steel 8-8 class (supplied with fuseholder).

Maximum recommended tightening torque: 22^{+0}_{-8} Nm for M8 screw.

- Fixing of base with M8 screws. Tightening torque 10 Nm ± 2.

** Electrical connection of fuseholder and wires by screws made in plated steel 8-8 class at least (supplied in "TRAC" version and not supplied in standard version.)*

Maximum recommended tightening torque: 22^{+0}_{-8} Nm for M8 screw.

44^{+0}_{-8} Nm for M10 screw.

76^{+0}_{-8} Nm for M12 screw.

Semiconductor Fuses
AC+DC Ferrule Fuse Holders
Clips



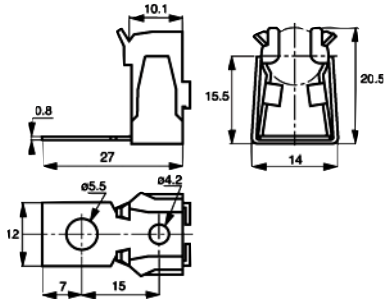
For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36

- SILVER-PLATED COPPER CLIPS: EXTREMELY HIGH THERMAL AND ELECTRIC CONDUCTIVITY
- MOUNTING TYPE:
  - SCREWING ON ISOLATORS
  - SCREWING ON BARS OR INSULATED BARS
  - WELDING ON P.C.B. (MR 10 CI)
- STAINLESS STEEL PRESSURE SPRINGS: HIGHLY RESISTANT TO SALT SPRAY

Main Characteristics

Designation	Current rating I_N (A)	Maximum R.M.S continuous current through IN - rated current fuses (A)	Recommended copper cable section (mm^2)
MR 10	32	32	4
MR 10 CI	32	32	4
MR 14	63	63	10
MR 20	125	125	35
MR 22	135	135	35
MR 27	250	250	120
MR 36	250	250	120

MR 10 - MR 10 CI

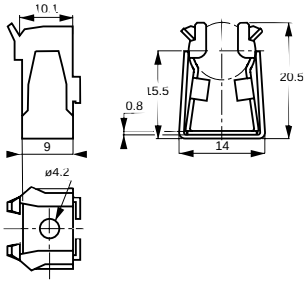


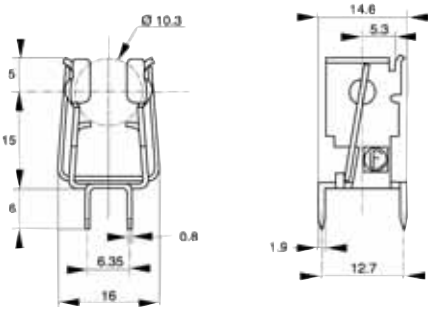
Designation	Ref. Number	Weight (g)	Catalog Number
MR 10	B098004	7	MR10RESSORT

Pack: *20 pieces*

Designation	Ref. Number	Weight (g)	Catalog Number
MR 10 without connection	C098994	5,7	MR10RESSORTSP

Pack: *20 pieces*





Designation	Ref. Number	Weight (g)	Catalog Number
MR 10 CI	Y098507	4,5	MR10RESSORTCI

Pack: *200 pieces*

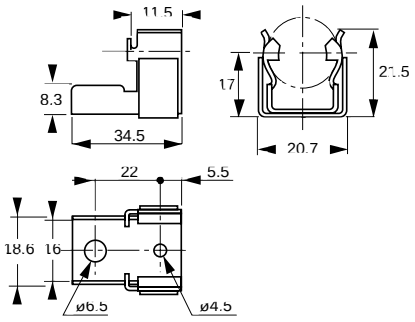
Semiconductor Fuses
AC+DC Ferrule Fuse Holders
Clips

For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36

MR 14

Designation	Ref. Number	Weight (g)	Catalog Number
MR 14	G098170	16	MR14SPRING

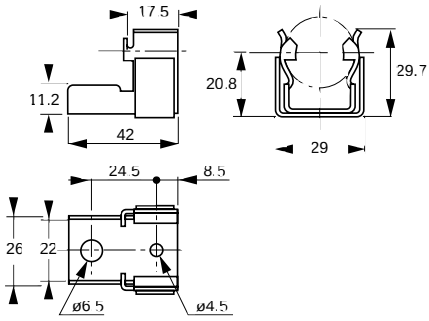
Pack: *10 pieces*



MR 20.6

Designation	Ref. Number	Weight (g)	Catalog Number
MR 20.6	H099988	40	MR20.6RESSORT

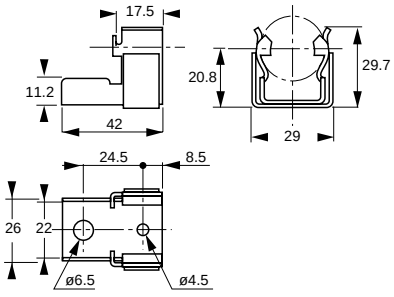
Pack: *20 pieces*



MR 22

Designation	Ref. Number	Weight (g)	Catalog Number
MR 22	K098909	40	MR22SPRING

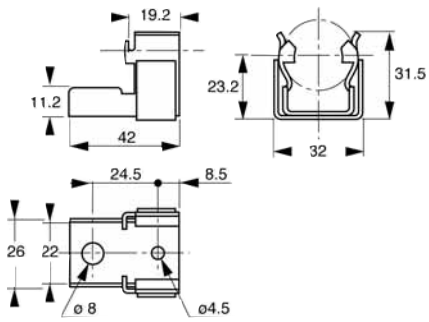
Pack: *10 pieces*



MR 27

Designation	Ref. Number	Weight (g)	Catalog Number
MR 27	Y092734	50	MR27RESSORT

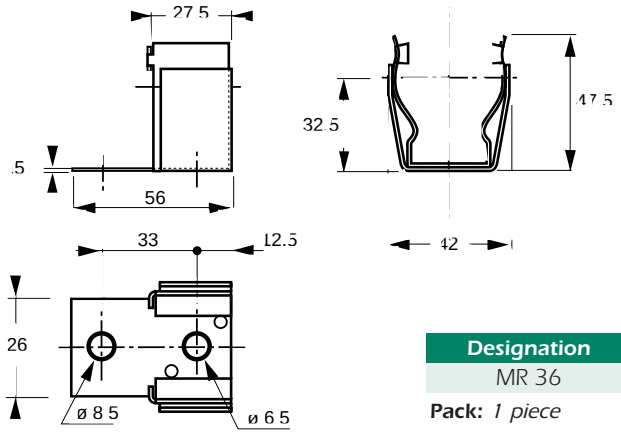
Pack: *20 pieces*



Semiconductor Fuses
AC+DC Ferrule FuseHolders
Clips

MR 36

For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36



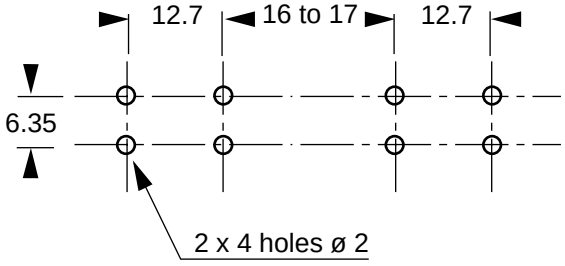
Designation	Ref. Number	Weight (g)	Catalog Number
MR 36	M091275	85	MR36R

Pack: *1 piece*

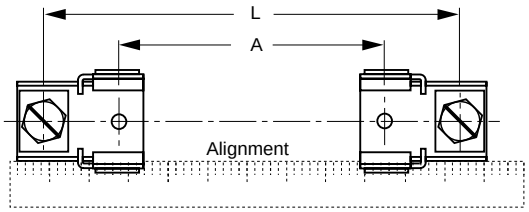
All clips silver-plated copper with stainless steel springs.

Mounting Instructions

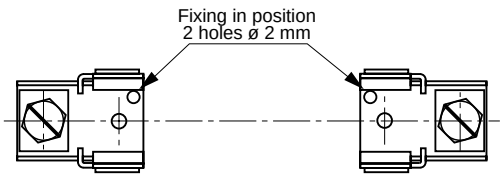
P.C.B. Drilling for MR10 CI clip (10 X 38 Size Fuse)



Clip Mounting



Fuse size	A	L
10 x 38	31	61
14 x 51	42	86
22 x 58	42	91
20 x 51	36	85
20 x 127	113	162
20 x 190	175	224
27 x 60	41	91
36 x 127	100	148
36 x 190	165	231



Mounting of two elastic stop pins of 2 mm dia. for fixing clips in position

Semiconductor Fuses
AC+DC Ferrule FuseHolders
SI Bases for 14x51, 22x58

SI 14 SI 22



SI with microswitch



For Ferrules-type fuses Ø 14 - 22

- SHOCK-PROOF MODULAR ASSEMBLY COMPLIANT WITH IEC 60269-1 AND NF C 63130
- BASE MOUNTING WITH OR WITHOUT MICROSWITCH AND ISOLATING PARTITION
- PHENOLIC RESIN FOR BASIC APPLICATIONS (BASIC MODEL)
- SELF-EXTINGUISHABLE FIBERGLASS POLYESTER FOR TRACTION AND CORROSIVE ATMOSPHERE APPLICATIONS (SALT SPRAY-PROOF MODEL)

Main Characteristics

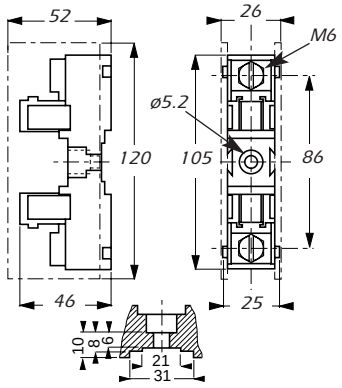
Model	Thermal current rating (Ith)	Maximum power losses	Rated insulation voltage Ui AC or DC according VDE 0110:565 - group C withstand	Dielectric withstand tests	
				R.M.S. voltage 1mn 50-60 Hz	Voltage shock 1.2/50µs Uimp. : impulse voltage as per IEC 60947-1
Phenolic resin (standard) SI 14	63 A	16 W per phase	750 V	8 kV between phase and mass	between phase and mass
SI 22	135 A	26 W per phase			
Salt-spray proof fiber glass polyester SKI 14	63 A	16 W per phase	750 V	3 kV between phases and microswitch	between phases and microswitch
SKI 22	135 A	26 W per phase			
				Tests according to IEC 60060 and 60944 and NF C 64010 Dry atmosphere and new fusegear	

Connecting with 16 mm max. width, 5mm max. thick terminal for SI 14 and 22 mm max. for SI 22
** Only for the base. Accessories (partitions and microswitches) are not classified due to their lightness.*

Basic model
Max. temperature (°C)/Relative Humidity (%): 20 °C/95% - 40°C/80% - 50°C/50%
If Holder must be kept off, a heating system fed during stop periods must be used. Purpose is to keep the temperature of cubicle at a level slightly higher than outdoor.

Salt spray-proof model
Moist tropical and equatorial climate. Corrosive atmosphere.

SI 14 and partition wall



For direct mounting, screw tightening torque = 0.24 mdaN

Designation	Ref. Number	Catalog Number	Weight (g)
SI 14	V 097124	SI14	85
SKI 14	B 097130	SKI14	100

Pack: *3 pieces*
SI: basic model - SK salt spray-proof model

Partition wall

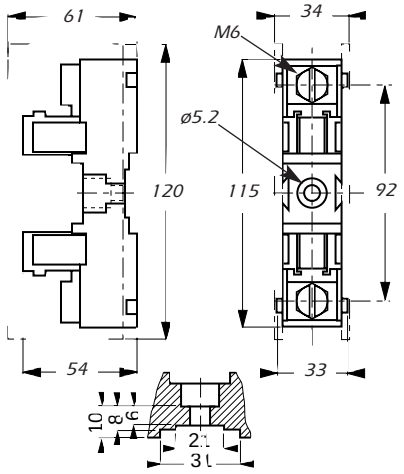
Designation	Ref. Number	Catalog Number	Weight (g)
E 14 - 22	B 097107	E14-22	13

Pack: *2 pieces*

Semiconductor Fuses
AC+DC Ferrule FuseHolders
SI Bases for 14x51, 22x58

For Ferrules-type fuses Ø 14 - 22

SI 22 and partition wall



For direct mounting, screw tightening torque = 0.3 mdaN

Designation	Ref. Number	Catalog Number	Weight (g)
SI 22	W097125	SI22	160
SKI 22	C097131	SKI22	190

Pack: *3 pieces*
SI: basic model - SK salt spray-proof model

Partition wall

Designation cloison	Ref. Number	Catalog Number	Weight (g)
E 14 - 22	B 097107	E14-22	13

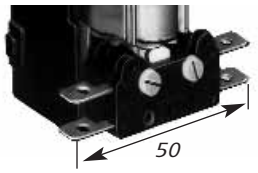
Pack: *2 pieces*

Remote sensing microswitch

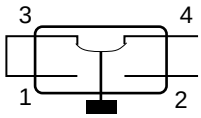
Microswitch type for SI 14	Code	Ref. Number	Catalog Number	Weight (g)
Basic single microswitch	MC 1-5 14 FL 1-5	D 096051	-	20
salt spray-proof single microswitch	MCK 1-5 14 FL 1-5	T 097215	-	20
Basic twin microswitch	MC 1-5 14 FL 1-9	P 096061	-	40

Microswitch type for SI 22	Code	Ref. Number	Catalog Number	Weight (g)
Basic single microswitch	MC 1-5 22 FL 1-5	H 096055	-	24
salt spray-proof single microswitch	MCK 1-5 22 FL 1-5	R 097213	-	22
Basic twin microswitch	MC 1-5 22 FL 1-9	T 096065	-	40

Pack: *1 piece*



POSSIBLE ASSEMBLING AFTER CONNECTING ON MODEL WITHOUT PARTITION WALL



- With manual reset reversing style microswitch 10A - 250V AC @ cos φ = 0.3
- #1 and 3 terminals must always be connected.

Adapters for DIN-rail mounting

Rail style	Designation	Ref. Number	Cat.Number	Top part	Bottom part	Color	Weight (g)	Pkg.
 Asymmetrical DIN EN 50035	EF 4	L 097047	EF4	vis M 4		blue	4	100
	EF 35	G 097043	EF35	vis M 3	vis M 5	cream	4	100
	EF 46	K 097046	EF46	vis M 4	vis M 6	white	4	100
 Symmetrical DIN EN 50022	Fixoméga FM4	B 092093	MIFIXOME-GAFM4	M 4 center screw		stainless steel	4.4	10

Semiconductor Fuses
AC+DC Ferrule FuseHolders
MSC10, USM

MSC 10 Fuse Holder

MSC 10 fuse holder – no accessories
I_{th} max. 32A - Un 690V

for 10x38 fuses without striker, with or without indicator light



Nb. of Poles	Model without blown fuse indicator light		Model with blown fuse indicator light		Nb Mod	Pckg
	Ref.number	Cat. Number	Ref. Number	Cat. Number		
N	Q218215	MSC8/10N			1	12
1	Q216674	MSC101	W219784	MSC101I	1	12
1+N	C212085	MSC101N	D232602	MSC101NI	2	6
2	E213122	MSC102	K215151	MSC102I	2	6
3	M215659	MSC103	R226611	MSC103I	3	4
3+N	E217193	MSC103N	E232603	MSC103NI	4	3
4	F218735	MSC104			4	3

MSC 10 fuse holder Phase + Neutral (1 mod.)
I_{th} max. 32A - Un 690V

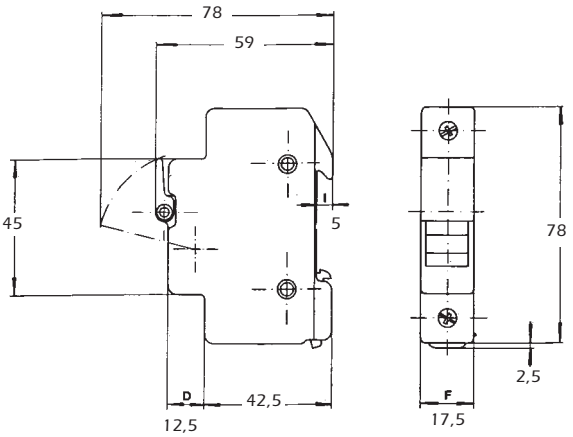


Nb. of Poles	Model without blown fuse indicator light		Model with blown fuse indicator light		Nb Mod	Pckg
	Ref.number	Cat. Number	Ref. Number	Cat. Number		
1+N	Y201317	MSC101N1M	C211050	MSC101N1MI	1	12
3+N	S218217	MSC103N3M	S226612	MSC103N3MI	3	4

Assembly accessories	Ref. Numbrer	Cat. Numbrer	Pckg
2-pole pin	G215125	MSC810PAK2	10*
3-pole pin	Q216145	MSC810PAK3	10*
4-pole pin	A217166	MSC810PCK4	10*

** 10 per bag*

Dimensions



- Direct mounting on symmetrical DIN rail
- Indicator light (120/690V)
- Wiring cross sections:
  - single-pole: 1 x 16mm2
  - single-pole + neutral: 1 x 10 mm²
- Insulated to IP 20 standard
- Single-pole weight
  - 10x38 ; 63 g
  - 10x38 - Ph + N1M ; 68 g

Semiconductor Fuses
AC+DC Ferrule FuseHolders
MSC10, USM

MSCC and USM 10 Fuse Holder

USM fuse holders
I_{th} max. 32A - Un 800VAC - 1000VDC

for 10 x 38 Midget fuses (1-1/2" x 13/32")
with or without indicator light

Nb. of Poles	Model without blown fuse indicator light		Model with blown fuse indicator light		Nb Mod	Pckg
	Ref.number	Cat. Number	Ref. Number	Cat. Number		
N	W201131	USN				12
1	Y213944	USM1	L214462	USM1I	1	12
2	N217523	USM2	Z218039	USM2I	2	6
3	C218548	USM3	Y219073	USM3I	3	4
3+N	H222049	USM3N	P219594	USM3NI	4	3
4	R222793	USM4	F223312	USM4I	4	3

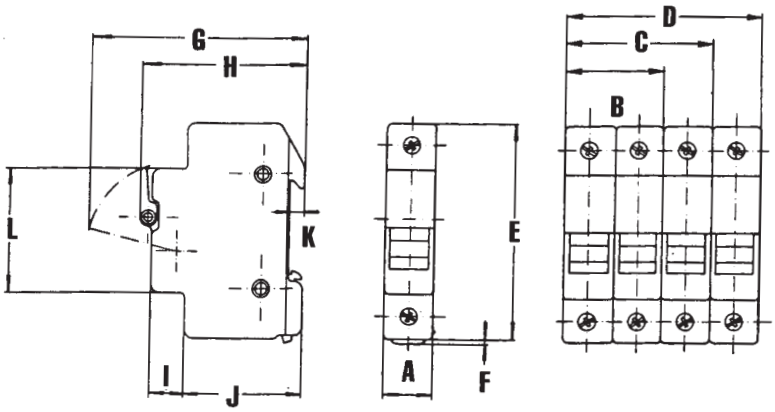


Assembly accessories	Ref. Numbrer	Cat. Numbrer	Pckg
2-pole pin	F201646	USPTH2	10*
3-pole pin	C205047	USPTH3	10*
4-pole pin	P211383	USPTH4	10*

Dimensions

DIMENSION	mm	In
A	17.5	0.69
B	35.0	1.38
C	52.5	2.07
D	70.0	2.76
E	78.0	3.07
F	2.5	0.10
G	78.0	3.07
H	59.0	2.32
I	12.5	0.49
J	42.5	1.67
K	5.0	0.20
L	45.0	1.77

** 10 per bag*



** With the indicator light a blown fuse can be quickly located if power is still on*

- Direct mounting on symmetrical DIN rail
- Single-pole weight
  USM ; 63g

MODULOSTAR® Series



The brand-new innovative and comprehensive «MODULOSTAR®» range of Ferraz Shawmut Modular Fuseholders and Fuse disconnectors is global and designed to accommodate a multitude of fuses from around the world, including - IEC industrial Cylindrical (gG, aM, gD) - UL class CC, Midget - Special protection class (UR, gR, gD) in 5 sizes : 8x32, 10x38, 14x51, 22x58 and 27x60 mm.
All MODULOSTAR® products are manufactured in accordance with IEC 60269-2, IEC 60947 - 1 & 3, UL512 and CSA 22-2 Standards.

General charateristics:

• Impulse withstand voltages:
- The range is tested at respectivly Uimp= 6KV and 8KV according to part 8.3.3.4.1 of IEC60947-1 between neighboring poles, between phase and wires, between phase and microswitch.
Insulation voltage rating Ui = 690VAC and 800VAC
- The blown fuse light indicators are available for 24VDC to 700VDC and 110VAC to 690-700VAC

• European RoHS Directive:
Modulostar® product range is develop in accordance with European Directive 2002/95/CE dated 27 January 2003, as free of halogene (PBB, PBDE), chlorine, mercury, cadmium and lead.

• Environmental aspects:
Modulostar® range is design following «ecoconception» method, with sofware tool EIME (Environmental Information & Management Explorer), which takes into account the following criteria: Water Toxicity, Water Eutrophication, Hazardous Waste Production, Raw Material Depletion, Energy Depletion, Water Depletion, Global Warming, Air Toxicity, Photochemical Ozone Creation, Air Acidification

• Plastic material used are UL 94 V0 to V2 with UL Recognized Yellow card:
- RTI (Relative Thermal Index) > 120°C
- CTI (Comparative Tracking Index) > 350V
- Bodies are in Polyamide 6 with 20% reinforced material
- Handles are in Polyamide 6.6 with 25% reinforced material or in Thermodur BMC

• Homologations:
CB report according IEC 60269-2 and IEC 60947-3 standards UL CSA Listed (600V AC) for class CC products ranges, UL CSA recognition (800V AC - 1000V DC) for Midget and IEC products

• Vibration withstand:
Tests with sine vibrations carried out at ambiant temperature with scanning each of the three main axis of the holder .
Spectrum: 1st segment (2 to 16Hz) constant displacement x=5mm peak
2nd segment (16 to 250 Hz) constant acceleration γ= 5g peak
Exponential scanning speed: 1 octave per minute.
Duration : 2 hours per axis.

• Climatic usage conditions:
Modulostar® is designed for temperate climates . For more severe climates we recommend the following:

Maximum temperature	20°C	30°C	40°C	50°C
Maximum relative humidity	95%	90%	80%	50%
Curent derating	1	0.95	0.9	0.8

Fuse ranges used in Ferraz Shawmut fusegear





Size	10.3 x 38 / CC	14 x 51	22 x 58	27 x 60
600V Class J Time delay			AJT 1 to 30A	AJT 31 to 60A
600V Class J Fast acting			A4J 1 to 30A	A4J 31 to 60A
600V Midget fast acting	6JX, ATM, SBS 0.25 to 30A			
600V Class CC Time delay	ATDR, ATQR, ATMR 1/4 to 30A			
600V Class RK5 Time delay		TR 1 to 30A		
250V Class RK1 Fast acting		A2K 1 to 30A		
250V Class K-5		OT, OTN 1 to 30A		
250V Class RK1 Time delay		A2D, 1 to 30A		
500V Midget Time delay	ATQ 0.1 to 10A			
250V-300V Midget	OTM, TRM, A25Z-2 0.1 to 30A			
125V Midget Fast acting	GGU, GFN 3 to 30A			
aM	400V 25 to 32A 500V 0.16 to 20A 690V 0.16 to 12 or20A*	500V 32 to 50A 690V 0.25 to 40A	500V 100 to 125A 690V 1 to 80A	
gG	400V 32A 500V 0.5 to 25A 690V 0.5 to 12 or 20A*	400V 50A 500V 32 to 40A 690V 1 to 32A	400V 125A 500V 100A 690V 4 to 80A	
60gD		600V 10 to 30A	600V 35 to 60A	600V 65 to 100A
gG with striker	400V 50A 400V 2 to 32A 690V 2 to 32A*	400V 125A 500V 2 to 40A 690V 4 to 80A*	690V 63 to 160A* 500V 80 to 100A	
aM with striker	400V 2 to 32A 690V 10 to 40A*	500V 1 to 15A 690V 1 to 80A*	500V 63 to 100A	690V 63 to 160A*
UR	600V 0.1 to 0.8	690V 6 to 50A	690V 25 to 100A	
gR	690V 1 to 32A	690V 1 to 50A	690V 25 to 100A	
UR with striker	500V 1 to 30A 690V 1 to 50A	690V 6 to 50A	690V 25 to 100A 1000V 32 to 170A	690V 63 to 250V
gR with striker			690V 25 to 100A	800V 8 to 110A
In maxi	32A	50A	125A	170A

** development in progress*

IEC fuse holders: CMS8

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7			Cable wire section (mm^2) recommanded
					gG	aM	gF / gG	
500V AC20B	6 kV	25 A	2.5 W	≤12	≤12	≤12	≤12	2.5
500V AC20B	6 kV	25 A	2.5 W	16	16	16	16	2.5
500V AC20B	6 kV	25 A	2.5 W	20	20	20	20	2.5
500V AC20B	6 kV	25 A	2.5 W	25	25	25	25	4

** Datas for ambiante temperature = 20°C.*
Wire range : Rigid wire = 1- 16 mm² (18 - 6 AWG) Multistrand wire = 0,75 - 10 mm² (18 - 8 AWG)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm)
Maximum Tightening Torque : 2.5 Nm (22lb-in)
IR for fuses : 80KA @ 690V

MODULOSTAR® Fuse holders for 8 x 32 fuse links



MODULOSTAR® Fuse holder without fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS810N**	D305006	1	12	
1	**CMS81**	X305000	1	12	
2	**CMS81N**	Y305001	2	6	
2	**CMS82**	Z305002	2	6	
3	**CMS83**	A305003	3	4	
4	**CMS83N**	B305004	4	3	
4	**CMS84**	C305005	4	3	

MODULOSTAR® Fuse holder with fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS81I**	E305007	1	12	
2	**CMS81NI**	F305008	2	6	
2	**CMS82I**	G305009	2	6	
3	**CMS83I**	H305010	3	4	
4	**CMS83NI**	J305011	4	3	
4	**CMS84I**	K305012	4	3	

Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**CMS810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

IEC fuse holders: CMS10

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7				Cable wire section (mm^2) recommanded
					gG	aM	URD / gRB	6JX	
	6 kV	32 A	3 W	≤12	≤12	≤12	≤12	≤12	2.5
	6 kV	32 A	3 W	16	16	16	16	16	2.5
690 VAC	6 kV	32 A	3 W	20	20	20	20	20	2.5
AC20B	6 kV	32 A	3 W	25	25	25	25	25	4
	6 kV	32 A	3 W	30			30	30	6
	6 kV	32 A	3 W	32	32	32	32		6

** Datas for ambiante temperature = 20°C.*
Wire range : Rigid wire = 1- 16 mm² (18 - 6 AWG) Multistrand wire = 0,75 - 10 mm² (18 - 8 AWG)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm)
Maximum Tightening Torque : 2.5 Nm (22lb-in)
IR for fuses : 120KA @ 500V - 80KA @ 690V

MODULOSTAR® Fuse holders for 10 x 38 fuse links

MODULOSTAR® Fuse holder without fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS810N**	D305006	1	12	
1	**CMS101**	T305020	1	12	
2	**CMS101N**	V305021	2	6	
2	**CMS102**	W305022	2	6	
3	**CMS103**	X305023	3	4	
4	**CMS103N**	Y305024	4	3	
4	**CMS104**	Z305025	4	3	



MODULOSTAR® Fuse holder with fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS101I**	A305026	1	12	
2	**CMS101NI**	B305027	2	6	
2	**CMS102I**	C305028	2	6	
3	**CMS103I**	D305029	3	4	
4	**CMS103NI**	E305030	4	3	
4	**CMS104**	F305031	4	3	

Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**CMS810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

IEC fuse holders: US10

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1,2, 3 and 3+N poles with FS fuse links For 4, 5 and 6 poles x by 0.9 For 7, 8, 9 poles x 0.8 For ≥ 10 poles x by 0,7				Cable wire section (mm^2) recommanded
					6Jx	ATM,SBS, GNF,GGU	ATQ, OTM TMR	URD / gRB	
	6 kV	30 A	3 W	≤16	16	16	16	16	2.5
690V AC	6 kV	30 A	3 W	20	20	20	20	19	2.5
AC20B	6 kV	30 A	3 W	25	25	25	25	22	4
	6 kV	30 A	3 W	30	30	30	30	25	6

Note: UL recognized Voltage are 800V AC and 1000V DC
** Datas for ambiante temperature = 20°C.*
Wire range : Rigid wire = 1- 16 mm² (18 - 6 AWG) Multistrand wire = 0,75 - 10 mm² (18 - 8 AWG)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm)
Maximum Tightening Torque : 2.5 Nm (22lb-in)
IR for fuses : 120KA @ 500V IEC - 80KA @ 690V IEC - 80 KA @ 700V UL

MODULOSTAR® Fuse holders for Midget and 10 x 38 fuse links



MODULOSTAR® Fuse holder without fuse light melting indicator

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US10N**	H305056	1	12	
1	**US101**	B305050	1	12	
2	**US101N**	C305051	2	6	
2	**US102**	D305052	2	6	
3	**US103**	E305053	3	4	
4	**US103N**	F305054	4	3	
4	**US104**	G305055	4	3	

MODULOSTAR® Fuse holder with fuse light melting indicator

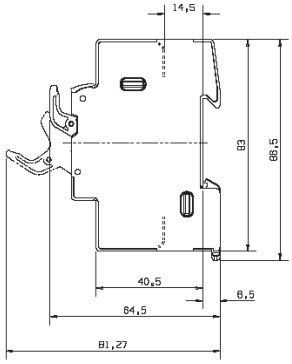
Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US101I**	J305057	1	12	
2	**US101NI**	K305058	2	6	
2	**US102I**	L305059	2	6	
3	**US103I**	M305060	3	4	
4	**US103NI**	N305061	4	3	
4	**US104I**	P305062	4	3	

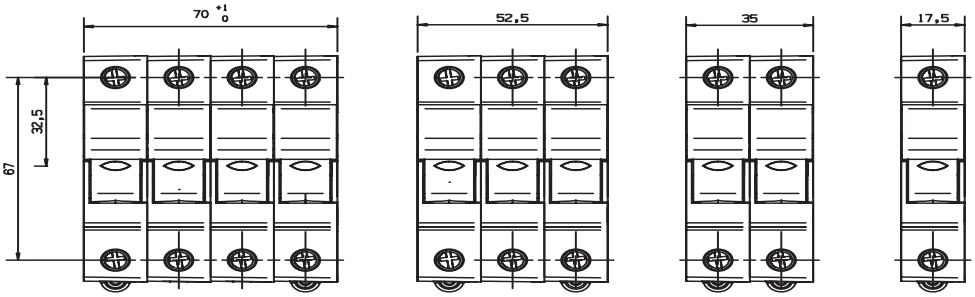
Accessories

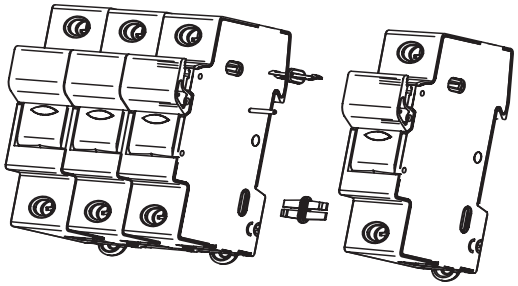
Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**US810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

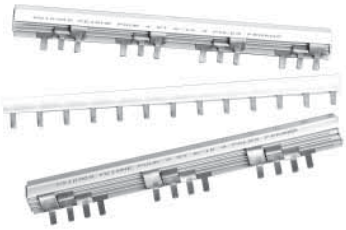
Dimensions











Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Maxi. RMS current (A)	Number of Poles	Pack	Sur Condi
Kit for Multi-Phase connection links	**CMS810PAK**	Z233725				12	
Lock	**LOCK**	M223525				1	
Tag and lockout	**TAGLOCKCMS810**	A235773				1	
jumping bars 1 phase size 8/10 *	**CMS810BB1F13**	T210306	13	63	1	10	
jumping bars 2 phases size 8/10 *	**CMS810BB2F6**	V210307	6	63	2	10	
jumping bars 3 phases size 8/10 *	**CMS810BB3F4**	W210308	4	100	3	10	
jumping bars 4 phases size 8/10 *	**CMS810BB4F3**	X210309	3	100	4	10	
1 phase lateral incoming power supply	**TBB1C**	E210316		90		50	
2 & 3 phases lateral incoming power supply	**TBB23C**	G210318		90		50	
1 phase axial incoming power supply	**TBB1A**	D210315		90		50	
2 & 3 phases axial incoming power supply	**TBB23A**	F210317		90		50	

*Note *: It is possible to use a rigid cable 16 mm² with a jumping bar 1.5 mm thick.*

Semiconductor Fuses
AC+DC Ferrule FuseHolders
MODULOSTAR® USFM10 - ULTRASAFE™ USFMM

Three poles fuse holders and fuse disconnectors: USFM10 / USFMM

Electrical characteristics

Nominal Voltage Ui AC/DC	Voltage Isolation Uimp	Nominal Current	Max. power losses in the fuse links	Fuse links rating	Maxi RMS* Current for 1 Three poles system with FS fuse links. For 2 to 7 Three poles systems x by 0.9				Cable wire section (mm²) recommanded
					6JX	ATM, SBS, GNF, GGU	ATO, OTM, TMR	URD / gRB	
690 V IEC 600V UL AC20B	6 kV	32 A	3 W	≤12	≤12	≤12	≤12	≤12	2.5
				16	16	16	16	16	2.5
				20	20	20	20	20	2.5
				25	25	25	25	25	4
				30			26	30	6
				32	32	32	27		6

** Datas for ambiante temperature = 20°C.*

Wire range : Rigid and Multistrand wire = 1- 4 mm² (18 - 10 AWG) - Maximum multistrand wire for each open lug = 2.6 mm² (12 AWG)
Maximum Tightening Torque : 1.5 Nm (13 lb-in)
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 0.8 mm (maximum diameter 6 mm)
IR with fuses : 120KA @ 500V IEC - 80KA @ 690V IEC - 80 KA @ 700V UL

MODULOSTAR® USFM10

for IEC 10x38 fuse links. Fuse holder compliant with IEC 60269-1 & 2, and tested in accordance with IEC 60947-1 & 3 for fuse disconnector usage

Nb of Pole / Width	MODULOSTAR® USFM Fuse holder and Fuse disconnector			Fonction	
	Catalog Number	Ref Number	Description	Fuse holder	Fuse disconnector
3 poles system / 45 mm width	USFM10	S302765	USFM10 FUSE HOL 3P 690V 32A EU	w/o Indicator	
	USFM10M	T302766	USFM10M FUSEHOL+MC3P690V32A EU		w/o Indicator
	USFM10I	W302768	USFM10I FUS.HOL3P+V 690V32A EU	with Indicator	
	USFM10MI	V302767	USFM10MI FUS.HOL3P+MC+V690V EU		with Indicator

Pack: *1 piece*
Fuse holder is without Prebreaking Microswitch (see accessories)
Fuse disconnector is with mounted Prebreaking Microswitch



ULTRASAFE USFMM

for Midget and IEC 10x38 fuse links. Fuse holder UL /CSA Recognized compliant with UL 512 and CSA 22-2 , IEC 60269-1 & 2, and tested in accordance with IEC 60947-1 & 3 for fuse disconnector usage

Nb of Pole / Width	ULTRASAFE™ USFM Fuse holder and Fuse disconnector			Fonction	
	Catalog Number	Ref Number	Description	Fuse holder	Fuse disconnector
3 poles system / 45 mm width	USFMM	D302775	USFMM 3P 600V 30A UL	w/o Indicator	
	USFMMM	E302776	USFMMM 3P 600V 30A +MS UL		w/o Indicator
	USFMMI	G302778	USFMMI 3P 600V 30A +LIGHT UL	with Indicator	
	USFMMMI	F302777	USFMMMI 3P 600V 30A +LI+MS UL		with Indicator

Pack: *1 piece*
Fuse holder is without Prebreaking Microswitch (see accessories)
Fuse disconnector is with mounted Prebreaking Microswitch

Accessories

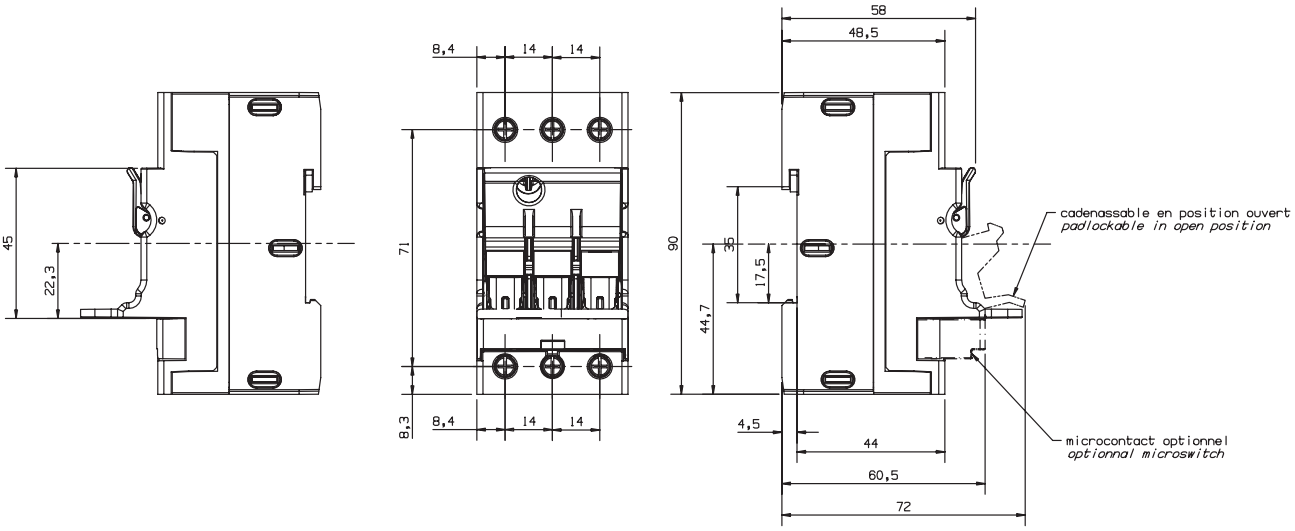
Description	Catalog Number	references Number	Number of systems interconnected	Maxi. RMS current (A)	Number of poles	Pckg
Lock	LOCK	M223525				1
Microswitch	USFMAC11	C302797	1		3	1
Additional Neutral			1			
jumping bars 3 phases			4		3	
Lateral incoming power supply	TBB23C	G210318		90		50
Axial incoming power supply	TBB23A	F210317		90		50
Interconnexion with SEI 30A Contactor			1		3	
Interconnexion with Rockwell 30A Contactor			1		3	
Interconnexion with SIEMENS 30A Contactor			1		3	
Interconnexion with ABB 30A Contactor			1		3	
Interconnexion with GE 30A Contactor			1		3	

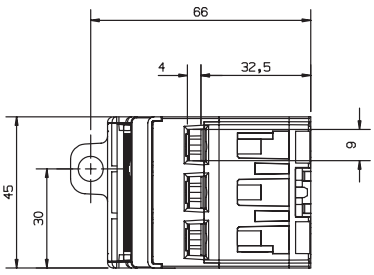
Semiconductor Fuses
AC+DC Ferrule FuseHolders
MODULOSTAR® USFM10, UltraSafe USFMM

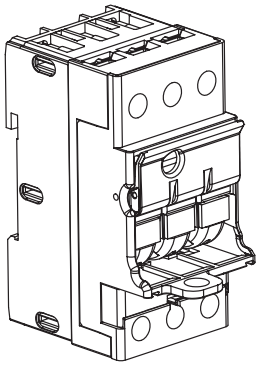


USFM 10 - USFMM - USFMCC

Dimensions







Accessories

Description	Catalog Number	references Number	Number of systems interconnected	Maxi. RMS current (A)	Number of poles	Pckg
Lock	LOCK	M223525				1
Microswitch	USFMAC11	C302797	1		3	1
Additional Neutral			1			
jumping bars 3 phases			2		3	
Lateral incoming power supply	TBB23C	G210318		90		50
Axial incoming power supply	TBB23A	F210317		90		50
Interconnexion with SEI 30A Contactor			1		3	
Interconnexion with Rockwell 30A Contactor			1		3	
Interconnexion with SIEMENS 30A Contactor			1		3	
Interconnexion with ABB 30A Contactor			1		3	
Interconnexion with GE 30A Contactor			1		3	

IEC fuse holders & fuse disconnectors: CMS 14

IEC fuse holders: CMS 14: Fuse holder compliant with IEC 60269-1 & 2, and tested in accordance with IEC 60947-1 & 3 for fuse disconnector usage
IEC fuse disconnectors: CMS 14 : Fuse disconnectors compliant with IEC 60947-1 & 3 and IEC 60269-1 & 2

Electrical characteristics

Rated insulation voltage Ui AC/DC	Rated impulse withstand voltage Uimp	Rated current	Max. power dissipation per fuse	Fuse rating	Maximum current in use for 1, 2, 3 et 3+N poles with FS-fuses. for 4, 5 and 6 poles, multiply by 0.8 for 7, 8, 9 x 0.7 and for ≥ 10 x 0.6						Cable wire section (mm^2) recommanded
					gG	aM	URD - URC	URGA URGB	gRB	gLB	
690 VAC 20 B	8 kV	50 A	5 W	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	2.5
690 VAC 20 B	8 kV	50 A	5 W	20	20	20	18	18	18	20	2.5
690 VAC 20 B	8 kV	50 A	5 W	25	25	25	20	20	20	25	4
690 VAC 20 B	8 kV	50 A	5 W	32	32	32	25	25	25	32	6
690 VAC 20 B	8 kV	50 A	5 W	40	40	40	30	30	30	40	6
690 VAC 20 B	8 kV	50 A	5 W	50	50	50	35	35	35	45	10
690 VAC 20 B	8 kV	50 A	5 W	63			38				10

** Values shown for 20°C ambient temperature.*
Wiring: Rigid wire = 1.5 - 35 mm²(16 - 3 AWG) - Multistrand wire: Maximum 25 mm² (4 AWG)
Tightening torque: 3.5 Nm max / 30 lbs.in
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm).

CMS 14 fuse holders for 14x51 fuses without striker

Fuse holders without indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**CMS14N**	T331056F	1.5	6	
1	**CMS141**	A331016F	1.5	6	
1 + N	**CMS141N**	T331010C	3	3	
2	**CMS142**	R331031C	3	3	
3	**CMS143**	S331032B	4.5	2	
3 + N	**CMS143N**	D331042A	6	1	
4	**CMS144**	F331021A	6	1	



Fuse holders with indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS141I**	L331049F	1.5	6	
1 + N	**CMS141NI**	M331050C	3	3	
2	**CMS142I**	M331004C	3	3	
3	**CMS143I**	K331071B	4.5	2	
3 + N	**CMS143NI**	Q331007A	6	1	

CMS 14 fuse holders for 14x51 fuses with striker

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS141AC**	F331044F	1.5	6	

Indicator light & blown fuse only



CMS 14 fuse disconnectors for all types of 14x51 fuses



Model without indicator light ready for accessories

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**CMS14N**	T331056F	1.5	6	
1	**CMS141P**	W331058F	1.5	6	
1 + N	**CMS141NP**	X331059C	3	3	
2*	**CMS142P**	G331022C	3	3	
3	**CMS143P**	R331054B	4.5	2	
3 + N	**CMS143NP**	Z331015A	6	1	

Model fitted with auxiliary microswitch

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS141M**	Z331038F	1.5	6	
2*	**CMS142M**	A331062C	3	3	
3	**CMS143M**	F331067B	4.5	2	
3*	**CMS143M2**	H331069B	4.5	2	
3 + N	**CMS143NM**	E331043A	6	1	

Model fitted with auxiliary microswitch & indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS141MI**	S331055F	1.5	6	
2*	**CMS142MI**	X331036C	3	3	
3	**CMS143MI**	P331006B	4.5	2	
3*	**CMS143M2I**	Y331037B	4.5	2	
3 + N	**CMS143NMI**	H331000A	6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers.*

Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Pack	Sur Condi
Auxiliary microswitch kit 1 pole CMS 14	**CMS14W1**	M218741	1.5	1	
Auxiliary microswitch kit 3 poles CMS 14	**CMS14W2**	C219261	4.5	1	
2 auxiliary microswitch kit 3 poles CMS 14	**CMS14W3**	D219791	4.5	1	
Auxiliary microswitch assembly pin (between 2 kits)	**CMS1422PTH**	J214138		10*	
Enlargement pin for auxiliary microswitch	**CMS1422BP**	F213629		10*	
Multi-pole assembly kit	**CMS1422PAK**	Z218223		10*	
Indicator light kit	**CMS1422LHI**	A225653		1	
Lock	**LOCK**	M223525		1	

** 10 per bag*

IEC fuse holders & fuse disconnectors: CMS 22

IEC fuse holders: CMS 22 - Fuse holder compliant with IEC 60269-1 & 2, and tested in accordance with IEC 60947-1 & 3 for fuse disconnector usage
IEC fuse disconnectors: CMS 22 - Fuse disconnectors compliant with IEC 60947-1 & 3 and IEC 60269-1 & 2

Electrical characteristics

Rated insulation voltage Ui AC/DC	Rated impulse withstand voltage Uimp	Rated current	Max. power dissipation per fuse	Fuse rating	Maximum current in use for 1, 2, 3 et 3+N poles with FS-fuses. for 4, 5 and 6 poles, multiply by 0.8 for 7, 8, 9 x 0.7 and for ≥ 10 x 0.6						Cable wire section (mm^2) recommanded
					gG	aM	URD - URC	URGA URGB	gRB	gLB	
690 VAC 20 B	8 kV	125 A	9.5 W	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	2.5
690 VAC 20 B	8 kV	125 A	9.5 W	20	20	20	20	20	20	20	4
690 VAC 20 B	8 kV	125 A	9.5 W	25	25	25	25	25	25	25	6
690 VAC 20 B	8 kV	125 A	9.5 W	32	32	32	29	29	29	32	10
690 VAC 20 B	8 kV	125 A	9.5 W	40	40	40	35	35	35	40	10
690 VAC 20 B	8 kV	125 A	9.5 W	50	50	50	40	40	40	50	16
690 VAC 20 B	8 kV	125 A	9.5 W	63	63	63	52	50	50	63	25
690 VAC 20 B	8 kV	125 A	9.5 W	80	80	80	63	60	65	75	35
690 VAC 20 B	8 kV	125 A	9.5 W	100	100	100	76	65	76	85	35
690 VAC 20 B	8 kV	125 A	9.5 W	125	110	125	85			125	

** Values shown for 20°C ambient temperature.*
Wiring: Rigid wire = 1.5 - 50 mm²(16 - 1 AWG) - Multistrand wire: Maximum 35 mm² (3 AWG).
Tightening torque: max. 4.5 Nm - 45 lbs.in
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 6.5 x 1.2 mm (maximum diameter 7 mm).

