

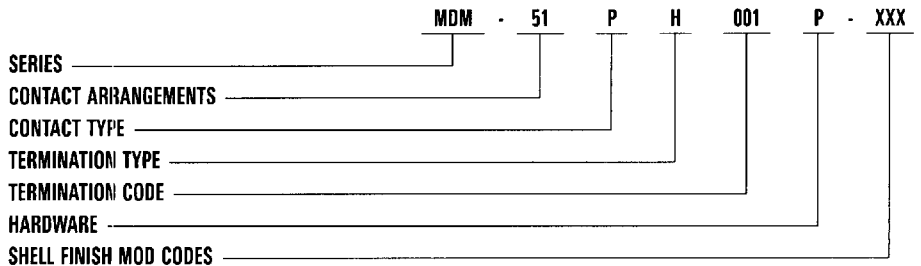
MDM connectors are used in applications requiring highly reliable, extremely small, lightweight connectors with higher density contact configurations than available in traditional rectangular connectors. They are available in 8 shell sizes accommodating from 9 to 100 contacts, and special arrangements of power and coaxial contacts.

These connectors are designed to meet the rapidly increasing demands for an environmental, high performance, rugged, moisture-sealed microminiature connector. This connector employs size 24 MICRO-

PIN™/MICROSOCKET™ contacts on .050(1.27) centers in a contact density identical to the standard MICRO-D connector series, but with these additional features:

- Aluminum shells to provide greater strength, prevent chipping, cracking or breaking, offer electromagnetic (EMI) and RFI shielding.
- Silicone elastomer compression interfacial seal to provide a moisture and humidity seal between each contact and between contacts and shell.

How to Order



SERIES

MDM: Diallyl Phthalate Insulator Material
MDMV: Polyester Insulator Material

CONTACT ARRANGEMENTS

9-15-21-25-31-37-51-100 (standard)
7C2, 24C4, (coaxial) } or combination of
7P2, 24P4 (power) } coax and power

CONTACT TYPE

P – Pin
S – Socket

TERMINATION TYPE

H – Harness-insulated wire.
L – Solid-uninsulated wire.
S – Solder pot to accept #26 AWG MAX. harness wire. (Not available with power contact arrangements.)

TERMINATION CODE*

(H) 001 – 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, yellow.
(H) 003 – 18", 7/34 strand, #26 AWG, MIL-W-16878/4, Type E Teflon, color coded to MIL-STD-681 System I.
(L) 1 – 1/2" uninsulated solid #25 AWG gold plated copper.
(L) 2 – 1" uninsulated solid #25 AWG gold plated copper.

HARDWARE

M – Military specification hardware, see page 25.
P – Jackpost
K – Jackscrew—standard
L – Jackscrew—low profile

F – Float mount
B – No hardware standard
.091 (2.31) dia. hole for sizes 9-51;
.120 (3.05) dia. hole for size 100.
A – .125 (3.18) dia. mounting holes for sizes 9-51;
.166 (4.22) dia. hole for size 100.
B1 – .1475 (3.75) dia. hole for size 100 (Per MIL-C-83513)

SHELL FINISH MOD CODES**

No
Number – Standard Cadmium/yellow chromate
A174 – Electroless nickel
A172 – Gold over nickel
A141 – Irridite/alodine
A30 – Black anodize

*See Termination Codes page 21 for additional length Modification Codes.

**For other modifications not listed, consult the factory.

Standard Data

STANDARD MATERIALS AND FINISHES

Shell	– Aluminum alloy per QQ-A-200/8 (6061-T6), yellow chromate/cadmium per QQ-P-416, Type II, class 3.
Insulator	– Glass-filled diallyl phthalate per MIL-M-14, Type SDGF, or polyester per MIL-M-24519, Type GPT-30F
Contacts	– Copper alloy, gold plate
Mounting Hardware	– 300 Series stainless steel, passivate
Kit, Jackpost (3) Items	– 300 Series stainless steel, passivate
Washer	– 400 Series stainless steel, passivate
Standard Epoxy	– Hysol EE4198 with HD3561 hardener, color green or EE4215 with HD3561, color black

MECHANICAL FEATURES

Coupling	– Friction/jackscrews
Polarization	– Keystone-shaped shells
Contact Spacing Centers	– .050 (1.27)
Shell Styles	– Plug and receptacle

ELECTRICAL DATA

No. of Contacts	– 9 thru 100 standard; 5 signal/2 coaxial; 5 signal/2 power; 20 signal/4 coaxial; 20 signal/4 power
Coaxial Cable	– RG-178/U
Wire Size	– #24 thru #32 AWG
Contact Termination	– Multiple indent crimp

Standard Wire Termination Codes

Cannon Modification Code (Not MS)

The following termination codes are listed for your information. For lengths not shown, consult factory for proper modification code. All wire lengths are minimum.

Harness Type (H)

#26 AWG per MIL-W-16878/4, 7/34 strand, type E Teflon, stranded.

