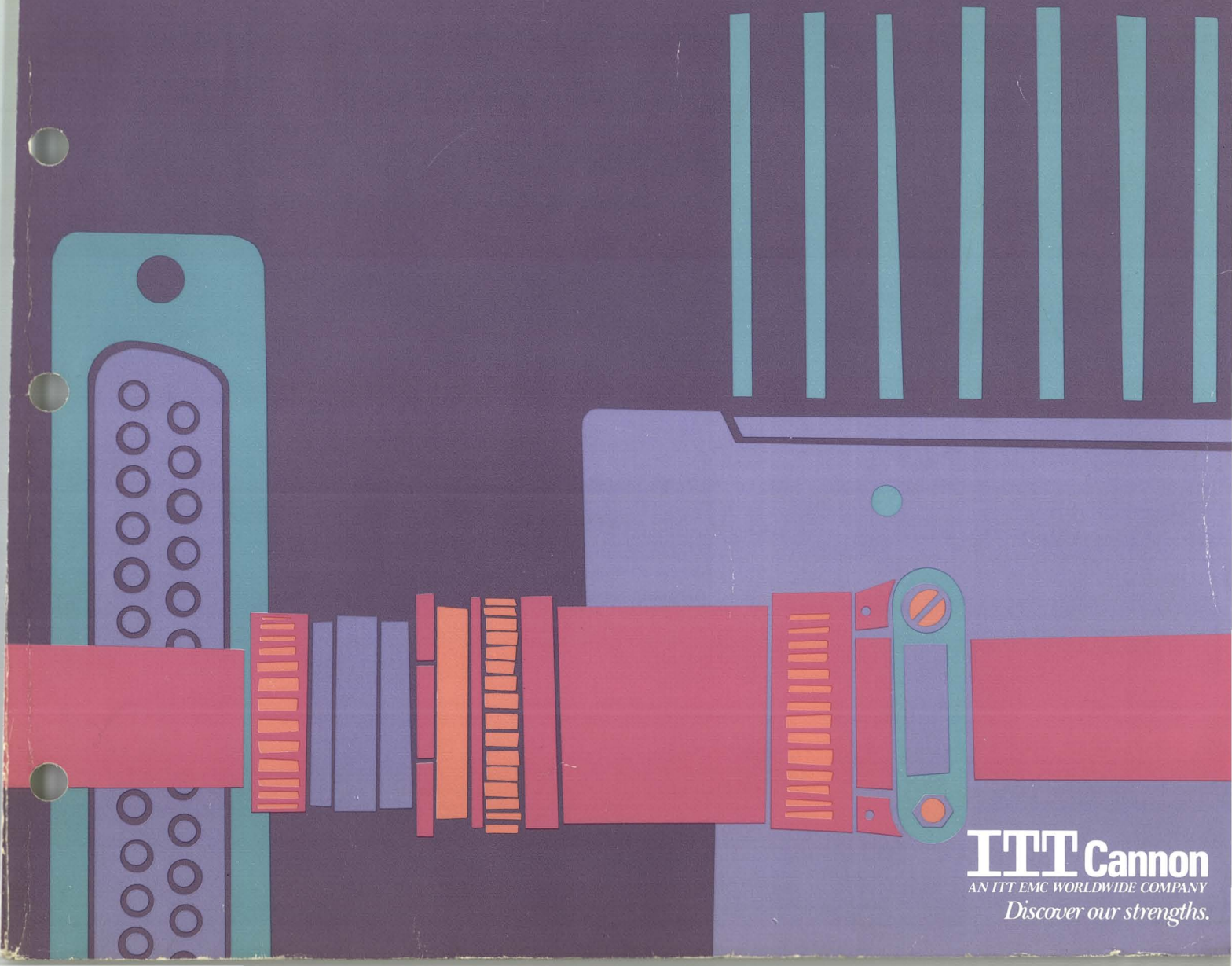
CONNECTOR SOURCEBOOK 1990



ITT Cannon
AN ITT EMC WORLDWIDE COMPANY
Discover our strengths.

ITT Cannon manufactures the finest quality product available to the marketplace, however these products are intended to be used in accordance with the specifications described in this catalog. Any use or application that deviates from the stated operating specifications is not recommended and may be unsafe. A limited warranty applies to ITT Cannon products. Except for obligations assumed by ITT Cannon under warranty, ITT Cannon will not be liable for any loss, damage, cost of repairs, incidental or consequential damages of any kind, whether or not based upon express or implied warranty, contract, negligence, or strict liability arising in connection with the design, manufacture, sale, use, or repair of the products.

This catalog is not to be construed as an offer. It is intended merely as an invitation to make an offer.

Discover our connections.

Inside this catalog are thousands of interconnect solutions. They include the latest components technology developed by ITT Cannon engineers for dozens of industries. So, no matter what your specifications or MIL-SPEC number, chances are you'll find what you need in here. Some are tried-and-true. Some are new. But they all represent the most reliable connectors and systems available today. They're all the result of more than 75 years of designing and manufacturing highly reliable products for customers throughout the world.

Discover our strengths.

Cannon's broad line of interconnect solutions has come out of the best R&D lab there is – our customers' environments. By forging strategic partnerships with our customers, we know the pulse of the industry. We get to know you. Your company. Your markets. Which means we are driven by your needs, your people, and your timetables. As a part of a group of companies known as ITT ElectroMechanical Components Worldwide, we offer the synergy and resources few other suppliers can offer in the way of know-how, service and competitive pricing.

We'll discover solutions for you that don't exist yet.

This catalog is only the beginning. So, if you can't find the exact product you're looking for in these pages, don't give up. Because our engineers will come up with a solution for you. We'll modify one of the standards included in this catalog. Or, start from scratch if that's what it takes. Please call us. Perhaps we can write a new page of connector history together.

How to get what you need. Fast.

It's simple. Just call an ITT Cannon distributor. They're your local source for a full range of Cannon product – and a staff of experienced connector specialists. Most have CAPS (Cannon Authorized Plug Specialist) value-added facilities and all have plenty of inventory. Service and delivery is the best in the business.

For the phone number of your nearest ITT Cannon sales representative and distributor, or for answers to any technical questions, simply call the location listed at the right that serves your company's product needs.

How to locate what you're looking for.

This catalog is divided into five sections. Each section includes the products of one of our five connector sales and manufacturing locations.

Use the chart at the right as a preliminary guide. Then, turn to the Table of Contents on the following two pages to locate the type of product and page numbers for each. See page 4 for a cross reference of Cannon product designations to MIL-SPEC numbers.

For technical assistance .....

ITT Cannon — **Page 5 to 194**
666 East Dyer Road
Santa Ana, CA 92702
714-557-4700

A leading supplier of circular and rack and panel connectors for military and aerospace customers. Other product lines include microminiature and fiber optic connectors, as well as a variety of highly reliable products for the transportation, medical and electronics industries.

ITT Cannon — **Page 195 to 229**
4 Cannon Court
Whitby, Ontario L1N 5V8
Canada
416-668-8881

Manufacturing high reliability connectors for the airframe and energy markets is a specialty of this location. They also provide connectors to a wide variety of geophysical and firewall, shipboard and other hostile environment applications.

ITT Cannon — **Page 230**
2801 E. Air Lane
Phoenix, AZ 85034
602-275-4792

This location manufactures and sells hermetic, filter and various special connectors for both commercial and military markets, as well as a line of cable assemblies. The engineering team specializes in custom connectors to suit difficult customer applications.

ITT Cannon — **Page 231 to 375**
1851 E. Deere Avenue
Santa Ana, CA 92705
714-261-5300

A major supplier of connectors for commercial market applications. Products include D Subminiature and I.O. connectors, as well as surface mount and pin grid array devices, printed circuit connectors and custom harnessing to customer specifications.

ITT Sealectro — **Page 376 to 384**
40 Lindeman Drive
Trumbull, CT 06611
203-372-4118

A leading U.S. supplier of sub-miniature RF and microwave coaxial connectors for military, telecom and test instrumentation applications. Many of Sealectro's designs are now widely used MIL-Specification and standard commercial series. They manufacture coaxial cable assemblies of both standard and high-performance construction and are leaders in millimeter wave interconnection technology. Capabilities include engineering, test and complete manufacturing facilities.

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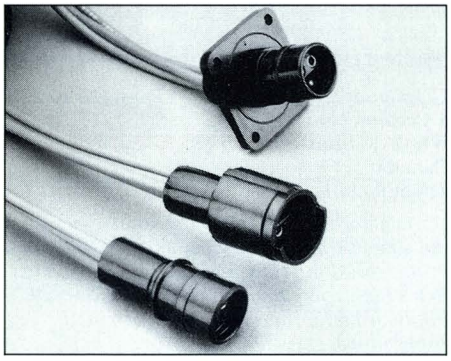
MIL-SPEC/CANNON CROSS REFERENCE 4

AUTOMOTIVE 5–17

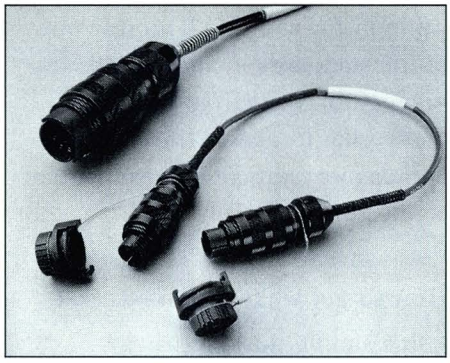


Connectors using environmentally resistant materials and components sealed against contaminants for wire-to-wire and printed circuit board interface applications. These connectors are designed to withstand shock, vibration, temperature extremes and submersion in water.

MIL-SPEC CIRCULAR 18–108

Circular connectors are designed for military applications, but are readily adaptable to both space and commercial requirements.

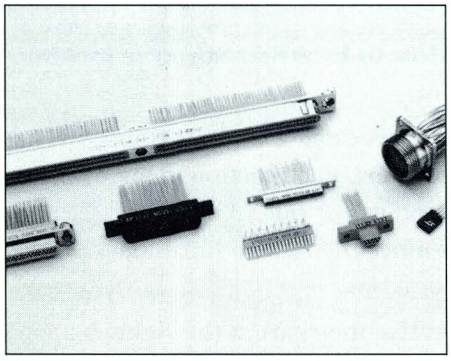
FIBER OPTIC 109–114



Fiber Optic Multi-Channel Connectors and Cable Assemblies 109

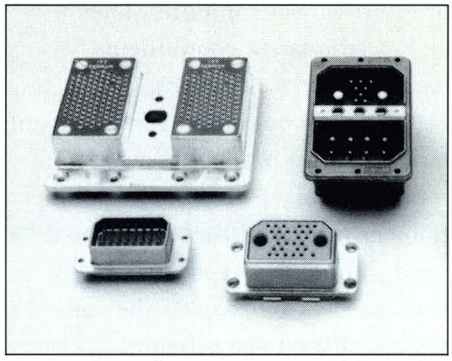
Optical Contacts—Designed to fit any size 16 cavity with no modification to connector 112

MICROMINIATURE 115–154



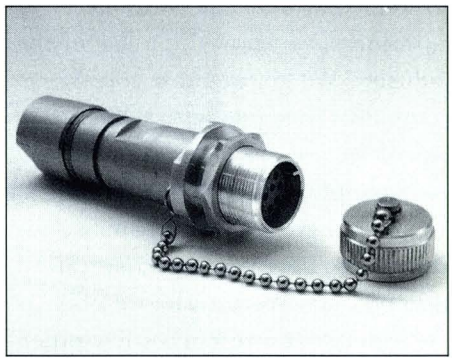
Rectangular, circular and strip configurations featuring high contact density with MICRO (3 amp), CENTI (5 amp) and NANO (1 amp) twist pin contacts.

RACK AND PANEL 155–194



Rack and Panel connectors are widely used in military/aerospace and commercial applications. These versatile connectors come in a variety of configurations and sizes, including square, rectangular, miniature, standard, environmental, and non-environmental for any blind mate applications.

SEVERE ENVIRONMENT 195–227

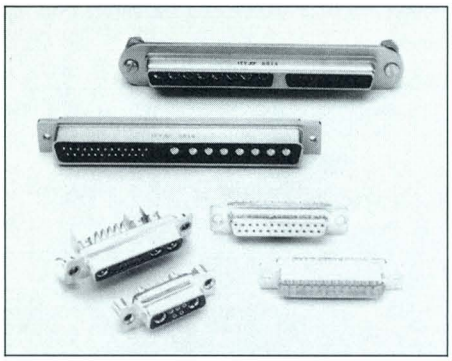


Mil-Spec. 195
Firewall 205
Waterproof 221

HERMETIC CONNECTORS 228–229

FILTER CONNECTORS 230

D SUBMINIATURE 231–316



Rectangular connectors for commercial/ industrial and general military/aerospace (MIL-C-24308) applications.

Commercial 231
Combination 253
HiRel/Military 275
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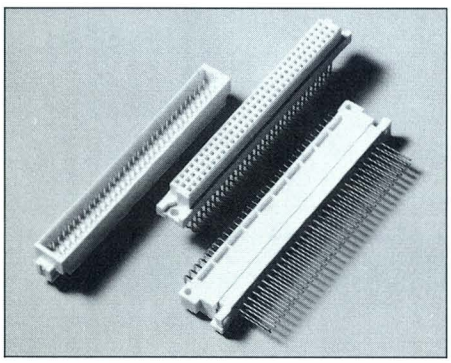
IDC/EDGECARD/ PC BOARD 317–341



IDC 317
One-Piece PCB 322
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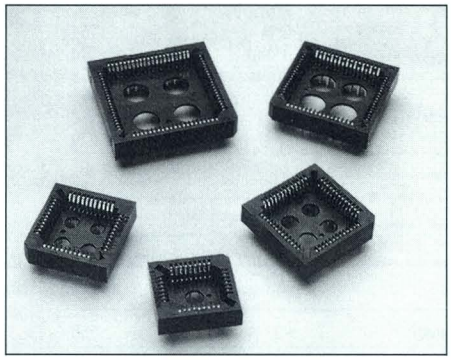
DIN 336

LEADED CHIP CARRIER SOCKETS 342–344



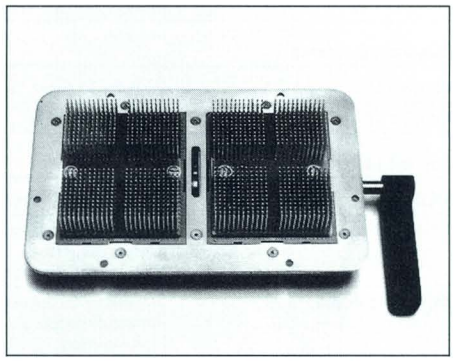
Accommodate JEDEC Type A Plastic Leaded Chip-Carrier devices with 32, 44, 52, 68 and 84 leads.

GENERAL PURPOSE CIRCULAR 345–363

Lightweight, rugged connectors with quick connect/disconnect Acme threads.

AUDIO CONNECTORS 364

ZERO INSERTION FORCE 365–375



Designed for commercial/industrial computer and peripheral equipment, zero mating-force via cam actuated contacts.

RF 376–384

SMA Subminiature, ConheX® Subminiature and NanoheX® Microminiature RF Connectors used in military, telecommunications and instrumentation for high-density radio frequency and microwave circuits.

Military Specification/Cannon Cross Reference

Contacts used in MIL spec. connectors are to the MIL-C-39029 specification.

Military Specification	Description	Cannon Designator	Page No.
NORTH AMERICA			
Subminiature Rectangular Connectors			
MIL-C-24308	Metal shell	D*MM	276
(Qualified To)	Metal shell	D*MAM	276
MIL-C-24308	Metal shell	D*	231
(Designed To)	Metal shell	D*C/D*U	239
	Metal shell	D*D	291
	Plastic shell	D*P	247
	Metal shell	D*SF	249
		Speedy-D	
	Metal shell	D*M	254
	Metal shell	D*MA	276
		Accessories	278
	Hermetically sealed connectors	D*H	228
	Metal shell	GD*	286
	Filtered connectors	TD1	230
Rack/Panel Connectors			
MIL-C-81659	Single 2-, 3-, 4-gang Rack/Panel connectors	DPXNA/NE	183
MIL-C-83733	Rack/Panel connectors	DPK	168
Miniature Circular Connectors			
MIL-C-25955	Miniature circular, general purpose	KO	355
MIL-C-26482 SERIES 1 & 2	Miniature circular, general purpose Series 1	KPT/KPSE/KPTB	58
	Hermetic connectors	KPTH/PVA	228
	Miniature circular connectors Series 2	PV	74
MIL-C-38999 SERIES I, II, III	Subminiature circular connectors Series I, II, III	KJL/KJ/KJA	84
	Hermetic connectors Series I, II, III	KJLY/KJY/KJAY	228
	Filter connectors	TKJL/TKJ/TKJA	230
MIL-C-39012	Microminiature RF Connectors	NanoheX®	382
MIL-C-83513	Microminiature Rack and Panel connectors	MD	128
	Microminiature Rack and Panel connectors	MDM	117
MIL-C-83723 SERIES I, II	Standard Circular Connectors	CV	38
	Standard circular connectors Series II	CVA	51
	Miniature circular connectors Series I	PV	74
	Filter connectors	TPV	230
NAS-1599	Filter connectors	TPV	230
NASA 40M39569	Filter connectors	TPV	230
Standard Circular Connectors			
MIL-C-5015	Hermetic Bulkhead Receptacle	BFH/TBFH	229
	Bulkhead Receptacles	BFR/TBF	32
	Standard circular connectors	CA Bayonet	46
	Firewall connectors	CA-KE	215
	Standard circular connectors	CV	38
	Firewall connectors	FRF/FVR/FRA/FVA	209
	Hermetically sealed connectors	GS	229
	Waterproof connectors	MR	221
	General purpose connectors	MS-A/B	202
	General purpose connectors	MS-E/F/R/ER	18
	Firewall connectors	MS-K	205
MIL-C-28840	Front release, high contact density	KFS	195
EUROPEAN			
VG 95 234	Standard circular connectors	CA	46
VG96912 LN 29729	High voltage circular connectors	CGE	49
DIN 41612, VG 95 234, IEC, MIL-C-55302	PC Edgecard connectors, indirect, two piece	G06/G60	336
DIN 41651, MIL-C-83503, BPO-SPEC D 2632, UTE-C-93428	Header (shrouded)	G80	322

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CA Bayonet	46
CA-KE Series	215
CGE Series	49
CHD	330
CTA Series	152
CV/MIL-C-5015 Series	38
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Commercial	231
Combination	253
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Non-Magnetic/No-Outgas	298
High Density	300
Accessories	301
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D*BA	234
D*BMA Series	290
D*C/D*U Series	239
D* Series	231
D*D Series	291
D*H Series	228
DIN, Two-Piece	338
DL Series	365
D*M Series	275
D*M Coaxial	254
D*M High Power	265
D*M High Voltage	273
D*P Series	247
D*SF Series	249
DPK Series	168
DPXNA/DPXNE Series	182
Fiber Optic Contacts	112
FOMC	109
FRF/FVF/FRA/FVA Series	209
GD*	286
GS	229
Gender Changer	251
IDC	319
K and RK Series	345
KFS	195
KJL/KJ/KJA Series	84
KJLY/KJY/KJAY Series	228
KO Series	355
KPTH/PVA Series	228
KPT/KSPE Series	58
LCS	342
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MD/MDB/MDV/MDVB Series	128
MDM/MDM-PCB/MDM-Coaxial Power	117
MIK/MIKM/MIKQ Series	139
MJS Series	137
MR Series	221
MS-A/B	202
MS-E/F/R/ER	18
MS-K Series	205
MT Series	143
PCB, One-Piece	322
PCB, Two-Piece	336
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RF	376
SLE	5
SURE-SEAL® Series	12
UBC/UBS	323
TD1	230
TDPX	230
TKJL/TKJ/TKJA	230
TPV	230
W Series	224

The Snap Lock Environmental (SLE) Series is Cannon's newest environmentally-sealed connector created for printed circuit board, black box, cable to cable or bulkhead applications.

When your under-the-hood requirements call for tough performance, the SLE "snaps" into a tightly-sealed connection that can withstand heat, shock and vibration. The connector is designed to preserve the integrity of the solid state package, while protecting against contaminants—even when unmated.

Polarization, scoop-proofing and hand insertion of contacts are part of the package. Gold/tin lead-plated stamped contacts add durability. A rugged, thermoplastic receptacle body maximizes performance by withstanding temperature variances from −40° to +125°C.

The SLE series is available in both 19 and 28 wire configurations. It can also be adapted to robotic assembly. Should your requirement demand higher density configurations, consult our applications engineering staff.

Features	Benefits
• Superior environmental sealing	• Circuit protection and lowers warranty risk
• Integral mold latch	• Latch with tactile and audible feedback
• −40° to +125°C continuous operation at rated current	• Extends temperature operating range
• Available in two sizes, 19 and 28 contacts	• Meets most design requirements
• Crimp stamped gold, tin-lead plated contacts	• Increases durability and provides for minimum installation cost
• Hand insertable/removable contacts	• Low installed cost
• Current rating 5 amp and 13 amp versions	• To meet signal and power requirements
• Low millivolt drop	• An absolute must in low signal applications
• Low contact resistance	• A must for circuitry with low potentials
• Small footprint on P.C. board and low profile	• Requires less P.C. board space
• 5-way alternate polarization	• One body offers 5 combinations of polarization
• Adaptable to robotic assembly	• Another avenue for cost savings
• Multi-direction, easily assembled end bells	• Versatile cable strain relief, up, down, straight, left and right
• Optional secondary latch	• Connector mating assurance

How to Order

SLE B 19 P 2 S F **

SERIES PREFIX
SIZE
NUMBER OF CONTACTS
CONTACT TERMINATION
CONNECTOR TYPE
CONNECTOR TERMINATION
MECHANICAL MODIFIER
MATERIAL OR FINISH MODIFIER

SERIES PREFIX
Snap Lock Environmental

SIZE
B or C

NUMBER OF CONTACTS
19 or 28

CONTACT TERMINATION
T – Tuning Fork Straight (Plug with .120 (3.05) min. PCB tails)
N – Tuning Fork 90° (Plug with .100 (2.54) min. PCB tails)
P – Crimp Pin (cable receptacle)
S – Crimp Socket (cable plug)

CONNECTOR TYPE
2 – Cable Plug
3 – PCB Plug
4 – Cable Receptacle

CONNECTOR TERMINATION
S – Straight E/B (cable only)
L – 90° Left E/B (cable only)
R – 90° Right E/B (cable only)
U – 90° Up E/B (cable only)
D – 90° Down E/B (cable only)
P – Potted (PCB only)

MECHANICAL MODIFIER
F – With Flange Mount
G – Screwlock Applications
M – Metric Threaded Inserts M3.5×.60
N – Threaded Inserts 6-32 UNC
E – Threaded spacer 6-32 x .56

Standard Data

MATERIALS AND FINISHES

Item	Material
Plug	High temperatures thermoplastic with silicone elastomer sealing
Contacts	Copper alloy.
Finish	Engaging area: Gold over nickel crimp/P.C. tail area: Tin lead over nickel.

ELECTRICAL

Contact Resistance	10 milliohms maximum
Insulation Resistance	100 megaohms minimum
Current Rating	5 amp signal continuous at 125°C all contacts 13 amp power continuous at 125°C all contacts
Dielectric Withstanding Voltage	1000 volts ACRMS at sea level
Applicable ITT Cannon Specification	CS-189
Operating Temperature	−40° to +125°C

MECHANICAL

Crimp Contacts	Semi-automatic or hand crimpable
Wire Size	16-18-20 AWG
Wire Insulation Sealing Range	.095 (2.41) to .130 (3.30) inch dia.
Polarization	'D' shaped interface with five alternate positions.
Contact Insertion	No tool required. Suitable for automation.
Contact Extraction	Rear removable
Contact Retention	25 lbs. minimum per contact
Wire Strip Length	.220 (5.59) to .210 (5.33) inch

Conversion Chart

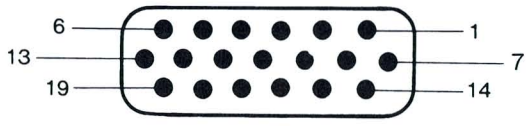
Assembly Number	Part Number	Description
130408-0000	SLEB19P4S	"B" Receptacle
130408-0001	SLEB19P4L	"B" Receptacle
130408-0002	SLEB19P4R	"B" Receptacle
130408-0003	SLEB19P4U	"B" Receptacle
130408-0004	SLEB19P4D	"B" Receptacle
130408-0005	SLEB19P4SF	"B" Receptacle
130408-0008	SLEB19P4UF	"B" Receptacle
130408-0009	SLEB19P4DF	"B" Receptacle
130408-0010	SLEB19P4SG	"B" Receptacle
130408-0011	SLEB19P4UG	"B" Receptacle
130408-0012	SLEB19P4DG	"B" Receptacle
130409-0000	SLEB19S2SF	"B" Plug In-Line
130409-0001	SLEB19S2S	"B" Plug In-Line
130409-0002	SLEB19S2L	"B" Plug In-Line
130409-0003	SLEB19S2R	"B" Plug In-Line
130409-0004	SLEB19S2U	"B" Plug In-Line
130409-0005	SLEB19S2D	"B" Plug In-Line

Assembly Number	Part Number	Description
130410-0000	SLEB19N3P	"B" 90° PCB Plug
130410-0001	SLEB19N3PM	"B" 90° PCB Plug
130410-0002	SLEB19N3PN	"B" 90° PCB Plug
130410-0003	SLEB19N3PG	"B" 90° PCB Plug
130410-0004	SLEB19N3	"B" 90° PCB Plug
130411-0000	SLEB19T3P	"B" Straight PCB Plug
130411-0001	SLEB19T3PM	"B" Straight PCB Plug
130411-0002	SLEB19T3PN	"B" Straight PCB Plug
130411-0003	SLEB19T3PG	"B" Straight PCB Plug
130412-0000	SLEC28P4S	"C" Receptacle
130412-0001	SLEC28P4L	"C" Receptacle
130412-0002	SLEC28P4R	"C" Receptacle
130412-0003	SLEC28P4U	"C" Receptacle
130412-0004	SLEC28P4D	"C" Receptacle
130412-0005	SLEC28P4SF	"C" Receptacle
130412-0008	SLEC28P4UF	"C" Receptacle
130412-0009	SLEC28P4DF	"C" Receptacle

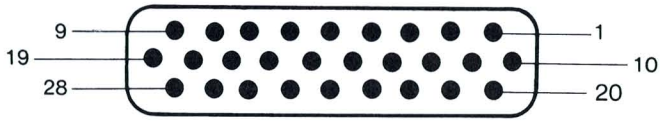
Assembly Number	Part Number	Description
130412-0010	SLEC28P4SG	"C" Receptacle
130412-0011	SLEC28P4UG	"C" Receptacle
130412-0012	SLEC28P4DG	"C" Receptacle
130413-0000	SLEC28S2SF	"C" Plug In-Line
130413-0001	SLEC28S2S	"C" Plug In-Line
130413-0002	SLEC28S2L	"C" Plug In-Line
130413-0003	SLEC28S2R	"C" Plug In-Line
130413-0004	SLEC28S2U	"C" Plug In-Line
130413-0005	SLEC28S2D	"C" Plug In-Line
130414-0000	SLEC28N3P	"C" 90° PCB Plug
130414-0001	SLEC28N3PM	"C" 90° PCB Plug
130414-0002	SLEC28N3PN	"C" 90° PCB Plug
130414-0003	SLEC28N3PG	"C" 90° PCB Plug
130414-0004	SLEC28N3	"C" 90° PCB Plug
130415-0000	SLEC28T3P	"C" Straight PCB Plug
130415-0001	SLEC28T3PM	"C" Straight PCB Plug
130415-0002	SLEC28T3PN	"C" Straight PCB Plug
130415-0003	SLEC28T3PG	"C" Straight PCB Plug

Contact Arrangements

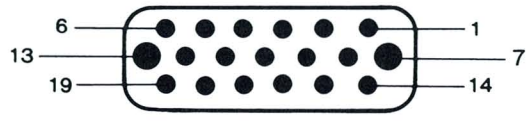
Actual Size
Face View – Engaging Face



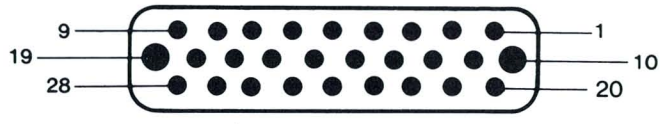
Size B
19 Contacts



Size C
28 Contacts



Power Version
(Consult Factory)



Power Version
(Consult Factory)

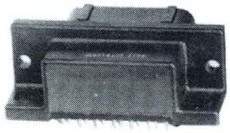
ITT Cannon
Transportation Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

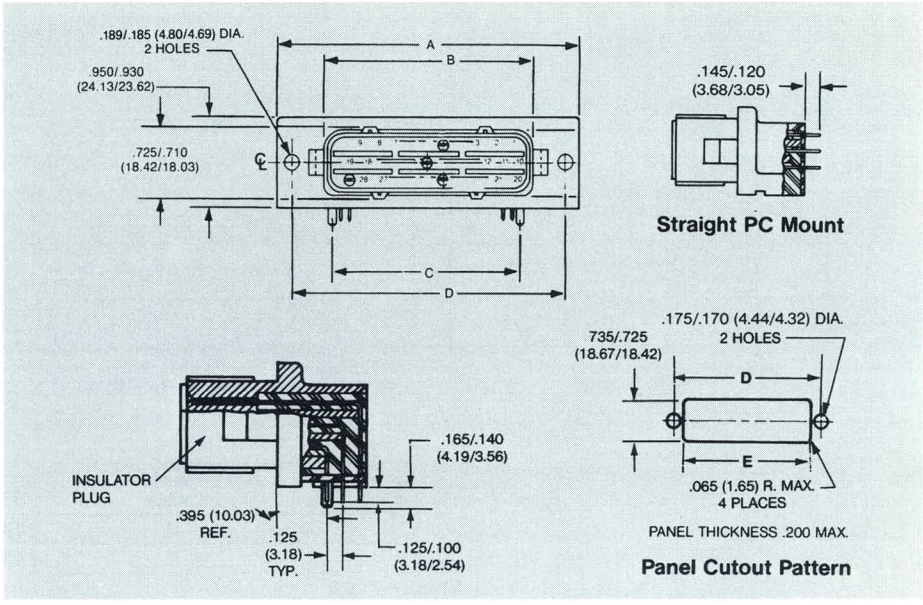
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Plug, P.C. Board

Straight

90°

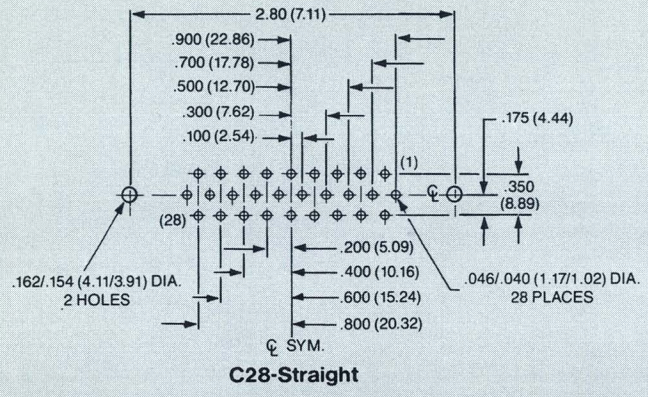


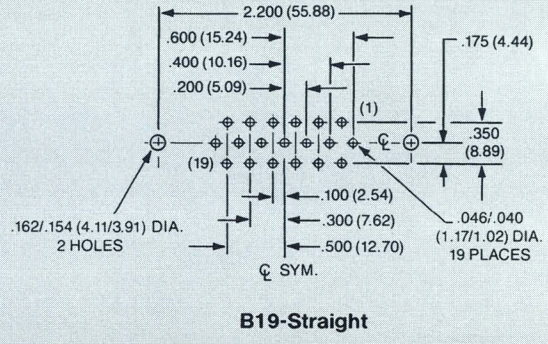


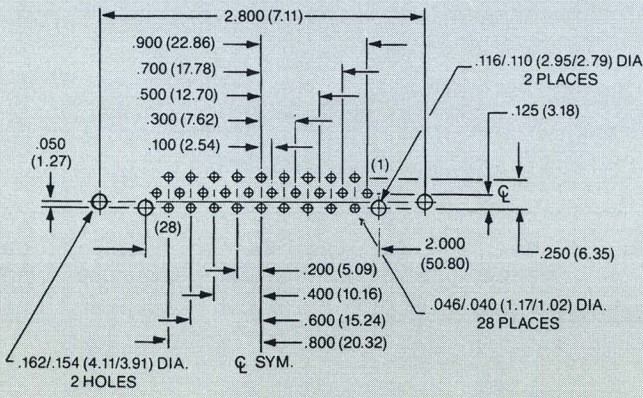
Part Number by Shell Size	No of Contacts	A Max.	B Max.	C Max.	D Max.	E Max.
SLE-B	19	2.530 (64.26)	1.550 (39.37)	1.410 (35.81)	2.210 (56.13)	1.875 (47.62)
SLE-C	28	3.130 (79.50)	2.150 (54.61)	2.010 (51.05)	2.810 (71.37)	2.475 (62.86)

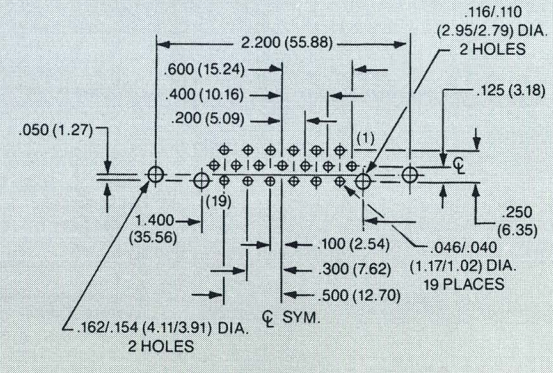
Tolerance ±.015

P.C. Board Mounting



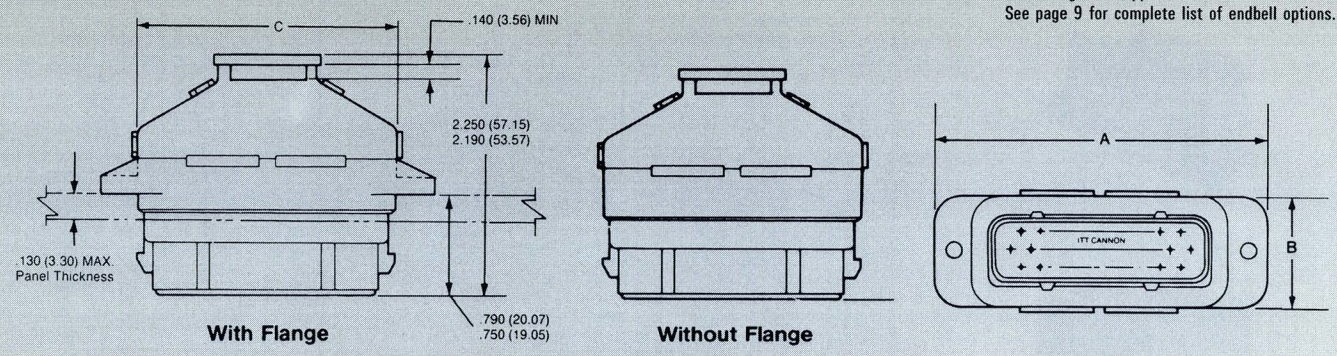






Plug (Inline, Cable-to-Cable)*

*Cable Plugs are supplied with end bell assemblies.
See page 9 for complete list of endbell options.

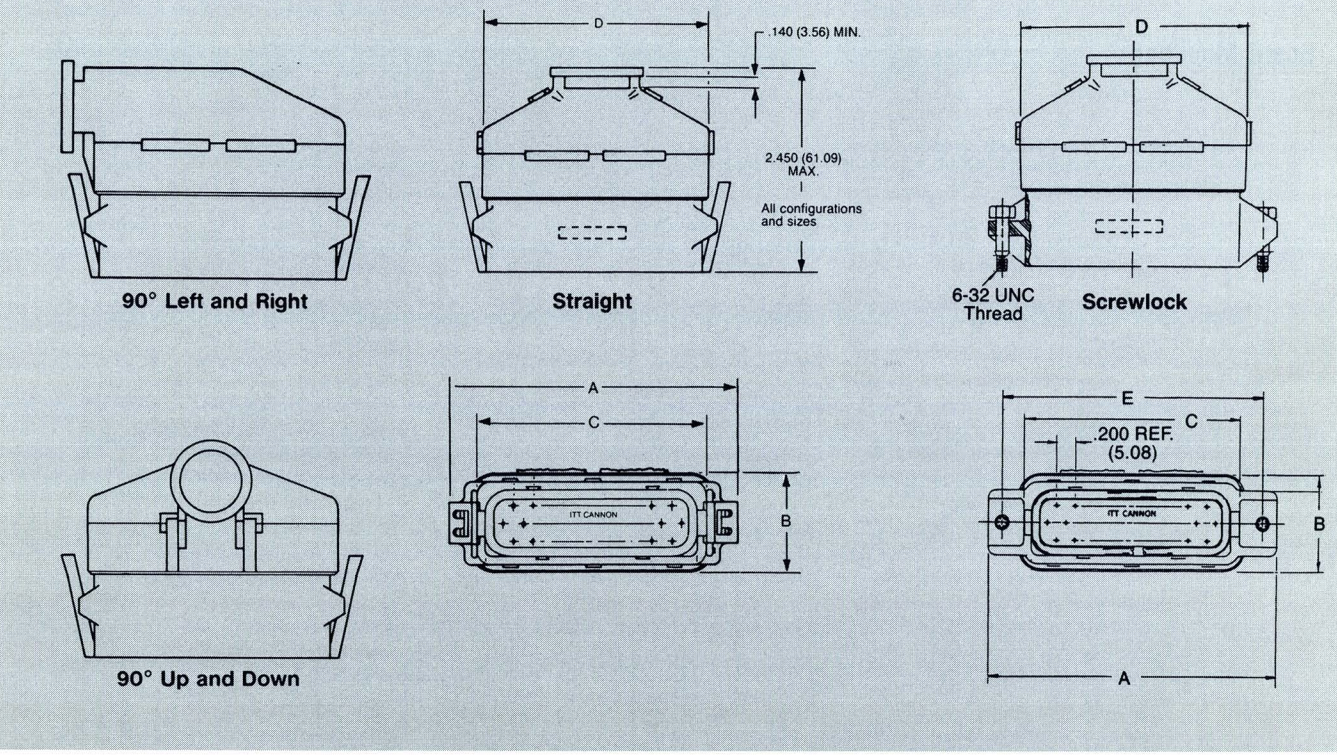


Part Number by Shell Size	No of Contacts	A Max.	B Max.	C Max.
SLE-B	19	2.830 (71.88)	1.030 (26.16)	1.870 (47.50)
SLE-C	28	3.420 (87.12)	1.030 (26.16)	2.470 (62.74)

Tolerance ±.015

Receptacle

*Receptacles are supplied with end bell assemblies
See page 9 for complete list of endbell options.



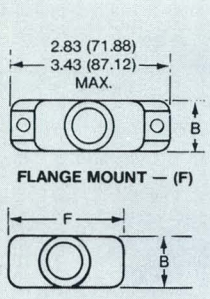
Part Number by Shell Size	No of Contacts	A Max.	B Max.	C Max.	D Max.	E Max.
SLE-B	19	2.340 (59.44)	1.030 (26.16)	1.735 (44.07)	2.000 (50.80)	2.210 (56.13)
SLE-C	28	3.010 (76.45)	1.030 (33.02)	2.335 (59.31)	2.600 (66.04)	2.810 (71.37)

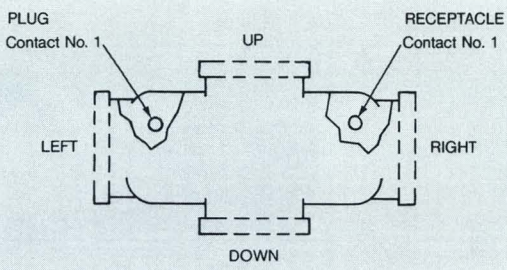
Tolerance ±.015

ITT Cannon
Transportation Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

End Bells



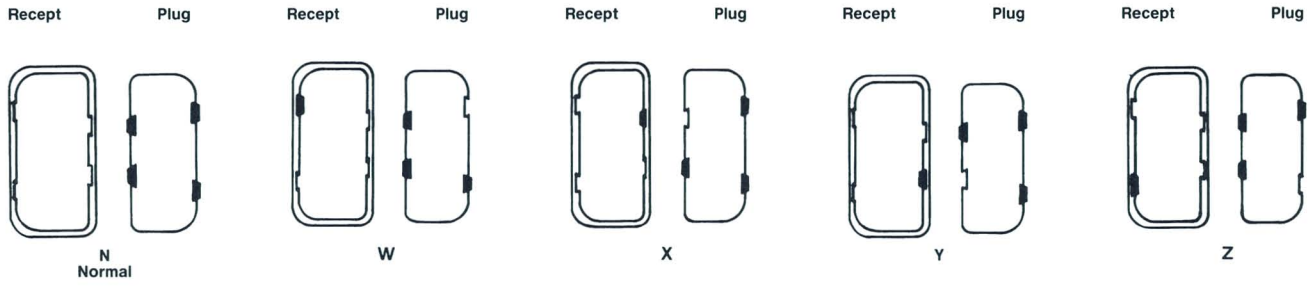


OTHER END BELL VIEWS (FROM REAR)

"B" and "F" dimensions are the same for all SLE end bells.

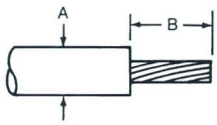
Part Number by Shell Size	B Max.	F Max.	Cable Entry I.D.
SLE-B	1.030 (26.16)	2.00 (50.80)	.580 (14.73)
SLE-C	1.030 (26.16)	2.60 (66.04)	.780 (19.81)

Polarization



NOTE: Connectors are shipped with keys installed in the "Normal" position unless otherwise ordered.

Wire Stripping

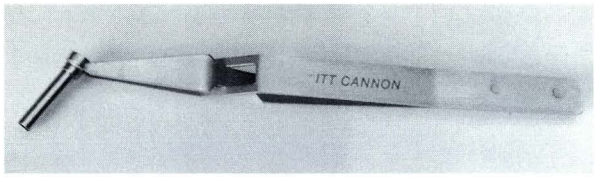


AWG WIRE SIZES	A DIM	B DIM
16-20	.095 (2.41) .130 (3.30)	.210 (5.33) .220 (5.59)

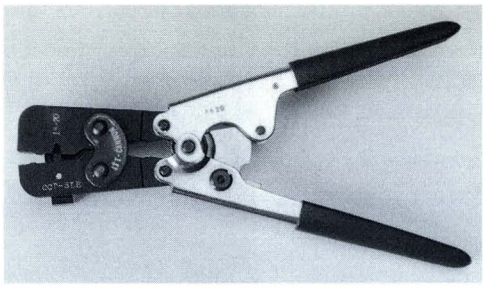
Test Methods

Insulation Resistance	MIL-STD-1344	Method 3003.1
Dielectric Withstanding Voltage	MIL-STD-1344	Method 3001.1
Contact Resistance	MIL-STD-1344	Method 3004.1
Low Level Contact Resistance	MIL-STD-1344	Method 3002.1
Crimp Tensile Strength	MIL-STD-1344	Method 2003.1
Contact Retention	MIL-STD-1344	Method 2007.1
Mating Separating Force	MIL-STD-1344	Method 2013.1
Durability	MIL-STD-1344	Method 2016
Temperature Life	MIL-STD-202	Method 108 Condition D
Mechanical Shock	MIL-STD-202	Method 213 Condition I
Maintenance Aging	MIL-STD-1344	Method 2002.1
Vibration	MIL-STD-1344	Method 2005.1 Condition VI 20 Hours/Axis
Sand and Dust	MIL-STD-202	Method 110
Salt and Spray	MIL-STD-202	Method 101 Condition A
Humidity	MIL-STD-202	Method 106
Steam Cleaning/Pressure Wash	SAE	Proposed

Tooling

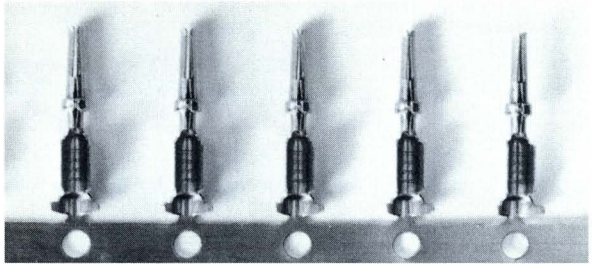


Contact Extraction Tool – CET-SLE
Part No. 274-7068-000
Insertion Tool not required.

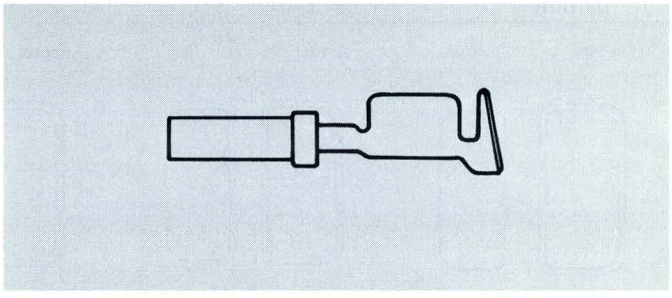


Hand Crimp Tool CCT-SLE Part No. 980-0008-052

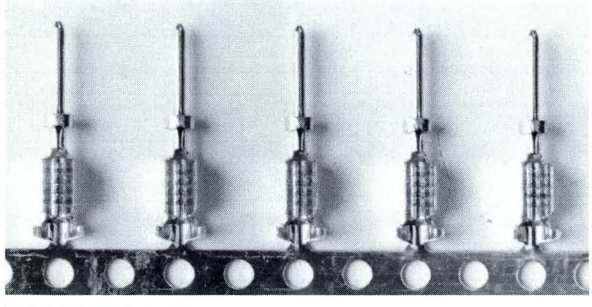
Contacts



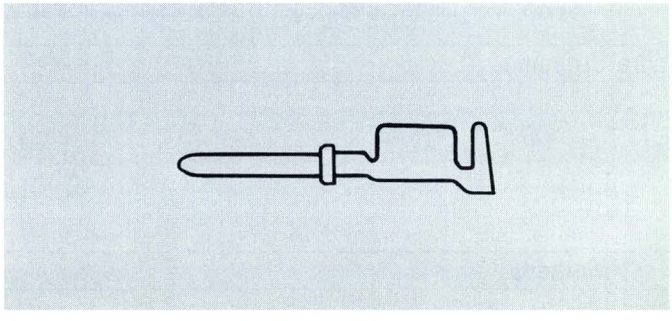
Reel of 4500 Socket Contacts
Part No. 110238-0448 (Signal); 110238-2003 (Power)



Socket Part No. 030-2480-000 (Signal); 030-2480-003 (Power)



Reel of 4500 Pin Contacts
Part No. 110238-0446 (Signal), 110238-2004 (Power)

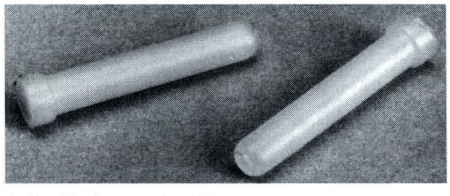


Pin Part No. 030-2464-000 (Signal); 030-2464-003 (Power)

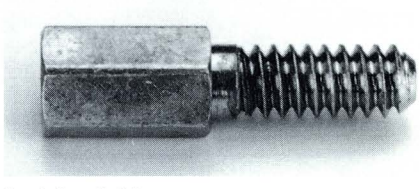
Accessories

Bale Latch
For Redundant Latch Applications

SLE-B	029-0281-000
SLE-C	029-0281-001



Sealing Plug for unused cavities
Part No. 225-0093-000

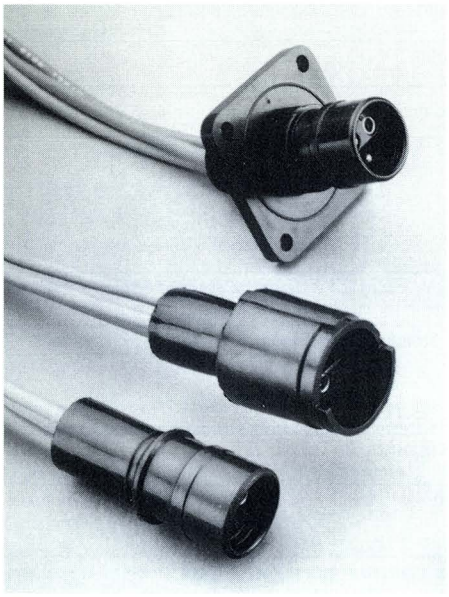


Female Screwlock Post
for use on PCB connectors, Suffix "N".
Part No. 265-0061-000
(2 required)

Test Parameters

SLE products are designed to meet ITT Cannon specification CS-189. Items of most general interest to users and designers are listed below.

Test Description	Reference Paragraph	Requirements
Environmental Sealing	3.2.3.5 3.2.3.6 3.2.3.7 3.2.3.8 3.2.3.9 3.2.3.10	Sand and Dust MIL-STD-202 Method 110 Test Condition A 5% salt spray 96 hours 10 cycles of 24 hours, 90-98% humidity Steam Cleaning/Pressure Wash 95°C, 375 Cycles 750 PSIG Solvent Resistance/Immersion (see 3.2.3.9) Thermal Shock Ten Cycles 4° to 100°C + 3°C
Contact Crimp Tensile Strength	3.2.2.1	The minimum tensile load required to separate the wire from the contact, either by pulling the wire out of the crimp joint or breaking the wire within the crimp joint shall not be less than the applicable limits as specified. Wire breakage or contact damage not due to crimping at less than tensile loads shall not constitute a failure. **Wire Size AWG** / **Crimp Tensile Strength, Pounds Minimum** 16 — 35 18 — 25 20 — 20
Insulation Resistance	3.2.1.1	Mated and wired connectors shall exhibit an insulation resistance greater than 100 megohms between all contacts. This limit shall apply after exposure to each environment including salt solution immersion. Tests shall be performed at 100 VDC ± 10%.
Dielectic Withstanding Voltage	3.2.1.2	Wired and mated connectors shall show no evidence of breakdown between adjacent contacts when tested at 1000 VDC ± 5%. Connectors shall meet this requirement after exposure to each environment. Current leakage shall be less than 1.0 milliamp.
Low Level Contact Resistance	3.2.1.4	The low level contact resistance of mated contacts shall be less than 10 milliohms when measured across the contacts and crimp joints. The test current shall be a maximum of 100 milliamps with an open circuit test voltage of 20 millivolts maximum.
Mechanical Shock	3.2.3.3	Connectors shall be subjected to three shocks in each direction applied along the three mutually perpendicular axes of the connector test specimen for a total of 18 shocks. Each shock shall consist of a terminal peak sawtooth pulse with a peak value of 100 g's and a duration of 6 milliseconds.
Vibration	3.2.3.4	Connectors shall be subjected to random vibration in accordance with MIL-STD-1344, Method 2005.1, test condition VI, for 20 hours along each of the following three axes: **Direction** / **Grms** Transverse axis of connector — 22.8 Longitudinal axis of connector — 13.2 Mating axis — 10.2 Electrical continuity of the connectors shall be monitored during the last 20 minute sweep in each axis with a test current of 100 milliamps or less and a test voltage less than 2 VDC. Electrical discontinuities in excess of 10 microseconds shall be cause of failure.
Durability	3.2.2.5	Connectors shall be subjected to 25 cycles of mating and unmating at room temperature. Following this test there shall be no evidence of damage to the contacts, contact plating, connector housing or seals which may prove detrimental to reliable performance of the connector.
Contact	3.2.2.2	Contacts shall not be displaced greater than 0.030 inches from the connector body when a force of 25 pounds is applied. When this test follows maintenance aging the same contacts shall be tested.
Maintenance Aging	3.2.2.3	Shall consist of subjecting each wired receptacle to 5 cycles of removal and reinsertion of 20% of the contacts or a minimum of 6 per connector with approved tooling.
Mating and Separating Force	3.2.2.4	The maximum force required to mate the plug and receptacle shall be 25 pounds. The maximum force required to separate the plug and receptacle shall be 15 pounds. The rate of travel shall be one inch per minute.
Solvent Resistance Immersion	3.2.3.9	Connectors shall be subjected to the following fluids at the temperature and length of time specified. Following the fluid dip or immersion, the connectors shall be immersed to a depth of 2 to 12 inches in a **5% salt water solution** for **24 hours** at room temperature. At the completion of the salt water immersion test, while still immersed, the connectors shall meet the **insulation resistance** requirement specified herein. **Fluid** / **Method** / **Temperature** No. 2 Diesel Fluid — Immersion (2) — 140°F Methyl Alcohol — Dip (1) — Room Temperature Antifreeze —Dowtherm 209 — Immersion (2) — 180°F —50% Water/50% Ethylene Glycol — Immersion (2) — 180°F Degreaser —Gunk — Dip (1) — Room Temperature —Mineral Spirits — Dip (1) — Room Temperature Paint (Oil Base) — Immersion (2) — Room Temperature Lubricating Oil (SAE 10 W40) — Immersion (2) — 200°F Brake Fluid (Delco Supreme) — Dip (1) — Room Temperature Transmission Fluid (Dextron) — Dip (1) — Room Temperature (1) Dip: Connectors shall withstand a one second dip and a three minute air dry for a total of 80 cycles. (2) Immersion: Connectors shall withstand immersion for one hour.
Temperature Life	3.2.3.1	Connectors shall be subjected to a temperature of 125 ± 3°C for a period of 1000 hours. At the end of the temperature soak period and after removal from the chamber, the connectors shall meet the insulation resistance and dielectric withstanding voltage requirements specified herein. Connectors shall be operated at rated current throughout the duration of the temperature life test. Upon removal from the chamber at the conclusion of the test, the connectors shall show no visual signs of damage which may be detrimental to the performance of the connector.
Thermal Cycling	3.2.3.2	Connectors shall be subjected to 100 thermal cycles from −40° to +125°C. One cycle shall consist of the transitions from room temperature to −40° to +125°C, and from 125°C to room temperature. One cycle shall be accomplished in a three hour period with a minimum stabilization period of 15 minutes at each temperature extreme. The chamber temperature transition rate shall be a minimum of 1.30°C per minute and a maximum of 6.00°C per minute.



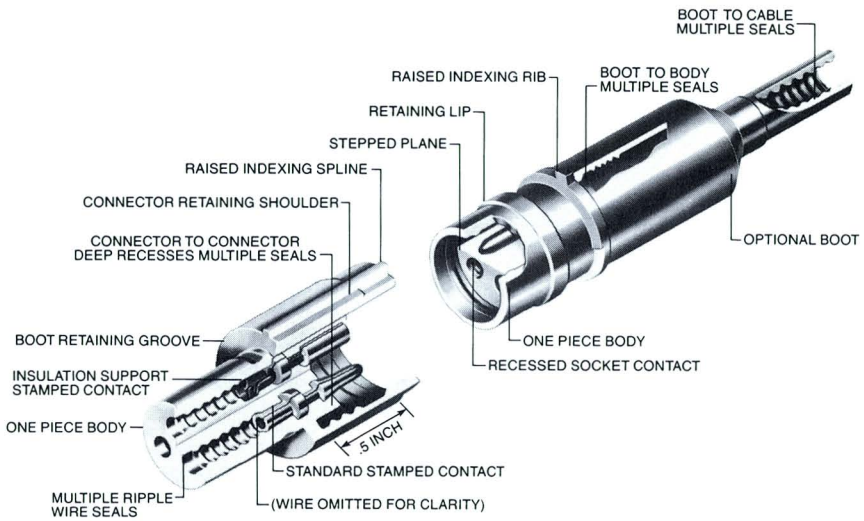
SURE-SEAL® connectors are an expanding series of low cost, UL and CSA recognized, environmental connectors.

ITT Cannon developed SURE-SEAL connectors to meet the increased requirements for safety and reliability in the automotive field brought about by Department of Transportation safety regulations. These sealed connectors satisfy many of the parameters defined by automotive/industrial standards including vibration, shock, temperature cycling, salt water spray and immersion, petroleum derivatives, industrial gas, and most importantly, low millivolt drop and low contact resistance.

SURE-SEAL connectors are also tailored to fit into such areas as marine, recreation, household appliance, solar energy and agriculture applications.

The one-piece molded body and rugged multiple moisture seals make the SURE-SEAL connector a natural for applications where outside contaminants must be excluded.

Cannon has added a mini SURE-SEAL version and a wall mounting square flange configuration to its family of SURE-SEAL connectors. For more information on these two series please fill out the reply card at the back of this catalog.



Low Installed Cost
ITT Cannon's Sure-Seal connectors are designed to be terminated by the O.E.M. The O.E.M. being the termination facility gives complete in-house capability! The total installed cost is what counts.

Field Serviceable
When necessary. Sure-Seal connectors can be changed, modified or re-wired in the field.

One-Piece Molded Bodies
The Sure-Seal connector incorporates a very simple one-piece molded body. No other parts — other than contacts — are needed to assemble a complete connector.

Low Cost Stamped Contacts
Without sacrificing quality, the cost of Sure-Seal connectors is kept low by using stamped contacts available on reels in a continous strip for use on the industry accepted ABT-500 or ABT-607 semi automatic crimp press. All contacts utilize a "B" type crimp.

Wide Wire Gage and Cable Accommodations
Ideally suited to be terminated on SAE-J1128 wires of size 14, 16 and 18 AWG, wire sizes with insulation in the range of .100 (2.54) to .147 (3.73) inches, termination to multi-conductor jacketed cables in the range of .208 (5.28) to .380 (9.65) inches diameter, and can be terminated to three different wire ranges with total environmental sealing still assured.

Polarized Against Mis-Mates
Sure-Seal Connector mating faces are constructed with two stepped planes; the plug and receptacle must be properly oriented in order for the contacts to engage. For "blind" mating a raised indexing rib and matching raised indexing spline has been added to the plug and receptacle.

Water Submersible
Not just splash proof, but truly submersible for short periods of time. The Sure-Seal connector has been successfully tested in up to three feet of 5% water saline solution. **Note: Although Sure-Seal can withstand submersion, it is not designed to be used as an underwater connector.**

Resistant to Vehicular/Industrial Environments
Sure-Seal connectors are designed to meet temperatures from −40°C to +105°C under conditions of high humidity severe vibration, ice and mud. Sealing integrity is still maintained with exposure to brake fluid, gasoline, diesel fuel, anti-freeze, ultra violet, ozone, steam cleaning under normal operating conditions.

How to Order

To order connector, specify component parts and contact part number as listed.

Component Part Numbers

Insert Arrangement	Receptacle Housing	Plug Housing	Boot	Clip/ Clamp	Color	Grommet
SS1*	120-1833-000	120-1832-000	N/A	026-0452-000	Black	N/A
SS2*	120-1804-000	120-1807-000	317-1398-000	029-0263-000	Red	351-1640-000
SS3*	120-1805-000	120-1808-000	317-1397-000	029-0262-000	Yellow	351-1641-000
SS4*	120-1806-000	120-1809-000	317-1399-000			
SS5*	120-1839-000	120-1841-000	N/A			
SS6*	120-1840-000	120-1842-000	N/A	026-0450-000	Natural	351-1633-000
SS7*	120-1874-000	120-1873-000	N/A			
SS8*	120-1866-000	120-1865-000	N/A			
SS9*	120-1868-000	120-1867-000	N/A	026-0451-000	Black	351-1634-000
SS10*	120-1870-000	120-1869-000	N/A			

*Add R for Receptacle, P for Plug, C for Clamp, B for Boot, G for Grommet.

Power Connectors (See page 15)

Insert Arrangement	Receptacle Housing	Plug Housing
SS1R-4*	120-1903-000	—
SS1P-4*	—	120-1905-000
SS1R-8*	120-1904-000	—
SS1P-8*	—	120-1906-000

Contact Part Numbers (See page 16)

		Pin	Socket
Non-Insulation Support	Individual*	030-2196-000	031-1267-000
	Reels of 5000	110238-0040	110238-0085
Insulation Support	Individual*	030-2196-001	031-1267-001
	Reels of 5000	110238-0195	110238-0194

*Loose piece available from distribution only.

Note: High temperature versions of molded bodies to meet temperatures up to 150°C with stamped contacts having selective silver or gold plate are available. Please contact the factory or your local Cannon sales office or distributors for ordering nomenclature.

Standard Data

MATERIALS AND FINISHES

Plug	Elastomeric material
Receptacle	Elastomeric material
Contacts	Copper alloy, tin-lead plate
Socket Contact Sleeves	Stainless steel, passivated

MECHANICAL

Crimp Contacts	Semi-automatic or hand crimpable
Contact Positions	1 thru 10 inclusive
Polarization	Stepped plane positive polarization and visual polarization
Contact Retention	7.5 lbs. minimum
Contact Insertion	From rear with single hand tool, or simultaneous insertion of multiple crimped contacts with semi-automatic insertion machine

ELECTRICAL DATA

Contact Resistance	10 Milliohms maximum
Current Rating*	15 amps continuous at 85°C 8 amps continuous at 105°C
Insulation Resistance	100 Megohms minimum
Dielectric Withstanding Voltage	1,200 VAC at sea level
Wire Range	14 AWG to 18 AWG
Wire Insulation Sealing Range	.100" (.254) minimum; .147" (3.73) maximum

ACCESSORIES

Protective Seal Boot	Seals cabled wire jackets to connector housing
Connector Clamp	Clamps plug and receptacle in mated condition
Connector Grommet	Provides for panel mounting of either plug or receptacle

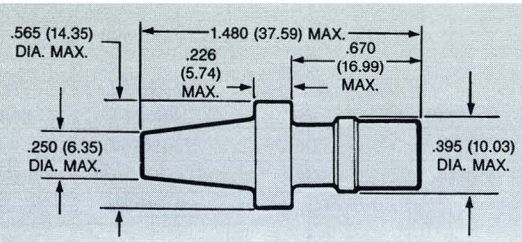
*For total current carrying capacity of connectors with multiple wires in bundles, refer to derating curves in CS-155.

TEST CRITERIA

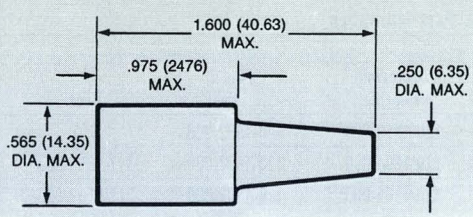
Sealing Capability	3 foot depth immersion in 5% salt solution, room ambient
Weather, Ozone and Ultra Violet Resistance	In accordance with ASTM D-1149 (100 pphm) and ASTM D-1171 (outdoor exposure)
Industrial Gas	Equivalent to MIL-C-23216, para. 5.6.13.
Durability	50 cycles mating and unmating
Salt Spray	In accordance with MIL-STD-202D, Method 101D
Humidity	95% at 95°C/1000 hours
Dry Heat	105°C for 1000 hours
Vibration	10 to 55 Hz, .06" DA, 1 hour, Y (radial) and Z (longitudinal) axes
Shock	50g, 11ms, 30 cycles, y (radial) and Z (longitudinal) axes

SS1

Plug P/N 120-1832-000

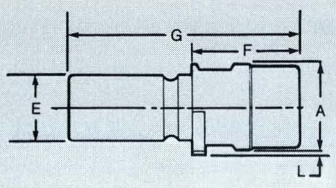


Receptacle P/N 120-1833-000

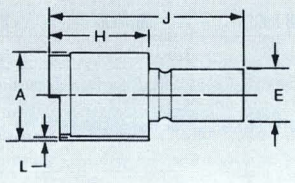


SS2 – SS4

Plug



Receptacle

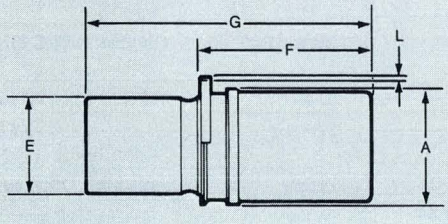


Body Identifier	Part Number	E Dia. Max.	F Max.	G Max.	L Max.	A Dia. Max.
SS2P	120-1807-000	.430 (10.92)	.715 (18.16)	1.410 (35.81)	.050 (1.27)	.550 (13.97)
SS3P	120-1808-000	.500 (12.70)	.715 (18.16)	1.410 (35.81)	.050 (1.27)	.600 (15.24)
SS4P	120-1809-000	.500 (12.70)	.715 (18.16)	1.410 (35.81)	.050 (1.27)	.600 (15.24)

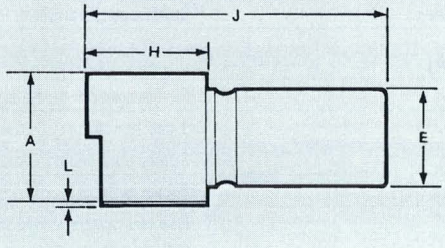
Body Identifier	Part Number	A Dia. Max.	E Dia. Max.	H Max.	J Max.	L Max.
SS2R	120-1804-000	.710 (18.03)	.430 (10.92)	.855 (21.71)	1.550 (39.37)	.050 (1.27)
SS2R	120-1805-000	.760 (19.30)	.500 (12.70)	.855 (21.71)	1.550 (39.37)	.050 (1.27)
SS4R	120-1806-000	.760 (19.30)	.500 (12.70)	.855 (21.71)	1.550 (39.37)	.050 (1.27)

SS5 – SS10

Plug



Receptacle



Body Identifier	Part Number	E Dia. Max.	F Max.	G Max.	L Max.	A Dia. Max.
SS5P	120-1841-000	.810 (20.57)	.700 (17.78)	1.470 (37.34)	.050 (1.27)	1.010 (25.65)
SS6P	120-1842-000	.810 (20.57)	.700 (17.78)	1.470 (37.34)	.050 (1.27)	1.010 (25.65)
SS7P	120-1873-000	.810 (20.57)	.700 (17.78)	1.470 (37.34)	.050 (1.27)	1.010 (25.65)
SS8P	120-1865-000	.935 (23.75)	.700 (17.78)	1.470 (37.34)	.050 (1.27)	1.135 (28.83)
SS9P	120-1867-000	.935 (23.75)	.700 (17.78)	1.470 (37.34)	.050 (1.27)	1.135 (28.83)
SS10P	120-1869-000	.935 (23.75)	.700 (17.78)	1.470 (37.34)	.050 (1.27)	1.135 (28.83)

Body Identifier	Part Number	A Dia. Max.	E Dia. Max.	H Max.	J Max.	L Max.
SS5R	120-1839-000	1.160 (29.46)	.810 (20.57)	.835 (21.21)	1.610 (40.89)	.050 (1.27)
SS6R	120-1840-000	1.160 (29.46)	.810 (20.57)	.835 (21.21)	1.610 (40.89)	.050 (1.27)
SS7R	120-1874-000	1.160 (29.46)	.810 (20.57)	.835 (21.21)	1.610 (40.89)	.050 (1.27)
SS8R	120-1866-000	1.285 (32.64)	.935 (23.75)	.835 (21.21)	1.625 (41.27)	.050 (1.27)
SS9R	120-1868-000	1.285 (32.64)	.935 (23.75)	.835 (21.21)	1.625 (41.27)	.050 (1.27)
SS10R	120-1870-000	1.285 (32.64)	.935 (23.75)	.835 (21.21)	1.625 (41.27)	.050 (1.27)

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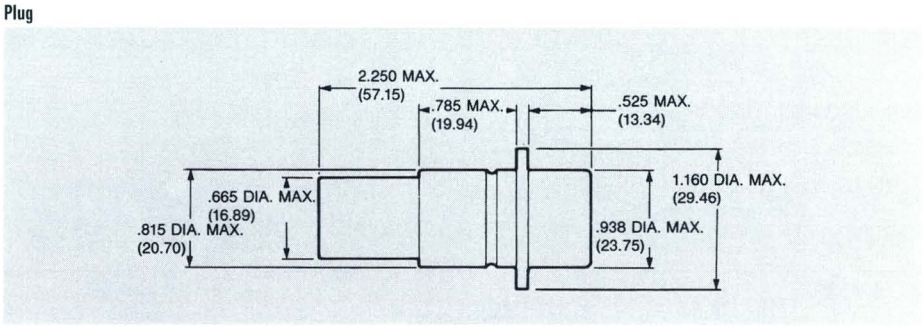
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

SS1 Power Connector

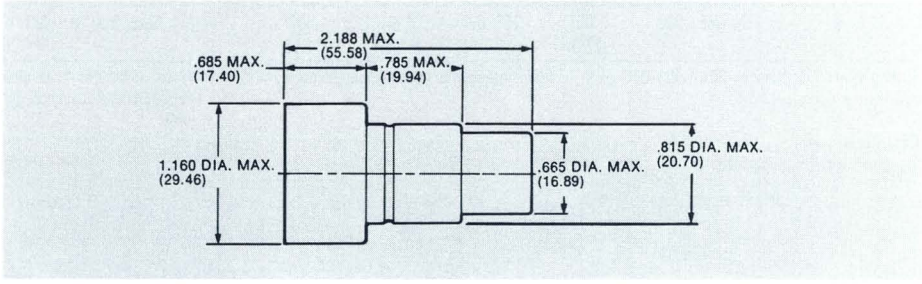
Accommodates VE AWG #4 through #10.

Plug



Body Identifier	Part Number	AWG Size
SS1P-4	120-1905-000	#4 or #6
SS1P-8	120-1906-000	#8 or #10

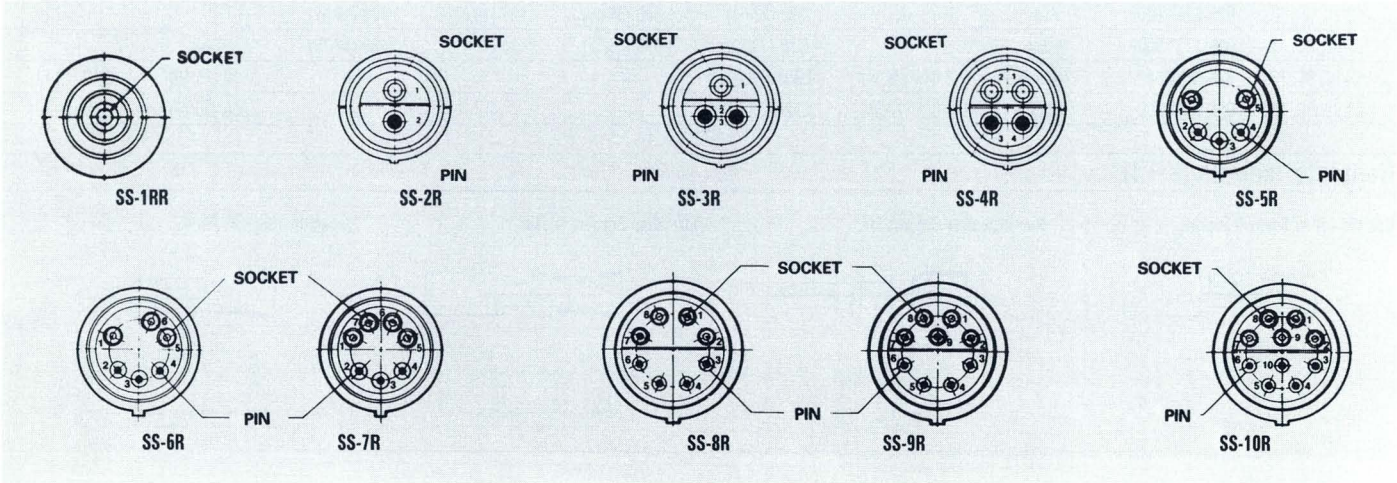
Receptacle



Body Identifier	Part Number	AWG Size
SS1R-4	120-1903-000	#4 or #6
SS1R-8	120-1904-000	#8 or #10

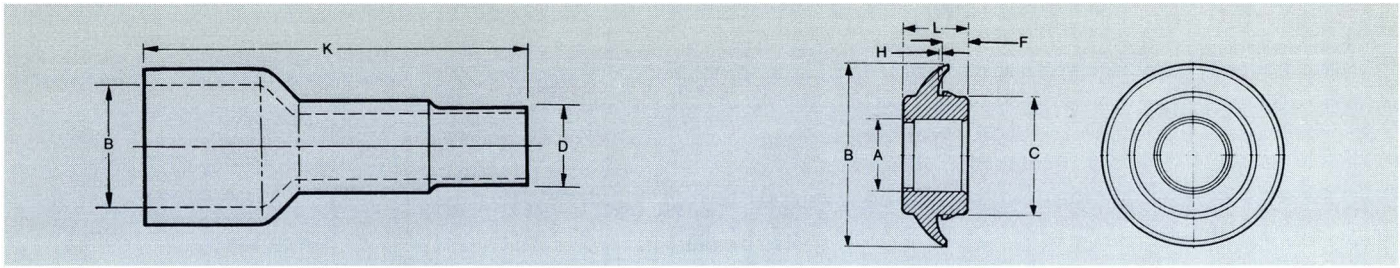
Contact Arrangements

Drawing not to scale. Rear view, receptacle side.



Accessories

Boot



Used With Body Identifier	Part Number	B Dia.	Cable O.D.	K Ref.	D Dia.
SS-2	317-1398-000	.435 (11.05)	.208-.228 (5.28-5.79)	2.05 (52.07)	.380 (9.65)
SS-3 or SS-4	317-1397-000	.504 (12.80)	.220-.240 (5.59-6.10)	2.05 (52.07)	.380 (9.65)
SS-3 or SS-4	317-1399-000	.504 (12.80)	.345-.380 (8.76-9.65)	2.05 (52.07)	.500 (12.70)
SS-5, -6, -7	317-8657-000	1.063 (27.0)	.283-.331 (7.2-8.4)	2.441 (62.00)	.492 (12.50)

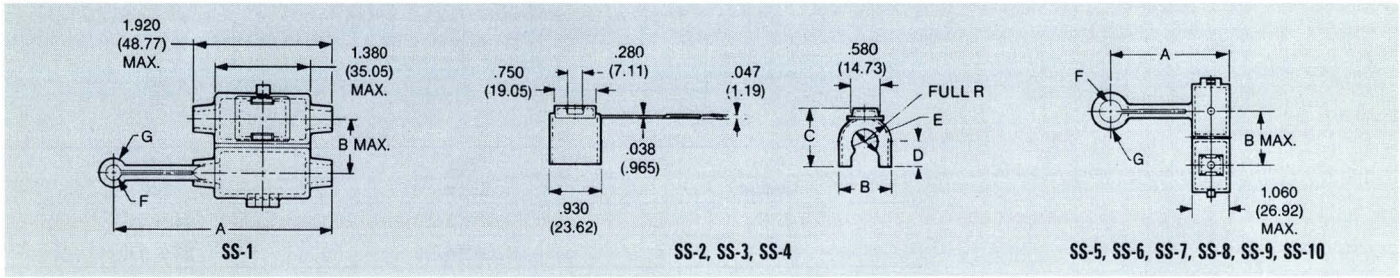
Sealing Plug: Part Number 225-0093-000 (will maintain integrity of environmental seal if all cavities are not used).

Grommet

Used With Body Identifier	Part Number	A Dia. Max.	B Dia. Max.	C Dia. Max.	F Max.	H Ref.	L Max.
SS-2	351-1640-000	.410 (10.41)	1.275 (32.39)	.755 (19.18)	.230 (5.84)	.055 (1.40)	.690 (17.53)
SS-3, or 4	351-1641-000	.475 (12.06)	1.275 (32.39)	.755 (19.18)	.230 (5.84)	.055 (1.40)	.690 (17.53)
SS-5, 6 or 7	351-1533-000	.765 (19.43)	2.200 (55.88)	1.445 (36.70)	.315 (8.00)	.065 (1.65)	.810 (20.57)
SS-8, 9 or 10	351-1634-000	.890 (22.61)	2.200 (55.88)	1.445 (36.70)	.315 (8.00)	.065 (1.65)	.810 (20.57)

Note: SS-2, 3 or 4 recommended panel hole diameter to be 25 / 32 X.060 material. SS-5 thru -10 recommended panel hole diameter to be 1-1 / 2 X .060 material. **These diameters are for reference only.**

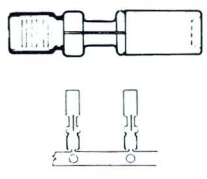
Clip/Clamp



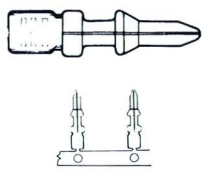
Used With Body Identifier	Part Number	Colors	A Max.	B	C	D	E Dia.	F Max.	G Max.
SS-1C	026-0452-000	Black	3.200 (80.00)	.740 (18.80)	—	—		.210 (5.33)	.390 (9.91)
SS-2C	029-0263-000	Red	—	.890 (22.61)	1.000 (25.40)	.420 (10.67)	.420 (10.67)	—	—
SS-3C, 4C	029-0262-000	Yellow	—	.930 (23.62)	1.050 (26.67)	.450 (11.43)	.480 (12.19)	—	—
SS-5C, 6C, 7C	026-0450-000	Natural	3.045 (77.34)	1.395 (35.43)	—	—	—	.610 (15.49)	.910 (23.11)
SS-8C, 9C, 10C	026-0451-000	Black	3.045 (77.34)	1.520 (38.61)	—	—	—	.660 (16.76)	.960 (24.38)

Contacts (see page 13)

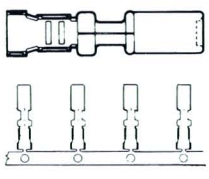
Non-Insulation Support Socket



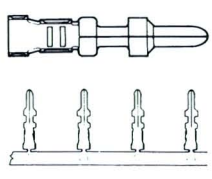
Non-Insulation Support Pin



Insulation Support Socket



Insulation Support Pin



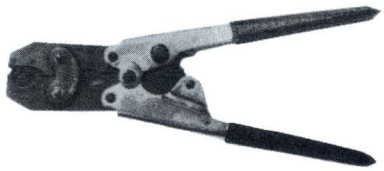
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Hand Crimp Tools

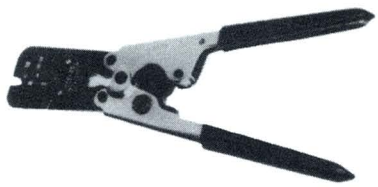
The CCT-SS and CCT-SS-2 hand crimp tools are designed to crimp individual Sure-Seal contacts on wire sizes 14, 16 and 18 AWG. Each cycle is ratchet-controlled (the tool must be completely closed before it can be re-opened) to assure a satisfactory crimp each time. Over and under crimps are eliminated.

These tools are for use where the requirements are for low to moderate volume quantities, and for on-site applications where semi-automatic tools cannot be practically used.

CCT-SS
For Standard Contact.
Part No. 995-0001-746.



CCT-SS-2
For Insulation Support Contact.
Part No. 995-0001-904.



Contact Insertion Tools

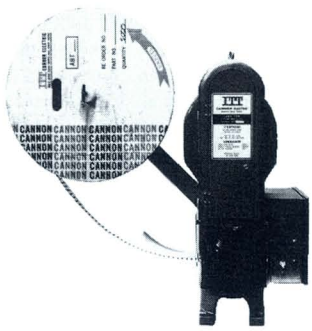
CIT-SS-14
For Non-Insulation Support Contacts
Part No. 070235-0001

CIT-SS-10
For Insulation Support Contacts
Part No. 070306-0000

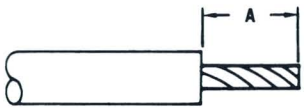
Semi–Automatic Machines

Semi-Automatic Crimp Machine
ABT-607

Semi-Automatic Crimp Tool
ABT-500-UCCD-SS



Semi-Automatic Bench Insertion Machine
CBIT-SS



Wire Stripping

Contact	AWG Wire Sizes	A Dim
Standard	14-18	.185 (4.70)
		.220 (5.59)
Insulation	14-18	.155 (3.94)
Support		.185 (4.70)

Connector Support Blocks

CIF-SS-1	317-1408-002
CIF-SS-2	317-1408-001
CIF-SS-3-4	317-1408-000
CIF-SS-5-6-7	317-1408-003
CIF-SS-8-9-10	317-1408-004

ITT Cannon is the foremost manufacturer of MS and MS type connectors with the widest range of connector styles, sizes and variations in the industry. These connectors utilize the finest materials, which, along with precision manufacturing and rigid quality control, assure ITT Cannon customers of the finest quality connectors.

These circular connectors were originally designed for aircraft, but are now widely used in many other fields. They are particularly suitable for commercial applications requiring low cost and high reliability.

ENVIRONMENTAL RESISTANT MS-E, MS-F, MS-R AND F80 (Solder/Crimp Termination)

MS-E, MS-F and MS-R are similar to MS-A and MS-B connectors but have resilient insulators and wire sealing grommets for extreme environmental conditions and high altitude sealing. MS-E's and MS-F's have a mechanical cable clamp; the MS-R has a shorter, lighter weight endbell without the cable clamp. Both the MS-F and MS-R have O rings to supplement the interfacial seal. Shells are aluminum alloy. Contacts are silver plated copper alloy. The F80 modification (crimp contact termination) is available in E, R, F and BFR styles with resilient insulators.

POTTING ER CONNECTORS (Solder Contact Termination)

These lightweight potting connectors provide resistance to salt water, fuels, etc., and will withstand the effects of high vibration. 3100 and 3106 connectors with plastic potting cups and resilient inserts meet the requirements of MS3103 and MS25183. Contacts are silver plated copper or brass. ER insulators are resilient; shells are aluminum alloy. A 90° plug (3108ER) is also available.

ACCESSORIES

Accessories to fit MS connectors include junction shells, protective caps, dummy or stowage receptacles, cable clamps, telescoping bushings.

How to Order

In the latest revision of MIL-C-5015, a new class of environment-resistant connectors was added. This new class F connector supersedes the previous class E connector. The MS3106F is identical to the MS3106E except that the MS3106F has an "O" ring under the coupling nut. The class E will still be available upon request for existing programs, and upon ordering will also bear the E nomenclature on the shell.

MS-F and MS-R connectors are designed to operate in the extreme environmental conditions of high altitude flight and must be completely sealed to withstand moisture, condensation, vibration, corona and flashover caused by high altitude environments.

They have resilient grommet with internal restrictions in the wire cavities which act as O rings around the wires. This allows the wires to slide thru the grommet with a minimum of friction, yet when the ferrule is seated and the endbell tightened it provides a perfect wire seal thru a wide variety of wire diameters. This seal at the rear, plus the interfacial seal at the front, effects a completely environment-resistant assembly when the plug is mated to an F or R receptacle. Sockets are of the closed-entry type.

The temperature range for this connector is −55°C (−67°F) to +125°C (+257°F) and meets the requirements of MIL-C-5015.

The F80 modification (crimp contact termination) is avialable in resilient insulators in the E, R, F, and BFR styles, creating a large selection of insert assemblies and hardware. Components are identical to the MS-5015 except that the contacts are modified for crimp termination providing an inexpensive crimp contact connector with the proven reliability of and complete intermateability with the MS-5015 series. See page 37 for assembly instructions. Cable clamps have been integrally designed with the endbell on MS-E and MS-F connectors. Class R is without the cable clamp.

CA	3106	R	20 - 27	P	W	*
MS	3106	R	20 - 27	P	W	—

PREFIX
SHELL STYLE
CLASS
SHELL SIZE
CONTACT ARRANGEMENT
CONTACT TYPE
ALTERNATE INSERT POSITION
MODIFICATION CODE

PREFIX
MS – Conforms to latest MIL-C-5015 revision
CA – Cannon designation (for any modification)

SHELL STYLE
3100 – Wall mounting receptacle
3101 – Cable connecting plug
3102 – Box mounting receptacle
3106 – Straight plug
3108 – 90° angle plug

CLASS
E/F – Environmental with resilient insulators and integral cable clamp.
R – Environmental with resilient insualtors and shortened lightweight endbell; also additional sealing with O ring seal under coupling nut in styles 3106 and 3108

SHELL SIZE
Coupling thread diameter in sixteenths of an inch

CONTACT ARRANGEMENTS
See pages 21-24

CONTACT TYPE
P for Pin; S for Socket

ALTERNATE INSERT POSITION
See page 24

MODIFICATION CODE
(applies to CA numbers only, not MS)
F80 – Crimp type contacts. See page 37 for assembly instructions.

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Standard Data

MATERIALS AND FINISHES

Shell	Material	Aluminum alloy
	Finish	O.D. Chromate coating over cadmium plating
Insulator	Material	Polychloroprene (resilient)
Contacts	Material	Brass or copper alloy
	Finish	Silver plate
	Termination	Tinned solder pot

WIRING

For class E, R and F connectors, satisfactory moisture sealing will be obtained if AWG and MS wire sizes and insulation outside diameters are governed by this table.

Contact Size	Wire Size (MIL-W-5086)	Insulation OD Limit (inches)
16	16 thru 20	.064 min. to .130 max.
12	12 thru 14	.114 min. to .170 max.
8	8 thru 10	.164 min. to .255 max.
4	4 thru 6	.275 min. to .370 max.
0	0 thru 2	.415 min. to .550 max.

ELECTRICAL SERVICE DATA

Test current ratings of contacts and allowable voltage drop under test conditions when assembled as in service are shown below. Maximum total current to be carried per connector is the same as the allowable in wire bundles as specified in MIL-W-5088.

Contact Size	Test Current (amps)	Potential Drop (millivolts)
16	13	49
12	23	42
8	46	26
4	80	23
0	150	21

CONTACTS

Pin and socket contacts are designed to resist severe vibration and repeated connection and disconnection. The average force to either engage or separate pin and socket contacts will not exceed the average values given in the latest revision of MIL-C-5015.

Force in Lbs.	Contact Sizes 16	12	8	4	0
Maximum	3.00	5.00	10.00	15.00	20.00
Average	2.10	3.50	7.00	10.50	14.00
Minimum	.25	.50	.75	1.00	2.00

THERMOCOUPLE CONTACTS

Sizes 12 and 16 contacts, machined from matching thermocouple lead wire alloys, can be supplied in ITT Cannon connectors. These thermocouple contacts maintain continuity from thermal-sensor leads thru a bulkhead of other closures in temperature measuring applications.

These contacts for matching lead wires are detailed by the standards of the Instrument Society of America (I.S.A.):

I.S.A. Standards	Material
J and Y	Iron and constantan
K	Chromel and alumel
T	Copper and constantan

Since the thermocouple connector application determines the soldering methods and materials to be used, thermocouple contacts, identified by permanent markings, are normally supplied with untinned solder pots. Thermocouple contacts are supplied only in connectors having resilient insulators.

HIGH POTENTIAL TEST VOLTAGE

MS connectors show no evidence of breakdown when the test voltage given below is applied between the two closest contacts and between the shell and the contacts closest to the shell for a period of one minute.

MS Service Rating	Test Voltage (RMS) 60 cps	Suggested* Operating Voltages DC	AC (rms)	Air Spacing Nom. (inches)	Creepage Distance Nom. (inches)
Inst.	1000	250	200		1/16
A	2000	700	500	1/16	1/8
D	2800	1250	900	1/8	3/16
E	3500	1750	1250	3/16	1/4
B	4500	2450	1750	1/4	5/16
C	7000	4200	3000	5/16	1

*As indicated in previous MS Specification and to be used by designer only as a guide.

High Voltage Cartridges for MS–E and MS–R (HV310*E/R Series)

- Standard contact arrangements are adaptable to high voltage applications.
- Eliminates need for a separate high voltage connector.
- Assembly time is reduced.

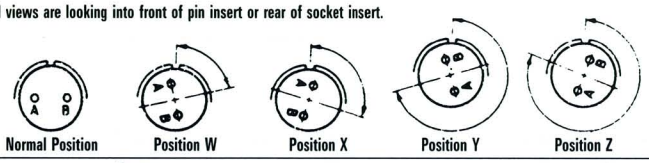
High voltage conductors as well as power and/or control signal conductors can now be connected simultaneously in standard MS connectors. Previously, MS connectors involved in high voltage circuitry required individual design considerations and could only be ordered as a "special." The new high voltage cartridge allows conversion of a standard connector to one capable of handling up to 15,000 volts DC (Test Voltage — mated), operating voltage — Sea level 5,000 VDC or 3,500 VAC. These cartridges are molded of nylon and provide a high degree of arc-over protection between adjacent contacts or between a contact and the connector shell. Unmated, each cartridge provides a nylon isolating barrier capable of withstanding up to 10,000 volts DC (or peak).

The contact within the cartridge is a 7.5 amp, size 20, crimp snap-in type with dielectric rear release clip retention. This contact is removable with the plastic CIET20 insertion/extraction tool provided the insulation is .084" or less. The contact may be crimped with the standard MS-3191 tool and MS-3191-20A locator and hand inserted into the nylon cartridge. The cartridge body is installed in the connector at the factory.

High voltage cartridges now available fit the space normally occupied by a #4 or #8 size contact in an MS-E, MS-R or MS-F type connector.

Over forty-nine contact arrangements are currently available in which these high voltage cartridges may be used. Consult factory for ordering information.

All views are looking into front of pin insert or rear of socket insert.



Shell Size	Contact Arrangement	Wire Size	Service Rating	Alternate Positions–Degrees W	X	Y	Z
8S	8S-1	1 #16	A	—	—	—	—
10S	10S-2	1 #16	A	—	—	—	—
	10SL-4	2 #16	A	—	—	—	—
	10SL-3	3 #16	A	—	—	—	—
12	12-5	1 #12	D	—	—	—	—
12S	12S-4	1 #16	D	—	—	—	—
	12S-3	2 #16	A	—	—	—	—
	12S-3	2 #16	A	70	145	215	290
14	14-3	1 #8	A	—	—	—	—
14S	14S-1	3 #16	A	—	—	—	—
	14S-2	4 #16	Inst.	—	120	240	—
	14S-5	5 #16	Inst.	—	110	—	—
	14S-6	6 #16	Inst.	—	—	—	—
	14S-7	3 #16	A	90	180	270	—
	14S-9	2 #16	A	70	145	215	290
16	16-9	2 #16 2 #12	A	35	110	250	325
	16-10	3 #12	A	90	180	270	—
	16-11	2 #12	A	35	110	250	325
	16-13	2 #12	A	35	110	250	325
16S	16S-1	7 #16	A	80	—	—	280
	*16S-4	2 #16	D	35	110	250	325
	16S-5	3 #16	A	70	145	215	290
	16S-6	3 #16	A	90	180	270	—
	16S-8	5 #16	A	—	170	265	—
18	18-1	10 #16	A(B,C,F,G) Inst.(all others)	70	145	215	290
	18-3	2 #12	D	35	110	250	325
	18-4	4 #16	D	35	110	250	325
	18-5	1 #16 2 #12	D	80	110	250	280
	18-8	7 #16 1 #12	A	70	—	—	290
	18-9	5 #16 2 #12	Inst.	80	110	250	280
	18-10	4 #12	A	—	120	240	—
	18-11	5 #12	A	—	170	265	—
	18-12	6 #16	A	80	—	—	280
	*18-13	3 #12 1 #8	A	80	110	250	280
	*18-15	4 #12	A	—	120	240	—
	*18-22	3 #16	D	70	145	215	290
20	20-3	3 #12	D	70	145	215	290
	20-4	4 #12	D	45	110	250	—
	20-7	8 #16	A(C-F) D(A,B,G,H)	80	110	250	280
	20-8	4 #16	Inst.	80	110	250	280
	20-14	3 #12 2 #8	A	80	110	250	280
	20-15	7 #12	A	80	—	—	280
	20-16	7 #16 2 #12	A	80	110	250	280
	20-17	1 #16 5 #12	A	90	180	270	—
	20-18	6 #16 3 #12	A	35	110	250	325
	20-19	3 #8	A	90	180	270	—
	20-22	3 #16 3 #8	A	80	110	250	280
	20-23	2 #8	A	35	110	250	325
	20-24	2 #16 2 #8	A	35	110	250	325
	20-27	14 #16	A	35	110	250	325
	20-29	17 #16	A	80	—	—	280
22	22-2	3 #8	D	70	145	215	290
	*22-4	2 #12 2 #8	A	35	110	250	325
	22-5	4 #16 2 #12	D	35	110	250	325
	*22-6	1 #16 2 #8	D	80	110	250	280
	22-9	3 #12	E	70	145	215	290
	22-10	4 #16	E	35	110	250	325
	22-11	2 #16	B	35	110	250	325
	22-12	3 #16 2 #8	D	80	110	250	280
	22-13	1 #16 4 #12	A(A-D) D(E)	35	110	250	325
	22-14	19 #16	A	80	—	—	280
	*22-15	1 #16 5 #12	A(A-C,E,F) E(D)	80	110	250	280
	22-17	8 #16 1 #12	D(A) A (all others)	80	110	250	280
22	22-18	8 #16	A (C-E) D (all others)	80	110	250	280
	22-19	14 #16	A	80	110	250	280
	22-20	9 #16	A	35	110	250	325
	22-22	4 #8	A	—	110	250	—
	22-23	8 #12	D(H) A (all others)	35	—	250	—
	*22-27	8 #16 1 #8	D(J) A (all others)	80	—	250	280
	22-28	7 #12	A	80	—	—	280
24	24-2	7 #12	D	80	—	—	280
	*24-5	16 #16	A	80	110	250	280
	*24-6	8 #12	D(A,G,H) A (all others)	80	110	250	280
	24-7	14 #16 2 #12	A	80	110	250	280
	*24-9	2 #4	A	35	110	250	325
	24-10	7 #8	A	80	—	—	280
	*24-11	6 #12 3 #8	A	35	110	250	325
	24-12	3 #12 2 #4	A	80	110	250	280
	24-20	9 #16 2 #12	D	80	110	250	280
	24-22	4 #8	D	45	110	250	—
	24-27	7 #16	E	80	—	—	280
	24-28	24 #16	Inst.	80	110	250	280
28	28-1	6 #12 3 #8	D(A,E,J) A (all others)	80	110	250	280
	*28-2	12 #16 2 #12	D	35	110	250	325
	28-7	2 #4	D	35	110	250	325
	28-9	6 #16 6 #12	D	80	110	250	280
	28-10	3 #12 2 #8 2 #4	D(G) A (all others)	80	110	250	280
	28-11	18 #16 4 #12	A	80	110	250	280
	28-12	26 #16	A	90	180	270	—
	28-15	35 #16	A	80	110	250	280
	28-16	20 #16	A	80	110	250	280
	*28-17	15 #16	A(A-L), B(R) D(M-P)	80	110	250	280
	*28-19	6 #16 4 #12	A(C,E,G,J,K,L) B(H,M), D(A,B)	80	110	250	280
	28-20	4 #16 10 #12	A	80	110	250	280
	28-21	37 #16	A	80	110	250	280
	*28-22	3 #16 3 #4	D	70	145	215	290
32	*32-1	3 #12 2 #0	E(A) D (all others)	80	110	250	280
	*32-6	16 #16 2 #12 3 #8 2 #4	A	80	110	250	280
	32-7	28 #16 7 #12	Inst. (A,B,h,j) A (all others)	80	125	235	280
	32-8	24 #16 6 #12	A	80	125	235	280
	*32-9	12 #16 2 #4	D	80	110	250	280
	32-15	2 #0 6 #12	D	35	110	250	280
	32-17	4 #4	D	45	110	250	—
36	*36-4	3 #0	A(B,C) D(A)	70	145	215	290
	36-5	4 #0	A	—	120	240	—
	36-6	4 #4 2 #0	A	35	110	250	325
	36-7	40 #16 7 #12	A	80	110	250	280
	36-8	46 #16 1 #12	A	80	110	250	280
	36-9	14 #16 14 #12 2 #8 1 #4	A	80	125	235	280
	36-10	48 #16	A	80	125	235	280
	36-14	6 #16 5 #12 5 #8	D	90	180	270	—
	*36-15	35 #16	D (m) A (all others)	60	125	245	305
40	40-10	16 #16 9 #8 4 #4	A	65	125	225	310
	*40-56	85 #16	A	72	144	216	288
44	44-1	36 #16 6 #12	D	65	125	225	310
48	48-5	90 #16 1 #8 9 #12	A	65	125	225	310

*Not MSA/B insert arrangements and polarization.

Contact Arrangements (Face View Pin Insert)

LEGEND
- ● Resilient only
- ▲ Resilient & Plastic
- ¢ High Volume Layouts — readily available from Cannon Distributors

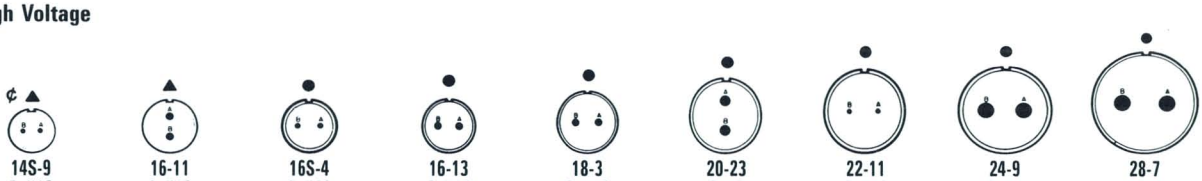
1 Contact

Shell Size	8S-1	10S-2	12S-4	12-5	14-3	16-12	18-7	20-2	22-7
No. of Contacts	1 #16	1 #16	1 #16	1 #12	1 #8	1 #4	1 #8	1 #0	1 #0
Service Rating	A	A	D	D	A	A	B	D	E

2 Contacts

Shell Size	10SL-4	12S-3
No. of Contacts	2 #16	2 #16
Service Rating	A	A

High Voltage



Shell Size	14S-9	16-11	16S-4	16-13	18-3	20-23	22-11	24-9	28-7
No. of Contacts	2 #16	2 #12	2 #16	2 #12 (A-Iron B-Constantan)	2 #12	2 #8	2 #16	2 #4	2 #4
Service Rating	A	A	D	A	D	A	B	A	D

3 Contacts

Shell Size	10SL-3	14S-1	14S-7	16S-5	16S-6	16-10	18-5	18-22
No. of Contacts	3 #16	3 #16	3 #16	3 #16	3 #16	3 #12	1 #16 (A) 2 #12 (B,C)	3 #16
Service Rating	A	A	A	A	A	A	D	D

4 Contacts

Shell Size	20-3	20-19	22-2	22-6	22-9	36-4	12SA10	14S-2
No. of Contacts	3 #12	3 #8	3 #8	1 #16(B) 2 #8(A,C)	3 #12	3 #0	4 #16	4 #16
Service Rating	D	A	D	D	E	A (B,C), C (A)	Inst.	Inst.

Shell Size	16-9	18-4	18-10	18-13	18-15	20-4	20-24	20A37
No. of Contacts	2 #16 (B,D) 2 #12 (A,C)	4 #16	4 #12	3 #12 (B,C,D) 1 #8 (A)	4 #12 (A, C-Iron; B, D-Constantan)	4 #12	2 #16 (A,C) 2 #8 (B,D)	ITT Cannon pos. #8 of 20-4
Service Rating	A	D	A	A	A	D	A	

Contact Arrangements (Continued)

LEGEND
- ● Resilient only
- ▲ Resilient & Plastic
- ¢ High Volume Layouts — readily available from Cannon Distributors

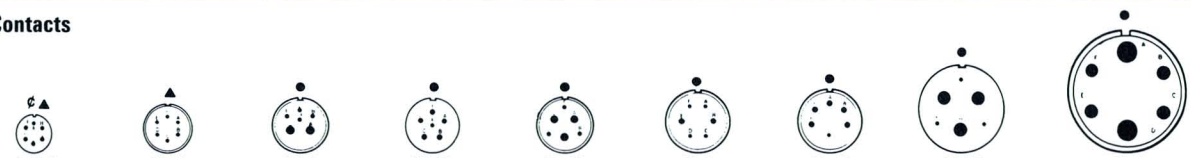
	22-4	22-10	22-22	24-22	32-17	36-5
Shell Size	22-4	22-10	22-22	24-22	32-17	36-5
No. of Contacts	2 #12 (A,C) 2 #8 (B,D)	4 #16	4 #8	4 #8	4 #4	4 #0
Service Rating	A	E	A	D	D	A

5 Contacts

	10SLA4	14S-5
Shell Size	10SLA4	14S-5
No. of Contacts	5 #20	5 #16
Service Rating	A	Inst.

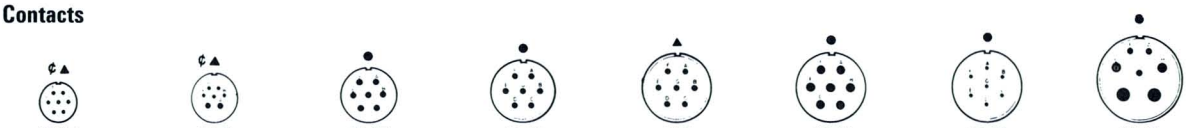
	16S-8	18-11	20-14	22-12	22-13	24-12	32-1
Shell Size	16S-8	18-11	20-14	22-12	22-13	24-12	32-1
No. of Contacts	5 #16	5 #12	3 #12 (C,D,E) 2 #8 (A,B)	3 #16 (A,C,D) 2 #8 (B,E)	1 #16 4 #12 (A-D)	3 #12 (B,D,E) 2 #4 (A,C)	3 #12 (A,C,D) 2 #0 (B,E)
Service Rating	A	A	A	D	A (A-D), D (E)	A	E (A), D (all others)

6 Contacts



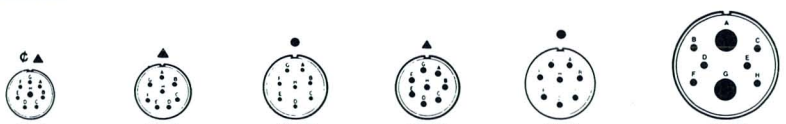
	14S-6	18-12	20-8	20-17	20-22	22-5	22-15	28-22	36-6
Shell Size	14S-6	18-12	20-8	20-17	20-22	22-5	22-15	28-22	36-6
No. of Contacts	6 #16	6 #16	4 #16(B,C,E,F) 2 #8(A,D)	1 #16(F) 5 #12(A-E)	3 #16(B,D,F) 3 #8(A,C,E)	4 #16(A,C,D,F) 2 #12(B,E)	1 #16(D) 5 #12 (A-C,E,F)	3 #16(D-F) 3 #4(A-C)	4 #4(B,C,E,F) 2 #0(A,D)
Service Rating	Inst.	A	Inst.	A	A	D	A(A-C,E,F), E(D)	D	A

7 Contacts



	16S-1	18-9	20-15	22-28	24-2	24-10	24-27	28-10
Shell Size	16S-1	18-9	20-15	22-28	24-2	24-10	24-27	28-10
No. of Contacts	7 #16	5 #16(B,C,E-G) 2 #12(A,D)	7 #12	7 #12	7 #12	7 #8	7 #16	3 #12(A,F,G) 2 #8(B,E) 2 #4(C,D)
Service Rating	A	Inst.	A	A	D	A	E	D(G), A(all others)

8 Contacts



	18-8	20-7	22-18	22-23	24-6	32-15
Shell Size	18-8	20-7	22-18	22-23	24-6	32-15
No. of Contacts	7 #16(A-G) 1 #12(H)	8 #16	8 #16	8 #12	8 #12	2 #0(A,G) 6 #12(B,C,D,E,F,H)
Service Rating	A	A(C-F) D(A,B,G,H)	A(C-E) D(all others)	D(H) A (all others)	D(A,G,H) A (all others)	D

9 Contacts

	20-16	20-18	22-17
Shell Size	20-16	20-18	22-17
No. of Contacts	7 #16(A-G) 2 #12(H,I)	6 #16(A,C-E,G,H) 3 #12(B,F,I)	8 #16(A-D,F-J) 1 #12(E)
Service Rating	A	A	D(A), A(all others)

	22-20	22-27	24-11	28-1	28A16
Shell Size	22-20	22-27	24-11	28-1	28A16
No. of Contacts	9 #16	8 #16(A-H) 1 #8(J)	6 #12(A-C, G-I) 3 #8(D-F)	6 #12(A,B,D-F,H) 3 #8(C,J,G)	5 #16(A,D-F,J) 4 #4(B,C,G,H)
Service Rating	A	D(J), A (all others)	A	D(A,E,J) A (all others)	A

10 Contacts

	18-1	18-19
Shell Size	18-1	18-19
No. of Contacts	10 #16	10 #16
Service Rating	A(B,C,F,G) Inst. (all others)	A

Contact Arrangements (Continued)

LEGEND
- ● Resilient only
- ▲ Resilient & Plastic
- ¢ High Volume Layouts — readily available from Cannon Distributors
- † Grommet not available. Consult factory for ordering connectors with this arrangement.

10 Contacts

Shell Size	28-19
No. of Contacts	6 #16(A-C,H,L,M) 4 #12(E,G,J,K)
Service Rating	A (C,E,G,J,K,L) B (H,M), D(A,B)

11 Contacts

Shell Size	20-33
No. of Contacts	11 #16
Service Rating	A

Shell Size	24-20
No. of Contacts	9 #16(A-D,G-L) 2 #12(E,F)
Service Rating	D

12 Contacts

Shell Size	28-9
No. of Contacts	6 #16(A,H-M) 6 #12(B-G)
Service Rating	D

Shell Size	24-19
No. of Contacts	12 #16
Service Rating	A

Shell Size	24A24
No. of Contacts	12 #12
Service Rating	A

13 Contacts (20-25)* (20-30)*

Shell Size	20-11
No. of Contacts	13 #16
Service Rating	Inst.

Shell Size	40A33
No. of Contacts	7 #8 (G-N) 6 #4 (A-F)
Service Rating	A

14 Contacts

Shell Size	20-27
No. of Contacts	14 #16
Service Rating	A

Shell Size	22-19
No. of Contacts	14 #16
Service Rating	A

Shell Size	28-2
No. of Contacts	12 #16 (A, L, N) 2 #12 (M, P)
Service Rating	D

Shell Size	28-20
No. of Contacts	4 #16 (K-N) 10 #12 (A-J, P)
Service Rating	A

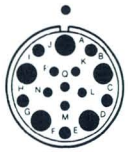
Shell Size	32-9
No. of Contacts	12 #16 (C-N) 2 #4 (A, B)
Service Rating	D

15 Contacts

Shell Size	28-17
No. of Contacts	15 #16
Service Rating	A (A-L), B (R) D (M-P)

16 Contacts

Shell Size	24-5
No. of Contacts	16 #16
Service Rating	A



Shell Size	36-16
No. of Contacts	6 #16 (K-N, P, Q) 5 #12 (B, D, F, H, J) 5 #8 (A, C, E, G, I)
Service Rating	D

Shell Size	24-7
No. of Contacts	14 #16 (A-M, O) 2 #12 (P, N)
Service Rating	A

17 Contacts

Shell Size	20-29
No. of Contacts	17 #16
Service Rating	A

18 Contacts

Shell Size	36A16
No. of Contacts	(B, C, V, J, K, M, N, R, T-Iron; A, D-F, H, L P, S, U-Constantan)
Service Rating	A

19 Contacts

Shell Size	22-14
No. of Contacts	19 #16
Service Rating	A

20 Contacts

Shell Size	28-16
No. of Contacts	20 #16
Service Rating	A

22 Contacts

Shell Size	28-11
No. of Contacts	18 #16 (A-I, N-X) 4 #12 (J-M)
Service Rating	A

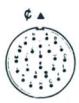
23 Contacts

Shell Size	32-6
No. of Contacts	16 #16(A-O,S) 2 #12(U,V) 3 #8(P,R,T) 2 #4(W,X)
Service Rating	A

24 Contacts

Shell Size	24-28
No. of Contacts	24 #16
Service Rating	Inst.

26 Contacts



Shell Size	28-12
No. of Contacts	26 #16
Service Rating	A

27 Contacts

Shell Size	36A46
No. of Contacts	27 #12
Service Rating	A

29 Contacts

Shell Size	40-10
No. of Contacts	16 #16(A,B,E-H,M,N,P Q,V-Y,b,c) 9 #8(C,D,I,L,O,R,U,Z,a) 4 #4(K,J,S,T)
Service Rating	A

30 Contacts

Shell Size	32-8
No. of Contacts	24 #16(A-L,T-Z,a-e) 6 #12 2 #8(O,R)
Service Rating	A For new MIL equip. design, use 32-7

31 Contacts

Shell Size	36-9
No. of Contacts	14 #16(A-G,Z-f) 14 #12 (H-N,S-Y) 1 #4(P)
Service Rating	A

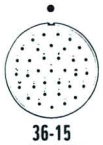
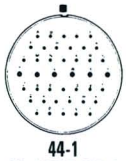
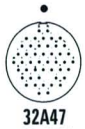
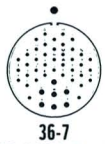
35 Contacts

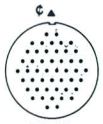
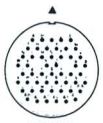
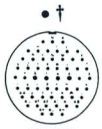
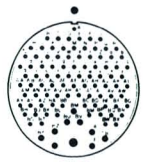
Shell Size	28-15
No. of Contacts	35 #16
Service Rating	A For new MIL equip. design, use 28-21

***NOTE:** Additional layouts are the same as shown but in unique alternate positions. Please consult the factory.

Contact Arrangements (Continued)

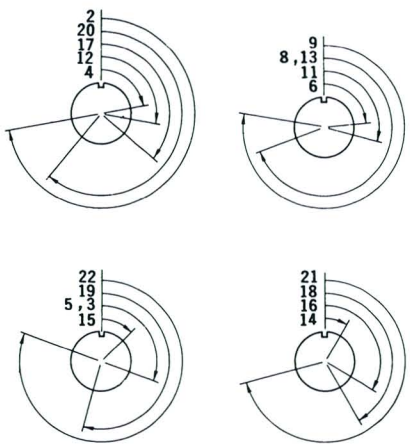
LEGEND
- ● Resilient only
- ▲ Resilient & Plastic
- ¢ High Volume Layouts — readily available from Cannon Distributors
- † Grommet not available. Consult factory for ordering connectors with this arrangement.

	35 Contacts		37 Contacts	42 Contacts	43 Contacts	47 Contacts	
							
Shell Size	32-7	36-15	28-21	44-1	28A51	32A47	36-7
No. of Contacts	28 #16 (A-N,W-Z,a-k) 7 #12(0-V)	35 #16	37 #16	36 #16(A-S,Z-t) 6 #12(T-Y)	43 #16	47 #16	40 #16(A-Z,a-s) 7 #12(t-z)
Service Rating	Inst. (A,B,h,j) A (all others)	D (m), A (all others)	A	D	A	A	A

	47 Contacts	48 Contacts	52 Contacts	54 Contacts	56 Contacts	60 Contacts	85 Contacts	100 Contacts
								
Shell Size	36-8	36-10	36A34	32A10	36A66	40A27	40-56	48-5
No. of Contacts	46 #16(A-X,Z-z) 1 #12(Y)	48 #16	52 #16	54 #16	52 #16(A-c,h-AK) 4 #12(d,e,f,g)	60 #16	85 #16	90 #16(A-BL,BN-BT, BW,BX) 1 #8(CD) 9 #12(BM,BU,BV, BY-CC,CE)
Service Rating	A	A	A	A	A	A	A	A

Alternate Insert Positions

Not MS approved



NOTE: Front view of pin insulator rotated as shown.

Position	Angle (degrees)
Normal	0
2	260
3	110
4	80
5	use pos. 3
6	85
8	250
9	280
11	105
12	100
13	use pos. 8
14	30
15	45
16	120
17	130
18	150
19	195
20	220
21	255
22	290
23	165
24	330
25	235
26	125

Shell Size	Contact Arrangement	Wire Size	Service Rating	Available Position
10SL	10SLA4	5 #20	A	2 3 5 8 12 13
12S	12SA10	4 #16	Inst.	3 5 8 13
20	20A37	4 #8	D	
24	24A24	12 #12	A	2 4 9 12
28	28A16	5 #16 4 #4	A	2 3 5 8 9 13
	28A51	43 #16	A	3 4 5 8 9 12 13
32	32A10	54 #16	A	2 3 4 5 8 9 12 13
	32A47	47 #16	A	2 3 4 5 8 9 12 13
36	36A16	18 #12	A	2 3 4 5 8 9 12 13 15
	36A34	52 #16	A	2 3 4 5 8 9 12 13 20
	36A46	27 #12	A	2 3 4 5 8 9 12 13
	36A66	52 #16 4 #12	A	2 3 5 8 9 13 17 18
40	40A27	60 #16	A	4 14 17 20 22
	40A33	7 #8 6 #4	A	2 3 5 8 13

Note: For ITT Cannon contact arrangements not listed, consult factory.

ITT Cannon
Circular Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

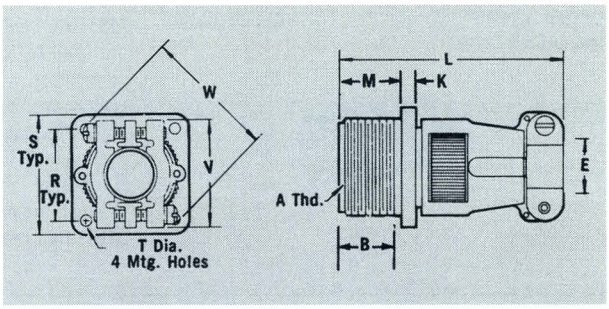
Wall Mounting Receptacle

MS3100E/MS3100F
Integral Cable Clamp

CA3100E/CA3100F

MS3100F wall mounting receptacles are used to carry wires thru walls or bulkheads, or to provide a means of disconnection at a bulkhead. MS3100F receptacles mate with 3106 and 3108 plugs.

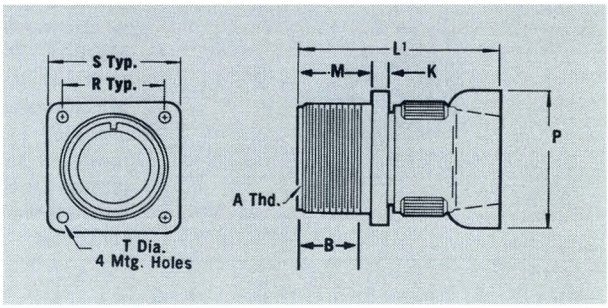
MS3100E is identical to MS3100F and is available upon request. For new equipment, customer should specify MS3100F.



MS3100R

CA3100R

The MS3100R receptacle is identical in purpose to the MS3100F. The MS3100R features a shorter lightweight endbell and mates with 3106 and 3108 plugs.



Shell Size	B Min.	E Max.	E Min.	K Max.	L Max.	L¹ Max.	M +.031 −.000	P Max.	R ±.005	S ±.031	T +.010 −.005	V Max.	W Max.
8S	.375 (9.53)	.235 (5.97)	.102 (2.59)	.125 (3.18)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	.890 (22.61)	.594 (15.09)	.875 (22.23)	.120 (3.05)	.840 (21.34)	1.046 (26.57)
10S	.375 (9.53)	.235 (5.97)	.102 (2.59)	.125 (3.18)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	.890 (22.61)	.719 (18.26)	1.000 (25.40)	.120 (3.05)	.840 (21.34)	1.046 (26.57)
10SL	.375 (9.53)	.297 (7.54)	.140 (3.56)	.125 (3.18)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	.970 (24.64)	.719 (18.26)	1.000 (25.40)	.120 (3.05)	.900 (22.86)	1.125 (28.58)
12S	.375 (9.53)	.297 (7.54)	.140 (3.56)	.140 (3.56)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	.970 (24.64)	.812 (20.62)	1.094 (27.79)	.120 (3.05)	.900 (22.86)	1.125 (28.58)
14S	.375 (9.53)	.422 (10.72)	.195 (4.95)	.140 (3.56)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	1.150 (29.21)	.906 (23.01)	1.188 (30.18)	.120 (3.05)	1.100 (27.94)	1.343 (34.11)
16S	.375 (9.53)	.547 (13.89)	.255 (6.48)	.140 (3.56)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	1.250 (31.75)	.969 (24.61)	1.281 (32.54)	.120 (3.05)	1.200 (30.48)	1.484 (37.69)
12	.625 (15.88)	.297 (7.54)	.140 (3.56)	.146 (3.71)	2.625 (66.68)	2.181 (55.40)	.750 (19.05)	.970 (24.64)	.812 (20.62)	1.094 (27.79)	.120 (3.05)	.900 (22.86)	1.125 (28.58)
14	.625 (15.88)	.422 (10.72)	.195 (4.95)	.146 (3.71)	2.625 (66.68)	2.181 (55.40)	.750 (19.05)	1.150 (29.21)	.906 (23.01)	1.188 (30.18)	.120 (3.05)	1.100 (27.94)	1.343 (34.11)
16	.625 (15.88)	.547 (13.89)	.255 (6.48)	.146 (3.71)	2.625 (66.68)	2.181 (55.40)	.750 (19.05)	1.250 (31.75)	.969 (24.61)	1.281 (32.54)	.120 (3.05)	1.200 (30.48)	1.484 (37.69)
18	.625 (15.88)	.610 (15.49)	.285 (7.24)	.180 (4.57)	2.688 (68.28)	2.281 (55.40)	.750 (19.05)	1.450 (36.83)	1.062 (26.97)	1.375 (34.93)	.120 (3.05)	1.300 (33.02)	1.609 (40.87)
20	.625 (15.88)	.735 (18.67)	.350 (8.89)	.180 (4.57)	2.750 (69.85)	2.281 (55.40)	.750 (19.05)	1.570 (39.88)	1.156 (29.36)	1.500 (38.10)	.120 (3.05)	1.500 (38.10)	1.890 (48.01)
22	.625 (15.88)	.740 (18.80)	.350 (8.89)	.180 (4.57)	2.750 (69.85)	2.281 (55.40)	.750 (19.05)	1.570 (39.88)	1.250 (31.75)	1.625 (41.28)	.120 (3.05)	1.500 (38.10)	1.890 (48.01)
24	.625 (15.88)	.922 (23.42)	.468 (11.89)	.203 (5.16)	2.969 (75.41)	2.281 (55.40)	.812 (20.62)	1.880 (47.75)	1.375 (34.93)	1.750 (44.45)	.147 (3.73)	1.740 (44.20)	2.170 (55.12)
28	.625 (15.88)	.922 (23.42)	.468 (11.89)	.203 (5.16)	3.031 (76.99)	2.281 (55.40)	.812 (20.62)	1.880 (47.75)	1.562 (39.67)	2.000 (50.80)	.147 (3.73)	1.740 (44.20)	2.170 (55.12)
32	.625 (15.88)	1.235 (31.37)	.664 (15.87)	.203 (5.16)	3.031 (76.99)	2.322 (58.98)	.875 (22.23)	2.205 (56.01)	1.750 (44.45)	2.250 (57.15)	.173 (4.39)	2.075 (52.71)	2.656 (67.46)
36	.625 (15.88)	1.360 (34.54)	.694 (17.63)	.203 (5.16)	3.281 (83.34)	2.322 (58.98)	.875 (22.23)	2.400 (60.96)	1.938 (49.23)	2.500 (63.50)	.173 (4.39)	2.300 (58.42)	2.922 (74.22)
*40	.625 (15.88)	1.628 (41.35)	.911 (23.14)	.203 (5.16)	3.530 (89.66)†	2.427 (61.65)†	.875 (22.23)	2.840 (72.14)	2.188 (55.58)	2.750 (69.85)	.173 (4.39)	2.688 (68.28)	—

†Not to MS specification
*Not Available in MS3101E and MS3101R.

Shell Size	A Thread
8S	1/2-28UNEF-2A
10S	5/8-24UNEF-2A
10SL	5/8-24UNEF-2A
12S	3/4-20UNEF-2A
14S	7/8-20UNEF-2A
16S	1-20UNEF-2A
12	3/4-20UNEF-2A
14	7/8-20UNEF-2A

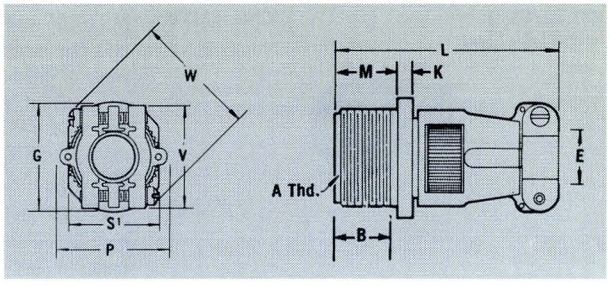
Shell Size	A Thread
16	1-20UNEF-2A
18	1-1/8-18UNEF-2A
20	1-1/4-18UNEF-2A
22	1-3/8-18UNEF-2A
24	1-1/2-18UNEF-2A
28	1-3/4-18UNS-2A
32	2-18UNS-2A
36	2-1/4-16UN-2A
40	2-1/2-16UN-2A

Cable Connecting Plug (Receptacle with no mounting flange)

MS3101E/MS3101F
Integral Cable Clamp

CA3101E/CA3101F

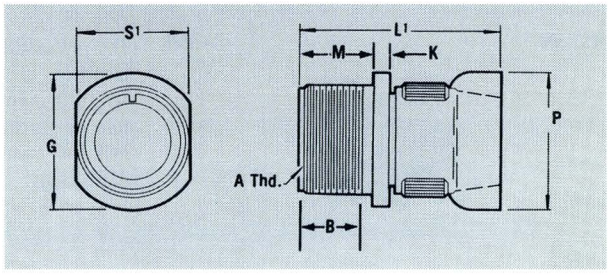
MS3101E cable connecting plugs are used for cable extension requirements, where mounting provisions are unnecessary.
MS3101E plugs mate with 3106, 3107 and 3108 plugs. Note: the D revision of MIL-C-5015 has changed the nomenclature of the 3101 from receptacle to plug.



MS3101R

CA3101R

MS3101R cable connecting plug is identical in purpose to the MS3101E. The MS3101R features a shorter lightweight endbell and mates with 3106, 3107 and 3108 plugs. Note: The D revision of the MIL-C-5015 specification has changed the nomenclature of the 3101 from receptacle to plug.



Shell Size	B Min.	E Max.	E Min.	G Max.	K Max.	L Max.	L¹ Max.	M +.031 (0.79) −.000 (0.00)	P Max.	S¹ Max.	V Max.	W Max.
8S	.375 (9.53)	.235 (5.97)	.102 (2.59)	.844 (21.44)	.125 (3.18)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	.890 (22.61)	.515 (13.08)	.840 (21.34)	1.046 (26.57)
10S	.375 (9.53)	.235 (5.97)	.102 (2.59)	.969 (24.61)	.125 (3.18)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	.890 (22.61)	.640 (16.26)	.840 (21.34)	1.046 (26.57)
10SL	.375 (9.53)	.297 (7.54)	.140 (3.56)	1.062 (26.97)	.125 (3.18)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	.970 (24.64)	.640 (16.26)	.900 (22.86)	1.125 (28.58)
12S	.375 (9.53)	.297 (7.54)	.140 (3.56)	1.062 (26.97)	.140 (3.56)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	.970 (24.64)	.765 (19.43)	.900 (22.86)	1.125 (28.58)
14S	.375 (9.53)	.422 (10.72)	.195 (4.95)	1.156 (29.36)	.140 (3.56)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	1.150 (29.21)	.890 (22.61)	1.100 (27.94)	1.343 (34.11)
16S	.375 (9.53)	.547 (13.89)	.255 (6.48)	1.281 (32.54)	.140 (3.56)	2.250 (57.15)	1.838 (46.69)	.562 (14.27)	1.250 (31.75)	1.015 (25.78)	1.200 (30.48)	1.484 (37.69)
12	.625 (15.88)	.297 (7.54)	.140 (3.56)	1.062 (26.97)	.146 (3.71)	2.625 (66.68)	2.181 (55.40)	.750 (19.05)	.970 (24.64)	.765 (19.43)	.900 (22.86)	1.125 (28.58)
14	.625 (15.88)	.422 (10.72)	.195 (4.95)	1.156 (29.36)	.146 (3.71)	2.625 (66.68)	2.181 (55.40)	.750 (19.05)	1.150 (29.21)	.890 (22.61)	1.100 (27.94)	1.343 (34.11)
16	.625 (15.88)	.547 (13.89)	.255 (6.48)	1.281 (32.54)	.146 (3.71)	2.625 (66.68)	2.181 (55.40)	.750 (19.05)	1.250 (31.75)	1.015 (25.78)	1.200 (30.48)	1.484 (37.69)
18	.625 (15.88)	.610 (15.49)	.285 (7.24)	1.344 (34.14)	.180 (4.57)	2.688 (68.28)	2.281 (55.40)	.750 (19.05)	1.450 (36.83)	1.140 (28.96)	1.300 (33.02)	1.609 (40.87)
20	.625 (15.88)	.735 (18.67)	.350 (8.89)	1.500 (38.10)	.180 (4.57)	2.750 (69.85)	2.281 (55.40)	.750 (19.05)	1.570 (39.88)	1.265 (32.13)	1.500 (38.10)	1.890 (48.01)
22	.625 (15.88)	.740 (18.80)	.350 (8.89)	1.625 (41.28)	.180 (4.57)	2.750 (69.85)	2.281 (55.40)	.750 (19.05)	1.570 (39.88)	1.390 (35.31)	1.500 (38.10)	1.890 (48.01)
24	.625 (15.88)	.922 (23.42)	.468 (11.89)	1.750 (44.45)	.203 (5.16)	2.969 (75.41)	2.281 (55.40)	.812 (20.62)	1.880 (47.75)	1.515 (38.48)	1.740 (44.20)	2.170 (55.12)
28	.625 (15.88)	.922 (23.42)	.468 (11.89)	2.000 (50.80)	.203 (5.16)	3.031 (76.99)	2.281 (55.40)	.812 (20.62)	1.880 (47.75)	1.765 (44.83)	1.740 (44.20)	2.170 (55.12)
32	.625 (15.88)	1.235 (31.37)	.664 (15.87)	2.250 (57.15)	.203 (5.16)	3.031 (76.99)	2.322 (58.98)	.875 (22.23)	2.205 (56.01)	2.015 (51.18)	2.075 (52.71)	2.656 (67.46)
36	.625 (15.88)	1.360 (34.54)	.694 (17.63)	2.500 (63.50)	.203 (5.16)	3.281 (83.34)	2.322 (58.98)	.875 (22.23)	2.400 (60.96)	2.270 (57.66)	2.300 (58.42)	2.922 (74.22)
*40	.625 (15.88)	1.628 (41.35)	.911 (23.14)	2.750 (69.85)	.203 (5.16)	3.530 (89.66)†	2.427 (61.65)†	.875 (22.23)	2.840 (72.14)	2.427 (61.65)	2.688 (68.28)	—

†Not to MS specification
*Not Available in MS3101E and MS3101R.

Shell Size	A Thread
8S	1/2-28UNEF-2A
10S	5/8-24UNEF-2A
10SL	5/8-24UNEF-2A
12S	3/4-20UNEF-2A
14S	7/8-20UNEF-2A
16S	1-20UNEF-2A
12	3/4-20UNEF-2A
14	7/8-20UNEF-2A

Shell Size	A Thread
16	1-20UNEF-2A
18	1-1/8-18UNEF-2A
20	1-1/4-18UNEF-2A
22	1-3/8-18UNEF-2A
24	1-1/2-18UNEF-2A
28	1-3/4-18UNS-2A
32	2-18UNS-2A
36	2-1/4-16UN-2A
40	2-1/2-16UN-2A

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

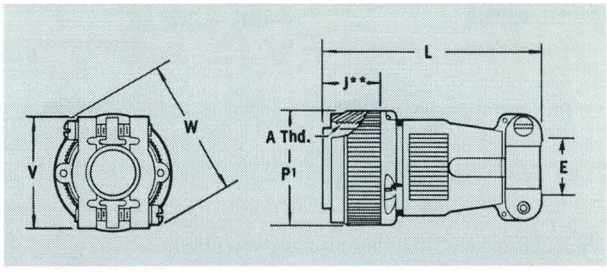
Straight Plug

MS3106E/MS3106F
Integral Cable Clamp

CA3106E/CA06R

MS3106F straight plugs mate with 3100 and 3102 receptacles and 3101 plugs.

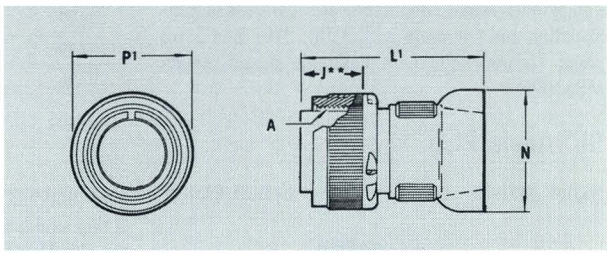
The MS3106E is available upon request. For new equipment, customer should specify MS3106F. MS3106E is identical to MS3106F except for O ring under the coupling nut.



MS3106R

CA3106R

The MS3106R straight plug is identical in purpose to the MS3106F. The MS3106R has the shorter endbell. This plug will mate with 3100 and 3102 receptacles and 3101 plugs.



Shell Size	E Max.	E Min.	J** Max.	L Max.	L1 Max.	N Max.	P1 Max.	V Max.	W Max.
8S	.235 (5.97)	.102 (2.59)	.536 (13.61)	2.250 (57.15)	1.838 (46.69)	.890 (22.61)	.844 (21.44)	.840 (21.34)	1.046 (26.57)
10S	.235 (5.97)	.102 (2.59)	.536 (13.61)	2.250 (57.15)	1.838 (46.69)	.890 (22.61)	.969 (24.61)	.840 (21.34)	1.046 (26.57)
10SL	.297 (7.54)	.140 (3.56)	.536 (13.61)	2.250 (57.15)	1.838 (46.69)	.970 (24.64)	.969 (24.61)	.900 (22.86)	1.125 (28.58)
12S	.297 (7.54)	.140 (3.56)	.536 (13.61)	2.250 (57.15)	1.838 (46.69)	.970 (24.64)	1.062 (26.97)	.900 (22.86)	1.125 (28.58)
14S	.422 (10.72)	.195 (4.95)	.536 (13.61)	2.250 (57.15)	1.838 (46.69)	1.150 (29.21)	1.156 (29.36)	1.100 (27.94)	1.343 (34.11)
16S	.547 (13.89)	.255 (6.48)	.536 (13.61)	2.250 (57.15)	1.838 (46.69)	1.250 (31.75)	1.250 (31.75)	1.200 (30.48)	1.484 (37.69)
12	.297 (7.54)	.140 (3.56)	.724 (18.39)	2.625 (66.68)	2.181 (55.40)	.970 (24.64)	1.062 (26.97)	.900 (22.86)	1.125 (28.58)
14	.422 (10.72)	.195 (4.95)	.724 (18.39)	2.625 (66.68)	2.181 (55.40)	1.150 (29.21)	1.156 (29.36)	1.100 (27.94)	1.343 (34.11)
16	.547 (13.89)	.255 (6.48)	.724 (18.39)	2.625 (66.68)	2.181 (55.40)	1.250 (31.75)	1.250 (31.75)	1.200 (30.48)	1.484 (37.69)
18	.610 (15.49)	.285 (7.24)	.724 (18.39)	2.688 (68.28)	2.281 (55.40)	1.450 (36.83)	1.344 (34.14)	1.300 (33.02)	1.609 (40.87)
20	.735 (18.67)	.350 (8.89)	.724 (18.39)	2.750 (69.85)	2.281 (55.40)	1.570 (39.88)	1.469 (37.31)	1.500 (38.10)	1.890 (48.01)
22	.740 (18.80)	.350 (8.89)	.724 (18.39)	2.750 (69.85)	2.281 (55.40)	1.570 (39.88)	1.594 (40.49)	1.500 (38.10)	1.890 (48.01)
24	.922 (23.42)	.468 (11.89)	.724 (18.39)	2.969 (75.41)	2.281 (55.40)	1.880 (47.75)	1.719 (43.66)	1.740 (44.20)	2.170 (55.12)
28	.922 (23.42)	.468 (11.89)	.724 (18.39)	3.031 (76.99)	2.281 (55.40)	1.880 (47.75)	1.969 (50.01)	1.740 (44.20)	2.170 (55.12)
32	1.235 (31.37)	.664 (15.87)	.724 (18.39)	3.031 (76.99)	2.322 (58.98)	2.205 (56.01)	2.219 (56.36)	2.075 (52.71)	2.656 (67.46)
36	1.360 (34.54)	.694 (17.63)	.724 (18.39)	3.281 (83.34)	2.322 (58.98)	2.400 (60.96)	2.469 (62.71)	2.300 (58.42)	2.922 (74.22)
*40	1.628 (41.35)	.911 (23.14)	.724 (18.39)	3.530 (89.66)†	2.427 (61.65)†	2.840 (72.14)	2.723 (69.16)†	2.688 (68.28)	—

†Not to MS specification

**Barrel engaging face to shoulder.

Shell Size	A Thread
8S	1/2-28UNEF-2B
10S	5/8-24UNEF-2B
10SL	5/8-24UNEF-2B
12S	3/4-20UNEF-2B
14S	7/8-20UNEF-2B
16S	1-20UNEF-2B
12	3/4-20UNEF-2B
14	7/8-20UNEF-2B

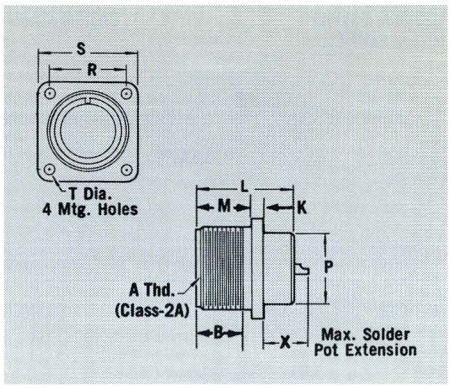
Shell Size	A Thread
16	1-20UNEF-2B
18	1-1/8-18UNEF-2B
20	1-1/4-18UNEF-2B
22	1-3/8-18UNEF-2B
24	1-1/2-18UNEF-2B
28	1-3/4-18UNS-2B
32	2-18UNS-2B
36	2-1/4-16UN-2B
40	2-1/2-16UN-2B

Box Mounting Receptacle

MS3102E/MS3102R **CA3102E/CA3102R**

MS3102E and MS3102R box mounting receptacles are used in junction boxes or as an integral part of equipment. These connectors are identical in construction and will mate with 3106, 3107 and 3108 plugs. For new equipment, customer should specify MS3102R.

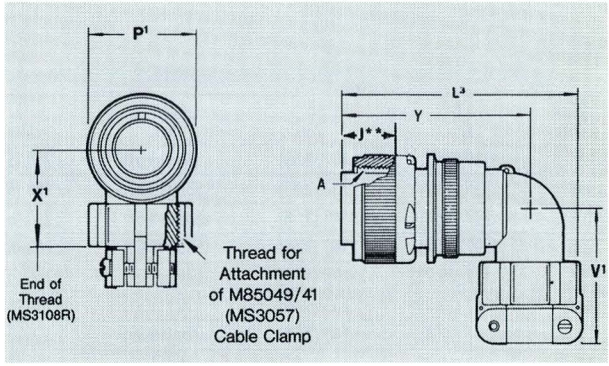
	X DIMENSION				
	Max. Solder Pot Ext. — Pin or Socket				
	Contact Size				
Shell Size	16	12	8	4	0
8S, 10S, 10SL	.534	—	—	—	—
12S, 14S, 16S	.518	—	—	—	—
12	.705	.705	—	—	—
14	.705	.705	.767	—	—
16	.705	.705	.767	.767	—
18	.674	.674	.736	.736	—
20,22	.674	.674	.736	.736	.971
24,28	.612	.612	.674	.674	.909
32,36	.549	.549	.611	.611	.846



90° Angle Plug

MS3108E/MS3108R **CA3108E/CA3108R**

MS3108R 90° angle plugs (with O ring seal less cable clamp) and the MS3108E 90° angle plugs (less O ring seal with cable clamp) are used where there is limited space and where wires must be brought at abrupt angles. This plug will mate with 3100 and 3102 receptacles and 3101 plugs.



See page 35 for cable clamp dimensions.

Shell Size	B Min.	J** Max.	K Max.	L Max.	L³ Max.	M +.031 (0.79) −.000 (0.00)	P Max.	P¹ Max.	R ±.005	S ±.031	T +.010 −.005	V¹ Max.	X¹ Max.	Y Max.
8S	.375 (9.53)	.536 (13.61)	.125 (3.18)	1.040 (26.42)	2.156 (54.76)	.562 (14.27)	.426 (10.82)	.844 (21.44)	.594 (15.09)	.875 (22.23)	.120 (3.05)	1.218 (30.94)	.811 (20.60)	1.640 (41.66)
10S	.375 (9.53)	.536 (13.61)	.125 (3.18)	1.040 (26.42)	2.156 (54.76)	.562 (14.27)	.520 (13.21)	.969 (24.61)	.719 (18.26)	1.000 (25.40)	.120 (3.05)	1.250 (31.75)	.842 (21.39)	1.640 (41.66)
10SL	.375 (9.53)	.536 (13.61)	.125 (3.18)	1.040 (26.42)	2.188 (55.58)	.562 (14.27)	.614 (15.60)	.969 (24.61)	.719 (18.26)	1.000 (25.40)	.120 (3.05)	1.281 (32.54)	.873 (22.17)	1.703 (43.26)
12S	.375 (9.53)	.536 (13.61)	.140 (3.56)	1.040 (26.42)	2.188 (55.58)	.562 (14.27)	.614 (15.60)	1.062 (26.97)	.812 (20.62)	1.094 (27.79)	.120 (3.05)	1.281 (32.54)	.873 (22.17)	1.703 (43.26)
14S	.375 (9.53)	.536 (13.61)	.140 (3.56)	1.040 (26.42)	2.312 (58.72)	.562 (14.27)	.739 (18.77)	1.156 (29.36)	.906 (23.01)	1.188 (30.18)	.120 (3.05)	1.406 (35.71)	.936 (23.77)	1.765 (44.83)
16S	.375 (9.53)	.536 (13.61)	.140 (3.56)	1.040 (26.42)	2.406 (61.11)	.562 (14.27)	.864 (21.95)	1.250 (31.75)	.969 (24.61)	1.281 (32.54)	.120 (3.05)	1.531 (38.89)	.998 (25.35)	1.796 (45.62)
12	.675 (15.88)	.724 (18.39)	.146 (3.71)	1.400 (35.56)	2.531 (64.29)	.750 (19.05)	.614 (15.60)	1.062 (26.97)	.812 (20.62)	1.094 (27.79)	.120 (3.05)	1.281 (32.54)	.873 (22.17)	2.062 (52.37)
14	.675 (15.88)	.724 (18.39)	.146 (3.71)	1.400 (35.56)	2.688 (68.28)	.750 (19.05)	.739 (18.77)	1.156 (29.36)	.906 (23.01)	1.188 (30.18)	.120 (3.05)	1.406 (35.71)	.936 (23.77)	2.125 (53.98)
16	.675 (15.88)	.724 (18.39)	.146 (3.71)	1.400 (35.56)	2.781 (70.64)	.750 (19.05)	.864 (21.95)	1.250 (31.75)	.969 (24.61)	1.281 (32.54)	.120 (3.05)	1.531 (38.89)	.998 (25.35)	2.156 (54.76)
18	.675 (15.88)	.724 (18.39)	.180 (4.57)	1.400 (35.56)	2.844 (72.24)	.750 (19.05)	.989 (25.12)	1.344 (34.14)	1.062 (26.97)	1.375 (34.93)	.120 (3.05)	1.593 (40.46)	1.061 (26.95)	2.250 (57.15)
20	.675 (15.88)	.724 (18.39)	.180 (4.57)	1.400 (35.56)	3.250 (82.55)	.750 (19.05)	1.145 (29.08)	1.469 (37.31)	1.156 (29.36)	1.500 (38.10)	.120 (3.05)	1.656 (42.06)	1.123 (28.52)	2.312 (58.72)
22	.675 (15.88)	.724 (18.39)	.180 (4.57)	1.400 (35.56)	3.250 (82.55)	.750 (19.05)	1.270 (32.26)	1.594 (40.49)	1.250 (31.75)	1.625 (41.28)	.120 (3.05)	1.718 (43.64)	1.186 (30.12)	2.312 (58.72)
24	.675 (15.88)	.724 (18.39)	.203 (5.16)	1.400 (35.56)	3.719 (94.46)	.812 (20.62)	1.395 (35.43)	1.719 (43.66)	1.375 (34.93)	1.750 (44.45)	.147 (3.73)	1.890 (48.01)	1.263 (32.08)	2.531 (64.29)
28	.675 (15.88)	.724 (18.39)	.203 (5.16)	1.400 (35.56)	3.719 (94.46)	.812 (20.62)	1.614 (41.00)	1.969 (50.01)	1.562 (39.67)	2.000 (50.80)	.147 (3.73)	1.968 (49.99)	1.342 (34.09)	2.531 (64.29)
32	.675 (15.88)	.724 (18.39)	.203 (5.16)	1.400 (35.56)	4.188 (106.38)	.875 (22.23)	1.864 (47.35)	2.219 (56.36)	1.750 (44.45)	2.250 (57.15)	.173 (4.39)	2.187 (55.55)	1.561 (39.65)	2.750 (69.85)
36	.675 (15.88)	.724 (18.39)	.203 (5.16)	1.400 (35.56)	4.297 (109.14)	.875 (22.23)	2.051 (52.10)	2.469 (62.71)	1.938 (49.23)	2.500 (63.50)	.173 (4.39)	2.406 (61.11)	1.780 (45.21)	2.875 (73.02)
40	.675 (15.88)	.724 (18.39)	.203 (5.16)	1.400 (35.56)	7.211 (183.16)†	.875 (22.23)	2.390 (60.71)	2.723 (69.16)†	2.188 (55.58)	2.750 (69.85)	.173 (4.39)	5.875 (149.22)	—	5.690 (144.53)

†Not to MS specification

**Barrel engaging face to shoulder.

Shell Size	A Thread
8S	1/2-28UNEF-2B
10S	5/8-24UNEF-2B
10SL	5/8-24UNEF-2B
12S	3/4-20UNEF-2B
14S	7/8-20UNEF-2B
16S	1-20UNEF-2B
12	3/4-20UNEF-2B
14	7/8-20UNEF-2B

Shell Size	A Thread
16	1-20UNEF-2B
18	1-1/8-18UNEF-2B
20	1-1/4-18UNEF-2B
22	1-3/8-18UNEF-2B
24	1-1/2-18UNEF-2B
28	1-3/4-18UNS-2B
32	2-18UNS-2B
36	2-1/4-16UN-2B
40	2-1/2-16UN-2B

How to Order

MS type potting connectors are available with nylon cups. 00 and 06 shell styles with plastic cups and resilient insulators meet the requirements of MS3103 and MS25183. Also available is the 08 plug with resilient insulator and 90° angle nylon potting cup.

ITT Cannon provides for a 1/4" clearance for potting on all contact sizes.

MS	25183	—	18 – 10	P		
MS	3103	—	18 – 10	P		
CA	3100	ER	18 – 10	P		
PREFIX	SHELL STYLE	CLASS	SHELL SIZE	CONTACT ARRANGEMENT	CONTACT TYPE	

PREFIX
CA – ITT Cannon prefix indicating special application or variation of MS

SHELL STYLE
3100 – Wall mounting receptacle (MS3103)
3106 – Straight plug (MS25183)
3108 – 90° angle plug

CLASS
ER – Resilient insulator, nylon potting cup and thread attachment ring
No class designator for MS types.

SHELL SIZE
Coupling thread diameter figured in sixteenths of an inch

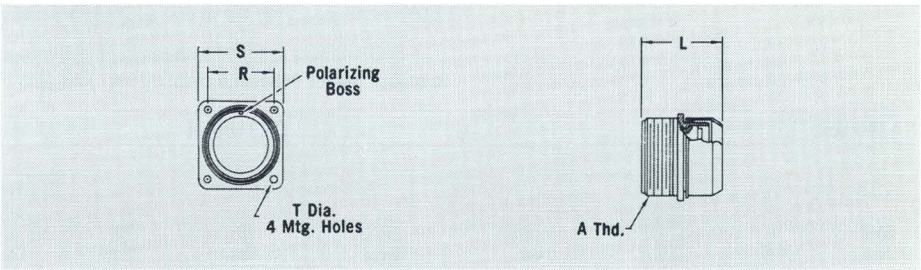
CONTACT ARRANGEMENTS
See pages 21-24.

CONTACT TYPE
P for Pin; S for Socket

Wall Mounting Receptacle

MS3103
Nylon Potting Cup
Threaded Attachment Ring

CA3100ER



The CA3100ER receptacle (MS3103) is supplied with a resilient insulator and a nylon potting cup with a threaded attachment ring. This receptacle mates with 3106, 3107, and 3108 plugs.

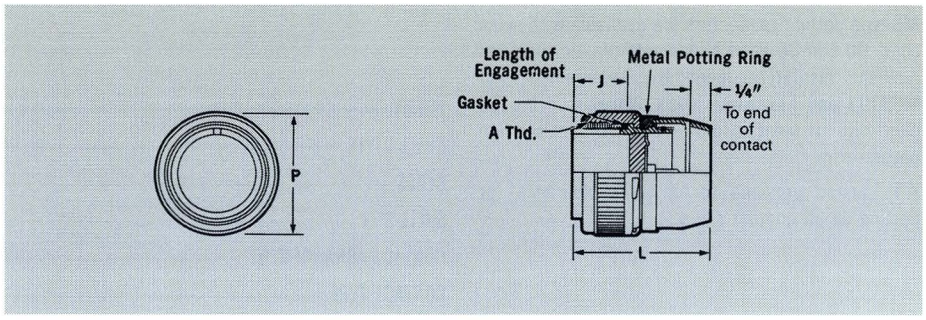
Shell Size	L Max.	R ±.005 (±0.13)	S Max.	T +.010 (+0.25) −.005 (+0.13)	A Thread
8S	1.531 (38.89)	.594 (15.09)	.906 (23.01)	.120 (3.05)	1/2-28UNEF-2A
10S	1.531 (38.89)	.719 (18.26)	1.031 (26.19)	.120 (3.05)	5/8-24NEF-2A
10SL	1.531 (38.89)	.719 (18.26)	1.031 (26.19)	.120 (3.05)	5/8-24NEF-2A
12S	1.531 (38.89)	.812 (20.62)	1.125 (28.58)	.120 (3.05)	3/4-20UNEF-2A
14S	1.531 (38.89)	.906 (23.01)	1.219 (30.96)	.120 (3.05)	7/8-20UNEF-2A
16S	1.531 (38.89)	.969 (24.61)	1.312 (33.32)	.120 (3.05)	1-20UNEF-2A
12	1.968 (49.99)	.812 (20.62)	1.125 (28.58)	.120 (3.05)	3/4-20UNEF-2A
14	1.968 (49.99)	.906 (23.01)	1.219 (30.96)	.120 (3.05)	3/4-20UNEF-2A
16	1.968 (49.99)	.968 (24.59)	1.312 (33.32)	.120 (3.05)	1-20UNEF-2A
18	1.968 (49.99)	1.062 (26.97)	1.406 (35.71)	.120 (3.05)	1-1/8-18NEF-2A
20	2.188 (55.58)	1.156 (29.36)	1.531 (38.89)	.120 (3.05)	1-1/4-18NEF-2A
22	2.188 (55.58)	1.250 (31.75)	1.656 (42.06)	.120 (3.05)	1-3/8-18NEF-2A
24	2.188 (55.58)	1.375 (34.92)	1.781 (45.24)	.147 (3.73)	1-1/2-18NEF-2A
28	2.188 (55.58)	1.562 (39.67)	2.031 (51.59)	.147 (3.73)	1-3/4-18NS-2A
32	2.188 (55.58)	1.750 (44.45)	2.281 (57.94)	.173 (4.39)	2-18NS-2A
36	2.188 (55.58)	1.938 (49.23)	2.531 (64.29)	.173 (4.39)	2-1/4-16UN-2A

Circular Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Straight Plug

MS25183
Nylon Potting Cup
Rubber Gasket

CA3106ER

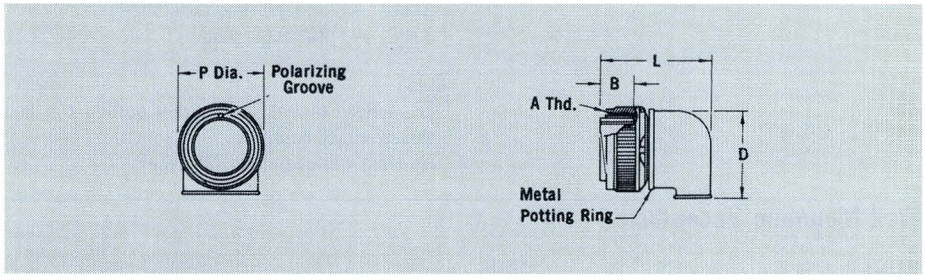


The CA3106ER plug is supplied with resilient insulators, nylon potting cups with threaded attachment rings, and a rubber gasket under the coupling nut. This plug mates with 3100 and 3102 receptacles and 3101 plugs.

90° Angle Plug

Nylon Potting Cup
Rubber Gasket

CA3108ER

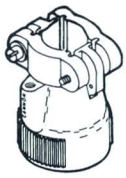
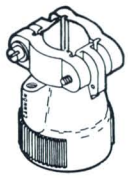
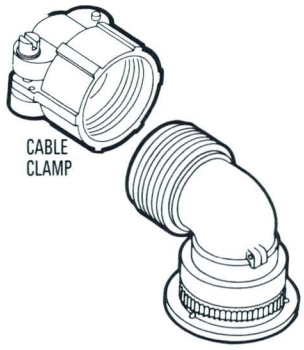
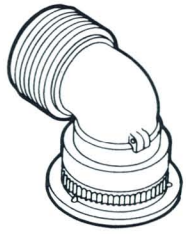
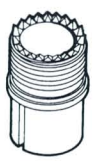
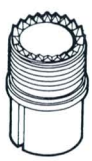
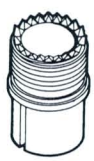
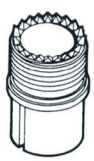
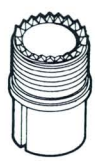


The CA3108ER is supplied with resilient insulator, 90° nylon potting cup and threaded attachment ring with a rubber gasket under the coupling nut. This plug mates with 3100 and 3102 receptacles and 3101 plugs.

CA3106ER					CA3108ER					
							L Max.			
Shell Size	J Max.	L Max.	P Max.	A Thread	B Max.	D Max.	For Arr. w/#16 & #12 Contacts	For. Arr. w/#8 & #4 Contacts	P Max.	A Thread
8S	.536 (13.61)	1.562 (39.67)	.844 (21.44)	1/2-28UNEF-2B	—	—	—	—	—	—
10S	.536 (13.61)	1.562 (39.67)	.969 (24.61)	5/8-24UNEF-2B	—	—	—	—	—	—
10SL	.536 (13.61)	1.562 (39.67)	.969 (24.61)	5/8-24UNEF-2B	.536 (13.61)	1.040 (26.42)	1.463 (37.16)	—	.969 (24.61)	5/8-24UNEF-2B
12S	.536 (13.61)	1.562 (39.67)	1.062 (26.97)	3/4-20UNEF-2B	.536 (13.61)	1.040 (26.42)	1.600 (40.64)	—	1.062 (26.97)	3/4-24UNEF-2B
14S	.536 (13.61)	1.562 (39.67)	1.156 (29.36)	7/8-20UNEF-2B	.536 (13.61)	1.040 (26.42)	1.600 (40.64)	2.300 (58.42)	1.156 (29.36)	7/8-20UNEF-2B
16S	.536 (13.61)	1.562 (39.67)	1.250 (31.75)	1-20UNEF-2B	.536 (13.61)	1.290 (32.77)	1.600 (40.64)	2.550 (64.77)	1.250 (31.75)	1-20UNEF-2B
12	.724 (18.39)	2.000 (50.80)	1.062 (26.97)	3/4-20UNEF-2B	.724 (18.39)	1.040 (26.42)	1.910 (48.51)	—	1.062 (26.97)	3/4-20UNEF-2B
14	.724 (18.39)	2.000 (50.80)	1.156 (29.36)	7/8-20UNEF-2B	.724 (18.39)	1.040 (26.42)	1.910 (48.51)	2.610 (66.29)	1.156 (29.36)	7/8-20UNEF-2B
16	.724 (18.39)	2.000 (50.80)	1.250 (31.75)	1-20UNEF-2B	.724 (18.39)	1.290 (32.77)	1.910 (48.51)	2.850 (72.39)	1.250 (31.75)	1-20UNEF-2B
18	.724 (18.39)	2.000 (50.80)	1.344 (34.14)	1-1/8-18UNEF-2B	.724 (18.39)	1.290 (32.77)	2.100 (53.34)	2.850 (72.39)	1.344 (34.14)	1-1/8-18UNEF-2B
20	.724 (18.39)	2.125 (53.98)	1.469 (37.31)	1-1/4-18UNEF-2B	.724 (18.39)	1.540 (39.12)	2.100 (53.34)	2.850 (72.39)	1.469 (37.31)	1-1/4-18UNEF-2B
22	.724 (18.39)	2.125 (53.98)	1.594 (40.49)	1-3/8-18UNEF-2B	.724 (18.39)	1.540 (39.12)	2.100 (53.34)	2.850 (72.39)	1.594 (40.49)	1-3/8-18UNEF-2B
24	.724 (18.39)	2.125 (53.98)	1.719 (43.66)	1-1/2-18UNEF-2B	.724 (18.39)	1.790 (45.47)	2.281 (57.94)	2.985 (75.82)	1.719 (43.66)	1-1/2-18UNEF-2B
28	.724 (18.39)	2.125 (53.98)	1.969 (50.01)	1-3/4-18UNS-2B	.724 (18.39)	2.040 (51.82)	2.485 (63.12)	2.985 (75.82)	1.969 (50.01)	1-3/4-18UNS-2B
32	.724 (18.39)	2.180 (55.37)	1.219 (30.96)	2-18UNS-2B	.724 (18.39)	2.290 (58.17)	2.485 (63.12)	2.985 (75.82)	1.219 (30.96)	2-18UNS-2B
36	.724 (18.39)	2.180 (55.37)	2.469 (62.71)	2-1/4-16UN-2B	.724 (18.39)	2.540 (64.52)	2.485 (63.12)	2.985 (75.82)	2.469 (62.71)	2-1/4-16UN-2B
40	.724 (18.39)	2.180 (55.37)	2.723 (69.16)	2-1/2-16UN-2B						

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Components

MS3106R CA3106R Straight Plug	MS3106F CA06R Straight Plug	MS3106E CA3106E Straight Plug	MS3108E CA3108E 90° Angle Plug	MS3108R CA3108R 90° Angle Plug
Endbell				
				
Ferrule				
Grommet				
Pin Contacts				
Insulator				
Coupling Nut				
Barrel				
				
O Ring				

Note: Class F is not applicable to MS3108 shell style.

How to Order

TBF and BFR pressurized bulkhead receptacles mate with standard MS type plugs (3106, 3107 and 3108) if contact arrangements correspond. Both the BFR and TBF have resilient insulators. The TBF (thru-bulkhead fitting) version has a double-faced construction allowing mating from both ends. An O ring is supplied as standard on both the BFR and the TBF. Contacts are silver plated copper or brass alloy. Shells are aluminum alloy.

	BF / TBF	R	14S – 20	5 – 15	P / PS	*	1
PREFIX							
CLASS							
SHELL SIZE							
CONTACT ARRANGEMENT							
CONTACT TYPE							
ALTERNATE POSITION							
MOUNTING (BFR ONLY)							

PREFIX
BF – Bulkhead fittings
TBF – Thru bulkhead fittings

CLASS
*R – Resilient insulators
H – Hermetic; see page 198
*Letter designator "R" not required for TBF.

SHELL SIZE
Coupling thread diameter figured in sixteenths of an inch

CONTACT ARRANGEMENTS
See pages 21-24.

CONTACT TYPE
P for Pin; S for Socket; PS for Pin and Socket (TBF only)

ALTERNATE POSITION
(Consult factory for available alternate positions.)

MOUNTING
BFR only; see chart on page 33

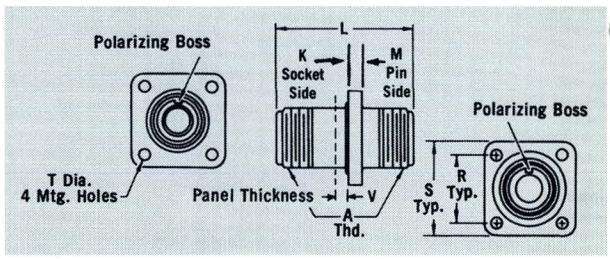
Thru-Bulkhead Receptacle

TBF – Resilient Insulator

Pin Insert End

Socket Insert End

TBF thru-bulkhead fittings have pressurized resilient insulators. Special double-face pin and socket contact construction permits cable components to be wired and tested in the shop and then to be plugged into the mounted TBF plug to complete the installation. The TBF mates with 3106, 3107 and 3108 plugs.

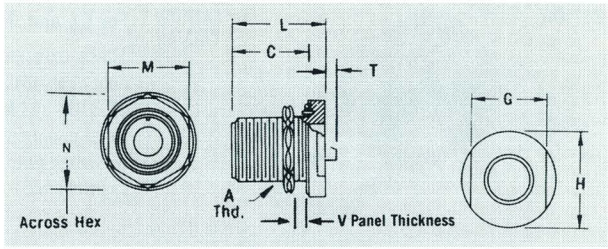


Shell Size	K Max.	L Max.	M ±.031 (+0.79) −.000 (−0.00)	R ±.005 (±0.13)	S ±.031 (±0.79)	T +.010 (+0.25) −.005 (−0.13)	V Max.	A Thread
8S	.125 (3.18)	1.482 (37.64)	.562 (14.27)	.594 (15.09)	.875 (22.22)	.120 (3.05)	.325 (8.26)	1/2-28UNEF-2A
10S	.125 (3.18)	1.482 (37.64)	.562 (14.27)	.719 (18.26)	1.000 (25.40)	.120 (3.05)	.325 (8.26)	5/8-24UNEF-2A
10SL	.125 (3.18)	1.482 (37.64)	.562 (14.27)	.719 (18.26)	1.000 (25.40)	.120 (3.05)	.325 (8.26)	5/8-24UNEF-2A
12S	.140 (3.56)	1.482 (37.64)	.562 (14.27)	.812 (20.62)	1.094 (27.79)	.120 (3.05)	.325 (8.26)	3/4-20UNEF-2A
14S	.140 (3.56)	1.482 (37.64)	.562 (14.27)	.906 (23.01)	1.188 (30.18)	.120 (3.05)	.325 (8.26)	7/8-20UNEF-2A
16S	.140 (3.56)	1.482 (37.64)	.562 (14.27)	.968 (24.59)	1.281 (32.54)	.120 (3.05)	.325 (8.26)	1-20UNEF-2A
12	.146 (3.71)	2.030 (51.56)	.750 (19.05)	.812 (20.62)	1.094 (27.79)	.120 (3.05)	.445 (11.30)	3/4-20UNEF-2A
14	.146 (3.71)	2.030 (51.56)	.750 (19.05)	.906 (23.01)	1.188 (30.18)	.120 (3.05)	.445 (11.30)	7/8-20UNEF-2A
16	.146 (3.71)	2.030 (51.56)	.750 (19.05)	.968 (24.59)	1.281 (32.54)	.120 (3.05)	.445 (11.30)	1-20UNEF-2A
18	.180 (4.57)	2.030 (51.56)	.750 (19.05)	1.062 (26.97)	1.375 (34.92)	.120 (3.05)	.445 (11.30)	1-1/8-18UNEF-2A
20	.180 (4.57)	2.030 (51.56)	.750 (19.05)	1.156 (29.36)	1.500 (38.10)	.120 (3.05)	.445 (11.30)	1-1/4-18UNEF-2A
22	.180 (4.57)	2.030 (51.56)	.750 (19.05)	1.250 (31.75)	1.625 (41.28)	.120 (3.05)	.445 (11.30)	1-3/8-18UNEF-2A
24	.203 (5.16)	2.030 (51.56)	.812 (20.62)	1.375 (34.92)	1.750 (44.45)	.147 (3.73)	.383 (9.73)	1-1/2-18UNEF-2A
28	.203 (5.16)	2.030 (51.56)	.812 (20.62)	1.562 (39.67)	2.000 (50.80)	.147 (3.73)	.383 (9.73)	1-3/4-18UNS-2A
32	.203 (5.16)	2.030 (51.56)	.875 (22.22)	1.750 (44.45)	2.250 (57.15)	.173 (4.39)	.320 (8.13)	2-18UNS-2A
36	.203 (5.16)	2.030 (51.56)	.812 (20.62)	1.938 (49.23)	2.500 (63.50)	.173 (4.39)	.383 (9.73)	2-1/4-16UN-2A
40	.203 (5.16)	2.030 (51.56)	.875 (22.22)	2.188 (55.58)	2.750 (69.85)	.173 (4.39)	.383 (9.73)	

Pressurized Bulkhead Receptacle

BFR

BFR pressurized bulkhead receptacles withstand the air leakage requirements of MIL-C-5015 not to exceed 1 cu. in. of air per hour when subjected to a pressure differential of 30 psi at −55°C. Insulators are resilient material bonded to aluminum shell. Both pin and socket assemblies are available. The BFR will mate with standard MS type 3106, 3107, 3108 plugs.



Standard Position
Pin is 3/32″ Dia.

Type 1

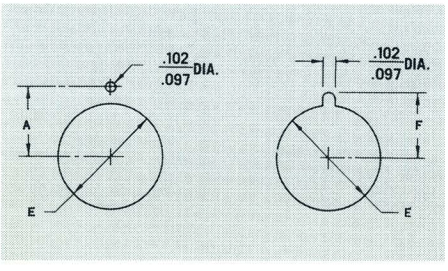
Shell	Standard
Insulator	Polychloroprene
Lock Nut	Hex with 6 wire holes
O Ring	Neoprene
Position Pin	Standard
Mounting	Figure 1 or 2
Part No. Example:	BFR14S-5P-1

Shell Size	C Max.	G Max.	H Max.	L Max.	M Max.	N Max.	T Max. Solder Pot Ext. #16	#12	#8	#4	#0	V Max.
8S	.853 (21.67)	.895 (22.73)	1.077 (27.36)	1.087 (27.61)	.697 (17.70)	.820 (20.83)	.140 (3.56)	—	—	—	—	.250 (6.35)
10S	.853 (21.67)	1.015 (25.78)	1.203 (30.56)	1.087 (27.61)	.822 (20.88)	.960 (24.38)	.140 (3.56)	—	—	—	—	.250 (6.35)
10SL	.853 (21.67)	1.015 (25.78)	1.203 (30.56)	1.087 (27.61)	.822 (20.88)	.960 (24.38)	.140 (3.56)	—	—	—	—	.250 (6.35)
12S	.853 (21.67)	1.077 (27.36)	1.327 (33.71)	1.087 (27.61)	.955 (24.26)	1.110 (28.19)	.140 (3.56)	—	—	—	—	.375 (9.52)
14S	.853 (21.67)	1.203 (30.56)	1.453 (36.91)	1.087 (27.61)	1.072 (27.23)	1.250 (31.75)	.140 (3.56)	—	—	—	—	.375 (9.52)
16S	.853 (21.67)	1.327 (33.71)	1.577 (40.06)	1.087 (27.61)	1.265 (32.13)	1.460 (37.08)	.140 (3.56)	—	—	—	—	.375 (9.52)
12	1.244 (31.60)	1.077 (27.36)	1.327 (33.71)	1.525 (38.74)	.947 (24.05)	1.110 (28.19)	.062 (1.57)	.062 (1.57)	—	—	—	.375 (9.52)
14	1.244 (31.60)	1.203 (30.56)	1.453 (36.91)	1.525 (38.74)	1.072 (27.23)	1.250 (31.75)	.062 (1.57)	.062 (1.57)	.125 (3.18)	—	—	.375 (9.52)
16	1.244 (31.60)	1.327 (33.71)	1.577 (40.06)	1.525 (38.74)	1.265 (32.13)	1.460 (37.08)	.062 (1.57)	.062 (1.57)	.125 (3.18)	.125 (3.18)	—	.375 (9.52)
18	1.244 (31.60)	1.453 (36.91)	1.703 (43.26)	1.525 (38.74)	1.395 (35.43)	1.610 (40.89)	.062 (1.57)	.062 (1.57)	.125 (3.18)	.125 (3.18)	—	.375 (9.52)
20	1.244 (31.60)	1.577 (40.06)	1.827 (46.41)	1.525 (38.74)	1.515 (38.48)	1.750 (44.45)	.062 (1.57)	.062 (1.57)	.125 (3.18)	.125 (3.18)	.359 (9.12)	.375 (9.52)
22	1.244 (31.60)	1.577 (40.06)	1.953 (49.61)	1.525 (38.74)	1.635 (41.53)	1.900 (48.26)	.062 (1.57)	.062 (1.57)	.125 (3.18)	.125 (3.18)	.359 (9.12)	.375 (9.52)
24	1.244 (31.60)	1.827 (46.41)	2.077 (52.76)	1.525 (38.74)	1.765 (44.83)	2.030 (51.56)	.062 (1.57)	.062 (1.57)	.125 (3.18)	.125 (3.18)	.359 (9.12)	.375 (9.52)
28	1.244 (31.60)	1.953 (49.61)	2.327 (59.11)	1.525 (38.74)	2.015 (51.18)	2.330 (59.18)	.062 (1.57)	.062 (1.57)	.125 (3.18)	.125 (3.18)	.359 (9.12)	.375 (9.52)
32	1.244 (31.60)	2.203 (55.96)	2.577 (65.46)	1.525 (38.74)	2.205 (56.01)	2.550 (64.77)	.062 (1.57)	.062 (1.57)	.125 (3.18)	.125 (3.18)	.359 (9.12)	.375 (9.52)
36	1.244 (31.60)	2.577 (65.46)	2.827 (71.81)	1.525 (38.74)	2.455 (62.36)	2.840 (72.14)	.062 (1.57)	.062 (1.57)	.125 (3.18)	.125 (3.18)	.359 (9.12)	.312 (7.92)

Shell Size	A Thread
8S	1/2-28UNEF-2A
10S	5/8-24UNEF-2A
10SL	5/8-24UNEF-2A
12S	3/4-20UNEF-2A
14S	7/8-20UNEF-2A
16S	1-20UNEF-2A
12	3/4-20UNEF-2A
14	7/8-20UNEF-2A

Shell Size	A Thread
16	1-20UNEF-2A
18	1-1/8-18UNEF-2A
20	1-1/4-18UNEF-2A
22	1-3/8-18UNEF-2A
24	1-1/2-18UNEF-2A
28	1-3/4-18UNS-2A
32	2-18UNS-2A
36	2-1/4-16UN-2A

Mounting Dimensions



Shell Size	A ±.005 (±0.13)	E +.015 (+0.38) −.000 (−0.00)	F ±.005 (±0.13)
8S	.323 (8.20)	.500 (12.70)	.373 (9.47)
10S, 10SL	.385 (9.78)	.625 (15.88)	.435 (11.05)
12S, 12	.448 (11.38)	.750 (19.05)	.498 (12.65)
14S, 14	.510 (12.95)	.875 (22.22)	.560 (14.22)
16S, 16	.573 (14.55)	1.000 (25.40)	.623 (15.82)
18	.635 (16.13)	1.125 (28.58)	.685 (17.40)

Shell Size	A ±.005 (±0.13)	E +.015 (+0.38) −.000 (−0.00)	F ±.005 (±0.13)
20	.698 (17.73)	1.250 (31.75)	.748 (19.00)
22	.760 (19.30)	1.375 (34.92)	.810 (20.57)
24	.823 (20.90)	1.500 (38.10)	.873 (22.17)
28	.948 (24.08)	1.750 (44.45)	.998 (25.35)
32	1.073 (27.25)	2.000 (50.80)	1.123 (28.52)
36	1.198 (30.43)	2.250 (57.15)	1.248 (31.70)

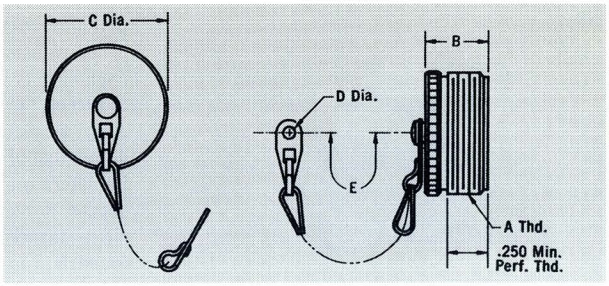
Protective Metal Cap

MS25042

CA17530
CA19741

For 06 and 08 Style Plugs

These externally threaded metal dust caps are used to protect the MS3106 and MS3108 plugs. Material is aluminum alloy. They are furnished with sash chain or less sash chain.



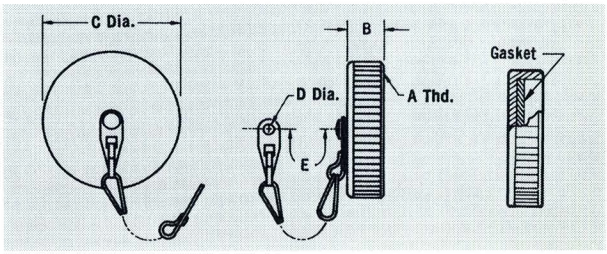
Part Number											
Black Anodized Finish With Sash Chain		Olive Drab Chromate Over Cadmium Finish With Sash Chain May Still be Purchased by		Olive Drab Chromate Over Cadmium Finish, Without Sash Chain							
MS	ITT Cannon	Superseded MS Number (Ref)	ITTC Part Number	ITTC Part Number	Fits Shell Size	B Max.	C Dia. Max.	E Max.	D Dia. Max.	A Thread
MS25042-8DA	CA17530-8000	MS25042-8D	CA17530-5100	CA19741-8	**8S**	.656 (16.66)	.562 (14.27)	4.500 (114.30)	.166 (4.22)	1/2-28UNEF-2A
MS25042-10DA	CA17530-8001	MS25042-10D	CA17530-5101	CA19741-10	**10S, 10SL**	.656 (16.66)	.687 (17.45)	4.500 (114.30)	.166 (4.22)	5/8-24UNEF-2A
MS25042-12DA	CA17530-8002	MS25042-12D	CA17530-5102	CA19741-12	**12S, 12SL**	.844 (21.44)	.812 (20.62)	5.000 (127.00)	.166 (4.22)	3/4-20UNEF-2A
MS25042-14DA	CA17530-8003	MS25042-14D	CA17530-5103	CA19741-14	**14S, 14SL**	.844 (21.44)	.937 (23.80)	5.000 (127.00)	.166 (4.22)	7/8-20UNEF-2A
MS25042-16DA	CA17530-8004	MS25042-16D	CA17530-5104	CA19741-16	**16S, 16SL**	.844 (21.44)	1.062 (26.97)	5.000 (127.00)	.166 (4.22)	1-20UNEF-2A
MS25042-18DA	CA17530-8005	MS25042-18D	CA17530-5105	CA19741-18	**18**	.844 (21.44)	1.187 (30.15)	5.000 (127.00)	.166 (4.22)	1-1/8-18UNEF-2A
MS25042-20DA	CA17530-8006	MS25042-20D	CA17530-5106	CA19741-20	**20**	.844 (21.44)	1.312 (33.32)	5.500 (139.70)	.197 (5.00)	1-1/4-18UNEF-2A
MS25042-22DA	CA17530-8007	MS25042-22D	CA17530-5107	CA19741-22	**22**	.844 (21.44)	1.437 (36.50)	5.500 (139.70)	.197 (5.00)	1-3/8-18UNEF-2A
MS25042-24DA	CA17530-8008	MS25042-24D	CA17530-5108	CA19741-24	**24**	.844 (21.44)	1.562 (39.67)	6.000 (152.40)	.197 (5.00)	1-1/2-18UNEF-2A
MS25042-28DA	CA17530-8009	MS25042-28D	CA17530-5109	CA19741-28	**28**	.844 (21.44)	1.812 (46.02)	8.250 (209.55)	.197 (5.00)	1-3/4-18UNEF-2A
MS25042-32DA	CA17530-8010	MS25042-32D	CA17530-5110	CA19741-32	**32**	.844 (21.44)	2.062 (52.37)	8.250 (209.55)	.228 (5.79)	2-18UNEF-2A
MS25042-36DA	CA17530-8011	MS25042-36D	CA17530-5111	CA19741-36	**36**	.844 (21.44)	2.312 (58.72)	8.250 (209.55)	.228 (5.79)	2-1/4-16UN-2A
MS25042-40DA	CA17530-8012	MS25042-40D	CA17530-5112	CA19741-40	**40**	.844 (21.44)	2.562 (65.07)	8.250 (209.55)	.228 (5.79)	2-1/2-16UN-2A
MS25042-44DA	CA17530-8013	MS25042-44D	CA17530-5113	CA19741-44	**44**	.844 (21.44)	2.812 (71.42)	8.250 (209.55)	.228 (5.79)	2-3/4-16UN-2A
MS25042-48DA	CA17530-8014	MS25042-48D	CA17530-5114	CA19741-48	**48**	.844 (21.44)	3.062 (77.77)	8.250 (209.55)	.228 (5.79)	3-16UN-2A

MS25043

CA2209
CA2322

For 00, 01 and 02 Style Receptacles

These internally threaded metal dust caps are used to protect MS3100, MS3101 and MS3102 receptacles. Material is aluminum alloy. They are furnished with sash chain or less sash chain.

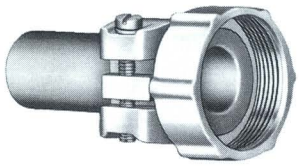


Part Number											
Black Anodize Finish With Sash Chain		Olive Drab Chromate Over Cadmium Finish With Sash Chain May Still be Purchased by		Olive Drab Chromate Over Cadmium Finish Without Sash Chain							
MS	ITT Cannon	Superseded MS Number (Ref)	ITTC Part Number	ITTC Part Number	Fits Shell Size	B Max.	C Dia. Max.	E Max.	D Dia. Max.	A Thread
MS25043-8DA	CA2209-8000	MS25043-8D	CA2209-5100	CA2322-1	**8S**	.469 (11.91)	.688 (17.48)	4.500 (114.30)	.150 (3.81)	1/2-28UNEF-2B
MS25043-10DA	CA2209-8001	MS25043-10D	CA2209-5101	CA2322-2	**10S, 10SL**	.469 (11.91)	.815 (20.70)	4.500 (114.30)	.150 (3.81)	5/8-24UNEF-2B
MS25043-12DA	CA2209-8002	MS25043-12D	CA2209-5102	CA2322-3	**12S, 12SL**	.469 (11.91)	1.000 (25.40)	5.000 (127.00)	.150 (3.81)	3/4-20UNEF-2B
MS25043-14DA	CA2209-8003	MS25043-14D	CA2209-5103	CA2322-4	**14, 14S**	.469 (11.91)	1.125 (28.58)	5.000 (127.00)	.150 (3.81)	7/8-20UNEF-2B
MS25043-16DA	CA2209-8004	MS25043-16D	CA2209-5104	CA2322-5	**16, 16S**	.469 (11.91)	1.188 (30.18)	5.000 (127.00)	.150 (3.81)	1-20UNEF-2B
MS25043-18DA	CA2209-8005	MS25043-18D	CA2209-5105	CA2322-6	**18**	.469 (11.91)	1.344 (34.14)	5.000 (127.00)	.150 (3.81)	1-1/8-18UNEF-2B
MS25043-20DA	CA2209-8006	MS25043-20D	CA2209-5106	CA2322-7	**20**	.469 (11.91)	1.469 (37.31)	5.500 (139.70)	.150 (3.81)	1-1/4-18UNEF-2B
MS25043-22DA	CA2209-8007	MS25043-22D	CA2209-5107	CA2322-8	**22**	.469 (11.91)	1.594 (40.49)	5.500 (139.70)	.150 (3.81)	1-3/8-18UNEF-2B
MS25043-24DA	CA2209-8008	MS25043-24D	CA2209-5108	CA2322-9	**24**	.469 (11.91)	1.719 (43.66)	6.000 (152.40)	.181 (4.60)	1-1/2-18UNEF-2B
MS25043-28DA	CA2209-8009	MS25043-28D	CA2209-5109	CA2322-10	**28**	.531 (13.49)	1.969 (50.01)	8.250 (209.55)	.181 (4.60)	1-3/4-18UNS-2B
MS25043-32DA	CA2209-8010	MS25043-32D	CA2209-5110	CA2322-11	**32**	.531 (13.49)	2.219 (56.36)	8.250 (209.55)	.197 (5.00)	2-18UNS-2B
MS25043-36DA	CA2209-8011	MS25043-36D	CA2209-5111	CA2322-12	**36**	.531 (13.49)	2.469 (62.71)	8.250 (209.55)	.197 (5.00)	2-1/4-16UN-2B
MS25043-40DA	CA2209-8012	MS25043-40D	CA2209-5112	CA2322-13	**40**	.531 (13.49)	2.719 (69.06)	8.250 (209.55)	.197 (5.00)	2-1/2-16UN-2B
MS25043-44DA	CA2209-8013	MS25043-44D	CA2209-5113	CA2322-14	**44**	.531 (13.49)	2.969 (75.41)	8.250 (209.55)	.197 (5.00)	2-3/4-16UN-2B
MS25043-48DA	CA2209-8014	MS25043-48D	CA2209-5114	CA2322-15	**48**	.531 (13.49)	3.188 (80.98)	8.250 (209.55)	.197 (5.00)	3-16UN-2B

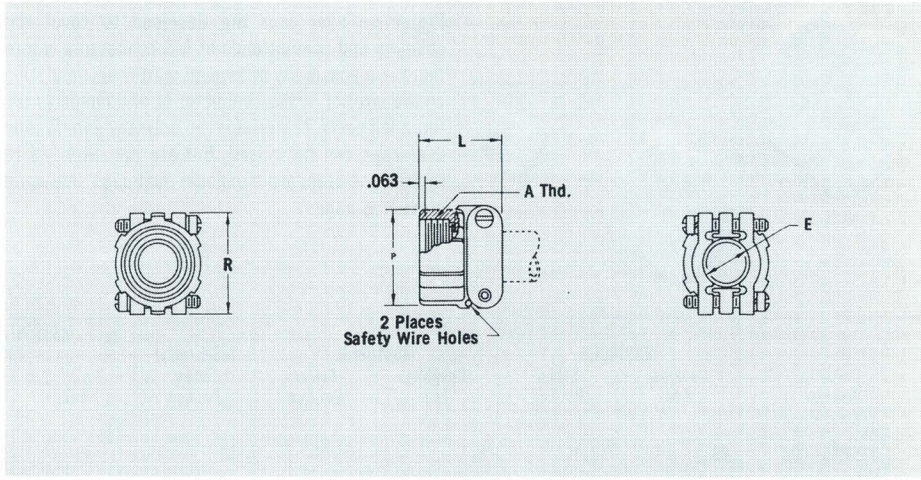
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Cable Clamp

M85049/41
With or Without Bushing



The M85049/41 cable clamp is made for plugs and receptacles that have an endbell with external conduit threads. The double clamping action provides a balanced, positive hold on the wires and greatly reduces moisture transmission. Provision is made for safety wiring. This clamp is supplied without bushing; to order bushing; add "with bushing" after part number.



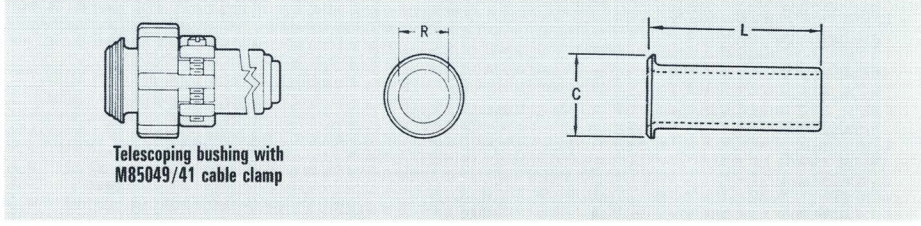
Part Number*	Superseded Part Number*	Fits Shell Size	Accommodates MS Bushings†	E Min.	E Max.	L ±.031 (±0.79)	P ±.031 (±0.79)	R ±.031 (±0.79)	A Thread
M85049/41-3A	MS3057-3A	**8S-10S**	MS3420-3	.102 (2.59)	.250 (6.35)	.812 (20.62)	.688 (17.48)	.812 (20.62)	1/2-28UNEF-2B
M85049/41-4A	MS3057-4A	**10SL, 12S, 12**	MS3420-4	.140 (3.56)	.312 (7.92)	.812 (20.62)	.812 (20.62)	.875 (22.22)	5/8-24UNEF-2B
M85049/41-6A	MS3057-6A	**14S, 14**	MS3420-6	.195 (4.95)	.438 (11.13)	.875 (22.22)	.969 (24.61)	1.062 (26.97)	3/4-20UNEF-2B
M85049/41-8A	MS3057-8A	**16S, 16**	MS3420-8	.255 (6.48)	.562 (14.27)	.938 (23.83)	1.094 (27.79)	1.156 (29.36)	7/8-20UNEF-2B
M85049/41-10A	MS3057-10A	**18**	MS3420-10	.285 (7.24)	.625 (15.88)	.938 (23.83)	1.188 (30.18)	1.250 (31.75)	1-20UNEF-2B
M85049/41-12A	MS3057-12A	**20, 22**	MS3420-12	.350 (8.89)	.750 (19.05)	.938 (23.83)	1.375 (34.92)	1.469 (37.31)	1-3/16-18UNEF-2B
M85049/41-16A	MS3057-16A	**24, 28**	MS3420-16, 12	.468 (11.89)	.938 (23.83)	1.031 (26.19)	1.656 (42.06)	1.688 (42.88)	1-7/16-18UNEF-2B
M85049/41-20A	MS3057-20A	**32**	MS3420-20, 16	.664 (16.87)	1.250 (31.75)	1.094 (27.79)	2.031 (51.59)	2.031 (51.59)	1-3/4-18UNS-2B
M85049/41-24A	MS3057-24A	**36**	MS3420-24, 20	.694 (17.63)	1.375 (34.92)	1.156 (29.36)	2.219 (56.36)	2.281 (57.94)	2-18UNS-2B
M85049/41-28A	MS3057-28A	**40**	MS3420-24, 20	.911 (23.14)	1.625 (41.28)	1.688 (42.88)	2.500 (63.50)	2.688 (68.28)	2-1/4-16UN-2B
M85049/41-32A	MS3057-32A	**44**	MS3420-32, 28, 24	—	1.875 (47.62)	1.750 (44.45)	2.781 (70.64)	2.938 (74.63)	2-1/2-16UN-2B
M85049/41-40A	MS3057-40A	**48**	MS3420-40, 32, 28	—	2.375 (60.32)	1.750 (44.45)	3.281 (83.34)	3.500 (88.90)	3-16UN-2B

*To order cable clamp with bushing, add "with bushing" after part number.
†MS bushings are polychloroprene.

Telescoping Bushing

MS3420/
MS39056(REF.)

Telescoping gland bushings (used with M85049/41 cable clamp) keep dirt, oil and moisture out of endbell. Taping or wrapping wires is eliminated since bushing protects wires going thru clamp. Combinations of bushings may be used to decrease cable entry diameter to improve sealing. Material is polychloroprene (MS).

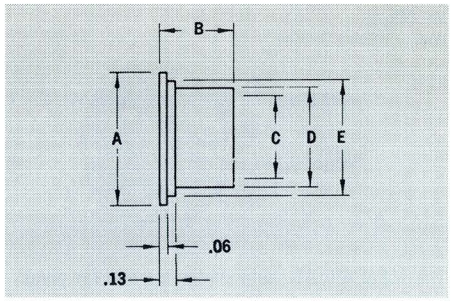


Telescoping bushing with M85049/41 cable clamp

MS Part Number	POLYCHLOROPRENE MS Part Number	ITT Cannon Part Number	Fits Shell Size	C ±.016 (±0.41)	L ±.031 (±0.79)	R ±.016 (±0.41)
MS3420-3	MS39056-1	CA18220-3	**8S, 10S**	.379 (9.63)	2.875 (73.02)	.130 (3.30)
MS3420-4	MS39056-2	CA18220-4	**10SL, 12, 12S**	.505 (12.83)	2.750 (69.85)	.220 (5.59)
MS3420-6	MS39056-3	CA18220-6	**14, 14S**	.619 (15.72)	2.625 (66.68)	.312 (7.92)
MS3420-8	MS39056-4	CA18220-8	**16, 16S**	.744 (18.90)	2.500 (63.50)	.437 (11.10)
MS3420-10	MS39056-5	CA18220-10	**18**	.869 (22.07)	2.375 (60.32)	.562 (14.27)
MS3420-12	MS39056-6	CA18220-12	**20, 22**	1.064 (27.03)	2.250 (57.15)	.625 (15.88)
MS3420-16	MS39056-7	CA18220-16	**24, 28**	1.314 (33.38)	2.125 (53.98)	.750 (19.05)
MS3420-20	MS39056-8	CA18220-20	**32**	1.596 (40.54)	2.000 (50.80)	.937 (23.80)
MS3420-24	MS39056-9	CA18220-24	**36**	1.847 (46.91)	1.875 (47.62)	1.250 (31.75)
MS3420-28	MS39056-10	CA18220-28	**40**	2.085 (52.96)	1.750 (44.45)	1.375 (34.92)
MS3420-32	MS39056-11	CA18220-32	**44**	2.335 (59.31)	1.625 (41.28)	1.624 (41.25)
MS3420-40	MS39056-12	CA18220-40	**48**	2.835 (72.01)	1.500 (38.10)	1.874 (47.60)

Plastic Protective Caps

Protective dust caps are designed to cover the coupling and conduit ends of MS connectors where there is a possibility of foreign matter accumulating on the interior of the connector or of damage to the threaded parts. Material is red polyethylene. Plastic dust caps can be reused, but are not intended to replace the standard aluminum dust caps shown on preceding pages.



Part Number	MS3100F,R Coupling End	MS3100F,R Solder Pot End	MS3102F,R Coupling End	MS3102F,R Solder Pot End	MS-F (only) Solder Pot End	MS3106/MS3108 F,R Coupling End	MS3106/MS3108 F,R Solder Pot End	Dimensions A Max.	B Max.	C Max.	D Max.	E Max.	Wt. Lb.
025-0458-000				8S		8S		.673	.440	.430	.486	.583	.0012
025-0459-000	8S	8S, 10S	8S	8S, 10S	10S		8S, 10S	.734	.440	.490	.546	.644	.0014
025-0460-000	10S, 10SL	10SL, 12S, 12	10S, 10SL	10SL, 12S, 12		10SL, 12S, 12	10SL, 12S, 12	.848	.700	.600	.656	.758	.0022
025-0462-000	12S, 12	14S, 14	12S, 12	14S, 14			14S, 14	.973	.700	.730	.786	.883	.0028
025-0463-000	14S, 14	16S, 16	14S, 14	16S, 16			16S, 16	1.098	.700	.850	.908	1.008	.0033
025-0466-000				18	18			1.209	.700	.950	1.016	1.119	.0042
025-0467-000				20		20		1.396	.700	1.150	1.216	1.308	.0054
025-0468-000	20		20	22	22			1.500	.700	1.240	1.306	1.405	.0060
025-0469-000	22		22	24	24			1.625	.700	1.360	1.426	1.530	.0067
025-0470-000				28				1.870	.700	1.610	1.676	1.775	.0087
025-0471-000				32				2.120	.700	1.860	1.926	2.025	.0103
025-0472-000				36				2.370	.700	2.110	2.176	2.275	.0141
025-0473-000				40				2.501	.700	2.310	2.380	2.491	.0164
025-0474-000				44				2.872	.700	2.590	2.660	2.772	.0186
025-0475-000				48				3.122	.700	2.840	2.910	3.022	.0222
025-0477-000						10S, 10SL		.802	.491	.550	.616	.712	.0017
025-0478-000						12S, 12		.911	.571	.669	.725	.821	.0022
025-0479-000						14S, 14		1.036	.571	.794	.850	.946	.0027
025-0480-000						16S, 16		1.161	.571	.919	.975	1.071	.0033
025-0484-000						18		1.290	.576	1.028	1.094	1.195	.0044
025-0486-000						22		1.540	.576	1.278	1.344	1.445	.0058
025-0487-000						24		1.665	.576	1.403	1.469	1.570	.0066
025-0488-000						28		1.907	.576	1.645	1.711	1.812	.0084
025-0489-000						32		2.157	.576	1.895	1.961	2.062	.0102
025-0490-000						36		2.412	.576	2.140	2.216	2.317	.0132
025-0491-000						40		2.672	.576	2.390	2.466	2.572	.0163
025-0492-000						44		2.922	.576	2.640	2.716	2.822	.0186
025-0493-000						48		3.172	.576	2.890	2.966	3.072	.0213
025-0498-000	16S, 16	18	16S, 16	48			18	1.240	.700	.990	1.056	1.150	.0044
025-0499-000		20, 22		36		22	20, 22	1.427	.700	1.117	1.183	1.337	.0055
025-0500-000		24, 28		40			24, 28	1.677	.700	1.420	1.486	1.587	.0072
025-0501-000	28	32	28	44			32	1.985	.700	1.730	1.796	1.895	.0095
025-0502-000	32	36	32	32			36	2.245	.700	1.980	2.046	2.155	.0114
025-0503-000	36	40	36	24, 28			40	2.495	.700	2.230	2.296	2.400	.0134
025-0504-000	40	44	40	20, 22			44	2.742	.700	2.480	2.546	2.652	.0186
025-0505-000	48		48	18			48	3.257	.700	2.980	3.046	3.157	.0233
025-0507-000	18		18		20			1.365	.700	1.110	1.176	1.275	.0050
025-0510-000	24		24					1.740	.700	1.490	1.556	1.650	.0077
025-0511-000	44	48	44					3.007	.700	2.730	2.796	2.907	.0220
025-0608-000					8S			.643	.440	.400	.456	.553	.0011
025-0609-000					10SL, 12S, 12			.829	.700	.580	.636	.739	.0021
025-0610-000					14S, 14			.954	.700	.710	.766	.864	.0028
025-0611-000					16S, 16			1.079	.700	.830	.886	.989	.0032
025-0612-000					28			1.839	.700	1.570	1.626	1.744	.0083
025-0613-000					32			2.089	.700	1.820	1.876	1.994	.0100
025-0614-000					36			2.376	.700	2.010	2.066	2.231	.0132

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

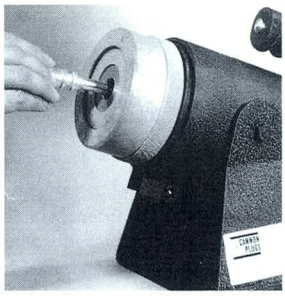
F80 Assembly Instructions

ITT Cannon provides a complete line of crimp insertion and extraction tooling to be used with CA-F80 contacts as follows:

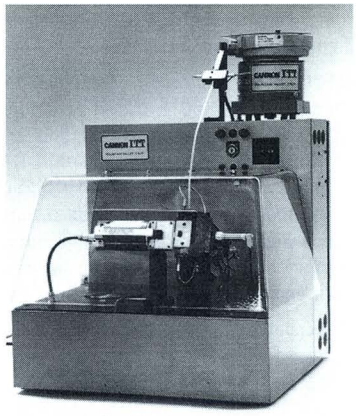
Contact Size	Hand Crimp Tool*	Locator	Power Crimp Tool**	Crimp Head	Locator	Gauge
16	M-22520/1-01	TH-70-1	CBT-493/4			
12	M-22520/1-01	TP567	CBT-600/600B	CCH-12-7	CCHP-12-2	—
8	—	—	CBT-600/600B	CCH-8-1	CCHP-8-1	CCH-8-1
4	—	—	CBT-600/600B	CCH-4-1	CCH-4-1	CCH-4-1
0	—	—	CBT-600B	CCH-0-1	CCHP-0-9	CCH-0

*The M-22520/1-01 is the MIL standard crimp tool for #12 thru #20 contacts and when used with crimp #12, 16 and 20 contacts for the CA-F80.

**The CBT-600 is recommended for crimping of #4 thru #12 contacts. The CBT-600B for #0 thru #8. The appropriate locators and crimp heads are available as shown above.

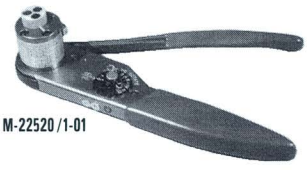


CBT-600



CBT-493 and 494 series automatic feed crimp machines are available for crimping contacts on pre-stripped = 12 thru #20 AWG wire. Bulk loose piece contacts are vibra-bowl fed, oriented and presented; so the operator simply inserts wires thru the guide funnel into the contact, and crimps. For productivity estimating and budgeting, crimp rates in the 1200 per hour range are conservative.

Crimp Tool



M-22520/1-01

Crimping Contacts

1. Check the crimp tool to be sure that the proper crimp head locator is used.
2. Cycle the tool to be sure the indentors are open.
3. Place the contact, mating end first, into the tool.
4. Insert the stripped wire into the hollow end of the contact. Be sure the wire is inserted as far as it will go.
5. Close the tool completely to crimp. Unless the tool is closed completely, the tool will not release the contact.
6. Remove the crimped contact from the tool. Check the inspection hole to verify that the wire is fully inserted.

Insertion/Extraction Tools

Insertion and extraction tools used for these connectors are available for contact sizes 16 thru 0 as shown.

Contact Size	Insertion Tools	Extraction Tools	Handle Color
16	CIT-16 (038895-0000)	CET-16-4 (038888-0004)	Blue
12	CIT-12 (038895-0000)	CET12-2 (0388890-0002)	Yellow
8	CIT-8	CET-8	Red
4	CIT-4	CET-4	Blue
0	CIT-0	CET-0	Yellow

Insertion of Contacts

1. Before inserting the contacts, remove the endbell, grommets, and ferrule from the receptacle. Remove the endbell, grommet, ferrule, and coupling nut from the plug. Slide the hardware over the wire bundle in the proper order for reassembly after all the contacts are inserted.
2. To assist insertion of contacts, lubricate insert cavities with isopropyl alcohol. Alcohol will evaporate and will not leave a conductive film. **Caution: Never use any lubricant other that isopropyl alcohol.** Hold the plug or receptacle body firmly and insert the wired contacts as far as possible by hand. Starting at one side of the insulator, work progressively from contact to contact across the layout. When inserting socket contacts, be sure to provide fixture space below the front face to permit length of guide pins for #16 and #12 contacts to clear insulator face.
3. Place the correct insertion tool on the contact so that the wire runs along the groove in the tool. (Tool tip will butt against the shoulder.)
4. Beginning with a cavity on the outer edge of the plug, apply a slow, even pressure perpendicular to the insulator face until the contact snaps into position. If contacts are not inserted all the way prior to removing insertion tool, do not try to reinsert the insertion tool. Instead, using the extraction tool, push the contact back to position it was in when the insertion tool was originally placed over the contact for push-in; other wise the inside of contact cavity may be damaged by reinserting the insertion tool.
5. Inspect the front end of the insulator to assure that the contacts are inserted to the proper depth.

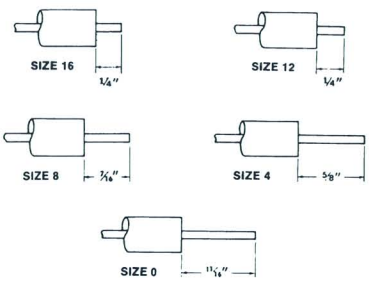
Completion

After all the cavities have been filled, slide the hardware back into position on the barrel. Tighten the endbell until the ferrule and endbell are flush. Compression of the grommet in this manner results in maximum sealing characteristics of the plug.

Extraction of Contacts

1. Select the appropriate tool. (Tool tips are reversible for either pin or socket.) Place the extraction tool over the pin or into the socket.
2. Apply a slow, even pressure to push the contact out of the rear of the insulator.

Recommended Wire Stripping



Contacts

	Contact Part Numbers	
	F80	
Contact Size	Pin	Socket
16S	330-0345-016	031-0554-161
16	330-0351-016	031-0560-161
12	330-0351-012	031-0560-121
8	330-0351-008	031-0560-081
4	330-0351-004	031-0560-041
0	330-0351-000	031-0560-001

Guide Pins

Guide pins are used to assist insertion of socket contact Sizes #16 and #12. Larger sizes do not require guide pins.

Contact	Guide Pin
#16	226-1017-000
#12	226-1018-000

Wire Hole Fillers

Size	ITT Cannon Part Number	MS Number
16	225-0017-000	MS25251-16
12	225-0018-000	MS25251-12
8	225-0019-000	MS25251-8

Standard Circular High Environmental Connectors

These connectors are available for many applications, from commercial/industrial and mass transportation systems to the most stringent high reliability military and space requirements.

The MS/CV345* connector manufactured by ITT Cannon to MIL-C-5015 (Navy) is a threaded coupling, removable rear release crimp contact type. Fully intermateable with existing MIL-C-5015 and threaded MIL-C-83723 Series II (USAF) type connectors, they provide for minimum effort and high economy upgrades for existing applications. In addition, they offer simplified design for new and interphase equipment.

MS/CV connectors covered under MIL-C-5015 (Navy) utilize fluid resistant elastomers to provide maximum protection against degrading fuels, oils, coolants and cleansers.

Temperature withstanding capabilities range from −55°C to +200°C depending upon the class. The use of electroless nickel and cadmium plating for hardware finishes gives the connectors maximum protection from the above factors. High quality manufacturing processes and materials combine to insure the optimum performance and reliability under an extreme range of environmental conditions.

The MS/CV connector manufactured by ITT Cannon is available in five shell styles and 72 contact arrangements accommodating from 1 to 52 contacts (sizes 0, 4, 8, 12 and 16).

This connector series is manufactured to accommodate the following backshells: M85049/43 (MS3415), M85049/31 or /60 (MS3416), M85049/52 (MS3417), M85049/51 (MS3418) and M85049/26 (MS3419).

Shell polarization is effected by a single keyway and key, and standard MS polarization positions are available to prevent mismating.

FEATURES

Universal Insertion/Extraction Tool Style – A single, expendable plastic tool is used for insertion and extraction of both pins and sockets. Tool never touches engaging ends of contacts, cannot damage insert.

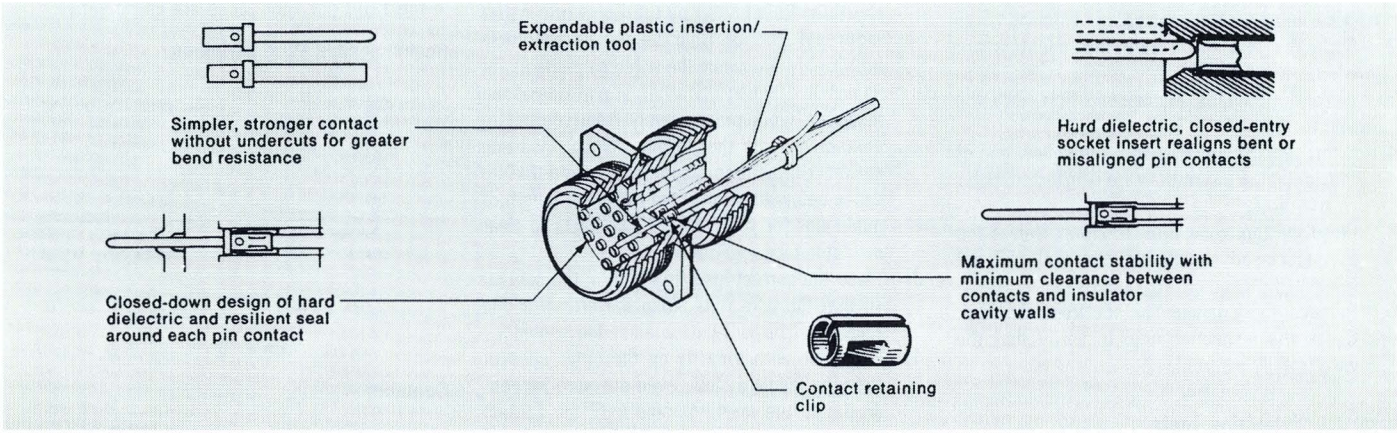
Simple, Strong Contact Design – One basic configuration eliminates undercuts, maximizes bend resistance for positive contact mating.

Interfacial Pin Insert Seal – Universal Interconnect permits design of raised moisture barriers around each pin which mate into lead-in chamfers of hard face socket insert for individual contact sealing. Interfacial seal is never touched by service tools.

Superior Contact Stability – "Closed-down" design of each contact cavity in the insulator support each contact, minimizes contact splaying.

Closed Entry Socket Insert – Hard dielectric socket face of mating connector has lead-in chamfers for positive alignment of pins and sockets.

Simplified Assembly Operations – One standard procedure for assembling connectors and contacts . . standard MS crimp tools . . all servicing of contacts accomplished from the rear of the connector.



How to Order

PREFIX
MS – Complies with MIL-C-5015
CV – ITT Cannon Prefix

SHELL STYLES
MS3450 – Wall Mounting Receptacle
MS3451 – Cable Connecting Receptacle
MS3452 – Box Mounting Receptacle
MS3456 – Cable Connecting Plug
MS3459 – Cable Connecting Plug with Self-Locking Coupling Nut
CV3450 – Wall Mounting Receptacle
CV3451 – Cable Connecting Receptacle
CV3452 – Box Mounting Receptacle
CV3456 – Cable Connecting Plug
CV3459 – Cable Connecting Plug with Self-Locking Coupling Nut

CONNECTOR CLASSES
Class KT, KS – Firewall
Class L, LS – High Temperature, Fluid Resistant
Class W – General Purpose

CV	345	6	L	18 – 9	P	W
MS	345	6	L	18 – 9	P	W

PREFIX
SERIES
SHELL STYLE
CONNECTOR CLASS
SHELL SIZE
CONTACT ARRANGEMENT
CONTACT SEX
POLARIZATION

SHELL SIZE
See pages 39–41.

CONTACT ARRANGEMENTS
See pages 40 and 41.

CONTACT SEX
P – Pin
S – Socket
*A – Less Pin Contact
*B – Less Socket Contact
*Used only when other than power contacts are to be installed (i.e., shielded, thermocouple, etc.)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Standard Data

Class	Temp. °C	Moisture, Fluid and Fuel Resistant	Shell Material	Finish
W	+175 −55	Yes	Aluminum per QQ-A-225 or QQ-A-591	Olive drab over cad plate
L & M83723/**	+200 −55	Yes		Electroless nickel
KT	+175 −55	Yes	Steel per QQ-S-637	Olive drab over cad plate
KS LS	+200 −55	Yes	Stainless Steel	Passivate

NOTE: Resistant to hydraulic fluid per MIL-H-5606 or Skydrol (LD), lubricating oils per MIL-L-7808 and MIL-L-23699, cleaners CeeBee A694 or Aerosafe 2300, jet engine fuel per MIL-J-5624 Grade JP-5, Ethylene Glycol, and Coolanol 25.

Contacts (Crimp Removable Rear Release)

Material – Copper Alloy
Finish – Size 16 – Gold over Nickel
Size 12, 8, 4 and 0 – Silver Plated

Wire Range Accommodations

Contact Size	Wire Size	O.D. of Finished Wire (inch)[1] Minimum	Maximum
16-16	20, 18, 16	.053 (1.35)	.103 (2.62)
12-12	14, 12	.085 (2.16)	.158 (4.01)
8-8	10, 8	.132 (3.35)	.255 (6.48)
4-4	6, 4	.237 (6.02)	.370 (9.40)
0-0	2, 0	.360 (9.14)	.550 (13.97)

[1]Wire Reference – MIL-W-16878, MIL-W-22759, MIL-W-81381, MIL-C-915, MIL-C-24145 and MIL-C-2194.
[2]MS3348 Bushing required in crimp barrel to accommodate 10, 6 and 2 wire sizes – they are ordered separately, consult factory.

Test Data

High Potential Test Voltage

MS/CV connectors show no evidence of breakdown when the test voltage given below is applied between the two closest contacts and between the shell and the contacts closest to the shell for a period of one minute.

Service Rating	Test Voltage (rms) 60 cps	Suggested Operating Voltage* DC	AC (rms)
Inst.	1000	250	200
A	2000	700	500
D	2800	1250	900
E	3500	1750	1250
B	4500	2450	1750
C	7000	4200	3000

*As indicated in previous MS Specification and to be used by the designer only as a guide.

Test Current

Test current ratings of contacts and allowable voltage drop under test conditions when assembled as in service are shown below. Maximum total current to be carried per connector is the same as that allowable in wire bundles as specified in MIL-W-5088.

Current Rating with Silver Plated Wire (MIL-C-5015 test method)

Contact Size	Test Current (amps)	Potential Drop (millivolts)
16	13	49
12	23	42
8	46	26
4	80	23
0	150	21

MS Alternate Positions

All views are looking into front of pin insert or rear of socket insert.

Normal Position | Position W | Position X | Position Y | Position Z

Shell Size	No. of Contacts	Contact Arr.	Degrees W	X	Y	Z
8S	1 #16	8S-1	—	—	—	—
10S	1 #16	10S-2	—	—	—	—
10SL	2 #16	10SL-4	—	—	—	—
12	1 #12	12-5	—	—	—	—
12S	2 #16	12S-3	70	145	215	290
14S	2 #16	14S-9	70	145	215	290
	3 #16	14S-7	90	180	270	—
	4 #16	14S-2	—	120	240	—
	5 #16	14S-5	—	110	—	—
16S	2 #16	16S-4	35	110	250	325
	5 #16	16S-8	—	170	265	—
	7 #16	16S-1	80	—	—	280
16	2 #12	16-11	35	110	250	325
	3 #12	16-10	90	180	270	—
	2 #16,2 #12	16-9	35	110	250	325
	2 #16,1 #8	16-7	80	110	250	280
18	4 #16	18-4	35	110	250	325
	4 #12	18-10	—	120	240	—
	3 #16	18-22	70	145	215	290
	5 #12	18-11	—	170	265	—
	6 #16	18-12	80	—	—	280
	5 #16,2 #12	18-9	80	110	250	280
	7 #16,1 #12	18-8	70	—	—	290
	10 #16	18-1	70	145	215	290

Shell Size	No. of Contacts	Contact Arr.	Degrees W	X	Y	Z
20	1 #0	20-2	—	—	—	—
	4 #12	20-4	45	110	250	—
	8 #16	20-7	80	110	250	280
	7 #16,2 #12	20-16	80	110	250	280
	14 #16	20-27	35	110	250	325
	17 #16	20-29	80	—	—	280
	3 #12,2 #8	20-14	80	110	250	280
	6 #16,3 #12	20-18	35	110	250	325
	7 #12	20-15	80	—	—	280
22	3 #8	22-2	70	145	215	290
	4 #8	22-22	—	110	250	—
	1 #16,4 #12	22-13	35	110	250	325
	4 #16,2 #12	22-5	35	110	250	325
	8 #16	22-18	80	110	250	280
	6 #16,3 #12	22-16	80	110	250	280
	14 #16	22-19	80	110	250	280
	19 #16	22-14	80	—	—	280
24	9 #16,2 #12	24-20	80	110	250	280
	3 #16,1 #0	24-4	80	110	250	280
	4 #8	24-22	45	110	250	—
	7 #8	24-10	80	—	—	280
	6 #12,3 #8	24-11	35	110	250	325
	14 #16,2 #12	24-7	80	110	250	280
	24 #16	24-28	80	110	250	280

Shell Size	No. of Contacts	Contact Arr.	Degrees W	X	Y	Z
28	6 #16,6 #12	28-9	80	110	250	280
	12 #16	28-18	70	145	215	290
	12 #16,2 #12	28-2	35	110	250	325
	15 #16	28-17	80	110	250	280
	18 #16,4 #12	28-11	80	110	250	280
	26 #16	28-12	90	180	270	—
	35 #16	28-15	80	110	250	280
	37 #16	28-21	80	110	250	280
32	4 #4	32-17	45	110	250	—
	12 #16,2 #4	32-9	80	110	250	280
	10 #16,5 #12	32-12	80	110	250	280
	16 #16,3 #8	32-6	80	110	250	280
	2 #12,2 #4					
	18 #16,5 #12	32-13	80	110	250	280
	28 #16,7 #12	32-7	80	125	235	280
36	40 #16,7 #12	36-7	80	110	250	280
	48 #16	36-10	80	125	235	280
	4 #0	36-5	—	120	240	—
	4 #4,2 #0	36-6	35	110	250	325
	3 #12,3 #0	36-3	70	145	215	290
	46 #16,1 #12	36-8	80	110	250	280
	52 #16	36-52	72	144	216	288
40	24 #16,6 #12	40-1	65	130	235	300

*20-29 is an auth. position but it is possible to cross mate to normal position.

Contact Arrangements

Face view, Pin insert

1 Contact

	8S-1	10S-2	12-5	20-2
Shell Size	8S-1	10S-2	12-5	20-2
No. of Contacts	1 #16	1 #16	1 #12	1 #0
Service Rating	A	A	D	D

2 Contacts

	10SL-4	12S-3	14S-9
Shell Size	10SL-4	12S-3	14S-9
No. of Contacts	2 #16	2 #16	2 #16
Service Rating	A	A	A

3 Contacts

	16S-4	16-11	10SL-3	14S-7	16-7	16-10	18-22 (Socket Only)	22-2
Shell Size	16S-4	16-11	10SL-3	14S-7	16-7	16-10	18-22	22-2
No. of Contacts	2 #16	2 #12	3 #16	3 #16 3 #8	3 #16 1 #8 (C)	2 #16 (A,B)	3 #12	3 #16
Service Rating	D	A	A	A	A	A	D	D

4 Contacts

	14S-2	16-9	18-4	18-10	20-4	22-22
Shell Size	14S-2	16-9	18-4	18-10	20-4	22-22
No. of Contacts	4 #16	2 #16 (B,D) 2 #12 (A,C)	4 #16	4 #12	4 #12	4 #8
Service Rating	Inst.	A	D	A For new MIL equip. design, use 18-11	D	A

4 Contacts

	24-4	24-22	32-17	36-5
Shell Size	24-4	24-22	32-17	36-5
No. of Contacts	3 #16 (B,C,D) 1 #0 (A)	4 #8	4 #4	4 #0
Service Rating	D	D	D	A

5 Contacts

	14S-5
Shell Size	14S-5
No. of Contacts	5 #16
Service Rating	Inst.

6 Contacts

	16S-8	18-11	20-14	22-13 (Socket Only)	14S-6	18-12	22-5	36-3	36-6
Shell Size	16S-8	18-11	20-14	22-13	14S-6	18-12	22-5	36-3	36-6
No. of Contacts	5 #16	5 #12	3 #12 (C,D,E) 2 #8 (A,B)	1 #16 (E) 4 #12 (A-D)	6 #16	6 #16	4 #16 (A,C,D,F) 2 #12 (B,E)	3 #12 (A,C,E) 3 #0 (B,D,F)	4 #4 (B,C,E,F) 2 #0 (A,D)
Service Rating	A	A	A	A (A-D), D(E)	Inst.	A For new MIL equip. design, use 16S-1	D	D	A

7 Contacts

	16S-1	18-9	20-15	24-10
Shell Size	16S-1	18-9	20-15	24-10
No. of Contacts	7 #16	5 #16 (B,C,E-G) 2 #12 (A,D)	7 #12	7 #8
Service Rating	A	Inst.	A	A

8 Contacts

	18-8	20-7	22-18 (Pin Only)
Shell Size	18-8	20-7	22-18
No. of Contacts	7 #16 (A-G) 1 #12 (H)	8 #16	8 #16
Service Rating	A	A (C-F) D (A,B,G,H)	A (C-E) D (all others)

Contact Arrangements (Continued)

Face view, pin insert

9 Contacts

Shell Size	20-16
No. of Contacts	7 #16 (A-G) 2 #12 (H,I)
Service Rating	A

Shell Size	20-18
No. of Contacts	6 #16 (A,C-E,G,H) 3 #12 (B,F,I)
Service Rating	A

Shell Size	22-16
No. of Contacts	6 #16 (A,B,F-J) 3 #12 (C-E)
Service Rating	A

Shell Size	24-11
No. of Contacts	6 #12 (A-C,G-I) 3 #8 (D-F)
Service Rating	A

10 Contacts

Shell Size	18-1
No. of Contacts	10 #16
Service Rating	A (B,C,F,G) Inst. (all others)

11 Contacts

Shell Size	24-20
No. of Contacts	9 #16 (A-D,G-L) 2 #12 (E,F)
Service Rating	D

12 Contacts

Shell Size	28-9
No. of Contacts	6 #16 (A,H-M) 6 #12 (B-G)
Service Rating	D

Socket Only

Shell Size	28-18
No. of Contacts	12 #16
Service Rating	A (A,B) C(M) D (G-L) Inst. (C-F)

14 Contacts

Shell Size	20-27
No. of Contacts	14 #16
Service Rating	A

Socket Only

Shell Size	22-19
No. of Contacts	14 #16
Service Rating	A

Shell Size	28-2
No. of Contacts	12 #16 (A-L,N) 2 #12 (M,P)
Service Rating	D

Shell Size	32-9
No. of Contacts	12 #16 (C-N) 2 #4 (A,B)
Service Rating	D

15 Contacts

Shell Size	28-17
No. of Contacts	15 #16
Service Rating	A (A-L), B (R), D (M-P)

Shell Size	32-12
No. of Contacts	10 #16 (A-D,F,G,L,N-P) 5 #12 (E,H,J,K,M)
Service Rating	A (C-G), D (all others)

16 Contacts

Shell Size	24-7
No. of Contacts	14 #16 (A-M,O) 2 #12(P,N)
Service Rating	A

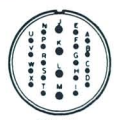
17 Contacts

Shell Size	20-29
No. of Contacts	17 #16
Service Rating	A

19 Contacts

Shell Size	22-14
No. of Contacts	19 #16
Service Rating	A

22 Contacts



Shell Size	28-11
No. of Contacts	18 #16 (A-I,N-X) 4 #12 (J-M)
Service Rating	A

23 Contacts

Shell Size	32-6
No. of Contacts	16 #16 (A-O,S) 2 #12 (U,V) 3 #8 (P,R,T) 2 #4 (W,X)
Service Rating	A

Shell Size	32-13
No. of Contacts	18 #16 (A-D,K-Z) 5 #12 (E-J)
Service Rating	D

24 Contacts

Shell Size	24-28
No. of Contacts	24 #16
Service Rating	Inst.

26 Contacts

Shell Size	28-12
No. of Contacts	26 #16
Service Rating	A

30 Contacts

Shell Size	40-1
No. of Contacts	24 #16 (A-L,T-e) 6 #12 (M-S)
Service Rating	D

35 Contacts

Shell Size	28-15
No. of Contacts	35 #16
Service Rating	A For new equip. design, use 28-21

Shell Size	32-7
No. of Contacts	28 #16 (A-N,W-Z,a-k) 7 #12 (O-V)
Service Rating	Inst. (A,B,h,j) A (all others)

37 Contacts

Shell Size	28-21
No. of Contacts	37 #16
Service Rating	A

47 Contacts

Shell Size	36-7
No. of Contacts	40 #16 (A-Z,a-s) 7 #12 (t-z)
Service Rating	A

Shell Size	36-8
No. of Contacts	46 #16 (A-X,Z-z) 1 #12 (Y)
Service Rating	A

48 Contacts

Shell Size	36-10
No. of Contacts	48 #16
Service Rating	A

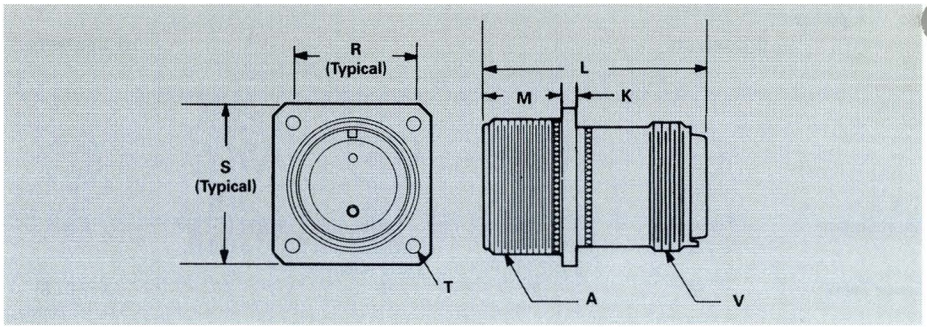
52 Contacts

Shell Size	36-52
No. of Contacts	52 #16
Service Rating	A

Wall Mounting Receptacle

MS3450

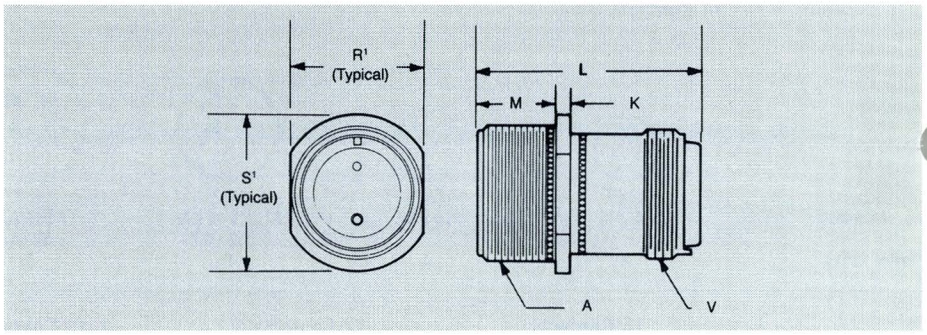
CV3450



Cable Connecting Receptacle

MS3451
(Class L and W only)

CV3451



Shell Size	L Max. Contact #16, #12, #8, #4	L Max. Contact #0	K ±.015 (±.38)	M +.031 +.79 −.000 (−.00)	R ±.005 (±.13)	R¹ Max.	S ±.031 (±7.87)	S¹ ±.031 (±7.87)	T Dia. +.015/−.000 (+0.38/−0.00) Class L, W, LS	T Dia. +.015/−.000 (+0.38/−0.00) Class KT, KS
8S	1.750 (44.45)	— —	.083 (2.11)	.562 (14.27)	.594 (15.09)	.504 (12.80)	.875 (22.22)	.729 (18.52)	.115 (2.92)	.145 (3.68)
10S	1.750 (44.45)	— —	.083 (2.11)	.562 (14.27)	.562 (14.27)	.629 (15.98)	1.000 (25.40)	.854 (21.69)	.115 (2.92)	.145 (3.68)
10SL	1.750 (44.45)	— —	.083 (2.11)	.562 (14.27)	.719 (18.26)	.629 (15.98)	1.000 (25.40)	.854 (21.69)	.115 (2.92)	.145 (3.68)
12S	1.750 (44.45)	— —	.083 (2.11)	.562 (14.27)	.812 (20.62)	.754 (19.15)	1.094 (27.79)	.974 (24.74)	.115 (2.92)	.145 (3.68)
12	2.100 (53.34)	— —	.083 (2.11)	.750 (19.05)	.812 (20.62)	.754 (19.15)	1.094 (27.79)	.974 (24.74)	.115 (2.92)	.145 (3.68)
14S	1.750 (44.45)	— —	.083 (2.11)	.562 (14.27)	.906 (23.01)	.879 (22.33)	1.188 (30.18)	1.099 (27.91)	.115 (2.92)	.145 (3.68)
14	2.100 (53.34)	— —	.083 (2.11)	.750 (19.05)	.906 (23.01)	.879 (22.33)	1.188 (30.18)	1.099 (27.91)	.115 (2.92)	.145 (3.68)
16S	1.750 (44.45)	— —	.083 (2.11)	.562 (14.27)	.969 (24.61)	1.005 (25.53)	1.281 (32.54)	1.224 (31.09)	.115 (2.92)	.145 (3.68)
16	2.100 (53.34)	— —	.083 (2.11)	.750 (19.05)	.969 (24.61)	1.005 (25.53)	1.281 (32.54)	1.224 (31.09)	.115 (2.92)	.145 (3.68)
18	2.100 (53.34)	— —	.125 (3.18)	.750 (19.05)	1.062 (26.97)	1.131 (28.73)	1.375 (34.92)	1.349 (34.26)	.115 (2.92)	.172 (4.37)
20	2.100 (53.34)	2.250 (57.15)	.125 (3.18)	.750 (19.05)	1.156 (29.36)	1.256 (31.90)	1.500 (38.10)	1.474 (37.44)	.115 (2.92)	.172 (4.37)
22	2.100 (53.34)	2.250 (57.15)	.125 (3.18)	.750 (19.05)	1.250 (31.75)	1.381 (35.08)	1.625 (41.28)	1.599 (40.61)	.115 (2.92)	.172 (4.37)
24	2.100 (53.34)	2.250 (57.15)	.125 (3.18)	.812 (20.62)	1.375 (34.92)	1.506 (38.25)	1.750 (44.45)	1.715 (43.56)	.142 (3.61)	.172 (4.37)
28	2.100 (53.34)	2.250 (57.15)	.125 (3.18)	.812 (20.62)	1.562 (39.67)	1.756 (44.60)	2.000 (50.80)	1.974 (50.14)	.142 (3.61)	.172 (4.37)
32	2.100 (53.34)	2.250 (57.15)	.125 (3.18)	.875 (22.22)	1.750 (44.45)	2.007 (50.98)	2.250 (57.18)	2.224 (56.49)	.168 (4.27)	.204 (5.18)
36	2.100 (53.34)	2.250 (57.15)	.125 (3.18)	.875 (22.22)	1.938 (49.23)	2.257 (57.33)	2.500 (63.50)	2.474 (62.84)	.168 (4.27)	.204 (5.18)
40	2.100 (53.34)	2.250 (57.15)	.125 (3.18)	.875 (22.22)	2.188 (55.58)	2.511 (63.78)	2.750 (69.85)	2.724 (69.19)	.168 (4.27)	.204 (5.18)
44	2.100 (53.34)	2.250 (57.15)	.125 (3.18)	.875 (22.22)	2.375 (60.32)	2.761 (70.13)	3.000 (76.20)	2.974 (75.54)	.168 (4.27)	.204 (5.18)
48	2.100 (53.34)	2.250 (57.15)	.125 (3.18)	.875 (22.22)	2.625 (66.68)	3.011 (76.48)	3.250 (82.55)	3.224 (81.89)	.168 (4.27)	.204 (5.18)

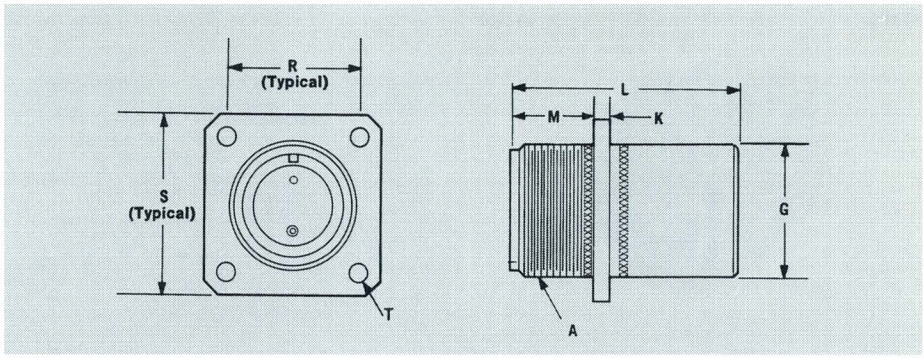
Size Shell	A Thread Class 2A	V Thread Class 2A
8S	1/2-28UNEF	1/2-20UNEF
10S	5/8-24UNEF	5/8-24UNEF
10SL	5/8-24UNEF	5/8-24UNEF
12S	3/4-20UNEF	3/4-20UNEF
12	3/4-20UNEF	3/4-20UNEF
14S	7/8-20UNEF	7/8-20UNEF
14	7/8-20UNEF	7/8-20UNEF
16S	1-20UNEF	1-20UNEF
16	1-20UNEF	1-20UNEF

Size Shell	A Thread Class 2A	V Thread Class 2A
18	1-1/8-18UNEF	1-1/16-18UNEF
20	1-1/4-18UNEF	1-3/16-18UNEF
22	1-3/8-18UNEF	1-5/16-18UNEF
24	1-1/2-18UNEF	1-7/16-18UNEF
28	1-3/4-18UNS	1-3/4-18UNS
32	2-18UNS	2-18UNS
36	2-1/4-16UN	2-1/4-16UN
40	2-1/2-16UN	2-1/2-16UN
44	2-3/4-16UN	2-3/4-16UN
48	3-16UN	3-16UN

Box Mounting Receptacle

MS3452
Class L and W only

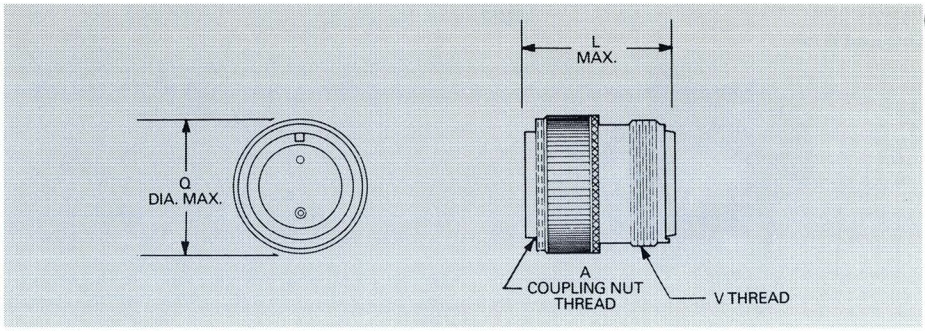
CV3452



Shell Size	G Dia. ±.016 (±0.41)	K ±.015 (±0.38)	L. Max. Contact #16 & #12	L. Max. Contact #8, #4, & #0	M +.031/ (+0.79/ −.000 −0.00)	R ±.005 (±0.13)	S ±.031 (±0.79)	T Dia. +.015/−.000 (+0.38/−0.00) Class L, W	A Thread Class 2A
8S	.500 (12.70)	.083 (2.11)	1.662 (42.21)	— —	.562 (14.27)	.594 (15.09)	.875 (22.22)	.115 (2.92)	1/2-28UNEF
10S	.625 (15.88)	.083 (2.11)	1.662 (42.21)	— —	.562 (14.27)	.719 (18.26)	1.000 (25.40)	.115 (2.92)	5/8-24UNEF
10SL	.625 (15.88)	.083 (2.11)	1.662 (42.21)	— —	.562 (14.27)	.719 (18.26)	1.000 (25.40)	.115 (2.92)	5/8-24UNEF
12S	.750 (19.05)	.083 (2.11)	1.662 (42.21)	— —	.562 (14.27)	.812 (20.62)	1.094 (27.79)	.115 (2.92)	3/4-20UNEF
12	.750 (19.05)	.083 (2.11)	1.662 (42.21)	— —	.750 (19.05)	.812 (20.62)	1.094 (27.79)	.115 (2.92)	3/4-20UNEF
14S	.875 (22.22)	.083 (2.11)	1.662 (42.21)	— —	.562 (14.27)	.906 (23.01)	1.188 (30.18)	.115 (2.92)	7/8-20UNEF
14	.875 (22.22)	.083 (2.11)	1.662 (42.21)	— —	.750 (19.05)	.906 (23.01)	1.188 (30.18)	.115 (2.92)	7/8-20UNEF
16S	1.000 (25.40)	.083 (2.11)	1.662 (42.21)	— —	.562 (14.27)	.969 (24.61)	1.281 (32.54)	.115 (2.92)	1-20UNEF
16	1.000 (25.40)	.083 (2.11)	1.662 (42.21)	1.937 (49.20)	.750 (19.05)	.969 (24.61)	1.281 (32.54)	.115 (2.92)	1-20UNEF
18	1.062 (26.97)	.125 (3.18)	1.662 (42.21)	1.937 (49.20)	.750 (19.05)	1.062 (26.97)	1.375 (34.92)	.115 (2.92)	1-1/8-18UNEF
20	1.187 (30.15)	.125 (3.18)	1.662 (42.21)	1.937 (49.20)	.750 (19.05)	1.156 (29.36)	1.500 (38.10)	.115 (2.92)	1-1/4-18UNEF
22	1.312 (33.32)	.125 (3.18)	1.662 (42.21)	1.937 (49.20)	.750 (19.05)	1.250 (31.75)	1.625 (41.28)	.115 (2.92)	1-3/8-18UNEF
24	1.437 (36.50)	.125 (3.18)	1.662 (42.21)	1.937 (49.20)	.812 (20.62)	1.375 (34.92)	1.750 (44.45)	.142 (3.61)	1-1/2-18UNEF
28	1.750 (44.45)	.125 (3.18)	1.662 (42.21)	1.937 (49.20)	.812 (20.62)	1.562 (39.67)	2.000 (50.80)	.142 (3.61)	1-3/4-18UNS
32	2.000 (50.80)	.125 (3.18)	1.662 (42.21)	1.937 (49.20)	.875 (22.22)	1.750 (44.45)	2.250 (57.15)	.168 (4.27)	2-18UNS
36	2.250 (57.15)	.125 (3.18)	1.662 (42.21)	1.937 (49.20)	.875 (22.22)	1.938 (49.23)	2.500 (63.50)	.168 (4.27)	2-1/4-16UN
40	2.500 (63.50)	.125 (3.18)	1.662 (42.21)	1.937 (49.20)	.875 (22.22)	2.188 (55.58)	2.750 (69.85)	.168 (4.27)	2-1/2-16UN
44	2.750 (69.85)	.125 (3.18)	1.662 (42.21)	1.937 (49.20)	.875 (22.22)	2.375 (60.32)	3.000 (76.20)	.168 (4.27)	2-3/4-16UN
48	3.000 (76.20)	.125 (3.18)	1.662 (42.21)	1.937 (49.20)	.875 (22.22)	2.625 (66.68)	3.250 (82.55)	.168 (4.27)	3-16UN

Cable Connecting Plug

MS3456 **CV3456**

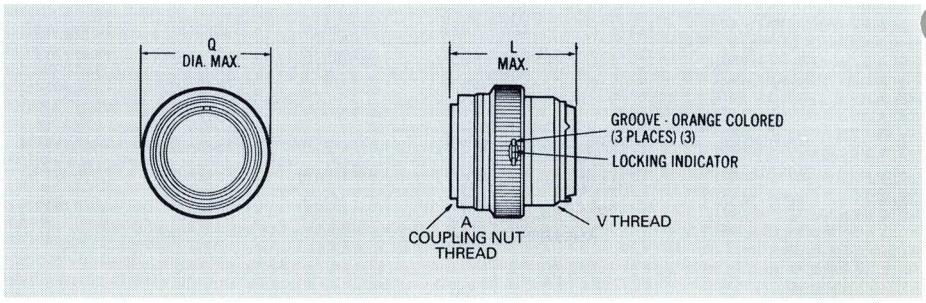


Shell Size	L Max. Contact #16, #12, #8, #4	L Max. Contact #0	Q Dia. Max.	A Thread Class 2B	V Thread Class 2A
8S	1.750 (44.45)	— —	.844 (21.44)	1/2-28UNEF	1/2-20UNEF
10S	1.750 (44.45)	— —	.969 (24.61)	5/8-24UNEF	5/8-24UNEF
10SL	1.750 (44.45)	— —	.969 (24.61)	5/8-24UNEF	5/8-24UNEF
12S	1.750 (44.45)	— —	1.062 (26.97)	3/4-20UNEF	3/4-20UNEF
12	2.100 (53.34)	— —	1.062 (26.97)	3/4-20UNEF	3/4-20UNEF
14S	1.750 (44.45)	— —	1.156 (29.36)	7/8-20UNEF	7/8-20UNEF
14	2.100 (53.34)	— —	1.156 (29.36)	7/8-20UNEF	7/8-20UNEF
16S	1.750 (44.45)	— —	1.250 (31.75)	1-20UNEF	1-20UNEF
16	2.100 (53.34)	— —	1.250 (31.75)	1-20UNEF	1-20UNEF
18	2.100 (53.34)	— —	1.344 (34.14)	1-1/8-18UNEF	1-1/16-18UNEF
20	2.100 (53.34)	2.250 (57.15)	1.469 (37.31)	1-1/4-18UNEF	1-3/16-18UNEF
22	2.100 (53.34)	2.250 (57.15)	1.594 (40.49)	1-3/8-18UNEF	1-5/16-18UNEF
24	2.100 (53.34)	2.250 (57.15)	1.719 (43.66)	1-1/2-18UNEF	1-7/16-18UNEF
28	2.100 (53.34)	2.250 (57.15)	1.969 (50.01)	1-3/4-18UNS	1-3/4-18UNS
32	2.100 (53.34)	2.250 (57.15)	2.219 (56.36)	2-18UNS	2-18UNS
36	2.100 (53.34)	2.250 (57.15)	2.469 (62.71)	2-1/4-16UN	2-1/4-16UN
40	2.100 (53.34)	2.250 (57.15)	2.719 (69.06)	2-1/2-16UN	2-1/2-16UN
44	2.100 (53.34)	2.250 (57.15)	2.969 (75.41)	2-3/4-16UN	2-3/4-16UN
48	2.100 (53.34)	2.250 (57.15)	3.219 (81.76)	3-16UN	3-16UN

Cable Connecting Plug

MS3459
Self-Locking Coupling Nut

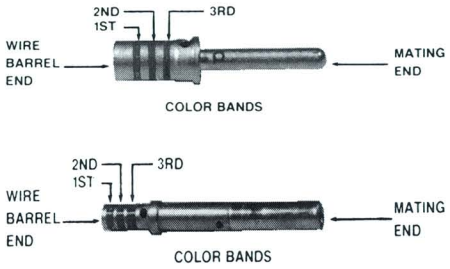
CV3459



Shell Size	L Max. Contact #16, #12, #8, #4	L Max. Contact #0	Q Dia. Max.	A Thread Class 2B	V Thread Class 2A
8S	1.750 (44.45)	— —	.963 (24.46)	1/2-28UNEF	1/2-20UNEF
10S	1.750 (44.45)	— —	1.088 (27.64)	5/8-24UNEF	5/8-24UNEF
10SL	1.750 (44.45)	— —	1.088 (27.64)	5/8-24UNEF	5/8-24UNEF
12S	1.750 (44.45)	— —	1.213 (30.8)	3/4-20UNEF	3/4-20UNEF
12	2.100 (53.34)	— —	1.213 (30.8)	3/4-20UNEF	3/4-20UNEF
14S	1.750 (44.45)	— —	1.358 (34.49)	7/8-20UNEF	7/8-20UNEF
14	2.100 (53.34)	— —	1.358 (34.49)	7/8-20UNEF	7/8-20UNEF
16S	1.750 (44.45)	— —	1.463 (37.16)	1-20UNEF	1-20UNEF
16	2.100 (53.34)	— —	1.463 (37.16)	1-20UNEF	1-20UNEF
18	2.100 (53.34)	— —	1.588 (40.34)	1-1/8-18UNEF	1-1/16-18UNEF
20	2.100 (53.34)	2.250 (57.15)	1.713 (43.51)	1-1/4-18UNEF	1-3/16-18UNEF
22	2.100 (53.34)	2.250 (57.15)	1.788 (45.42)	1-3/8-18UNEF	1-5/16-18UNEF
24	2.100 (53.34)	2.250 (57.15)	1.963 (49.86)	1-1/2-18UNEF	1-7/16-18UNEF
28	2.100 (53.34)	2.250 (57.15)	2.213 (56.21)	1-3/4-18UNS	1-3/4-18UNS
32	2.100 (53.34)	2.250 (57.15)	2.463 (62.56)	2-18UNS	2-18UNS
36	2.100 (53.34)	2.250 (57.15)	2.713 (68.91)	2-1/4-16UN	2-1/4-16UN
40	2.100 (53.34)	2.250 (57.15)	2.963 (75.26)	2-1/2-16UN	2-1/2-16UN

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Contacts



Wire Hole Fillers

Contact Size	ITT Cannon Part Number	MS Part Number	Color Code
16	225-0071-000	MS27488-16	Blue
12	225-0072-000	MS27488-12	Yellow
*8	225-1009-000	MS27488-8	Red
*4	225-1008-000	MS27488-4	Blue
*0	225-1007-000	MS27488-0	Yellow

*Consult factory for availability.

Pin, MIL-C-39029/29

BIN Code	Military Part Number	Color Bands 1st	Color Bands 2nd	Color Bands 3rd	Mating End Size	Wire Barrel Size	ITT Cannon Part Number
212	M39029/29-212	Red	Brown	Red	16	16	030-3196-008
213	M39029/29-213	Red	Brown	Orange	12	12	030-3197-007
214	M39029/29-214	Red	Brown	Yellow	8	8	030-3198-003
215	M39029/29-215	Red	Brown	Green	4	4	030-3199-004
216	M39029/29-216	Red	Brown	Blue	0	0	030-3200-003

Socket, MIL-C-39029/30

BIN Code	Military Part Number	Color Bands 1st	Color Bands 2nd	Color Bands 3rd	Mating End Size	Wire Barrel Size	ITT Cannon Part Number
217	M39029/30-217	Red	Brown	Violet	16S	16	031-3113-005
218	M39029/30-218	Red	Brown	Gray	16	16	031-3114-008
219	M39029/30-219	Red	Brown	White	12	12	031-3115-006
220	M39029/30-220	Red	Red	Black	8	8	031-3116-003
212	M39029/30-221	Red	Red	Brown	4	4	031-3117-003
222	M39029/30-222	Red	Red	Red	0	0	031-3118-003

Thermocouple

Contact Size	Alumel Pin	Alumel Socket	Chromel Pin	Chromel Socket
16S	030-3196-015	031-3113-011	030-3196-016	031-3113-012
16	030-3196-015	031-3114-014	030-3196-016	031-3114-015
12	030-3197-011	031-3115-009	030-3197-012	031-3115-010

Tooling

A complete line of crimp, insertion and extraction tools is provided for MIL-C-5015 connectors. Crimp tools are made from high quality metal and are designed for long life and trouble-free service. Insertion and extraction tools are made of a durable plastic and are inexpensive and expendable.

M22520/1-01

CIET-16

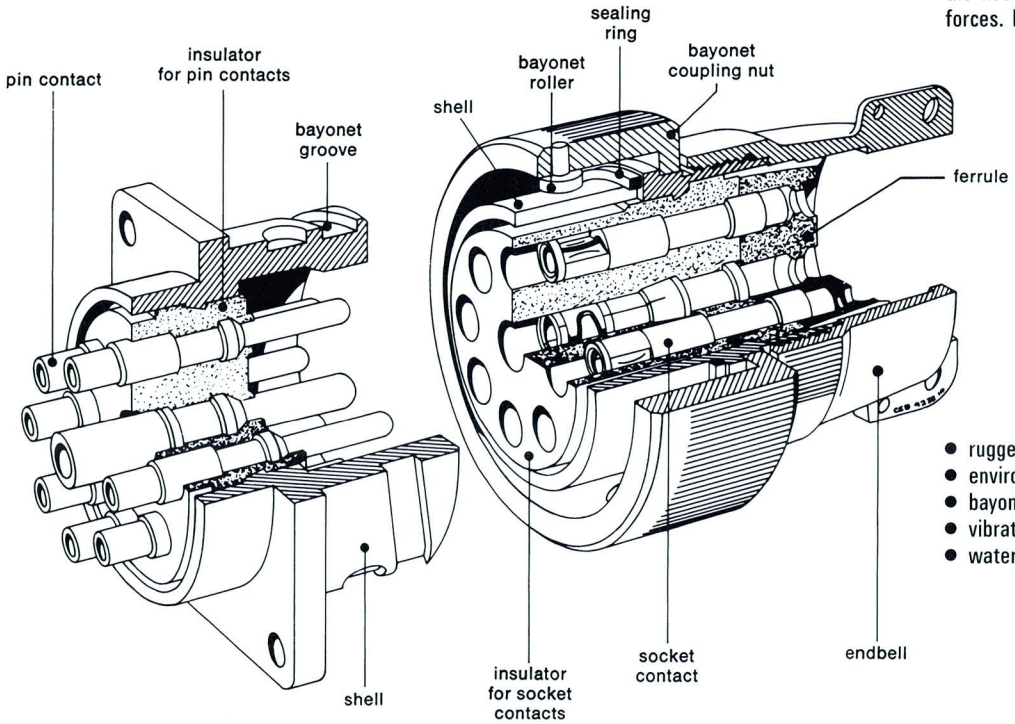
Contact Size	Insertion/Extraction Tools: Plastic MS No.	Plastic Part Number	Plastic ITT Cannon No.	Metal MS No.	Metal ITT Cannon No.	Crimp Tool	Unwired Contact
16	M81969/14-03	274-7002-000	CIET-16-03	—	—	M22520/1-01 with M22520/1-02 Turret	274-7008-000
12	M81969/14-04	274-7003-000	CIET-12-04	—	—		274-7009-000
8	MS3165-8 M83723/32-8		CET 8-2	MS3483-1	CET-CVR-8	CBT 600B Power Unit CCH-8-1 Crimp Head CCHP-8-6 Locator	— — — —
4	MS3165-4 M83723/32-4		CET 4-8	MS3483-2	CET-CVR-4	CBT 600B Power Unit CCH-4-1 Crimp Head CCHP-4-8 Locator	— — — —
0	MS3165-0 M83723/32-0		CET 0-1	MS3483-3	CET-00-CV	CBT 600B Power Unit CCH-0-1 Crimp Head CCHP-0-8 Locator	— — — —

ITT Cannon's circular bayonet coupling connectors are basically MIL-C-5015 type connectors that provide superior performance.

