

variable resistors

preset potentiometers

CTP10 – miniature carbon
10 mm – linear law

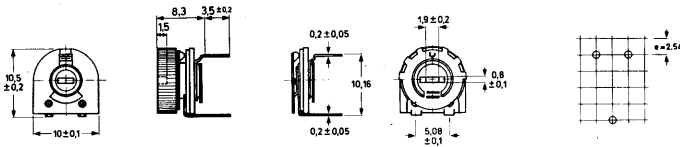
For detailed information
Handbook CM2a

Max. dissipation at $T_{amb} = 40^{\circ}C$	0,1 W
70 $^{\circ}C$	0,05 W
Ambient temperature range	-25 to +70 $^{\circ}C$

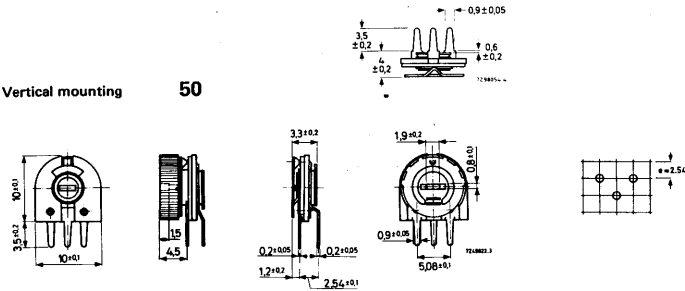
Composition of the catalogue no.

2322 410		resistance code	
0 = without knob		nom. value	I_{max} slider
4 = with knob		$\pm 20\%$	mA
(cat. no. of knob: 4322 047 00190)			
11 = vertical mounting			
33 = horizontal mounting			
50 = vertical mounting			
100 Ω	10	51	
220	7	52	
330	6	69	
470	4,5	53	
1 k Ω	3,2	54	
2,2	2,2	55	
4,7	1,4	56	
10	1,0	57	
22	0,7	58	
47	0,45	59	
100	0,32	61	
220	0,22	62	
470	0,22	63	
1 M Ω	0,22	64	
2,2	0,22	65	
4,7	0,14	66	

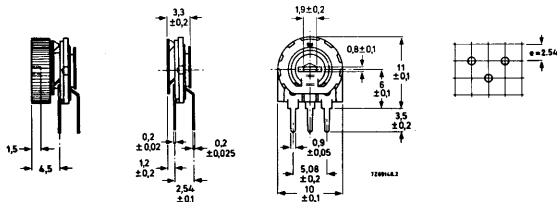
Horizontal mounting 33



Vertical mounting 50



Vertical mounting 11



CTP14 — carbon
14 mm — linear law

Max. dissipation at $T_{amb} = 40^{\circ}C$ 0,2 W
 Operating temperature range -25 to $+70^{\circ}C$
 Climatic category IEC 68 25/070/21
 Basic specification DIN 44150

Composition of the catalogue no.

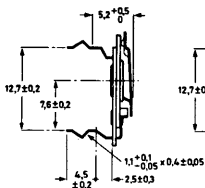
2322 409

resistance code

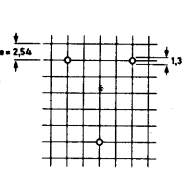
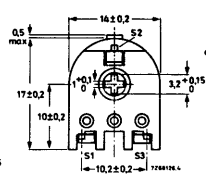
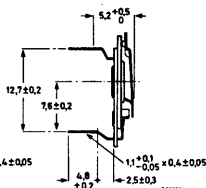
			resistance code	
			nom. value $\pm 20\%$	I_{max} slider mA
0 = without knob	horizontal mounting			
1 = with knob at base-plate side	with snap-in pins	83		
2 = with knob at carbon-track side	straight pins	63		
4 = with adjustment wheel at carbon-track side	vertical mounting			
	with snap-in pins	72	100 Ω	45
	straight pins	52	220	30
			330	24,5
			470	20,5
			1 k Ω	14
			2,2	9,5
			4,7	6,5
			10	4,5
			22	3
			47	2
			100	1,4
			220	0,9
			470	0,6
			1 M Ω	0,4
			2,2	0,3
			4,7	0,2

Horizontal mounting

snap-in pins

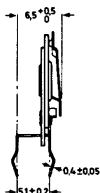


straight pins

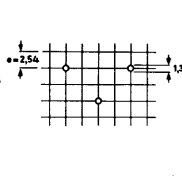
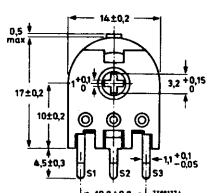
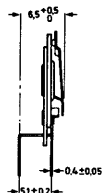


Vertical mounting

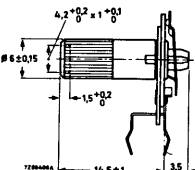
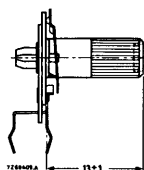
snap-in pins



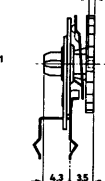
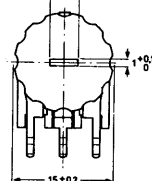
straight pins



Knob sizes



Wheel sizes



variable resistors

preset potentiometers

CTP18 – carbon
18 mm – linear law

Max. dissipation at $T_{amb} = 25^{\circ}C$	0,25 W
70 $^{\circ}C$	0,15 W
Operating temperature range	-25 to +70 $^{\circ}C$

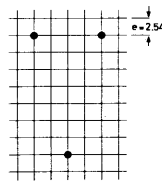
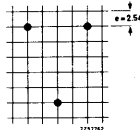
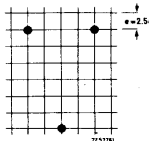
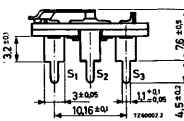
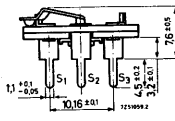
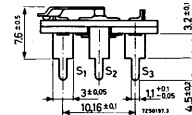
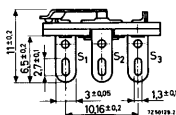
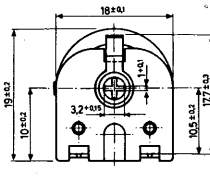
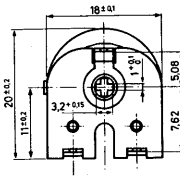
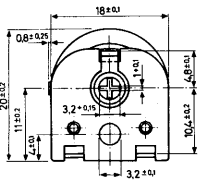
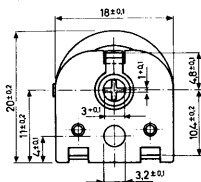


Fig.1
2322 411 000 . .

Fig.2
2322 411 033 . .

Fig.3
2322 411 083 . .

Fig.4
2322 411 084 . .