CMS 22 fuse holders for 22x58 fuses without striker

Fuse holders without indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**CMS22N**	K331094F	1.5	6	
1	**CMS221**	T331079F	1.5	6	
1 + N	**CMS221N**	H331092C	3	3	
2	**CMS222**	Q331122C	3	3	
3	**CMS223**	E331135B	4.5	2	
3 + N	**CMS223N**	B331109B	6	1	
4	**CMS224**	Q331099A	6	1	



Fuse holders with indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS221I**	B331086F	1.5	6	
1 + N	**CMS221NI**		3	3	
2	**CMS222I**	D331134C	3	3	
3	**CMS223I**	L331095B	4.5	2	
3 + N	**CMS223NI**		6	1	



CMS 22 fuse holders for 22x58 fuses with striker

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS221AC**	V331103F	1.5	6	

Indicator light & blown fuse only

CMS 22 fuse disconnectors for all types of 22x58 fuses



Model without indicator light ready for accessories

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**CMS22N**	K331094F	1.5	6	
1	**CMS221PMAC**	Y331083F	1.5	6	
1 + N	**CMS221NP**		3	3	
2	**CMS222P**		3	3	
3	**CMS223PAC**	V331126B	4.5	2	
3*	**CMS223PAC**	V331126B	6	2	
3 + N	**CMS223NP**		6	1	

Model fitted with auxiliary microswitch

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS221M**	S331078F	1.5	6	
2	**CMS222M**	V331080C	3	3	
3	**CMS223M**	B331109B	4.5	2	
3*	**CMS223M2**	C331087B	6	2	
3 + N	**CMS223NM**	T331102A	6	1	

Model fitted with auxiliary microswitch & indicator light

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**CMS221MI**	A216683	1.5	6	
2	**CMS222MI**	N217201	3	3	
3	**CMS222MI**	R217710	4.5	2	
3*	**CMS223M2I**	B218225	6	2	
3 + N	**CMS223NMI**	P218743	6	1	

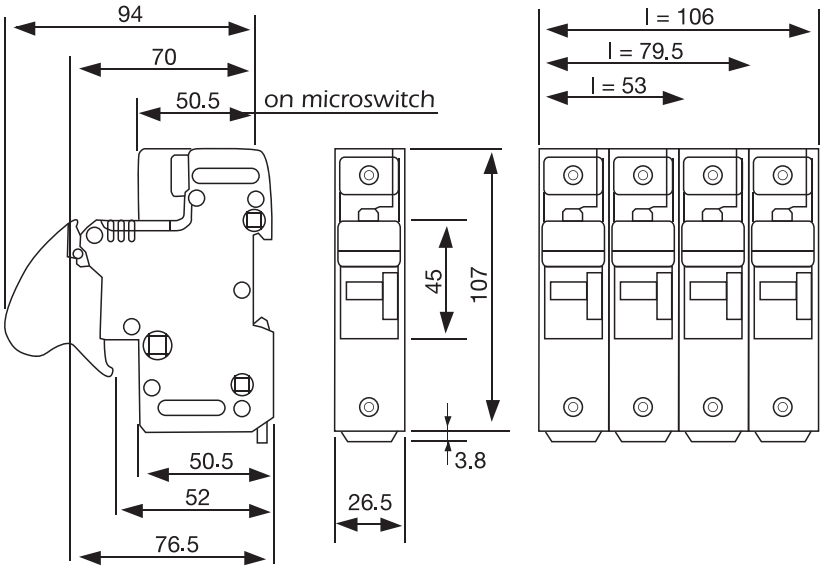
** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers.*

Accessories

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Pack	Sur Condi
Auxiliary microswitch kit 1 pole CMS 22	**CMS22W1**	E211581	1.5	1	
Auxiliary microswitch kit 3 poles CMS 22	**CMS22W2**	L212093	4.5	1	
2 auxiliary microswitch kit 3 poles CMS 22	**CMS22W3**	B212613	4.5	1	
Auxiliary microswitch assembly pin (between 2 kits)	**CMS1422PTH**	J214138		10*	
Enlargement pin for auxiliary microswitch	**CMS1422BP**	F213629		10*	
Multi-pole assembly kit	**CMS1422PAK**	Z218223		10*	
Indicator light kit	**CMS1422LHI**	A225653		1	
Lock	**LOCK**	M223525		1	

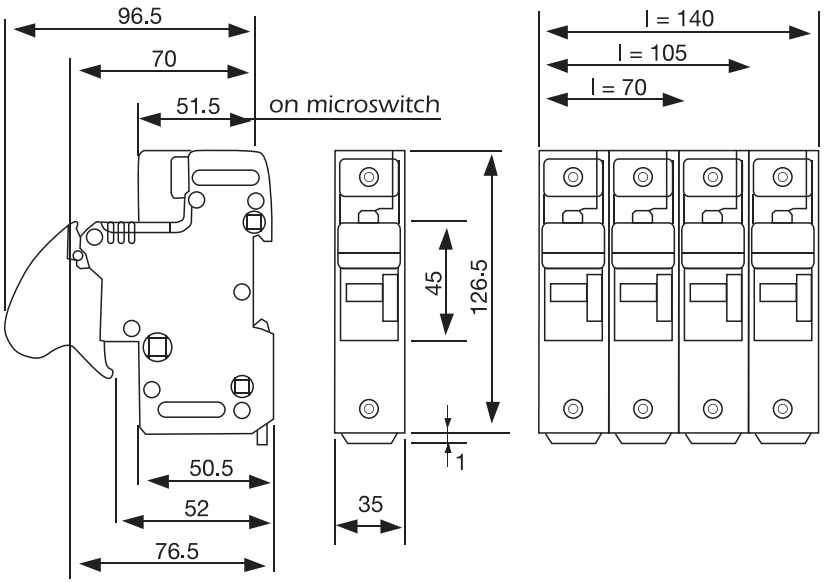
** 10 per bag*

Dimensions of CMS 14 and US 14 products



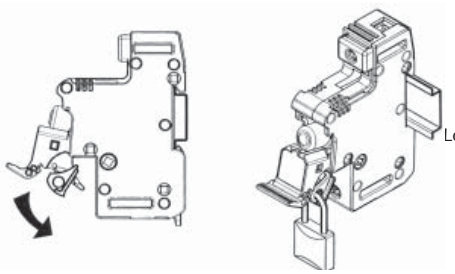
Width depending on nb. of 17.5 mm modules	Nb poles	1	2	3	4	5	6
	Nb of modules	1.5	3	4.5	6	7.5	9
	mm	26.5	53	79.5	106	132.5	159

Dimensions of CMS 22 and US 22 products



Width depending on nb. of 17.5 mm modules	Nb poles	1	2	3	4	5	6
	Nb of modules	2	4	6	8	10	12
	mm	35	70	105	140	175	210

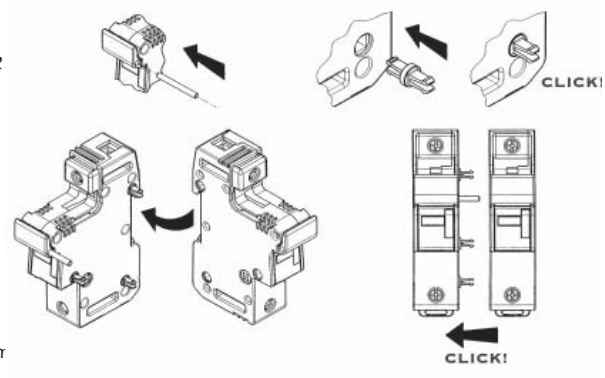
Locking system



Locking reference: M223525

Multipole assembly

Assembly kit
CMS14 & CMS 22: Z2

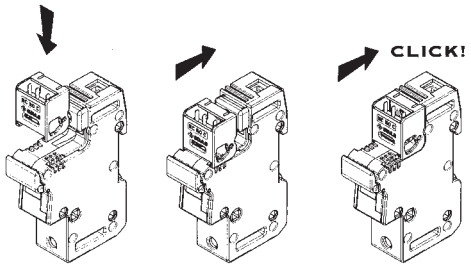


Assembly kit
US 14: X227927
US 22: F227958

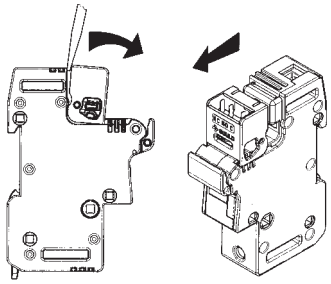
NB: 6 poles maximum

Each bag of kits is sufficient for:
- 10 multipole assemblies
- 10 two-pole assemblies
- 5 three-pole assemblies
- 3 four-pole assemblies

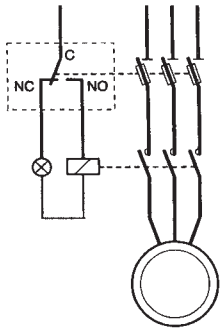
Mounting auxiliary microswitches



Dismounting auxiliary microswitches



Auxiliary microswitch functions



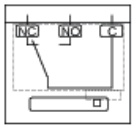
Fuse melting: A fuse holder containing a fuse with a striker sends out a signal when the fuse element melts
Pre-isolation: When the fuse holder opens
Presence: Sends a signal when the holder is closed with no fuse in it

Characteristics of the auxiliary microswitch

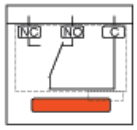
Min. voltage and current for operation 10VAC-DC -100mA

	6A	AC 12
Rated current	3A	AC 13
and breaking capacity (1) at 250V	0,3A	AC 14
	0,1A	DC 12/13/14
	6A	DC 12/DC13
Rated current and breaking capacity (1) at 2 and 24 V	5A	AC 13
	2A	AC 14/DC 13
	0,6A	DC 14

(1) as per standard IEC 947-5



With the fuse in the handle closed state.

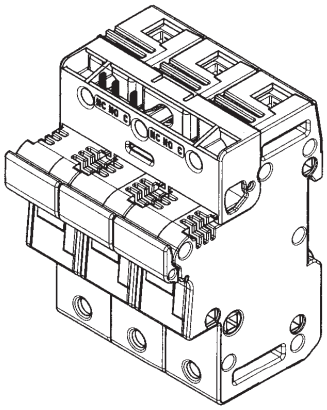


No fuse
Fuse blown Handle open

Microswitch options

Auxiliary microswitches can only be mounted on previously prepared fuse disconnectors.
Use of the auxiliary microswitch for fuse melting requires the use of fuses with strikers.

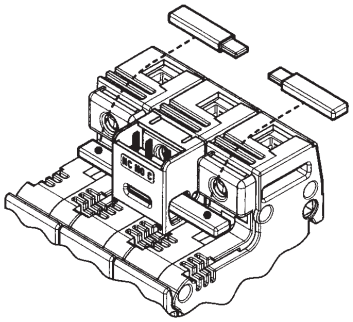
1 auxiliary microswitch



CMS 14 (C219261) - US14 (Z227929)
CMS 22 (L212093) - US 22 (H227960)

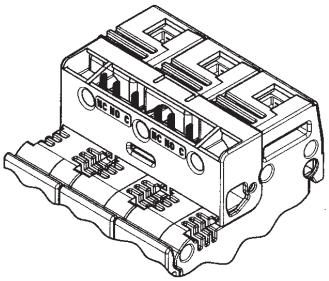
or

1 auxiliary microswitch



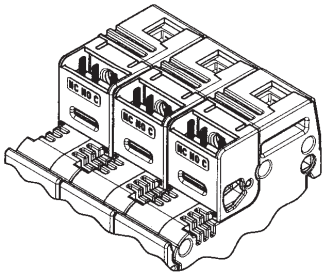
CMS 14 (M218741+F213629)
CMS 22 (E211581+F213629)
US 14 (Y227928+F213629)
US 22 (G229759+F213629)

2 auxiliary microswitches



CMS 14 (D219791) - US14 (A227930)
CMS 22 (B212613) - US 22 (J227961)

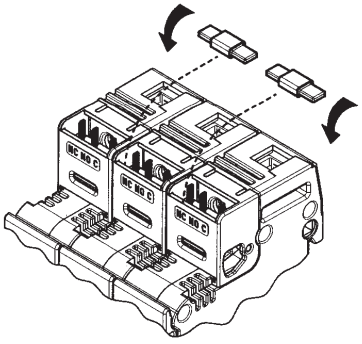
3 independent auxiliary microswitches



CMS 14 (3 x M218741)
CMS 22 (3 x E211581)
US 14 (3 x Y227928)
US 22 (3 x G227959)

NOTE: Do not fit with more than 3 microswitches

3 mechanically interconnected auxiliary microswitches



CMS 14 (3 x M218741+2 x J214138)
CMS 22 (3 x E211581+2 x J214138)
US 14 (3 x Y227928) + (2 x J214138)
US 22 (3 x G227959) + (2 x J214138)

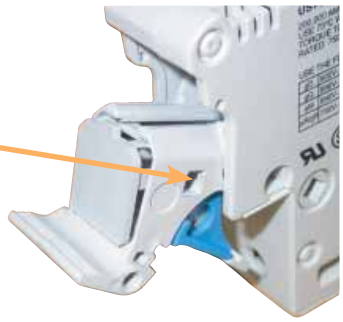
Supply wiring bars and terminals

Description	Cat. Number	Ref. Number	Maxi. acceptable RMS current (A)	Pack	Sur Condi
jumping bar for 4 (CMS 14/US 14) 3 poles	CMS14BB3F4	A210312	100	5	
jumping bar for 6 (CMS 14/US 14) 2 poles	CMS14BB2F6	Z210311	63	5	
jumping bar for 12 (CMS 14/US 14) 1 pole	CMS14BB1F12	Y210310	63	5	
jumping bar for 6 (CMS 22/US 22) 2 poles	CMS22BB2F6	C210314	150	5	
jumping bar for 12 (CMS 22/US 22) 1 pole	CMS22BB1F12	B210313	90	5	
Single-pole terminal, side	TBB1C	E210316	90	50	
2/3-pole terminal, side	TBB23C	G210318	90	50	
Single-pole terminal, axial	TBB1A	D210315	90	50	
2/3-pole terminal, axial	TBB23A	F210317	90	50	

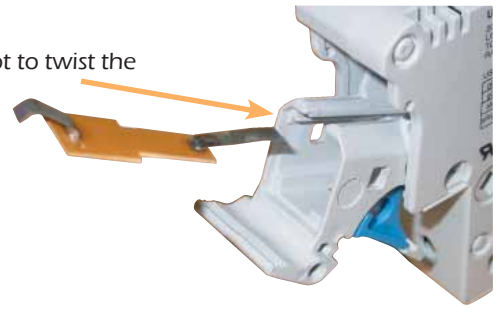
Indicator light kit for CMS 14 & 22

With the indicator light a blown fuse can be quickly located if power is still on

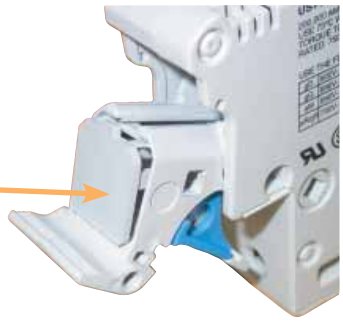
1 Carefully remove the cover with 2 screw drivers.



2 Slip the indicator light's top insert into the rails, being careful not to twist the contact tabs.



3 Put the cover back on



Assembly precautions in multipole assemblies

When fuse holders are side by side or very near each other (less than one module apart), they must be derated again, in addition to derating for temperature

Number of 17.5 mm modules	Derating factor
1-2-3	None = 1
4-5-6	0.8
7-8-9	0.7
> 10	0.6

UL fuse holders: US 14

Electrical characteristics

Rated insulation voltage Ui AC/DC	Rated impulse withstand voltage Uimp	Rated current	Max. power dissipation per fuse	Fuse rating	Maximum current in use for 1, 2, 3 et 3+N poles with FS-fuses. for 4, 5 and 6 poles, multiply by 0.8 for 7, 8, 9 x 0.7 and for ≥ 10 x 0.6							Cable wire section (mm^2) recommanded
					gG	60gD	aM	URD - URC	URGA URGB	gRB	gLB	
750 V	8 kV	50 A	4,7 W	≤ 20		20	≤ 20	18	18	18	≤ 16	≤ 16
750 V	8 kV	50 A	4,7 W	≤ 25		25	25	20	20	20	20	20
750 V	8 kV	50 A	4,7 W	≤ 30	≤ 20	30		18	18	18	25	25
750 V	8 kV	50 A	4,7 W	32	≤ 25		32	25	25	25	32	32
750 V	8 kV	50 A	4,7 W	40	≤ 30		40	30	30	30	40	40
750 V	8 kV	50 A	4,7 W	50			50	35	35	35	45	45
750 V	8 kV	50 A	4,7 W	63				38				

** Values shown for 20°C ambient temperature.*
Wiring: Rigid wire = 1.5 - 35 mm² (16 - 3 AWG) - Multistrand wire: Maximum 25 mm² (4 AWG)
Tightening torque: 3.5 Nm max / 30 lbs.in
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 5.5 x 1 mm (maximum diameter 6 mm).

ULTRASAFE™ US 14 fuse disconnectors for 14x51 fuses with no striker, or with indicator light or with striker

Model without indicator light ready for accessories

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**US14N**	S227900	1.5	6	
1	**US141**	Z331153F	3	6	
1 + N	**US141N**	D331157C	3	3	
2	**US142**	G331137C	4.5	3	
3	**US143**	N331143B	6	2	
3 + N	**US143N**	X331151A	6	1	
4	**US144**		6	1	



Model with indicator light ready for auxiliary contact

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US141I**	A331154F	3	6	
1 + N	**US141NI**	Z227906	3	3	
2	**US142I**	H331138C	4.5	3	
3	**US143I**	P331144B	6	2	
3 + N	**US143NI**	R227922	6	1	
4	**US144I**		6	1	

ULTRASAFE™ US 14 fuse disconnectors for 14x51 fuses with no striker, or with indicator light or with striker

Model with indicator light ready for auxiliary contact



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US141M**	W227903	1.5	6	
1 + N	**US141NM**	A227907	3	3	
2	**US142M**	E227911	3	3	
2*	**US142M2**	G227913	3	3	
3	**US143M**	L227917	4.5	2	
3*	**US143M2**	N227919	4.5	2	
3 + N	**US143NM**	S227923	6	1	
3 + N*	**US143NM2**	V227925	6	1	
4	**US144M**		6	1	
4*	**US144M2**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Model fitted with auxiliary contact & indicator light



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US141MI**	C331156F	1.5	6	
1 + N	**US141NMI**	B227908	3	3	
2	**US142MI**	K331140C	3	3	
2*	**US142M2I**	M331142C	3	3	
3	**US143MI**	S331147B	4.5	2	
3*	**US143M2I**	W331150B	4.5	2	
3 + N	**US143NMI**	T227924	6	1	
3 + N*	**US143NM2I**	W227926	6	1	
4	**US14MI**		6	1	
4*	**US144M2I**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Accessories



Auxiliary contact kit



Enlargement pin for auxiliary contact



Auxiliary contact assembly pin

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Pack	Sur Condi
Auxiliary contact kit 1 pole US 14	**USMSW1**	Y227928	1.5	1	
Auxiliary contact kit 3 poles US 14	**USMSW2**	Z227929	4.5	1	
2 auxiliary contact kit 3 poles US 14	**USMSW3**	A227930	4.5	1	
Auxiliary contact assembly pin (between 2 kits)	**US1422PTH**	J214138		10*	
Enlargement pin for auxiliary contact	**US1422BP**	F213629		10*	
Multi-pole assembly kit	**US14PAK**	X227927		10*	
Indicator light kit	**CMS1422LHI**	A225653		1	
Lock	**LOCK**	M223525		1	

** 10 per bag*

UL fuse holders: US 22

Electrical characteristics

Rated insulation voltage Ui AC/DC	Rated impulse withstand voltage Uimp	Rated current	Max. power dissipation per fuse	Fuse rating	Maximum current in use for 1, 2, 3 et 3+N poles with FS-fuses. for 4, 5 and 6 poles, multiply by 0.8 for 7, 8, 9 x 0.7 and for ≥ 10 x 0.6							Cable wire section (mm^2) recommanded
					gG	60gD	aM	URD - URC	URGA URGB	gRB	gLB	
750 V	8 kV	125 A	9.5 W	≤ 16	≤ 16		≤ 16	≤ 16	≤ 16	≤ 16	≤ 16	2.5/12
750 V	8 kV	125 A	9.5 W	20	20		20	20	20	20	20	4/10
750 V	8 kV	125 A	9.5 W	25	25		25	25	25	25	25	6/10
750 V	8 kV	125 A	9.5 W	32-35	32	35	32	29	29	29	32	10/8
750 V	8 kV	125 A	9.5 W	40	40	40	40	35	35	35	40	10/8
750 V	8 kV	125 A	9.5 W	50	50	50	50	40	40	40	50	10/8
750 V	8 kV	125 A	9.5 W	60/63	60	60	63	52	51	52	63	10/6
750 V	8 kV	125 A	9.5 W	80			80	65	64	75	75	25/4
750 V	8 kV	125 A	9.5 W	100			100	76	74	76	85	35/2
750 V	8 kV	125 A	9.5 W	125			100	85				35/2

** Values shown for 20°C ambient temperature.*
Wiring: Rigid wire = 1.5 - 50 mm² (16 - 1 AWG) - Multistrand wire: Maximum 35 mm² (3 AWG).
Tightening torque: max. 4.5 Nm - 45 lbs.in
Ferraz Shawmut recommands to use screwdrivers PZ 2 or Flat 6.5 x 1.2 mm (maximum diameter 7 mm).

ULTRASAFE™ US 22 fuse disconnectors for 22x58 fuses with no striker, or with indicator light or with striker

Model without indicator light ready for accessories

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
N	**US22N**	B227931	1.5	6	
1	**US221**	E331158F	1.5	6	
1 + N	**US221N**	H331161C	3	3	
2	**US222**	K331163C	3	3	
3	**US223**	R331169B	4.5	2	
3 + N	**US223N**	X331174A	6	1	
4	**US224**		6	1	



Model with indicator light ready for auxiliary contact

Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US221I**	F331159F	1.5	6	
1 + N	**US221NI**	H227937	3	3	
2	**US222I**	L331164C	3	3	
3	**US223I**	S331170B	4.5	2	
3 + N	**US223NI**	A227953	6	1	
4	**US224I**		6	1	

ULTRASAFE™ US 22 fuse disconnectors for 14x51 fuses with no striker, or with indicator light or with striker

Model with indicator light ready for auxiliary contact



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US221M**	G331160F	1.5	6	
1 + N	**US221NM**	J331162C	3	3	
2	**US222M**	M331165C	3	3	
2*	**US222M2**	P331167C	3	3	
3	**US223M**	T331171B	4.5	2	
3*	**US223M2**	W331173B	4.5	2	
3 + N	**US223NM**	B227954	6	1	
3 + N*	**US223NM2**	D227956	6	1	
4	**US224M**		6	1	
4*	**US224M2**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Model fitted with auxiliary contact & indicator light



Nb of Pole	Cat. Number	Ref. Number	Nb of Mode (17.5mm)	Pack	Sur Condi
1	**US221MI**	F227935	1.5	6	
1 + N	**US221NMI**	K227939	3	3	
2	**US222MI**	N331166C	3	3	
2*	**US222M2I**	R227945	3	3	
3	**US223MI**	V331172B	4.5	2	
3*	**US223M2I**	Y227951	4.5	2	
3 + N	**US223NMI**	C227955	6	1	
3 + N*	**US223NM2I**	E227957	6	1	
4	**US22MI**		6	1	
4*	**US224M2I**		6	1	

** Two auxiliary microswitches (see instructions for mounting) – The auxiliary microswitch function requires use of fuses with strikers*

Accessories



Auxiliary contact kit





Enlargement pin for auxiliary contact



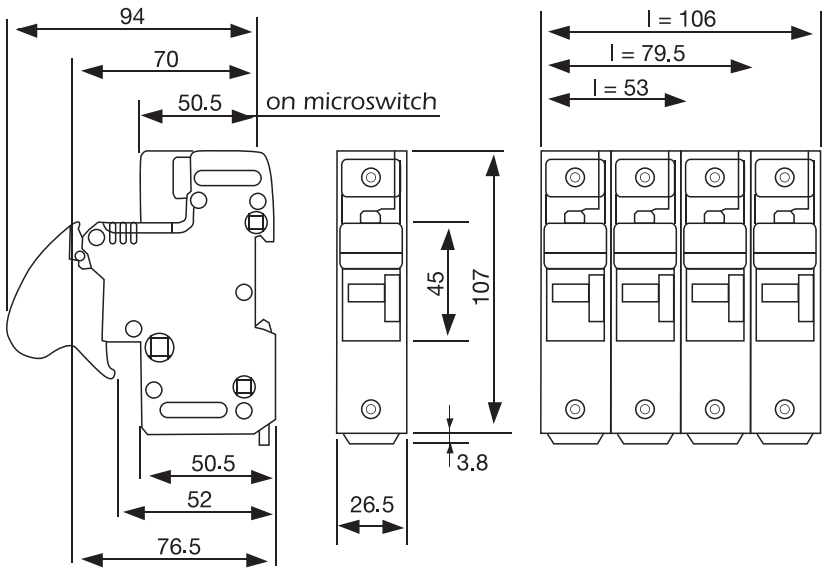
Auxiliary contact assembly pin

Description	Cat. Number	Ref. Number	Nb of Mod. (17.5 mm)	Pack	Sur Condi
Auxiliary contact kit 1 pole US 22	**USMSW4**	G227959	1.5	1	
Auxiliary contact kit 3 poles US 22	**USMSW5**	H227960	4.5	1	
2 auxiliary contact kit 3 poles US 22	**USMSW6**	J227961	4.5	1	
Auxiliary contact assembly pin (between 2 kits)	**US1422PTH**	J214138		10*	
Enlargement pin for auxiliary contact	**US1422BP**	F213629		10*	
Multi-pole assembly kit	**US22PAK**	F227958		10*	
Indicator light kit	**CMS1422LHI**	A225653		1	
Lock	**LOCK**	M223525		1	

** 10 per bag*

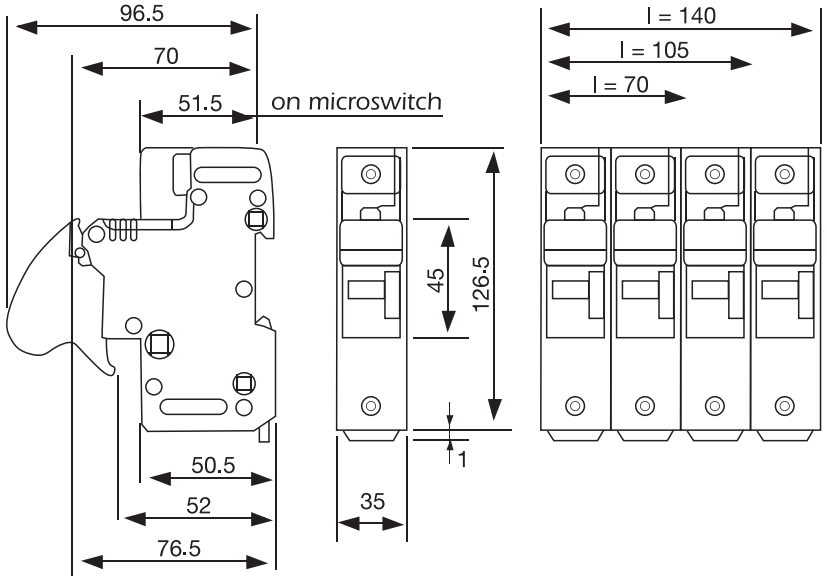
Mecanics for CMS/US 14 & 22

Dimensions of CMS 14 and US 14 products



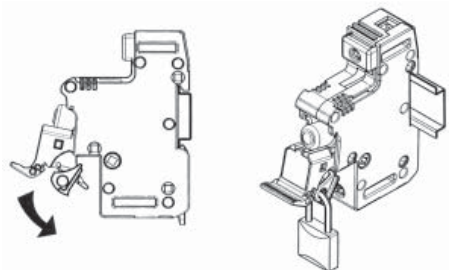
Width depending on nb. of 17.5 mm modules	Nb poles	1	2	3	4	5	6
	Nb of modules	1.5	3	4.5	6	7.5	9
	mm	26.5	53	79.5	106	132.5	159

Dimensions of CMS 22 and US 22 products



Width depending on nb. of 17.5 mm modules	Nb poles	1	2	3	4	5	6
	Nb of modules	2	4	6	8	10	12
	mm	35	70	105	140	175	210

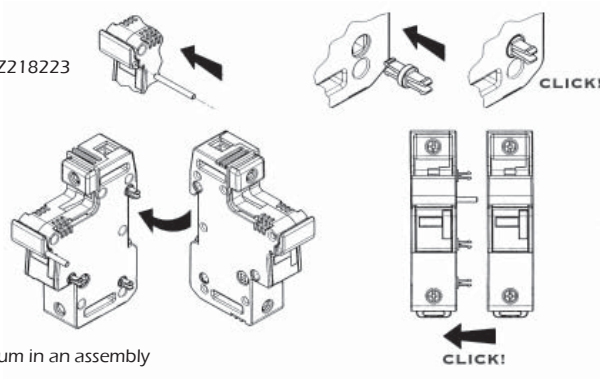
Locking system



Locking reference: M223525

Multipole assembly

Assembly kit
CMS14 & CMS 22: Z218223

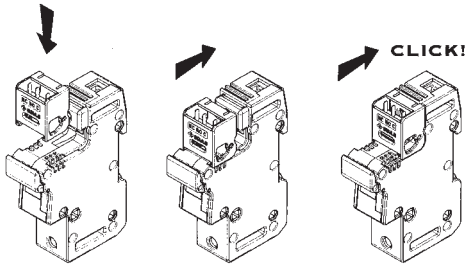


Assembly kit
US 14: X227927
US 22: F227958

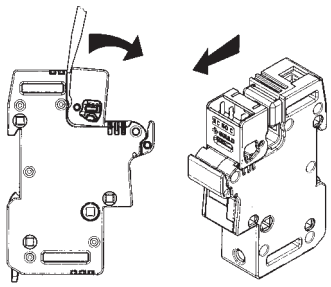
NB: 6 poles maximum in an assembly

Each bag of kits is sufficient for:
- 10 multipole assemblies
- 10 two-pole assemblies
- 5 three-pole assemblies
- 3 four-pole assemblies

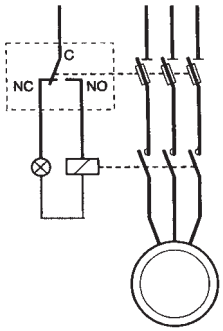
Mounting auxiliary microswitches



Dismounting auxiliary microswitches



Auxiliary microswitch functions



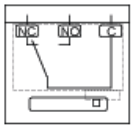
Fuse melting: A fuse holder containing a fuse with a striker sends out a signal when the fuse element melts
Pre-isolation: When the fuse holder opens
Presence: Sends a signal when the holder is closed with no fuse in it

Characteristics of the auxiliary microswitch

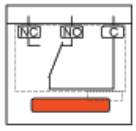
Min. voltage and current for operation 10VAC-DC -100mA

	6A	AC 12
Rated current	3A	AC 13
and breaking capacity (1) at 250V	0,3A	AC 14
	0,1A	DC 12/13/14
	6A	DC 12/DC13
Rated current and breaking capacity (1) at 2 and 24 V	5A	AC 13
	2A	AC 14/DC 13
	0,6A	DC 14

(1) as per standard IEC 947-5



With the fuse in the handle closed state.

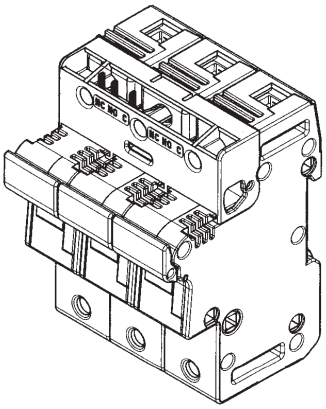


No fuse
Fuse blown Handle open

Microswitch options

Auxiliary microswitches can only be mounted on previously prepared fuse disconnectors.
Use of the auxiliary microswitch for fuse melting requires the use of fuses with strikers.

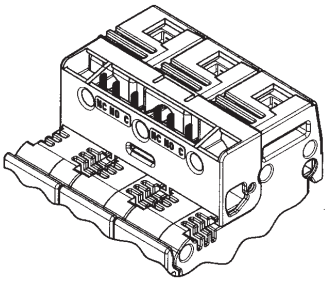
1 auxiliary microswitch



CMS 14 (C219261) - US14 (Z227929)
CMS 22 (L212093) - US 22 (H227960)

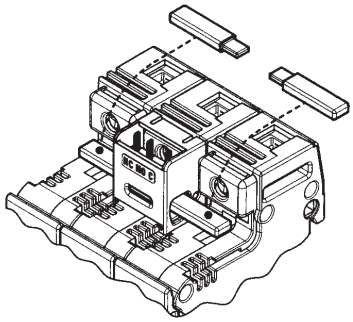
or

2 auxiliary microswitches



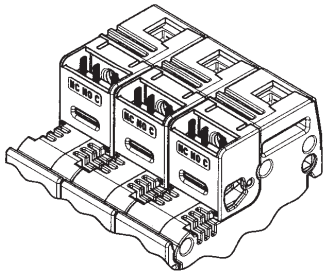
CMS 14 (D219791) - US14 (A227930)
CMS 22 (B212613) - US 22 (J227961)

1 auxiliary microswitch



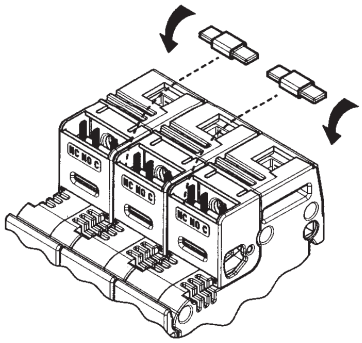
CMS 14 (M218741+F213629)
CMS 22 (E211581+F213629)
US 14 (Y227928+F213629)
US 22 (G229759+F213629)

3 independent auxiliary microswitches



CMS 14 (3 x M218741)
CMS 22 (3 x E211581)
US 14 (3 x Y227928)
US 22 (3 x G227959)

3 mechanically interconnected auxiliary microswitches



CMS 14 (3 x M218741+2 x J214138)
CMS 22 (3 x E211581+2 x J214138)
US 14 (3 x Y227928) + (2 x J214138)
US 22 (3 x G227959) + (2 x J214138)

NOTE: Do not fit with more than 3 microswitches

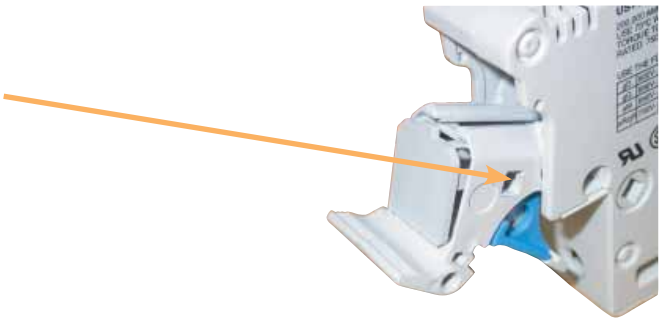
Supply wiring bars and terminals

Description	Cat. Number	Ref. Number	Maxi. acceptable RMS current (A)	Pack	Sur Condi
jumping bar for 4 (CMS 14/US 14) 3 poles	CMS14BB3F4	A210312	100	5	
jumping bar for 6 (CMS 14/US 14) 2 poles	CMS14BB2F6	Z210311	63	5	
jumping bar for 12 (CMS 14/US 14) 1 pole	CMS14BB1F12	Y210310	63	5	
jumping bar for 6 (CMS 22/US 22) 2 poles	CMS22BB2F6	C210314	150	5	
jumping bar for 12 (CMS 22/US 22) 1 pole	CMS22BB1F12	B210313	90	5	
Single-pole terminal, side	TBB1C	E210316	90	50	
2/3-pole terminal, side	TBB23C	G210318	90	50	
Single-pole terminal, axial	TBB1A	D210315	90	50	
2/3-pole terminal, axial	TBB23A	F210317	90	50	

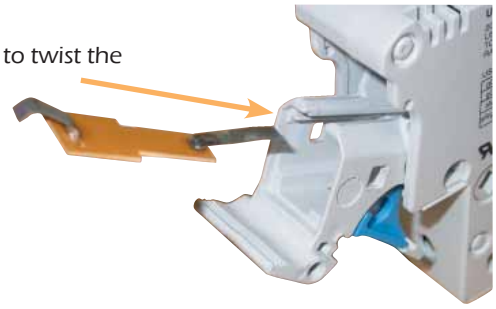
Indicator light kit for CMS/US 14 & 22

With the indicator light a blown fuse can be quickly located if power is still on

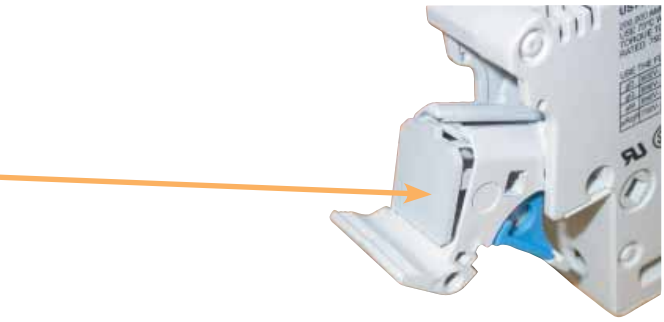
1 Carefully remove the cover with 2 screw drivers.



2 Slip the indicator light's top insert into the rails, being careful not to twist the contact tabs.



3 Put the cover back on



Assembly precautions in multipole assemblies

When fuse holders are side by side or very near each other (less than one module apart), they must be derated again, in addition to derating for temperature

Number of 17.5 mm modules	Derating factor
1-2-3	None = 1
4-5-6	0.8
7-8-9	0.7
> 10	0.6



ST 22

Semiconductor Fuses
AC+DC Ferrule FuseHolders
ST22

ST Fuse Disconnectors Size 22

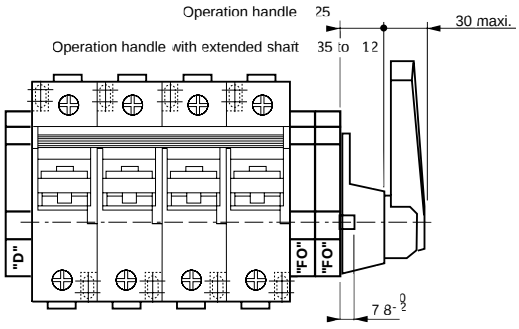
- IN ACCORDANCE WITH IEC 947-3 AND EN 60947-3
  OPERATION CLASS: AC20B
  IMPULSE WITHSTAND VOLTAGE: 6 AND 8 kV (1.2/50 µs wave)
- WITH PRE-ISOLATING AND BLOWN-FUSE INDICATING MICROSWITCHES
- COMPLETE PROTECTION AGAINST TOUCHING OF LIVE PARTS
- PROTECTION DEGREE: IP 2X
- HIGH-PERFORMANCE ST RANGE COMPLIANT WITH THE NEW EUROPEAN VOLTAGE RATINGS (IEC 33) U_N 480-690 V AC/DC I_N UP TO 125 A

Main Characteristics

Size	AC Insulation voltage rating Ui (V) AC/DC	Impulse withstand voltage Uimp(kV)(1)	Current rating I_N(A)	Fuse current rating I_N(A)	Maximum fuse operating current (A)						Recommended copper wire gauge (mm²)	Fire and fumes class NF F 16 -102
					gG	aM	gR/UR			gL		
							URD/URC	URGB/URGA	gRC			
ST 22	690 (CEI) 700 (US)	8	125	25	25	25	25	25	25	25	4	I3-F1
				32	32	32	29	29	29	32	6	
				40	40	40	35	35	35	40	10	
				50	50	50	40	40	40	50	10	
				63	63	63	52	51	52	63	16	
				80	80	80	65	64	65	75	16	
				100	100	100	76	74	76	85	25	
				125	110	125	85				25	
				135			87				35	

All terminals silver-plated copper
(1) Between close phases and phase and mass, between phases and microswitch as per IEC 947-1

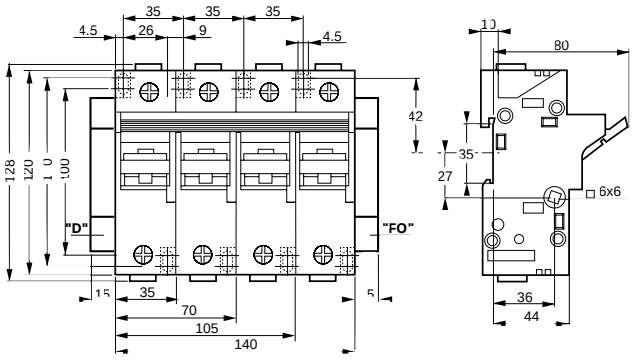
Mounting with a padlocking right side-handle for ST 22



Designation	Ref. Number	Qty. of «FO»	Qty. of «D»	Catalog Number
ST22 IIIN FOFOD+CDELAT.D.	M 209633	2	1	
ST22 IIIN FOFO+CDELAT.D.	N 209634	2	0	
ST22 IIIN FOD+CDELAT.D.	P 209635	1	1	
ST22 IIIN FO+CDELAT.D.	Q 209636	1	0	
ST22 III FOFOD+CDELAT.D.	S 209638	2	1	
ST22 III FOFO+CDELAT.D.	R 209637	2	0	
ST22 III FOD+CDELAT.D.	T 209639	1	1	
ST22 III FO+CDELAT.D.	V 209640	1	0	

Semiconductor Fuses
AC+DC Ferrule FuseHolders
ST22

ST 22 (for 22x58 fuses)



Unmovable screw clamp-type connections for wires:

- one conductor, multistrand or rigid wire: 35 mm²
- two conductors, multistrand wire: 16 mm²
- two conductors, rigid wire : 25 mm²

Minimal section: 2.5 mm²

With tightening torque: 2.8 to 3.5 Nm

Mounting:

- simple snap-mounting on standard symmetrical DIN-rail
- direct on board: two M4 screws with tightening torque 1 to 1.2 Nm

Poles	Symbol	Indication[1]	Predisconnection[2]	Cat. Num	Ref.Num	Approvals	Weight (g)	Pck
1				ST221	F220368		235	12&3
			▪	ST221FO	M220397		260	1
		▪		ST22ID	N220398		285	1
		▪	▪	ST22IFOD	P220399		310	1
1+N				ST221N	D220389		485	6&1
			▪	ST221NFO	E220620		510	1
		▪		ST221ND	D220619		535	1
		▪	▪	ST221NFOD	D220573		560	1
N				ST22N	E220367		250	12&3
2				ST222	B220387		470	6&1
			▪	ST222FO	R220401		495	1
		▪		ST222D	S220402		520	1
		▪	▪	ST222FOD	T220403		545	1
3				ST223	C220388		705	4&1
			▪	ST223FO	W220405		730	1
		▪		ST223D	X220406		755	1
		▪	▪	ST223FOD	Y220407		780	1
3+N				ST223N	E220390		955	3&1
			▪	ST223NFO	A220409		980	1
		▪		ST223ND	B220410		1005	1
		▪	▪	ST223NFOD	C220411		1030	1
4		▪		ST224D	H205926		1030	1

[1] Reversing switch-style blown-fuse indication contacts (D model)
[2] Reversing switch-style preisolating contacts (FO model) enabling control of protection device and opening of off load disconnector.

Preisolating "FO" and blown fuse indication "D" switch characteristics

AC insulation voltage rating (***)	FO or D type	Voltage/ current for certain operating	Current rating	Interrupting rating							AC voltage withstand test (*)	Impulse voltage Uimp1.2/50 µs (**)		1er FO	2ème FO	D
				Current	Non-inductive current			Inductive circuit : L/R = 25ms								
					30V	110V	250V	30V	110V	250V						
690 V	«FO»	20 V/50 mA	10 A	50/60 Hz	10 A	10 A	7 A	10 A	8 A	6 A	7.5 kV	8 kV	ST22			
690 V	«D»	10 V/10 mA	10 A	DC	5 A	0.5 A		1.6 A	0.3 A		7.5 kV	8 kV	open disconnector Connecting with 6.3 clips			

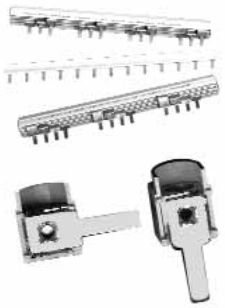
* Between power circuit and microswitch terminals according to IEC 60 and 694 and NFC 64010 (50/60 Hz 1 mn dry air).
** Between power circuit and microswitch terminals Uimp: impulse voltage according to IEC 947-1.
*** Between power circuit and microswitch terminals

Mounting adapter

Blue colored AF adapter (Ref. Number Q 098500) available for mounting on standard assymetrical DIN-rail (EN 50035) and usable for all models.

Supply wiring bars and terminals

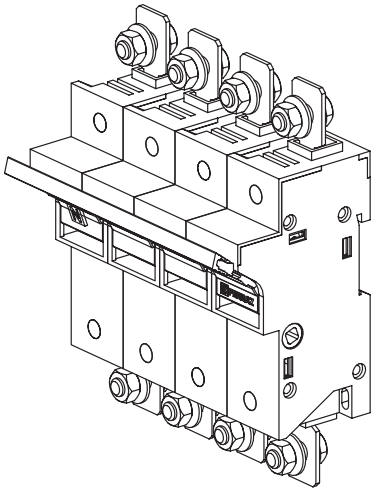
Description	Catalog Number	References	Maximum acceptable RMS current (A)	Pckg
Wiring bar for 6x2 poles Size 22	CMS22BB2F6	C210314	150	5
Wiring bar for 12x1 pole Size 22	CMS22BB1F12	B210313	90	5
Single-pole terminal, side	TBB1C	E210316	90	50
2/3-pole terminal, side	TBB23C	G210318	90	50
Single-pole terminal, axial	TBB1A	D210315	90	50
2/3-pole terminal, axial	TBB23A	F210317	90	50

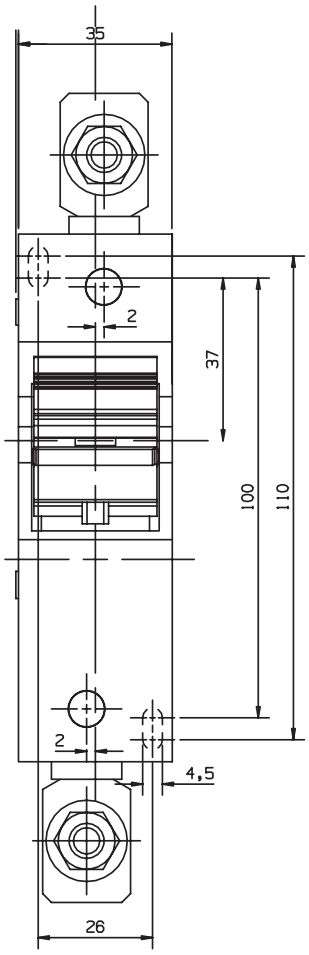


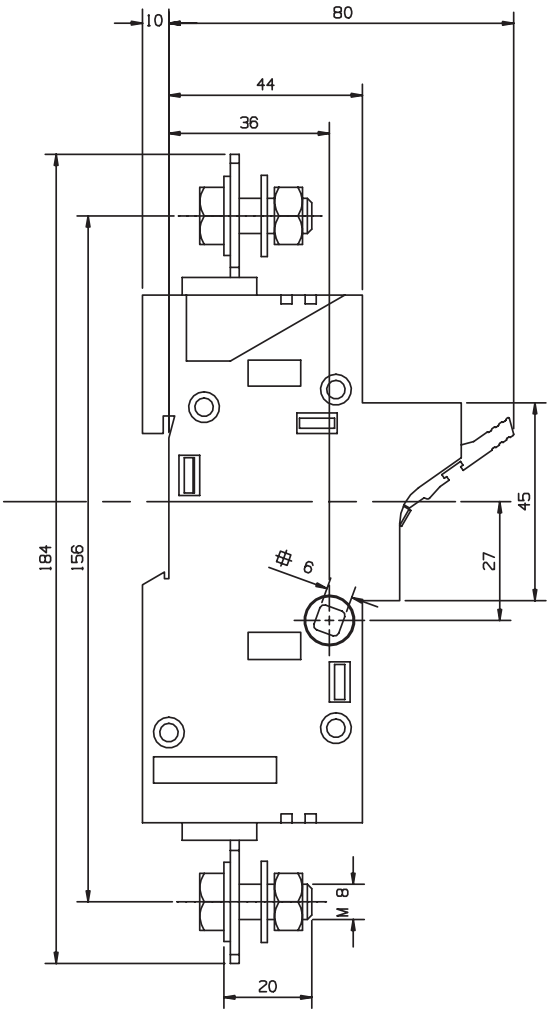
Semiconductor Fuses
AC+DC Ferrule FuseHolders
ST22

ST22 with ring pug connection

Poles	FO	D	Right Handle	Designation	Reference Number	Catalog Number
1	/	/	No	ST 22 Plage Type B	B228828	ST22RING
	/	1	No	ST 22 D Plage Type B	C229910	ST22DRING
2	/	/	No	ST 22 II Plage Type B	K210873	ST222RING
	2	1		ST 22 II FOFOD Plage Type B	L210874	ST222FOFODRING
	2	1	Yes	ST22 II FOFOD Cde Lat. D Plage Type B	M210875	ST222LHFOFODRIN
3	/	/	No	ST22 III Plage Type B	N210876	ST223RING
	2	1	No	ST22 III FOFOD Plage Type B	P210877	ST223FOFODRING
	2	1	Yes	ST22 III FOFOD Cde Lat. D Plage Type B	Q210878	ST223LHFOFODRIN
4	2	1	Yes	ST 22 IV FOFOD Cde Lat. D Plage Type B"	M227711	ST224LHFOFODRIN







MODULOSTAR®: CMS27 Fuse Disconnector ULTRASAFE™: US27 Fuse Holder

- Conforms to the standards: UL 512 AND UL 840
  CSA 22-2 N° 39
  EN 60947-1 & 3 (Class : AC20B)



- Rated insulation voltage Ui= 800VAC-DC
- Full protection against accidentally touching live parts.
  Protection degree : IP 2XB in accordance with the IEC standard 60529.
- High performance, conforming to European standards (Attachment to DIN rail - Modular fuse-disconnector).
- The US27 models have c UL us approval.

Designed for 27 x 60 mm (2 3/8 x 1 1/16 In.) ferrule fuses. (800V AC - DC, Ith = 150A)

New Improved Design:
Attractive design and colour

Designed for all 27 x 60 ferrule fuses
- UR curve (class UR)
- gR curve (class gR)
- Class J (UL)

The Only Fuse-Disconnector which Conforms to the Standard
The only fuse-disconnector on the market that respects the pre-isolation time defined by the standard (EN60947-1:t >20 ms), when it is equipped with a microswitch.

Ample Space for Wiring and Connection
Standard wiring with a choice of either :
- One 35 mm² cable (3AWG) flexible or rigid,
- Two 16 mm² flexible cables (6AWG),
- Wiring with B type connection plates for eye lugs (electronic market in the USA and Japan, global traction market).

Blown Fuse Indicator
The blown fuse indicator functions at between 100V and 800V AC and DC and is a standard part of the US 27 range. (Leak current less than 0.5mA)

UL Approval
The US 27 version has c UL us certification.
File Number E113357.
Fire smoke resistance classification : I3F2 in accordance with the standards NFF 16101 and NFF 16102 (US 27 version).

The Only Fuse-Holder With IP 20
- The only fuse-holder/fuse-disconnector on the market that offers certified IP 20B (open and closed)
- The only fuse-holder/fuse-disconnector on the market for this range of fuse (800V AC-DC 150A).

Identification of Terminals
The terminals are easy to identify due to the marker kit provided with the standard product.

