



Catalog 1308940 Revised 09-14

## Connectors for Aerospace, Defense and Marine

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## Introduction

For 50+ years, we have been helping the aerospace, defense and marine industry reach new levels of performance with specific product solutions. Built on the foundation of AMP Incorporated, which originated in 1941 as Aircraft Marine Products, TE Connectivity is now the home of an unmatched array of quality components for the MIL-Aero market.

TE has grown to become the world's largest manufacturer of passive electronic components, as well as a world leader in fiber optic active components. We are also one of the largest RF component and subsystem manufacturers in the industry.

In addition to our broad offering of interconnection solutions for copper and fiber, cable and harness assemblies, our portfolio also includes printed circuits, touch screens, relays, high-reliability lasers, aircraft sensors, plus nano- and micro-lens connectors for free space optical interconnect applications. In short, we have the products to meet your MIL-Spec, QPL, space-qualified and COTS requirements.

We're committed to working with you to design the next generation of aerospace and defense products — and delivering cost-effective performance and innovative solutions through capabilities such as:

- Design and development engineering and analysis
- Reliability, quality assurance, testing and agency approvals
- Materials engineering expertise in metals, polymers and plating
- Technology leadership in electromagnetic and shielding analysis and high-speed circuit design
- Program management



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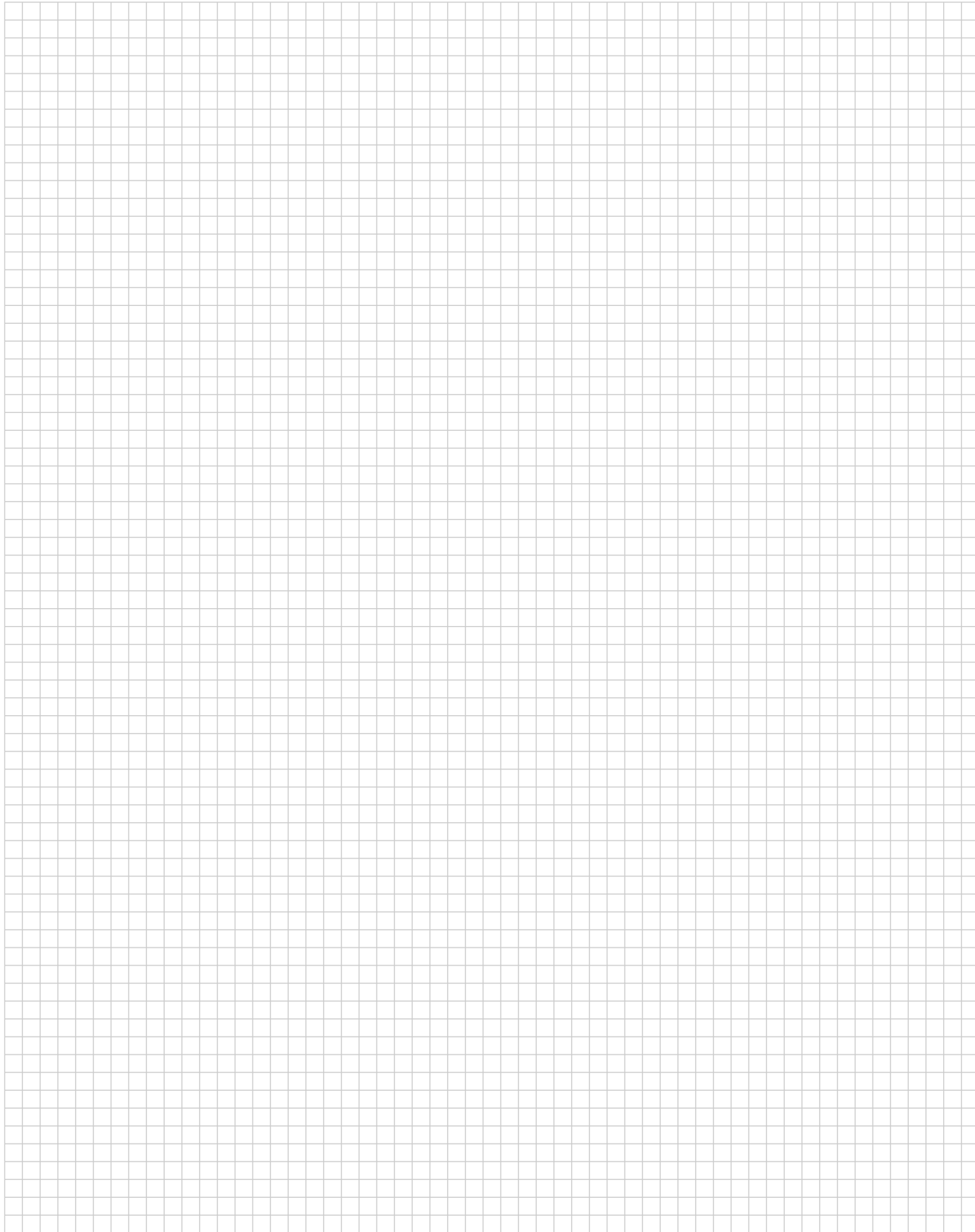
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Printed Circuit Board Connectors

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**AMP-BLADE Two-Piece Printed Circuit Edge Connectors**

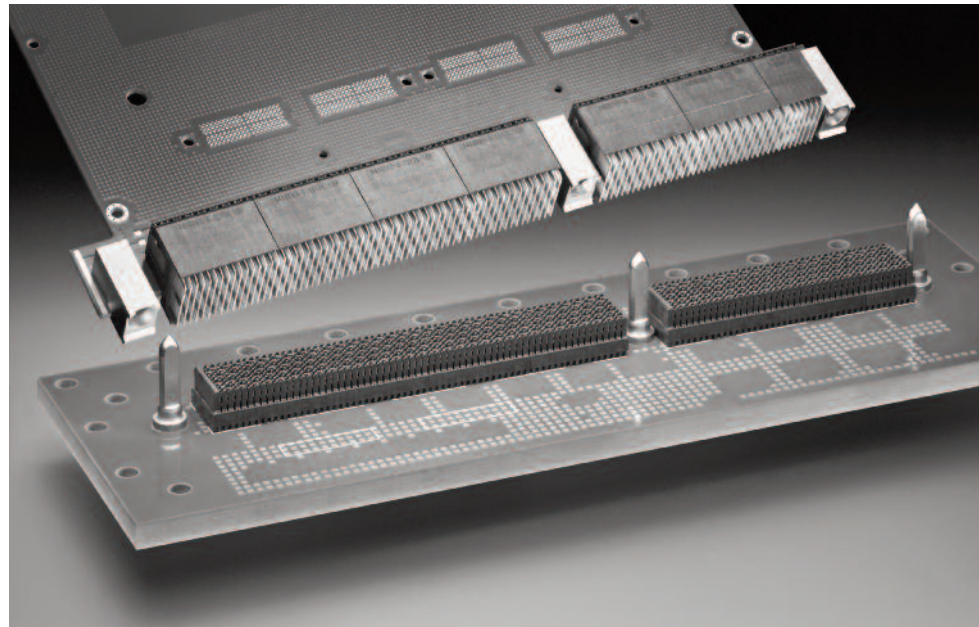
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**MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications**

**Product Facts**

- Quad-redundant contact system supports high levels of shock/vibration
- Compliant to VITA 46 for Open VPX applications
- Supports Ethernet, Fibre Channel, InfiniBand applications, PCIe and Serial RapidIO high speed protocols
- Modular, lightweight connector system
- Robust “pinless” interface
- Differential, single-ended and power
- Ruggedized guide hardware available
- Supports 0.8 inch card slot pitches
- VITA 46 compliance enables upgrade in existing VPX applications
- Can be combined with high power modules (VITA 62), RF modules (VITA 67) and Optical modules (VITA 66)



Printed Circuit Board Connectors

**Description**

TE's MULTIGIG RT 2-R ruggedized, light weight, high speed board-to-board interconnect is compliant to VITA 46 standard. This connector system features a quad-redundant contact structure designed for high vibration levels.

**Applications**

Rugged embedded computing applications:

- Ground Defense
- Missile Defense
- Electronic Systems / C4ISR
- Space
- Commercial and Military Aerospace

**Materials**

Contacts: High performance copper alloy, plated 50 µm Au over 50 µm Ni in mating area, tin-lead on compliant pin tails

Housings: High temperature thermoplastic

Rugged Guide Hardware: Aluminum and passivated stainless steel

**Mechanical**

Operating Temperature: -55 to +105°C

Mating Force: 0.75 N [2.70 ozf] maximum per contact

**Standards & Specifications**

Compliant to VITA 46 (VPX)

Product Specification: 108-2072

Application Specification: 114-13056

Qualification Test Report: 501-544

**Physical or other Properties**

Tested to HALT (Highly accelerated life test) vibration levels (0.2G2/Hz) per VITA 72

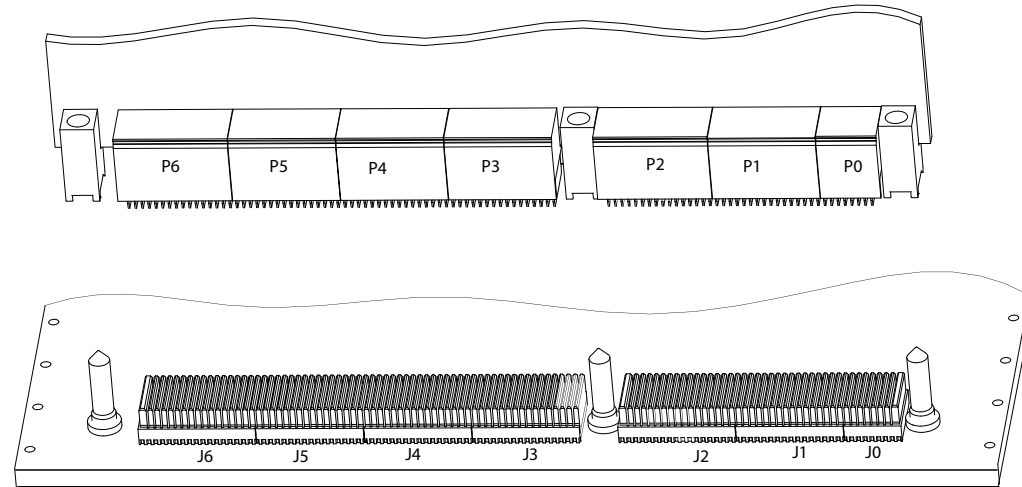
Connector modules available for 3U and 6U VPX slot profiles, including rear transition modules

Reliable press-fit termination, requiring only flat rock tooling

Lightest weight VPX connector system: mated set of connectors and guide hardware for typical module and backplane slots: 3U - 62.66g (2.21 oz); 6U - 140.26g (4.95 oz)

**MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications** (Continued)

**Part Configurations**



**Daughtercard**

Module Position	Part No.	
	Ruggedized MULTIGIG RT 2-R (Extended Pad Wafers)	MULTIGIG RT 2 Connectors
P0	2102772-1	1410189-3
P1, P2, P3, Differential	2102771-1	1410187-3
P4, P5, P6, Single-Ended	2102847-1	1410190-3
Keying Guide Modules	2000713-X	1-1469492-X
	Machined 6061 Aluminum Guide Socket, w/ESD Contact	Standard (Zinc Die Cast) Guide Socket

See TE drawings for guide module and pin options.

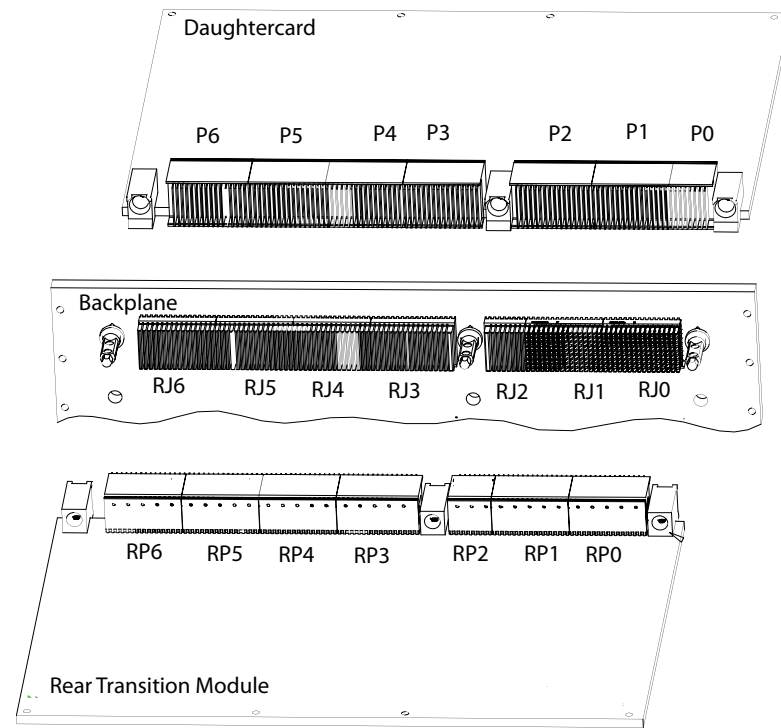
**Backplane**

Module Position	Part No.	
	Ruggedized MULTIGIG RT 2-R (Quad Redundant Contacts)	MULTIGIG RT 2 Connectors
J0	2102735-1	1410186-1
J1, J3, J4, J5	2102736-1	1410140-1
J2, J6	2102737-1	1410142-1
Keying Guide Pin	2000676-X	1-1469491-X
	Stainless Steel Guide Pin	Standard (Zinc Die Cast) Guide Pin

See TE drawings for guide module and pin options.

**MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications** (Continued)

**Part Configurations**



Printed Circuit Board Connectors

**Rear Transition Module**

Module Position		Part No.	
MULTIGIG RT 2		Ruggedized MULTIGIG RT 2-R	
		(Extended Pad Wafers)	Connectors
RP0		2102773-1	1410968-3
	Differential	2102774-1	1410975-3
RP1	Differential & Single-Ended	2102849-1	1410970-3
	Differential	2102775-1	1410971-3
RP2	Single-Ended	2102848-1	1410972-3
	Differential	2102774-1	1410975-3
RP3, RP4, RP5, RP6	Single-Ended	2102847-1	1410190-3
		2000713-X	1-1469492-X
Keying Guide Modules		Machined 6061 Aluminum Guide Socket, w/ESD Contact	Standard (Zinc Die Cast) Guide Socket

See TE drawings for guide module and pin options.

**Rear Transition Backplane**

Module Position		Part No.	
		Ruggedized MULTIGIG RT 2-R (Quad Redundant Contacts)	MULTIGIG RT 2 Connectors
RJ0	See Note 1	2102768-1	1410964-1
	See Note 2	2102850-1	1410965-1
RJ1	See Note 3	2102736-1	1410140-1
	See Note 4	2102851-1	1410966-1
RJ2		2102735-1	1410186-1
RJ3		2102737-1	1410142-1
RJ4, RJ5, RJ6		2102736-1	1410140-1
Keying Guide Pin		2226127-1 Stainless Steel Guide Pin	1410956-1 Standard (Zinc Die Cast) Guide Pin

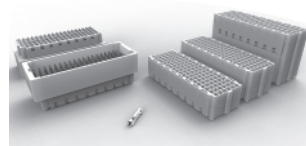
**Notes (Reference VITA 46.10; Observation 3-6):**

- Note 1:** 16 column shell, 15 columns of contacts
- Note 2:** 16 column shell, 7 columns of contacts present
- Note 3:** 16 column shell, 16 columns of contacts
- Note 4:** 16 column shell, 8 columns of contacts present



**MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications** (Continued)

**Associated VPX Solutions**



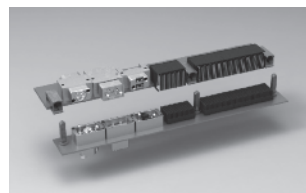
**MEZALOK Mezzanine Connectors (Compliant to VITA 61)**

- Utilizes the proven, reliable MIL-55302 Mini-Box contact interface, with four points of contact
- Backwards compatible with XMC board footprint
- Accommodates 10mm, 12mm, 15mm and 18mm stack heights
- Solder ball SMT attach in SnPb and RoHS options
- 114 (6 x 19) positions and 60 (6 x 10) positions
- Protected "stub-proof" socket contacts w/superior signal integrity
- Exceptional solder joint reliability (1000+ cycles thermal shock)



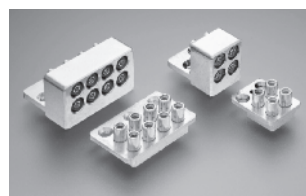
**MULTI-BEAM XLE Power Connectors (Compliant to VITA 62)**

- 20A and 50A power contacts, plus signal contacts
- 3-beam high-conductivity-copper contact design allows for a greater angular misalignment between mating connectors and offers a lower mating force
- Slim guide sockets reduce the overall PCB footprint
- Vented housing allows for better heat dissipation
- Hot-plug capable



**Optical Modules (Compliant to VITA 66)**

- Light weight
- High bandwidth
- EMI immunity
- 3 fiber optic interface types available:
  - 66.1 has two MT ribbon ferrules up to 24 fibers each
  - 66.2 four ARINC 801 termini
  - 66.3 one expanded beam lensed insert with four fibers



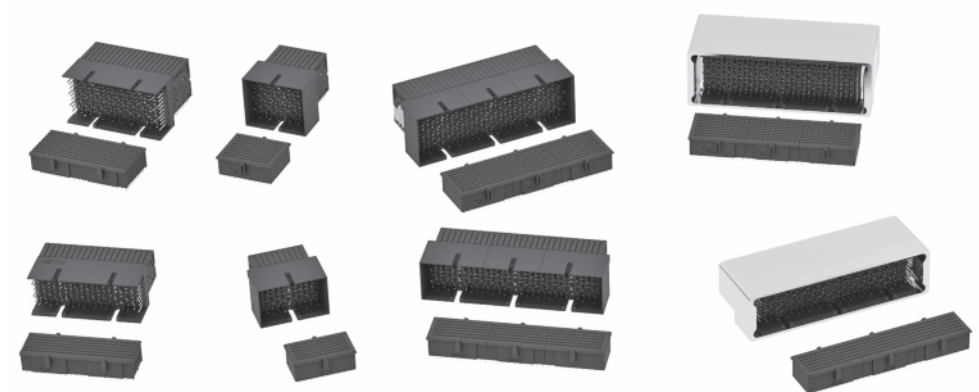
**RF Modules (Compliant to VITA 67)**

- Excellent channel-to-channel isolation and RF performance to 65 GHz
- Modular design permits application specific configuration with high RF contact count
- Float mounted jack maintains positive RF ground
- 240 center-to-center spacing
- 4 and 8 position modules are designed to meet the requirements of VITA 67.1 and VITA 67.2

**Fortis Zd Connector**

**Product Facts**

- Allows 10+ Gb/s data rates
- Extreme mechanical and electrical performance for the most demanding applications
- Modular design allows for user configurability and modular evolution
- M55302 heritage Mini-Box separable interface provides 4 points of contact
- Three options for application versatility, including standard, shielded and rugged metal shell
- 3-Pair and 2-Pair versions available to accommodate multiple slot pitches
- Space compatible materials
- Proven compliant pin board attach facilitates manufacturing efficiency, repairability, and superior electrical performance
- Staggered daughtercard pin field supports 2 level maintenance
- Protected pin field on backplane for reliability and durability



Printed Circuit Board Connectors

**Description**

Modular backplane connector system combining the highest performance mil/aero and commercial technologies in a user configurable platform. Built to be the most robust and highest performance backplane connector.

**Technical Documents**

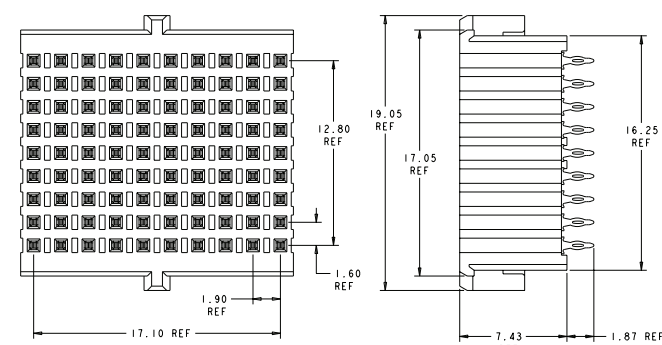
Product Specifications: 108-2409

Qualification Test Report: 501-752

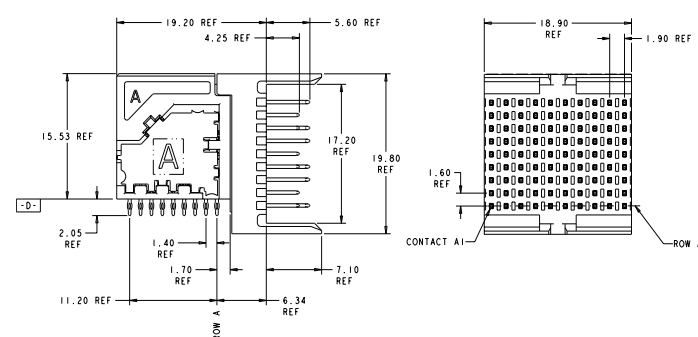
Application Specification: 114-13267

**Product Dimensions**

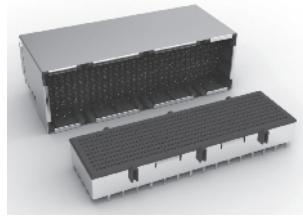
**2000896-1 (3-pair, Vertical Center Module)**



**-1 (3-pair, Right-Angle Center Module)**



**Fortis Zd Connector** (Continued)



3-Bay Shielded



3-Bay Metal Shell

**Mechanical**

Durability: 500 mating cycles  
 Operating Temperature:  
 -55 to +125°C  
 Contact Engaging &  
 Separating Force: 4.0 oz. max

**Physical or Other Properties**

10 and 20 column modules  
 3-pair (9-row) and 2-pair (6-row) modules  
 6U configuration offers 300 differential pairs  
 Multi-bay shielded and rugged shell options  
 6 row module enables 0.6" reduced form factor card pitch  
 Modularity enables scalability for various card sizes

**Materials**

Contacts: High performance copper alloy  
 Plated 50µin Au over 50µin Ni in mated contact area  
 Tin/lead or tin (RoHS) on compliant tails  
 Housings: High temperature thermoplastic  
 Shell:  
 Shield: Copper alloy  
 Rugged shell: 6061 Aluminum with trivalent chromate conversion coating

**Ordering Information**

Size	Description	Right Angle Connector Modules <sup>1</sup>						Vertical Connector Modules <sup>1</sup>				
		10-col. left	10-col. center	20-col. center	10-col. right	10-col. full shroud	20-col. full shroud	10-col. end	10-col. center	20-col. center	10-col. full shroud	20-col. full shroud
2-pair	Differential	2102086	2102087	2102096	2102088	2102081	2102232	2102092	2102093	2102098	2102094	2102234
3-pair	Differential	2000890	2000891	2000903	2000892	2102155	2102159	2000895	2000896	2000905	2102157	2102161
3-pair <sup>2</sup>	Single-Ended	2102314	2102315	2102316	2102317	2102318	2102319					

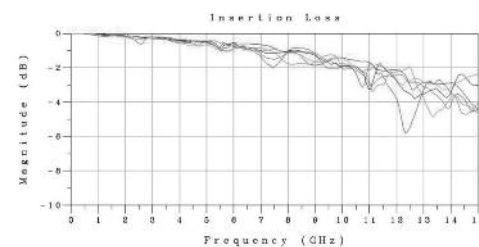
Size	Description	Shielded Right Angle Connector Modules						Shielded Vertical Connector Modules					
		10-col.	20-col.	30-col.	40-col.	50-col.	60-col.	10-col.	20-col.	30-col.	40-col.	50-col.	60-col.
3-pair	Differential	2102247-1	2102247-2	2102247-3	2102247-4	2102247-5	2102247-6	2102248-1	2102248-2	2102248-3	2102248-4	2102248-5	2102248-6
3-pair <sup>2</sup>	Single-Ended	2102320-1	2102320-3	2102320-4	2102320-4	2102320-5	2102320-6						

Size	Description	Rugged Shell for Right Angle Connector Modules						VITA 46 Die Cast		VITA 46 Machined	
		10-col.	20-col.	30-col.	40-col.	50-col.	60-col.	Guide Pin	Guide Module	2000676	2000677 or 2000713
2-pair	Differential	2102114-1	2102114-2	2102114-3	2102114-4	2102114-5	2102114-6				
3-pair	Differential	2102077-1	2102077-2	2102077-3	2102077-4	2102077-5	2102077-6				

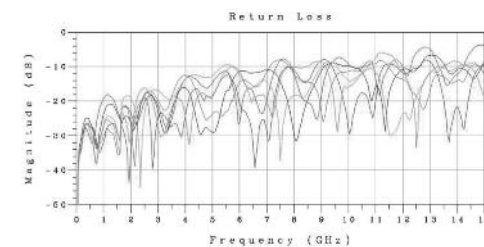
1. -1 SnPb Tails, -2 Sn Tails  
 2. Single-Ended 3-pair uses the same vertical connector as differential 3-pair

See drawings for dash number options.

Differential Insertion Loss



Differential Return Loss





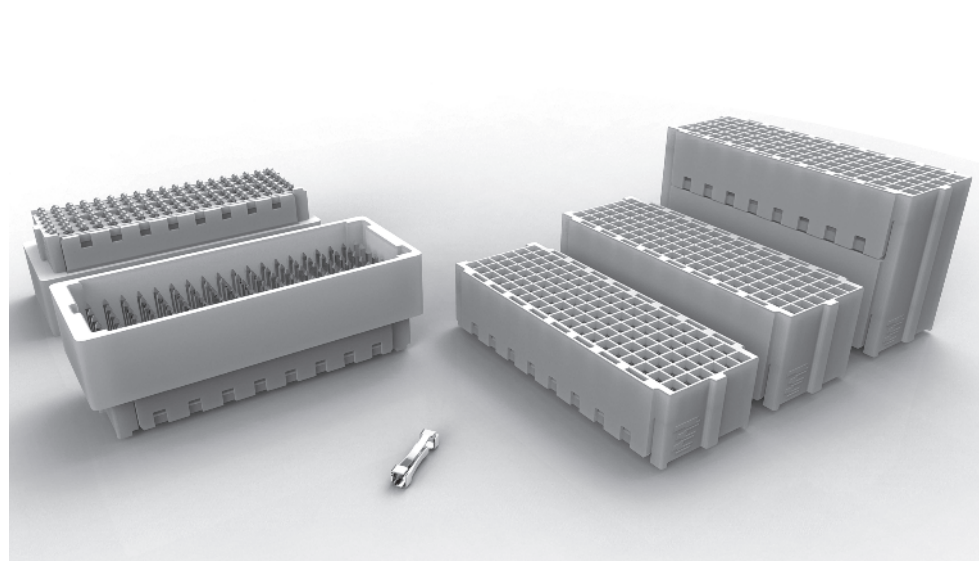
**Mezalok Connector (High Reliability Mezzanine Connector)**

**Product Facts**

- Allows 10Gb/s and data rates
- 60, 114, and 320 positions
- Mini-Box contact system provides 4 points of contact for ultra reliability
- LCP plastic housings offer superior thermal stability and are low-outgassing
- Compliant BGA board attach supports standard surface mount processing and excellent thermal stability
- 114 position footprint compatible to XMC footprint and all dimensional constraints, VITA 61 compliant
- Stack heights from 10 mm to 18 mm

**Technical Documents**

- Product Specifications: 108-2411
- Qualification Test Report: 501-735
- Application Specification: 114-13279



Printed Circuit Board Connectors

**Description**

Rugged surface mount mezzanine connector incorporating "super-redundant" Mini-Box contact system for separable interface. Designed for 10 mm through 18 mm stack heights.

**Applications**

Stacking or mezzanine applications  
 114 position is designed to support VITA 61 XMC architecture as rugged alternative to VITA 42 XMC  
 60 and 320 position designed for custom architecture stacking applications

**Mechanical**

500 mating cycles durability  
 Mating force: 0.30 lb. max. times number of contacts  
 -65°C to +125°C operating temperature  
 Shock and vibration per VITA 47 requirements

**Materials**

Pin Assembly: LCP plastic housings, white in color  
 Socket Assembly: LCP plastic housings, white in color  
 Contacts: High Performance Copper Alloy, 50µ" Au in mating interface (Sn/Pb and SAC305 solder balls are available)

**Standards & Specs**

114 position conforms to requirement of VITA 61 (VITA 42 Alternate)  
 VITA 42 and VITA 61 are not intermateable, but are footprint and XMCarchitecture compatible

**Application Tooling**

Product is installed via standard BGA surface mount processes.

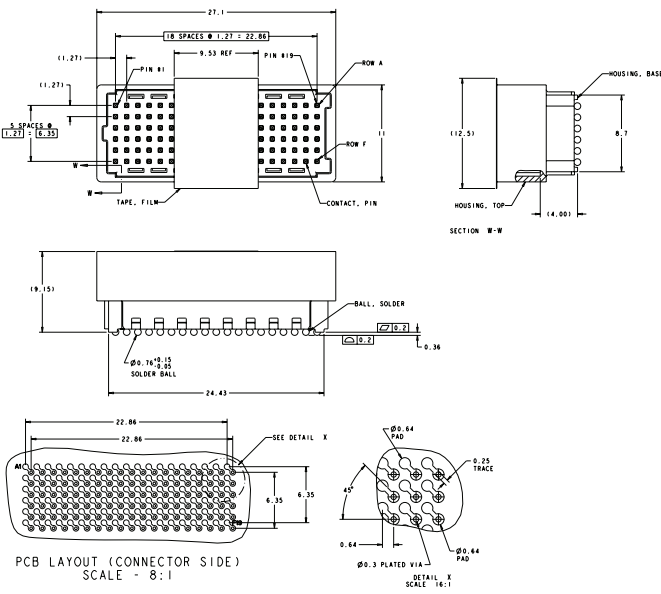
**Mezlok Connector (High Reliability Mezzanine Connector)** (Continued)



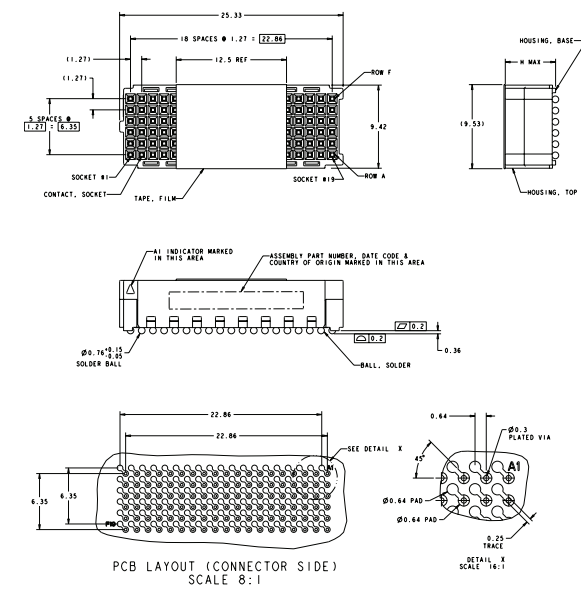
Mini-box contact

No. of Pos.	Interface	Mated Stack Height (mm)	Part No.	Contact Plating	BGA Solder
60	pin	10	2102079-1	1.27 um gold	tin-lead
			2102079-2	1.27 um gold	lead free
			2102079-3	0.76 um gold	tin-lead
			2102079-4	0.76 um gold	lead free
			2102080-1	1.27 um gold	tin-lead
			2102080-2	1.27 um gold	lead free
	socket	12	2102080-5	0.76 um gold	tin-lead
			2102080-6	0.76 um gold	lead free
			2102080-3	1.27 um gold	tin-lead
			2102080-4	1.27 um gold	lead free
			2102080-7	0.76 um gold	tin-lead
			2102080-8	0.76 um gold	lead free
	socket	18	2102080-9	1.27 um gold	tin-lead
			1-2102080-0	1.27 um gold	lead free
			1-2102080-1	0.76 um gold	tin-lead
			1-2102080-2	0.76 um gold	lead free
			2102060-1	1.27 um gold	tin-lead
			2102060-2	1.27 um gold	lead free
114	pin	10	2102060-3	0.76 um gold	lead free
			2102060-4	0.76 um gold	lead free
			2102061-1	1.27 um gold	tin-lead
			2102061-2	1.27 um gold	lead free
			2102061-5	0.76 um gold	tin-lead
			2102061-6	0.76 um gold	lead free
	socket	12	2102061-3	1.27 um gold	tin-lead
			2102061-4	1.27 um gold	lead free
			2102061-7	0.76 um gold	tin-lead
			2102061-8	0.76 um gold	lead free
			1-2102061-3	1.27 um gold	tin-lead
			1-2102061-4	1.27 um gold	lead free
	socket	15	1-2102061-5	0.76 um gold	tin-lead
			1-2102061-6	0.76 um gold	lead free
			2102061-9	1.27 um gold	tin-lead
			1-2102061-0	1.27 um gold	lead free
			1-2102061-1	0.76 um gold	tin-lead
			1-2102061-2	0.76 um gold	lead free
320	pin	10	2102429-1	1.27 um gold	tin-lead
			2102429-2	1.27 um gold	lead free
			2102429-3	0.76 um gold	tin-lead
			2102429-4	0.76 um gold	lead free
			2102430-1	1.27 um gold	tin-lead
			2102430-2	1.27 um gold	lead free
	socket	18	2102430-5	0.76 um gold	tin-lead
			2102430-6	0.76 um gold	lead free
			2102430-9	1.27 um gold	tin-lead
			1-2102430-0	1.27 um gold	lead free
			1-2102430-1	0.76 um gold	tin-lead
			1-2102430-2	0.76 um gold	lead free

**Pin — 2102060**

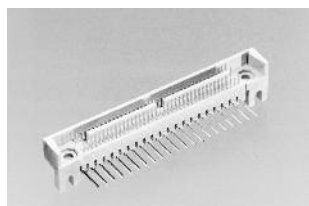


**Socket — 2102061**



**Introduction**

**Mini-Box .050 [1.27] Centerline Connectors**



**Mini-Box Contact Connectors, per MIL-C-55302** are available in 2-row configurations with pin counts from 20 to 200 positions and uses the reliable 4-beam box contact and 4-row configurations up to 320 positions. The tighter centerline spacing, .050 x .150 [1.27 x 3.81] in 2-row, .050 x .100 [1.27 x 2.54] in 4-row, provides more pins within a specified distance and the staggered footprint allows for easier manufacturing of the pc boards.

Standard receptacles are thru-hole flow solder, surface mount, press fit tail and straddle mount. Standard pin headers are available in a choice of surface mount, straddle mount or right-angle configurations.

Extended receptacles are vertical thru-hole and pin headers are available in straddle mount or right-angle thru-hole versions.

In addition, Mini-Box 2-row connectors are available with 4 or 6 hybrid cavities which accept micro-miniature coax contacts or a choice of high voltage pin and socket contacts.

TE Connectivity Mini-Box connectors are also available in 4-row connector configurations. Vertical mount receptacle assemblies and pin headers with flexible circuit tails.

**AMP-HDI .050 [1.27] and .075 [1.91] Centerline Connectors**

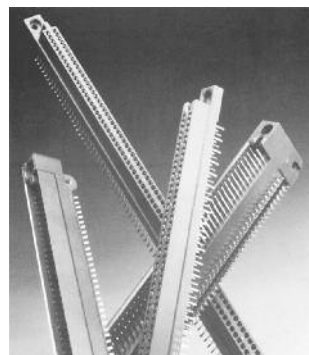


**This family includes .050 [1.27] stacking connectors and 6 & 8 Row LRM (Line Replaceable Module) Connectors**

Designed specifically to be the next generation, high density electronic packaging system, the AMP-HDI 6 Row, .075 [1.91] centerlines and 8 Row, .080 [2.03] centerlines, LRM Interconnection System meets applicable DSCC 89065 LRM specifications. This advanced system features high temperature plastic housings compatible with IR reflow solder techniques. Added advantage of the AMP-HDI LRM System is its capability of accepting MIL SPEC fiber optic contacts per MIL-T29504/5. Six-row configurations available in 306 contact positions. Eight-row configurations feature two 214 position plug halves which mate with one 428-position receptacle. This technological leader is offered with standard tin-lead plated solder tails and for those applications where maintaining a light weight system is a factor. The 8-row configuration is made available with weight saving, flexible film tails.

Equally important are Application Costs. The AMP-HDI LRM interconnection system offers advanced tooling that simplifies contact alignment to the pc board, substantially reducing overall applied labor costs.

**.075 [1.91] & .100 [2.54] Centerline Box Contact Connectors**

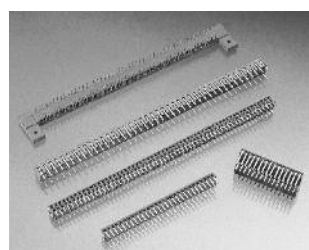


**Box Contact Connectors** with contacts on .075 [1.91] & .100 [2.54] centerline spacing are available in 2, 3 and 4-row configurations with pin counts up to 300 contact positions. Box contact connectors use this unique, reliable four-beam design which offers low applied cost while maintaining high reliability and performance.

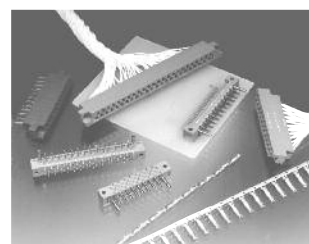
Commercial military versions are available for both pin headers and receptacles.

Box II vertical receptacles with ACTION PIN Posts and Solder Post Contacts are also available. When mated with AMP-HDI pin assemblies, these permit horizontal stacking of motherboards. 2, 3, and 4-row connector versions are available.

**.100 [2.54] Centerline Connectors**



**AMPMODU Board-Mount Receptacle Assemblies** are qualified to MIL-C-55302, and provide a compact and versatile means of interconnecting today's complex electronic modules. Right-angle receptacle connectors mate with .025" [0.64] posts, have dual cantilever spring contact design and built-in anti-overstress, duplex gold-over-nickel plating, and wide misalignment tolerances. Contacts are on .100 [2.54] centerlines, and are available in single or double row, blue diallyl phthalate housings. Assemblies will accommodate pcb .062 [1.57] or .093 [2.36] thick.



**AMP-BLADE Two-Piece PC Edge Connectors** provide high levels of conductivity and reliability to meet the performance specifications of MIL-C-21097, and the design requirements of MIL-E-5400. Blade and receptacle contacts, on .100 [2.54] centerlines provide multiple areas of contact for maximum conductivity. Blade contacts are gold plated in the contact mating area, with tin-lead on the solder tails all over nickel underplate.

PC board housings are available with or without mounting hole while cable-mount connectors are designed for maximum versatility, and will accept a variety of receptacle contact designs.



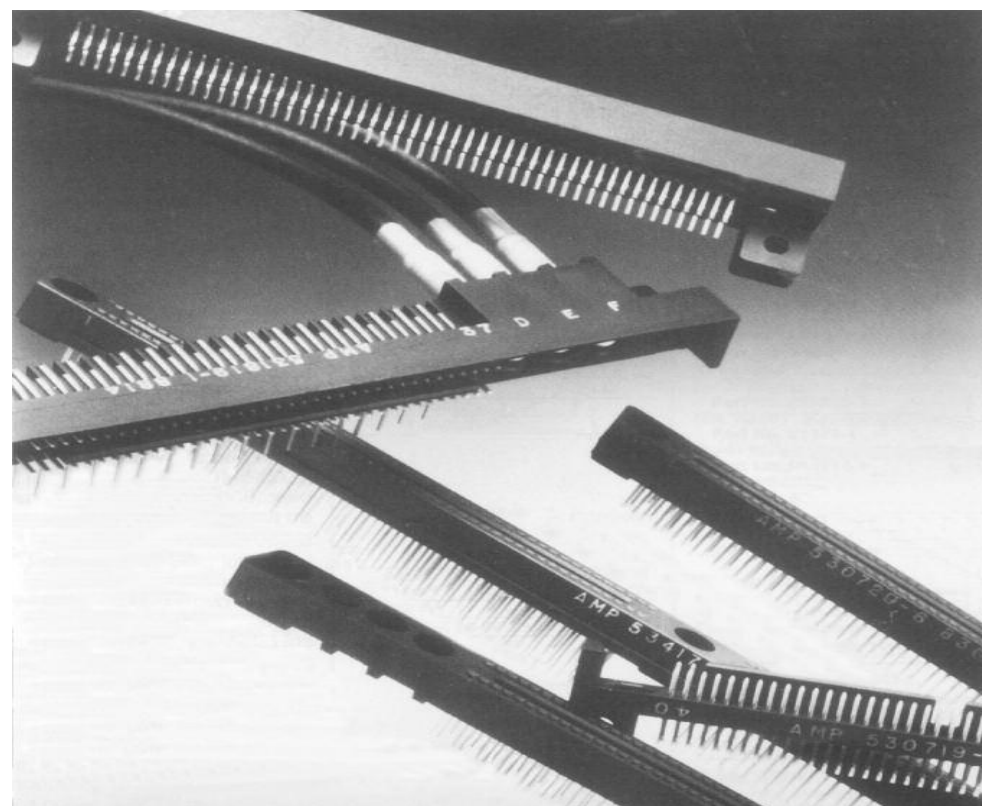
Printed Circuit Board Connectors



**Introduction**

**Product Facts**

- Contacts are on .050 x .150 [1.27 x 3.81] centers
- Four-beam box-type receptacle contact design provides four areas of contact per connection
- Quad-beam contact redundancy makes it an excellent choice in high-vibration environments
- 2-row standard versions: 2 to 120 contact positions
- 2-row extended versions: 132 to 200 contact positions
- 4-row versions: 120 to 320 contact positions
- Sealed versions available
- Pin headers are available in straddle mount (with or without pin protectors) and right-angle versions (with pin protectors)
- Solder tails on receptacles and right-angle pin headers are staggered for easy access
- Hybrid connectors with coaxial and signal contacts available
- Qualified to MIL-C-55302/117, /118, /119
- 2 row and 4 row versions available



**Performance Characteristics**

- Rated Current** — 1.5 amps per contact
- Operating Temperature Range** — -85° to 257°F [-65° to 125° C]
- Maximum Mating Force** — .3 lb. [.08N] per contact
- Durability** — 500 cycles of mating and unmating
- Dielectric Withstanding Voltage** — 600 VAC at sea level, 150 VAC at 70,000 feet

**Technical Documents**

- Product Specifications**
- 108-9046 Connector Mini-Box Contact
- 108-1663 Connector Mini-Box Contact with Compliant Printed Wiring Board Termination

TE Connectivity Mini-Box .050 [1.27] centerline connectors are available in 2-row connector configurations having 20 to 128 contact positions in the standard version, and 132 to 200 contact positions in the extended version.

Standard Mini-Box receptacle assemblies are available with a choice of thru-hole, surface-mount or straddle mount solder tails. Standard Mini-Box pin headers are designed with surface-mount, straddle

mount, and thru-hole right-angle solder tails.

Extended receptacle assemblies are vertical-mount thru-hole configurations, and pin headers are in a choice of straddle mount or thru-hole versions.

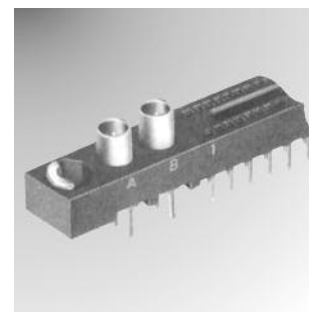
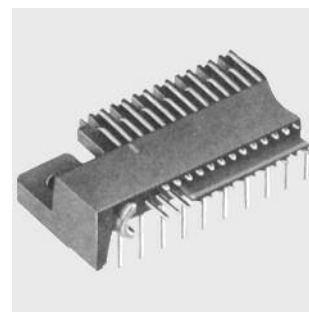
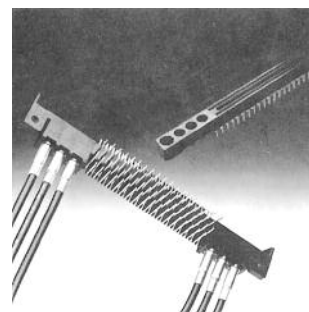
A 4-row version for compact high count connections\* is offered in thru-hole receptacle and straddle mount pin header configurations.

Mini-Box connectors are also available in four or six cavity hybrid configurations with 26 to 74-Mini-Box contacts.

Coaxial Cavities in the hybrid Mini-Box connectors will also accept high voltage pin or socket contacts with operating voltage up to 5KVDC.

External keying is an added feature of the TE Mini-Box connector family. External keys are used with receptacle assemblies and pin headers. Keys used in one end of each mated pair will yield eight keying combinations. If used in both ends sixty-four keying combinations are possible.

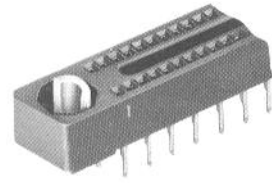
\*up to 360 positions



**Mini-Box Receptacle Assemblies for Flow Soldering —  
MIL-C-55302 Qualified**



Printed Circuit Board Connectors



**Housing Material** — In accordance with MIL-M-24519 per MIL-C-55302. GLCP-30F, liquid crystal polymer

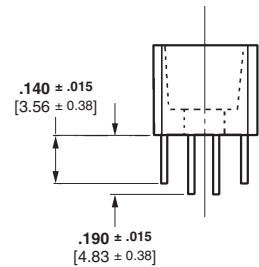
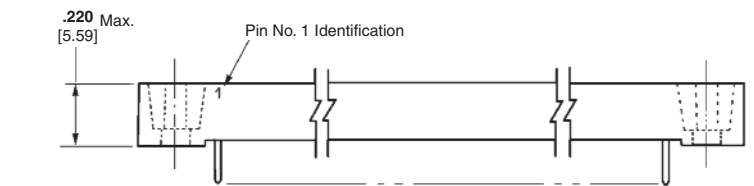
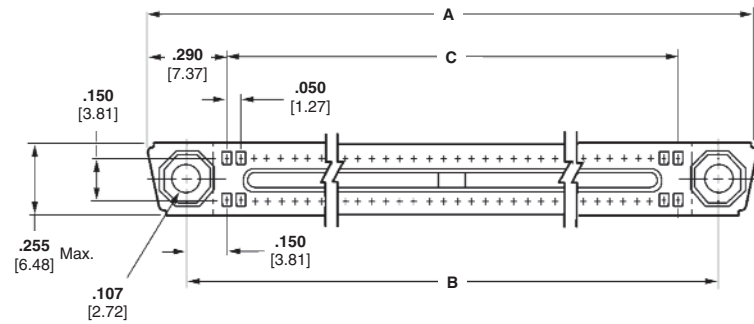
**Contact Material and Finish** — Commercial receptacle — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000030 [0.00076] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area over .000030 [0.00076] min. nickel on the entire contact; Military receptacle — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area over .000030 [0.00076] min. nickel on the entire contact

**Related Product Data**

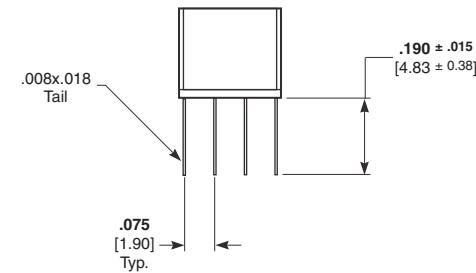
**Mates with** — Pin headers, pages 1-21 to 1-22

**External Keying** — page 1-30

**Recommended PC Board Layout** — page 1-28



530720 and 530745 Series



534175 Series

No. of Pos.	Dimensions			Assembly Part Nos.		Military Assembly Part Nos.		
	A	B	C	Commercial	Epoxy Sealed*	M55302/	Unsealed	Sealed
128	3.740 95.00	3.450 87.63	3.150 80.01	530720-9	534175-1	119-11	1-530745-1	2-530745-2
110	3.290 83.57	3.000 76.2	2.700 68.58	530720-8	534175-2	119-10	1-530745-0	2-530745-1
100	3.040 77.22	2.750 69.85	2.450 62.23	530720-7	534175-3	119-09	530745-9	2-530745-0
90	2.790 70.87	2.500 63.5	2.200 55.88	530720-6	534175-4	119-08	530745-8	1-530745-9
80	2.540 64.52	2.250 57.15	1.950 49.53	530720-5	534175-5	119-07	530745-7	1-530745-8
70	2.290 58.17	2.000 50.8	1.700 43.18	530720-4	534175-6	119-06	530745-6	1-530745-7
60	2.040 51.82	1.750 44.45	1.450 36.83	530720-3	534175-7	119-05	530745-5	1-530745-6
50	1.790 45.47	1.500 38.1	1.200 30.48	530720-2	534175-8	119-04	530745-4	1-530745-5
40	1.540 39.12	1.250 31.75	.950 24.13	530720-1	534175-9	119-03	530745-3	1-530745-4
30	1.290 32.77	1.000 25.4	.700 17.78	1-530720-0	1-534175-0	119-02	530745-2	1-530745-3
20	1.040 26.42	.750 19.05	.450 11.43	1-530720-1	1-534175-1	119-01	530745-1	1-530745-2

**Note:** Contact Align—Part Number 58107-1  
\*Same contact material and finish per military receptacle

**Mini-Box Receptacle Assemblies for Flow Soldering —  
MIL-C-55302 Qualified** (Continued)

**Vertical, Surface-Mount**



**Material and Finish**

**Housing** — In accordance with MIL-M-24519 per MIL-C-55302. GLCP-30F, liquid crystal polymer, grey

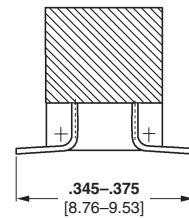
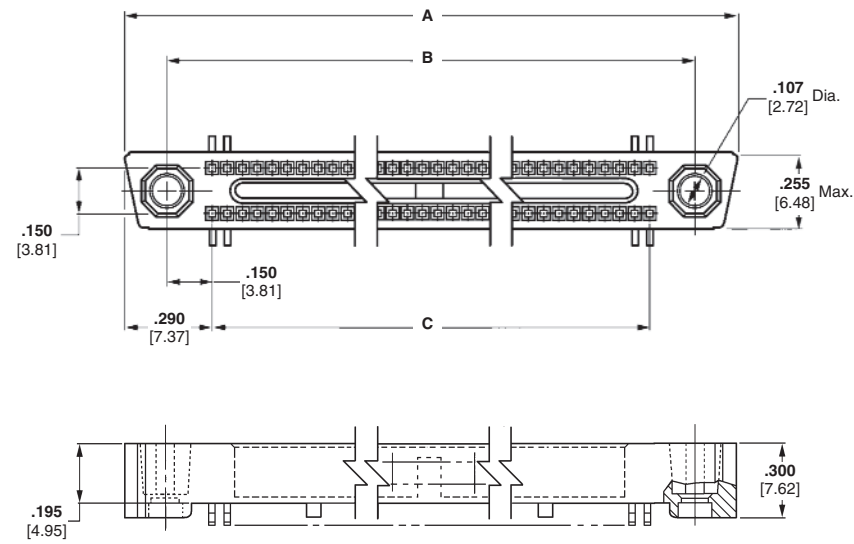
**Contacts** — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area, over .000030 [0.00076] min. nickel on the entire contact

**Related Product Data**

**Mates with** — Pin headers, pages 1-21 to 1-22

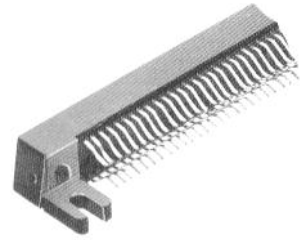
**External Keying** — page 1-30

**Recommended PC Board Layout** — page 1-28



No. of Pos.	Dimensions			Assembly Part No.
	A	B	C	
128	3.740 95.00	3.450 87.63	3.150 80.01	1-449599-1
110	3.290 83.57	3.000 76.20	2.700 68.58	1-449599-0
100	3.040 77.22	2.750 69.85	2.450 62.23	449599-9
90	2.790 70.87	2.500 63.50	2.200 55.88	449599-8
80	2.540 64.52	2.250 57.15	1.950 49.53	449599-7
70	2.290 58.17	2.000 50.80	1.700 43.18	449599-6
60	2.040 51.82	1.750 44.45	1.450 36.83	449599-5
50	1.790 45.47	1.500 38.10	1.200 30.48	449599-4
40	1.540 39.12	1.250 31.75	.950 24.13	449599-3
30	1.290 32.77	1.000 25.40	.700 17.78	449599-2
20	1.040 26.42	.750 19.05	.450 11.43	449599-1

**Mini-Box Straddle Mount Receptacle Assemblies**



**Housing Material** — Liquid crystal polymer

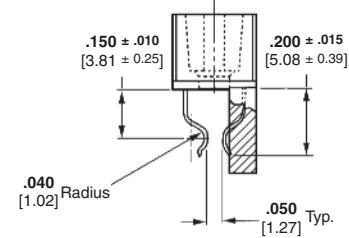
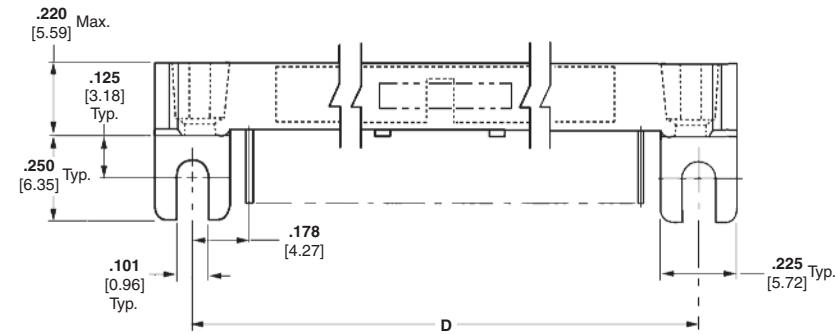
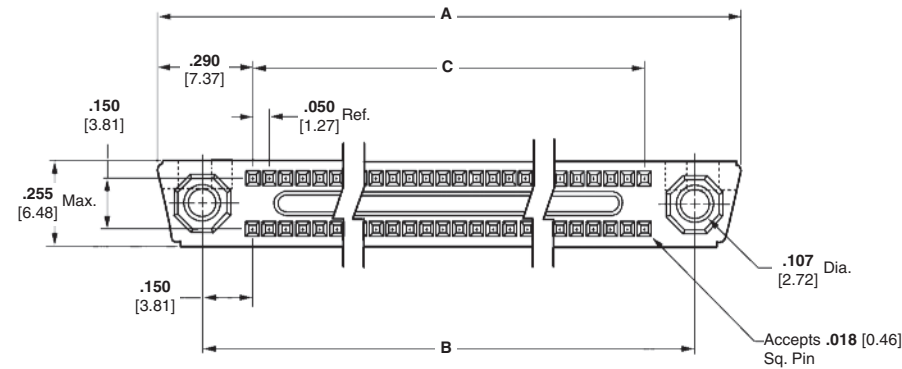
**Contact Material and Finish** — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area over .000030 [0.00076] min. nickel on the entire contact

**Related Product Data**

**Mates with** — Pin headers, pages 1-21 to 1-22

**External Keying** — page 1-30

**Recommended PC Board Layout** — page 1-28



No. of Pos.	Dimensions				Assembly Part No.
	A	B	C	D	
128	3.740	3.450	3.150	3.505	445185-1
	95.00	87.63	80.01	89.03	
110	3.290	3.000	2.700	3.055	445185-2
	83.57	76.2	68.58	77.60	
100	3.040	2.750	2.450	2.805	445185-3
	77.22	69.85	62.23	71.25	
90	2.790	2.500	2.200	2.555	445185-4
	70.87	63.5	55.88	64.90	
80	2.540	2.250	1.950	2.305	445185-5
	64.52	57.15	49.53	58.55	
70	2.290	2.000	1.700	2.055	445185-6
	58.17	50.8	43.18	52.20	
60	2.040	1.750	1.450	1.805	445185-7
	51.82	44.45	36.83	45.85	
50	1.790	1.500	1.200	1.555	445185-8
	45.47	38.1	30.48	39.50	
40	1.540	1.250	.950	1.305	445185-9
	39.12	31.75	24.13	33.15	
30	1.290	1.000	.700	1.055	1-445185-0
	32.77	25.4	17.78	26.80	
20	1.040	.750	.450	.805	1-445185-1
	26.42	19.05	11.43	20.45	



Printed Circuit Board Connectors



**Mini-Box Pin Header Assemblies**

**Vertical, Surface Mount**



**Material and Finish**

**Housing** — In accordance with MIL-M-24519 per MIL-C-55302. GLCP-30F, liquid crystal polymer, grey

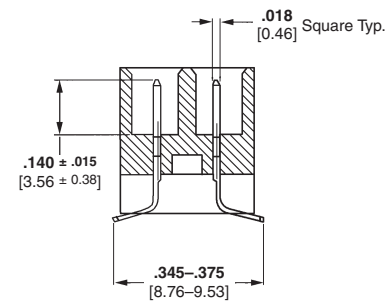
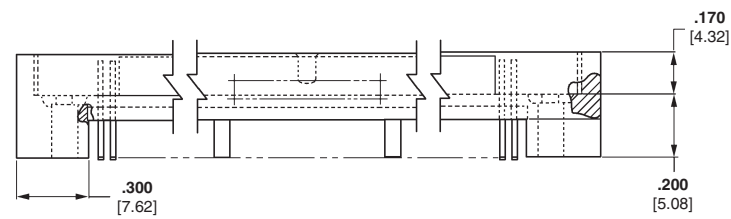
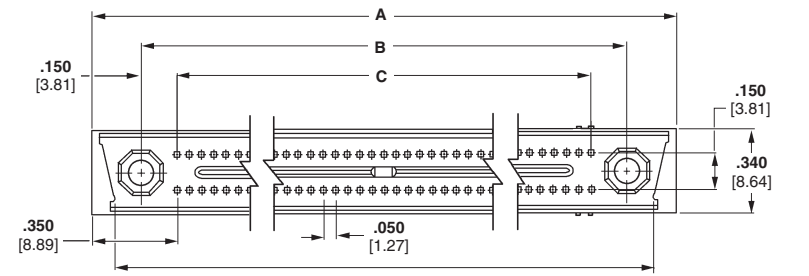
**Contacts** — Brass per QQ-B-626, plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area, over .000030 [0.00076] min. nickel on the entire contact

**Related Product Data**

**Mates with** — Receptacle assemblies, pages 1-18 to 1-20

**External Keying** — page 1-30

**Recommended PC Board Layout** — page 1-28



No. of Pos.	Dimensions			Assembly Part No.
	A	B	C	
128	3.850 97.79	3.450 87.63	3.150 80.01	447441-3
110	3.400 86.36	3.000 76.20	2.700 68.58	447441-1
100	3.150 80.01	2.750 69.85	2.450 62.23	447441-4
90	2.900 73.66	2.500 63.50	2.200 55.88	447441-5
80	2.650 67.31	2.250 57.15	1.950 49.53	447441-6
70	2.400 60.96	2.000 50.80	1.700 43.18	447441-2
60	2.150 54.61	1.750 44.45	1.450 36.83	447441-7
50	1.900 48.26	1.500 38.10	1.200 30.48	447441-8
40	1.650 41.91	1.250 31.75	.950 24.13	447441-9
30	1.400 35.56	1.000 25.40	.700 17.78	1-447441-0
20	1.150 29.21	.750 19.05	.450 11.43	1-447441-1

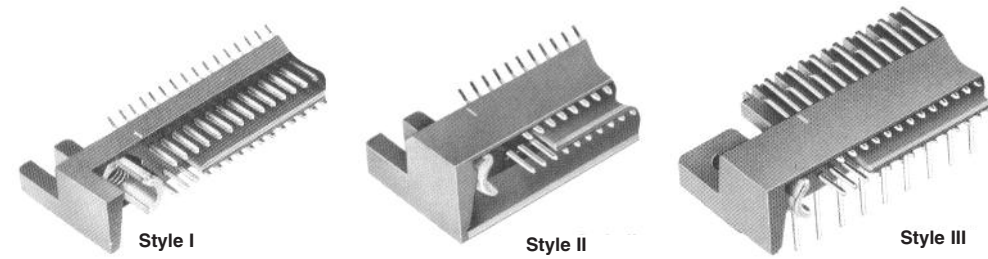
**Mini-Box Pin Header Assemblies** (Continued)

**Related Product Data**

**Mates with** — Receptacles, pages 1-21 to 1-22

**External Keying** — Page 1-30

**Recommended PC Board Layout** — Page 1-28



Printed Circuit Board Connectors

**Commercial Pin Header Assemblies**

**Housing Material** — In accordance with MIL-M-24519 per MIL-C-55302 GLCP-30F, liquid crystal polymer

.000100 [0.00254] min. tin-lead on the tail over .000050 [0.00127] min. nickel on the entire contact

**Contact Material and Finish** — Brass per QQ-B-626 plated .000030 [0.00076] min. gold in the contact area,

No. of Pos.	Dimensions			Style I Straddle Mount Part No.	Style II Straddle Mt. w/Pin Protect. Part No.	Style III Right-Angle Mount Part No.
	A	B	C			
128	3.850 97.79	3.600 91.44	3.150 80.01	530719-9	1-531122-1	530733-9
110	3.400 86.36	3.150 80.01	2.700 68.58	—	—	530733-8
100	3.150 80.01	2.900 73.66	2.450 62.23	530719-7	—	530733-7
90	2.900 73.66	2.650 67.31	2.200 55.88	530719-6	—	530733-6
80	2.650 67.31	2.400 60.96	1.950 49.53	530719-5	—	530733-5
70	2.400 60.96	2.150 54.61	1.700 43.18	530719-4	531122-6	530733-4
60	2.150 54.61	1.900 48.26	1.450 36.83	530719-3	531122-5	530733-3
50	1.900 48.26	1.650 41.91	1.200 30.48	530719-2	—	530733-2
40	1.650 41.91	1.400 35.56	.950 24.13	530719-1	—	530733-1
30	1.400 35.56	1.150 29.21	.700 17.78	—	—	1-530733-0
20	1.150 29.21	.900 22.86	.450 11.43	—	—	1-530733-1

**Military Pin Header Assemblies — Qualified to MIL-C-55302**

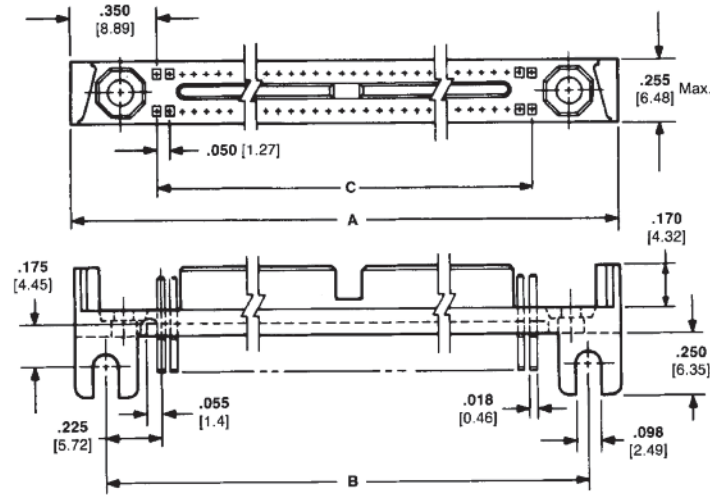
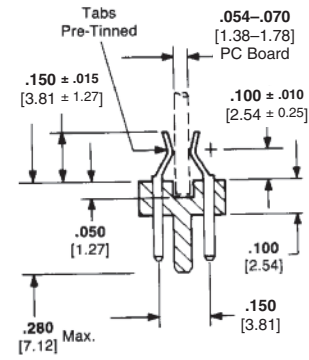
**Housing Material** — In accordance with MIL-C-55302

**Contact Material and Finish** — Brass per QQ-B-626 plated .000050 [0.00127] min. gold in the contact area, .000100 [0.00254] min. tin-lead on the tail over .000050 [0.00127] min. nickel on the entire contact.