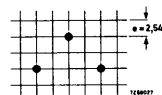
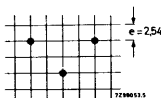
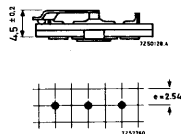
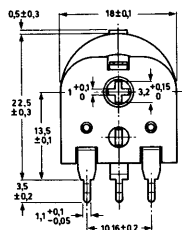
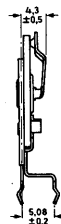
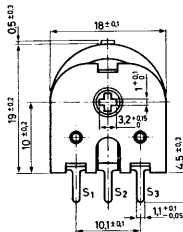
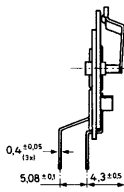
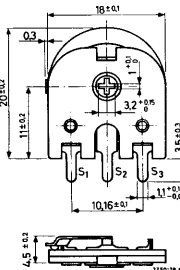


Fig.5
2322 411 022 . .

Fig.6
2322 411 072 . .

Fig.7
2322 411 073 ..

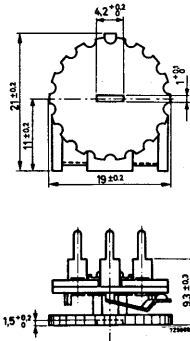
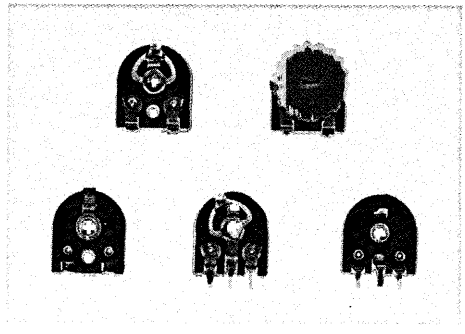


Fig.8
2322 411 433 ..

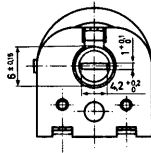


Fig.9
2322 411 133 ..

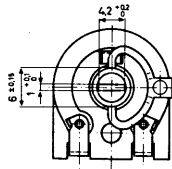
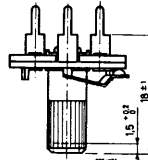
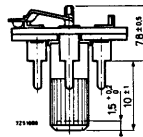


Fig.10
2322 411 233 ..



Composition of the catalogue no.

0 = without knob	2322 411	code for resistance value, see table
1 = with knob at base-plate side		
2 = with knob at carbon-track side		
3 = with adjustment wheel at base-plate side (only for vertical mounting versions)		
4 = with adjustment wheel at carbon-track side		
	00 = with solder tags (Fig.1)	
	22 = with pins for vertical mounting (Fig.5)	
	33 = with pins for horizontal mounting (Fig.2)	
	72 = with pins for vertical mounting (according to DIN 44150, Fig.6)	
	73 = with pins for vertical mounting (Fig.7)	
	83 = with pins for horizontal mounting (according to DIN 44150, Fig.3)	
	84 = with pins for horizontal mounting (according to DIN 44151, Fig.4)	

nom. resistance value R_n	code in catalogue no.
100 Ω	51
220 Ω	52
330 Ω	69
470 Ω	53
1 $k\Omega$	54
2.2 $k\Omega$	55
4.7 $k\Omega$	56
10 $k\Omega$	57
22 $k\Omega$	58
47 $k\Omega$	59
100 $k\Omega$	61
220 $k\Omega$	62
470 $k\Omega$	63
1 $M\Omega$	64
2.2 $M\Omega$	65
4.7 $M\Omega$	66

Note: catalogue no. of adjustment wheel: 4322 047 08230;
catalogue no. of adjustment knob : 4322 047 08280.

variable resistors

preset potentiometers

TMP10 — cermet
10 mm — linear law

Max dissipation at $T_{amb} = 70^{\circ}\text{C}$	0,5 W
Operating temperature range	-55 to $+70^{\circ}\text{C}$
Limiting slider current	$\sqrt{P_{max}/R_{tot}}$
Tolerance on nominal resistance	$\pm 20\%$

Horizontal mounting

open version

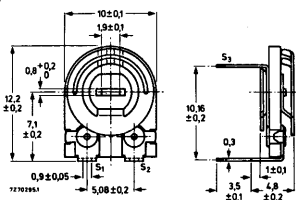


Fig.1a

dust-covered version

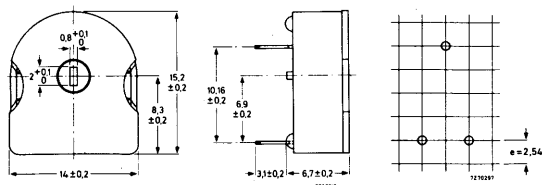


Fig.1b

Vertical mounting

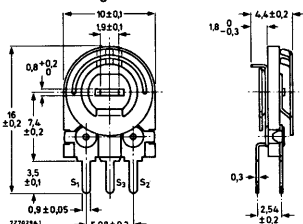


Fig.2a

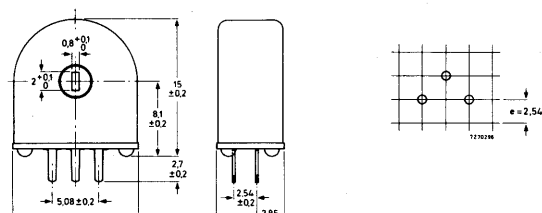


Fig.2b

Composition of the catalogue no.

2322 482

code for version _____ resistance code, see table

- 20 = for horizontal mounting (Fig.1a)
- 21 = dust-covered version for horizontal mounting (Fig.1b)
- 30 = for vertical mounting (Fig.2a)
- 31 = dust-covered version for vertical mounting (Fig.2b)

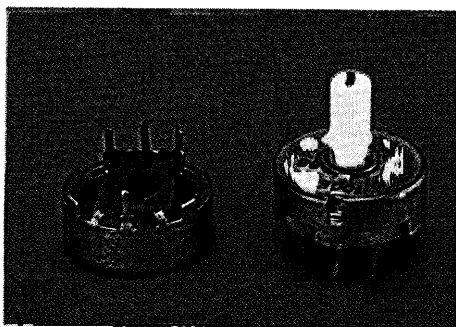
nominal resistance code in catalogue no.

100 Ω	101
150 Ω	151
220 Ω	221
330 Ω	331
470 Ω	471
680 Ω	681
1 k Ω	102
1,5 k Ω	152
2,2 k Ω	222
3,3 k Ω	332
4,7 k Ω	472
6,8 k Ω	682

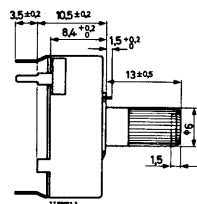
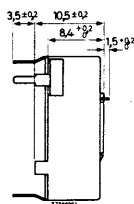
nominal resistance code in catalogue no.