Cannon's CA Bayonet is designed for the most difficult environmental conditions.

The insulators, grommets and o-rings are all made of high quality polychloroprene or high performance fuel resistant fluoroelastomers that can withstand temperature extremes from −55° to +200°C.

Cannon designed the CA Bayonet with a gradual slope of the coupling ramp and unique roller bolt (not a fixed stud) bayonet pins. A quick 120 degree turn of the coupling nut and the roller bolt audibly locks into place. The locked position is marked with colored arrows. The roller bolt feature eliminates the need for a strap wrench by reducing coupling forces. Reduced friction means reduced wear.



- rugged shell design
- environmental
- bayonet coupling for easy mating and unmating
- vibration proof
- waterproof up to 1 bar (35 feet of water)

Standard Data

MATERIALS AND FINISHES

Item	Material	Finish
Shell	Aluminum Alloy	Olive drab chromate coating over cadmium plating. Special Finish: A 105 clear chromate coating over cadmium plating.
Insulator	Polychloroprene	—
Grommets	Polychloroprene	—
Contacts	Copper Alloy	Hard Silver Special Finish: A 176 nickel and hard gold plating.

ELECTRICAL DATA

Contact rating at 68°F (+20°C)

Contact Size Awg/Metric	Max Current A
10	8
16S/15S	22
16/15	22
12/25	41
8/60/100	74
4/160	135
0/500	245

Contact Resistance

Contact resistance tested according to VG 95319 Part 2, Test Nr.5.10.1

Contact Size (Metric)	Max. Contact Resistance AWG	MΩ
10	—	12
15S/15	16S/16	6
25	12	3
60/100	8	1
160	4	0,3
500	0	0,2

How to Order

CA 3106 E 18–1 S X B — ***

- SERIES
- SHELL STYLE
- CLASS
- SHELL SIZE
- CONTACT ARRANGEMENT
- TYPE OF CONTACT
- POLARIZATION
- CONNECTORS WITH BAYONET COUPLING
- DASH
- MODIFICATION

SERIES
CA – Circular Connectors

SHELL STYLE
3100 Wall mounting receptacle
3101 Cable connecting plug
3102 Box mounting receptacle
3106 Plug, straight
3108 Plug 90

CLASS
E – Environmental with resilient insulators and endbell with clamp and bushing
F – Environmental with resilient insulator and endbell for flex tube
R – Environmental with resilient insulator and shortened light-weight endbell

SHELL SIZE
Sizes 10 SL to 36 are available.

CONTACT ARRANGEMENT
See page 48.

CONTACT TYPE
P – Pin contact
S – Socket

POLARIZATION
On all CA connectors, MIL-C-5015 polarization is available. Polarization will be used to prevent mismating. Polarization is achieved by turning the insulators cockwise (pin) and counterclockwise (socket) against the normal position of the shells.

BAYONET COUPLING
B – Bayonet coupling

DASH

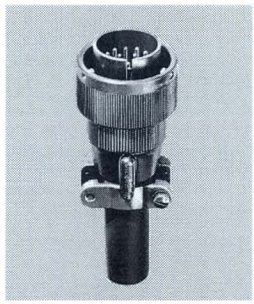
MODIFICATION
01 – Metric crimp contacts
02 – Adapter for shrink boots, AWG crimp contacts
03 – Adapter for shrink boots, metric crimp contacts
04 – Rear mounting, threaded holes, metric crimp contacts
05 – Rear mounting, through holes in flange
06 – Adapter for shrink boots
08 – 90° angle shell, threaded holes in flange*
09 – 90° endbell, 4 through holes*
13 – Endbell for shielded cables and heat shrink boots, solder contacts
14 – Endbell for shielded cables and heat shrink boots, metric crimp contacts
15 – Endbell for shielded cables and heat shrink boots, AWG crimp contacts
109 – F 80 rear mount with four threaded holes**
111 – Rear mount with four threaded holes**
F 80 – AWG crimp contacts
F 42 – Less ferrule, grommet and backshell

* for CA 3100 only
**for receptacles only

Shell Styles

Front Mounting Receptacle
CA 3102 E-B/-01/-F80

Rear Mounting Receptacle
CA 3102 E-B/-04/-109/-111



Straight Plug With Cable Clamp
CA 3106 E-B/-01/-F80

90° Plug With Cable Clamp
CA 3108 F-B/-01/-F80

Cable Extension With Cable Clamp
CA 3101 E-B/-01/-F80

Rear Mounting Wall Receptacle With Flange (Threaded Holes) And Cable Clamp
CA 3100 E-B/-01/-F80
Wall Mounting Receptacle With Cable Clamp (Through Holes)
CA 3100 E-B/-05/01-05/05-F80

Straight Plug With Endbell For Flex Tube
CA 3106 F-B/-01/-F80

Straight Plug With 360° EMR Shielding, With Endbell, Shielded Cables and Heat Shrinkable
CA 3106 E-B/-13/-14/-15

Flanged Wall Mount Receptacle With Shrink Boot Adapter
CA 3100 E-B/-02/-03/-06

90° Plug With 360° EMR Shielding, With Endbell, Shielded Cables and Heat Shrinkable
CA 3106 F-B/-13/-14/-15

Contact Arrangements

Shell Size	Contact Arrangement	No. of Contacts	Contact Size AWG
18	18-23*	10	16
	18-24*	10	16
	18-25*	2	12
	18-27*	2 1	12 16
	18A31*	10	16
20	20-2†	1	0
	20-4	4	12
	20-6	3	16
	20-7	8	16
	20-8†	2 4	8 16
	20-11	13	16
	20-15†	7	12
	20-16	2 7	12 16
	20-19	3	8
	20-24	2 2	8 16
	20-25	13	16
	20-27	14	16
	20-29	17	16
	20-30*	13	16
	20-32*	8	16
	20-33	11	16
	20A9†	9	12
	20A16	13	16
	20A48†	19	16
22	22-1	2	8
	22-2†	3	8
	22-7	1	0
	22-9	3	12
	22-12†	2 3	8 16
	22-14†	19	16
	22-15	5 1	12 16
	22-19	14	16
	22-20	9	16
	22-22†	4	8
	22-23	8	12
	22-27†	1 8	8 16
	22-30*	19	16

†VG 95234 contact arrangement

Shell Size	Contact Arrangement	No. of Contacts	Contact Size AWG
24	24-2	7	12
	24-7	2 14	12 16
	24-9	2	4
	24-10†	7	8
	24-11†	3 6	8 12
	24-12†	2 3	4 12
	24-19	12	16
	24-20	2 9	12 16
	24-22	4	8
	24-28	24	16
	24A24	12	12
	24A35	2 14	12 16
28	28-11†	4 18	12 16
	28-12	26	16
	28-13*	26	16
	28-15	35	16
	28-16	20	16
	28-20†	10 4	12 16
	28-21†	37	16
	28-22	3 3	4 16
	28A16	4 5	4 16
	28A63†	9 19	12 16

Shell Size	Contact Arrangement	No. of Contacts	Contact Size AWG
32	32-1†	2 3	0 12
	32-5	2	0
	32-6†	2 3 2 16	4 8 12 16
	32-7†	7 28	12 16
	32-8	6 24	12 16
	32-13	5 18	12 16
	32-15	2 6	0 12
	32-16*	2 3 2 16	4 8 12 16
	32-17	4	4
	32-19*	2 3	0 12
	32-20*	2 3 2 16	4 8 12 16
	32A10	54	16
	32A30*	2 3	0 12
	32A69†	20 41	— —
36	36-3	3 3	0 12
	36-5†	4	0
	36-10†	48	16
	36-11*	48	16
	36-12*	48	16
	36-14	5 5 6	8 12 16
	36-15	35	16
	36A98	8 31	8 16

*Standard contact arrangement with special alternation of contact insert

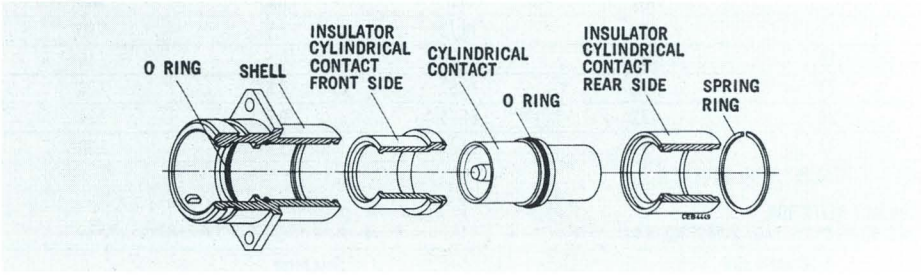
These connectors are used to transmit very high current at low voltage, as for example in the electrical equipment of military land and sea-borne vehicles and in industrial facilities. The connectors meet the mating dimensions, mechanical features and rear panel installation requirements of VG 95234. Ultraflexible, shielded weld cables are terminated to the connectors.

These high power connectors feature one contact in a two-piece rigid insulator. The aluminum shell has a chromate finish over cadmium. The operating temperature ranges from −55°C to +125°C (−67°F to +257°F). The contacts of copper or copper alloy with hard silver finish are designed for crimping or termination to solid copper conductors with threaded bolts. The mechanical durability is a minimum of 500 mating cycles. The crimp contacts accept wires per DIN 46438 (25-240 sq. mm).

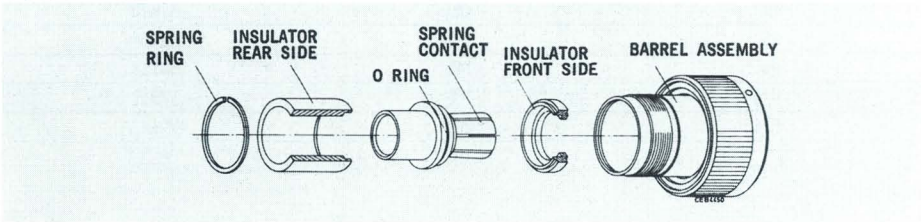
Contact retention is achieved by the two-piece insulator which is fixed to the shell with a snap-in ring. This allows unlimited exchange of the crimp contacts. The bayonet coupling assures fast coupling and uncoupling. Color-coded snap-in points indicate positive mating. Plugs and receptacles are waterproof in mated condition up to 1 bar (35 feet of water).

Connector Design

Receptacle CGE2 . . . B-04



Plug CGE6 . . . B-03



How To Order

CGE 6 E 32 H 24 F W B ***

SERIES
SHELL STYLE
CLASS
SHELL SIZE
CONTACT ARRANGEMENT
CONTACT SIZE
CONTACT TYPE
ALTERNATE KEYWAY POLARIZATION
BAYONET COUPLING
MODIFICATION

SERIES
CGE – ITT CANNON Prefix

SHELL STYLE
0 – Wall mounting receptacle with mounting flange
1 – Cable connecting plug
2 – Box mounting receptacle with mounting flange
6 – Straight plug
8 – 90° angle plug

CLASS
E – Environmental, class JP 07, according to DIN 40050

SHELL SIZE
16 – 18 – 22 – 28 – 32

CONTACT ARRANGEMENT
16H2 – Shell size 16, 1 contact H2
18H5 – Shell size 18, 1 contact H5
22H9 – Shell size 22, 1 contact H9
28H15 – Shell size 28, 1 contact H15
32H24 – Shell size 32, 1 contact H24

CONTACT SIZE
(For U.S. wire size accommodation please consult the factory)
H2 – $(25.00)^2$
H5 – $(50.00)^2$
H9 – $(95.00)^2$
H15 – $(150.00)^2$
H24 – $(240.00)^2$

CONTACT TYPE
F – Spring contact
Z – Cylindrical contact

ALTERNATE KEYWAY POLARIZATION
Standard – 180°
W – 120°

BAYONET COUPLING
B – Bayonet coupling

MODIFICATIONS
05 – Through holes in flange
03 – Adapter for heat shrink boots, metric size crimp contact
04 – Rear panel mounting, 4 threaded holes, metric size crimp contact
04-05 – Same as 04, however with 4 through holes
14 – Shielded version, metric size crimp contact
16 – Thread bolt termination, front panel mounting, O-ring for sealing between wall and receptacle (only for style CGE2EB)

Standard Data

MECHANICAL

Admissible ambient temperature	−55°C to +125°C
Class	JP 07 according to DIN 40050 Test pressure: 1 bar overpressure Test duration 12 hours
Vibration	200 m/s² for 10 to 2000 Hz
Mechanical durability	500 mating cycles

COUPLING TORQUE
(IN WIRED CONDITION ACC. TO VG 95319 Part 2, Test No. 5.8.2.)

Shell size	max. closing/opening torque		min. opening torque	
	Nm	ozm	Nm	ozm
16	5,5	19.78	0,5	1.80
18	8,0	28.78	0,6	2.16
22	11,0	39.57	0,8	2.88
28	17,0	61.15	0,9	3.24
32	19,0	68.34	1,0	3.60

3,597 = (Oz & Ozm)

CONTACT RETENTION
(ACC. TO VG 95319, PART 2. TEST NO. 5.4.)

Contact size	Test force	
	(N min.)	(Oz. min.)
H2	100	359.70
H5	120	431.64
H9	140	503.58
H15	160	575.52
H24	200	719.4

ELECTRICAL DATA

CONTACT RATING
(amps) at 125°C ambient temperature:

Shell size	16	18	22	28	32
Contact size	H2	H5	H9	H15	H24
Max. current rating (amps) at 125°C ambient temperature	250	300	500	650	1000
Max. short-time load approx. 0,5 - 1 sec. (amps.)	750	1000	2000	3000	5000

AIR AND CREEPAGE PATHS

Air path	.118 (3.00) min.
Creepage path	.197 (5.00) min.

CONTACT RESISTANCE

Contact size	H2	H5	H9	H15	H24
Contact resistance (mOhm max.)	0,6	0,3	0,15	0,1	0,07

INSULATOR RESISTANCE
min. 5000 MOhm

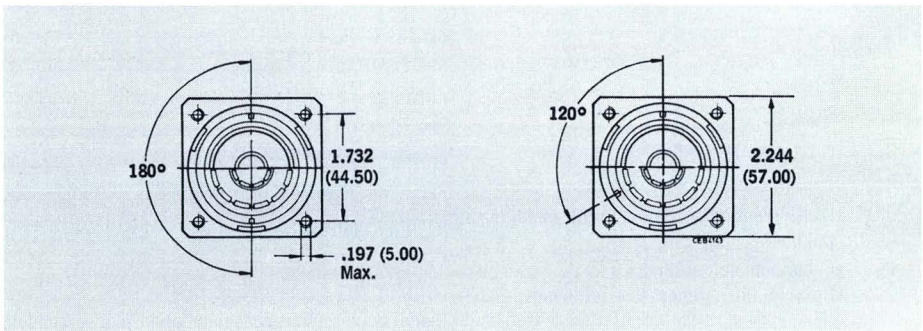
MATERIALS AND FINISHES

Shell	Aluminum alloy
Finish	Olive chromate over cadmium
Insulator	PTFE
Contact	Copper and copper alloy
Finish	Hard silver
O-Rings	Viton

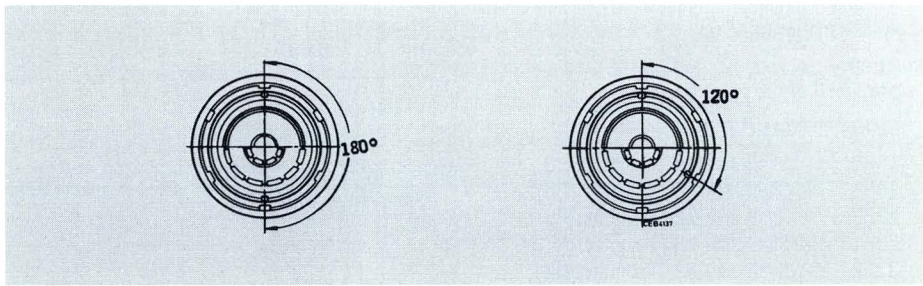
Alternate Keyway Positions

To avoid mismating of identical connectors, the keyway of the CGE connectors is available in two different positions:
Standard Keyway position = 180°
Keyway position W = 120°

Keyway position of receptacles and cable connecting plugs.



Keyway position of straight and 90° angle plugs.



Dimensions are shown in inches (millimeters).
Dimensions subject to change.

The United States Air Force specification, MIL-C-83723, USAF Series II, reflects a vastly upgraded, hi-rel version of the MIL-C-5015 type connectors. These connectors are suited for a variety of applications from commercial/industrial to the most stringent, high performance, high reliability military and space applications.

The M83723/CVA connector, manufactured by ITT Cannon is a threaded coupling, removable rear release crimp contact type which is fully qualified and QPL approved under MIL-C-83723 (USAF). They are fully intermateable/intermountable with all existing MIL-C-5015 connectors.

The removable rear release crimp contact concept utilized by this connector has become the standard design in the military/aerospace and commercial industries.

Features such as faster and easier wire termination, use of common termination tooling and minimizing field repair during maintenance are combined to provide a maximum savings in termination and training time.

CVA connectors covered under MIL-C-83723 (USAF) utilize fluid resistant elastomers to provide the greatest protection against degradation from a wide variety of fuels, oils, coolants, and cleaning agents. The hardware is finished in electroless nickel to provide for operating temperature from −55° to +200°C. All materials, finishes and processes used in the manufacture of Cannon's CVA connectors assure the best performance and reliability in the industry for the widest possible range of environmental conditions.

The M83723/CVA connector manufactured by ITT Cannon is available in 4 shell styles and 75 contact arrangements accommodating from 1 to 48 contacts (sizes 0, 4, 8, 12 and 16).

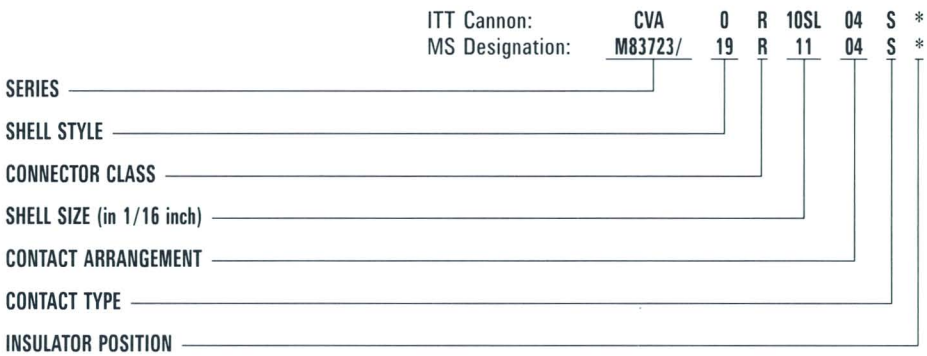
Backshells are available in three configurations for the CVA connector series: straight with strain relief, 90° with strain relief, and straight, short without strain relief. All are fully qualified and QPL-listed under MIL-C-83723 (USAF). **Backshells are not included with the connector and must be ordered separately.**

Shell polarization is effected by a single key and keyway with alternate insert positions available to prevent mismating.

For product features and standard data, see MS/CV345*, pages 38 and 39.

How to Order

Use the Military part number (M83723) when ordering connectors for military use. These M part number connectors have the required acceptance testing for each part lot per Mil Spec requirements. If a military type connector is needed but without the added acceptance testing for each part, yet having "in process" checking, specify the ITT Cannon equivalent part number on the drawing or purchase order.



SERIES
CVA – ITT Cannon designation
M83723 – Military designation

SHELL STYLE
See Shell Style Chart

CONNECTOR CLASS
R – Conductive Finish:
Operating Temp. −55°C to +200°C; fluid-resistant

SHELL SIZE*
8(8S), 10(10S), 11(10SL), 12, 13(12S), 15(14S), 16, 17(16S), 18, 20, 22, 24, 28, 32, 36 and 40

CONTACT ARRANGEMENTS
1-48 contacts (sizes 16, 12, 8, 4, and 0)

CONTACT TYPE
P for Pin, S for Socket

INSULATOR POSITION
N, W, X, Y, and Z

*Shell sizes shown in parenthesis – i.e., 8(8S) – are the MIL-C-5015 equivalent shell sizes.

Shell Style and Contact Type

Shell Style and Contact Type

Shell Style	Contact Type	MS Designation	ITT Cannon Designation
Cable Connecting Receptacle	Socket	M83723/17	CVA1R
	Pin	M83723/18	
Wall Mounting Receptacle	Socket	M83723/19	CVA0R
	Pin	M83723/20	
Box Mounting Receptacle	Socket	M83723/21	CVA2R
	Pin	M83723/22	
Straight Plug	Socket	M83723/23	CVA6R
	Pin	M83723/24	

For contact, sealing plug, and insertion tool data, see MS/CV345*, page 45.

Military Specification Cross Reference Chart

MIL-C-83723/MIL-C-5015

MIL-C-83723 Series II connectors are inactive for new design and are superseded by the military standards as listed below.

MIL-C-83723 "Slash" Sheet Numbers*		ITT Cannon Equivalent Prefix Designation for MIL-C-83723	Superseded by MIL-C-5015	Description
Sockets	Pin			
–19	–20	CVA0	MS3450	Wall Mounting Receptacle
–17	–18	CVA1	MS3451	Cable Mounting Receptacle
–21	–22	CVA2	MS3452	Box Mounting Receptacle
–23	–24	CVA6	MS3456	Straight Plug
–23**	–24**	CVA6**	MS3456	90° Angle Plug

*If parts per MIL-C-83723 are desired, order per applicable M83723 number only.
**Requires 90° Backshell (must be purchased separately).

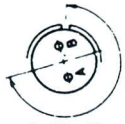
Alternate Insert Arrangement Positions

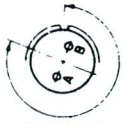
All views are looking into front of pin insert or rear of socket insert.

Normal Position

Position W

Position X


Position Y


Position Z

LEGEND:
All arrangements are available in pin and socket side unless otherwise noted:

Shell Size	M83723 Arrangement	MIL-C-5015 Equiv Arrangement	No. Contacts/ Wire Size	Alternate Positions Degrees W	X	Y	Z
8S	0801	8S-1	1 #16	—	—	—	—
10S	1002	10S-2	1 #16	—	—	—	—
10SL	1103	10SL-3	3 #16	—	—	—	—
	1104	10SL-4	2 #16	—	—	—	—
12	1205	12-5	1 #12	—	—	—	—
12S	1303	12S-3	2 #16	70	145	215	290
	1304	12S-4	1 #16	—	—	—	—
14S	1502	14S-2	4 #16	—	120	240	—
	1505	14S-5	5 #16	—	110	—	—
	1506	14S-6	6 #16	—	—	—	—
	1507	14S-7	3 #16	90	180	270	—
	1509	14S-9	2 #16	70	145	215	290
16	1609	16-9	2 #12 2 #16	35	110	250	325
	1610	16-10	3 #12	90	180	270	—
	1611	16-11	2 #12	35	110	250	325
16S	1701	16S-1	7 #16	80	—	—	280
	1708	16S-8	5 #16	—	170	265	—
18	1801	18-1	10 #16	70	145	215	290
	1804	18-4	4 #16	35	110	250	325
	1805	18-5	2 #12 1 #16	80	110	250	280
	1808	18-8	1 #12 7 #16	70	—	—	290
	1809	18-9	2 #12 5 #16	80	110	250	280
	1810	18-10	4 #12	—	120	240	—
	1811	18-11	5 #12	—	170	265	—
20	2004	20-4	4 #12	45	110	250	—
	2007	20-7	8 #16	80	110	250	280
	2014	20-14	2 #8 3 #12	80	110	250	280
	2015	20-15	7 #12	80	—	—	280
	2016	20-16	2 #12 7 #16	80	110	250	280
	2018	20-18	3 #12 6 #16	35	110	250	325
	2024	20-24	2 #8 2 #16	35	110	250	325
	2027	20-27	14 #16	35	110	250	325
	2029	20-29	17 #16	80	—	—	280
	2033	20-33	11 #16	—	—	—	—
22	2202	22-2	3 #8	70	145	215	290
	2205	22-5	2 #12 4 #16	35	110	250	325
	2206	22-6	2 #8 1 #16	80	110	250	280
	2214	22-14	19 #16	80	—	—	280
	2219	22-19	14 #16	80	110	250	280
	2222	22-22	4 #8	—	110	250	—
	2223	22-23	8 #12	35	—	250	—
24	2402	24-2	7 #12	80	—	—	280
	2405	24-5	16 #16	80	110	250	280
	2407	24-7	2 #12 14 #16	80	110	250	280
	2409	24-9	2 #4	35	110	250	325
	2410	24-10	7 #8	80	—	—	280
	2411	24-11	3 #8 6 #12	35	110	250	325
	2412	24-12	2 #4 3 #12	80	110	250	280
	2420	24-20	2 #12 9 #16	80	110	250	280
	2428	24-28	24 #16	80	110	250	280
28	2802	28-2	2 #12 12 #16	35	110	250	325
	2809	28-9	6 #12 6 #16	80	110	250	280
	2811	28-11	4 #12 18 #16	80	110	250	280
	2812	28-12	26 #16	90	180	270	—
	2815	28-15	35 #16	80	110	250	280
	2817	28-17	25 #16	80	110	250	280
	2820	28-20	4 #16 10 #12	80	110	250	280
	2821	28-21	37 #16	80	110	250	280
32	3205	32-5	2 #0	35	110	250	325
	3207	32-7	7 #12 28 #16	80	125	235	280
	3209	32-9	2 #4 12 #16	80	110	250	280
	3213	32-13	5 #12 18 #16	80	110	250	280
	3217	32-17	4 #4	45	110	250	—
36	3605	36-5	4 #0	—	120	240	—
	3606	36-6	2 #0 4 #4	35	110	250	325
	3607	36-7	7 #12 40 #16	80	110	250	280
	3608	36-8	1 #12 46 #16	80	110	250	280
	3609	36-9	1 #4 2 #8 14 #12 14 #16	80	125	235	280
	3610	36-10	48 #16	80	125	235	280
	3615	36-15	35 #16	60	125	245	305
40	4001	40-1	6 #12 24 #16	65	130	235	300
	4009	40-9	1 #8 22 #12 24 #16	65	125	225	310

Contact Arrangements

Face view, pin insert
Numbers shown in parentheses are the M83723 shell size/insert arrangement equivalent for the MIL-C-5015 insert arrangement shown in bold type, i.e. 10SL-4. (1104)

1 Contact

Shell Size	12-5 (1205)
No. of Contacts	1 #12
Service Rating	D

Shell Size	8S-1 (0801)
No. of Contacts	1 #16
Service Rating	A

Shell Size	10S-2 (1002)
No. of Contacts	1 #16
Service Rating	A

2 Contacts

for new MIL. use 24-12 equip. design

Shell Size	10SL-4 (1104)
No. of Contacts	2 #16
Service Rating	A

Shell Size	12S-3 (1303)
No. of Contacts	2 #16
Service Rating	A

Shell Size	14-9 (1509)
No. of Contacts	2 #16
Service Rating	A

Shell Size	16-11 (1611)
No. of Contacts	2 #12
Service Rating	A

Shell Size	24-9 (2409)
No. of Contacts	2 #4
Service Rating	A

Shell Size	32-5 (3205)
No. of Contacts	2 #0
Service Rating	D

3 Contacts

Shell Size	10SL-3 (1103)
No. of Contacts	3 #16
Service Rating	A

Shell Size	14S-7 (1507)
No. of Contacts	3 #16
Service Rating	A

Shell Size	16-10 (1610)
No. of Contacts	3 #12
Service Rating	A

Shell Size	22-2 (2202)
No. of Contacts	3 #8
Service Rating	D

Available Socket only

Shell Size	18-5 (1805)
No. of Contacts	2 #12 (B,C) 1 #16 (A)
Service Rating	D

Available Socket only

Shell Size	22-6 (2206)
No. of Contacts	1 #16 (B) 2 #8 (A,C)
Service Rating	D

4 Contacts

Shell Size	14S-2 (1502)
No. of Contacts	4 #16
Service Rating	Inst.

Shell Size	16-9 (1609)
No. of Contacts	2 #16 (B,D) 2 #12 (A,C)
Service Rating	A

Shell Size	18-4 (1804)
No. of Contacts	4 #16
Service Rating	D

Shell Size	18-10 (1810)
No. of Contacts	4 #12
Service Rating	A

Shell Size	20-4 (2004)
No. of Contacts	4 #12
Service Rating	D

Shell Size	22-22 (2222)
No. of Contacts	4 #8
Service Rating	A

Shell Size	20-24 (2024)
No. of Contacts	2 #16 (A,C) 2 #8 (B,D)
Service Rating	A

Shell Size	32-17 (3217)
No. of Contacts	4 #4
Service Rating	D

Shell Size	36-5 (3605)
No. of Contacts	4 #0
Service Rating	A

5 Contacts

Shell Size	14S-5 (1505)
No. of Contacts	5 #16
Service Rating	Inst.

Shell Size	16S-8 (1708)
No. of Contacts	5 #16
Service Rating	A

Shell Size	18-11 (1811)
No. of Contacts	5 #12
Service Rating	A

Shell Size	20-14 (2014)
No. of Contacts	3 #12 (C,D,E) 2 #8 (A,B)
Service Rating	A

Shell Size	24-12 (2412)
No. of Contacts	3 #12 (B,D,E) 2 #4 (A,C)
Service Rating	A

6 Contacts

Shell Size	14S-6 (1506)
No. of Contacts	6 #16
Service Rating	Inst.

Shell Size	22-5 (2205)
No. of Contacts	4 #16 (A,C,D,F) 2 #12 (B,E)
Service Rating	D

Shell Size	36-6 (3606)
No. of Contacts	4 #4 (B,C,E,F) 2 #0 (A,D)
Service Rating	A

7 Contacts

Shell Size	16S-1 (1701)
No. of Contacts	7 #16
Service Rating	A

Shell Size	18-9 (1809)
No. of Contacts	5 #16 (B,C,E,F,G) 2 #12 (A,D)
Service Rating	Inst.

Shell Size	20-15 (2015)
No. of Contacts	7 #12
Service Rating	A

Shell Size	24-10 (2410)
No. of Contacts	7 #8
Service Rating	A

Shell Size	24-2 (2402)
No. of Contacts	7 #12
Service Rating	D

8 Contacts

Shell Size	18-8 (1808)
No. of Contacts	7 #16 (A-G) 1 #12 (H)
Service Rating	A

Shell Size	20-7 (2007)
No. of Contacts	8 #16
Service Rating	A (C-F) D (A,B,G,H)

Available Pin only

Shell Size	22-23 (2223)
No. of Contacts	8 #12
Service Rating	D (H) A (all others)

9 Contacts

Shell Size	20-16 (2016)
No. of Contacts	7 #16 (A-G) 2 #12 (H,I)
Service Rating	A

Shell Size	20-18 (2018)
No. of Contacts	6 #16 (A,C-E,G,H) 3 #12 (B,F,I)
Service Rating	A

Shell Size	24-11 (2411)
No. of Contacts	6 #12 (A-C,G-I) 3 #8 (D-F)
Service Rating	A

Contact Arrangements (Continued)

Face view, pin insert

	10 Contacts	11 Contacts		12 Contacts	14 Contacts	
						Available Socket only
Shell Size No. of Contacts	18-1 (1801) 10 #16	20-33 (2033) 11 #16	24-20 (2420) 9 #16 (A-D,G-L) 2 #12 (E,F)	28-9 (2809) 6 #16 (A,H-M) 6 #12 (B-G)	20-27 (2027) 14 #16	22-19 (2219) 14 #16
Service Rating	A (B,C,F,G) Inst. (all others)	A	D	D	A	A

	14 Contacts			15 Contacts	16 Contacts		17 Contacts
					Available Socket only		
Shell Size No. of Contacts	28-2 (2802) 12 #16 (A-L,N) 2 #12 (M,P)	28-20 (2820) 4 #16 (K-N) 10 #12 (A-J,P)	32-9 (3209) 12 #16 (C-N) 2 #4 (A,B)	28-17 (2817) 15 #16	24-5 (2405) 16 #16	24-7 (2407) 14 #16 (A-M,O) 2 #12 (P,N)	20-29 (2029) 17 #16
Service Rating	D	A	D	A (A-L), B(R) D (M-P)	A	A	A

	19 Contacts	22 Contacts	23 Contacts	24 Contacts	26 Contacts
Shell Size No. of Contacts	22-14 (2214) 19 \$16	28-11 (2811) 18 #16 (A-I,N-X) 4 #12 (J-M)	32-13 (3213) 18 #16 (A-D,K-Z) 5 #12 (E-J)	24-28 (2428) 24 #16	28-12 (2812) 26 #16
Service Rating	A	A	D	Inst.	A

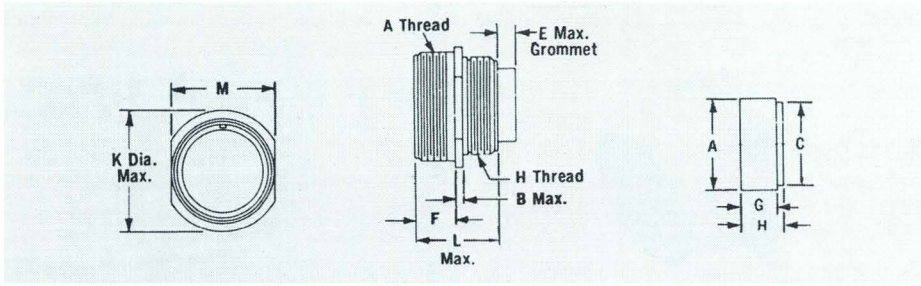
	30 Contacts	31 Contacts Available Pin only	35 Contacts			37 Contacts
				Available Socket only		
Shell Size No. of Contacts	40-1 (4001) 24 #16 (A-L,T-e) 6 #12 (M-S)	36-9 (3609) 14 #16 (A-G,Z-f) 14 #12 (H-N,S-Y) 2 #8 (O,R), 1 #4 (P)	32-7 (3207) 28 #16 (A-N,W-Z,a-k) 7 #12 (O-V)	36-15 (3615) 35 #16	28-15 (2815) 35 #16	28-21 (2821) 37 #16
Service Rating	D	A	Inst. (A,B,h,j) A (all others)	D (M) A (all others)	A For new MIL equip. design, use 28-21	A

	47 Contacts	Available Socket only		48 Contacts
Shell Size No. of Contacts	36-7 (3607) 40 #16 (A-Z,a-s) 7 #12 (t-z)	36-8 (3608) 46 #16 (A-X,Z-z) 1 #12 (Y)	40-9 (4009) 24 #16 (A,B,D,E,G,I,J,L,M,P, Q,T,b,e,f,i,j,l,m,o,p,q,t,u) 22 #12 (C,F,H,K,N,O,R,S,U-W,Y,Z, a,c,d,g,h,k,n,r,s) 1 #8 (X)	36-10 (3610) 48 #16
Service Rating	A	A	A	A

Cable Connecting Receptacle

M83723
- 17 Socket
- 18 Pin

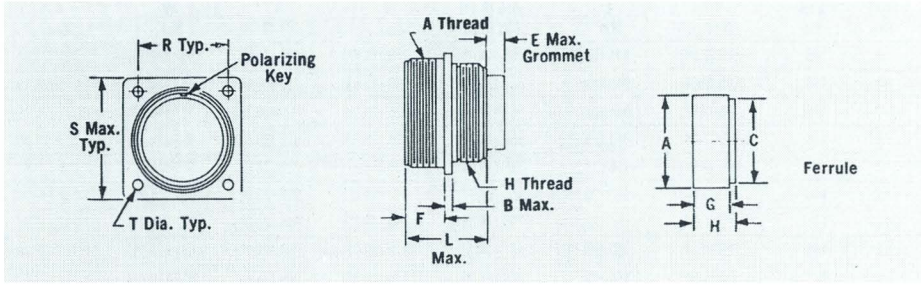
CVA1



Wall Mounting Receptacle

M83723
- 19 Socket
- 20 Pin

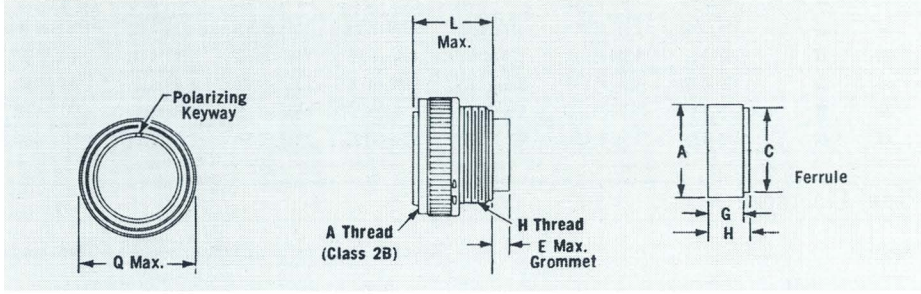
CVA0



Straight Plug

M83723
- 23 Socket
- 24 Pin

CVA6



When contact arr. size 18 thru 40 contain one or more size 0 contacts E dim. will increase .150 (3,81mm).

M83723 Shell Size	M5015 Shell Size	B Max.	E Max.	F +.016 (0.41) −.000	K Max.	L Max.	M ±.004 (0.10)	Q Max.	R ±.005 (0.13)	S Max.	T +.015 (0.38) −.000 (0.00)	A Thread Class 2A	H Thread Class 2A	Ferrule Overall Dimensions A Max.	C Max.	G Max.	H Max.
8	8S	.110 (2.79)	.378 (9.60)	.562 (14.27)	.729 (18.52)	1.135 (28.83)	.500 (12.70)	.760 (19.30)	.594 (15.09)	.906 (23.01)	.115 (2.92)	1/2-28UNEF	7/16-28UNEF	.280 (7.11)	.245 (6.22)	.342 (8.69)	.427 (10.85)
10	10S	.110 (2.79)	.378 (9.60)	.562 (14.27)	.854 (21.69)	1.135 (28.83)	.625 (15.87)	.880 (22.35)	.719 (18.26)	1.031 (26.19)	.115 (2.92)	5/8-24UNEF	1/2-28UNEF	.340 (8.64)	.298 (7.57)	.335 (8.51)	.420 (10.67)
11	10SL	.110 (2.79)	.378 (9.60)	.562 (14.27)	.849 (21.56)	1.135 (28.83)	.625 (15.87)	.880 (22.35)	.719 (18.26)	1.031 (26.19)	.115 (2.92)	5/8-24UNEF	9/16-24UNEF	.409 (10.39)	.378 (9.60)	.335 (8.51)	.430 (10.92)
13	12S	.130 (3.30)	.378 (9.60)	.562 (14.27)	.974 (24.74)	1.135 (28.83)	.750 (19.05)	1.010 (25.65)	.812 (20.62)	1.125 (28.58)	.115 (2.92)	3/4-20UNEF	5/8-24UNEF	.460 (11.68)	.403 (10.24)	.340 (8.64)	.419 (10.64)
12	12	.130 (3.30)	.317 (8.05)	.750 (19.05)	.974 (24.74)	1.495 (37.97)	.750 (19.05)	1.010 (25.65)	.812 (20.62)	1.125 (28.58)	.115 (2.92)	3/4-20UNEF	5/8-24UNEF	.460 (11.68)	.403 (10.24)	.340 (8.64)	.419 (10.64)
15	14S	.130 (3.30)	.378 (9.60)	.562 (14.27)	1.099 (27.91)	1.135 (28.83)	.875 (22.22)	1.130 (28.70)	.906 (23.01)	1.218 (30.94)	.115 (2.92)	7/8-20UNEF	3/4-20UNEF	.563 (14.30)	.485 (12.32)	.339 (8.61)	.414 (10.52)
14	14	.130 (3.30)	.317 (8.05)	.750 (19.05)	1.099 (27.91)	1.495 (37.97)	.875 (22.22)	1.130 (28.70)	.906 (23.01)	1.218 (30.94)	.115 (2.92)	7/8-20UNEF	3/4-20UNEF	.563 (14.30)	.485 (12.32)	.339 (8.61)	.414 (10.52)
17	16S	.130 (3.30)	.378 (9.60)	.562 (14.27)	1.224 (31.09)	1.135 (28.83)	1.000 (25.40)	1.250 (31.75)	.969 (24.61)	1.312 (33.32)	.115 (2.92)	1-20UNEF	7/8-20UNEF	.689 (17.50)	.605 (15.37)	.339 (8.61)	.424 (10.77)
16	16	.130 (3.30)	.317 (8.05)	.750 (19.05)	1.224 (31.09)	1.495 (37.97)	1.000 (25.40)	1.250 (31.75)	.969 (24.61)	1.312 (33.32)	.115 (2.92)	1-20UNEF	7/8-20UNEF	.689 (17.50)	.605 (15.37)	.339 (8.61)	.424 (10.77)
18	18	.160 (4.06)	.367 (9.32)	.750 (19.05)	1.349 (34.26)	1.495 (37.97)	1.125 (28.57)	1.340 (34.04)	1.062 (26.97)	1.406 (35.71)	.115 (2.92)	1-1/8-18UNEF	1-20UNEF	.806 (20.47)	.725 (18.42)	.449 (11.41)	.574 (14.58)
20	20	.160 (4.06)	.367 (9.32)	.750 (19.05)	1.474 (37.44)	1.495 (37.97)	1.250 (31.75)	1.469 (37.31)	1.156 (29.36)	1.531 (38.89)	.115 (2.92)	1-1/4-18UNEF	1-1/8-18UNEF	.941 (23.90)	.863 (21.92)	.458 (11.63)	.573 (14.55)
22	22	.160 (4.06)	.367 (9.32)	.750 (19.05)	1.599 (40.61)	1.495 (37.97)	1.375 (34.92)	1.590 (40.39)	1.250 (31.75)	1.656 (42.06)	.115 (2.92)	1-3/8-18UNEF	1-1/4-18UNEF	1.059 (26.90)	.973 (24.71)	.456 (11.58)	.551 (13.99)
24	24	.160 (4.06)	.305 (7.75)	.812 (20.62)	1.715 (43.56)	1.556 (39.52)	1.500 (38.10)	1.719 (43.66)	1.375 (34.92)	1.781 (45.24)	.142 (3.61)	1-1/2-18UNEF	1-3/8-18UNEF	1.170 (29.72)	1.085 (27.56)	.457 (11.61)	.547 (13.89)
28	28	.160 (4.06)	.305 (7.75)	.812 (20.62)	1.974 (50.14)	1.556 (39.52)	1.750 (44.45)	1.969 (50.01)	1.562 (39.67)	2.031 (51.59)	.142 (3.61)	1-3/4-18UNS	1-5/8-18UNEF	1.401 (35.58)	1.245 (31.62)	.458 (11.63)	.573 (14.55)
32	32	.160 (4.06)	.244 (6.20)	.875 (22.22)	2.224 (56.49)	1.620 (41.15)	2.000 (50.80)	2.219 (56.36)	1.750 (44.45)	2.281 (57.94)	.168 (4.27)	2-18UNS	1-7/8-16UN	1.652 (41.96)	1.515 (38.48)	.459 (11.66)	.544 (13.82)
36	36	.160 (4.06)	.244 (6.20)	.875 (22.22)	2.474 (62.84)	1.620 (41.15)	2.250 (57.15)	2.469 (62.71)	1.938 (49.22)	2.531 (64.29)	.168 (4.27)	2-1/4-16UN	2-1/8-16UN	1.860 (47.24)	1.751 (44.48)	.463 (11.76)	.573 (14.55)
40	40	.160 (4.06)	.244 (6.20)	.875 (22.22)	2.724 (69.19)	1.620 (41.15)	2.505 (63.62)	2.728 (69.29)	2.188 (55.57)	2.781 (70.64)	.168 (4.27)	2-1/2-16UN	2-3/8-16UN	2.105 (53.47)	—	—	.823 (20.90)

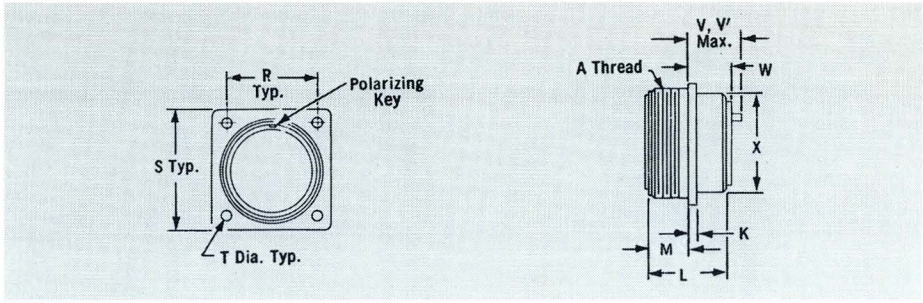
CONNECTOR WITHOUT BACKSHELL ASSEMBLY

NOTE: Backshells and Bushings are ordered separately see page 56 for part numbers. See page 56 for minimum I.D. bushing dimensions and page 57 for backshell dimensions.

Box Mounting Receptacle

M83723
– 21 Socket
– 22 Pin

CVA2

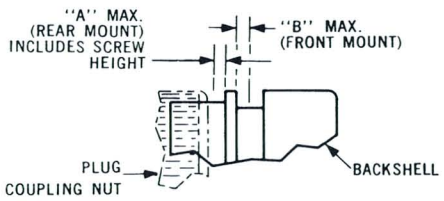


NOTE: This connector does not accommodate backshell assembly.

M83723 Shell Size	M5015 Shell Size	K Max.	L Max.	M +.016 (0.41) −.000 (0.00)	X Max.	R ±.005 (0.13)	W Max.	S Max.	Max. Contact Ext. V Size 0	Max. Contact Ext. V' Sizes 8, 4	T +.015 (0.38) −.000 (0.00)	A Thread Class 2A
8	8S	.100 (2.54)	.943 (23.95)	.562 (14.27)	.449 (11.40)	.594 (15.09)	.557 (14.15)	.906 (23.01)	— —	— —	.115 (2.92)	1/2-28UNEF
10	10S	.100 (2.54)	.943 (23.95)	.562 (14.27)	.509 (12.93)	.719 (18.26)	.557 (14.15)	1.031 (26.19)	— —	— —	.115 (2.92)	5/8-24UNEF
11	10SL	.115 (2.92)	1.065 (27.05)	.562 (14.27)	.625 (15.87)	.719 (18.26)	.521 (13.23)	1.031 (26.19)	— —	— —	.115 (2.92)	5/8-24UNEF
13	12S	.100 (2.54)	.960 (24.38)	.562 (14.27)	.625 (15.87)	.812 (20.62)	.557 (14.15)	1.125 (28.58)	— —	— —	.115 (2.92)	3/4-20UNEF
12	12	.100 (2.54)	1.150 (29.21)	.750 (19.05)	.625 (15.87)	.812 (20.62)	.625 (15.87)	1.125 (28.58)	— —	— —	.115 (2.92)	3/4-20UNEF
15	14S	.100 (2.54)	.960 (24.38)	.562 (14.27)	.750 (19.05)	.906 (23.01)	.557 (14.15)	1.218 (30.94)	— —	— —	.115 (2.92)	7/8-20UNEF
14	14	.100 (2.54)	1.150 (29.21)	.750 (19.05)	.750 (19.05)	.906 (23.01)	.625 (15.87)	1.218 (30.94)	— —	— —	.115 (2.92)	7/8-20UNEF
17	16S	.100 (2.54)	.960 (24.38)	.562 (14.27)	.875 (22.22)	.969 (24.61)	.557 (14.15)	1.312 (33.32)	— —	— —	.115 [2.92]	1-20UNEF
16	16	.100 (2.54)	1.150 (29.21)	.750 (19.05)	.875 (22.22)	.969 (24.61)	.625 (15.87)	1.312 (33.32)	— —	.790 (20.07)	.115 (2.92)	1-20UNEF
18	18	.140 (3.56)	1.130 (28.70)	.750 (19.05)	.984 (24.99)	1.062 (26.97)	.640 (16.26)	1.406 (34.71)	.915 (23.24)	.790 (20.07)	.115 (2.92)	1-1/8-18UNEF
20	20	.140 (3.56)	1.161 (29.49)	.750 (19.05)	1.171 (29.74)	1.156 (29.36)	.640 (16.26)	1.531 (38.89)	.915 (23.24)	.790 (20.07)	.115 (2.92)	1-1/4-18UNEF
22	22	.140 (3.56)	1.161 (29.49)	.750 (19.05)	1.265 (32.13)	1.250 (31.75)	.640 (16.26)	1.656 (42.06)	.915 (23.24)	.790 (20.07)	.115 (2.92)	1-3/8-18UNEF
24	24	.140 (3.56)	1.317 (33.45)	.812 (20.62)	1.390 (35.31)	1.375 (34.92)	.578 (14.68)	1.781 (45.24)	.853 (21.67)	.728 (18.49)	.142 (3.61)	1-1/2-18UNEF
28	28	.140 (3.56)	1.317 (33.45)	.812 (20.62)	1.640 (41.66)	1.562 (39.67)	.578 (14.68)	2.031 (51.59)	.853 (21.67)	.728 (18.49)	.142 (3.61)	1-3/4-18UNS
32	32	.170 (4.32)	1.317 (33.45)	.875 (22.22)	1.890 (48.01)	1.750 (44.45)	.515 (13.08)	2.281 (57.94)	.790 (20.07)	.655 (16.64)	.168 (4.27)	2-18UNS
36	36	.170 (4.32)	1.317 (33.45)	.875 (22.22)	2.140 (54.36)	1.938 (49.22)	.515 (13.08)	2.531 (64.29)	.790 (20.07)	.655 (16.64)	.168 (4.27)	2-1/4-16UN
40	40	.170 (4.32)	1.348 (34.24)	.875 (22.22)	2.359 (59.92)	2.188 (55.57)	.515 (13.08)	2.781 (70.64)	.790 (20.07)	.655 (16.64)	.168 (4.27)	2-1/2-16UN

Panel Clearance

Receptacle



Shown here are the maximum dimensions allowable to ensure complete connector operation.

Panel Thickness	SHELL SIZE																
	8S	10S	10SL	12S	14S	16	12	14	16	18	20	22	24	28	32	36	40
A (Max.)	.187 (4,75)						.125 (3,18)						.187 (4,75)		.250 (6,35)		
B (Max.)	.125 (3,18)*																

*Depending on outer diameter of backshell.

Bushing Dimensions and Part Numbers

	Single Bushing						Two Bushings			
Shell Size	**8S, 10S**	**10SL, 12S, 12**	**14S, 14**	**16S, 16**	**18**	**20, 22**	**24, 28**	**32**	**36**	**40**
Bushing I.D. ±.015 (0,38mm)	.130 (3,30)	.220 (5,59)	.312 (7,92)	.437 (11,10)	.562 (14,24)	.625 (15,88)	.625 (15,88)	.750 (19,05)	.937 (23,80)	1.250 (31,75)
Part Number	012-0215-007	012-0216-016	012-0217-119	012-0218-017	012-0219-009	012-0220-012	012-0220-012 & 012-0221-014	012-0221-014 & 012-0222-010	012-0222-010 & 012-0223-008	012-0223-008 & 012-0224-007

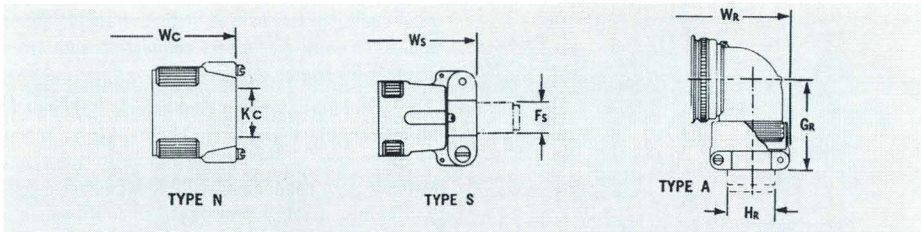
Wire Size

Contact Size	Wire Size (MIL-W-16878)	Insul. O.D. Minimum	Limit (inch.) Maximum	Contact Size	Wire Size (MIL-W-16878)	Insul. O.D. Minimum	Limit (inch.) Maximum
16	16 thru 20	.068 (1.73)	.103 (2.62)	4	4 thru 6	.288 (7.32)	.370 (9.40)
12	12 thru 14	.097 (2.46)	.158 (4.01)	0	0 thru 2	.415 (10.54)	.550 (13.97)
8	8 thru 10	.164 (4.17)	.255 (6.48)				

Backshell Assemblies

Receptacle With Backshell Assembly

CVA1
CVA0
CVA2



M83723 Shell Size	Type N (Straight) †K_C Max.	Type N (Straight) W_C Max.	Type S (Cable Clamp) †F_S Max.	Type S (Cable Clamp) W_S Max.	Type A (90° Clamp) G_R Max.	Type A (90° Clamp) †H_R Max.	Type A (90° Clamp) W_R Max.
8S	.245 (6.22)	1.535 (38.99)	.235 (5.97)	2.065 (52.45)	1.220 (30.99)	.235 (5.97)	2.177 (55.29)
10S	.300 (7.62)	1.550 (39.37)	.235 (5.97)	2.065 (52.45)	1.250 (31.75)	.235 (5.97)	2.177 (55.29)
10SL	.380 (9.65)	1.540 (39.12)	.297 (7.54)	2.065 (52.45)	1.280 (32.51)	.297 (7.54)	2.272 (57.71)
12S	.403 (10.24)	1.562 (39.67)	.297 (7.54)	2.065 (52.45)	1.280 (32.51)	.297 (7.54)	2.272 (57.71)
12	.403 (10.24)	1.921 (48.79)	.297 (7.54)	2.425 (61.60)	1.280 (32.51)	.297 (7.54)	2.632 (66.85)
14S	.485 (12.32)	1.538 (39.06)	.422 (10.72)	2.155 (54.74)	1.405 (35.69)	.422 (10.72)	2.427 (61.64)
14	.485 (12.32)	1.897 (48.18)	.422 (10.72)	2.505 (63.63)	1.405 (35.69)	.422 (10.72)	2.787 (70.79)
16S	.604 (15.34)	1.530 (38.86)	.547 (13.89)	2.205 (56.01)	1.529 (38.84)	.547 (13.89)	2.505 (63.63)
16	.604 (15.34)	1.907 (48.44)	.547 (13.89)	2.560 (65.02)	1.529 (38.84)	.547 (13.89)	2.865 (72.77)
18	.725 (18.42)	2.017 (51.23)	.610 (15.49)	2.680 (68.07)	1.593 (40.46)	.610 (15.49)	2.944 (74.78)
20	.865 (21.97)	2.036 (51.71)	.735 (18.67)	2.680 (68.07)	1.655 (42.04)	.735 (18.67)	3.170 (50.52)
22	.973 (24.71)	2.003 (50.88)	.735 (18.67)	2.680 (68.07)	1.718 (43.64)	.735 (18.67)	3.170 (50.52)
24	1.085 (27.56)	2.016 (51.21)	.922 (23.42)	2.975 (75.56)	1.894 (48.11)	.922 (23.42)	3.505 (89.03)
28	1.245 (31.62)	2.016 (51.21)	.922 (23.42)	2.975 (75.56)	1.973 (50.11)	.922 (23.42)	3.505 (89.03)
32	1.515 (38.48)	2.024 (51.41)	1.235 (31.37)	2.975 (75.56)	2.187 (55.55)	1.235 (31.37)	3.389 (86.08)
36	1.750 (44.45)	2.023 (51.38)	1.360 (34.54)	2.975 (75.56)	2.405 (61.09)	1.360 (34.54)	4.139 (105.13)
40	1.865 (47.37)	2.449 (62.20)	1.630 (41.40)	3.950 (100.33)	5.100 (129.54)	1.630 (41.40)	7.151 (181.64)

† Maximum entry into end bell excluding bushings. See page 56 for minimum I.D. bushing dimensions.

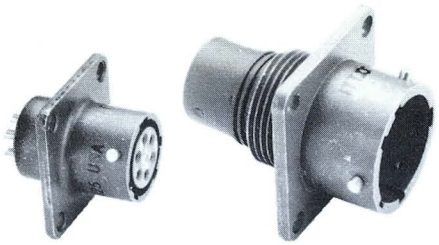
Backshell Cross Reference

BACKSHELLS (MIL-C-83723 cross reference to ITT Cannon part numbers with and without bushings and ground screws)

Shell Size	Military Part No.	ITT Cannon Part Number: Type "A" (90°) With Bushing	Type "A" (90°) Without Bushing	Type "N" (Str. No Clamp) With Ground Scr.	Type "S" (Str. w/Clamp) With Bushing	Type "S" (Str. w/Clamp) W/O Ground Screw/Bushing
8S	M83723/35*-08**	—	—	057-3143-003	057-0438-011	057-0438-012
10S	M83723/35*-10**	—	—	—	057-0439-012	057-0439-014
10SL	M83723/35*-11**	057-3366-000	057-3366-002	057-3086-005	057-0440-033	057-0440-037
12	M83723/35*-12**	—	—	—	—	—
12S	M83723/35*-13**	057-3367-000	057-3367-001	057-0612-002	057-0441-016	057-0441-025
14	M83723/35*-14**	—	—	—	—	—
14S	M83723/35*-15**	057-3355-000	057-3355-001	057-0618-005	057-0443-031	057-0443-035
16	M83723/35*-16**	057-3357-000	057-3357-001	057-3255-002	057-0446-015	057-0446-017
16S	M83723/35*-17**	057-3356-000	057-3356-001	057-3085-002	057-0445-021	057-0445-023
18S	M83723/35*-18**	057-3358-000	057-3358-001	057-0553-007	057-0447-025	057-0447-028
20	M83723/35*-20**	057-3359-000	057-3359-001	057-0500-007	057-0448-030	057-0448-031
22	M83723/35*-22**	057-3360-000	057-3360-001	057-0536-007	057-0449-024	057-0449-026
24	M83723/35*-24**	057-3361-000	057-3361-001	057-3068-008	057-0450-026	057-0450-028
28	M83723/35*-28**	057-3362-000	057-3362-001	057-0613-008	057-0451-026	057-0451-027
32	M83723/35*-32**	057-3363-000	057-3363-001	057-0537-005	057-0452-022	057-0452-023
36	M83723/35*-36**	057-3364-000	057-3364-001	057-3126-003	057-0453-023	057-0453-024
40	M83723/35*-40**	—	—	057-3161-002	057-3368-000	057-3368-004

* = Add Type, "A", "N", or "S"
** = Add Class; R = Conductive Finish (Electroless Nickel)
A = Non-Conductive Finish (Hard Anodize). Consult Factory on availability and part numbers.

NOTE: Unless specifically requested, all backshells ordered by the M83723 part number will be supplied without bushings and ground screws.



Solder Crimp

- General purpose
- Closed-entry socket contacts
- Solder termination

KPT connectors are a series of general-purpose, environment-resistant, miniature circular connectors, qualified for use in industrial applications calling for quick-disconnect connectors with fixed contacts for solder termination.

These miniature circular connectors are grouped into two series ranging from general purpose solder pot connectors . . . to high performance, crimp connectors . . . to connectors with high contact density. This broad range provides the most complete family of 26482 connectors available today. The versatility of these connectors is proven by the fulfillment of requirements ranging from general purpose to space environmental.

In addition to the two basic series, connectors for special applications are also available. They include RFI filtering versions (with low pass internal filter pin contacts), hermetic connectors for high pressure watertight requirements, and twist-on pull-off couplers for MIL-C-26482 plugs.
This series is intermateable and intermountable with all MIL-C-26482 connectors, whether solder or crimp type and is available with many materials, finishes and configurations.

How to Order — KPT — Solder Contact Connectors

MS	3110	E	22 - 36	P	Y		
KPT	00	E	22 - 36	P	Y	**	

SERIES PREFIX
SHELL STYLE
CLASS
SHELL SIZE
CONTACT ARRANGEMENT
CONTACT TYPE
ALTERNATE INSERT POSITION
MODIFICATION CODE

SERIES PREFIX
KPT – ITT Cannon prefix
MS – MIL-C-26482 prefix

SHELL STYLE
Cannon Designation
00 – wall mounting receptacle
01 – cable connecting plug
02 – box mounting receptacle (Class E only)
*03 – wall mounting receptacle without grommet, ferrule and endbell
*04 – cable connecting plug without grommet, ferrule and endbell
*05 – straight plug without grommet, ferrule, and endbell
06 – straight plug
07 – jam nut receptacle (available in hermetic version also)
08 – 90° angle plug
B – thru-bulkhead receptacle (Class E only)
*Consult factory for details

SHELL STYLE (cont'd)
MS Designation
3110 – wall mounting receptacle
3111 – cable connecting plug
3112 – box mounting receptacle (Class E only)
3114 – jam nut receptacle
3116 – straight plug
3119 – thru-bulkhead receptacle (Class E only)

CLASS
A – general duty (not MS approved)
B – general duty with strain relief without grommet & ferrules (may be used for potting when strain relief is desired) (not MS approved)
E – grommet seal except on 02 and 3112 (MS specification)
F – grommet seal with strain relief (MS specification)
J – water tight gland seal with strain relief for jacketed cable (MS specification)
P – potted (MS specification)

SHELL SIZE
8, 10, 12, 14, 16, 18, 20, 22, and 24

CONTACT ARRANGEMENT
See contact arrangements page 61.

CONTACT STYLE
P – pin; S – socket

ALTERNATE INSERT POSITION
W, X, Y and Z. (Omit for normal.)

MODIFICATION CODE
Omit first (0) of shell style indication when using modification code.
07 – clear chromate over cadmium
16 – twist-pull lanyard release coupler (applicable to plug only).
23 – grounding springs fingers (applicable to plug only)

How to Order — KPTB Thru-Bulkhead Receptacle Connectors

- General Purpose
- Double ended pin and socket contacts
- Contains KPT socket insert
- Nonremovable contacts

KPTB connectors are a series of general purpose, miniature circular connectors, qualified for use in military applications. They are also widely used in industrial applications. The KPTB in a thru-bulkhead version with double faced pin and socket insert construction allowing mating from both ends. They contain KPT socket inserts with feed-thru (pin/socket) non-removable contacts.

The thru-bulkhead receptacle is provided for applications requiring the disconnection of a power source from either side of a panel. A typical connector to be used if air leakage requirements are critical.

KPTB	22	- 55	PS	Y	

SERIES PREFIX
SHELL SIZE
CONTACT ARRANGEMENT
CONTACT STYLE (pin & socket)
ALTERNATE INSERT POSITION

MS3119	E	22	- 55	Y	

MIL-C-26482 PREFIX
CLASS
SHELL SIZE
CONTACT ARRANGEMENT
ALTERNATE INSERT POSITION

How to Order — KPSE Crimp Contact Connectors

MS	3120	E	18 – 32	P	X		
KPSE	00	E	18 – 32	P	X	**	

SERIES PREFIX
SHELL STYLE
CLASS
SHELL SIZE
CONTACT ARRANGEMENT
CONTACT TYPE
ALTERNATE INSERT POSITION
MODIFICATION CODE

SERIES PREFIX
KPSE – ITT Cannon prefix
MS – MIL-C-26482 prefix

SHELL STYLE
ITT Cannon Number:
00 – wall mounting receptacle
01 – cable connecting plug
02 – box mounting receptacle (without wire seals)
*03 – wall mounting receptacle without ferrule and endbell
*04 – cable connector plug without ferrule and endbell
*05 – straight plug without ferrule and endbell
06 – straight plug
07 – jam nut receptacle
08 – 90° angle plug
*Consult factory for details

MS Designation
3120 – wall mounting receptacle
3121 – cable connecting plug
3122 – box mounting receptacle
3124 – jam nut receptacle
3126 – straight plug

CLASS
A – general duty (not MS approved)
B – general duty with strain relief without grommet & ferrule (not MS approved)
E – grommet seal (MS specification)
F – grommet seal with strain relief (MS specification)
J – gland seal with strain relief for jacketed cable (not MS approved)
P – potted (MS specification)

SHELL SIZE
10, 12, 14, 16, 18, 20, 22, and 24

CONTACT ARRANGEMENT
See contact arrangements page 61.

CONTACT STYLE
P – pin
S – socket

ALTERNATE INSERT POSITION
W, X, Y and Z. (Omit for normal.)

MODIFICATION CODE
Omit first (0) of shell style indication when using modification code.
FO– less contacts, not marked on connectors
07– clear chromate over cadmium
16– twist-pull lanyard release coupler (applicable to plug only)
23– grounding springs fingers (applicable to plug only)

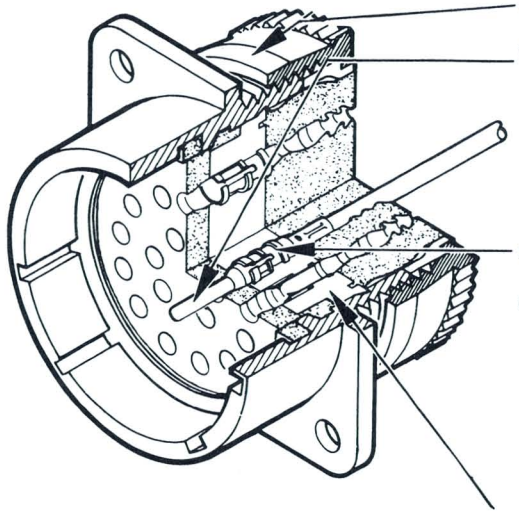
KPSE High Performance Crimp Contact Connectors

- Environment-resistant
- Voidless integrally molded insulator
- Front-release, crimp snap-in contacts
- Closed entry socket contacts
- 4 moisture seals for complete sealing
- Contact clip protected in hard dielectric
- Positive insert-to-shell mechanical retention

KPSE environment-resistant, miniature circular, quick disconnect connectors, qualified to MIL-C-26482, are designed for the exacting requirements of today's electronic industry. The KPSE features an insulator which is mechanically retained in the shell by a positive, hard plastic-to-metal lock retention augmented by a reliable adhesive bond. Complete moisture sealing is achieved by four seals; shell, peripheral, interfacial and wire seals.

Crimp snap-in contacts are retained in clips that are completely encased in a tough hard dielectric wafer, thus protecting the clip tines from damage. Closed-entry socket contacts facilitate positive mating.

The KPSE series is intermateable, intermountable and interchangeable with all MIL-C-26482 connectors, whether crimp or solder type, and is available with many materials, finishes and configurations.



STANDARD MIL-C-26482 HARDWARE mates with any connector designed to MIL-C-26482.

CRIMP, SNAP-IN CONTACTS are designed to MIL-C-39029 and can be crimped with the standard M22520/1 crimp tool.

CLOSED-ENTRY SOCKET CONTACTS eliminate damage from abuse by test probes and help to correct any misaligned pins during engagement.

CONTACT INSERTION is accomplished from the rear of the connector. When the contact is fully inserted, the clip tines snap securely behind the contact shoulder.

CONTACT EXTRACTION is accomplished with a front-inserted extraction tool. Pressing the tool plunger pushes the contact out thru the rear of the connector.

CONTACT RETAINING CLIP is completely encased in a tough plastic wafer to protect the clip from damage.

COMPLETE MOISTURE SEALING is achieved by combining four seals: shell, peripheral, interfacial and wire seals.

SHELL SEAL is effected when the plug shell pushes against the sealing ring in the receptacle when the connectors are mated.

PERIPHERAL SEAL around the edge of the pin insulator is designed so that mating the connector puts tension on the seal and greatly reduces compression set.

INTERFACIAL SEAL is achieved by the insulator faces meeting when the plug and receptacle are mated.

WIRE SEAL is accomplished by a multiple ripple design, exceeding the wire sealing requirements of MIL-C-26482.

POSITIVE INSERT-TO-SHELL MECHANICAL RETENTION with hard plastic wafer firmly locked into a groove in the shell, in addition to a strong adhesive bond between the insert and shell.

Standard Data

ELECTRICAL DATA

Contact Termination		solder (KPT)	crimp snap-in (KPSE)
Number of Contacts		KPT 2 thru 61	KPSE 3 thru 61
Wire Size, AWG		KPT 12 thru 24	KPSE 16 thru 24
Wire Range Accommodations		Insulation O.D. Limits	
Contact Size	AWG Wire Size	Min. KPT	Min. KPSE / Max. KPT/KPSE
20	24, 22 and 20	.060 (1.52)	.047 (1.19) / .083 (2.11)
16	20, 18 and 16	.066 (1.68)	.066 (1.68) / .109 (2.77)
12	14 and 12	.097 (2.46)	.142 (3.61)

Contact Rating	Contact Size	Rated Amps	Test Current	Millivolt Drop
	20	7.5	7.5	less than 55
	16	22.0	13.0	less than 50

Service Rating	Test Volt	Service	AC(rms)	DC
	Sea Level	1	1500	2100
		2	2300	3200
	70,000 ft.	1	375	535
		2	550	770
Maximum Operating Voltage	Sea Level	1	600	850
		2	1000	1275

STANDARD MATERIALS AND FINISHES

Shell	aluminum alloy, conductive olive drab chromate over cadmium finish per QQ-P-416
Insulator	polychloroprene
Grommet and Seal	polychloroprene
Contacts	Copper alloy, gold plate per MIL-G-45204 type II
Temperature Range	−55°C to +125°C

MECHANICAL DATA

Shell Sizes 00 — wall mounting receptacle
01 — cable connecting plug
02 — box mounting receptacle
06 — straight plug
07 — jam nut receptacle
08 — 90° angle plug
B — thru-bulkhead receptacle (KPT only)

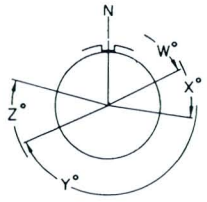
Shell Sizes KPT 8 thru 24
KPSE 10 thru 24

Polarization/Coupling: five keyway/three point bayonet

Service Classes A — general duty
B — general duty with strain relief
E — grommet seal
F — grommet seal with strain relief
J — gland nut with strain relief for jacketed cable
P — potted

Alternate Insert Positions

Face view of pin inserts



The five positions (W, X, Y, Z and Normal) differ in degree of rotation for various sizes and arrangements.

NO. OF CONTACTS	SHELL SIZE	ARR. NO.	Degrees of Rotation W	X	Y	Z
2	8	8-2	58	122	—	—
3	8	8-3	60	210	—	—
	8	8-33	90	—	—	—
	12	12-3	—	—	180	—
4	8	8-4	45	—	—	—
5	14	14-5	40	92	184	273
6	10	10-6	90	—	—	—
	10	10-98	90	180	240	270
8	12	12-8	90	112	203	292
	16	16-8	54	152	180	331
10	12	12-10	60	155	270	295
11	18	18-11	62	119	241	340
12	14	14-12	43	90	—	—
15	14	14-15	17	110	155	234
16	20	20-16	238	318	333	347
18	14	14-18	15	90	180	270
19	14	14-19	30	165	315	—
21	22	22-21	16	135	175	349
23	16	16-23	158	270	—	—
	16	16-99	66	156	223	340
24	20	20-24	70	145	215	290
26	16	16-26	60	—	275	338
28	18	18A28	—	—	—	—
30	18	18-30	180	193	285	350
31	24	24A31	90	225	—	—
32	18	18-32	85	138	222	265
	22	22-32	72	145	215	288
34	22	22-34	62	142	218	298
36	22	22-36	72	144	216	288
39	20	20-39	63	144	252	333
41	20	20-41	45	126	225	—
	22	22-41	39	135	264	—
55	22	22-55	30	142	226	314
57	24	24A57	90	180	270	324
61	24	24-61	90	180	270	324

Numbers in bold face indicate contact arrangements are not to MIL-C-26482.

Contact Arrangements

▲ KPT
◆ KPSE
△ Authorized per MIL-C-26482 (NAVY)

Drawing not to scale; face view of pin insert shown (socket view is opposite)

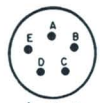
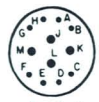
Shell Size 8

Shell Size	8-2	8-3	8-4	8-33
No. of Contacts	2-#20	3-#20	4-#20	3-#20
Service Rating	1	1	1	1

Shell Size 10

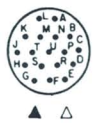
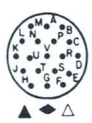
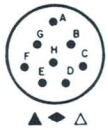
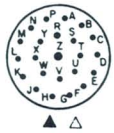
Shell Size 12

Shell Size 14

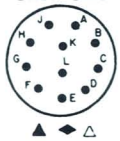
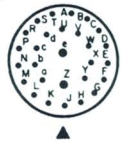



Shell Size	10-6	10-98	12-3	12-8	12-10	14-5	14-12	14-15
No. of Contacts	6-#20	6-#20	3-#16	8-#20	10-#20	5-#16	8-#20 4-#16	14-#16 1-#16
Service Ratings	1	1	2	1	1	2	1	1

Shell Size 16

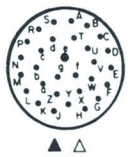





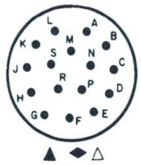
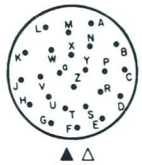
Shell Size 18

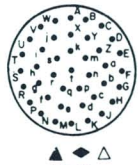



Shell Size	14-18	14-19	16-8	16-23	16-26	16-99	18-11	18A28
No. of Contacts	18-#20	19-#20	8-#16	22-#20 1-#16	26-#20	21-#20 2-#16	11-#16	26-#20 2-#16
Service Ratings	1	1	2	1	1	1	2	1

Shell Size 20



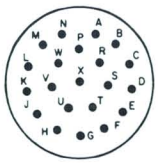



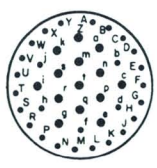
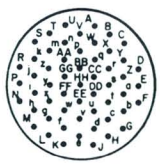


Shell Size	18-30	18-32	20-16	20-24	20-39	20-41
No. of Contacts	29-#20 1-#16	32-#20	16-#16	24-#20	37-#20 2-#16	41-#20
Service Rating	1	1	2	1	1	1

Shell Size 22

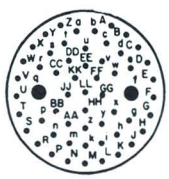
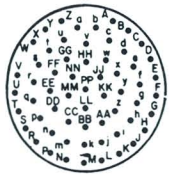
Pin Insert Only KPTM



Shell Size	22-21	22-32	22-34	22-36	22-41	22-55
No. of Contacts	21-#16	32-#20	34-#20	36-#20	27-#20 14-#16	55-#20
Service Rating	2	1	1	1	2	1

Shell Size 24

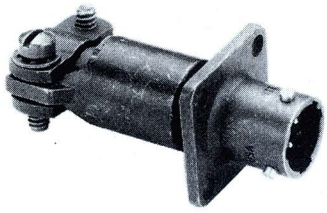



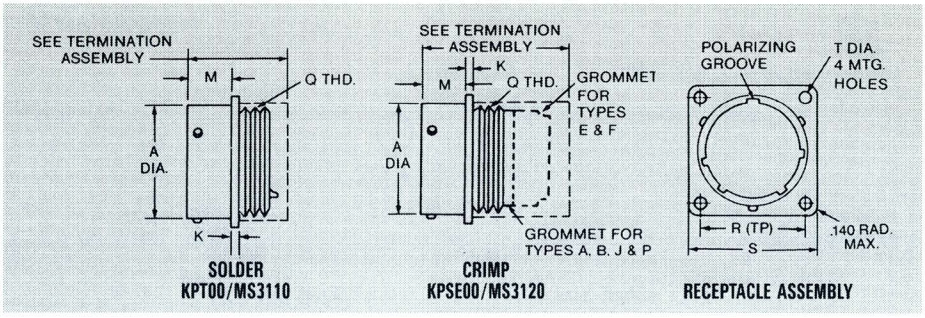
Shell Size	24A57	24-61
No. of Contacts	55-#20 2-#12	61-#20
Service Rating	1	1

(See page 60 for Alternate Insert Positions.)

Wall Mounting Receptacles

MS3110 (MS service class E, F, J, P) **KPT00**
MS3120 (MS service class E, F, P) **KPSE00**

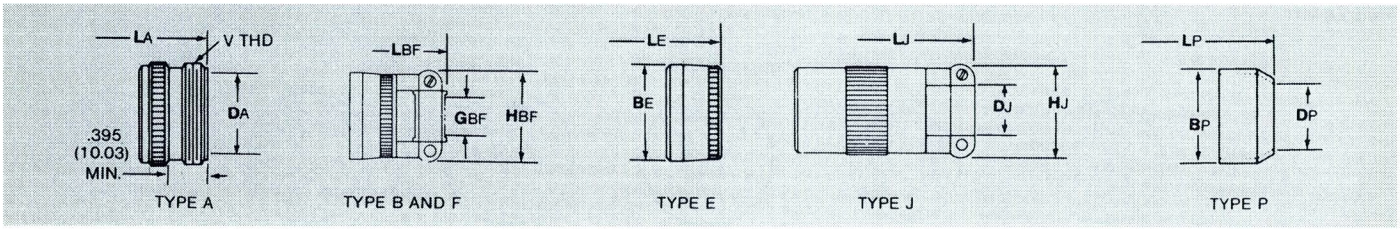




Shell Size	A ±.003 (±.08)	K ±.016 (±.41)	M +.031 (+.79) −.000 (−.00)	R* (TP)	S Max.	T ±.005 (±.13)	Q Thread Class 2A
‡8	.471 (11.96)	.062 (1.57)	.431 (10.95)	.594 (15.09)	.828 (21.03)	.120 (3.05)	7/16-28UNEF
10	.588 (14.96)	.062 (1.57)	.431 (10.95)	.719 (18.26)	.954 (24.23)	.120 (3.05)	9/16-24UNEF
12	.748 (19.00)	.062 (1.57)	.431 (10.95)	.812 (20.62)	1.047 (26.59)	.120 (3.05)	11/16-24UNEF
14	.873 (22.17)	.062 (1.57)	.431 (10.95)	.906 (23.01)	1.141 (28.98)	.120 (3.05)	13/16-20UNEF
16	.998 (25.35)	.062 (1.57)	.431 (10.95)	.969 (24.61)	1.234 (31.34)	.120 (3.05)	15/16-20UNEF
18	1.123 (28.52)	.062 (1.57)	.431 (10.95)	1.062 (26.97)	1.328 (33.73)	.120 (3.05)	1-1/16-18UNEF
20	1.248 (31.70)	.094 (2.39)	.556 (14.12)	1.156 (29.36)	1.453 (36.91)	.120 (3.05)	1-3/16-18UNEF
22	1.373 (34.87)	.094 (2.39)	.556 (14.12)	1.250 (31.75)	1.578 (40.08)	.120 (3.05)	1-5/16-18UNEF
24	1.498 (38.05)	.094 (2.39)	.589 (14.96)	1.375 (34.92)	1.703 (43.26)	.147 (3.73)	1-7/16-18UNEF

‡ Not available in KPSE * (TP) located within .010 T.P. with respect to diameter A and master keyway.

Receptacles with Termination Assemblies



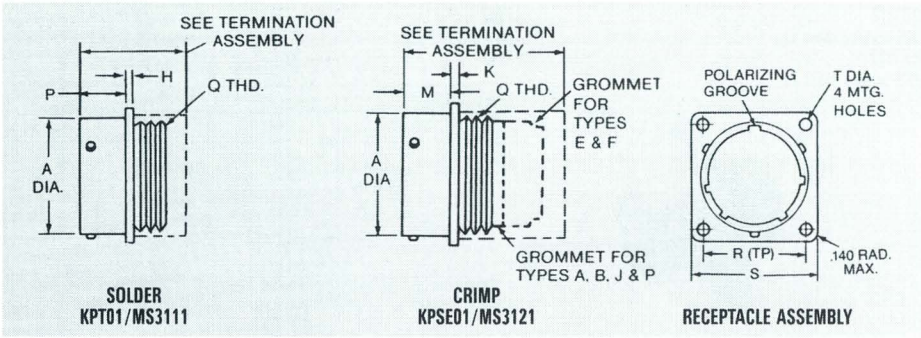
	TYPE A			TYPE B and F			TYPE E	
Shell Size	DA Min.	LA Max.	V Thread Class 2A	GBF Min.	HBF Max.	LBF Max.	BE Max.	LE Max.
‡8	.335 (8.51)	1.444 (36.68)	1/2-28UNEF	.115 (2.92)	.828 (21.03)	1.922 (48.82)	.608 (15.44)	1.328 (33.73)
10	.466 (11.84)	1.444 (36.68)	5/8-24UNEF	.178 (4.52)	.891 (22.63)	1.922 (48.82)	.732 (18.64)	1.328 (33.73)
12	.591 (15.01)	1.444 (36.68)	3/4-20UNEF	.302 (7.67)	1.016 (25.81)	1.922 (48.82)	.858 (21.79)	1.328 (33.73)
14	.705 (19.05)	1.444 (36.68)	7/8-20UNEF	.365 (9.27)	1.141 (28.98)	1.922 (48.82)	.984 (24.99)	1.328 (33.73)
16	.830 (21.08)	1.444 (36.68)	1-20UNEF	.490 (12.45)	1.203 (30.56)	2.047 (51.99)	1.110 (28.19)	1.328 (33.73)
18	.948 (24.08)	1.444 (36.68)	1-3/16-18UNEF	.615 (15.62)	1.469 (37.31)	2.078 (52.78)	1.234 (31.34)	1.328 (33.73)
20	1.043 (26.49)	1.728 (43.89)	1-3/16-18UNEF	.615 (15.62)	1.469 (37.31)	2.344 (59.54)	1.360 (34.54)	1.531 (38.89)
22	1.198 (30.43)	1.728 (43.89)	1-7/16-18UNEF	.740 (18.80)	1.656 (42.06)	1.344 (59.54)	1.484 (37.69)	1.531 (38.89)
24	1.293 (32.84)	1.738 (44.15)	1-7/16-18UNEF	.790 (20.07)	1.750 (44.45)	2.406 (61.11)	1.610 (40.89)	1.594 (40.49)

	TYPE J			TYPE P		
Shell Size	DJ Max./Min.	HJ Max.	LJ Max.	BP Max.	DP Min.	LP Max.
‡8	.230/.168 (5.84/ 4.27)	.828 (21.03)	2.271 (57.68)	.608 (15.44)	.317 (8.05)	1.453 (36.91)
10	.312/.205 (7.92/ 5.21)	.891 (22.63)	2.271 (57.68)	.734 (18.64)	.434 (11.02)	1.453 (36.91)
12	.442/.338 (11.23/8.59)	1.016 (25.81)	2.411 (61.24)	.858 (21.79)	.548 (13.92)	1.453 (36.91)
14	.539/.416 (13.56/10.57)	1.141 (28.98)	2.599 (66.01)	.984 (24.99)	.673 (17.09)	1.453 (36.91)
16	.616/.550 (15.65/13.97)	1.203 (30.56)	2.943 (74.75)	1.110 (28.19)	.798 (20.27)	1.453 (36.91)
18	.672/.600 (17.07/15.24)	1.469 (37.31)	3.172 (80.57)	1.234 (31.34)	.899 (22.83)	1.453 (36.91)
20	.747/.635 (18.97/16.13)	1.469 (37.31)	3.610 (91.69)	1.360 (34.54)	1.024 (26.01)	1.672 (42.47)
22	.846/.670 (21.49/17.02)	1.656 (42.06)	3.766 (95.66)	1.484 (37.69)	1.149 (29.18)	1.672 (42.47)
24	.894/.740 (22.71/18.80)	1.750 (44.45)	3.985 (101.22)	1.610 (40.89)	1.274 (32.36)	1.734 (44.04)

‡ Not available in KPSE

Cable Connecting Plugs

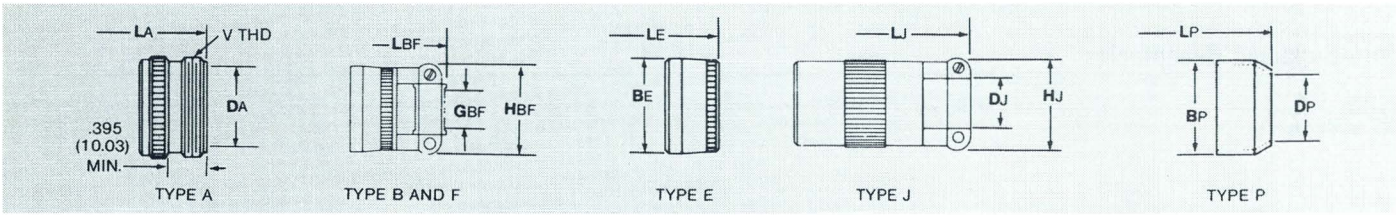
MS3111 **KPT01**
(MS service class E, F, J, P)
MS3121 **KPSE01**
(MS service class E, F, P)



Shell Size	A ±.003 (±.08)	H ±.016 (±.41)	P +.031 (+.79) −.000 (−.00)	S Max.	Y Max.	Q Thread Class 2A
‡8	.471 (11.96)	.094 (2.39)	.400 (10.16)	.828 (21.03)	.958 (24.33)	7/16-28UNEF
10	.588 (14.94)	.094 (2.39)	.400 (10.16)	.954 (24.23)	1.082 (27.48)	9/16-24UNEF
12	.748 (19.00)	.094 (2.39)	.400 (10.16)	1.047 (26.59)	1.176 (29.87)	11/16-24UNEF
14	.873 (22.17)	.094 (2.39)	.400 (10.16)	1.141 (28.98)	1.270 (32.26)	13/16-20UNEF
16	.998 (25.35)	.094 (2.39)	.400 (10.16)	1.234 (31.34)	1.364 (34.65)	15/16-20UNEF
18	1.123 (28.52)	.094 (2.39)	.400 (10.16)	1.328 (33.73)	1.458 (37.03)	1-1/16-18UNEF
20	1.248 (31.70)	.115 (2.92)	.535 (13.59)	1.453 (36.91)	1.582 (40.18)	1-3/16-18UNEF
22	1.373 (34.87)	.115 (2.92)	.535 (13.59)	1.578 (40.08)	1.708 (43.38)	1-5/16-18UNEF
24	1.498 (38.05)	.115 (2.92)	.568 (14.43)	1.703 (43.26)	1.832 (46.53)	1-7/16-18UNEF

‡Not available in KPSE *(TP) located within .010 T.P. with respect to diameter A and master keyway.

Cable Connecting Plugs With Termination Assemblies



With Termination Assemblies

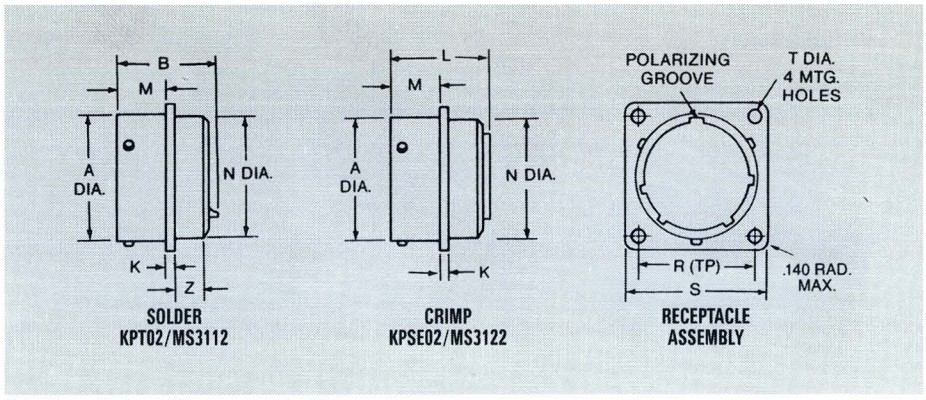
Shell Size	TYPE A DA Min.	TYPE A LA Max.	TYPE A V Thread Class 2A	TYPE B and F GBF Min.	TYPE B and F HBF Max.	TYPE B and F LBF Max.	TYPE E BE Max.	TYPE E LE Max.
‡8	.335 (8.51)	1.444 (36.68)	1/2-28UNEF	.115 (2.92)	.828 (21.03)	1.922 (48.82)	.608 (15.44)	1.328 (33.73)
10	.466 (11.84)	1.444 (36.68)	5/8-24UNEF	.178 (4.52)	.891 (22.63)	1.922 (48.82)	.732 (18.64)	1.328 (33.73)
12	.591 (15.01)	1.444 (36.68)	3/4-20UNEF	.302 (7.67)	1.016 (25.81)	1.922 (48.82)	.858 (21.79)	1.328 (33.73)
14	.705 (19.05)	1.444 (36.68)	7/8-20UNEF	.365 (9.27)	1.141 (28.98)	1.922 (48.82)	.984 (24.99)	1.328 (33.73)
16	.830 (21.08)	1.444 (36.68)	1-20UNEF	.490 (12.45)	1.203 (30.56)	2.047 (51.99)	1.110 (28.19)	1.328 (33.73)
18	.948 (24.08)	1.444 (36.68)	1-3/16-18UNEF	.615 (15.62)	1.469 (37.31)	2.078 (52.78)	1.234 (31.34)	1.328 (33.73)
20	1.043 (26.49)	1.728 (43.89)	1-3/16-18UNEF	.615 (15.62)	1.469 (37.31)	2.344 (59.54)	1.360 (34.54)	1.531 (38.89)
22	1.198 (30.43)	1.728 (43.89)	1-7/16-18UNEF	.740 (18.80)	1.656 (42.06)	1.344 (59.54)	1.484 (37.69)	1.531 (38.89)
24	1.293 (32.84)	1.738 (44.15)	1-7/16-18UNEF	.790 (20.07)	1.750 (44.45)	2.406 (61.11)	1.610 (40.89)	1.594 (40.49)

Shell Size	TYPE J DJ Max./Min.	TYPE J HJ Max.	TYPE J LJ Max.	TYPE P BP Max.	TYPE P DP Min.	TYPE P LP Max.
‡8	.230/.168 (5.84/4.27)	.828 (21.03)	2.271 (57.68)	.608 (15.44)	.317 (8.05)	1.453 (36.91)
10	.312/.205 (7.92/5.21)	.891 (22.63)	2.271 (57.68)	.734 (18.64)	.434 (11.02)	1.453 (36.91)
12	.442/.338 (11.23/8.59)	1.016 (25.81)	2.411 (61.24)	.858 (21.79)	.548 (13.92)	1.453 (36.91)
14	.539/.416 (13.56/10.57)	1.141 (28.98)	2.599 (66.01)	.984 (24.99)	.673 (17.09)	1.453 (36.91)
16	.616/.550 (15.65/13.97)	1.203 (30.56)	2.943 (74.75)	1.110 (28.19)	.798 (20.27)	1.453 (36.91)
18	.672/.600 (17.07/15.24)	1.469 (37.31)	3.172 (80.57)	1.234 (31.34)	.899 (22.83)	1.453 (36.91)
20	.747/.635 (18.97/16.13)	1.469 (37.31)	3.610 (91.69)	1.360 (34.54)	1.024 (26.01)	1.672 (42.47)
22	.846/.670 (21.49/17.02)	1.656 (42.06)	3.766 (95.66)	1.484 (37.69)	1.149 (29.18)	1.672 (42.47)
24	.894/.740 (22.71/18.80)	1.750 (44.45)	3.985 (101.22)	1.610 (40.89)	1.274 (32.36)	1.734 (44.04)

‡Not available in KPSE

Box Mounting Receptables

MS3112 **KPT02**
(MS service class E)
MS3122 **KPSE02**
(MS service class E)



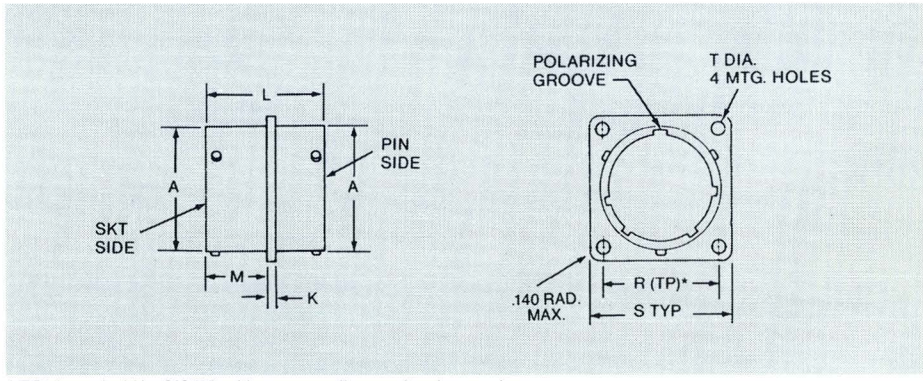
Note: Connector does not accommodate backshell.

Shell Size	A ±.003 (±.08)	B Max	K ±.016 (±.41)	L Max.	M +.031 (+.79) −.000 (.00)	N Dia. Max.	R* (TP)	S Max.	T ±.005	Z Max.
‡8	.471 (11.96)	.978 (12.14)	.062 (1.57)	1.320 (33.07)	.431 (10.95)	.469 (11.91)	.594 (15.09)	.828 (21.03)	.120 (3.05)	.354 (8.99)
10	.588 (14.96)	.978 (12.14)	.062 (1.57)	1.320 (33.07)	.431 (10.95)	.593 (15.06)	.719 (18.26)	.954 (24.23)	.120 (3.05)	.354 (8.99)
12	.748 (19.00)	.978 (12.14)	.062 (1.57)	1.320 (33.07)	.431 (10.95)	.719 (18.26)	.812 (20.62)	1.047 (26.59)	.120 (3.05)	.354 (8.99)
14	.873 (22.17)	.978 (12.14)	.062 (1.57)	1.320 (33.07)	.431 (10.95)	.843 (21.41)	.906 (23.01)	1.141 (28.98)	.120 (3.05)	.354 (8.99)
16	.998 (25.35)	.978 (12.14)	.062 (1.57)	1.320 (33.07)	.431 (10.95)	.969 (24.61)	.969 (24.61)	1.234 (31.34)	.120 (3.05)	.354 (8.99)
18	1.123 (28.52)	.978 (12.14)	.062 (1.57)	1.320 (33.07)	.431 (10.95)	1.093 (27.76)	1.062 (26.97)	1.328 (33.73)	.120 (3.05)	.354 (8.99)
20	1.248 (31.70)	1.196 (30.38)	.094 (2.39)	1.367 (34.72)	.556 (14.12)	1.219 (30.96)	1.156 (29.36)	1.453 (36.91)	.120 (3.05)	.417 (10.59)
22	1.373 (34.87)	1.196 (30.38)	.094 (2.39)	1.367 (34.72)	.556 (14.12)	1.343 (34.11)	1.250 (31.75)	1.578 (40.08)	.120 (3.05)	.417 (10.59)
24	1.498 (38.05)	1.196 (30.98)	.094 (2.39)	1.418 (36.02)	.589 (14.96)	1.469 (37.31)	1.375 (34.92)	1.703 (43.26)	.147 (3.73)	.445 (11.30)

‡Not available in KPSE *(TP) located within .010 T.P. with respect to diameter A and master keyway.

Thru-Bulkhead Receptacles

MS3119 **KPTB**
(MS service class E)



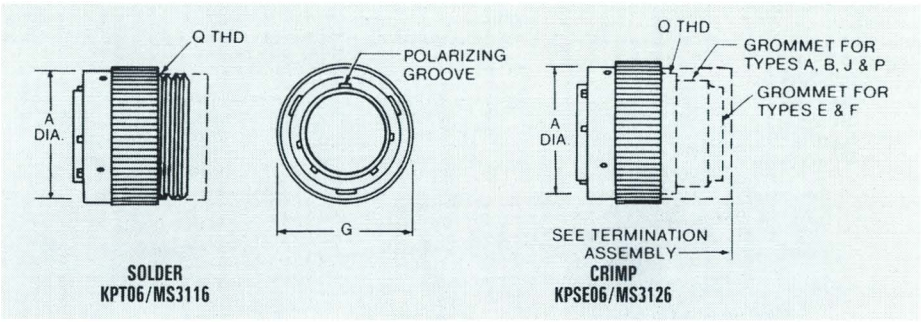
*(T.P.) located within .010 T.P. with respect to diameter A and master keyway.

Shell Size	A Dia. ±.003 (±.08)	K ±.016 (±.406)	L Max.	M +.031 (+.79) −.000 (−.00)	R* (TP)	S Max.	T ±.005 (±.127)
8	.471 (11.96)	.062 (1.57)	1.125 (28.58)	.562 (14.27)	.594 (15.09)	.828 (21.03)	.120 (3.05)
10	.588 (14.94)	.062 (1.57)	1.125 (28.58)	.562 (14.27)	.719 (18.26)	.954 (24.23)	.120 (3.05)
12	.748 (18.00)	.062 (1.57)	1.125 (28.58)	.562 (14.27)	.812 (20.62)	1.047 (26.59)	.120 (3.05)
14	.873 (22.17)	.062 (1.57)	1.125 (28.58)	.562 (14.27)	.906 (23.01)	1.141 (28.98)	.120 (3.05)
16	.998 (25.35)	.062 (1.57)	1.125 (28.58)	.562 (14.27)	.969 (24.61)	1.234 (31.34)	.120 (3.05)
18	1.123 (28.52)	.062 (1.57)	1.125 (28.58)	.562 (14.27)	1.062 (26.97)	1.328 (33.73)	.120 (3.05)
20	1.248 (31.70)	.094 (2.39)	1.406 (35.71)	.688 (17.48)	1.156 (29.36)	1.453 (36.91)	.120 (3.05)
22	1.373 (34.87)	.094 (2.39)	1.406 (35.71)	.688 (17.48)	1.250 (31.76)	1.578 (40.08)	.120 (3.05)
24	1.498 (38.05)	.094 (2.39)	1.406 (35.71)	.688 (17.48)	1.375 (34.92)	1.703 (43.26)	.147 (3.73)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Straight Plugs

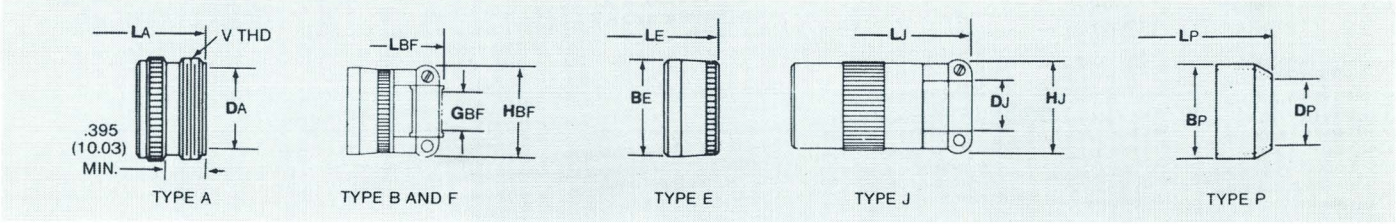
MS3116 KPT06
(MS service class E, F, J, P)
MS3126 KPSE06
(MS service class E, F, P)



Shell Size	A dia. Max	G Max	J ±.010 (±0.25)	Q Thread Class 2A
‡8	.765 (19.43)	.782 (19.86)	.353 (8.99)	7/16-28UNEF
10	.840 (21.34)	.926 (23.52)	.353 (8.99)	9/16-24UNEF
12	.999 (25.38)	1.043 (26.49)	.353 (8.99)	11/16-24UNEF
14	1.139 (28.93)	1.183 (30.05)	.353 (8.99)	13/16-20UNEF
16	1.261 (32.03)	1.305 (33.15)	.353 (8.99)	15/16-20UNEF
18	1.337 (33.96)	1.391 (35.33)	.353 (8.99)	1-1/16-18UNEF
20	1.477 (37.52)	1.531 (38.89)	.415 (10.54)	1-3/16-18UNEF
22	1.602 (40.69)	1.656 (42.06)	.415 (10.54)	1-5/16-18UNEF
24	1.723 (43.76)	1.777 (45.14)	.415 (10.54)	1-7/16-18UNEF

‡Not available in KPSE

Straight Plugs With Termination Assemblies



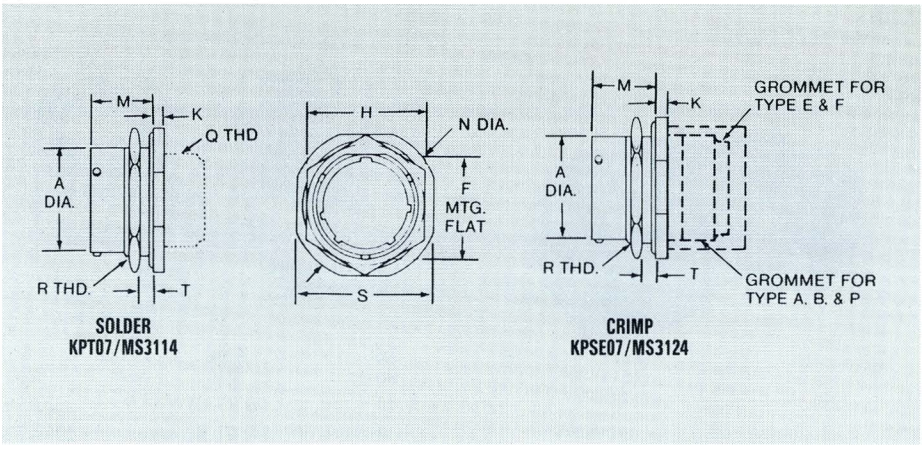
	TYPE A			TYPE B and F			TYPE E	
Shell Size	LA Max.	DA Min.	V Thread Class 2A	LBF Max.	HBF Max	GBF Min.	BE Max.	LE Max.
‡8	1.440 (36.58)	.335 (8.51)	1/2-28UNEF	1.906 (48.41)	.828 (21.03)	.115 (2.02)	.608 (15.44)	1.328 (33.73)
10	1.440 (36.58)	.466 (11.84)	5/8-24UNEF	1.906 (48.41)	.891 (22.63)	.178 (4.52)	.734 (18.64)	1.328 (33.73)
12	1.440 (36.58)	.591 (15.01)	3/4-20UNEF	1.906 (48.41)	1.016 (25.81)	.302 (7.67)	.858 (21.79)	1.328 (33.73)
14	1.444 (36.58)	.705 (19.05)	7/8-20UNEF	1.906 (48.41)	1.141 (28.98)	.365 (9.27)	.984 (24.99)	1.328 (33.73)
16	1.440 (36.58)	.830 (21.08)	1-20UNEF	2.047 (51.99)	1.203 (30.56)	.490 (12.45)	1.110 (28.19)	1.328 (33.73)
18	1.444 (42.21)	.948 (26.49)	1-3/16-18UNEF	2.078 (57.15)	1.469 (37.31)	.615 (15.62)	1.234 (31.34)	1.328 (33.73)
20	1.662 (42.21)	1.043 (26.49)	1-3/16-18UNEF	2.250 (57.15)	1.469 (37.31)	.615 (15.62)	1.360 (34.54)	1.453 (36.91)
22	1.662 (42.21)	1.198 (30.43)	1-7/16-18UNEF	2.250 (57.15)	1.656 (42.06)	.740 (18.80)	1.484 (37.69)	1.453 (36.91)
24	1.672 (42.47)	1.293 (32.84)	1-7/16-18UNEF	2.312 (58.72)	1.750 (44.45)	.790 (20.07)	1.610 (40.89)	1.510 (38.54)

	TYPE J			TYPE P		
Shell Size	LJ Max.	HJ Max.	DJ Max./Min.	LP Max.	DP Min.	BP Max.
‡8	2.271 (57.68)	.828 (21.03)	.230/.168 (5.84/4.27)	1.500 (38.10)	.317 (8.05)	.608 (15.44)
10	2.271 (57.68)	.891 (22.63)	.321/.205 (7.92/5.21)	1.500 (38.10)	.434 (11.02)	.734 (18.64)
12	2.411 (61.24)	1.016 (25.81)	.442/.338 (11.23/8.59)	1.500 (38.10)	.548 (13.92)	.858 (21.79)
14	2.599 (66.01)	1.141 (28.98)	.539/.416 (13.56/10.57)	1.500 (38.10)	.673 (17.09)	.984 (24.99)
16	2.943 (74.75)	1.203 (30.56)	.616/.550 (15.65/13.97)	1.500 (38.10)	.798 (20.27)	1.110 (28.19)
18	3.172 (80.57)	1.469 (37.31)	.672/.600 (17.07/15.24)	1.500 (38.10)	.899 (22.83)	1.234 (31.34)
20	3.610 (91.69)	1.469 (37.31)	.747/.635 (18.97/16.13)	1.609 (40.87)	1.024 (26.01)	1.360 (34.54)
22	3.766 (95.66)	1.656 (42.06)	.846/.670 (21.49/17.02)	1.609 (40.87)	1.149 (29.18)	1.484 (37.69)
24	3.985 (101.22)	1.750 (44.45)	.894/.740 (22.71/18.80)	1.687 (42.85)	1.274 (32.36)	1.610 (40.89)

‡Not available in KPSE

Jam Nut Receptacles

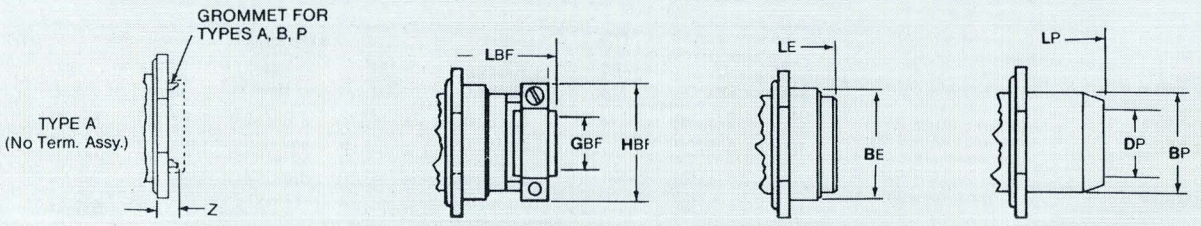
MS3114 **KPT07**
(MS service class E, F, P)
MS3124 **KPSE07**
(MS service class E, F, P)



Shell Size	A ±.003 (±0.08)	F ±.005 (.130)	H ±.017 (±0.43)	K ±.020 (±.05)	M ±.031 (±.08) −.000 (−.00)	N Max.	S max.	T Panel Thickness Min.	T Panel Thickness Max.	R thread Class 2A
‡8	.471 (11.96)	.525 (13.34)	.750 (19.05)	.117 (2.97)	.691 (17.55)	1.078 (27.38)	.954 (24.23)	.062 (1.57)	.125 (3.17)	9/16-24UNEF
10	.588 (14.93)	.650 (16.51)	.875 (22.22)	.117 (2.97)	.691 (17.55)	1.203 (30.56)	1.078 (27.38)	.062 (1.57)	.125 (3.17)	11/16-24UNEF
12	.748 (19.00)	.813 (20.65)	1.062 (26.97)	.117 (2.97)	.691 (17.55)	1.319 (35.33)	1.266 (32.16)	.062 (1.57)	.125 (3.17)	7/8-20UNEF
14	.873 (22.17)	.937 (23.80)	1.188 (30.17)	.117 (2.97)	.691 (17.55)	1.516 (38.51)	1.391 (35.33)	.062 (1.57)	.125 (3.17)	1-20UNEF
16	.988 (25.35)	1.061 (26.95)	1.312 (33.32)	.117 (2.97)	.691 (17.55)	1.641 (41.68)	1.516 (38.51)	.062 (1.57)	.125 (3.17)	1-1/8-18UNEF
18	1.123 (28.52)	1.186 (30.12)	1.438 (36.25)	.117 (2.97)	.691 (17.55)	1.766 (44.86)	1.641 (41.68)	.062 (1.57)	.125 (3.17)	1-1/4-18UNEF
20	1.248 (31.70)	1.311 (33.30)	1.562 (39.67)	.148 (3.76)	.879 (22.33)	1.954 (49.63)	1.828 (46.43)	.062 (1.57)	.250 (6.35)	1-3/8-18UNEF
22	1.373 (34.87)	1.436 (36.47)	1.688 (42.87)	.148 (3.76)	.879 (22.33)	2.078 (52.78)	1.954 (49.63)	.062 (1.57)	.250 (6.35)	1-1/2-18UNEF
24	1.498 (38.05)	1.561 (39.65)	1.812 (46.02)	.148 (3.76)	.912 (23.16)	2.203 (55.96)	2.078 (52.78)	.062 (1.57)	.250 (6.35)	1-5/8-18UNEF

‡Not available in KPSE

Jam Nut Receptacles With Termination Assemblies

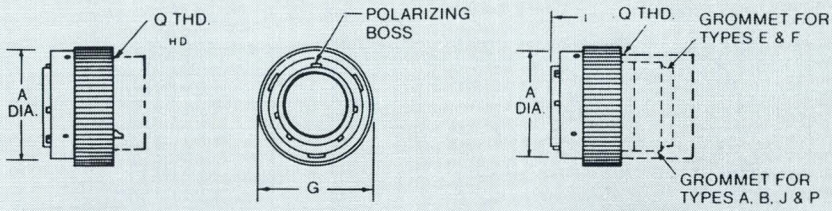


Shell Size	TYPE A Z Max.	TYPE B AND F HBF Max	TYPE B AND F GBF Min.	TYPE B AND F LBF Max.	TYPE E BE Max.	TYPE E LE Max.	TYPE P BP Max.	TYPE P DP Min.	TYPE P LP Max.
8	.312 (7.92)	.828 (21.03)	.115 (2.92)	1.906 (48.41)	.608 (15.44)	1.344 (34.14)	.608 (15.44)	.317 (8.05)	1.391 (35.33)
10	.312 (7.92)	.891 (22.63)	.178 (4.52)	1.906 (48.41)	.734 (18.64)	1.344 (34.14)	.734 (18.64)	.434 (11.02)	1.391 (35.33)
12	.312 (7.92)	1.016 (25.81)	.302 (7.67)	1.906 (48.41)	.858 (21.79)	1.344 (34.14)	.858 (21.79)	.548 (13.92)	1.391 (35.33)
14	.312 (7.92)	1.141 (28.98)	.365 (9.27)	1.906 (48.41)	.984 (24.99)	1.344 (34.14)	.984 (24.99)	.673 (17.09)	1.391 (35.33)
16	.312 (7.92)	1.203 (30.56)	.490 (12.45)	2.047 (51.99)	1.110 (28.19)	1.344 (34.14)	1.110 (28.19)	.798 (20.27)	1.391 (35.33)
18	.312 (7.92)	1.469 (37.31)	.615 (15.62)	2.078 (52.78)	1.234 (31.34)	1.344 (34.14)	1.234 (31.34)	.899 (22.83)	1.391 (35.33)
20	.193 (4.90)	1.469 (37.31)	.615 (15.62)	2.328 (59.13)	1.360 (34.54)	1.594 (4.49)	1.360 (34.54)	1.024 (26.01)	1.641 (41.68)
22	.193 (4.90)	1.656 (42.06)	.740 (18.80)	2.328 (59.13)	1.484 (37.69)	1.594 (40.49)	1.484 (37.69)	1.149 (29.18)	1.641 (41.68)
24	.150 (3.81)	1.750 (44.45)	.790 (20.07)	2.453 (62.31)	1.610 (40.89)	1.641 (41.68)	1.610 (40.89)	1.274 (32.36)	1.703 (43.26)

ITT Cannon
Circular Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Right Angle Plugs

KPT08/KPSE08

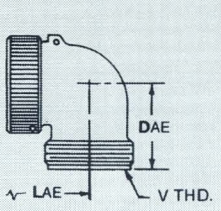


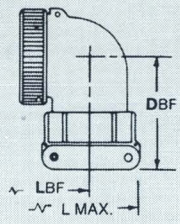
Solder KPT08 **Crimp KPSE08**

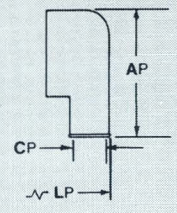
Shell Size	KPT/KPSE A Dia. Max.	KPT/KPSE G Max.	Q Thread Class 2A
‡8	.765 (19.43)	.782 (19.86)	7/16-28UNEF
10	.840 (21.34)	.926 (23.52)	9/16-24UNEF
12	.999 (25.38)	1.043 (26.49)	11/16-24UNEF
14	1.139 (28.93)	1.183 (30.05)	13/16-20UNEF
16	1.261 (32.03)	1.305 (33.15)	15/16-20UNEF
18	1.337 (33.96)	1.391 (35.33)	1-1/16-18UNEF
20	1.477 (37.52)	1.531 (38.89)	1-3/16-18UNEF
22	1.602 (40.69)	1.656 (42.09)	1-5/16-18UNEF
24	1.723 (43.76)	1.777 (45.13)	1-7/16-18UNEF

‡Not available in KPSE.
NOTE: for size 10 and 24 consult factory for availability in type A, B, E and F.
For size 8 consult factory for availability in Type P.

Right Angle Plugs With Termination Assemblies





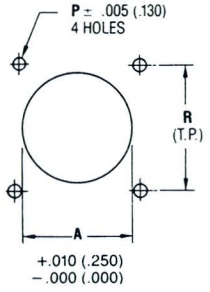


Shell Size	TYPE A AND E LAE Max.	DAE Max.	V Thread Class 2A	TYPE B AND F DBF Max.	LBF Max.	L Max.	V Thread Class 2A	TYPE P AP Max.	LP Max.	CP Min.	V Thread Class 2A
‡8	1.421 (36.09)	.822 (20.88)	1/2-28UNEF	1.238 (31.44)	1.421 (36.09)	1.842 (46.79)	1/2-28UNEF	— (—)	— (—)	— (—)	1/2-28UNEF
10	1.484 (37.69)	.853 (21.67)	5/8-28UNEF	1.269 (32.24)	1.484 (37.69)	1.937 (49.20)	5/8-28UNEF	1.030 (26.16)	1.380 (35.05)	.252 (6.40)	5/8-28UNEF
12	1.546 (39.27)	.916 (23.27)	3/4-20UNEF	1.395 (35.43)	1.546 (39.27)	1.937 (49.20)	3/4-20UNEF	1.030 (26.16)	1.567 (39.80)	.252 (6.40)	3/4-20UNEF
14	1.577 (40.05)	.978 (24.84)	7/8-20UNEF	1.519 (38.58)	1.577 (40.05)	2.124 (53.95)	7/8-20UNEF	1.030 (26.16)	1.567 (39.80)	.283 (7.19)	7/8-20UNEF
16	1.609 (40.87)	1.041 (26.44)	1-20UNEF	1.582 (40.18)	1.609 (40.87)	2.203 (55.96)	1-20UNEF	1.280 (32.51)	1.567 (39.80)	.355 (9.02)	1-20UNEF
18	1.734 (44.04)	1.103 (28.70)	1-3/16-18UNEF	1.644 (41.76)	1.734 (44.04)	2.380 (60.45)	1-3/16-18UNEF	1.280 (32.51)	1.755 (44.58)	.530 (13.46)	1-3/16-18UNEF
20	1.879 (47.73)	1.166 (29.62)	1-5/16-18UNEF	1.707 (43.36)	1.879 (47.73)	2.629 (66.78)	1-5/16-18UNEF	1.530 (38.86)	1.782 (45.26)	.562 (14.27)	1-5/16-18UNEF
22	2.035 (51.69)	1.245 (31.62)	1-7/16-18UNEF	1.884 (47.85)	2.035 (51.69)	2.629 (66.78)	1-7/16-18UNEF	1.530 (38.86)	1.782 (45.26)	.562 (14.27)	1-7/16-18UNEF
24	2.035 (51.69)	1.322 (33.58)	1-7/16-18UNEF	1.963 (49.86)	2.035 (51.69)	2.895 (73.53)	1-7/16-18UNEF	1.780 (45.21)	2.087 (53.01)	.610 (15.49)	1-7/16-18UNEF

‡Not available in KPSE. NOTE: For size 10 and 24 consult factory for availability in type A, B, E and F. For size 8 consult factory for availability in Type P.

Panel Cutouts

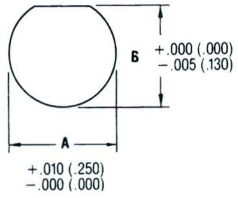
Box and Wall Mounting Receptacle



Shell Size	FLANGE (FRONT MOUNTING) KPT/KPSE		MOUNTING HOLE DIA. KPT/KPSE	
	A	R	P ±.005	Screw
‡8	.618 (15.70)	.594 (15.09)	.125 (3.17)	#4
10	.735 (18.67)	.719 (18.26)	.125 (3.17)	#4
12	.859 (21.82)	.812 (20.62)	.125 (3.17)	#4
14	.985 (25.02)	.906 (23.01)	.125 (3.17)	#4
16	1.113 (28.27)	.969 (24.61)	.125 (3.17)	#4
18	1.235 (31.37)	1.062 (26.97)	.125 (3.17)	#4
20	1.361 (34.57)	1.156 (29.36)	.125 (3.17)	#4
22	1.485 (37.72)	1.250 (31.75)	.125 (3.17)	#4
24	1.611 (40.92)	1.375 (34.92)	.155 (3.94)	#6

‡Not available in KPSE connectors.

Jam Nut Receptacle



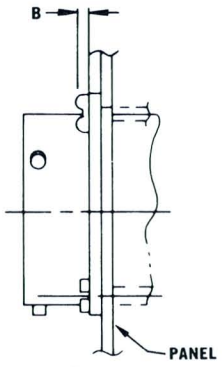
Shell Size	KPT/KPSE	
	A	B
‡8	.578 (14.68)	.540 (13.72)
10	.703 (17.86)	.665 (16.89)
12	.890 (22.61)	.828 (21.02)
14	1.015 (25.78)	.952 (24.18)
16	1.140 (28.96)	1.076 (27.33)
18	1.265 (32.13)	1.201 (30.51)
20	1.390 (35.31)	1.326 (33.68)
22	1.515 (38.48)	1.451 (36.86)
24	1.640 (41.66)	1.576 (40.03)

‡Not Available in KPSE connectors.

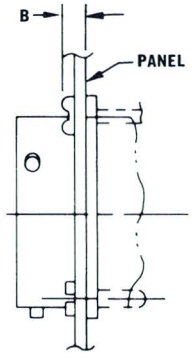
Panel Thickness

Maximum panel thickness dimensions allowable to ensure complete connector operation for the Wall Mounting Receptacle, Box Mounting Receptacle, and Thru-Bulkhead Receptacle.

Wall Mounting and Box Mounting Receptacle

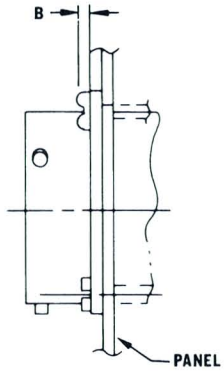


FRONT PANEL MTG REF

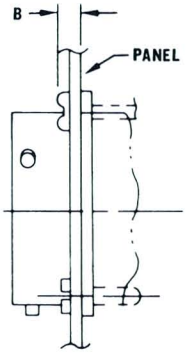


REAR PANEL MTG REF

Thru-Bulkhead Receptacle



FRONT PANEL MTG REF



REAR PANEL MTG REF

Size	B Max
8	.087 (2.21)
10	
12	
14	
16	
18	
20	.212 (5.38)
22	
24	

Size	B Max panel and screw head
8	.218 (5.54)
10	
12	
14	
16	
18	
20	.334 (8.74)
22	
24	.311 (7.90)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Dummy Receptacles

How To Order KPT 15 – 12A *

SERIES PREFIX

DUMMY RECEPTACLE INDICATOR

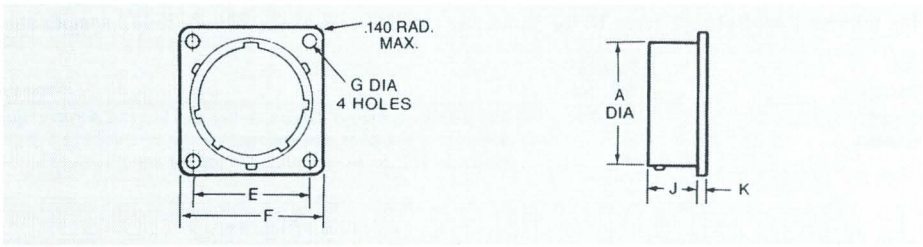
SHELL SIZE

MODIFICATIONS

SERIES PREFIX
KPT — ITT Cannon Prefix

SHELL SIZE
8 thru 24

MODIFICATIONS
None — Olive drab chromate over cadmium



NOTE: For MS version and additional finishes see PV catalog.

Shell Size	A ±.003 (±.08)	E Basic	F Max.	G ±.005 (±.13)	J +.031 (+.79) −.000 (−.00)	K ±.016 (±.41)
8	.471 (11.96)	.594 (15.09)	.828 (21.03)	.120 (3.05)	.412 (10.46)	.062 (1.57)
10	.588 (14.94)	.719 (18.26)	.954 (24.23)	.120 (3.05)	.412 (10.46)	.062 (1.57)
12	.748 (19.00)	.812 (20.62)	1.047 (26.60)	.120 (3.05)	.412 (10.46)	.062 (1.57)
14	.873 (22.17)	.906 (23.01)	1.141 (28.98)	.120 (3.05)	.412 (10.46)	.062 (1.57)
16	.998 (25.35)	.969 (24.61)	1.234 (31.34)	.120 (3.05)	.412 (10.46)	.062 (1.57)
18	1.123 (28.52)	11.57 (26.97)	1.328 (33.73)	.120 (3.05)	.462 (11.73)	.062 (1.57)
20	1.248 (31.70)	1.156 (23.96)	1.453 (36.91)	.120 (3.05)	.556 (14.12)	.094 (2.39)
22	1.373 (34.87)	1.250 (31.75)	1.578 (40.08)	.120 (3.05)	.556 (14.12)	.094 (2.39)
24	1.498 (38.05)	1.375 (34.93)	1.703 (43.26)	.147 (3.73)	.589 (14.96)	.094 (2.39)

Protective Caps

How To Order KPT 80 12 C *

SERIES PREFIX

TYPE

SHELL SIZE

TERMINATION STYLE

MODIFICATIONS

SERIES PREFIX
KPT – ITT Cannon Prefix

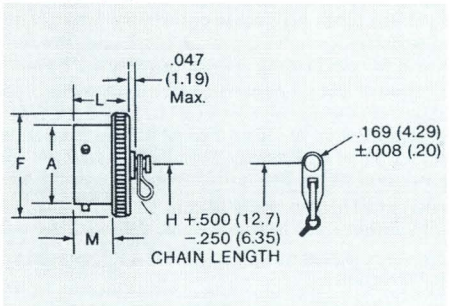
TYPE
80 – Plug Cap
81 – Receptacle Cap

SHELL SIZE
8 thru 24

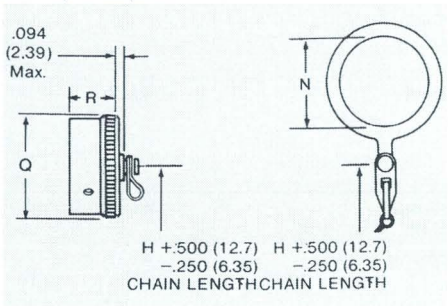
TERMINATION STYLE
C – Sash Chain
N – Sash Chain with Ring (81 type only)

NOTE: For MS version and additional finishes see PV catalog.
(N Style used Primarily for Jam Nut Receptacle)

80 — cap for plugs



81 — cap for receptacle



Shell Size	A ±.003 (±.08)	F Max.	H	L Max.	M +.031 (+.79) −.000 (−.00)	N Min.	Q Max.	R Max.
8	.471 (11.96)	.719 (18.26)	3.000 (76.20)	.562 (14.27)	.368 (9.35)	.578 (14.68)	.734 (18.64)	.562 (14.27)
10	.588 (14.94)	.844 (21.44)	3.000 (76.20)	.562 (14.27)	.368 (9.35)	.703 (17.86)	.859 (21.82)	.562 (14.27)
12	.748 (19.00)	1.000 (25.40)	3.500 (88.90)	.562 (14.27)	.368 (9.35)	.891 (22.63)	1.000 (25.40)	.562 (14.27)
14	.873 (22.17)	1.125 (28.58)	3.500 (88.90)	.562 (14.27)	.368 (9.35)	1.016 (25.81)	1.125 (28.58)	.562 (14.27)
16	.998 (25.35)	1.250 (31.75)	3.500 (88.90)	.562 (14.27)	.368 (9.35)	1.141 (28.98)	1.250 (31.75)	.562 (14.27)
18	1.123 (28.52)	1.375 (34.93)	3.500 (88.90)	.562 (14.27)	.368 (9.35)	1.266 (32.16)	1.375 (34.93)	.562 (14.27)
20	1.248 (31.70)	1.500 (38.10)	4.000 (101.60)	.625 (15.88)	.430 (10.92)	1.391 (35.33)	1.500 (38.10)	.562 (14.27)
22	1.373 (34.87)	1.625 (41.26)	4.000 (101.60)	.625 (15.88)	.430 (10.92)	1.516 (38.51)	1.625 (41.26)	.562 (14.27)
24	1.498 (38.05)	1.750 (44.45)	4.000 (101.60)	.658 (16.71)	.463 (11.76)	1.641 (41.68)	1.750 (44.45)	.602 (15.29)

MATERIALS AND FINISHES

	KPT
Protective Cap	aluminum alloy, olive drab finish per QQ-P-416
Sash Chain	stainless steel
Ring/Rivet	stainless steel
Gasket	polychloroprene

Test Data

The following excerpts are some of the parameter requirements of the MIL–C–26482 specification.

Test Description	Paragraph Reference	Requirements
Contact Retention	4.6.32.1	After preloading to 3 pounds maximum, the force shall be applied at a rate of approximately 1 pound per second and maintained at full load for 5–10 seconds. No damage to contacts or insert shall result nor shall the contacts be dislocated from their normal position in the connector more than 0.012 inch under giveload for KPSE and within 1 minute after the load is removed for KPT.

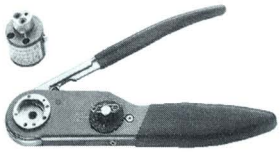
Contact Size	20	16	12
Load in Pounds Min.	15	25	25

Contact Insertion/Extraction (KPSE Only)	4.6.11	When using the proper insertion and extraction tools the forces required to insert or extract the contact shall not exceed 20 lbs. Connectors shall be less endbell.
Coupling Torque	4.6.3	For qualification testing, mating halves shall be coupled and uncoupled, measuring the torques necessary. The torques required to couple and uncouple mating connector halves shall fall within the limits specified as follows:

	Torque lb./in.			Torque lb./in.	
Shell Size	Max.	Min.	Shell Size	Max.	Min.
8	8	1	18	28	4
10	12	1	20	32	6
12	16	2	22	36	7
14	20	4	24	44	7
16	24	4			

Durability	4.6.17	Connector halves shall be mated and unmated 500 times at a rate of 200±100 cycles per hour. The test may be performed by hand or by mechanical means, but the coupling ring shall be operated as in normal service. Failure to complete this test because of mechanical malfunction shall be cause for rejection.
Insert Retention	4.6.29	Connectors with the endbells and grommets (if possible) removed shall be subjected to a 75 psi load on the insulator in both directions. The load shall be applied at a rate of 10lb/sec. and held for 5 to 10 secs. Insulators shall not be dislodged from their original position.
Insulation Resistance	4.6.7.1	On unmated connectors at 25°C±3°C a potential of 500 VDC ± 10% shall be applied between all, but not more than 6, pairs of adjacent contacts and between all, but not more than 6, contacts and the shell. Failure to meet a minimum requirement of 5,000 megohms shall be cause for rejection.
Vibration	4.6.21	Wired, mated connectors shall be subjected to the vibration test of MIL–STD–1344, Method 2005, Test Condition II. Receptacles shall be mounted on the vibration fixture by normal means. All contacts shall be wired in a series circuit and 100 max. milliamperes of current shall be allowed to flow through the series circuit during vibration. Suitable means shall be employed to monitor the current flow and to indicate any discontinuity of more than 10 microseconds. The wire bundle shall be clamped to nonvibrating points at least 8 inches from the rear of the connector. Current discontinuity of 10 microsecond or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.
Shock	4.6.23	Wired, mated connectors shall be subjected to one shock in each direction in each of three mutually perpendicular axes. The pulse shall be approximate half sine wave of 50g±15% magnitude with a duration of 11±1 milliseconds. Receptacles shall be mounted on a shock fixture by normal means. All contacts shall be wired in a series circuit and 90–110 ma. of current shall flow through the series circuit during shock. Suitable means shall be employed to monitor the current flow and to indicate any discontinuity of more than 10 microseconds. Current discontinuity of 10 microseconds or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.
Thermal Shock	4.6.12	Wired, unmated plug and receptacle shall be subjected to 5 cycles of hot and cold temperatures. Maximum temperature shall be +125°C and the minimum shall be −55°C. Duration at each temperature extreme shall be 1/2 hour minimum. Cracking, breaking or loosening of parts shall be cause for rejection.
Humidity	4.6.25	The connectors shall be subjected to varying humidity, 50% to 95%, conditions for a period of 10 days KPSE or 20 days KPT. The insulation resistance shall not be less than 100 megohms.
Air Leakage (KPT Only)	4.6.15.1	A 30 psi pressure differential shall be applied across the connector for 30 minutes. The leak rate, in either direction, shall be no greater than 1 atmosphere cubic inch per hour ($4.55 \times 10^{-3} cm^3/S$) at −67°F (−55°C).
Salt Spray (Corrosion)	4.6.19	Unmated and wired connectors shall be subject to a salt fog for 48 hours. These shall be no exposure of base metal, the connector shall be functional and meet the contact resistance requirement.
Fluid Immersion	4.6.27	At least one connector, unmated and wired, shall be immersed in each fluid for a period of 20 hours then dried at room conditions for hour. Connectors shall be able to mate and meet the coupling torque requirements. a) Hydraulic Fluid per MIL–H–5606, b) Lubricating Oil per MIL–L–7808

Tooling, Crimp



M22520/1-01 CRIMP TOOL
M22520/1-02 Turret

KPSE Insertion

Contact Size	
20	MS24256A20
16	MS24256A16

KPSE Extraction

Contact Size	
20	MS24256R20
16	MS24356R16

Contacts

#20

Contact Size/Type	Military Part Number	Color Bands 1st	2nd	3rd	ITT Cannon Part Number
20 Socket	M39029/32-259	Red	Green	White	031-9074-002
20 Pin	M39029/31-240	Red	Yellow	Black	030-9036-000
16 Socket	M39029/32-247	Red	Yellow	Violet	031-9095-003
16 Pin	M39029/31-228	Red	Red	Grey	030-9032-003

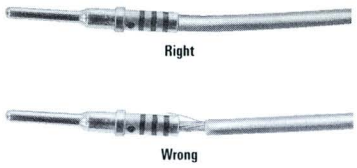
Contacts for Printed Circuit Applications Also Available

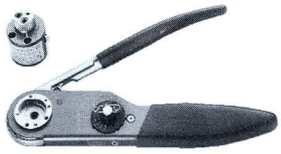
Wire Hole Fillers/Grommet Sealing Plugs

Contact Size	Part Number Cannon	Military	Color Code
20	225-1012-000	MS3187A20	Red
16	225-1011-000	MS3187-16	Blue

KPSE Assembly Instructions

Contact Size	Wire Size AWG	Strip Insulation
20	#20-#24	3/16″
16	#16-#20	1/4″



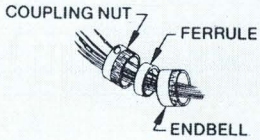


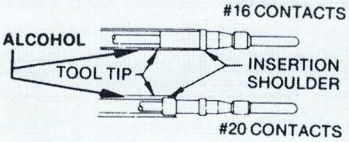
CRIMPING CONTACTS

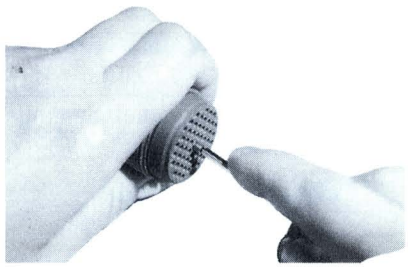
1. Strip wires according to the table above taking care not to cut or nick strands.

2. Insert stripped wire into contact crimp pot. Wire must be visible thru inspection hole.

3. Using correct crimp tool and locator select proper crimp setting for wire sizer to be crimped; cycle the tool once to be sure the indentors are open. Insert contact and wire into locator. Squeeze tool handles firmly and completely to insure a proper crimp. The tool will not release unless the crimp indentors in the tool head have been fully actuated. Release crimped contact and wire from tool. Be certain the wire is visible thru inspection hole in contact.
CAUTION: *Check that none of the contacts are bent or damaged in any way after crimping.*





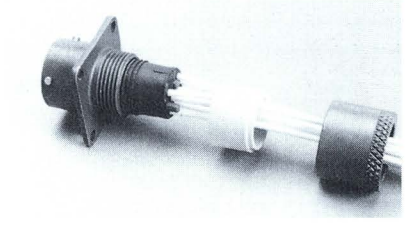


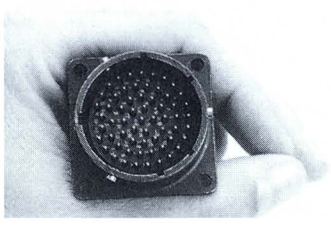
CONTACT INSERTION

1. Remove hardware from plug and receptacle. Slide hardware over wire bundle in proper order for reassembly.

2. Use the proper contact insertion tool and slide the tool over the terminal end of the contact. The size 16 contact lies in the tool and the tool tip butts against the contact shoulder. The rear, or insulation support of the size 20 contact butts against an internal shoulder in the tool tip.
NOTE: *Apply a small amount of isopropyl alcohol to the insertion tool tip while installing contacts.*

3. Beginning from center cavity and working outwards in a circular pattern, insert wired contacts into rear of connector by hand until the front of the contact shoulder is no more than 1/8″ from the grommet. Holding the connector horizontally, position tool behind contact. Push tool straight into contact cavity until contact snaps into position. A light pull on wire will assure that contact is locked securely. Repeat for reemaining contacts.





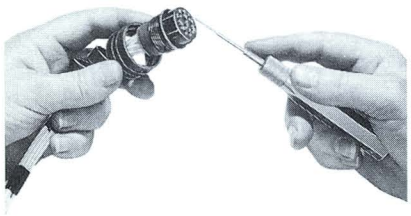
Size	Torque in/lbs.
8,10,12 and 14	10-15
16 and 18	15-25
20,22 and 24	25-35

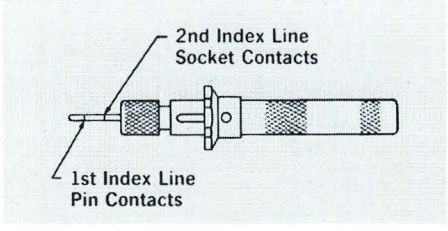
4. Use contacts and grommet sealing plugs to fill any empty cavities.

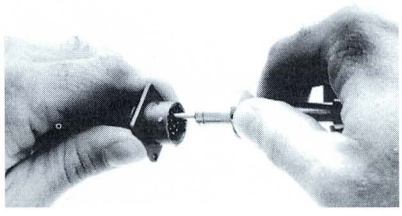
COMPLETION

1. Check face of plug or receptacle for proper contact installation.

2. Using mating connector with contacts installed, mate both connector halves together.
3. Assemble ferrule over the grommet by hand as far as possible.
4. Assemble endbell over ferrule and loosely tighten endbell. Partially loosen (1/4 turn) and retighten to recommended torque limits.







CONTACT EXTRACTION

1. Slide hardware back over wire bundle. Using proper extraction tool or extraction end of proper insertion/extraction tool, proceed as follows:

KPSE: There are two lines on the clip sleeve which are vital to the contact removal process. The first index line is used for removing pin contacts while the second index line is for removing socket contacts.

Carefully place the tool tip over the contact to be extracted until the tool tip touches the insulator face. Carefully rotate the tool until the index line is slightly below the insulator face. Keep an even pressur against tool body; push plunger forward with thumb and index finger, and push the contact out through the clip. Carefully remove extraction tool from connector. Pull the wire by hand to complete the removal of the contact.

How to Order

KPT	03	–	18 – 32	P	W	
KPT	04	–	18 – 32	P	W	
KPT	05	–	18 – 32	P	W	
KPSE	03	–	18 – 32	P	W	
KPSE	04	–	18 – 32	P	W	
KPSE	05	–	18 – 32	P	W	

PREFIX
SHELL STYLE
DASH (No Class required, less rear termination)
SHELL SIZE
CONTACT ARRANGEMENT
CONTACT TYPE
P – Pin
S – Socket
ALTERNATE INSERT POSITION

Contact ITT Cannon for additional information

Solder Type KPT03/04/05 — Supplied less endbell, ferrule and grommet.

KPT03

KPT04

KPT05

Crimp Type KPSE03/04/05 — Supplied less endbell and ferrule.

KPSE03

KPSE04

KPSE05

Twist Pull Lanyard Release Coupler Plug

KPT06/KPSE06

KPT	6	A	22 – 55	P	W	16
KPSE	6	E	22 – 55	S	Z	16

PREFIX
SHELL STYLE
SERVICE TYPE
SHELL SIZE
CONTACT ARRANGEMENT
CONTACT TYPE
POLARIZATION
MODIFICATION CODE*

*Omit (0) of shell style indication when using this modification code.
16 = Overall length of connector including lanyard to be 6″ ± 1/8″ when measured over a 1″ ± .005″ diameter mandrel.

Printed Circuit Termination

KPT02E

KPT07

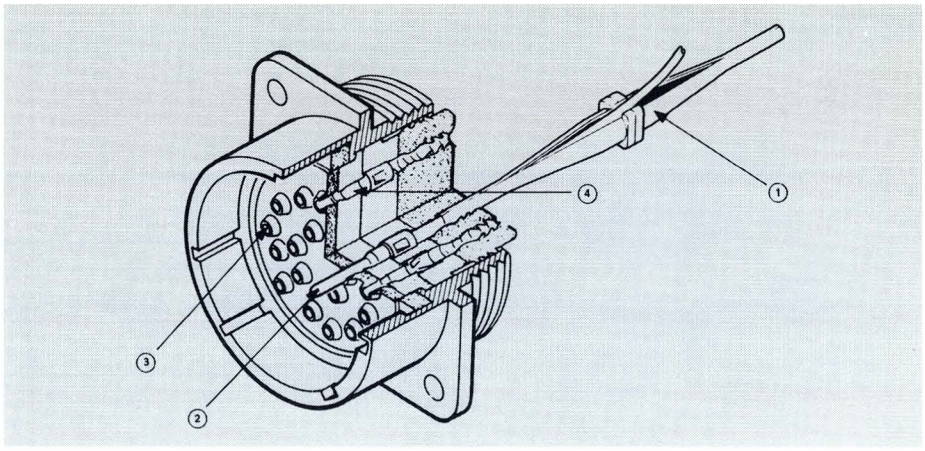
- **Intermateable with MIL-C-26482 Series I**
- **Operating termperature −55°C to ±200°C**

The PV connector is designed to meet the rugged requirements of MIL-C-26482, Series 2 / MIL-C-83723 Series I*, the specification which delineates the critical requirements of space-age applications. PV connectors have been used extensively on major aerospace programs requiring general-purpose, miniature cylindrical bayonet coupling connectors such as Space Shuttle, Apollo, ATM, OWS Minuteman, Skylab, Thor-Delta, Titan IIIC, and Viking.

The PV series is an important member of the Universal Interconnect System (UIS) — the only system that can perform all interconnection missions. This system is adaptable for use with connectors of all shapes and sizes, including circular and rectangular configurations, standard, miniature and subminiature sizes. UIS is a rear servicing system that evolved from the LITTLE CAESAR® rear release contact retention assembly, pioneered and developed by ITT Cannon. Since this time, ITT Cannon, and its licensees, have supplied to industry over 250 million interconnections utilizing this system.

PV7 connectors are available under numerous industrial specifications, some of which are listed below:

- CS512089 Jet Propulsion Laboratory
- 40M39569 NASA, George C. Marshall Space Flight Center
- 81D52 Martin Marietta, Denver Division
- MC414-0365 Rockwell International Space Division
- AC414-0013 Rockwell International Autonetics Division
- STS0003 McDonnel Douglas Astronautics

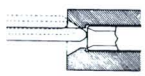


Universal Insertion / Extraction Tool Style — A single, expendable plastic tool is used for insertion and extraction of both pins and sockets.

Simple, Strong Contact Design — One basic configuration eliminates undercuts and maximizes bend resistance for positive contact mating.

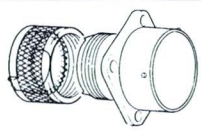
Closed-Entry Socket Insert — Hard dielectric socket face of mating connector has lead-in chamfers for positive alignment of pins and sockets.

Interfacial Pin Insert Seal — Universal interconnect permits design of raised moisture barriers around each pin which mate into lead-in chambers of hard face sockets insert for individual contact sealing. Interfacial sealing is never touched by service tools.



Superior Contact Stability — Rear Contact Release System (LITTLE CAESAR contact assembly) features a stamped metal retaining clip captivated by molded-in shoulders of each contact cavity in the insulator. A rear-inserted plastic tool expands the tines beyond the contact shoulder, releasing the contact.

Polarized Backshells — Interlocking teeth on the front of the backshell and rear portion of the shell allow endbells to be positioned as desired, eliminating chafing of wire during assembly.



Military Specification Cross Reference

PV7 and MIL-C-26482 (Series 2) Replacement for	MS Standards	ITT Cannon Prefix Commercial Design	MIL-C-83723* Slash Sheet		Description
MIL-C-26482 (Series 1)		**MIL-C-26482**	**Socket**	**Pin**	
MS3110,MS3120	MS3470	PV70	/1	/2	Narrow Flange Receptacle
MS3111,MS3121	MS3471	PV71	/7	/8	Cable Connecting Receptacle
MS3112,MS3122	MS3470	PV70	/1	/2	Narrow Flange Receptacle
MS3114,MS3124	MS3474	PV74	/5	/6	Jam Nut Receptacle
MS3116,MS3126	MS3476	PV76	/13	/14	Straight Plug
KSP/KSPM/KSSE	MS3472	PV72	/3	/4	Wide Flange Receptacle
	MS3475	PV75	/43	/42	Straight Plug, RFI Shielded
NAS1599					
NAS1650,NAS1699	MS3470		/1	/2	Narrow Flange Receptacle
NAS1651,NAS1700	MS3472		/3	/4	Wide Flange Receptacle
NAS1652,NAS1701	MS3474		/5	/6	Jam Nut Receptacle
NAS1653,NAS1702	MS3476		/13	/14	Straight Plug

*NOTE: M83723 series has been superseded by MIL-C-26482 Series 2.

ITT Cannon
Circular Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Standard Data

MATERIALS AND FINISHES

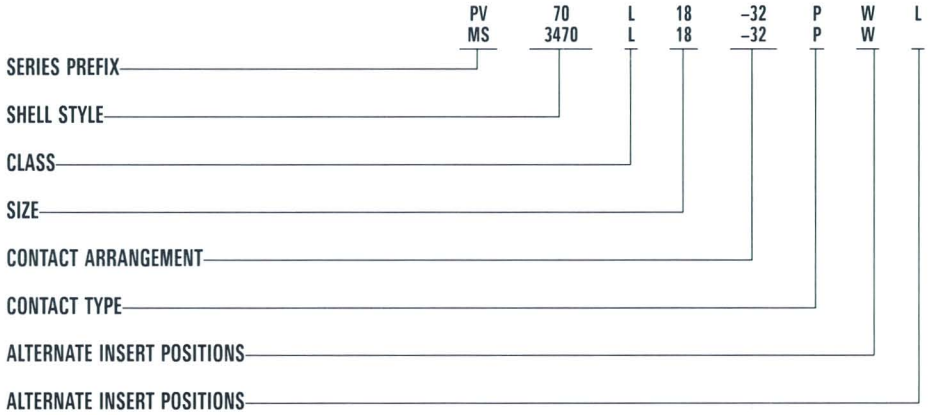
Description	Material	Finish
Shell	Aluminum alloy per QQ-A-367, QQ-A-591 or QQ-A-225	Electroless nickel per MIL–C–26074, anodized per MIL–A–8625 or olive drab cadmium over nickel
Insulators	Rigid dielectric	None
Elastomers (grommets, interfacial and O ring seals)	Silicone rubber (ITT Cannon blend) or Fluorosilicone rubber (ITT Cannon blend)	None None
Contacts	Copper alloy	Gold plate per MIL–G–45204
Coupling Nut	Aluminum alloy per QQ-A-591	Electroless nickel per MIL–C–26074, anodized per MIL–A–8625 or olive drab cadmium over nickel
Jam Nut (on PV74)	Aluminum alloy per QQ-A-225	Electroless nickel per MIL–C–26074, anodized per MIL–A–8625 or olive drab cadmium over nickel

ELECTRICAL

Contact Size	Wire Size	Insulation O.D. Limits, inch (mm) min.	Insulation O.D. Limits, inch (mm) max.	Max. Current for Tests (amps)	Potential Drop (Millivolts at 25°C)
12	12	.097 (2.46)	.158 (4.01)	23	50
	14			17	45
16	16	.053 (1.35)	.103 (2.62)	13	50
	20			7.5	45
20	20	.040 (1.02)	.083 (2.11)	7.5	55
	24			3.0	45

Service Rating	Dielectric Withstanding Voltage (Test Voltage) Sea Level	70,000 ft. Altitude	(25°C)
1	1500 Vac rms	375 Vac rms	5000 megohms minimum
2	2300 Vac rms	500 Vac rms	5000 megohms minimum

How to Order



SERIES PREFIX
MS – Complies with MIL–C–26482 Series 2
PV – ITT Cannon Interchangeable with MIL–C–26482 Series 2

SHELL STYLE

ITT Cannon Part No.	Military No.	Description
PV70	MS3470	– Narrow Flange Receptacle
PV71	MS3471	– Cable Connecting Receptacle
PV72	MS3472	– Wide Range Receptacle
PV74	MS3474	– Jam Nut Receptacle
PV75	MS3475	– Straight Plug, RFI Shielded
PV76	MS3476	– Straight Plug

*Consult factory for availability.

CLASS
(PV Series and MS Series)
*A – Fluid resistant, 200°C, non-conductive (anodized)
L – Fluid resistant, 200°C, conductive, finish (nickel)
W – Corrosive and fluid resistant, 175°C (cadmium over nickel)

SHELL SIZE
8, 10, 12, 14, 16, 18, 20, 22 and 24
(Size 8 available in PV70 & 76 only)

CONTACT ARRANGEMENTS
See page 76.

CONTACT TYPE
P – Pin contact
S – Socket contact

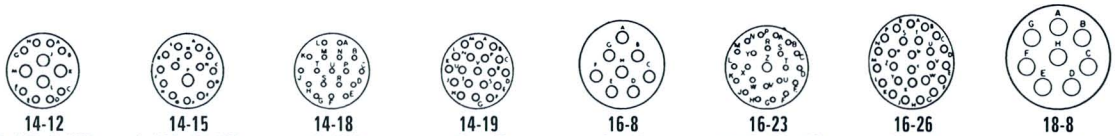
ALTERNATE INSERT POSITIONS
No designation required for normal position. Standard MS alternate positions available.

LESS COMPONENTS
Use "L" if PV connectors are ordered less contacts, sealing plugs and insertion/extraction tool ("L" is not stamped on connectors). To order MS connectors *less contacts*, purchase order must state less contacts.

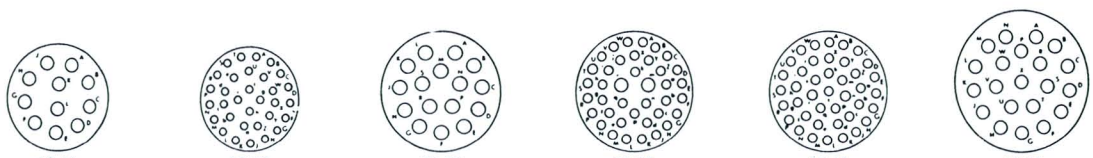
Contact Arrangements

(Face view, pin insert)

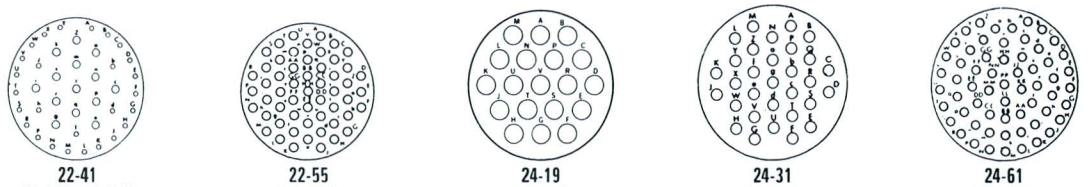
	8-33	8-98	10-6	12-3	12-8	12-10	14-4	14-5
Shell Size	8-33	8-98	10-6	12-3	12-8	12-10	14-4	14-5
No. of Contacts	3-#20	3-#20	6-#20	3-#16	8-#20	10-#20	4-#12	5-#16
Service Rating	1	1	1	2	1	1	1	2



	14-12	14-15	14-18	14-19	16-8	16-23	16-26	18-8
Shell Size	14-12	14-15	14-18	14-19	16-8	16-23	16-26	18-8
No. oF Contacts	4-#16, 8-#20	1-#16, 14-#20	18-#20	19-#20	8-#16	1-#16, 22-#20	26-#20	8-#12
Service Rating	1	1	1	1	2	1	1	1



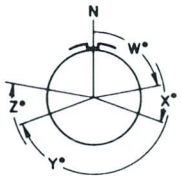
	18-11	18-32	20-16	20-39	20-41	22-21
Shell Size	18-11	18-32	20-16	20-39	20-41	22-21
No. of Contacts	11-#16	32-#20	16-#16	2-#16, 37-#20	41-#20	21-#16
Service Rating	2	1	2	1	1	2



	22-41	22-55	24-19	24-31	24-61
Shell Size	22-41	22-55	24-19	24-31	24-61
No. of Contacts	27-#20, 14-#16	55-#20	19-#12	31-#16	61-#20
Service Rating	1	1	2	1	1

Alternate Insert Positions

Face view, pin insert



Contact arrangements requiring reduced diameter for lead-in chamfer on outer row of contact cavities as indicated below.

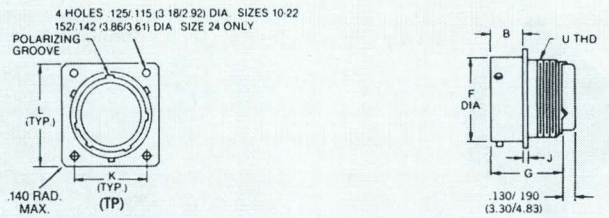
Shell	Contact Arrangements	Contact Cavities
8	33, 98	A, B, C
12	10	C, G
14	12	A, B, C, D, E, F, G, and H
14	18	A, C, E, G, J, and L
14	19	B, D, F, H, K, and M
16	26	A, B, C, D, E, F, G, H, J, K, L, M, N, P, and R)
18	32	A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, and T
22	41	A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, T, U, V, W, X, and Y

SHELL SIZE	ARRANGE-MENT	POS CODE N	W	X	Y	Z
8	33	0°	90°	—	—	—
	98	0°	—	—	—	—
10	6	0°	90°	—	—	—
12	3	0°	—	—	180°	—
	8	0°	90°	112°	203°	292°
	10	0°	60°	155°	270°	295°
14	4	0°	45°	—	—	—
	5	0°	40°	92°	184°	273°
	12	0°	43°	90°	—	—
	15	0°	17°	110°	155°	234°
	18	0°	15°	90°	180°	270°
	19	0°	30°	165°	315°	—
16	8	0°	54°	152°	180°	331°
	23	0°	158°	270°	—	—
	26	0°	60°	—	275°	338°
18	8	0°	180°	—	—	—
	11	0°	62°	119°	241°	340°
	32	0°	85°	138°	222°	265°
20	16	0°	238°	318°	333°	347°
	39	0°	63°	144°	252°	333°
	41	0°	45°	126°	225°	—
22	21	0°	16°	135°	175°	349°
	41	0°	39°	135°	264°	—
	55	0°	30°	142°	226°	314°
24	19	0°	30°	165°	315°	—
	31	0°	90°	225°	255°	—
	61	0°	90°	180°	270°	324°

ITT Cannon
Circular Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Narrow Flange Receptacle

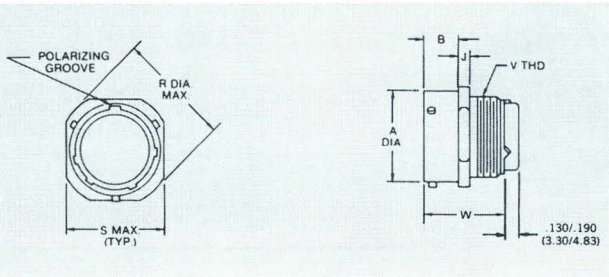
MS3470 **PV70**



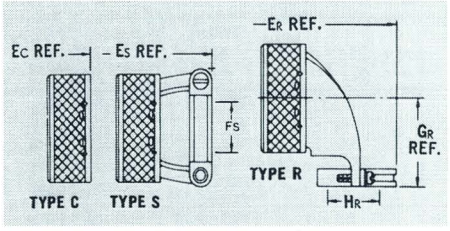
Shell Size*	B Max.	F Max.	G Max.	J Max.	K	L	U Thread UNEF Class 2A
8	.462 (11.73)	.474 (12.04)	1.215 (30.85)	.078 (1.98)	.594 (15.09)	.828 (21.03)	1/2-20
10	.462 (11.73)	.594 (15.01)	1.215 (30.85)	.078 (1.98)	.719 (18.26)	.954 (24.23)	5/8-24
12	.462 (11.73)	.751 (19.08)	1.215 (30.85)	.078 (1.98)	.812 (20.62)	1.047 (26.59)	3/4-20
14	.462 (11.73)	.876 (22.25)	1.215 (30.85)	.078 (1.98)	.906 (23.01)	1.141 (28.98)	7/8-20
16	.462 (11.73)	1.001 (25.43)	1.215 (30.85)	.078 (1.98)	.969 (24.61)	1.234 (31.34)	1-20
18	.462 (11.73)	1.126 (28.60)	1.215 (30.85)	.078 (1.98)	1.062 (26.97)	1.328 (33.73)	1-1/16-18
20	.587 (14.91)	1.251 (31.78)	1.275 (32.40)	.110 (2.79)	1.156 (29.36)	1.453 (36.91)	1-3/16-18
22	.587 (14.91)	1.376 (34.95)	1.275 (32.40)	.110 (2.79)	1.250 (31.75)	1.578 (40.08)	1-5/16-18
24	.620 (15.75)	1.501 (38.13)	1.275 (32.40)	.110 (2.79)	1.375 (34.93)	1.703 (43.26)	1-7/16-18

Cable Connecting Receptacle

MS3471 **PV71**



Shell Size*	A Max.	B Max.	J Max.	R Dia. Max.	S Max.	W Max.	V Thread UNEF Class 2A
10	.591 (15.01)	.462 (11.73)	.078 (1.98)	1.082 (27.48)	.954 (24.23)	1.215 (30.86)	5/8-24
12	.751 (19.08)	.462 (11.73)	.078 (1.98)	1.176 (29.87)	1.047 (26.59)	1.215 (30.86)	3/4-20
14	.876 (22.25)	.462 (11.73)	.078 (1.98)	1.270 (32.26)	1.141 (28.98)	1.215 (30.86)	7/8-20
16	1.001 (25.43)	.462 (11.73)	.078 (1.98)	1.364 (34.64)	1.234 (31.34)	1.215 (30.86)	1-20
18	1.126 (28.60)	.462 (11.73)	.078 (1.98)	1.458 (37.03)	1.328 (33.73)	1.215 (30.86)	1-1/16-18
20	1.251 (31.78)	.587 (14.91)	.110 (2.79)	1.708 (43.38)	1.578 (40.08)	1.275 (32.38)	1-5/16-18
22	1.376 (34.95)	.587 (14.91)	.110 (2.79)	1.708 (43.38)	1.578 (40.08)	1.275 (32.38)	1-5/16-18
24	1.501 (38.13)	.620 (15.75)	.110 (2.79)	1.832 (46.53)	1.703 (43.26)	1.275 (32.38)	1-7/16-18



Backshell Assemblies not supplied with MS connectors.

Receptacle Assembly With Backshell†

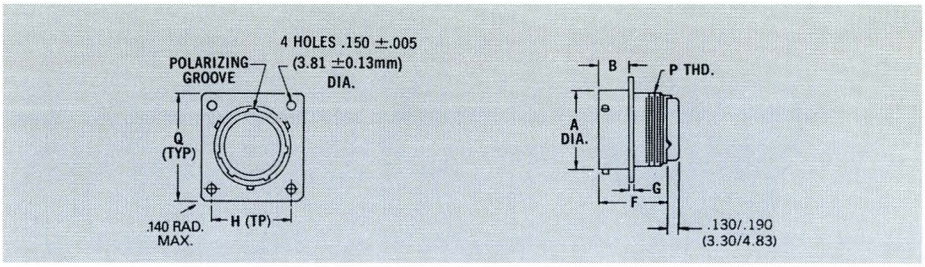
SHELL SIZE*	TYPE C Ec Max.	TYPE S Fs Max.	TYPE S Es Max.	TYPE R Gr Max.	TYPE R Hr Max.	TYPE R Er Max.
10	1.492 (37.90)	.286 (7.26)	1.842 (46.79)	.880 (23.35)	.286 (7.26)	2.115 (53.72)
12	1.492 (37.90)	.416 (10.57)	1.842 (46.79)	.950 (24.13)	.416 (10.57)	2.250 (57.15)
14	1.492 (37.90)	.476 (12.09)	2.077 (52.76)	1.010 (25.65)	.476 (12.09)	2.340 (59.44)
16	1.492 (37.90)	.626 (15.90)	2.077 (52.76)	1.070 (27.18)	.626 (15.90)	2.475 (62.87)
18	1.492 (37.90)	.706 (17.93)	2.077 (52.76)	1.130 (28.70)	.706 (17.93)	2.574 (65.38)
20	1.552 (39.42)	.831 (21.11)	2.137 (54.28)	1.190 (30.23)	.831 (21.11)	2.767 (70.28)
22	1.552 (39.42)	.956 (24.28)	2.137 (54.28)	1.260 (32.00)	.956 (24.28)	2.890 (73.41)
24	1.552 (39.42)	1.081 (27.46)	2.137 (54.28)	1.320 (33.53)	1.081 (27.46)	3.012 (76.50)

* See page 75 for part numbers. † To order backshell assemblies separately, see page 79.

Wide Flange Receptacle

MS3472

PV72

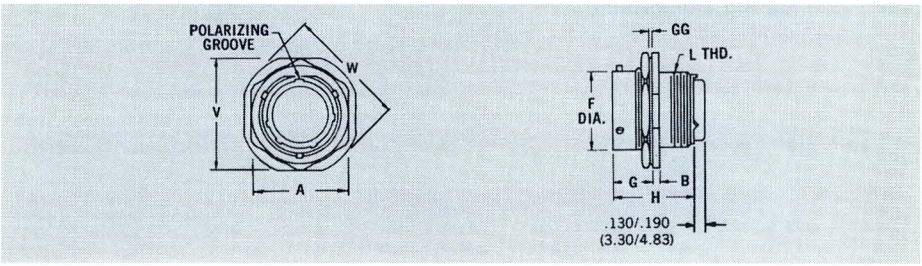


Shell Size*	A Max.	B Max.	F Max.	G Max.	H Max.	Q Max.	P Thread UNEF Class A
10	.591 (15.01)	.493 (12.52)	1.215 (30.85)	.078 (1.98)	.812 (20.62)	1.141 (28.98)	5/8-24
12	.751 (19.08)	.493 (12.52)	1.215 (30.85)	.078 (1.98)	.938 (23.83)	1.266 (32.16)	3/4-20
14	.876 (22.25)	.493 (12.52)	1.215 (30.85)	.078 (1.98)	1.031 (26.19)	1.360 (34.54)	7/8-20
16	1.001 (25.43)	.493 (12.52)	1.215 (30.85)	.078 (1.98)	1.125 (28.58)	1.453 (36.91)	1-20
18	1.126 (28.60)	.493 (12.52)	1.215 (30.85)	.078 (1.98)	1.203 (30.56)	1.532 (38.91)	1-1/16-18
20	1.251 (31.78)	.587 (14.91)	1.275 (32.40)	.110 (1.98)	1.297 (32.94)	1.688 (42.88)	1-3/16-18
22	1.376 (34.95)	.587 (14.91)	1.275 (32.40)	.110 (1.98)	1.375 (34.93)	1.766 (44.86)	1-5/16-18
24	1.501 (38.13)	.620 (15.75)	1.275 (32.40)	.110 (1.98)	1.500 (38.10)	1.891 (48.03)	1-7/16-18

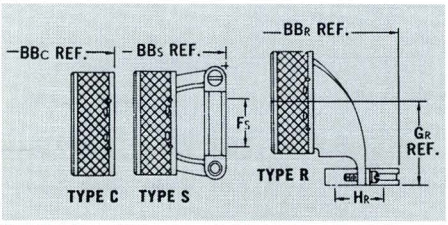
Jam Nut Receptacle

MS3474

PV74



Shell Size*	V Max.	A Max.	B Max.	F Max.	G Max.	GG Panel Thickness	H Max.	W Dia. Max.	L Thread UNEF Class 2
8	.954 (24.23)	.767 (19.48)	.113 (2.87)	.474 (12.04)	.707 (17.96)	.187/.062 (4.75/1.57)	1.215 (30.86)	1.078 (27.38)	1/2-20
10	1.078 (27.38)	.892 (22.66)	.113 (2.87)	.591 (15.01)	.707 (17.96)	.187/.062 (4.75/1.57)	1.215 (30.85)	1.203 (30.56)	5/8-24
12	1.266 (32.16)	1.079 (27.41)	.113 (2.87)	.751 (19.08)	.707 (17.96)	.187/.062 (4.75/1.57)	1.215 (30.85)	1.391 (35.33)	3/4-20
14	1.391 (35.33)	1.205 (30.61)	.113 (2.87)	.876 (22.25)	.707 (17.96)	.187/.062 (4.75/1.57)	1.215 (30.85)	1.516 (38.51)	7/8-20
16	1.516 (38.51)	1.329 (33.76)	.113 (2.87)	1.001 (25.43)	.707 (17.96)	.187/.062 (4.75/1.57)	1.215 (30.85)	1.641 (41.68)	1-20
18	1.641 (41.68)	1.455 (36.96)	.113 (2.87)	1.126 (28.60)	.707 (17.96)	.187/.062 (4.75/1.57)	1.215 (30.85)	1.766 (44.86)	1-1/16-18
20	1.828 (46.43)	1.579 (40.11)	.148 (3.76)	1.251 (31.78)	.772 (19.61)	.250/.062 (6.35/1.57)	1.275 (32.40)	1.954 (49.63)	1-3/16-18
22	1.954 (49.63)	1.705 (40.11)	.148 (3.76)	1.376 (34.95)	.772 (19.61)	.250/.062 (6.35/1.57)	1.275 (32.40)	2.078 (52.78)	1-5/16-18
24	2.078 (52.78)	1.829 (46.46)	.148 (3.76)	1.501 (38.13)	.772 (19.61)	.219/.062 (5.56/1.57)	1.275 (32.40)	2.203 (55.96)	1-7/16-18



Backshell Assemblies not supplied with MS connectors.

Receptacle Assembly With Backshell†

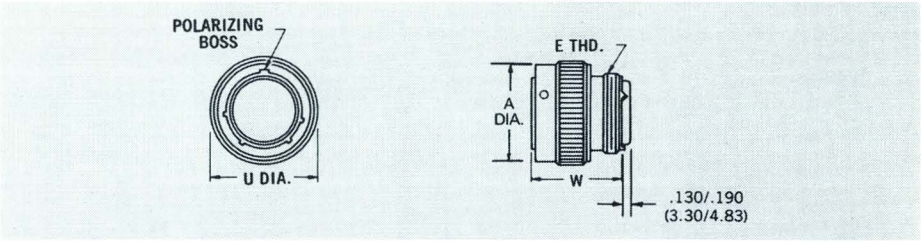
SHELL SIZE*	TYPE C BBC Max.	TYPE S BBS Max.	TYPE S FS Max.	TYPE R BBR Max.	TYPE R GR Max.	TYPE R HR Max.
10	1.492 (37.90)	1.842 (46.79)	.286 (7.26)	2.115 (53.72)	.880 (22.35)	.286 (7.26)
12	1.492 (37.90)	1.842 (46.79)	.416 (10.57)	2.250 (57.15)	.950 (24.13)	.416 (10.57)
14	1.492 (37.90)	2.077 (52.76)	.476 (12.09)	2.340 (59.44)	1.010 (25.65)	.476 (12.09)
16	1.492 (37.90)	2.077 (52.76)	.626 (15.90)	2.475 (62.87)	1.070 (27.18)	.626 (15.90)
18	1.492 (37.90)	2.077 (52.76)	.706 (17.93)	2.574 (65.38)	1.130 (28.70)	.706 (17.93)
20	1.552 (39.42)	2.137 (54.28)	.831 (21.11)	2.767 (70.28)	1.190 (30.23)	.831 (21.11)
22	1.552 (39.42)	2.137 (54.28)	.956 (24.28)	2.890 (73.41)	1.260 (32.00)	.956 (24.28)
24	1.552 (39.42)	2.137 (54.28)	1.081 (27.46)	3.012 (76.50)	1.320 (33.53)	1.081 (27.46)

* See page 75 for part number. † To order backshell assemblies separately, see page 79.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Straight Plug

MS3476 PV76



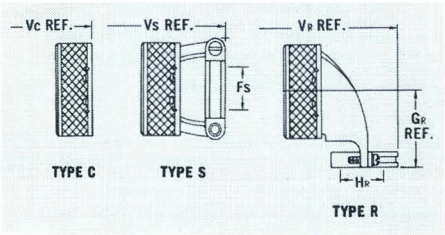
Shell Size*	A Dia. Max.	U Max.	W Max.	E Thread UNEF Class 2A
8	.765 (19.43)	.782 (19.86)	1.230 (31.24)	1/2-20
10	.840 (21.34)	.926 (23.52)	1.230 (31.24)	5/8-24
12	.999 (25.37)	1.043 (26.49)	1.230 (31.24)	3/4-20
14	1.139 (28.93)	1.183 (30.05)	1.230 (31.24)	7/8-20
16	1.261 (32.03)	1.305 (33.15)	1.230 (31.24)	1-20
18	1.337 (33.96)	1.391 (35.33)	1.230 (31.24)	1-1/16-18
20	1.477 (37.52)	1.531 (38.89)	1.230 (31.24)	1-3/16-18
22	1.602 (40.69)	1.656 (42.06)	1.230 (31.24)	1-5/16-18
24	1.723 (43.76)	1.777 (45.14)	1.230 (31.24)	1-7/16-18

MS3475 PV75

SHELL SIZE*	E Thread UNEF Class 2A	A Dia. Max.	U Max.	W Max.
10	5/8-24	.840 (21.34)	.926 (21.72)	1.230 (31.24)
12	3/4-20	.999 (25.37)	1.043 (26.42)	1.230 (31.24)
14	7/8-20	1.139 (28.93)	1.183 (29.97)	1.230 (31.24)
16	1-20	1.261 (32.03)	1.305 (33.15)	1.230 (31.24)
18	1-1/16-18	1.337 (33.96)	1.391 (35.33)	1.230 (31.24)
20	1-3/16-18	1.477 (37.52)	1.531 (38.89)	1.230 (31.24)
22	1-5/16-18	1.602 (40.69)	1.656 (42.06)	1.230 (31.24)
24	1-7/16-18	1.723 (43.76)	1.777 (45.14)	1.230 (31.24)

* See page 75 for part numbers.

Plug Assemblies with Backshell†



Backshell Assemblies not supplied with MS connectors.

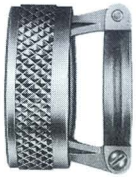
Shell Size*	TYPE C Vc Max.	TYPE S Fs Max.	TYPE S Vs Max.	TYPE R GR Max.	TYPE R HR Max.	TYPE R VR Max.
8						
10	1.507 (38.28)	.286 (7.26)	1.857 (47.17)	.880 (22.35)	.286 (7.26)	2.130 (54.10)
12	1.507 (38.28)	.416 (10.57)	1.857 (47.17)	.950 (24.13)	.416 (10.57)	2.265 (57.53)
14	1.507 (38.28)	.476 (12.09)	2.092 (53.14)	1.010 (25.65)	.476 (12.09)	2.355 (59.82)
16	1.507 (38.28)	.626 (15.90)	2.092 (53.14)	1.070 (27.18)	.626 (15.90)	2.490 (63.25)
18	1.507 (38.28)	.706 (17.93)	2.092 (53.14)	1.130 (28.70)	.706 (17.93)	2.589 (65.76)
20	1.507 (38.28)	.831 (21.11)	2.092 (53.14)	1.190 (30.23)	.831 (21.11)	2.722 (69.14)
22	1.507 (38.28)	.956 (24.28)	2.092 (53.14)	1.260 (32.00)	.956 (24.28)	2.845 (72.26)
24	1.507 (38.28)	1.081 (27.46)	2.092 (52.14)	1.320 (33.53)	1.081 (27.46)	2.967 (75.36)

* See page 75 for part numbers. † To order backshell assemblies separately, see page 79.

Backshells

(Not supplied with MS Connectors)

Short



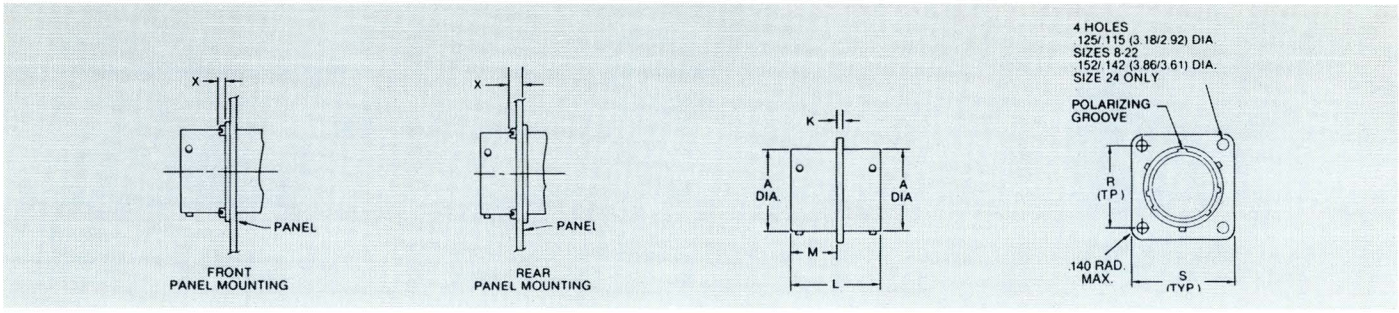
Straight

90° Degree

Shell Size	TYPE C (SHORT) ITT CANNON Conductive (Nickel finish)	TYPE S (STRAIGHT) ITT CANNON Conductive (Nickel finish)	TYPE R (90°) ITT CANNON Conductive (Nickel finish)
10	057-0716-002	057-0683-002	057-0704-001
12	057-0717-002	057-0684-002	057-0705-001
14	057-0718-002	057-0685-002	057-0706-001
16	057-0719-002	057-0686-002	057-0707-001
18	057-0720-002	057-0687-002	057-0708-001
20	057-0721-002	057-0688-002	057-0709-001
22	057-0722-002	057-0689-002	057-0710-001
24	057-0723-002	057-0713-002	057-0711-001

Thru-Bulkhead Receptacle

PV-TBF



Shell Size	A Dia. ±.003 (0.08)	K ±.016 (0.41)	L Max.	M ±0.41 (.016)	R (TP)	S Max.	X Max.
8	.471 (11.96)	.062 (1.57)	28.58 (1.125)	14.66 (.577)	15.09 (.594)	21.03 (.828)	5.54 (.218)
10	.588 (14.94)	.062 (1.57)	28.58 (1.125)	14.66 (.577)	18.26 (.719)	24.23 (.954)	5.54 (.218)
12	.748 (19.00)	.062 (1.57)	28.58 (1.125)	14.66 (.577)	20.62 (.812)	26.59 (1.047)	5.54 (.218)
14	.873 (22.17)	.062 (1.57)	28.58 (1.125)	14.66 (.577)	23.01 (.906)	28.98 (1.141)	5.54 (.218)
16	.998 (25.35)	.062 (1.57)	28.58 (1.125)	14.66 (.577)	24.61 (.969)	31.34 (1.234)	5.54 (.218)
18	1.123 (28.52)	.062 (1.57)	28.58 (1.125)	14.66 (.577)	26.97 (1.062)	33.73 (1.328)	5.54 (.218)
20	1.248 (31.70)	.094 (2.39)	35.71 (1.406)	17.86 (.703)	29.36 (1.156)	36.91 (1.453)	8.74 (.344)
22	1.373 (34.87)	.094 (2.39)	35.71 (1.406)	17.86 (.703)	31.75 (1.250)	40.08 (1.578)	8.74 (.344)
24	1.498 (38.05)	.094 (2.39)	35.71 (1.406)	17.86 (.703)	34.92 (1.375)	43.26 (1.703)	7.90 (.311)

Notes: 1) Shell available in conductive (nickel finish) only.
2) Contacts are nonremovable.

How to Order — PV TBF

PV-TBF 10 -6 PS W

SERIES PREFIX
SHELL SIZE
INSERT ARRANGEMENTS
CONTACT STYLE
ALTERNATE POLARIZING POSITION

SERIES PREFIX
PV-TBF — ITT Cannon prefix

SHELL SIZE
8 through 24

INSERT ARRANGEMENTS
10-6, 14-19, 16-8, 16-26, 18-32, 20-39, 20-41, 22-41, 22-55, 24-61.

CONTACT STYLE
Pin and socket

ALTERNATE POLARIZING POSITION
No designation required for normal. Standard MS alternate positions available.

Notes: 1) Shell available in conductive (nickel finish) only.
2) Contacts are nonremovable.
3) Designed to MS3119 configuration and meets the performance requirements of MIL–C–26482 Series 2.

Tooling

Crimp Tool

M22520/1-01 Crimp Tool with M22520/1-02 Turret

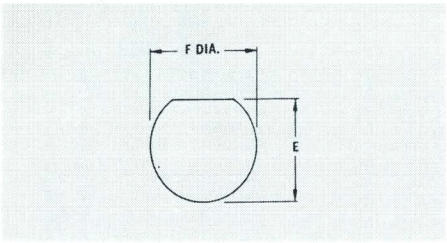
Insertion/Extraction Tools

Contact Size	Wire Contact Tools			Unwired Contact Tools
	Cannon Pt. No.	Mil. Pt. No.	Superseded Mil. Pt. No.	Cannon Pt. No.
20	CIET-20-11 (274-7001-006)	M81969/14-11	MS27534-20 MS3447-20 NAS1664-20	274-7007-000
16	CIET-16-03 (274-7002-000)	M81969/14-03	MS27534-16 MS3447-16 NAS1664-16	274-7008-000
12	CIET-12-04 (274-7003-000)	M81969/14-04	MS27534-12 MS3447-12 NAS1664-12	274-7009-000

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

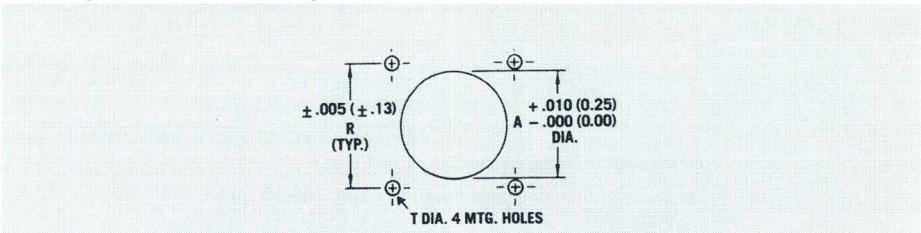
Panel Cutouts

Jam Nut Receptacle



Shell Size	E ±.005 (.130)	F Dia. ±.005 (.130)
10	.661 (16.79)	.697 (17.70)
12	.824 (20.93)	.895 (22.73)
14	.948 (24.08)	1.010 (25.65)
16	1.072 (27.23)	1.135 (28.33)
18	1.197 (30.40)	1.260 (32.00)
20	1.322 (33.58)	1.385 (35.18)
22	1.447 (36.75)	1.510 (38.35)
24	1.572 (39.93)	1.635 (41.53)

Narrow Flange and Thru-Bulkhead/Wide Flange

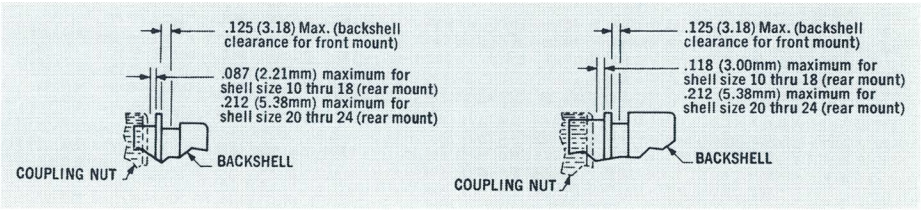


Shell Size	Flange Front and Rear Mounting A Dia.	R	Mounting Hole T Dia.	Screw Size
8	.620 (15.75)	.594 (18.26)	.125 (3.14)	#4
10	.740 (18.80)	.719 (18.26)	.125 (3.17)	#4
12	.864 (21.95)	.812 (20.62)	.125 (3.17)	#4
14	.990 (25.15)	.906 (23.01)	.125 (3.17)	#4
16	1.118 (28.40)	.969 (24.61)	.125 (3.17)	#4
18	1.240 (31.50)	1.062 (26.97)	.125 (3.17)	#4
20	1.366 (34.70)	1.156 (29.36)	.125 (3.17)	#4
22	1.490 (37.85)	1.250 (31.75)	.125 (3.17)	#4
24	1.616 (41.05)	1.375 (34.92)	.155 (3.97)	#6

Shell Size	Flange Front and Rear Mounting A Dia.	R	Mounting Hole T Dia.	Screw Size
10	.740 (18.80)	.812 (20.62)	.155 (3.97)	#6
12	.864 (21.95)	.938 (23.93)	.155 (3.97)	#6
14	.990 (25.15)	1.031 (26.19)	.155 (3.97)	#6
16	1.118 (28.40)	1.125 (28.58)	.155 (3.97)	#6
18	1.240 (31.50)	1.203 (30.56)	.155 (3.97)	#6
20	1.366 (34.70)	1.297 (32.94)	.155 (3.97)	#6
22	1.490 (37.85)	1.375 (34.92)	.155 (3.97)	#6
24	1.616 (41.05)	1.500 (38.10)	.155 (3.97)	#6

Panel Thickness

Shown here are the maximum panel thickness including screw head height allowable to ensure complete connector operation.



Dummy Stowage Receptacles

How to Order

PV DESCRIPTION

PVS -15 G 12

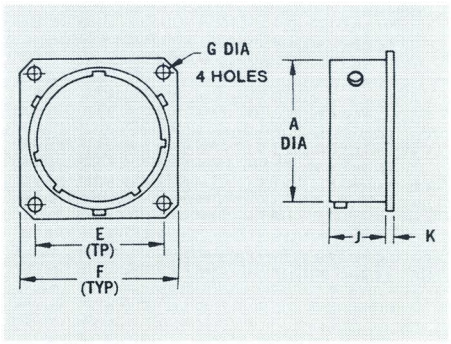
SERIES PREFIX
PVS – ITT Cannon prefix
DUMMY RECEPTACLE INDICATOR
–15 – PV
CLASS
G – Conductive finish (nickel)
A – Nonconductive finish (anodized)
SHELL SIZE
8 through 24

MS DESCRIPTION

MS 3115 -12 L

SERIES PREFIX
MS – Complies with MIL–C–26482
MS STANDARD
3115 – Dummy receptacle
SHELL SIZE
8 through 24
CLASS
L – Conductive finish (nickel)
A – Nonconductive finish (anodized)

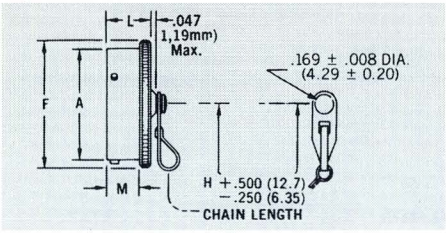
NOTE: Usable on KPT/KPSE series also.



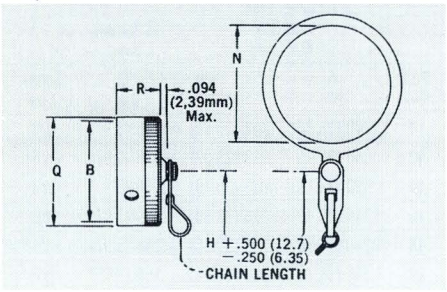
Shell Size	A Dia. Max.	E (TYP)	F Max.	G Max.	J Max.	K Max.
8	.474 (12.04)	.594 (15.09)	.828 (21.03)	.125 (3.18)	.493 (12.52)	.078 (1.98)
10	.591 (15.01)	.719 (18.26)	.954 (24.23)	.125 (3.18)	.493 (12.52)	.078 (1.98)
12	.751 (19.08)	.812 (20.62)	1.047 (26.59)	.125 (3.18)	.493 (12.52)	.078 (1.98)
14	.876 (22.25)	.906 (23.01)	1.141 (28.98)	.125 (3.18)	.493 (12.52)	.078 (1.98)
16	1.001 (25.43)	.969 (24.61)	1.234 (31.34)	.125 (3.18)	.493 (12.52)	.078 (1.98)
18	1.126 (28.60)	1.062 (26.97)	1.328 (33.73)	.125 (3.18)	.493 (12.52)	.078 (1.98)
20	1.251 (31.78)	1.156 (29.36)	1.453 (36.91)	.125 (3.16)	.587 (14.91)	.110 (2.79)
22	1.376 (34.95)	1.250 (31.75)	1.578 (40.08)	.125 (3.18)	.587 (14.91)	.110 (2.79)
24	1.501 (38.13)	1.375 (34.92)	1.703 (43.26)	.152 (3.86)	.620 (15.75)	.110 (2.79)

Protective Metal Caps

Plugs



Receptacles



PVS 80 -12 C A
MS 3180 -12 C A

SERIES PREFIX
PVS – ITT Cannon Prefix
MS – Complies with MIL–C–26482 (Series 2)

TYPE
80 or 3180 – Plug Cap
81 or 3181 – Receptacle Cap

SHELL SIZE
8 thru 24

TERMINATION STYLE
C – Sash chain (MS approved)
N – Sash chain with ring (81 or 3181 type only) MS approved

FINISH
A – Hard anodic, non-conductive (MS approved)
G – Nickel, conductive (not MS) (PVS only)

NOTE: Usable on KPT/KPSE series also.
N style used primarily on Jam Nut Receptacle.

Shell Size	A Max. Dia.	B Max.	F Max. Dia	H	L Max.	M Max.	N Min. Dia.	Q Max.	R Max.
8	.474 (12.04)	.486 (12.34)	.719 (18.26)	3.000 (76.20)	.562 (14.27)	.399 (10.13)	.578 (14.68)	.734 (18.64)	.562 (14.27)
10	.591 (15.01)	.607 (15.42)	.844 (21.44)	3.000 (76.20)	.562 (14.27)	.399 (10.13)	.703 (17.86)	.859 (21.82)	.562 (14.27)
12	.751 (19.08)	.766 (19.46)	1.000 (25.40)	3.500 (76.20)	.562 (14.27)	.399 (10.13)	.891 (22.63)	1.000 (25.40)	.562 (14.27)
14	.876 (22.25)	.890 (22.60)	1.125 (28.58)	3.500 (88.90)	.562 (14.27)	.399 (10.13)	1.016 (25.81)	1.125 (28.58)	.562 (14.27)
16	1.001 (25.43)	1.015 (25.78)	1.250 (31.75)	3.500 (88.90)	.562 (14.27)	.399 (10.13)	1.141 (28.98)	1.250 (31.75)	.562 (14.27)
18	1.126 (28.60)	1.141 (28.98)	1.375 (34.93)	3.500 (88.90)	.562 (14.27)	.399 (10.13)	1.266 (32.16)	1.375 (34.93)	.562 (14.27)
20	1.251 (31.78)	1.265 (32.13)	1.500 (38.10)	4.000 (101.60)	.625 (15.88)	.461 (11.71)	1.391 (35.33)	1.500 (38.10)	.562 (14.27)
22	1.376 (34.96)	1.390 (35.31)	1.625 (41.26)	4.000 (101.60)	.625 (15.88)	.461 (11.71)	1.516 (38.51)	1.625 (41.26)	.562 (14.27)
24	1.501 (38.13)	1.515 (38.48)	1.750 (44.45)	4.000 (101.60)	.658 (16.71)	.494 (12.55)	1.641 (41.68)	1.750 (44.45)	.602 (15.29)

Contacts

Contact Size	Type	MS Number	Color Brands 1st	2nd	3rd	ITT Cannon
20	Socket	M39029/5-115	Brown	Brown	Green	031-9174-004
20	Pin	M39029/4-110	Brown	Brown	Black	030-9173-006
16	Socket	M39029/5-116	Brown	Brown	Blue	031-9206-006
16	Pin	M39029/4-111	Brown	Brown	Brown	030-9205-007
12	Socket	M39029/5-118	Brown	Brown	Grey	031-9186-003
12	Pin	M39029/4-113	Brown	Brown	Orange	030-9185-003

Thermocouple Contacts

Contact Size	Alumel	Chromal
20 Pin	030-1831-000	030-1832-000
20 Socket	031-1013-000	031-1014-000

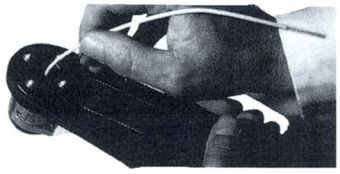
Wire Hole Fillers

Contact Size	Part Number Cannon	Military	Superseded Mil. Pt. No.	Color Code
20	225-0070-000	MS27488-20	MS3187-20 M83723/28-20	Red
16	225-0071-000	MS27488-16	MS3187-16 M83723/28-16	Blue
12	225-0072-000	MS27488-12	MS3187-12 M83723/28-12	Yellow

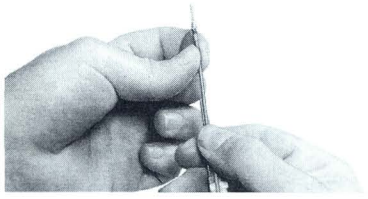
Assembly Procedures

STRIPPING AND CRIMPING

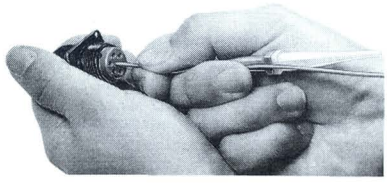
1. Strip wires according to contact size: 3/16" for #20 and 9/32" for #16 and #12. #20 contacts accommodate AWG wire sizes 20, 22, or 24; #16 accommodates 16, 18 or 20; and #12 accommodates 12 or 14.



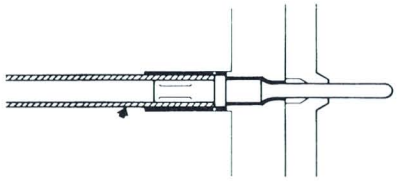
4. Insert contact and wire into tool jaws. To crimp, squeeze handles together fully until ratchet releases and allows handles to expand; otherwise, contact cannot be extracted from tool jaws. Maintain slight insertion pressure on wire while crimping contact to wire.



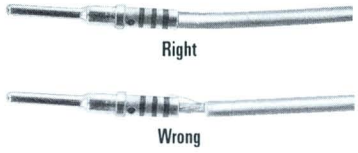
3. Slide back tool on wire shile holding thumb against wire at opening. Wire will slip into tool.
NOTE: Socket contacts should be inserted partially into grommet by hand before using insertion tool.



6. Withdraw tool from rear of plug. To be sure that contact is locked, pull back lightly on wire. Then remove tool from wire and proceed with other contacts.

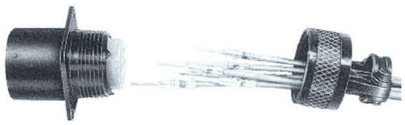


2. Push tool into rear of plug until it bottoms. At this point, tool releases tines on retaining clip so that contact can be extracted.

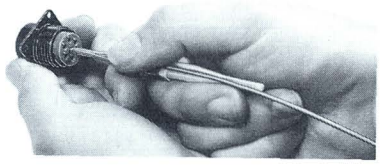


2. Insert wire into rear of contact. Wire insulation must butt against rear of contact. Wire must be visible thru inspection hole.

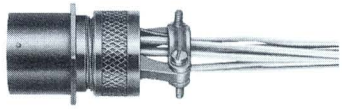
CONTACT INSERTION



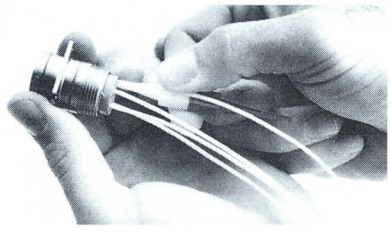
1. Remove backshell and put wired contacts thru cable clamp opening.



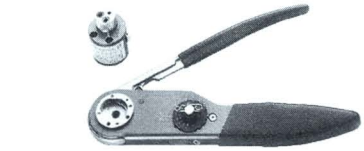
4. With tool pressed against shoulder of contact, starting at the center cavity, insert wired contact and tool into properly identified cavity at rear of plug with firm, even pressure. Do not use excessive pressure.



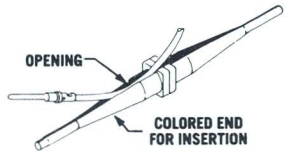
7. After all contacts are inserted, fill unwired cavities with sealing plugs (insert head last and leave end protruding for ease of removal), assemble backshell on rear of connector.



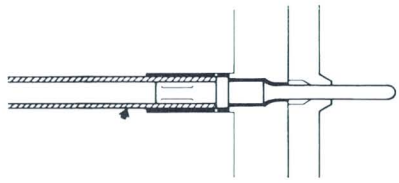
3. While maintaining slight insertion force on tool, firmly hold wire against serrated shoulder at center of tool and extract both wired contact and tool from plug.



3. Use M22520/1-01 crimp tool with proper crimp locator M22520/1-02. The color code band on the contact (red for #20, blue for #16 and yellow for #12) **must** match the color code of the locator and the insertion tool throughout the crimping and assembly operations.

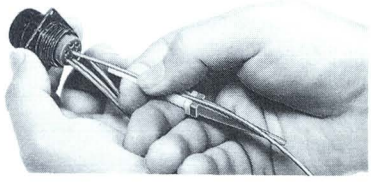


2. Use colored end of CIET tool for insertion. Place wire into tool at large opening. To facilitate contact insertion, a 6-in. min. free length of wire is recommended.



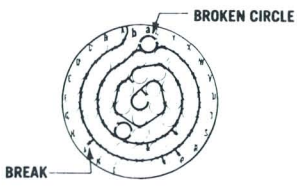
5. When contact bottoms, a slight click can be heard as tines of metal retaining clip snaps into place behind contact shoulder.

CONTACT EXTRACTION



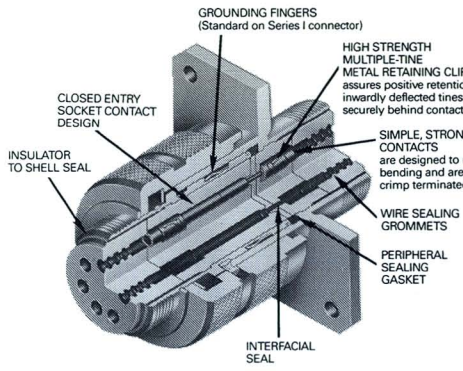
1. Remove backshell and slide back along wires to allow access. To extract a contact, use white end of CIET tool. Place wire into tool at large opening. Slide back tool on wire while holding thumb against wire at opening. Wire will slip into tool.

COMPLETION

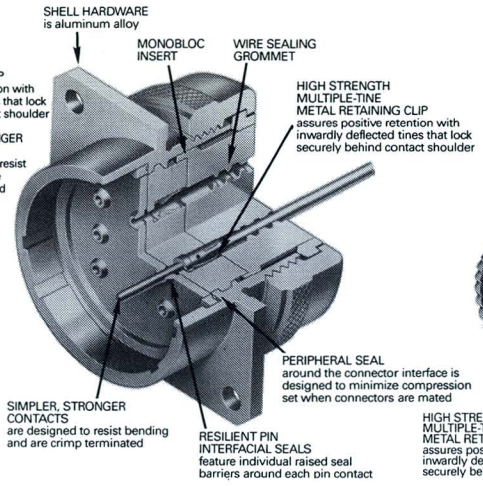


4. Check face of plug or receptacle for proper contact installation. In socket inserts with a large number of contact, cavities are identified in a spiral pattern. A projecting line from the spiral indicates omission of a letter; a broken circle around a cavity indicates transition between capitals and lower case and double letters.

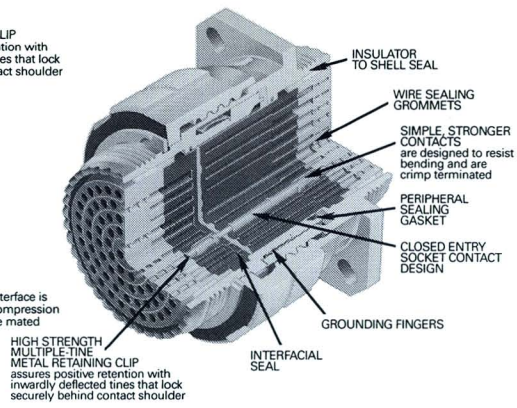
SERIES I



SERIES II



SERIES III



- Corrosion-resistant shells of aluminum alloy with cadmium over nickel plating withstand a 500 hour salt spray exposure
- Rear release crimp snap-in contacts
- High contact density
- Standard MIL-C-39029 contacts, MIL-I-81969 application tools and MIL-STD 1560 insert arrangements
- Special/custom capabilities
- 100% scoop-proof — Series I and III
- Lightweight/Low Profile — Series II
- Operates under severe high temperature vibration testing through 200°C — engineered for high density circuitry — Series III
- Interfacial seal helps prevent electrolytic erosion of contacts — Series III
- Superior EMI shielding provides outstanding protection up to 65dB at 10GHz. — Series III

Specification Comparison

Design Criteria	Series I	Series II	Series III
Low Profile/Light Weight	no	yes	no
Scoop Proof	yes	no	yes
Coupling System	Bayonet	Bayonet	Triple Lead Thread
Electrolytic Erosion	no	no	yes
Durability (cycles)	500	250	500
High Impact Shock	yes	no	yes
External Bending Moment Shell Size 25	650 in/lbs	150 in/lbs	1000 in/lbs
Random Vibration "J"	Ambient	Ambient	492 F
Sine Vibration	30G, Ambient		60G, −85 to +392 F
Sand, Dust, Ice	yes		yes
Shell Size	9 – 25	8 – 24	9 – 25

Contact Rating

Contact Size	Test Current DC Test Amperage	Maximum Millivolt Drop*	Crimp Well Data: Well Diameter	Crimp Well Data: Well Depth
22D	5	40	.0345 ± .0010	.157/.141
22M•	3	30	.0280 ± .0010	.157/.141
22•	5	40	.0365 ± .0010	.157/.141
20	7.5	35	.0470 ± .0010	.229/.209
16	13	25	.0670 ± .0010	.229/.209
12	23	25	.1000 ± .0020	.229/.209

*Maximum millivolt drop data is determined by measuring resistance of mated contacts from end to end.
•Inactive for new design, available from the factory.

Materials and Finishes

	Receptacle	Grounded Plug
Shell	Aluminum alloy	Aluminum alloy*
Insulator	High grade plastic	High grade plastic
Contacts	Copper alloy, gold plate	Copper alloy, gold plate
Grommet and Seal	Silicone base elastomer	Silicone base elastomer
Jam Nut	Aluminum alloy	—
Grounding Spring	—	Beryllium copper

*Finish as noted in How To Order sections.

Electrical Data

Contact Size: 22D, 22M*, 22*, 20, 16 and 12

Contact Rating and Wire Size Accommodation

Wire Size	Contact Size and Test Amps					
	22D	22M*	22*	20	16	12
28	1.5	1.5	—	—	—	—
26	2.0	2.0	2.0	—	—	—
24	3.0	3.0	3.0	3.0	—	—
22	5.0	—	5.0	5.0	—	—
20	—	—	—	7.5	7.5	—
18	—	—	—	—	10.0	—
16	—	—	—	—	13.0	—
14	—	—	—	—	—	17.0
12	—	—	—	—	—	23.0

Service Rating (Unmated Condition)

Test Voltages	Service Rating M	Service Rating I	Service Rating II
Sea Level	1300	1800	2300
100,000 ft.	200	200	200

Contact Termination: Crimp contact per MIL-C-39029
*Inactive for new design.

Specifications

Test Description	Parameters
Durability	500 cycles of mating and unmating, 250 cycles for Series II with spring fingers
Temperature Range	Class F, C; −65°C (−85°F) to +200°C (+392°F) Class W: −65°C (−85°F) to +175°C (+347°F)
Vibration	Mated connectors are vibrated with weights to simulate rear accessory loads to the following levels: Sine Vibration: Up to 60 G's — Series I & III (at rated temperature — Series III) Not applicable for Series II. Random Vibration: 43.7 Grms at rated temperature — Series III 49.5 Grms at Ambient Temperature — Series I & III 43.7 Grms at Ambient Temperature — Series II
EMI Shielding Effectiveness	Class F: EMI leakage attenuation, greater than 90dB at 100MHz, greater than 65dB at 10 GHz. Shell to shell conductivity, 1.0 millivolt max. resistance. Class W: EMI leakage attenuation, greater than 90dB at 100 MHz, greater than 50dB at 10 GHz. Shell to shell conductivity, 2.5 millivolt max.
Corrosion Resistant	Class C, W, Y, will withstand 500 hours salt spray. Class F, N, will withstand 48 hours salt spray.
Fluid Immersion	Connectors are fluid resistant to many fuels, solvents, coolants and oils.
High Impact Shock	Mated connectors terminated with MIL-C-915 cable and environmentally sealed backshells will withstand high impact shock per MIL-S-901. Applicable to Series I & III only.
Altitude	Designed to operate between sea level and 100,000 ft. above sea level.
Other Environments	Mated connectors shall withstand sand and dust per method 110 of MIL-STD-202 and be ice resistant. Applicable to Series I & III only.

NOTE: For hermetic standard or test data please consult ITT Cannon-Phoenix.

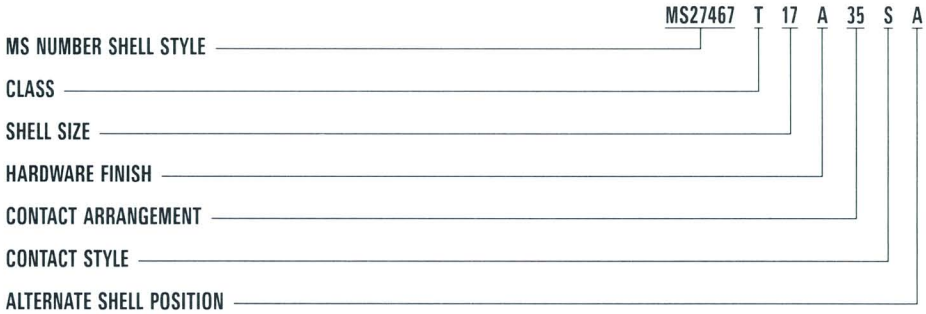
Insert Availability and Identification

Series II	Series I & III	Service Rating	Total Contacts	Contact Size						
				22D	22M●	22●	20	16	12	8
8-6●	9-6●	M	6		6					
8-35	9-35	M	6	6						
8-98	9-98	I	3				3			
	11-4	I	4				4			
10-5	11-5	I	5				5			
10-13●	11-13●	M	13		13					
10-35	11-35	M	13	13						
10-98	11-98	I	6				6			
10-99	11-99	I	7				7			
12-3		II	3					3		
12-4	13-4	I	4					4		
12-8	13-8	I	8				8			
12-22●	13-22●	M	22		22					
12-35	13-35	M	22	22						
12-98	13-98	I	10				10			
14-5	15-5	II	5					5		
14-15	15-15	I	15				14	1		
14-18	15-18	I	18				18			
	15-19	I	19				19			
14-35	15-35	M	37	37						
14-37●	15-37●	M	37		37					
14-97	15-97	I	12				8	4		
16-6	17-6	I	6						6	
16-8	17-8	II	8					8		
16-26	17-26	I	26				26			
16-35	17-35	M	55	55						
16-42●		M	42			42				
16-55●	17-55●	M	55		55					
16-99	17-99	I	23				21	2		
18-11	19-11	II	11					11		
18-28	19-28	I	28				26	2		
18-30	19-30	I	30				29	1		
18-32	19-32	I	32				32			
18-35	19-35	M	66	66						
18-53●		M	53			53				
18-66●	19-66●	M	66		66					
20-1●	21-1●	M	79		79					
20-2●		M	65			65				
	21-11	I	11						11	
20-16	21-16	II	16					16		
20-35	21-35	M	79	79						
20-39	21-39	I	39				37	2		
20-41	21-41	I	41				41			
	21-75	M	4							4**†
22-1●	23-1●	M	100		100					
22-2●	23-2●	M	85			85				
22-21	23-21	II	21					21		
22-32	23-32	I	32				32			
22-35	23-35	M	100	100						
22-53	23-53	I	53				53			
22-55	23-55	I	55				55			
24-1●	25-1●	M	128		128					
24-2●	25-2●	M	100			100				
24-4	25-4	I	56				48	8		
	25-19	I	19						19	
24-24	25-24	I	24					12	12	
24-29	25-29	I	29					29		
24-35	25-35	M	128	128						
	25-37	I	37					37		
	25-43	I	43				23	20		
	25-46	I, Coax	46				40	4		2*†
	25-8	Coax	8							8***
	25-20	N	30				10	13	4*	3**
	25-42	I, Coax	42				38			4*
24-61	25-61	I	61				61			
	25-64	I	64	40			8	10	6	
	25-66	I	66	53			2	11		

*Coax
**Twinax
***Coax/Twinax
† For RG180/U and RG195/U cables only (check factory for other cable applications)
● Inactive for new design.

How To Order

Military Nomenclature



MS NUMBER SHELL STYLE
- MS27466 – Wall Mounting Receptacle
- MS27468 – Jam Nut Receptacle
- MS27467 – Grounded Plug
- MS27656 – Wall Mounting Receptacle (back panel mounting)
- MS27505 – Box Mounting Receptacle (back panel) (Class E)

CLASS
- E – Environment-resistant with accessory threads and teeth, except MS27505 (without rear accessory)
- P – Environment-resistant with straight potting cup accessories
- T – Environment-resistant with accessory threads and teeth, except MS27505 (without rear accessory) (Class T not applicable to MS27505)

SHELL SIZE
9, 11, 13, 15, 17, 19, 21, 23 and 25

HARDWARE FINISH STANDARD
- A – Bright cadmium over electroless nickel plate, −85°F to +302°F (−65°C to +150°C)
- B – Olive drab cadmium over electroless nickel plate, −85°F to +347°F (−65°C to +175°C)
- F – Electroless nickel, −85°F to +392°F (−65°C to +200°C)

CONTACT ARRANGEMENT
See pages 101 and 102.

CONTACT STYLE
- P – Pin
- S – Socket
- *A – Less Pin Contact
- *B – Less Socket Contact

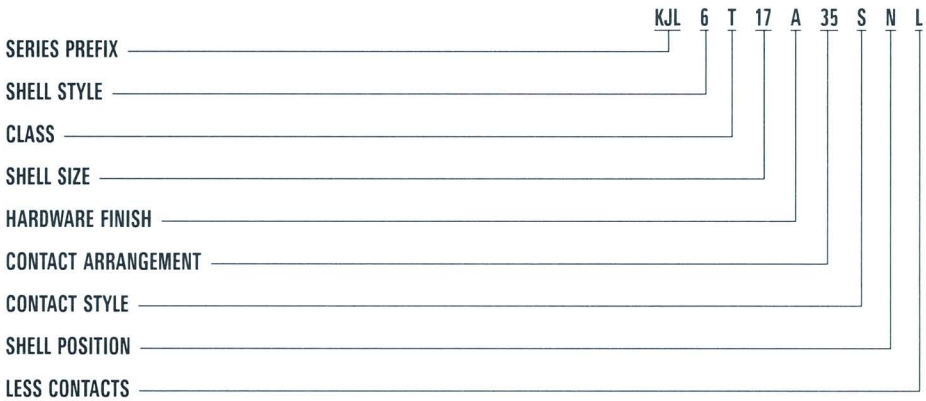
See pages 112-114 for Fiber Optic Contacts.

*Used only when other than power contacts are to be installed (i.e. shielded, thermocouple, etc.)

ALTERNATE SHELL POSITION
A, B, C, and D. (Not required for normal). See page 100.

Note: To order MS connectors less standard power contacts, purchase order must state "Less Contacts".

ITT Cannon Nomenclature



NOTE: KJL supplied with exact complement of contacts.

SERIES PREFIX
KJL – Series I - Scoop proof

SHELL STYLE
- 0 – Wall mounting receptacle
- 3 – Wall mounting receptacle (back panel mounting)
- 5 – Box mounting receptacle (back panel mounting)
- 6 – Straight plug, grounded
- 7 – Jam nut receptacle

CLASS
- E – Environment-resistant with rear accessory (without strain relief)
- F – Enviroment-resistant with strain relief accessory
- P – Environment-resistant with straight potting cup accessory
- T – Environment-resistant (without rear accessory) (Class T not applicable to KJL5)

SHELL SIZE
9, 11, 13, 15, 17, 19, 21, 23 and 25

HARDWARE FINISH STANDARD
- A – Bright cadmium over electroless nickel plate, −85°F to +302°F (−65°C to +150°C)
- B – Olive drab cadmium over electroless nickel plate, −85°F to +347°F (−65°C to +175°C)
- N – Electroless nickel, −85°F to +392°F (−65°C to +200°C)

CONTACT ARRANGEMENT
See pages 101 and 102.

CONTACT STYLE
- P – Pin
- S – Socket

See pages 112-114 for Fiber Optic Contacts.

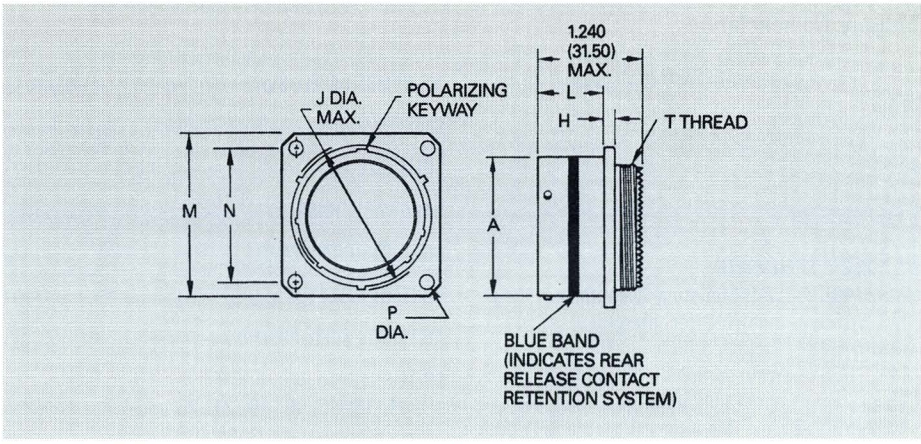
ALTERNATE SHELL POSITION
N (normal), A, B, C, D. See page 100.

LESS CONTACTS
Use "L" when connectors are ordered less contacts, sealing plugs and insertion/extraction tool ("L" is not stamped on connectors).

Wall Mounting Receptacle

MS27466
(MS service class E, P, T)

KJL0



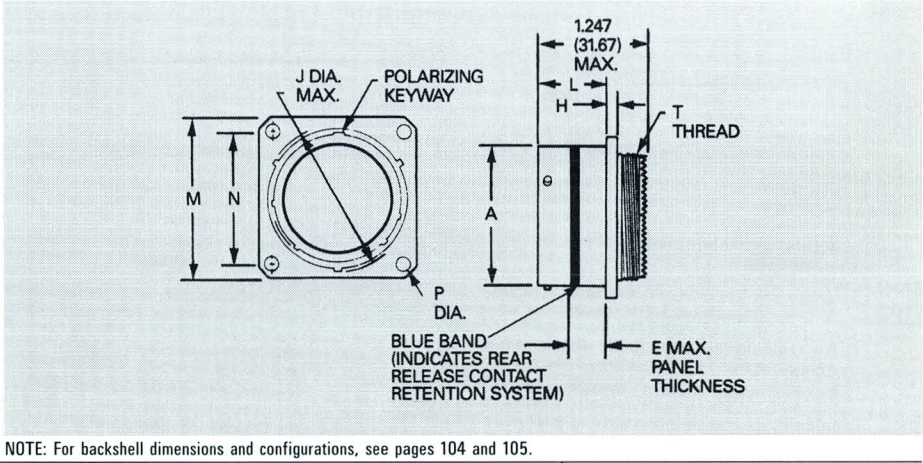
NOTE: For backshell dimensions and configurations, see pages 104 and 105.

Shell Size	A Dia. Max.	H Max.	J Dia. Max.	L Max.	M Max.	N T.P.	P Dia. Max.	T Thread	Overall Length With Backshells E Straight	F Cable Clamp	P Potting Max.
9	.573 (14.55)	.100 (2.54)	.662 (16.81)	.632 (16.05)	.958 (24.33)	.719 (18.26)	.138 (3.51)	7/16-28UNEF-2A	1.365 (34.67)	1.846 (46.89)	1.451 (36.86)
11	.701 (17.81)	.100 (2.54)	.810 (20.57)	.632 (16.05)	1.051 (26.70)	.812 (20.62)	.138 (3.51)	9/16-24UNEF-2A	1.365 (34.67)	1.846 (46.89)	1.451 (36.86)
13	.851 (21.62)	.100 (2.54)	.960 (24.38)	.632 (16.05)	1.145 (29.08)	.906 (23.01)	.138 (3.51)	11/16-24UNEF-2A	1.365 (34.67)	1.846 (46.89)	1.451 (36.86)
15	.976 (24.79)	.100 (2.54)	1.085 (27.56)	.632 (16.05)	1.239 (31.47)	.969 (24.61)	.138 (3.51)	13/16-20UNEF-2A	1.365 (34.67)	1.846 (46.89)	1.451 (36.86)
17	1.101 (27.97)	.100 (2.54)	1.210 (30.73)	.632 (16.05)	1.332 (33.83)	1.062 (26.97)	.138 (3.51)	15/16-20UNEF-2A	1.365 (34.67)	1.966 (49.94)	1.451 (36.86)
19	1.208 (30.68)	.100 (2.54)	1.317 (33.45)	.632 (16.05)	1.458 (37.03)	1.156 (29.36)	.138 (3.51)	1-1/16-18UNEF-2A	1.365 (34.67)	1.996 (50.70)	1.451 (36.86)
21	1.333 (33.86)	.130 (3.30)	1.442 (36.63)	.602 (15.29)	1.582 (40.18)	1.250 (31.75)	.138 (3.51)	1-3/16-18UNEF-2A	1.365 (34.67)	1.996 (50.70)	1.451 (36.86)
23	1.458 (37.03)	.130 (3.30)	1.567 (39.80)	.602 (15.29)	1.708 (43.38)	1.375 (34.93)	.157 (3.99)	1-5/16-18UNEF-2A	1.365 (34.67)	1.996 (50.70)	1.451 (36.86)
25	1.583 (40.21)	.130 (3.30)	1.692 (42.98)	.602 (15.29)	1.832 (46.53)	1.500 (38.10)	.157 (3.99)	1-7/16-18UNEF-2A	1.309 (33.25)	1.996 (50.70)	1.451 (36.86)

Wall Mounting Receptacle (Back Panel)

MS27656
(MS service class E, P, T)

KJL3



NOTE: For backshell dimensions and configurations, see pages 104 and 105.

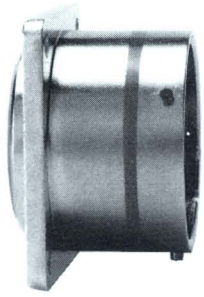
Shell Size	A Dia. Max.	E Max.	H Max.	J Dia. Max.	L Max.	M Max.	N T.P.	P Dia. Max.	T Thread	Overall Length With Backshells E Straight	F Cable Clamp	P Potting Max.
9	.573 (14.55)	.234 (5.94)	.100 (2.54)	.662 (16.81)	.820 (20.83)	.958 (24.33)	.719 (18.26)	.138 (3.51)	7/16-28UNEF-2A	1.324 (33.63)	1.805 (45.85)	1.410 (35.81)
11	.701 (17.81)	.234 (5.94)	.100 (2.54)	.810 (20.57)	.820 (20.83)	1.051 (26.70)	.812 (20.62)	.138 (3.51)	9/16-24UNEF-2A	1.324 (33.63)	1.805 (45.85)	1.410 (35.81)
13	.851 (21.62)	.234 (5.94)	.100 (2.54)	.960 (24.38)	.820 (20.83)	1.145 (29.08)	.906 (23.01)	.138 (3.51)	11/16-24UNEF-2A	1.324 (33.63)	1.805 (45.85)	1.410 (35.81)
15	.976 (24.79)	.234 (5.94)	.100 (2.54)	1.085 (27.56)	.820 (20.83)	1.239 (31.47)	.969 (24.61)	.138 (3.51)	13/16-20UNEF-2A	1.324 (33.63)	1.805 (45.85)	1.410 (35.81)
17	1.101 (27.97)	.234 (5.94)	.100 (2.54)	1.210 (30.73)	.820 (20.83)	1.332 (33.83)	1.062 (26.97)	.138 (3.51)	15/16-20UNEF-2A	1.324 (33.63)	1.935 (48.90)	1.410 (35.81)
19	1.208 (30.68)	.234 (5.94)	.100 (2.54)	1.317 (33.45)	.820 (20.83)	1.458 (37.03)	1.156 (29.36)	.138 (3.51)	1-1/16-18UNEF-2A	1.324 (33.63)	1.955 (49.66)	1.410 (35.81)
21	1.333 (33.86)	.204 (5.18)	.130 (3.30)	1.442 (36.63)	.790 (20.07)	1.582 (40.18)	1.250 (31.75)	.138 (3.51)	1-3/16-18UNEF-2A	1.324 (33.63)	1.955 (49.66)	1.410 (35.81)
23	1.458 (37.03)	.204 (5.18)	.130 (3.30)	1.567 (39.80)	.790 (20.07)	1.708 (43.38)	1.375 (34.93)	.157 (3.99)	1-5/16-18UNEF-2A	1.324 (33.63)	1.955 (49.66)	1.410 (35.81)
25	1.583 (40.21)	.193 (4.90)	.130 (3.30)	1.692 (42.98)	.790 (20.07)	1.832 (46.53)	1.500 (38.10)	.157 (3.99)	1-7/16-18UNEF-2A	1.268 (32.21)	1.955 (49.66)	1.410 (35.81)

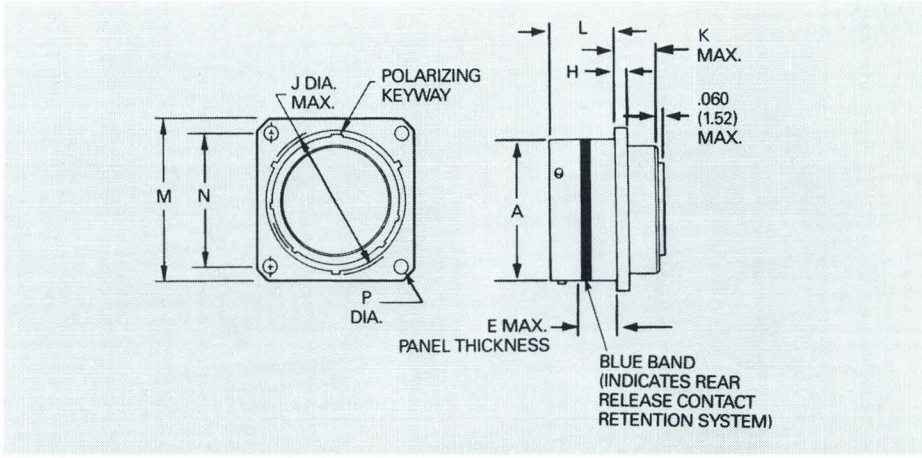
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Box Mounting Receptacle (Back Panel)

MS27505E
(MS service class E)

KJL5E





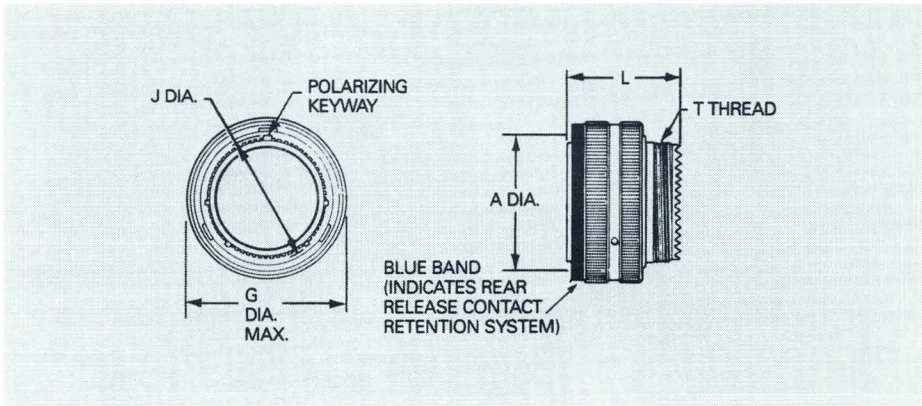
NOTE: This connector does not accommodate backshells.

Shell Size	A Dia. Max.	E Max.	H Max.	J Dia. Max.	K Max.	L Max.	M Max.	N T.P.	P Dia. Max.
9	.573 (14.55)	.234 (5.94)	.100 (2.54)	.662 (16.81)	.219 (5.56)	.820 (20.83)	.958 (24.33)	.719 (18.26)	.138 (3.51)
11	.701 (17.81)	.234 (5.94)	.100 (2.54)	.810 (20.57)	.219 (5.56)	.820 (20.83)	1.051 (26.70)	.812 (20.60)	.138 (3.51)
13	.851 (21.62)	.234 (5.94)	.100 (2.54)	.960 (24.38)	.219 (5.56)	.820 (20.83)	1.145 (29.08)	.906 (23.01)	.138 (3.51)
15	.976 (24.79)	.234 (5.94)	.100 (2.54)	1.085 (27.56)	.219 (5.56)	.820 (20.83)	1.239 (31.47)	.969 (24.61)	.138 (3.51)
17	1.101 (27.97)	.234 (5.94)	.100 (2.54)	1.210 (30.73)	.219 (5.56)	.820 (20.83)	1.332 (33.83)	1.062 (26.97)	.138 (3.51)
19	1.208 (30.68)	.234 (5.94)	.100 (2.54)	1.317 (33.45)	.219 (5.56)	.820 (20.83)	1.458 (37.03)	1.156 (29.36)	.138 (3.51)
21	1.333 (33.86)	.204 (5.18)	.130 (3.30)	1.442 (36.63)	.250 (6.35)	.790 (20.07)	1.582 (40.18)	1.250 (31.75)	.138 (3.51)
23	1.458 (37.03)	.204 (5.18)	.130 (3.30)	1.567 (39.80)	.250 (6.35)	.790 (20.07)	1.708 (43.38)	1.375 (34.93)	.157 (3.99)
25	1.583 (40.21)	.193 (4.90)	.130 (3.30)	1.692 (42.98)	.250 (6.35)	.790 (20.07)	1.832 (46.53)	1.500 (38.10)	.157 (3.99)

Straight Plug Grounded

MS27467
(MS service class E, P, T)

KJL6



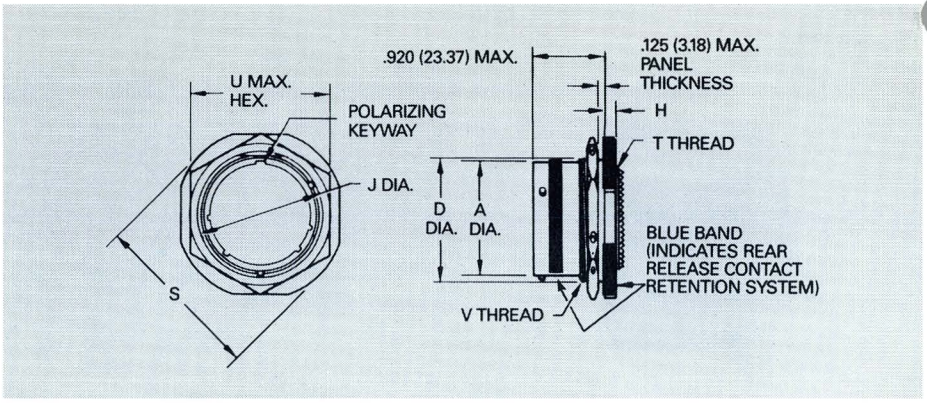
NOTE: For backshell dimensions and configurations, see pages 104 and 105.

Shell Size	A Max.	G Dia.	J Dia. Max.	L Max.	T Thread	Overall Length With Backshells E Straight	F Cable Clamp	P Potting Max.
9	.585 (14.86)	.859 (21.82)	.483 (12.27)	1.234 (31.34)	7/16-28UNEF-2A	1.312 (33.32)	1.793 (45.54)	1.398 (35.51)
11	.717 (18.21)	.984 (24.99)	.611 (15.52)	1.234 (31.34)	9/16-24UNEF-2A	1.312 (33.32)	1.793 (45.54)	1.398 (35.51)
13	.866 (22.00)	1.156 (29.36)	.760 (19.30)	1.234 (31.34)	11/16-24UNEF-2A	1.312 (33.32)	1.793 (45.54)	1.398 (35.51)
15	.990 (25.15)	1.281 (32.54)	.885 (22.48)	1.234 (31.34)	13/16-20UNEF-2A	1.312 (33.32)	1.793 (45.54)	1.398 (35.51)
17	1.115 (28.32)	1.406 (35.71)	1.010 (25.65)	1.234 (31.34)	15/16-20UNEF-2A	1.312 (33.32)	1.913 (48.59)	1.398 (35.51)
19	1.222 (31.04)	1.516 (38.51)	1.115 (28.32)	1.234 (31.34)	1-1/16-18UNEF-2A	1.312 (33.32)	1.943 (49.35)	1.398 (35.51)
21	1.347 (34.21)	1.641 (41.68)	1.240 (31.50)	1.234 (31.34)	1-3/16-18UNEF-2A	1.312 (33.32)	1.943 (49.35)	1.398 (35.51)
23	1.472 (37.39)	1.766 (44.86)	1.365 (34.67)	1.234 (31.34)	1-5/16-18UNEF-2A	1.312 (33.32)	1.943 (49.35)	1.398 (35.51)
25	1.597 (40.56)	1.891 (48.03)	1.490 (37.85)	1.234 (31.34)	1-7/16-18UNEF-2A	1.256 (31.90)	1.943 (49.35)	1.398 (35.51)

Jam Nut Receptacle

MS27468
(MS service class E, P, T)

KJL7

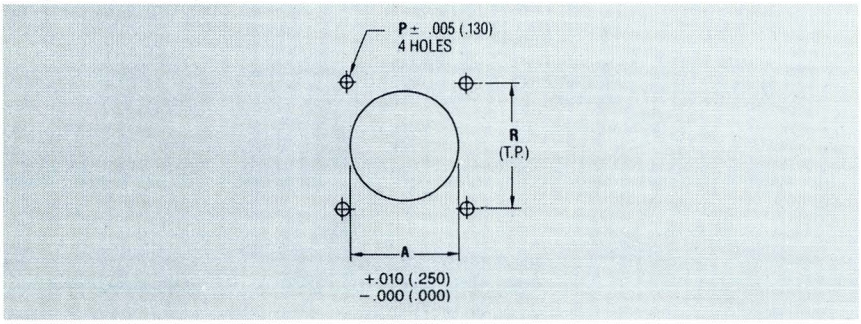


NOTE: For backshell dimensions and configurations, see pages 104 and 105.

Shell Size	A Dia. Max.	D Max.	H Max.	J Dia. Max.	S Dia. Max.	T Thread	U Max. Hex.	V Thread Class 2A	Overall Length With Backshells E Straight	F Cable Clamp	P Potting Max.
9	.573 (14.55)	.655 (16.64)	.120 (3.05)	.662 (16.81)	1.204 (30.58)	7/16-28UNEF-2A	.892 (22.66)	11/16-24UNEF	1.365 (34.67)	1.846 (46.89)	1.451 (36.86)
11	.701 (17.81)	.755 (19.18)	.120 (3.05)	.810 (20.57)	1.391 (35.33)	9/16-24UNEF-2A	1.017 (25.83)	13/16-24UNEF	1.365 (34.67)	1.846 (46.89)	1.451 (36.86)
13	.851 (21.62)	.942 (23.93)	.120 (3.05)	.960 (24.38)	1.516 (38.51)	11/16-24UNEF-2A	1.205 (30.61)	1-20UNEF	1.365 (34.67)	1.846 (46.89)	1.451 (36.86)
15	.976 (24.79)	1.066 (27.08)	.120 (3.05)	1.085 (27.56)	1.641 (41.68)	13/16-20UNEF-2A	1.329 (33.76)	1-1/8-18UNEF	1.365 (34.67)	1.846 (46.89)	1.451 (36.86)
17	1.101 (27.97)	1.191 (30.25)	.120 (3.05)	1.210 (30.73)	1.766 (44.86)	15/16-20UNEF-2A	1.455 (36.96)	1-1/4-18UNEF	1.365 (34.67)	1.966 (49.94)	1.451 (36.86)
19	1.208 (30.68)	1.316 (33.43)	.151 (3.84)	1.317 (33.45)	1.954 (49.63)	1-1/16-18UNEF-2A	1.579 (40.11)	1-3/8-18UNEF	1.365 (34.67)	1.996 (50.70)	1.451 (36.86)
21	1.333 (33.86)	1.441 (36.60)	.151 (3.84)	1.442 (36.63)	2.078 (52.78)	1-3/16-18UNEF-2A	1.705 (43.31)	1-1/2-18UNEF	1.365 (34.67)	1.996 (50.70)	1.451 (36.86)
23	1.458 (37.03)	1.566 (39.78)	.151 (3.84)	1.567 (39.80)	2.204 (55.98)	1-5/16-18UNEF-2A	1.829 (46.46)	1-5/8-18UNEF	1.365 (34.67)	1.996 (50.70)	1.451 (36.86)
25	1.583 (40.21)	1.691 (42.95)	.151 (3.84)	1.692 (42.98)	2.328 (59.13)	1-7/16-18UNEF-2A	2.017 (51.23)	1-3/4-18UNS	1.309 (33.25)	1.996 (50.70)	1.451 (36.86)

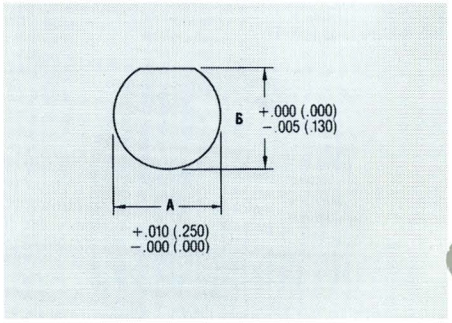
Panel Cutouts

Flange Mounted Receptacles



Shell Size	A Dia.	P Dia.	R	Mtg. Screw
9	.665 (16.89)	.125 (3.18)	.719 (18.26)	#4
11	.812 (20.62)	.125 (3.18)	.812 (20.62)	#4
13	.965 (24.51)	.125 (3.18)	.906 (23.01)	#4
15	1.085 (27.55)	.125 (3.18)	.969 (24.61)	#4
17	1.210 (30.73)	.125 (3.18)	1.062 (26.97)	#4
19	1.322 (33.57)	.125 (3.18)	1.156 (29.36)	#4
21	1.447 (36.75)	.125 (3.18)	1.250 (31.75)	#4
23	1.569 (39.85)	.125 (3.18)	1.375 (34.93)	#4
25	1.703 (43.25)	.152 (3.86)	1.500 (38.10)	#6

Jam Nut Receptacles

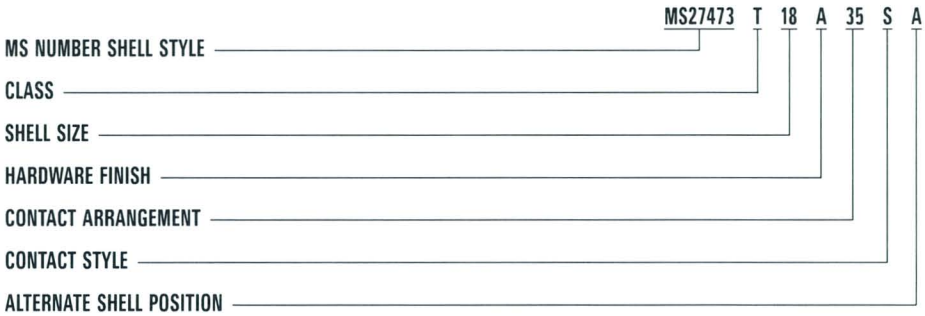


Shell Size	A Dia.	B Dia.
9	.697 (17.70)	.665 (16.89)
11	.822 (20.88)	.765 (18.43)
13	1.010 (25.65)	.952 (24.18)
15	1.135 (28.83)	1.076 (27.33)
17	1.260 (32.00)	1.201 (30.51)
19	1.385 (35.18)	1.326 (33.68)
21	1.510 (38.35)	1.451 (36.86)
23	1.635 (41.53)	1.576 (40.03)
25	1.760 (44.70)	1.701 (43.21)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

How To Order

Military Nomenclature



MS NUMBER SHELL STYLE
- MS27472 – Wall Mounting Receptacle
- MS27473 – Straight Plug
- MS27474 – Jam Nut Receptacle
- MS27484 – Grounded Plug
- MS27497 – Wall Mounting Receptacle (back panel mounting)
- MS27513 – Box Mounting Receptacle
- MS27479 – Wall Mounting Receptacle (C Finish) – Inactive, use MS27472
- MS27480 – Straight Plug (C Finish) – Inactive, use MS27473
- MS27481 – Jam Nut Receptacle (C Finish) – Inactive, use MS27474
- MS27499 – Box Mounting Receptacle (Class E)
- MS27508 – Box Mounting (back panel mounting) (Class E)

CLASS
- E – Environment-resistant with rear accessory (without strain relief)
- P – Environment-resistant with straight potting cup accessories
- T – Environment-resistant (without rear accessory). (Class T not applicable to MS27499, MS27513, and MS27508).

SHELL SIZE
8, 10, 12, 14, 16, 18, 20, 22, 24.

HARDWARE FINISH STANDARD
- A – Bright cadmium over electroless nickel plate, −85°F to +302°F (−65°C to +150°C)
- B – Olive drab cadmium over electroless nickel plate, −85°F to +347°F (−65°C to +175°C)
- C – Anodic (non-conductive), −85°F to +392°F (−65°C to +200°C). Not applicable to MS27484.
- F – Electroless nickel, −85°F to +392°F (−65°C to +200°C)

CONTACT ARRANGEMENT
See pages 101 and 102.

CONTACT STYLE
- P – Pin
- S – Socket
- *A – Less Pin Contact
- *B – Less Socket Contact

*Used only when other than power contacts are to be installed (i.e. shielded, thermocouple, etc.)

ALTERNATE SHELL POSITION
A, B, C, and D (not required for normal). See page 100.

Note: To order MS connectors less standard power contacts, purchase order must state "Less Contacts".

ITT Cannon Nomenclature

NOTE: KJ supplied with exact complement of contacts.

SERIES PREFIX
KJ – Series II-Low Profile

SHELL STYLE
- 0 – Wall mounting receptacle
- 2 – Box mounting receptacle (available as hermetic)
- 3 – Wall mounting receptacle (back panel mounting)
- 5 – Box mounting receptacle (back panel mounting)
- 6 – Straight plug
- G6 – Straight plug, grounded
- 7 – Jam nut receptacle (available as hermetic)

CLASS
- E – Environment-resistant with rear accessory (without strain relief)
- F – Enviroment-resistant with strain relief accessory
- P – Environment-resistant with straight potting cup accessory
- R – Environment-resistant with full grommet seal without rear accessory; shell styles 2 and 5 only
- T – Environment-resistant (without rear accessory). (Class T not applicable to KJ2E, KJ2R, KJ5E, and KJ5R).

SHELL SIZE
8, 10, 12, 14, 16, 18, 20, 22, and 24.

HARDWARE FINISH STANDARD
- A – Bright cadmium over electroless nickel plate, −85°F to +302°F (−65°C to +150°C)
- B – Olive drab cadmium over electroless nickel plate, −85°F to +347°F (−65°C to +175°C)
- C – Anodic (non-conductive), −85°F to +392°F (−65°C to +200°C). Not applicable to KJG6.
- N – Electroless nickel, −85°F to +392°F (−65°C to +200°C)

CONTACT ARRANGEMENT
See pages 101 and 102.

CONTACT STYLE
- P – Pin
- S – Socket

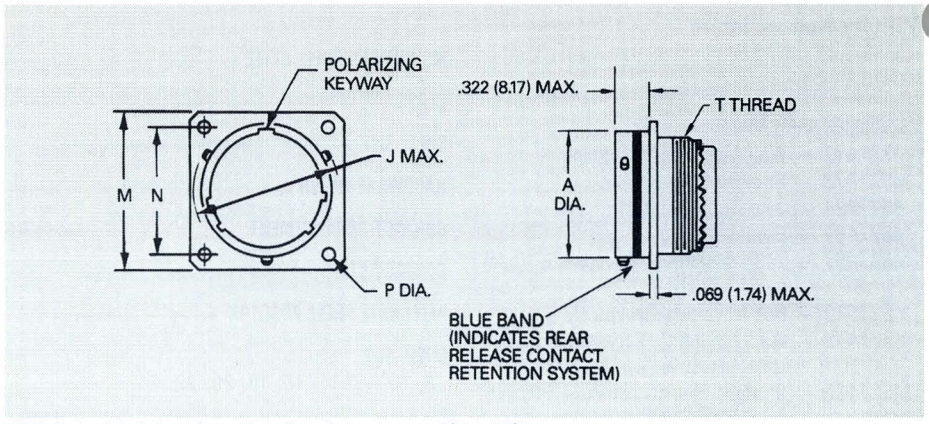
ALTERNATE SHELL POSITION
N(normal), A, B, C, D, See page 100.

LESS CONTACTS
Use "L" when connectors are ordered less contacts, sealing plugs and insertion/extraction tool. ("L" is not stamped on connectors.)

Wall Mounting Receptacle

MS27472
(MS service class E, P, T)

KJ0



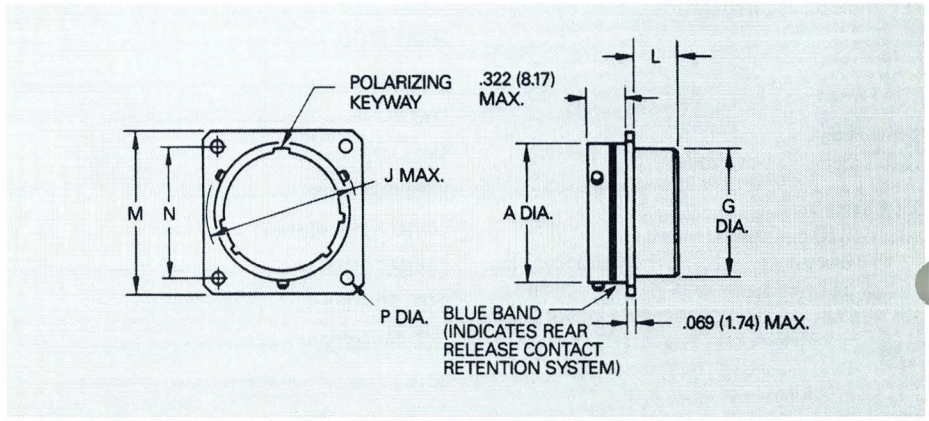
NOTE: For backshell dimensions and configurations, see pages 104 and 105.