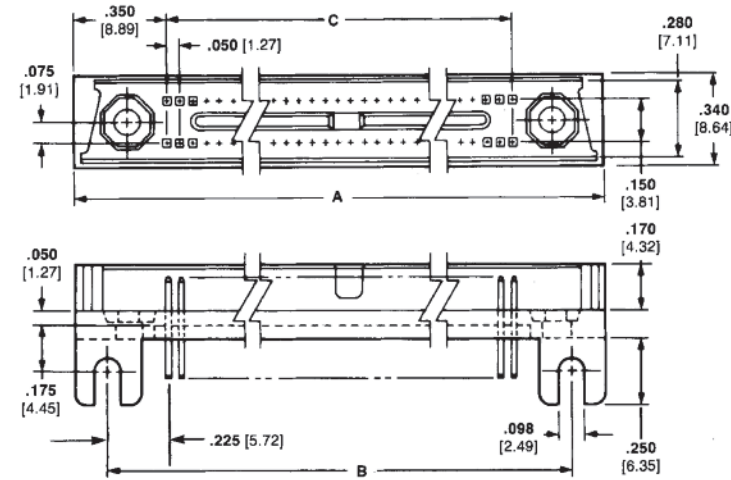
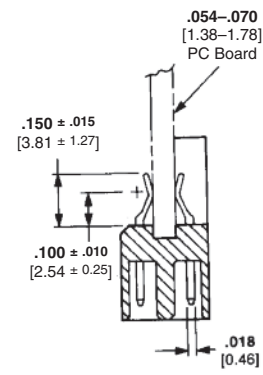
No. of Pos.	Dimensions			Style I - Straddle Mount		Style II - Straddle Mt. w/ Pin Protect.		Style III - Right-Angle	
	A	B	C	MIL-C-55302/	Part No.	MIL-C-55302/	Part No.	MIL-C-55302/	Part No.
128	3.850 97.79	3.600 91.44	3.150 80.01	118-11	2-530744-2	118-22	2-531803-2	117-11	2-530743-2
110	3.400 86.36	3.150 80.01	2.700 68.58	118-10	2-530744-1	118-21	2-531803-1	117-10	2-530743-1
100	3.150 80.01	2.900 73.66	2.450 62.23	118-09	2-530744-0	118-20	2-531803-0	117-09	2-530743-0
90	2.900 73.66	2.650 67.31	2.200 55.88	118-08	1-530744-9	118-19	1-531803-9	117-08	1-530743-9
80	2.650 67.31	2.400 60.96	1.950 49.53	118-07	1-530744-8	118-18	1-531803-8	117-07	1-530743-8
70	2.400 60.96	2.150 54.61	1.700 43.18	118-06	1-530744-7	118-17	1-531803-7	117-06	1-530743-7
60	2.150 54.61	1.900 48.26	1.450 36.83	118-05	1-530744-6	118-16	1-531803-6	117-05	1-530743-6
50	1.900 48.26	1.650 41.91	1.200 30.48	118-04	1-530744-5	118-15	1-531803-5	117-04	1-530743-5
40	1.650 41.91	1.400 35.56	.950 24.13	118-03	1-530744-4	118-14	1-531803-4	117-03	1-530743-4
30	1.400 35.56	1.150 29.21	.700 17.78	118-02	1-530744-3	118-13	1-531803-3	117-02	1-530743-3
20	1.150 29.21	.900 22.86	.450 11.43	118-01	1-530744-2	118-12	1-531803-2	117-01	1-530743-2

Mini-Box Pin Header Assemblies (Continued)

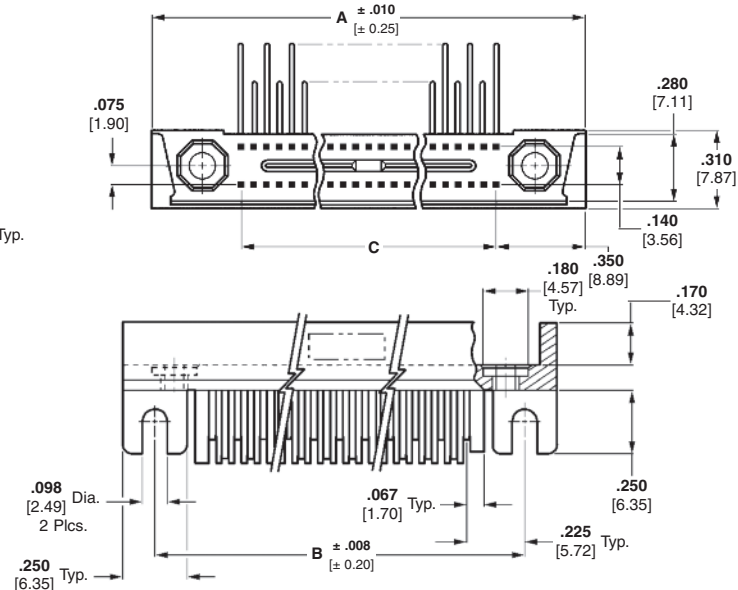
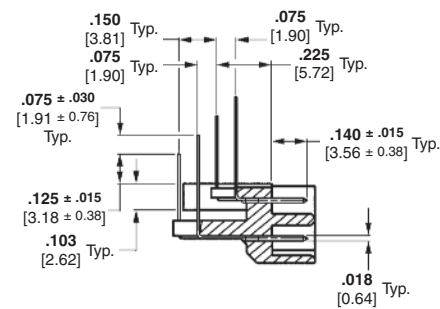
**Style I**  
Straddle Mount without  
Pin Protectors



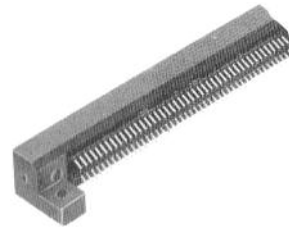
**Style II**  
Straddle Mount with  
Pin Protectors



**Style III**  
Right-Angle Mount



**Extended Mini-Box Receptacle Assemblies**



**Housing Material** — Liquid crystal polymer

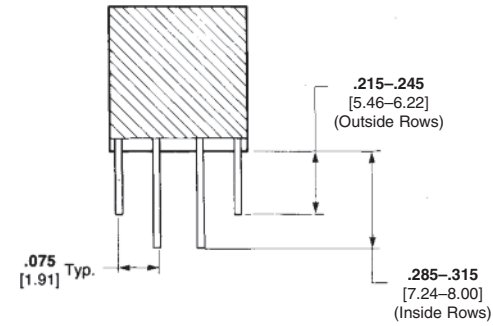
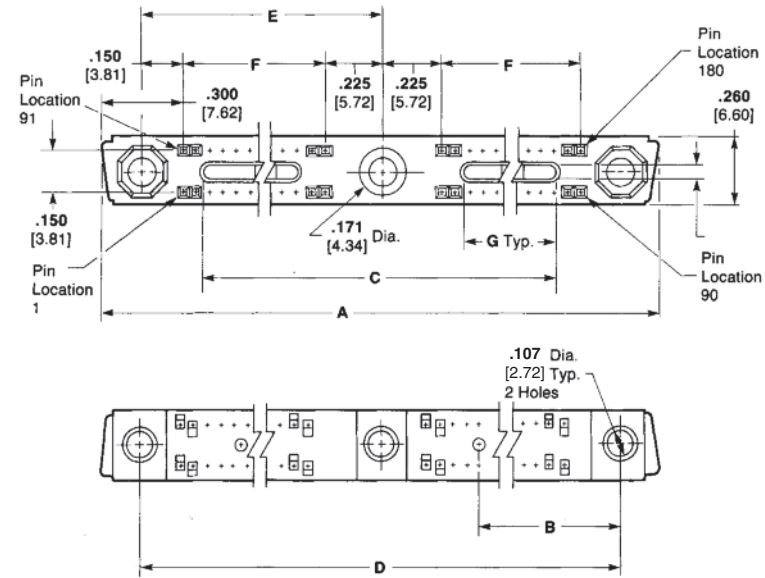
**Contact Material and Finish** — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area over .000030 [0.00076] min. nickel on the entire contact

**Related Product Data**

**Mates with** — Straddle mount pin header assembly, page 1-23, and right-angle pin header, page 1-24

**External Keying** — page 1-30

**Recommended PC Board Layout** — page 1-28



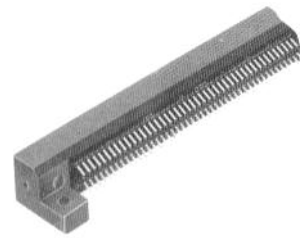
Printed Circuit Board Connectors

No. of Pos.	Dimensions							Assembly Part No.
	A	B	C	D	E	F	G	
200	5.950 151.13	1.413 35.89	5.200 132.08	5.650 143.51	2.825 71.76	2.450 62.23	2.300 58.42	534179-8
192	5.750 146.05	1.362 34.60	5.000 127.00	5.450 138.43	2.725 69.22	2.350 59.69	2.200 55.88	534179-7
180	5.450 138.43	1.287 32.69	4.700 119.38	5.150 130.81	2.575 65.41	2.200 55.88	2.050 52.07	534179-6
172	5.250 133.35	1.237 31.42	4.500 114.30	4.950 125.73	2.475 62.87	2.100 53.34	1.950 49.53	534179-5
160	4.950 125.73	1.162 29.52	4.200 106.68	4.650 118.11	2.325 59.06	1.950 49.53	1.800 45.72	534179-4
152	4.750 120.65	1.062 26.98	4.000 101.60	4.450 113.03	2.225 56.52	1.850 46.99	1.700 43.18	534179-3
140	4.450 113.03	1.037 26.34	3.700 93.98	4.150 105.41	2.075 52.71	1.700 43.18	1.550 39.37	534179-2
132	4.250 107.95	.987 25.07	3.500 88.90	3.950 100.33	1.975 50.17	1.600 40.64	1.450 36.83	534179-1



Extended Mini-Box Pin Header Assemblies

Style I



**Housing Material** — Liquid crystal polymer

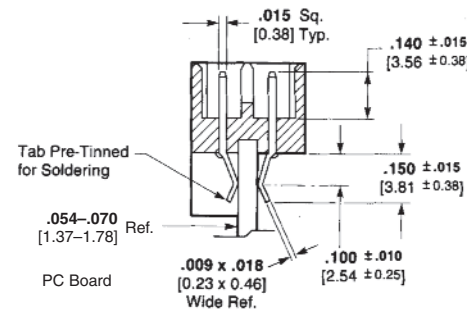
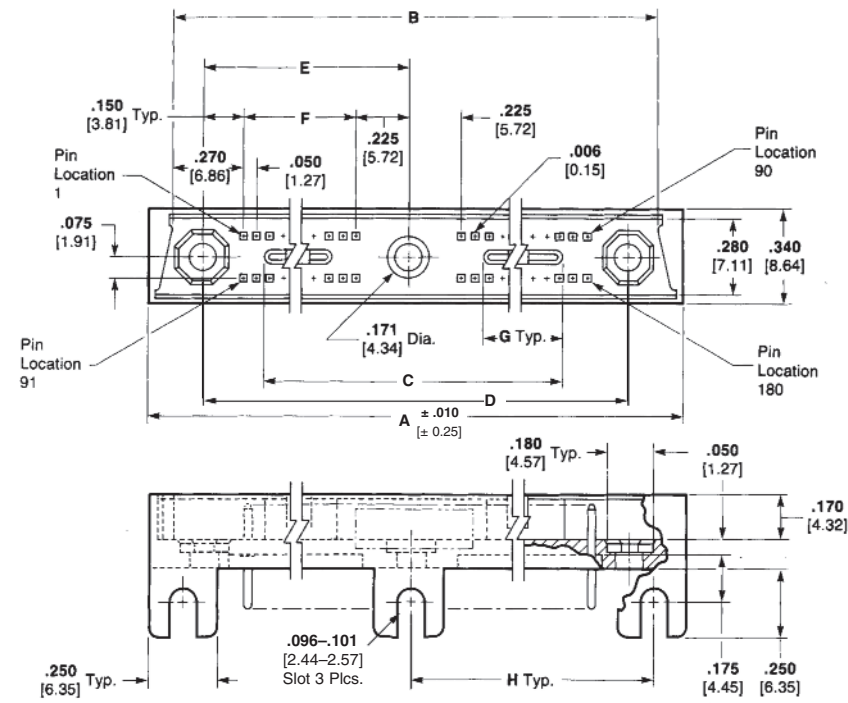
**Contact Material and Finish** — Brass per QQ-B-626 plated .000050 [0.00127] min. gold in the contact area, .000100 [0.00254] min. tin-lead on the tails over .000050 [0.00127] min. nickel on the entire contact

**Related Product Data**

**Mates with** — Receptacle, page 1-23

**External Keying** — page 1-30

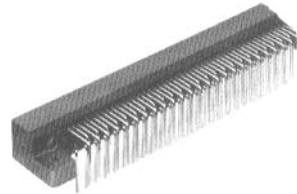
**Recommended PC Board Layout** — page 1-29



No. of Pos.	Dimensions								Assembly Part No.
	A	B	C	D	E	F	G	H	
200	6.050 153.67	5.890 149.61	5.190 131.83	5.650 143.51	2.825 71.76	2.450 62.23	2.290 58.17	2.900 73.66	534180-8
192	5.850 148.6	5.690 144.53	4.990 126.75	5.450 138.43	2.725 69.22	2.350 59.69	2.190 55.63	2.800 71.12	534180-7
180	5.550 140.97	5.390 136.91	4.690 119.13	5.150 130.81	2.575 65.41	2.200 55.88	2.040 51.82	2.650 67.31	534180-6
172	5.350 135.89	5.190 131.83	4.490 114.00	4.950 125.73	2.475 62.87	2.100 53.34	1.940 49.28	2.550 64.77	534180-5
160	5.050 128.27	4.890 124.21	4.190 106.43	4.650 118.11	2.325 59.06	1.950 49.53	1.790 45.47	2.400 60.96	534180-4
152	4.850 123.19	4.690 119.13	3.990 101.35	4.450 113.03	2.225 56.52	1.850 46.99	1.690 42.93	2.300 58.42	534180-3
140	4.550 115.57	4.390 111.51	3.690 93.73	4.150 105.41	2.075 52.71	1.700 43.18	1.540 38.12	2.150 54.60	534180-2
132	4.350 110.49	4.190 106.43	3.490 88.65	3.950 100.33	1.975 50.17	1.600 40.64	1.440 36.58	2.050 52.07	534180-1

Extended Mini-Box Right-Angle Pin Header Assemblies

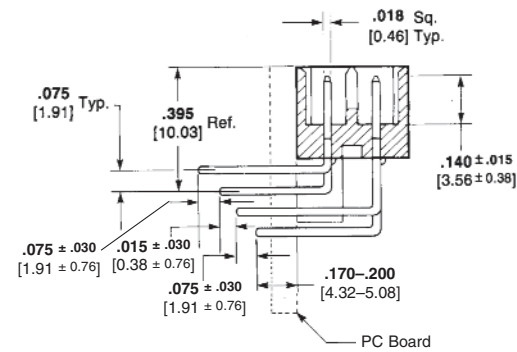
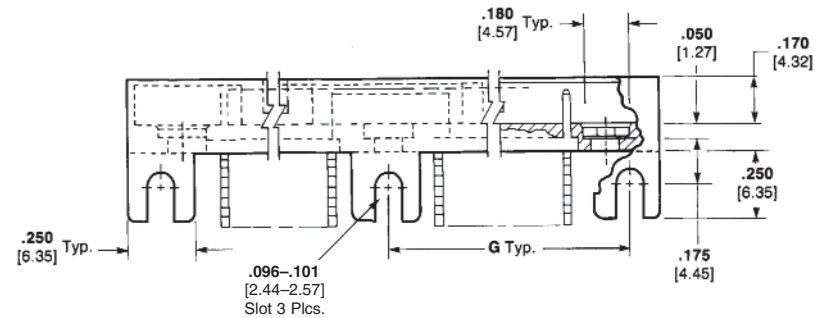
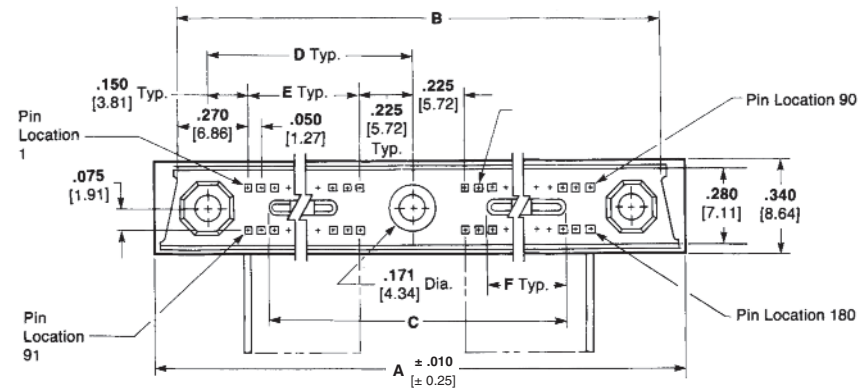
Style II



**Housing Material** — Liquid crystal polymer  
**Contact Material and Finish** — Brass per QQ-B-626 plated .000050 [0.00127] min. gold in the contact area, .000100 [0.00254] min. tin-lead on the tail over .000050 [0.00127] min. nickel on the entire contact

**Related Product Data**

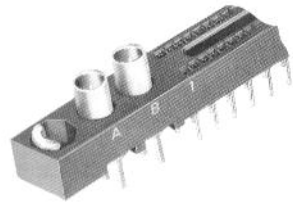
**Mates with** — Receptacle assemblies, page 1-22  
**External Keying** — page 1-30  
**Recommended PC Board Layout** — page 1-26



Printed Circuit Board Connectors

No. of Pos.	Dimensions							Assembly Part No.
	A	B	C	D	E	F	G	
200	6.050	5.890	5.190	2.825	2.450	2.290	2.900	534688-8
	153.67	149.61	131.83	71.76	62.23	58.17	73.66	
192	5.850	5.690	4.990	2.725	2.350	2.190	2.800	534688-7
	148.60	144.53	126.75	69.22	59.69	55.63	71.12	
180	5.550	5.390	4.690	2.575	2.200	2.040	2.650	534688-1
	140.97	136.91	119.13	65.41	55.88	51.82	67.31	
172	5.350	5.190	4.490	2.475	2.100	1.940	2.550	534688-6
	135.89	131.83	114.00	62.87	53.34	49.28	64.77	
160	5.050	4.890	4.190	2.325	1.950	1.790	2.400	534688-5
	128.27	124.21	106.43	59.06	49.53	45.47	60.96	
152	4.850	4.690	3.990	2.225	1.850	1.690	2.300	534688-4
	123.19	119.13	101.35	56.52	46.99	42.93	58.42	
140	4.550	4.390	3.690	2.075	1.700	1.540	2.150	534688-3
	115.57	111.51	93.73	52.71	43.18	38.12	54.60	
132	4.350	4.190	3.490	1.975	1.600	1.440	2.050	534688-2
	110.49	106.43	88.65	50.17	40.64	36.58	52.07	

**Mini-Box Receptacle Assemblies with 4 or 6 Hybrid Cavities**



**Housing Material** — In accordance with MIL-C-55302

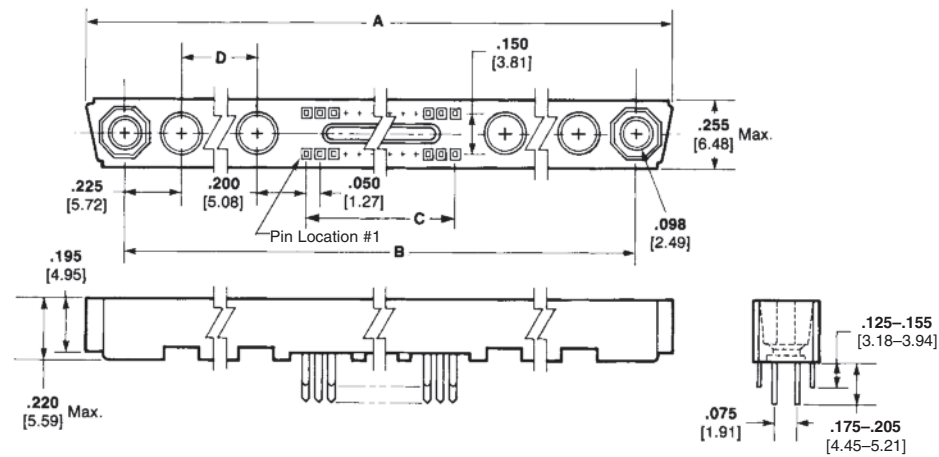
**Contact Material and Finish** — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000030 [0.00076] min. gold in the contact area, .000100 [0.00254] min. tin-lead in the termination area over .000030 [0.00076] min. nickel on the entire contact

**Related Product Data**

**Mates with** — Pin headers, page 1-26

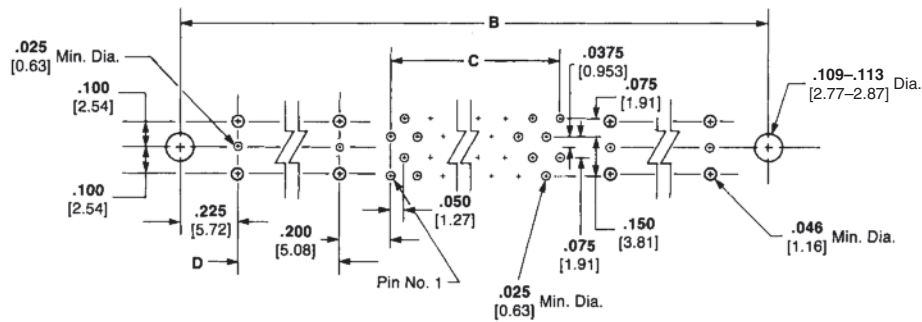
**External Keying** — page 1-30

Other sizes and configurations available. Consult TE Connectivity.



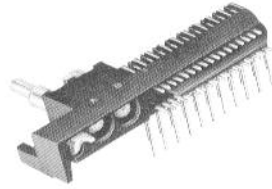
No. of Box Contact Pos.	No. of Coaxial Cavities	Dimensions				Assembly Part No.
		A	B	C	D	
90	4	3.740 95.00	3.450 87.63	2.200 55.88	.200 5.08	532797-1
74	6	3.740 95.00	3.450 87.63	1.800 45.72	.400 10.16	531820-1
36	6	2.790 70.87	2.500 63.5	.850 21.59	.400 10.16	531820-3
26	6	2.540 65.52	2.250 57.15	.600 15.24	.400 10.16	531820-2

**Note:** These receptacle assemblies accept coaxial contact—Vertical PC Board Mount Socket 227603-1



**Recommended PC Board Layout**

**Mini-Box Right-Angle Pin Header Assemblies with 4 or 6 Hybrid Cavities**



**Housing Material** — In accordance with MIL-C-55302

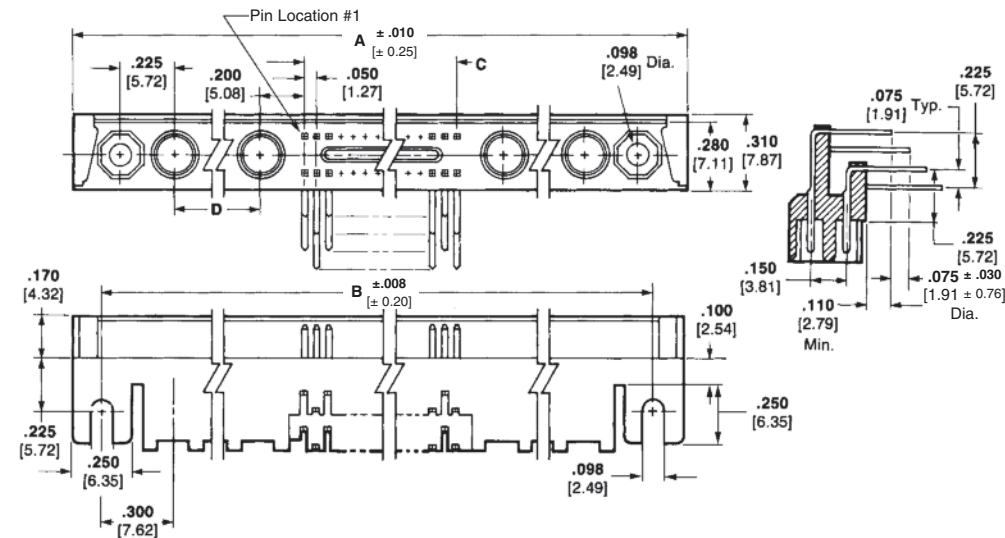
**Contact Material and Finish** — Brass per QQ-B-626 plated .000030 [0.00076] min. gold in the contact area, .000100 [0.00254] min. tin-lead on the post over .000030 [0.00076] min. nickel on the entire contact

**Related Product Data**

**Mates with** — Receptacles, page 1-25

**External Keying** — page 1-30

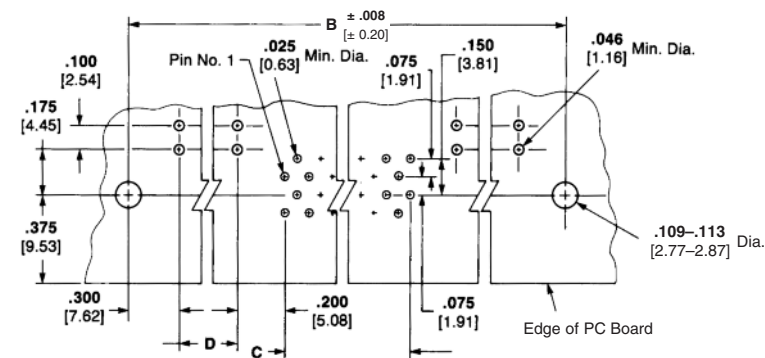
Other sizes and configurations available. Consult TE Connectivity.



Printed Circuit Board Connectors

No. of Box Contact Pos.	No. of Coaxial Cavities	Dimensions				Assembly Part No.
		A	B	C	D	
90	4	3.850 97.79	3.600 91.44	2.200 55.88	.200 5.08	532796-1
74	6	3.850 97.79	3.600 91.44	1.800 45.72	.400 10.16	531819-1
36	6	2.900 73.66	2.650 67.31	.850 21.59	.400 10.16	531819-3
26	6	2.650 67.31	2.400 60.96	.600 15.24	.400 10.16	531819-2

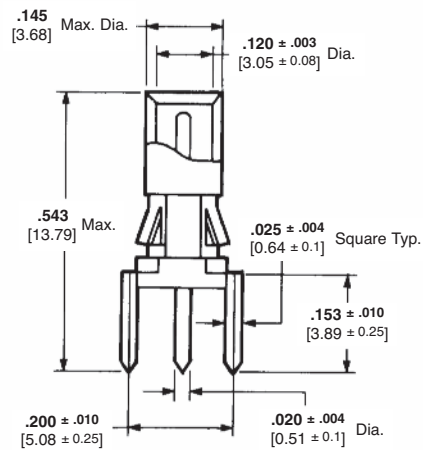
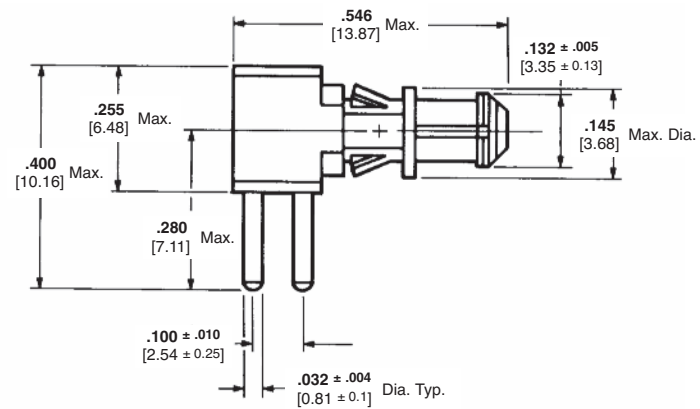
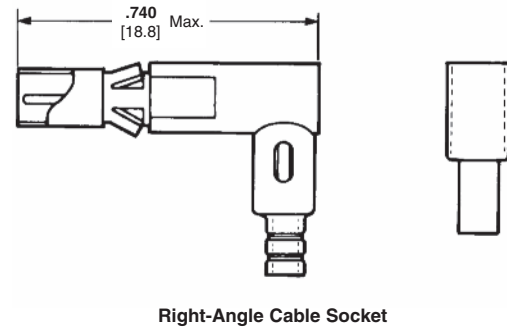
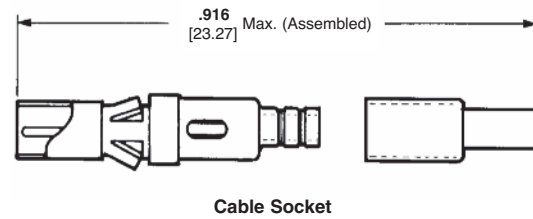
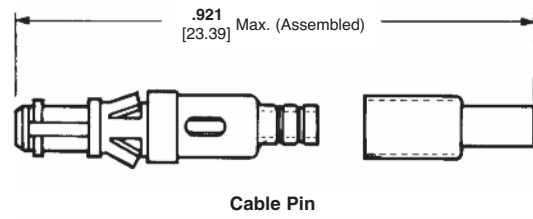
**Note:** These pin header assemblies accept coaxial contacts—Vertical Cable Pin 227604-1 and Right-Angle PC Board Mount Pin 227602-1.



Recommended PC Board Layout



**Microminiature COAXICON Contacts for Hybrid Cavities**



Cable Size	Contact Style	Part No.	Application Tool Part No.
	Cable Pin	227604-1	
RG 178/U Double Braid	Cable Socket	227605-1	220215-1
RG 196/U	Right-Angle Cable Socket	227606-1	

Extraction Tool Part Number 220216-1

**Notes:**

- Center contacts are plated with .000030 [0.00076] gold.
- For .125 [3.18] maximum thick pc boards.

**Electrical Characteristics**

**Nominal Impedance** — 50 ohms  
**Frequency Range** — 0-2 GHz  
**Maximum Operating Voltage (Sea Level)** — 150 VAC RMS

**Mechanical Characteristics**

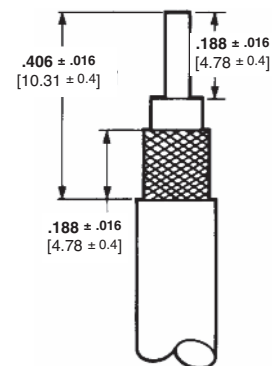
**Operating Temperature Range** — -67°C to +257°F [-55°C to +125°C]  
**Cable Retention** — 15 lb. [66.7N] min. (RG 178 type double braid)

**Contact Materials**

**Stainless Steel** — QQ-S-766  
**Gold Plate** — MIL-G-45204  
**Nickel Plate** — QQ-N-290  
**Beryllium Copper** — QQ-C-530  
**PTFE** — MIL-P-19468A  
**Brass** — QQ-B-626

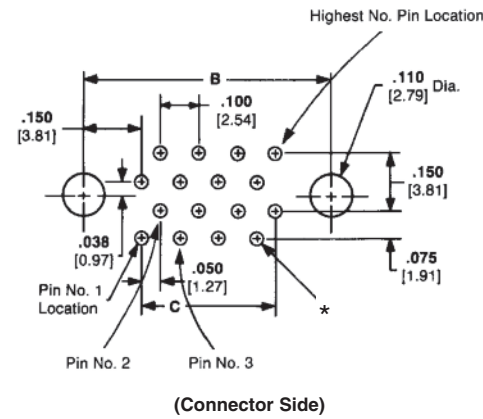
**Ferrule Material**

**Brass** — MIL-C-50, tin plate per MIL-T-10727

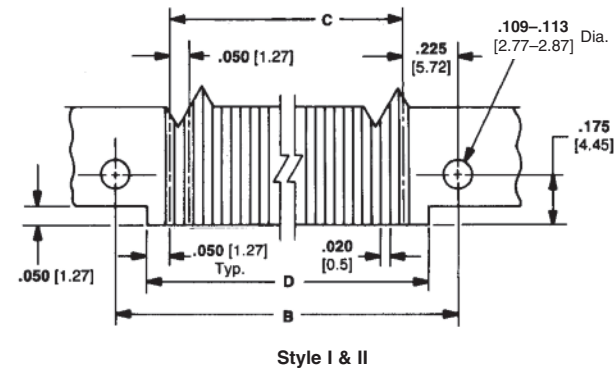


**Mini-Box Connectors Recommended Printed Circuit Board Layouts**

**Receptacle Assemblies**

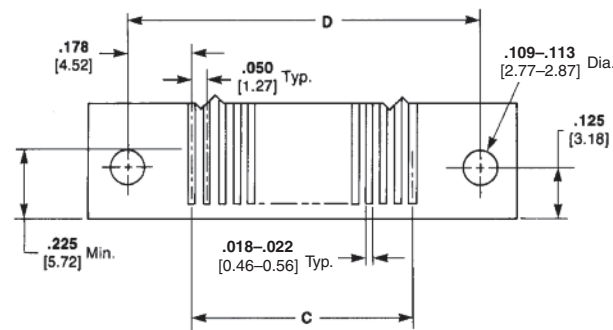


**Pin Header Assemblies**

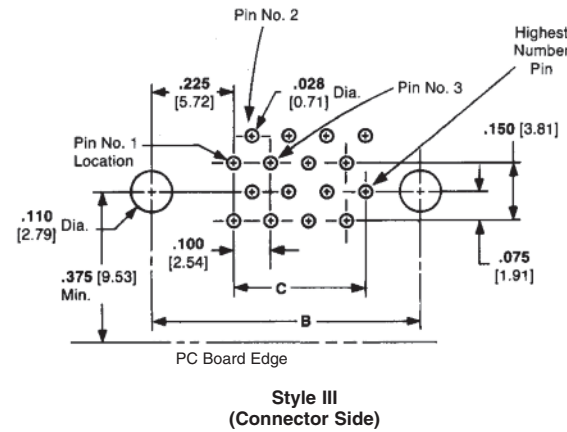


\*Holes for solder type receptacle connectors should be .025 to .032 [0.64 to 0.81] dia. Holes for compliant tails should be manufactured as follows: .0320±.0010 [0.813±0.025] drilled hole dia. (no. 67 drill), .0003 [0.008] min. tin-lead plating over .001 to .002 [0.025 to 0.051] thick copper on wall. Finished hole diameter to be .026 to .030 [0.66 to 0.76] after plating, .025 to .030 [0.64 to 0.76] after reflow.

**Straddle Mount Receptacle Assemblies**



**Right-Angle Pin Header Assemblies**



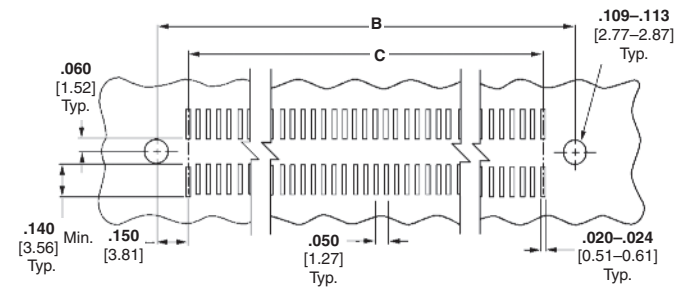
No. of Pos.	Dimensions		
	B	C	D
128	3.450 87.63	3.150 80.01	3.505 89.03
110	3.000 76.2	2.700 68.58	3.055 77.60
100	2.750 69.85	2.450 62.23	2.805 71.25
90	2.500 63.5	2.200 55.88	2.555 64.90
80	2.250 57.15	1.950 49.53	2.305 58.55
70	2.000 50.8	1.700 43.18	2.055 52.20
60	1.750 44.45	1.450 36.83	1.805 45.85
50	1.500 38.1	1.200 30.48	1.555 39.50
40	1.250 31.75	.950 24.13	1.305 33.15
30	1.000 25.4	.700 17.78	1.055 26.80
20	.750 19.05	.450 11.43	.805 20.45

No. of Pos.	Dimensions		
	B	C	D
128	3.600 91.44	3.150 80.01	3.250 82.55
110	3.150 80.01	2.700 68.58	2.800 71.12
100	2.900 73.66	2.450 62.23	2.550 64.77
90	2.650 67.31	2.200 55.88	2.300 58.42
80	2.400 60.96	1.950 49.53	2.050 52.07
70	2.150 54.61	1.700 43.18	1.800 45.72
60	1.900 48.26	1.450 36.83	1.550 39.37
50	1.650 41.91	1.200 30.48	1.300 33.02
40	1.400 35.56	.950 24.13	1.050 26.67
30	1.150 29.21	.700 17.78	.800 20.32
20	.900 22.86	.450 11.43	.550 13.97



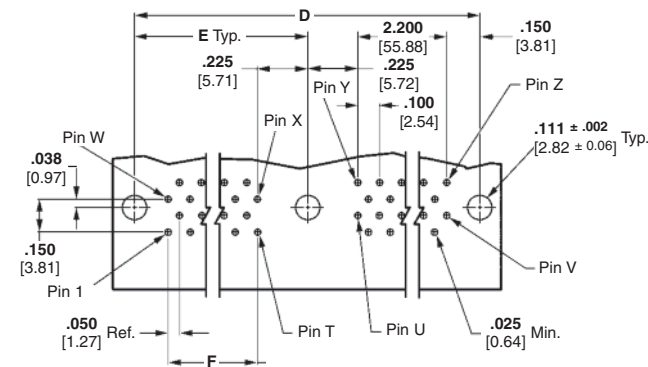
**Mini-Box Connectors Recommended Printed Circuit Board Layouts (Continued)**

**Vertical Surface Mount  
Receptacle and  
Pin Header Assemblies**

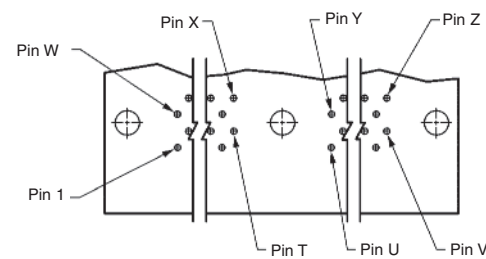


**Extended Mini-Box Connectors Recommended Printed  
Circuit Board Layouts (Connector Side of Board)**

**Receptacle Assemblies**

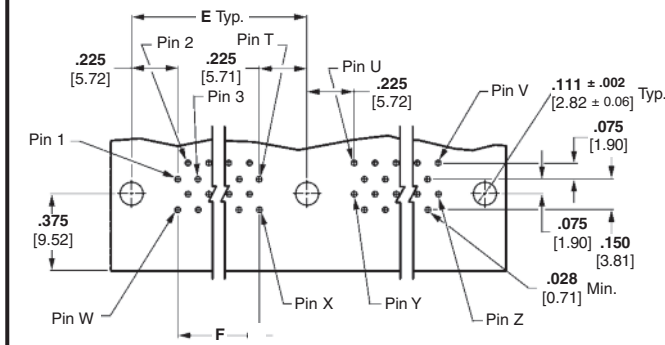


PC Layout I

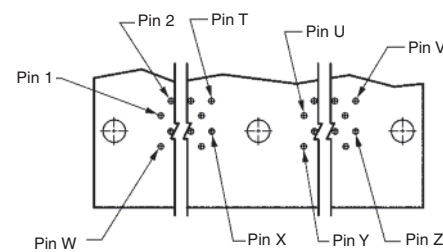


PC Layout II

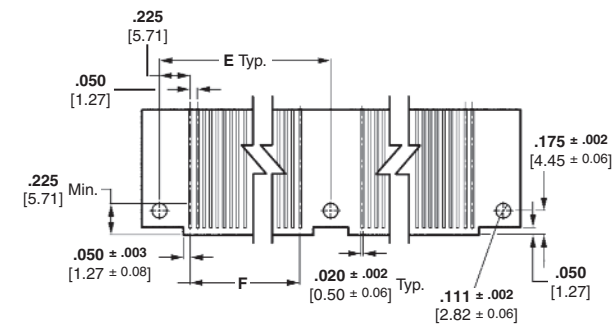
**Pin Header Assemblies**



Right-Angle—PC Layout I



Right-Angle—PC Layout II



Straddle Mount

**Extended Mini-Box Connectors Recommended Printed Circuit Board Layouts (Connector Side of Board)** (Continued)

**Receptacles**

PC Layout	Pin Locations						
	T	U	V	W	X	Y	Z
II	50	51	100	101	150	151	200
II	48	49	96	97	144	145	192
I	45	46	90	91	135	136	180
I	43	44	86	87	129	130	172
II	40	41	80	81	120	121	160
II	38	39	76	77	114	115	152
I	35	36	70	71	105	106	140
I	33	34	66	67	99	100	132

No. of Pos.	Dimensions		
	D	E	F
200	5.650 143.51	2.825 71.76	2.450 62.23
192	5.450 138.43	2.725 69.22	2.350 59.69
180	5.150 130.81	2.575 65.41	2.200 55.88
172	4.950 125.73	2.475 62.87	2.100 53.34
160	4.650 118.11	2.325 59.06	1.950 49.53
152	4.450 113.03	2.225 56.52	1.850 46.99
140	4.150 105.41	2.075 52.71	1.700 43.18
132	3.950 100.33	1.975 50.17	1.600 40.64

**Pin Headers**

PC Layout	Pin Locations						
	T	U	V	W	X	Y	Z
II	50	51	100	101	150	151	200
II	48	49	96	97	144	145	192
I	45	46	90	91	135	136	180
I	43	44	86	87	129	130	172
II	40	41	80	81	120	121	160
II	38	39	76	77	114	115	152
I	35	36	70	71	105	106	140
I	33	34	66	67	99	100	132

No. of Pos.	Dimensions	
	F	E
200	2.450 62.23	2.900 73.66
192	2.350 59.69	2.800 71.12
180	2.200 55.88	2.650 67.31
172	2.100 53.34	2.550 64.77
160	1.950 49.53	2.400 60.96
152	1.850 46.99	2.300 60.96
140	1.700 43.18	2.150 54.61
132	1.600 40.64	2.050 52.07

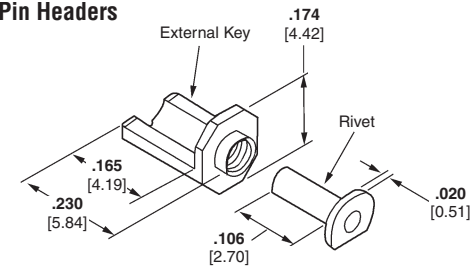


Printed Circuit Board Connectors

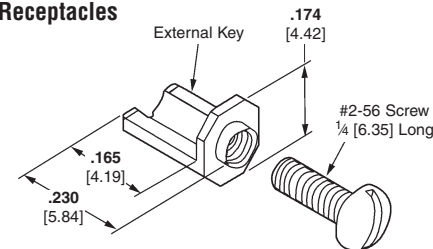
**Mini-Box and Extended Mini-Box Connector Keying Hardware**
**External Keys**

These external keys can be used with all the receptacle assemblies and with all the pin header assemblies. They are press fitted into position using tool number 91117-2. Keys used in one end of each mated pair will yield 8 keying combinations, and when used in both ends of the mated

pairs will yield 64 keying combinations. The No. 2-56 screws are used to mount keyed receptacles to a printed circuit board. See instruction sheet 408-7894 for details. Rivets can be used to retain keys in pin header assemblies. See instruction sheet 408-9240.

**Pin Headers**


**External Key Kit Number 530721-4**  
 Kit includes 2 each of the following:  
**Keys** — Part Number 530721-1  
 Military Part Number M55302/31-06  
**Rivets** — Part Number 534164-2  
**Material** — Passivated Stainless Steel

**Receptacles**


**External Key Kit Number 530721-3**  
 Kit includes 2 each of the following:  
**Keys** — Part Number 530721-1  
 Military Part Number M55302/31-06  
**#2-56 Screws**, .250 [6.35] Long  
**Material** — Passivated Stainless Steel



**4-Row Mini-Box Connectors**
**Receptacle Assemblies, Vertical**

**Material and Finish**

**Housing** — In accordance with MIL-M-24519 per MIL-C-55302. GLCP-30F, liquid crystal polymer, grey

**Contacts** — Beryllium copper per QQ-C-533 or ASTM B760, or phosphor bronze per ASTM B103 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area, over .000030 [0.00076] min. nickel on the entire contact

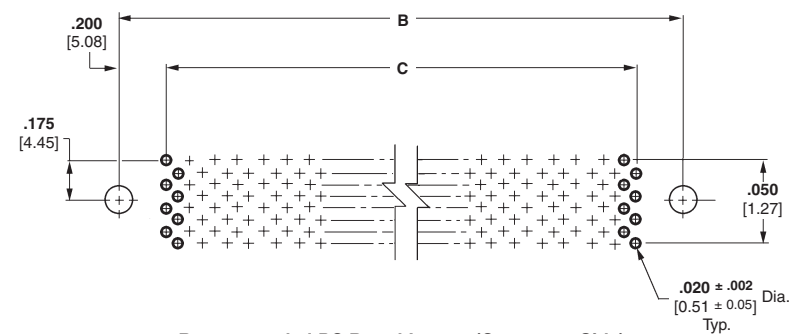
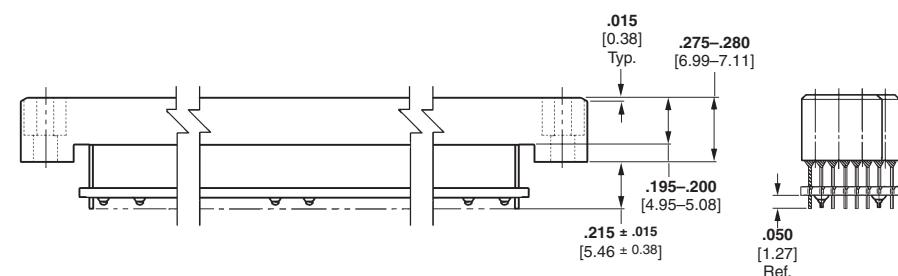
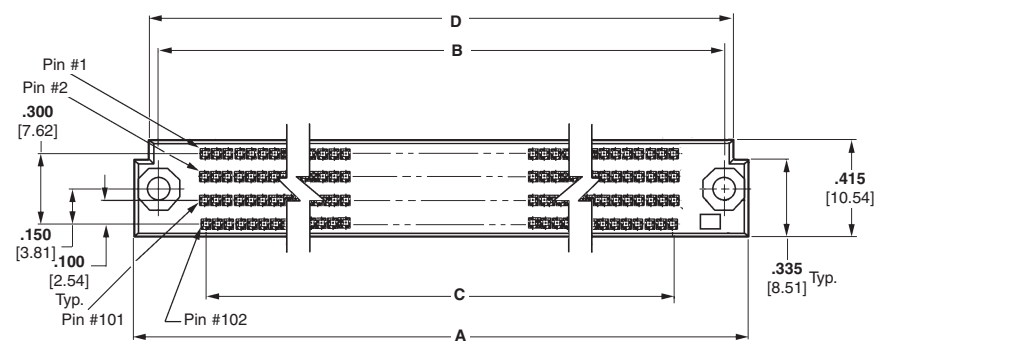
**Related Product Data**

**Mates with** — Pin headers, page 1-32

**External Keying** — page 1-30

**Technical Documents**

**Product Specifications** — 108-1551



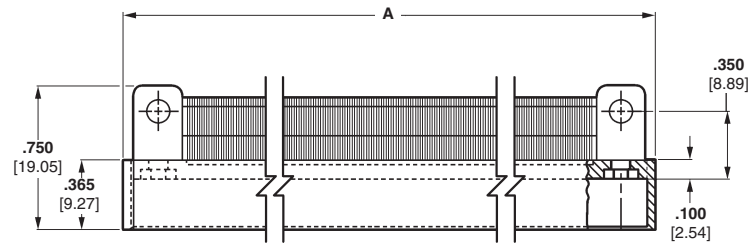
Recommended PC Board Layout (Connector Side)

No. of Pos.	Dimensions				Connector w/ Hardware*	Part No.
	A	B	C	D		
120	2.095 53.21	1.850 46.99	1.450 36.83	1.950 49.53	—	448445-1
152	2.495 63.37	2.250 57.15	1.850 46.99	2.350 59.69	449650-2	448445-4
200	3.095 78.61	2.850 72.39	2.450 62.23	2.950 74.93	—	448445-2
300	4.345 110.36	4.100 104.14	3.700 93.98	4.200 106.68	449650-1	448445-5
320	4.595 116.71	4.350 110.49	3.950 100.33	4.450 113.03	—	448445-3

\* Hardware includes 2 each 531721-3 External Key Kit (See page 1-27)

4-Row Mini-Box Connectors (Continued)

Pin Headers, with Flexible Circuit Terminations



Material and Finish

**Housing** — In accordance with MIL-M-24519 per MIL-C-55302. GLCP-30F, liquid crystal polymer, grey

**Contacts** — Brass per ASTM B36 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area, over .000030 [0.00076] min. nickel on the entire contact with flexible circuits, 3.5 oz [99.23 g] beryllium copper per QQ-C-530 conductors with polyimide dielectric and acrylic adhesive

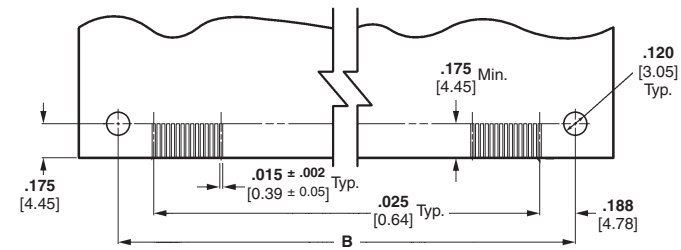
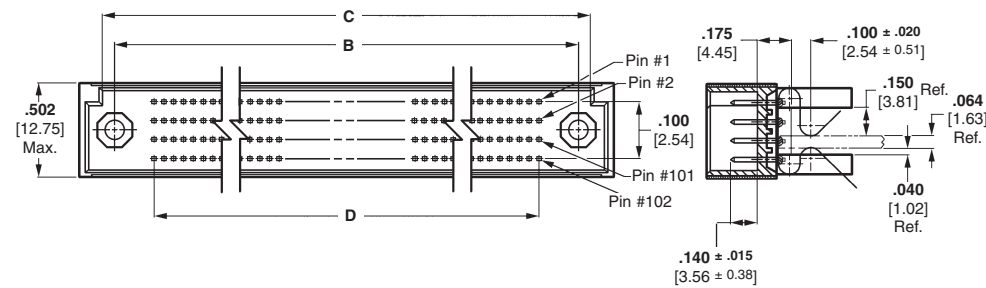
Related Product Data

**Mates with** — Receptacle assemblies, page 1-31

**External Keying** — page 1-30

Technical Documents

**Product Specifications** — 108-1551



Recommended PC Board Layout



Printed Circuit Board Connectors

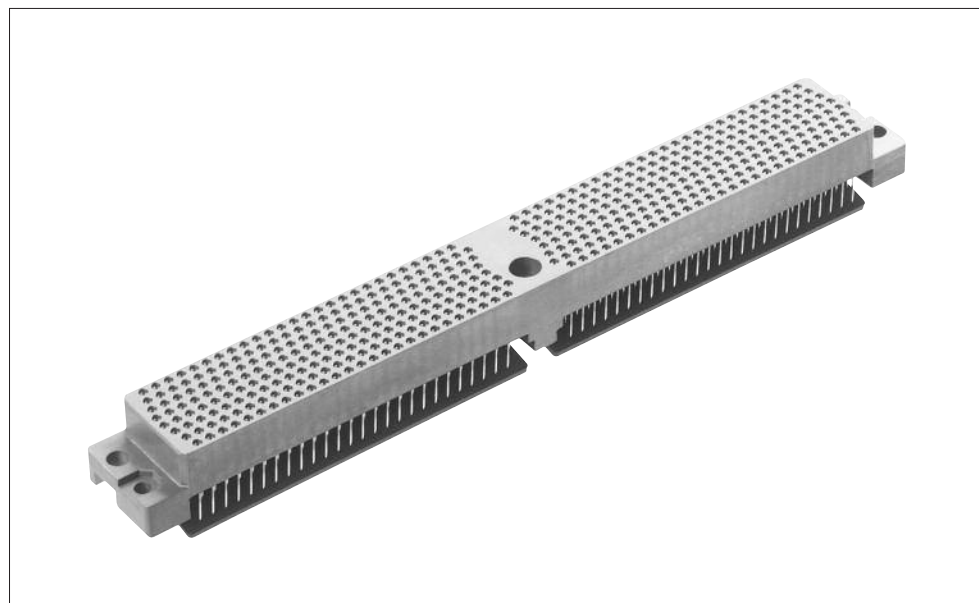
No. of Pos.	Dimensions				Connector w/ Hardware*	Part No.
	A	B	C	D		
120	2.210 56.13	1.850 46.99	1.975 50.17	1.450 36.83	—	448446-1
152	2.610 63.37	2.250 57.15	2.375 46.99	1.850 59.69	449619-2	448446-4
200	3.210 78.61	2.850 72.39	2.975 62.23	2.450 74.93	—	448446-2
300	4.460 110.36	4.100 104.14	4.225 93.98	3.700 106.68	449619-1	448446-5
320	4.710 116.71	4.350 110.49	4.475 100.33	3.950 113.03	—	448446-3

\* Connector includes 2 each of 449601-1 Hardware Kit. Hardware Kit can also be purchased separately. Hardware Kit includes: external key, screw, spacers, e-ring and threaded spacer.

**Introduction**

**Product Facts**

- Two-piece high density, high performance connectors for printed circuit board use
- Four-beam box-type contact design provides four areas of contact per connection
- Available in 6-Row 306 position and 8-Row 428 position
- Receptacles designed for through-hole soldering
- Pins designed for surface mount card edge applications
- Guide posts provide proper alignment during mating
- Octagonal shape keys ensure proper mating
- Meets DSCC 89065 performance requirements



**AMP-HDI 6 and 8 Row LRM (Line Replaceable Module) Connectors**

Designed specifically to be the next generation, high density electronic packaging system, the AMP-HDI 6 Row, .075 [1.91] centerlines and 8 Row, .080 [2.03] centerlines, LRM Interconnection System meets all DSCC 89065 LRM specifications. This advanced system features high temperature plastic housings compatible with IR reflow solder techniques. Added advantage of the AMP-HDI LRM Connector System is its capability of accepting MIL SPEC fiber optic contacts per MIL-T29504/5. Six-row configurations available in 306 contact positions. Eight-row configurations feature two 214 position plug halves which mate with one 428-position receptacle. This technological leader is offered with standard tin-lead plated solder tails and for those applications where maintaining a light weight system is a factor. The 8-row configuration is made available with weight saving, flexible film tails.

Equally important are Application Costs. The AMP-HDI LRM Connector interconnection system offers advanced tooling that simplifies contact alignment to the pc board, substantially reducing overall applied labor costs.

Guide posts provide alignment for the connectors when mating. Shell accessories protect the pin assemblies from physical damage. Octagonal shape keys permit eight rotational positions assuring only the proper mating assembly can be inserted.

The connectors offer 6 row and 306 positions with 4 fiber optic ports capability or 8 rows with 428 positions.

Housings are made from Polyphenylene sulfide with duplex plated .000050 [.00127] min. gold beryllium copper contacts. The contact tails are tin-lead coated for easy soldering.