Blown Fuse Micro-Switch, Safe Pre-Isolation and fuse presence characteristics for the US 27 version
Rated and minimum use current : In= 5A, Imini= 100 mA
Rated and minimum use voltage : Un= 250V, Umini= 20V
Approvals : UL

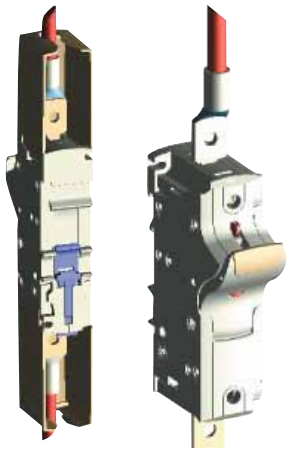


2.8 mm connection terminals

Electric Characteristics

Insulation voltage AC UI in V AC/DC	Impulse withstand voltage Uimp (kV)	Current rating I_N (A)	Fuse current rating I_N (A)	Maxi fuse operating current (A)					Recommended copper wire gauge	
				660V URGD	60gD	660V URQ URS CC	660V-800V gRB	1000V URB	AWG	mm²
800 (CEI) / (US)	8	150	8	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	10	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	12	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	16	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	20	-	WITHOUT DERATING			-	18	1
800 (CEI) / (US)	8	150	25	-	WITHOUT DERATING			-	12	4
800 (CEI) / (US)	8	150	32	32		32	32	29	10	6
800 (CEI) / (US)	8	150	40	40		40	40	36	8	10
800 (CEI) / (US)	8	150	50	50		45	50	42	8	10
800 (CEI) / (US)	8	150	63-65	55	65	55	63	50	6	16
800 (CEI) / (US)	8	150	80	61	80	60	80	60	6	16
800 (CEI) / (US)	8	150	100	75	100	72	96	72	4	25
800 (CEI) / (US)	8	150	110	-		-	102	-	3	30
800 (CEI) / (US)	8	150	125	91		90	-	90	3	35
800 (CEI) / (US)	8	150	160	112		110	-	109	3	35
800 (CEI) / (US)	8	150	170	-		-	-	112	3	35
800 (CEI) / (US)	8	150	200	130		130	-	-	1	50*
800 (CEI) / (US)	8	150	250	138		138	-	-	1	50*

** Busbar and ring lug connection*



Versatile Methods of Mounting

Option of mounting the fuse-holder with phase and neutral poles, as well as micro-switches, due to the connection accessories.

Several Kinds of Attachment

With M4 screws,
- 35 mm or 75 mm symmetric DIN rail*,
- Asymmetric DIN rail with adapter (Ref. Q098500).

** Need of 15 mm distance between DIN rail and panel*

Possibility of Using Connection Plates

For a cable with a diameter greater than either a 35 mm² rigid or flexible cable, or two 16 mm² flexible cables, the connection can be made using ring lug.
Protection covers are provided with this series to safeguard against accidental contact. Connection to connection plates, for cables equipped with ring or fork-type lugs.

Climatic Conditions of Use

This range of products has been designed for use in temperate, tropical and equatorial climates, provided that the following temperature/humidity conditions are not exceeded:

Maximum temperature °C	20	40	50
Maximum relative humidity %	95	80	50

Resistance to Vibrations

Test with sinusoidal vibrations, scanning the three main axes of the holder.
Spectrum :
- 1st segment (2-16Hz) constant displacement
  χ = 5 mm peak
- 2nd segment (16-250Hz) constant acceleration
  γ = 5g peak

Exponential scanning speed : 1 octave per minute.
Duration : 2 hours per axis.

Resistance to Vibrations

27x60 Fuses used Ranges	U_N	I_N	Applications
(6,621 CP URGD 27.60 ...)	660VAC	63 to 250A	Class aR - Protection of semiconductor equipment,
(6,621 CP URQ, URS 27.60...)	660VAC	32 to 250A	e.g. Soft starters, static relays, or regulators.
(821 CP gRB 27.60...)	800VAC	8 to 110A	Class gR - Protection of cables, semiconductor equipment and AC instrument circuits.
(1021 CP URB 27.60...)	1000VAC	25 to 170A	Class aR - Protection of semiconductor equipment, e.g. Soft starters, static relays, regulators.
(CC 4,421 CP gLB 27.60...)	440VDC	125 to 160A	Protection of DC instrument circuits, traction auxiliary circuits,
(CC 6,621 CP gRB 27.60...)	660VDC	0.8 to 125A	DC fed converters.

Range Without Microswitch

Number of poles	Connections	Cat.Number	Ref. Number	Weight (g)	Pack	Sur Condi
1	By screw, U bolt or connector	**US271I**	J226420C	285	3	
1	By screw, U bolt or connector	**CMS271**	R210580C	290	3	
1	Ring lug connection	**US271RING**	B223515C	340	3	
1 + N	By screw, U bolt or connector	**US271NI**	K226421A	580	1	
1 + N	By screw, U bolt or connector	**CMS271N**	S210581A	570	1	
1 + N	Ring lug connection	**US271NIRING**	E223518A	690	1	
N	By screw, U bolt or connector	**CMS27N**	B210152C	285	3	
N	Ring lug connection	**US27NIRING**	F223519C	340	3	
2	By screw, U bolt or connector	**US272I**	L226422A	580	1	
2	By screw, U bolt or connector	**CMS272**	T210582A	570	1	
2	Ring lug connection	**US272IRING**	C223516A	690	1	
3	By screw, U bolt or connector	**US273I**	M226423A	855	1	
3	By screw, U bolt or connector	**CMS273**	V210583A	870	1	
3	Ring lug connection	**US273IRING**	D223517A	1030	1	
3 + N	By screw, U bolt or connector	**US273NI**	N226424A	1200	1	
3 + N	By screw, U bolt or connector	**CMS273N**	W210584A	1250	1	
Assembly kit		**US27PAK**	H227615	10		
Microswitch*		**US27W1**	E227612	1		

** for US27 version only.*

The ring lug connection, four-pole model does not exist in the configuration (3 + neutral).
The blown fuse indicators are available with the standard US 27 version.
The recognized US 27 equipment uses UL 94 VO plastic materials. The US27range is pre-equipped with blown fuse microswitch and safe pre-isolation accessories, to transform the products into fuse-disconnectors.

Range Without Microswitch

Number of poles	Connections	Cat.Number	Ref. Number	Nb of Micro.	Weight (g)	Pack	Sur Condi
1	By screw, U bolt or connector	**US271MI**	R227600C	1	295	3	
1	Ring lug connection	**US271MIRING**	Z227607A	1	355	1	
2	By screw, U bolt or connector	**US272M2I**	T227602A	2	600	1	
2	Ring lug connection	**US272M2IRING**	B227609A	2	710	1	

Range of Accessories

Micro-switches and safe pre-isolation

Number of poles	Catalog Number	Reference number	Packaging	Sur Condi.
1	**US27W1**	E227612	1	

Note : 2 one-pole microswitches need to be purchased for a two-pole assembly (Ph+N or two-phase).

Pole Assembly Kit

Number of poles	Catalog Number	Reference number	Packaging	Sur Condi.
For 2, 3 and 4 poles	**US27PAK**	H227615	1	

The assembly kit is made up of staples to assemble the poles and pins for the handles.

Neutral Tubes

The neutral poles come with a neutral tube, which is sealed with plastic so that it cannot be removed.

35mm Mounting Rail

Type	Catalog Number	Reference number	Packaging	Sur Condi.
Symmetric		J213172	40 lengths of 2 m	
Symmetric drilled		C213672	40 lengths of 2 m	
Symmetric reinforced		R215203	20 lengths of 2 m	
Adaptor for asymmetric DIN rail	ADAP-RASST	Q098500	50	



Symmetric

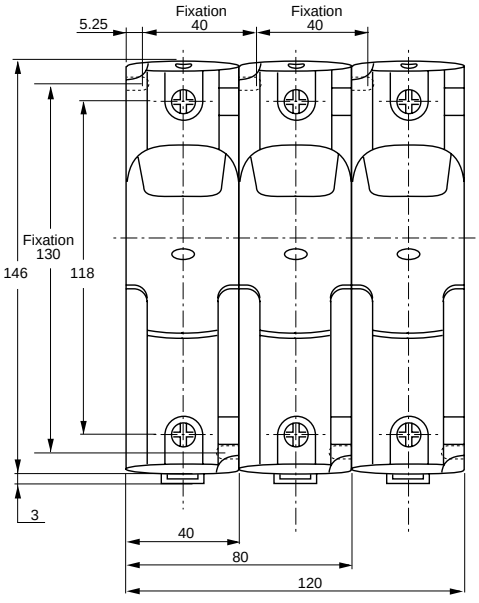


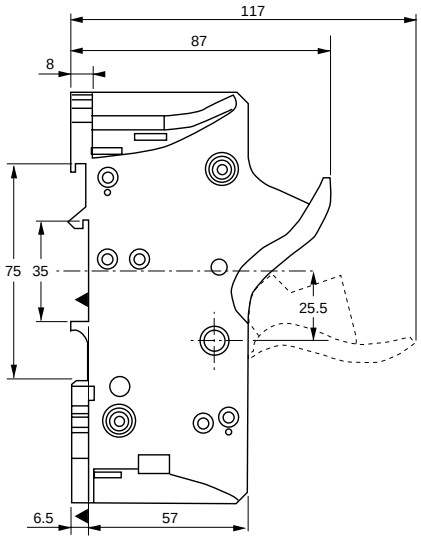
Symmetric drilled



Symmetric reinforced

Dimensions US27





Connection by fixed terminal screw-clamps for wires. Maximum section:

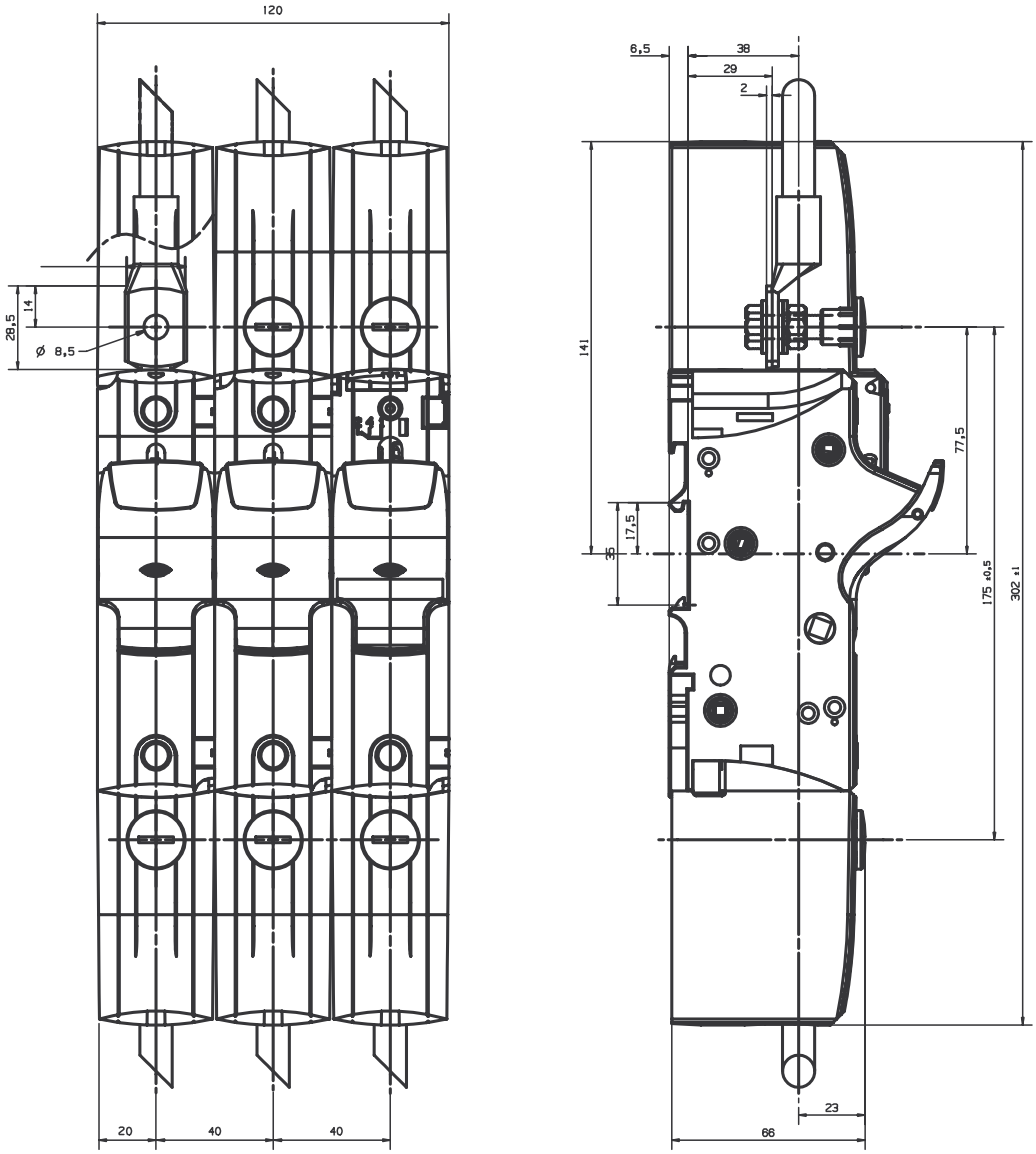
- One conductor, rigid or multistrand : Maximum 35 mm² (3 AWG)
- 2 conductors, multistrand : 16 mm² (6 AWG) or rigid with tightening torque : 2.8 - 3.5 Nm (30 lbs.in)
- Ferraz Shawmut recommands to use screwdrivers PZ 3 or Flat 8 x 1.2 mm (maximum diameter 8 mm).
- Ring lug connection.

Mounting:

- Simple snap mounting on 35 mm symmetric DIN rail (standard EN 50022) and 75 mm with 2 locking positions*.
- Directly onto the board with M4 screws and tightening torque from 1 to 1.2 Nm (11 lbs.in)
- On 35 mm asymmetric DIN rail with adaptor (Ref. Q098500)

** Need of 15 mm distance between DIN rail and panel*

Dimensions US27
for ring lugs connections



Semiconductor Fuses
AC+DC Ferrule FuseHolders
PS27



PSI 27x60+MC PS

FUSE HOLDERS AND FUSE DISCONNECTORS FOR FERRULE-TYPE FUSES

- SOLID ASSEMBLY OFFERING GOOD THERMAL AND MECHANICAL WITHSTANDS
- FUSE MOUNTING IN HOLDERS OR DISCONNECTORS WITH OR WITHOUT PREISOLATING AND BLOWN-FUSE INDICATING MICROSWITCHES
- PHENOLIC RESIN MODELS FOR BASIC APPLICATIONS - FIBER GLASS POLYESTER FOR APPLICATIONS IN CORROSIVE ATMOSPHERES OR IN TRACTION
- COMPLYING WITH IEC 947-3 STANDARD (AC 20 A CLASS)
- Ui = 1,000 V AC - 1,250 V DC

Main Characteristics

Designation	Insulation voltage rating Ui AC 50/60 Hz or DC	Fuse current rating I_N(A)	Maximum operating current of fuse (A)					Recommended copper wire size mm²	Fire and fumes class
			=440 V gLB	=660 V gRB	AC1000 VURB	AC660 VURGD	660 V URQ		
PSI 27x60	1000 V AC 1250 V DC with or without terminal covers	110	no operating limit					50	basic model UL 94 V1 salt spray-proof model UL 94 V0
PSII 27x60		125							
PSIII 27x60									
PSIV 27x60		160							
PSI 27x60 PRE		170						70	
PSII 27x60 PRE		200				190	200	95	
PSIII 27x60 PRE						225	225		
PSIV 27x60 PRE		250						120	

Connecting with two screws M8 (maximum tightenning torque 13.5 mN) on silver plated terminals the 95 mm² max. cable with copper terminals or with 20 x 8 max. rigid or flexible bar.

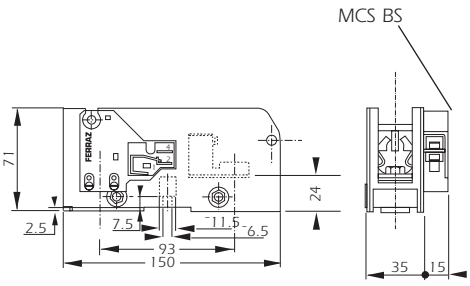
Basic model
Max. temperature (°C)/ Relative humidity (%): 20 °C/95% - 40°C/80% - 50°C/50%
Salt spray-proof model: (BS type)
Moist tropical and equatorial climate. Corrosive atmosphere.

Dielectric withstand tests

	R.M.S. voltage 1 mn 50/60 Hz	Impulse voltage 1.2/50 µs (IEC694 et CEI 60)
Between close phases and phase and mass	9 kV	12 kV
Between phases and microswitch	14 kV	

Fuse Holders and Accessories

Designation	Ref. Number	Catalog Number	Weight (g)	Packaging
PSI 27x60	B 220088	PS271	300	3 pieces
PSII 27x60	C 220089	PS272	560	2 pieces
PSIII 27x60	D 220090	PS273	920	1 piece
PSIV 27x60	E 220091	PS274	1150	1 piece
PSI 27x60+MCS BS	R 220240	PS271MCSBS	330	2 pieces
PSII 27x60+MCS BS	S 220632	PS272MCSBS	600	2 pieces
PSIII 27x60+MCS BS	P 220215	PS273MCSBS	900	1 piece
PSIV 27x60+MCS BS	S 220356	PS274MCSBS	1200	1 piece

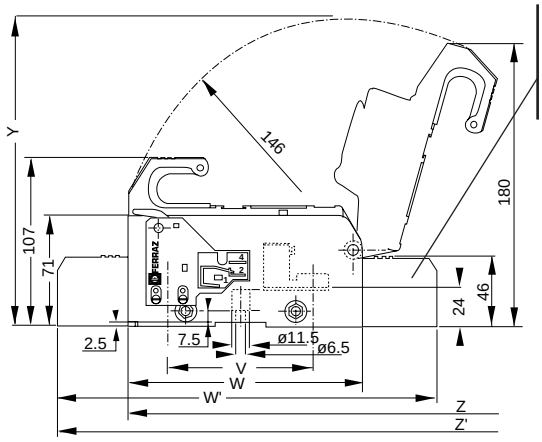


Mounting : Direct on board or bar with two M6 screws - see below drilling diagram

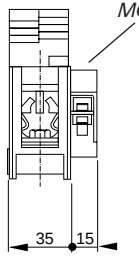
Semiconductor Fuses
AC+DC Ferrule FuseHolders
PS27

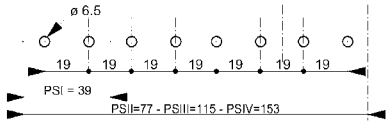
FUSE HOLDERS AND FUSE DISCONNECTORS FOR FERRULE-TYPE FUSES

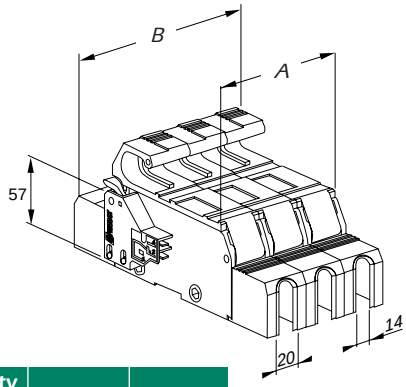
Fuse Disconnectors and Accessories



Twin terminal covers
PS 27
Part #: A 220087
Weight: 30g
Packaging: 3 twins







Quantity of poles	A	B
1	39	53
2	77	91
3	115	129
4	153	167

V: 93 Connecting distance between centers
W: 150 Without terminals cover length
W': 240 With terminals cover length
Y: 196 Space factor with a 90° fuse carrier position
Z: 284 Without terminal cover, space factor with a 180° fuse carrier position
Z': 279 With terminal cover, space factor with a 180° fuse carrier position

Designation (basic model)	Ref. Number	Cat. Number	Weight (g)	Packaging
PSI 27x60 PRE	H 220071	PS271PRE	400	3 pieces
PSII 27x60 PRE	J 220072	PS272PRE	800	2 pieces
PSIII 27x60 PRE	K 220073	PS273PRE	1300	1 piece
PSIV 27x60 PRE	L 220074	PS274PRE	1700	1 piece
PSI 27x60 PRE+MC PS	M 220075	PS271PREMCPS	500	2 pieces
PSII 27x60 PRE+MC PS	N 220076	PS272PREMCPS	900	2 pieces
PSIII 27x60 PRE+MC PS	P 220077	PS273PREMCPS	1400	1 piece
PSIV 27x60 PRE+MC PS	Q 220078	PS274PREMCPS	1800	1 piece

Preisolating and blown fuse indicating microswitch features	
Microswitch rated current	Non-inductive circuit interrupting rating
3A - 50 Hz	3A - 250V
3A - DC	3A - 30V 0.5A - 110V

- *Reliable minimum operating voltage/ current : 10V - 10mA*
- *Connecting with 6.35 mm lug*

Catalog Number (salt spray-proof model)	Ref. Number	Cat. Number	Weight (g)	Packaging
PSI 27x60 PRE BS	R 220079	PS271PREBS	500	3 pieces
PSII 27x60 PRE BS	S 220080	PS272PREBS	1030	2 pieces
PSIII 27x60 PRE BS	T 220081	PS273PREBS	1540	1 piece
PSIV 27x60 PRE BS	V 220082	PS274PREBS	2080	1 piece
PSI 27x60 PRE BS+MC PS	W 220083	PS271PREBSMCPS	540	2 pieces
PSII 27x60 PRE BS+MC PS	X 220084	PS272PREBSMCPS	1100	2 pieces
PSIII 27x60 PRE BS+MC PS	Y 220085	PS273PREBSMCPS	1600	1 piece
PSIV 27x60 PRE BS+MC PS	Z 220086	PS274PREBSMCPS	2100	1 piece

Semiconductor Fuses
AC+DC Ferrule FuseHolders
PS 20 x 127



PSI 20x127+MC PS

FUSE HOLDERS AND FUSE DISCONNECTORS FOR FERRULE-TYPE FUSES 20x127

- SOLID ASSEMBLY OFFERING GOOD THERMAL AND MECHANICAL WITHSTANDS
- FUSE MOUNTING IN HOLDERS OR DISCONNECTORS WITH OR WITHOUT PREISOLATING AND BLOWN-FUSE INDICATING MICROSWITCHES
- PHENOLIC RESIN MODELS FOR BASIC APPLICATIONS FIBER-GLASS POLYESTER FOR APPLICATIONS IN CORROSI-VE ATMOSPHERES OR IN TRACTION
- Ui = 1,500 V AND 2,500 V

Main Characteristics

Designation	Insulation voltage rating Ui AC 50/60 Hz or DC	Fuse current rating I_N(A)	1000 V gLB	=1000 V gRC	AC1000V gRB	AC1500V gRB	AC1500V gRD	Advised copper wire size mm²	Fire and fumes class
PSI 20x127	1500 V without terminal covers 2500 V with terminal covers and only salt spray -proof model	50		50	no operating limit			10	basic model UL 94 V1
PSI 20x127 PRE		63		56				16	salt spray-proof model UL 94 V0
PSII 20x127 PRE		80	80					25	
PSIII 20x127 PRE		100	90					35	
PSIV 20x127 PRE		125	100					50	

Connecting with 50 mm² max. cable with copper terminals or with a 15 x 8 max. rigid or flexible bar.

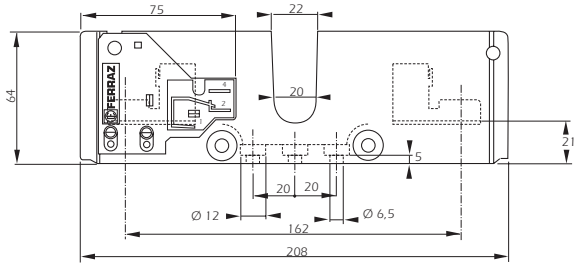
(1) Basic model
Max. temperature (°C)/ Relative humidity (%): 20 °C/95% - 40°C/80% - 50°C/50%
If Holder has to be kept off, and an heating system fed during stop periods must be used. Purpose is to keep the temperature of cubicle at a level just a little higher than outdoor temperature.
(2) Salt spray-proof model (BS type)
Moist tropical and equatorial climate. Corrosive atmosphere.

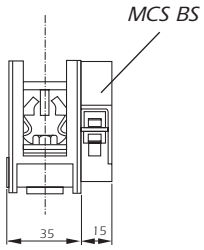
Dielectric withstand tests

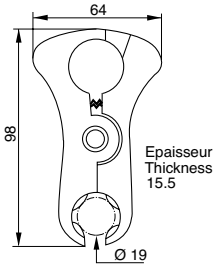
	R.M.S. voltage 1 mn 50/60 Hz	Impulse voltage 1.2/50 µs (IEC694 et CEI 60)
Between close phases and phase and mass	6kV(1) - 10 kV(2)	12 kV(1) - 20 kV(2)
Between phases and microswitch	12 kV	

Connecting with 16mm max. width, 5mm max. thick terminal

Fuse Holders and Accessories







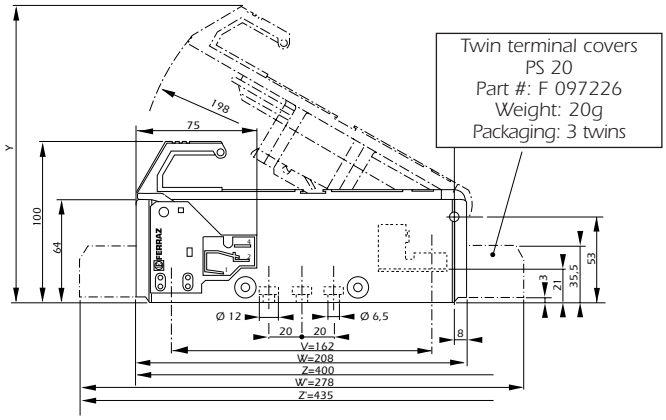
Designation	Ref. Number	Catalog Number	Weight (g)	Packaging
PSI 20x127	X 097310	PS201	260	3 pieces
PSI 20x127+MCS BS	X 220130	PS201MCSBS	290	2 pieces

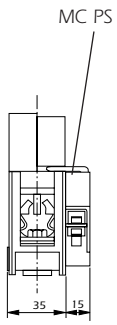
Cat N°: PMC20+22
Ref N°: K 100036
Weight: 40g
Packaging: 1

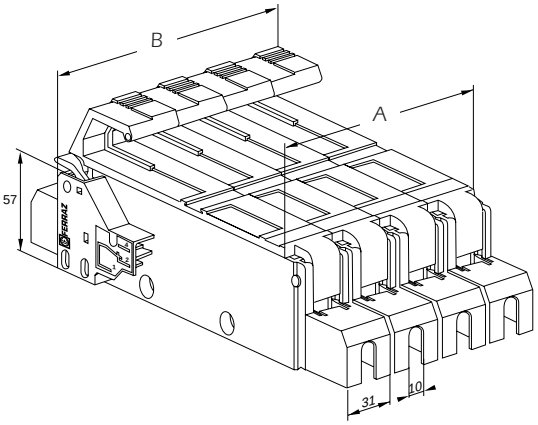
Semiconductor Fuses
AC+DC Ferrule FuseHolders
PS 20 x 127

FUSE HOLDERS AND FUSE DISCONNECTORS FOR FERRULE-TYPE FUSES 20x127

Fuse Disconnectors and Accessories







V: Connecting distance between centers
W: Without terminal cover length
W': With terminal cover length
Y: Space factor with a 90° fuse carrier position
Z: Without terminal cover, space factor with a 180° fuse carrier position
Z': With terminal cover, space factor with a 180° fuse carrier position

Quantity of poles	A	B
1	35	50
2	69	84
3	103	118
4	137	152

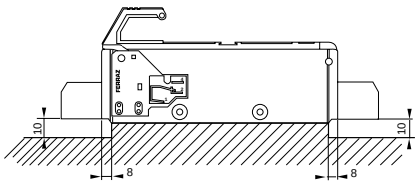
Designation (basic model)	Ref. Number	Cat. Number	Weight (g)	Packaging
PSI 20x127 PRE	F 097203	PS201PRE	400	3 pieces
PSII 20x127 PRE	G 097227	PS202PRE	800	2 pieces
PSIII 20x127 PRE	H 097228	PS203PRE	1200	1 piece
PSIV 20x127 PRE	J 097229	PS204PRE	1510	1 piece
PSI 20x127 PRE+MC PS	H 097205	PS201PREMCPS	430	2 pieces
PSII 20x127 PRE+MC PS	D 097293	PS202PREMCPS	880	2 pieces
PSIII 20x127 PRE+MC PS	E 097294	PS203PREMCPS	1200	1 piece
PSIV 20x127 PRE+MC PS	F 097295	PS204PREMCPS	1700	1 piece

Preisolating and blown fuse indicating microswitch features	
Microswitch rated current	Non-inductive circuit interrupting rating
3A - 50 Hz	3A - 250V
3A - DC	3A - 30V 0.5A - 110V

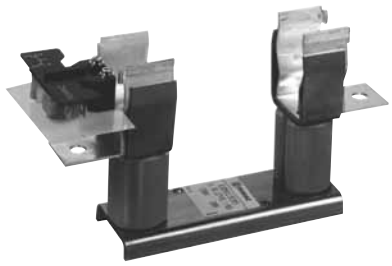
- *Reliable minimum operating voltage/ current : 10V / 10mA*
- *Connecting with 6.35 mm lug*

Catalog Number (salt spray-proof model)	Ref. Number	Cat. Number	Weight (g)	Packaging
PSI 20x127 PRE BS	G 097204	PS201PREBS	490	3 pieces
PSII 20x127 PRE BS	L 097231	PS202PREBS	1000	2 pieces
PSIII 20x127 PRE BS	T 097261	PS203PREBS	1500	1 piece
PSIV 20x127 PRE BS	C 097292	PS204PREBS	1700	1 piece
PSI 20x127 PRE BS+MC PS	J 097206	PS201PREBSMCPS	520	2 pieces
PSII 20x127 PRE BS+MC PS	G 097296	PS202PREBSMCPS	1030	2 pieces
PSIII 20x127 PRE BS+MC PS	H 097297	PS203PREBSMCPS	1530	1 piece
PSIV 20x127 PRE BS+MC PS	J 097298	PS204PREBSMCPS	1730	1 piece

Distances when mounting on a conductive board @ Ui= 2500 VAC



Semiconductor Fuses
AC+DC Ferrule FuseHolders
SI Bases for 20 & 36



FUSE HOLDERS
FOR FERRULE-TYPE FUSES 36 x 127

- STURDY ASSEMBLY WITH VERY HIGH COLLISION WITHSTAND
- MOUNTING AS BASE WITH OR WITHOUT MICROSWITCH
- POLYESTER ISOLATORS FOR ALL APPLICATIONS

Main Characteristics

Designation	Thermal current rating (Ith)*	Maximum power (W)	Insulation voltage Ui (AC 50/60 Hz & DC) (According to VDE 0110 : 565 - C group)	Dielectric withstand test		Fire and fumes class
				RMS voltage 1 mn 50/60 Hz (1)	Impulse voltage 1.2/50ms	
SI 36 x 127 BS SI 36 x 127 BS + MC 1-5 BS	200A	Fitted to FERRAZ SHAWMUT fuses	2 500 V	10 kV (1) phase-ground 9 kV phase-microswitch	Consult us phase-microswitch	UL 94-VO

(1) Tests according to IEC 60 & 694 and NF C 64010
Dry atmosphere, new fuse holder

Note: SI 36 x 127 BS fuse holder may be used for rolling stock.

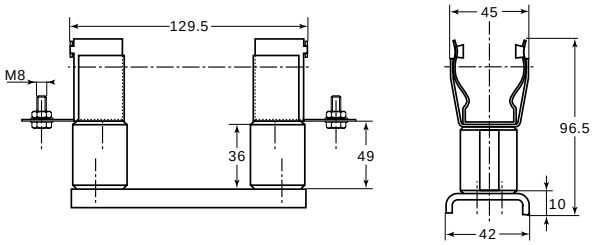
Vibration withstand:
Tests with sine vibrations carried out at ambient, scanning each of the three main axes of the holder.
Spectrom: 1st segment (2 to 16 Hz) constant displacement x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration γ = 5 g peak.
Exponential scanning speed: 1 octave per minute.
Duration: 2 hours per axis

Semiconductor Fuses
AC+DC Ferrule FuseHolders
SI Bases for 20 & 36

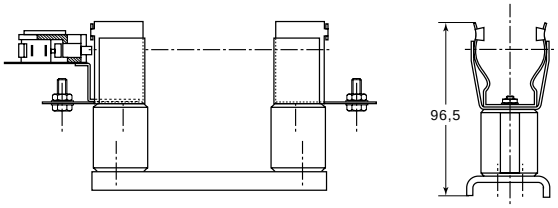
FUSE HOLDERS
FOR FERRULE-TYPE FUSES 36 x 127

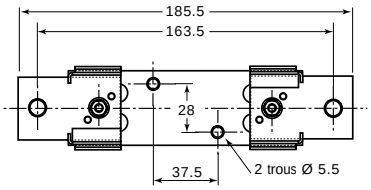
Fuse Holders and Accessories

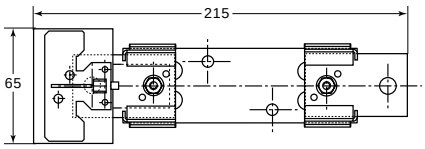
Without microswitch



With microswitch







Designation	Ref. Number	Catalog Number	Weight (g)
SI 36 127 BS	N 091920	SI36127BS	406
SI 36 127 BS + MC 1-5 BS	E 091935	SI36127BSMCR	456

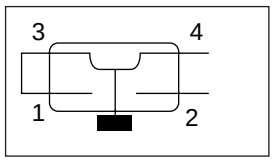
** Electrical connection of fuse holder and wires by screws made in plated steel 8-8 class (supplied with fuseholder).*
Maximum recommended tightening torque: 22 $^{+0}_{-8}$ Nm for M8 screw.

- Fixing of base with M5 screws. Tightening torque 7±1,5 Nm.

Microswitch Characteristics

Microswitch current rating	Interrupting rating Non-inductive circuit
10 A - 50 Hz	7 A - 250 V
10 A - DC	10 A - 30 V 2,2 A - 110 V

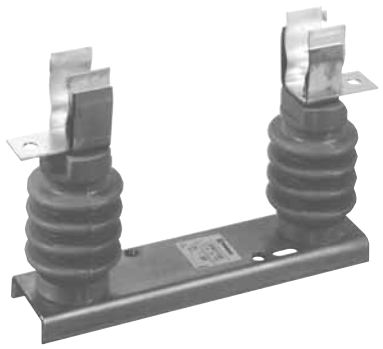
Positive operating voltage/current : 20 V - 100 mA
6.35 mm slip on connector tags



- *With hand-made resetting reversing style micros-witch 10A - 250V AC with cos j = 0.3*
- *#1 and 3 terminals must always be connected*

Each microswitch weighs less than 100g, therefore no fume and smoke grade required.

Semiconductor Fuses
AC+DC Ferrule FuseHolders
SI Bases for 20 & 36



FUSE HOLDERS FOR FERRULE-TYPE FUSES
20.6 x 190
36 x 190
36 x 250
36 x 400

- STURDY ASSEMBLY WITH VERY HIGH COLLISION WITHSTAND
- MOUNTING AS BASE WITH OR WITHOUT MICROSWITCH
- POLYESTER ISOLATORS FOR ALL APPLICATIONS

Main Characteristics

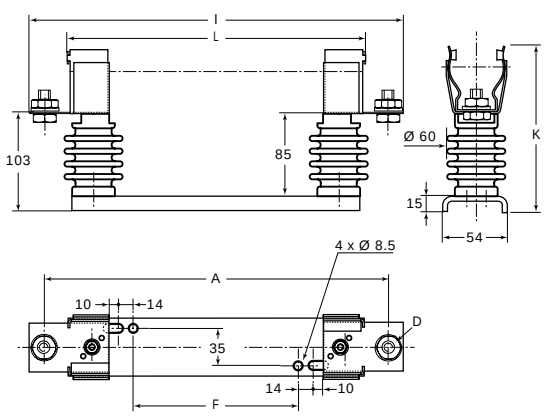
Designation	Thermal current rating (Ith)*	Insulation voltage Ui (AC 50/60 Hz & DC) (According to VDE 0110 : 565 - C group)	Dielectric withstand test		Fire and fumes class
			RMS voltage 1 mn 50/60 Hz (1)	Impulse voltage 1.2/50ms	
SI 85 - 20 - 190 SI 85 - 20 - 190 + MC 2R 1 - 5	50 A	7 200 V	27 kV phase-ground		
SI 85 - 36 - 190 TRAC SI 85 - 36 - 190 + MC 2R 1 - 5	100 A	7 200 V		60 kV phase-ground	
SI 85 - 36 - 250	50 A	7 200 V	9 kV phase-microswitch		UL 94 VO
SI 85 - 36 - 400 TRAC	20 A	7 200 V			

Note: "TRAC" in catalog number means that fuse holder may be used for rolling stock with reinforced fixing of clips on isolators.
** No use limitation for FERRAZ SHAWMUT fuses mounted in the above holders.*

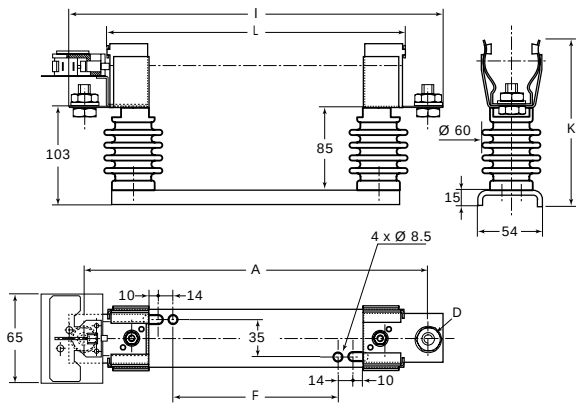
Vibration withstand:
Tests with sine vibrations carried out at ambiant with scanning each of the three main axis of the holder.
Spectrum:1st segment (2 to 16 Hz) constant displacement x = 5 mm peak.
2nd segment (16 to 250 Hz) constant acceleration γ = 5 g peak.
Exponential scanning speed: 1 octave per minute.
Duration: 2 hours per axis.

Fuse Holders and Accessories

Without microswitch



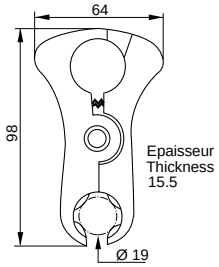
With microswitch



Semiconductor Fuses
AC+DC Ferrule FuseHolders
SI Bases for 20 & 36

FUSE HOLDERS FOR FERRULE-TYPE FUSES
20.6 x 190
36 x 190
36 x 250
36 x 400

for 20 x 190:



Cat. Number: PMCP 20 + 22
Ref. Number: K 100036
Weight: 40 g
Packaging: 1

Designation	Ref. Number	Catalog Number	Weight (g)
SI 85 20 x 190	Y 092665	SI85-20-190	950
SI 85 20 x 190 + MC 1-5	B 220525	SI85-20190TRACM	1 050
SI 85 36 x 190 TRAC	C 092738	SI85-36-190TRA	1 080
SI 85 36 x 190 + MC 2R1-5	B 220617	SI85-36190TRACM	1 180
SI 85 36 x 250	P 092864	SI85-36-250	1 170
SI 85 36 x 400 TRAC	D 092831	SI85-36400TRAC	1 400

Pack : *1 piece*

Dimensions					
I	L	A	F	D	K
241	192	223	73	6.5	131
288	192	223	73	6.5	
250	194	228	73	8.5	150.5
299	194	228	73	8.5	
316	260	294	139	8.5	
455	399	433	266	8.5	

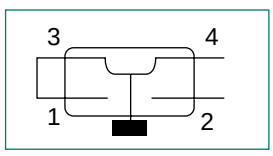
** Electrical connection of fuse holder and wires by screws made in plated steel 8-8 class (supplied with fuseholder).*
maximum tightening torque advised: 22^{+0}_{-8} Nm for M8 screw. (SI 85 36x ...)
9 ± 2 Nm for M6 screw. (SI 85 20x ...)

- Fixing of base with M8 screws. Tightening torque 10 ± 2 Nm.

Microswitch Characteristics

Microswitch current rating	Interrupting rating Non-inductive circuit
10 A - 50 Hz	7 A - 250 V
10 A - DC	10 A - 30 V 2,2 A - 110 V

Positive operating voltage/current : 20 V - 100 mA
6.35 mm slip on connector tags



- *With hand reset reversing-type microswitch 10A - 250V AC with cos φ = 0.3*
- *#1 and 3 terminals must always be connected*

Each microswitch weighs less than 100g, therefore no fume and smoke grade required.

Medium Voltage Fuses
Clips



Cat. No. 228-700-520
(Pair at bottom)

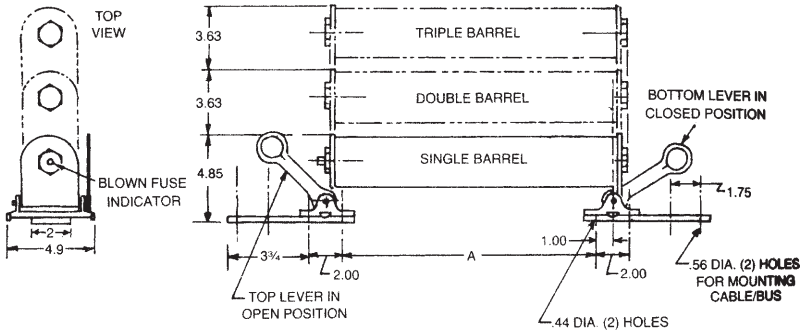
Cat. No. 228-700-530
(Single at top)

Clip lock design for CL-14 series

The Clip Lock design provides a reliable, high-pressure contact. Ferraz Shawmut CL-14 fuses have copper tabs which slide into position between the clip casting and cam. When the cam is locked by moving the pull ring, a high-pressure contact is made between the clip casting and fuse tab. Each clip includes two .44" diameter counter-sunk holes on 2" centers and two flat head socket screws (3/8-16 UNRC, recommended torque 200 pound-inches) for mounting the clip on standard NEMA insulators. These clips will accommodate 5kV and 15kV CL-14 fuses rated 10E to 600E. Order catalog number 228-700-520 for one pair of fuse clips, enough for one fuse.

Mounting Details for Clip Lock Cat. No. 228-700-520

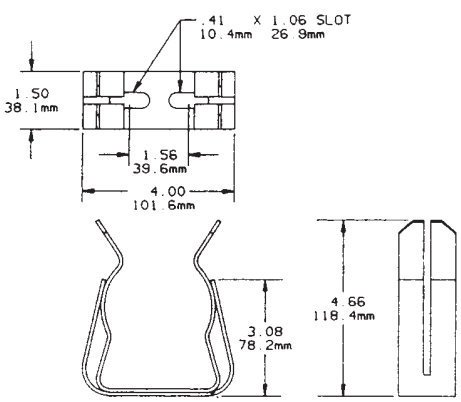
CL-14 Fuse Catalog Number	A Dimensions - Inches
A055C1DORO-(10E-150E)	13.25
A055C1DORO-(200E-400E)	19.25
A055C2DORO-(450E-600E)	19.25
A155C1DORO-(10E-50E)	19.25
A155C1DORO-(65E-100E)	19.25
A155C2DORO-(125E)	19.25
A155C3DORO-(150E-300E)	19.25



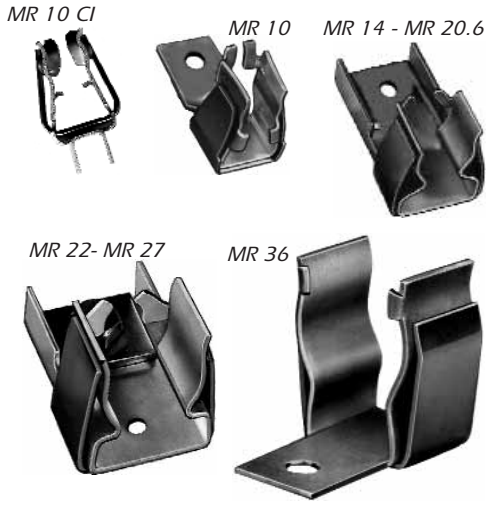
Clips for 3" diameter ferrule fuses

These spring-reinforced clips will accommodate all 3" diameter, one and two barrel E-rated and R-rated medium voltage ferrule-type fuses. The clip and reinforcing spring are intended to be bolted to a copper bus bar through two .41" x 1.06" slots. A minimum copper-bus cross section of 1/4" x 1-1/2" is recommended for maximum fuse ratings of 24R and 450E. Catalog number is 228-700-530 for one pair of spring-reinforced clips, enough for one fuse.

Cat. No. 228-700-530



Medium Voltage Fuses Clips



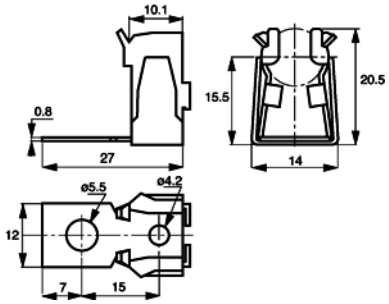
For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36 - 45 - 55

- SILVER-PLATED COPPER CLIPS: EXTREMELY HIGH THERMAL AND ELECTRIC CONDUCTIVITY
- MOUNTING TYPE:
  - SCREWING ON ISOLATORS
  - SCREWING ON BARS OR INSULATED BARS
  - WELDING ON P.C.B. (MR 10 CI)
- STAINLESS STEEL PRESSURE SPRINGS: HIGHLY RESISTANT TO SALT SPRAY

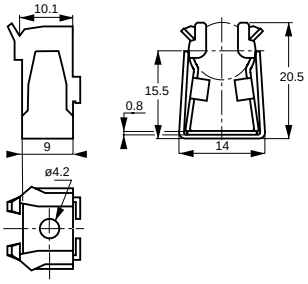
Main Characteristics

Designation	Current rating IN(A)	Maximum R.M.S continuous current through IN - rated current fuses (A)	Recommended copper cable section (mm^2)
MR 10	32	32	4
MR 10 CI	32	32	4
MR 14	63	63	10
MR 20	125	125	35
MR 22	135	135	35
MR 27	250	250	120
MR 36	250	250	120
MR45	525	525	-
MR55	750	750	-

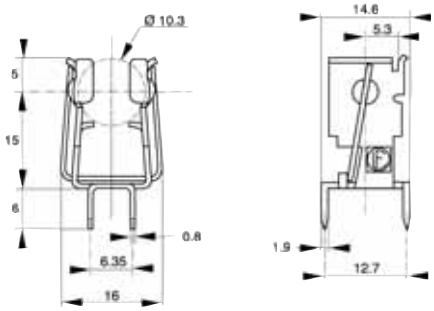
MR 10 - MR 10 CI



Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR10RESSORT	MR 10	B098004	7	20 pieces



Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR10RESSORTSP	MR 10 without connection	C098994	5,7	20 pieces



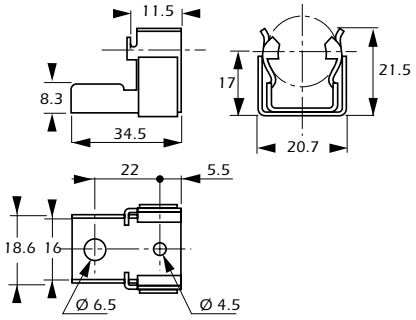
Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR10RESSORTCI	MR 10 CI	Y098507	4,5	200 pieces

Medium Voltage Fuses
Clips

For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36 - 45 - 55

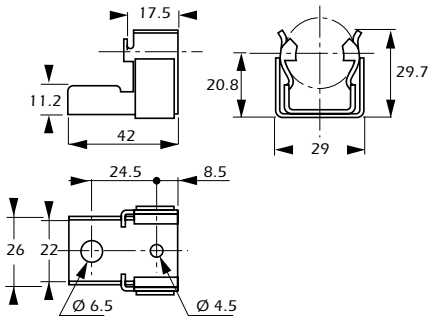
MR 14

Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR14SPRING	MR 14	G098170	16	10 pieces



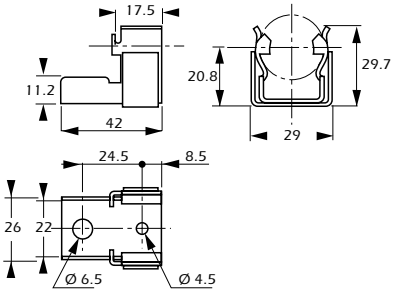
MR 20.6

Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR20RESSORT	MR 20.6	H099988	40	20 pieces



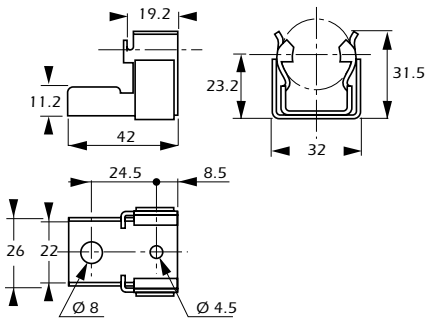
MR 22

Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR22SPRING	MR 22	K098909	40	10 pieces



MR 27

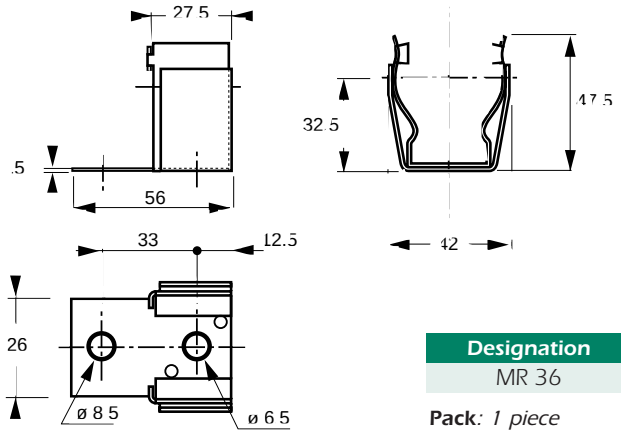
Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR27RESSORT	MR 27	Y092734	50	20 pieces



Medium Voltage Fuses
Clips

MR 36

For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36 - 45 - 55

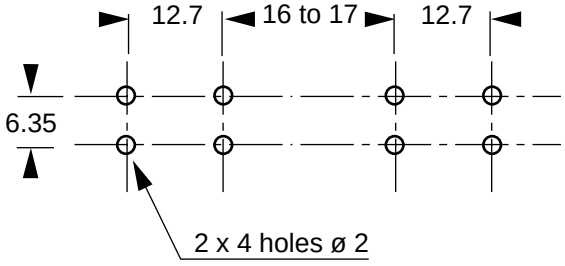


Designation	Ref. Number	Weight (g)	Catalog Number
MR 36	M091275	85	MR36R

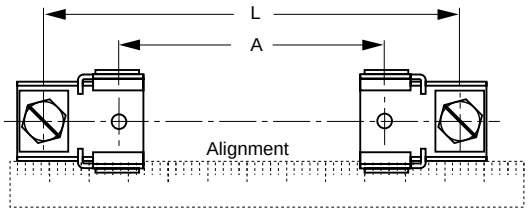
Pack: *1 piece*

All clips silver-plated copper with stainless steel springs.