Shell Size	A Dia. Max.	J Dia. Max.	M Max.	N T.P.	P +.005 (0.13) −.010 (0.25)	T Thread	Overall Length With Backshells E Straight	F Cable Clamp	P Potting Max.
8	.474 (12.04)	.563 (14.30)	.828 (21.03)	.594 (15.09)	.125 (3.18)	7/16-28UNEF-2A	.850 (21.59)	1.555 (39.50)	1.020 (25.91)
10	.591 (15.01)	.680 (17.27)	.954 (24.23)	.719 (18.26)	.125 (3.18)	9/16-24UNEF-2A	.850 (21.59)	1.555 (39.50)	1.020 (25.91)
12	.751 (19.08)	.859 (21.82)	1.047 (26.59)	.812 (20.62)	.125 (3.18)	11/16-24UNEF-2A	.850 (21.59)	1.555 (39.50)	1.020 (25.91)
14	.876 (22.25)	.984 (24.99)	1.141 (28.98)	.906 (23.01)	.125 (3.18)	13/16-20UNEF-2A	.850 (21.59)	1.790 (45.47)	1.020 (25.91)
16	1.001 (25.43)	1.108 (28.14)	1.234 (31.34)	.969 (24.61)	.125 (3.18)	15/16-20UNEF-2A	.850 (21.59)	1.790 (45.47)	1.020 (25.91)
18	1.126 (28.60)	1.233 (31.32)	1.328 (33.73)	1.062 (26.97)	.125 (3.18)	1- 1/16-18UNEF-2A	.850 (21.59)	1.790 (45.47)	1.020 (25.91)
20	1.251 (31.78)	1.358 (34.49)	1.453 (36.91)	1.156 (27.36)	.125 (3.18)	1- 3/16-18UNEF-2A	.850 (21.59)	1.790 (45.47)	1.020 (25.91)
22	1.376 (34.95)	1.483 (37.67)	1.578 (39.08)	1.250 (31.76)	.125 (3.18)	1- 5/16-18UNEF-2A	.850 (21.59)	1.930 (49.02)	1.020 (27.43)
24	1.501 (38.13)	1.610 (40.89)	1.703 (43.26)	1.375 (34.92)	.152 (3.86)	1- 7/16-18UNEF-2A	.850 (21.59)	1.900 (48.26)	1.080 (27.43)

Box Mounting Receptacle

MS27499E
(MS service class E)

KJ2E



NOTE: This connector does not accommodate backshells

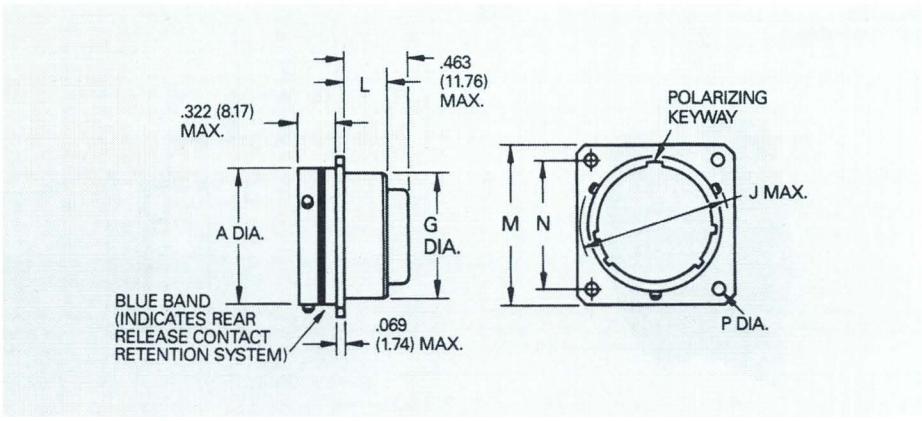
Shell Size	A Dia. Max.	G Dia. Max.	J Dia. Max.	L Max.	M Max.	N T.P.	P +.005 (0.13) −.010 (0.25)
8	.474 (12.04)	.421 (10.69)	.563 (14.30)	.312 (7.92)	.828 (21.03)	.594 (15.09)	.125 (3.18)
10	.591 (15.01)	.542 (13.77)	.680 (17.27)	.312 (7.92)	.954 (24.23)	.719 (18.26)	.125 (3.18)
12	.751 (19.08)	.667 (16.94)	.859 (21.82)	.312 (7.92)	1.047 (26.59)	.812 (20.62)	.125 (3.18)
14	.876 (22.25)	.791 (20.09)	.984 (24.99)	.312 (7.92)	1.141 (28.98)	.906 (23.01)	.125 (3.18)
16	1.001 (25.43)	.916 (23.27)	1.108 (28.14)	.312 (7.92)	1.234 (31.34)	.969 (24.61)	.125 (3.18)
18	1.126 (28.60)	1.034 (26.26)	1.233 (31.32)	.312 (7.92)	1.328 (33.73)	1.062 (26.97)	.125 (3.18)
20	1.251 (31.78)	1.158 (29.41)	1.358 (34.49)	.312 (7.92)	1.453 (36.81)	1.156 (27.36)	.125 (3.18)
22	1.376 (33.95)	1.283 (32.59)	1.483 (37.67)	.312 (7.92)	1.578 (40.08)	1.250 (31.75)	.125 (3.18)
24	1.501 (38.13)	1.408 (35.76)	1.610 (40.89)	.312 (7.92)	1.703 (43.26)	1.375 (34.93)	.152 (3.86)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Box Mounting Receptacle

MS27513E
(MS service class E)

KJ2R



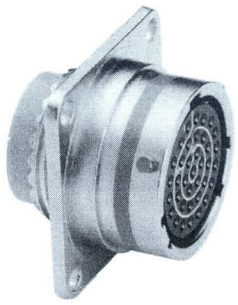
NOTE: This connector does not accommodate backshells

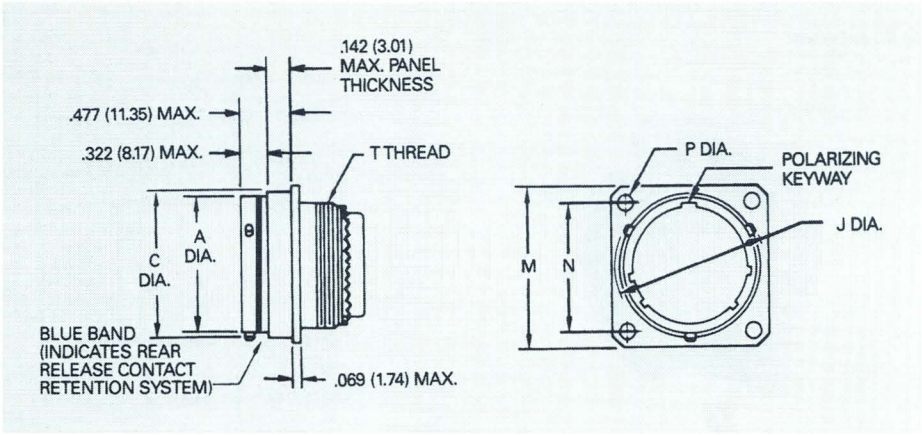
Shell Size	A Dia. Max.	G Dia. Max.	J Dia. Max.	L Max.	M Max.	N T.P.	P +.005 (0.13) +.010 (0.25)
8	.474 (12.04)	.421 (10.69)	.563 (14.30)	.312 (7.92)	.828 (21.03)	.594 (15.09)	.125 (3.18)
10	.591 (15.01)	.542 (13.77)	.680 (17.27)	.312 (7.92)	.954 (24.23)	.719 (18.26)	.125 (3.18)
12	.751 (19.08)	.667 (16.94)	.859 (21.82)	.312 (7.92)	1.047 (26.59)	.812 (20.62)	.125 (3.18)
14	.876 (22.25)	.791 (20.09)	.984 (24.99)	.312 (7.92)	1.141 (28.98)	.906 (23.01)	.125 (3.18)
16	1.001 (25.43)	.916 (23.27)	1.108 (28.14)	.312 (7.92)	1.234 (31.34)	.969 (24.61)	.125 (3.18)
18	1.126 (28.60)	1.034 (26.26)	1.233 (31.32)	.312 (7.92)	1.328 (33.73)	1.062 (26.97)	.125 (3.18)
20	1.251(31.78)	1.158 (29.41)	1.358 (34.49)	.312 (7.92)	1.453 (36.81)	1.156 (27.36)	.125 (3.18)
22	1.376 (33.95)	1.283 (32.59)	1.483 (27.67)	.312 (7.92)	1.578 (40.08)	1.250 (31.75)	.125 (3.18)
24	1.501 (38.13)	1.408 (35.76)	1.610 (40.89)	.312 (7.92)	1.703 (43.26)	1.375 (34.93)	.152 (3.85)

Wall Mounting Receptacle

MS27497
(MS service class E, P, T)

KJ3





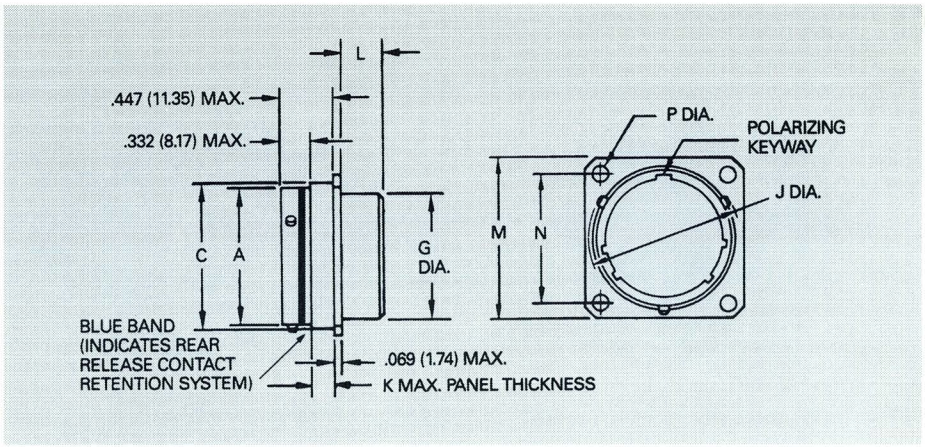
NOTE: For backshell dimensions and configurations, see pages 104 and 105.

Shell Size	A Dia. Max.	C Dia. Max.	J Dia. Max.	M Max.	N T.P.	P +.005 (0.13) −.010 (0.25)	T Thread	Overall Length With Backshells E Straight	F Cable Clamp	P Potting Max.
8	.474 (12.04)	.522 (13.26)	.563 (14.30)	.828 (21.03)	.594 (15.09)	.125 (3.18)	7/16-28UNEF-2A	.855 (21.72)	1.570 (39.88)	1.020 (25.91)
10	.591 (15.01)	.639 (16.23)	.680 (17.27)	.954 (24.23)	.719 (18.26)	.125 (3.18)	9/16-24UNEF-2A	.855 (21.72)	1.570 (39.88)	1.020 (25.91)
12	.751 (19.08)	.808 (20.52)	.859 (21.82)	1.047 (26.59)	.812 (20.62)	.125 (3.18)	11/16-24UNEF-2A	.855 (21.72)	1.570 (39.88)	1.020 (25.91)
14	.876 (22.25)	.935 (23.75)	.984 (24.99)	1.141 (28.98)	.906 (23.01)	.125 (3.18)	13/16-20UNEF-2A	.855 (21.72)	1.780 (45.21)	1.020 (25.91)
16	1.001 (25.43)	1.058 (26.87)	1.108 (28.14)	1.234 (31.34)	.969 (24.61)	.125 (3.18)	15/16-20UNEF-2A	.855 (21.72)	1.780 (45.21)	1.020 (25.91)
18	1.126 (28.60)	1.183 (30.05)	1.233 (31.32)	1.328 (33.73)	1.062 (26.97)	.125 (3.18)	1- 1/16-18UNEF-2A	.855 (21.72)	1.780 (45.21)	1.020 (25.91)
20	1.251 (31.78)	1.308 (33.22)	1.358 (34.49)	1.453 (36.91)	1.156 (29.36)	.125 (3.18)	1- 3/16-18UNEF-2A	.855 (21.72)	1.780 (45.21)	1.020 (25.91)
22	1.376 (34.95)	1.433 (36.40)	1.483 (37.67)	1.578 (40.08)	1.250 (31.75)	.125 (3.18)	1- 5/16-18UNEF-2A	.855 (21.72)	1.960 (49.78)	1.020 (25.91)
24	1.501 (38.13)	1.568 (39.83)	1.610 (40.89)	1.703 (43.26)	1.375 (34.93)	.152 (3.86)	1- 7/16-18UNEF-2A	.855 (21.72)	1.960 (49.78)	1.080 (27.43)

Box Mounting Receptacle (Back Panel)

MS27508E
(MS service class E)

KJ5E



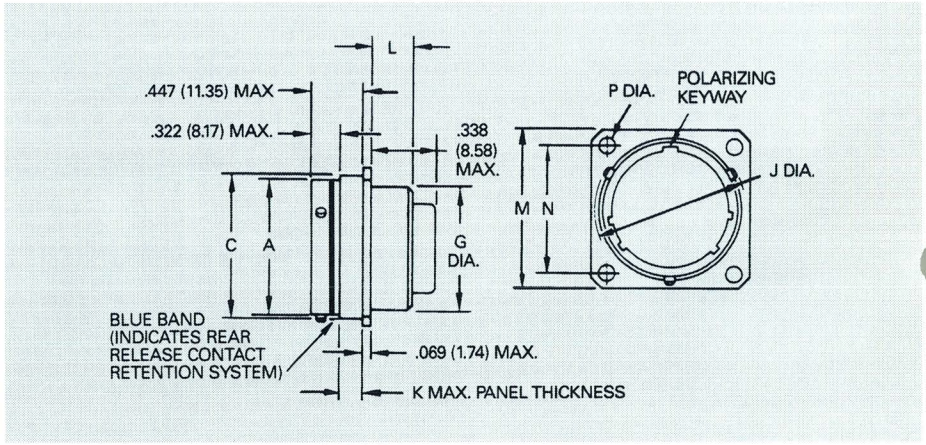
NOTE: This connector does not accommodate backshells

Shell Size	A Dia. Max.	C Dia. Max.	G Dia. Max.	J Dia. Max.	K Max.	L Max.	M Max.	N T.P.	P +.005 (0.13) −.010 (0.25)
8	.474 (12.04)	.522 (13.26)	.421 (10.69)	.563 (14.30)	.147 (3.73)	.185 (4.70)	.828 (21.03)	.594 (15.09)	.125 (3.18)
10	.591 (15.01)	.639 (16.23)	.542 (13.77)	.680 (17.27)	.152 (3.86)	.185 (4.70)	.954 (24.23)	.719 (18.26)	.125 (3.18)
12	.751 (19.08)	.808 (20.52)	.667 (16.94)	.859 (21.82)	.152 (3.86)	.185 (4.70)	1.047 (26.59)	.812 (20.62)	.125 (3.18)
14	.876 (22.25)	.935 (23.75)	.791 (20.09)	.984 (24.99)	.152 (3.86)	.185 (4.70)	1.141 (28.98)	.906 (23.01)	.125 (3.18)
16	1.001 (25.42)	1.058 (26.87)	.916 (23.27)	1.108 (28.14)	.152 (3.86)	.185 (4.70)	1.234 (31.24)	.969 (24.61)	.125 (3.18)
18	1.126 (28.60)	1.183 (30.05)	1.034 (31.34)	1.233 (31.32)	.152 (3.86)	.185 (4.70)	1.328 (33.73)	1.062 (26.97)	.125 (3.18)
20	1.251(31.77)	1.308 (33.22)	1.158 (34.52)	1.358 (34.49)	.179 (4.55)	.185 (4.70)	1.453 (36.91)	1.156 (29.36)	.125 (3.18)
22	1.376 (34.95)	1.433 (36.40)	1.283 (32.59)	1.483 (37.67)	.179 (4.55)	.185 (4.70)	1.578 (40.08)	1.250 (31.75)	.125 (3.18)
24	1.501 (38.13)	1.568 (39.83)	1.408 (35.76)	1.610 (40.89)	.169 (4.29)	.185 (4.70)	1.703 (43.66)	1.375 (34.92)	.152 (3.86)

Box Mounting Receptacle (Back Panel)

No MS part number

KJ5R

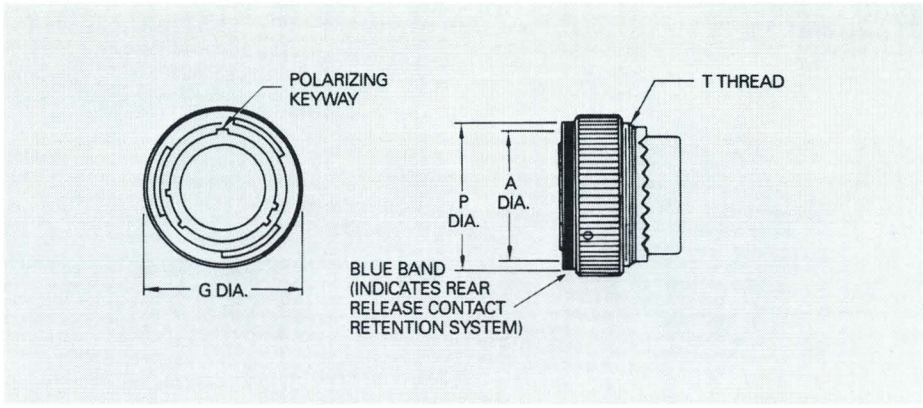


NOTE: This connector does not accommodate backshells

Shell Size	A Dia. Max.	C Dia. Max.	G Dia. Max.	J Dia. Max.	K Max.	L Max.	M Max.	N T.P.	P +.005 (0.13) −.010 (0.25)
8	.474 (12.04)	.522 (13.26)	.421 (10.69)	.563 (14.30)	.147 (3.73)	.185 (4.70)	.828 (21.03)	.594 (15.09)	.125 (3.18)
10	.591 (15.01)	.639 (16.23)	.542 (13.77)	.680 (17.27)	.152 (3.86)	.185 (4.70)	.954 (24.23)	.719 (18.26)	.125 (3.18)
12	.751 (19.08)	.808 (20.52)	.667 (16.94)	.859 (21.82)	.152 (3.86)	.185 (4.70)	1.047 (26.59)	.812 (20.62)	.125 (3.18)
14	.876 (22.25)	.935 (23.75)	.791 (20.09)	.984 (24.99)	.152 (3.86)	.185 (4.70)	1.141 (28.98)	.906 (23.01)	.125 (3.18)
16	1.001 (25.42)	1.058 (26.87)	.916 (23.27)	1.108 (28.14)	.152 (3.86)	.185 (4.70)	1.234 (31.24)	.969 (24.61)	.125 (3.18)
18	1.126 (28.60)	1.183 (30.05)	1.034 (31.34)	1.233 (31.32)	.152 (3.86)	.185 (4.70)	1.328 (33.73)	1.062 (26.97)	.125 (3.18)
20	1.251 (31.77)	1.308 (33.22)	1.158 (34.52)	1.358 (34.49)	.179 (4.55)	.185 (4.70)	1.453 (36.91)	1.156 (29.36)	.125 (3.18)
22	1.376 (34.95)	1.433 (36.40)	1.283 (32.59)	1.483 (37.67)	.179 (4.55)	.185 (4.70)	1.578 (40.08)	1.250 (31.75)	.125 (3.18)
24	1.501 (38.13)	1.568 (39.83)	1.408 (35.76)	1.610 (40.89)	.169 (4.29)	.185 (4.70)	1.703 (43.66)	1.375 (34.92)	.152 (3.86)

Straight Plug

MS27473 **KJ6**
(MS service class E, P, T)

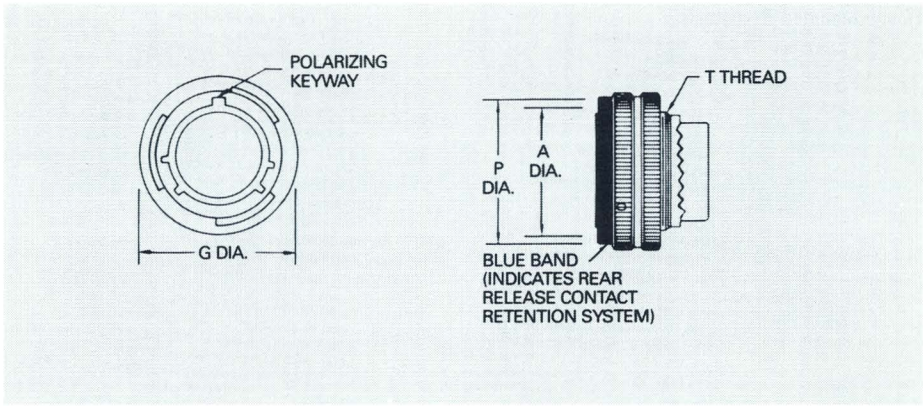


NOTE: For backshell dimensions and configurations, see pages 104 and 105.

Shell Size	A Dia. Max.	G Dia. Max.	P Dia. Max.	T Thread	Overall Length With Backshells E Straight	F Cable Clamp	P Potting Max.
8	.485 (12.32)	.749 (19.02)	.630 (16.00)	7/8-28UNEF-2A	.840 (21.34)	1.555 (39.50	1.020 (25.91)
10	.606 (15.39)	.858 (21.79)	.752 (19.10)	9/16-24UNEF-2A	.840 (21.34)	1.555 (39.50)	1.020 (25.91)
12	.765 (19.43)	1.030 (26.16)	.925 (23.50)	11/16-24UNEF-2A	.840 (21.34)	1.555 (39.50)	1.020 (25.91)
14	.890 (22.61)	1.155 (29.34)	1.050 (26.67)	13/16-20UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
16	1.014 (25.76)	1.280 (32.51)	1.172 (29.77)	15/16-20UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
18	1.140 (28.96)	1.405 (35.69)	1.304 (33.12)	1- 1/16-18UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
20	1.264 (32.11)	1.530 (38.86)	1.435 (36.45)	1- 3/16-18UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
22	1.389 (35.28)	1.640 (40.66)	1.560 (39.62)	1- 5/16-18UNEF-2A	.840 (21.34)	1.930 (49.02)	1.020 (25.91)
24	1.514 (38.46)	1.765 (44.83)	1.688 (42.88)	1- 7/16-18UNEF-2A	.480 (21.34)	1.900 (48.26)	1.080 (27.43)

Straight Plug Grounded

MS27484 **KJG6**
(MS service class E, P, T)



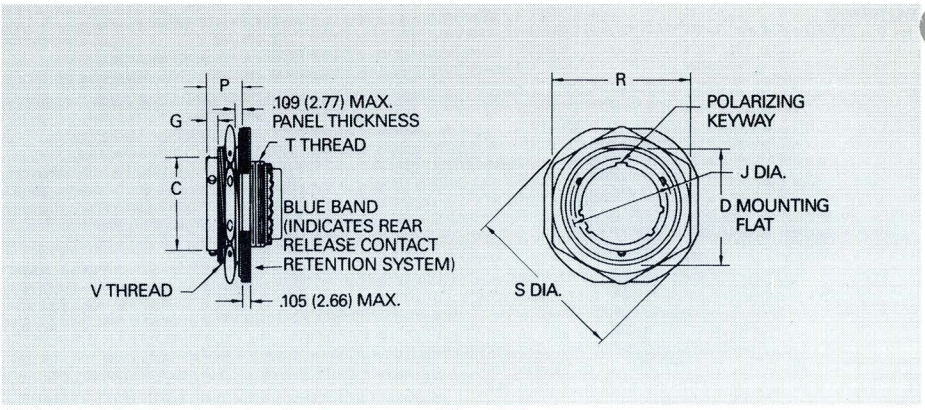
NOTE: For backshell dimensions and configurations, see pages 104 and 105.

Shell Size	A Dia. Max.	G Dia. Max.	P Dia. Max.	T Thread	Overall Length With Backshells E Straight	F Cable Clamp	P Potting Max.
8	.485 (12.32)	.749 (19.02)	.630 (16.00)	7/8-28UNEF-2A	.840 (21.34)	1.555 (39.50)	1.020 (25.91)
10	.606 (15.39)	.858 (21.79)	.752 (19.10)	9/16-24UNEF-2A	.840 (21.34)	1.555 (39.50)	1.020 (25.91)
12	.765 (19.43)	1.030 (26.16)	.925 (23.50)	11/16-24UNEF-2A	.840 (21.34)	1.555 (39.50)	1.020 (25.91)
14	.890 (22.61)	1.155 (29.34)	1.050 (26.67)	13/16-20UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
16	1.014 (25.76)	1.280 (32.51)	1.172 (29.77)	15/16-20UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
18	1.140 (28.96)	1.405 (35.69)	1.304 (33.12)	1- 1/16-18UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
20	1.264 (32.11)	1.530 (38.86)	1.435 (36.45)	1- 3/16-18UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
22	1.389 (35.28)	1.640 (40.66)	1.560 (39.62)	1- 5/16-18UNEF-2A	.840 (21.34)	1.930 (49.02)	1.020 (25.91)
24	1.514 (38.46)	1.765 (44.83)	1.688 (42.88)	1- 7/16-18UNEF-2A	.860 (21.84)	1.900 (48.26)	1.080 (27.43)

Jam Nut Receptacle

MS27474
(MS service class E, P, T)

KJ7

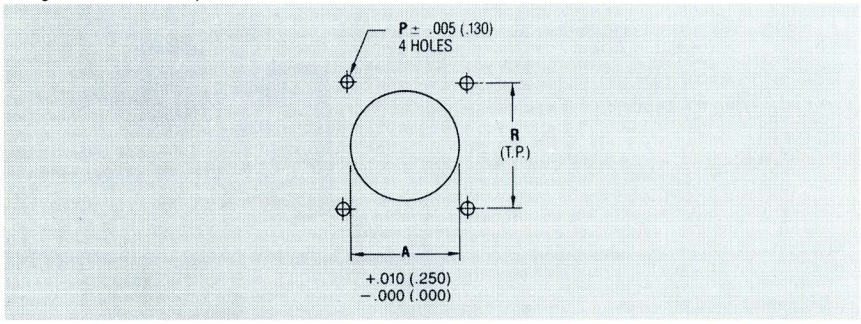


NOTE: For backshell dimensions and configurations, see pages 104 and 105.

Shell Size	C Dia. Max.	D Max.	G Max.	J Max.	P Max.	R Max. Hex.	S Dia. Max.	T Thread	V Thread	Overall Length With Backshells E Straight	F Cable Clamp	P Potting Max.
8	.474 (12.04)	.818 (20.78)	.145 (3.68)	.563 (14.30)	.443 (11.25)	1.079 (27.41)	1.381 (35.08)	7/16-28UNEF-2A	7/8-20UNEF-2A	.840 (21.34)	1.555 (39.50)	1.020 (25.91)
10	.591 (15.01)	.942 (23.93)	.145 (3.68)	.680 (17.27)	.443 (11.25)	1.205 (30.61)	1.506 (38.25)	9/16-24UNEF-2A	1 -20UNEF-2A	.840 (21.34)	1.555 (39.50)	1.020 (25.91)
12	.751 (19.08)	1.066 (27.08)	.145 (3.68)	.859 (21.82)	.443 (11.25)	1.329 (33.76)	1.631 (41.43)	11/16-24UNEF-2A	1-1/8-18UNEF-2A	.840 (21.34)	1.555 (39.50)	1.020 (25.91)
14	.876 (22.25)	1.191 (30.25)	.145 (3.68)	.984 (24.99)	.443 (11.25)	1.455 (36.96)	1.756 (44.60)	13/16-20UNEF-2A	1-1/4-18UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
16	1.001 (25.43)	1.321 (33.55)	.145 (3.68)	1.108 (28.14)	.443 (11.25)	1.579 (40.11)	1.944 (49.38)	1-15/16-20UNEF-2A	1-3/8-18UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
18	1.126 (28.60)	1.441 (36.60)	.145 (3.68)	1.233 (31.32)	.443 (11.25)	1.705 (43.31)	2.022 (51.36)	1-1/16-18UNEF-2A	1-1/2-18UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
20	1.251 (31.78)	1.566 (39.78)	.171 (4.34)	1.358 (34.49)	.469 (11.91)	1.829 (46.46)	2.147 (54.53)	1-3/16-18UNEF-2A	1-5/8-18UNEF-2A	.840 (21.34)	1.790 (45.47)	1.020 (25.91)
22	1.376 (33.95)	1.691 (42.95)	.171 (4.34)	1.483 (37.67)	.469 (11.91)	2.017 (51.23)	2.271 (57.68)	1-5/16-18UNEF-2A	1-3/4-18UNS -2A	.840 (21.34)	1.930 (49.02)	1.020 (25.91)
24	1.501 (38.13)	1.816 (46.13)	.171 (4.34)	1.610 (40.89)	.469 (11.91)	2.142 (54.41)	2.396 (60.86)	1-7/16-18UNEF-2A	1-7/8-16UNS-2A	.860 (21.84)	1.900 (48.26)	1.080 (27.43)

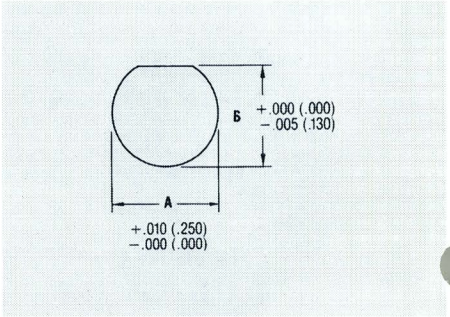
Panel Cutouts

Flange Mounted Receptacle



Shell Size	A Dia.	P Dia.	R	Mfg. Screw
8	.610 (15.49)	.125 (3.18)	.594 (15.09)	#4
10	.734 (18.64)	.125 (3.18)	.719 (18.26)	#4
12	.860 (21.84)	.125 (3.18)	.812 (20.62)	#4
14	.985 (25.02)	.125 (3.18)	.906 (23.01)	#4
16	1.110 (28.19)	.125 (3.18)	.969 (24.61)	#4
18	1.234 (31.34)	.125 (3.18)	1.062 (26.97)	#4
20	1.360 (35.54)	.125 (3.18)	1.156 (29.36)	#4
22	1.484 (37.69)	.125 (3.18)	1.250 (31.75)	#4
24	1.611 (40.92)	.152 (3.86)	1.375 (34.93)	#6

Jam Nut Receptacle



Shell Size	A Dia.	B Dia.
8	.885 (22.48)	.828 (21.03)
10	1.010 (25.65)	.952 (24.18)
12	1.135 (28.82)	1.076 (27.33)
14	1.260 (32.00)	1.201 (30.51)
16	1.385 (35.18)	1.331 (33.81)
18	1.510 (38.35)	1.451 (36.86)
20	1.635 (41.53)	1.576 (40.03)
22	1.760 (44.70)	1.701 (43.21)
24	1.885 (47.88)	1.826 (46.38)

How To Order

Military Nomenclature

CONNECTOR TYPE
D38999/ – MIL-C-38999 Series III

SHELL STYLE
D38999/20 – Wall mount receptacle
D38999/21 – Box mount receptacle (hermetic)
D38999/23 – Jam nut receptacle (hermetic)
D38999/24 – Jam nut receptacle
D38999/25 – Solder mount receptacle (hermetic)
D38999/26 – Straight plug, Grounded

SERVICE CLASS
(Hardware Finish)
F – Electroless nickel −85°F to +392°F (−65°C to +200°C)
N – Corrosion resistant steel, electro-deposited nickel (hermetic), −85°F to +392°F (−65°C to +200°C)
W – Olive drab cadmium over electroless nickel plate, −85°F to +347°F (−65°C to +175°C)
Y – Corrosion resistant steel, passivated (hermetic), −85°F to +392°F (−65°C to +200°C)

SHELL SIZE

A	B	C	D	E	F	G	H	J	Military Designation
9	11	13	15	17	19	21	23	25	Cannon Designation

CONTACT ARRANGEMENTS
See pages 101 and 102.

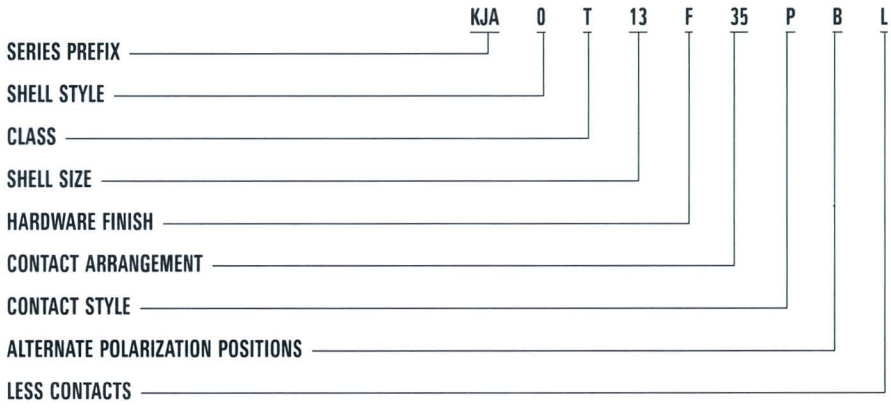
CONTACT STYLE
P – Pin contacts
S – Socket contacts
A – Less Pin contact*
B – Less Socket contact*
See pages 112-114 for Fiber Optic Contacts.

* Used only when other than power contacts are to be installed (i.e., shielded, thermocouple, etc.)

ALTERNATE POSITIONS
N (normal), A, B, C, D, E. See page 100.

Note: To order MS connectors less standard power contacts, purchase order must state "Less Contacts".

ITT Cannon Nomenclature



SERIES PREFIX
KJA – Series III – Scoop proof, threaded coupling

SHELL STYLE
0 – Wall mount receptacle
1 – Solder mount receptacle (hermetic)
2 – Box mount receptacle (hermetic)
6 – Straight plug
7 – Jam nut receptacle (also available in hermetic)

CLASS
T – Environment-resistant (without rear accessory)
Y – Hermetic

SHELL SIZE

9	11	13	15	17	19	21	23	25	Cannon Designation
A	B	C	D	E	F	G	H	J	Military Designation

HARDWARE FINISH
F – Electroless nickel, −85°F to +392°F (−65°C to +200°C)
K – Corrosion resistant steel passivated, −85°F to +392°F (−65°C to +200°C)
N – Corrosion resistant steel with electro-deposited nickel plate, −85°F to +392°F (−65°C to 200°C)
W – Olive drab cadmium over electroless nickel plate, −85°F to +347°F (−65°C to +175°C)

CONTACT ARRANGEMENTS
See pages 101 and 102.

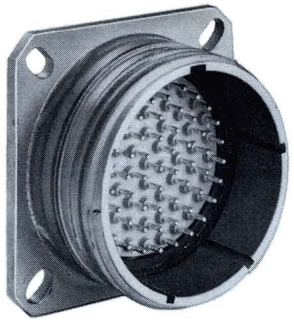
CONTACT STYLE
P – Pin contacts
S – Socket contacts
See pages 112-114 for Fiber Optic Contacts

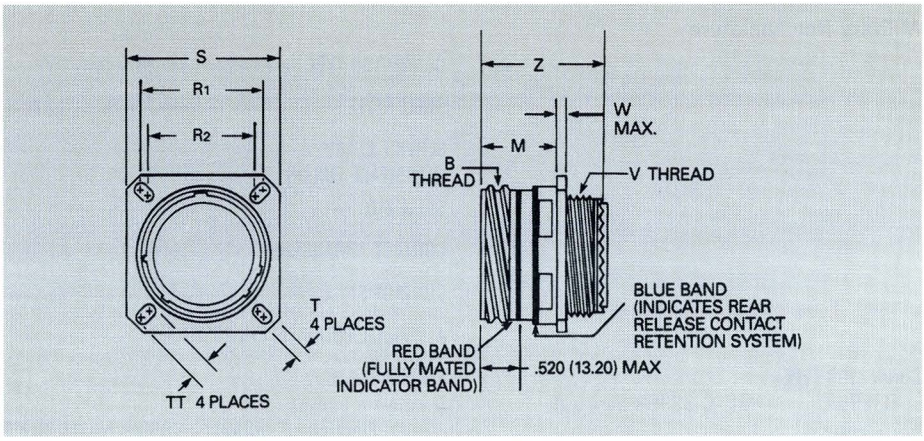
ALTERNATE POLARIZATION POSITIONS
N (normal), A, B, C, D, E. See page 100.

LESS CONTACTS
Use "L" when connectors are ordered less contacts, sealing plugs and insertion/extraction tool. ("L" is not stamped on connectors.)

Wall Mount Receptacle

D38999/20 **KJA0T**

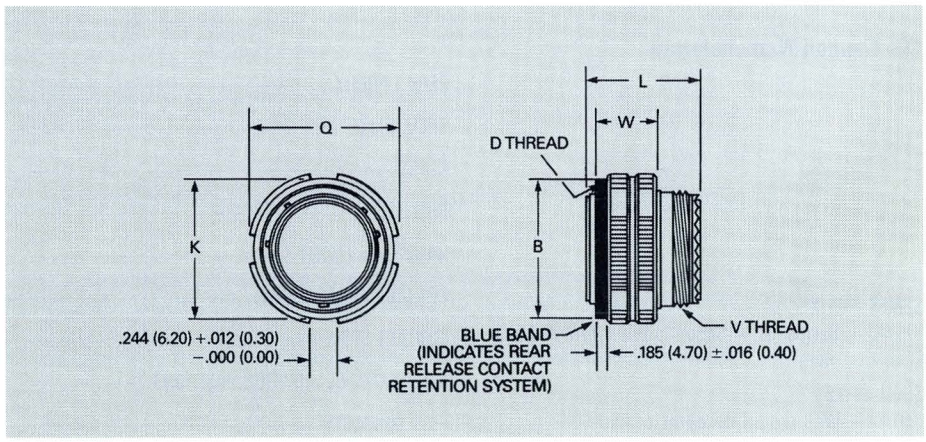




Shell Size	MS Shell size Code	B Thread Class 2A (Plated)	M +.000 (.000) −.005 (.130)	R_1	R_2	S ±.012 (.300)	T +.004 (.100) −.002 (.050)	TT +.004 (.100) −.002 (.050)	Metric V Thread (Plated)	W Max.	Z +.005 (.130) −.010 (.250)
9	A	.6250-0.1P-0.3L-TS	.820 (20.83)	.719 (18.26)	.594 (15.09)	.938 (23.83)	.128 (3.25)	.216 (5.49)	M12X1-6g0.100R	.098 (2.50)	1.235 (31.36)
11	B	.7500-0.1P-0.3L-TS	.820 (20.83)	.812 (20.62)	.719 (18.26)	1.031 (26.19)	.128 (3.25)	.194 (4.93)	M15X1-6g0.100R	.098 (2.50)	1.235 (31.36)
13	C	.8750-0.1P-0.3L-TS	.820 (20.83)	.906 (23.01)	.812 (20.62)	1.125 (28.58)	.128 (3.25)	.194 (4.93)	M18X1-6g0.100R	.098 (2.50)	1.235 (31.36)
15	D	1.0000-0.1P-0.3L-TS	.820 (20.83)	.969 (24.61)	.906 (23.01)	1.219 (30.96)	.128 (3.25)	.173 (4.39)	M22X1-6g0.100R	.098 (2.50)	1.235 (31.36)
17	E	1.1875-0.1P-0.3L-TS	.820 (20.83)	1.062 (26.97)	.969 (24.61)	1.312 (33.32)	.128 (3.25)	.194 (4.93)	M25X1-6g0.100R	.098 (2.50)	1.235 (31.36)
19	F	1.2500-0.1P-0.3L-TS	.820 (20.83)	1.156 (29.36)	1.062 (26.97)	1.438 (36.53)	.128 (3.25)	.194 (4.93)	M28X1-6g0.100R	.098 (2.50)	1.235 (31.36)
21	G	1.3750-0.1P-0.3L-TS	.790 (20.07)	1.250 (31.75)	1.156 (29.36)	1.562 (39.67)	.128 (3.25)	.194 (4.93)	M31X1-6g0.100R	.126 (3.20)	1.235 (31.36)
23	H	1.5000-0.1P-0.3L-TS	.790 (20.07)	1.375 (34.92)	1.250 (31.75)	1.688 (42.88)	.154 (3.91)	.242 (6.15)	M34X1-6g0.100R	.126 (3.20)	1.235 (31.36)
25	J	1.6250-0.1P-0.3L-TS	.790 (20.07)	1.500 (38.10)	1.375 (34.92)	1.812 (46.02)	.154 (3.91)	.242 (6.15)	M37X1-6g0.100R	.126 (3.20)	1.235 (31.36)

Straight Plug Grounded

D38999/26 **KJA6T**

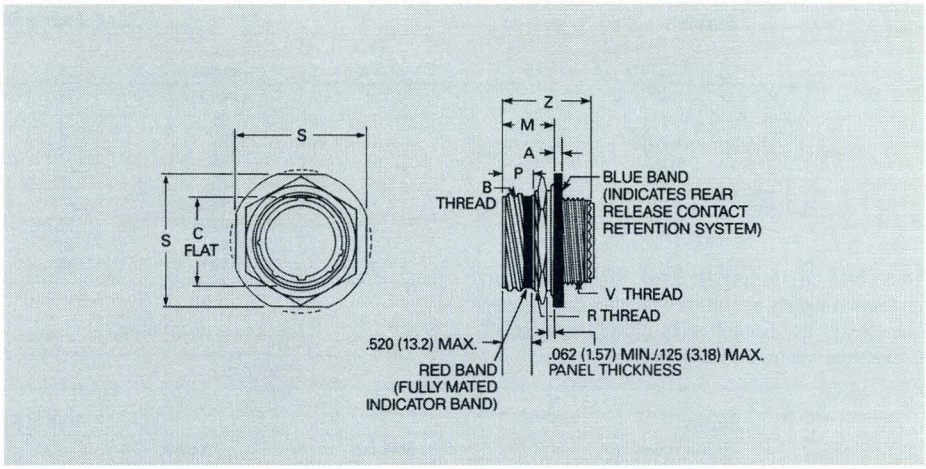


Shell Size	MS Shell size Code	B +.008 (.200) −.000 (.000)	D Thread Class 2B (Plated)	K Max.	L Max.	Q Dia. Max.	Metric V Thread (Plated)	W +.008 (.200) −.004 (.100)
9	A	.724 (18.40	.6250-0.1P-0.3L-TS	.748 (19.00)	1.234 (31.34)	.859 (21.82)	M12X1-6g0.100R	.760 (19.30)
11	B	.831 (21.10)	.7500-0.1P-0.3L-TS	.862 (21.90)	1.234 (31.34)	.969 (24.61)	M15X1-6g0.100R	.760 (19.30)
13	C	1.000 (25.40)	.8750-0.1P-0.3L-TS	1.027 (26.10)	1.234 (31.34)	1.141 (28.98)	M18X1-6g0.100R	.760 (19.30)
15	D	1.130 (28.70)	1.0000-0.1P-0.3L-TS	1.153 (29.30)	1.234 (31.34)	1.266 (32.16)	M22X1-6g0.100R	.760 (19.30)
17	E	1.268 (32.20)	1.1875-0.1P-0.3L-TS	1.291 (32.80)	1.234 (31.34)	1.391 (35.53)	M25X1-6g0.100R	.760 (19.30)
19	F	1.374 (34.90)	1.2500-0.1P-0.3L-TS	1.398 (35.50)	1.234 (31.34)	1.500 (38.10)	M28X1-6g0.100R	.760 (19.30)
21	G	1.500 (38.10)	1.3750-0.1P-0.3L-TS	1.524 (38.70)	1.234 (31.34)	1.625 (41.28)	M31X1-6g0.100R	.760 (19.30)
23	H	1.618 (41.40)	1.5000-0.1P-0.3L-TS	1.642 (41.70)	1.234 (31.34)	1.750 (44.45)	M34X1-6g0.100R	.760 (19.30)
25	J	1.744 (44.30)	1.6250-0.1P-0.3L-TS	1.768 (44.90)	1.234 (31.34)	1.875 (47.62)	M37X1-6g0.100R	.760 (19.30)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Jam Nut Receptacle

D38999/24 **KJA7T***

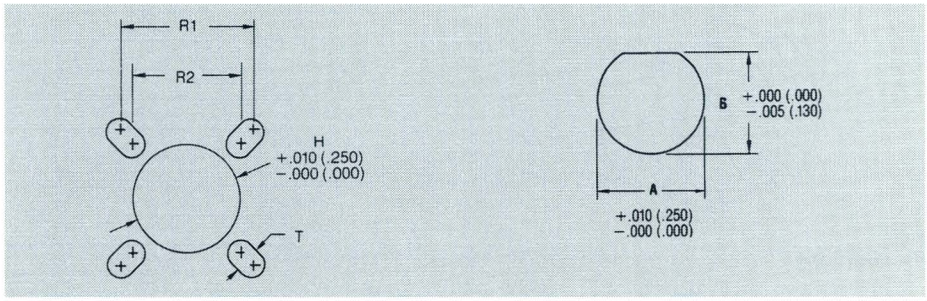


Shell Size	MS Shell Size Code	A +.010 (.250) −.005 (.130)	B Thread Class 2A (Plated)	C +.004 (.100) −.010 (.250)	Z +.005 (.130) −.004 (.100)	M +.005 (.130) −.004 (.100)	P +.016 (.410) −.004 (.100)	S	Metric R Thread (Plated)	Metric V Thread (Plated)
9	A	.104 (2.64)	.6250-0.1P-0.3L-TS	.651 (16.53)	1.243 (31.57)	.871 (22.12)	.555 (14.10)	1.062 (26.97)	M17X1-6g0.100R	M12X1-6g0.100R
11	B	.104 (2.64)	.7500-0.1P-0.3L-TS	.751 (19.07)	1.243 (31.57)	.871 (22.12)	.555 (14.10)	1.250 (31.75)	M20X1-6g0.100R	M15X1-6g0.100R
13	C	.104 (2.64)	.8750-0.1P-0.3L-TS	.938 (23.82)	1.243 (31.57)	.878 (22.30)	.563 (14.30)	1.375 (34.92)	M25X1-6g0.100R	M18X1-6g0.100R
15	D	.104 (2.64)	1.0000-0.1P-0.3L-TS	1.062 (26.97)	1.243 (31.57)	.878 (22.30)	.563 (14.30)	1.500 (38.10)	M28X1-6g0.100R	M22X1-6g0.100R
17	E	.104 (2.64)	1.1875-0.1P-0.3L-TS	1.187 (30.15)	1.243 (31.57)	.878 (22.30)	.563 (14.30)	1.625 (41.28)	M32X1-6g0.100R	M25X1-6g0.100R
19	F	.135 (3.43)	1.2500-0.1P-0.3L-TS	1.312 (33.32)	1.243 (31.57)	.878 (22.30)	.563 (14.30)	1.812 (46.02)	M35X1-6g0.100R	M28X1-6g0.100R
21	G	.135 (3.43)	1.3750-0.1P-0.3L-TS	1.437 (36.50)	1.243 (31.57)	.878 (22.30)	.563 (14.30)	1.938 (49.23)	M38X1-6g0.100R	M31X1-6g0.100R
23	H	.135 (3.43)	1.5000-0.1P-0.3L-TS	1.562 (39.67)	1.243 (31.57)	.878 (22.30)	.563 (14.30)	2.062 (55.38)	M41X1-6g0.100R	M34X1-6g0.100R
25	J	.135 (3.43)	1.6250-0.1P-0.3L-TS	1.687 (42.85)	1.243 (31.57)	.878 (22.30)	.563 (14.30)	2.188 (55.38)	M44X1-6g0.100R	M37X1-6g0.100R

Panel Cutouts

Wall Mounted Receptacle

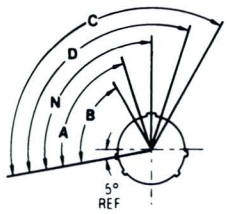
Jam Nut Receptacle



Shell Size	A	B	H	R1 (TP)	R2 (TP)	T (Max.)
9	.697 (17.70)	.669 (16.99)	.626 (15.90)	.719 (18.26)	.594 (15.09)	.134 (3.40)
11	.822 (20.88)	.769 (19.53)	.751 (19.08)	.812 (20.62)	.719 (18.26)	.134 (3.40)
13	1.007 (25.58)	.955 (24.26)	.876 (22.25)	.906 (23.01)	.812 (20.62)	.134 (3.40)
15	1.134 (28.80)	1.084 (27.53)	1.001 (25.43)	.969 (24.61)	.906 (23.01)	.134 (3.40)
17	1.259 (31.98)	1.208 (30.68)	1.188 (30.18)	1.062 (26.97)	.969 (24.61)	.134 (3.40)
19	1.383 (35.15)	1.333 (33.86)	1.251 (31.78)	1.156 (29.36)	1.062 (26.97)	.134 (3.40)
21	1.507 (38.28)	1.459 (37.06)	1.376 (34.95)	1.250 (31.75)	1.156 (29.36)	.134 (3.40)
23	1.633 (41.50)	1.584 (40.24)	1.511 (38.38)	1.375 (34.92)	1.250 (31.75)	.160 (4.06)
25	1.759 (44.68)	1.709 (43.41)	1.626 (41.30)	1.500 (38.10)	1.375 (34.92)	.160 (4.06)

Polarizing Positions

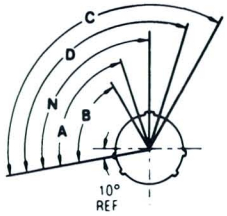
Series I



Front face of receptacle (plug opposite). Insert arrangement does not rotate with main key-keyway. The master key is rotated to provide shell polarization; the minor keys remain fixed.

Shell Size	Angle of Rotation (Degrees) Normal	A	B	C	D
9	95°	77°	—	—	113°
11	95°	81°	67°	123°	109°
13	95°	75°	63°	127°	115°
15	95°	74°	61°	129°	116°
17	95°	77°	65°	125°	113°
19	95°	77°	65°	125°	113°
21	95°	77°	65°	125°	113°
23	95°	80°	69°	121°	110°
25	95°	80°	69°	121°	110°

Series II

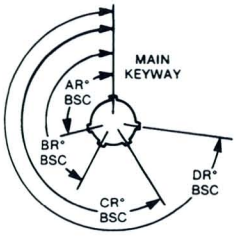


Front face of receptacle (plug opposite). Insert arrangement does not rotate with main key/keyway. The master key is rotated to provide shell polarization; the minor keys remain fixed.

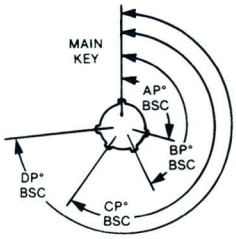
Shell Size	Angle of Rotation (Degrees) Normal	A	B	C	D
8	100°	82°	—	—	118°
10	100	°86°	72°	128°	114°
12	100°	80°	68°	132°	120°
14	100°	79°	66°	134°	121°
16	100°	82°	70°	130°	118°
18	100°	82°	70°	130°	118°
20	100°	82°	70°	130°	118°
22	100°	85°	74°	126°	115°
24	100°	85°	74°	126°	115°

Series III

RECEPTACLE
(Front face shown)



PLUG
(Front face shown)



NOTES:
1. All angles are BSC
2. The insert arrangement does not rotate with main key/keyway
3. All minor keys are rotated to provide shell polarization, the master key remains fixed at twelve o'clock position.
4. Polarization is different from Series I and II.

Shell Size	Key & Keyway Arrangement Identification Letter	Key Locations AR° or AP° BSC	BR° or BP° BSC	CR° or CP° BSC	DR° or DP° BSC
9	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
	E	91	131	197	240
11 13 and 15	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C	53	156	220	255
	D	119	146	176	298
	E	51	141	184	242
17 and 19	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
21 23 and 25	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272

Contact Arrangements (Engaging View Pin Insert)

* Socket insert only
** Pin insert only (Not available in socket insert Series I and III)

† Indicates layouts are available in all shell styles including MS27499, MS27508, KJ2E and KJ5E
● Consult factory for MS27505E/KJL5E insert availability

	Inactive					Inactive						
Series III	—	9-98	9-35	—	11-5	—	11-98	—	11-35	—	—	13-8
Series II	8-6†	8-98†	8-35†	—	10-5†	10-13†	10-98†	10-99†	10-35†	12-3	12-4†	12-8†
Series I	9-6**	9-98	9-35	11-4	11-5	11-13**	11-98	11-99**	11-35	—	13-4**	13-8
No. of Contacts	6 #22M	3 #20	6 #22D	4 #20	5 #20	13 #22M	6 #20	7 #20	13 #22D	3 #16	4 #16	8 #20
Service Ratings	M	I	M	I	I	M	I	I	M	II	I	I

		Inactive							Inactive
Series III	13-98	—	13-35	15-5	15-15	15-18	15-19	15-35	—
Series II	12-98†	12-22†	12-35†	14-5†	14-15†	14-18†	—	14-35†	14-37†
Series I	13-98	13-22**	13-35	15-5	15-15	15-18	15-19	15-35	15-37**
No. of contacts	10 #20	22 #22M	22 #22D	5 #16	14 #20, 1 #16	18 #20	19 #20	37 #22D	37 #22M
Service Ratings	I	M	M	II	I	I	I	M	M

							Inactive	
Series III	15-97	17-6	17-8	17-26	17-35	—	—	—
Series II	14-97†	16-6	16-8†	16-26†	16-35†	16-42†	16-55†	16-99†
Series I	15-97	17-6	17-8	17-26	17-35	—	17-55**	17-99**
No. of Contacts	8 #20, 4 #16	6 #12	8 #16	26 #20	55 #22D	42 #22	55 #22M	21 #20, 2 #16
Service Ratings	I	I	II	I	M	M	M	I

						Inactive	Inactive
Series III	—	—	19-11	19-32	19-35	—	—
Series II	18-28	18-30	18-11	18-32†	18-35†	18-53	18-66†
Series I	19-28**	19-30**	19-11	19-32	19-35	—	19-66**
No. of Contacts	26 #20, 2 #16	29 #20. 1 #16	11 #16	32 #20	66 #22D	53 #22	66 #22M
Service Ratings	I	I	II	I	M	M	M

	Inactive	Inactive					
Series III	—	—	21-11	21-16	21-35	21-39	21-41
Series II	20-1†	20-2†	—	20-16†	20-35†	20-39†	20-41†
Series I	21-1**	—	21-11	21-16	21-35	21-39	21-41
No. of Contacts	79 #22M	65 #22	11 #12	16 #16	79 #22D	37 #20, 2 #16	41- #20
Service Ratings	M	M	I	II	M	I	I

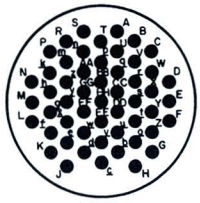
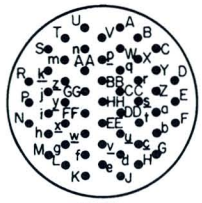
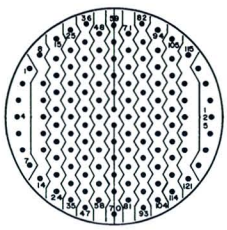
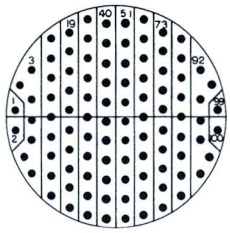
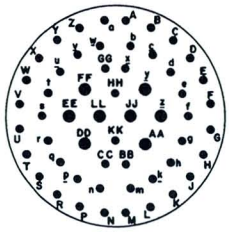
		Inactive	Inactive				
Series III	21-75	—	—	23-21	—	23-35	
Series II	—	22-1†	22-2†	22-21	23-32	22-35†	
Series I	21-75*●	23-1**	23-2**	23-21	23-32**	23-35	
No. of Contacts	4 #8 Twinax	100 #22M	85 #22	21 #16	32 #20	100 #22D	
Service Ratings	M	M	M	II	I	M	

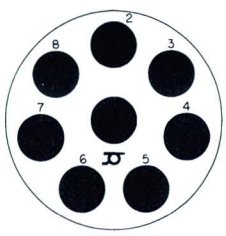
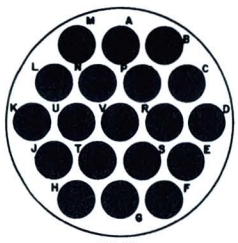
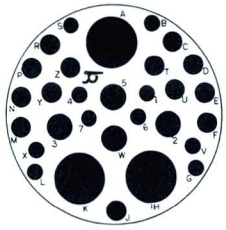
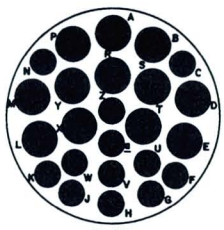
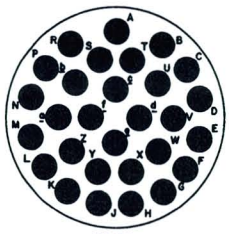
Please consult factory for availability of layouts not shown.

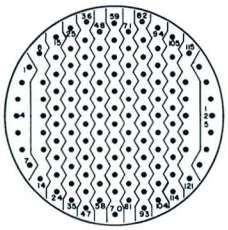
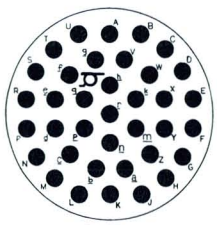
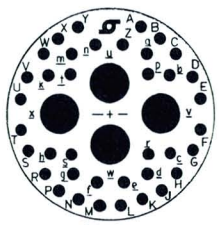
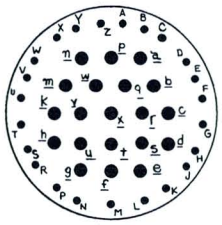
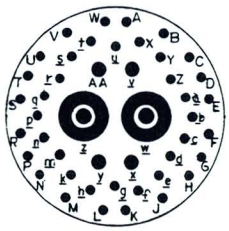
Contact Arrangements (Engaging View Pin Insert)

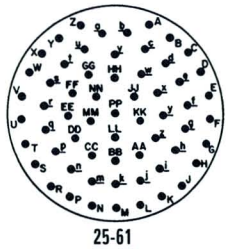
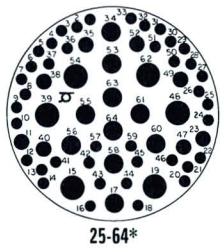
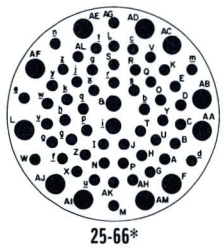
* Socket insert only
** Pin insert only (Not available in socket insert Series I and III

† Indicates layouts are available in all shell styles including MS27499, MS27508, KJ2E and KJ5E
• Consult factory for MS27505E/KJL5E insert availability

			Inactive	Inactive	
					
Series III	23-53	23-55	—	—	25-4
Series II	22-53†	22-55†	24-1†	24-2	24-4†
Series I	23-53	23-55	25-1**	25-2**	25-4
No. of Contacts	53 #20	55 #20	128 #22M	100 #22	48 #20, 8 #16
Service Ratings	I	I	M	M	I

					
Series III	25-8	25-19	25-20	25-24	25-29
Series II	—	—	—	24-24†	24-29†
Series I	25-8*•	25-19	25-20*•	25-24	25-29
No. of Contacts	8 #8 Coax/Twinax	19 #12	3 #8 Twinax, 13 #16, 4 #12 Coax, 10 #20	12 #16, 12 #12	29 #16
Service Ratings	Coax	I	N	I	I

					
Series III	25-35	25-37	25-42	25-43	25-46*
Series II	24-35†	—	—	—	—
Series I	25-35	25-37*•	25-42*•	25-43	25-46*
No. of Contacts	128 #22D	37 #16	38 #20, 4 #8 Coax	23 #20, 20 #16	40 #20, 4 #16, 2 #8
Service Ratings	M	I	I, Coax	I	coax

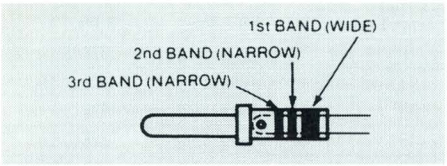
			
Series III	25-61	25-64*	25-66*
Series II	24-61†	—	—
Series I	25-61	25-64•	25-66•
No. of Contacts	61 #20	40 #22D, 8 #20 10 #16, 6 #12	53 #22D, 2 #20, 11 #16
Service Rating	I	I	I

Please consult factory for availability of layouts not shown.

ITT Cannon
Circular Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Contacts–Pin (Series I/II/III)

MIL-C-39029/58 KJL/KJ/KJA

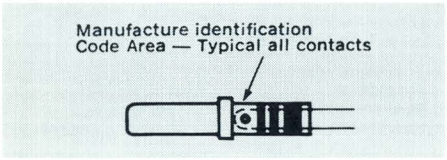


Contact Size	Color Bands 1	2	3	Cannon Part Number	Military Part Number	Superseded Military Part Number
22D	Orange	Blue	Black	030-2042-000	M39029/58-360	MS27493-22D
*22M	Orange	Blue	Brown	030-1993-022	M39029/58-361	MS27493-22M
*22	Orange	Blue	Red	030-1999-022	M39029/58-362	MS27493-22
20	Orange	Blue	Orange	030-1997-020	M39029/58-363	MS27493-20
16	Orange	Blue	Yellow	030-1995-016	M39029/58-364	MS27493-16
12	Orange	Blue	Green	030-2155-000	M39029/58-365	MS27493-12

*Inactive for new design.

Contacts–Socket (Series II)

MIL-C-39029/57 KJ

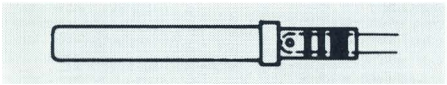


Contact Size	Color Bands 1	2	3	Cannon Part Number	Military Part Number	Superseded Military Part Number
22D	Orange	Green	Yellow	031-1147-000	M39029/57-354	MS27491-22D
*22M	Orange	Green	Green	031-1122-022	M39029/57-355	MS27491-22M
*22	Orange	Green	Blue	031-1125-022	M39029/57-356	MS27491-22
20	Orange	Green	Violet	031-1124-020	M39029/57-357	MS27491-20
16	Orange	Green	Gray	031-1123-016	M39029/57-358	MS27491-16
12	Orange	Green	White	031-1238-000	M39029/57-359	MS27491-12

*Inactive for new design.

Contacts–Socket (Series I & III)

MIL-C-39029/56 KJL/KJA



Contact Size	Color Bands 1	2	3	Cannon Part Number	Military Part Number	Superseded Military Part Number
22D	Orange	Yellow	Gray	031-1147-007	M39029/56-348	MS27490-22D
20	Orange	Green	Brown	031-1250-001	M39029/56-351	MS27490-20
16	Orange	Green	Red	031-1251-001	M39029/56-352	MS27490-16
12	Orange	Green	Orange	031-1237-000	M39029/56-353	MS27490-12

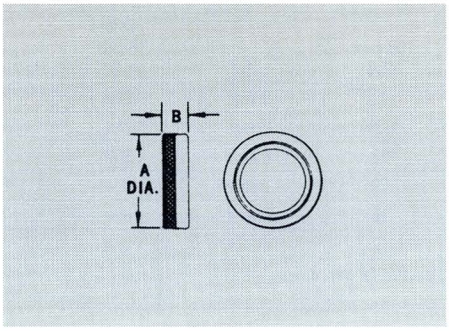
Wire Sizes and Diameters

Wire sizes and diameters

Contact size	Wire size (AWG)	Finished wire outside dimensions Minimum	Maximum
22D	28, 26, 24, 22	0.030 (0.76)	0.054 (1.37)
22M*	28, 26, 24	0.030 (0.76)	0.050 (1.27)
22*	26, 24, 22	0.034 (0.86)	0.060 (1.52)
20	24, 22, 20	0.040 (1.02)	0.083 (2.11)
16	20, 18, 16	0.065 (1.65)	0.109 (2.77)
12	14, 12	0.097 (2.46)	0.142 (3.61)
8	M17/095-RG-180**	0.135 (3.43)	0.155 (3.94)

*Inactive for new design.
**MIL-C-17
Connectors shall meet the requirements specified when:
a. A full complement of wire of the applicable minimum or maximum insulation diameter is installed.
b. Any combination of wire diamters not exceeding dimensions of (a), above can be used.

Backshell—Type E (Straight)

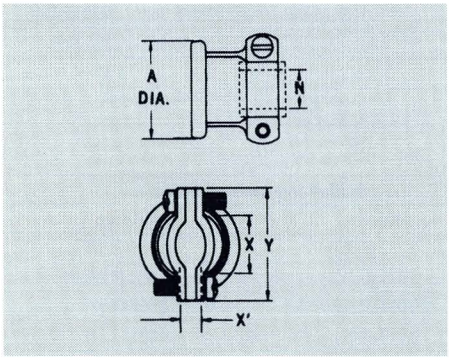


Shell Size			
Series I	Series II	A Dia. Max.	B Dia. Max.
9	8	.580 (14.73)	.328 (8.33)
11	10	.705 (17.91)	.328 (8.33)
13	12	.830 (21.08)	.328 (8.33)
15	14	.955 (24.26)	.328 (8.33)
17	16	1.080 (27.32)	.328 (8.33)
19	18	1.205 (30.61)	.328 (8.33)
21	20	.330 (33.78)	.328 (8.33)
23	22	1.455 (36.96)	.328 (8.33)
25	24	1.555 (39.50)	.270 (6.86)

How To Order

Shell Size		Finishes			
		A	B	C	N
Series I	Series II	Cadmium/Nickel-Clear Part Number	Cadmium/Nickel-O.D. Part Number	Anodic Non-cond. Part Number	Electroless Nickel Part Number
9	8	057-0776-000	057-0862-000	057-0819-000	057-0776-002
11	10	057-0777-000	057-0863-000	057-0820-000	057-0777-002
13	12	057-0778-000	057-0864-000	057-0821-000	057-0778-002
15	14	057-0779-000	057-0846-000	057-0822-000	057-0779-002
17	16	057-0780-000	057-0847-000	057-0823-000	057-0780-002
19	18	057-0781-000	057-0848-000	057-0824-000	057-0781-002
21	20	057-0782-000	057-0849-000	057-0825-000	057-0782-002
23	22	057-0783-000	057-0850-000	057-0826-000	057-0783-002
25	24	057-0784-000	057-0851-000	057-0827-000	057-0784-002

Backshell—Type F (Cable Clamp)



Shell Size						
Series I	Series II	A Max.	N Dia. Max.	X Dia. Min.	X[1] Dia. Min.	Y Max.
9	8	.508 (14.73)	.135 (3.43)	.234 (5.94)	.187 (4.75)	.829 (21.06)
11	10	.705 (17.91)	.198 (5.03)	.297 (7.54)	.187 (4.75)	.891 (22.63)
13	12	.830 (21.08)	.322 (7.18)	.422 (10.72)	.281 (7.14)	1.016 (25.81)
15	14	.955 (24.26)	.385 (9.78)	.547 (12.89)	.325 (8.26)	1.141 (28.98)
17	16	1.080 (27.43)	.510 (12.95)	.609 (15.47)	.356 (9.04)	1.203 (30.56)
19	18	1.205 (30.61)	.635 (16.13)	.734 (18.64)	.456 (11.58)	1.469 (37.31)
21	20	1.330 (33.78)	.635 (16.13)	.734 (18.64)	.519 (13.18)	1.469 (37.31)
23	22	1.455 (36.96)	.760 (19.30)	.922 (23.42)	.519 (13.18)	1.656 (42.06)
25	24	1.555 (39.50)	.810 (20.57)	.984 (24.99)	.657 (16.69)	1.750 (44.45)

How To Order (MS Version)

MS27506 – A - 8 - 2

Military Designation
MS27506 Type F Straight with Cable Clamp

Finish
A—Cad/Nickel (Clear)
B—Cad/Nickel (O.D.)
F—Nickel (Electroless)

Shell Size
Series I - 9, 11, 13, 15, 17, 19, 21, 23, 25
Series II - 8, 10, 12, 14, 16, 18, 20, 22, 24

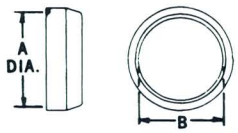
Adapter
Geometry—2

Shell Size				Finishes					
				A		B		N	F
Series I	Series II	MS Part Number	Cannon Part Number	Cannon	MS	Cannon	MS	Cannon	MS
9	8	27506-*8-2	057-3005-***	-012	A	-013	B	-015	F
11	10	27506-*10-2	057-3006-***	-011	A	-012	B	-014	F
13	12	27506-*12-2	057-3007-***	-012	A	-013	B	-015	F
15	14	27506-*14-2	057-3008-***	-010	A	-011	B	-013	F
17	16	27506-*16-2	057-3009-***	-012	A	-013	B	-015	F
19	18	27506-*18-2	057-3010-***	-013	A	-014	B	-016	F
21	20	27506-*20-2	057-3011-***	-011	A	-013	B	-015	F
23	22	27506-*22-2	057-3012-***	-015	A	-016	B	-018	F
25	24	27506-*24-2	057-3013-***	-013	A	-014	B	-017	F

* MS Finish *** Cannon Finish

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Backshell - Type P (Potting Boot)



Shell Size			
Series I	Series II	A Dia. Max.	B Dia. Max.
9	8	.598 (15.19)	.434 (11.02)
11	10	.723 (18.36)	.548 (13.92)
13	12	.847 (21.51)	.673 (17.09)
15	14	.969 (24.61)	.798 (20.27)
17	16	1.087 (27.61)	.899 (22.83)
19	18	1.211 (30.76)	1.024 (26.01)
21	20	1.336 (33.93)	1.141 (29.98)
23	22	1.461 (37.11)	1.274 (32.36)
25	24	1.586 (40.28)	1.399 (35.53)

How To Order (MS Version)

MS27486 - 9 - 1

MS Designation

Shell Size
Series I—9, 11, 13, 15, 17, 19, 21, 23, 25
Series II—8, 10, 12, 14, 16, 18, 20, 22, 24

1—Straight Cup

NOTE: When ordering the MS version you must specify both MS numbers for the Potting Boot and the Adapter Ring.

Shell Size		MS	Cannon
Series I	Series II	Part Number	Part Number
9	8	27486-**-1	040-0185-000
11	10	27486-**-1	040-0169-000
13	12	27486-**-1	040-0170-000
15	14	27485-**-1	040-0171-000
17	16	27485-**-1	040-0172-000
19	18	27486-**-1	040-0173-000
21	20	27486-**-1	040-0174-000
23	22	27486-**-1	040-0175-000
25	24	27486-**-1	040-0176-000

** Specify applicable Series I or II, shell size.

Adapter Ring

How To Order (MS Version)

MS27485 - A - 8

Military Designation

Finish
A—Cad/Nickel (Clear)
B—Cad/Nickel (O.D.)
F—Nickel (Electroless)

Shell Size
Series I—9, 11, 13, 15, 17, 19, 21, 23, 25
Series II—8, 10, 12, 14, 16, 18, 20, 22, 24

NOTE: When ordering the MS version you must specify both MS numbers for the Potting Boot and the Adapter Ring.

Shell Size				Finishes					
				A Cadmium/Nickel-Clear		B Cadmium/Nickel-O.D.		N Electroless Nickel	F
Series I	Series II	MS Part Number	Cannon Part Number	Cannon	MS	Cannon	MS	Cannon	MS
9	8	27485-*-**	237-0887-***	-000	A	-001	B	-002	F
11	10	27485-*-**	237-0874-***	-000	A	-001	B	-002	F
13	12	27485-*-**	237-0875-***	-000	A	-001	B	-002	F
15	14	27485-*-**	237-0876-***	-000	A	-001	B	-002	F
17	16	27485-*-**	237-0877-***	-000	A	-001	B	-002	F
19	18	27485-*-**	237-0878-***	-000	A	-001	B	-002	F
21	20	27485-*-**	237-0879-***	-000	A	-001	B	-002	F
23	22	27485-*-**	237-0880-***	-000	A	-001	B	-003	F
25	24	27485-*-**	273-0881-***	-000	A	-001	B	-003	F

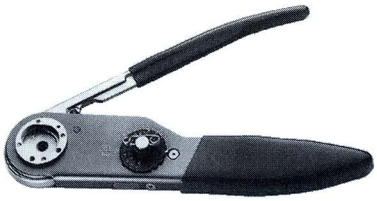
* MS Finish
** Specify applicable Series I or II shell size
*** Cannon Finish

Wire Sealing Plugs

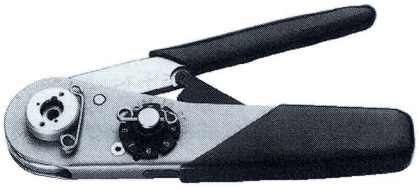
Series III Size	Series I & II Size	Part Number ITT Cannon	Part Number MS	Color Code
22D	22D	225-1013-000	MS27488-22	Black
22M	22M	225-1013-000	MS27488-22	Black
—	22	225-1013-000	MS27488-22	Black
20	20	225-0070-000	MS27488-20	Red
16	16	225-0071-000	MS27488-16	Blue
12	12	225-0072-000	MS27488-12	Yellow

Wire sealing plugs meet MS27488 standards. The plugs are color coded according to size for easy identification. Wire sealing plugs may be ordered separately.

Tools–Crimp



M22520/1-01



M22520/2-01

Contact Style	Contact Size	Crimp Tool Part Number	Locator or Turret Part Number
PIN CONTACT SERIES I/II/III	22D OR 22M	M22520/2-01	M22520/2-09
	22	M22520/2-01	M22520/2-09
	20	M22520/1-01	M22520/1-04 OR TH 187
	16	M22520/1-01	M22520/1-04 OR TH 187
	12	M22520/1-01	M22520/1-04
SOCKET CONTACT SERIES II	22D OR 22M	M22520/2-01	M22520/2-06
	22	M22520/2-01	M22520/2-06
	20	M22520/1-01	M22520/1-04
	16	M22520/1-01	M22520/1-04
	12	M22520/1-01	M22520/1-04
SOCKET CONTACT SERIES I & III	22D	M22520/2-01	M22520/2-07
	20	M22520/1-01	M22520/1-04
	16	M22520/1-01	M22520/1-04
	12	M22520/1-01	M22520/1-04

Tools–Plastic Insertion/Extraction

Contact Size	Cannon Description	Cannon Part Number	Military Part Number	Superseded Military Part Number	Insertion Color Tip	Extraction Color Tip
22D	CIET-22D-01	274-7048-000	M81969/14-01	MS27534-22D	Green	White
22M	CIET-22D-01	274-7048-000	M81969/14-01	MS27534-22D	Green	White
20	CIET-20-10	274-7001-000	M81969/14-10	MS27534-20	Red	Orange
16	CIET-16-03	274-7002-000	M81969/14-03	MS27534-16	Blue	White
12	CIET-12-04	274-7003-000	M81969/14-04	MS27534-12	Yellow	White

Tools–Metal (MS) Insertion

Contact Size	MS Part Number	ITT CANNON Part Number	Color Band†
22D OR 22M*	MS27495 A22M	995-0001-718	Black
22*	MS27495 A22	995-0001-720	Brown
20	MS27495 A20	995-0001-716	Red
16	MS27495 A16	995-0001-732	Blue

† Color band indicates tool size
* Replacement only, not recommended for new design.

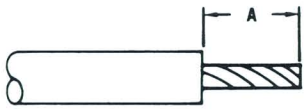
Tools–Metal (MS) Extraction

Contact Size	MS Part Number	ITT CANNON Part Number	Color Band† No. 1	No. 2
22D OR 22M *	MS27495 R22M	995-0001-719	Black	White
22*	MS27495 R22	995-0001-721	Brown	White
20	MS27495 R20	995-0001-717	Red	White
16	MS27495 R16	995-0001-731	Blue	White

† Band No. 1 indicates tool size.
Band No. 2 indicates removal tool.
* Replacement only, not recommended for new design.

Wire Stripping

Strip insulation from end of wire to be crimped. (See table for proper stripping dimensions.) Do not cut or damage wire strands.

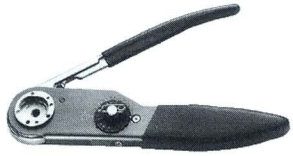


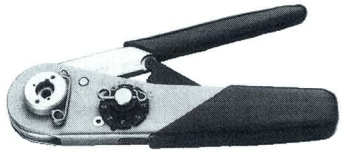
Wire Size	A
22D or 22M*	.125 (3.18)
20	.188 (4.77)
16	.188 (4.77)
12	.188 (4.77)

* Inactive, not recommended for new design, replacement only.

Contact Crimping

1. Insert stripped wire into contact crimp pot. Wire must be visible thru inspection hole.

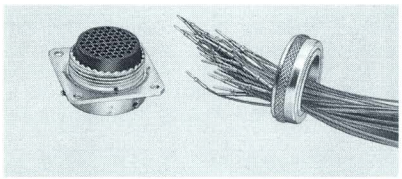




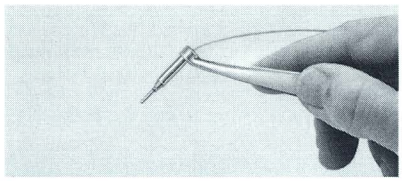
2. Using correct crimp tool and locator, cycle the tool once to be sure the indentors are open. Insert contact and wire into locator. Squeeze tool handles firmly and completely to insure a proper crimp. The tool will not release unless the crimp indentors in the tool head have been fully actuated.

3. Release crimped contact and wire from tool. Be certain the wire is visible thru inspection hole in contact.

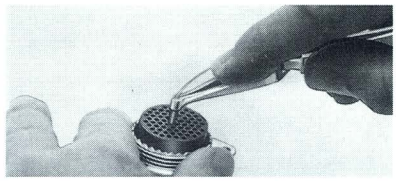
Contact Insertion



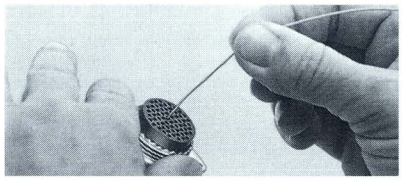
1. Remove hardware from plug or receptacle and slip over wire bundle in proper order for reassembly.



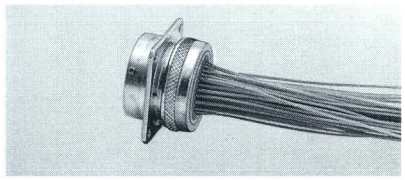
2. Using proper plastic or metal insertion tool for corresponding contact, position wire in tip of the tool so that the tool tip butts up against the contact shoulder.



3. Press tool against contact shoulder and, with firm and even pressure, insert wired contact and tool tip into center contact cavity. A slight click may be heard as metal retaining tines snap into place behind contact shoulder.

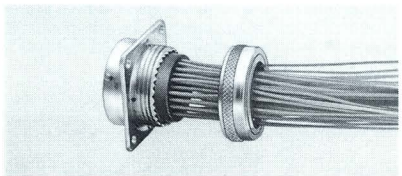


4. Remove tool and pull back lightly on wire to make sure contact is properly seated. Repeat operation with remainder of contacts to be inserted, beginning with the center cavity and working outward in alternating rows.

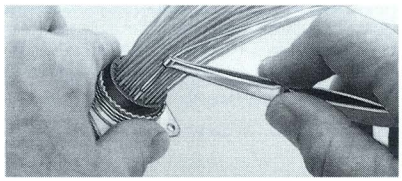


5. After all contacts are inserted, fill any empty cavities with wire sealing plugs. Reassemble plug or receptacle hardware.

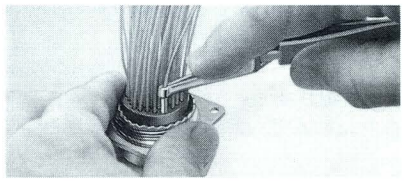
Contact Extraction



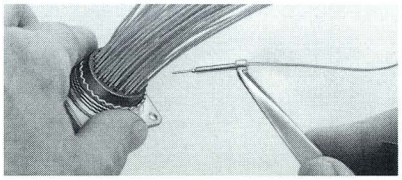
1. Remove hardware from plug or receptacle and slide hardware back along wire bundle.



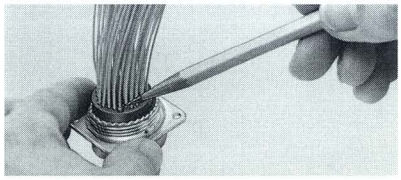
2. Using plastic or metal extraction tool with proper color code corresponding to contact size, place wire in tool.



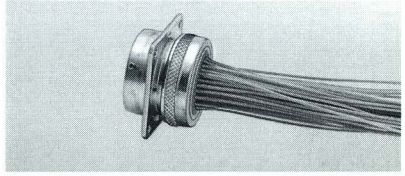
3. Insert tool into contact cavity until tool tip bottoms against the contact shoulder, expanding clip retaining tines.



4. Hold wire firmly in tool and extract wired contact and tool. Repeat operation for all contacts to be extracted.



5. Fill any empty wire cavities with wire sealing plugs, and



6. Reassemble plug or receptacle.

Test Data

The following excerpts are some of the parameter requirements of the MIL-C-38999 Specification.

Test Description	Paragraph Reference	Requirements
Contact Retention	4.7.19	After preloading to 3 pounds maximum, the force shall be applied at a rate of approximately 1 pound per second and maintained at full load for 5-10 seconds. No damage to contacts or insert shall result nor shall the contacts be dislocated from their normal position in the connector more than 0.012 inch under the given load. Failure to meet these requirements shall be cause for rejection.
Coupling Torque	4.7.6	For qualification testing, mating halves shall be coupled and uncoupled, measuring the torques necessary. The torques required to couple and uncouple mating connector halves shall fall within the limits specified as follows:
Durability	4.7.7	Connector halves shall be mated and unmated 250 times for Series II with ground fingers and 500 times for Series I and III at a rate not exceeding 300 cycles per hour. The test may be performed by hand or by mechanical means, but the coupling ring shall be operated as in normal service. Failure to complete this test because of mechanical malfunction shall be cause for rejection.
Insulation Resistance	4.7.9	An insulation resistance test shall be performed on unmated connectors in accordance with MIL-STD-202, Method 302, Test condition B. Measurement shall be made between three pairs of adjacent contacts and the shell. Failure to meet the minimum requirement of 50,000 megohms for Classes E, P, F, R, and T shall be cause for rejection.
Vibration	4.7.22	Wired, mated connectors shall be subjected to the vibration test of MIL-STD-202, Method 214, Test Condition II, except that the duration shall be one hour in each plane. Receptacles shall be mounted on the vibration fixture by normal means. All contacts shall be wired in a series circuit and 100-500 millamperes of current shall be allowed to flow through the series circuit during vibration. Suitable means shall be employed to monitor the current flow and to indicate any discontinuity of more than 1 microsecond. The wire bundle shall be clamped to the nonvibrating points at least 8 inches from the rear of the connector. Current discontinuity of 1 microsecond or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.
Shock	4.7.23	Wired, mated connectors shall be subjected to one shock in each direction in each of three mutually perpendicular axes. The pulse shall be approximate half sine wave of 300g ±15% magnitude with a duration of 3 ±1 milliseconds. Receptacles shall be mounted on a shock fixture by normal means. All contacts shall be wired in a series circuit and 100-150 ma. of current shall flow through the series circuit during shock. Suitable means shall be employed to monitor the current flow and to indicate any discontinuity of more than 1 microsecond. The wire bundle shall be clamped to fixed points at least 8 inches from the rear of the connector. Current discontinuity of 1 microsecond or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.
Thermal Shock	4.7.4	Unmated receptacles shall be subject to 10 cycles of thermal shock in the following manner: Step a. The receptacle shall be suspended for 10 + 1 − 0 minutes in the center of a cold water bath with a volume of approximately one cubic foot. No dimension of the bath shall be less than 10 inches. The water temperature shall not exceed 4°C (201°F). Step b. The receptacle shall be suspended for 10 + 1 − 0 minutes in the center of a hot water bath with a volume of approximately one cubic foot. No dimension of the bath shall be less than 10 inches. The water temperature shall be not less than 94°C (201°F). The time of transfer from one bath to the other shall not exceed 5 seconds. At the end of the tenth cycle, the receptacle shall have the excess moisture shaken off and shall then be dried in a forced air oven at 66 ± 5°C for 15 ±1 minutes. Any evidence of damage resulting from this test shall be cause for rejection.
Altitude Immersion	4.7.8	Mated connectors shall be placed in a container of water at approximately 20°C and placed in an altitude chamber. All wire ends shall be located within the chamber and exposed to the chamber atmosphere, but not submerged. The exposed wire ends shall not be sealed. A quantity of salt, 5 percent by weight, shall be added to make the water conductive. The chamber pressure shall then be reduced to approximately one inch of mercury and maintained for thirty minutes. The chamber pressure shall then be slowly returned to atmospheric. This shall be considered one cycle. Two additional cycles shall be performed. At the end of the last cycle, while the mated connectors are still submerged, the Insulation Resistance Test (room temperature), and the High Potential Test (sea level voltages) shall be performed upon the same circuits. Failure to meet an insulation resistance minimum of 2,000 megohms or any evidence of dielectric breakdown or flashover shall be cause for rejection.
Solvent Immersion	4.7.29	Unmated connectors shall be immersed fully in the applicable fluid specified below for 20 hours. After removal from the fluid, each connector shall remain for one hour in free air at room temperature. a. Jet fuel JP-4 to MIL-J-5624 b. Aircraft lubricating oil to MIL-L-9236
Corrosion	4.7.12	Unmated connectors and individual contact samples shall be subjected to the salt spray of MIL-STD-202, Method 101, Test Condition B (tin plated, Class Y receptacles—24 hours). Immediately after exposure, the surfaces of the specimens shall be thoroughly washed in tap water and dried in a circulatory oven at a temperature of 38 ±3°C (100°F) for a period of approximately 12 hours. Any exposure of basis metal as a result of this test, shall be cause for rejection.
Dynamic Salt Spray	4.7.12.2	(Series I and II, finish B; Series III, class W). The wired assembled plugs and receptacles shall be mated and unmated 50 cycles at a rate of 300 cycles per hour maximum. The mating and unmating shall be accomplished so that the plug and receptacle are completely separated during each cycle. The connectors shall then be subjected to the salt spray test in accordance with method 1001 of MIL-STD-1344. The connectors shall be tested for 452 hours mated followed by 48 hours unmated. After the salt spray exposure the remaining number of durability cycles specified in 4.7.7 shall be completed.
Temperature Durability	4.7.33	Wired, mated connectors shall be subjected to the indicated ambient temperature for a period of 1,000 hours. Series I and II (finish A) ..... $150^{+3^\circ}_{-0^\circ}$C (302°F) Series I and II (finish B) ..... $175^{+3^\circ}_{-0^\circ}$C (347°F) Series III (class W) ..... $175^{+3^\circ}_{-0^\circ}$C (347°F) All other finishes ..... $200^{+3^\circ}_{-0^\circ}$C (392°F)

Coupling Torque

Shell Size	Torque lb/in. Max.	Torque lb/in. Min.	Shell Size	Torque lb/in. Max.	Torque lb/in. Min.	Shell Size	Torque lb/in. Max.	Torque lb/in. Min.	Shell Size	Torque lb/in. Max.	Torque lb/in. Min.
8/9	8	2	14	20	4	18	28	5	22	36	7
10/11	12	2	15	20	3	19	28	3	23	36	5
12	16	2	16	24	4	20	32	6	24	36	7
13	16	2	17	24	3	21	32	5	25	40	5

Contact Retention

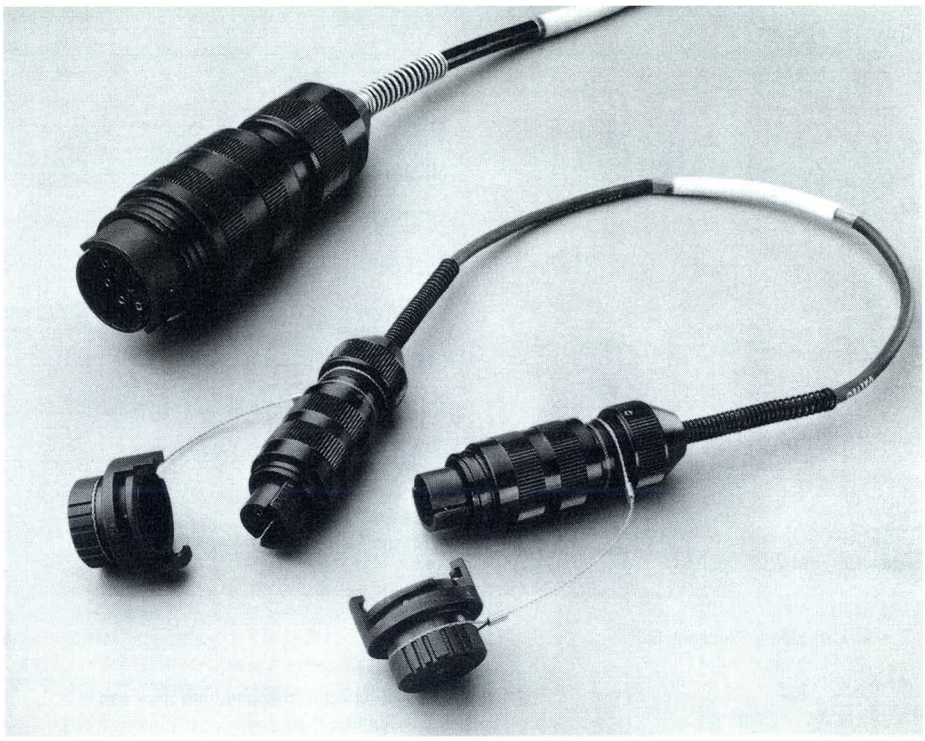
Contact Size	22M	22D	22	20	16
Loads in Pounds ±10%	10	10	10	15	25

ITT Cannon's FOMC Series Fiber Optic connectors are designed to meet the needs of military and commercial customers who require a rugged environmental multifiber field connector. The FOMC combines features which provide the user with a connector that will withstand rough handling and weather extremes with features of elastomeric cable and interface sealing, scoop proof interface to prevent optical contact damage, removable front insert for easy optical contact cleaning, anodized shell finish, and a tough, strong dust cap with attaching strap.

Hermaphroditic design means plugs will mate with an identical plug as well as receptacles. The removable insert assures correct mating and alignment. In the FOMC, ruggedness is combined with good optical performance, rapid coupling and attractive pricing.

Another plus feature for ITT Cannon's FOMC design is the fiber flexure chamber which prevents tensile loads from being applied to the terminated fiber and provides surplus fiber in a service loop of sufficient length to permit one retermination of one or more fibers in the plug and cable receptacle without reterminating the strength member at the same time or any other fiber. This versatility is an ITT Cannon exclusive.

The FOMC 2, 4, and 8 channel connectors are available as a cable plug, and several receptacle shell configurations. The 8 channel can also be used with less contacts i.e. 6, 4, or 2 channels. Sealing plugs are supplied with the 8 channel connector when using less than the full complement of contacts. This catalog provides complete ordering information on available shell types, contact layouts, fiber and cable dimensional and mechanical parameters.



Standard Data

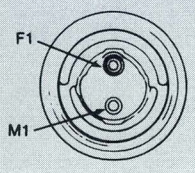
Description	Materials
Shell Hardware	Aluminum Alloy
Cable Clamp	Aluminum Alloy
Insert, Front Removable	Thermoplastic
Interfacial Seal	Elastomer
Cable Seal	Elastomer
O Rings	Elastomer
Alignment Guide	Thermoplastic
Strain Relief Spring	Steel wire with black chrome finish
Mandrel/Yoke	Thermoplastic
Receptacle Yoke	Thermoplastic
Dust Cap	Elastomer
Marking	Laser with clear chromate over exposed base metal

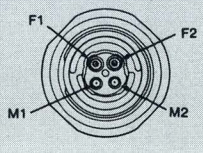
Fungus inert per requirement 4 of MIL-STD-454 Fluid resistant (elastomeric materials) per
- MIL-H-5606-Hydraulic fluid, petroleum base
- MIL-L-7808-Lubricating oil, synthetic base
- MIL-G-3056-Gasoline
- MIL-A-8243-Ethelyne glycol

Contact Arrangements

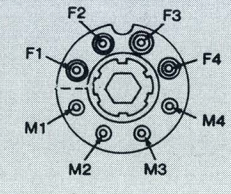
Face View of Insert

2 and 4 Channel





8 Channel



How to Order

FOMC 6- 2 W 2 C * ***

- SERIES
- SHELL STYLE
- SHELL SIZE
- DUST CAP
- CABLE TYPE
- CABLE SIZE (O.D.)
- POLARIZATION POSITION
- MODIFICATION CODES

SERIES
Fiber Optic Multi Channel

SHELL STYLE
2 – Square Flange Receptacle (2/4) channel only)
6 – Cable Plug
7 – Jam Nut Receptacle

SHELL SIZE (Channels)
(Maximum number of contact positions)
2
4
8

DUST CAP
W – Connector supplied with dust cap
X – Without dust cap

CABLE TYPE
1 – Pigtail buffered fiber (receptacle only)
2 – Multi fiber strengthened cable
3 – Single fiber strengthened cables (8 channel only)

CABLE SIZE (O.D.)
A – .190 ± .015 (4.83 ± .38)
D – .236 ± .019 (6.0 ± .5)
F – .276 ± .015 (7.0 ± .4)
G – .374 ± .015 (9.50 ± .38)*
H – .500 ± .015 (12.70 ± .38)*
P – Pigtail buffered fiber

*NOTE: Cable sizes G and H are for 8 channel FOMC Connector only

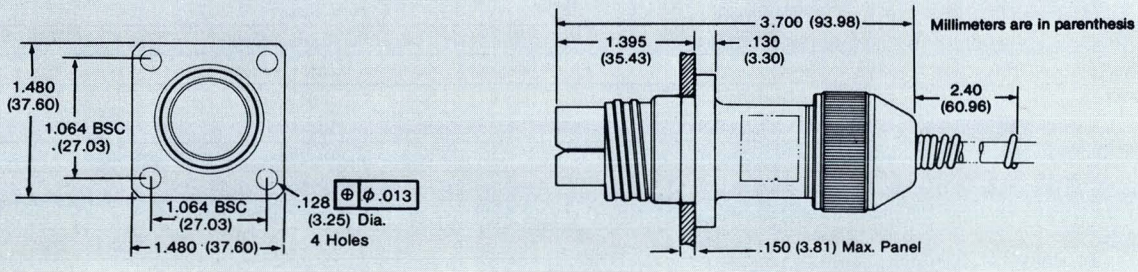
POLARIZATION
(8 channel plug only. Omit for 2/4 channel)
0 – Not polarized
1 thru 6 – key position

MODIFICATION CODES
Consult factory

2 and 4 Channel

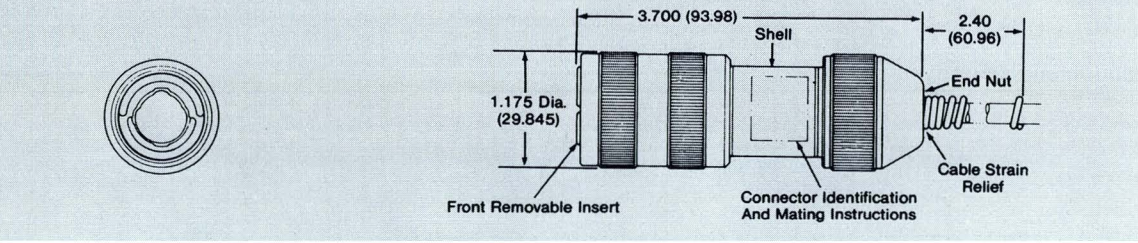
Square Flange Receptacle

FOMC 2



Plug

FOMC 6

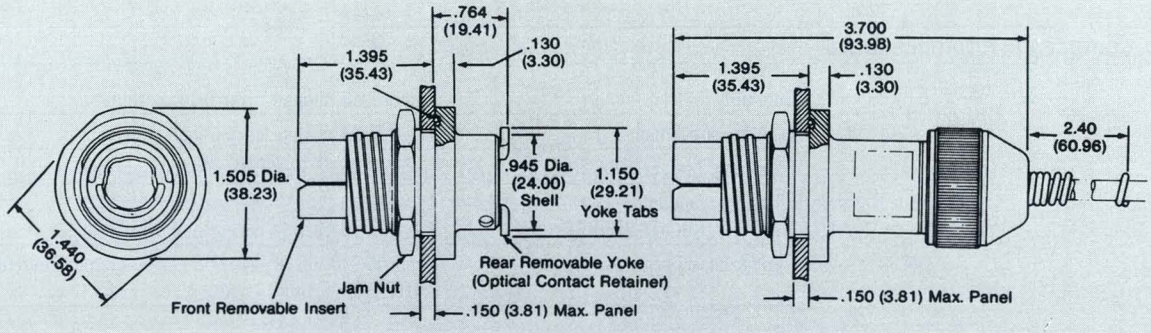


Dimensions are shown in inches (millimeters).
Dimensions subject to change.

2 and 4 Channel

Jam Nut Receptacle

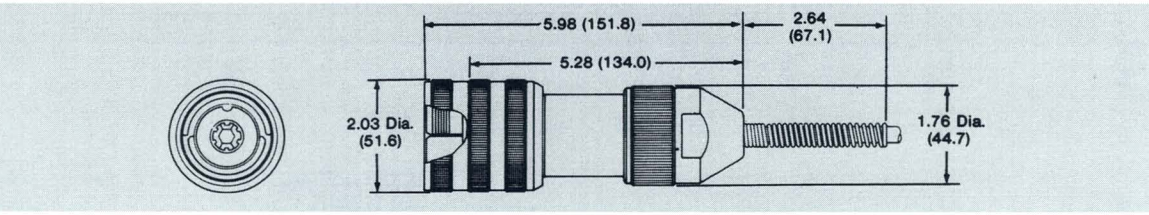
FOMC 7



8 Channel

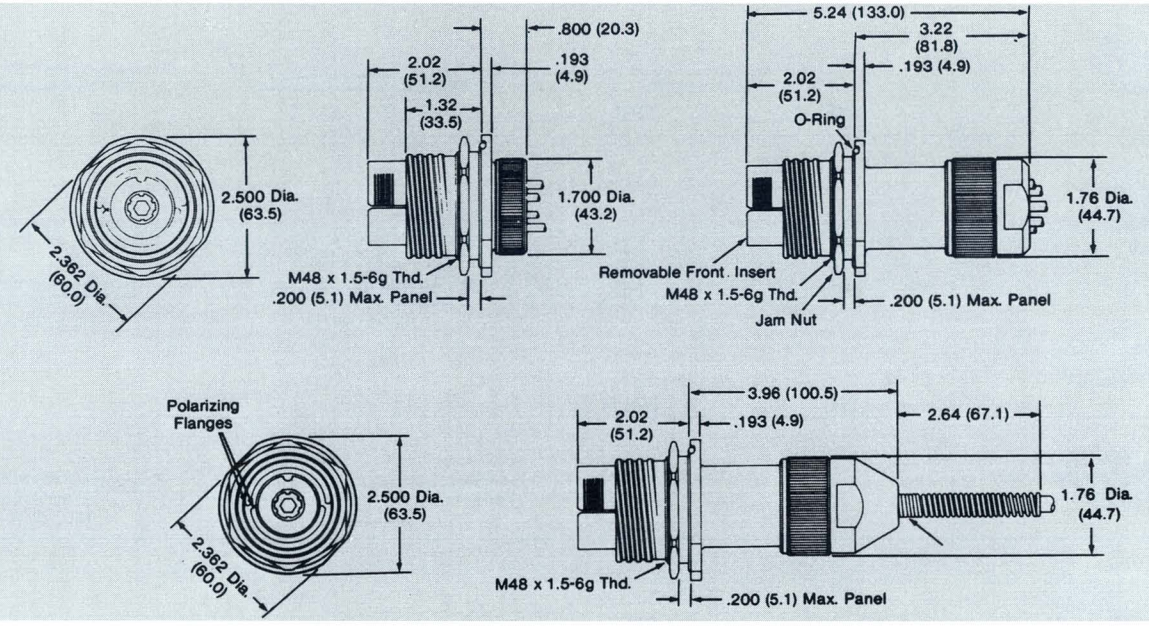
Plug

FOMC 6

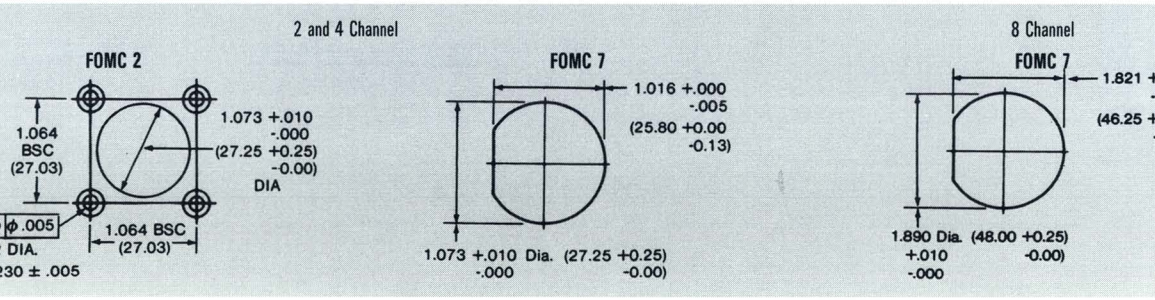


Jam Nut Receptacle

FOMC 7



Recommended Panel Cutouts



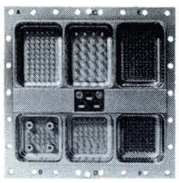
Fiber Optic Contacts

- Conforms to MIL-T-29504 fiber optic termini.
- Fits any size 16 cavity with no modification to connector.
- Designed for use with standard size 16 contact insertion/extraction tool.
- Both pin and socket contact end faces are easily cleaned.

Fiber Optic Contact Performance Data

Durability	< 0.5 dB change after 500 matings
Temperature Shock	< 0.5 dB change during and after test
Operating Temperature	−65°C to +200°C (Cable/contact dependent)
Vibration, random (16 hrs/MIL–C–38999)	< 0.5 dB change during and after test
Optical Loss Performance	Typical 1.0 dB using 100/140 micron fiber-tested per EIA FOTP-34, Method A

Standard MIL–Spec Connectors

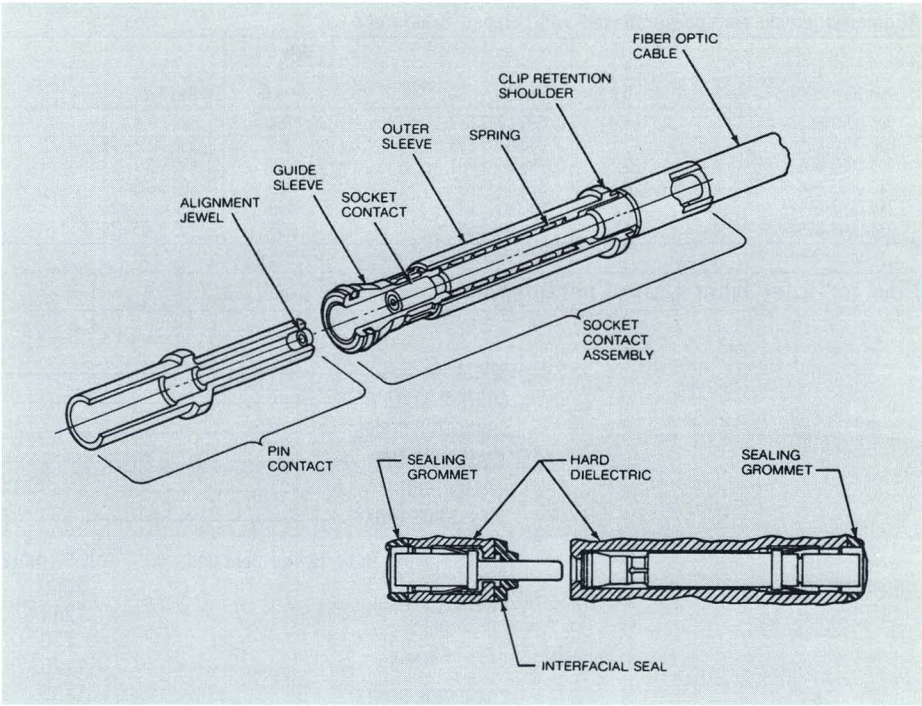
Standard Connector	Cannon Designator	Number of Size #16 Cavities Available Dependent Upon Shell Size	Fiber Optic Contact	
			Socket (Body)	Pin (Body)
MIL-C-38999 Series I	KJL	1-29		
MIL-C-38999 Series III MIL-C-38999 Series IV	KJA	1-29	MIL-T-29504/5	MIL-T-29504/4
MIL-C-26482 Series I	KPSE	1-31		
MIL-C-26482 Series II MIL-C-83723 Series I MIL-C-83723 Series III	PV7 PVA HTMF	1-31 1-31 1-52	MIL-T-29504/11	MIL-T-29504/10
MIL-C-83733	DPK	Up to 64		
MIL-C-28840	KFS	Up to 8	MIL-T-29504/9	MIL-T-29504/8
ARINC 600	BKAD	Up to 6		
 MIL-C-83527	BKW	Up to 30	MIL-T-29504/7	MIL-T-29504/6

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Fiber Optic Products • 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Jewel Ferrule Alignment System

Cannon's patented* optical contacts allow the use of all standard fibers via the field-proven jewel ferrule alignment system in a size 16 pin or socket contact. The jewel ferrule system provides precise alignment regardless of fiber size, accommodates fiber tolerances, eliminates the requirement for a minimum end gap, and allows for spring loading of contacts.



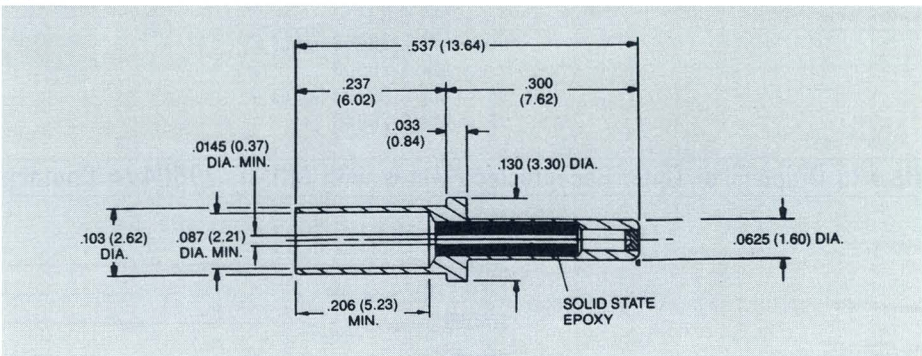
U.S. Patent No 4,351,586, No. 3,947,182, and No. 4,747,658

Solid State Epoxy

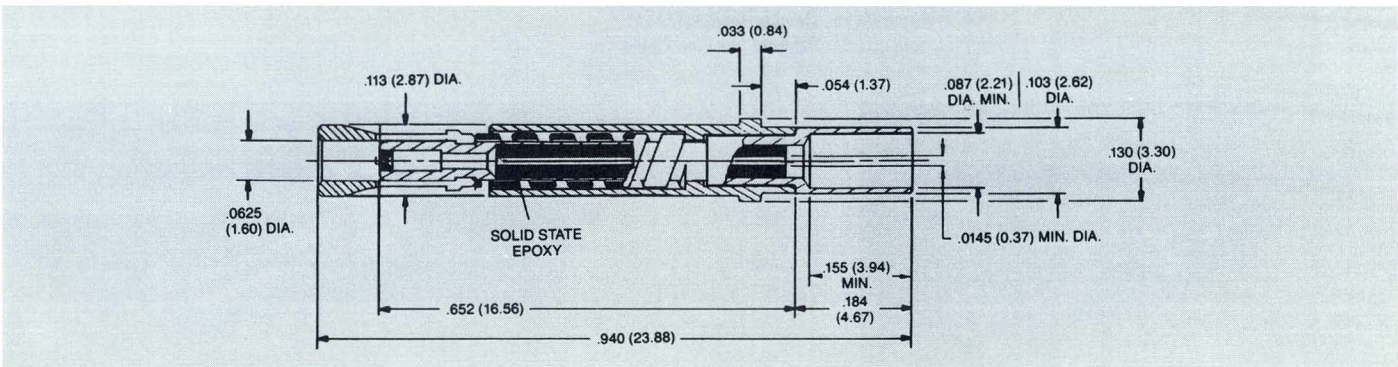
Since the advent of fiber optics, fibers have been terminated in optical contacts using messy two-part liquid epoxy. This process is cumbersome and not conducive to high volume production.

Optical contacts are now available with solid state epoxy. The fiber is inserted into the contact and the epoxy is reflowed in a cure fixture. No mixing of liquids is required; the volume and flow viscosity is controlled, resulting in a perfect bond and the elimination of clean-up.

Pin



Socket



Note: Dimensions are for 38999 contacts.

Alignment Jewels

Alignment jewels may be purchased and shipped separately.

Part No.	Hole Dia. +2.5 −0.0	Part No.	Hole Dia. +4.0 −0.0	Part No.	Hole Dia. +4.0 −0.0	Part No.	Hole Dia. +4.0 −0.0
980-0007-666	144.7	980-0005-899	260	980-0005-893	230	980-0005-841	135
980-0007-665	142.2	980-0005-898	255	980-0005-892	225	980-0005-840	130
980-0007-664	139.7	980-0005-897	250	980-0007-283	175	980-0005-839	125
980-0007-660	129.5	980-0005-896	245	980-0005-877	150		
980-0007-659	127.0	980-0005-895	240	980-0005-876	145		
980-0007-658	124.5	980-0005-894	235	980-0005-875	140		

How to Order Fiber Optic Contacts

FOHC - P A 1422 M P

- SERIES
- CONTACT STYLE
- CONNECTOR SERIES
- JEWEL HOLE SIZE
- APPLICATION
- SOLID STATE EPOXY

SERIES – Fiber Optic Hybrid Contacts

CONTACT STYLE
- P – Pin
- S – Socket

CONNECTOR SERIES
- A – MIL-C-38999 Series I, III, IV
- B – MIL-C-83723 Series I, III
  – MIL-C-83733
- C – ARINC 600
  – MIL-C-83527
- D – MIL-C-26482 Series I
  – MIL-C-26500
- E – MIL-C-83723 Series II
- F – MIL-C-28840

JEWEL HOLE SIZE (MICRONS)*

0000 – Less Jewel

1245	1300	1400	2350
1250	1397	1450	2400
1270	1422	1750	2450
1295	1447	2300	2500

APPLICATION
- M – Military
- C – Commercial

SOLID STATE EPOXY

*For size not listed, consult factory.

How to Order Fiber Optic Receptacles (Mates with MIL–T–29504 /4 Contacts)

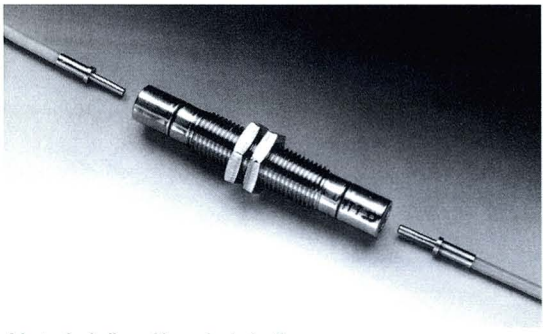
FOHC - * - *

- SERIES
- SHELL STYLE
- SEALING

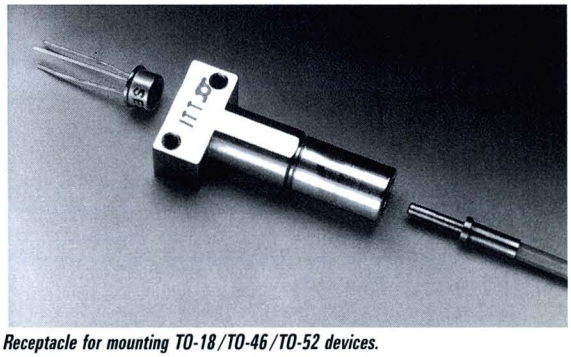
SERIES – Fiber Optic Hybrid Contacts

SHELL STYLE
- 3 – Receptacle, Device, PCB Mount
- 4 – Receptacle, Device, Flange Mount
- 7 – Receptacle, Adapter, In-Line Cable Panel Mount

SEALING
- N – Non-Sealed
- S – Sealed



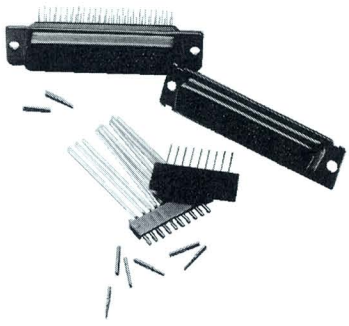
Adapter for in-line cable mechanical splice.



Receptacle for mounting TO-18/TO-46/TO-52 devices.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Micro line



Centi line

Nano line

The Interconnect system scaled for today's requirements

In electronic systems today, space is becoming a precious commodity. More and more is being designed into less and less space, with resulting demands for reductions in size and weight yet with no relaxation of reliability requirements.

A frequent choice for interconnecting microminiature systems has been hard-wiring—in spite of the loss of plugability and versatility—because conventional connectors are too large.

But there is a better choice.

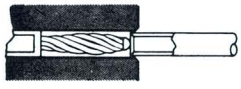
Cannon microminiature connectors.

Our microminiature connectors are available with densities as high as 1600 contacts per square inch and a reliability factor that approaches that of a hard-wired system. Three basic contact families encompass 80,000 standard line items that may be used in their standard configurations, readily and inexpensively modified for your specific applications, or provided in completely assembled, wired and tested multiple connector harnesses.

We have manufactured hundreds of millions of contact lines in our microminiature connectors and have a high volume capability and range of designs that make our microminiature connectors competitive in even the most cost-conscious commercial applications.

Our microminiature connectors are flying in artillery shells where they withstand high levels of shock and in model airplanes, computer mainframes and peripherals, seismic streamers and portable radios.

The key to the high performance and reliability of Cannon microminiature connectors is the Twist Pin Contact system. In this design, the conventional positions and action of the pin and socket are reversed. The spring action is in the flexible Twist Pin, not the socket, and the socket is exposed while the pin is recessed within a positive alignment cavity within the insulator.



The flexible Twist Pin Contact consists of several strands of wire in a compressible spiral which is welded at both ends, with one end crimped into a tubular sleeve. During mating, the protruding socket is guided into the pin cavity by the lead-in chamfer. The walls of the pin cavity keep the pin within the capture radius of the socket, while the controlled radius on the pin tip combines with the interior chamfer of the socket to cam the pin into alignment, assuring positive mating. Once mated, the compression of the pin spring members exerts a constant pressure that ensures electrical continuity and resists the highest levels of shock and vibration.

These contacts are used in all three basic families of Cannon microminiature connectors: the CENTI line, with 5 amp Twist Pin contacts on .100 (2.54) and .075 (1.91) centers; the MICRO line with 3 amp Twist Pin contacts on .050 (1.27) centers; and the NANO line, with 1 amp Twist Pin contacts on .025 (0.64) centers. Connectors are available in miniature rectangular, circular, center jackscrew, strip and many other special configurations. The Micro and Nano lines can be ordered in metal and plastic shells; with solder pots and P.C. tail terminations; in your choice of several insulator materials, some with interfacial seals; as standard catalog items or customized versions; with coax or 13 amp power contacts; and in complete multi-connector harnesses. The Centi line is available as connectors you wire yourself or in complete assembled harnesses.

Those products shown in the following list that are not described in the following pages are in our complete Microminiature Catalog (MMC). For this complete catalog fill out the reply card at the back of your Connector Sourcebook and request a copy of the full line Microminiature Catalog.

MMC Catalog

The MICRO Line

MDM	Rectangular, metal shell, high environmental, EMI and RFI resistant
MDM-PCB	MDM connectors for flat cable, flex circuit and printed circuit board termination
MDM-C	MDM connector with coaxial contacts
MDM-P	MDM connector with 13 amp power contacts
MDM-C*P	MDM connector with alternate coaxial and power contacts
MDM*	MDM "Connector Saver"
MD	Lightweight, all plastic
MJS	Plastic rectangular, with center jackscrew coupling
MEB*	Metal shell edgecard connectors, meets requirements of MIL-E-5400
MIK	Threaded coupling circulars, metal plugs and plastic receptacles, high contact density
MIKM	MIK with metal shells for improved ruggedness. EMI and RFI resistance
MIKQ	MIK metal shell with push/pull quick disconnect coupling
MT	Plastic strip configuration on .050 (1.27) centers, up to 120 contacts

The CENTI Line

Double D	D Subminiature size metal shell with twice the contact density
Centi-Loc™	Plastic strip configuration, .075 (1.91) and .100 (2.54) centers

The NANO Line

NTP*	Contact strips on .025 (.64) centers
NDM*	Rectangular metal shell, environmental EMI/RFI resistance
NJSC*	Rectangular plastic insulator with center jackscrew coupling
SPECIALS*	72 contact circular center jackscrew coupling 90 contact strip configuration on .025 (0.64) centers Multi-Stacking Configurations Micro, Centi and Nano

*Contact ITT Cannon for information on this connector.

Microminiature Products, • 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Microminiature Connectors – The Micro Line

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.
- 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	No breakdown
	300 VAC at 70,000' altitude	No breakdown
	Solder Pots and Shielded Cable 600 VAC at sea level	No breakdown
	150 VAC at 70,000' altitude	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	8 milliohms maximum
	At 1 milliamp	10 milliohms maximum
Contact Retention	Per MIL-C-83513	5 lb. minimum axial load

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.

For further technical and applications information, contact your nearest ITT Cannon field sales office or call our Microminiature Products Group.

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
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 EE-4198 with HD-3561 hardener, color green or EE-4215 with HD-3561, color black

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	– #26 thru #32 AWG
Contact Termination	– Multiple indent crimp

MECHANICAL FEATURES

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

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.

	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.

How to Order

MDM - 51 P H 001 P - XXX

SERIES
CONTACT LAYOUT
CONTACT TYPE
TERMINATION TYPE
TERMINATION CODE
HARDWARE
SHELL FINISH MOD CODES

SERIES
Micro D Metal Shell Series

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.

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 122.
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 – .145 dia. hole for size 100 (Per MIL-C-83513)

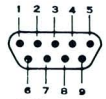
SHELL FINISH MOD CODES**
No Number – Standard Cadmium/yellow chromate
A174 – Electroless nickel
A172 – Gold over nickel
A141 – Irridite/alodine
A30 – Black anodize

*See Termination Codes below for additional length Modification Codes.
**For other modification not listed, consult the factory.

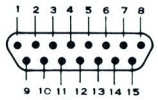
Contact Arrangements

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

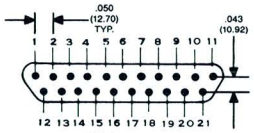
Standard



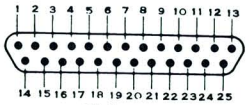
9 Contacts



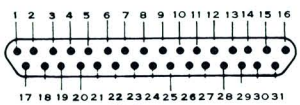
15 Contacts



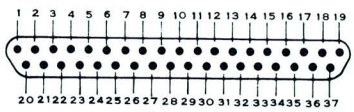
21 Contacts



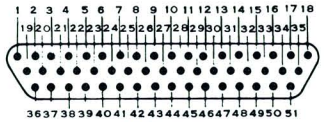
25 Contacts



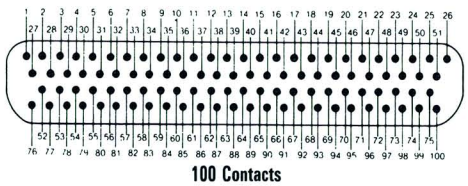
31 Contacts



37 Contacts

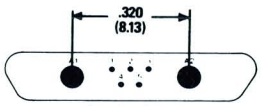


51 Contacts

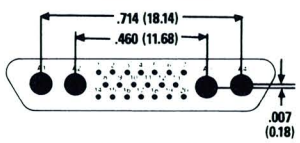


100 Contacts

Coaxial



Size 25 Shell
5 Micro Contact
2 Coax or 2 Power



Size 51 Shell
20 Micro Contacts
4 Coax or 4 Power
(Not MS)

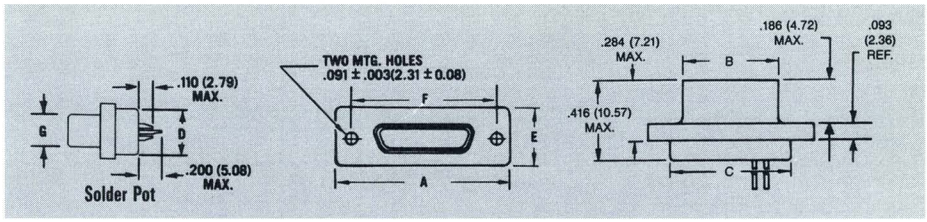
Contact identification numbers are for reference only and do not appear on insulator or connector body.

ITT Cannon
Microminiature Products, • 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

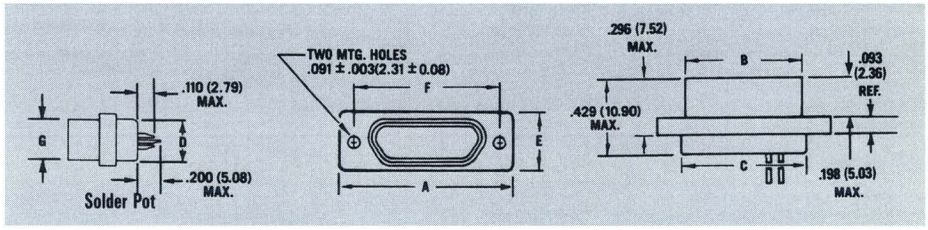
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Shell Dimensions (Conforms to MIL-C-83513)

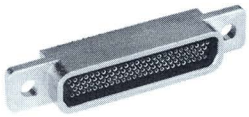
Plug

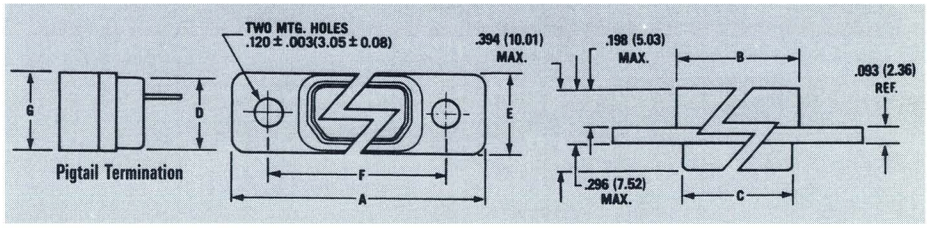


Receptacle



Receptacle (MDM-100 only)

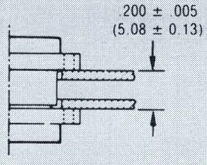




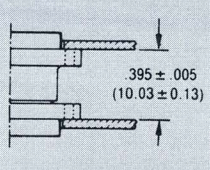
Part Number By Shell Size	A Max.	B Max.	C Max.	D Max.	E Max.	F ±.005 (0.13)	G Max.	Average Weights** oz. (gm.) ±5%
MDM-9P*	.785 (19.94)	.334 (8.48)	.400 (10.16)	.270 (6.86)	.308 (7.82)	.565 (14.35)	.185 (4.70)	.063 (1.79)
MDM-9S*	.785 (19.94)	.402 (10.21)	.400 (10.16)	.270 (6.86)	.308 (7.82)	.565 (14.35)	.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.

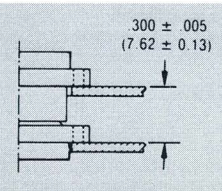
Panel Mounting Dimensions (Sizes 9 thru 100)



Plug and Receptacle Rear Mounted



Plug and Receptacle Front Mounted



Plug Front Mounted Receptacle Rear Mounted

Panel Cutouts

Shell Sizes 9 thru 51

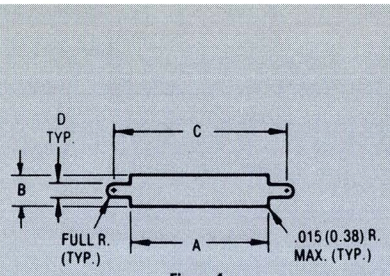


Figure 1
Front Mounting

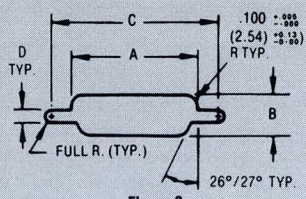


Figure 2
Rear Mounting

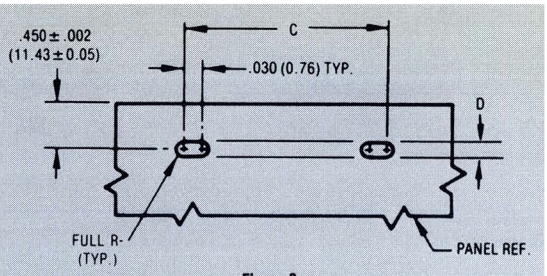


Figure 3
Edgeboard Mounting

Shell Size 100

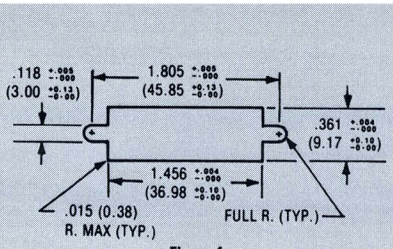


Figure 1
Front Mounting

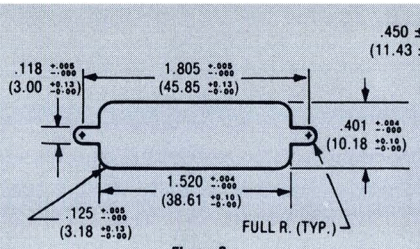


Figure 2
Rear Mounting

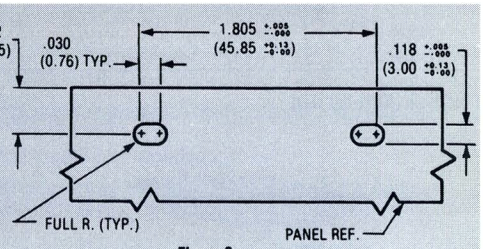


Figure 3
Edgeboard Mounting

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.
3. Edgeboard mounting bracket (figure 3) uses #2-56 screws. Dimension .450 ± .002 (11.43 ± 0.05) locates the MDM receptacle flush with the end of the board.

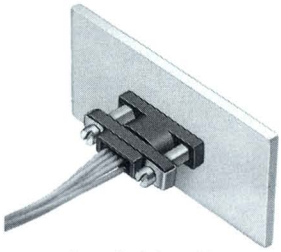
For 100 Shell Size
NOTES:
1. Front mounting (figure 1) and rear mounting (figure 2) accommodates #4-40 screws.
2. Edgeboard mounting bracket (figure 3) uses #4-40 screws. Dimension .450 ± .002 (11.43 ± 0.05) locates the MDM receptacle flush with the end of the board.
3. Front mounting is preferred. However, when rear mounting is necessary, use figure 2 dimensions.

Shell Size	Cutout Figure	A +.004 (0.10) −.000 (0.00)	B +.004 (0.10) −.000 (0.00)	C +.005 (0.13) −.000 (0.00)	D +.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)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

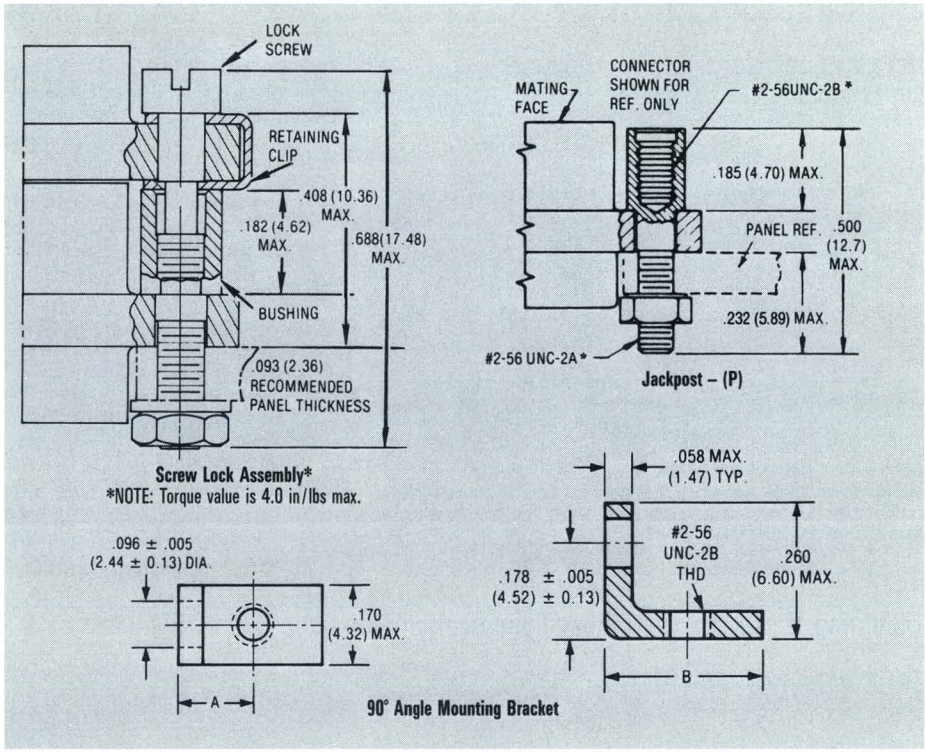
Mounting Hardware Views (for sizes 9 thru 51)

This hardware supplied unassembled.



Screw Lock Assembly

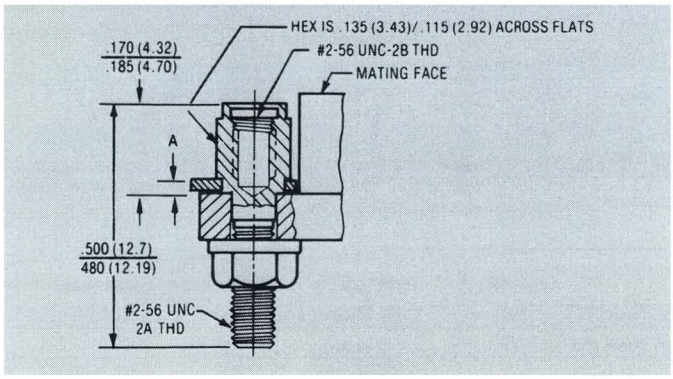
90° Angle Mounting Bracket



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)

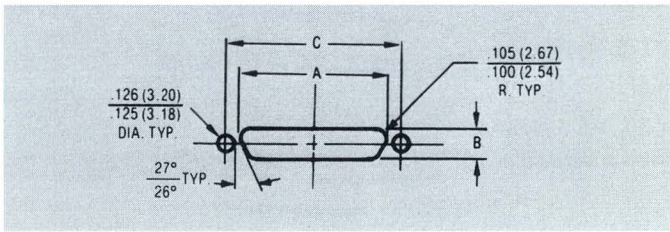
NOTES: Screw lock assembly (322-9500-000) can be used for front mounting only. Jackpost kit (320-9505-000) consists of 2 assemblies, shipped unassembled.

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



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.

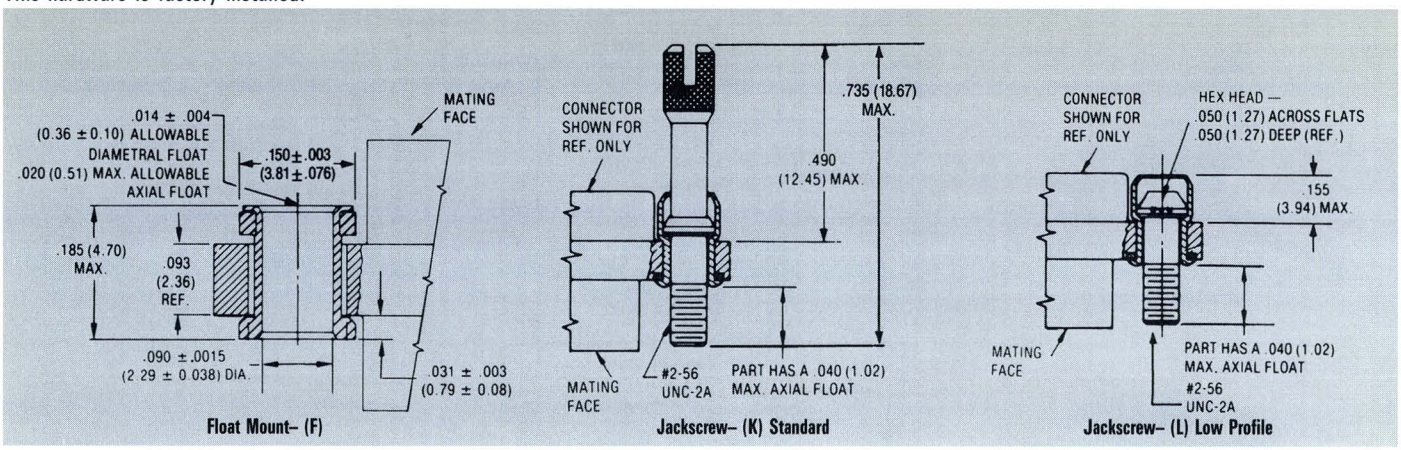


Plug and Receptacle Dimensions

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)

Mounting Hardware Views (sizes 9 thru 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.

Repair kit available–consult factory.

*NOTE: Torque values are as follows:
Low Profile Jackscrew (L)–2.5 in/lbs
Standard Jackscrew (K)–4.0 in/lbs

Mounting Hardware to Military Specification (for sizes 9 thru 51)

This hardware supplied unassembled.

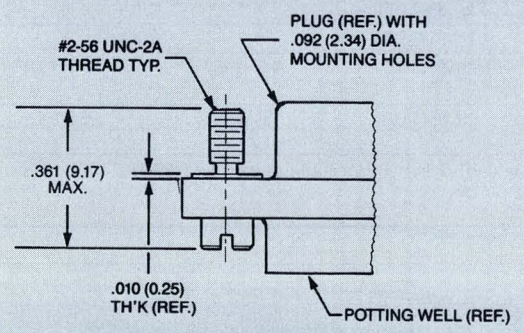
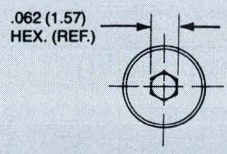


Figure 1. Jackscrew – Low profile
Slotted Head
Size 9-51



Allen Head
Optional Head Configuration
Plug and Receptacle
Low and High Profile
Size 9-51

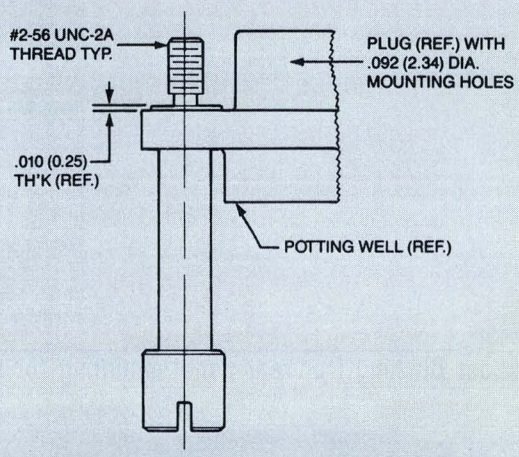


Figure 2. Jackscrew – High Profile
Slotted Head
Size 9-51

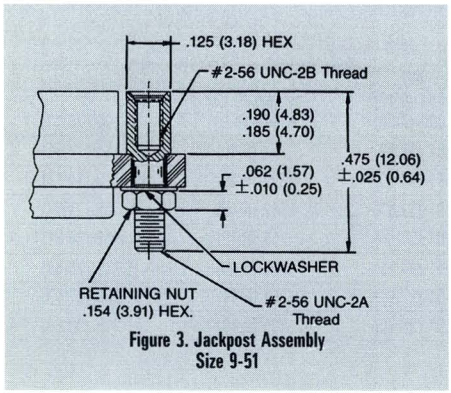


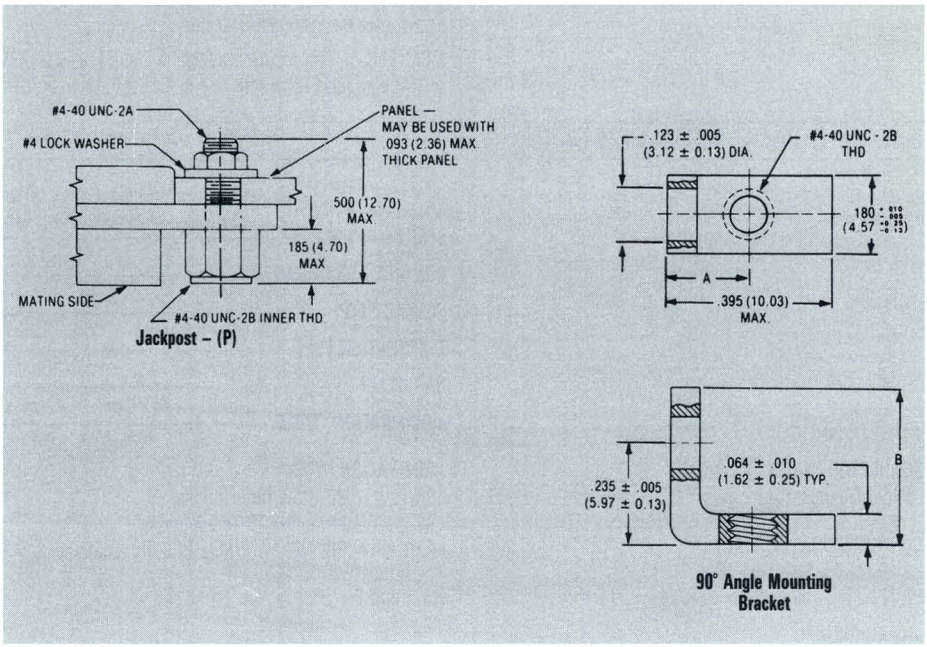
Figure 3. Jackpost Assembly
Size 9-51

Description	Size 9-51 Mod Code	Size 9-51 Part Number	Size 100 Mod Code	Size 100 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

Mounting Hardware Views (for size 100)

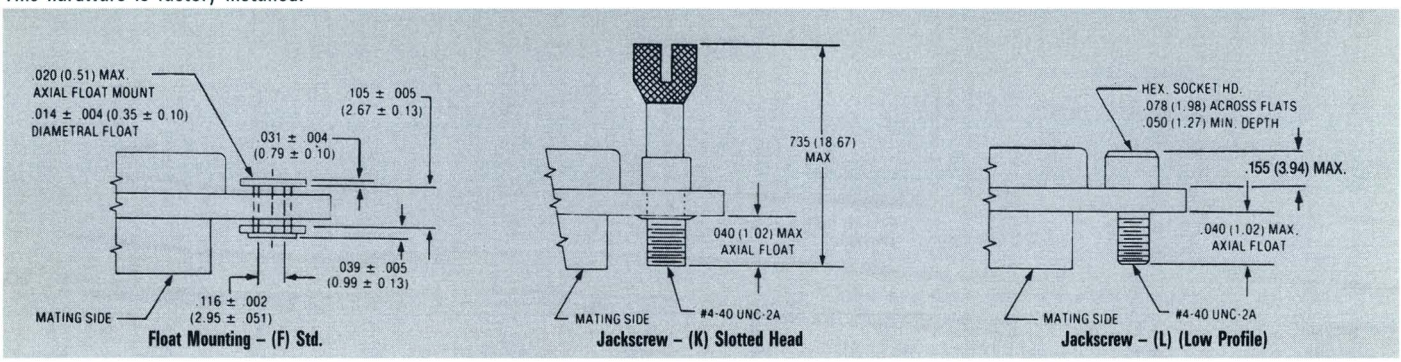
This hardware supplied unassembled.

90° Angle Mounting Bracket



Description	Part Number	A ±.005 (±0.13)	B Max.
Screw Lock Assembly	322-9501-005	N/A	
Jackpost Kit	320-9505-015	N/A	
Mounting Bracket 90° MDM	015-9528-000	.191 (4.85)	.370 (9.40)

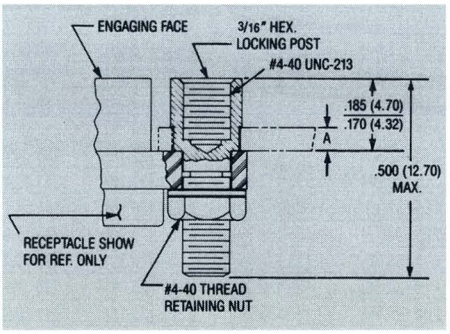
This hardware is factory installed.

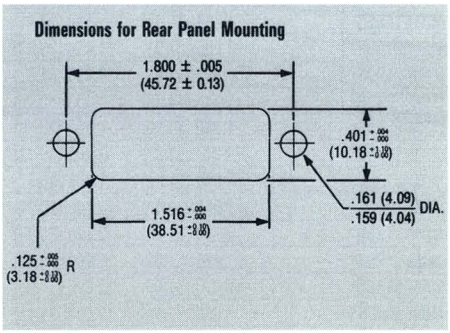


Jackpost Bushing (for Rear Panel Mounting)

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





MDM-PCB connectors are designed for use with flex circuitry, flat cable and printed circuit boards or multi-layer boards. They use the standard MDM metal shell and provide high density and high reliability in board-to-board, board-to-cable and cable-to-cable applications.

MDM-PEB connectors are available in 8 shell sizes with 9 to 100 contacts. Terminations may be straight or at 90° for PCB mounting, with a variety of tail lengths for varying board thickness. Jackpost mounting for use with locking hardware is also available.

For further technical and applications information, contact your nearest ITT Cannon field sales office or call our Microminiature Products Group in Santa Ana, California.

How to Order – MDM–PCB Series

MDM- 37 S BR * - ***

SERIES
CONTACT ARRANGEMENTS
CONTACT TYPE
TERMINATION TYPE
HARDWARE
MODIFICATION CODES

CONNECTOR SERIES
Micro D metal shell

CONTACT ARRANGEMENTS
9-15-21-25-31-37-51-100
(see page 126 for basic arrangements)

CONTACT TYPE
S – Socket;
P – Pin

TERMINATION TYPE
BR – 90° PCB Terminations
BS – Straight PCB Terminations
CBR – 90° Narrow Profile PCB Terminations

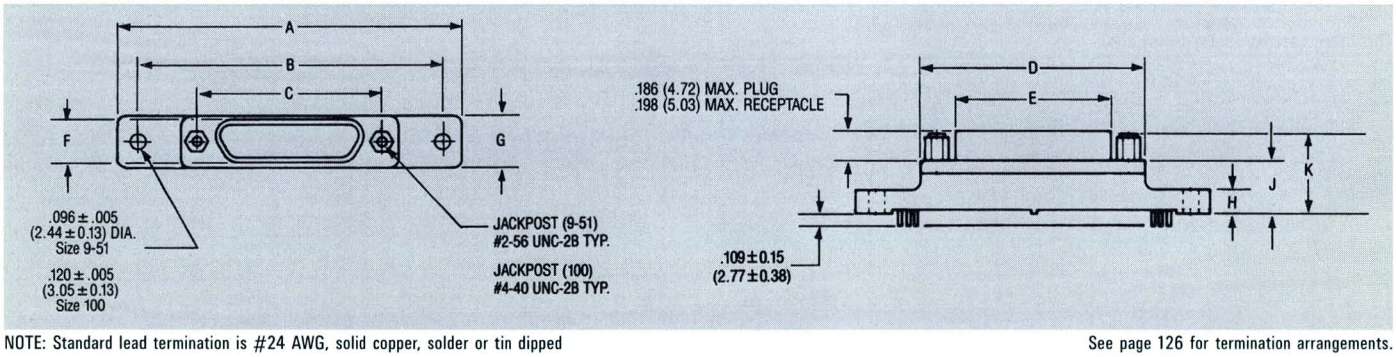
HARDWARE
P – Jackpost
M7 – Jackpost (MIL-C-83513)
No Letter – Less Hardware

NOTE: Back molding material-Epoxy Hysol #MG8F-0134.

SHELL FINISH MODIFICATION CODES*
No Number – Standard Cadmium/Yellow Chromate
A174 – Electroless Nickel
A172 – Gold over Nickel
A141 – Irridite/Alodine
A30 – Black Anodize

For other modifications not listed consult the factory.

BS Series (Straight)



NOTE: Standard lead termination is #24 AWG, solid copper, solder or tin dipped

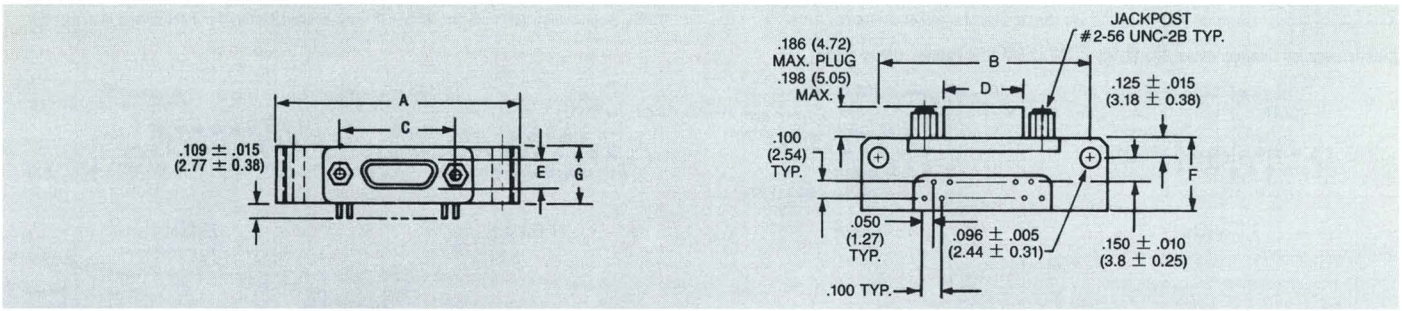
See page 126 for termination arrangements.

Part Number By Shell Size	A Max.	B ±.007 (±.018)	C ±.005 (±.013)	D Max.	E Max.	F ±.005 (0.13)	G Max.	H Max.	J Max.	K Max.
MDM-9PBS*	1.390 (35.31)	1.150 (29.21)	.565 (14.35)	.785 (19.94)	.334 (8.48)	.185 (4.70)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-9SBS*	1.390 (35.31)	1.150 (29.21)	.565 (14.35)	.785 (19.94)	.402 (10.21)	.253 (6.43)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-15PBS*	1.390 (35.31)	1.150 (29.21)	.715 (18.16)	.935 (23.75)	.484 (12.29)	.185 (4.70)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-15SBS*	1.390 (35.31)	1.150 (29.21)	.715 (18.16)	.935 (23.75)	.552 (13.97)	.253 (6.43)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-21PBS*	1.690 (43.93)	1.450 (36.83)	.865 (21.97)	1.085 (27.56)	.634 (16.10)	.185 (4.70)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-21SBS*	1.690 (43.93)	1.450 (36.83)	.865 (21.97)	1.085 (27.56)	.702 (17.83)	.253 (6.43)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-25PBS*	1.740 (44.20)	1.500 (38.10)	.965 (24.51)	1.185 (30.10)	.734 (18.64)	.185 (4.70)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-25SBS*	1.740 (44.20)	1.500 (38.10)	.965 (24.51)	1.185 (30.10)	.802 (20.37)	.253 (6.43)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-31PBS*	2.040 (51.82)	1.800 (45.72)	1.115 (28.32)	1.335 (33.91)	.884 (22.45)	.185 (4.70)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-31SBS*	2.040 (51.82)	1.800 (45.72)	1.115 (28.32)	1.335 (33.91)	.952 (24.18)	.253 (6.43)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-37PBS*	2.340 (59.44)	2.100 (53.34)	1.265 (32.13)	1.485 (37.72)	1.034 (26.26)	.185 (4.70)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-37SBS*	2.340 (59.44)	2.100 (53.34)	1.265 (32.13)	1.485 (37.72)	1.102 (27.99)	.253 (6.43)	.308 (7.82)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-51PBS*	2.270 (67.66)	2.000 (50.80)	1.215 (30.86)	1.435 (36.45)	.984 (24.99)	.228 (5.79)	.351 (8.92)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-51SBS*	2.270 (67.66)	2.000 (50.80)	1.215 (30.86)	1.435 (36.45)	1.052 (26.72)	.296 (7.52)	.351 (8.92)	.165 (4.19)	.355 (9.02)	.555 (14.10)
MDM-100PBS*	3.070 (77.98)	2.800 (71.12)	1.800 (45.72)	2.175 (55.24)	1.384 (35.15)	.271 (6.88)	.460 (11.68)	.303 (7.70)	.550 (12.70)	.686 (17.42)
MDM-100SBS*	3.070 (77.98)	2.800 (71.12)	1.800 (45.72)	2.175 (55.24)	1.500 (38.10)	.394 (10.01)	.460 (11.68)	.303 (7.70)	.550 (12.70)	.686 (17.75)

*For jackpost locking add letter "P".

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

BR Series (90° Mounting)



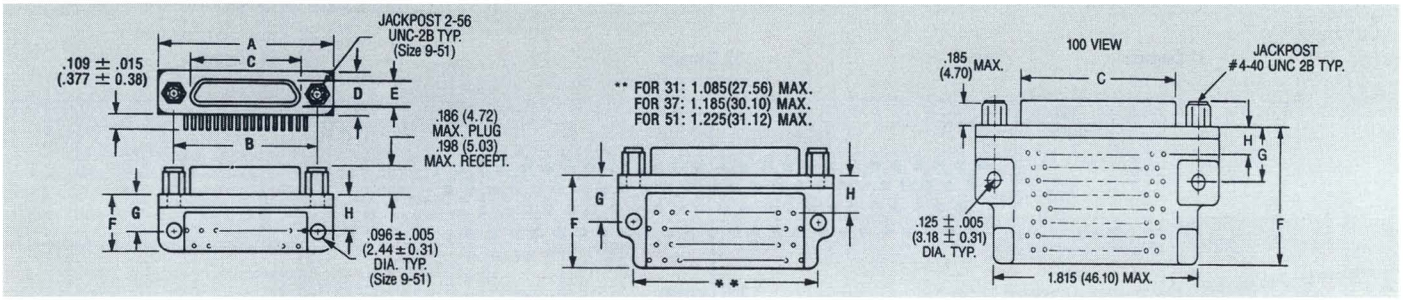
NOTE: Standard lead termination is #24 AWG, gold plated, solid copper, solder or tin dipped.

See page 126 for termination arrangements.

Part Number By Shell Size	A Max.	B ±.007 (±.018)	C ±.005 (±.013)	D Max.	E Max.	F Max.	G Max.
MDM-9PBR*	1.390 (35.31)	1.150 (29.21)	.565 (14.35)	.334 (8.48)	.185 (4.70)	.455 (11.56)	.308 (7.82)
MDM-9SBR*	1.390 (35.31)	1.150 (29.21)	.565 (14.35)	.402 (10.21)	.253 (6.43)	.455 (11.56)	.308 (7.82)
MDM-15PBR*	1.540 (39.12)	1.300 (33.02)	.715 (18.16)	.484 (12.29)	.185 (4.70)	.455 (11.56)	.308 (7.82)
MDM-15SBR*	1.540 (39.12)	1.300 (33.02)	.715 (18.16)	.552 (13.97)	.253 (6.43)	.455 (11.56)	.308 (7.82)
MDM-21PBR*	1.690 (42.93)	1.450 (36.83)	.865 (21.97)	.634 (16.10)	.185 (4.70)	.455 (11.56)	.308 (7.82)
MDM-21SBR*	1.690 (42.93)	1.450 (36.83)	.865 (21.97)	.702 (17.83)	.253 (6.43)	.455 (11.56)	.308 (7.82)
MDM-25PBR*	1.790 (45.47)	1.550 (39.37)	.965 (24.51)	.734 (18.64)	.185 (4.70)	.455 (11.56)	.308 (7.82)
MDM-25SBR*	1.790 (45.47)	1.550 (39.37)	.965 (24.51)	.802 (20.37)	.253 (6.43)	.455 (11.56)	.308 (7.82)
MDM-31PBR*	2.040 (51.82)	1.800 (45.72)	1.115 (28.32)	.884 (22.45)	.185 (4.70)	.455 (11.56)	.308 (7.82)
MDM-31SBR*	2.040 (51.82)	1.800 (45.72)	1.115 (28.32)	.952 (24.18)	.253 (6.43)	.455 (11.56)	.308 (7.82)
MDM-37PBR*	2.340 (59.44)	2.100 (53.34)	1.265 (32.13)	1.034 (26.26)	.185 (4.70)	.455 (11.56)	.308 (7.82)
MDM-37SBR*	2.340 (59.44)	2.100 (53.34)	1.265 (32.13)	1.102 (27.99)	.253 (6.43)	.455 (11.56)	.308 (7.82)
MDM-51PBR*	1.875 (47.63)	1.600 (40.64)	1.215 (30.86)	.984 (24.99)	.228 (5.79)	.565 (14.35)	.351 (8.92)
MDM-51SBR*	1.875 (47.63)	1.600 (40.64)	1.215 (30.86)	1.052 (26.72)	.296 (7.52)	.565 (14.35)	.351 (8.92)

*For jackpost locking add letter "P".

CBR Series (90° Narrow Profile Mounting)



NOTE: Standard lead termination is #24 AWG, gold plated, solid copper, solder or tin dipped.

See page 126 for termination arrangements.

Part Number By Shell Size	A Max.	B ±.005 (±.013)	C Max.	D Max.	E Max.	F Max.	G ±.010 (±.025)	H ±.010 (±.025)
MDM-9PCBR*	.785 (19.94)	.565 (14.35)	.334 (8.48)	.308 (7.82)	.185 (4.70)	.420 (10.67)	.250 (6.35)	.230 (5.81)
MDM-9SCBR*	.785 (19.94)	.565 (14.35)	.402 (10.21)	.308 (7.82)	.253 (6.43)	.420 (10.67)	.250 (6.35)	.230 (5.81)
MDM-15PCBR*	.935 (23.75)	.715 (18.16)	.484 (12.29)	.308 (7.82)	.185 (4.70)	.420 (10.67)	.250 (6.35)	.130 (3.30)
MDM-15SCBR*	.935 (23.75)	.715 (18.16)	.552 (13.97)	.308 (7.82)	.253 (6.43)	.420 (10.67)	.250 (6.35)	.130 (3.30)
MDM-21PCBR*	1.085 (27.56)	.865 (21.97)	.634 (16.10)	.308 (7.82)	.185 (4.70)	.420 (10.67)	.250 (6.35)	.130 (3.30)
MDM-21SCBR*	1.085 (27.56)	.865 (21.97)	.702 (17.83)	.308 (7.82)	.253 (6.43)	.420 (10.67)	.250 (6.35)	.130 (3.30)
MDM-25PCBR*	1.185 (30.10)	.965 (24.51)	.734 (18.64)	.308 (7.82)	.185 (4.70)	.420 (10.67)	.250 (6.35)	.130 (3.30)
MDM-25SCBR*	1.185 (30.10)	.965 (24.51)	.802 (20.37)	.308 (7.82)	.253 (6.43)	.420 (10.67)	.250 (6.35)	.130 (3.30)
MDM-31PCBR*	1.335 (33.91)	1.115 (28.32)	.884 (22.45)	.308 (7.82)	.185 (4.70)	.520 (13.21)	.250 (6.35)	.130 (3.30)
MDM-31PCBR*	1.335 (33.91)	1.115 (28.32)	.952 (24.18)	.308 (7.82)	.253 (6.43)	.520 (13.21)	.250 (6.35)	.130 (3.30)
MDM-31SCBR*	1.335 (33.91)	1.115 (28.32)	1.034 (26.26)	.308 (7.82)	.185 (4.70)	.520 (13.21)	.250 (6.35)	.130 (3.30)
MDM-37SCBR*	1.485 (37.72)	1.265 (32.13)	1.102 (27.99)	.308 (7.82)	.253 (6.43)	.520 (13.21)	.250 (6.35)	.130 (3.30)
MDM-51PCBR*	1.435 (36.45)	1.215 (30.86)	.984 (24.99)	.351 (8.92)	.228 (5.79)	.650 (16.15)	.300 (7.62)	.150 (3.81)
MDM-51SCBR*	1.435 (36.45)	1.215 (30.86)	1.052 (26.72)	.351 (8.92)	.296 (7.52)	.650 (16.15)	.300 (7.62)	.150 (3.81)
MDM-100PCBR*	2.170 (55.12)	1.800 (45.72)	1.384 (35.15)	.394 (10.01)	.271 (6.88)	1.000 (25.40)	.400 (10.16)	.200 (5.08)
MDM-100SCBR*	2.170 (55.12)	1.800 (45.72)	1.508 (38.10)	.394 (10.01)	.394 (10.01)	1.000 (25.40)	.400 (10.16)	.200 (5.08)

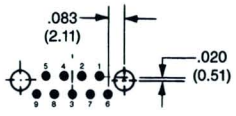
*For jackpost locking add letter "P".

Pin Termination Arrangements

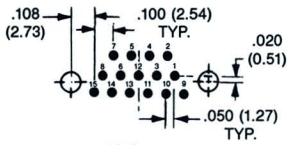
Identification number shown for plug connector, use reverse order for socket connector.

NOTE: Dimensions shown are for reference only–consult factory for final design dimensions.

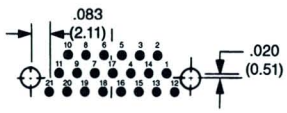
CBR Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27)



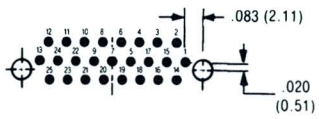
9 Contacts



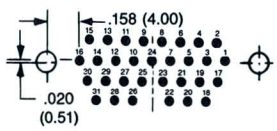
15 Contacts



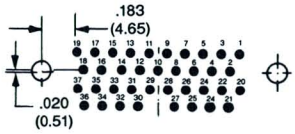
21 Contacts



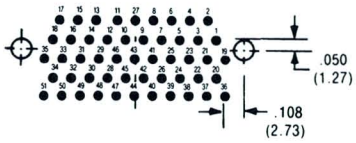
25 Contacts



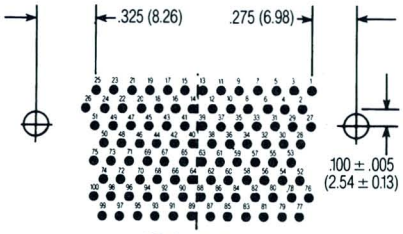
31 Contacts



37 Contacts

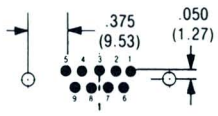


51 Contacts

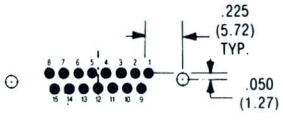


100 Contacts

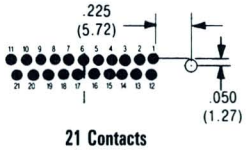
BS Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27)



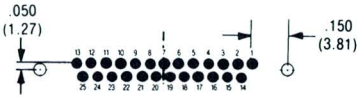
9 Contacts



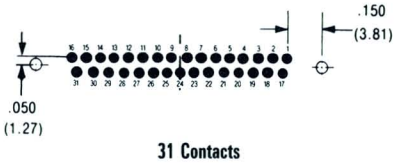
15 Contacts



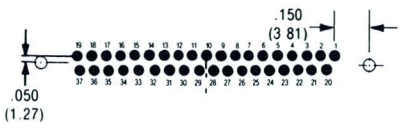
21 Contacts



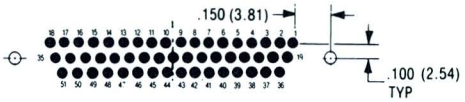
25 Contacts



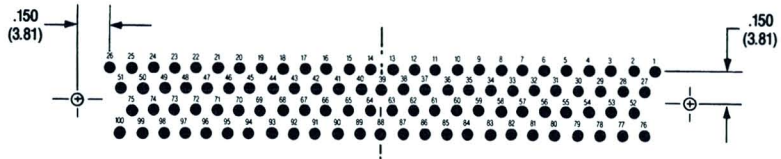
31 Contacts



37 Contacts

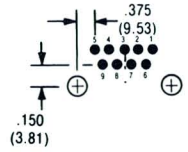


51 Contacts

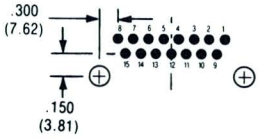


100 Contacts

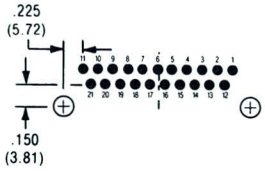
BR Termination Configurations .100 (2.54) x .100 (2.54) Grid Pattern, Offset .050 (1.27)



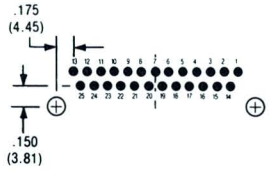
9 Contacts



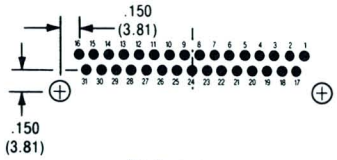
15 Contacts



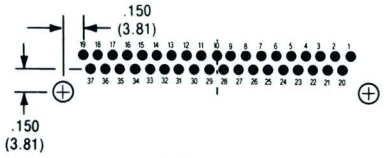
21 Contacts



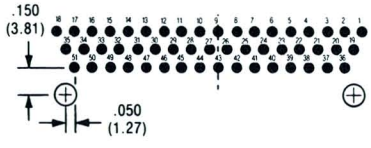
25 Contacts



31 Contacts



37 Contacts



51 Contacts

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

MDM Coaxial

The MDM Metal Shell Connectors have been tooled in several coaxial layouts and offer the versatility of combining coaxial and signal lines in the same connector. Any modifications to these layouts or new requirements, please consult the factory. For ordering information see page 118. For contact layouts see page 118. Standard coax is RG178 white.

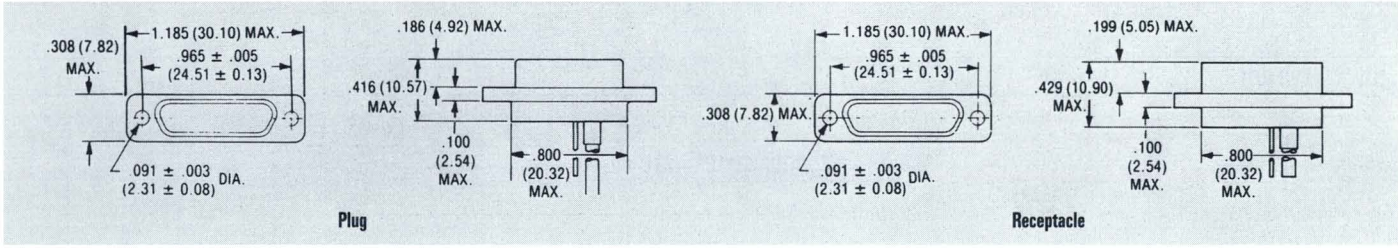
MDM Power

The same insulator that is used with coaxial contacts is available with power contacts. This offers the versatility of combining power and signal lines in the same connector.

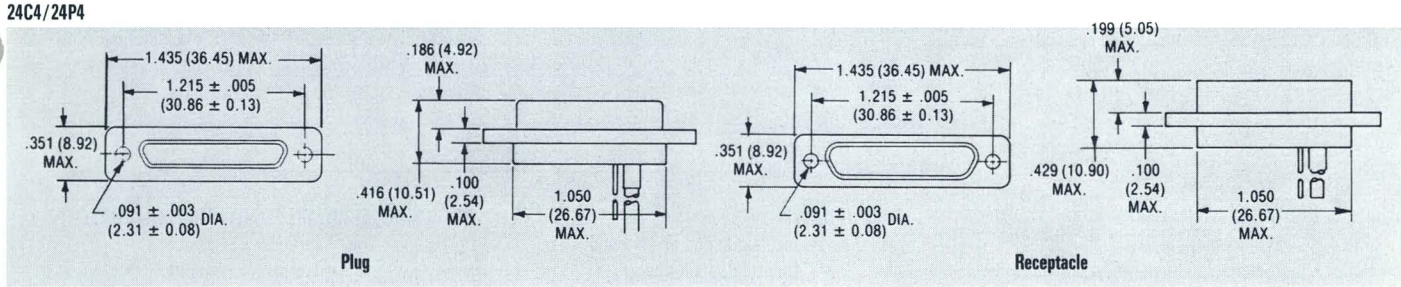
MDM Coaxial Power

Power and coaxial contacts can be interchanged as desired. Power contacts are rated at 13 amps, 24V rms, AWG #16 stranded.

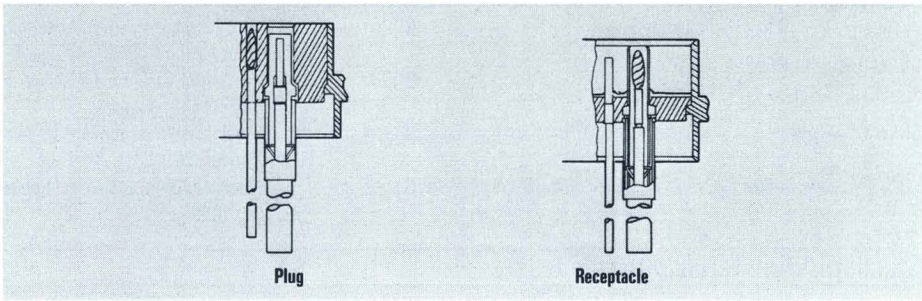
7C2/7P2



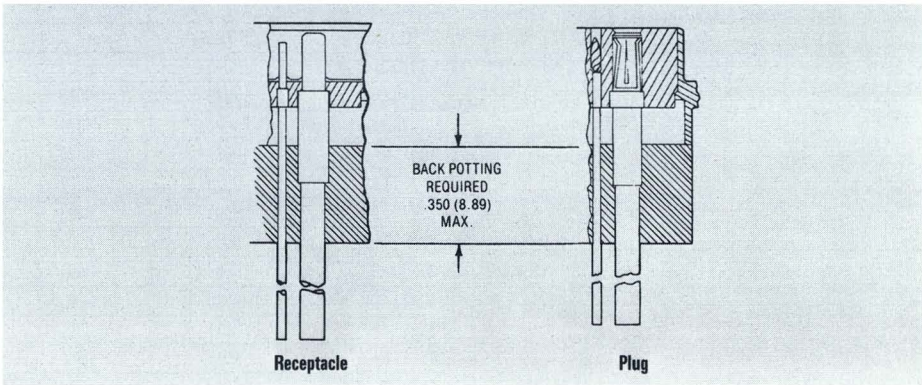
24C4/24P4



Coaxial Contacts



Power Contacts



Microminiature Rectangular Connectors with MICRO-PIN® Contacts on .050 (1.27) centers.

MICRO-D microminiature rack/panel connectors are used in applications requiring highly reliable, extremely small, lightweight connectors.

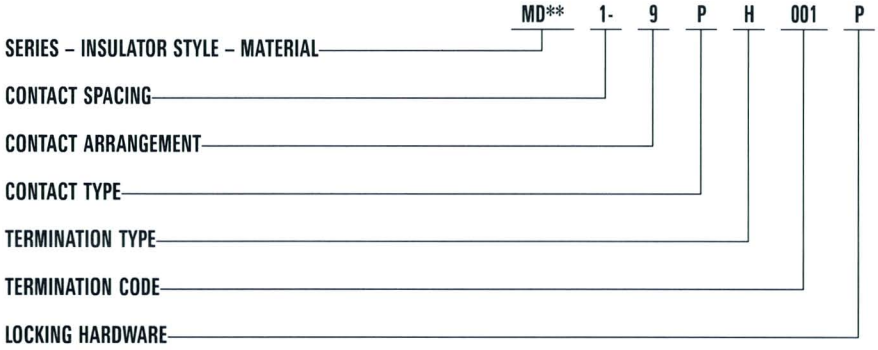
These connectors are available in 4 insulator materials, 2 mounting variations, 7 shell sizes accommodating from 9 to 51 contacts and a special arrangement of 5 micro contacts and 2 coaxials. The 4 insulator materials listed give the MICRO-D connector wide versatility in most applications required by industry.

ITT Cannon can also terminate a wide variety of stranded or solid wire directly to MICRO-D contacts, which is often desirable in high density arrangements.

MICRO-D connectors can also be custom harnessed to meet any customer requirement of single or multiple connectors. Pigtail lead and harness description must be given by the customer. A typical description would be: 192" #25 AWG, gold plated copper leads or 18" of #26 yellow, Teflon-insulated, Type E wire. Shown below are various methods of termination. Consult factory for any routine or complex harnessing of MICRO-D connectors.

- Glass-filled diallyl phthalate–a thermoset material used in high termperature applications that is immune to cleaning solvents. It also has excellent dielectric properties. Temperature range: −65°F to +300°F (−18°C to +149°C).
- Glass-filled polyester –a thermoplastic that is not affected by cleaning solvents and exhibits excellent dielectric properties. Temperature range: −55°F to +125°F (−65°C to +257°C).

How to Order



SERIES-INSULATOR STYLE-MATERIAL

MD	– Clip mounting–Diallyl phthalate
MDB	– Screw mounting–Diallyl phthalate
MDV	– Clip mounting–Polyester
MDVB	– Screw mounting–Polyester

CONTACT SPACING

1 – .050 (1.27) centers

CONTACT ARRANGEMENT

9-15-21-25-31*37-51. See page 118.

CONTACT TYPE

P	– Pin
S	– Socket

TERMINATION TYPE

H	– Insulated solid or stranded wire
L	– Uninsulated solid wire
S	– Solder pot to accept #26 AWG max. harness wire.

TERMINATION CODE**

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

LOCKING HARDWARE (SCREW MOUNTING ONLY)

P	– Jackpost
K	– Jackscrew-standard
L	– Jackscrew-low profile
F	– Float mount
M	– Military specification hardware see page 135.

No designator – No hardware-standard mounting .091 (2.31) hole diameter

**See table below for additional codes.

Standard Wire Termination Codes

For lengths not shown, consult factory for proper modification code. All wire lengths are minimum.

Harness Type (H)
#26 AWG per MIL-W-16878 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

	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)

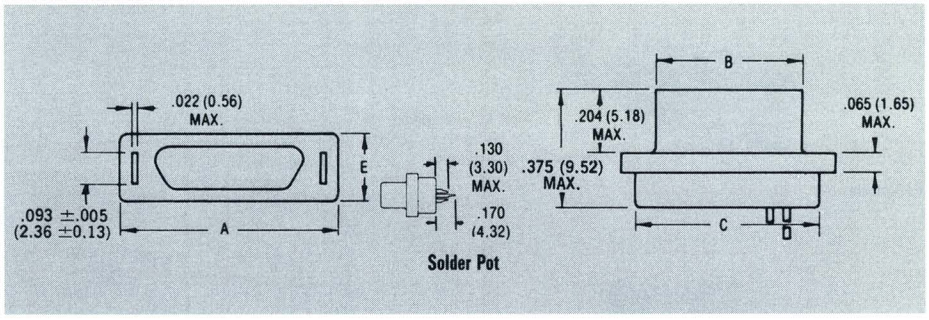
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

With Clip Mounting Slots

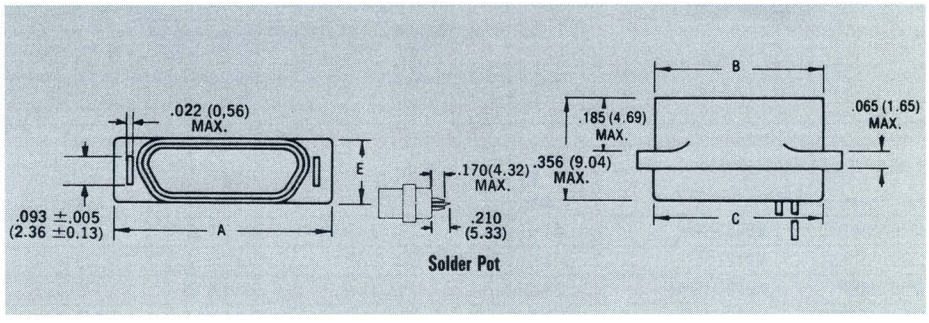
Plug

MD **Glass-filled Diallyl Phthalate Plastic Insulator**

MDV **Glass-filled Polyester Plastic Insulator**



Receptacle



Part Number by Shell Size		A Max.	B Max.	C Max.	D Max.	E Max.	Avg. Weight*** ±5% (oz.)/±5% (gm.)
MD1-9P**	MDV1-9P**	.512 (13.00)	.292 (7.42)	.405 (10.29)	.170 (4.32)	.215 (5.46)	.026 (0.73)
MD1-9S**	MDV1-9S**	.512 (13.00)	.376 (9.55)	.405 (10.29)	.170 (4.32)	.215 (5.46)	.026 (0.73)
MD1-15P**	MDV1-15P**	.662 (16.81)	.442 (11.23)	.555 (14.10)	.170 (4.32)	.215 (5.46)	.038 (1.10)
MD1-15S**	MDV1-15S**	.662 (16.81)	.526 (13.36)	.555 (14.10)	.170 (4.32)	.215 (5.46)	.035 (1.00)
MD1-21P**	MDV1-21P**	.812 (20.62)	.592 (15.04)	.705 (17.91)	.170 (4.32)	.215 (5.46)	.053 (1.50)
MD1-21S**	MDV1-21S**	.812 (20.62)	.676 (17.17)	.705 (17.91)	.170 (4.32)	.215 (5.46)	.050 (1.40)
MD1-25P**	MDV1-25P**	.912 (23.16)	.692 (17.58)	.805 (20.45)	.170 (4.32)	.215 (5.46)	.063 (1.80)
MD1-25S**	MDV1-25S**	.912 (23.16)	.776 (19.71)	.805 (20.45)	.170 (4.32)	.215 (5.46)	.056 (1.60)
MD1-37P**	MDV1-37P**	1.212 (30.78)	.992 (25.20)	1.105 (28.07)	.170 (4.32)	.215 (5.46)	.086 (2.45)
MD1-37S**	MDV1-37S**	1.212 (30.78)	1.076 (27.33)	1.105 (28.07)	.170 (4.32)	.215 (5.46)	.076 (2.15)
MD1-51P**	MDV1-51P**	1.162 (29.51)	.942 (23.93)	1.055 (26.80)	.213 (5.41)	.258 (6.55)	.109 (3.10)
MD1-51S**	MDV1-51S**	1.162 (29.51)	1.026 (26.06)	1.055 (26.80)	.213 (5.41)	.258 (6.55)	.093 (2.65)

**Add lead type and length, see Part Number Explanation.
***Weight given is with 1/2", uninsulated solid #25 AWG gold plated copper pigtails.

Standard Data

MATERIALS AND FINISHES

Shell/Insulator (One Piece)	–MD/MDB; Glass-filled thermoset plastic MDV/MDVB: Thermoplastic
Contacts	—Copper alloy, gold plate

ELECTRICAL DATA

No. of Contacts	– 9 to 51; 1 arrangement of 5 contacts and 2 coaxials
Coaxial Cable	– RG-178/U (Not available for MD clip mount)
Wire Size	– #24 thru #32 AWG
Contact Termination	– Crimp stationary

MECHANICAL FEATURES

Size or Length	– 7 sizes
Coupling	– Friction/jackscrews
Polarization	– Keystone-shaped shells
Contact Spacing Centers	–.050" (1.27mm)
Shell Styles	– Plug and receptacle

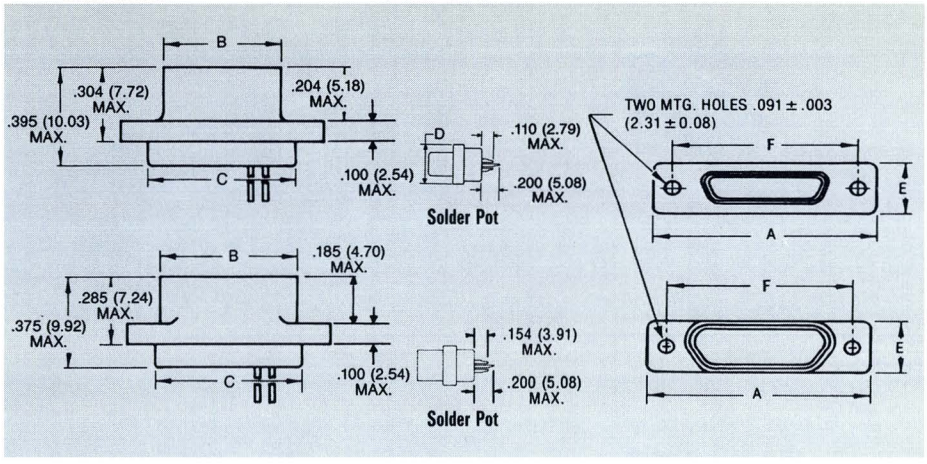
Consult factory for availability.

With Screw Mounting Holes (Conforms to MIL-C-83513)

Plug

Receptacle

MDB **Glass-filled Diallyl Phthalate Plastic Insulator** MDVB **Glass-filled Polyester Plastic Insulator**



Part Number by Shell Size		A Max.	B Max.	C Max.	D Max.	E Max.	F ±.005	Avg. Weight*** ±5% (oz.) ±5% (gm.)
MDB1-9P**	MDVB1-9P**	.788 (20.02)	.292 (7.42)	.408 (10.36)	.173 (4.39)	.218 (5.54)	.565 (14.35)	.026 (0.73)
MDB1-9S**	MDVB1-9S**	.788 (20.02)	.380 (9.65)	.408 (10.36)	.173 (4.39)	.218 (5.54)	.565 (14.35)	.025 (0.70)
MDB1-15P**	MDVB1-15P**	.938 (23.82)	.442 (11.23)	.588 (14.17)	.173 (4.39)	.218 (5.54)	.715 (18.16)	.038 (1.10)
MDB1-15S**	MDVB1-15S**	.938 (23.82)	.530 (13.46)	.588 (14.17)	.173 (4.39)	.218 (5.54)	.715 (18.16)	.035 (1.00)
MDB1-21P**	MDVB1-21P**	1.088 (27.64)	.592 (15.04)	.708 (17.98)	.173 (4.39)	.218 (5.54)	.865 (21.97)	.053 (1.50)
MDB1-21S**	MDVB1-21S**	1.088 (27.64)	.680 (17.27)	.708 (17.98)	.173 (4.39)	.218 (5.54)	.865 (21.97)	.050 (1.40)
MDB1-25P**	MDVB1-25P**	1.188 (30.18)	.692 (17.58)	.808 (20.56)	.173 (4.39)	.218 (5.54)	.965 (24.51)	.063 (1.80)
MDB1-25S**	MDVB1-25S**	1.188 (30.18)	.780 (19.81)	.808 (20.56)	.173 (4.39)	.218 (5.54)	.965 (24.51)	.056 (1.60)
MDB1-31P**	MDVB1-31P**	1.338 (33.98)	.842 (21.39)	.958 (24.33)	.173 (4.39)	.218 (5.54)	1.115 (28.32)	.080 (2.30)
MDB1-31S**	MDVB1-31S**	1.338 (33.98)	.930 (23.62)	.958 (24.33)	.173 (4.39)	.218 (5.54)	1.115 (28.32)	.073 (2.10)
MDB1-37P**	MDVB1-37P**	1.488 (37.80)	.992 (25.20)	1.108 (28.14)	.173 (4.39)	.218 (5.54)	1.265 (32.13)	.086 (2.45)
MDB1-37S**	MDVB1-37S**	1.488 (37.80)	1.080 (27.43)	1.108 (28.14)	.173 (4.39)	.218 (5.54)	1.265 (32.13)	.076 (2.15)
MDB1-51P**	MDVB1-51P**	1.438 (36.52)	.942 (23.93)	1.008 (26.87)	.220 (5.59)	.260 (6.60)	1.215 (30.86)	.109 (3.10)
MDB1-51S**	MDVB1-51S**	1.438 (36.52)	1.030 (26.16)	1.058 (26.87)	.220 (5.59)	.260 (6.60)	1.215 (30.86)	.093 (2.64)

**Add lead type and length, see Part Number Explanation.
***Weight given is with 1/2", uninsulated solid #25 AWG gold plated copper pigtails.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Panel Mounting Hardware

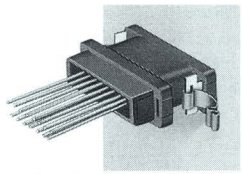
Clip Mounting

Illustrated is the recommended method of front mounting with metal panel mounting keys. Panel mounting keys are available with or without coupling retention clips.

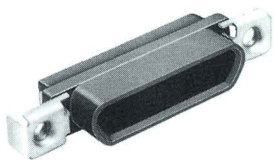
For front mounting, place the rear of the connector thru the panel cutout. With the mounting flange against the panel, fully insert the panel mounting keys thru the slots in the flange and thru the panel cutout. Retaining the keys in this position, bend them outward against the rear of the panel. When mating a front mounted connector with an unmounted connector, a coupling retention clip assembly may be used to securely lock the two together. Mounting screw brackets are available and may be used instead of the panel mounting keys.

Description	Part Number
Panel Mounting Key	201-9100-000
Mounting Key and Coupling Clip Assembly	294-9100-000
Mounting Screw Bracket	015-9100-000
*Edgeboard Mounting Bracket	015-5009-000
**Edgeboard Mounting Bracket and Coupling Clip Assembly	MD51428-1

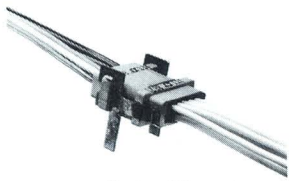
*Must be ordered separately; specify left and right hand for complete assembly.
**Must be ordered separately; assembly contains a set of left and right hand types.



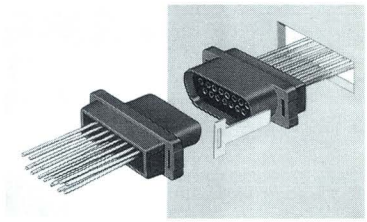
Coupling Retention Clip
(see Figure 2)



Mounting Screw Brackets
(see Figures 1 and 3)

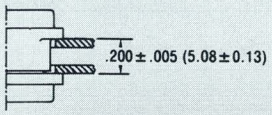


Edgeboard Mounted
(see Figure 4)

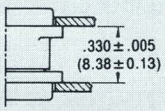


Panel
Mounting Key

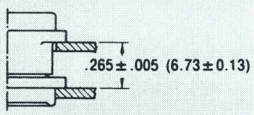
Dimensions (Clip Mounting Only)



Plug and Receptacle
Rear Mounted



Plug and Receptacle
Front Mounted



Plug Front Mounted
Receptacle Rear Mounted

Panel Cutouts

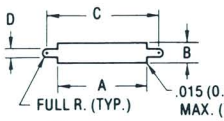


Figure 1

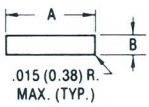


Figure 2

Front Mounting

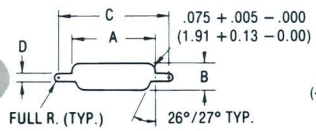


Figure 3
Rear Mounting

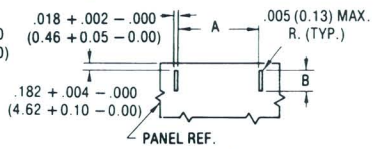


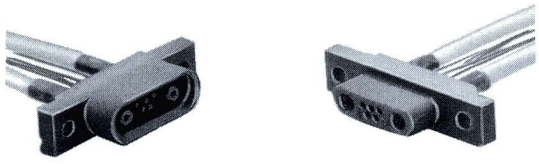
Figure 4
Edgeboard Mounting

1. A panel thickness of 1/8" (3.17mm) maximum is recommended for ease of tab bending when a panel mounting key & clip assembly or edgeboard mounting brackets are used.
2. Front mounting is preferred. However, when rear mounting is necessary, use figure 3 for dimensions.
3. Figure 4 is for edgeboard mounting bracket or edgeboard clip assembly. The .184 ± .002 (2.67 ± 0.05) dimension locates the MD socket insulator flush with the end of the board.
4. Screw brackets (015-9100-000) will accommodate #2-56 screws.

Shell Size	Cutout Figure	A +.004 (0.10) −.000 (0.00)	B +.004 (0.10) −.000 (0.00)	C +.004 (0.10) −.000 (0.00)	D +.005 (0.13) −.000 (0.00)
9	1	.408 (10.36)	.172 (4.37)	.650 (16.51)	.089 (2.26)
	2	.408 (10.36)	.172 (4.37)	—	—
	3	.378 (9.60)	.217 (5.51)	.650 (16.51)	.089 (2.26)
	4	.400 (10.16)	.091 (2.31)	—	—
15	1	.588 (14.94)	.172 (4.37)	.795 (20.19)	.089 (2.26)
	2	.588 (14.94)	.172 (4.37)	—	—
	3	.528 (13.28)	.217 (5.51)	.795 (20.19)	.089 (2.26)
	4	.550 (13.97)	.091 (2.31)	—	—
21	1	.738 (18.75)	.172 (4.37)	.945 (24.00)	.089 (2.26)
	2	.738 (18.75)	.172 (4.37)	—	—
	3	.678 (17.27)	.217 (5.51)	.945 (24.00)	.089 (2.26)
	4	.700 (17.78)	.091 (2.31)	—	—
25	1	.838 (21.29)	.172 (4.37)	1.045 (26.54)	.089 (2.26)
	2	.838 (21.29)	.172 (4.37)	—	—
	3	.778 (19.76)	.217 (5.51)	1.045 (26.54)	.089 (2.26)
	4	.800 (20.32)	.091 (2.31)	—	—
37	1	1.138 (28.91)	.172 (4.37)	1.345 (34.16)	.089 (2.26)
	2	1.138 (28.91)	.172 (4.37)	—	—
	3	1.078 (27.38)	.217 (5.51)	1.345 (34.16)	.089 (2.26)
	4	1.100 (27.94)	.091 (2.31)	—	—
51	1	1.088 (27.64)	.215 (5.46)	1.295 (32.89)	.089 (2.26)
	2	1.088 (27.64)	.215 (5.46)	—	—
	3	1.028 (26.11)	.260 (6.60)	1.295 (32.89)	.089 (2.26)
	4	1.050 (26.67)	.091 (2.31)	—	—

MDB Coaxial Series with Screw Mounting Holes

MDB connectors with two coaxial and five MICRO-PIN™/MICROSOCKET™ contacts. Crimp-type coaxial contacts accommodate RG-178/U cables. A plastic insertion/extraction tool is supplied with each connector assembly having removable coaxial assembly.



How to Order — MDB Coaxial

MDB	1	-7	C2	*	S	H	**	*	K

SERIES
SIGNAL CONTACT SPACING
TOTAL CONTACT CAVITIES
NUMBER OF COAXIALS
COAXIAL TYPE
SIGNAL CONTACT TYPE
SIGNAL CONTACT LEAD TYPE
SIGNAL CONTACT LEAD LENGTH
MODIFICATION
HARDWARE

SERIES
ITT Cannon Prefix

SIGNAL CONTACT SPACING
1 – .050 (1.27) centers

TOTAL CONTACT CAVITIES 7

NUMBER OF COAXIALS 2

COAXIAL TYPE
No letter – Coaxial assembly installed and nonremovable
RO – coaxial assembly ordered separately
RA – Coaxial shipped assembled but uninstalled

SIGNAL CONTACT TYPE
P – Pin
S – Socket

SIGNAL CONTACT LEAD TYPE
L – Uninsulated, solid wire
H – Insulated, solid or stranded
S – Solder pot*

SIGNAL CONTACT LEAD LENGTH
See Standard Wire Termination Codes on page 128. Coaxial cable will be RG-178U unless otherwise specified; length will be same as wire modification.

MODIFICATION
Consult factory

HARDWARE
No letter – No hardware standard mounting .091" (2.31 mm) hole diameter
F – Float
K – Jackscrew (standard)
L – Jackscrew (low profile)
P – Jackpost

*Not available with removable coax cable type connectors RO and RA.

How to Order — Coaxial Cable Assemblies

MD	CC	S	*	***

SERIES
COAXIAL CABLE
CONTACT TYPE
COAXIAL CABLE TYPE
COAXIAL CABLE LENGTH

SERIES
ITT Cannon Prefix

COAXIAL CABLE

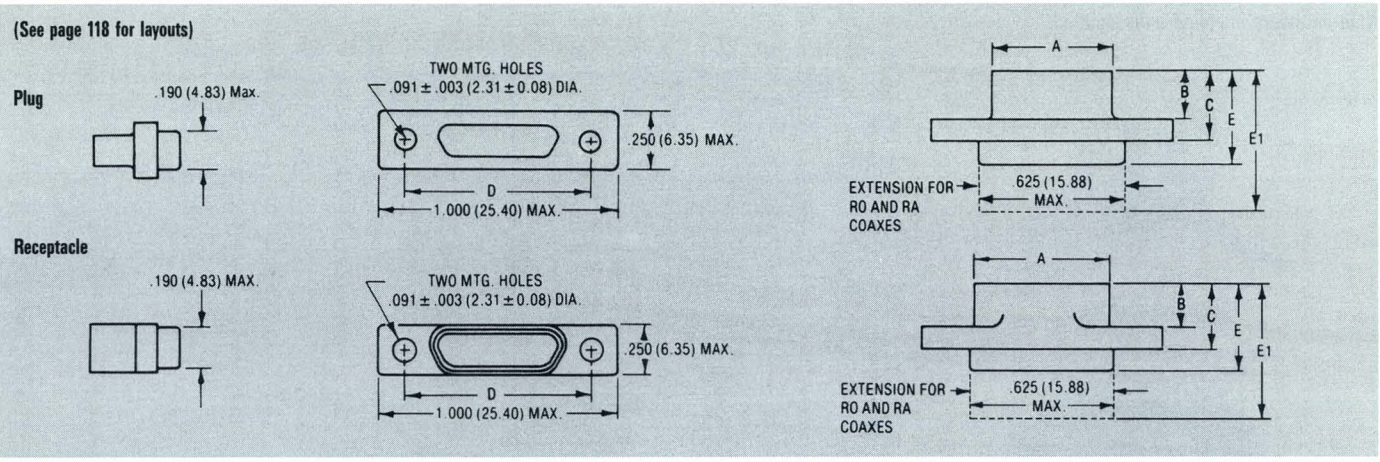
CONTACT TYPE
P – Pin (used with socket side connection)
S – Socket (used with pin type connection)

COAXIAL CABLE TYPE
1 – RG178/U

COAXIAL CABLE LENGTH
See Standard Wire Termination Codes on page 128. Coaxial cable will be RG-178U unless otherwise specified; length will be same as wire modification.

Dimensions — MDB Coaxial Series

(See page 118 for layouts)

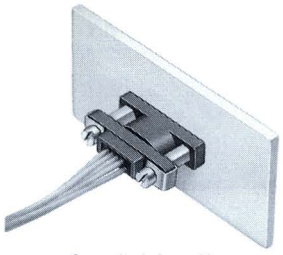


Part Number by Shell Size	A Max.	B Max.	C Max.	D ±.005 (±0.13)	E Max.	E¹ Max.	Avg. Weight** (oz.) ±5% (gm.) ±5%
MDB1-7C2P*	.510 (12.95)	.204 (5.18)	.298 (7.57)	.782 (19.86)	.395 (10.03)	.510 (12.95)	.290 (8.30)
MDB1-7C2S*	.600 (15.24)	.185 (4.70)	.279 (7.09)	.782 (19.86)	.375 (9.52)	.540 (13.72)	.273 (7.80)

*Add lead type and length, see Part Number Explanation.
**Weight given is with 7" (177.80mm) insulated leads, #26 AWG silver plated copper pigtails and RG178/U coaxials.

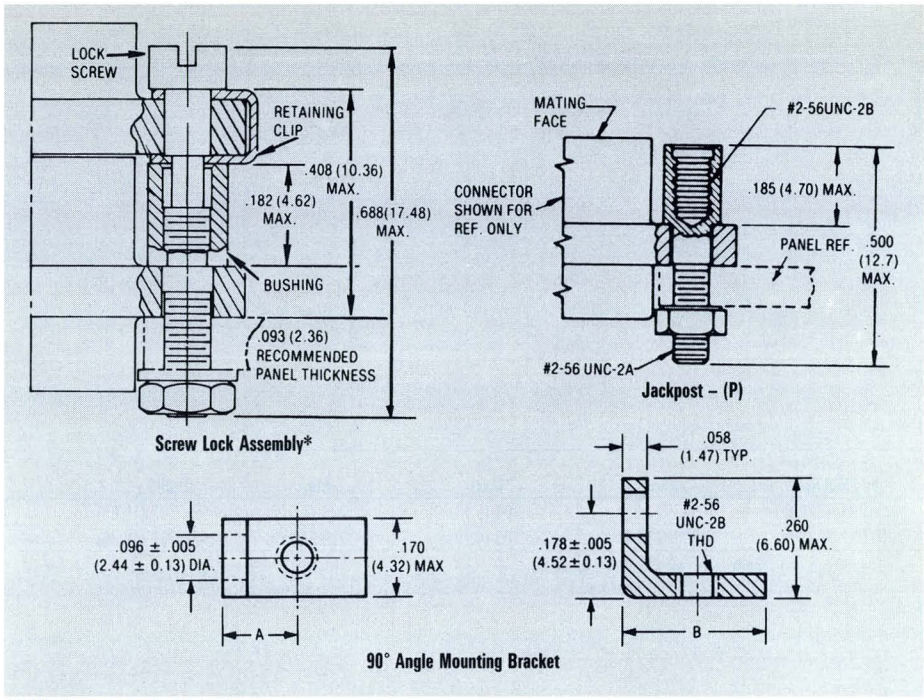
Mounting Hardware Views — Sizes 9-51

This hardware supplied unassembled.



Screw Lock Assembly

90° Angle Mounting Bracket

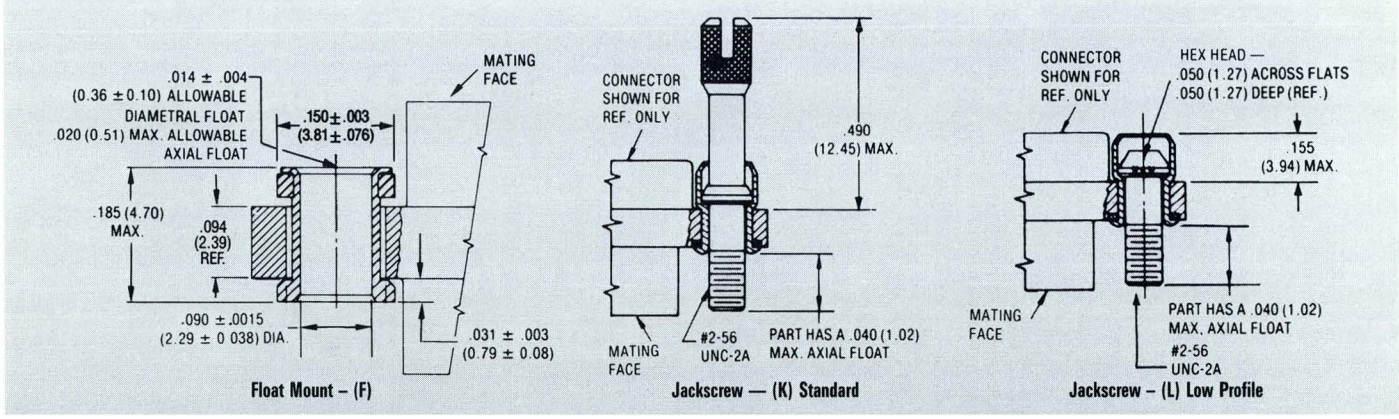


*NOTE: Torque value is 4.0 in/lbs max.

Description	Part Number	A ±.005 (±0.13)	B Max.
Screw Lock Assembly Jackpost Kit	322-9500-000 320-9505-000		
Mounting Bracket, 90° Angle– MD*1 for 9 thru 37 Shell Sizes	015-9516-000	.100 (2.54)	.215 (5.46)
MD*1 for 51 Shell Size	015-9516-001	.122 (3.10)	.257 (6.53)

NOTES: Screw lock assembly (322-9500-000) can be used for front mounting. Jackpost kit (320-9505-000) consists of 2 assemblies, shipped unassembled.
For Jackpost/Jackscrew Assembly, polarized version see page 121.

This hardware is factory installed.



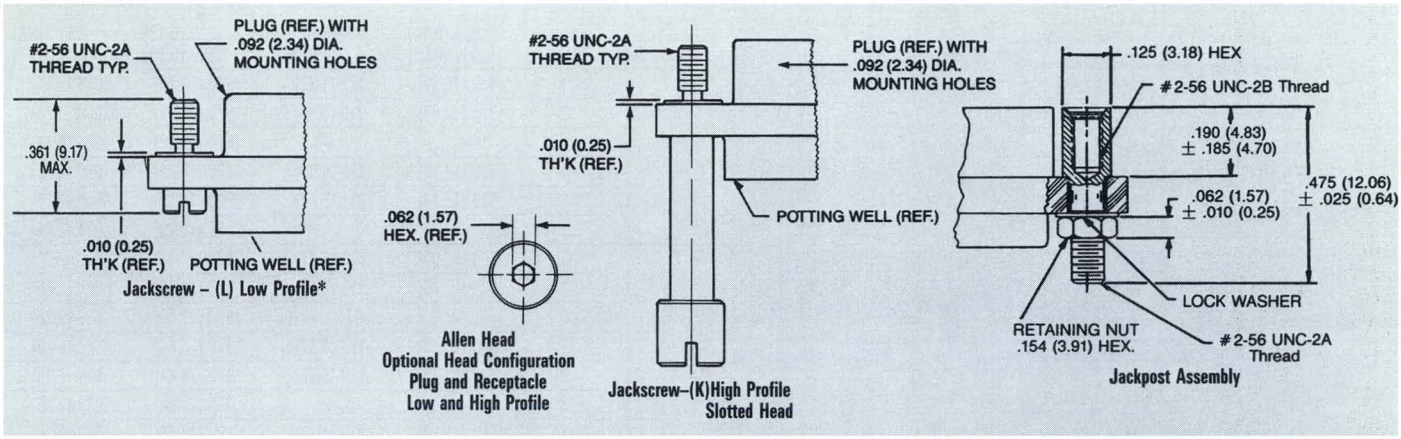
Shown here is a cutaway view of the float mount for the MD connector. The basic shell dimensions are the same for the float mount and the screw mounting hole configurations. View shown is for standard float mount front panel mounting. Reverse mounting is available on request.

*NOTE: Torque values are as follows:
Low Profile Jackscrew (L)–2.5 in/lbs
Standard Jackscrew (K)–4.0 in/lbs

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

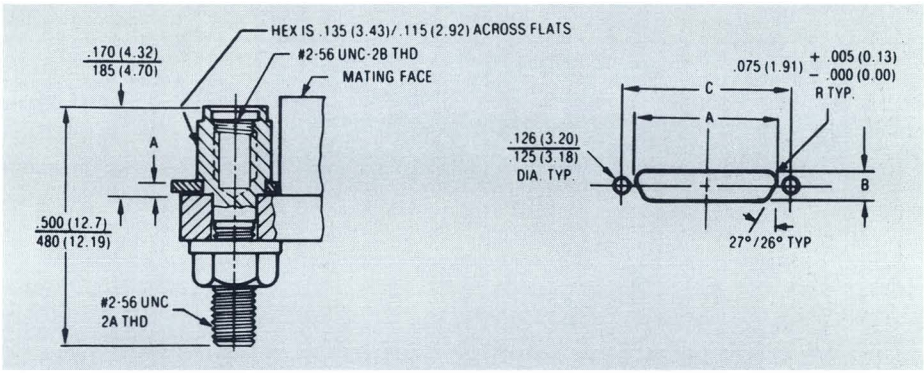
Mounting Hardware to Military Specification (for sizes 9 thru 51)

This hardware supplied unassembled.



Description	Mode Code	Part Number
Slotted Head Jackscrew Assy Low Profile	M5	320-9508-025
Slotted Head Jackscrew Assy High Profile	M6	320-9508-027
Allen Head Jackscrew Assy Low Profile	M2	320-9508-026
Allen Head Jackscrew Assy High Profile	M3	320-9508-028
Jackpost Assy	M7	320-9505-033

Jackpost Bushing (for Rear Panel Mounting)



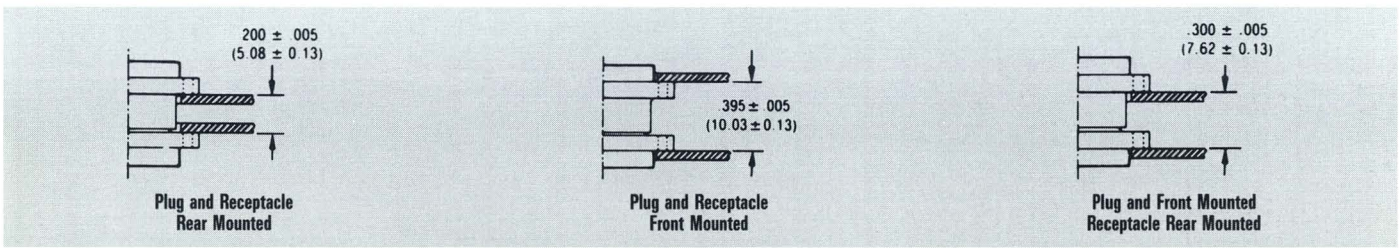
Panel Thickness	A Dim.	Jackpost Kit Number*
3/32 (2.4)	.092/.087 (2.34/2.21)	320-9505-007
1/16 (1.6)	.061/.056 (2.34/1.42]	320-9505-006
3/64 (1.2)	.047/.042 (1.19/1.07)	320-9505-005
1/32 (0.8)	.030/0.25 (0.76/0.64)	320-9505-004

*2 Jackposts, 2 nuts, 2 washers.

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	.379 (9.63)	.219 (5.56)	.565 (14.35)
15	.529 (13.44)	.219 (5.56)	.715 (18.16)
21	.679 (17.25)	.219 (5.56)	.865 (21.97)
25	.779 (19.79)	.219 (5.56)	.965 (24.51)
31	.929 (23.60)	.219 (5.56)	1.115 (28.32)
37	1.079 (27.41)	.219 (5.56)	1.265 (32.13)
51	1.029 (26.14)	.261 (6.63)	1.215 (30.86)

Panel Mounting Dimensions



Panel Cutouts

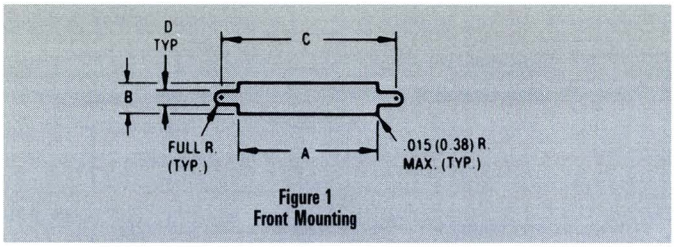


Figure 1
Front Mounting

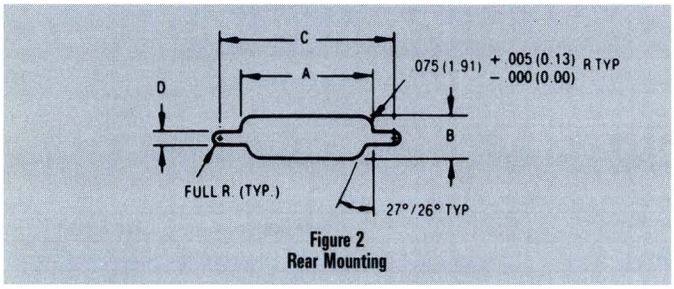


Figure 2
Rear Mounting

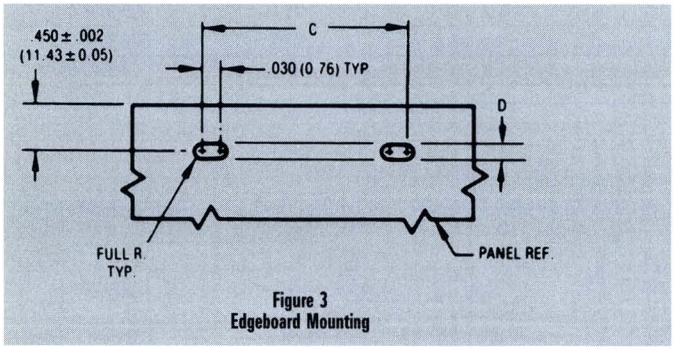


Figure 3
Edgeboard Mounting

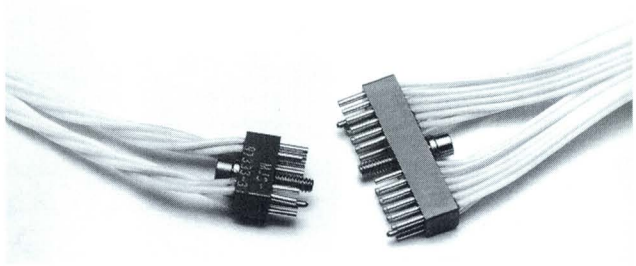
Size	Cutout Figure	A +.004 (0.10) −.000 (0.00)	B +.004 (0.10) −.000 (0.00)	C +.005 (0.13) −.000 (0.00)	D +.005 (0.13) −.000 (0.00)
9	1	.409 (10.39)	.172 (4.37)	.570 (14.48)	.089 (2.26)
	2	.379 (9.63)	.219 (5.56)	.570 (14.48)	.089 (2.26)
	3	—	—	.570 (14.48)	.089 (2.26)
15	1	.559 (14.20)	.172 (4.37)	.720 (18.29)	.089 (2.26)
	2	.529 (13.44)	.219 (5.56)	.720 (18.29)	.089 (2.26)
	3	—	—	.720 (18.29)	.089 (2.26)
21	1	.709 (18.00)	.172 (4.37)	.870 (22.10)	.089 (2.26)
	2	.679 (17.25)	.219 (5.56)	.870 (22.10)	.089 (2.26)
	3	—	—	.870 (22.10)	.089 (2.26)
25	1	.809 (20.55)	.172 (4.37)	.970 (24.64)	.089 (2.26)
	2	.779 (19.79)	.219 (5.56)	.970 (24.64)	.089 (2.26)
	3	—	—	.970 (24.64)	.089 (2.26)
31	1	.959 (24.36)	.172 (4.37)	1.120 (28.45)	.089 (2.26)
	2	.929 (23.60)	.219 (5.56)	1.120 (28.45)	.089 (2.26)
	3	—	—	1.120 (28.45)	.089 (2.26)
37	1	1.109 (28.17)	.172 (4.37)	1.270 (32.26)	.089 (2.26)
	2	1.079 (27.41)	.219 (5.56)	1.270 (32.26)	.089 (2.26)
	3	—	—	1.270 (32.26)	.089 (2.26)
51	1	1.059 (26.90)	.215 (5.46)	1.220 (30.99)	.089 (2.26)
	2	1.029 (26.14)	.261 (6.63)	1.220 (30.99)	.089 (2.26)
	3	—	—	1.220 (30.99)	.089 (2.26)

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.
3. Edgeboard mounting bracket (figure 3) uses #2-56 screws. Dimension .450 ± .002 (11.43 ± 0.05) locates the MD receptacle flush with the end of the board.

Micro Center Jackscrew

The MJS jackscrew series provides a reliable interconnect for board-to-board, board-to-cable and in-line cable-to-cable applications. Layouts accommodating up to 66 MICROPIN/MICROSOCKET™ contacts are available, with the same wide range of options as are offered with the other MICRO Line products offered in this catalog.

For further technical and applications information, contact your nearest ITT Cannon field office or call our Microminiature Products Group.



How to Order

MJS * — 26 P H 001

SERIES
INSULATOR MATERIAL
CONTACT ARRANGEMENT
CONTACT TYPE
TERMINATION TYPE
TERMINATION CODES

SERIES
MJS – Micro Center Jackscrew

INSULATOR MATERIAL
B – Diallyl phthalate
V – Polyester
U – Polyetherimide
R – Polyphenylene sulfide

CONTACT ARRANGEMENTS
Unshrouded Receptacle: 10, 26, 51, 66
Shrouded Receptacle: 16, 34
Low Profile Plug and Receptacle: 28

CONTACT TYPE
P – Pin
S – Socket

TERMINATION TYPE
H – Insulated wire harness.
I – Integral tail MJSV-28S only.
L – Solid-uninsulated wire.
S – Solder pot to accept #26 AWG harness wire.
T – Thru bundle pigtail MJSV-28P only.

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

*See Termination Codes shown below for additional length modification codes.

Standard Wire Termination Codes

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 Type E Teflon, 7/34 stranded.

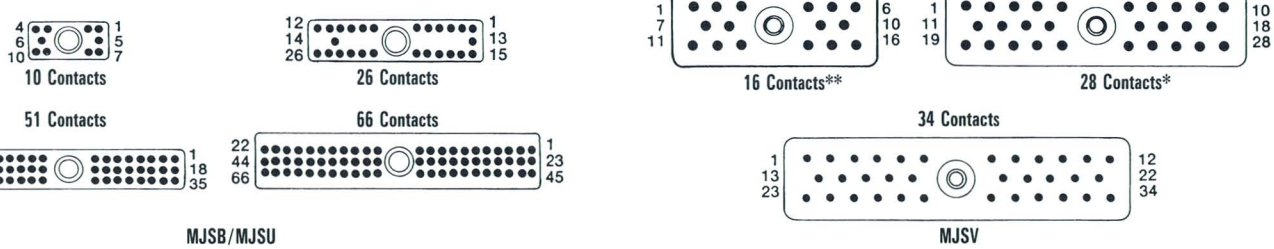
Length	All Yellow	Color Coded	Length	All Yellow	Color Coded
3(76.2)	H020	H027	24(609.6)	H009	H004
6(152.4)	H019	H016	30(762.0)	H010	H005
8(203.2)	H026	H034	36(914.4)	H011	H006
10(254.0)	H029	H025	48(1219.2)	H013	H048
12(304.8)	H028	H002	72(1828.8)	H017	H046
18(457.2)	H001	H003	120(3048.0)	H042	H041
20(508.0)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

Solid Uninsulated Type (L)
#25 AWG gold plated copper.

Length		Length	
L61	.125(3.18)	L14	.750(19.05)
L56	.150(3.81)	L2	1.000(25.40)
L57	.190(4.83)	L7	1.500(38.10)
L39	.250(6.35)	L6	2.000(50.80)
L58	.375(9.53)	L16	2.500(63.50)
L1	.500(12.70)	L10	3.000(76.20)

Contact Arrangements

Face view of pin–use reverse order for socket



MJSB/MJSU

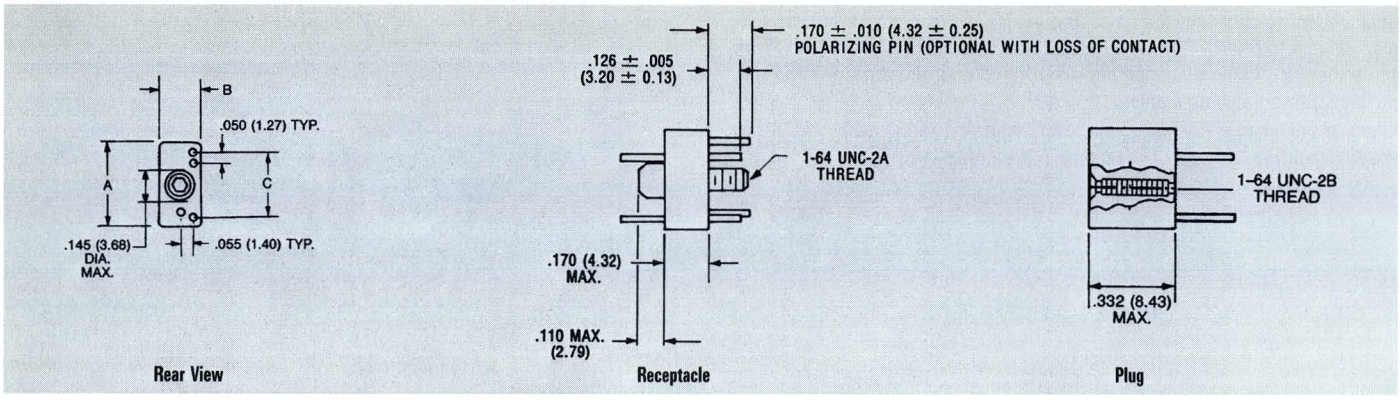
Identification numbers are for reference only and do not appear on connectors.

MJSV

*Low profile configuration
**MJSV & MJSR

MJSB/MJSU–Unshrouded Receptacle (10-26-51-66)

MJSB/MJSU

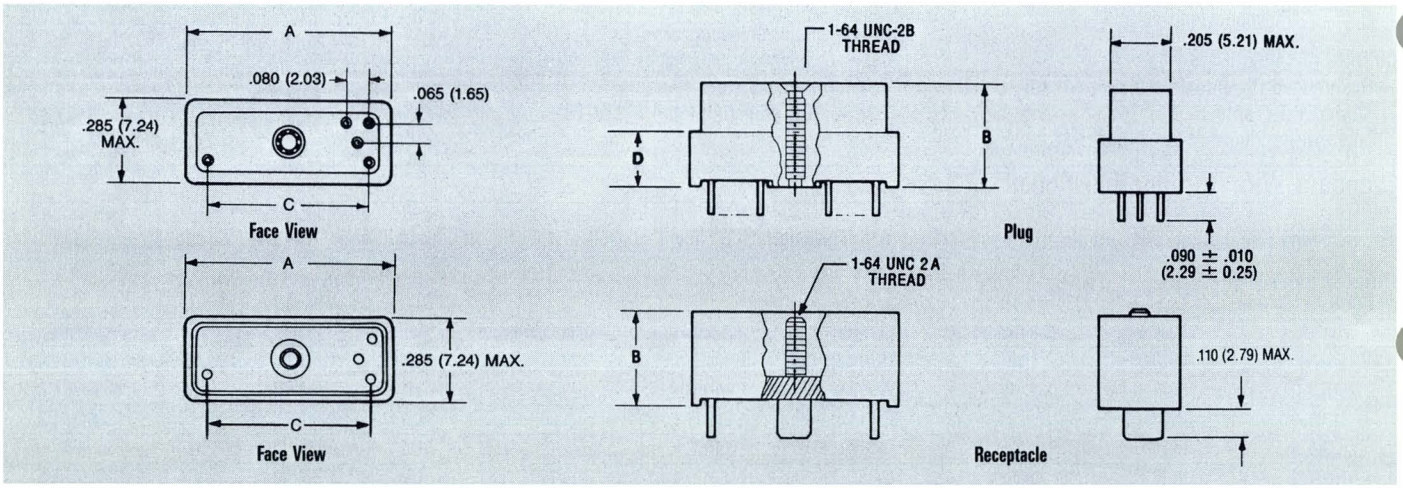


STANDARD MATERIALS AND FINISHES

Micropin	Copper alloy, 50 micro-inch gold
Microsocket	Copper alloy, 50 micro-inch gold
Insulator	Diallyl phthalate, green color or polyetherimide, natural color
Jackscrew	Stainless steel, passivated & lubricated
Jackscrew Retainer	Stainless steel, passivated
Insert, Threaded	Stainless steel, passivated
Polarizing Post	Stainless steel, passivated

Part Number	A Max.	B Max.	C Bsc.
MJSB or MJSU-10P	.378 (9.60)	.190 (4.83)	.290 (7.37)
MJSB or MJSU-10S	.378 (9.60)	.190 (4.83)	.290 (7.37)
MJSB or MJSU-26P	.778 (19.76)	.190 (4.83)	.690 (17.53)
MJSB or MJSU-26S	.778 (19.76)	.190 (4.83)	.690 (17.53)
MJSB or MJSU-51P	1.028 (26.11)	.260 (6.60)	.940 (23.88)
MJSB or MJSU-51S	1.028 (26.11)	.260 (6.60)	.940 (23.88)
MJSB or MJSU-66P	1.280 (32.51)	.260 (6.60)	1.190 (30.23)
MJSB or MJSU-66S	1.280 (32.51)	.260 (6.60)	1.190 (30.23)

MJSV/MJSR–Shrouded Receptacle (16-28*-34)



STANDARD MATERIALS AND FINISHES

Micropin	Copper alloy, 50 micro-inch gold
Microsocket	Copper alloy, 50 micro-inch gold
Insulator	Polyester, black color Polyphenylene sulfide, black color
Jackscrew	Stainless steel, passivated & lubricated
Jackscrew Retainer	Stainless steel, passivated
Insert, Threaded	Stainless steel, passivated
Polarizing Post	Stainless steel, passivated

Part Number	A Max.	B Max.	C Bsc.	D ±.006 (0.15)
MJSV-16P	.700 (17.78)	.345 (8.76)	.545 (13.84)	.175 (4.45)
MJSV-16S	.700 (17.78)	.320 (8.13)	.545 (13.84)	—
MJSV-28P*	1.020 (25.91)	.232 (5.89)	.865 (21.97)	.062 (1.57)
MJSV-28S*	1.020 (25.91)	.246 (6.25)	.865 (21.97)	—
MJSV-34P	1.180 (29.97)	.330 (8.38)	1.025 (26.04)	.160 (4.06)
MJSV-34S	1.180 (29.97)	.305 (7.75)	1.025 (26.04)	—

*Low profile configuration, for "L" (uninsulated solid wire) termination add .090 (2.29) to the "B" dimension. For "H" (insulated wire) termination add .200 (5.08) to "B" dimension.

MICRO-K microminiature circular connectors are rugged yet lightweight — and meet or exceed the applicable requirements of MIL-C-83513. Applications include computers, biomedical, instrumentation and miniature black boxes.

MIK: Accommodate up to 55 contacts on .050 (1.27) centers (equivalent to 420 contacts per square inch). Five keyway polarization prevents cross plugging. The threaded coupling nuts provide strong, reliable coupling. MIK receptacles can be either front or back panel mounted; in back mounting applications, panel thickness of up to 3/32" can be used on the larger sizes. Maximum temperature range −55°C to +105°C.

Standard MIK connectors are available in two shell sizes accommodating two contact arrangements pre-wired to your specific requirements.

MIKM: Similar to our MIK, except has a steel shell and receptacle for improved ruggedness and RFI resistance. It accommodates up to 85 twist pin contacts. Maximum temperature range −55°C to +105°C.

MIKQ: A quick disconnect metal shell and receptacle version that can be instantaneously disconnected yet provides a solid lock when engaged. Applications include commercial TV cameras, portable radios, military gun sights, airborne landing systems and medical equipment. Maximum temperature range −55°C to +125°C.

For other variations of the basic MIK circular design, contact your nearest ITT Cannon field sales office or call our Microminiature Products Group.

Standard Data

STANDARD MATERIAL AND FINISHES

	MIK	MIKM	MIKQ
Shell	Thermoplastic	Stainless Steel	Brass
Coupling Nut	Stainless Steel Passivated	Stainless Steel Passivated	Brass, Electroless Nickel Plated*
Insulator	— Glass-reinforced Thermoplastic		
Contacts	— 50 Microinch Gold Plated Copper Alloy-		

*For plug only
Electrodeposited for receptacle.

ELECTRO/MECHANICAL FEATURES

	MIK	MIKM	MIKQ
No. of Contacts	7,55	7,55,85	7,19,37
Wire Size	#26 AWG thru #32 AWG		
Contact Termination	Crimp or Solder Pot		
Contact Rating	3 Amps		
Coupling	Threaded	Threaded	Push/Pull
Polarization	Keyways		
Contact Spacing	.050 (1.27) Centers		
Shell Styles	0-Wall Mtg. 6-Straight Plug	0-Wall Mtg. 6-Straight Plug	7-Jam Nut 6-Straight Plug 9-Rear Panel Mtg. Receptacle

How to Order

MIK M 6- 55 P * ** ***

SERIES
CONNECTOR TYPE
SHELL STYLE
CONTACT ARRANGEMENT
CONTACT TYPE
TERMINATION TYPE
TERMINATION LENGTH CODE
HARDWARE

SERIES
MIK: ITT Cannon Prefix

CONNECTOR TYPES
No letter – Screw coupling, plastic shell
M – Screw coupling, metal shell
Q – Push/Pull, metal shell

SHELL STYLES
0 – Wall mounting receptacle (MIK and MIKM only)
6 – Straight plug [MIK, MIKM and MIKQ)
7 – Jam nut mount (MIKQ only)
9 – Rear panel mounted receptacle (MIKQ)

CONTACT ARRANGEMENTS
1-7, 2-19, 3-37, 4-55, 5-85

CONTACT TYPE
P – Pin
S – Socket

TERMINATION TYPES
H – Insulated round hook-up wire
L – Uninsulated round solid wire

TERMINATION LENGTH CODES (STANDARDS)
(H)001 – 18" #26 AWG MIL W-16878/4 Type E Teflon, yellow wire
(H)003 – 18" #26 AWG MIL W-16878/4 Type E Teflon, color coded wire per MII-STD-681, System 1
(L) 1 – 1/2" uninsulated solid #25 AWG gold plated copper wire
(L) 2 – 1" uninsulated solid #25 AWG gold plated copper wire

HARDWARE
G – Cable nut and grip (MIKQ plug only)
N – Nut only (MIKQ plug only)

NOTE: Contact types cannot be interchanged between shell styles.

Standard Wire Termination Codes

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 TYPES (H)
#26 AWG per MIL-W-16878 Type E, Teflon Stranded

Length	—All Yellow	Color Coded
3 (76,2)	020	027
6 (152,4)	019	016
8 (203,2)	026	034
10 (254,0)	029	025
12 (304,8)	028	002
18 (457,2)	001	003
20 (508,0)	038	023

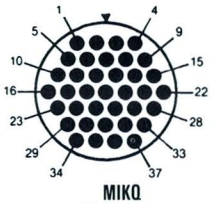
Length	—All Yellow	Color Coded
24 (609,6)	009	004
30 (762,0)	010	005
36 (914,4)	011	006
48 (1219,2)	013	048
72 (1828,8)	017	046
120 (3048,0)	042	041

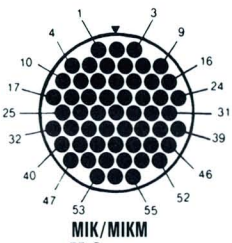
Contact Arrangements

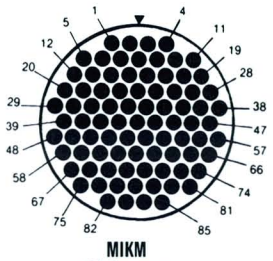
(Face View, Pin Side–[Male Contacts])

MIK/MIKM/MIKQ
7 Contacts

MIKQ
19 Contacts


MIKQ
37 Contacts


MIK/MIKM
55 Contacts

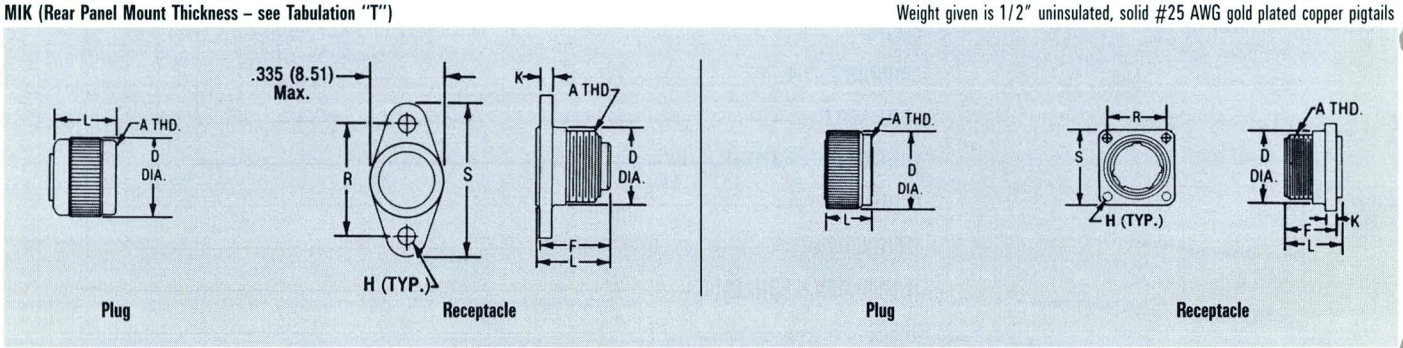

MIKM
85 Contacts

Cavity identification numbers are for reference only, they do not appear on connectors.

Shell Dimensions

MIK (Rear Panel Mount Thickness – see Tabulation "T")

Weight given is 1/2" uninsulated, solid #25 AWG gold plated copper pigtails



Plug

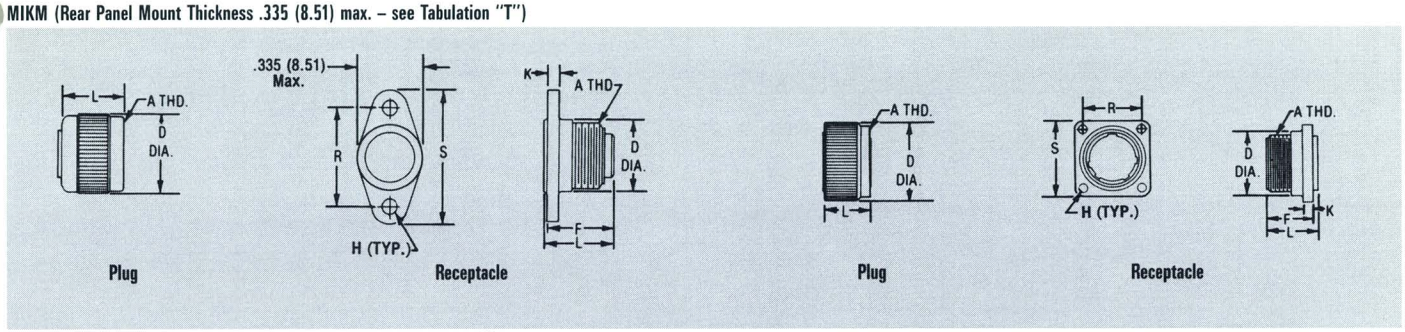
Part Number by Shell Size	A Thread	D Max.	L Max.	Avg. Weight oz. (gm.) ±5%
MIK6-7P	5/16-24UNF-2B	.375 (9.52)	.315 (8.00)	.054 (1.54)
MIK6-55P	9/16-24UNF-2A	.755 (19.18)	.460 (11.68)	.202 (5.72)

Receptacle

Part Number by Shell Size	A Thread	D ±.010 (0.25)	F Max.	H ±.003 (0.08)	K ±.010 (0.25)	L Max.	R ±.005 (0.13)	S Max.	T Max.	Avg. Weight oz. (gm.) ±5%
MIKQ-7S	5/16-24UNF-2B	.325 (8.26)	.315 (8.00)	.078 (1.98)	.062 (1.57)	.355 (9.02)	.460 (11.68)	.630 (16.00)	.032 (0.81)	.022 (.635)
MIKQ-55S	9/16-24UNF-2A	.625 (15.88)	.440 (11.18)	.089 (2.26)	.100 (2.54)	.495 (12.57)	.580 (14.73)	.760 (19.30)	.062 (1.57)	.134 (3.81)

Shell Dimensions (Continued)

MIKM (Rear Panel Mount Thickness .335 (8.51) max. – see Tabulation "T")



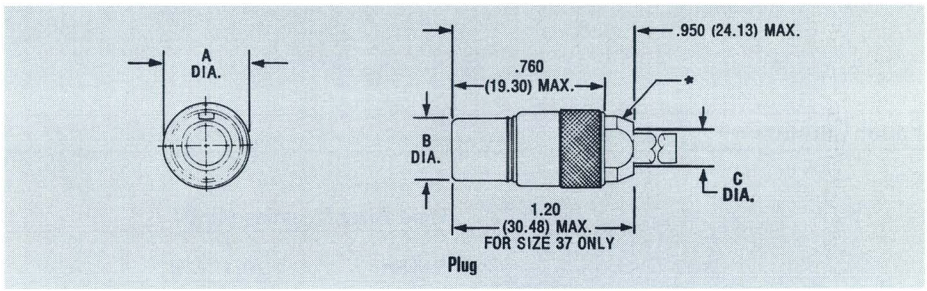
Plug

Part Number by Shell Size	A Thread	D Max.	L Max.	Avg. Weight oz. (gm.) ±5%
MIKM6-7P	5/16-24UNF-2A	.375 (9.52)	.315 (8.00)	.054 (1.54)
MIKM6-55P	5/8-24UNEF-2B	.755 (19.18)	.440 (11.18)	.333 (9.44)
MIKM6-85P	11/16-24UNEF-2B	.860 (21.84)	.460 (11.68)	.419 (11.88)

Receptacle

Part Number by Shell Size	A Thread	D	F Max.	H ±.003 (0.08)	K	L Max.	R ±.005 (0.13)	S Max.	T Max.	Avg. Weight oz. (gm.) ±5%
MIKMO-7S	5/16-24UNF-2A	.325 (8.26)	.320 (8.13)	.078 (1.98)	.062 (1.57)	.400 (10.16)	.460 (11.68)	.630 (16.00)	.032 (0.81)	.051 (1.45)
MIKMO-55S	5/8-24UNEF-2A	.625 (15.88)	.440 (11.18)	.091 (2.31)	.062 (1.57)	.490 (12.45)	.580 (14.73)	.760 (19.30)	.125 (3.18)	.269 (7.62)
MIKMO-85S	11/16-24UNEF-2A	.745 (18.92)	.440 (11.18)	.091 (2.31)	.062 (1.57)	.490 (12.45)	.674 (17.12)	.845 (21.46)	.125 (3.18)	.346 (9.80)

MIKQ

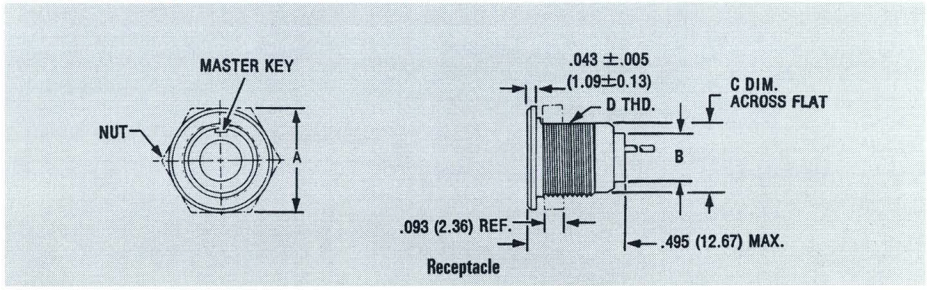


Plug

Part Number by Shell Size	A Max.	B Max.	C Ref.	Avg. Weight oz. (gm.) ±5%
MIKQ6- 7S	.385 (9.78)	.305 (7.75)	.180 (4.57)	.214 (6.08)
MIKQ6-19S	.515 (13.08)	.405 (10.29)	.260 (6.60)	.376 (10.70)
MIKQ6-37S	.760 (19.30)	.635 (16.13)	.350 (8.89)	.714 (20.23)

*Std. Cone not supplied with Cable Nut & Grip, See Mod Codes.
Lanyard Release is available. Consult factory.

(Front Panel Mounting Type Shown–.093 (2.36) Thickness)

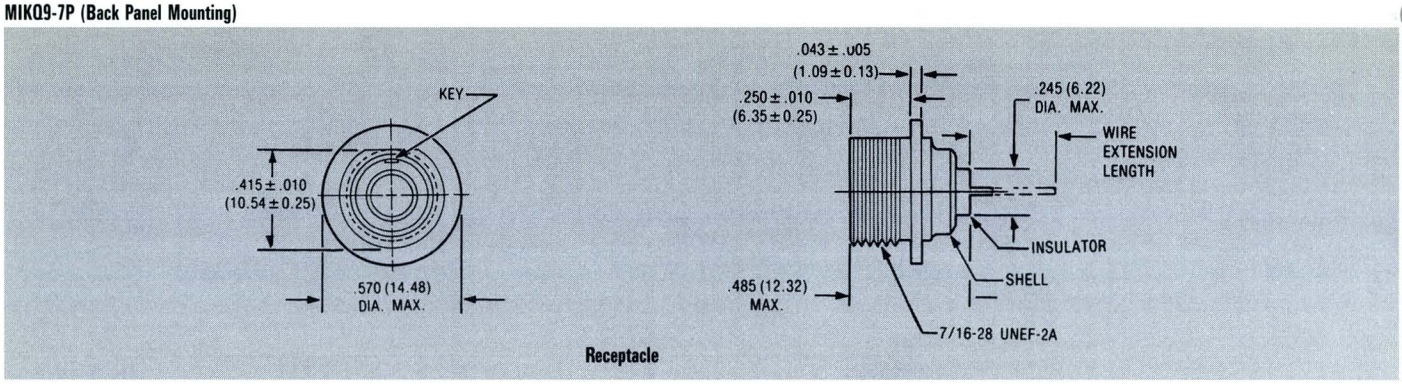


Receptacle

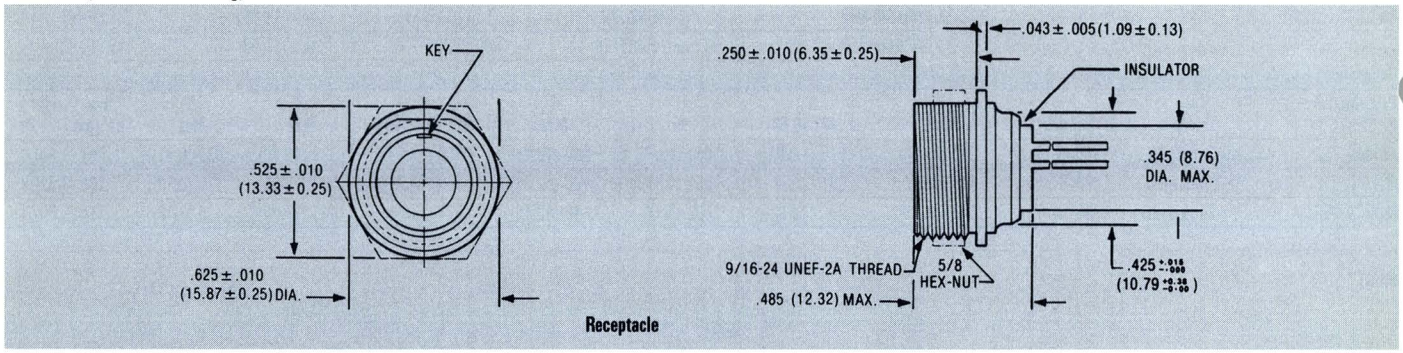
Part Number by Shell Size	A Max.	B Max.	C Max.	D Thread	Avg. Weight oz. (gm.) ±5%
MIKQ7- 7P	.510 (12.95)	.245 (6.22)	.359 (9.12)	3/8-32UNEF-2A	.128 (3.63)
MIKQ7-19P	.575 (14.60)	.345 (8.76)	.470 (11.94)	1/2-28UNEF-2A	.214 (6.08)
MIKQ7-37P	.855 (21.71)	.520 (13.20)	.740 (18.80)	3/4-20UNEF-2A	.300 (8.52)

Shell Dimensions (Continued)

MIKQ9-7P (Back Panel Mounting)

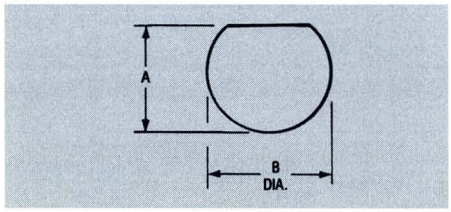


MIKQ9-19P (Back Panel Mounting)



Panel Cutouts

MIKQ



Front Panel Mounting-MIKQ7

Shell Size	A ±.005 (±0.13)	B Dia.
MIKQ7-7P	.364 (9.24)	.390 (9.91)
MIKQ7-19P	.475 (12.06)	.515 (13.08)
MIKQ7-37P	.729 (18.50)	.755 (19.17)

Rear Panel Mounting-MIKQ9

Shell Size	A ±.005 (±0.13)	B Dia.
MIKQ9-7P	.425 (10.76)	.440 (11.18)
MIKQ9-19P	.535 (13.58)	.564 (14.33)
MIKQ9-37P	.729 (18.50)	.755 (19.17)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Printed Circuit Board and Card Mounting Frame Applications. Contacts on .050(1.27) centers.

50-MIL STRIP microminiature connectors are designed for space and weight saving applications in a space conscious industry. The strip configuration provides an extremely dense and reliable interconnection device in a minimum profile package, giving great application flexibility.

These connectors are available in many combinations of length, contact spacing and terminations to give designers maximum latitude in their packaging and interconnection solutions. They have been used successfully on printed circuit boards and card mounting frames. Because of its configuration, the 50-MIL STRIP connector is particularly suited for mounting with high strength epoxy adhesive. In lengths over 2" (50.80) guides, rails or other systems should be used to assure alignment.

50-MIL STRIP connectors use either a flexible insulator of polyester that can be mounted on curved surfaces up to a radius of approximately eight inches, or a more rigid insulator of diallyl phthalate–giving the connector a higher temperature capability. Up to 120 micropin contacts can be held in a single strip on .050(1.27) centers. Guide pins and polarizing devices are available. Special termination with hookup wire is available to meet specific customer requirements. Crimping hookup wire to contacts before they are inserted is often desirable in high density contact arrangements. Color coded wires of any length in sizes #26 thru #30 AWG solid and #26 thru #30 AWG stranded can be harnessed by the factory.

Standard Data

STANDARD MATERIALS AND FINISHES

One-piece insulator:	MTB: glass-filled dially phthalate MTV: glass-filled polyester
Contacts:	Copper alloy, gold plate

MECHANICAL FEATURES

No. of Contacts:	MTV: 120 max. MTB: 81 max.
Wire Size:	Solid: #24 thru #30 AWG Stranded: #26 thru #30 AWG
Contact Termination:	Crimp stationary
Size or Length:	MTV: 6.04" (153.42) max. "yardage" MTB: 4.09" (103.89) max. "yardage"
Coupling:	Friction
Polarization:	Guide posts
Contact Spacing Centers:	.050" (1.27) and .100" (2.54)

Test Data

CONTACT RESISTANCE

Tests give constant resistance readings from 10μa to 3 amps on individually mated contacts. The maximum allowable contact resistance, measured on the wire at the rear of the contact, is 8 milliohms. The average contact resistance is 6 milliohms.

Current Rating–3 amps max.
Max. Voltage Drop–24 millivolts at 3 amps.
Average Voltage Drop–12 millivolts at 3 amps.
Low Level Contact Resistance–Measured voltage drop is .24 x 10^{-8} volts at 10 x 10^{-6} amps.

DIELECTRIC WITHSTANDING VOLTAGE

Min. Flashover voltage (at room temp.) at 60 cps rms 50% R.H.
Sea Level–900 VAC, 70,000 feet.–250 VAC
Solder Pot Contacts
Sea Level–600 VAC, 70,000 feet–150 VAC

VIBRATION AND SHOCK

No discontinuity detected (in excess of 1 micro second) after twelve 15-min. sweeps from 10 to 2000 cps at .060" (1.52mm) double aptitude or 20g, or after twenty shocks of 50g. Connectors were mounted to simulate service condition. Tests conducted to MIL-STD-202, Method 204A, Condition D and Method 213, Condition G.

TEMPERATURE RANGE

MTB: −55°C to +149°C
MTV: −55°C to +125°C

ENGAGING AND SEPARATING FORCE

For an individual contact the maximum engaging force is 8 ounces (226,80 grams). Minimum separating force is 0.5 ounces (14,17 grams) per contact. Test conducted using min./max. bushings.

SALT SPRAY

No damage or unacceptable increase in contact resistance after mated sample subjected to 48 hours of salt spray per MIL-STD-202, Method 101C, 5% solution, Condition B.

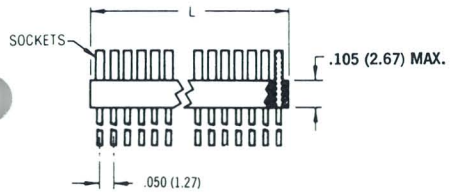
CONTACT AND INSERT RETENTION

Over 6 lbs. (2,72 kg.) min. axial load after 10 cycles.

Dimensional Data

LENGTH

Contact cavities in 50-MIL STRIP connectors are in a single row and located on .050" (1.27) centers or increments thereof. MTV connectors can be supplied in lengths up to 6.04 inches (157.42) with a maximum of 120 contacts on .050" (1.27) centers. MTB connectors can be supplied in lengths up to 4.09 inches (103.89) with a maximum of 81 contacts on .050" (1.27) centers. Length of connectors can be calculated as follows:



L = number of contacts times .050" (1.27mm) plus .020" (0.51mm)

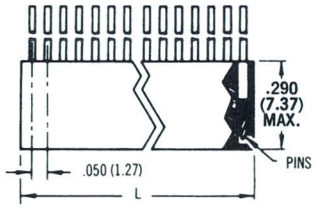
EXAMPLE:

50 contacts (installed in each cavity):

L = (50 x .050") + .020" = 2.52" length of strip

L = (50 x 1.27mm) + 0.51mm = 64.01mm length of strip

NOTES: MT not to be terminated with insulated wire in more than 41 cavities without adding backpotting support on socket side.



WEIGHT

			lbs.	gms.
Contact (with std. 1/2" copper pigtails)		pin	.000088	.040
		socket	.000088	.040
Insulator (per contact cavity)	MTB	pin	.000046	.021
		socket	.000013	.006
	MTV	pin	.000031	.014
		socket	.000009	.004
Guide Post	Stainless Steel		.000079	.035

How to Order

MT* 1- 120 P A L 1- 01

- SERIES AND MATERIALS
- CONTACT SPACING
- NUMBER OF INSULATOR CAVITIES
- CONTACT TYPE
- PCB TERMINATION CODE***
- TERMINATION TYPE
- TERMINATION CODE*
- MODIFICATION**

SERIES AND MATERIALS
- MTB – Glass filled diallyl phthalate (149°C)
- MTV – Glass filled polyester (125°C)

CONTACT SPACING
- 1 – .050 (1.27) centers, MTB1 and MTV1 only
- 2 – .100 (2.54) centers, MTB2 and MTV2 only

NUMBER OF INSULATOR CAVITIES
- MTV1 – 120 Max.
- MTV2 – 60 Max.
- MTB1 – 81 Max.
- MTB2 – 41 Max.

CONTACT TYPE
- P – Pin
- S – Socket

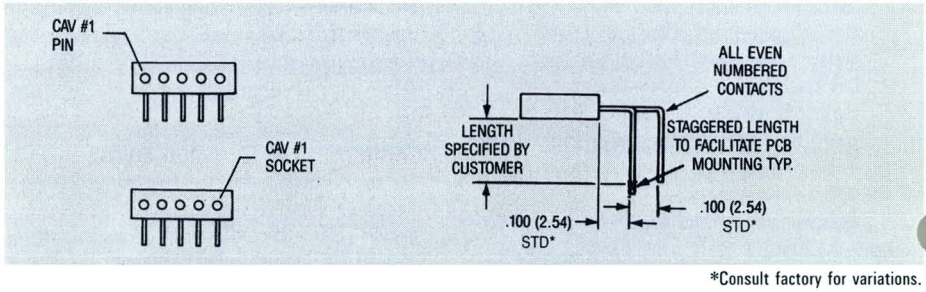
TERMINATION TYPE
- L – Uninsulated solid pigtail
- H – Insulated †
- S – Solder pots
- AL – PCB pigtail termination*** PCB termination code***

TERMINATION CODE*
- (H) 001 – 18″ #26 AWG per MIL-W-16878 Type E Teflon yellow.
- (H) 003 – 18″ #26 AWG per MIL-W-16878 Type E Teflon, color coded to MIL-STD-681, System 1.
- (L) 1 – 1/2″ uninsulated solid #25 AWG gold plated copper.
- (L) 2 – 1″ uninsulated solid #25 AWG gold plated copper.

MODIFICATION**
- 01 – Guide posts each end of socket strip–blank cavities each end of pin strips.

*See Termination Codes for additional length modification codes.
**Consult factory for variations from standard not shown.
***PCB terminations preformed at 90° increments of .050″ (1.27) to bend from rear of insulator on solid uninsulated leads are available. Consult factory for proper ordering nomenclature.
†NOTE: MT Strips are not to be terminated with insulated wire in more than 41 cavities without added backpotting support on socket side.

PCB Terminations



*Consult factory for variations.