**Technical Features**

**Available Number of Positions** — 306 and 428

**Center Spacing** — .075 [1.91] and .080 [2.03]

**Housing Material** — Polyphenylene Sulfide per MIL-M-24519

**Contact Material** — Beryllium copper

**Contact Finish** — 50 µ in gold per MIL-G-45204

**Contact Dimension** — .008 [0.20] wide

**Current Rating** — 1 ampere

**Termination Resistance (Max.)** — 20 milliohms

**Connector Mating Force** — Less than 130 pounds

**Performance Characteristics**

**Dielectric Withstanding Voltage** — 600 VRMS

**Insulation Resistance** — 100 VDC, 1000 Megaohms

**Connector Mating/Unmating** — Less than 3 oz. per contact

**Durability** — 500 cycles

**Vibration** — MIL-STD-1344 per Method 2005 Condition V

**Physical Shock** — MIL-STD-1344 per Method 2004 Condition H (15G)

**Thermal Shock** — MIL-STD-1344 method 1003 cond A

**Temperature Humidity** — MIL-STD-1344 method 1002 Type II

**Technical Documents**  
Instruction Sheet 408-4008

**AMP-HDI 6-Row, 306-Position Connector**

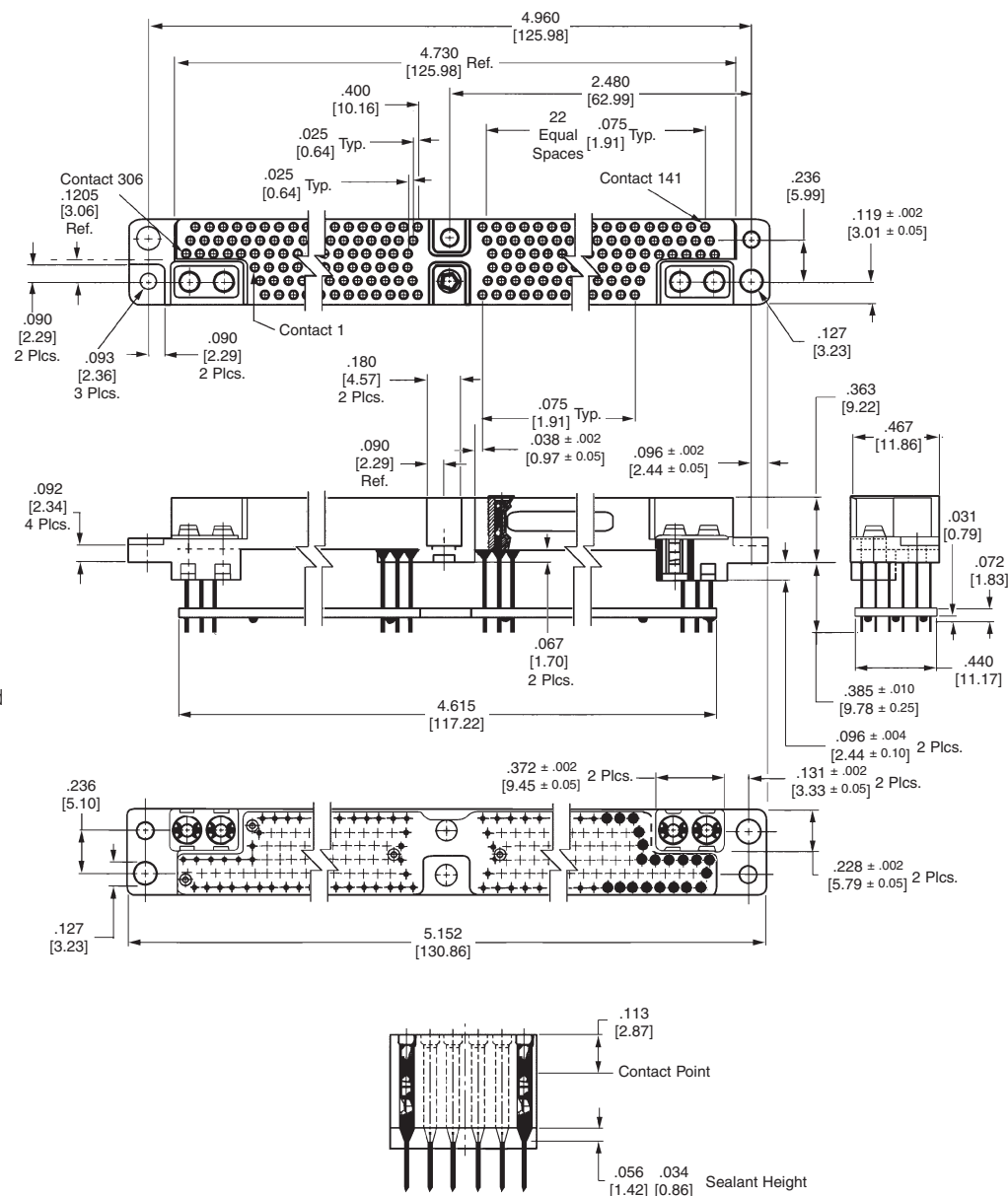
**LRM Receptacle Connectors with Additional, 4-Position, Fiber Optic Contact Ports**

**Part Number 445270-1**



**Material and Finish:**

- Housing** — Polyphenylene sulfide, (PPS) per MIL-M-24519
- Contacts** — Beryllium copper, duplex plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the termination area per 5N60 or 5N63
- Sealant** — Epoxy, all 306 positions
- Insert Key** — Stainless steel, passivated
- Fiber Optic Seats** — Fluorosilicone rubber compound, blue
- Fiber Optic Clip** — Beryllium copper per QQ-C-533
- Interfacial Seal** — Fluorosilicone rubber compound, blue
- Guide Post and Ground** — Stainless steel, passivated
- Shell** — Aluminum per ASTM B 221-alloy 6061-T6, plated chromate per MIL-C-5541, Class 3 with **Captive Screws** — MS 246903-C7 modified

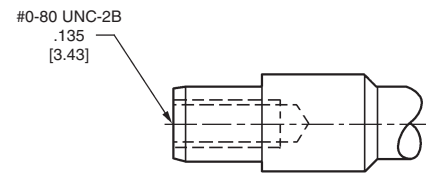


Printed Circuit Board Connectors

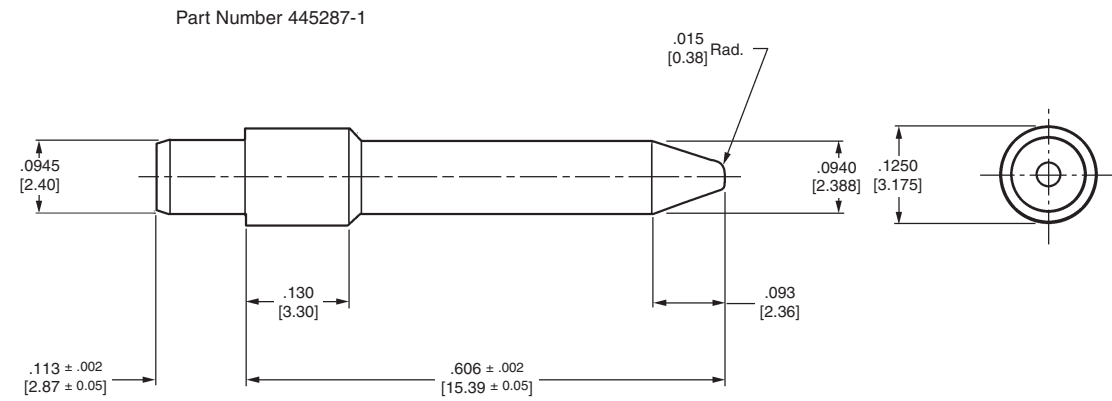


**AMP-HDI 6-Row, 306-Position Connector** (Continued)

**LRM Receptacle Connectors with Additional, 4-Position, Fiber Optic Contact Ports**  
(Continued)

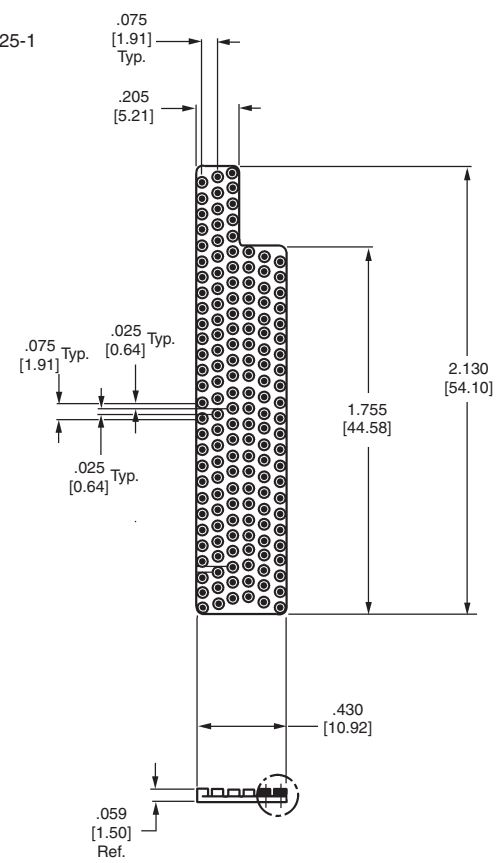


Part Number 445287-2

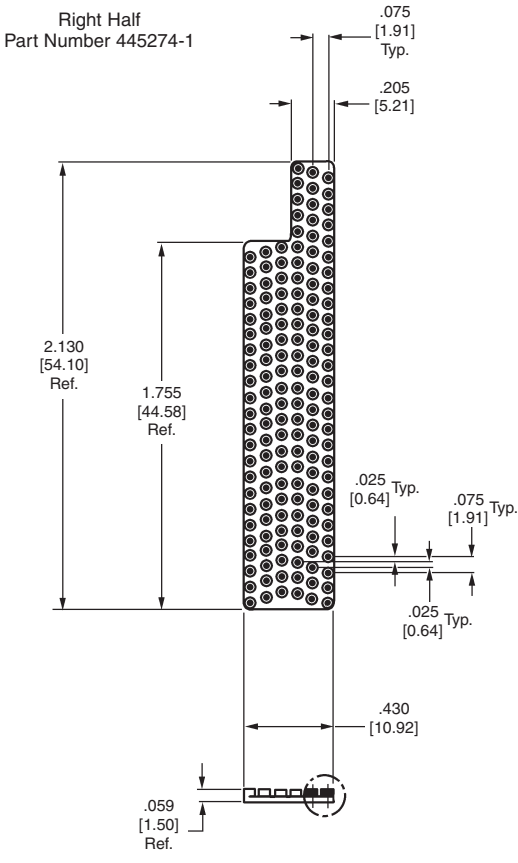


Guide Post

Left Half  
Part Number 445525-1



Right Half  
Part Number 445274-1



Interfacial Sealing Gaskets

**AMP-HDI 6-Row, 306-Position Connector** (Continued)

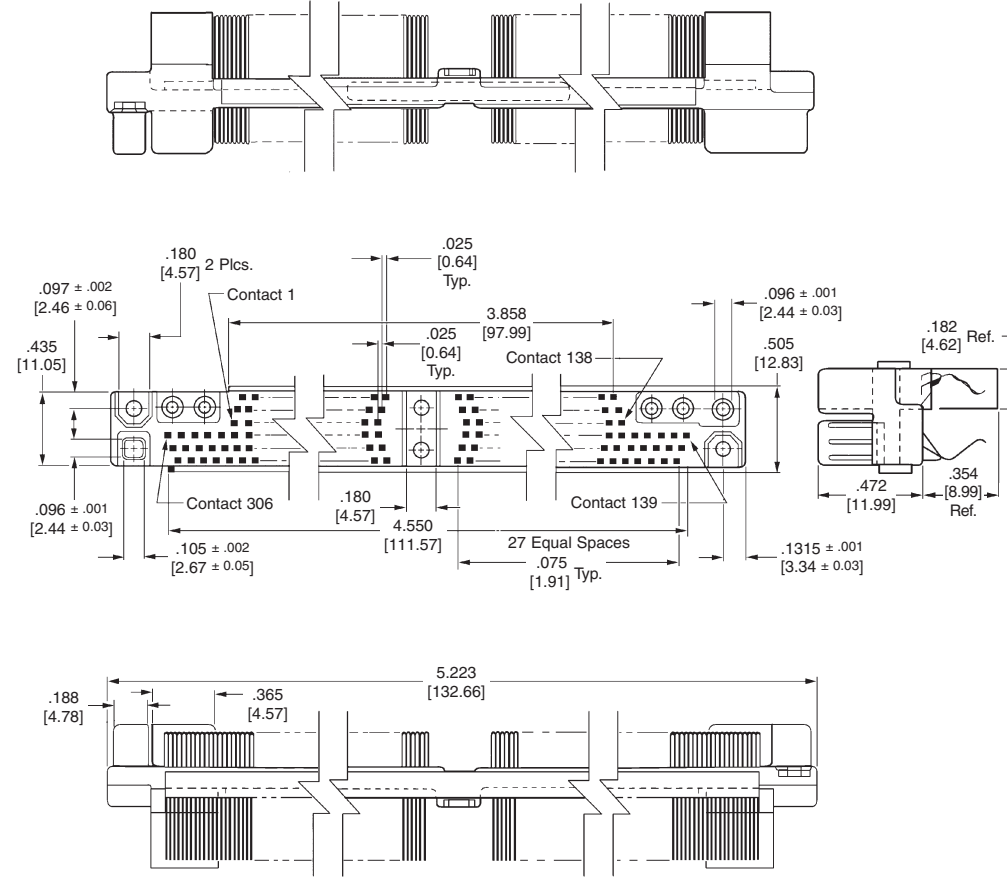
**LRM Plug Assembly with Additional, 4-Position, Fiber Optic Contacts**  
**Part Number 445269-1**

**Material and Finish**

**Housing** — Polyphenylene sulfide (PPS) per MIL-M-24519

**Contacts** — Beryllium copper, duplex .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the termination area per 5N60 or 5N63

**Fiber Optic Contacts** — Per MIL-T-29504/5 (are customer supplied)



Printed Circuit Board Connectors

**AMP-HDI 8-Row, 428-Position Connector**

**LRM Motherboard Connector**

Part Number 447447-1



**Material and Finish**

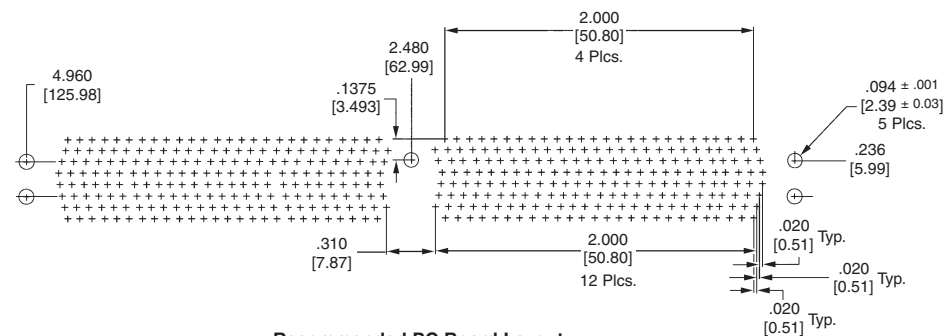
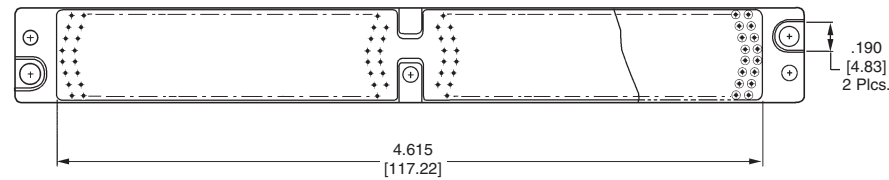
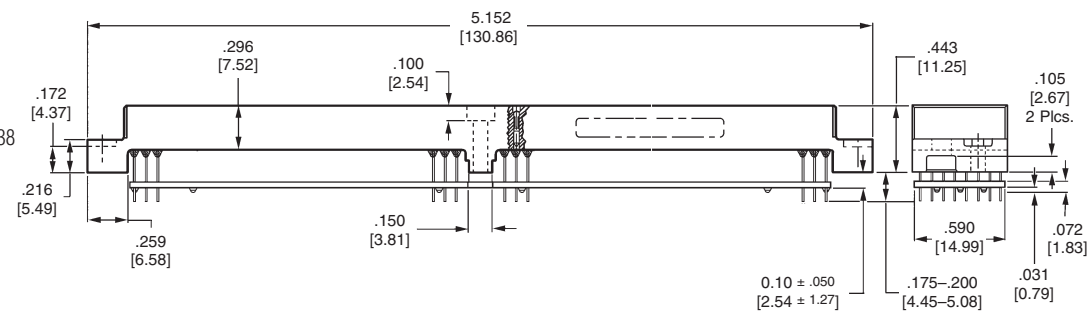
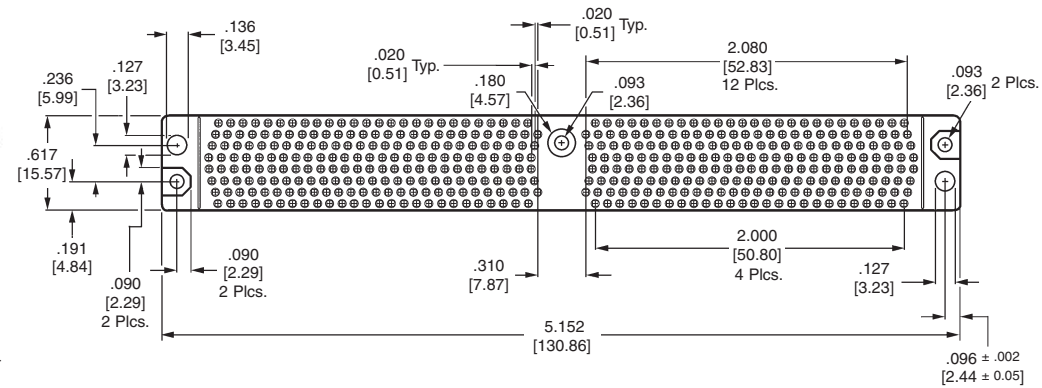
**Housing** — Polyphenylene sulfide per MIL-M-24519

**Contacts** — Beryllium copper, plated .000050 [0.00127] min. gold per MIL-G-45204 in the contact area, over .000050 [0.00127] min. on the entire contact per QQ-N-290

**Related Product Data**

**Mates with** — Pin headers, page 1-38

**Available Hardware** — External Keys, Guide Pins



Recommended PC Board Layout

**AMP-HDI 8-Row, 428-Position Connector** (Continued)

**LRM Daughterboard Connector**

**Part Number 447444**

**Material and Finish**

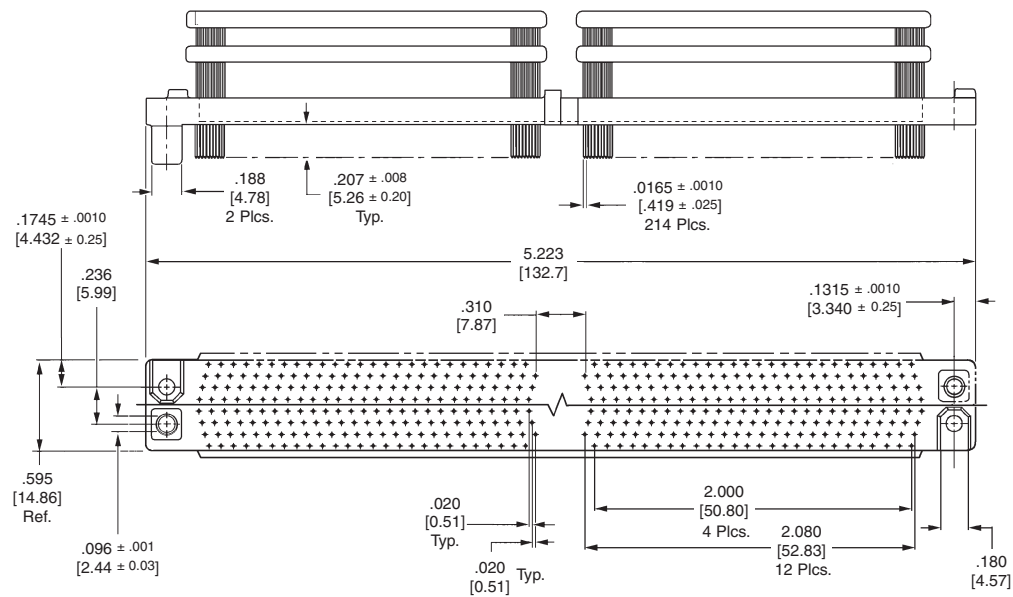
**Housing** — Polyphenylene sulfide per MIL-M-24519

**Contacts** — Beryllium copper, plated .000050 [0.00127] min. gold per MIL-G-45204 in the contact area, over .000050 [0.00127] min. on the entire contact per QQ-N-290

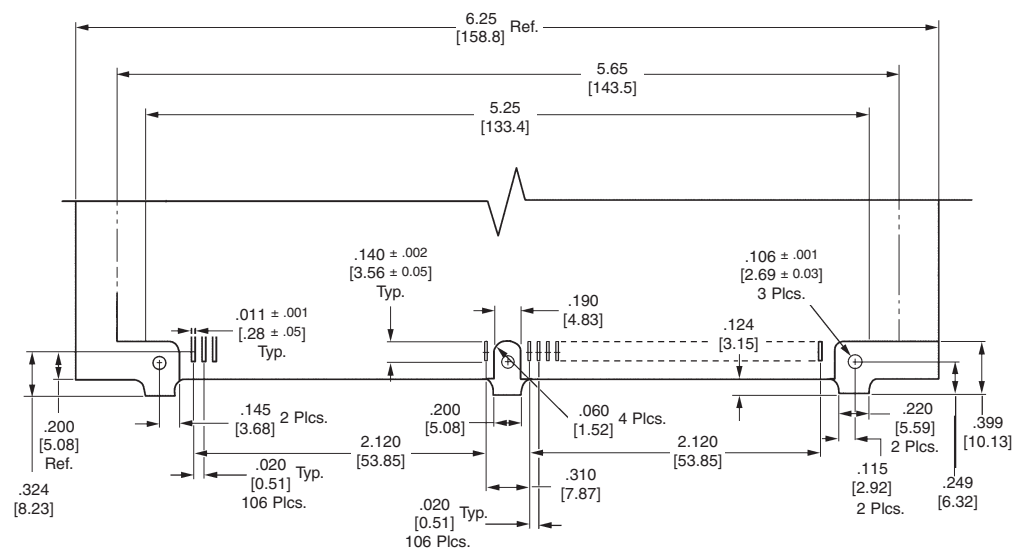
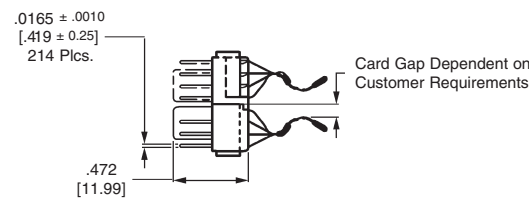
**Related Product Data**

**Mates with** — Receptacle, page 1-37 Ref.

**Available Hardware** — Shell Assembly, Polarizing Keys



Printed Circuit Board Connectors



**Recommended PC Board Layout**

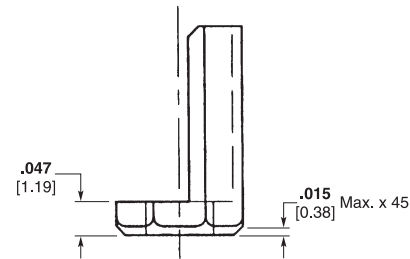
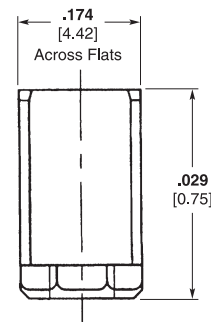
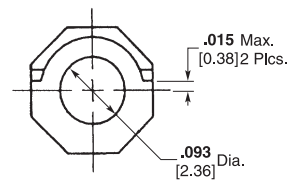
Plug Housing Assembly	Part Number	
Plug Half (214 Pos.)	B Side	447444-4
		447444-2
	A Side	447444-3
		447444-1

**Note:** 8-Row Housing Dim. (Typ.) — Plug, 5.223 [132.66] L x .585 [14.86] W x .472 [11.99] H.

**AMP-HDI Connector Accessories**

**External Key for  
Part Number 445270 and  
Part Number 447447**

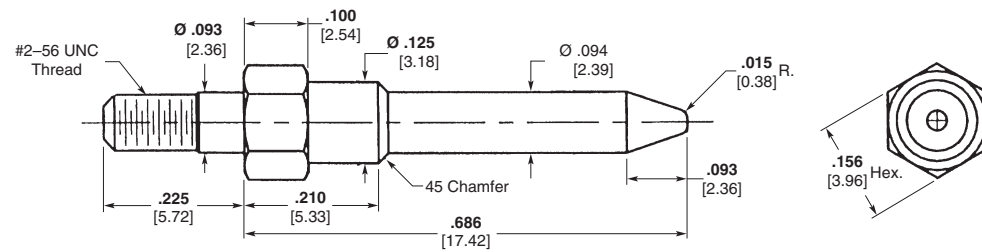
**Material** — Passivated stainless steel.  
Fasten with 2-56 cap screw x .50" long  
not included.



Part Number 445282-1

**Threaded Post Guide for  
Part Number 445270 and  
Part Number 447447**

**Material** — Passivated stainless steel.  
Fasten with 2-56 nut not included.



Part Number 447448-1



**AMP-HDI Connector Shell Accessories**

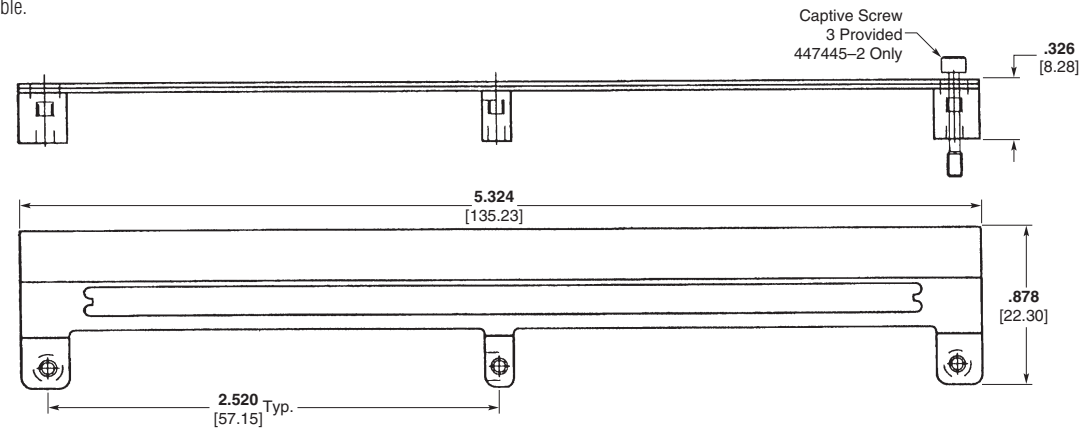
**Protective Shell for Part Number 447444**

**Part Number 447445-2**  
Side "A" Shell With Captive Screws

**Part Number 447446-2**  
Side "B" Shell Without Captive Screws

**Material** — Aluminum

**Finish** — Chromate conversion.  
Special shell markings available.



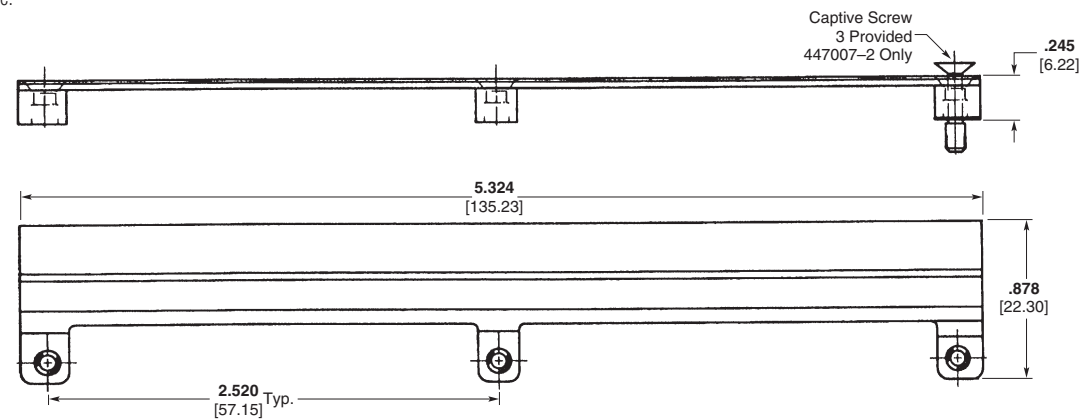
**Protective Shell for Part Number 445269**

**Part Number 447007-2**  
Side "A" Shell With Captive Screws

**Part Number 447006-2**  
Side "B" Shell Without Captive Screws

**Material** — Aluminum

**Finish** — Chromate conversion.  
Special shell markings available.

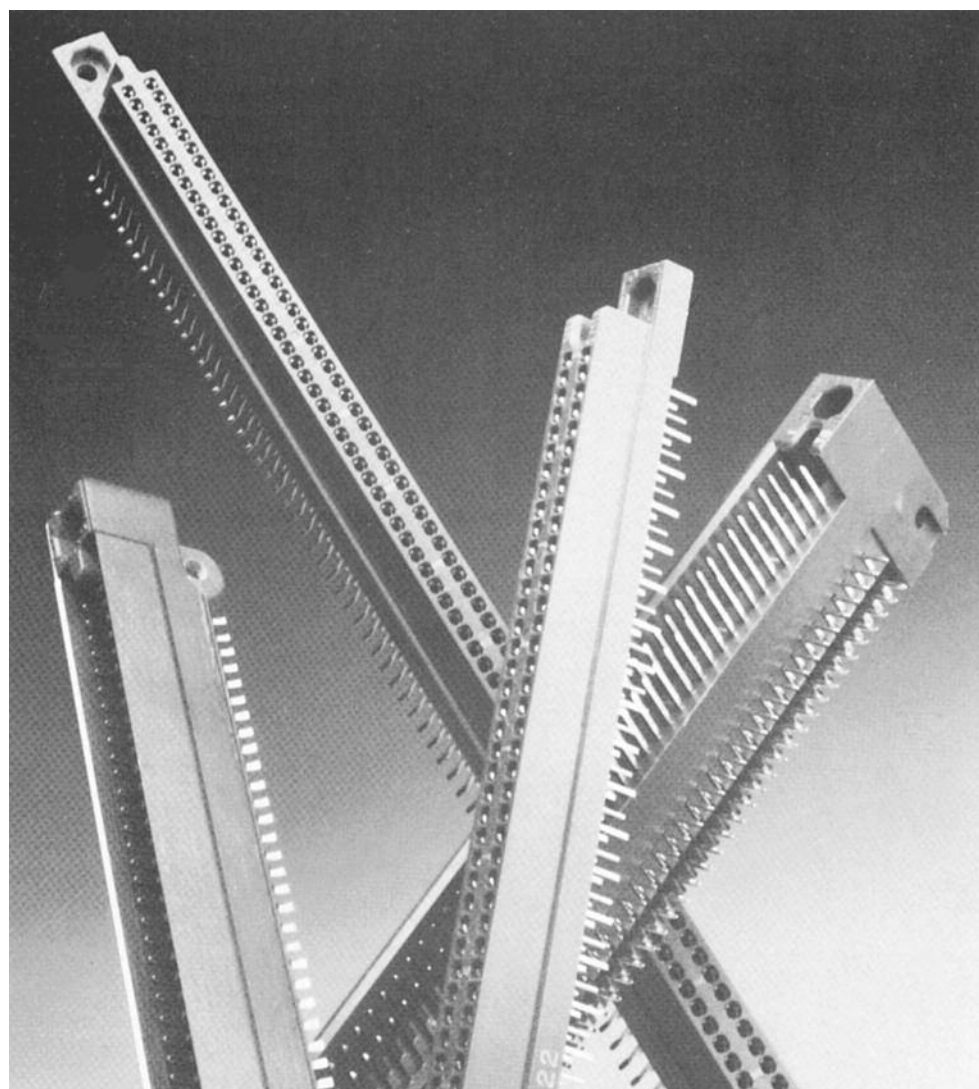


Printed Circuit Board Connectors

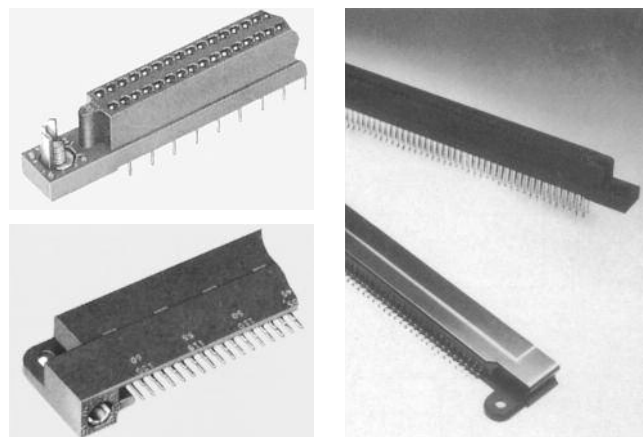
**Introduction**

**Product Facts**

- Contacts are on .075 x .125 [1.91 x 3.18] centers
- Pin headers are provided with pin protectors
- Box receptacles contacts are available in flow solder, solder eyelet and straddle mount styles
- Qualified to MIL-C-55302/24, /25, /23, /156
- Four-beam box-type receptacle contact design provides four areas of contact per connection



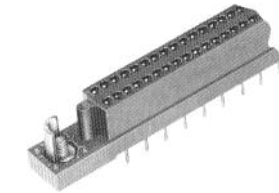
The .075 [1.91] centerline Box Connector series is available in a 2-row configuration with pin counts from 10 to 180 positions and uses the reliable four-beam box contact. The tighter centerline spacing provides more pins within a specified distance and the staggered footprint allows for easier manufacturing of the printed circuit board.



Receptacle Assemblies for Flow Soldering — MIL-C-55302 Qualified



Printed Circuit Board Connectors



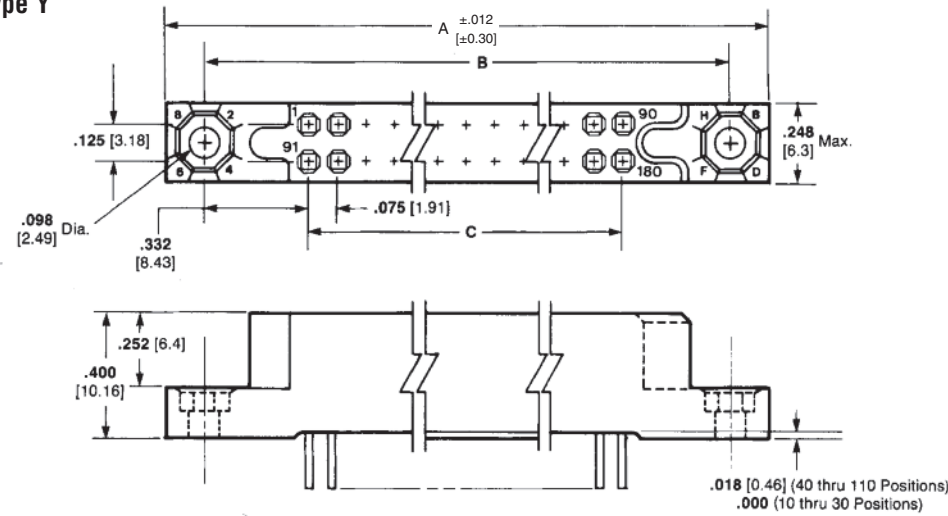
Related Product Data

Mates with — Pin Headers, pages 1-44 and 1-45

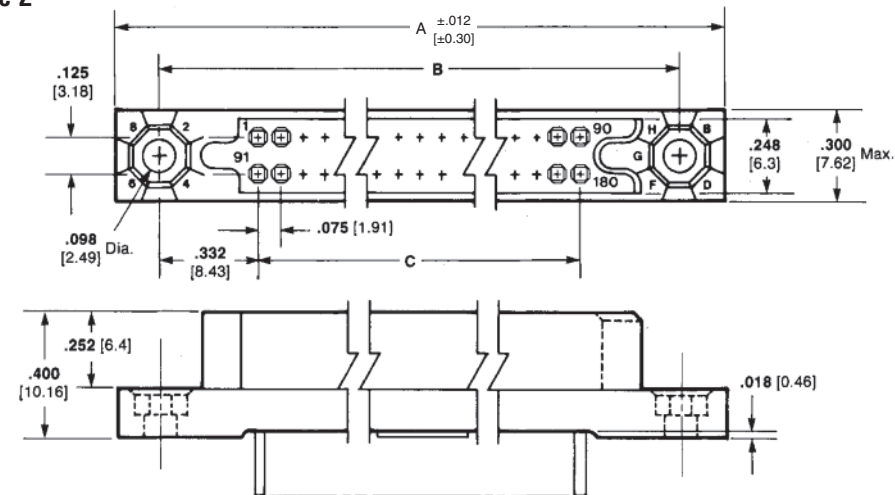
External Keying — page 1-80

Recommended PC Board Layout — page 1-47

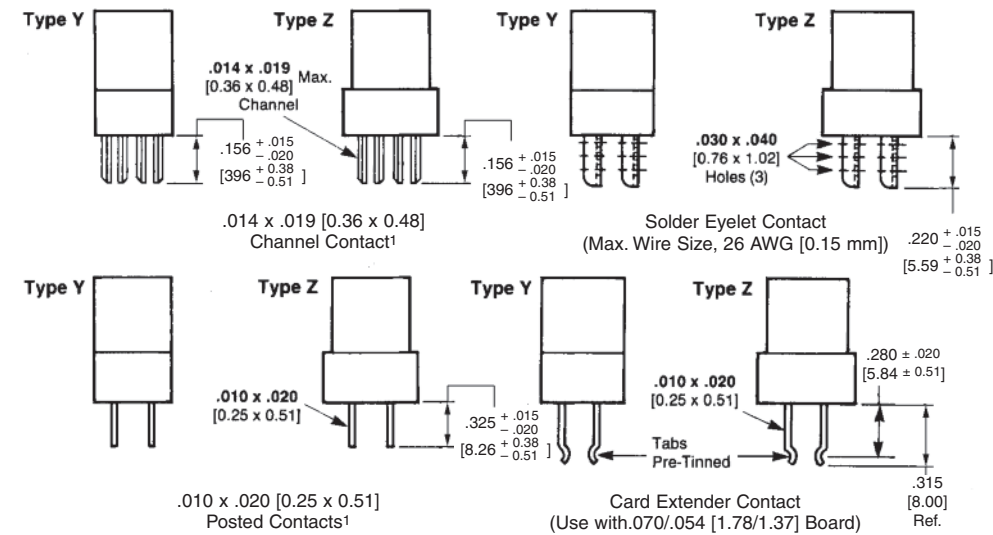
Type Y



Type Z



Contact Styles





**Receptacle Assemblies for Flow Soldering — MIL-C-55302 Qualified** (Continued)

**Commercial Receptacle Assemblies**

**Housing Material**—In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Contact Material and Finish**—Beryllium copper per QQ-C-533 or copper nickel silicon per ASTM B422 and ASTM B888

Channel Contact, Posted Contact and Card Extender Contact—Plated .000030 [0.00076] gold in contact area, .000100 [0.00254] tin-lead on the tails over .00030 [0.00076] nickel on the entire contact.

Solder Eyelet Contact—Plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact.

No. of Pos.	Housing Type	Dimensions			.014 x .019 [0.36 x 0.48] Channel Contacts		Solder Eyelet Contacts AMP Part No.	.010 x .020 [0.25 x 0.51] Posted Contacts		Card Extender Contacts AMP Part No.
		A	B	C	AMP Part No.	AMP Part No.				
180	Z	7.630 193.8	7.340 186.44	6.675 169.55	531813-4	531811-4	531815-4	531817-4		
160	Z	6.880 174.75	6.590 167.39	5.925 150.5	531813-3	—	—	531817-3		
150	Z	6.505 165.23	6.215 157.86	5.550 140.97	531813-2	—	—	531817-2		
120	Z	5.380 136.65	5.090 129.29	4.425 112.4	—	531811-1	531815-1	531817-1		
100	Y	4.630 117.6	4.340 110.24	3.675 93.35	—	1-531810-0	—	1-531816-0		
80	Y	3.880 98.55	3.590 91.19	2.925 74.3	531812-8	531810-8	—	—		
50	Y	2.755 69.98	2.465 62.61	1.800 45.72	531812-5	531810-5	—	531816-5		
40	Y	2.380 60.45	2.090 53.09	1.425 36.2	531812-4	531810-4	—	531816-4		
30	Y	2.005 50.93	1.715 43.56	1.050 26.67	531812-3	—	—	531816-3		
10	Y	1.255 31.88	.965 24.51	.300 7.62	—	—	531814-1	—		

**Military Receptacle Assemblies**

**Housing Material**—In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

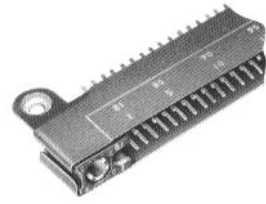
**Contact Material and Finish**—Beryllium copper per QQ-C-533

Channel Contact, Posted Contact and Card Extender Contact—Plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact.

Solder Eyelet Contact—Plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact.

No. of Pos.	Housing Type	Dimensions			.014 x .019 [0.36 x 0.48] Channel Contacts		Solder Eyelet Contacts MIL-Part No. M55302/ AMP Part No.	.010 x .020 [0.25 x 0.51] Posted Contacts		Card Extender Contacts MIL-Part No. M55302/ AMP Part No.		
		A	B	C	MIL-Part No. M55302/ AMP Part No.	MIL-Part No. M55302/ AMP Part No.		MIL-Part No. M55302/ AMP Part No.	MIL-Part No. M55302/ AMP Part No.			
180	Z	7.630 193.8	7.340 186.44	6.675 169.55	25-29	531145-4	25-30	531146-4	25-31	531147-4	25-32	531148-4
160	Z	6.880 174.75	6.590 167.39	5.925 150.5	25-25	531145-3	25-26	531146-3	25-27	531147-3	25-28	531148-3
150	Z	6.505 165.23	6.215 157.86	5.550 140.97	25-21	531145-2	25-22	531146-2	25-23	531147-2	25-24	531148-2
120	Z	5.380 136.65	5.090 129.92	4.425 112.4	25-17	531145-1	25-18	531146-1	25-19	531147-1	25-20	531148-1
110	Y	5.005 127.13	4.715 119.76	4.050 102.87	24-85	1-531142-1	24-86	1-531129-1	24-87	1-531143-1	24-88	1-531144-1
100	Y	4.630 117.6	4.340 110.24	3.675 93.35	24-81	1-531142-0	24-82	1-531129-0	24-83	1-531143-0	24-84	1-531144-0
90	Y	4.255 108.08	3.965 100.71	3.300 83.82	24-77	531142-9	24-78	1-531129-2	24-79	531143-9	24-80	531144-9
80	Y	3.880 98.55	3.590 91.19	2.925 74.3	24-73	531142-8	24-74	531129-9	24-75	531143-8	24-76	531144-8
70	Y	3.505 89.03	3.215 81.66	2.550 64.77	24-69	531142-7	24-70	531129-8	24-71	531143-7	24-72	531144-7
60	Y	3.130 79.5	2.840 72.14	2.175 55.25	24-65	531142-6	24-66	531129-7	24-67	531143-6	24-68	531144-6
50	Y	2.755 69.98	2.465 62.61	1.800 45.72	24-61	531142-5	24-62	531129-6	24-63	531143-5	24-64	531144-5
40	Y	2.380 60.45	2.090 53.09	1.425 36.2	24-57	531142-4	24-58	531129-5	24-59	531143-4	24-60	531144-4
30	Y	2.005 50.93	1.715 43.56	1.050 26.67	24-53	531142-3	24-54	531129-4	24-55	531143-3	24-56	531144-3
20	Y	1.630 41.4	1.340 34.04	.675 17.15	24-49	531142-2	24-50	531129-3	24-51	531143-2	24-52	531144-2
10	Y	1.255 31.88	.965 24.51	.300 7.62	24-45	531142-1	24-46	531129-2	24-47	531143-1	24-48	531144-1

**Straddle Mount Pin Header Assemblies with Anodized Pin Protectors — MIL-C-55302 Qualified**



**Related Product Data**

**Mates with** — Receptacles, pages 1-42 and 1-43

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-47

**Commercial Pin Header Assemblies**

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F

**Pin Protector Material** — Anodized aluminum per QQ-A-250/1

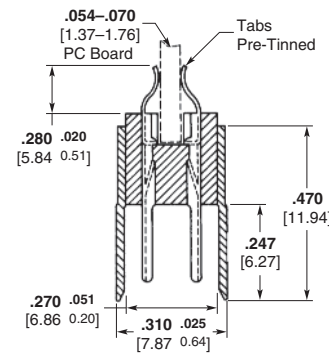
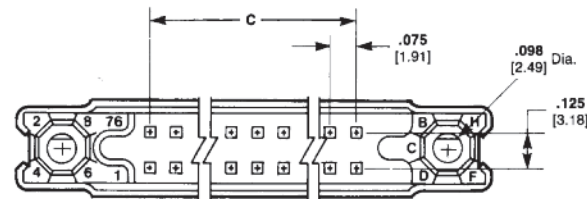
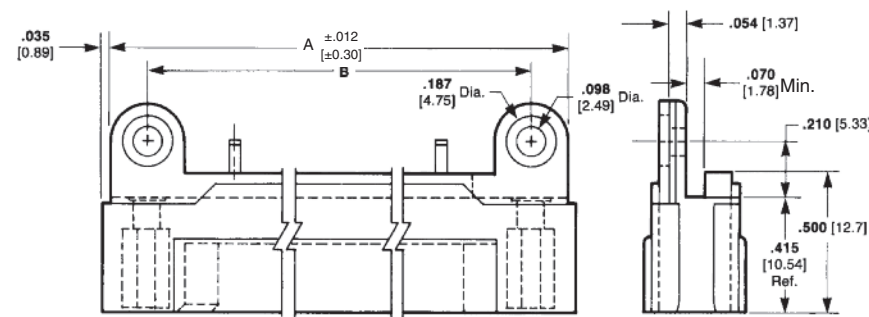
**Contact Material and Finish** — Brass per QQ-B-626 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tabs over .000050 [0.00127] nickel on the entire contact.

**Military Pin Header Assemblies**

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F

**Pin Protector Material** — Anodized aluminum per QQ-A-250/1

**Contact Material and Finish** — Brass per QQ-B-626 plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tabs over .000050 [0.00127] nickel on the entire contact.

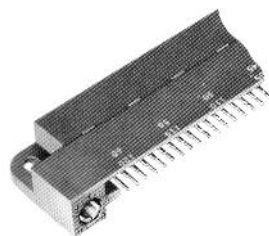


Printed Circuit Board Connectors

No. of Pos.	Dimensions			Military Pin Header	
	A	B	C	M55302/	AMP Part No.
180	7.630 193.8	7.340 186.44	6.675 169.55	23-30	530785-4
160	6.880 174.75	6.590 167.39	5.925 150.5	23-29	530785-5
150	6.505 165.23	6.215 157.86	5.550 140.97	23-28	530785-2
120	5.380 136.65	5.090 129.29	4.425 112.4	23-27	530785-6
110	5.005 127.13	4.715 119.76	4.050 102.87	23-26	530785-7
100	4.630 117.6	4.340 110.24	3.675 93.35	23-25	530785-8
90	4.255 108.08	3.965 100.71	3.300 83.82	23-24	1-530785-7
80	3.880 98.55	3.590 91.19	2.925 74.3	23-23	530785-9
70	3.505 89.03	3.215 81.66	2.550 64.77	23-22	1-530785-0
60	3.130 79.5	2.840 72.14	2.175 55.25	23-21	1-530785-1
50	2.755 69.98	2.465 62.61	1.800 45.72	23-20	1-530785-2
40	2.380 60.45	2.090 53.09	1.425 36.2	23-19	1-530785-3
30	2.005 50.93	1.715 43.56	1.050 26.67	23-18	1-530785-4
20	1.630 41.4	1.340 34.04	.675 17.15	23-17	1-530785-5
10	1.255 31.88	.965 24.51	.300 7.62	23-16	1-530785-6



**Right-Angle Pin Header Assemblies for Flow Soldering —  
MIL-C-55302 Qualified**



**Related Product Data**

**Mates with** — Receptacles, pages 1-42 and 1-43

**External Keying**—page 1-80

**Recommended PC Board Layout** — page 1-47

**Commercial Pin Header Assemblies**

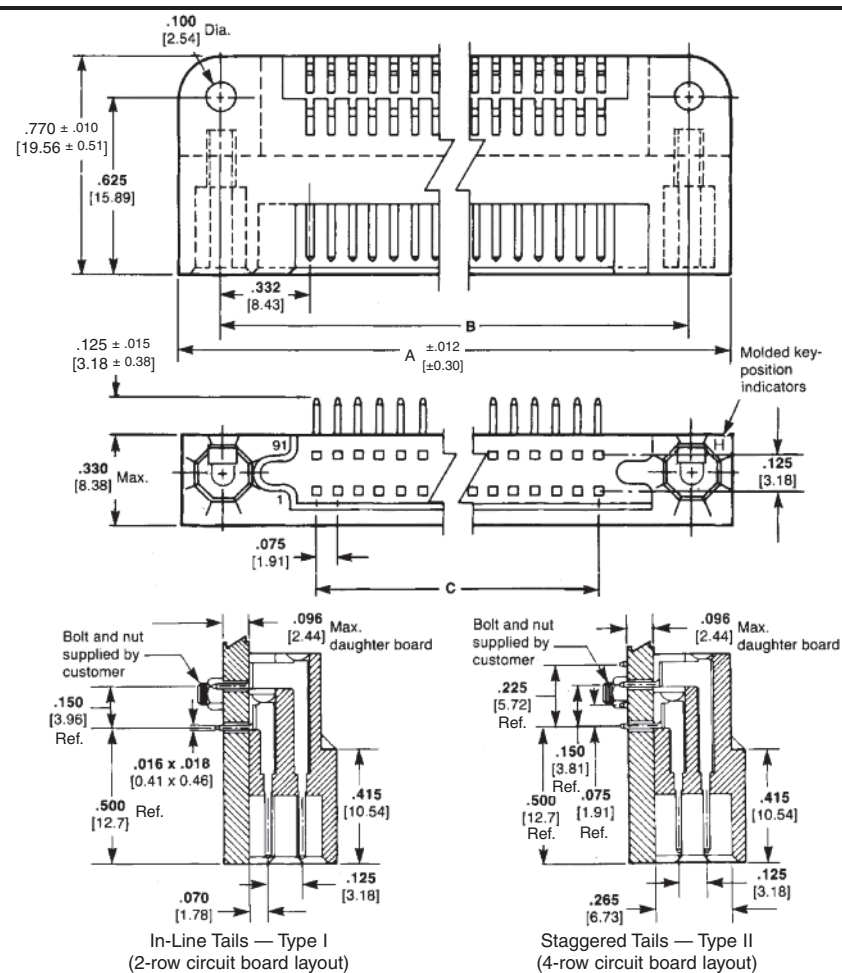
**Housing Material** — In accordance with MIL-C-55302

**Contact Material and Finish** — Brass per QQ-B-626 plated .00030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact

**Military Pin Header Assemblies**

**Housing Material** — In accordance with MIL-C-55302

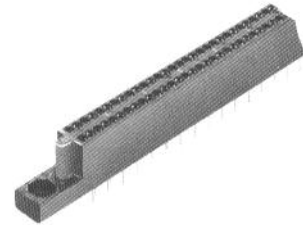
**Contact Material and Finish** — Brass per QQ-B-626 plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact



No. of Positions	Dimensions			In-line, Type I			Staggered, Type II		
	A	B	C	Commercial Part No.	MIL-Part No. M55302/	AMP MIL Part No.	Commercial Part No.	MIL-Part No. M55302/	AMP MIL Part No.
180	7.630 193.8	7.340 186.44	6.675 169.55	—	156-15	1-531719-5	1-53124-5	156-30	1-531720-5
160	6.880 174.75	6.590 167.39	5.925 150.5	1-531127-4	156-14	1-531719-4	—	156-29	1-531720-4
150	6.505 165.23	6.215 157.86	5.550 140.97	—	156-13	1-531719-3	1-53124-3	156-28	1-531720-3
120	5.380 136.65	5.090 129.29	4.425 112.4	—	156-12	1-531719-2	—	156-27	1-531720-2
110	5.005 127.13	4.715 119.76	4.050 102.87	—	156-11	1-531719-1	—	156-26	1-531720-1
100	4.630 117.6	4.340 110.24	3.675 93.35	—	156-10	1-531719-0	—	156-25	1-531720-0
90	4.255 108.08	3.965 100.71	3.300 83.82	—	156-09	531719-9	—	156-24	531720-9
80	3.880 98.55	3.590 91.19	2.925 74.3	—	156-08	531719-8	—	156-23	531720-8
70	3.505 89.03	3.215 81.66	2.550 64.77	—	156-07	531719-7	—	156-22	531720-7
60	3.130 79.5	2.840 72.14	2.175 55.25	—	156-06	531719-6	53124-6	156-21	531720-6
50	2.755 69.98	2.465 62.61	1.800 45.72	—	156-05	531719-5	53124-5	156-20	531720-5
40	2.380 60.45	2.090 53.09	1.425 36.2	—	156-04	531719-4	53124-4	156-19	531720-4
30	2.005 50.93	1.715 43.56	1.050 26.67	—	156-03	531719-3	53124-3	156-18	531720-3
20	1.630 41.4	1.340 34.04	.675 17.15	—	156-02	531719-2	—	156-17	531720-2
10	1.255 31.88	.965 24.51	.300 7.62	—	156-01	531719-1	—	156-16	531720-1

Stacking Connectors

Receptacle Assembly



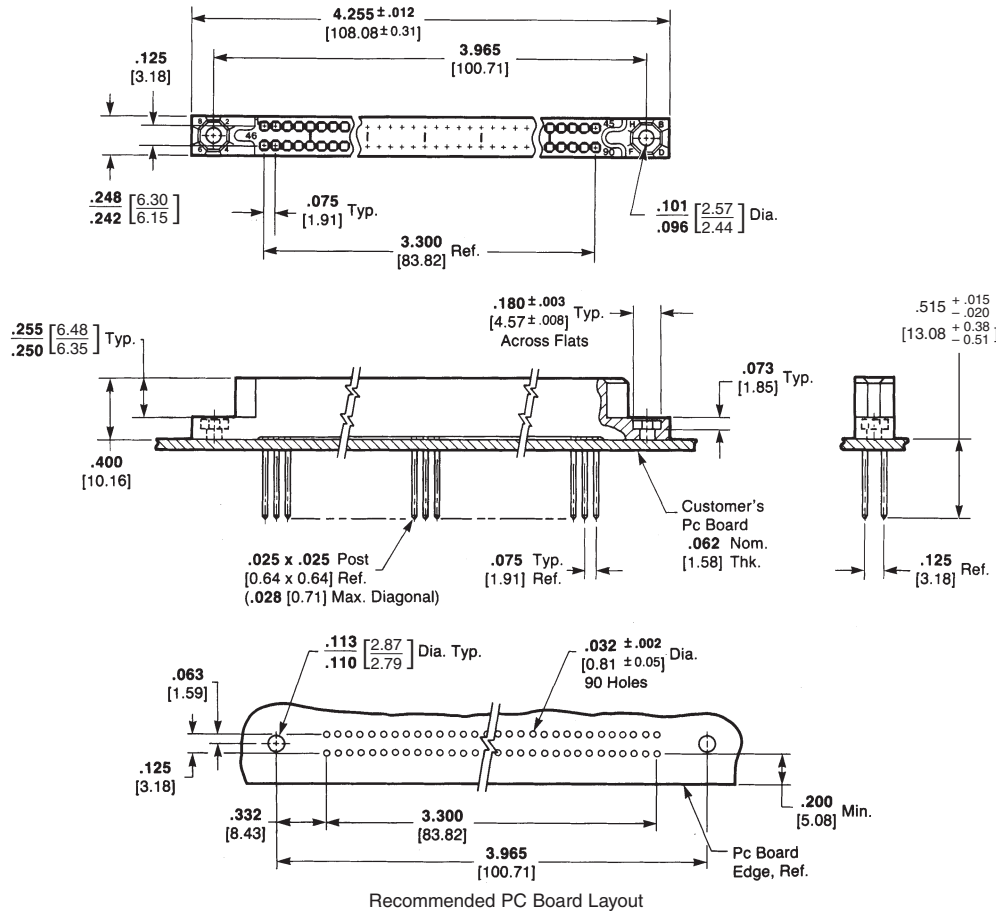
**Housing Material** — Blue Diallyl Phthalate or MIL-M-24519 Type GLCP-30F

**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888, plated gold .000050 [0.00127] thick all over nickel .000030 [0.00076] thick

**Related Product Data**

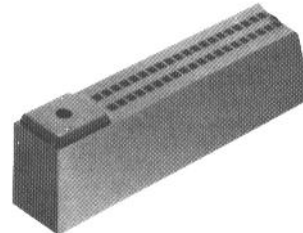
**Mates with** — Pin Shroud Housing

**External Keying** — page 1-80



Printed Circuit Board Connectors

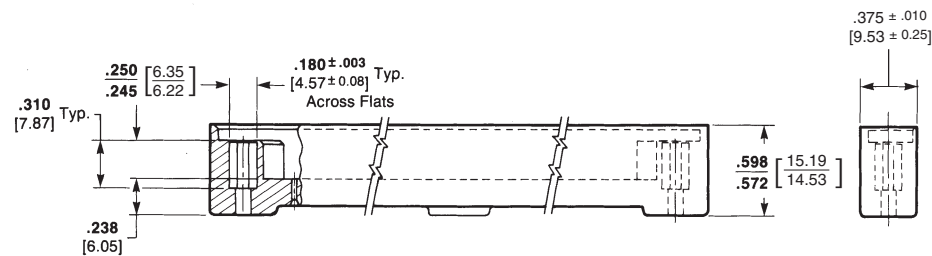
Pin Shroud Housing



**Housing Material** — Blue Polyester

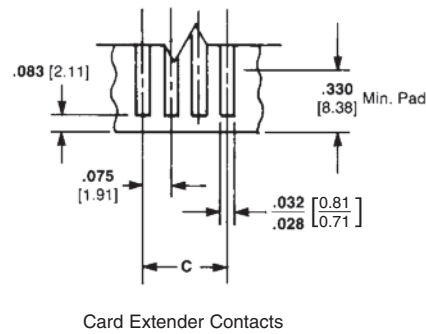
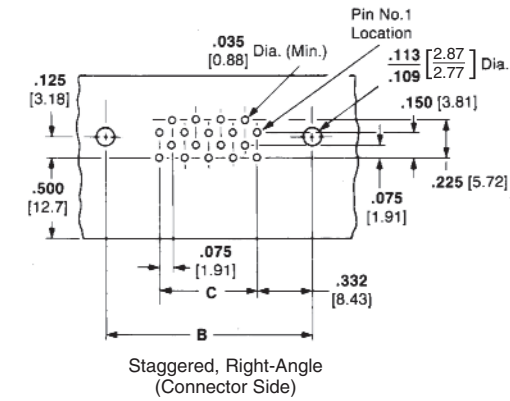
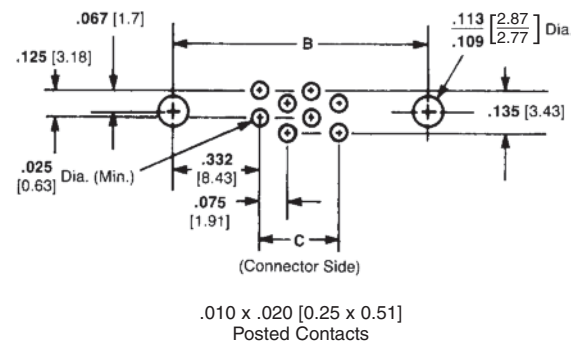
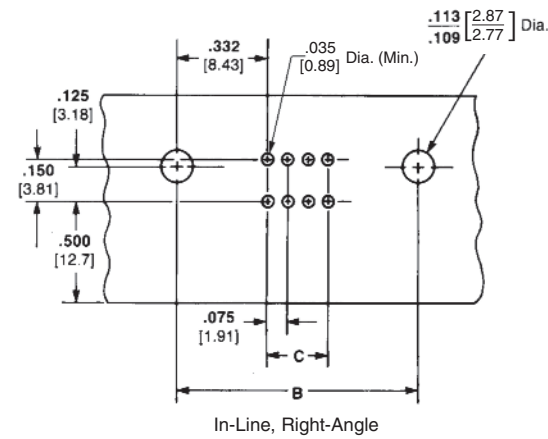
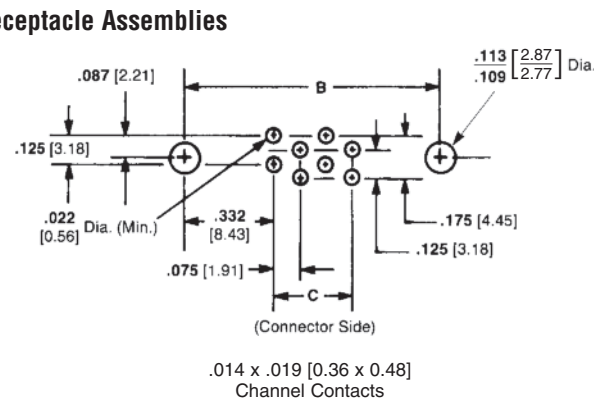
**Related Product Data**

**Mates with** — Receptacle Assembly



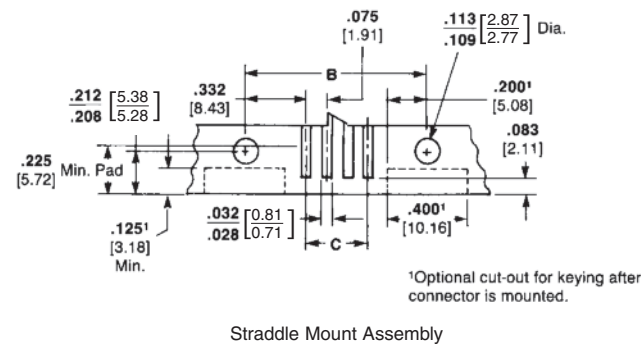
**Recommended Printed Circuit Board Layouts**

**Receptacle Assemblies**



No. of Pos.	Dimensions	
	B	C
180	7.340 186.44	6.675 169.55
160	6.590 167.39	5.925 150.5
150	6.215 157.86	5.550 140.97
120	5.090 129.29	4.425 112.4
110	4.715 119.76	4.050 102.87
100	4.340 110.24	3.675 93.35
90	3.965 100.71	3.300 83.82
80	3.590 91.19	2.925 74.3
70	3.215 81.66	2.550 64.77
60	2.840 72.14	2.175 55.25
50	2.465 62.61	1.800 45.72
40	2.090 53.09	1.425 36.2
30	1.715 43.56	1.050 26.67
20	1.340 34.04	.675 17.15
10	.965 24.51	.300 7.62

**Pin Header Assemblies**

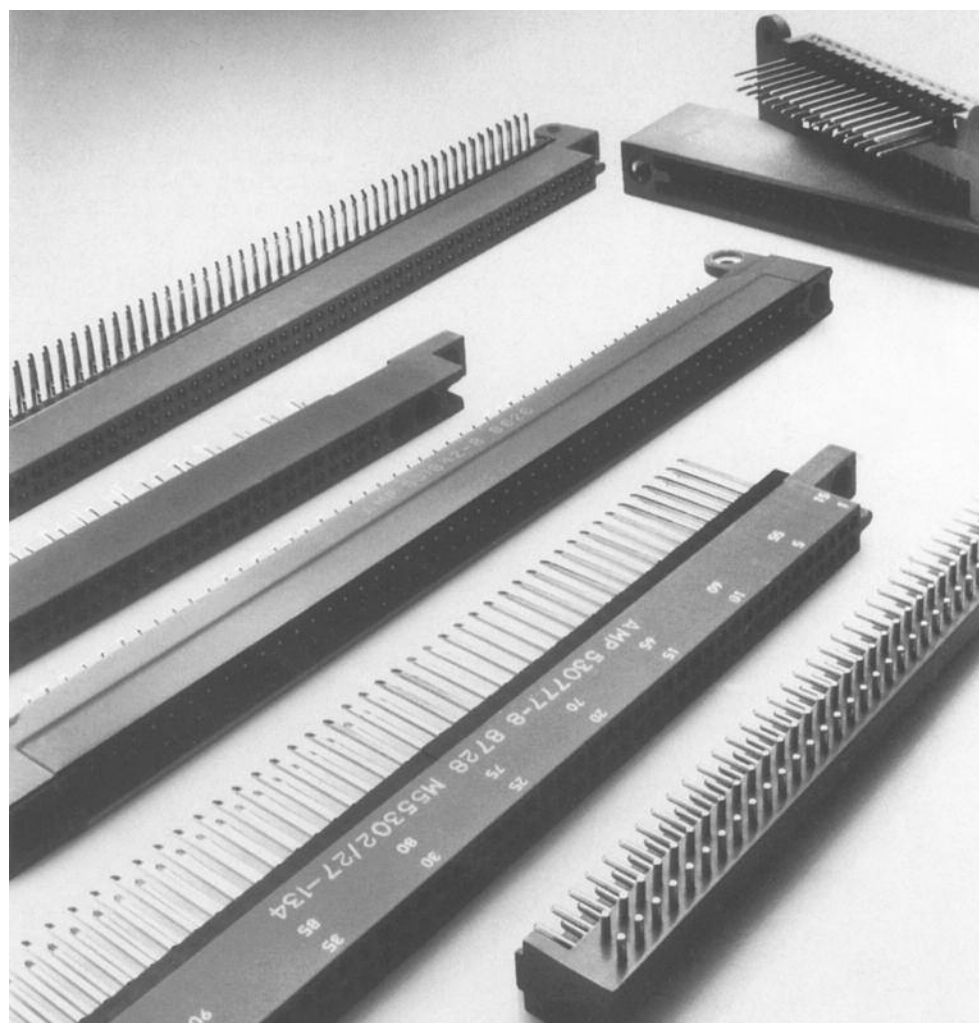


**Note:** These drawings are for reference only. Consult TE Connectivity for board layout details.

**Introduction**

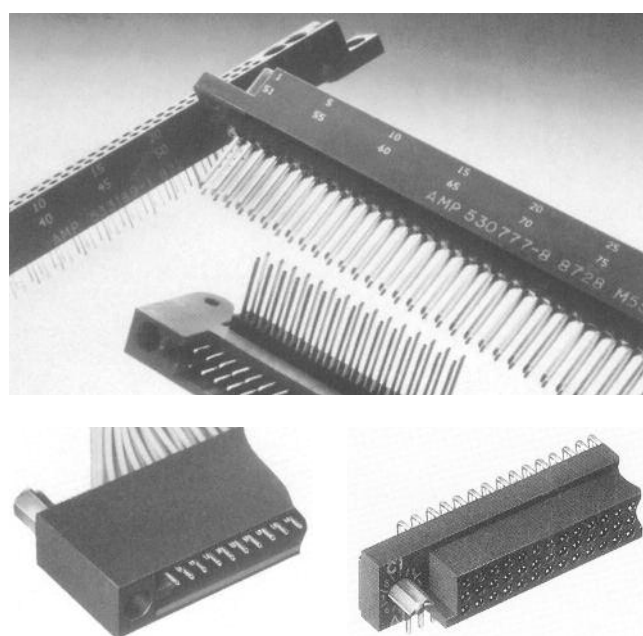
**Product Facts**

- Contacts are on .100 x .100 [2.54 x 2.54] centers
- Four-beam box-type contact design provides four areas of contact per connection
- Quad-beam redundancy offers high performance and reliability
- Sealed versions available
- Straddle mount pin headers have pretinned tabs for connection to daughter boards
- Pin headers are provided with pin protectors
- Straddle mount pin headers have replaceable contacts
- Box receptacle contacts are available in flow solder, solder eyelet, straddle mount, wrap-type and crimp styles
- Pin header assemblies are available in right-angle, straddle mount and crimp styles
- Solder tails are tin-lead plated for solderability
- Signal-coax mix connectors available
- Qualified to MIL-C-55302/26, /27, /110, /113, /129, /130



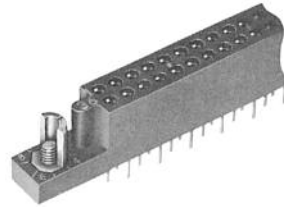
Printed Circuit Board Connectors

The .100 [2.54] Box Contact Connector series is available in 2, 3 and 4-row configurations with pin counts up to 300 positions. Each configuration uses the unique, very reliable four-beam box design which offers low applied cost while maintaining high performance and reliability. The ability to choose different sizes; housing materials; terminations; sealed versions; hybrids; etc. provides one with needed versatility in designing a system.