Length	All Yellow	Color Coded*
3 (76.2)	H020	H027
6 (152.4)	H019	H016
8 (203.2)	H026	H034
10 (254.0)	H029	H025
12 (304.8)	H028	H002
18 (457.2)	H001	H003
20 (508.0)	H038	H023
24 (609.6)	H009	H004
30 (762.0)	H010	H005
36 (914.4)	H011	H006
48 (1219.2)	H013	H048
72 (1828.8)	H017	H046
120 (3048.0)	H042	H041

*Cavity #1 black

Solid Uninsulated Type (L)

#25 AWG gold plated copper.

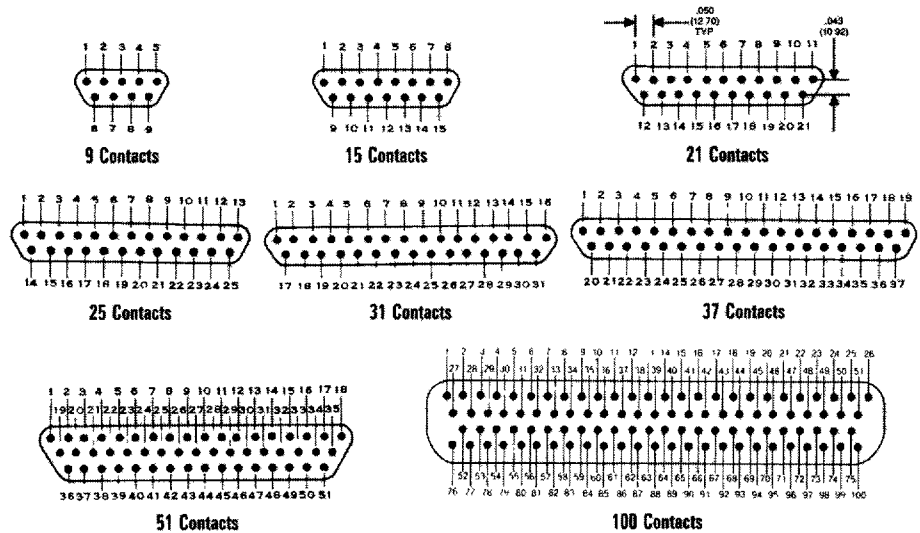
Termination Code	Length
L61	.125 (3.18)
L56	.150 (3.81)
L57	.190 (4.83)
L39	.250 (6.35)
L58	.375 (9.52)
L1	.500 (12.70)
L14	.750 (19.05)
L2	1.000 (25.40)
L7	1.500 (38.10)
L6	2.000 (50.80)
L16	2.500 (63.50)
L10	3.000 (76.20)

Millimeters are in parentheses.

Contact Arrangements

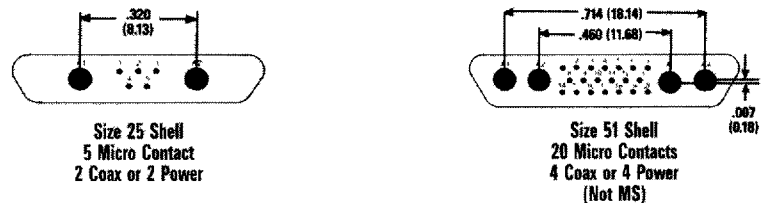
(Face View of Pin Insert – Use Reverse Order for Socket Side)

Standard



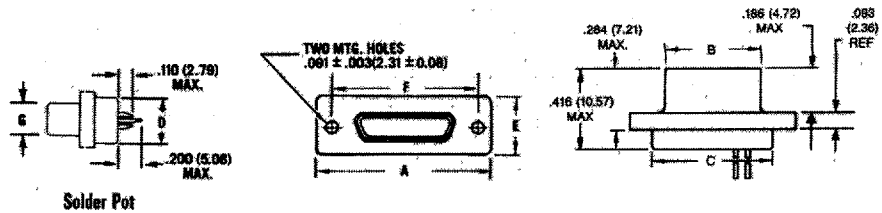
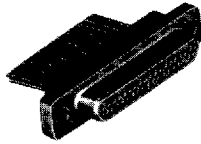
Contact identification numbers are for reference only and do not appear on insulator or connector body.

Coaxial



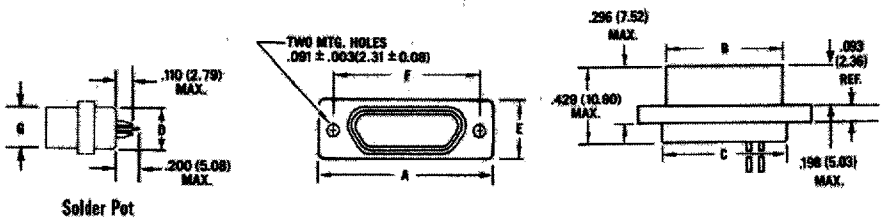
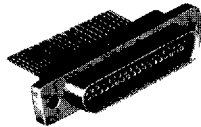
Shell Dimensions (Conforms to MIL-C-83513)