Standard Wire Termination Codes

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 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)	H026	H002
18 (457.2)	H001	H003
20 (508.0)	H033	H023
24 (609.6)	H009	H004
30 (762.0)	H010	H005
36 (914.4)	H011	H006
48 (1219.2)	H013	H048
72 (1828.5)	H017	H046
120 (3048.0)	H042	H041

Solid Uninsulated Type – (L)
#25 AWG Gold Plated Copper

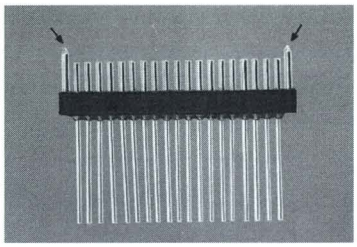
	Length
L61	.125 (3.18)
L56	.150 (3.81)
L57	.190 (4.83)
L39	.250 (6.35)
L58	.375 (9.52)
L1	.500 (12.70)
L14	.750 (19.05)
L2	1.000 (25.40)
L7	1.500 (38.10)
L6	2.000 (50.80)
L16	2.500 (63.50)
L10	3.000 (76.20)

ITT Cannon

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Microminiature Products, • 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

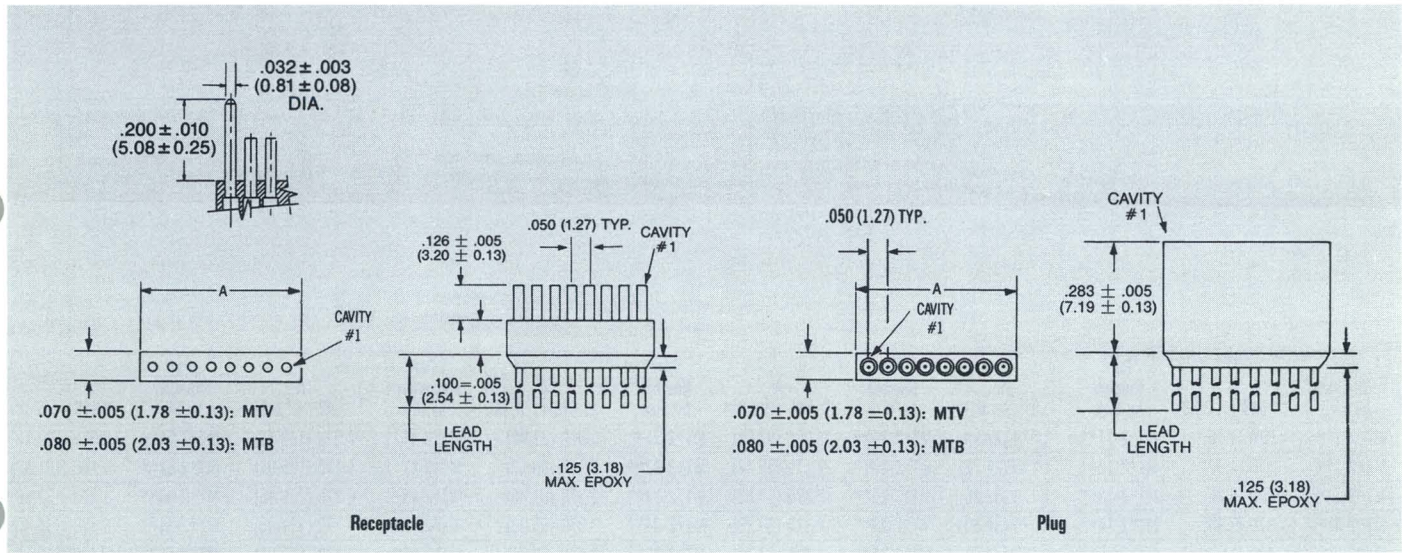
Polarization



Modification code "-01" in the part number refer to guide posts located on both ends of the socket side of the 50-MIL STRIP connector and blank cavities on the pin side to accept the guide posts.

Although in many cases it is not necessary to polarize 50–MIL STRIP connectors, there are several ways to prevent cross plugging. One method is the use of guide posts that can be lcoated in specified cavities to assure that the contacts will align when these post are positioned before mating.

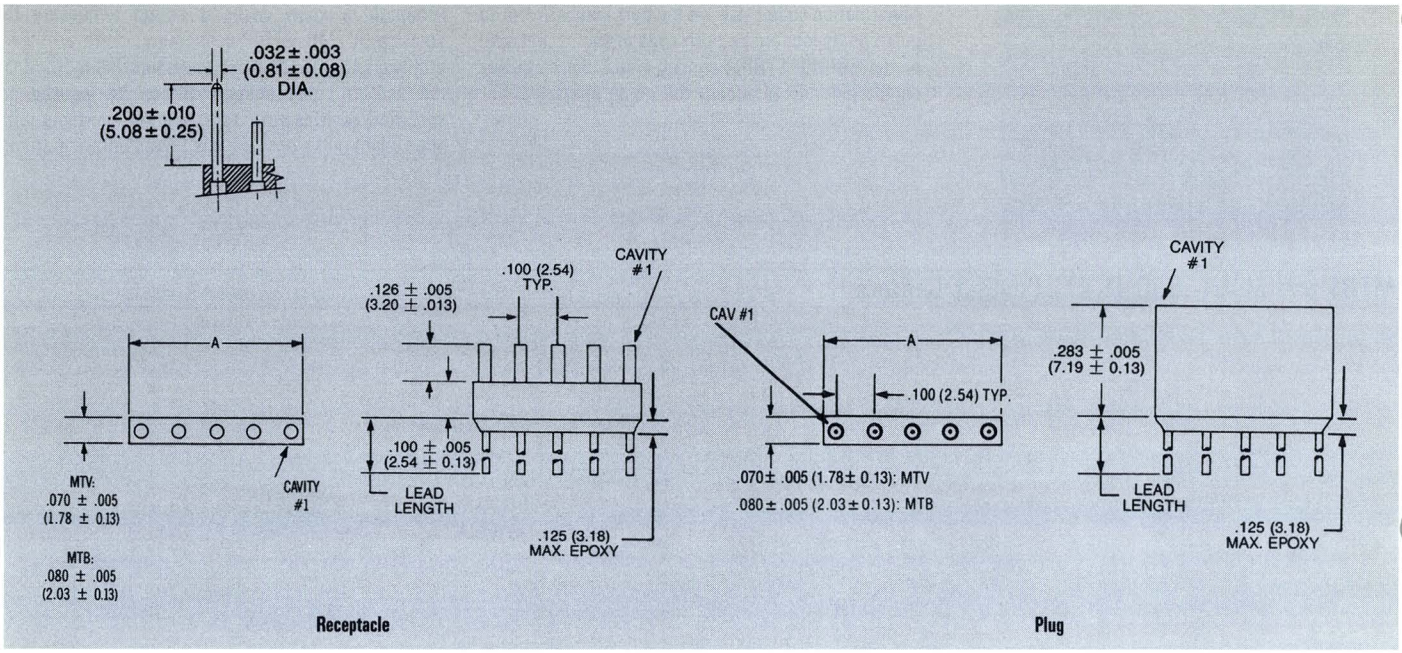
MTB1 and MTV1-.050 (1.27) Contact Centers



Part Number by Size	A ±.015 (±0.38)	Part Number by Size	A ±.015 (±0.38)	Part Number by Size	A ±.015 (±0.38)	Part Number by Size	A ±.015 (±0.38)	Part Number by Size	A ±.015 (±0.38)	Part Number by Size	A ±.015 (±0.38)
MT*1-1**	.070 (1.78)	MT*1-21**	1.070 (27.18)	MT*1-41**	2.070 (52.58)	MT*1-61**	3.070 (77.98)	MT*1-81**	4.070 (103.38)	MT*1-101**	5.070 (128.78)
MT*1-2**	.120 (3.05)	MT*1-22**	1.120 (28.45)	MT*1-42**	2.120 (53.85)	MT*1-62**	3.120 (79.25)	MT*1-82**	4.120 (104.65)	MT*1-102**	5.120 (130.05)
MT*1-3**	.170 (4.32)	MT*1-23**	1.170 (29.72)	MT*1-43**	2.170 (55.12)	MT*1-63**	3.170 (80.52)	MT*1-83**	4.170 (105.92)	MT*1-103**	5.170 (131.32)
MT*1-4**	.220 (5.59)	MT*1-24**	1.220 (30.99)	MT*1-44**	2.220 (56.39)	MT*1-64**	3.220 (81.79)	MT*1-84**	4.220 (107.19)	MT*1-104**	5.220 (132.59)
MT*1-5**	.270 (6.85)	MT*1-25**	1.270 (32.36)	MT*1-45**	2.270 (57.66)	MT*1-65**	3.270 (83.06)	MT*1-85**	4.270 (108.46)	MT*1-105**	5.270 (133.86)
MT*1-6**	.320 (8.13)	MT*1-26**	1.320 (33.53)	MT*1-46**	2.320 (58.93)	MT*1-66**	3.320 (84.33)	MT*1-86**	4.320 (109.73)	MT*1-106**	5.320 (135.13)
MT*1-7**	.370 (9.40)	MT*1-27**	1.370 (34.80)	MT*1-47**	2.370 (60.20)	MT*1-67**	3.370 (85.60)	MT*1-87**	4.370 (111.00)	MT*1-107**	5.370 (136.40)
MT*1-8**	.420 (10.67)	MT*1-28**	1.420 (36.07)	MT*1-48**	2.420 (61.47)	MT*1-68**	3.420 (86.87)	MT*1-88**	4.420 (112.27)	MT*1-108**	5.420 (137.67)
MT*1-9**	.470 (11.94)	MT*1-29**	1.470 (37.34)	MT*1-49**	2.470 (62.74)	MT*1-69**	3.470 (88.14)	MT*1-89**	4.470 (113.54)	MT*1-109**	5.470 (138.94)
MT*1-10**	.520 (13.60)	MT*1-30**	1.520 (38.61)	MT*1-50**	2.520 (64.01)	MT*1-70**	3.520 (89.41)	MT*1-90**	4.520 (114.81)	MT*1-110**	5.520 (140.21)
MT*1-11**	.570 (14.48)	MT*1-31**	1.570 (39.88)	MT*1-51**	2.570 (65.28)	MT*1-71**	3.570 (90.68)	MT*1-91**	4.570 (116.08)	MT*1-111**	5.570 (141.48)
MT*1-12**	.620 (15.75)	MT*1-32**	1.620 (41.15)	MT*1-52**	2.620 (66.55)	MT*1-72**	3.620 (91.95)	MT*1-92**	4.620 (117.35)	MT*1-112**	5.620 (142.75)
MT*1-13**	.670 (17.02)	MT*1-33**	1.670 (42.42)	MT*1-53**	2.670 (67.82)	MT*1-73**	3.670 (93.22)	MT*1-93**	4.670 (118.62)	MT*1-113**	5.670 (144.02)
MT*1-14**	.720 (18.29)	MT*1-34**	1.720 (43.69)	MT*1-54**	2.720 (69.09)	MT*1-74**	3.720 (94.49)	MT*1-94**	4.720 (119.89)	MT*1-114**	5.720 (145.29)
MT*1-15**	.770 (19.56)	MT*1-35**	1.770 (44.96)	MT*1-55**	2.770 (70.36)	MT*1-75**	3.770 (95.76)	MT*1-95**	4.770 (121.16)	MT*1-115**	5.770 (146.56)
MT*1-16**	.820 (20.83)	MT*1-36**	1.820 (46.23)	MT*1-56**	2.820 (71.63)	MT*1-76**	3.820 (97.03)	MT*1-96**	4.820 (122.43)	MT*1-116**	5.820 (147.83)
MT*1-17**	.870 (22.10)	MT*1-37**	1.870 (47.50)	MT*1-57**	2.870 (72.90)	MT*1-77**	3.870 (98.30)	MT*1-97**	4.870 (123.70)	MT*1-117**	5.870 (149.10)
MT*1-18**	.920 (23.37)	MT*1-38**	1.920 (48.77)	MT*1-58**	2.920 (74.17)	MT*1-78**	3.920 (99.57)	MT*1-98**	4.920 (124.97)	MT*1-118**	5.920 (150.37)
MT*1-19**	.970 (24.64)	MT*1-39**	1.970 (50.04)	MT*1-59**	2.970 (75.44)	MT*1-79**	3.970 (100.84)	MT*1-99**	4.970 (126.24)	MT*1-119**	5.970 (151.64)
MT*1-20**	1.020 (25.91)	MT*1-40**	2.020 (51.31)	MT*1-60**	3.020 (76.71)	MT*1-80**	4.020 (102.11)	MT*1-100**	5.020 (127.50)	MT*1-120**	6.020 (152.91)

NOTE: MTB1 available in up to 81 contacts.

MTB2 and MTV2-.100 (2.54) Contact Centers



Part Number by Size	A ±.015 (±0.38)	Part Number by Size	A ±.015 (±0.38)	Part Number by Size	A ±.015 (±0.38)	Part Number by Size	A ±.015 (±0.38)	Part Number by Size	A ±.015 (±0.38)	Part Number by Size	A ±.015 (±0.38)
MT*2-1**	.070 (1.78)	MT*2-11**	1.070 (27.18)	MT*2-21**	2.070 (52.58)	MT*2-31**	3.070 (77.98)	MT*2-41**	4.070 (103.38)	MT*2-51**	5.070 (128.78)
MT*2-2**	.170 (4.32)	MT*2-12**	1.170 (29.72)	MT*2-22**	2.170 (55.12)	MT*2-32**	3.170 (80.52)	MT*2-42**	4.170 (105.92)	MT*2-52**	5.170 (131.32)
MT*2-3**	.270 (6.86)	MT*2-13**	1.270 (32.26)	MT*2-23**	2.270 (57.66)	MT*2-33**	3.270 (83.06)	MT*2-43**	4.270 (108.46)	MT*2-53**	5.270 (133.86)
MT*2-4**	.370 (9.40)	MT*2-14**	1.370 (34.80)	MT*2-24**	2.370 (60.20)	MT*2-34**	3.370 (85.60)	MT*2-44**	4.370 (111.00)	MT*2-54**	5.370 (136.40)
MT*2-5**	.470 (11.94)	MT*2-15**	1.470 (37.34)	MT*2-25**	2.470 (62.74)	MT*2-35**	3.470 (88.14)	MT*2-45**	4.470 (113.53)	MT*2-55**	5.470 (138.94)
MT*2-6**	.570 (14.48)	MT*2-16**	1.570 (39.88)	MT*2-26**	2.570 (65.28)	MT*2-36**	3.570 (90.68)	MT*2-46**	4.570 (116.08)	MT*2-56**	5.570 (141.48)
MT*2-7**	.670 (17.02)	MT*2-17**	1.670 (42.42)	MT*2-27**	2.670 (67.82)	MT*2-37**	3.670 (93.22)	MT*2-47**	4.670 (118.62)	MT*2-57**	5.670 (144.02)
MT*2-8**	.770 (19.56)	MT*2-18**	1.770 (44.96)	MT*2-28**	2.770 (70.36)	MT*2-38**	3.770 (95.76)	MT*2-48**	4.770 (121.16)	MT*2-58**	5.770 (146.56)
MT*2-9**	.870 (22.10)	MT*2-19**	1.870 (47.50)	MT*2-29**	2.870 (72.90)	MT*2-39**	3.870 (98.30)	MT*2-49**	4.870 (123.70)	MT*2-59**	5.870 (149.10)
MT*2-10**	.970 (24.64)	MT*2-20**	1.970 (50.04)	MT*2-30**	2.970 (75.44)	MT*2-40**	3.970 (100.84)	MT*2-50**	4.970 (126.24)	MT*2-60**	5.970 (151.64)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Cannon Centi connectors are especially suitable for commercial applications such as computers, instrumentation, model airplane R/C equipment, calculators, communications and audio equipment. They are available in D subminiature size metal shell rectangular, plastic shell rectangular and ship configurations.

All Centi connectors use the same reliable twist pin contact design as our MICRO connectors, but in a slightly larger 5 amp version terminated on .075 (1.91) and .100 (2.54) centers. This larger contact is crimp removable, so Centi Series connectors are available in connector kits and as bulk parts for customer assembly. Standard crimp and assembly tools are available.

As in our MICRO Series, the twist pin contact is recessed within the insulator housing while the rugged cylindrical socket is exposed. When the connector halves are mated, the chamfered sockets guide the pins into positive alignment.

The Centipin™ contact, now under compression, forms a multi-point contact with the Centisocket™ to provide a high degree of reliability.

Standard Data

- Contact rating-5 amps max.
- Minimum contact centers-0.075 (1.91).
- Wire sizes-#22 thru #26 AWG, stranded or solid.
- Contact termination-multiple indent crimp.
- Contact retention-crimp snap-in/removable.
- Contact materials and finish-Copper alloy, gold-plated per MIL-G-45204, Type II, Class 0.
- Mating/unmating force-10 oz. per contact, max.

Performance Data

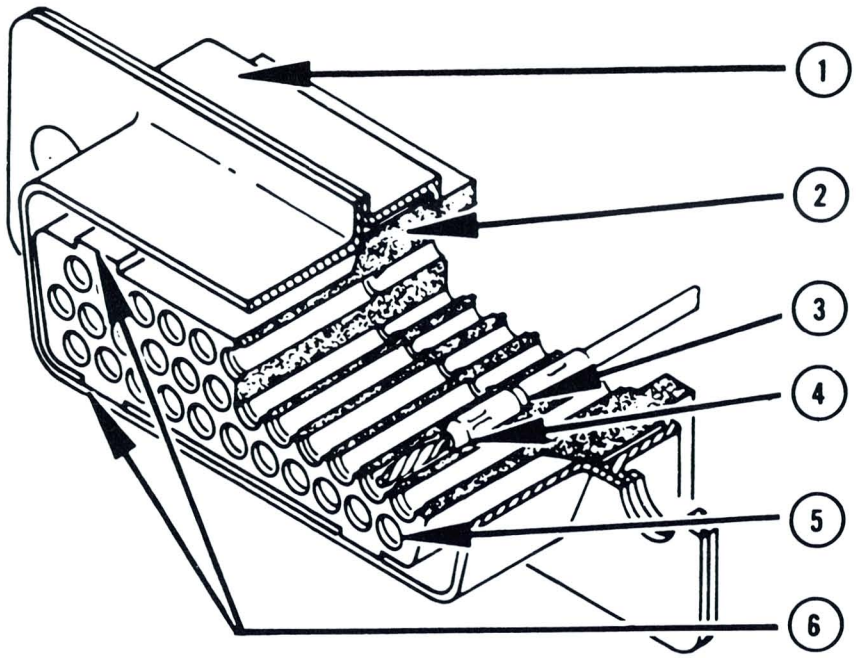
The table below summarizes the results of key tests performed in accordance with MIL-STD-202, where specified. Data is applicable to standard connectors with standard terminations. Variations may affect this data, so please consult the factory for further information on your requirements.

Test	Method	Criteria of Acceptance
Dielectric Withstanding Voltage	Method 301: 1,000 VAC at sea level 300 VAC at 70,000' altitude	 No breakdown No breakdown
Insulation Resistance	Method 302, Condition A	5,000 megohms minimum
Thermal Shock	Method 107, Condition A: +55°C to +85°C	No physical damage
Physical Shock	Method 213, Condition I: 100 G's, 3 axes, 6 millisecond duration sawtooth pulse	No physical damage No loss of continuity $>1\mu$sec
Vibration	Method 204, Condition B: 15 G's, 10-2,000 Hz, 12 hours	No physical damage No loss of continuity $>1\mu$sec
Durability	500 cycles of mating and unmating, 500 CPH max.	No mechanical or electrical defects
Moisture Resistance	Method 106, Omit 7b	Insulation resistance >100 megohms
Salt Spray	Method 101, Condition B: 48 hours	Shall be capable of mating and unmating, and meet contact resistance requirements
Contact Resistance	Method 307: At 5 amps	 9 milliohms maximum
Contact Retention	—	4 lb. minimum axial load

The Double Density D is a rectangular connector in the popular D Subminiature shell configuration featuring double the contact density in the same insert area. The Double Density D connector can thus accommodate up to 100 contacts instead of 50.

This double contact density is achieved by using field-proven, highly reliable centipin/centisocket contacts on .075 (1.91) centers, in the positive contact alignment design. In this design contact positions are reversed; the flexible centipin contacts are recessed in the insulator and the more rugged centisocket contacts are exposed. This reversal of positions, and the chamfered-entry of the sockets, assures positive mating even under severe misalignment conditions. The contacts are retained in the monobloc insulator by a resilient internal shoulder that snaps into a locking groove in the contact. The chamfered front of the contact will not damage the internal shoulder in the insulator. Contacts are crimp removable type.

The Double Density D connector is available in the five popular shell and insert sizes accommodating up to 100 contacts. These connectors mate exclusively with other Double Density D connectors. A wide range of accessories can be used, including junction shells, potting cups, switching shells, guide pin plates, and dust caps.



1. **STANDARD D HARDWARE—** including full range of D Subminiature accessories
2. **ONE PIECE TYPE INSULATOR—** glass-filled nylon material
3. **CONTACT RETENTION—** thermoplastic internal shoulder snaps into a locking groove in the contact.

   Retention Force: 10 lbs. min. initially 4 lbs. min. after 10 cycles.
4. **TWIST PIN CONTACTS—** seven outer wiping surfaces assure electrical continuity even under severe shock and vibration
5. **POSITIVE CONTACT ALIGNMENT—** flexible pin is recessed in insulator cavity and rugged socket is exposed
6. **GUIDE-IN KEYS AND KEYWAYS—** assure alignment during mating and prevent scooping

Double Density D/CENTI-LOC™ Connectors Assembly Instructions

The Double Density D and CENTI-LOC Connectors are highly reliable and simple connectors to use. There are a few helpful suggestions that will assure complete satisfaction when followed:

1. The instructions on page 154 should be followed.
2. The proper crimp tool and locator (if required) must be used. These tools have been designed for use with this product. Substitutions of crimping equipment may result in connector failure at the assembly operation.
3. After crimping a contact to a lead it is of vital importance that the proper tool be used to assure seating the contact in the insulator in the proper position. Any substitution of insertion tools may result in over or under insertion of the contact which will damage the retention system of the insulator.
4. The female (socket) side of the connector has been designed with a controlled float to allow for ease of mating. To avoid reducing this float or causing a splaying of the contacts, any unnecessary strain by clamping too close to the rear of the connector should be avoided.

Use of recommended tooling together with proper assembly techniques will pay dividends in reliability and reduced costs.

Standard Data

WEIGHT

Part Number by Shell Size	Weight (in gr.) Less With Contacts		Weight (in oz.) Less With Contacts	
2DE19P	4.05	5.02	.142	.177
2DE19S	3.75	5.17	.133	.182
2DA31P	5.20	6.78	.183	.239
2DA31S	4.90	7.22	.173	.255
2DB52P	8.75	11.40	.308	.402
2DB52S	7.15	11.05	.252	.390
2DC79P	11.70	15.73	.413	.555
2DC79S	9.70	15.62	.342	.551
2DD100P	12.85	17.95	.453	.633
2DD100S	10.95	18.45	.386	.651

MATERIALS AND FINISHES

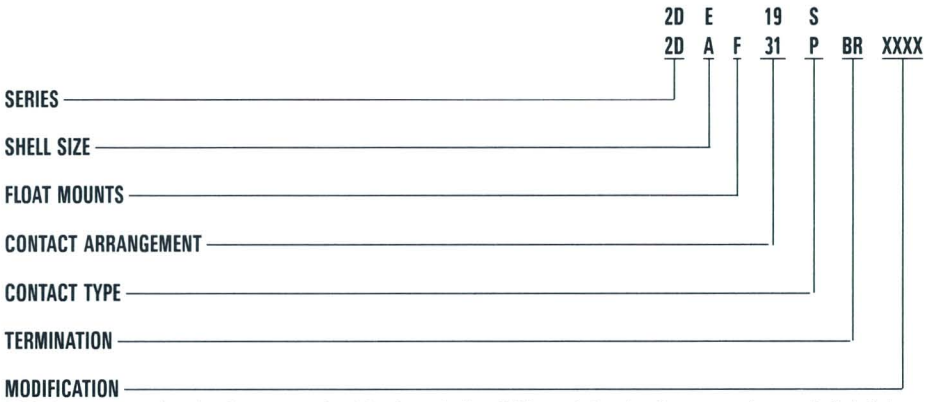
* Shell	—	Steel, cadmium plated with yellow chromate supplementary coating
Mounting Hardware	—	Stainless steel and float mounts
Insulator	—	Glass-filled nylon
Contacts	—	Copper alloy, gold plate
Alternate finish, Modification Code	—	A106 Gold over steel A156 Gold over brass A197 Tin/Lead over steel

*Brass non-magnetic also available

MECHANICAL FEATURES

Sizes	—	Five shell sizes: E, A, B, C, and D
Coupling	—	Friction or jackscrew
Polarization	—	Keystone-shaped shells
Contact Spacing	—	.075 (1.91)
Contact Termination	—	Crimp snap-in

How to Order



NOTE: Connectors may be ordered less contacts by adding the mod callout "F0" at end of number. Contacts are then supplied in bulk form. For type of contacts and installation/assembly tools refer to page 153.

SERIES
2D – Double Density D – ITT Cannon prefix

SHELL SIZE
E, A, B, C and D

FLOAT MOUNTS
Omit if not required

CONTACT ARRANGEMENT
19, 31, 52, 79 and 100

CONTACT TYPE*
P – Pin
S – Socket

TERMINATION
BR – 90° PCB mounting
(For BR Series use "P" to designate jackpost)

MODIFICATION
F171 – Jackpost assembly
F172 – Standard jackscrew
F173 – Low profile jackscrew
For other modifications consult factory

*Accommodates AWG #26 thru #22

Contact Arrangements

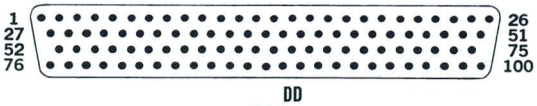
All views are pin front face. Use reverse order for socket side.

DE
19 Contacts

DA
31 Contacts

DB
52 Contacts

DC
79 Contacts

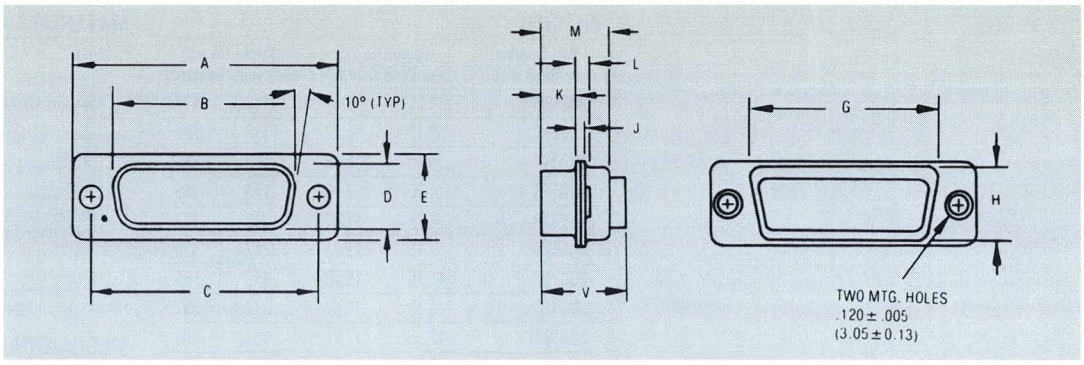


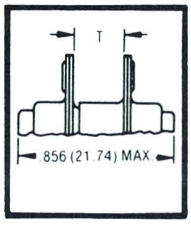
DD
100 Contacts

Cavity identification numbers are shown for reference only and do not appear on insulator front face. However they do appear on rear of insulator.

Microminiature Products, • 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Standard Shell

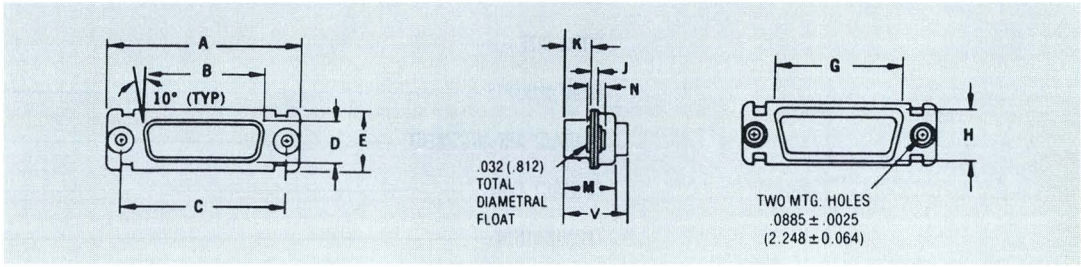




Part Number by Shell Size	T +.020 (+0.51) −.000 (−0.00)
2DE19P	.250 (6.35)
2DE19S	.250 (6.35)
2DA31P	.250 (6.35)
2DA31S	.250 (6.35)
2DB52P	.236 (5.99)

Part Number by Shell Size	T +.020 (+0.51) −.000 (−0.00)
2DB52S	.236 (5.99)
2DC79P	.236 (5.99)
2DC79S	.236 (5.99)
2DD100P	.236 (5.99)
2DD100S	.236 (5.99)

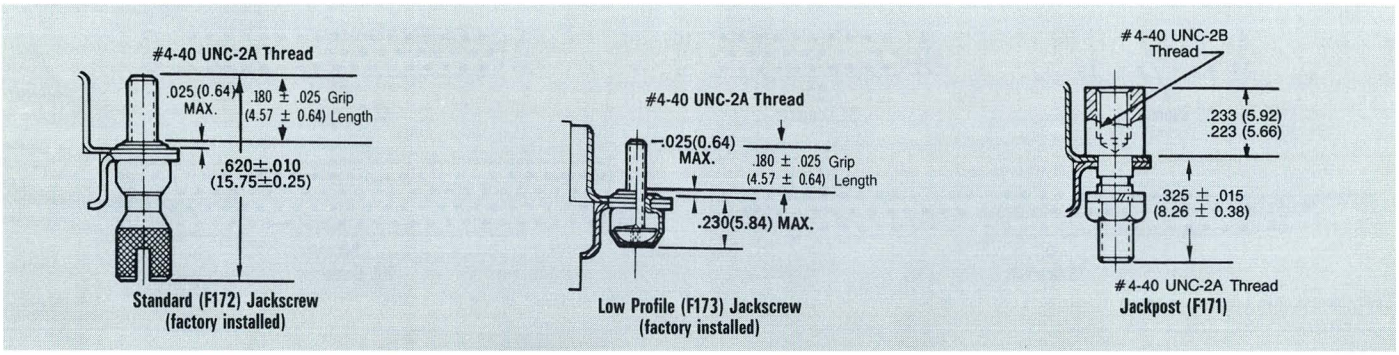
Float Mount



Part Number by Shell Size	A ±.015 (0.38)	B ±.010 (0.25)	C ±.010 (0.25)	D ±.010 (0.25)	E ±.015 (0.38)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (.025)	K ±.010 (0.25)	L ±.010 (0.25)	M ±.010 (0.25)	N ±.010 (0.25)	V Max.
2DE19P	1.213 (30.81)	.697 (17.70)	.984 (24.99)	.360 (9.14)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (.762)	.236 (5.99)	.045 (1.14)	.422 (10.72)	.120 (3.05)	.555 (14.10)
2DE19S	1.213 (30.81)	.640 (16.26)	.984 (24.99)	.308 (7.82)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (.762)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.120 (3.05)	.555 (14.10)
2DA31P	1.541 (39.14)	1.025 (26.03)	1.312 (33.32)	.360 (9.14)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (.762)	.236 (5.99)	.045 (1.14)	.422 (10.72)	.120 (3.05)	.555 (14.10)
2DA31S	1.541 (39.14)	.968 (24.58)	1.312 (33.32)	.308 (7.82)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (.762)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.120 (3.05)	.555 (14.10)
2DB52P	2.088 (53.03)	1.583 (40.21)	1.852 (47.04)	.378 (9.60)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.039 (.990)	.231 (5.87)	.060 (1.52)	.426 (10.82)	.129 (3.28)	.555 (14.10)
2DB52S	2.088 (53.03)	1.508 (38.30)	1.852 (47.04)	.308 (7.82)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.030 (.762)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.120 (3.05)	.555 (14.10)
2DC79P	2.729 (69.31)	2.231 (56.67)	2.500 (63.50)	.378 (9.60)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.039 (.990)	.231 (5.87)	.060 (1.52)	.426 (10.82)	.129 (3.28)	.555 (14.10)
2DC79S	2.729 (69.31)	2.156 (54.76)	2.500 (63.50)	.308 (7.82)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (.762)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.120 (3.05)	.555 (14.10)
2DD100P	2.635 (66.92)	2.127 (54.02)	2.406 (61.11)	.484 (12.29)	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.039 (.990)	.231 (5.87)	.060 (1.52)	.426 (10.82)	.129 (3.28)	.555 (14.10)
2DD100S	2.635 (66.92)	2.062 (52.37)	2.406 (61.11)	.420 (10.67)	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.030 (.762)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.120 (3.05)	.555 (14.10)

For shell with float mounts, add letter F after shell size, e.g., 2DEF19P.

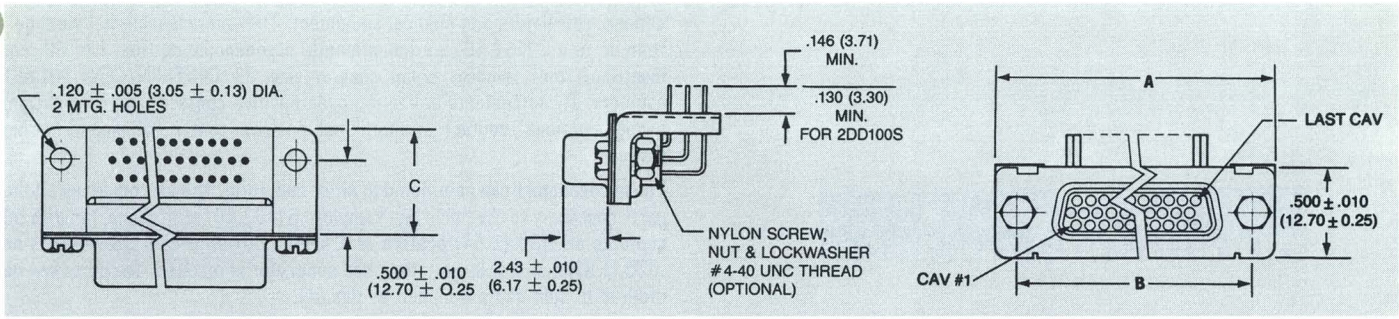
Jackscrew/Jackpost Assembly



ITT Cannon
Microminiature Products, • 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

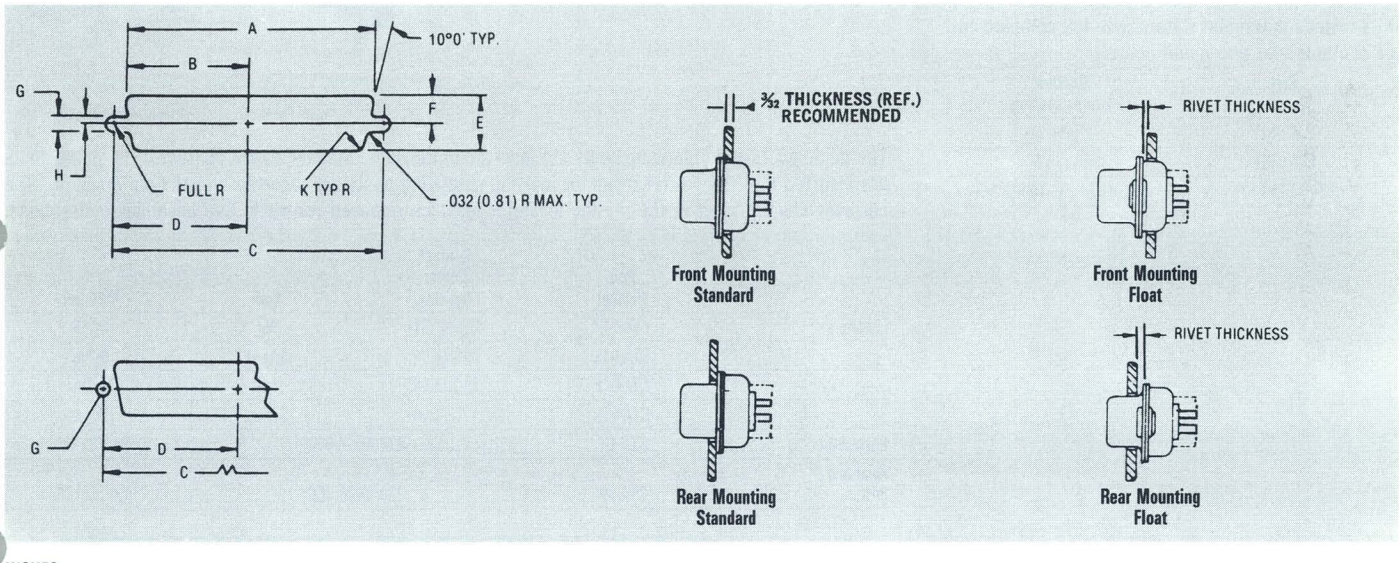
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

90° PCB Mounting



Part Number by Shell Size	A ±.015 (±0.38)	B ±.010 (±0.25)	C Max.
2DE19S	1.213 (30.81)	.984 (24.99)	.690 (17.53)
2DA31S	1.540 (39.12)	1.312 (33.32)	.690 (17.53)
2DB52S	2.090 (53.09)	1.852 (47.04)	.690 (17.53)
2DC79S	2.729 (69.32)	2.500 (63.50)	.690 (17.53)
2DD100S	2.635 (66.93)	2.406 (61.11)	.790 (20.07)

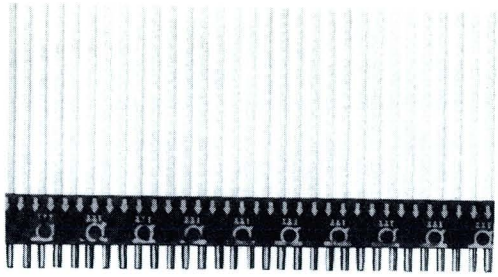
Panel Cutouts



INCHES

Conn.	Mtg. Method	A ±.005 (±0.13)	B ±.005 (±0.13)	C ±.005 (±0.13)	D ±.005 (±0.13)	E ±.005 (±0.13)	F ±.005 (±0.13)	G ±.002 (±0.05)	H ±.002 (±0.05)	K ±.005 (±0.13)
2DE	Front	.874 (22.20)	.437 (11.10)	.984 (24.99)	.492 (12.50)	.513 (13.03)	.257 (6.53)	.120 (3.05)	.060 (1.52)	.083 (2.11)
	Rear	.806 (20.47)	.403 (10.24)	.984 (24.99)	.492 (12.50)	.449 (11.40)	.225 (5.71)	.120 (3.05)	.060 (1.52)	.132 (3.35)
2DA	Front	1.202 (30.53)	.601 (15.26)	1.312 (33.32)	.656 (16.66)	.513 (13.03)	.257 (6.53)	.120 (3.05)	.060 (1.52)	.083 (2.11)
	Rear	1.134 (28.80)	.567 (14.40)	1.312 (33.32)	.656 (16.66)	.449 (11.40)	.225 (5.71)	.120 (3.05)	.060 (1.52)	.132 (3.35)
2DB	Front	1.743 (44.27)	.872 (22.15)	1.852 (47.04)	.926 (23.52)	.513 (13.03)	.257 (6.53)	.120 (3.05)	.060 (1.52)	.083 (2.11)
	Rear	1.674 (42.52)	.837 (21.26)	1.852 (47.04)	.926 (23.52)	.449 (11.40)	.225 (5.71)	.120 (3.05)	.060 (1.52)	.132 (3.35)
2DC	Front	2.391 (60.73)	1.196 (30.38)	2.500 (63.50)	1.250 (31.75)	.513 (13.03)	.257 (6.53)	.120 (3.05)	.060 (1.52)	.083 (2.11)
	Rear	2.326 (59.08)	1.163 (29.54)	2.500 (63.50)	1.250 (31.75)	.449 (11.40)	.225 (5.71)	.120 (3.05)	.060 (1.52)	.132 (3.35)
2DD	Front	2.297 (58.34)	1.149 (29.18)	2.406 (61.11)	1.203 (30.56)	.623 (15.82)	.312 (7.92)	.120 (3.05)	.060 (1.52)	.083 (2.11)
	Rear	2.218 (56.34)	1.109 (28.17)	2.406 (61.11)	1.203 (30.56)	.555 (14.10)	.278 (7.06)	.120 (3.05)	.060 (1.52)	.132 (3.35)

For contact part numbers, termination tooling and assembly see pages 153 and 154.



CENTILOC® connectors are low-cost nylon strip connectors designed for commercial applications such as computers, instrumentation, communications, calculators and medical equipment. They are available in "yardage" from up to a 6 (152.40) maximum length, accommodating from 1 to 60 rear insertion, front release, crimp snap-in size 22 CENTIPIN/CENTISOCKET contacts. These contacts utilize a proven positive contact alignment design, giving additional contact strength and positive contact alignment during mating.

These connectors can be ordered in kit or bulk form. The kit comprises all the parts necessary to assemble one complete 6 (152.40) strip connector with 60 contacts on .100 (2.54) centers or a 4 (101.60) strip with 53 contacts on .075 (1.91) centers. If more than one connector is required, the parts can be ordered in bulk and assembled as desired.

Components and Accessories

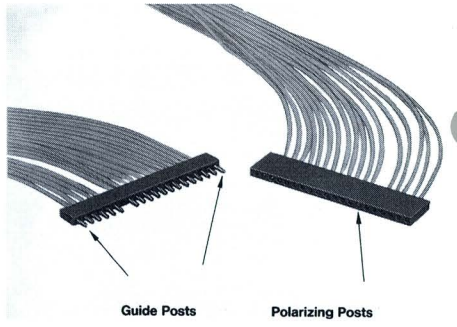
The CENTI-LOC strip connector can be ordered in kit or bulk form. The kit includes mating insulators with a full compliment of contacts and two guide posts. If more than one connector is required, the parts can be ordered in bulk and assembled as desired.

Kit Form

Kits include mating insulators with full complement of contacts and two guide posts.

Part Number	Contact Center spacing
CTA3-KIT	.075 (1.91)
CTA4-KIT	.100 (25.40)
CTA3-CTA4-KIT	.075 (1.91) & .100 (2.54)

Insulator

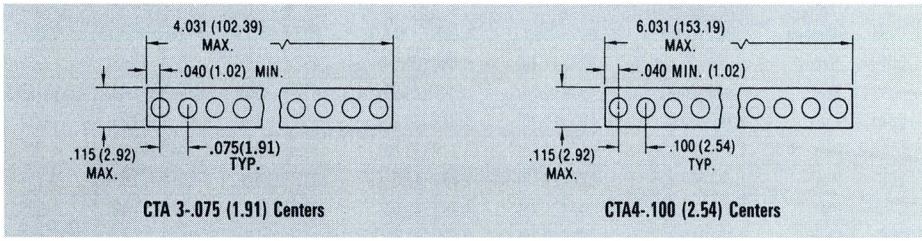


Guide Posts Polarizing Posts

The guide posts and polarizing posts are inserted in the same manner as the contacts. The guide posts are inserted into the socket insulator and the polarizing posts are inserted into the pin insulator. The corresponding contact in the mating insulator must be removed for each. See assembly instructions.

	Part Number	Contact Center Spacing	Type	Material
Insulators	CTA3-IP	.075 (1.91)	Pin	Nylon
	CTA3-IS	.075 (1.91)	Socket	Nylon
	CTA4-IP	.100 (2.54)	Pin	Nylon
	CTA4-IS	.100 (2.54)	Socket	Nylon
Guide Post	CTA-GP	230-4507-000		Pas. St. Stl.
Polarizing Post	CTA-PP	230-9506-000		Pas. St. Stl.

Dimensional Data



Weights

Part Number	No. of Contacts	Contact Type	Avg. Weight oz.	±5% gm.
CTA3	53	pin	.185	5.25
		socket	.203	5.75
CTA4	60	pin	.230	6.30
		socket	.241	6.90

Contacts

The contacts are retained in the insulator by means of a resilient internal shoulder that allows contact to snap into a locking groove.

The front of the contact is chamfered so that the internal shoulder in the insulator is not damaged as the contact is pushed thru.

P.C. Tail Contacts

Subtract .064 (1.63) ± .010 (.25) from pigtail length when used in 2D pin insulator for potting well of connector assembly.

Subtract .081 (2.08) ± .010 (.25) from pigtail length when used in 2D socket insulator for potting well of connector assembly.

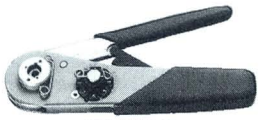
Contact Part Number

Part Number Pin	Part Number Socket	Type	Pin	Socket
031-9540-000	030-9542-001	Standard		
031-9540-004	030-9542-002	50μ in. plating		
031-9540-005	030-9542-004	With inspection hole; 50μ in. plating		
N/A	030-9542-011	P.C. tail .026 dia. x .083 lg. Soc.		
*031-9540-013	030-9542-012	P.C. tail .020 dia. x .183 lg. Soc. .183 lg. Pin		
031-9540-016	030-9542-014	Long crimp barrel**		
031-9540-022	030-9556-000	Small crimp bore For AWG #32 & 30		
031-9540-007	030-9542-022	Small crimp bore For AWG #28 & 30		
*031-9540-015	030-9542-015	P.C. tail .020 dia. x .235 lg. Soc. .255 lg. Pin		
*031-9540-019	030-9542-016	P.C. tail .018 dia. x .447 lg. Soc. .445 lg. Pin 50μ in. plating		

NOTE: Plating, except as noted, is 30 micro-inch gold.

*Consult factory for any tail size or plating requirements.
**Special crimp locator required. Part number: 995-0001-714.

2D and Centi-Loc Crimp and Assembly Tools



M22520/2-01

	Tool	Locators	
		Pin	Socket
Description	M22520/2-01	L3198-CLP	L3198-CLS
Part Number	995-0001-584	995-0001-338	995-0001-353

CIET-CTA Handle

Insertion Tips

Insertion Tools For Standard Contact

AWG Size*	Kit Part Number (handle and tip)	Tip Part Number**	Handle Part Number**
22	CIT-PS-CTA-22	323-9510-001	204-9500-000
24	CIT-PS-CTA-24	323-9510-002	204-9500-000
26	CIT-PS-CTA-26	323-9510-003	204-9500-000
28	CIT-PS-CTA-28	323-9510-004	204-9500-000
30/P.C. Tail	CIT-PS-CTA-30	323-9510-005	204-9500-000

*Based on wire size per MIL-W-16878 with Type E insulation, use smaller tool for wire with thin insulation, larger tool for wire having thick insulation.
**The 3 insertion tips (part numbers 323-9510-001 thru -003), plus handle, and the pin and socket extraction tips may be ordered as a SINGLE KIT by specifying the part number CIET-CTA-2. [Part number: 070-143-0002).

CTA-AB Assembly Holding Block Part Number: 328-9508-000

Insertion Tools For Standard Contact

AWG Size*	Tip Part Number*** Pin Contact	Tip Part Number*** Socket Contact	Handle Part Number***
22	323-9510-008	323-9510-012	204-9500-000
24	323-9510-009	323-9510-013	204-9500-000
26	323-9510-010	323-9510-014	204-9500-000

***To order the SINGLE KIT for the long crimp barrel contact (tip part numbers 323-9510-008 thru -014, handle and pin and socket extraction tips) please specify CIET-CTA-3.

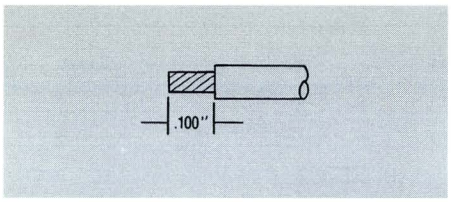
Socket Extraction Tip

Pin Extraction Tip

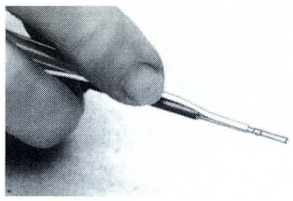
Extraction Tools

Contact	Part Number (handle and tip)	Tip Part Number	Handle Part Number
CENTIPIN	CET-P-CTA-2	323-9502-000	204-9500-000
CENTISOCKET	CET-S-CTA-1	323-9501-000	204-9500-000

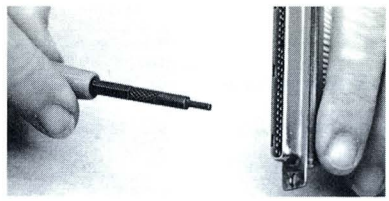
2D Assembly Instructions



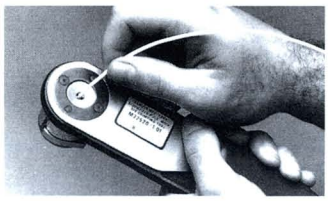
WIRE STRIPPING
Cut the wires to length required and strip .100" of insulation from the end to be crimped. Check for cut or broken wires and frayed insulation.



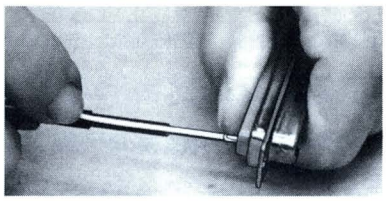
CONTACT INSERTION
1. Place the proper insertion tip in the insertion/-extraction handle and put the tip over the wire as shown. The tool tip will butt up against the crimp pot. Connector must be firmly supported during both insertion and extraction operations.



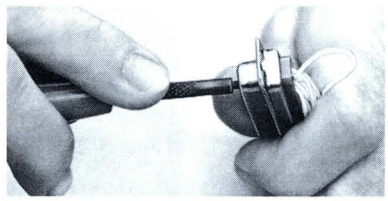
CONTACT EXTRACTION
1. For contact extraction, remove the insertion tool tip and replace it with the proper extraction tool tip. (The socket tip will fit into the socket, and the pin tip will slide over the pin bundle). Insert thetool tip into the contact cavity: (the pin tip will butt up against the shoulder of the pin contact, and the socket tip will bottom in the socket contact.)



CONTACT CRIMPING
Using the proper crimp tool and locator, insert the contact into the locator. Insert the stripped end of the wire into the contact crimp pot, and crimp the contact to the wire. Squeeze the handles firmly to insure a proper crimp (tool will not release if crimping is incomplete). NOTE: Contact stop must be changed in tool locator when crimping pin and socket contacts.

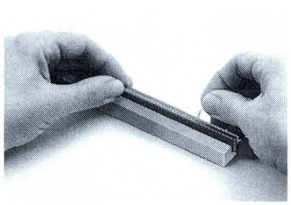


2. Using a firm, steady pressure, push the contact into the cavity until the resilient internal shoulder in the insulator snaps into the locking groove in the contact. The shoulder of the tool tip bottoms against the rear of the insulator, preventing over-insertion. Repeat for balance of contacts.

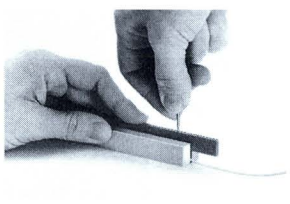


2. Apply a firm, steady pressure until the contact is released from the internal shoulder in the insulator. The shoulder of the tool tip bottom against the insulator face to prevent damage to the internal shoulder. Remove the tool tip and pull the contact from the rear of the connector. Repeat for the balance of contacts to be removed.

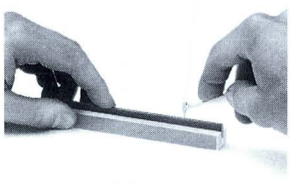
CTA Assembly Instructions



INSERTION
1. Place the connector into the slot in the assembly block with the arrows on the insulator pointing downward. The connector will bottom against the internal shoulder in the groove in the assembly block. Start contact insertion by placing the crimped contact in the cavity by hand.

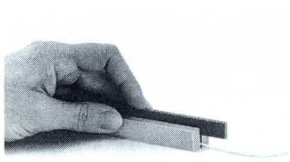


2. Position the insertion tool tip on the rear of contact as shown. The insulation must be pulled back from the crimp pot approximately 1/32" to allow the tool tip to butt against the contact crimp pot.

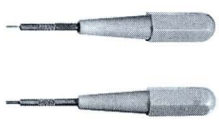


3. With firm steady pressure, push the contact into the cavity until the resilient internal shoulder snaps into the locking groove in the contact. To prevent over insertion, the tool tip bottoms against the rear of the insulator.

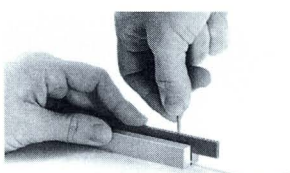
4. The guide post and polarizing posts are inserted in the same manner as the contacts. The guide posts are inserted into the socket insulator, and the polarizing posts are inserted into the pin insulator. The corresponding contact in the mating insulator must be removed for each.



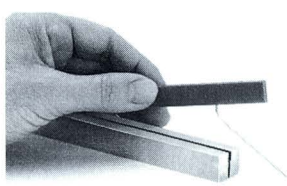
EXTRACTION
1. To extract the contacts,place the connector face up in the assembly block so that the contact to be extracted is in the end of the block that has a fully slotted opening.



2. The pin extraction tool tip is tubular, slides over the pin bundle and butts against the front shoulder of the pin. The socket extraction tool is a solid rod that fits into the socket contact, the external shoulder butts against the contact socket shoulder.



3. Insert the extraction tool into the cavity and apply firm pressure until the contact is pushed thru the rear of the connector.



4. Lift the insulator from the groove and pull the contact out. Repeat for balance of contacts to be removed.

- Low insertion force contacts.
- Both environmental and non-environmental versions.
- Polarizing posts that are removable from the mating face.
- Field replaceable inserts for size 22 and power contacts.
- Up to 800 size 22 contacts in one connector.
- Crimp, coax, power, printed circuit and wire wrappable post style contacts.
- Uses standard DPX crimp, insertion/extraction tooling.
- Waveguide connections available.

BKAD/E

Rear Release/Rear Removable
Size 12, 16, 20, 22 Crimp Contacts

BKAD/E connectors represent a major milestone in presenting a new rack and panel connector for support of the air transportation market.
Several important design concerns have been addressed and solved in this new series. High mating forces of pluggable modules in a rack have been reduced by approximately two-thirds.

The low insertion force contacts are also interchangeable with the contacts used in the DPX series and permit retrofit of existing equipment.

BKAF

Front Release/Rear Removable
Size 22 Solder Tail and Wrap Post Contacts

This new connector is totally intermateable and intermountable with ARINC 600 connectors now in the field.
The BKAF permits the user to easily replace a contact in case of problems, rather than disassemble the entire connector—it is available with size 22 contacts in wrap post or solder-tail versions. The system maintains the advantages of low insertion force technology incorporated in all ARINC 600 connectors.

Pos-aline® Connector Construction Feature

In the ARINC 600 connector series, size 22 contacts are the only size that utilize this design feature. The hooded socket extends from its insulator while the pin contacts are shrouded by its front insulator.
All other contacts used in this series employ standard contact design.

The result is that the complement of contacts for the plug connectors will consist of pin contacts for size 22 and socket contacts for all others. The receptacle contacts will be just the reverse, socket contacts for size 22 and pin contacts for the balance.

Standard Data

		BKAD	BKAE	BKAF	Specifications
Shell	Material	Aluminum alloy	Aluminum alloy	Aluminum Alloy	QQ-A-591/A380
	Finish	Clear chromate over cadmium	Clear chromate over cadmium	Clear chromate over cadmium	QQ-P-416
Insulator	Material	Thermoplastic	Thermoplastic	Thermoset	N/A
Contacts	Material	Copper alloy	Copper alloy	Copper alloy	QQ-C-533
	Finish	Gold	Gold	Gold	MIL-G-45204
	Termination	Crimp	Crimp	P.C./Wrap Post	N/A
Grommets/Seals	Material	N/A	Silicone-based Elastomer	N/A	N/A
O-Ring	Material	N/A	Silicone-based Elastomer	N/A	N/A
Waveguide	Material	Aluminum alloy	Aluminum alloy	Aluminum alloy	N/A

How to Order

CONNECTOR SERIES
BKA (Per ARINC 600)

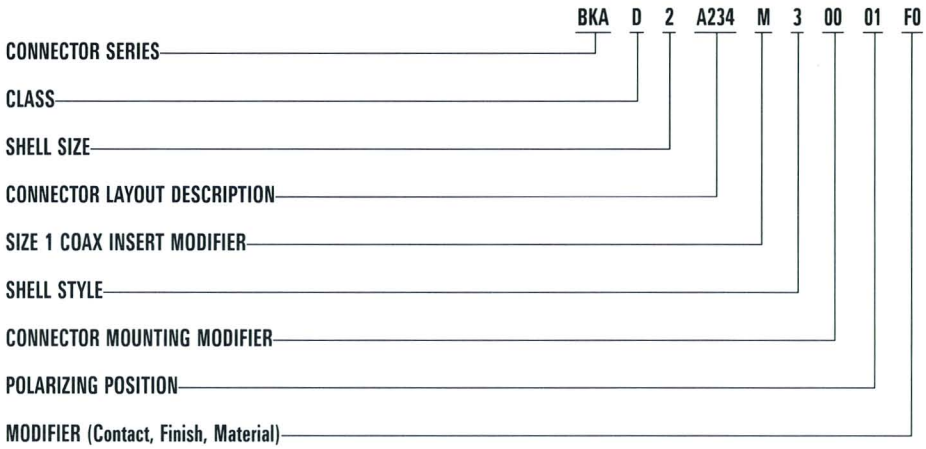
CLASS
- D – Non-environmental (rear release, crimp contacts)
- E – Environmental (rear release, crimp contacts)
- F – Non-environmental (front release, solder and wrap post #22 contacts, rear release all others)
- C – Same as E, except uses BKAD shells, and less O rings on plug side.
- S – Environmental (O-ring is used to seal between connector shell and insulators) with rear release, crimp contacts.
- T – Non-environmental connector using filtered contacts (reference Cannon Phoenix)

SHELL SIZE
- 1 – Max. contact capacity–125
- 2 – Max. contact capacity–400
- 3 – Max. contact capacity–800

CONNECTOR LAYOUT DESCRIPTION
Three Digit Number Contained within the Shell Layout Indicates Total Number of Contacts Available (Including Waveguide)

Connector Layout	Shell Size	Shell Cavity Identification A	B	C	D	E	F	Ref. ARINC Characteristic
–005	1	—	—	5W2				
–060	1	—	60	—				
A060	1	60	—	—				
–065	1	—	60	5W2				
A065	1	60	—	5W2				
–120	1	60	60	—				
–125	1	60	60	5W2				•
–013	2	—	—	13W2				
–071	2	—	71W1	—				
A071	2	71W1	—	—				
–085	2	Waveguide	71W1	13W2				
A085	2	71W1	Waveguide	13W2				
–100	2	—	—	100				
–142	2	71W1	71W1	—				
–155	2	71W1	71W1	13W2				••
–163	2	—	150	13W2				
A163	2	150	—	13W2				
–164	2	150	Waveguide	13W2				
A164	2	150	Waveguide	13W2				708
–234	2	150	71W1	13W2				709
A234	2	71W1	150	13W2				727
–300	2	150	150	—				
–313	2	150	150	13W2				•••
–400	2	150	150	100				
–284	3	71W1	71W1	—	71W1	71W1	—	
–310	3	71W1	71W1	13W2	71W1	71W1	13W2	
–600	3	150	150	—	150	150	—	
–626	3	150	150	13W2	150	150	13W2	••••
–713	3	150	150	100	150	150	13W2	
A713	3	150	150	13W2	150	150	100	
–800	3	150	150	100	150	150	100	
–326	3	Open	150	13W2	Open	150	13W2	
–269M	3	2W2	2W2	13W2	2W2	150	100	735

NOTE: ANY OTHER COMBINATION OF INSERTS WITHIN A SPECIFIC SHELL IS AVAILABLE UPON REQUEST
- • Layout included in the following ARINC configurations 702, 710, 711, 712, 714, 715, 716, 723.
- •• Layout included in the following ARINC configurations 707, 718 & 730.
- ••• Layout included in the following ARINC configurations 701, 702, 703, 704, 705, 706, 724, 725.
- •••• Layout included in the following ARINC configurations 701, 717, 726, 729.



SIZE 1 COAX INSERT MODIFIER
M – Connector contains modified 71W1 insert (four MTG screw hole locations and coaxial contact used in this insert are interchangeable between different manufacturers
NOTE: A dash must be inserted whenever code does not apply.

SHELL STYLE
- 3 – Plug (rack side)
- 4 – Receptacle (box side)

CONNECTOR MOUNTING MODIFIER
- 00 – Standard design, .148 dia. holes
- 01 – With #6-32 ESNA (#12 NCFMA2-62) clinch nuts (see chart)
- 02 – Size 1 receptacle only – less 3 printed circuit board mounting lugs
- 03 – With #4-40 ESNA (#22 NCFMA2-40) clinch nuts (see chart)
- 08 – Size 2 and 3 plug and receptacle only-with #4-40 ESNA (#22 NCFMA2-40) clinch nuts (all mounting holes)
- 09 – Size 2 and 3 plug and receptacle only-with #6-32 ESNA (#12 NCFMA2-62) clinch nuts (all mounting holes)
- 23 – With floating eyelets (.048 min. radial float) 4 corner holes per connector

Consult factory if other modifications are required

POLARIZING POSITION
01 thru 99 (per ARINC 600)
Blank–Polarizing posts or keys not installed but supplied with connector

MODIFIER (Contact, Finish, Material)
- Blank– Rear release, crimp, signal and power contacts supplied with connector (when applicable)
- FO – Contacts not supplied with connector (FO not stamped on connector)
- SA – Front release .025(0.63) D. x .150 (3.81) solder post and crimp, rear release power contacts (when applicable) supplied with connector
- SB – Front release .025(0.63) D. x .250 (6.35) solder post and crimp, rear release power contacts (when applicable) supplied with connector
- SC – Front release .025(0.63) D. x .375 (9.53) solder post and crimp, rear release power contacts (when applicable) supplied with connector
- SD – Front release .025(0.63) D. x .500 (12.7) solder post and crimp, rear release power contacts (when applicable) supplied with connector
- WA – Front release .025(0.63) Sq. x .250 (6.35) (1 wrap) wrap post and crimp, rear release power contacts (when applicable) supplied with connector
- WB – Front release .025(0.63) Sq. x .375 (9.53) (2 wraps) wrap post and crimp, rear release power contacts (when applicable) supplied with connector
- WC – Front release .025(0.63) Sq. x .500 (12.7) (3 wraps) wrap post and crimp, rear release power contacts (when applicable) supplied with connector

NOTE: COAXIAL CONTACTS TO BE ORDERED SEPARATELY

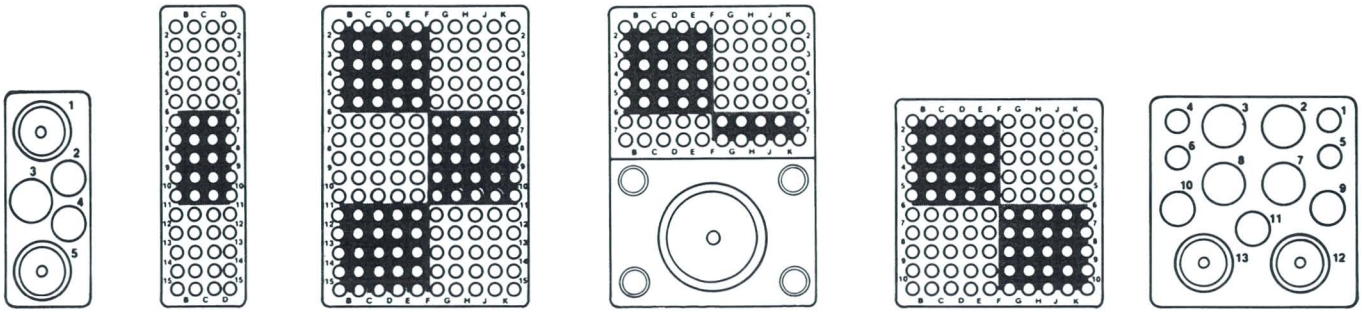
Connector Size	Number of Clinch Nuts Plug	Receptacle
1	4	4
2	4	6
3	8	10

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Contact Arrangements

BKAD/BKAE Plug (Rear face show—white marking on blue background

Size 1 Sizes 2 & 3



5W2
1 #12
2 #16
2 #5 COAX
SHELL CAVITY C

60
60 #22
SHELL CAVITY A or B

150
150 #22

71W1
70 #22
1 #1 COAX

SHELL CAVITY A, B, D, or E

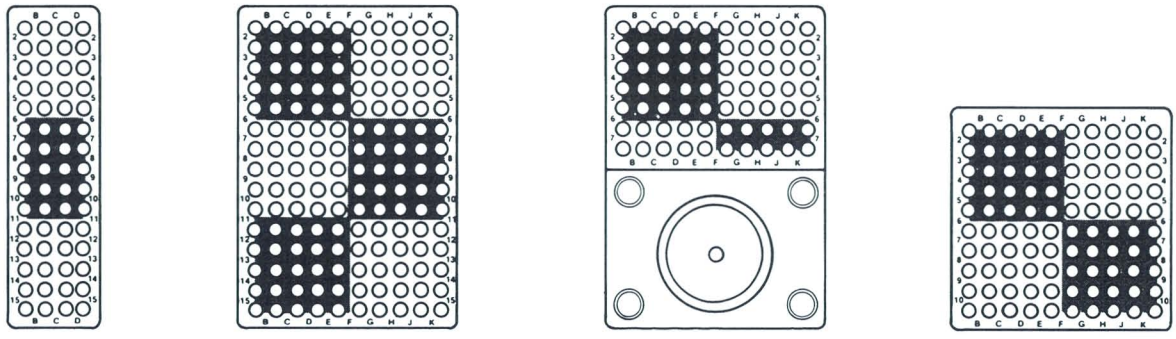
100
100 #22

13W2
4 #20
4 #12
3 #16
2 #5 COAX

SHELL CAVITY C or F

BKAF Receptacle (Engaging face shown—white marking on red backround)

Size 1 Sizes 2 & 3



60
60 #22
SHELL CAVITY A or B

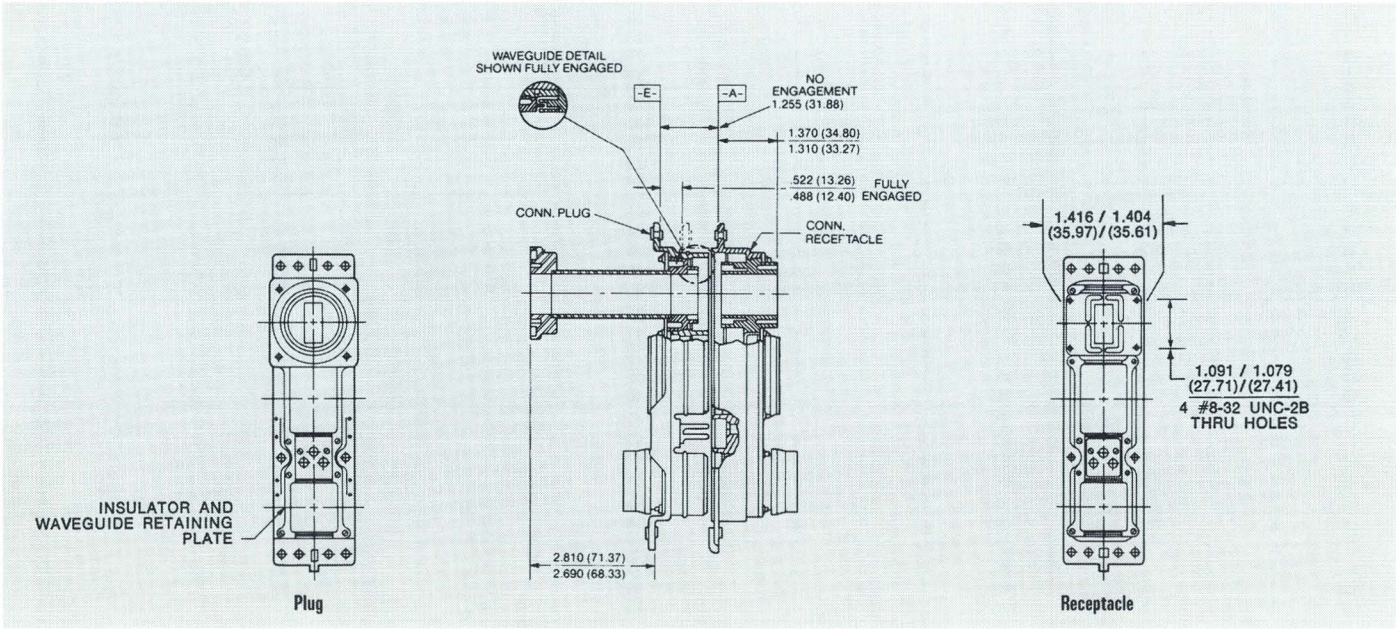
150
150 #22

71W1
70 #22

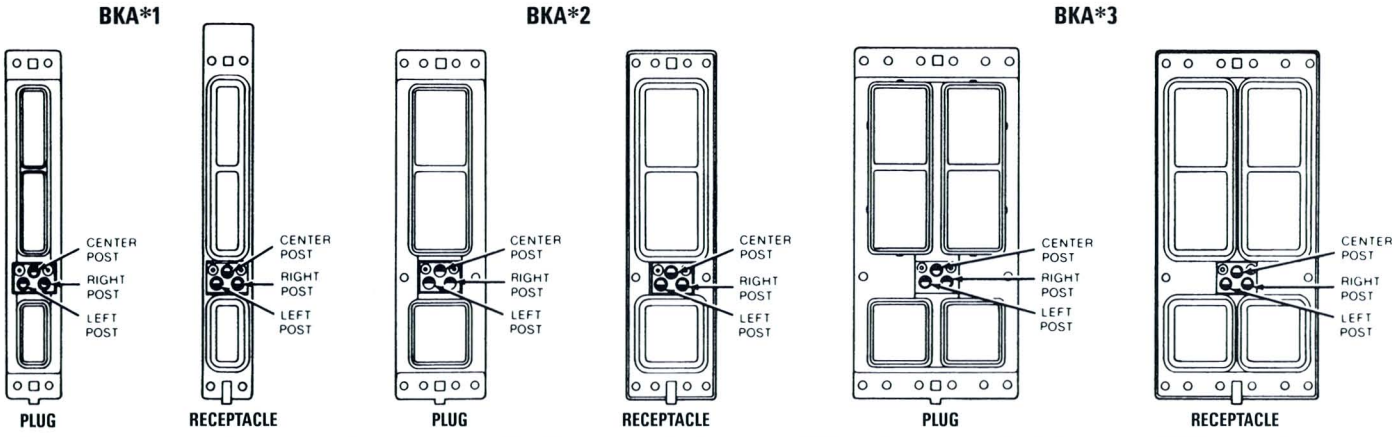
SHELL CAVITY A, B, D, or E

100
100 #22
SHELL CAVITY C or F

Waveguide Connections



Polarization (Engaging End)



Polarizing Positions

Dark area represents post

POST 230-0138-000

KEY 201-0070-000

Plug Shell								Receptacle Shell							
Position	Left Post	Center Post	Right Post	Position	Left Post	Center Post	Right Post	Position	Left Post	Center Post	Right Post	Position	Left Post	Center Post	Right Post
01	1	1	1	51	3	2	5	01	4	4	4	51	6	3	2
02	2	1	1	52	4	2	5	02	4	4	3	52	6	3	1
03	3	1	1	53	5	2	5	03	4	4	2	53	6	3	6
04	4	1	1	54	6	2	5	04	4	4	1	54	6	3	5
05	5	1	1	55	1	2	4	05	4	4	6	55	1	3	4
06	6	1	1	56	2	2	4	06	4	4	5	56	1	3	3
07	1	1	6	57	3	2	4	07	5	4	4	57	1	3	2
08	2	1	6	58	4	2	4	08	5	4	3	58	1	3	1
09	3	1	6	59	5	2	4	09	5	4	2	59	1	3	6
10	4	1	6	60	6	2	4	10	5	4	1	60	1	3	5
11	5	1	6	61	1	2	3	11	5	4	6	61	2	3	4
12	6	1	6	62	2	2	3	12	5	4	5	62	2	3	3
13	1	1	5	63	3	2	3	13	6	4	4	63	2	3	2
14	2	1	5	64	4	2	3	14	6	4	3	64	2	3	1
15	3	1	5	65	5	2	3	15	6	4	2	65	2	3	6
16	4	1	5	66	6	2	3	16	6	4	1	66	2	3	5
17	5	1	5	67	1	2	2	17	6	4	6	67	3	3	4
18	6	1	5	68	2	2	2	18	6	4	5	68	3	3	3
19	1	1	4	69	3	2	2	19	1	4	4	69	3	3	2
20	2	1	4	70	4	2	2	20	1	4	3	70	3	3	1
21	3	1	4	71	5	2	2	21	1	4	2	71	3	3	6
22	4	1	4	72	6	2	2	22	1	4	1	72	3	3	5
23	5	1	4	73	1	3	1	23	1	4	6	73	4	2	4
24	6	1	4	74	2	3	1	24	1	4	5	74	4	2	3
25	1	1	3	75	3	3	1	25	2	4	4	75	4	2	2
26	2	1	3	76	4	3	1	26	2	4	3	76	4	2	1
27	3	1	3	77	5	3	1	27	2	4	2	77	4	2	6
28	4	1	3	78	6	3	1	28	2	4	1	78	4	2	5
29	5	1	3	79	1	3	6	29	2	4	6	79	5	2	4
30	6	1	3	80	2	3	6	30	2	4	5	80	5	2	3
31	1	1	2	81	3	3	6	31	3	4	4	81	5	2	2
32	2	1	2	82	4	3	6	32	3	4	3	82	5	2	1
33	3	1	2	83	5	3	6	33	3	4	2	83	5	2	6
34	4	1	2	84	6	3	6	34	3	4	1	84	5	2	5
35	5	1	2	85	1	3	5	35	3	4	6	85	6	2	4
36	6	1	2	86	2	3	5	36	3	4	5	86	6	2	3
37	1	2	1	87	3	3	5	37	4	3	4	87	6	2	2
38	2	2	1	88	4	3	5	38	4	3	3	88	6	2	1
39	3	2	1	89	5	3	5	39	4	3	2	89	6	2	6
40	4	2	1	90	6	3	5	40	4	3	1	90	6	2	5
41	5	2	1	91	1	3	4	41	4	3	6	91	1	2	4
42	6	2	1	92	2	3	4	42	4	3	5	92	1	2	3
43	1	2	6	93	3	3	4	43	5	3	4	93	1	2	2
44	2	2	6	94	4	3	4	44	5	3	3	94	1	2	1
45	3	2	6	95	5	3	4	45	5	3	2	95	1	2	6
46	4	2	6	96	6	3	4	46	5	3	1	96	1	2	5
47	5	2	6	97	1	3	3	47	5	3	6	97	2	2	4
48	6	2	6	98	2	3	3	48	5	3	5	98	2	2	3
49	1	2	5	99	3	3	3	49	6	3	4	99	2	2	2
50	2	2	5					50	6	3	3				

Sizes 1 Coax Contacts (71W1 layout only)

Same standard coax contacts as used in ITT Cannon's DPX (ARINC 404) connector series.

For Receptacle Connector

Cable Accommodation	Coax Part Number	Style	Replacement Coax Termination Kit	Replacement Coax Body Assembly
RG-9/U RG-214/U	249-1521-000		249-1521-002	021-0144-000
NSA 935354 NSA 935355	—		249-2201-000	
RG-55/U RG-58/U RG-142/U RG-400/U	249-1554-000	Straight	249-1554-002	021-0144-003
RG-58/U RG-142/U RG-225/U	249-1604-001	90°	249-1604-003	021-0144-006
RG-402/U UT-141	249-1604-002			
RG-402/U UT-141	249-5027-008	Straight	249-5027-016	021-0144-001
SMA Jack Termination	249-5027-017	Straight	—	—

For Plug Connector

Cable Accommodation	Coax Part Number	Style	Replacement Coax Termination Kit	Replacement Coax Body Assembly
RG-9/U	249-1522-000	Straight	249-1522-002	021-0144-004
NSA 935354 NSA 935355	—		249-2202-000	
RG-58/U RG-142/U	249-1882-000			
RG-402/U	249-1885-002	Straight	320-0051-000	021-0144-011
RG-214/U	249-5123-000	Straight	249-5027-013	021-0144-008
RG-115/U	249-5123-001		249-5027-015	

Size 1 Coax Contacts (To be used with connectors containing 71W1 insert modifier-"M")

Designed to be interchangeable with contacts made by other manufacturers.

For Receptacle Connector

Cable Accommodation	Part Number	Style
RG-214/U RG-393/U BA-6903 (BG)	349-0002-000	Straight
5012H3012 Raychem	349-0004-000	Straight
RG-142B/U	349-0006-000	Straight
RG-402/U UT-141	349-0008-000	Straight
RG-142B/U	349-0021-000	Right Angle
RG-402/U UT-141	349-0022-000	Right Angle

For Plug Connector

Cable Accommodation	Part Number	Style
SMA Jack Termination	349-0023-000	Straight
RG-214/U RG-393/U BA-6903 (BG)	349-0017-000	Straight
5012H3012 (Raychem)	349-0018-000	Straight
RG-142B/U	349-0005-000	Straight
RG-402/U UT-141	349-0007-000	Straight

Size 5 Coax Contact (Rear insertable/removable)

Solder Center Contact

Same standard coax contacts as used on Cannon's DPX (ARINC 404) connector series.

Cable Accommodation	Part Number				Outer Shell Crimp Tooling			Extraction Tool
	Pin (Receptacle Connector)		Socket (Plug Connector)		MIL Std		ITT Cannon	
	Environmental	Non-environmental	Environmental	Non-environmental	Frame	Jaw	Complete Tool	
RG-180B/U RG-195A/U	249-2101-000	249-2071-000	249-2106-000	249-2076-000	M22520/ 5-01	M22520/ 5-45A	CCT-HX3-156	CET-C8
RG-58C/U	249-2102-000	249-2072-000	249-2107-000	249-2077-000	M22520/ 5-01	M22520/ 5-45A	CCT-HX3-156	CET-C8
RG-142B/U	249-2103-000	249-2073-000	249-2108-000	249-2078-000	M22520/ 5-01	M22520/ 5-45A	CCT-HX3-156	CET-C8
RG-174/U RG-179B/U RG-187A/U	249-2104-000	249-2074-000	249-2109-000	249-2079-000	M22520/ 5-01	M22520/ 5-45A	CCT-HX3-156	CET-C8
RG-178/U RG-196/U	249-2105-000	249-2075-000	249-2110-000	249-2080-000	M22520/ 5-01	M22520/ 5-45A	CCT-HX3-156	CET-C8

Crimp Center Contact

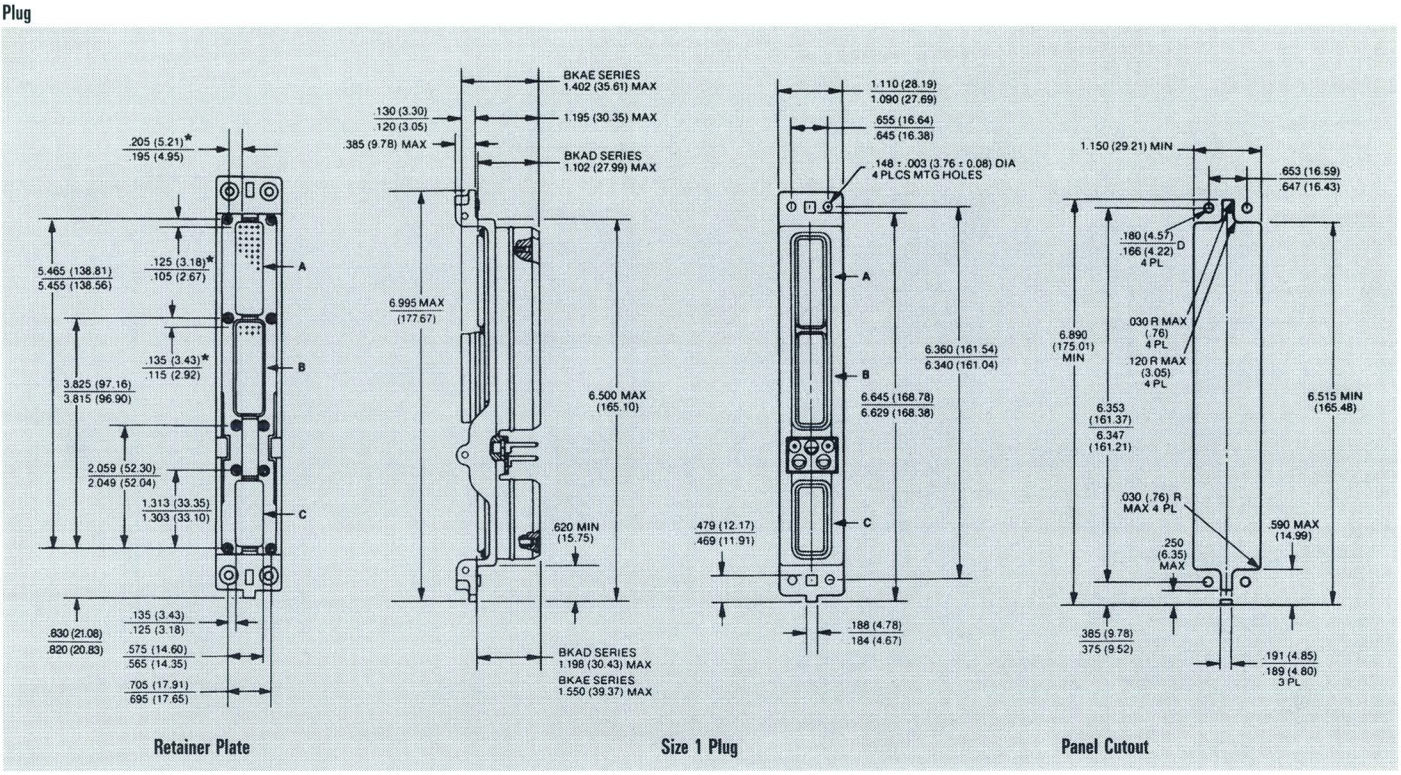
Cable Accommo-dation	Part Number		Crimp Tooling							Extraction Tool
			Center Contact				Outer Shell			
			Tool		Locator		MIL Std		ITT Cannon	
	Pin (Receptacle) Connector)	Socket (Plug) Connector)	MIL Spec	ITT Cannon	Daniels	ITT Cannon	Frame	Jaw	Complete Tool	
RG-58C/U BA-5903 (BG)	349-0014-000	349-0013-000	M22520/2-01	995-0001-584	K-345	995-002- 049	M22520/5-01	M22520/5-45A	CCT-HX3-156	CET-C8
5021K1011 (Raychem)	349-0016-000	349-0015-000	M22520/2-01	995-0001-584	K-345	995-002-049	M22520/5-01	M22520/5-45A	CCT-HX3-156	CET-C8

Size 12 Shielded Contact (Rear insertable/removable)

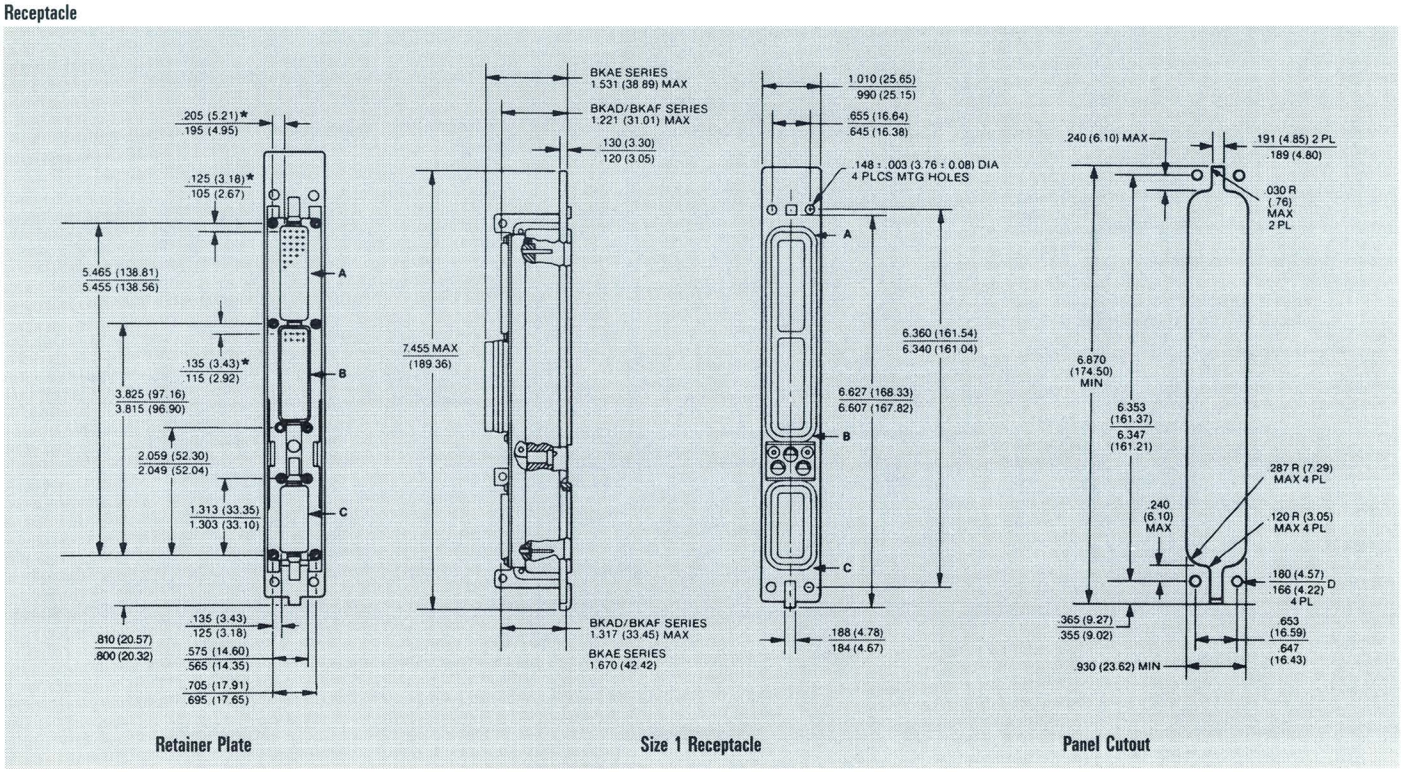
Cable Accommo-dation	Part Number		Crimp Tooling							Tool Tool	
			Center Contact				Outer Shell Tool				
			Tool P/N Tool P/N		Locator P/N Locator P/N		MIL Std				
	Pin (Receptacle Connector)	Socket (Plug Connector)	MIL Spec	ITT Cannon	Daniels	ITT Cannon	Frame	Jaw	ITT Cannon	MIL Spec	ITT Cannon
RG-196A/U	249-1767-000	—	M22520/2-01	995-0001-584	K-182	995-002- 051	M22520/10-1	M22520/10-05A	995-0001-071	M81969/28-02	CET-12-4 Plastic
5071 (HW)	249-1767-001	—	M22520/2-01	995-0001-584	K-182	995-002- 051	M22520/10-1	M22520/10-05A	995-0001-071	M81969/28-02	CET-12-4 Plastic
RG-174/U	—	249-1768-000	M22520/2-01	995-0001-584	K-182	995-002- 051	M22520/10-1	M22520/10-05A	995-0001-071	M81969/28-02	CET-12-4 Plastic
BMS-1348 (BG)	—	249-2203-000	M22520/2-01	995-0001-584	K-644	995-002- 050	M22520/10-1	M22520/10-05A	995-0001-071	M81969/28-02	CET-12-4 Plastic

Shell Dimensions – Size 1

Plug



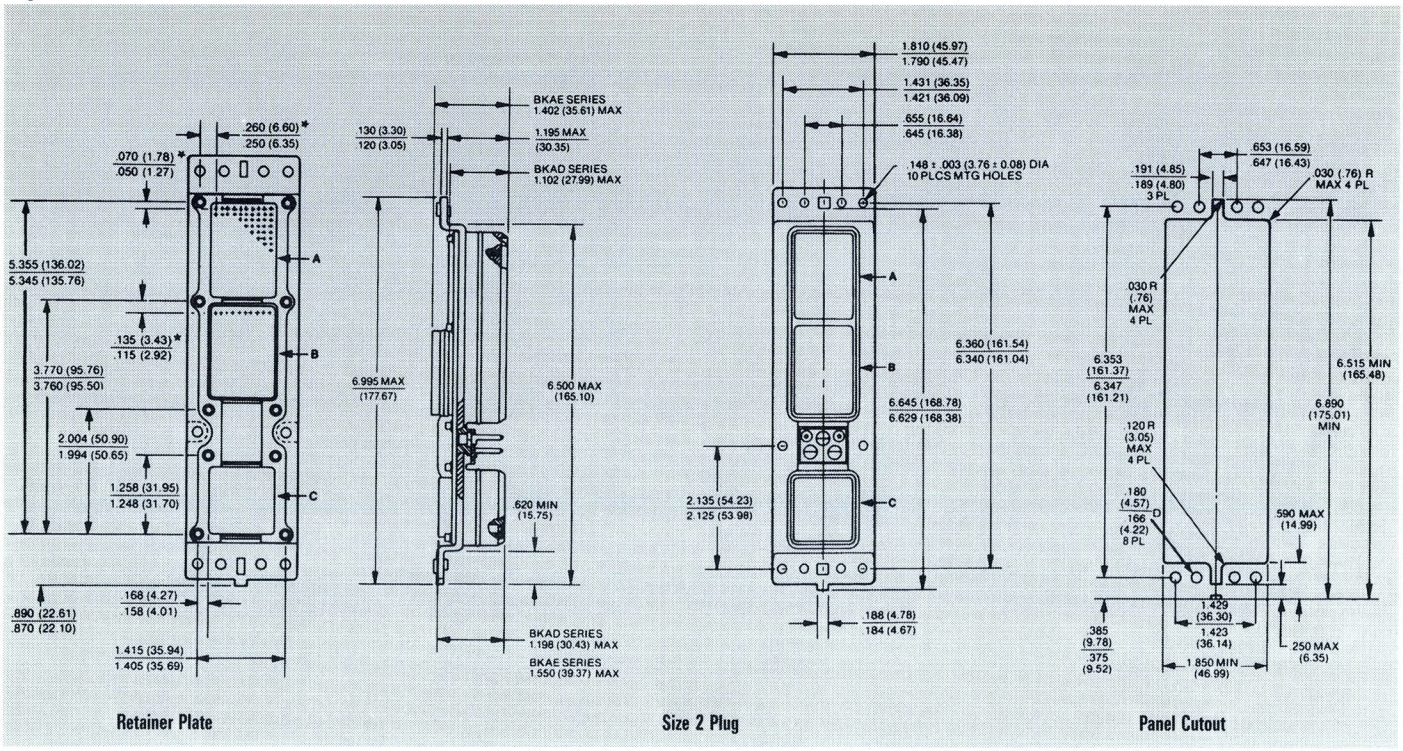
Receptacle



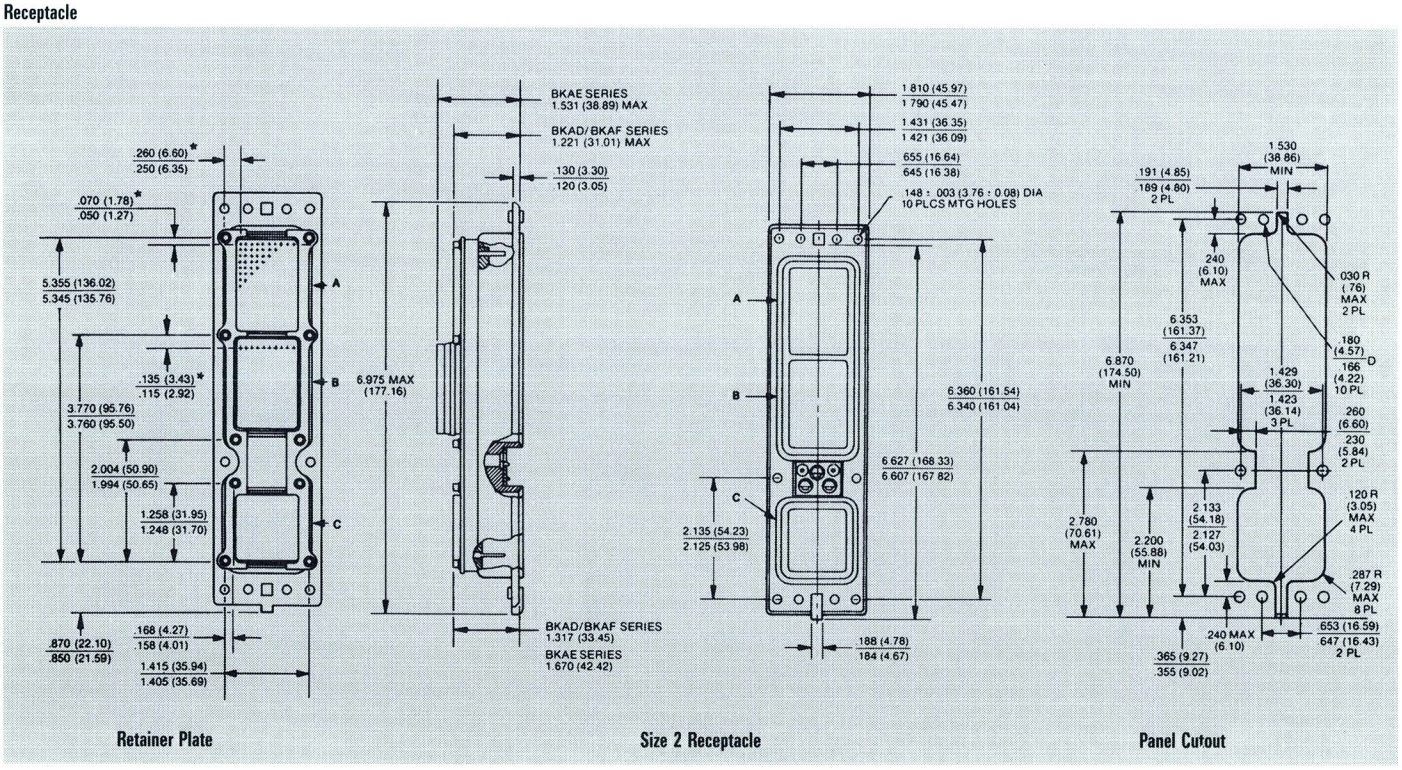
* THIS DIMENSION INDICATES DISTANCE FROM CENTERLINE OF RETAINING SCREW TO THE CENTERLINE OF FIRST CONTACT CAVITY.

Shell Dimensions – Size 2

Plug



Receptacle

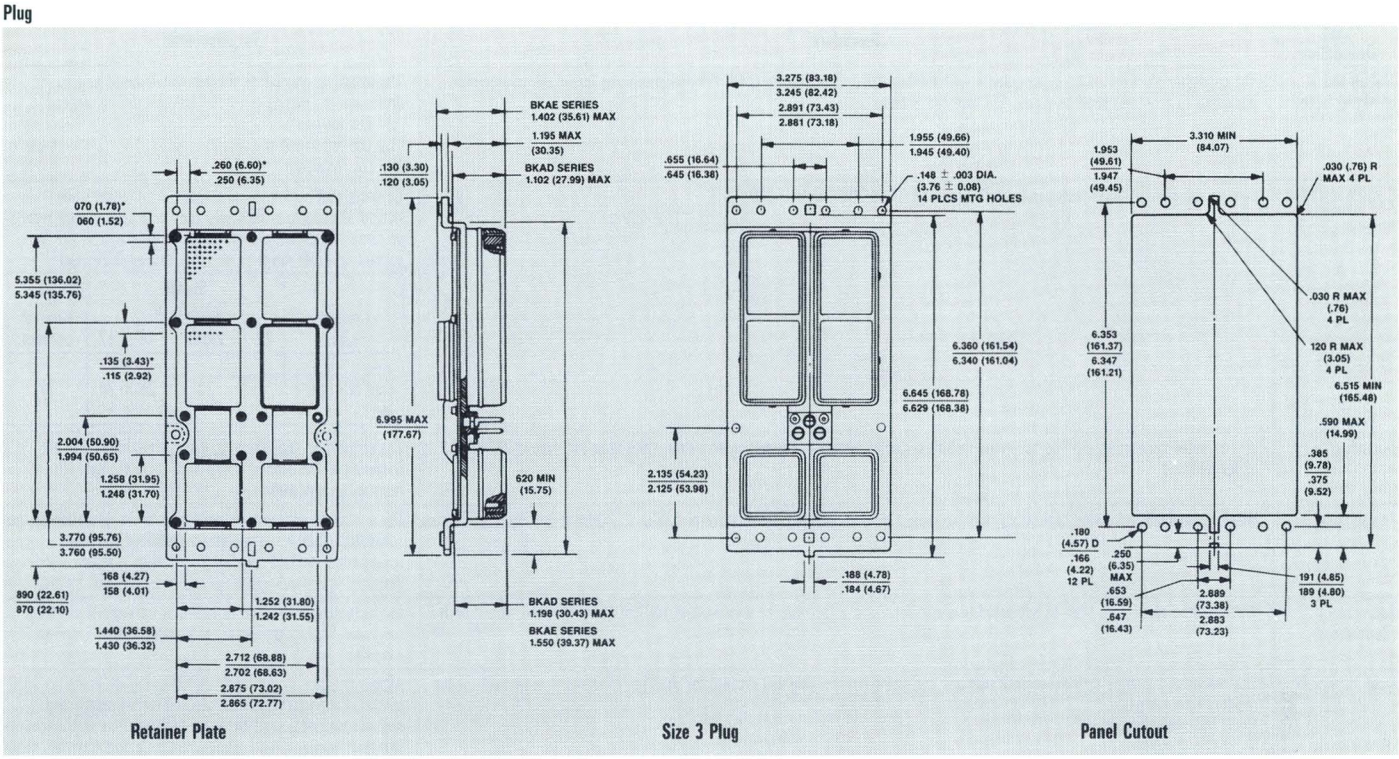


* THIS DIMENSION INDICATES DISTANCE FROM CENTERLINE OF RETAINING SCREW TO THE CENTERLINE OF FIRST CONTACT CAVITY.

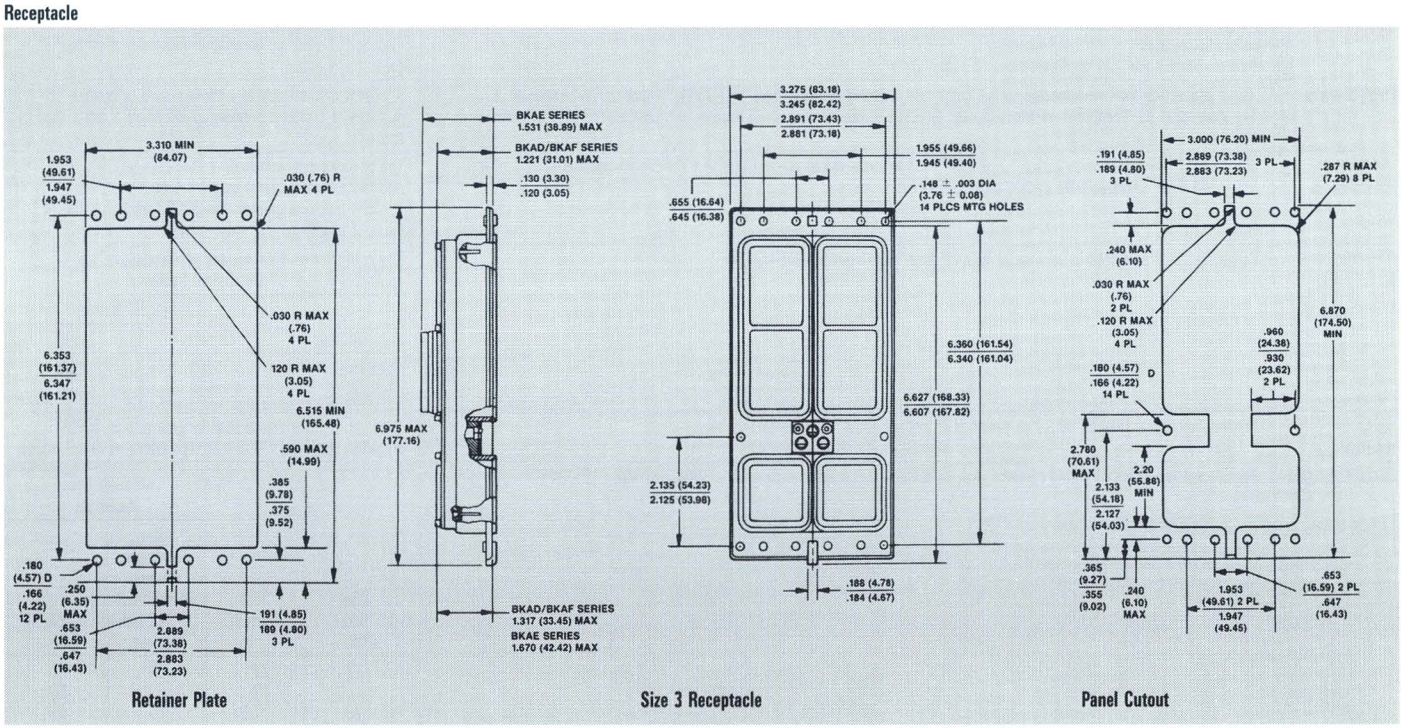
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Shell Dimensions – Size 3

Plug



Receptacle



* THIS DIMENSION INDICATES DISTANCE FROM CENTERLINE OF RETAINING SCREW TO THE CENTERLINE OF FIRST CONTACT CAVITY.

Performance Specifications

<table>
<tr><th>Test Description</th><th>Procedure</th><th>Requirements</th></tr>
<tr><td>Mating and unmating force</td><td>The connector shall be tested in accordance with method 2013 of MIL–STD–1344. Prior to measuring forces the connectors (including all contacts) shall be mated and unmated 3 times</td><td>The maximum amount of direct thrust force to engage or disengage the mating connector halves shall not exceed:
27 Lbs for size 1
60 Lbs for size 2
105 Lbs for size 3</td></tr>
<tr><td>Contact retention</td><td>Contact retention shall be tested in accordance with method 2007 of MIL–STD–1344</td><td>Contacts shall withstand axial loads in either direction without dislodging or damaging the contact, connector insert or contact retention system. Axial displacement of the contact in either direction shall not exceed 0.015 inch.
<table>
<tr><th rowspan="2">Contact size</th><th colspan="4">Signal contact #</th><th rowspan="2">#5 Coaxial contact</th></tr>
<tr><th>22</th><th>20HD</th><th>16</th><th>12</th></tr>
<tr><td>Axial load min. in Lbs</td><td>12</td><td>20</td><td>25</td><td>30</td><td>35</td></tr>
</table></td></tr>
<tr><td>Durability</td><td>Wired, mated connectors shall be subjected to 500 cycles of mating and unmating at a rate which does not exceed 250±50 cycles per hour</td><td>The connectors shall show no damage detrimental to the operation of the connector and shall meet the contact resistance requirements.</td></tr>
<tr><td>Temperature life</td><td>Wired, assembled and mated connectors shall be subjected to an ambient temperature of 125°C ±3°C for a period of 1000 hours</td><td>There shall be no damage detrimental to the operation of the connector. After test samples are stabilized to room temperature, contact resistance, insulation resistance and dielectric withstanding voltage requirements must be met.</td></tr>
<tr><td>Salt spray (Corrosion)</td><td>Wired, mated connectors shall be subjected to a salt spray test in accordance with method 1001 of MIL STD 1344, condition B</td><td>Connectors shall show no exposure of base metal or visible corrosion. Product connectors shall meet further tests as specified.</td></tr>
<tr><td>Fluid immersion</td><td>The connectors shall be distributed such that one connector (mating plug and receptacle) shall be immersed in each fluid for the required time period
Fluids for immersion are:
— MIL–L–23699
— MIL–H–5606
One part isopropyl alcohol per TT–I–735 and three parts mineral spirits per TT–I–291 for P–D–680</td><td>After immersion in the fluids the following requirements shall be met: Connectors shall unmate and mate properly and resilient materials shall not swell to the extent that cracks and tears appear. Shells, plating and dielectric materials shall show no evidence of deterioration, distortion or material reversion. Contact retention requirements shall be met.</td></tr>
<tr><td>Vibration</td><td>Mated connectors shall be vibrated in accordance with MIL–STD–1344 A, method 2005-1 for 8 hours in each of three mutually perpendicular axes
Test condition V and test condition letter "E" shall apply</td><td>A current discontinuity of 1 micro-second or greater, or evidence of cracking, breaking or loosening of parts shall be cause for rejection.</td></tr>
<tr><td>Physical shock</td><td>Mated connectors shall be subjected to the shock test in accordance with MIL–STD–1344, method 2004-1 condition A
The shock shall be repeated three times in each direction of the referenced 90 degrees axis position (18 shocks total)</td><td>A current discontinuity of 1 micro-second or greater, or evidence of cracking, breaking or loosening of parts shall be cause for rejection.</td></tr>
<tr><td>Moisture resistance</td><td>Wired mated connectors in an horizontal position shall be subjected to the humidity test specified in method 1002-1 of MIL–STD–1344 Type II (temperature cycling shall apply)</td><td>The unmated connector halves shall have an insulation resistance greater than 1 megohm 1 to 2 hours after humidity test, and greater than 5000 megohms after 24 hours of conditioning at room ambient.</td></tr>
<tr><td>Dielectric withstanding voltage</td><td>Connectors shall be tested in accordance with Method 3001-1 of MIL–STD–1344</td><td>The connector shall be capable of withstanding the applicable voltage shown without flashover.
<table>
<tr><th rowspan="2">Altitude</th><th colspan="2">AC Volts 60 Hz rms</th></tr>
<tr><th>Unmated</th><th>Mated</th></tr>
<tr><td>Sea level
50,000 ft</td><td>1500
500</td><td>1500
500</td></tr>
</table></td></tr>
<tr><td>Insulation resistance</td><td>Unmated connector shall be tested as specified in method 3003-1 of MIL–STD–1344</td><td>The insulation resistance shall be greater than 5000 megohms (ambient), 1000 megohms (elevated temperature).</td></tr>
<tr><td>Contact resistance</td><td>The contact resistance of mated contacts shall be tested in accordance with method 3004-1 of MIL–STD–1344</td><td>
<table>
<tr><th rowspan="2">Wire Size (AWG)</th><th rowspan="2">Test Current (amps)</th><th colspan="2">Millivolt Drop Maximum</th></tr>
<tr><th>After Corrosion, Temp. Durability, or Current Cycling</th><th>All Others</th></tr>
<tr><td>12</td><td>23</td><td>60</td><td>45</td></tr>
<tr><td>16</td><td>13</td><td>65</td><td>50</td></tr>
<tr><td>20</td><td>7.5</td><td>65</td><td>55</td></tr>
<tr><td>22</td><td>5</td><td>55</td><td>40</td></tr>
<tr><td>24</td><td>3</td><td>45</td><td>30</td></tr>
<tr><td>26</td><td>2</td><td>40</td><td>25</td></tr>
<tr><td>28</td><td>1.5</td><td>35</td><td>20</td></tr>
</table></td></tr>
</table>

ITT Cannon
Rack and Panel Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Contact and Termination Tooling Data

BKAD/E Crimp Contacts (Rear insertable/rear removable)

Contact Size and Part Numbers			Crimp Tooling					Ins.-Ext. Tooling				Wire		
	Part Number		Tool P/N		Selector #	Locator P/N		Mil Spec.	ITT Cannon			AWG	Insul. Dia. Max.	Strip Length
Size	Pin	Socket	Mil Spec.	ITT Cannon		Mil Spec.	ITT Cannon		Insertion	Extraction	Ins.-Ext.			
2222	Used in Plug 030-2259-000	Used in Receptacle 031-1287-000	M22520/2-01	995-0001-584	3 3 4	M22520/2-23	995-0002-015	M81969/1-01	CIT-DPXMA-22-1 Metal	CET-DPXMA-22 Metal	980-0004-804 Metal Tip	26 24 22	.054 (1.4)	.130 .110 (3.3) (2.8)
2020HD	Used in Receptacle 030-2273-000	Used in Plug 031-1302-000	M22520/2-01	995-0001-584	6 7	M22520/2-08	995-0001-604	M81969/1-02	—	—	980-0004-805 Metal Tip	22 20	.071 (1.8)	.167 .147 (4.2) (3.7)
1616	Used in Receptacle 030-2280-000	Used in Plug 031-1303-000	M22520/1-01	995-0001-585	4 5 6	M22520/1-02	995-0001-736	M81969/1-03	—	CET-16-9 Plastic	980-0004-806 Metal Tip	20 18 16	.103 (2.6)	.270 .230 (6.9) (5.8)
1212	Used in Receptacle 030-2286-000	Used in Plug 031-1308-000	M22520/1-01	995-0001-585	7 8	M22520/1-11	995-0002-027	M81969/28-02	—	CET-12-4 Plastic	CIET-12 Plastic	14 12	.135 (3.4)	.270 .230 (6.9) (5.8)

BKAD/E Thermocouple Contacts (Rear insertable/rear removable)

2222 Alumel	Used in Plug 030-1975-009	Used in Receptacle 031-1113-009	M22520/2-01	995-0001-584	3 3 4	M22520/2-23	995-0002-015	M81969/1-01	CIT-DPXMA-22-1 Metal	CET-DPXMA-22 Metal	980-0004-804 Metal Tip	26 24 22	.054 (1.4)	.130 .110 (3.3) (2.8)
2222 Chromel	Used in Plug 030-1975-010	Used in Receptacle 031-1113-010												

BKAF-ARINC 600 Size 22 Wrap Post Socket Contacts With .025(6.35) Square Wire-Wrappable Tails—Receptacle Only.

The new low insertion force, front-insertable, front-removable #22 socket contacts with .025(6.35) square wire wrappable tails are now available for use in the BKAF non-environmental receptacle version only.

These contacts can be sold separately or they can be supplied with a connector (see How to Order). Use part numbers shown in the table on the right when ordering separately.

Part Number	Number of Wraps	Min. Post Extension	Extraction Tool
031-1351-000	1	.250 (6.35)	CET-BKAF-22S
031-1351-001	2	.375 (9.52)	
031-1351-002	3	.500 (12.70)	
031-1351-003	3	.641 (16.28)	

BKAF Printed Circuit Solder Post Socket Contacts Size 22 with .025(6.35) Dia. Printed Circuit Tails—Receptacle Only.

The new low insertion force, front-insertable, front-removable #22 socket contacts with .025(6.35) dia. PC tails are now available for use in the BKAF non-environmental receptacle version only.

These contacts can be sold separately or they can be supplied with a connector (see How to Order). Use part numbers shown in the table on the right when ordering separately.

Part Number	Min. Post Extension	Extraction Tool
031-1352-000	.150 (3.81)	CET-BKAF-22S
031-1352-001	.250 (6.35)	
031-1352-002	.375 (9.52)	
031-1352-003	.500 (12.70)	

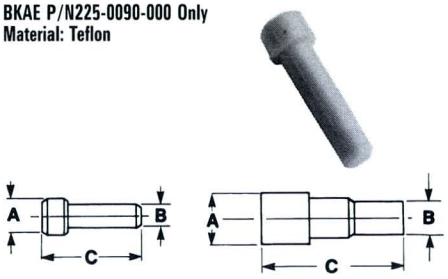
BKAD/F Solder Post, Power Pin Contacts (Captive)—Receptacle Only.

Contacts are captivated between two unbonded insulator halves.

Contact Size	Part Number	Post Dia.	Min. Post Extension
20 HD	030-2358-000	.032 (0.81)	.150 (3.81)
16	030-2357-000	.050 (1.27)	.150 (3.81)
12	030-2356-000	.081 (2.06)	.150 (3.81)

Sealing Plugs

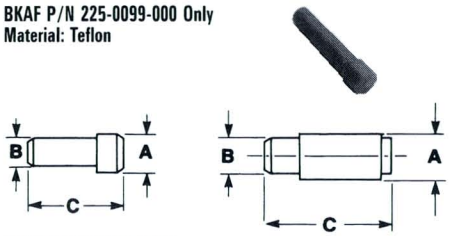
BKAE P/N225-0090-000 Only
Material: Teflon



Part Number	Contact Size	Color	A	B	C
225-1013-000	22	Black	.063 (1.6)	.040 (1.0)	.469 (11.9)
225-0070-000	20	Red	.085 (2.2)	.065 (1.6)	.469 (11.9)
225-0071-000	16	Blue	.115 (2.9)	.075 (1.9)	.469 (11.9)
225-0072-000	12	Yellow	.171 (4.3)	.121 (3.1)	.564 (14.3)
225-0090-000	#5 Coax	White	.365 (9.3)	.287 (7.3)	.835 (21.2)

Filler Plug

BKAF P/N 225-0099-000 Only
Material: Teflon



BKAD P/N 225-1058-000
(Size 22 – Black)

Part Number	Contact Size	Color	A	B	C
225-0094-000	22	Black	.069 (1.7)	.051 (1.3)	.420 (10.7)
225-0095-000	20	Red	.083 (2.1)	.069 (1.7)	.350 (8.9)
225-0096-000	16	Blue	.131 (3.3)	.108 (2.7)	.320 (8.1)
225-0097-000	12	Yellow	.187 (4.7)	.156 (4.0)	.320 (8.1)
225-0098-000	#5 Coax (Pin)	White	.275 (7.0)	.251 (6.4)	.450 (11.4)
225-0099-000	#5 Coax (Socket)	White	.275 (7.0)	.251 (6.4)	1.061 (26.9)

Cavity Reducer

Pin
P/N 021-8756-000

Socket
P/N 021-8757-000

#5 Coax to #12 Contact
Cavity reducers are available when additional circuits are required for size 12 power contacts. These reducers, having the internal configuration of size 12 power contact, are inserted into the size 5 coaxial insulator cavity to create size 12 power contact cavity.

Dust Caps

Part Number		
Conductive*	Non-Conductive	Description
025-1121-001	025-1121-000	BKAD 1-A & B-Plug
025-1122-001	025-1122-000	BKAD 1-C-Plug
025-1123-001	025-1123-000	BKAD 2 & 3-A & B-Plug
025-1124-001	025-1124-000	BKAD 2 & 3-C-Plug

Part Number		
Conductive*	Non-Conductive	Description
025-1155-001	025-1155-000	BKAD 1-A & B-Receptacle
025-1156-001	025-1156-000	BKAD 1-C-Receptacle
025-1157-001	025-1157-000	BKAD 2 & 3-A & B-Receptacle
025-1158-001	025-1158-000	BKAD 2 & 3-C-Receptacle

*Conductive dust caps protect against static electricity.

Replaceable Inserts

Layout	Class	Part Number	
		Pin Assembly	Socket Assembly
60	BKAD	143-1910-000	143-1911-000
	BKAE	143-1910-001	143-1911-001
	BKAF	N/A	143-2065-000
100	BKAD	143-2015-000	143-2016-000
	BKAE	143-2015-001	143-2016-001
	BKAF	N/A	143-2067-000
150	BKAD	143-1906-000	143-1907-000
	BKAE	143-1906-001	143-1907-001
	BKAF	N/A	143-2068-000

Layout	Class	Part Number	
		Pin Assembly	Socket Assembly
71W1	BKAD	143-1958-000	143-1960-000
	BKAE	143-1958-002	143-1960-002
	BKAF	N/A	N/A
71W1A*	BKAD	143-2085-001	143-2086-001
	BKAE	143-2085-000	143-2086-000
	BKAF	N/A	143-2066-000
5W2	BKAD	143-1912-000	143-1913-000
	BKAE	143-1912-001	143-1913-001
	BKAF	N/A	N/A
13W2	BKAD	143-1908-000	143-1909-000
	BKAE	143-1908-001	143-1909-001
	BKAF	N/A	N/A

*Modified 71W1 insert to be used with connectors containing 71W1 insert modifier "M"

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Cross Reference

COMPONENT PART NUMBER	CUSTOMER USE DRAWING NUMBER
Contacts	
030-1975-009	030-1975-009
030-1975-010	030-1975-010
030-2259-000	030-2259-000
030-2273-000	030-2273-000
030-2280-000	030-2280-000
030-2286-000	030-2286-000
030-2356-000	030-2356-000
030-2357-000	030-2357-000
030-2358-000	030-2358-000
031-1113-009	031-1113-009
031-1113-010	031-1113-010
031-1287-000	031-1287-000
031-1302-000	031-1302-000
031-1303-000	031-1303-000
031-1308-000	031-1308-000
031-1351-000	031-0000-343
031-1351-001	
031-1351-002	
031-1351-003	
031-1352-000	031-0000-344
031-1252-000	
031-1252-002	
031-1352-003	
Replacement Coax Body Assembly	
021-0144-000	021-0144-000
021-0144-001	021-0144-001
021-0144-002	021-0144-002
021-0144-003	021-0144-003
021-0144-004	021-0144-004
021-0144-006	021-0144-006
021-0144-008	021-0144-008
021-0144-011	021-0144-011
Size #5 Coax Contacts	
249-2071-000	249-0000-049
249-2072-000	
249-2073-000	
249-2074-000	
249-2075-000	
249-2076-000	249-0000-050
249-2077-000	
249-2078-000	
249-2079-000	
249-2080-000	
249-2101-000	249-0000-053
249-2102-000	
249-2103-000	
249-2104-000	
249-2105-000	
249-2106-000	249-0000-054
249-2107-000	
249-2108-000	
249-2109-000	
249-2110-000	
349-0013-000	349-0000-002
349-0014-000	349-0000-001
349-0015-000	349-0000-002
349-0016-000	349-0000-001
Size #12 Shielded Contact	
249-1767-000	249-1767-000
249-1767-001	249-1767-001
249-1768-000	249-1768-000
249-2203-000	249-2203-000
Replaceable Inserts	
143-1906-000	143-0000-079
143-1906-001	
143-1907-001	
143-1907-001	
143-1908-000	143-0000-081
143-1908-001	
143-1909-000	
143-1909-001	
143-1910-000	143-0000-077
143-1910-001	
143-1911-000	
143-1911-001	
143-1912-000	143-0000-080
143-1912-001	
143-1913-000	
143-1913-001	
143-1958-000	143-0000-079
143-1958-002	
143-1960-000	
143-1960-002	
143-2015-000	143-0000-078
143-2015-001	
143-2016-000	
143-2016-001	
143-2065-000	1247Y
143-2066-000	
143-2067-000	
143-2068-000	
143-2085-000	143-0000-079
143-2085-001	
143-2086-000	
143-2086-001	
Size #1 Coax Contacts	
249-1521-000	249-1521-000
249-1522-000	249-1522-000
249-1522-002	249-1522-002
249-1554-000	249-1554-000
249-1604-000	249-1604-000
249-1604-001	249-1604-001
249-1604-002	249-1604-002
249-1882-000	249-1882-000
249-1882-002	1250Y
249-1885-002	
249-5027-008	249-5027-008
249-5027-017	249-5027-017
249-5123-000	249-5027-000
249-5123-001	249-5027-007
Replacement Coax Termination Kit	
249-1521-002	249-1521-002
249-1522-009	249-1522-010
249-1522-010	249-1522-010
249-1554-002	249-1554-002
249-1604-003	249-1604-003
249-1604-004	249-1604-004
249-2201-000	249-1521-002
249-2202-000	249-1522-010
249-5027-013	249-5027-013
249-5027-015	249-5027-007
249-5027-016	249-5027-016
320-0051-000	1250Y
Dust Caps	
025-1121-001	025-0000-054 (Conductive Only)
025-1122-001	
025-1123-001	
025-1124-001	
025-1155-001	025-0000-055 (Conductive Only)
025-1156-001	
025-1157-001	
025-1158-001	
Filler Plugs	
225-0094-000	225-0000-014
225-0095-000	
225-0096-000	
225-0097-000	
225-0098-000	
225-0099-000	
225-1058-000	
Sealing Plugs	
225-0072-000	225-0000-006
225-0090-000	225-0090-000
225-1013-000	225-0000-008
225-1014-000	
225-1015-000	

HIGH-PERFORMANCE MIL-C-83733 QUALIFIED
Temperature Ranges of −65°C to +200°C
Environment-Resistant

The Cannon DPK series are high performance environment-resistant, rectangular connectors qualified to MIL-C-83733 (USAF). They feature crimp snap-in contacts in the dependable LITTLE CAESAR® rear release contact retention assembly. This field-proven assembly permits contacts to be inserted and extracted at the rear of the connector. Contacts are qualified to military specifcations and are crimped with MIL-C-22520 crimp tools, using standard locators.

The versatile DPK Connector is suitable for many applications, particularly where environment or thermal protection is mandatory and high reliability is a design requirement.

These high performance connectors are available in two shell sizes with a variety of mounting configurations. There are 13 contact arrangements available accommodating from 18 to 185 standard, shielded and coaxial contacts. The standard contacts are available in sizes 12, 16, 20 and 22D. Shells are a die-cast aluminum alloy with electroless nickel finish. Insulators are a high grade, glass reinforced, resin conforming to MIL-M-14 which meets or exceeds the requirements of MIL-C-83733. Silicone rubber is used for wire sealing grommets, interfacial and peripheral seals.

How To Order

MIL-C-83733 (USAF) Nomenclature

M 83733 / 4 R B 101

- MILITARY PART NUMBER INDICATOR
- BASIC SPECIFICATION
- SPECIFICATION SHEET NUMBER
- CLASS: R-ENVIRONMENT RESISTANT
- SHELL SIZE
- CONTACT ARRANGEMENT

ITT Cannon Nomenclature

DPK A – G 131 P * G – 7 FO
DPK B – G 185 S * K – 7 FO

- SERIES PREFIX / ITT CANNON DESIGNATION
- SHELL SIZE
- CONTACT MODIFICATION
- CONTACT ARRANGEMENT
- CONTACT TYPE
- POLARIZATION (applicable to mounting style A)
- CONNECTOR MOUNTING STYLE
- CONNECTOR MATERIALS PER MIL-C-83733
- FURNISHED LESS CONTACTS (will not be stamped on connector).

SHELL SIZE
A–Small shell
B–Large shell

CONTACT MODIFICATION
G–MIL-C-38999 contacts. Size 22D for DPKA-131 and DPKB-185 contact arrangements only.
W–MIL-C-38999 type contacts. Size 22D wrap posts for DPKA-131 and DPKB-185 layouts. .025 (0.63) square posts for .340(8.64); extension from grommet face.

CONTACT ARRANGEMENT
Shell Size A–18, 32, 51 and 131 (MIL-STD-1531).
Shell Size B–48, 64, 78, 101 59W7, 71, 71C15, 161 and 185 (MIL-STD-1532).

CONTACT TYPE
P–Pin (Receptacle Connectors)
S–Socket (Plug Connectors)

POLARIZATION
Six-position shell polarization accomplished with polarizing pins mounted on each end of shell flange. Available on mounting style A only.

MOUNTING STYLES
A – Two mounting holes .197(5.00) diameter (for either nuts or jackscrews ordered separately) and two polarizing posts. (Replaces Mounting Style B.)
C – Four MS24700-2 bushings, included for the receptacle (M83733/5).
F – Four (4) clinch nuts (No. 6-32 thread) M83733/6).
G – Four .281(7.14) diameter holes (for MS24700-2 bushings or 231-0019-000 spring mounts) (M83733/1).
H – Two mounting hole flange. Two (231-0019-000) spring mounts on the plug and two MS24700-2 bushing mounts on the receptacle (M83733/10/12).
K – Four captivated, non-rotating spring mounts on the plug (M83733/4).
M – Two mounting hole flange. Two mounting holes .281(7.14) diameter (for MS24700-2 bushings or 231-0019-000 spring mounts) (M83733/9).
X – Two guide pins with two (231-0019-000) spring mounts on the plug and two guide sockets with two .197(5.00) diameter holes on the receptacle (M83733/2; /3)
Y – Two guide sockets with two (231-0019-000) spring mounts on the plug and two guide pins with .197(5.00) diameter holes on the receptacle (M83733/7; /8).
Z – Two staggered clinch nuts on the receptacle (No. 6-32 thread) (M83733/11).

MATERIAL MODIFICATION
-7 standard product line, environment resistant per MIL-C-83733(USAF). QPL M83733.

Standard Data

MATERIALS

Shell	Diecast aluminum alloy A-380 per QQ-A-591
Insulator	Thermosetting plastic/Thermoplastic
Contacts	Copper alloy per QQ-C-533
Grommets and Seals	Silicone base elastomer
Mounting Hardware	Stainless steel/Alloy steel

FINISHES

Shell	Electroless nickel plate per MIL-C-26074, Class 3
Contacts	Gold over suitable underplate per MIL-C-39029
Hardware	Passivate/Cadmium plate

MECHANICAL FEATURES

Shell Sizes	A (DPKA); B (DPKB)
Coupling	Friction, spring mount or jackscrew-coupling nut
Contact Arrangements	A—18, 32, 51, G131 B—48, 64, 78, 101, 59W7 71, 71C15, 161, G185
Contact Termination	Crimp

Electrical Data

Number of contacts: 18 thru 185		Sealing Range Wire Diameter	
Contact Sizes	Wire Accommodation (AWG)	Min.	Max.
22D	22, 24, 26	.030(0.76)	.060(1.52)
20	20, 22, 24	.040(1.02)	.083(2.11)
16	16, 18	.063(1.60)	.103(2.62)
12	12, 14	.081(2.06)	.158(4.01)
12 Shielded	RG-179/U	.081(2.06)	.158(4.01)

Max. current carrying capacity of contacts

Contact Size:	#12	#16	#20	#22
Amperage:	23	13	7.5	5.0

Test Voltages (AC-RMS)

Altitude (feet)	Equivalent Pressure (Torr)	Service Ratings (M & I)				Unmated 161 Arrangement
		Mated		Unmated		
		M	I	M	I	
Sea level	—	1300	1800	1300	1800	1000
50,000	87.5	800	1000	550	600	350
70,000	35.5	800	1000	350	400	250
110,000	5.74	800	1000	200	200	150

Cross Reference From Military to Cannon Part Numbers

MIL-SPEC P/N	ITTC P/N
M83733/1RA018	DPKA-18PG-7
M83733/1RA032	DPKA-32PG-7
M83733/1RA051	DPKA-51PG-7
M83733/1RA131	DPKA-G131PG-7
M83733/1RB048	DPKB-48PG-7
M83733/1RB064	DPKB-64PG-7
M83733/1RB071	DPKB-71PG-7
M83733/1RB71C	DPKB-71C15PG-7
M83733/1RB078	DPKB-78PG-7
M83733/1RB101	DPKB-101PG-7
M83733/1RB185	DPKB-G185PG-7
M83733/4RA018	DPKA-18SK-7
M83733/4RA032	DPKA-32SK-7
M83733/4RA051	DPKA-51SK-7
M83733/4RA131	DPKA-G131SK-7
M83733/4RA048	DPKB-48SK-7
M83733/4RB064	DPKB-64SK-7
M83733/4RB071	DPKB-71SK-7
M83733/4RB71C	DPKB-71C15SK-7
M83733/4RB078	DPKB-78SK-7
M83733/4RB101	DPKB-101SK-7
M83733/4RB185	DPKB-G185SK-7
M83733/7RA018	DPKA-18SY-7
M83733/7RA032	DPKA-32SY-7
M83733/7RA051	DPKA-51SY-7
M83733/7RA131	DPKA-G131SY-7
M83733/7RB048	DPKB-48SY-7
M83733/7RB064	DPKB-64SY-7
M83733/7RB071	DPKB-72SY-7
M83733/7RB71C	DPKB-71C15SY-7
M83733/7RB078	DPKB-78SY-7
M83733/7RB101	DPKB-101SY-7
M83733/10RA018	DPKA-18PH-7
M83733/10RA032	DPKA-32PH-7
M83733/10RA051	DPKA-51PH-7
M83733/10RB048	DPKB-48PH-7
M83733/10RB064	DPKB-64PH-7
M83733/10RB071	DPKB-71PH-7
M83733/10RB71C	DPKB-71C15PH-7
M83733/10RB078	DPKB-78PH-7
M83733/10RB101	DPKB-101PH-7
M83733/2RA018	DPKA-18SX-7
M83733/2RA032	DPKA-32SX-7
M83733/2RA051	DPKA-51SX-7
M83733/2RA131	DPKA-G131SX-7
M83733/2RB048	DPKB-48SX-7
M83733/2RB064	DPKB-64SX-7
M83733/2RB071	DPKB-71SX-7
M83733/2RB71C	DPKB-71C15SX-7
M83733/2RB078	DPKB-78SX-7
M83733/2RB101	DPKB-101SX-7
M83733/2RB185	DPKB-G185SX-7
M83733/5RA018	DPKA-18PC-7
M83733/5RA032	DPKA-32PC-7
M83733/5RA051	DPKA-51PC-7
M83733/5RA131	DPKA-G131PC-7
M83733/5RB048	DPKB-48PC-7
M83733/5RB064	DPKB-64PC-7
M83733/5RB71C	DPKB-71C15PC-7
M83733/5RB078	DPKB-78PC-7
M83733/5RB101	DPKB-101PC-7
M83733/5RB185	DPKB-G185PC-7
M83733/5RB071	DPKB-71PC-7
M83733/8RA018	DPKA-18PY-7
M83733/8RA032	DPKA-32PY-7
M83733/8RA051	DPKA-51PY-7
M83733/8RB048	DPKB-48PY-7
M83733/8RB064	DPKB-64PY-7
M83733/8RB071	DPKB-71PY-7
M83733/8RB71C	DPKB-71C15PY-7
M83733/8RB078	DPKB-78PY-7
M83733/8RB101	DPKB-101PY-7
M83733/11RA018	DPKA-18PZ-7
M83733/11RA032	DPKA-32PZ-7
M83733/11RA051	DPKA-51PZ-7
M83733/11RB048	DPKB-48PZ-7
M83733/11RB064	DPKB-64PZ-7
M83733-11RB071	DPKB-71PZ-7
M83733/11RB71C	DPKB-71C15PZ-7
M83733/11RB078	DPKB-78PZ-7
M83733/11RB101	DPKB-101PZ-7
M83733/3RA018	DPKA-18PX-7
M83733/3RA032	DPKA-32PX-7
M83733/3RA051	DPKA-51PX-7
M83733/3RA131	DPKA-G131PX-7
M83733/3RB048	DPKB-48PX-7
M83733/3RB064	DPKB-64PX-7
M83733/3RB071	DPKB-71PX-7
M83733/3RB71C	DPKB-71C15PX-7
M83733/3RB078	DPKB-78PX-7
M83733/3RB101	DPK-101PX-7
M83733/3RB185	DPKB-G185PX-7
M83733/6RA018	DPKA-18PF-7
M83733/6RA032	DPKA-32PF-7
M83733/6RA051	DPKA-51PF-7
M83733/6RA131	DPKA-G131PF-7
M83733/6RB048	DPKB-48PF-7
M83733/6RB064	DPKB-64PF-7
M83733/6RB071	DPKB-71PF-7
M83733/6RB71C	DPKB-71C15PF-7
M83733/6RB078	DPKB-78PF-7
M83733/6RB101	DPKB-101PF-7
M83733/6RB185	DPKB-G185PF-7
M83733/9RA018	DPKA-18PM-7
M83733/9RA032	DPKA-32PM-7
M83733/9RA051	DPKA-51PM-7
M83733/9RB048	DPKB-48PM-7
M83733/9RB064	DPKB-64PM-7
M83733/9RB071	DPKB-71PM-7
M83733/9RB71C	DPKB-71C15PM-7
M83733/9RB078	DPKB-78PM-7
M83733/9RB101	DPKB-101PM-7
M83733/12RA018	DPKA-18SH-7
M83733/12RA032	DPKA-32SH-7
M83733/12RA051	DPKA-51SH-7
M83733/12RB048	DPKB-48SH-7
M83733/12RB064	DPKB-64SH-7
M83733/12RB071	DPKB-71SH-7
M83733/12RB71C	DPKB-71C15SH-7
M83733/12RB078	DPKB-78SH-7
M83733/12RB101	DPKB-101SH-7

Mounting Styles / Applications

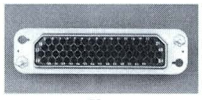
DPK connectors for rectangular or staggered mounting are available in both two- and four-spring mount assemblies, or the same shell style may be ordered to accommodate bushing assemblies. In the spring mount version the spring-loaded mechanism will compensate for a panel space variation of up to .070(1.78) while insuring electrical and environmental integrity.

DPK connectors are also available with polarizing posts, accommodations for jackscrews, and coupling nuts for cord-to-cord and cord-to-panel applications. Another shell style has two or four mounting holes fitted with captive clinch nuts.

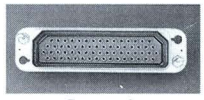
For mounting dimensions of the various mounting styles shown here please refer to pages 174-177.

Style A

Mounting style A is designed for cord-to-panel and cord-to-cord applications. Connectors are supplied with two polarizing posts installed and provisions for installation of two jackscrew assemblies or two coupling nut assemblies. (Replaces Mounting Style B.)



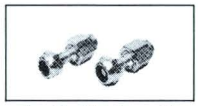
Plug
Socket Contacts



Receptacle
Pin Contacts

Ordered Separately

Jackscrew Assembly
305-0007-000

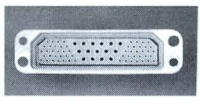


Coupling Nut Assembly
335-0002-000

Style C

Mounting style C is designed for cord-to-panel or rack-to-panel applications. Connectors are supplied with (4) MS24700-2 bushings on the receptacle and 4 spring mount assemblies on the plug.

M83733/5



Receptacle
Pin Contacts

Supplied with Connector

Bushing MS24700-2
(Self-Locking)
012-0515-000

Spring Mount Assembly
MIL-C-83733/17
231-0019-000

Style F

Mounting Style F is designed for rack-to-panel applications. Connectors are supplied with four captive clinch nuts installed.

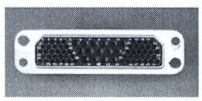
M83733/6

Receptacle
Pin Contacts

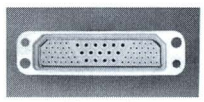
Style G

Mounting style G is designed for rack-to-panel applications. Connectors are supplied with four .281(7.14) diameter holes which will accommodate either four MS24700-2 bushings or four 231-0019-000 spring mounts.

M83733/1



Plug
Socket Contacts



Receptacle
Pin Contacts

Ordered Separately

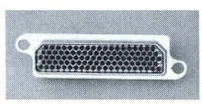
Bushing MS24700-2
(Self-Locking)
012-0515-000

Spring Mount Assembly
MIL-C-83733/17
213-0019-000

Style H

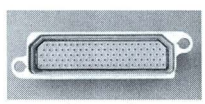
Mounting style H is designed for rack-to-panel applications. Connectors are supplied with two .281(7.14) diameter holes which are staggered. Two spring mounts are on the plug end two MS24700-2 bushings are on the receptacle.

M83733-12



Plug
Socket Contacts

M83733-10



Receptacle
Pin Contacts

Supplied with Connector

Bushing MS24700-2
(Self-Locking)
012-0515-000

Spring Mount Assembly
MIL-C-83733/17
231-0019-000

Style K

Mounting style K is designed for rack-to-panel applications. Connectors are supplied with four captivated, non-rotating spring mounts on the plug.

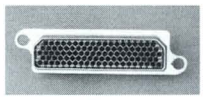
M83733/4

Plug
Socket Contacts

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

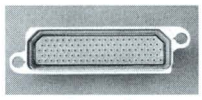
Style M

Mounting style M is designed for rack-to-panel applications. Connectors are supplied with two .281 (7.14) diameter holes which are staggered and will accommodate eight two MS24700-2 bushings or two 231-0019-000 spring mounts.



Plug
Socket Contacts

M83733/9



Receptacle
Pin Contacts

Ordered Separately

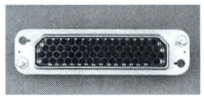
Spring Mount Assembly
MIL-C-83733/17
231-0019-000

Bushing MS24700-2
(Self-Locking)
012-0515-000

Style X

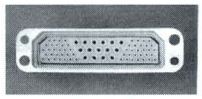
Mounting style X is designed for rack-to-panel applications where positive alignment is required before connectors are mated. Plug has two guide pins and two spring mounts (MIL-STD-1533); receptacle has two guide sockets and two .197 (5.00) dia. holes.

M83733/2

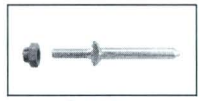


Plug
Socket Contacts

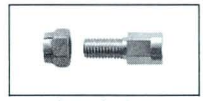
M83733/3



Receptacle
Pin Contacts



Guide Pins

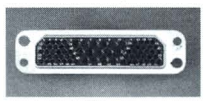


Guide Sockets

Style Y

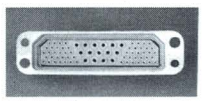
Mounting style Y is identical to mounting style X, except the guide sockets are on the plug and the guide pin and springs are on the receptacle.

M83733/7

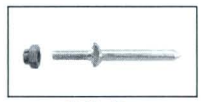


Plug
Socket Contacts

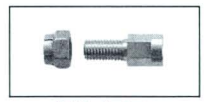
M83733/8



Receptacle
Pin Contacts



Guide Pins

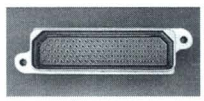


Guide Sockets

Style Z

Mounting style Z is designed for use in rack-to-panel applications. Connectors are supplied with two captive clinch nuts which are staggered.

M83733/11



Receptacle
Pin Contacts

MIL–C–83733/DPK Mounting Styles

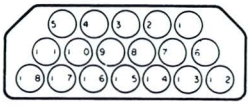
MIL-C-83733 Connector Type	DPK Mtg. Style	Mating MIL-C-83733 Connector	DPK Mtg. Style
M83733/1 RECEPTACLE	G	M83733/4	K
M83733/2 PLUG	X	M83733/3	X
M83733/3 RECEPTACLE	X	M83733/2	X
M83733/4 PLUG	K	M83733/1	G
		M83733/5	C
		M83733/6	F
M83733/5 RECEPTACLE	C	M83733/4	K
M83733/6 RECEPTACLE	F	M83733/4	K
M83733-07 PLUG	Y	M83733/8	Y
M83733-08 RECEPTACLE	Y	M83733/7	Y
M83733-09 RECEPTACLE*	M	M83733/12	H
M83733-10 RECEPTACLE*	H	M83733/12	H
M83733-11 RECEPTACLE*	Z	M83733/12	H
M83733-12 PLUG	H	M83733/9	M
		M83733/10	H
		M83733/11	Z

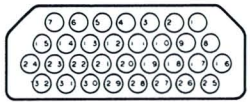
*Not recommended for G131 and G185 layouts.

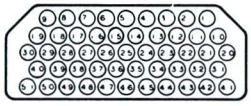
Contact Arrangements

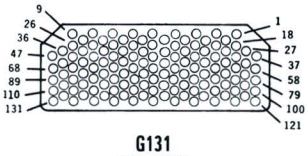
DPKA

Face View Pin Insert Shown



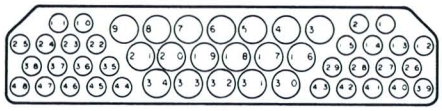


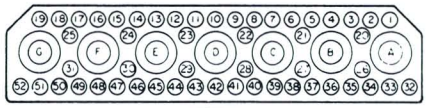




Layout	18	32	51	G131
No. of Contacts and Wire Size	18 #12	32 #16	51 #20	131 #22D
Service Rating	I	I	I	M

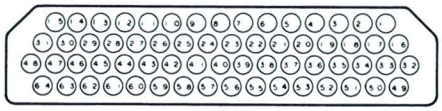
DPKB

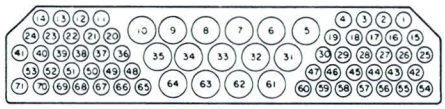




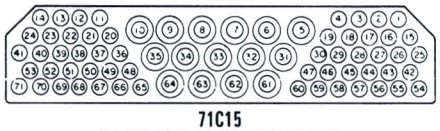
Layout	48	59W7
No. of Contacts and Wire Size	30 #16 (1, 2, 10-15, 22-29, 35-48), 18 #12 (3-9, 16-21, 30-34)	52 #20 (1-52) 7 Coax. (A-G)
Service Rating		#20: 1500 Coax: 1000 I & 500 VDC (Coax)

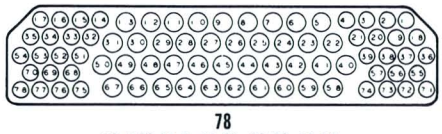
The 59W7 layout is sold less coaxial contacts, see page 173 for contact part numbers.



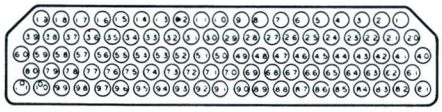


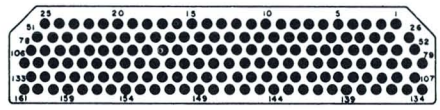
Layout	64	71
No. of Contacts and Wire Size	64 #16	56 #20 (1-4, 11-30, 36-60, 65-71) 15 #12 (5-10, 31-35, 61-64)
Service Rating	I	I



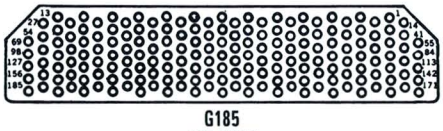


Layout	71C15	78
No. of Contacts and Wire Size	56 #20 (1-4, 11-30, 36-60, 65-71) 15 Shielded #12 (5-10, 31-35, 61-64)	38 #20 (1-4, 14-21, 32-39, 51-57, 68-78), 40 #16 (5-13, 22-31, 40-50, 58-67)
Service Rating	#20: 1500; #12 Shielded: 500 1 & 500 VDC (Coax)	I





Layout	101	161*
No. of Contacts and Wire Size	101 #20	161 #22
Service Rating	I	1000 VDC



Layout	G185
No. of Contacts and Wire Size	185 #22D
Service Rating	M

***POS-ALINE DESIGN**

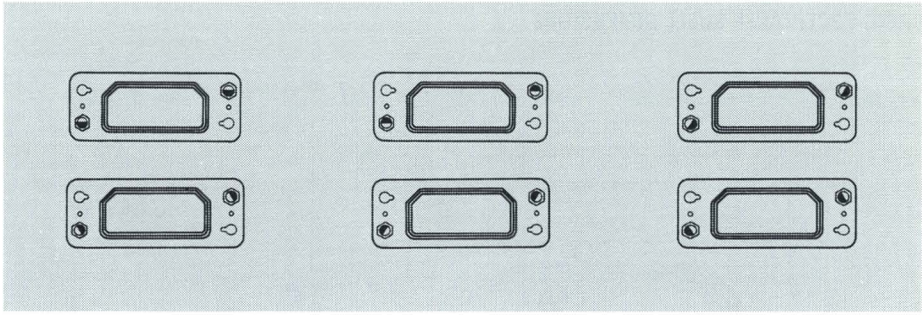
In the 161 contact arrangement, the entire pin contact is recessed in an individual cavity in the plug connector. The socket contact is exposed and extends from the connector receptacle face. (Pin insulator accepts socket contacts.)

Polarization (Mounting Style A only)

Polarizing Post Alternate Positions

Pin inserts polarizing positions are 180° opposite socket insert polarizing positions. Shaded areas indicate extended portion of the polarizing posts. Cord to panel DPK connectors are available in 35 alternate polarizing positions by changing indexing of the polarizing posts. Keystone corners and hexagonal posts provide this wide range of alternate positions.

Face view of socket insert plug connector engaging end.



Contact Data

Standard Contacts

Contact Size	Type	Cannon Part Number	Military Part Number	Crimp Tool	Insertion/ Extraction Tool	Grommet Sealing Plug Part Number (Color)
12	Pin Skt.	030-9185-003 031-9186-003	M39029/4-113 M39029/5-118	M22520/1-01 with M22520/1-02 Turret	MIL-I-81969/14-04	225-0072-000 (Yellow)
16	Pin Skt.	030-9205-007 031-9206-006	M39029/4-111 M39029/5-116		MIL-I-81969/14-03	225-0071-000 (Blue)
20	Pin Skt.	030-9173-006 031-9174-004	M39029/4-110 M39029/5-115	M22520/2-01 with M22520/2-02 Turret	MIL-I-81969/14-02	225-0070-000 (Red)
22	Pin Skt.	030-1975-008 031-1113-008	M39039/11-144 M39029/12-148	M22520/2-01 with M22520/2-23 Turret	MIL-I-81969/14-01	225-1013-000 (Black)
22D	Pin Skt.	030-2042-000 031-1147-000	M39029/58-360 M39029/57-354	M22520/2-01 with M22520/2-09 (Socket) Turret M22520/2-07 (Pin) Turret	MIL-I-81969/14-01	

Coaxial/Shielded Contacts

Coaxial	Type	Cannon Part Number	Cable Accom.	DWV Voltage	Min./Max. O.D. Wire Accom.	Crimp Tool	Ins./ Ext. Tool	Grommet Sealing Plug Part Number (Color)
Coaxial Contacts* 59W7 Arrangement Only	Plug Receptacle	249-5500-012 249-5500-013	RG-316	500 VDC	.122 (3.10) .250 (6.35)	CCTC8 Outer M22520/2-01 M22520/2-30	CET-C8	225-0085-000 (White)
	Plug Receptacle	249-5500-010 249-5500-011	RG-180/U	500 VDC	.122/.250	CCTC9 Outer M22520/2-01 M22520/2-30	CET-C8	

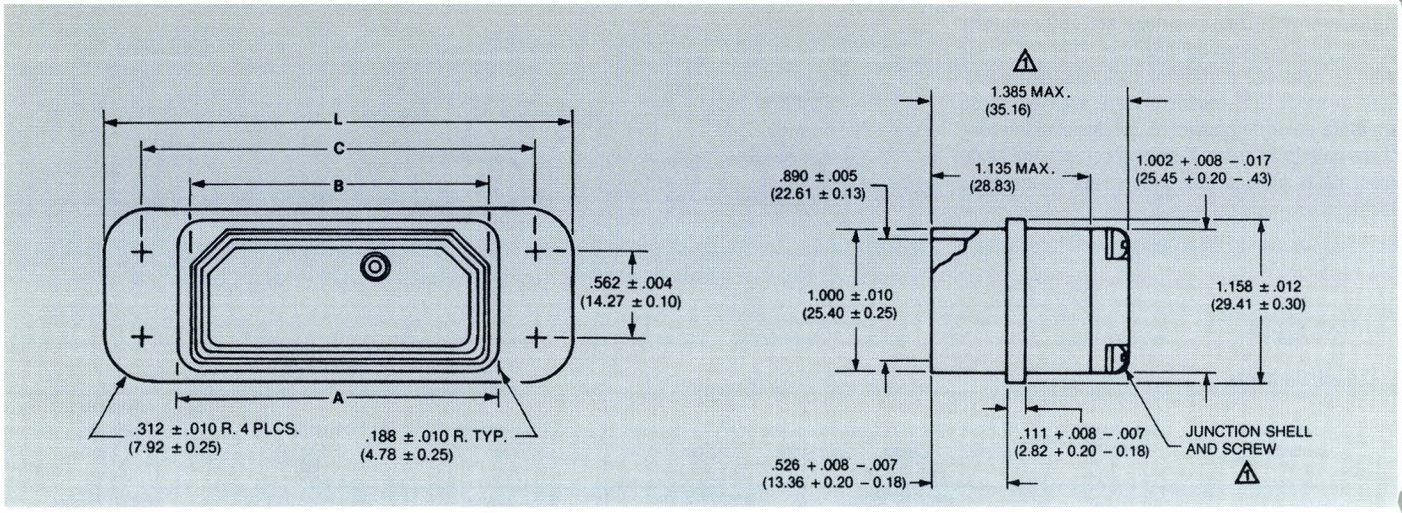
*Plug coaxials go into plug connectors (59W7S inserts with socket contacts). Receptacle coaxials go into receptacle connectors ("P" inserts) with pin contacts (59W7P inserts with pin contacts).

Shielded	Type	Cannon Part Number	MIL Part Number	Cable Accom.	Min./Max. Cable Dia.	Crimp Tools	Locator	Ins./ Ext. Tool	Grommet Sealing Plug Part Number (Color)
Size 12 Contact 71C15 Layout Only	Pin Socket	249-1825-001 249-1826-000	M39029/50-340 M39029/51-341	RG-179/U	.081(2.06) .158(4.01)	M22520/5-01 Outer M22520/2-01 Inner	M22520/5-08 Outer M22520/2-30 Inner	CIET-12	225-0072-000 (Yellow)

*Pin shielded contacts utilized in receptacle connectors (71C15P inserts).
Socket shielded contacts utilized in plug connectors (71C15S inserts).

Receptacle (Pin Contacts)

BASIC RECEPTACLE SHELL DIMENSIONS



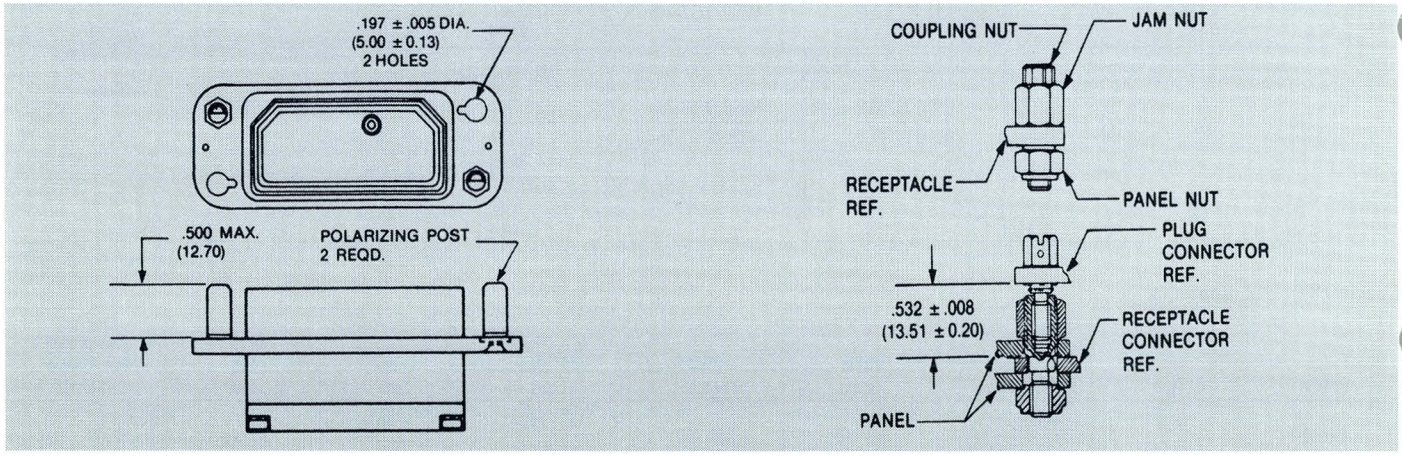
⚠ Junction shell and screws are not supplied on -G131 and -G185 layouts.

SHELL SIZE	A	B	C	L	N Staggered†
DPKA-*P*-*	2.085 (52.96) 2.072 (52.63)	1.976 (50.19) 1.961 (49.81)	2.580 (65.58) 2.570 (65.38)	3.030 (76.96) 3.000 (76.20)	2.150 (54.61) 2.130 (54.10)
DPKB-*P*-*	3.385 (85.98) 3.372 (85.65)	3.281 (83.34) 3.261 (82.83)	3.880 (98.53) 3.870 (98.32)	4.330 (109.98) 4.300 (109.22)	3.450 (87.63) 3.430 (87.12)

†See Page 175 Style M and Z

DPK TYPES

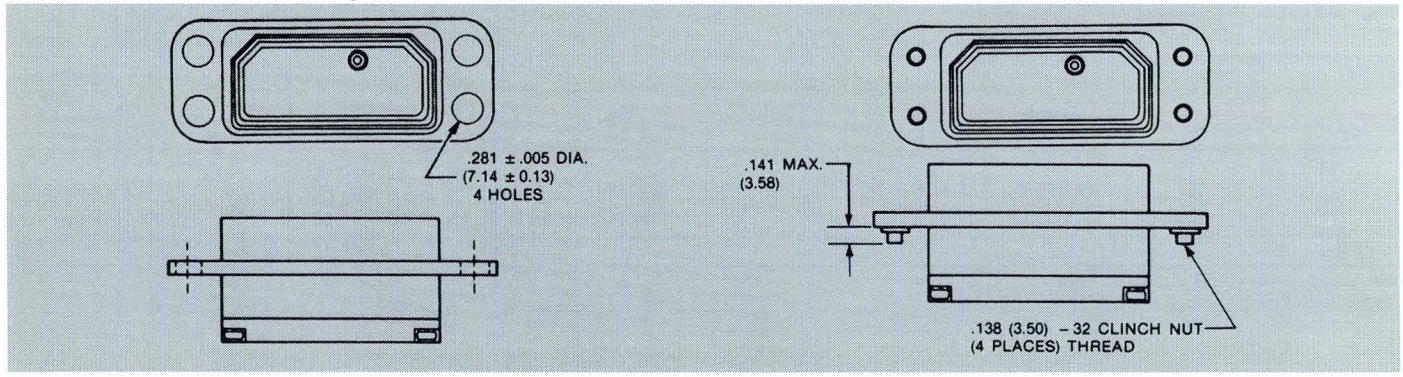
Mounting Style A



Mounting Dimensions for Coupling Nut Assemblies

DPK/MIL-C-83733 TYPES

Mounting Style G
Standard Hole Mounting MIL-C-83733/1(USAF)

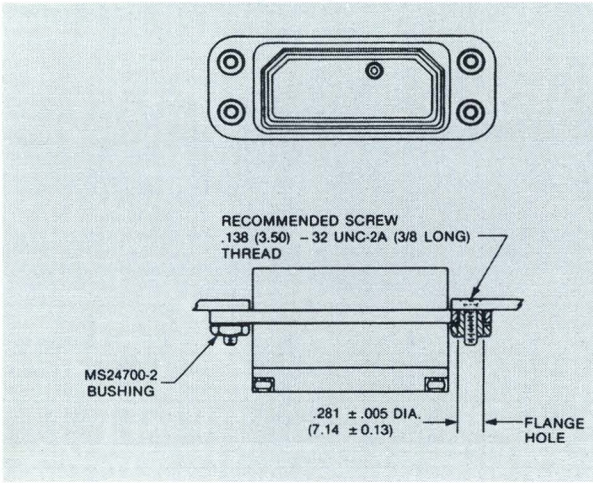


Mounting Style F Clinch Nut Mounting
MIL-C-83733/6(USAF)

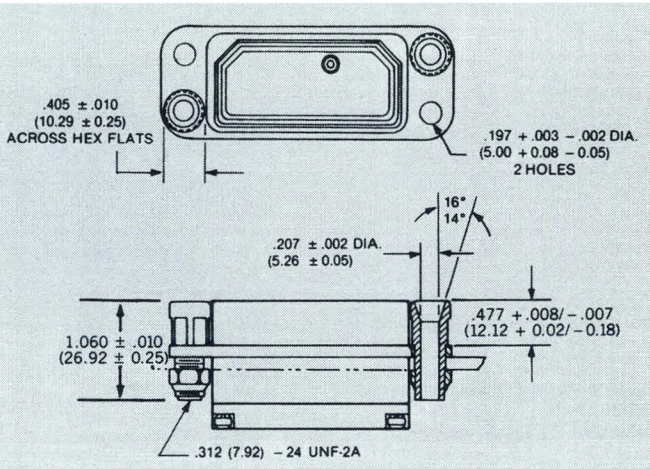
Receptacles / Configurations (Pin Contacts)

DPK/MIL-C-83733 TYPES

Mounting Style C
Bushing Mounting MIL-C-83733/5(USAF)

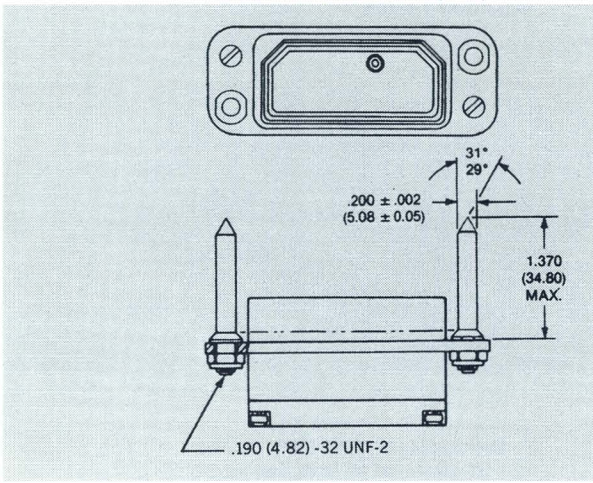


Mounting Style X
With Guide Sockets MIL-C-83733/3(USAF)

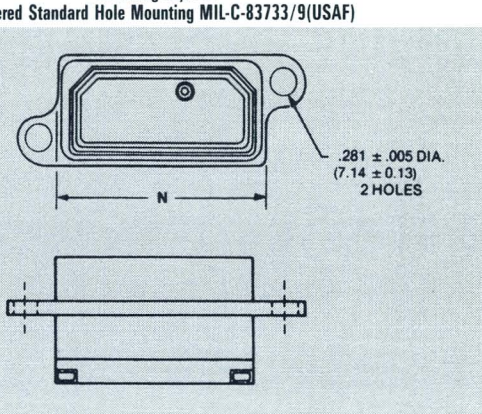


DPK/MIL-C-83733 TYPES

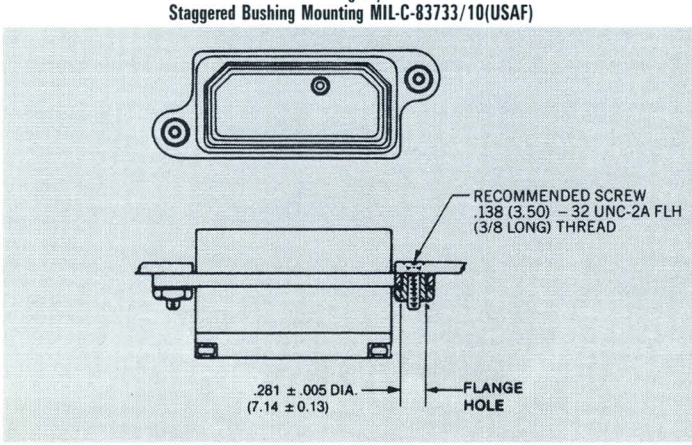
Mounting Style Y
With Guide Pins MIL-C-83733/8(USAF)



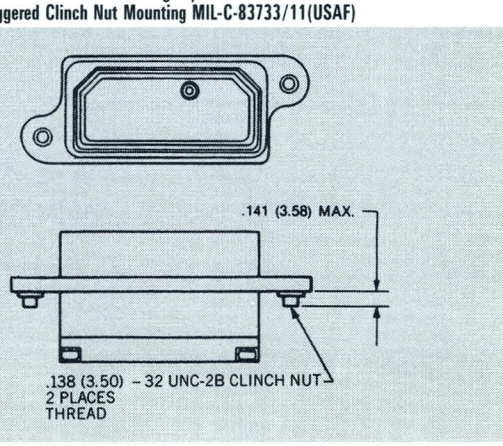
Mounting Style M
Staggered Standard Hole Mounting MIL-C-83733/9(USAF)



Mounting Style H
Staggered Bushing Mounting MIL-C-83733/10(USAF)

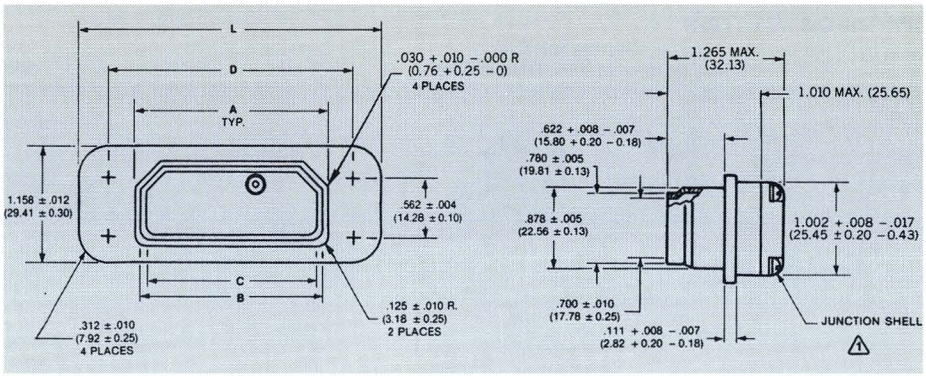


Mounting Style Z
Staggered Clinch Nut Mounting MIL-C-83733/11(USAF)



Plug/Configurations (Socket Contacts)

Basic Plug
Shell Dimensions

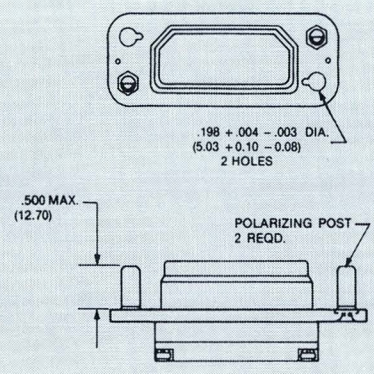


Shell Size	A	B	C	D	L	N Staggered†
DPKA-*S*-*	1.959 (49.76) 1.946 (49.43)	1.864 (47.35) 1.853 (47.07)	1.780 (45.21) 1.763 (44.78)	2.580 (65.53) 2.570 (65.28)	3.030 (76.96) 3.000 (76.20)	2.150 (54.61) 2.130 (54.10)
DPKB-*S*-*	3.259 (82.78) 3.246 (82.45)	3.164 (80.37) 3.153 (80.09)	3.080 (78.23) 3.063 (77.80)	3.880 (96.52) 3.870 (98.30)	4.330 (109.98) 4.300 (109.22)	3.450 (87.63) 3.430 (87.12)

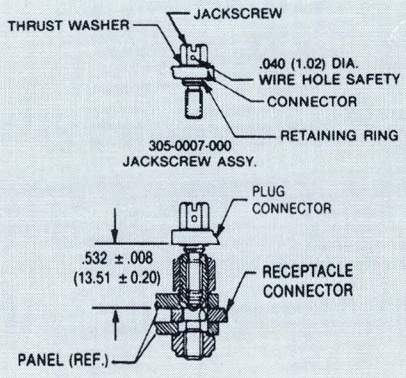
⚠ Junction shell and hardware are not supplied on -G131 and -G185 layouts.
†See page 177 Style M and H

DPK Styles

Mounting Style A

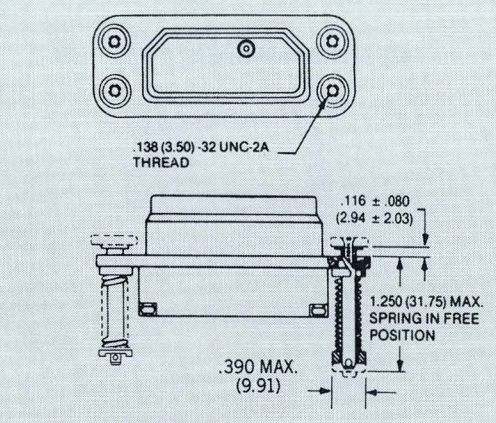


Mounting Spacing Dimensions For Jackscrew Assemblies



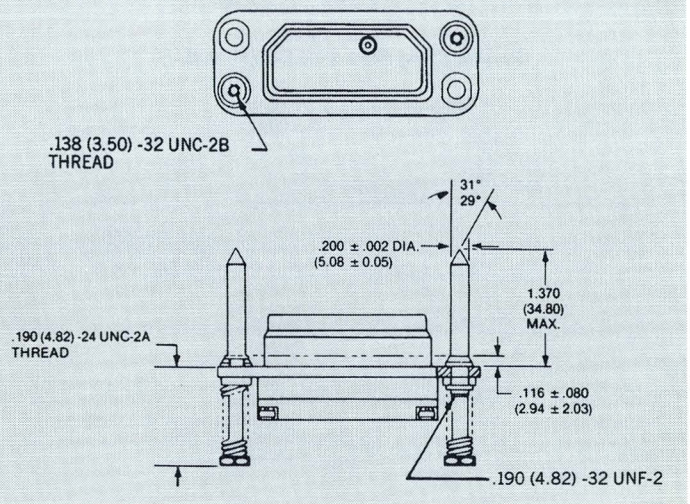
DPK/MIL-C-83733 Types

Mounting Style K — MIL-C-83733/4(USAF) With Captive Springs



NOTES: 1. Springs are pre-loaded to 25 pounds each in free position.
2. Spring forces will be 118 pounds minimum at .500 (12.70) panel spacing and 176 pounds maximum at .390 (9.91) panel spacing.

Mounting Style X — MIL-C-83733/2(USAF) With Guide Pins and Spring Mounting



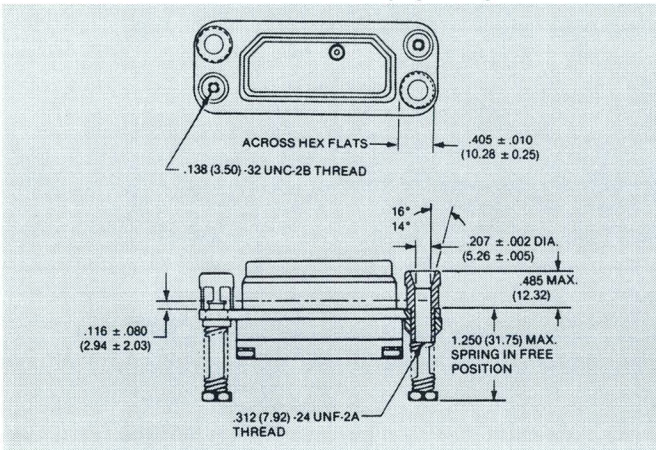
NOTES: 1. Springs are pre-loaded to 25 pounds each in free position.
2. Spring forces will be 59 pounds minimum at .500 (12.70) panel spacing and 88 pounds maximum at .390 (9.91) panel spacing.
3. This configuration must not be used on the 131 or 185 contact layouts.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Plug Configurations (Socket Contacts)

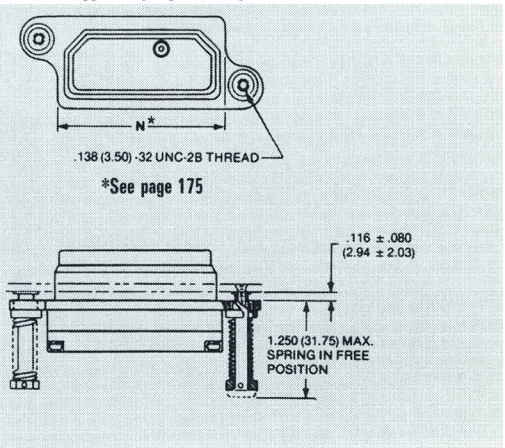
DPK/MIL-C-83733 Types

Mounting Style Y — MIL-C-83733/7(USAF)
With Guide Sockets and Spring Mounting



NOTES: 1. Springs are pre-loaded to 25 pounds each in free position.
2. Spring forces will be 59 pounds minimum at .500 (12.70) panel spacing and 88 pounds maximum at .390 (9.91) panel spacing.

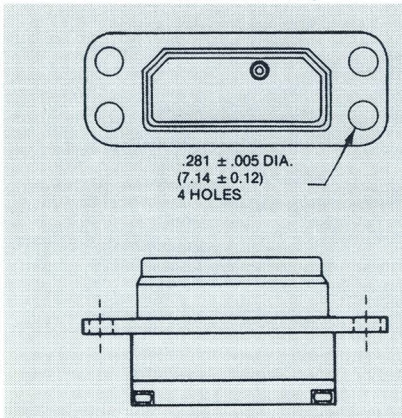
Mounting Style H — MIL-C-83733/12(USAF)
Staggered Spring Mounting



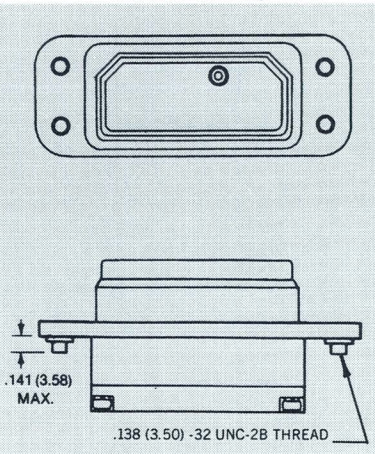
NOTES: 1. Springs are pre-loaded to 25 pounds each in free position.
2. Spring forces will be 59 pounds minimum at .500 (12.70) panel spacing and 88 pounds maximum at .390 (9.91) panel spacing.
3. This configuration must not be used on the 131 or 185 contact layouts.

DPK Commercial Types

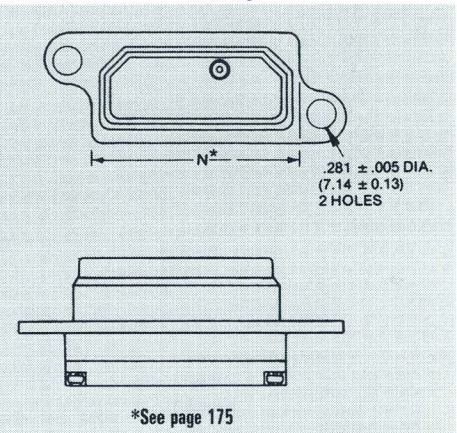
Mounting Style G
Standard Hole Mounting



Mounting Style F
Clinch Nut Mounting



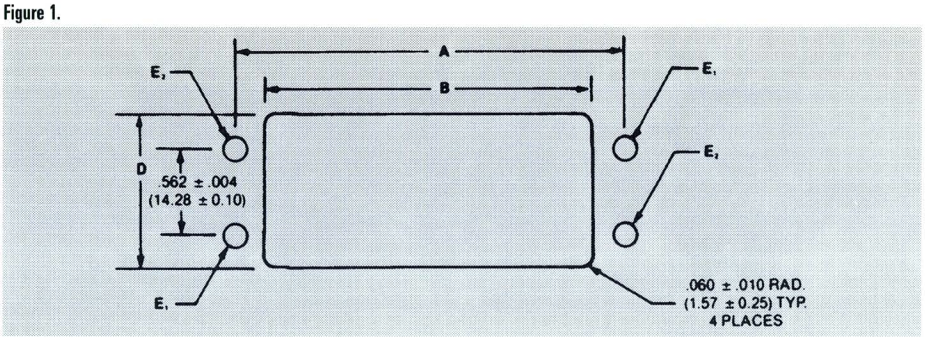
Mounting Style M
Mounting



Panel Cutout Dimensions

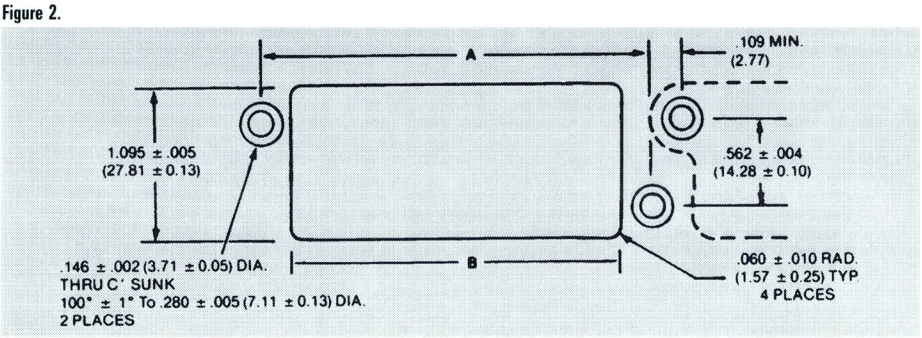
Mounting Styles
PG, SG SY, PY
PC, PF, SF S*A, S*B
SX, PX, SK P*A, P*B

Figure 1.



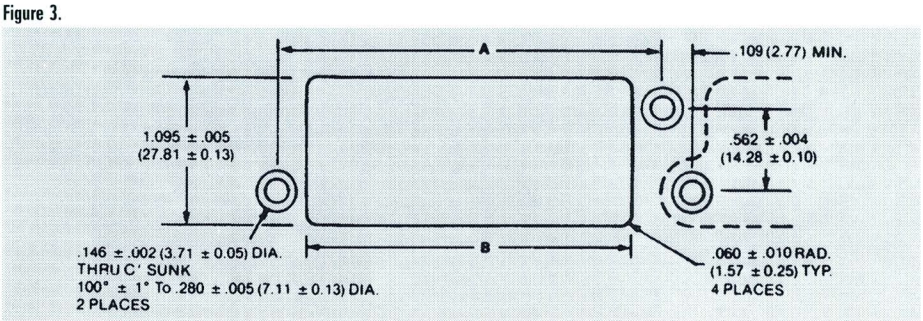
Mounting Styles
SH, SM

Figure 2.



Mounting Styles
PM, PH, PZ

Figure 3.



MIL-C-83733 Part No./ Mounting Style	DPK Mounting Styles	Figure Ref.	A ±.004(±0.10)		B ±.005(±0.13)		D ±.005(±0.13)		E_1		E_2	
			Shell Size A	Shell Size B	Shell Size A	Shell Size B	Shell Size A	Shell Size B	Shell Size A	Shell Size B	Shell Size A	Shell Size B
M83733/1/5/6	PG,SG, PC, PF, SF	1	2.578 (65.48)	3.875 (98.43)	2.103 (51.13)	3.400 (86.36)	1.022 (25.96)	1.022 (25.96)	.148 (3.76) / .144 (3.66)	.148 (3.76) / .144 (3.66)	.148 (3.76) / .144 (3.66)	.148 (3.76) / .144 (3.66)
M83733/2	SX	1	2.578 (65.48)	3.875 (98.43)	2.103 (51.13)	3.465 (88.01)	1.022 (25.96)	1.095 (27.81)	.148 (3.76) / .144 (3.66)	.148 (3.76) / .144 (3.66)	.260 (6.60) / .250 (6.35)	.260 (6.60) / .250 (6.35)
M83733/3	PX	1	2.578 (65.48)	3.875 (98.43)	2.103 (51.13)	3.465 (88.01)	1.022 (25.96)	1.095 (27.81)	.320 (8.13) / .315 (8.00)	.320 (8.13) / .315 (8.00)	.148 (3.76) / .144 (3.66)	.148 (3.76) / .144 (3.66)
M83733/4	SK	1	2.578 (65.48)	3.875 (98.43)	2.167 (55.04)	3.465 (88.01)	1.095 (27.81)	1.095 (27.81)	.148 (3.76) / .144 (3.66)	.148 (3.76) / .144 (3.66)	.148 (3.76) / .144 (3.66)	.148 (3.76) / .144 (3.66)
M83733/7	SY	1	2.578 (65.48)	3.875 (98.43)	2.167 (55.04)	3.465 (88.01)	1.095 (27.81)	1.095 (27.81)	.148 (3.76) / .144 (3.66)	.148 (3.76) / .144 (3.66)	.430 (10.92) / .420 (10.67)	.430 (10.92) / .420 (10.67)
M83733/8	PY	1	2.578 (65.48)	3.875 (98.43)	2.167 (55.04)	3.465 (88.01)	1.095 (27.81)	1.095 (27.81)	.380 (9.65) / .370 (9.40)	.380 (9.65) / .370 (9.40)	.148 (3.76) / .144 (3.66)	.148 (3.76) / .144 (3.66)
M83733/9/10/11	PM, PH, PZ	2	2.578 (65.48)	3.875 (98.43)	2.167 (55.04)	3.465 (88.01)	1.095 (27.81)	1.022 (25.96)	—	—	—	—
M83733/12	SH, SM	3	2.578 (65.48)	3.875 (98.43)	2.095 (53.21)	3.400 (86.36)	1.095 (27.81)	1.095 (27.81)	—	—	—	—
N/A	S*A, S*B, P*A, P*B	1	2.578 (65.48)	3.875 (98.43)	2.103 (51.13)	3.465 (88.01)	1.022 (25.96)	1.095 (27.81)	.301 (7.65) / .294 (7.45)	.301 (7.65) / .294 (7.45)	.301 (7.65) / .294 (7.45)	.301 (7.65) / .294 (7.45)

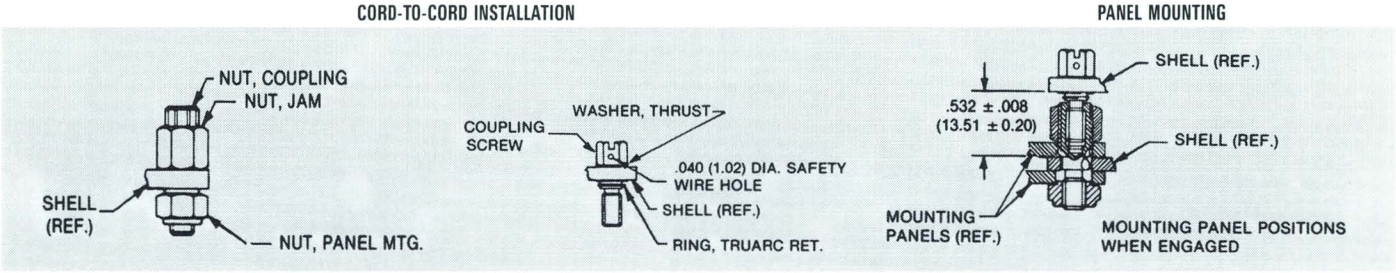
ITT Cannon

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Rack and Panel Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

Mounting Assembly — Jackscrew/Coupling Nut

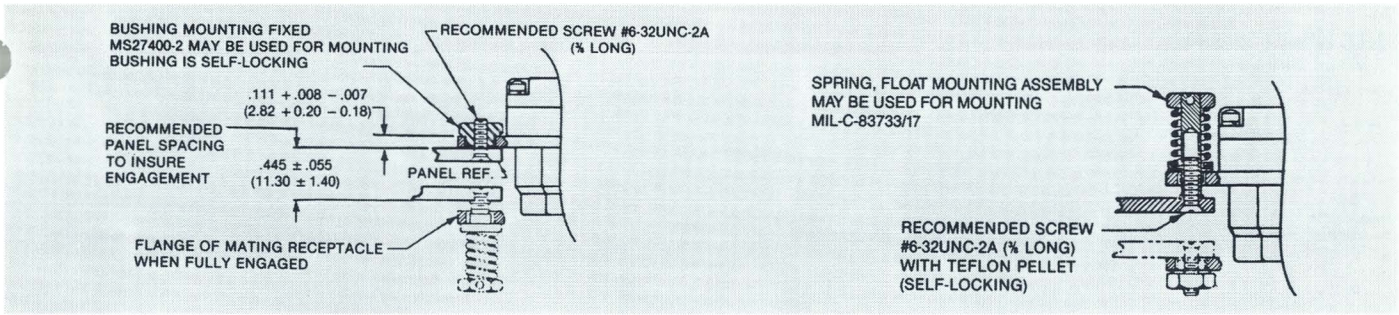
Installation of jackscrew and coupling nuts in mounting style A and B.



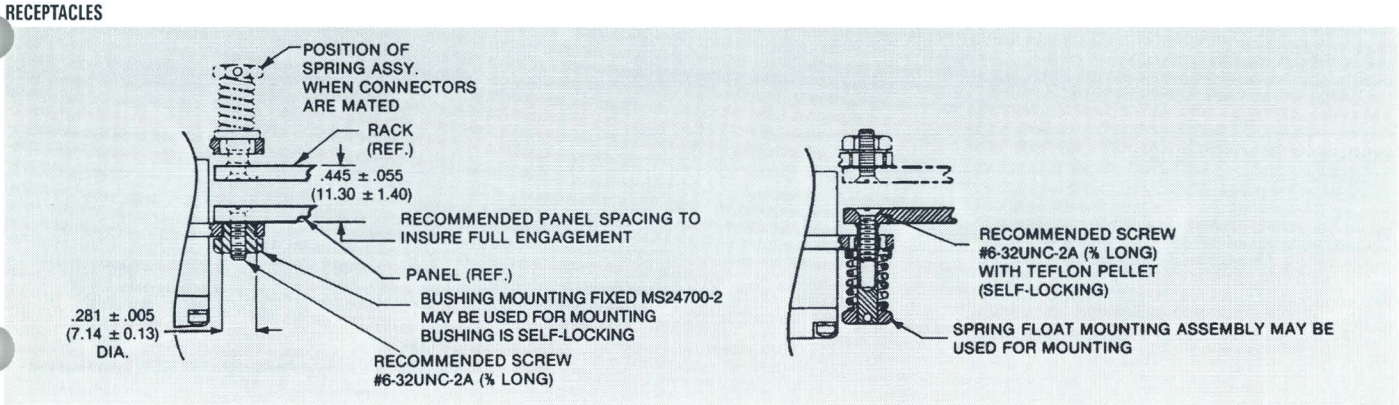
Mounting Assembly — Bushing/Spring Mount

Installation of mounting styles utilizing bushing and spring mount assemblies.

PLUGS



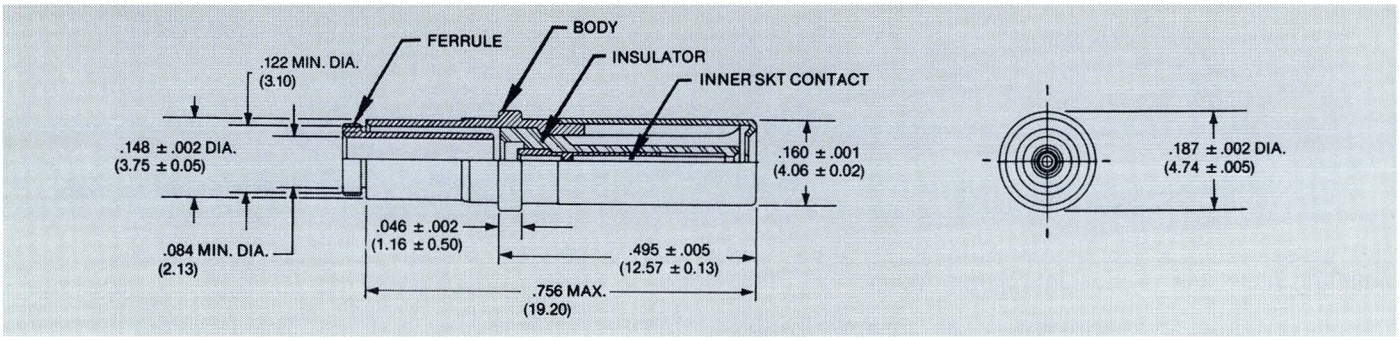
RECEPTACLES



Assembly / Shielded Contacts

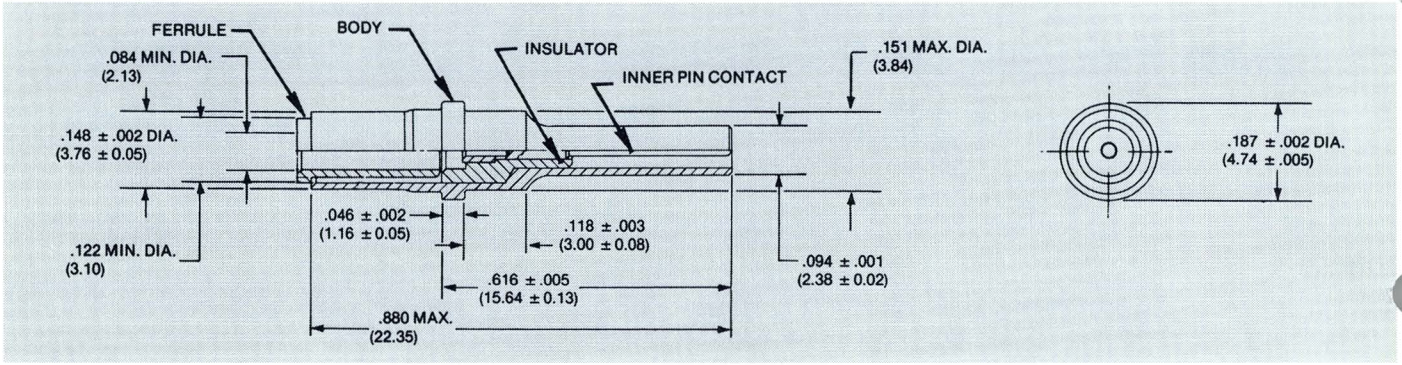
Socket

249-1826-000/MIL-C-39029/51
Size 12/RG-179B/U Cable

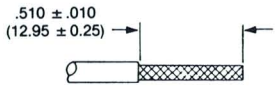


Pin

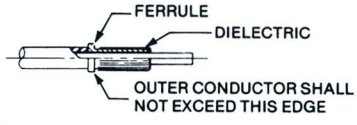
249-1825-001/MIL-C-39029/50
Size 12/RG-179B/U Cable



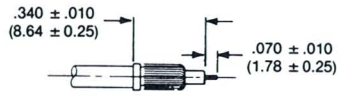
Assembly Instructions



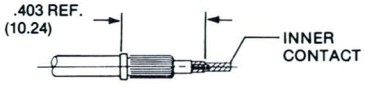
Step 1.
Strip outer jacket to dimensions shown to expose outer conductor.



Step 2.
Slip (or install ferrule over outer conductor against cable jacket. Exposed portion of the outer conductor must be combed out then folded back over ferrule.



Step 3.
Trim cable to dimensions, as shown. (Ferrule must butt against cable jacket.)



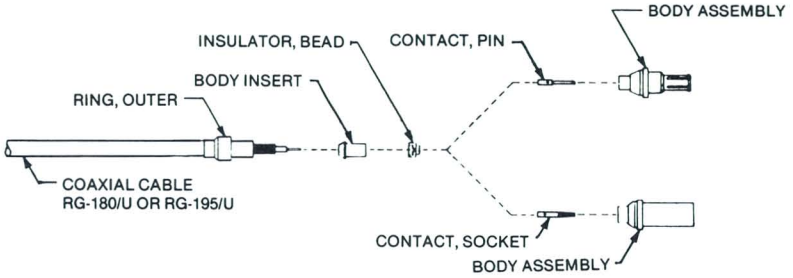
Step 4.
Install inner contact against dielectric then crimp contact and center conductor with a M22520/2-01 crimp tool using a M22520/2-30 locator.

Step 5.
Insert cable, ferrule and inner contact to rear of shell and crimp into place with M22520/5-03 crimp tool.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Coaxial Contact / Assembly

249-5500-010
249-5500-011



NOTES:
1. These assembly instructions apply to 249-5500-010, and 249-5500-011.
2. The following assembly tools are required:
   a) CCT-C9 hex crimp tool
   b) MS3198-Q W/L-3198-C1 contact crimp tool and locator
   c) 149°C(300°F) hot air gun (recommended): Regal Heat Gun No. 9A)
   d) Blades, scissors, and picks

STEP 1.
Slide outer ring over cable as shown (Figure 1).

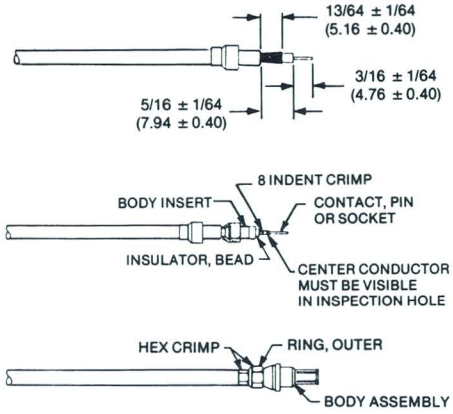
STEP 2.
Strip cable as shown (Figure 1).

STEP 3.
Install body insert, insulator bead, and contact on cable as shown (Figure 2).

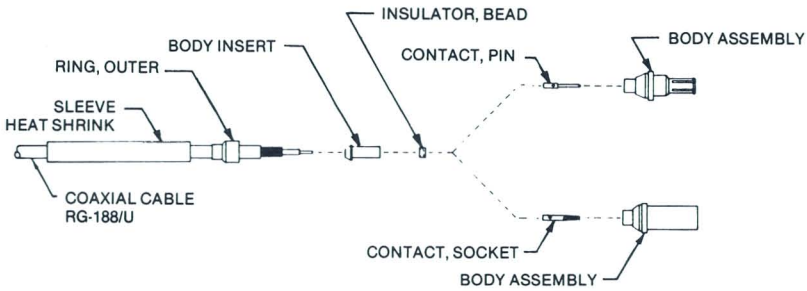
STEP 4.
With body insert, insulator bead, and contact firmly in place, crimp the contact with tool M22520/2-01 (setting number 3) and locator M22520/2-30 (Figure 2). Caution: The assembled components must be tightly in place after crimping.

STEP 5.
Slide body assembly over components and under shield until firmly bottomed in place. Locate outer ring over shield and against body as shown (Figure 3).

STEP 6.
With cable and body assembly securely held together, hex crimp the outer ring with tool CCT-C9 (Figure 3). Important: For optimum hex crimp, firmly bottom the outer ring against the shoulder of the hex die before compressing the handles.



249-5500-012
249-5500-013



NOTES:
1. These assembly instructions apply to 249-5500-010, and 249-5500-011.
2. The following assembly tools are required:
   a) CCT-C9 hex crimp tool
   b) M22520/2-01 contact crimp tool and locator
   c) 149°C(300°F) hot air gun (recommended): Regal Heat Gun No. 9A)
   d) Blades, scissors, and picks

STEP 1.
Slide heat-shrink sleeve and outer ring over cable as shown.

STEP 2.
Strip cable as shown (Figure 1). Caution: Do not nick shield wires.

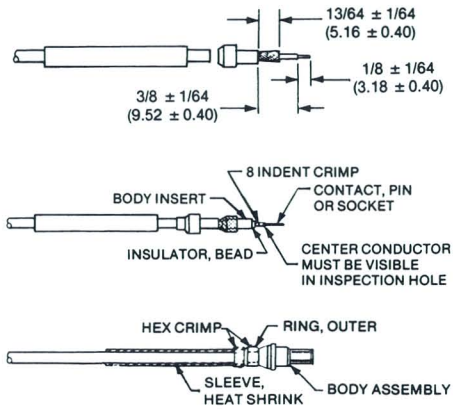
STEP 3.
Install body insert, insualtor bead, and contact on cable as shown.

STEP 4.
With body insert, insulator bead, and contact firmly in place, crimp the contact with tool M22520/2-01, using setting number 3 and locator M22520/2-30 (Figure 2). Caution: The assembled components must be tightly in place after crimping.

STEP 5.
Slide body assembly over assembled components and under shield until firmly bottomed in place. Locate outer ring over shield and against body as shown (Figure 3).

STEP 6.
With cable and body assembly securely held together, hex crimp the outer ring tool CCT-C8 (Figure 3). Important: For optimum hex crimp, firmly bottom the outer ring against the shoulder of the hex die before compressing the handles.

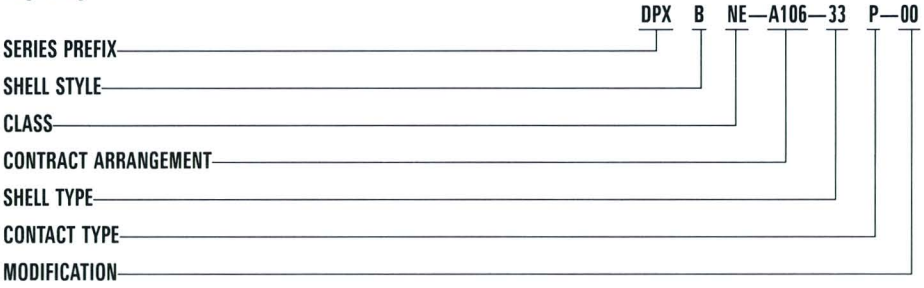
STEP 7.
The final step is to shrink the heat sleeve in place with a hot air source of 149°C to 327°C (300°F to 621°F) (Figure 3).



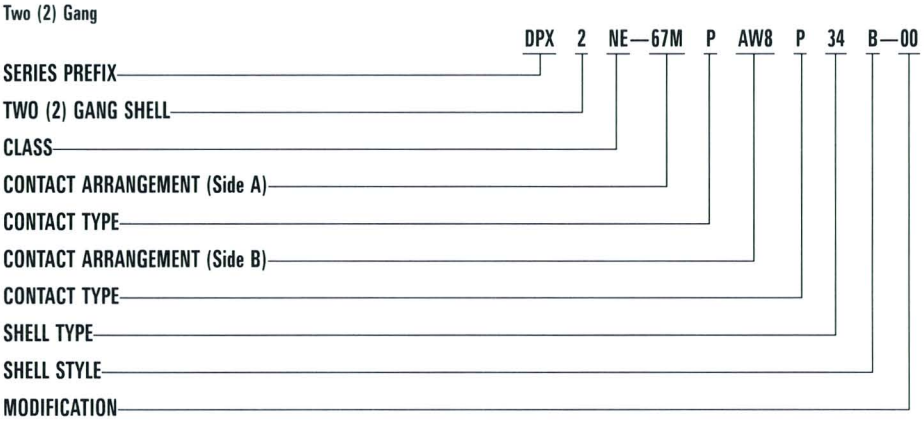
Cannon's DPXNA (non-environmental, Type IV) and DPXNE (environmental, Types II and III) rack and panel connectors are designed to meet or exceed the requirements of MIL–C–81659, Revision B. They are used in military and aerospace applications and computer periphery equipment requirements, and are designed to operate in temperatures ranging from −65°C to +125°C. DPXNA/NE connectors are available in single, 2, 3, and 4 gang configurations, with a total of 12 contact arrangements accommodating contact sizes 12, 16, 20 and 22, and combination standard and coaxial contacts. Contact retention of these crimp snap-in contacts is provided by the LITTLE CAESAR® rear release contact retention assembly. Environmental sealing is accomplished by wire sealing grommets and interfacial seals. For a complete catalog on rack and panel connectors including the DPX family series, please fill out the reply card located in the back of your Connector Sourcebook.

How to Order

Single Gang

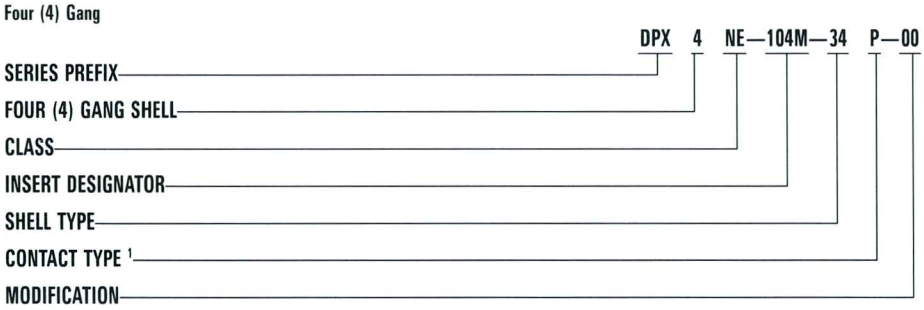


Two (2) Gang



Three (3) Gang

Four (4) Gang



[1]NOTE: On 3 & 4 gang assemblies, combination layouts, the contact type designator of the A106 layout, if applicable, precedes the designator for standard contact sex layouts. See 3 gang nomenclature breakdown above for 240M example (67MS, 67MS, A106P).

SERIES PREFIX
DPX - ITT Cannon Designation

SHELL STYLE
B - ARINC 'B' Shell

CLASS (MIL-C-81659B, Class 1)....
NA - Non-Environmental (MIL-C-81659B, Type IV)
NE - Environmental (MIL-C-81659B, Types II and III)

INSERT DESIGNATOR
In the 3 and 4 gang assemblies, the insert designation number represents cumulative (Total) contacts. The charts on Page 183 denote shell cavity location by layout. (If desired arrangement location is not defined, please consult our local sales engineering office.)

CONTACT ARRANGEMENT
See page 187

SHELL TYPE
'33' for Plug; '34' for Receptacle

CONTACT TYPE
'P' for Pin (Standard on '34' receptacle except A106 layout which has reversed contact sex)
'S' for Socket (Standard on '33' plug except A106 layout which has reversed contact sex)

MODIFICATION CODES
−00 Standard
−01 Standard with clinch nuts in the mounting holes (34 only).
−02 Standard with tabs for attaching junction shells.
−03 Standard with mounting holes .120 dia. countersunk 100° to .230 dia. (33 only).
−17 Combination of 01** and 02** (clinch nuts in mounting holes - 34 only and tabs for attaching junction shells).
−22 Standard with clinch nuts (33 only).
−23 Standard with standard floating eyelets.
−29 Standard except less grommet (NE, pin only).
−30 Same as −29** except with tabs for attaching junction shells.
−33 Same as −29** except with clinch nuts.
−37 Same as −29** except with clinch nuts and tabs for attaching junction shells.
−39 Standard with standard floating eyelets and tabs for attaching junction shells.

NOTE: For additional modification codes please consult the factory.

Insert Designator Number

DPX3NA/DPX3NE

MS3157	ITTC	Side A	Side B	Side C
0005	78M	26MP	26MP	26MP
0006	78M	26MS	26MS	26MS
0013	120M	40MP	40MP	40MP
0014	120M	40MS	40MS	40MS
0021	135M	45MP	45MP	45MP
0022	135M	45MS	45MS	45MS
0029	171M	57MP	57MP	57MP
0030	171M	57MS	57MS	57MS
0037	201M	67MP	67MP	67MP
0038	201M	67MS	67MS	67MS
0045	A318	A106P	A106P	A106P
0046	A318	A106S	A106S	A106S
0065	24M	W8MP	W8MP	W8MP
0066	24M	W8MS	W8MS	W8MS
0067	122M	W8MP	W8MP	A106S
0068	122M	W8MS	W8MS	A106P
0073	142M	67MP	67MP	W8MP
0074	142M	67MS	67MS	W8MS
0075	240M	67MP	67MP	A106S
0076	240M	67MS	67MS	A106P
0079	A240M	67MP	A106S	67MP
0080	A240M	67MS	A106P	67MS
0091	279M	A106S	A106S	67MP
0092	279M	A106P	A106P	67MS
0157	244M	A106S	A106S	32W4MP
0158	244M	A106P	A106P	32W4MS

DPX4NA/DPX4NE

MS3157	ITTC	Side A	Side B	Side C	Side D
0007	104M	26MP	26MP	26MP	26MP
0008	104M	26MS	26MS	26MS	26MS
0015	160M	40MP	40MP	40MP	40MP
0016	160M	40MS	40MS	40MS	40MS
0023	180M	45MP	45MP	45MP	45MP
0024	180M	45MS	45MS	45MS	45MS
0031	228M	57MP	57MP	57MP	57MP
0032	228M	57MS	57MS	57MS	57MS
0039	268M	67MP	67MP	67MP	67MP
0040	268M	67MS	67MS	67MS	67MS
0047	A424	A106P	A106P	A106P	A106P
0048	A424	A106S	A106S	A106S	A106S

MS3157	ITTC	Side A	Side B	Side C	Side D
0063	95M	10W3MP	10W3MP	W8MP	67MP
0064	95M	10W3MS	10W3MS	W8MS	67MS
0085	150M	W8MP	W8MP	67MP	67MP
0086	150M	W8MS	W8MS	67MS	67MS
0095	326M	A106S	W8MP	A106S	A106S
0096	326M	A106P	W8MS	A106P	A106P
0097	287M	A106S	67MP	A106S	W8MP
0098	287M	A106P	67MS	A106P	W8MS
0099	189M	A106S	67MP	W8MP	W8MP
0100	189M	A106P	67MS	W8MS	W8MS
0101	346M	A106S	A106S	67MP	67MP
0102	346M	A106P	A106P	67MS	67MS

Standard Data

Description	Material	Finish
Shell	Aluminum alloy	Cadmium plating, Type II, Class 3/QQ-P-416 with yellow chromate finish
Insulators	Thermoplastic or thermosetting plastic	None
Elastomers	Silicone rubber (ITT Cannon Blend)	None
Contacts	Copper alloy	Gold plate per MIL–G–45204, Type 1, Grade C, Class 1 with suitable underplating (silver not used)
Insulator Retaining Plate Junction Shells (Not available for four gang)	Aluminum alloy Aluminum alloy	Anodize, blue color Same as shell
Clinch Nuts Float Mounts Polarizing Posts Polarizing Keys & Retaining Plate	Stainless steel Stainless steel Zinc (die cast) Nickel silver	None None Cadmium plating None
Screws Lockwashers	Brass Phosphor Bronze	Cadmium plating Cadmium plating

Electrical Data

Contact Size	Wire Size	Insulation O.D. Limits (Inch) Max.	Test Current per MIL–C–39029	Max. Current for Tests (Amps) (MIL–C–39029)	Max. Potential Drop (Millivolts) at 25°C
4	6	.310 (7.87)	60.0	60.0	33
8	8	.250 (6.35)	46.0	46.0	39
12	12	.135 (3.43)	23.0	23.0	63
	14		17.0	17.0	60
16	16	.103 (2.62)	13.0	13.0	68
	18		—	—	—
	20		7.5	—	75
20	20	.071 (1.80)	7.5	7.5	83
	22		—	—	—
	24		3.0	3.0	68
22	22	.054 (1.37)	5.0	5.0	110
	24		—	—	—
	26		2.0	2.0	80

Note — The maximum contact resistance listed above is with silver plated wire.

Contact and Termination Tooling Data — Military

Contact Size	DPX*NE/NA Pin Part Number (Military Equivalent)	DPX*NE/NA Socket Part Number (Military Equivalent)	Wire Accom.	Crimp Tool Part Number	Locator Part Number	Insertion/ Extraction Tool	Layout Usage DPX* NE/NA
2222	030-1975-008 (M39029/11-144)	031-1113-008 (M39029/12-148)	22, 24, 26	M22520/2-01	M22520/2-23	CIT-DPXMA-22 M81969/1-01	A106
2020HD	030-1892-004 (M39029/11-145)	031-1047-003 (M39029/12-149)	20, 22, 24	M22520/2-01 MS-3191-1	M22520/2-08 Standard	CIT-20 CET-20D-1 M81969/1-02	10W3M, 32W2M, 32W4M, 40M 40W1M, 45M, 57M, 67M
1616	030-9083-012 (M39029/11-146)	031-1271-000 (M39029/12-150)	16, 18, 20	M22520/1-01 MS-3191-1	M22520/1-02 Std. Locator	CIET-16	D8M, 26M, 32W4M 67M
1212	030-1909-002 (M39029/11-147)	031-1059-003 (M39029/12-151)	12, 14	M22520/1-01	M22520/1-11	CIET-12	D8M
0808	030-1908-001	031-1154-000	8	CBT-600* CBT-600B*	CCH8-1 Head CCHP-8-6	CET-8-2	—
0406	030-2049-000	031-1151-000	6	CBT-600* CBT-600B*	CCH4-1 Head CCHP-4-8	CET-4-8	—

*Requires air line pressure of 80 to 100 PSI for CBT-600 and 120 PSI for CBT-600B.

Coaxial Contact Data

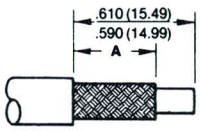
Components/Accessories

LITTLE CAESAR® contact retention assembly (W8M, 32W2M, 32W4M & 40W1M contact arrangements)

Contact Arrangement	Part Number (P = Pin, S = Socket) Without Seal†† A152†††	Without Seal†† A176†††	With Seal A152†††	Cable Accommodation† Seal 1	Seal 2	Ins. Dia. Size/Max.	'A' Trim Dim.
(Size 5 Coax)	P-249-2071-000	249-2071-001	249-2101-000	RG180	RG195U	.158(4.01)	.260(6.60)
	S-249-2076-000	249-2076-001	249-2106-000				.250(6.35)
	P-249-2072-000	249-2072-001	249-2102-000	RG58	X	.196(4.98)	.260(6.60)
	S-249-2077-000	249-2077-001	249-2107-000				.250(6.35)
	P-249-2073-000	249-2073-001	249-2103-000	RG142	X	.196(4.98)	.260(6.60)
	S-249-2078-000	249-2078-001	249-2108-000				.250(6.35)
32W2M 40W1M	P-249-2074-000	249-2074-001	249-2104-000	RG179	RG174, RG179,	.111(2.82)	.350(8.89)
	S-249-2079-000	249-2079-001	249-2109-000		RG316		.330(8.38)
	P-249-2075-000	249-2075-001	249-2105-000	RG178	X	.075(1.90)	.260(6.60)
	S-249-2080-000	249-2080-001	249-2110-000	RG196			.250(6.35)
(Size 9 Coax)	P-249-2081-000	249-2081-001	249-2111-000	RG180	RG195U	.158(4.01)	.260(6.60)
	S-249-2086-000	249-2086-001	249-2116-000				.250(6.35)
	P-249-2082-000	249-2082-001	249-2112-000	RG58	X	.196(4.98)	.260(6.60)
	S-249-2087-000	249-2087-001	249-2117-000				.250(6.35)
	P-249-2083-000	249-2083-001	249-2113-000	RG142	X	.196(4.98)	.260(6.60)
W8M 32W4M	S-249-2088-000	249-2088-001	249-2118-000				.250(6.35)
	P-249-2084-000	249-2084-001	249-2114-000	RG179	RG174, RG179,	.111(2.82)	.350(8.89)
	S-249-2089-000	249-2089-001	249-2119-000		RG316		.330(8.38)
	P-249-2085-000	249-2085-001	249-2115-000	RG178U	X	.075(1.90)	.260(6.60)
	S-249-2090-000	249-2090-001	249-2120-000	RG196U			.250(6.35)

NOTES: † Coaxials without the seal accommodates both Seal 1 and Seal 2 cables.
†† Coaxials without the seal are utilized in DPX*NE connectors supplied less the grommet (modification code: −29**) and DPX*NA connectors.
††† A152 modification code indicates .00005 (0.0010) gold plating on coaxial contacts. (Standard for the DPXNE/NA series.)
A176 modification code indicates .00002 (0.0005) gold plating on coaxial contacts.

Cable Trim Dimensions

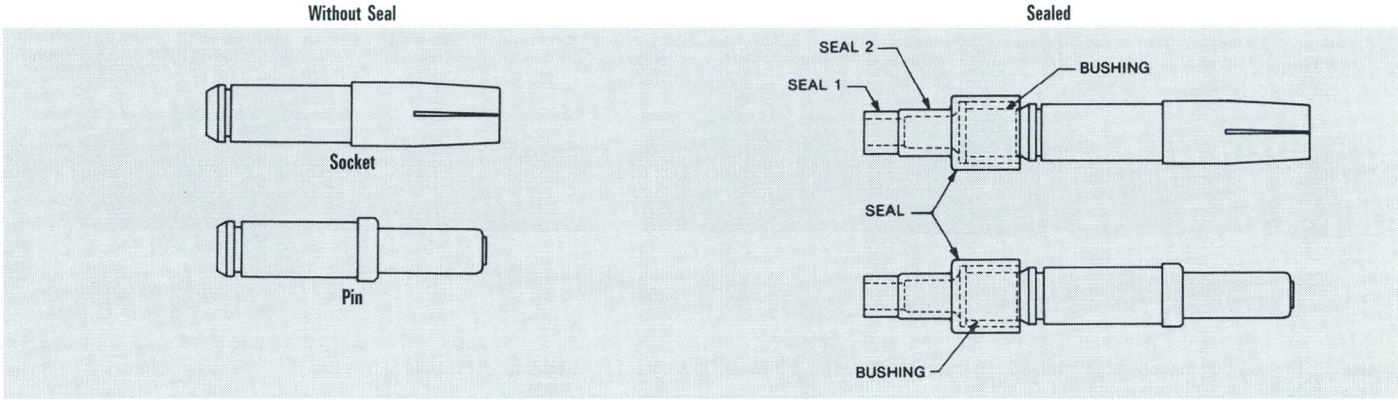


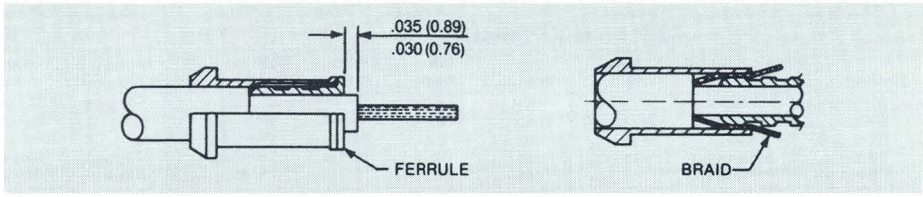
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Coaxial Contact Data

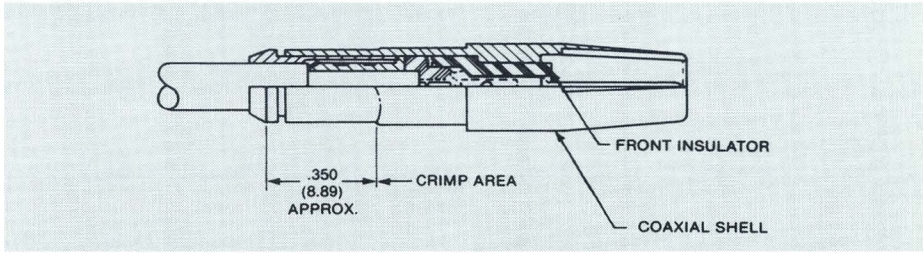
Installation Data

1. Use Thomas and Betts Crimp Tool No. WT410.
2. Use extraction tool No. CET-C8. An insertion tool is required (See Note 5).
3. Center contact, rear insulator, crimp ring, support bushing (not applicable to RG58/RG142 coaxials), seal sleeve, front insulator, shell and ferrule are shipped unassembled in a common container.
4. Cable Assembly Instructions
   Step 1 – If applicable determine which portion of seal sleeve should be used. If Seal 2 is used, cut off Seal 1 portion.
   Step 2–In sequence, place seal sleeve, support bushing and crimp ring over cable jacket.
   Step 3–Trim cable per illustration.
   Step 4–Comb out braid and flare out ends to permit entry of ferrule.
   Step 5–Complete termination per illustration.
5. To extract coaxial, push back seal sleeve and support bushing. Slip cable into extraction tool Push tool into insert until contacts coaxial retaining shoulder. Grip both cable and tool with one hand and pull coaxial rearward out of insert cavity.
6. To facilitate extraction of contacts and avoid splaying, the length of free cable adjacent to the rear surface of the connector should not be less than 2.000 (50.80).

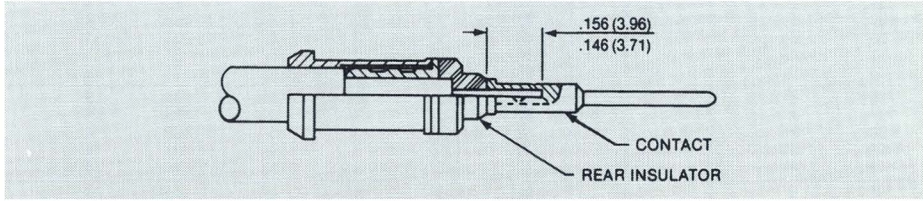




A. Push ferrule under braid as far as it will go. Trim off braid extending beyond shoulder of ferrule, if necessary.
B. While holding ferrule in place pull crimp sleeve forward over braid until it is tight against shoulder on ferrule. Pull firmly against face of ferrule to make sure it is up tight.
C. Trim dielectric to the .035 (0.89)/.030 (0.76) dimension.



A. Place front insulator over contact and then push assembly into coaxial shell.
B. Place parts in jaw of crimp tool. Locate jaws at start of chamfer on crimp sleeve. Press sleeve firmly into coaxial shell and crimp.
C. After assembled coaxial is inserted into connector, push support bushing into grommet until shoulder rests on tubular extension. Then pull sealing sleeve forward until it is snug on grommet.



A. Carefully push inner conductor through rear insulator.
B. While holding rear insulator firmly against ferrule, trim conductor to .156 (3.96)/.146 (3.91) dimension.
C. Place contact over conductor and solder.

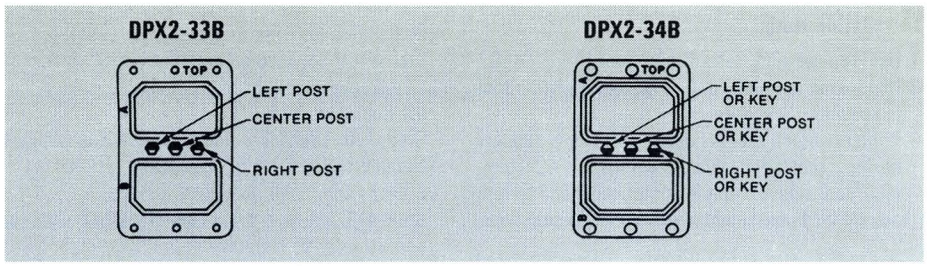
Polarization Positions

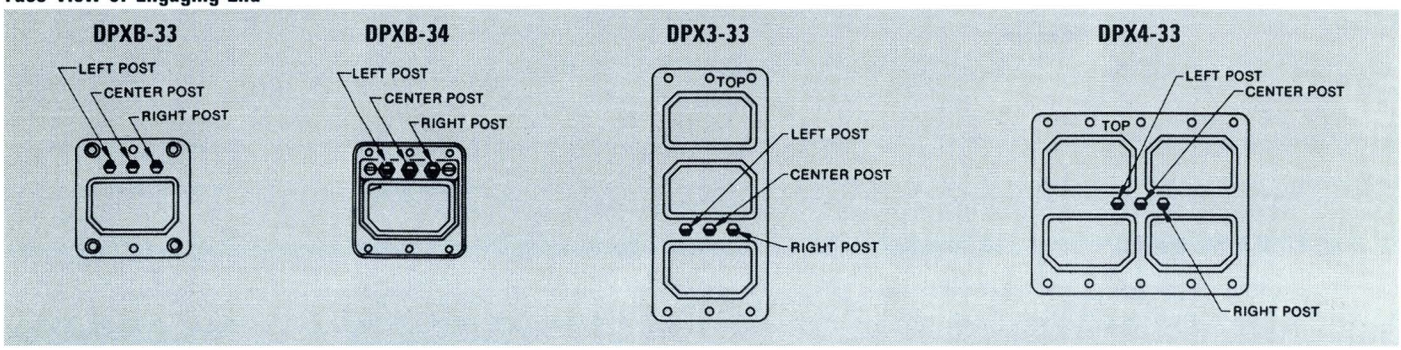
MIL-C-81659B requires that polarizing posts be shipped unassembled with the connector. The user then assembles the posts in the preferred position and marks the position number on the connector. All DPXNA and DPXNE connectors shall be sold this way. The position number will not be marked.

Positions 1 2 3 4 5 6

Dark area represents post

Face View of Engaging End





The last two digits in the four-digit dash number refer to the polarizing post position. The polarizing posts will be shipped unassembled with the connector assembly. The position number is not stamped on the connector. This allows the customer to position the posts themselves and then stamp the appropriate number on the shell.

33 PLUG MALE SHELL								34 RECEPTACLE FEMALE SHELL							
Position	Left Post	Center Post	Right Post	Position	Left Post	Center Post	Right Post	Position	Left Post	Center Post	Right Post	Position	Left Post	Center Post	Right Post
01	1	1	1	51	3	2	5	01	4	4	4	51	6	3	2
02	2	1	1	52	4	2	5	02	4	4	3	52	6	3	1
03	3	1	1	53	5	2	5	03	4	4	2	53	6	3	6
04	4	1	1	54	6	2	5	04	4	4	1	54	6	3	5
05	5	1	1	55	1	2	4	05	4	4	6	55	1	3	4
06	6	1	1	56	2	2	4	06	4	4	5	56	1	3	3
07	1	1	6	57	3	2	4	07	5	4	4	57	1	3	2
08	2	1	6	58	4	2	4	08	5	4	3	58	1	3	1
09	3	1	6	59	5	2	4	09	5	4	2	59	1	3	6
10	4	1	6	60	6	2	4	10	5	4	1	60	1	3	5
11	5	1	6	61	1	2	3	11	5	4	6	61	2	3	4
12	6	1	6	62	2	2	3	12	5	4	5	62	2	3	3
13	1	1	5	63	3	2	3	13	6	4	4	63	2	3	2
14	2	1	5	64	4	2	3	14	6	4	3	64	2	3	1
15	3	1	5	65	5	2	3	15	6	4	2	65	2	3	6
16	4	1	5	66	6	2	3	16	6	4	1	66	2	3	5
17	5	1	5	67	1	2	2	17	6	4	6	67	3	3	4
18	6	1	5	68	2	2	2	18	6	4	5	68	3	3	3
19	1	1	4	69	3	2	2	19	1	4	4	69	3	3	2
20	2	1	4	70	4	2	2	20	1	4	3	70	3	3	1
21	3	1	4	71	5	2	2	21	1	4	2	71	3	3	6
22	4	1	4	72	6	2	2	22	1	4	1	72	3	3	5
23	5	1	4	73	1	3	1	23	1	4	6	73	4	2	4
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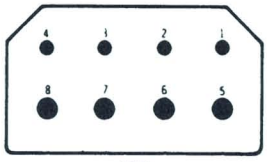
49	1	2	5	99	3	3	3	49	6	3	4	99	2	2	2
50	2	2	5					50	6	3	3				

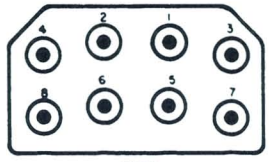
Contact Arrangements

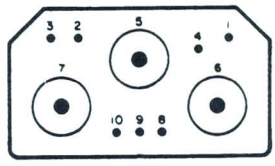
Face View of Pin Insulator Shown.

Cross Reference

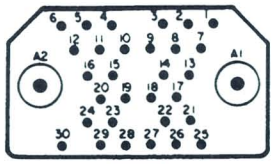
MS3157	ITTC
C8	W8M
E8	D8M
10C3	10W3M
26	26M
32C2	32W2M
32C4	32W4M
40	40M
40C1	40W1M
45	45M
57	57M
67	67M
106	A106

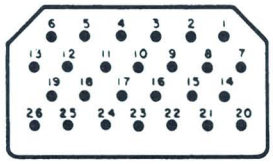


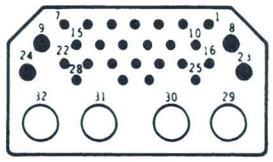




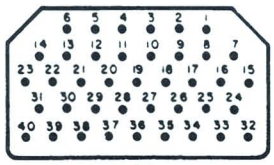
	D8M	W8M	10W3M
Layout			
Contacts	4 #16, 4 #12	8 Coaxial*	7H.D. #20, 3 Coaxial**
Test Voltage	1500	1000	1500 (Coax 1000)

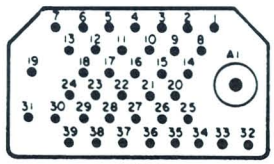


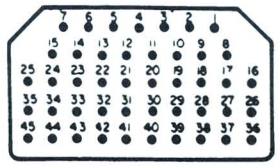




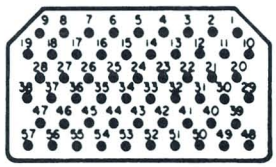
	32W2M	26M	32W4M
Layout			
Contacts	30HD #20, 2 Coaxial†	26 #16	24H.D. #20 4 #16, $ Coaxial*
Test Voltage	1500 (COAX 1000)	1500	1500 (Coax 1000)

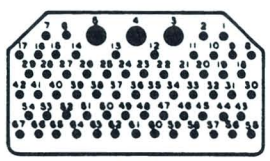


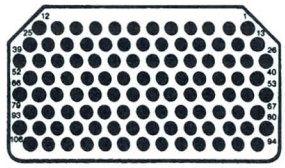




	40M	40W1M	45M
Layout			
Contacts	40 HD #20	39HD #20, 1 COAXIAL†	45HD #20
Test Voltage	1500	1500 (COAX 1000)	1500







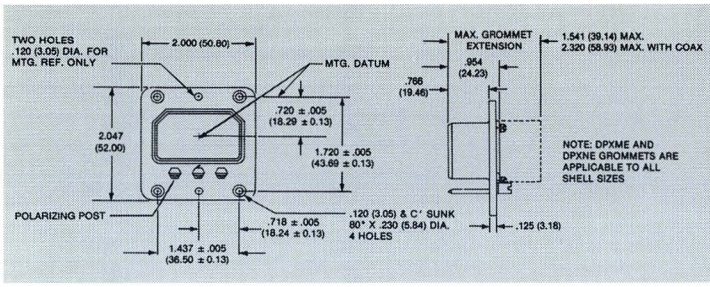
	57M	67M	A106
Layout			
Contacts	57H.D. #20	64 HD #20, 3 #16	106 #22
Test Voltage	1500	1000	1000

*SIZE 9 COAXIAL **SIZE 11 COAXIAL † SIZE 5 COAXIAL

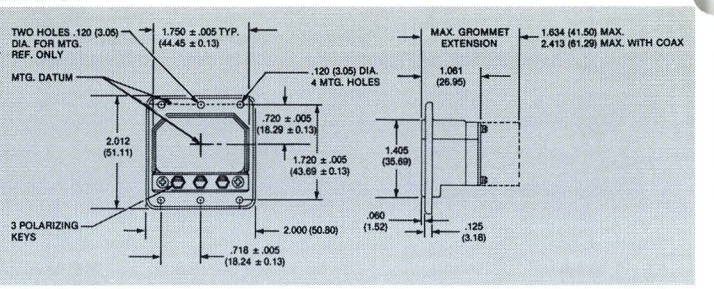
NOTE: All coaxial layouts except C2 and AC3, supplied less coaxial contacts (i.e. W8M, 10W3M, 32W2M, 32W4M, 40W1M)

Shell Dimensions / Modifications

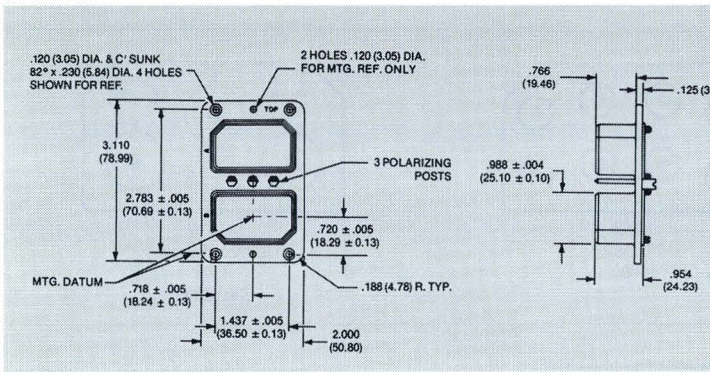
DPXB-33



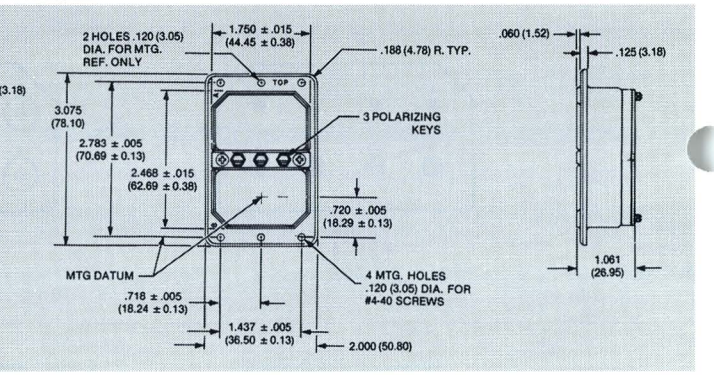
DPXB-34



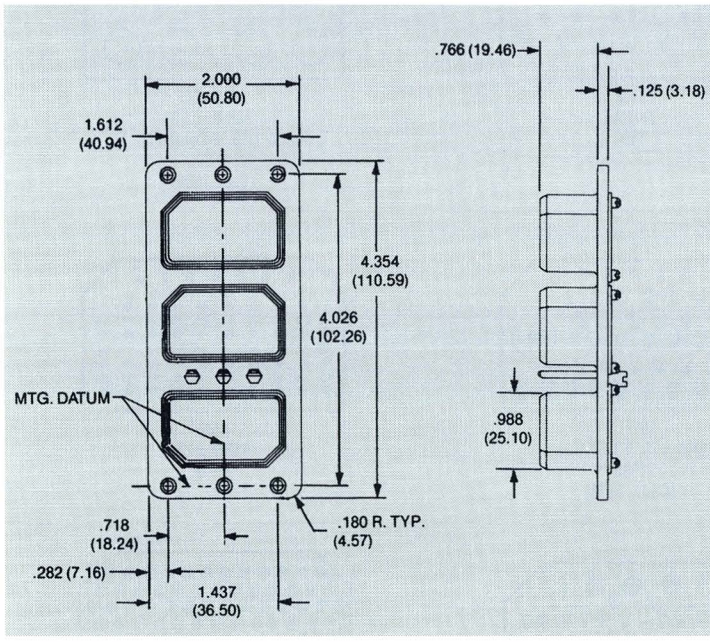
DPX2-33B



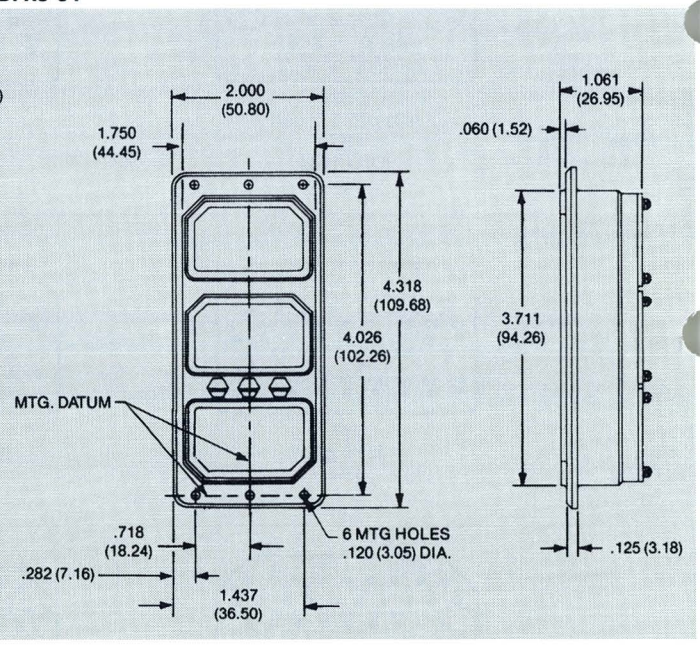
DPX2-34B



DPX3-33



DPX3-34

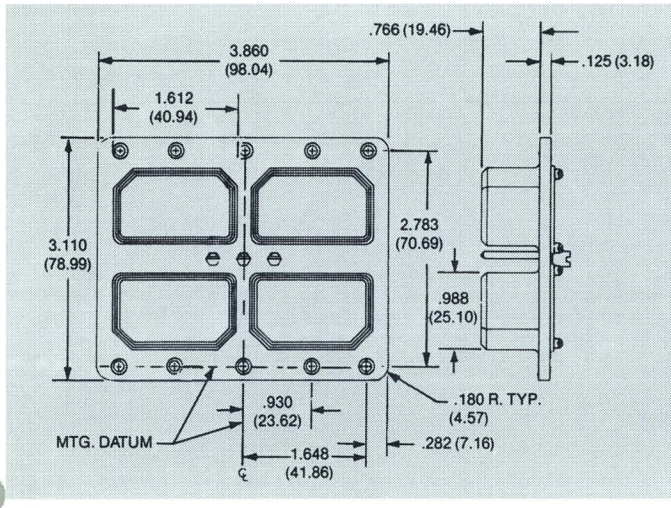


All tolerances ±.015 (0.38) unless otherwise noted.

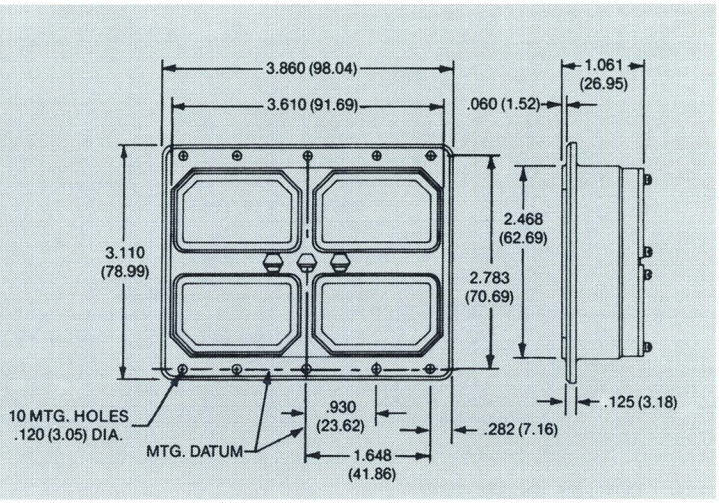
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Shell Dimensions

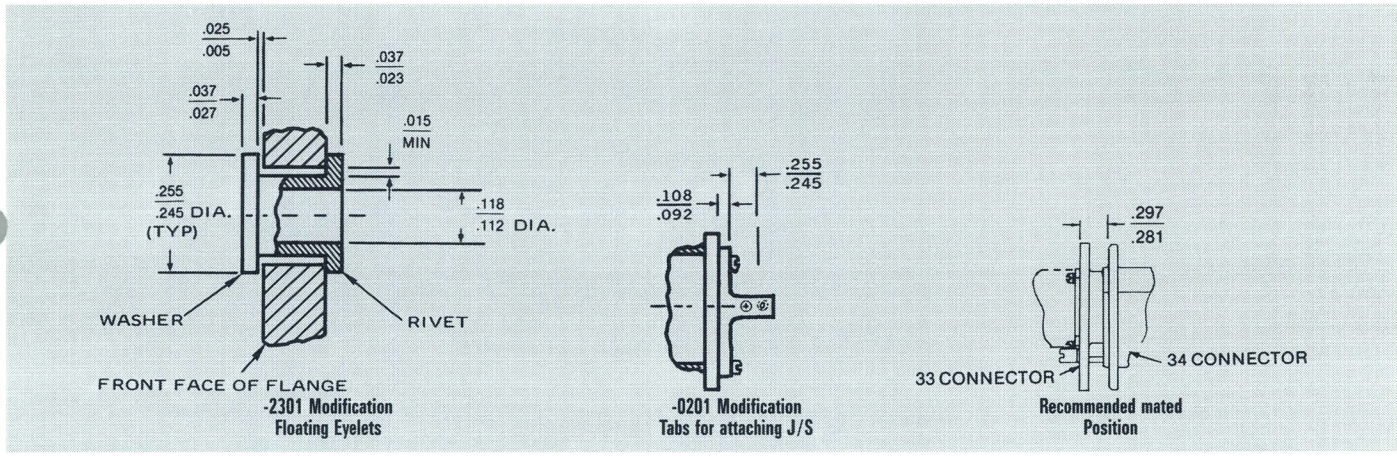
DPX4-33



DPX4-34

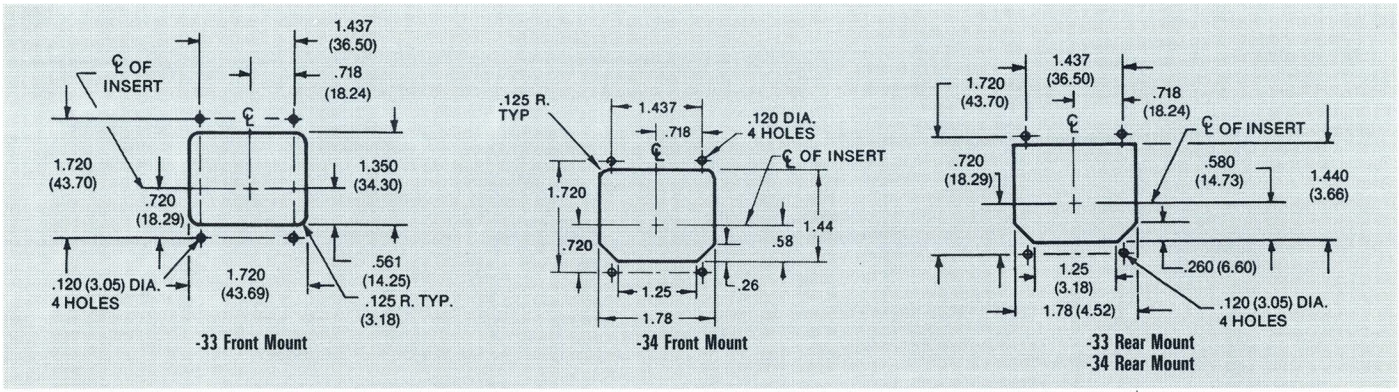


Modification Codes



Panel Cutouts

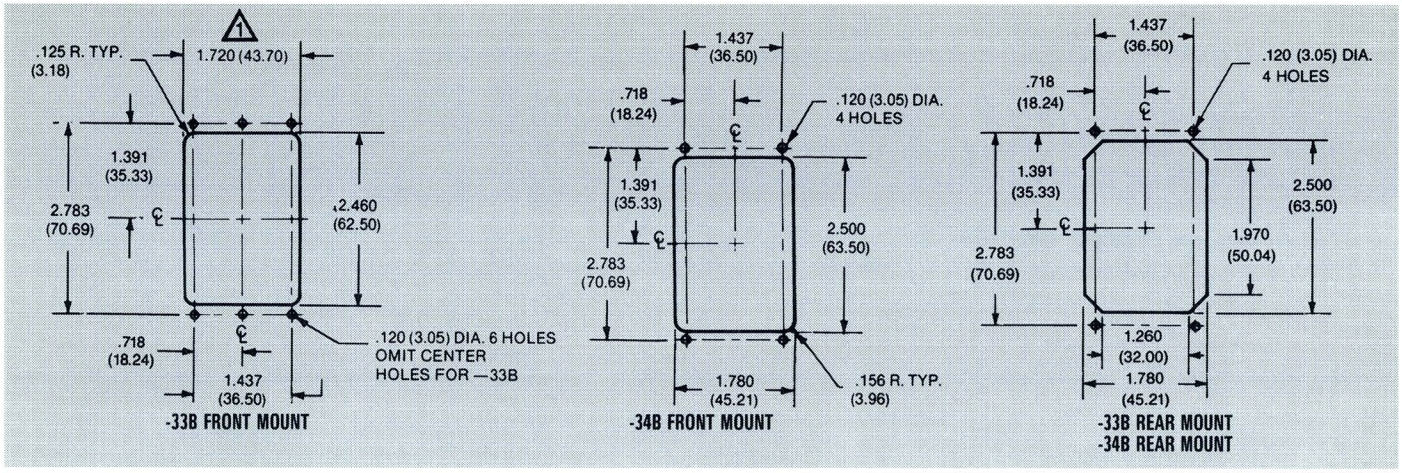
DPXB



All tolerances ±.015 (0.38) unless otherwise noted.

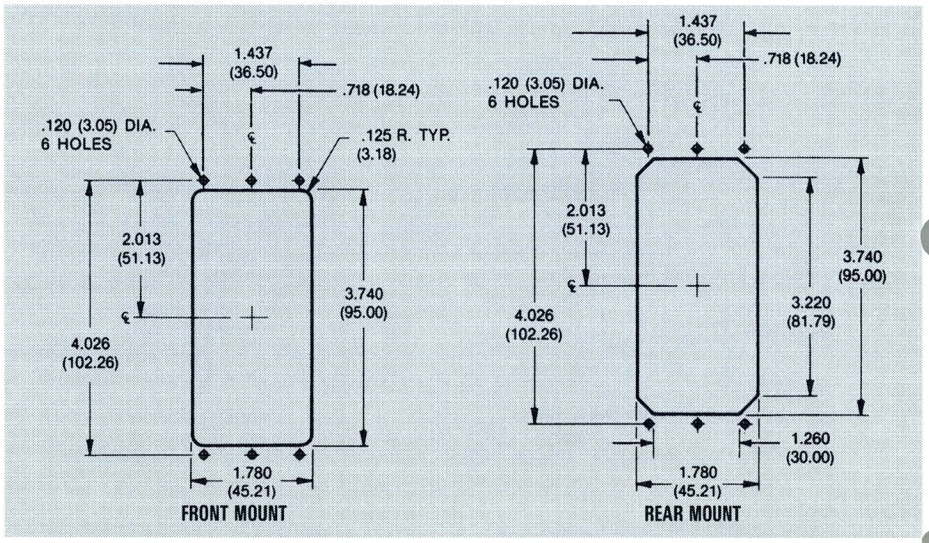
Panel Cutouts (continued)

DPX2

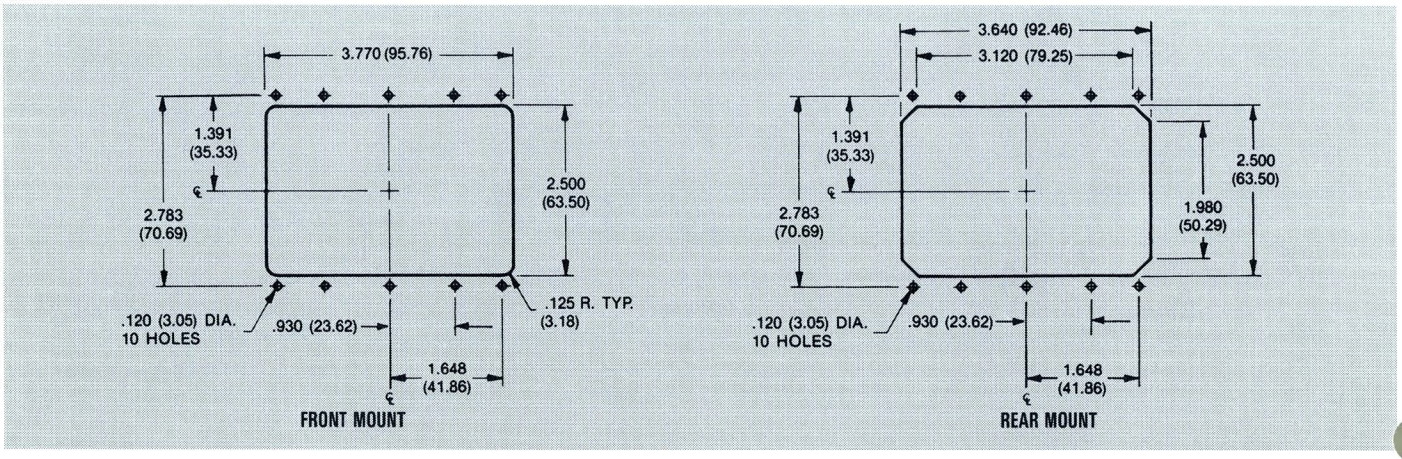


⚠ For —23 float mtg. mod. 1.78 (45.21).

DPX3



DPX4



All tolerances ±.015 (0.38) unless otherwise noted.