**2-Row Receptacle Assemblies — MIL-C-55302 Qualified**

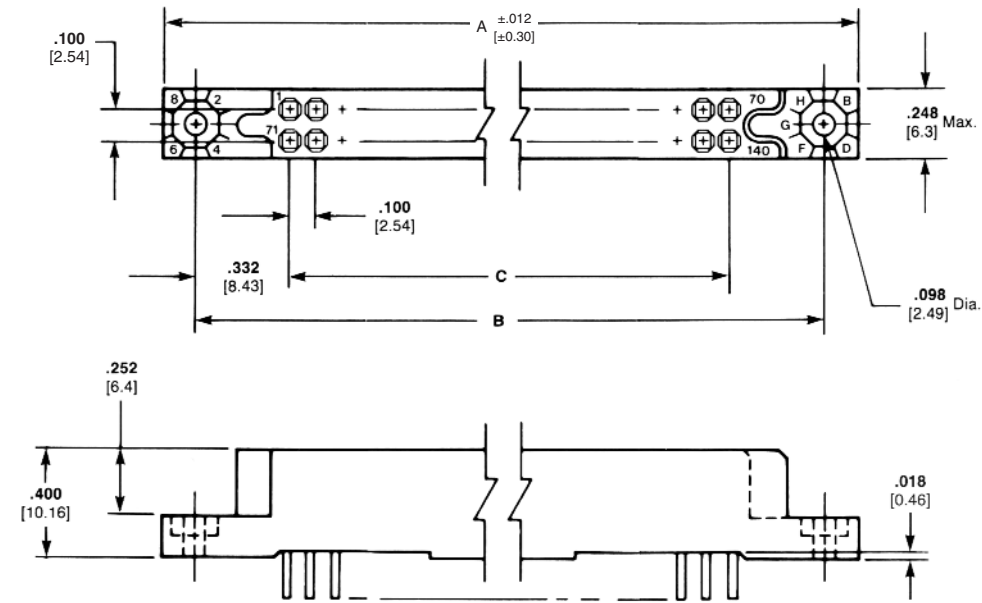


**Related Product Data**

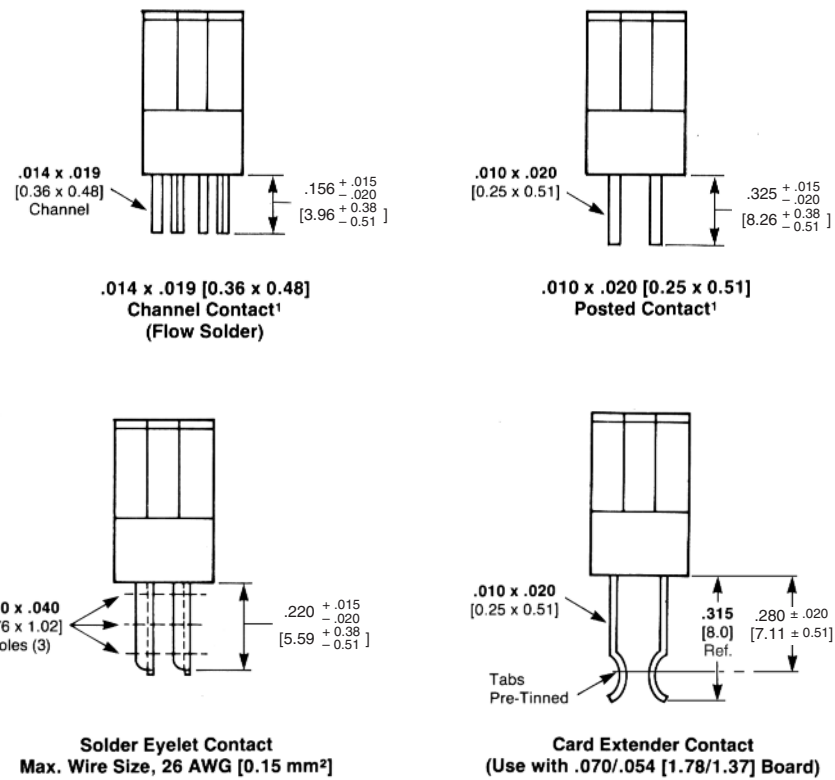
**Mates with** — Pin Headers and Assemblies, pages 1-56 to 1-60

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-74



**Contact Styles**



<sup>1</sup> For flow solder application





**2-Row Receptacle Assemblies — MIL-C-55302 Qualified** (Continued)

**Commercial Receptacle Assemblies**

**Housing Material** — In accordance with MIL-C-55302

**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888

Channel Contact, Posted Contact and Card Extender Contact — Plated .000030 [0.00076] gold in contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact.

**Solder Eyelet Contact** — Plated .000030 [0.00076] gold in contact area, .000100 [0.00254] tin-lead on tails over .000030 [0.00076] nickel on the entire contact.

No. of Pos.	Dimensions			.014 x .019 [0.36 x 0.48] Channel Contacts AMP Part No.	.010 x .020 [0.25 x 0.51] Posted Contacts AMP Part No.	Solder Eyelet Contacts AMP Part No.	Card Extender Contacts AMP Part No.
	A	B	C				
140	7.855 199.52	7.565 192.15	6.900 175.26	1-531832-3	—*	—*	—*
134	7.555 191.90	7.265 184.53	6.600 167.64	—*	—*	1-531833-2	—*
130	7.355 186.82	7.065 179.45	6.400 162.56	—*	—*	—*	—*
120	6.855 174.12	6.565 166.75	5.900 149.86	—*	—*	—*	—*
110	6.355 161.42	6.065 154.05	5.400 137.16	531832-9	—*	—*	531835-9
100	5.855 148.72	5.565 141.35	4.900 124.46	531832-8	—*	—*	—*
90	5.355 136.02	5.065 128.65	4.400 111.76	—*	—*	—*	—*
80	4.855 123.32	4.565 115.95	3.900 99.06	—*	531834-6	—*	—*
70	4.355 110.62	4.065 103.25	3.400 83.36	—*	—*	—*	—*
60	3.855 97.92	3.565 90.55	2.900 73.66	—*	—*	531833-4	—*
50	3.355 85.22	3.065 77.85	2.400 60.96	—*	—*	—*	531835-3
40	2.855 72.52	2.565 65.15	1.900 48.26	—*	—*	—*	—*
30	2.355 59.82	2.065 52.45	1.400 35.56	—*	—*	—*	—*

\* Part Numbers available upon request, contact TE Connectivity.

**Military Receptacle Assemblies**

**Housing Material** — In accordance with MIL-C-55302

**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888

Channel Contact, Posted Contact and Card Extender Contact — Plated .000050 [0.00127] gold in contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact.

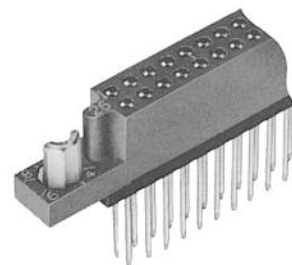
**Solder Eyelet Contact** — Plated .000050 [0.00127] gold in contact area, in accordance with MIL-C-55302 .000100 [0.00254] tin-lead on tails over .000050 [0.00127] nickel on the entire contact.

No. of Pos.	Dimensions			.014 x .019 [0.36 x 0.48] Channel Contacts		Solder Eyelet Contacts		.010 x .020 [0.25 x 0.51] Posted Contacts		Card Extender Contacts	
	A	B	C	MIL-Part No. M55302/	AMP Part No.	MIL-Part No. M55302/	AMP Part No.	MIL-Part No. M55302/	AMP Part No.	MIL-Part No. M55302/	AMP Part No.
140	7.855 199.52	7.565 192.15	6.900 175.26	27-193	2-530340-2	27-197	1-530758-3	27-201	1-530776-3	27-229	1-530782-3
134	7.555 191.90	7.265 184.53	6.600 167.64	27-192	2-530340-1	27-196	1-530758-2	27-200	1-530776-2	27-228	1-530782-2
130	7.355 186.82	7.065 179.45	6.400 162.56	27-191	2-530340-0	27-195	1-530758-1	27-199	1-530776-1	27-227	1-530782-1
120	6.855 174.12	6.565 166.75	5.900 149.86	27-190	1-530340-9	27-194	1-530758-0	27-198	1-530776-0	27-226	1-530782-0
110	6.355 161.42	6.065 154.05	5.400 137.16	27-99	530340-9	27-108	530758-9	27-117	530776-9	27-180	530782-9
100	5.855 148.72	5.565 141.35	4.900 124.46	27-98	530340-8	27-107	530758-8	27-116	530776-8	27-179	530782-8
90	5.355 136.02	5.065 128.65	4.400 111.76	27-97	530340-7	27-106	530758-7	27-115	530776-7	27-178	530782-7
80	4.855 123.32	4.565 115.95	3.900 99.06	27-96	530340-6	27-105	530758-6	27-114	530776-6	27-177	530782-6
70	4.355 110.62	4.065 103.25	3.400 83.36	27-95	530340-5	27-104	530758-5	27-113	530776-5	27-176	530782-5
60	3.855 97.92	3.565 90.55	2.900 73.66	27-94	530340-4	27-103	530758-4	27-112	530776-4	27-175	530782-4
50	3.355 85.22	3.065 77.85	2.400 60.96	27-93	530340-3	27-102	530758-3	27-111	530776-3	27-174	530782-3
40	2.855 72.52	2.565 65.15	1.900 48.26	27-92	530340-2	27-101	530758-2	27-110	530776-2	27-173	530782-2
30	2.355 59.82	2.065 52.45	1.400 35.56	27-91	530340-1	27-100	530758-1	27-109	530776-1	27-172	530782-1



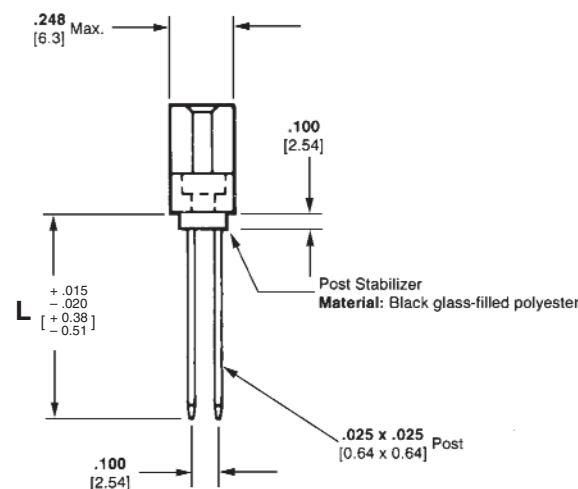
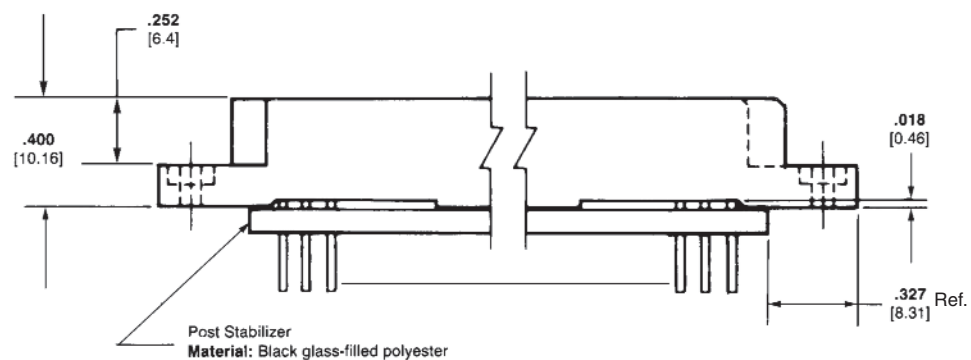
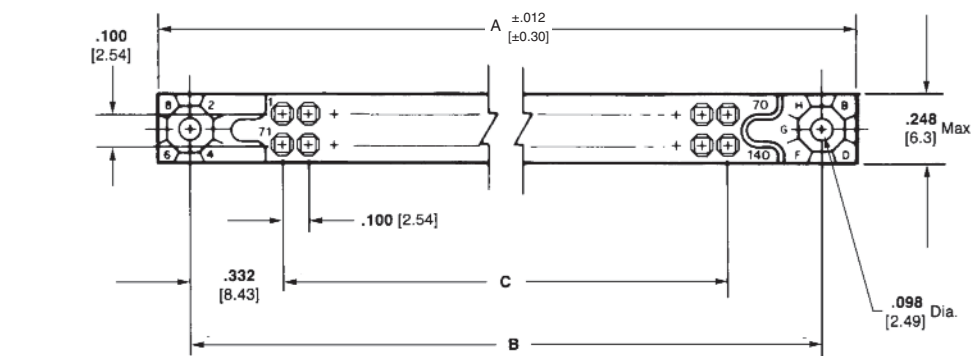
Printed Circuit Board Connectors

**2-Row Receptacle Assemblies for Rack Mounting  
with Posted Contacts (Wrap-Type) — MIL-C-55302 Qualified**



**Related Product Data**

**Mates with** — Pin Headers Assemblies, pages 1-56 to 1-60  
**External Keying** — page 1-80  
**Recommended PC Board Layout** — page 1-74



Post Length	No. of Terminals per Post		
	1 High	2 High	3 High
L	.405 10.29	.565 14.35	.725 18.42

**Post Wrapping Information**

Maximum wire size for wrapping a posted box terminal is 30 AWG [0.05mm<sup>2</sup>] (maximum insulated wire diameter, .019 [0.49mm]).

The following data can be used to determine bit and sleeve size:  
 Maximum Terminal Diagonal: .034 [0.87]  
 Minimum Terminal Diagonal: .031 [0.78]  
 Maximum Effective Radius: .067 [1.71]

Recommended Sleeve:  
 No. 507100<sup>1</sup>  
 Recommended Bits:  
 No. 511208<sup>1</sup>  
 No. 507063<sup>1</sup>

<sup>1</sup>Available from Gardner-Denver Co., Grand Haven, Michigan.

**2-Row Receptacle Assemblies for Rack Mounting with Posted Contacts (Wrap-Type) — MIL-C-55302 Qualified** (Continued)

**Commercial Receptacle Assemblies**

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F

**1 Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact  
**2 Contact Material and Finish** — Same as above except for tin on the tails

No. of Pos.	Dimensions			No. of Terminations Per Post			
	A	B	C	1 High Part No. <sup>1</sup>	2 High Part No. <sup>1</sup>	3 High Part No. <sup>1</sup>	3 High RoHS Part No. <sup>2</sup>
140	7.855 199.52	7.565 192.15	6.900 175.26	—*	—*	—*	—
134	7.555 191.50	7.265 184.53	6.600 167.64	—*	—*	—*	—
130	7.355 186.82	7.065 179.45	6.400 162.56	—*	—*	—*	—
120	6.855 174.12	6.565 166.75	5.900 149.86	—*	—*	—*	—
110	6.355 161.42	6.065 154.05	5.400 137.16	—*	—*	531838-9	—
100	5.855 148.72	5.565 141.35	4.900 124.46	—*	531837-8	531838-8	5-531838-8
90	5.355 136.02	5.065 128.65	4.400 111.76	531836-7	—*	—*	—
80	4.855 123.32	4.565 115.95	3.900 99.06	—*	—*	531838-6	5-531838-6
70	4.355 110.62	4.065 103.25	3.400 86.36	—*	—*	—*	—
60	3.855 97.92	3.565 90.55	2.900 73.66	—*	—*	—*	—
50	3.355 85.22	3.065 77.85	2.400 60.96	531836-3	—*	531838-3	5-531838-3
40	2.855 72.52	2.565 65.15	1.900 48.26	—*	—*	—*	—
30	2.355 59.82	2.065 52.45	1.400 35.56	—*	—*	—*	—

\* Part Numbers available upon request, contact TE Connectivity.

**Military Receptacle Assemblies**

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F

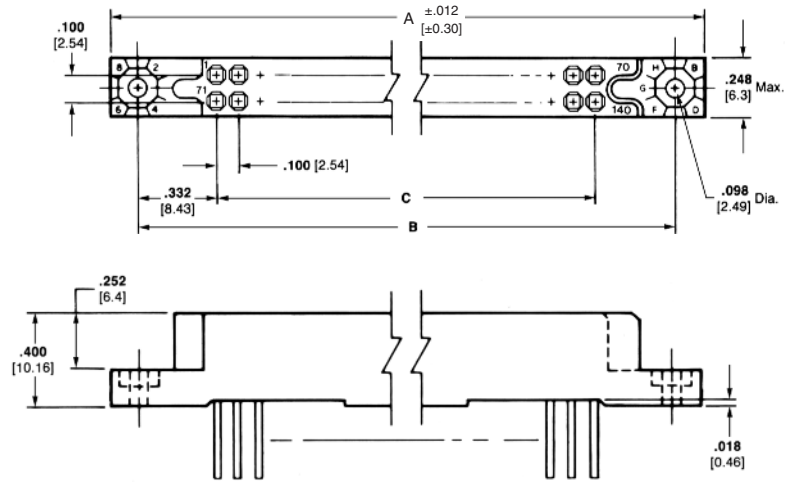
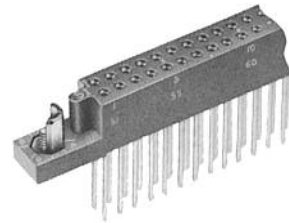
**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000050 [0.00127] gold over .000030 [0.00076] nickel on the entire contact

No. of Pos.	Dimensions			No. of Terminations Per Post					
	A	B	C	1 High		2 High		3 High	
				MIL-Part No.	AMP Part No.	MIL-Part No.	AMP Part No.	MIL-Part No.	AMP Part No.
140	7.855 199.52	7.565 192.15	6.900 175.26	M55302/27-213	—	M55302/27-209	1-530777-3	M55302/27-205	1-530763-3
134	7.555 191.50	7.265 184.53	6.600 167.64	M55302/27-212	1-530778-2	M55302/27-208	1-530777-2	M55302/27-204	1-530763-2
130	7.355 186.82	7.065 179.45	6.400 162.56	M55302/27-211	1-530778-1	M55302/27-207	1-530777-1	M55302/27-203	1-530763-1
120	6.855 174.12	6.565 166.75	5.900 149.86	M55302/27-210	1-530778-0	M55302/27-206	1-530777-0	M55302/27-202	1-530763-0
110	6.355 161.42	6.065 154.05	5.400 137.16	M55302/27-144	530778-9	M55302/27-135	530777-9	M55302/27-126	530763-9
100	5.855 148.72	5.565 141.35	4.900 124.46	M55302/27-143	530778-8	M55302/27-134	530777-8	M55302/27-125	530763-8
90	5.355 136.02	5.065 128.65	4.400 111.76	M55302/27-142	530778-7	M55302/27-133	530777-7	M55302/27-124	530763-7
80	4.855 123.32	4.565 115.95	3.900 99.06	M55302/27-141	530778-6	M55302/27-132	530777-6	M55302/27-123	530763-6
70	4.355 110.62	4.065 103.25	3.400 86.36	M55302/27-140	530778-5	M55302/27-131	530777-5	M55302/27-122	530763-5
60	3.855 97.92	3.565 90.55	2.900 73.66	M55302/27-139	530778-4	M55302/27-130	530777-4	M55302/27-121	530763-4
50	3.355 85.22	3.065 77.85	2.400 60.96	M55302/27-138	530778-3	M55302/27-129	530777-3	M55302/27-120	530763-3
40	2.855 72.52	2.565 65.15	1.900 48.26	M55302/27-137	530778-2	M55302/27-128	530777-2	M55302/27-119	530763-2
30	2.355 59.82	2.065 52.45	1.400 35.56	M55302/27-136	530778-1	M55302/27-127	530777-1	M55302/27-118	530763-1



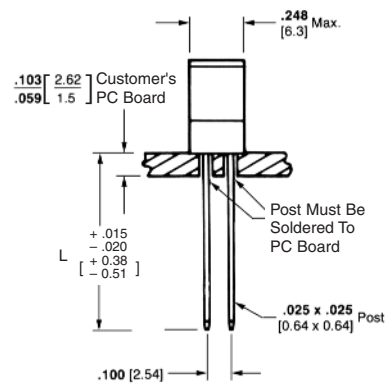
Printed Circuit Board Connectors

**2-Row Receptacle Assemblies for PC Solder Mount with Posted Contacts (Wrap-Type) — MIL-C-55302 Qualified**



**Related Product Data**

- Mates with** — Pin Header Assemblies, pages 1-56 to 1-60
- External Keying** — page 1-80
- Post Wrapping Information** — page 1-51
- Recommended PC Board Layout** — page 1-74



**Military Receptacle Assemblies**

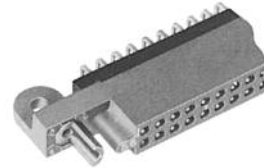
- Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F
- Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000050 [0.00127] gold over .000030 [0.00076] nickel on the entire contact.

No. of Pos.	Dimensions			No. of Terminations Per Post					
	A	B	C	1 High		2 High		3 High	
				MIL-Part No.	AMP Part No.	MIL-Part No.	AMP Part No.	MIL-Part No.	AMP Part No.
140	7.855 199.52	7.565 192.15	6.900 175.26	M55302/27-225	—	M55302/27-221	1-530780-3	M55302/27-217	1-530779-3
134	7.555 191.90	7.265 184.53	6.600 167.64	M55302/27-224	—	M55302/27-220	1-530780-2	M55302/27-216	1-530779-2
130	7.355 186.82	7.065 179.45	6.400 162.56	M55302/27-223	1-530781-1	M55302/27-219	1-530780-1	M55302/27-215	1-530779-1
120	6.855 174.12	6.565 166.75	5.900 149.86	M55302/27-222	—	M55302/27-218	1-530780-0	M55302/27-214	1-530779-0
110	6.355 161.42	6.065 154.05	5.400 137.16	M55302/27-171	530781-9	M55302/27-162	530780-9	M55302/27-153	530779-9
100	5.855 148.72	5.565 141.35	4.900 124.46	M55302/27-170	530781-8	M55302/27-161	530780-8	M55302/27-152	530779-8
90	5.355 136.02	5.065 128.65	4.400 111.76	M55302/27-169	530781-7	M55302/27-160	530780-7	M55302/27-151	530779-7
80	4.855 123.32	4.565 115.95	3.900 99.06	M55302/27-168	530781-6	M55302/27-159	530780-6	M55302/27-150	530779-6
70	4.355 110.62	4.065 103.25	3.400 86.36	M55302/27-167	530781-5	M55302/27-158	530780-5	M55302/27-149	530779-5
60	3.855 97.92	3.565 90.55	2.900 73.66	M55302/27-166	—	M55302/27-157	530780-4	M55302/27-148	530779-4
50	3.355 85.22	3.065 77.85	2.400 60.96	M55302/27-165	530781-3	M55302/27-156	530780-3	M55302/27-147	530779-3
40	2.855 72.52	2.565 65.15	1.900 48.26	M55302/27-164	530781-2	M55302/27-155	530780-2	M55302/27-146	530779-2
30	2.355 59.82	2.065 52.45	1.400 35.56	M55302/27-163	530781-1	M55302/27-154	530780-1	M55302/27-145	530779-1

**2-Row Right-Angle Receptacle Assemblies with Posted Contacts (Wrap-Type)**



Printed Circuit Board Connectors



**Related Product Data**

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F

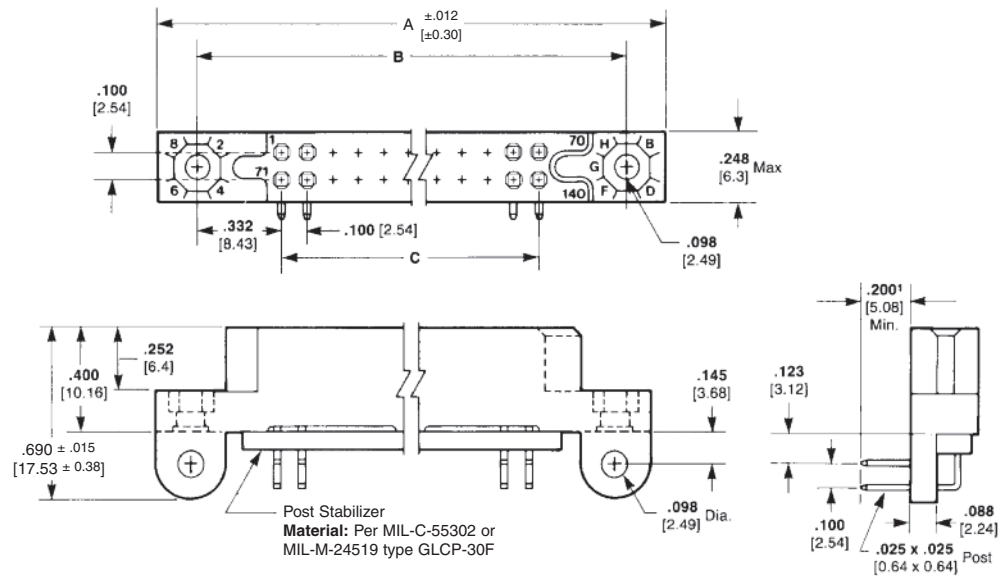
**1 Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on posts over .000030 [0.00076] nickel on the entire contact

**2 Contact Material and Finish** — Same as above except for tin on posts

**Mates with** — Pin Header Assemblies, pages 1-56 to 1-60

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-74

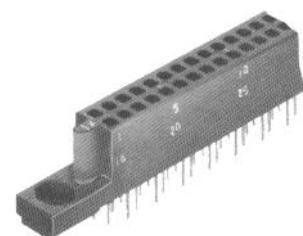


<sup>1</sup>The rows of posts will not be of equal length.

No. of Pos.	Dimensions			Part No. <sup>1</sup>	RoHS Part No. <sup>2</sup>
	A	B	C		
140	7.855 199.52	7.565 192.15	6.900 175.26	—	—
134	7.555 191.50	7.265 184.53	6.600 167.64	—	—
130	7.355 186.82	7.065 179.45	6.400 162.56	—	—
120	6.855 174.12	6.565 166.75	5.900 149.86	532469-4	—
110	6.355 161.42	6.065 154.05	5.400 137.16	1-532469-0	—
100	5.855 148.72	5.565 141.35	4.900 124.46	532469-9	5-532469-9
90	5.355 136.02	5.065 128.65	4.400 111.76	532469-3	5-532469-3
80	4.855 123.32	4.565 115.95	3.900 99.06	—	—
70	4.355 110.62	4.065 103.25	3.400 86.36	—	—
60	3.855 97.92	3.565 90.55	2.900 73.66	532469-2	—
50	3.355 85.22	3.065 77.85	2.400 60.96	—	—
40	2.855 72.52	2.565 65.15	1.900 48.26	532469-6	—
30	2.355 59.82	2.065 52.45	1.400 35.56	532469-5	—



**2-Row Sealed Receptacle Connector**



**Housing Material** — Per MIL-C-55302 or MIL-M-24519 type GLCP-30F

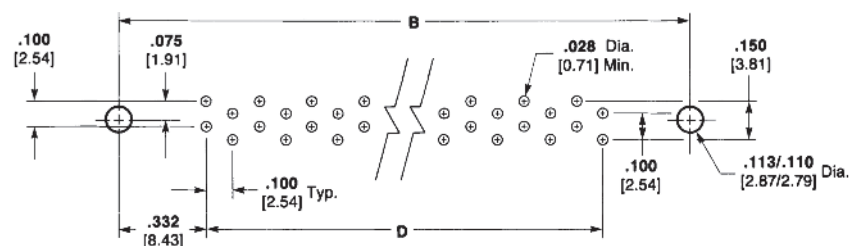
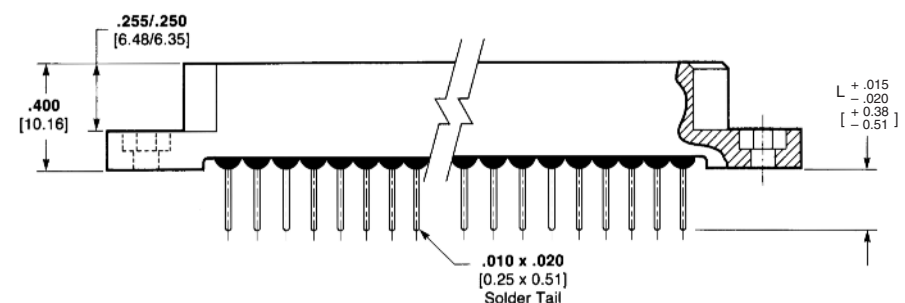
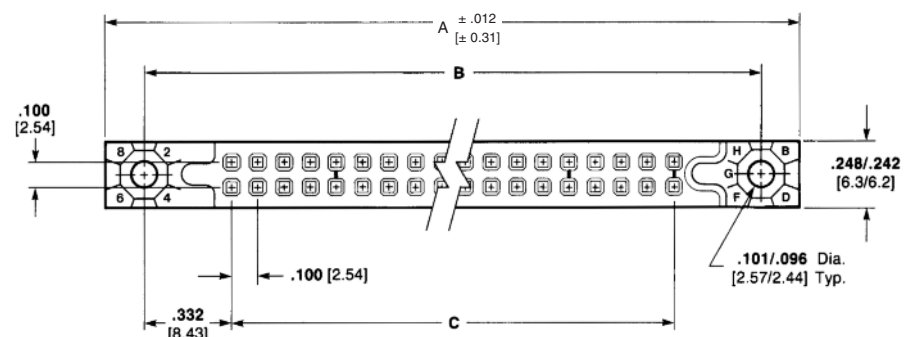
**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the solder tails over .000030 [0.00076] nickel on the entire contact

**Related Product Data**

**Mates with** — Pin Header Assemblies, pages 1-56 to 1-60

**External Keying** — page 1-80

**Mating Sealed Pin Header Assembly** — Part Number 532795

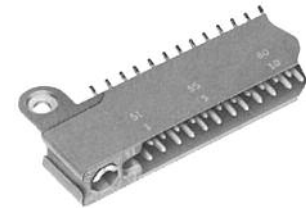


Recommended PC Board Layout

No. of Pos.	Dimensions				Part Nos. Dim. L	
	A	B	C	D	.156 [3.96]	.235 [5.97]
140	7.855 199.52	7.565 192.15	7.165 181.99	6.900 175.26	—*	—*
134	7.555 191.90	7.265 184.53	6.865 174.37	6.600 167.64	—*	—*
130	7.355 186.82	7.065 179.45	6.555 166.50	6.400 162.56	—*	—*
120	6.855 174.12	6.565 166.75	6.165 156.59	5.906 149.86	—*	—*
110	6.355 161.42	6.065 154.05	5.655 143.64	5.400 137.16	534195-9	534650-9
100	5.855 148.72	5.565 141.35	5.165 131.19	4.900 124.46	—*	—*
90	5.355 136.02	5.065 128.65	4.655 118.24	4.400 111.76	534195-7	—*
80	4.855 123.32	4.565 115.95	4.165 105.79	3.900 99.06	534195-6	—*
70	4.355 110.62	4.065 103.25	3.655 92.84	3.400 86.36	534195-5	—*
60	3.855 97.92	3.565 90.55	3.165 80.39	2.900 73.66	534195-4	—*
50	3.355 85.22	3.065 77.85	2.655 67.44	2.400 60.96	534195-3	—*
40	2.855 72.52	2.565 65.15	2.165 54.99	1.900 48.26	534195-2	—*
30	2.355 59.82	2.065 52.45	1.665 42.29	1.400 35.56	534195-1	—*

\* Part Numbers available upon request, contact TE Connectivity.

**2-Row Straddle Mount Pin Header Assemblies with Anodized Pin Protectors — MIL-C-55302 Qualified**



**Commercial Pin Header Assembly**

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Pin Protector Material** — Anodized aluminum per QQ-A-250/1

**Contact Material and Finish** — Brass per QQ-B-626 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tabs over .000050 [0.00127] nickel on the entire contact

**Military Pin Header Assembly**

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Pin Protector Material** — Anodized aluminum per QQ-A-250/1

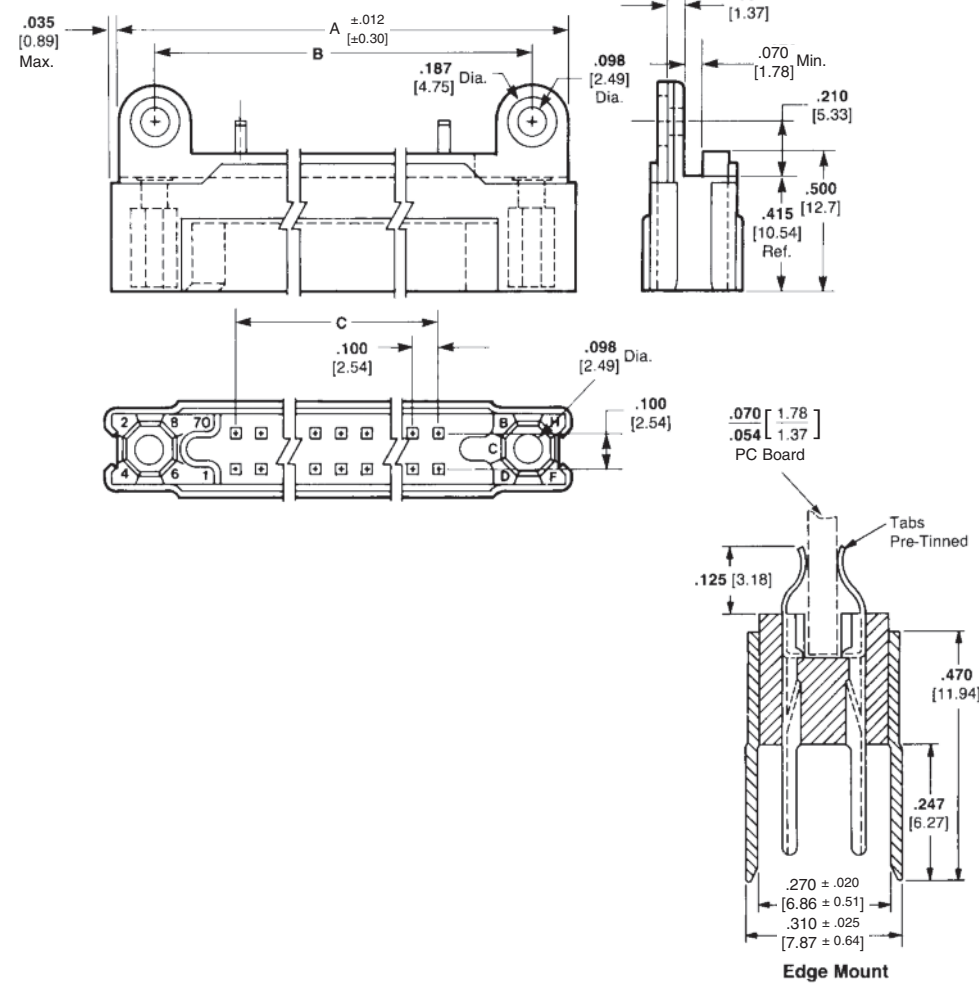
**Contact Material and Finish** — Brass per QQ-B-626 plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tabs over .000050 [0.00127] nickel on the entire contact

**Related Product Data**

**Mates with** — Receptacles, pages 1-49 to 1-54, 1-61 and 1-62

**External Keying** — page 1-80

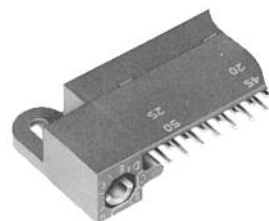
**Recommended PC Board Layout** — page 1-75



Printed Circuit Board Connectors

No. of Pos.	Dimensions			Commercial Part No.	Military MIL Part No.	AMP Part No.
	A	B	C			
140	7.855 199.52	7.565 192.15	6.900 175.26	—	M55302/26-22	1-530761-5
134	7.555 191.50	7.265 184.53	6.600 167.64	—	M55302/26-21	530761-3
130	7.355 186.82	7.065 179.45	6.400 162.56	—	M55302/26-20	1-530761-4
120	6.855 174.12	6.565 166.75	5.900 149.86	—	M55302/26-19	1-530761-3
110	6.355 161.42	6.065 154.05	5.400 137.16	—	M55302/26-18	530761-5
100	5.855 148.72	5.565 141.35	4.900 124.46	531842-8	M55302/26-17	530761-6
90	5.355 136.02	5.065 128.65	4.400 111.76	531842-7	M55302/26-16	530761-7
80	4.855 123.32	4.565 115.95	3.900 99.06	531842-6	M55302/26-15	530761-4
70	4.355 110.62	4.065 103.25	3.400 86.36	—	M55302/26-14	530761-8
60	3.855 97.92	3.565 90.55	2.900 73.66	531842-4	M55302/26-13	530761-9
50	3.355 85.22	3.065 77.85	2.400 60.96	531842-3	M55302/26-12	1-530761-0
40	2.855 72.52	2.565 65.15	1.900 48.26	—	M55302/26-11	1-530761-1
30	2.355 59.82	2.065 52.45	1.400 35.56	—	M55302/26-10	1-530761-2

**2-Row Right-Angle Pin Header Assemblies for Flow Soldering — MIL-C-55302 Qualified**



**Commercial Pin Header**

**1 Contact Material and Finish** —

Brass per QQ-B-626 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact

**2 Contact Material and Finish** —

Same as above except for tin on the tails

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Military Pin Header**

**Contact Material and Finish** —

Brass per QQ-B-626 plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact

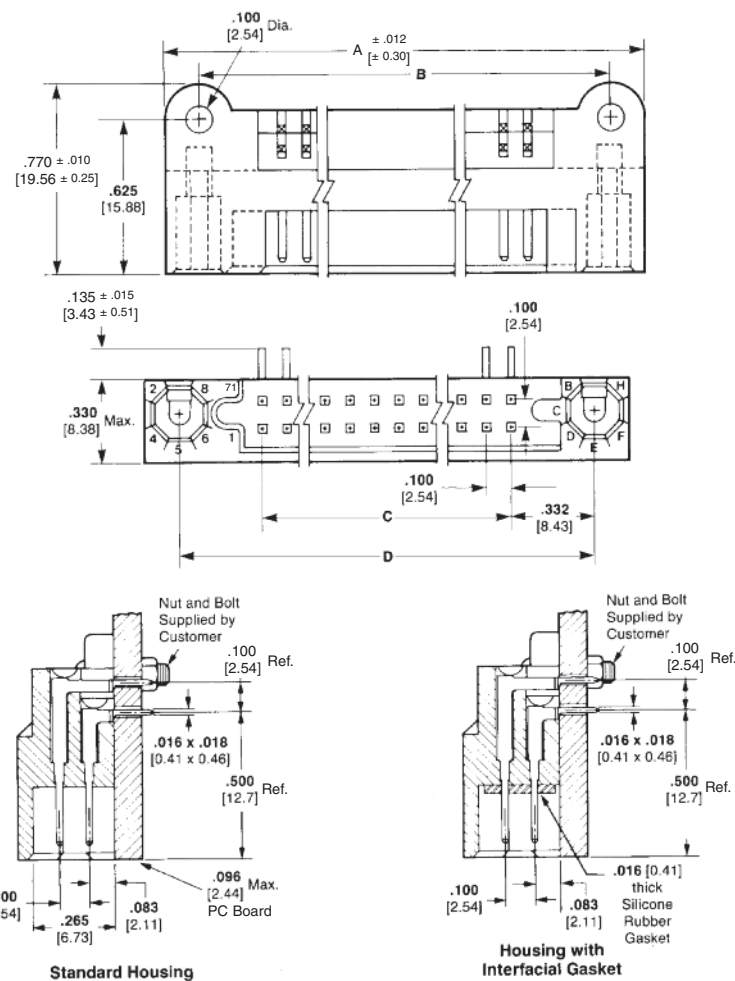
**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Related Product Data**

**Mates with** — Receptacles, pages 1-49 to 1-54, 1-61 and 1-62

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-75



No. of Pos.	Dimensions				Standard Housing			Housing with Interfacial Gasket	
	A	B	C	D	Commercial Part No.	MIL Part No. M55302/	AMP Part No.	MIL Part No. M55302/	AMP Part No.
140	7.855 199.52	7.565 192.15	6.900 175.26	7.565 192.15	—	110-31	1-531721-3	110-35	1-531722-3
134	7.555 191.50	7.265 184.53	6.600 167.64	7.265 184.53	1-530942-21 6-530942-22	110-30	1-531721-2	110-34	1-531722-2
130	7.355 186.82	7.065 179.45	6.400 162.56	7.065 179.45	—	110-29	1-531721-1	110-33	1-531722-1
120	6.855 174.12	6.565 166.75	5.900 149.86	6.565 166.75	—	110-28	1-531721-0	110-32	1-531722-0
110	6.355 161.42	6.065 154.05	5.400 137.16	6.065 154.05	530942-91	110-18	531721-9	110-27	531722-9
100	5.855 148.72	5.565 141.35	4.900 124.46	5.565 141.35	530942-81 5-530942-82	110-17	531721-8	110-26	531722-8
90	5.355 136.02	5.065 128.65	4.400 111.76	5.065 128.65	530942-71	110-16	531721-7	110-25	531722-7
80	4.855 123.32	4.565 115.95	3.900 99.06	4.565 115.95	—	110-15	531721-6	110-24	531722-6
70	4.355 110.62	4.065 103.25	3.400 86.36	4.065 103.25	530942-51 5-530942-52	110-14	531721-5	110-23	531722-5
60	3.855 97.92	3.565 90.55	2.900 73.66	3.565 90.55	530942-41 5-530942-42	110-13	531721-4	110-22	531722-4
50	3.355 85.22	3.065 77.85	2.400 60.96	3.065 77.85	530942-31	110-12	531721-3	110-21	531722-3
40	2.855 72.52	2.565 65.15	1.900 48.26	2.565 65.15	530942-21	110-11	531721-2	110-20	531722-2
30	2.355 59.82	2.065 52.45	1.400 35.56	2.065 52.45	—	110-10	531721-1	110-19	531722-1

<sup>1</sup>See Material and Finish above.

<sup>2</sup>See Material and Finish for RoHS Part Numbers above.

**2-Row Right-Angle Pin Header Assemblies with Posted Contacts (Wrap-Type)**



**Related Product Data**

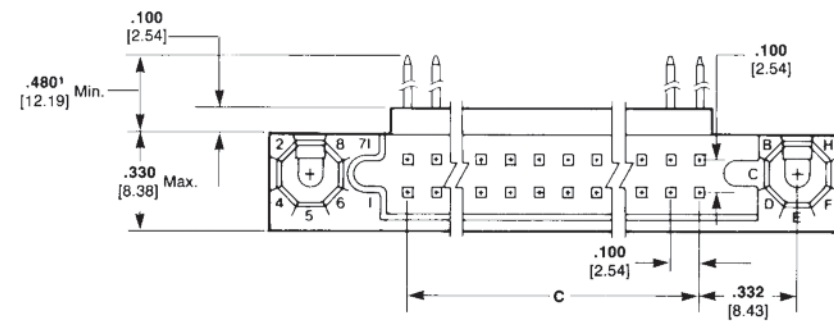
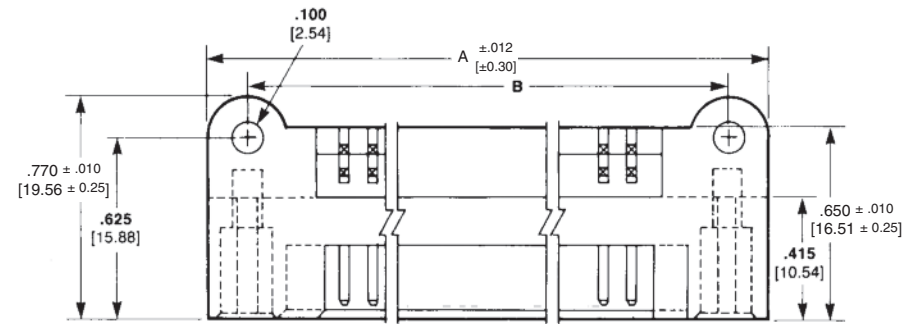
**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Contact Material and Finish** — Phosphor bronze plated .00050 [0.00127] gold over .000030 [0.00076] nickel on the entire contact

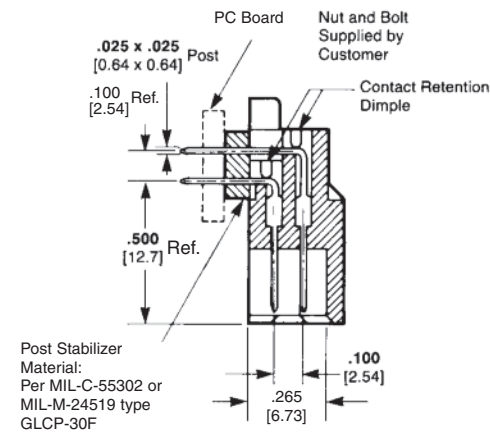
**Mates with** — Receptacles, pages 1-49 to 1-54, 1-61 and 1-62

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-75



<sup>1</sup>The two rows of posts will not be of equal length.



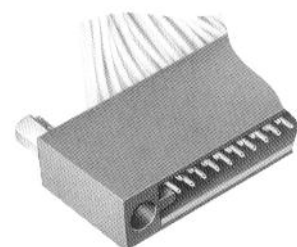
No. of Pos.	Dimensions			AMP Part No.
	A	B	C	
110	6.355 161.42	6.065 154.05	5.400 137.16	532488-9
90	5.355 136.02	5.065 128.65	4.400 111.76	532488-7
80	4.855 123.32	4.565 115.95	3.900 99.06	—
70	4.355 110.62	4.065 103.25	3.400 86.36	—
30	2.355 59.82	2.065 52.45	1.400 35.56	532488-1



Printed Circuit Board Connectors

**2-Row Pin Housing and Assemblies for Crimp Contacts — MIL-C-55302 Qualified**

**Housing Assembly**  
(includes turnable jackscrews)



**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F  
**Jackscrew Material** — Passivated stainless steel

**Related Product Data**

**Mates with** — Receptacle assemblies, pages 1-49 to 1-54, and receptacle housings, pages 1-61 and 1-62

**Crimp Type Pin Contact**

**Material** — Brass  
**Finish** — .000050 [0.00127] gold over .000050 [0.00127] nickel  
**Wire Range** — 26-22 AWG [0.12-0.4mm<sup>2</sup>]  
**Ins. Dia. Range** — .036-.054 [0.91-1.37]

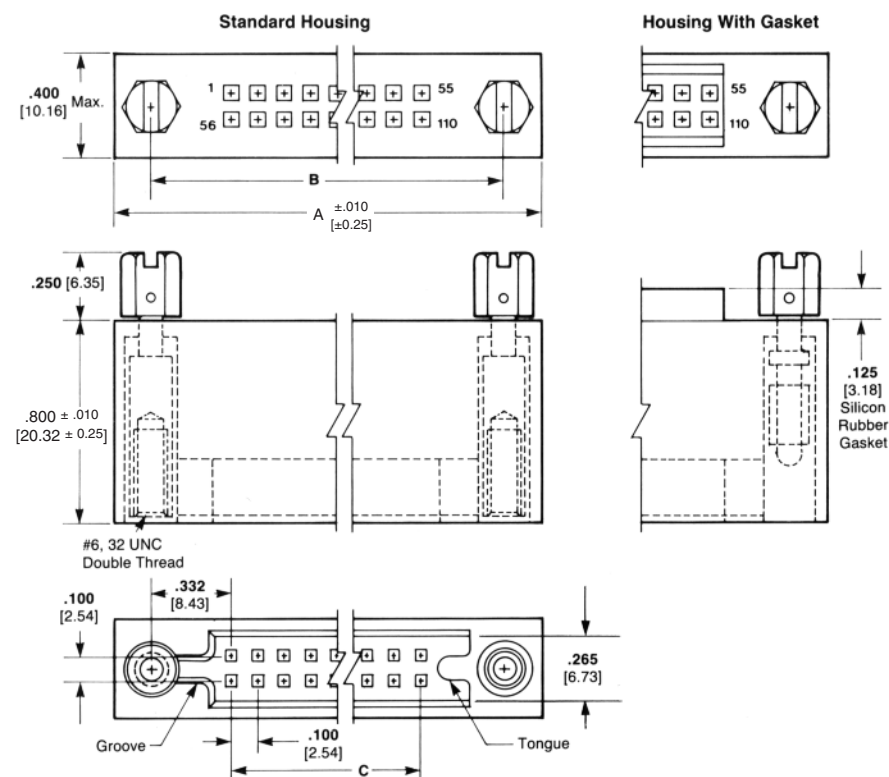


**Extraction Tool** —  
Part Number 91156-1

Loose Piece  
 Military Part Number M55302/113-05  
 AMP Part Number 530750-5  
 Strip Form  
 Military Part Number M55302/113-06  
 AMP Part Number 530750-4

**Tooling**

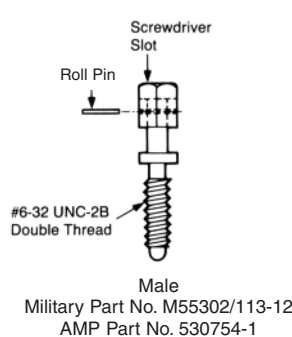
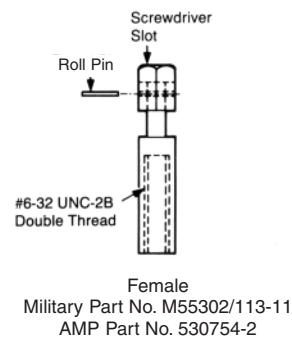
Hand Tool No. 90346-1 is used to apply the loose piece contacts (Hand tool instruction sheet 408-7820). For the application of strip contacts use the AMP-O-ELECTRIC Machine with the applicator No. 466625-3. Other automated machines are available, consult TE Connectivity for specifications.



**Turnable Jackscrews**

**Material** — Passivated stainless steel

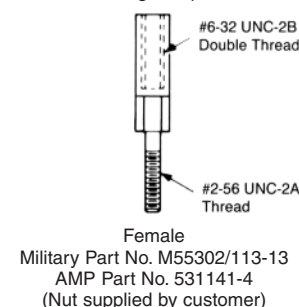
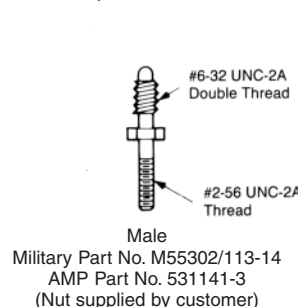
**Note:** To be used as replacement jackscrew for the pin housing assemblies shown above. They are not compatible with any other pin header assemblies.



**Fixed Jackscrews**

**Material** — Passivated stainless steel

**Note:** To be used with receptacle assemblies shown on pages 1-49 to 1-54 for mating with pin assemblies shown above.





**2-Row Pin Housing and Assemblies for Crimp Contacts — MIL-C-55302 Qualified** (Continued)

**Standard Housing**

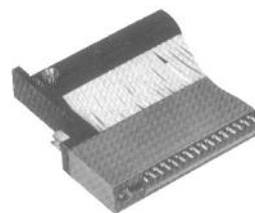
No. of Pos.	Dimensions			Housing Part Nos.		Turnable Jackscrew Combinations		Housing Assembly Part Nos. <sup>1</sup>		Kit Part Nos. <sup>2</sup>	
	A	B	C	Military Part No. M55302/	AMP Part No.	Tongue End	Groove End	Military Part No. M55302/	AMP Part No.	Military Part No. M55302/	AMP Part No.
110	6.355 161.42	6.065 154.05	5.400 137.16	113-23	1-530753-8	Female	Female	113-84	3-530752-3	113-80	530755-5
						Male	Female	113-85	3-530752-4	113-81	530755-6
						Female	Male	113-86	3-530752-5	113-82	530755-7
						Male	Male	113-87	3-530752-6	113-83	530755-8
100	5.855 148.72	5.565 141.35	4.900 124.46	113-22	1-530753-6	Female	Female	113-76	2-530752-9	113-72	3-530755-3
						Male	Female	113-77	3-530752-0	113-73	3-530755-4
						Female	Male	113-78	3-530752-1	113-74	3-530755-5
						Male	Male	113-79	3-530752-2	113-75	3-530755-6
90	5.355 136.02	5.065 128.65	4.400 111.76	113-21	1-530753-4	Female	Female	113-68	2-530752-5	113-64	2-530755-9
						Male	Female	113-69	2-530752-6	113-65	3-530755-0
						Female	Male	113-70	2-530752-7	113-66	3-530755-1
						Male	Male	113-71	2-530752-8	113-67	3-530755-2
80	4.855 123.32	4.565 115.95	3.900 99.06	113-20	1-530753-2	Female	Female	113-60	2-530752-1	113-56	2-530755-5
						Male	Female	113-61	2-530752-2	113-57	2-530755-6
						Female	Male	113-62	2-530752-3	113-58	2-530755-7
						Male	Male	113-63	2-530752-4	113-59	2-530755-8
70	4.355 110.62	4.065 103.25	3.400 86.36	113-19	530753-2	Female	Female	113-07	530752-1	113-01	530755-1
						Male	Female	113-08	530752-2	113-02	530755-2
						Female	Male	113-09	530752-3	113-03	530755-3
						Male	Male	113-10	530752-4	113-04	530755-4
60	3.855 97.92	3.565 90.55	2.900 73.66	113-18	1-530753-0	Female	Female	113-52	1-530752-7	113-48	2-530755-1
						Male	Female	113-53	1-530752-8	113-49	2-530755-2
						Female	Male	113-54	1-530752-9	113-50	2-530755-3
						Male	Male	113-55	2-530752-0	113-51	2-530755-4
50	3.355 85.22	3.065 77.85	2.400 60.06	113-17	530753-8	Female	Female	113-44	1-530752-3	113-40	1-530755-7
						Male	Female	113-45	1-530752-4	113-41	1-530755-8
						Female	Male	113-46	1-530752-5	113-42	1-530755-9
						Male	Male	113-47	1-530752-6	113-43	2-530755-0
40	2.855 72.52	2.565 65.15	1.900 48.26	113-16	530753-6	Female	Female	113-36	530752-9	113-32	1-530755-3
						Male	Female	113-37	1-530752-0	113-33	1-530755-4
						Female	Male	113-38	1-530752-1	113-34	1-530755-5
						Male	Male	113-39	1-530752-2	113-35	1-530755-6
30	2.355 59.82	2.065 52.45	1.400 35.56	113-15	530753-4	Female	Female	113-28	530752-5	113-24	530755-9
						Male	Female	113-29	530752-6	113-25	1-530755-0
						Female	Male	113-30	530752-7	113-26	1-530755-1
						Male	Male	113-31	530752-8	113-27	1-530755-2

**Housing with Gasket**

No. of Pos.	Dimensions			Housing Part Nos.		Turnable Jackscrew Combinations		Housing Assembly Part Nos. <sup>1</sup>		Kit Part Nos. <sup>2</sup>	
	A	B	C	Military Part No. M55302/	AMP Part No.	Tongue End	Groove End	Military Part No. M55302/	AMP Part No.	Military Part No. M55302/	AMP Part No.
110	6.355 161.42	6.065 154.05	5.400 137.16	113-89	530884-2	Female	Female	113-94	530885-5	113-102	530886-5
						Male	Female	113-95	530885-6	113-103	530886-6
						Female	Male	113-96	530885-7	113-104	530886-7
						Male	Male	113-97	530885-8	113-105	530886-8
70	4.355 110.62	4.065 103.25	3.400 86.36	113-88	530884-1	Female	Female	113-90	530885-1	113-98	530886-1
						Male	Female	113-91	530885-2	113-99	530886-2
						Female	Male	113-92	530885-3	113-100	530886-3
						Male	Male	113-93	530885-4	113-101	530886-4

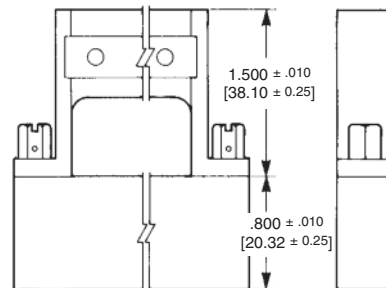
<sup>1</sup>Each Housing Assembly contains: A. 1 Housing. B. 2 Turnable Jackscrews installed (four combinations available, see table).  
<sup>2</sup>Each Kit contains: A. 1 Housing Assembly with 2 Turnable Jackscrews installed (four combinations are available, see table). B. 2 Fixed Jackscrews to mate with Turnable Jackscrews (nuts included). These Jackscrews are for installation on the mating receptacle housing. C. Loose Piece Contacts. Quantity is number of positions plus 5 extra.

**Pin Housing Assembly with Strain Relief**



**Material**

- Strain Relief** — Black glass-filled nylon
- Jackscrews** — Passivated stainless steel
- Housing** — Blue glass-filled polyester



**110 Position Housing and Strain Relief Kits**

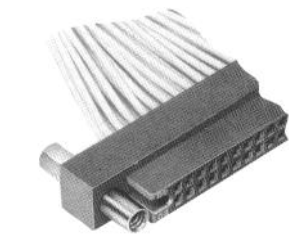
Tongue End	Groove End	Part No.
Female	Female	533194-1
Male	Female	—
Female	Male	—
Male	Male	533194-4

Other sizes can be made available, consult TE Connectivity.

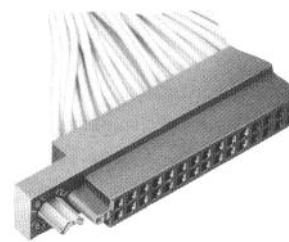


Printed Circuit Board Connectors

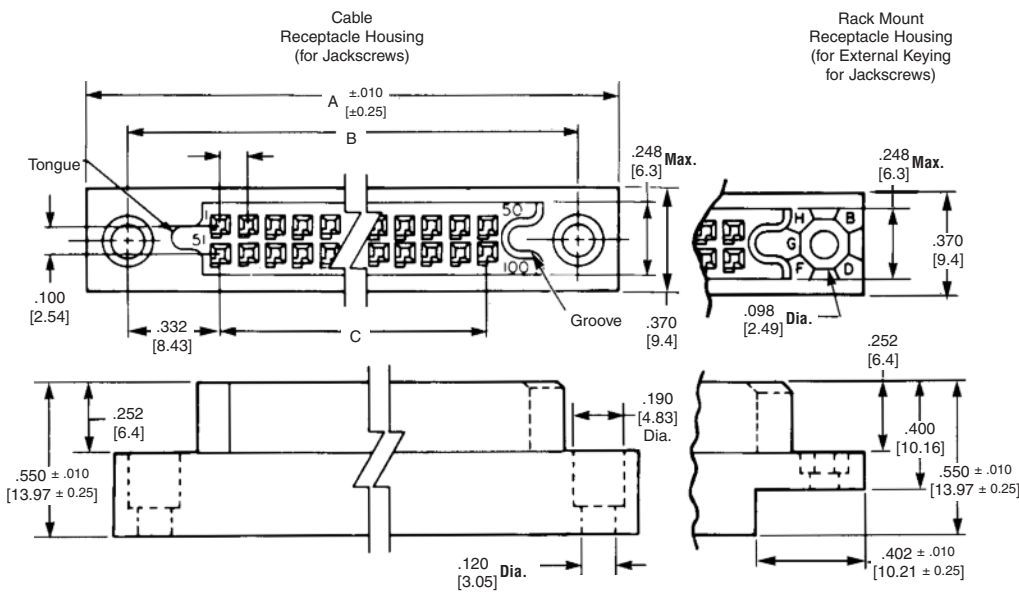
**2-Row Receptacle Housing and Assemblies for Crimp Contacts**



**Cable Receptacle with Jackscrews**



**Rack Mount Receptacle with External Keying**



**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Related Product Data**

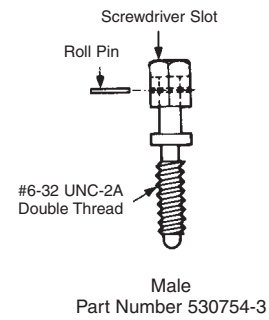
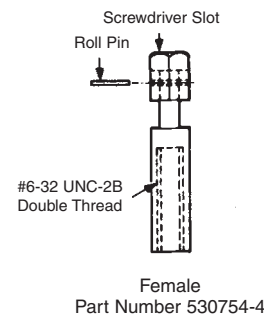
**Mates with** — Cable Receptacle Housings mate with Pin Housings on pages 1-56 to 1-60. Rack Mount Receptacle Housings mate with Pin Header Assemblies pages 1-56 to 1-60

**External Keying** — page 1-80

**Turnable Jackscrews**

**Material** — Passivated stainless steel

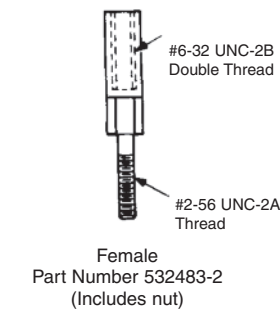
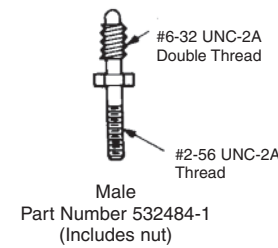
**Note:** To be used with the cable receptacle housings shown above. They are not compatible with other receptacle assemblies.