10 k Ω	103
15 k Ω	153
22 k Ω	223
33 k Ω	333
47 k Ω	473
68 k Ω	683
100 k Ω	104
150 k Ω	154
220 k Ω	224
330 k Ω	334
470 k Ω	474
680 k Ω	684
1 M Ω	105

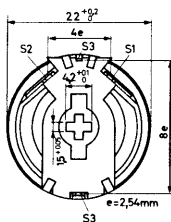
**TWP22 – wirewound
linear law**



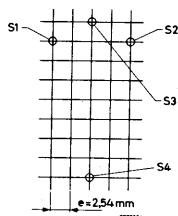
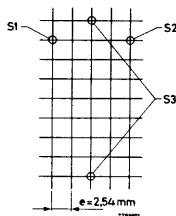
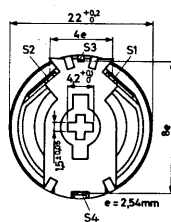
Maximum dissipation at $T_{amb} = 40^{\circ}C$	2 W
$70^{\circ}C$	1,5 W
Operating temperature	-10 to $+70^{\circ}C$
Climatic category (IEC 68)	10/070/21



without tap



with tap

**Composition of the catalogue no.**

2322 011

resistance code, see table

without tap or knob
with tap, without knob
without tap, with knob
with tap and knob

- $\equiv 02$
- $\equiv 03$
- $\equiv 22$
- $\equiv 23$

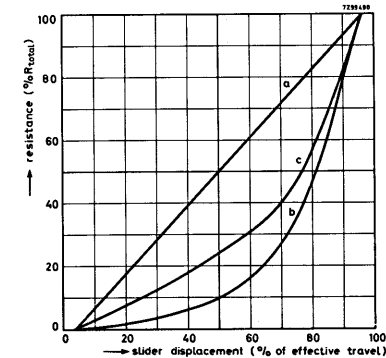
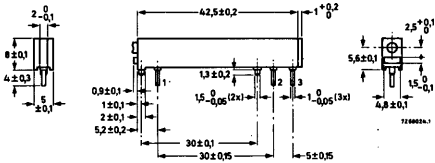
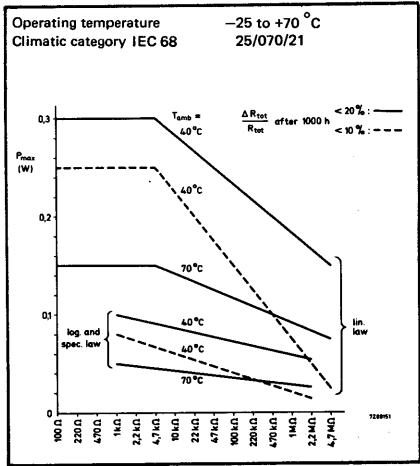
resistance value in Ω	code in catalogue no.
2,2	228
3,3	338
4,7	478
6,8	688
10	109
15	159
22	229
33	339
47	479
68	689
100	101
120	121
150	151
180	181
220	221
330	331
470	471
680	681
1000	102
4700	472
11 + 11	229
50 + 50	101
150 + 150	301

variable resistors

preset potentiometers

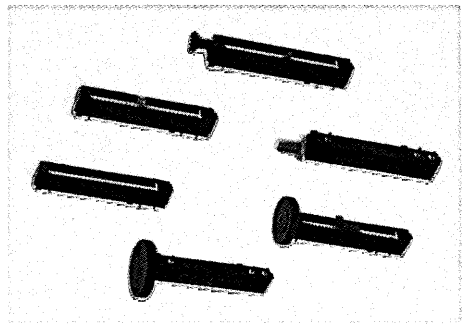
MCP10 MCP20 MCP40 – multturn carbon
linear and other laws

Precision multiturn preset potentiometers, widely
used in tv and radio tuning.



code in catalogue no.

nominal resistance	linear law, curve a	logarithmic law, curve b	special law, curve c
100 Ω	01		
220 Ω	02		
470 Ω	03		
1 kΩ	04	24	
2,2 kΩ	05	25	
4,7 kΩ	06	26	
10 kΩ	07	27	
22 kΩ	08	28	
47 kΩ	09	29	
100 kΩ	11	31	
220 kΩ	12	32	
470 kΩ	13	33	
1 MΩ	14	34	
2,2 MΩ	15	35	
4,7 MΩ	16		



Composition of the catalogue no.

2322 41

code for number of turns of spindle
 2 = 20 turns
 3 = 10 turns
 4 = 40 turns

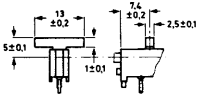
resistance code, see table on previous page

code for adjustment provision,

code for indicator

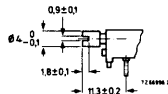
8 without indicator but with dust cover

0 without indicator



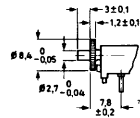
1268001.2A

slotted



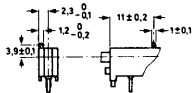
1268000.2

gear-wheel



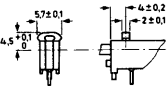
1268000.1

2



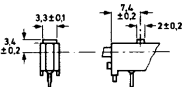
1268000.1A

3



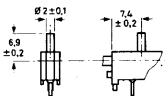
1268000.1A

4

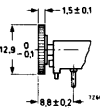


1268000.1A

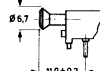
5



1268000.1



1268000.1



1268000.2

51

81

52

82

83

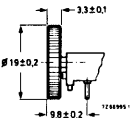
62

61

64

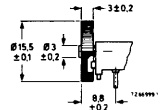
63

knobs



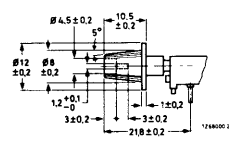
1268000.1

approx. 48 notches

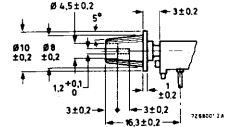


1268000.1

approx. 60 notches



1268000.2



1268000.2A

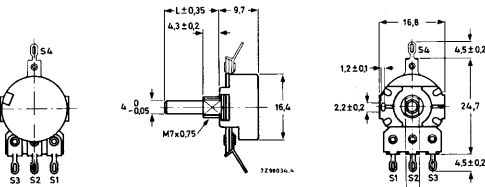
variable resistors

control potentiometers

CP16 – carbon
16 mm – linear and other laws

Widely used in video and audio equipment; switched versions also available.

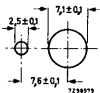
Max dissipation at T _{amb} = 40 °C	
linear	0,1 W
others	0,05 W
Operating temperature	–10 to +70 °C
Climatic category IEC 68	10/070/21
Breaking capacity of switch	
rotary	12 V(d.c.), 2A
push-pull	250 V(a.c.), 1A



Single potentiometer

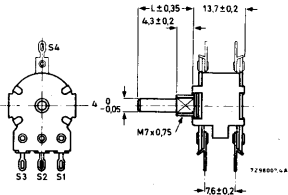
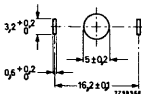
Mounting facilities
required mounting
holes in chassis.

mounting bush
M7 x 0,75

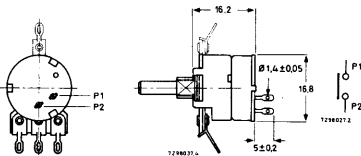


twist tags

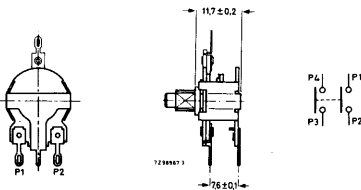
Note: not for
potentiometers
with push-pull
switch.