Cross Reference from Military to Cannon Part Numbers

Military Part Number	Cannon Part Number
M81659/29A2-0001	DPXBNE-26M-33P-00
0002	DPXBNE-26M-33S-00
0009	DPXBNE-40M-33P-00
0010	DPXBNE-40M-33S-00
0017	DPXBNE-45M-33P-00
0018	DPXBNE-45M-33S-00
0025	DPXBNE-57M-33P-00
0026	DPXBNE-57M-33S-00
0033	DPXBNE-67M-33P-00
0034	DPXBNE-67M-33S-00
0041	DPXBNE-A106-33P-00
0042	DPXBNE-A106-33S-00
0083	DPXBNE-D8M-33P-00
0084	DPXBNE-D8M-33S-00
0135	DPXBNE-W8M-33P-00
0136	DPXBNE-W8M-33S-00
0137	DPXBNE-10W3M-33P-00
0138	DPXBNE-10W3M-33S-00
0139	DPXBNE-32W2M-33P-00
0140	DPXBNE-32W2M-33S-00
0141	DPXBNE-40W1M-33P-00
0142	DPXBNE-40W1M-33S-00
0149	DPXBNE-32W4M-33P-00
0150	DPXBNE-32W4M-33S-00
M81659/31A2-0001	DPXBNE-26M-34P-00
0002	DPXBNE-26M-34S-00
0009	DPXBNE-40M-34P-00
0010	DPXBNE-40M-34S-00
0017	DPXBNE-45M-34P-00
0018	DPXBNE-45M-34S-00
0025	DPXBNE-57M-34P-00
0026	DPXBNE-57M-34S-00
0033	DPXBNE-67M-34P-00
0034	DPXBNE-67M-34S-00
0041	DPXBNE-A106-34P-00
0042	DPXBNE-A106-34S-00
0083	DPXBNE-D8M-34P-00
0084	DPXBNE-D8M-34S-00
0135	DPXBNE-W8M-34P-00
0136	DPXBNE-W8M-34S-00
0137	DPXBNE-10W3M-34P-00
0138	DPXBNE-10W3M-34S-00
0139	DPXBNE-32W2M-34P-00
0140	DPXBNE-32W2M-34S-00
0141	DPXBNE-40W1M-34P-00
0142	DPXBNE-40W1M-34S-00
0149	DPXBNE-32W4M-34P-00
0150	DPXBNE-32W4M-34S-00
M81659/33A2-0003	DPX2NE-26MP26MP-33B-00
0004	DPX2NE-26MS26MS-33B-00
0011	DPX2NE-40MP40MP-33B-00
0012	DPX2NE-40MS40MS-33B-00
0019	DPX2NE-45MP45MP-33B-00
0020	DPX2NE-45MS45MS-33B-00
0027	DPX2NE-57MP57MP-33B-00
0028	DPX2NE-57MS57MS-33B-00
0035	DPX2NE-67MP67MP-33B-00
0036	DPX2NE-67MS67MS-33B-00
0043	DPX2NE-A106PA106P-33B-00
0044	DPX2NE-A106SA106S-33B-00
0057	DPX2NE-A106S26MP-33B-00
0058	DPX2NE-A106P26MS-33B-00
0059	DPX2NE-26MPA106S-33B-00
0060	DPX2NE-26MSA106P-33B-00
0071	DPX2NE-67MPA106S-33B-00
0072	DPX2NE-67MSA106P-33B-00
0087	DPX2NE-A106SW8MP-33B-00
0088	DPX2NE-A106PW8MS-33B-00
0089	DPX2NE-A106S67MP-33B-00
0090	DPX2NE-A106P67MS-33B-00
0109	DPX2NE-C2P40W1MP-33B-00
0110	DPX2NE-C2S40W1MS-33B-00
0111	DPX2NE-C2P57MP-33B-00
0112	DPX2NE-C2S57MS-33B-00
0113	DPX2NE-AC3P67MP-33B-00
0114	DPX2NE-AC3S67MS-33B-00
0115	DPX2NE-AC3PA106S-33B-00
0116	DPX2NE-AC3SA106P-33B-00
0117	DPX2NE-W8MSA106S-33B-00
0118	DPX2NE-W8MSA106P-33B-00
0119	DPX2NE-10W3MP32W2MP-33B-00
0120	DPX2NE-10W3MS32W2MS-33B-00
0121	DPX2NE-32WMP40W1MP-33B-00

Military Part Number	Cannon Part Number
M81659/35A2-0122	DPX2NE-32W2MS40W1MS-33B-00
0123	DPX2NE-32WMP45MP-33B-00
0124	DPX2NE-32W2MS45MS-33B-00
0125	DPX2NE-32W2MP57MP-33B-00
0126	DPX2NE-32W2MS57MS-33B-00
0127	DPX2NE-32W2MP67MP-33B-00
0128	DPX2NE-32W2MS67MS-33B-00
0129	DPX2NE-32W2MPA106S-33B-00
0130	DPX2NE-32W2MSA106P-33B-00
0131	DPX2NE-40W1MP40W1MP-33B-00
0132	DPX2NE-40W1MS40W1MS-33B-00
0133	DPX2NE-57MPA106S-33B-00
0134	DPX2NE-57MSA106P-33B-00
0145	DPX2NE-W8MP57MP-33B-00
0146	DPX2NE-W8MS57MS-33B-00
0147	DPX2NE-57MP26MP-33B-00
0148	DPX2NE-57MS26MS-33B-00
0151	DPX2NE-32W4MPA106S-33B-00
0152	DPX2NE-32W4MSA106P-33B-00
0155	DPX2NE-W8MP32W4MP-33B-00
0156	DPX2NE-W8MS32W4MS-33B-00
0159	DPX2NE-32W4MPW8MP-33B-00
0160	DPX2NE-32W4MSW8MS-33B-00
0003	DPX2NE-26MP26MP-34B-00
0004	DPX2NE-26MS26MS-34B-00
0011	DPX2NE-40MP40MP-34B-00
0012	DPX2NE-40MS40MS-34B-00
0019	DPX2NE-45MP45MP-34B-00
0020	DPX2NE-45MS45MS-34B-00
0027	DPX2NE-57MP57MP-34B-00
0028	DPX2NE-57MS57MS-34B-00
0035	DPX2NE-67MP67MP-34B-00
0036	DPX2NE-67MS67MS-34B-00
0043	DPX2NE-A106PA106P-34B-00
0044	DPX2NE-A106SA106S-34B-00
0057	DPX2NE-A106S26MP-34B-00
0058	DPX2NE-A106P26MS-34B-00
0059	DPX2NE-26MPA106S-34B-00
0060	DPX2NE-26MSA106P-34B-00
0071	DPX2NE-67MPA106S-34B-00
0072	DPX2NE-67MSA106P-34B-00
0087	DPX2NE-A106SW8MP-34B-00
0088	DPX2NE-A106PW8MS-34B-00
0089	DPX2NE-A106S67MP-34B-00
0090	DPX2NE-A106P67MS-34B-00
0109	DPX2NE-C2P40W1MP-34B-00
0110	DPX2NE-C2S40W1MS-34B-00
0111	DPX2NE-C2P57MP-34B-00
0112	DPX2NE-C2S57MS-34B-00
0113	DPX2NE-AC3P67MP-34B-00
0114	DPX2NE-AC3S67MS-34B-00
0115	DPX2NE-AC3PA106S-34B-00
0116	DPX2NE-AC3SA106P-34B-00
0117	DPX2NE-W8MPA106S-34B-00
0118	DPX2NE-W8MSA106P-34B-00
0119	DPX2NE-10W3P32W2MP-34B-00
0120	DPX2NE-10W3S32W2MS-34B-00
0121	DPX2NE-32W2MP40W1MP-34B-00
0122	DPX2NE-32W2MS40W1MS-34B-00
0123	DPX2NE-32W2MP45MP-34B-00
0124	DPX2NE-32W2MS45MS-34B-00
0125	DPX2NE-32W2MP57MP-34B-00
0126	DPX2NE-32W2MS57MS-34B-00
0127	DPX2NE-32W2MP67MP-34B-00
0128	DPX2NE-32W2MS67MS-34B-00
0129	DPX2NE-32W2MPA106S-34B-00
0130	DPX2NE-32W2MSA106P-34B-00
0131	DPX2NE-40W1MP40W1MP-34B-00
0132	DPX2NE-40W1MS40W1MS-34B-00
0133	DPX2NE-57MPA106S-34B-00
0134	DPX2NE-57MSA106P-34B-00
0145	DPX2NE-W8MP57MP-34B-00
0146	DPX2NE-W8MS57MS-34B-00
0147	DPX2NE-57MP26MP-34B-00
0148	DPX2NE-57MS26MS-34B-00
0151	DPX2NE-32W4MPA106S-34B-00
0152	DPX2NE-32W4MSA106P-34B-00
0155	DPX2NE-W8MP32W4MP-34B-00
0156	DPX2NE-W8MS32W4MS-34B-00
0159	DPX2NE-32W4MPW8MP-34B-00
0160	DPX2NE-32W4MSW8MS-34B-00

Military Part Number	Cannon Part Number
M81659/37A2-0005	DPX3NE-78M-33P-00
0006	DPX3NE-78M-33S-00
0013	DPX3NE-120M-33P-00
0014	DPX3NE-120M-33S-00
0021	DPX3NE-135M-33P-00
0022	DPX3NE-135M-33S-00
0029	DPX3NE-171M-33P-00
0030	DPX3NE-171M-33S-00
0037	DPX3NE-201M-33P-00
0038	DPX3NE-201M-33S-00
0045	DPX3NE-A318-33P-00
0046	DPX3NE-A318-33S-00
0065	DPX3NE-24M-33P-00
0066	DPX3NE-24M-33S-00
0067	DPX3NE-122M-33SP-00
0068	DPX3NE-122M-33PS-00
0073	DPX3NE-142M-33P-00
0074	DPX3NE-142M-33S-00
0075	DPX3NE-240M-33P-00
0076	DPX3NE-240M-33S-00
0079	DPX3NE-A240M-33SP-00
0080	DPX3NE-A240M-33PS-00
0091	DPX3NE-279M-33SP-00
0092	DPX3NE-279M-33PS-00
0157	DPX3NE-244M-33SP-00
0158	DPX3NE-244M-33PS-00
M81659/39A2-0005	DPX3NE-78M-34P-00
0006	DPX3NE-78M-34S-00
0013	DPX3NE-120M-34P-00
0014	DPX3NE-120M-34S-00
0021	DPX3NE-135M-34P-00
0022	DPX3NE-135M-34S-00
0029	DPX3NE-171M-34P-00
0030	DPX3NE-171M-34S-00
0037	DPX3NE-201M-34P-00
0038	DPX3NE-201M-34S-00
0045	DPX3NE-A318-34P-00
0046	DPX3NE-A318-34S-00
0065	DPX3NE-24M-34P-00
0066	DPX3NE-24M-34S-00
0067	DPX3NE-122M-34SP-00
0068	DPX3NE-122M-34PS-00
0073	DPX3NE-142M-34P-00
0074	DPX3NE-142M-34S-00
0075	DPX3NE-240M-34P-00
0076	DPX3NE-240M-34S-00
0079	DPX3NE-A240M-34SP-00
0080	DPX3NE-A240M-34PS-00
0091	DPX3NE-279M-34SP-00
0092	DPX3NE-279M-34PS-00
0157	DPX3NE-244M-34SP-00
0158	DPX3NE-244M-34PS-00
M81659/41A2-0007	DPX4NE-104M-33P-00
0008	DPX4NE-104M-33S-00
0015	DPX4NE-160M-33P-00
0016	DPX4NE-160M-33S-00
0023	DPX4NE-180M-33P-00
0024	DPX4NE-180M-33S-00
0031	DPX4NE-228M-33P-00
0032	DPX4NE-228M-33S-00
0039	DPX4NE-268M-33P-00
0040	DPX4NE-268M-33S-00
0047	DPX4NE-A424-33P-00
0048	DPX4NE-A424-33S-00
0061	DPX4NE-104M-33P-00
0062	DPX4NE-104M-33S-00
0063	DPX4NE-95M-33P-00
0064	DPX4NE-95M-33S-00
0085	DPX4NE-150M-33P-00
0086	DPX4NE-150M-33S-00
0095	DPX4NE-326M-33SP-00
0096	DPX4NE-326M-33PS-00
0097	DPX4NE-287M-33SP-00
0098	DPX4NE-287M-33PS-00
0099	DPX4NE-189M-33SP-00
0100	DPX4NE-189M-33PS-00
0101	DPX4NE-346M-33SP-00
0102	DPX4NE-346M-33PS-00

Cross Reference from Military to Cannon Part Numbers (continued)

Military Part Number	Cannon Part Number
M81659/43A2-0007	DPX4NE-104M-34P-00
0008	DPX4NE-104M-34S-00
0015	DPX4NE-160M-34P-00
0016	DPX4NE-160M-34S-00
0023	DPX4NE-180M-34P-00
0024	DPX4NE-180M-34S-00
0031	DPX4NE-228M-34P-00
0032	DPX4NE-228M-34S-00
0039	DPX4NE-268M-34P-00
0040	DPX4NE-268M-34S-00
0047	DPX4NE-A424-34P-00
0048	DPX4NE-A424-34S-00
0061	DPX4NE-104M-34P-00
0062	DPX4NE-104M-34S-00
0063	DPX4NE-95M-34P-00
0064	DPX4NE-95M-34S-00
0085	DPX4NE-150M-34P-00
0086	DPX4NE-150M-34S-00
0095	DPX4NE-326M-34SP-00
0096	DPX4NE-326M-34PS-00
0097	DPX4NE-287M-34SP-00
0098	DPX4NE-287M-34PS-00
0099	DPX4NE-189M-34SP-00
0100	DPX4NE-189M-34PS-00
0101	DPX4NE-346M-34SP-00
0102	DPX4NE-346M-34PS-00
M81659/61A2-0001	DPXBNE-26M-34P-29
0002	DPXBNE-26M-34S-29
0009	DPXBNE-40M-34P-29
0010	DPXBNE-40M-34S-29
0017	DPXBNE-45M-34P-29
0018	DPXBNE-45M-34S-29
0025	DPXBNE-57M-34P-29
0026	DPXBNE-57M-34S-29
0033	DPXBNE-67M-34P-29
0034	DPXBNE-67M-34S-29
0041	DPXBNE-A106-34P-29
0042	DPXBNE-A106-34S-29
0083	DPXBNE-D8M-34P-29
0084	DPXBNE-D8M-34S-29
0135	DPXBNE-W8M-34P-29
0136	DPXBNE-W8M-34S-29
0137	DPXBNE-10W3M-34P-29
0138	DPXBNE-10W3M-34S-29
0139	DPXBNE-32W2M-34P-29
0140	DPXBNE-32W2M-34S-29
0141	DPXBNE-40W1M-34P-29
0142	DPXBNE-40W1M-34S-29
0149	DPXBNE-32W4M-34P-29
0150	DPXBNE-32W4M-34S-29
M81659/62A2-0003	DPX2NE-26MP26MP-34B-29
0004	DPX2NE-26MS26MS-34B-29
0011	DPX2NE-40MP40MP-34B-29
0012	DPX2NE-40MS40MS-34B-29
0019	DPX2NE-45MP45MP-34B-29
0020	DPX2NE-45MS45MS-34B-29
0027	DPX2NE-57MP57MP-34B-29
0028	DPX2NE-57MS57MS-34B-29
0035	DPX2NE-67MP67MP-34B-29
0036	DPX2NE-67MS67MS-34B-29
0043	DPX2NE-A106PA106P-34B-29
0044	DPX2NE-A106SA106S-34B-29
0057	DPX2NE-A106S26MP-34B-29
0058	DPX2NE-A106P26MS-34B-29
0059	DPX2NE-26MPA106S-34B-29
0060	DPX2NE-26MSA106P-34B-29
0071	DPX2NE-67MPA106S-34B-29
0072	DPX2NE-67MSA106P-34B-29
0087	DPX2NE-A106SW8MP-34B-29
0088	DPX2NE-A106PW8MS-34B-29
0089	DPX2NE-A106S67MP-34B-29
0090	DPX2NE-A106P67MS-34B-29
0109	DPX2NE-C2P40W1MP-34B-29
0110	DPX2NE-C2S40W1MS-34B-29
0111	DPX2NE-C2P57MP-34B-29
0112	DPX2NE-C2S57MS-34B-29
0113	DPX2NE-AC3P67MP-34B-29
0114	DPX2NE-AC3S67MS-34B-29
0115	DPX2NE-AC3PA106S-34B-29
0116	DPX2NE-AC3SA106P-34B-29
0117	DPX2NE-W8MPA106S-34B-29
0118	DPX2NE-W8MSA106P-34B-29
0119	DPX2NE-10W3P32W2MP-34B-29
0120	DPX2NE-10W3S32W2MS-34B-29
M81659/62A2-0121	DPX2NE-32W2MP40W1MP-34B-29
0122	DPX2NE-32W2MS40W1MS-34B-29
0123	DPX2NE-32W2MP45MP-34B-29
0124	DPX2NE-32W2MS45MS-34B-29
0125	DPX2NE-32W2MP57MP-34B-29
0126	DPX2NE-32W2MS57MS-34B-29
0127	DPX2NE-32W2MP67MP-34B-29
0128	DPX2NE-32W2MS67MS-34B-29
0129	DPX2NE-32W2MPA106S-34B-29
0130	DPX2NE-32W2MSA106P-34B-29
0131	DPX2NE-40W1MP40W1MP-34B-29
0132	DPX2NE-40W1MS40W1MS-34B-29
0133	DPX2NE-57MPA106S-34B-29
0134	DPX2NE-57MSA106P-34B-29
0145	DPX2NE-W8MP57MP-34B-29
0146	DPX2NE-W8MS57MS-34B-29
0147	DPX2NE-57MP26MP-34B-29
0148	DPX2NE-57MS26MS-34B-29
0151	DPX2NE-32W4MPA106S-34B-29
0152	DPX2NE-32W4MSA106P-34B-29
0155	DPX2NE-W8MP32W4MP-34B-29
0156	DPX2NE-W8MS32W4MS-34B-29
0159	DPX2NE-32W4MPW8MP-34B-29
0160	DPX2NE-32W4MSW8MS-34B-29
M81659/63A2-0005	DPX3NE-78M-34P-29
0006	DPX3NE-78M-34S-29
0013	DPX3NE-120M-34P-29
0014	DPX3NE-120M-34S-29
0021	DPX3NE-135M-34P-29
0022	DPX3NE-135M-34S-29
0029	DPX3NE-171M-34P-29
0030	DPX3NE-171M-34S-29
0037	DPX3NE-201M-34P-29
0038	DPX3NE-201M-34S-29
0045	DPX3NE-A318-34P-29
0046	DPX3NE-A318-34S-29
0065	DPX3NE-24M-34P-29
0066	DPX3NE-24M-34S-29
0067	DPX3NE-122M-34SP-29
0068	DPX3NE-122M-34PS-29
0073	DPX3NE-142M-34P-29
0074	DPX3NE-142M-34S-29
0075	DPX3NE-240M-34P-29
0076	DPX3NE-240M-34S-29
0079	DPX3NE-A240M-34SP-29
0080	DPX3NE-A240M-34PS-29
0091	DPX3NE-279M-34SP-29
0092	DPX3NE-279M-34PS-29
0157	DPX3NE-244M-34SP-29
0158	DPX3NE-244M-34PS-29
M81659/64A2-0007	DPX4NE-104M-34P-29
0008	DPX4NE-104M-34S-29
0015	DPX4NE-160M-34P-29
0016	DPX4NE-160M-34S-29
0023	DPX4NE-180M-34P-29
0024	DPX4NE-180M-34S-29
0031	DPX4NE-228M-34P-29
0032	DPX4NE-228M-34S-29
0039	DPX4NE-268M-34P-29
0040	DPX4NE-268M-34S-29
0047	DPX4NE-A424-34P-29
0048	DPX4NE-A424-34S-29
0061	DPX4NE-104M-34P-29
0062	DPX4NE-104M-34S-29
0063	DPX4NE-95M-34P-29
0064	DPX4NE-95M-34S-29
0085	DPX4NE-150M-34P-29
0086	DPX4NE-150M-34S-29
0095	DPX4NE-326M-34SP-29
0096	DPX4NE-326M-34PS-29
0097	DPX4NE-287M-34SP-29
0098	DPX4NE-287M-34PS-29
0099	DPX4NE-189M-34SP-29
0100	DPX4NE-189M-34PS-29
0101	DPX4NE-346M-34SP-29
0102	DPX4NE-346M-34PS-29
M81659/65A2-0001	DPXBNA-26M-33P-00
0002	DPXBNA-26M-33S-00
0009	DPXBNA-40M-33P-00
0010	DPXBNA-40M-33S-00
0017	DPXBNA-45M-33P-00
0018	DPXBNA-45M-33S-00
0025	DPXBNA-57M-33P-00
M81659/65A2-0026	DPXBNA-57M-33S-00
0033	DPXBNA-67M-33P-00
0034	DPXBNA-67M-33S-00
0041	DPXBNA-A106-33P-00
0042	DPXBNA-A106-33S-00
0083	DPXBNA-D8M-33P-00
0084	DPXBNA-D8M-33S-00
0135	DPXBNA-W8M-33P-00
0136	DPXBNA-W8M-33S-00
0137	DPXBNA-10W3M-33P-00
0138	DPXBNA-10W3M-33S-00
0139	DPXBNA-32W2M-33P-00
0140	DPXBNA-32W2M-33S-00
0141	DPXBNA-40W1M-33P-00
0142	DPXBNA-40W1M-33S-00
0149	DPXBNA-32W4M-33P-00
0150	DPXBNA-32W4M-33S-00
M81659/66A2-0001	DPXBNA-26M-34P-00
0002	DPXBNA-26M-34S-00
0009	DPXBNA-40M-34P-00
0010	DPXBNA-40M-34S-00
0017	DPXBNA-45M-34P-00
0018	DPXBNA-45M-34S-00
0025	DPXBNA-57M-34P-00
0026	DPXBNA-57M-34S-00
0033	DPXBNA-67M-34P-00
0034	DPXBNA-67M-34S-00
0041	DPXBNA-A106-34P-00
0042	DPXBNA-A106-34S-00
0083	DPXBNA-D8M-34P-00
0084	DPXBNA-D8M-34S-00
0135	DPXBNA-W8M-34P-00
0136	DPXBNA-W8M-34S-00
0137	DPXBNA-10W3M-34P-00
0138	DPXBNA-10W3M-34S-00
0139	DPXBNA-32W2M-34P-00
0140	DPXBNA-32W2M-34S-00
0141	DPXBNA-40W1M-34P-00
0142	DPXBNA-40W1M-34S-00
0149	DPXBNA-32W4M-34P-00
0150	DPXBNA-32W4M-34S-00
M81659/67A2-0001	DPXBNA-26M-34P-01
0002	DPXBNA-26M-34S-01
0009	DPXBNA-40M-34P-01
0010	DPXBNA-40M-34S-01
0017	DPXBNA-45M-34P-01
0018	DPXBNA-45M-34S-01
0025	DPXBNA-57M-34P-01
0026	DPXBNA-57M-34S-01
0033	DPXBNA-67M-34P-01
0034	DPXBNA-67M-34S-01
0041	DPXBNA-A106-34P-01
0042	DPXBNA-A106-34S-01
0083	DPXBNA-D8M-34P-01
0084	DPXBNA-D8M-34S-01
0135	DPXBNA-W8M-34P-01
0136	DPXBNA-W8M-34S-01
0137	DPXBNA-10W3M-34P-01
0138	DPXBNA-10W3M-34S-01
0139	DPXBNA-32W2M-34P-01
0140	DPXBNA-32W2M-34S-01
0141	DPXBNA-40W1M-34P-01
0142	DPXBNA-40W1M-34S-01
0149	DPXBNA-32W4M-34P-01
0150	DPXBNA-32W4M-34S-01
M81659/68A2-0001	DPXBNA-26M-34P-23
0002	DPXBNA-26M-34S-23
0009	DPXBNA-40M-34P-23
0010	DPXBNA-40M-34S-23
0017	DPXBNA-45M-34P-23
0018	DPXBNA-45M-34S-23
0025	DPXBNA-57M-34P-23
0026	DPXBNA-57M-34S-23
0033	DPXBNA-67M-34P-23
0034	DPXBNA-67M-34S-23
0041	DPXBNA-A106-34P-23
0042	DPXBNA-A106-34S-23
0083	DPXBNA-D8M-34P-23
0084	DPXBNA-D8M-34S-23
0135	DPXBNA-W8M-34P-23
0136	DPXBNA-W8M-34S-23
0137	DPXBNA-10W3M-34P-23

Cross Reference from Military to Cannon Part Numbers (continued)

Military Part Number	Cannon Part Number
M81659/68A2-0138	DPXBNA-10W3M-34S-23
0139	DPXBNA-32W2M-34P-23
0140	DPXBNA-32W2M-34S-23
0141	DPXBNA-40W1M-34P-23
0142	DPXBNA-40W1M-34S-23
0149	DPXBNA-32W4M-34P-23
0150	DPXBNA-32W4M-34S-23
M81659/69A2-0003	DPX2NA-26MP26MP-33B-00
0004	DPX2NA-26MS26MS-33B-00
0011	DPX2NA-40MP40MP-33B-00
0012	DPX2NA-40MS40MS-33B-00
0019	DPX2NA-45MP45MP-33B-00
0020	DPX2NA-45MS45MS-33B-00
0027	DPX2NA-57MP57MP-33B-00
0028	DPX2NA-57MS57MS-33B-00
0035	DPX2NA-67MP67MP-33B-00
0036	DPX2NA-67MS67MS-33B-00
0043	DPX2NA-A106PA106P-33B-00
0044	DPX2NA-A106SA106S-33B-00
0057	DPX2NA-A106S26MP-33B-00
0058	DPX2NA-A106P26MS-33B-00
0059	DPX2NA-26MPA106S-33B-00
0060	DPX2NA-26MSA106P-33B-00
0071	DPX2NA-67MPA106S-33B-00
0072	DPX2NA-67MSA106P-33B-00
0087	DPX2NA-A106SW8MP-33B-00
0088	DPX2NA-A106PW8MS-33B-00
0089	DPX2NA-A106S67MP-33B-00
0090	DPX2NA-A106P67MS-33B-00
0109	DPX2NA-C2P40W1MP-33B-00
0110	DPX2NA-C2S40W1MS-33B-00
0111	DPX2NA-C2P57MP-33B-00
0112	DPX2NA-C2S57MS-33B-00
0113	DPX2NA-AC3P67MP-33B-00
0114	DPX2NA-AC3S67MS-33B-00
0115	DPX2NA-AC3PA106S-33B-00
0116	DPX2NA-AC3SA106P-33B-00
0117	DPX2NA-W8MPA106S-33B-00
0118	DPX2NA-W8MSA106P-33B-00
0119	DPX2NA-10W3P32W2MP-33B-00
0120	DPX2NA-10W3S32W2MS-33B-00
0121	DPX2NA-32W2MP40W1MP-33B-00
0122	DPX2NA-32W2MS40W1MS-33B-00
0123	DPX2NA-32W2MP45MP-33B-00
0124	DPX2NA-32W2MS45MS-33B-00
0125	DPX2NA-32W2MP57MP-33B-00
0126	DPX2NA-32W2MS57MS-33B-00
0127	DPX2NA-32W2MP67MP-33B-00
0128	DPX2NA-32W2MS67MS-33B-00
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0134	DPX2NA-57MSA106P-33B-00
0145	DPX2NA-W8MP57MP-33B-00
0146	DPX2NA-W8MS57MS-33B-00
0147	DPX2NA-57MP26MP-33B-00
0148	DPX2NA-57MS26MS-33B-00
0151	DPX2NA-32W4MPA106S-33B-00
0152	DPX2NA-32W4MSA106P-33B-00
0155	DPX2NA-W8MP32W4MP-33B-00
0156	DPX2NA-W8MS32W4MS-33B-00
0159	DPX2NA-32W4MPW8MP-33B-00
0160	DPX2NA-32W4MSW8MS-33B-00
M81659/70A2-0003	DPX2NA-26MP26MP-34B-00
0004	DPX2NA-26MS26MS-34B-00
0011	DPX2NA-40MP40MP-34B-00
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0019	DPX2NA-45MP45MP-34B-00
0020	DPX2NA-45MS45MS-34B-00
0027	DPX2NA-57MP57MP-34B-00
0028	DPX2NA-57MS57MS-34B-00
0035	DPX2NA-67MP67MP-34B-00
0036	DPX2NA-67MS67MS-34B-00
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0115	DPX2NA-AC3PA106S-34B-00
0116	DPX2NA-AC3SA106P-34B-00
0117	DPX2NA-W8MPA106S-34B-00
0118	DPX2NA-W8MSA106P-34B-00
0119	DPX2NA-10W3P32W2MP-34B-00
0120	DPX2NA-10W3S32W2MS-34B-00
0121	DPX2NA-32W2MP40W1MP-34B-00
0122	DPX2NA-32W2MS40W1MS-34B-00
0123	DPX2NA-32W2MP45MP-34B-00
0124	DPX2NA-32W2MS45MS-34B-00
0125	DPX2NA-32W2MP57MP-34B-00
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0019	DPX2NA-45MP45MP-34B-01
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0058	DPX2NA-A106P26MS-34B-01
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0089	DPX2NA-A106S67MP-34B-01
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0113	DPX2NA-AC3P67MP-34B-01
0114	DPX2NA-AC3S67MS-34B-01
0115	DPX2NA-AC3PA106S-34B-01
0116	DPX2NA-AC3SA106P-34B-01
0117	DPX2NA-W8MPA106S-34B-01
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0115	DPX2NA-AC3PA106S-34B-23
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0120	DPX2NA-10W3S32W2MS-34B-23
0121	DPX2NA-32W2MP40W1MP-34B-23
0122	DPX2NA-32W3MS40W1MS-34B-23
0123	DPX2NA-32W2MP45MP-34B-23
0124	DPX2NA-32W2MS45MS-34B-23
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0126	DPX2NA-32W2MS57MS-34B-23
0127	DPX2NA-32W2MP67MP-34B-23
0128	DPX2NA-32W2MS67MS-34B-23
0129	DPX2NA-32W2MPA106S-34B-23
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0133	DPX2NA-57MPA106S-34B-23
0134	DPX2NA-57MSA106P-34B-23
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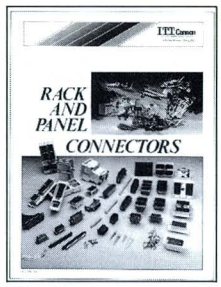
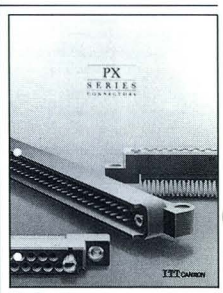
0156	DPX2NA-W8MS32W4MS-34B-23
0159	DPX2NA-32W4MPW8MP-34B-23
0160	DPX2NA-32W4MSW8MS-34B-23

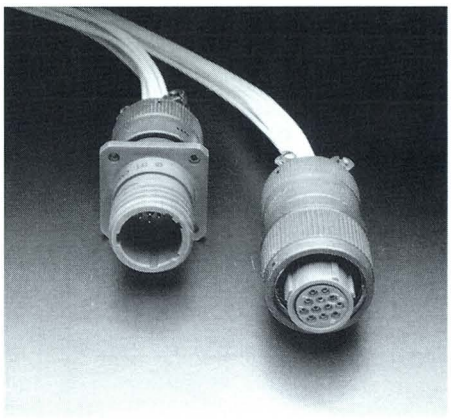
Rack and Panel Connectors

ITT Cannon manufactures a variety of configurations and sizes of Rack and Panel Connectors. To receive additional information, complete one of the cards at the back of your Connector Sourcebook and request the catalog indicated.

DESCRIPTION	CONTACT DATA	APPLICATIONS	CATALOG
BKA SERIES — ARINC 600 connectors High performance, environmental, non-environmental versions with low insertion force front and rear removable contacts. BKAD/E – rear release/rear removable crimp contacts BKAF – front release/front removable solder tail or wrap post size 22 contacts ■	**3-800 CONTACTS** Contact/Wire Size 22, 20, 16, 12 Coax contact available SOLDER TAIL, CRIMP or WRAP POST TERMINATION	• Space Program Equipment • Computer Periphery • Environmental/Thermal Protection • Black Box Instrumentation • Military Aircraft • Test Equipment • Radar Systems • Ground Support Equipment • Test Equipment • Power Circuits • Communications Equipment • Guidance Controls • Early Warning Systems • Missile Ground Support • In-Flight Electronic Instrumentation • Commercial/Military Aircraft • Retrofitting/repackaging with advantage of UF contacts • Avionics • Flight Simulators	 **RP Catalog**
DPX SERIES — rugged, general purpose single gang **For commercial/industrial applications** SINGLE DPXA – single shell DPXAF – float mount DPXA DPXB – polarized ARINC shell DPXAL – large flange DPXLAF – float mount DPXL DPXAMA – LITTLE CAESAR® contact assembly TWO DPXBMA – LITTLE CAESAR® contact assembly DPXBME – LITTLE CAESAR® contact assembly – environmental **For general military/aerospace applications** THREE DPXBNA – non-environmental, MIL-C-81659, type IV DPXBNE – environmental, MIL-C-81659, types II and III **two, three and four gang** FOUR *DPX2 – two gang DPX2A – ARINC A shell DPX2B – ARINC B shell *DPX2MA – LITTLE CAESAR® contact assembly *DPX2ME – LITTLE CAESAR® contact assembly – environmental *DPX2NA – non-environmental, MIL-C-81659, type IV *DPX2NE – environmental, MIL-C-81659, types II and III ■ *These versions are available in the three and four gang configurations	**2-424 CONTACTS** Contact/Wire Size 22, 20, 16, 2, 4 Coax contacts available SOLDER OR CRIMP TERMINATION **2-106 CONTACTS** (single gang) **4-212 CONTACTS** (two gang) **6-318 CONTACTS** (three gang) **8-424 CONTACTS** (four gang)		
DPK SERIES — high performance, environmental, MIL-C-83733 Environmental sealing, thermal resistant connector with rear release or crimp snap-in contacts per PV/KJ circular series. ■	**18-185 CONTACTS** Contact/Wire Size 12, 16, 20, 22, 22D Coax contacts available CRIMP TERMINATION		
DPGM/DPJM SERIES — general purpose, environmental DPGM – short shell, economical ring-type contact retention DPJM – same as DPGM except shell is longer DPJMB – rear insertion/release of crimp snap-in contacts ■	**12-98 CONTACTS** Contact/Wire Size 20, 16, 12 Coax contacts available CRIMP TERMINATION		
DPD SERIES — general purpose single gang DPD –standard rack/panel connector with widest range of contact arrangements DPDMA –rear release of crimp snap-in contacts **two gang** DPD2 –two gang DPD2MA –two gang with rear release of crimp snap-in contacts ■	**2-128 CONTACTS** **(single gang)** **4-256 CONTACTS** **(two gang)** Contact/Wire Size 20, 16, 14, 10, 8, 6, 4, 2, 0 Coax contacts available SOLDER OR CRIMP TERMINATION		
DPA SERIES — miniature, general purpose DPA – solder contacts DPAMA – crimp LITTLE CAESAR® contact assembly DPAME – environmental, crimp contacts ■	**2-32 CONTACTS** Contact/Wire Size 20, 18, 14, 8, 4 Coaxial		
PX SERIES — environmental PC Straight and 90° versions, available in six sizes accommodating 36, 44, 70, 80, 90 and 120 contacts.	**36-120 CONTACTS** Contact/Wire Size 22 CRIMP TERMINATION also PC SOLDER TAIL or WRAP POST		 **PX Catalog**

■ Environmental versions available, consult factory

ITT Cannon
Rack and Panel Products, 666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000



Cannon's M28840/KFS connectors are designed to meet the rigid specifications of MIL-C-28840. These circular, threaded coupling connectors feature high contact density, front release crimp contacts, high impact shock resistance, and are designed for use with navy shipboard cable MIL-C-915, MIL-C-24640, MIL-C-24643 and MIL-W-16878 wire.

M28840/KFS connectors utilizer fluid resistant, fluorosilicone elastomers to provide maximum protection against fuels, oils, coolants and cleansers.

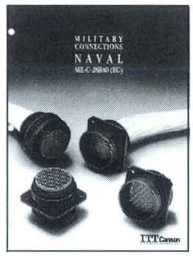
High quality manufacturing processes and materials combine to insure the optimum in performance and reliability under an extreme range of environmental conditions, which include high impact shock, corrosion, vibration, moisture-resistance and water pressure. Temperature withstanding capabilities range from −55°C to +200°C (−67°F to +392°F).

M28840/KFS connectors are available in nine shell sizes, accommodating from seven contacts in shell size 11 up to 155 contacts in shell size 33, and have a multiple keying arrangement to prevent mismating.

Also available as KFS connectors are printed circuit contacts for a variety of P.C. board/flex circuit applcations, 16 AWG contact sizes,* EMP adapters/EMI RFI filters, connector savers, press fit solder pins and fiber optic contacts, high performance EMI versions and thru-bulkhead fittings.

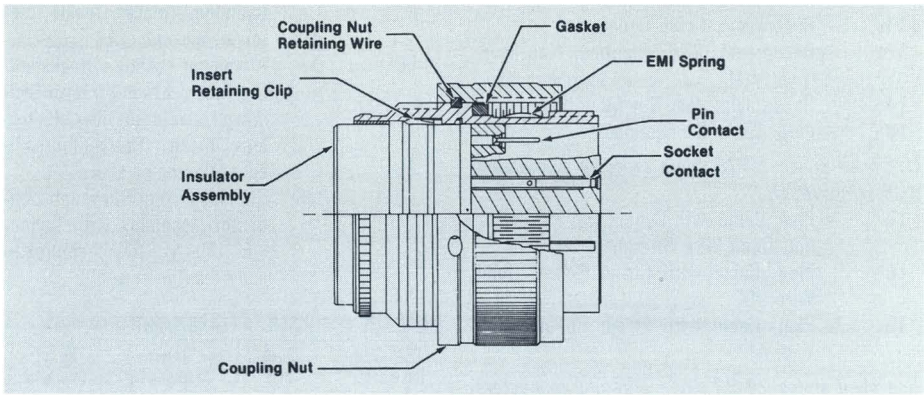
Please fill out the reply card at the back of your Connector Sourcebook if you would like a copy of the full line MIL-C-28840 catalog.

*Consult factory



M28840 Catalog

Design Features



Front Release System using standard MS tooling

EMI Shielding
EMI suppression is obtained by means of spring fingers located on the plug. During mating, multiple spring fingers make contact with the receptacle at least .040 (1.02) before pin and socket electrical engagement occurs. In addition, a metal to metal shield is obtained when accessories are attached to the rear of the connector through a unique spline and ramp system. This total system provides the most effective EMI protection in the industry.

Scoop Proof
100% scoop-proof protection on all connectors eliminates bent pins as well as inadvertent electrical contact whether pins are mounted in the plug or receptacle.

Multiple Keying
Locksmith keying allows alternate polarizations eliminating the possibility of mismating.

Quick Engagement
Double start-rapid advance thread provides rapid engagement and disengagement of connector in 1-1/2 turns.

High Density
Maximum density of contacts is obtained without sacrificing ruggedness required for high shock and vibration while holding size to a minimum.

Corrosion Resistant**
Standard finish — olive drab chromate over cadmium over nickel finish provides in excess of 500 hours of protection from salt spray without degradation of connector performance. Stainless steel with black chromate over cadmium over nickel finish provides protection in areas of direct salt exposure.

**KFS connectors are available using alternate materials which will exceed a ten thousand hour (10,000 hrs.) salt spray. These connectors are intermateable & intermountable with both aluminum and stainless steel connectors from ITT Cannon.

How to Order

Shell Styles 10-19.

M28840/ KFS 10 A G 1 P 1

- SERIES
- SHELL STYLE DESIGNATOR
- CLASS CODE
- SHELL SIZE DESIGNATOR
- INSERT ARRANGEMENT
- CONTACT STYLE
- KEY POSITION (POLARIZATION)

Shell Styles 20-29.

M28840/ KFS 20 C G 1 D A P 1
21 C G 1 D A P 1

- SERIES
- †CONNECTOR WITH BACKSHELL
- CLASS
- SHELL SIZE DESIGNATOR
- INSERT ARRANGEMENT
- †BACKSHELL SIZE DESIGNATOR (Consult factory for details)
- †BACKSHELL STYLE
- CONTACT STYLE
- KEY POSITION (POLARIZATION)

† Add for connector with backshells.

SERIES

M28840 – MIL-C-28840 Prefix
**KFS – ITT Cannon Prefix for non-specification connectors

SHELL STYLE DESIGNATOR

Use shell styles 10-16 when ordering connectors without backshells.

10 – Receptacle, Wall Mounting
11 – Receptacle, Cable Connecting
12 – Receptacle, Box Mounting, Non-Environmental
14 – Receptacle, Jam Nut Mounting
16 – Plug, Cable Connecting

Use shell styles 17-19 when ordering connectors with strain reliefs.

17 – Plug, Cable with Connecting Strain Relief, Open Wire Straight
18 – Plug, Cable with Strain Relief, Open Wire 90°
19 – Plug, Cable with Strain Relief, Open Wire 45°

Use shell styles 20-29 when ordering connectors with backshells.

20 – Receptacle, Wall Mounting with Backshell, Jacket Cable Straight
21 – Receptacle, Cable Connecting with Backshell, Jacket Cable Straight
26 – Plug, Cable Connecting with Backshell, Jacket Cable Straight
28 – Plug, Cable Connecting with Backshell, Jacket Cable 90°
29 – Plug, Cable Connecting with Backshell, Jacket Cable 45°

CLASS

Code Letter	Class	
A	D	Aluminum Alloy connector with Cadmium (olive drab) over electroless nickel finish–fluorosilicone elastometer seals.
B	DS	Stainless Steel Connector with Cadmium (black) finish–fluoroisilicone elastometer seals.
C	DJ	Aluminum Alloy Backshell-Connector Assembly with Cadmium (olive drab) over electroless nickel finish–fluorosilicone elastomer seals.
E	DJS	Stainless Steel Backshell-Connector Assembly with Cadmium (black) finish–fluorosilicone elastomer seals.

SHELL SIZE AND INSERT ARRANGEMENT

Shell Size Designator	Shell Size	Insert Arrangement	No. of Contacts
A	11	1	7
B	13	1	12
C	15	1	21
D	17	1	31
E	19	1	42
F	23	1	64
G	25	1	92
H	29	1	121
J	33	1	155

BACKSHELL SIZE

(Applies to Shell Style 20, 21, 26, 28, 29 only)
A, B, C, or D
The backshell sizes are identified by the appropriate letter: A, B, C or D depending upon cable diameter as shown in the plug assembly section of this catalog

BACKSHELL STYLE

(Applies to Shell Style 20, 21, 26, 28, 29 only)
A – EMI Jacketed Cable
B – Non-EMI Jacketed Cable

CONTACT STYLE

P – Contact, No. 20 Pin with Crimp for 22-26 Gauge
S – Contact, No. 20 Socket with Crimp for 22-26 Gauge
D – Contact, No. 20 Pin with Crimp for 28 Gauge
E – Contact, No. 20 Socket with Crimp for 28 Gauge
F – Contact, No. 20 Pin with Crimp for 20 Gauge
G – Contact, No. 20 Socket with Crimp for 20 Gauge
A – Pin Insert–Less Contacts*
B – Socket Insert–Less Contacts*

KEY POSITION (POLARIZATION)

1,2,3,4,5,6

*A and B signify a mixed complement of contact crimp barrel sizes. Contacts must be ordered separately, consult factory. Used only with KFS designation.
**Consult factory for connector savers, EMI versions and corrosion resistant connectors & adapters.

Contact Arrangements

Shell Size Designator and Insert Arrangement	A-1	B-1	C-1	D-1	E-1	F-1	G-1	H-1	J-1
Shell Size	11	13	15	17	19	23	25	29	33
Number of Contacts	7 #20	12 #20	21 #20	31 #20	42 #20	64 #20	92 #20	121 #20	155 #20

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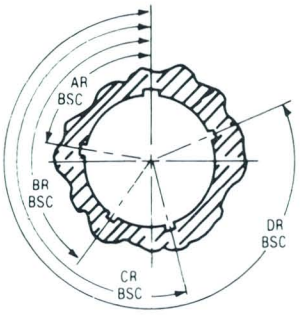
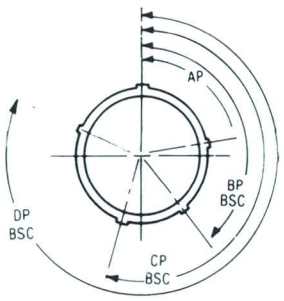
Polarization

Receptacle



Plug



Shell Size Designator	Key Position	AR° or AP°	BR° or BP°	CR° or CP°	DR° or DP°
A-(11) & B-(13)	1	95	141	208	236
	2	113	156	182	292
	3	90	145	195	252
	4	53	156	220	255
	5	119	146	176	298
	6	51	141	184	242
C-(15) D-(17) E-(19) F-(23) G-(25) H-(29) & J-(33)	1	80	142	196	293
	2	135	170	200	310
	3	49	169	200	244
	4	66	140	200	257
	5	62	145	180	280
	6	79	153	197	272

(Shell sizes are in parenthesis, for reference only)

Standard Data

EMI SHIELDING EFFECTIVENESS

Frequency (MHz)	Attenuation
100	60 db min.
200	50 db min.
400	45 db min.
600	45 db min.
800	35 db min.
1000	40 db min.

CONTACT RETENTION

Contact Size	Min. Axial Load (Lbs.)
20	20

TEST VOLTAGE

Service Rating	Test Voltage (rms) 60 cps	Operating Voltage (sea level)
A	1000	200 AC (rms)

CONTACT RATING AND WIRE SIZE ACCOMMODATION

Wire Size	Contact Size	Individual Contact Test Current (Amps)	Potential Drop (Millivolts)
20	20	7.5	—
22	20	5	88
24	20	3	—
26	20	2	64
28	20	1.5	65
30	20	1.0	73
32	20	.5	—

Note: For total current rating per arrangement please consult factory.

WIRE CRIMPING AND SEALING RANGE

Contact Mating End Size	Wire Barell Size	Wire Size	Sealing Min./Max.
20	20	20, 22 & 24	.040/.070 (1.02/1.78)
20	22	22, 24 & 26	.040/.070 (1.02/1.78)
20	28	28, 30 & 32	.040/.070 (1.02/1.78)

MATERIALS AND FINISHES

Description		Materials and Finishes
Receptacle Shell		Aluminum Alloy, Olive Drab Chromate Over Cadmium Over Nickel
Barrel		Aluminum Alloy, Olive Drab Chromate Over Cadmium Over Nickel
Coupling Nut		Aluminum Alloy, Olive Drab Chromate Over Cadmium Over Nickel
Coupling Nut Retaining Wire		Copper Alloy, Nickel Over Copper
Gasket		FLuorosilicone Rubber
Insulator Assembly	Insulator	Glass-filled Epoxy
	Grommet	Fluorosilicone Rubber
	Interfacial Seal	Fluorosilicone Rubber
Pin Contact		Copper Alloy, Gold Over Nickel
Socket Contact	Body	Copper Alloy, Gold Over Nickel
	Sleeve	Stainless Steel, Passivated
EMI Spring		Copper Alloy, Olive Drab Chromate Over Cadmium Over Nickel

Contacts

Contact and Seal Plug Part Numbers

Mating End Size	Wire Barrel Size	MS Contact Part Number		Cannon Contact Part Number		MS Seal Plug Part Number	Cannon Seal Plug Part Number
		Pin	Socket	Pin	Socket		
20	20	M39029/83-508	M39029/84-509	030-8085-700	031-8005-700	MS27186	980-8003-000
20	22	M39029/83-450	M39029/84-452	030-8008-800	031-8004-300	MS27186	980-8003-000
20	28	M39029/83-451	M39029/84-453	030-8009-100	031-8004-400	MS27186	980-8003-000

Printed Circuit Contacts

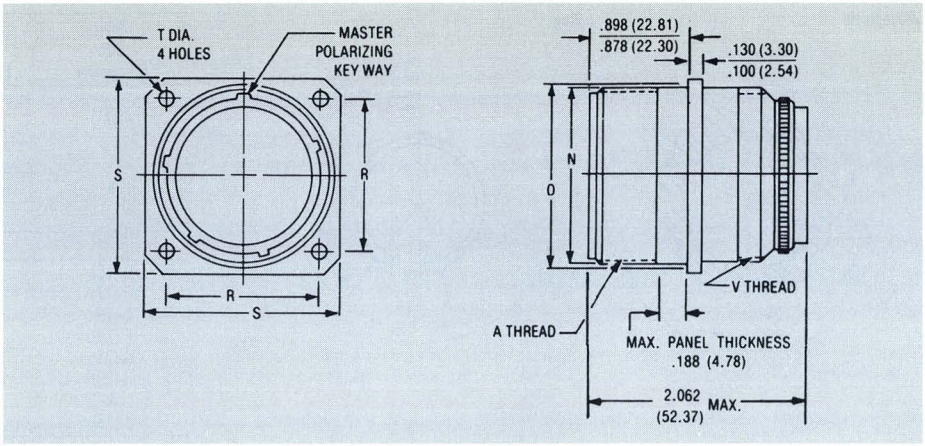
	.020 Tail	.025 Tail
Pin	030-8218-200	080-8088-800
Socket	031-8009-100	—

Consult factory for additional component part numbers.

Wall Mounting Receptacle

M28840/10
(Class D and DS)

KFS10

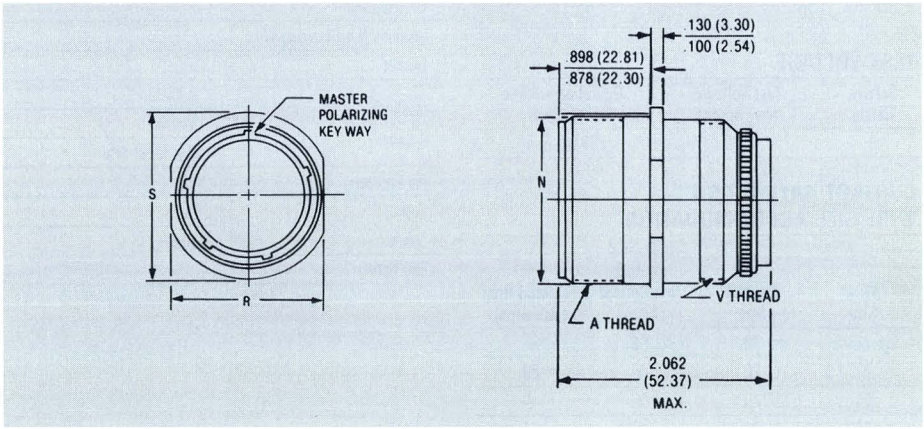


Shell Size Designator	Shell Size	A Thread Class 2A	V Thread Class 2A	N Dia. Max.	O Dia. (Ref. Mtg. Hole)	R T.P.	S ±.020	T Dia. +.015 −.000
A	-11	.750-.1P-.2L-D.S.	3/4-20 UNEF	.750 (19.05)	.812 (20.62)	.750 (19.05)	1.023 (25.98)	.115 (2.92)
B	-13	.875-.1P-.2L-D.S.	7/8-20 UNEF	.875 (22.22)	.937 (23.80)	.843 (21.41)	1.138 (28.91)	.115 (2.92)
C	-15	1.062-.1P-.2L-D.S.	1-20 UNEF	1.062 (26.97)	1.124 (28.55)	.968 (24.59)	1.258 (31.95)	.115 (2.92)
D	-17	1.125-.1P-.2L-D.S.	1 1/8-18 UNEF	1.125 (28.58)	1.187 (30.15)	1.015 (25.78)	1.383 (35.13)	.115 (2.92)
E	-19	1.312-.1P-.2L-D.S.	1 1/4-18 UNEF	1.312 (33.32)	1.374 (34.90)	1.140 (28.96)	1.508 (38.30)	.115 (2.92)
F	-23	1.500-.1P-.2L-D.S.	1 7/16-18 UNEF	1.500 (38.10)	1.562 (39.67)	1.281 (32.54)	1.718 (43.64)	.115 (2.92)
G	-25	1.625-.1P-.2L-D.S.	1 9/16-18 UNEF	1.625 (41.28)	1.687 (42.85)	1.392 (35.36)	1.818 (46.18)	.142 (3.61)
H	-29	1.812-.1P-.2L-D.S.	1 7/8-16UN	1.812 (46.02)	1.937 (49.20)	1.568 (39.83)	2.138 (54.31)	.142 (3.61)
J	-33	2.000-.1P-.2L-D.S.	2 1/16-16UNS	2.000 (50.80)	2.124 (53.95)	1.734 (44.04)	2.328 (59.13)	.168 (4.27)

Cable Connecting Receptacle

M28840/11
(Class D and DS)

KFS11



Shell Size Designator	Shell Size	A Thread Class 2A	V Thread Class 2A	N Dia. Max.	R ±.005	S ±.010
A	-11	.750-.1P-.2L-D.S.	3/4-20 UNEF	.750 (19.05)	.763 (19.38)	.953 (24.21)
B	-13	.875-.1P-.2L-D.S.	7/8-20 UNEF	.875 (22.22)	.888 (25.56)	1.078 (27.38)
C	-15	1.062-.1P-.2L-D.S.	1-20 UNEF	1.062 (26.97)	1.075 (27.30)	1.265 (32.13)
D	-17	1.125-.1P-.2L-D.S.	1 1/8-18 UNEF	1.125 (28.58)	1.138 (28.91)	1.328 (33.73)
E	-19	1.312-.1P-.2L-D.S.	1 1/4-18 UNEF	1.312 (33.32)	1.325 (33.66)	1.515 (38.48)
F	-23	1.500-.1P-.2L-D.S.	1 7/16-18 UNEF	1.500 (38.10)	1.513 (38.43)	1.703 (43.26)
G	-25	1.625-.1P-.2L-D.S.	1 9/16-18 UNEF	1.625 (41.28)	1.638 (41.61)	1.828 (46.43)
H	-29	1.812-.1P-.2L-D.S.	1 7/8-16 UN	1.812 (46.02)	1.888 (47.96)	2.078 (52.78)
J	-33	2.000-.1P-.2L-D.S.	2 1/16-16 UNS	2.000 (50.80)	2.075 (52.70)	2.265 (57.53)

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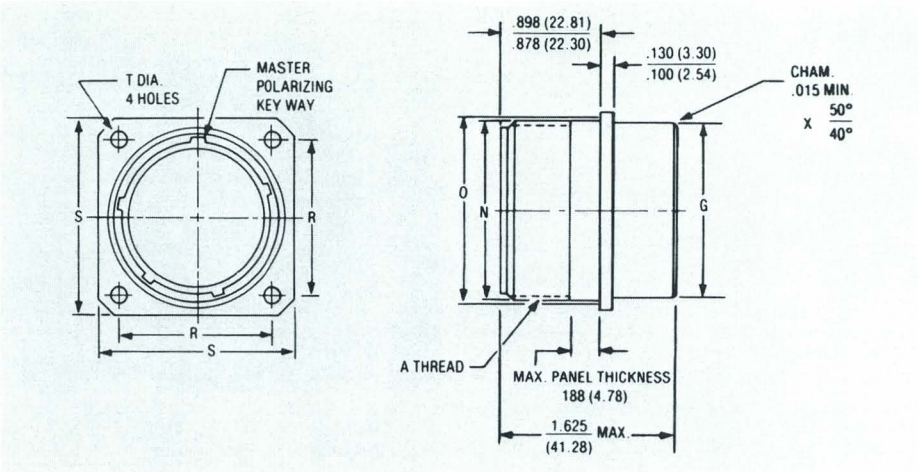
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Box Mounting Receptacle

M28840/12
(Class D and DS)

KFS12

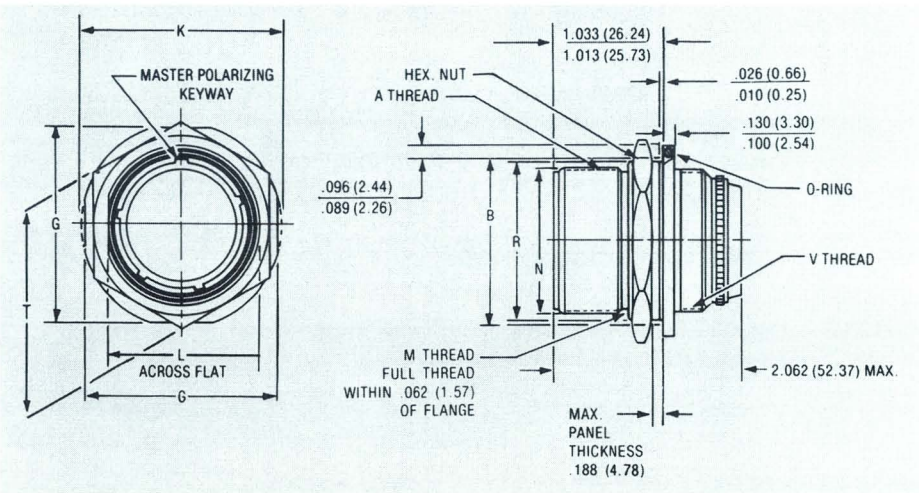


Shell Size Designator	Shell Size	A Thread Class 2A	N. Dia. Max.	O. Dia. (Ref. Mtg. Hole)	R T.P.	S ±.020	T Dia. +.015 −.000	G Max.
A	-11	.750-.1P-.2L-D.S.	.750 (19.05)	.812 (20.62)	.750 (19.05)	1.023 (25.98)	.115 (2.92)	.755 (19.18)
B	-13	.875-.1P-.2L-D.S.	.875 (22.22)	.937 (23.80)	.843 (21.41)	1.138 (28.91)	.115 (2.92)	.880 (22.35)
C	-15	1.062-.1P-.2L-D.S.	1.062 (26.97)	1.124 (28.55)	.968 (24.59)	1.258 (31.95)	.115 (2.92)	1.005 (25.53)
D	-17	1.125-.1P-.2L-D.S.	1.125 (28.58)	1.187 (30.15)	1.015 (25.78)	1.383 (35.13)	.115 (2.92)	1.130 (28.70)
E	-19	1.312-.1P-.2L-D.S.	1.312 (33.32)	1.374 (34.90)	1.140 (28.96)	1.508 (38.30)	.115 (2.92)	1.255 (31.88)
F	-23	1.500-.1P-.2L-D.S.	1.500 (38.10)	1.562 (39.67)	1.281 (32.54)	1.718 (43.64)	.115 (2.92)	1.443 (36.65)
G	-25	1.625-.1P-.2L-D.S.	1.625 (41.28)	1.687 (42.85)	1.392 (35.36)	1.818 (46.18)	.142 (3.61)	1.567 (39.80)
H	-29	1.812-.1P-.2L-D.S.	1.812 (46.02)	1.937 (47.60)	1.568 (39.84)	2.138 (54.31)	.142 (3.61)	1.880 (47.75)
J	-33	2.000-.1P-.2L-D.S.	2.000 (50.80)	2.124 (52.37)	1.734 (44.04)	2.328 (59.13)	.168 (4.27)	2.067 (52.50)

Jam Nut Receptacle

M28840/14
(Class D and DS)

KFS14

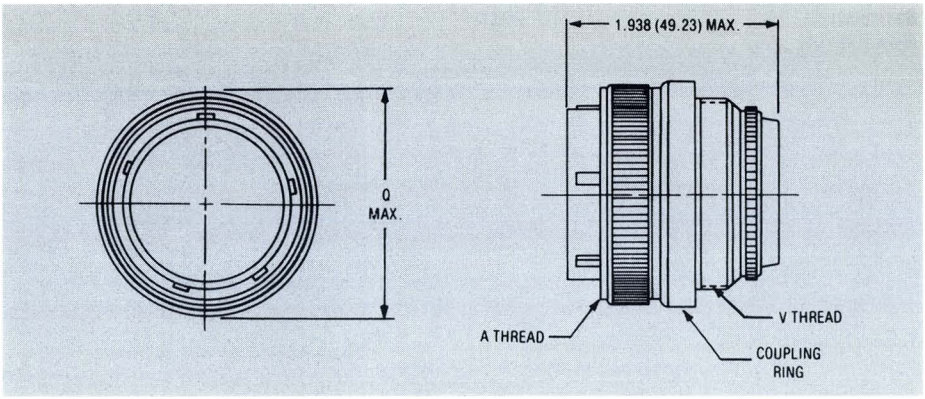


Shell Size Designator	Shell Size	A Thread Class 2A	M Thread Class 2A	V Thread Class 2A	G ±.010	K ±.010	L +.009 −.000	N Max.	R Max.	B ±.005	T ±.017
A	-11	.750-.1P-.2L-D.S.	7/8-20 UNEF	3/4-20 UNEF	1.264 (32.11)	1.358 (34.49)	.832 (21.13)	.750 (19.05)	.875 (22.22)	.974 (24.74)	1.062 (26.97)
B	-13	.875-.1P-.2L-D.S.	1-20 UNEF	7/8-20 UNEF	1.389 (35.28)	1.498 (38.05)	.957 (24.31)	.875 (22.22)	1.000 (25.40)	1.099 (27.91)	1.188 (30.18)
C	-15	1.062-.1P-.2L-D.S.	1 3/16-18 UNEF	1-20 UNEF	1.577 (40.06)	1.671 (42.44)	1.144 (29.06)	1.062 (26.97)	1.188 (30.18)	1.287 (32.69)	1.375 (34.92)
D	-17	1.125-.1P-.2L-D.S.	1 1/4-18 UNEF	1 1/8-18 UNEF	1.639 (41.63)	1.733 (44.02)	1.207 (30.66)	1.125 (28.58)	1.250 (31.75)	1.349 (34.26)	1.438 (36.53)
E	-19	1.312-.1P-.2L-D.S.	1 7/16 UNEF	1 1/4-18 UNEF	1.827 (46.41)	1.921 (48.79)	1.394 (35.41)	1.312 (33.32)	1.438 (36.53)	1.537 (39.04)	1.625 (41.28)
F	-23	1.500-.1P-.2L-D.S.	1 5/8-18 UNEF	1 7/16-18 UNEF	2-014 (51.16)	2.108 (53.54)	1.582 (40.18)	1.500 (38.10)	1.625 (41.28)	1.724 (43.79)	1.812 (46.02)
G	-25	1.625-.1P-.2L-D.S.	1 3/4-18 UNS	1 9/16-18 UNEF	2.139 (54.33)	2.233 (56.72)	1.707 (43.36)	1.625 (41.28)	1.750 (44.45)	1.849 (46.96)	2.000 (50.80)
H	-29	1.812-.1P-.2L-D.S.	1 15/16-16 UN	1 7/8-16 UN	2.327 (59.11)	2.425 (61.60)	1.894) (48.11)	1.812 (46.02)	1.938 (49.23)	2.037 (51.74)	2.188 (55.58)
J	-33	2.000-.1P-.2L-D.S.	2 1/8-16 UN	2 1/16-16 UNS	2.514 (63.86)	2.608 (66.24)	2.082 (52.88)	2.000 (50.80)	2.125 (54.98)	2.224 (56.49)	2.375 (60.32)

Cable Connecting Plug

M28840/16
(Class D and DS)

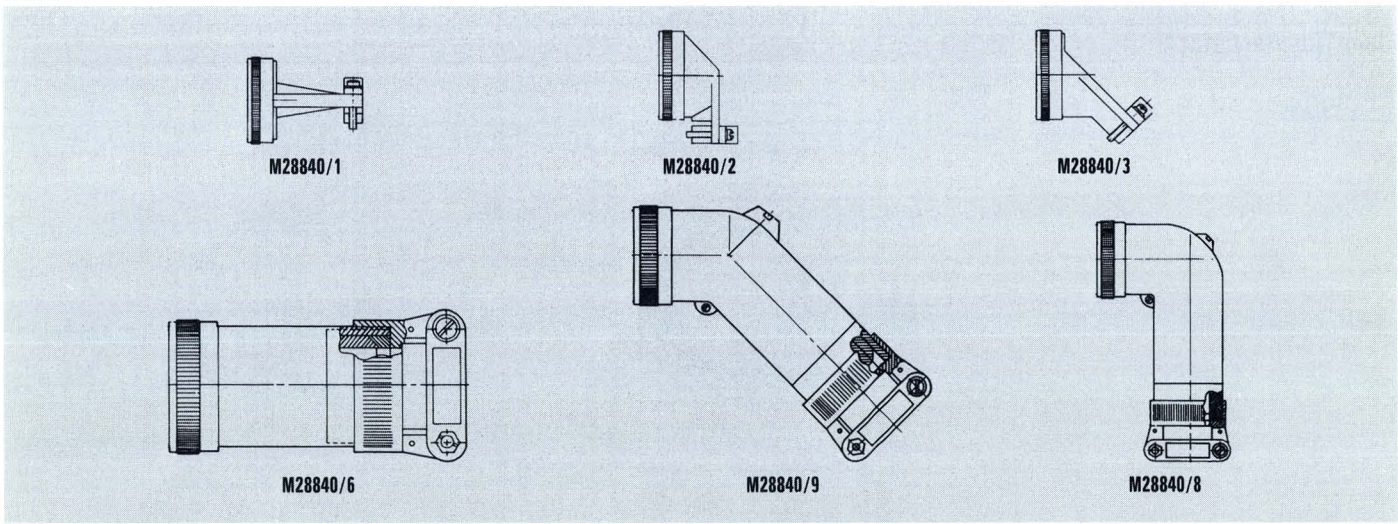
KFS16



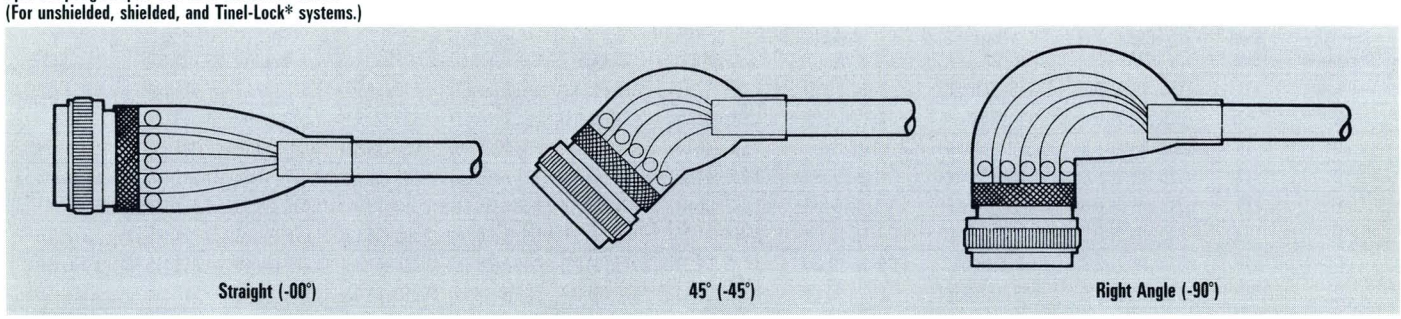
Shell Size Designator	Shell Size	A Thread Class 2B	V Thread Class 2A	Q Dia. Max.
A	-11	.750-.1P-.2L-D.S.	3/4-20 UNEF	1.028 (26.11)
B	-13	.875-.1P-.2L-D.S.	7/8-20 UNEF	1.141 (28.98)
C	-15	1.062-.1P-.2L-D.S.	1-20 UNEF	1.263 (32.08)
D	-17	1.125-.1P-.2L-D.S.	1 1/8-18 UNEF	1.387 (35.23)
E	-19	1.312-.1P-.2L-D.S.	1 1/4-18 UNEF	1.513 (38.43)
F	-23	1.500-.1P-.2L-D.S.	1 7/16-18 UNEF	1.703 (43.26)
G	-25	1.625-.1P-.2L-D.S.	1 9/16-18 UNEF	1.825 (46.36)
H	-29	1.812-.1P-.2L-D.S.	1 7/8-16 UN	2.143 (54.43)
J	-33	2.000-.1P-.2L-D.S.	2 1/16-16 UNS	2.329 (59.16)

Backshell Styles

M28840



KFS-UBK/KFS-RBK/KFS-TBK
Spin coupling adapter and heat shrinkable boots.
(For unshielded, shielded, and Tinel-Lock* systems.)

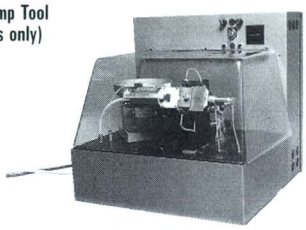


Consult ITT Cannon Canada for ordering information.
*Trademark of Raychem

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Tooling

Semi-Automatic Crimp Tool (for size 20 contacts only)



CBT-490
High Volume Crimp
Termination

Contact Insertion Tools

M81969/33-01 (Straight)
Cannon Part No. 070333-0000

M81969/33-02 (90°)
Cannon Part No. 070334-0000

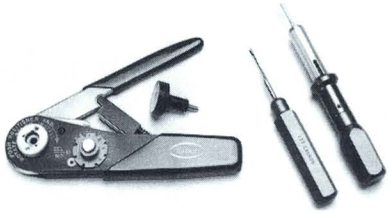
Contact Removal Tool

M81969/34-01
Cannon Part No. 070335-0000

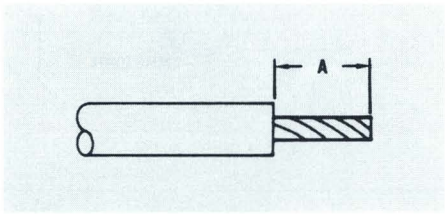
Hand Crimping Tool

M22520/34-01 Basic Tool
Cannon Part No. 995-0002-054
M22520/34-02 Positioner
Cannon Part No. 995-0002-055

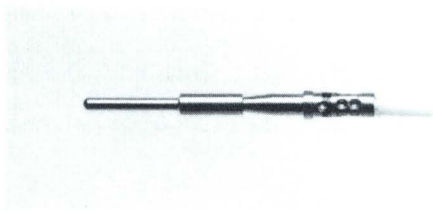
Assembly Instruction



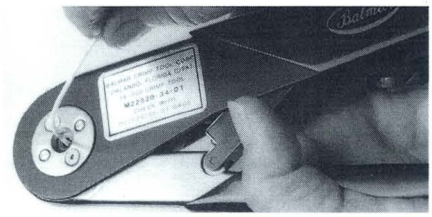
1. Be sure proper assembly tools are on hand.



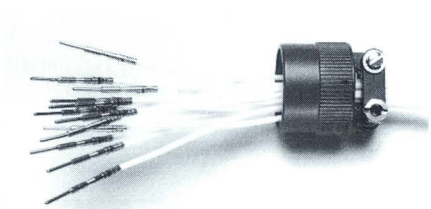
STRIPPING AND CRIMPING.
2. Strip wires to 3/16" ("A" dimension) for #20 gauge contact.



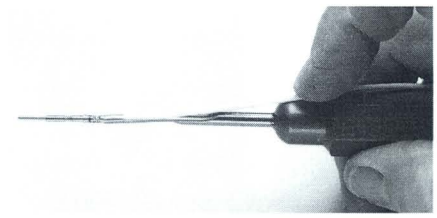
3. Insert wire into rear or contact. Wire insulation must butt against rear of contact. Wire must be visible thru inspection hole.



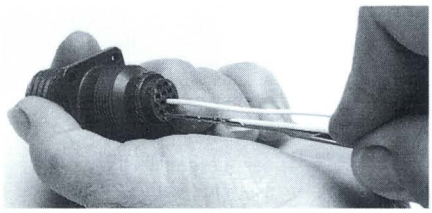
4. Using M22520/34-01 crimp tool with the M22520/34-02 positioner, insert wire and contact into the locator jaws. Squeeze tool handles together until ratchet releases. When using the CBT 490 semi-automatic crimp tool, follow instructions supplied with tool.



CONTACT INSERTION.
5. Slide open wire strain relief or backshell for jacketed cable over wires in proper order for re-assembly. (For jacketed cable to backshell assembly procedure, consult the backshell manufacturer.

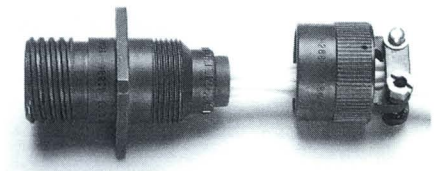


6. Slide wired contact in M81969/33-01 straight or M81969/33-02 right angle insertion tool so that tip of tool butts against contact shoulder.



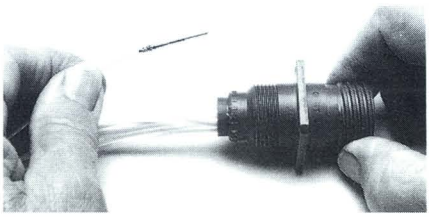
7. Insert wired contacts into cavities from rear of insulator until contact "clicks" into retaining clip. A slight pull on wire will assure that contact is securely seated.

8. After all contacts are inserted, assemble open wire strain relief, or backshell for jacketed cable per manufacturers instruction.



CONTACT EXTRACTION.
9. Remove open wire strain relief or backshell for jacketed cable from connector assembly.

10. Using M81969/34-01 extraction tool, insert tool around contact from front of insulator until tool tip engages against contact retaining clip. Push plunger (use minimum force) to release contact.



11. Pull wired contact out from rear of insulator.

12. After replacing the contact (see Contact Insertion), re-assemble open wire strain relief or backshell for jacketed cable.

MS–A and MS–B connectors were originally designed and approved under Military Specifications for use in military aircraft. Since then, commercial and industrial demand for these connectors has grown because of their uniform quality, dependability, and interchangeability as prescribed in MIL-C-5015. These MS connectors are available in two classes:

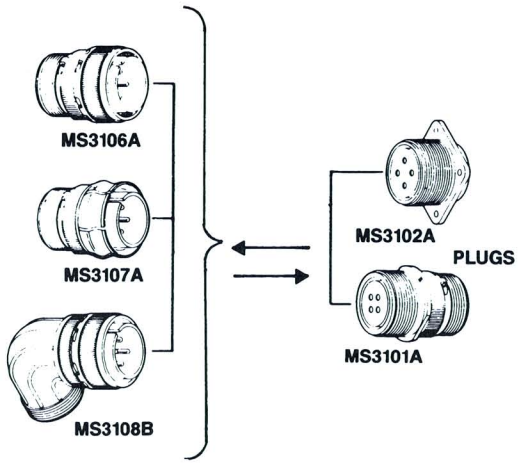
A — Solid endbell with plastic insulators (resilient insulators are available also).

B — Split endbell with plastic insulators for greater accessiblity to solder connections.

The MS–A and MS–B are available as plugs or receptacles. The term plug applies to any assembly fixed to the end of a cable. The term receptacle applies to any assembly mounted to a wall or box. MS shells will accept either pin or socket insert assemblies. Socket contacts are the closed-entry type.

Each contact arrangement is available with pin or socket contacts and will mate with all MS type connectors having the same size and contact arrangements.

Typical Mating Guide



Standard Data

MATERIALS AND FINISHES

Shell	Material	Aluminum alloy
	Finish	Olive drab chromate coating over cadmium plating
Insulator	Material	Thermoset Plastic
Contacts	Material	Brass or copper alloy
	Finish	Silver plate
	Termination	Tinned solder pot

How to Order

MS	3102	A	18 -8	P	X	
CA	3106	B	18 -8	P	X	

PREFIX
SHELL STYLE
CLASS
SHELL SIZE
CONTACT ARRANGEMENT
CONTACT TYPE
ALTERNATE INSERT POSITION

PREFIX
MS – Complies with Military Specification MIL-C-5015
CA – ITT Cannon prefix indicating special application or variation of MS. See modification codes.

SHELL STYLE
3102 – Box mounting receptacle
3106 – Straight plug
Consult factory for additional shell styles.

CLASS
A – Solid or one-piece endbell
B – Split or two-piece endbell

SHELL SIZE
Coupling thread diameter in sixteenths of an inch

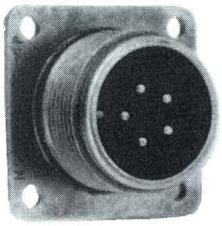
CONTACT ARRANGEMENTS
Consult factory for additional layouts

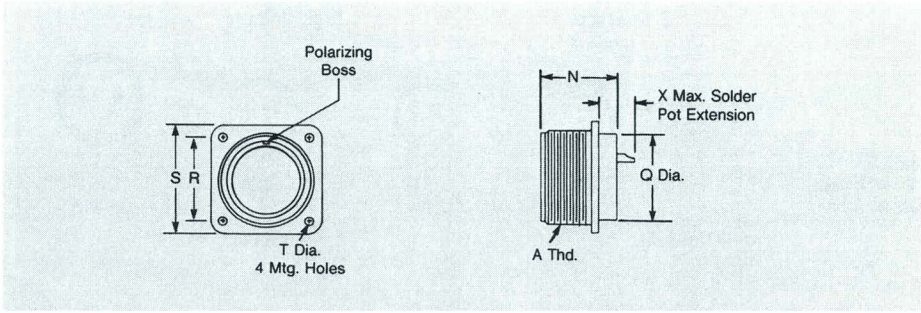
CONTACT TYPE
P for Pin; S for Socket

ALTERNATE INSERT POSITIONS
Consult factory

Box Mounting Receptacle

MS3102A **(Available with plastic or resilient insulators)**

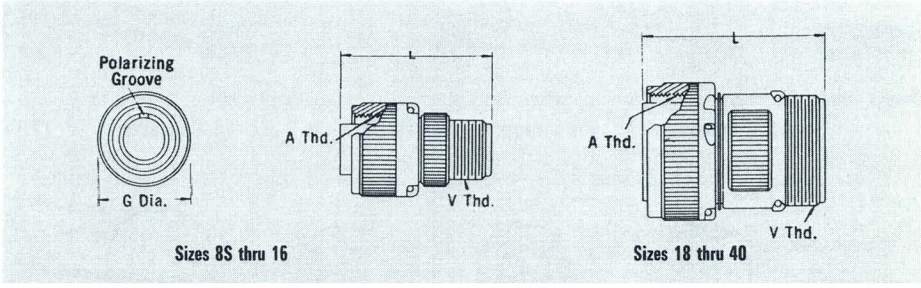




The MS3102A box mounting receptacles are used on boxes and equipment cases where no cable support is required.

Straight Plug

MS3106A **Solid Endbell**



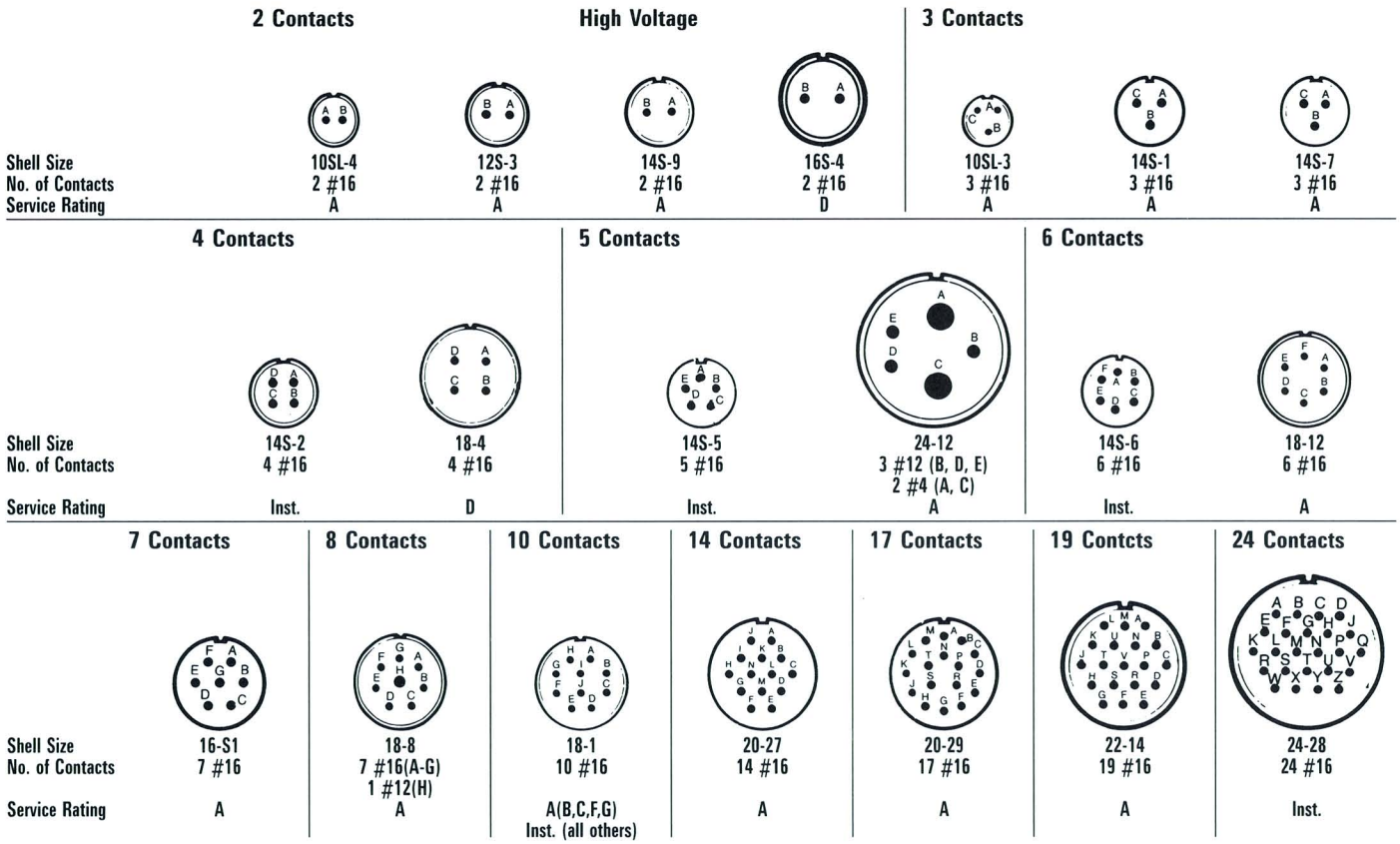
MS3106A straight plugs are used with 3100 and 3102 receptacles and 3101 plugs.

Shell Size	G Max.	L Max.	N Max.	Q Max.	R ±.005	S Max.	T +.010 −.005	A Thread	V Thread
8S	.844 (21.44)	1.469 (37.31)	1.000 (25.40)	.454 (11.53)	.594 (15.09)	.906 (23.01)	.120 (3.05)	1/2-28UNEF-2B	1/2-28UNEF-2A
10S	.969 (24.63)	1.531 (38.89)	1.000 (25.40)	.514 (13.06)	.719 (18.26)	1.031 (26.19)	.120 (3.05)	5/8-24NEF-2B	1/2-28UNEF-2A
10SL	.969 (24.62)	1.531 (38.89)	1.000 (25.40)	.630 (16.00)	.719 (18.26)	1.031 (26.19)	.120 (3.05)	5/8-24NEF-2B	5/8-24NEF-2A
12S	1.062 (26.97)	1.688 (42.88)	1.000 (25.40)	.630 (16.00)	.812 (20.62)	1.125 (28.58)	.120 (3.05)	3/4-20UNEF-2B	5/8-24NEF-2A
14S	1.156 (29.36)	1.688 (42.88)	1.000 (25.40)	.755 (19.18)	.906 (23.01)	1.219 (30.96)	.120 (3.05)	7/8-20UNEF-2B	3/4-20UNEF-2A
16S	1.250 (31.75)	1.688 (42.88)	1.000 (25.40)	.880 (22.35)	.969 (24.62)	1.312 (33.32)	.120 (3.05)	1-20UNEF-2B	7/8-20UNEF-2A
12	1.062 (26.97)	2.062 (52.37)	1.205 (30.61)	.630 (16.00)	.812 (20.62)	1.125 (28.58)	.120 (3.05)	3/4-20UNEF-2B	5/8-24NEF-2A
14	1.156 (29.36)	2.062 (52.37)	1.205 (30.61)	.755 (19.18)	.906 (23.01)	1.219 (30.96)	.120 (3.05)	7/8-20UNEF-2B	3/4-20UNEF-2A
16	1.250 (31.75)	2.062 (52.37)	1.205 (30.61)	.880 (22.35)	.969 (24.62)	1.312 (33.32)	.120 (3.05)	1-20UNEF-2B	7/8-20UNEF-2A
18	1.344 (34.14)	2.062 (52.37)	1.205 (30.61)	.989 (25.13)	1.062 (26.97)	1.406 (35.71)	.120 (3.05)	1-1/8-18NEF-2B	1-20UNEF-2A
20	1.469 (37.31)	2.188 (55.58)	1.205 (30.61)	1.176 (29.87)	1.156 (29.36)	1.531 (38.89)	.120 (3.05)	1-1/4-18NEF-2B	1-3/16-18NEF-2A
22	1.594 (40.49)	2.188 (55.58)	1.205 (30.61)	1.270 (32.26)	1.250 (31.75)	1.656 (42.06)	.120 (3.05)	1-3/8-18NEF-2B	1-3/16-18NEF-2A
24	1.719 (43.66)	2.312 (58.72)	1.375 (34.92)	1.395 (35.43)	1.375 (34.92)	1.781 (45.24)	.147 (3.73)	1-1/2-18NEF-2B	1-7/16-18NEF-2A
28	1.969 (50.01)	2.312 (58.72)	1.375 (34.92)	1.645 (41.78)	1.562 (39.67)	2.031 (51.59)	.147 (3.73)	1-3/4-18NS-2B	1-7/16-18NEF-2A
32	2.219 (56.36)	2.438 (61.93)	1.375 (34.92)	1.895 (48.13)	1.750 (44.45)	2.281 (57.94)	.173 (4.39)	2-18NS-2B	1-3/4-18NS-2A

X DIMENSION
Max. Solder Pot Ext. — Pin or Socket

Shell Size	Contact Size 16	12	8	4	0
8S-16S	.50	—	—	—	—
12	—	.59	—	—	—
14	—	—	.73	—	—
16	.50	.59	.73	.86	—
18-22	.50	.59	.72	.86	.86
24-28	.59	.65	.76	.90	.90
32-48	.47	.53	.66	.78	.78

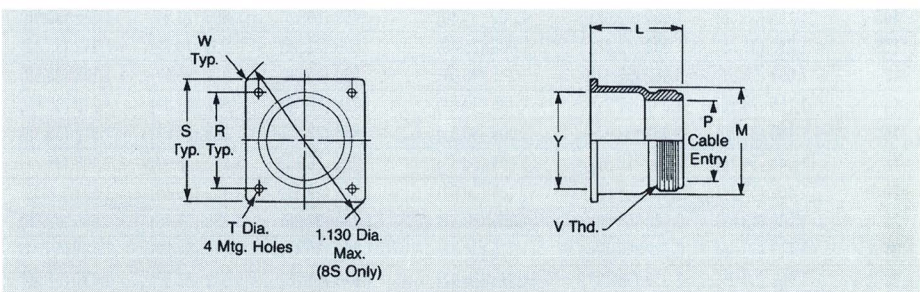
Contact Arrangements (Face View, Pin Insert)



Junction Shell

CA2120

The CA2120 straight junction shell is used with MS3102 box mounting receptacle to protect and enclose the wires behind a panel or bulkhead and to connect flexible or rigid conduit. Material is aluminum alloy; finish is olive drab chromate over cadmium plate.



Part Number	Fits Shell Size	L Max.	M Max.	P Max.	R ±.005	S Max.	T +.010 −.005	Y Max.	V thread	W Rad. Max.
CA2120-1	8S	.789	.542	.350	.594	.906	.120	.472	1/2-28UNEF-2A	—
CA2120-2	10S	.789	.656	.350	.718	1.031	.120	.530	1/2-28UNEF-2A	.155
CA2120-2A	10SL	.749	.782	.430	.718	1.031	.120	.655	5/8-24UNEF-2A	.155
CA2120-3	12S & 12	.811	.782	.430	.813	1.125	.120	.655	5/8-24UNEF-2A	.155
CA2120-4	14S & 14	.812	.906	.550	.906	1.219	.120	.772	3/4-20UNEF-2A	.155
CA2120-5	16S & 16	.890	1.032	.679	.968	1.312	.120	.896	7/8-20UNEF-2A	.155
CA2120-9	18	1.119	1.156	.780	1.062	1.406	.120	1.004	1-20UNEF-2A	.175
CA2120-10	20	1.276	1.282	.890	1.156	1.531	.120	1.192	1-3/16-18UNEF-2A	.185
CA2120-11	22	1.244	1.406	.900	1.250	1.656	.120	1.285	1-3/16-18UNEF-2A	.205
CA2120-12	24	1.354	1.532	1.150	1.375	1.781	.147	1.411	1-7/16-18UNEF-2A	.205
CA2120-13	28	1.338	1.782	1.159	1.562	2.031	.147	1.660	1-7/16-18UNEF-2A	.235
CA2120-14	32	1.385	2.032	1.460	1.750	2.281	.173	1.910	1-3/4-18UNS-2A	.265
CA2120-15	36	1.385	2.282	1.710	1.937	2.531	.173	2.160	2-18UNS-2A	.295
CA2120-16	40	1.385	2.532	1.960	2.187	2.781	.173	2.379	2-1/4-16UN-2A	.295
CA2120-17	44	1.510	2.782	2.210	2.375	3.031	.173	2.661	2-1/2-16UN-2A	.325
CA2120-18	48	1.510	3.032	2.704	2.625	3.281	.173	2.910	3-16UN-2A	.325

For other accessories, see MS-E/F/R, pages 34-37.

Dimensions are shown in inches.
Dimensions subject to change.

MS-K firewall connectors have met and are qualified to the fireproof test of MIL-C-5015. This test requires that a connector mounted to a firewall will continue to operate for 5 minutes in case of fire and prevent the passage of flame for 20 minutes. These connectors are not environmentally sealed but operate continuously at temperature up to +177°C (+350°F). MS-K connectors have crimp type contacts; thermocouple contacts must be ordered separately and are solder type unless otherwise requested on order. Cavities that will contain the thermocouple contacts and contact material must be specified when ordering.

Standard Data

MATERIALS

- Shell — Steel
- Insulator — Glass-filled epoxy or glass-filled melamine or melamine glass cloth laminate
- Contacts — Copper alloy

FINISHES

- Shell — Olive drab over cadmium plate
- Contacts — Silver plate

MECHANICAL FEATURES

- Shell Size — In sixteenths of an inch
- Coupling — Threaded
- Contact Arrangements — See pages 219-220

ELECTRICAL DATA

- Number of Contacts — 1 thru 37

How to Order

MS 3106 K 36 8 P

- SERIES PREFIX
- SHELL STYLE
- CLASS
- CONTACT TYPE
- CONTACT ARRANGEMENT
- SHELL SIZE

SERIES PREFIX
MS

SHELL STYLE
See pages 205-207

CLASS
K per MIL-C-5015

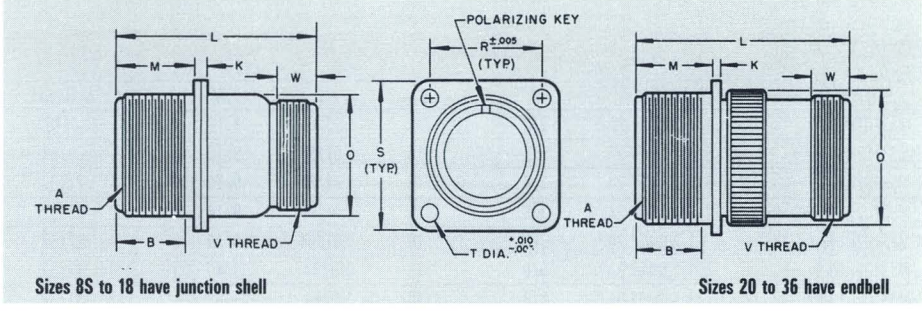
SHELL SIZE
8S to 36

CONTACT ARRANGEMENT
See pages 219-220

CONTACT TYPE
P for pin; S for socket

Wall Mounting Receptacle

MS3100K

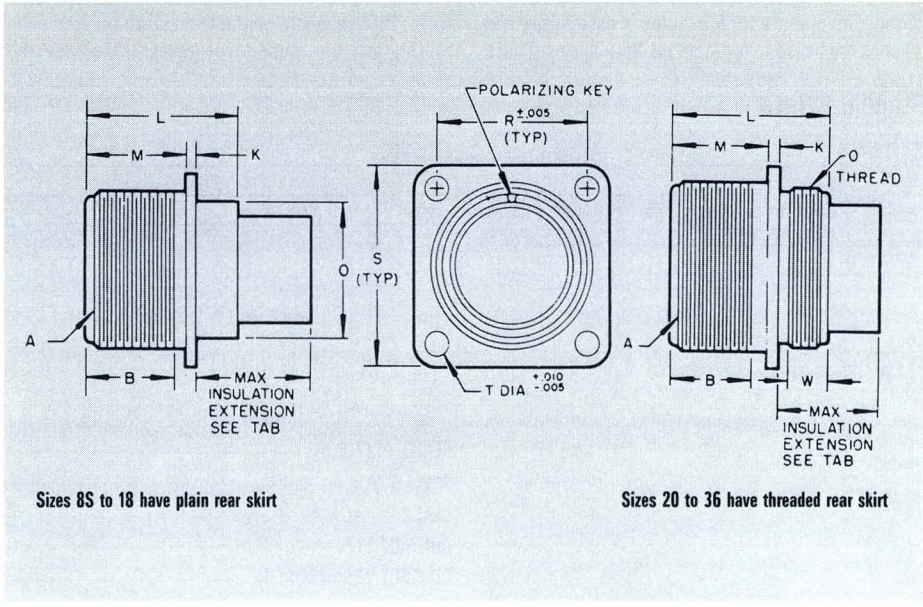


Part Number	A Thread	B	K	L	M	O	R	S	T	V Thread	W
MS3100K8S-*†	1/2-28UNEF-2A	3/8	1/8	1-29/64	9/16	17/32	19/32	7/8	.150	1/2-28UNEF-2A	3/8
•MS3100K10SL-*†	5/8-24UNEF-2A	3/8	1/8	1-7/64	9/16	25/32	23/32	1	.150	5/8-24UNEF-2A	3/8
MS3100K12S-*†	3/4-20UNEF-2A	3/8	1/8	1-33/64	9/16	25/32	13/16	1-3/32	.150	5/8-24UNEF-2A	3/8
MS3100K14S-*†	7/8-20UNEF-2A	3/8	1/8	1-33/64	9/16	29/32	29/32	1-3/16	.150	3/4-20UNEF-2A	3/8
MS3100K16S-*†	1-20UNEF-2A	3/8	1/8	1-33/64	9/16	1-1/32	31/32	1-9/32	.150	7/8-20UNEF-2A	3/8
MS3100K16-*†	1-20UNEF-2A	5/8	1/8	1-45/64	3/4	1-1/32	31/32	1-9/32	.150	7/8-20UNEF-2A	3/8
MS3100K18-*†	1-1/8-18UNEF-2A	5/8	1/8	1-59/64	3/4	1-5/32	1-1/16	1-3/8	.177	1-20UNEF-2A	3/8
MS3100K20-*†	1-1/4-18UNEF-2A	5/8	5/64	2-7/64	3/4	1-21/64	1-5/32	1-1/2	.177	1-3/16-18UNEF-2A	3/8
MS3100K22-*†	1-3/8-18UNEF-2A	5/8	5/64	2-1/32	3/4	1-25/64	1-1/4	1-5/8	.177	1-3/16-18UNEF-2A	3/8
MS3100K24-*†	1-1/2-18UNEF-2A	5/8	5/64	2-21/64	13/16	1-37/64	1-3/8	1-3/4	.177	1-7/16-18UNEF-2A	3/8
MS3100K28-*†	1-3/4-18UNS-2A	5/8	5/64	2-1/4	13/16	1-49/64	1-9/16	2	.177	1-7/16-18UNEF-2A	3/8
MS3100K32-*†	2-18UNS-2A	5/8	5/64	2-29/64	7/8	2-1/64	1-3/4	2-1/4	.209	1-3/4-18UNS-2A	7/16
MS3100K36-*†	2-1/4-16UN-2A	5/8	1/8	2-19/32	7/8	2-17/64	1-15/16	2-1/2	.209	2-18UNS-2A	1/2

•Receptacles in size 10SL are available with pin inserts only. *Add contact arrangement. See pages 219-220. †Add contact type: P — pin; S — socket.

Box Mounting Receptacle

MS3102K



Sizes 8S to 18 have plain rear skirt

Sizes 20 to 36 have threaded rear skirt

Maximum Insulation Extensions

Shell Size	Contact Size 16	12	8	4	0
8S	11/16	—	—	—	—
10SL-16S	51/64	7/8	—	—	—
16-18	13/16	7/8	7/8	1-3/32	—
20-22	13/16	7/8	7/8	1-3/32	1-9/64
24	47/64	13/16	13/16	1-1/32	1-3/32
28	47/64	13/16	13/16	1-1/32	1-3/32
32	47/64	47/64	47/64	61/64	1-1/32
36	39/64	43/64	43/64	57/64	61/64

Part Number	A Thread	B	K	L	M	O Thread	R	S	T	W
MS3102K8S-*†	1/2-28UNEF-2A	3/8	1/16	59/64	9/16	7/16	19/32	7/8	.150	—
•MS3102K10SL-*†	5/8-24UNEF-2A	3/8	1/16	61/64	9/16	39/64	23/32	1	.150	—
MS3102K12S-*†	3/4-20UNEF-2A	3/8	1/16	61/64	9/16	21/32	13/16	1-3/32	.150	—
MS3102K14S-*†	7/8-20UNEF-2A	3/8	1/16	61/64	9/16	23/32	29/32	1-3/16	.150	—
MS3102K16S-*†	1-20UNEF-2A	3/8	1/16	61/64	9/16	27/32	31/32	1-9/32	.150	—
MS3102K16-*†	1-20UNEF-2A	5/8	1/16	1-9/64	3/4	27/32	31/32	1-9/32	.150	—
MS3102K18-*†	1-1/8-18UNEF-2A	5/8	1/16	1-9/64	3/4	31/32	1-1/16	1-3/8	.177	—
MS3102K20-*†	1-1/4-18UNEF-2A	5/8	5/64	1-15/64	3/4	1-3/16-18UNEF-2A	1-5/32	1-1/2	.177	9/64
MS3102K22-*†	1-3/8-18UNEF-2A	5/8	5/64	1-15/64	3/4	1-1/4-18UNEF-2A	1-1/4	1-5/8	.177	9/64
MS3102K24-*†	1-1/2-18UNEF-2A	5/8	5/64	1-18/64	13/16	1-7/16-18UNEF-2A	1-3/8	1-3/4	.177	9/64
MS3102K28-*†	1-3/4-18UNS-2A	5/8	5/64	1-18/64	13/16	1-5/8-18UNEF-2A	1-9/16	2	.177	9/64
MS3102K32-*†	2-18UNS-2A	5/8	5/64	1-3/8	7/8	1-7/8-16UN-2A	1-3/4	2-1/4	.209	5/16
MS3102K36-*†	2-1/4-16UN-2A	5/8	1/8	1-29/64	7/8	2-1/8-16UN-2A	1-15/16	2-1/2	.209	11/32

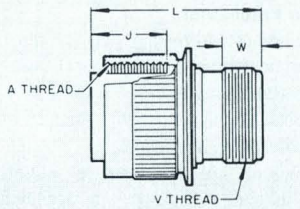
•Receptacles in size 10SL are available with pin inserts only.
*Add contact arrangement, see pages 219-220.
†Add contact type: P — pin; S — socket.

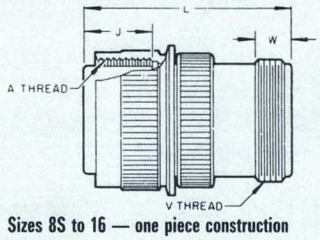
Dimensions are shown in inches.
Dimensions subject to change.

Straight Plug

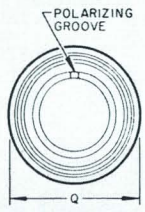
Pin Insert

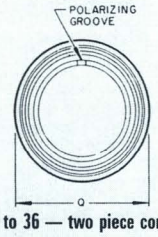
Socket Insert





Sizes 8S to 16 — one piece construction





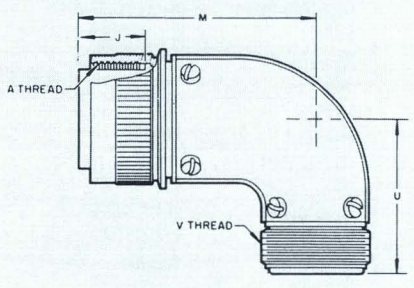
Sizes 18 to 36 — two piece construction

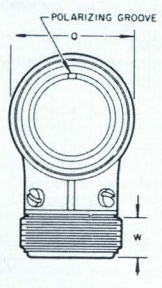
Part Number	A Thread	J	L	Q	V Thread	W
MS3106K8S-*†	1/2-28UNEF-2B	17/32	1-1/4	3/4	1/2-28UNEF-2A	3/8
•MS3106K10SL-*†	5/8-24UNEF-2B	17/32	1-7/16	31/32	5/8-24UNEF-2A	3/8
MS3106K12S-*†	3/4-20UNEF-2B	17/32	1-7/16	1	5/8-24UNEF-2A	3/8
MS3106K14S-*†	7/8-20UNEF-2B	17/32	1-7/16	1-1/8	3/4-20UNEF-2A	3/8
MS3106K16S-*†	1-20UNEF-2B	17/32	1-7/16	1-1/4	7/8-20UNEF-2A	3/8
MS3106K16-*†	1-20UNEF-2B	23/32	1-5/8	1-1/4	7/8-20UNEF-2A	3/8
MS3106K18-*†	1-1/8-18UNEF-2B	23/32	2-1/16	1-11/32	1-20UNEF-2A	3/8
MS3106K20-*†	1-1/4-18UNEF-2B	23/32	2-11/64	1-15/32	1-3/16-18UNEF-2A	3/8
MS3106K22-*†	1-3/8-18UNEF-2B	23/32	2-5/32	1-19/32	1-3/16-18UNEF-2A	3/8
MS3106K24-*†	1-1/2-18UNEF-2B	23/32	2-21/64	1-23/32	1-7/16-18UNEF-2A	3/8
MS3106K28-*†	1-3/4-18UNS-2B	23/32	2-5/16	1-31/32	1-7/16-18UNEF-2A	3/8
MS3106K32-*†	2-18UNS-2B	23/32	2-25/64	2-7/32	1-3/4-18UNS-2A	7/16
MS3106K36-*†	2-1/4-16UN-2B	23/32	2-17/32	2-15/32	2-18UNS-2A	1/2

•Plugs in size 10SL are available with socket inserts only.
*Add contact arrangement; see pages 219-220.
†Add contact type: P — pin; S — socket.

90° Angle Plug

MS3108K





Part Number	A Thread	J	M	Q	U	V Thread	W
•MS3108K10SL-*†	5/8-24UNEF-2B	17/32	1-41/64	31/32	1-21/64	5/8-24UNEF-2A	3/8
MS3108K12S-*†	3/4-20UNEF-2B	17/32	1-41/64	1	1-21/64	5/8-24UNEF-2A	3/8
MS3108K14S-*†	7/8-20UNEF-2B	17/32	1-29/32	1-1/8	1-27/64	3/4-20UNEF-2A	3/8
MS3108K16S-*†	1-20UNEF-2B	17/32	1-29/32	1-1/4	1-27/64	7/8-20UNEF-2A	3/8
MS3108K16-*†	1-20UNEF-2B	23/32	2-3/32	1-1/4	1-27/64	7/8-20UNEF-2A	3/8
MS3108K18-*†	1-1/8-18UNEF-2B	23/32	2-15/64	1-11/32	1-31/64	1-20UNEF-2A	3/8
MS3108K20-*†	1-1/4-18UNEF-2B	23/32	2-19/32	1-15/32	1-21/32	1-3/16-18UNEF-2A	3/8
MS3108K22-*†	1-3/8-18UNEF-2B	23/32	2-19/32	1-19/32	1-21/32	1-3/16-18UNEF-2A	3/8
MS3108K24-*†	1-1/2-18UNEF-2B	23/32	2-49/64	1-23/32	1-63/64	1-7/16-18UNEF-2A	3/8
MS3108K28-*†	1-3/4-18UNS-2B	23/32	2-49/64	1-31/32	1-63/64	1-7/16-18UNEF-2A	3/8
MS3108K32-*†	2-18UNS-2B	23/32	3-1/4	2-7/32	2-7/32	1-3/4-18UNS-2A	7/16
MS3108K36-*†	2-1/4-16UNS-2B	23/32	3-1/4	2-15/32	2-9/32	2-18UNS-2A	1/2

•Plugs in size 10SL are available with socket inserts only.
*Add contact arrangement; see pages 219-220.
†Add contact type: P — pin; S — socket.

Assembly Instructions

Recommended Procedures

*1. Remove Formica retaining ring (or the ceramic retaining ring) from contact (Figure 1).
2. Crimp contact to wire.
3. Slip endbell (or junction shell), retaining ring, and washer over wire bundle.
4. Push contact thru rear insulator. (Contact should extend sufficiently to accomplish Step 5.)
5. Attach Formica retaining ring onto the contact (see Figure 1).
6. Seat each contact securely in rear insulator.
7. Assemble front insulator on engaging end of contact.
8. Slide insulator assembly into hardware.
9. Slide washer and insulator retaining ring into place, making sure that insulator retaining is fully seated in groove.
10. Slide endbell or junction shell down wire bundle and attach to shell (or barrel).

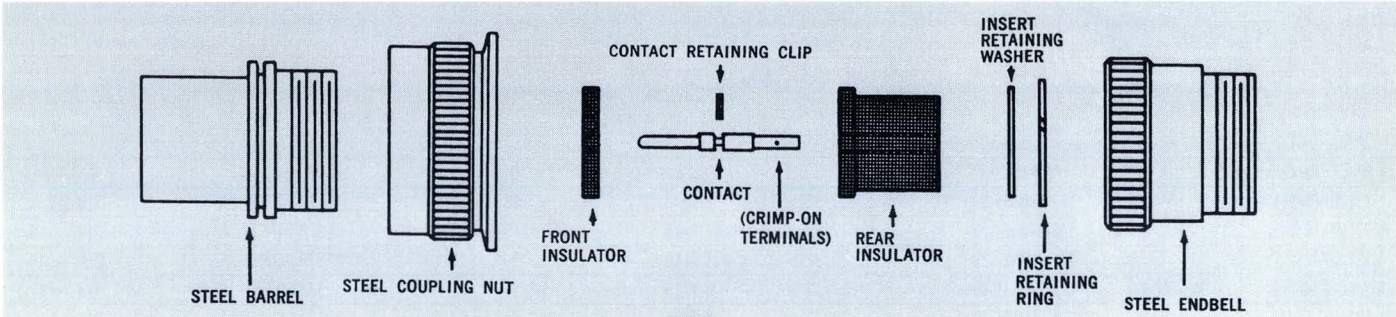


FIGURE 1

*NOTE: For MS-K Assembly it is not necessary to remove the ceramic retaining ring used on sizes 16 and 12 contacts for MS-K **providing** that the crimp tool M22520/1-01 is used with the TH119 turret. However, the formica ring must be removed if using the crimp tools listed below.

When using the MS3191-1 (or CCT-1612) crimp tool with proper locator, both the ceramic or formica retaining ring for sizes 16 and 12 contacts must be removed. For sizes 8, 4, and 0 contacts, the ceramic or formica retaining rings must be removed before crimping.

Contacts, Crimp Tools, Contact Kit Part Numbers

MS-K Contacts and Crimp Tools can be ordered separately

MS-K Contact Assembly Kit With Contact and Retaining Ring

Contact Size	Part Number	Wire Accom.	Crimp Tool	Locator	Crimp Head†	Contact Size	Kit Part Number
16 Pin 8S-36	330-0187-000	16-18-20	M22520/1-01 MS3191-1	TH119 Turret L16-3191-8	—	16 Pin 8S-36	320-0002-000
16 Pin* 8S-36	030-1154-000	16-18-20	M22520/1-01 MS3191-1	TH119 Turret L16-3191-8	—	16 Pin* 8S-36	320-0001-000
16 Socket 8S-16S	031-0497-000	16-18-20	M22520/1-01 MS3191-1	TH119 Turret L16-3191-8	—	16 Socket 8S-16S	320-0013-000
16 Socket 12-36	031-0498-000	16-18-20	M22520/1-01 MS3191-1	TH119 Turret L16-3191-7	—	16 Socket 12-36	320-0005-000
16 Socket* 12-36	031-0728-000	16-18-20	M22520/1-01 MS3191-1	TH119 Turret L16-3191-7	—	16 Socket* 12-36	320-0008-000
12 Pin	330-0188-000	12-14	M22520/1-01 MS3191-1	TH119 Turret L12-3191-4	—	12 Pin	320-0009-000
12 Socket	031-0499-000	12-14	M22520/1-01 MS3191-1	TH119 Turret L12-3191-4	—	12 Socket	320-0007-000
8 Pin	330-0189-000	8	CBT600B or CBT600	CCHP8	CCH8-1	8 Pin	320-0010-000
8 Socket	031-0500-000	8	CBT600B or CBT600	CCHP8	CCH8-1	8 Socket	320-0014-000
4 Pin	330-0190-000	4	CBT600B or CBT600	CCHP4	CCH4-1	4 Pin	320-0011-000
4 Socket	031-0501-000	4	CBT600B or CBT600	CCHP4	CCH4-1	4 Socket	320-0006-000
0 Pin	330-0191-000	0	CBT600B	CCHP0-6	CCH0-1	0 Pin	320-0012-000
0 Socket	031-0502-000	0	CBT600B	CCHP0-6	CCH0-1	0 Socket	320-0015-000

*These contacts must be used when ordering contact arrangements 24-28 pin or socket, 28-21 pin or socket, and 20-27 socket only.
†Crimp heads are only applicable for contact sizes 8, 4, and 0.

FRF/FVF Firewall connectors are designed to meet the requirements of MIL-C-5015 and prevent the passage of +1093°C (+2000°F) flames for 20 minutes. They incorporate the latest sophisticated design improvements necessary to meet the exacting demands of supersonic flight applications. Some of these features are temperature capabilities to +204°C (+392°F) for more than 1000 hours, lighter weight, smaller than other MIL-C-5015 firewall connectors, and crimp front release contacts.

Firewall connectors fulfill the very important application of providing a means to penetrate the engine firewall of military and commercial aircraft with electrical circuits, and still maintain the integrity of the flame barrier requirements of the aircraft firewall. These connectors provide protection against high temperatures, emergency fire-retardant conditions, moisture, atmospheric changes, and are resistant to fuels, cleaning agents, coolants, and hydraulic fluids. Materials of connector arrangements are designed to meet the requirements of MIL-C-5015 Class K connectors.

The maximum operating temperature noted for these connectors is the maximum internal hot spot resulting from any combination of electrical load and ambient conditions.

How to Order

FRF	6	E	12S	3	P	X	-01	
FVF	0	A	12S	3	S	X		
FRA	0	–	12S	3	P			
FVA	6	–	12S	3	S			FO
SERIES PREFIX								
SHELL STYLE								
ACCESSORY HARDWARE								
SHELL SIZE								
CONTACT ARRANGEMENT								
CONTACT TYPE								
INSERT POLARIZATION								
LESS CONTACTS								
MODIFIERS								

SERIES PREFIX
- FRF – Fluorosilicone elastomers, steel hardware with black chromate finish
- FVF – Silicone elastomers, steel hardware with clear chromate (A105) finish
- FRA – Same as FRF except aluminum hardware
- FVA – Same as FVF except aluminum hardware

SHELL STYLE
- 6 – Plug
- 0 – Receptacle, flange mounting

ACCESSORY HARDWARE (ALUMINUM)
- E (FRF/FRA) – Endbell with cable clamp
- E (FVF/FVA) – Endbell with cable clamp with ferrules
- A (FRF/FRA) – Endbell adapter threaded for conduit
- A (FVF/FVA) – Endbell adapter threaded for conduit with ferrules
- — Use dash (–) for connectors less accessories (Dash must be included in description)

SHELL SIZE

10SL, 12S, 14S, 16S, 20, 22, 24, 28, 32 and 36

CONTACT ARRANGEMENT

See pages 219-220

CONTACT TYPE

P for pin; S for socket

INSERT POLARIZATION

W, X, Y or Z in accordance with MIL-C-5015. No designator required for normal

LESS CONTACT

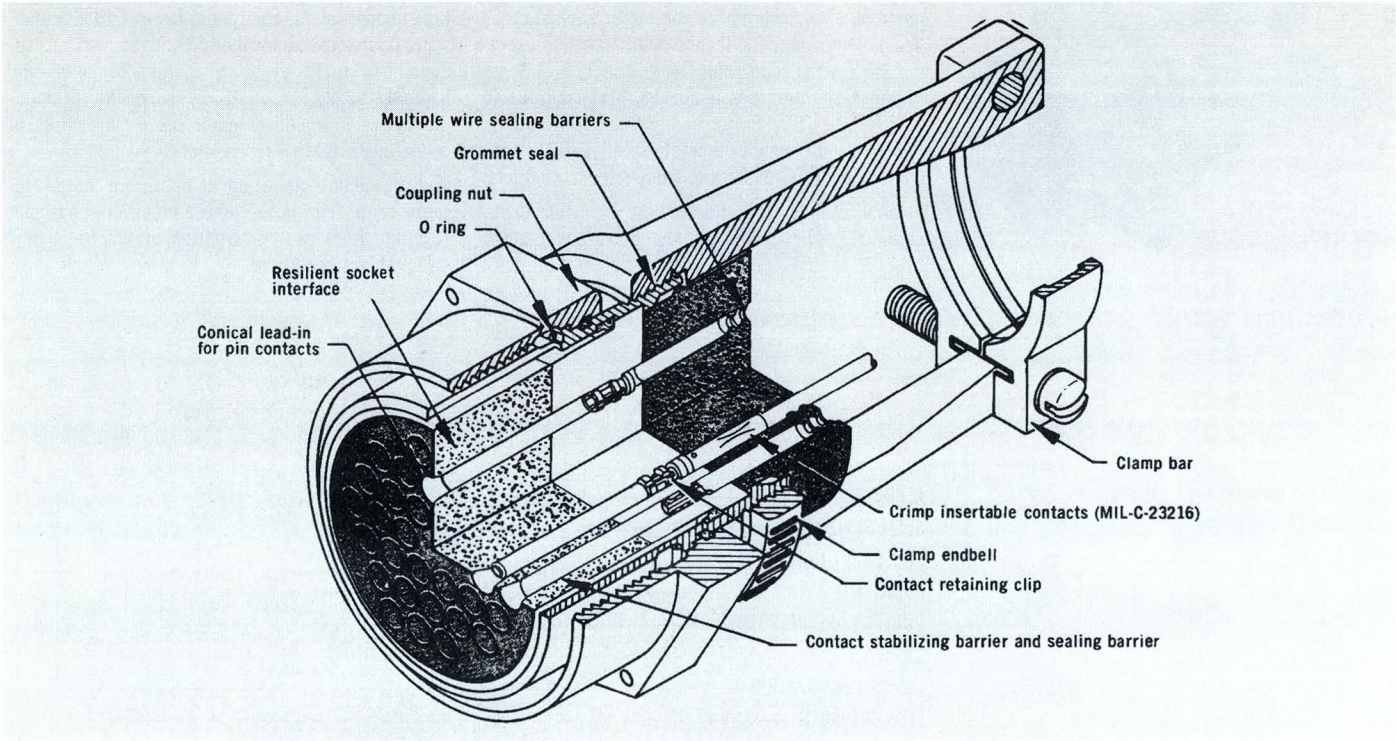
FO – (Will not be stamped on connectors)

MODIFIERS
- 01 – Ball, self-locking knurled coupling nut (see note 1 below)
- 02 – Size 16 contacts to accommodate size 20 wire
- 03 – Clinch nut mounting receptacles (F28)
- 04 – Obsolete
- 05 – Knurled coupling nut
- 06 – Combination 01 and 02 codes
- 07 – Ferrules only (see note 4 below)
- 08 – Combination 01 and 07 codes (see note 4 below)
- 09 – Combination 05 and 07 codes (see note 4 below)
- 10 – Anchor nut plates on receptacle shells
- 11 – MS3057 type "A" endbell clamp, less bushing

MODIFIERS (continued)
- 12 – Combination 07 and 10 codes
- 13 – 01 code, with safety wire holes on coupling nut
- 14 – 90° endbell (with saddle clamp and ferrule)
- 15 – Combination 01 and 14 codes
- 16 – 03 code plus ferrules (code 07)
- 17 – Obsolete
- 18 – 01 code and steel conduit adapter
- 19 – FRFO/FVFO receptacle with steel conduit adapter

NOTES
1. Modifier 01: Used for high vibration/shock applications
2. Less Contacts: Use the Modifier "-FO" or "L". The modifier will not be stamped on the connector. Modifier "-FO" is preferred.
3. Numerical FRA/FRF modifiers are assigned consecutively as needed and there is no significance to numerical order.
4. The basic FRA and FRF connectors were designed for use without ferrules. Ferrules are suggested when undersized wire is used so that the grommet seals will not spread apart (i.e. opened) when the wires are flexed as the wire may be too stiff for its bend to be completely damped out by the endbell cable clamp. FVA and FVF are always supplied with ferrules.

Design Features

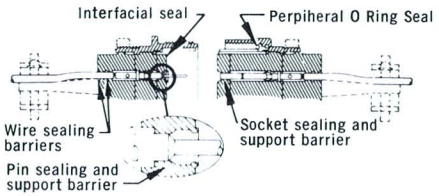


Complete Moisture Sealing

An improved shell-to-barrel O ring seals against pressure differential to 15 psi before and after exposure to +204°C (+392°F).

Positive interfacial sealing is accomplished with a pin and socket interlocking barrier design.

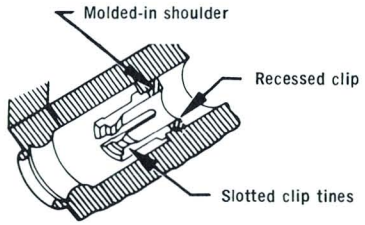
A highly reliable grommet sealing system incorporates multiple wire sealing barriers and a grommet-to-shell seal.



Rugged Metal Clip Retention System

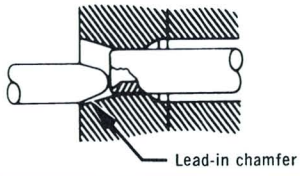
These clips are one-piece metal parts with slotted, inwardly deflected tines assuring positive contact retention. They are retained and positively located in the hard insulator contact cavities by a molded-in shoulder providing strength where the greatest load from mating and unmating occurs.

Contacts are seated on the clip shoulder, and the contact retaining clip locks on the taper retention undercut of the contact.



Improved Contact Alignment and Stability

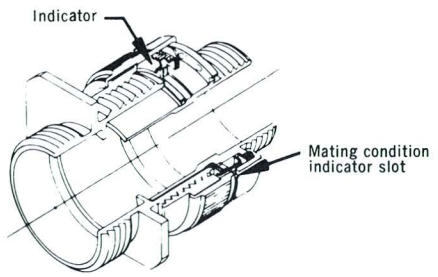
The large lead-in chamfer on the semi-resilient insert provides positive contact alignment by "guiding" the tip of the pin contact into the mating socket. This chamfer provides maximum contact centering without restricting contact float or tool insertion.



Optional Self-Locking Coupling Nut

The mechanism employs a spring-loaded detent system that is free running until near full engagement. At this point torque valves increase causing the mechanism to produce an audible clicking until full engagement. The mechanism is effective even when coupling stops at a position between detents.

When full mating is achieved, a color appears in the indicator window on the periphery of the coupling nut. The indicator is serrated so that full mating can be determined in a blind installation by feel, with a probe approximately 1/32" in diameter.



Standard Data

ELECTRICAL DATA

Contact Size	Wire Size (MIL-W-5086)	Insulation OD Limit min.	Insulation OD Limit max.
16	16 thru 20	.068 (1.73)	.135 (3.43)
12	12 thru 14	.092 (2.34)	.200 (5.08)
8	8 thru 10	.132 (3.35)	.300 (7.62)
4	4 thru 6	.227 (5.77)	.425 (10.80)
0	0 thru 2	.390 (9.91)	.590 (14.99)

MATERIALS AND FINISHES

Shell — Machined cadmium plated steel (FRF/FYF)
— Aluminum (FRA/FVA)

Insulator — Glass-filled epoxy

Grommets and Interfacial Seals — FRF – Fluorosilicone/FVF – Silicone

Contacts† — Copper alloy, gold plating per MIL-C-39029

Clip — Copper alloy

MECHANICAL FEATURES

Coupling — Threaded

Polarization — Single keyway per MIL-C-5015

Contact Retention — Metal clip

Test Data (FRF and FVF Only)

Moisture Resistance — Exceeds MIL-STD-202E, Method 106D

Fire Test — Exceeds MIL-C-5051G, Para. 4.6.16

Fluid Emersion — Per MIL-C-5015G, Para. 4.6.15.3

Fluid	Use	Fluid	Use
JP-4	Aviation fuel	Navee 427	Alkaline cleaner
Kerosene	Aviation fuel	MIL-L-23699	Turbine lube oil
MIL-H-5606	Hydraulic fluid	Skydrol 500A	Hydraulic fluid
Ethylene Glycol	Synthetic coolant	MIL-L-7808D	Turbine lube oil
Cee-Bee A-693	Alkaline cleaner	Texaco 6256	Turbine lube oil

Contacts

Pin and Socket

Pin and socket contacts are machined from bar stock to assure precision operation. They are designed to resist severe vibration and repeated connection and disconnection. The average force to either engage or separate pin and socket contacts will not exceed the average values given in the latest revision of MIL-C-39029.

Force in oz.	Contact Sizes 16	12	8	4	0
Maximum	30	30	160	240	320
Average	24	24	7	10.5	15
Minimum	2	3	5	10	14

Thermocouple Contacts

Size 12 and 16 contacts, machined from matching thermocouple lead wire alloys, can be supplied in ITT Cannon connectors. These thermocouple contacts maintain continuity from thermal-sensor leads thru a bulkhead or other closures in temperature measuring applications.

These contacts for matching lead wires are detailed by the standards of the Instrument Society of America (I.S.A.).

I.S.A. Standards	Material
J	Iron and constantan
K	Chromel and alumel
T	Copper and constantan

Service Data

Maximum current ratings of contacts and maximum allowable voltage drop under test conditions when assembled as in service are shown. Maximum total current to be carried per connector is the same as that allowable in wire bundles as specified in MIL-W-5088.

Current Rating with Silver Plated Wire

Contact Size	Test Current (amps)	Potential Drop (millivolts)
16	13	49
12	23	42
8	46	26
4	80	23
0	150	21

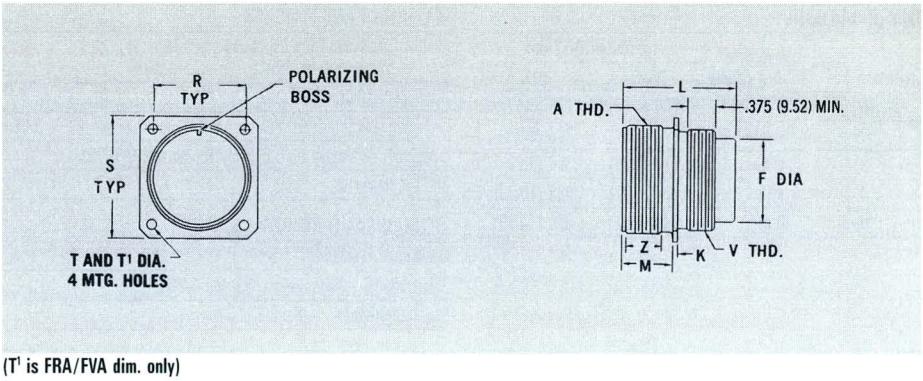
High Potential Test Data

These connectors show no evidence of breakdown when the test voltage indicated is applied between the two closest contacts and between the shell and the contacts closest to the shell for a period of one minute.

MS Service Rating	TEST Voltage (RMS) 60 cps	Operating Voltages Suggested DC	Operating Voltages Suggested AC (rms)	Air Spacing nom. inches	Creepage Distance nom. inches
Inst.	1000	250	200	—	1/16
A	2000	700	500	1/16	1/8
D	2800	1250	900	1/8	3/16
E	3500	1750	1250	3/16	1/4
B	4500	2450	1750	1/4	5/16
C	7000	4200	3000	5/16	1

Wall Mounting Receptacle

FRF0/FVF0



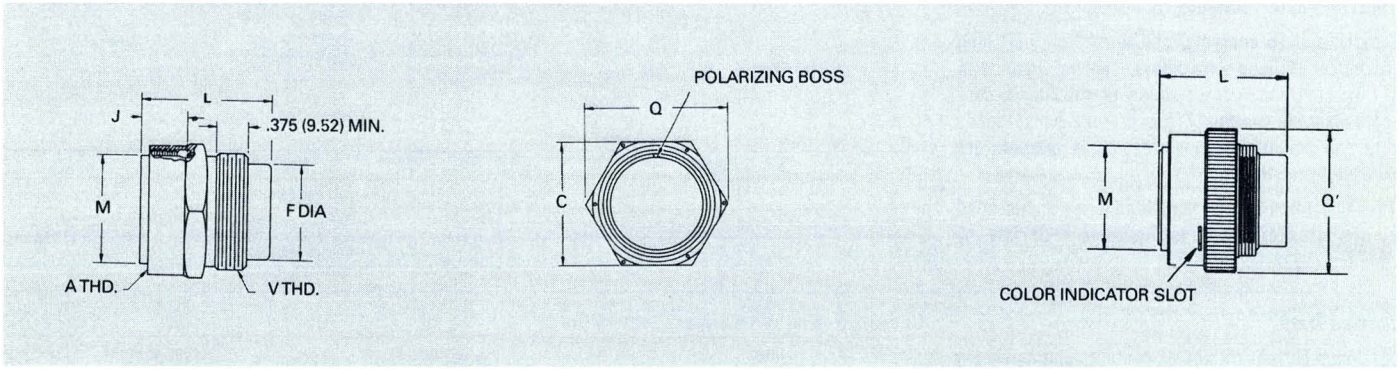
(T¹ is FRA/FVA dim. only)

Shell Size	A Thread	L Max. #16 #12	L Max. #8 #4	L Max. #0	F Max.	K Max.	M +.031 −.000	R ±.005	S Max.	T +.010 −.005	T¹ +.010 −.005	V Thread	Z Min.
10SL	5/8-24UNEF-2A	1.685 (42.80)*	—	—	.445 (11.30)	.098 (2.49)	.562 (14.27)	.719 (18.26)	1.031 (26.19)	.150 (3.81)	.120 (3.04)	5/8-24UNEF-2A	.375 (9.52)
12S	3/4-20UNEF-2A	1.875 (47.62)	—	—	.445 (11.30)	.098 (2.49)	.562 (14.27)	.812 (20.62)	1.125 (28.58)	.150 (3.81)	.120 (3.04)	5/8-24UNEF-2A	.375 (9.52)
14S	7/8-20UNEF-2A	1.875 (47.62)	—	—	.522 (13.26)	.098 (2.49)	.562 (14.27)	.906 (23.01)	1.219 (30.96)	.150 (3.81)	.120 (3.04)	3/4-20UNEF-2A	.375 (9.52)
16S	1-20UNEF-2A	1.875 (47.62)	—	—	.647 (16.43)	.098 (2.49)	.562 (14.27)	.969 (24.61)	1.312 (33.32)	.150 (3.81)	.120 (3.04)	7/8-20UNEF-2A	.375 (9.52)
16	1-20UNEF-2A	1.922 (48.82)	2.141 (54.38)	—	.647 (16.43)	.098 (2.49)	.750 (19.05)	.969 (24.61)	1.312 (33.32)	.150 (3.81)	.120 (3.04)	7/8-20UNEF-2A	.625 (15.86)
20	1-1/4-18UNEF-2A	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	.921 (23.39)	.140 (3.56)	.750 (19.05)	1.156 (29.36)	1.531 (38.89)	.177 (4.50)	.120 (3.04)	1-1/4-18UNEF-2A	.625 (15.86)
22	1-3/8-18UNEF-2A	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	1.016 (25.81)	.140 (3.56)	.750 (19.05)	1.250 (31.75)	1.656 (42.06)	.177 (4.50)	.120 (3.04)	1-1/4-18UNEF-2A	.625 (15.86)
24	1-1/2-18UNEF-2A	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	1.141 (28.98)	.140 (3.56)	.812 (20.62)	1.375 (34.92)	1.781 (45.24)	.177 (4.50)	.147 (3.73)	1-3/8-18UNEF-2A	.625 (15.86)
28	1-3/4-18UNS-2A	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	1.361 (34.57)	.140 (3.56)	.812 (20.62)	1.562 (39.67)	2.031 (51.59)	.177 (4.50)	.147 (3.73)	1-5/8-18UNEF-2A	.625 (15.86)
32	2-18UNS-2A	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	1.611 (40.92)	.140 (3.56)	.875 (22.22)	1.750 (44.45)	2.281 (57.94)	.209 (5.31)	.173 (4.39)	1-7/8-16UN-2A	.625 (15.86)
36	2-1/4-16UN-2A	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	1.826 (46.38)	.140 (3.56)	.875 (22.22)	1.938 (49.23)	2.531 (64.29)	.209 (5.31)	.173 (4.39)	2-1/8-16UN-2A	.625 (15.86)

*Available with pin inserts only.

Straight Plug

FRF6/FVF6



Shell Size	A Thread	L Max. #16 #12	L Max. #8 #4	L Max. #0	C Hex.	F Max.	J Max.	M Max.	Q Max.	Q' Max.	V Thread
10SL	5/8-24UNEF-2B	1.813 (46.05)*	—	—	—	.455 (11.56)	.536 (13.61)	.446 (11.33)	—	.970 (24.64)	5/8-24UNEF-2A
12S	3/4-20UNEF-2B	1.875 (47.62)	—	—	.937 (23.80)	.455 (11.56)	.536 (13.61)	.555 (14.10)	1.092 (27.74)	1.092 (27.74)	5/8-24UNEF-2A
14S	7/8-20UNEF-2B	1.875 (47.62)	—	—	1.000 (25.40)	.522 (13.26)	.536 (13.61)	.675 (17.14)	1.164 (29.57)	1.240 (31.50)	3/4-20UNEF-2A
16S	1-20UNEF-2B	1.875 (47.62)	—	—	1.125 (28.58)	.647 (16.43)	.536 (13.61)	.805 (20.45)	1.309 (33.25)	1.386 (35.20)	7/8-20UNEF-2A
16	1-20UNEF-2B	1.922 (48.82)	2.141 (54.38)	—	1.125 (28.58)	.647 (16.43)	.722 (18.34)	.805 (20.45)	1.309 (33.25)	1.386 (35.20)	7/8-20UNEF-2A
20	1-1/4-18UNEF-2B	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	1.375 (34.92)	.921 (23.39)	.724 (18.39)	1.050 (26.67)	1.598 (40.59)	1.650 (41.91)	1-1/8-18UNEF-2A
22	1-3/8-18UNEF-2B	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	1.500 (38.10)	1.016 (25.81)	.724 (18.39)	1.175 (29.84)	1.742 (44.25)	1.745 (44.32)	1-1/4-18UNEF-2A
24	1-1/2-18UNEF-2B	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	1.625 (41.28)	1.141 (28.98)	.724 (18.39)	1.300 (33.02)	1.886 (47.90)	1.962 (49.83)	1-3/8-18UNEF-2A
28	1-3/4-18UNS-2B	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	1.875 (47.62)	1.361 (34.57)	.724 (18.39)	1.520 (38.61)	2.175 (55.24)	2.125 (53.98)	1-5/8-18UNEF-2A
32	2-18UNS-2B	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	2.125 (43.96)	1.611 (40.92)	.724 (18.39)	1.770 (44.96)	2.464 (62.59)	2.380 (60.45)	1-7/8-16UN-2A
36	2-1/4-16UN-2B	1.922 (48.82)	2.141 (54.38)	2.422 (61.52)	2.375 (60.33)	1.826 (46.38)	.724 (18.39)	1.980 (50.29)	2.752 (69.90)	2.580 (65.53)	2-1/8-16UN-2A

*Available with socket inserts only.

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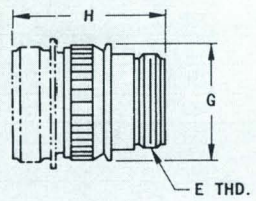
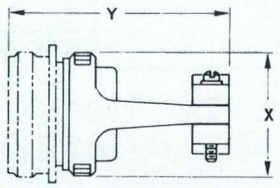
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Accessory Hardware

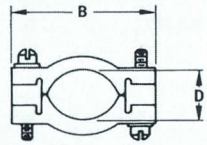
FRF0/FVF0

Straight Conduit Adapter



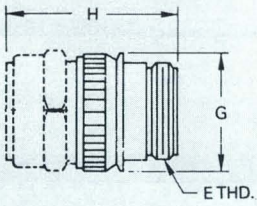


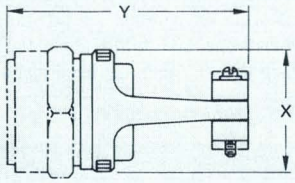
Straight Cable Clamp



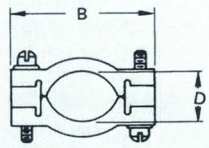
FRF6/FVF6

Straight Conduit Adapter





Straight Cable Clamp



Shell Size	E Thread	B Max.	D Max.	G Max.	Max. #16,#0	X Max.	Y Max.
10SL	**5/8-24UNEF-2A**	—	—	**.833 (21.16)**	**2.135 (54.23)**	**.953 (24.21)**	**2.662 (67.62)**
12S	3/4-20UNEF-2A	.925 (23.50)	.361 (9.17)	.833 (21.16)	2.135 (54.23)	.953 (24.21)	2.662 (67.62)
14S	7/8-20UNEF-2A	1.100 (27.94)	.441 (11.20)	1.003 (25.48)	2.135 (54.23)	1.078 (27.38)	2.826 (71.78)
16S	7/8-20UNEF-2A	1.224 (31.09)	.561 (14.25)	1.333 (33.86)	2.135 (54.23)	1.203 (30.56)	3.181 (80.80)
16	1-13/16-18UNEF-2A	1.224 (31.09)	.581 (14.76)	1.333 (33.86)	2.235 (56.77)	1.203 (30.56)	3.332 (84.63)
20	1-3/16-18UNEF-2A	1.524 (38.71)	.691 (17.55)	1.430 (36.32)	3.000 (76.20)	1.453 (36.91)	3.332 (84.63)
22	1-7/16-18UNEF-2A	1.630 (41.40)	.791 (20.09)	1.497 (38.02)	3.000 (76.20)	1.578 (40.08)	3.332 (84.63)
24	1-7/16-18UNEF-2A	1.775 (45.08)	.921 (23.39)	1.573 (39.95)	3.000 (76.20)	1.703 (43.26)	3.622 (92.00)
28	1-3/4-18UNS-2A	2.025 (51.44)	1.181 (30.00)	1.792 (45.52)	3.000 (76.20)	1.953 (49.61)	3.622 (92.00)
32	2-18UNS-2A	2.265 (57.53)	1.361 (34.57)	2.121 (53.87)	3.000 (76.20)	2.203 (55.96)	4.137 (105.08)
36	2-1/4-16UN-2A	2.525 (64.14)	1.621 (44.17)	2.308 (58.62)	3.000 (76.20)	2.453 (62.31)	4.387 (111.43)

Tooling

Contact Size	Crimp Tool	Crimp Head	Locator Number	Insertion Tool		Extraction Tool
				Standard	Oversize	
16	M22520/1-01	M22520/1-02		CIT16-2	CIT16-15	CET-FRF-16-22A
12				CIT12	CIT12-7	CET-FRF-12
8	CBT600B	CCH-8-1	CCHP-8-6	Not Req'd	Not Req'd	CET-FRF-8
4	CBT600B	CCH-4-1	CCHP-4-8	Not Req'd	Not Req'd	CET-FRF-4
0	CBT600B	CCH-0-1	CCHP-0-8	Not Req'd	Not Req'd	CET-FRF-0

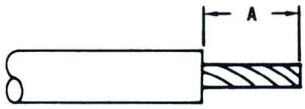
Contact/Wire Seal Plugs

Contact Size*	Part Number		Wire Seal Plugs	Color
	Pin	Socket		
16	030-1878-001	031-1040-001	225-0071-000	Blue
12	030-1879-003	031-1041-003	225-0072-000	Yellow
8	030-1880-001	031-1042-001	225-1009-000	Red
4	030-1881-001	031-1043-001	225-1008-000	Blue
0	030-8011-747	031-8012-747	225-1007-000	Yellow

*Consult factory for variations in contact finish, wire accommodation, and thermocouple materials.

Wire Stripping

Using proper assembly tools (see page 213), strip insulation from end of wire to be crimped. (See table for proper stripping dimensions.) Do not cut or damage wire strands.



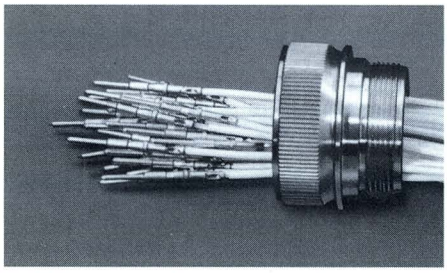
Contact Size	A	
	Max.	Min.
16	.250 (6.35)	.220 (5.59)
12	.250 (6.35)	.220 (5.59)
8	.250 (6.35)	.220 (5.59)
4	.480 (12.18)	.450 (11.43)
0	.630 (16.00)	.600 (15.24)

Assembly Instructions

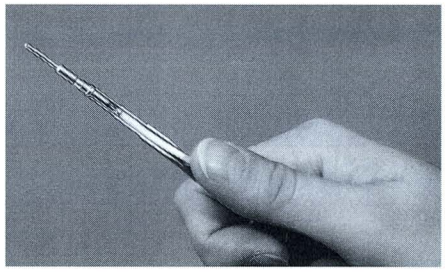
Contact Crimping

Insert wire into rear of contact. Wire insulation must butt against rear of contact. Wire must be visible thru inspection hole. Using M22520/1-01 crimp tool with proper locator, insert wire and contact into locator jaws. Squeeze tool handle together until ratchet releases. When using CBT 600B crimp tool, follow instructions supplied with tool. Inspect crimped contact to be sure proper crimp has been made.

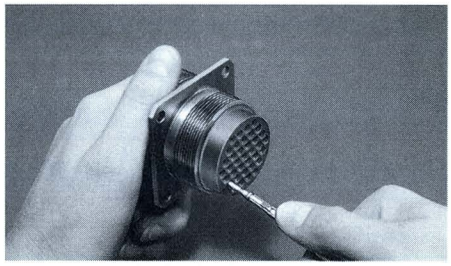
Contact Insertion



1. Slide conduit adapter or clamp bars over wire bundle in proper order for re-assembly.

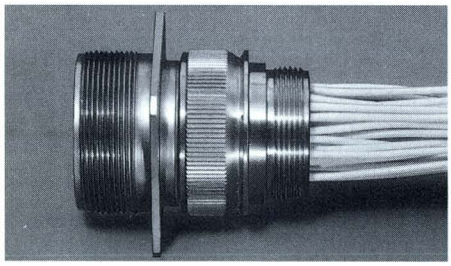


2. Slide wired contact into proper insertion tool so that tip of tool butts against contact shoulder.

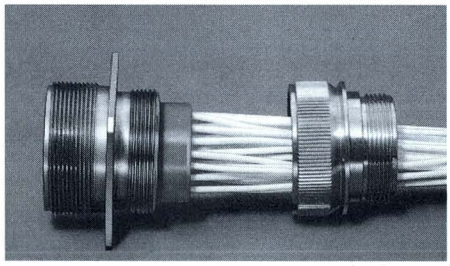


3. Insert wired contacts into cavities from rear of insulator until contact "clicks" into retaining clip. A slight pull on wire will assure that contact is securely seated.

Contact Extraction



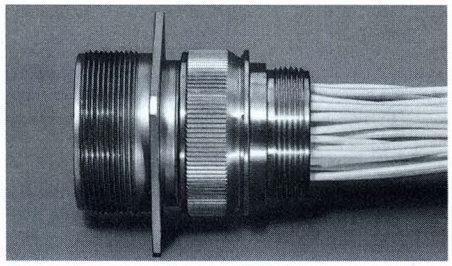
4. After all contacts are inserted, assemble conduit adapter or clamp bars.



1. Remove conduit adapter or clamp bars from connector assembly.

2. Using proper extraction tool, insert tool around contact from front of insulator until tool tip butts against contact shoulder. Push plunger to release contact.

3. Pull wired contact out from rear of insulator.

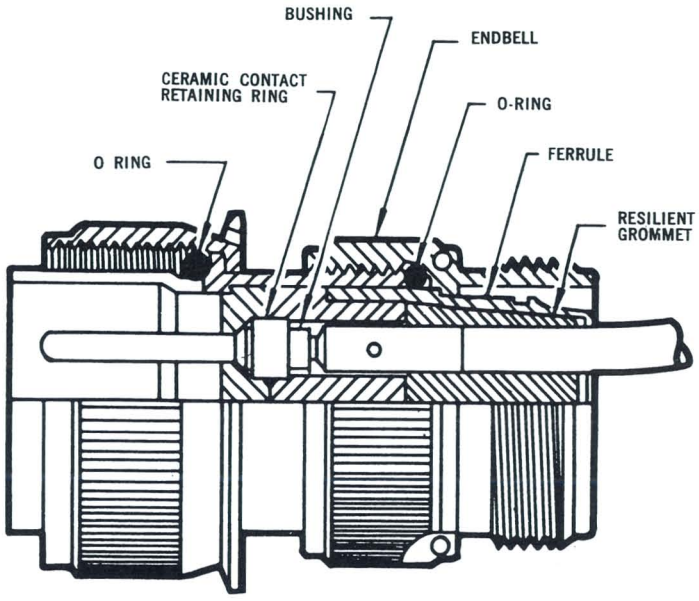


4. After replacing contact, re-assemble conduit adapter or cable clamp.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Washing, fuel spillage, and atmospheric variations are responsible for the development of firewall connectors that combine moisture resistance with fireproof characteristics. The CA-KE series provide environmental resistance to meet the moisture problems as well as emergency fire conditions defined by MIL-C-5015. CA-KE connectors are fully interchangeable and intermateable with other 5015 type of connectors. In order to maintain the moisture seal and fire resistance, however, they must mate with corresponding CA-KE connectors.

Continuous operating temperature of +177°C (+350°F) — crimp contacts. Moisture resistant connector for use with sealable wires. Modification of MS31**K configuration.



Standard Data

MATERIALS	
Shell	—Steel
Insulator	—Glass-filled epoxy or glass-filled melamine
Contacts	—Copper alloy
Grommet and O Ring	—Fuel-resistant silicone rubber
Accessory Hardware	—Steel

FINISHES	
Shell	—Olive drab over cadmium plate
Contacts	—Silver Plate
Accessory Hardware	—Olive drab over cadmium plate

MECHANICAL FEATURES	
Shell Size	—In sixteenths of an inch
Coupling	—Threaded
Contact Arrangements	—See pages 219-220

ELECTRICAL DATA	
Number of Contacts	—1 thru 47

How to Order

CA 00 KE 24 28 S

SERIES PREFIX
SHELL STYLE
CLASS
SHELL SIZE
CONTACT ARRANGEMENT
CONTACT TYPE

SERIES PREFIX
CA

SHELL STYLE
00 – Wall mounting receptacle (without conduit threads)
06 – Straight plug (without conduit threads)
3100 – Wall mounting receptacle
3106 – Straight plug

CLASS
KE – Environment-resistant firewall connector

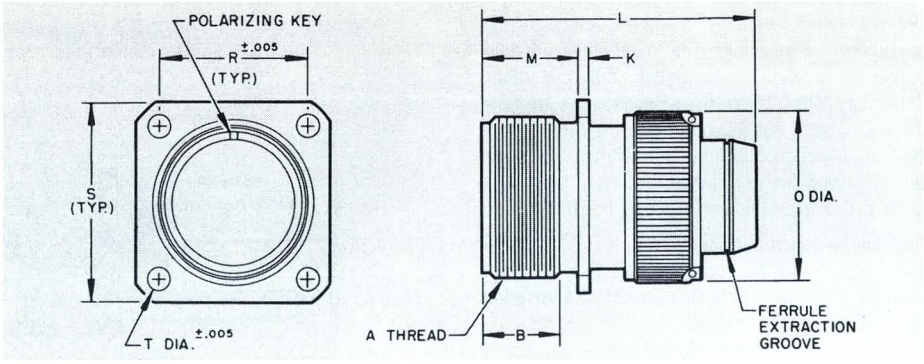
SHELL SIZE
8S to 36

CONTACT ARRANGEMENT
See pages 219-220.

CONTACT TYPE
P for pin; S for socket

Wall Mounting Receptacle

CA00KE

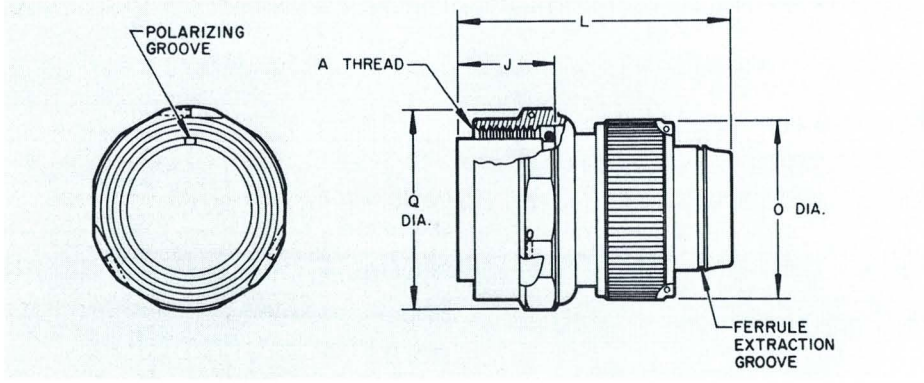


Part Number	A Thread	B	K	L	M	O	R	S	T
CA00KE8S-*†	1/2-28UNEF-2A	3/8	1/16	1-11/16	37/64	17/32	.594	7/8	.150
CA00KE10S-*†	5/8-24UNEF-2A	3/8	1/16	1-11/16	37/64	11/16	.719	1	.150
•CA00KE10SL-*†	5/8-24UNEF-2A	3/8	1/16	1-25/32	37/64	11/16	.719	1	.150
CA00KE12S-*†	3/4-20UNEF-2A	3/8	1/16	1-11/16	37/64	25/32	.812	1-3/32	.150
CA00KE14S-*†	7/8-20UNEF-2A	3/8	1/16	1-11/16	37/64	29/32	.906	1-3/16	.150
CA00KE16S-*†	1-20UNEF-2A	3/8	1/16	1-11/16	37/64	1-1/32	.969	1-9/32	.150
CA00KE16-*†	1-20UNEF-2A	5/8	5/64	2-3/32	49/64	1-1/32	.969	1-9/32	.150
CA00KE18-*†	1-1/8-18UNEF-2A	5/8	5/64	2-1/4	49/64	1-5/32	1.062	1-3/8	.177
CA00KE20-*†	1-1/4-18UNEF-2A	5/8	5/64	2-1/4	49/64	1-11/32	1.156	1-1/2	.177
CA00KE22-*†	1-3/8-18UNEF-2A	5/8	5/64	2-1/4	53/64	1-13/32	1.250	1-5/8	.177
CA00KE24-*†	1-1/2-18UNEF-2A	5/8	5/64	2-1/4	53/64	1-5/8	1.375	1-3/4	.177
CA00KE28-*†	1-3/4-18UNEF-2A	5/8	5/64	2-1/4	57/64	1-25/32	1.562	2	.177
CA00KE32-*†	2-18UNEF-2A	5/8	5/64	2-1/4	57/64	2-1/32	1.750	2-1/4	.209
CA00KE36-*†	2-1/4-16UN-2A	5/8	3/32	2-1/4	57/64	2-9/32	1.938	2-1/2	.209

•Receptacles in size 10SL are available with pin inserts only. † Add contact type: P — pin; S — socket. * Add contact arrangement; see pages 219-220.

Straight Plug (Without Conduit Threads)

CA06KE



Part Number	A Thread	J	L	O	Q
CA06KE8S-*†	1/2-28UNEF-2B	17/32	1-11/16	17/32	53/64
CA06KE10S-*†	5/8-24UNEF-2B	17/32	1-11/16	11/16	31/32
•CA06KE10SL-*†	5/8-24UNEF-2B	17/32	1-11/16	25/32	31/32
CA06KE12S-*†	3/4-20UNEF-2B	17/32	1-11/16	25/32	1-3/64
CA06KE14S-*†	7/8-20UNEF-2B	17/32	1-11/16	29/32	1-1/8
CA06KE16S-*†	1-20UNEF-2B	17/32	1-11/16	1-1/32	1-1/4
CA06KE16-*†	1-20UNEF-2B	23/32	2-3/32	1-1/32	1-1/4
CA06KE18-*†	1-1/8-18UNEF-2B	23/32	2-1/4	1-5/32	1-11/32
CA06KE20-*†	1-1/4-18UNEF-2B	23/32	2-1/4	1-11/32	1-31/64
CA06KE22-*†	1-3/8-18UNEF-2B	23/32	2-1/4	1-13/32	1-39/64
CA06KE24-*†	1-1/2-18UNEF-2B	23/32	2-1/4	1-5/8	1-47/64
CA06KE28-*†	1-3/4-18UNS-2B	23/32	2-1/4	1-25/32	1-63/64
CA06KE32-*†	2-18UNS-2B	23/32	2-1/4	2-1/32	2-15/64
CA06KE36-*†	2-1/4-18UNS-2B	23/32	2-1/4	2-9/32	2-31/64

•Plugs in size 10SL are available with socket inserts only. † Add contact type: P — pin; S — socket. * Add contact arrangement; see pages 219-220.
NOTE: Coupling nut has hex configuration on sizes 8S, 10S, 10SL, 12 and 24; knurled configuration on all others.

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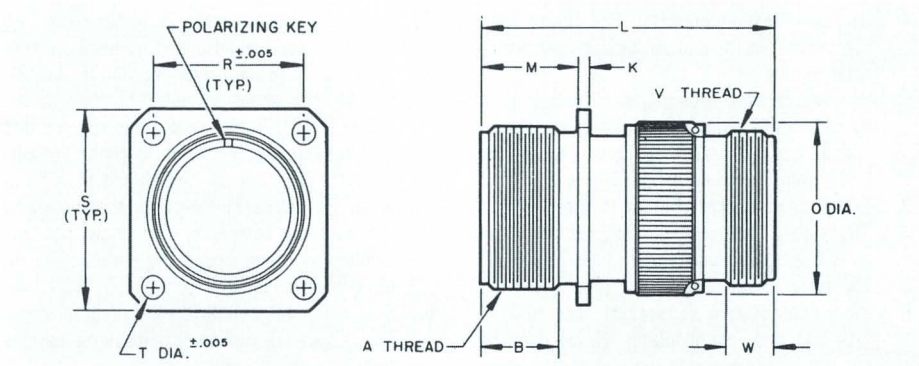
Dimensions are shown in inches.
Dimensions subject to change.

Wall Mounting Receptacle

CA3100KE

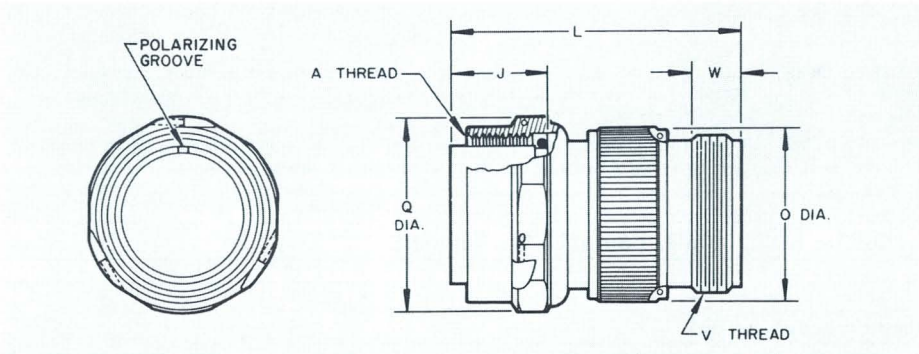


Part Number	A Thread	B	K	L	M	O	R	S	T	V Thread	W
CA3100KE8S-*†	1/2-28UNEF-2A	3/8	1/16	2	37/64	17/32	.594	7/8	.150	1/2-28UNEF-2A	3/8
CA3100KE10S-*†	5/8-24UNEF-2A	3/8	1/16	2	37/64	11/16	.719	1	.150	1/2-28UNEF-2A	3/8
•CA3100KE10SL-*†	5/8-24UNEF-2A	3/8	1/16	2	37/64	25/32	.719	1	.150	5/8-24UNEF-2A	3/8
CA3100KE12S-*†	3/4-20UNEF-2A	3/8	1/16	2	37/64	25/32	.812	1-3/32	.150	5/8-24UNEF-2A	3/8
CA3100KE14S-*†	7/8-20UNEF-2A	3/8	1/16	2	37/64	29/32	.906	1-3/16	.150	3/4-20UNEF-2A	3/8
CA3100KE16S-*†	1-20UNEF-2A	3/8	1/16	2	37/64	1-1/32	.969	1-9/32	.150	7/8-20UNEF-2A	3/8
CA3100KE16-*†	1-20UNEF-2A	5/8	5/64	2-3/16	49/64	1-1/32	.969	1-9/32	.150	7/8-20UNEF-2A	3/8
CA3100KE18-*†	1-1/8-18UNEF-2A	5/8	5/64	2-1/4	49/64	1-5/32	1.062	1-3/8	.177	1-20UNEF-2A	3/8
CA3100KE20-*†	1-1/4-18UNEF-2A	5/8	5/64	2-5/16	49/64	1-11/32	1.156	1-1/2	.177	1-3/16-18UNEF-2A	3/8
CA3100KE22-*†	1-3/8-18UNEF-2A	5/8	5/64	2-5/16	49/64	1-13/32	1.250	1-5/8	.177	1-3/16-18UNEF-2A	3/8
CA3100KE24-*†	1-1/2-18UNEF-2A	5/8	5/64	2-5/16	53/64	1-5/8	1.375	1-3/4	.177	1-7/16-18UNEF-2A	3/8
CA3100KE28-*†	1-3/4-18UNS-2A	5/8	5/64	2-11/16	53/64	1-25/32	1.562	2	.177	1-7/16-18UNEF-2A	3/8
CA3100KE32-*†	2-18UNS-2A	5/8	5/64	2-3/8	57/64	2-1/32	1.750	2-1/4	.209	1-3/4-18UNS-2A	7/16
CA3100KE36-*†	2-1/4-16UN-2A	5/8	3/32	2-7/16	57/64	2-9/32	1.938	2-1/2	.209	2-18UNS-2A	1/2

•Receptacles in size 10SL are available with pin inserts only. † Add contact type: P — pin; S — socket.
* Add contact arrangement; see pages 219-220.

Straight Plug

CA3106KE



Part Number	A Thread	J	L	O	Q	V Thread	W
CA3106KE8S-*†	1/2-28UNEF-2B	17/32	2	17/32	53/64	1/2-28UNEF-2A	3/8
CA3106KE10S-*†	5/8-24UNEF-2B	17/32	2	11/16	31/32	1/2-28UNEF-2A	3/8
•CA3106KE10SL-*†	5/8-24UNEF-2B	17/32	2	25/32	31/32	5/8-24UNEF-2A	3/8
CA3106KE12S-*†	3/4-20UNEF-2B	17/32	2	25/32	1-3/64	5/8-24UNEF-2A	3/8
CA3106KE14S-*†	7/8-20UNEF-2B	17/32	2	29/32	1-1/8	3/4-20UNEF-2A	3/8
CA3106KE16S-*†	1-20UNEF-2B	17/32	2	1-1/32	1-1/4	7/8-20UNEF-2A	3/8
CA3106KE16-*†	1-20UNEF-2B	23/32	2-3/16	1-1/32	1-1/4	7/8-20UNEF-2A	3/8
CA3106KE18-*†	1-1/8-18UNEF-2B	23/32	2-1/4	1-5/32	1-11/32	1-20UNEF-2A	3/8
CA3106KE20-*†	1-1/4-18UNEF-2B	23/32	2-5/16	1-11/32	1-31/64	1-3/16-18UNEF-2A	3/8
CA3106KE22-*†	1-3/8-18UNEF-2B	23/32	2-5/16	1-13/32	1-39/64	1-3/16-18UNEF-2A	3/8
CA3106KE24-*†	1-1/2-18UNEF-2B	23/32	2-5/16	1-5/8	1-47/64	1-7/16-18UNEF-2A	3/8
CA3106KE28-*†	1-3/4-18UNEF-2B	23/32	2-11/16	1-25/32	1-63/64	1-7/16-18UNEF-2A	3/8
CA3106KE32-*†	2-18UNS-2B	23/32	2-3/8	2-3/8	2-1/32	1-3/4-18UNS-2A	7/16
CA3106KE36-*†	2-1/4-16UN-2B	23/32	2-7/16	2-9/32	2-31/64	2-18UNS-2A	1/2

•Plugs in size 10SL are available with socket inserts only. † Add contact type: P — pin; S — socket.
* Add contact arrangement; see pages 219-220.
NOTE: Coupling nut has hex configuration on sizes 8S, 10S, 10SL, 12 and 24; knurled configuration on all others.

Assembly Instructions

1. Disassemble the connector. See Figure 1 for component parts relationship for reassembly after wiring.
*2. Remove ceramic retaining ring from contact by sliding the retaining ring back, compressing the bushing until the ring can be slipped away from the contact (see Figure 2).
3. Crimp pin or socket contact to wire.
4. Slip endbell or ferrule retaining nut (whichever is used) over wire bundle (see Figure 3).
5. Slip ferrule over wire bundle (see Figure 3).
6. Push contact (pin or socket) thru rear of grommet and rear insulator. (Note that the contact is inserted into the end of the grommet that shows the layout identification.) Contact should extend sufficiently to accomplish Step 7.
7. After the wired contacts have been inserted thru the rear insulator and grommet, install the ceramic contact retaining ring (Figure 2). Slip on the small diameter of the contact (diameter B). Push the ceramic ring up and onto the larger diameter of the contact (diameter A). The ceramic ring should then be in place. The rubber bushing (which is already on the contact) compresses to allow this assembly, and also keeps the ceramic ring in place after assembly.
8. Seat each contact individually in rear insulator (see Figure 4), pulling rear insulator so it is tight against the grommet.
9. Assemble front insulator onto engaging end of contacts.
10. Slide ferrule down wire bundle over grommet, making sure that grommet is lubricated per assembly drawing (see Figure 4).
11. Insert this assembly into shell or barrel (whichever is applicable) being careful to polarize correctly.
12. Slide endbell or ferrule retaining nut down wire bundle and screw on to shell/barrel. When properly assembled the layout identification will be visible.

Fig. 1

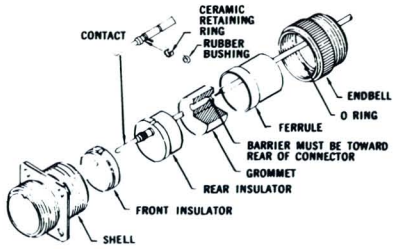


Fig. 2

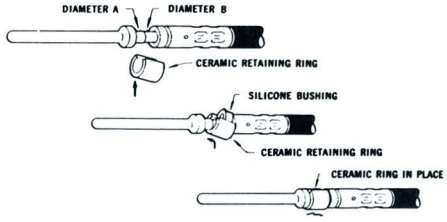


Fig. 3

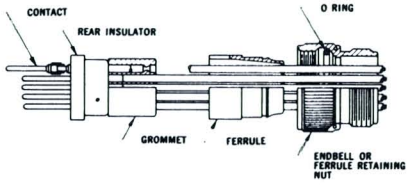
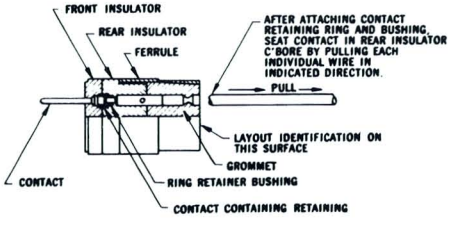


Fig. 4



***NOTE: For CA-KE Assembly** it is not necessary to remove the ceramic retaining ring used on sizes 16 and 12 contacts for CA-KE **providing** the crimp tool M22520/1-01 is used with the TH118 turret. However, the formica ring must be removed if using the crimp tools.

When using the MS3191-1 (or CCT-1612) crimp tool with proper locator, both the ceramic or formica retaining ring for sizes 16 and 12 contacts must be removed. For sizes 8, 4, and 0 contacts, the ceramic or formica retaining rings must be removed before crimping.

Contacts, Crimp Tools, Contact Part Numbers

Contacts and Crimp Tools

Contact Size	Part Number	Wire Accomm.	Crimp Tool	Locator	Crimp Head*
16 Pin/8S-16S	030-1133-000	16-18-20	M22520/1-01 or MS3191-1	TH118 Turret/L16-3191-2	—
16 Pin/12-36	030-1082-000	16-18-20	M22520/1-01 or MS3191-1	TH118 Turret/L16-3191-9	—
16 Socket/8S-16S	031-0731-000	16-18-20	M22520/1-01 or MS3191-1	TH118 Turret/L16-3191-2	—
16 Socket/12-36	031-0706-000	16-18-20	M22520/1-01 or MS3191-1	TH118 Turret/L16-3191-11	—
12 Pin	030-1134-000	12-14	M22520/1-01 or MS3191-1	TH118 Turret/L12-3191-5	—
12 Socket	031-0732-000	12-14	M22520/1-01 or MS3191-1	TH118 Turret/L12-3191-1	—
8 Pin	030-1135-000	8	CBT600B or CBT600	CCHP8-7	CCH8-1
8 Socket	031-0733-000	8	CBT600B or CBT600	CCHP8-7	CCH8-1
4 Pin	030-1212-000	4	CBT600B or CBT600	CCHP4-7	CCH4-1
4 Socket	031-0770-000	4	CBT600B or CBT600	CCHP4-7	CCH4-1
0 Pin	030-1734-000	0	CBT600B	CCHP0-7	CCH0-1
0 Socket	031-0975-000	0	CBT600B	CCHP0-7	CCH0-1

Contact Assembly Kit With Retaining Ring and Bushing

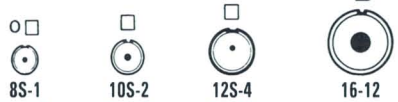
Contact Size	Kit Part Number
16 Pin/8S-16S	038586-0000
16 Pin/12-36	038588-0000
16 Socket/8S-16S	038587-0000
16 Socket/12-36	038589-0000
12 Pin	038590-0000
12 Socket	038591-0000
8 Pin	038592-0000
8 Socket	038593-0000
4 Pin	038594-0000
4 Socket	038595-0000
0 Pin	031-1176-000
0 Socket	031-1177-000

*Crimp heads are applicable for contact sizes 8, 4, and 0.

Contact Arrangements

LEGEND
○ Available in MS-K (page 205)
● Available in FRF (page 209)
□ Available in CA-KE (page 215)
† Available with MS polarization

1 Contact



Shell Size	8S-1	10S-2	12S-4	16-12
No. of Contacts	1-#16	1-#16	1-#16	1-#4
Service Rating	A	A	D	A

2 Contacts

Shell Size	10SL4	12S-3†	14S-9†	16-11†	16-13†	32-5†
No. of Contacts	2-#16	2-#16	2-#16	2-#12	2-#12 (A–iron; B-constantan)	2-#0
Service Rating	A	A	A	A	A	D

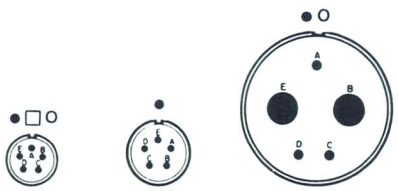
3 Contacts

Shell Size	10SL-3	14S-1
No. of Contacts	3-#16	3-#16

4 Contacts

Shell Size	14S-2†	16-9†	22-22†	32-17†	36-5†
No. of Contacts	4-#16	2-#16(B,D) 2-#12(A,C)	4-#8	4-#4	4-#0

5 Contacts



Shell Size	14S-5†	16S-8†	32-1†
No. of Contacts	5-#16	5-#16	3-#12(A,C,D) 2-#0(B,E)
Service Rating	Inst.	A	E(A), D(all others)

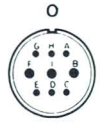
6 Contacts

Shell Size	14S-6	18-12†	20-17†	28-22†	36-3†
No. of Contacts	6-#16	6-#16	1-#16(F) 5-#12(A-E)	3-#16(D,F) 3-#4(A-C)	3-#12(A,C,E) 3-#0(B,D,F)
Service Rating	Inst.	A	A	D	D

7 Contacts

Shell Size	16S-1†	24-10†
No. of Contacts	7-#16	7-#8
Service Rating	A	A

9 Contacts

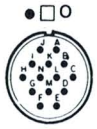
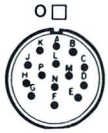
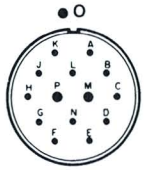
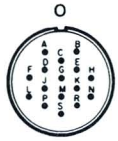
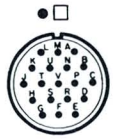


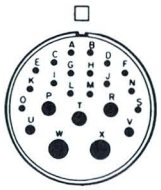
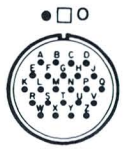
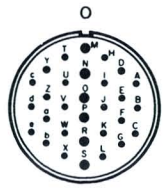
Shell Size	20-18†
No. of Contacts	6-#16(A,C-E,G,H) 3-#12(B,F,I)
Service Rating	A

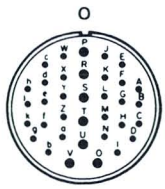
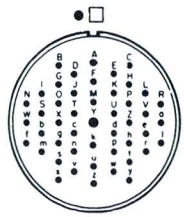
10 Contacts

Shell Size	18-1†
No. of Contacts	10-#16
Service Rating	A(B,C,F,G) Inst. (all others)

Contact Arrangements

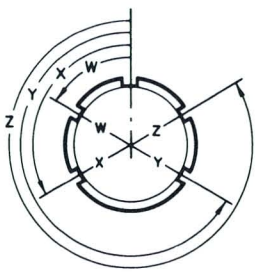
	14 Contacts			16 Contacts	19 Contacts
					
Shell Size No. of Contacts	20-27† 14-#16	22-19† 14-#16	28-2† 12-#16(A, L, N) 2-#12(M, P)	24-5† 16-#16	22-14† 19-#16
Service Rating	A	A	D	A	A

	22 Contacts	23 Contacts	24 Contacts	26 Contacts	30 Contacts
					
Shell Size No. of Contacts	28-11† 18-#16(A-I, N-X) 4-#12(J-M)	32-6† 16-#16(A-O, S) 2-#12(U, V) 3-#8(P-T) 2-#4(W, X)	24-28† 24-#16	28-12† 26-#16	32-8† 24-#16(A-L, T-Z, a-e) 6-#12(M-S)
Service Rating	A	A	Inst.	A	A

	35 Contacts		37 Contacts	47 Contacts
				
Shell Size No. of Contacts	28-15† 35-#16	32-7† 28-#16(A-N, W-Z, a-k) 7-#12 (O-V)	28-21† 37-#16	36-8† 46-#16 (A-X, Z-z) 1-#12 (Y)
Service Rating	A	Inst. (A, B, h, j) A (all others)	A	A

Alternate Positions

Pin front view;
Shell rotation



No. of Contacts	Contact Arrangement	Degrees W	X	Y	Z
2	12S-3	70	145	215	290
	14S-9	70	145	215	290
	16-11	35	110	250	325
	16-13	35	110	250	325
	32-5	35	110	250	325
4	14S-2	—	120	240	—
	16-9	35	110	250	325
	22-22	—	110	250	—
	32-17	45	110	250	—
	36-5	—	120	240	—
5	14S-5	—	110	—	—
	16S-8	—	170	265	—
	32-1	80	110	250	280
6	18-12	80	—	—	280
	20-17	90	180	270	—
	28-22	70	145	215	290
	36-3	70	145	215	290
7	16S-1	80	—	—	280
	24-10	80	—	—	280

No. of Contacts	Contact Arrangement	Degrees W	X	Y	Z
9	20-18	35	110	250	325
10	18-1	70	145	215	290
14	20-27	35	110	250	325
	22-19	80	110	250	280
	28-2	35	110	250	325
16	24-5	80	110	250	280
19	22-14	80	—	—	280
22	28-11	80	110	250	280
23	32-6	80	110	250	280
24	24-28	80	110	250	280
26	28-12	90	180	270	—
30	32-8	80	125	235	280
35	28-15	80	110	250	280
	32-7	80	125	235	280
37	28-21	80	110	250	280
47	36-8	80	110	250	280

ITT Cannon
Four Cannon Court, Whitby, Ontario LIN5V8 Canada • (416) 668-8881

Cannon's MR waterproof connectors, designed to meet the requirements of MIL-C-5015, withstand conditions involving mud, ice, and water. They are particularly suited for missle ground support equipment, radar installations, heavy construction installations, and outdoor applications involving rapid transit, radio/tv stations, and marine equipment.

Maximum resistance to severe environmental conditions is assured by an O-ring seal around the mated insert faces, and a gland seal at the cable entry which provides a cable strain relief as well. When properly terminated to a jacketed cable, a mated pair of MR connectors can be immersed in depths of 150 feet in fresh water. For other immersion media consult factory.

The MR connector series is supplied with MIL-C-5015 resilient insulators and solder pot contacts. For crimp type contacts refer to the ordering information below. MS contact arrangements, coupling threads, and sizes are standard to MIL-C-5015. Simple maintenance under severe conditions is possible with a convenient, long, knurled coupling nut and endbell that can be easily removed by standard open end wrenches. Dust caps have attached bead chains to prevent kinking.

For a copy of the full line Waterproof Connectors catalog, please complete the business reply card in the back of your Connector Sourcebook.

Standard Data

MATERIALS

Shell — Aluminum alloy

Insulator — Synthetic elastomer

Contacts — Copper alloy

FINISHES

Shell — Clear anodized

Contacts — Silver plate

MECHANICAL FEATURES

Shell Styles

00 – Wall Mounting Receptacle
01 – Cable Connecting Receptacle
02 – Chassis Mounting Receptacle
06 – Cable Connecting Straight Plug

Shell Size — 14S thru 36

Coupling — Threaded

Cable Entry — 00, 01, and 06 accommodate cables from –3 (3/16") to –28 (1-3/4") in sixteenths of an inch. 02 requires no jacketed cable seal.

Polarization — Single keyway

ELECTRICAL DATA

Number of Contacts — 1 thru 66

TEST CURRENT

Maximum current ratings of contacts and maximum allowable voltage drop under test conditions when assembled as in service are shown below. Maximum total current to be carried per connector is the same as the allowable in wire bundles as specified in MIL-W-5088.

Contact Size	Test Current (Amps)	Potential Drop (millivolts)
16	20	21
12	35	20
8	60	12
4	110	10
0	200	10

HIGH POTENTIAL TEST VOLTAGE

MS connectors show no evidence of breakdown when the test voltage given below is applied between the two closest contacts and between the shell and the contact closest to the shell for a period of one minute.

MS Service Rating	Test Voltage (rms) 60 cps	Suggested Operating Voltage* DC	AC (rms)	Air Spacing nom. in.
Inst.	1000	250	200	—
A	2000	700	500	1/16
D	2800	1250	900	1/8
E	3500	1750	1250	3/16
B	4500	2450	1750	1/4
C	7000	4200	3000	5/16

*As indicated in MS Specifications and to be used by the designer only as a guide

How to Order

MR 06 28 12 P X 18 *

SERIES PREFIX
SHELL STYLE
SHELL SIZE
CONTACT ARRANGEMENTS
CONTACT TYPE
ALTERNATE INSERT POSITION
CABLE ENTRY
MODIFICATIONS

SERIES PREFIX
MR – Resilient Insulator

SHELL STYLE
00 – Wall Mounting Receptacle
01 – Cable Connecting Receptacle
02 – Chassis Mounting Receptacle
06 – Cable Connecting Straight Plug

SHELL SIZE
14S, 16S, 18, 20, 22, 24, 28, 32, and 36

CONTACT ARRANGEMENTS
See 5015 layouts in MS-E/F/R section, pages 34-37.

CONTACT TYPE
P for pin; S for socket

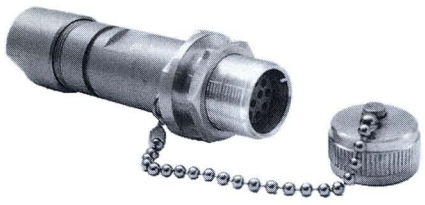
ALTERNATE INSERT POSITION
W, X, Y, and Z per MIL-C-5015

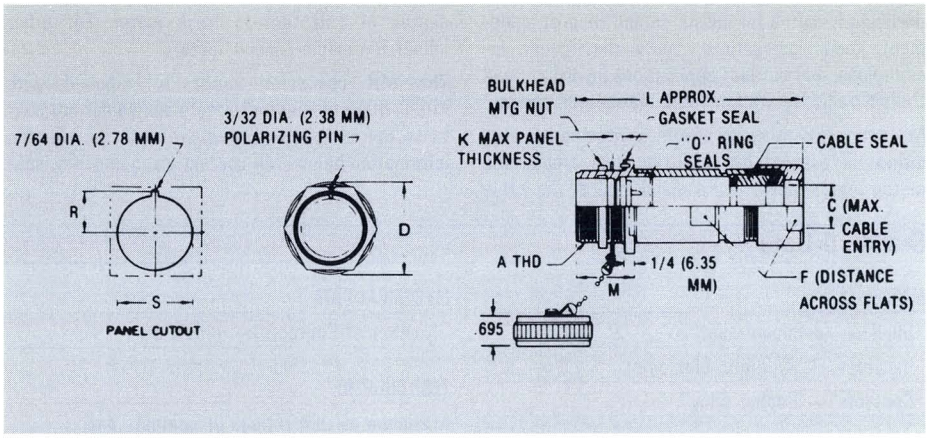
CABLE ENTRY
00, 01, and 06 shell styles accommodate cables from –3 (3/16") to –28 (1-3/4") graduated in sixteenths of an inch. The 02 shell style requires no jacketed cable seal.

MODIFICATIONS
F0 – Less contacts
A66 – Olive drab cadmium
A105 – Clear cadmium
F80 – Crimp contacts
F111 – Stainless steel 303 hardware
F135 – Stainless steel link chain
F150 – Less dust cap and chain
For other modifications, such as cable grips and peripheral ground adapters, consult the factory.

Wall Mounting Receptacle

MR00

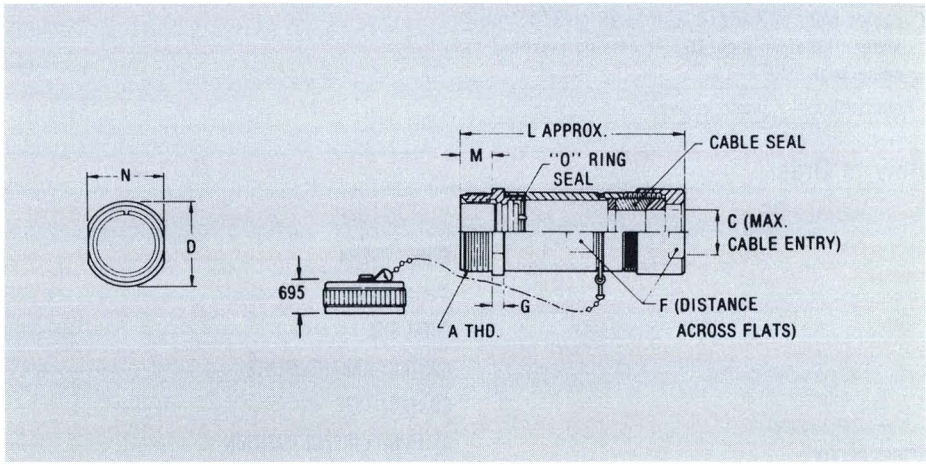




Shell Size	A Thread	C	D	F	K	L	M	R	S
14S	7/8-20NEF-2A	3/16 to 1/2 (4.76 to 12.20)	1-3/8 (34.92)	.745 (18.92)	5/32 (3.97)	4-1/8 (104.78)	1-1/16 (26.99)	.546 (13.89)	29/32 (23.02)
16S	1-20NEF-2A	1/4 to 9/16 (6.35 to 14.29)	1-1/2 (38.10)	.870 (22.10)	5/32 (3.97)	4-1/4 (107.95)	1-1/16 (26.99)	.609 (15.47)	1-1/32 (26.19)
18	1-1/8-18NEF-2A	1/4 to 3/4 (6.35 to 19.05)	1-5/8 (41.28)	.995 (25.27)	1/4 (6.35)	5-1/16 (128.59)	1-13/32 (35.72)	.671 (17.06)	1-5/32 (29.37)
20	1-1/4-18NEF-2A	1/4 to 3/4 (6.35 to 19.05)	1-3/4 (44.45)	.995 (25.27)	1/4 (6.35)	5-3/16 (131.76)	1-13/32 (35.72)	.734 (18.64)	1-9/32 (32.54)
22	1-3/8-18NEF-2A	1/4 to 1 (6.35 to 24.40)	1-7/8 (47.62)	1.245 (31.62)	1/4 (6.35)	5-5/16 (134.94)	1-13/32 (35.72)	.796 (20.22)	1-13/32 (35.72)
24	1-1/2-18NEF-2A	1/4 to 1 (6.35 to 24.40)	2 (50.80)	1.245 (31.62)	7/32 (5.56)	5-7/16 (138.11)	1-13/32 (35.72)	.857 (21.82)	1-17/32 (38.89)
28	1-3/4-18NS-2A	5/16 to 1-1/4 (7.94 to 31.75)	2-1/4 (57.15)	1.495 (37.97)	7/32 (5.56)	5-9/16 (141.29)	1-13/32 (35.72)	.989 (24.99)	1-25/32 (45.24)
32	2-18NS-2A	3/4 to 1-1/2 (19.05 to 38.10)	2-1/2 (63.50)	1.807 (45.90)	7/32 (5.56)	5-11/16 (144.46)	1-13/32 (35.72)	1.109 (26.17)	2-1/32 (51.59)
36	2-1/4-16UN-2A	3/4 to 1-3/4 (19.05 to 44.75)	2-3/4 (69.85)	2.058 (52.27)	5/32 (3.97)	5-3/4 (146.05)	1-13/32 (35.72)	1.234 (31.34)	2-3/32 (57.94)

Cable Connecting Plug

MR01



Shell Size	A Thread	C	D	F	G	L	M	N
14S	7/8-20NEF-2A	3/16 to 1/2 (4.76 to 12.20)	1-3/32 (27.78)	.745 (18.92)	.180 (4.57)	3-21/32 (92.87)	15/32 (11.91)	7/8 (23.22)
16S	1-20NEF-2A	1/4 to 9/16 (6.35 to 14.29)	1-7/32 (30.96)	.870 (22.10)	.250 (6.35)	4 (101.60)	17/32 (13.49)	1 (25.40)
18	1-1/8-18NEF-2A	1/4 to 3/4 (6.35 to 19.05)	1-11/32 (34.13)	.995 (25.27)	.250 (6.35)	4-5/8 (117.48)	23/32 (18.26)	1-1/8 (28.58)
20	1-1/4-18NEF-2A	1/4 to 3/4 (6.35 to 19.05)	1-15/32 (37.31)	.995 (25.27)	.250 (6.35)	4-3/4 (120.65)	23/32 (18.26)	1-1/4 (31.75)
22	1-3/8-18NEF-2A	1/4 to 1 (6.35 to 25.40)	1-19/32 (40.48)	1.245 (31.62)	.250 (6.35)	4-7/8 (123.83)	23/32 (18.26)	1-3/8 (34.92)
24	1-1/2-18NEF-2A	1/4 to 1 (6.35 to 24.40)	1-23/32 (43.66)	1.245 (31.62)	.250 (6.35)	5 (127.00)	23/32 (18.26)	1-1/2 (38.10)
28	1-3/4-18NS-2A	5/16 to 1-1/4 (7.94 to 31.75)	1-31/32 (50.01)	1.495 (37.97)	.250 (6.35)	5-1/8 (130.18)	23/32 (18.26)	1-3/4 (44.45)
32	2-18NS-2A	3/4 to 1-1/2 (19.05 to 38.10)	2-7/32 (56.36)	1.807 (45.90)	.250 (6.35)	5-1/4 (133.35)	23/32 (18.26)	2 (50.80)
36	2-1/4-16UN-2A	3/4 to 1-3/4 (19.05 to 44.75)	2-15/32 (62.71)	2.058 (52.27)	.250 (6.35)	5-3/8 (136.52)	23/32 (18.26)	2-1/4 (57.15)

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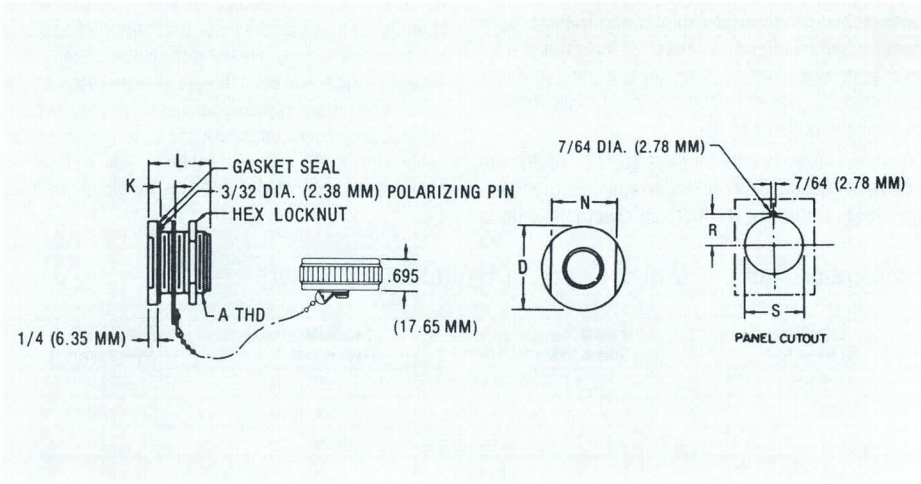
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Chassis Mounting Receptacle

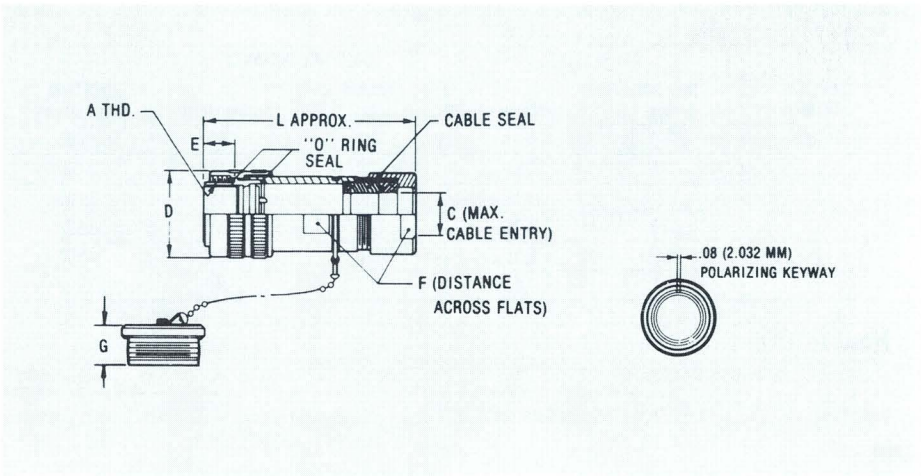
MR02



Shell Size	A Thread	D	K	L	N	R	S
14S	7/8-20NEF-2A	1-3/8 (34.92)	5/32 (3.97)	1-1/16 (26.99)	1-1/8 (28.56)	.546 (13.87)	29/32 (23.02)
16S	1-20NEF-2A	1-1/2 (38.10)	5/32 (3.97)	1-1/16 (26.99)	1-1/4 (31.75)	.609 (15.47)	1-1/32 (26.19)
18	1-1/8-18NEF-2A	1-5/8 (41.28)	1/4 (6.35)	1-13/32 (35.72)	1-3/8 (34.92)	.671 (17.04)	1-5/32 (29.37)
20	1-1/4-18NEF-2A	1-3/4 (44.45)	1/4 (6.35)	1-13/32 (35.72)	1-7/16 (36.51)	.734 (18.64)	1-9/32 (32.54)
22	1-3/8-18NEF-2A	1-7/8 (47.62)	1/4 (6.35)	1-13/32 (35.72)	1-1/2 (38.10)	.796 (20.22)	1-13/32 (35.72)
24	1-1/2-18NEF-2A	2 (50.80)	7/32 (5.56)	1-13/32 (35.72)	1-5/8 (41.28)	.859 (21.82)	1-17/32 (38.89)
28	1-3/4-18NS-2A	2-1/4 (57.15)	7/32 (5.56)	1-13/32 (35.72)	1-3/4 (44.45)	.984 (24.99)	1-25/32 (45.24)
32	2-18NS-2A	2-1/2 (63.50)	7/32 (5.56)	1-13/32 (35.72)	2 (50.80)	1.109 (28.17)	2-1/32 (51.59)
36	2-1/4-16UN-2A	2-3/4 (69.85)	5/32 (3.97)	1-13/32 (35.72)	2-3/8 (60.32)	1.234 (31.34)	2-9/32 (57.94)

Cord Connecting Straight Plug

MR06



Shell Size	A Thread	C	D	E	F	G	L
14S	7/8-20NEF-2B	3/16 to 1/2 (4.76 to 12.20)	1.125 (28.58)	.531 (13.49)	.745 (18.92)	.712 (18.09)	3-3/4 (95.25)
16S	1-20NEF-2B	1/4 to 9/16 (6.35 to 14.29)	1.250 (31.75)	.531 (13.49)	.870 (22.10)	.712 (18.09)	3-7/8 (98.42)
18	1-1/8-18NEF-2B	1/4 to 3/4 (6.35 to 19.05)	1.375 (34.92)	.718 (18.24)	.995 (25.27)	.900 (22.86)	4-9/16 (115.89)
20	1-1/4-18NEF-2B	1/4 to 3/4 (6.35 to 19.05)	1.500 (38.10)	.718 (18.24)	.995 (25.27)	.900 (22.86)	4-11/16 (119.06)
22	1-3/8-18NEF-2B	1/4 to 1 (6.35 to 25.40)	1.625 (41.28)	.718 (18.24)	1.245 (31.62)	.900 (22.86)	4-13/16 (122.24)
24	1-1/2-18NEF-2B	1/4 to 1 (6.35 to 25.40)	1.750 (44.45)	.718 (18.24)	1.245 (31.62)	.900 (22.86)	4-15/16 (125.41)
28	1-3/4-18NS-2B	5/16 to 1-1/4 (7.94 to 31.75)	2.000 (50.80)	.718 (18.24)	1.495 (37.97)	.900 (22.86)	5-1/16 (128.59)
32	2-18NS-2B	3/4 to 1-1/2 (19.05 to 38.10)	2.250 (57.15)	.718 (18.24)	1.807 (45.90)	.900 (22.86)	5-3/16 (131.76)
36	2-1/4-16UN-2B	3/4 to 1-3/4 (19.05 to 44.49)	2.500 (63.50)	.718 (18.24)	2.058 (52.27)	.900 (22.86)	5-5/16 (134.94)

ITT Cannon W Series waterproof connectors are widely used and have field-proven experience in meeting the extreme watertight requirements for underwater geophysical exploration. These rugged constructed waterproof connectors have found wide usage in underwater, underground, and outdoor applications where moisture conditions require thoroughly sealed fittings.

Heavy duty brass shells (in sizes 16, 22 and 36) use standard MIL-C-5015 contact arrangements accommodating from one to fifty-six contacts with a variety of voltage amperage capacities.

Complete watertight coupling between mating connectors is accomplished by the use of special Acme threads on the coupling nut and the shell, plus a rubber sealing ring. Heavy duty cable clamps and Kellems grips are available to insure cable strain relief. Watertight coupling between the plug and the cable is dependent upon how the outer jacket of the cable fits in the sealing bushing. The bushing is compressed against the cable by the gland nut. It is required, therefore, to supply the cable diameter when ordering connectors.

These connectors are designed to withstand hydrostatic pressures. *(See table below for converting water depth to hydrostatic pressure to determine the psi at various water depths (reference only).

For a copy of the full line Waterproof Connectors catalog, please complete a business reply card at the back of your Connector Sourcebook.

*Consult factory for specific depth application information.

Conversion Table – Water Depth to Hydrostatic Pressure

Salt Water Depth in feet	Pounds Per Square Inch	Salt Water Depth in feet	Pounds Per Square Inch	Salt Water Depth in feet	Pounds Per Square Inch
2.3	1.0	40	17.7	800	350.0
3	1.3	50	22.0	1,000	444.0
4	1.8	60	27.0	1,500	666.0
5	2.2	80	35.0	2,000	890.0
6	2.7	100	44.0	3,000	1,330.0
8	3.5	150	66.0	4,000	1,770.0
10	4.4	200	89.0	6,000	2,700.0
15	6.6	300	133.0	8,000	3,500.0
20	8.9	400	177.0	10,000	4,400.0
30	13.3	600	270.0	20,000	8,900.0

Standard Data

ELECTRICAL DATA

Number of Contacts	Wire Size/Amps	Termination
1 thru 48	– #16–22 amps max. – #4–135 amps max. – #12–41 amps max. – #0–245 amps max. – #8–73 amps max.	Solder pot

High Potential Test Voltage–
MIL-C-5015 inserts show no evidence of breakdown when the test voltages given below are applied between contact and between the shell and the contacts closest to the shell for a period of one minute.

SERVICE RATING	AIR SPACING (Nominal inches)	AIR SPACING (millimeters)	CREEPAGE DISTANCE (Nominal inches)	CREEPAGE DISTANCE (millimeters)	TEST VOLTAGE (rms, 60 cps)
Instr.	—	—	1/16	1.57	1,000
A	1/16	1.57	1/8	3.18	2,000
D	1/8	3.18	3/16	4.75	2,800
E	3/16	4.75	1/4	6.35	3,500
B	1/4	6.35	5/16	7.92	4,500
C	5/16	7.92	1	25.40	7,000

MATERIALS AND FINISHES

Shell	– brass, nickel plate
Insulator	– melamine
Contacts	– copper alloy, silver plate

MECHANICAL FEATURES

Shell Styles	– 21-cable plug – 22-cable plug – 31-Wall Mounting Receptacle – 32-Wall Mounting Receptacle
Shell Sizes	– 16, 22 and 36
Cable Entry	– 1/8" to 1-5/8" (3.18 mm to 41.28 mm)
Coupling	– Acme threads
Polarization	– one keyway

How to Order

SERIES – W

SHELL SIZE
16, 22, and 36 (coupling thread diameter in sixteenths of an inch). When ordering 16S contact arrangement add 16S as well as 16, e.g., W16-16S-1P-31

CONTACT ARRANGEMENT
1 to 56 contacts

CABLE CLAMP
7/16 (3.18) to 1-5/8 (41.28)–Plugs only

CABLE ENTRY
1/8 (3.18) to 1-3/8 (41.28)–Plugs only

WATERPROOF CAPS
59 (for W-21 and W-31)
60 (for W-22 and W-32)

CONTACT TYPE
P for pin
S for socket

SHELL STYLE
21 – Cable Plug
22 – Cable Plug
31 – Wall Mounting Receptacle
32 – Wall Mounting Receptacle

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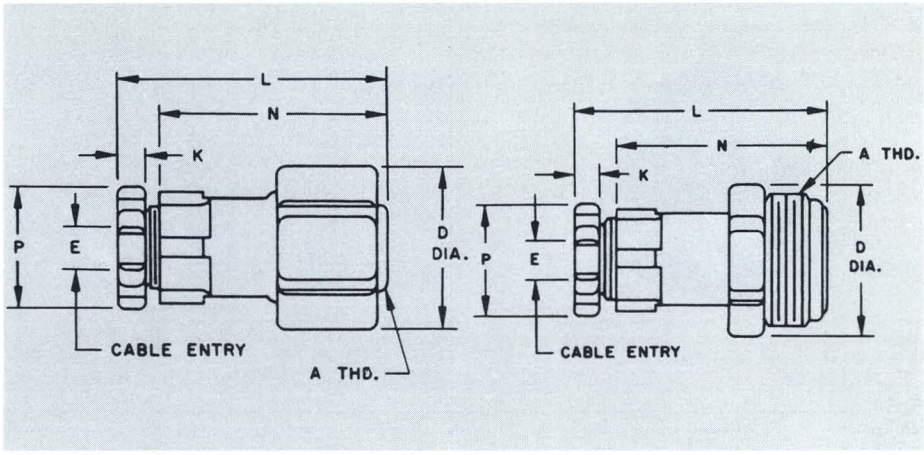
Dimensions are shown in inches.
Dimensions subject to change.

Cable Plug

W-21

W-22

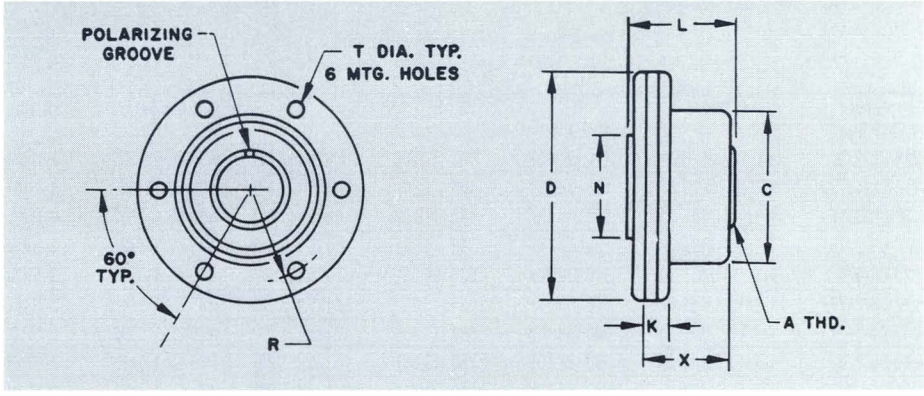


W-21 Part Number by Shell Size	W-22 Part Number by Shell Size	A Thread Acme	D Dia.	E max.		K	L	N	P	Weight (lb.)
W16-*-21**	W16-*-22**	1-3/8-10	1.625 (41.28)	1/8, 3/16, 1/4, 3/8, 7/16 or 1/2	(3.18, 4.75 6.35, 9.52, 11.10, 12.70)	.250 (6.35)	3.093 (78.56)	2.625 (66.68)	1.125 (28.58)	.680
W22-*-21**	W22-*-22**	1-13/16-10	2.062 (52.37)	1/4, 3/8, 1/2, 5/8, 11/16, 3/4, 13/16 or 7/8	(6.35, 9.52, 12.70, 15,88, 17.45, 19.05, 20.62, 22.22)	.250 (6.35)	3.281 (83.34)	2.812 (71.42)	1.500 (38.10)	.970
W36-*-21**	W36-*-22**	2-3/4-10	3.093 (78.56)	3/4, 1, 1-3/16, 1-1/4, 1-3/8, 1-7/16, 1-1/2 or 1-5/8	(19.05, 25.40, 30.15, 31.75, 34.92, 36.50, 38.10, 41.28)	.375 (9.52)	5.156 (130.96)	4.531 (115.09)	2.453 (62.31)	2.812

*Add contact arrangement and contact type (P for pin, S for socket).
**Add cable clamp (CG), if desired, and cable entry dimension (select from colum #); see How To Order, page 224. Also, if desired, add waterproof cap (59 for W-21 shell, 60 for W-22 shell).

Wall Mounting Receptacle

W-31 Shell

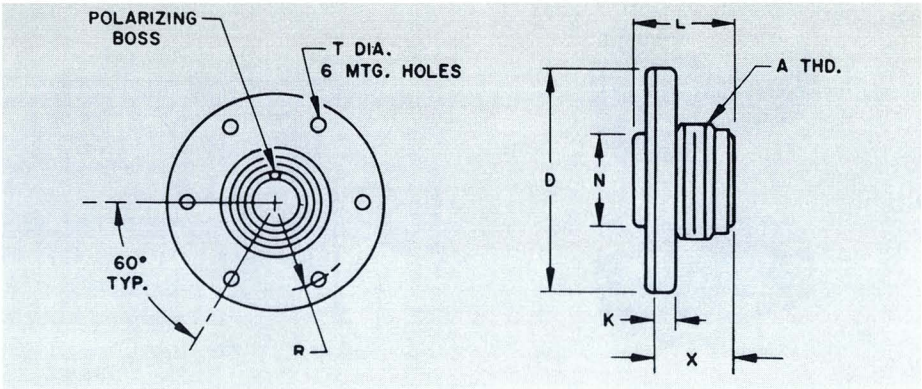


Part Number by Shell Size	A Thread Acme	C	D Dia.	K	L	N	R	T	X	Weight (lb.)
W16-*-31	1-3/8-10	1.625 (41.28)	2.750 (69.85)	.250 (6.35)	1.281 (32.54)	1.093 (27.76)	1.125 (28.58)	.204 (5.18)	1.093 (27.76)	.718
W22-*-31	1-13/16-10	2.062 (52.37)	3.187 (80.95)	.375 (9.52)	1.343 (34.11)	1.437 (36.50)	1.243 (31.57)	.204 (5.18)	1.156 (29.36)	1.250
W36-*-31	2-3/4-10	3.093 (78.56)	4.250 (107.95)	.500 (12.70)	1.406 (35.71)	2.312 (58.72)	1.828 (46.43)	.265 (6.73)	1.250 (31.75)	2.375

*Add contact arrangement and contact type (P for pin, S for socket).
NOTE: To include waterproof cap, add -59 to part number, e.g., W16-*-31-59.

Wall Mounting Receptacle

W-32 Shell

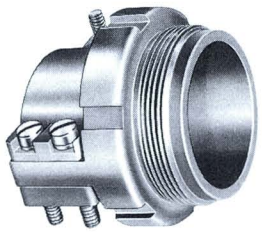


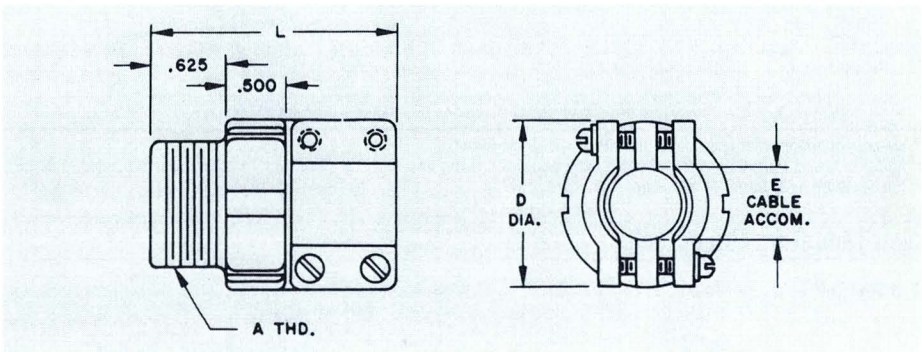
Part Number by Shell Size	A Thread Acme	D Dia.	K	L	N	R	T	X	Weight (lb.)
W16-*-32	1-3/8-10	2.750 (69.85)	.250 (6.35)	1.218 (30.94)	1.093 (27.76)	1.125 (28.58)	.204 (5.18)	.942 (23.93)	.562
W22-*-32	1-13/16-10	3.187 (80.95)	.250 (6.35)	1.218 (30.94)	1.437 (36.50)	1.243 (31.57)	.204 (5.18)	.942 (23.93)	.784)
W36-*-32	2-3/4-10	4.250 (107.95)	.375 (9.52)	1.343 (34.11)	2.312 (58.72)	1.828 (46.43)	.265 (6.73)	1.130 (28.70)	1.844

*Add contact arrangement and contact type (P for pin, S for socket).
NOTE: To include waterproof cap, add -60 to part number, e.g., W16-*-32-60.

Accessories

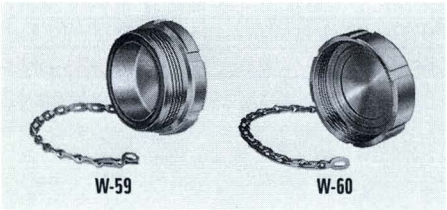
Cable Clamp





Part Number by Shell Size	A Thread	D Dia.	E	L	Part Number by Shell Size	A Thread	D Dia.	E	L
W16-CG-1/2	13/16-20NEF-2A	1.125 (28.58)	.500 (12.70)	1.875 (47.62)	W36-CG-25/32	2-16UN-2A	2.500 (63.50)	.812 (20.62)	2.125 (53.98)
W16-CG-15/32	13/16-20NEF-2A	1.125 (28.58)	.469 (11.91)	1.875 (47.62)	W36-CG-15/16	2-16UN-2A	2.500 (63.50)	.937 (23.80)	2.125 (53.98)
W22-CG-7/16	1-3/16-18NEF-2A	1.500 (38.10)	.437 (11.10)	1.875 (47.62)	W36-CG-1-1/32	2-16UN-2A	2.500 (63.50)	1.031 (26.19)	2.125 (53.98)
W22-CG-9/16	1-3/16-18NEF-2A	1.500 (38.10)	.562 (14.27)	2.125 (53.98)	W36-CG-1-1/8	2-16UN-2A	2.453 (62.31)	1.125 (28.58)	2.125 (53.98)
W22-CG-5/8	1-3/16-18NEF-2A	1.500 (38.10)	.625 (15.88)	2.125 (53.98)	W36-CG-1-3/16	2-16UN-2A	2.453 (62.31)	1.187 (30.15)	2.125 (53.98)
W22-CG-21/32	1-3/16-18NEF-2A	1.500 (38.10)	.656 (16.66)	2.125 (53.98)	W36-CG-1-1/4	2-16UN-2A	2.453 (62.31)	1.250 (31.75)	2.125 (53.98)
W22-CG-11/16	1-3/16-18NEF-2A	1.500 (38.10)	.687 (17.45)	2.125 (53.98)	W36-CG-1-9/32	2-16UN-2A	2.500 (63.50)	1.281 (32.54)	2.125 (53.98)
W22-CG-3/4	1-3/16-18NEF-2A	1.500 (38.10)	.750 (19.05)	2.125 (53.98)	W36-CG-1-5/16	2-16UN-2A	2.500 (63.50)	1.375 (34.92)	2.125 (53.98)
W22-CG-27/32	1-3/16-18NEF-2A	1.500 (38.10)	.844 (21.44)	2.125 (53.98)	W36-CG-1-3/8	2-16UN-2A	2.500 (63.50)	1.375 (34.92)	2.125 (53.98)
W22-CG-7/8	1-3/16-18NEF-2A	1.500 (38.10)	.875 (22.22)	2.125 (53.98)	W36-CG-1-5/8	2-16UN-2A	2.500 (63.50)	1.625 (41.28)	2.125 (53.98)

Caps



W-59 (for W-21 plug and W-31 recept.)

Part Number by Shell Size	Fits Shell Style	Coupling Thd. Size (Acme)
W16-59*	W16-21 W16-31	1-3/8-10
W22-59*	W22-21 W22-31	1-13/16-10
W36-59*	W36-21 W36-31	2-3/4-10

W-60 (for W-22 plug and W-32 recept.)

Part Number by Shell Size	Fits Shell Style	Coupling Thd. Size (Acme)
W16-60*	W16-22 W16-32	1-3/8-10
W22-60* W22-32	W22-22	1-13/16-10
W36-60*	W36-22 W36-32	2-3/4-10

*To order waterproof caps without chains, add -2 to part number.

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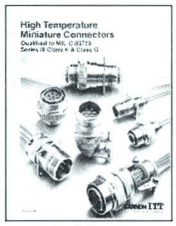
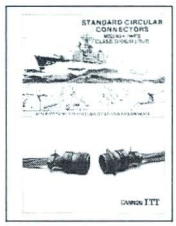
Four Cannon Court, Whitby, Ontario LIN5V8 Canada • (416) 668-8881

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Severe Environment & Circular Connectors

This quide lists some of the additional connector configurations available from ITT Cannon Canada that are not included in this catalog. If you would like additional information on any series listed below, please complete and mail a business reply card at the back of your Connector Sourcebook.

DESCRIPTION	CONTACT DATA	APPLICATIONS	CATALOG
HIGH TEMPERATURE connectors HTMF — Qualified to Mil-C-83723 Series III Class K and Class G. Temperature range from −85°F to +392°F (−65°C to +200°C). Meets U.S., NATO and British Govmnt. specifications **Threaded Coupling**	**3–55 CONTACTS** Contact/Wire Size 12 16 20 Thermocouple contacts available CRIMP TERMINATION	• High Temperature Engines	 **HTMC Catalog**
HRM — Hermetic +315° (+600°F), nuclear radiation-resistant miniature curcular connector **Threaded Coupling**	**1–73 CONTACTS** Contact/Wire Size 16 4 12 0 8 CRIMP OR WELD TERMINATIONS	• Temperature Sensing Detection Devices • Radiation- and Temperature-Resistant Environmental Applications	
CA-HR — +371°F (+700°F), nuclear-radiation resistant **Threaded Coupling**		• Provides protection against extreme high temperatures, emergency fire retardant conditions, moisture, atmospheric conditions, resistant to fuels, cleaning agents, coolants, hydraulic fluids • Nuclear-Radiation Resistant • Aircraft Firewall	
GEOPHYSICAL SERIES—hermaphroditic connectors Connectors designed for seismic applications in hostile environments. **Threaded Coupling**	**122, 176, 216 CONTACTS** Contact/Wire Size 20 18 SOLDER TERMINATION	• Oil Exploration	
LRN—connectors Power connector for use on nuclear fueling machines; environmentally sealed and impervious to serious degradation from radiation.	**4–72 CONTACTS** Contact/Wire Size 16 12 4 SOLDER OR CRIMP TERMINATION	• Nuclear	
WFS—standard circular, designed to MIL-C-5015-340* WFS — front release contacts, for use in commercial/industrial, military, mass transit, retrofit programs.	**7–104 CONTACTS** Contact/Wire Size 16–16 16–22 CRIMP TERMINATION	• Navy Shipboard Cable • Mass Transportation • Heavy Equipment • Space Programs	 **MS340* Catalog**
CA-BVS—rugged, water-proof connectors Designed for the stringent requirements for mining equipment; contact arrangements to MIL-C-5015, VG 95 234; 360° HF shielding available. **Bayonet Coupling**	**1–61 CONTACTS** Contact/Wire Size 16 8 12 4 — 0 CRIMP TERMINATION	• Underground Mining Installations • Heavy Duty Equipment	
HYDROSPACE connectors—designed to withstand stringent environments encountered by submarines and other undersea vehicles MIL-C-24217 — hermetic seal capability of withstanding pressures up to to 10,000 psi. MIL-C-22249 — receptacles with feed thru pin-pin contacts mated to low pressure (internal) and high pressure (hydrostatic) plugs. MIL-C-22539 — similar to MIL-C-24217 connectors.	**3–208 CONTACTS** Contact/Wire Size 20 8 16 4 12 0 SOLDER, SET SCREW CRIMP TERMINATION	• Submarines and Underwater Equipment • Submersible Vehicles • Nuclear Instrumentation	

D*H – D Subminiature MIL–C–24308

D*H hermetically sealed connectors are designed to meet environmental conditions of extreme pressure differential. These connectors are part of the ITT Cannon
D Subminiature series and are qualified to MIL-C-24308 (see below for cross reference information). The hermetic seal prevents leakage and subsequent accumulation of corrosive moisture behind the connector. There are five basic shell sizes in both standard and thru-bulkhead designs which can accommodate from 9 to 50 contacts. Polarization is achieved by the keystone shape of the shell, a feature of all connectors within the D Subminiature series.

Locking devices are available for all shell sizes. Size 20 pin contacts are standard and have a current rating of 5 amps.† Eyelet, solder pot, and feed-thru contact terminations are available and can accommodate stranded wire up to #20 AWG. Operating temperatures range from −54°C to 125°C (−65°F to 257°F).

Your inquiries are invited regarding custom brazed component variations and special modifications.

†Military rating of #20 contacts or wires is 1.5 amps average, and 7.5 amps maximum. See explanation below.

Cross Reference

Military Part No.	ITT Cannon Part No.	Military Part No.	ITT Cannon Part No.	Military Part No.	ITT Cannon Part No.
M24308/9-1	DEH9P002	M24308/9-8	DBH25P001	M24308/9-15	DDH50P202
M24308/9-2	DAH15P002	M24308/9-9	DCH37P001	M24308/9-16	DEH9P201
M24308/9-3	DBH25P002	M24308/9-10	DDH50P001	M24308/9-17	DAH15P201
M24308/9-4	DCH37P002	M24308/9-11	DEH9P202	M24308/9-18	DBH25P201
M24308/9-5	DDH50P002	M24308/9-12	DAH15P202	M24308/9-19	DCH37P201
M24308/9-6	DEH9P001	M24308/9-13	DBH25P202	M24308/9-20	DDH50P201
M24308/9-7	DAH15P001	M24308/9-14	DCH37P202		

KJLY, KJY, KJAY – MIL–C–38999 Series I, II, III

Cannon's KJLY/KJY/KJAY miniature circular connectors are hermetically sealed and designed to meet the critical performance and design requirements of MIL-C-38999 (leakage is less than 0.01 micron ft^3/hour). Engineered for high density circuitry capabilities, these connectors are designed to operate at temperatures ranging from −85°F to +392°F (−65°C to +200°C); solder mounts 302°F (150°C). They are readily adaptable to both commercial and space age requirements where size, weight, scoop proof/low-profile design and high reliability are key factors. KJLY/KJY/KJAY connectors are offered in nine shell sizes. A total of 53 contact arrangements are available that will accommodate from 3 to 128 contacts using AWG wire sizes 16 through 28. Contacts are of nickel/iron alloy with gold plated finish.

KPTH/PVA – Miniature Circular MIL–C–26482

ITT Cannon hermetically-sealed KPTH and PVA (MIL-C-26482, Series I and II) connectors are designed for those applications and environments that require delicate mechanisms to be protected from variations in atmospheric pressure (leakage is less than 0.01 micron ft^3/hr).

The receptacles are available with pin contacts only and in three shell styles; box mounting KPT02H, solder mounting KPT01H, and jam nut KPT07H for Series I; box mounting PVA0, solder mounting PVA3, and jam nut PVA7 for Series II. Contact arrangements are tooled in a full leak-free compression glass web.

In addition to the two basic series, connectors for special applications are also offered, including RFI filtering (with low-pass integral filter pin contact) and twist-on, pull-off couplers for MIL-C-26482 connectors.

GS – Standard Circular MIL-C-5015

GS02-00
Flangeless Receptacle

GS02-11
Square Flange Receptacle

GS02-25
Circular Flange Receptacle

ITT Cannon hermetically sealed GS connectors are designed for applications where a vacuum, inert gas, or a constant or controlled pressure is required to eliminate adverse effects created by atmospheric changes.

GS connectors are hermetically sealed with compression glass to prevent air leakage in excess of 1 x 10^{-5} standard cubic centimeters per second at 1 atmosphere. Standard hermetic receptacles are available with either solder pot or eyelet contacts. Tube-type contacts for special solid wire feedthru applications (thermocouple) are also available.

The standard material for shells and contacts is steel with tin over cadmium finish on GS02/GS06 connectors. Other materials and finishes can be supplied to meet any specific application.

GS connectors are manufactured to ITT Cannon specifications and meet the Instrument Service Voltage Rating of MIL-C-5015. Connectors with higher voltage ratings are also available upon request. Salt spray, shock and vibration requirements, and mating dimensions all approximate the requirements of MIL-C-5015 and can be contractually approved for military applications.

BFH/TBFH

TBFH-100/TBFH-200

TBFH-110

The BFH is a hermetically sealed version of the BFR bulkhead fitting.

The TBFH-100 is a jam nut-mounted, thru-bulkhead receptacle for panel thicknesses of .187″ thru .312″. Sealing against the bulkhead is accomplished by an O ring seal.

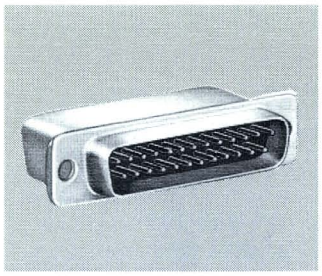
The TBFH-200 is similar to the TBFH-100 with a longer overall length for panel thicknesses of .375″ thru .750″.

The TBFH-110 is the hermetically sealed version of the TBF thru-bulkhead receptacle. It is flange mounted and mates with 3106, 3107 and 3108 plugs. Contacts are sealed to achieve hermeticity preventing air leakage in excess of one micron cubic foot per hour at a pressure differential of one atmosphere. Receptacles with leakage rate of 0.01 micron cubic foot per hour, and lower, are also available.

Contacts and shells are steel. Standard finish is clear chromate over cadmium. Other finishes are available for high temperature and special applications.

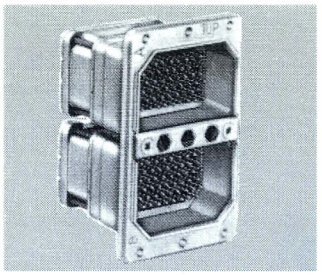
Filter Connectors

TD1



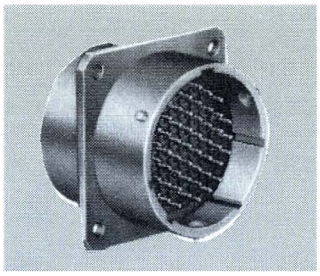
These subminiature rectangular filter connectors are designed for applications where space and weight are prime considerations. These connectors are intermateable with all of our standard D subminiature connectors including MIL-C-24308 types and meet applicable portions of that specification. They are available in 9, 15, 25, 37, and 50 contact arrangements.

TDPX



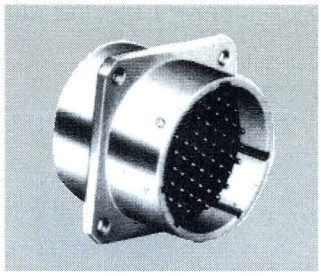
TDPX filter connectors are used primarily on commercial and military aircraft for radio and instrumentation equipment and are available in single thru four gang versions with standard ARINC shells and polarizing posts. They are intermateable with the standard DPX connectors and available in 9 contact arrangements.

TKJL/TKJ/TKJA



These miniature circular filter connectors are designed to combine the functions of a standard electrical connector and a feed-thru filter into one compact package. They are designed to meet the applicable portions of military specification MIL-C-38999 series I, II, III and IV. These connectors feature arrangements that will accommodate up to 128 contacts. Consult factory for socket versions.

TPV



TPV miniature circular filter connectors are designed to meet the applicable portions of military specifications MIL-C-26482 and MIL-C-83723. They are also intermateable with the NAS1599 and the NASA 40M39569 type connectors. These connectors feature three-point bayonet lock coupling, five keyway polarization, and have contact arrangements that will accommodate up to 61 contacts in shell sizes, with both pin and socket contact versions available.

Typical Construction Concept

Types of Contacts

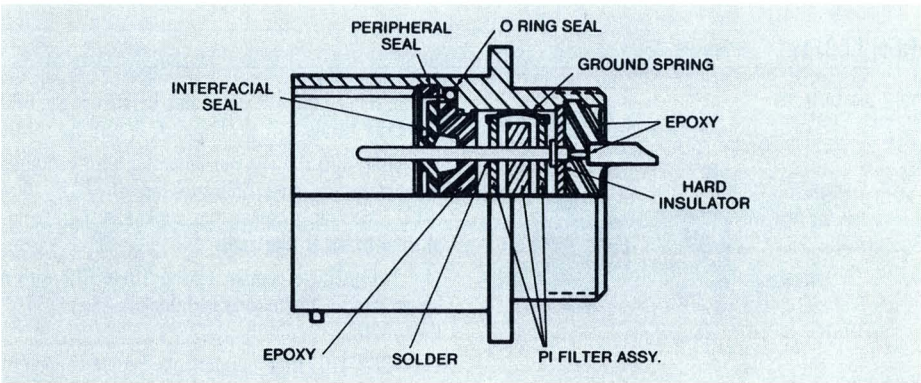
Three types of contacts are available for each contact position: **filter** contacts, **feed-thru** contacts or **grounded** contacts. These contacts can be intermixed in any arrangement to offer maximum circuit flexibility at reduced costs.

Operating Temperatures

Filter contacts are designed to operate within the temperature range of −55°C to +125°C without any significant changes in insertion loss characteristics. They will also operate at temperatures up to +150°C with temporary performance reduction.

Repairability

Under most circumstances filter connectors are repairable at the factory, and new product "re-warranty" is provided.



Intermateability With Standard Product Lines

All ITT Cannon Filter Connectors have the same layout pattern and contact spacing as their equivalent non-filtered connectors, and are intermateable and intermountable with them. The basic difference is that they are solder termination while some of the non-filtered versions may be crimp. Also, all rear accessories are ordered separately.

General Performance Data

Size #16, #20 and #22

Filter Description		Low Freq.	Mid Freq.	Std. Freq.	High Freq.
Catalog Indicator		L	M	T	H
Voltage Rating		200 VDC—120 VAC rms 400 Hz			
Current Rating (amp DC)		15 amp size 16, 7.5 amp size 20, 5.0 amp size 22			
Insulation Resistance, 2 min. electrification time max. at 25°C		5,000 megohms min. @ 100 VDC			
DWV, sea level, with 500 microamps max. charge/discharge		300V DC size 22 500V DC size 16 & 20	500 VDC		
Capacitance at 1 KHz, 0.1 V rms Picofarads		32000 45000	8000 12000	3300 5000	850 1300
Attenuation per MIL-STD-220 @ 25°C with no applied voltage or current.	Freq. MHz				
	0.1	2 min.	—	—	—
	1.0	10 min.	2 min.	—	—
	2	16 min.	7 min.	2 min.	—
	10	40 min.	18 min.	8 min.	2 min.
	100	60 min.	60 min.	45 min.	30 min.
	500 to 1000	70 min.	70 min.	55 min.	50 min.
Filter Type/Construction		Pi	Pi	Pi	Pi

Consult factory for higher or mixed attenuation values and higher voltage ratings.

3801 E. Air Lane, P.O. Box 20893, Phoenix, AZ 85036 • (602) 275-4702

Machined Contacts, Solder, Printed Circuit and Wire Wrap Termination

Standard Data

MATERIALS AND FINISHES

	Material	Finish
Shell	Steel	Yellow chromate over cadmium
Insulator	Two piece white nylon	—
Contacts	Copper alloy	Gold over nickel
Float Mount Hardware	Stainless steel	Passivated

MECHANICAL FEATURES

Coupling — Friction and lock accessories

Polarization — Keystone-shaped shells

PERFORMANCE SPECIFICATIONS

Temperature Rating — −55°C to +125°C

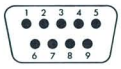
Dielectric Withstanding Voltage — 1250 VAC sea level

Wire/Contact Size — #20 AWG

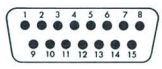
Current Rating — #20 contact 5 Amps

Contact Arrangements

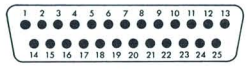
Face View, Pin Insert



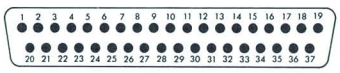
Shell Size E
Contact Arrangement 9
Contact Size #20



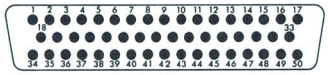
Shell Size A
Contact Arrangement 15
Contact Size #20



Shell Size B
Contact Arrangement 25
Contact Size #20

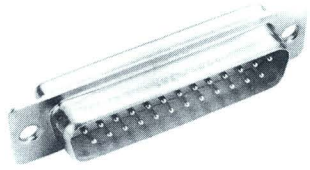


Shell Size C
Contact Arrangement 37
Contact Size #20



Shell Size D
Contact Arrangement 50
Contact Size #20

How to Order – Solder Cup Termination



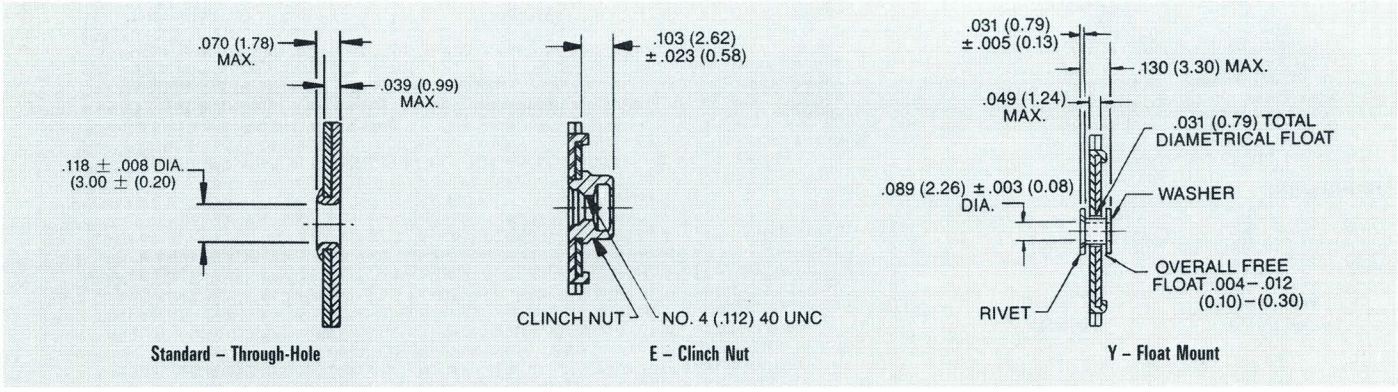
Number of Contacts (Shell Size)	Part Number .120 Dia. Through-Hole Mounting Pin/Socket
9 (E)	DE9P or S
15 (A)	DA15P or S
25 (B)	DB25P or S
37 (C)	DC37P or S
50 (D)	DD50P or S

Clinch Nut and Float Mounting Options Available:

Add: E = 4-40 Clinch Nut
Y = Float Mounting

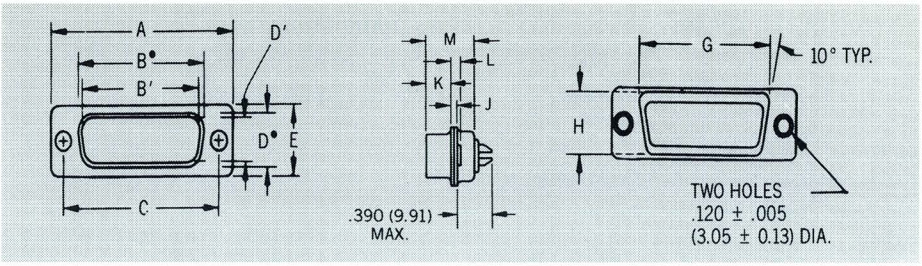
Example: DBE25S
DBY25S

Mounting Methods



Machined Contacts Solder, Printed Circuit and Wire Wrap Termination

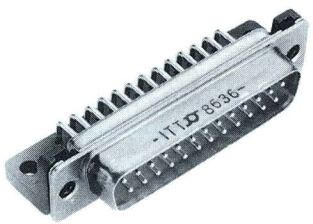
Dimensions



Part Number by Shell Size	A ± .015 (0.38)	B• ± .010 (0.25)	B′ ± .010 (0.25)	C ± .005 (0.12)	D• ± .010 (0.25)	D′ ± .010 (0.25)	E ± .015 (0.38)	G ± .010 (0.25)	H ± .010 (0.25)	J ± .010 (0.25)	K ± .010 (0.25)	L	M ± .015 (0.38)
DE-9P	1.213 (30.81)	—	.666 (16.91)	.984 (24.99)	—	.329 (8.36)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.060 (1.53) .035 (.89)	.422 (10.72)
DE-9S	1.213 (30.81)	.640 (16.25)	—	.984 (24.99)	.308 (7.82)	—	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.060 (1.53) .035 (.89)	.429 (10.90)
DA-15P	1.541 (39.14)	—	.994 (25.24)	1.312 (33.32)	—	.329 (8.36)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.060 (1.53) .035 (.89)	.422 (10.72)
DA-15S	1.541 (39.14)	.968 (24.58)	—	1.312 (33.32)	.308 (7.82)	—	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.060 (1.53) .035 (.89)	.429 (10.90)
DB-25P	2.088 (53.03)	—	1.534 (38.96)	1.852 (47.04)	—	.329 (8.36)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.039 (0.99)	.231 (5.87)	.070 (1.78) .050 (1.27)	.426 (10.82)
DB-25S	2.088 (53.03)	1.508 (38.30)	—	1.852 (47.04)	.308 (7.82)	—	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.060 (1.53) .035 (.89)	.429 (10.90)
DC-37P	2.729 (69.31)	—	2.182 (55.42)	2.500 (63.50)	—	.329 (8.36)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.039 (0.99)	.231 (5.87)	.070 (1.78) .050 (1.27)	.426 (10.82)
DC-37S	2.729 (69.31)	2.156 (54.76)	—	2.500 (63.50)	.308 (7.82)	—	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.060 (1.53) .035 (.89)	.429 (10.90)
DD-50P	2.635 (66.92)	—	2.079 (52.81)	2.406 (61.11)	—	.436 (11.07)	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.039 (0.99)	.231 (5.87)	.070 (1.78) .050 (1.27)	.426 (10.82)
DD-50S	2.635 (66.92)	2.062 (52.37)	—	2.406 (61.11)	.420 (10.67)	—	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.030 (0.76)	.243 (6.17)	.060 (1.53) .035 (.89)	.429 (10.90)

•Dimensions B, D, G, and H are measured as outside dimensions at the bottom of draw.
NOTE: B• and D• are the O.D. dims. for socket side, B′ and D′ are the I.D. dims. for pin side.

How to Order – 90° PC Tail



.040 Dia, .093 extension below bracket

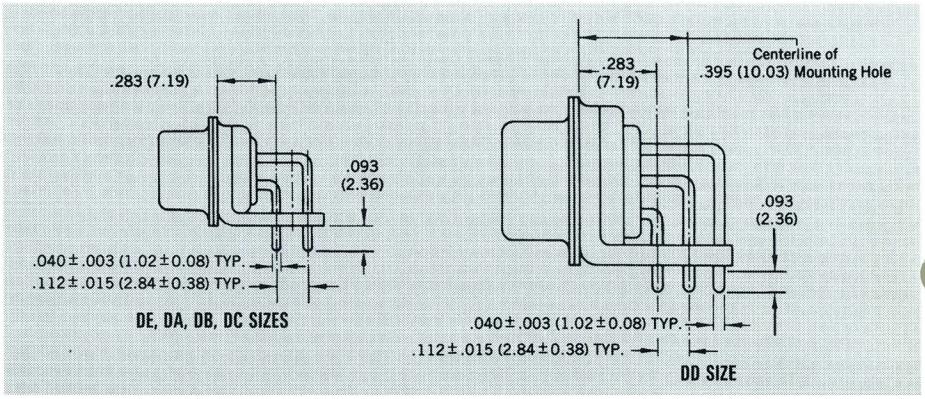
Number of Contacts (Shell Size)	Part Number Pin/Socket With Bracket	Part Number Pin/Socket Without Bracket
9 (E)	DE9PA or SA	DE9PC or SC
15 (A)	DA15PA or SA	DA15PC or SC
25 (B)	DB25PA or SA	DB25PC or SC
37 (C)	DC37PA or SA	DC37PC or SC
50 (D)	DD50PA or SA	DD50PC or SC

For PC Board hole pattern see page 283.

Dimensions

Connectors are furnished with or without a bracket.

Printed Circuit Terminal Modifier	90° Bracket Included
A	Yes
C	No



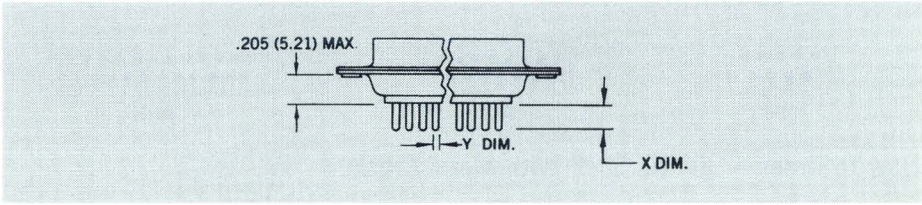
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Machined Contacts, Solder, Printed Circuit and Wire Wrap Termination

How to Order – Straight PC Termination

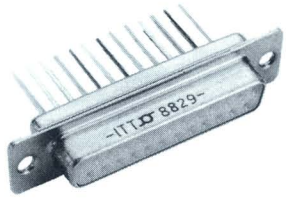
Number of Contacts (Shell Size)	Part Number		
	.040 Dia., .156 extension Pin/Socket	.024 Dia, .125 extension Pin/Socket	.040 Dia, .093 extension Pin/Socket
9 (E)	DE9PH or SH	DE9PU or SU	DE9PV or SV
15 (A)	DA15PH or SH	DA15PU or SU	DA15PV or SV
25 (B)	DB25PH or SH	DB25PU or SU	DB25PV or SV
37 (C)	DC37PH or SH	DC37PU or SU	DC37PV or SV
50 (D)	DD50PH or SH	DD50PU or SU	DD50PV or SV

Dimensions



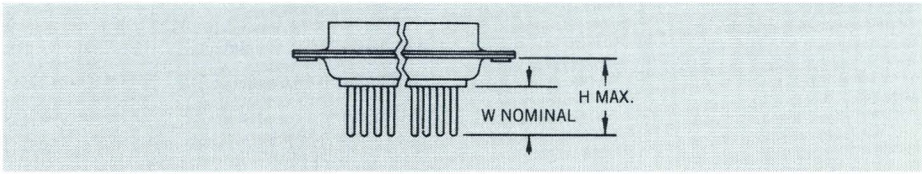
Printed Circuit Terminal Modifier	X Nominal	Y ±.003 (±0.08)
H	.156 (3.96)	.040 (1.02)
U	.125 (3.18)	.024 (0.61)
V	.093 (2.36)	.040 (1.02)

How to Order – Wire Wrap Posts



Number of Contacts (Shell Size)	Part Number	
	.024 Sq. Post .375 Extension F179 Pin/Socket	.024 Sq. Post .500 Extension F179A Pin/Socket
9 (E)	DE9P or S F179	DE9P or S F179A
15 (A)	DA15P or S F179	DA15P or S F179A
25 (B)	DB25P or S F179	DB25P or S F179A
37 (C)	DC37P or S F179	DC37P or S F179A
50 (D)	DD50P or S F179	DD50P or S F179A

Dimensions



Modification Code	H	W	Wrap Accommodations
F179	.587 (14.91)	.375 (9.52)	2
F179A	.713 (18.11)	.500 (12.7)	3

.024 (0.61) square contact tails will accommodate #28 or #30 AWG rigid wire (diagonal of square is .034 / .031 (0.86 / 0.79).

Machined Contacts, 90° Printed Circuit Termination

Standard Data

MATERIALS AND FINISHES

	Material	Finish
Shell	Steel	Tin plated
Insulator	94V-0 Thermoplastic	—
Contacts	Copper alloy	Gold over nickel plating
Brackets	Steel	Tin plated
Nuts	Copper, Alloy	Tin plated

PERFORMANCE DATA

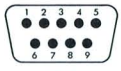
Operating Temperature: −55°C to +105°C

Contact Current Rating: 5 Amp

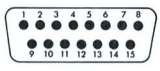
Voltage Rating: 1500 VAC

Contact Arrangements

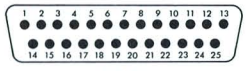
Face View, Pin Insert



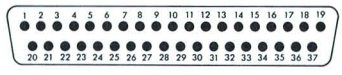
DE-9



DA-15

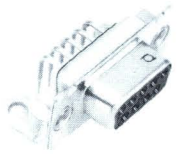


DB-25



DC-37

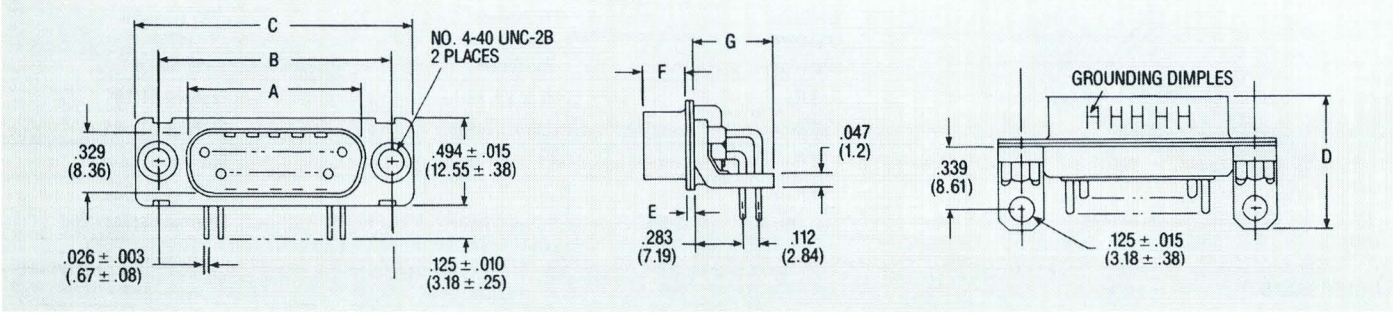
How to Order – 90° Tin Shell With Metal Bracket



Number of Contacts (Shell Size)	Part Number	
	Pin Connectors (with dimples)	Socket Connectors
9 (E)	DE9PBA-K87	DE9SBA
15 (A)	DA15PBA-K87	DA15SBA
25 (B)	DB25PBA-K87	DB25SBA
37 (C)	DC37PBA-K87	DC37SBA

Dimensions

Pin Connector



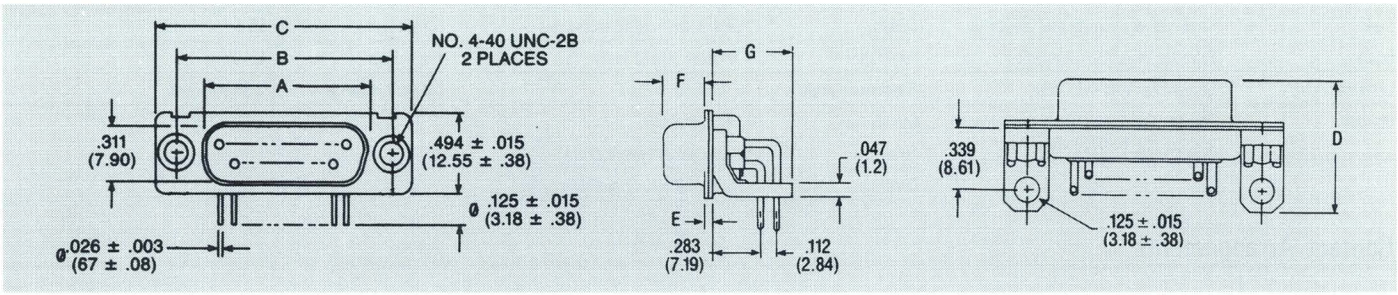
Part Number	A ±.010 (.25)	B ±.005 (.13)	C ±.015 (.38)	D ±.025 (.64)	E ±.010 (.25)	F ±.010 (.25)	G ±.010 (.25)
DE 9PBA-K87	.666 (16.91)	.984 (24.99)	1.213 (30.81)	.727 (18.47)	.030 (.76)	.236 (5.99)	.447 (11.35)
DA15PBA-K87	.994 (25.24)	1.312 (33.32)	1.541 (39.14)	.727 (18.47)	.030 (.76)	.236 (5.99)	.447 (11.35)
DB25PBA-K87	1.534 (38.96)	1.852 (47.04)	2.088 (53.03)	.720 (18.29)	.039 (.99)	.231 (5.87)	.447 (11.35)
DC37PBA-K87	2.182 (55.42)	2.500 (63.50)	2.729 (69.31)	.720 (18.29)	.039 (.99)	.231 (5.87)	.447 (11.35)

For PC board hole pattern, see page 283.

Machined Contacts, 90° Printed Circuit Termination

Dimensions (Continued)

Socket Connector



Part Number	A ±.010 (.25)	B ±.005 (.13)	C ±.015 (.38)	D ±.025 (.64)	E ±.010 (.25)	F ±.010 (.25)	G ±.010 (.25)
DE 9SBA	.640 (16.25)	.984 (24.99)	1.213 (30.81)	.720 (18.29)	.030 (.76)	.243 (6.17)	.447 (11.35)
DA15SBA	.968 (24.58)	1.312 (33.32)	1.541 (39.14)	.720 (18.29)	.030 (.76)	.243 (6.17)	.447 (11.35)
DB25SBA	1.508 (38.30)	1.852 (47.04)	2.088 (53.03)	.720 (18.29)	.030 (.76)	.243 (6.17)	.447 (11.35)
DC37SBA	2.156 (54.76)	2.500 (63.50)	2.729 (69.31)	.720 (18.29)	.030 (.76)	.243 (6.17)	.447 (11.35)

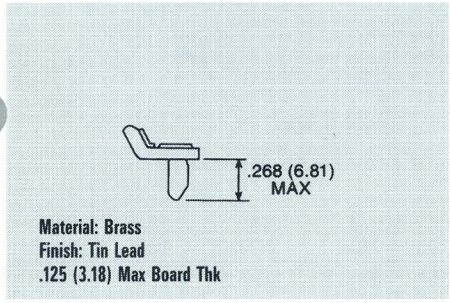
For PC board hole pattern, see page 283.

How to Order – 90° Tin Shell With Metal Bracket, 4-40 Rivnuts and Compliant Eyelet Holddown

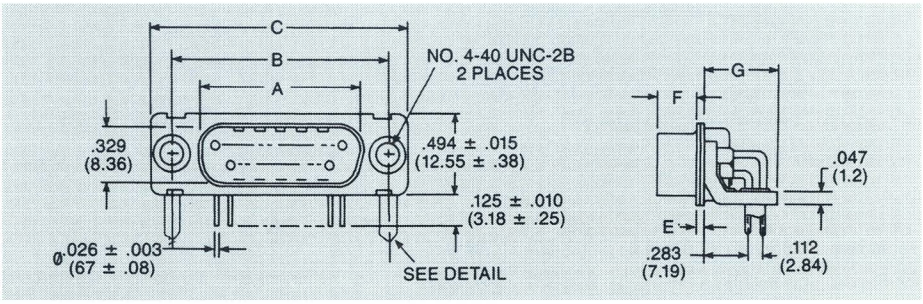
Number of Contacts (Shell Size)	Part Number .026 Dia, .125 Extension	
	Pin Connectors	Socket Connectors
9 (E)	DE19808-500	DE19808-501
15 (A)	DA19603-224	DA19603-225
25 (B)	DB19604-271	DB19604-272
37 (C)	DC19605-229	DC19605-230

Dimensions

Compliant Eyelet Detail

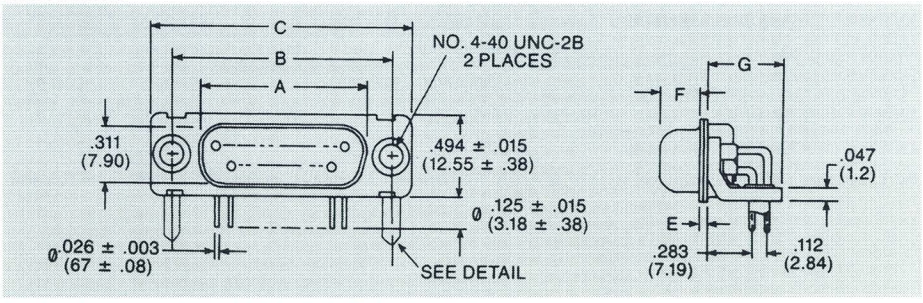


Pin Connector



See previous page for dimensional data of 90° Tin Shells (Pin Connector).

Socket Connector



See above for dimensional data of 90° Tin Shells (Socket Connector).

Stamped Contacts, Solder and Printed Circuit Termination
Standard Data

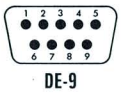
MATERIALS AND FINISHES	
Shell	Steel, yellow chromate over zinc or tin
Insulator	Polyester, monobloc construction
Contacts	Copper alloy, gold over nickel
Standoff	Copper alloy with electro deposited tin lead per MIL-T-10727, Type I

PERFORMANCE SPECIFICATIONS	
Coupling	Friction and locking accessories
Polarization	Keystone-shaped shells
Temperature range	−55°C to +125°C
Contact type	Non-removable
Termination	Solder pot or printed circuit
Durability	Up to 100 mating/unmating cycles

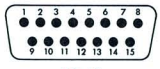
ELECTRICAL	
Current rating	5A
Test voltage	1250V ac rms
Contact resistance	<15 milliohms

Contact Arrangements

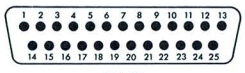
Face View, Pin Insert



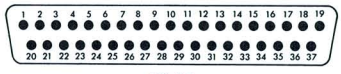
DE-9



DA-15

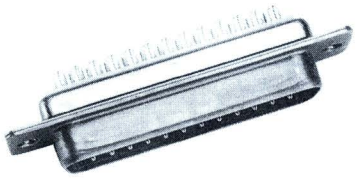


DB-25



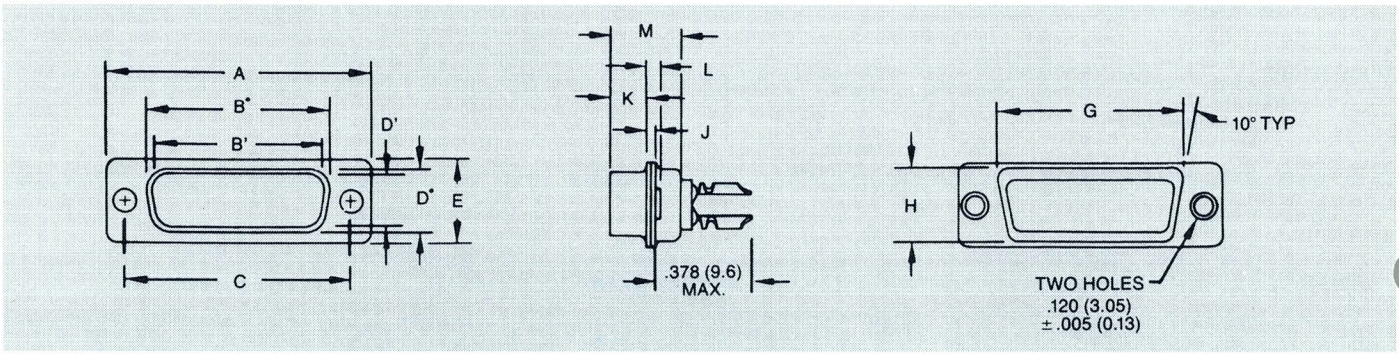
DC-37

How to Order – Solder Termination



Number of Contacts (Shell Size)	Part Number Solder Termination Pin/Socket
9(E)	ADE9P or S
15(A)	ADA14P or S
25(B)	ADB25P or S
37(C)	ADC37P or S

Dimensions



Part Number	A ±.016 (0.4)	B• ±.012 (0.3)	B' ±.012 (0.3)	C ±.008 (0.2)	D• ±.012 (0.3)	D' ±.012 (0.3)	E ±.016 (0.4)	G ±.012 (0.3)	H ±.012 (0.3)	J Max.	K ±.012 (0.3)	L Max.	M ±.016 (0.4)
ADE-9S	1.213 (30.8)	—	.665 (16.9)	.984 (25.0)	—	.331 (8.4)	.492 (12.5)	.760 (19.3)	.421 (10.7)	.051 (1.3)	.236 (6.0)	.075 (1.90)	.430 (10.93)
ADE-9P	1.213 (30.8)	.642 (16.3)	—	.984 (25.0)	.307 (7.8)	—	.492 (12.5)	.760 (19.3)	.421 (10.7)	.051 (1.3)	.244 (6.2)	.075 (1.90)	.425 (10.79)
ADA-15S	1.539 (39.1)	—	.996 (25.3)	1.311 (33.3)	—	.331 (8.4)	.492 (12.5)	1.083 (27.5)	.421 (10.7)	.051 (1.3)	.236 (6.0)	.075 (1.90)	.430 (10.93)
ADA-15P	1.539 (39.1)	.969 (24.6)	—	1.311 (33.3)	.307 (7.8)	—	.492 (12.5)	1.083 (27.5)	.421 (10.7)	.051 (1.3)	.244 (6.2)	.075 (1.90)	.425 (10.79)
ADB-25S	2.087 (53.0)	—	1.535 (39.0)	1.850 (47.0)	—	.331 (8.4)	.492 (12.5)	1.626 (41.3)	.421 (10.7)	.051 (1.3)	.232 (5.9)	.075 (1.90)	.430 (10.93)
ADB-25P	2.087 (53.0)	1.508 (38.3)	—	1.850 (47.0)	.307 (7.8)	—	.492 (12.5)	1.626 (41.3)	.421 (10.7)	.051 (1.3)	.244 (6.2)	.075 (1.90)	.425 (10.79)
ADC-37S	2.728 (69.3)	—	2.181 (55.4)	2.500 (63.5)	—	.331 (8.4)	.492 (12.5)	2.272 (57.7)	.421 (10.7)	.051 (1.3)	.232 (5.9)	.075 (1.90)	.430 (10.93)
ADC-37P	2.728 (69.3)	2.157 (54.8)	—	2.500 (63.5)	.307 (7.8)	—	.492 (12.5)	2.272 (57.7)	.421 (10.7)	.051 (1.3)	.244 (6.2)	.075 (1.90)	.425 (10.79)

NOTE: Dimensions B•, D•, G and H are measured as outside dimensions at the bottom of the draw. B•, and D• are the O.D. dims. for socket side B' and D' are the dims. for pin side.