**Fixed Jackscrews**

**Material** — Passivated stainless steel

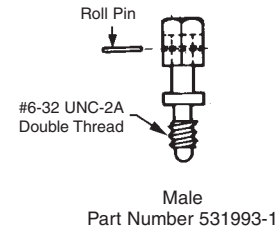
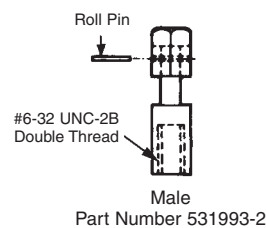
**Note:** For use with rack mount receptacles shown above.



**Turnable Jackscrews**

**Material** — Passivated stainless steel

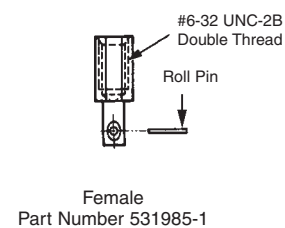
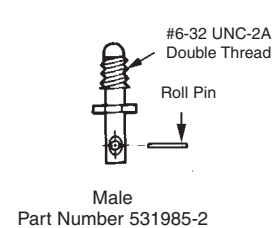
**Note:** For use with rack mount receptacles shown above.



**Fixed Jackscrews**

**Material** — Passivated stainless steel

**Note:** For use with external key type Right-Angle pin headers when mating with rack mount receptacle housings with turnable jackscrews shown to the left.



**2-Row Receptacle Housing and Assemblies for Crimp Contacts** (Continued)

No. of Pos.	Dimensions			Rack Mount Housing Part No.	Cable Housing Part No.	Jackscrews Combinations <sup>1</sup>		Cable Housing with Jackscrews Part No.
	A	B	C			Groove End	Tongue End	
110	6.355	6.065	5.400	1-531802-7	1-531840-7	Male	Male	—
	161.42	154.05	137.16			Female	Female	3-531841-3
						Male	Male	—
100	5.855	5.565	4.900	1-531802-5	1-531840-5	Male	Female	—
	148.72	141.35	124.46			Female	Male	3-531841-0
						Female	Female	—
80	4.855	4.565	3.900	—	1-531840-1	Male	Male	—
	123.32	115.95	99.06			Female	Female	2-531841-1
70	4.355	4.065	3.400	531802-9	531840-9	Male	Male	—
	110.62	103.25	86.36			Female	Female	—
60	3.855	3.565	2.900	531802-7	531840-7	Male	Female	—
	97.92	90.55	73.66			Female	Female	—
						Male	Male	1-531841-2
50	3.355	3.065	2.400	531802-5	531840-5	Male	Female	—
	85.22	77.85	60.96			Female	Male	—
						Female	Female	—
40	2.855	2.565	1.900	531802-3	531840-3	Male	Male	—
	72.52	65.15	48.26			Female	Male	—
						Female	Female	—
30	2.355	2.065	1.400	531802-1	531840-1	Male	Male	531841-4
	59.82	52.45	35.56			Male	Female	531841-3
						Female	Male	—

<sup>1</sup>Jackscrews supplied with assemblies 531841 are 530754-4, female, and 530754-3, male, shown on page 1-61.

**Crimp Type Receptacle Contacts**

**Material** — Phosphor bronze

**Finish** — Gold over nickel  
(See chart for gold thickness)



Wire Range	Insulation Range	Loose Piece		Strip		Hand Tool	Applicator for AMP-O-ELECTRIC Machine	Applicator for Stripper Crimper Machine
		.000030 [0.00076] Gold	.000050 [0.00127] Gold	.000030 [0.00076] Gold	.000050 [0.00127] Gold			
26-22 AWG 0.15-0.3mm <sup>2</sup>	.036-.054 0.91-1.37	531216-2	531216-4	531216-1	531216-3	91540-1	466819-2 <sup>2</sup>	466943-1

<sup>2</sup>Use Applicator 466819-1 for the AMPOMATOR Machine.

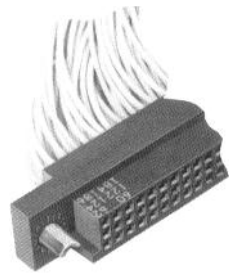
**Note:** Instruction sheet for Hand Tool 90301-2 is 408-7909.

Extraction Tool Part Number 91156-2



Printed Circuit Board Connectors

### 3-Row Receptacle Housings for Crimp Contacts

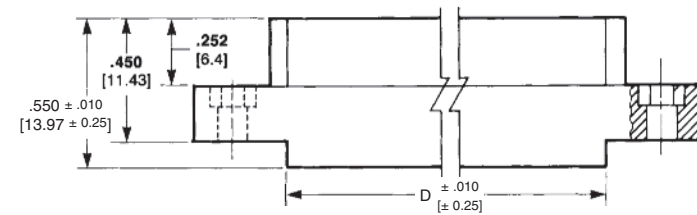
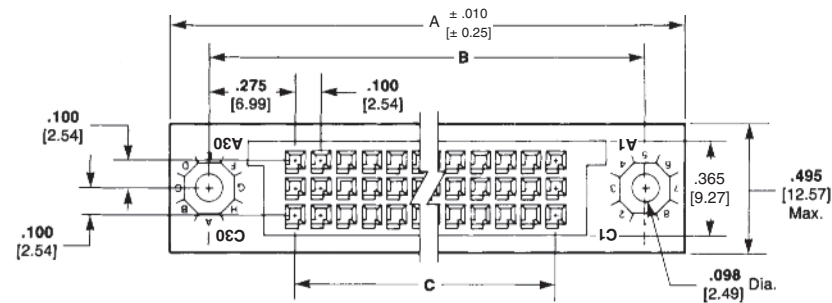


**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Related Product Data**

**Mates with** — Pin Headers, page 1-66

**External Keying** — page 1-80



No. of Pos.	Dimensions				Part No.
	A	B	C	D	
165	6.250 158.75	5.950 151.13	5.400 137.16	5.550 140.97	1-531984-4
150	5.750 146.05	5.450 138.43	4.900 124.46	5.050 128.27	1-531984-3
135	5.250 133.35	4.950 125.73	4.400 111.76	4.550 115.57	1-531984-1
126	4.950 125.73	4.650 118.11	4.100 104.14	4.250 107.95	531984-8
120	4.750 120.65	4.450 113.03	3.900 99.06	4.050 102.87	531984-6
105	4.250 107.95	3.950 100.33	3.400 86.36	3.550 90.17	531984-4
90	3.750 95.25	3.450 87.63	2.900 73.66	3.050 77.47	531984-1

**Crimp Type Receptacle Contact**

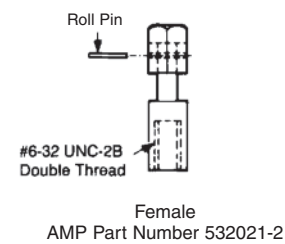
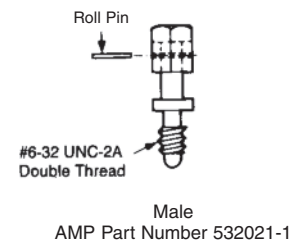
(Refer to page 1-62 for specifications and part numbers)



**Turnable Jackscrews**

**Material** — Passivated stainless steel

**Note:** For use with receptacle housings shown above when mating with Right-Angle pin headers having fixed jackscrews (531985-1 and 531985-2) shown on page 1-61.



**3-Row Receptacle Assemblies — MIL-C-55302 Qualified**



**Commercial Receptacle Assemblies**

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

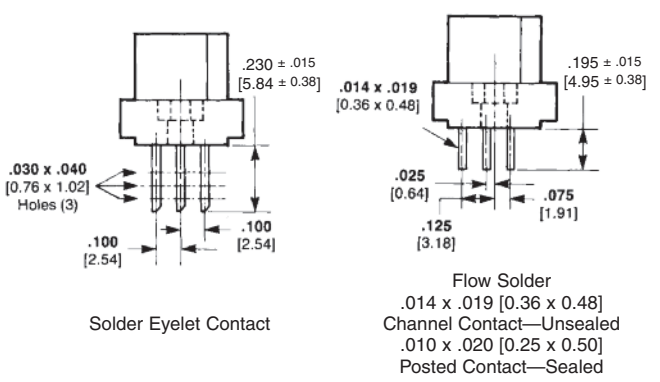
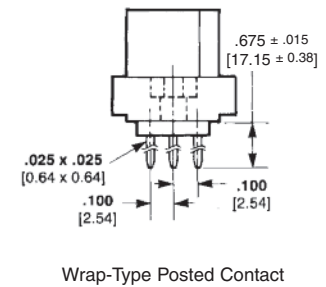
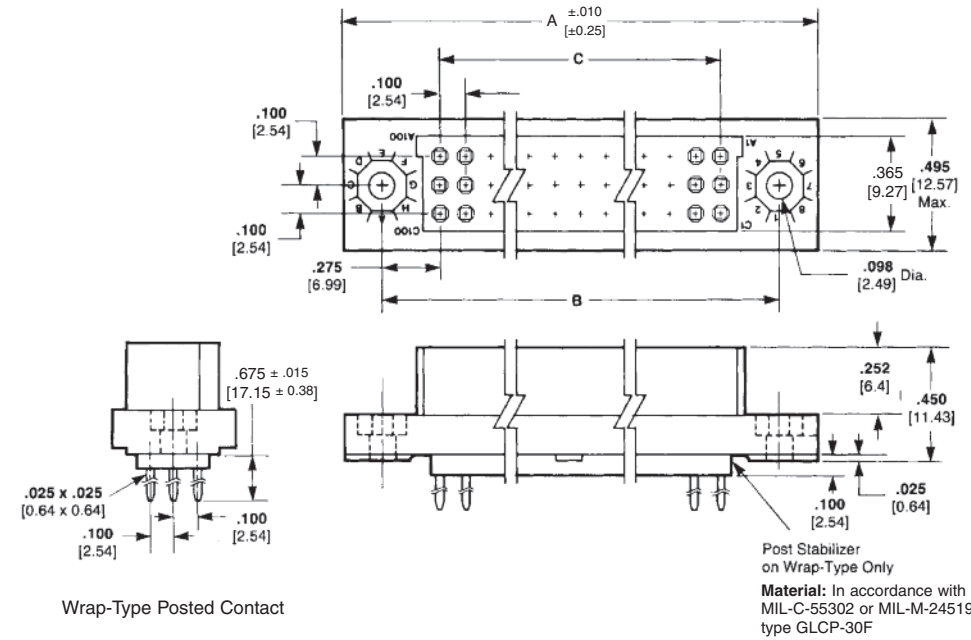
**1 Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 Channel Contact and Wrap-Type Posted Contact — Plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact; Solder Eyelet — Plated .000030 [0.00076] gold in the contact area, in accordance with MIL-C-55302 tin-lead on the tails over .000030 [0.00076] nickel on the entire contact

**2 Contact Material and Finish** — Same as above except for tin on the tails

**Military Receptacle Assemblies**

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 Channel Contact — Plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact; Wrap-Type Posted Contact — Plated .000050 [0.00127] gold over .000030 [0.00076] nickel on the entire contact; Solder Eyelet — Plated .000050 [0.00127] gold in the contact area, in accordance with MIL-C-55302 .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact



Post Stabilizer on Wrap-Type Only  
**Material:** In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Related Product Data**

- Mates with** — Pin Headers, page 1-68
- External Keying** — page 1-80
- Recommended PC Board Layout** — page 1-76

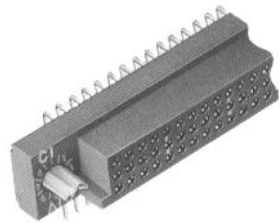
No. of Pos.	Dimensions			Flow Solder Contacts						Solder Eyelet			Wrap-Type Posted Contact		
	A	B	C	Commercial Part No.		Military M55302/130	AMP Part No.		Commercial Part No.	Military M55302/130	AMP Part No.	Commercial Part No.	Military M55302/130	AMP Part No.	
				Sealed	Unsealed		Sealed	Unsealed							
300 <sup>3</sup>	10.750 273.05	10.450 265.43	9.900 251.46	—	—	—	—	—	—	—	—	—	—	—	
270 <sup>3</sup>	9.750 247.65	9.450 240.03	8.900 226.06	—	—	—	—	—	—	—	—	—	—	—	
240	8.750 222.25	8.450 214.63	7.900 200.66	—	531138-8 <sup>1</sup>	-44	446853-8	531134-8	—	-46	447192-8	—	-45	447193-8	
210	7.750 196.85	7.450 189.23	6.900 175.26	—	531138-7 <sup>1</sup>	-41	446853-7	531134-7	—	-43	447192-7	—	-42	447193-7	
195	7.250 184.15	6.950 176.53	6.400 162.56	—	1-531138-3 <sup>1</sup>	-38	1-446853-0	1-531134-3	1-531140-3 <sup>1</sup>	-40	1-447192-0	—	-39	1-447193-0	
180	6.750 171.45	6.450 163.83	5.900 149.86	—	531138-6 <sup>1</sup>	-35	446853-6	531134-6	—	-37	447192-6	531139-6 <sup>1</sup>	-36	447193-6	
165	6.250 158.75	5.950 151.13	5.400 137.16	—	531138-5 <sup>1</sup>	-32	446853-5	531134-5	—	-34	447192-5	—	-33	447193-5	
150	5.750 146.05	5.450 138.43	4.900 124.46	—	531138-4 <sup>1</sup> 5-531138-4 <sup>2</sup>	-29	446853-4	531134-4	—	-31	447192-4	—	-30	447193-4	
135	5.250 133.35	4.950 125.73	4.400 111.76	—	1-531138-2 <sup>1</sup>	-26	446853-9	1-531134-2	—	-28	447192-9	1-531139-2 <sup>1</sup>	-27	447193-9	
126 <sup>3</sup>	4.950 125.73	4.650 118.11	4.100 104.14	—	—	—	—	—	—	—	—	—	—	—	
120	4.750 120.65	4.450 113.03	3.900 99.06	—	531138-3 <sup>1</sup>	-23	446853-3	531134-3	—	-25	447192-3	—	-24	447193-3	
105	4.250 107.95	3.950 100.33	3.400 86.36	—	531138-2 <sup>1</sup> 5-531138-2 <sup>2</sup>	-20	446853-2	531134-2	—	-22	447192-2	—	-21	447193-2	
90	3.750 95.25	3.450 87.63	2.900 73.66	—	531138-1 <sup>1</sup> 5-531138-1 <sup>2</sup>	-17	446853-1	531134-1	—	-19	447192-1	531139-1 <sup>1</sup>	-18	447193-1	

<sup>1</sup>See Material and Finish above.      <sup>2</sup>See Material and Finish for RoHS Part Numbers above.      <sup>3</sup>Part Numbers available upon request.

1 Printed Circuit Board Connectors



**3-Row Right-Angle Receptacle Assemblies with Posted Contacts (Wrap-Type)**



**Housing Material** — In accordance with MIL-C-55302

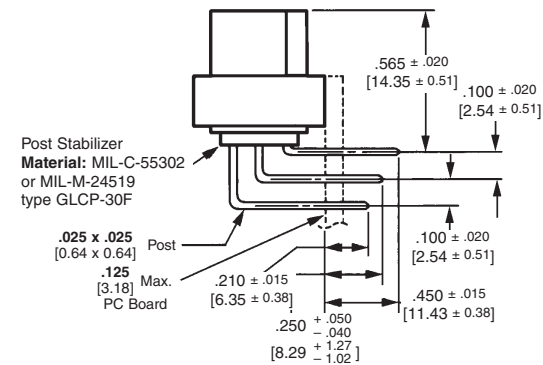
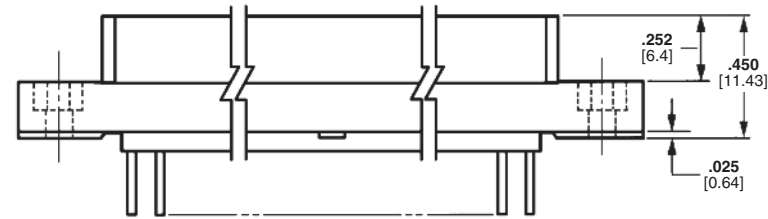
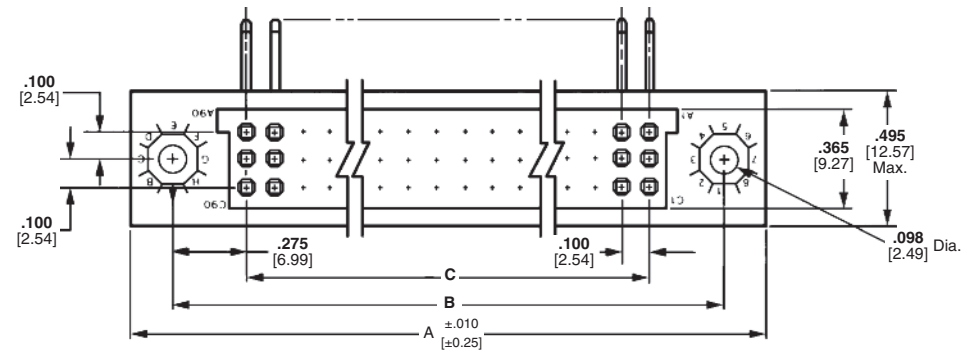
**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000050 [0.00127] gold over .000030 [0.00076] nickel on the entire contact

**Related Product Data**

**Mates with** — Pin Headers, page 1-66

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-76



**Right-Angle Wrap-Type Posts**

No. of Pos.	Dimensions			Part No.
	A	B	C	
270 <sup>1</sup>	9.750 247.65	9.450 240.03	8.900 226.06	—
240 <sup>1</sup>	8.750 222.25	8.450 214.63	7.900 200.66	—
210	7.750 196.85	7.450 189.23	6.900 175.26	447255-2
195	7.250 184.15	6.950 176.53	6.400 162.58	447255-3
180	6.750 171.45	6.450 163.83	5.900 149.86	447255-4
165 <sup>1</sup>	6.250 158.75	5.950 151.13	5.400 137.16	—
150	5.750 146.05	5.450 138.43	4.900 124.46	447255-6
135 <sup>1</sup>	5.250 133.35	4.950 125.73	4.400 111.76	—
126 <sup>1</sup>	4.950 125.73	4.650 118.11	4.100 104.14	—
123 <sup>1</sup>	4.850 123.19	4.550 115.57	4.000 101.6	—
120	4.750 120.65	4.450 113.03	3.900 86.36	447255-8
105	4.250 107.95	3.950 100.33	3.400 86.36	447255-9
90	3.750 95.25	3.450 87.63	2.900 73.66	1-447255-0

<sup>1</sup>Part numbers available upon request.

**3-Row Right-Angle Pin Header Assemblies — MIL-C-55302 Qualified**



**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**1 Contact Material and Finish** —

Commercial Flow Solder Contact — Brass per QQ-B-626 plated .00030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact; Military Flow Solder Contact — Brass per QQ-B-626 plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact; Wrap-Type Contact — Phosphor bronze plate .00050 [0.00127] gold over .00030 [0.00076] nickel on the entire contact

**2 Contact Material and Finish** —

Same as above except for tin on the tails

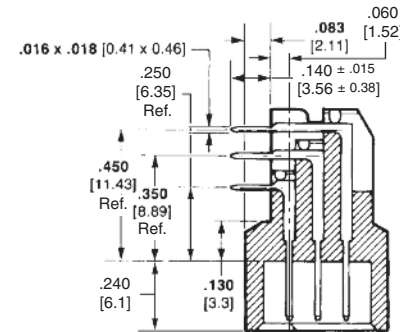
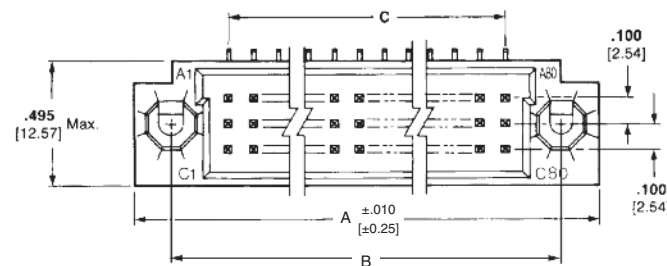
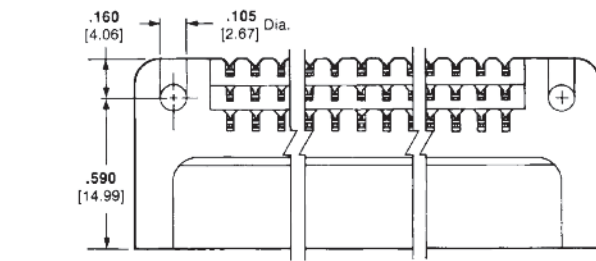
**Related Product Data**

**Mates with** — 3-Row Receptacles, pages 1-63 to 1-65

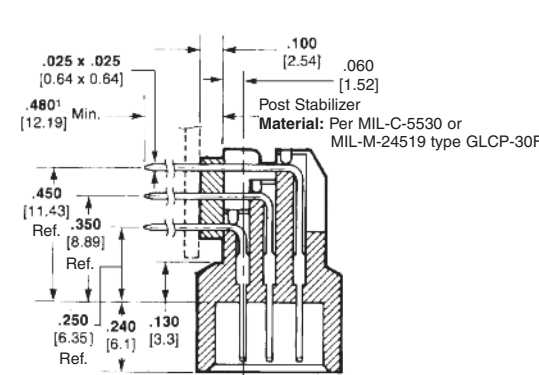
**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-76

**Fixed Jackscrew** — page 1-61



**Flow Solder Contacts**  
(for use with .096 [2.44] Max. thick PC board)



**Wrap-Type Posted Contacts**

<sup>1</sup>The three rows of posts will not be of equal length.

No. of Pos.	Dimensions			Flow Solder Contacts				Wrap-Type Posted Contacts (2 High)		
	A	B	C	Commercial Part No.		MIL-Part No. M55302/129	AMP Part No.		AMP Part No.	
				Sealed	Unsealed		Sealed	Unsealed	Without Stabilizer	With Stabilizer
300 <sup>3</sup>	10.750 273.05	10.450 265.43	9.900 251.46	1-447373-11	—	—	—	—	—	—
270 <sup>3</sup>	9.750 247.65	9.450 240.03	8.900 226.06	—	—	—	—	—	—	—
240	8.750 222.25	8.450 214.63	7.900 200.66	—	531137-8 <sup>1</sup>	-18	446852-8 <sup>1</sup>	531133-8 <sup>1</sup>	—	—
210	7.750 196.85	7.450 189.23	6.900 175.26	—	531137-7 <sup>1</sup>	-17	446852-7 <sup>1</sup>	531133-7 <sup>1</sup>	—	—
195	7.250 184.15	6.950 176.53	6.400 162.56	—	1-531137-3 <sup>1</sup>	-16	1-446852-0 <sup>1</sup>	1-531133-3 <sup>1</sup>	—	—
180	6.750 171.45	6.450 163.83	5.900 149.86	—	—	-15	446852-6 <sup>1</sup>	531133-6 <sup>1</sup>	—	—
165	6.250 158.75	5.950 151.13	5.400 137.16	—	531137-5 <sup>1</sup>	-14	446852-5 <sup>1</sup>	531133-5 <sup>1</sup>	532775-3 <sup>1</sup>	—
150	5.750 146.05	5.450 138.43	4.900 124.46	—	531137-4 <sup>1</sup> 5-531137-4 <sup>2</sup>	-13	446852-4 <sup>1</sup>	531133-4 <sup>1</sup>	1-532775-2 <sup>1</sup>	—
135	5.250 133.35	4.950 125.73	4.400 111.76	—	—	-12	446852-9 <sup>1</sup>	1-531133-2 <sup>1</sup>	—	—
126	4.950 125.73	4.650 118.11	4.100 104.14	—	—	—	—	1-531133-0 <sup>1</sup>	1-532775-0 <sup>1</sup>	—
120	4.750 120.65	4.450 113.03	3.900 99.06	—	531137-3 <sup>1</sup>	-11	446852-3 <sup>1</sup>	531133-3 <sup>1</sup>	532775-8 <sup>1</sup>	447380-7 <sup>1</sup>
105	4.250 107.95	3.950 100.33	3.400 86.36	—	531137-2 <sup>1</sup> 5-531137-2 <sup>2</sup>	-10	446852-2 <sup>1</sup>	531133-2 <sup>1</sup>	—	—
90	3.750 95.25	3.450 87.63	2.900 73.66	—	531137-1 <sup>1</sup> 5-531137-1 <sup>2</sup>	-09	446852-1 <sup>1</sup>	531133-1 <sup>1</sup>	—	447380-5 <sup>1</sup>

<sup>1</sup>See Material and Finish above.

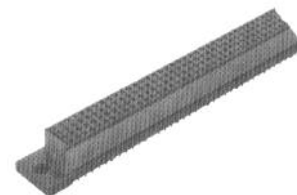
<sup>2</sup>See Material and Finish for RoHS Part Numbers.

<sup>3</sup>Part Numbers available upon request.



Printed Circuit Board Connectors

4-Row Receptacle Assemblies



**Housing Material** — Polyphenylene sulfide per MIL-M-24519 or type GLCP-30F

**1 Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated gold .000050 [0.00127] thick per MIL-G-45204 in contact area, tails plated tin-lead all over nickel per QQ-N-290

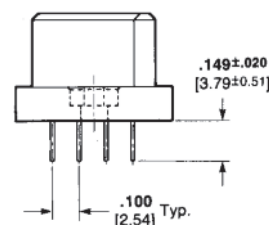
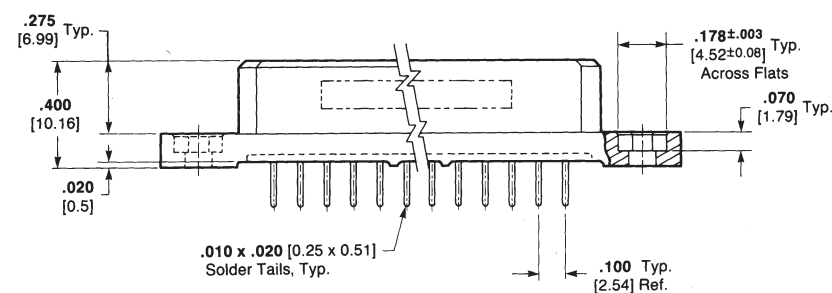
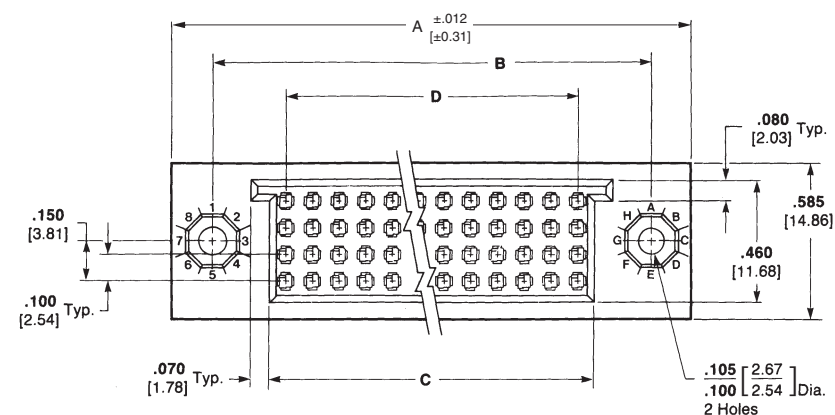
**2 Contact Material and Finish** — Same as above except for tin on tails

**Related Product Data**

**Mates with** — Pin Header assembly, page 1-68

**External Keying** — page 1-80

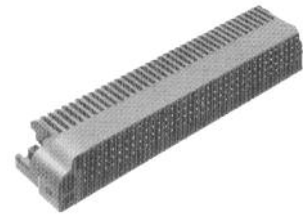
**Recommended PC Board Layout** — page 1-77



No. of Pos.	Dimensions				Part No. <sup>1</sup>	RoHS Part No. <sup>2</sup>
	A	B	C	D		
300	8.250 209.60	7.950 201.93	7.524 191.11	7.400 187.96	—*	—
292	8.050 204.47	7.750 196.85	7.324 186.03	7.200 182.88	—*	—
280	7.750 196.85	7.450 189.23	7.024 178.41	6.900 175.26	—*	—
268	7.450 189.23	7.150 181.61	6.724 170.79	6.600 167.64	—*	—
260	7.250 184.15	6.950 176.53	6.524 165.71	6.400 162.56	—*	—
240	6.750 171.45	6.450 163.83	6.024 153.01	5.900 149.86	—*	—
232	6.550 166.37	6.250 158.75	5.824 147.93	5.700 144.78	—*	—
220	6.250 158.75	5.950 151.13	5.524 140.31	5.400 137.16	446081-8	—
216	6.150 156.21	5.850 148.59	5.424 137.77	5.300 134.62	—*	—
200	5.750 146.05	5.450 138.43	5.024 127.61	4.900 124.46	1-446081-0	6-446081-0
192	5.550 140.97	5.250 133.35	4.824 122.53	4.700 119.38	—*	—
180	5.250 133.35	4.950 125.73	4.524 114.91	4.400 111.76	—*	—
168	4.950 125.73	4.650 118.11	4.224 107.29	4.100 104.14	—*	—
160	4.750 120.65	4.450 113.03	4.024 102.21	3.900 99.06	—*	—
152	4.550 115.57	4.250 107.95	3.824 97.13	3.700 93.98	—*	—
140	4.250 107.95	3.950 100.33	3.524 89.51	3.400 86.36	—*	—
128	3.950 100.33	3.650 92.71	3.224 81.89	3.100 78.74	1-446081-7	6-446081-7
120	3.750 95.25	3.450 87.63	3.024 76.81	2.900 73.66	—*	—
100	3.250 82.55	2.950 74.93	2.524 64.11	2.400 60.96	1-446081-9	—
68	2.450 62.23	2.150 54.60	1.727 43.87	1.600 40.64	—*	—
40	1.750 44.45	1.450 36.83	1.024 26.01	.900 22.86	—*	—

\* Part Numbers available upon request, contact TE Connectivity.

4-Row Right-Angle Pin Header Assemblies



**Housing Material** — Polyphenylene sulfide per MIL-M-24519 or type GLCP-30F

**1 Contact Material and Finish** — Phosphor bronze per QQ-B-750, plated gold .000050 [0.00127] thick per MIL-G-45204 on mating end for a length of .120 [3.05] min., tails plated tin-lead over nickel per QQ-N-290

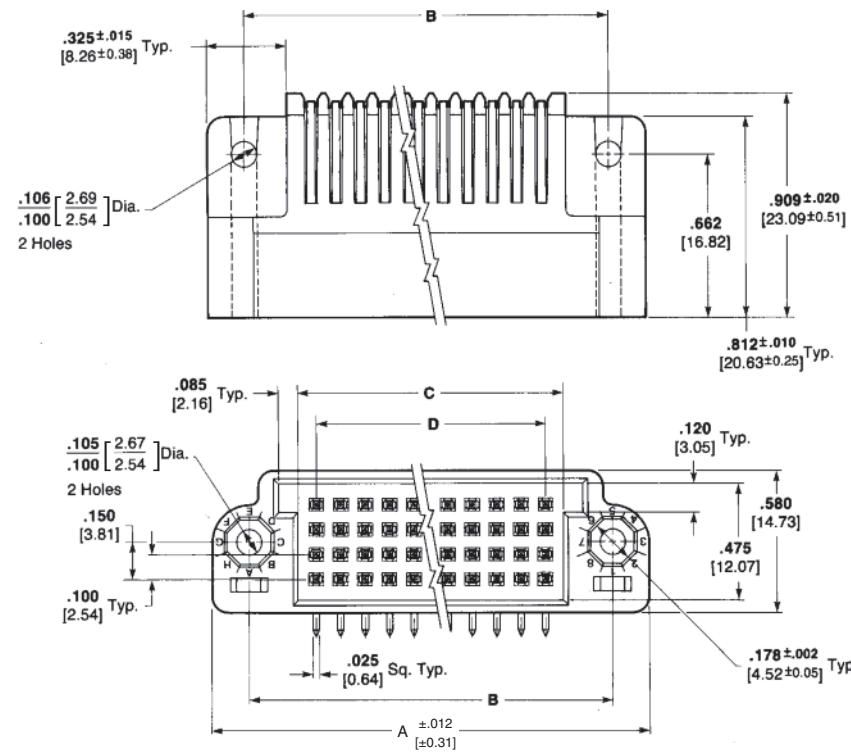
**2 Contact Material and Finish** — Same as above except for tin on tails

**Related Product Data**

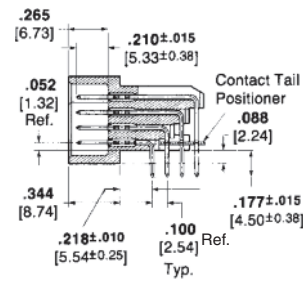
**Mates with** — Receptacle assembly, page 1-67

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-77



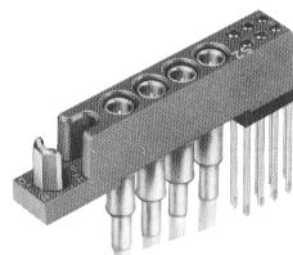
Printed Circuit Board Connectors



No. of Pos.	Dimensions				Part No. <sup>1</sup>	RoHS Part No. <sup>2</sup>
	A	B	C	D		
300	8.250 209.60	7.950 201.93	7.550 191.77	7.400 187.96	—*	—
292	8.050 204.47	7.750 196.85	7.350 186.69	7.200 182.88	—*	—
280	7.750 196.85	7.450 189.23	7.050 179.07	6.900 175.26	—*	—
268	7.450 189.23	7.150 181.61	6.750 171.45	6.600 167.64	—*	—
260	7.250 184.15	6.950 176.53	6.550 166.37	6.400 162.56	—*	—
240	6.750 171.45	6.450 163.83	6.050 153.67	5.900 149.86	—*	—
232	6.550 166.37	6.250 158.75	5.850 148.59	5.700 144.78	—*	—
220	6.250 158.75	5.950 151.13	5.550 140.97	5.400 137.16	—*	—
216	6.150 156.21	5.850 148.59	5.450 138.43	5.300 134.62	—*	—
200	5.750 146.05	5.450 138.43	5.050 128.27	4.900 124.46	1-446080-0	6-446080-0
192	5.550 140.97	5.250 133.35	4.850 123.19	4.700 119.38	—*	—
180	5.250 133.35	4.950 125.73	4.550 115.57	4.400 111.76	1-446080-2	—
168	4.950 125.73	4.650 118.11	4.250 107.95	4.100 104.14	—*	—
160	4.750 120.65	4.450 113.03	4.050 102.87	3.900 99.06	—*	—
152	4.550 115.57	4.250 107.95	3.850 97.79	3.700 93.98	—*	—
140	4.250 107.95	3.950 100.33	3.550 90.17	3.400 86.36	—*	—
128	3.950 100.33	3.650 92.71	3.250 82.55	3.100 78.74	1-446080-7	6-446080-7
120	3.750 95.25	3.450 87.63	3.050 77.47	2.900 73.66	—*	—
100	3.250 82.55	2.950 74.93	2.550 64.77	2.400 60.96	—*	—
68	2.450 62.23	2.150 54.60	1.750 44.45	1.600 40.64	—*	—
40	1.750 44.45	1.450 36.83	1.050 26.67	.900 22.86	—*	—

\* Part Numbers available upon request, contact TE Connectivity.

Receptacle Assemblies with Hybrid Cavities



8 Hybrid Cavity Shown

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

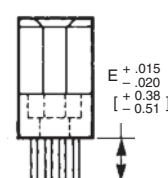
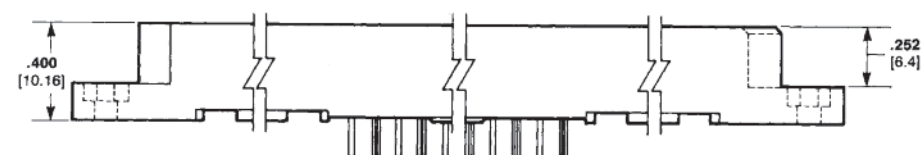
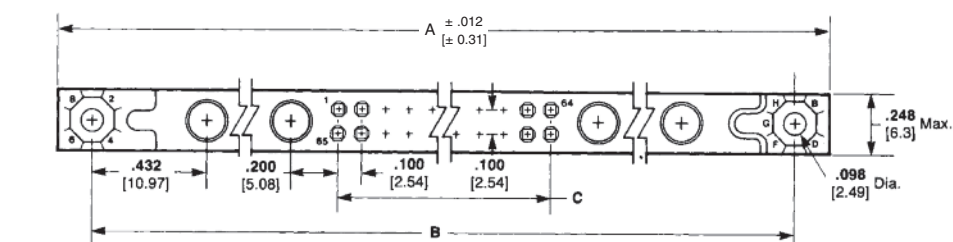
**Contact Material and Finish** — Beryllium copper per QQ-C-533 or copper nickel silicon per ASTM B422 and ASTM B888 Channel Contact and Posted Contact — Plated .000050 [0.00127] gold in contact area, .000100 [0.00254] tin-lead on the tails over .00030 [0.0076] nickel on the entire contact; Solder Eyelet Contact — Plated .000050 [0.00127] gold in the contact area, in accordance with MIL-C-55302 .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact

**Related Product Data**

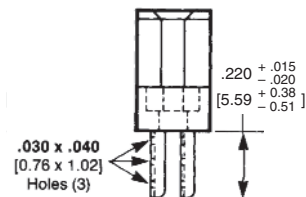
**Mates with** — Right-Angle Pin Headers, pages 1-71 and 1-72

**External Keying** — page 1-80

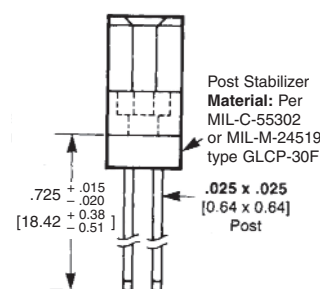
**Recommended PC Board Layout** — page 1-78



.014 x .019 [0.36 x 0.48] Channel Contact



Solder Eyelet Contact (Max. Wire Size, #26 AWG [0.15 mm])



Wrap-Type Posted Contact (3 terminations per post)

E = .235 [5.97] - 2 Hybrid cavity connector  
.154 [3.91] - 4 and 6 Hybrid cavity connector

2 Hybrid Cavity Connectors<sup>1</sup>

No. of Box Contact Pos.	Dimensions			.014 x .019 [0.36 x 0.48] Channel Contacts Part No.
	A	B	C	
128	7.885 199.52	7.565 192.15	6.300 160.02	—*
122	7.555 191.90	7.265 184.53	6.000 152.4	—*
118	7.355 186.82	7.065 179.45	5.800 147.32	—*
108	6.855 174.12	6.565 166.75	5.300 134.62	—*
98	6.335 161.42	6.065 154.05	4.800 121.92	—*
88	5.855 148.72	5.565 141.35	4.300 109.22	—*
78	5.355 136.02	5.065 128.65	3.800 96.52	533606-7
68	4.855 123.32	4.565 115.95	3.300 83.82	—*
58	4.355 110.62	4.065 103.25	2.800 71.12	533606-5
48	3.855 97.92	3.565 90.55	2.300 58.42	—*
38	3.355 85.22	3.065 77.85	1.800 45.72	—*
28	2.855 72.52	2.565 65.15	1.300 33.02	533606-2
18	2.355 58.82	2.065 52.45	.800 20.32	533606-1

<sup>1</sup>These receptacle assemblies accept coaxial contacts—Vertical Cable Socket 227605-1, Right-Angle Cable Socket 227606-1 and Vertical Printed Circuit Board Mount Socket 227603-1.

\* Part Numbers available upon request, contact TE Connectivity.



**Receptacle Assemblies with Hybrid Cavities** (Continued)

**4 Hybrid Cavity Connectors<sup>1</sup>**

No. of Box Contact Pos.	Dimensions				.014 x .019 [0.36 x 0.48] Channel Contacts Part No.	Solder Eyelet Contacts Part No.	Wrap-Type Posted Contacts Part No.
	A	B	C	D			
120	7.855 199.52	7.565 192.15	5.900 149.86	.200 5.08	—*	—*	—*
110	7.355 186.82	7.065 179.45	5.400 137.16	.200 5.08	—*	—*	—*
100	6.855 174.12	6.565 166.75	4.900 124.46	.200 5.08	533189-8	—*	533181-3
90	6.355 161.42	6.065 154.05	4.400 111.76	.200 5.08	—*	—*	—*
80	5.855 148.72	5.565 141.35	3.900 99.06	.200 5.08	—*	—*	—*
70	5.355 136.02	5.065 128.65	3.400 86.36	.200 5.08	—*	—*	—*
60	4.855 123.32	4.565 115.95	2.900 73.66	.200 5.08	—*	—*	—*
50	4.355 110.62	4.065 103.25	2.400 60.96	.200 5.08	—*	—*	—*
40	3.855 97.92	3.565 90.55	1.900 48.26	.200 5.08	533189-3	—*	—*
30	3.355 85.22	3.065 77.85	1.400 35.56	.200 5.08	533189-2	—*	—*

**6 Hybrid Cavity Connectors<sup>1</sup>**

No. of Box Contact Pos.	Dimensions				.014 x .019 [0.36 x 0.48] Channel Contacts Part No.
	A	B	C	D	
112	7.855 199.52	7.565 192.15	5.500 139.7	.400 10.16	—*
102	7.355 186.82	7.065 179.45	5.000 127.0	.400 10.16	—*
92	6.855 174.12	6.565 166.75	4.500 114.3	.400 10.16	—*
82	6.355 161.42	6.065 154.05	4.000 101.6	.400 10.16	—*
72	5.855 148.72	5.565 141.35	3.500 88.9	.400 10.16	—*
62	5.355 136.02	5.065 128.65	3.000 76.2	.400 10.16	533639-5
52	4.855 123.32	4.565 115.95	2.500 63.5	.400 10.16	—*
42	4.355 110.62	4.065 103.25	2.000 50.8	.400 10.16	—*
32	3.855 97.92	3.565 90.55	1.500 38.1	.400 10.16	—*
22	3.355 85.22	3.065 77.85	1.000 25.4	.400 10.16	533639-1

**8 Hybrid Cavity Connectors<sup>1</sup>**

No. of Box Contact Positions	Dimensions				Wrap-Type Contacts Part No.
	A	B	C	D	
104	7.855 199.52	7.565 192.15	5.100 129.54	.600 15.24	—*
94	7.355 186.82	7.065 179.45	4.600 116.84	.600 15.24	—*
84	6.855 174.12	6.565 166.75	4.100 104.14	.600 15.24	—*
74	6.355 161.42	6.065 154.05	3.600 91.44	.600 15.24	—*
64	5.855 148.72	5.565 141.35	3.100 78.74	.600 15.24	—*
54	5.355 136.02	5.065 128.65	2.600 66.04	.600 15.24	—*
44	4.855 123.32	4.565 115.95	2.100 53.34	.600 15.24	—*
34	4.355 110.62	4.065 103.25	1.600 40.64	.600 15.24	533170-8
24	3.855 97.92	3.565 90.55	1.100 27.94	.600 15.24	—*
14	3.355 85.22	3.065 77.85	.600 15.24	.600 15.24	1-533170-0

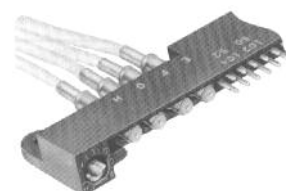
<sup>1</sup>These receptacle assemblies accept coaxial contacts — Vertical Cable Sockets 227605-1, Right-Angle Cable Socket 227606-1 and Vertical PC Board Mount Socket 227603-1.

\* Part Numbers available upon request, contact TE Connectivity.



Printed Circuit Board Connectors

**Right-Angle Pin Header Assemblies with Hybrid Contact Cavities**



8 Hybrid Cavity Shown

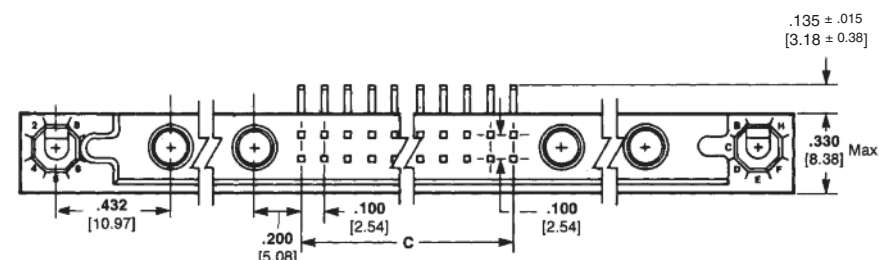
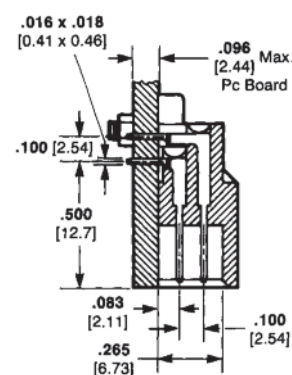
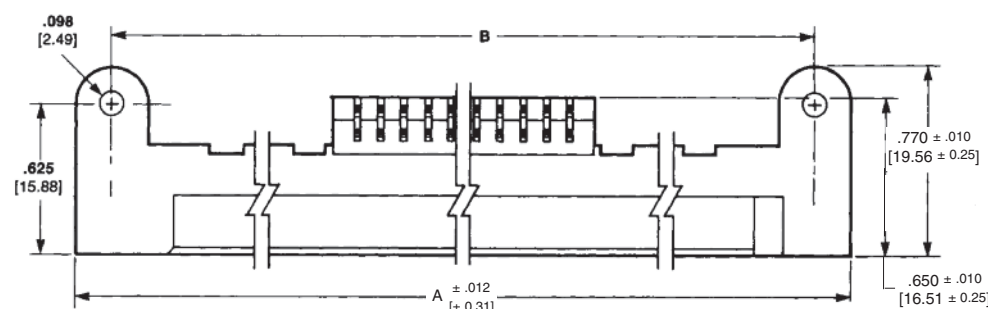
**Related Product Data**

**Mates with** — Receptacles, pages 1-69 and 1-70

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-79

**Fixed Jackscrews** — page 1-61



**2 Hybrid Cavity Connectors<sup>1</sup>**

No. of Box Contact Pos.	Dimensions			Part No. <sup>2</sup>	RoHS Part No. <sup>3</sup>
	A	B	C		
128	7.885 199.52	7.565 192.15	6.300 160.02	—*	—
122	7.555 191.90	7.265 184.53	6.000 152.4	—*	—
118	7.355 186.82	7.065 179.45	5.800 147.32	—*	—
108	6.855 174.12	6.565 166.75	5.300 134.62	—*	—
98	6.335 161.42	6.065 154.05	4.800 121.92	—*	—
88	5.855 148.72	5.565 141.35	4.300 109.22	—*	—
78	5.355 136.02	5.065 128.65	3.800 96.52	—*	—
68	4.855 123.32	4.565 115.95	3.300 83.82	—*	—
58	4.355 110.62	4.065 103.25	2.800 71.12	—*	—
48	3.855 97.92	3.565 90.55	2.300 58.42	—*	—
38	3.355 85.22	3.065 77.85	1.800 45.72	—*	—
28	2.855 72.52	2.565 65.15	1.300 33.02	533607-3	—
18	2.355 59.82	2.065 52.45	.800 20.32	533607-1	5-533607-1

<sup>1</sup>These pin header assemblies accept coaxial contacts—Vertical Cable Pin 227604-1 and Right-Angle Printed Circuit Board Mount Pin 227602-1.

\* Part Numbers available upon request, contact TE Connectivity.

**Right-Angle Pin Header Assemblies with Hybrid Contact Cavities** (Continued)

**4 Hybrid Cavity Connectors<sup>1</sup>**

No. of Box Contact Pos.	Dimensions				Part No. <sup>2</sup>	RoHS Part No. <sup>3</sup>
	A	B	C	D		
120	7.855 199.52	7.565 192.15	5.900 149.86	.200 5.08	1-533182-0	—
80	5.855 148.72	5.565 141.35	3.900 99.06	.200 5.08	—*	—
70	5.355 136.02	5.065 128.65	3.400 86.36	.200 5.08	—*	—
40	3.855 97.92	3.565 90.55	1.900 48.26	.200 5.08	533182-3	5-533182-3
30	3.355 85.22	3.065 77.85	1.400 35.56	.200 5.08	—*	—

**6 Hybrid Cavity Connectors<sup>1</sup>**

No. of Box Contact Pos.	Dimensions				Part No.
	A	B	C	D	
112	7.855 199.52	7.565 192.15	5.500 139.7	.400 10.16	—*
102	7.355 186.82	7.065 179.45	5.000 127.0	.400 10.16	—*
92	6.855 174.12	6.565 166.75	4.500 114.3	.400 10.16	—*
82	6.355 161.42	6.065 154.05	4.000 101.6	.400 10.16	—*
72	5.855 148.72	5.565 141.35	3.500 88.9	.400 10.16	—*
62	5.355 136.02	5.065 128.65	3.000 76.2	.400 10.16	533637-5
52	4.855 123.32	4.565 115.95	2.500 63.5	.400 10.16	—*
42	4.355 110.62	4.065 103.25	2.000 50.8	.400 10.16	—*
32	3.855 97.92	3.565 90.55	1.500 38.1	.400 10.16	—*
22	3.355 85.22	3.065 77.85	1.000 25.4	.400 10.16	—*

**8 Hybrid Cavity Connectors<sup>1</sup>**

No. of Box Contact Pos.	Dimensions				Part No.
	A	B	C	D	
104	7.855 199.52	7.565 192.15	5.100 129.54	.600 15.24	—*
94	7.355 186.82	7.065 179.45	4.600 116.84	.600 15.24	533171-2
84	6.855 174.12	6.565 166.75	4.100 104.14	.600 15.24	—*
74	6.355 161.42	6.065 154.05	3.600 91.44	.600 15.24	—*
64	5.855 148.72	5.565 141.35	3.100 78.74	.600 15.24	533171-5
54	5.355 136.02	5.065 128.65	2.600 66.04	.600 15.24	—*
44	4.855 123.32	4.565 115.95	2.100 53.34	.600 15.24	—*
34	4.355 110.62	4.065 103.25	1.600 40.64	.600 15.24	533171-8
24	3.855 97.92	3.565 90.55	1.100 27.94	.600 15.24	—*
14	3.355 85.22	3.065 77.85	.600 15.24	.600 15.24	1-533171-0

<sup>1</sup>These pin header assemblies accept coaxial contacts—Vertical Cable Pin 227604-1 and Right-Angle Printed Circuit Board Mount Pin 227602-1.

<sup>2</sup>See Material and Finish on previous page.

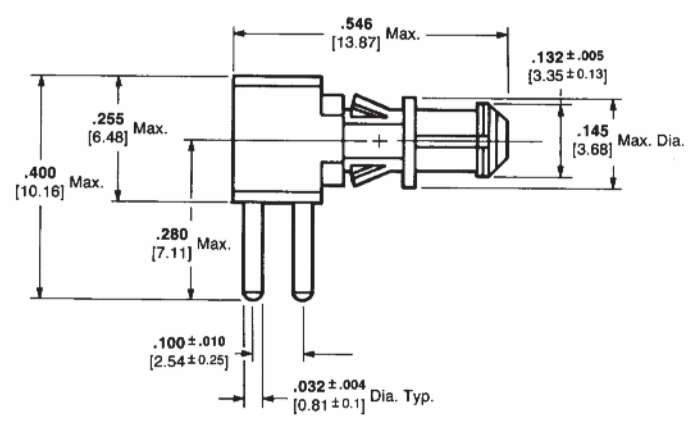
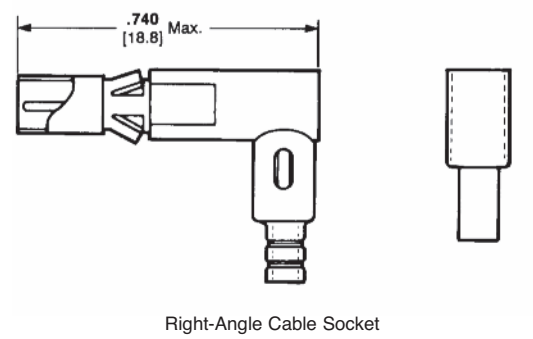
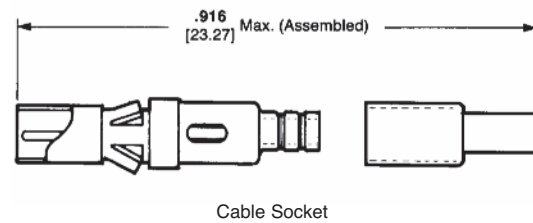
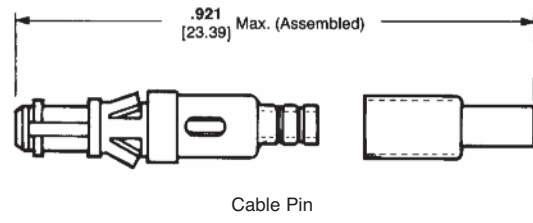
<sup>3</sup>See Material and Finish for RoHS Part Numbers on previous page.

\* Part Numbers available upon request, contact TE Connectivity.

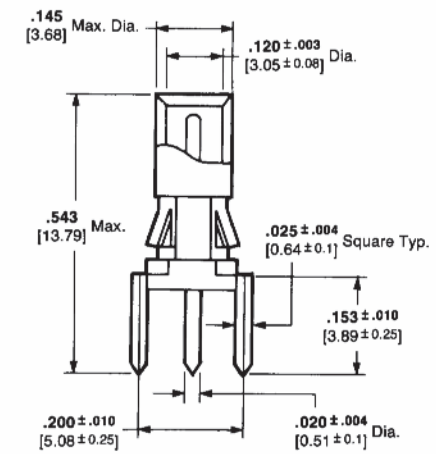


Printed Circuit Board Connectors

**Microminiature COAXICON Contacts for Hybrid Cavities**



Right-Angle Pin  
for PC Board Application  
Part Number 227602-1  
Plated .000030 [0.00076] gold



Vertical Socket  
for PC Board Application  
Part Number 227603-1

Cable Size	Contact Style	Part No.	Application Tool Part No.
	Cable Pin	227604-1	
RG 178/U Double Braid	Cable Socket	227605-1	220215-1
RG 196/U	Right-Angle Cable Socket	227606-1	

Extraction Tool Part Number 220216-1

**Notes:**

- Center contacts are plated with .000030 [0.00076] gold.
- For .125 [3.18] maximum thick PC boards.

**Electrical Characteristics**

- Nominal Impedance — 50 ohms
- Frequency Range — 0-2 GHz
- Maximum Operating Voltage (Sea Level) — 150 VAC RMS

**Mechanical Characteristics**

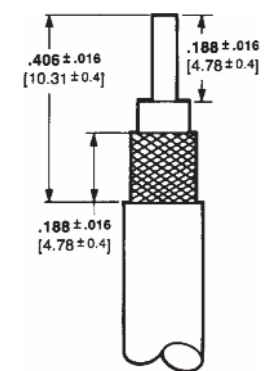
- Operating Temperature Range — -55°C to +125°C
- Cable Retention — 15 lb. [66.7N] min. (RG 178 type double braid)

**Contact Materials**

- Stainless Steel — QQ-S-766
- Gold Plate — MIL-G-45204
- Nickel Plate — QQ-N-290
- Beryllium Copper — QQ-C-530
- PTFE — MIL-P-19468A
- Brass — QQ-B-626

**Ferrule Material**

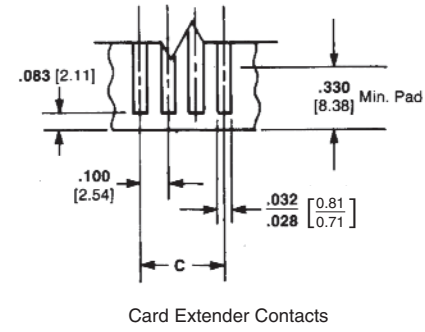
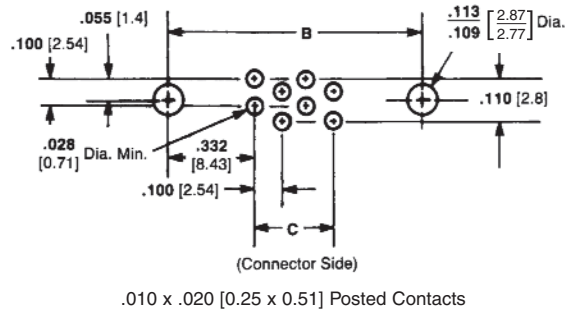
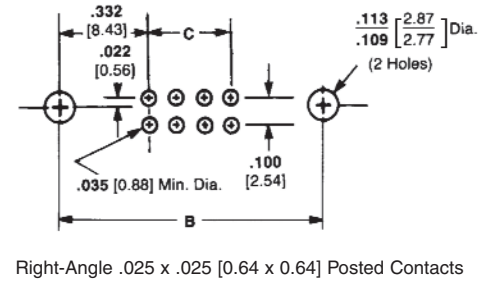
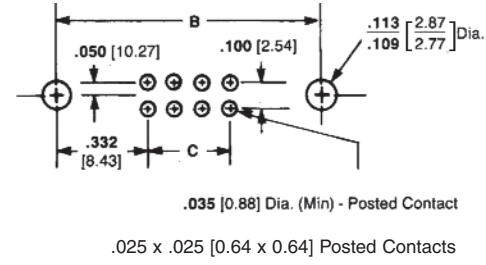
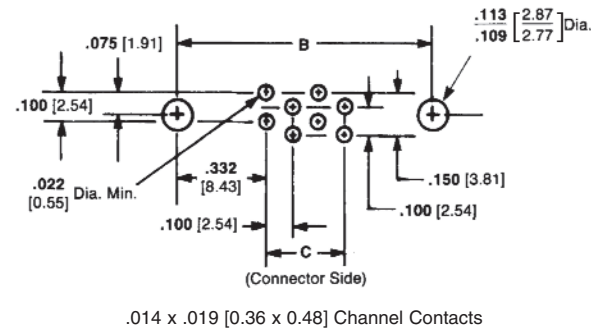
- Brass — MIL-C-50, tin plate per MIL-T-10727



Recommended Strip Length

**Recommended Printed Circuit Board Layouts**

**Receptacle Assemblies**



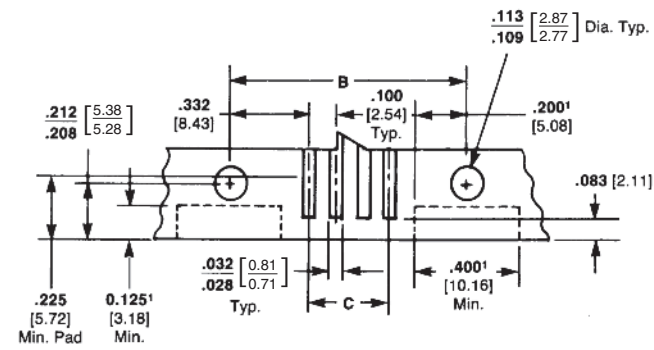
Printed Circuit Board Connectors

No. of Pos.	Dimensions	
	B	C
140	7.565 192.15	6.900 175.26
134	7.265 184.53	6.600 167.64
130	7.065 179.45	6.400 162.56
120	6.565 166.75	5.906 149.86
110	6.065 154.05	5.400 137.16
100	5.565 141.35	4.900 124.46
90	5.065 128.65	4.400 111.76
80	4.565 115.95	3.900 99.06
70	4.065 103.25	3.400 86.36
60	3.565 90.55	2.900 73.66
50	3.065 77.85	2.400 60.96
40	2.565 65.15	1.900 48.26
30	2.065 52.45	1.400 35.56



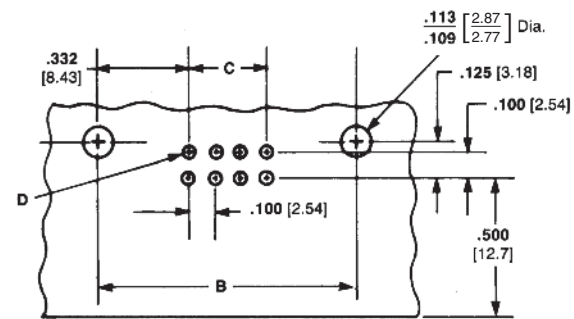
**Recommended Printed Circuit Board Layouts** (Continued)

**Pin Header Assemblies**



<sup>1</sup>Optional cut-out for keying after connector is mounted.

**Straddle Mount Assembly**



D = Right-Angle Flow Solder - .035 [0.88] Dia. (Min.)  
Wrap-Type Posts - .045 [1.14] Dia. (Min.)