Plug



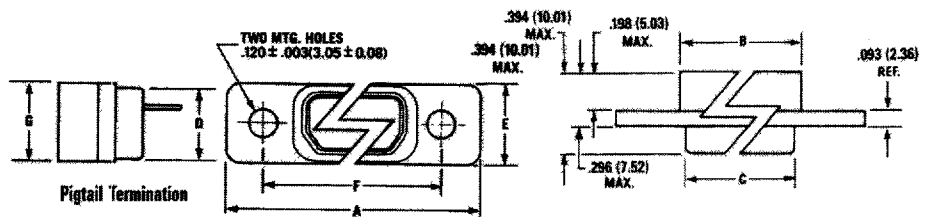
Solder Pot

Receptacle



Solder Pot

Receptacle (MDM-100 only)

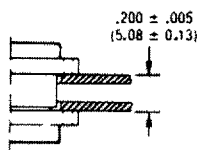


Pigtail Termination

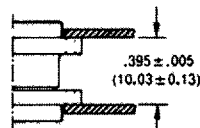
Part Number By Shell Size	A Max.	B Max.	C Max.	D Max.	E Max.	F ±.005 (0.13)	G Max.	Average Weights** oz. (gm.) ±5%
MDM-9P*	.785 (19.94)	.334 (8.48)	.400 (10.16)	.270 (6.86)	.308 (7.82)	.565 (14.35)	.185 (4.70)	.063 (1.79)
MDM-9S*	.785 (19.94)	.402 (10.21)	.400 (10.16)	.270 (6.86)	.308 (7.82)	.565 (14.35)	.253 (6.43)	.063 (1.79)
MDM-15P*	.935 (23.75)	.484 (12.29)	.550 (13.97)	.270 (6.86)	.308 (7.82)	.715 (18.16)	.185 (4.70)	.084 (2.39)
MDM-15S*	.935 (23.75)	.552 (13.97)	.550 (14.02)	.270 (6.86)	.308 (7.82)	.715 (18.16)	.253 (6.43)	.083 (2.37)
MDM-21P*	1.085 (27.56)	.634 (16.10)	.700 (17.78)	.270 (6.86)	.308 (7.82)	.865 (21.97)	.185 (4.70)	.105 (2.99)
MDM-21S*	1.085 (27.56)	.702 (17.83)	.700 (17.78)	.270 (6.86)	.308 (7.82)	.865 (21.97)	.253 (6.43)	.104 (2.97)
MDM-25P*	1.185 (30.10)	.734 (18.64)	.800 (20.32)	.270 (6.86)	.308 (7.82)	.965 (24.51)	.185 (4.70)	.119 (3.39)
MDM-25S*	1.185 (30.10)	.802 (20.37)	.800 (20.32)	.270 (6.86)	.308 (7.82)	.965 (24.51)	.253 (6.43)	.118 (3.36)
MDM-31P*	1.335 (33.91)	.884 (22.45)	.950 (24.13)	.270 (6.86)	.308 (7.83)	1.115 (28.32)	.185 (4.70)	.140 (3.99)
MDM-31S*	1.335 (33.91)	.952 (24.18)	.950 (24.13)	.270 (6.86)	.308 (7.83)	1.115 (28.32)	.253 (6.43)	.139 (3.96)
MDM-37P*	1.485 (37.72)	1.034 (26.26)	1.100 (27.94)	.270 (6.86)	.308 (7.82)	1.265 (32.13)	.185 (4.70)	.161 (4.59)
MDM-37S*	1.485 (37.72)	1.102 (27.99)	1.100 (27.94)	.270 (6.86)	.308 (7.82)	1.265 (32.13)	.253 (6.43)	.160 (4.56)
MDM-51P*	1.435 (36.45)	.984 (24.99)	1.050 (26.67)	.310 (7.87)	.351 (8.92)	1.215 (30.86)	.228 (5.79)	.193 (5.50)
MDM-51S*	1.435 (36.45)	1.052 (26.72)	1.050 (26.67)	.310 (7.87)	.351 (8.92)	1.215 (30.86)	.296 (7.52)	.188 (5.35)
MDM-100P*	2.170 (55.12)	1.384 (35.15)	1.442 (36.63)	.360 (9.14)	.394 (10.01)	1.800 (45.72)	.271 (6.88)	.500 (14.3)
MDM-100S*	2.170 (55.12)	1.508 (38.10)	1.442 (36.63)	.360 (9.14)	.394 (10.01)	1.800 (45.72)	.394 (10.01)	1.040 (29.5)

*Add lead type and length; see How To Order. **Weight given is 1/2", uninsulated, solid, #25 AWG gold plated copper pigtails.