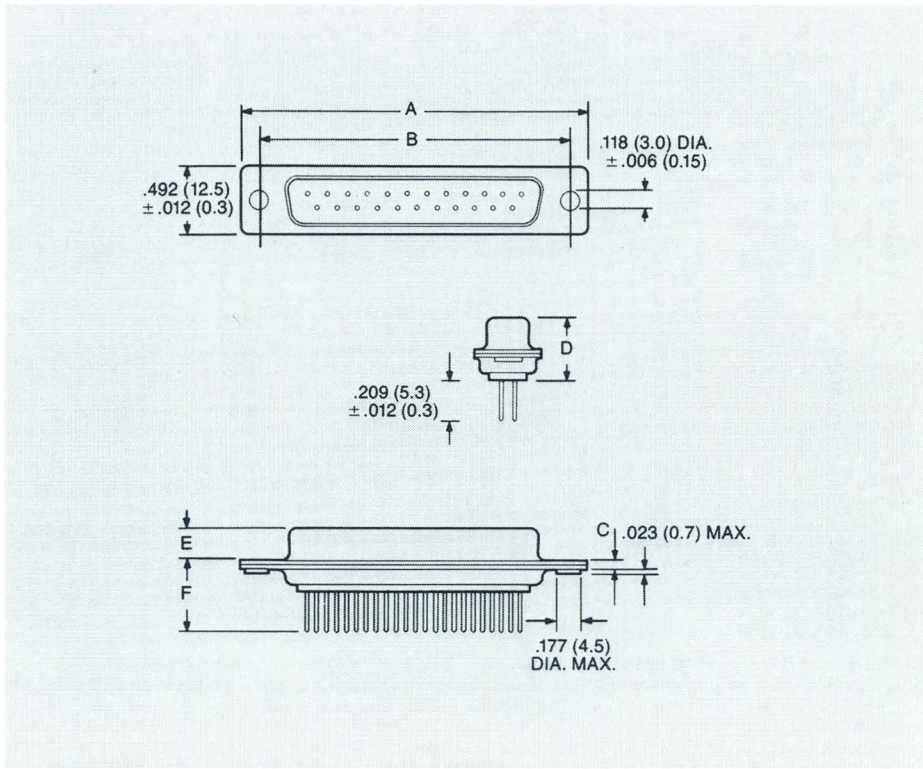
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Stamped Contacts, Solder and Printed Circuit Termination

How to Order – Straight PC Termination

Number of Contacts (Shell Size)	Part Number Pin/Socket
9 (E)	ADE9POL2 or SOL2
15 (A)	ADA15POL2 or SOL2
25 (B)	ADB25POL2 or SOL2
37 (C)	ADC37POL2 or SOL2

Dimensions

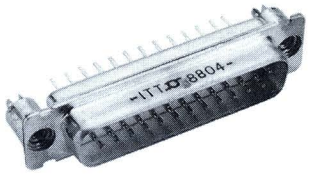


Part Number	A ±.012 (0.3)	B ±.006 (0.15)	C ±.008 (0.2)	D MAX.	E ±.008 (0.2)	F
ADE-9S-OL2	1.184 (30.8)	0.984 (25.0)	.031 (0.8)	.469 (11.9)	.244 (6.2)	.433 (11.0)
ADE-9P-OL2	1.184 (30.8)	0.984 (25.0)	.031 (0.8)	.461 (11.7)	.236 (6.0)	.433 (11.0)
ADA-15S-OL2	1.539 (39.1)	1.311 (33.3)	.031 (0.8)	.469 (11.9)	.244 (6.2)	.433 (11.0)
ADA-15P-OL2	1.539 (39.1)	1.311 (33.3)	.031 (0.8)	.461 (11.7)	.236 (6.0)	.433 (11.0)
ADB-25S-OL2	2.087 (53.0)	1.850 (47.0)	.031 (0.8)	.469 (11.9)	.244 (6.2)	.433 (11.0)
ADB-25P-OL2	2.087 (53.0)	1.850 (47.0)	.039 (1.0)	.465 (11.8)	.232 (5.9)	.441 (11.2)
ADC-37S-OL2	2.728 (69.3)	2.500 (63.5)	.031 (0.8)	.469 (11.9)	.244 (6.2)	.433 (11.0)
ADC-37P-OL2	2.728 (69.3)	2.500 (63.5)	.039 (1.0)	.465 (11.8)	.232 (5.9)	.441 (11.2)

For PC Board hole pattern, see page 283.

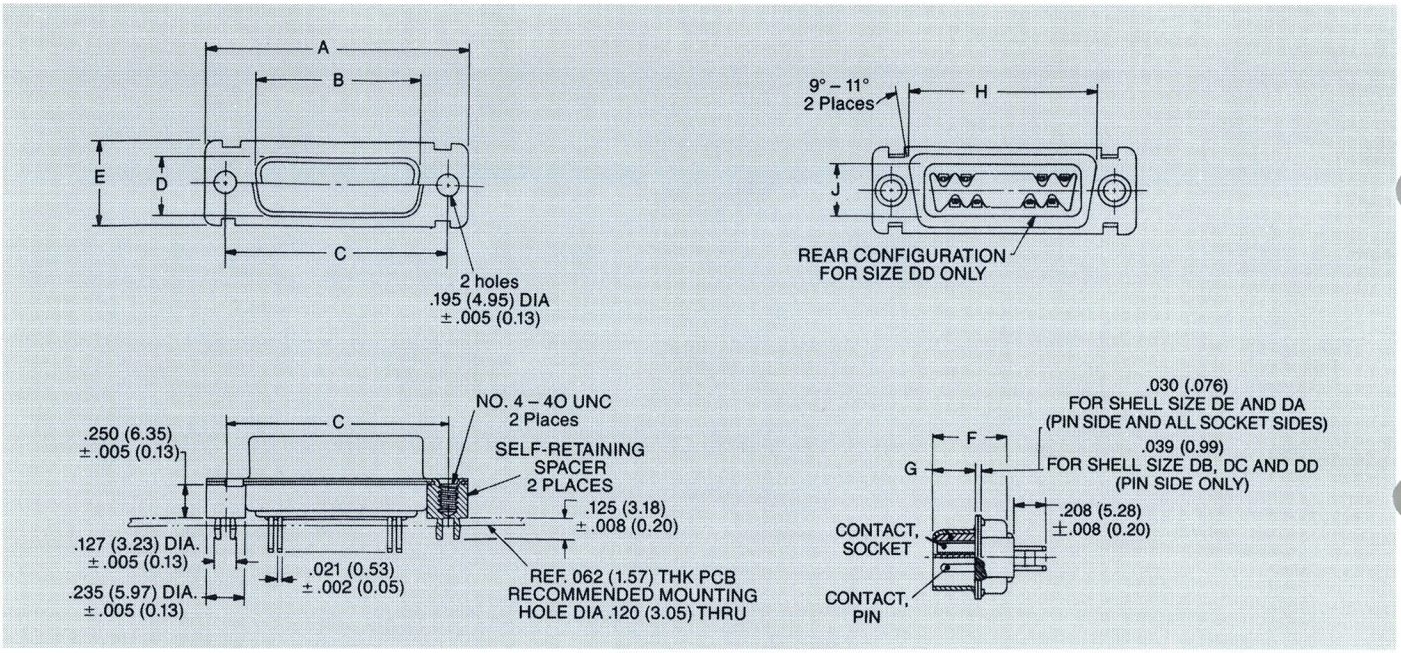
Stamped Contacts, Solder and Printed Circuit Termination

How to Order – PC Termination With Integral Board Standoff, Tin Shell Finish



Number of Contacts (Shell Size)	Part Numbers		
	Pin	Socket	Grounding Indents (Pin Only)
9 (E)	ADE19808-496	ADE19808-499	ADE19808-497
15 (A)	ADA19603-216	ADA19603-218	ADA19603-215
25 (B)	ADB19604-263	ADB19604-262	ADB19604-264
37 (C)	ADC19605-225	ADC19605-227	ADC19605-225

Dimensions



NOTE: Section of side view and the engaging face view are designed to show configurations of both pin and socket.
After assembling self-retaining spacers to shell, the retention in relation to swage must withstand 6 lb torque and 10 lb push-out force.

Number of Contacts (Shell Size)	A ±.015 (0.38)	B ±.005 (0.13)	C ±.005 (0.13)	D ±.005 (0.13)	E ±0.15 (0.38)	F ±.010 (0.25)	G ±.006 (0.15)	H ±.010 (0.25)	J ±.010 (0.25)
ADE-9P	1.213 (30.81)	.666 (16.92)	.984 (24.99)	.329 (8.36)	.494 (12.55)	.422 (10.72)	.235 (5.97)	.759 (19.28)	.422 (10.72)
ADE-9S	1.213 (30.81)	.643 (16.33)	.984 (24.99)	.311 (7.90)	.494 (12.55)	.429 (10.90)	.243 (6.17)	.759 (19.28)	.422 (10.72)
ADA-15P	1.541 (39.14)	.994 (25.25)	1.312 (33.32)	.329 (8.36)	.494 (12.55)	.422 (10.72)	.235 (5.97)	1.083 (27.51)	.422 (10.72)
ADA-15S	1.541 (39.14)	.971 (24.66)	1.312 (33.32)	.311 (7.90)	.494 (12.55)	.429 (10.90)	.243 (6.17)	1.083 (27.51)	.422 (10.72)
ADB-25P	2.088 (53.04)	1.534 (38.96)	1.852 (47.04)	.329 (8.36)	.494 (12.55)	.426 (10.82)	.230 (5.84)	1.625 (41.28)	.422 (10.72)
ADB-25S	2.088 (53.04)	1.511 (38.38)	1.852 (47.04)	.311 (7.90)	.494 (12.55)	.429 (10.90)	.243 (6.17)	1.625 (41.28)	.422 (10.72)
ADC-37P	2.729 (69.32)	2.182 (55.42)	2.500 (63.50)	.329 (8.36)	.494 (12.55)	.426 (10.82)	.230 (5.84)	2.272 (57.71)	.422 (10.72)
ADC-37S	2.729 (69.32)	2.159 (54.84)	2.500 (63.50)	.311 (7.90)	.494 (12.55)	.429 (10.90)	.243 (6.17)	2.272 (57.71)	.422 (10.72)
ADD-50P	2.635 (66.93)	2.079 (52.81)	2.406 (61.11)	.441 (11.20)	.605 (15.37)	.426 (10.82)	.230 (5.84)	2.178 (55.32)	.534 (13.56)
ADD-50S	2.635 (66.93)	2.064 (52.43)	2.406 (61.11)	.423 (10.74)	.605 (15.37)	.429 (10.90)	.243 (6.17)	2.178 (55.32)	.534 (13.56)

For PC Board hole pattern, see page 283.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Machined and Stamped Contacts, Crimp and Printed Circuit Termination

Standard Data

MATERIALS AND FINISHES

	Material	Finish
Shell	Steel	Yellow chromate over cadmium or tin
Insulator	D*C: Thermoplastic, Glass filled, color red D*U: UL 94V-0 rated Thermoplastic, Glass-filled, color black	
Contacts:		
Machined	Copper alloy	Gold over nickel
Stamped and Formed Crimp Type	Copper alloy	Gold over nickel
Stamped and Formed P.C. Type	Copper alloy	Gold over nickel-engaging end Tin/lead-terminal end
Float Mount Hardware	Stainless Steel	Passivated

MECHANICAL FEATURES

Coupling – Friction and lock accessories

Polarization – Keystone-shaped shells

PERFORMANCE SPECIFICATIONS

Wire Size – See contact ordering information.

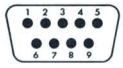
Current Rating – #20 contact, 5 Amps

Voltage Rating – 1000 VAC sea level

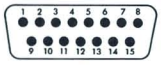
Temperature Rating – −65°C to +125°C

Contact Arrangements

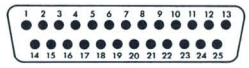
Face view, pin insert



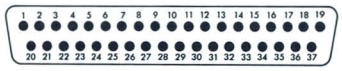
Shell Size	E
Contact Arrangement	9
Contact Size	#20



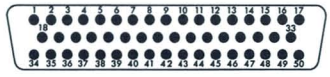
Shell Size	A
Contact Arrangement	15
Contact Size	#20



Shell Size	B
Contact Arrangement	25
Contact Size	#20



Shell Size	C
Contact Arrangement	37
Contact Size	#20



Shell Size	D
Contact Arrangement	50
Contact Size	#20

How to Order

Connectors With Cadmium Plated Shells

Number of Positions (Shell Size)	Part Numbers: Connectors Without Contacts	Part Numbers: Connectors Packaged With Machined Contacts*
9 (E)	DEU9P or S-FO	DEU9P or S
15 (A)	DAU15P or S-FO	DAU15P or S
25 (B)	DBU25P or S-FO	DBU25P or S
37 (C)	DCU37P or S-FO	DCU37P or S
50 (D)	DDU50P or S-FO	DDU50P or S

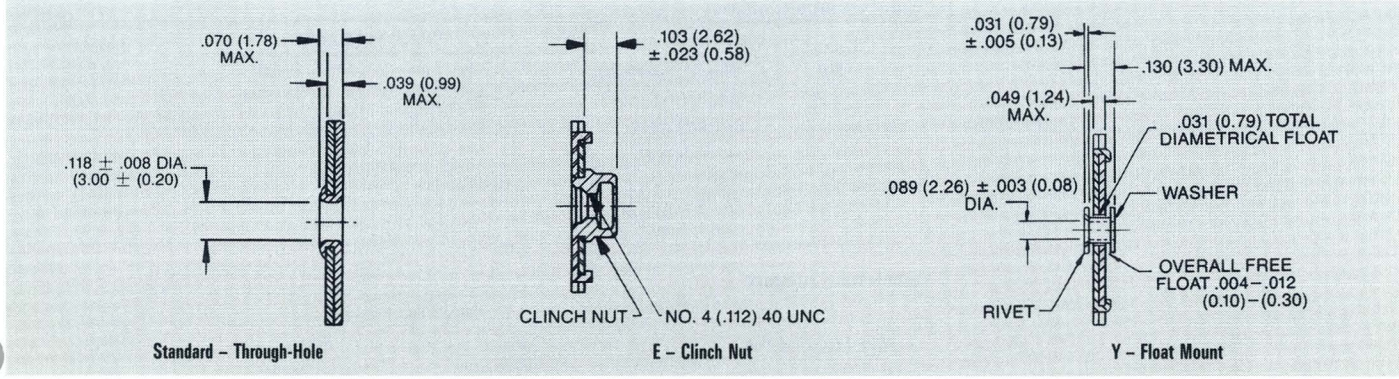
*Pin contact is 030-1952-000/Socket contact is 030-1953-000

Connectors With Tin Shells

Number of Contacts (Shell Size)	Part Numbers: With Dimples (Pin Only) Without Contacts	Part Numbers: Without Dimples (Socket) Without Contacts
9 (E)	DEU-9P-K87-FO	DEU-9S-A197-FO
15 (A)	DAU-15P-K87-FO	DAU-15S-A197-FO
25 (B)	DBU-25P-K87-FO	DBU-25S-A197-FO
37 (C)	DCU-37P-K87-FO	DCU-37S-A197-FO
50 (D)	DDU-50P-K87-FO	DDU-50S-A197-FO

NOTE: To order Red insulator instead of UL 94V-0 rated black insulator, change part number as follows: From D*U to D*C. Example: DBC-25P

Mounting Methods



Clinch Nut and Float Mounting Options Available

Add: E for 4-40 Clinch Nut
Y for Float Mounting

Example: DBUE25P or SFO
DBUY25P or SFO

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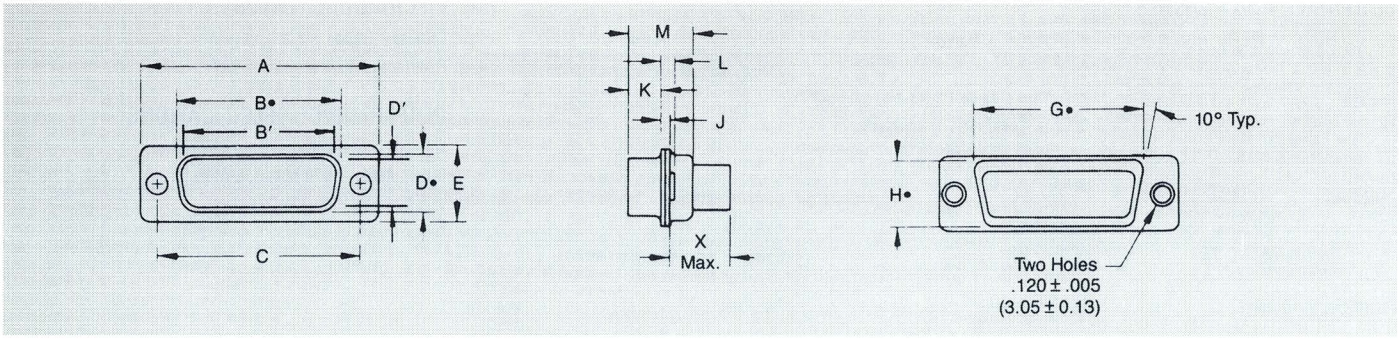
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

D Subminiature Products, 1851 E. Deere Ave, P.O. Box 35000, Santa Ana, CA 92705-6500 • (714) 261-5300

Machined and Stamped Contacts, Crimp and Printed Circuit Termination

Dimensions

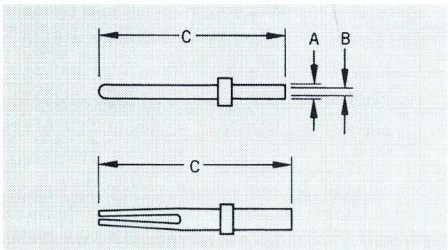


Part Number by Shell Size	A ±.015 (0.38)	B• ±.010 (0.25)	B′ ±.010 (0.25)	C ±.005 (0.12)	D• ±.010 (0.25)	D′ ±.010 (0.25)	E ±.015 (0.38)	G• ±.010 (0.25)	H• ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)	M ±.015 (0.38)	X Max.
DEU-9P	1.213 (30.81)	—	.666 (16.91)	.984 (24.99)	—	.329 (8.36)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.422 (10.72)	.375 (9.52)
DEU-9S	1.213 (30.81)	.640 (16.25)	—	.984 (24.99)	.308 (7.82)	—	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.422 (10.90)	.375 (9.52)
DAU-15P	1.541 (39.14)	—	.994 (25.24)	1.312 (33.32)	—	.329 (8.36)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.422 (10.72)	.375 (9.52)
DAU-15S	1.541 (39.14)	.968 (24.58)	—	1.312 (33.32)	.308 (7.82)	—	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.375 (9.52)
DBU-25P	2.088 (53.03)	—	1.534 (38.96)	1.852 (47.04)	—	.329 (8.36)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.039 (0.99)	.231 (5.87)	.060 (1.52)	.426 (10.82)	.375 (9.52)
DBU-25S	2.088 (53.03)	1.508 (38.30)	—	1.852 (47.04)	.308 (7.82)	—	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.375 (9.52)
DCU-37P	2.729 (69.31)	—	2.182 (55.42)	2.500 (63.50)	—	.329 (8.36)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.039 (0.99)	.231 (5.87)	.060 (1.52)	.426 (10.82)	.375 (9.52)
DCU-37S	2.729 (69.31)	2.156 (54.76)	—	2.500 (63.50)	.308 (7.82)	—	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.375 (9.52)
DDU-50P	2.635 (66.92)	—	2.079 (52.81)	2.406 (61.11)	—	.436 (11.07)	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.039 (0.99)	.231 (5.87)	.060 (1.52)	.426 (10.82)	.375 (9.52)
DDU-50S	2.635 (66.92)	2.062 (52.37)	—	2.406 (61.11)	.420 (10.67)	—	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.375 (9.52)

•Dimensions B•, D•, G•, and H• are measured as outside dimensions at the bottom of the draw.
NOTE: B• and D• are the O.D. dims. for socket side, B′ and D′ are the I.D. dims. for pin side.

Machined Crimp Contacts

Machined contacts are furnished loose piece for use with manual and semi-automatic machines.



Description	Part Number	Wire Accommodation	A ±.002 (0.05)	B ±.002 (0.05)	C Max.
Pin 20	030-1952-000	20, 22, 24	.067(1.70)	.045(1.14)	.537(13.64)
Pin 20-18	030-1954-000	(1) 18 or (2) #22	.086(2.18)	.066(1.68)	.874(22.20)
Pin 20-26	030-1952-002	26, 28, 30	.067(1.70)	.025(0.63)	.537(13.64)
Socket 20	030-1953-000	20, 22, 24	.067(1.70)	.045(1.14)	.523(13.28)
Socket 20-18	030-1955-000	(1) 18 or (2) #22	.086(2.18)	.066(1.68)	.852(21.64)
Socket 20-26	030-1953-002	26, 28, 30	.067(1.70)	.025(0.63)	.523(13.28)

NOTE for Size 20-18 contacts only: Shrink sleeving is suggested on the crimp pot to prevent contacts from touching.

Stamped Crimp Contacts/Reeled

Non-Insulation Support

Contact Size	Wire Accommodation	Contact Part Number Pin	Contact Part Number Socket	Contacts Per Reel
20-18	AWG #18 thru 22 (For AWG #24 consult factory)	D110238-165	D110238-166	7,500
20	AWG #20 thru 28 (For AWG #30 consult factory)	D110238-34	D110238-35	10,000

Insulation Support

Wire Accommodation	Contact Part Number Pin	Contact Part Number Socket	Contact Per Reel
AWG #22-#26	D110238-428	D110238-434	7,500
AWG #28 thru #32	D110238-431	D110238-436	7,500

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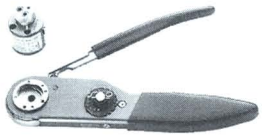
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

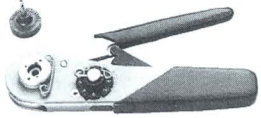
Stamped and Machined Contacts
Hand Tooling

CCT-D*C-1
Stamped Contact Crimp Tool

CCTP-D*C
Stamped Contact
Parallel Action Crimp Tool



CCT-DCM-1
Machined Contact Crimp Tool



CCT-DCM-2
Machined Contact Crimp Tool

Contact Type	Contact Size	Wire Accommodation	Hand Tool Part No.	Hand Tool Description
Machined	20	20, 22, 24	995-0002-206	CCT-DCM-1
			995-0002-207	CCT-DCM-2
	20-18	1 #18, 2 #22	995-0002-206	CCT-DCM-1
	20-26	26, 28, 30	995-0002-207	CCT-DCM-2
Stamped	20	20-28	995-0001-662	CCT-D*C-1
	20-18	18,20,2 #22	995-0001-870	CCT-D*C-4
Stamped Insulation Support	All	28-32 22-26	111494-0008 111494-0009	CCTP-D*C-8 CCTP-D*C-10

Insertion/Extraction Tools

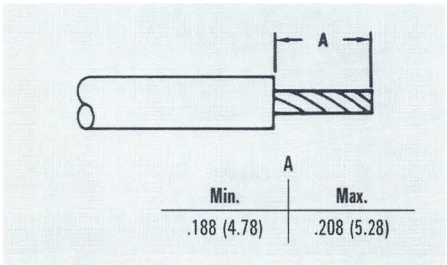
CIET-20HD
Plastic

CET-20D
Metal

Contact Type	Contact Size	Wire Accommodation	Plastic Insertion/Extraction Part No.	Plastic Insertion/Extraction Description	Metal Extraction Part No.	Metal Extraction Description
Machined	20	20, 22, 24	274-7006-000	CIET-20HD	995-0001-695	CET-20D
	20-18	1 #18, 2 #22	274-5016-002	CET-20-15	995-0001-695	CET-20D
	20-26	26, 28, 30	274-7006-000	CIET-20HD	995-0001-695	CET-20D
Stamped	All	20-32	274-7006-000	CIET-20HD	995-0001-695	CET-20D
Stamped	20-18	#18	Not Available		995-0001-695	CET-20D

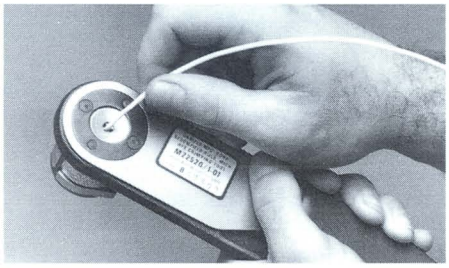
Assembly Instructions

Wire Stripping – Machined Contacts



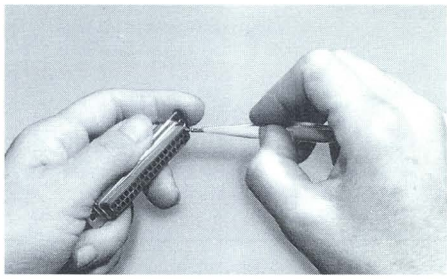
1. Cut wires to length. Strip insulation per above illustration. Check for broken or frayed wires.

Contact Crimping



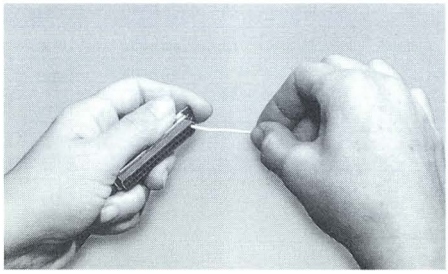
2. Insert contact and wire into proper crimp tool (and locator, if required). Crimp contact to wire. Inspect crimp.

Contact Insertion

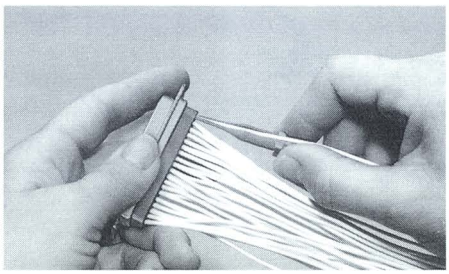


3. Center wired contact in groove of insertion tool with tool tip butting contact shoulder. Insert contact into cavity until a positive stop is felt. Inspect insertion.

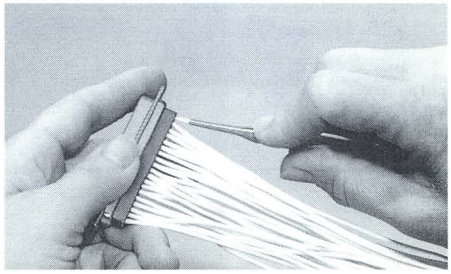
Contact Extraction



4. To be sure contact is locked securely, pull back lightly on wire. Repeat for balance of contacts working row by row across the insulator.



5. Place wire into extraction tool tip.



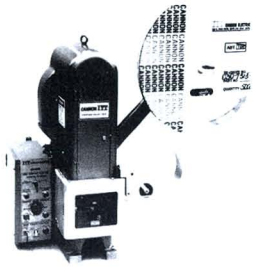
6. Insert tool tip into contact cavity until tip bottoms against contact shoulder, releasing tines. Hold wire against tool with finger and remove tool and contact. Repeat for balance of contacts.

Stamped and Machined Contact Termination Equipment

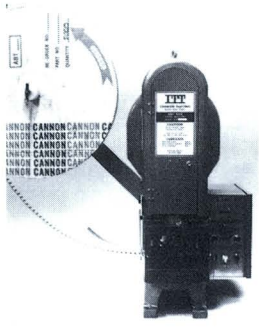
A full range of manual to fully automatic crimp equipment is available from ITT Cannon to meet all volume requirements.

Machined contact needs are met by Mil standard hand crimp tools for low volumes. For volume applications the CBT-491 is a pneumatically operated, vibra-bowl crimper offering a more economical approach than belt-fed contacts.

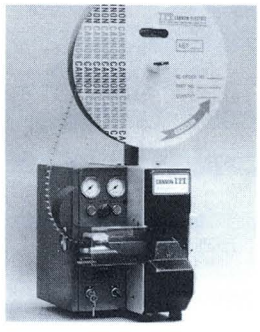
For low volume **stamped contact** applications CCT type hand tools deliver a reliable crimp with minimal expense. For higher volumes the pneumatically operated ABT-607 is available for lease. For maximum savings the ABT-500 stripper and crimper uses stamped reeled contacts and terminates in one easy operation. Our newest machine the ABT-620 is also designed for highest volume lowest installed cost applications.



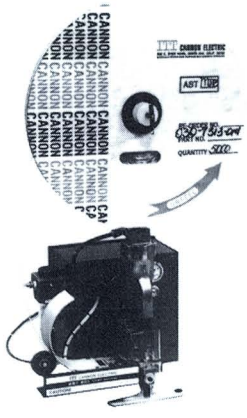
ABT-500 UCCS
Strip-Crimp Machine



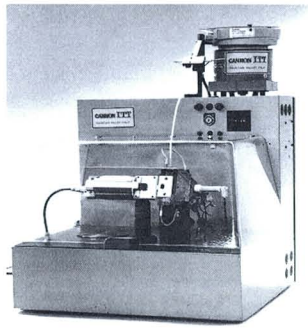
ABT-500 UCCD
Crimp Machine



ABT-620-UCCS
Strip-Crimp Machine



ABT-607
Pneumatic Crimp Machine



CBT-491
Crimp Machine

CBT-565

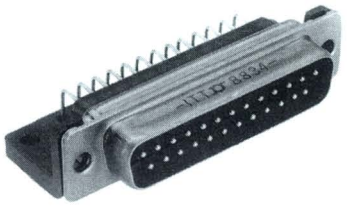
CPT-D*C

Contact Type	Volume	Contact Size	Tool Part No.	Lease/ Purchase
Machined	Low/Medium	All	CBT-565	Purchase
	High Volume	All	CBT-491	Both
Stamped	Low Volume	All	CPT-D*C	Purchase
	Medium/High	All	ABT-607	Lease
	High	All	ABT-500	Lease
			ABT-620	Lease

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Machined and Stamped Contacts, Crimp and Printed Circuit Termination

How to Order – 90° PC Tails



90° Printed Circuit Connectors With Cadmium Shells

Number of Contacts (Shell Size)	Part Numbers: .028 Dia. .156 Inch Ext. Stamped Contacts Plastic Bracket Pin/Socket	.024 Dia. .156 Inch Ext. Machined Contacts Plastic Brackets Pin/Socket	.028 Dia. .156 Inch Ext. Stamped Contacts Metal Bracket Pin/Socket
9(E)	DEU9PAA or SAA	DEU9PAD or SAD	DEU9PCA or SCA
15(A)	DAU15PAA or SAA	DAU15PAD or SAD	DAU15PCA or SCA
25(B)	DBU25PAA or SAA	DBU25PAD or SAD	DBU25PCA or SCA
37(C)	DCU37PAA or SAA	DCU37PAD or SAD	DCU37PCA or SCA
50(D)	DDU50PAA or SAA	DDU50PAD or SAD	DDU (Not available with metal bracket)

90° Printed Circuit Connectors With Tin Shells, Plastic Bracket

Number of Contacts (Shell Size)	Part Numbers: With Dimples (Pin)	Without Dimples (Socket)
9 (E)	DEU-9PAA-K87	DEU-9SAA-A197
15 (A)	DAU-15PAA-K87	DAU-15SAA-A197
25 (B)	DBU-25PAA-K87	DBU-25SAA-A197
37 (C)	DCU-37PAA-K87	DCU-37SAA-A197
50 (D)	DDU-50PAA-K87	DDU-50SAA-A197

90° Printed Circuit Connectors With Tin Shells, Metal Bracket and .545 Footprint

Number of Contacts (Shell Size)	Part Numbers: With Dimples (Pin)	Without Dimples (Socket)
9 (E)	DEU-9PCA-K87	DEU-9SCA-A197
15 (A)	DAU-15PCA-K87	DAU-15SCA-A197
25 (B)	DBU-25PCA-K87	DBU-25SCA-A197
37 (C)	DCU-37PCA-K87	DCU-37SCA-A197
50 (D)	Not available	Not available

How to Order – Straight PC Tail

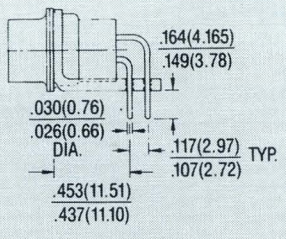
Number of Contacts (Shell Size)	Part Numbers: .028 Dia. .144 Inch Ext. Stamped Contacts Pin/Socket	.024 Dia. .144 Inch Ext. Machined Contacts Pin/Socket
9(E)	DEU9PBB or SBB	DEU9PBF or SBF
15(A)	DAU15PBB or SBB	DAU15PBF or SBF
27(B)	DBU25PBB or SBB	DBU25PBF or SBF
37(C)	DCU37PBB or SBB	DCU37PBF or SBF
50(D)	DDU50PBB or SBB	DDU50PBF or SBF

Dimensions – 90° PC Tails

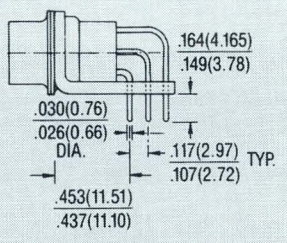
STAMPED CONTACTS are factory-installed in connectors and cannot be ordered separately.

CODE AA: PLASTIC BRACKET
Connectors come with contacts installed and are supplied with plastic mounting bracket.
Typical Part Number: DCU-37P-AA

Plastic Bracket Material: Thermoplastic, UL 94V-0 rated.
Color: Black
Board Layout: See page 283
Connectors are fully assembled.



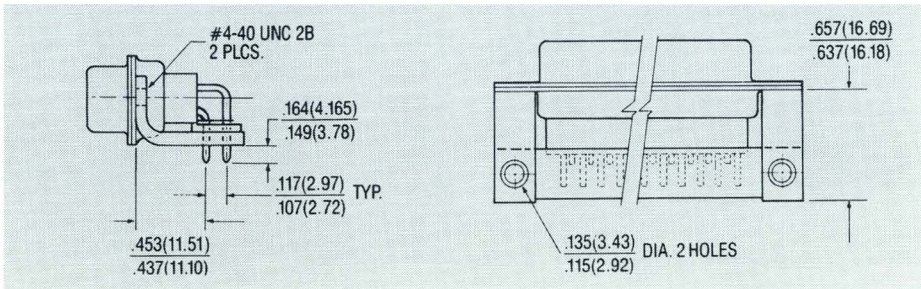
DE, DA, DB, DC SIZES



DD SIZE

CODE AA-F202: METAL BRACKET
Connectors come with contacts installed and are supplied with a metal bracket.
Typical Part Number: DAU-15S-AA-F202.

Bracket Material: Zinc, tin-plated
Board Layout: See page 283
Consult factory for DD-50 layout

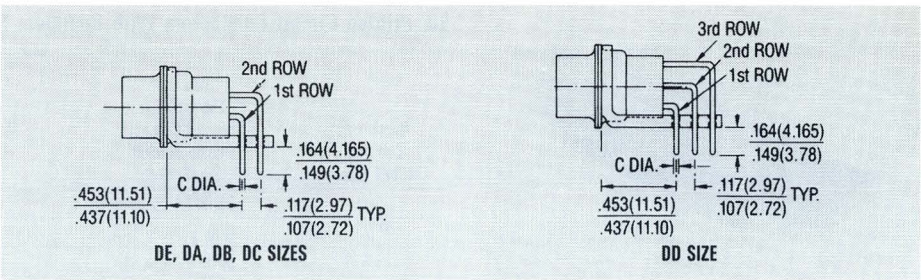


Machined and Stamped Contacts, Crimp and Printed Circuit Termination

Dimensions - 90° PC Tail (continued)

MACHINED CONTACTS can be ordered either installed in connectors or in bulk.

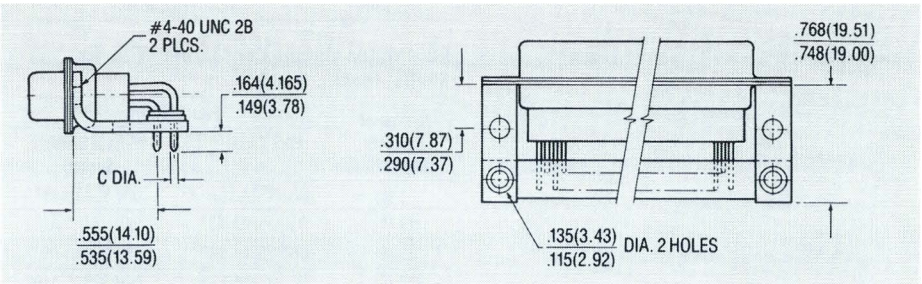
CODE AD: PLASTIC BRACKET
Connectors come with contacts installed and are supplied with plastic mounting bracket.
Typical Part Number: DBU-25S-AD



STAMPED CONTACTS are factory installed in connector and cannot be ordered separately.

CODE CA: METAL BRACKET
Connectors come with contacts installed and are supplied with a metal bracket.
Typical Part Number: DEU-9P-CA

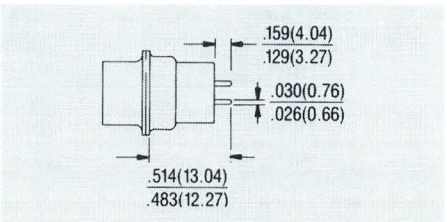
Bracket Material: Zinc, tin-plated
Board Layout: See page 283
DD-50 layout not available with metal bracket



Dimensions – Straight PC Tail

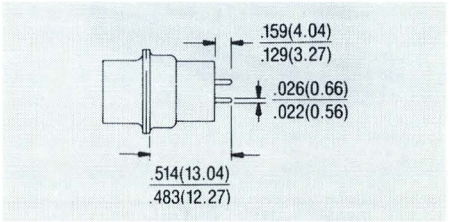
STAMPED CONTACTS are factory installed in connectors and cannot be ordered separately.

CODE BB: Typical Part Number: DBU-25S-BB

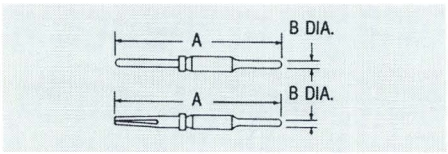


MACHINED CONTACTS can be ordered either installed in the connector, or connectors and contacts may be ordered separately.

CODE BF: Connectors with contacts installed
Typical Part No. DBU-25P-BF.

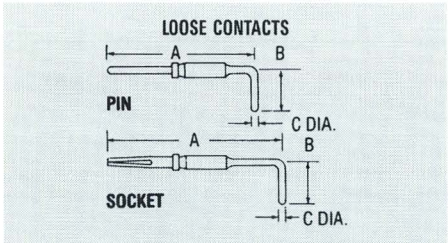


How to Order Straight Machined PC Contacts Separately



	Contact Part Number	A ± .010 (0.25)	B ± .002 (0.51) Dia. Type
Pin	030-1989-000	.730 (18.5)	.024 (0.61)
Socket	030-1990-000	.710 (18.0)	.024 (0.61)

How to Order 90° Contacts Separately



	Row	Contact Part Number	A	B	C ± .002(0.51) Dia. Typ.
Pin	1st	030-2086-000	.684(17.37)	.345(8.76)	.024(0.61)
*Pin	2nd	030-2087-000	.796(20.21)	.457(11.61)	.024(0.61)
**Pin	3rd	030-2088-000	.908(23.06)	.569(14.45)	.024(0.61)
Socket	1st	030-2089-000	.666(16.92)	.345(8.76)	.024(0.61)
*Socket	2nd	030-2090-000	.778(19.76)	.457(11.61)	.024(0.61)
**Socket	3rd	030-2091-000	.890(22.61)	.569(14.45)	.024(0.61)

*2nd row for shell sizes E, A, B and C starting from cavity 1.
**3rd row for shell size D only, starting from cavity 1.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Stamped Contacts, Crimp Termination, Industry Compatible

Standard Data

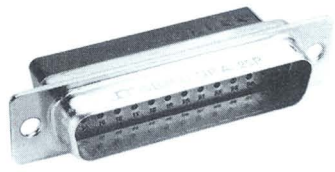
MATERIALS AND FINISHES

	Material	Finish
Shell	Steel	Tin or yellow chromate over zinc
Insulator	Glass-filled thermoplastic, UL 94V-0 rated	—
Contacts	Copper alloy	Gold over nickel plate.

ELECTRICAL

Contact Current Rating (Size 20):	7.5A
Contact Resistance:	15 milliohms (max.)
Dielectric Withstanding Voltage:	1000 Vac
Insulation Resistance:	5000 Megohms
Contact Retention:	Greater than 9 lbs.
Temperature Rating:	−55° to +125°C

How to Order



Connectors With Tin Shells

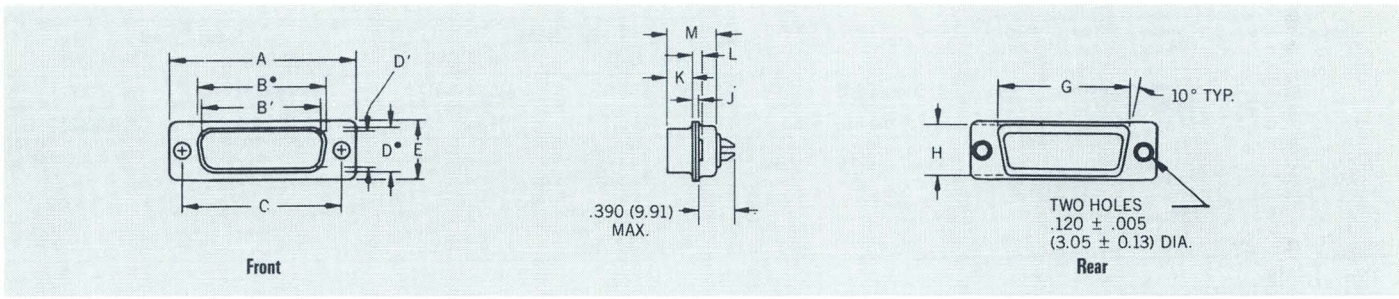
Number of Positions (Shell Size)	Part Numbers	
	Pin Connector With Grounding Indents	Socket Connector
9(E)	DEA9P-K87-F0	DEA9S-A197-F0
15(A)	DAA15P-K87-F0	DAA15S-A197-F0
25(B)	DBA25P-K87-F0	DBA25S-A197-F0
37(C)	DCA37P-K87-F0	DCA-37S-A197-F0
50(D)	DDA50P-K87-F0	DDA-50S-A197-F0

Connectors With Zinc Shells

Number of Positions (Shell Size)	Part Numbers	
	Pin Connector	Socket Connector
9 (E)	DEA9P-F0	DEA9S-F0
15 (A)	DAA15P-F0	DAA15S-F0
25 (B)	DBA25P-F0	DBA25S-F0
37 (C)	DCA37P-F0	DCA37S-F0
50 (D)	DDA50P-F0	DDA50S-F0

(F0 = less contacts)

Dimensions



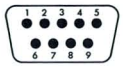
Part No. by Shell Size	A ±0.016 (0.4)	B• ±0.012 (0.3)	B′ ±0.012 (0.3)	C ±0.008 (0.2)	D• ±0.012 (0.3)	D′ ±0.012 (0.3)	E ±0.016 (0.4)	G• ±0.012 (0.3)	H• ±0.012 (0.3)	J ±0.012 (0.3)	K ±0.012 (0.3)	L Max	M ±0.012 (0.3)
DEA-9P	1.213 (30.8)	— —	0.665 (16.9)	0.984 (25.0)	— —	0.331 (8.4)	0.492 (12.5)	0.760 (19.3)	0.421 (10.7)	0.031 (0.8)	0.236 (6.0)	0.075 (1.90)	0.421 (10.7)
DEA-9S	1.213 (30.8)	0.642 (16.3)	— —	0.984 (25.0)	0.307 (7.8)	— —	0.492 (12.5)	0.760 (19.3)	0.421 (10.7)	0.031 (0.8)	0.244 (6.2)	0.075 (1.90)	0.429 (10.9)
DAA-15P	1.539 (39.1)	— —	0.996 (25.3)	1.311 (33.3)	— —	0.331 (8.4)	0.492 (12.5)	1.083 (27.5)	0.421 (10.7)	0.031 (0.8)	0.236 (6.0)	0.075 (1.90)	0.421 (10.7)
DAA-15S	1.539 (39.1)	0.969 (24.9)	— —	1.311 (33.3)	0.307 (7.8)	— —	0.492 (12.5)	1.083 (27.5)	0.421 (10.7)	0.031 (0.8)	0.244 (6.2)	0.075 (1.90)	0.429 (10.9)
DBA-25P	2.087 (53.0)	— —	1.535 (39.0)	1.850 (47.0)	— —	0.331 (8.4)	0.492 (12.5)	1.626 (41.3)	0.421 (10.7)	0.039 (1.0)	0.232 (5.9)	0.075 (1.90)	0.429 (10.9)
DBA-25S	2.087 (53.0)	1.508 (38.3)	— —	1.850 (47.0)	0.307 (7.8)	— —	0.492 (12.5)	1.626 (41.3)	0.421 (10.7)	0.031 (0.8)	0.244 (6.2)	0.075 (1.90)	0.429 (10.9)
DCA-37P	2.728 (69.3)	— —	2.181 (55.4)	2.500 (63.5)	— —	0.331 (8.4)	0.492 (12.5)	2.272 (57.7)	0.421 (10.7)	0.039 (1.0)	0.232 (5.9)	0.075 (1.90)	0.425 (10.8)
DCA-37S	2.728 (69.3)	2.157 (54.8)	— —	2.500 (63.5)	0.307 (7.8)	— —	0.492 (12.5)	2.272 (57.7)	0.421 (10.7)	0.031 (0.8)	0.244 (6.2)	0.075 (1.90)	0.429 (10.9)
DDA-50P	2.634 (66.9)	— —	2.079 (52.8)	2.406 (61.1)	— —	0.437 (11.1)	0.606 (15.4)	2.177 (55.3)	0.535 (13.6)	0.039 (1.0)	0.232 (5.9)	0.075 (1.90)	0.429 (10.9)
DDA-50S	2.634 (66.9)	2.063 (52.4)	— —	2.406 (61.1)	0.421 (10.7)	— —	0.606 (15.4)	2.177 (55.3)	0.535 (13.6)	0.031 (0.8)	0.244 (6.2)	0.075 (1.90)	0.429 (10.9)

NOTE: Dimensions B•, D•, G• and H• are measured as outside dimensions at the bottom of the draw. B• and D• are the O.D. dims. for socket side; B′ and D′ are the dims. for pin side.

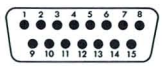
Stamped Contacts, Crimp Termination, Industry Compatible

Contact Arrangements

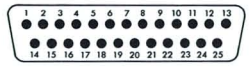
Face view, pin insert



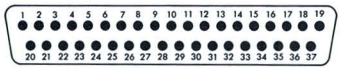
Shell Size	**E**
Contact Arrangement	**9**
Contact Size	**#20**



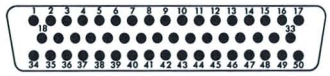
Shell Size	**A**
Contact Arrangement	**15**
Contact Size	**#20**



Shell Size	**B**
Contact Arrangement	**25**
Contact Size	**#20**



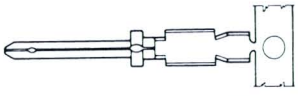
Shell Size	**C**
Contact Arrangement	**37**
Contact Size	**#20**



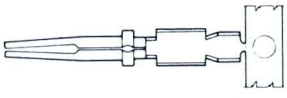
Shell Size	**D**
Contact Arrangement	**50**
Contact Size	**#20**

How to Order – Contacts

Stamped contacts with insulation support are supplied on reels of 10,000 for use with semi-automatic strip and crimp machines, or loose for use with hand crimp tooling. Two sizes are available to accommodate wire ranges 20-28 AWG.



Pin



Socket

Stamped Contacts — 10,000 Pieces per Reel

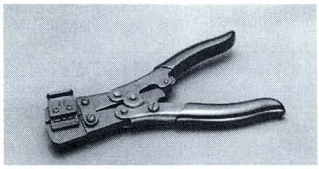
	Part Number			
	Pin Contact		Socket Contact	
	24-28 AWG	20-24 AWG	24-28 AWG	20-24 AWG
Standard Gold	D110238-476	D110238-475	D110238-478	D110238-477
Selective Gold (30μ)	D110238-472	D110238-471	D110238-474	D110238-473

Loose Contacts (Order Multiples of 100)

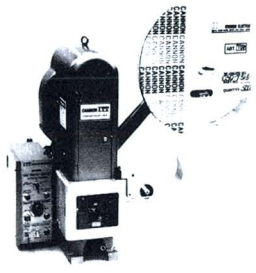
	Part Number			
	Pin Contact		Socket Contact	
	24-28 AWG	20-24 AWG	24-28 AWG	20-24 AWG
Standard Gold	030-2487-013	030-2487-012	030-2488-013	030-2488-012
Selective Gold (30μ)	030-2487-015	030-2487-014	030-2488-015	030-2488-014

Crimp Tools

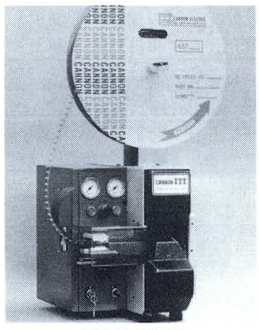
Semi-automatic and hand crimp tools are available for crimping D*A contacts. For high volumes and maximum savings, Cannon offers the ABT-500-UCCD crimper, the ABT-500-UCCS stripper-crimper, or the new ABT-620-UCCS stripper-crimper for crimping stamped, reeled contacts. These semi-automatic machines will crimp up to 1200 contacts per hour, and are leased through the Customer Use Tooling Dept. For low volume, the CCT-D*A-1 hand crimp tool is available for crimping loose piece contacts.



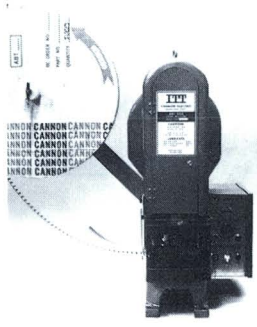
CCT-D*A-1
995-2000-000



ABT-500-UCCS
Strip Crimp Machine



ABT-620-UCCS
Strip-Crimp Machine



ABT-500-UCCD
Crimp Machine

Insertion / Extraction Tool

A single plastic insertion / extraction tool with metal tips is available. The insertion side is colored and the extraction side is white. Also available is an all metal extraction tool, CET-20-D (995-0001-695).

Wire Size	Description	Part Number
20-24	CIET-D*A-20-24	980-0008-135
24-28	CIET-D*A-24-28	980-0008-136

ITT Cannon

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

90° All Plastic, Printed Circuit Termination

Standard Data

MATERIAL AND FINISHES

	Materials	Finishes
Housing/Retainer	Glass-filled thermoplastic, UL 94V-0 rated, black	—
Contacts	Copper alloy, stamped	Engaging End: Gold over nickel electroplate Termination End: Tin/Lead electroplate

MECHANICAL FEATURES

Coupling — Friction

Polarization — Keystone shape

Contact Type — Captivated

Contact Termination — Solder

PERFORMANCE SPECIFICATIONS

Current Rating — 3 Amps

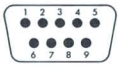
Dielectric Withstanding Voltage — 600 VAC sea level

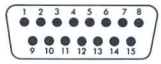
Insulation Resistance — 1000 megohms minimum

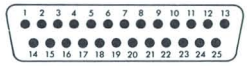
Temperature Range — −55°C to +125°C

Contact Arrangements

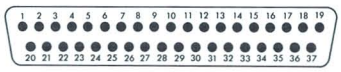
Face View, Pin Insert

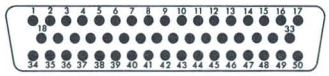






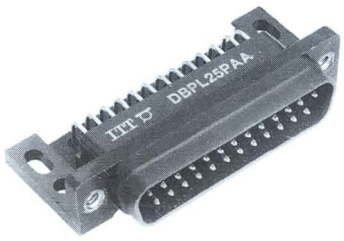
Shell Size	E	A	B
Contact Arrangement	9	15	25
Contact Size	#20	#20	#20





Shell Size	C	D
Contact Arrangement	37	50
Contact Size	#20	#20

How To Order



AA Style (.478 Footprint)

Number of Contacts (Shell Size)	Part Numbers .120 Mounting Hole Pin/Socket	4-40 Threaded Inserts Installed Pin/Socket	4-40 Female Screwlock Installed Pin/Socket
9 (E)	DEP-9PAA or SAA	DEPL-9PAA or SAA	DEPM-9PAA or SAA
15 (A)	DAP-15PAA or SAA	DAPL-15PAA or SAA	DAPM-9PAA or SAA
25 (B)	DBP-25PAA or SAA	DBPL-25PAA or SAA	DBPM-9PAA or SAA
37 (C)	DCP-37PAA or SAA	DCPL-37PAA or SAA	DCPM-9PAA or SAA
50 (D)	DDP-50PAA or SAA	DDPL-50PAA or SAA	DDPM-9PAA or SAA

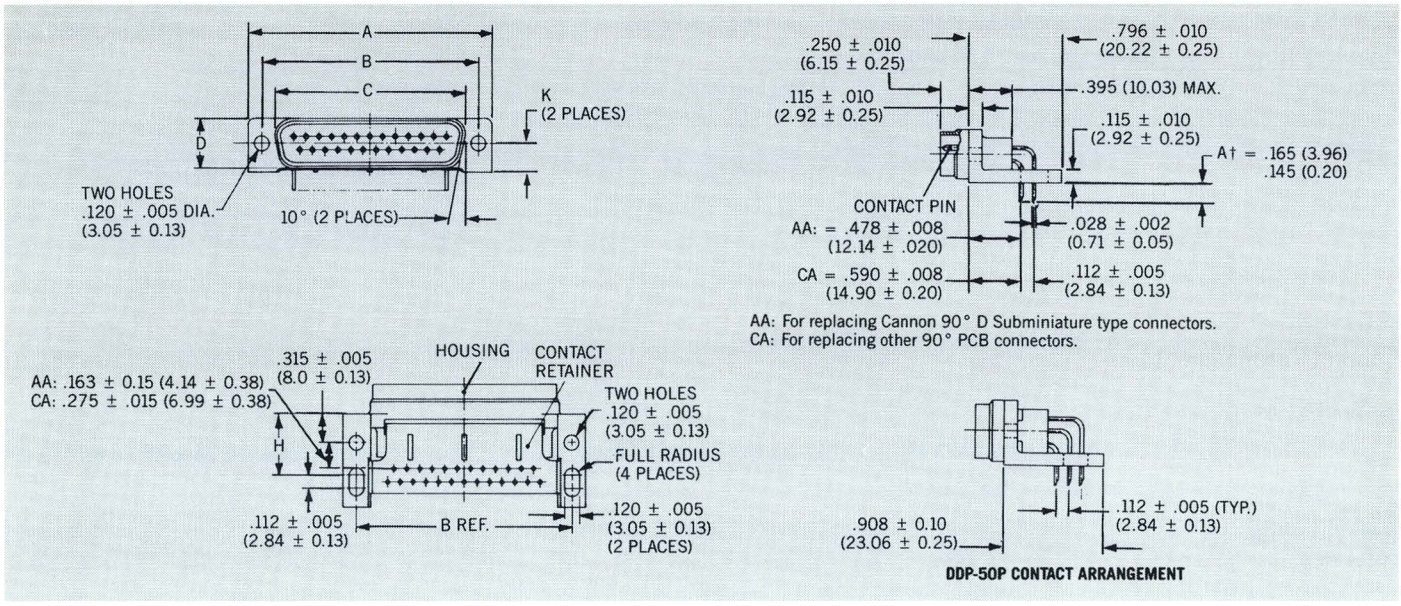
CA Style (.590 Footprint)

Number of Contacts (Shell Size)	Part Numbers .120 Mounting Hole Pin/Socket	4-40 Threaded Inserts Installed Pin/Socket	4-40 Female Screwlock Installed Pin/Socket
9 (E)	DEP-9PCA or SCA	DEPL-9PCA or SCA	DEPM-9PCA or SCA
15 (A)	DAP15PCA or SCA	DAPL-15PCA or SCA	DAPM-15PCA or SCA
25 (B)	DBP25PCA or SCA	DBPL-25PCA or SCA	DBPM-25PCA or SCA
37 (C)	DCP37PCA or SCA	DCPL-37PCA or SCA	DCPM-37PCA or SCA
50 (D)	Not available	Not available	Not available

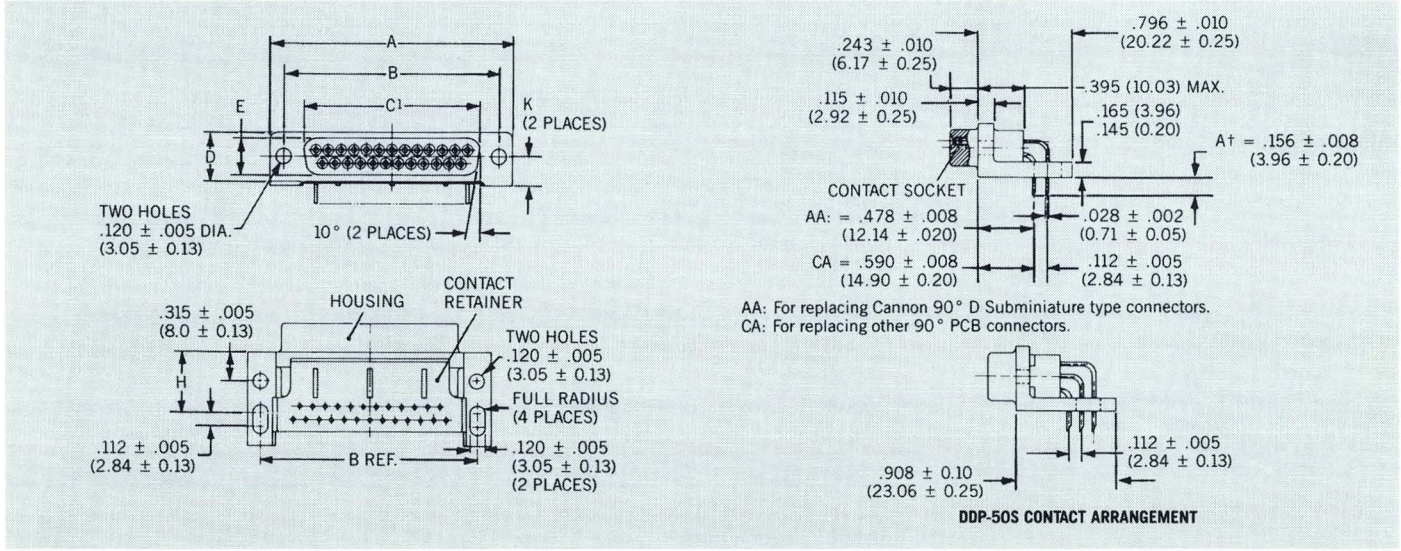
90° All Plastic, Printed Circuit Termination

Dimensions

Pin Connector



Socket Connector



See page 283 for PC Board hole patterns.

Part Number by Shell Size	A ±.015 (0.38)	B ±.005 (0.13)	C ±.010 (0.25)	C' ±.005 (0.13)	D ±.015 (0.38)	E ±.005 (0.13)	H ±.005 (0.13)	K ±.010 (0.25)
DEP-9P*	1.213 (30.81)	.984 (24.99)	.752 (19.10)	—	.419 (10.64)	—	.523 (13.28)	.245 (6.22)
DEP-9S*	1.213 (30.81)	.984 (24.99)	—	.643 (16.33)	.419 (10.64)	.311 (7.90)	.523 (13.28)	.245 (6.22)
DAP-15P*	1.543 (39.19)	1.312 (39.19)	1.080 (27.43)	—	.419 (10.64)	—	.523 (13.28)	.245 (6.22)
DAP-15S*	1.543 (39.19)	1.312 (39.19)	—	.971 (24.66)	.419 (10.64)	.311 (7.90)	.523 (13.28)	.245 (6.22)
DBP-25P*	2.085 (52.96)	1.852 (47.04)	1.620 (41.15)	—	.419 (10.64)	—	.523 (13.28)	.245 (6.22)
DBP-25S*	2.085 (52.96)	1.852 (47.04)	—	1.511 (38.38)	.419 (10.64)	.311 (7.90)	.523 (13.28)	.245 (6.22)
DCP-37P*	2.729 (69.32)	2.500 (63.50)	2.268 (57.61)	—	.419 (10.64)	—	.523 (13.28)	.245 (6.22)
DCP-37S*	2.729 (69.32)	2.500 (63.50)	—	2.159 (54.84)	.419 (10.64)	.311 (7.90)	.523 (13.28)	.245 (6.22)
DDP-50P*	2.635 (66.93)	2.406 (61.11)	2.168 (55.07)	—	.525 (13.34)	—	.558 (14.17)	.300 (7.62)
DDP-50S*	2.635 (66.93)	2.406 (61.11)	—	2.064 (52.43)	.525 (13.34)	.423 (10.74)	.558 (14.17)	.300 (7.62)

*Add PC Termination Type

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Speedy D IDC Termination

Standard Data

MATERIALS AND FINISHES

Shell (Standard)	Steel, with yellow chromate over zinc
Insulator	High quality thermoplast, flame retardant, UL94V-0 rated
Contacts	Copper alloy (CuBe)
Contact area	Gold-plated over nickel
Termination area	Tinned

MECHANICAL FEATURES

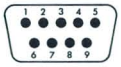
Coupling	Friction, accessories
Polarizing	Keystone shape
Termination	IDC
Wire sizes	AWG 26-28 stranded or solid
Ribbon cable	Conductor spacing .050 (1.27)
Max. operating temperature	−67°F to +267°F (−55°C to +125°C)

ELECTRICAL DATA

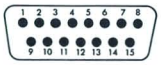
Current rating	1 Amp
Test voltage	750 V_{rms}
Insulation resistance	1000 megohms min.
Contact resistance	15 milliohms max.

Contact Arrangements

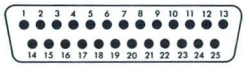
Face View, Pin Insert



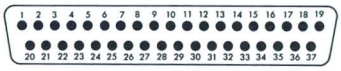
DE-9



DA-15



DB-25



DC-37

How to Order

Yellow Chromate Over Zinc Plating

Number of Contacts (Shell Size)	Part Numbers: .120 Through-Hole Mounting Pin/Socket	Float Mount Pin/Socket	4-40 Clinch Nut Pin/Socket
9(E)	DESF-9P or S	DESFY-9P or S	DESFE-9P or S
15(A)	DASF-15P or S	DASFY-15P or S	DASFE-15P or S
25(B)	DBSF-25P or S	DBSFY-25P 94 S	DBSFE-25P or S
37(C)	DCSF-37P or S	DCSFY-37P or S	DCSFE-37P or S

Tin Shell Plating

Number of Contacts (Shell Size)	Part Numbers: .120 Through-Hole With Grounding Indents (Pin Only)	.120 Through-Hole Socket
9(E)	DESF-9P-K87	DESF-9S-A197
15(A)	DASF-15P-K87	DASF-15S-A197
25(B)	DBSF-25P-K87	DBSF-25S-A197
37(C)	DCSF-37P-K87	DCSF-37S-A197

Number of Contacts (Shell Size)	Part Numbers: Float Mounting Pin	Float Mounting Socket
9(E)	DESFY-9P-K87	DESFY-9S-A197
15(A)	DASFY-15P-K87	DASFY-15S-A197
25(B)	DBSFY-25P-K87	DBSFY-25S-A197
37(C)	DCSFY-37P-K87	DCSFY-37S-A197

Number of Contacts (Shell Size)	Part Numbers: 4-40 Clinch Nut Pin	4-40 Clinch Nut Socket
9(E)	DESFE-9P-K87	DESFE-9S-A197
15(A)	DASFE-15P-K87	DASFE-15S-A197
25(B)	DBSFE-25P-K87	DBSFE-25S-A197
37(C)	DCSFE-37P-K87	DCSFE-37S-A197

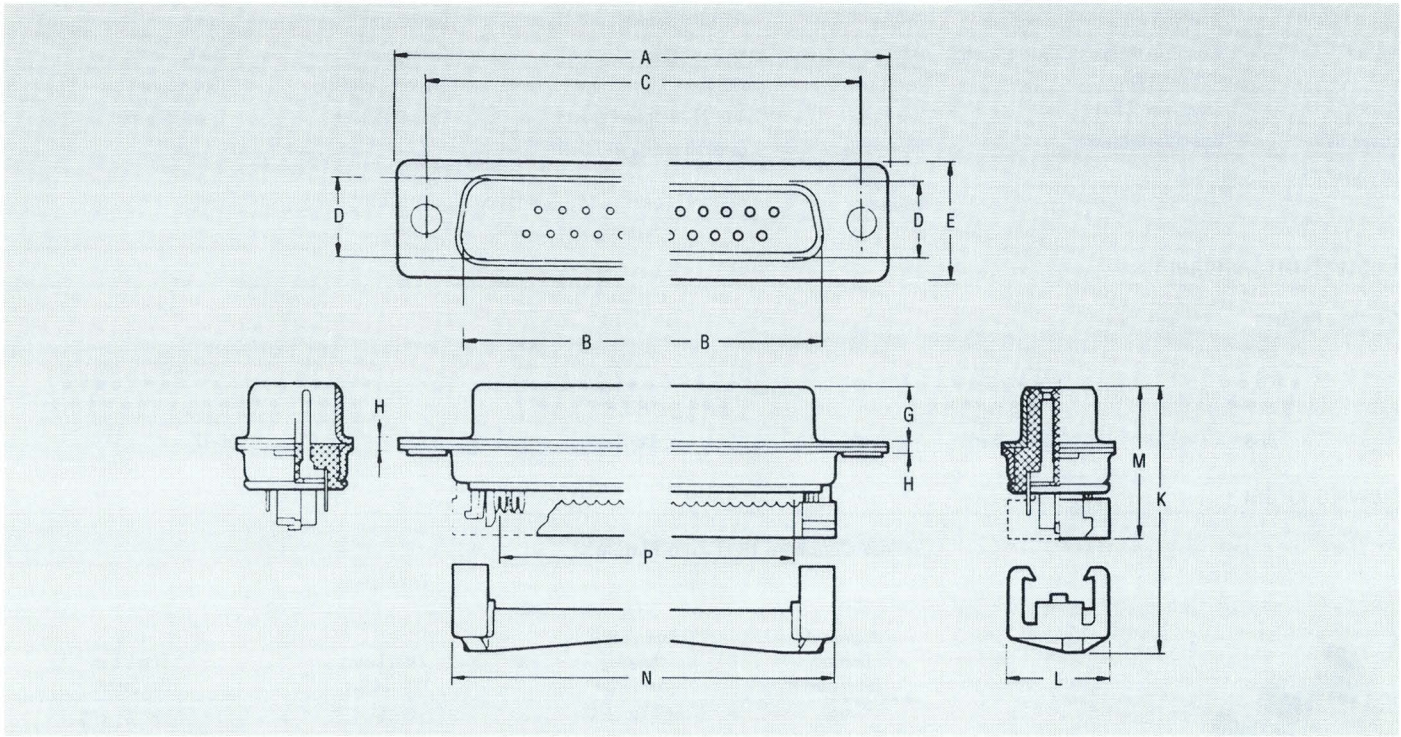
Cable Strain Relief

Shell Size	Part Number
9 (E)	029-8757-009
15 (A)	029-8757-015
25 (B)	029-8757-025
37 (C)	029-8757-037

Speedy D IDC Termination

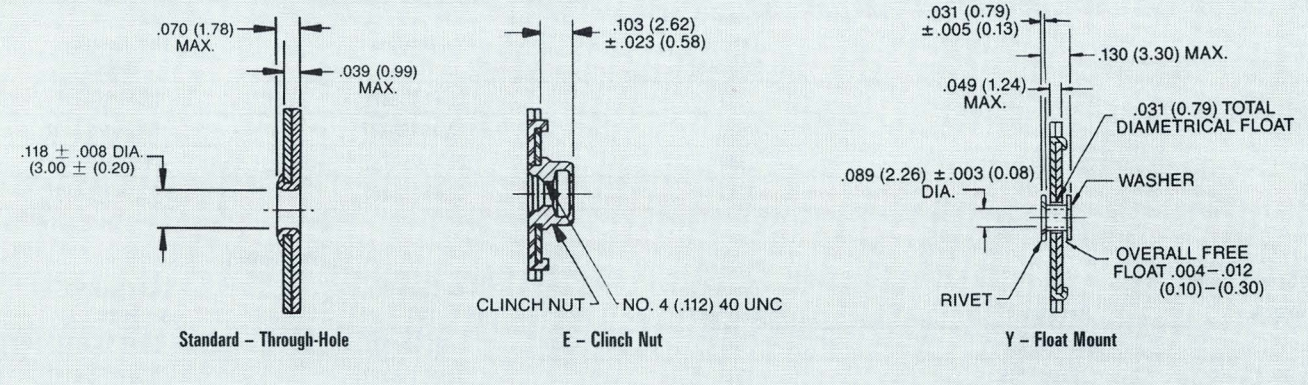
Dimensions

Pin connector Socket connector



Number of Contacts	A ±.015(0.3)	B ±.006(0.15)	C ±.012(0.3)	D ±.008(0.2)	E	G max.	H ±.008(0.2)	K ±.008(0.2)	L ±.006(0.15)	M ±.006(0.15)	N	P
DESF-9P	1.213 (30.8)	.661 (16.8)	.984 (25.0)	.331 (8.4)	.492 (12.5)	.236 (6.0)	.039 (1.0)	1.016 (25.8)	.433 (11)	.630 (16.0)	.764 (19.4)	8 x .050(1.27)=.400(10.16)
DESF-9S	1.213 (30.8)	.640 (16.25)	.984 (25.0)	.307 (7.8)	.492 (12.5)	.244 (6.2)	.031 (0.8)	1.024 (26.0)	.433 (11)	.638 (16.2)	.764 (19.4)	
DASF-9P	1.541 (39.1)	.988 (25.1)	1.311 (33.3)	.331 (8.4)	.492 (12.5)	.236 (6.0)	.039 (1.0)	1.016 (25.8)	.433 (11)	.630 (16.0)	1.091 (27.7)	14 x .050(1.27)=.700(17.78)
DASF-9S	1.541 (39.1)	.967 (24.55)	1.311 (33.3)	.307 (7.8)	.492 (12.5)	.244 (6.2)	.031 (0.8)	1.024 (26.0)	.433 (11)	.638 (16.2)	1.091 (27.7)	
DBSF-25P	2.088 (53.0)	1.530 (38.85)	1.850 (47.0)	.331 (8.4)	.492 (12.5)	.232 (5.9)	.039 (1.0)	1.020 (25.9)	.433 (11)	.634 (16.1)	1.630 (41.4)	24 x .050(1.27)=1.200(30.48)
DBSF-25S	2.088 (53.0)	1.508 (38.3)	1.850 (47.0)	.307 (7.8)	.492 (12.5)	.244 (6.2)	.031 (0.8)	1.024 (26.0)	.433 (11)	.638 (16.2)	1.630 (41.4)	
DCSF-25P	2.729 (69.3)	2.177 (55.3)	2.500 (63.5)	.331 (8.4)	.492 (12.5)	.232 (5.9)	.039 (1.0)	1.020 (25.9)	.433 (11)	.634 (16.1)	2.280 (57.9)	36 x .050(1.27)=1.800(45.72)
DCSF-37S	2.729 (69.3)	2.156 (54.75)	2.500 (63.5)	.307 (7.8)	.492 (12.5)	.244 (6.2)	.031 (0.8)	1.024 (26.0)	.433 (11)	.638 (16.2)	2.280 (57.9)	

Mounting Methods



Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Gender Changer

Standard Data

MATERIALS AND FINISHES

Part		Material	Finish
Contacts		Copper Alloy	Gold Over Nickel
Rivets			Tin/Lead
Shells		Steel	
Insulator:	M/M	Glass Epoxy	
	F/F	Thermo Plastic	
Locking Nut		Steel	Clear Chromate Over Cadmium
Washers			
Washer, Captive		Mylar	None

MECHANICAL FEATURES

Coupling – Friction and lock accessories

Polarization – Keystone-shaped shells

PERFORMANCE SPECIFICATIONS

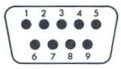
Temperature Rating: −55° to +105°C

Current Rating: 3 Amp continuous

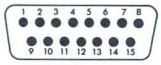
Dielectric Withstanding Voltage: 500 VAC at Sea Level

Contact Arrangements

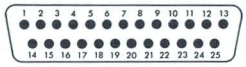
Face View Pin Insert



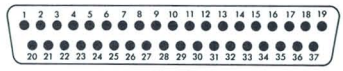
DE-9



DA-15



DB-25



DC-37

How To Order

Male/Male

Number of Contacts (Shell Size)	Part Number			
	With Grounding Indents †	With Grounding Indents/With Hardware Assembled	Without Grounding Indents	Without Grounding Indents/With Hardware Assembled
9 (E)	DE111805-1	DE111805-5	DE111805	DE111805-4
15 (A)	DA111806-1	DA111806-5	DA111806	DA111806-4
25 (B)	DB111807-1	DB111807-5	DB111807	DB111807-4
37 (C)	DC111808-1	DC111808-5	DC111808	DC111808-4

Hardware Kit: D111809-1*

† Indents available on male/male only

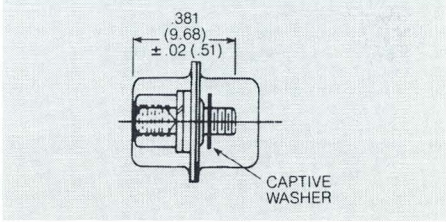
Female/Female

Number of Contacts (Shell Size)	Part Number	
	Without Hardware	With Hardware Assembled
9 (E)	DE111813	DE111813-3
15 (A)	DA111810	DA111810-3
25 (B)	DB111811	DB111811-2
37 (C)	Not Available	Not Available

Hardware Kit: D111924-1*

*Kit contains 2 locking nuts, 2 split lockwashers and 2 mylar washers.

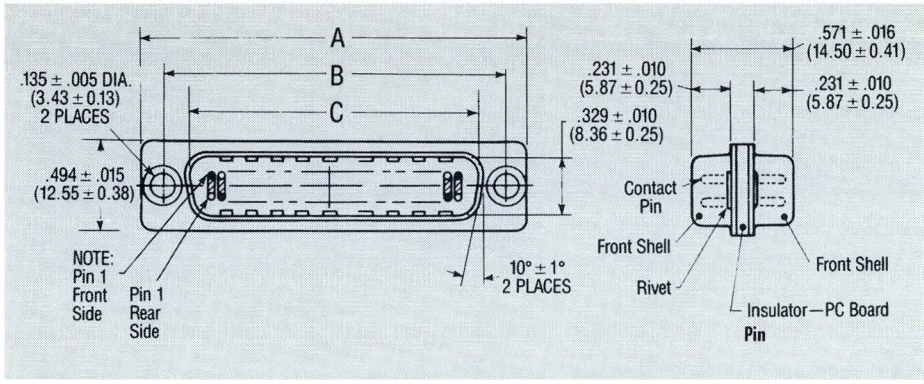
Locking nut and washers may be ordered separately or installed on connectors as shown.



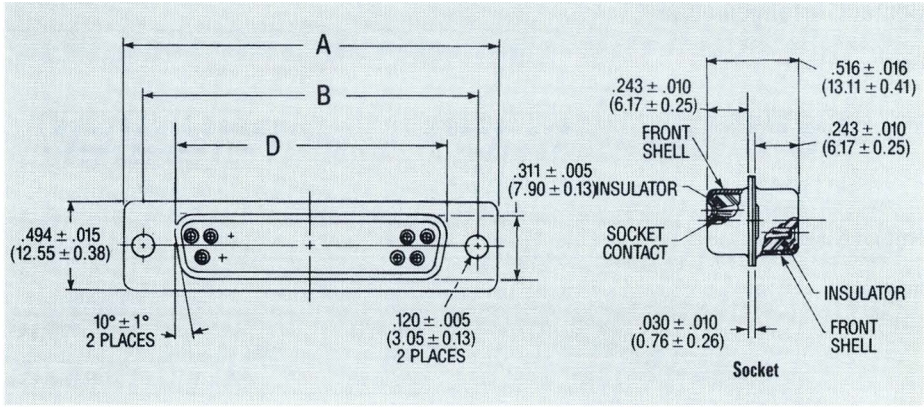
Gender Changer

Dimensions

Male/Male



Female/Female



Number of Contacts (Shell Size)	A ±.015 (0.4)	B ±.010 (0.25)	C ±.005 (0.13)	D ±.005 (0.13)
9 (E)	1.213 (30.81)	.984 (24.99)	.666 (16.92)	.643 (16.33)
15 (A)	1.541 (39.14)	1.312 (33.32)	.994 (25.25)	.971 (24.66)
25 (B)	2.088 (53.04)	1.852 (47.04)	1.534 (38.96)	1.511 (38.38)
37† (C)	2.729 (69.32)	2.500 (63.50)	2.192 (55.68)	†

† Size 37 not available in Female/Female.

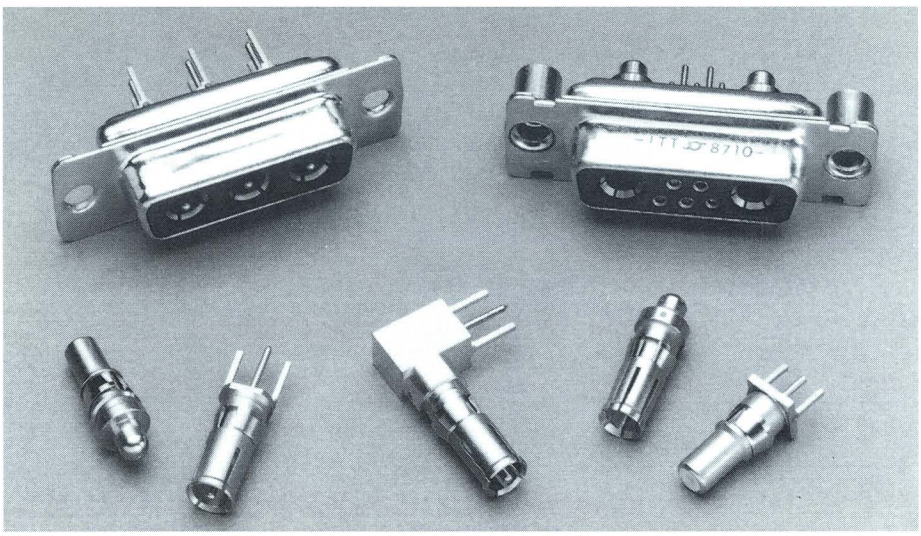
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Combination D Subminiature connectors are the fastest growing segment of the D Subminiature market. ITT Cannon engineering teams, in keeping pace with the demands of the industry, have developed the broadest selection of Combination D Subminiatures available.

We offer the ability to integrate signal and coax, high power, and high voltage. You can mix red, green, and blue video lines with signal and up to 40 amps of power in the same package.

Design variations of the new D Sub Combo, versus other packaging methods, include the proven ITT Cannon polarized "D" shape to prevent mismating; dense, space-saving packaging; and diverse mounting options. Choose from a variety of cable and printed wiring board selections. Printed wiring board combos come pre-assembled with fixed contacts eliminating the need to buy several components.

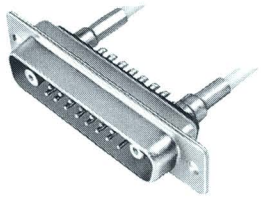
This new line of connectors offers you **unlimited design versatility**. If you would like more information about our Combination D Subminiature connector offering, please contact us.

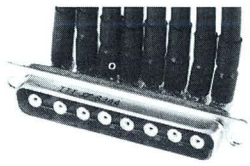


Straight and right angle printed wiring board contacts are available in both coax and high power versions.

Signal and Coaxial

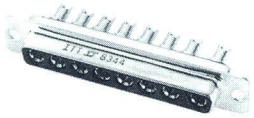
Page 254 to 264





Signal and Power

Pages 265 to 272

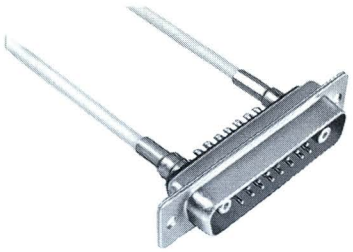


Signal and High Voltage

Pages 273 to 274

Combination D Subminiature – Coaxial

Coaxial Housing With Solder Cup Signal Contacts



- Cable Combinations supplied with preloaded solder signal contacts
- Coax contacts supplied separately (see pages 256-257)

D B MM - 5W5 P **

SERIES PREFIX
SHELL SIZE
CLASS
MOUNTING TYPE
CONTACT ARRANGEMENT
CONTACT TYPE
MODIFICATION

SERIES PREFIX
D

SHELL SIZE
A, B, C, D, E

CLASS
M – Commercial Version – One piece insulator with gold over nickel contact plating.
MM – Military Version – One piece insulator, materials, finishes and inspection per MIL-C-24308, as applicable. Military version supplied with cadmium over yellow chromate shells with 50 microinches gold over copper contact plating.

MOUNTING TYPE
No Designator: Standard .120 (3.05) diameter hole
E – Two clinch nuts for rear panel mounting
Y – Dual float mount for both front and rear panel mounting.

CONTACT ARRANGEMENTS
See below.

CONTACT TYPE
P – Pin
S – Socket

MODIFICATION–COMMERCIAL
A197 – Tin/Lead electroplated shells (receptacles), socket contacts.
K87 – Shell plated A197 with ground indent (plugs), pin contacts.
For other options consult ITT Cannon.

Contact Arrangements

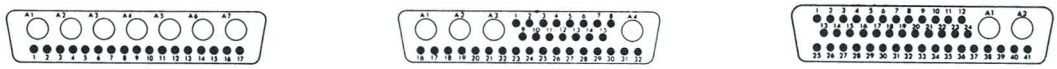
(Will accommodate Removable Coax, Power and/or High Voltage Contacts)

Note: Color Code — Pin Connector: Red, Socket Connector: Blue

Shell Size	E	A	A	A	B	B
Contact Arrangement	5W1	3W3	7W2	11W1	5W5	9W4
No. of Contacts	4	0	5	10	0	5
Contact Size	#20	—	#20	#20	—	#20
Coax or HV Cavities	1	3	2	1	5	4

Shell Size	B	B	B	C
Contact Arrangement	13W3	17W2	21W1	8W8
No. of Contacts	10	15	20	0
Contact Size	#20	#20	#20	—
Coax or HV Cavities	3	2	1	8

Shell Size	C	C	C	C
Contact Arrangement	13W6	17W5	21WA4	25W3
No. of Contacts	7	12	17	22
Contact Size	#20	#20	#20	#20
Coax or HV Cavities	6	5	4	3



Shell Size	D	D	D
Contact Arrangement	24W7	36W4	43W2
No. of Contacts	17	32	41
Contact Size	#20	#20	#20
Coax or HV Cavities	7	4	2

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Materials and Finishes

Cable and Straight PCB
Connector Assembly

Description	Material	Finish
Shell	Steel per ASTM A-620	Military: Yellow chromate over cadmium per QQ-P-416, Type II, CL2 Commercial: Electrodeposited Tin/Lead per MIL-T-10727 over Copper per MIL-C-14550, Class 2, Tin
Insulator	Diallyl Phthalate glass-filled per MIL-M-14, Type SDG-F, color green	None
Size 20 contacts when applicable	Copper alloy	Commercial: gold over nickel. Military: 50µ min gold per MIL-G-45204, Type II, Grade: C, Class I/Copper per MIL-C-14550
Coaxial Assembly		
Contacts and shells	Copper alloy	Commercial: gold over nickel. Military: 50µ min gold per MIL-G-45204, Type II, Grade C Class I / Copper per MIL-C-14550
Ring, retaining	Copper alloy	Nickel
Insulator	Teflon	None
Standoff	Leaded Brass	Commercial: Electrodeposited Tin/Lead per MIL-T-10727 over Copper per MIL-C-14550, Class 2, Tin

Right Angle PCB Receptacle
Connector Assembly

Description	Material	Finish
Shell	Steel per ASTM-A-620	Military: Yellow chromate over cadmium per QQ-P-416, Type II, Class 2 Commercial: Electrodeposited Tin/Lead per MIL-T-10727 over Copper per MIL-C-14550, Class 2
Bracket		
Rivnut		
Eyelet	Cartridge Brass	Commercial: Electrodeposited Tin/Lead per MIL-T-10727 over Copper per MIL-C-14550, Class 2, Tin
Insulator	Diallyl Phthalate glass-filled per MIL-M-14, Type SDG-F, color green	None
Contacts		
Size 20 signal contact where applicable Coax engaging end and inner conductor	Copper alloy	Commercial: gold per MIL-G-45204 over nickel per QQ-N-290 Military: gold per MIL-G-45204, Type II, Grade C, Class I over Copper per MIL-C-14550
Coaxial	Copper alloy	Electrodeposited Tin/Lead Per MIL-T-10727, over Copper Per MIL-C-14550, Class 2
Outer conductor		
Retaining Ring	Copper alloy	Nickel per QQ-N-290
Insulator	Teflon [TFE] per AMS 3651	None
8W8 PCB layouts may utilize polyester, color green, insulators		

Performance Data

Wire Accommodation (AWG)	See pages 256-257 for ordering information
Current Rating	5 Amp
Temperature Rating	−65°C to +150°C
Contact Resistance After Salt Spray, Millivolt Max.	55 @ 7.5 Amp test current

Dielectric Withstanding Voltage

		Altitude (feet/m)							
		Sea Level		20,000/6096		50,000/15240		70,000/1336	
Type of Contact		90°	Straight	90°	Straight	90°	Straight	90°	Straight
Center Conductor to Coaxial Shell	Average Flashover	1200	1500	900	1000	600	700	400	500
	Test	800	1000	600	650	400	475	275	325
Coaxial Shell to Nearest Standard Solder Pot Contact	Average Flashover	•	1500	•	1500	•	900	•	650
	Test	•	1000	•	1000	•	600	•	425
#20 Signal	Average Flashover	1700		1000		650		500	
	Test	1250		750		475		375	

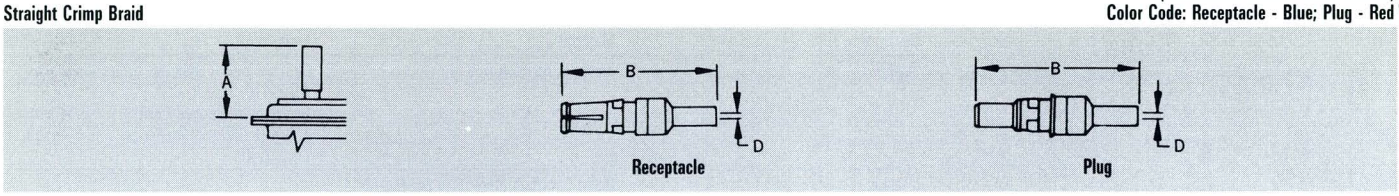
All voltage figures are rms AC 60 rms cps, measured at approximately +25°C, 50% rh.
For additional performance specifications refer to MIL-C-24308 Test Extracts on page 297.

Impedance: 50 ohm (75 ohm available)
VSWR: Less than 1.3–1.0 up to 500 megahertz
Insertion Loss: .1 db loss at 500 megahertz.

Cable Combinations – Coaxial Contacts

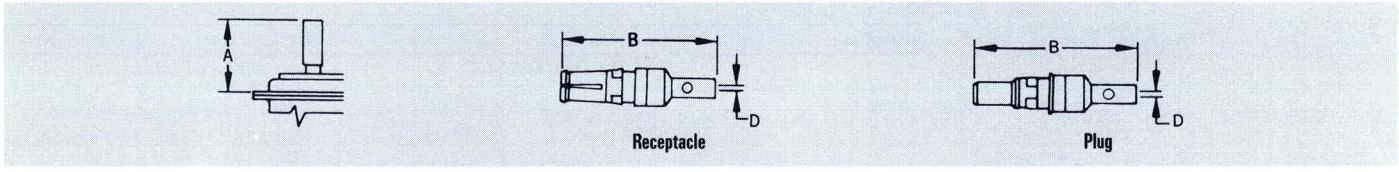
Straight Crimp Braid

(Dimensions include outer sleeve.)
Color Code: Receptacle - Blue; Plug - Red



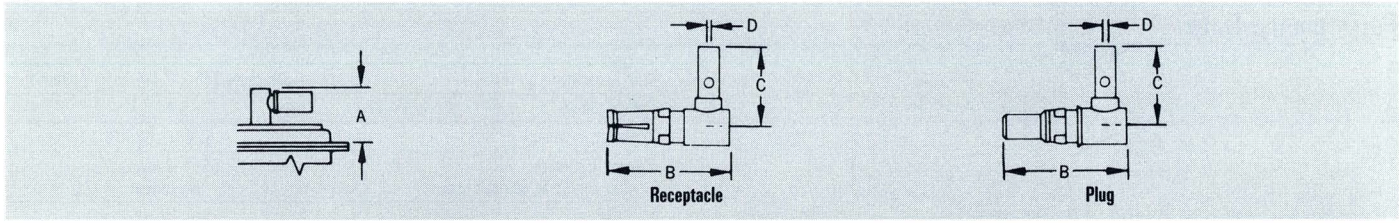
	Part Number		A	B	D	RG Cable No.	
	Standard Finish	Military Finish*	Max.		±.005 (0.13)	Old	New
Plug	DM53740	DM53740-17	.739 (18.8)	.945/.915 (24.00/23.24)	.040 (1.02)	196/U	178B/U
Plug	DM53740-1	DM53740-15	.739 (18.8)	.945/.915 (24.00/23,24)	.067 (1.70)	187/U 188/U	179B/U 316B/U
Plug	DM53740-3	DM53740-16	.847 (21.5)	1.052/1.022 (26.72/25.96)	.110 (2.79)	195/U	180B/U
Plug	DM53740-5	DM53740-18	.847 (21.5)	1.052/1.022 (26.72/25.96)	.125 (3.18)	58/U	58B/U
Receptacle	DM53742	DM53742-18	.739 (18.8)	.965/.917 (24.51/23.29)	.040 (1.02)	196/U	178B/U
Receptacle	DM53742-1	DM53742-16	.739 (18.8)	.965/.917 (25.51/23.29)	.067 (1.70)	187/U 188/U	179B/U 316B/U
Receptacle	DM53742-3	DM53742-17	.847 (21.5)	1.079/1.033 (27.41/26.24)	.110 (2.79)	195/U	180B/U
Receptacle	DM53742-5	DM53742-19	.847 (21.5)	1.079/1.033 (27.41/26.24)	.125 (3.18)	58/U	58B/U

Straight Solder Braid



	Part Number		A	B	D	RG Cable No.	
	Standard Finish	Military Finish*	Max.		±.005 (0.13)	Old	New
Plug	DM53740-5008	DM53740-5105	.739 (18.8)	.945/.915 (24.00/23.24)	.040 (1.02)	196/U	178B/U
Plug	DM53740-5001	DM53740-5099	.739 (18.8)	.945/.915 (24.00/23.24)	.067 (1.70)	187/U 188/U	179B/U 316B/U
Plug	DM53740-5002	DM53740-5104	.847 (21.5)	1.052/1.022 (26.72/25.96)	.110 (2.79)	195/U	180B/U
Plug	DM53740-5005	DM53740-5101	.847 (21.5)	1.052/1.022 (26.72/25.96)	.125 (3.18)	58/U	58/U
Receptacle	DM53742-5006	DM53742-5092	.739 (18.8)	.965/.917 (24.51/23.29)	.040 (1.02)	196/U	178B/U
Receptacle	DM53742-5001	DM53742-5089	.739 (18.8)	.965/.917 (25.51/23.29)	.067 (1.70)	187/U 188/U	179B/U 316B/U
Receptacle	DM53742-5002	DM53742-5091	.847 (21.5)	1.079/1.033 (27.41/26.24)	.110 (2.79)	195/U	180B/U
Receptacle	DM53742-5004	DM53742-5086	.847 (21.5)	1.079/1.033 (27.41/26.24)	.125 (3.18)	58/U	58/U
Plug (Short Type)	DM53740-5000	DM53740-5100	.670 (17.0)	.876/.846 (22.25/21.49)	.040 (1.02)	196/U	178B/U
Receptacle (Short Type)	DM53742-5000	DM53742-5085	.670 (17.0)	.898/.850 (22.81/21.59)	.040 (1.02)	196/U	178B/U

Right Angle Solder Braid



	Part Number		A	B	C	D	RG Cable No.	
	Standard Finish	Military Finish*	Max.			±.005 (0.13)	Old	New
Plug	DM53741-5000	DM53741-5059	.530 (13.46)	.745/.725 (18.92/18.41)	.492 (12.50)	.040(1.02)	196/U	178B/U
Plug	DM53741-5001	DM53741-5062	.530 (13.46)	.745/.725 (18.92/18.41)	.492 (12.50)	.067 (1.70)	187/U 188/U	179B/U 316B/U
Plug	DM53741-5003	DM53741-5063	.530 (13.46)	.745/.725 (18.92/18.41)	.601 (15.27)	.110 (2.79)	195/U	180B/U
Plug	DM53741-5004	DM53741-5060	.530 (13.46)	.745/.725 (18.92/18.41)	.601 (15.27)	.125 (3.18)	58/U	58/U
Receptacle	DM53743-5000	DM53743-5073	.530 (13.46)	.765/.729 (19.43/18.52)	.492 (12.50)	.040 (1.02)	196/U	178B/U
Receptacle	DM53743-5001	DM53743-5076	.530 (13.46)	.765/.729 (19.43/18.52)	.492 (12.50)	.067 (1.70)	187/U 188/U	179B/U 316B/U
Receptacle	DM53743-5003	DM53743-5077	.530 (13.46)	.765/.729 (19.43/18.52)	.601 (15.27)	.110 (2.79)	195/U	180B/U
Receptacle	DM53743-5004	DM53743-5074	.530 (13.46)	.765/.729 (19.43/18.52)	.601 (15.27)	.125 (3.18)	58/U	58B/U

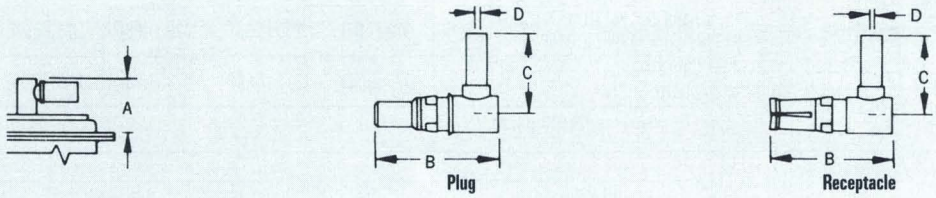
*MIL-C-24308 Finish: 0.00005 (0.00127) minimum gold plate over copper plate (ITT Cannon code A 156).

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Cable Combinations – Coaxial Contacts (Continued)

Right Angle Crimp Braid

(Dimensions include outer sleeve.)
Color Code: Receptacle - Blue; Plug - Red



	Part Number		A	B	C	D	RG Cable No.	
	Standard Finish	Military Finish*	Max.	Ref.		±.005 (0.13)	Old	New
Plug	DM53741	DM53741-12	.535 (13.60)	.745/.725 (18.92/18.41)	.492 (12.50)	.040 (1.02)	196/U	178B/U
Plug	DM53741-1	DM53741-11	.535 (13.60)	.745/.725 (18.92/18.41)	.492 (12.50)	.067 (1.70)	187/U 188/U	179B/U 316B/U
Plug	DM53741-3	DM53741-10	.535 (13.60)	.745/.725 (18.92/18.41)	.593 (13.69)	.110 (2.79)	195/U	180B/U
Plug	DM53741-4	DM53741-13	.535 (13.60)	.745/.725 (18.92/18.41)	.593 (13.69)	.125 (3.18)	58/U	58B/U
Receptacle	DM53743-2	DM53743-18	.535 (13.60)	.765/.729 (19.43/18.52)	.492 (12.50)	.040 (1.02)	196/U	178B/U
Receptacle	DM53743-3	DM53743-16	.535 (13.60)	.765/.729 (19.43/18.52)	.492 (12.50)	.067 (1.70)	187/U 188/U	179B/U 316B/U
Receptacle	DM53743-5	DM53743-17	.535 (13.60)	.765/.729 (19.43/18.52)	.593 (13.69)	.110 (2.79)	195/U	180B/U
Receptacle	CM53743-6	DM53743-19	.535 (13.60)	.765/.729 (19.43/18.52)	.593 (13.69)	.125 (3.18)	58/U	58B/U

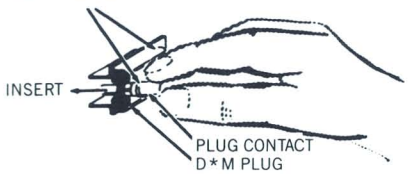
Insertion/Extraction Instructions

Coaxial, High Power and High Voltage Contacts

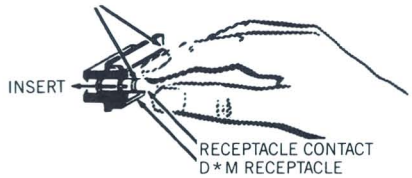
Insertion

No insertion tool is required. The contact is easily snapped in from the rear of the connector.

RED COLOR CODED CONNECTOR ACCEPTS PLUG CONTACTS.



BLUE COLOR CODED CONNECTORS ACCEPTS RECEPTACLE CONTACTS. INSERT FROM TERMINAL END AS SHOWN BELOW.



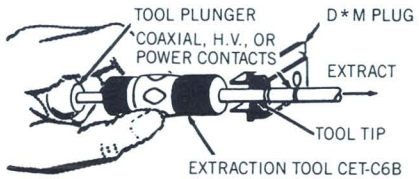
Extraction

CET-C6B

The CET-C6B tool extracts coaxial, high power and high voltage contacts (plug and receptacle). Part number 070064-0000.

Operating Instructions:

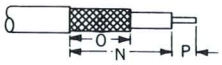
To extract the coax contact, hold the tool by the body and insert the tip into the front of the contact cavity until it bottoms and closes the coax retaining ring. Holding the body in this position securely enough to keep coax retaining ring closed, push the plunger; contact will be pushed out of the rear of the assembly.



Hand Tool with integral die set for all coax straight crimp braid. Part Number: 070051-0000 (CCT-DM)

Coax Assembly Instructions

Trim Dimensions



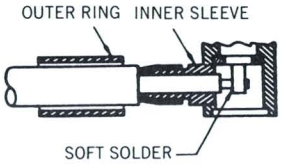
RG Cable No.	Straight			Right Angle		
	N	O	P	N	O	P
196/U, 178B/U, 187/U 188/U, 179B/U, 316B/U	.312 (7.92)	.250 (6.35)	.078 (1.98)	.375 (9.52)	.234 (5.94)	.062 (1.57)
195/U, 180B/U 58/U, 58B/U	.375 (9.52)	.312 (7.92)	.078 (1.98)	.422 (10.69)	.312 (7.92)	.094 (2.39)

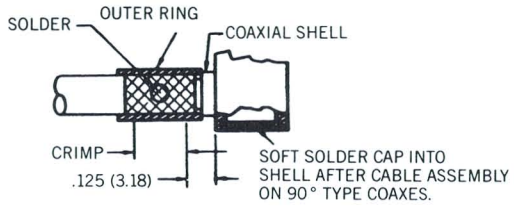
All tolerances ±.010 (0.25)

Crimp Tooling

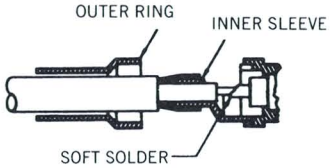
RG Cable No.	Tool P/N	Description	Closure
196/U, 178B/U	070051-0000	CCT-DM	C
187/U, 179B/U 188/U, 316B/U	070051-0000	CCT-DM	B
195/U, 180B/U 58/U, 58B/U	070051-0000	CCT-DM	A

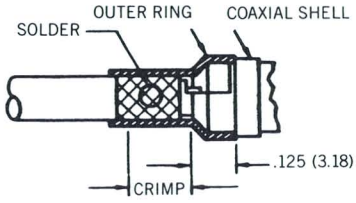
90° Coaxial





Straight Coaxial





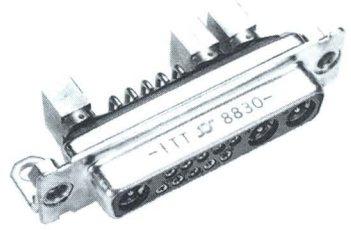
STEP 1: Straight and 90° Coaxials

1. Slide the outer ring over the cable jacket. Trim the cable as specified in the table of Coax Cable Trim Dimensions. Insert the cable dielectric and center conductor into the inside diameter of the inner sleeve. Then solder the center conductor to the coax center contact.

STEP 2: Straight and 90° Coaxials

2. Slide the outer ring forward until it is flush with the coax shell containing the braid between the outer ring and the inner sleeve. For solder type coaxes, soft solder the outer ring to the assembly thru the cross-drilled solder hold. For crimp type coaxes, crimp with the appropriate tool in the area defined.

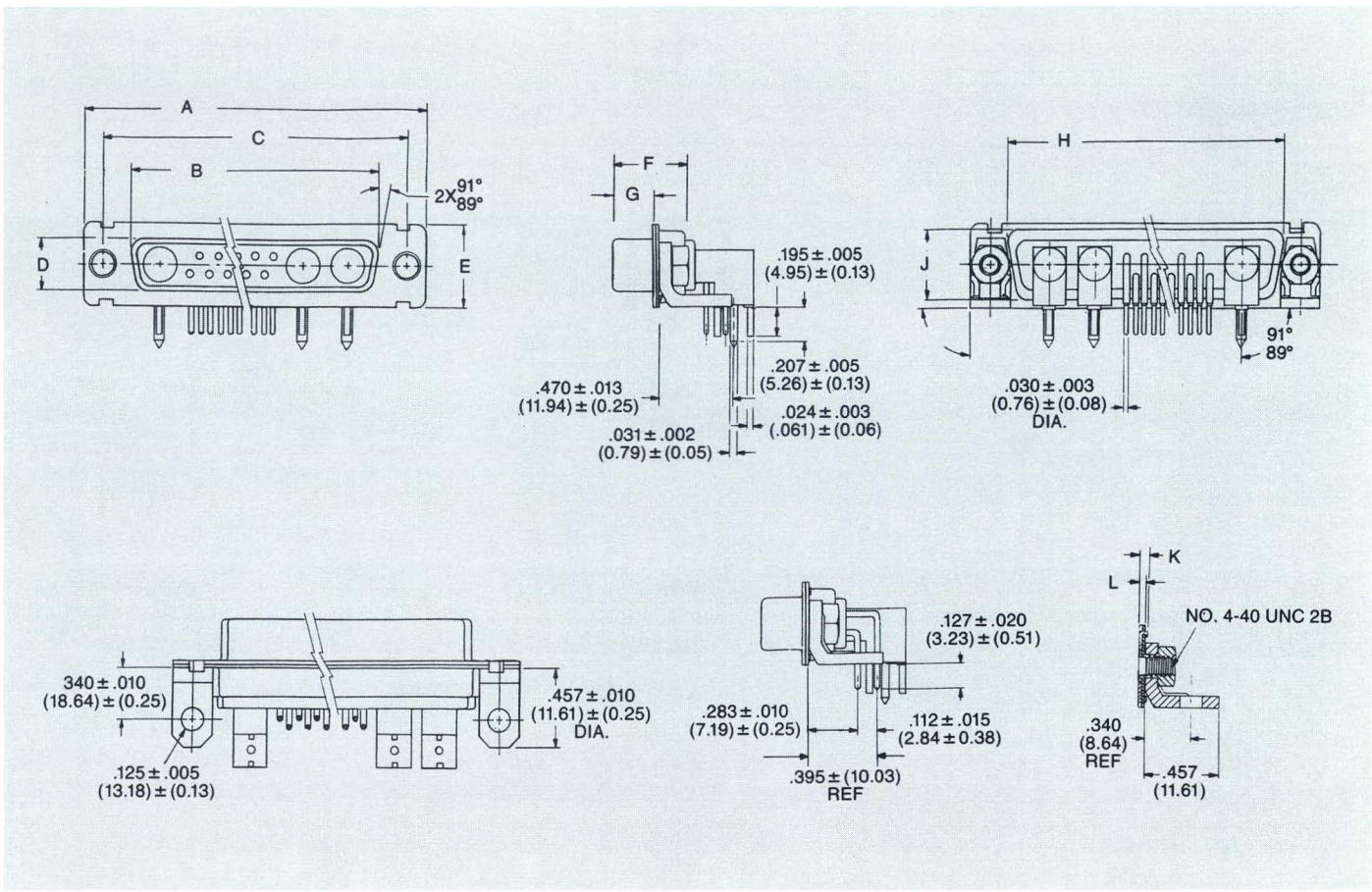
Right Angle Receptacle for PCB Mounting



Shell Finish	Tin	Tin	Cadmium/Yellow Chromate
Contact Finish	Gold over Nickel	Gold over Nickel	50 Gold Over Copper
Grounding Indents	No	No	No
Compliant Eyelets	No	Yes	No
DE-5W1	DEM53516-775	DEM53516-776	DEM53516-777
DA-7W2	DAM53512-1322	DAM53512-1323	DAM53512-1324
DA-11W1	DAM53512-1328	DAM53512-1329	DAM53512-1330
DA-3W3	DAM53512-1334	DAM53512-1335	DAM53512-1336
DB-5W5	DBM53513-1632	DBM53513-1633	DBM53513-1634
DB-9W4	DBM53513-1628	DBM53513-1639	DBM53513-1638
DB-13W3	DBM53513-1643	DBM53513-1644	DBM53513-1645
DB-17W2	DBM53513-1649	DBM53513-1650	DBM53513-1651
DB-21W1	DBM53513-1655	DBM53513-1656	DBM53513-1657
DC-8W8	DCM53514-1586	DCM53514-1587	DCM53514-1588
DC-13W6	DCM53514-1592	DCM53514-1593	DCM53514-1594
DC-17W5	DCM53514-1610	DCM53514-1611	DCM53514-1612
DC-21WA4	DCM53514-1598	DCM53514-1599	DCM53514-1600
DC-25W3	DCM53514-1604	DCM53514-1605	DCM53514-1606

Part numbers come complete with fixed, female, signal and coaxial contacts.
"D" shell size layouts available

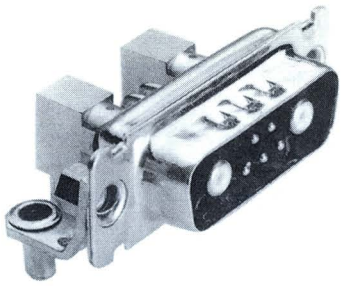
Dimensions



Socket Connector Assembly (Female)

Shell Size	A ±.015 (0.38)	B ±.010 (0.25)	C ±.005 (0.13)	D ±.010 (0.25)	E ±.015 (0.38)	F ±.015 (0.38)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)
DE	1.213 (30.81)	.643 (16.33)	.984 (24.99)	.311 (7.90)	.494 (12.55)	.429 (10.90)	.243 (6.17)	.759 (19.28)	.422 (10.72)	.048 (1.22)	.030 (0.76)
DA	1.541 (39.14)	.971 (24.66)	1.312 (33.32)	.311 (7.90)	.494 (12.55)1	.429 (10.90)	.243 (6.17)	.083 (27.51)	.422 (10.72)	.048 (1.22)	.030 (0.76)
DB	2.088 (53.03)	1.511 (38.38)	1.852 (47.04)	.311 (7.90)	.494 (12.55)1	.429 (10.90)	.243 (6.17)	.625 (41.27)	.422 (10.72)	.060 (1.52)	.039 (0.99)
DC	2.729 (69.31)	2.159 (54.84)	2.500 (63.50)	.311 (7.90)	.494 (12.55)2	.429 (10.90)	.243 (6.17)	.272 (57.71)	.422 (10.72)	.060 (1.52)	.039 (0.99)

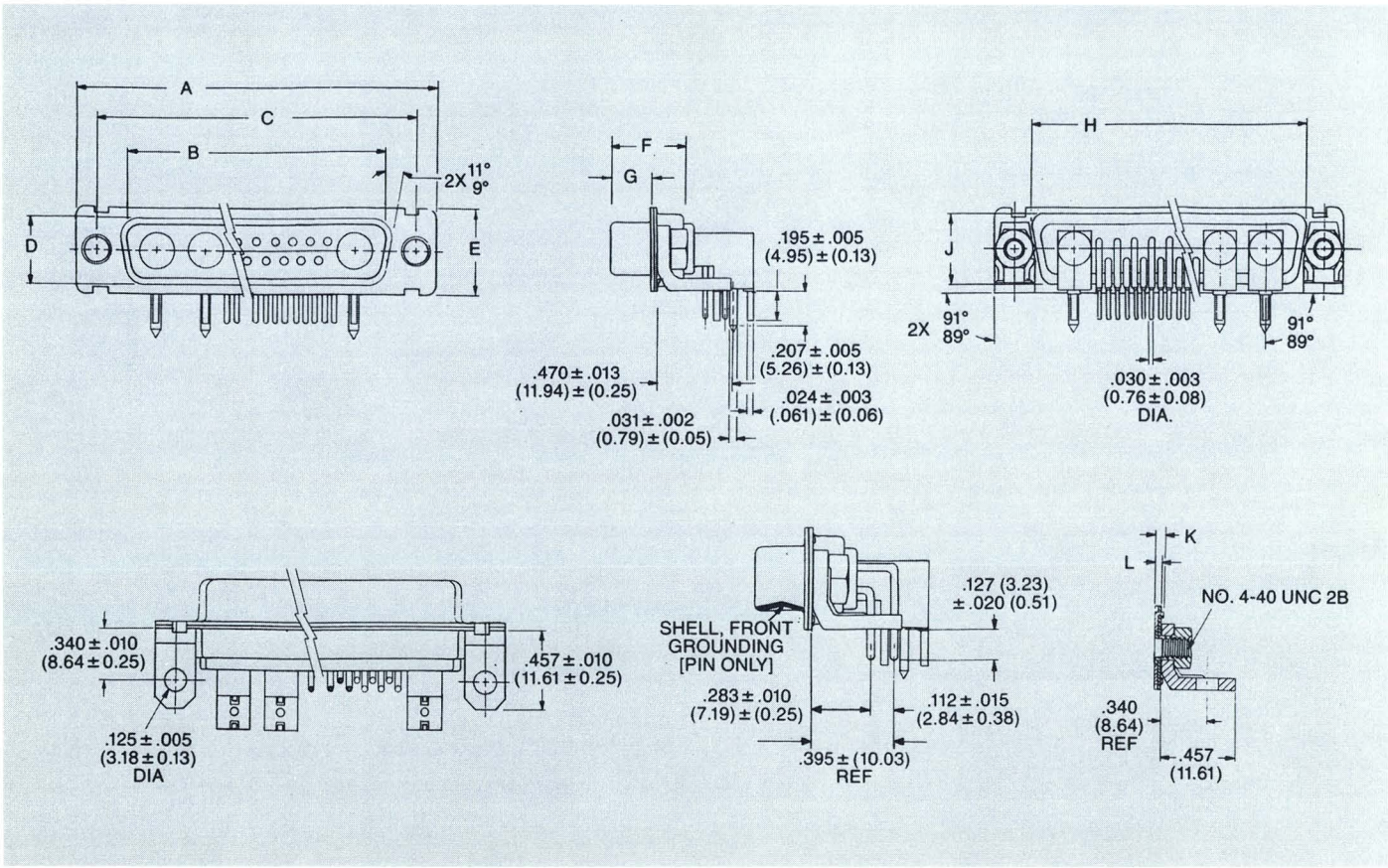
Right Angle Plug for PCB Mounting



Shell Finish	Tin	Tin	Cadmium/Yellow Chromate
Contact Finish	Gold over Nickel	Gold over Nickel	50 Gold over Copper
Grounding Indents	Yes	Yes	No
Compliant Eyelets	No	Yes	No
DE-5W1	DEM53516-772	DEM53516-773	DEM53516-774
DA-7W2	DAM53512-1319	DAM53512-1320	DAM53512-1321
DA-11W1	DAM53512-1325	DAM53512-1326	DAM53512-1327
DA-3W3	DAM53512-1331	DAM53512-1332	DAM53512-1333
DB-5W5	DBM53513-1629	DBM53513-1630	DBM53513-1631
DB-9W4	DBM53513-1635	DBM53513-1636	DBM53513-1637
DB-13W3	DBM53513-1640	DBM53513-1641	DBM53513-1642
DB-17W2	DBM53513-1646	DBM53513-1647	DBM53513-1648
DB-21W1	DBM53513-1652	DBM53513-1653	DBM53513-1654
DC-8W8	DCM53514-1583	DCM53514-1584	DCM53514-1585
DC-13W6	DCM53514-1589	DCM53514-1590	DCM53514-1591
DC-17W5	DCM53514-1607	DCM53514-1608	DCM53514-1609
DC-21WA4	DCM53514-1595	DCM53514-1596	DCM53514-1597
DC-25W3	DCM53514-1601	DCM53514-1602	DCM53514-1603

Part numbers come complete with fixed, male, signal and coaxial contacts.
"D" shell size layouts available

Dimensions



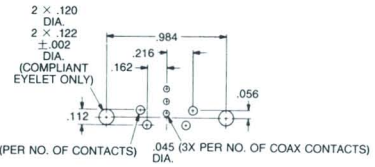
Plug Connector Assembly (Male)

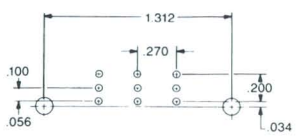
Shell Size	A ±.015 (0.38)	B ±.010 (0.25)	C ±.005 (0.13)	D ±.010 (0.25)	E ±.015 (0.38)	F ±.015 (0.38)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)
DE	1.213 (30.81)	.666 (16.91)	.984 (24.99)	.329 (8.36)	.494 (12.55)	.422 (10.72)	.236 (5.99)	.759 (19.28)	.422 (10.72)	.048 (1.22)	.030 (0.76)
DA	1.541 (39.14)	.994 (25.24)	1.312 (33.32)	.329 (8.36)	.494 (12.55)	.422 (10.72)	.236 (5.99)	1.083 (27.51)	.422 (10.72)	.048 (1.22)	.030 (0.76)
DB	2.088 (53.03)	1.534 (38.96)	1.852 (47.04)	.329 (8.36)	.494 (12.55)	.422 (10.82)	.231 (5.87)	1.625 (41.27)	.422 (10.72)	.060 (1.52)	.039 (0.99)
DC	2.729 (69.31)	2.182 (55.42)	2.500 (63.50)	.329 (8.36)	.494 (12.55)2	.426 (10.82)	.231 (5.87)	2.272 (57.71)	.422 (10.72)	.060 (1.52)	.039 (0.99)

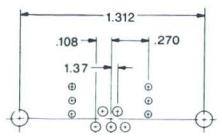
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

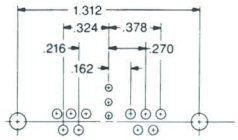
Right Angle Printed Circuit Board Hole Pattern

Face view, pin insert
(for receptacle, hole pattern is a mirror image)

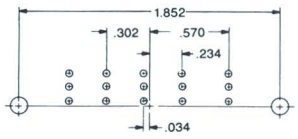


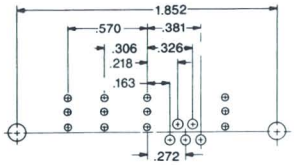


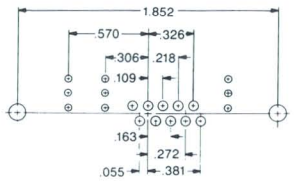


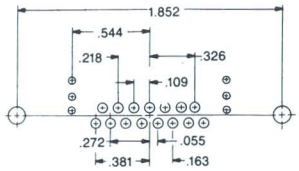


Shell Size	**E**	**A**	**A**	**A**
Contact Arrangement	**5W1**	**3W3**	**TW2**	**11W1**
No. of Contacts	**4**	**0**	**5**	**10**
Contact Size	**#20**	**—**	**#20**	**#20**
Coaxial Cavities	**1**	**3**	**2**	**1**

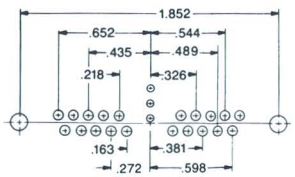


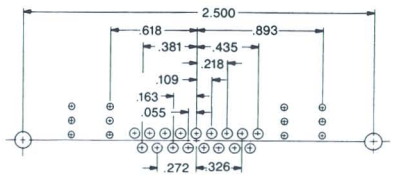




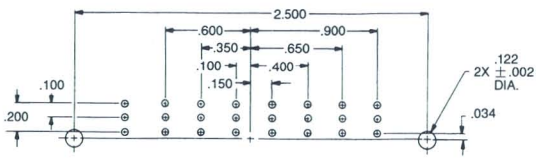


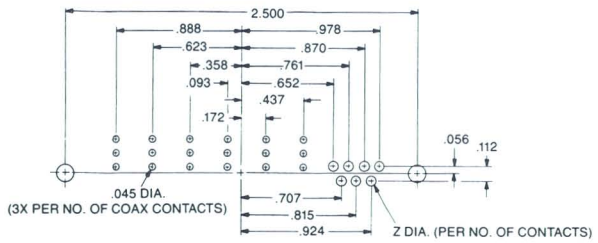
Shell Size	**B**	**B**	**B**	**B**
Contact Arrangement	**5W5**	**9W4**	**13W3**	**17W2**
No. of Contacts	**0**	**5**	**10**	**15**
Contact Size	**—**	**#20**	**#20**	**#20**
Coaxial Cavities	**5**	**4**	**3**	**2**



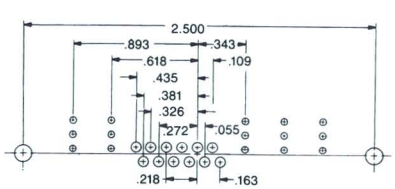


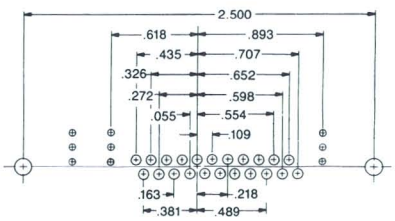
Shell Size	**B**	**C**
Contact Arrangement	**21W1**	**21WA4**
No. of Contacts	**20**	**17**
Contact Size	**#20**	**#20**
Coaxial Cavities	**1**	**4**





Shell Size	**C**	**C**
Contact Arrangement	**8W8**	**13W6**
No. of Contacts	**0**	**7**
Contact Size	**—**	**#20**
Coaxial Cavities	**8**	**6**



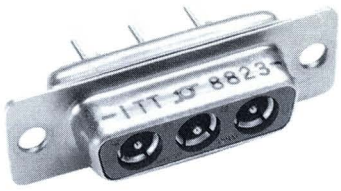


Shell Size	**C**	**C**
Contact Arrangement	**17W5**	**25W3**
No. of Contacts	**12**	**22**
Contact Size	**#20**	**#20**
Coaxial Cavities	**5**	**3**

Size #20 Contact PC Tail Dia.	Z Dia.
.030 (0.76)	.045 (1.14)

Combination D Subminiature – Coaxial

Straight Receptacle for PCB Mounting

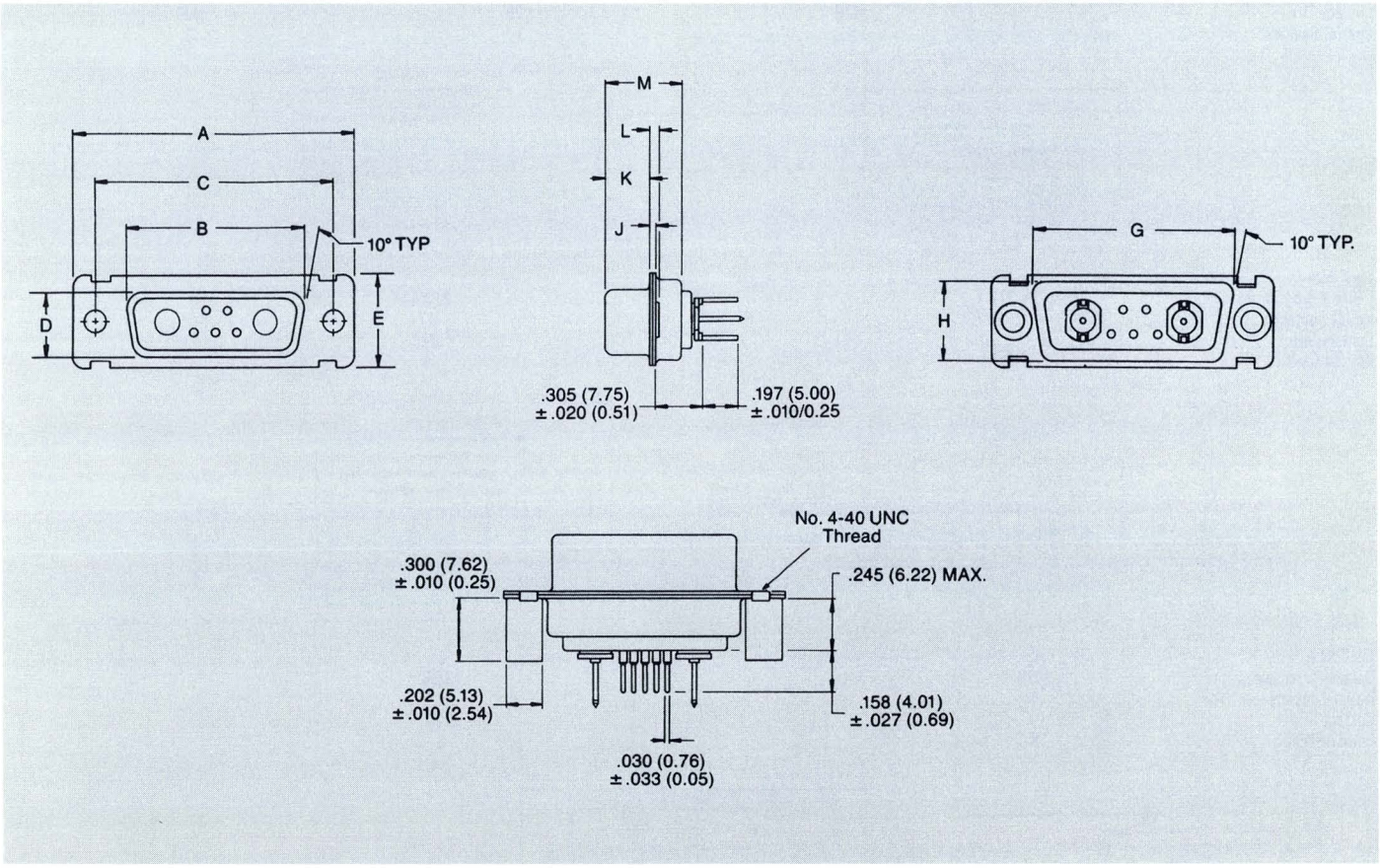


Shell Finish	Tin	Tin	Cadmium/Yellow Chromate
Contact Finish	Gold over Ni	Gold over Ni	50 Gold over Copper
Standoffs	No.	Yes	No
DE-5W1	DEM53516-790	DEM53516-791	DEMM51529-44
DA-7W2	DAM53512-1363	DAM53512-1364	DAMM51521-65
DA-11W1	DAM53512-1368	DAM53512-1369	DAMM51521-67
DA-3W3	DAM53512-1349	DAM53512-1350	DAMM51521-61
DB-5W5	DBM53513-1697	DBM53513-1698	DBMM51523-102
DB-9W4	DBM53513-1689	DBM53513-1690	DBMM51523-100
DB-13W3	DBM53513-1685	DBM53513-1686	DBMM51523-99
DB-17W2	DBM53513-1715	DBM53513-1716	DBMM51523-108
DC-8W8	DCM53514-1643	DCM53514-1644	DCMM51525-82
DC-13W6	DCM53514-1651	DCM53514-1652	DCMM51525-85
DC-17W5	DCM53514-1659	DCM53514-1660	DCMM51525-88
DC-21WA4	DCM53514-1667	DCM53514-1668	DCMM51525-91
DC-25W3	DCM53514-1677	DCM53514-1678	DCMM53514-94

Part numbers come complete with fixed, female, signal and coaxial contacts.
"D" shell size layouts available.

If interested in other layouts, please consult ITT Cannon.

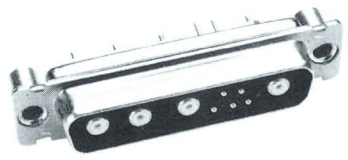
Dimensions



Shell Size	A ±.015 (0.38)	B ±.010 (0.25)	C ±.005 (0.13)	D ±.010 (0.25)	E ±.015 (0.38)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)	M ±.015 (0.38)
DE	1.213 (30.81)	.643 (16.33)	.984 (24.99)	.311 (7.90)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DA	1.541 (39.14)	.971 (24.66)	1.312 (33.32)	.311 (7.90)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DB	2.088 (53.03)	1.511 (38.38)	1.852 (47.04)	.311 (7.90)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DC	2.729 (69.31)	2.159 (54.84)	2.500 (63.50)	.311 (7.90)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Straight Plug for PCB Mounting – How to Order

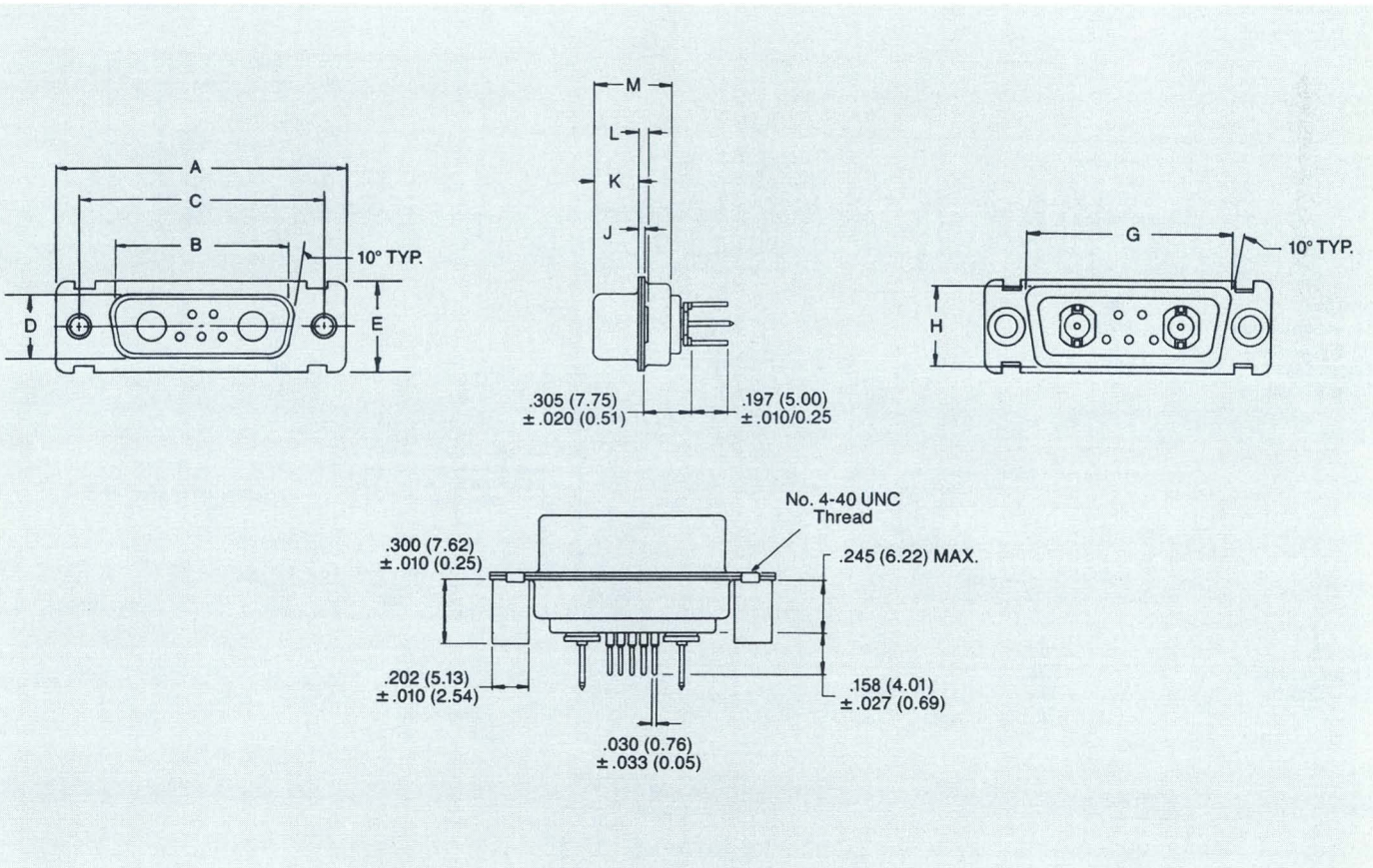


Shell Finish	Tin	Tin	Cadmium/Yellow Chromate
Contact Finish	Gold over Nickel	Gold over Nickel	50 Gold over Copper
Standoffs	No	Yes	No
DE-5W1	DEM53516-778	DEM53516-779	DEMM51528-40
DA-7W2	DAM53512-1347	DAM53512-1348	DAMM51520-67
DA-11W1	DAM53512-1366	DAM53512-1367	DAMM51520-73
DA-3W3	DAM53512-1345	DAM53512-1346	DAMM51520-66
DB-5W5	DBM53513-1665	DBM53513-1666	DBMM51522-101
DB-9W4	DBM53513-1667	DBM53513-1668	DBMM51522-102
DB-13W3	DBM53513-1669	DBM53513-1670	DBMM51522-103
DB-17W2	DBM53513-1712	DBM53513-1713	DBMM51522-110
DC-8W8	DCM53514-1623	DCM53514-1624	DCMM51524-98
DC-13W6	DCM53514-1625	DCM53514-1626	DCMM51524-99
DC-17W5	DCM53514-1627	DCM53514-1628	DCMM51524-100
DC-21WA4	DCM53514-1629	DCM53514-1630	DCMM51524-101
DC-25W3	DCM53514-1672	DCM53514-1673	DCMM51524-111

Part numbers come complete with fixed, male, signal and coaxial contacts.
"D" shell size layouts available.

If interested in other layouts, please consult ITT Cannon.

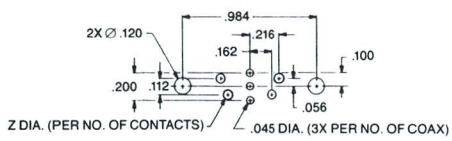
Dimensions



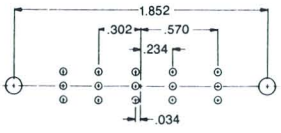
Shell Size	A ±.015 (0.38)	B ±.010 (0.25)	C ±.005 (0.13)	D ±.010 (0.25)	E ±.015 (0.38)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)	M ±.015 (0.38)
DE	1.213 (30.81)	.666 (16.91)	.984 (24.99)	.329 (8.36)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.429 (10.90)
DA	1.541 (39.14)	.994 (25.24)	1.312 (33.32)	.329 (8.36)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.429 (10.90)
DB	2.088 (53.03)	1.534 (38.96)	1.852 (47.04)	.329 (8.36)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.030 (0.76)	.231 (5.87)	.045 (1.14)	.429 (10.90)
DC	2.729 (69.31)	2.182 (55.42)	2.500 (63.50)	.329 (8.36)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (0.76)	.231 (5.87)	.045 (1.14)	.429 (10.90)

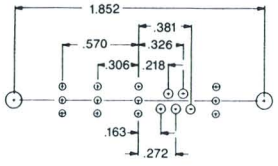
Straight Printed Circuit Board Hole Pattern

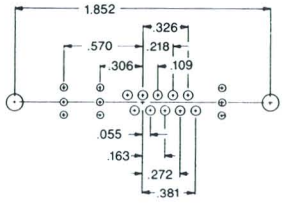
Face view, pin insert
(for receptacle, hole pattern is a mirror image)



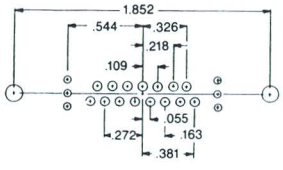
Shell Size	E	A	A	A
Contact Arrangement	5W1	3W3	7W2	11W1
No. of Contacts	4	0	7	1
Contact Size	20	20	20	20
No. of PC Contacts	1	3	2	1

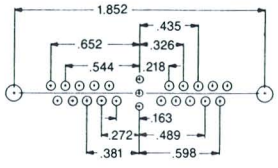


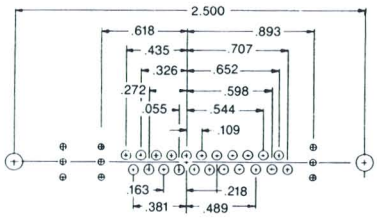




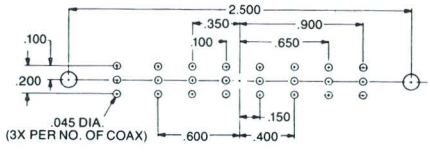
Shell Size	B	B	B
Contact Arrangement	5W5	9W4	13W3
No. of Contacts	0	9	13
Contact Size	20	20	20
No. of PC Contacts	5	4	3

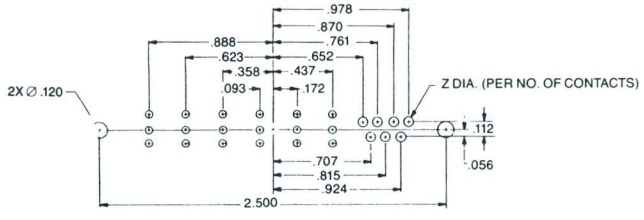




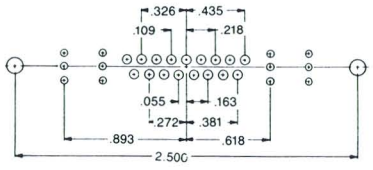


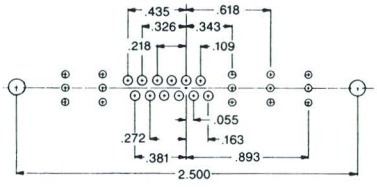
Shell Size	B	B	C
Contact Arrangement	17W2	21W1	25W3
No. of Contacts	17	21	22
Contact Size	20	20	20
No. of PC Contacts	2	1	3





Shell Size	C	C
Contact Arrangement	8W8	13W6
No. of Contacts	0	7
Contact Size	20	20
No. of PC Contacts	8	6





Shell Size	C	C
Contact Arrangement	21WA4	17W5
No. of Contacts	17	12
Contact Size	20	20
No. of PC Contacts	4	5

Size No. 20 Contact PC Tail Dia.	Z Dia.
.030 (0.76)	.045 (1.14)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Power Housing With Solder Cup Signal Contacts

High power contacts supplied separately.

D B MM - 5W5 P **

- SERIES PREFIX
- SHELL SIZE
- CLASS
- MOUNTING TYPE
- CONTACT ARRANGEMENT
- CONTACT TYPE
- MODIFICATION

SERIES PREFIX
D

SHELL SIZE
A, B, C, D, E

CLASS
M – Commercial Version – One piece insulator with gold over nickel contact plating.
MM – Military Version – One piece insulator, materials, finishes and inspection per MIL-C-24308, as applicable. Military version supplied with cadmium over yellow chromate shells with 50 microinches gold over copper contact plating.

MOUNTING TYPE
No Designator: Standard 120(3.05) diameter hole
E – Two clinch nuts for rear panel mounting
Y – Dual float mount for both front and rear panel mounting

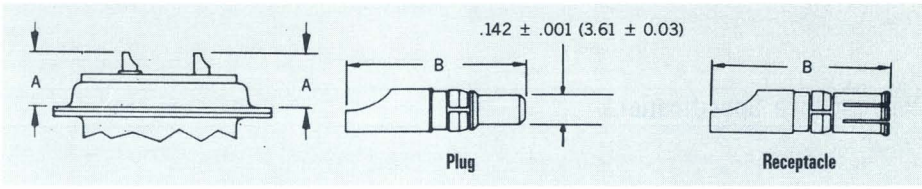
CONTACT ARRANGEMENTS
See page 254 of coax section.

CONTACT TYPE
P – Pin
S – Socket

MODIFICATION–COMMERCIAL
A197 – Tin/Lead electroplated shells (receptacles), socket contacts.
K87 – Shell plated A197 with ground indents (plugs), pin contacts.
For other options consult ITT Cannon.

High Power Contacts

Solder Type



	Part Number Standard Finish	Part Number Military Finish*	A Max.	B Ref.	Current Rating (Amps)	Wire Size
Plug	DM53745-1	DM53745-28	.666 (16.92)	.866 (22.00)	40	#8
Plug	DM53745-7	DM53745-27	.666 (16.92)	.866 (22.00)	20	#12
Plug	DM53745-8	DM53745-25	.666 (16.92)	.866 (22.00)	10	#16
Receptacle	DM53744-1	DM53744-21	.666 (16.92)	.856 (21.74)	40	#8
Receptacle	DM53744-6	DM53744-25	.666 (16.92)	.856 (21.74)	20	#12
Receptacle	DM53744-7	DM53744-24	.666 (16.92)	.856 (21.74)	10	#16

*MIL-C-24308 Finish: 0.00005 (0.00127) minimum gold plate over copper plate (ITT Cannon code A156).

Tools for High Power are the same as for Coaxial Contacts. See page 257.

Materials and Finishes

Cable and Straight PCB
Connector Assembly

Description	Material	Finish
Shell	Steel per ASTM A-620	Military: Yellow Chromate over cadmium per QQ-P-416, Type II, CL2 Commercial: Electrodeposited Tin/Lead per MIL-T-10727 over Copper per MIL-C-14550, Class 2, Tin
Insulator	Diallyl phthalate glass-filled per ML-M-14, Type SDG-F, color green	None
Size 20 contacts when applicable	Copper alloy	Commercial: gold over nickel. Military: 50µ min. gold per MIL-G-45204, Type II, grade C, Class I/copper per MIL-C-14550
Straight Power Assembly		
Contacts and shells	Copper alloy	Commercial: gold over nickel. Military: 50µ min. gold per MIL-G-45204, Type II, grade C, Class I/copper per MIL-C-14550

Right Angle PCB Receptacle

Description	Material	Finish
Commercial contact	Beryllium copper per QQ-C-530	Gold per MIL-G-45204, Type II, Class 0 over nickel per QQ-N-290, Class 2
Ring, retaining	Beryllium copper per QQ-C-530	Nickel per QQ-N-290
Military contact	Brass	Gold 50 microinches min. thickness per MIL-G-45204, Type II, Grade C, Class 1, over copper per MIL-C-14550.

Plug

Description	Material	Finish
Commercial contact	Brass per QQ-B-626	Gold per MIL-G-45204, Type II, Class 0, over nickel per QQ-N-290, Class 2
Washer, stabilizing	Brass per QQ-B-626	Gold per MIL-G-45204, Type II
Ring, retaining	Brass per QQ-B-626	Nickel per QQ-N-290
Military contact	Brass	Gold 50 microinches min. thickness per MIL-G-45204, Type II, Grade C, Class 1, over copper per MIL-C-14550.

Performance Specifications

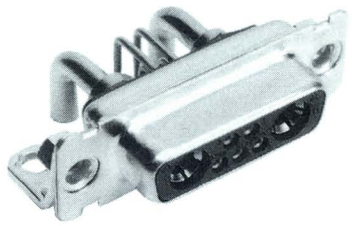
	Contact Size	Wire Size
Wire Accommodation (AWG)	0808	# 8
	0812	#12
	0816	#16
	Contact Size	**Current Rating**
Current Rating	0808	40 Amp
	0812	20 Amp
	0816	10 Amp
Temperature Rating	−65°C to +150°C	

Dielectric Withstanding Voltage

		Altitude (feet/m)							
		Sea Level		20,000/6,096		50,000/15,240		70,000/1,336	
Type of Contact		90°	Straight	90°	Straight	90°	Straight	90°	Straight
High Power Contact and/or Coaxial Shell to Plug Shell	Average Flashover	1500	1500	1000	1000	500	500	500	500
	Test	1000	1000	650	650	325	325	325	325
#20 Signal	Average Flashover	1700		1000		650		500	
	Test	1250		750		475		375	

All voltage figures are rms AC 60 rms cps, measured at approximately +25°C, 50% rh.
For additional performance specifications refer to MIL-C-24308 Test Extracts on page 297.

Right Angle Receptacle for PCB Mounting

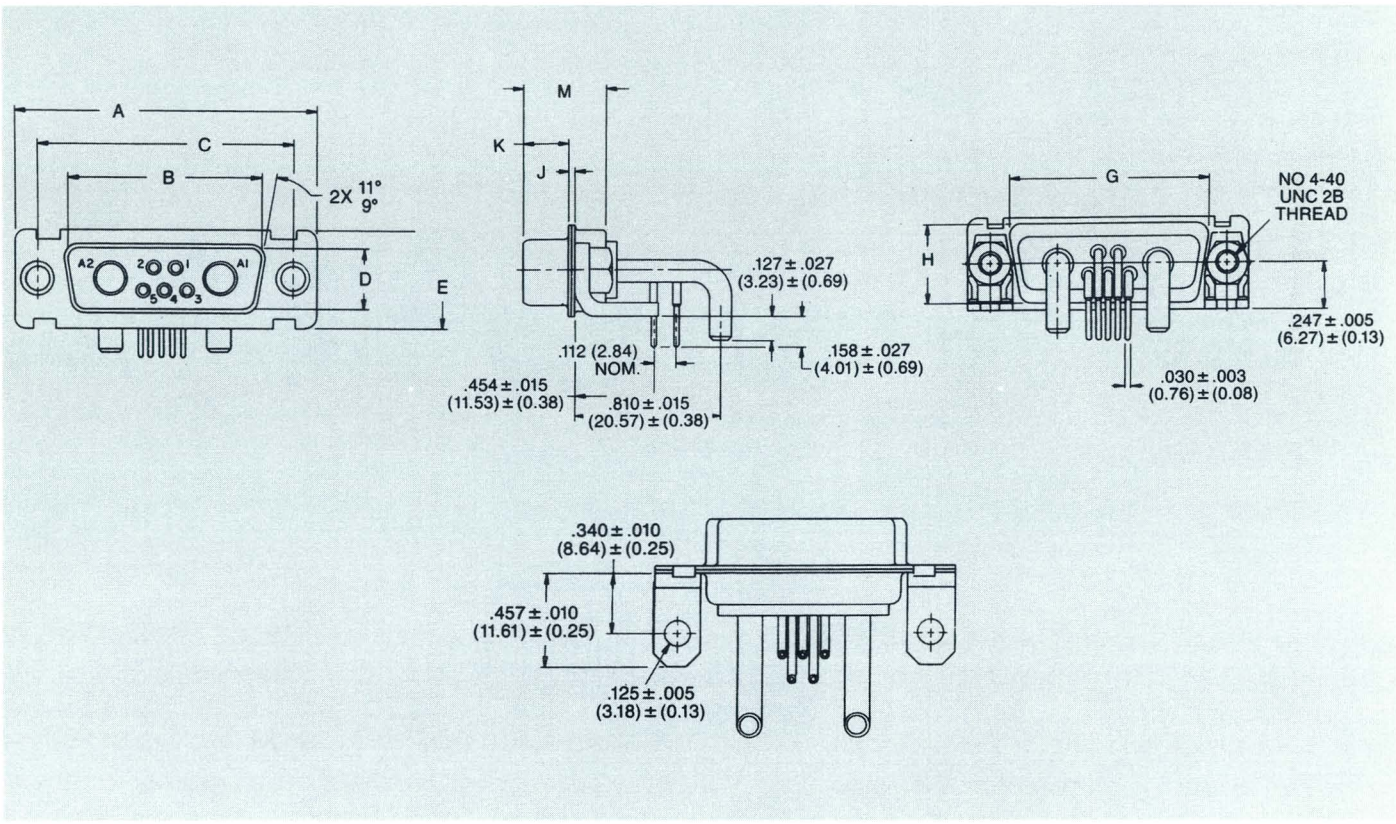


Shell Finish	Tin	Cadmium/Yellow Chromate
Contact Finish	30 Gold over Ni	50 Gold over Copper
DE-5W1	DEM53516-792	DEMM51529-45
DA-7W2	DAM53512-1365	DAMM51521-66
DA-3W3	DAM53512-1357	DAMM51521-63
DB-5W5	DBM53513-1699	DBMM51523-103
DB-9W4	DBM53513-1705	DBMM51523-105
DB-13W3	DBM53513-1711	DBMM51523-107
DB-17W2	DBM53513-1717	DBMM51523-109
DC-8W8	DCM53514-1645	DCMM51525-83
DC-13W6	DCM53514-1653	DCMM51525-86
DC-17W5	DCM53514-1661	DCMM51525-89
DC-21WA4	DCM53514-1669	DCMM51525-92
DC-25W3	DCM53514-1679	DCMM51525-95

Part numbers come complete with fixed, female, signal and high power contacts.
"D" shell size layouts available

If interested in other layouts, please consult ITT Cannon.

Dimensions



Shell Size	A ±.015 (0.38)	B ±.010 (0.25)	C ±.005 (0.13)	D ±.010 (0.25)	E ±.015 (0.38)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)	M ±.015 (0.38)
DE	1.213 (30.81)	.643 (16.33)	.984 (24.99)	.311 (7.90)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DA	1.541 (39.14)	.971 (24.66)	1.312 (33.32)	.311 (7.90)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DB	2.088 (53.03)	1.511 (38.38)	1.852 (47.04)	.311 (7.90)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DC	2.729 (69.31)	2.159 (54.84)	2.500 (63.50)	.311 (7.90)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)

Combination D Subminiature – High Power

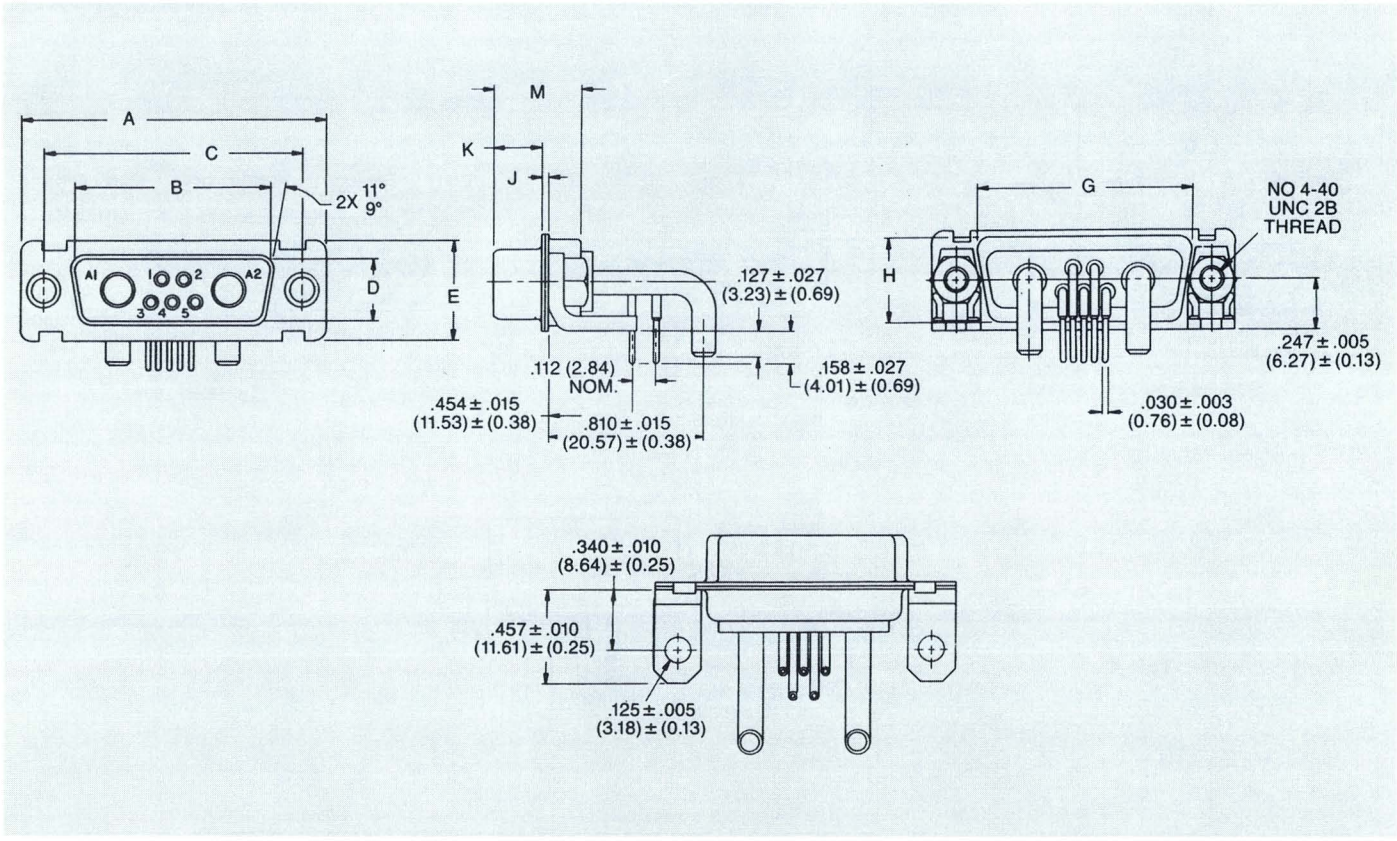
Right Angle Plug for PCB Mounting

Shell Finish	Tin w/Indents	Cadmium/Yellow Chromate
Contact Finish	30 Gold over Ni	50 Gold over Copper
DE-5W1	DEM53516-787	DEMM51528-43
DA-7W2	DAM53512-1358	DAMM51520-71
DA-3W3	DAM53512-1354	DAMM51520-70
DB-5W5	DBM53513-1694	DBMM51522-105
DB-9W4	DBM53513-1702	DBMM51522-107
DB-13W3	DBM53513-1708	DBMM51522-109
DB-17W2	DBM53513-1714	DBMM51522-111
DC-8W8	DCM53514-1640	DCMM51524-103
DC-13W6	DCM53514-1648	DCMM51524-105
DC-17W5	DCM53514-1656	DCMM51524-107
DC-21WA4	DCM53514-1664	DCMM51524-109
DC-25W3	DCM53514-1674	DCMM51524-112

Part numbers come complete with fixed, male, signal and power contacts.
"D" shell size layouts available

If interested in other layouts, please consult ITT Cannon.

Dimensions

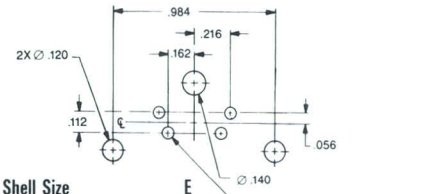


Shell Size	A ±.015 (0.38)	B ±.010 (0.25)	C ±.005 (0.13)	D ±.010 (0.25)	E ±.015 (0.38)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)	M ±.015 (0.38)
DE	1.213 (30.81)	.666 (16.91)	.984 (24.99)	.329 (8.36)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.429 (10.90)
DA	1.541 (39.14)	.994 (25.24)	1.312 (33.32)	.329 (8.36)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.429 (10.90)
DB	2.088 (53.03)	1.534 (38.96)	1.852 (47.04)	.329 (8.36)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.030 (0.76)	.231 (5.87)	.045 (1.14)	.429 (10.90)
DC	2.729 (69.31)	2.182 (55.42)	2.500 (63.50)	.329 (8.36)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (0.76)	.231 (5.87)	.045 (1.14)	.429 (10.90)

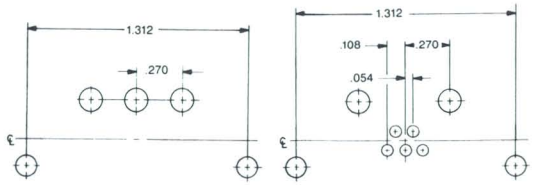
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Right Angle Printed Circuit Board Hole Patterns

Face View, Pin Insert

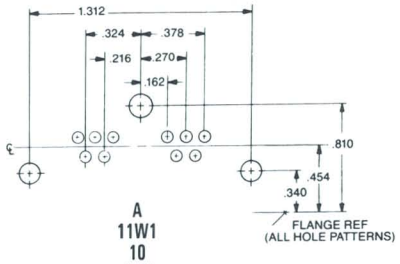


Shell Size	E
Contact Arrangement	5W1
No. of Contacts	4
Contact Size	#20
High Power Cavities	1

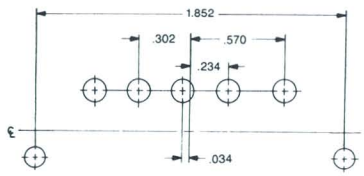


Shell Size	A
Contact Arrangement	3W3
No. of Contacts	0
Contact Size	—
High Power Cavities	3

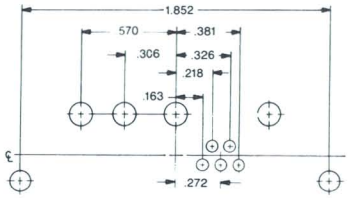
Shell Size	A
Contact Arrangement	7W2
No. of Contacts	5
Contact Size	#20
High Power Cavities	2



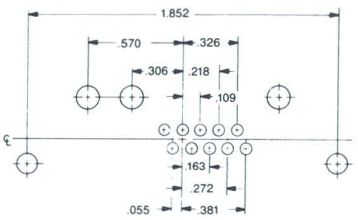
Shell Size	A
Contact Arrangement	11W1
No. of Contacts	10
Contact Size	#20
High Power Cavities	1



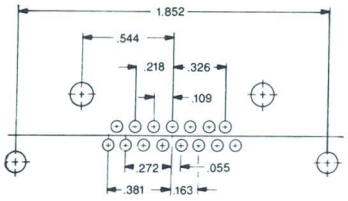
Shell Size	B
Contact Arrangement	5W5
No. of Contacts	0
Contact Size	—
High Power Cavities	5



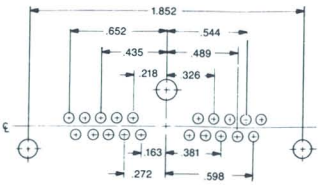
Shell Size	B
Contact Arrangement	9W4
No. of Contacts	5
Contact Size	#20
High Power Cavities	4



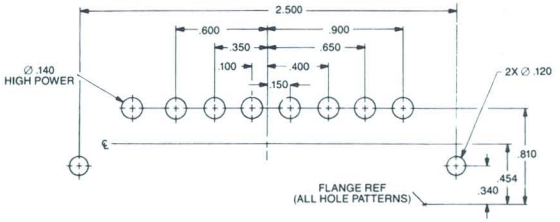
Shell Size	B
Contact Arrangement	13W3
No. of Contacts	10
Contact Size	#20
High Power Cavities	3



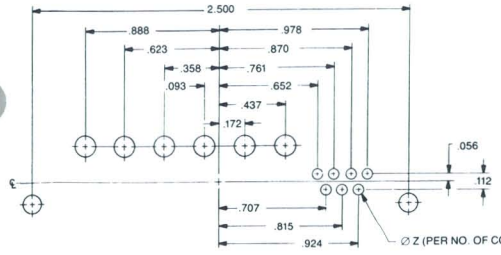
Shell Size	B
Contact Arrangement	17W2
No. of Contacts	15
Contact Size	#20
High Power Cavities	2



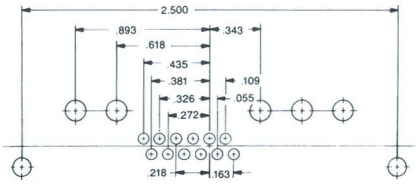
Shell Size	B
Contact Arrangement	21W1
No. of Contacts	20
Contact Size	#20
High Power Cavities	1



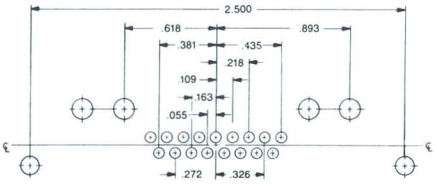
Shell Size	C
Contact Arrangement	8WB
No. of Contacts	0
Contact Size	—
High Power Cavities	8



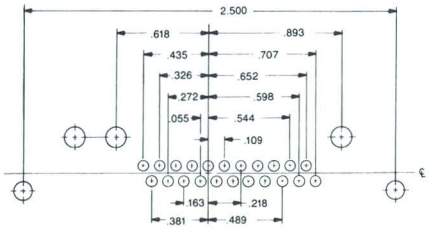
Shell Size	C
Contact Arrangement	13W6
No. of Contacts	7
Contact Size	#20
No. of High Power Cavities	4



Shell Size	C
Contact Arrangement	17W5
No. of Contacts	12
Contact Size	#20
High Power Cavities	5



Shell Size	C
Contact Arrangement	21WA4
No. of Contacts	17
Contact Size	#20
High Power Cavities	4

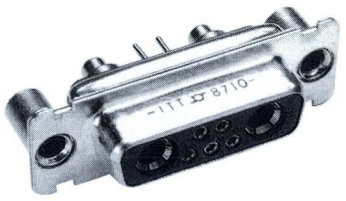


Shell Size	C
Contact Arrangement	25W3
No. of Contacts	22
Contact Sizes	#20
No. of High Power Cavities	3

Size No. 20 Contacts PC Tail Diameter	Z DIA.
.030 (0.76)	.045 (1.14)

Combination D Subminiature—High Power

Straight Receptacle for PCB Mounting

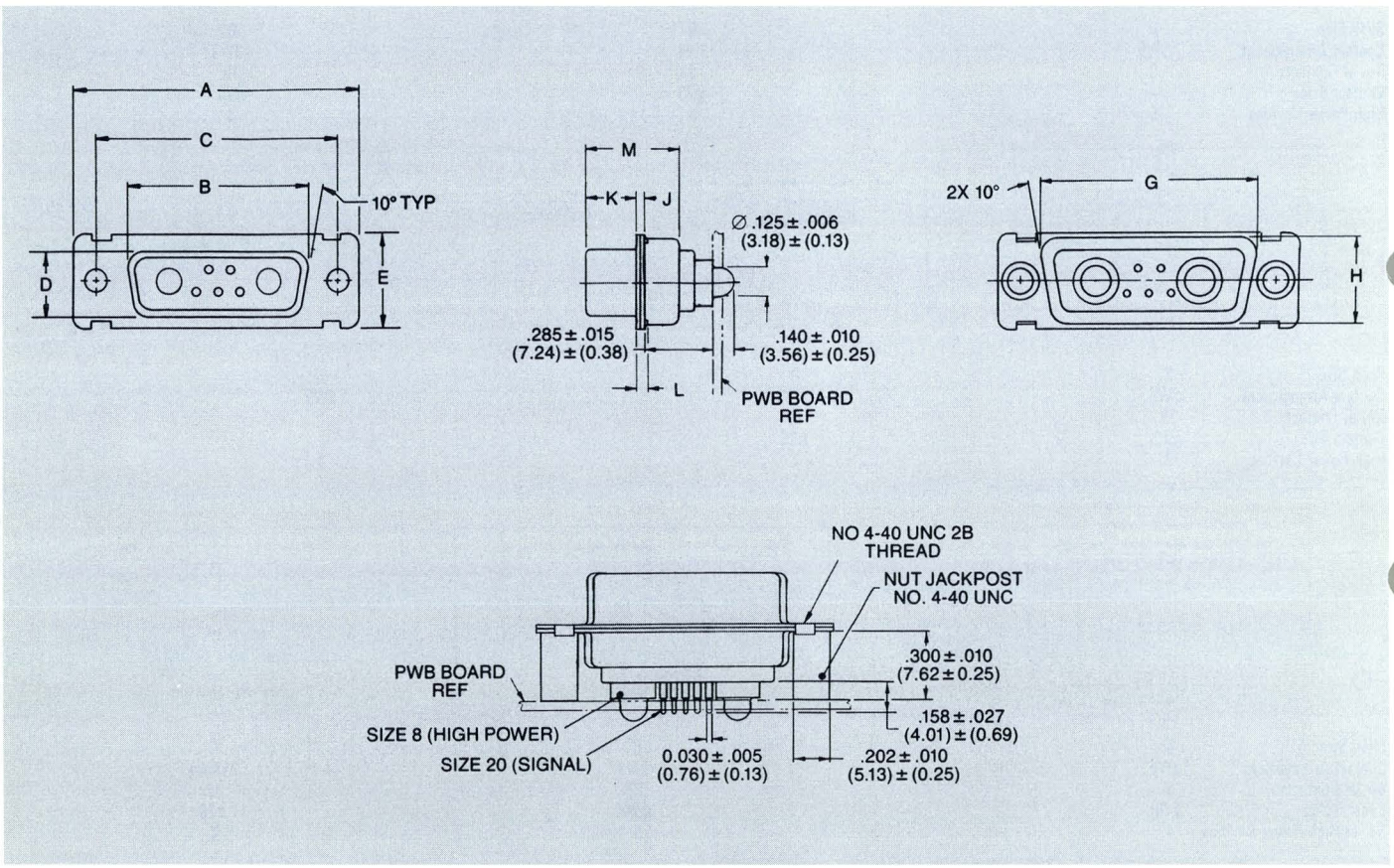


Shell Finish	Tin	Tin	Cadmium/Yellow Chromate
Contact Finish	Gold over Nickel	Gold over Nickel	50 Gold over Copper
Standoffs	No.	Yes	No
DE-5W1	DEM53516-788	DEM53516-789	DEMM51529-43
DA-7W2	DAM53512-1361	DAM53512-1362	DAMM51521-64
DA-3W3	DAM53512-1355	DAM53512-1356	DAMM51521-62
DB-5W5	DBM53513-1695	DBM53513-1696	DBMM51523-101
DB-9W4	DBM53513-1703	DBM53513-1704	DBMM51523-104
DB-13W3	DBM53513-1709	DBM53513-1710	DBMM51523-106
DC-8W8	DCM53514-1641	DCM53514-1642	DCMM51525-81
DC-13W6	DCM53514-1649	DCM53514-1650	DCMM51525-84
DC-17W5	DCM53514-1657	DCM53514-1658	DCMM51525-87
DC-21WA4	DCM53514-1665	DCM53514-1666	DCMM51525-90
DC-25W3	DCM53514-1675	DCM53514-1676	DCMM51525-93

Part numbers come complete with fixed, female, signal and high power contacts.
"D" shell size layouts available

If interested in other layouts, please consult ITT Cannon.

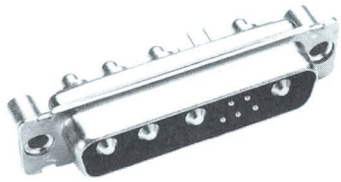
Dimensions



Shell Size	A ±.015 (0.38)	B ±.010 (0.25)	C ±.005 (0.13)	D ±.010 (0.25)	E ±.015 (0.38)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)	M ±.015 (0.38)
DE	1.213 (30.81)	.643 (16.33)	.984 (24.99)	.311 (7.90)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DA	1.541 (39.14)	.971 (24.66)	1.312 (33.32)	.311 (7.90)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DB	2.088 (53.03)	1.511 (38.38)	1.852 (47.04)	.311 (7.90)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DC	2.729 (69.31)	2.159 (54.84)	2.500 (63.50)	.311 (7.90)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Straight Plug for PCB Mounting

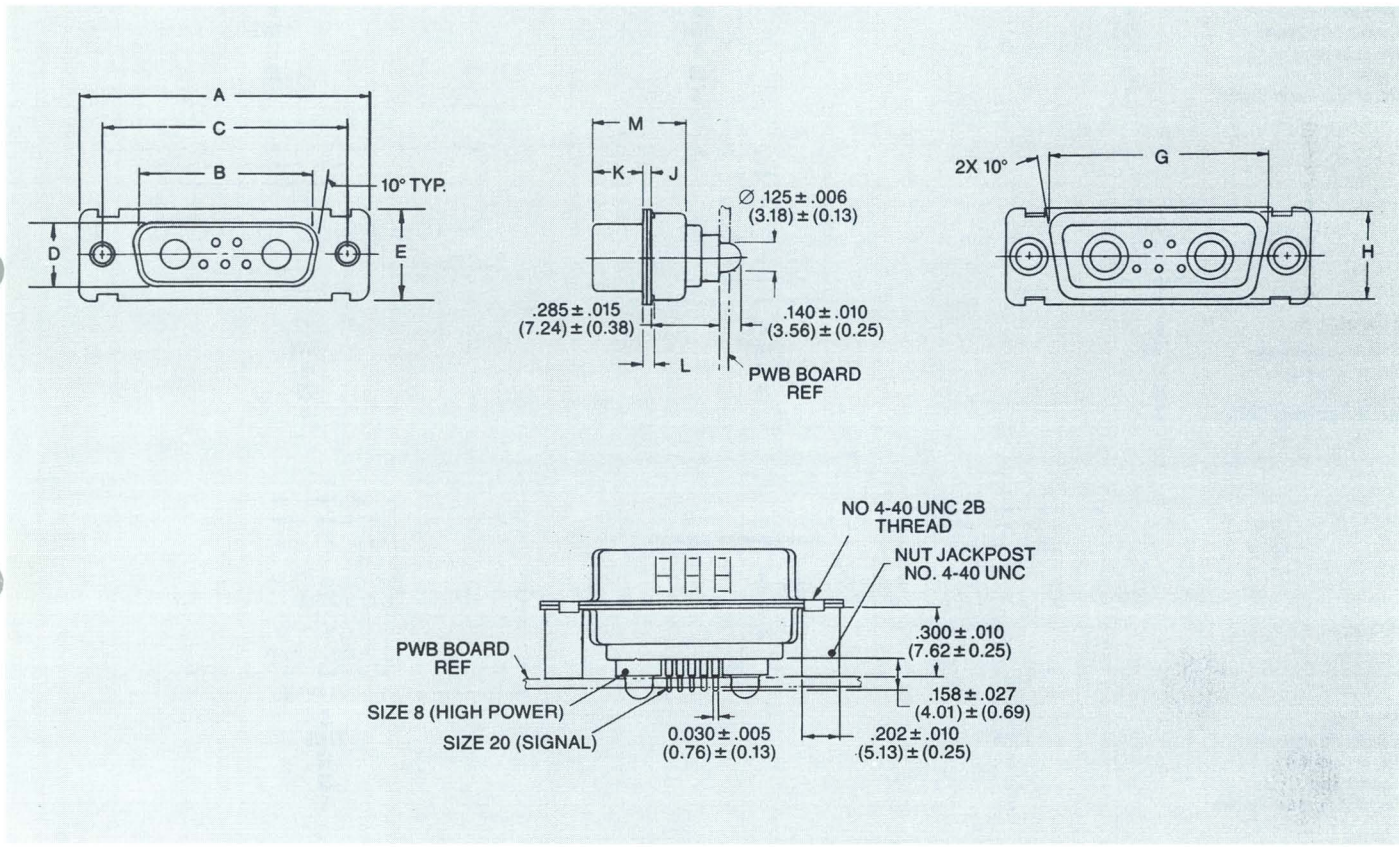


Shell Finish	Tin	Tin	Cadmium/Yellow Chromate
Contact Finish	Gold over Nickel	Gold over Nickel	50 Gold over Copper
Standoffs	No.	Yes	No
DE-5W1	DEM53516-785	DEM53516-786	DEMM51528-42
DA-7W2	DAM53512-1359	DAM53512-1360	DAMM51520-742
DA-3W3	DAM53512-1352	DAM53512-1353	DAMM51520-69
DB-5W5	DBM53513-1692	DBM53513-1693	DBMM51522-104
DB-9W4	DBM53513-1700	DBM53513-1701	DBMM51522-106
DB-13W3	DBM53513-1706	DBM53513-1707	DBMM51522-108
DC-8W8	DCM53514-1638	DCM53514-1639	DCMM51524-102
DC-13W6	DCM53514-1646	DCM53514-1647	DCMM51524-104
DC-17W5	DCM53514-1654	DCM53514-1655	DCMM51524-106
DC-21WA4	DCM53514-1662	DCM53514-1663	DCMM51524-108
DC-25W3	DCM53514-1670	DCM53514-1671	DCMM51524-110

Part numbers come complete with fixed, male, signal and high power contacts.
"D" shell size layouts available

If interested in other layouts please consult ITT Cannon.

Dimensions

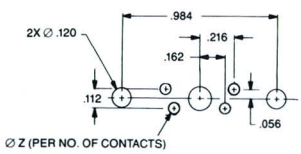


Shell Size	A ±.015 (0.38)	B ±.010 (0.25)	C ±.005 (0.13)	D ±.010 (0.25)	E ±.015 (0.38)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)	M ±.015 (0.38)
DEM-9P	1.213 (30.81)	.666 (16.91)	.984 (24.99)	.329 (8.36)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.429 (10.90)
DAM-15P	1.541 (39.14)	.994 (25.24)	1.312 (33.32)	.329 (8.36)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.429 (10.90)
DBM-25P	2.088 (53.03)	1.534 (38.96)	1.852 (47.04)	.329 (8.36)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.030 (0.76)	.231 (5.87)	.045 (1.14)	.429 (10.90)
DCM-37P	2.729 (69.31)	2.182 (55.42)	2.500 (63.50)	.329 (8.36)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (0.76)	.231 (5.87)	.045 (1.14)	.429 (10.90)

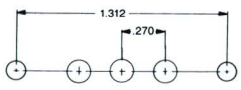
Combination D Subminiature – High Power

Straight Printed Circuit Board Hole Patterns

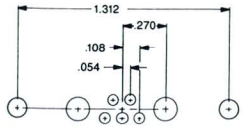
Face View, Pin Insert



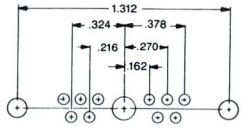
Shell Size	E
Contact Arrangement	5W1
No. of Contacts	4
Contact Size	20
No. of High Power Cavities	1



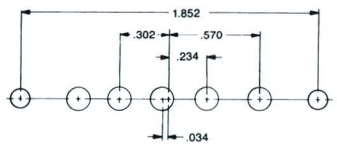
Shell Size	A
Contact Arrangement	3W3
No. of Contacts	0
Contact Size	20
No. of High Power Cavities	3



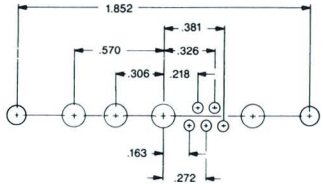
Shell Size	A
Contact Arrangement	7W2
No. of Contacts	7
Contact Size	20
No. of High Power Cavities	2



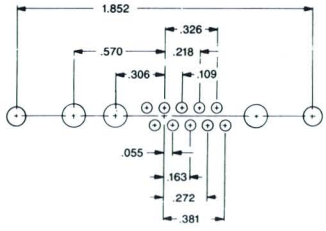
Shell Size	A
Contact Arrangement	11W1
No. of Contacts	1
Contact Size	20
No. of High Power Cavities	1



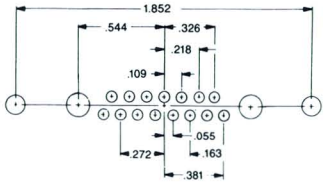
Shell Size	B
Contact Arrangement	5W5
No. of Contacts	0
Contact Size	20
No. of High Power Cavities	5



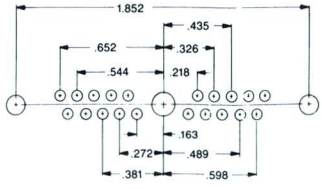
Shell Size	B
Contact Arrangement	9W4
No. of Contacts	9
Contact Size	20
No. of High Power Cavities	4



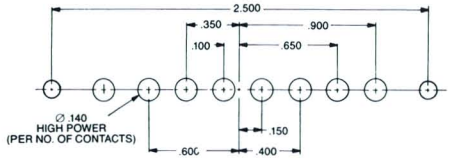
Shell Size	B
Contact Arrangement	13W3
No. of Contacts	13
Contact Size	20
No. of High Power Cavities	3



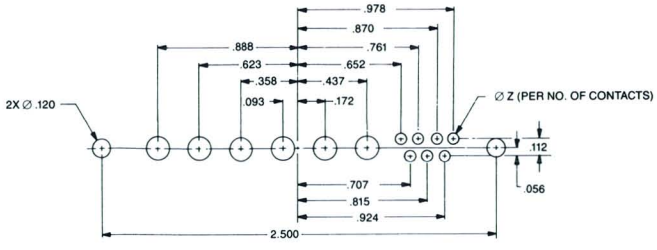
Shell Size	B
Contact Arrangement	17W2
No. of Contacts	17
Contact Size	20
No. of High Power Cavities	2



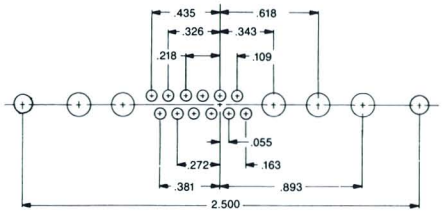
Shell Size	B
Contact Arrangement	21W1
No. of Contacts	21
Contact Size	20



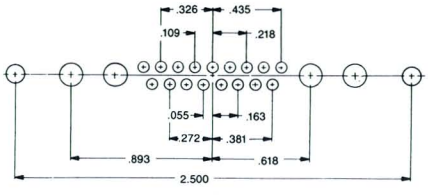
Shell Size	C
Contact Arrangement	8W8
No. of Contacts	0
Contact Size	20
No. of High Power Cavities	8



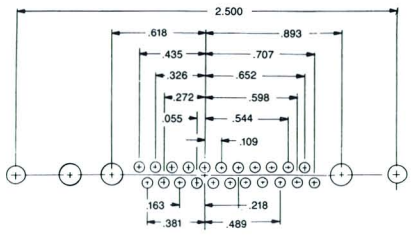
Shell Size	C
Contact Arrangement	13W6
No. of Contacts	7
Contact Size	20
No. of High Power Cavities	6



Shell Size	C
Contact Arrangement	17W5
No. of Contacts	12
Contact Size	20
No. of High Power Cavities	5



Shell Size	C
Contact Arrangement	21WA4
No. of Contacts	17
Contact Size	20
No. of High Power Cavities	4



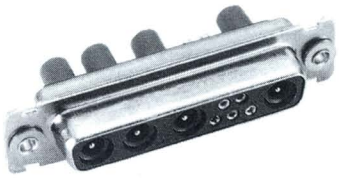
Shell Size	C
Contact Arrangement	25W3
No. of Contacts	22
Contact Size	20
No. of High Power Cavities	3

Size No. 20 Contacts PC Tail Diameter	Z Dia.
.030 (0.76)	.045 (1.14)

ITT Cannon

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Coaxial Housings With Solder Cup Signal Contacts



High voltage contacts supplied separately.

D B MM - 5W5 P **

- SERIES PREFIX
- SHELL SIZE
- CLASS
- MOUNTING TYPE
- CONTACT ARRANGEMENT
- CONTACT TYPE
- MODIFICATION

SERIES PREFIX
D

SHELL SIZE
A, B, C, D, E

CLASS
M – Commercial Version – One piece insulator with gold over nickel contact plating.
MM – Military Version – One piece insulator, materials, finishes and inspection per MIL-C-24308, as applicable. See pages 284-285 for QPL listing. Military version supplied with cadmium over yellow chromate shells with 50 microinches gold over copper contact plating.

MOUNTING TYPE
No Designator: Standard 120 (3.05) diameter hole
E – Two clinch nuts for rear panel mounting
Y – Dual float mount for both front and rear panel mounting.

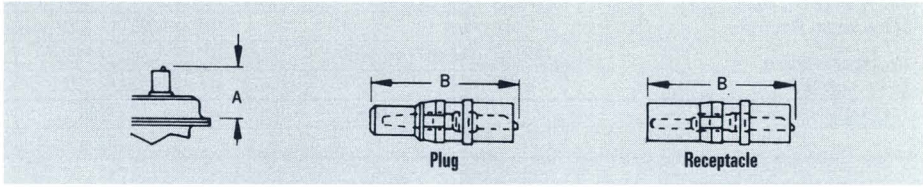
CONTACT ARRANGEMENTS
See page 254 of coax section.

CONTACT TYPE
P – Pin
S – Socket

MODIFICATION–COMMERCIAL
A197 – Tin/Lead electroplated shells (receptacles), socket contacts.
K87 – Shell plated A197 with ground indent (plugs), pin contacts.

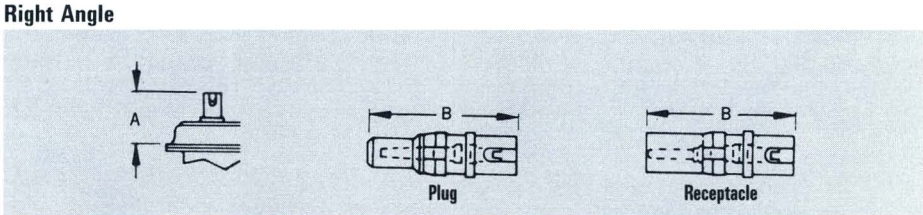
High Voltage Combination Contacts

Straight



	Part Number Std. Finish	Part Number Mil. Finish*	A Max.	B Ref.	Wire Size
Plug	DM51157	DM51157-8	.539 (13.69)	.734 (18.64)	#20
Receptacle	DM51155	DM51155-7	.539 (13.69)	.734 (18.64)	#20

Right Angle



	Part Number Standard Finish	Part Number Military Finish*	A Max.	B Ref.	Wire Size
Plug	DM51157-5000	DM51157-5005	.491 (12.47)	.697 (17.70)	#20
Receptacle	CM51155-5000	DM51155-5004	.491 (12.47)	.697 (17.70)	#20

*MIL-C-23308 Finish: 0.00005 (0.00127) minimum gold plate over copper plate (ITT Cannon code A156).

Tools for High Voltage are the same as for Coaxial Contacts. See page 254.

Combination D Subminiature – High Voltage

Materials and Finishes

Connector Assembly

Description	Material	Finish
Shell	Steel per ASTM A-620	Military: Yellow chromate over cadmium per QQ-P-416, Type II, Class 2 Commercial: Electrodeposited Tin/Lead per MIL-T-10727 over Copper per MIL-C-14550, Class 2, Tin
Insulator	Diallyl phthalate glass-filled per MIL-M-14, Type SDG-F, color green	None
Size 20 contacts when applicable	Copper alloy	Commercial: gold over nickel Military: 50µ min gold per MIL-G-45204, Type II, Grade: C, Class 1/copper per MIL-C-14550

High Voltage Assembly

Description	Material	Finish
Contacts and shells	Copper alloy	Commercial: Gold over nickel Military: 50µ min gold per MIL-G-45204, Type II, Grade C, Class 1/copper per MIL-C-14550
Ring, retaining	Copper alloy	Nickel
Insulator	Teflon	None

Performance Specifications

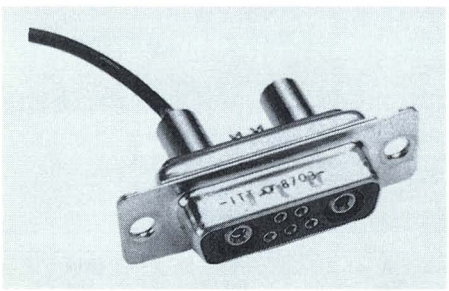
Wire Accommodation (AWG)	#20 Max.
Current Rating	5 Amp
Temperature Rating	−55°C to +125°C

Dielectric Withstanding Voltage

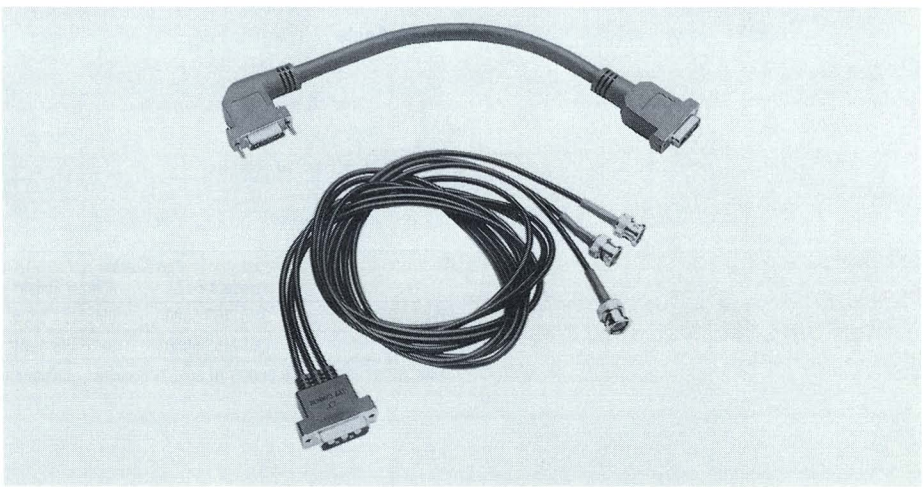
		Altitude (feet/m)							
		Sea Level		20,000/6096		50,000/15240		70,000/1336	
Type of Contact		90°	Straight	90°	Straight	90°	Straight	90°	Straight
High Power Contact and/or Coaxial Shell to Plug Shell	Average Flashover	1500	1500	1000	1000	500	500	500	500
	Test	1000	1000	650	650	325	325	325	325
HV Contact to Nearest Contact or to Shell	Average Flashover	3800	3800	2300	2300	900	900	650	650
	Test	2800	2800	1700	1700	675	675	475	475
#20 Signal	Average Flashover	1700		1000		650		500	
	Test	1250		750		475		375	

All voltage figures are rms AC 60 rms cps, measured at approximately +25°C, 50% rh.
For additional performance specifications refer to MIL-C-24308 Test Extracts on page 297.

D Subminiature Special Applications



Exclusive field-proven fiber optic contacts are interchangeable with electrical contacts in the Combination D Subminiature connectors. Allows for duplex, fiber, and signal contacts to provide needed power.

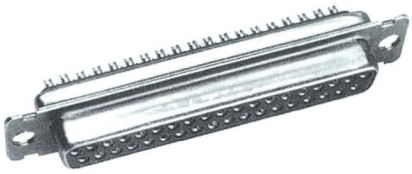


ITT Cannon manufactures highly competitive cable harnessing to all specifications.

Please contact ITT Cannon if you have a special application in mind or if you would like more information about fiber optic contacts or cable harnessing.

High Reliability, Military D Subminiature

Solder Cup



(See page 276)

Crimp

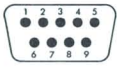
(See page 277)

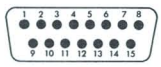
Printed Circuit

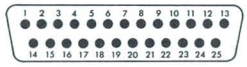
(See page 280)

Contact Arrangements

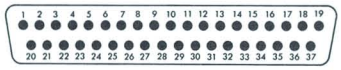
Face View Pin Insert

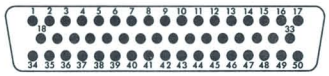






Shell Size	**E**	**A**	**B**
Contact Arrangement	**9**	**15**	**25**
Contact Size	**#20**	**#20**	**#20**





Shell Size	**C**	**D**
Contact Arrangement	**37**	**50**
Contact Size	**#20**	**#20**

Standard Data

MATERIALS AND FINISHES

	Commercial		Military	
	Material	**Finish**	**Material**	**Finish**
Shell	Steel per ASTM A-620	Yellow chromate over cadmium QQ-P-416 Type II Class 2	Steel per ASTM A-620	Yellow chromate over cadmium QQ-P-416 Type II Class 2
Insulator	Diallyl phthalate glass-filled per MIL-M-14, type SDG-F, color green	—	Diallyl phthalate glass-filled per MIL-M-14, type SDG-F, color green	—
Contact	Copper alloy Crimp socket has stainless steel hood passivated.	Gold over nickel	Copper alloy	Gold 50 microinches minimum thickness per MIL-G-45204 Type II Grade C Class 1 over copper per MIL-C-14550
Float Mount Hardware	Stainless steel	Passivate per QQ-P-35	Stainless steel	Passivate per QQ-P-35

PERFORMANCE SPECIFICATIONS

Wire Accommodation (AWG)	Solder – #20 Max. Crimp – #18-#30 Max.
Current Rating	#20; 5 Amp
Temperature Rating	−65°C to +150°C
Contact Resistance After Salt Spray, Millivolt Max.	55 @ 7.5 Amp test current

See pages 284 and 285 for complete M24308 cross reference.

DIELECTRIC WITHSTANDING VOLTAGE

	90° and Straight (Solder/Crimp)			
	Altitude (feet/m)			
	Sea Level	**20,000/6,096**	**50,000/15,240**	**70,000/21,336**
Average Flashover	1700/1500	1000/1000	650/500	500/500
Test	1250/1000	750/650	475/325	375/325

All voltage figures are rms AC 60 rms cps, measured at approximately +25°C, 50% rh. For additional performance specifications refer to MIL-C-24308 Test Extracts on page 297.

How to Order High Rel – Solder Cup Connectors

Mounting Options Available:
4-40 Clinch Nut – Add "E" to Part Number After "M".
4-40 Float Mount – Add "Y" to Part Number After "M".

(Can be used in front or rear panel mount applications)

Example: DBME25S DEMY9P
DBMME25S DEMMY9P

Receptacles (Includes Socket Contacts) With .120" Through Mounting Holes

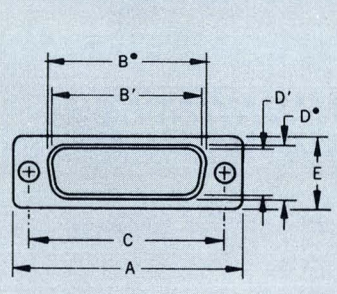
Number of Contacts (Shell Size)	Commercial Version	Military Version	M24308 Cross Reference
9 (E)	DEM9S	DEMM9S	M24308/1-1
15 (A)	DAM15S	DAMM15S	M24308/1-2
25 (B)	DBM25S	DBMM25S	M24308/1-3
37 (C)	DCM37S	DCMM37S	M24308/1-4
50 (D)	DDM50S	DDMM50S	M24308/1-5

Plugs (Includes Pin Contacts) With .120" Through Mounting Holes

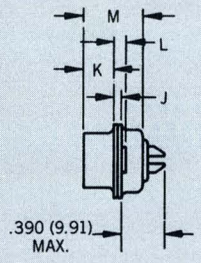
Number of Contacts (Shell Size)	Commercial Version	Military Version	M24308 Cross Reference
9 (E)	DEM9P	DEMM9P	M24308/3-1
15 (A)	DAM15P	DAMM15P	M24308/3-2
25 (B)	DBM25P	DBMM25P	M24308/3-3
37 (C)	DCM37P	DCMM37P	M24308/3-4
50 (D)	DDM50P	DDMM50P	M24308/3-5

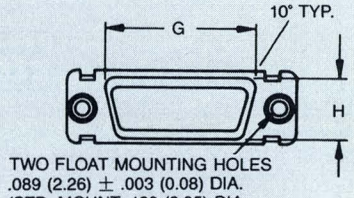
(See page 275 for material/performance specifications)

Dimensions – High Rel Solder Cup Connectors



Front



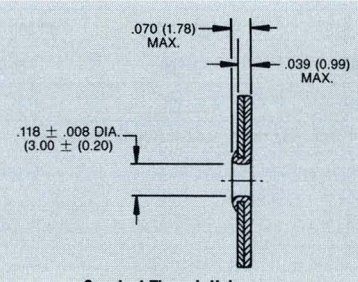


Rear

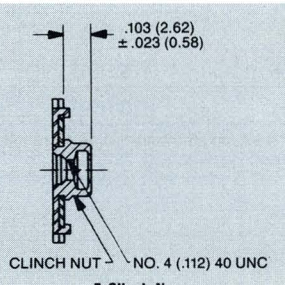
Part Number by Shell Size	A ± .015 (0.38)	B• ± .010 (0.25)	B' ± .010 (0.25)	C ± .005 (0.12)	D• ± .010 (0.25)	D' ± .010 (0.25)	E ± .015 (0.38)	G ± .010 (0.25)	H ± .010 (0.25)	J ± .010 (0.25)	K ± .010 (0.25)	L ± .010 (0.25)	M ± .015 (0.38)
DEM-9P	1.213 (30.81)	— —	.666 (16.91)	.984 (24.99)	— —	.329 (8.36)	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.422 (10.72)
DEM-9S	1.213 (30.81)	.640 (16.25)	— —	.984 (24.99)	.308 (7.82)	— —	.494 (12.55)	.759 (19.28)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DAM-15P	1.541 (39.14)	— —	.994 (25.24)	1.312 (33.32)	— —	.329 (8.36)	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.422 (10.72)
DAM-15S	1.541 (39.14)	.968 (24.58)	— —	1.312 (33.32)	.308 (7.82)	— —	.494 (12.55)	1.083 (27.51)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DBM-25P	2.088 (53.03)	— —	1.534 (38.96)	1.852 (47.04)	— —	.329 (8.36)	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.039 (0.99)	.231 (5.87)	.060 (1.52)	.426 (10.82)
DBM-25S	2.088 (53.03)	1.508 (38.30)	— —	1.852 (47.04)	.308 (7.82)	— —	.494 (12.55)	1.625 (41.27)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DCM-37P	2.729 (69.31)	— —	2.182 (55.42)	2.500 (63.50)	— —	.329 (8.36)	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.039 (0.99)	.231 (5.87)	.060 (1.52)	.426 (10.82)
DCM-37S	2.729 (69.31)	2.156 (54.76)	— —	2.500 (63.50)	.308 (7.82)	— —	.494 (12.55)	2.272 (57.71)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)
DDM-50P	2.635 (66.92)	— —	2.079 (52.81)	2.406 (61.11)	— —	.436 (11.07)	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.039 (0.99)	.231 (5.87)	.060 (1.52)	.426 (10.82)
DDM-50S	2.635 (66.92)	2.062 (52.37)	— —	2.406 (61.11)	.420 (10.67)	— —	.605 (15.37)	2.178 (55.32)	.534 (13.56)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)

• Dimensions B, D, G, and H are measured as outside dimensions at the bottom of the draw.
NOTE: B• and D• are the O.D. dims. for socket side, B' and D' are the I.D. dims. for pin side.

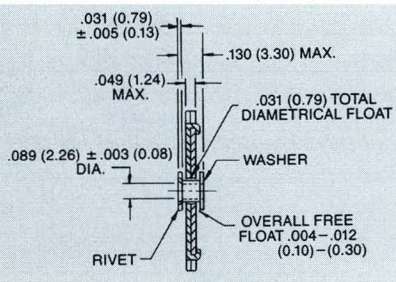
Mounting Option Dimensions — Solder Cup Connectors



Standard-Through-Hole



E-Clinch Nut



Y-Float Mount

It is recommended that only one assembly, either pin or socket, be float mounted.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

How to Order — Crimp Connectors

Receptacles (Includes Socket Contacts) With .120" Through-Mounting Holes

Number of Contacts (Shell Size)	Commercial Version	Military Version	M24308 Cross Reference
9(E)	DEMA9S	DEMAM9S	M24308/2-1
15(A)	DAMA15S	DAMAM15S	M24308/2-2
25(B)	DBMA25S	DBMAM25S	M24308/2-3
37(C)	DCMA37S	DCMAM37S	M24308/2-4
50(D)	DDMA50S	DDMAM50S	M24308/2-5

Plugs (Includes Pin Contacts)* With .120" Through Mounting Holes

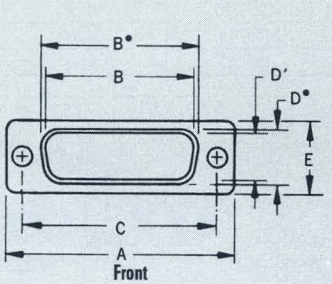
Number of Contacts (Shell Size)	Commercial Version	Military Version	M24308 Cross Reference
9(E)	DEMA9P	DEMAM9P	M24308/4-1
15(A)	DAMA15P	DAMAM15P	M24308/4-2
25(B)	DBMA25P	DBMAM25P	M24308/4-3
37(C)	DCMA37P	DCMAM37P	M24308/4-4
50(D)	DDMA50P	DDMAM50P	M24308/4-5

*To receive the connector without contacts, add "FO" to end of part number.
Example: DBMA25SFO, DBMAM25SFO.

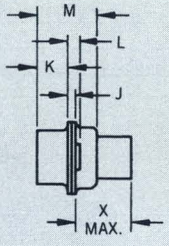
Mounting Options Available:
4-40 Clinch Nut — Add "E" to Part Number After "M" or "A"
4-40 Float Mount — Add "Y" to Part Number After "M" or "A"
(Can be used in front or rear panel mount applications)

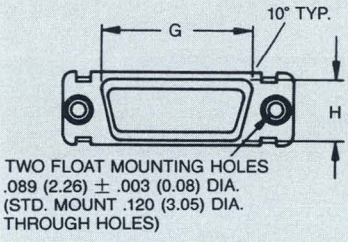
Example: DBMAE25S
DBMAME25S
DEMAY9P
DEMAMY9P

Dimensions — Crimp Connectors



Front

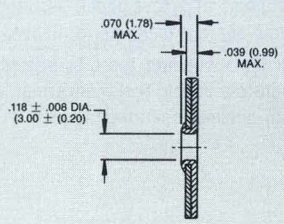




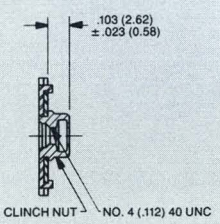
Rear

Part Number by Shell Size	A ±.015 (0.38)	B• ±.010 (0.25)	B' ±.010 (0.25)	C ±.005 (0.12)	D• ±.010 (0.25)	D' ±.010 (0.25)	E ±.015 (0.38)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)	M ±.015 (0.38)	X Max
DEM-9P	1.213(30.81)	—	.666(16.91)	.984(24.99)	—	.329(8.36)	.494(12.55)	.759(19.28)	.422(10.72)	.030(0.76)	.236(5.99)	.045(1.14)	.422(10.72)	.375(9.52)
DEM-9S	1.213(30.81)	.640(16.25)	—	.984(24.99)	.308(7.82)	—	.494(12.55)	.759(19.28)	.422(10.72)	.030(0.76)	.243(6.17)	.045(1.14)	.429(10.90)	.375(9.52)
DAM-15P	1.541(39.14)	—	.994(25.24)	1.312(33.32)	—	.329(8.36)	.494(12.55)	1.083(27.51)	.422(10.72)	.030(0.76)	.236(5.99)	.045(1.14)	.422(10.72)	.375(9.52)
DAM-15S	1.541(39.14)	.968(24.58)	—	1.312(33.32)	.308(7.82)	—	.494(12.55)	1.083(27.51)	.422(10.72)	.030(0.76)	.243(6.17)	.045(1.14)	.429(10.90)	.375(9.52)
DBM-25P	2.088(53.03)	—	1.534(38.96)	1.852(47.04)	—	.329(8.36)	.494(12.55)	1.625(41.27)	.422(10.72)	.039(0.99)	.231(5.87)	.060(1.52)	.426(10.82)	.375(9.52)
DBM-25S	2.088(53.03)	1.508(38.30)	—	1.852(47.04)	.308(7.82)	—	.494(12.55)	1.625(41.27)	.422(10.72)	.030(0.76)	.243(6.17)	.045(1.14)	.429(10.90)	.375(9.52)
DCM-37P	2.729(69.31)	—	2.182(55.42)	2.500(63.50)	—	.329(8.36)	.494(12.55)	2.272(57.71)	.422(10.72)	.039(0.99)	.231(5.87)	.060(1.52)	.426(10.82)	.375(9.52)
DCM-37S	2.729(69.31)	2.156(54.76)	—	2.500(63.50)	.308(7.82)	—	.494(12.55)	2.272(57.71)	.422(10.72)	.030(0.76)	.243(6.17)	.045(1.14)	.429(10.90)	.375(9.52)
DDM-50P	2.635(66.92)	—	2.079(52.81)	2.406(61.11)	—	.436(11.07)	.605(15.37)	2.178(55.32)	.534(13.56)	.039(0.99)	.231(5.87)	.060(1.52)	.426(10.82)	.375(9.52)
DDM-50S	2.635(66.92)	2.062(52.37)	—	2.406(61.11)	.420(10.67)	—	.605(15.37)	2.178(55.32)	.534(13.56)	.030(0.76)	.243(6.17)	.045(1.14)	.429(10.90)	.375(9.52)

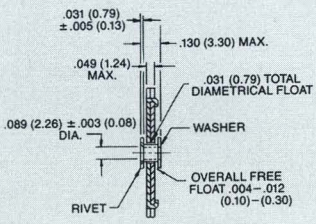
Mounting Option Dimensions



Standard-Through-Hole



E-Clinch Nut



Y-Float Mount

It is recommended that only one assembly, either pin or socket, be float mounted.

High Rel Crimp Contacts

MATERIALS AND FINISHES

Contact Size	Wire Size Accom.	Standard Finish Pin	Standard Finish Socket	Military Finish Pin	Military Finish Socket
20	20, 22, 24	330-5291-000	031-1007-000	330-5291-037	031-1007-042
20-18	1 #18 & 2 #22	330-5291-001	031-1007-001	330-5291-055	031-1007-054
20-26	26, 28, 30	330-5291-004	031-1007-004	330-5291-050	031-1007-048
22D	22, 24, 26, 28			330-2042-002	031-1147-002

MIL-C-39029 Cross-Reference

Contact Size	Wire Size Accom.	M39029	M24308*	Cannon Part No.
20 Pin	20/22/24	/64-369	/11-1	330-5291-037
20 Socket	20/22/24	/63-368	/10-1	031-1007-042
22D Pin 23	24/26/28	/58-360	/13-1	031-2042-000
22D Socket	22/24/26/28	/57-354	/12-1	331-1147-000

*Superseded by M39029

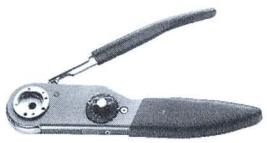
Tooling

Insertion/Extraction Tools

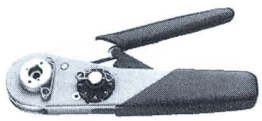
CIET-20-HD

Contact Size	AWG	Plastic Insertion/Extraction Part No.	Plastic Insertion/Extraction Description	Plastic Extraction Part No.	Plastic Extraction Description
20	20, 22, 24	274-7006-000	CIET-20HD	323-7010-000	CET-20-11
2026	26, 28, 30	274-7006-000	CIET-20HD	323-7010-000	CET-20-11
2018	1 #18	None	None	274-5016-002	CET-20-15
	2 #22	None	None	274-5016-002	CET-20-15
22D	22, 24, 26, 28	274-7048-000	CIET-22D	None	None
High Power	12, 16	274-7003-000	CIET-12	None	None
High Volt	#20	274-7003-000	CIET-12	None	None

Hand Crimp Tools



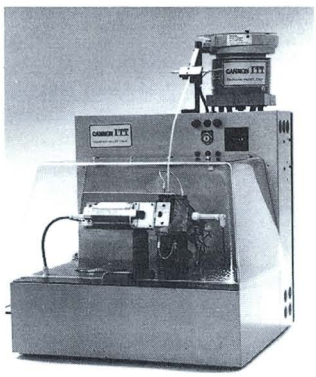
M22520/1-01



M22520/2-01

Contact Size	AWG	Crimp Tool Part No.	Crimp Tool Description	Locator Part No.	Locator Description
20	20, 22, 24	995-0001-584	M22520/2-01	995-00001-604	M22520/2-08
		995-0001-585	M22520/1-01	995-0001-244	TH25
2026	26, 28, 30	995-0001-584	M22520/2-01	995-0001-325	L3198-20HD
2018	1 #18 2 #22	995-0001-584	M22520/2-01	980-0005-722	K250
22D	22, 24, 26, 28	995-0001-584	M22520/2-01	995-0001-739	M22520/2-06

Semi-Automatic Crimp Machines

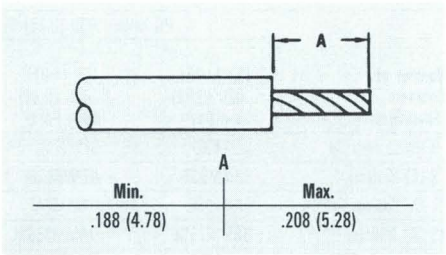


CBT 491

For volume applications the CBT-491 is a vibra-bowl, pneumatically operated crimper offering a more economical approach than belt-fed crimpers. Available for lease or purchase, this machine is designed for use with a wide variety of machined contacts. The MIL-Spec crimp is accomplished at the press of a foot pedal, assuring minimum cycle times and maximum performance.

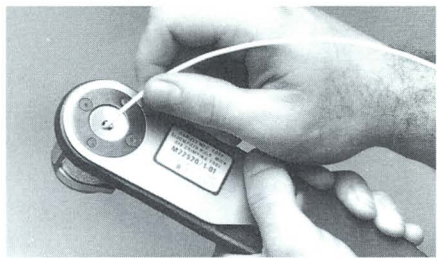
For lower volumes the CBT-565 is a pneumatically operated bench tool delivering MIL-Spec crimps with minimal operator fatigue.

Assembly Instructions



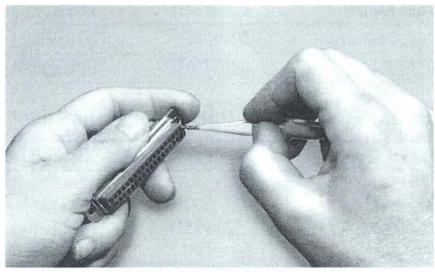
1. Cut wires to length. Strip insulation per above illustration. Check for broken or frayed wires.

Contact Crimping

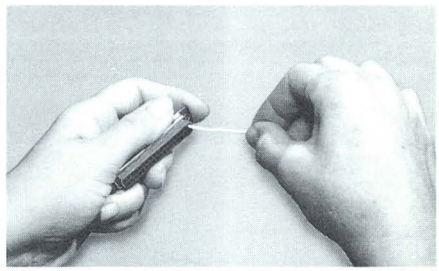


2. Insert contact and wire into proper crimp tool (and locator, if required). Crimp contact to wire. Inspect crimp.

Contact Insertion

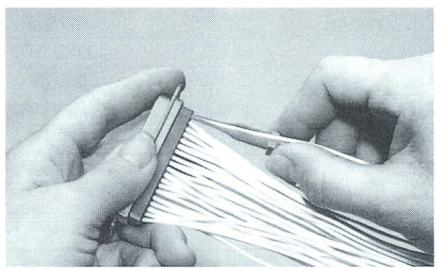


3. Center wired contact in groove of insertion tool with tool tip butting contact shoulder. Insert contact into cavity until a positive stop is felt. Inspect insertion.

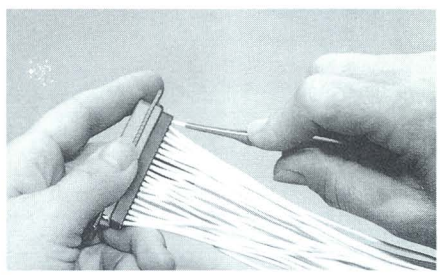


4. To be sure contact is locked securely, pull back lightly on wire. Repeat for balance of contacts working row by row across the insulator.

Contact Extraction

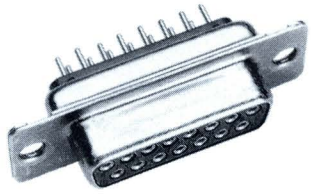


5. Place wire into extraction tool tip.



6. Insert tool tip into contact cavity until tip bottoms against contact shoulder, releasing tines. Hold wire against tool with finger and remove tool and contact. Repeat for balance of contacts.

How to Order – High-Rel Printed Circuit Mount Connectors



Straight PC Tail, Receptacles (Includes Socket Contacts) With .120 (3.15) Through-Mounting Holes

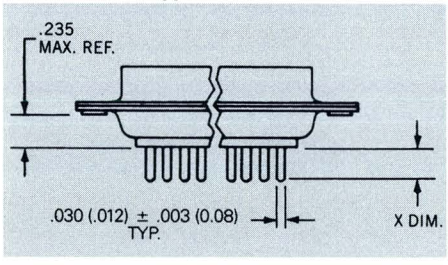
Number of Contacts (Shell Size)	PC Tails - .030 (0.76) Diameter			Wire Wrap Post - .024 (0.61) Square	
	.127 (3.23) ±.020 (0.51) Long Post	.158 (4.01) ±.020 (0.51) Long Post	.183 (4.65) ±.020 (0.51) Long Post	.375 (9.52) ±.020 (0.51) Long Post (Two Wrap)	.500 (12.70) ±.020 (0.51) Long Post (Three Wrap)
9 (E) Commercial	DEM9SE	DEM9SM	DEM9SZ	DEM9SF179	DEM9SF179A
9 (E) Military	**DEMM9SE**	**DEMM9SM**	**DEMM9SZ**	**DEMM9SF179**	**DEMM9SF179A**
15 (A) Commercial	DAM15SE	DAM15SM	DAM15SZ	DAM15SF179	DAM15SF179A
15 (A) Military	**DAMM15SE**	**DAMM15SM**	**DAMM15SZ**	**DAMM15SF179**	**DAMM15SF179A**
25 (B) Commercial	DBM25SE	DBM25SM	DBM25SZ	DBM25SF179	DBM25SF179A
25 (B) Military	**DBMM25SE**	**DBMM25SM**	**DBMM25SZ**	**DBMM25SF179**	**DBMM25SF179A**
37 (C) Commercial	DCM37SE	DCM37SM	DCM37SZ	DCM37SF179	DCM37SF179A
37 (C) Military	**DCMM37SE**	**DCMM37SM**	**DCMM37SZ**	**DCMM37SF179**	**DCMM37SF179A**
50 (D) Commercial	DDM50SE	DDM50SM	DDM50SZ	DDM50SF179	DDM50SF179A
50 (D) Military	**DDMM50SE**	**DDMM50SM**	**DDM50SZ**	**DDMM50SF179**	**DDMM50SF179A**

Straight PC Tail, Plug (Includes Pin Contacts) With .120(3.15) Through-Mounting Holes

Number of Contacts (Shell Size)	PC Tails - .030 (0.76) Diameter			Wire Wrap Post - .024 (0.61) Square	
	.127 (3.23) ±.020 (0.51) Long Post	.158 (4.01) ±.020 (0.51) Long Post	.183 (4.65) ±.020 (0.51) Long Post	.375 (9.52) ±.020 (0.51) Long Post (Two Wrap)	.500 (12.70) ±.020 (0.51) Long Post (Three Wrap)
9 (E) Commercial	DEM9PE	DEM9PM	DEM9PZ	DEM9PF179	DEM9PF179A
9 (E) Military	**DEMM9PE**	**DEMM9PM**	**DEMM9PZ**	**DEMM9PF179**	**DEMM9PF179A**
15 (A) Commercial	DAM15PE	DAM15PM	DAM15PZ	DAM15PF179	DAM15PF179A
15 (A) Military	**DAMM15PE**	**DAMM15PM**	**DAMM15PZ**	**DAMM15PF179**	**DAMM15PF179A**
25 (B) Commercial	DBM25PE	DBM25PM	DBM25PZ	DBM25PF179	DBM25PF179A
25 (B) Military	**DBMM25PE**	**DBMM25PM**	**DBMM25PZ**	**DBMM25PF179**	**DBMM25PF179A**
37 (C) Commercial	DCM37PE	DCM37PM	DCM37PZ	DCM37PF179	DCM37PF179A
37 (C) Military	**DCMM37PE**	**DCMM37PM**	**DCMM37PZ**	**DCMM37PF179**	**DCMM37PF179A**
50 (D) Commercial	DDM50PE	DDM50PM	DDM50PZ	DDM50PF179	DDM50PF179A
50 (D) Military	**DDMM50PE**	**DDMM50PM**	**DDMM50PZ**	**DDMM50PF179**	**DDMM50PF179A**

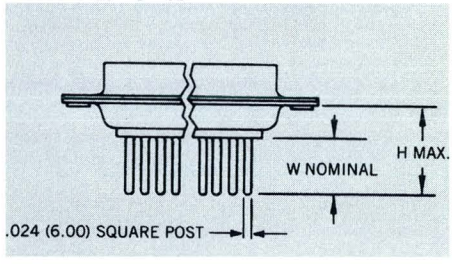
Dimensions

Printed Circuit Applications



Code (Last Letter of Part Number)	Straight X ±.020 (0.51)
E	.127 (0.51)
M	.158 (4.01)
Z	.183 (4.65)

Wire Wrapping Applications



Modification Code	Number of Wraps	W	H
F179	2	.375 (9.52)	.625 (15.88)
F179A	3	.500 (12.7)	.750 (19.05)

How to Order - High-Rel Printed Circuit Mount Connectors

Right Angle PC Tail Receptacles, With Bracket (.120(3.15) Through-Holes Only)

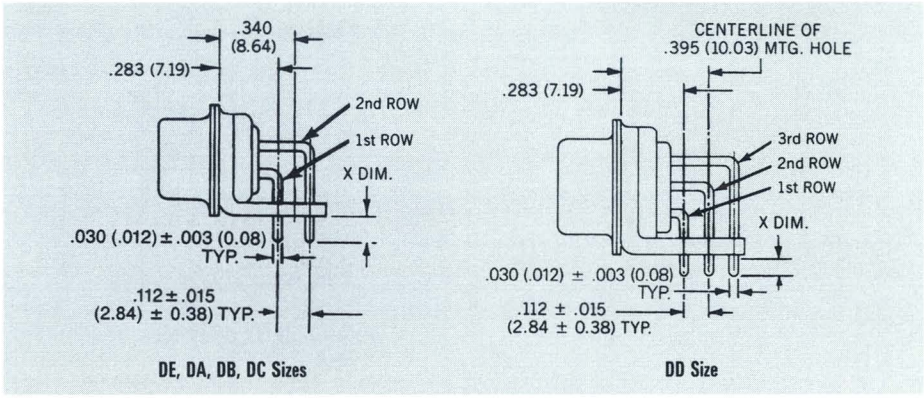
Number of Contacts (Shell Size)	PC Tails - .030 (0.76) Diameter .127 (3.23) ±.020 (0.51) Long Post	.158 (4.01) ±.020 (0.51) Long Post	.183 (4.65) ±.020 (0.51) Long Post
9 (E) Commercial	DEM9SD	DEM9SL	DEM9SS
9 (E) Military	**DEMM9SD**	**DEMM9SL**	**DEMM9SS**
15 (A) Commercial	DAM15SD	DAM15SL	DAM15SS
15 (A) Military	**DAMM15SD**	**DAMM15SL**	**DAMM15SS**
25 (B) Commercial	DBM25SD	DBM25SL	DBM25SS
25 (B) Military	**DBMM25SD**	**DBMM25SL**	**DBMM25SS**
37 (C) Commercial	DCM37SD	DCM37SL	DCM37SS
37 (C) Military	**DCMM37SD**	**DCMM37SL**	**DCMM37SS**
50 (D) Commercial	DDM50SD	DDM50SL	DDM50SS
50 (D) Military	**DDMM50SD**	**DDMM50SL**	**DDMM50SS**

Right Angle PC Tail Plug, With Bracket (.120(3.15) Through-Holes Only)

Number of Contacts (Shell Size)	PC Tails - .030 (0.76) Diameter .127 (3.23) ±.020 (0.51) Long Post	.158 (4.01) ±.020 (0.51) Long Post	.183 (4.65) ±.020 (0.51) Long Post
9 (E) Commercial	DEM9PD	DEM9PL	DEM9PS
9 (E) Military	**DEMM9PD**	**DEMM9PL**	**DEMM9PS**
15 (A) Commercial	DAM15PD	DAM15PL	DAM15PS
15 (A) Military	**DAMM15PD**	**DAMM15PL**	**DAMM15PS**
25 (B) Commercial	DBM25PD	DBM25PL	DBM25PS
25 (B) Military	**DBMM25PD**	**DBMM25PL**	**DBMM25PS**
37 (C) Commercial	DCM37PD	DCM37PL	DCM37PS
37 (C) Military	**DCMM37PD**	**DCMM37PL**	**DCMM37PS**
50 (D) Commercial	DDM50PD	DDM50PL	DDM50PS
50 (D) Military	**DDMM50PD**	**DDMM50PL**	**DDMM50PS**

Dimensions-Right Angle 90° D Subminiature

Connectors with brackets cannot be ordered with float mounts or clinch nuts.

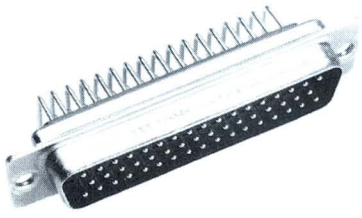


Code Last Letter of P/N's	Right Angle With Bracket	X ±.020 (0.51)
D	•	.127 (3.22)
L	•	.158 (4.01)
S	•	.183 (4.65)

High-Rel Printed Circuit Mount Connectors

Right Angle PC Tail Receptacles, Without Bracket (.120(3.15) Through-Holes)

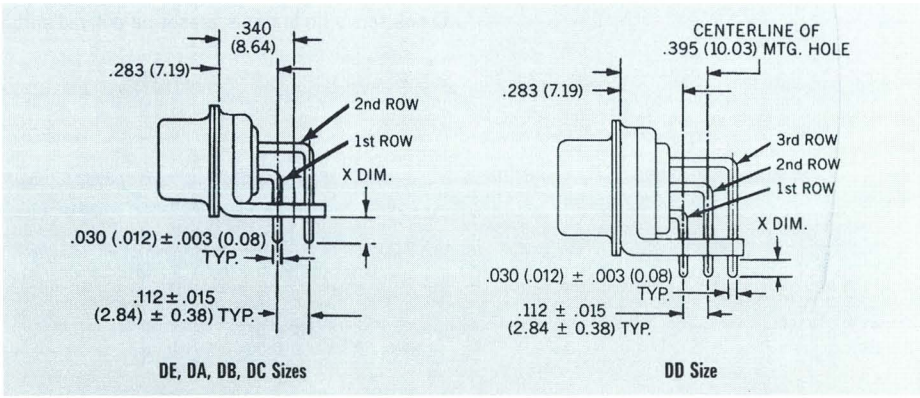
Number of Contacts (Shell Size)	PC Tails - .030 (0.76) Diameter .127 (3.23) ±.020 (0.51) Long Post	.158 (4.01) ±.020 (0.51) Long Post	.183 (4.65) ±.020 (0.51) Long Post
9 (E) Commercial	DEM9SF	DEM9SP	DEM9SR
9 (E) Military	**DEMM9SF**	**DEMM9SP**	**DEMM9SR**
15 (A) Commercial	DAM15SF	DAM15SP	DAM15SR
15 (A) Military	**DAMM15SF**	**DAMM15SP**	**DAMM15SR**
25 (B) Commercial	DBM25SF	DBM25SP	DBM25SR
25 (B) Military	**DBMM25SF**	**DBMM25SP**	**DBMM25SR**
37 (C) Commercial	DCM37SF	DCM37SP	DCM37SR
37 (C) Military	**DCMM37SF**	**DCMM37SP**	**DCMM37SR**
50 (D) Commercial	DDM50SF	DDM50SP	DDM50SR
50 (D) Military	**DDMM50SF**	**DDMM50SP**	**DDMM50SR**



Right Angle PC Tail Plugs, Without Bracket (.120(3.15) Through-Holes)

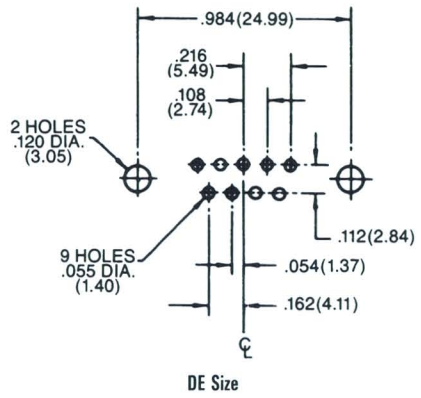
Number of Contacts (Shell Size)	PC Tails - .030 (0.76) Diameter .127 (3.23) ±.020 (0.51) Long Post	.158 (4.01) ±.020 (0.51) Long Post	.183 (4.65) ±.020 (0.51) Long Post
9 (E) Commercial	DEM9PF	DEM9PP	DEM9PR
9 (E) Military	**DEMM9PF**	**DEMM9PP**	**DEMM9PR**
15 (A) Commercial	DAM15PF	DAM15PP	DAM15PR
15 (A) Military	**DAMM15PF**	**DAMM15PP**	**DAMM15PR**
25 (B) Commercial	DBM25PF	DBM25PP	DBM25PR
25 (B) Military	**DBMM25PF**	**DBMM25PP**	**DBMM25PR**
37 (C) Commercial	DCM37PF	DCM37PP	DCM37PR
37 (C) Military	**DCMM37PF**	**DCMM37PP**	**DCMM37PR**
50 (D) Commercial	DDM50PF	DDM50PP	DDM50PR
50 (D) Military	**DDMM50PF**	**DDMM50PP**	**DDMM50PR**

Dimensions-Right Angle 90° D Subminiature

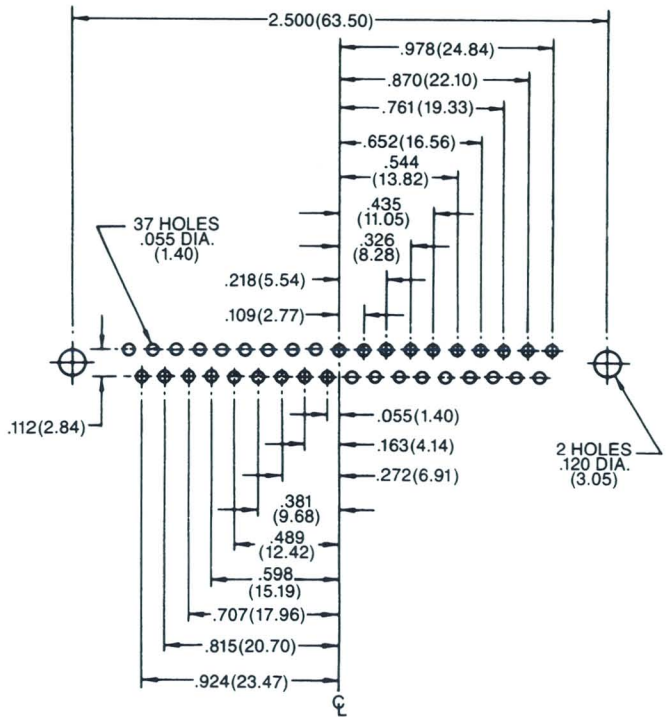


Code Last Letter of P/N's	Right Angle Without Bracket	X ±.020 (0.51)
F	•	.127 (3.22)
P	•	.158 (4.01)
R	•	.183 (4.65)

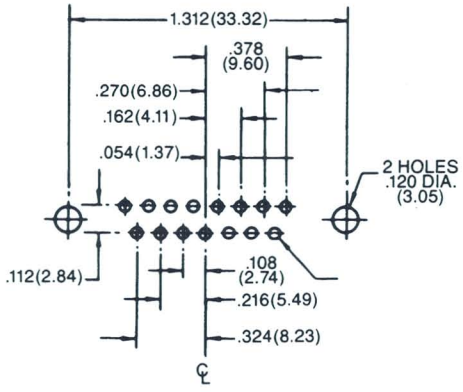
PC Board Hole Patterns



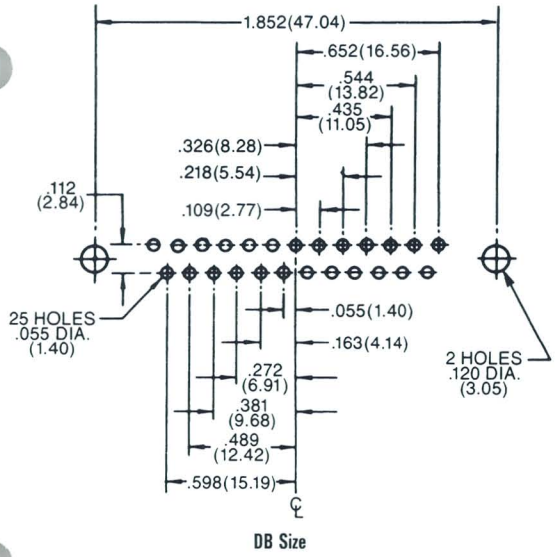
DE Size



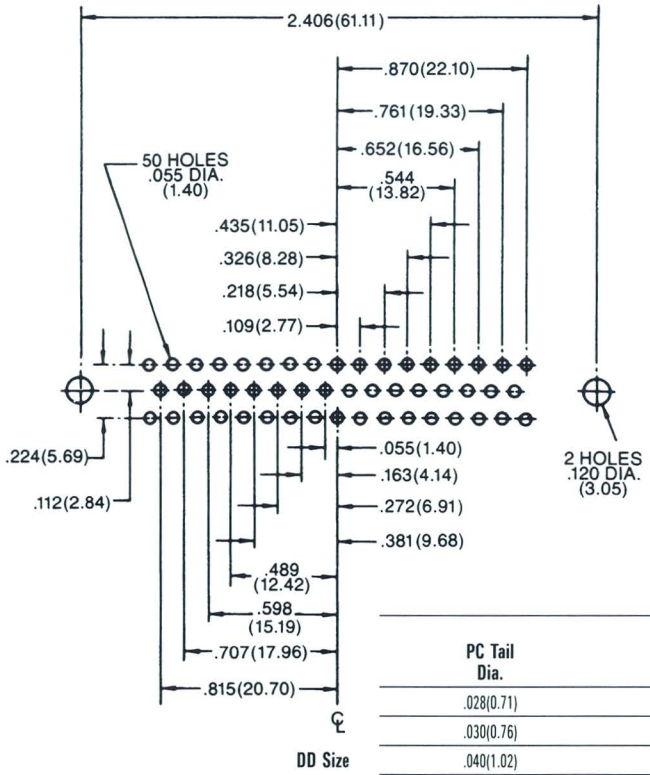
DC Size



DA Size



DB Size



DD Size

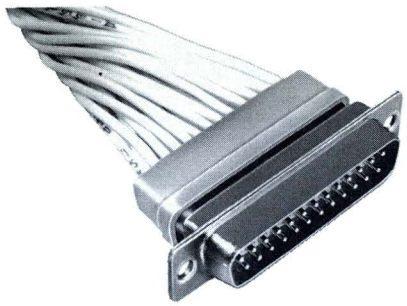
PC Tail Dia.	Recommended PC Board Hole Dia.
.028(0.71)	.045(1.14)
.030(0.76)	.045(1.14)
.040(1.02)	.055(1.40)

MIL-C-24308 Cross Reference

Military Part Number	Cannon Part Number	Military Part Number	Cannon Part Number	Military Part Number	Cannon Part Number
M24308/1-1	DEMM9S	M24308/2-485	DCMAMY37S-FO	M24308/6-5	DDMAM50SNM
M24308/1-2	DAMM15S	M24308/2-486	DDMAMY50S-FO	M24308/6-6	DEMAMT9SNM
M24308/1-3	DBMM25S	M24308/3-1	DEMM9P	M24308/6-7	DAMAMT15SNM
M24308/1-4	DCMM37S	M24308/3-2	DAMM15P	M24308/6-8	DBMAMT25SNM
M24308/1-5	DDMM50S	M24308/3-3	DBMM25P	M24308/6-9	DCMAMT37SNM
M24308/1-12	DEMMF9S	M24308/3-4	DCMM37P	M24308/6-10	DDMAMT50SNM
M24308/1-13	DAMMF15S	M24308/3-5	DDMM50P	M24308/6-15	DDMAM78SNM
M24308/1-14	DBMMF25S	M24308/3-12	DEMMF9P	M24308/6-259	DEMAMF9SNM
M24308/1-15	DCMMF37S	M24308/3-13	DAMMF15P	M24308/6-260	DAMAMF15SNM
M24308/1-16	DDMMF50S	M24308/3-14	DBMMF25P	M24308/6-261	DBMAMF25SNM
M24308/1-23	DEMMY9S	M24308/3-15	DCMMF37P	M24308/6-262	DCMAMF37SNM
M24308/1-24	DAMMY15S	M24308/3-16	DDMMF50P	M24308/6-263	DDMAMF50SNM
M24308/1-25	DBMMY25S	M24308/4-1	DEMAM9P	M24308/6-268	DDMAMF78SNM
M24308/1-26	DCMMY37S	M24308/4-2	DAMAM15P	M24308/6-270	DEMAMFT9SNM
M24308/1-27	DDMMY50S	M24308/4-3	DBMAM25P	M24308/6-271	DAMAMFT15SNM
M24308/2-1	DEMAM9S	M24308/4-4	DCMAM37P	M24308/6-272	DBMAMFT25SNM
M24308/2-2	DAMAM15S	M24308/4-5	DDMAM50P	M24308/6-273	DCMAMFT37SNM
M24308/2-3	DBMAM25S	M24308/4-6	DEMAMT9P	M24308/6-274	DDMAMFT50SNM
M24308/2-4	DCMAM37S	M24308/4-7	DAMAMT15P	M24308/6-281	DEMAM9SNM-FO
M24308/2-5	DDMAM50S	M24308/4-8	DBMAMT25P	M24308/282	DAMAM15SNM-FO
M24308/2-6	DEMAMT9S	M24308/4-9	DCMAMT37P	M24308/6-283	DBMAM25SNM-FO
M24308/2-7	DAMAMT15S	M24308/4-10	DDMAMT50P	M24308/6-284	DCMAM37SNM-FO
M24308/2-8	DBMAMT25S	M24308/4-15	DDMAM78P	M24308/6-285	DDMAM50SNM-FO
M24308/2-9	DCMAMT37S	M24308/4-259	DEMAM9P-FO	M24308/6-290	DDMAM78SNM-FO
M24308/2-10	DDMAMT50S	M24308/4-260	DAMAM15P-FO	M24308/6-324	DEMAMF9SNM-FO
M24308/2-15	DDMAM78S	M24308/4-261	DBMAM25P-FO	M24308/6-325	DAMAMF15SNM-FO
M24308/2-23	DEMAMF9S	M24308/4-262	DCMAM37P-FO	M24308/6-326	DBMAMF25SNM-FO
M24308/2-24	DAMAMF15S	M24308/4-263	DDMAM50P-FO	M24308/6-327	DCMAMF37SNM-FO
M24308/2-25	DBMAMF25S	M24308/4-268	DDMAM78P-FO	M24308/6-328	DDMAMF50SNM-FO
M24308/2-26	DCMAMF37S	M24308/4-302	DEMAMF9P	M24308/6-333	DDMAMF78SNM-FO
M24308/2-27	DDMAMF50S	M24308/4-303	DAMAMF15P	M24308/6-453	DEMAMY9SNM
M24308/2-32	DDMAMF78S	M24308/4-304	DBMAMF25P	M24308/6-454	DAMAMY15SNM
M24308/2-34	DEMAMFT9S	M24308/4-305	DCMAMF37P	M24308/6-455	DBMAMY25SNM
M24308/2-35	DAMAMFT15S	M24308/4-306	DDMAMF50P	M24308/6-456	DCMAMY37SNM
M24308/2-36	DBMAMFT25S	M24308/4-311	DCMAMF78P	M24308/6-457	DDMAMY50SNM
M24308/2-37	DCMAMFT37S	M24308/4-313	DEMAMFT9P	M24308/6-464	DDMEMYT9SNM
M24308/2-38	DDMAMFT50S	M24308/4-314	DAMAMFT15P	M24308/6-465	DAMAMYT15SNM
M24308/2-281	DEMAM9S-FO	M24308/4-315	DBMAMFT25P	M24308/6-466	DBMAMYT25SNM
M24308/2-282	DAMAM15S-FO	M24308/4-316	DCMAMFT37P	M24308/6-467	DCMAMYT37SNM
M24308/2-283	DBMAM25S-FO	M24308/4-317	DDMAMFT50P	M24308/6-468	DDMAMYT50SNM
M24308/2-284	DCMAM37S-FO	M24308/4-324	DEMAMF9P-FO	M24308/6-491	DEMAMY9SNM-FO
M24308/2-285	DDMAM50S-FO	M24308/4-325	DAMAMF15P-FO	M24308/6-492	DAMAMY15SNM-FO
M24308/2-290	DDMAM78S-FO	M24308/4-326	DBMAMF25P-FO	M24308/6-493	DBMAMY25SNM-FO
M24308/2-292	DEMAMF9S-FO	M24308/4-327	DCMAMF37P-FO	M24308/6-494	DCMAMY37SNM-FO
M24308/2-293	DAMAMF15S-FO	M24308/4-328	DDMAMF50P-FO	M24308/6-495	DDMAMY50SNM-FO
M24308/2-294	DBMAMF25S-FO	M24308/4-333	DDMAMF78P-FO	M24308/7-1	DEMM9PNM
M24308/2-295	DCMAMF37S-FO	M24308/5-1	DEMM9SNM	M24308/7-2	DAMM15PNM
M24308/2-296	DDMAMF50S-FO	M24308/5-2	DAMM15SNM	M24308/7-3	DBMM25PNM
M24308/2-301	DDMAMF78S-FO	M24308/5-3	DBMM25SNM	M24308/7-4	DCMM37PNM
M24308/2-335	DBMAMR25S-FO	M24308/5-4	DCMM37SNM	M24308/7-5	DDMM50PNM
M24308/2-336	DCMAMR37S	M24308/5-5	DDMM50SNM	M24308/7-12	DEMMF9PNM
M24308/2-341	DAMAMR15S	M24308/5-12	DEMMF9SNM	M24308/7-13	DAMMF15PNM
M24308/2-342	DEMAMY9S	M24308/5-13	DAMMF15SNM	M24308/7-14	DBMMF25PNM
M24308/2-343	DAMAMY15S	M24308/5-14	DBMMF25SNM	M24308/7-15	DCMMF37PNM
M24308/2-344	DBMAMY25S	M24308/5-15	DCMMF37SNM	M24308/7-16	DDMMF50PNM
M24308/2-345	DCMAMY37S	M24308/5-16	DDMMF50SNM	M24308/8-1	DEMAM9PNM
M24308/2-346	DDMAMY50S	M24308/5-23	DDMMY9SNM	M24308/8-2	DAMAM15PNM
M24308/2-353	DEMAMYT9S	M24308/5-24	DAMMY15SNM	M24308/8-3	DBMAM25PNM
M24308/2-354	DAMAMYT15S	M24308/5-25	DBMMY25SNM	M24308/8-4	DCMAM37PNM
M24308/2-355	DBMAMYT25S	M24308/5-26	DCMMY37SNM	M24308/8-5	DDMAM50PNM
M24308/2-356	DCMAMYT37S	M24308/5-27	DDMMY50SNM	M24308/8-6	DEMAMT9PNM
M24308/2-357	DDMAMYT50S	M24308/6-1	DEMAM9SNM	M24308/8-7	DAMAMT15PNM
M24308/2-482	DEMAMY9S-FO	M24308/6-2	DAMAM15SNM	M24308/8-8	DBMAMT25PNM
M24308/2-483	DEMAMY15S-FO	M24308/6-3	DBMAM25SNM	M24308/8-9	DCMAMT37PNM
M24308/2-484	DEMAMY25S-FO	M24308/6-4	DCMAM37SNM	M24308/8-10	DDMAMT50PNM

MIL-C-24308 Cross Reference (Continued)

Military Part Number	Cannon Part Number	Military Part Number	Cannon Part Number	Military Part Number	Cannon Part Number
M24308/8-15	DDMAM78PNM	M24308/23-8	DAMM15SZ	M24308/24-8	DAMM15PZ
M24308/8-259	DEMAM9PNM-FO	M24308/23-9	DBMM25SZ	M24308/24-9	DBMM25PZ
M24308/8-260	DAMAM15PNM-FO	M24308/23-10	DCMM37SZ	M24308/24-10	DCMM37PZ
M24308/8-261	DBMAM25PNM-FO	M24308/23-11	DDMM50SZ	M24308/24-11	DDMM50PZ
M24308/8-262	DCMAM37PNM-FO	M24308/23-13	DEMM9SH	M24308/24-13	DEMM9PH
M24308/8-263	DDMAM50PNM-FO	M24308/23-14	DAMM15SH	M24308/24-14	DAMM15PH
M24308/8-269	DDMAM78PNM-FO	M24308/23-15	DBMM25SH	M24308/24-15	DBMM25PH
M24308/8-302	DDEMAMF9PNM	M24308/23-16	DCMM37SH	M24308/24-16	DCMM37SH
M24308/8-303	DAMAMF15PNM	M24308/23-17	DDMM50SH	M24308/24-17	DDMM50PH
M24308/8-304	DBMAMF25PNM	M24308/23-19	DEMM9SX	M24308/24-19	DEMM9PX
M24308/8-305	DCMAMF37PNM	M24308/23-20	DAMM15SX	M24308/24-20	DAMM15PX
M24308/8-306	DDMAMF50PNM	M24308/23-21	DBMM25SX	M24308/24-21	DBMM25PX
M24308/8-311	DDMAMF78PNM	M24308/23-22	DCMM37SX	M24308/24-22	DCMM37PX
M24308/8-313	DEMAMFT9PNM	M24308/23-23	DDMM50SX	M24308/24-23	DDMM50PX
M24308/8-314	DAMAMFT15PNM	M24308/23-25	DEMM9SD	M24308/24-25	DEMM9PD
M24308/8-315	DBMAMFT25PNM	M24308/23-26	DAMM15SD	M24308/24-26	DAMM15PD
M24308/8-316	DCMAMFT37PNM	M24308/23-27	DBMM25SD	M24308/24-27	DBMM25PD
M24308/8-317	DDMAMFT50PNM	M24308/23-28	DCMM37SD	M24308/24-28	DCMM37PD
M24308/8-324	DEMAMF9PNM-FO	M24308/23-29	DDMM50SD	M24308/24-29	DDMM50PD
M24308/8-325	DAMAMF15PNM-FO	M24308/23-31	DEMM9SL	M24308/24-31	DEMM9PL
M24308/8-326	DBMAMF25PNM-FO	M24308/23-32	DAMM15SL	M24308/24-32	DAMM15PL
M24308/8-327	DCMAMF37PNM-FO	M24308/23-33	DBMM25SL	M24308/24-33	DBMM25PL
M24308/8-328	DDMAMF50PNM-FO	M24308/23-34	DCMM37SL	M24308/24-34	DCMM37PL
M24308/8-333	DDMAMF78PNM-FO	M24308/23-35	DDMM50SL	M24308/24-35	DDMM50PL
M24308/9-1	DEH9P002	M24308/23-37	DEMM9SA	M24308/24-37	DEMM9PA
M24308/9-2	DAH15P002	M24308/23-38	DAMM15SA	M24308/24-38	DAMM15PA
M24308/9-3	DBH25P002	M24308/23-39	DBMM25SA	M24308/24-39	DBMM25PA
M24308/9-4	DCH37P002	M24308/23-40	DCMM37SA	M24308/24-40	DCMM37PA
M24308/9-5	DDH50P002	M24308/23-41	DDMM50SA	M24308/24-41	DDMM50PA
M24308/9-6	DEH9P001	M24308/23-43	DEMM9SG	M24308/24-43	DEMM9PG
M24308/9-7	DAH15P001	M24308/23-44	DAMM15SG	M24308/24-44	DAMM15PG
M24308/9-8	DBH25P001	M24308/23-45	DBMM25SG	M24308/24-45	DBMM25PG
M24308/9-9	DCH37P001	M24308/23-46	DCMM37SG	M24308/24-46	DCMM37PG
M24308/9-10	DDH50P001	M24308/23-47	DDMM50SG	M24308/24-47	DDMM50PG
M24308/9-11	DEH9P202	M24308/23-49	DEMM9SS	M24308/24-49	DEMM9PS
M24308/9-12	DAH15P202	M24308/23-50	DAMM15SS	M24308/24-50	DAMM15PS
M24308/9-13	DBH25P202	M24308/23-51	DBMM25SS	M24308/24-51	DBMM25PS
M24308/9-14	DCH37P202	M24308/23-52	DCMM37SS	M24308/24-52	DCMM37PS
M24308/9-15	DDH50P202	M24308/23-53	DDMM50SS	M24308/24-53	DDMM50PS
M24308/9-16	DEH9P201	M24308/23-55	DEMM9SW	M24308/24-55	DEMM9PW
M24308/9-17	DAH15P201	M24308/23-56	DAMM15SW	M24308/24-56	DAMM15PW
M24308/9-18	DBH25P201	M24308/23-57	DBMM25SW	M24308/24-57	DBMM25PW
M24308/9-19	DCH37P201	M24308/23-58	DCMM37SW	M24308/24-58	DCMM37PW
M24308/9-20	DDH50P201	M24308/23-59	DDMM50SW	M24308/24-59	DDMM50PW
M24308/23-1	DEMM9SM	M24308/24-1	DEMM9PM	M24308/26-1	D20418-2
M24308/23-2	DDAMM15SM	M24308/24-2	DAMM15PM	M24308/26-2	D20418-39
M24308/23-3	DDBMM25SM	M24308/24-3	DBMM25PM		
M24308/23-4	DCMM37SM	M24308/24-4	DCMM37PM		
M24308/23-5	DDMM50SM	M24308/24-5	DDMM50PM		
M24308/23-7	DEMM9SZ	M24308/24-7	DEMM9PZ		



- Environmental Protection
- MIL-C-24308 Compatibility
- Reliability and Versatility

GD* connectors are ideal for aerospace, military, telecommunications and other applications requiring environmental protection and high reliability.

ITT Cannon developed GD* connectors to meet the needs of the avionics industry. These connectors provide high-density and moisture protection.

Environmental protection is accomplished by the resilient grommet, interfacial seal, and bonded connector components.

ITT Cannon is the first and only connector manufacturer to offer a crimp-removable environmental series with M24308 compatibility.

Standard Data

MATERIALS AND FINISHES

	Materials	Finishes
Shell	Low carbon steel per ASTM-A-620	Yellow chromate over cadmium per QQ-P-416, Type II, Class 2
Insulator	Diallyl phthalate per MIL-M-14 type SDG-F or GDI-30F	—
Contacts	Copper alloy	Standard finish: Gold 50 microinches thickness per MIL-G-45204, Type II, Grade C, Class 1, over copper per MIL-C-14350
Float Mount Hardware	Stainless steel	Passivated per QQ-P-35
Grommets and Seals	Silicone elastomer	
Bonding Materials	Epoxy	—

MECHANICAL FEATURES

Wire Accommodation – Contact: #20, #22, #24 AWG.
Wire O.D. .071 (1.80) maximum, .038 (0.97) minimum.

Contact Retention – 9 lbs. minimum (40N) after 10 insertions

ELECTRICAL DATA

Test Voltage AC RMS 60 Hz

	Sea Level	20,000 Ft.	50,000 Ft.	70,000 Ft.
Average Flashover	1,000	1,000	500	500
Test	1,000	650	325	325

Maximum Current Carrying Capacity of Contacts – #20 Contacts: 5 Amps

Temperature Range – −65°C to +150°C (−53.9°F to +302°F)

How to Order

GD B - 25 P **

SERIES PREFIX
SHELL SIZE
MOUNTING TYPE
CONTACT ARRANGEMENT
CONTACT TYPE
MODIFICATION

SERIES PREFIX
GD – Grommet D

SHELL SIZE
E, A, B, D

MOUNTING TYPE
No Designator – .120 (3.05) Diameter Mounting Holes
Y – Float Mount for Rear and Front Panel Mounting

CONTACT ARRANGEMENTS
9, 15, 25, and 50

CONTACT TYPE
P – Pin, crimp termination
S – Socket, crimp termination
PB – Pin, printed circuit termination with non-removable straight tails for .125 (3.18) maximum P.C. Board thickness

MODIFICATIONS (Typical Modifiers)
F0 – Connectors supplied Less Contacts
A156 – Connectors supplied with contacts plated per MIL-G-45204 Type II Class 1 (M24308 Finish)

ITT Cannon

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

D Subminiature Products, 1851 E. Deere Ave, P.O. Box 35000, Santa Ana, CA 92705-6500 • (714) 261-5300

Performance Specifications

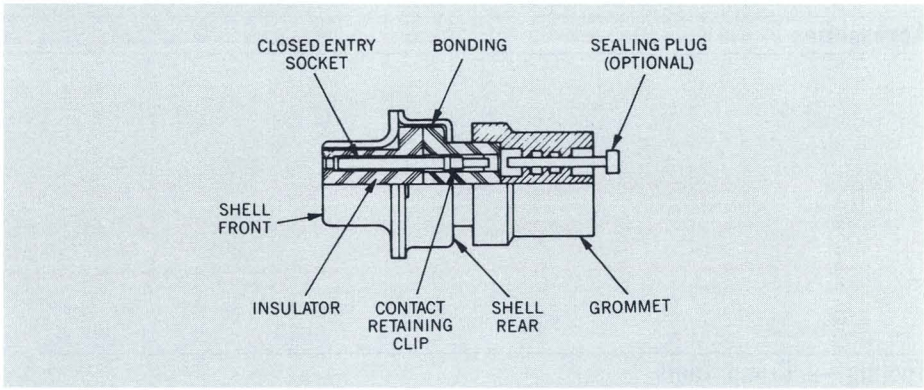
GD* Connectors meet all applicable requirements of MIL-C-24308. The following are excerpts from ITT Cannon Test Report C82-78 applicable to environmental D Subminiature GD* series connectors. Refer to MIL-C-24308 Test Extracts on page 297.