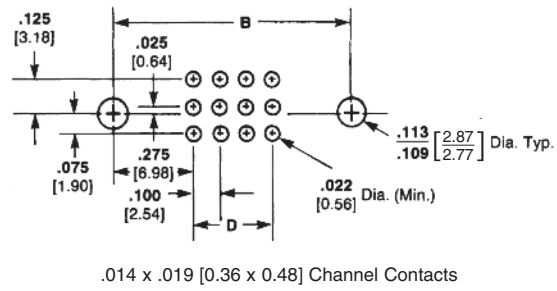
**Right-Angle Flow Solder and Wrap-Type Posted Contacts**

**Note:** These drawings are for reference only. Consult TE Connectivity for board layout details.

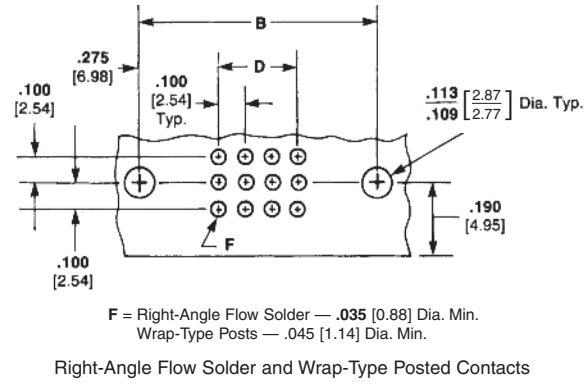
No. of Pos.	Dimensions	
	B	C
140	7.565 192.15	6.900 175.26
134	7.265 184.53	6.600 167.64
130	7.065 179.45	6.400 162.56
120	6.565 166.75	5.906 149.86
110	6.065 154.05	5.400 137.16
100	5.565 141.35	4.900 124.46
90	5.065 128.65	4.400 111.76
80	4.565 115.95	3.900 99.06
70	4.065 103.25	3.400 86.36
60	3.565 90.55	2.900 73.66
50	3.065 77.85	2.400 60.96
40	2.565 65.15	1.900 48.26
30	2.065 52.45	1.400 35.56

**3-Row Assembly Recommended Printed Circuit Board Layouts**

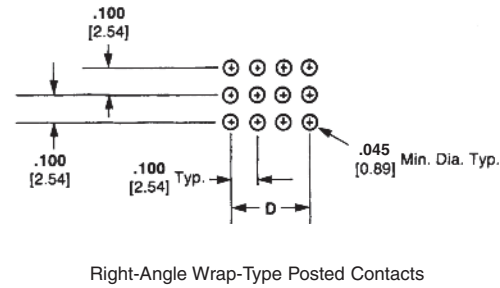
**Receptacle Assemblies**



**Pin Header Assemblies**



**Note:** These drawings are for reference only. Consult TE Connectivity for board layout details.

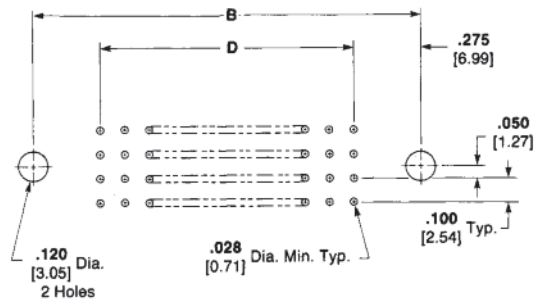


Printed Circuit Board Connectors

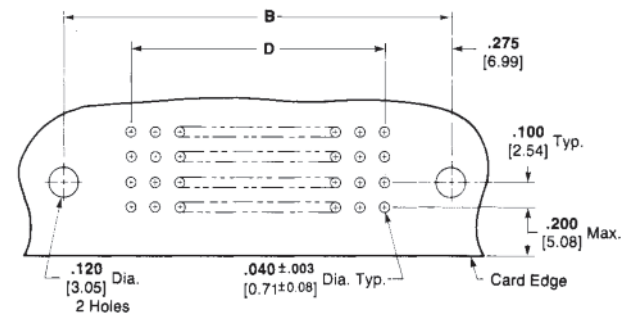
No. of Pos.	Dimensions	
	B	D
300	10.450	9.900
	265.43	251.46
270	9.450	8.900
	240.03	226.06
240	8.450	7.900
	214.63	200.66
210	7.450	6.900
	189.23	175.26
180	6.450	5.900
	163.83	149.86
165	5.950	5.400
	151.13	137.16
150	5.450	4.900
	138.43	124.46
126	4.650	4.100
	118.11	104.14
123	4.550	4.000
	115.57	101.6
120	4.450	3.900
	113.03	99.06
105	3.950	3.400
	100.33	86.36
90	3.450	2.900
	87.63	73.66

**4-Row Assembly Recommended Printed Circuit Board Layouts**

**Receptacle Assemblies**



**Pin Header Assemblies**

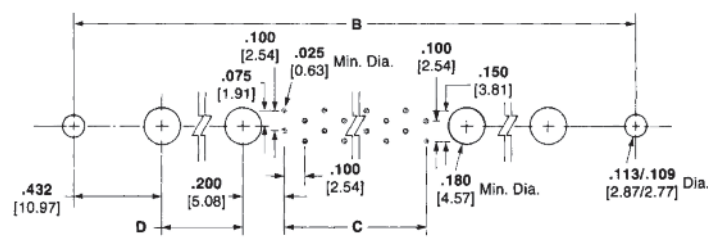


No. of Pos.	Dimensions	
	B	D
300	7.950	7.400
	201.93	187.96
292	7.750	7.200
	196.85	182.88
280	7.450	6.900
	189.23	175.26
268	7.150	6.600
	181.61	167.64
260	6.950	6.400
	176.53	162.56
240	6.450	5.900
	163.83	149.86
232	6.250	5.700
	158.75	144.78
220	5.950	5.400
	151.13	137.16
216	5.850	5.300
	148.59	134.62
200	5.450	4.900
	138.43	124.46
192	5.250	4.700
	133.35	119.38
180	4.950	4.400
	125.73	111.76
168	4.650	4.100
	118.11	104.14
160	4.450	3.900
	113.03	99.06
152	4.250	3.700
	107.95	93.98
140	3.950	3.400
	100.33	86.36
128	3.650	3.100
	92.71	78.74
120	3.450	2.900
	87.63	73.66
100	2.950	2.400
	74.93	60.96
68	2.150	1.600
	54.60	40.64
40	1.450	.900
	36.83	22.86

**Hybrid Contacts Recommended Printed Circuit Board Layouts**

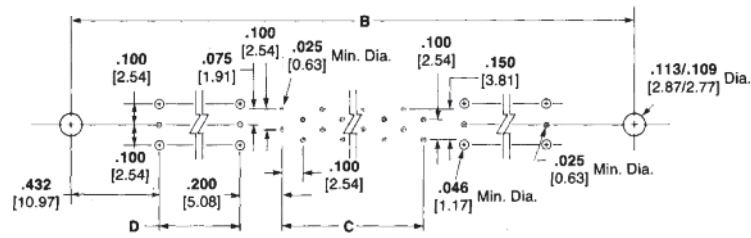
**Receptacle Assemblies with Hybrid Contacts**

**With Cable**



.014 x .019 [0.36 x 0.48] Channel Contacts with Hybrid Printed Circuit Board Mount Sockets

**With Solder Terminations**



.014 x .019 [0.36 x 0.48] Channel Contacts with Vertical Coaxial Printed Circuit Board Mount Sockets



Printed Circuit Board Connectors

**2 Hybrid Contact Connectors**

No. of Box Contact Pos.	Dimensions	
	B	C
128	7.565 192.15	6.300 160.02
122	7.265 184.53	6.000 152.4
118	7.065 179.45	5.800 147.32
108	6.565 166.75	5.300 134.62
98	6.065 154.05	4.800 121.92
88	5.565 141.35	4.300 109.22
78	5.065 128.65	3.800 96.52
68	4.565 115.95	3.300 83.82
58	4.065 103.25	2.800 71.12
48	3.565 90.55	2.300 58.42
38	3.065 77.85	1.800 45.72
28	2.565 65.15	1.300 33.02
18	2.065 52.45	.800 20.32

**4 Hybrid Contact Connectors**

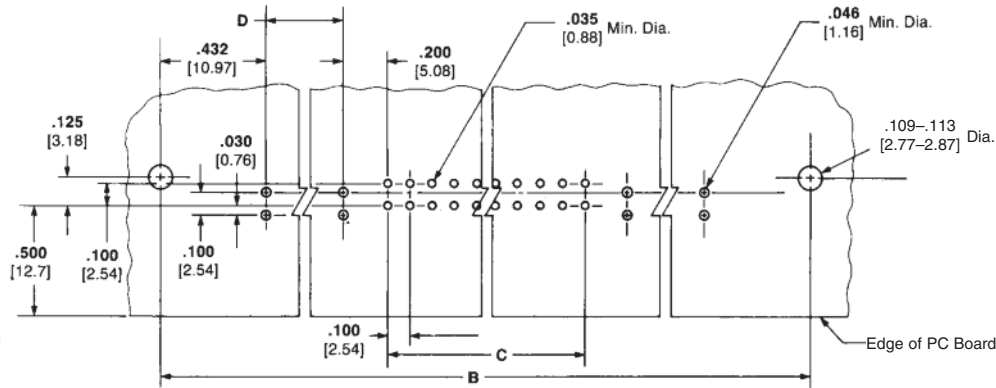
No. of Box Contact Pos.	Dimensions		
	B	C	D
120	7.565 192.15	5.900 149.86	.200 5.08
110	7.065 179.45	5.400 137.16	.200 5.08
100	6.565 166.75	4.900 124.46	.200 5.08
90	6.065 154.05	4.400 111.76	.200 5.08
80	5.565 141.35	3.900 99.06	.200 5.08
70	5.065 128.65	3.400 86.36	.200 5.08
60	4.565 115.95	2.900 73.66	.200 5.08
50	4.065 103.25	2.400 60.96	.200 5.08
40	3.565 90.55	1.900 48.26	.200 5.08
30	3.065 77.85	1.400 35.56	.200 5.08

**6 Hybrid Contact Connectors**

No. of Box Contact Pos.	Dimensions		
	B	C	D
112	7.565 192.15	5.500 139.7	.400 10.16
102	7.065 179.45	5.000 127.0	.400 10.16
92	6.565 166.75	4.500 114.3	.400 10.16
82	6.065 154.05	4.000 101.6	.400 10.16
72	5.565 141.35	3.500 88.9	.400 10.16
62	5.065 128.65	3.000 76.2	.400 10.16
52	4.565 115.95	2.500 63.5	.400 10.16
42	4.065 103.25	2.000 50.8	.400 10.16
32	3.565 90.55	1.500 38.1	.400 10.16
22	3.065 77.85	1.000 25.4	.400 10.16

Hybrid Contacts Recommended Printed Circuit Board Layouts (Continued)

Pin Header Assemblies with Hybrid Cavities



2 Hybrid Contact Connectors

No. of Box Contact Pos.	Dimensions	
	B	C
128	7.565 192.15	6.300 160.02
122	7.265 184.53	6.000 152.4
118	7.065 179.45	5.800 147.32
108	6.565 166.75	5.300 134.62
98	6.065 154.05	4.800 121.92
88	5.565 141.35	4.300 109.22
78	5.065 128.65	3.800 96.52
68	4.565 115.95	3.300 83.82
58	4.065 103.25	2.800 71.12
48	3.565 90.55	2.300 58.42
38	3.065 77.85	1.800 45.72
28	2.565 65.15	1.300 33.02
18	2.065 52.45	.800 20.32

6 Hybrid Contact Connectors

No. of Box Contact Positions	Dimensions		
	B	C	D
112	7.565 192.15	5.500 139.7	.400 10.16
102	7.065 179.45	5.000 127.0	.400 10.16
92	6.565 166.75	4.500 114.3	.400 10.16
82	6.065 154.05	4.000 101.6	.400 10.16
72	5.565 141.35	3.500 88.9	.400 10.16
62	5.065 128.65	3.000 76.2	.400 10.16
52	4.565 115.95	2.500 63.5	.400 10.16
42	4.065 103.25	2.000 50.8	.400 10.16
32	3.565 90.55	1.500 38.1	.400 10.16
22	3.065 77.85	1.000 25.4	.400 10.16

8 Hybrid Contact Connectors

No. of Box Contact Positions	Dimensions		
	B	C	D
104	7.565 192.15	5.100 129.54	.600 15.24
94	7.065 179.45	4.600 116.84	.600 15.24
84	6.565 166.75	4.100 104.14	.600 15.24
74	6.065 154.05	3.600 91.44	.600 15.24
64	5.565 141.35	3.100 78.74	.600 15.24
54	5.065 128.65	2.600 66.04	.600 15.24
44	4.565 115.95	2.100 53.34	.600 15.24
34	4.065 103.25	1.600 40.64	.600 15.24
24	3.565 90.55	1.100 27.94	.600 15.24
14	3.065 77.85	.600 15.24	.600 15.24

4 Hybrid Contact Connectors

No. of Box Contact Positions	Dimensions		
	B	C	D
120	7.565 192.15	5.900 149.86	.200 5.08
80	5.565 141.35	3.900 99.06	.200 5.08
70	5.065 128.65	3.400 86.36	.200 5.08
40	3.565 90.55	1.900 48.26	.200 5.08
30	3.065 77.85	1.400 35.56	.200 5.08



**Keying Hardware — MIL-C-55302 Qualified**

**External Keys**

**Receptacle Key**

For use with Receptacles

**Kit Part Number 530341-3**

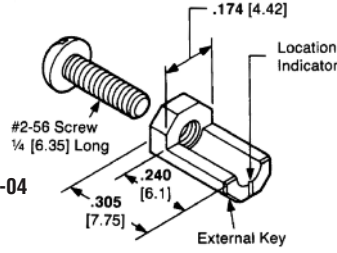
Kit includes 2 each of the following:

Keys, passivated stainless steel

**Part Number 530341-1**

**Military Part Number M55302/31-04**

Screws, #2-56 .250 [6.35] Long



**Pin Header Key**

For use with 2-row Straddle Mount Pin Headers

**Kit Part Number 530341-4<sup>1</sup>**

Kit includes 2 each of the following:

Keys, passivated stainless steel

**Part Number 530341-1**

**Military Part Number M55302/31-04**

Rivets, nickel plated brass

**Part Number 530347-1**

**Military Part Number M55302/31-05**

**Pin Header Key**

For use with 2-, 3-, and 4-row Pin Headers

**Kit Part Number 530341-5<sup>1</sup>**

Kit includes 2 each of the following:

Keys, passivated stainless steel

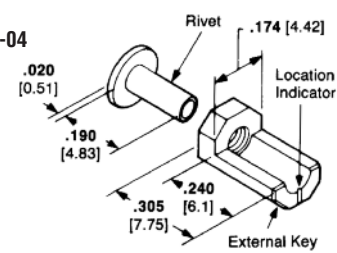
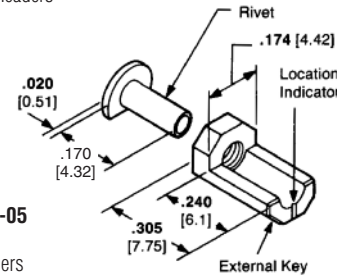
**Part Number 530341-1**

**Military Part Number M55302/31-04**

Rivets, nickel plated brass

**Part Number 530347-3**

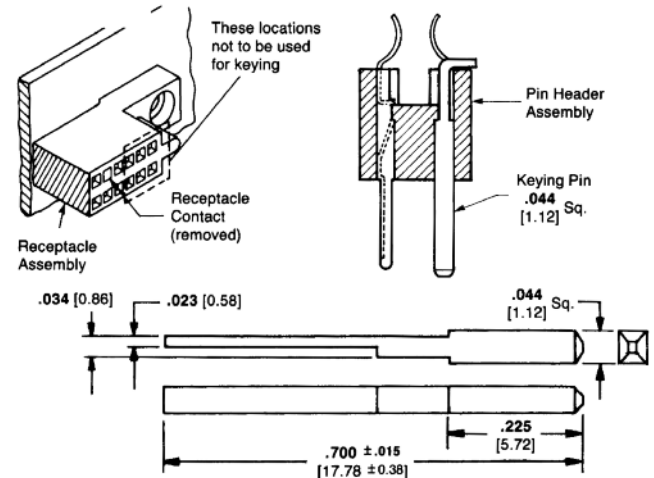
**Military Part Number M55302/31-10**



<sup>1</sup>Rivet Clinching Tools:  
2-Row Pin Headers—Tool Part Number 91117-1  
(See instruction sheet 408-7803)  
3-Row Pin Headers—Tool Part Number 91117-3  
(See instruction sheet 408-6626)  
4-Row Pin Headers—Tool Part Number 92-0800-003

**Solid Keying Pin**

Solid keying pins are for use on connectors when external keying is not used or on external keyed assemblies when more than 64 keying positions are required. Solid keying pins are not to be installed in the three dual positions at each end of the connector.



Material: Nickel plated brass  
Part Number 530328-2  
Military Part Number M55302/31-03

**Assembly Instructions:**

1. Remove pin and receptacle from desired keying locations.
2. Insert keying pin in pin header, secure by bending rear of pin over outside edge of housing, and trim excess material.

**Guide Keys**

**Guide Keying Pin and Insert**

For use with 2-row Receptacles and 2-row Straddle Mount Pin Headers

**Kit Part Number 531715-1<sup>1</sup>**

Kit includes 2 each of the following:

Guide keying pin, passivated stainless steel

**Part Number 531713-1**

Nut, #2-56

**Part Number 23174-1**

Guide keying insert, passivated stainless steel

**Part Number 531714-1**

Rivet, nickel plated brass

**Part Number 530347-9**

**Guide Keying Pin and Insert**

For use with 2- and 3-row Receptacles and Right-Angle Pin Headers

**Kit Part Number 531715-2<sup>1</sup>**

Kit includes 2 each of the following:

Guide keying pin, passivated stainless steel

**Part Number 531713-1**

Nut, #2-56

**Part Number 23174-1**

Guide keying insert, passivated stainless steel

**Part Number 531714-1**

Rivet, nickel plated brass

**Part Number 530347-8**

<sup>1</sup>Rivet Clinching Tools:

2-Row Pin Headers—Tool Part Number 91117-1  
(See instruction sheet 408-7803)

3-Row Pin Headers—Tool Part Number 91117-4  
(See instruction sheet 408-6627)

**Guide Pin/Insert**

**Guide Pin**

Passivated stainless steel

A	Part No.
.400	530345-1
10.16	—
.680	—
17.27	—
.750	530345-3
19.05	—

**Guide Insert**

Passivated stainless steel

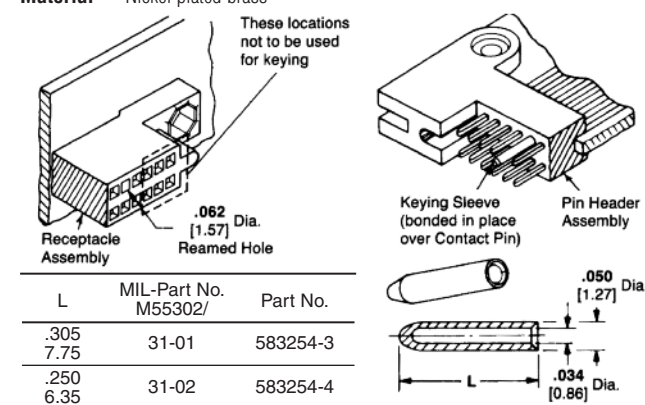
**Part Number 530346-1**

(Consult TE Connectivity for mounting recommendations)

**Keying Sleeve**

Keying sleeves, like solid keying pins, are used as an alternative to external keys or when additional keying is required. When the keying sleeve is used on the pin header, the contact must be removed from the receptacle assembly and the cavity reamed to .062 [1.57] diameter.

**Material** — Nickel plated brass



Printed Circuit Board Connectors

**Replacement Contacts — MIL-C-55302 Qualified**

**Plating Code**

Contacts are plated in various thicknesses. These thicknesses are coded in the charts as follows:

1. — .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tail over .000050 [0.00127] nickel on the entire contact.
2. — .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tail over .000050 [0.00127] nickel on the entire contact.
3. — .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tail over .000030 [0.00076] nickel on the entire contact.
4. — .000050 [0.00127] gold over .000030 [0.00076] nickel.
5. — .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tail over .000030 [0.00076] nickel on the entire contact.
6. — .000030 [0.00076] gold in the contact area, in accordance with MIL-C-55302, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact.
7. — .000050 [0.00127] gold in the contact area, in accordance with MIL-C-55302 .000100 [0.00254] tin-lead on tails over .000050 [0.00127] nickel on the entire contact.

**Contact Extraction**

**Pin Contacts**

Extraction Tool  
Part Number 91156-1

**Receptacle Contacts**

Extraction Tool  
Part Number 91035-1  
Military Part Number M81969/9-01



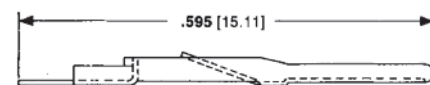
**Posted Receptacle Contacts**

Contact for Rack Mounting  
Extraction Tool  
Part Number 1-265871-7  
(Extraction Tool Instruction sheet 408-2636)

**Contact for PC Board**

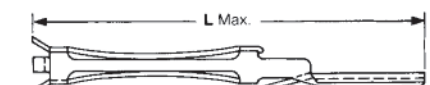
No tool needed — After de-soldering, extract by pressing on post end of contact.

**Pin Contacts**

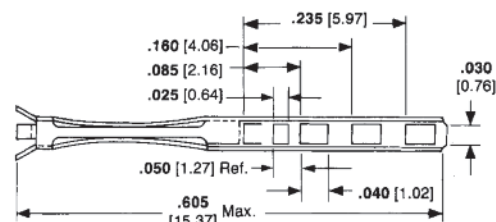


For Straddle Mount Pin Headers

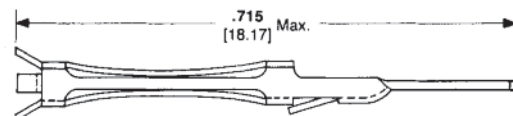
**Receptacle Contacts**



.014 x .019 [0.36 x 0.48]  
Channel Contact



Solder Eyelet Contact  
(Max. Wire Size, 26 AWG [0.15mm])



.010 x .020 [0.25 x 0.51]  
Posted Contact<sup>1</sup>

<sup>1</sup>.010 x .020 [0.25 x 0.51] posted contacts are used as replacement contacts in card extender assemblies.

Plating Code	AMP Part No.
1	202947-2
2	202947-3

Plating Code	AMP Part No.
3	202946-1
4	202946-7

Plating Code	AMP Part No.	
	2-Row Connectors	3-Row Connectors
5	202946-7	202946-5
6	202946-1	202946-2

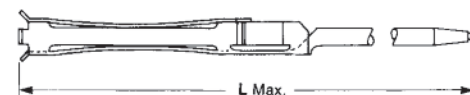
L Length Equals .540 Max. for 2-Row .619 Max for 3-Row

Plating Code	MIL-Part No.	AMP Part No.
5	—	—
6	—	—
7	M55302/32-01	583218-3

For 2-Row Only

Plating Code	AMP Part No.
3	583452-4
5	1-583452-9

**Posted Receptacle Contacts**



Wrap-Type Contact for Rack Mounting  
Double Latch .025 x .025 [0.64 x 0.64] Post



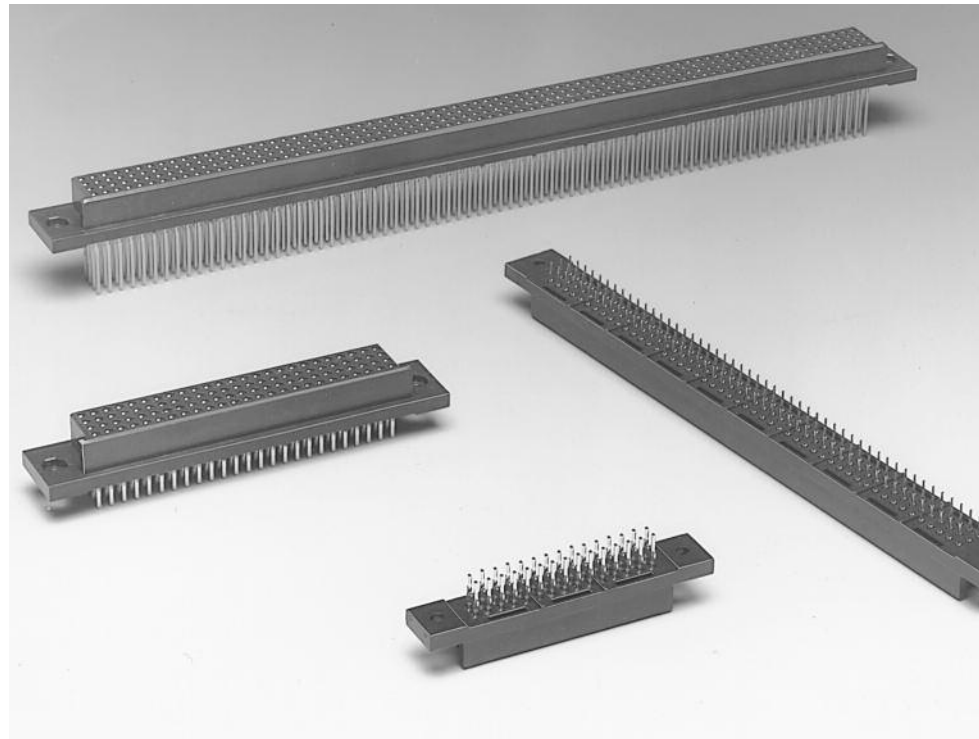
Wrap-Type Contact for PC Mounting  
Single Latch .022 x .027 [0.56 x 0.69] Post

No. Terminations	Dim. L	For Rack Mount (Double Latch)		For PC Mount (Single Latch)			
		Plating Code 3	Plating Code 4	Plating Code 3	Plating Code 4		
		Part No.	MIL-Part No.	Part No.	Part No.		
1 High	.795 20.0	446629-6	M55302/32-05	1-446629-4	—	M55302/32-02	2-583812-6
2 High	.955 24.26	446629-9	M55302/32-06	1-446629-6	—	M55302/32-03	2-583812-8
3 High	1.115 28.32	1-446629-2	M55302/32-07	1-446629-8	583812-9	M55302/32-04	3-583812-0

**Vertical Receptacles with ACTION PIN Posts and Solder Post Contacts**

**Product Facts**

- Horizontal motherboard stacking capability
- Mateable with AMP-HDI pin assemblies
- 4-beam box-type receptacle contact design provides four areas of contact per connection
- Available with ACTION PIN contacts or solder posts
- Inserts into standard .100 [2.54] grid
- Keying system provides 64 combinations without loss of contact count
- High temperature material permits vapor phase reflow soldering
- Low mating forces
- Highly economical for quality and density
- Product Specification 108-9003



Printed Circuit Board Connectors

TE Connectivity vertical receptacle assemblies, when mated with AMP-HDI pin assemblies, permit horizontal stacking of motherboards. They are available with two, three or four rows of contacts on a .100 [2.54] grid and with a choice of either ACTION PIN posts or solder posts.

The required PC board hole sizes and patterns of these receptacle assemblies allow space-efficient circuitry layout. The box-type, quad redundant receptacle contacts with selective gold plating in the contact area deliver high reliability while maintaining low mating force.

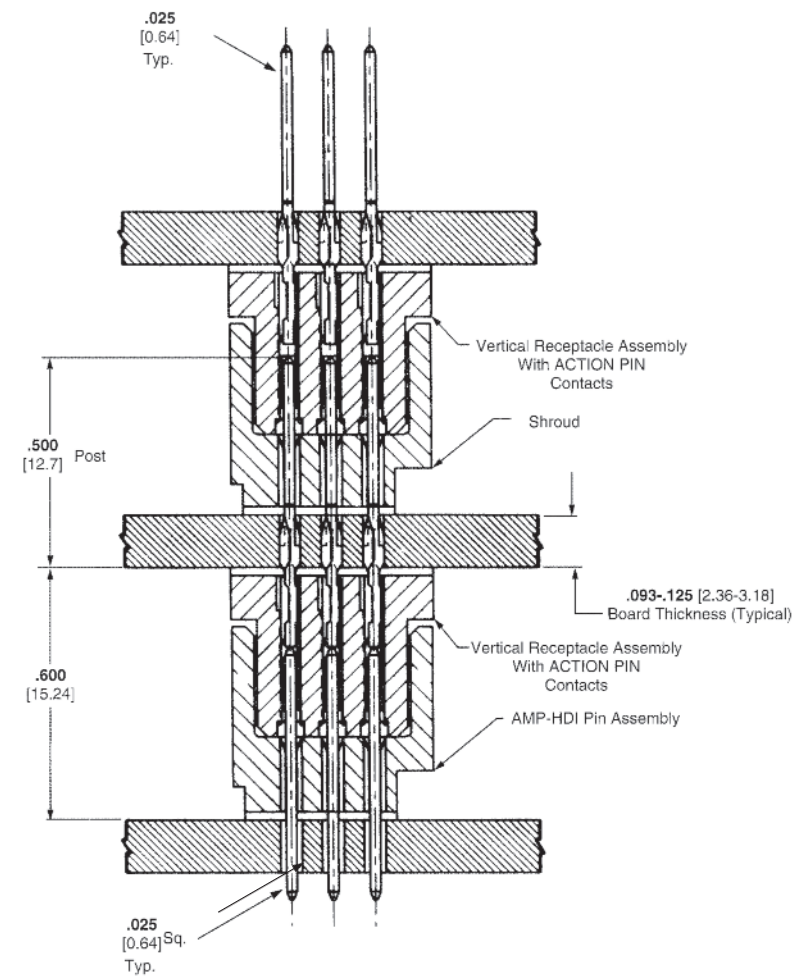
In addition, contact and housing configurations prevent pin damage if a long connector is “peeled” apart from one end.

Features such as 64-combination keying and high temperature housing materials add to the appeal of TE vertical receptacle assemblies.

These connectors are highly specialized products for applications demanding their unusual characteristics.

**Horizontal Motherboard Stacking  
(Not Recommended for MFBL Applications)**

Multiple stacking of motherboards on backplanes is readily achieved using TE Connectivity vertical receptacle assemblies and AMP-HDI pin assemblies. This unique board-to-board interconnection concept eliminates exposed contacts inherent with open pin fields. Vertical receptacle assemblies with either ACTION PIN posts or solder posts provide the same low .600 [15.24] stack height between boards.



**Note:** The .600 [15.24] board-to-board stacking height is also achieved using vertical receptacle assemblies with solder posts.



**Four-Row Vertical Receptacle Assemblies Without Guide Holes**

**ACTION PIN Posts and Solder Posts**

**Material and Finish**

**Housing** — Brown glass-filled polyphenylene sulfide  
**Contacts** — ACTION PIN (phosphor bronze), solder (beryllium copper), plated as follows:

**A** .000030 [0.00076] gold in contact area, tin-lead on posts, with entire contact underplated .000050-.000100 [0.00127-0.00254] nickel

**B** Gold flash over .000050-.000100 [0.00127-0.00254] nickel on entire contact, with .000030 [0.00076] gold on contact area and for .200 [5.08] from tip of ACTION PIN post

**C** .000050 [0.00127-0.00254] gold in contact area, tin-lead on posts, with entire contact underplated .000050-.000100 [0.00127-0.00254] nickel

**D** RoHS Part Numbers same as A plating except for tin on posts

**Related Product Data**

**Mateable Connectors —**

**Vertical Pin Headers —**

Base numbers 533435, 533254, 533270, 532448, 532436

**90° Pin Headers —**

Base numbers 533444, 533286

Consult TE Connectivity for part number details.

**Accessories —**

**Keys** — page 1-92

**Jackscrews** — page 1-93

**PCB Hole Layouts** — page 1-88

**Application Tooling** — page 1-91

**Technical Documents —**

Product Specifications

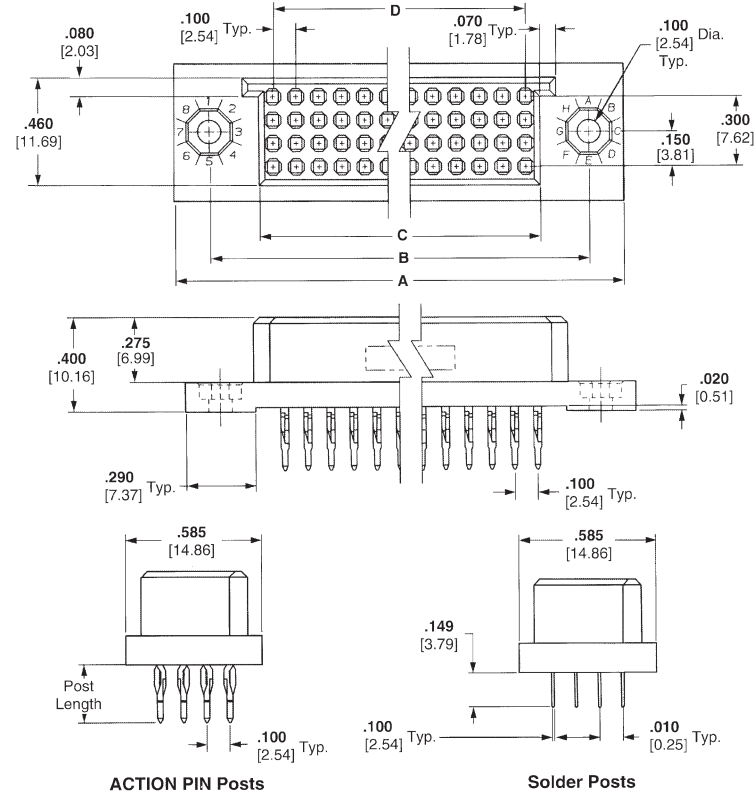
108-9069, 108-26003

Application Specification

114-9010

Instruction Sheets 408-6927,

408-6979, 408-6989, 408-9185



No. of Pos.	Dimensions				Contact Finish	Part Numbers*			
	A	B	C	D		ACTION PIN Posts		Solder Posts	
						.500 [12.7] Length	.250 [6.35] Length	.149 [3.78] Length	.180 [4.57] Length
300	8.250 209.55	7.950 201.93	7.524 191.11	7.400 187.95	A	—	1-533427-2	1-533285-2	—
					B	1-533656-2	—	—	
					D	—	—	6-533285-2	
280	7.750 196.85	7.450 189.23	7.024 178.41	6.900 175.26	A	—	—	1-533285-1	—
					D	—	—	—	
					D	—	—	6-533285-0	
260	7.250 184.15	6.950 176.53	6.524 165.71	6.400 162.56	A	—	1-533427-0	1-533285-0	—
					D	—	—	—	
					D	—	—	6-533285-0	
240	6.750 171.45	6.450 163.83	6.024 153.01	5.900 149.86	A	—	533427-9	533285-9	—
					B	533656-9	—	—	
					D	—	—	5-533285-9	
232	6.550 166.37	6.250 158.75	5.824 147.93	5.700 144.78	A	—	—	—	533499-2
					D	—	—	—	5-533499-2
					D	—	—	—	
216	6.150 156.21	5.850 148.59	5.424 137.77	5.300 134.62	A	—	—	—	533499-1
					D	—	—	—	5-533499-1
					D	—	—	—	
200	5.750 146.05	5.450 138.43	5.024 127.61	4.900 124.46	A	—	—	533285-7	—
					B	533656-7	—	—	
					D	—	—	5-533285-7	
180	5.250 133.35	4.950 125.73	4.524 114.91	4.400 111.76	B	533656-6	—	533285-6	—
					D	—	—	5-533285-6	
					D	—	—	—	
160	4.750 120.65	4.450 113.03	4.024 102.21	3.900 99.06	A	—	533427-5	533285-5	533492-1
					C	—	—	650844-1	—
					D	—	—	5-533285-5	
140	4.250 107.95	3.950 100.33	3.524 89.51	3.400 86.36	A	—	—	533285-4	—
					D	—	—	—	
					D	—	—	—	
128	3.950 100.33	3.650 92.71	3.224 81.89	3.100 78.74	A	—	533427-3	533285-3	—
					D	—	—	5-533285-3	
					D	—	—	—	
100	3.250 82.55	2.950 74.93	2.524 64.11	2.400 60.96	A	533694-1	533427-1	533285-1	—
					B	533656-1	—	—	
					D	—	—	5-533285-1	

\*Other connector sizes and solder post lengths can be made available. Consult TE Connectivity.



Printed Circuit Board Connectors

**Four-Row Vertical Receptacle Assemblies Without Guide Holes** (Continued)

**Material and Finish**

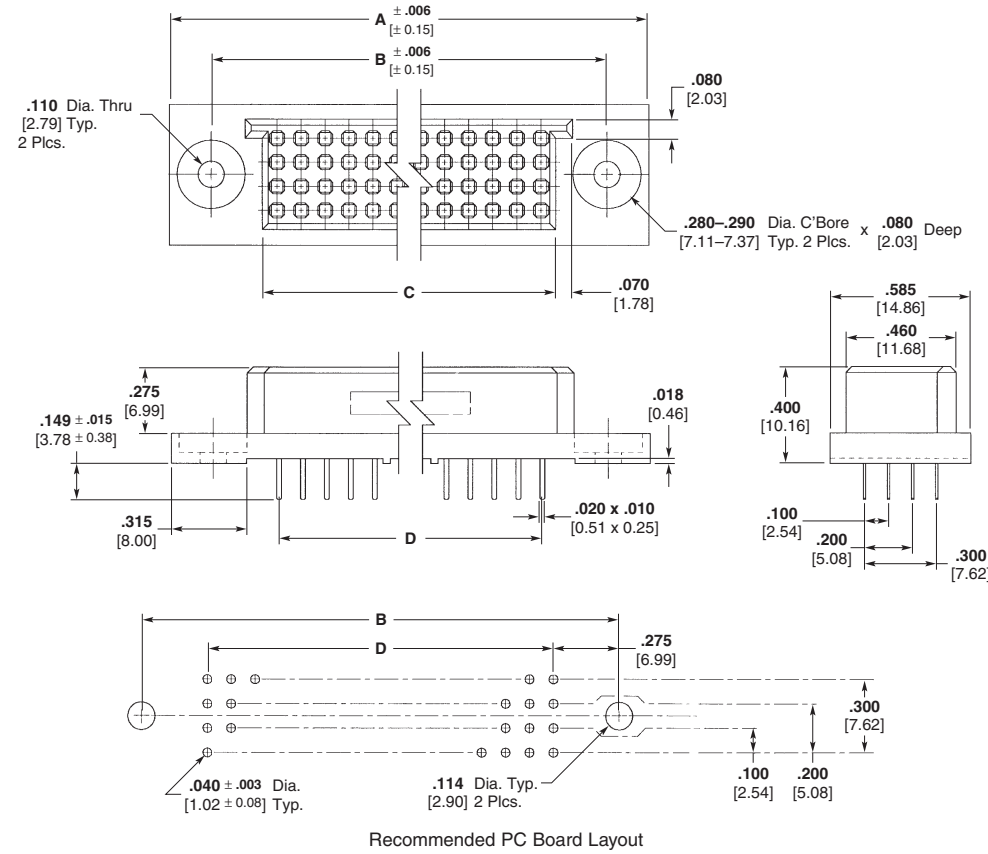
**Housing** — Natural (brown)  
polyphenylene sulfide

**Contacts** — Beryllium copper,  
.000050–.000100 [0.00127–0.00254]  
nickel underplate over .000030  
[0.00076] gold in contact area, tin-lead  
plated solder tails

**Solder Posts .149 [3.78] Length**  
**Mounting Ears Have .285 [7.24] C'Bore x .080 [2.03] Deep**

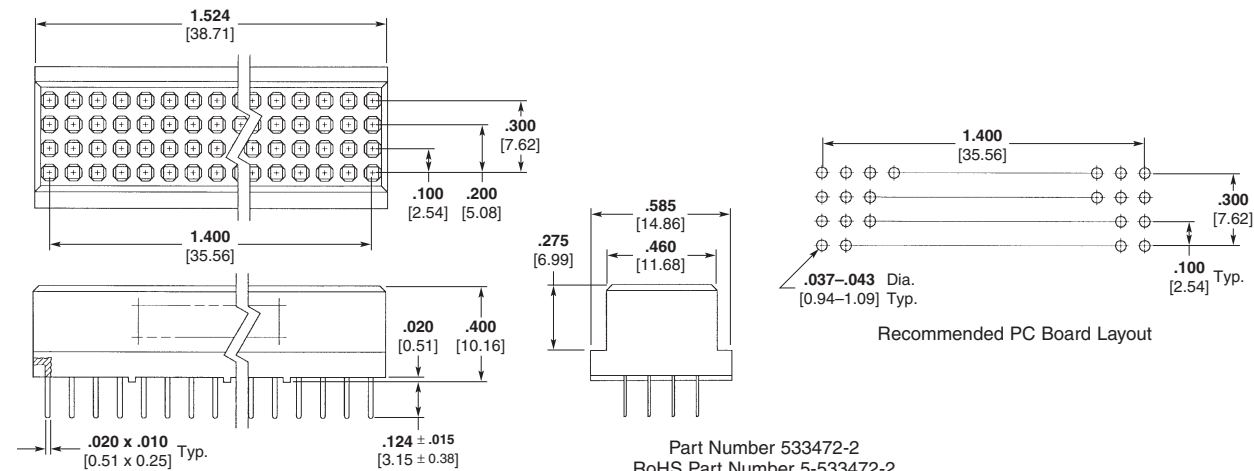
No. of Pos.	Dimensions				Contact Finish	Part No.
	A	B	C	D		
192	5.600 142.24	5.450 133.35	4.824 122.53	4.700 119.38	A	533484-1
68	2.500 63.50	2.150 54.61	1.724 43.79	1.600 40.64	A	533484-2

**With Special Mounting Ears**



Recommended PC Board Layout

**Without Mounting Ears**



Part Number 533472-2  
RoHS Part Number 5-533472-2  
60 Position



**Three-Row Vertical Receptacle Assemblies Without Guide Holes**

**ACTION PIN Posts and Solder Posts**

**Material and Finish**

**Housing** — Brown glass-filled polyphenylene sulfide  
**Contacts** — ACTION PIN (phosphor bronze), solder (beryllium copper), plated as follows:

**A** .000030 [0.00076] gold in contact area; tin-lead on posts, with entire contact underplated .000050-.000100 [0.00127-0.00254] nickel

**B** Gold flash over .000050-.000100 [0.00127-0.00254] nickel on entire contact, with .000030 [0.00076] gold on contact area and for .200 [5.08] from tip of ACTION PIN post

**C** RoHS Part Numbers same as A plating except for tin on posts

**Related Product Data**

**Mateable Connectors** —

**Vertical Pin Headers** —

Base numbers 532432, 533061, 533093, 532447, 532433

**90° Pin Headers** —

Base numbers 533420, 533288

Consult TE Connectivity for part number details.

**Accessories** —

**Keys** — page 1-92

**Jackscrews** — page 1-93

**PCB Hole Layouts** — page 1-89

**Application Tooling** — page 1-91

**Technical Documents** —

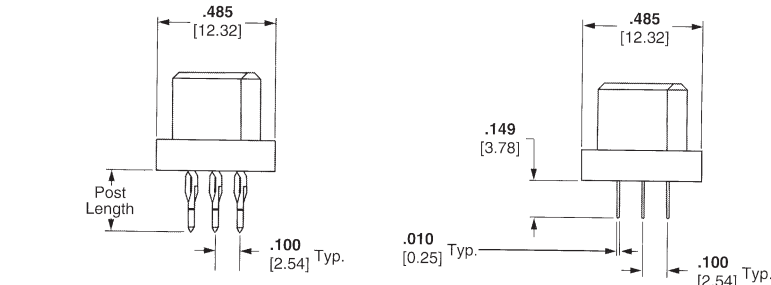
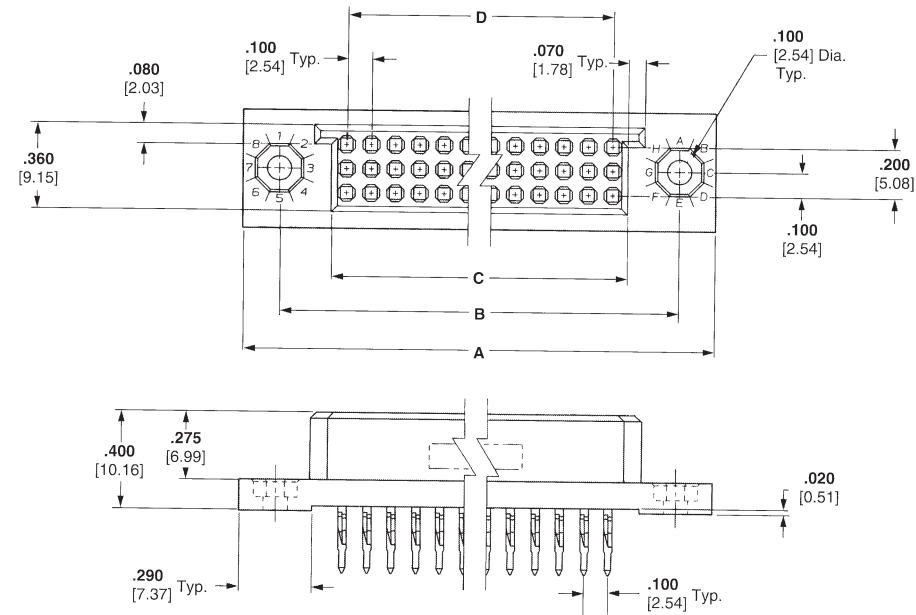
Product Specifications

108-9069, 108-26003

Application Specification 114-9010

Instruction Sheets 408-6927,

408-6981, 408-6989, 408-9185



**ACTION PIN Posts**

**Solder Posts**



Printed Circuit Board Connectors

No. of Pos.	Dimensions				Contact Finish	Part Numbers*		
	A	B	C	D		ACTION PIN Posts		Solder Posts
						.250 [6.35] Length	.149 [3.78] Length	.180 [4.57] Length
174	6.550	6.250	5.824	5.700	A	—	—	533495-3
	166.37	158.75	147.93	144.78	C	—	—	5-533495-3
150	5.750	5.450	5.024	4.900	A	533657-7	533287-7	—
	146.05	138.43	127.61	124.46	B	—	—	533495-2
					C	—	5-533287-7	5-533495-2
120	4.750	4.450	4.024	3.900	A	533657-5	533287-5	—
105	4.250	3.950	3.524	3.400	A	—	533287-4	—
	101.95	100.33	89.51	86.36	C	—	5-533287-4	—
96	3.950	3.650	3.224	3.100	A	—	533287-3	—
	100.33	92.71	81.89	78.74	C	—	5-533287-3	—

\*Other connector sizes and solder post lengths can be made available, consult TE Connectivity.

### Two-Row Vertical Receptacle Assemblies Without Guide Holes

#### ACTION PIN Posts and Solder Posts

##### Material and Finish

**Housing** — Brown glass-filled polyphenylene sulfide

**Contacts** — ACTION PIN (phosphor bronze), solder (beryllium copper), plated as follows:

**A** .000030 [0.00076] gold in contact area, tin-lead on posts, with entire contact underplated .000050-.000100 [0.00127-0.00254] nickel

**B** Gold flash over .000050-.000100 [0.00127-0.00254] nickel on entire contact, with .000030 [0.00076] gold on contact area and for .200 [5.08] from tip of ACTION PIN post

**C** RoHS Part Numbers same as A plating except for tin on posts

##### Related Product Data

###### Mateable Connectors —

###### Vertical Pin Headers —

Base numbers 533060, 532446, 532430, 532091, 532430

###### 90° Pin Headers —

Base numbers 533515, 533295

Consult TE Connectivity for part number details.

###### Accessories —

**Keys** — page 1-92

**Jackscrows** — page 1-93

**PCB Hole Layouts** — page 1-89

**Application Tooling** — page 1-91

###### Technical Documents —

Product Specifications

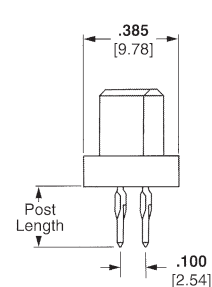
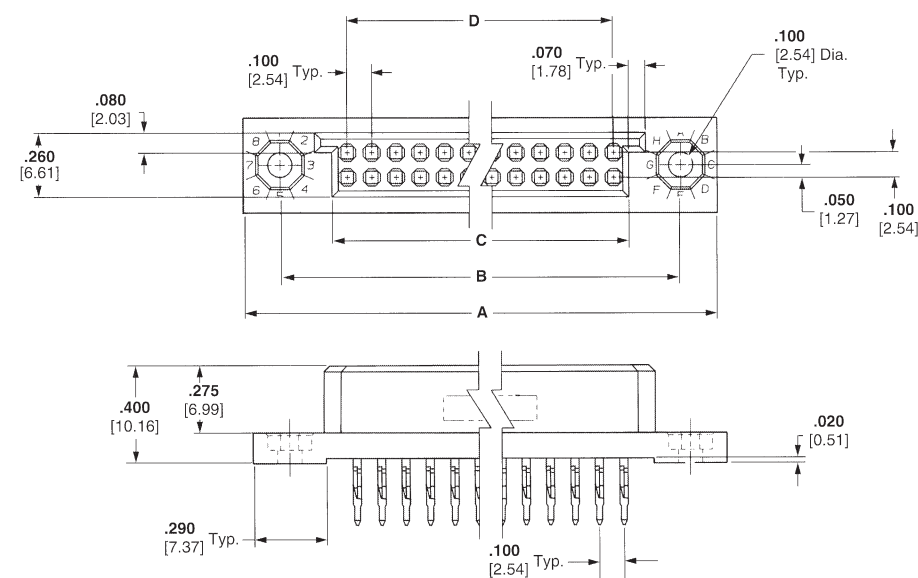
108-9069, 108-26003

Application Specification

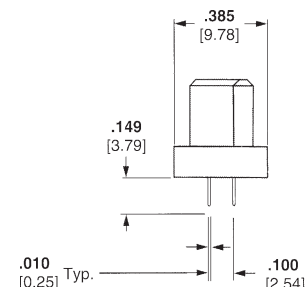
114-9010

Instruction Sheets 408-6927,

408-6980, 408-6989, 408-9185



ACTION PIN Posts



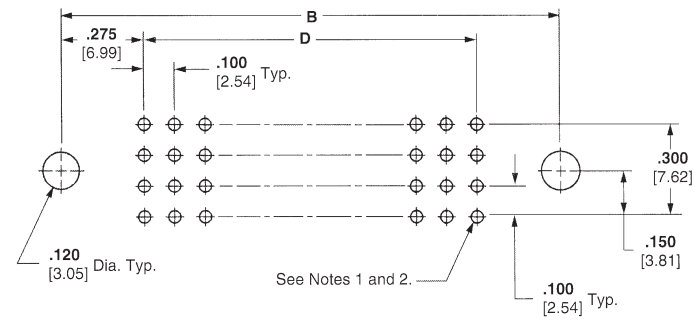
Solder Posts

No. of Pos.	Dimensions				Contact Finish	Part Numbers*		
	A	B	C	D		ACTION PIN Posts		Solder Posts
						.500 [12.7] Length	.250 [6.35] Length	.149 [3.78] Length
200	10.750 273.05	10.450 265.43	10.024 254.61	9.900 251.46	A	—	1-533650-9	—
80	4.750 120.65	4.450 113.03	4.024 102.21	3.900 99.06	B	533693-7	—	—
60	3.750 95.25	3.450 87.63	3.024 76.81	2.900 73.66	A	—	—	533289-5
					C	—	—	5-533289-5
40	2.750 69.85	2.450 62.23	2.024 51.41	1.900 48.26	A	533693-3	—	533289-3
20	1.750 44.45	1.450 36.83	1.024 26.10	.900 22.86	A	—	—	533289-1

\*Other connector sizes and solder post lengths can be made available, consult TE Connectivity.

**Recommended Printed Circuit Board Hole Layouts**

**Four-Row  
Receptacle Assemblies  
Without Guide Holes**



**Vertical Receptacle Assemblies  
with ACTION PIN Contacts and Solder Posts**



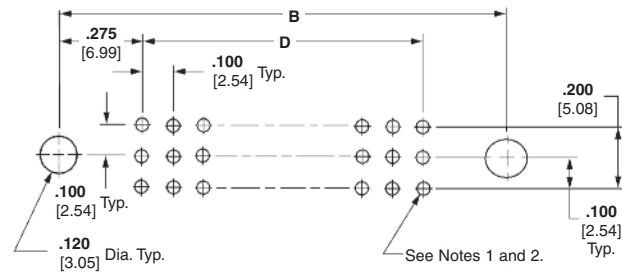
Printed Circuit Board Connectors

- Notes:** 1. ACTION PIN posts require .093 [2.36] min. thick PC board. For ACTION PIN post plated-through hole specifications, see page 1-90.  
2. Plated-through hole diameter for solder posts is .037-.043 [0.94-1.09]; recommended pad diameter is hole diameter plus .020 [0.51].

No. of Pos.	Dimensions	
	B	D
300	<b>7.950</b> 201.93	<b>7.400</b> 187.96
280	<b>7.450</b> 189.23	<b>6.900</b> 175.26
260	<b>6.950</b> 176.53	<b>6.400</b> 162.56
240	<b>6.450</b> 163.83	<b>5.900</b> 149.86
232	<b>6.250</b> 166.37	<b>5.700</b> 144.78
216	<b>5.850</b> 148.59	<b>5.300</b> 134.62
200	<b>5.450</b> 138.43	<b>4.900</b> 124.46
180	<b>4.950</b> 125.73	<b>4.400</b> 111.76
160	<b>4.450</b> 113.03	<b>3.900</b> 99.06
140	<b>3.950</b> 100.33	<b>3.400</b> 86.36
128	<b>3.650</b> 92.71	<b>3.100</b> 78.74
120	<b>3.450</b> 87.63	<b>2.900</b> 73.66
100	<b>2.950</b> 74.93	<b>2.400</b> 60.96
40	<b>1.450</b> 36.83	<b>.900</b> 22.86

**Recommended Printed Circuit Board Hole Layouts** (Continued)

**Three-Row Receptacle Assemblies  
Without Guide Holes**

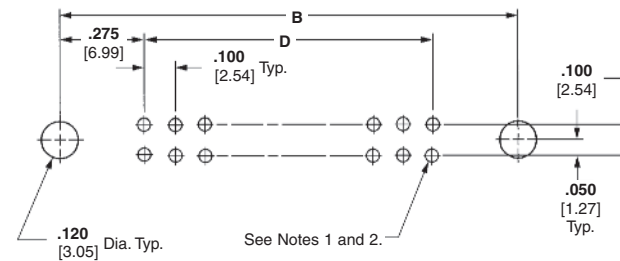


**Vertical Receptacle Assemblies  
with ACTION PIN Contacts and Solder Posts**

- Notes:** 1. ACTION PIN posts require .093 [2.36] min. thick PC board.  
For ACTION PIN post plated-through hole specifications, see page 1-90.  
2. Plated-through hole diameter for solder posts is .037-.043 [0.94-1.09];  
recommended pad diameter is hole diameter plus .020 [0.51].

No. of Pos.	Dimensions	
	B	D
174	6.250 158.75	5.700 144.78
150	5.450 138.43	4.900 124.46
120	4.450 113.03	3.900 99.06
105	3.950 100.33	3.400 86.36
96	3.650 92.71	3.100 78.74

**Two-Row Receptacle Assemblies  
Without Guide Holes**



**Vertical Receptacle Assemblies  
with ACTION PIN Contacts and Solder Posts**

- Notes:** 1. ACTION PIN posts require .093 [2.36] min. thick PC board.  
For ACTION PIN post plated-through hole specifications, see page 1-90.  
2. Plated-through hole diameter for solder posts is .037-.043 [0.94-1.09];  
recommended pad diameter is hole diameter plus .020 [0.51].

No. of Pos.	Dimensions	
	B	D
200	10.450 265.43	9.900 251.46
80	4.450 113.03	3.900 99.06
60	3.450 87.63	2.900 73.66
40	2.450 62.23	1.900 48.26
30	1.950 49.53	1.400 35.56
20	1.450 36.83	.900 22.86

**ACTION PIN Press-Fit Contacts**



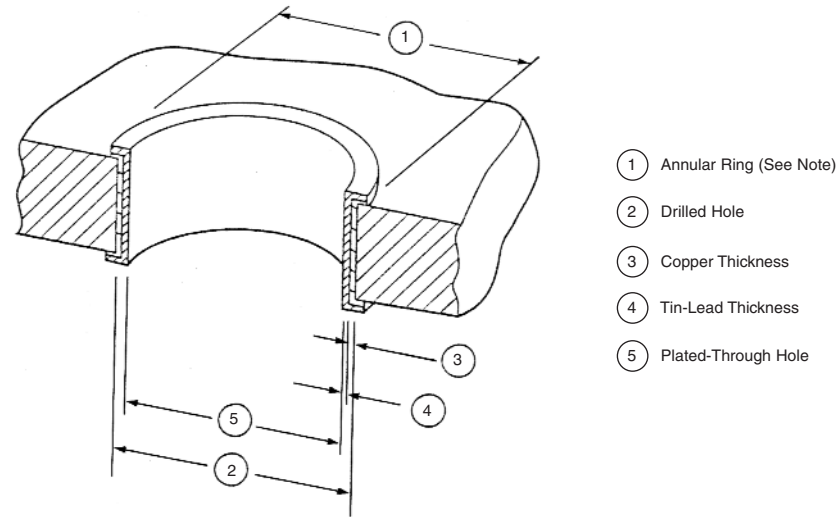
ACTION PIN contacts provide a reliable press-fit connection. Localized pressure in the interface area promotes oxide breakthrough and prevents corrosion in harsh environments to provide a reliable connection. Also, radial and axial distortion are controlled to meet today's standards for multilayer board applications.



Printed Circuit Board Connectors

**PC Board Thickness**

ACTION PIN contacts are designed for use in a variety of PC board thicknesses. However, certain ACTION PIN contacts are to be used in specific ranges of board thicknesses. For optimum performance, the recommended board thicknesses provided with the connector being used must be followed.



**ACTION PIN Contact/PC Board Applications**

Connector Type	ACTION PIN		Plating Thicknesses		Plated-Through Hole Diameter	Radial Hole Distortion	
	Contact Material Thickness	Drilled Hole Diameter	Copper *	Tin-Lead		Average	Maximum
Vertical Receptacle Assemblies	.025 0.64	.0453±.001 1.151±0.03	.001-.003 0.03-0.08	.0003 Min. 0.008	.037-.043 0.94-1.09	Not Specified	Not Specified

\*Maximum hardness of copper layer is 150 Knoop  
**Note:** Recommended annular ring diameter is hole diameter plus .020 [0.51]

### Application Tooling

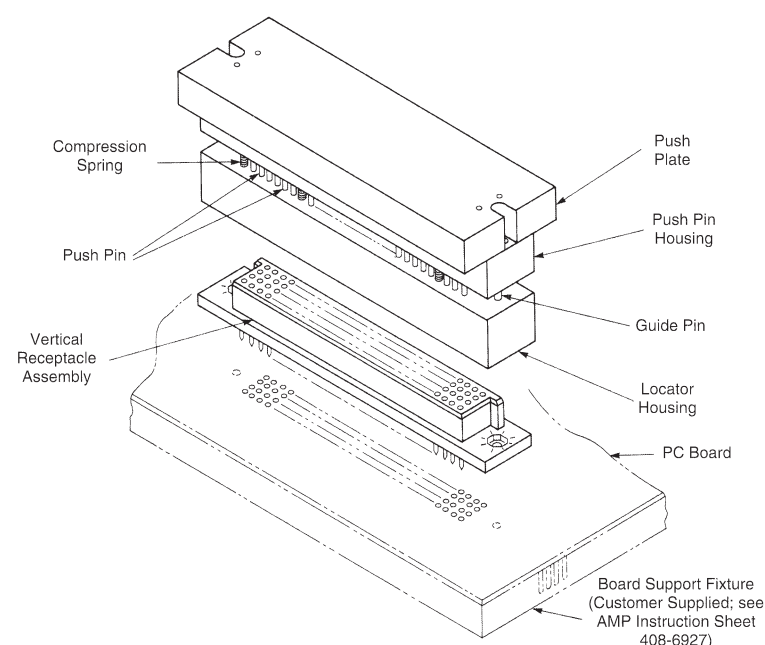
Receptacle assemblies with ACTION PIN contacts allow high speed, solderless backplane construction through reliable press-fit application. Press fitting connectors to printed circuit boards requires special seating tools which transfer application force directly to the contacts.

Each spring-loaded seating tool features a push plate, push pin housing, and locator housing. The push plate provides the bearing surface for the application tooling which forces the ACTION PIN posts into the PC board. The push pin housing holds the same number of push pins as the connector size (no. of contact positions). The locator housing fits over the connector body to align the components for proper seating. Compression springs (approximately one for every seven contacts) and guide pins (one at each end) provide tool alignment and stability.

Board support fixtures are used to support PC boards or backplanes while connectors are being assembled to the boards or backplanes. TE Connectivity Instruction Sheet 408-6927 provides recommendations for manufacturing board support fixtures.

Force applied to the tool to seat the connectors can be provided by the TE seating machines shown below, or by commercially available hand-operated arbor presses such as Greenerd 3A or 3B. Refer to Instruction Sheet 408-9027 for use of TE adapter kits with these presses.

For tooling information, contact Technical Support.



Receptacle Assembly Configuration			Seating Tool Numbers
No. of Rows	No. of Pins/Row	Total No. of Pins	
Four (without Guide Holes)	25	100	58279-2
	30	120	58279-4
	32	128	58279-8
	35	140	58279-9
	45	180	58279-5
	60	240	58279-3
	65	260	58279-7
	75	300	58279-6
Three (without Guide Holes)	32	96	58277-2
	33	99	58277-3
	50	150	58277-4
	67	201	58277-1
Two (without Guide Holes)	15	30	58280-4
	28	56	58280-1
	35	70	58280-6
	60	120	58280-5
	67	134	58280-2
	70	140	58280-3



**MANTA Servo Electric Press**

Electric Servo Press created to satisfy the increasing need for a "Low Cost" method of controlled connector pressing into today's complex circuit boards. The MANTA can precisely control force and speed of each pressing cycle. Quality feedback is accessible in the form of SPC analysis, display, and reports. The "C-Frame" design, with a 12-inch throat depth, accommodates a wide range of smaller printed circuit boards.



**BMEP-3T/5T Bench Top Electric Servo Press (3 or 5 ton)**

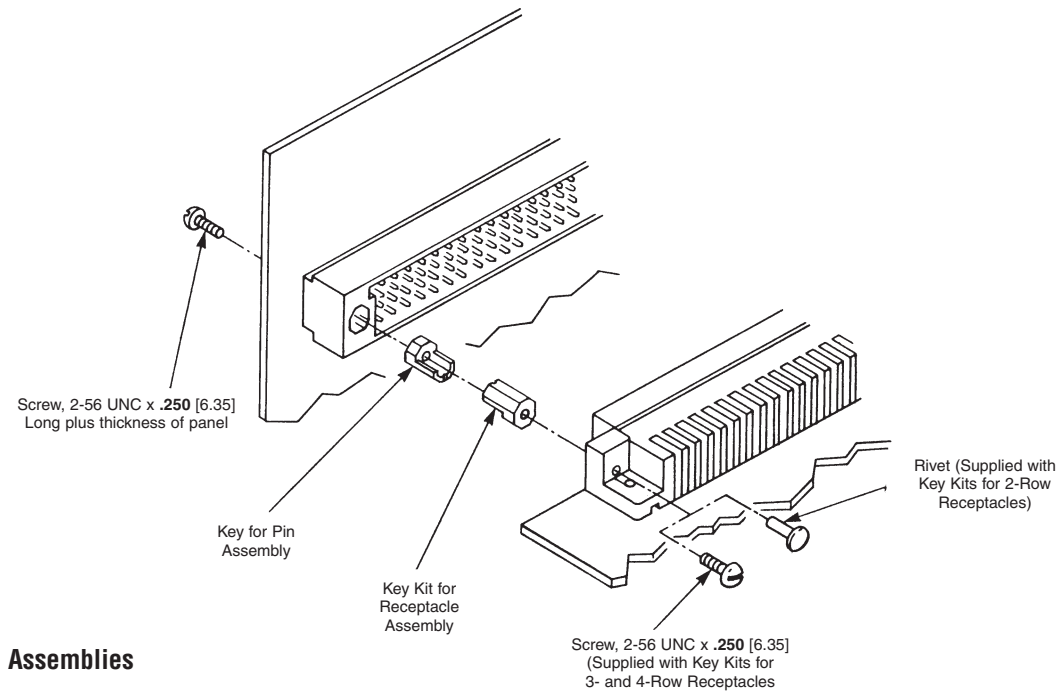
PC-controlled, cost effective bench mounted machine for semi-automatic pressing of ACTION PIN (Compliant Pin, Pressfit) connectors into printed circuit boards. The pressing force is delivered by an all-electric servomotor, providing precise control of force, speed, and seating height. A touch screen monitor provides a user-friendly interface and a bar code scanner provides PCB serial number input for product tracking.



