

Series MM-22

MICRO-MINIATURE CONNECTORS • SELF ALIGNING CONTACTS

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**Contact a Winchester Interconnect sales representative for your
Micro Miniature Connectors and Self Aligning Contacts**

While the information in this publication is believed to be accurate and reliable, all data presented is subject to change without notice. Winchester Interconnect disclaims responsibility for any damages resulting from application or any incompleteness or inaccuracies in the information presented. Consult factory for specific information on the latest design specifications.

SPECIFICATIONS

MIL-C-28748

MATERIALS & FINISHES

Molded inserts: Glass fiber filled diallyl phthalate per MIL-M-14, type GDI-30F or SDG-F.

Pin contact material: Copper alloy in accordance with QQ-B-626 or QQ-B-750.

Socket contact material: Copper alloy body in accordance with QQ-B-626 or QQ-B-750, with beryllium copper pressure member in accordance with QQ-C-533

Contact finish: Gold plate in accordance with MIL-G-45204, over an underplate of nickel in accordance with QQ-N-290. Nonfunctional areas (pressure member, retaining clip) to be nickel plated in accordance with QQ-N-290

Thicknesses of gold plate:

30 - .000030" (.8 micron) - Class 0

50 - .000050" (1.3 microns) Class 1 (MIL-spec approved)

Guides: Brass in accordance with QQ-B-626, nickel plated in accordance with QQ-N-290; or optional corrosion resistant steel in accordance with ASTM-A582, passivated in accordance with QQ-P-35

Screwlocks: Corrosion resistant steel in accordance with ASTM-A582, passivated in accordance with QQ-P-35

Mounting brackets: Aluminum alloy in accordance with QQ-A-250/8, anodized in accordance with MIL-A-8625

Hoods: Aluminum alloy in accordance with QQ-A-250/8, anodized in accordance with MIL-A-8625

Shells: Aluminum alloy in accordance with QQ-A-250/8, anodized in accordance with MIL-A-8625

Cable brackets: Aluminum alloy in accordance with QQ-A-250/8, anodized in accordance with MIL-A-8625

RATINGS

Voltage, breakdown (sea level): 1,800 volts rms, 60 Hz.

Voltage, test (sea level): 1,300 volts rms, 60 Hz.

Contact size: No. 22, .030" (.76mm) diameter.

Wire size accommodated: No. 22 AWG maximum

Current rating: 5 amperes maximum per contact.

Contact resistance (at 5 amps): .005 ohm maximum.

Insulation resistance: 5,000 megohms minimum at 500 volts DC.

Durability: 500 cycles mating and unmating.

Connector mating and unmating forces: Maximum 1 pound times the number of contacts.

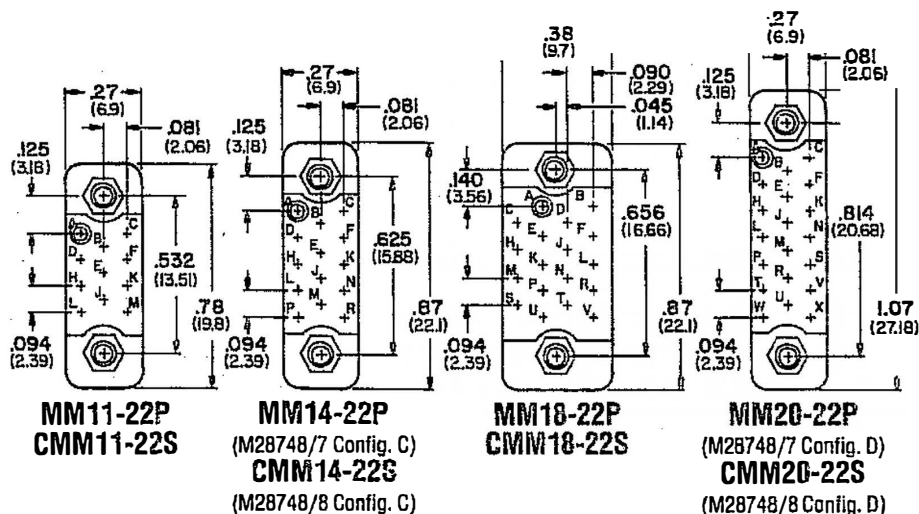
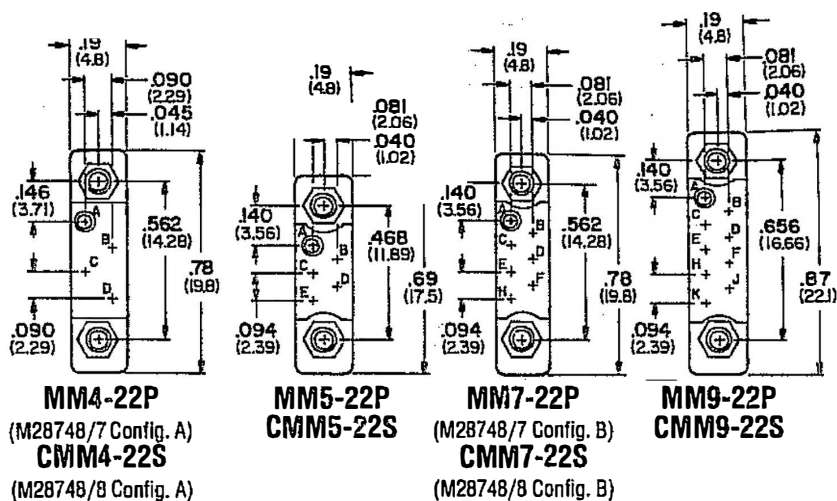
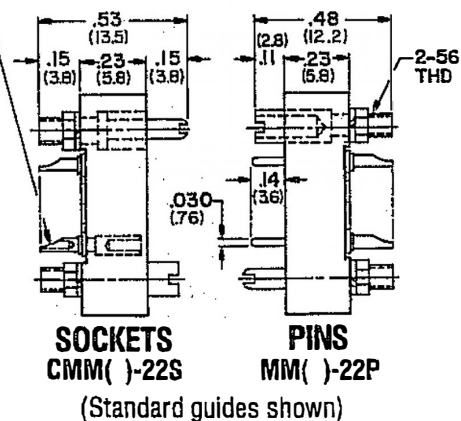
Individual contact separating force: .5 to 9 ounces maximum.

Operating temperature: -65 C to + 125 C.

Connectors meet all other requirements of MIL-C-287 48 for contact size 22 (electrical, mechanical, environmental) when supplied with MIL-approved materials and finishes.

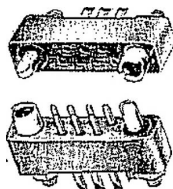
SERIES MM-22 Micro-miniature connectors & self aligning contacts

.035 (.89) DIA SOLDER CUP # 22 AWG MAX.
SEE "AVAILABLE TERMINALS"



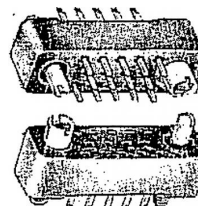
Views shown are wiring sides of pin contact connectors.
Wiring sides of socket contact connectors are mirror images.