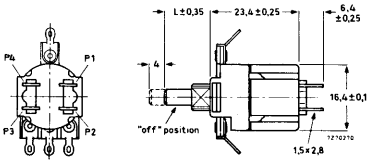
Tandem potentiometer



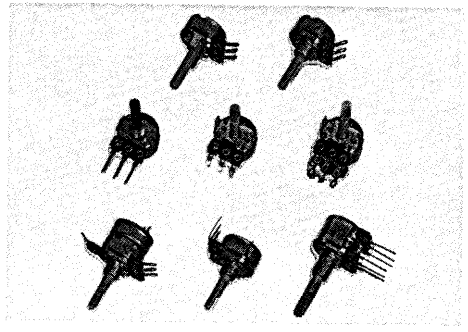
Single potentiometer
with s.p.s.t. rotary switch
(spring actuated).



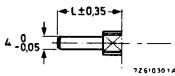
Single potentiometer
with s.p.s.t. rotary switch
(direct operating).



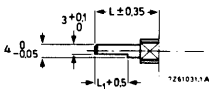
Single potentiometer
with d.p.s.t. push-pull switch.



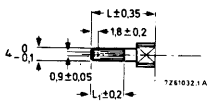
Spindles



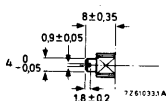
plain



flat-faced

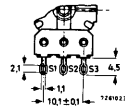


knurled

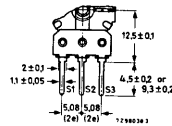
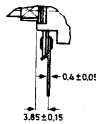


slotted

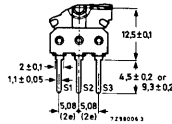
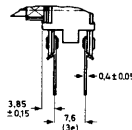
Connecting terminals



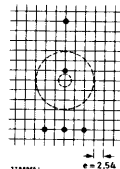
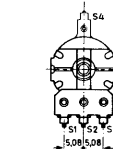
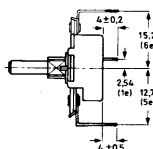
Solder tags



Long or short printed-wiring pins (single potentiometer)



Long or short printed-wiring pins (tandem potentiometer)

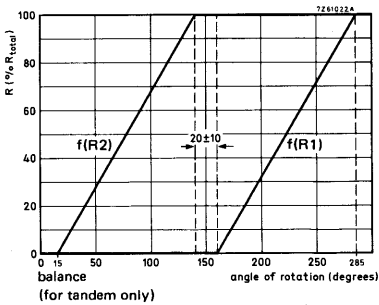
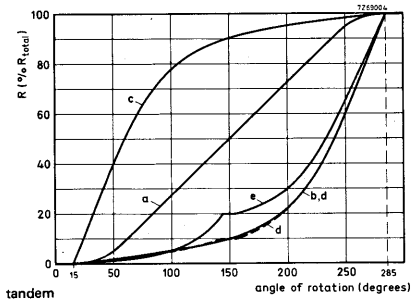
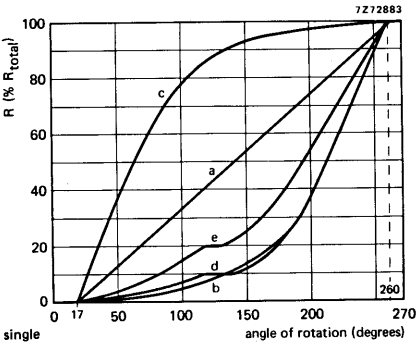


Bent printed-wiring pins

variable resistors

control potentiometers

CP16 – carbon
16 mm – linear and other laws



code in catalogue no.

nominal resistance	linear law curve a	log. law curve b	rev. log. law curve c	balance curve f
220 Ω	02			
470 Ω	03			
1 kΩ	04	24	44	
2,2 kΩ	05	25	45	
4,7 kΩ	06	26	46	
10 kΩ	07	27	47	91
22 kΩ	08	28	48	92
47 kΩ	09	29	49	93
100 kΩ	11	31	51	94
220 kΩ	12	32	52	95
470 kΩ	13	33	53	96
1 MΩ	14	34	54	97
2,2 MΩ	15	35	55	
4,7 MΩ	16			

code in catalogue no.

nominal resistance	tap at 10% curve d	tap at 20% curve e
5 + 42 kΩ	72	
20 + 200 kΩ	67	
50 + 420 kΩ	73	
100 + 900 kΩ	64	
2 + 8 kΩ		76
5 + 17 kΩ		82
10 + 37 kΩ		86
20 + 80 kΩ		77
50 + 170 kΩ		83
100 + 370 kΩ		87
0,5 + 1,7 MΩ		84

Composition of the catalogue no.

code for type and switch,
see table below

2322

code for terminals, mounting facility,
spindle type and length L

code for resistance law and nominal
resistance, see table previous page

solder tags				p.w. pins, length 4,5 mm				p.w. pins, length 9,3 mm			
mounting bushing		twist tags		mounting bushing		twist tags		mounting bushing		twist tags	
steel spindle	plastic spindle	steel spindle	plastic spindle	steel spindle	plastic spindle	steel spindle	plastic spindle	steel spindle	plastic spindle	steel spindle	plastic spindle
0 ..	7 ..	2 ..	4 ..	0 ..	7 ..	2 ..	4 ..	1 ..	6 ..	3 ..	5 ..
L = 10 mm = . 11				L = 10 mm = . 61				L = 10 mm = . 61			
12 mm = . 09				12 mm = . 59				12 mm = . 59			
15 mm = . 12				15 mm = . 62				15 mm = . 62			
17 mm = . 13				17 mm = . 63				17 mm = . 63			
19 mm = . 14				19 mm = . 64				19 mm = . 64			
plain 20 mm = . 15				plain 20 mm = . 65				plain 20 mm = . 65			
22 mm = . 17				22 mm = . 67				22 mm = . 67			
24 mm = . 19				24 mm = . 69				24 mm = . 69			
25 mm = . 01				25 mm = . 51				25 mm = . 51			
28 mm = . 02				28 mm = . 52				28 mm = . 52			
30 mm = . 03				30 mm = . 53				30 mm = . 53			
10 mm = . 42 (L ₁ = 3,5 mm)				10 mm = . 92 (L ₁ = 3,5 mm)				10 mm = . 92 (L ₁ = 3,5 mm)			
flat 15 mm = . 44 (L ₁ = 8,5 mm)				flat 15 mm = . 94 (L ₁ = 8,5 mm)				flat 15 mm = . 94 (L ₁ = 8,5 mm)			
faced 20 mm = . 45 (L ₁ = 8,5 mm)				faced 20 mm = . 95 (L ₁ = 8,5 mm)				faced 20 mm = . 95 (L ₁ = 8,5 mm)			
20 mm = . 46 (L ₁ = 13,5 mm)				20 mm = . 96 (L ₁ = 13,5 mm)				20 mm = . 96 (L ₁ = 13,5 mm)			
knurled 10 mm = . 26 (L ₁ = 5 mm)				knurled 10 mm = . 76 (L ₁ = 5 mm)				knurled 10 mm = . 76 (L ₁ = 5 mm)			
(plastic 15 mm = . 27 (L ₁ = 9 mm)				(plastic 15 mm = . 77 (L ₁ = 9 mm)				(plastic 15 mm = . 77 (L ₁ = 9 mm)			
only) 20 mm = . 28 (L ₁ = 9 mm)				only) 20 mm = . 78 (L ₁ = 9 mm)				only) 20 mm = . 78 (L ₁ = 9 mm)			
slotted = . 10				slotted = . 60				slotted = . 60			