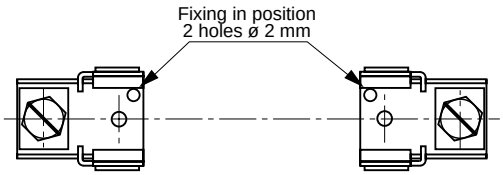
Mounting Instructions
P.C.B. Drilling for MR10 CI clip (10 X 38 Size Fuse)



Clip Mounting



Fuse size	A	L
10 x 38	31	61
14 x 51	42	86
22 x 58	42	91
20 x 51	36	85
20 x 127	113	162
20 x 190	175	224
27 x 60	41	91
36 x 127	100	148
36 x 190	165	231



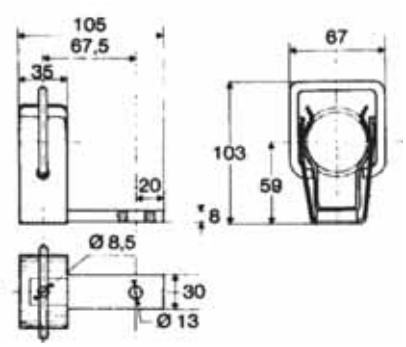
Mounting of two elastic stop pins of 2 mm dia. for fixing clips in position

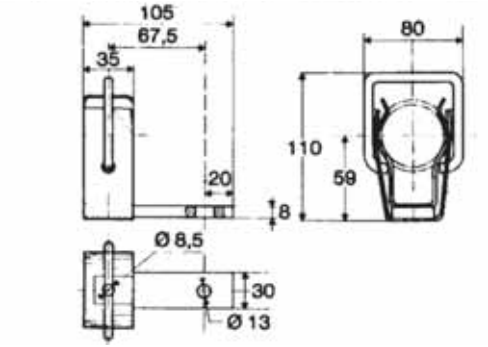
Medium Voltage Fuses
Clips





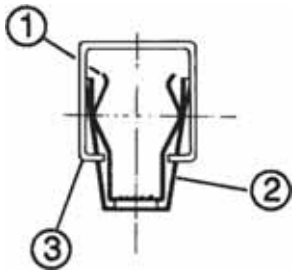
Dimensions MR45 - MR55





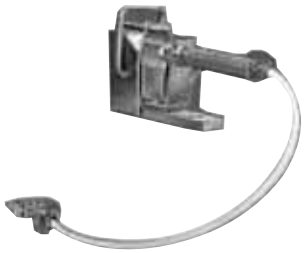
For fuse diameter	Designation	Reference Number	Catalog Number	Material ensuring the electrical contact (1)	Thermal current Ith (A)	Weight (g)
45	MR 45	L096472	MR45R	Silver-plated copper	525	450
55	MR55	L078969	MR55R	Silver-plated copper	750	450

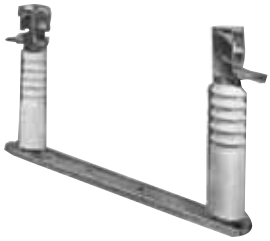
Packaging: 1 piece

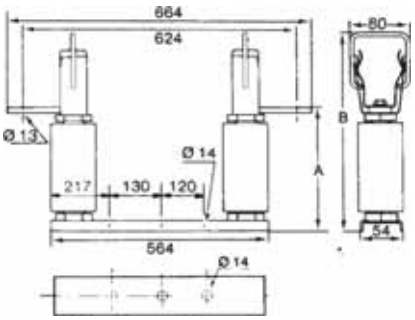


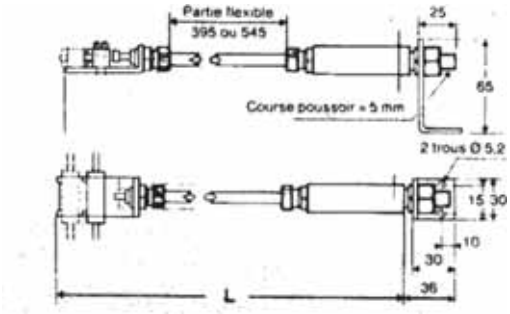
All the clips are made of an electrical contact (1) and a spring in stainless steel (2).
The clip MR 45 and MR 55 have also a padlocking system (3) which enables to stop in rotation the heavy fuses.

Medium Voltage Fuses
SI Fuse Bases
NF Fuse Base









Fuse-holder

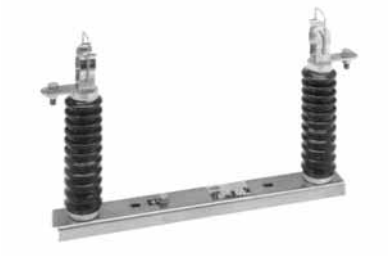
Rated voltage (kV)	Designation	Reference Number	Ground voltage withstand		A (mm)	B (mm)	Weight (kg)	Catalog Number
			50 Hz - 1 mn (RMS)	1,2/50µS (peak)				
7,2	SI 120 55x520	K092354	27	60	161	260	2.8	SI130-55-520
12/17,5	SI 175 55x520	Q092934	45	95	216	315	3.6	SI175-55-520
24	SI 225 55x520	R092935	55	125	266	365	4.8	SI210-55-520
36	SI 310 55x520	L092355	75	170	351	450	6.8	SI300-55-520

Indicating device

Rated voltage of corresponding fuse-holder (kV)	Designation	Reference Number	Number of Microswitches	Length of flexible part	L (mm)	Weight (kg)	Catalog Number
7,2	MC 1-5 FlexQ	E092694	1	395	560	0.205	MC1-5NFLEXQ
7,2	MC 1-9 FlexQ	F092695	2	395	560	0,215	MC1-9NFLEXQ
12 to 36	MC 1-5 FlexQ640	T092615	1	545	710	0,220	MC1-5NFLEXQ640
12 to 36	MC 1-9 FlexQ640	K078945	2	545	710	0,230	MC1-9NFLEXQ640

The indicating device enables electrical actuating of the opening mechanism for a circuit or triggering of an indicator during the melting of a fuse equipped with a trip-indicator. This very robust and original device means freedom for any mechanical system and offers the advantage of being able to incorporate a microswitch unit or units according to the equipment configuration.

Medium Voltage Fuses
SI Fuse Bases
DIN Fuse Base



K209424A



E092855A



Fuse Holder

Rated Voltage (V)	Size	Use	Reference Number	Catalog Number
7200	SI 7,2/192	indoor	G209421	SI72V192
12000	SI 12/292	indoor	H209422	SI120V292
17500	SI 17,5/292	indoor	J209423	SI175V292
24000	SI 24/442	indoor	K209424	SI 240V442
36000	SI 36/537	indoor	M209426	SI360V537
12000	SE 12/292	outdoor	S210328	SE120V292
17500	SE 17,5/292	outdoor	T210329	SE175V292
24000	SE 24/442	outdoor	V210330	SE240V442
36000	SE 36/537	outdoor	W210331	SE360V537

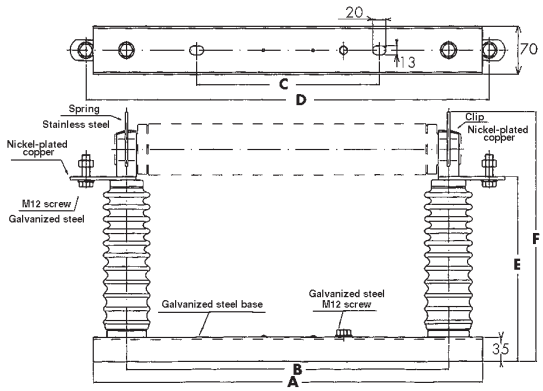
Packaging: 1 piece

Indicating Device

Rated Voltage (KV)	Number of microswitches	Reference Number	Catalog Number
12/36	1 NO/NC	E092855A	MC1-5NFLEXQS500
12/36	2 NO/NC	F092856A	MC1-9NFLEXQS500

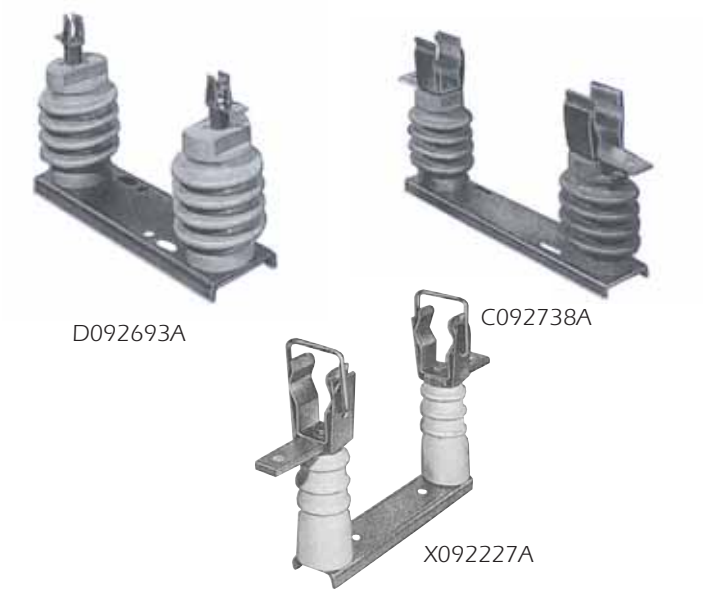
Packaging: 1 piece

Dimensions



Rated Voltage (V)	Fuse Length L (mm)	Size	Rated withstand Voltage line-mass		Dimensions (mm)						Weight (kg)
			50 HZ - 1 min Kv rms	1,2/50 µ s Kv peak	A	B	C	D	E	F	
7200	192	SI 7,2/192	20	60	400	226	322	347	175	270	3,8
12000	292	SI 12/292	28	75	424	324	200	445	175	270	4,1
17500	292	SI 17,5/292	38	95	424	324	200	445	220	315	5,1
24000	442	SI 24/442	50	125	576	476	270	597	270	365	5,5
36000	537	SI 36/537	70	170	670	570	350	691	354	449	7,7
12000	292	SE 12/292	28	75	424	324	200	445	261	356	7,5
17500	292	SE 17,5/292	38	95	424	324	200	445	261	356	7,5
24000	442	SE 24/442	50	125	576	476	270	597	309	404	8,8
36000	537	SE 36/537	70	170	670	570	350	691	381	476	13,2

Medium Voltage Fuses
SI Fuse Bases
Other MV Fuse Base



D092693A

C092738A

X092227A

Fuse-holder

Rated voltage (kV)	Designation	Reference Number	Ground voltage withstand		Weight (kg)	Catalog Number
			50 Hz - 1 mn (RMS)	1,2/50µS (kV-peak)		
3,6	SI 50 10x180	S092706	21	45	0,22	SI50-10-180
7,2	S1 85 36x190	C092738	27	60	1,05	SI85-36-190TRA
7,2	S1 85 10x180	D092693	27	60	0,27	SI85-10-180
7,2	S1 85 36x250	P092864	27	60	1,15	SI85-36-250
7,2	S1 120 55x259	X092227	27	60	3,9	SI130-55-259

Pack: *1 piece*
The clip MR10, MR 36 and MR 55 can be supplied separately

Indicating Device

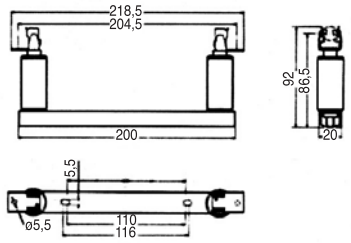
Designation	Number of microswitch	Reference Number	Type of fuse that can be equipped	Lenght of flexible part	Weight (kg)	Catalog Number
MC 1-5 Flex	1NO/NC	E098674	36x190 and 36x250	395	0,110	MC1-5NFLEX
MC 1-9 Flex	2NO/NC	F098675	36x190 and 36x250	395	0,120	MC1-9NFLEX
MC 1-5 Flex Q	1NO/NC	E092694	55x259	395	0,205	MC1-5NFLEXQ
MC 1-9 Flex Q	2NO/NC	F092695	55x259	395	0,215	MC1-9NFLEXQ

Pack: *1 piece*

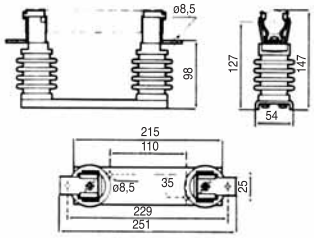
Medium Voltage Fuses
SI Fuse Bases
Other MV Fuse Base

Dimensions

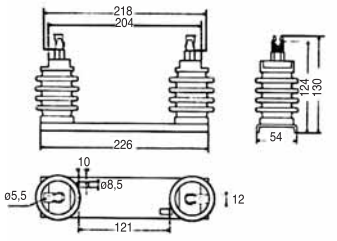
SI 50 10x180



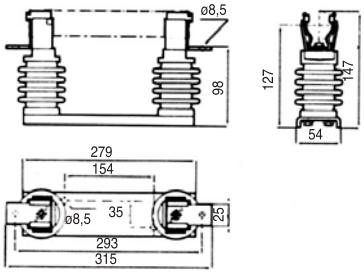
SI 85 36x190



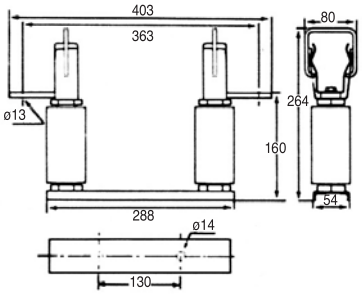
SI 85 10x180



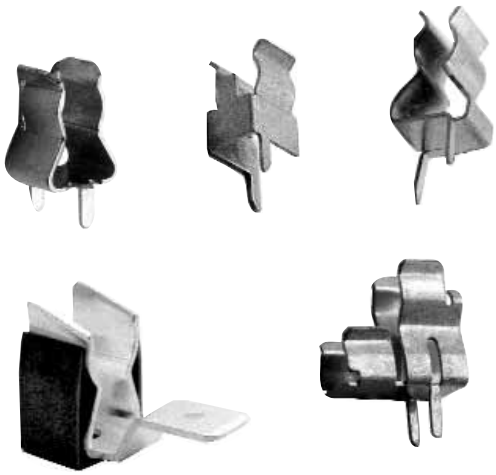
SI 85 36x250



SI 120 55x259



All Fuse Clips



5x20 and 6x32 Fuse sizes

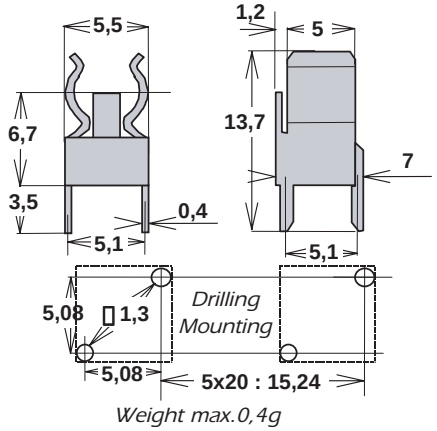
- CLIPS FOR PRINTED CIRCUIT BOARD OR SCREW MOUNTING
- RATED CURRENT BELOW 30A* DEPENDING ON TYPE

Main Characteristics

Size	Rated Current A	Power acceptance W 23°C	End Stops	Monting	Material	Designation	Reference Number	in box of 1000pcs	blister of 50pcs	Catalog Number
5x20	6,3*	1,6	Yes	Printed circuitboard	Brass, Tin plated	MR 5 CI.SP	W202074	Yes	Yes	MIMR5CISP
5x20	6,3*	2	Yes	Printed circuitboard	Brass, Tin plated	MR 5 CI-S	J210550	Yes	Yes	MIMR5CI-S
5x20	6,3*	2,5	Yes	Printed circuitboard	Bronze, Tin plated	MR 5 CI-C	K210551	Yes	Yes	MIMR5CI-C
5x20 &6x32	6,3*	1,6	No	Printed circuitboard	Brass, Nickel plated	MR 5-6	Y098967	Yes	Yes	MIMR5-6
5x20 &6x32	6,3*	1,6	Yes	Printed circuitboard	Brass, Tin plated	MR 5-6.SP	C204955	No	Yes	MIMR5-6SP
6x32	10*	2,5	Yes	Printed circuitboard	Bronze, Tin plated	MR 6 CI-S	H210549	Yes	Yes	MIMR6CIS
6x32	30*	3,5	No	Screw mounting 6,3mm slip-on connector tags	Silver plated copper + stainless steel spring	MR 6 VI	K091480	No	Yes	MIMR6VI

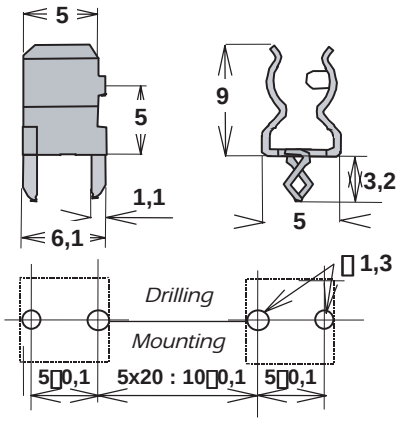
** Depends on fuse cover number for 5x20. L210552P*

MR 5 CI.SP:



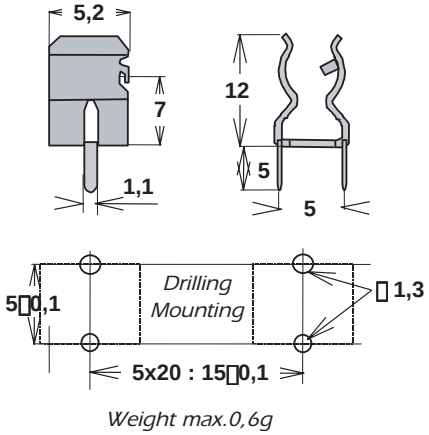
Weight max.0,4g

MR 5 CI.S:



Weight max.0,5g

MR 5 CI.C:

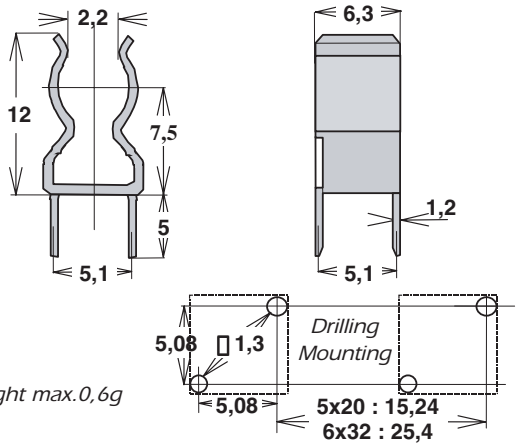


Weight max.0,6g

All Fuse Clips

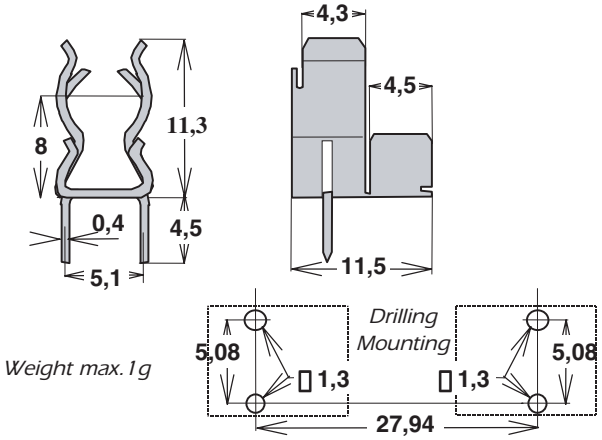
5x20 and 6x32 Fuse sizes

MR 5 - 6:



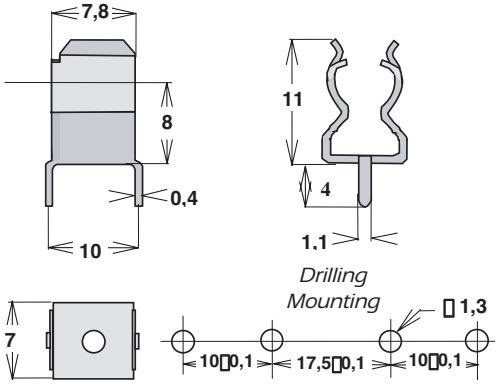
Weight max.0,6g

MR 5 - 6 SP:



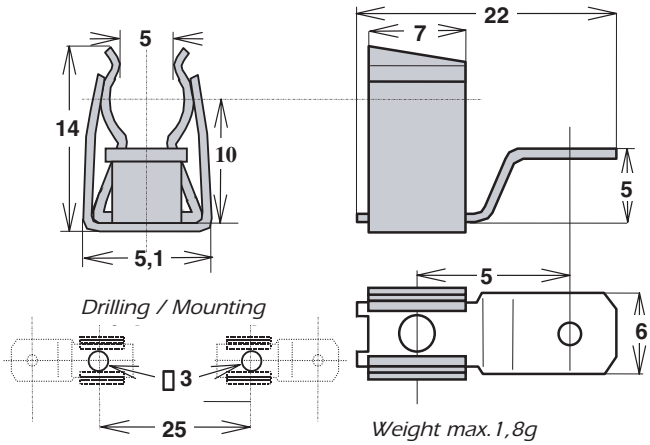
Weight max.1g

MR 6 CI - S :



Weight max.1g

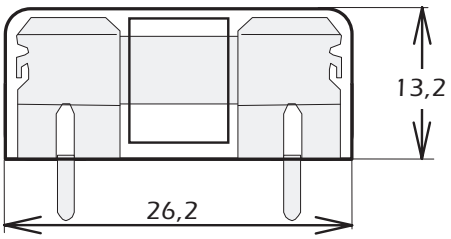
MR 6 VI :



Weight max.1,8g

CPT 5x20 FOR MR5CI-C & MR5-6:

Ref. L210552
Cat. Num MICPT5MR5CI-C



All Fuse Clips



for Ferrule fuses / pc board
30A & 60A ferrule - fuse clips

Fuse Clips for 30 & 60 Ampere Ferrule-type Fuses

Cat. Num.	Ref. Num.	Fig.	For Fuse Rating/Size: Amps (max.)	Ferrule Dia.	Mounting Details Hole Size	Screw Size
CO8915P	R215479	1	30	13/32"	.172" dia.	#8
CO8919P	P217524	2	30	13/32"	.196" dia.	#10
CO8916P	V215988	3	30	9/16"	.172" dia.	#8
CO8917P	R216491	4	30 or 60	13/16"	.22" x .30"	#10
CO8918P	F217010	5	60	1-1/16"	.22" x .30"	#10

All clips are UL Recognized: Guide IZLT2, File E52283
All clips are tin-plated copper alloy, non-spring reinforced.

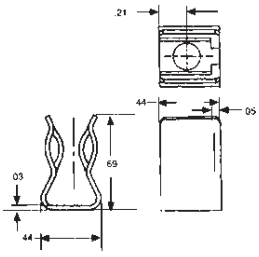


Figure 1

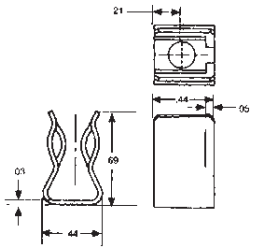


Figure 2

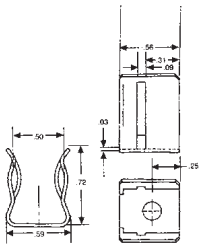


Figure 3

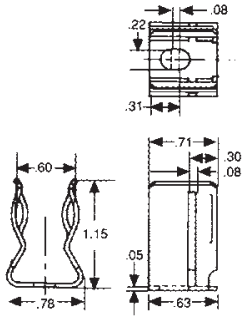


Figure 4

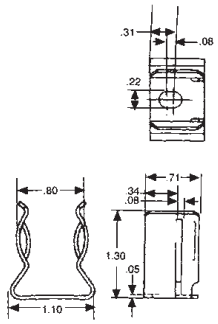
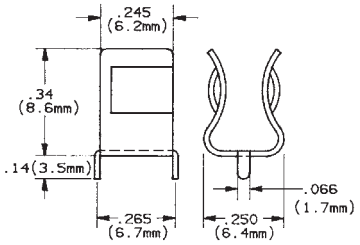


Figure 5

SDC6 - K222051
PC BOARD clips

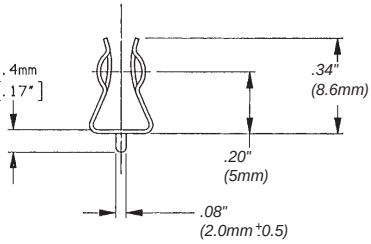
- PC board mount fuse clip
- For 1/4" diameter fuses
- Tin plated hard brass
- 15A maxi





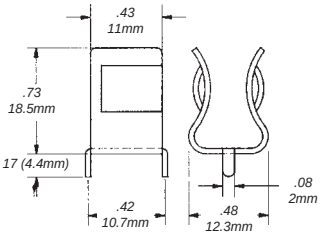
SDC5 - R219596
PC BOARD clips

- PC board mount fuse clip
- For 5mm diameter fuses
- Tin plated hard brass
- 10A maxi



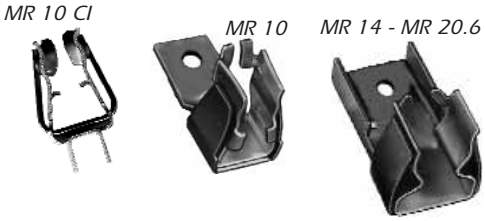
SDC7 - T222795
PC BOARD clips

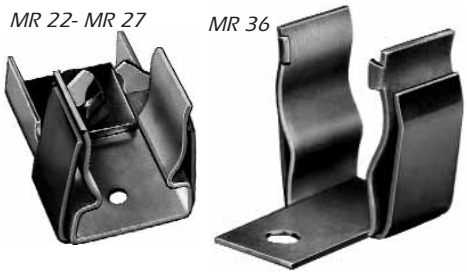
- PC board mount fuse clip
- For 13/32" (10mm) diameter fuses
- Tin plated spring brass
- 30A maxi



All Fuse Clips







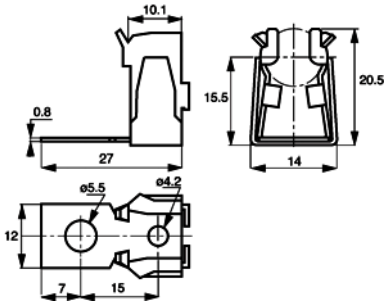
For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36 - 45 - 55

- SILVER-PLATED COPPER CLIPS: EXTREMELY HIGH THERMAL AND ELECTRIC CONDUCTIVITY
- MOUNTING TYPE:
  - SCREWING ON ISOLATORS
  - SCREWING ON BARS OR INSULATED BARS
  - WELDING ON P.C.B. (MR 10 CI)
- STAINLESS STEEL PRESSURE SPRINGS: HIGHLY RESISTANT TO SALT SPRAY

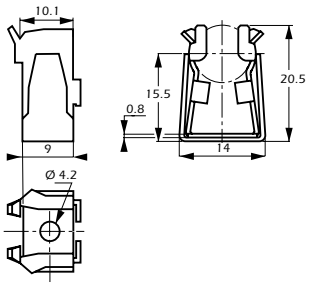
Main Characteristics

Designation	Current rating IN(A)	Maximum R.M.S continuous current through IN - rated current fuses (A)	Recommended copper cable section (mm^2)
MR 10	32	32	4
MR 10 CI	32	32	4
MR 14	63	63	10
MR 20	125	125	35
MR 22	135	135	35
MR 27	250	250	120
MR 36	250	250	120
MR 45	525	525	-
MR 55	750	750	-

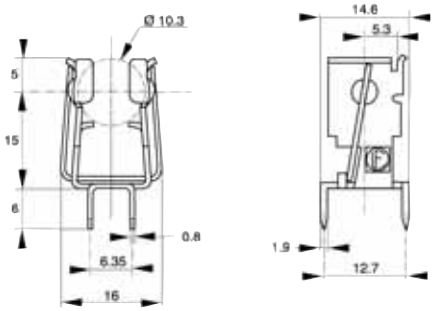
MR 10 - MR 10 CI



Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR10RESSORT	MR 10	B098004	7	20 pieces



Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR10RESSORTSP	MR 10 without connection	C098994	5,7	20 pieces



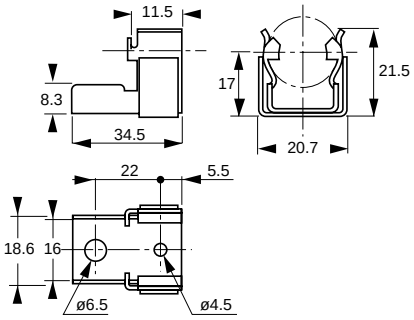
Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR10RESSORTCI	MR 10 CI	Y098507	4,5	200 pieces

All Fuse Clips

For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36

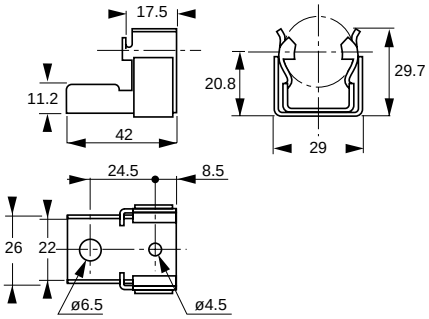
MR 14

Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR14SPRING	MR 14	G098170	16	10 pieces



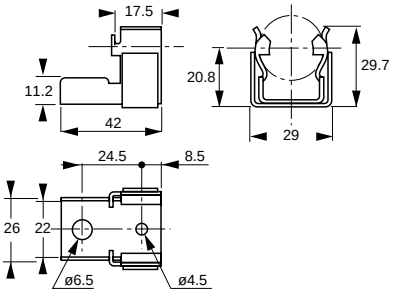
MR 20.6

Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR20RESSORT	MR 20.6	H099988	40	20 pieces



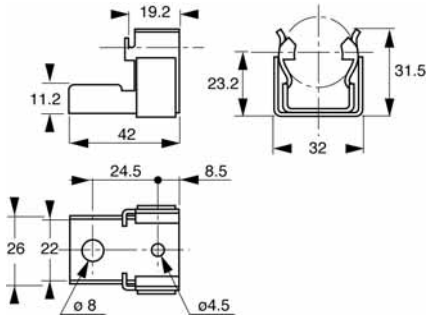
MR 22

Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR22SPRING	MR 22	K098909	40	10 pieces



MR 27

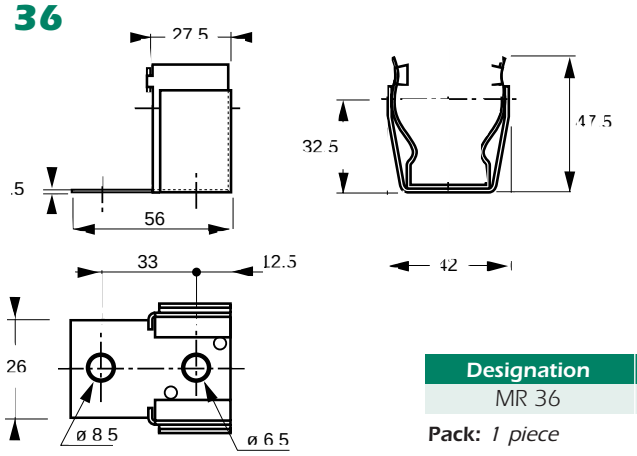
Catalog Number	Designation	Ref. Number	Weight (g)	Packaging
MR27RESSORT	MR 27	Y092734	50	20 pieces



All Fuse Clips

For Ferrule style Fuses
ø 10 - 14 - 22 - 27 - 36

MR 36

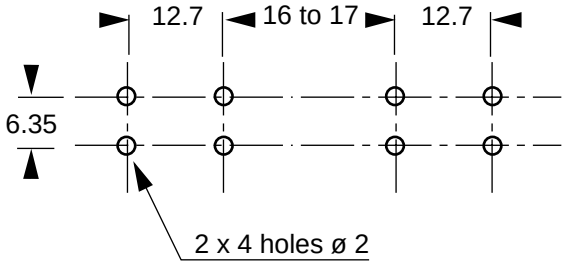


Designation	Ref. Number	Weight (g)	Catalog Number
MR 36	M091275	85	MR36R

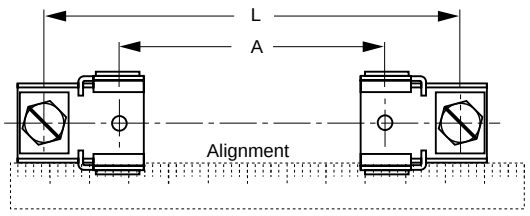
Pack: *1 piece*

All clips silver-plated copper with stainless steel springs.

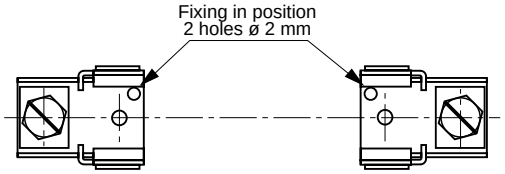
Mounting Instructions
P.C.B. Drilling for MR10 CI clip (10 X 38 Size Fuse)



Clip Mounting



Fuse size	A	L
10 x 38	31	61
14 x 51	42	86
22 x 58	42	91
20 x 51	36	85
20 x 127	113	162
20 x 190	175	224
27 x 60	41	91
36 x 127	100	148
36 x 190	165	231



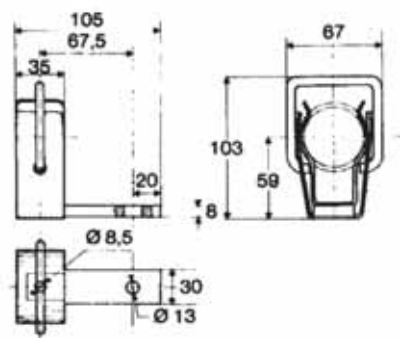
Mounting of two elastic stop pins of 2 mm dia. for fixing clips in position

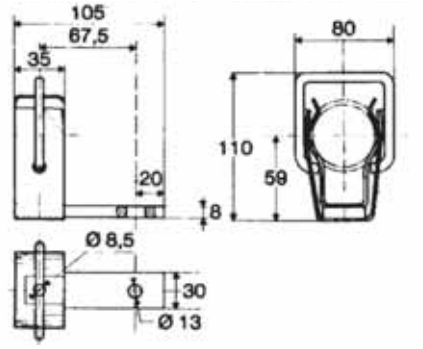
All Fuse Clips





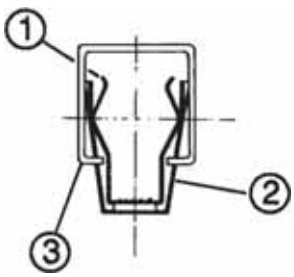
Dimensions MR45 - MR55





For fuse diameter	Designation	Reference Number	Catalog Number	Material ensuring the electrical contact (1)	Thermal current Ith (A)	Weight (g)
45	MR 45	L09647	MR45R	Silver-plated copper	525	450
55	MR55	L078969	MR55R	Silver-plated copper	750	450

Packaging: 1 piece



All the clips are made of an electrical contact (1) and a spring in stainless steel (2).
The clip MR 45 and MR 55 have also a padlocking system (3) which enables to stop in rotation the heavy fuses.

All Fuse Clips

Clip lock design for CL-14 series

The Clip Lock design provides a reliable, high-pressure contact. Ferraz Shawmut CL-14 fuses have copper tabs which slide into position between the clip casting and cam. When the cam is locked by moving the pull ring, a high-pressure contact is made between the clip casting and fuse tab. Each clip includes two .44" diameter counter-sunk holes on 2" centers and two flat head socket screws (3/8-16 UNRC, recommended torque 200 pound-inches) for mounting the clip on standard NEMA insulators. These clips will accommodate 5kV and 15kV CL-14 fuses rated 10E to 600E. Order catalog number 228-700-520 for one pair of fuse clips, enough for one fuse.

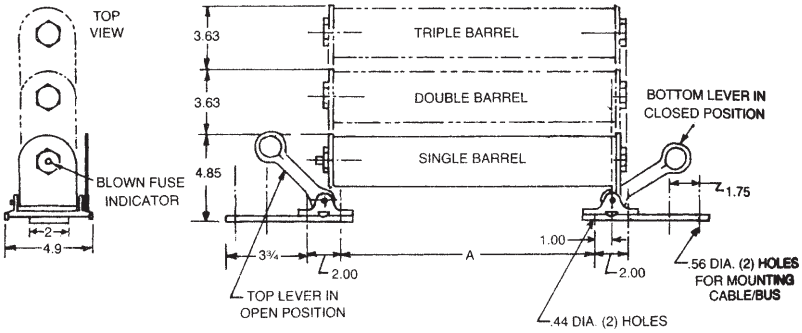


Cat. No. 228-700-520
(Pair at bottom)

Cat. No. 228-700-530
(Single at top)

Mounting Details for Clip Lock Cat. No. 228-700-520

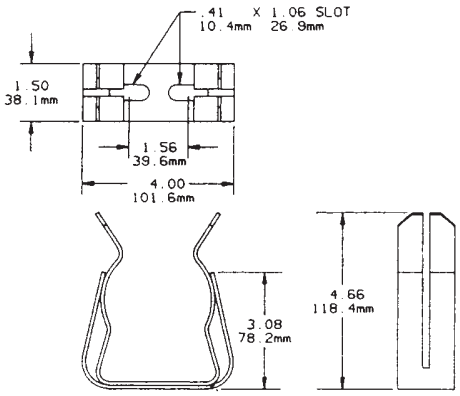
CL-14 Fuse Catalog Number	A Dimensions - Inches
A055C1DORO-(10E-150E)	13.25
A055C1DORO-(200E-400E)	19.25
A055C2DORO-(450E-600E)	19.25
A155C1DORO-(10E-50E)	19.25
A155C1DORO-(65E-100E)	19.25
A155C2DORO-(125E)	19.25
A155C3DORO-(150E-300E)	19.25



Clips for 3" diameter ferrule fuses

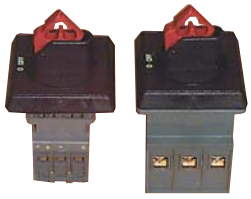
Cat. No. 228-700-530

These spring-reinforced clips will accommodate all 3" diameter, one and two barrel E-rated and R-rated medium voltage ferrule-type fuses. The clip and reinforcing spring are intended to be bolted to a copper bus bar through two .41" x 1.06" slots. A minimum copper-bus cross section of 1/4" x 1-1/2" is recommended for maximum fuse ratings of 24R and 450E. Catalog number is 228-700-530 for one pair of spring-reinforced clips, enough for one fuse.



Non-fused Switches Front-handle Modular IT 25 to 160A







MODULAR SWITCH-DISCONNECTORS INDICATED INTERRUPTION IT 25A TO 160A

Front-operated switches

- COMPLIANCE WITH: IEC 947- 1 and -3, AC 21, AC 23 J UP TO 690V, Uimp. ≥ 8KV. BS Standard.
- MOUNTING: 35 MM DIN RAIL, SCREWED ON BASE PLATE OR DOOR.
- FULLY MODULAR (FRAME ≤ 45 mm).
- EASY AND QUICK-TO-MOUNT ACCESSORIES (SNAP ON FOR 4TH POLE AND MICROSWITCHES).SPEEDS UP WIRING PROCESS WITH ELECTRICAL OR PNEUMATIC SCREW DRIVER.
- PROTECTION AGAINST HARSH CLIMATIC ENVIRONMENTS, HIGH WITHSTAND TO CREEPING ON INSULATEDMATERIALS UL94 V1.
- SNAP CONTACTS which ensures rapid disconnection regardjess of how fast the user turns the operation handle.
- HIGH-PERFORMANCE INTERRUPTING RATING (AC 23 & DC 23 CLASSES).
- FOR HIGHER RATINGS, REFER TO TECHNICAL DATA SHEETS.

Main Electrical Characteristics

			IT 25E	IT 32E	IT 50E	IT 63E	IT 80E	IT 125E	IT 160E
Rated operated current at ambient	40°c	Ith	25	32	50	63	80	125	160
Rated operational current under cover	40°c	Ithe	25	32	50	63	80	125	160
with a copper cable cross section of	Scu	mm²	4	6	16	16	50	70	70
Rated insulation voltage (Ui). Pollution class 3		V	750	750	750	750	750	750	750
Rated operational voltage AC-20 DC-20		V	750	750	750	750	750	750	750
Rated impulse withstand voltage		kV	8	8	8	8	8	8	12
Rated operating current AC22	500V	A	16	25	50	63	80	125	160
AC-21-A / AC-22-AAC21	690V	A	16	25	50	63	80	125	160
Rated operating current AC-23-A	≤415V		16	20	45	63	55	90	135
	500V	A	16	20	45	58	32	70	125
	690V		10	11	20	20	20	50	80
Rated operating power AC-23 with a 3-phase	220/240V		3	4	11	22	18,5	22	45
	380/440V	kW	7,5	9	22	37	30	45	75
1.500 rpm standard asynchronous motor at	500/690V		7,5/7,5	9/9	22/15	37/18,5	18,5/15	45/45	75/75
AC-23 Interrupting rating : Ic A	≤415V		128	160	340	640	440	720	1080
	500V	A	128	160	360	464	256	560	1000
under rated operating voltage (U)e	690V		80	88	160	160	160	400	640
DC-23-A rating operating current /poles in series**	110V		16/2	25/2	50/2	63/2	80/2	125/2	160/1
	220V	A	16/4	25/4	45/4	45/4	45/4	63/4	160/2
	440V		10/4	10/4	10/4	10/4	10/4	-	160/3
RMS permissible short duration (1.5) rated current	0,25s	kA	-	-	-	-	-	-	7
	1 s	kA	0,5	0,5	1	1,5	1,5	2,5	4
Mechanical endurance: operation cycles number (1 cycle = 1opening + 1closing of contacts)			10 000	10 000	10 000	10 000	10 000	10 000	10 000
Electrical endurance operation cycles number at Ie and cosφ 0.65	500V		3000	3000	3000	3000	3000	3000	1000
Power loss per pole		W	0,3	0,6	2,8	4,5	6,4	6,3	6,5
Tightening torque for terminals	mini	Nm	0,8	0,8	2	2	2,5	6	6
	maxi		0,88	0,88	2,2	2,2	2,75	6,6	6,6
Permissible section for tightening of copper wires (section ≥Scu is recommended)		mm²	0,75...10	0,75...10	1,5...35	2,5...35	2...50	10...70	10...70

*** To be realised by the user. Distributing poles per conductor e.g. 2poles in series*

Non-fused Switches
Front-handle Modular
IT 25 to 160A

Modular switch-disconnectors and accessories
Reference Number

Current rating Ith	Poles	Designation	Reference Number	Non-padlockable direct handle	Padlockable external handle 3 padlocks Ø 8 mm IP 65	Necessary shaft for external handle	Auxilliary contact 1 NC	Auxilliary contact 1 NO	Pole # 4 (for 3-pole switches only modulable on both sides)
DIN-rail or screwed on base mounting. IT with indicated interruption.							**2 contacts max. on each side**		
25 A	3 4	IT 25E III IT 25E IV	F210064 G210065	Suplied with switch (red handle*)	N207702 (Red & Yellow) H208571 (Black) (Necessary shaft)	M207701 (L = 130 mm) T208558 (L = 330 mm)	M207494 Located on left side	L207493 Located on right side	S208120 Prohibited for 4-pole switch
32 A	3 4	IT 32E III IT 32E IV	D207486 E207487						S208120 Prohibited for 4-pole switch
50 A	3 4	IT 50E III IT 50E IV	F207488 G207489						T208121 Prohibited for 4-pole switch
63 A	3 4	IT 63E III IT 63E IV	H207490 J207491						T208121 Prohibited for 4-pole switch
80 A	3 4	IT 80E III IT 80E IV	B208956 C208957				D210453 Double microswitch NO&NC		F208960 Prohibited for 4-pole switch
125 A	3 4	IT 125E III IT 125E IV	D208958 E208959						G208961 Prohibited for 4-pole switch
DIN-rail or screwed on base mounting. IT with visible interruption.									
160 A	3 4	IT 160E III IT 160E IV	D208107 E208108	G208110 black handle (no microswitch)	M209909 (black) (extended shaft is supplied) N209910 (Red & Yellow)	B210106 (L = 290 mm)	L208114 Necessity of using a K 208 113 base for enabling the mounting of 1 to 6 contacts auxiliary contacts (maxi 3 NO+3 NC). Cannot be mounted with the direct handle.	M208115	F208109 Prohibited for 4-pole switch Mounting on left side only (refer to drawing)

Catalog Number

Current rating Ith	Poles	Designation	Catalog Number	Non-padlockable direct handle	Padlockable external handle 3 padlocks Ø 8 mm IP 65	Necessary shaft for external handle	Auxilliary contact 1 NC	Auxilliary contact 1 NO	Pole # 4 (for 3-pole switches only modulable on both sides)
DIN-rail or screwed on base mounting. IT with indicated interruption.							**2 contacts max. on each side**		
25 A	3 4	IT 25E III IT 25E IV	IT25S3CF IT25S4CF	Suplied with switch (red handle*)	PINIT25/125 (Red & Yellow) PIRJIT25/125 (Black) (Necessary shaft)	A130IT25/125 (L = 130 mm) AIT330 (L = 330 mm)	FOIT25/125ETNO Located on left side	FOIT25/125ETNC Located on right side	4PIT25/32 Prohibited for 4-pole switch
32 A	3 4	IT 32E III IT 32E IV	IT32S3CF IT32S4CF						4PIT25/32 Prohibited for 4-pole switch
50 A	3 4	IT 50E III IT 50E IV	IT50S3CF IT50S4CF						4PIT50/63 Prohibited for 4-pole switch
63 A	3 4	IT 63E III IT 63E IV	IT63S3CF IT63S4CF						4PIT50/63 Prohibited for 4-pole switch
80 A	3 4	IT 80E III IT 80E IV	IT80S3CF IT80S4CF				FOIT25/125 INV Double microswitch NO&NC		4PIT80 Prohibited for 4-pole switch
125 A	3 4	IT 125E III IT 125E IV	IT125S3CF IT125S4CF						4PIT125 Prohibited for 4-pole switch
DIN-rail or screwed on base mounting. IT with visible interruption.									
160 A	3 4	IT 160E III IT 160E IV	IT160S3CF IT160S4CF	PIRNIT160 black handle (no microswitch)	PENITC32/160 (black) (extended shaft is supplied) PERJIT160 (Red & Yellow)	A290ITC50/160 (L = 290 mm)	FOIT160NC Necessity of using a K 208 113 base for enabling the mounting of 1 to 6 contacts auxiliary contacts (maxi 3 NO+3 NC). Cannot be mounted with the direct handle.	FOIT160NO	4PIT160 Prohibited for 4-pole switch Mounting on left side only (refer to drawing)

Non-fused Switches Front-handle Modular IT 25 to 160A

Ready to install complete switch

Switch + direct handle + External handle + Shaft 330 mm + Auxiliary preisolating contacts (No - Nc) Protection against Live Terminal Touching