**Keying Hardware and Applications**

**1**

Printed Circuit Board Connectors



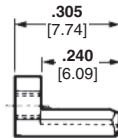
**Keys for Pin Assemblies**

**Material and Finish**

Passivated Stainless Steel

**Key Part Number 530341-1**

**Key Part Number 530341-6**  
(contains 2 per package)



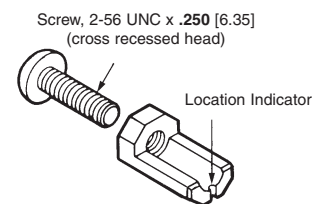
**Note:** Customer must supply screws; .250 [6.35] min. long, plus thickness of panel.

**Key Kits for Three- and Four-Row Receptacles**

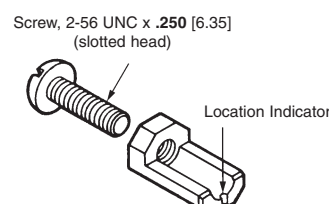
**Material and Finish**

**Key** — Passivated Stainless Steel

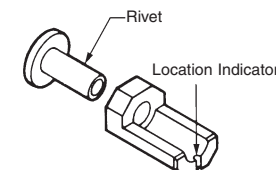
**Screw** — Passivated Stainless Steel



**Kit Number 530341-7**  
(includes 2 keys and 2 screws)



**Kit Number 530341-3**  
(includes 2 keys and 2 screws)



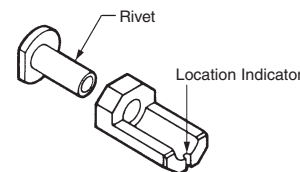
**Kit Number 530341-5**  
(includes 2 keys and 2 rivets)  
**Note:** Use Clinching Tool Number 91117-3  
(See Instruction Sheet 408-6626.)

**Key Kit for Two-Row Receptacles**

**Material and Finish**

**Key** — Passivated Stainless Steel

**Rivet** — Nickel plated brass

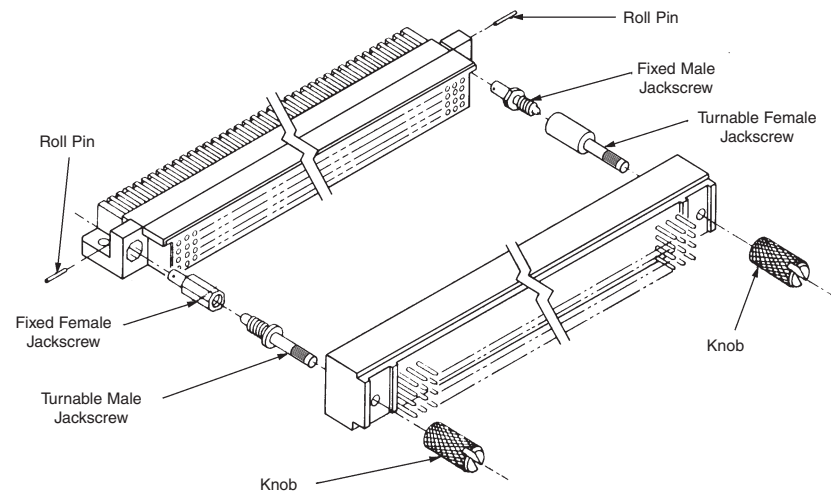


**Kit Number 530341-4**  
(includes 2 keys and 2 rivets)  
**Note:** Use Clinching Tool Number 91117-5  
(See Instruction Sheet 408-9178.)

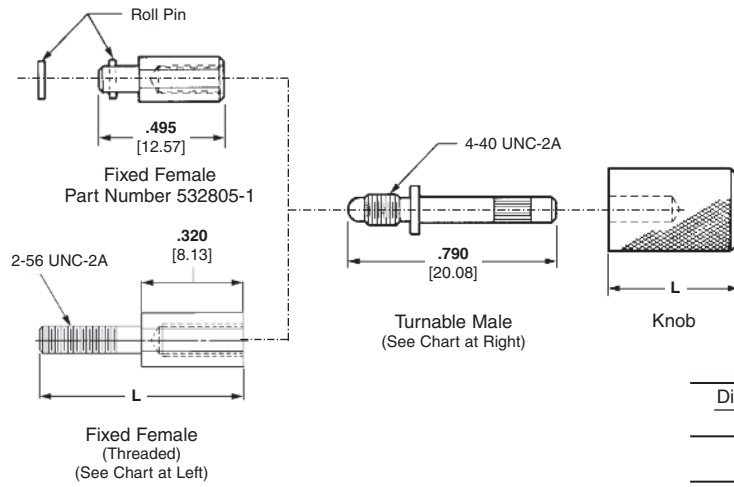
**Mating Hardware and Applications**

**Jackscrews for  
Three- and Four-Row  
Connectors Only**

See Instruction Sheet 408-6909.



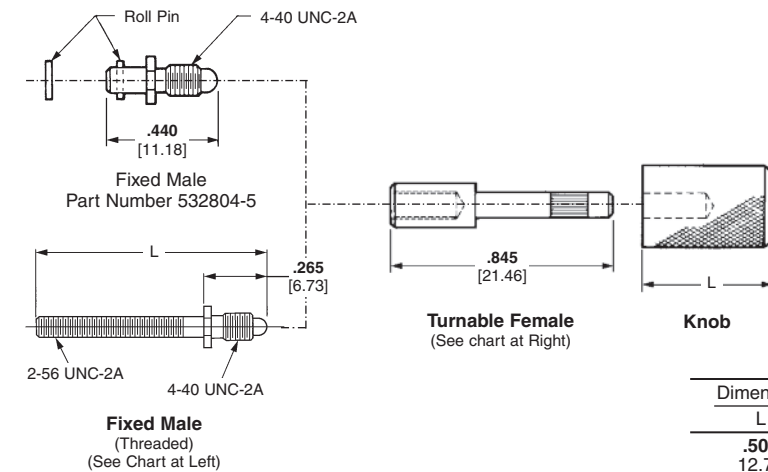
Dimension L	Material and Finish	Fixed Female (Threaded) Part Numbers
.750 19.05	Plain Stainless Steel	533424-1
	Passivated Stainless Steel	533424-2
.625 15.88	Plain Stainless Steel	533424-3
	Passivated Stainless Steel	533424-4
.525 14.61	Plain Stainless Steel	533424-5
	Passivated Stainless Steel	533424-6



Dimension L	Turnable Male Part Numbers
.500 12.70	532805-3*

\*Knob with screwdriver slot

Dimension L	Material and Finish	Fixed Male (Threaded) Part Numbers
.695 17.65	Plain Stainless Steel	533423-1
	Passivated Stainless Steel	533423-2
.960 24.38	Plain Stainless Steel	533423-3



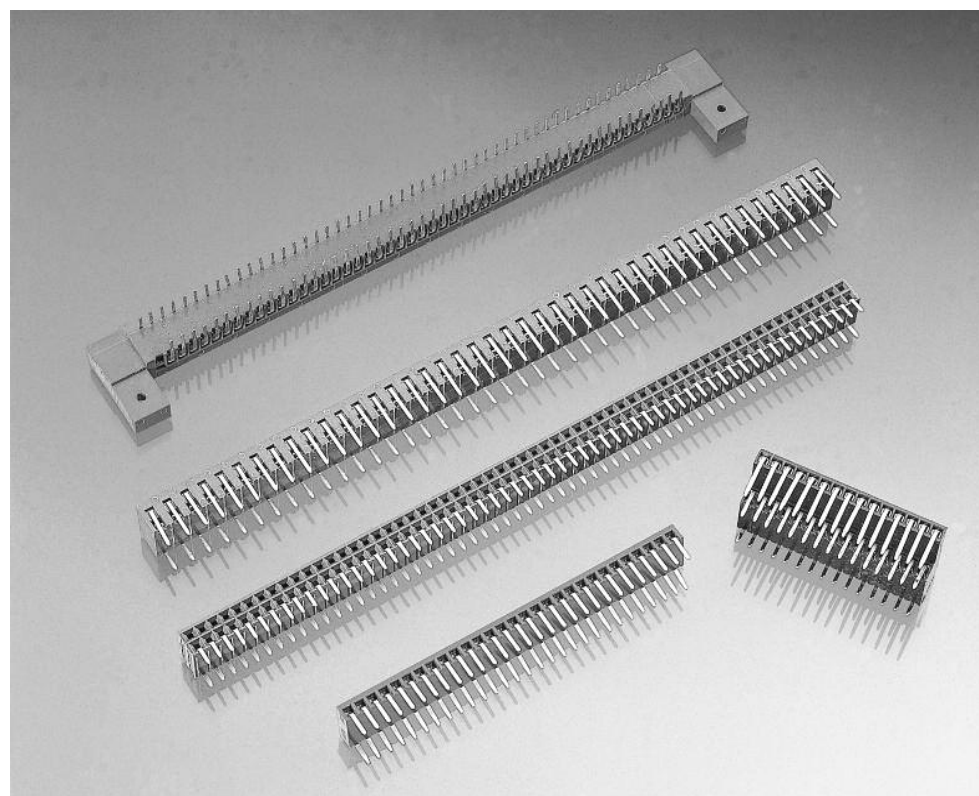
Dimension L	Turnable Male Part Numbers
.500 12.70	532804-3*

\*Knob with screwdriver slot

## Introduction

### Product Facts

- Qualified to MIL-C-55302/127 and /128
- Mates with .025 x .025 [0.64 x 0.64] posts
- Dual cantilever spring contact design and built-in anti-overstress
- Wide misalignment tolerances
- One-piece phosphor bronze contacts, plated gold over nickel per MIL-C-55302
- .100 [2.54] centerline spacing
- Choice of single or double row assemblies
- Assemblies available for .062 [1.57] or .093 [2.36] thick PC boards
- Special right-angle receptacle configurations available



Printed Circuit Board Connectors

AMPMODU Receptacle Assemblies per MIL-C-55302 are specifically designed to meet today's need for a reliable, modular inter-connection system for advanced electronic packaging.

These right-angle assemblies mate with the electronic industry's popular, .025 x .025 [0.64 x 0.64] posts. This means that the AMPMODU Connector system may be used with a host of applications ... from individual PC board mount posts to complex post headers and connectors.

Housings are made of blue diallyl phthalate, 94V-0 rated thermoplastic, and are pre-loaded with phosphor bronze contacts, plated .000050 [0.00127] gold over .000050 [0.00127] nickel per MIL-C-55302. A special AMPMODU Receptacle Assembly is available for high temperature requirements. This double row, right-angle assembly has a housing made of polyphenylene sulfide (PPS) GST-40F, per MIL-M-24519 with a choice of contact platings.

Keying plugs are available for all assembly configurations.

### Technical Features

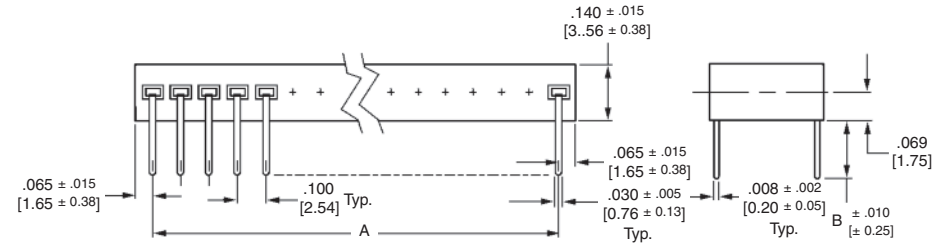
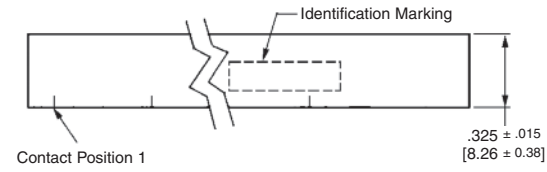
- Center Spacing** — 0.100 [2.54]
- Housing Materials** — Polyphenylene sulfide or diallyl phthalate
- Flammability Rating** — 94 V-0
- Contact Material** — Phosphor bronze
- Contact Finish** — .000050 [0.00127] Gold or gold flash
- Temperature Range** — -85° to 257°F [-65° to 125°C]
- Current Rating** — 3 amp max.
- Termination Resistance (max)** — 12 milliohms max.
- Performance Characteristics**
- Dielectric Withstand Voltage** — 750 Vac at sea level
- Insulation Resistance** — 5000 megohms minimum
- Contact Insertion Force** — 6 oz. [1.67 N] max. per contact
- Durability** — 500 cycles
- Vibration** — MIL-STD-1344 method 2005 Cond III (15G)
- Physical Shock** — MIL-STD-1344 method 2004 Cond G (100G)
- Thermal Shock** — MIL-STD-1344 method 1003 Cond A
- Temperature Humidity** — MIL-STD-1344 method 1002 Type II
- Technical Documents** — Application spec. 114-25018

**Receptacle Assemblies, Single Row**

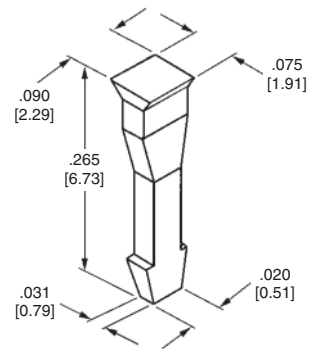
**Material and Finish**

**Housing** — In accordance with MIL-C-55302 or MIL-M-24519 type GST-40F

**Contacts** — In accordance with MIL-C-55302



No. of Pos.	Dimensions		Board Thickness	Military Part No M55302/127-	AMP Part No.
	A	B			
2	.100 2.54	.175 4.45	.125 3.18	023B	102275-1
3	.200 5.08	.175 4.45	.125 3.18	033B	102275-2
4	.300 7.62	.175 4.45	.125 3.18	043B	102275-3
5	.400 10.16	.175 4.45	.125 3.18	053B	102275-4
6	.500 12.70	.115 2.92	.062 1.57	061B	87968-5
7	.600 15.24	.175 4.45	.125 3.18	073B	102275-6
8	.700 17.78	.175 4.45	.125 3.18	083B	102275-7
9	.800 20.32	.175 4.45	.125 3.18	093B	102275-8
10	.900 22.86	.175 4.45	.125 3.18	103B	102275-9
11	1.000 25.40	.175 4.45	.125 3.18	113B	1-102275-0



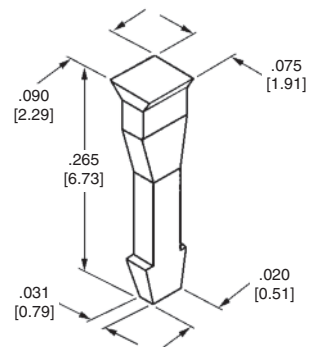
**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**

**Receptacle Assemblies, Single Row** (Continued)

No. of Pos.	Dimensions		Board Thickness	Military Part No M55302/127-	AMP Part No.
	A	B			
12	1.100 27.94	.175 4.45	.125 3.18	123B	1-102275-1
13	1.200 30.48	.175 4.45	.125 3.18	133B	1-102275-2
15	1.400 35.56	.175 4.45	.125 3.18	153B	1-102275-4
16	1.500 38.10	.175 4.45	.125 3.18	163B	1-102275-5
17	1.600 40.64	.175 4.45	.125 3.18	173B	1-102275-6
18	1.700 43.18	.175 4.45	.125 3.18	183B	1-102275-7
19	1.800 45.72	.175 4.45	.125 3.18	193B	1-102275-8
20	1.900 48.26	.175 4.45	.125 3.18	203B	1-102275-9
21	2.000 50.80	.145 3.68	.093 2.36	212B	2-87971-0
		.175 4.45	.125 3.18	213B	2-102275-0
22	2.100 5.34	.175 4.45	.125 3.18	223B	2-102275-1
23	2.200 55.88	.175 4.45	.125 3.18	233B	2-102275-2
24	2.300 58.42	.175 4.45	.125 3.18	243B	2-102275-3
25	2.400 60.96	.175 4.45	.125 3.18	253B	2-102275-4
26	2.500	.175 4.45	.125 3.18	263B	2-102275-5
27	2.600 66.04	.145 3.68	.093 2.36	272B	2-87971-6
		.175 4.45	.125 3.18	273B	2-102275-6
28	2.700 68.58	.175 4.45	.125 3.18	283B	2-102275-7
29	2.800 71.12	.175 4.45	.125 3.18	293B	2-102275-8
30	2.900 73.66	.175 4.45	.125 3.18	303B	2-102275-9
31	3.000 76.20	.175 4.45	.125 3.18	313B	3-102275-0
32	3.100 78.74	.175 4.45	.125 3.18	323B	3-102275-1
33	3.200 81.28	.175 4.45	.125 3.18	333B	3-102275-2
34	3.300 83.82	.175 4.45	.125 3.18	343B	3-102275-3
35	3.400 86.36	.175 4.45	.125 3.18	353B	3-102275-4
36	3.500 88.90	.175 4.45	.125 3.18	363B	3-102275-5
37	3.600 91.44	.175 4.45	.125 4.45	373B	3-102275-6
38	3.700 93.98	.175 4.45	.125 3.18	383B	3-102275-7
39	3.800 96.52	.175 4.45	.125 3.18	393B	3-102275-8



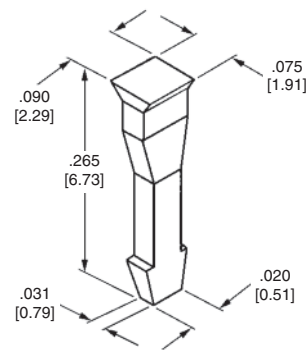
Printed Circuit Board Connectors



**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**

**Receptacle Assemblies, Single Row** (Continued)

No. of Pos.	Dimensions		Board Thickness	Military Part No M55302/127-	AMP Part No.
	A	B			
40	3.900	.145	.093	402B	3-87971-9
	99.06	3.68	2.36		
41	4.000	.175	.125	413B	4-102275-0
	101.60	4.45	3.18		
42	4.100	.175	.125	423B	4-102275-1
	104.14	4.45	3.18		
43	4.200	.175	.125	433B	4-102275-2
	106.68	4.45	3.18		
44	4.300	.175	.125	443B	4-102275-3
	109.22	4.45	3.18		
45	4.400	.175	.125	453B	4-102275-4
	111.76	4.45	3.18		
46	4.500	.175	.125	463B	4-102275-5
	114.30	4.45	3.18		
47	4.600	.175	.125	473B	4-102275-6
	116.84	4.45	3.18		
48	4.100	.175	.125	483B	4-102275-7
	119.38	4.45	3.18		
49	4.800	.175	.125	493B	4-102275-8
	121.92	4.45	3.18		
50	4.900	.175	.125	503B	4-102275-9
	124.46	4.45	3.18		
51	5.000	.175	.125	513B	5-102275-0
	127.00	4.45	3.18		
53	5.200	.175	.125	533B	5-102275-2
	132.08	4.45	3.18		
54	5.300	.175	.125	543B	5-102275-3
	134.62	4.45	3.18		
55	5.400	.175	.125	553B	5-102275-4
	137.16	4.45	3.18		
56	5.500	.175	.125	563B	5-102275-5
	139.70	4.45	3.18		
57	5.600	.175	.125	573B	5-102275-6
	142.24	4.45	3.18		
58	5.700	.175	.125	583B	5-102275-7
	144.78	4.45	3.18		
59	5.800	.175	.125	593B	5-102275-8
	147.32	4.45	3.18		
60	5.900	.175	.125	603B	5-102275-9
	149.86	4.45	3.18		
61	6.000	.175	.125	613B	6-102275-0
	152.40	4.45	3.18		
62	6.100	.175	.125	623B	6-102275-1
	154.94	4.45	3.18		
63	6.200	.175	.125	633B	6-102275-2
	157.48	4.45	3.18		
64	6.300	.175	.125	643B	6-102275-3
	160.02	4.45	3.18		
65	6.400	.175	.125	653B	6-102275-4
	162.56	4.45	3.18		



**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**



**Receptacle Assemblies, Double Row**

**Material and Finish**

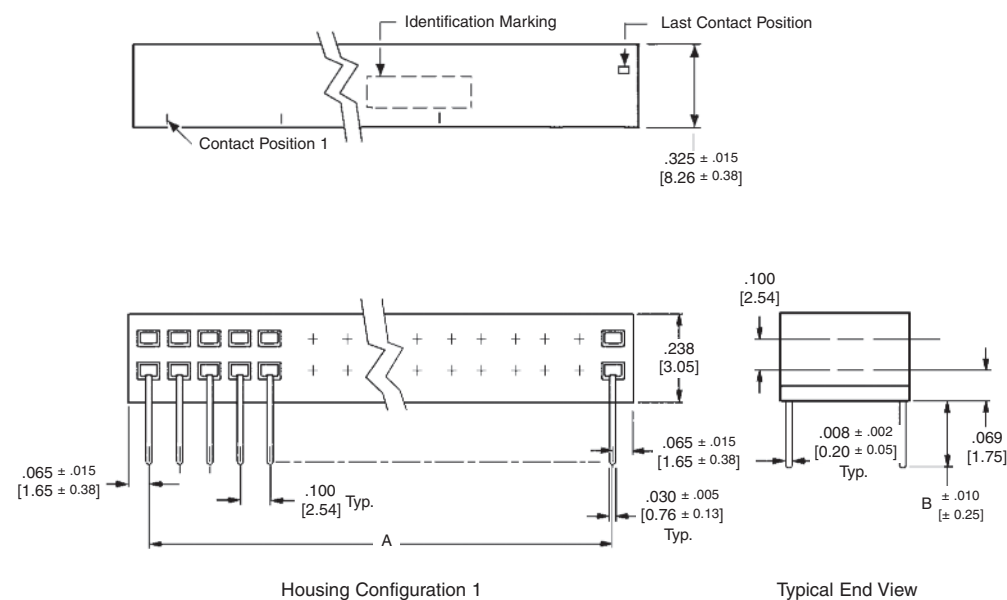
**Housing** — In accordance with MIL-C-55302 or MIL-M-24519 type GST-40F

**Contacts** — In accordance with MIL-C-55302

**Plating Codes:**

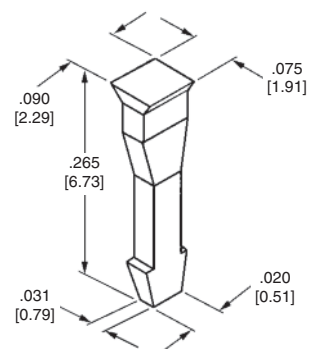
**A** — Gold flash over .000050 [0.00127] min. nickel on entire contact, .000050 [0.00127] min. gold on contact area

**B** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel on the entire contact



Printed Circuit Board Connectors

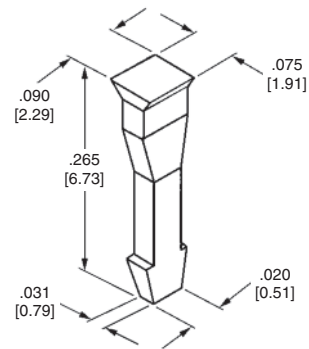
No. of Pos.	Dimensions		Board Thickness	Plating Code A		Plating Code B	
	A	B		Military Part No M55302/128-	Part No.	Military Part No. M55302/128-	Part No.
4	.100 2.54	.115 2.92	.062 1.57	AA1A	87961-1	—	—
8	.300 7.62	.145 3.68	.093 2.36	AC1C	87964-3	—	—
10	.400 10.16	.115 2.92	.062 1.57	AD1A	87961-4	AD1B	87962-4
12	.500 12.70	.115 2.92	.062 1.57	AE1A	87961-5	—	—
		.145 3.68	.093 2.36	AE1C	87964-5	—	—
14	.600 15.24	.115 2.92	.062 1.57	AF1A	87961-6	AF1B	87962-6
16	.700 17.78	.115 2.92	.062 1.57	AG1A	87961-7	AG1B	87962-7
18	.800 20.32	.115 2.92	.062 1.57	—	—	AH1B	87962-8
		.145 3.68	.093 2.36	AH1C	87964-8	—	—
20	.900 22.86	.115 2.92	.062 1.57	AJ1A	87961-9	AJ1B	87962-9
		.145 3.68	.093 2.36	—	—	AJ1D	87965-9
22	1.000 25.40	.115 2.92	.062 1.57	AK1A	1-87961-0	AK1B	1-87962-0
		.175 4.45	.125 3.18	AK1E	1-102277-0	—	—
24	1.100 27.94	.115 2.92	.062 1.57	AL1A	1-87961-1	AL1B	1-87962-1
26	1.200 30.48	.115 2.92	.062 1.57	AM1A	1-87961-2	AM1B	1-87962-2
		.145 3.68	.093 2.36	AM1C	1-87964-2	—	—



**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**

**Receptacle Assemblies, Double Row** (Continued)

No. of Pos.	Dimensions		Board Thickness	Plating Code A		Plating Code B	
	A	B		Military Part No. M55302/128-	Part No.	Military Part No. M55302/128-	Part No.
28	1.300	.115	.062	AN1A	1-87961-3	AN1B	1-87962-3
	33.02	2.92	1.57				
30	1.400	.115	.062	AP1A	1-87961-4	AP1B	1-87962-4
		35.56	2.92				
		.145	.093	AP1C	1-87964-4	—	—
32	1.500	.115	.062	AQ1A	1-87961-5	AQ1B	1-87962-5
		38.10	2.92				
34	1.600	.115	.062	AR1C	1-87964-6	—	—
		40.64	2.92				
		.145	.093	AR1E	1-102277-6	—	—
36	1.700	.115	.062	BA1A	1-87961-7	BA1B	1-87962-7
		43.18	2.92				
		.145	.093	BA1C	1-87964-7	BA1D	1-87965-7
38	1.800	.115	.062	BB1A	1-87961-8	BB1B	1-87962-8
		45.72	2.92				
		.145	.093	—	—	—	—
40	1.900	.115	.062	BC1A	1-87961-9	BC1B	1-87962-9
		48.26	2.92				
		.145	.093	BC1C	1-87964-9	—	—
42	2.000	.115	.062	BD1A	2-87961-0	BD1B	2-87962-0
		50.80	2.92				
		.145	.093	BD1C	2-87964-0	—	—
44	2.100	.115	.062	—	—	BE1B	2-87962-1
		53.34	2.92				
		.145	.093	—	—	BE1F	2-102278-1
46	2.200	.115	.062	BF1A	2-87961-2	BF1B	2-87962-2
		55.88	2.92				
		.145	.093	BF1C	2-87964-2	—	—
48	2.300	.115	.062	BG1A	2-87961-3	—	—
		58.42	2.92				
		.145	.093	BG1C	2-87964-3	—	—
50	2.400	.115	.062	BH1A	2-87961-4	BH1B	2-87962-4
		60.96	2.92				
		.145	.093	BH1C	2-87964-4	—	—
52	2.500	.115	.062	—	—	—	—
		63.50	2.92				
		.145	.093	—	—	—	—
54	2.600	.115	.062	—	—	BK1B	2-87962-6
		66.04	2.92				
56	2.700	.115	.062	BL1A	2-87961-7	BL1B	2-87962-7
58	2.800	.115	.062	BM1A	2-87961-8	BM1B	2-87962-8
60	2.900	.115	.062	BN1A	2-87961-9	BN1B	2-87962-9
		73.66	2.92				
		.175	.125	BN1E	2-102277-9	BN1F	2-102278-9



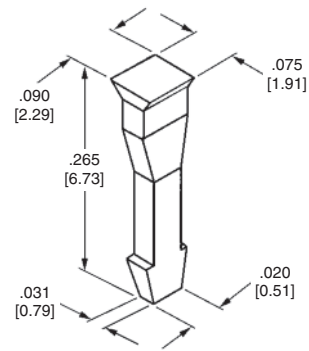
**Keying Plug —**  
Military Part Number  
M55302/127-00KY  
Part Number 102188-1

**Receptacle Assemblies, Double Row** (Continued)

No. of Pos.	Dimensions		Board Thickness	Plating Code A		Plating Code B	
	A	B		Military Part No. M55302/128-	Part No.	Military Part No. M55302/128-	Part No.
62	3.000 76.20	.115 2.92	.062 1.57	—	—	BP1B	3-87962-0
		.145 3.68	.093 2.36	—	—	BP1D	3-87965-0
64	3.100 78.74	.115 2.92	.062 1.57	—	—	BQ1B	3-87962-1
		.175 4.45	.125 3.18	BR1A	3-87961-2	BR1B	3-87962-2
66	3.200 81.28	.115 2.92	.062 1.57	CA1A	3-87961-3	CA1B	3-87962-3
		.145 3.68	.093 2.36	CA1C	3-87964-3	—	—
70	3.400 86.36	.115 2.92	.062 1.57	CB1A	3-87961-4	CB1B	3-87962-4
		.145 3.68	.093 2.36	CB1C	3-87964-4	—	—
72	3.500 88.90	.115 2.92	.062 1.57	CC1A	3-87961-5	—	—
74	3.600 91.44	.115 2.92	.062 1.57	CD1A	3-87961-6	CD1B	3-87962-6
76	3.700 93.98	.115 2.92	.062 1.57	CE1A	3-87961-7	—	—
78	3.800 96.52	.115 2.92	.062 1.57	—	—	CF1B	3-87962-8
		.145 3.68	.093 2.36	CF1C	3-87964-8	—	—
80	3.900 99.06	.115 2.92	.062 1.57	CG1A	3-87961-9	CG1B	3-87962-9
		.145 3.68	.093 2.36	CG1C	3-87964-9	—	—
86	4.200 106.68	.115 2.92	.062 1.57	—	—	CK1B	4-87962-2
88	4.300 109.22	.115 2.92	.062 1.57	CL1A	4-87961-3	—	—
		.145 3.68	.093 2.36	—	—	CL1D	4-87965-3
90	4.400 111.76	.115 2.92	.062 1.57	CM1A	4-87961-4	—	—
		.175 4.45	.125 3.18	—	—	CM1F	4-102278-4
96	4.700 119.38	.115 2.92	.062 1.57	—	—	CQ1B	4-87962-7
98	4.800 121.92	.115 2.92	.062 1.57	CR1A	4-87961-8	—	—
		.145 3.68	.093 2.36	CR1C	4-87964-8	—	—
100	4.900 124.46	.115 2.92	.062 1.57	DA1A	4-87961-9	DA1B	4-87962-9
106	5.200 132.08	.115 2.92	.062 1.57	DD1A	5-87961-2	—	—
108	5.300 134.62	.115 2.92	.062 1.57	DE1A	5-87961-3	—	—
110	5.400 137.16	.115 2.92	.062 1.57	DF1A	5-87961-4	—	—
116	5.700 144.78	.115 2.92	.062 1.57	DJ1A	5-87961-7	DJ1B	5-87962-7
		.145 3.68	.093 2.36	DJ1C	5-87964-7	DJ1D	5-87965-7
120	5.900 149.86	.115 2.92	.062 1.57	—	—	DL1B	5-87962-9
122	6.000 152.40	.115 2.92	.062 1.57	DM1A	6-87961-0	DM1B	6-87962-0
124	6.100 154.94	.115 2.92	.062 1.57	DN1A	6-87961-1	—	—
130	6.400 162.66	.115 2.92	.062 1.57	DR1A	6-87961-4	DR1B	6-87962-4

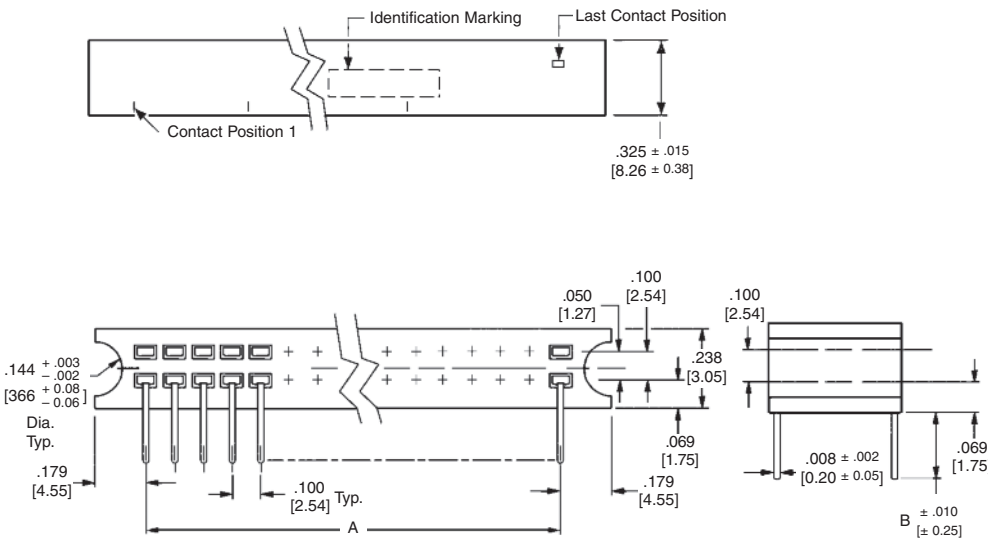


Printed Circuit Board Connectors



**Keying Plug —**  
Military Part Number  
M55302/127-00KY  
Part Number 102188-1

**Special Double Row Receptacle Assemblies**



**Material and Finish**

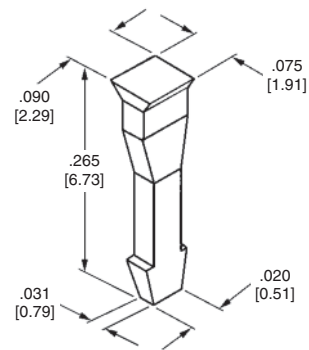
**Housing** — In accordance with MIL-C-55302 or MIL-M-24519 type GST-40F

**Contacts** — Per MIL-C-55302

**Plating Codes:**

**A** — Gold flash over .000050 [0.00127] min. nickel on entire contact, .000050 [0.00127] min. gold on contact area  
**B** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel on the entire contact

No. of Pos.	Dimensions		Board Thickness	Plating Code A		Plating Code B	
	A	B		Military Part No M55302/128-	Part No.	Military Part No. M55302/128-	Part No.
22	1.000 25.40	.115 2.92	.062 1.57	AK2A	102192-5	—	—
26	1.200 30.48	.175 4.45	.125 3.18	AM2E	102281-6	—	—
50	2.400 60.96	.115 2.92	.062 1.57	BH2A	102192-8	—	—
		.145 3.68	.093 2.36	—	—	BH2D	102196-8
54	2.600 66.04	.115 2.92	.062 1.57	—	—	BK2B	102193-3
58	2.800 71.12	.115 2.92	.062 1.57	BM2A	102192-2	BM2B	102193-2
60	2.900 73.66	.115 2.92	.062 1.57	BN2A	102192-4	—	—
80	3.900 99.06	.115 2.92	.062 1.57	CG2A	102192-9	—	—
84	4.100 104.14	.115 2.92	.062 1.57	—	—	CJ2B	102193-1
100	4.900 124.46	.115 2.92	.062 1.57	DA2A	1-102192-0	DA2B	1-102193-0
102	5.000 127.00	.115 2.92	.062 1.57	—	—	DB2B	102193-7



**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**

## Introduction

### Product Facts

#### AMP-BLADE II Connectors

- Selective gold plating for economy with high performance

- Glass-filled polyester housing

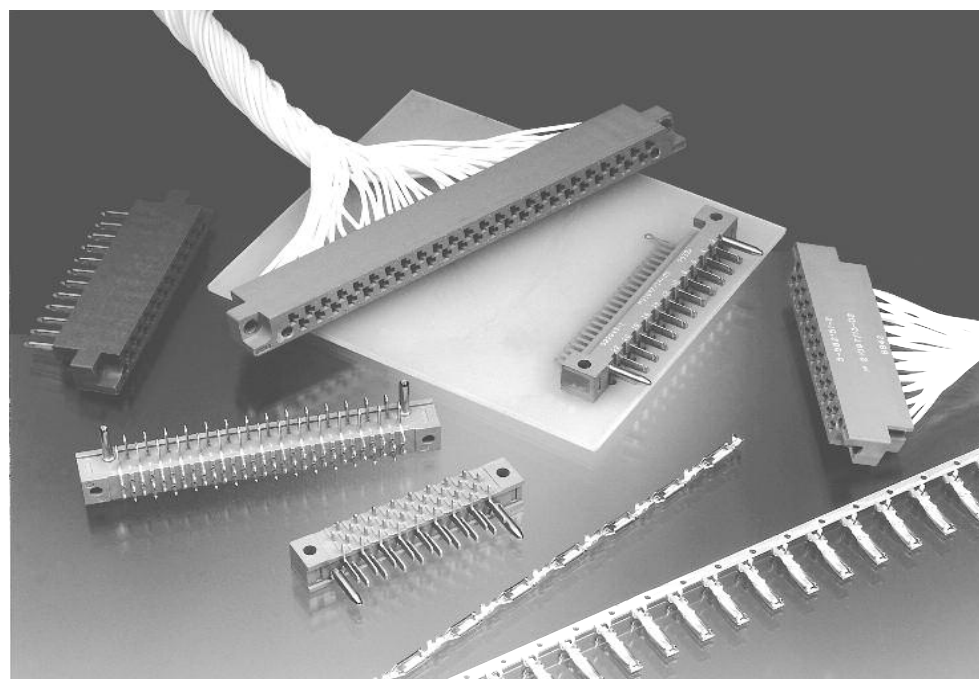
#### AMP-BLADE and Military Connectors

- Full gold plating

- Diallyl phthalate housing rated from -85°F to 257°F [-65°C to 125°C]

- 5 amps per contact

- Recognized under the Component Program of Underwriters Laboratories Inc. File No. E28476



Printed Circuit Board Connectors

Various technical documents are available for your use:

**Product Specifications** describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

108-9004 Diallyl Phthalate

108-9009 Phenolic

108-9201 Contact Crimp

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

Instructional material covering operation, setup, maintenance, repair, etc. is included with each machine, tool or die set. If this material is required prior to receiving your tooling, contact Technical Support for the applicable document.

#### Electrical Characteristics

**Contact Rating** — 5 amps

**Operating Temperature** — -85° to 257°F [-65° to 125°C] (Military)

For applications requiring the highest level of conductivity and reliability, AMP-BLADE Two-Piece Printed Circuit Edge Connectors meet all applicable performance requirements of MIL-C-21097.

The blade and receptacle design provides multiple areas of contact for maximum conductivity. Gold-over-nickel plating in mating areas of the contacts prevents metal migration and oxide build-up for additional reliability. Controlled insertion and extraction forces permit easy mating and unmating of connector assemblies.

A guide system helps prevent contact damage and provides positive alignment for reliable mating of connector halves.

The receptacle half of this two-piece connector accepts a variety of contact designs, but requires only that number of contacts which fulfills circuitry needs.

Crimp snap-in contacts are available in loose-piece or, to further reduce installed costs, in strip form for application by high-speed, automatic compression-crimping equipment.

Post-type contacts are specifically designed for wiring TE Connectivity TERMI-POINT clips and tools. The connectors with post-type contacts also adapt to wrap-type terminations.

The split eyelet contact simplifies bus wiring by permitting wire to be easily snapped into the contact notch for soldering. Each contact accepts up to two 18 AWG [0.8 to 0.9 mm<sup>2</sup>] stranded or 16 AWG [1.25 to 1.4 mm<sup>2</sup>] solid wires.

High reliability, versatility and speed of assembly are features which recommend the AMP-BLADE Two-Piece Printed Circuit Edge Connectors for dense wiring in applications where rugged serviceability is a prime consideration.

#### Construction

**Contact Material** — Phosphor bronze per QQ-B-750

**Contact Plating** — **Gold plate** — MIL-G-45204; **Nickel plate** — QQ-N-290 (thickness as specified); Tin-lead per MIL-T-10727, Type 1, on solder tails

**Contact Identification** — Cavities identified on both faces of receptacle block

#### Performance

This connector meets performance requirements of MIL-C-21097

Altitude	Test Voltage (AC RMS)
Sea level	1,800 VAC
50,000 feet [15,240 m]	700 VAC
70,000 feet [21,336 m]	500 VAC

#### Individual-Contact Engaging and Separating Forces

2 ounces to 16 ounces [0.6 N to 4.5 N]

**Contact Resistance** —

25 millivolts maximum at 5 amps

**Vibration Tolerance** —

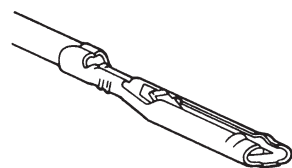
10 to 2,000 hz. @ 15Gs per method 204B of MIL STD 202

**Durability** —

Gold Thickness	Cycles
.000015 0.00038	100
.000030 0.00076	250
.000050 0.00127	500

**AMP-BLADE Connector for Snap-In Receptacle Contacts**

**Crimp, Snap-In Receptacle Contacts**



**Materials**

**Contact** — Phosphor bronze

**1 Finish** — Selective gold plating in contact mating area over .000030 [0.00076] nickel, see table for gold thicknesses; tin-lead in wire barrel

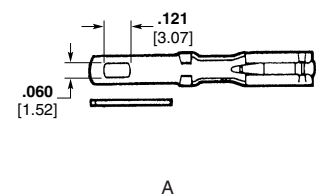
**2 Finish** — RoHS Part Numbers are same as above except for tin in wire barrel

Wire (Insulation) Ranges	Gold Plate Thickness	Side Feed Contact Part Number	
		Strip Form	Loose Piece*
24-20 AWG 0.2-0.5 mm <sup>2</sup> (.040-.080) (1.02-2.03)	.000030	531586-3 <sup>1</sup>	531586-6 <sup>1</sup>
	0.00076	5-531586-3 <sup>2</sup>	5-531586-6 <sup>2</sup>
28-24 AWG 0.09-0.2 mm <sup>2</sup> (.030-.060) (0.76-1.52)	.000030	531587-3	531587-6
	0.00076		
1: 18 AWG 0.8-0.9 mm <sup>2</sup> or 2: 20 or 22 AWG 0.3-0.6 mm <sup>2</sup> (.067-.090) (1.70-2.28)	.000015	—	—
	0.00038		
	.000030	531589-3 <sup>1</sup>	531589-6
	0.00076	5-531589-3 <sup>2</sup>	

\*See page 1-109 for crimping tool.

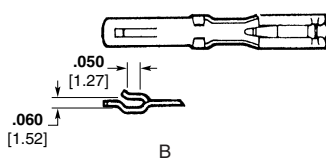
Wire Range AWG	Insulation mm <sup>2</sup>	Insulation Range	Commercial Type		Military Type		
			End Feed Strip Part No.	Loose Piece Part No.	Military Part No.	End Feed Strip Part No.	Loose Piece Part No.
			.000030 [0.00076] Gold Over .000030 [0.00076] Nickel		.000050 [0.00127] Gold Over .000030 [0.00076] Nickel		
24-20	0.2-0.6	.040-.080 1.02-2.03	66005-2	66010-2	21097/16-03	66005-3	66010-3
28-24	0.08-0.2	.030-.060 0.76-1.52	—	66011-2	21097/16-01	66009-3	66011-3
(2)20 or (2)22	0.183 or 0.643	(2).045 to (2)1.14 (2).072 to (2)1.83	66021-2	66026-2	21097/16-04	66021-3	66026-3
18	0.8	.067-.090 1.70-2.29	66021-2	66026-2	21097/16-04	66021-3	66026-3
28-24	0.08-0.2	.078 1.98	66027-2	—	21097/16-02	66027-3	—

**Solder—Tab Receptacle Contacts**



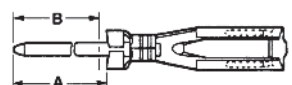
**Materials**

**Contact** — Phosphor bronze



Type	Maximum Extension Beyond Back Face of Block	Part Numbers—Loose Piece
		Commercial Type Gold Plate Thickness .000030 [0.00076] over .000030 [0.00076] Nickel
A	.390 9.91	66086-2
B	.375 9.52	66086-4

**Post-Type Receptacle Contacts**



**Materials**

**Contact** — Phosphor bronze

**1 Finish** — Selective gold plating in contact mating area over .000030 [0.00076] nickel (see table for gold thicknesses); posts, tin plated

**2 Finish** — RoHS Part Numbers have same finish as above except for tin on posts

Dimensions A	Dimensions B*	Gold Plate Thickness	Part Numbers - Loose Piece
			.045 x .045 [1.14 x 1.14] Posts
.410	.370	.000030	1-582364-1 <sup>1</sup>
10.41	9.40	0.00076	6-582364-1 <sup>2</sup>
.640	.600	.000030	1-582364-2 <sup>1</sup>
16.26	15.24	0.00076	
.810	.770	.000030	1-582364-3 <sup>1</sup>
20.57	19.56	0.00076	
1.040	1.000	.000030	1-582364-4 <sup>1</sup>
26.42	25.4	0.00076	

\*Post length after inserted into housing.



**Board Half Housing Pre-loaded with Blade Type Contacts**

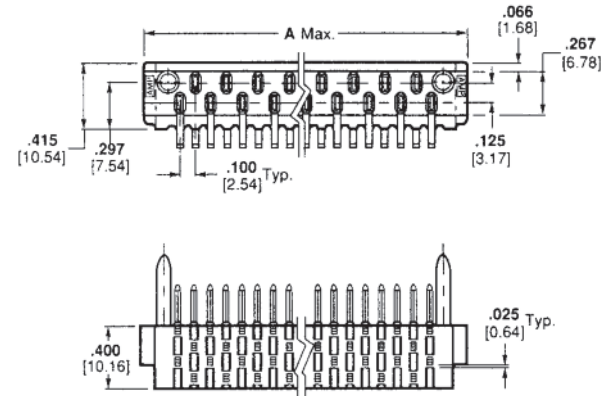
**Housing without Mounting Holes**

**Materials**

**Housing** — Diallyl phthalate

**Blade Contact** — Gilding material

**Finish** — Selective gold plating in contact mating area over .000030 [0.00076] min. nickel. See table for gold thicknesses



Printed Circuit Board Connectors

No. of Positions	A (Max.)	Printed Circuit Board Thickness	Military Type CS	
			Military Part No. Gold Plating Thickness .000050 [0.00127]	Diallyl Phthalate Housing Part No.
17	2.070 52.58	.125 3.18	21097/15-03	—
		.063 1.59	21097/15-04	582843-9
23	2.670 67.80	.094 2.38	21097/15-05	2-582843-0
		.125 3.18	21097/15-06	3-582843-2
35	3.870 98.30	.063 1.59	21097/15-10	1-582843-1
		.094 2.38	21097/15-11	2-582843-2
41	4.470 113.54	.063 1.59	21097/15-13	1-582843-2
		.094 2.38	21097/15-14	2-582843-3
47	5.070 128.80	.063 1.59	21097/15-16	1-582843-3
		.125 3.18	21097/15-18	3-582843-6

**Notes:**

- AMP-BLADE contacts (gold plated) are molded into housing in predetermined positions to mate with receptacle housing.
- Connectors can be furnished with the two middle rows of lines removed to fit existing board hole patterns.

**Board Half Housing Pre-loaded with Blade Type Contacts** (Continued)

**Housing with Mounting Holes**

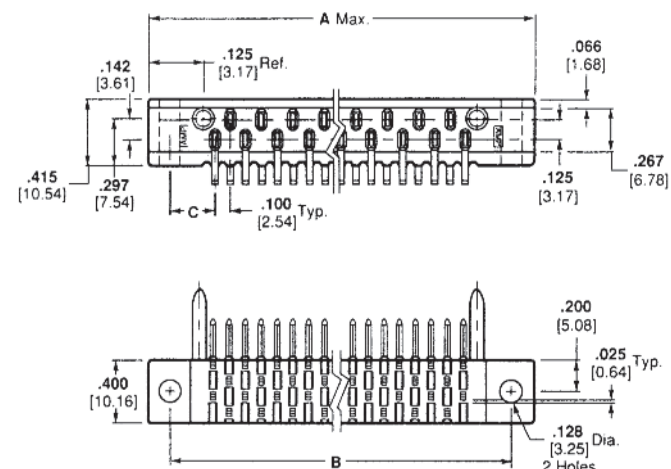
**Materials**

**Housing** — Diallyl phthalate

**Blade Contact** — Gilding metal

**3 Finish** — Selective gold plating in contact mating area over .000030 [0.00076] min. nickel. See table for gold thicknesses. Gold flash on tails (2 rows) and tin-lead on remaining tails.

**4 Finish** — RoHS Part Numbers are same as above except for tin on remaining tails



No. of Positions	A (Max.)	B	C	Printed Circuit Board Thickness	Commercial Type		Military Type CS	
					Diallyl Phthalate Housing		Diallyl Phthalate Housing	
					Gold Plate Thickness .000015 [0.00030]	Gold Plate Thickness .000030 [0.00076]	Military Part No. Gold Plating Thickness .000050 [0.00127]	Part No.
17	2.390 60.70	2.130 54.10	.265 6.73	.063 1.59	1-582390-13	3-582152-13 3-5582152-14	21097/14-01	582843-2
				.094 2.38	—	—	21097/14-02	1-582843-4
				.125 3.18	—	—	21097/14-03	2-582843-5
23	2.990 54.10	2.730 69.34	.265 6.73	.063 1.59	—	3-582152-23 3-5582152-24	21097/14-04	582843-3
				.094 2.38	—	—	21097/14-05	582843-1
				.125 3.18	—	—	21097/14-06	2-582843-6
29	3.590 91.19	3.330 84.58	.265 6.73	.063 1.59	1-582390-33 1-5582390-34	3-582152-33 3-5582152-34	21097/14-07	582843-4
				.094 2.38	2-582390-33 2-5582390-34	—	21097/14-08	1-582843-5
				.063 1.59	1-582390-43 1-5582390-44	3-582152-43 3-5582152-44	21097/14-10	582843-5
35	4.190 106.43	3.930 99.82	.265 6.73	.094 2.38	2-582390-43 2-5582390-44	6-582152-43 6-5582152-44	21097/14-11	1-582843-6
				.125 3.18	—	—	21097/14-12	2-582843-8
				.063 1.59	1-582390-53 1-5582390-54	3-582152-53 3-5582152-54	21097/14-13	582843-6
41	4.790 121.67	4.530 115.06	.265 6.73	.094 2.38	—	6-582152-53 6-5582152-54	21097/14-14	1-582843-7
				.125 3.18	3-582390-53 3-5582390-54	9-582152-53	—	—
				.063 1.59	—	3-582308-13 3-5582308-14	21097/14-16	582843-7
47	5.623 142.82	5.363 136.22	.381 9.68	.094 2.38	2-582390-63 2-5582390-64	6-582308-13	21097/14-17	1-582843-8
				.125 4.65	3-582390-63	—	21097/14-18	3-582843-0

- Notes:**  
1. AMP-BLADE contacts (gold plated) are molded into housing in predetermined positions to mate with receptacle housing.  
2. Connectors can be furnished with the two middle rows of lines removed to fit existing board hole patterns.

Wire-Half Assemblies and Housings

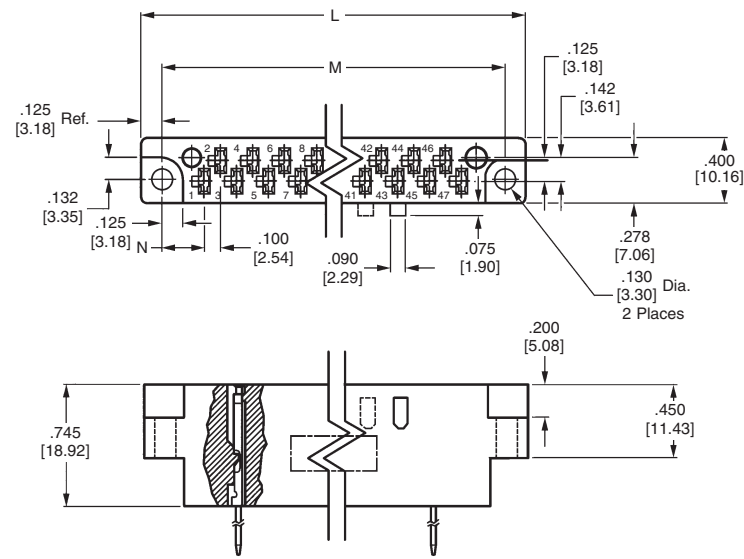
Pre-loaded Assemblies  
for Crimp Contacts,  
TERMI-POINT Clip or  
Wrap-Type Post Contacts,  
Solder/Weld Contacts

Materials

**Housing** — Diallyl phthalate glass-filled polyester, green

**Contact** — Phosphor bronze

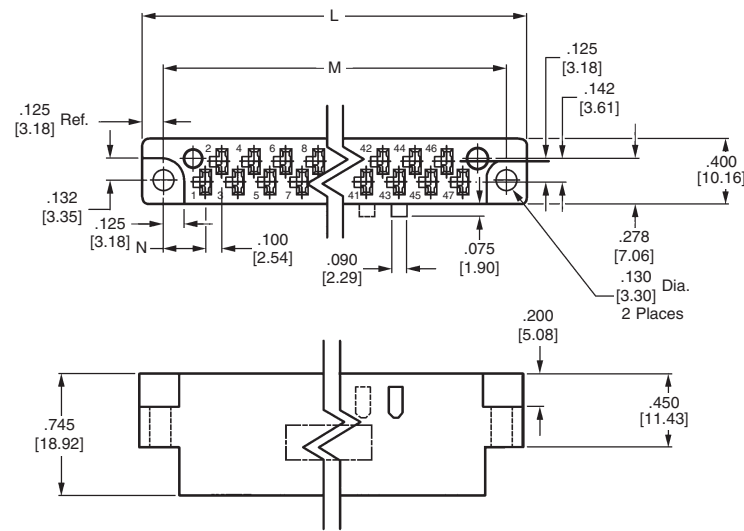
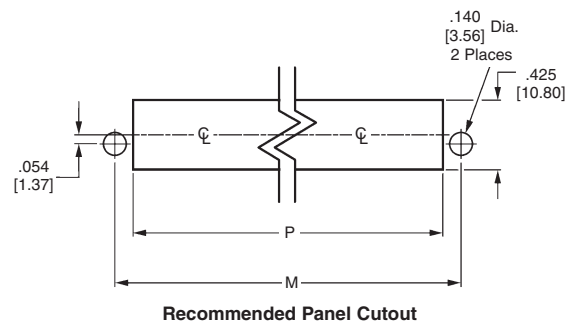
**Posts** — Brass, tin plated



Receptacle Housing

Material

Diallyl phthalate



No. of Pos.	Post	Length in.	Length mm	No. of Clip or Wrap Type Terminations	Dimensions			Cutout Dim. for Mounting P	Diallyl Phthalate			
					L	M	N		Preloaded Housing Part No.			
									Commercial Type Part No.	Military Type Part No.	Part No.	
17	.370	9.40		1	2.390 60.71	2.130 54.10	.265 6.73	1.910 48.51	582828-4	3-582151-1	21097/13-01	5-582151-1
23	.770	19.65		3	2.990 75.95	2.730 69.34	.265 6.73	2.510 63.75	—	3-582151-2	21097/13-02	5-582151-2
29	1.000	25.40		4	3.590 91.19	3.330 84.58	.265 6.73	3.110 78.99	582830-1	3-582151-3	21097/13-03	5-582151-3
	.770	19.65	3	582830-2								
	.370	9.40	1	—								
35	1.000	25.40		4	4.190 106.43	3.930 99.82	.265 6.73	3.710 94.23	582831-1	3-582151-4	21097/13-04	5-582151-4
	.770	19.65	3	—								
	.600	15.24	2	—								
	.370	9.40	1	582831-4								
41	.770	19.65		3	4.790 121.67	4.530 115.06	.265 6.73	4.310 109.47	—	3-582151-5	21097/13-05	5-582151-5
	.600	15.24	2	582832-4								
	.370	9.40	1	—								
47	1.000	25.40		4	5.623 142.82	5.363 136.22	.381 9.68	5.143 130.63	582819-1	3-582307-1	21097/13-06	5-582307-1
	.770	19.65	3	582819-2								
	.600	15.24	2	—								
	.370	9.40	1	—								



Printed Circuit Board Connectors

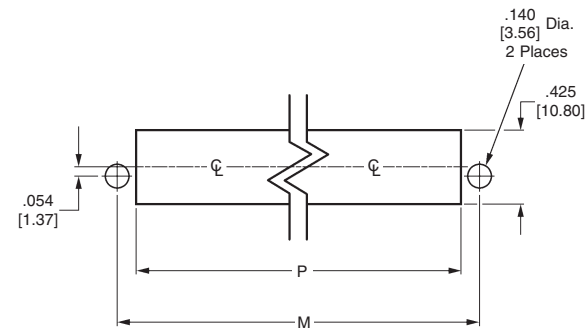
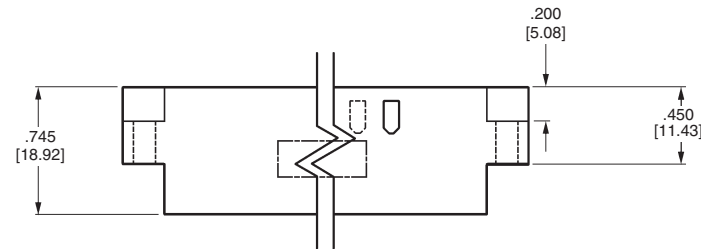
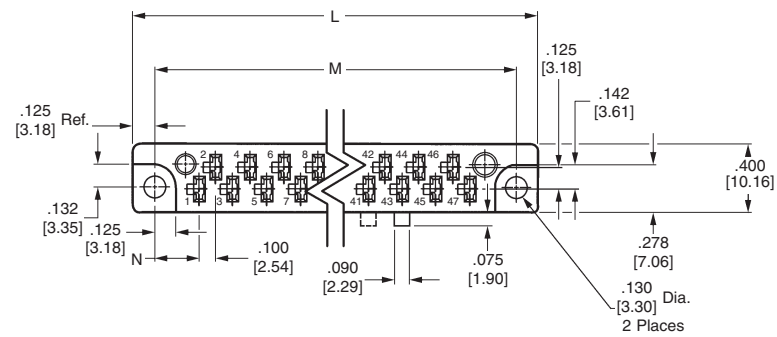
**Receptacle Housings for Crimp Snap-in Contacts**

**Material**

Glass-filled polyester, green

**Related Product Data**

**Contact Part Numbers** —  
page 1-103

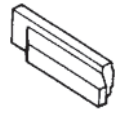


Recommended Panel Cutout

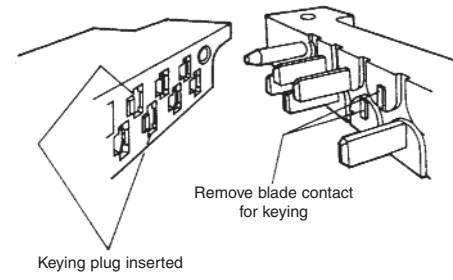
No. of Pos.	Dimensions				AMP Part Number
	L	M	N	P	
17	2.390 60.71	2.130 54.10	.265 6.73	1.910 48.51	531590-1
23	2.990 75.95	2.730 69.34	.265 6.73	2.510 63.75	531590-2
29	3.590 91.19	3.330 84.58	.265 6.73	3.110 78.99	531590-3
35	4.190 106.43	3.930 99.82	.265 6.73	3.710 94.23	531590-4
41	4.790 121.67	4.530 115.06	.265 6.73	4.310 109.47	531590-5
47	5.623 142.82	5.363 136.22	.381 9.68	5.143 130.63	531590-6

**AMP-BLADE Connector Keying**

**Keying Plugs**



**Keying Plug** — Nylon  
**Part Number 1-582156-9**  
**Military Part Number 21097/11-07**



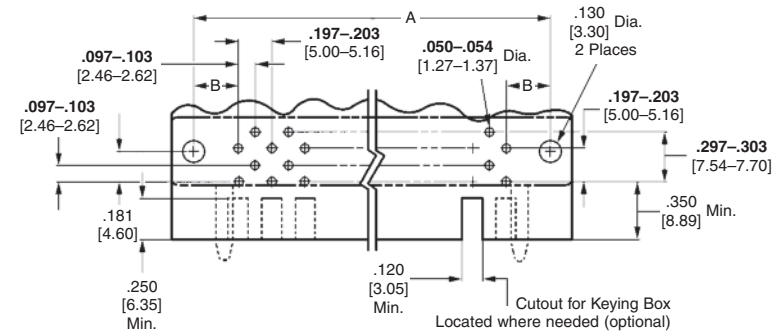
Keying of the connector can be achieved by plugging receptacle cavities. Insert keying plug into mating side of receptacle housing cavity. Remove corresponding blade contact from blade housing using tool number 811145.



Printed Circuit Board Connectors

**Printed Circuit Board Layout**

No. of Pos.	Dimensions	
	A	B
17	2.130 54.10	.265 6.73
23	2.730 69.34	.265 6.73
29	3.330 84.58	.265 6.73
35	3.930 99.82	.265 6.73
41	4.530 115.06	.265 6.73
47	5.363 136.22	.381 9.68

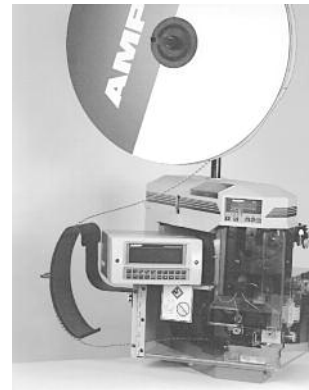


**Note:** If existing printed circuit board layout does not include the two middle rows of holes, TE Connectivity can supply the connector with the middle rows of tines removed.