MM7-22S



MM7-22P

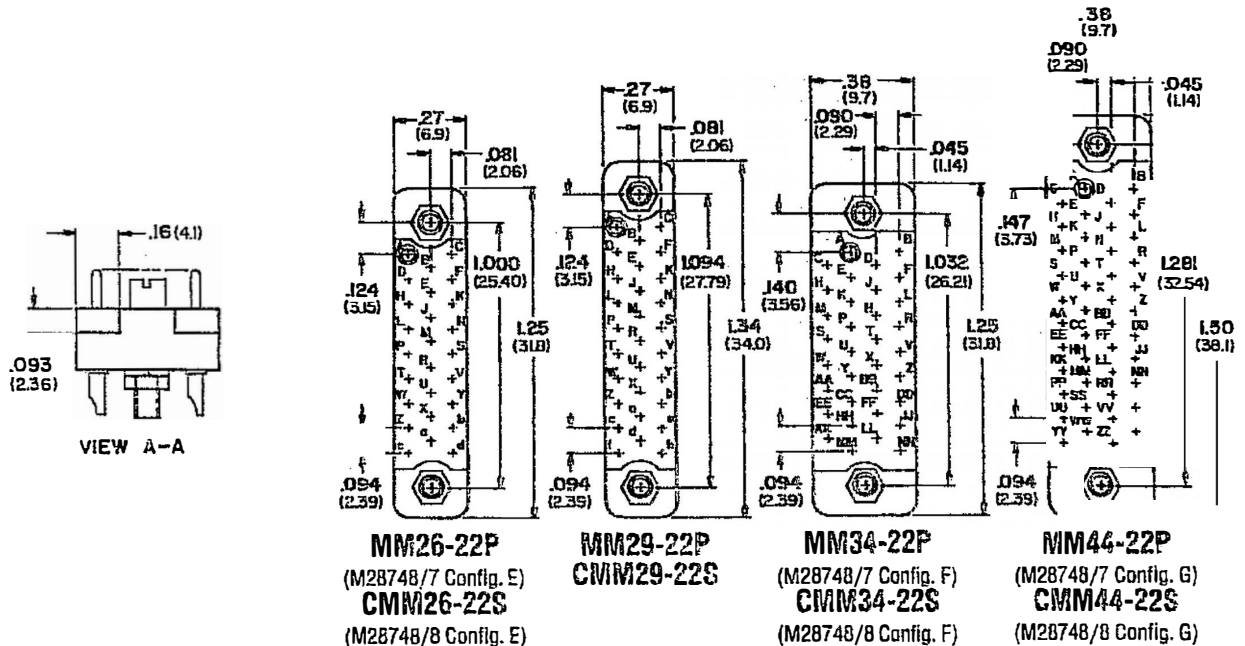
MM14-22S



MM14-22P

ACTUAL SIZE

SERIES MM-22 Micro-miniature connectors & self aligning contacts



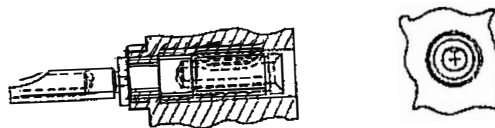
Available with 4, 5, 7, 9, 11, 14, 18, 20, 26, 29, 34, 44, 50, 75
and 104 Contacts.

Series MM-22 connectors are RUGGEDIZED to withstand shock and vibration extremes and offers miniaturization without sacrifice of performance.

Heavy duty, closed entry socket assures thorough reliability. All contacts are **100%** gaged to meet requirements of specification MIL-C-28748.

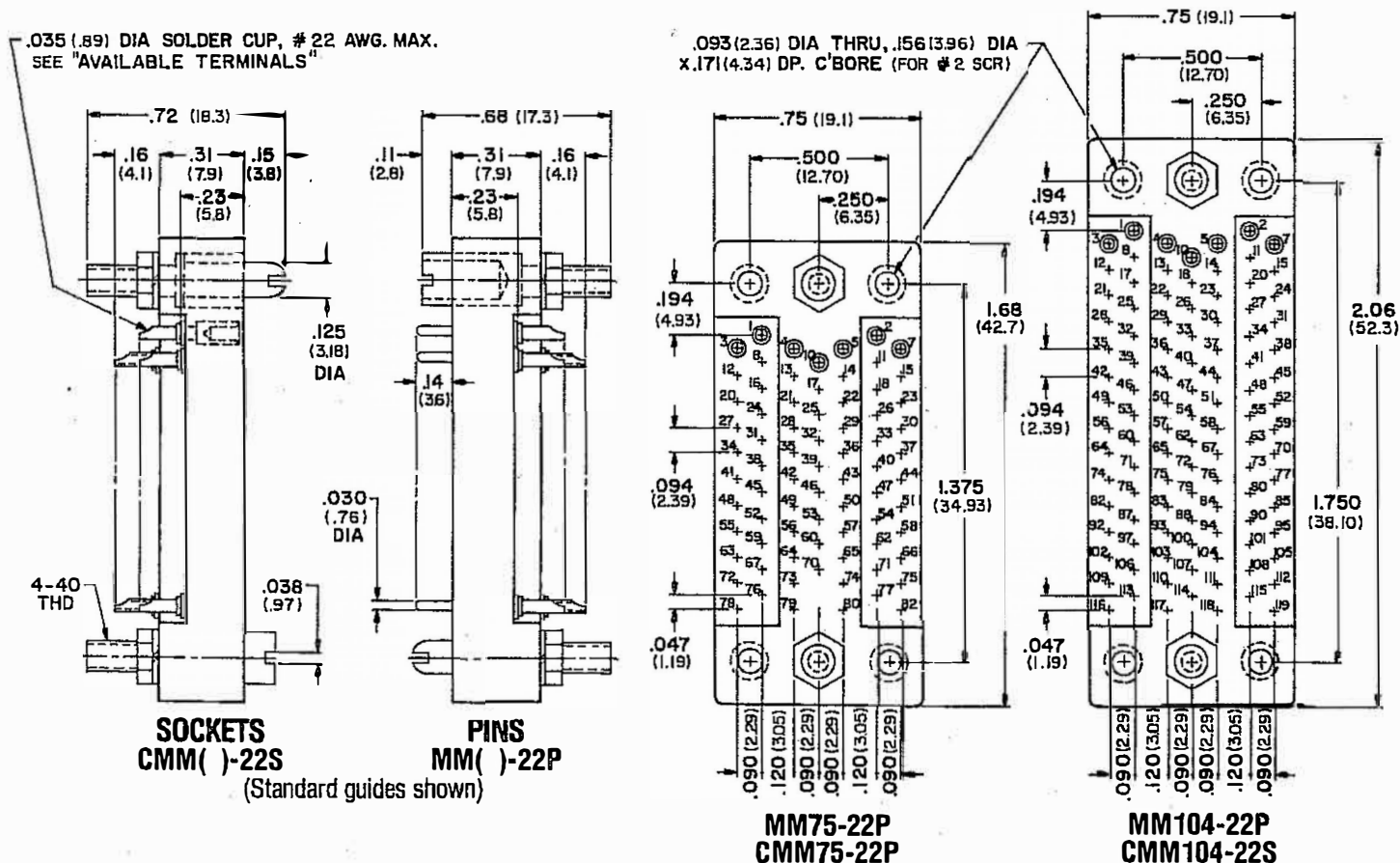
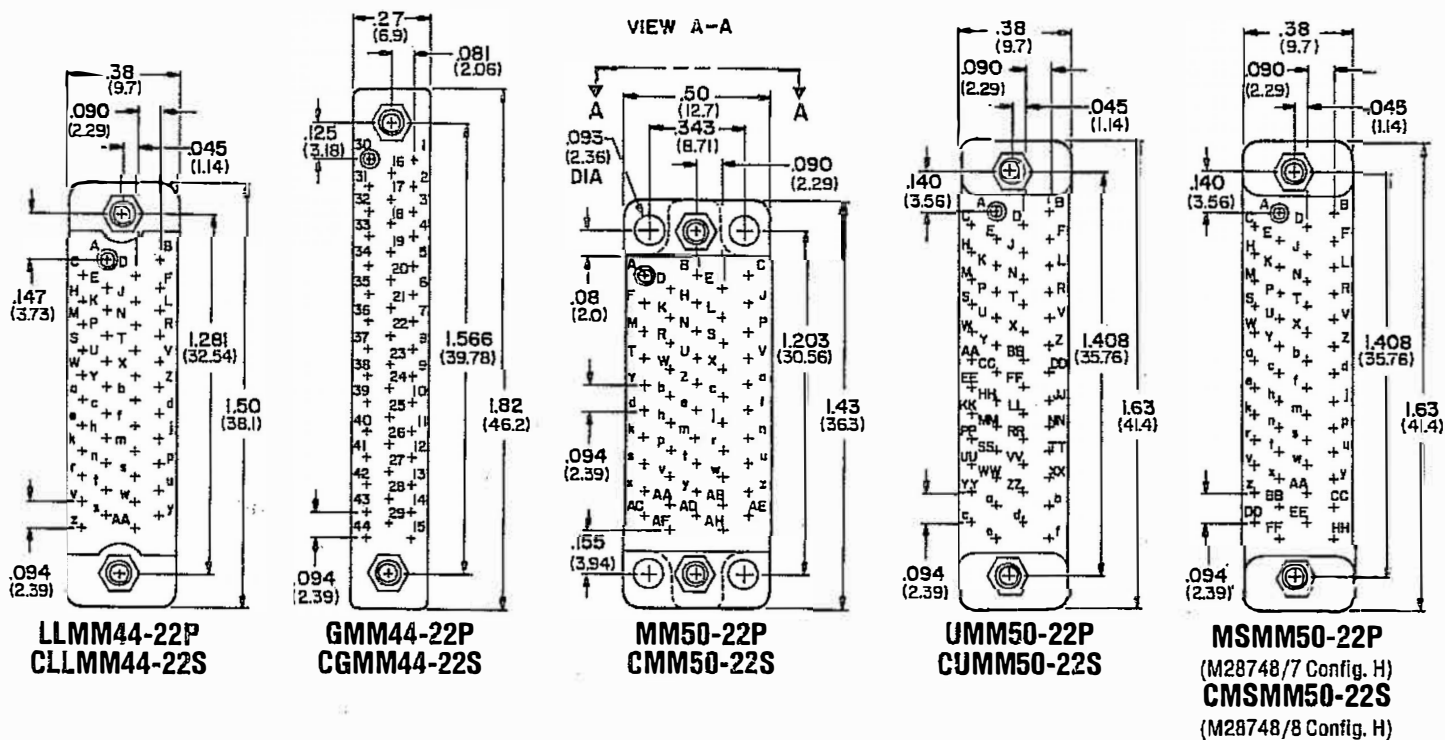
Polarization is positive with reversed guide pins and guide sockets. Floating contacts insure positive self-alignment of each contact. Precision machined contacts are gold plated for high conductivity, corrosion resistance and ease of soldering.