Current rating Ith	Poles	Designation	Reference Number	Catalog Number
25A	3	IT 25 CIII Cde Front N&R	D 235201	IT25C3CFN
	4	IT 25 CIV Cde Front N&R	E 235202	IT25C4CFN
	3	IT 25 CIII Cde Front J&R	F 235203	IT25C3CFJ
	4	IT 25 CIV Cde Front J&R	G 235204	IT25C4CFJ
32A	3	IT 32 CIII Cde Front N&R	H 235205	IT32C3CFN
	4	IT 32 CIV Cde Front N&R	J 235206	IT32C4CFN
	3	IT 32 CIII Cde Front J&R	K 235207	IT32C3CFJ
	4	IT 32 CIV Cde Front J&R	L 235208	IT32C4CFJ
50A	3	IT 50 CIII Cde Front N&R	R 235213	IT50C3CFN
	4	IT 50 CIV Cde Front N&R	S 235214	IT50C4CFN
	3	IT 50 CIII Cde Front J&R	T 235215	IT50C3CFJ
	4	IT 50 CIV Cde Front J&R	V 235216	IT50C4CFJ
63A	3	IT 63 CIII Cde Front N&R	A 235221	IT63C3CFN
	4	IT 63 CIV Cde Front N&R	B 235222	IT63C4CFN
	3	IT 63 CIII Cde Front J&R	C 235223	IT63C3CFJ
	4	IT 63 CIV Cde Front J&R	D 235224	IT63C4CFJ
80A	3	IT 80 CIII Cde Front N&R	J 235229	IT80C3CFN
	4	IT 80 CIV Cder Front N&R	K 235230	IT80C4CFN
	3	IT 80 CIII Cde Front J&R	L 235231	IT80C3CFJ
	4	IT 80 CIV Cde Front J&R	M 235232	IT80C4CFJ
125A	3	IT 125 CIII Cde Front N&R	S 235237	IT125C3CFN
	4	IT 125 CVI Cde Front N&R	T 235238	IT125C4CFN
	3	IT 125 CIII Cde Front J&R	V 235239	IT125C3CFJ
	4	IT 125 CIV Cde Front J&R	W 235240	IT125C4CFJ
160A	3	IT 160 CIII Cde Front N&R	B 235245	IT160C3CFN
	4	IT 160 CIV Cde Front N&R	C 235246	IT160C4CFN
	3	IT 160 CIII Cde Front J&R	D 235247	IT160C3CFJ
	4	IT 160 CIV Cde Front J&R	E 235248	IT160C4CFJ

External handle : N&R = black - J&R = red and yellow

Control

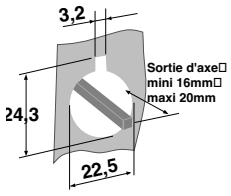
Direct handle IT 160 E
G208110



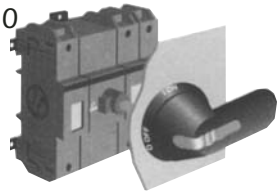
External type handle IT 25 to 125
N207702
H208571



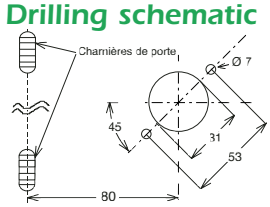
Drilling diagram



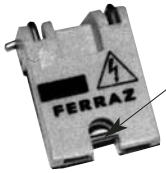
External type handle IT 160 E
M209909
N209910



Drilling schematic







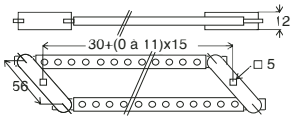
Ø 4 maxi

Padlocking device
P207496

Accessories for outside control

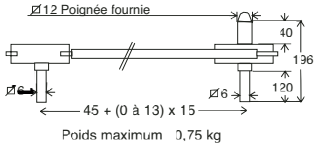
688-pole system: N097118 for IT 25 E to 125 E

To order with outside handle and 2 axles



688-pole system:

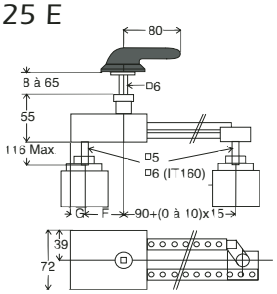
A209024 for IT 160 E



Reversing system 1-0-2:

A092598 for IT 25 E to 125 E
T081713 for IT 160 E

Outside handle supplied with



Non-fused Switches
Front-handle Modular
IT 25 to 160A

On door or side mounting Switch-disconnector. Modular switch-disconnector and accessories

Current rating Ith	Poles	Designation	Reference Number	Padlockable handle for on door mounting		Auxilliary contact 1 NC (left)	Auxilliary contact 1 NO (right)	Supplementary pole P : Phase - T : Ground
				Red & Yellow	Black			
32 A	3 4	IT 32ET III Select a 3-pole plus a 4th pole	N208116	P208117 P209083	Q208118 Q209084	M207494	L207493	R208119 (P) T209754 (T)
50 A	3 4	IT 50ET III Select a 3-pole plus a 4th pole	R209085	P209083	Q209084	Two contacts max. can be snapped-on		T209087 (P) V209755 (T)
63 A	3 4	IT 63ET III Select a 3-pole plus a 4th pole	S209086					T209087 (P) V209755 (T)
80 A	3 4	IT 80ET III Select a 3-pole plus a 4th pole	M235485					T209087 (P) V209755 (T)

Current rating Ith	Poles	Designation	Catalog Number	Padlockable handle for on door mounting		Auxilliary contact 1 NC (left)	Auxilliary contact 1 NO (right)	Supplementary pole P : Phase - T : Ground
				Red & Yellow	Black			
32 A	3 4	IT 32ET III Select a 3-pole plus a 4th pole	IT32S3MP	PICRJIT32ET PIRJIT32ET	PINCIT32ET PINIT32ET	FOIT25/125ET NO	FOIT25/125ET NC	4PIT32ET(P) PTIT32ET(T)
50 A	3 4	IT 50ET III Select a 3-pole plus a 4th pole	IT50S3MP	PIRJIT32ET	PINIT32ET	Two contacts max. can be snapped-on		4PIT50/63ET(P) PTIT50/63ET(T)
63 A	3 4	IT 63ET III Select a 3-pole plus a 4th pole	IT63S3MP					4PIT50/63ET(P) PTIT50/63ET(T)
80 A	3 4	IT 80ET III Select a 3-pole plus a 4th pole						4PIT50/63ET(P) PTIT50/63ET(T)

Ready to install on door or side complete switch

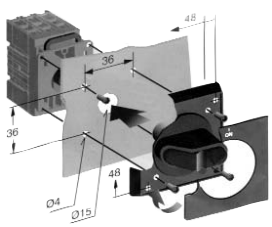
Switch with handle and auxiliary contact (preisolating)

Current rating Ith	Poles	Designation	Reference Number	Catalog Number
32A	3	IT 32 CIII Cde Porte N&R	M 235209	IT32C3CPN
	4	IT 32 CIV Cde Porte N&R	N 235210	IT32C4CPN
	3	IT 32 CIII Cde Porte J&R	P 235211	IT32C3CPJ
	4	IT 32 CIV Cde Porte J&R	Q 235212	IT32C4CPJ
50A	3	IT 50 CIII Cde Porte N&R	W 235217	IT50C3CPN
	4	IT 50 CIV Cde Porte N&R	X 235218	IT50C4CPN
	3	IT 50 CIII Cde Porte J&R	Y 235219	IT50C3CPJ
	4	IT 50 CIV Cde Porte J&R	Z 235220	IT50C4CPJ
63A	3	IT 63 CIII Cde Porte N&R	E 235225	IT63C3CPN
	4	IT 63 CIV Cde Porte N&R	F 235226	IT63C4CPN
	3	IT 63 CIII Cde Porte J&R	G 235227	IT63C3CPJ
	4	IT 63 CIV Cde Porte J&R	H 235228	IT63C4CPJ
80A	3	IT 80 CIII Cde Porte N&R	N 235233	IT80C3CPN
	4	IT 80 CIV Cde Porte N&R	P 235234	IT80C4CPN
	3	IT 80 CIII Cde Porte J&R	Q 235235	IT80C3CPJ
	4	IT 80 CIV Cde Porte J&R	R 235236	IT80C4CPJ
125A	3	IT 125 CIII Cde Porte N&R	X 235241	IT125C3CPN
	4	IT 125 CIV Cde Porte N&R	Y 235242	IT125C4CPN
	3	IT 125 CIII Cde Porte J&R	Z 235243	IT125C3CPJ
	4	IT 125 CIV Cde Porte J&R	A 235244	IT125C4CPJ

External handle : N&R = black / J&R = red and yellow

Control for on-door or side mounting - IT 32 to 63 ET

Handle for IT32 & 63ET
P209083
Q209084



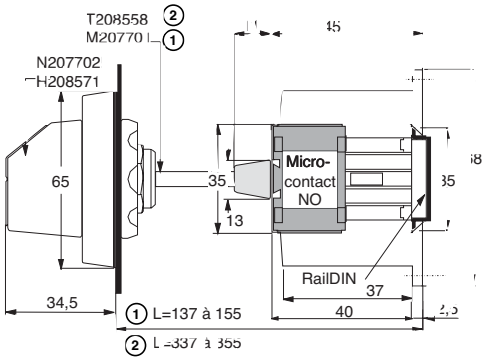
Handle for IT 32ET
P208117
Q208118

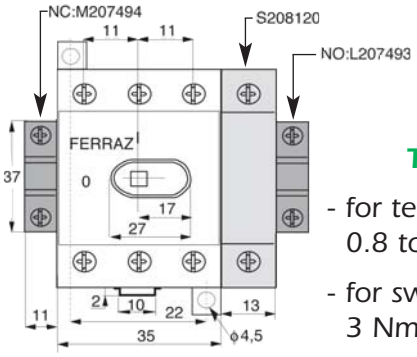


Non-fused Switches
Front-handle Modular
IT 25 to 160A

Dimensions

IT 25E - IT 32E

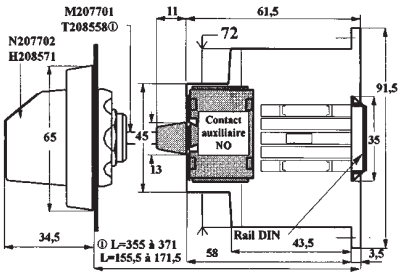


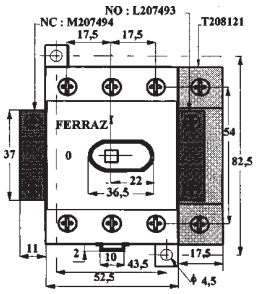


Tightening torques

- for terminals (Pozidrive screw) 0.8 to 0.88 Nm
- for switches (M4 screw) 3 Nm maximum.

IT 50E - IT 63E

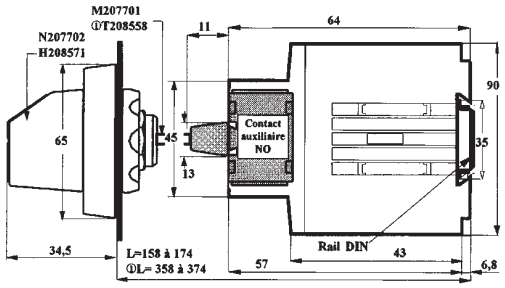


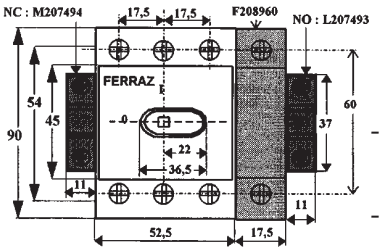


Tightening torques

- for terminals (Pozidrive screw) 2 to 2.2 Nm
- for switches (M4 screw) 3 Nm maximum.

IT 80E

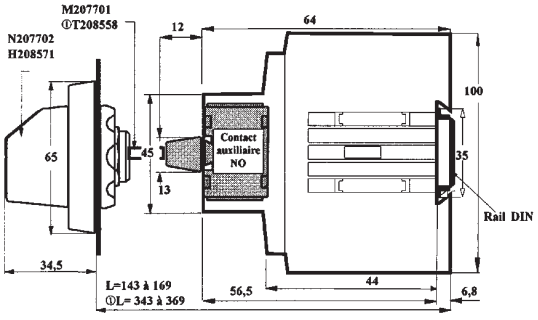


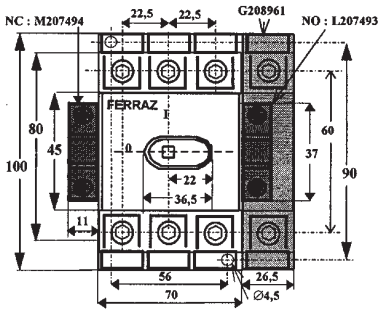


Tightening torques

- for terminals (Pozidrive screw) 2.5 to 2.75 Nm
- for switches (M4 screw) 3 Nm maximum.

IT 125E



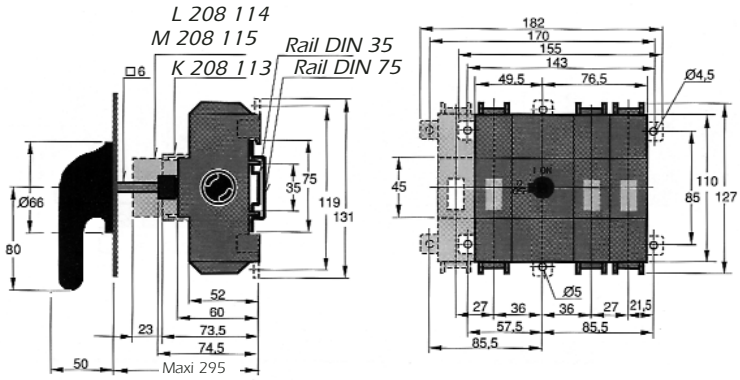


Tightening torques

- for terminals (Pozidrive screw) 6 to 6.6 Nm
- for switches (M4 screw) 3 Nm maximum.

Non-fused Switches
Front-handle Modular
IT 25 to 160A

IT 160 E

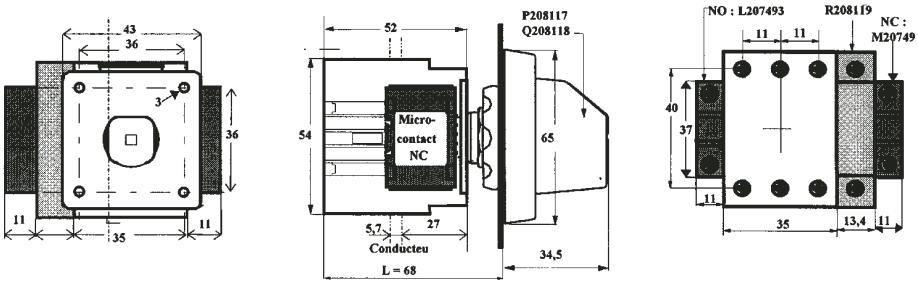


Tightening torques

- for terminals (Hc screw) 6 to 6.6 Nm
- for switches (M4 screw) 3 Nm maximum.

Dimensions on door or side mounting switches

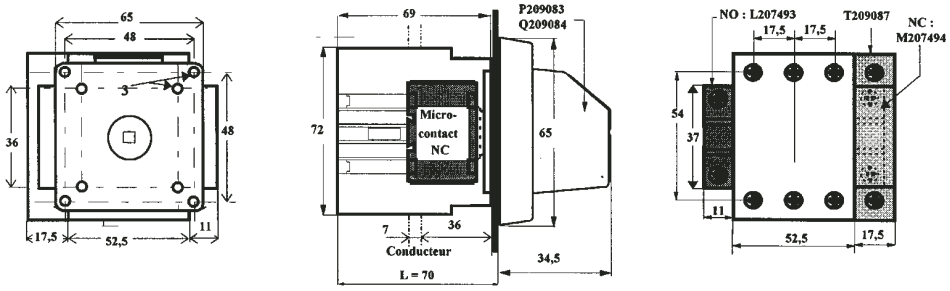
IT 32 ET



Tightening torques

- for terminals (Pozidrive screw) 0.8 to 0.88 Nm
- for switches to be snapped on handles P208117 and Q208118
- for switches to be screwed via handles P209083 and Q209084 with 0.7 Nm max tightening torque

IT 50 ET 63 ET



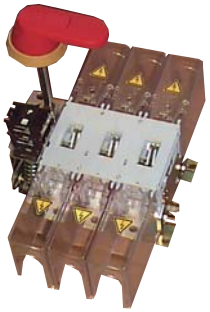
Tightening torques

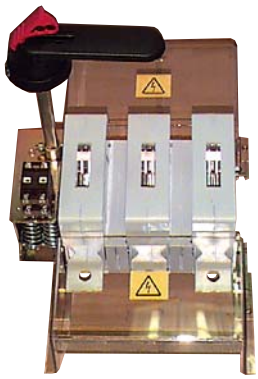
- for terminals (Pozidrive screw) 2 to 2.2 Nm
- for switches to be screwed via handles P209083 and Q209084 with 0.7 Nm max tightening torque

Ref. Number	D207486	E207487	F207488	G207489	H207490	J207491	L207493	M207494	P207496	M207701	N207702	D208107	E208108	F208109	G208110	K096609	K208113	L208114	M208115	N208116
Weight	110 g	150 g	270 g	350 g	270 g	350 g	20 g	20 g	5 g	25 g	70 g	1 kg	1,3 kg	300 g	20 g	50 g	10 g	20 g	20 g	130 g

Ref. number	P208117	Q208118	R208119	S208120	T208121	T208558	H208571	B208956	C208957	D208958	E208959	F208960	G208961	P209083	Q209084	R209085	S209086	T209087	M209909	N209910
Weight	70 g	70 g	30 g	50 g	70 g	70 g	70 g	310 g	450 g	360 g	500 g	140 g	140 g	70 g	70 g	270 g	270 g	80 g	100 g	100 g

Non-fused Switches Front-handle IT 250 to 800A





CONTROL: FRONT HANDLE PADLOCKABLE IN OFF-POSITION WITH 3 PADLOCKS. SAFE AND RELIABLE INDICATION OF POSITION BY HANDLES.
INTERRUPTING: VISIBLE INTERRUPTION. AC 23 & DC 23 ON LOAD OPENING AND CLOSING.
INSULATION VOLTAGE: 1000 V.
MECANISM: SNAP CONTACTS which ensures rapid disconnection regardjess of how fast the user turns the operation handle.
FIXING: ON-BOARD OR ON-FRAME FOR CUBICLE BACKGROUND.
CONSTRUCTION: COMPLYING WITH IEC AND EN60 947 1&3
PROTECTION DEGREE (WITH ACCESSORIES): IP 2X.
PROTECTION FOR ANY CLIMATE.
SILVER-PLATED COPPER ELECTRIC CONTACTS.
ISOLATING PARTITIONS MADE WITH UL 94 VO MATERIALS.
3 AND 4-POLE IN STANDARD MODELS.
6 & 8-POLE MOUNTING AS ACCESSORIES.
PRE-ISOLATING AND TERMINAL SHROUDS AS ACCESSORIES.

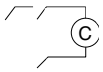
Main electrical characteristics

			IT 250K	IT 315K	IT 350K	IT 500K	IT 630K	IT 800K
Rated operating current at ambient Rated operating current under cover	40°c 40°c	Ith Ithe	250 200	315 270	350 315	500 500	630 630	800 720
Rated insulation voltage (Ui). Pollution class 3		V	1000	1000	1000	1000	1000	1000
Rated operatingl voltage AC-20 DC-20 Rated impulse withstand voltage		V kV	1000 12	1000 12	1000 12	1000 12	1000 12	1000 12
RMS prospective short-circuit current with aM or gG class FerrazSchawmut fuses. Fuse Rating Permissible peak let-through current		kA A kA	100 200 40	100 250 40	100 315 40	100 400 45	80 630 55	80 800 ——
Rated operating current AC-21-A and AC-22-A	690 V	A	200	250	315	500	630	800
Rated operating current AC-23-A	≤ 415 V 500 V 690 V	A	200 200 200	250 250 250	315 315 315	500 500 350	630 580 350	720 600 350
Rated operating power AC-23 in kW with a 3-phase 1.500 rpm standard asynchronous motor at	415 V 500 V 690 V	kW	90 132 170	132 160 200	160 200 250	200 315 315	315 355 355	**355** **400** **355**
AC-23 interrupting rating: Ic at cos φ = 0.35) under rated operating voltage (Ue)	≤ 500 V 690 V	A	1600 1600	2000 2000	2520 2520	4000 2800	4640 2800	4800 2800
DC-23-A rating operating current / poles in series** for	110 V 220 V 440 V	A	200/2 200/2 200/3	250/2 250/2 250/3	315/2 315/2 315/3	400/2 400/2 400/3	630/2 630/2 400/3	800/2 630/2 400/3
RMS permissible short duration (1s) rated current		kA	8	8	8	16	17	17
Mechanical endurance: operating cycle number (1 cycle = 1 opening + 1 closing of contacts)			8 000	8 000	8 000	5 000	5 000	5 000
Electrical endurance: operating cycle number at Ie and cos φ 0.65	500 V		1000	1000	1000	1000	1000	500
Power loss per pole		W	3,5	5,5	8,5	13	22	40
Tightening torque for terminals	mini maxi	N.m	15 22	30 44	30 44	30 44	50 75	50 75

*** To be connected in series by user.*
Distributing poles per conductor e.g. 2 poles in series.



E.g. 3 poles in series, recommended mounting for 3-pole switches.

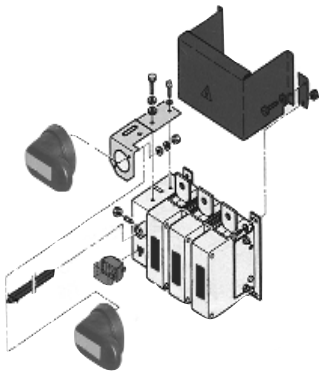


Non-fused Switches
Front-handle
IT 250 to 800A

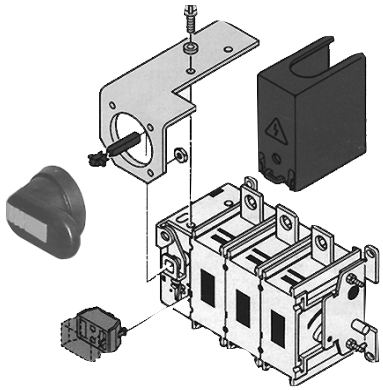
Switch-disconnectors visible interruption and accessories

Standard switches

Current rating Ith	Pole	Designation	Reference Number	Catalog Number
250 A	3	IT 250 K III	L 202 134	IT250S3CF
	4	IT 250 K IV	D 202 127	IT250S4CF
315 A	3	IT 315 K III	R 202 139	IT315S3CF
	4	IT 315 K IV	P 202 137	IT315S4CF
350 A	3	IT 350 K III	F 202 152	IT350S3CF
	4	IT 350 K IV	E 202 151	IT350S4CF
500 A	3	IT 500 III	M 096 450	IT500S3CF
	4	IT 500 IV	P 096 498	IT500S4CF
630 A	3	IT 630 K III	M 096 151	IT630S3CF
	4	IT 630 K IV	N 096 152	IT630S4CF
800 A	3	IT 800 K III	P 096 153	IT800S3CF
	4	IT 800 K IV	Q 096 154	IT800S4CF



IT 630



IT 250

All of the following items are supplied separately.
For additional adaptations see "Accessories" section and order selected reference numbers.

Microswitch characteristics

Microswitch Reference Number	Minimum for safe operation	Maximum for operation in AC 12	Application
① Y 202 168 ① S 086 588 ② Z 202 169 ② L 097 300	24 V 25 mA AC / DC	690 V 2 A cos φ = 0,9	① Single-standard microswitch ② Twin-standard microswitch
③ H 208 019 ③ J 208 020	24 V 10 mA AC / DC	690 V 2 A cos φ = 0,9	③ Single microswitch: Aggressive environment or connection with a programmable machine

Non-fused Switches Front-handle IT 250 to 800A

Accessories

Reference Number

Current rating Ith	Pre-isolating microswitch Single microswitch ① 1 NO - 1 NC Twin microswitch ② 1 NO - 1 NC Low level micro. ③ 1 NO - 1 NC	Protection against live terminal touching ● One shroud per terminals ❂ One partition upstream and one downstream	Inside ☛ or outside▼ black handle padlockable with 3 padlocks (8 mm dia.) ▼ (Door locked when handle is ON)	Inside ☛ or outside▼ red and yellow handle padlockable with 3 padlocks (Ø 8 mm) ▼ (Door locked when handle is ON)	☛ Adaptation part for inside control handle (accessory)	Long shaft without handle for outside control
250 A 315 A 350 A	① Y 202 168 ② Z 202 169 ③ H 208 019	● A 202 170	S 209914 Supplied with a 140 mm shaft ☛ (for inside handle order control adaptation)	T 209915 Supplied with a 140 mm shaft ☛ (for inside handle order control adaptation)	X 202 167	W 202 166 240 mm shaft D 210 108 500 mm shaft
500 A III VI	① S 086 588 ② L 097 300 ③ J 208 020	❂ Q 096 499 ❂ Z 096 507	Q 209912 Supplied with a 250 mm shaft ☛ (for inside handle order control adaptation)	R 209913 Supplied with a 250 mm shaft ☛ (for inside handle order control adaptation)	C 092 600	L 097 093 395 mm shaft P 092 979 465 mm shaft
630 A III VI		❂ F 080 137 ❂ E 080 136				
800 A III VI		❂ G 080 138 ❂ D 080 135				

Catalog Number

Current rating Ith	Pre-isolating microswitch Single microswitch ① 1 NO - 1 NC Twin microswitch ② 1 NO - 1 NC Low level micro. ③ 1 NO - 1 NC	Protection against live terminal touching ● One shroud per terminals ❂ One partition upstream and one downstream	Inside ☛ or outside▼ black handle padlockable with 3 padlocks (8 mm dia.) ▼ (Door locked when handle is ON)	Inside ☛ or outside▼ red and yellow handle padlockable with 3 padlocks (Ø 8 mm) ▼ (Door locked when handle is ON)	☛ Adaptation part for inside control handle (accessory)	Long shaft without handle for outside control
250 A 315 A 350 A	① FOIT250NO/NC ② FOIT2502NO/NC ③ FOIT250/350AU	● CBIT250/350	PERNIT250/350 Supplied with a 140 mm shaft ☛ (for inside handle order control adaptation)	PERJIT250/350 Supplied with a 140 mm shaft ☛ (for inside handle order control adaptation)	APIIT250/350	A240IT250/350 240 mm shaft A500IT250/350 500 mm shaft
500 A III VI	① FOIT500NO/NC ② FOIT5002NO/NC ③ FOIT5002NONCBN	❂ CBIT5003 ❂ CBIT5004	PERNIT500/1600 Supplied with a 250 mm shaft ☛ (for inside handle order control adaptation)	PERJIT500/1600 Supplied with a 250 mm shaft ☛ (for inside handle order control adaptation)	APIIT500/800	A395IT500ITC250 395 mm shaft A465IT500/ITC250 465 mm shaft
630 A III VI		❂ CBIT6303 ❂ CBIT6304				
800 A III VI		❂ CBIT8003 ❂ CBIT8004				

Non-fused Switches
Front-handle
IT 250 to 800A

Ready to install complete switch

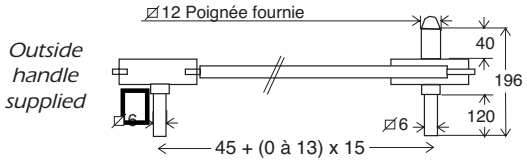
Switch with direct handle + external handle + auxiliary contact (2 NO + 2 NC) + protection against live terminal touching

Current rating Ith	Poles	Designation	Reference Number	Catalog Number
250A	3	IT 250 CIII Cde Front N&R	F 235249	IT250C3CFN
	4	IT 250 CIV Cde Front N&R	G 235250	IT250C4CFN
	3	IT 250 CIII Cde Front J&R	H 235251	IT250C3CFJ
	4	IT 250 CIV Cde Front J&R	J 235252	IT250C4CFJ
315A	3	IT 315 CIII Cde Front N&R	P 235257	IT315C3CFN
	4	IT 315 CIV Cde Front N&R	Q 235258	IT315C4CFN
	3	IT 315 CIII Cde Front J&R	R 235259	IT315C3CFJ
	4	IT 315 CIV Cde Front J&R	S 235260	IT315C4CFJ
350A	3	IT 350 CIII Cde Front N&R	Y 235265	IT350C3CFN
	4	IT 350 CIV Cde Front N&R	Z 235266	IT350C4CFN
	3	IT 350 CIII Cde Front J&R	A 235267	IT350C3CFJ
	4	IT 350 CIV Cde Front J&R	B 235268	IT350C4CFJ
500A	3	IT 500 CIII Cde Front N&R	G 235273	IT500C3CFN
	4	IT 500 CIV Cde Front N&R	H 235274	IT500C4CFN
	3	IT 500 CIII Cde Front J&R	J 235275	IT500C3CFJ
	4	IT 500 CIV Cde Front J&R	K 235276	IT500C4CFJ
630A	3	IT 630 CIII Cde Front N&R	N 235279	IT630C3CFN
	4	IT 630 CIV Cde Front N&R	P 235280	IT630C4CFN
	3	IT 630 CIII Cde Front J&R	Q 235281	IT630C3CFJ
	4	IT 630 CIV Cde Front J&R	R 235282	IT630C4CFJ
800A	3	IT 800 CIII Cde Front N&R	V 235285	IT800C3CFN
	4	IT 800 CIV Cde Front N&R	W 235286	IT800C4CFN
	3	IT 800 CIII Cde Front J&R	X 235287	IT800C3CFJ
	4	IT 800 CIV Cde Front J&R	Y 235288	IT800C4CFJ

External handle : N&R = black / J&R = red and yellow

Accessories for outside control

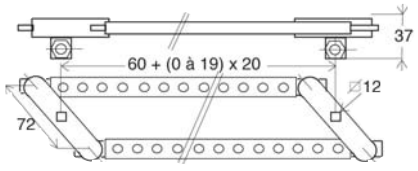
VI and VIII-pole system: for IT 250 K to 350 K
Ref N°:B202171 - Cat.N°:ADAIT250/350



Maximum weight: 0,80 kg

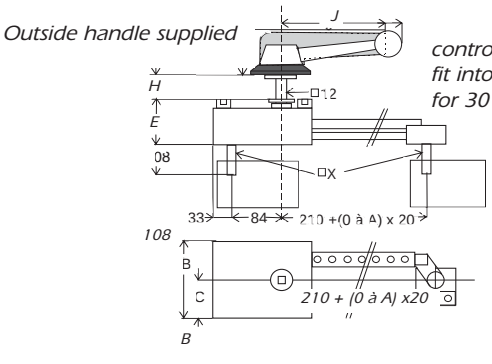
VI and VIII-pole: for IT 500 K to 800 K
Ref N°: P097119 - Cat N°: ADAIT500/1600

To order with outside handle and an additional shaft



Weight: 0,90 kg

Reverse system 1-0-2: for IT250 K to 350 K
for IT 500 K to 800 K



Reference Number	Switch model	A	B mm	C mm	D mm	E mm	H mm	J mm	X mm	Weight (kg)	Catalog Number
C 202 172	IT 250 to 350 K	11	83	34	61	53	8 à 15	145	8	2,75	INVIT250/350
B 092 599	IT 500 to 800 K	18	90	40	100	63	16 à 23	220	12	4,60	INVIT500/1600

C 202 172 plastic handle. B 092 599 metal handle.

NOTE: *Weights given without accessories. Tightening torques of switches depend on quality of bolts.*

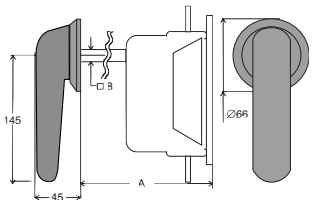
Non-fused Switches Front-handle IT 250 to 800A

Control handles dimensions

Inside padlockable side

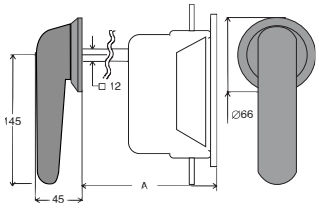
Handle Ref. number	Color	Switch model	A: mounting depth	A: with long shaft (or)	A: with long shaft (or)
				W 202 166*	D210108*
S 209 914	Black	IT 250 K	120 mm	220	480
T 209 915	Red	IT 315 K IT 350 K	to 200 mm	to 300 mm	to 560 mm

**Only long shaft. Must be ordered with handle. Weight: 0,25 kg.*



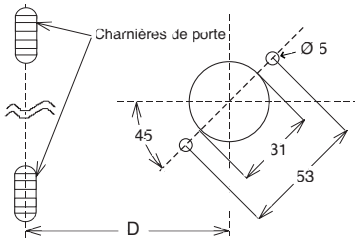
Handle Ref. number	Color	Switch model	A: mounting depth	A: with long shaft (or)	A: with long shaft (or)
				L 097 093*	P092979*
Q 209912	Black	IT 500 K	230	375	445
R209913	Red	IT 630 K IT 800 K	to 320 mm	to 460 mm	to 540 mm

**Only long shaft. Must be ordered with handle. Weight: 0,25 kg.*



Drilling for outside handles

Handle Ref. number	D: minimal distance between door hinges shaft and handle shaft	Catalog Number
S 209914	150 mm	PERNIT250/350
T 209915		PERJIT250/350
Q 209912	80 mm	PERNIT500/1600
R 209913		PERJIT500/1600



Shroud for protection against live part touching

Terminal Shroud Ref.number	Switch model	A	B	C	Weight	Figure	Catalog Number
A202170	IT 250K IT 315K IT 350K	92,5	105	44	70 g	1	CBIT250/3503
Q 096499	IT 500K III	125	120	175	250 g	2	CBIT5004
Z 096507	IT 500K IV	125	120	221	300 g	2	CBIT5004
F 080137	IT 630K III	125	120	207	260 g	2	CBIT6303
E 080136	IT 630K IV	125	120	269	310 g	2	CBIT6304
G 080138	IT 800K III	125	120	223	270 g	2	CBIT8003
D 080135	IT 800K IV	125	120	293	320 g	2	CBIT8004

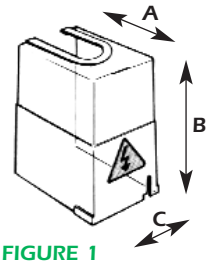


FIGURE 1

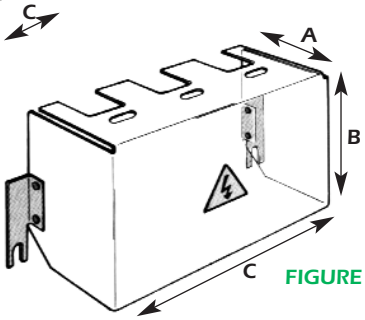


FIGURE 2

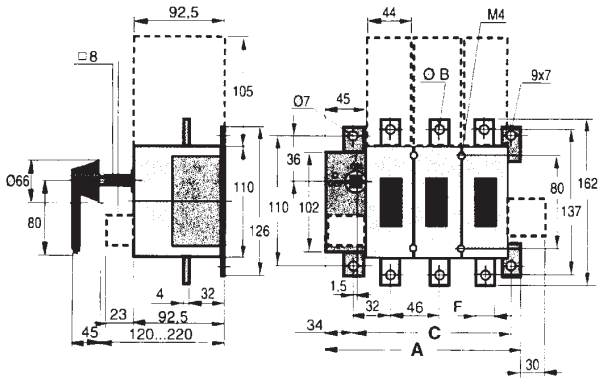
Non-fused Switches
Front-handle
IT 250 to 800A

Dimensions and weigth

IT 250 K - 315 K - 350 K

Pole	IT 250 K		IT 315 K		IT 350 K	
	III	IV	III	IV	III	IV
A (mm)	199	245	199	245	199	245
Ø B (mm)	9	9	11	11	11	11
C (mm)	157	203	157	203	157	203
F (mm)	20	20	25	25	25	25
Weight (kg)	3	3,7	3	3,7	3	3,7

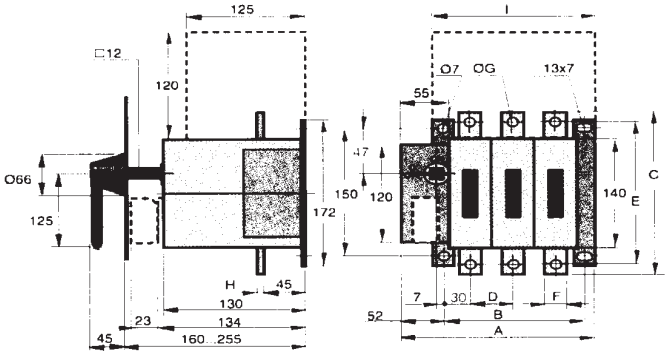
Terminal tightening torque: M8 bolt 15 N.m to 22 N.m
M10 bolt 30 N.m to 44 N.m
Tightening torques for switches: M6 screw 6 N.m to 10 N.m



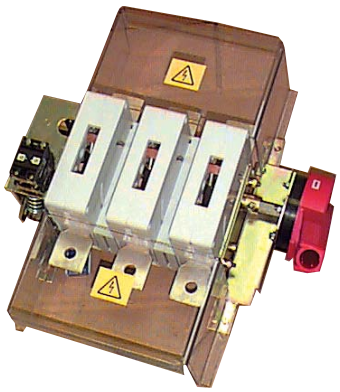
IT 500 K - 630 K - 800 K

Pole	IT 500 K		IT 630 K		IT 800 K	
	III	IV	III	IV	III	IV
A (mm)	216	262	248	310	264	334
B (mm)	153	199	185	247	201	271
C (mm)	205	205	223	223	223	223
D (mm)	46	46	62	62	70	70
E (mm)	180	180	185	185	185	185
F (mm)	25	25	40	40	40	40
ø G (mm)	11	11	13,5	13,5	13,5	13,5
H (mm)	4	4	5	5	5	5
I (mm)	175	221	207	269	223	293
Weight (kg)	5,2	6,4	6,2	7,6	6,2	7,6

Terminal tightening torque: M10 bolt 30 N.m to 44 N.m
M12 bolt 50 N.m to 75 N.m
Tightening torques for switches: M6 screw 6 N.m to 10 N.m



Non-fused Switches Side-handle IT 250 to 800A



Switch-disconnectors visible interruption IT 250A to 800A Side-operated switches

CONTROL: SIDE-HANDLE PADLOCKABLE IN OFF-POSITION WITH 3 PADLOCKS SAFE AND RELIABLE INDICATION OF POSITION BY HANDLES.
INTERRUPTING: VISIBLE INTERRUPTION.AC 23 & DC 23 ON LOAD OPENING AND CLOSING.
INSULATION VOLTAGE: 1000 V.
MECANISM: SNAP CONTACTS which ensures rapid disconnection regardjess of how fast the user turns the operation handle.
FIXING: ON-BOARD OR ON-FRAME FOR CUBICLE BACKGROUND.
CONSTRUCTION: COMPLYING WITH IEC 947 1&3 AND EN 60 947.- 1 AND - 3
PROTECTION DEGREE (WITH ACCESSORIES): IP 2X.
PROTECTION FOR ANY CLIMATE.
SILVER-PLATED COPPER ELECTRIC CONTACTS.
ISOLATING PARTITIONS MADE WITH UL 94 VO MATERIALS.
3 AND 4-POLE IN STANDARD.
6 & 8-POLE MOUNTING AS ACCESSORIES.

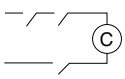
Main electrical characteristics

Code			IT 250A	IT 315A	IT 350A	IT 500A	IT 630A	IT 800A
Rated operational current at ambiant Rated operational current under cover	40°c 40°c	Ith Ithe	250 200	315 270	350 315	500 500	630 630	800 720
Rated insulation voltage (Ui). Pollution class 3		V	1000	1000	1000	1000	1000	1000
Rated operational voltage AC-20 DC-20 Rated impulse without voltage		V kV	1000 12	1000 12	1000 12	1000 12	1000 12	1000 12
RMS Prospective short-circuit current with aM or gG class FerrazSchawmut fuses fuse rating Permissible peak let-through current		kA A kA	100 200 40	100 250 40	100 315 40	100 400 45	80 630 55	80 800 ——
Rated operating current AC-21-A / AC-22-A	690 V	A	200	250	315	500	630	800
Rated operating current AC-23-A	≤ 415 V 500 V 690 V	A	200 200 200	250 250 250	315 315 315	500 500 350	630 580 350	720 600 350
Rated operating power AC-23 (kW) with a 3-phase 1.500 rpm standard asynchronous motor at	415 V 500 V 690 V	kW	90 132 170	132 160 200	160 200 250	200 315 315	315 355 355	355 400 355
AC-23 Interrupting rating : Ic A at cos φ = 0.35 under rated operating voltage (Ue)	≤ 500 V 690 V	A	1600 1600	2000 2000	2520 2520	4000 2800	4640 2800	4800 2800
DC-23-A rating operating current / poles in series** for	110 V 220 V 440 V	A	200/2 200/2 200/3	250/2 250/2 250/3	315/2 315/2 315/3	400/2 400/2 400/3	630/2 630/2 400/3	800/2 630/2 400/3
RMS permissible short duration (1s) rated current		kA	8	8	8	16	17	17
Mechanical endurance : operation cycles number (1 cycle = 1 opening + 1 closing of contacts)			8 000	8 000	8 000	5 000	5 000	5 000
Electrical endurance : operation cycles number at Ie and cos φ 0.65	500 V		1000	1000	1000	1000	1000	500
Power loss per pole		W	3,5	5,5	8,5	13	22	40
Tightening torque for terminals	mini maxi	N.m	15 22	30 44	30 44	30 44	50 75	50 75

*** To be connected in series by user*
Distributing poles per conductor e.g. 2 poles in series



E.g. 3 poles in series, advised mounting for 3-pole switches



Non-fused Switches
Side-handle
IT 250 to 800A

Standard switches

The following items are supplied separately.
For additional adaptations refer to the Accessories section and order selected reference numbers.

Current rating Ith	Pole	Designation	Reference Number	Catalog Number
250 A	3	IT 250 KM III	M 210070	IT250S3CL
	4	IT 250 KM IV	N 210071	IT250S4CL
315 A	3	IT 315 KM III	P 210072	IT315S3CL
	4	IT 315 KM IV	Q 210073	IT315S4CL
350 A	3	IT 350 KM III	R 210074	IT350S3CL
	4	IT 350 KM IV	S 210075	IT350S4CL
500 A	3	IT 500 KM III	T 210076	IT500S3CL
	4	T 500 KM IV	V 210077	IT500S4CL
630 A	3	IT 630 KM III	W 210078	IT630S3CL
	4	IT 630 KM IV	X 210079	IT630S4CL
800 A	3	IT 800 KM III	Y 210080	IT800S3CL
	4	IT 800 KM IV	Z 210081	IT800S4CL

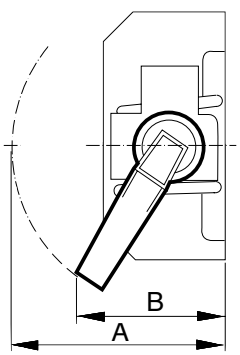
Microswitch characteristics

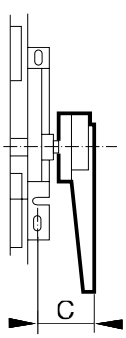
Reference Number	Minimum for safe operation	Maximum for operation in AC 12	Application	Catalog Number
Y202168 S086588 Z202169 L097300	24 V 25 mA AC / DC	690 V 2 A cos φ = 0,9	Single-standard microswitch Twin-standard microswitch	FOIT250NO/NC FOIT500NO/NC FOIT2502NO/NC FOIT5002NO/NC
H208019 J208020	24 V 10 mA AC / DC	690 V 2 A cos φ = 0,9	Single microswitch. Aggressive atmosphere or connection with a programmable machine	FOIT250/350AU FOIT5002NONCBN

Control handles dimensions

Insulating, padlockable inside or outside

Reference Number	Switch Model	A	B	C	D	E	Weight (kg)	Catalog number
T090936	IT 500KM IT 630KM IT 800KM	203	178	100	30	90	1,2	PILRIT500ITC250





Non-fused Switches Side-handle IT 250 to 800A

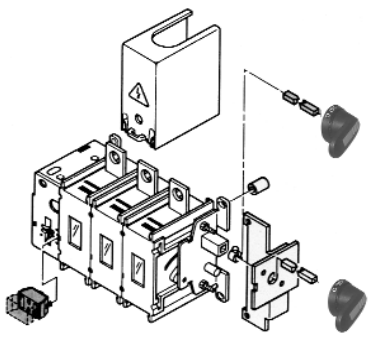
Accessories

Reference Number

Current rating		Pre-isolating microswitch Single microswitch ③ 1 NO - 1 NC Twin microswitch ⑤ 1 NO - 1 NC Low level micro. ⑥ 1 NO - 1 NC	Protection against live terminal touching *One shroud per terminals (figure 1) ▪One partition upstream andone downstream (figure 2)	Inside padlockable (red handle) (3 padlocks)	Outside padlockable (3 padlocks) ① black handle ② red and yellow handle ③ red handle
250 A 315 A 350 A		③ Y 202 168 ⑤ Z 202 169 ⑥ H 208 019	* A 202 170	Not available see front handle Swiches	① H 210066 ② J 210067
500 A	III IV	③ S 086 588 ⑤ L 097 300 ⑥ J 208 020	▪ Q 096 499 ▪ Z 096 507	T 090936	③ Y 090940
630 A	III IV		▪ F 080 137 ▪ E 080 136		
800 A	III IV		▪ G 080 138 ▪ D 080 135		

Catalog Number

Current rating		Pre-isolating microswitch Single microswitch ③ 1 NO - 1 NC Twin microswitch ⑤ 1 NO - 1 NC Low level micro. ⑥ 1 NO - 1 NC	Protection against live terminal touching *One shroud per terminals (figure 1) ▪One partition upstream andone downstream (figure 2)	Inside padlockable (red handle) (3 padlocks)	Outside padlockable (3 padlocks) ① black handle ② red and yellow handle ③ red handle
250 A 315 A 350 A		③ FOIT250NO/NC ⑤ FOIT2502NO/NC ⑥ FOIT250/350AU	* CBIT250/350	Not available see front handle Swiches	① PELNIT250/350 ② PELRJIT250/350
500 A	III IV	③ FOIT500NO/NC ⑤ FOIT5002NO/NC ⑥ FOIT5002NONCBN	▪ CBIT5003 ▪ CBIT5004	PILRIT500ITC250	③ PELRIT500ITC250
630 A	III IV		▪ CBIT6303 ▪ CBIT6304		
800 A	III IV		▪ CBIT8003 ▪ CBIT8004		



Non-fused Switches
Side-handle
IT 250 to 800A

Ready to install complete switch

Switch with direct handle + external handle + auxiliary contact (2 NO + 2 NC) + protection against Live Terminal Touching

Current rating Ith	Poles	Designation	Reference Number	Catalog Number
250A	3	IT 250 CIII Cde Later N&R	K 235253	IT250C3CLN
	4	IT 250 CIV Cde Later N&R	L 235254	IT250C4CLN
	3	IT 250 CIII Cde Later J&R	M 235255	IT250C3CLJ
	4	IT 250 CIV Cde Later J&R	N 235256	IT250C4CLJ
315A	3	IT 315 CIII Cde Later N&R	T 235261	IT315C3CLN
	4	IT 315 CIV Cde Later N&R	V 235262	IT315C4CLN
	3	IT 315 CIII Cde Later J&R	W 235263	IT315C4CLJ
	4	IT 315 CIV Cde Later J&R	X 235264	IT315C4CLJ
350A	3	IT 350 CIII Cde Later N&R	C 235269	IT350C3CLN
	4	IT 350 CIV Cde Later N&R	D 235270	IT350C4CLN
	3	IT 350 CIII Cde Later J&R	E 235271	IT350C3CLJ
	4	IT 350 CIV Cde Later J&R	F 235272	IT350C4CLJ
500A	3	IT 500 CIII Cde Later N&R	L 235277	IT500C3CLN
	4	IT 500 CIV Cde Later N&R	M 235278	IT500C4CLN
630A	3	IT 630 CIII Cde Later N&R	S 235283	IT630C3CLN
	4	IT 630 CIV Cde Later N&R	T 235284	IT630C4CLN
800A	3	IT 800 CIII Cde Later N&R	Z 235289	IT800C3CLN
	4	IT 800 CIV Cde Later N&R	A 235290	IT800C4CLN

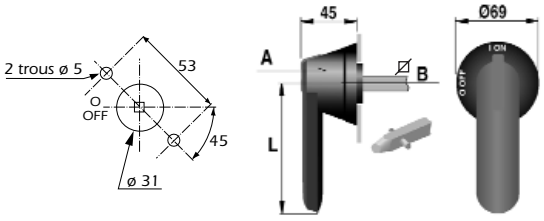
External handle : N&R = black / J&R = red and yellow

Non-fused Switches Side-handle IT 250 to 800A

Control handles dimensions

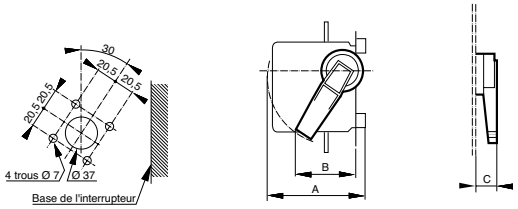
Handle Ref. Number	Switch Model	⌀ B	L	IP	Weight (kg)
H 210066 or0 J 210067	IT 250KM IT 315KM IT 350KM	8	80	65	0,3 kg

Distance between switch-disconnector and handle: 25 to 96 mm



Handle Ref. Number	Switch Model	A	B	C	D	Weight (kg)
Y 090940	IT 500KM	203	178	55	30	0,75

Distance between switch-disconnector and handle: 45 to 120 mm



Protection against live terminal touching: dimensions

Reference Number	Switch Model	A	B	C	Weight (kg)	Figure
A202170	IT 250KM IT 315KM IT 350KM	92,5	105	44	70 g	1
Q 096499	IT 500KM III	125	120	175	250 g	2
Z 096507	IT 500KM IV	125	120	221	300 g	2
F 080137	IT 630KM III	125	120	207	260 g	2
E 080136	IT 630KM IV	125	120	269	310 g	2
G 080138	IT 800KM III	125	120	223	270 g	2
D 080135	IT 800KM IV	125	120	293	320 g	2

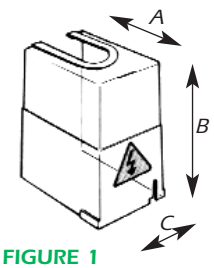
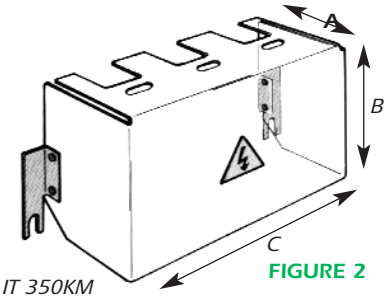


FIGURE 1



IT 350KM

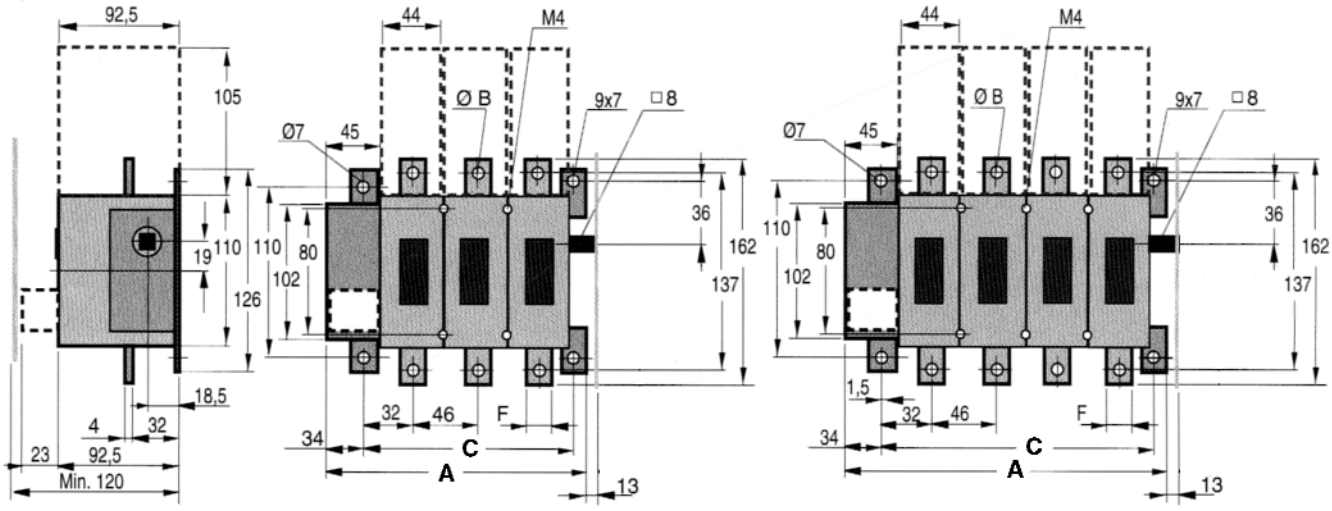
FIGURE 2

Non-fused Switches
Side-handle
IT 250 to 800A

IT 250 to 350
Dimensions and weight

- *Connection: range 25 mm and 20 mm with bolt M10 tightening torque 30 to 40 Nm. Tightening torque for switches: M6 screw 6 N.m to 10 N.m*

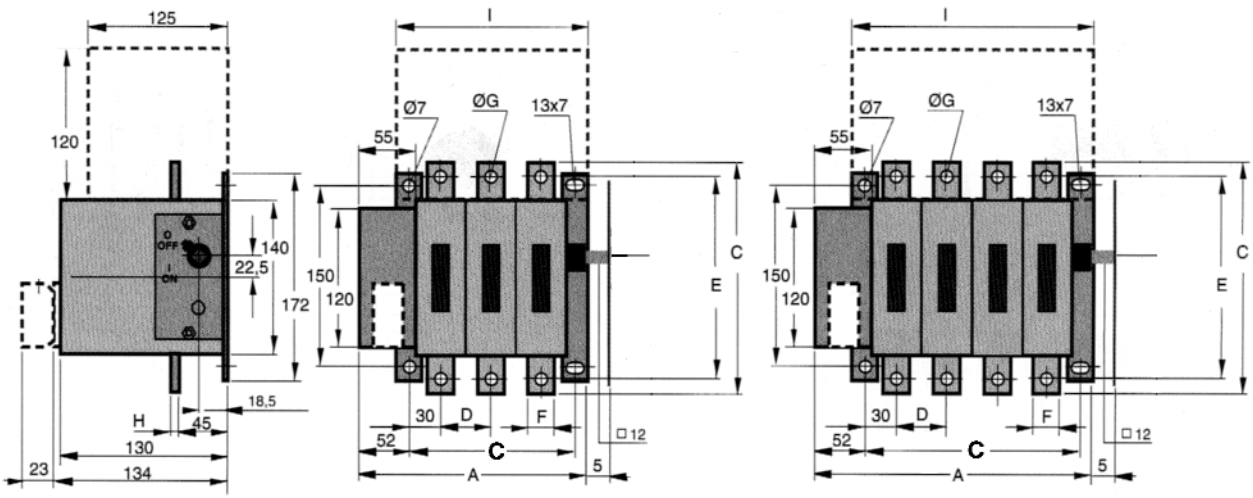
Pole	IT 250 KM		IT 315 KM		IT 350 KM	
	III	IV	III	IV	III	IV
A (mm)	199	245	199	245	199	245
Ø B (mm)	9	9	11	11	11	11
C (mm)	157	203	157	203	157	203
F (mm)	20	20	25	25	25	25
Weight (kg)	3	3,7	3	3,7	3	3,7



IT 500 to 800
Dimensions and weight

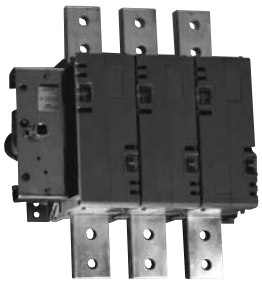
- *Connection: range 25 mm with M10 bolt and tightening torque 30 to 40 Nm.*
- *Connection: range 40 mm with M12 bolt and tightening torque 50 to 75 Nm. Tightening torque for switches: M6 screw 6.N.m to 10 N.m*

Pole	IT 500 KM		IT 630 KM		IT 800 KM	
	III	IV	III	IV	III	IV
A (mm)	216	262	248	310	264	334
B (mm)	153	199	185	247	201	271
C (mm)	205	205	223	223	223	223
D (mm)	46	46	62	62	70	70
E (mm)	180	180	185	185	185	185
F (mm)	25	25	40	40	40	40
ø G (mm)	11	11	13,5	13,5	13,5	13,5
H (mm)	4	4	5	5	5	5
I (mm)	175	221	207	269	223	293
Weight (kg)	5,2	6,4	6,2	7,6	6,2	7,6

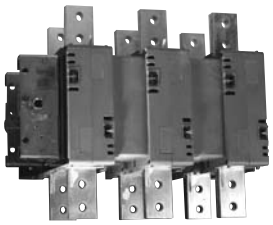


NOTE: Weights without accessories; tightening torques of switches depend on quality of bolts.