Code for type and switch

without switch	single	= 380
	single, with bent p.w. pins (only available with mounting bushing and p.w. pins of 9,3 mm length)	= 389
	tandem (and balance)	= 390
with switch	single, with s.p.s.t. rotary switch, spring actuated (only available with mounting bushing)	= 381
	single, with d.p.s.t. push-pull switch (only available with mounting bushing and plastic spindle, not available with slotted spindle)	= 382
	single, with s.p.s.t. rotary switch, direct operating (plastic spindle only)	= 387

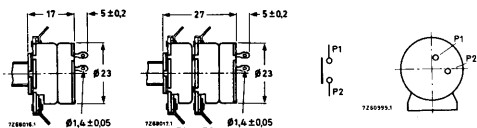
variable resistors

control potentiometers

CP23 — carbon
23 mm — linear and other laws

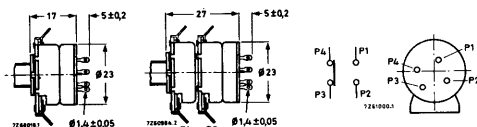
Widely used in video and audio equipment;
switched versions also available.

Max. dissipation at $T_{amb} = 40^{\circ}C$	
linear	0,25 W
others	0,125 W
Working temperature	- 10 to $+70^{\circ}C$
Climatic category IEC 68	10/070/21
Breaking voltage of switch	250 V (a.c.)



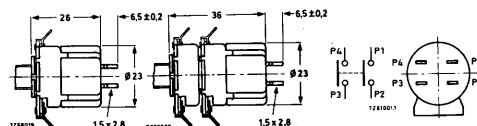
S.P.S.T. rotary
switch (single)

S.P.S.T. rotary
switch (tandem or twin)



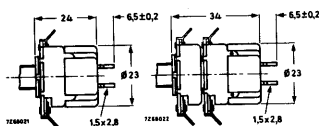
S.P.D.T. rotary
switch (single)

S.P.D.T. rotary
switch (tandem)



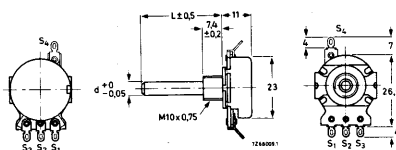
D.P.S.T. rotary
switch (single)

D.P.S.T. rotary
switch (tandem or twin)

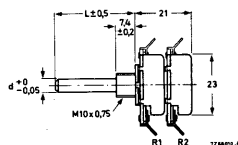


D.P.S.T. push-pull
switch (single)

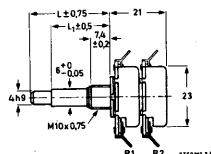
D.P.S.T. push-pull
switch (tandem or twin)



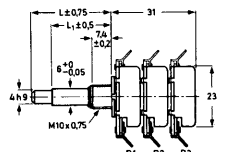
Single



Tandem



Twin

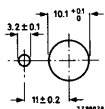


Triple

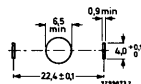
For d, L and L_1 see composition of catalogue no.

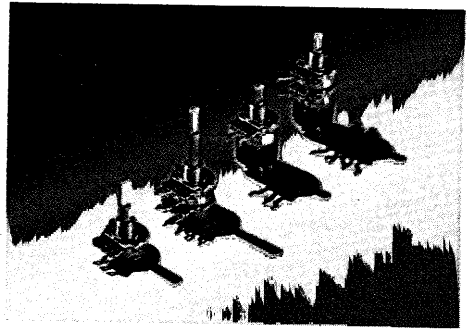
Required mounting holes in chassis

mounting bushing
M10 x 0,75

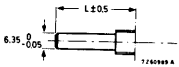
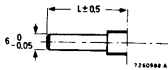


twist tags
only for single
and tandem

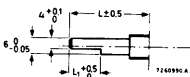




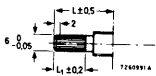
Spindles



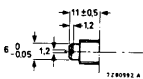
plain



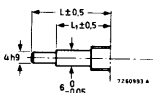
flat faced
(single only)



knurled
(single only)



slotted

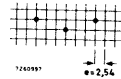
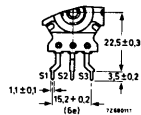
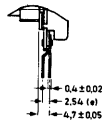
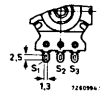


twin/triple

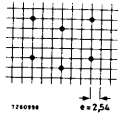
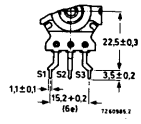
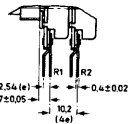
Connecting terminals



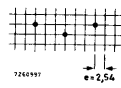
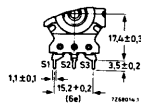
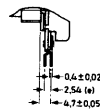
Solder tags



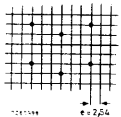
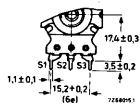
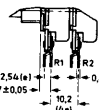
Long printed-wiring pins, pin distance 15,2 mm (6e) (single potentiometer).



Long printed-wiring pins, pin distance 15,2 mm (6e) (tandem potentiometer).



Short printed-wiring pins, pin distance 15,2 mm (6e) (single potentiometer).

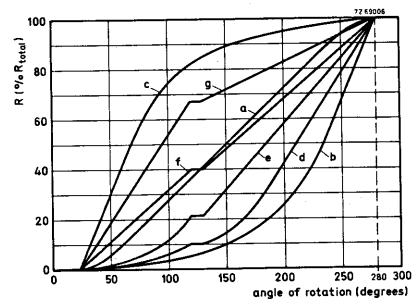


Short printed-wiring pins, pin distance 15,2 mm (6e) (tandem potentiometer).