CLOSED ENTRY SOCKETS



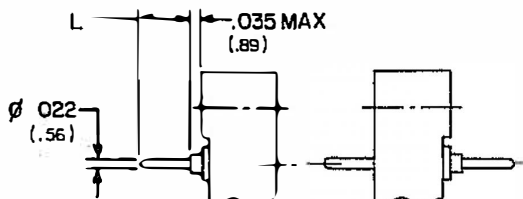
Closed entry design provides increased reliability while maintaining excellent conductivity with constant insertion and withdrawal forces. This design prevents probe damage. Closed entry socket contacts will not accept a pin contact that is bent beyond a pre-established limit

SERIES MM-22 Micro-miniature connectors & self aligning contacts



FLOW/DIP SOLDER, FLEXIBLE CIRCUIT

.022 (.56) DIA



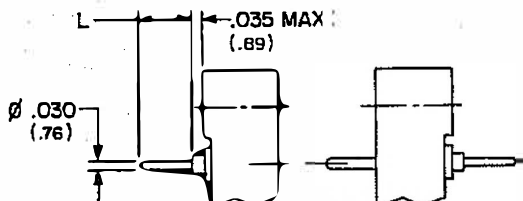
D09, D15, D25

* L	ORDERING CODE
.094 (2.39)	D09
.145 (3.68)	D15
.250 (6.35)	D25

* Other lengths available

FLOW/DIP SOLDER

.030 (.76) DIA

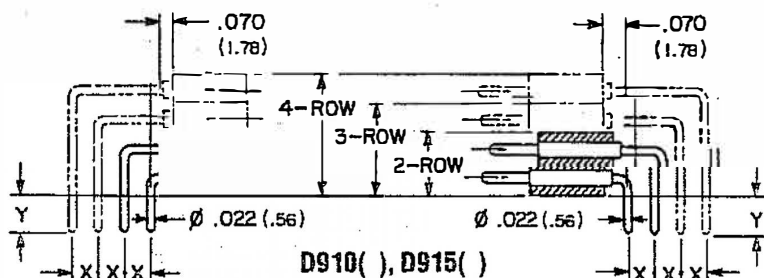


DD09, DD13, DD15, DD19

L	ORDERING CODE
.094 (2.39)	DD09
.125 (3.18)	DD13
.156 (3.96)	DD15
.188 (4.78)	DD19

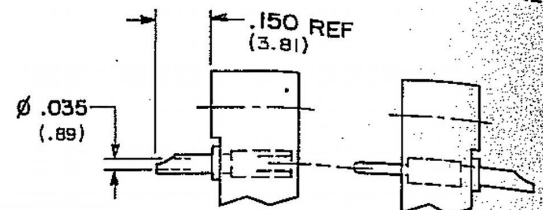
RIGHT-ANGLE TERMINALS FLOW/DIP SOLDER, FLEXIBLE CIRCUIT

FIXED (MOLDED-IN) PIN CONTACTS



X = .100 (2.54) or .150 (3.81)
Y = .093 (2.36) or .125 (3.18) or .156 (3.96)
(See pages 10, 11, 12 & 13)

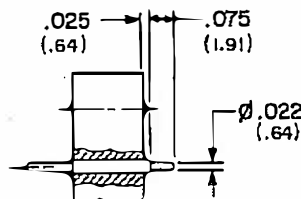
SOLDERCUP ACCOMMODATES NO. 22 AWG MAX WIRE



NO CODE

Soldercup terminals are supplied unless otherwise specified.

FLEXIBLE CIRCUIT FIXED (MOLDED-IN) PIN CONTACTS

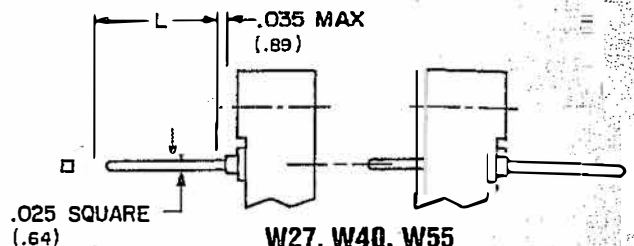


FD08

(See pages 8 & 9)

WIRE WRAPPING

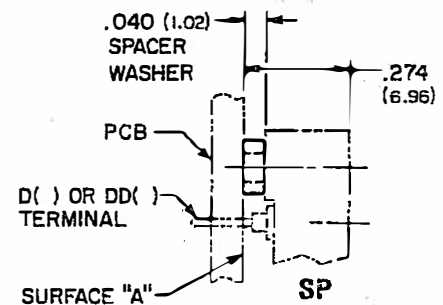
.025 (.64) SQUARE



W27, W40, W55

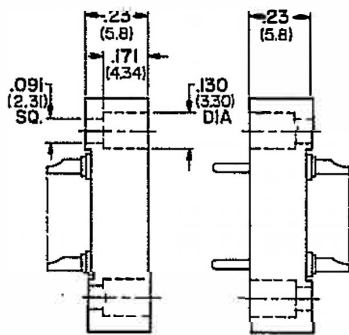
L	ORDERING CODE	NO. OF WRAPS
.250 (6.35)	W27	1
.380 (9.65)	W40	2
.540 (13.72)	W55	3