Non-fused Switches Front-handle IT 1000 to 3150A



IT 1250



IT 2500

SWITCH-DISCONNECTORS INDICATED INTERRUPTION IT 1000 to 3150 A Front-operated switches

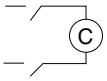
- DUAL-INDICATED INTERRUPTION
- POSITIVE FRONT CONTROL
- SNAP CONTACTS which ensures rapid disconnection regardjess of how fast the user turns the operation handle.
- SILVER-PLATED COPPER ELECTRIC CONTACTS PROTECTION FOR ALL CLIMATES: ISOLATING PARTITIONS MADE WITH VO UL 94 MATERIALS
- COMPLIANCE WITH IEC 947-1 AND 3, NF C60 947
- HIGH-PERFORMANCE INTERRUPTING RATING (AC23 AND DC23 CLASSES)
- 3- AND 4-POLE MODELS STANDARD
- FOR OTHER RATINGS, REFER TO OUR TECHNICAL DATA SHEETS

Main electrical characteristics

		IT 1000K	IT 1250K	IT 1600K	IT 2500K	IT 3150K
Rated operational current at ambient Rated operational current under cover	Ith Ithe	1000 1000	1250 1250	1600 1600	2500 2300	3150 2600
Rated operational voltage AC-20 DC-20 Rated insulation voltage (Ui) Rated impulse withstand voltage	V V kV	1 000 1 000 8	1 000 1 000 8	1 000 1 000 8	1 000 1 000 8	1 000 1 000 8
RMS prospective short-circuit current with aM or gG class FerrazSchawmut fuses	kA	50	50	—	—	—
Fuse Rating	A	800	1000	—	—	—
Permissible peak let-through current	kA	—	—	—	—	—
Rating operating current: AC-21-A AC-22-A AC-23-A	690V ≤500V ≤500V	1000 1000 800	1250 1250 800	1600 1600 800	2500 ✢ 1600 ✢ 800 ✢	3150 ✢ 1600 ✢ 800 ✢
Rated operating power AC -23 in kW with a 3-phase 1.500 rpm standard asynchronous motor at	415V 500V 690V	400 450 —	400 450 —	400 450 —	400 450	400 450
AC-23 interrupting rating: Ic A at cosφ = 0.35 under rated operating voltage (Ue)	≤500 V 690V	6400 2500 ✪	6400 2500 ✪	6400 2500 ✪	6400 4800 ✹	6400 4800 ✹
DC-23-A rating operating current / poles in series** for	110 V 220 V 440 V	Consult us				
RMS permissible short duration (1.5) rated current	kA	33	33	33	37	37
Mechanical endurance: operation cycles number (1 cycle = 1 opening + 1 closing of contacts)		5 000	5 000	5 000	3 000	3 000
Electrical endurance : operation cycles number at Ie and cosφ 0.65	500 V	500	500	500	100 ✢	100 ✢
Power loss per pole	en W	27	40	67	90	140
Tightening torque for terminals	mini maxi	50 75	50 75	50 75	50 75	50 75

✪ *cosφ = 0,95* ✹ *cosφ = 0,65* ✢ *use in class B*

*** To be connected in series by user.*
Distributing poles per conductor e.g. in series.



E.g. 3 poles in series.
Connection recommended.

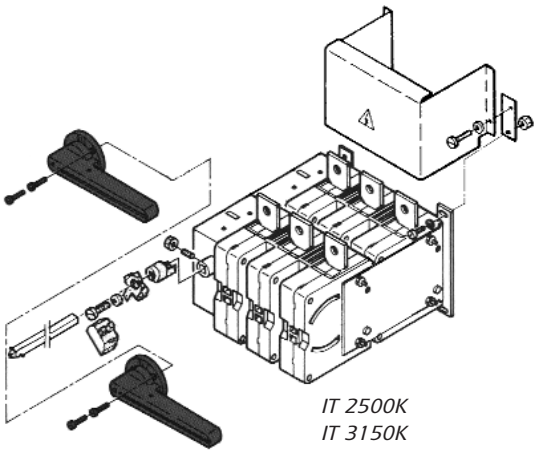


Non-fused Switches
Front-handle
IT 1000 to 3150A

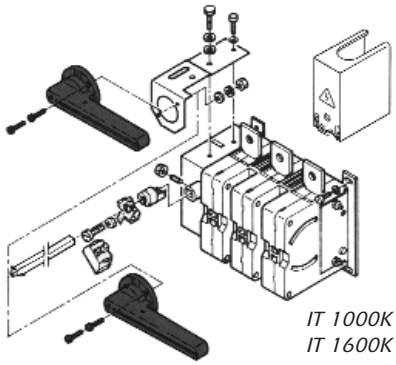
Standard switches

Microswitch, protection, handle and shaft must be ordered separately - See Accessories section

Current rating Ith	Pole	Designation	Reference Number	Catalog Number
1000 A	3	IT 1000 K III	B 081559	IT1000S3CF
	4	IT 1000 K IV	C 081560	IT1000S4CF
1250 A	3	IT 1250 K III	T 096157	IT1250S3CF
	4	IT 1250 K IV	V 096158	IT1250S4CF
1600 A	3	IT 1600 K III	R 096155	IT1600S3CF
	4	IT 1600 K IV	S 096 156	IT1600S4CF
2500 A	3	IT 2500 K III	J 081681	IT2500S3CF
	4	IT 2500 K IV	H 081680	IT2500S4CF
3150 A	3	IT 3150 K III	B 202148	IT3150S3CF
	4	IT 3150 K IV	A 202147	IT3150S4CF



IT 2500K
IT 3150K



IT 1000K
IT 1600K

Non-fused Switches Front-handle IT 1000 to 3150A

Accessories

Reference Number

Current rating	Pre-isolating microswitch Single microswitch ① 1 NO - 1 NC Twin microswitch ② 1 NO - 1 NC Low level micro. ③ 1 NO - 1 NC	Protection against live terminal touching ● One shroud per terminals ❁ One partition upstream and one downstream	Inside ☛ or outside▼ black handle padlockable with 3 padlocks (Ø 8 mm) ▼ (Door locked when handle is ON)	Inside ☞ or outside ▼ red and yellow handle padlockable with 3 padlocks Ø ≤ 8 mm ▼ (Door locked when handle is ON)	☞Obligatory inside control adaptation for inside control	Long shaft without handle for outside control
1000 A 1250 A	① S086588 ② L097300 ③ J208020	● S095880	Q209912 or Y210678 Supplied with a 250 mm shaft ☞ (for inside control order control adaptation)	R209913 or Z210679 Supplied with a 250 mm shaft ☞ (for inside control order control adaptation)	R092084	L097093 395 mm shaft
1600 A						
2500 A III IV		✹ L099554 ✹ K099553	outside only Y210678	outside only Z210679 or F099549(*) (*red handle)	–	P092979 465 mm shaft
3150 A III IV		✹ L099554 ✹ K099553				

Catalog Number

Current rating	Pre-isolating microswitch Single microswitch ① 1 NO - 1 NC Twin microswitch ② 1 NO - 1 NC Low level micro. ③ 1 NO - 1 NC	Protection against live terminal touching ● One shroud per terminals ❁ One partition upstream and one downstream	Inside ☛ or outside▼ red and yellow handle padlockable with 3 padlocks (Ø 8 mm) ▼ (Door locked when handle is ON)	Inside ☞ or outside ▼ red handle padlockable with 3 padlocks Ø ≤ 8 mm ▼ (Door locked when handle is ON)	☞Obligatory inside control adaptation for inside control	Long shaft without handle for outside control
1000 A 1250 A	① FOIT500NO/NC ② FOIT5002NO/NC ③ FOIT5002NONCBN	● CBIT1000/1600	PERNIT500/1600 or PERNIT2500/3150 Supplied with a 250 mm shaft ☞ (for inside control order control adaptation)	PERJIT500/1600 or PERJIT2500/3150 Supplied with a 250 mm shaft ☞ (for inside control order control adaptation)	APIIT1000/1600	A395IT500ITC250 395 mm shaft
1600 A						
2500 A III IV		✹ EIT31503 ✹ EIT31504	outside only PERNIT2500/3150	outside only PERJIT2500/3150 or PEDT2500/3150 Red handle	–	A465IT500ITC250 465 mm shaft
3150 A III IV		✹ EIT31503 ✹ EIT31504				

Non-fused Switches
Front-handle
IT 1000 to 3150A

Ready to install complete switch

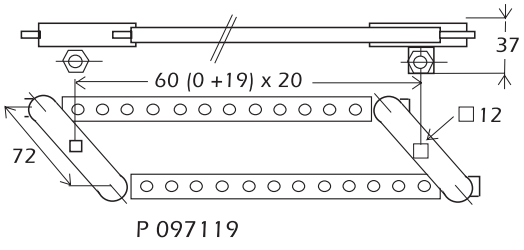
SWITCH WITH DIRECT HANDLE + EXTERNAL HANDLE + AUXILIARY CONTACT (2 NO + NC) + PROTECTION AGAINST LIVE TERMINAL TOUCHING

Current rating Ith	Poles	Designation	Reference Number	Catalog Number
1000A	3	IT 1000 CIII Cde Front N&R	B 235291	IT1000C3CFN
	4	IT 1000 CIV Cde Front N&R	C 235292	IT1000C4CFN
	3	IT 1000 CIII Cde Front J&R	D 235293	IT1000C3CFJ
	4	IT 1000 CIV Cde Front J&R	E 235294	IT1000C4CFJ
1250A	3	IT 1250 CIII Cde Front N&R	F 235295	IT1250C3CFN
	4	IT 1250 CIV Cde Front N&R	G 235296	IT1250C4CFN
	3	IT 1250 CIII Cde Front J&R	H 235297	IT1250C3CFJ
	4	IT 1250 CIV Cde Front J&R	J 235298	IT1250C4CFJ
1600A	3	IT 1600 CIII Cde Front N&R	K 235299	IT1600C3CFN
	4	IT 1600 CIV Cde Front N&R	L 235300	IT1600C4CFN
	3	IT 1600 CIII Cde Front J&R	M 235301	IT1600C3CFJ
	4	IT 1600 VIV Cde Front J&R	N 235302	IT1600C4CFJ
2500A	3	IT 2500 CIII Cde Front N&R	P 235303	IT2500C3CFN
	4	IT 2500 CIV Cde Front N&R	Q 235304	IT2500C4CFN
	3	IT 2500 CIII Cde Front J&R	R 235305	IT2500C3CFJ
	4	IT 2500 CIV Cde Front J&R	S 235306	IT2500C4CFJ
3150A	3	IT 3150 CIII Cde Front N&R	T 235307	IT3150C3CFN
	4	IT 3150 CIV Cde Front N&R	V 235308	IT3150C4CFN
	3	IT 3150 CIII Cde Front J&R	W 235309	IT3150C3CFJ
	4	IT 3150 CIV Cde Front J&R	X 235310	IT3150C4CFJ

External handle : N&R = black / J&R = red and yellow

Accessories for outside control

VI and VIII pole system for IT 1000 to 1600 K



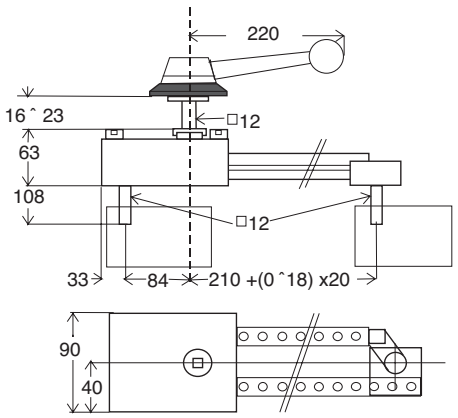
P 097119

Handle (F099549) and additionnal shaft (L097093 or P092979) must be ordered separately.

HANDLE SUPPLIED

Reference Number	Switch Model	Weight	Catalog Number
P097119	IT 1000 to 1600 K	1 kg	ADAIT500/600

Reversing system 1-0-2 for IT 1000 to 1600K



HANDLE SUPPLIED

Reference Number	Switch Model	Weight	Catalog Number
B092599	IT 1000 to 1600 K	4,50kg	INVIT500/1600

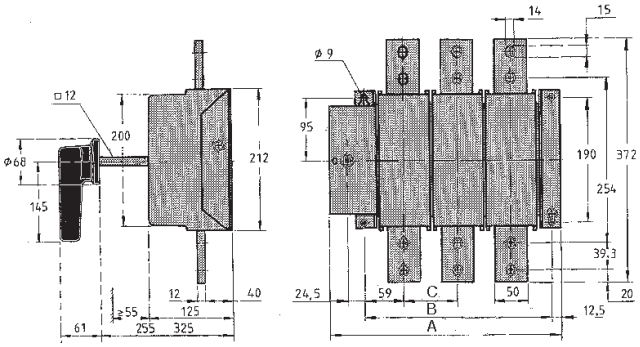
NOTE: *Weights without accessories; tightening torques of switches depend on quality of bolts.*

Non-fused Switches Front-handle IT 1000 to 3150A

Dimensions and weight

IT 1000K - 1250 K - 1600 K

Pole	IT 1000 K		IT 1200 K		IT 1600 K	
	III	IV	III	IV	III	IV
A (mm)	343	423	343	423	363	453
B (mm)	278	358	278	358	298	388
C (mm)	80	80	80	80	90	90
d (mm)	80	80	80	80	90	90
Weight (kg)	16,3	20,5	16,3	20,5	17,5	22,5

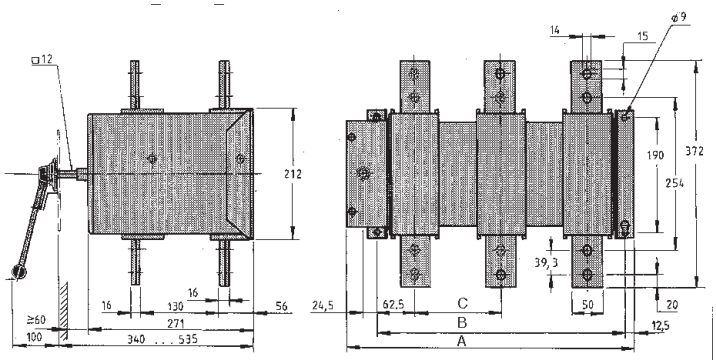


Terminal tightening torque: *M12 bolt 50 N.m to 75 N.m*

Tightening torque for switches: *M8 screw 11 N.m to 22 N.m*

IT 2500K - 3150 K

Pole	IT 2500 K		IT 3150 K	
	III	IV	III	IV
A (mm)	468	607	468	607
B (mm)	403	542	403	542
C (mm)	139	139	139	139
Weight (kg)	37	47	37	47



Terminal tightening torque: *M12 bolt 50 N.m to 75 N.m*

Tightening torque for switches: *M8 screw 11 N.m to 22 N.m*

Microswitch characteristics

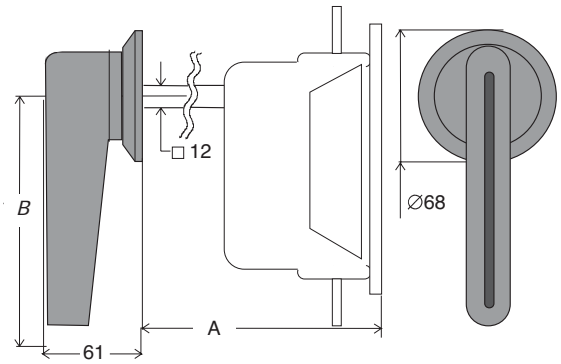
Reference Number	Minimum for safe operation	Maximum for operation in AC 12	Application
① S 086 588 ② L 097 300	24 V 25 mA AC / DC	690 V 2 A cos φ = 0,9	Single-standard microswitch Twin-standard microswitch
③ J 208 020	24 V 10 mA AC / DC	690 V 2 A cos φ = 0,9	Single microswitch. Agressive atmosphere or connection with a programmable machine

Non-fused Switches
Front-handle
IT 1000 to 3150A

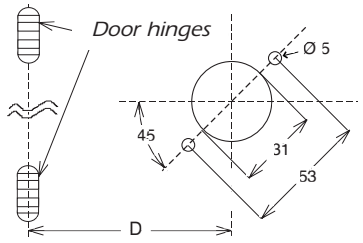
Control handles dimensions and drilling for out side handle

Ref. Number	Switch Model	A: distance depth	A: with long shaft	B
Q209912 R209913	IT 1000 to IT 1600	255 mm to 325 mm	L 097 093 400 to 470 mm P 092 979 505 to 570 mm	145
Y210678 Z210679	IT 1000 to IT 3150			

Weight: 0.56 kg.

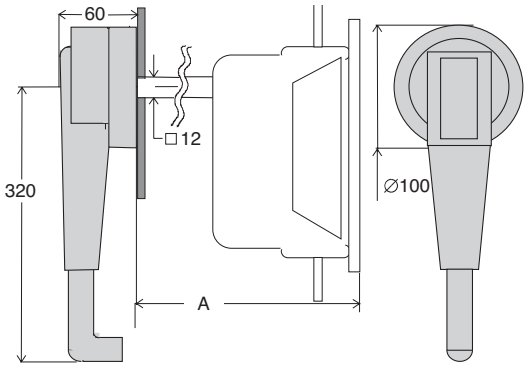


Handle Ref. number	D: minimal distance between door hinges shaft and handle shaft
S 209914	150 mm
T 209915	
Q 209912	80 mm

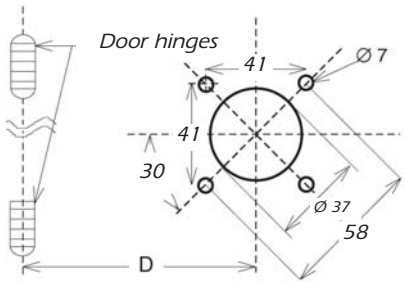


Ref. Number	Switch Model	A: distance depth	A: with long shaft
F 099 549	IT 2500K IT 3150K	360 mm to 490 mm	L 097 093 570 to 700 mm P 092 979 675 to 800 mm

Weight: 1.2 kg.



Reference Number	D: minimal distance between hinge shaft and handle shaft
F099549	150 mm



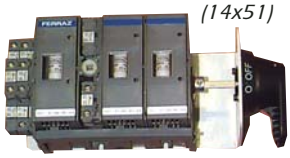
Fused Switches
ITC for Ferrule Fuses
32 to 125A



ITC 125 (22x58)



ITC 32 (10x38)



ITC 50 (14x51)

SWITCH-DISCONNECTORS - FUSES FOR FERRULE FUSES ITC 32 - 50 - 125 A

CONTROL: SIDE OR FRONT HANDLE
PADLOCKABLE IN OFF-POSITION WITH 3 PADLOCKS.
SAFE AND RELIABLE INDICATION OF POSITION ON HANDLES.

INTERRUPTING: TWIN INTERRUPTING PER PHASE
FUSE IS COMPLETELY ISOLATED WHEN POSITION IS OFF
AC23 & DC23 ON-LOAD SWITCHING AND CLOSING

INTERRUPTING RATING: 25 TO 50

INSULATION VOLTAGE: 1 000 V

MECHANISM: SNAP CONTACTS which ensures rapid disconnection regardless of how fast the user turns the operation handle.

FIXATION: ON DIN RAIL
ON-BOARD OR ON-FRAME FOR CUBICLE BACKGROUND

CONSTRUCTION: COMPLYING WITH IEC AND EN 60 947.- I AND -3

PROTECTION DEGREE (WITH ACCESORIES): IP 2X.

PROTECTION FOR ANY CLIMATE.

SILVER-PLATED COPPER ELECTRIC CONTACTS.

ISOLATING PARTITIONS MADE WITH UL 94 VO MATERIALS.

PRE-ISOLATING AND BLOWN FUSE INDICATION AS ACCESSORIES.

Main electrical characteristics

			ITC 32	ITC 50	ITC 125
Rated operational current at ambient Rated operational current under cover	40°c (1) 40°c	Ith Ithe	32 32	50 50	125 125
Rated insulation voltage (Ui). Pollution class 3		V	1000	1000	750
Rated operational voltage AC-20 DC-20 Rated impulse withstand voltage		V kV	1000 12	1000 12	750 12
Fuse Size Max power loss / fuse to Ith		W	10 x 38 3	14 x 51 7,5	22 x 58 12
RMS Prospective short-circuit current with aM or gG class FerrazShawmut Fuses. Fuses Rating Permissible peak let-through current		kA A kA	25 32 6	50 50 14	50 125 14
Rated operating current AC-21-A / AC-22-A	≤ 500 V 690 V	A	32 32	50 50	125 125 *
Rated operating current AC-23-A	≤ 500 V 690 V	A	32 32	50 50 *	100 50 *
Rated operating power Ac-23 (kW) with a 3-phase 1,500 rpm standard asynchronous motor at	400 V 500 V 690 V	kW	14 18 25	25 33 45	55 70 45
AC-23 Interrupting rating : Ic at cosj = 0.35) under rated operating voltage (Ue)	≤ 500 V 690 V	A	256 256	504 504	800 405
DC-23-A rating operating current/ poles in series** for	110-220 V 440 V 500-750 V	A	32/2 32/4	consult us	125/3 100/4 * .....
RMS permissible short duration (1.5) rated current Mechanical endurance : operation cycles number (1 cycle = 1 opening + 1 closing of contacts)		kA	1 10 000	2,5 10 000	5 10 000
Electrical endurance : operation cycles number at Ie and cosφ 0.65	≤ 500 V 690 V		 1500	.....	1500 *** .....
Power loss per pole (without fuses)		W	2	2,5	5

*(1) For ambient temperature 50°C : x 0.9 - 60°C : x 0.8 ; for horizontal fuse : x 0.9. * Use in class B ** To be achieved by user*
**** Test at 100 A*

Fused Switches
ITC for Ferrule Fuses
32 to 125A

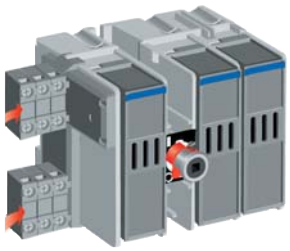
Standard switch - Fuses

The following items are supplied separately.
For additional adaptations refer to Accessories section and order selected reference numbers.

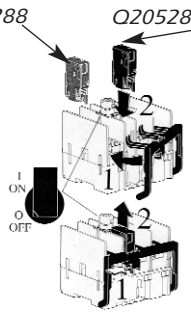
		Type	Pole	Designation	Reference Number	Catalog Number
FRONT		10x38 32 A	3 3+N 4	ITC 32 III 10x38 ITC 32 III+N 10x38 ITC 32 IV 10x38	J 205283 K 205284 L 205285	ITC32S3CF ITC32S3NCF ITC32S4CF
		14x51 50 A	3 4	ITC 50 F III 14x51 ITC 50 F IV 14x51	Y 209896 Z 209897	ITC50S3CF ITC50S4CF
		22x58 125 A	3 3+N 4	ITC 125F III 22x58 ITC 125F III+N 22x58 ITC 125F IV 22x58	L 210782 M 210783 N 210784	ITC125S3CF ITC125S3NCF ITC125S4CF
SIDE		10x38 32 A	3 4	ITC 32 M III 10x38 CDE LAT ITC 32 M IV 10x38 CDE LAT	F 210087 G 210088	ITC32S3CL ITC32S4CL
		14x51 50 A	3 4	ITC 50 FS III 14x51 CDE LAT ITC 50 FS IV 14x51 CDE LAT	D 209901 E 209902	ITC50S3CL ITC50S4CL
		22x58 125 A	3 4	ITC 125 M III 22x58 CDE LAT ITC 125 M IV 22x58 CDE LAT	P 210785 R 210787	ITC125S3CL ITC125S4CL

Mounting of pre-isolating and blown fuse-indicator microswitch

ITC 32



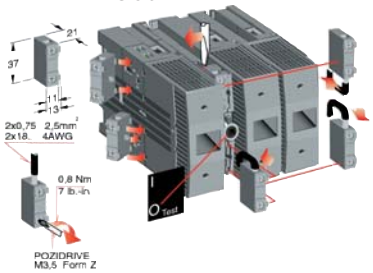
P205288 *Q205289*



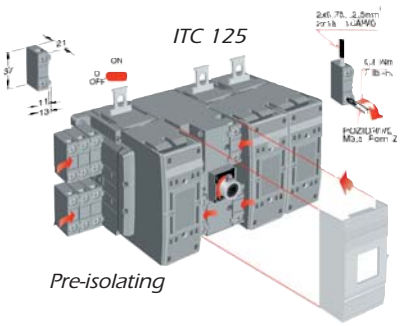


Blown fuse

ITC 50



ITC 125



Pre-isolating

Fused Switches ITC for Ferrule Fuses 32 to 125A

Accessories

Reference Number

HANDLE		Size	Pre-isolating microswitch Single microswitch ①One contact NO or NC ② Reversing (NO/NC)	Blownfuse microswitches ③ One contact NO + one contact NC ② Reversing (NO/NC)	Protection against live terminal touching For protection upstream and dowstream order two pieces	Protection against fuse touching	Inside handle padlockable See control handle bulk	Outside handle padlockable suplied with shaft Distance between switch and handle See bulk Black (Red and Yellow)	Shaft extension Distance max. between switch and handle is - 60 mm compare with the shaft length L
FRONT	3 3+N 4	10x38 32 A	② P 205288 (NO/NC) or G210663+ ① H 209882(NC) ① L 207493(NO)	② Q205289 ② R205290 ② R205290	Original	Original	N205287	V 209916 (C 210084)	H 081703 (L = 265 mm)
	3 4	14x51 50 A	① H 209882(NC) ① L 207493(NO)	③ Z210104 ③ A210105	Original	Original	E210109	M 209909 (N 209910)	B 210106 (L = 290 mm)
	3 3+N 4	22x58 125 A	① H 209882(NC) ① L 207493(NO)	③ A210473	N 210807 (1 per terminal)	Original	E210109	M 209909 (N 209910)	C 210107 (L = 430 mm)
SIDE	3 4	10x38 32 A	② P 205288 (NO/NC)	② Q205289 ② R205290	Original	Original	N205287	A 210082 (B 210083)	H 081703 (L = 265 mm)
	3 4	14x51 50 A	① L 207493(NO) ① H 209882(NC)	③ Z210104 ③ A210105	Original	Original	E210109	D 210085 (E 210086)	B 210106 (L = 290 mm)
	3 4	22x58 125 A	① L 207493(NO) ① H 209882(NC)	③ A210473	N 210807 (1 per terminal)	Original	E210109	D 210085 (E 210086)	C 210107 (L = 430 mm)

Catalog Number

HANDLE	Size	Pre-isolating microswitch Single microswitch ①One contact NO or NC ② Reversing (NO/NC)	Blownfuse microswitches ③ One contact NO + one contact NC ② Reversing (NO/NC)	Protection against live terminal touching For protection upstream and dowstream order two pieces	Protection against fuse touching	Inside handle padlockable See control handle bulk	Outside handle padlockable suplied with shaft Distance between switch and handle See bulk Black (Red and Yellow)	Shaft extension Distance max. between switch and handle is - 60 mm compare with the shaft length L
FRONT	3 3+N 4 10x38 32 A	② FOITC32 NO/NC or ADAPTITC32FO ① FOITC32/160NC ① FOIT25/125ETNC	② DITC323 NO/NC ② DITC323N/4NO/NC ② DITC323N/4NO/NC	Original	Original	PIITC32	PENITC32 (PERJITC32)	A265ITC32 (L = 265 mm)
	3 4 14x51 50 A	① FOITC32/160NC ① FOIT25/125ETNC	③ DITC503 NO/NC ③ DITC50NO/NC3N/4	Original	Original	PIITC50/160	PENITC32/160 (PERJIT160)	A290ITC50/160 (L = 290 mm)
	3 3+N 4 22x58 125 A	① FOITC32/160NC ① FOIT25/125ETNC	DITC125NO/NC3/4	CBITC125/160 (1 per terminal)	Original	PIITC50/160	PENITC32/160 (PERJIT160)	A430ITC50/160 (L = 430 mm)
SIDE	3 4 10x38 32 A	② FOITC32 NO/NC	② DITC323 NO/NC ② DITC323N/4NO/NC	Original	Original	PIITC32	PENITC32L (PERJITC32L)	A265ITC32 (L = 265 mm)
	3 4 14x51 50 A	① FOIT25/125ETNC ① FOITC32/160NC	③ DITC503 NO/NC ③ DITC50NO/NC3N/4	Original	Original	PITC50/160	PENITC50/160 (PERJITC50/160)	A290ITC50/160 (L = 290 mm)
	3 4 22x58 125 A	① FOIT25/125ETNC ① FOITC32/160NC	DITC125NO/NC3/4	CBITC125/160 (1 per terminal)	Original	PITC50/160	PENITC50/160 (PERJITC50/160)	A430ITC50/160 (L = 430 mm)

Fused Switches
ITC for Ferrule Fuses
32 to 125A

Ready to install complete switch

Switch with direct handle outside handle (1) + Auxiliary preisolating contacts (2No + 2Nc) + protection against live touching (fuses and teminals)"

Front handle-switch

Current rating Ith	Poles	Designation	Reference Number	Catalog Number
32	3	ITC 32CIII 10x38 CF/N&R SF	Y235311	ITC32C3CFNSF
	3 + N	ITC 32CIII+N 10x38 CF/N&R SF	Z235312	ICT32C3NCFNSF
	4	ITC 32CIV 10x38 CF/N&R SF	A235313	ITC32C4CFNSF
50	3	ITC 50CIII 14x51 CF/N&R SF	L235323	ITC50C3CFNSF
	3 + N	ITC 50CIII+N 14x51 CF/N&R SF	M235324	ITC50C3NCFNSF
	4	ITC 50IV 14x51 CF/N&R SF	N235325	ITC50C4CFNSF
125	3	ITC 125CIII 22x58 CF/N&R SF	Z235335	ITC125C3CFNSF
	3 + N	ITC 125CIII+N 22x58 CF/N&R SF	A235336	ITC125C3NCFNSF
	4	ITC 125CIV 22x58 CF/N&R SF	B235337	ITC125C4CFNSF

Side handle switch

Current rating Ith	Poles	Designation	Reference Number	Catalog Number
32	3	ITC 32CIII 10x38 CL/N&R SF	E235317	ITC32C3CLNSF
	3 + N	ITC 32CIII+N 10x38 CL/N&R SF	F235318	ICT32C3NCLNSF
	4	ITC 32CIV 10x38 CL/N&R SF	G235319	ITC32C4CLNSF
50	3	ITC 50CIII 14x51 CL/N&R SF	S235329	ITC50C3CLNSF
	3 + N	ITC 50CIII+N 14x51 CL/N&R SF	T235330	ITC50C3NCLNSF
	4	ITC 50IV 14x51 CL/N&R SF	V235331	ITC50C4CLNSF
125	3	ITC 125CIII 22x58 CL/N&R SF	F235341	ITC125C3CLNSF
	3 + N	ITC 125CIII+N 22x58 CL/N&R SF	G235342	ITC125C3NCLNSF
	4	ITC 125CIV 22x58 CL/N&R SF	H235343	ITC125C4CLNSF

(1) length of shaft outside handle: 32A = 265 mm, 50A = 430 mm, 125A = 430 mm

Microswitch Characteristics

Reference Number	Minimum for safe operation	Maximum for operation in AC 12	Applications	
② P205288 ② Q205289 ② R205290	24 V 25 mA AC / DC	24V - 6A DC12 440V - 2A AC15	Single microswitch standard	NO/NC NO/NC 4NO/NC
① H209882 ① L207493		690V - 2A AC15	Single microswitch standard	NC NO
③ Z210104 ③ A210105 ③ A2100473			Twin microswitch standard	1 NO + 1 NC 1 NO + 1 NC 1 NO + 1 NC

Inside Control handle bulk

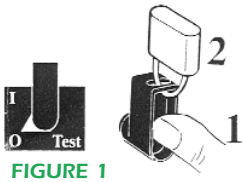
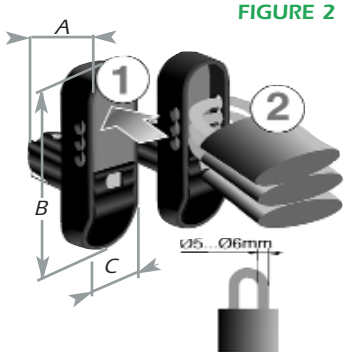


FIGURE 1

Insulating, padlockable inside front handle

Reference Number	Switch Model	A	B	C	Weight (kg)	Figure	Catalog number
N 205287	ITC 32	40	50	22	0,1	1	PIITC32
E 210109	ITC 50 & 125	50	70	20	0,15	2	PIITC50/160

FIGURE 2



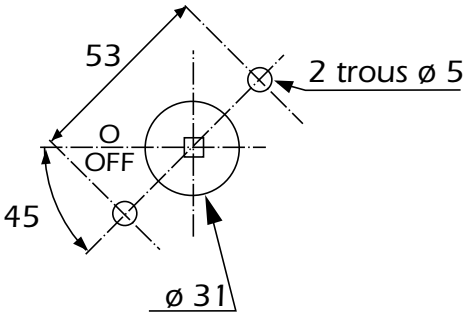
Fused Switches
ITC for Ferrule Fuses
32 to 125A

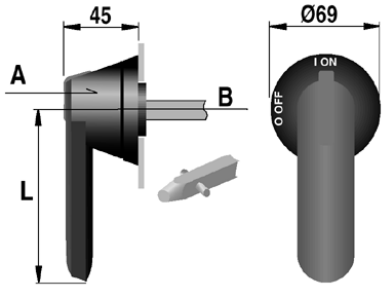
Control handles dimensions

Insulating, padlockable outside front handle

Reference Number	Switch Model	L mm	■ mm	Weight (kg)	Figure
V 209916 C 210084	ITC 32	65	5	0,1	1
M 209909 N 209910	ITC 50F ITC 125F	80	6	0,1	1

FIGURE 1

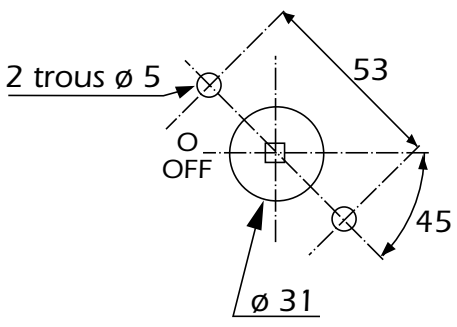


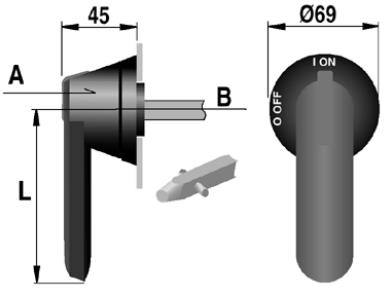


Insulating, padlockable outside front handle

Reference Number	Switch Model	L mm	■ mm	Weight (kg)	Figure
A 210082 B 210083	ITC 32M	65	5	0,1	2
D 210085 E 210086	ITC 50FS ITC 125M	80	6	0,1	2

FIGURE 2





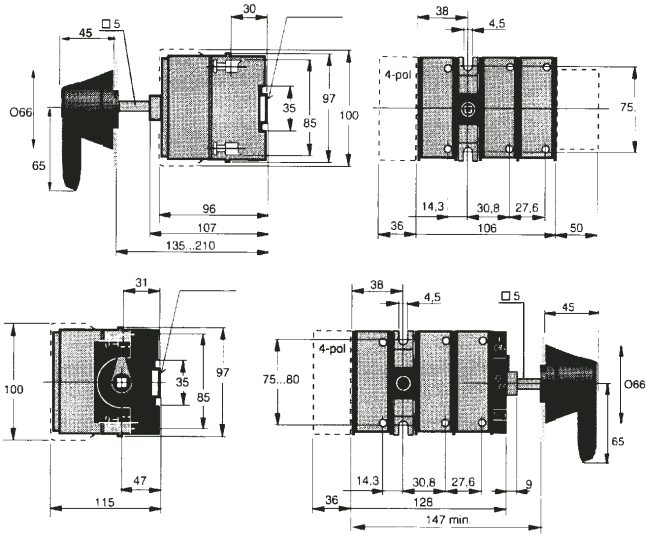
Fused Switches ITC for NH Fuses 32 to 125A

Dimensions and weight

ITC 32

Pole	III	III+N	IV
A	106	142	142
B	156	192	192
Weight (kg)	0.7	0.9	0.9

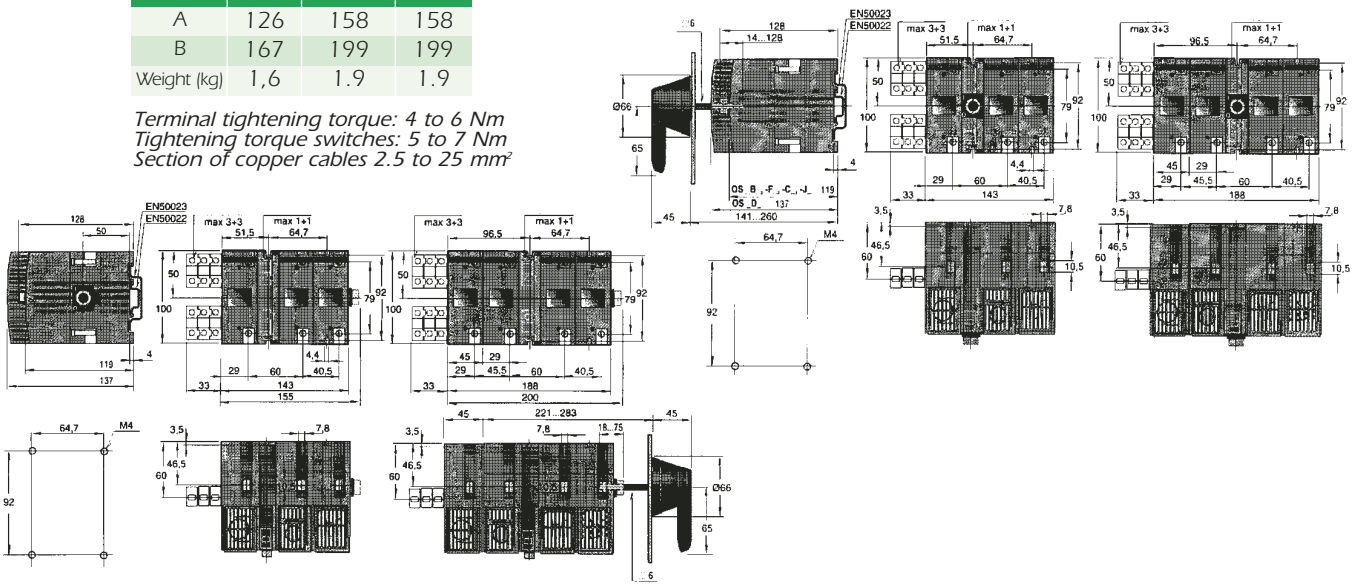
Terminal tightening torque: 1.6 to 2.4 Nm
Tightening torque switches: 1.2 to 1.8 Nm
Section of copper cables 0.5 to 10 mm²



ITC 50

Pole	III	III+N	IV
A	126	158	158
B	167	199	199
Weight (kg)	1,6	1.9	1.9

Terminal tightening torque: 4 to 6 Nm
Tightening torque switches: 5 to 7 Nm
Section of copper cables 2.5 to 25 mm²

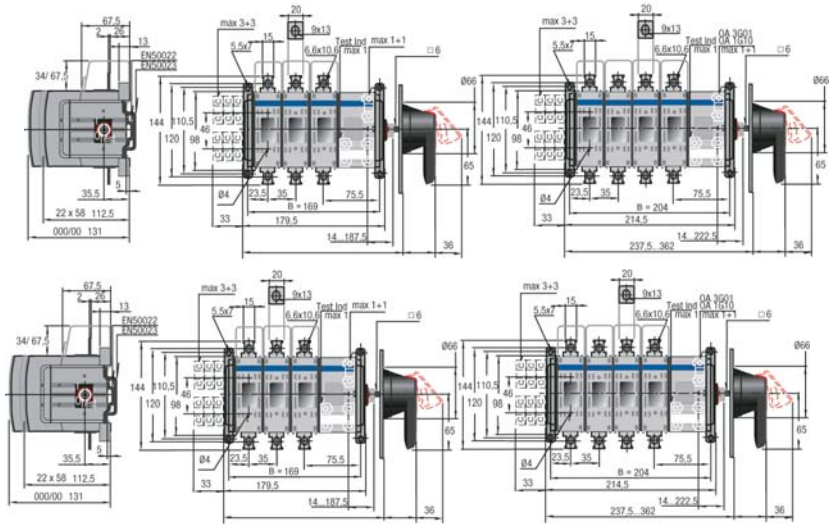


Dimensions and weight

ITC 125

Pole	III	III+N	IV
A	169	204	204
B	180	214	214
Weight (kg)	1,9	2,4	2,4

Connection: torque 20 mm with M8 bolt
Terminal tightening torque: 15 to 22 Nm
Switch tightening torque: 5 to 7 Nm



NOTE: *Weights given without accessories; tightening torques of switches depend on quality of bolts.*

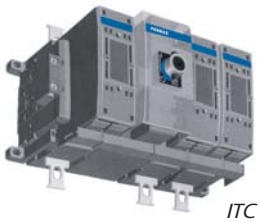
Fused Switches ITC for NH Fuses 63 to 630A

ITC 63



ITC 250





ITC 160



ITC 400

CONTROL: SIDE OR FRONT, PADLOCKABLEIN OFF-POSITION BY 3 PADLOCKSSAFE AND RELIABLE INDICATION OF CONTACT POSITION ON HANDLES

INTERRUPTION: DUAL INTERRUPTION PER PHASE COMPLETE ISOLATION OF FUSE IN OPEN CIRCUIT ON-LOAD

OPENING AND CLOSING: AC 23 AND DC 23

INTERRUPTING POWER: 25 kA A 50 kA.

ISOLATION VOLTAGE: 1000 V.

MECHANISM: SNAP CONTACTS which ensures rapid disconnection regardjess of how fast the user turns the operation handle.

FIXING: ON DIN RAIL ON PANEL BOARD

CONSTRUCTION: COMPLYING WITH IEC AND EN 60947-1 AND -3
- PROTECTION INDEX IP 2X
- SUITABLE FOR ALL CLIMATE TYPES
- SILVER-PLATED COPPER CONTACTS
- ISOLATING PARTITIONS IN MATERIAL AS PER UL 94 VO.
- PREISOLATING AND BLOWN-FUSE INDICATION ACCESSORIES.