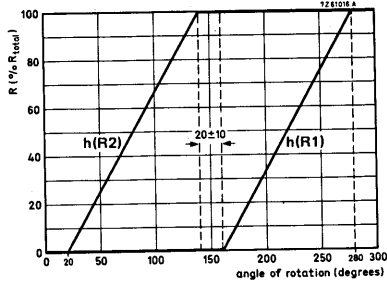
variable resistors

control potentiometers

CP23 – carbon
23 mm – linear and other laws



single and tandem



balance (tandem only)

code in catalogue no.

nominal resistance	linear law curve a	log. law curve b	rev. log. law curve c	balance curve h
220 Ω	02			
330 Ω	19		59	
470 Ω	03		43	
1 kΩ	04	24	44	
2,2 kΩ	05	25	45	
4,7 kΩ	06	26	46	
10 kΩ	07	27	47	
22 kΩ	08	28	48	92
47 kΩ	09	29	49	93
100 kΩ	11	31	51	94
220 kΩ	12	32	52	95
470 kΩ	13	33	53	96
1 MΩ	14	34	54	97
2,2 MΩ	15	35	55	
4,7 MΩ	16	36		

code in catalogue no.

nominal resistance	tap at 10% curve d	tap at 20% curve e	tap at 40% curve f	tap at 67% curve g
20 + 200 kΩ	67			
50 + 420 kΩ	73			
100 + 900 kΩ	64			
0,2 + 2 MΩ	68			
0,5 + 1,7 kΩ		81		
5 + 17 kΩ		82		
10 + 37 kΩ		86		
20 + 80 kΩ		77		
50 + 170 kΩ		83		
100 + 370 kΩ		87		
200 + 800 kΩ		78		
0,5 + 1,7 MΩ		84		
400 + 600 kΩ			89	
200 + 100 kΩ				65

**Composition of the catalogue no.
Single and tandem types**

code for type and switch

2322

code for terminals, mounting facility,
type, and length of plastic spindle

code for resistance law and nominal
resistance, see table previous page

		solder tags		long p.w. pins		short p.w. pins	
		mounting bushing	twist tags	mounting bushing	twist tags	mounting bushing	twist tags
without switch	single = 350 tandem = 360			3 ..	5 ..	2 ..	6 ..
with s.p.d.t. rotary switch	single = 352 tandem = 363	17 mm = 713 18 mm = 708 19 mm = 714 20 mm = 715 22 mm = 717	17 mm = 433 18 mm = 426 19 mm = 434 20 mm = 435 22 mm = 437	17 mm = . 63 18 mm = . 56 19 mm = . 64 20 mm = . 65 22 mm = . 67		17 mm = . 83 18 mm = . 76 19 mm = . 84 20 mm = . 85 22 mm = . 87	
with s.p.s.t. rotary switch	single = 353 tandem = 362	25 mm = 701 30 mm = 703 35 mm = 704 40 mm = 705 60 mm = 707 70 mm = 708 90 mm = 709	25 mm = 421 30 mm = 423 35 mm = 424 40 mm = 425 60 mm = 427 70 mm = 428 90 mm = 429	25 mm = . 51 30 mm = . 53 35 mm = . 54 40 mm = . 55 60 mm = . 57 70 mm = . 58 90 mm = . 59		25 mm = . 71 30 mm = . 73 35 mm = . 74 40 mm = . 75 60 mm = . 77 70 mm = . 78 90 mm = . 79	
with d.p.s.t. push-pull switch 2A	single = 355 tandem = 365	plain φ 6 mm	plain φ 6,35 mm	plain φ 6 mm		plain φ 6,35 mm	
with d.p.d.t. rotary switch	single = 357 tandem = 366	18 mm = 740 25 mm = 741 28 mm = 742 30 mm = 743 35 mm = 744 40 mm = 745 60 mm = 747 70 mm = 748 90 mm = 749	18 mm = 411 30 mm = 412 60 mm = 431	18 mm = . 90 25 mm = . 91 28 mm = . 92 30 mm = . 93 35 mm = . 94 40 mm = . 95 60 mm = . 97 70 mm = . 98 90 mm = . 99		18 mm = . 61 knurled 30 mm = . 62 70 mm = . 81	
		flat faced	slotted	flat faced		slotted	
			= 410			= 60	

**Composition of the catalogue no.
Twin and triple types**

code for type, switch and hollow spindle

2322

code for resistance law and nominal resistance of
potentiometer R₂, see table previous page

code for resistance law and nominal resistance of
potentiometer R₁, see table previous page

code for spindle lengths

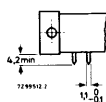
steel hollow spindle		plastic hollow spindle			
without switch	twin = 370 triple = 378	without switch	twin = 470 triple = 478		
with s.p.d.t. rotary switch	twin = 372	with s.p.d.t. rotary switch	twin = 472	steel hollow spindle	plastic hollow spindle
with s.p.s.t. rotary switch	twin = 373	with s.p.s.t. rotary switch	twin = 473	18 and 30,5 mm = 6	18 and 30,5 mm = 0
with d.p.s.t. push-pull switch 2A	twin = 375	with d.p.s.t. push-pull switch 2A	twin = 475	30 and 42,5 mm = 7	30 and 42,5 mm = 1
with d.p.s.t. rotary switch	twin = 376	with d.p.s.t. rotary switch	twin = 476		

2322 42 . — slide carbon
60 mm — linear and other laws

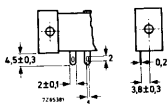
Widely used in video and audio equipment.

Additional terminals for tandem are shown in brackets.

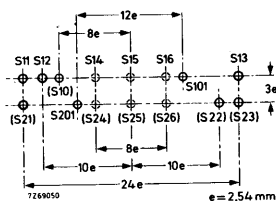
printed-wiring pins



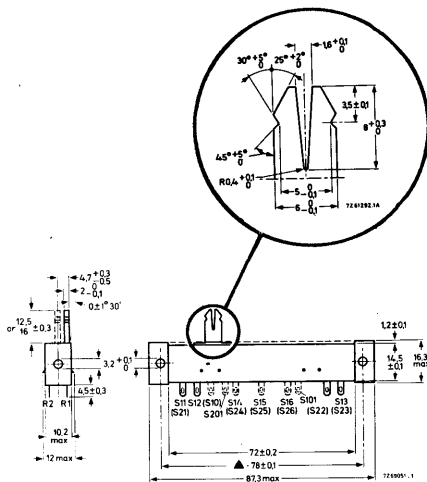
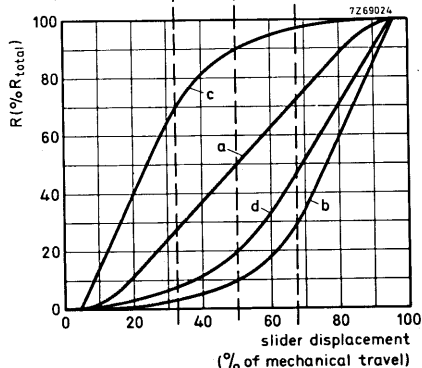
solder tags



holes:
(viewed on
component side)



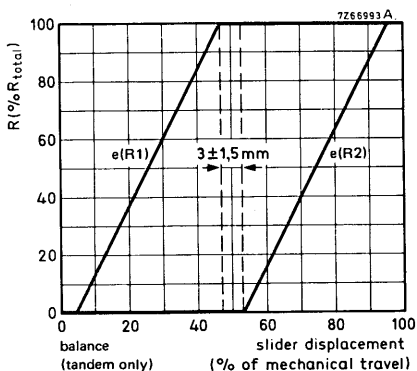
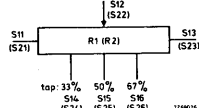
tap positions : 33% 50% 67%