SPACER WASHER RECOMMENDED FOR FLOW/DIP SOLDER TERMINALS



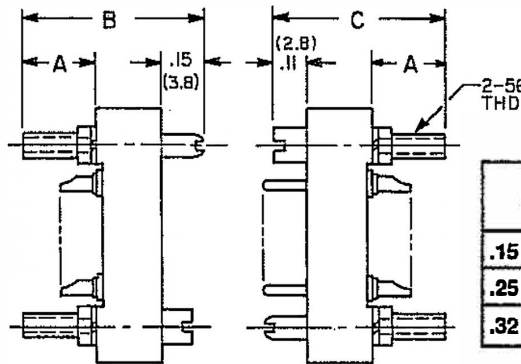
Non-metallic spacer washers allow only the useable terminal portion (.022 or .030 dia) below surface "A." (check availability of extended raised pads on molding inserts as alternate to spacer washers)

WITHOUT HARDWARE



W

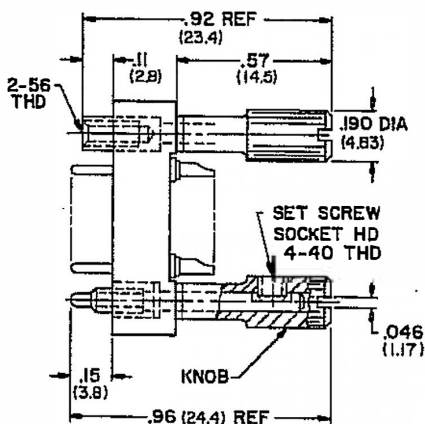
POLARIZING GUIDES



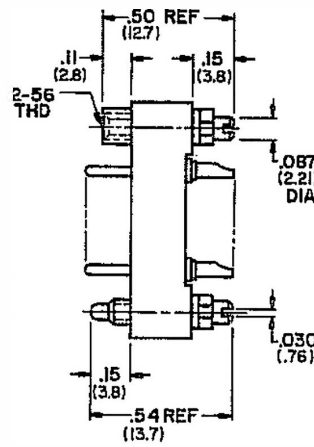
—, 25, SS, SS25, SS32

A	B	C	CODE	
			BRASS	STAINLESS
.15 (3.8)	.53 (13.5)	.48 (12.2)	—	SS
.25 (6.4)	.63 (16.0)	.59 (15.0)	25	SS25
.32 (8.1)	.70 (17.8)	.67 (17.0)	N/A	SS32

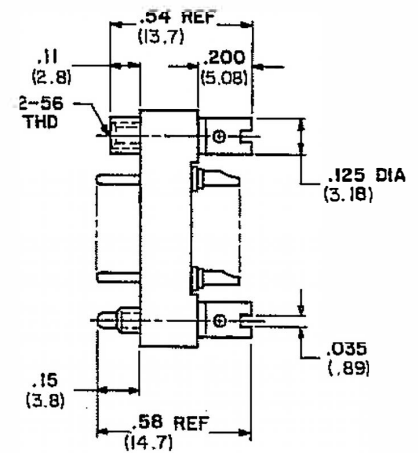
SHORT TURNABLE SCREWLOCKS



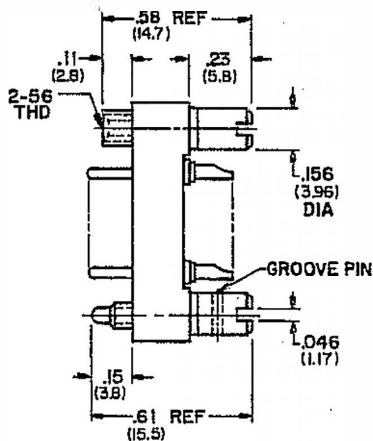
SK6



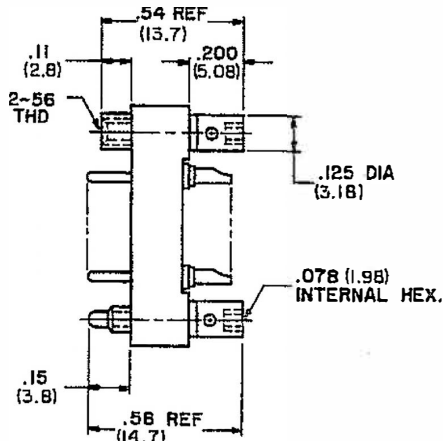
SL



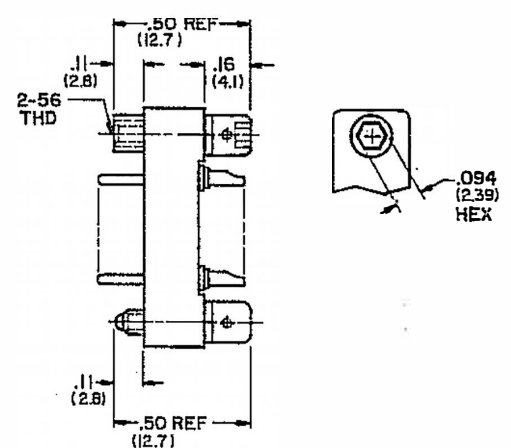
SK16



SK19

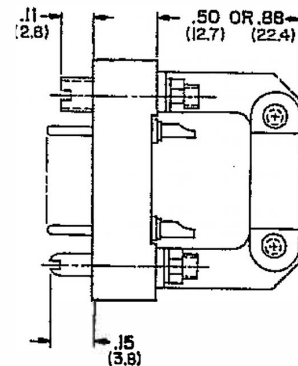
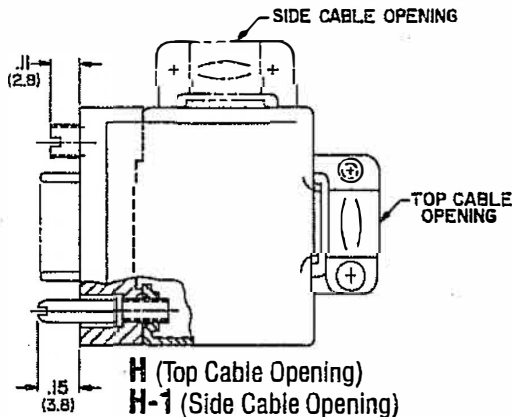


SK21



SK24

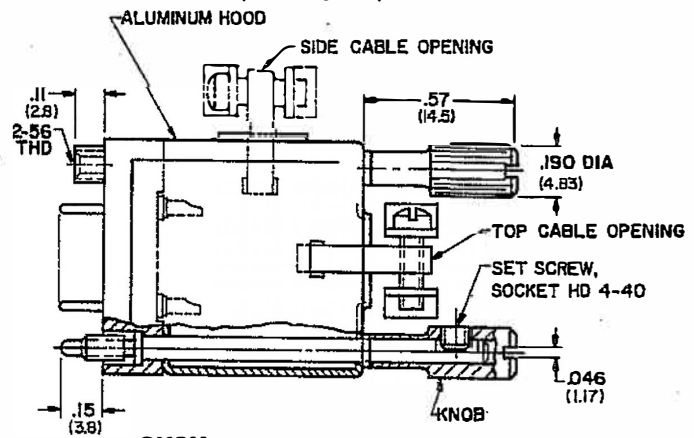
CABLE HOODS FOR USE WITH GUIDES (See Page 18)



CABLE BRACKETS (See Pages 20 & 21)