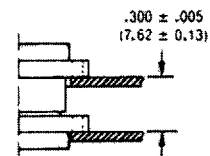
Panel Mounting Dimensions (Sizes 9 – 100)



Plug and Receptacle
Rear Mounted



Plug and Receptacle
Front Mounted



Plug Front Mounted
Receptacle Rear Mounted

Panel Cutouts

NOTE: See page 24 for rear panel mounting configuration

Shell Sizes 9 thru 51

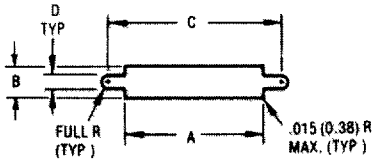


Figure 1
Front Mounting

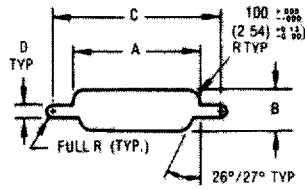


Figure 2
Rear Mounting

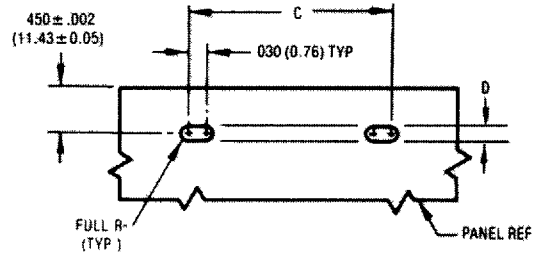


Figure 3
Edgeboard Mounting

Shell Size 100

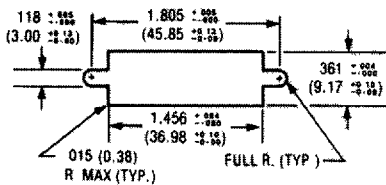


Figure 1
Front Mounting

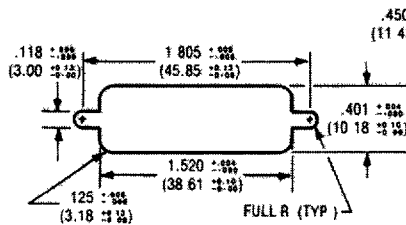


Figure 2
Rear Mounting

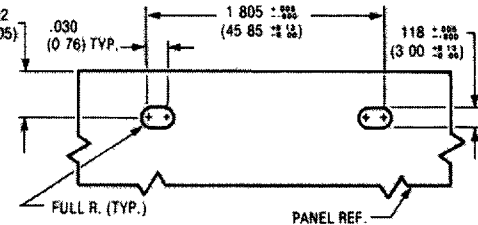


Figure 3
Edgeboard Mounting

For 9-51 Shell Sizes

NOTES:

1. Front mounting (figure 1) and rear mounting (figure 2) accommodates #2-56 screws.
2. Front mounting is preferred. However, when rear mounting is necessary, use figure 2 dimensions when jackscrews are used. See detail on page 24 when jackposts are used.
3. Edgeboard mounting bracket (figure 3) uses #2-56 screws. Dimension $.450 \pm .002$ (11.43 ± 0.05) locates the MDM receptacle flush with the end of the board.

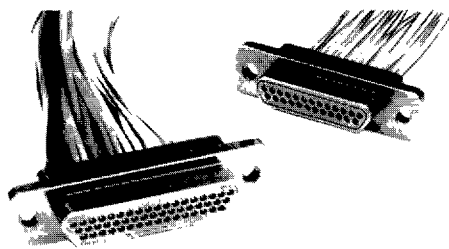
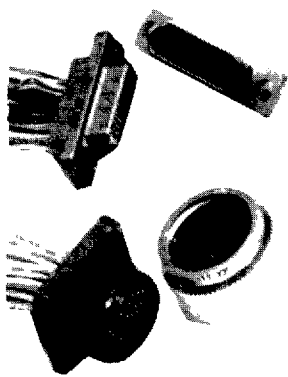
For 100 Shell Size

NOTES:

1. Front mounting (figure 1) and rear mounting (figure 2) accommodates #4-40 screws
2. Edgeboard mounting bracket (figure 3) uses #4-40 screws. Dimension $450 \pm .002$ (11.43 ± 0.05) locates the MDM receptacle flush with the end of the board
3. Front mounting is preferred. However, when rear mounting is necessary, use figure 2 dimensions

Shell Size	Cutout Figure	A		B		C		D	
		+ .004 (0.10)	- .000 (0.00)	+ .004 (0.10)	- .000 (0.00)	+ .005 (0.13)	- .000 (0.00)	+ .005 (0.13)	- .000 (0.00)
9	1	.408 (10.36)		.271 (6.88)		.570 (14.48)		.089 (2.26)	
	2	.401 (10.19)		.252 (6.40)		.570 (14.48)		.089 (2.26)	
	3	-		-		.570 (14.48)		.089 (2.26)	
15	1	.558 (14.17)		.271 (6.88)		.720 (18.29)		.089 (2.26)	
	2	.551 (14.00)		.252 (6.40)		.670 (18.29)		.089 (2.26)	
	3	-		-		.720 (18.29)		.089 (2.26)	
21	1	.708 (17.98)		.271 (6.88)		.870 (22.10)		.089 (2.26)	
	2	.701 (17.81)		.252 (6.40)		.870 (22.10)		.089 (2.26)	
	3	-		-		.870 (22.10)		.089 (2.26)	
25	1	.808 (20.52)		.271 (6.88)		.970 (24.64)		.089 (2.26)	
	2	.801 (20.34)		.252 (6.40)		.970 (24.64)		.089 (2.26)	
	3	-		-		.970 (24.64)		.089 (2.26)	
31	1	.958 (24.33)		.271 (6.88)		1.120 (28.45)		.089 (2.26)	
	2	.951 (24.16)		.252 (6.40)		1.120 (28.45)		.089 (2.26)	
	3	-		-		1.120 (28.45)		.089 (2.26)	
37	1	1.108 (28.14)		.271 (6.88)		1.270 (32.26)		.089 (2.26)	
	2	1.101 (27.97)		.252 (6.40)		1.270 (32.26)		.089 (2.26)	
	3	-		-		1.270 (32.26)		.089 (2.26)	
51	1	1.058 (26.87)		.315 (8.00)		1.220 (30.99)		.089 (2.26)	
	2	1.051 (26.70)		.295 (7.49)		1.220 (30.99)		.089 (2.26)	
	3	-		-		1.220 (30.99)		.089 (2.26)	