Main electrical characteristics

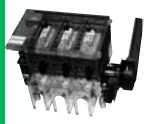
			ITC 63A	ITC 160A	ITC 250A	ITC 400A	ITC 630A
Rated operational current at ambient Rated operational current under cover	40°c (1) 40°c	Ith Ithe	63 63	160 135	250 230	400 360	630 570
Rated insulation voltage (Ui). Pollution class 3		V	1000	750	1000	1000	1000
Rated operational voltage AC-20 DC-20 Rated impulse withstand voltage		V kV	1000 12	750 12	1000 12	1000 12	1000 12
Size fuses Max. power loss/fuse at Ith		DIN W	00 / 000 7,5	00 12	Size 1 32/27 Ithe	Size 2 45/37 Ithe	Size 3 60/50 Ithe
RMS prospective short-circuit current with aM or gG class FerrazShawmut Fuses. Fuses Rating Permissible peak let-through current		kA A kA	50 63 14	100 160 14	100 250 35	100 400 35	100 630 60
Rated operating current AC-21-A and AC-22-A	≤ 500 V 690 V	A	63 63	160 135*	250 250	400 400	630 630
Rated operating current AC-23-A	≤ 500 V 690 V	A	63 63*	100 50*	250 250	400 400	630 630
Rated operating power AC-23 in kW with a 3-phase 1.500 rpm standard asynchronous motor at	400 V 500 V 690 V	kW	30 37 60	55 70 45	132 170 230	210 280 330	315 400 540
AC-23 interrupting rating: Ic A at cos φ = 0.35 under rated operating voltage (Ue)	≤ 500 V 690 V	A	504 504	800 405	2000 2000	3200 3200	5760 5760
DC-23-A rating operating current / poles in series** for	110-220 V 440 V 500-750 V	A	Consult us	160/3 100/4*	250/2 250/2 250/3	400/2 400/2 400/3	630/2 630/2 630/3
RMS permissible short duratiobn (1.5) rated current		kA	2,5	5	8	10	16
Mechanical endurance : operation cycles number (1 cycle = 1 opening + 1 closing of contacts)			10 000	10 000	8 000	8 000	5 000
Electrical endurance : operation cycles number at Ie and cos φ 0.65	≤ 500 V 690 V		....	1000	 1000	 1000	 1000
Power loss per pole		W	4	9	11	30	55

(1) For ambient temperature 50°C : x 0.9 - 60°C : x 0.8 ; for horizontal fuse : x 0.9.
** Use in class B ** To be achieved by user *** Test at 100 A*

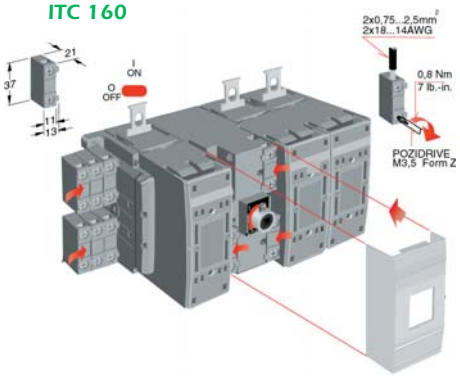
Fused Switches
ITC for NH Fuses
63 to 630A

Standard switches - fuses

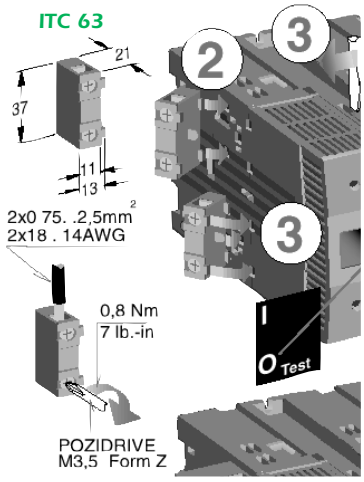
The following items are supplied separately.
For additional adaptations refer to Accessories section and order selected reference numbers.

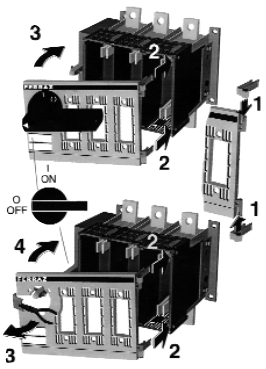
		Type	Pole	Designation	Reference Number	Catalog Number
FRONT		00 63 A	3 3+N 4	ITC 63D III 00CDE FRONT ITC 63D III+N 00CDE FRONT ITC 63D IV 00CDE FRONT	A 209898 B 209899 C 209900	ITC63S3CF ITC63S3NCF ITC63S4CF
		00 160 A	3 3+N 4	ITC 160F III 00 CDE Front ITC 160 F iii+NQ0 ITC 160F IV 00 CDE Front	S 210788 T 210789 U 210790	ITC160S3CF ITC160S3NCFF ITC160S4CF
		DIN 1 250 A	3 3+N 4	ITC 250D III T1 ITC 250D III+N T1 ITC 250D IV T1	Q 207290 R 207291 V 207292	ITC250S3CF ITC250S3NCF ITC250S4CF
		DIN 2 400 A	3 3+N 4	ITC 400D III T2 ITC 400D III+N T2 ITC 400D IV T2	T 207293 V 207294 W 207295	ITC400S3CF ITC400S3NCF ITC400S4CF
		DIN 3 630 A	3 3+N 4	ITC 630D III T3 ITC 630D III+N T3 ITC 630D IV T3	X 207296 Y 207297 Z 207298	ITC630S3CF ITC630S3NCF ITC630S4CF
SIDE		00 63 A	3 3+N 4	ITC 63DM III 00 CDE LAT ITC 63DM III+N 00 CDE LAT ITC 63DM IV 00 CDE LAT	F 209903 G 209904 H 209905	ITC63S3CL ITC63S3NCL ITC63S4CL
		00 160 A	3 3+N 4	ITC 160M III 00 CDE LAT ITC 160M III +N 00CDE LAT ITC 160M IV 00 CDE LAT	W 210791 X210792 Y 210793	ITC160S3CL ITC160S3NCL ITC160S4CL
		DIN 1 250 A	3 3+N 4	ITC 250DM III T1 CDE LAT ITC 250DM III+N T1 CDE LAT ITC 250DM IV T1 CDE LAT	E 208614 F 208615 G 208616	ITC250S3CL ITC250S3NCL ITC250S4CL
		DIN 2 400 A	3 3+N 4	ITC 400DM III T2 CDE LAT ITC 400DM III+N T2 CDE LAT ITC 400DM IV T2 CDE LAT	H 208617 J 208618 K 208619	ITC400S3CL ITC400S3NCL ITC400S4CL

ITC 160

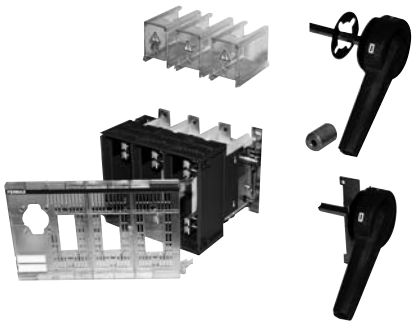


ITC 63



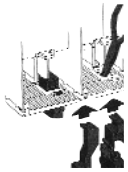


ITC 250D À 630D





BLOWN FUSE M.S.



PRE-ISOLATING M.S.



Microswitches characteristics

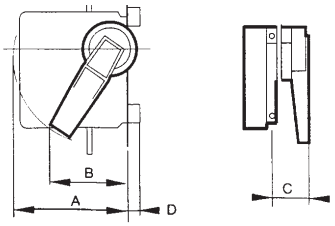
Reference Number	Minimum for safe operation	Maximum for operation in AC 12	Applications	
H 209882 L 207493 S 086 588 L 097 300	24 V 25 mA AC / DC	690 V 2 A cos φ = 0,9	Single-standard microswitch Twin-standard microswitch	NC NO NO/NC NO/NC
J 208020	24 V 10 mA AC / DC	690 V 2 A cos φ = 0,9	Single microswitch: aggressive atmosphere or connection with a programmable machine	NO/NC
Blown-fuse indicator microswitches	24 V 25 mA AC / DC	690 V 2 A cos φ = 0,9	Single-standard microswitch	

Fused Switches ITC for NH Fuses 63 to 630A

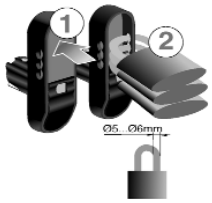
Inside control handle bulk

Insulating padlockable inside side handle

Reference Number	Switch Model	A mm	B mm	C mm	D mm	Weight (kg)	Catalog number
T 090 936	ITC 250 ITC 400	202	170	100	30	1,2	PILRIT500ITC250



Reference Number	Switch Model	A mm	B mm	C mm	D mm	Weight (kg)	Catalog number
E 210109	ITC 63D	50	70	20	XX	0,15	PIITC50/160



Accessories

Reference Number

HANDLE	Fuse size and Current rating		Pre-isolating microswitch Single microswitch ① One contact(NO) ou(NC) ② Reversing (NO/NC) ③ 2 single micro(NO/NC) Twin microswitch ④ 2 reversing (NO/NC) ⑤ 2x2 single micro(NO/NC) Bas niveau ⑥ 2x2 single micro(NO/NC)	Blown fuse indicator	Finger safe Protection One shroud per terminal	Protection against fuse touching	Inside handle padlockable supplied with shaft. See bulk switches.	Outside handle padlockable supplied with shaft. Distance between switch and handle. See control handle bulk. Black (Red and yellow)	Axle extension The maximum distance between the handle and the machine is - 60 mm compare with the shaft length L
FRONT	00 63A	III III+N IV	① H209882 (NC)* ① L207493 (NO)*	_____ _____	Built-in	Built-in	E 210109	M 209909 (N 209910)	B 210 106 (L = 290 mm)
	00 160A	III III+N IV	① H209882 (NC)* ① L207493 (NO)*	_____ _____	N 210807 (1 per terminal)	Built-in		M 209909 (N 209910)	C 210 107 (L = 430 mm)
	DIN1 250A	III III+N IV	③ S086588 ⑤ L097300 ⑥ J208020	III& III+N IV A207299 NO L207976 NC B207300 NO N207978 NC	M 096657 (1 per terminal)	G 207305 H 207306 H 207306	Take the outside handle with a protection partition against fuses touching	Q 209912 (R 209913)	
	DIN2 400A	III III+N IV		III& III+N IV C207301 NO L207976 NC D207302 NO N207978 NC	M 096657 (1 per terminal)	J 207307 K 207308 K 207308		Q 209912 (R 209913)	L 097093 (L = 395 mm)
	DIN3 630A	III III+N IV		III& III+N IV E207303 NO L207976 NC F207304 NO N207978 NC	S 095880 (1 per terminal)	L 207309 M 207310 M 207310		Q 209912 (R 209913)	
SIDE	00 63A	III III+N IV	① H209882 (NC)* ① L207493 (NO)*	_____ _____	Built-in	Built-in	not available take the outside front handle	D 210085 (E 210086)	B 210 106 (L = 290 mm)
	00 160A	III III+N IV	① H209882 (NC)* ① L207493 (NO)*	_____ _____	N210807	Built-in		D 210085 + E 210454 (E 210086 +E 210454)	C 210 107 (L = 430 mm)
	DIN1 250A	III III+N IV	③ S086588 ⑤ L097300 ⑥ J208020	III& III+N IV A 207299 NO L 207976 NC B 207300 NO N 207978 NC	M 096657 (1 per terminal)	G 207305 H 207306 H 207306	T 090936 (red)	Y 090940 (red)	P 092979 (L = 465mm)
	DIN2 400A	III III+N IV		III& III+N IV C 207301 NO L 207976 NC D 207302 NO N 207978 NC	M 096657 (1 per terminal)	J 207307 K 207308 K 207308	T 090936 (red)	Y 090940 (red)	

* 8 contacts maxi

Fused Switches ITC for NH Fuses 63 to 630A

Catalog Number

HANDLE	Fuse size and Current rating		Pre-isolating microswitch Single microswitch ① One contact(NO) ou(NC) ② Reversing (NO/NC) ③ 2 single micro(NO/NC) Twin microswitch ④ 2 reversing (NO/NC) ⑤ 2x2 single micro(NO/NC) Bas niveau ⑥ 2x2 single micro(NO/NC)	Blown fuse indicator		Finger safe Protection One shroud per terminal	Protection against fuse touching	Inside handle padlockable supplied with shaft. See bulk switches.	Outside handle padlockable supplied with shaft. Distance between switch and handle. See control handle bulk. Black (Red and yellow)	Axle extension The maximum distance between the handle and the machine is - 60 mm compare with the shaft length L
FRONT	00 63A	III III+N IV	① FOITC32/160NC ① FOIT25/125ETNC	——— ———		Built-in	Built-in	PIITC50/160	PENITC32/160 PERJIT160	A290ITC50/160 (L = 290 mm)
	00 160A	III III+N IV	① FOITC32/160NC ① FOIT25/125ETNC	——— ———		CBITC125/160 (1 per terminal)	Built-in		PENITC32/160 PERJIT160	A430ITC50/160 (L = 430 mm)
	DIN1 250A	III III+N IV		III& III+N IV	DITC250NO3/3N DITC250/630NC3 DITC250NO4 DITC250/630NC4	CBITC250/400 (1 per terminal)	CPTITC250/3 CPTITC250/3N/4 CPTITC250/3N/4	Take the outside handle with a protection partition against fuses touching	PERNIT500/1600 PERJIT500/1600	
	DIN2 400A	III III+N IV	③ FOIT500NO/NC ⑤ FOIT5002NO/NC ⑥ FOIT5002NONCBN	III& III+N IV	DITC400NO3/3N DITC250/630NC3 DITC400NO4 DITC250/630NC4	CBITC250/400 (1 per terminal)	CPTITC400/3 CPTITC400/3N/4 CPTITC400/3N/4		PERNIT500/1600 PERJIT500/1600	A430ITC50/160 (L = 395 mm)
	DIN3 630A	III III+N IV		III& III+N IV	DITC630NO3/3N DITC250/630NC3 DITC630NO4 DITC250/630NC4	CBIT1000/1600 (1 per terminal)	CPTITC630/3 CPTITC630/3N/4 CPTITC630/3N/4		PERNIT500/1600 PERJIT500/1600	
SIDE	00 63A	III III+N IV	① FOITC32/160NC ① FOIT25/125ETNC	——— ———		Built-in	Built-in	take the outside front handle	PENITC50/160 PERJIT50/160	A290ITC50/160 (L = 290 mm)
	00 160A	III III+N IV	① FOITC32/160NC ① FOIT25/125ETNC	——— ———		CBITC125/160 (1 per terminal)	Built-in		PENITC50/160 +MANCHONRALAXE6 PERJITC50/160 +MANCHONRALAXE6	A430ITC50/160 (L = 430 mm)
	DIN1 250A	III III+N IV	③ FOIT500NO/NC ⑤ FOIT5002NO/NC	III& III+N IV	DITC250NO3/3N DITC250/630NC3 DITC250NO4 DITC250/630NC4	CBITC250/400 (1 per terminal)	PTITC250/3 CPTITC250/3N/4 CPTITC250/3N/4	PILRIT500ITC250 (red)	PELRIT500ITC250 (red)	A465IT500ITC250 (L = 465mm)
	DIN2 400A	III III+N IV	⑥ FOIT5002NONCBN	III& III+N IV	DITC400NO3/3N DITC250/630NC3 DITC400NO4 DITC250/630NC4	CBITC250/400 (1 per terminal)	CPTITC400/3 CPTITC400/3N/4 CPTITC400/3N/4	PILRIT500ITC250 (red)	PELRIT500ITC250 (red)	

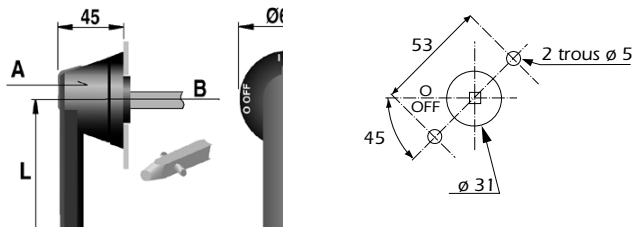
* 8 contacts maxi

Outside control handle bulk

Insulating padlockable outside front handle

Reference Number	Switch Model	A mm	B mm	C mm	D mm	L mm	■ mm	Weight (kg)	Figure	Catalog Number
M 209909 N 209910	ITC 63D ITC 160	-	-	45	-	80	6	0,1	1	PENITC32/160 PERJIT160
Q 209912 R 209913	TC 250D ITC 400D ITC 630D	-	-	45	–	145	12	0,2	1	PERNIT500/1600 PERJIT500/1600

FIGURE 1



Fused Switches ITC for NH Fuses 63 to 630A

Ready to install complete switches

Switch with direct handle + outside handle (1) + Auxiliary preisolating contacts (2No + 2Nc) + protection against live touching (fuses and teminals)"

Front handle switch

Current rating Ith	Poles	Designation	Reference Number	Catalog Number
63A	3	ITC 63CIII T00 CF/N&R SF	M235347	ITC63C3CFNSF
	3 + N	ITC 63CIII+N T00 CF/N&R SF	N235348	ICT63C3NCFNSF
	4	ITC 63CIV T00 CF/N&R SF	P235349	ITC63C4CFNSF
160A	3	ITC 160CIII T00 CF/N&R SF	T235353	ITC160C3CFNSF
	3 + N	ITC 160CIII+N T00 CF/N&R SF	V235354	ITC160C3NCFNSF
	4	ITC 160IV T00 CF/N&R SF	W235355	ITC160C4CFNSF
250A	3	ITC 250CIII T1 CF/N&R SF	A235359	ITC250C3CFNSF
	3 + N	ITC 250CIII+N T1 CF/N&R SF	B235360	ITC250C3NCFNSF
	4	ITC 250CIV T1 CF/N&R SF	C235361	ITC250C4CFNSF
400A	3	ITC 400CIII T2 CF/N&R SF	N235371	ITC400C3CFNSF
	3 + N	ITC 400CIII+N T2 CF/N&R SF	P235372	ITC400C3NCFNSF
	4	ITC 400CIV T2 CF/N&R SF	Q235373	ITC400C4CFNSF
630A	3	ITC 630CIII T3 CF/N&R SF	B235383	ITC630C3CFNSF
	3 + N	ITC 630CIII+N T3 CF/N&R SF	C235384	ITC630C3NCFNSF
	4	ITC 630CIV T3 CF/N&R SF	D235385	ITC630C4CFNSF

Side handle switch

Current rating Ith	Poles	Designation	Reference Number	Catalog Number
63A	3	ITC 63CIII T00 CL/N&R SF	Q235350	ITC63C3CLNSF
	3 + N	ITC 63CIII+N T00 CL/N&R SF	R235351	ICT63C3NCLNSF
	4	ITC 63CIV T00 CL/N&R SF	S235352	ITC63C4CLNSF
160A	3	ITC 160CIII T00 CL/N&R SF	X235356	ITC160C3CLNSF
	3 + N	ITC 160CIII+N T00 CL/N&R SF	Y235357	ITC160C3NCLNSF
	4	ITC 160IV T00 CL/N&R SF	Z235358	ITC160C4CLNSF
250A	3	ITC 250CIII T1 CL/N&R SF	G235365	ITC250C3CLNSF
	3 + N	ITC 250CIII+N T1 CL/N&R SF	H235366	ITC250C3NCLNSF
	4	ITC 250CIV T1 CL/N&R SF	J235367	ITC250C4CLNSF
400A	3	ITC 400CIII T2 CL/N&R SF	V235377	ITC400C3CLNSF
	3 + N	ITC 400CIII+N T2 CL/N&R SF	W235378	ITC400C3NCLNSF
	4	ITC 400CIV T2 CL/N&R SF	X235379	ITC400C4CLNSF

(1) length of shaft outside handle: 63A = 430 mm, 160A = 430 mm, 250A = 395 mm, 400A = 395 mm, 630A = 395 mm

Outside control handles dimensions

Insulating padlockable outside side handle

Reference Number	Switch Model	A mm	B mm	C mm	D mm	L mm	■ mm	Weight (kg)	Figure
D 210085 E 210096	ITC 63DS ITC 160M	-	-	45	-	80	6	0,1	2
Y 090940	ITC 250DM ITC 400DM	202	170	55	30	145	12	0,75	3

FIGURE 2

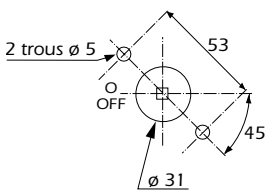
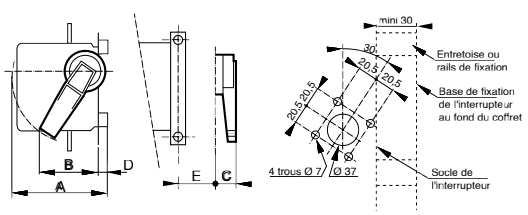


FIGURE 3



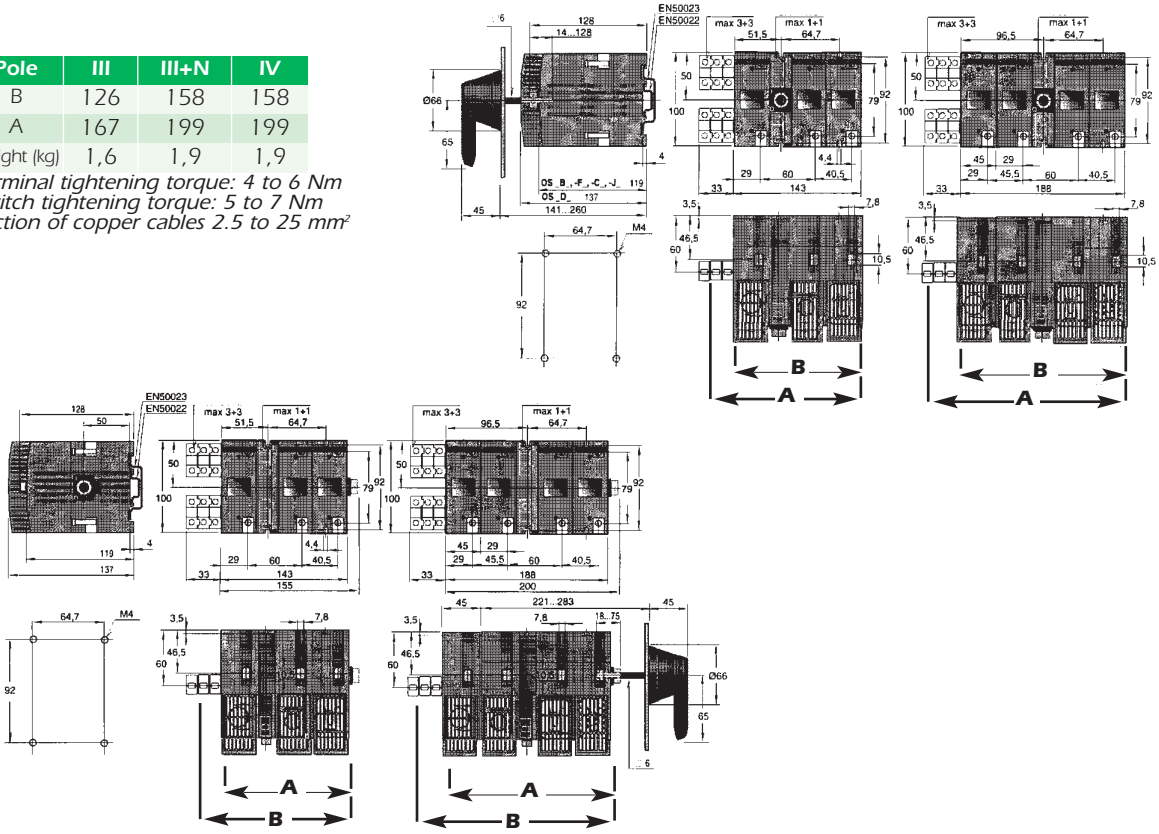


Fused Switches ITC for NH Fuses 63 to 630A

ITC 63

Pole	III	III+N	IV
B	126	158	158
A	167	199	199
Weight (kg)	1,6	1,9	1,9

Terminal tightening torque: 4 to 6 Nm
Switch tightening torque: 5 to 7 Nm
Section of copper cables 2.5 to 25 mm²



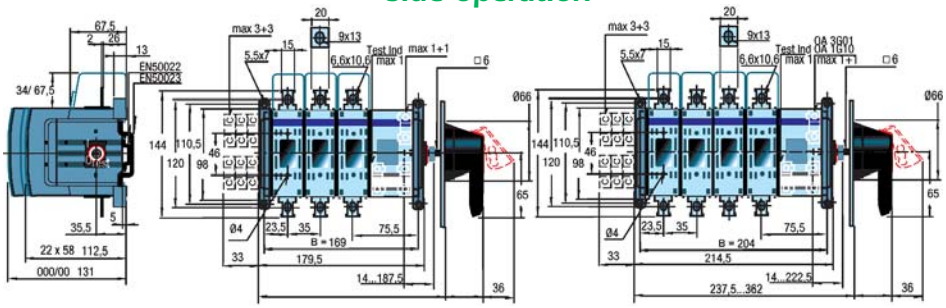
Dimensions and weight

ITC 160

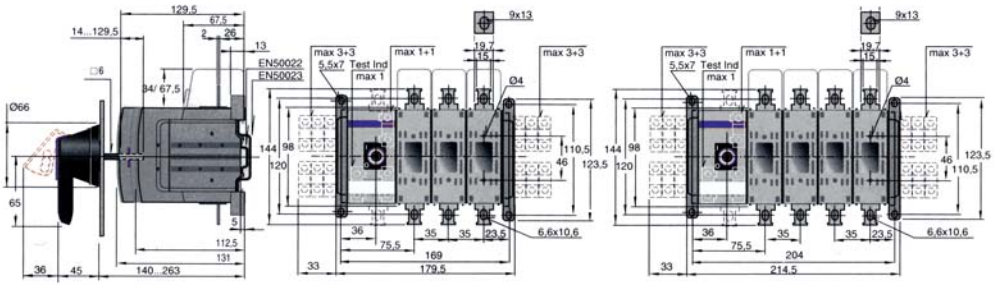
Pole	III	III+N	IV
B	169	204	204
A	156	214	214
Weight (kg)	1.9	2.4	2.4

Terminal tightening torque: 15 to 22 Nm
Connection: torque 20 mm with M8 bolt
Switch tightening torque: 3 to 4 Nm

Side operation



Front operation



NOTE: *Weights given without accessories; tightening torques of switches depend on quality of bolts.*

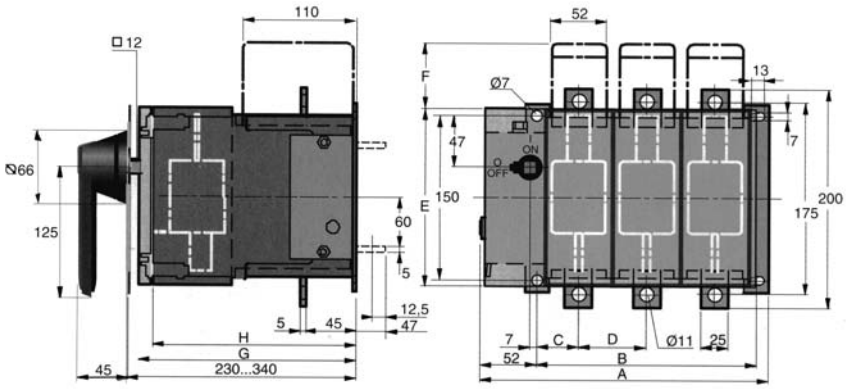
Fused Switches ITC for NH Fuses 63 to 630A

ITC 250/400

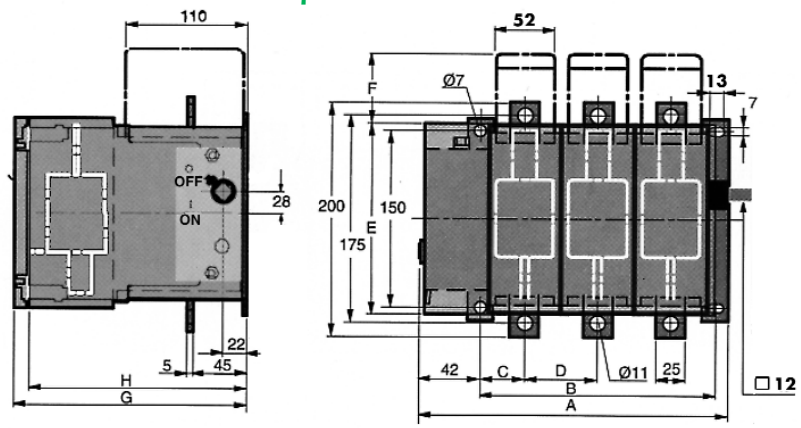
Pole	III	III+N	IV
A	262/286	324/356	324/356
B	198/222	260/292	260/292
C	37/41	37/41	37/41
D	62/70	62/70	62/70
E	162/180	162/180	162/180
F	60/51	60/51	60/51
G	199/206	199/206	199/206
H	185/192	185/192	185/192
Weight (kg)	7/8	8/9	8/9

Terminal tightening torque: 30 to 44 Nm
Connection torque 25 mm with M10 bolt
Switch tightening torque: 5 to 7 Nm

Front operation



Side operation

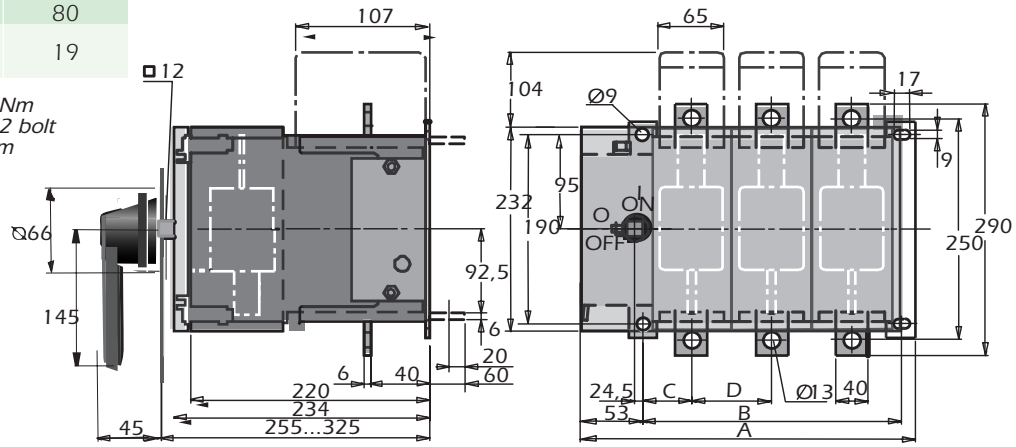


Dimensions and weight

ITC 630

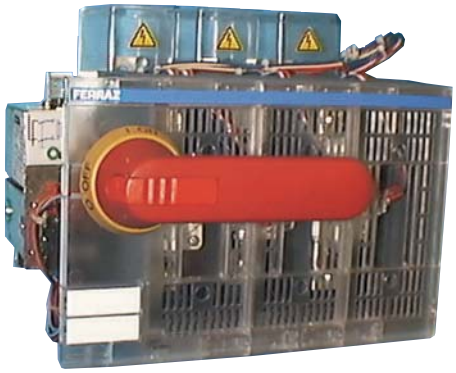
Pole	III	III+N	IV
A	343	423	423
B	278	358	358
C	59	59	59
D	80	80	80
Weight (kg)	15.5	19	19

Terminal tightening torque: 50/75 Nm
Connecton: torque 40mm with M12 bolt
Switch tightening torque: 5 to 7 Nm



NOTE: *Weights without accessories; tightening torques of switches depend on quality of bolts.*

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A



CONTROL:

Side control, padlockable in off position by three padlocks.
Safe and reliable indication of contact position on handles.

SWITCHING:

Double isolation per phase.
Complete isolation of fuse when circuit open.
On-load opening and closing
AC23 & DC 23.
Interrupting rating 25 kA up to 100 kA.
Insulation voltage 1000 V.

FIXING:

On DIN rail for ratings lower 250A or on board.

FUSE CONNECTING:

Forced tightening.

MECHANISM:

Snap action mechanism which ensures rapid disconnection
regardjess of how fast the user turns the operation handle.`

CONSTRUCTION:

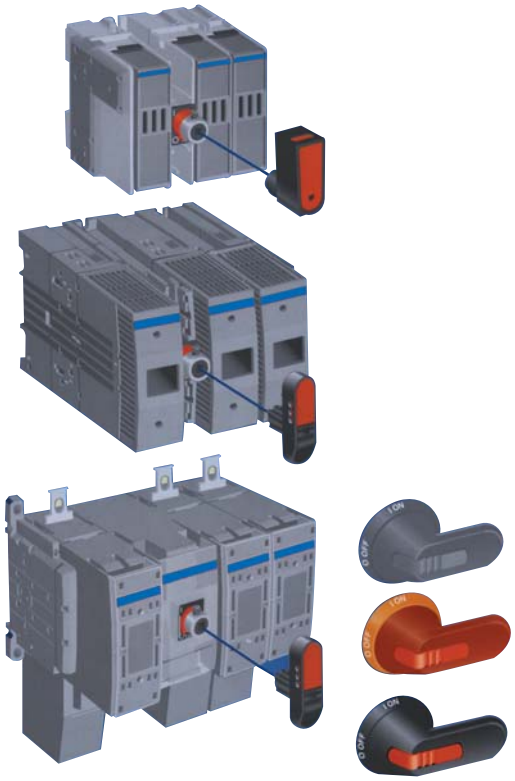
Complying with IEC 947 1and 3 and EN 60947- 1 and - 3 Standards
Silver-plated copper electrical contacts.
Insulating partitions in UL 94 UO materials.
Required blown-fuse indication.

PROTECTION AGAINST TOUCHING OF LIVE PARTS: IP 20

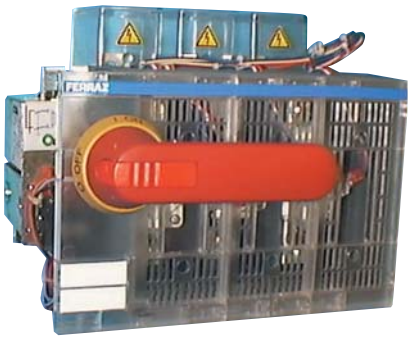
COMPLETE RANGE READY-TO-INSTALL

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Protistor Fuse Switch disconnectors

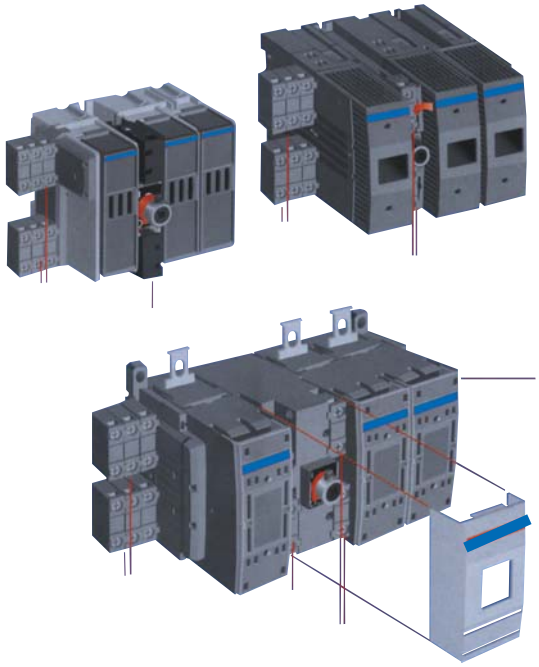


- *For 10 x 38 fuses*
- *For 14 x 51 fuses*
- *For 22 x 58 fuses*
- *For 27 x 60 fuses*
- *For 00 x 000 fuses*

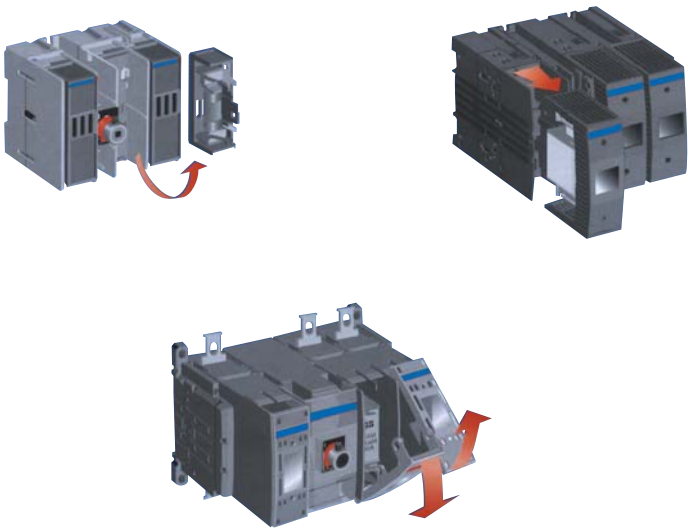


- *For 00P & 00TD80 fuses*
- *For end-contact fuses*
- *For blade-style Protistor fuses DIN 80 - 110 - 140*
- *For American blade-style Protistor fuses*

Easy-to-install and use



Complete protection against touching of live parts



Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

The ITCP switch-disconnector range is specially designed to satisfy the connection requirements of Protistor semiconductor fuses along with thermal stresses generated during their use.

The combination of ITCP switches and Protistor fuses ensures a high degree of safety in the protection of both personnel and equipment, including power semiconductors and other fragile components.

ITCP Main characteristics

- Safe switching or closing of circuit at any time, even on load
- Disconnection of circuit in order to safely service installations and downstream components off load
- Associated fuses enable protection of the even the most demanding semiconductors
- Complying with IEC 947-3 BS 5419 - VDE 0660 - NFC 63130 Standards.
- Silver-plated copper electrical contacts Interrupting rating as per IEC 947-3, AC 23 Isolation of fuses downstream and upstream: when switch is open, fuses are off load Protection in all climate types Molded partitions in self-extinguishing fiber glass-reinforced polyester
- Front-controlled
- Numerous accessories offer complete protection against casual touch of live parts for improved personnel safety.
- Designed for fusing with three Protistor fuse technologies:
  - ferrule-type fuses
  - 00-000 fuses
  - PSC series 660V and 000V fuses.
- Thermal rating is given for an ambient temperature <40°c Beyond this ambient, a derating factor must be applied to thermal rating:

$$\sqrt{\frac{110 - \theta}{70}}$$ where θ is ambient in °C

User advice

While the rating alone enables selection of the switch-disconnector for general purpose fuses, additional parameters must be taken into account for semiconductor fuses:

- RMS operating current
- Actual power loss through fuse

must be lower than maximum dissipable power per fuse in fused switch.

ITCP Selection example

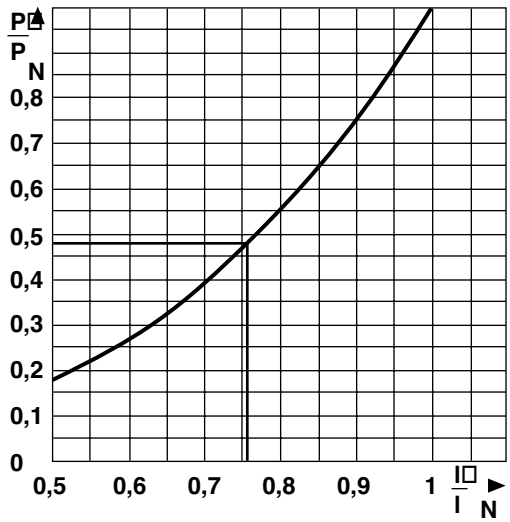
Assume that fuse determination, in accordance with our T59 application information document, results in selection of a PSC 660V size 31 with IN = 450A and 70W rated power.

Operating conditions will be as follows:

- open air installation, ambient 30°C
- vertically-assembled fuses
- I rms = 340 A

Calculated power loss through fuse:

$$\frac{I\ rms}{IN} = \frac{340}{450} \sim 0.76$$



In Semiconductor Fuses section, curve P/PN = f(I/IN) provides a 0.48 coefficient, thus power lost in fuse is: P = 0.48 x 70W = 33.6W

Various possibilities:

1st case: fuse with end contacts TT

(1) ITC P 400 III 30/32 TTF
I rms = 340 A < 400 A
P = 33,6 W < 45 W
(Possible selection)

2nd case: fuse with LI blades

(2) ITC P 400 III 30/32 LI
I rms = 340 A < 400 A
P = 33.6 W < 45 W
(Possible selection)

(3) ITC P 630 III 30/33 LI
I rms = 340 A < 630 A
P = 33.6 W < 60 W
(Possible selection)

Conclusion:

Selection # (2) is recommended by Ferraz Shawmut
- easy-to-install fuse
- most cost-efficient solution

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Selection Table: ITCP Thermal Rating vs fuse type

Reference number

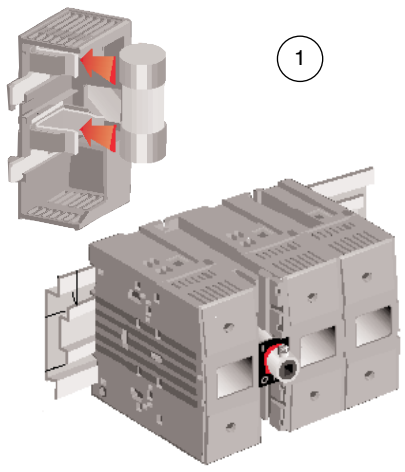
ITCP Thermal Rating Open air Ambient ≤ 40°C	Max. Power loss in fuse	For PROTISTOR® fuses													
		Ferrule ①				00 - 000 Solid Blades ②	Brackets	End-contacts PSC ③							
		10 x 38	14 x 51	22 x 58	27 x 60	00P	000/ 00D80	30TT	31TT	32TT	33TT	70TT	71TT	72TT	73TT
32 A	3,5 W @ Ith 3,5 W@ Ithe	**B210405** *J205283*													
50 A	7,5 W @ Ith 7,5 W @ Ithe		**C210406** *Y209896*												
125 A	12 W @ Ith 12 W @ Ithe			**D210407** *L210782*											
160 A (135)*	12 W @ Ith 9 W @ Ithe				**E210408** *B210888*	**F210409** *S210788*									
250 A (230)*	32 W @ Ith 23 W @ Ithe						**G210410** *X210125*	**H210411** *Y210126*	**H210411** *Y210126*			**J210412** *Z210127*	**J210412** *Z210127*		
400 A (360)*	45 W @ Ith 34 W @ Ithe*						**M210415** *C210130*	**N210416** *D210131*	**N210416** *D210131*	**N210416** *D210131*		**P210417** *E210132*	**P210417** *E210132*	**P210417** *E210132*	
630 A (570)*	60 W @ Ith 45 W @ Ithe*							**S210420** *H210135*	**S210420** *H210135*	**S210420** *H210135*		**S210420** *H210135*	**S210420** *H210135*	**S210420** *H210135*	
800 A (720)*	65 W @ Ith 55 W @ Ithe*							**W210423** *M210139*	**W210423** *M210139*	**W210423** *M210139*	**W210423** *M210139*	**W210423** *M210139*	**W210423** *M210139*	**W210423** *M210139*	**W210423** *M210139*

In bold letters: *Switch plus accessories to be mounted (switch + connection kit + inside control + protection against fuse live parts touching + protection against terminal touching + pre-isolating microswitch) + heightening cover.*

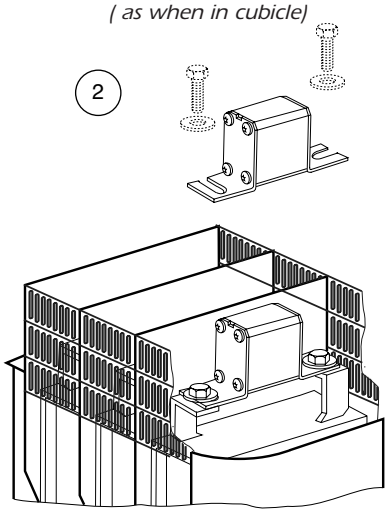
In Italics: *Switch - Accessories must be ordered separately.*

@ Ith : value given at switch thermal rating

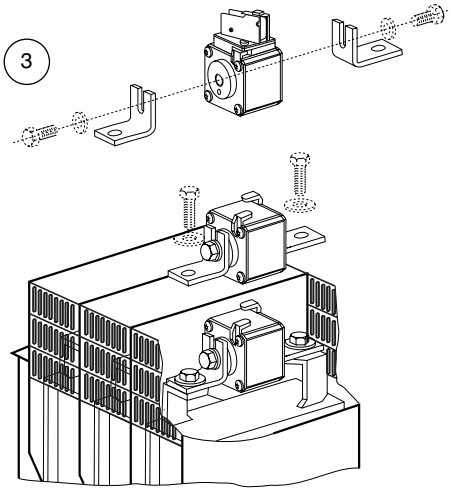
@ Ithe : value given for a shrouded switch (as when in cubicle)



ITCP FOR FERRULE FUSES



ITCP FOR BRACKET-STYLE 00 & 000 FUSES



ITCP FOR END-CONTACT FUSES

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Reference number

ITCP Thermal Rating Open air Ambient ≤ 40°C	Max. Power loss in fuse	For PROTISTOR® fuses											
		 German range PSC (4)				 American range PSC (5)							
						Long blades				Short blades			
		30-70 DIN 110	31-71 DIN 110	32-72 DIN 110	33-73 DIN 110	30LI	31LLI	32LI	33LI	70KI	71KI	72KI	73KI
32 A	3,5 W @ Ith 3,5 W@ Ithe												
50 A	7,5 W @ Ith 7,5 W @ Ithe												
125 A	12 W @ Ith 12 W @ Ithe												
160 A (135)*	12 W @ Ith 9 W @ Ithe												
250 A (230)*	32 W @ Ith 23 W @ Ithe	**K210413** *A210128*	**K210413** *A210128*			**L210414** *B210129*	**L210414***B 210129*			**L210414** *B210129*	**L210414** *B210129*		
400 A (360)*	45 W @ Ith 34 W @ Ithe*	**Q210418** *F210133*	**Q210418** *F210133*	**Q210418** *F210133*		**R210419** *G210134*	**R210419** *G210134*	**R210419** *G210134*		**R210419** *G210134*	**R210419** *G210134*	**R210419** *G210134*	
630 A (570)*	60 W @ Ith 45 W @ Ithe*	**T210421** *L210138*	**T210421** *L210138*	**T210421** *L210138*		**V210422** *K210137*	**V210422** *K210137*	**V210422** *K210137*		**V210422** *K210137*	**V210422** *K210137*	**V210422** *K210137*	
800 A (720)*	65 W @ Ith 55 W @ Ithe*	**X210424** *Q210142*	**X210424** *Q210142*	**X210424** *Q210142*	**X210424** *Q210142*	**Y210425** *P210141*	**Y210425** *P210141*	**Y210425** *P210141*	**Y210425** *P210141*	**Y210425** *P210141*	**Y210425** *P210141*	**Y210425** *P210141*	**Y210425** *P210141*

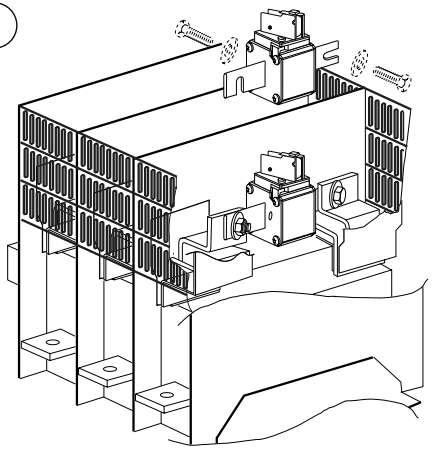
In bold letters: *Switch plus accessories to be mounted (switch + connection kit + inside control + protection against fuse live parts touching + protection against terminal touching + pre-isolating microswitch) + heightening cover.*

In Italics: *Switch - Accessories must be ordered separately.*

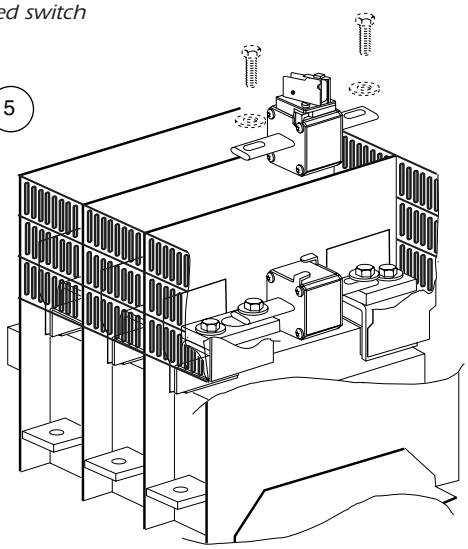
@ Ith : value given at switch thermal rating

@ Ithe : value given for a shrouded switch (as when in cubicle)

(4)



(5)



ITCP FOR DIN-BLADE FUSES

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Selection Table: ITCP Thermal Rating vs fuse type

Catalog number

ITCP Thermal Rating Open air Ambient ≤ 40°C	Max. Power loss in fuse	For PROTISTOR® fuses					
		Ferrule			(1)	Solid Blades (2) 00 - 000	Brackets
		10 x 38	14 x 51	22 x 58	27 x 60	00P	000/00D80
32 A	3,5 W @ Ith 3,5 W@ Ithe	**ITCP32C3CP10** *ITCP32S3CF*					
50 A	7,5 W @ Ith 7,5 W @ Ithe		**ITCP50C3CP14** *ITC50S3CF*				
125 A	12 W @ Ith 12 W @ Ithe			**ITCP125C3CP22** *ITC125S3CF*			
160 A (135)*	12 W @ Ith 9 W @ Ithe				- *ITCP160K3CP27*	**ITCP160C3D08** *ITC160S3CF*	
250 A (230)*	32 W @ Ith 23 W @ Ithe						**ITCP250C3TD08** *ITCP250K3TD08*
400 A (360)*	45 W @ Ith 34 W @ Ithe*						**ITCP400C3TD08** *ITCP400K3TD08*
630 A (570)*	60 W @ Ith 45 W @ Ithe*						
800 A (720)*	65 W @ Ith 55 W @ Ithe*						