Test Description	Test Method	Results
Moisture Resistant	MIL-STD-1344 Method 1002.1 Type II	1. No deterioration of performance. 2. Insulation resistance greater than 100 megohms. 3. No evidence of flashover or breakdown during 1000 VAC DWV testing.
Fluid Immersion	20 hours immersion in hydraulic fluid per MIL-H-5606 and lubricating fluid per MIL-L-23699.	1. No detrimental damage. 2. Able to meet requirements of mating and unmating forces test.
Immersion	Two hours immersion in tap water at a depth of 36.00 (914.40) in mated condition, per MIL-STD 810, Method 512, Procedure 1.	While still immersed, the mated connectors exceeded 100 megohm insulator resistance and exhibited no evidence of breakdown or flashover during 1000 VAC (RMS) DWV testing.

Design Features

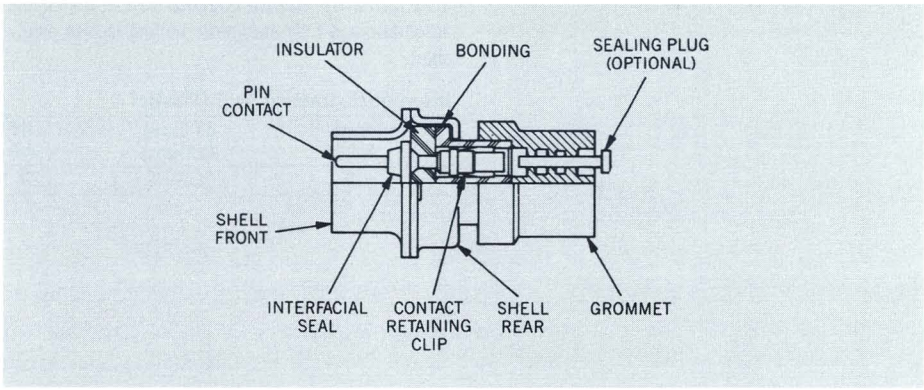
Socket Connector

- Resilient silicone grommets for wire sealing
- Interfacial seals
- Closed-entry socket contacts
- Bonded components to prevent moisture seepage
- Optional sealing plugs



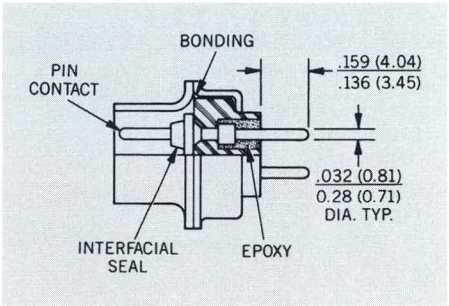
Pin Connector

- Uses M39029 type contacts and termination tooling
- Intermateable with most M24308 type connectors
- Rear-release crimp contacts
- LITTLE CAESAR® contact retention assembly



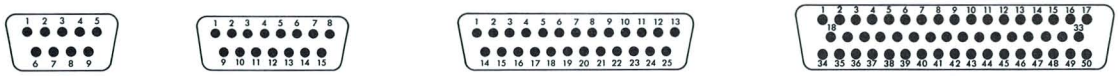
Printed Circuit Applications

GD* Pin connectors are available with pre-loaded, non-removable contacts for P.C. board termination. Typical Part No. GDB-25PB. Environmental sealing is accomplished by application of epoxy to each contact cavity, interfacial seals, and bonded connector components.



Contact Arrangements

Face View Pin Insert



Shell Size	E	A	B	D
Contact Arrangement	9	15	25	50
Contact Size	#20	#20	#20	#20

Contacts

Finish	Type	ITT Cannon Part Number	Military Part Number
Standard Gold/Nickel	Pin #20	330-5291-000	
	Socket #20	031-1007-000	
A156 Gold/Copper	Pin #20	330-5291-037	M39029/64-369
	Socket #20	031-1007-042	M39029/63-368

Accessories

SEALING PLUGS: GD* grommets are designed to accept MS27488-20 sealing plugs, ITT Cannon P/N 225-0070-000 ordered separately.

LOCKING HARDWARE, DUST CAPS: GD* Connectors will accommodate most standard D Subminiature accessories.

BACKSHELLS: Consult factory. Backshell ordering information is found in the accessories section of the catalog, see pages 301-308.

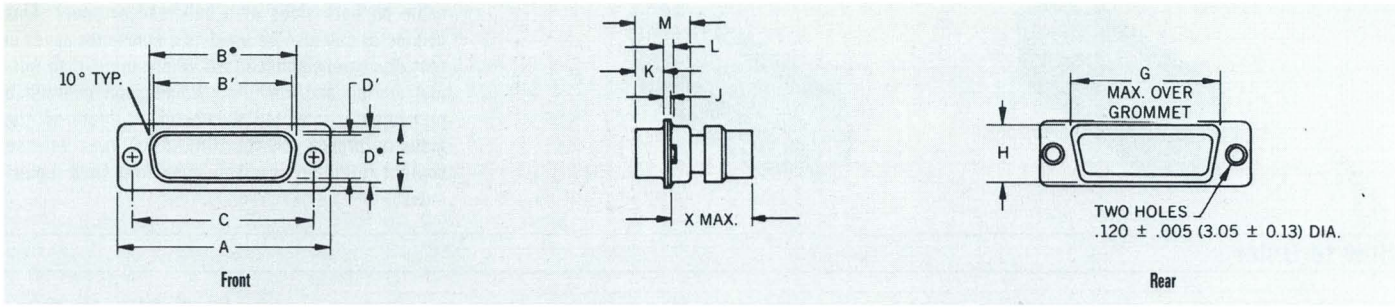
Tooling — Crimp Tools

M22520/2-01 with M22520/2-08 locator. Semi-automatic and fully automatic tooling is also available.

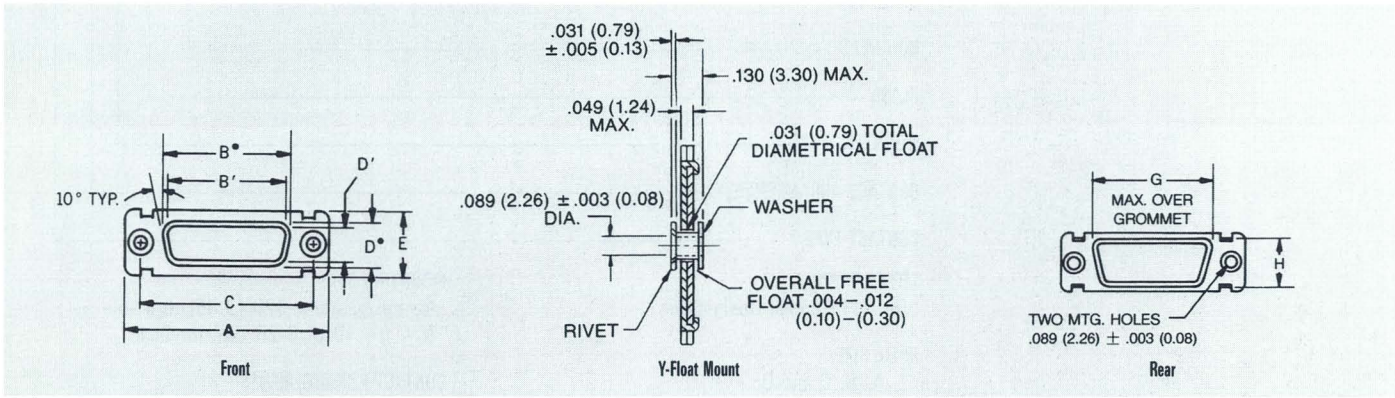
Insertion/Extraction Tool (Plastic)

Contact Size	ITT Cannon Description	ITT Cannon Part Number	Insertion Color Tip	Extraction Color Tip
#20	CIET-20HDL	274-7010-000	White	Green

Standard Shell Dimensions



Shell With Float Mount Dimensions



It is recommended that only one assembly, either pin or socket, be float mounted. For front panel mounting use reverse float mount.

Part Number by Shell size	A ±.015 (0.38)	B● ±.010 (0.25)	B′ ±.010 (0.25)	C ±.005 (0.12)	D● ±.010 (0.52)	D′ ±.010 (0.38)	E ±.015 (0.38)	G Max.	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.010 (0.25)	M ±.015 (0.38)	X Max.
GDE-9P	1.213 (30.81)	—	.666 (16.91)	.984 (24.99)	—	.329 (8.36)	.494 (12.55)	.750 (19.05)	.422 (10,.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.422 (10.72)	.718 (18.24)
GDE-9S	1.213 (30.81)	.640 (16.25)	—	.984 (24.99)	.308 (7.82)	—	.494 (12.55)	.750 (19.05)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.718 (18.24)
GDA-15P	1.541 (39.14)	—	.994 (25.24)	1.312 (33.32)	—	.329 (8.36)	.494 (12.55)	1.093 (27.76)	.422 (10.72)	.030 (0.76)	.236 (5.99)	.045 (1.14)	.422 (10.72)	.718 (18.24)
GDA-15S	1.541 (39.14)	.958 (24.58)	—	1.312 (33.32)	.308 (7.82)	—	.494 (12.55)	1.093 (27.76)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.14)	.429 (10.90)	.718 (18.24)
GDB-25P	2.088 (53.03)	—	1.534 (38.96)	1.852 (47.04)	—	.329 (8.36)	.494 (12.55)	1.625 (41.28)	.422 (10.72)	.039 (0.99)	.231 (5.87)	.060 (1.52)	.426 (10.82)	.718 (18.24)
GDB-25S	2.088 (53.03)	1.508 (38.30)	—	1.852 (47.04)	.308 (7.82)	—	.494 (12.55)	1.625 (41.28)	.422 (10.72)	.030 (0.76)	.243 (6.17)	.045 (1.52)	.429 (10.90)	.718 (18.24)
GDD-50P	2.635 (66.92)	—	2.079 (52.81)	2.406 (61.11)	—	.436 (11.07)	.605 (15.37)	2.162 (54.91)	.534 (13.56)	.039 (0.99)	.231 (5.87)	.060 (1.52)	.425 (10.82)	.718 (18.24)
GDD-50S	2.635 (66.92)	2.062 (52.37)	—	2.406 (61.11)	.420 (10.87)	—	.605 (15.37)	2.162 (54.91)	.534 (13.56)	.030 (0.76)	.243 (6.17)	.045 (1.52)	.429 (10.90)	.718 (18.24)

*dimensions B, D, G, and H are measured as outside dimensions at the bottom of draw.

NOTE: B● and D● are the outside dimensions for socket side, B′ and D′ are the inside dimensions for pin side.

The D*BMA feed-thru bulkhead connector is used when it is desirable to connect and disconnect a cable on both sides of a bulkhead or panel. This connector can also be used as a connector saver in test equipment applications where more than normal mating and unmating would soon degrade a permanently mounted connector. It features the industry proven LITTLE CAESAR® rear release contact retention assembly, making it field repairable.

How to Order

D A B MA - 15 PS

SERIES PREFIX

SHELL SIZE

BULKHEAD

CLASS

MOUNTING TYPE

CONTACT ARRANGEMENTS

CONTACT TYPE

SERIES PREFIX
D – ITT Cannon Designation

SHELL SIZE
E, A, B, C and D

BULKHEAD
B

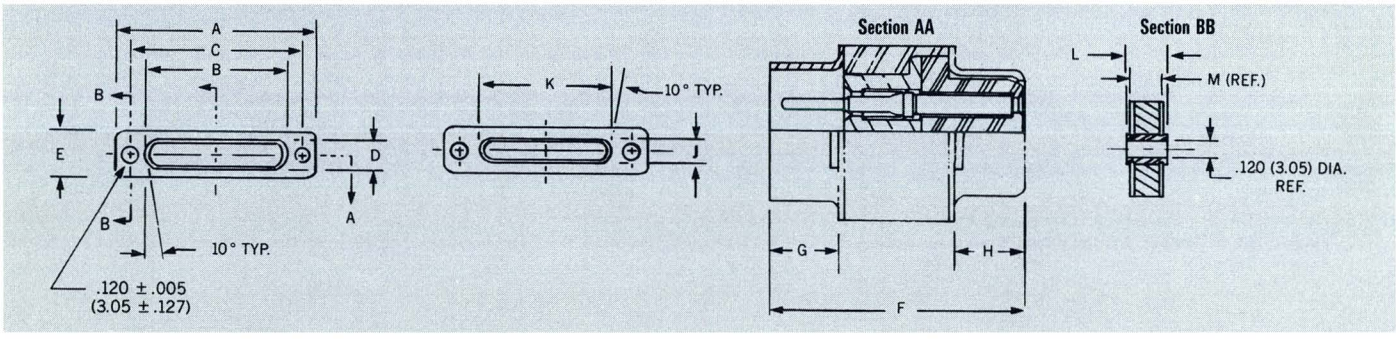
CLASS
MA – LITTLE CAESAR rear release contact retention assembly

MOUNTING TYPE
No designator – 120 (3.05) thru hole
N – #4-40 UNC-2B thru threads

CONTACT ARRANGEMENTS
9, 15, 25, 37 and 50 (See page 292)

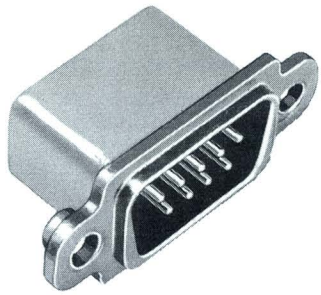
CONTACT TYPE
PS – Pin/Socket

Shell Dimensions



Part Number by Shell Size	A ±.015 (0.38)	B ±.010 (0.25)	C ±.005 (0.13)	D ±.010 (0.25)	E ±.015 (0.38)	F ±.010 (0.25)	G ±.010 (0.25)	H ±.010 (0.25)	J ±.010 (0.25)	K ±.010 (0.25)	L ±.015 (0.38)	M ±.010 (0.25)
DEBMA-9PS	1.213(30.81)	.697(17.70)	.984(24.99)	.360(9.14)	.494(12.55)	.861(21.87)	.236(5.99)	.243(6.17)	.308(7.82)	.640(16.26)	.417(10.59)	.388(9.86)
DABMA-15PS	1.541(39.14)	1.025(26.04)	1.312(33.32)	.360(9.14)	.494(12.55)	.861(21.87)	.236(5.99)	.243(6.17)	.308(7.82)	.968(24.59)	.417(10.59)	.388(9.86)
DBBMA-25PS	2.088(53.04)	1.583(40.21)	1.852(47.04)	.378(9.60)	.494(12.55)	.865(21.97)	.231(5.87)	.243(6.17)	.308(7.82)	1.508(38.30)	.417(10.59)	.388(9.86)
DCBMA-37PS	2.729(69.29)	2.231(56.67)	2.500(63.50)	.378(9.60)	.494(12.55)	.865(21.97)	.231(5.87)	.243(6.17)	.308(7.82)	2.156(54.76)	.417(10.59)	.388(9.86)
DDBMA-50PS	2.635(66.93)	2.127(54.03)	2.406(61.11)	.484(12.29)	.605(15.37)	.865(21.97)	.231(5.87)	.243(6.17)	.420(10.67)	2.062(52.37)	.417(10.59)	.388(9.86)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.



The Cannon D*D Environmental Series is designed to meet the demand for sealed subminiature rectangular plugs with superior vibration and moisture resistance characteristics for aircraft, missile, and ground support equipment applications.

Featuring a rugged aluminum shell and peripheral seal, the D*D connector meets all applicable requirements of MIL-C-24308. Available in both solder and crimp versions, all assemblies are provided with nylon potting cups and dust caps.

Solder type contacts are non-removable and are factory-installed. Crimp type connectors utilize the field-proven LITTLE CAESAR® rear insertion, rear-release retention system.

PLEASE NOTE: The D*D Series is not intermateable with other D Subminiature connectors.

Standard Data

Shell	Aluminum, cadmium plated with yellow chromate supplementary coating.
Contacts	Solder pot: Copper alloy, gold plated .00002 (0.0005) over nickel .00004 (0.0010). Crimp type: Copper alloy, gold plated .00002 (0.0005) over nickel .00004 (0.0010).
Insulator	Diallylphthalate, per MIL-M-14, Type MDG or SDG-F.
Contact Termination	Solder pot accommodating up to #20 AWG stranded wire. Crimp type accommodating #20, #22, and #24 AWG stranded wire.
Socket Type	Closed entry
Float Mounting Rivets & Washers	Stainless steel

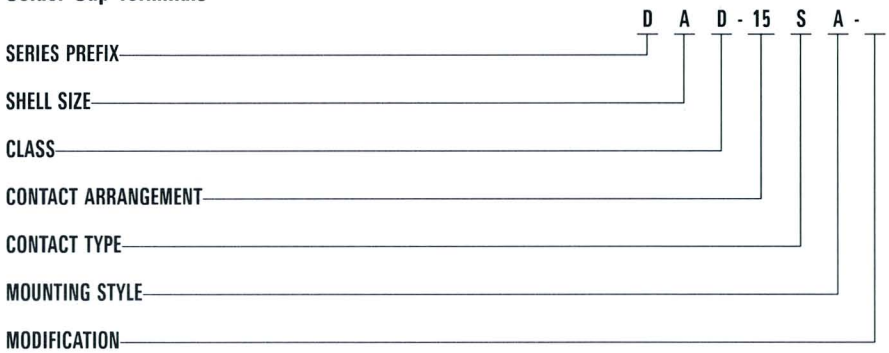
Test Data

	Specifications
Voltage Rating	All voltage figures are AC (rms), 60 cps. measured at approximately 25.0°C 50% RH.
Insulation Resistance (per MIL-C-24308)	Greater than 5,000 megohms, determined in accordance with MIL-STD-202A, Method 302.
Contact Voltage Drop	2.67 millivolts, maximum, per amp.
Contact Separation Force	1 to 8 ounces when tested in accordance with MIL-C-24308.
Air Leakage	When properly wired and potted, 1 cubic inch of air per hour max. when subjected to 30 PSI pressure differential in accordance with MIL-C-5015D, Paragraph 4.5.3.1.
Vibration (per MIL-C-24308)	Exceeds test requirements of MIL-STD-202A, Method 204, Condition D.†
Corrosion Resistance (per MIL-C-24308)	Exceeds requirements of 50 hour exposure to salt spray in accordance with MIL-STD-202A, Method 101A, Condition B.
Moisture Resistance (per MIL-C-24308)	Exceeds requirements of MIL-STD-202A, Method 106.
Shock	Exceeds requirements of MIL-STD-202A, Method 213, Condition G.
Environmental Seal	Effective from full engagement to 1/16 short of full engagement.
Contact Retention Force	(Crimp type) 8 pounds (35.6 newtons) minimum for first cycle; 5 pounds (22.2 newtons) minimum after tenth cycle.
Standard Layout Plugs	Measured from contact-to-contact, and contact-to-shell in unmated condition.

	ALTITUDE (FEET)			
	Sea Level	**20,000**	**50,000**	**70,000**
Average Flash-over	1700	1000	650	500
Test	1250	750	475	375

How to Order

Solder Cup Terminals



SERIES PREFIX
ITT Cannon Designation

SHELL SIZE
A, B, C, D, E

CLASS
D – Environmental

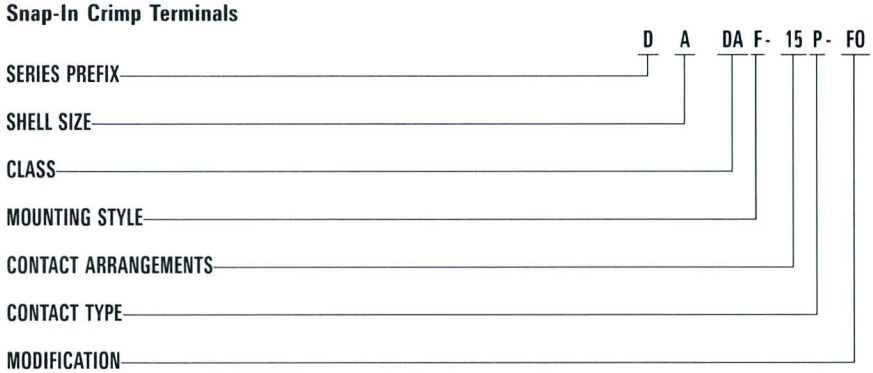
CONTACT ARRANGEMENT
9, 15, 25, 37, 50

CONTACT TYPE
P – Pin
S – Socket

MOUNTING STYLE
A – Standard mounting holes
B – Float mounts supplied

MODIFICATION
Consult factory

Snap-In Crimp Terminals



SERIES PREFIX
ITT Cannon Designation

SHELL SIZE
A, B, C, D, E

CLASS
DA – Environmental, crimp type

MOUNTING STYLE
No Designator – Standard mounting
F – Float mounts supplied

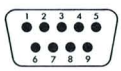
CONTACT ARRANGEMENTS
9, 15, 25, 37, 50

CONTACT TYPE
P – Pin
S – Socket

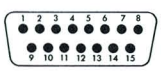
MODIFICATION
FO – Connector supplied less contacts, for other modifications consult factory

Contact Arrangements

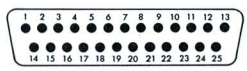
Face View Pin Insert



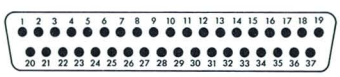
Shell Size	E
Contact Arrangement	9
Contact Size	#20



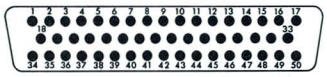
Shell Size	A
Contact Arrangement	15
Contact Size	#20



Shell Size	B
Contact Arrangement	25
Contact Size	#20



Shell Size	C
Contact Arrangement	37
Contact Size	#20



Shell Size	D
Contact Arrangement	50
Contact Size	#20

Mounting Dimensions

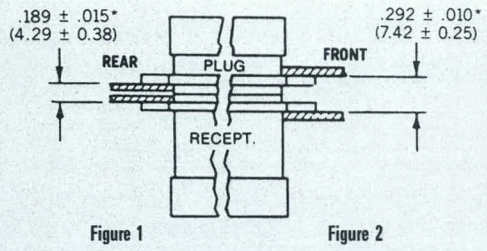


Figure 1 Figure 2

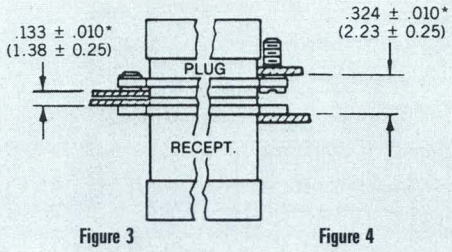


Figure 3 Figure 4

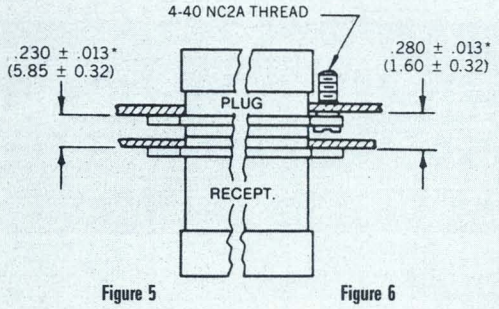
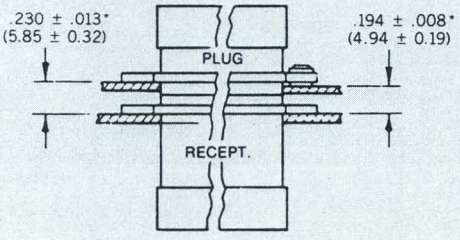


Figure 5 Figure 6

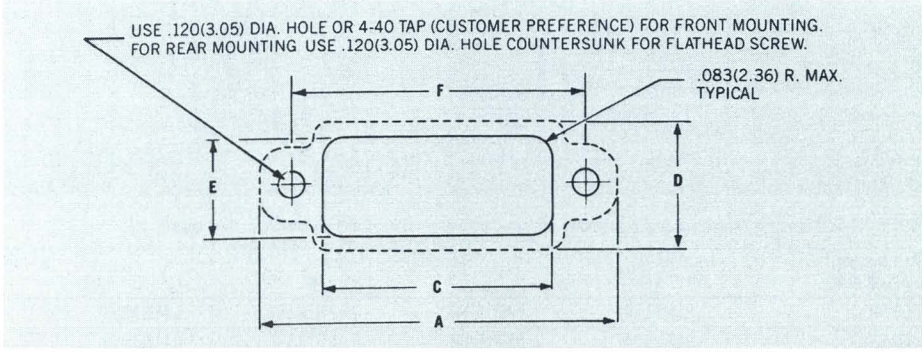


NOTE: Max panel thickness is .125 (3.17) for non-floating rear panel mounting.

1. With both connectors rear mounted, use #4-40 flat head screws flush with the panel (Fig. 1).
2. With both connectors front mounted, use #4-40 binder or pan head screws (Fig. 2).
3. With both connectors rear mounted (float rivets on plug assembly side), use #4-40 flat head screws, flush with the panels (Fig. 3).
4. With both connectors front mounted (plug assembly has float mounting screw), use #4-40 binder or pan head screws for receptacle assembly (Fig. 4).
5. With plug assembly front mounted and receptacle assembly rear mounted, use hardware from Figures 5 and 6.
6. With plug assembly front mounted and receptacle assembly rear mounted (plug assembly has float mounting screw), use hardware from Figure 1 for receptacle assembly.
   *Dimensions between panels represent the recommended limit to be used in the design of the connector mounting method.
7. With plug assembly rear mounted and receptacle assembly front mounted, use hardware from Figures 1 and 2.
8. With plug assembly rear mounted (float rivets) and receptacle assembly front mounted, use hardware from Figures 2 and 3.
9. Electrical contact engagement when mounted per Figure 1 is .046(1.17) min./.070(1.78) max.

NOTE: Float rivets are for rear mounting only and float screw for front mounting only. (Specify when ordering.)

Panel Cutouts

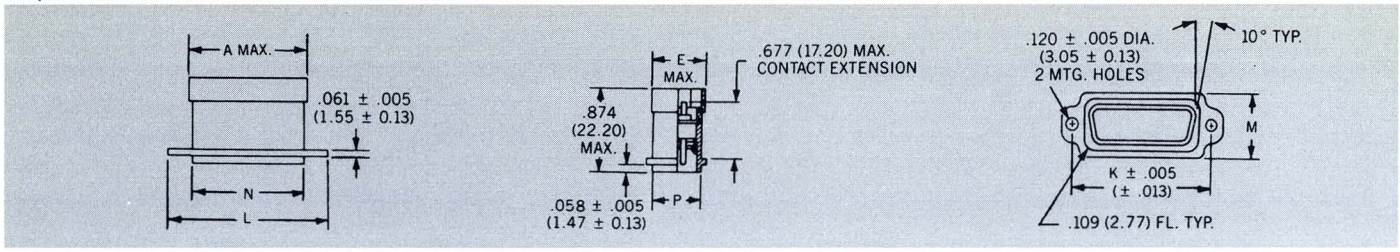


Shell Size	A ±.010	C Min.	D ±.010	E Min.	F ±.006
DED-9	1.442(36.63)	.839(21.31)	.814(15.60)	.497(12.62)	1.125(28.58)
DAD-15	1.755(44.58)	1.157(29.39)	.614(15.60)	.497(12.62)	1.437(36.50)
DBD-25	2.295(58.29)	1.697(43.10)	.614(15.60)	.497(12.62)	1.993(50.62)
DCD-37	2.937(74.60)	2.357(59.87)	.614(15.60)	.497(12.62)	2.625(66.68)
DDD-50	2.859(72.62)	2.265(57.53)	.735(18.67)	.610(15.49)	2.531(64.29)

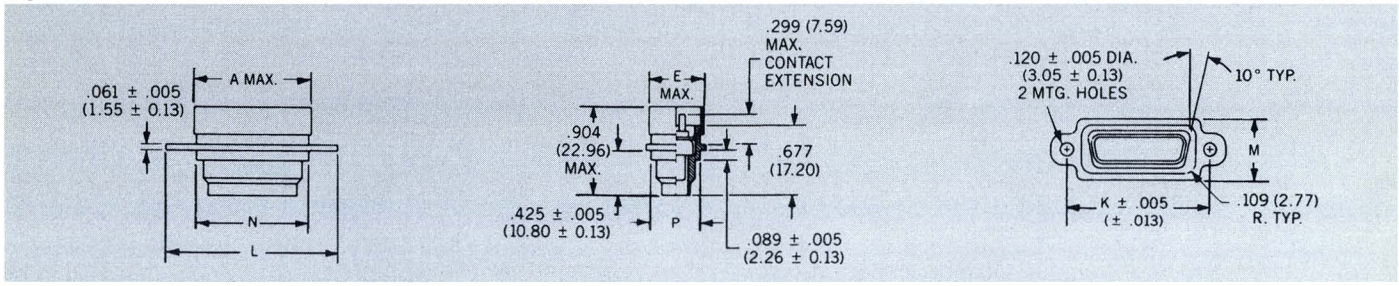
Add .032 (0.81) to dimensions C and E for float mounting.
Note: Panel cutout does not allow for potting cup clearance.

Shell Dimensions, Standard Mount

Receptacle

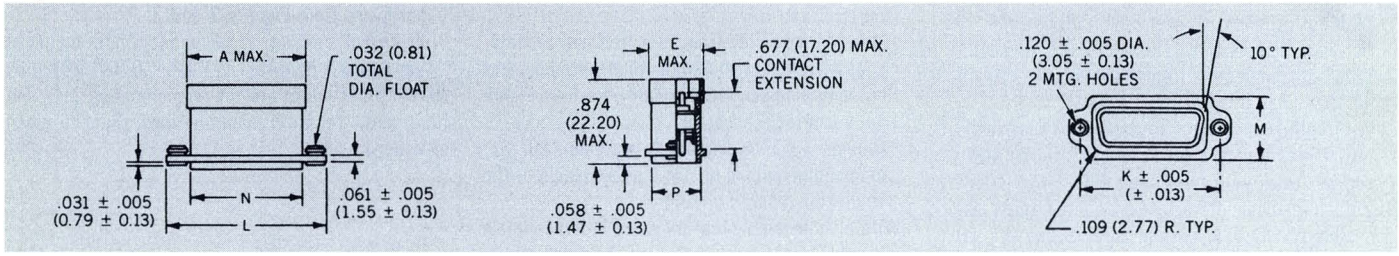


Plug

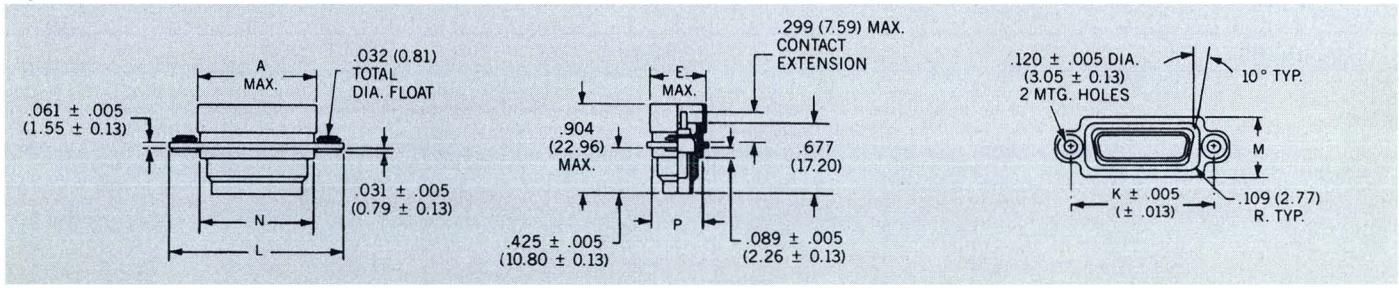


Float Mount Dimensions

Receptacle



Plug



NOTE: All D*D Environmental plugs and receptacles are provided with dust caps and removable potting cups.

Part Number by Shell Size	A	E	K	L	M	N	P
DED-9P	.915(23.24)	.596(15.14)	1.125(28.58)	1.442(36.63)	.614(15.60)	.825(20.86)	.483(12.27)
DED-9S	.915(23.24)	.596(15.14)	1.125(28.58)	1.442(36.63)	.614(15.60)	.825(20.86)	.483(12.27)
DAD-15P	1.233(31.32)	.596(15.14)	1.437(36.50)	1.755(44.58)	.614(15.60)	1.143(29.03)	.483(12.27)
DAD-15S	1.233(31.32)	.596(15.14)	1.437(36.50)	1.755(44.58)	.614(15.60)	1.143(29.03)	.483(12.27)
DBD-25P	1.786(45.36)	.596(15.14)	1.993(50.62)	2.295(58.29)	.614(15.60)	1.683(42.75)	.483(12.27)
DBD-25S	1.786(45.36)	.596(15.14)	1.993(50.62)	2.295(58.29)	.614(15.60)	1.683(42.75)	.483(12.27)
DCD-37P	2.458(62.43)	.567(14.40)	2.625(55.68)	2.937(74.60)	.614(15.60)	2.343(59.51)	.483(12.27)
DCD-37S	2.458(62.43)	.567(14.40)	2.625(55.68)	2.937(74.60)	.614(15.60)	2.343(59.51)	.483(12.27)
DDD-50P	2.390(60.71)	.680(17.27)	2.531(64.29)	2.859(72.62)	.735(18.67)	2.251(57.18)	.596(15.14)
DDD-50S	2.390(60.71)	.680(17.27)	2.531(64.29)	2.859(72.62)	.735(18.67)	2.251(57.18)	.596(15.14)

All tolerances are ±.010 (0.24) unless noted otherwise.

Contact Crimping Information

Crimp Type Contacts

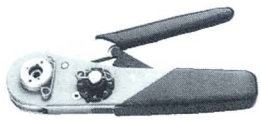
Contact Size	Wire Size Accom.	Standard Finish Pin	Standard Finish Socket	Military Finish Pin	Military Finish Socket
20	20, 22, 24	330-5291-015	031-1007-000	330-5291-079	031-1007-042

CIET-20-HD

Insertion/Extraction Tools

Contact Size	AWG	Plastic Insertion/Extraction Part No.	Plastic Insertion/Extraction Description	Plastic Extraction Part No.	Plastic Extraction Description
20	20, 22, 24	274-7006-000	CIET-20HD	323-7010-000	CET-20-11

M22520/1-01

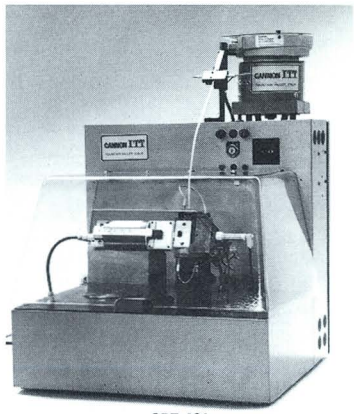


M22520/2-01

Hand Crimp Tools

Contact Size	AWG	Crimp Tool Part No.	Crimp Tool Description	Locator Part No.	Locator Description
20	20, 22, 24	995-0001-584	M22520/2-01	995-0001-604	M22520/2-08
		995-0001-585	M22520/1-01	995-0001-244	TH25

Semi-Automatic Crimp Machines



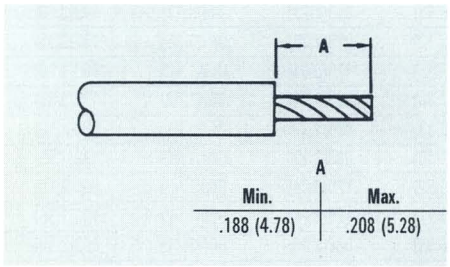
CBT 491

For volume applications the CBT-491 is a vibra-bowl, pneumatically operated crimper offering a more economical approach than belt-fed crimpers. Available for lease or purchase, this machine is designed for use with a wide variety of machined contacts. The MIL-Spec crimp is accomplished at the press of a foot pedal, assuring minimum cycle times and maximum performance.

For lower volumes the CBT-565 is a pneumatically operated bench tool delivering MIL-Spec crimps with minimal operator fatigue.

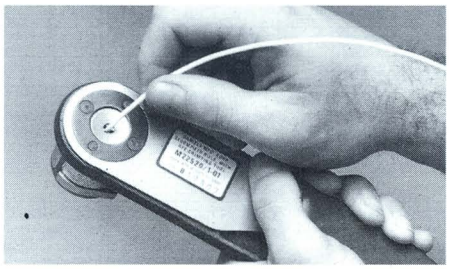
Assembly Instructions

Wire Stripping – Machined Contacts



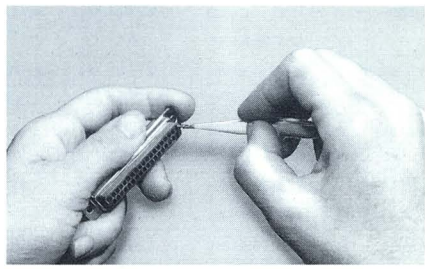
1. Cut wires to length. Strip insulation per above illustration. Check for broken or frayed wires.

Contact Crimping



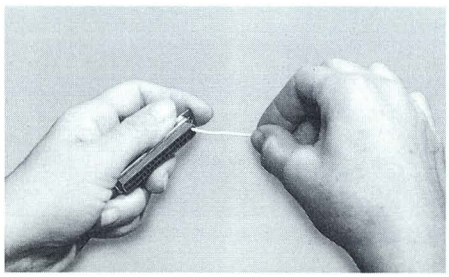
2. Insert contact and wire into proper crimp tool (and locator, if required). Crimp contact to wire. Inspect crimp.

Contact Insertion

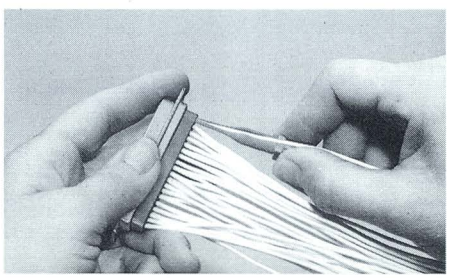


3. Center wired contact in groove of insertion tool with tool tip butting contact shoulder. Insert contact into cavity until a positive stop is felt. Inspect insertion.

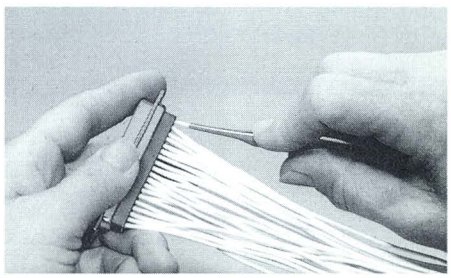
Contact Extraction



4. To be sure contact is locked securely, pull back lightly on wire. Repeat for balance of contacts working row by row across the insulator.

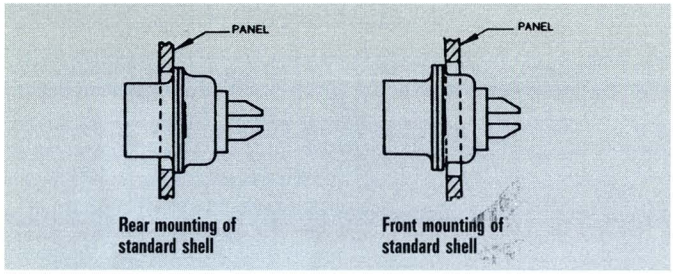


5. Place wire into extraction tool tip.



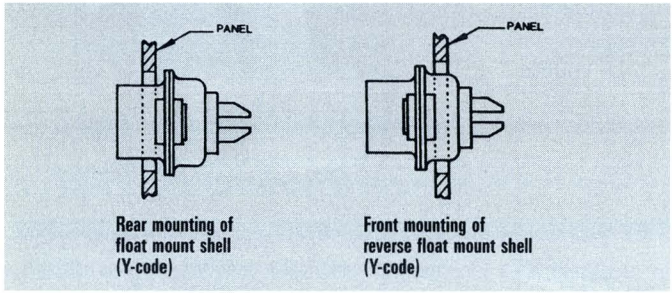
6. Insert tool tip into contact cavity until tip bottoms against contact shoulder, releasing tines. Hold wire against tool with finger and remove tool and contact. Repeat for balance of contacts.

Panel Cutouts



Rear mounting of standard shell

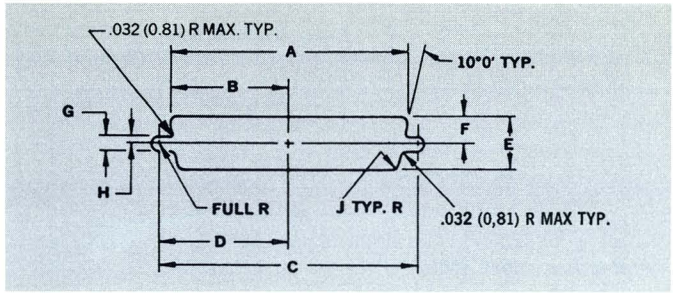
Front mounting of standard shell



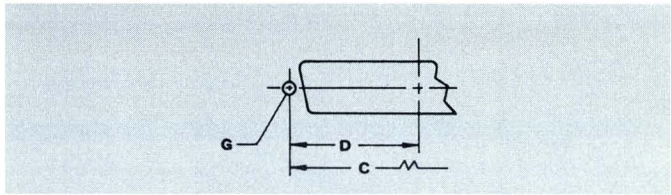
Rear mounting of float mount shell (Y-code)

Front mounting of reverse float mount shell (Y-code)

Standard Cutout



Optional Cutout (For Rear Mounting)



Connector Size	Mounting Method	A ±.005 (0.13)	B ±.005 (0.13)	C ±.005 (0.13)	D ±.005 (0.13)	E ±.005 (0.13)	F ±.005 (0.13)	G ±.002 (0.05)	H ±.002 (0.05)	J ±.002 (0.05)
A Standard	Front Mounting	1.202(30.53)	.601(15.26)	1.312(33.32)	.656(16.66)	.513(13.03)	.257(6.52)	.120(3.04)	.060(1.52)	.083(2.10)
	Rear Mounting	1.134(28.80)	.567(14.40)	1.312(33.32)	.656(16.66)	.449(11.40)	.225(5.71)	.120(3.04)	.060(1.52)	.132(3.35)
A Float	Front Mounting	1.234(31.34)	.617(15.67)	1.312(33.32)	.656(16.66)	.545(13.84)	.273(6.93)	.088(2.23)	.044(1.11)	.083(2.10)
	Rear Mounting	1.166(29.61)	.583(14.80)	1.312(33.32)	.656(16.66)	.481(12.21)	.241(6.12)	.088(2.23)	.044(1.11)	.132(3.35)
B Standard	Front Mounting	1.743(44.27)	.872(22.14)	1.852(47.04)	.926(23.52)	.513(13.03)	.257(6.52)	.120(3.04)	.060(1.52)	.083(2.10)
	Rear Mounting	1.674(42.51)	.837(21.25)	1.852(47.04)	.926(23.52)	.449(11.40)	.225(5.71)	.120(3.04)	.060(1.52)	.132(3.35)
B Float	Front Mounting	1.775(45.08)	.888(22.55)	1.852(47.04)	.926(23.52)	.545(13.84)	.273(6.93)	.088(2.23)	.044(1.11)	.083(2.10)
	Rear Mounting	1.706(43.33)	.853(21.66)	1.852(47.04)	.926(23.52)	.481(12.21)	.241(6.12)	.088(2.23)	.044(1.11)	.132(3.35)
C Standard	Front Mounting	2.391(60.73)	1.196(30.37)	2.500(63.50)	1.250(31.75)	.513(13.03)	.257(6.52)	.120(3.04)	.060(1.52)	.083(2.10)
	Rear Mounting	2.326(59.08)	1.163(29.54)	2.500(63.50)	1.250(31.75)	.449(11.40)	.225(5.71)	.120(3.04)	.060(1.52)	.132(3.35)
C Float	Front Mounting	2.423(61.54)	1.212(30.78)	2.500(63.50)	1.250(31.75)	.545(13.84)	.273(6.93)	.088(2.23)	.044(1.11)	.083(2.10)
	Rear Mounting	2.354(59.79)	1.177(29.89)	2.500(63.50)	1.250(31.75)	.481(12.21)	.241(6.12)	.088(2.23)	.044(1.11)	.132(3.35)
D Standard	Front Mounting	2.297(58.34)	1.149(29.18)	2.406(61.11)	1.203(30.55)	.623(15.82)	.312(7.92)	.120(3.04)	.060(1.52)	.083(2.10)
	Rear Mounting	2.218(56.33)	1.109(28.16)	2.406(61.11)	1.203(30.55)	.555(14.09)	.278(7.06)	.120(3.04)	.060(1.52)	.132(3.35)
D Float	Front Mounting	2.329(59.15)	1.165(29.59)	2.406(61.11)	1.203(30.55)	.655(16.63)	.328(8.33)	.088(2.23)	.044(1.11)	.083(2.10)
	Rear Mounting	2.250(57.15)	1.125(28.57)	2.406(61.11)	1.203(30.55)	.587(14.90)	.294(7.46)	.088(2.23)	.044(1.11)	.132(3.35)
E Standard	Front Mounting	.874(22.19)	.437(11.09)	.984(24.99)	.492(12.49)	.513(13.03)	.257(6.52)	.120(3.04)	.060(1.52)	.083(2.10)
	Rear Mounting	.806(20.47)	.403(10.23)	.984(24.99)	.492(12.49)	.449(11.40)	.225(5.71)	.120(3.04)	.060(1.52)	.132(3.35)
E Float	Front Mounting	.906(23.01)	.453(11.50)	.984(24.99)	.492(12.49)	.545(13.84)	.273(6.93)	.088(2.23)	.044(1.11)	.083(2.10)
	Rear Mounting	.838(21.28)	.419(10.64)	.984(24.99)	.492(12.49)	.481(12.21)	.241(6.12)	.088(2.23)	.044(1.11)	.132(3.35)

Panel Mounting

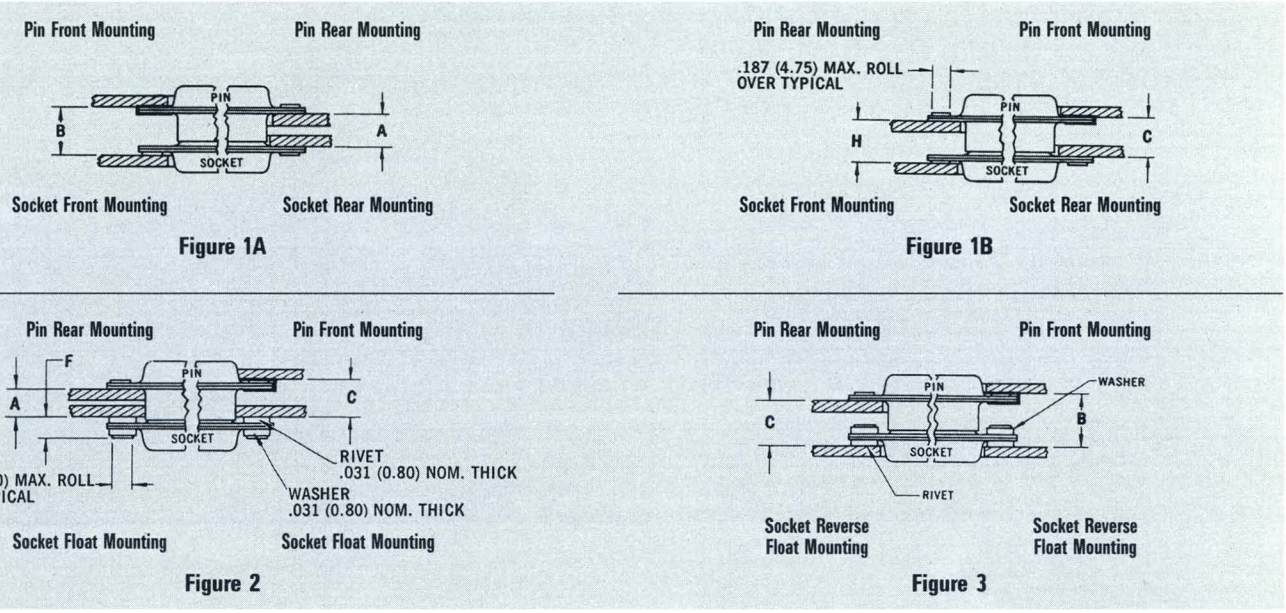


Fig. No.	Combination of Mated Connectors: Size	Pin (See Note Below)	Socket	A +.030 (+0.76) −.000 (−0)	B +.030 (+0.76) −.000 (−0)	C +.030 (+0.76) −.000 (−0)	F ±.010 (±0.25)	H +.030 (+0.76) −.000 (−0)
1	A, E	Standard	Standard	.250(6.35)	.340(8.63)	.295(7.49)	–	.295(7.49)
1	B, C, D	Standard	Standard	.238(6.04)	.343(8.71)	.298(7.56)	–	.283(7.18)
2	A, E	Standard	Float Mount	.218(5.53)	–	.263(6.68)	.120(3.04)	–
2	B, C, D	Standard	Float Mount	.206(5.23)	–	.266(6.75)	.120(3.04)	–
2	A, E	Float Mount	Standard	.218(5.53)	–	.263(6.68)	.120(3.04)	–
2	B, C, D	Float Mount	Standard	.206(5.23)	–	.251(6.37)	.130(3.30)	–
3	A, E	Standard	Rev. Float Mount	–	.358(9.09)	.313(7.95)	.120(3.04)	–
3	B, C, D	Standard	Rev. Float Mount	–	.361(9.16)	.301(7.64)	.120(3.04)	–
3	A, E	Rev. Float Mount	Standard	–	.358(9.09)	.313(7.95)	.120(3.04)	–
3	B, C, D	Rev. Float Mount	Standard	–	.355(9.01)	.310(7.87)	.130(3.30)	–

NOTE:
1. A, B, C and H are dimensions between panels and represent the recommended limit to be used in the design of the connector mounting method.
2. It is recommended that only one assembly, either pin or socket, be float mounted.
3. Standard pin assemblies contained .015 (0.38) thick front shells on E and A sizes; .024 (061) thick front shells on B, C, and D sizes.
4. Standard connectors accommodate a #4 screw. Float mount connectors accommodate a #2 screw.

MIL-C-24308 Test Extracts Applicable to Class G Connectors

Test Description	Requirement			Method
Mating/Unmating Force	Shell Size	Max Unmating (LBS)	Max Mating (LBS)	MIL-STD-1344 Method 2013
	1	6	10	
	2	10	17	
	3	17	28	
	4	24	39	
	5	30	49	
Contact Retention	Contacts shall be retained in their inserts by a 9 pound (minimum) force. The axial displacement of contacts shall not exceed .012 inch while under load			MIL-STD-1344 Method 2004
Insulation Resistance	After humidity 1 Megohm (min) All other conditions 5000 Megohm (min).			MIL-STD-1344 Method 3003
Contact Resistance	After salt spray not to exceed 55 millivolts max.			#20 AWG; 7.5 Amp MIL-STD-1344 Method 3004
Vibration	No damage and no loosening of parts due to vibration. No interruption of electrical continuity longer than 1 microsecond.			MIL-STD-1344 Method 2005 Test Cond. 4
Shock	No damage and no loosening of parts. No interruption of electrical continuity longer than 1 microsecond.			MIL-STD-1344 Method 2004 Test Cond. E
Durability	No electrical or mechanical defects after 500 cycles of mating and unmating			MIL-STD-1344 Method 2016 200 ± 100 cycles/hour
Salt Spray (Corrosion)	No exposure of base metal due to corrosion which will affect performance. Product will meet further tests as specified.			MIL-STD-1344 Method 1001 Cond. B
Fluid Immersion	20 hours immersion MIL-H-5606 Hydraulic Fluid 20 hours immersion MII-L-23659 Lubricating Fluid Connectors shall meet mating/unmating force following immersion.			MIL-STD-1344 Method 1016

Military D Subminiature, Non-Magnetic/No-Outgas

ITT Cannon is the industry leader in the non-magnetic/no-outgas connector industry. This catalog section illustrates our standard, highly popular offering for spaceborne applications. Class M gold finishes are standard issue for ITT Cannon. Also, Class D and K electroless nickel finishes can be supplied upon request (A159 plating on shells). If a NASA-Goddard specification application exists or NMC (20 gamma residual magnetism) please contact ITT Cannon.

Available Options

Suffix Code	Residual Magnetism	Shell Material (Finish)	Desired Results
NM	20,000 Gamma Residual Magnetism Standard Insulator. (Diallyl phthalate per MIL-M-14 type SDGF, color green.)	Brass Shells Per QQ-B-613 (Yellow Chromate over Cadmium per QQ-P-416), Type II, Class 2.	**Non-Magnetic**
NM-K52	20,000 Gamma Residual Magnetism Standard Insulator. (Diallyl phthalate per MIL-M-14 type SDGF, color green.)	Brass Shells Per QQ-B-613 (Gold over Copper per MIL-G-45204, Type II Grade C, Class 1 over copper per MIL-C-14450.)	**Non-Magnetic No-Outgas**
NMB	200 Gamma Residual Magnetism Unpigmented Insulator. (Diallyl phtalate per MIL-M-14 type SDGF unmilled, unpigmented, color white.)	Brass Shells Per QQ-B-613 (Yellow Chromate over Cadmium per QQ-P-416), Type II, Class 2.	**Non-Magnetic**
NMB-K52	200 Gamma Residual Magnetism Unpigmented Insulator. (Diallyl phtalate per MIL-M-14 type SDG-F unmilled, unpigmented, color white.)	Brass Shells Per QQ-B-613 (Gold over Copper per MIL-G-45204, Type II, Grade C, Class 1 over copper per MIL-C-14450.)	**Non-Magnetic No Outgas**

How To Order High-Rel Solder Cup Connectors

Solder Cup Receptacle and Plug (With .120 Through-Mounting Holes)

Shell Size (Number of Contacts)	Plug (With Pin Contacts Installed)	Receptacle (With Socket Contacts Installed)
E (9)	DEM9P***	DEM9S***
A (15)	DAM15P***	DAM15S***
B (25)	DBM25P***	DBM25S***
C (37)	DCM37P***	DCM37S***
D (50)	DDM50P***	DDM50S***

***Add desired suffix code with desired option to end of part number.

Example: DEM9PNM
DEM9PNM-K52
DEM9PSNMB
DEM9PSNMB-K52

How to Order High-Rel Crimp Connectors

Crimp Snap Receptacle and Plug (With .120 Through-Mounting Hole)

Shell Size (Number of Contacts)	Plug (With Pin Contacts Installed)	Receptacle (With Socket Contacts Installed)
E (9)	DEMA9P***	DEMA9S***
A (15)	DAMA15P***	DAMA15S***
B (25)	DBMA25P***	DBMA25S***
C (37)	DCMA37P***	DCMA37S***
D (50)	DDMA50P***	DDMA50S***

***Add desired suffix code with desired option to end of part number.

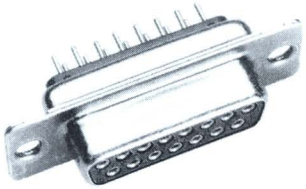
Example: DEMA9PNM
DEMA9PNM-K52
DEMA9PSNMB
DEMA9PSNMB-K52

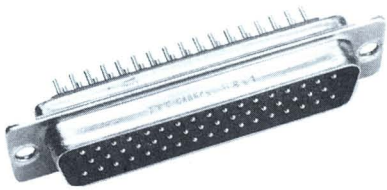
Crimp Connectors without contacts, add FO to end of the part number and change K52 to K47.

Example: DEMA9PNM-K47FO
DEMASNMB-K47FO
DEMA9PNMFO

Non-Magnetic Contacts: (20–24 AWG)	Pin (NM, NMB)	Socket (NM)	Socket (NMB)
	330-5291-037 (Standard Pins)	031-1007-042 (Standard Socket)	031-1007-052 (NMB Socket)

How to Order High-Rel Printed Circuit Mount Connectors





Straight PC Tail, Receptacle (Includes Socket Contacts) With .120(3.15) Through-Mounting Holes

Number of Contacts (Shell Size)	PC Tails - .030 (0.76) Diameter .127 (3.23) ±.020 (0.51) Long Post	.158 (4.01) ±.020 (0.51) Long Post	.183 (4.65) ±.020 (0.51) Long Post
9 (E)	DEM9SE***	DEM9SM***	DEM9SZ***
15 (A)	DAM15SE***	DAM15SM***	DAM15SZ***
25 (B)	DBM25SE***	DBM25SM***	DBM25SZ***
37 (C)	DCM37SE***	DCM37SM***	DCM37SZ***
50 (D)	DDM50SE***	DDM50SM***	DDM50SZ***

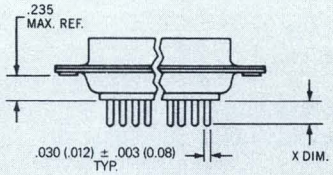
***Add desired suffix code (NM, NM-K52, NMB, NMB-K52) to end of part number. Example: DEM9SZNM
DEM9SZNMB-K52

Straight PC Tail, Plug (Includes Pin Contacts) With .120(3.15) Through-Mounting Holes

Number of Contacts (Shell Size)	PC Tails - .030 (0.76) Diameter .127 (3.23) ±.020 (0.51) Long Post	.158 (4.01) ±.020 (0.51) Long Post	.183 (4.65) ±.020 (0.51) Long Post
9 (E)	DEM9PE***	DEM9PM***	DEM9PZ***
15 (A)	DAM15PE***	DAM15PM***	DAM15PZ***
25 (B)	DBM25PE***	DBM25PM***	DBM25PZ***
37 (C)	DCM37PE***	DCM37PM***	DCM37PZ***
50 (D)	DDM50PE***	DDM50PM***	DDM50PZ***

***Add desired suffix code (NM, NM-K52, NMB, NMB-K52) to end of part number. Example: DEM9PENM
DEM9PZNMB-K52

Straight Terminal



Code (Last Letter of Part Number)	Straight X ±.020 (0.51)
E	.127 (0.51)
M	.158 (4.01)
Z	.183 (4.65)

Right Angle PC Tail Receptacle, With Bracket (.120(3.15) Through-Holes Only)

Number of Contacts (Shell Size)	PC Tails - .030 (0.76) Diameter .127 (3.23) ±.020 (0.51) Long Post	.158 (4.01) ±.020 (0.51) Long Post	.183 (4.65) ±.020 (0.51) Long Post
9 (E)	DEM9SD***	DEM9SL***	DEM9SS***
15 (A)	DAM15SD***	DAM15SL***	DAM15SS***
25 (B)	DBM25SD***	DBM25SL***	DBM25SS***
37 (C)	DCM37SD***	DCM37SL***	DCM37SS***
50 (D)	DDM50SD***	DDM50SL***	DDM50SS***

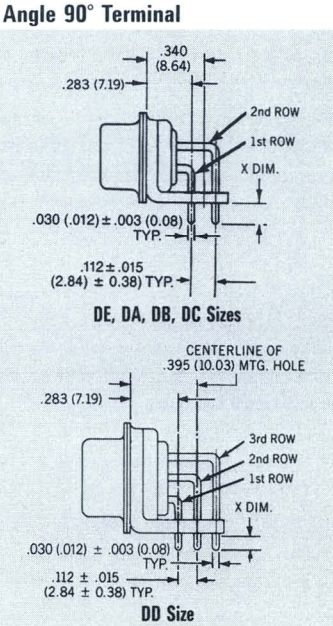
***Add desired suffix code (NM, NM-K52, NMB, NMB-K52) to end of part number. Example: DEM9SDNM
DEM9SLNMB-K52

Right Angle PC Tail Plug, With Bracket (.120(3.15) Through-Holes Only)

Number of Contacts (Shell Size)	PC Tails - .030 (0.76) Diameter .127 (3.23) ±.020−(0.51) Long Post	.158 (4.01) ±.020−(0.51) Long Post	.183 (4.65) ±.020−(0.51) Long Post
9 (E)	DEM9PD***	DEM9PL***	DEM9PS***
15 (A)	DAM15PD***	DAM15PL***	DAM15PS***
25 (B)	DBM25PD***	DBM25PL***	DBM25PS***
37 (C)	DCM37PD***	DCM37PL***	DCM37PS***
50 (D)	DDM50PD***	DDM50PL***	DDM50PS***

***Add desired suffix code (NM, NM-K52, NMB, NMB-K52) to end of part number. Example: DEM9PDNM
DEM9PLNMB-K52

Right Angle 90° Terminal

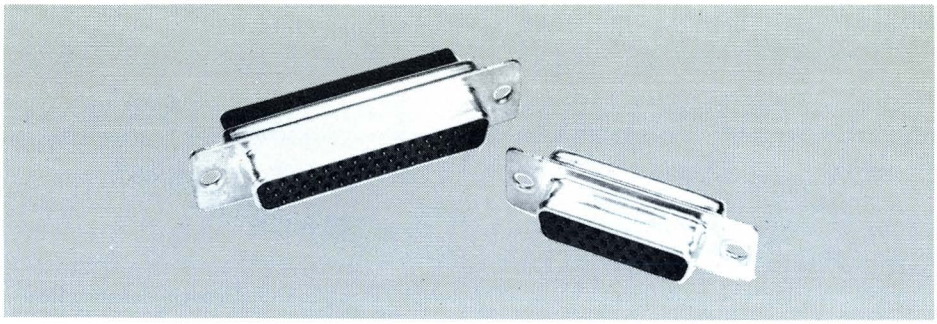


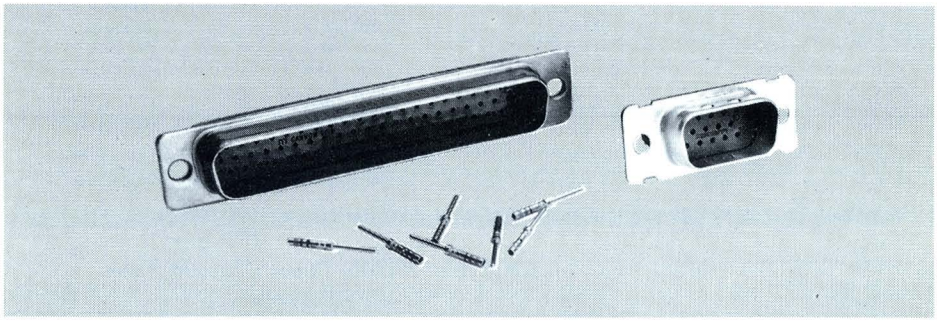
Connectors with brackets cannot be ordered with float mounts or clinch nuts.

Code (Last Letter of Part Number)	Right Angle With Bracket	Right Angle X ±.020 (0.51)
D	•	.127 (3.22)
L	•	.158 (4.01)
S	•	.183 (4.65)

Military D Subminiature, High Density Connectors

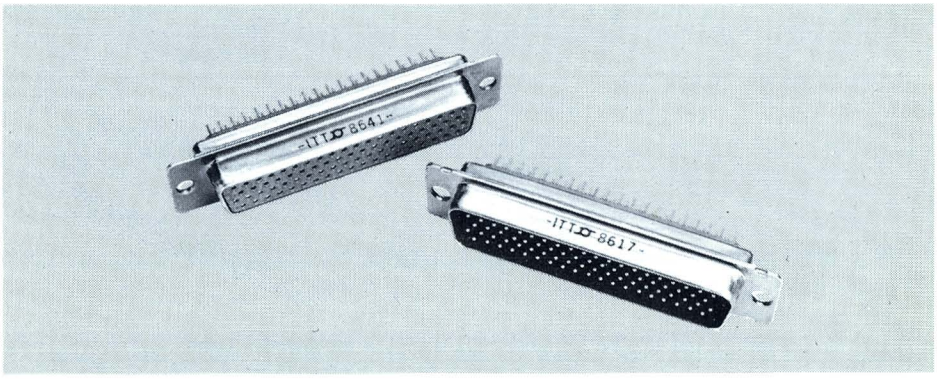
High Density Cable Connectors





If you desire real estate savings, ITT Cannon's high density D Subminiature connectors provide 15, 26, 44, 62 and 78 contacts in the same space normally occupied by 9, 15, 25, 37 and 50 contacts. The same ITT Cannon quality is present in this .030" diameter system as in our standard .040" diameter system. High temperature thermoset plastics and stringent tolerances are utilized in this product offering.

High Density Printed Wiring Board Mount Connectors



A variety of printed wiring board mount options, both right angle and straight are available including high density combination D Subminiatures.

High Density Combo D Connectors

The 1990's will demand high density combination D Subminiatures utilizing coax, power, high voltage and fiber optics in space-saving arrangements. This diverse connector line can be supplied for commercial or military applications.

If you would like additional information on D Subminiature High Density connectors, please contact ITT Cannon.

ITT Cannon
D Subminiature Products, 1851 E. Deere Ave., P.O. Box 35000, Santa Ana, CA 92705-6500 • (714) 261-5300

Backshell/Hardware Compatibility Chart

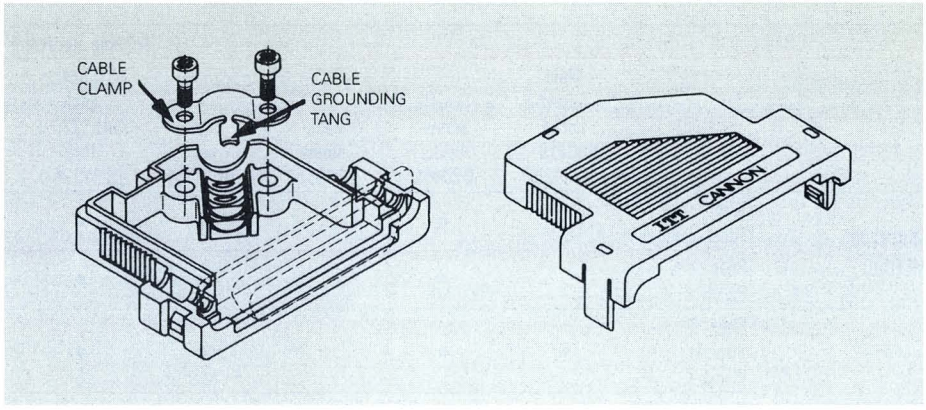
		Locking Hardware								
		Male Screw Locks D20419/ D20420	Female Screw-Locks D20418	Jack-screw D110550	Jack-post D110551	Slide Lock DA51220-1 thru DE51224-1	Slide Lock Post D53018	Spring Latch D110277/ D110279	Spring Latch Plate D110279/ D11028	Keying Plate
MOUNTING METHOD	Front Panel		•		•	•	•	•		•
	Rear Panel		•			•	•	•		
M85049 METAL BACKSHELLS	Deep Straight Clamp	•	•		•	•	•	•	•	•
	Right Angle		•			•	•	•	•	•
	Round Clamp	•	•		•	•	•	•	•	•
	Straight Clamp	•	•		•	•	•	•	•	•
SHIELDED BACKSHELLS	Plated Plastic	See ordering information on page 309 for Screw Lock part number.								
	Die-Cast Aluminum							•	•	
	Shielded/ Shrouded	See ordering information on page 303 for Jackscrew part number								
PLASTIC BACKSHELLS	Straight & 90° (D*5121X)							•	•	•
	Universal D*110963	•	•	•	•			•	•	
	Snap-Together Universal	•	•	•	•			•	•	
	Dataphone DB51226-1B	Supplied with male screw locks.								
	IDC D*115386	Designed for use with quick-disconnect latching hardware (see page 307).								
	STR/90° D*115339									
POTTING CUPS	Metal	•	•		•	•	•	•	•	•
	Plastic	•	•		•	•	•	•	•	•

Legend: • = Compatible

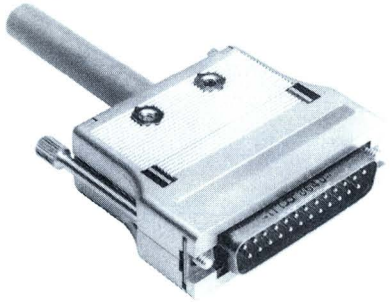
Snap-Together

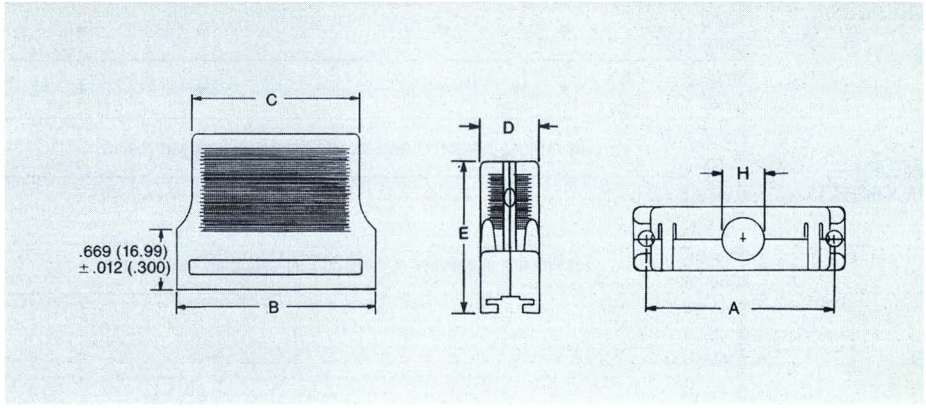
- Quick and simple assembly using snap-together design feature
- No complicated crimp ferrule tooling needed
- Helps to comply with FCC shielding requirements

Material:	ABS Polymer
Finish:	Nickel over Copper
Temperature Range:	−20/80°C
Attenuation:	−44 DB @ 1000 MHZ



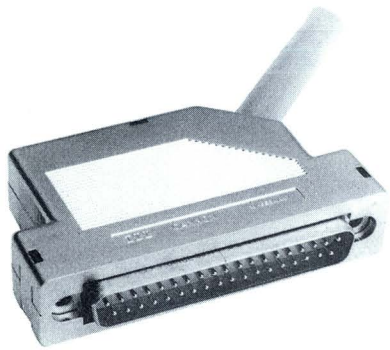
Straight Exit

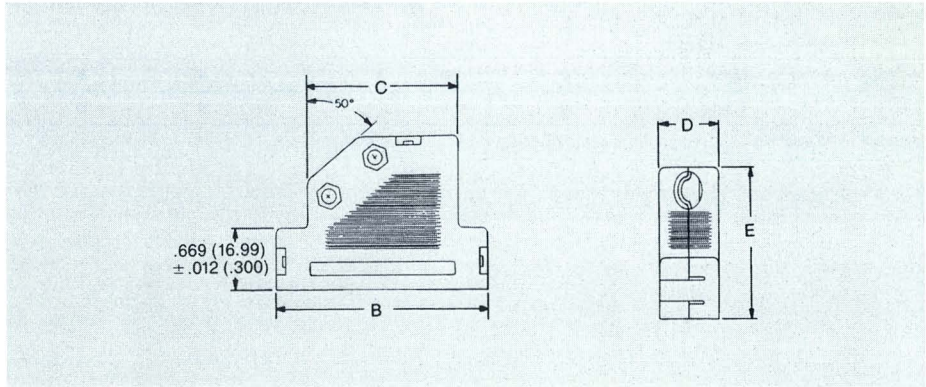




Layout	Part Number	A ±.006 (0.15)	B ±.012 (0.30)	C ±.012 (0.30)	D ±.012 (0.30)	E ±.008 (0.20)	H Max.
DE-9	DE121073-154	.982 (24.95)	1.213 (30.8)	.933 (23.7)	.630 (16.0)	1.417 (36.0)	.268 (6.80)
DA-15	DA121073-150	1.311 (33.30)	1.539 (39.1)	1.252 (31.8)	.630 (16.0)	1.654 (42.0)	.307 (7.80)
DA-25	DB121073-151	1.850 (47.00)	2.087 (53.0)	1.772 (45.0)	.630 (16.0)	1.654 (42.0)	.409 (10.40)
DA-37	DC121073-152	2.488 (63.45)	2.728 (69.3)	2.374 (60.3)	.630 (16.0)	1.654 (42.0)	.480 (12.20)

40° Exit



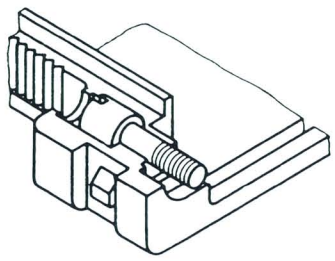


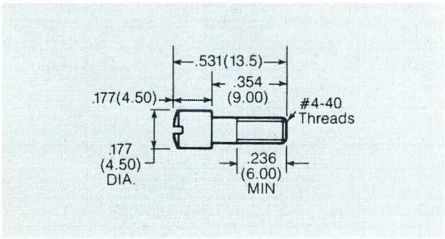
Layout	Part Number	B ±.012 (0.30)	C ±.012 (0.30)	D ±.012 (0.30)	E ±.008 (0.20)	Cable Diameter Min.	Cable Diameter Max.
DE-9	DE121073-54	1.417 (36.0)	.866 (22.0)	.630 (16.0)	1.417 (36.0)	.138 (3.5)	.295 (7.5)
DA-15	DA121073-50	1.744 (44.3)	1.075 (27.3)	.630 (16.0)	1.654 (42.0)	.256 (6.5)	.354 (9.0)
DB-25	DB121073-51	2.283 (58.0)	1.614 (41.0)	.630 (16.0)	1.654 (42.0)	.256 (6.5)	.433 (11.0)
DC-37	DC121073-52	2.933 (74.5)	2.264 (57.5)	.630 (16.0)	1.654 (42.0)	.256 (6.5)	.433 (11.0)
DD-50	DD121073-53	2.875 (73.0)	2.165 (55.0)	.748 (19.0)	1.654 (42.0)	.354 (9.0)	.512 (13.0)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

#4-40 Locking Hardware For Snap-Together Shielded Backshells

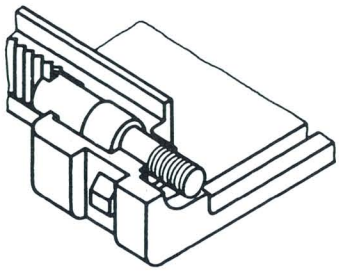
Recessed Jackscrew

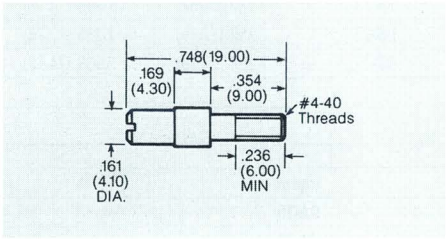




Part Number:	**250-8501-004**
Material:	**Brass**
Finish:	**Nickel**
Quantity Required per Backshell:	**2**

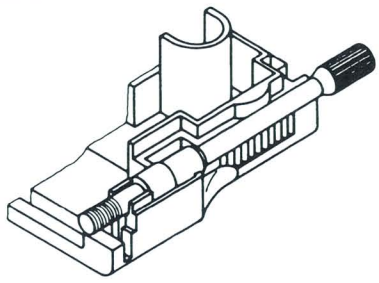
Extended Jackscrew

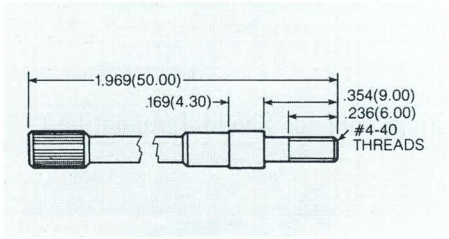




Part Number:	**250-8501-010**
Material:	**Brass**
Finish:	**Nickel**
Quantity Required per Backshell:	**2**

Thumbscrew

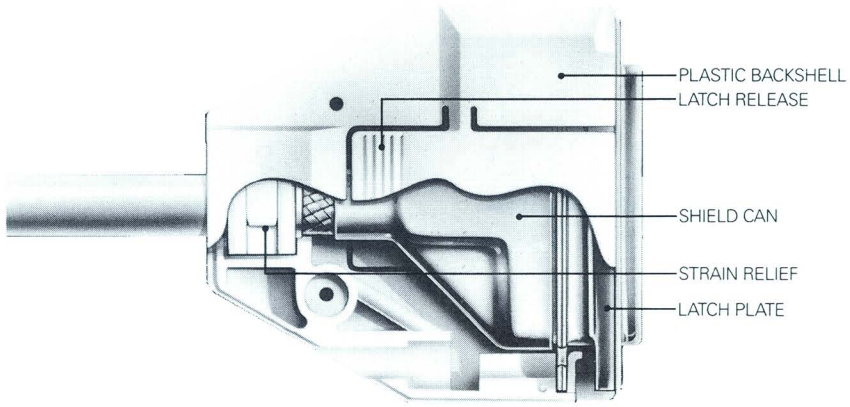




Part Number:	**250-8501-013**
Material:	**Brass**
Finish:	**Nickel**
Quantity Required per Backshell:	**2**

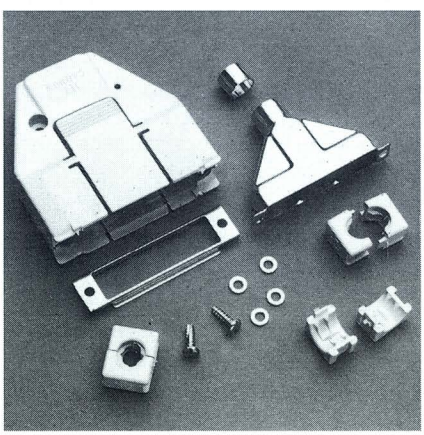
Shielded / Shrouded Backshells

- Sizes DA-15, DB-25, DC-37
- 360° Shielding
- Quick Disconnect
- Crimp Ferrule supplied



How to Order

Complete kit consists of items shown.

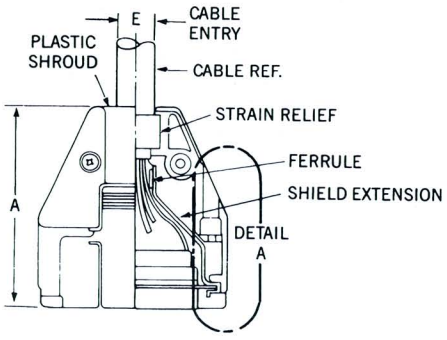


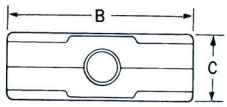
Layout	Complete Kit	Shield Can & Ferrule Kit	Plastic Backshell And Latch Plate Kit	Latch Plate
DA-15	DA111401	DA59104	DA111409	227-1304-000
DB-25	DB111402	DB59105	DB111410	227-1302-000
DC-37	DC111403	DC59106	DC111411	227-1306-000

Description	Material	Finish
Plastic Shroud	Thermoplastic Flame Retardart UL 94-V0 rated	Matte Light Gray
Strain Relief		
Shield Extension	Brass	Tin-Lead
Ferrule		
Ground Spring	CRES	Tin-Lead
Hardware (Screws / Washers)	Steel	Cadmium / Zinc

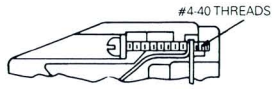
D Subminiture Accessories — Shielded Backshells

Dimensions





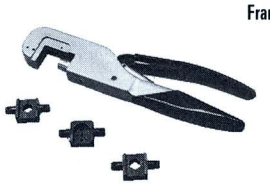
Detail A



Captive Screw Kit (male) to be used for permanent secured fastening. Must be ordered separately. Part Number D111396. *Order 1 kit per connector.*

Shell Size	A ±.020(0.51)	B ±.020(0.51)	C ±.020(0.51)	E Cable Entry Min.	E Cable Entry Max.
DA-15	2.180 (55.37)	1.745 (17.78)	.700 (17.78)	.25 (6.35)	.35 (8.89)
DB-25	2.250 (57.15)	2.285 (17.78)	.700 (17.78)	.30 (7.62)	.40 (10.16)
DC-37	2.250 (57.15)	2.933 (74.50)	.700 (17.78)	.35 (8.89)	.45 (11.43)

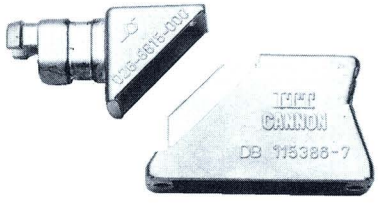
Crimp Tool for Shield Termination

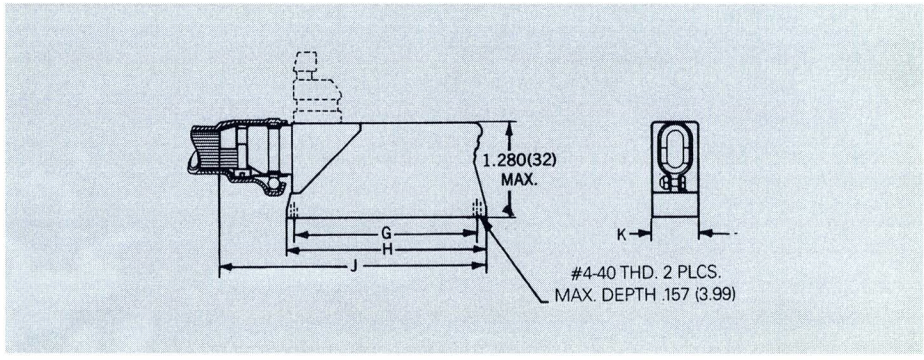


Layout	Frame	Die Set
DA-15	995-0001-761	995-0002-046
DB-25	995-0001-761	995-0001-878
DC-37	995-0001-761	995-0001-885

Note: For cable preparation, mounting, and installation information, requrest Master Drawing 1238Y.

EMI/RFI Diecast for 90° or Straight Cable Exit



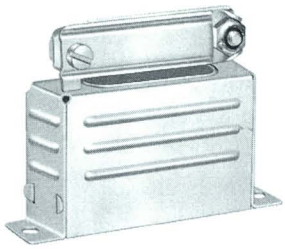


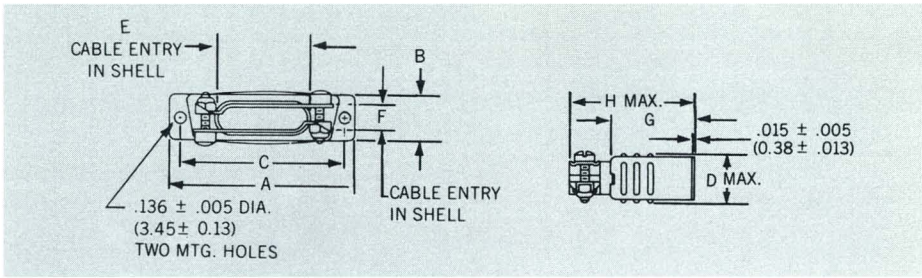
Material: Aluminum
Finish: Clear Chromate Over Cadmium per QQ-P-416

Layout	Part Number	G ±.005(0.13)	H ±.010(0.25)	J Max.	K Max.	Max. Cable Entry
DB-25	DB115386-72	1.850(47.04)	2.169(55.00)	2.992(76.00)	.636(16.15)	2.638 sq. in. (67mm²)
DC-37	DC115386-82	2.500(63.50)	2.819(71.60)	3.637(92.40)	.636(16.15)	2.638 sq. in. (67mm²)
DD-50	DD115386-92	2.406(61.10)	2.717(69.00)	3.543(90.00)	.748(19.00)	3.740 sq. in. (98mm²)

Note: Furnished with stainless steel shield clamp. Customer-furnished tie-wrap for strain relief and heat-shrink sleeving are recommended. Locking Hardware: Spring latch clips are recommended.

Deep Straight Clamp

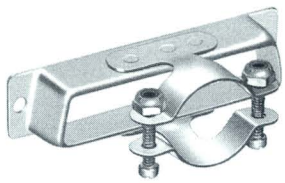


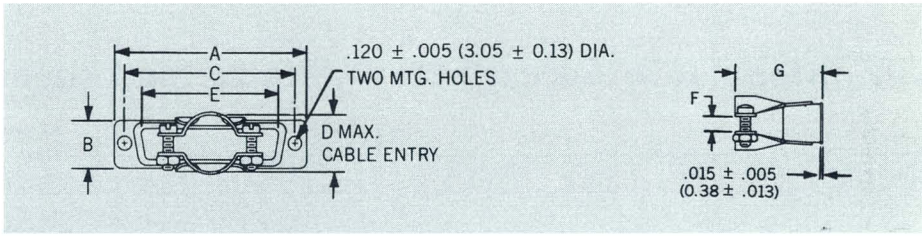


Material: Low Carbon Steel per ASTM A-620
Finish: Yellow Chromate Over Cadmium per QQ-P-416, Type II, Class 2

Layout	Part Number	Mil. Spec.	A ±.015 (0.38)	B ±.015 (0.38)	C ±.010 (0.25)	D Max.	E ±.015 (0.38)	F ±.015 (0.38)	G ±.015 (0.38)	H Max.
DE-9	DE 24657	M85049/48-1-1	1.203(30.6)	.484(12.3)	.984(25.0)	.578(14.7)	.375(9.5)	.375(9.5)	.750(19.0)	1.250(31.7)
DA-15	DA 24658	M85049/48-1-2	1.531(38.9)	.484(12.3)	1.312(33.3)	.578(14.7)	.713(18.1)	.312(7.9)	.750(19.0)	1.250(31.7)
DB-25	DB 24659	M85049/48-1-3	2.078(52.8)	.484(12.3)	1.852(47.0)	.578(14.7)	1.000(25.4)	.312(7.9)	1.000(25.4)	1.563(39.7)
DC-37	DC 24660	M85049/48-1-4	2.718(69.0)	.484(12.3)	2.500(63.5)	.578(14.7)	1.375(34.9)	.312(7.9)	1.000(25.4)	1.563(39.7)
DD-50	DD 24661	M85049/48-1-5	2.625(66.7)	.593(15.1)	2.406(61.1)	.687(17.4)	1.406(35.7)	.406(10.3)	1.125(28.6)	1.688(42.9)

Round Clamp

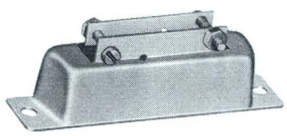


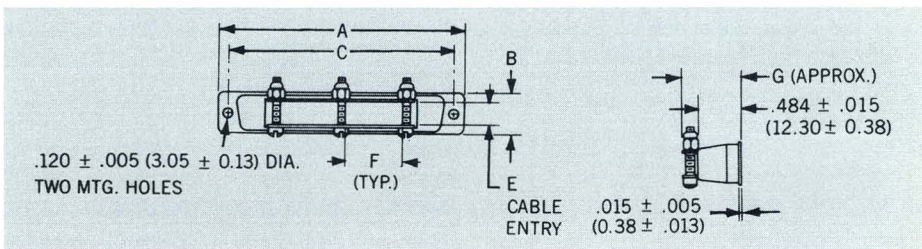


Material: Low Carbon Steel per ASTM A-620
Finish: Yellow Chromate Over Cadmium Per QQ-P-416, Type II, Class 2

Layout	Part Number	Mil. Spec	A ±.015 (0.38)	B ±.015 (0.38)	C ±.005 (0.13)	D Max.	E ±.015 (0.38)	F −.015 (0.38)	G ±.030 (0.76)
DE-9	DE 44994	M85049/48-2-1	1.208 (30.7)	.500 (12.7)	.984 (25.0)	.406 (10.3)	.661 (16.8)	.125 (3.2)	1.031 (26.2)
DA-15	DA 20961	M85049/48-2-2	1.531 (38.9)	.500 (12.7)	1.312 (33.3)	.406 (10.3)	.984 (25.0)	.125 (3.2)	1.031 (26.2)
DB-25	DB 20962	M85049/48-2-3	2.078 (52.8)	.500 (12.7)	1.852 (47.0)	.593 (15.1)	1.515 (38.5)	.187 (4.7)	1.062 (27.0)
DC-37	DC 20963	M85049/48-2-4	2.718 (69.0)	.500 (12.7)	2.500 (63.5)	.718 (18.2)	2.171 (55.1)	.250 (6.3)	1.062 (27.0)
DD-50	DD 20964	M85049/48-2-5	2.625 (66.7)	.609 (15.5)	2.406 (61.1)	.812 (20.6)	2.093 (53.2)	.312 (7.9)	1.062 (27.0)

Straight Clamp



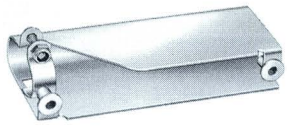


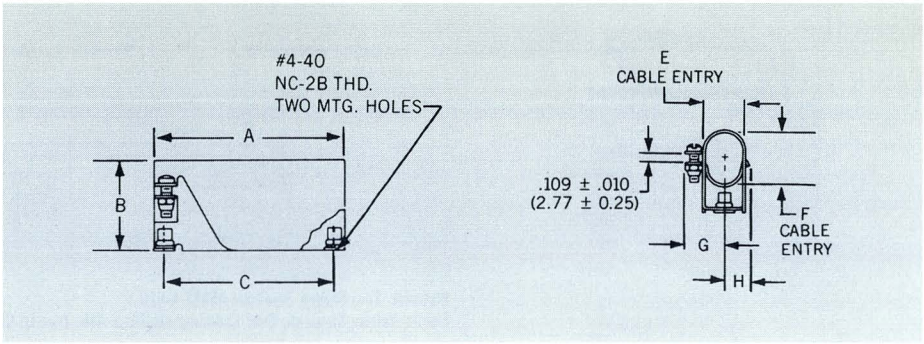
Material: Low Carbon Steel per ASTM A-620
Finish: Yellow Chromate Over Cadmium per QQ-P-416, Type II, Class 2

Layout	Part Number	Mil. Spec.	No. of Cable Locking Screws Reqd.	A ±.015 (0.38)	B ±.015 (0.38)	C ±.005 (0.13)	E ±.015 (0.38)	F ±.015 (0.38)	G ±.035 (0.89)
DA-15	DA 19678-1	M85049/48-3-2	2	1.531 (38.9)	.500 (12.7)	1.312 (33.3)	.296 (7.5)	.312 (7.9)	.644 (16.36)
DB-25	DB 19678-2	M85049/48-3-3	2	2.078 (52.8)	.500 (12.7)	1.852 (47.0)	.296 (7.5)	.796 (20.2)	.644 (16.36)
DC-37	DC 19678-3	M85049/48-3-4	3	2.718 (69.0)	.500 (12.7)	2.500 (63.5)	.296 (7.5)	.687 (17.4)	.644 (16.36)
DD-50	DD 19678-4	M85049/48-3-5	3	2.625 (66.7)	.609 (12.7)	2.406 (61.1)	.390 (9.9)	.687 (17.4)	.694 (17.63)

D Subminiature Accessories — M85049 Backshells

Right Angle





Material: Low Carbon Steel Per ASTM A-620
Finish: Yellow Chromate Over Cadmium per QQ-P-416, Type II, Class 2

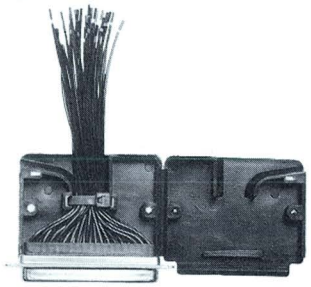
Layout	Part Number	Mil. Spec.	A ±.015 (0.38)	B ±.030 (0.76)	C ±.005 (0.13)	E ±.030 (0.76)	F ±.030 (0.76)	G ±.030 (0.76)	H ±.030 (0.76)
DE-9	DE 19977-5	**M85049/50-1**	1.203 (30.6)	.718 (18.2)	.984 (25.0)	.437 (11.1)	.437 (11.1)	.468 (11.9)	.281 (7.1)
DA-15	DA 19977-1	**M85049/50-2**	1.531 (38.9)	.718 (18.2)	1.312 (33.3)	.437 (11.1)	.437 (11.1)	.468 (11.9)	.281 (7.1)
DB-25	DB 19977-2	**M85049/50-3**	2.078 (52.8)	.968 (24.6)	1.852 (47.0)	.437 (11.1)	.625 (15.9)	.468 (11.9)	.281 (7.1)
DC-37	DC 19977-3	**M85049/50-4**	2.718 (69.0)	1.187 (30.1)	2.500 (63.5)	.437 (11.1)	.812 (20.6)	.468 (11.9)	.281 (7.1)
DD-50	DD 19977-4	**M85049/50-5**	2.625 (66.7)	1.250 (31.7)	2.406 (61.1)	.562 (14.3)	.906 (23.1)	.531 (13.5)	.343 (8.7)

D Subminiature Accessories — Plastic Backshells

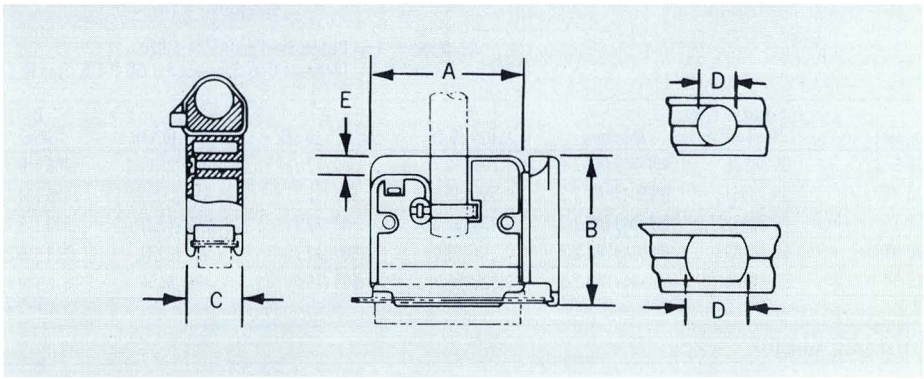
Universal

- Economical design uses a tie-wrap for cable strain relief
- Compatible with screw locks and spring latches

Straight



90°



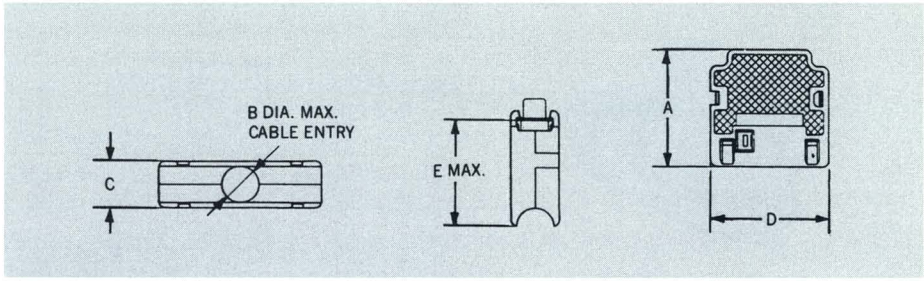
Material: Junction shell — polypropylene; hardware — steel; tie-wrap — nylon.
Finish: Hardware – cadmium plate, yellow chromate.
Color: Black (junction shell).
U.L. rated 94V-2 (flame retardant)

Layout	Part Number	A ±.015 (0.38)	B ±.020 (0.51)	C ±.020 (0.51)	D ±.020 (0.51)	E ±.010 (0.25)
DE-9	DE 110963-1	.765 (19.43)	1.400 (35.56)	.600 (15.24)	.250 (6.35)	.125 (3.18)
DA-15	DA 110963-2	1.097 (27.86)	1.569 (39.85)	.600 (15.24)	.375 (9.53)	.161 (4.09)
DB-25	DB 110963-3	1.641 (41.68)	1.651 (41.94)	.600 (15.24)	.410 (10.41)	.205 (5.21)
DC-37	DC 110963-4	2.279 (57.89)	1.899 (48.23)	.600 (15.24)	.593 (15.06)	.250 (6.35)
DD-50	DD 110963-5	2.063 (52.40)	1.925 (48.90)	.710 (18.03)	.670 (17.01)	.285 (7.24)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Snap-Together Universal

- Snap-together design simplifies assembly



Material: Flame-retardant thermoplastic, UL 94V-0 rated.

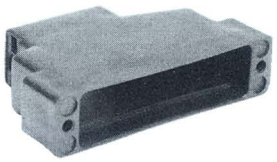
A 2-piece snap-together design for quick assembly. Customer furnished tie-wrap.

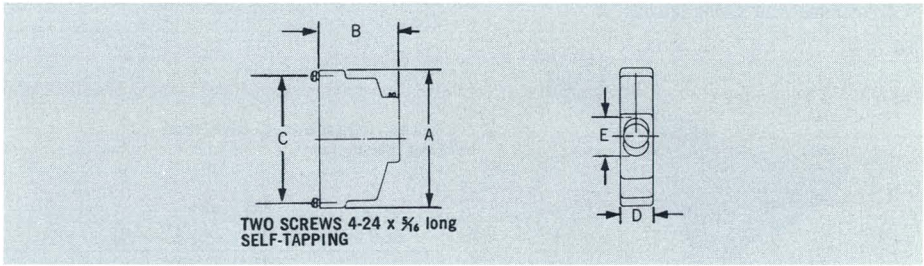
Layout	Part Number	A ±.008 (0.20)	B Max.	C ±.008 (0.20)	D ±.008 (0.20)	E Max.
DE-9	DE 115339-20	1.673 (42.5)	.276 (7.0)	.669 (17.0)	.768 (19.5)	1.555 (39.5)
DA-15	DA 115339-21	1.673 (42.5)	.378 (9.6)	.669 (17.0)	1.094 (27.8)	1.555 (39.5)
DB-25	DB 115339-22	1.673 (42.5)	.457 (11.6)	.669 (17.0)	1.638 (41.6)	1.555 (39.5)
DC-37	DC 115339-23	1.673 (42.5)	.512 (13.0)	.669 (17.0)	2.283 (58.0)	1.555 (39.5)
DD-50	DD 115339-24	1.673 (42.5)	.630 (16.0)	.780 (19.8)	2.050 (52.3)	1.555 (39.5)

One Piece Plastic

- Straight or 90° cable exit
- Integral cable clamp and set screw
- Accommodates spring latches
- UL 94V-2 rated flame retardant

Straight Cable Exit

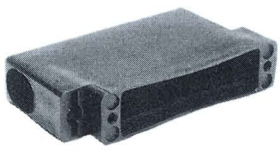


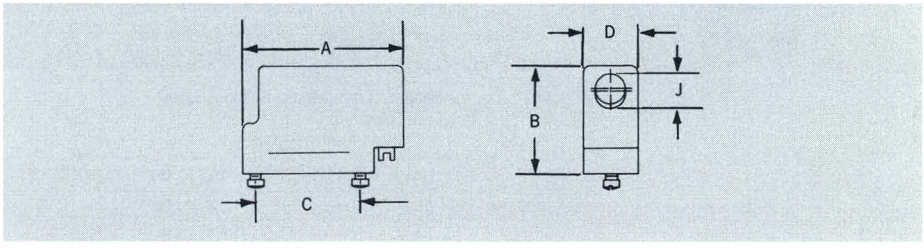


Material: Thermoplastic UL 94V-2 rated
Color: Black
Screws: Steel, cadmium plated

Layout	Part Number	A ±.015 (0.38)	B ±.015 (0.38)	C ±.005 (0.13)	D ±.015 (0.38)	E ±.010 (0.25)
DE-9	DE 51218	1.218 (30.9)	1.000 (25.4)	.984 (25.0)	.500 (12.7)	.281 (7.1)
DA-15	DA 51210	1.546 (39.3)	1.000 (25.4)	1.312 (33.3)	.500 (12.7)	.360 (9.1)
DB-25	DB 51212	2.093 (53.2)	1.250 (31.7)	1.852 (47.0)	.500 (12.1)	.493 (12.5)
DC-37	DC-51214	2.734 (69.4)	1.500 (38.1)	2.500 (63.5)	.500 (12.7)	.694 (17.6)
DD-50	DD-51216	2.640 (67.1)	1.500 (38.1)	2.406 (61.1)	.609 (15.5)	.734 (18.6)

90° Cable Exit



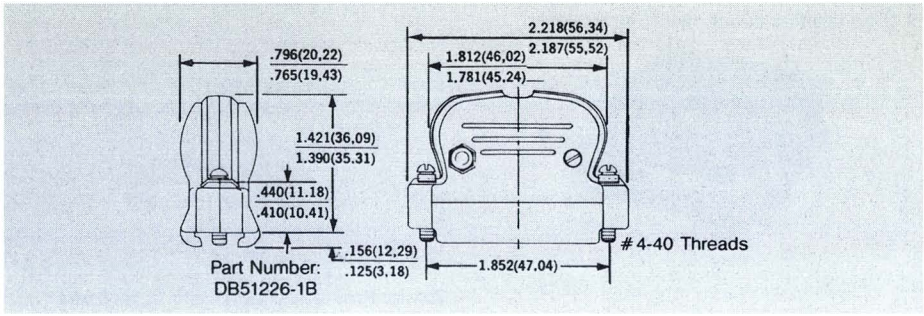


Material: Thermoplastic UL 94V-2 rated
Color: Black
Screws: Steel, cadmium plated

Layout	Part Number	A ±0.15 (0.38)	B ±.015 (0.38)	C ±.005 (0.13)	D ±.015 (0.38)	J ±.010 (0.25)
DA-15	DA 51211	1.822 (46.3)	1.000 (25.4)	1.312 (33.3)	.500 (12.7)	.360 (9.1)
DB-25	DB 51213	2.368 (60.1)	1.250 (31.7)	1.852 (47.0)	.500 (12.7)	.493 (12.5)
DC-37	DC 51215	3.009 (76.4)	1.500 (38.1)	2.500 (63.5)	.500 (12.7)	.694 (17.6)
DD-50	DD 51217	2.915 (74.0)	1.500 (38.1)	2.406 (61.1)	.609 (15.5)	.734 (18.6)

Dataphone

Part Number: DB51226-1B
Available in DB size only.
Supplied with screw locks.



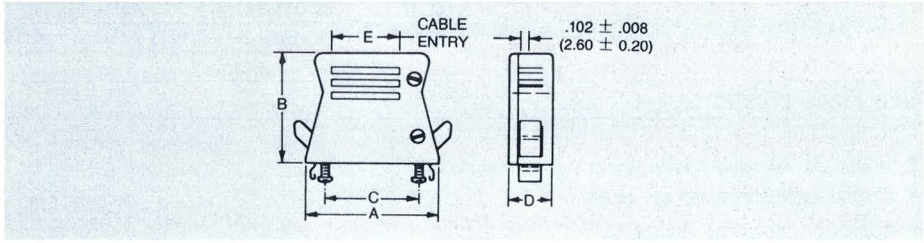
Max. Cable Entry .312 (7.92)

Material: Junction shell — Thermoplastic UL 94V-0 rated. Hardware — steel.
Finish: Hardware — cadmium plate, clear chromate.
Color: Black

Quick-Disconnect Backshells for IDC or Round Cable

- Optional Spring Clips provide quick disconnect for either flat IDC cable or round jacketed cable
- Designed for use with keying plates sold separately
- Compatible with spring latches

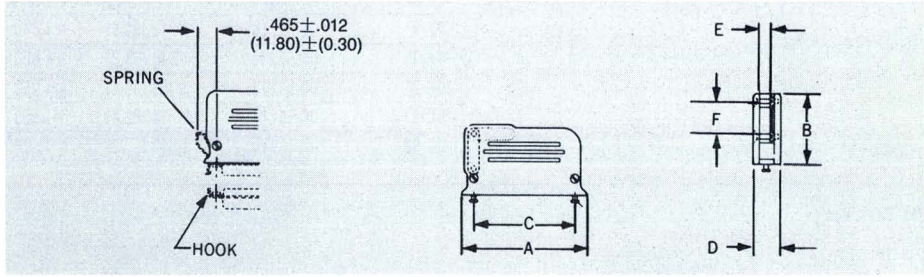
IDC



Material: Thermoplastic, UL 94V-0 rated
Color: Black

Layout	Part Number	A ±.011 (0.03)	B ±.011 (0.03)	C ±.005 (.013)	D ±.011 (.03)	E ±.007 (0.2)
DE-9	DE 115386-1B	1.602 (40.7)	1.574 (40.0)	0.984(25.0)	0.629 (16.0)	0.590 (15.0)
DA-15	DA 115386-2B	1.929 (49.0)	1.574 (40.0)	1.311 (33.3)	0.629 (16.0)	0.917 (23.3)
DB-25	DB 115386-3B	2.468 (62.7)	1.574 (40.0)	1.850 (47.0)	0.629 (16.0)	1.456 (37.0)
DC-37	DC 115386-4B	3.118 (79.2)	1.574 (40.0)	2.490 (63.5)	0.629 (16.0)	2.106 (53.5)

Round Cable – Straight/90°



Material: Thermoplastic, UL 94V-0 rated
Color: Black

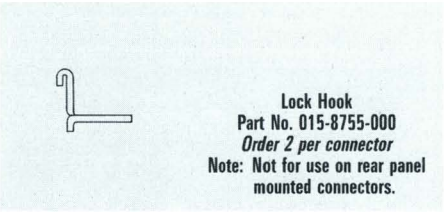
Layout	Part Number	A ±.012 (0.30)	B ±.012 (0.30)	C ±.005 (0.13)	D ±.012 (0.3)	E ±.012 (0.3)	F ±.012 (0.3)
DE-9	DE 115339	1.614 (41.0)	1.260 (32.0)	0.984 (25.0)	.630 (16.0)	.315 (8.0)	.275 (7.0)
DA-15	DA 115339-1	1.929 (49.0)	1.260 (32.0)	1.311 (33.30)	.630 (16.0)	.315 (8.0)	.275 (7.0)
DB-25	DB 115339-2	2.490 (63.0)	1.653 (42.0)	1.852 (47.04)	.630 (16.0)	.315 (8.0)	.708 (18.0)
DC-37	DC 115339-3	3.118 (79.2)	1.653 (42.0)	2.500 (63.50)	.630 (16.0)	.315 (8.0)	.708 (18.0)
DD-50	DD 115339-4	3.023 (76.8)	1.653 (42.0)	2.405 (61.10)	.748 (19.0)	.433 (11.0)	.708 (18.0)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

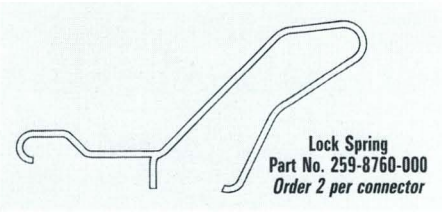
Optional Locking Mechanism/Hardware

Material: Corrosion-resistant steel.
Note: When used with keying plate, order lock hook part number 015-8755-001.

Hardware



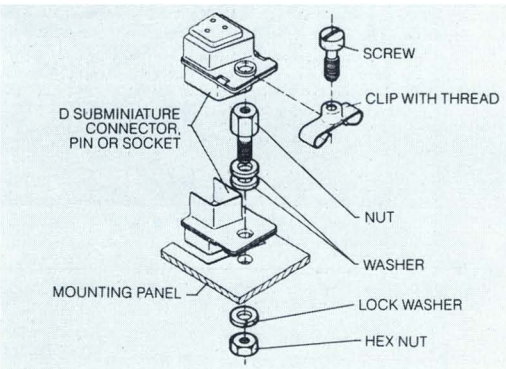
Lock Hook
Part No. 015-8755-000
Order 2 per connector
Note: Not for use on rear panel mounted connectors.



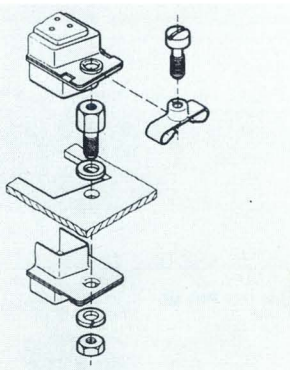
Lock Spring
Part No. 259-8760-000
Order 2 per connector

Screw Locks

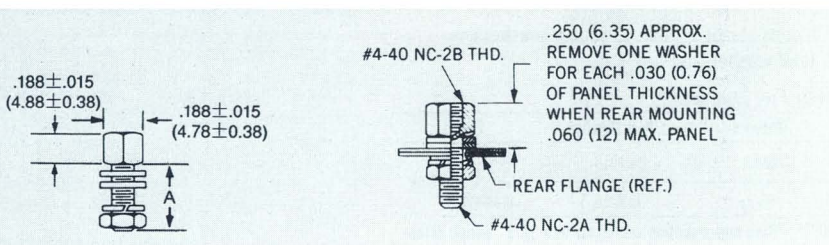
Front Panel Mount



Rear Panel Mount



Female Screw Locks

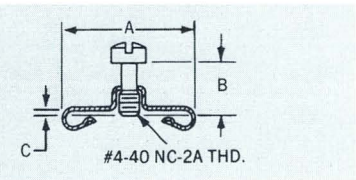


Order 2 per connector.

Cannon Part Number	Mil. Spec.	A ±.015 (0.38)
D20418-2	**M24308/26-1**	.312 (7.92)
D20418-50	—	.500 (12.70)
D20418-39	**M24308/26-2**	.625 (15.88)
D20418-74	—	.750 (19.05)

Material: Cold rolled steel.
Finish: Cadmium plate, yellow chromate. Per QQ-P-416, Type II, Class 2.
NOTE: (1) A 6 inch/pound (female) and 4 inch/pound (male) maximum torque during assembly is recommended on steel screw lock assemblies.
(2) A third flat washer is supplied for front panel mounting of tab shell connectors.

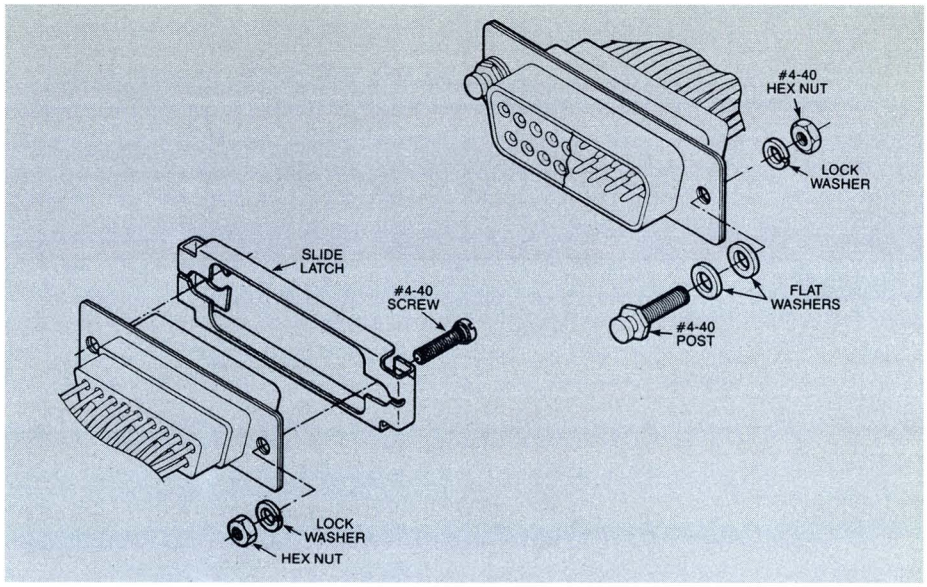
Male Screw Locks



Material: Clip – sheet steel; hardware – cold rolled steel.
Finish: Cadmium plate, yellow chromate.
Order 2 per connector

Cannon Part Number	Mil. Spec.	A ±.015 (0.38)	B ±.010 (.025)	C ±.005 (0.13)	Connector Size
D20419	—	.555 (14.10)	.250 (6.35)	.048 (1.22)	DE9, DA15, DB25, DC37
D20419-18	**M24308/25-9**	.555 (14.10)	.281 (7.14)	.067 (1.70)	DE9, DA15, DB25, DC37
D20419-21	—	.555 (14.10)	.281 (7.14)	.092 (2.34)	DE9, DA15, DB25, DC37
D20419-104	—	.555 (14.10)	.312 (7.92)	.092 (2.34)	DE9, DA15, DB25, DC37
D20420	—	.656 (16.66)	.250 (6.35)	.048 (1.22)	DD50
D20420-13	**M24308/25-10**	.656 (16.66)	.281 (7.14)	.067 (1.70)	DD50
D20420-15	—	.656 (16.66)	.281 (7.14)	.092 (2.34)	DD50
D20420-86	—	.656 (16.66)	.312 (7.92)	.092 (2.34)	DD50

Slide Latch Assemblies



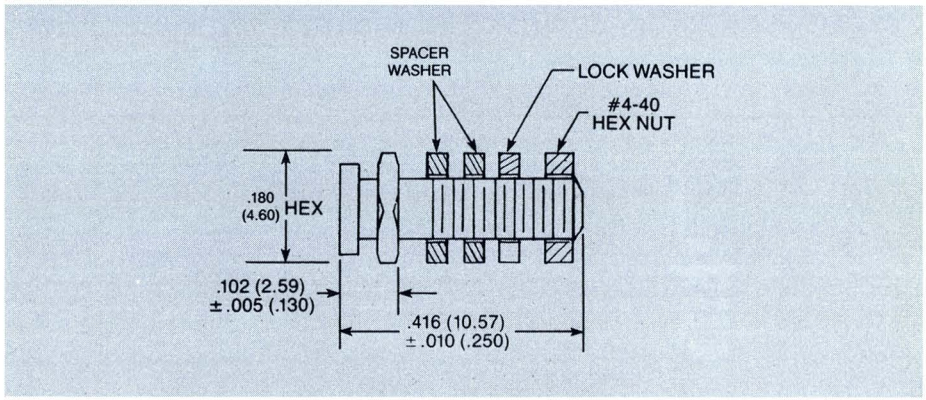
Slide Lock Post Kit

Kit consists of 1 post, 2 spacer washers, 1 lock washer and hex nut.

Order 2 per connector.

Material	Part Number	Finish
Steel	D53018	Cadmium per QQ-P-416 Yellow Chromate
Brass	D53018-5	

NOTE: When rear-mounting connector to a 1/16″ panel, delete the 2 spacer washers.

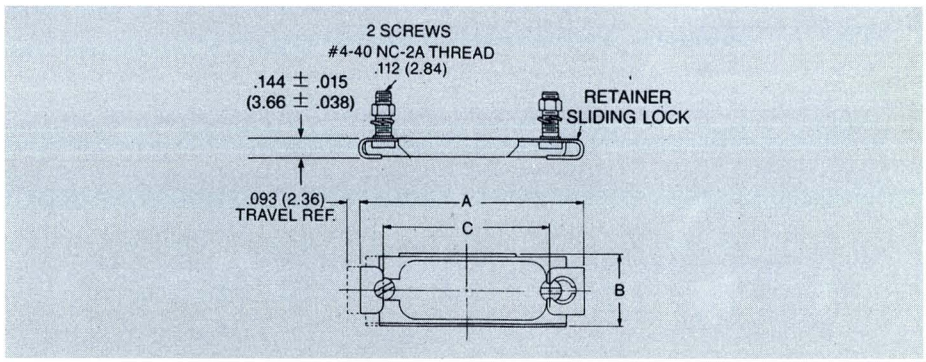


Slide Latch Kit

Kit consists of slide latch retainer, 2 screws, 2 nuts, 2 lock washers.

Order one per connector.

Description	Material	Finish
Retainer Sliding Lock	Stainless Steel per QQ-S-766	Passivated per QQ-P-35
Screw, Mtg.	Steel	Yellow Chromate Over Cadmium Plate per QQ-P-416
Washer, Lock		
Washer, Flat		
Nut, Hex		

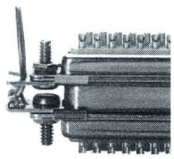


Layout	Part Number	A ±.015 (0.38)	B ±.015 (0.38)	C ±.005 (0.13)
DE-9	DE 51224-1	1.392 (35.36)	.500 (12.70)	.984 (25.00)
DA-15	DA 51220-1	1.720 (43.70)	.500 (12.70)	1.312 (33.32)
DB-25	DB 51221-1	2.260 (57.40)	.500 (12.70)	1.852 (47.07)
DC-37	DC 51222-1	2.908 (73.86)	.500 (12.70)	2.500 (63.50)
DD-50	DD 51223-1	2.814 (71.47)	.609 (15.47)	2.406 (61.10)

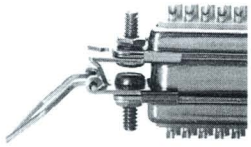
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Spring Latch Assemblies

Locked

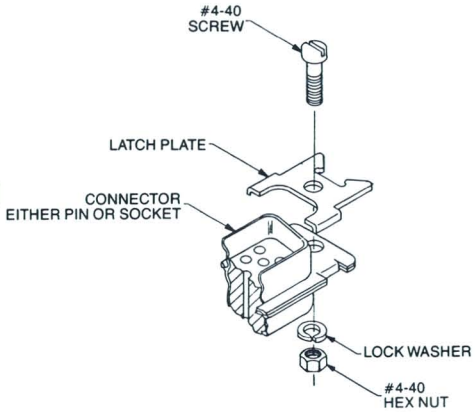


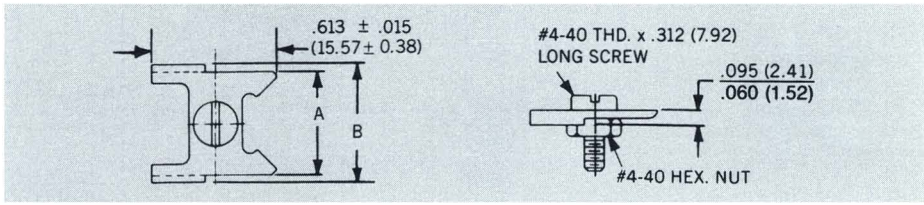
Unlocked



Spring Latch Plate

Kit consists of 1 plate, 1 screw, 1 lock washer, 1 nut.
Order two per connector.



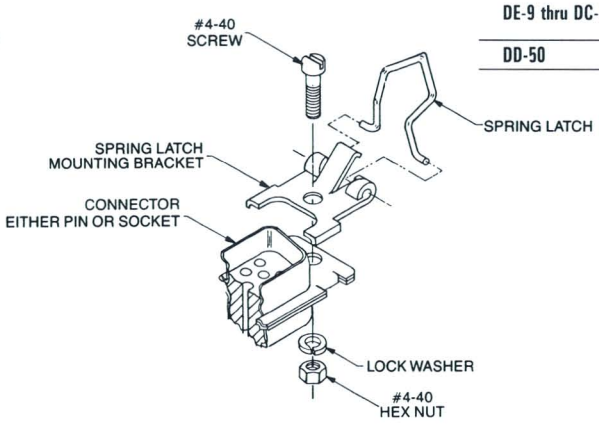


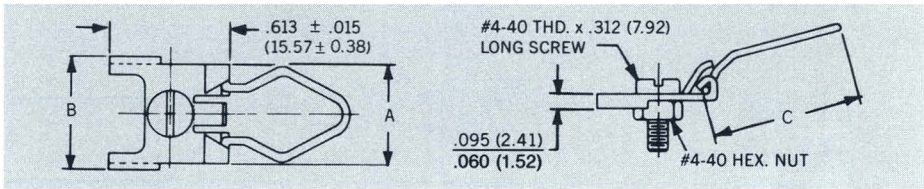
Material: Stainless Steel
Finish: Passivated

Layout	Part Number	A ±.015 (0.38)	B ±.015 (0.38)
DE-9 thru DC-37	D110278	.484 (12.29)	.556 (14.12)
DD-50 Only	D110279	.609 (15.49)	.673 (17.09)

Spring Latch

Kit consists of 1 spring, 1 screw, 1 bracket, 1 lock washer, and 1 hex nut.
Order two per connector.





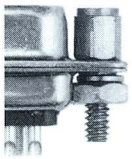
Material: Stainless steel
Finish: Passivated

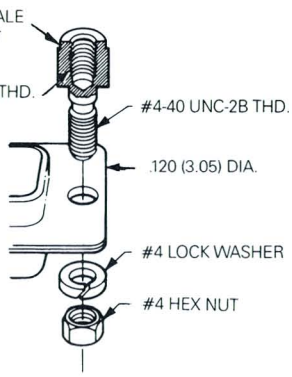
Layout	Mounting	Part Number	A ±.015 (0.38)	B ±.015 (0.38)	C ±.020 (0.51)
DE-9 thru DC-37	Front Panel	D110277	.484 (12.29)	.565 (14.35)	.722 (18.34)
	Rear Panel	D110277-4	.484 (12.29)	.605 (15.37)	.615 (15.62)
DD-50	Front Panel	D110279	.609 (15.49)	.673 (17.09)	.722 (18.34)

Jackscrew/Jackpost Assemblies

Jackpost — P/N D110551

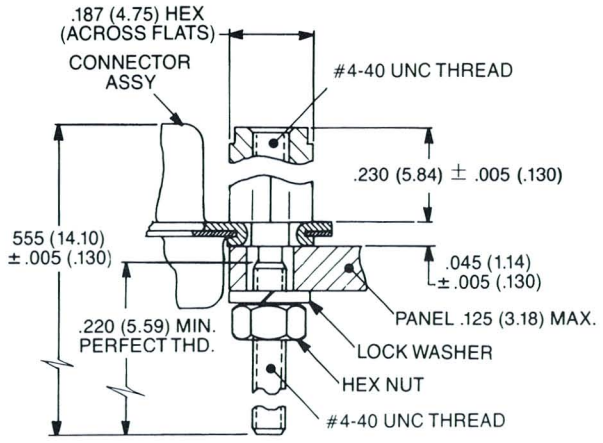
Kit consists or 2 posts, 2 nuts, 2 lockwashers.
Order one per connector.





JACKPOST ASSEMBLY

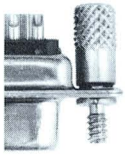
Note: Jackpost is not compatible with rear-panel mounted connectors.

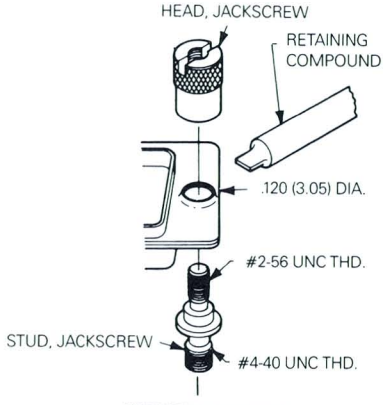


Material: Stainless Steel per QQ-S-763
Finish: Passivated per QQ-P-35

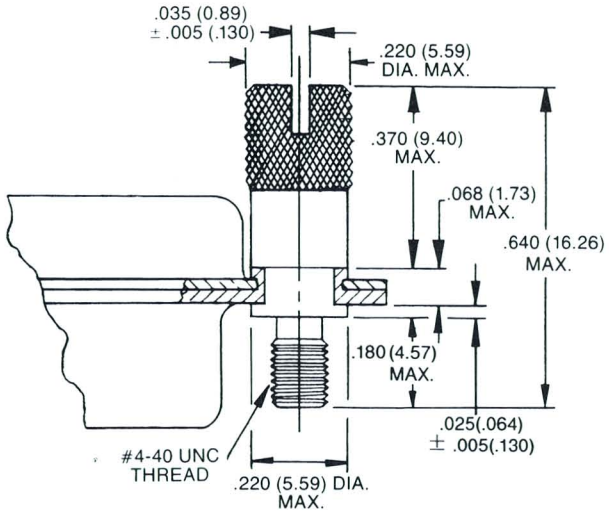
Jackscrew — P/N D110550

Kit consists of 2 studs, 2 heads, and 1 tube retaining compound.
Order one per connector.





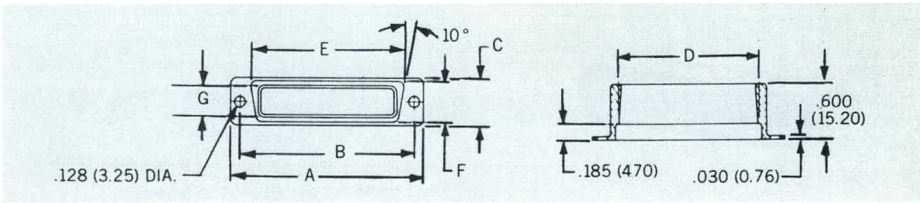
JACKSCREW ASSEMBLY



Material: Stainless Steel per QQ-S-763
Retaining Compound: per MIL-S-46163
Finish: None

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Plastic Potting Cups

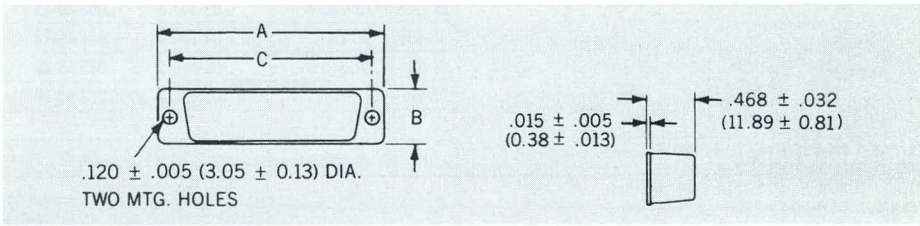


Material: Nylon
Color: Natural (white)

Note: Nylon potting shells are molded with a thin flange .030 (0.76) to permit the use of D Subminiature locking devices.

Layout	Part Number	A ±.015 (0.38)	B	C ±.010 (0.25)	D ± (0.38)	E ±.020 (0.51)	F ±.010 (0.25)	G ±.020 (0.51)
DE-9	DE 50904-1	1.208 (30.68)	.984 (24.99)	.495 (12.57)	.641 (16.28)	.769 (19.53)	.430 (10.99)	.345 (8.76)
DA-15	DA 50905-1	1.536 (39.01)	1.312 (33.32)	.495 (12.57)	.973 (24.71)	1.104 (28.04)	.430 (10.99)	.345 (8.76)
DB-25	DB 50906-1	2.083 (52.91)	1.852 (47.04)	.495 (12.57)	1.516 (38.50)	1.639 (41.63)	.430 (10.99)	.345 (8.76)
DC-37	DC 50907-1	2.723 (69.16)	2.500 (63.50)	.495 (12.57)	2.154 (54.71)	2.289 (58.14)	.430 (10.99)	.345 (8.76)
DD-50	DD 50908-1	2.630 (66.80)	2.406 (61.11)	.606 (15.39)	1.938 (49.23)	2.189 (55.60)	.545 (13.84)	.445 (11.30)

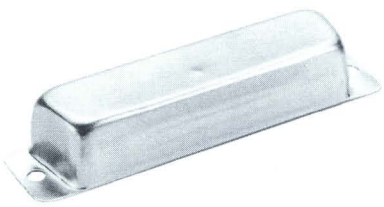
Metal Potting Shell

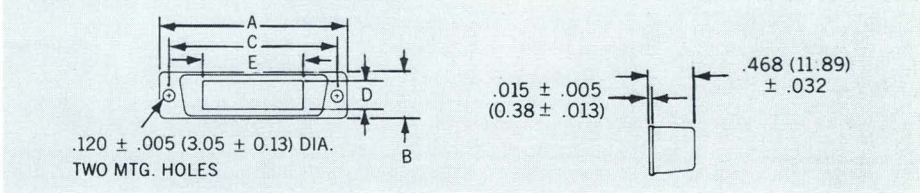


Material: Low carbon steel per ASTM A-620
Finish: Cadmium plate, yellow chromate per QQ-P-416, Type II, Class 2

Layout	Part Number	A ±.015 (0.38)	B ±.015 (0.38)	C ±.005 (0.13)
DA-15	DA 19678-6	1.531 (38.89)	.500 (12.70)	1.312 (33.32)
DB-25	DB 19678-7	2.078 (52.78)	.500 (12.70)	1.852 (47.04)
DC-37	DC 19678-8	2.718 (69.04)	.500 (12.70)	2.500 (63.50)
DD-50	DD 19678-9	2.625 (66.68)	.609 (15.47)	2.406 (61.11)

Switching Shell



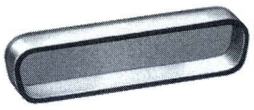


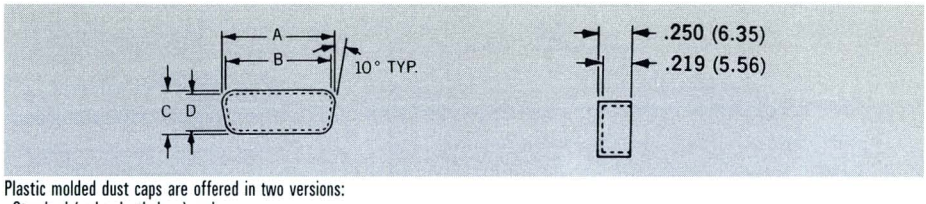
Material: Low carbon steel per ASTM A-620
Finish: Cadmium plate, yellow chromate per QQ-P-416, Type II, CLass 2

Layout	Part Number	A ±.015 (0.38)	B ±.015 (0.38)	C ±.010 (0.25)	D	E ±.020 (0.51)
DA-15	DA 19678-10	1.531 (38.89)	.500 (12.70)	1.312 (33.32)	.300 (7.62)	.588 (14.94)
DB-25	DB 19678-11	2.078 (52.78)	.500 (12.70)	1.852 (47.04)	.300 (7.62)	1.125 (28.58)
DC-37	DC 19678-12	2.718 (69.04)	.500 (12.70)	2.500 (63.50)	.300 (7.62)	1.750 (44.45)
DD-50	DD 19678-13	2.625 (66.68)	.609 (15.47)	2.406 (61.11)	.390 (9.91)	1.750 (44.45)

D Subminiature Accessories

Dust Caps





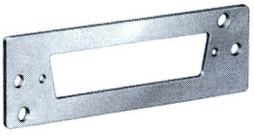
Plastic molded dust caps are offered in two versions:
Standard (red polyethelyne) and
anti-static (black polypropelyne).

Anti-Static Performance:
Volume resistivity: 10^3 ohms/sq
Static Charge Decay: 5 kv, 2 second max. (MIL-B-81705B Method 4046)

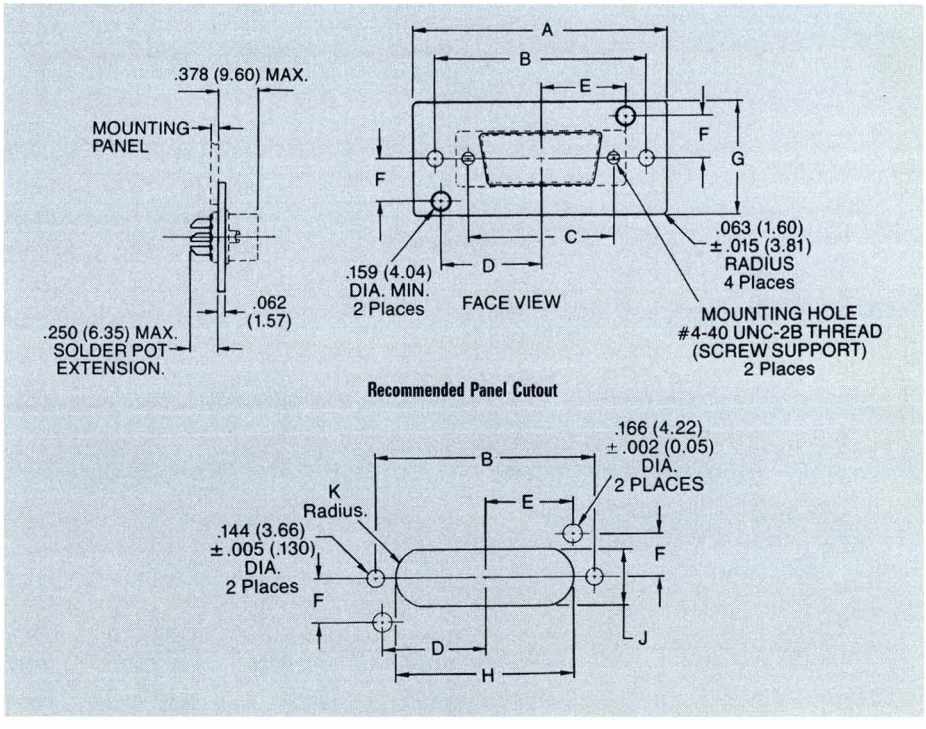
Layout	Identification	Part Number Standard	Part Number Anti-Static	A ±.020 (0.51)	B ±.020 (0.51)	C ±.020 (0.51)	D ±.020 (0.51)
DA-15S	DA-Socket	DA-59-20	**DAS-59-20**	1.022 (25.96)	.955 (24.26)	.362 (9.19)	.295 (7.49)
DA-15P	DA-Pin	DA-60-20	**DAS-60-20**	1.077 (27.36)	1.010 (25.65)	.412 (10.46)	.345 (8.76)
DB-25S	DB-Socket	DB-59-20	**DBS-59-20**	1.562 (39.67)	1.495 (37.97)	.362 (9.19)	.295 (7.49)
DB-25P	DB-Pin	DB-60-20	**DBS-60-20**	1.635 (41.53)	1.568 (39.83)	.430 (10.32)	.363 (9.22)
DC-37S	DC-Socket	DC-59-20	**DCS-59-20**	2.210 (56.13)	2.143 (54.43)	.362 (9.19)	.295 (7.49)
DC-37P	DC-Pin	DC-60-20	**DCS-60-20**	2.283 (57.99)	2.216 (56.29)	.430 (10.32)	.363 (9.22)
DD-50S	DD-Socket	DD-59-20	**DDS-59-20**	2.116 (53.75)	2.049 (52.04)	.474 (12.04)	.407 (10.34)
DD-50P	DD-Pin	DD-60-20	**DDS-60-20**	2.179 (55.35)	2.112 (53.64)	.536 (13.61)	.469 (11.91)
DE-9S	DE-Socket	DE-59-20	**DES-59-20**	.694 (17.63)	.627 (15.93)	.362 (9.19)	.295 (7.49)
DE-9P	DE-Pin	DE-60-20	**DES-60-20**	.749 (19.02)	.682 (17.32)	.412 (10.46)	.345 (8.76)

Guide Pin Plates

Female



Materials
Plate: Cold rolled steel per ASTM A-620, yellow chromate over cadmium plate per QQ-P-416, Type II, Class 2
Screw: Steel, yellow chromate over cadmium per QQ-P-416, Type II, Class 2



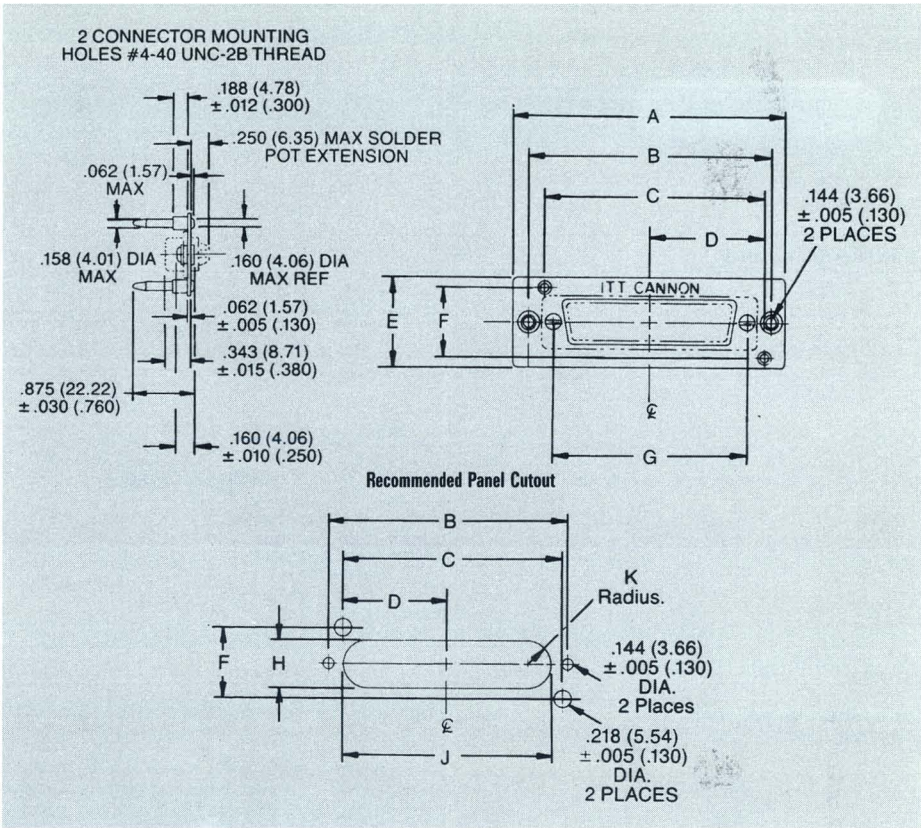
Layout	Part Number	A ±.016 (0.41)	B ±.005 (0.13)	C ±.005 (0.13)	D ±.005 (0.13)	E ±.005 (0.13)	F ±.005 (0.13)	G ±.016 (0.41)	H ±.016 (0.41)	J ±.016 (0.41)	K ±.016 (0.41)
DA-15	DA22214	2.282 (57.96)	1.906 (48.41)	1.312 (33.32)	.898 (22.81)	.765 (19.43)	.375 (9.52)	1.000 (25.40)	1.532 (38.91)	.484 (12.29)	.242 (6.15)
DB-25	DB22254	2.820 (71.63)	2.446 (62.13)	1.852 (47.04)	1.168 (29.67)	1.035 (26.29)	.375 (9.52)	1.000 (25.40)	2.016 (51.21)	.459 (11.66)	.234 (5.94)
DC-37	DC22071	3.469 (88.11)	3.094 (78.59)	2.500 (63.50)	1.492 (37.90)	1.359 (34.52)	.375 (9.52)	1.000 (25.40)	2.657 (67.49)	.459 (11.66)	.234 (5.94)
DD-50	DD21961	3.375 (85.72)	3.000 (76.20)	2.406 (61.11)	1.437 (36.50)	1.312 (33.32)	.437 (11.10)	1.125 (28.58)	2.563 (65.10)	.563 (14.33)	.282 (7.16)

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Guide Pin Plates

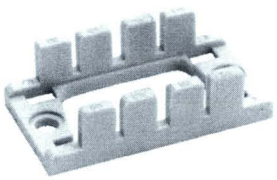
Male

Materials
Guide Pin: 303 stainless steel per MIL-S-7720 Cond. A, passivated per QQ-P-35
Screws, Rivits, Washers: Steel, Yellow chromate over cadmium plate per QQ-P-416, Type II, Class 2
Plate: Cold rolled steel per ASTM A-620, yellow chromate over cadmium plate per QQ-P-416, Type II, Class 2

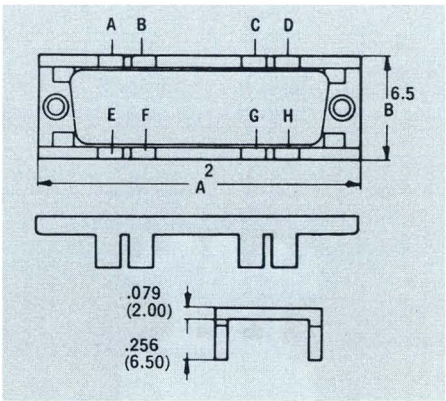


Layout	Part Number	A ±.015 (0.38)	B ±.005 (0.13)	C ±.010 (0.25)	D ±.005 (0.13)	E ±.015 (0.38)	F ±.010 (0.25)	G ±.005 (0.13)	H ±.010 (0.25)	J ±.015 (0.38)	K ±.005 (0.13)
DA-15	DA-22213	2.281 (57.94)	1.906 (48.41)	1.663 (42.24)	.898 (22.81)	1.000 (25.40)	.750 (19.05)	1.312 (33.32)	.484 (12.29)	1.531 (38.89)	.242 (6.15)
DB-25	DB-22255	2.820 (71.63)	2.446 (62.13)	2.203 (55.96)	1.168 (29.67)	1.000 (25.40)	.750 (19.05)	1.852 (47.04)	.484 (12.29)	2.047 (51.99)	.242 (6.15)
DC-37	DC-22070	3.468 (88.09)	3.094 (78.42)	2.851 (72.42)	1.492 (37.90)	1.000 (25.40)	.750 (19.05)	2.500 (63.50)	.484 (12.29)	2.687 (68.25)	.242 (6.15)
DD-50	DD-21962	3.375 (85.72)	2.300 (58.42)	2.749 (69.82)	1.437 (36.50)	1.125 (28.58)	.874 (22.20)	2.406 (61.11)	.593 (14.33)	2.257 (66.68)	.296 (7.52)

Keying Plates



- Plastic plates provide an easy method of keying all types of D subminiature connectors.
- Instructions for use: cut off plastic tabs according to the keying scheme at right.
- Application notes: Keying plates cannot be used with screw locks and cannot be used for rear-panel mounted connectors.



Material: Black plastic, UL 94V-0 rated

Layout	Part Number	A	B
DE-9	DE 115398	1.208 (30.7)	0.629 (16)
DA-15	DA 115398-1	1.535 (39.0)	0.629 (16)
DB-25	DB 115398-2	2.082 (52.9)	0.629 (16)
DC-37	DC 115398-3	2.726 (69.2)	0.629 (16)
DD-50	DD 115398-4	2.630 (66.8)	0.749 (19)

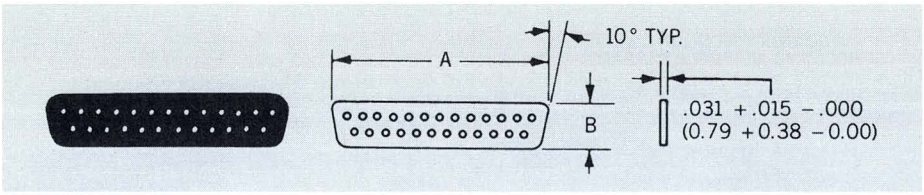
Keying scheme

Keys		A	B	C	D	E	F	G	H
Position	1	○	☒	☒	○	○	☒	☒	○
	2	☒	○	○	☒	☒	○	○	☒
	3			☒	☒	☒	☒		
	4	☒	☒					☒	☒
	5	☒	☒			☒	☒		
	6			☒	☒			☒	☒
	7	☒				☒		☒	
	8		☒		☒	☒		☒	
	9	☒		☒		☒		☒	
	10		☒		☒		☒		☒

○ Cut Key on pin connector
☒ Cut key on socket connector

D Subminiature Accessories

Gaskets

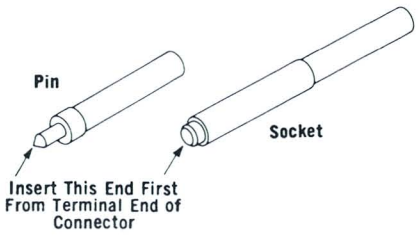


Layout	Part Number	A	B
DE-9	DE 53750	.656 (16.7)	.328 (8.3)
DA-15	DA 53750-1	.984 (25.0)	.328 (8.3)
DB-25	DB 53750-2	1.531 (38.9)	.328 (8.3)
DC-37	DC 53750-3	2.171 (55.1)	.328 (8.3)
DD-50	DD 53750-4	2.078 (52.8)	.437 (11.1)

Material: Silastic sheet

Wire Hole Fillers

(D*MA Series Only)

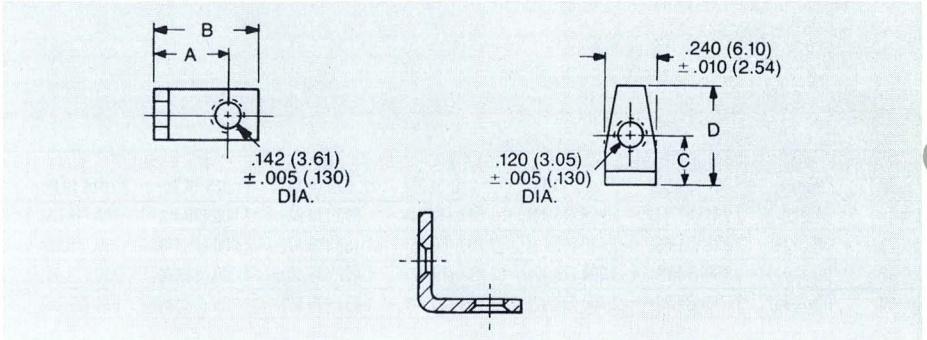


Part Number	Insert Type
DMA 51236-1	Socket
DMA 51235-1	Pin

Material: Nylon.

Steel Mounting Brackets

For printed circuit board applications.
Sold in kits: 2 pieces per package

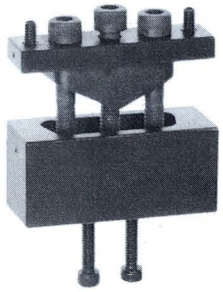


Material: Cold rolled steel per QQ-S-698 yellow chromate over cadmium per QQ-P-416, Type II, Class 2.

Layout	Part Number	A ±.010 (0.25)	B ±.010 (0.25)	C ±.015 (0.38)	D ±.010 (0.25)
DE-9 thru DC-37	D110853	.340 (8.64)	.484 (12.29)	.249 (6.32)	.490 (12.45)
DD-50	D110854	.395 (10.03)	.540 (13.72)	.307 (7.80)	.579 (14.71)

Panel Punches

These easy-to-use panel punches are supplied with adhesive templates, wrenches and screws. Simply drill 3 pilot holes, located by the template, tighten the screws and a neat mounting hole is produced. Recommended for use with 22 to 16 guage material, the punch units are made from tool steel and can be ground for extra life.



Size	Part Number	Description
DE-9	995-0002-108	CPP- 9P
DA-15	995-0002-109	CPP-15P
DB-25	995-0002-110	CPP-25P
DC-37	995-0002-111	CPP-37P
DD-50	995-0002-112	CPP-50P

Quick Selection Chart

Insulation Displacement Connectors

IDC Description	Number of Contacts	Contact Arrangement	Contact Material	Contact Finish	Insulator Material	Contact Centers	Contact Resistance	Current Rating	Test Voltage	Temperature Range	Pages
DIN	64	Two rows Three rows	Copper Alloy	Gold over Nickel	Glass-filled Polyester	.100 (2.54) .200 (5.08)	15 m Ω max.	2 A	750 Vrms	−55°C to +125°C	319
DIP	14, 16, 24, 40	Two rows	Copper alloy	Tin	Glass-filled Polyester	.300 (7.62) .600 (15.24)	30 m Ω 10mA max.	1A	700 Vrms	−55°C to +125°C	319
Transition	10, 20, 26, 34, 40, 50, 64	Four rows	Copper alloy	Tin	Glass-filled Polyester	.100 (2.54)	30 m Ω 10mA max.	1A	700 Vrms	−55°C to +125°C	320
High Density Transition	10, 14, 16, 20, 26, 34, 40, 50	Two rows	Copper alloy	Tin	Glass-filled Polyester	.100 (2.54)	30 m Ω 10mA max.	1A	700 Vrms	−55°C to +125°C	320
Edgecard	20, 26, 34, 40, 50	Two rows	Phosphor Bronze	Gold over Nickel	Glass-filled Polyester	—	30 m Ω max.	2A	1000 Vrms	−40°C to +125°C	321
IOC Socket Receptacle	10, 14, 16, 20, 26, 34, 40, 50, 60, 64	Two rows	Beryllium Copper	Gold over Nickel	Glass-filled Polyester	.100 (2.54)	15 m Ω max.	2A	750 Vrms	−55°C to +125°C	321

PC Connectors Direct (One Piece)

Description	Number of Contacts	Contact Arrangement	Contact Material	Contact Finish	Insulator Material	Contact Centers	Contact Resistance	Current Rating	Test Voltage	Termination Styles	Page
Edgecard	2 to 89 4 to 178	Single read-out Dual read-out	Copper alloy	Gold oveer Nickel	Thermoplastic UL94V-0	.100 (2.54)	10 mΩ max.	3 A	1000 Vrms	Solder Tails Wrap Posts	322
Stacking Board	double row 256 max.	Dual read-out	Copper alloy	Gold over Nickel	Thermoplastic	.030 (0.76)	30 mΩ max.	.85 A max.	600 VDC min.	Surface mount gas tight to PC Board	Separate Catalog

PC Connectors (Two Piece)

Description	Number of Contacts	Contact Arrangement	Contact Material	Contact Finish	Insulator Material	Contact Centers	Contact Resistance	Current Rating	Test Voltage	Termination Styles	Page
Header Unshrouded	72 (double row) 36 (single row)	Double Row Single Row	Copper alloy	Gold over Nickel	Glass-filled Polyester	.100 (2.54)	15 mΩ max.	2 A	750 Vrms	90° PC Straight PC	322
Header Shrouded	10, 14, 16, 20, 26, 34 40, 50, 60, 64	Two Rows	Brass	Gold over Nickel	Glass-filled Polyester	.100 (2.54)	15 mΩ max.	2 A	750 Vrms	90° PC Solder Tails, Wrap Posts	322
Board Mount Receptacle	65 130	Single row Double row Straight or Right Angle	Copper alloy	Gold over Nickel	Thermo-Plastic	.100 (2.54)	15 mΩ max.	3 A	650 VAC	Solder	323
Crimp Receptacle	65 130	Single row Double rows	Copper alloy	Gold over Nickel	Thermo-Plastic	.100 (2.54)	15 mΩ max.	3 A	650 VAC	Crimp	327
High Density	96-684	Three rows Four rows	Phospher Bronze	Gold over Nickel	Glass-filled PPS	1.00 (2.54)	20 mΩ max.	2.25 A	900 Vrms	Pressfit Wrap posts, Solder tails	330

DIN Connectors (Two Piece)

Description	Number of Contacts	Contact Arrangement	Contact Material	Contact Finish	Insulator Material	Contact Centers	Contact Resistance	Current Rating	Test Voltage	Termination Styles	Page
Standard DIN	48, 64, 96	Three rows	Copper alloy	Gold over Nickel	Glass-filled Polyester	.100 (2.54)	15 mΩ max.	2 A	1000 Vrms	Solder Tails, Wrap Posts 90° PC	336
Inverse DIN	48, 64, 96	Three rows	Copper alloy	Gold over Nickel	Glass-filled Polyester	.100 (2.54)	15 mΩ max.	2 A	1000 Vrms	Solder Tails, Wrap Posts 90° PC	338
Standard DIN Pressfit	96	Three rows	Copper alloy	Gold over Nickel	Glass-filled Polyester	.100 (2.54)	15 mΩ max.	2 A	1000 Vrms	Pressfit PC and Wrap Post	340
Inverse DIN Pressfit	96	Three rows	Copper alloy	Gold over Nickel	Glass-filled Polyester	.100 (2.54)	15 mΩ max.	2 A	1000 Vrms	Pressfit PC and Wrap Posts	340
Combo DIN	426, 604	Three rows	Copper alloy	Gold over Nickel	Glass-filled Polyester	.100 (2.54)	15 mΩ max.	2 A Signal Contacts	1000 Vrms	Solder Tails, Wrap Post, 90° PC	341

Description/Part Number Cross Reference

Description	Part No.
IDC DIN	
G06D64P3BLBL	121061-0231
G06M96P3BLBL-004	121061-0241
G06D64P3BLAL	121061-0119
G06M96P3BLAL-004	121061-0121
G06D64P3BKAL	121061-0118
G06M96P3BKAL-004	121061-0120
IDC DIP	
RTG08A14LA	121542-0000
RTG08A16LA	121542-0001
RTG08A24LA	121542-0002
RTG08A40LA	121542-0003
IDC Transition	
RTG08B10LA	121542-1000
RTG08B20LA	121542-1001
RTG08B26LA	121542-1002
RTG08B34LA	121542-1003
RTG08B40LA	121542-1004
RTG08B50LA	121542-1005
RTG08B64LA	121542-1006
IDC High Density Transition	
RTG08C10LA	121542-2000
RTG08C14LA	121542-2001
RTG08C16LA	121542-2002
RTG08C20LA	121542-2003
RTG08C26LA	121542-2004
RTG08C34LA	121542-2005
RTG08C40LA	121542-2006
RTG08C50LA	121542-2007
IDC Edgecard	
G03D20P2BLAA	121268-7020
G03D26P2BLAA	121268-7026
G03D34P2BLAA	121268-7034
G03D40P2BLAA	121268-7040
G03D50P2BLAA	121268-7050
G03D20P2BLBA	121268-7120
G03D26P2BLBA	121268-7126
G03D34P2BLBA	121268-7134
G03D40P2BLBA	121268-7140
G03D50P2BLBA	121268-7150

Description	Part No.
IDC Receptacle	
G80D10P3BKAL	121638-0010
G80D14P3BKAL	121638-0014
G80D16P3BKAL	121638-0016
G80D20P3BKAL	121638-0020
G80D26P3BKAL	121638-0026
G80D34P3BKAL	121638-0034
G80D40P3BKAL	121638-0040
G80D50P3BKAL	121638-0050
G80D60P3BKAL	121638-0060
G80D64P3BKAL	121638-0064
G80D10P7BKAL	121638-1010
G80D14P7BKAL	121638-1014
G80D16P7BKAL	121638-1016
G80D20P7BKAL	121638-1020
G80D26P7BKAL	121638-1026
G80D34P7BKAL	121638-1034
G80D40P7BKAL	121638-1040
G80D50P7BKAL	121638-1050
G80D60P7BKAL	121638-1060
G80D64P7BKAL	121638-1064
Single Row Edgecard	
G30A015P2BBBL	121654-1115
G30A019P2BBAL	121654-0119
G30A035P2BBBL	121654-1135
G30A050P2BBBL	121654-1150
Double Row Edgecard	
G30D030P2BBBL	121654-1415
G30D034P2BBAL	121654-0417
G30D034P2BBBL	121654-1417
G30D038P2BBBL	121654-1419
G30D070P2BBBL	121654-1435
G30D086P2BBAL	121654-0443
G30D086P2BBBL	121654-1443
G30D100P2BBAL	121654-0450
G30D100P2BBBL	121654-1450
DIN	
G06M604P4BEBL	121060-0033
G06M426P4BEBL	121060-0036
G06M426P4BEBL-004	121060-0089
G06M604P4BEBL-004	121060-0090
G06M48P4BEBL	121060-0282
G06M96P4BEBL	121060-0500
G06M96P4BEBL-004	121060-0501
G06M604P3BDBL	121061-0048
G06M426P3BDBL	121061-0053
G06M604P3BBBL	121061-0091
G06M426P3BBBL	121061-0098
G06M426P3BDBL-004	121061-0146
G06M604P3BDBL-004	121061-0159
G06M426P3BBBL-004	121061-0178
G06M604P3BBBL-004	121061-0199
G06M96P3BDBL	121061-0500
G06M96P3BDBL-004	121061-0501
G06M96P3BBBL	121061-0520
G06M96P3BBBL-004	121061-0521

Description	Part No.
G06M48P3BBBL	121061-0620
G06M48P3BDBL	121061-0621
G06M96P3BPIBL	121061-0641
G06M96P3BP2BL	121061-0642
G60M096P3BEBM3D	121618-0000
G60M096P3BEBM3D-004	121618-0005
G60M048P3BEBM3D	121618-0050
G60M096P4BDBM1-004	121619-0005
G60M096P4BBBM1	121619-0510
G60M096P4BBBM1-004	121619-0515
G60M048P4BBBM1	121619-0715
G60M096P4BDBM1	121619-0000
G60M096P4BPBM1A	121619-4000
G60M096P4BPBM1B	121619-4060
G60M048P4BDBM1	121619-5150
Unshrouded Header	
G08A36A4BBAA	121088-7036
G08A36A4BEAA	121088-2361
G08D72A4BBAA	121088-1338
G08D70A4BEAA	121088-7135
Shrouded Headers	
G80D10P9BBBL	121639-2040
G80D10P9BEBL	121639-2050
G80D14P9BBBL	121639-2041
G80D14P9BEBL	121639-2051
G80D16P9BBBL	121639-2042
G80D16P9BEBL	121639-2052
G80D20P9BBBL	121639-2043
G80D20P9BEBL	121639-2053
G80D26P9BBBL	121639-2044
G80D26P9BEBL	121639-2054
G80D34P9BBBL	121639-2045
G80D34P9BEBL	121639-2055
G80D40P9BBBL	121639-2046
G80D40P9BEBL	121639-2056
G80D50P9BBBL	121639-2047
G80D50P9BEBL	121639-2057
G80D60P9BBBL	121639-2048
G80D60P9BEBL	121639-3108N
G80D64P9BBBL	121639-3099N
G80D64P9BEBL	121639-3109N

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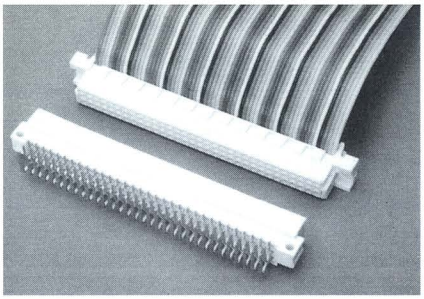
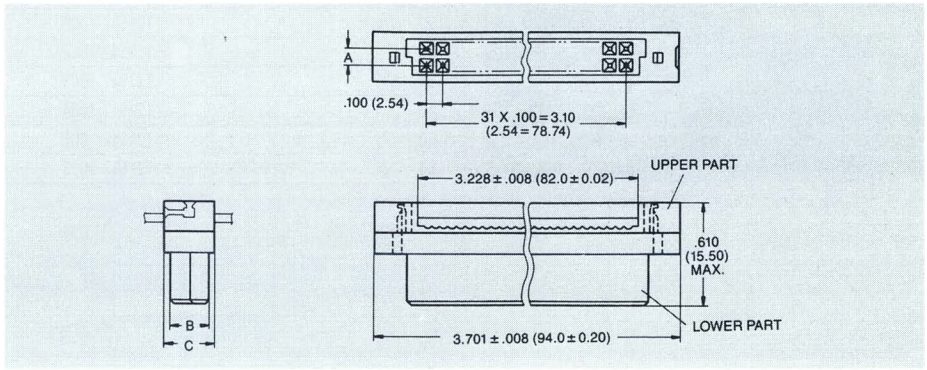
IDC DIN Receptacle

Without flange



No. of Contacts	Part Number	Part Number	Dimensions A ±.020 (±0.5)	B ±.004 (±0.1)	C ±.006 (±0.15)
64	121061-0119	121061-0118	.100 (2.54)	.236 (6.00)	.315 (8.00)
64*	121061-0121	121061-0120	.200 (5.08)	.336 (8.54)	.415 (10.55)

*Contact rows spaced at .200 (5.08)

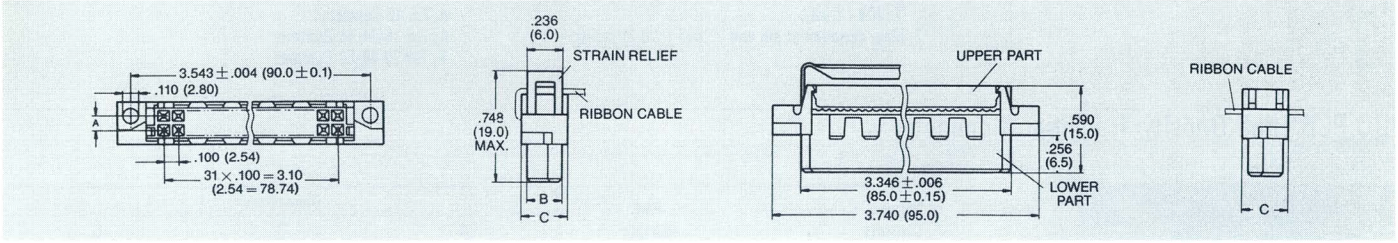


With flange and two through holes

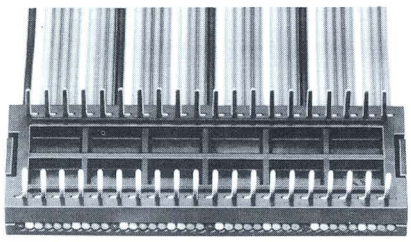
No. of Contacts	Part Number	Dimensions A ±.020 (±0.5)	B ±.004 (±0.1)	C ±.006 (±0.15)
64	121061-0231	.100 (2.54)	.236 (6.00)	.315 (8.00)
64*	121061-0241	.200 (5.08)	.336 (8.54)	.415 (10.55)

Center row not equipped with contacts. Above version meets performance class II acc. DIN 41612. Please consult factory concerning performance classes I and III.

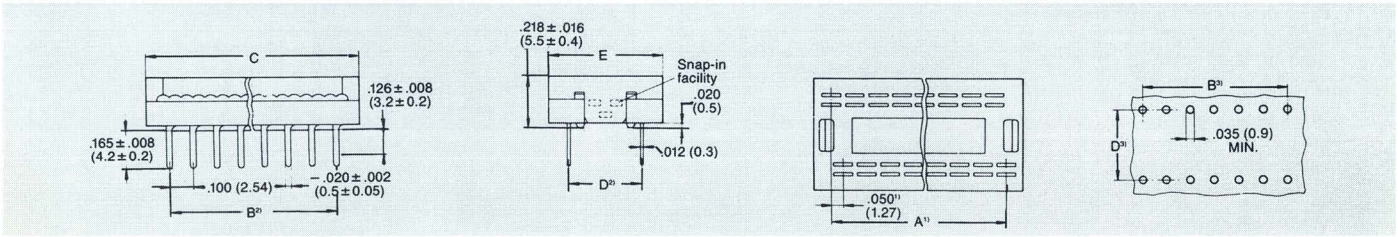
Strain relief
Order Ref. 029-8510-064



IDC Dual-In-Line Plug

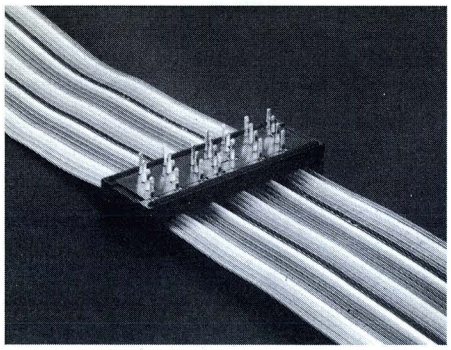


No. of Contact	Part Number	Dimensions A	B	C	D	E
14	121542-0000	.650 (16.51)	.600 (15.24)	.787 (20.0)	.300 (7.62)	.433 (11.0)
16	121542-0001	.750 (19.05)	.700 (17.78)	.886 (22.5)	.300 (7.62)	.433 (11.0)
24	121542-0002	1.178 (29.91)	1.100 (27.94)	1.319 (33.5)	.600 (15.24)	.748 (19.0)
40	121542-0003	1.950 (49.53)	1.900 (48.26)	2.118 (53.8)	.600 (15.24)	.748 (19.0)

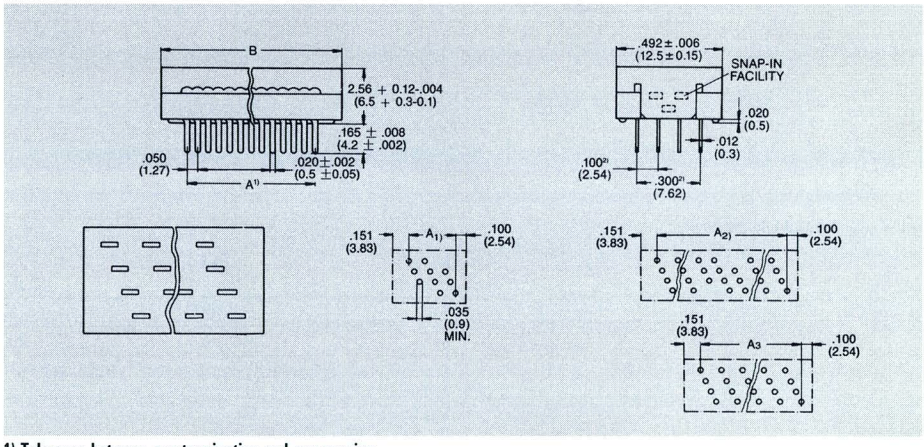


1) Tolerance between any termination ±.004 (±0.1)
2) Max. deviation at pin end .008 (±0.2) radius
3) Tolerances between any spacing ± .002 (±0.05)

IDC PCB Transition Connector



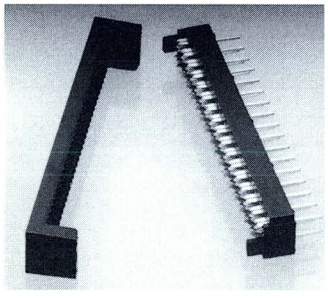
No. of Contacts	Part Number	Dimensions	
		A	B
10	121542-1000	.450 (11.43)	.701 (17.8)
20	121542-1001	.950 (24.13)	1.201 (30.5)
26	121542-1002	1.250 (31.75)	1.500 (38.1)
34	121542-1003	1.650 (41.91)	1.902 (48.3)
40	121542-1004	1.950 (49.53)	2.201 (55.9)
50	121542-1005	2.450 (62.23)	2.701 (68.6)
64	121542-1006	3.150 (80.01)	3.402 (86.4)



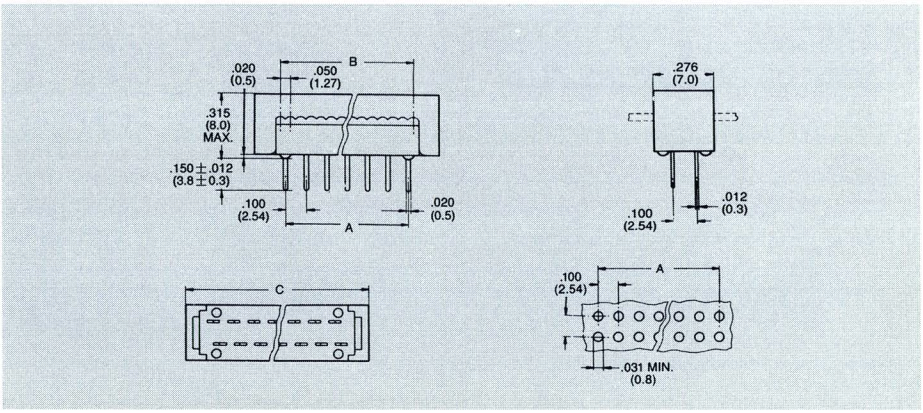
1) Tolerance between any termination and any spacing ±.004 (±0.1)
2) Max. deviation at pin end ±.008 (±0.2) radius

A_1 For 10 Contacts
A_2 For 26-34-50 Contacts
A_3 For 20-40-64 Contacts

IDC PCB High Density Transition Connector



No. of Contacts	Part Number	Dimensions		
		A	B	C
10	121542-2000	.400 (10.16)	.450 (11.43)	.701 (17.80)
14	121542-2001	.600 (15.24)	.650 (16.51)	.901 (22.88)
16	121542-2002	.700 (17.78)	.750 (19.05)	1.001 (25.42)
20	121542-2003	.900 (22.86)	.950 (24.13)	1.201 (30.50)
26	121542-2004	1.200 (30.48)	1.250 (31.75)	1.501 (38.12)
34	121542-2005	1.600 (40.64)	1.650 (41.91)	1.901 (48.28)
40	121542-2006	1.900 (48.26)	1.950 (49.53)	2.201 (55.90)
50	121542-2007	2.400 (60.96)	2.450 (62.23)	2.701 (68.60)



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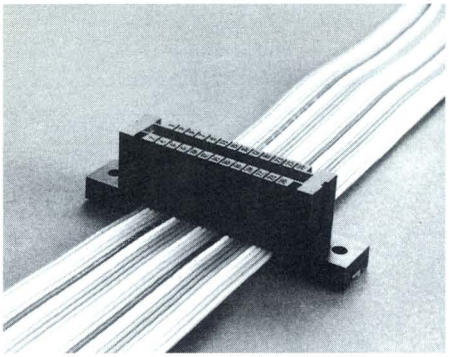
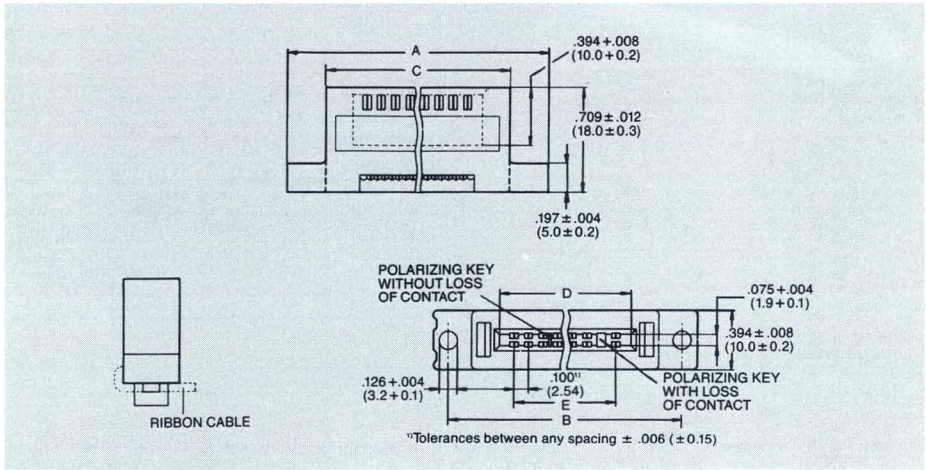
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Edgecard Connector

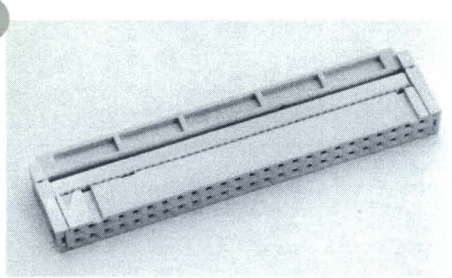


No. of Contacts	Part Number		Dimensions				
	Without Flange	With Flange	A	B	C	D	E
20	121268-7020	121268-7120	2.000 (50.80)	1.800 (45.72)	1.480 (37.59)	1.104 (28.04)	.900 (22.86)
26	121268-7026	121268-7126	2.300 (58.42)	2.100 (53.34)	1.780 (45.21)	1.404 (35.66)	1.200 (30.48)
34	121268-7034	121268-7134	2.700 (68.58)	2.500 (63.50)	2.180 (55.37)	1.804 (45.82)	1.600 (40.64)
40	121268-7040	121268-7140	3.00 (76.20)	2.800 (71.12)	2.480 (62.99)	2.104 (53.44)	1.900 (48.26)
50	121268-7050	121268-7150	3.900 (99.06)	3.400 (86.36)	2.990 (75.95)	2.604 (66.14)	2.400 (60.96)



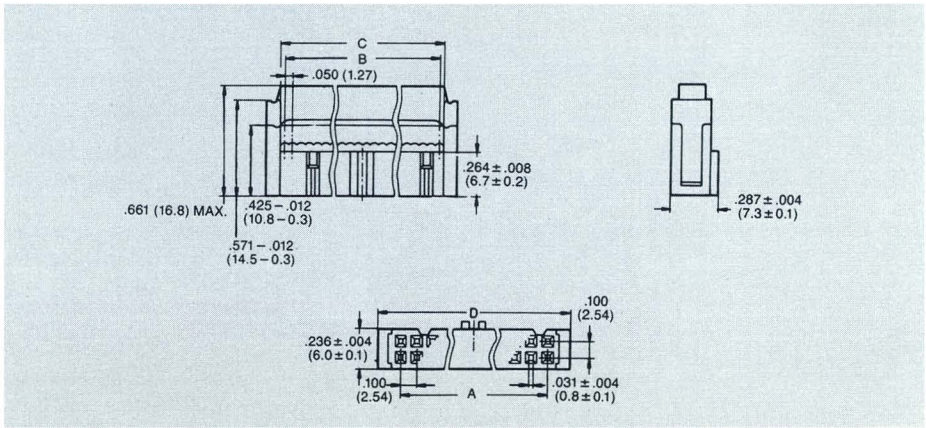
1) Tolerances between any spacing ± .006 (±0.15)

IDC Socket Receptacle



No. of Contacts	Part Number		Dimensions			
	Without strain relief	With strain relief	A	B	C ±.006 (±0.15)	D ±.006 (±0.15)
10	121638-0010	121638-1010	.400 (10.16)	.450 (11.43)	.504 (12.80)	.678 (17.22)
14	121638-0014	121638-1014	.600 (15.24)	.650 (16.51)	.704 (17.88)	.878 (22.30)
16	121638-0016	121638-1016	.700 (17.78)	.750 (19.05)	.804 (20.42)	.978 (24.84)
20	121638-0020	121638-1020	.900 (22.86)	.950 (24.13)	1.004 (25.50)	1.178 (29.92)
26	121638-0026	121638-1026	1.200 (30.48)	1.250 (31.75)	1.304 (33.12)	1.478 (37.54)
34	121638-0034	121638-1034	1.600 (40.64)	1.650 (41.91)	1.704 (43.28)	1.878 (47.70)
40	121638-0040	121638-1040	1.900 (48.26)	1.950 (49.53)	2.004 (50.90)	2.178 (55.32)
50	121638-0050	121638-1050	2.400 (60.96)	2.450 (62.23)	2.504 (63.60)	2.678 (68.02)
60	121638-0060	121638-1060	2.900 (73.66)	2.950 (74.93)	3.004 (76.30)	3.178 (80.72)
64	121638-0064	121638-1064	3.100 (78.74)	3.150 (80.01)	3.204 (81.38)	3.378 (85.80)

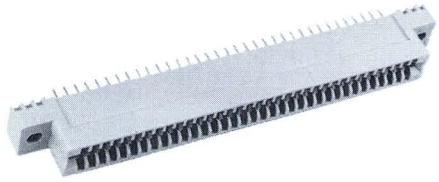
Receptacles comply with performance class II acc. DIN 41651 (200 mating cycles)



Receptacles with and without strain relief. Mateable with headers with and without locking device.

Edgecard Connector (One Piece)

An economical one-piece edgecard connector with non-removable contacts. Shell configurations can be ordered with or without an integral mounting flange and the insulator material is of thermoplastic, rated UL 94V-0.



Single Row Edgecard Connector

Positions	Straight PC With Mounting Ears	Straight PC Without Mounting Ears
15	121654-1115	—
19	—	121654-0119
35	121654-1135	—
50	121654-1150	—

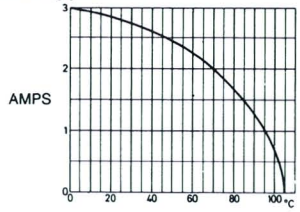
Double Row Edgecard Connectors

Positions	Straight PC With Mounting Ears	Straight PC Without Mounting Ears
30	121654-1415	—
34	121654-1417	121654-0417
38	121654-1419	—
70	121654-1435	—

Electrical Data

Air and creepage paths	= .026 (0.65)
Test voltage	1000 Vrms
Contact resistance	10 mOhms max.
Insulator resistance	5 x 10^9 Ohms min.
Capacitance	5 pF max.

Max. Current rating per contact



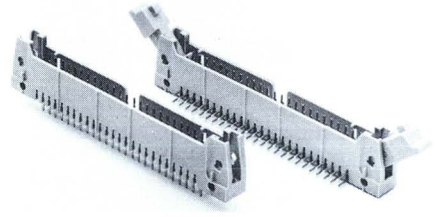
Unshrouded Headers

The low profile unshrouded header is available in double row versions accommodating 72 contacts, or single row versions accommodating 36 contacts in straight or right angle solder tails.
Unshrouded headers are used to electonically interconnect rigid printed circuit boards with board mount receptacles or ribbon cable socket connectors.

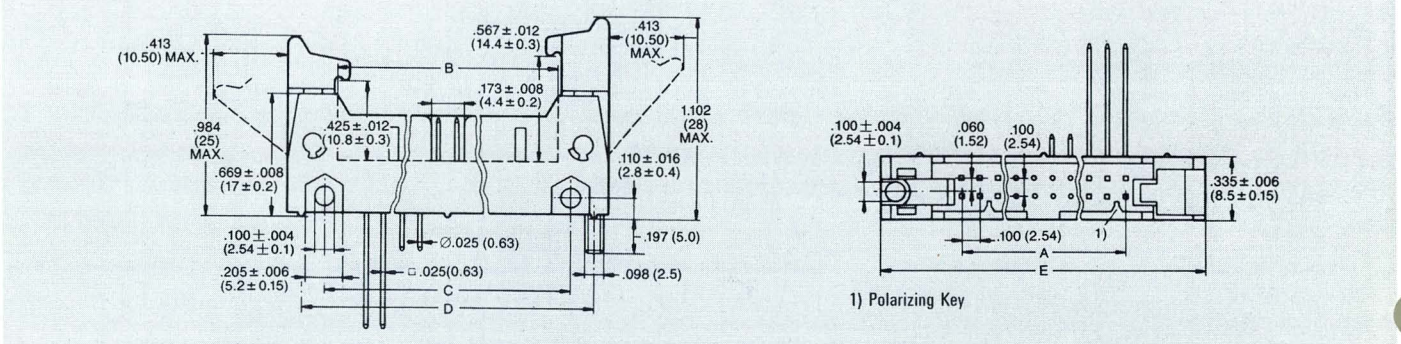
No. of Positions	Part Number	
	Straight	Right Angle
36	121088-7036	121088-2361
72*	121088-1338	121088-7135

*Right angle unshrouded header is 70 positions.

Shrouded Pin Headers



No. of Contacts	Without Locking Device: Solder pins, straight	Solder pins 90°	A	B .008 (±0.2)	C .004 (±0.1)	D .005 (±0.13)	E .005 (±0.13)
10	121639-2040	121639-2050	.400 (10.16)	.705 (17.91)	.860 (21.84)	1.100 (27.94)	1.265 (32.13)
14	121639-2041	121639-2051	.600 (15.24)	.905 (22.99)	1.060 (26.92)	1.300 (33.02)	1.465 (37.21)
16	121639-2042	121639-2052	.700 (17.78)	1.005 (25.53)	1.160 (29.46)	1.400 (35.56)	1.565 (39.75)
20	121639-2043	121639-2053	.900 (22.86)	1.205 (30.61)	1.360 (34.54)	1.600 (40.64)	1.765 (44.83)
26	121639-2044	121639-2054	1.200 (30.48)	1.505 (38.23)	1.660 (42.16)	1.900 (48.26)	2.065 (52.45)
34	121639-2045	121639-2055	1.600 (40.64)	1.905 (48.39)	2.060 (52.32)	2.300 (58.42)	2.465 (62.61)
40	121639-2046	121639-2056	1.900 (48.26)	2.205 (56.01)	2.360 (59.94)	2.600 (66.04)	2.765 (70.23)
50	121639-2047	121639-2057	2.400 (60.96)	2.705 (68.71)	2.860 (72.64)	3.100 (78.74)	3.265 (82.93)
60	121639-2048	121639-3108N	2.900 (73.66)	3.205 (81.41)	3.360 (85.34)	3.600 (91.44)	3.765 (95.63)
64	121639-3099N	121639-3109N	3.100 (78.74)	3.405 (86.49)	3.560 (90.42)	3.800 (96.52)	3.965 (100.71)



Locking devices should be ordered separately in pairs. Short Locking Latch — 317-8651-000 (for use without strain relief) Long Locking Latch — 317-8651-001 (for use with strain relief)
The headers comply with performance class II acc. DIN 41651 (200 mating cycles). For headers with straight and 90° Wire Wrap posts please consult factory.

ITT Cannon
1851 E. Deere Ave, P.O. Box 35000, Santa Ana, CA 92705-6500 • (714) 261-5300

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Board Mount and Crimp Receptacles

The ITT Cannon **low cost** board mount and crimp receptacles are versatile printed circuit connectors. They have a variety of possible combinations all emanating from a female box type receptacle mating with a .025(3.18) pin.

The heart of this system is a modified box contact, incorporating two opposing cantilever beams acting independently to produce a consistent contact insertion force. This insertion force allows the designer to fabricate assemblies with over 100 contacts that are easily mated and unmated.

Applications

Board Mount Receptacle (UBS)

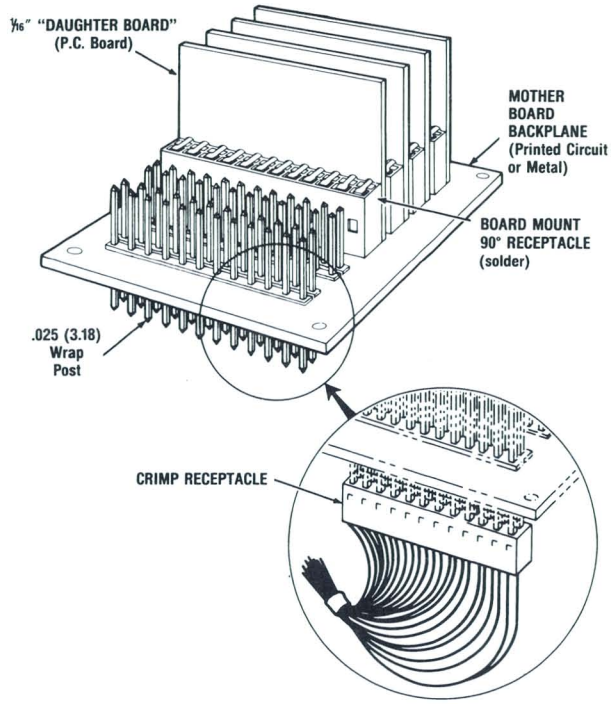
- Daughter card to mother board
- Printed circuit board stack
- Flex cable to .025(0.64) pin

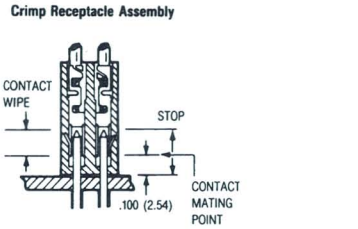
Crimp Receptacle (UBC)

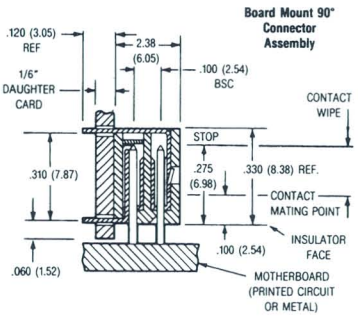
- Cable to .025(0.64) pins in printed circuit boards
- Cable to .025(0.64) pin headers, shrouded or unshrouded
- Cable to .025(0.64) wrap tails

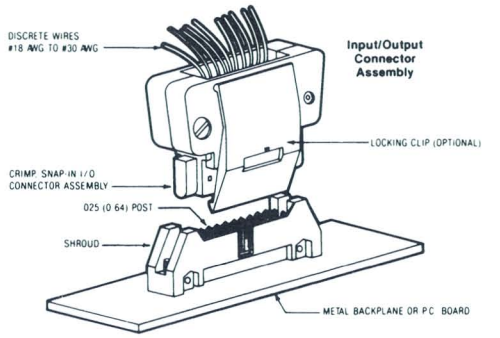
Design Features

- Contacts on .100(2.54) centers
- Choice of low or high insertion force
- Insertable and removable contacts
- Wire and post stop
- Insulation support in contact crimp barrel
- Lead-in chamfer – in insulator
- Solder anti-wicking
- Point contact within .100(2.54) of mating face
- Minimum .150(3.81) contact wipe







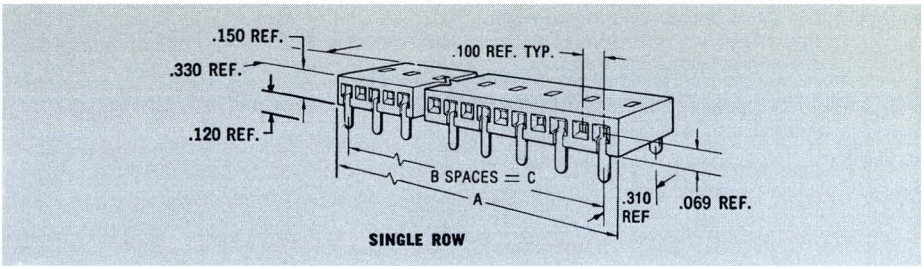


Standard Data

	Board Mount Receptacle	Crimp Receptacle
MATERIALS AND FINISHES		
Insulator, Single Row/Double Row Flammability Rating	Thermoset/Thermoplastic UL 94V-0	Thermoplastic/Thermoset UL 94V-1/UL 94V-0
Contacts, Low and High Force	Material: Copper alloy Finish: Gold over nickel	Material: Copper alloy Finish: Gold over nickel
MECHANICAL FEATURES		
Termination Technique	Flow solder (.013(0.33) x .026(0.66) solder tab)	Crimp
Max. Engagement Force	6.0 oz. (1,67 N) per contact (low) 12.0 oz. (3,34 N) per contact (high)	6.0 oz. (1,67 N) per contact (low) 12.0 oz. (3,34 N) per contact (high)
Min. Separation Force	0.5 oz. (0,14 N) per contact (low) 2.0 oz. (0,56 N) per contact (high)	0.5 oz. (0,14 N) per contact (low) 2.0 oz. (0,56 N) per contact (high)
ELECTRICAL DATA		
Current Rating	3 amps max.	3 amps max.
Temperature Rating	−55°C to +105°C (−67°F to +221°F)	−55°C to +85°C (−67°F to +185°F)
Insulation Resistance	≥5000 Megohms	≥5000 Megohms
Contact Resistance (Initial)	15 Milliohms max.	10 Milliohms max.
Dielectric Withstanding Voltage (sea level)	650 Vac	650 Vac

90° Connector Assemblies .100″ Centers

Single Row, .100″ Centers



(See page 325 for mounting dimensions)

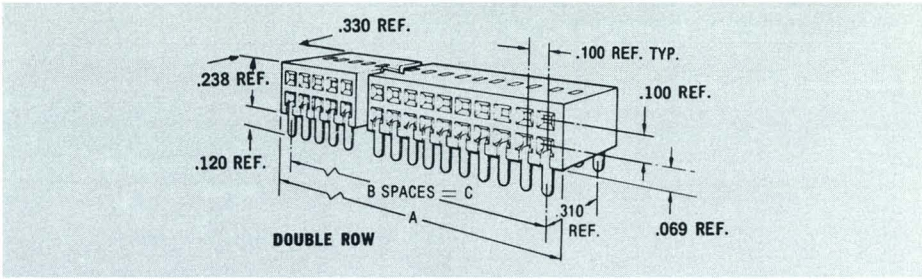
No. of Contacts	Part Number	A	B	C	No. of Contacts	Part Number	A	B	C	No. of Contacts	Part Number	A	B	C
4	UBS 4 * 004 A 1S†	.430	3	.300	25	UBS 4 * 025 A 1S†	2.530	24	2.400	46	UBS 4 * 046 A 1S†	4.630	45	4.500
5	005	.530	4	.400	26	026	2.630	25	2.500	47	047	4.730	46	4.600
6	006	.630	5	.500	27	027	2.730	26	2.600	48	048	4.830	47	4.700
7	007	.730	6	.600	28	028	2.830	27	2.700	49	049	4.930	48	4.800
8	008	.830	7	.700	29	029	2.930	28	2.800	50	050	5.030	49	4.900
9	009	.930	8	.800	30	030	3.030	29	2.900	51	051	5.130	50	5.000
10	010	1.030	9	.900	31	031	3.130	30	3.000	52	052	5.230	51	5.100
11	011	1.130	10	1.000	32	032	3.230	31	3.100	53	053	5.330	52	5.200
12	012	1.230	11	1.100	33	033	3.330	32	3.200	54	054	5.430	53	5.300
13	013	1.330	12	1.200	34	034	3.430	33	3.300	55	055	5.530	54	5.400
14	014	1.430	13	1.300	35	035	3.530	34	3.400	56	056	5.630	55	5.500
15	015	1.530	14	1.400	36	036	3.630	35	3.500	57	057	5.730	56	5.600
16	016	1.630	15	1.500	37	037	3.730	36	3.600	58	058	5.830	57	5.700
17	017	1.730	16	1.600	38	038	3.830	37	3.700	59	059	5.930	58	5.800
18	018	1.830	17	1.700	39	039	3.930	38	3.800	60	060	6.030	59	5.900
19	019	1.930	18	1.800	40	040	4.030	39	3.900	61	061	6.130	60	6.000
20	020	2.030	19	1.900	41	041	4.130	40	4.000	62	062	6.230	61	6.100
21	021	2.130	20	2.000	42	042	4.230	41	4.100	63	063	6.330	62	6.200
22	022	2.230	21	2.100	43	043	4.330	42	4.200	64	064	6.430	63	6.300
23	023	2.330	22	2.200	44	044	4.430	43	4.300	65	065	6.540	64	6.400
24	024	2.430	23	2.300	45	045	4.530	44	4.400					

*Contact Finish – Specify: A – 20 microinches gold over 50 microinches nickel
B – 30 microinches gold over 50 microinches nickel
C – 50 microinches gold over 50 microinches nickel

†Control Force – Specify: L – Low: .5 to 6 oz. (0.14 to 1.67 N)
H – High: 2 to 12 oz. (0.56 to 3.33 N)

Board Mount Receptacle

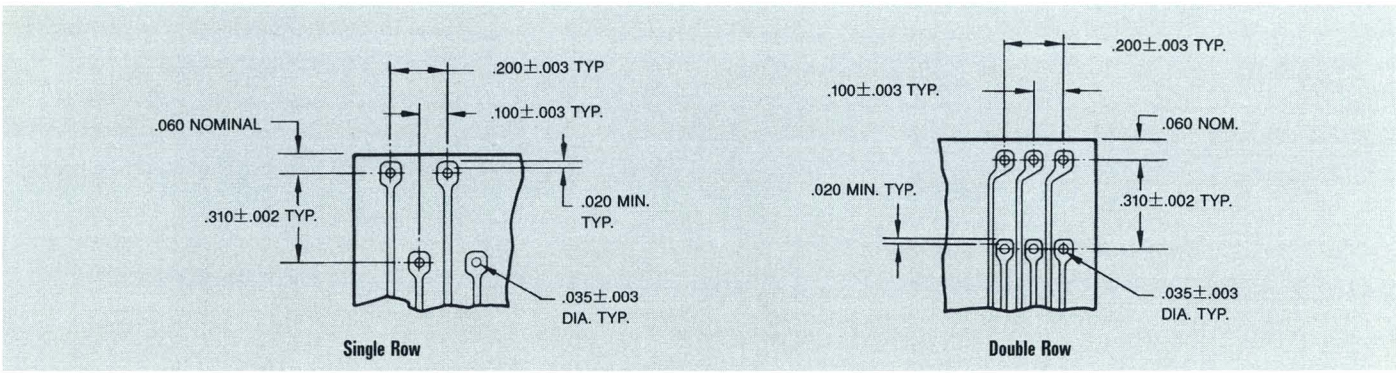
Double Row, .100" X .100" Centers



No. of Contacts	Part Number	A	B	C	No. of Contacts	Part Number	A	B	C	No. of Contacts	Part Number	A	B	C
4/8	UBS 4 * 008 A 1D†	.430	3	.300	25/50	UBS 4 * 050 A 1D†	2.530	24	2.400	46/92	UBS 4 * 092 A 1D†	4.630	45	4.500
5/10	010	.530	4	.400	26/52	052	2.630	25	2.500	47/94	094	4.730	46	4.600
6/12	012	.630	5	.500	27/54	054	2.730	26	2.600	48/96	096	4.830	47	4.700
7/14	014	.730	6	.600	28/56	056	2.830	27	2.700	49/98	098	4.930	48	4.800
8/16	016	.830	7	.700	29/58	058	2.930	28	2.800	50/100	100	5.030	49	4.900
9/18	018	.930	8	.800	30/60	060	3.030	29	2.900	51/102	102	5.130	50	5.000
10/20	020	1.030	9	.900	31/62	062	3.130	30	3.000	52/104	104	5.230	51	5.100
11/22	022	1.130	10	1.000	32/64	064	3.230	31	3.100	53/106	106	5.330	52	5.200
12/24	024	1.230	11	1.100	33/66	066	3.330	32	3.200	54/108	108	5.430	53	5.300
13/26	026	1.330	12	1.200	34/68	068	3.430	33	3.300	55/110	110	5.530	54	5.400
14/28	028	1.430	13	1.300	35/70	070	3.530	34	3.400	56/112	112	5.630	55	5.500
15/30	030	1.530	14	1.400	36/72	072	3.630	35	3.500	57/114	114	5.730	56	5.600
16/32	032	1.630	15	1.500	37/74	074	3.730	36	3.600	58/116	116	5.830	57	5.700
17/34	034	1.730	16	1.600	38/76	076	3.830	37	3.700	59/118	118	5.930	58	5.800
18/36	036	1.830	17	1.700	39/78	078	3.930	38	3.800	60/120	120	6.030	59	5.900
19/38	038	1.930	18	1.800	40/80	080	4.030	39	3.900	61/122	122	6.130	60	6.000
20/40	040	2.030	19	1.900	41/82	082	4.130	40	4.000	62/124	124	6.230	61	6.100
21/42	042	2.130	20	2.000	42/84	084	4.230	41	4.100	63/126	126	6.330	62	6.200
22/44	044	2.230	21	2.100	43/86	086	4.330	42	4.200	64/128	128	6.430	63	6.300
23/46	046	2.330	22	2.200	44/88	088	4.430	43	4.300	65/130	130	6.540	64	6.400
24/48	048	2.430	23	2.300	45/90	090	4.540	44	4.400					

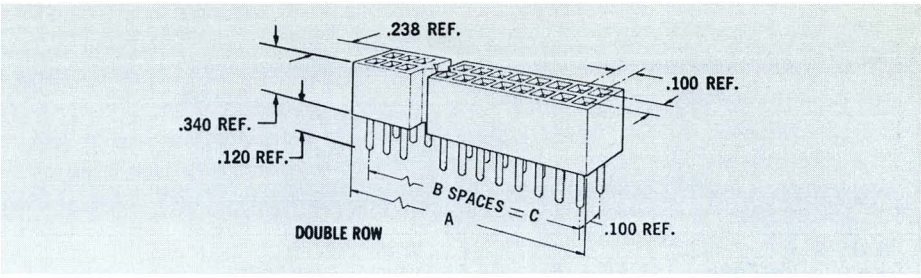
*Contact Finish, Contact Forces as applicable–See How To Order.
*Contact Finish – Specify: A – 20 microinches gold over 50 microinches nickel
B – 30 microinches gold over 50 microinches nickel
C – 50 microinches gold over 50 microinches nickel
†Control Force – Specify: L – Low: .5 to 6 oz. (0.14 to 1.67 N)
H – High: 2 to 12 oz. (0.56 to 3.33 N)

Mounting Dimensions – 90°



Vertical Connector Assemblies .100" Centers

Double Row .100" Centers



Double Row: Includes solder anti-wicking contact feature

No. of Contacts	Part Number	A	B	C	No. of Contacts	Part Number	A	B	C	No. of Contacts	Part Number	A	B	C
4/8	UBS 4 * 008 C 4DL	.420	3	.300	25/50	UBS 4 * 050 C 4DL	2.520	24	2.400	45/90	UBS 4 * 090 C 4DL	4.520	44	4.400
5/10	010	.520	4	.400	26/52	052	2.620	25	2.500	46/92	092	4.620	45	4.500
6/12	012	.620	5	.500	27/54	054	2.720	26	2.600	47/94	094	4.720	46	4.600
7/14	014	.720	6	.600	28/56	056	2.820	27	2.700	48/96	096	4.820	47	4.700
8/16	016	.820	7	.700	29/58	058	2.920	28	2.800	49/98	098	4.920	48	4.800
9/18	018	.920	8	.800	30/60	060	3.020	29	2.900	50/100	100	5.020	49	4.900
10/20	020	1.020	9	.900	31/62	062	3.120	30	3.000	51/102	102	5.120	50	5.000
11/22	022	1.120	10	1.000	32/64	064	3.220	31	3.100	52/104	104	5.220	51	5.100
12/24	024	1.220	11	1.100	33/66	066	3.320	32	3.200	53/106	106	5.320	52	5.200
13/26	026	1.320	12	1.200	34/68	068	3.420	33	3.300	54/108	108	5.420	53	5.300
14/28	028	1.420	13	1.300	35/70	070	3.520	34	3.400	55/110	110	5.520	54	5.400
15/30	030	1.520	14	1.400	36/72	072	3.620	35	3.500	56/112	112	5.620	55	5.500
16/32	032	1.620	15	1.500	37/74	074	3.720	36	3.600	57/114	114	5.720	56	5.600
17/34	034	1.720	16	1.600	38/76	076	3.820	37	3.700	58/116	116	5.820	57	5.700
18/36	036	1.820	17	1.700	39/78	078	3.920	38	3.800	59/118	118	5.920	58	5.800
19/38	038	1.920	18	1.800	40/80	080	4.020	39	3.900	60/120	120	6.020	59	5.900
20/40	040	2.020	19	1.900	41/82	082	4.120	40	4.000	61/122	122	6.120	60	6.000
21/42	042	2.120	20	2.000	42/84	084	4.220	41	4.100	62/124	124	6.220	61	6.100
22/44	044	2.220	21	2.100	43/86	086	4.320	42	4.200	63/126	126	6.320	62	6.200
23/46	046	2.320	22	2.200	44/88	088	4.420	43	4.300	64/128	128	6.420	63	6.300
24/48	048	2.420	23	2.300						65/130	130	6.520	64	6.400

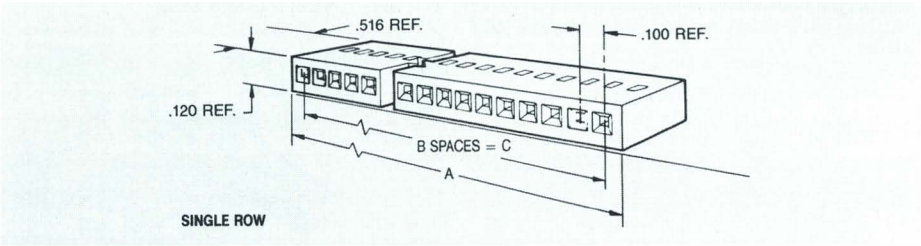
*Contact Finish – Specify: A – 20 microinches gold over 50 microinches nickel
B – 30 microinches gold over 50 microinches nickel
C – 50 microinches gold over 50 microinches nickel

*Contact Finish as applicable – See How to Order.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Connector Insulators .100" Centers

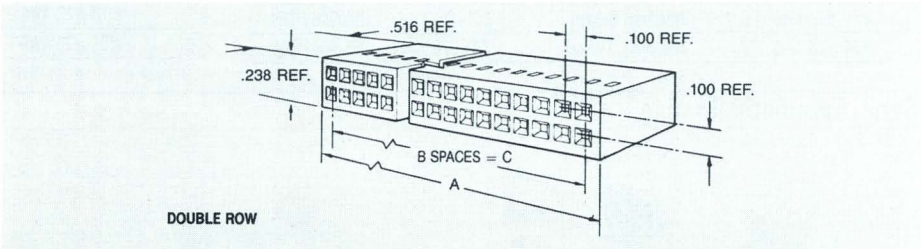
Single Row



No. of Contacts	Part Number	A	B	C	No. of Contacts	Part Number	A	B	C	No. of Contacts	Part Number	A	B	C
4	121-7356-004	.420	3	.300	25	121-7356-025	2.520	24	2.400	46	121-7356-046	4.620	45	4.500
5	005	.520	4	.400	26	026	2.620	25	2.500	47	047	4.720	46	4.600
6	006	.620	5	.500	27	027	2.720	26	2.600	48	048	4.820	47	4.700
7	007	.720	6	.600	28	028	2.820	27	2.700	49	049	4.920	48	4.800
8	008	.820	7	.700	29	029	2.920	28	2.800	50	050	5.020	49	4.900
9	009	.920	8	.800	30	030	3.020	29	2.900	51	051	5.120	50	5.000
10	010	1.020	9	.900	31	031	3.120	30	3.000	52	052	5.220	51	5.100
11	011	1.120	10	1.000	32	032	3.220	31	3.100	53	053	5.320	52	5.200
12	012	1.220	11	1.100	33	033	3.320	32	3.200	54	054	5.420	53	5.300
13	013	1.320	12	1.200	34	034	3.420	33	3.300	55	055	5.520	54	5.400
14	014	1.420	13	1.300	35	035	3.520	34	3.400	56	056	5.620	55	5.500
15	015	1.520	14	1.400	36	036	3.620	20	3.500	57	057	5.720	56	5.600
16	016	1.620	15	1.500	37	037	3.720	36	3.600	58	058	5.820	57	5.700
17	017	1.720	16	1.600	38	038	3.820	37	3.700	59	059	5.920	58	5.800
18	018	1.820	17	1.700	39	039	3.920	38	3.800	60	060	6.020	59	5.900
19	019	1.920	18	1.800	40	040	4.020	39	3.900	61	061	6.120	60	6.000
20	020	2.020	19	1.900	41	041	4.120	40	4.000	62	062	6.220	61	6.100
21	021	2.120	20	2.000	42	042	4.220	41	4.100	63	063	6.320	62	6.200
22	022	2.220	21	2.100	43	043	4.320	42	4.200	64	064	6.420	63	6.300
23	023	2.320	22	2.200	44	044	4.420	43	4.300	65	065	6.520	64	6.400
24	024	2.420	23	2.300	45	045	4.520	44	4.400					

Note: UBC insulators utilize insertable and removable crimp contacts that accommodate #18-28 AWG wire. See page 328.

Double Row



No. of Contacts	Part Number	A	B	C	No. of Contacts	Part Number	A	B	C	No. of Contacts	Part Number	A	B	C
2/4	121-7326-202	.230	1	.100	12/24	121-7326-112	1.230	11	1.100	23/46	121-7326-123	2.330	22	2.200
3/6	203	.330	2	.200	13/26	113	1.330	12	1.200	24/48	124	2.430	23	2.300
4/8	204	.430	3	.300	14/28	114	1.430	13	1.300	25/50	125	2.530	24	2.400
5/10	105	.530	4	.400	15/30	115	1.530	14	1.400	26/52	126	2.630	25	2.500
6/12	106	.630	5	.500	16/32	116	1.630	15	1.500	27/54	127	2.730	26	2.600
7/14	107	.730	6	.600	17/34	117	1.730	16	1.600	28/56	128	2.830	27	2.700
8/16	108	.830	7	.700	18/36	118	1.830	17	1.700	29/58	129	2.930	28	2.800
9/18	109	.930	9	.800	19/38	119	1.930	18	1.800	30/60	130	3.030	29	3.000
10/20	110	1.030	9	.900	20/40	120	2.030	19	1.900	31/62	131	3.130	30	3.000
11/22	111	1.130	10	1.000	21/42	121	2.130	20	2.000	32/64	132	3.240	31	3.100
					22/44	122	2.230	21	2.100					

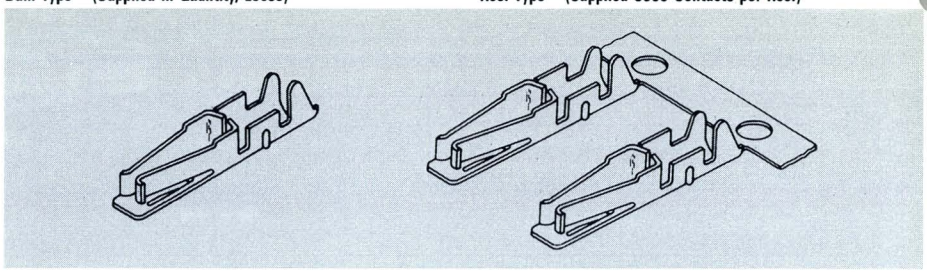
Note: UBC insulators utilize insertable and removable crimp contacts that accommodate #18-28 AWG wire. See page 328.

Crimp Receptacle

Crimp Contacts

NOTE: All gold plated contacts are selectively plated with specified minimums of gold on mating surface only. Balance of contact is plated gold flash.

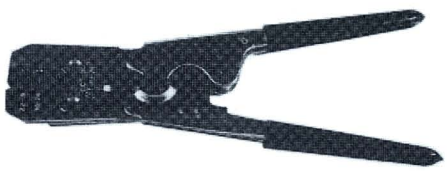
Bulk Type – (Supplied in Quantity, Loose) **Reel Type – (Supplied 5000 Contacts per Reel)**



Wire Range*	Withdrawal Force, Min.	Insertion Force, Max.	Contact and Plating Thickness	Bulk Type Part No.	Reel Type Part No.
18-22 AWG Non-Insulation Support	2 oz.	12 oz.	20 microinches gold over 50 microinches nickel	030-7313-016	110238-0095
			30 microinches gold over 50 microinches nickel	030-7313-096	110238-0155
			50 microinches gold over 50 microinches nickel	030-7313-076	110238-0154
	0.5 oz.	6 oz.	20 microinches gold over 50 microinches nickel	030-7361-016	110238-0099
			30 microinches gold over 50 microinches nickel	030-7361-096	110238-0157
			50 microinches gold over 50 microinches nickel	030-7361-076	110238-0156
24-28 AWG Insulation Support	2 oz.	12 oz.	20 microinches gold over 50 microinches nickel	030-7313-012	110238-0087
			30 microinches gold over 50 microinches nickel	030-7313-092	110238-0151
			50 microinches gold over 50 microinches nickel	030-7313-072	110238-0150
	0.5 oz.	6 oz.	20 microinches gold over 50 microinches nickel	030-7361-012	110238-0091
			30 microinches gold over 50 microinches nickel	030-7361-092	110238-0153
			50 microinches gold over 50 microinches nickel	030-7361-072	110238-0152

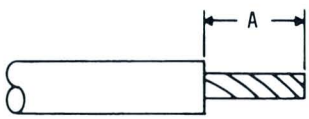
NOTE: Minimum withdrawal force using .024 sq. gauge. Maximum insertion force using .026 sq. gauge.

Hand Tool for Crimp Contacts



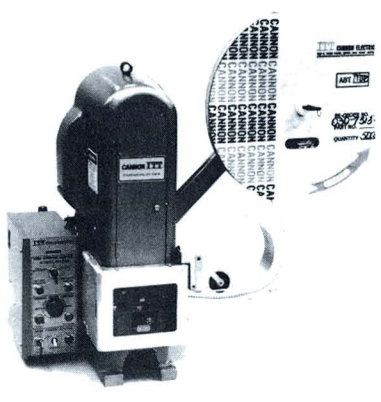
Wire Range	Type	Tool	Part No.
#18-#22 AWG	Non-Insu. Support	CCT-UBC-1	995-0001-789
#24-#28 AWG	With Insul. Support	CCT-UBC	995-0001-681

Recommended Wire Strip Length
For use with ABT-500, ABT-607 and hand crimp tool for UBC contacts

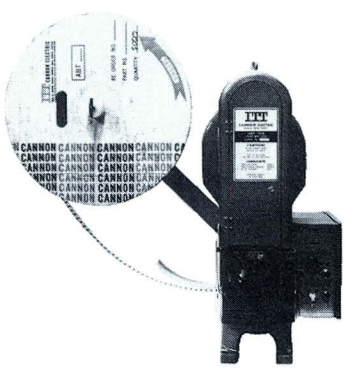


Wire Range	Type	A Dim.
#18-#22 AWG	Non-Insul. Support	.180 (4.57)
#24-#28 AWG	With Insul. Support	.125 (3.18)

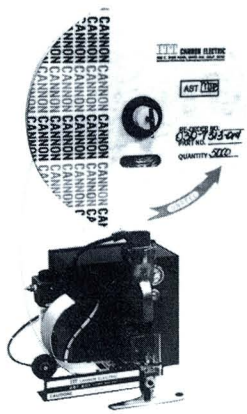
Semi-Automatic Tooling



ABT-500-UCCS-UBC* Strip Crimp Machine



ABT-500-UCCD-UBC* Crimp Machine



ABT-607-UBC* All Pneumatic Crimp Machine

*Please specify contact part number when ordering semi-automatic tools

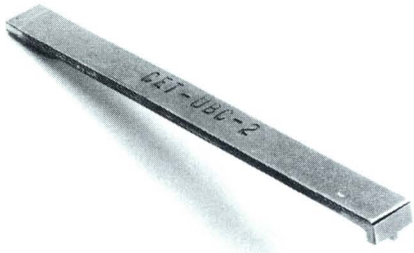
1851 E. Deere Ave. P.O. Box 35000, Santa Ana, CA 92705-6500 • (714) 261-5300

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Crimp Receptacle – Accessories

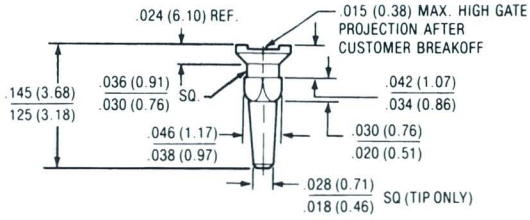
Crimp Contact Extraction Tool

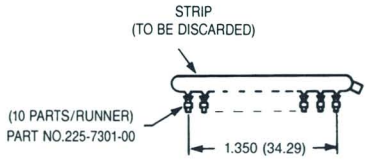
CET-UBC-2
P/N 274-7302-004



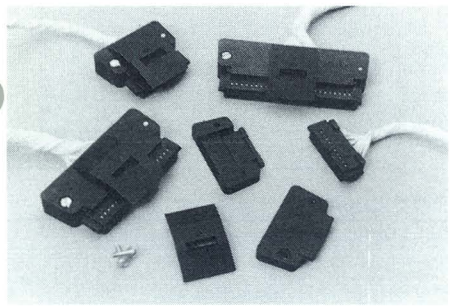
Polarizing Plug

225-7301-002 Natural (Off-White)
225-7301-003 Black



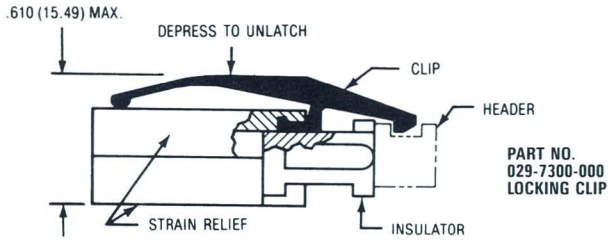


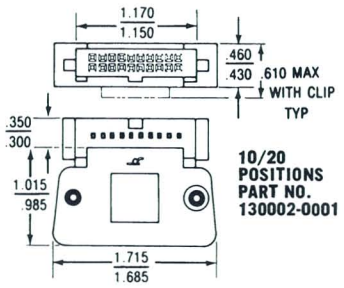
Special Assemblies

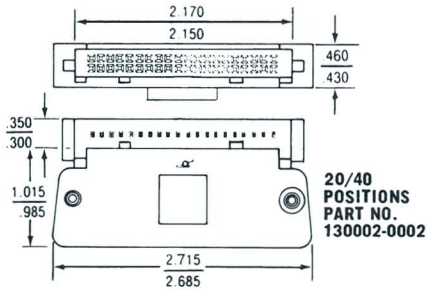


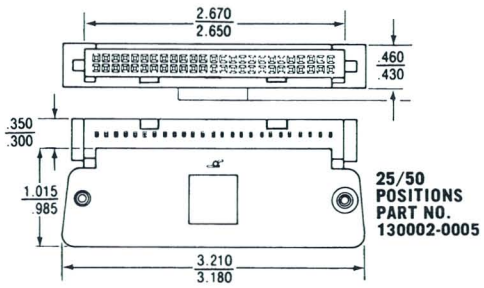
Positions	Kit*	Kit**
10/20	130002-0001	130002-0101
20/40	130002-0002	130002-0102
25/50	130002-0005	130002-0105

*Consists of 1 insulator, 2 clam shells and 2 screws
**Consists of 1 insulator, 2 clam shells, 2 screws and a locking clip.







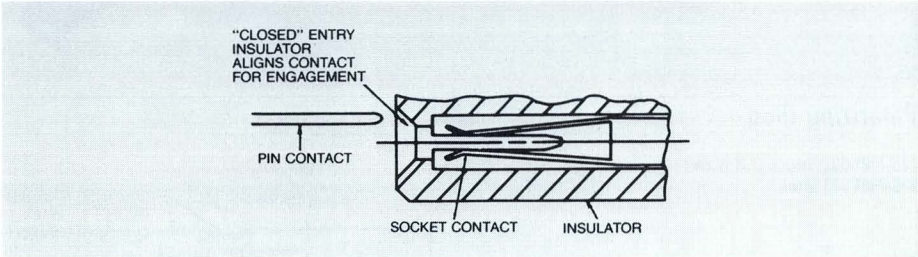


The Cannon High Density (CHD) connector series was developed to address the dramatic increase in the number of I/O signals required on today's printed circuit boards.

ITT Cannon CHD offers a lower insertion force design with up to 684 contacts on a .100" x .100" grid. Available in 3- and 4- row configurations, the CHD connector is a reliable and cost effective solution for mating a large number of contacts.

Typically, the pin side of the connector is mounted on the backplane utilizing press-fit compliant pin technology. The right angle socket connector is soldered on the daughter card. ITT Cannon offers a complete line of mounting hardware including guide pins, power pins and receptacles, and polarizing keys.

For more information, consult the factory or your local ITT Cannon sales office.



Features

- High Pin Count
- Consistent high contact normal force of 70 grams minimum per beam after life
- Low insertion force per mated contact of 1.5 ounces
- "Closed"-entry female housing gives resistance to probe damage
- Press-fit compliant pin tails available
- Intermates/intermounts with most manufacturers' high density PC connectors
- 64 position polarizing system
- High temperature material compatible with all reflow solder techniques
- Standard .100" x .100" (2.54 x 2.54) PC foot print
- Preloaded socket contacts
- First make, last break pin contact (.040 (1.02) longer) available
- .090 (2.29) nominal contact electrical engagement length
- UL Recognized File #E8572
- CSA certification pending

Standard Data

MATERIALS

Housing: Glass-filled thermoplastic, black

Contacts: Copper alloy

Contact Finish: .000030" (.00076) Gold on mating area over .000050" (.00127) nickel underplate. Tin plated P.C. Tails

ELECTRICAL

Current Rating: 2.25 amps. continuous per contact

Operating Temperature: −65°C to +105°C

DWV: 900 Vrms. Sea level

Insulation Resistance: 5000 MΩ min.

Contact Resistance: 20 mΩ max.

MECHANICAL

Socket Contact: Twin cantilever beam, "closed" entry

Normal Force: 70 grams/beam after life min.

Insertion Force: 1.5 oz./mated contact avg.

Withdrawal Force: 0.5 oz./mated contact avg.

How to Order

CHD – 240 P 4 A – XXX

SERIES

NUMBER OF CONTACTS

CONTACT TYPE

NUMBER OF CONTACT ROWS

TERMINATION TYPE

MODIFICATION

SERIES
Cannon High Density

NUMBER OF CONTACTS
Up to 684

CONTACT TYPE
P – Pin
S – Socket

NUMBER OF CONTACT ROWS
3 – 3-Row
4 – 4-Row

TERMINATION TYPE
A – Press fit (Male only)
B – Solder

MODIFICATION
–020: .120 (3.05) solder tail
–021: .250 (6.35) compliant pin wire wrap post tail length
–022: .533 (13.54) compliant pin wire wrap post tail length

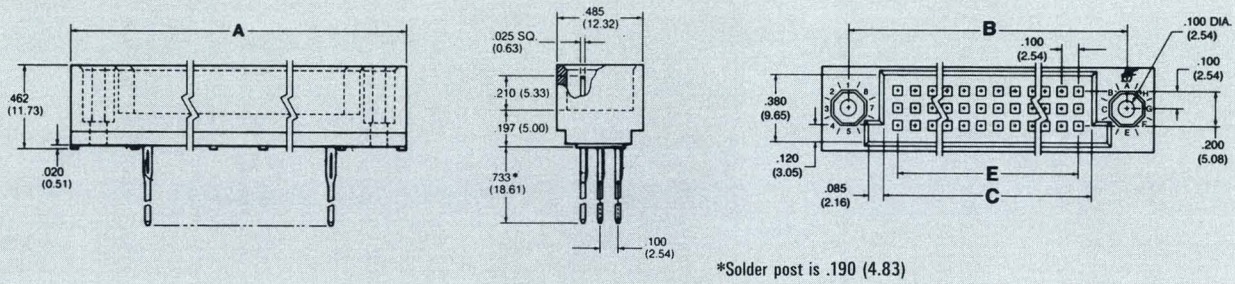
First mate/last break pin contacts (.040 (1.0) longer) are available. They can be installed into any contact cavity. For additional information consult factory.

ITT Cannon

3 Row Pin Connectors

Pin (without guide pin)

Compliant pin tails shown. Solder posts are available.

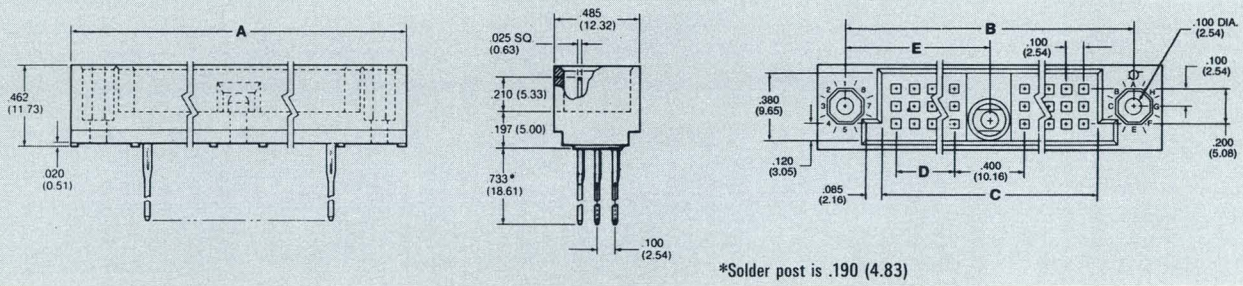


*Solder post is .190 (4.83)

Number of Positions**	A	B	C	E
96	3.950 (100.33)	3.650 (92.71)	3.250 (82.55)	3.100 (78.74)
120	4.750 (120.65)	4.450 (113.03)	4.050 (102.87)	3.900 (99.06)
165	6.250 (158.75)	5.950 (151.13)	5.550 (140.97)	5.400 (137.16)
210	7.750 (196.85)	7.450 (189.23)	7.050 (179.07)	6.900 (175.26)
225	8.250 (209.55)	7.950 (201.93)	7.550 (191.77)	7.400 (187.96)

Pin (with 1 guide pin)

Compliant pin tails shown. Solder posts are available.



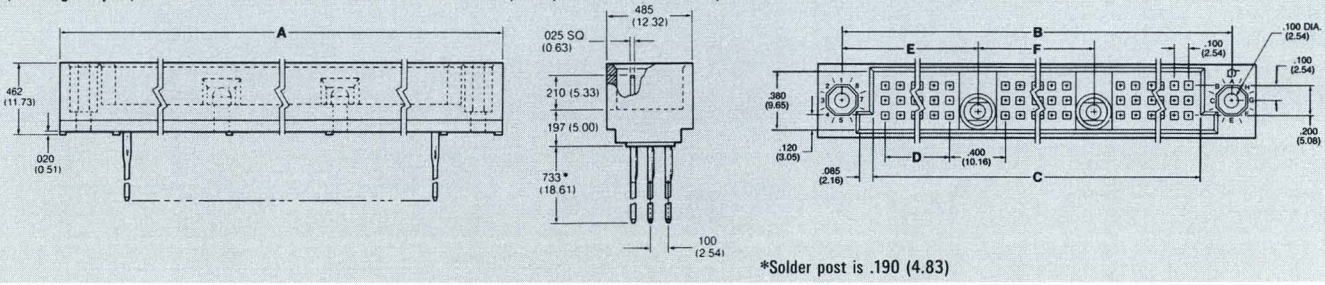
*Solder post is .190 (4.83)

Number of Positions**	A	B	C	D	E
240	9.050 (229.87)	8.750 (222.25)	8.350 (212.09)	3.900 (99.06)	4.375 (111.12)
258	9.650 (245.11)	9.350 (237.49)	8.950 (227.33)	4.200 (106.68)	4.675 (118.74)
276	10.250 (260.35)	9.950 (252.73)	9.550 (242.57)	4.500 (114.30)	4.975 (126.36)
294	10.850 (275.59)	10.550 (267.97)	10.150 (257.81)	4.800 (121.92)	5.275 (133.98)
312	11.450 (290.83)	11.150 (283.21)	10.750 (273.05)	5.100 (129.54)	5.575 (141.60)
330	12.050 (306.07)	11.750 (298.45)	11.350 (288.29)	5.400 (137.16)	5.875 (149.22)
348	12.650 (321.31)	12.350 (313.69)	11.950 (303.53)	5.700 (144.78)	6.175 (156.84)
366	13.250 (336.55)	12.950 (328.93)	12.550 (318.77)	6.000 (152.40)	6.475 (164.46)

**Additional sizes are continually added. Consult factory for availability.

Pin (with 2 guide pins)

Compliant pin tails shown. Solder posts are available.

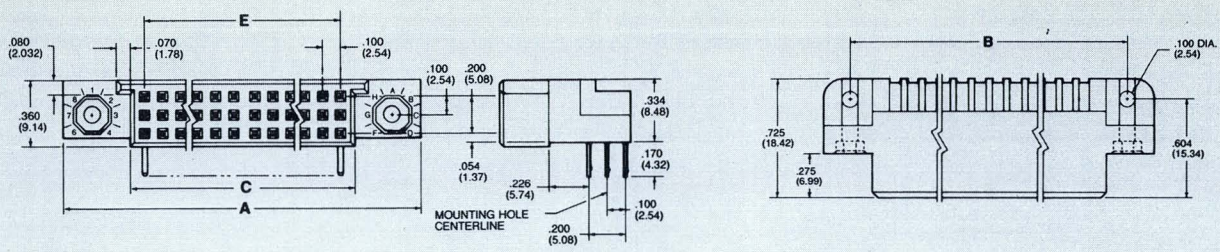


*Solder post is .190 (4.83)

Number of Positions**	A	B	C	D	E	F
387	14.250 (361.95)	13.950 (354.33)	13.550 (344.17)	4.200 (106.68)	4.675 (118.74)	4.600 (116.84)
405	14.850 (377.19)	14.550 (369.57)	14.150 (359.41)	4.400 (111.76)	4.875 (123.82)	4.800 (121.92)

3 Row Socket Connectors

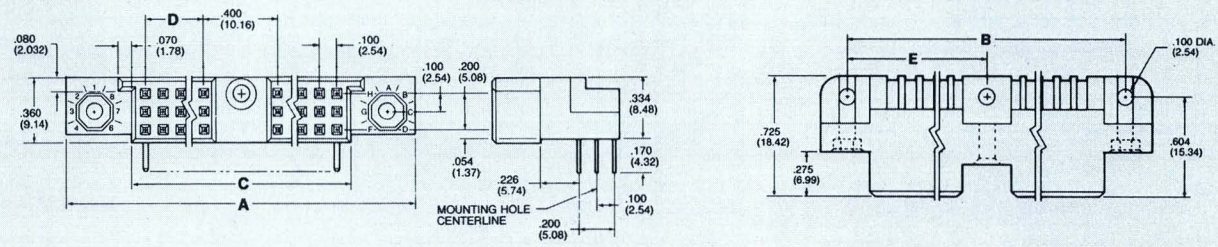
Socket (without guide pin)



Number of Positions**	A	B	C	E
96	3.950 (100.33)	3.650 (92.71)	3.224 (81.89)	3.100 (78.74)
120	4.750 (120.65)	4.450 (113.03)	4.024 (102.21)	3.900 (99.06)
165	6.250 (158.75)	5.950 (151.13)	5.524 (140.31)	5.400 (137.16)
210	7.750 (196.85)	7.450 (189.23)	7.024 (178.41)	6.900 (175.26)
225	8.250 (209.55)	7.950 (201.93)	7.524 (191.11)	7.400 (187.96)

**Additional sizes are continually added. Consult factory for availability.

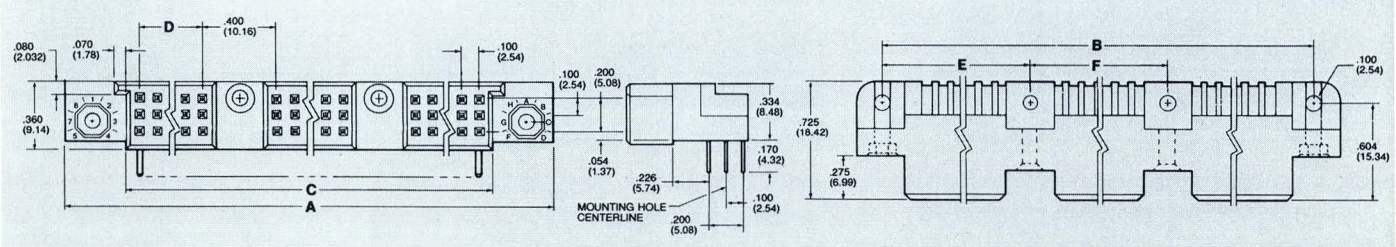
Socket (with 1 guide pin)



Number of Positions**	A	B	C	D	E
240	9.050 (229.87)	8.750 (222.25)	8.324 (211.43)	3.900 (99.06)	4.375 (111.12)
258	9.650 (245.11)	9.350 (237.49)	8.924 (226.67)	4.200 (106.68)	4.675 (118.74)
276	10.250 (260.35)	9.950 (252.73)	9.524 (241.91)	4.500 (114.30)	4.975 (126.36)
294	10.850 (275.59)	10.550 (267.97)	10.124 (257.15)	4.800 (121.92)	5.275 (133.98)
312	11.450 (290.83)	11.150 (283.21)	10.724 (272.39)	5.100 (129.54)	5.575 (141.60)
330	12.050 (306.07)	11.750 (298.45)	11.324 (287.63)	5.400 (137.16)	5.875 (149.22)
348	12.650 (321.31)	12.350 (313.69)	11.924 (302.87)	5.700 (144.78)	6.175 (156.84)
366	13.250 (336.55)	12.950 (328.93)	12.524 (318.11)	6.000 (152.40)	6.475 (164.46)

**Additional sizes are continually added. Consult factory for availability.

Socket (with 2 guide pins)



Number of Positions**	A	B	C	E	F	
387	14.250 (361.95)	13.950 (354.33)	13.524 (343.51)	4.200 (106.68)	4.675 (118.74)	4.600 (116.84)
405	14.850 (377.19)	14.550 (369.57)	14.124 (358.75)	4.400 (111.76)	4.875 (123.82)	4.800 (121.92)

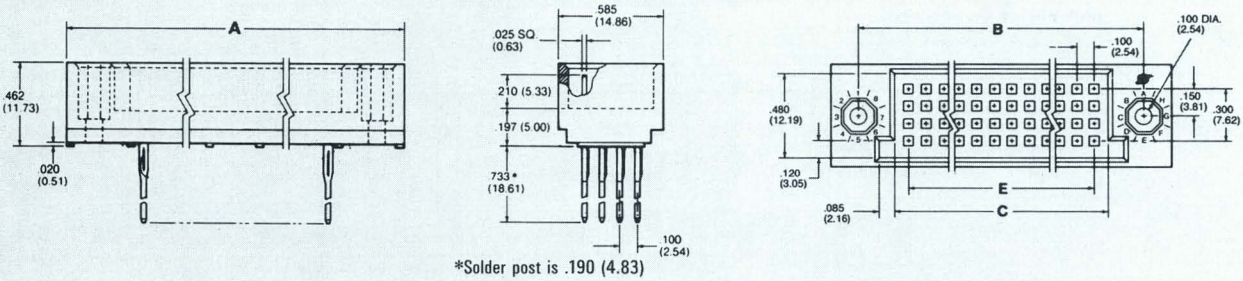
**Additional sizes are continually added. Consult factory for availability.

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

4 Row Pin Connectors

Pin (without guide pin)

Compliant pin tails shown. Solder posts are available.



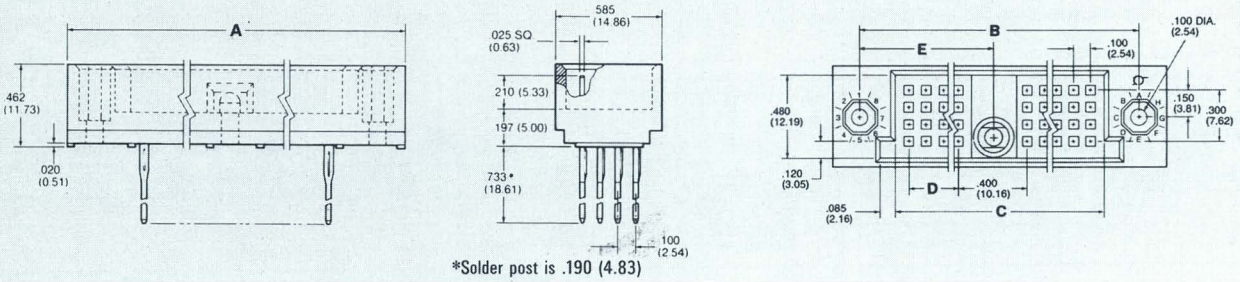
*Solder post is .190 (4.83)

Number of Positions**	A	B	C	E	Number of Positions**	A	B	C	E
96	3.150 (80.01)	2.850 (72.39)	2.450 (62.23)	2.300 (58.42)	180	5.250 (133.35)	4.950 (125.73)	4.550 (115.57)	4.400 (111.76)
100	3.250 (82.55)	2.950 (74.93)	2.550 (64.77)	2.400 (60.96)	200	5.750 (146.05)	5.450 (138.43)	5.050 (128.27)	4.900 (124.46)
120	3.750 (95.25)	3.450 (87.63)	3.050 (77.47)	2.900 (73.66)	240	6.750 (171.45)	6.450 (163.83)	6.050 (153.67)	5.900 (149.86)
128	3.950 (100.33)	3.650 (92.71)	3.250 (82.55)	3.100 (78.74)	252	7.050 (179.07)	6.750 (171.45)	6.350 (161.29)	6.200 (157.48)
140	4.250 (107.95)	3.950 (100.33)	3.550 (90.17)	3.400 (86.36)	256	7.150 (181.61)	6.850 (173.99)	6.450 (163.83)	6.300 (160.02)
160	4.750 (120.65)	4.450 (113.03)	4.050 (102.87)	3.900 (99.06)	260	7.250 (184.15)	6.950 (176.53)	6.550 (166.37)	6.400 (162.56)
168	4.950 (125.73)	4.650 (118.11)	4.250 (107.95)	4.100 (104.14)	300	8.250 (209.55)	7.950 (201.93)	7.550 (191.77)	7.400 (187.96)

**Additional sizes are continually added. Consult factory for availability.

Pin (with 1 guide pin)

Compliant pin tails shown. Solder posts are available.



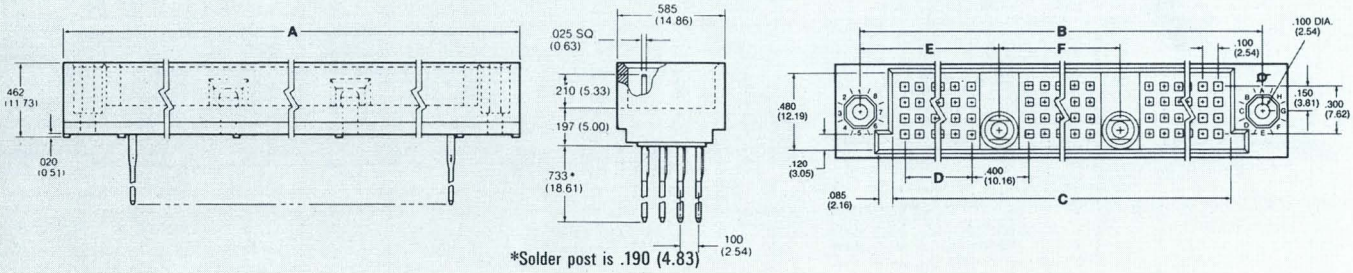
*Solder post is .190 (4.83)

Number of Positions**	A	B	C	D	E	Number of Positions**	A	B	C	D	E
320	9.050 (229.87)	8.750 (222.25)	8.350 (212.09)	3.900 (99.06)	4.375 (111.12)	416	11.450 (290.83)	11.150 (283.21)	10.750 (273.05)	5.100 (129.54)	5.575 (141.60)
344	9.650 (245.11)	9.350 (237.49)	8.950 (227.33)	4.200 (106.68)	4.675 (118.74)	440	12.050 (306.07)	11.750 (298.45)	11.350 (288.29)	5.400 (137.16)	5.875 (149.22)
368	10.250 (260.35)	9.950 (252.73)	9.550 (242.57)	4.500 (114.30)	4.975 (126.36)	464	12.650 (321.31)	12.350 (313.69)	11.950 (303.53)	5.700 (144.78)	6.175 (156.84)
392	10.850 (275.59)	10.550 (267.97)	10.150 (257.81)	4.800 (121.92)	5.275 (133.98)	488	13.250 (336.55)	12.950 (328.93)	12.550 (318.77)	6.000 (152.40)	6.475 (164.46)

**Additional sizes are continually added. Consult factory for availability.

Pin (with 2 guide pins)

Compliant pin tails shown. Solder posts are available.



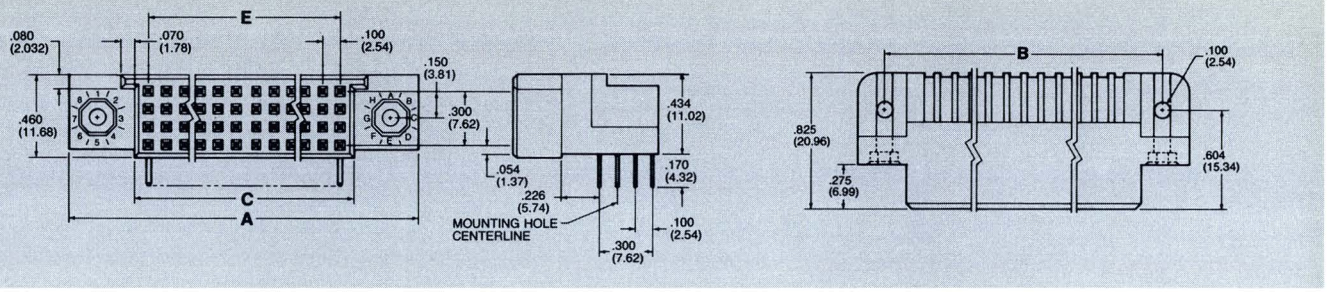
*Solder post is .190 (4.83)

Number of Positions**	A	B	C	D	F	Number of Positions**	A	B	C	D	F
516	14.250 (361.95)	13.950 (354.33)	13.550 (344.17)	4.200 (106.68)	4.600 (116.84)	612	16.650 (422.91)	16.350 (415.29)	15.950 (405.13)	5.000 (127.00)	5.400 (137.16)
540	14.850 (377.19)	14.550 (369.57)	14.150 (359.41)	4.400 (111.76)	4.800 (121.92)	636	17.250 (438.15)	16.950 (430.53)	16.550 (420.37)	5.200 (132.08)	5.600 (142.24)
564	15.450 (392.43)	15.150 (384.81)	14.750 (374.65)	4.600 (116.84)	5.000 (127.00)	660	17.850 (453.39)	17.550 (445.77)	17.150 (435.61)	5.400 (137.16)	5.800 (147.32)
588	16.050 (407.67)	15.750 (400.05)	15.350 (389.89)	4.800 (121.92)	5.200 (132.08)	684	18.450 (468.63)	18.150 (461.01)	17.750 (450.85)	5.600 (142.24)	6.000 (152.40)

**Additional sizes are continually added. Consult factory for availability.

4 Row Socket Connectors

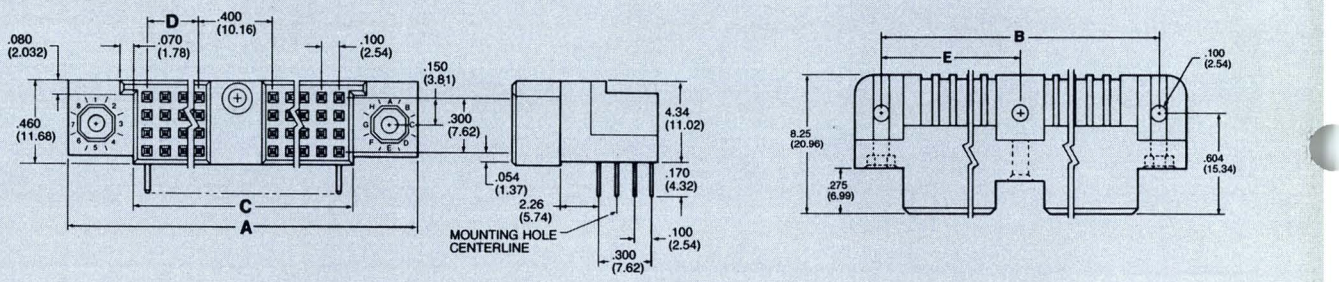
Socket (without guide pin)



Number of Positions**	A	B	C	E	Number of Positions**	A	B	C	E
96	3.150 (80.01)	2.850 (72.39)	2.424 (61.57)	2.300 (58.42)	180	5.250 (133.35)	4.950 (125.73)	4.524 (114.91)	4.400 (111.76)
100	3.250 (82.55)	2.950 (74.93)	2.524 (64.11)	2.400 (60.96)	200	5.750 (146.05)	5.450 (138.43)	5.024 (127.61)	4.900 (124.46)
120	3.750 (95.25)	3.450 (87.63)	3.024 (76.81)	2.900 (73.66)	240	6.750 (171.45)	6.450 (163.83)	6.024 (153.01)	5.900 (149.86)
128	3.950 (100.33)	3.650 (92.71)	3.224 (81.89)	3.100 (78.74)	252	7.050 (179.07)	6.750 (171.45)	6.324 (160.63)	6.200 (157.48)
140	4.250 (107.95)	3.950 (100.33)	3.524 (89.51)	3.400 (86.36)	256	7.150 (181.61)	6.850 (173.99)	6.424 (163.17)	6.300 (160.02)
160	4.750 (120.65)	4.450 (113.03)	4.024 (102.21)	3.900 (99.06)	260	7.250 (184.15)	6.950 (176.53)	6.524 (165.71)	6.400 (162.56)
168	4.950 (125.73)	4.650 (118.11)	4.224 (107.29)	4.100 (104.14)	300	8.250 (209.55)	7.950 (201.93)	7.524 (191.11)	7.400 (187.96)

**Additional sizes are continually added. Consult factory for availability.

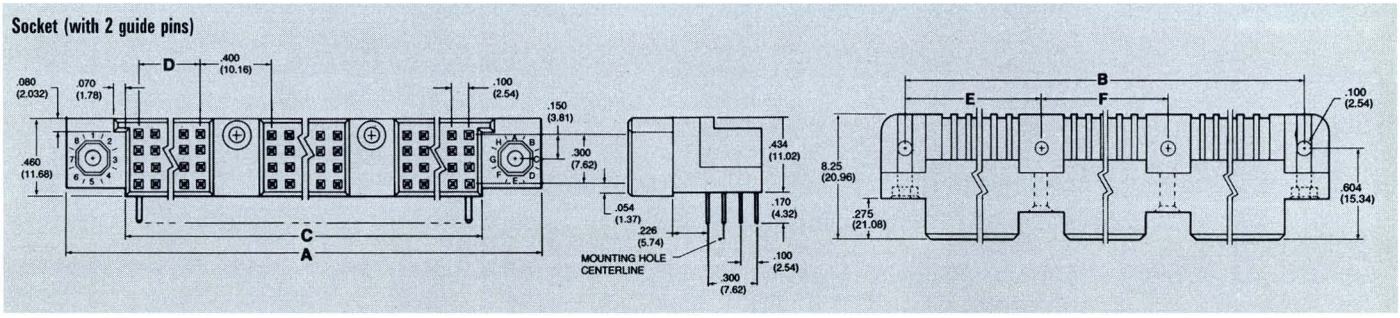
Socket (with 1 guide pin)



Number of Positions**	A	B	C	D	E	Number of Positions**	A	B	C	D	E
320	9.050 (229.87)	8.750 (222.25)	8.324 (211.43)	3.900 (99.06)	4.375 (111.12)	416	11.450 (290.83)	11.150 (283.21)	10.724 (272.39)	5.100 (129.54)	5.575 (141.60)
344	9.650 (245.11)	9.350 (237.49)	8.924 (226.67)	4.200 (106.68)	4.675 (118.74)	440	12.050 (306.07)	11.750 (298.45)	11.324 (287.63)	5.400 (137.16)	5.875 (149.22)
368	10.250 (260.35)	9.950 (252.73)	9.524 (241.91)	4.500 (114.30)	4.975 (126.36)	464	12.650 (321.31)	12.350 (313.69)	11.924 (302.87)	5.700 (144.78)	6.175 (156.84)
392	10.850 (275.59)	10.550 (267.97)	10.124 (257.15)	4.800 (121.92)	5.275 (133.98)	488	13.250 (336.55)	12.950 (328.93)	12.524 (318.11)	6.000 (152.40)	6.475 (164.46)

**Additional sizes are continually added. Consult factory for availability.

Socket (with 2 guide pins)



Number of Positions**	A	B	C	D	E	F	Number of Positions**	A	B	C	D	E	F
516	14.250 (361.95)	13.950 (354.33)	13.524 (343.51)	4.200 (106.68)	4.675 (118.74)	4.600 (116.84)	612	16.650 (422.91)	16.350 (415.29)	15.924 (404.47)	5.000 (127.00)	5.475 (139.06)	5.400 (137.16)
540	14.850 (377.19)	14.550 (369.57)	14.124 (358.75)	4.400 (111.76)	4.875 (123.82)	4.800 (121.92)	636	17.250 (438.15)	16.950 (430.53)	16.524 (419.71)	5.200 (132.08)	5.675 (144.14)	5.600 (142.24)
564	15.450 (392.43)	15.150 (384.81)	14.724 (373.99)	4.600 (116.84)	5.075 (128.90)	5.000 (127.00)	660	17.850 (453.39)	17.550 (445.77)	17.124 (434.95)	5.400 (137.16)	5.875 (149.22)	5.800 (147.32)
588	16.050 (407.67)	15.750 (400.05)	15.324 (389.23)	4.800 (121.92)	5.275 (133.98)	5.200 (132.08)	684	18.450 (468.63)	18.150 (461.01)	17.724 (450.19)	5.600 (142.24)	6.075 (154.30)	6.000 (152.40)

**Additional sizes are continually added. Consult factory for availability.

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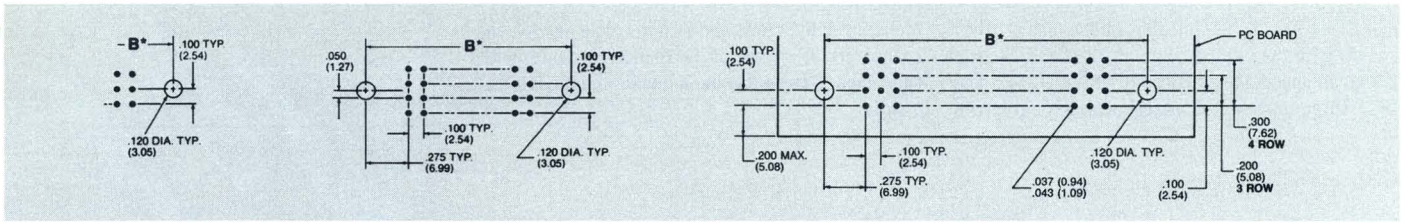
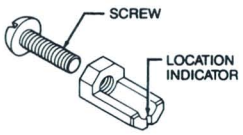
Recommended Board Layout

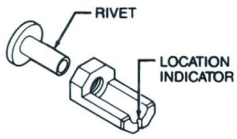


*See pages 331-334 for B dimension.