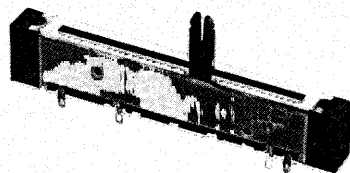


▲80 ± 0,1 for mounting with self-tapping Parker screws.
marking is always placed at
the beginning of R1 (S11)

earthing screen

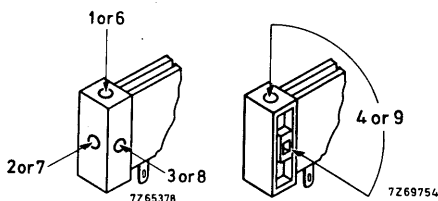
S101; S201 external
S10 internal





Composition of the catalogue no.

single	code for mounting facility		code for resistance law and nominal resistance, see table below	
	0 = no mounting facility			
	1 = making use of holes in top and bottom	1, 2, 3 mounting with screws	code for taps	
	2 = making use of holes in the small sides		0 = without taps	
	3 = making use of holes in front and back		1 = tap at 1/3	
	4 = mounting with self-tapping Parker screws		2 = tap at 1/2	
			4 = taps at 1/3 and 2/3	
			code for terminals and screening	
			0 = without screening	
			1 = with internal screening ¹⁾	with solder tags
			2 = with internal and external screening ¹⁾	
			3 = with external screening	
tandem	5 = no mounting facility	6, 7, 8 mounting with screws	5 = without screening	
	6 = making use of holes in top and bottom		6 = with internal screening ¹⁾	
	7 = making use of holes in the small sides		7 = with internal and external screening ¹⁾	with printed-wiring pins
	8 = making use of holes in front and back		8 = with external screening	
	9 = mounting with self-tapping Parker screws		code for adjustment provision	
			0 = asymmetrically placed	length 12,5 mm
			1 = symmetrically placed	
			2 = asymmetrically placed	length 16 mm
			3 = symmetrically placed	



code in catalogue no.

nominal resistance	linear law curve a	log. law curve b	rev. log. law curve c	semi-log. law curve d	balance ²⁾ curve e
220 Ω	02				
330 Ω	19				
470 Ω	03				
1 kΩ	04	24	44	63	
2,2 kΩ	05	25	45	64	
4,7 kΩ	06	26	46	65	
10 kΩ	07	27	47	66	
22 kΩ	08	28	48	67	87
47 kΩ	09	29	49	68	88
100 kΩ	11	31	51	69	89
220 kΩ	12	32	52	71	91
470 kΩ	13	33	53	72	92
1 MΩ	14	34	54	73	93
2,2 MΩ	15	35	55	74	94
4,7 MΩ	16	36	56	75	95
10 MΩ	17			76	96

¹⁾ Only for tandem potentiometers. ²⁾ Only without tap. ³⁾ Without tap, or with tap at 1/3 of the total travel.

variable resistors

control potentiometers

2322 43 . — slide carbon
40 mm — linear and other laws

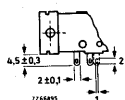
Widely used in video and audio equipment.

Max dissipation at $T_{amb} = 40^\circ C$

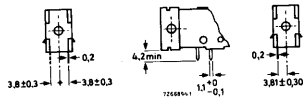
linear	0,25 W
others	0,125 W
Working temperature	-10 to +70 °C
Climatic category IEC 68	10/070/21

Additional terminals for tandem
are shown in brackets.

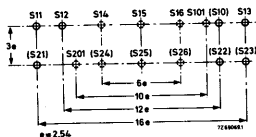
printed-wiring pins



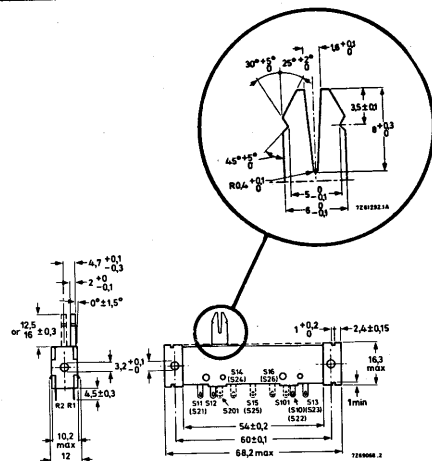
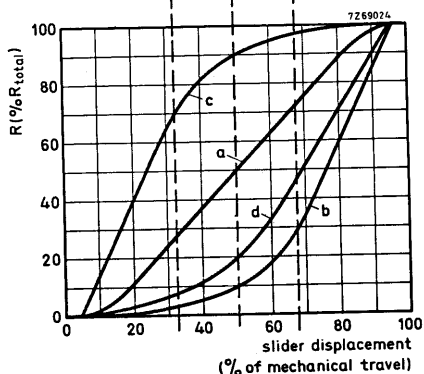
solder tags



holes:
(viewed on
component side)

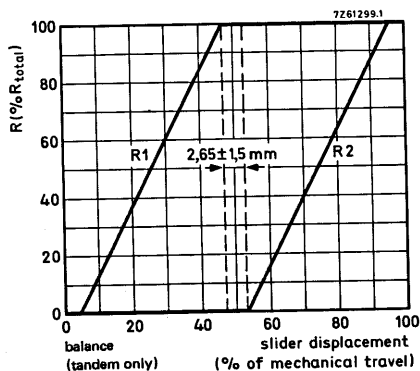


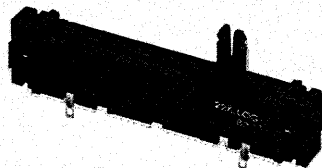
tap positions: 33% 50% 67%



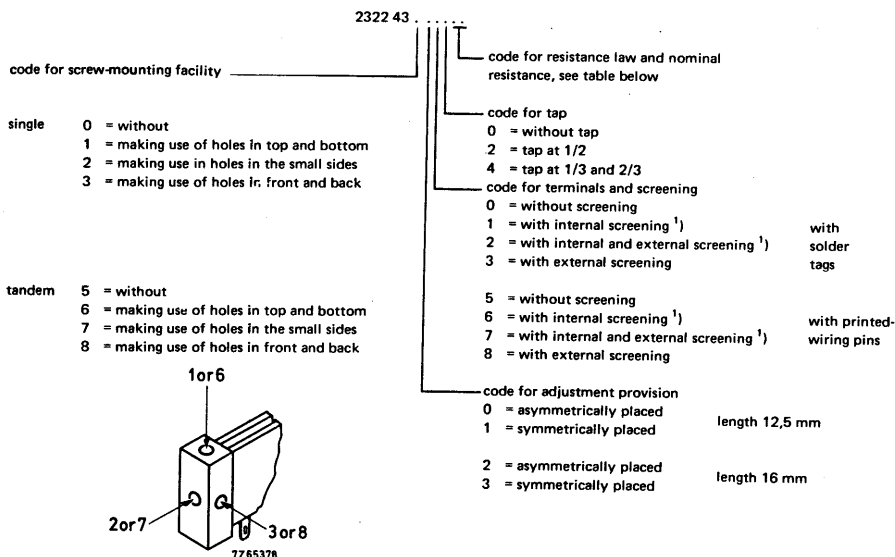
marking is always placed at
the beginning of R1 (S11)

earthing screen
S101; S201 external
S10 internal





Composition of the catalogue no.