The Micro Line – .050" Center Spacing



The Cannon MICRO Series established the standards for performance and reliability in microminiature interconnects. Exceptionally versatile, MICRO connectors are available in rectangular, circular, and strip configurations, with 3 amp MICROPIN™/MICROSOCKET™ contacts on .050(1.27) centers, or with special arrangements of power and coaxial contacts.

The heart of the Cannon MICROPIN/MICROSOCKET contact system is a multi-element Twist Pin Contact recessed within an insulating housing. The rugged, cylindrical sockets are mounted in the exposed half of the connector. When connector

halves are mated, the chamfered sockets are first aligned by the connector body, then guide the spiral MICROPIN contacts into proper and positive alignment, even under worst-case tolerance conditions. This is Cannon's POS-A-LINE connector design.

The multiple spring elements of the MICROPIN, then under compression, form a multi-point contact system of high mechanical and electrical integrity. Contacts will provide a high degree of reliability over hundreds of mating and unmating cycles, and have proven themselves in applications that range from commercial products to equipment that has been landed on the moon.

- Contact rating – 3 amps max.
- Contact centers – .050(1.27).
- Wire sizes – #24 thru #32 AWG, stranded or solid.
- Contact termination—multiple indent crimp.
- Contact retention – fixed via epoxy.
- Contact materials and finish – Copper alloy, gold-plated per MIL-G-45204, Type II, Grade C, Class 1 over copper flash.
- Mating/unmating force – 8 oz. per contact, max./0.5 oz. per contact min.

Performance Data

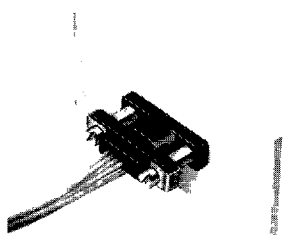
The table below summarizes the results of key tests performed in accordance with MIL-STD-1344, where applicable. Data is applicable to standard

connectors with standard terminations. Variations may affect this data, so please consult the factory for further information on your requirements.

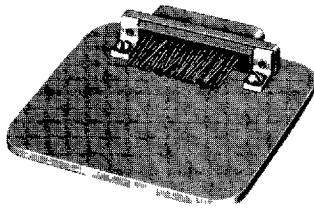
Test	Method	Criteria of Acceptance
Dielectric Withstanding Voltage	Method 3001: 900 VAC at sea level 300 VAC at 70,000' altitude Solder Pots and Shielded Cable 600 VAC at sea level 150 VAC at 70,000' altitude	No breakdown No breakdown No breakdown No breakdown
Insulation Resistance	Method 3003	5,000 megohms minimum
Thermal Shock	Method 1003, Condition A: –55°C to +125°C	No physical damage
Physical Shock	Method 2004, Condition E: 50 G's, 3-axes, 6 millisecond duration sawtooth pulse	No physical damage No loss of continuity > 1 μsec
Vibration	Method 2005, Condition IV: 20 G's, 10-2,000 Hz, 12 hrs.	No physical damage No loss of continuity > 1 μsec
Durability	500 cycles of mating and unmating, 500 CPH max.	No mechanical or electrical defects
Moisture Resistance	Method 1002, Type II omit steps 7a & 7b	Insulation resistance > 100 megohms
Salt Spray	Method 1001, Condition B. 48 hours	Shall be capable of mating and unmating, and meet contact resistance requirements
Contact Resistance (MIL-STD-202)	Method 307: At 3 amps At 1 milliamp	8 milliohms maximum 10 milliohms maximum
Contact Retention	Per MIL-C-83513	5 lb. minimum axial load

Mounting Hardware Views (for sizes 9 – 51)

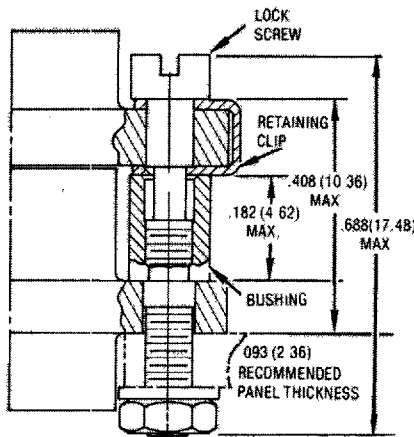
This hardware supplied unassembled.