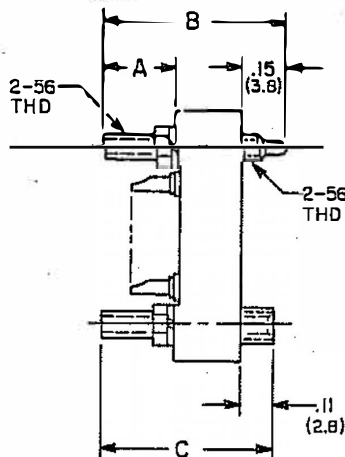
B (.50 High)
B88 (.88 High)
B90 (For Side Cable Entry)

CABLE HOODS WITH LONG TURNABLE SCREWLOCKS (See Page 19)



SK6H (Top Cable Opening)
SK6H-1 (Side Cable Opening)

FIXED SCREWLOCKS

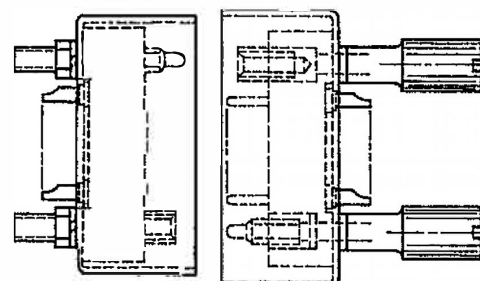


S, S25, S32

A	B	C	CODE
.15 (3)	.53 (13.5)	.48 (12)	S
.25 (6)	.63 (16)	.59 (15)	S25
.32 (8)	.70 (17)	.66 (16.8)	S32

PROTECTIVE SHELLS (See Pages 22 & 23)

RECEPTACLE PLUG

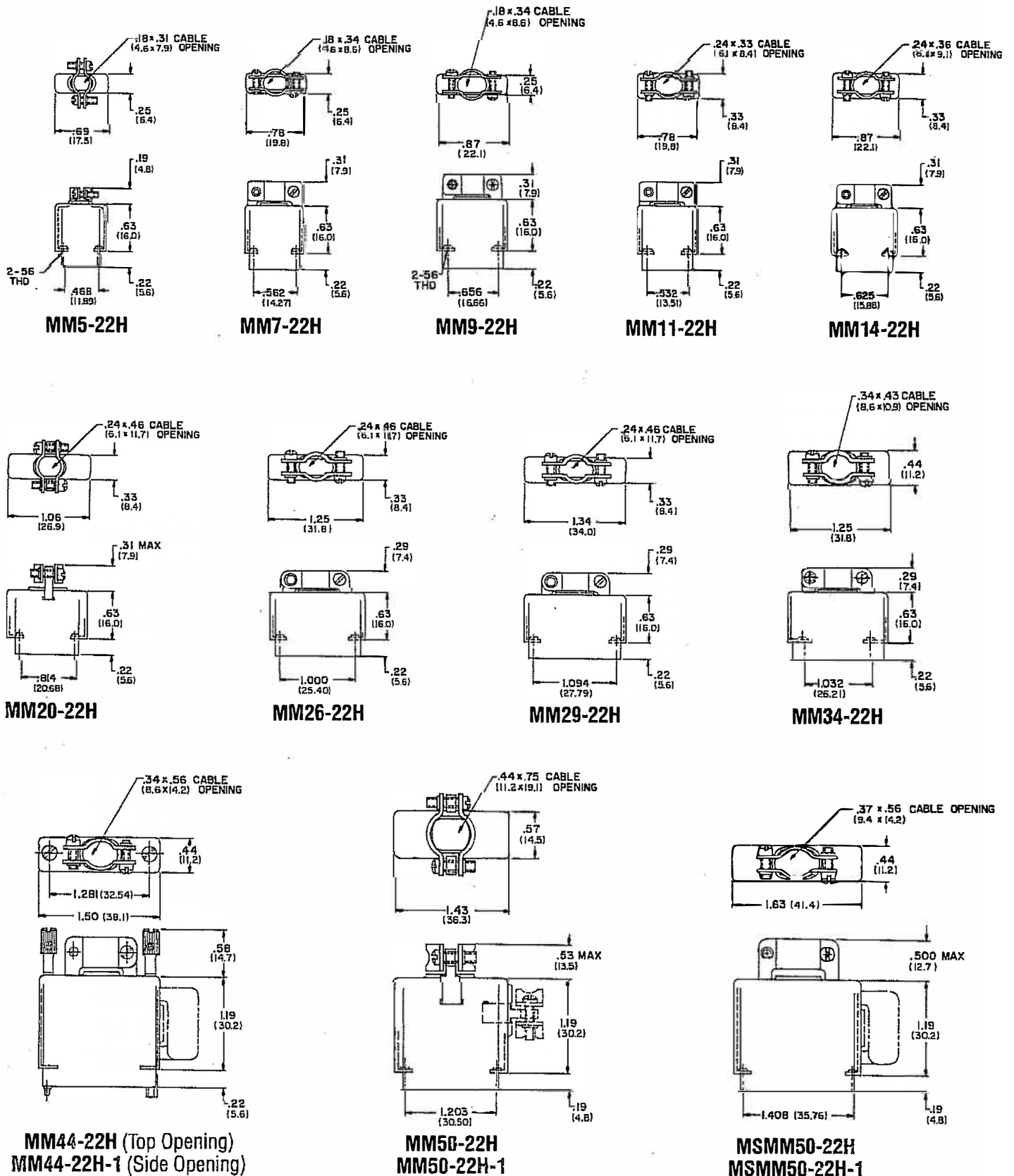


C*

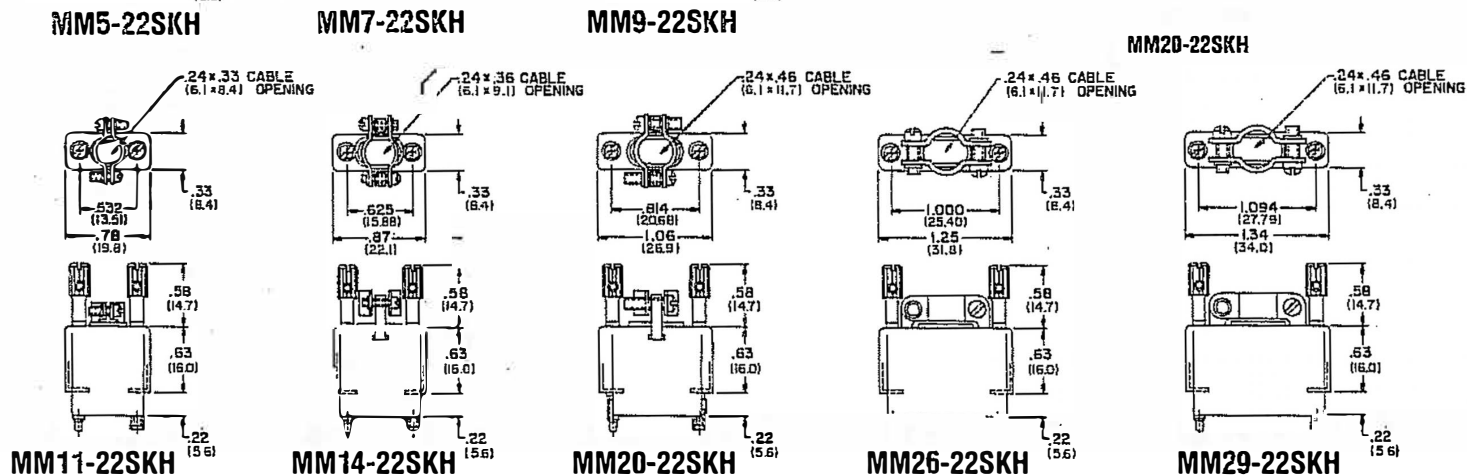
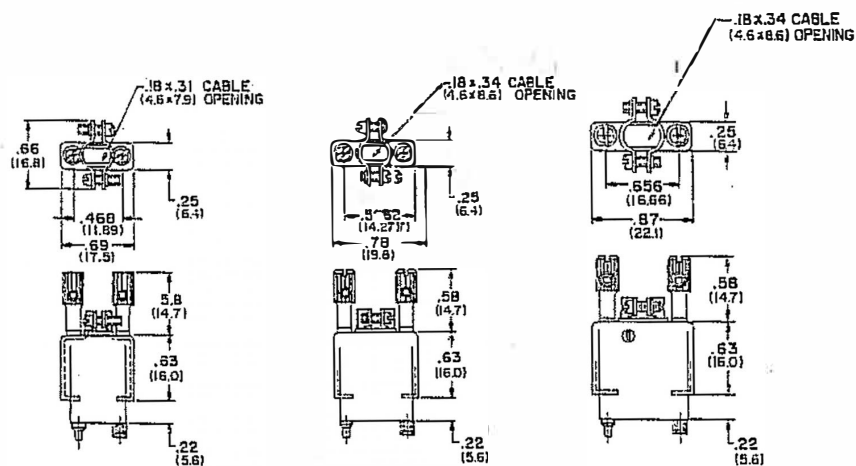
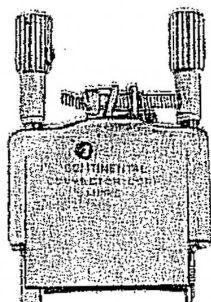
P*