code in catalogue no.

nominal resistance	linear law curve a	log. law curve b	rev. log. law curve c	semi-log. law curve d	balance ²⁾ curve e
220 Ω	02				
330 Ω	19				
470 Ω	03				
1 kΩ	04	24	44	64	
2,2 kΩ	05	25	45	65	
4,7 kΩ	06	26	46	66	
10 kΩ	07	27	47	67	87
22 kΩ	08	28	48	68	88
47 kΩ	09	29	49	69	89
100 kΩ	11	31	51	71	91
220 kΩ	12	32	52	72	92
470 kΩ	13	33	53	73	93
1 MΩ	14	34	54	74	94
2,2 MΩ	15	35	55	75	95
4,7 MΩ	16				

¹⁾ Only for tandem potentiometers.

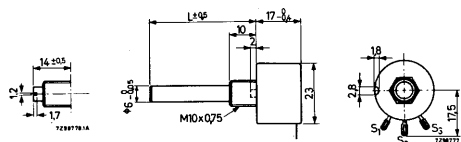
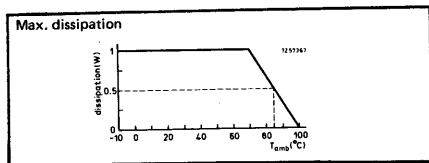
²⁾ Only without tap.

³⁾ Without tap, or with tap at 1/2 of total travel.

variable resistors

control potentiometers

2322 012 2322 013 – wirewound
linear law – 1 W



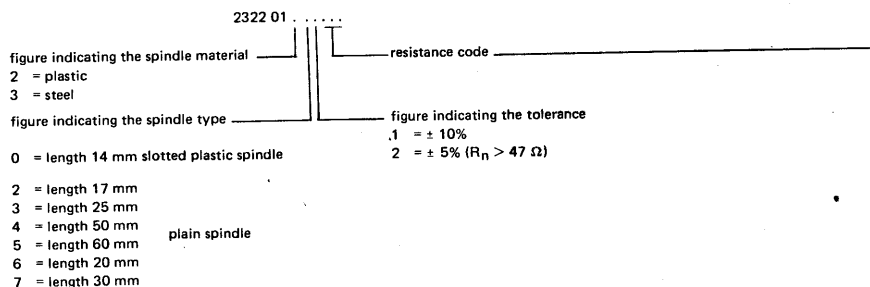
supplied with nut
catalogue no. of spare nuts
4322 047 00350

mounting holes



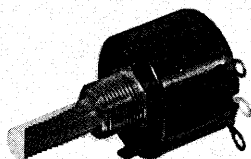
resistance value Ω	temperature coefficient ppm/°C	code in catalogue no.
2,2	0 to +600	228
3,3		338
4,7		478
6,8		688
10		109
15		159
22	- 25 to +25	229
33		339
47		479
68		689
100		101
150		151
220	0 to +140	221
330		331
470		471
680		681
1000		102
1500	- 20 to +140	152
2200		222
3300		332
4700		472
6800		682
10000		103
15000		153
22000		223

Composition of the catalogue no.



Example: For a potentiometer with a nominal resistance value of 10 Ω , tolerance $\pm 10\%$, with slotted plastic spindle, the catalogue no. is 2322 012 01109.

**2322 003 2322 010 — wirewound
linear law — 3 W**



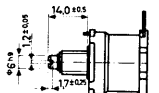
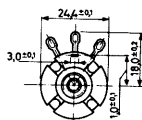
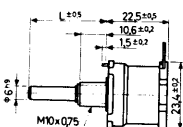
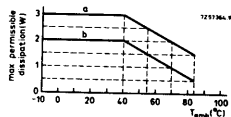
2322 012...



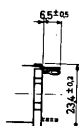
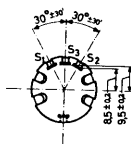
2322 003
2322 010

Max. dissipation

Curve a: mounted on a metal
chassis 100 x 100 x 1 mm
Curve b: mounted on an insulating
panel

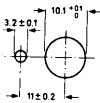


72447014



72447014

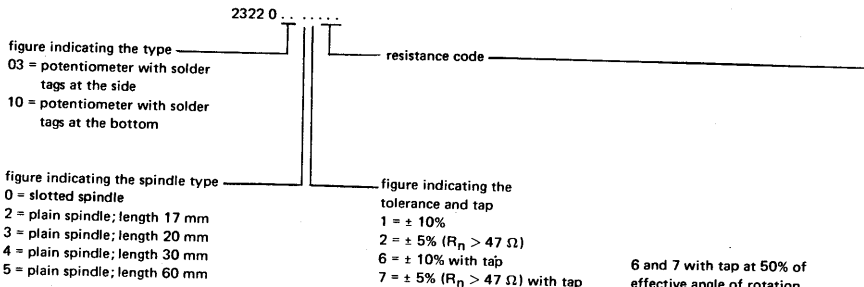
mounting holes



72440281

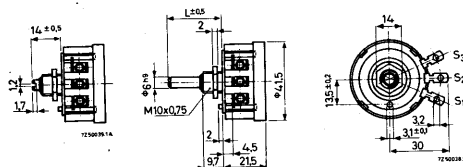
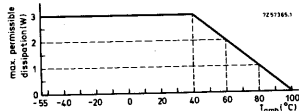
resistance value Ω	temperature coefficient ppm/°C	code in catalogue no.
2,2		228
3,3		338
4,7		478
6,8		688
10	0 to +600	109
15		159
22		229
33		339
47	- 25 to +600	479
68		689
100	- 25 to +25	101
150		151
220		221
330		331
470	- 25 to +140	471
680		681
1000		102
1500		152
2200	0 to +140	222
3300		332
4700		472
6800		682
10000		103
15000	- 20 to +140	153
22000		223

Composition of the catalogue no.

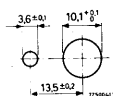


6 and 7 with tap at 50% of effective angle of rotation

**2322 004 — wirewound
linear law — 3 W**



mounting holes



resistance value Ω	temperature coefficient ppm/°C	code in catalogue no.
10		109
15		159
20		209
25	0 to +600	259
35		359
50		509
75		759
100		101
150		151
200		201
250		251
350	- 25 to +25	351
500		501
750		751
1000		102
1500		152
2000		202
2500		252
3500		352
5000		502
7500	0 to +140	752
10000		103
15000		153
20000		203
25000		253
35000		353
50000	- 20 to +20	503

2322 004

resistance code

figure indicating the tolerance

$\pm 10\%$

$$2 = \pm 5\% (R_n > 75 \Omega)$$
 $z = \pm 3\sigma$ ($\alpha = 0.0044$)

7 = plain spindle: length 80 mm