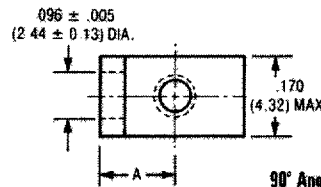
Screw Lock Assembly



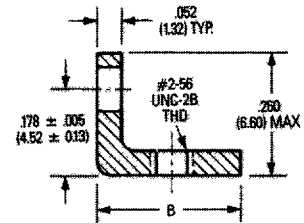
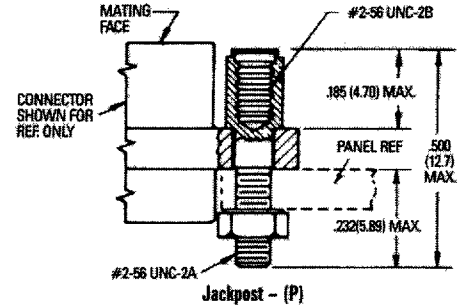
90° Angle Mounting Bracket



Screw Lock Assembly*
*NOTE: Torque value is 2.5 in/lbs max.



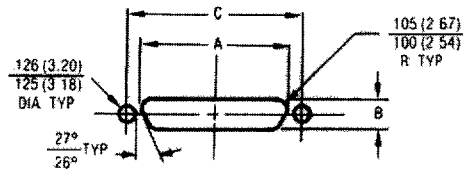
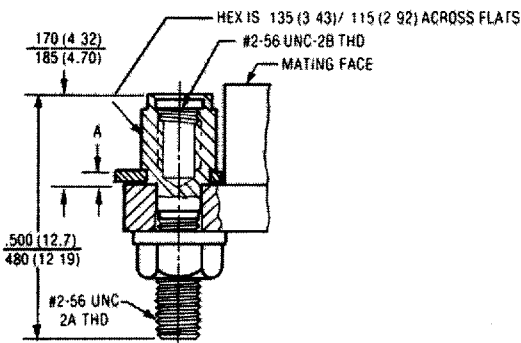
90° Angle Mounting Bracket



Description	Part Number	A ±.005 (±0.13)	B Max.
Screw Lock Assembly	322-9500-000		N/A
Jackpost Kit	320-9505-000		N/A
Mounting Bracket 90° MDM for 9 thru 37 Shell Sizes	015-9516-002	.147 (3.73)	.308 (7.82)
Mounting Bracket 90° MDM for 51 Shell Size	015-9516-003	.169 (4.29)	.350 (8.89)

NOTES: Screw lock assembly (322-9500-000) can be used for front mounting only. Jackpost kit (320-9505-000) consists of two assemblies, shipped unassembled

Jackpost Bushing (for rear panel mounting-for sizes 9 – 51)



Plug and Receptacle Dimensions

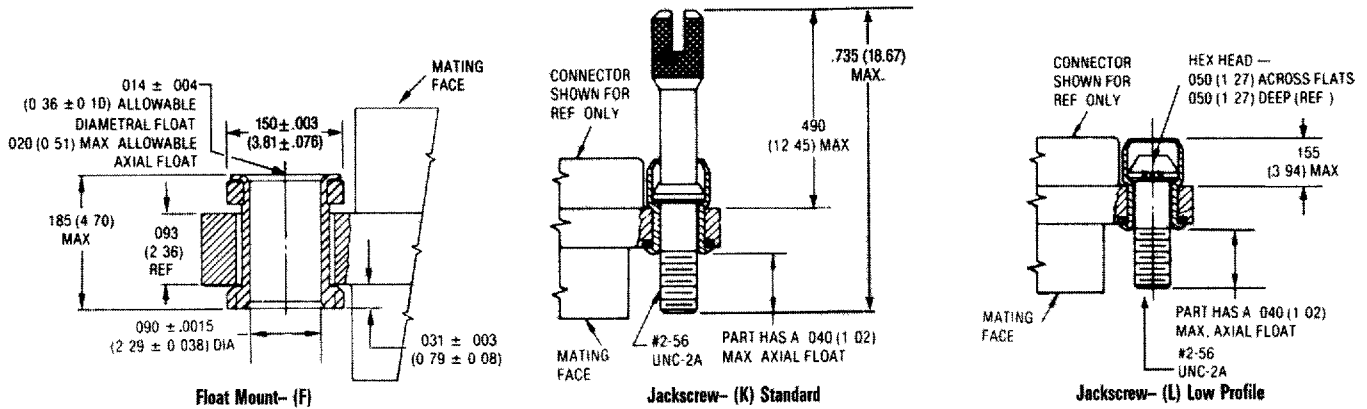
Shell Size	A +.004 (0.10) -.000 (0.00)	B +.004 (0.10) -.000 (0.00)	C ±.005 (0.13)
9	.401 (10.19)	.252 (6.40)	.565 (14.35)
15	.551 (14.00)	.252 (6.40)	.715 (18.16)
21	.701 (17.81)	.252 (6.40)	.865 (21.97)
25	.801 (20.34)	.252 (6.40)	.965 (24.51)
31	.951 (24.16)	.252 (6.40)	1.115 (28.34)
37	1.101 (27.97)	.252 (6.40)	1.265 (32.13)
51	1.051 (26.70)	.295 (7.49)	1.215 (30.86)