* Polarization position letter

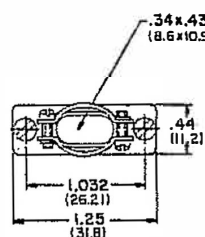
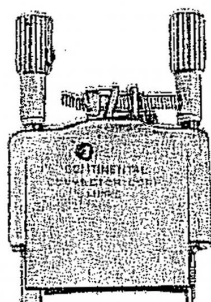
CABLE HOODS for guide pins and sockets



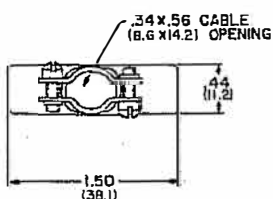
CABLE HOODS for long turnable screw locks



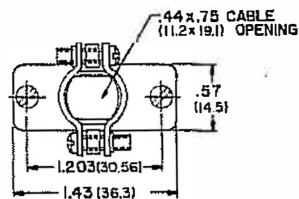
CABLE HOODS for long turnable screw locks



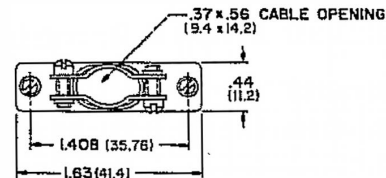
MM34-22SKH



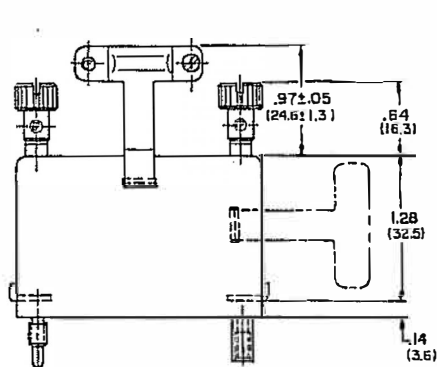
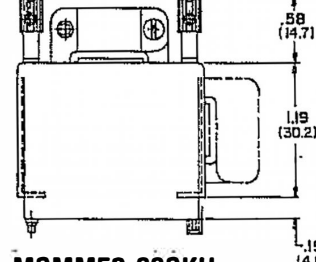
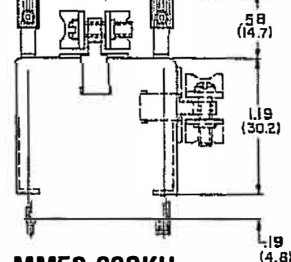
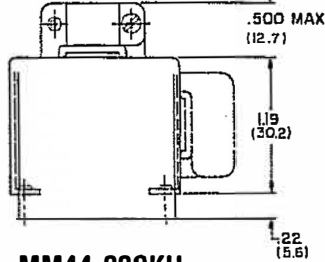
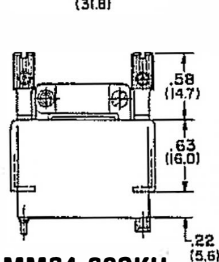
**MM44-22SKH
MM44-22SKH-1**



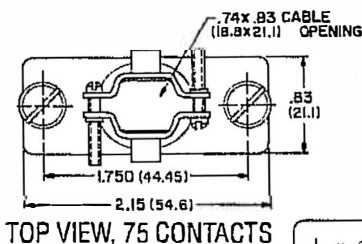
**MM50-22SKH
MM50-22SKH-1**



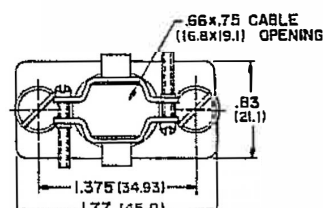
**MSMM50-22SKH
MSMM50-22SKH-1**



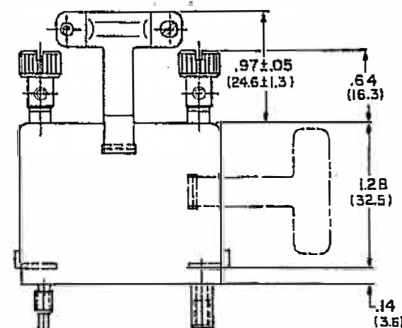
**MM75-22SKH (Top Opening)
MM75-22SKH-1 (Side Opening)
CONTINENTAL CONNECTORS**



TOP VIEW, 75 CONTACTS



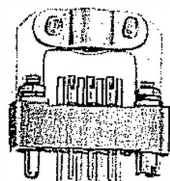
TOP VIEW, 104 CONTACTS



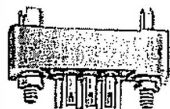
**MM104-22SKH
MM104-22SKH-1**

Series 1800 extra light weight brackets are used with micro-miniature Series MM-22 connector to provide cable strain relief. They are recommended where critical weight and space requirements are a problem, such as missile and space exploration projects. The brackets are made of anodized aluminum alloy, and mount directly on plug and socket sections of the connector. Wires soldered to contacts pass through bracket clamp opening which acts as a strain relief.

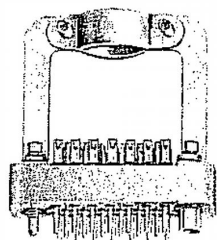
Low profile and right angle brackets are compatible with all hardware types (see pages 14 & 15) except "SK6." Tall brackets are compatible with all hardware types (including "SK6").



MM7-22P-B



MM7-22S



MM20-22PSL-B88



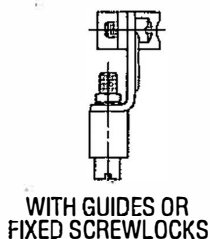
MM20-22SS

To order cable bracket as separate piece part, specify the Continental part number below the appropriate size configuration.

Examples: 1800-13B-7, MMM1800-13B-26
1800-13B-14-90

To order bracket as part of connector assembly, add "B" (low profile), or "B88" (tall), or "B90" (right angle) as specified in "HOW TO ORDER" (see pages 26 & 27).