Accessories: Must be ordered separately



Screw Assembly Polarization Kit
Part No. CHD 130403
Consists of:
2 keys and mounting hardware

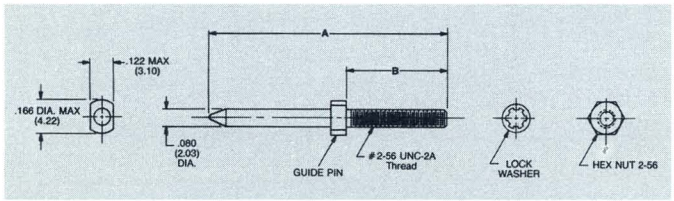


Rivet Assembly Polarization Kit
Part No. CHD 130404
Consists of:
2 keys and mounting hardware

Material and Finish:
Key - Passivated stainless steel
Screw - Passivated stainless steel
Rivet - Nickel plated brass

Guide Pin Kits

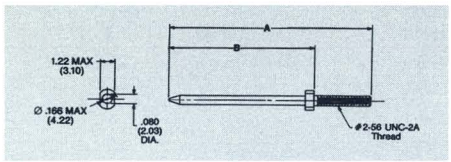
Material and Finish: Pin - Passivated stainless steel
Washer - Passivated stainless steel
Nut - Passivated stainless steel



Part Number	A	B
CHD130405-1	1.125 (28.58)	.475 (12.06)
CHD130405-2	1.212 (30.78)	.562 (14.27)
CHD130405-3	1.400 (35.56)	.750 (19.05)

Static Discharge Guide/Power Pins
(For use in center guide pin holes)

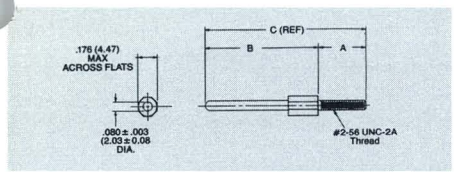
Material: Brass
Finish: X: 30 micro-inches gold over nickel
Y: 50 micro-inches gold over nickel



Part Number	A	B	Finish	Part Number	A	B	Finish
226-0369-000	1.670 (42.42)	1.195 (30.35)	X	226-0369-003	1.500 (38.10)	1.025 (26.04)	Y
226-0369-001	1.625 (41.28)	1.150 (29.21)	X	226-0369-004	1.455 (36.96)	.980 (24.89)	X
226-0369-002	1.500 (38.10)	1.025 (26.04)	X	226-0369-005	1.325 (33.66)	.850 (21.59)	Y
				226-0369-006	1.325 (33.66)	.850 (21.59)	None

Guide/Power Pins
(For use in keying holes)

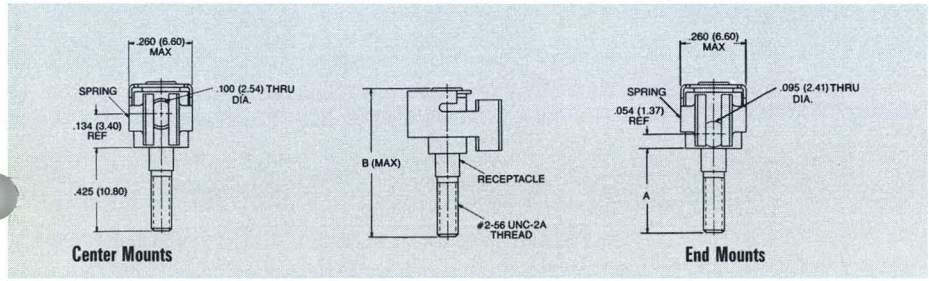
Material: Brass
Finish: X: 30 micro-inches gold over nickel
Y: 50 micro-inches gold over nickel



Part Number	A	B	C	Finish	Part Number	A	B	C	Finish
226-0368-000	.375 (9.52)	1.025 (26.04)	1.400 (35.56)	None	226-0368-005	.475 (12.06)	1.195 (30.35)	1.670 (42.42)	None
226-0368-001	.375 (9.52)	1.195 (30.35)	1.570 (39.88)	None	226-0368-006	.475 (12.06)	1.195 (30.35)	1.670 (42.42)	X
226-0368-002	.375 (9.52)	1.025 (26.04)	1.400 (35.56)	X	226-0368-007	.475 (12.06)	1.025 (26.04)	1.500 (38.10)	None
226-0368-003	.375 (9.52)	1.195 (30.35)	1.570 (39.88)	X	226-0368-008	.475 (12.06)	1.025 (26.04)	1.500 (38.10)	X
226-0368-004	.375 (9.52)	1.025 (26.04)	1.400 (35.56)	Y	226-0368-009	.560 (14.22)	1.025 (26.04)	1.585 (40.26)	None
					226-0368-010	.560 (14.22)	1.025 (26.04)	1.585 (40.26)	X

Guide Pin/Power Receptacle Assembly
(For use in end mounts)

Material: Brass
Finish: 30 micro-inches gold in contact area with gold flash on remainder over nickel



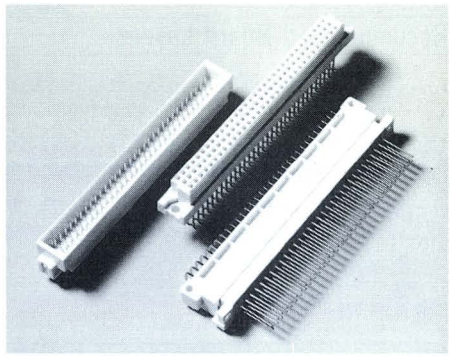
End Mount Part Number	A	B
395-0008-000	.425 (10.80)	.684 (17.37)
395-0008-001	.325 (8.26)	.584 (14.83)
395-0008-002	.285 (7.24)	.544 (13.81)

Center Mount Part Number	B Max.
395-0009-000	.684 (17.37)

Two-Piece DIN Connectors

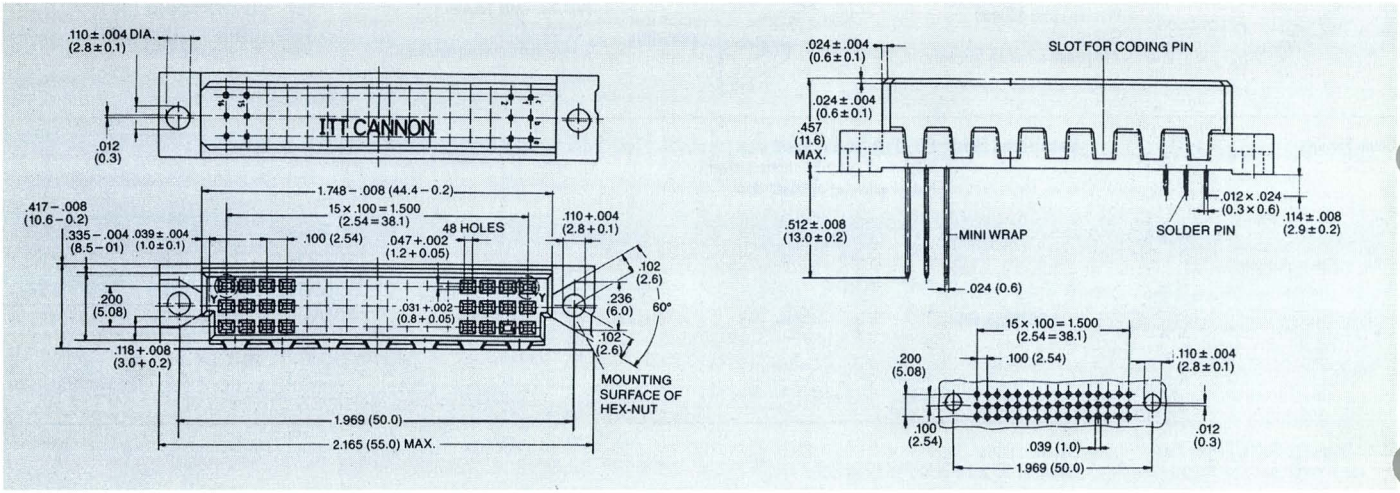
Indirect, two piece .100 (2.54) center connectors are designed for printed circuit boards size 3.93 x 6.30 (100 x 160). They also can be used for multilayer boards as for flat ribbon cable. They comply with the requirements of MIL-C-55302 and European specificatons DIN 41612, VG 95324 and IEC. Three different contact arrangements with cavities for coaxial, HP and/or HV-contact are also available. Polarizing is possible with the loss of a single contact.

Mounting is by screws for both the male and female connectors. A version of the female connector with short solder posts can be soldered directly into PC boards.



DIN Socket Type C Connectors (3 row) Straight

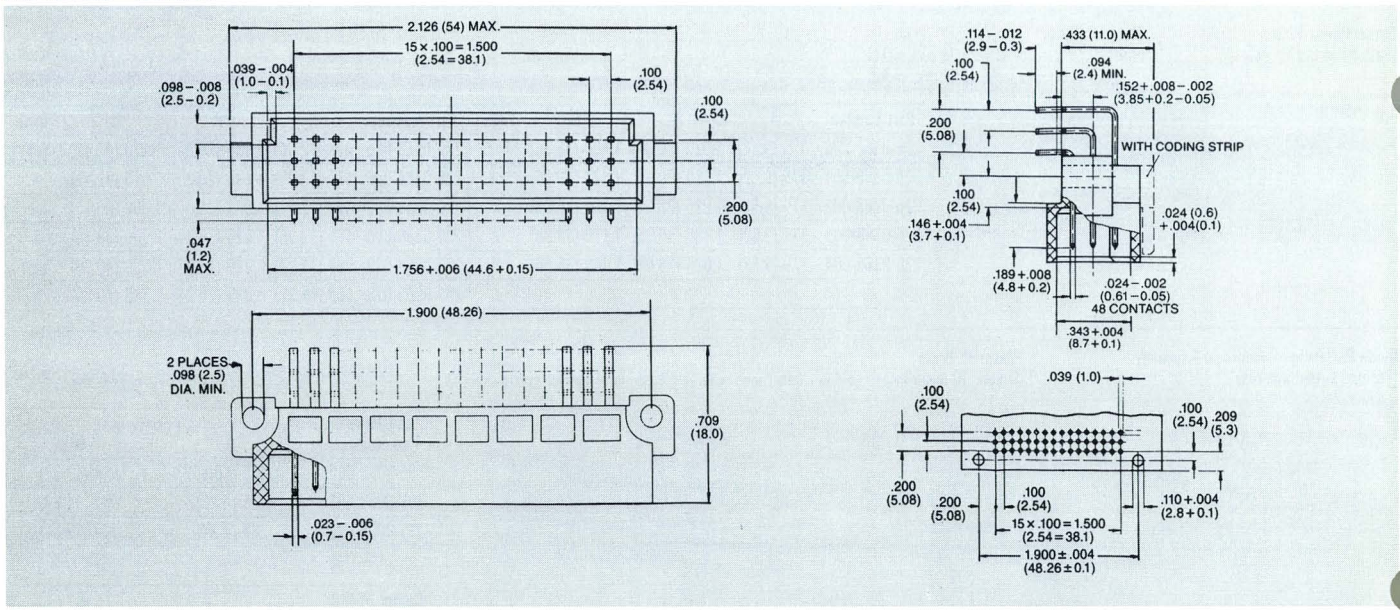
Female Connector – 48 Positions



No. of contacts Loaded	Rows Loaded	PC tail .118 (3.0)	Wire Wrap Tail .512 (13.0)
48	A, B, C	121061-0620	121061-0621

DIN Pin Type C Connectors (3 row) Right Angle

Male Connector – 48 Positions



No. of contacts Loaded	Rows Loaded	Right Angle PC Tail .114 (2.90)
48	A, B, C	121060-0282

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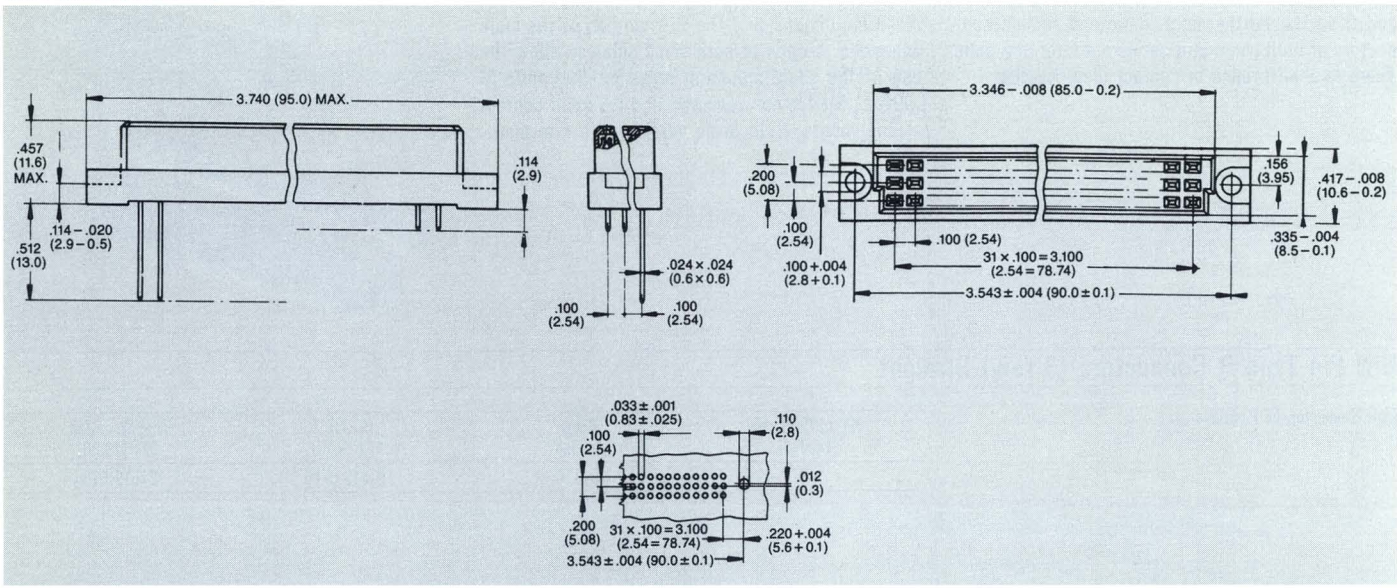
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

DIN Socket Type C Connectors (3 row) Straight

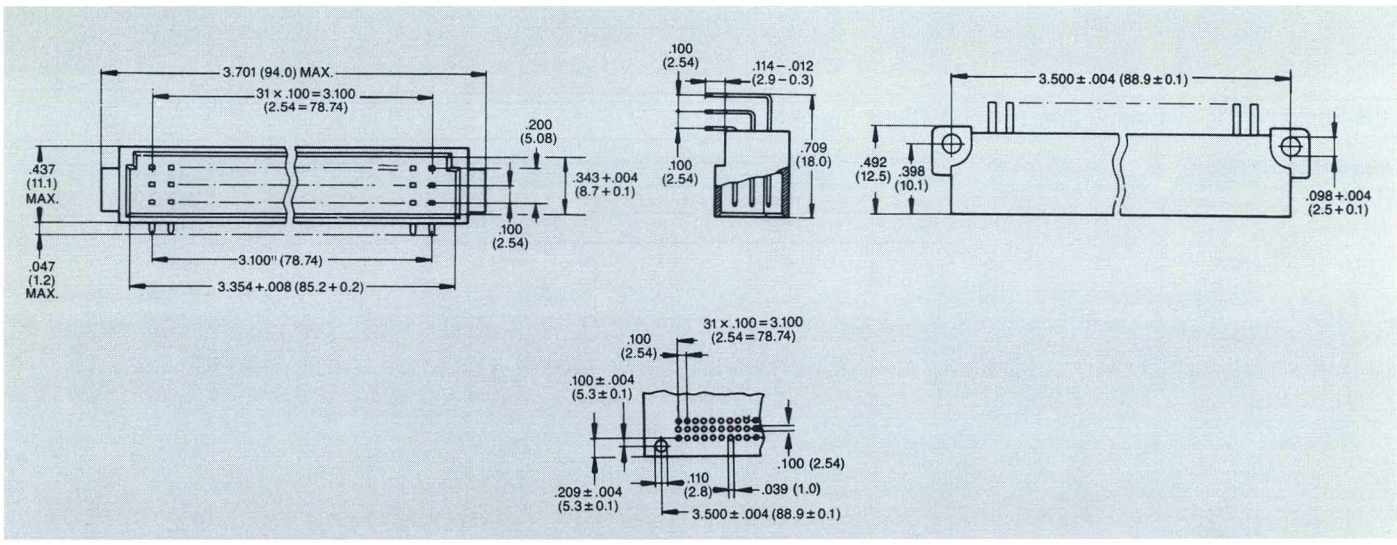
Female Connector, 96 Positions



No. of Contacts Loaded	Rows Loaded	PC Tail .118 (3.00)	Wire Wrap Tail .512 (13.00)
96	A, B, C	121061-0520	121061-0500
64	A, C	121061-0521	121061-0501

DIN Pin Type C Connectors (3 row) Right Angle

Male Connector 96 Positions



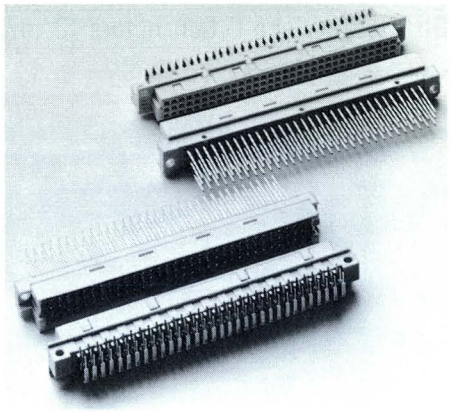
No. of Contacts Loaded	Rows Loaded	Right Angle PC .114 (2.90)
96	A, B, C	121060-0500
64	A, C	121060-0501

Two-Piece DIN Connectors

Indirect, Two Piece .100 (2.54) Center DIN connectors are designed according to the requirements of DIN 41612. Mated pairs of DIN 41612, Q and R series are fully interchangeable with DIN 41612, B and C series. Furthermore, male and female connectors of both connector series are intermateable. There is a difference in contact identification.

Example: contact 1 of DIN type C becomes 32 of DIN type R series. Identification of the contact rows remains the same.

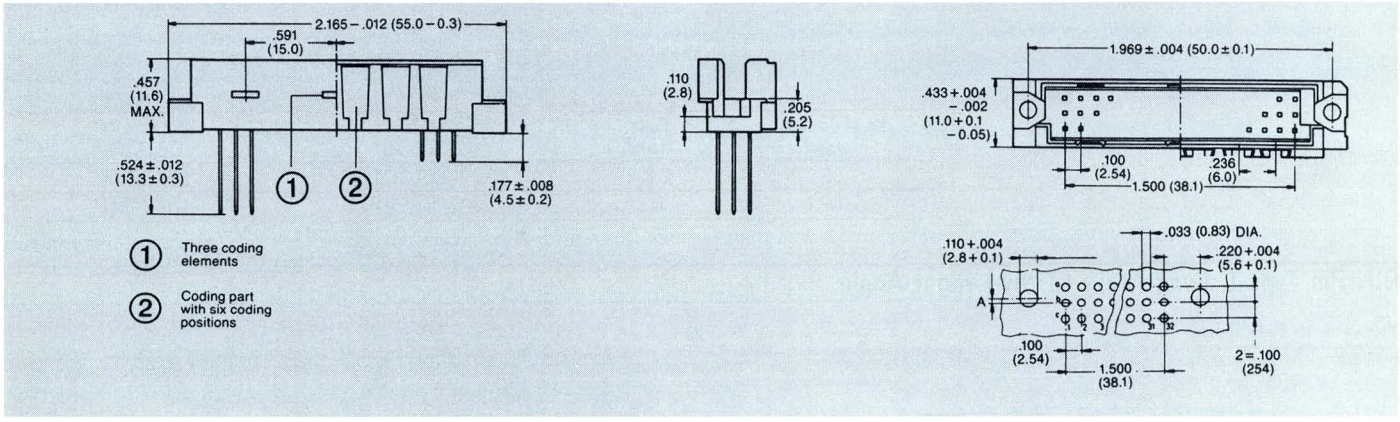
Two basic versions are available, offering different mounting dimensions. The DIN version of the male connector is open at both short sides to allow the use of the same mounting provision (hex nuts M .098 (2.5)) for non-reversed and reversed contact arrangements. Both basic versions are intermateable.



DIN Pin Type R Connectors (3 row) Straight

Male Connector, 48 Positions

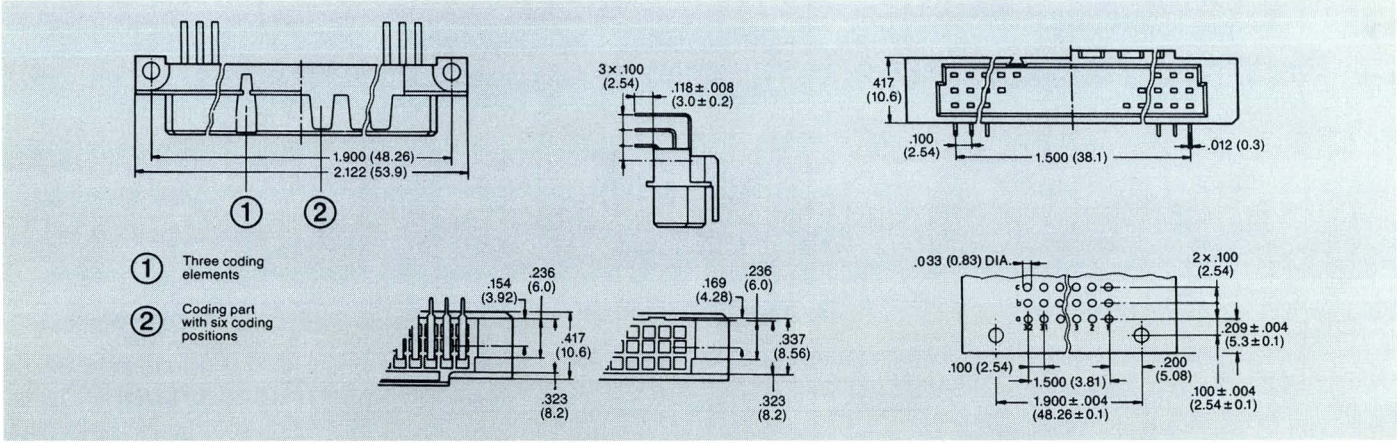
No. of Contacts Loaded	Rows Loaded	PC Tail .177 (4.50)	Wire Wrap Tail .524 (13.30)
48	A, B, C	121619-0715	121619-5150



DIN Socket Type R Connectors (3 row) Right Angle

Female Connector, 48 Positions

No. of Contacts Loaded	Rows Loaded	PC Tail .118 (3.00)
48	A, B, C	121618-0050



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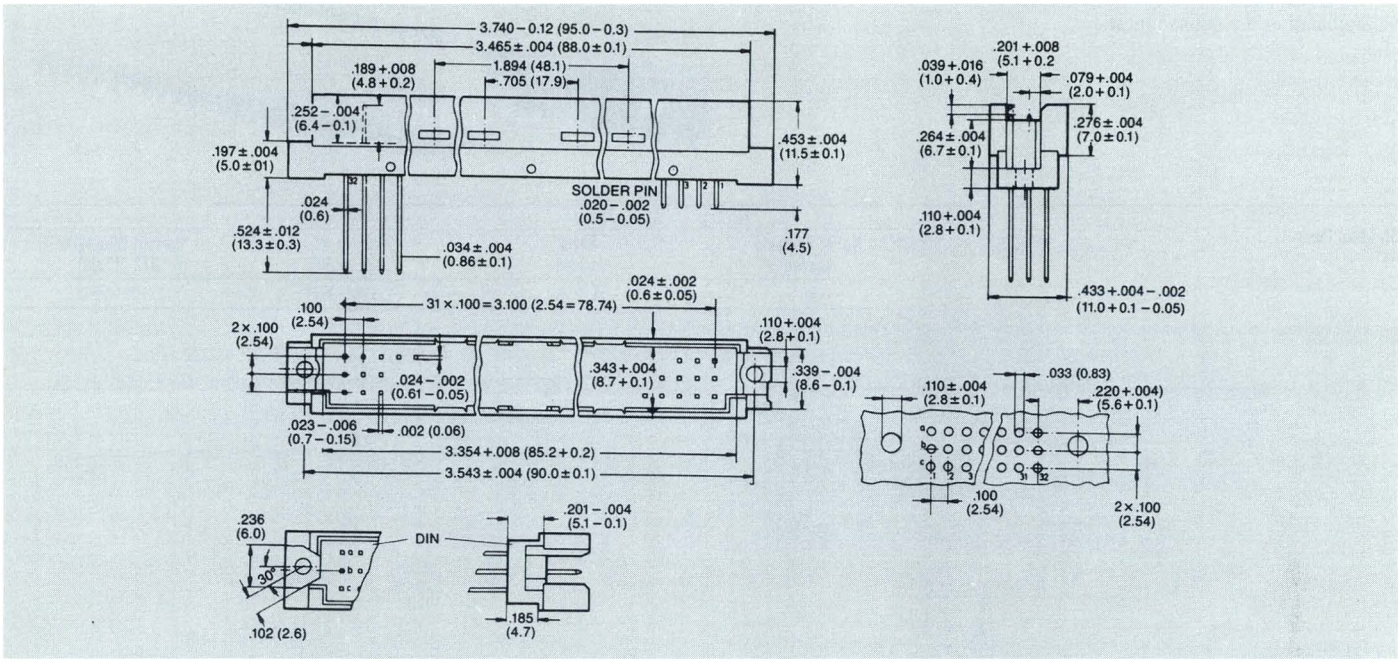
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

DIN Pin Type R Connectors (3 row) Straight

Male Connector, 96 Positions

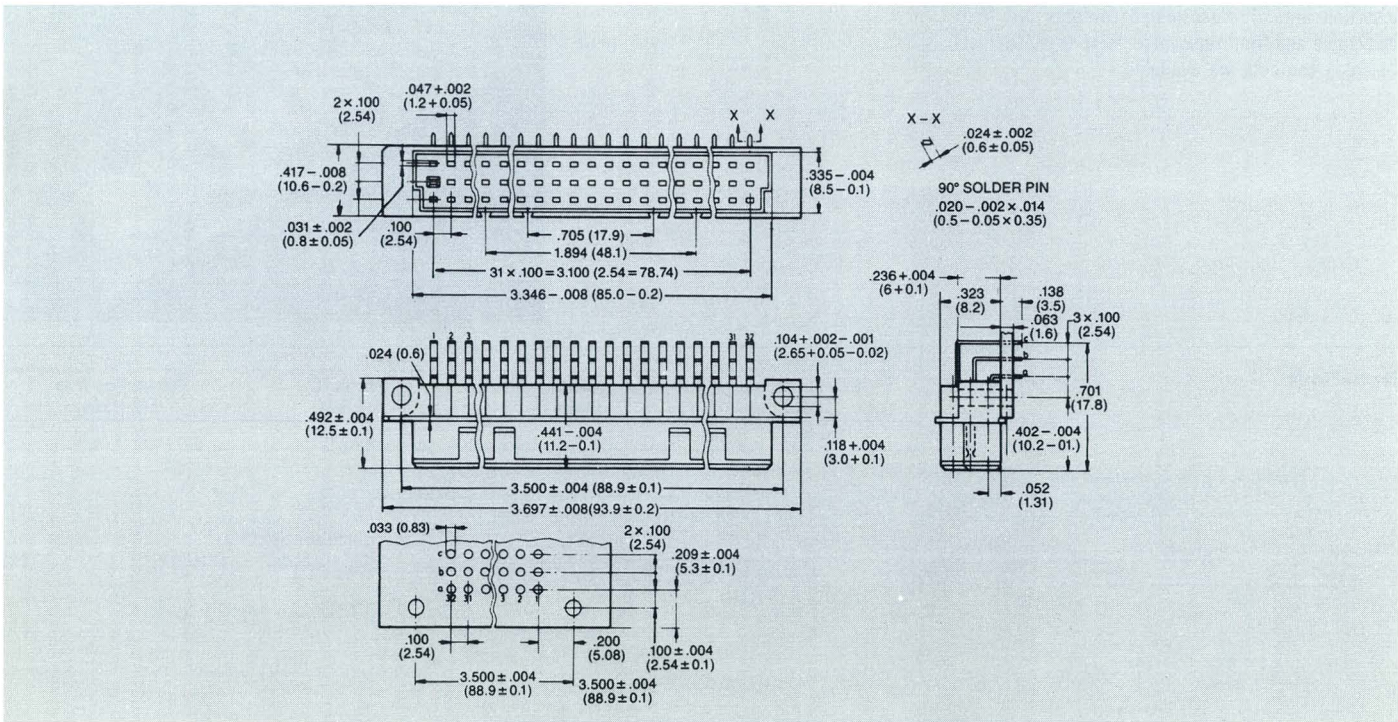
No. of Contacts Loaded	Rows Loaded	PC Tail .177 (4.50)	Wire Wrap Tail .524 (13.30)
96	A, B, C	121619-0510	121619-0000
64	A, C	121619-0515	121619-0005



DIN Socket Type R Connectors (3 row) Right Angle

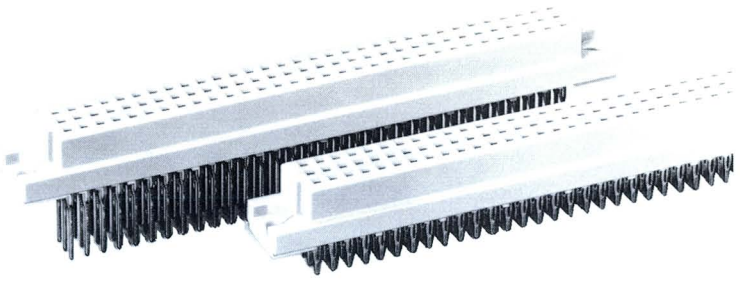
Female Connector, 96 Positions

No. of Contacts Loaded	Rows Loaded	PC Tail .138 (3.50)
96	A, B, C	121618-0000
64	A, C	121618-0005



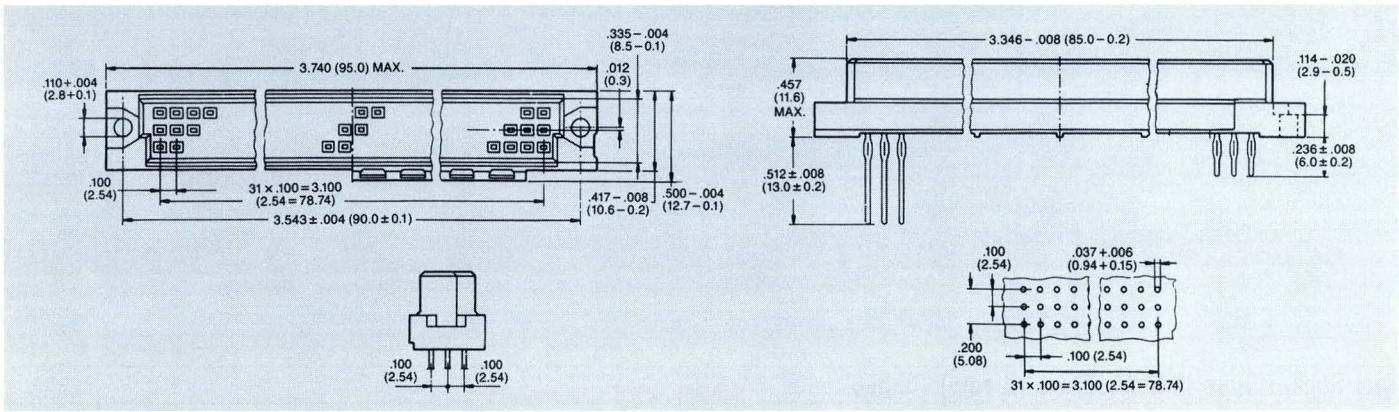
DIN Socket Type C Connectors (3 Row) Straight

Standard DIN female pressfit connectors, 96 and 64 positions, are available with PC and wire wrap terminations. They can be ordered with or without a flange. The mating features of these connectors ensure that daughter cards can only be mated to the motherboard in the defined location.



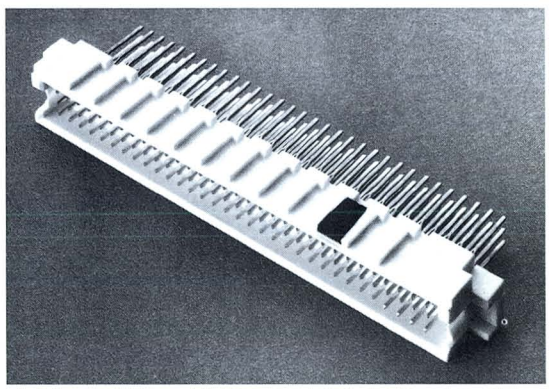
Standard Pressfit

No. of Contacts Loaded	Rows Loaded	Pressfit PC .236 (6.00)	Pressfit Wire Wrap .512 (13.00)
96	A, B, C	121061-0641	121061-0642



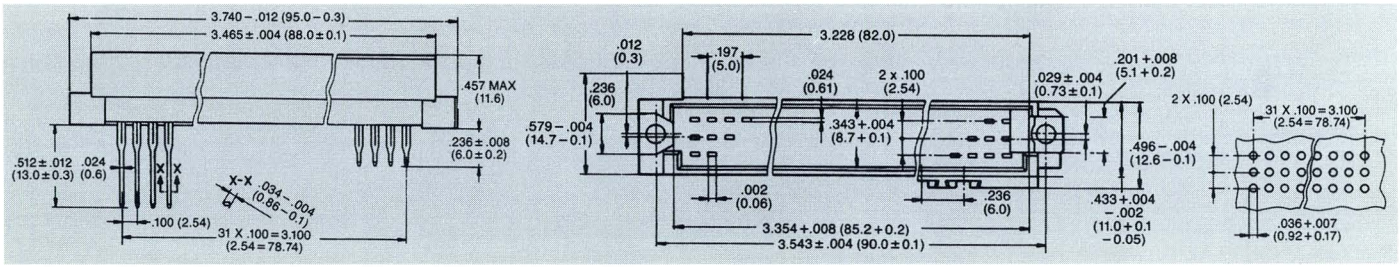
DIN Pin Type R Connectors (3 row) Straight

The Reverse DIN male pressfit connector features compliant pin contacts with an elastic pressfit insertion area. Pre-assembled contacts are front insertable and front removable. First-to-mate/last-to-break contacts are available.



Reverse Pressfit

No. of Contacts Loaded	Rows Loaded	Pressfit PC .236 (6.00)	Pressfit Wire Wrap .512 (13.00)
96	A, B, C	121619-4000	121619-4060



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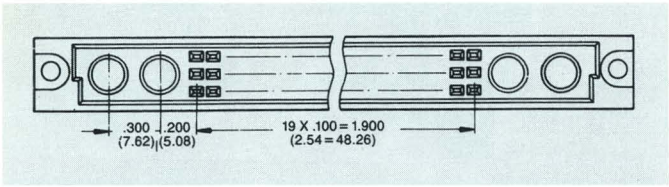
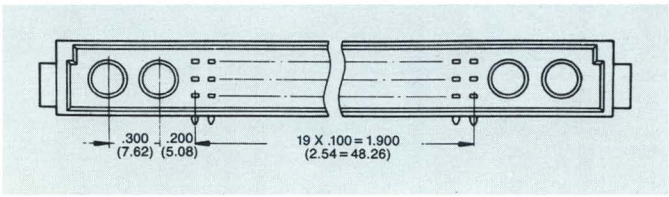
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Combination Socket Type C Connectors (3 row) Straight

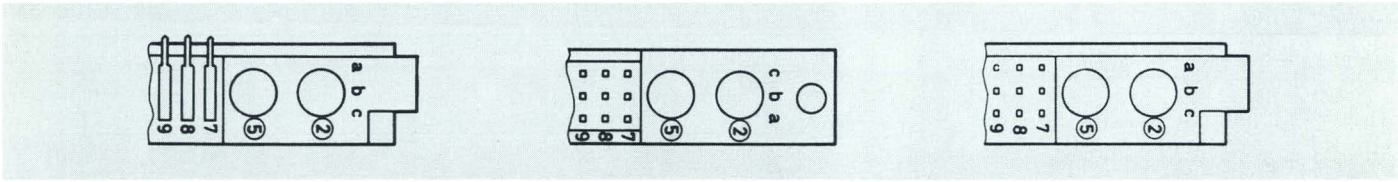


No. of Contacts Loaded	Rows Loaded	P/C Tails .118 (3.0)	Wire Wrap Tails, .512 (13.0)
60 Standard contacts, 4 cavities for coaxial, HP and/or HV-contacts	A, B, C	121061-0091	121061-0048
40 Standard contacts 4 cavities for coaxial, HP, and/or HV contacts	A, C	121061-0199	121061-0159

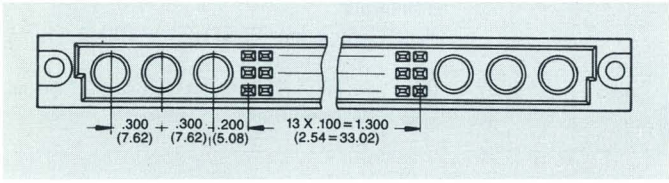
Combination Pin Type C Connectors (3 row) Right Angle



No. of Contacts Loaded	Rows Loaded	Right Angle PC .114 (2.90)
60 Standard contacts, 4 cavities for coaxial, HP and/or HV contacts	A, B, C	121060-0033
40 Standard contacts, 4 cavities for coaxial, HP and/or HV contacts	A, C	121060-0090

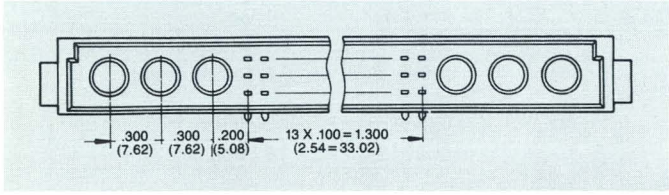


Combination Socket Type C Connectors (3 row) Straight

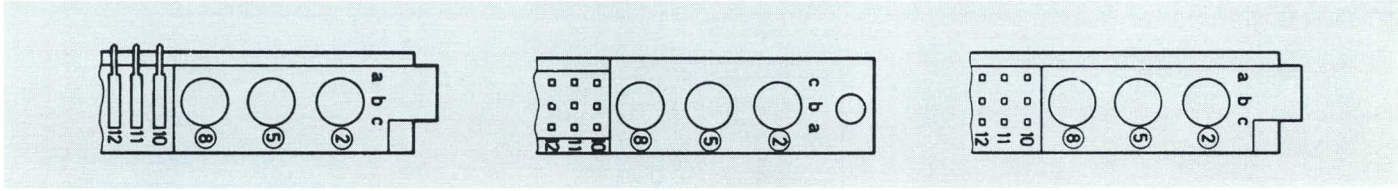


No. of Contacts Loaded	Rows Loaded	PC Tail .118 (3.0)	Wire Wrap Tail .512 (13.0)
42 Standard-contacts, 6 cavities for coaxial, HP and/or HV-contacts	A, B, C	121061-0098	121061-0053
28 Standard-contacts, 6 cavities for coaxial, HP and/or HV contacts	A, C	121061-0178	121061-0146

Combination Pin Type C Connectors (3 row) Right Angle



No. of Contacts Loaded	Rows Loaded	Right Angle PC Tail .114 (2.90)
42 Standard-contacts, 6 cavities for coaxial, HP and/or HV contacts	A, B, C	121060-0036
28 Standard-contacts, 6 cavities for coaxial, HP and/or HV contacts	A, C	121060-0089

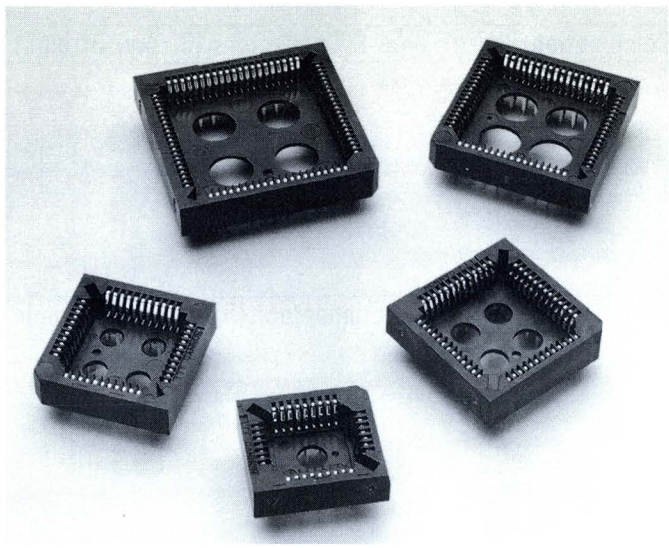


ITT Cannon's LCS Sockets accommodate JEDEC Type A Plastic Leaded Chip-Carrier (PLCC) devices with 32, 44, 52, 68 and 84 leads. The unique design of the contact supplies sufficient force on the PLCC to hold it firmly in place without the need for a retention clip (see Contact Design).

ITT Cannon's LCS Socket is designed for plastic chip carriers having .050 center spacing, tin plated and J bend leads, utilizing a 4 sided flat package called PCC. The package has been standardized by JEDEC as type A PLCC.

Both the .050 x .100 (1.27 x 2.54) staggered pattern for ease of PC conductor routing and the .100 x .100 (2.54 x 2.54) square grid to accept the universal PCB hole patterns are available in all sizes.

Plastic Leaded Chip Carrier



How to Order

LCS–**–**

SERIES PREFIX

NUMBER OF CONTACTS

TERMINATION

SERIES PREFIX
LCS

NUMBER OF CONTACTS
32, 44, 52, 68 and 84

TERMINATION
None: **Staggered**–.050 (1.27) x .100 (2.54) pin spacing PC tail
02: **In Line**–.100 square (2.54 x 2.54) pin spacing PC tail

Standard Data

MATERIALS AND FINISHES

Insulator	Black Thermoplastic UL 94V-0 Rated
Contact	Copper Alloy
Contact Finish	SnPb

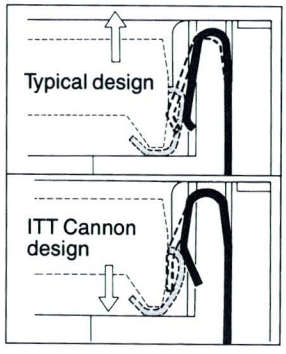
MECHANICAL DATA

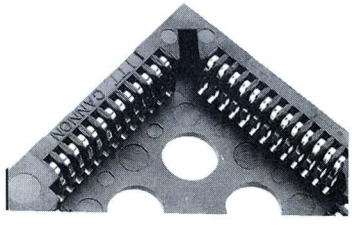
Termination	Solder Pin
Temperature Range	−55°C to +85°C

ELECTRICAL DATA

Operating Voltage	100 VAC rms; 150 VAC
Rated Current	1 Amp
Insulation Resistance	100mΩ min.
Dielectric withstanding voltage	600 VAC rms (1 min.)
Contact Resistance	30mΩ max.
Capacitance	5pF max.

Contact Design





ITT Cannon's copper alloy contact provides uniform retention force. The carrier inserted into the socket receives vertical and downward force from the contacts so that the carrier is firmly held and cannot be easily displaced or dislodged.

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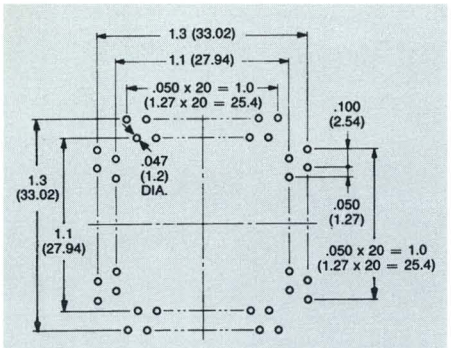
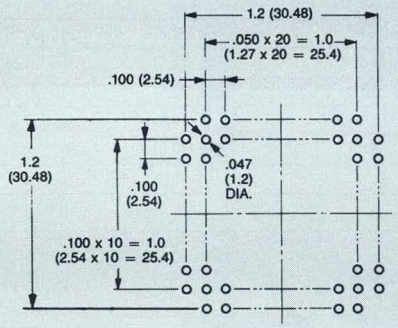
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

PCB Layouts

84 Pins

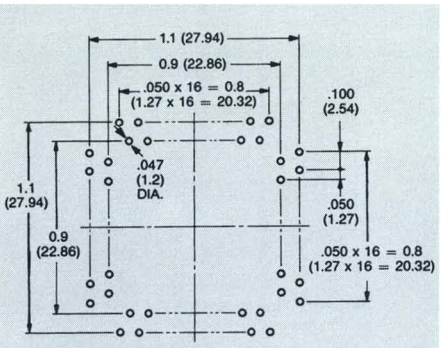


LCS-84

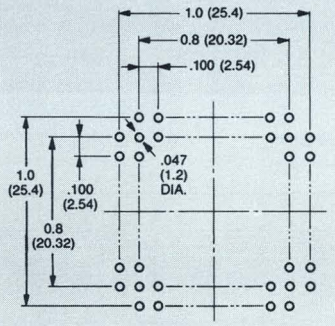


LCS-84-02

68 Pins

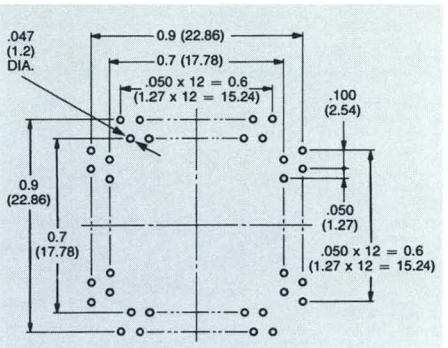


LCS-68

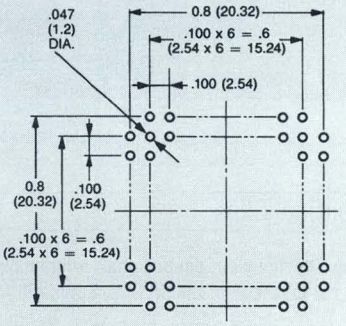


LCS-68-02

52 Pins

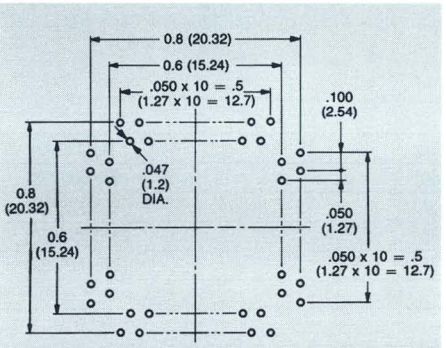


LCS-52

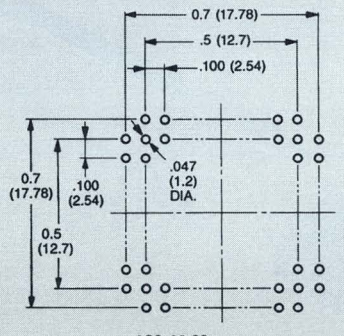


LCS-52-02

44 Pins

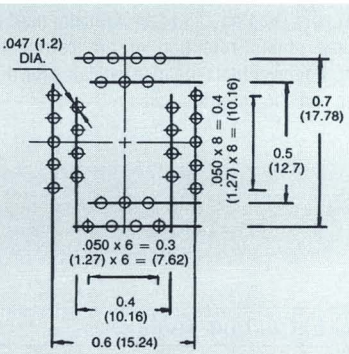


LCS-44

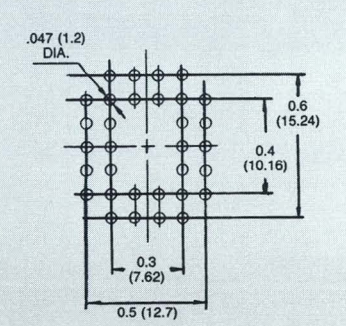


LCS-44-02

32 Pins

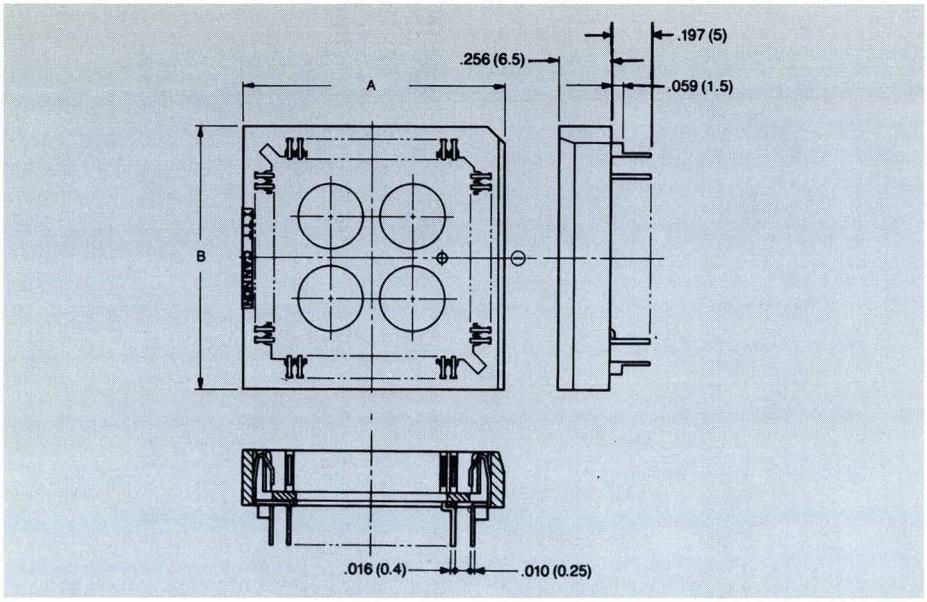


LCS-32



LCS-32-02

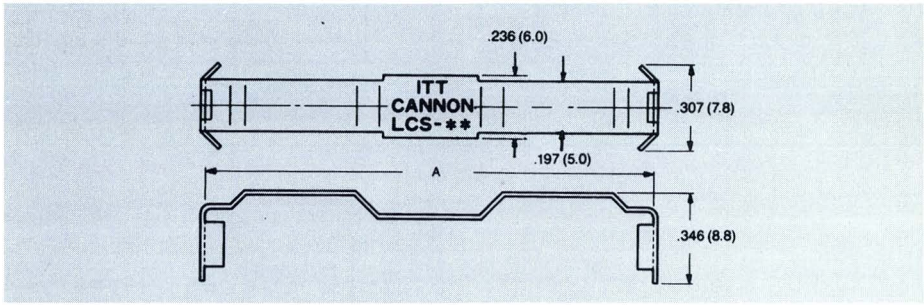
Dimensions



Part Number	A	B
LCS-32-**	.860 (22.0)	.740 (19.0)
LCS-44-**	.965 (24.5)	.965 (24.5)
LCS-52-**	1.060 (27.0)	1.060 (27.0)
LCS-68-**	1.260 (32.0)	1.260 (32.0)
LCS-84-**	1.500 (38.0)	1.500 (38.0]

Retention Clips

Comparatively wide dimensional tolerances have been established in the JEDEC Standard for the PCC. The J-bend leads also vary by the PCC manufacturers. Due to these variations, a retention clip has been developed to properly hold the carriers (that may be out of JEDEC Standard) in position to eliminate dislodging during shock and vibration. This simple snap on clip is an optimum method for providing proper retention of the carrier to the socket. Removal tools are also available for the chip carrier and the retention clip.



Size	Part Number	A
44	990-0020-901	1.32 (33.4)
52	990-0020-902	1.46 (37.0)
68	990-0020-903	1.73 (44.0)
84	990-0020-904	2.07 (52.5)

PLCC Extraction Tools

PLCC Extraction Tools

Size	Part Number
44	990-0020-905
52	990-0020-906
68	990-0020-907
84	990-0020-908

Retention Cover Extraction Tool-
P/N 990-0020-909

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Rugged Circular Connectors With Quick Connect/Disconnect ACME Threads

K standard circular connectors with special Acme thread coupling are rugged, lightweight and economical. These connectors are extremely versatile, with eight shell styles and seven shell sizes accommodating more than 70 contact arrangements, in a variety of amperage and voltage capacities.

K connectors have made the quick disconnect concept a standard in the industry, saving time and money in servicing, assembly, testing and inspection. K connectors are used on aircraft, transmitters, instrument panels, Geiger counters, television cameras, potentiometers, cathode ray recorders and other equipment. The general basic K series connectors are shown as follows:

- **K** The standard K coupling nut has **internal** threads and;
- **RK** The RK employs a reverse coupling feature, with the rotating coupling nut having **external** threads. (Note: K and RK connectors do not mate.)

Standard Data

STANDARD MATERIALS AND FINISHES

Shell – Aluminum alloy, cadmium plate

Insulator – Thermosetting plastic or fabricated phenolic

Contacts – Copper alloy, silver plate (gold plate for size 20 contact only)

ELECTRICAL DATA

Number of contacts – 2 thru 110

Wire Size / Amps – #20 – 5 amps
#16 – 10 amps
#14 – 15 amps
#10 – 30 amps
#8 – 40 amps
#6 – 60 amps
#4 – 80 amps

Other Contacts Available – Coax. — Minicoax must be purchased separately (see pages 256-257)

Termination – Solder pot

MECHANICAL FEATURES

Coupling – K – Special Acme thread coupling nut
RK – Reverse coupling nut

Temperature Rating: −55°C to +125°C

Durability: 500 mating cycles

MATING GUIDE

	K-21	K-22	K-23	K-24	K-31	K-32
K-21		●		●		●
K-22	●		●		●	
K-23		●		●		●
K-24	●		●		●	
K-31		●		●		
K-32	●		●			

How to Order

R W K - 6 - 22 C - 5/8″

REVERSE COUPLING
SHELL SIZE
SERIES PREFIX
CONTACT ARRANGEMENT
SHELL STYLE
CABLE CLAMP
CLAMP CAPACITY

REVERSE COUPLING

R – Pin insert typical in plug, socket insert typical in receptacle and coupling nut reversed; will not mate with K connectors.

SHELL SIZE

W – 7/8″ threaded coupling dia.
G – 1-3/16″ threaded coupling dia.
S – 1-5/16″ threaded coupling dia.
N – 1-9/16″ threaded coupling dia.
F – 1-13/16″ threaded coupling dia.
I – 2-1/4″ threaded coupling dia.
L – 2-1/2″ threaded coupling dia.

SERIES PREFIX

K – ITT Cannon Prefix

CONTACT ARRANGEMENT

See pages 347-349

SHELL STYLE

21 – Straight plug, socket insert
22 – Straight plug, pin insert
23 – 90° plug, socket insert
24 – 90° plug, pin insert
31S – Small flange receptacle, socket insert
31SL – Large flange receptacle, socket insert
32S – Small flange receptacle, pin insert
32SL – Large flange receptacle, pin insert

CABLE CLAMP

C – Cable clamp

CLAMP CAPACITY

See pages 350-352

POLARIZATION

See page 349

Contact Arrangements (By number of contacts)

SPACING/VOLTAGE CODE

There shall be no evidence of breakdown when the test voltages indicated below are applied, for a period of one minute, between the contacts and between the shell and the contacts with spacings as noted below:

Laboratory Conditions

Ambient Temperature	23°C to 27°C
Relative Humidity	69% to 73%
Barometric Pressure	29.70″ to 29.75″
Insert Material	Phenolic XXX-P or molded melamine

Code	Contact Spacing	Test Voltage 60 cps. (ac rms)
A	1/64	540 volts
B	1/32	1000 volts
C	3/64	1300 volts
D	1/16	1700 volts
E	5/64	2050 volts
F	3/32	2350 volts
G	7/64	2600 volts
H	1/8	2900 volts

Code	Contact Spacing	Test Voltage 60 cps. (ac rms)
J	9/64	3050 volts
K	5/32	3250 volts
L	11/64	3450 volts
M	3/16	3650 volts
N	13/64	3850 volts
O	7/32	4050 volts
P	15/64	4250 volts
Q	1/4	4420 volts
R	9/32	4780 volts

Code	Contact Spacing	Test Voltage 60 cps. (ac rms)
S	19/64	4940 volts
T	5/16	5100 volts
U	23/64	5580 volts
V	3/8	5750 volts
W	25/64	5890 volts
X	13/32	6020 volts
Y	7/16	6300 volts
Z	1/2	6800 volts

CONTACT ARRANGEMENTS

Contact Arr. No.	Contacts	Wire Size	Amps	Code	Page No.
2 CONTACTS					
NK-P2	2	#6	60	L	348
WK-M2	2	#16	10	F	347
GK-V2	2	#14	15	L	347
SK-S2	2	#4	80	E	347
3 CONTACTS					
WK-3	3	#14	15	D	347
WK-C3	2	#10	30	C	347
	1	#16	10	C	
GK-C3	2	#6	60	C	347
	1	#14	15	C	
GK-E3	3	#8	40	C	347
GK-S3	3	#10	30	E	347
SK-L3	3	#10	30 grounding unit	C	347
NK-E3	3	#4	80	F	348
4 CONTACTS					
WK-4	4	#16	10	C	347
WK-S4	2	#16	10	C	347
	2	#10	30	C	
GK-4	4	#10	30	C	347
GK-C4	2	#8	40	E	347
	2	#14	15	E	
NK-P4	4	#6	60	F	348
5 CONTACTS					
WK-5	5	#16	10	C	347
WK-S5	1	#10	30	C	347
	4	#16	10	C	
GK-G5	1	#16	10	C	347
	4	#10	30	C	
GK-M5	2	#10	30	E	347
	3	#16	10	E	
SK-5	5	#10	30	E	347
6 CONTACTS					
WK-6	6	#16	10	C	347
WK-M6	6	#16	10	B	347
SK-6	6	#10	30	D	347
7 CONTACTS					
WK-A7	7	#16	10	C	347
GK-R7	2	#14	15	7–J	347
	5	#16	10	1, 6–C	
SK-M7	4	#10	30	E	
	3	#16	10	E	347
8 CONTACTS					
WK-8	8	#20	5	E	347
GK-8	8	#14	15	C	347
GK-C8	5	#16	10	C	347
	3	#10	30	C	
GK-S8	4	#16	10	C	347
	4	#10	30	C	
SK-A8	7	#14	15	C	347
	1	#6	60	C	
NK-D8	8	#14	15	G	348
NK-L8	4	#14	15	E	348
	4	#8	40	E	
NK-M8	8	#10	30	E	348
9 CONTACTS					
GK-9	9	#16	10	D	347
NK-P9	9	#16	10	1-3, 5-7–G 4–P 8–E 9–L	348
10 CONTACTS					
SK-M10	2	#10	30	E	347
	8	#16	10	E	
11 CONTACTS					
NK-L11	2	#10	30	E	348
	8	#14	15	E	
	1	#16	10	E	
12 CONTACTS					
GK-12	12	#16	10	C	347
SK-D12	4	#10	30	C	347
	8	#16	10	C	
NK-12	12	#14	15	E	348
FK-12	12	#10	30		348
14 CONTACTS					
FK-B14	14	#14	15	1-13–F 14–W	348
FK-R14	16	#16	10	11-14–P 1-14–E	348
15 CONTACTS					
NK-L15	15	#14	15	D	348
16 CONTACTS					
SK-C16	2	#10	30	C	347
	14	#16	10	C	
17 CONTACTS					
NK-V17	6	#10	30	C	348
	11	#16	10	C	
FK-L17	2	#10	30	17–V	348
	15	#14	15	1-16–C	
19 CONTACTS					
SK-19	19	#16	10	C	347
FK-19	19	#14	15	E	348
20 CONTACTS					
NK-L20	7	#14	15	1-13, 15, 16–C	348
	13	#16	10	14,17-20–E	
FK-L20	7	#10	30	E	348
	13	#16	10	E	
FK-W20	20	min. coax.		B	348
21 CONTACTS					
NK-L21	4	#10	30	C	348
	17	#16	10	C	
FK-21	17	#16	10	D	348
	2	#8	40		
	2	#4	80		
23 CONTACTS					
NK-L23	2	#10	30	C	348
	2	#14	15	C	
	19	#16	10	C	
24 CONTACTS					
SK-24	24	#20	5	D	347
FK-24	23	#16	10	1-11–B 12-23–E 24–H	348
	1	coax.			
FK-V24	1	#4	80	C	348
	2	#10	30	C	
	21	#16	10	C	
LK-R24C	21	#14	15	1, 2, 3, 5-8 13, 15, 20, 22 23, 24–C	349
	3	coax.		4, 9-12, 14 16-21–G	
26 CONTACTS					
IK-26	26	#14	15	E	349
27 CONTACTS					
NK-27	27	#16	10	C	348
32 CONTACTS					
FK-27	32	#16	10	1, 2–H 3-32–D	348
FK-C32	32	#16	10	C	348
FK-L32	7	#10	30	C	348
	25	#16	10	C	
36 CONTACTS					
IK-A36	21	#16	10	1-26–C	349
	5	#14	15	29-36–D	
	10	#10	30		
37 CONTACTS					
FK-37	37	#16	10	C	348
46 CONTACTS					
FK-46	46	#16	10	C	348
53 CONTACTS					
LK-A53	4	#10	30	1-49–C	349
	49	#16	10	50-53–G	
68 CONTACTS					
LK-68	68	#16	10	D	349
75 CONTACTS					
FK-75	75	#20	5	C	348
81 CONTACTS					
LK-81	81	#16	10	C	349
110 CONTACTS					
LK-110	110	#20	5	B	349

ITT Cannon
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Dimensions are shown in inches.
Dimensions subject to change.

Contact Arrangements

Front view, pin inserts

See page 346 for contact spacing/voltage rating.

SHELL SIZE WK

	WK-M2
Contacts	2
Wires	2-#16
Contact Spacing	3/32

	WK-3
Contacts	3
Wires	3-#14
Contact Spacing	1/16

	WK-C3
Contacts	3
Wires	1-#16(3) 2-#10 (1 & 2)
Contact Spacing	3/64

	WK-4
Contacts	4
Wires	4-#16
Contact Spacing	3/64

	WK-S4
Contacts	4
Wires	2-#16 (1 & 3) 2-#10 (2 & 4)
Contact Spacing	3/64

	WK-5
Contacts	5
Wires	5-#16
Contact Spacing	3/64

	WK-S5
Contacts	5
Wires	4-#16 (1-4) 1-#10 (5)
Contact Spacing	3/64

	WK-M6
Contacts	6
Wires	6-#16
Contact Spacing	1/32

	WK-6
Contacts	6
Wires	6-#16
Contact Spacing	3/64

	WK-A7
Contacts	7
Wires	7-#16
Contact Spacing	3/64

	WK-8
Contacts	8
Wires	8-#20
Contact Spacing	5/64

SHELL SIZE GK

	GK-V2
Contacts	2
Wires	2-#14
Contact Spacing	11/64

	GK-C3
Contacts	3
Wires	1-#14 (1) 2-#6 (2 & 3)
Contact Spacing	3/64

	GK-E3
Contacts	3
Wires	3-#8
Contact Spacing	3/64

	GK-S3
Contacts	3
Wires	3-#10
Contact Spacing	5/64

	GK-4
Contacts	4
Wires	4-#10
Contact Spacing	3/64

	GK-C4
Contacts	4
Wires	2-#14 (1 & 2) 2-#8 (3 & 4)
Contact Spacing	5/64

	GK-G5
Contacts	5
Wires	1-#16 (5) 4-#10 (1-4)
Contact Spacing	3/64

	GK-M5
Contacts	5
Wires	3-#16 (1, 3, & 5) 2-#10 (2 & 4)
Contact Spacing	5/64

	GK-R7
Contacts	7
Wires	5-#16 (1, 2, 5, 6 & 7) 2-#14 (3 & 4)
Contact Spacing	9/64 (7) 3/64 (1-6)

SHELL SIZE SK

	GK-8
Contacts	3
Wires	8-#14
Contact Spacing	3/64

	GK-C8
Contacts	8
Wires	5-#16 (2, 3, 5, 6 & 8) 3-#10 (1, 4, & 7)
Contact Spacing	3/64

	GK-S8
Contacts	8
Wires	4-#16 (2, 3, 5 & 6) 4-#10 (1, 4, 7 & 8
Contact Spacing	3/64

	GK-9
Contacts	9
Wires	9-#16
Contact Spacing	1/16

	GK-12
Contacts	12
Wires	12-#16
Contact Spacing	3/64

	SK-S2
Contacts	2
Wires	2-#4
Contact Spacing	5/64

	SK-L3
Contacts	3
Wires	skt. contact 1-2 (#10) grd. to skt. contact G (#10) when pin insert is removed
Contact Spacing	3/64

	SK-5
Contacts	5
Wires	5-#10
Contact Spacing	5/64

	SK-6
Contacts	6
Wires	6-#10
Contact Spacing	1/16

	SK-M7
Contacts	7
Wires	3-#16 (2, 6 & 7) 4-#10 (1, 3, 4 & 5)
Contact Spacing	5/64

	SK-A8
Contacts	8
Wires	7-#14 (1-7) 1-#6 (8)
Contact Spacing	3/64

	SK-M10
Contacts	10
Wires	8-#16 (2, 4-10) 2-#10 (1 & 3)
Contact Spacing	5/64

	SK-D12
Contacts	12
Wires	8-#16 (1, 3, 5, 7, 9-12) 4-#10 (2, 4, 6 & 8)
Contact Spacing	3/64

	SK-C16
Contacts	16
Wires	14-#16 (1-12, 14, 16) 2-#10 (13 & 15)
Contact Spacing	3/64

	SK-19
Contacts	19
Wires	19-#16
Contact Spacing	3/64

	SK-24
Contacts	24
Wires	24-#20
Contact Spacing	1/16

Contact Arrangements (Continued)

Front view, pin inserts

See page 346 for contact spacing/voltage rating.

SHELL SIZE NK

	NK-P2	NK-E3	NK-P4	NK-D8	NK-L8	NK-M8
Contacts	2	3	4	8	8	8
Wires	2-#6	3-#4	4-#6	8-#14	4-#14 (1, 3, 6, 8) 4-#8 (2, 4, 5, 7)	8-#10
Contact Spacing	11/64	3/32	5/64	7/64	5/64	5/64

	NK-P9	NK-L11	NK-12	NK-N14	NK-L15	NK-V17
Contacts	9	11	12	14	15	17
Wires	9-#16	1-#16 (1) 8-#14 (2-9) 2-#10 (10 & 11)	12-#14	9-#16 (1-3, 5, 6, 9, 10, 12, 14) 5-#10 (4, 7, 8, 11, 13)	15-#14	11-#16 (1-11) 6-#10 (12-17)
Contact Spacing	15/64 (4), 11/64 (9) 7/64 (1-3, 5-7) 5/64 (8)	5/64	5/64	5/64	1/16	3/64

	NK-L20	NK-L21	NK-L23	NK-27	FK-12	FK-B14
Contacts	20	21	23	27	12	14
Wires	7-#14 (2, 11, 14, 17-20) 13-#16 (1, 3-10, 12, 13, 15, 16)	17-#16 (5-21) 4-#10 (1-4)	19-#16 (5-23) 2-#14 (3, 4), 2-#10 (1, 2)	27-#16	12-#10	14-#14
Contact Spacing	3/64 (1-13, 15, 16) 5/64 (14, 17-20)	3/64	3/64	3/64	7/64	3/32 (1-13) 25/64 (14)

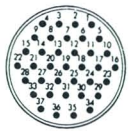
SHELL SIZE FK

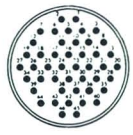
	FK-R14	FK-L17	FK-19	FK-L20	FK-W20
Contacts	14	17	19	20	20
Wires	14-#16	15-#14 (1-14 & 17) 2-#10 (15 & 16)	19-#14	13-#16 (1-13) 7-#10 (14-20)	20 min. coax.
Contact Spacing	5/64 (1-10) 15/64 (11-14)	3/8 (17) 3/64 (1-16)	5/64	5/64	See pages 256-257 1/32

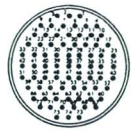
	FK-21	FK-24	FK-V24	FK-32	FK-C32
Contacts	21	24	24	32	32
Wires	17-#16 (1, 2, 5-7, 10-21) 2-#8 (3, 4) 2-#4 (8, 9)	23-#16 (1-23) 1-#16 coax. for RG-58/U cable	21-#16 (1-21) 2-#10 (22 & 23), 1-#4 (24)	32-#16	32-#16
Contact Spacing	1/16	1/32 (1-11) 5/64 (12-23), 1/8 (24)	3/64	1/8 (1-2) 1/16 (3-32)	3/64

Contact Arrangements (Continued)

Front view, pin inserts







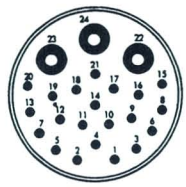
	FK-L32	FK-37	FK-46	FK-75
Contacts	32	37	46	75
Wires	25-#16 (1-3, 5-8, 10-13, 15-20, 22-25, 27, 28, 30, 31) 7-#10 (4, 9, 14, 21, 26, 29, 32)	37-#16	46-#16	75-#20
Contact Spacing	3/64	3/64	3/64	3/64

See page 346 for contact spacing/voltage rating.

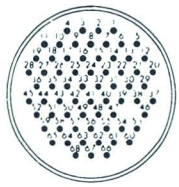
SHELL SIZE IK

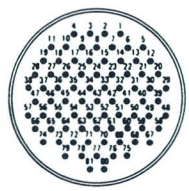
	IK-26	IK-A36
Contacts	26	36
Wires	26-#14	21-#16 (1-17, 19-22) 5-#14 (18, 23-26), 10-#10 (27-36)
Contact Spacing	5/64	3/64 (1-26) 1/16 (29-36)

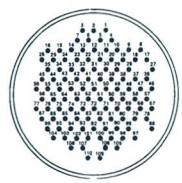
SHELL SIZE LK



	LK-R24C
Contacts	24
Wires	21-#14 (1-21), 3-#16 coax. (22-24) for RG-7/U cable
Contact Spacing	3/64 (1-3, 5-8, 13, 15, 20, 22-24) 7/64 (4, 9-12, 14, 16-19, 21)



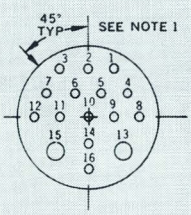




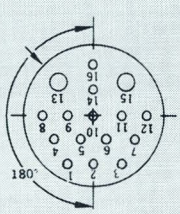
	LK-A53	LK-68	LK-81	LK-110
Contacts	53	68	81	110
Wires	49-#16 (1-49) 4-#10 (50-53)	68-#16	81-#16	110-#20
Contact Spacing	3/64 (1-49) 7/64 (50-53)	1/16	3/64	1/16

Polarization Positions

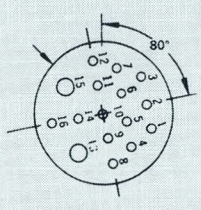
Face View – Pin Insert. (As viewed from engaging end.)



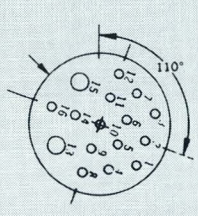
Position N



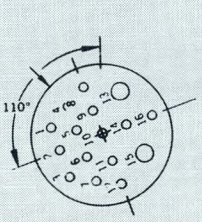
Position V



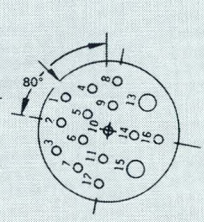
Position W



Position X



Position Y

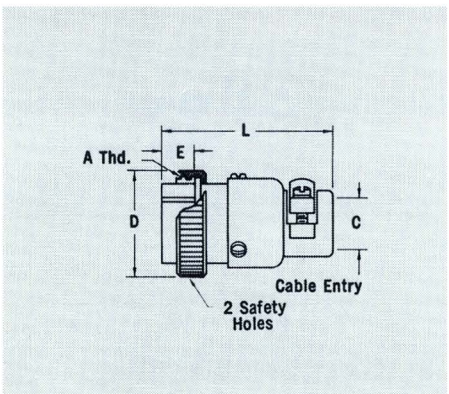


Position Z

NOTES:
1. Shell polarizing means is indicated by arrow at 45° and will remain constant regardless of insert rotation.
2. Insert to be rotated within the shell to the required position as viewed from engaging end.
3. For alternate positions not shown consult factory.
4. For alternate positions available for each layout consult factory.
5. Example of how to order: GK-12-21C-½ Pos X

Straight Plug

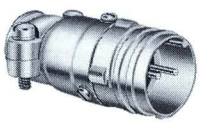
Socket Inserts **K-21C (Cable Clamp)**

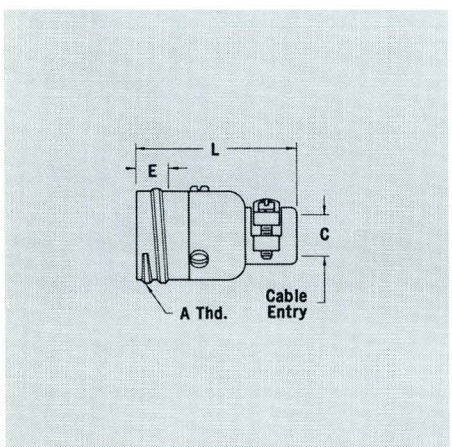


Part Number	C DIA ±1/64	D DIA ±1/64	E ±1/64	L ±3/64	A THD.
WK-(*)-21C-1/4″	15/64	1- 3/64	7/16	2- 3/32	7/8-6
WK-(*)-21C-5/16″	11/32	1- 3/64	7/16	2- 3/32	7/8-6
WK-(*)-21C-3/8″	13/32	1- 3/64	7/16	2- 3/32	7/8-6
WK-(*)-21C-1/2″	17/32	1- 3/64	7/16	2- 3/32	7/8-6
WK-(*)-21C-5/8″	21/32	1- 3/64	7/16	2- 3/32	7/8-6
GK-(*)-21C-1/2″	17/32	1-23/64	7/16	2- 3/16	1- 3/16-6
GK-(*)-21C-5/8″	21/32	1-23/64	7/16	2- 3/16	1- 3/16-6
SK-(*)-21C-1/2″	17/32	1-15/32	7/16	2- 3/16	1- 5/16-6
SK-(*)-21C-5/8″	21/32	1-15/32	7/16	2- 3/16	1- 5/16-6
SK-(*)-21C-3/4″	25/32	1-15/32	7/16	2- 3/16	1- 5/16-6
NK-(*)-21C-1/2″	17/32	1-47/64	7/16	2- 5/32	1- 9/16-6
NK-(*)-21C-5/8″	21/32	1-47/64	7/16	2- 5/32	1- 9/16-6
NK-(*)-21C-3/4″	25/32	1-47/64	7/16	2- 5/32	1- 9/16-6
NK-(*)-21C-7/8″	29/32	1-47/64	7/16	2- 5/32	1- 9/16-6
FK-(*)-21C-9/16″	19/32	2- 1/64	7/16	2- 5/16	1-13/16-6
FK-(*)-21C-5/8″	21/32	2- 1/64	7/16	2- 5/16	1-13/16-6
FK-(*)-21C-7/8″	29/32	2- 1/64	7/16	2- 5/16	1-13/16-6
FK-(*)-21C-1″	1-1/16	2- 1/64	7/16	2-15/32	1-13/16-6
IK-(*)-21C-7/8″	29/32	2- 1/2	1/2	3	2- 1/4-6
IK-(*)-21C-1″	1- 1/16	2- 1/2	1/2	3- 5/32	2- 1/4-6
IK-(*)-21C-1-1/8″	1- 3/16	2- 1/2	1/2	3	2- 1/4-6
LK-(*)-21C-1″	1- 1/16	2- 7/8	1/2	3- 5/64	2- 1/4-6
LK-(*)-21C-1-1/2″	1- 9/16	2- 7/8	1/2	3- 1/8	2- 1/2-6

*Add contact arrangement.

Pin Inserts **K-22C (Cable Clamp)**





Part Number	C DIA ±1/64	E ±1/64	L ±3/64	A THD.
WK-(*)-22C-1/4″	7/16	15/64	1-29/32	7/8-6
WK-(*)-22C-5/16″	11/32	7/16	1-29/32	7/8-6
WK-(*)-22C-3/8″	13/32	7/16	1-29/32	7/8-6
WK-(*)-22C-1/2″	17/32	7/16	1-29/32	7/8-6
WK-(*)-22C-5/8″	21/32	7/16	1-29/32	7/8-6
GK-(*)-22C-1/2″	17/32	7/16	2	1- 3/16-6
GK-(*)-22C-5/8″	21/32	7/16	2	1- 3/16-6
SK-(*)-22C-1/2″	17/32	7/16	2	1- 5/16-6
SK-(*)-22C-5/8″	21/32	7/16	2	1- 5/16-6
SK-(*)-22C-3/4″	25/32	7/16	2	1- 5/16-6
NK-(*)-22C-1/2″	17/32	7/16	1-31/32	1- 9/16-6
NK-(*)-22C-5/8″	21/32	7/16	1-31/32	1- 9/16-6
NK-(*)-22C-3/4″	25/32	7/16	1-31/32	1- 9/16-6
NK-(*)-22C-7/8″	29/32	7/16	1-31/32	1- 9/16-6
FK-(*)-22C-9/16″	19/32	7/16	2- 5/32	1-13/16-6
FK-(*)-22C-5/8″	21/32	7/16	2- 5/32	1-13/16-6
FK-(*)-22C-7/8″	29/32	7/16	2- 5/32	1-13/16-6
FK-(*)-22C-1″	1-1/16	7/16	2- 5/16	1-13/16-6
IK-(*)-22C-7/8″	29/32	1/2	2-13/16	2- 1/4-6
IK-(*)-22C-1″	1- 1/16	1/2	2-31/32	2- 1/4-6
IK-(*)-22C-1-1/8″	1- 3/16	1/2	2-13/16	2- 1/4-6
LK-(*)-22C-1″	1- 1/16	1/2	2-57/64	2- 1/2-6
LK-(*)-22C-1-1/2″	1- 9/16	1/2	2-15/16	2- 1/2-6

*Add contact arrangement.

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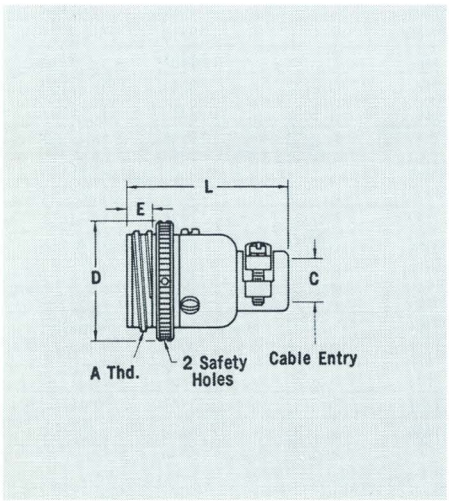
Dimensions are shown in inches.
Dimensions subject to change.

Straight Plug (Continued)

Reverse Coupling Pin Inserts

RK-22C (Cable Clamp)



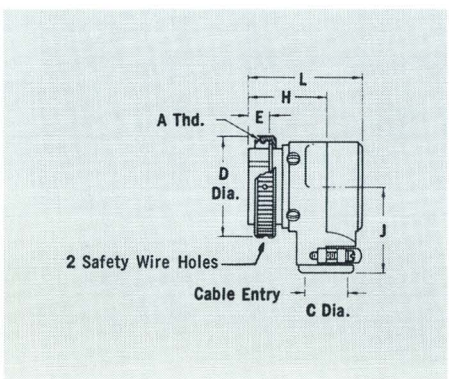
Part Number	C DIA ±1/64	D DIA ±1/64	E ±1/64	L ±3/64	A THD.
RWK-(*)-22C-1/4″	15/64	1- 9/64	7/16	1-29/32	15/16-6
RWK-(*)-22C-5/16″	11/32	1- 9/64	7/16	1-29/32	15/16-6
RWK-(*)-22C-3/8″	13/32	1- 9/64	7/16	1-29/32	15/16-6
RWK-(*)-22C-1/2″	17/32	1- 9/64	7/16	1-29/32	15/16-6
RWK-(*)-22C-5/8″	21/32	1- 9/64	7/16	1-29/32	15/16-6
RGK-(*)-22C-1/2″	17/32	1- 7/16	7/16	2	1- 1/4-6
RGK-(*)-22C-5/8″	21/32	1- 7/16	7/16	2	1- 1/4-6
RSK-(*)-22C-1/2″	17/32	1- 9/16	7/16	2	1- 3/8-6
RSK-(*)-22C-5/8″	21/32	1- 9/16	7/16	2	1- 3/8-6
RSK-(*)-22C-3/4″	25/32	1- 9/16	7/16	2	1- 38/-6
RNK-(*)-22C-1/2″	17/32	1- 9/16	7/16	1-31/32	1- 5/8-6
RNK-(*)-22C-5/8″	21/32	1-13/16	7/16	1-31/32	1- 5/8-6
RNK-(*)-22C-3/4″	25/32	1-13/16	7/16	1-31/32	1- 5/8-6
RNK-(*)-22C-7/8″	29/32	1-13/16	7/16	1-31/32	1- 5/8-6
RFK-(*)-22C-9/16″	19/32	2- 1/8	7/16	2- 5/32	1-15/16-6
RFK-(*)-22C-5/8″	21/32	2- 1/8	7/16	2- 5/32	1-15/16-6
RFK-(*)-22C-7/8″	29/32	2- 1/8	7/16	2- 5/32	1-15/16-6
RFK-(*)-22C-1″	1- 1/16	2- 1/8	7/16	2- 5/16	1-15/16-6
RIK-(*)-22C-7/8″	29/32	2- 9/16	1/2	2-13/16	2- 5/16-6
RIK-(*)-22C-1″	1- 1/16	2- 9/16	1/2	2-31/32	2- 5/16-6
RIK-(*)-22C-1-1/8″	1- 3/16	2- 9/16	1/2	2-13/16	2- 5/16-6
RLK-(*)-22C-1″	1- 1/16	2-13/16	1/2	2-57/64	2- 9/16-6
RLK-(*)-22C-1-1/2″	1- 9/16	2-13/16	1/2	2-15/16	2- 9/16-6

*Add contact arrangement.

90° Angle Plug

Socket Inserts

K-23C (Cable Clamp)

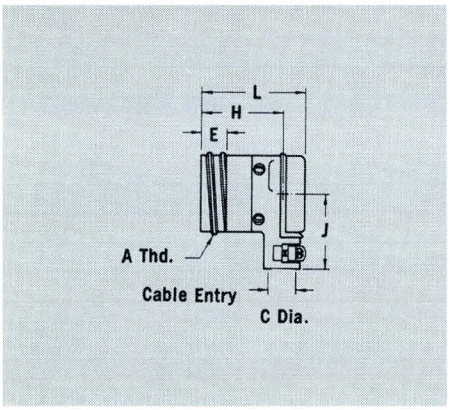


Part Number	C DIA ±1/64	D DIA ±1/64	E ±1/64	H ±3/64	J ±1/64	L ±1/16	A THD.
WK-(*)-23C-3/8″	13/32	1- 3/64	7/16	1-23/64	1	1- 3/4	7/8-6
WK-(*)-23C-1/2″	17/32	1- 3/64	7/16	1-31/64	1	2	7/8-6
WK-(*)-23C-5/8″	21/32	1- 3/64	7/16	1- 9/16	1	2- 9/64	7/8-6
GK-(*)-23C-3/8″	25/64	1-23/64	7/16	1- 7/16	1- 9/32	1-15/16	1- 3/16-6
GK-(*)-23C-1/2″	17/32	1-23/64	7/16	1- 7/16	1- 9/32	1-15/16	1- 3/16-6
GK-(*)-23C-5/8″	21/32	1-23/64	7/16	1- 9/16	1- 9/32	2- 5/32	1- 3/16-6
SK-(*)-23C-1/2″	17/32	1-15/32	7/16	1-29/64	1- 7/16	1-15/16	1- 5/16-6
SK-(*)-23C-5/8″	21/32	1-15/32	7/16	1-17/32	1- 7/16	2- 3/32	1- 5/16-6
SK-(*)-23C-3/4″	25/32	1-15/32	7/16	1-19/32	1- 7/16	2- 7/32	1- 5/16-6
NK-(*)-23C-9/16″	19/32	1-47/64	7/16	1-35/64	1- 9/16	2- 1/8	1- 9/16-6
NK-(*)-23C-5/8″	21/32	1-47/64	7/16	1-35/64	1- 9/16	2- 1/8	1- 9/16-6
NK-(*)-23C-11/16″	23/32	1-47/64	7/16	1-35/64	1- 9/16	2- 1/8	1- 9/16-6
FK-(*)-23C-9/16″	19/32	2- 1/64	7/16	1-33/64	1-23/32	2- 1/32	1-13/16-6
FK-(*)-23C-5/8″	21/32	2- 1/64	7/16	1-33/64	1-23/32	2- 1/16	1-13/16-6
FK-(*)-23C-7/8″	29/32	2- 1/64	7/16	1-11/16	1-23/32	2-23/64	1-13/16-6
IK-(*)-23C-1-1/8″	1-3/16	2- 1/2	1/2	2- 5/32	2- 5/32	2-55/64	2- 1/4-6
LK-(*)-23C-1″	1-1/16	2-13/16	1/2	1-31/32	2- 1/8	2-25/32	2- 1/2-6

*Add contact arrangement.

90° Angle Plug (Continued)

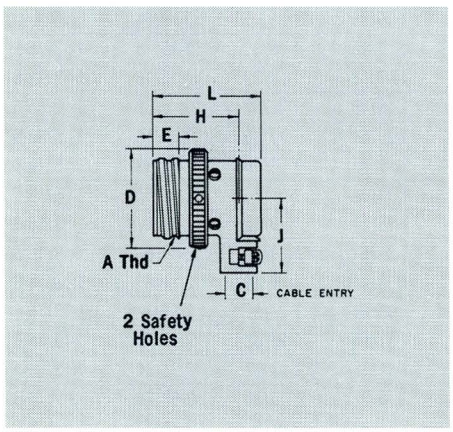
Pin Inserts **K-24C (Cable Clamp)**



Part Number	C DIA ±1/64	E ±1/64	H ±3/64	J ±1/64	L ±1/16	A THD.
WK-(*)-24C-3/8″	13/32	7/16	1-11/64	1	1- 9/16	7/8-6
WK-(*)-24C-1/2″	17/32	7/16	1-19/64	1	1-13/16	7/8-6
WK-(*)-24C-5/8″	21/32	7/16	1- 3/8	1	1-61/64	7/8-6
GK-(*)-24C-3/8″	25/64	7/16	1- 1/4	1- 9/32	1- 3/4	1- 3/16-6
GK-(*)-24C-1/2″	17/32	7/16	1- 1/4	1- 9/32	1- 3/4	1- 3/16-6
GK-(*)-24C-5/8″	21/32	7/16	1- 3/8	1- 9/32	1-31/32	1- 3/16-6
SK-(*)-24C-1/2″	17/32	7/16	1-17/64	1- 7/16	1- 3/4	1- 5/16-6
SK-(*)-24C-5/8″	21/32	7/16	1-11/32	1- 7/16	1-29/32	1- 5/16-6
SK-(*)-24C-3/4″	25/32	7/16	1-13/32	1- 7/16	2- 1/32	1- 5/16-6
NK-(*)-24C-9/16″	19/32	7/16	1-23/64	1- 9/16	1-15/16	1- 9/16-6
NK-(*)-24C-5/8″	21/32	7/16	1-23/64	1- 9/16	1-15/16	1- 9/16-6
NK-(*)-24C-11/16″	23/32	7/16	1-23/64	1- 9/16	1-15/16	1- 9/16-6
FK-(*)-24C-9/16″	19/32	7/16	1-23/64	1-23/32	1- 7/8	1-13/16-6
FK-(*)-24C-5/8″	21/32	7/16	1-23/64	1-23/32	1- 7/8	1-13/16-6
FK-(*)-24C-7/8″	29/32	7/16	1-17/32	1-23/32	2-13/64	1-13/16-6
IK-(*)-24C-1-1/8″	1-3/16	1/2	1-27/32	2- 5/32	2-43/64	2- 1/4-6
LK-(*)-24C-1″	1-1/16	1/2	1-51/64	2- 1/8	2-39/64	2- 9/16-6

*Add contact arrangement.

Reverse Coupling Pin Inserts **RK-24C (Cable Clamp)**



Part Number	C DIA ±1/64	D DIA ±1/64	E ±1/64	H ±3/64	J ±1/64	L ±1/16	A THD.
RWK-(*)-24C-3/8″	13/32	1- 9/64	7/16	1-11/64	1	1- 9/16	15/16-6
RWK-(*)-24C-1/2″	17/32	1- 9/64	7/16	1-19/64	1	1-13/16	15/16-6
RWK-(*)-24C-5/8″	21/32	1- 9/64	7/16	1- /38	1	1-61/64	15/16-6
RGK-(*)-24C-3/8″	25/64	1- 7/16	7/16	1-17/64	1- 9/32	1-49/64	1- 1/4-6
RGK-(*)-24C-1/2″	17/32	1- 7/16	7/16	1- 1/4	1- 9/32	1- 3/4	1- 1/4-6
RGK-(*)-24C-5/8″	21/32	1- 7/16	7/16	1- 3/8	1- 9/32	1-31/32	1- 1/4-6
RSK-(*)-24C-1/2″	17/32	1- 9/16	7/16	1-17/64	1- 7/16	1- 3/4	1- 3/8-6
RSK-(*)-24C-5/8″	21/32	1- 9/16	7/16	1-11/32	1- 7/16	1-29/32	1- 3/8-6
RSK-(*)-24C-3/4″	25/32	1- 9/16	7/16	1-13/32	1- 7/16	2- 1/32	1- 3/8-6
RNK-(*)-24C-9/16″	19/32	1-13/16	7/16	1-23/64	1- 9/16	1-15/16	1- 5/8-6
RNK-(*)-24C-5/8″	21/32	1-13/16	7/16	1-23/64	1- 9/16	1-15/16	1- 5/8-6
RNK-(*)-24C-11/16″	23/32	1-13/16	7/16	1-23/64	1- 9/16	1-15/16	1- 5/8-6
RFK-(*)-24C-9/16″	19/32	2- 1/8	7/16	1-23/64	1-23/32	1- 7/8	1-15/16-6
RFK-(*)-24C-5/8″	21/32	2- 1/8	7/16	1-23/64	1-23/32	1- 7/8	1-15/16-6
RFK-(*)-24C-7/8″	29/32	2- 1/8	7/16	1-17/32	1-23/32	2-13/64	1-15/16-6
RIK-(*)-24C-1-1/8″	1-3/16	2- 9/16	1/2	1-27/32	2- 5/32	2-43/64	2- 5/16-6
RLK-(*)-24C-1″	1-1/16	2-13/16	1/2	1-25/32	2- 1/8	2-19/32	2- 9/16-6

*Add contact arrangement.

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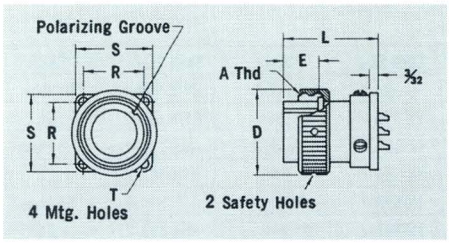
Dimensions are shown in inches.
Dimensions subject to change.

Wall Mount Receptacle

Socket Inserts

K-31S (Small Flange)

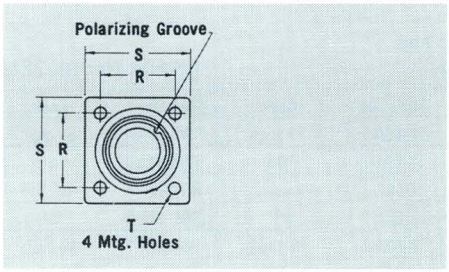


Part Number	D DIA ±1/64	E ±1/64	L ±3/64	A Thd.	R ±.005	S ±1/64	T ±.005
WK-(*)-31S	1-3/64	7/16	1-3/16	7/8-6	.730 (18.54)	15/16	.120 (3.05)
GK-(*)-31S	1-23/64	7/16	1-7/32	1-3/16-6	.972 (24.69)	1-1/4	.120 (3.05)
SK-(*)-31S	1-15/32	7/16	1-7/32	1-5/16-6	1.038 (26.37)	1-3/8	.120 (3.05)
NK-(*)-31S	1-47/64	7/16	1-7/32	1-9/16-6	1.259 (31.98)	1-5/8	.169 (4.29)
FK-(*)-31S	2-1/64	7/16	1-1/4	1-13/16-6	1.502 (38.15)	1-7/8	.169 (4.29)
IK-(*)-31S	2-1/2	1/2	1-13/32	2-1/4-6	1.944 (49.38)	2-5/16	.169 (4.29)
LK-(*)-31S	2-7/8	1/2	1-13/32	2-1/2-6	2.077 (52.76)	2-9/16	.169 (4.29)

*Add contact arrangement.

Socket Inserts

K-31SL (Large Flange)

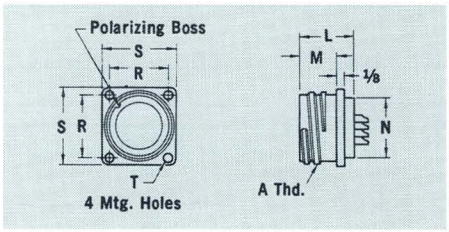


Part Number	D ±1/64	E ±1/64	L ±3/64	A Thd.	R ±.005	S ±1/64	T ±.005
WK-(*)-31SL	1-3/64	7/16	1-3/16	7/8-6	.972 (24.69)	1-5/16	.144 (3.65)
GK-(*)-31SL	1-23/64	7/16	1-7/32	1-3/16-6	1.192 (30.28)	1-9/16	.169 (4.29)
SK-(*)-31SL	1-15/32	7/16	1-7/32	1-5/16-6	1.282 (32.56)	1-11/16	.169 (4.29)
NK-(*)-31SL	1-47/64	7/16	1-7/32	1-9/16-6	1.500 (38.10)	1-15/16	.169 (4.29)
FK-(*)-31SL	2-1/64	7/16	1-1/4	1-13/16-6	1.678 (42.62)	2-1/8	.169 (4.29)
IK-(*)-31SL	2-1/2	1/2	1-13/32	2-1/4-6	2.031 (51.59)	2-9/16	.169 (4.29)
LK-(*)-31SL	2-7/8	1/2	1-13/32	2-1/2-6	2.210 (56.13)	2-7/8	.169 (4.29)

*Add contact arrangement.

Pin Inserts

K-32S (Small Flange)

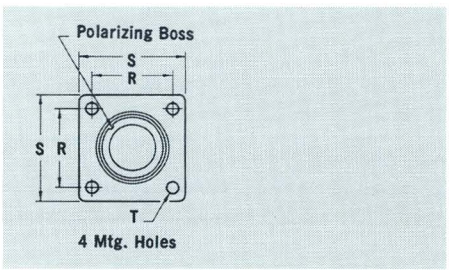


Part Number	L ±3/64	N DIA ±.005	M ±1/64	A Thd.	R ±.005	S ±1/64	T ±.005
WK-(*)-32S	3/4	3/4	7/16	7/8-6	.730 (18.54)	15/16	.120 (3.05)
GK-(*)-32S	3/4	1	7/16	1-3/16-6	.972 (24.69)	1-1/4	.120 (3.05)
SK-(*)-32S	3/4	1-1/8	7/16	1-5/16-6	1.038 (26.37)	1-3/8	.120 (3.05)
NK-(*)-32S	3/4	1-3/8	7/16	1-9/16-6	1.259 (31.98)	1-5/8	.144 (3.66)
FK-(*)-32S	3/4	1-5/8	7/16	1-13/16-6	1.502 (38.15)	1-7/8	.144 (3.66)
IK-(*)-32S	27/32	1-15/16	1/2	2-1/4-6	1.944 (49.38)	2-5/16	.169 (4.29)
LK-(*)-32S	27/32	2-1/4	1/2	2-1/2-6	2.077 (52.76)	2-9/16	.169 (4.29)

*Add contact arrangement.

Pin Inserts

K-32SL (Large Flange)

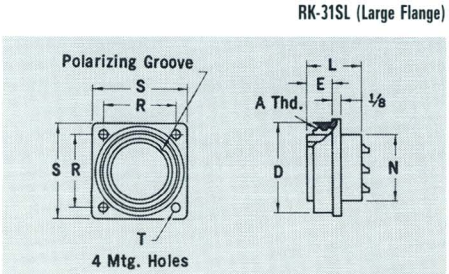


Part Number	L ±3/64	N ±.005	M ±1/64	A Thd.	R ±.005	S ±1/64	T ±.005
WK-(*)-32SL	3/4	3/4	7/16	7/8-6	.972 (24.69)	1-5/16	.144 (3.65)
GK-(*)-32SL	3/4	1	7/16	1-3/16-6	1.192 (30.28)	1-9/16	.169 (4.29)
SK-(*)-32SL	3/4	1-1/8	7/16	1-5/16-6	1.282 (32.56)	1-11/16	.169 (4.29)
NK-(*)-32SL	3/4	1-3/8	7/16	1-9/16-6	1.503 (38.18)	1-15/16	.169 (4.29)
FK-(*)-32SL	3/4	1-5/8	7/16	1-13/16-6	1.679 (42.65)	2-1/8	.169 (4.29)
IK-(*)-32SL	27/32	1-15/16	1/2	2-1/4-6	2.031 (51.59)	2-9/16	.169 (4.29)
LK-(*)-32SL	27/32	2-1/4	1/2	2-1/2-6	2.210 (56.13)	2-7/8	.169 (4.29)

*Add contact arrangement.

Reverse Coupling
Socket Inserts

RK-31SL (Large Flange)



Part Number	L ±3/64	N DIA ±.005	E ±1/64	A Thd.	D DIA ±1/64	R ±.005	S ±1/64	T ±.005
RWK-(*)-31SL	15/16	3/4	7/16	15/16-6	1-1/16	.972 (24.69)	1-5/16	.144 (3.65)
RGK-(*)-31SL	15/16	1	7/16	1-1/4-6	1-3/8	1.192 (30.28)	1-9/16	.169 (4.29)
RSK-(*)-31SL	15/16	1-1/8	7/16	1-3/8-6	1-1/2	1.282 (32.56)	1-11/16	.169 (4.29)
RNK-(*)-31SL	15/16	1-3/8	7/16	1-5/8-6	1-3/4	1.502 (38.15)	1-15/16	.169 (4.29)
RFK-(*)-31SL	15/16	1-5/8	7/16	1-15/16-6	2-1/16	1.680 (42.67)	2-1/8	.169 (4.29)
RIK-(*)-31SL	15/16	1-15/16	1/2	2-5/16-6	2-1/2	2.032 (51.61)	2-9/16	.169 (4.29)
RLK-(*)-31SL	15/16	2-1/4	1/2	2-9/16-6	2-3/4	2.210 (56.13)	2-7/8	.169 (4.29)

*Add contact arrangement.

Dust Caps

K & RK-59A

K-59A (for K-21, K-23 Plugs, K-31S, K-31SL Receptacles)				RK-59A (for RK-31SL Receptacle)			
Shell Size	Chain	Shell Size	Chain	Shell Size	Chain	Shell Size	Chain
WK-59A-1	No chain	FK-59A-1	No chain	RWK-59A-1	No chain	RNK-59A-2	#6
WK-59A-2	#6	FK-59A-2	#6	RWK-59A-2	#6	RFK-59A-1	No chain
GK-59A-1	No chain	IK-59A-1	No chain	RGK-59A-1	No chain	RFK-59A-2	#6
GK-59A-2	#6	IK-59A-1	#10	RGK-59A-2	#6	RIK-59A-1	No chain
SK-59A-1	No chain	LK-59A-1	No chain	RSK-59A-1	No chain	RIK-59A-2	#10
SK-59A-2	#6	LK-59A-2	#10	RSK-59A-2	#6	RLK-59A-1	No chain
NK-59A-1	No chain			RNK-59A-1	No chain	RLK-59A-2	#10
NK-59A-2	#6						

K & RK-60A

K-60A (for K-22, K-24 Plugs and K-32S, K-32SL Receptacles)				RK-60A (for RK-22 and RK-24 Plugs)			
Shell Size	Chain	Shell Size	Chain	Shell Size	Chain	Shell Size	Chain
WK-60A-1	No chain	FK-60A-1	No chain	RWK-60A-1	No chain	RNK-60A-2	#6
WK-60A-2	#6	FK-60A-2	#6	RWK-60A-2	#6	RFK-60A-1	No chain
GK-60A-1	No chain	IK-60A-1	No chain	RGK-60A-1	No chain	RFK-60A-2	#6
GK-60A-2	#6	IK-60A-1	#10	RGK-60A-2	#6	RIK-69A-1	No chain
SK-60A-1	No chain	LK-60A-1	No chain	RSK-60A-1	No chain	RIK-69A-2	#10
SK-60A-2	#6	LK-60A-2	#10	RSK-60A-2	#6	RLK-60A-1	No chain
NK-60A-1	No chain			RNK-60A-1	No chain	RLK-60A-2	#10
NK-60A-2	#6						

Barrel Extensions

Shell Size	Length	Part Number
WK	1/2″	019961-0017
	1 ″	019961-0009
GK	1/2″	019961-0023
	1 ″	019961-0011
SK	1/2″	019961-0010
	3/4″	019961-0020
	1-7/32″	019961-0001
NK	1/2″	019961-0014
	3/4″	019961-0021
	1-1/8″	019961-0006
FK	17/32″	019961-0003
	1 ″	019961-0016
	1-7/32″	019961-0004
IK	1/2″	019961-0018
	3/4″	019961-0019
LK	1″	019961-0012

Dimensions are shown in inches.
Dimensions subject to change.

Lightweight, General Purpose, High Density Connectors

The KO series, designed primarily for instrumentation and aircraft/ground support equipment, is now used in such varied applications as rapid transit, machine tools, recreational vehicles and automotive test instrumentation.

The KO connector features Acme thread for quick disconnect. It has a peripheral O ring seal and is suitable for environmental applications when the rear of the connector is potted. The insulators are of polyamide sandwich construction. Shells are diecast aluminum and the contacts are solder type. Straight, 45° and 90° endbells are available. The KO series offers a wide variety of contact arrangements and shell styles for many low cost, high density connector applications.

Standard Data

MATERIALS AND FINISHES

Shell Material: Die cast aluminum alloy per QQ-A-591

Shell Finish: .0002 inches cadmium plate with clear chromate conversion coating

Insulation: Polyamide (nylon) UL 94V-2 rated

Contact Termination: Solder

Contact Material: Copper Alloy

Contact Finish: .00002 inches gold over .0001 inches silver

Number of Contacts: 3–50

Contact Arrangements: 9

Coupling Method: Special Acme thread coupling nut

Contact Rating: #20—7.5 amps
#16—22 amps
#12—41 amps

SERVICE RATING

Test Voltage AC (rms) 60 cps

Sea Level –
Disengaged with grommet removed

Service	Voltage
1	1250
2	2400
3	3000

70,000 Feet –
Simulated Altitude

Service	Engaged	Disengaged
1	940	310
2	1800	600
3	2250	750

Temperature Rating — −55° to +125°C

MATING GUIDE

How To Order – Connectors

SERIES PREFIX
KO – ITT Cannon prefix

SPECIAL SHELL
A – used with 38, 48 and 50 contact arrangements only–not available in wall-mount receptacle
B – used with A10 layout only. (To receive high current contacts, #16, #12)

SHELL STYLE
0 – wall mounting receptacle—will take endbell
1 – cable connecting receptacle—will take endbell
2 – box mounting receptacle—will not take endbell
3 – plug

SHELL SIZE
16, 19, 21

CONTACT ARRANGEMENT
See page 359

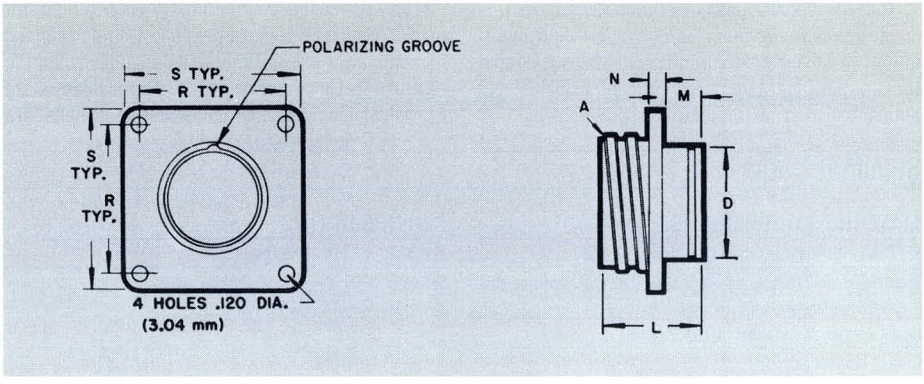
CONTACT TYPE
P – Pin
S – Socket

INSERT POSITION
N – Normal. See page 359 for alternate insert positions.

MODIFICATION CODES
C13– Melamine insulator material
D – Diallyl Phthalate insulator material

Wall Mounting Receptacle

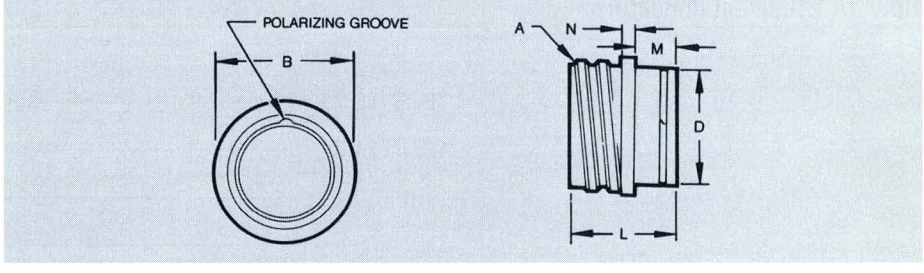
KO0



Part Number by Shell Size	A thd. Spl. Acme	D dia. ± .005	L	M	N	R ± .005	S
KO0-16L-**	1 -6	.833 (21.15)	.796 (20.24)	.328 (8.33)	.093 (2.36)	1.078 (27.38)	1.359 (34.51)
KO0-19L-**	1-3/16-6	1.020 (25.90)	.796 (20.24)	.328 (8.33)	.093 (2.36)	1.219 (30.96)	1.500 (38.10)
KO0-21L-**	1-5/16-6	1.175 (29.84)	.796 (20.24)	.328 (8.33)	.093 (2.36)	1.297 (32.94)	1.687 (42.84)

Cable Connecting Receptacle

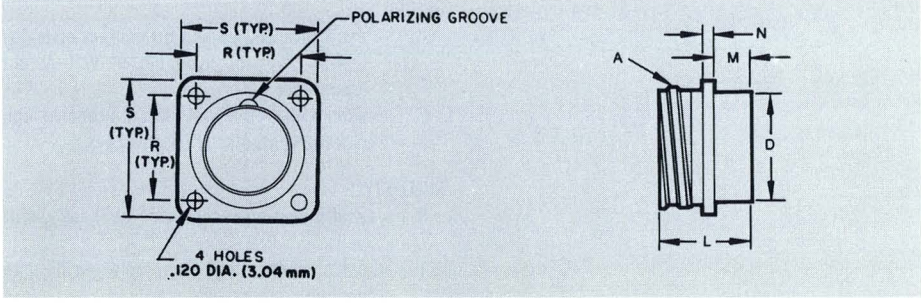
KO1



Part Number by Shell Size	A thd. Spl. Acme	B dia. ± .005	D dia. ± .005	L	M	N
KO1-16-**	1 -6	1.010 (25.65)	.833 (21.15)	.765 (19.44)	.396 (7.54)	.093 (2.36)
KO1-19-**	1-3/16-6	1.197 (30.40)	1.020 (25.90)	.765 (19.44)	.396 (7.54)	.093 (2.36)
KO1-21-**	1-5/16-6	1.322 (33.57)	1.175 (29.84)	.765 (19.44)	.396 (7.54)	.093(2.36)
KOA1-21-**	1-5/16-6	1.312 (33.32)	1.195 (30.35)	.719 (18.26)	—	—

Box Mounting Receptacle

KO2



Part Number by Shell Size	A thd. Spl. Acme	D dia. ± .005	L	M	N	R ± .005	S
KO2-16-**	1 -6	.833 (21.15)	.765 (19.44)	.296 (7.54)	.093 (2.36)	.843 (21.41)	1.125 (28.57)
KO2-19-**	1-3/16-6	1.020 (25.90)	.765 (19.44)	.296 (7.54)	.093 (2.36)	.972 (24.68)	1.250 (31.75)
KO2-21-**	1-5/16-6	1.175 (29.84)	.765 (19.44)	.296 (7.54)	.093 (2.36)	1.062 (26.97)	1.343 (34.11)
KOA2-21-**	1-5/16-6	1.312 (33.32)	.785 (19.94)	.313 (7.95)	.062 (1.57)	1.156 (29.36)	1.500 (38.10)

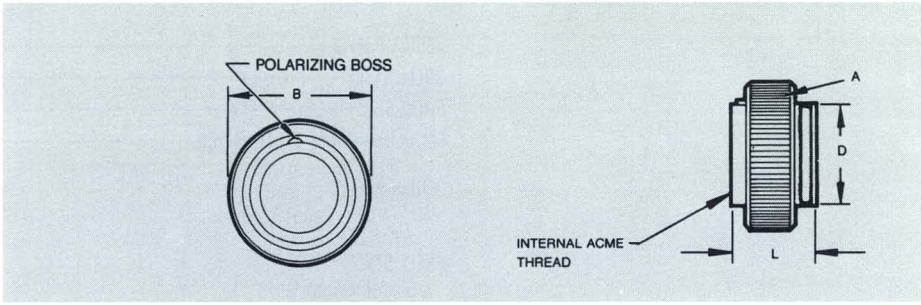
**Add contact arrangement, contact type (P for pin, S for socket) and, if required, alternate insert position.
NOTE: Unless specified, all inch dimensions are ±.015 (0.38). Hole dimensions are ±.005 (0.13).

ITT Cannon
1851 E. Deere Ave, P.O. Box 35000, Santa Ana, CA 92705-6500 • (714) 261-5300

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Plug

KO3

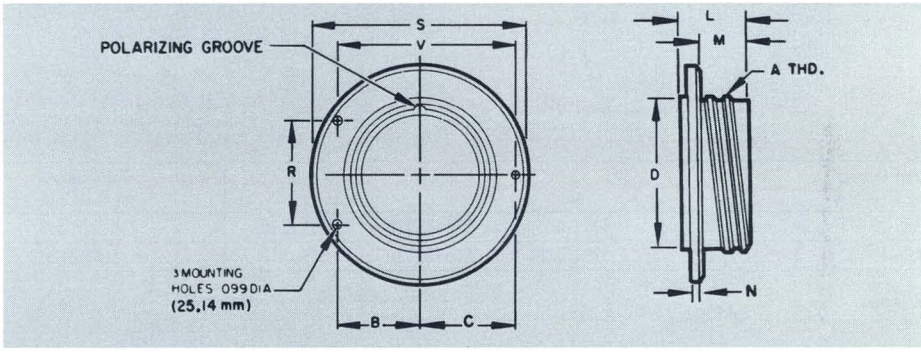


Part Number by Shell Size	A thd. Spl. Acme	B dia.	D dia. ± .005	L
KO3-16-**	1 -6	1.171 (29.74)	.833 (21.15)	.734 (18.65)
KO3-19-**	1-3/16-6	1.375 (34.92)	1.020 (25.90)	.734 (18.65)
KO3-21-**	1-5/16-6	1.468 (37.28)	1.175 (29.84)	.734 (18.65)
KOA3-21-**	1-5/16-6	1.500 (38.10)	1.195 (30.35)	.692 (17.58)

**Add contact arrangement, contact type (P for pin, S for socket) and, if required, alternate insert position.

Box Mounting Receptacle with Round Flange

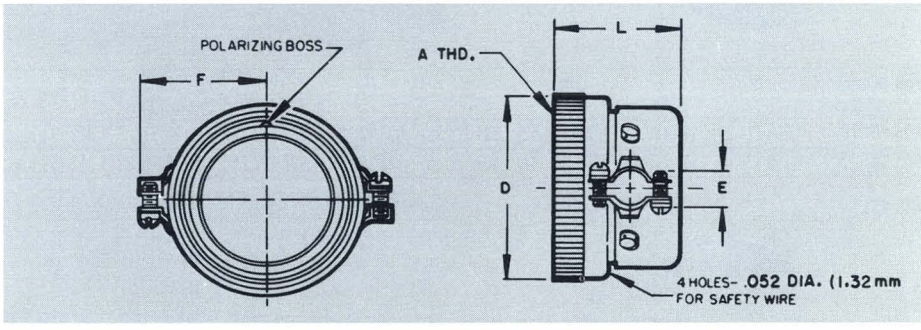
Special KO



Part Number by Shell Size	A Thread Acme	D dia.	L	M	N	R ± .005	S	V ± .005
KOA2-21R-*	1-5/16-6	1.312 (33.32)	.593 (15.08)	.406 (10.31)	.093 (2.38)	.936 (23.77)	1.906 (48.41)	1.606 (40.79)

Plug with Junction Shell

Special KO



Part Number by Shell Size	A Thread Acme	D dia.	E	F Approx.	L ± .046
KOA6-21S2C-*	1-5/16-6	1.500 (38.10)	.312(7.93)	1.000 (25.40)	1.031 (26.19)

*Add contact arrangement and contact type (P for pin, S for socket).
NOTE: Unless specified, all inch dimensions are ±.015 (0.38). Hole dimensions are ±.005 (0.13).

How To Order – Endbells

K 45 - -21 5/8

SERIES PREFIX
SHELL STYLE
SHELL SIZE
MAXIMUM CABLE TERMINATION

SERIES PREFIX
K – ITT Cannon prefix

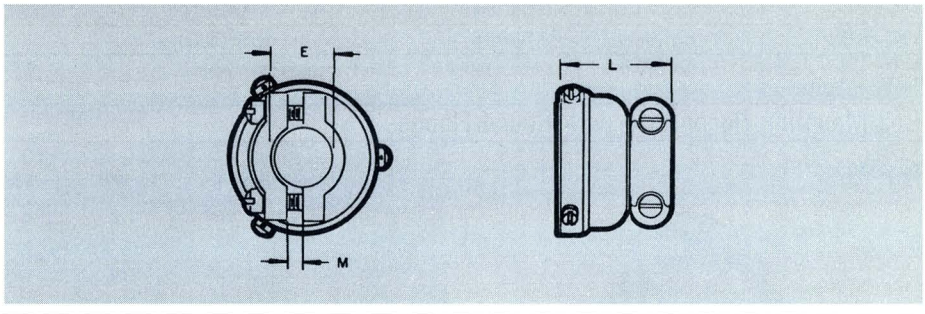
SHELL STYLE
06 – straight
08 – 90°
45 – 45°

SHELL SIZE
16, 19, 21

MAXIMUM CABLE TERMINATION
Size 16 – 3/8″
Size 19 – 1/2″
Size 21 – 5/8″

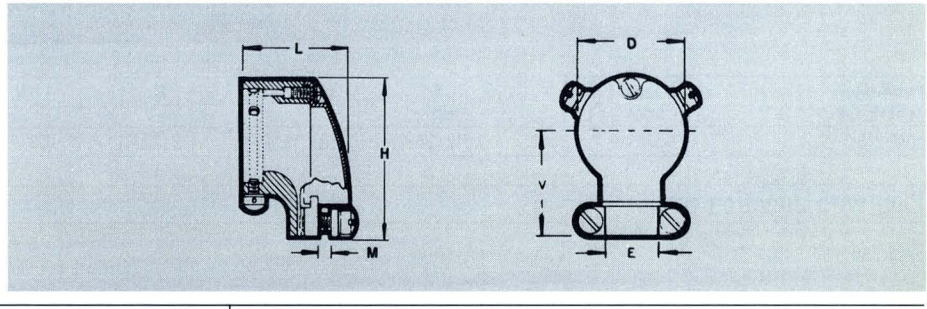
Endbells

KO6 Straight



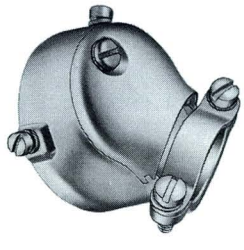
Part Number by Shell Size	E dia.	L	M	Part Number by Shell Size	E dia.	L	M
KO6-16-3/8	.406 (10.31)	.875 (22.22)	.093 (2.36)	KO6-21-5/8	.656 (16.66)	1.062 (26.97)	.125 (3.17)
KO6-19-1/2	.531 (13.48)	.968 (24.58)	.125 (3.17)	KOA6-21-5/8	.656 (16.66)	1.062 (26.97)	.125 (3.17)

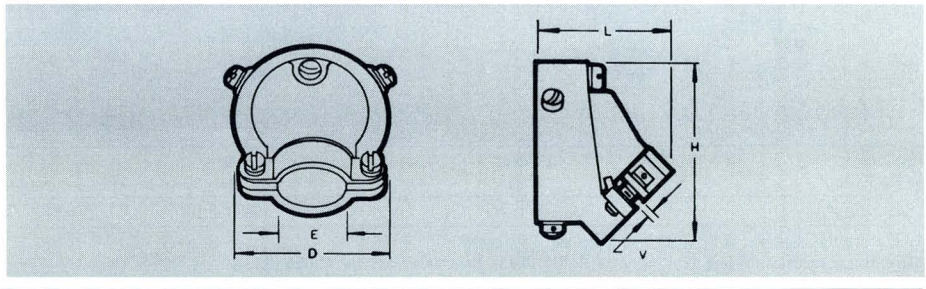
KO8 90°



Part Number by Shell Size	D	E dia.	H	L	M	V	Part Number by Shell Size	D	E dia.	H	L	M	V
KO8-16-3/8	.968 (24.58)	.406 (10.31)	1.359 (34.52)	.984 (24.99)	.093 (2.36)	.867 (22.22)	KO8-21-5/8	1.312 (33.32)	.656 (16.66)	1.906 (48.41)	1.234 (31.34)	.125 (3.17)	1.250 (31.75)
KO8-19-1/2	1.156 (29.36)	.531 (13.48)	1.672 (42.47)	1.109 (28.16)	.125 (3.17)	1.093 (27.76)	KOA8-21-5/8	1.312 (33.32)	.656 (16.66)	1.906 (48.41)	1.234 (31.34)	.125 (3.17)	1.250 (31.75)

K45 45°





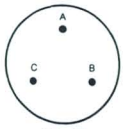
Part Number by Shell Size	D	E dia.	H	L	V
K45-16-3/8	.968 (25.58)	.406 (10.31)	1.078 (27.38)	.890 (22.60)	.093 (2.36)
K45-19-1/2	1.156 (29.36)	.531 (13.48)	1.296 (32.91)	1.015 (25.78)	.125 (3.17)
K45-21-5/8	1.312 (33.32)	.656 (16.66)	1.500 (38.10)	1.078 (27.38)	.125 (3.17)

NOTE: Unless specified, all inch dimensions are ±.015 (0.38).

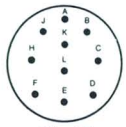
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Contact Arrangements

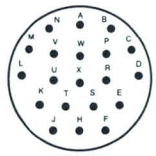
Face View Of Pin Insert



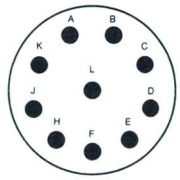
Shell Size & Arr. No. 16—3
Contact Size 3 #20
Service Rating 3



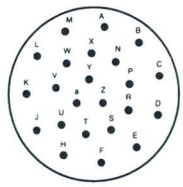
Shell Size & Arr. No. 16—10
Contact Size 10 #20
Service Rating 2 (C, E, H) 1 (all others)



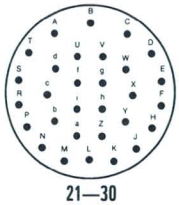
Shell Size & Arr. No. 19—20
Contact Size 20 #20
Service Rating 2 (A, E, K) 1 (all others)



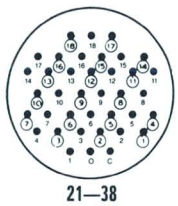
Shell Size & Arr. No. 21—A10 ◆
Contact Size 5 #16, 5 #12
Service Rating 3 (L) 2 (all others)



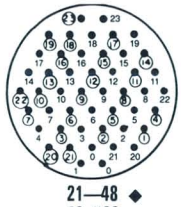
Shell Size & Arr. No. 21—23
Contact Size 23 #20
Service Rating 2 (A, B, C, D, E, F, K, L, M) 1 (all others)



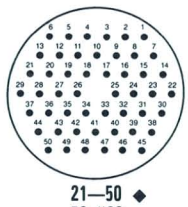
Shell Size & Arr. No. 21—30
Contact Size 30 #20
Service Rating 2 (A, B, C) 1 (all others)



Shell Size & Arr. No. 21—38
Contact Size 38 #20
Service Rating 1



Shell Size & Arr. No. 21—48 ◆
Contact Size 48 #20
Service Rating 1

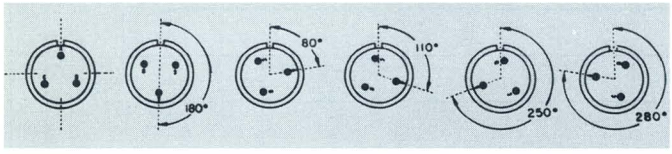


Shell Size & Arr. No. 21—50 ◆
Contact Size 50 #20
Service Rating 1

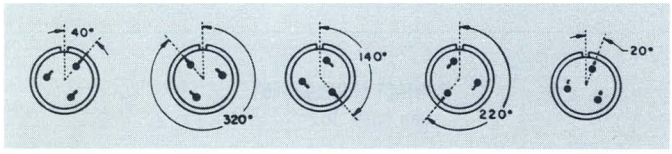
◆ Special shell required; see part number explanation.

Alternate Positions

21-38 and 21-48 arrangements are 180° from those shown.



NORMAL POS. N | POS. V | POS. W | POS. X | POS. Y | POS. Z

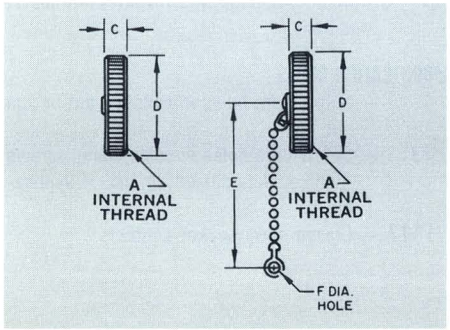


POS. E | POS. F | POS. G | POS. H | POS. J

(Viewed from face of pin insert)

Shell	Arr. No.	Insert Positions Available										
		N	V	W	X	Y	Z	E	F	G	H	J
16	3	●	●	●	●	●	●	●	●	●	●	
	10	●	●	●	●	●	●	●	●	●	●	
19	20	●	●	●	●	●	●	●	●	●	●	
21	13	●	●	●	●	●	●	●	●	●	●	
	23	●	●	●	●	●	●	●	●	●	●	
	30	●	●	●	●	●	●	●	●	●	●	
	38	●		●	●	●	●	●	●			●
	48	●		●	●	●	●	●	●			●
	50	●		●	●	●	●	●	●			●
	A10	●	●	●	●	●	●			●	●	

KO2 Dust Caps



Part Number LESS CHAIN	WITH CHAIN	A Thread Acme	C	D dia.	E	F dia.
KO2-16-1-DC	KO2-16-DC	1 -6	.313 (7.95)	1.250 (31.75)	3.250 (82.55)	.130 (3.30)
KO2-19-1-DC	KO2-19-DC	1-3/16-6	.313 (7.95)	1.313 (33.35)	3.250 (82.55)	.130 (3.30)
KO2-21-1-DC	KO2-21-DC	1-5/16-6	.313 (7.95)	1.438 (36.52)	3.250 (82.55)	.130 (3.30)

KO2 metal dust caps can be used with any KO receptacle with external threads. Plastic dust caps are provided for plugs and receptacles with internal threads.

NOTE: Unless specified, all inch dimensions are ±.015 (0.38)

Originally designed by ITT Cannon for use in various types of Signal Corps audio equipment, the MC connector series has since found its way into various non-military marketplaces. The MC series is now used in traffic control, machine tools, business aircraft, medical instrumentation and many other general purpose applications requiring a connector which will satisfy a variety of environmental conditions.

MC connectors have solder type contacts retained in polychloroprene insulators. Shells are diecast aluminum, finished in olive drab cadmium plate and feature Acme threads for quick disconnect versatility. Endbells are available in straight or 90° types.

Standard Data

MATERIALS AND FINISHES

Shell Material: Die cast aluminum alloy per QQ-A-591
Shell Finish: .0002 inches cadmium plate with olive drab chromate conversion coating
Insulation: Polychloroprene – 80 Shore
Bushing: Polychloroprene – 50 Shore
Contact Termination: Solder
Contact Material: Copper Alloy
Contact Finish: .00002 inches gold over .0001 inches silver
Number of Contacts: 3, 6 and 12
Contact Arrangements: 3
Coupling Method: Special Acme thread coupling nut
Contact Rating: #20 — 5 amps

SERVICE RATING

Test Voltage AC (rms) 60 cps	
Sea Level	1250 V
Temperature Rating	−55°C to +125°C

MATING GUIDE

How To Order

SERIES PREFIX
MC – ITT Cannon prefix

SHELL STYLE
11 – straight cord plug
12 – straight cord plug
13 – panel mounting receptacle
14 – panel mounting receptacle
23 – 90° cord plug
24 – 90° cord plug

CLASS
E – resilient insert

SHELL SIZE
8, 10, 13

CONTACT ARRANGEMENT
See page 362

CONTACT TYPE
P – pin
S – socket

INSERT POSITION
N – normal. See page 362 for alternate insert positions.

MODIFICATION CODES
1 – Safety wire holes in coupling nut or jam nut
13 – Safety wire holes in cable clamp screws (and coupling nut or jam nut, if applicable)
F117 – Closed entry socket contacts

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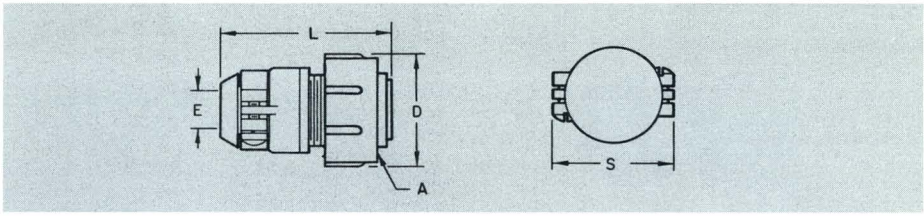
Straight Cord Plug

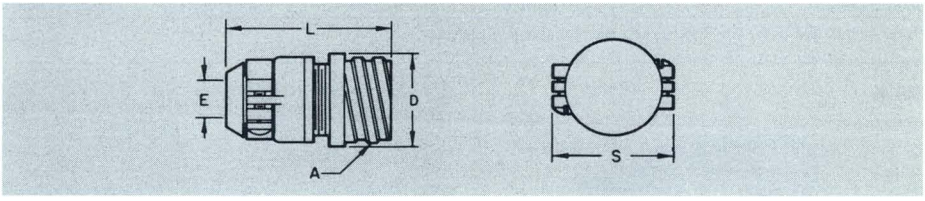
MC11E



Part Number by Shell Size	A thd. Spl. Acme	D dia.	E dia.	L	S
MC11E- 8- 3*	1/2-6	.656 (16.66)	.218 (5.55)	1.156 (29.36)	.687 (17.46)
MC11E-10- 6*	5/8-6	.781 (19.84)	.250 (6.35)	1.156 (29.36)	.812 (20.63)
MC11E-13-12*	13/16-6	.937 (23.81)	.406 (10.31)	1.156 (29.36)	.968 (24.60)

*Add contact type (P for pin, S for socket) and alternate insert position.

MC12E

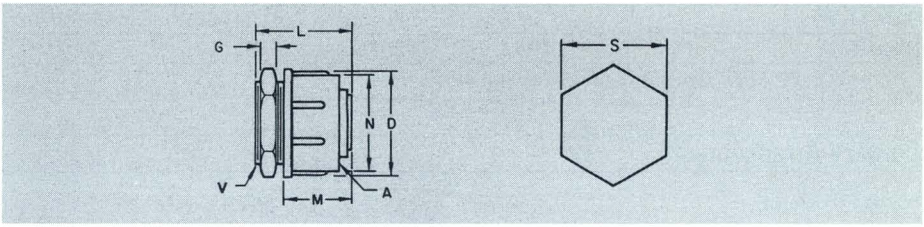


Part Number by Shell Size	A thd. Spl. Acme	D dia.	E dia.	L	S
MC12E- 8- 3*	1/2-6	.531 (13.49)	.218 (5.55)	1.187 (30.16)	.687 (17.46)
MC12E-10- 6*	5/8-6	.656 (16.66)	.250 (6.35)	1.187 (30.16)	.812 (20.63)
MC12E-13-12*	13/16-6	.875 (22.22)	.406 (10.31)	1.187 (30.16)	.968 (24.60)

*Add contact type (P for pin, S for socket) and alternate insert position.

Panel Mounting Receptacle

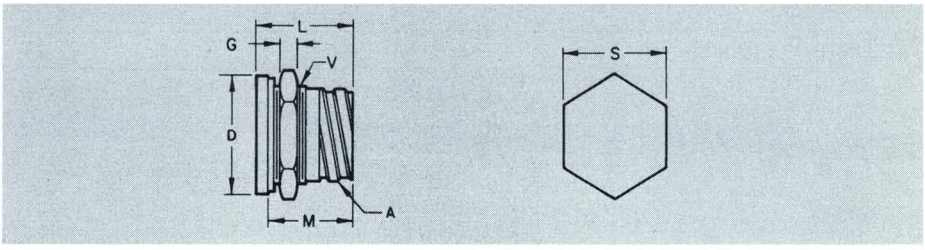
MC13E



Part Number by Shell Size	A thd. Spl. Acme	D dia.	G	L	M	N dia.	S hex	V thread
MC13E- 8- 3*	1/2-6	.687 (17.46)	.125 (.317)	.750 (19.05)	.500 (12.70)	.656 (16.66)	.625 (15.87)	9/16-24NEF-2A
MC13E-10- 6*	5/8-6	.812 (20.63)	.125 (.317)	750 (19.05)	.500 (12.70)	.781 (19.84)	.750 (19.05)	11/16-24NEF-2A
MC13E-13-12*	13/16-6	1.000 (25.40)	.125 (.317)	.750 (19.05)	.500 (12.70)	.937 (23.81)	1.000 (25.40)	7/8-20UNEF-2A

*Add contact type (P for pin, S for socket) and alternate insert position.

MC14E

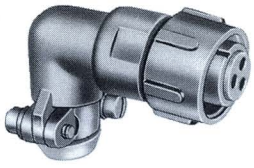


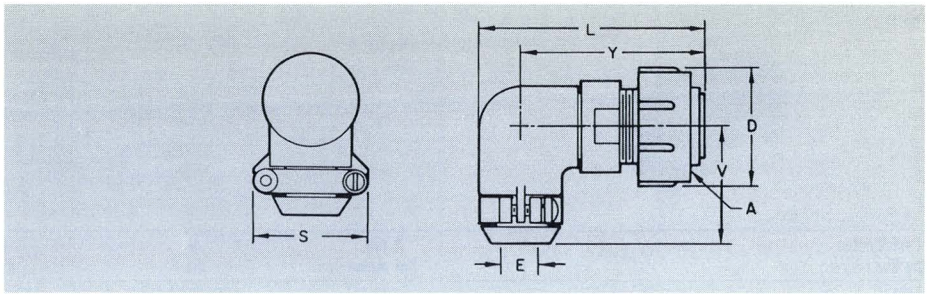
Part Number by Shell Size	A thd. Spl. Acme	D dia.	G	L	M	S hex	V thread
MC14E- 8- 3*	1/2-6	.687 (17.46)	.125 (3.17)	.656 (16.66)	.593 (15.08)	.625 (15.87)	9/16-24NEF-2A
MC14E-10- 6*	5/8-6	.812 (20.63)	.125 (3.17)	.656 (16.66)	.593 (15.08)	.750 (19.05)	11/16-24NEF-2A
MC14E-13-12*	13/16-6	1.000 (25.40)	.125 (3.17)	.656 (16.66)	.593 (15.08)	1.000 (25.40)	7/8-20UNEF-2A

*Add contact type (P for pin, S for socket) and alternate insert position.

90° Cord Plug

MC23E

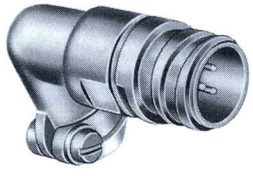


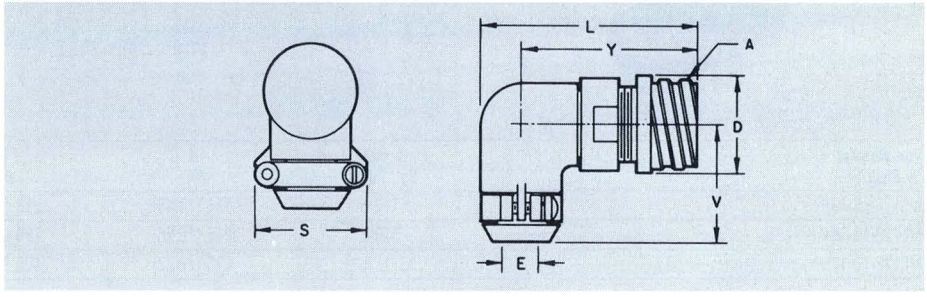


Part Number by Shell Size	A thread	D dia.	E dia.	L	S	V	Y
MC23E- 8- 3*	1/2-6	.656 (16.66)	.218 (5.55)	1.343 (34.13)	.687 (17.46)	.718 (18.25)	1.125 (28.57)
MC23E-10- 6*	5/8-6	.781 (19.84)	.250 (6.35)	1.500 (38.10)	.812 (20.63)	.812 (20.63)	1.218 (30.95)
MC23E-13-12*	13/16-6	.937 (23.81)	.406 (10.31)	1.656 (42.06)	.968 (24.60)	.937 (23.81)	1.281 (32.54)

*Add contact type (P for pin, S for socket) and alternate insert position.

MC24E



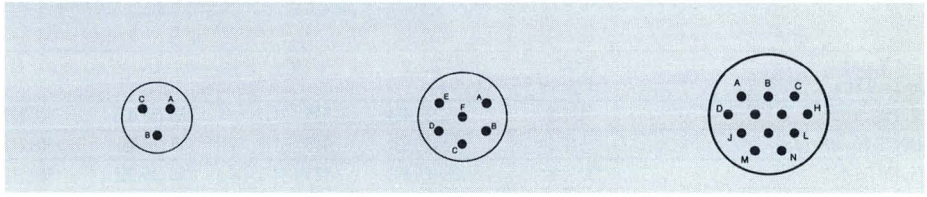


Part Number by Shell Size	A thread	D dia.	E dia.	L	S	V	Y
MC24E- 8- 3*	1/2-6	.531 (13.49)	.218 (5.55)	1.375 (34.92)	.687 (17.46)	.718 (18.25)	1.156 (29.36)
MC24E-10- 6*	5/8-6	.656 (16.66)	.250 (6.35)	1.531 (38.89)	.812 (20.63)	.812 (20.63)	1.250 (31.75)
MC24E-13-12*	13/16-6	.875 (22.22)	.406 (10.31)	1.718 (43.65)	.968 (24.60)	.937 (23.81)	1.343 (34.13)

*Add contact type (P for pin, S for socket) and alternate insert position.
NOTE: Unless specified, all inch dimensions are ± .015 (0.38)

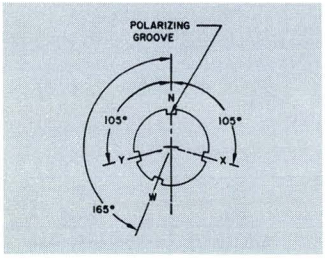
Contact Arrangements

Face view of pin insert



Shell Size & Arr. No.	8—3	10—6	13—12
Contact Size	3 #20	6 #20	12 #20

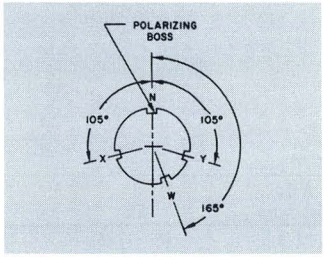
Alternate Positions



ALTERNATE BARREL POSITIONS*
Connector with internally threaded nut

TYPICAL AS VIEWED FROM ENGANGING END OF BARREL STYLES 11, 13 AND 23.

*Applicable to both pin and socket inserts.



Alternate positions X and Y are not available for MC 8-3 arrangement.

ALTERNATE SHELL POSITIONS*
Connector with externally threaded shell

TYPICAL AS VIEWED FROM ENGAGING END OF SHELL STYLES 12, 14 AND 24.

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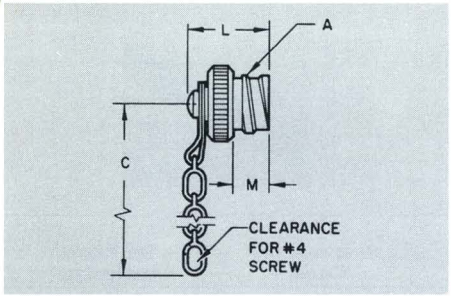
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

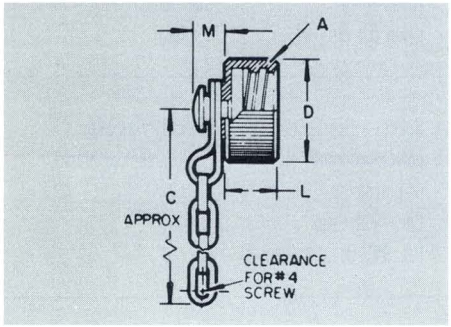
Dust Caps

MC-59 (Fits MC11E, 13E, 23E)



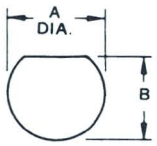
Part Number by Shell Size MC-59	A Thd. Acme	C Approx.	L	M
MC- 8-59	1/2 -6	3.500 (88.90)	.437 (11.10)	.250 (6.35)
MC-10-59	5/8 -6	3.500 (88.90)	.437 (11.10)	.250 (6.35)

MC-60 (Fits MC12E, 14E, 24E)



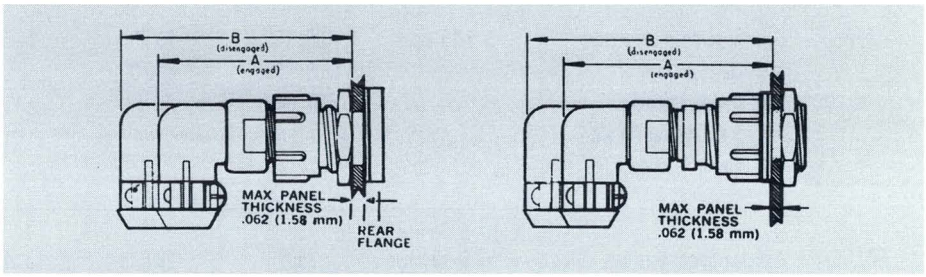
Part Number by Shell Size MC-60	A Thd. Acme	C Approx.	D	L	M
MC- 8-60	1/2 -6	3.437 (87.31)	.640 (16.27)	.375 (9.52)	.156 (3.96)
MC-10-60	5/8 -6	3.437 (87.31)	.765 (19.44)	.375 (9.52)	.156 (3.96)
MC-13-60	13/16-6	3.437 (87.31)	.953 (24.20)	.375 (9.52)	.156 (3.96)

Panel Cutouts



Size	A $^{+.005}_{-.000}$	B $^{+.005}_{-.000}$
MC13E-8 MC14E-8	.563 (14.30)	.531 (13.48)
MC13E-10 MC14E-10	.688 (17.47)	.656 (16.66)
MC13E-13 MC14E-13	.875 (22.22)	.840 (21.33)

Minimum Engaging Lengths

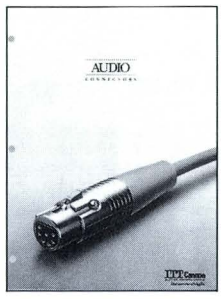


Shell Size	Mating Connectors	A	B
8	MC23E & MC14E	1.593 (40.46)	1.812 (46.02)
	MC24E & MC13E	1.625 (41.27)	1.906 (48.41)
10	MC23E & MC14E	1.750 (44.45)	1.937 (49.19)
	MC24E & MC13E	1.781 (45.23)	2.062 (52.37)
13	MC23E & MC14E	1.906 (48.41)	2.093 (53.16)
	MC24E & MC13E	1.937 (49.19)	2.218 (56.33)

NOTE: Unless specified, all inch dimensions are ±.015 (0.38)

Audio Connectors

ITT Cannon offers one of the broadest lines of audio connectors in the entertainment industry. You'll find Cannon audio connectors playing a key role in the performance quality of microphones, tape recorders, video tape recorders, amplifiers, mixers and TV cameras. In addition to audio applications, these connectors can be used in a wide range of industrial control devices, telecommunications equipment, and medical electronic applications. Complete the business reply card at the back of your Connector Sourcebook to receive the full-line Audio Connectors catalog.



Connector Series	Description	Contact Current Rating	Oper. Voltage	Temp. Range	No. of Contacts	Insulator Material	Shell Material (and Finishes)
XLB-PC	XLB audio connectors for printed circuit board mounting.	3 amps	133V	−35°C to +85°C	3	Glass-filled nylon (UL 94V-0)	One-piece insulator
AXR	Used for general purpose low level circuit applications when elimination of RFI/EMI is required.	5-15 amps	133V	−20°C to +70°C	3–7	Socket - Resilient polychloroprene or polyamide Pin – Polyester (UL 94V-0)	Die-cast zinc alloy (satin nickel or black).
AXR-LNE	A specially designed version of the AXR series for higher power applications.	6 amps	250V	−20°C to +70°C	2 plus 1 ground	Socket – Polycarbonate (UL 94V-0) Pin – Polyamide (UL 94V-0)	Diecast zinc alloy (satin nickel)
AXR-PDN	Suitable for connecting a power amplifier to loudspeaker enclosures ensuring minimum power loss and significantly improving performance when used in combination with high quality audio cable.	25 amps	200V	−20°C to +70°C	2 plus 1 drain	Polyester (UL 94V-0)	Die-cast zinc alloy (satin nickel)
EP	General purpose connectors available in a range of shell styles combining ruggedness, versatility and field-proven dependability.	5-15 amps	100, 150, 200, 250, 460, 660V	−20°C to +70°C	3–12	Polyamide (UL 94V-0)	Die-cast zinc alloy/ aluminum (satin nickel)
EP-LNE/ LNEM	A higher power version of the EP series with one (LNE) or two (LNEM) ground contacts.	7.5–10 amps	250V	−20°C to +70°C	3, 4	Polyamide (UL 94V-0)	Die-cast aluminum or zinc alloy (satin nickel)
RDL	Circular, plastic, zero insertion force mating connectors.	5 amps	Max. 1200V	−55°C to +105°C	82	Glass-filled thermoplastic (UL 94V-0)	One-piece insulator

ITT Cannon
666 E. Dyer Rd., P.O. Box 929, Santa Ana, CA 92702-0929 • (714) 557-4700 • (800) 845-7000

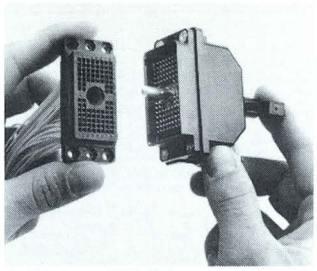
The Cannon DL Series of ZIF connectors fills the need in the commercial/industrial, computer and peripheral equipment market places for low-cost, high performance multiple-wire power and signal connectors.

DL connectors feature: a minimum rated life of 10,000 complete mating and unmating cycles with no performance loss; can be mated and unmated in less than two seconds even with as many as 2,496 contacts; and they cost less (often as much as 25% less) per mated line than competitive high-density rack-and-panel connectors.

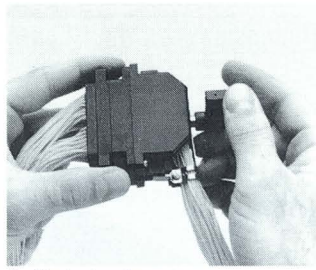
The long life and rapid mating are achieved through the use of our Zero Insertion Force design. Contacts in the plug and receptacle do not touch each other while the connector halves are being engaged. Instead, the plug is placed over the receptacle, then a quarter turn of an actuating shaft mates all the contacts at once, while also physically locking the connector halves together. Connector engagement force is zero, and the only wear on the contacts occurs as they are pressed together and lightly wiped past each other during the camming and locking operation.

Simple. Effective. And reliable.

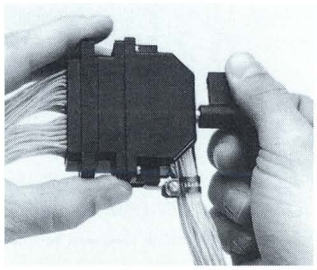
Combining their special design with commercial-grade materials and low cost crimp and wrappable hermaphroditic contacts that may be hand or machine terminated makes the DL Series of ZIF connectors the finest low-cost-per-mated-line I/O connectors available today.



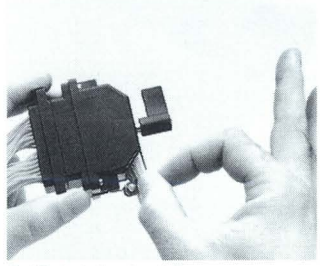
1. This is our "DL" Series.



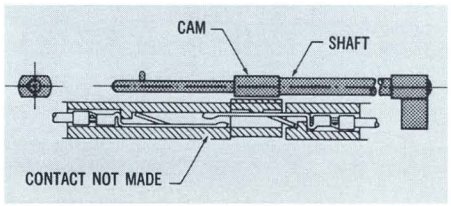
2. Simply place it together.

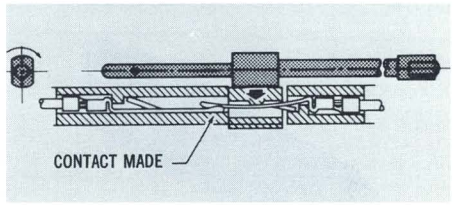


3. Turn the cam lock a quarter turn.



4. It's locked and mated.





Standard Data

MATERIALS & FINISHES

- Glass filled thermoplastic insulator (UL 94V-1 rated)
- Copper alloy contacts
- Stainless steel insulator retainer
- Stainless steel cam actuator
- Contacts selective plated 20 microinches gold over 50 microinches nickel

MECHANICAL FEATURES

- Crimp, Wire Wrap, Buss or PC contacts
- 60, 96, 156, 624, 1248 of 2496 contact positions
- 8 lbs. (35,585 N) min. contact retention
- Permanent raised cavity identification
- Actuation by screwdriver, socket wrench, allen wrench (for DL1, 2 and 3 only) or handle

ELECTRICAL DATA

- Ambient Operating Temperature: −55°C to 105°C (See page 368)
- Wire Range: #18 AWG thru #32 AWG (solid or stranded)
- Current Rating: 5 amps (see page 368)
- DWV: 1200 VAC at sea level
- 5000 megohms insulation resistance min.

How to Order

The basic DL connector is a standard plug and receptacle for applications requiring cable-to-cable, cable-to-panel and panel-to-panel interconnections. DL series connectors are available in shell sizes 1, 2, 3 and 4.

DL 4–2496 R W4

- SERIES PREFIX
- SHELL SIZE
- NUMBER OF CONTACTS
- SHELL STYLE
- TAIL LENGTHS*

SHELL SIZE
1, 2, 3 or 4

NUMBER OF CONTACTS
Shell Size 1: 156 Contacts
Shell Size 2: 96 Contacts
Shell Size 3: 60 Contacts
Shell Size 4: Three shell size configurations – 2496 Contacts or 1248 Contacts or 624 Contacts

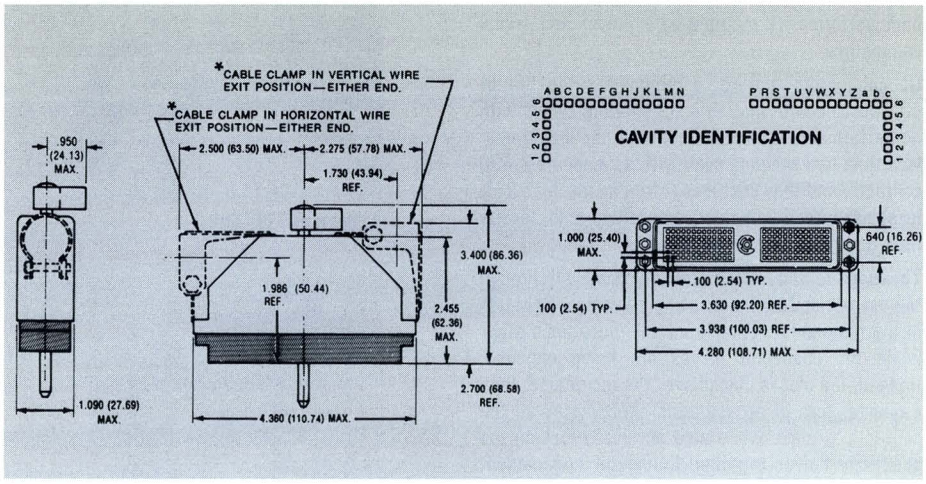
SHELL STYLE
P – Plug (crimp contacts must be ordered separately)
R – Receptacle (crimp contacts must be ordered separately)

TAIL LENGTHS* (Wire Wrap or PC)
W4 – .605 (15.4) nominal .025(.64) square posts (standard plating)
W6 – .280 (7.1) nominal .025(.64) square post (standard plating)

*Tail Lengths 4 and 6 may be ordered with other than standard plating and with or without "bumps" by adding A or B as shown below.
A – 50 microinch gold over 50 microinch nickel in mating area, balance gold flash over 50 microinch nickel.
B – (Flat Contact) — For use on receptacle only. 50 microinch gold over 50 microinch nickel in mating area, balance is gold flash over 50 microinch nickel. Mandatory for low current applications of less than 100 milliamps.

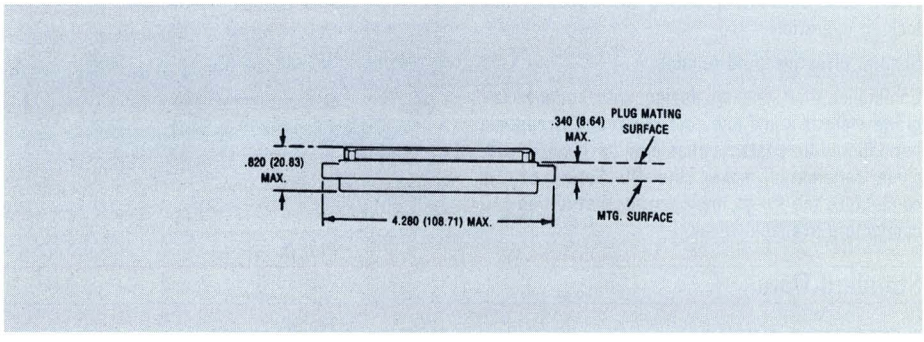
Shell Dimensions – Crimp Contact

DL1-156P

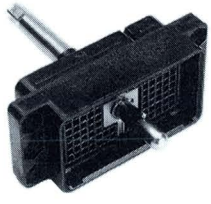


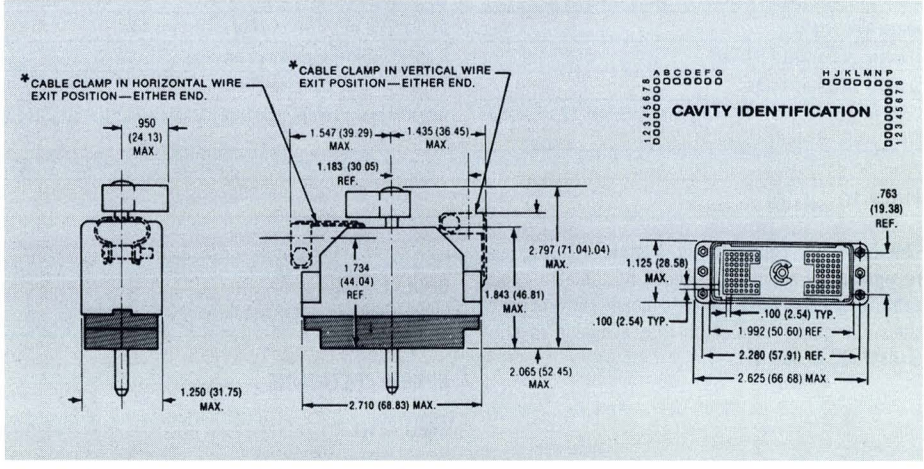
*Note: Handle, clamp, and junction shell must be ordered separately.

DL1-156R



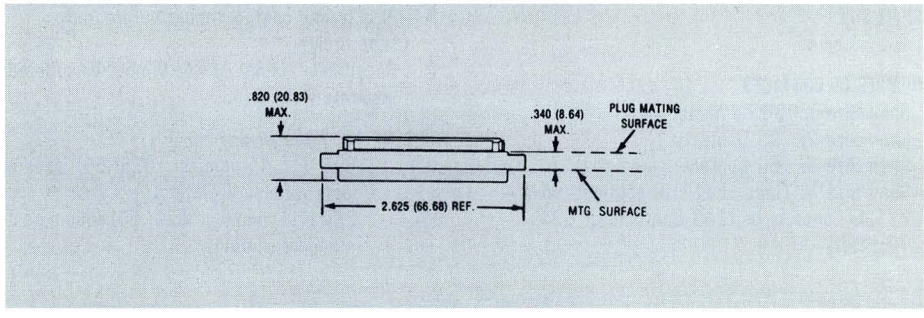
DL2-96P





*Note: Handle, clamp, and junction shell must be ordered separately.

DL2-96R



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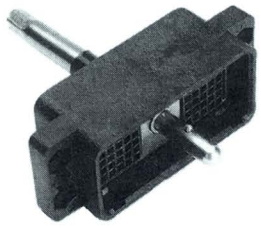
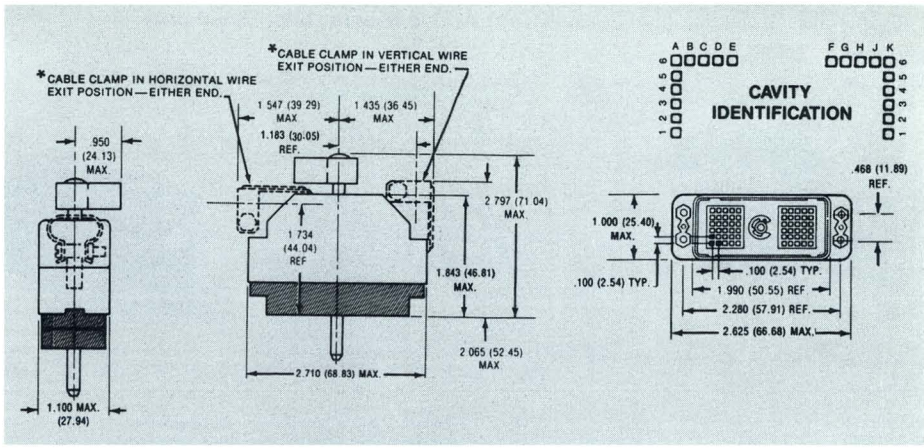
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Shell Dimensions – Crimp Contacts (Continued)

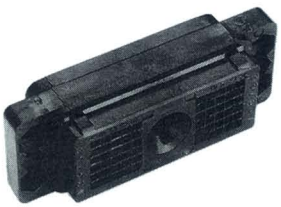
DL3-60P

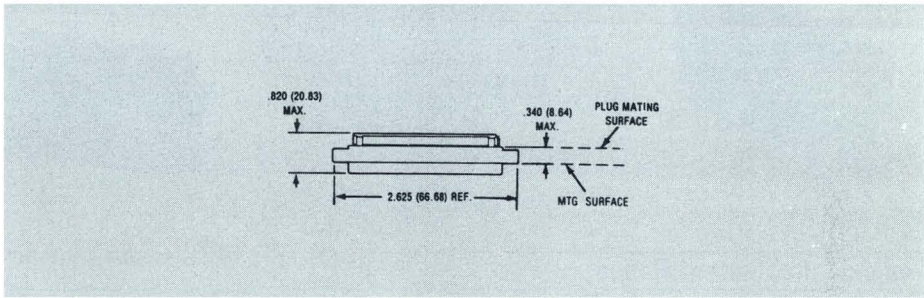




***Note: Handle, clamp, and junction shell must be ordered separately.**

DL3-60R

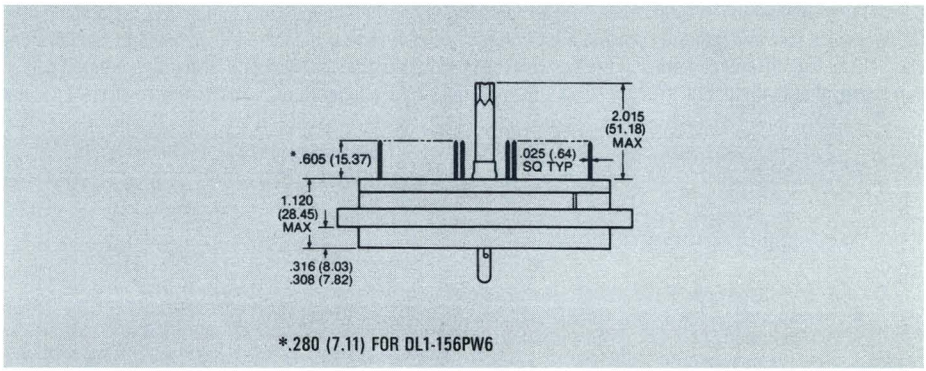




Shell Dimensions – Post Contacts

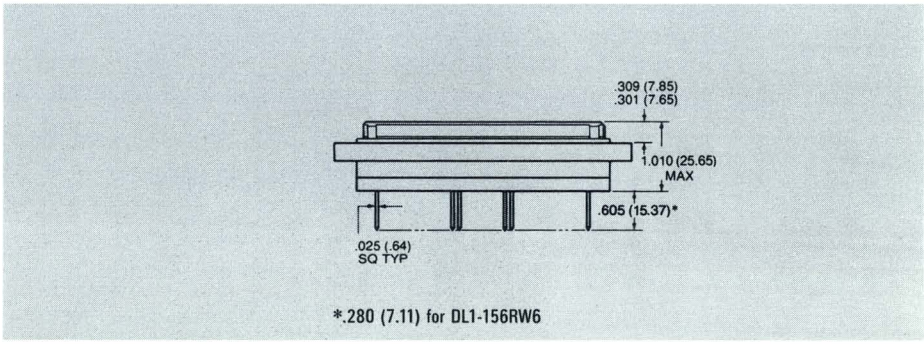
With Front Removable .025 (.64) Square Wrap Posts .100 (2.54) X .100 (2.54) Centers

DL1-156PW4
DL1-156PW6



***.280 (7.11) FOR DL1-156PW6**

DL1-156RW4
DL1-156RW6

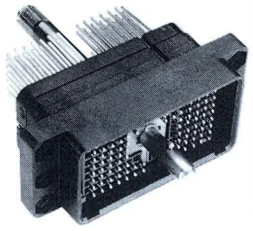


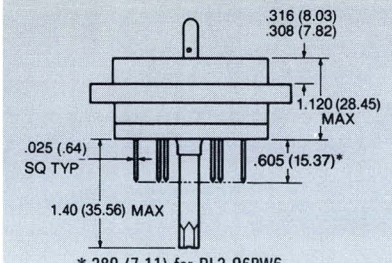
***.280 (7.11) for DL1-156RW6**

Shell Dimensions – Post Contacts (Continued)

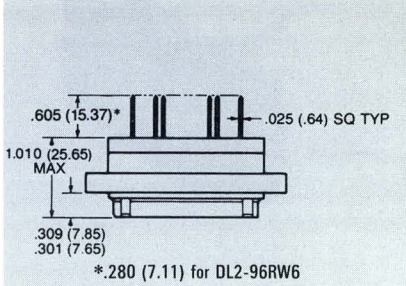
With Front Removable .025 (.64) Square Wrap Posts .100 (2.54) x .100 (2.54) Centers

DL2-96PW4
DL2-96PW6

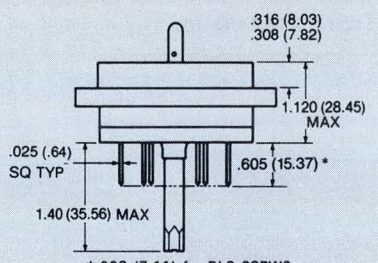




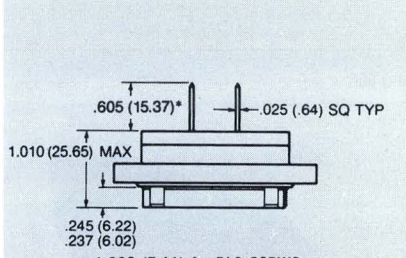
DL2-96RW4
DL2-96RW6



DL3-60PW4
DL3-60PW6



DL3-60RW4
DL3-60RW6

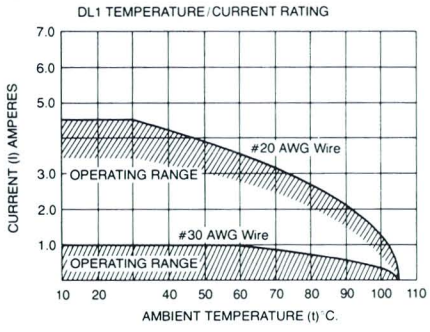


Temperature / Current Rating

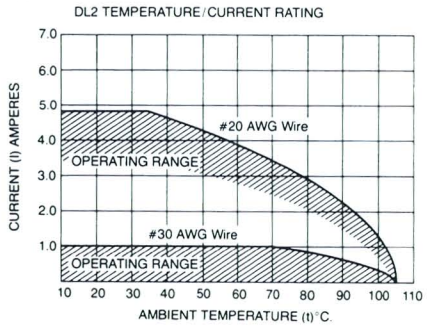
The curves shown represent the rated current carrying capacity of the Cannon DL1, DL2, DL3 & DL4 electrical connectors, derated to 80% of the values recorded using the methods specified by International Electro-Technical Commission Document 48 (1975).

Current was applied to the total connector (all contacts) in one-half ampere increments and maintained at each current level until thermal stability was achieved. A thermocouple inserted into the "hottest area" of each connector then measured the connector temperature at the same time that an ambient temperature reading was taken. The difference between the two measured values is the heat rise or self-heating created solely by the current flow, and this temperature rise for each current level was deducted from the insulator material rated temperature. These values were then derated to 80% to obtain the curves below.

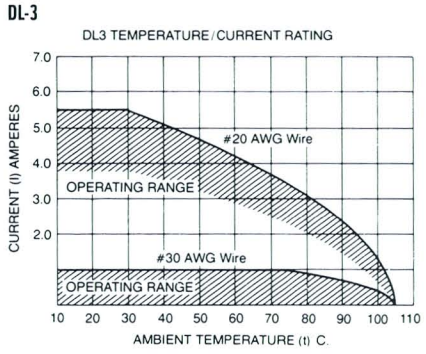
DL-1



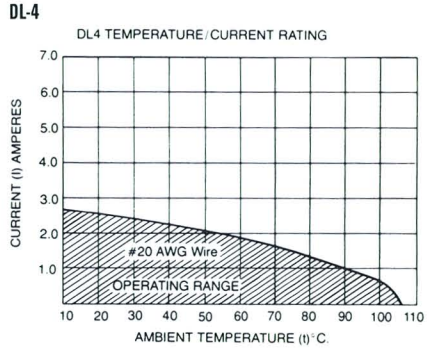
DL-2



DL-3



DL-4

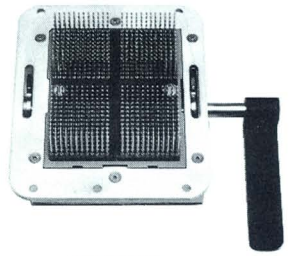


Dimensions are shown in inches (millimeters).
Dimensions subject to change.

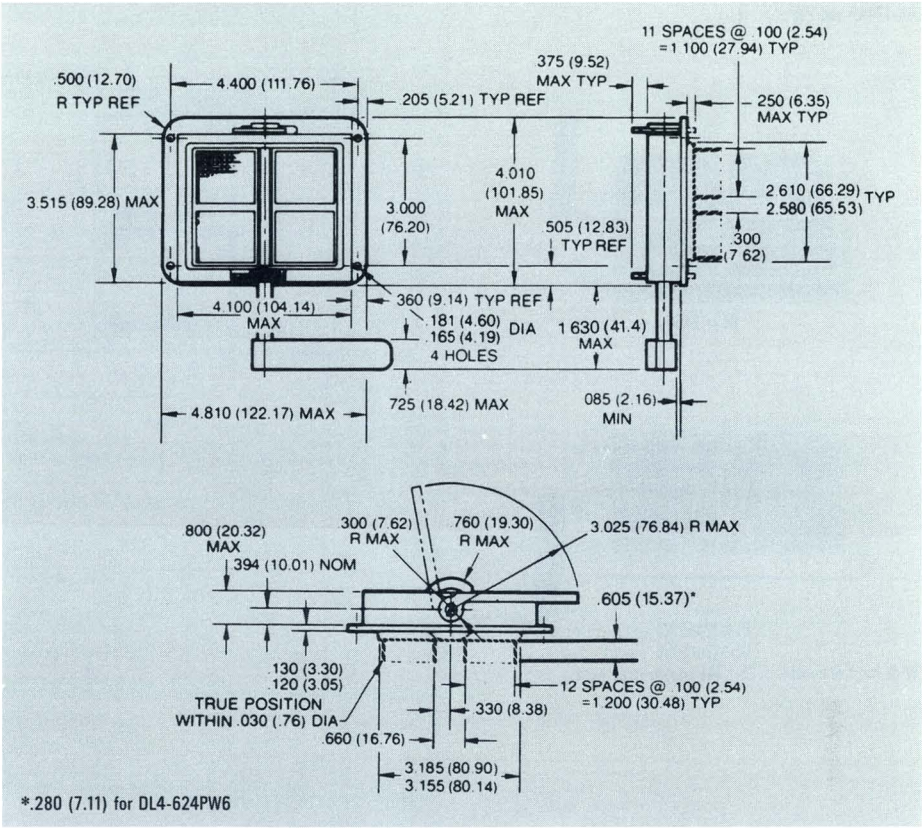
Shell Dimensions (Continued)

DL4-624P and PW Plugs

DL4-624P

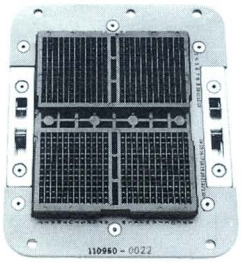


DL4-624PW4
DL4-624PW6
(With front removable .025 (.64) square wrap posts)

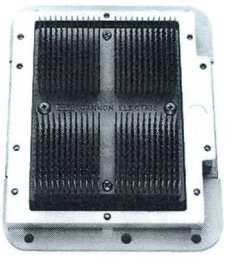


Note: See page 372 for cavity identification

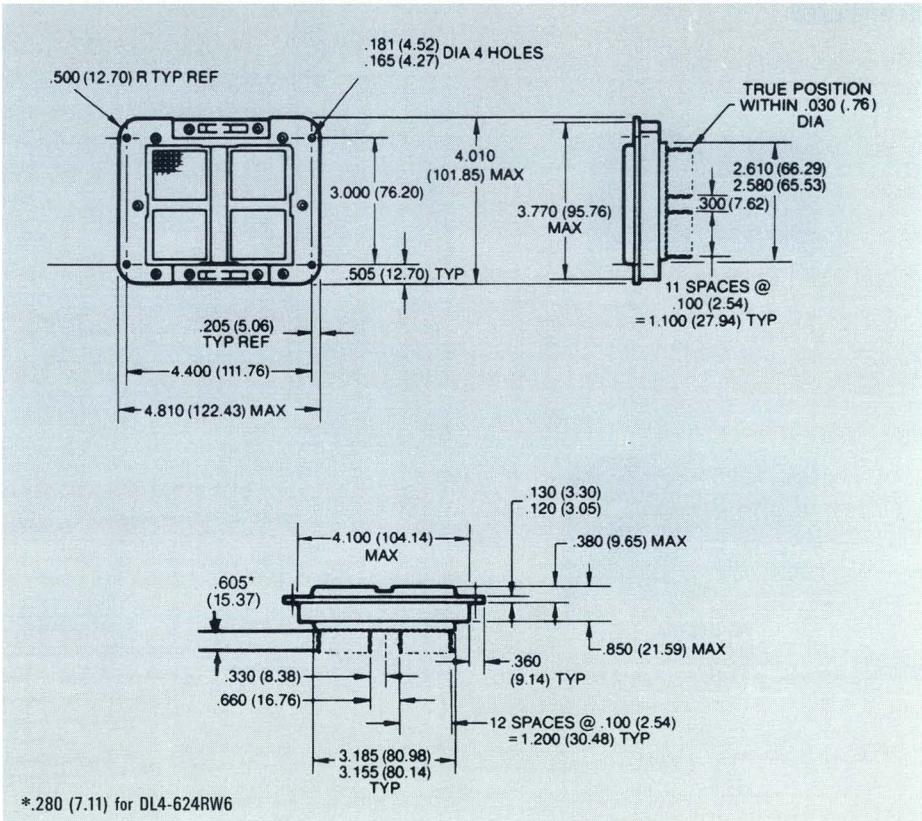
DL4-624R and RW Receptacles



DL4-624R



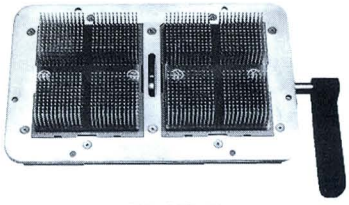
DL4-624RW4
DL4-624RW6
(With front removable .025 (.64) square wrap posts)



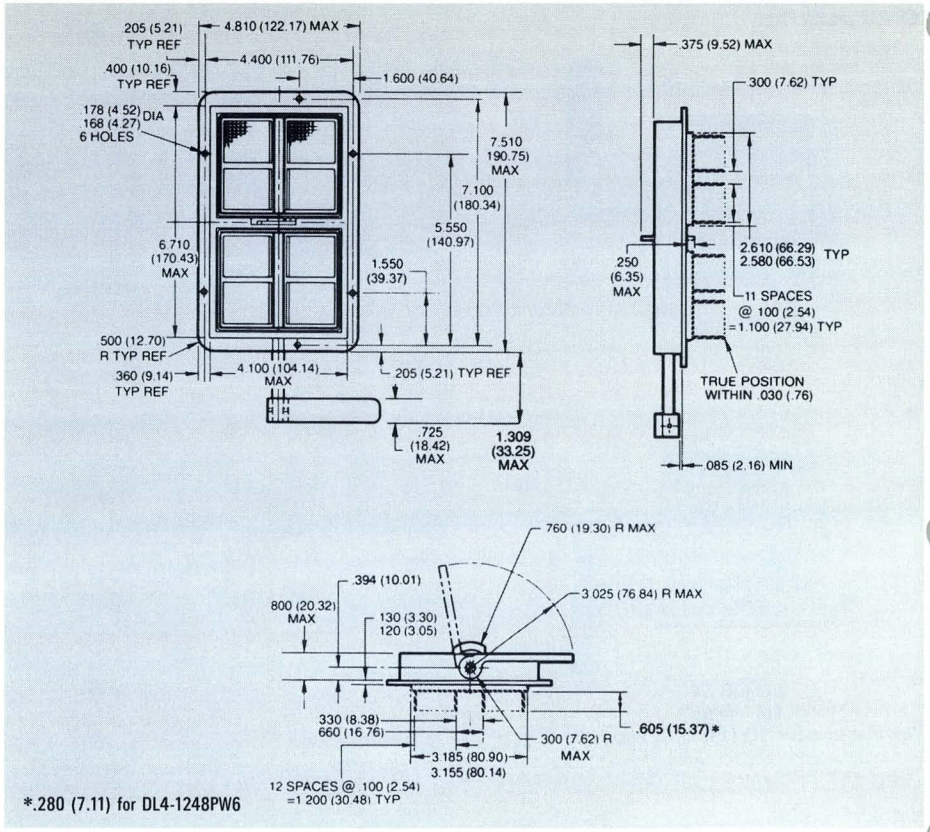
Shell Dimensions (Continued)

DL4-1248P and PW

DL4-1248P

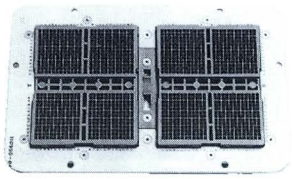


DL4-1248PW4
DL4-1248PW6
(With front removable .025 (.64) square wrap posts)

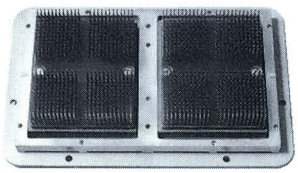


Note: See page 372 for cavity identification

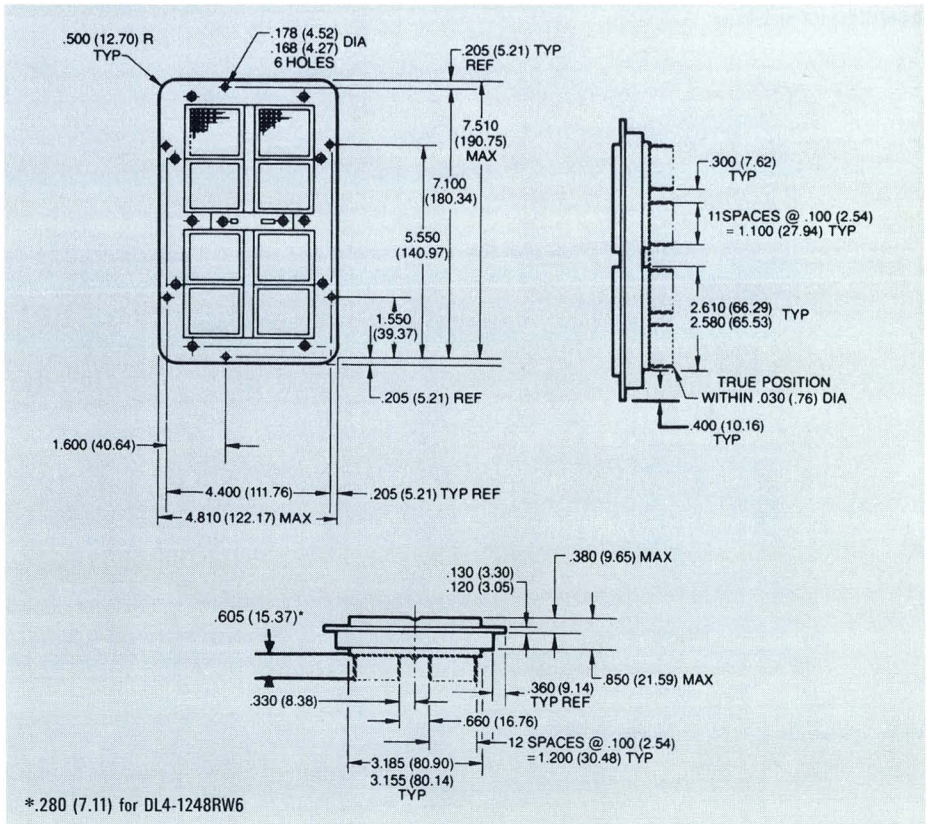
DL4-1248R and RW



DL4-1248R



DL4-1248RW4
DL4-1248RW6
(With front removable .025 (.64) square wrap posts)

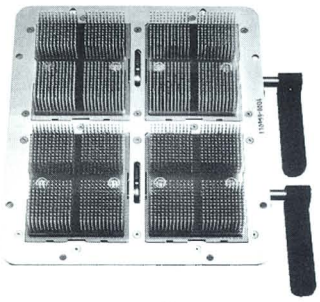


Dimensions are shown in inches (millimeters).
Dimensions subject to change.

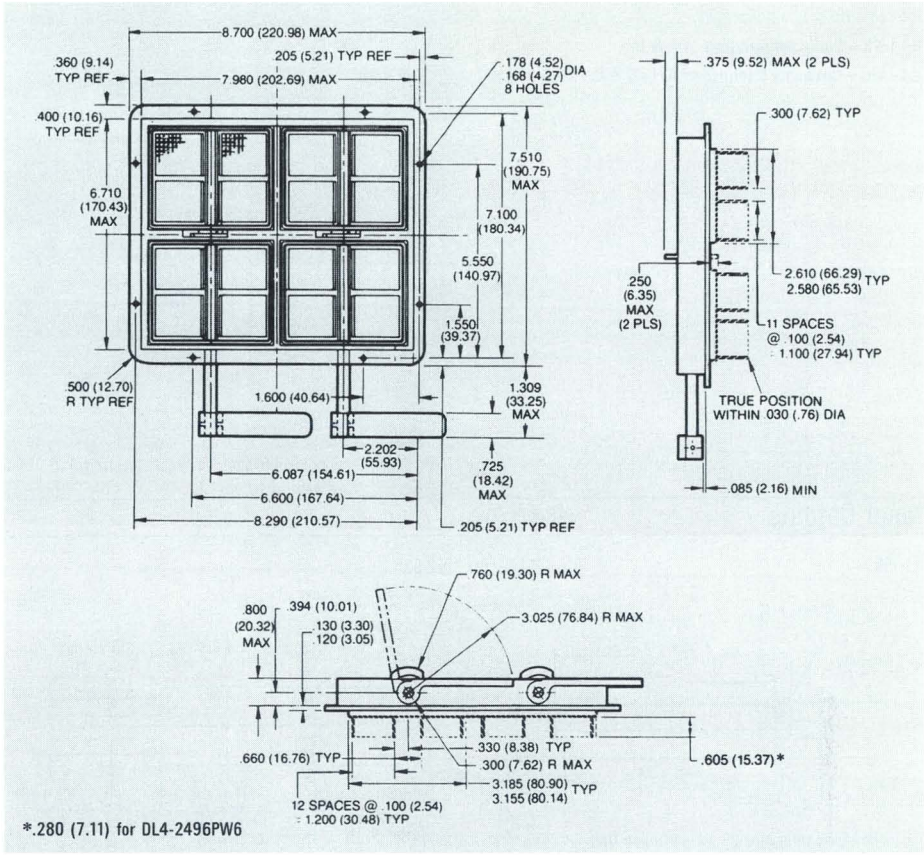
Shell Dimensions

DL4-2496P and PW

DL4-2496P

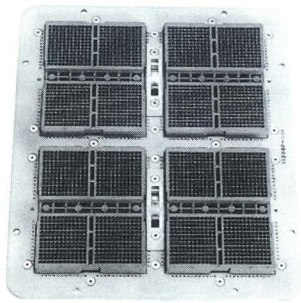


DL4-2496PW4
DL4-2496PW6
(with front removable .025 (.64) square wrap posts.)

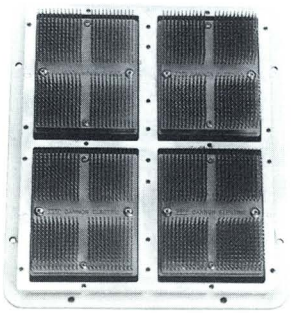


Note: See page 372 for cavity identification

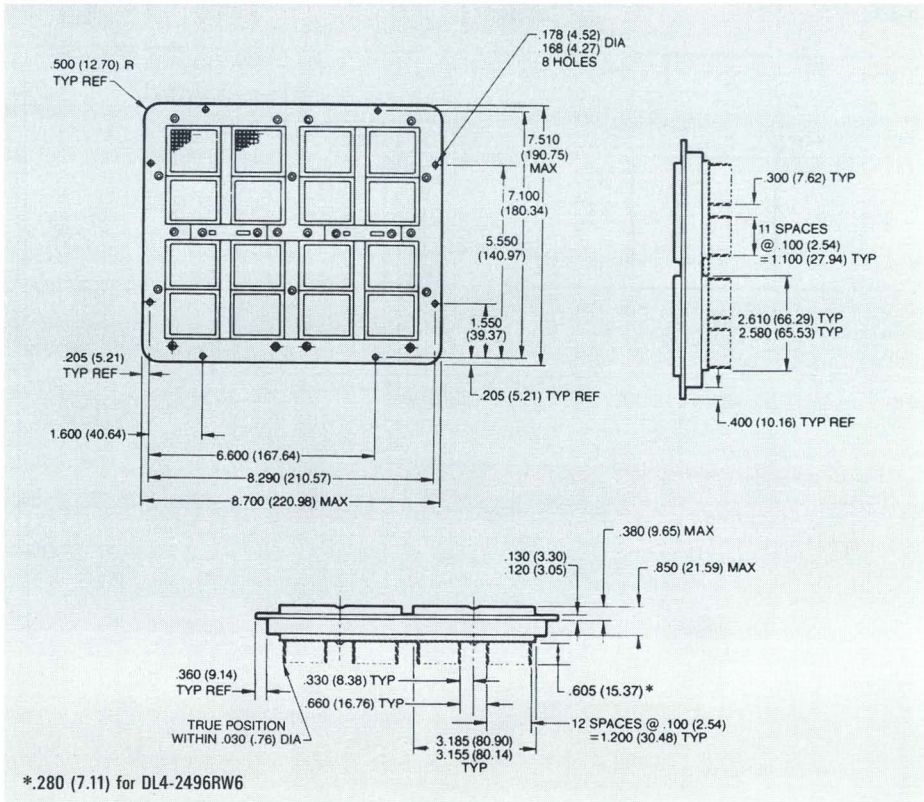
DL4-2496R and RW



DL4-2496R



DL4-2496RW4
DL4-2496RW6
(With front removable .025 (.64) square wrap posts.)

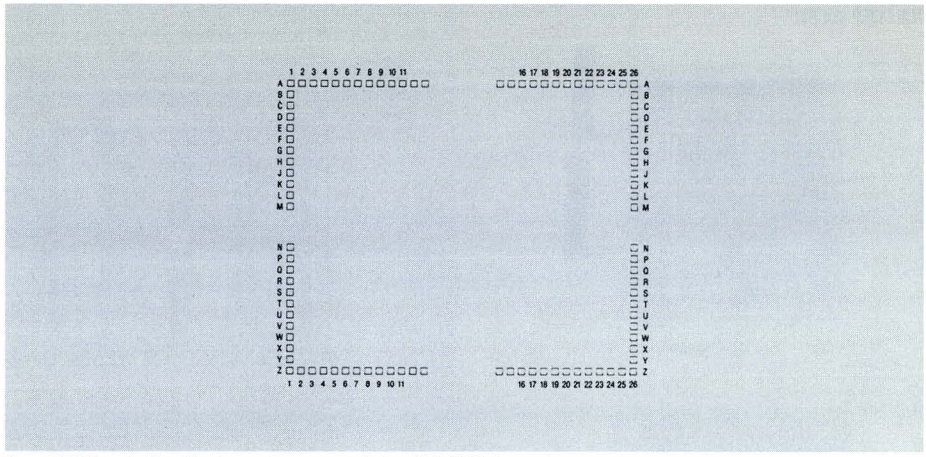


Cavity Quadrant Identification — DL4

DL4-624 – No quadrant identified.

DL4-1248 – Quadrants identified as A & B.

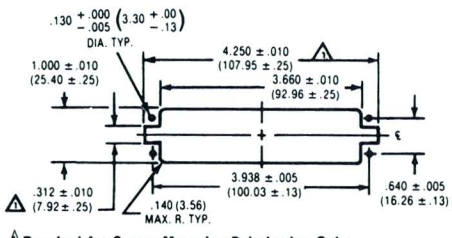
DL4-2496 – Quadrants identified as A, B, C & D.



Note: All DL4 cavity identification quadrants are typical to DL4-624P shown above.

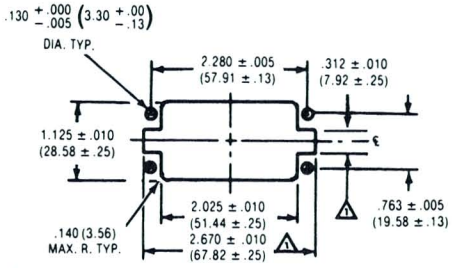
Panel Cutouts

DL1-156



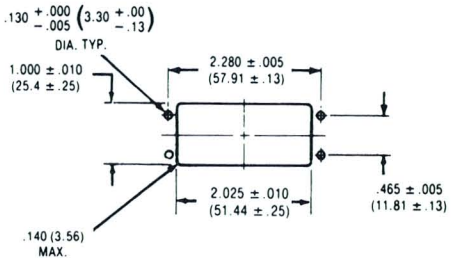
⚠ Required for Center Mounting Polarization Only

DL2-96

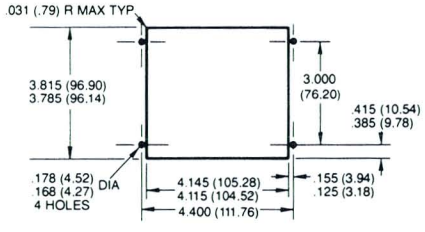


⚠ Required for Center Mounting Polarization Only

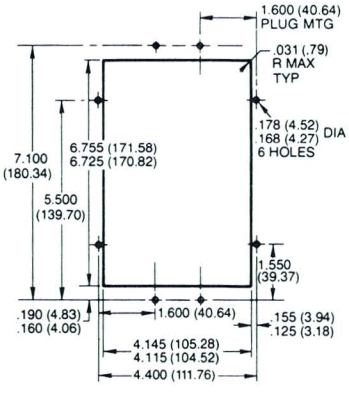
DL3-60



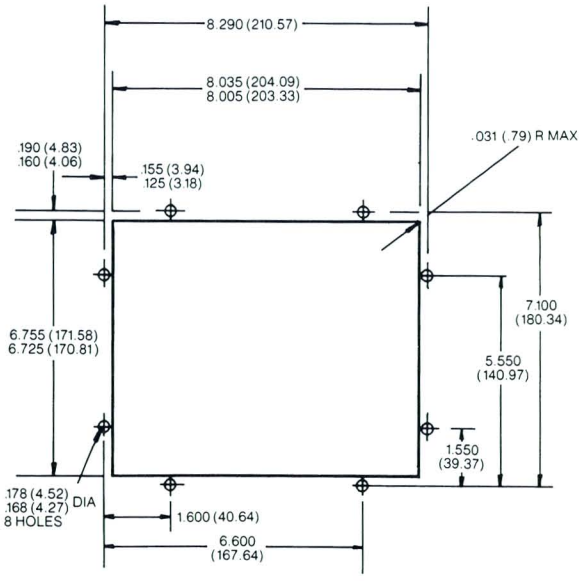
DL4-624



DL4-1248

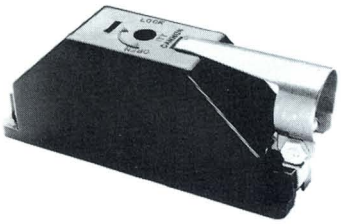


DL4-2496



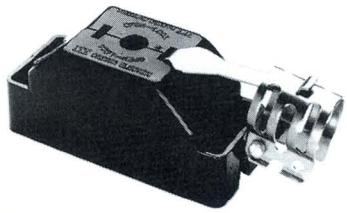
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Junction Shell Kits



DL1-J/S

DL2-J/S



DL3-J/S

- Stainless steel cable clamps
- Thermoplastic UL 94V-1 rated
- Straight, right angle or 45° cable entry
- Accommodates up to .875 (22.22) cable
- DL1 shell is single piece
- DL2 and DL3 are two piece shells
- Knockout plug provides alternate second cable entry
- Complete with 4 attaching screws and nuts

Junction Shell Kit — Selection Guide

For use on:	Mounting	Straight or Right Angle			45°
	Max. Cable Entry	.560 (14.2)	.625 (15.9)	.875 (22.23)	.625 (15.9)
DL1-156				DL1-J/S 249-1950-000	
DL2-96		DL2-J/S 249-1985-000	DL2-2J/S 249-2238-000	DL2-4-J/S 249-2238-001	DL2-1-J/S 249-1985-001
DL3-60		DL3-J/S 249-2060-000	DL3-3J/S 249-2237-000	DL3-4-J/S 249-2237-001	DL3-2J/S 249-2060-001

Cable Clamp Kits

C/C Kit	Part No.	Used on	Mounting	Cable Entry
DL1-C/C	218-0179-000	DL1	STR OR R/A	.875 (22.23)
DL2-C/C	218-0180-000	DL2, 3	STR OR R/A	.560 (14.2)
DL2-1-C/C	218-0181-000	DL2, 3	45°	.625 (15.9)
DL2-2-C/C	218-0181-001	DL2, 3	STR OR R/A	.625 (15.9)
DL2-3-C/C	218-0200-000	DL2, 3	STR OR R/A	.875 (22.23)

Actuating Handle Kit

DL HANDLE
Part No. 204-0016-000

Material: Glass-filled nylon actuating handle

- Provides a convenient method of actuating the contacts and cam for locking the connector
- Kit provides actuating handle and attaching screw
- Pointer on handle denotes "locked" and "open" positions

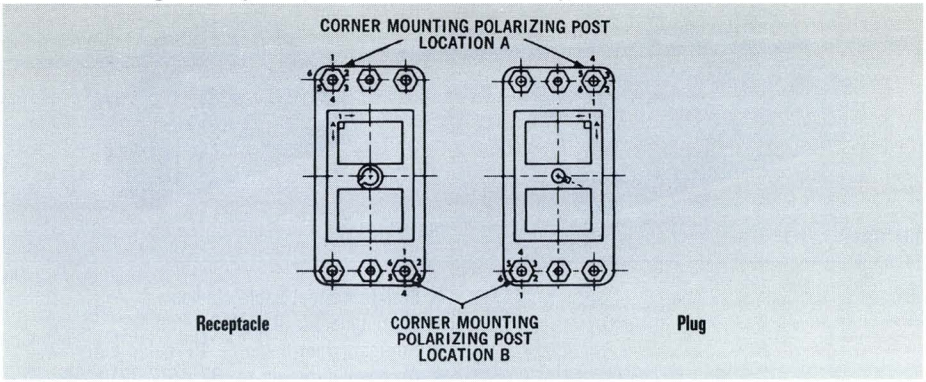
Polarizing Posts

Corner Mounting for DL1, 2, 3.
Kit No. 320-0021-006
Contains 2 posts and 2 screws
Post – Zinc per QQ-Z-363/Yellow chromate over cadmium
Screws – 4-40 x 9/32 Pan Head – Steel/Yellow chromate over cadmium
All corner mounting polarization is accomplished by replacing the nut with the polarizing post.

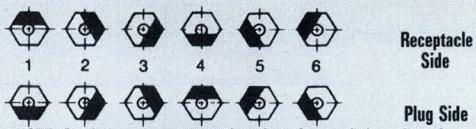
Center Mounting for DL1 and 2.
Kit No. 320-0021-005
Contains 2 posts and 2 screws
Post – Zinc per QQ-Z-363/Clear Chromate over cadmium
Screws – 2-56 x 3/16 Fil. Head – Steel/Clear chromate over cadmium

EXAMPLE
DL1-156RW432C describes a Size 1 receptacle connector with 156 front insertable/removable post contacts with polarization position 3 at location A and position 2 at location B.
Receptacle DL1-156RW432C would mate with plug DL1-156PW432C.

Corner Polarizing Post Layouts (for customer reference only)



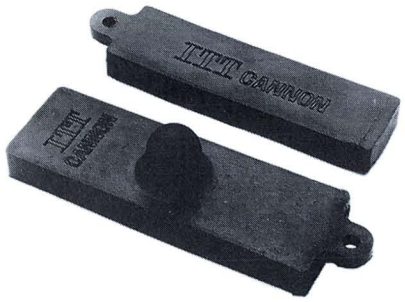
DL1-156, DL2-96 and DL3-60 Reference Views for Polarizing Arrangements



NOTE: Shaded area represents location of extended portion of polarizing pins in plug or receptacle.

Protective Covers

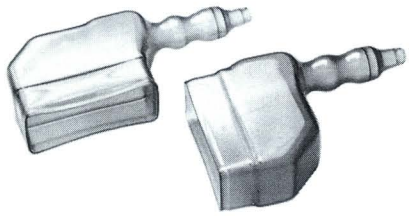
- Fits snugly over mating faces
- Prevents foreign matter from permeating contact cavities
- Anti-static synthetic rubber – ASTM2BC520A14B14Z1.



Description	Part Number
DL1-156P	039-0242-000
DL1-156R	039-0243-000
DL2-96P	039-0244-000
DL2-96R	039-0245-000
DL3-60P	039-0246-000
DL3-60R	039-0247-000
DL4-624P	039-0239-000
DL4-624R	039-0240-000
DL4-1248P	039-0235-000
DL4-1248R	039-0236-000
DL4-2496P	039-0237-000
DL4-2496R	039-0238-000

Protective Boots

- Straight or 90°
- Snaps over junction shell
- Graduated cable entry for wide range of cable diameters
- Fits both plug and receptacle
- Plasticized polyvinyl chloride



	Transparent	Black	Red
DL1 STR	317-1368-000	317-1368-001	317-1368-002
DL1 90°	317-1368-003	317-1368-004	317-1368-005
DL2 STR	317-1382-000	317-1382-001	317-1382-002
DL2 90°	317-1382-003	317-1382-004	317-1382-005
DL3 STR	317-1396-000	317-1396-001	317-1396-002
DL3 90°	317-1396-003	317-1396-004	317-1396-005

ITT Cannon
1851 E. Deere Ave, P.O. Box 35000, Santa Ana, CA 92705-6500 • (714) 261-5300

Contacts

Crimp

Loose

Reeled

Wire Accommodation	Loose 20μ" Gold	Loose 50μ" Gold†	Loose 50μ" Gold Flat†	Hand Tool	Reeled 20μ" Gold	Reeled 50μ" Gold	Reeled 50μ" Gold Flat
28 thru 32 AWG	030-2416-001	030-2416-003	030-2494-001	1	110238-0403	110238-0482	110238-0486
24 thru 26 AWG	030-2410-001	030-2410-003	030-2492-001	2	110238-0401	110238-0480	110238-0484
20 thru 22 AWG	030-2409-001	030-2409-003	030-2491-001	2	110238-0400	110238-0479	110238-0483
18 thru 20AWG*	030-2415-002	030-2415-003	030-2493-001	3	110238-0402	110238-0481	110238-0485

*Non Insulation Support

† For low current applications (less than 100 milliamps) use 50 microinches gold contact on plug side and 50 microinches flat gold contact on receptacle side.

Material: Beryllium copper alloy
Finish: Selective gold plate over 50 microinches of nickel
Extraction Tool: P/N 274-7029-007
Insertion Tool: None required

Hand Crimp Tool

	Description	Part Number
1.	CCT-DLT-1	995-0002-084
2.	CCT-DLT	995-0002-154
3.	CCT-DL-3	995-0001-903

Wire Wrap and Printed Circuit

Material: Beryllium copper alloy
Finish: Selective gold plate over 50 microinches of nickel
Extraction Tool: P/N 274-7045-000 (.605 PC tail)
P/N 274-7045-001 (.280 PC tail)

Length PC Tail	Length Wire Wrap	Plating 20 Micro-inches Gold	Connector Mod Code	Plating† 50 Micro-inches Gold	Connector Mod Code	Plating† 50 Micro-inches Gold Flat Tip	Connector Mod Code
.605	.580	030-2235-002	-W4	030-2235-010	-W4A	030-2488-000	-W4B
.280	.265	030-2235-009	-W6	030-2235-011	-W6A	030-2482-001	-W6B

Note: Loose piece wire wrap and printed circuit contacts are sold in limited quantities for minor repair work only. Fully loaded connectors may be ordered using connector mod codes listed above.

† For low current applications (less than 100 milliamps) use 50 microinches gold contact on plug side and 50 microinches flat gold contact on receptacle side.

Buss Contacts

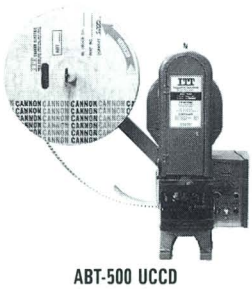
Designed for power distribution requirements of more than 5 amps.

- Accommodates #18 thru #30 AWG wire

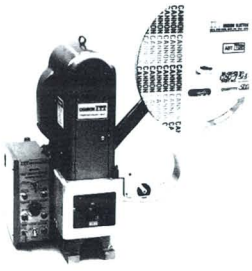
Material: Beryllium copper alloy
Finish: 20 microinches of gold over 50 microinches of nickel.

	Buss Contacts	Buss Contact Extraction Tool
Description	Part Number	Part Number
1 pair	030-7380-001	274-7029-003
2 pair	030-7380-002	274-7029-004
3 pair	030-7380-003	274-7029-004
4 pair	030-7380-004	274-7029-005
5 pair	030-7380-005	274-7029-006
6 pair	030-7380-006	274-7029-006

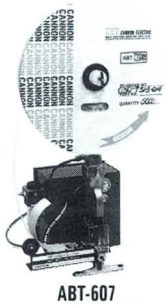
Semi-Automatic Crimp Tools



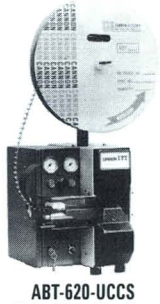
ABT-500 UCCD
Crimp Machine



ABT-500-UCCS
Strip-Crimp Machine



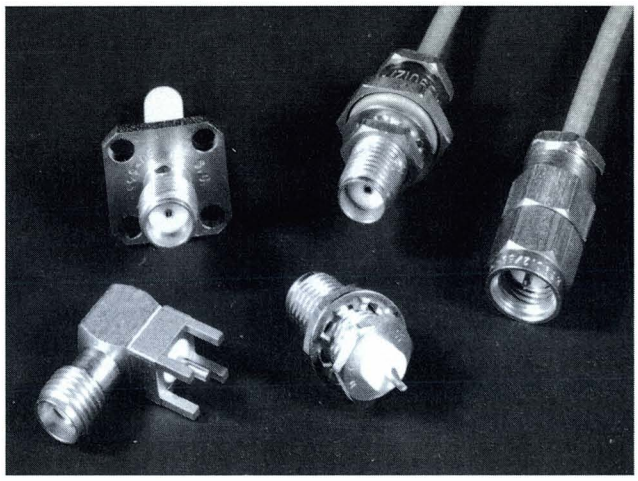
ABT-607
Pneumatic Crimp Machine



ABT-620-UCCS
Strip-Crimp Machine

SMA Subminiature RF Connectors

SMA connectors are the de-facto standard medium-power coaxial cable connectors for military and microwave applications. They transmit radio frequencies and mirowaves up to 18GHz with low VSWR, and are usable up to 26GHz. All meet the construction standards and electrical interchangeability of MIL-C-39012, Type SMA, Screw-On coupling interface. Crimp, clamp, and solder connections for braided cable. Solder, solder-clamp and field-repairable solderless type for semi-rigid coax. The following pages show a representative sample of the more than 200 different SMA connector types made by ITT Sealectro.



Standard Data

ELECTRICAL

Impedance: 50 ohms

Frequency Range: 0 to 18.0 GHz

Insulation Resistance: 5000 megohms min.

Voltage Standing Wave Ratio (VSWR)*
To 18 GHz or 80% of upper cutoff frequency of the cable, whichever is lower. (F=GHz)

Cable Group	Connector Configuration	
	Straight	Rt. Angle
RG-178/U Braided	1.20 + .025F	1.20 + .03F
RG-316/U Braided	1.15 + .02 F	1.15 + .03F
RG-142/U Braided	1.15 + .01 F	1.15 + .02F

Dielectric Withstanding Voltage (DMV): VRMS at Sea Level 750
Connectors for RG-316/U series cable

R.F. Leakage: −60 dB min @ 2-3 GHz

Insertion Loss: .06 x $\sqrt{\text{freq. GHz tested}}$ @ 6 GHz

MATERIALS AND FINISHES

Body and Body Components: Non-magnetic stainless steel, per ASTM A 582, Class 303, Conditiion A.

Female Contacts: Beryllium copper per QQ-C-530, heat treated per MIL-H-7199.

Insulators: TFE fluorocarbon per ASTM D 1710, Type I Grade 1.

Crimp Ferrule: Annealed copper alloy per WW-T-799.

Gaskets: Silicone rubber per ZZ-R-765, Class IIB, Grade 65-75.
Center Contacts:
.00005 min. Gold per MIL-G-45204B TYpe I, Grade C, Class 1.
over .000005 Gold per MIL-G-45204B Type I, Grade A.
over .0001 min. nickel per QQ-N-290.

Other Metal Parts: Gold plated or passivated (as specified) to meet the finish and corrosion requirements of MIL-C-39012.

*Applicable to 50 ohm cables only

ENVIRONMENTAL

Temperature Rating: −65°C to +165°C

GENERAL

Hermetic Seal: Leakage of hermetically sealed connectors shall not exceed 1 x 10^{-7} cc/sec. of tracer gas at atmospheric pressure and ambient temperature.

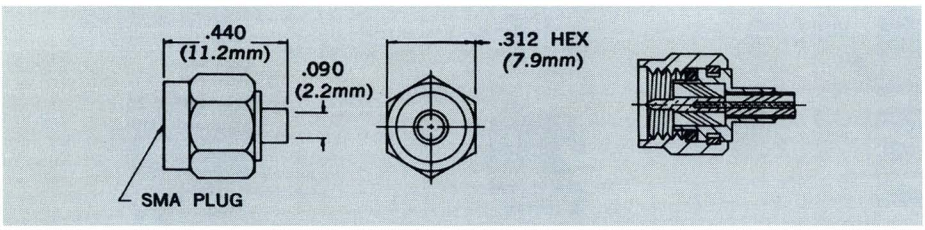
Contact Captivation: Unless otherwise specified, all connectors feature captivated contacts. When captivated, the contacts will withstand 6.0 lbs. minimum axial force.

Contact Torque: 4.0 inch-ounces minimum.

Connector Durability: 500 cycles minimum.

Cable Retention:
When properly assembled to the compatible single-braided, coaxial cable, the retention is equal to the breaking strength of the cable.

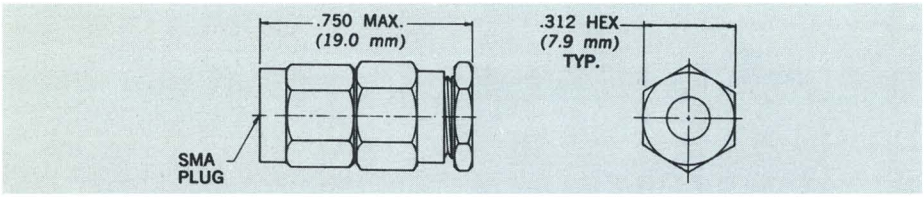
Straight Plug for Semi-Rigid Cable, Solder Type



If required, insulator pre-assembled at factory
55-607-3702-31

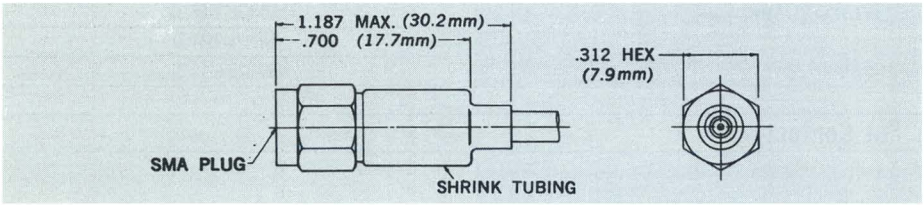
Insulator Not Assembled
55-607-9172-31

Staight Plug for Braided Coax, Clamp Type



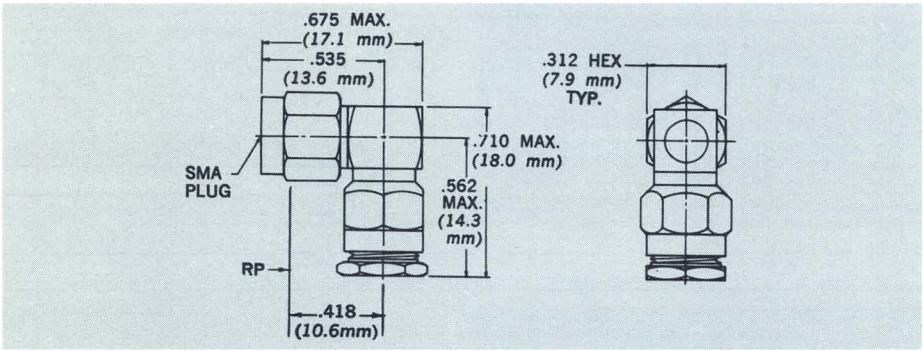
Part Number
50-607-3188-31
50-607-3141-31

Straight Plug for Braided Coax, Crimp Type



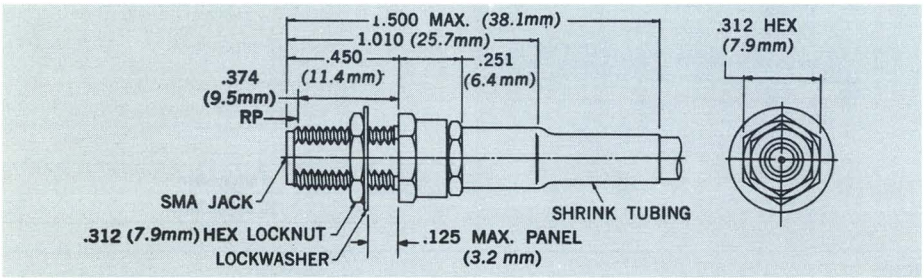
Part Number
50-622-9188-31
50-622-9141-31
50-622-9142-31

Right Angle Plug for Braided Coax, Clamp Type



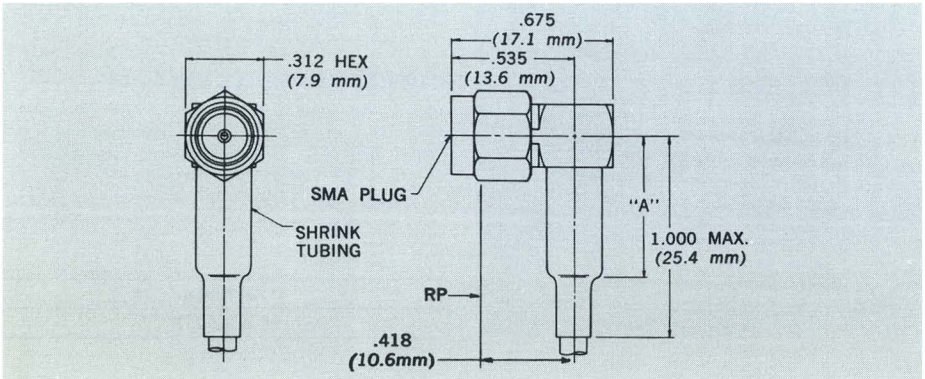
Part Number
50-611-3188-31
50-611-3141-31

Bulkhead Jack for Braided Coax, Crimp Type



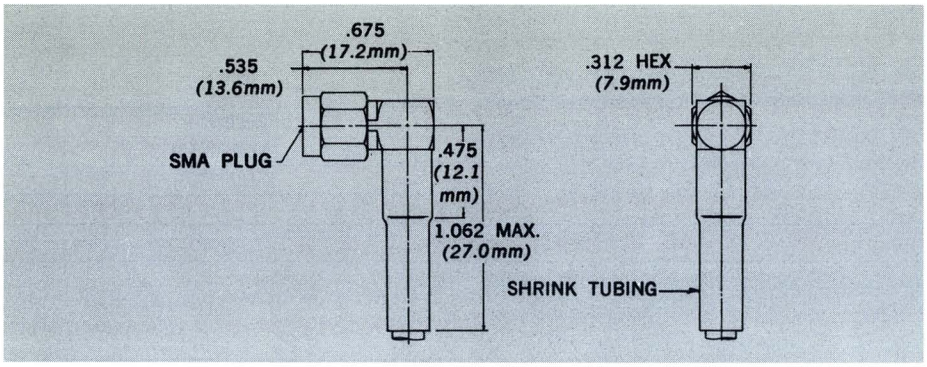
Part Number
50-627-9188-31
50-627-9141-31
50-627-9142-31

Right Angle Plug for Braided Coax, Solder Type



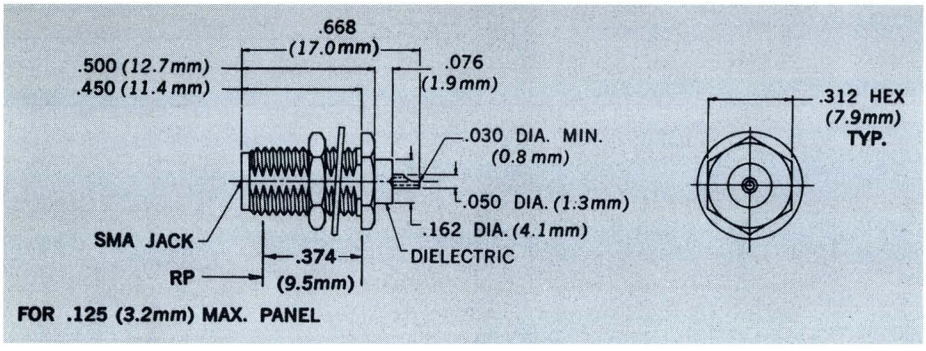
Part Number	"A" Dim.
50-628-9188-31	.440 (11.1mm)
50-628-9141-31	.630 (16.0mm)

Right Angle Plug for Braided Coax, Crimp Type



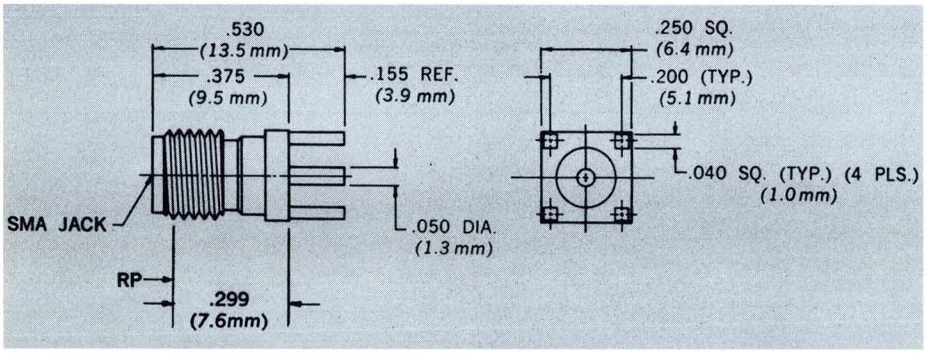
Part Number
50-628-9188-31
50-628-9141-31
50-628-9142-31

Bulkhead Mount Jack Receptacle, Solder Pot Contact



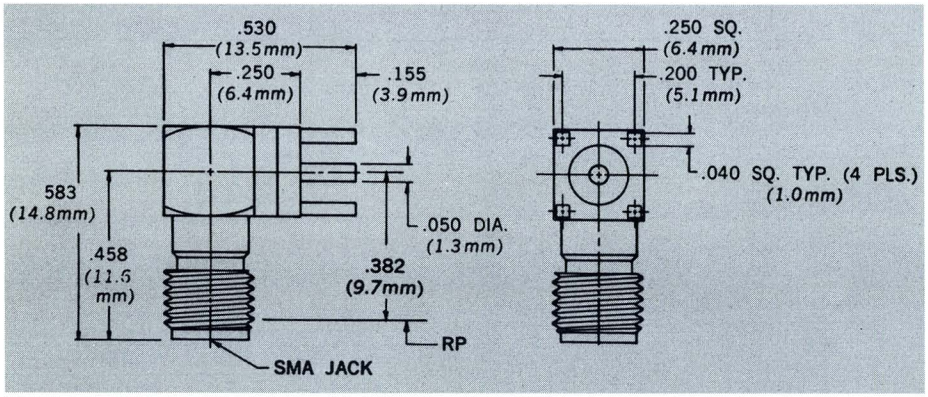
Part Number	
50-643-0000-31	(Captivated Contact)

Straight Printed Circuit Jack Receptacle



Part Number
50-651-0000-31

Right Angle Printed Circuit Jack Receptacle



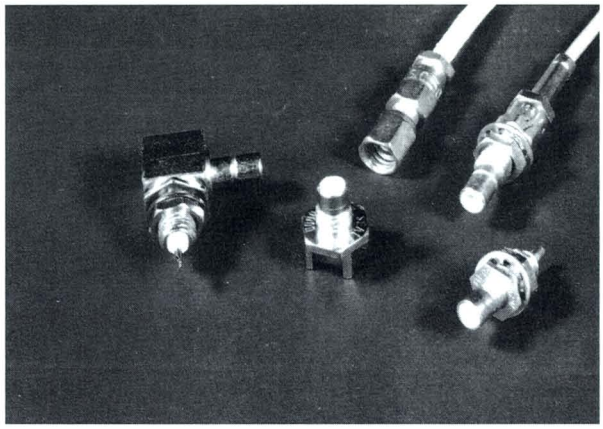
Part Number
50-653-0000-31

ITT Sealectro
40 Lindeman Drive, Trumbull, CT • (203) 372-4118

Dimensions are shown in inches (millimeters).
Dimensions subject to change.

ConheX® Subminiature RF Connectors

ConheX® connectros are subminiature units built to meet or exceed the requirements of MIL-C-39012, Types SMB and SMC... used extensively in military, telecommunications and instrumentation for high-density radio frequency and microwave circuits up to 12.4 GHz. Because of their small size, these connectors utilize overlapping dielectrics to maintain electrical integrity at high frequencies. Screw-on MIL type SMC, snap-on MIL type SMB and slide-on interfaces in both 50 and 75 Ohm impedances. Crimp and clamp type connections for braided coax cable. Clamp, solder and solder-clamp attachments for semi-rigid coax. Over 300 different connector types available.



Standard Data

ELECTRICAL

Impedance: 50 ohms and 75 ohms, nominal

Frequency Range: 0 to 12.4 GHz

Insulation Resistance: 1000 megohms min.

Voltage Standing Wave Ratio (VSWR)*
To 12.4 GHz or 80% of upper cutoff frequency of the cable, whichever is lower.

(F=GHz)	Mating Engagement			
	Snap-On (SMB)		Screw-On (SMC)	
Cable	Straight	Rt. Angle	Straight	Rt. Angle
RG-196/U Series	1.30 + .04F	1.45 + .06F	1.25 + .04F	1.40 + .06F
RG-188/U Series	1.25 + .04F	1.35 + .04F	1.20 + .04F	1.30 + .04F

Dielectric Withstanding Voltage (DWV): VRMS at Sea Level 1500
50 Ω connectors for RG-188/U series cable

R.F. Leakage:
Screw-On ..... −60 dB min. @ 2-3 GHz
Snap-On and Slide-On ..... −55 dB min. @ 2-3 GHz

Insertion Loss: .25 dB max. freq. GHz tested @ 4 GHz

MATERIALS AND FINISHES

Body and Body Components and Male Contacts: Brass, half hard, per QQ-B-626, Alloy 360.

Female Contacts: Beryllium copper per QQ-C-530, heat treated per MIL-H-7199.

Insulators: TFE fluorocarbon per ASTM D 1710, Type I Grade 1.

Lockwashers: Phosphor bronze per QQ-B-750.

Clamp Sleeve: Nickel silver.

Crimp Ferrule: Annealed copper alloy per WW-T-799.

Gaskets: Silicone rubber per ZZ-R-765, Class IIB, Grade 65-75.

Center Contacts (except for QPL items):
.000050 min. Gold per MIL-G-45204B Type I, Grade C, Class 1.
over .000005 Gold per MIL-G-45204B Type I, Grade A.
over .0001 min. nickel Per QQ-N-290.

Other Metal Parts: Gold plated to meet the finish and corrosion requirements of MIL-C-39012.

*Applicable to 50 ohm cables only.

ENVIRONMENTAL

Temperature Rating: −65°C to +165°C

GENERAL

Hermetic Seal: Leakage of hermetically sealed connectors shall not exceed 1 x 10^{-5} cc/sec. of tracer gas at atmospheric pressure.

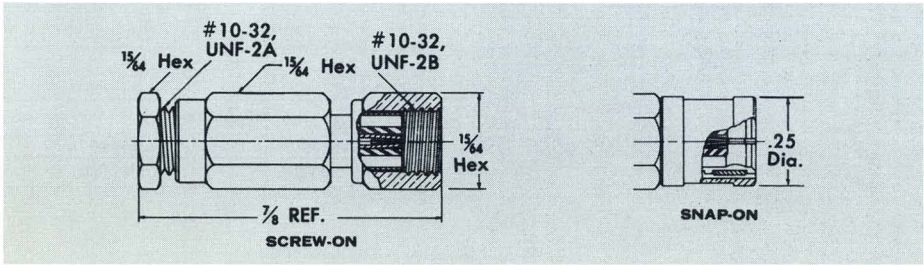
Contact Captivation: Unless otherwise specified, all connectors feature captivated contacts. When captivated, the contacts will withstand 4.0 lbs. minimum axial force.

Contact Torque: N/A

Connector Durability: 500 cycles minimum.

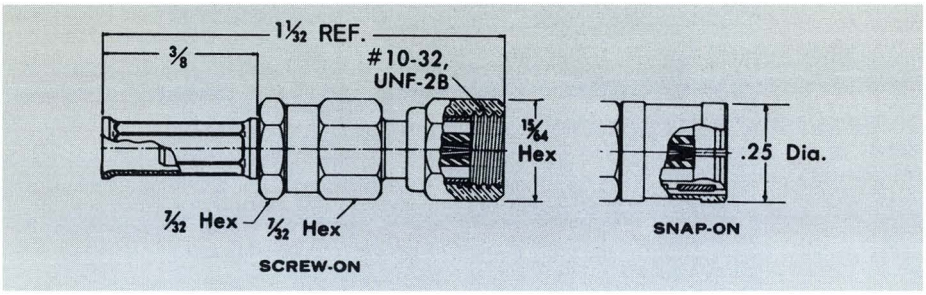
Cable Retention:
When properly assembled to the compatible braided coaxial cable, the retention is equal to the breaking strength of the cable.

Straight Plug for Braided Coax, Clamp Type



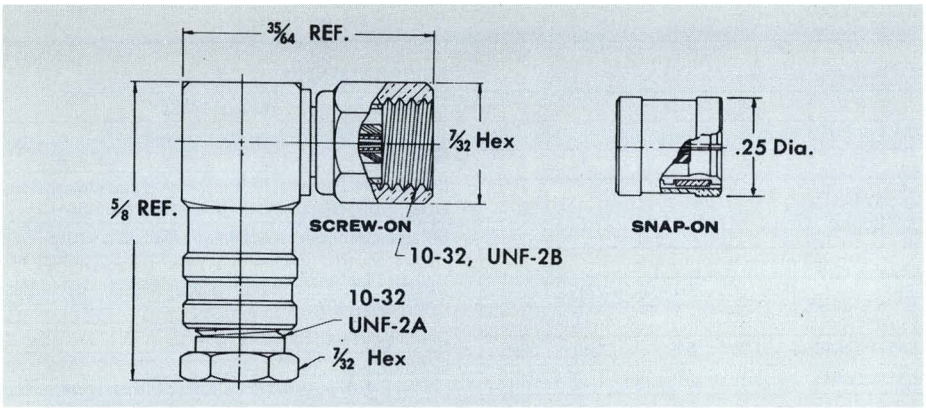
Part Number		
Cable	Screw-On	Snap-On
RG-188/U; 316/U	50-007-0000	51-007-0000
RG-178/U; 196/U	50-007-3196	51-007-3196

Straight Plug for Braided Coax, Crimp Type



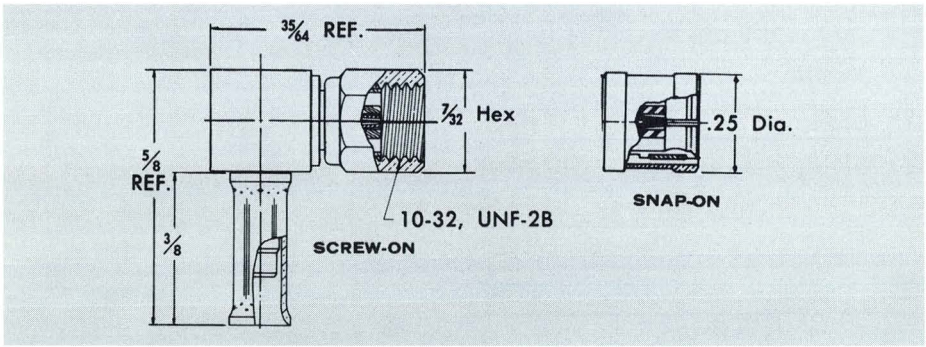
	Part Number	
Cable	Screw-on	Snap-on
RG-188/U; 316/U	50-024-0000	51-024-0000
RG-178/U; 196/U	50-024-3196	51-024-3196

Right Angle Plug for Braided Coax, Clamp Type



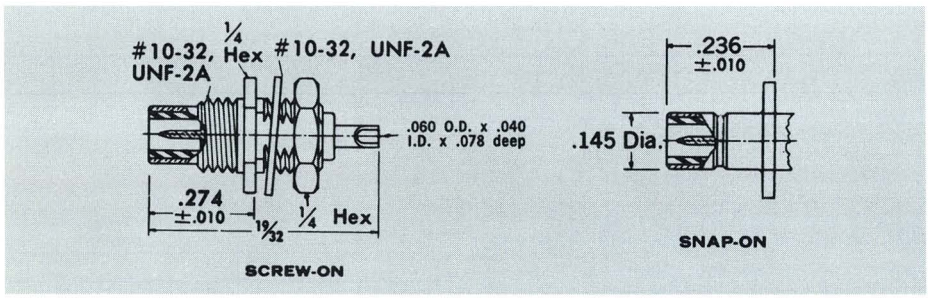
	Part Number	
Cable	Screw-on	Snap-on
RG-188/U; 316/U	50-311-3188	51-311-3188
RG-178/U; 196/U	50-311-3196	51-311-3196

Right Angle Plug for Braided Coax, Crimp Type



	Part Number	
Cable	Screw-on	Snap-on
RG-188/U; 316/U	50-328-3188	51-328-3188
RG-178/U; 196/U	50-328-3196	51-328-3196

*Bulkhead Jack Receptacle, Front Mount, Solder Pot



	Part Number	
Screw-on	Snap-on	
50-045-0000	51-045-0000	

*Designed for .093" max. Panel

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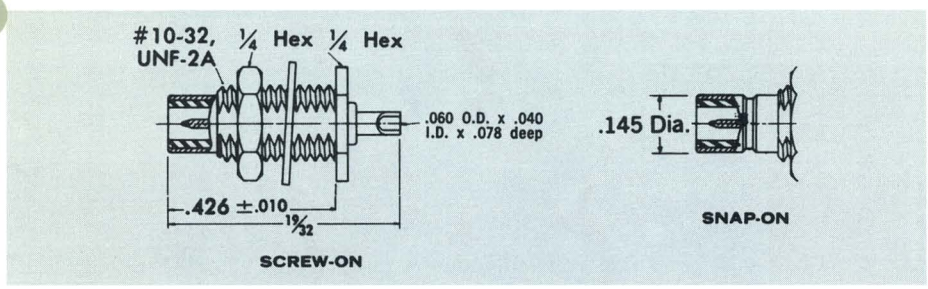
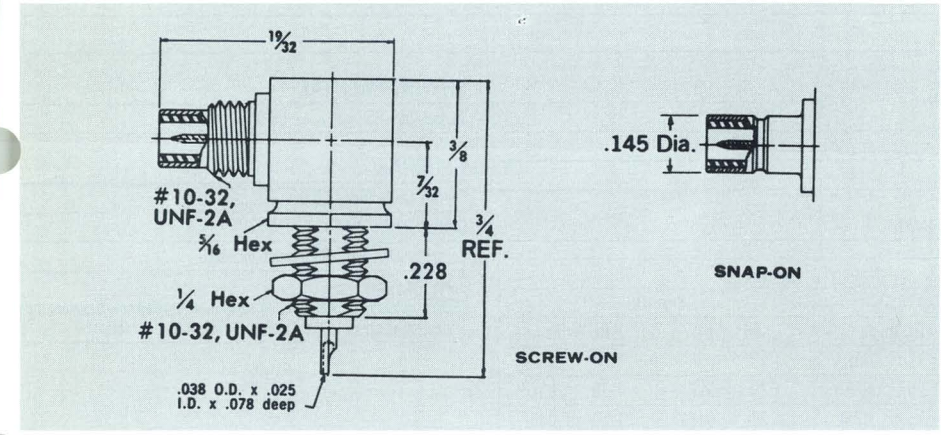
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

*Bulkhead Jack Receptacle, Rear Mount, Solder Pot



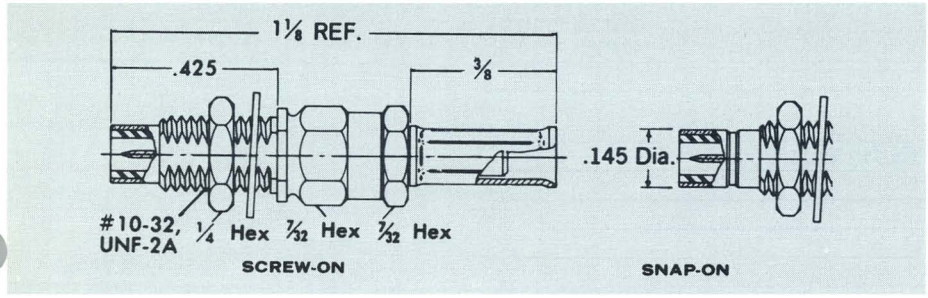
Part Numbers	
Screw-on	Snap-on
50-043-0000	51-043-0000

*Right Angle Bulkhead Jack Receptacle, Solder Pot



Part Numbers	
Screw-on	Snap-on
50-047-0000	51-047-0000

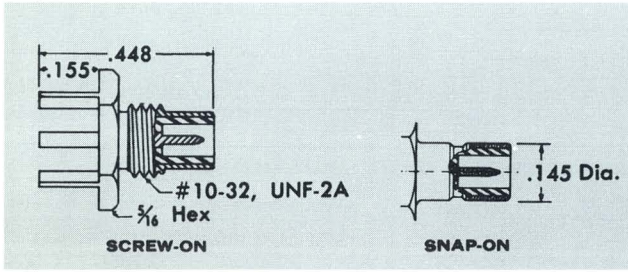
*Straight Bulkhead Jack for Braided Coax, Crimp Type



Part Numbers		
Cable	Screw-on	Snap-on
RG-188/U; 316/U	50-027-0000	51-027-0000
RG-178/U; 196/U	50-027-3196	51-027-3196

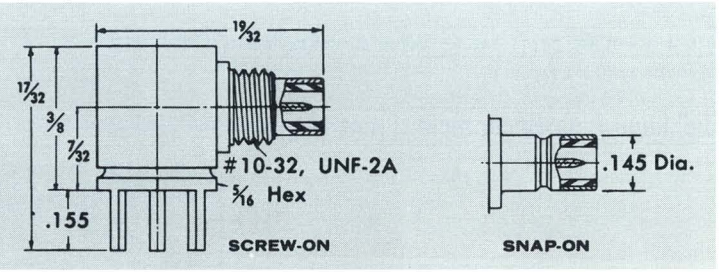
*Printed Circuit Jack Receptacle

Straight



Part Number: 50-051-0000 Part Number: 51-051-0000

Right Angle

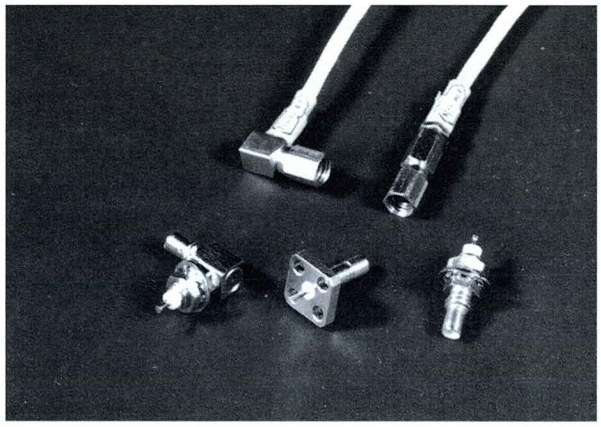


Part Number: 50-053-0000 Part Number: 51-053-0000

*Designed for .093" max. panel

NanoheX® Microminiature RF Connectors

Where packaging size restrictions are quite severe, ITT Sealectro's NanoheX® microminiature connectors are often the only connector that will fit, yet they still meet or exceed the applicable requirements of MIL-C-39012. These 50 Ohm connectors can be used up to 12.4 GHz. Overlapping dielectrics maintain alignment and electrical integrity at high frequencies. Screw-on MIL type SSMC, snap-on MIL type SSMB and slide-on interfaces. Crimp-type connections for braided coaxial cable, using a precision outer ferrule crimp tool for optimum electrical performance. Solder and clamp-type connections for semi-rigid coax. Over thirty types available.



Standard Data

ELECTRICAL

Impedance: 50 ohms

Frequency Range: 0 to 12.4 GHz

Insulation Resistance: 1000 megohms min.

Voltage Standing Wave Retio (VSWR Maximum)*
To 12.4 GHz or 80% of upper cutoff frequency of the cable, whichever is lower.

(F=GHz)	Mating Engagement			
	Screw-On		Snap-On	
Cable	Straight	Rt. Angle	Straight	Rt. Angle
RG-196/U; 178/U	1.15 + .02F	1.15 + .03F	1.20 + .02F	1.20 + .03F
RG-188/U; 316/U	1.25 + .02F	1.25 + .03F	1.30 + .02F	1.30 + .03F
.056 Semi-Rigid	1.15 + .015F	1.15 + .025F	1.20 + .015F	1.20 + .025F
.085 Semi-Rigid	1.20 + .015F	1.20 + .025F	1.25 + .015F	1.25 + .025F

Dielectric Withstanding Voltage (DMV): 500 VRMS at Sea Level

R.F. Leakage:
Screw-On ..... −50 dB min. @ 2-3 GHz
Snap-On and Slide-On ..... −40 dB min. @ 2-3 GHz

Insertion Loss: .30 dB max. freq. GHz tested @ 1.5 GHz

MATERIALS AND FINISHES

Body and Body Components and Male Contacts: Brass, half hard, per QQ-B-626, Alloy 360.

Center Contacts: Beryllium copper per QQ-C-530, heat treated per MIL-H-7199.

Insulators: TFE fluorocarbon per ASTM D 1710, Type I Grade 1.

Coupling Nuts: Beryllim copper per QQ-C-530.

Lockwashers: Phosphor bronze per QQ-B-750.

Crimp Ferrule: Annealed copper alloy per WW-T-799.

Finish:
Center Contacts:
.000050 min. Gold per MIL-G-45204B Type I, Grade C, Class 1.
over .000005 Gold per MIL-G-45204B Type I, Grade A.
over .0001 min. nickel Per QQ-N-290

Other Metal Parts: Gold plated to meet the finish and corrosion requirements of MIL-C-39012.

*Applicable to 50 ohm cables only.

ENVIRONMENTAL

Temperature Rating: −65°C to +165°C

GENERAL

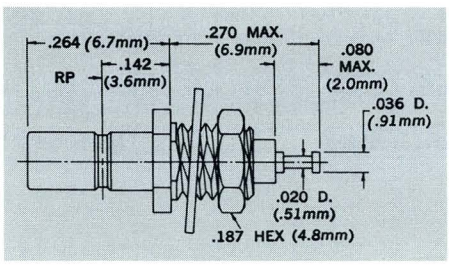
Contact Captivation: 2.0 lbs. min. axial force.

Contact Torque: N/A

Connector Durability: 500 cycles minimum.

Cable Retention:
When properly assembled to the compatible braided coaxial cable, the retention is equal to the breaking strength of the cable.

Bulkhead Plug Receptacle, Front Mount



Part Number
51-445-0000

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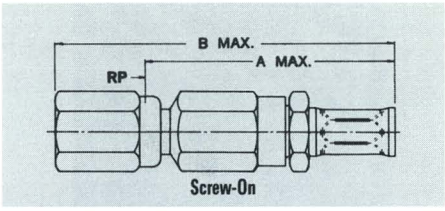
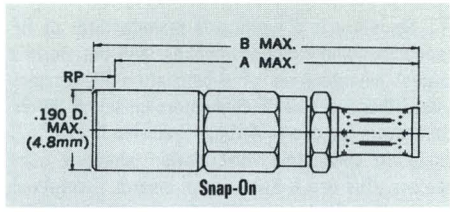
Dimensions are shown in inches (millimeters).
Dimensions subject to change.

Straight Plug for Braided Coax, Crimp Type

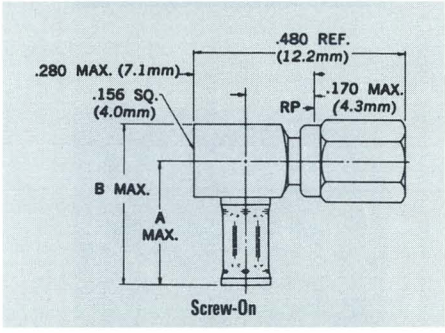


Part Number	A	B
50-424-3188	.590 (15mm)	.790 (20mm)
50-424-3196	.560 (14.2mm)	.760 (19.3mm)

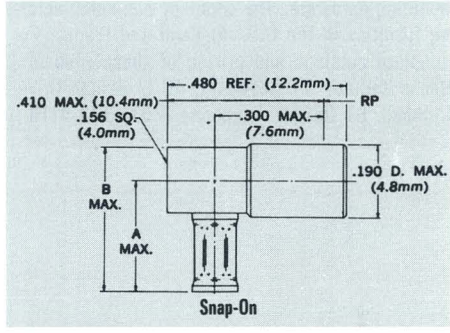


Part Number	A	B
51-424-3188	.720 (18.3mm)	.790 (20.1mm)
51-424-3196	.690 (17.5mm)	.760 (19.3mm)

Right Angle Plug for Braided Coax, Crimp Type

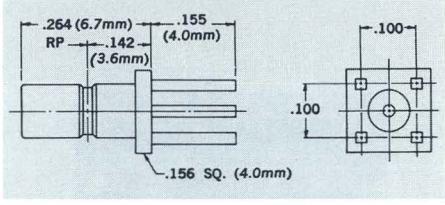


Part Number	A	B
50-428-3188	.320 (7.5mm)	.400 (9.5mm)
50-428-3196	.295 (6.5mm)	.375 (8.8mm)



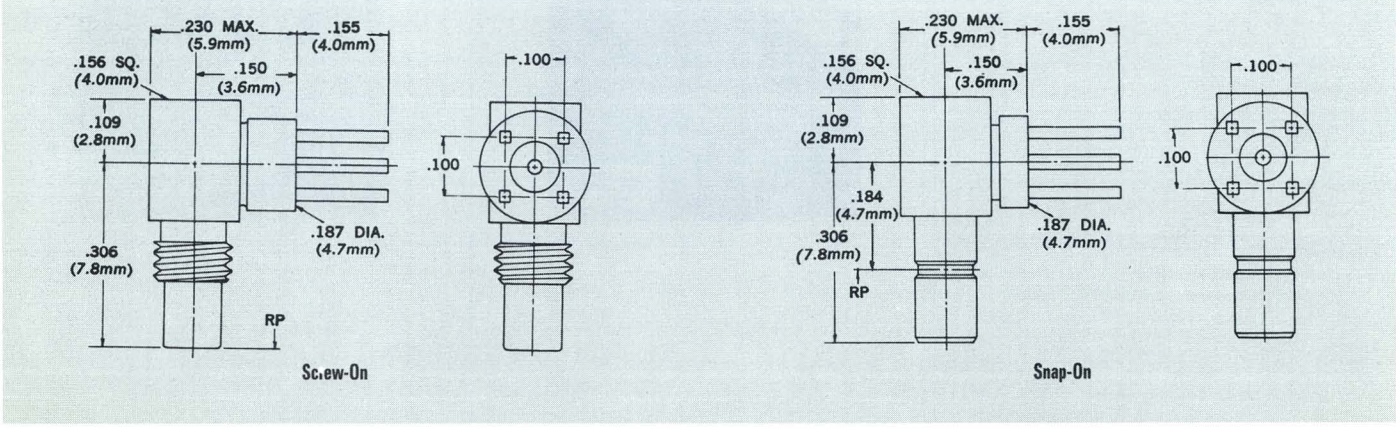
Part Number	A	B
51-428-3188	.320 (7.5mm)	.400 (9.5mm)
51-428-3196	.295 (6.5mm)	.375 (8.8mm)

Straight Printed Circuit Jack Receptacle



Part Number
51-451-0000

Right Angle Printed Circuit Jack Receptacle

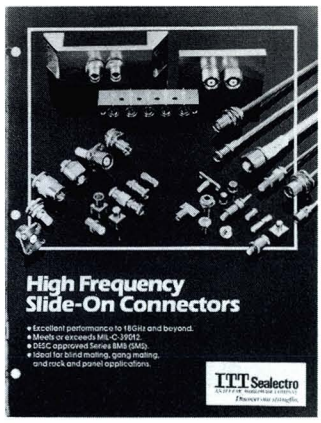


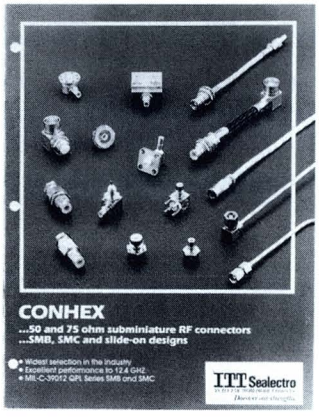
Part Number: 50-453-0000

Part Number: 51-453-000

Sealectro RF Connectors and Circuit Components.

ITT Sealectro is a worldwide manufacturer of RF connectors and cable assemblies, and the world's largest manufacturer of subminiature RF connectors. Other types of RF connectors include K Series connectors for use to 46Ghz, Precision N and TNC miniature connectors, BNC Series miniature connectors, DIN and D-Sub Coaxial inserts, Twin-Axial connectors, Solderless SMA Connectors for field-repairable coax assemblies, Slide-On subminiature RF connectors for blind mating, gang mounting and rack-and-panel applications, and a complete range of Between-Series Adapters. Sealectro also manufactures a wide range of printed circuit and circuit board components, including terminals, sockets and mounting hardware. The company has manufacturing facilities in the U.S., England and France. For complete catalogs and pricing of these products, please contact ITT Sealectro, 40 Lindeman Drive, Trumbull, CT 06611. Telephone (203) 372-4118.





ITT Cannon publishes a listing of Worldwide Sales and Distributor Locations. If you would like a copy, please return the business reply card at the back of your Connector Sourcebook, or call or write ITT Cannon, Publications Department.

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