Panel A Thickness	A +.005 (0.13) -.000 (0.00)	Jackpost Kit Number*
3/32 (2.4)	.087 (2.21)	320-9505-007
1/16 (1.6)	.056 (1.42)	320-9505-006
3/64 (1.2)	.042 (1.07)	320-9505-005
1/32 (0.8)	.025 (0.64)	320-9505-004

*2 jackposts, 2 nuts, 2 washers.

Mounting Hardware Views (sizes 9 – 51)

This hardware is factory installed.



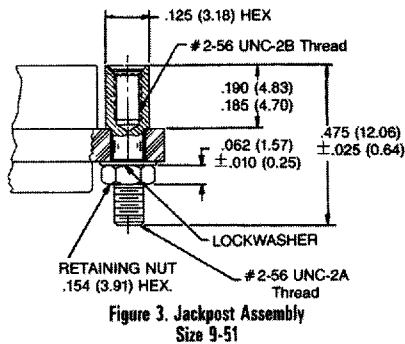
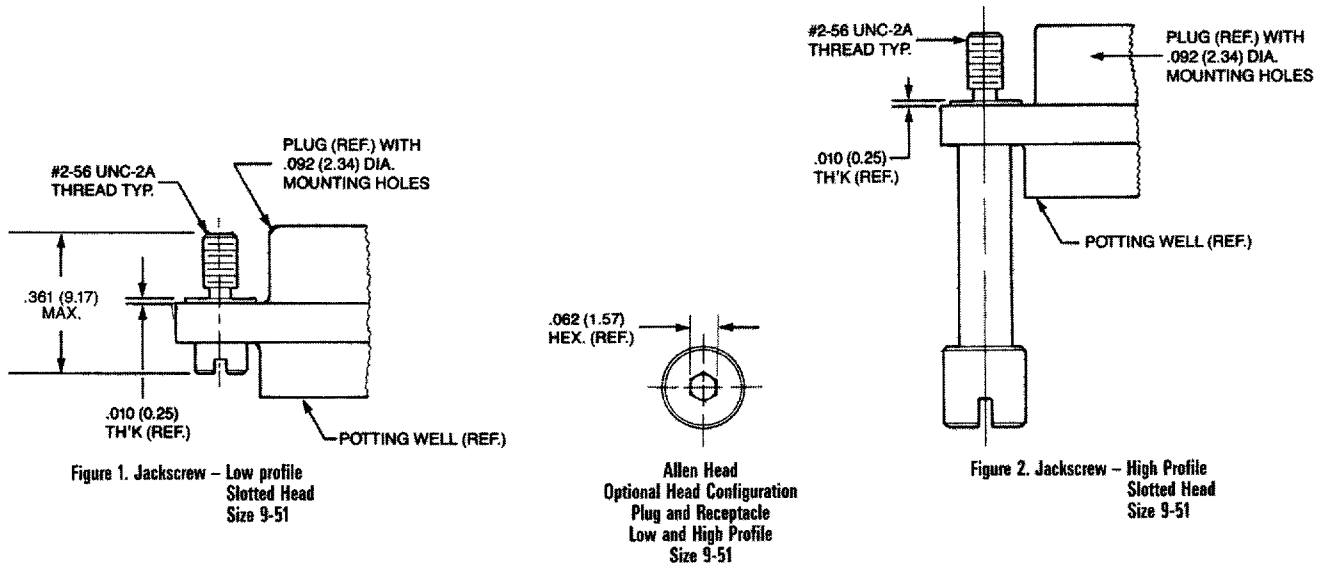
Shown here is a cutaway view of the float mount for the MD connector. The basic shell dimensions are the same for the float mount and the screw mounting hole configurations. View shown is for standard float mount front panel mounting. Reverse mounting is available on request

*NOTE: Torque values are as follows.
 Low Profile Jackscrew (L)—2.5 in/lbs
 Standard Jackscrew (K)—2.5 in/lbs

Repair kit available—consult factory.

Mounting Hardware to Military Specification (for sizes 9 – 100) per MIL-C-83513/5

This hardware supplied unassembled.