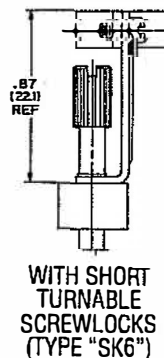
LOW PROFILE BRACKETS



WITH GUIDES OR
FIXED SCREWLOCKS



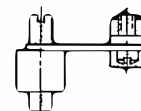
WITH SHORT
TURNABLE
SCREWLOCKS



WITH SHORT
TURNABLE
SCREWLOCKS
(TYPE "SK6")

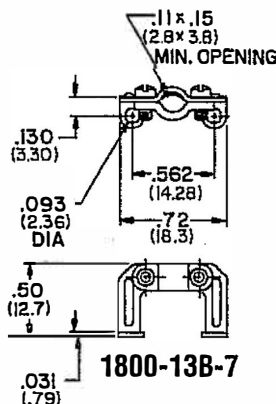
TALL BRACKETS

RIGHT ANGLE BRACKETS

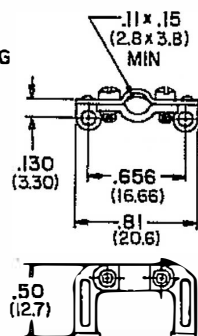


WITH SHORT
TURNABLE
SCREWLOCKS

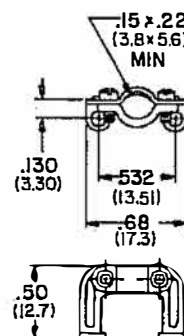
LOW PROFILE BRACKETS, .50" (12.7)



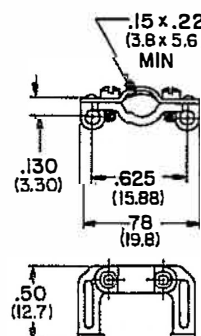
1800-13B-7



1800-13B-9

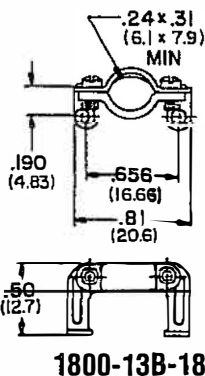


1800-13B-11

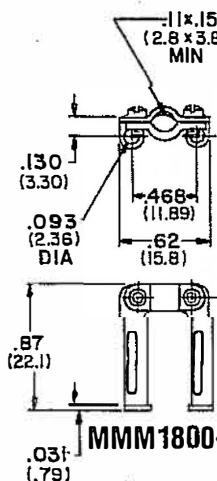


1800-13B-14

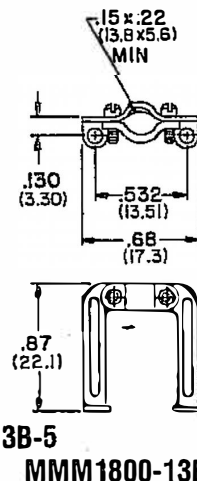
TALL BRACKETS, .87" (22.1)



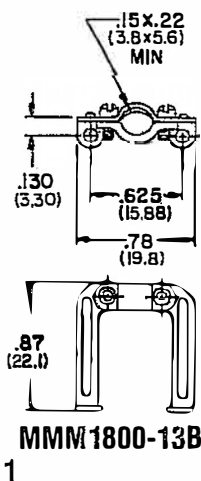
1800-13B-18



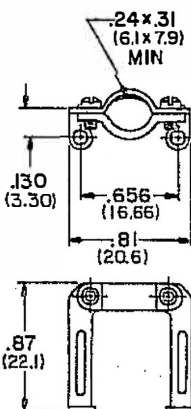
MMM1800-13B-5



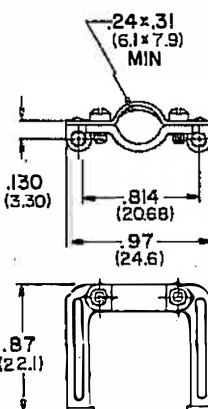
MMM1800-13B-11



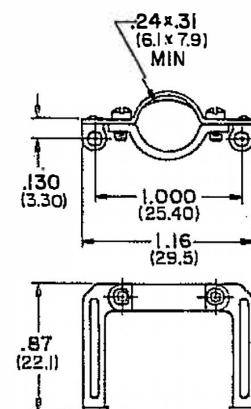
MMM1800-13B-14



MMM1800-13B-18

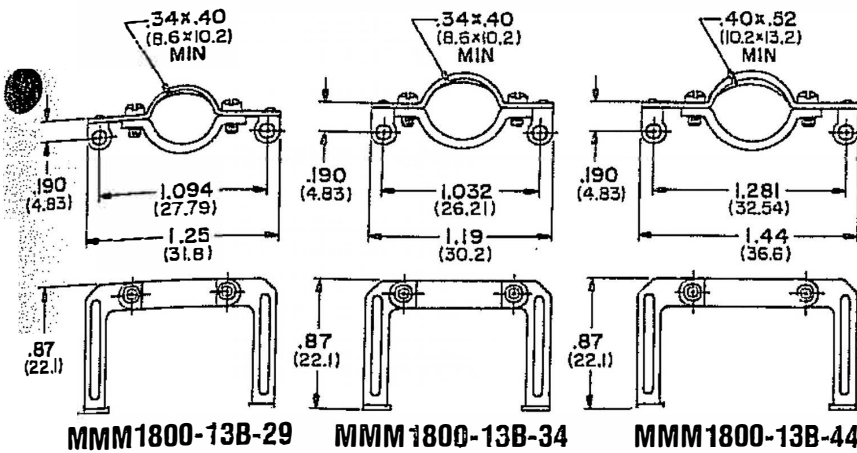


MMM1800-13B-20

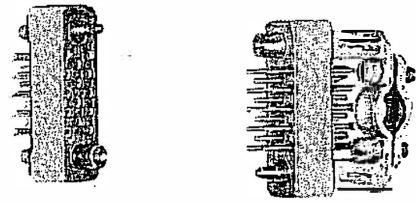


MMM1800-13B-26

CABLE BRACKETS

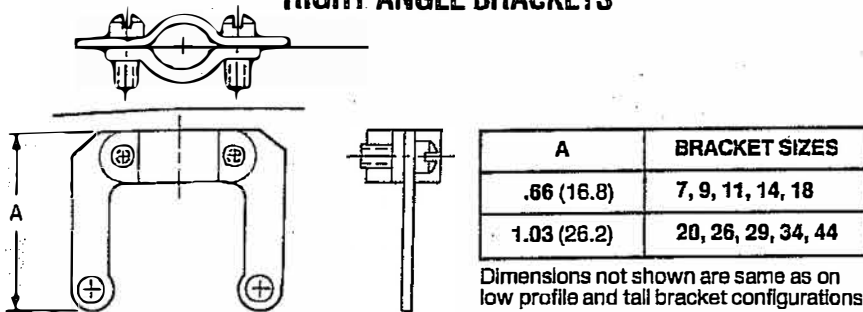


TALL BRACKETS, .87" (22.1)



CMM14-22SS MM14-22PSK21-90

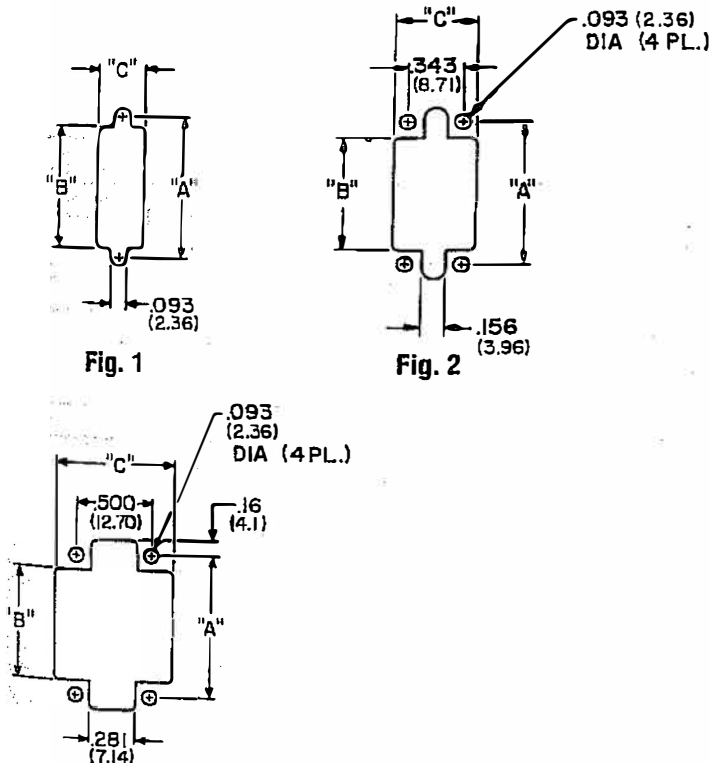
RIGHT ANGLE BRACKETS



1800-13B-*90 (Sizes 7, 9, 11, 14, 18)
 MMM1800-13B-*90 (Sizes 20, 26, 29, 34, 44)
 * - Substitute bracket size