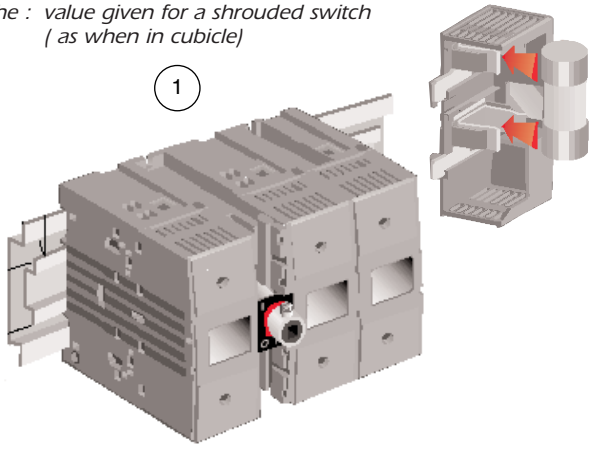
In bold letters: *Switch plus accessories to be mounted (switch + connection kit + inside control + protection against fuse live parts touching + protection against terminal touching + pre-isolating microswitch) + heightening cover.*

In Italics: *Switch - Accessories must be ordered separately.*

@ Ith : value given at switch thermal rating

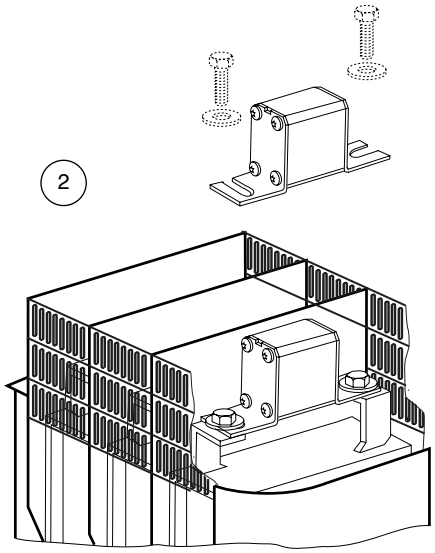
@ Ithe : value given for a shrouded switch (as when in cubicle)

(1)



ITCP FOR FERRULE FUSES

(2)



ITCP FOR BRACKET-STYLE 00 & 000 FUSES

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Catalog number

ITCP Thermal Rating Open air Ambient ≤ 40°C	Max. Power loss in fuse	For PROTISTOR® fuses							
		 End-contacts PSC ③							
		30TT	31TT	32TT	33TT	70TT	71TT	72TT	73TT
32 A	3,5 W @ Ith 3,5 W@ Ithe								
50 A	7,5 W @ Ith 7,5 W @ Ithe								
125 A	12 W @ Ith 12 W @ Ithe								
160 A (135)*	12 W @ Ith 9 W @ Ithe								
250 A (230)*	32 W @ Ith 23 W @ Ithe	**ITCP250C3TTF3** *ITCP250K3TTF3*	**ITCP250C3TTF3** *ITCP250K3TTF3*			**ITCP250C3TTF7** *ITCP250K3TTF7*	**ITCP250C3TTF7** *ITCP250K3TTF7*		
400 A (360)*	45 W @ Ith 34 W @ Ithe*	**ITCP400C3TTF3** *ITCP400K3TTF3*	**ITCP400C3TTF3** *ITCP400K3TTF3*	**ITCP400C3TTF3** *ITCP400K3TTF3*		**ITCP400C3TTF7** *ITCP400K3TTF7*	**ITCP400C3TTF7** *ITCP400K3TTF7*	**ITCP400C3TTF7** *ITCP400K3TTF7*	
630 A (570)*	60 W @ Ith 45 W @ Ithe*	**ITCP630C3TTF** *ITCP630K3TTF*	**ITCP630C3TTF** *ITCP630K3TTF*	**ITCP630C3TTF** *ITCP630K3TTF*		**ITCP630C3TTF** *ITCP630K3TTF*	**ITCP630C3TTF** *ITCP630K3TTF*	**ITCP630C3TTF** *ITCP630K3TTF*	
800 A (720)*	65 W @ Ith 55 W @ Ithe*	**ITCP800C3TTF** *ITCP800K3TTF*	**ITCP800C3TTF** *ITCP800K3TTF*	**ITCP800C3TTF** *ITCP800K3TTF*	**ITCP800C3TTF** *ITCP800K3TTF*	**ITCP800C3TTF** *ITCP800K3TTF*	**ITCP800C3TTF** *ITCP800K3TTF*	**ITCP800C3TTF** *ITCP800K3TTF*	**ITCP800C3TTF** *ITCP800 K3TTF*

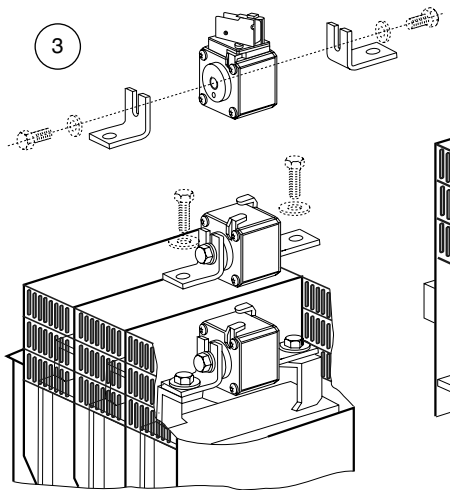
In bold letters: *Switch plus accessories to be mounted (switch + connection kit + inside control + protection against fuse live parts touching + protection against terminal touching + pre-isolating microswitch) + heightening cover.*

In Italics: *Switch - Accessories must be ordered separately.*

@ Ith : value given at switch thermal rating

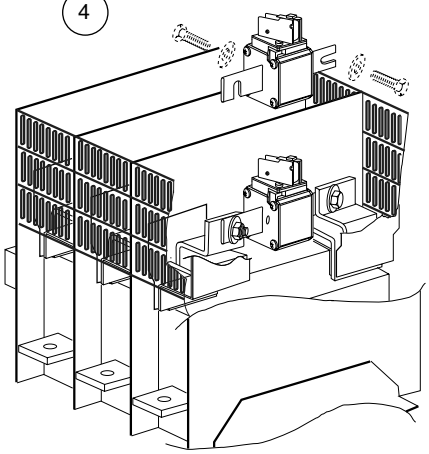
@ Ithe : value given for a shrouded switch (as when in cubicle)

③



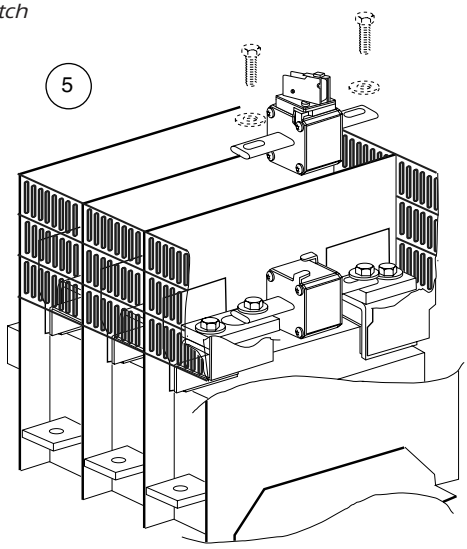
ITCP FOR END-CONTACT FUSES

④



ITCP FOR DIN-BLADE FUSES

⑤



Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Selection Table: ITCP Thermal Rating vs fuse type

Catalog number

ITCP Thermal Rating Open air Ambient ≤ 40°C	Max. Power loss in fuse	For PROTISTOR® fuses			
			German range PSC		(4)
		30-70 DIN 110	31-71 DIN 110	32-72 DIN 110	33-73 DIN 110
32 A	3,5 W @ Ith 3,5 W@ Ithe				
50 A	7,5 W @ Ith 7,5 W @ Ithe				
125 A	12 W @ Ith 12 W @ Ithe				
160 A (135)*	12 W @ Ith 9 W @ Ithe				
250 A (230)*	32 W @ Ith 23 W @ Ithe	**ITCP250C3D11** *ITCP250K3D11*	**ITCP250C3D11** *ITCP250K3D11*		
400 A (360)*	45 W @ Ith 34 W @ Ithe*	**ITCP400C3D11** *ITCP400K3D11*	**ITCP400C3D11** *ITCP400K3D11*	**ITCP400C3D11** *ITCP400K3D11*	
630 A (570)*	60 W @ Ith 45 W @ Ithe*	**ITCP630C3D08/14** *ITCP630K3D11/14*	**ITCP630C3D08/14** *ITCP630K3D11/14*	**ITCP630C3D08/14** *ITCP630K3D11/14*	
800 A (720)*	65 W @ Ith 55 W @ Ithe*	**ITCP800C3D08/14** *ITCP800K3D08/14*	**ITCP800C3D08/14** *ITCP800K3D08/14*	**ITCP800C3D08/14** *ITCP800K3D08/14*	**ITCP800C3D08/14** *ITCP800K3D08/14*

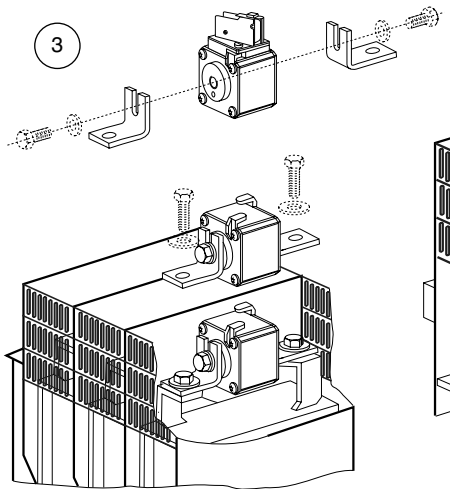
In bold letters: *Switch plus accessories to be mounted (switch + connection kit + inside control + protection against fuse live parts touching + protection against terminal touching + pre-isolating microswitch) + heightening cover.*

In Italics: *Switch - Accessories must be ordered separately.*

@ Ith : value given at switch thermal rating

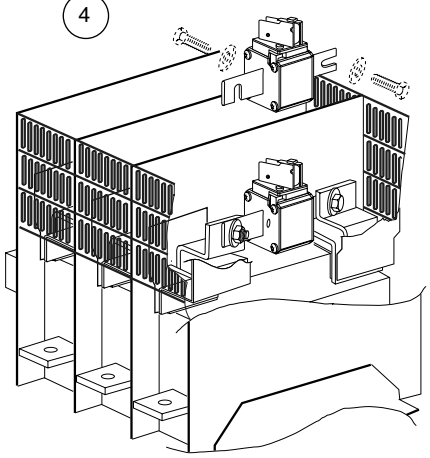
@ Ithe : value given for a shrouded switch (as when in cubicle)

(3)

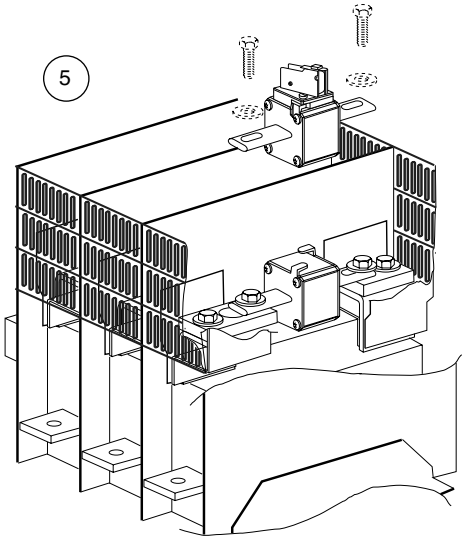


ITCP FOR END-CONTACT FUSES

(4)



(5)



ITCP FOR DIN-BLADE FUSES

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Catalog number

ITCP Thermal Rating Open air Ambient ≤ 40°C	Max. Power loss in fuse	For PROTISTOR® fuses							
						American range PSC			5
		Long blades				Short blades			
		30LI	31LLI	32LI	33LI	70KI	71KI	72KI	73KI
32 A	3,5 W @ Ith 3,5 W@ Ithe								
50 A	7,5 W @ Ith 7,5 W @ Ithe								
125 A	12 W @ Ith 12 W @ Ithe								
160 A (135)*	12 W @ Ith 9 W @ Ithe								
250 A (230)*	32 W @ Ith 23 W @ Ithe	**ITCP250C3US** *ITCP250K3US*	**ITCP250C3US** *ITCP250K3US*			**ITCP250C3US** *ITCP250K3US*	**ITCP250C3US** *ITCP250K3US*		
400 A (360)*	45 W @ Ith 34 W @ Ithe*	**ITCP400C3US** *ITCP400K3US*	**ITCP400C3US** *ITCP400K3US*	**ITCP400C3US** *ITCP400K3US*		**ITCP400C3US** *ITCP400K3US*	**ITCP400C3US** *ITCP400K3US*	**ITCP400C3US** *ITCP400K3US*	
630 A (570)*	60 W @ Ith 45 W @ Ithe*	**ITCP630C3US** *ITCP630K3US*	**ITCP630C3US** *ITCP630K3US*	**ITCP630C3US** *ITCP630K3US*		**ITCP630C3US** *ITCP630K3US*	**ITCP630C3US** *ITCP630K3US*	**ITCP630C3US** *ITCP630K3US*	
800 A (720)*	65 W @ Ith 55 W @ Ithe*	**ITCP800C3US** *ITCP800K3US*	**ITCP800C3US** *ITCP800K3US*	**ITCP800C3US** *ITCP800K3US*	**ITCP800C3US** *ITCP800K3US*	**ITCP800C3US** *ITCP800K3US*	**ITCP800C3US** *ITCP800K3US*	**ITCP800C3US** *ITCP800K3US*	**ITCP800C3US** *ITCP800K3US*

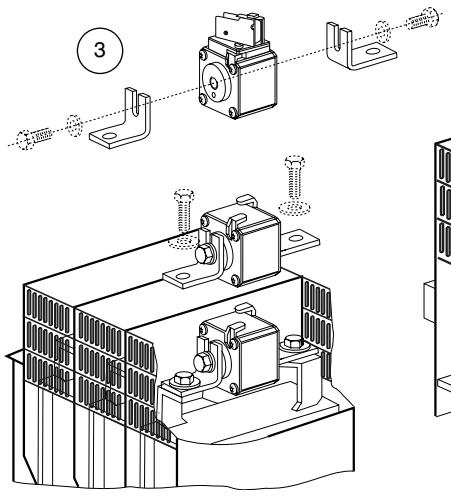
In bold letters: *Switch plus accessories to be mounted (switch + connection kit + inside control + protection against fuse live parts touching + protection against terminal touching + pre-isolating microswitch) + heightening cover.*

In Italics: *Switch - Accessories must be ordered separately.*

@ Ith : value given at switch thermal rating

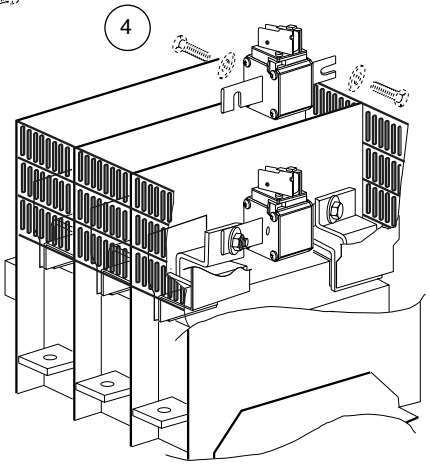
@ Ithe : value given for a shrouded switch (as when in cubicle)

3



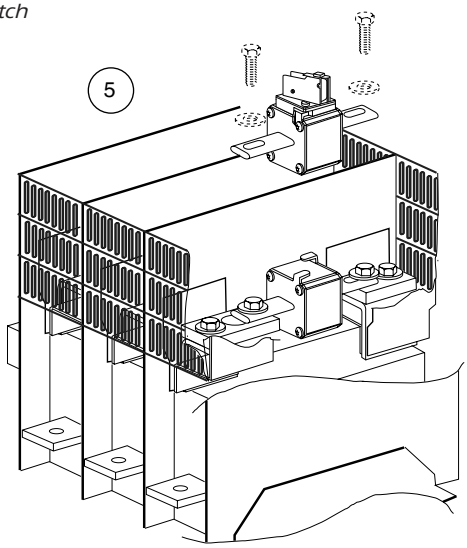
ITCP FOR END-CONTACT FUSES

4



ITCP FOR DIN-BLADE FUSES

5



Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Reference number

		Ready-to-install complete switch**			Separate switch with kit for connecting fuses		
Thermal Rating Ith (A)	Fuse Type	Complete switch Reference Number	Designation Switch supplied with black & red handle, 2 auxiliary pre-isolating contacts NO & NC, blown fuse indication for ferrule fuses, protection against fuse live parts touching, protection against terminal touching and heightening cover.		Separate Switch Reference Number	Connection kit Reference Number	Switch plus mounted connection kit Ref. Number
32	10x38	B 210 405	ITCP 32 III 10x38	COMPLETE	J 205 283	...	...
50	14x51	C 210 406	ITCP 50 III 14x51	COMPLETE	Y 209 896	...	...
125	22x58	D 210 407	ITCP 125 III 22x58	COMPLETE	L 210 782	...	...
160	27x60	E 210 408	ITCP 160 III 27x60	COMPLETE	B 210 888	...	...
160	00P	F 210 409	ITCP 160 III 00	COMPLETE	S 210 788	...	...
250	000/00DIN80	G 210 410	ITCP 250 III 00/000 TD08	COMPLETE	C 210 038	M 210 047	X 210 125
	30 to 31 TTF	H 210 411	ITCP 250 III 30-31 TTF	COMPLETE		K 210 045	Y 210 126
	70 to 71 TTF	J 210 412	ITCP 250 III 70-71 TTF	COMPLETE		L 210 046	Z 210 127
	30 to 31 LI 70 to 71 KI	L210 414	ITCP 250 III 30-31 LI/70-71 KI	COMPLETE		N 210 048	B 210 129
400	000/00DIN80	M 210 415	ITCP 400 III 00/000 TD08	COMPLETE	D 210 039	M 210 047	C 210 130
	30 to 32 TTF	N 210 416	ITCP 400 III 30-32 TTF	COMPLETE		K 210 045	D 210 131
	70 to 72 TTF	P 210 417	ITCP 400 III 70-72 TTF	COMPLETE		L 210 046	E 210 132
	30 to 32 DIN 110 70 to 72 DIN 110	Q 210 418 #	ITCP 400 III 30-32/70-72 D11 #	COMPLETE		H 210 043	F 210 133 #
	30 to 32 LI 70 to 72 KI	R 210 419	ITCP 400 III 30-32 LI/70-72 KI	COMPLETE		N 210 048	G 210 134
630	30 to 33 TTF 70 to 72 TTF	S 210 420	ITCP 630 III 30-33/70-73 TTF	COMPLETE	E 210 040	Q 210 050	H 210 135
	30 to 33 DIN 110 70 to 73 DIN 110	T 210 421#	ITCP 630 III 30-33/70-73 D08 à 14	COMPLETE		P 210 049	L 210 138 #
	30 to 33 LI 70 to 73 KI	V 210 422	ITCP 630 III 30-33 LI/70-73 KI	COMPLETE		S 210 052	K 210 137
800	30 to 33 TTF 70 to 73 TTF	W 210 423	ITCP 800 III 30-33/70-73 TTF	COMPLETE	F 210 041	Q 210 050	M 210 139
	30 to 33 DIN 110 70 to 73 DIN 110	X 210 424 #	ITCP 800 III 30-33/70-73 D08 à 14 #	COMPLETE		P 210 049	Q 210 142 #
	30 to 33 LI 70 to 73 KI	Y 210 425	ITCP 800 III 30-33 LI/70-73 KI	COMPLETE		S 210 052	P 210 141

*** Connection parts are not mounted on TTF fuses due to a distance between connection axes depending on height of fuse body variation which is +/- 1mm*

In-factory adjustments for DIN 110 blade fuses

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Reference number

		Accessories						
Thermal Rating Ith (A)	**Fuse Type**	**Inside handle Black & Red (Internal control)**	**Outside handle ① Black & Red ② Red & Yellow (Internal control)u**	**Shaft extension for outside handle if needed**	**Pre-isolating auxiliary contact (MC) ①②③④⑤⑥**	**Blown fuse indication auxiliary contact (DPMM) ①②③④**	**Protection against fuse live parts touching (CPT)***	**Terminal cover (CB) * 1 CB per terminal**
32	10x38	N 205 287	❶ V 209 916 ❷ C 210 084	H 081 703 265 mm shaft	③ P 205 288 ou G 210633 + ① L 207 493 ② H 209 882	③ Q 205 289	Built-in	Built-in
50	14x51	*E 210 109*	❶ M 209 909 ❷ N 209 910 150 mm shaft	B 210 106 290 mm shaft	① L 207 493 8 contacts maximum ② H 209 882	Z 210 104 (1 NO & 1 NC)	Built-in	Built-in
125	22x58					A 210 473 (1 NO & 1 NC) For 2 NO or 2 NC order L 207 493 H 209 882	Built-in	N 210 807
160	27x60							
160	00P					No indication		
250	000/00 DIN80	*Q 209 912* *To be ordered with a protection screen against fuse live part touching*	❶ Q 209 912 ❷ R 209 913 250 mm shaft	L 097 093 395 mm shaft	④ S 086 588 ⑤ L 097 300 ⑥ J 208 020	Function of fuse type See Semiconductor Fuse section	without blown fuse indication G 207 305 With blown fuse indication G 207 305 + Y 210 770	* M 096 657
	30 to 31 TTF							
	70 to 71 TTF							
	30 to 31 LI 70 to 71 KI							
400	000/00 DIN80	Q 209 912 To be ordered with a protection screen against fuse live part touching	❶ Q 209 912 ❷ R 209 913 250 mm shaft	L 097 093 395 mm shaft	④ S 086 588 ⑤ L 097 300 ⑥ J 208 020	Function of fuse type See Semiconductor Fuse section	without blown fuse indication J 207 307 With blown fuse indication J 207 307 + Y 210 770	* M 096 657
	30 to 32 TTF							
	70 to 72 TTF							
	30 to 32 DIN 110 70 to 72 DIN 110							
	30 to 32 LI 70 to 72 KI							
630	30 to 33 TTF 70 to 72 TTF	Q 209 912 To be ordered with a protection screen against fuse live part touching	❶ Q 209 912 ❷ R 209 913 250 mm shaft	L 097 093 395 mm shaft	④ S 086 588 ⑤ L 097 300 ⑥ J 208 020	Function of fuse type See Semiconductor Fuse section	Without blown fuse indication L 207 309 With blown fuse indication L 207 309 + Y 210 770	** S 095 880*
	30 to 33 DIN 110 70 to 73 DIN 110							
	30 to 33 LI 70 to 73 KI							
800	30 to 33 TTF 70 to 73 TTF	Q 209 912 To be ordered with a protection screen against fuse live part touching	❶ Q 209 912 ❷ R 209 913 250 mm shaft	L 097 093 395 mm shaft	④ S 086 588 ⑤ L 097 300 ⑥ J 208 020	Function of fuse type See Semiconductor Fuse section	Without blown fuse indication Z 210 771 With blown fuse indication Z 210 771+ Y 210 770	* S 095 880
	30 to 33 DIN 110 70 to 73 DIN 110							
	30 to 33 LI 70 to 73 KI							

** With outside control, a locking mechanism of cover can be used. When switch is ON, this mechanism locks the cover (e.g. test of fuse live part touching protection, servicing of circuit when cubicle open)*

TYPES OF AUXILIARY CONTACTS

① Single microswitch 1 NO
② Single microswitch 1 NC
③ Reversing microswitch 1 NO/NC
④ Microswitch 1 NO & 1 NC
⑤ Twin microswitch 2 NO & 2 NC
⑥ Microswitch 1 NO & 1 NC low level

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Catalog number

		Ready-to-install complete switch**			Separate switch with kit for connecting fuses		
Thermal Rating Ith (A)	Fuse Type	Complete switch catalog Number	Designation Switch supplied with black & red handle, 2 auxiliary pre-isolating contacts NO & NC, blown fuse indication for ferrule fuses, protection against fuse live parts touching, protection against terminal touching and heightening cover.		Separate Switch Catalog Number	Connection kit Catalog Number	Switch plus mounted connection kit Cat. Number
32	10x38	ITCP32C3CP10	ITCP 32 III 10x38	COMPLETE	ITC32S3CF	...	...
50	14x51	ITCP50C3CP14	ITCP 50 III 14x51	COMPLETE	ITC50S3CF	...	...
125	22x58	ITCP125C3CP22	ITCP 125 III 22x58	COMPLETE	ITC125S3CF	...	...
160	27x60	-	ITCP 160 III 27x60	COMPLETE	ITCP160K3CP27	...	...
160	00P	ITCP160C3D08	ITCP 160 III 00	COMPLETE	ITC160S3CF	...	...
250	000/00DIN80	ITCP250C3TD08	ITCP 250 III 00/000 TD08	COMPLETE	ITCP250S3	KITCP250/400TD8	ITCP250K3TD08
	30 to 31 TTF	ITCP250C3TTF3	ITCP 250 III 30-31 TTF	COMPLETE		KITCP250/400TF3	ITCP250K3TTF3
	70 to 71 TTF	ITCP250C3TTF7	ITCP 250 III 70-71 TTF	COMPLETE		KITCP250/400TF7	ITCP250K3TTF7
	30 to 31 LI 70 to 71 KI	ITCP250C3US	ITCP 250 III 30-31 LI/70-71 KI	COMPLETE		KITCP250/400US	ITCP250K3US
400	000/00DIN80	ITCP400C3TD08	ITCP 400 III 00/000 TD08	COMPLETE	ITCP400S3	KITCP250/400TD8	ITCP400K3TD08
	30 to 32 TTF	ITCP400C3TTF3	ITCP 400 III 30-32 TTF	COMPLETE		KITCP250/400TF3	ITCP400K3TTF3
	70 to 72 TTF	ITCP400C3TTF7	ITCP 400 III 70-72 TTF	COMPLETE		KITCP250/400TF7	ITCP400K3TTF7
	30 to 32 DIN 110 70 to 72 DIN 110	ITCP400C3D11	ITCP 400 III 30-32/70-72 D11 #	COMPLETE		KITCP250/400D11	ITCP400K3D11
	30 to 32 LI 70 to 72 KI	ITCP400C3US	ITCP 400 III 30-32 LI/70-72 KI	COMPLETE		KITCP250/400US	ITCP400K3US
630	30 to 33 TTF 70 to 72 TTF	ITCP630C3TTF	ITCP 630 III 30-33/70-73 TTF	COMPLETE	ITCP630S3	KITCP630/800TTF	ITCP630K3TTF
	30 to 33 DIN 110 70 to 73 DIN 110	ITCP630C3D08/14	ITCP 630 III 30-33/70-73 D08 à 14	COMPLETE		KITCP630/800D	ITCP630K3D11/14
	30 to 33 LI 70 to 73 KI	ITCP630C3US	ITCP 630 III 30-33 LI/70-73 KI	COMPLETE		KITCP630/800US	ITCP630K3US
800	30 to 33 TTF 70 to 73 TTF	ITCP800C3TTF	ITCP 800 III 30-33/70-73 TTF	COMPLETE	ITCP800S3	KITCP630/800TTF	ITCP800K3TTF
	30 to 33 DIN 110 70 to 73 DIN 110	ITCP800C3D08/14	ITCP 800 III 30-33/70-73 D08 à 14 #	COMPLETE		KITCP630/800D	ITCP800K3D08/14
	30 to 33 LI 70 to 73 KI	ITCP800C3US	ITCP 800 III 30-33 LI/70-73 KI	COMPLETE		KITCP630/800US	ITCP800K3US

*** Connection parts are not mounted on TTF fuses due to a distance between connection axes depending on height of fuse body variation which is +/- 1mm*

In-factory adjustments for DIN 110 blade fuses

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

Catalog number

		Accessories						
Thermal Rating Ith (A)	Fuse Type	Inside handle Black & Red (Internal control)	Outside handle ① Black & Red ② Red & Yellow (Internal control)u	Shaft extension for outside handle if needed	Pre-isolating auxiliary contact (MC) ①②③④⑤⑥	Blown fuse indication auxiliary contact (DPMM) ①②③④	Protection against fuse live parts touching (CPT)*	Terminal cover (CB) * 1 CB per terminal
32	10x38		❶ ❷	265 mm shaft	③ ou ① ②	③	Built-in	Built-in
50	14x51				①	(1 NO & 1 NC)	Built-in	Built-in
125	22x58		❶ ❷	290 mm shaft	8 contacts maximum	(1 NO & 1 NC) For 2 NO or 2 NC order L 207 493	Built-in	
160	27x60		150 mm shaft		②			
160	00P					No indication		
250	000/00 DIN80	*To be ordered with a protection screen against fuse live part touching*	❶ ❷ 250 mm shaft	395 mm shaft	④ ⑤ ⑥	Function of fuse type See Semiconductor Fuse section	without blown fuse indication	
	30 to 31 TTF						With blown fuse indication	
	70 to 71 TTF							
	30 to 31 LI 70 to 71 KI							
400	000/00 DIN80	To be ordered with a protection screen against fuse live part touching	❶ ❷ 250 mm shaft	395 mm shaft	④ ⑤ ⑥	Function of fuse type See Semiconductor Fuse section	without blown fuse indication	
	30 to 32 TTF						With blown fuse indication	
	70 to 72 TTF							
	30 to 32 DIN 110 70 to 72 DIN 110							
	30 to 32 LI 70 to 72 KI							
630	30 to 33 TTF 70 to 72 TTF	To be ordered with a protection screen against fuse live part touching	❶ ❷ 250 mm shaft	395 mm shaft	④ ⑤ ⑥	Function of fuse type See Semiconductor Fuse section	Without blown fuse indication	
	30 to 33 DIN 110 70 to 73 DIN 110						With blown fuse indication	
	30 to 33 LI 70 to 73 KI							
800	30 to 33 TTF 70 to 73 TTF	To be ordered with a protection screen against fuse live part touching	❶ ❷ 250 mm shaft	395 mm shaft	④ ⑤ ⑥	Function of fuse type See Semiconductor Fuse section	Without blown fuse indication	
	30 to 33 DIN 110 70 to 73 DIN 110						With blown fuse indication	
	30 to 33 LI 70 to 73 KI							

** With outside control, a locking mechanism of cover can be used. When switch is ON, this mechanism locks the cover (e.g. test of fuse live part touching protection, servicing of circuit when cubicle open)*

TYPES OF AUXILIARY CONTACTS

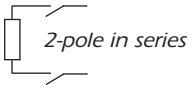
① *Single microswitch 1 NO*
② *Single microswitch 1 NC*
③ *Reversing microswitch 1 NO/NC*
④ *Microswitch 1 NO & 1 NC*
⑤ *Twin microswitch 2 NO & 2 NC*
⑥ *Microswitch 1 NO & 1 NC low level*

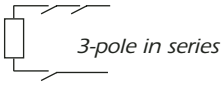
Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

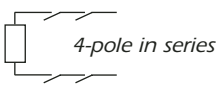
ITCP Fused Switch-disconnectors

Electrical characteristics			ITCP 32	ITCP 50	ITCP 125	ITCP 160
Thermal rating (1) ▪ open air Ith:		Ith (A)	32	50	125	160
▪ in cubicle Ithe:		Ithe	32	50	125	160
Rated voltage		AC-20 DC-20 (V)	1000	1000	1000	1000
Rated insulation voltage		Ui (V)	1000	1000	1000	1000
Rated impulse withstand voltage		(kV)	12	12	12	12
PROTISTOR® fuse type	Ferrule		10x38	14x51	22x58	27x60
	00-000		-	-	-	00P
	End-contacts PSC		-	-	-	-
	American PSC		-	-	-	-
	DIN PSC		-	-	-	-
Maximum power losses per fuse # (w)			3,5 @ Ith 3,5 @ Ithe	7,5 @ Ith 7,5 @ Ithe	12 @ Ith 12 @ Ithe	12 @ Ith 9 @ Ithe
RMS short-circuit rated current with fuses (kA)		500 V	25	50	50	50
		690 V				
Interrupting rating (AC23) Ic (A) Operating rated voltage:	Ue	500 V	256	504	800	800
		690 V	256	320	405	405
AC23 Operating rated current Ie (1) Power class	Ie en (A) Ue	≤ 500 V	32	50	125	160
		690 V	32	50	125	160
AC23 Operating rated power P (kW) with a 1500 rpm asynchronous 3-phase motor (Ue: operating rated voltage)	P en (W) Ue	400 V	15	25	55	55
		500 V	18	33	70	70
		690 V	25	45	45	45
DC23 Operating rated current / poles in series** Ie (A) (Ue: operating rated voltage)	Ue	110-220V	32/2	-	125/3	160/3
		440V	32/4	-	100/4*	100/4*
		500-750V	-	-	-	-
Mechanical endurance: number of operating cycles			10 000	10 000	10 000	10 000
Electrical endurance: number of operating cycles at Ith and cosj 0,65		500 V	-	1500	1500	1000
		690 V	1500	-	(I=100A)	-
Power losses per pole (without fusible)		(W)	2	2.5	12	12
Permissible short-duration current 1s		(kA)	1	2.5	5	5

** Poles in series: to be completed by user





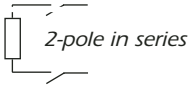


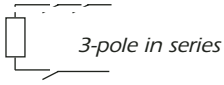
(1) For ambient 50°C = x0.9, 60°C : x0.8. Pour fusible horizontal: x0.9.
* Use in class B
** To be completed by user
Value given at thermal rating, for a switch in open air (Ith) and for a shrouded switch (Ithe) e.g. as in cubicle.

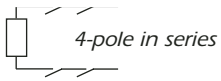
Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

ITCP Fused Switch-disconnectors				
Electrical characteristics			**ITCP 250**	**ITC 400**
Thermal rating (1) ▪ open air Ith:		Ith (A)	250	400
▪ in cubicle Ithe:		Ithe	230	360
Rated voltage		AC-20 DC-20 (V)	1000	1000
Rated insulation voltage		Ui (V)	1000	1000
Rated impulse withstand voltage		(kV)	12	12
PROTISTOR® fuse type	Ferrule		-	-
	00-000		000/00/D80	000/00/D80
	End-contacts PSC		30-31 TT - 70-71 TT	30-31TT - 70-71TT
	American PSC		30LI - 31LLI 70KI -71KI	30LI - 31LLI - 32LI 70KI - 71KI - 72KI
	DIN PSC		30-31 & 70-71 DIN110	30-31-32 & 70-71-72 DIN110
Maximum power losses per fuse # (w)			32 @ Ith 23 @ Ithe	45 @ Ith 34 @ Ithe
RMS short-circuit rated current with fuses (kA)		500 V	100	100
		690 V	50	50
Interrupting rating (AC23) Ic (A) Operating rated voltage:		Ue 500 V	2000	3200
		Ue 690 V	2000	3200
AC23 Operating rated current Ie (1) Power class		Ie en (A) Ue ≤ 500 V	200	400
		Ie en (A) Ue 690 V	200	400
AC23 Operating rated power P (kW) with a 1500 rpm asynchronous 3-phase motor (Ue: operating rated voltage)		P en (W) Ue 400 V	15	210
		P en (W) Ue 500 V	170	280
		P en (W) Ue 690 V	230	330
DC23 Operating rated current / poles in series** Ie (A) (Ue: operating rated voltage)		Ue 110-220V	250 /2	400 /2
		Ue 440V	250 /2	400 /2
		Ue 500-750V	200 /3	400 /3
Mechanical endurance: number of operating cycles			8 000	8 000
Electrical endurance: number of operating cycles at Ith and cosj 0,65		500 V	-	-
		690 V	8 000	8 000
Power losses per pole (without fusible)		(W)	5	30
Permissible short-duration current 1s		(kA)	8	10

** Poles in series: to be completed by user


2-pole in series


3-pole in series

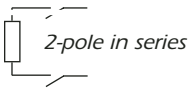

4-pole in series

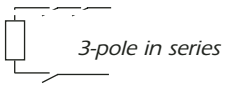
(1) For ambient 50°C = x0.9, 60°C : x0.8. Pour fusible horizontal: x0.9.
* Use in class B
** To be completed by user
Value given at thermal rating, for a switch in open air (Ith) and for a shrouded switch (Ithe) e.g. as in cubicle.

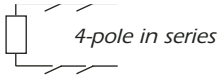
Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

ITCP Fused Switch-disconnectors				
Electrical characteristics			**ITCP 630**	**ITCP 800**
Thermal rating (1) ▪ open air Ith:		Ith (A)	630	800
▪ in cubicle Ithe:		Ithe	600	720
Rated voltage		AC-20 DC-20 (V)	1000	1000
Rated insulation voltage		Ui (V)	1000	1000
Rated impulse withstand voltage		(kV)	12	12
PROTISTOR® fuse type	Ferrule		-	-
	00-000		-	-
	End-contacts PSC		32TT - 72TT	32TT - 33TT 72TT - 73TT
	American PSC		30LI - 31LLI - 32 LI 70KI - 71KI - 72KI	30LI - 31LLI - 32LI - 33LI 70KI - 71KI - 72KI - 73KI
	DIN PSC		30-31-32 & 70-71-72 DIN110	30-31-32-33 & 70-71-72-73 DIN110
Maximum power losses per fuse # (w)			60 @ Ith 45 @ Ithe	65 @Ith 55 @ Ithe
RMS short-circuit rated current with fuses (kA)		500 V	100	100
		690 V	50	50
Interrupting rating (AC23) Ic (A) Operating rated voltage:	Ue	500 V	5760	5760
		690 V	5760	5760
AC23 Operating rated current Ie (1) Power class	Ie en (A) Ue	≤ 500 V	630	720
		690 V	630	720
AC23 Operating rated power P (kW) with a 1500 rpm asynchronous 3-phase motor	P en (W) Ue	400 V	315	350
		500 V	400	470
		690 V	540	600
AC23 (Ue: operating rated voltage)				
DC23 Operating rated current / poles in series** Ie (A)	Ue	110-220V	630 /2	800 /2
		440V	630 /2	800 /2
DC23 (Ue: operating rated voltage)		500-750V	630 /3	800 /3
Mechanical endurance: number of operating cycles			5 000	5 000
Electrical endurance: number of operating cycles at Ith and cosj 0,65		500 V	-	(cosj = 0.6)
		690 V	5 000	500
Power losses per pole (without fusible)		(W)	55	77
Permissible short-duration current 1s		(kA)	16	16

** Poles in series: to be completed by user







(1) For ambient 50°C = x0.9, 60°C : x0.8. Pour fusible horizontal: x0.9.
* Use in class B
** To be completed by user
Value given at thermal rating, for a switch in open air (Ith) and for a shrouded switch (Ithe) e.g. as in cubicle.

Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

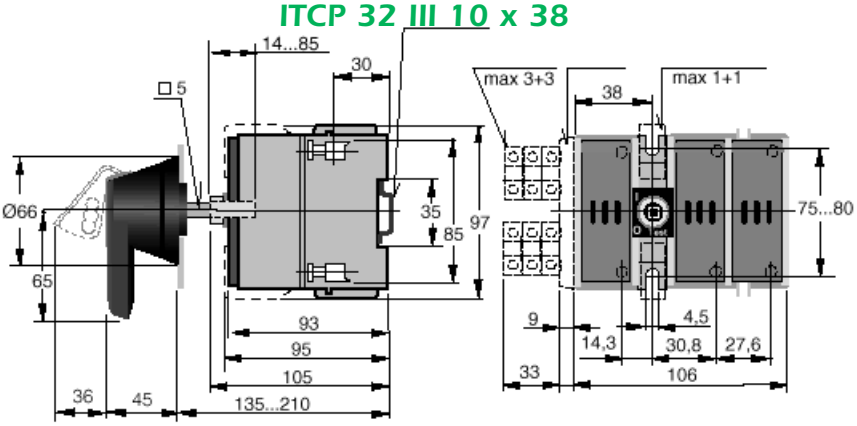
Dimensions and weight
ITC Protistor

ITCP 32 III 10 x 38

Weight: 0.7 kg

Terminal tightening torque:
Mini.: 1.6 N.m ▪ Maxi. 2.4 N.m

Section of copper cables:
0.5 to 10 mm≈



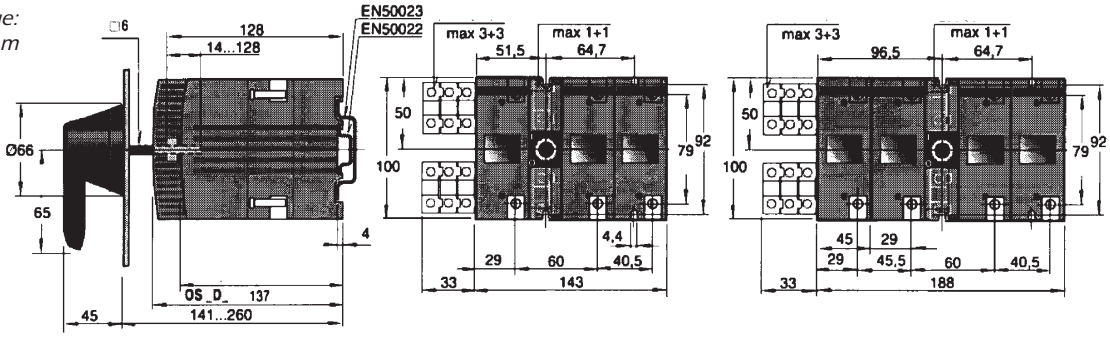
ITCP 50 III 14 x 51

1

Weight: 1.6 kg.

Terminal tightening torque:
Mini.: 4 N.m ▪ Maxi. 6 N.m

Section of copper cables:
2.5 to 25 mm≈



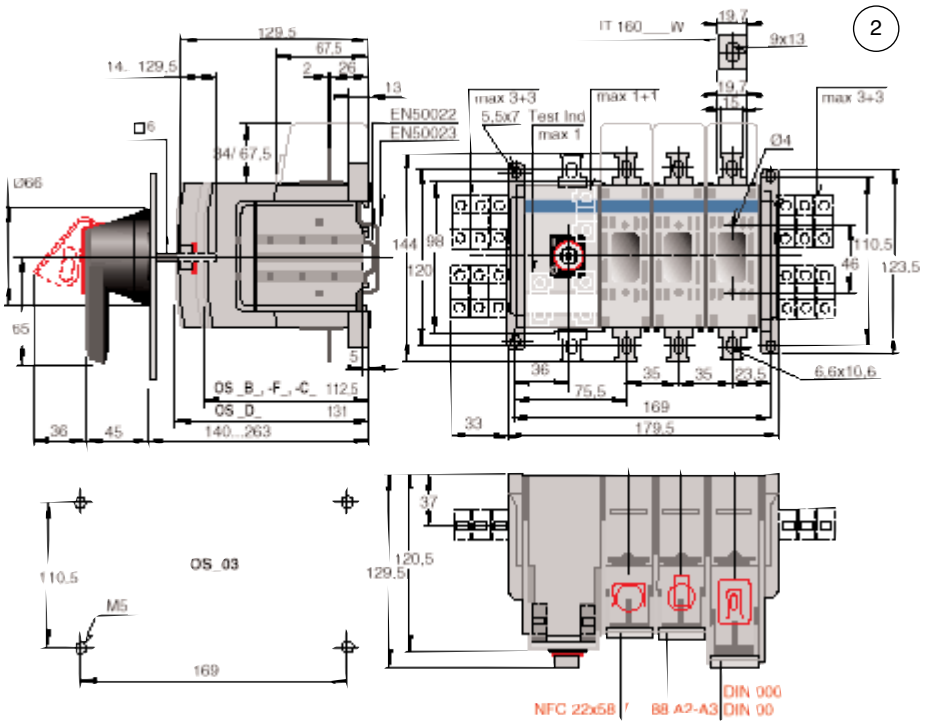
ITCP 125 III 22 x 58 - ITCP 160 III 27 x 60 - ITCP 160 III 00

2

Weight: 1.8 kg.

Terminal tightening torque:
Mini.: 5 N.m ▪ Maxi.: 7 N.m

Connection:
torque 20 mm with M8 bolt



Fused Switches
ITCP for Semiconductor Fuses
32 to 800A

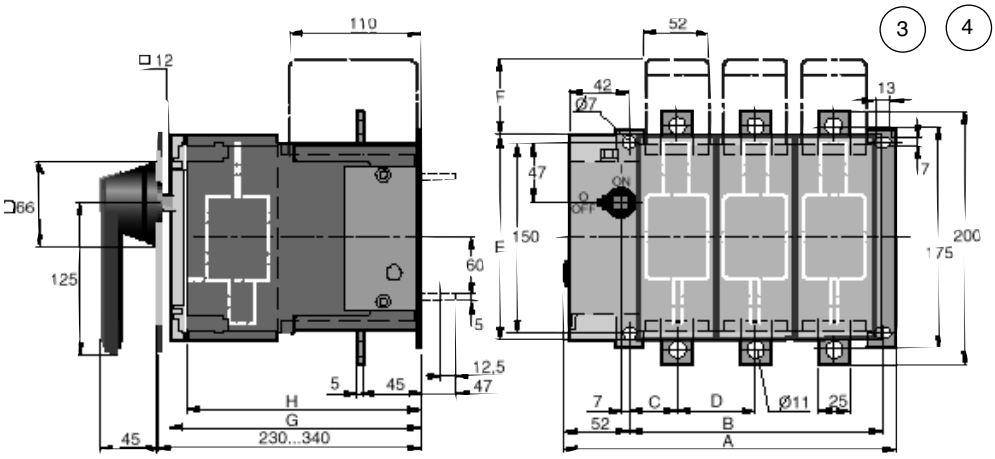
TCP 250 III D80 - ITCP 250 III 30 LI - 31 LLI - ITCP 250 III 30-31 TTF
ITCP 250 III 70-71 TTF - ITCP 250 III 30-31 DIN - 110 / 70-71 DIN 110

Weight: 7 kg.

Terminal tightening torque:
Mini.: 30 N.m ▪ Maxi. : 44 N.m

Connecting:
torque 25 mm per terminal
with M10 bolt

3 4



TCP 400 III D80 - ITCP 400 III 30-32 LI - 31LLI - 70-72 KI - ITCP 400 III 30-31 TTF
ITCP 400 III 70-71 TTF - ITCP 400 III 30-32 DIN 110 / 70-72 DIN 110

Weight: 8 kg.

Terminal tightening torque:
Mini.: 30 N.m ▪ Maxi. : 44 N.m

Connecting:
torque 25 mm per terminal with M10 bolt

	A	B	C	D	E	F	G*	H	*With booster
ITCP 250 D III	262	198	37	62	162	60	199	185	G + 41
ITCP 400 D III	286	222	41	70	180	51	206	192	G + 41

** With protection cover against live part touching, and if blown fuse indication auxiliary contacts are used, lenghthening of G is necessary.*

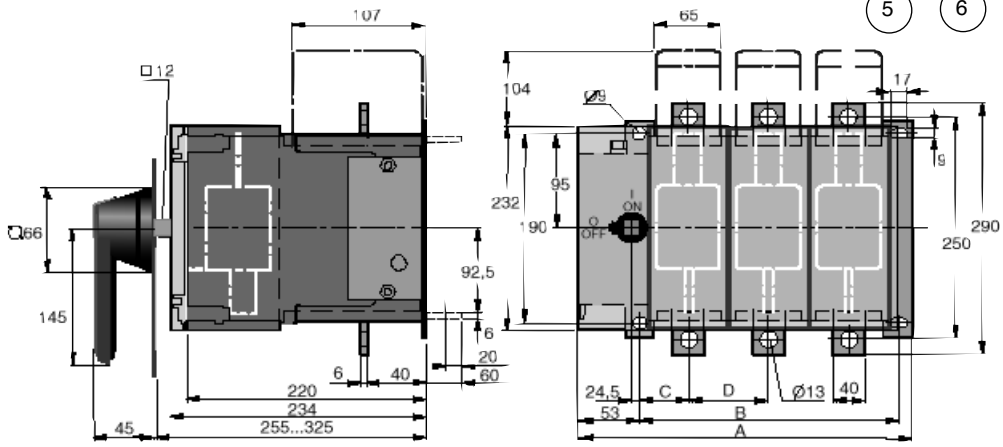
ITCP 630 III 30-33 / 70-73 TTF - ITCP 630 III 30-33 / 70-73 DIN 80 to 140
ITCP 630 III 30-33 LI - 31LLI - 70-73 KI

Weight: 15 kg.

Terminal tightening torque:
Mini.: 50 N.m ▪ Maxi.: 75 N.m

Connecting:
torque 40 mm per terminal
with M12 bolt

5 6



ITCP 800 III 30-33 / 70-73 TTF - ITCP 800 III 30-33 / 70-73 DIN 80 to 140
ITCP 800 III 30-33 LI - 31LLI - 70-73 KI

Weight: 19 kg.

Terminal tightening torque:
Mini: 50 N.m ▪ Maxi. : 75 N.m

Connecting:
torque 40 mm per terminal
with M12 bolt

	A	B	C	D	G* With booser
ITCP 630 D III	343	278	59	80	275
ITCP 800 D III	373	308	64	90	275

** With protection cover against live part touching, and if blown fuse indication auxiliary contacts are used, lenghthening of G is necessary.*

7

Drilling diagram for
outside control