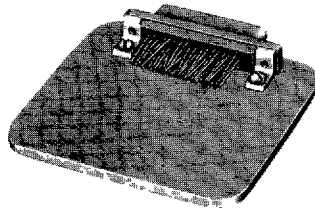


Description	Size 9-51	Size 100*
	Mod Code Part Number	Mod Code Part Number
Slotted Head Jackscrew Assy Low Profile (Figure 1)	M5 320-9508-025	M15 320-9508-021
Slotted Head Jackscrew Assy High Profile (Figure 2)	M6 320-9508-027	M16 320-9508-023
Allen Head Jackscrew Assy Low Profile (Figure 1)	M2 320-9508-026	M12 320-9508-022
Allen Head Jackscrew Assy High Profile (Figure 2)	M3 320-9508-028	M13 320-9508-024
Jackpost Assy (Figure 3)	M7 320-9505-033	M17 320-9505-030

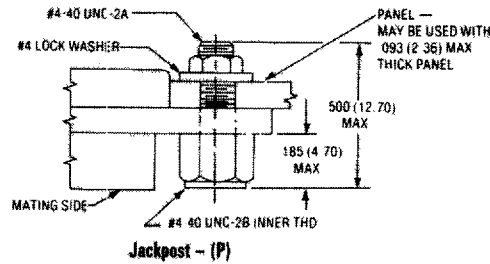
*Size 100 requires B1 size mounting holes.

Mounting Hardware Views (for size 100)

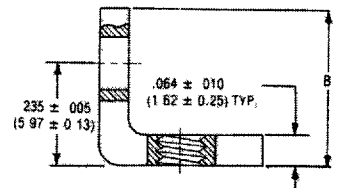
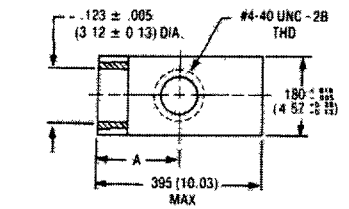
This hardware supplied unassembled.



90° Angle Mounting Bracket



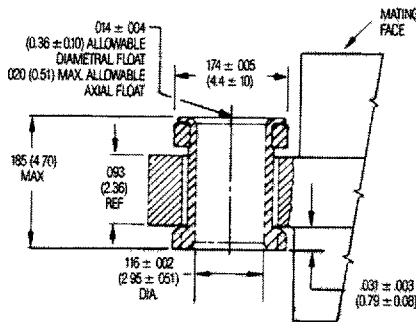
Jackpost – (P)



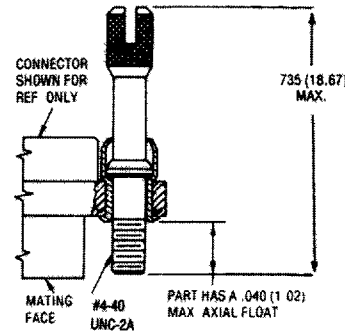
90° Angle Mounting Bracket

Description	Part Number	A ±.005 (0.13)	B Max.
Jackpost Kit	320-9505-015		N/A
Mounting Bracket 90° MDM	015-9528-000	.191 (4.85)	.370 (9.40)

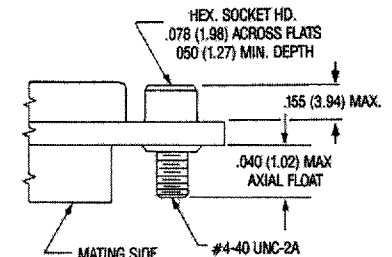
This hardware is factory installed.



Float Mounting – (F) Std.



Jackscrew – (K) Slotted Head



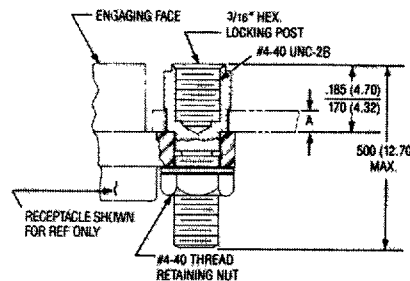
Jackscrew – (L) (Low Profile)

*NOTE: Torque values are as follows:
Low Profile Jackscrew (L)–4.0 in/lbs
Standard Jackscrew (K)–4.0 in/lbs

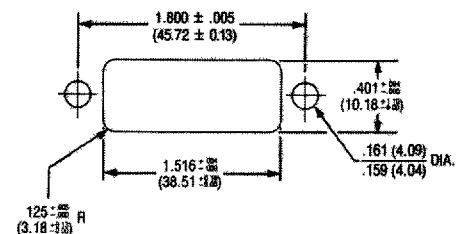
Jackpost Bushing (for Rear Panel Mounting)

Panel Thickness	A + .005 (0.13) – .000 (0.00)	Jackpost Kit Number*
3/32 (2.4)	.087 (2.21)	320-9505-013
1/16 (1.6)	.058 (1.42)	320-9505-012
1/32 (0.8)	.025 (0.64)	320-9505-010
3/64 (1.2)	.042 (1.07)	320-9505-011

*2 jackposts, 2 nuts, 2 washers



Dimensions for Rear Panel Mounting



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[MDM21SH003M7](#) [MS3100F24-11PW](#) [MS3100E2410SZ](#) [MS3100F24-10SZ](#) [MS3100F24-11P](#) [BKAC2-313-32201](#) [MS3100E2411P](#)
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[MS3100F24-28SW](#) [MS3106E2428SX](#) [BKAD3-A713-30001](#) [BKAD3-626-30001](#) [BKAC3-626-30001](#) [BKAD3-A713-30017](#) [BKAD3-537-](#)
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