PANEL CUTOUTS

CONNECTOR	FIG.	"A"	"B"	"C"
MM4-22	1	.562 (14.28)	.531 (13.49)	.200 (5.08)
5		.562 (14.28)	.343 (8.71)	.200 (5.08)
7		.562 (14.28)	.437 (11.10)	.200 (5.08)
9		.656 (16.66)	.531 (13.49)	.200 (5.08)
11		.532 (13.51)	.415 (10.54)	.280 (7.11)
14		.625 (15.88)	.515 (13.08)	.280 (7.11)
18		.656 (16.66)	.531 (13.48)	.390 (9.91)
20		.814 (20.68)	.700 (17.78)	.280 (7.11)
26		1.000 (25.40)	.890 (22.61)	.280 (7.11)
29		1.094 (27.79)	.890 (22.61)	.280 (7.11)
34		1.032 (26.21)	.906 (23.01)	.390 (9.91)
MM44		1.281 (32.54)	1.156 (29.36)	.390 (9.91)
LLMM44		1.281 (32.54)	1.156 (29.36)	.390 (9.91)
MM50	2	1.203 (30.56)	1.047 (26.59)	.510 (12.95)
MSMM50	1	1.408 (35.76)	1.281 (32.54)	.390 (9.91)
UMM50		1.408 (35.76)	1.281 (32.54)	.390 (9.91)
MM75	3	1.375 (34.93)	1.150 (29.21)	.800 (20.32)
MM104-22		1.750 (44.45)	1.525 (38.74)	.800 (20.32)
GMM 44	1	1.586 (39.12)	1.458 (36.98)	.280 (7.11)



HOW TO ORDER

34x.40

OMIT BOXES NOT APPLICABLE

	1	2	3	4	5	6	7	8	9	10	11						
Pin contact connectors	MM	14	-	22	P	D15	S25	-		-	SP	-	Z	-	50	/	SN64
Socket contact connectors	CMM	14	-	22	S		SK16	-		-		-		-	50	/	

Examples: MM14-22PD15S25-SP-Z-50/SN64
CMM14-22SSK16-50

If our manufacturer's part number exceeds 20 characters (including dashes and slash) please contact us for our recommended condensed equivalent part number.

- SERIES DESIGNATION** (Pages 4 & 5)
Pin contact connectors
MM - All pin contact connectors except the following alternate design 44 & 50 contact sizes
LLMM - Four-row, alternate identification, 44 contacts
GMM - Three-row, 44 contacts
MSMM - Four-row, alternate identification, 50 contacts
Socket contact connectors
CMM - All socket contact connectors except the following alternate design 44 & 50 contact sizes
CLLMM - Four-row, alternate identification, 44 contacts
CGMM - Three-row, 44 contacts
CMSMM - Four-row, alternate identification, 50 contacts
- NUMBER OF CONTACTS** (Pages 4 & 5)
4, 5, 7, 9, 11, 14, 18, 20, 26, 29, 34, 44, 50
- CONTACT SIZE**
22 - Size 22 contacts, .030 (.76) dia.
- PIN OR SOCKET CONTACTS**
P - Pin contacts
S - Socket contacts
- TERMINATION SELECTION** (Pages 6 & 7)
Solder cups
 - No code required. Automatically supplied by default unless another terminal is specified
Flow/dip solder, flex. circuit, .022 (.56) dia.
D09 - .094 (2.39) long
D15 - .145 (3.68) long
D25 - .250 (6.35) long
Flow/dip solder, .030 (.76) dia.
DD09 - .094 (2.39) long
DD13 - .125 (3.18) long
DD15 - .156 (3.96) long
DD19 - .188 (4.78) long
Wire-wrapping, .025 (.64) square
W27 - .250 (6.35) long
W40 - .380 (9.65) long
W55 - .540 (3.72) long
Right-angle flow/dip solder, flex. circuit
D9103 - .093 (2.36) long, .10 (2.5) row spacing
D9104 - .125 (3.18) long, .10 (2.5) row spacing
D9105 - .156 (3.96) long, .10 (2.5) row spacing
D9153 - .093 (2.36) long, .15 (3.8) row spacing
D9154 - .125 (3.18) long, .15 (3.8) row spacing
D9155 - .156 (3.96) long, .15 (3.8) row spacing
Fixed (molded-in) pin contacts, flex. circuit
FD08 - .075 (1.91) lc

- GUIDES, SCREWLOCKS, CABLE HOODS** (Pages 14 & 15)
Polarizing guides
 - Standard guides (brass, .15 (3.8) mounting stud. No code required
SS - Stainless steel, .15 (3.8) mounting stud
25 - Brass, .25 (6.4) mounting stud
SS25 - Stainless steel, .25 (6.4) mounting stud
SS32 - Stainless steel, .32 (8.1) mounting stud
Polarizing guides with cable hoods
H - Top cable opening hood, standard guides
SSH - Top cable opening hood, "SS" stainless steel guides
H-1 - Side cable opening hood, standard guides
SSH-1 - Side cable opening hood, "SS" stainless steel guides
Fixed screwlocks
S - .15 (3.8) long mounting stud
S25 - .25 (6.4) long mounting stud
S32 - .32 (8.1) long mounting stud
Short turnable screwlocks
SL - Knobless, slotted
SK6 - Knurled slotted knob
SK16 - Miniature slotted knob
SK19 - Miniature slotted knob
SK21 - Miniature internal hex. knob
SK24 - Miniature internal hex. knob
Long turnable screwlocks with hood
SK6H - Top cable opening hood, "SK6" knurled knob
SK6H-1 - Side cable opening hood, "SK6" knurled knob
- CABLE BRACKETS** (Pages 20 & 21), **RIGHT-ANGLE MTG. BRACKETS** (Page 11 or 13), **PROTECTIVE SHELLS** (Pages 22 & 23)
Cable brackets
B - Low profile brackets, .50 (12.7) high
B88 - Tall brackets, .87 (22.1) high
B90 - Right-angle brackets
Right-angle mounting brackets
MB
Protective shells
C - Plug shell, unpolarized
C() - Plug shell, polarized. Include polarization letter A, B, C, D, E, F or G
 Example: CB (polarized at B)
P - Receptacle shell, unpolarized
P() - Receptacle shell, polarized. Include polarization letter A, B, C, D, E, F or G
 Example: PB (polarized at B)
- OPTIONAL SPACER WASHERS** (Page 6)
SP - Spacer washers
- SEALED TERMINALS** (Page 7)
Z - Termination side sealed
- CONTACT FINISH** (Page 2)
30 - .000030 (.8 micron) gold thickness
50 - .000050 (1.3 micron) gold thickness
- PRE-TINNED TERMINALS** (Page 7)
SN64 - Terminals pre-tinned with solder