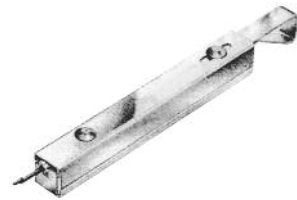
**Application Tooling**

**AMP-O-LECTRIC  
Machine**

Substantial savings and the benefits of mass production are obtained with the AMP-BLADE Printed Circuit Connector through the use of AMP automatic machines. The AMP-BLADE receptacle contacts are available in strip form for this use (see table on AMP-BLADE receptacle contacts) and can be terminated to wire leads at rates up to 1500 per hour, depending on operator skill. Contact TE Connectivity for complete specifications and part numbers.

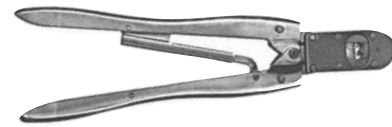


**Extraction Tool**



Receptacle Contact  
Extraction Tool  
Part Number 465199-1  
Military Part Number M21097/18-01

**Hand Crimping Tools**



Hand Tool Part Number	Loose-Piece Receptacle Contact Part Number	Wire Combinations
91555-1	66010	One 24, one 22 or one 20
	531586	
59524-1	66010	Two 24 or two 22
	66011	One 22 or one 20
	531587	One 26 or one 24
59525-1	66026	One 28, one 26 or one 24
	531589	Two 22 or two 20
90005-1	66026	Two 20, one 18 or one 20
	531589	Two 22 or three 22



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**2**

RF Connectors

## Military Specifications

### MIL-PRF-39012

- Defines the general requirements and tests for radio frequency (RF) connectors used with flexible RF cables and certain other types of coaxial transmission lines. It includes the following series of connectors in this catalog: N, BNC, TNC, SMA

### MIL-C-55339

- Defines the performance requirements and tests for between series and within series, RF coaxial connector adapters. The In-Series Adapters are shown in this catalog

### MIL-C-83517

- Defines the general requirements and test for RF connectors used with coaxial, strip, or microstrip transmission line devices. It includes the SMA Receptacles as shown in this catalog



#### Definition of Categories for MIL-PRF-39012

##### Category A — Flexible Cable

Field serviceable, no special tools required to assemble. Standard wrenches, soldering equipment, pliers, etc., are not defined as special tools. Captured center contact.

##### Category B — Flexible & Semi-Rigid Cable

Non-field replaceable, special tools may be required. These connectors may be used for original installations. Field replacement is intended to be made by Category A or C Connectors. Will not be stocked or procured by the Government. Captured and non-captured center contacts.

##### Category C — Flexible Cable

Field replaceable. Requires crimp tool and specified cable stripping dimensions. Captured center contact. Recommended crimp tool kit: Part Number 1055236-1.

##### Category D — Flexible Cable

Field replaceable. Requires crimp tool for center contact and outer ferrule; specified cable stripping dimensions (same as Category C) and defined piece parts. Captured center contact. Recommended crimp tool kit: Part Number 1055236-1.

##### Category E — Semi-Rigid Cable

Field replaceable. Requires specified cable stripping dimensions. Captured and non-captured center contact. Uses standard tool kit: Part Number 1055420-1.

##### Category F — Semi-Rigid Cable

Field replaceable. Requires crimp tool and specified cable stripping dimensions. Captured center contact. Recommended crimp tool kit: Part Number 1055835-1.

**N Series Connectors (MIL-PRF-39012)**
**Product Facts**

- Dual “O” Crimp connectors are MIL-PRF-39012, Class II, Category B qualified
- COTS equivalent parts available
- Captive center contacts
- Completely crimpable application – one hand tool crimps all cables with single or double braided shields of a given size
- Impedance matching crimps
- Broad band performance – low VSWR
- Superior cable retention
- PTFE dielectric

The TE Connectivity N Series Connector, featuring a .625 [15.88] - 24 threaded coupling for optimum stability, is highly suited for critical applications and environments. This medium sized connector can withstand shock and vibration for a low noise level and has a constant impedance of 50 ohms. It also features a captive center contact and provides excellent performance at frequencies up to 11 GHz, with voltages to 1000 volts rms.

This connector offers the added benefits of low overall applied cost with a labor-saving two-crimp assembly. The contact is simply crimped to the cable's center conductor, then both braid and cable support are simultaneously crimped to complete the termination.

N Series Connectors are available in standard plug, jack, bulkhead jack and right-angle plug configurations.

**Materials**

**Brass**—QQ-B-626  
**Beryllium Copper**—QQ-C-530  
**Dielectric**—PTFE  
**PTFE**—MIL-P-19468  
**Copper, Annealed**—QQ-C-576  
**Phosphor Bronze**—QQ-B-750  
**Silicone Rubber**—ZZ-R-765

**Plating**

**Body**—  
 Silver per QQ-S-365  
**Center Contact**—  
 Gold per ASTM B488, type 3, grade C



2

RF Connectors

**Electrical Characteristics**

**Nominal Impedance**—50 ohms  
**Working Voltage**—1000 volts, rms at sea level  
**Frequency Range**—0 to 11 GHz  
**Voltage Standing Wave Ratio (VSWR)**—Straight Plug or Jack-1.3:1 max.  
 Right-Angle Plug—  
 1.35 max. at 0 to 9.0 GHz  
 1.50 max. at 9.0 to 11.0 GHz  
**Contact Resistance**—  
 Outer Contact—0.2 milliohms  
 Center Contact—1.0 milliohms  
 Right-Angle—2.5 milliohms  
**Insulation Resistance**—  
 5000 megohms min.  
**Dielectric Withstanding Voltage**—  
 2500 Volts, rms at sea level  
**RF Leakage**—-90 dB min. at 2 to 3 GHz  
**RF Insertion Loss**—0.15 dB max. at 10 GHz; Right-Angle Plug, 0.3 dB max. at 10 GHz  
**Corona Level**—500 volts min. at 21 336 m [70,000 ft.]

**Mechanical Characteristics**

**Mating/Unmating**—Threaded coupling  
**Cable Attachment**—Crimp type - center contact and braid  
**Coupling Nut Retention**—445 N [100 lbs.] min.  
**Cable Retention**—400 N [90 lbs.] min. RG 214/U Cable  
**Durability**—500 cycles per MIL-PRF-39012  
**Captive Contact**—27 N [6 lbs.] min. axial retention, either direction

**Environmental Characteristics**

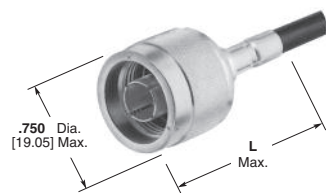
**Temperature Range**—  
 -85°F to +329°F [-65°C to +165°C]  
**Vibration**—MIL-STD-202, Method 204, Test Cond. B  
**Shock**—MIL-STD-202, Method 213, Test Cond. I  
**Moisture Resistance**—MIL-STD-202 Method 106  
**Salt Spray**—MIL-STD-202, Method 101, Test Cond B  
**Temperature Cycling**—MIL-STD-202, Method 107, Test Cond. B (except high temperature is +85°C)  
**Note:** All data pertains to use with MIL-PRF-39012 specified cables only.

**Termination Tooling**

**Integral Die**—  
 Hand Tool Part Number 220015-1

**N Series Connectors (MIL-PRF-39012)** (Continued)

**Plugs  
MIL-PRF-39012/01**



**Jacks  
MIL-PRF-39012/02**



**Bulkhead Jacks  
MIL-PRF-39012/03**



**Right-Angle Plugs  
MIL-PRF-39012/05**



**Plugs**

TE Part No.	Reference Part No.	Military PN M39012/01	Notes	Termination Style	Body Plating	Dim L	RG/U Cable
225092-7	—	B0012	Weatherproof	Crimp	Silver	1.859 [47.22]	225
1-225092-1	—	—	Weatherproof	Crimp	Silver	1.859 [47.22]	393
51692-4	—	B0013	—	Crimp	Silver	1.687 [42.85]	11, 11A, 216
225392-2	—	—	Weatherproof	Crimp	Silver	1.687 [42.85]	142, 142A, 142B, 400
225361-4	—	—	—	Crimp	Silver	1.687 [42.85]	142, 142A, 142B, 400
225361-2	—	—	—	Crimp	Silver	1.687 [42.85]	223, 55, 55A, 55B
225361-1	—	—	—	Crimp	Silver	1.687 [42.85]	58, 58A, 58B, 58C
1-225661-2	—	—	—	Crimp	Nickel	1.687 [42.85]	58, 58A, 58B, 58C
225092-2	—	B0007	Weatherproof	Crimp	Silver	1.859 [47.22]	8, 8A, 213
51692-2	—	B0007	—	Crimp	Silver	1.687 [42.85]	8, 8A, 213
225661-2	—	—	—	Crimp	Nickel	1.687 [42.85]	8, 8A, 213
225092-1	—	B0008	Weatherproof	Crimp	Silver	1.859 [47.22]	9, 9A, 9B, 214
51692-1	—	B0008	—	Crimp	Silver	1.687 [42.85]	9, 9A, 9B, 214
225661-1	—	—	—	Crimp	Nickel	1.687 [42.85]	9, 9A, 9B, 214
1057088-1	3001-7941-00	—	—	Solder	Passivate / Gold	0.970 [24.60]	402 semirigid (.141 dia)
1057094-1	3001-7985-00	—	—	Solder	Passivate / Gold	0.970 [24.60]	405 semirigid (.086 dia)

**Jacks**

TE Part No.	Reference Part No.	Military PN M39012/02	Notes	Termination Style	Body Plating	Dim L	RG/U Cable
225093-2	—	B0008	—	Crimp	Silver	1.937 [49.19]	8, 8A, 213
225664-2	—	—	Weatherproof	Crimp	Nickel	1.937 [49.19]	8, 8A, 213
225093-7	—	—	—	Crimp	Silver	1.937 [49.19]	225
1057116-1	3002-7941-00	—	—	Solder	Passivate / Gold	1.050 [26.70]	402 semirigid (.141 dia)

**Bulkhead Jacks**

TE Part No.	Reference Part No.	Military PN M39012/03	Notes	Termination Style	Body Plating	Dim L	RG/U Cable
225094-2	—	B0004	Weatherproof	Crimp	Silver	2.125 [53.98]	8, 8A, 213
225094-1	—	B0005	Weatherproof	Crimp	Silver	2.125 [53.98]	9, 9A, 9B, 214
1-225668-1	—	—	Weatherproof	Crimp	Nickel	2.125 [53.98]	393
1057140-1	3004-7388-10	—	—	Clamp	Nickel	1.125 [28.60]	174, 179, 187, 188, 316
1057138-1	3004-7341-10	—	—	Clamp	Nickel	1.125 [28.60]	55, 58, 141, 142, 223, 303
1057159-1	3004-7941-00	—	—	Solder	Passivate / Gold	1.335 [33.90]	402 semirigid (.141 dia)
1058628-1	3604-7841-02	—	18 GHz	Solder	Passivate / Gold	1.125 [28.60]	402 semirigid (.141 dia)
1057165-1	3004-7985-00	—	—	Solder	Passivate / Gold	1.335 [33.90]	405 semirigid (.086 dia)

**Flange Mount Cable Jacks**

TE Part No.	Reference Part No.	Termination Style	Body Plating	Dim L	RG/U Cable
1057176-1	3006-7941-00	Solder	Passivate / Gold	1.000 [25.40]	402 semirigid (.141 dia)
1057178-1	3006-7985-00	Solder	Passivate / Gold	1.000 [25.40]	405 semirigid (.086 dia)

**Right Angle Plugs**

TE Part No.	Reference Part No.	Military PN M39012/05	Notes	Termination Style	Body Plating	Dim L	RG/U Cable
225014-2	—	B0002	—	Crimp	Silver	2.275 [57.79]	8, 8A, 213
225389-2	—	B0002	Weatherproof	Crimp	Silver	2.453 [62.31]	8, 8A, 213
225669-2	—	—	—	Crimp	Nickel	2.275 [57.79]	8, 8A, 213
225014-3	—	B0003	—	Crimp	Silver	2.275 [57.79]	9, 9A, 9B, 214
225389-6	—	—	Weatherproof	Crimp	Silver	2.453 [62.31]	393
225389-3	—	—	Weatherproof	Crimp	Silver	2.453 [62.31]	225

**Panel Mount Receptacles**

TE Part No.	Reference Part No.	Interface	Termination Style
1057275-1	3051-0000-10	Plug	solder cup
1057284-1	3052-0000-10	Jack	solder cup
1057279-1	3051-1201-10	Plug	straight post
1057290-1	3052-1201-10	Jack	straight post
1057293-1	3052-1648-10	Jack	contact tab



**BNC Connectors (MIL-PRF-39012)**

**Product Facts**

- Dual “O” Crimp Connectors are MIL-PRF-39012, Class II, Category A or B qualified
- COTS equivalent parts available
- Bayonet lock coupling for quick connect/disconnect
- Various connectors available in 50 ohm versions
- Fully intermateable with comparable BNC UG/U connectors
- Low VSWR

**Related Product Data**

**Performance Specifications** — See chart below

**Material Specifications** — See chart below

**Military Category** — All MIL type “O” crimp connectors are Category B Type (TE Connectivity Crimp Tooling), unless otherwise noted.

**Packaging** — All connectors are packaged individually.

The TE Connectivity BNC RF connector family with bayonet locking coupling provides highly reliable, quick connect/disconnect coaxial connections. Exclusive “O” crimp terminations allow positive insulation grip and require no soldering, providing terminations at a very low overall applied cost.

Available in 50 ohm versions, these connectors feature numerous styles including cable plugs and jacks. These connectors accept a wide range of coaxial cables and are intermateable with industry standard connectors designed to MIL-PRF-39012 specifications.



**2**

RF Connectors

Characteristics	Category B “O” Crimp (MIL Type)
<b>Electrical</b>	
Impedance, Nom. (Ohms)	50
Working Voltage (Volts RMS)	500
Contact Resistance (Milliohms)	Inner: 1.5 Outer: 2.0
Initial Insulation Resistance (Megohms)	5000
Dielectric Withstanding Voltage (VAC)	1500
Corona Level at 70,000 ft. (Volts, RMS)	375
RF Leakage, Max. (dB)	-55 at 2-3 GHz
RF Insertion Loss, Max. (dB)	0.2 at 3 GHz
Frequency Range (GHz)	0-4
VSWR in Frequency Range Max.	1.30
<b>Mechanical</b>	
Force to Engage (lbs. [N])/couple, (in-lbs. [N·m]) max.	13.3/11.12 [3/2.5]
Coupling Nut Retention, Min. N [lbs.]	444.8 [100]
Cable Retention, N [lbs.]	266.9 [60] (RG58C/U)
Durability (Cycles)	500
Jam Nut Mounting Torque, Max. [N·m] (in. lbs.)	25 [2.8]
<b>Environmental</b>	
Temperature Range, Operating (C°)	-65 to +165 <sup>1</sup> / -55 to +85 <sup>2</sup>
Vibration	MIL-STD-202 Method 204 Cond. B
Physical Shock	MIL-STD-202 Method 213 Cond. G, 50 G's
Thermal Shock	MIL-STD-202 Method 107
Moisture Resistance	MIL-STD-202 Method 106
Salt Spray	MIL-STD-202 Method 101 Cond. B
Product Specification	108-12020

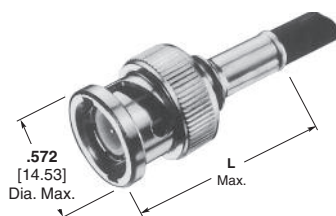
Connector Component	Category A & B “O” Crimp (MIL Type)
<b>Connector Material</b>	
Collar	Brass, QQ-B-626
Outer Contact (Plug)	Phos. Bronze, QQ-B-750
Shell (Jack)	Brass, QQ-B-626
Dielectric	PTFE, MIL-P-19468
Center Contact (Plug)	Brass, QQ-B-626
Center Contact (Jack)	Beryl. Copper, ASTM-B-643 QQ-C-530
Gasket	Silicon Rubber, QQ-R-765
Ferrule	Copper, QQ-C-576
<b>Connector Primary Finishes<sup>1</sup></b>	
Collar	Silver, QQ-S-365 Bright Nickel, QQ-N-290
Outer Contacts (Plug & Jack)	Silver, QQ-S-365 Bright Nickel, QQ-N-290
Center Contacts (Plug & Jack)	Gold MIL-G-45204
Ferrule <sup>2</sup>	Silver, QQ-S-365 Tin Lead, ASTM-B-545

<sup>1</sup> If more than one finish is listed, refer to individual catalog page(s) or customer drawings for exact specification.  
<sup>2</sup> Ferrules with tin-lead finish are used with nickel plated outer contacts.

<sup>1</sup> Assembled to cable with polytetrafluoroethylene dielectric.  
<sup>2</sup> Assembled to cable with polyethylene dielectric.

**BNC Connectors (MIL-PRF-39012)** (Continued)

**Plugs  
MIL-PRF-39012/16**



**Jacks  
MIL-PRF-39012/17**



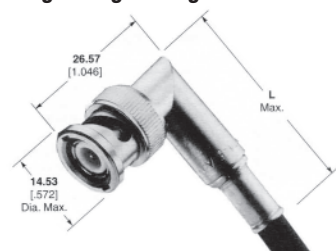
**Bulkhead Jacks  
MIL-PRF-39012/19**



**Field Serviceable  
Bulkhead Jack  
MIL-PRF-39012/19**



**Right Angle Plugs**



**Plugs**

TE Part No.	Military PN M39012/16	Termination Style	Body Plating	Dim L	RG/U Cable
8-331350-0	—	Crimp	Silver	1.188 [30.18]	174, 188, 316
5225395-7	—	Crimp	Nickel	1.188 [30.18]	174, 188, 316
9-331350-3	—	Crimp	Silver	1.188 [30.18]	179, 187
5225395-8	—	Crimp	Nickel	1.188 [30.18]	179, 187
2-331350-1	B0004	Crimp	Silver	1.188 [30.18]	58, 58A, 58B, 58C
5225395-1	—	Crimp	Nickel	1.188 [30.18]	58, 58A, 58B, 58C
5225395-3	—	Crimp	Nickel	1.188 [30.18]	55, 223
5225395-5	—	Crimp	Nickel	1.188 [30.18]	141
2-331350-9	B0007	Crimp	Silver	1.188 [30.18]	142, 400
5225395-6	—	Crimp	Nickel	1.188 [30.18]	142, 400
331350	B0008	Crimp	Silver	1.188 [30.18]	59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269
5225395-2	—	Crimp	Nickel	1.188 [30.18]	59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269
221265-1	—	Solder/clamp	Silver	1.250 [31.75]	58, 141, 142, 55, 223, 400
1-221265-0	—	Solder/clamp	Nickel	1.250 [31.75]	58, 141, 142, 55, 223, 400
221265-2	—	Solder/clamp	Silver	1.250 [31.75]	59, 62, 71, 210
1-221265-1	—	Solder/clamp	Nickel	1.250 [31.75]	59, 62, 71, 210

**Jacks**

TE Part No.	Military PN M39012/17	Termination Style	Body Plating	Dim L	RG/U Cable
2-331351-4	—	Crimp	Silver	1.200 [30.48]	174, 188, 316
5225396-7	—	Crimp	Nickel	1.200 [30.48]	174, 188, 316
2-331351-1	B0004	Crimp	Silver	1.200 [30.48]	58, 58A, 58B, 58C
5225396-1	—	Crimp	Nickel	1.200 [30.48]	58, 58A, 58B, 58C
331351	B0008	Crimp	Silver	1.200 [30.48]	59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269
5225396-2	—	Crimp	Nickel	1.200 [30.48]	59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269

**Bulkhead Jacks**

TE Part No.	Military PN M39012/19	Termination Style	Body Plating	Dim L	RG/U Cable
1-331693-2	—	Crimp	Silver	1.406 [35.71]	174, 188, 316
5225398-7	—	Crimp	Nickel	1.375 [34.93]	174, 188, 316
5225398-8	—	Crimp	Nickel	1.375 [34.93]	179, 187
1-331693-1	B0003	Crimp	Silver	1.406 [35.71]	58, 58A, 58B, 58C
5225398-1	—	Crimp	Nickel	1.375 [34.93]	58, 58A, 58B, 58C
331693	B0007	Crimp	Silver	1.406 [35.71]	59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269
5225398-3	—	Crimp	Nickel	1.500 [38.10]	55, 223
5225398-6	—	Crimp	Nickel	1.500 [38.10]	142, 400

**Right Angle Plugs**

TE Part No.	Military PN M39012/	Termination Style	Body Plating	Dim L	RG/U Cable
5225974-1	—	Crimp	Nickel	1.540 [39.12]	58
5225974-5	—	Crimp	Nickel	1.468 [37.29]	59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269

**TNC Connectors (MIL-PRF-39012)**

**Product Facts**

- **Dual “O” Crimp Connectors are MIL-PRF-39012, Class II, Category B qualified**
- **COTS equivalent parts available**
- **Provides excellent performance at frequencies up to 11 GHz**
- **Standard and weatherproof versions available**
- **Plugs available for high temperature cable**

**Related Product Data**

**Military Category** — All crimp connectors are Category B Type (TE Connectivity Crimp Tooling), unless otherwise noted.

**Packaging** — All connectors are packaged individually.

The TE Connectivity TNC RF connector family, with 7/16-28 threaded couplings, provides low noise levels and optimum stability, and can withstand the shock and vibration often present in harsh environments.

Available in 50 ohm versions, these connectors feature cable plugs and jacks. These connectors accept a wide range of coaxial cables and are interchangeable with industry standard connectors designed to MIL-PRF-39012 specifications.



2  
RF Connectors

Characteristics	Category B “O” Crimp (MIL Type)
<b>Electrical</b>	
Impedance, Nom. (Ohms)	50
Working Voltage (Volts RMS)	500
Contact Resistance (Milliohms)	Inner: 1.5 Outer: 0.2
Initial Insulation Resistance (Megohms)	5000
Dielectric Withstanding Voltage (VAC)	1500
Corona Level at 70,000 ft. (Picocoulombs)	5 max. @375 VRMS
RF Leakage, Max. (dB)	60 at 2-3 GHz
RF Insertion Loss, Max. (dB)	0.18 at 9 GHz
Frequency Range (GHz)	0-11
VSWR in Frequency Range Max.	1.3
<b>Mechanical</b>	
Force to Engage/Couple, lbs. [N]	2/2 [8.9/8.9]
Coupling Nut Retention, Min. lbs. [N]	100 [444.8]
Cable Retention, lbs. [N]	60 [266.9] RG58C/U
Durability (Cycles)	500
Jam Nut Mounting Torque, Max. lbs. [N•m]	25 [2.8]
<b>Environmental</b>	
Temperature Range, Operating (C°)	-65 to +165 <sup>1</sup> / -55 to +85 <sup>2</sup>
Vibration	MIL-STD-202 Method 204 Cond. B
Physical Shock	MIL-STD-202 Method 213 Cond. I, (100 G's)
Thermal Shock	MIL-STD-202 Method 107 Cond. B
Moisture Resistance	MIL-STD-202 Method 106
Salt Spray	MIL-STD-202 Method 101 Cond. B
Product Specification	108-12001

<sup>1</sup> Assembled to cable with polytetrafluoroethylene dielectric.

<sup>2</sup> Assembled to cable with polyethylene dielectric.

Characteristics	Category B “O” Crimp (MIL Type)
<b>Connector Material</b>	
Collar	Brass, QQ-B-626
Outer Contact (Plug)	Phos. Bronze, QQ-B-750 Beryl. Copper, QQ-C-530
Outer Contact (Jack)	Brass, QQ-B-626
Dielectric	PTFE, MIL-P-19468
Center Contact (Plug)	Brass, QQ-B-626
Center Contact (Jack)	Beryl. Copper, ASTM-B-643 QQ-C-530
Gasket	Silicon Rubber, QQ-R-765
Ferrule	Copper, QQ-C-576
<b>Connector Primary Finishes<sup>1</sup></b>	
Collar	Silver, QQ-S-365
Outer Contact (Plug & Jack)	Bright Nickel, QQ-N-290
Center Contact (Plug & Jack)	Silver, QQ-S-365
Ferrule	Gold, MIL-G-45204

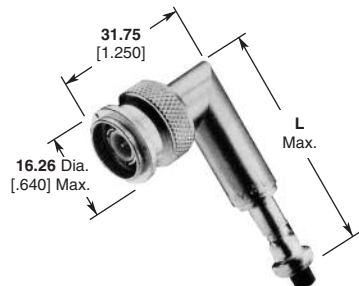
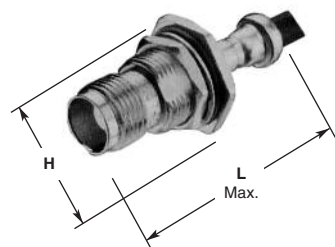
<sup>1</sup> If several finishes are listed, refer to individual catalog page(s) or customer drawings for exact specification.

**TNC Connectors (MIL-PRF-39012)** (Continued)

**Plugs  
MIL-PRF-39012/26  
(Weatherproof)**



**Jacks  
MIL-PRF-39012/27  
(Weatherproof)**



**Panel Jack  
MIL-PRF-39012/29**



**Plugs**

TE Part No.	Reference Part No.	Military PN M39012/26	Notes	Termination Style	Body Plating	Dim L	RG/U Cable
225550-2	—	B0005	Weatherproof	Crimp	Silver	1.375 [34.93]	58, 58A, 58B, 58C
522555-2	—	—	Weatherproof	Crimp	Nickel	1.375 [34.93]	58, 58A, 58B, 58C
225550-1	—	B0016	Weatherproof	Crimp	Silver	1.375 [34.93]	55, 55A, 55B, 223
225550-6	—	B0006	Weatherproof	Crimp	Silver	1.375 [34.93]	142, 142A, 142B, 400
225345-6	—	B0006	—	Crimp	Silver	1.343 [34.11]	142, 142A, 142B, 400
5-225345-6	—	—	—	Crimp	Silver	1.343 [34.11]	142, 142A, 142B, 400
522555-6	—	—	Weatherproof	Crimp	Nickel	1.375 [34.93]	142, 142A, 142B, 400
225550-3	—	B0007	Weatherproof	Crimp	Silver	1.375 [34.93]	59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269
522555-5	—	—	Weatherproof	Crimp	Nickel	1.375 [34.93]	141
1-225550-2	—	—	Weatherproof	Crimp	Silver	2.000 [50.80]	225
1-225550-3	—	—	Weatherproof	Crimp	Silver	1.995 [50.67]	393
522555-7	—	—	Weatherproof	Crimp	Nickel	2.000 [50.80]	8, 213
522555-8	—	—	Weatherproof	Crimp	Nickel	2.000 [50.80]	9, 214
1057635-1	3101-7985-00	—	—	Solder	Passivate / Gold	0.770 [19.60]	405 semirigid (.086 dia)
1057631-1	3101-7941-00	—	—	Solder	Passivate / Gold	0.770 [19.60]	402 semirigid (.141 dia)

**Jacks**

TE Part No.	Reference Part No.	Military PN M39012/27	Notes	Termination Style	Body Plating	Dim L	RG/U Cable
225551-2	—	B0005	Weatherproof	Crimp	Silver	1.406 [35.72]	58, 58A, 58B, 58C
225551-5	—	B0015	Weatherproof	Crimp	Silver	1.406 [35.72]	141, 141A, 303
225551-1	—	B0016	Weatherproof	Crimp	Silver	1.406 [35.72]	55, 55A, 55B, 223
225551-6	—	B0006	Weatherproof	Crimp	Silver	1.406 [35.72]	142, 142A, 142B, 400

**Bulkhead Jacks**

TE Part No.	Reference Part No.	Military PN M39012/	Notes	Termination Style	Body Plating	Dim L	RG/U Cable
522557-2	—	—	Weatherproof	Crimp	Nickel	1.500 [38.10]	58, 58A, 58B, 58C
522557-6	—	—	Weatherproof	Crimp	Nickel	1.500 [38.10]	142, 142A, 142B, 400
1057679-1	3104-7985-00	—	—	Solder	Passivate / Gold	1.200 [30.50]	405 semirigid (.086 dia)
1057676-1	3104-7941-00	—	—	Solder	Passivate / Gold	1.200 [30.50]	402 semirigid (.141 dia)

**Right Angle Plugs**

TE Part No.	Reference Part No.	Military PN M39012/	Notes	Termination Style	Body Plating	Dim L	RG/U Cable
522554-2	—	—	Weatherproof	Crimp	Silver	2.500 [63.50]	58, 58A, 58B, 58C
522559-2	—	—	Weatherproof	Crimp	Nickel	2.500 [63.50]	58, 58A, 58B, 58C
522554-6	—	—	Weatherproof	Crimp	Silver	2.500 [63.50]	142, 142A, 142B, 400
1-522554-1	—	—	Weatherproof	Crimp	Silver	2.500 [63.50]	393
522559-8	—	—	Weatherproof	Crimp	Nickel	2.500 [63.50]	8,213
522554-9	—	—	Weatherproof	Crimp	Silver	2.500 [63.50]	9,214

**Flange Mount Cable Jacks**

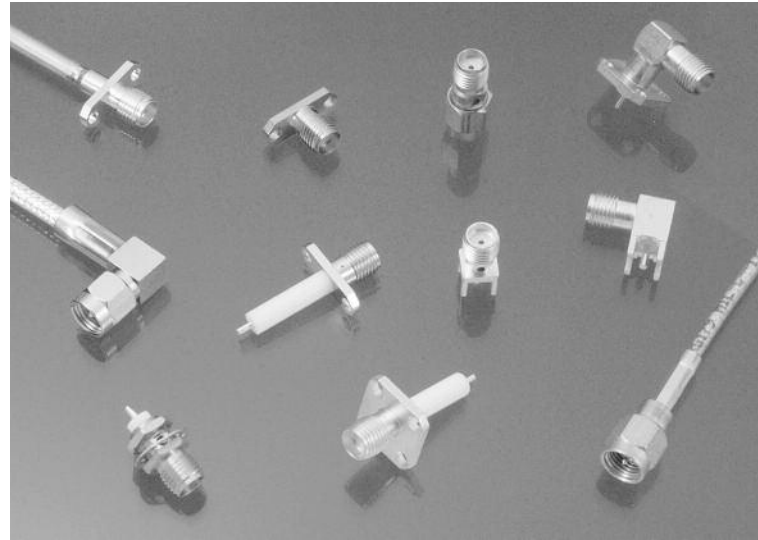
TE Part No.	Reference Part No.	Military PN M39012/29	Notes	Termination Style	Body Plating	Dim L	RG/U Cable
225348-2	—	B0005	—	Crimp	Solder	1.375 [34.93]	58, 58A, 58B, 58C
1057699-1	3106-7985-00	----	—	Solder	Passivate / Gold	0.900 [22.90]	405 semirigid (.086 dia)
1057697-1	3106-7941-00	----	—	Solder	Passivate / Gold	0.900 [22.90]	402 semirigid (.141 dia)

**Panel Mount Receptacles**

TE Part No.	Reference Part No.	Interface	Termination Style
1057775-1	3152-0000-10	TNC jack	solder cup
1057780-1	3152-1201-10	TNC jack	solder post

**SMA Connectors (MIL-PRF-39012) — Introduction****Product Facts**

- Performance to 18 GHz
- Uses industry standard crimp tools and processes
- Qualified to MIL-PRF-39012
- COTS equivalent parts available



TE Connectivity offers a complete line of SMA connectors. To satisfy the broad range of applications, SMA connectors are available in a broad range of standard configurations including; straight and right-angle cable applied plugs,

bulkhead cable jacks, two and four hole flange mount panel jacks, straight and right-angle pcb mount jacks and various between and in-series adapters, including connectors for semi-rigid cable and micro-strip applications.

**2**

RF Connectors



**SMA Connectors (MIL-PRF-39012) — Introduction** (Continued)

**Electrical Properties**

MIL Type	Cable Military Slash Sheet M17/	Frequency Max. (GHz)	VSWR (fGHz)	Contact Resistance (milliohms max.)		Insulation Resistance (megohms min.)	Dielectric Withstanding Voltage (Volts RMS)	Corona Extinction Voltage at 70,000 Ft. (V RMS min.)	RF Transmission Loss (GHz)	RF High Potential at 5 MHz (V RMS)	RF Leakage (dB min.)
				Center Contact	Outer Contact						
MIL-PRF-39012/55	93-RG178	12.4	1.20+0.025	3	2	5,000	500	125	0.06 x sqrt (freq)	335	-60
	54-RG122, 119-RG174, 94-RG179, 113-RG316, 152-152-	12.4	1.15+0.02	3	2	5,000	750	190	0.06 x sqrt (freq)	500	-60
	28-RG058, 60-RG142, 84-RG223, 111-RG303, 128-RG400	12.4	1.15+0.01	3	2	5,000	1000	250	0.06 x sqrt (freq)	670	-60
	169-00001	12.4	1.15+0.01	3	2	5,000	500	125	0.06 x sqrt (freq)	335	-60
	173-00001, 172-00001, 157-00001	12.4	1.15+0.01	3	2	5,000	750	190	0.06 x sqrt (freq)	500	-60
	155-0001, 158-00001, 167-00001, 170-00001, 175-00001	12.4	1.15+0.01	3	2	5,000	1000	250	0.06 x sqrt (freq)	670	-60
MIL-PRF-39012/56	93-RG178	12.4	1.20+0.03	4	2	5,000	500	125	0.15 x sqrt (freq)	335	-60
	54-RG122, 119-RG174, 94-RG179, 113-RG316, 152-00001	12.4	1.15+0.03	4	2	5,000	750	190	0.15 x sqrt (freq)	500	-60
	28-RG058, 60-RG142, 84-RG223, 111-RG303, 128-RG400	12.4	1.15+0.02	4	2	5,000	1000	250	0.15 x sqrt (freq)	670	-60
	169-00001	12.4	1.15+0.02	4	2	5,000	500	125	0.15 x sqrt (freq)	335	-60
	173-00001, 172-00001, 157-00001	12.4	1.15+0.02	4	2	5,000	750	190	0.15 x sqrt (freq)	500	-60
	155-0001, 158-00001, 167-00001, 170-00001, 175-00001	12.4	1.15+0.02	4	2	5,000	1000	250	0.15 x sqrt (freq)	670	-60
MIL-PRF-39012/57, /58 & /59	93-RG178	12.4	1.20+0.025	3	2	5,000	500	125	0.06 x sqrt (freq)	335	-60
	54-RG122, 119-RG174, 113-RG316	12.4	1.15+0.02	3	2	5,000	750	190	0.06 x sqrt (freq)	500	-60
	28-RG058, 60-RG142, 84-RG223, 111-RG303, 128-RG400	12.4	1.15+0.01	3	2	5,000	1000	250	0.06 x sqrt (freq)	670	-60
	169-00001	12.4	1.15+0.01	3	2	5,000	500	125	0.06 x sqrt (freq)	335	-60
	173-00001, 172-00001, 157-00001	12.4	1.15+0.01	3	2	5,000	750	190	0.06 x sqrt (freq)	500	-60
	155-0001, 158-00001, 167-00001, 170-00001, 175-00001	12.4	1.15+0.01	3	2	5,000	1000	250	0.06 x sqrt (freq)	670	-60
MIL-PRF-39012/60, & /61	—	N/A	N/A	3	2	5,000	1000	250	N/A	670	N/A
MIL-PRF-39012/79	133-RG405, 133-00001 Thru 133-00011 Captive	18	1.07+0.01	3	2	5,000	1000	250	0.03 x sqrt (freq)	670	-90
	130-RG402, 130-00001 Thru 133-00007 Captive	18	1.05+0.01	3	2	5,000	1500	375	0.03 x sqrt (freq)	1000	-90
	133-RG405, 133-00001 Thru 133-00011 Non-Captive	18	1.07+0.008	3	2	5,000	1000	250	0.03 x sqrt (freq)	670	-90
	130-RG402, 130-00001 Thru 130-00007 Non-Captive	18	1.05+0.008	3	2	5,000	1500	375	0.03 x sqrt (freq)	1000	-90
MIL-PRF-39012/80	133-RG405, 133-00001 Thru 133-00011	18	1.10+0.01	4	2	5,000	1000	250	0.05 x sqrt (freq)	670	-90
	130-RG402, 130-00001 Thru 130-00007	18	1.10+0.01	4	2	5,000	1500	375	0.05 x sqrt (freq)	1000	-90
MIL-PRF-39012/81, /82 & /83	133-RG405, 133-00001 Thru 133-00011 Captive	18	1.07+0.01	3	2	5,000	1000	250	0.03 x sqrt (freq)	670	-90
	130-RG402, 130-00001 Thru 133-00007 Captive	18	1.05+0.01	3	2	5,000	1500	375	0.03 x sqrt (freq)	1000	-90
	133-RG405, 133-00001 Thru 133-00011 Non-Captive	18	1.07+0.008	3	2	5,000	1000	250	0.03 x sqrt (freq)	670	-90
	130-RG402, 130-00001 Thru 130-00007 Non-Captive	18	1.05+0.008	3	2	5,000	1500	375	0.03 x sqrt (freq)	1000	-90
MIL-PRF-39012/92	—	18	1.035+0.005	N/A	2	5,000	N/A	250	0.03 x sqrt (freq)	670	-90
MIL-PRF-39012/93 & /94	—	18	N/A	3	2	5,000	1000	250	N/A	670	N/A



**SMA Connectors (MIL-PRF-39012) — Introduction** (Continued)

**Mechanical and Environmental Properties**

MIL Type	Force to Engage (in-lbs)	Coupling Nut Retention (lbs.)	Coupling Proof Torque (in-lbs)	Cable Retention			Insertion	Withdrawal	Connector Durability	Recommended Mating Torque (in lbs.)
				Dia.	Lbs. Min.	In.-Ounces				
MIL-PRF-39012/55	2 max.	60	15 min.	0.036 [0.91] 0.067 [1.70] 0.110 [2.79] 0.122 [3.10]	10 20 30 40	N/A	N/A	N/A	500 cycles min.	7-10
MIL-PRF-39012/56	2 max.	60	15 min.	0.036 [0.91] 0.067 [1.70] 0.110 [2.79] 0.122 [3.10]	10 20 30 40	N/A	N/A	N/A	500 cycles min.	7-10
MIL-PRF-39012/57, /58 & /59	2 max.	N/A	N/A	0.036 [0.91] 0.067 [1.70] 0.110 [2.79] 0.122 [3.10]	10 20 30 40	N/A	2 lbs. max. w/ .0370 dia. pin	1 oz. min. w/ .0355 dia. pin	500 cycles min.	7-10
MIL-PRF-39012/60, & /61	2 max.	N/A	N/A	N/A	N/A	N/A	2 lbs. max. w/ .0370 dia. pin	1 oz. min. w/ .0355 dia. pin	500 cycles min.	7-10
MIL-PRF-39012/79	2 max.	60	15 min.	133-RG405, 133-00001 Thru 133-00011 130-RG402, 130-00001 Thru 130-00007	30 60	16 55	N/A	N/A	500 cycles min.	7-10
MIL-PRF-39012/80	2 max.	60	15 min.	133-RG405, 133-00001 Thru 133-00011 130-RG402, 130-00001 Thru 130-00007	30 60	16 55	N/A	N/A	500 cycles min.	7-10
MIL-PRF-39012/81, /82 & /83	2 max.	N/A	N/A	133-RG405, 133-00001 Thru 133-00011 130-RG402, 130-00001 Thru 130-00007	30 60	16 55	2 lbs. max. w/ .0370 dia. pin	1 oz. min. w/ .0355 dia. pin	500 cycles min.	7-10
MIL-PRF-39012/92	2 max.	60	15 min.	N/A	N/A	N/A	N/A	N/A	100 cycles min.	7-10
MIL-PRF-39012/93 & /94	2 max.	N/A	N/A	N/A	N/A	N/A	2 lbs. max. w/ .0370 dia. pin	1 oz. min. w/ .0355 dia. pin	500 cycles min.	7-10

**Environmental**

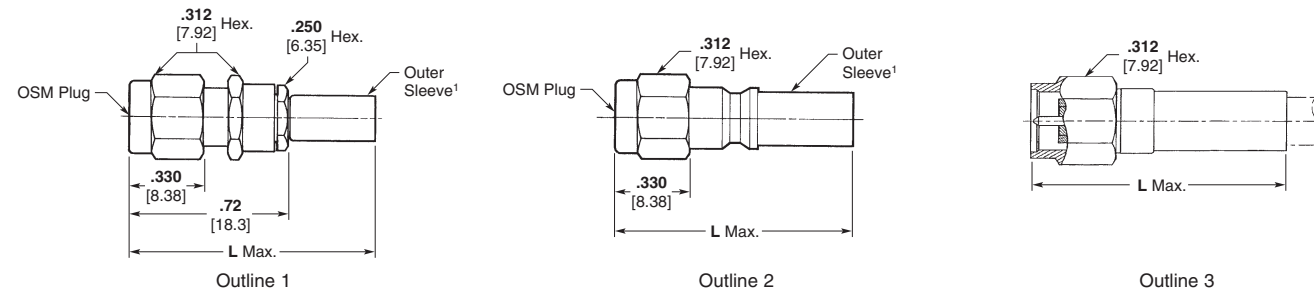
MIL Type	Vibration	Shock	Thermal Shock	Corrosion (Salt Spray)	Moisture Resistance
MIL-PRF-39012/55	MIL-STD-202 Method 204 Cond. D No Discontinuity	MIL-STD-202 Method 213 Cond. 1 No Discontinuity	MIL-STD-202 Method 107 Cond. B Except T <sub>HI</sub> 85C	MIL-STD-202 Method 101 Cond. B	MIL-STD-202, Method 106 No Measurement @ High Humidity Insulation Resistance 200 Megaohms with 5 min. of removal from humidity
MIL-PRF-39012/56	MIL-STD-202 Method 204 Cond. D No Discontinuity	MIL-STD-202 Method 213 Cond. 1 No Discontinuity	MIL-STD-202 Method 107 Cond. B Except T <sub>HI</sub> 85C	MIL-STD-202 Method 101 Cond. B	MIL-STD-202, Method 106 No Measurement @ High Humidity Insulation Resistance 200 Megaohms with 5 min. of removal from humidity
MIL-PRF-39012/57, /58 & /59	MIL-STD-202 Method 204 Cond. D No Discontinuity	MIL-STD-202 Method 213 Cond. 1 No Discontinuity	MIL-STD-202 Method 107 Cond. B Except T <sub>HI</sub> 85C	MIL-STD-202 Method 101 Cond. B	MIL-STD-202, Method 106 No Measurement @ High Humidity Insulation Resistance 200 Megaohms with 5 min. of removal from humidity
MIL-PRF-39012/60, & /61	MIL-STD-1344 Method 2005 Cond. IV No Discontinuity	MIL-STD-1344 Method 2004 Cond. G No Discontinuity	MIL-STD-1344 Method 1003 Cond. A Except T <sub>HI</sub> 200C	MIL-STD-1344 Method 1001 Cond. B	MIL-STD-1344, Method 1002, Type II No Measurement @ High Humidity Insulation Resistance 200 Megaohms with 5 min. of removal from humidity
MIL-PRF-39012/79	MIL-STD-202 Method 204 Cond. D No Discontinuity	MIL-STD-202 Method 213 Cond. 1 No Discontinuity	MIL-STD-202 Method 107 Cond. B Except T <sub>HI</sub> 115C	MIL-STD-202 Method 101 Cond. B	MIL-STD-202, Method 106 No Measurement @ High Humidity Insulation Resistance 200 Megaohms with 5 min. of removal from humidity
MIL-PRF-39012/80	MIL-STD-202 Method 204 Cond. D No Discontinuity	MIL-STD-202 Method 213 Cond. 1 No Discontinuity	MIL-STD-202 Method 107 Cond. B Except T <sub>HI</sub> 115C	MIL-STD-202 Method 101 Cond. B	MIL-STD-202, Method 106 No Measurement @ High Humidity Insulation Resistance 200 Megaohms with 5 min. of removal from humidity
MIL-PRF-39012/81, /82 & /83	MIL-STD-202 Method 204 Cond. D No Discontinuity	MIL-STD-202 Method 213 Cond. 1 No Discontinuity	MIL-STD-202 Method 107 Cond. B Except T <sub>HI</sub> 115C	MIL-STD-202 Method 101 Cond. B	MIL-STD-202, Method 106 No Measurement @ High Humidity Insulation Resistance 200 Megaohms with 5 min. of removal from humidity
MIL-PRF-39012/92	MIL-STD-202 Method 204 Cond. D No Discontinuity	MIL-STD-202 Method 213 Cond. 1 No Discontinuity	MIL-STD-202 Method 107 Cond. B Except T <sub>HI</sub> 115C	MIL-STD-202 Method 101 Cond. B	MIL-STD-202, Method 106 No Measurement @ High Humidity Insulation Resistance 200 Megaohms with 5 min. of removal from humidity
MIL-PRF-39012/93 & /94	MIL-STD-202 Method 204 Cond. D No Discontinuity	MIL-STD-202 Method 213 Cond. 1 No Discontinuity	MIL-STD-202 Method 107 Cond. B Except T <sub>HI</sub> 125C	MIL-STD-202 Method 101 Cond. B	MIL-STD-202, Method 106 No Measurement @ High Humidity Insulation Resistance 200 Megaohms with 5 min. of removal from humidity



RF Connectors

**SMA Connectors (MIL-PRF-39012) — For Flexible Cable**

**Straight Plugs**

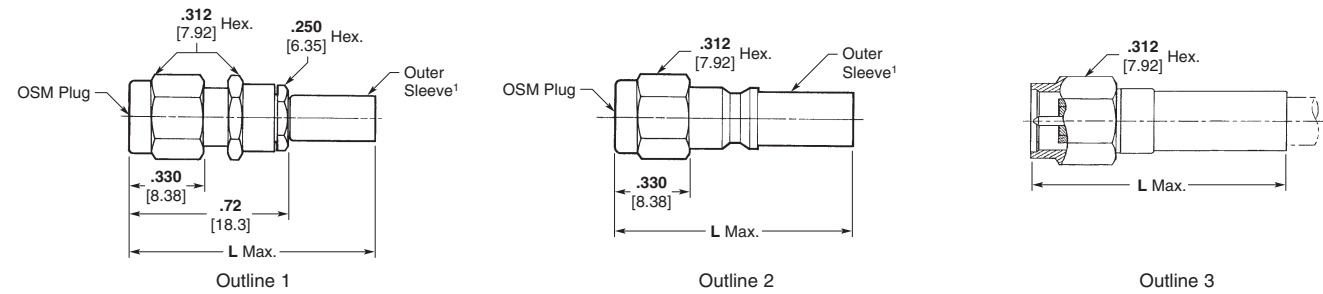


Military Part No. M39012/55	TE Part No.	Reference <sup>3</sup> Part No. (Ref. Only)	Outline	Cat. <sup>1</sup>	RG/U Cable	Dim. L	COTS Part No.	Reference <sup>3</sup> Part No. (Ref. Only)
-3006	1051757-1	2031-8006-92	1	A	178	1.030 [26.16]	—	—
-3007	1051759-1	2031-8007-92	1	A	174, 316	1.030 [26.16]	—	—
-3009	1051762-1	2031-8009-92	2	A	58, 142, 223	1.030 [26.16]	—	—
B3011	1051764-1	2031-8011-92	1	B	178	1.250 [31.75]	1051687-1 1051686-1	2031-5102-02 2031-5102-00
B3012	1051766-1	2031-8012-92	2	B	174, 316	1.250 [31.75]	1051665-1 1051664-1	2031-5012-02 2031-5012-00
B3014	1051768-1	2031-8014-92	2	B	58	1.250 [31.75]	1051678-1	2031-5055-00
B3015	1051769-1	2031-8015-92	2	B	142	1.250 [31.75]	1051651-1 1051650-1	2031-5005-02 2031-5005-00
B3016	1051770-1	2031-8016-92	2	B	223	1.250 [31.75]	1051651-1 1051650-1	2031-5005-02 2031-5005-00
B3019	1056413-1	2031-8019-92	1	B	174, 316	1.375 [34.93]	1051665-1 1051664-1	2031-5012-02 2031-5012-00
B3019	225532-4 <sup>2</sup>	—	3	B	174, 188, 188A, 316	.950 [24.13]	221117-2	—
B3021	225532-1 <sup>2</sup>	—	3	B	58, 58A, 58B, 58C	1.030 [26.16]	—	—
—	—	—	2	B	142	1.375 [34.93]	1051661-1 1051660-1	2031-5011-02 2031-5011-00
B3022	225532-3 <sup>2</sup>	—	4	B	142, 142A, 142B, 400, Belden 84142	1.030 [26.16]	221117-1	—
—	—	—	2	B	223	1.375 [34.93]	1051661-1 1051660-1	2031-5011-02 2031-5011-00
B3023	1-225532-0 <sup>2</sup>	—	4	B	223, 55, 55A, 55B	1.030 [26.16]	—	—
B3024	225532-9 <sup>2</sup>	—	4	B	141, 141A, 303	1.030 [26.16]	—	—
-3025	1051780-1	2031-8025-92	1	C	178	1.250 [31.75]	1051687-1 1051686-1	2031-5102-02 2031-5102-00
-3026	1051782-1	2031-8026-92	1	C	174, 316	1.250 [31.75]	1051665-1 1051664-1	2031-5012-02 2031-5012-00

\* No safety wire holes.  
<sup>1</sup> Category A: solder sleeve; Categories B, C and D: crimp sleeve.  
<sup>2</sup> Use Integral Die Crimp Tool Part Number 220061-1.  
<sup>3</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

**SMA Connectors (MIL-PRF-39012) — For Flexible Cable** (Continued)

**Straight Plugs** (Continued)

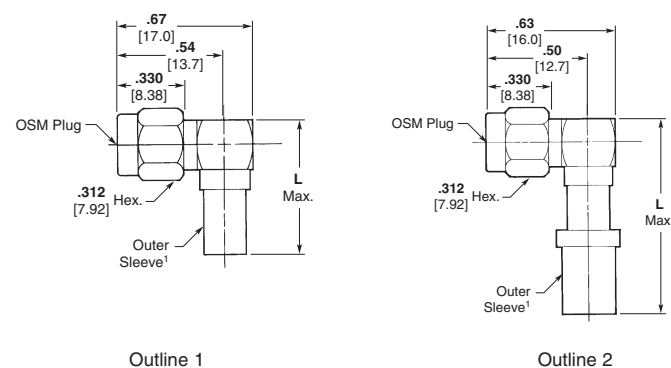


RF Connectors

Military Part No. M39012/55	TE Part No.	Reference <sup>3</sup> Part No. (Ref. Only)	Outline	Cat. <sup>1</sup>	RG/U Cable	Dim. L	COTS Part No.	Reference <sup>3</sup> Part No. (Ref. Only)
-3028	1051785-1	2031-8028-92	2	C	142, 223	1.250 [31.75]	1051661-1 1051660-1	2031-5011-02 2031-5011-00
-3029	1051787-1	2031-8029-92	2	C	58, 303	1.250 [31.75]	—	—
*-3106	1051789-1	2031-8106-92	1	A	178	1.030 [26.16]	—	—
*-3107	1051791-1	2031-8107-92	1	A	174, 316	1.030 [26.16]	—	—
*-3109	1051794-1	2031-8109-92	2	A	58, 142, 223	1.030 [26.16]	—	—
*B3112	1051797-1	2031-8112-92	2	B	174, 316	1.250 [31.75]	1051665-1 1051664-1	2031-5012-02 2031-5012-00
*B3113	1051798-1	2031-8113-92	2	B	122	1.250 [31.75]	—	—
*B3114	1051799-1	2031-8114-92	2	B	58	1.250 [31.75]	1051678-1	2031-5055-00
*B3115	1051800-1	2031-8115-92	2	B	142	1.250 [31.75]	1051651-1 1051650-1	2031-5005-02 2031-5005-00
*B3116	1051801-1	2031-8116-92	2	B	223	1.250 [31.75]	1051651-1 1051650-1	2031-5005-02 2031-5005-00
*B3119	1051804-1	2031-8119-92	1	B	174, 316	1.375 [34.93]	1051665-1 1051664-1	2031-5012-02 2031-5012-00
—	—	—	2	B	142	1.375 [34.93]	1051661-1 1051660-1	2031-5011-02 2031-5011-00
—	—	—	2	B	223	1.375 [34.93]	1051661-1 1051660-1	2031-5011-02 2031-5011-00
*-3125	1051810-1	2031-8125-92	1	C	178	1.250 [31.75]	1051687-1 1051686-1	2031-5102-02 2031-5102-00
*-3126	1051812-1	2031-8126-92	1	C	174, 316	1.250 [31.75]	1051665-1 1051664-1	2031-5012-02 2031-5012-00
*-3128	1051815-1	2031-8128-92	2	C	142, 223	1.250 [31.75]	1051661-1 1051660-1	2031-5011-02 2031-5011-00
*-3129	1051816-1	2031-8129-92	2	C	58, 303	1.250 [31.75]	—	—
-3502	1051788-1	2031-8052-92	2	D	142, 400	1.250 [31.75]	1051661-1 1051660-1	2031-5011-02 2031-5011-00
*-3602	1051817-1	2031-8162-92	2	D	142, 400	1.250 [31.75]	1051661-1 1051660-1	2031-5011-02 2031-5011-00

\* No safety wire holes.  
<sup>1</sup> Category A: solder sleeve; Categories B, C and D: crimp sleeve.  
<sup>2</sup> Use Integral Die Crimp Tool Part Number 220061-1.  
<sup>3</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

**SMA Connectors (MIL-PRF-39012) — For Flexible Cable** (Continued)

**Right Angle Plugs**


Outline 1

Outline 2

Military Part No. M39012/56	TE Part No.	Reference <sup>2</sup> Part No. (Ref. Only)	Outline	Cat. <sup>1</sup>	RG/U Cable	Dim. L	COTS Part No.	Reference <sup>2</sup> Part No. (Ref. Only)
-3006	1052149-1	2037-8006-92	1	A	178	1.125 [28.58]	—	—
-3007	1052151-1	2037-8007-92	1	A	174, 316	1.125 [28.58]	1052067-1 1052066-1	2037-5006-02 2037-5006-00
-3008	1052152-1	2037-8008-92	1	A	122	1.125 [28.58]	—	—
-3009	1052154-1	2037-8009-92	1	A	58, 142, 223	1.125 [28.58]	1052063-1 1052062-1	2037-5005-02 2037-5005-00
-3010	1052155-1	2037-8010-92	1	A	303	1.125 [28.58]	1052063-1 1052062-1	2037-5005-02 2037-5005-00
B3011	1052156-1	2037-8011-92	1	B	178	1.250 [31.75]	1052098-1 1052097-1	2037-5100-02 2037-5100-00
B3012	1052157-1	2037-8012-92	1	B	174, 316	1.250 [31.75]	1052076-1 1052075-1	2037-5008-02 2037-5008-00
B3013	1052158-1	2037-8013-92	1	B	122	1.250 [31.75]	—	—
B3014	1052159-1	2037-8014-92	1	B	58	1.250 [31.75]	1052092-1	2037-5056-00
B3015	1052160-1	2037-8015-92	1	B	142	1.250 [31.75]	1052072-1 1052071-1	2037-5007-02 2037-5007-00
B3016	1052161-1	2037-8016-92	1	B	223	1.250 [31.75]	1052072-1 1052071-1	2037-5007-02 2037-5007-00
B3017	1052162-1	2037-8017-92	1	B	303	1.250 [31.75]	1052092-1	2037-5056-00
B3018	1052163-1	2037-8018-92	1	B	178	1.375 [34.93]	1052098-1 1052097-1	2037-5100-02 2037-5100-00
B3019	1052165-1	2037-8019-92	1	B	174, 316	1.375 [34.93]	1052076-1 1052075-1	2037-5008-02 2037-5008-00
B3020	1052166-1	2037-8020-92	1	B	122	1.375 [34.93]	—	—
B3021	1052167-1	2037-8021-92	1	B	58	1.375 [34.93]	1052092-1	2037-5056-00
B3022	1052168-1	2037-8022-92	1	B	142	1.375 [34.93]	1052072-1 1052071-1	2037-5007-02 2037-5007-00
B3023	1052169-1	2037-8023-92	1	B	223	1.375 [34.93]	1052072-1 1052071-1	2037-5007-02 2037-5007-00
B3024	1052170-1	2037-8024-92	1	B	303	1.375 [34.93]	1052092-1	2037-5056-00
-3025	1052171-1	2037-8025-92	1	C	178	1.375 [34.93]	1052098-1 1052097-1	2037-5100-02 2037-5100-00
-3026	1052173-1	2037-8026-92	1	C	174, 316	1.375 [34.93]	1052076-1 1052075-1	2037-5008-02 2037-5008-00
-3027	1052174-1	2037-8027-92	1	C	122	1.375 [34.93]	—	—
-3028	1052176-1	2037-8028-92	1	C	142, 223	1.375 [34.93]	1052072-1 1052071-1	2037-5007-02 2037-5007-00

\* No safety wire holes.

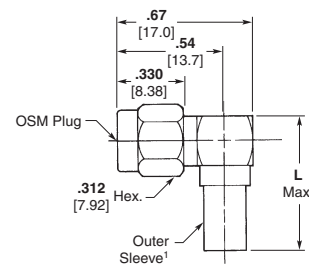
<sup>1</sup> Category A: solder sleeve; Categories B, C and D: crimp sleeve.

<sup>2</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

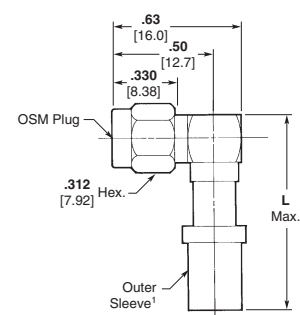
See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

**SMA Connectors (MIL-PRF-39012) — For Flexible Cable** (Continued)

**Right Angle Plugs** (Continued)



Outline 1



Outline 2



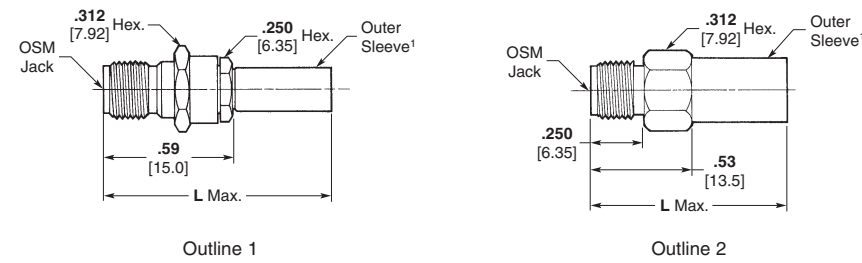
RF Connectors

Military Part No. M39012/56	TE Part No.	Reference <sup>2</sup> Part No. (Ref. Only)	Outline	Cat. <sup>1</sup>	RG/U Cable	Dim. L	COTS Part No.	Reference <sup>2</sup> Part No. (Ref. Only)
-3029	1052177-1	2037-8029-92	1	C	58, 303	1.375 [34.93]	1052092-1	2037-5056-00
*-3106	1052179-1	2037-8106-92	1	A	178	1.125 [28.58]	—	—
*-3107	1052181-1	2037-8107-92	1	A	174, 316	1.125 [28.58]	1052067-1 1052066-1	2037-5006-02 2037-5006-00
*-3108	1052182-1	2037-8108-92	1	A	122	1.125 [28.58]	—	—
*-3109	1052184-1	2037-8109-92	1	A	58, 142, 223	1.125 [28.58]	1052063-1 1052062-1	2037-5005-02 2037-5005-00
*-3110	1052185-1	2037-8110-92	1	A	303	1.125 [28.58]	1052063-1 1052062-1	2037-5005-02 2037-5005-00
*B3111	1052186-1	2037-8111-92	1	B	178	1.250 [31.75]	1052098-1 1052097-1	2037-5100-02 2037-5100-00
*B3112	1052187-1	2037-8112-92	1	B	174, 316	1.250 [31.75]	1052076-1 1052075-1	2037-5008-02 2037-5008-00
*B3113	1052188-1	2037-8113-92	1	B	122	1.250 [31.75]	—	—
*B3114	1052189-1	2037-8114-92	1	B	58	1.250 [31.75]	1052092-1	2037-5056-00
*B3115	1052190-1	2037-8115-92	1	B	142	1.250 [31.75]	1052072-1 1052071-1	2037-5007-02 2037-5007-00
*B3116	1052191-1	2037-8116-92	1	B	223	1.250 [31.75]	1052072-1 1052071-1	2037-5007-02 2037-5007-00
*B3117	1052192-1	2037-8117-92	1	B	303	1.250 [31.75]	1052092-1	2037-5056-00
*B3118	1052193-1	2037-8118-92	1	B	178	1.375 [34.93]	1052098-1 1052097-1	2037-5100-02 2037-5100-00
*B3119	1052194-1	2037-8119-92	1	B	174, 316	1.375 [34.93]	1052076-1 1052075-1	2037-5008-02 2037-5008-00
*B3120	1052195-1	2037-8120-92	1	B	122	1.375 [34.93]	—	—
*B3121	1052196-1	2037-8121-92	1	B	58	1.375 [34.93]	1052092-1	2037-5056-00
*B3122	1052197-1	2037-8122-92	1	B	142	1.375 [34.93]	1052072-1 1052071-1	2037-5007-02 2037-5007-00
*B3123	1052198-1	2037-8123-92	1	B	223	1.375 [34.93]	1052072-1 1052071-1	2037-5007-02 2037-5007-00
*B3124	1052199-1	2037-8124-92	1	B	303	1.375 [34.93]	1052092-1	2037-5056-00
*-3125	1052201-1	2037-8125-92	1	C	178	1.375 [34.93]	1052098-1 1052097-1	2037-5100-02 2037-5100-00
*-3126	1052203-1	2037-8126-92	1	C	174, 316	1.375 [34.93]	1052076-1 1052075-1	2037-5008-02 2037-5008-00
*-3127	1052204-1	2037-8127-92	1	C	122	1.375 [34.93]	—	—
*-3128	1052206-1	2037-8128-92	1	C	142, 223	1.375 [34.93]	1052072-1 1052071-1	2037-5007-02 2037-5007-00
*-3129	1052207-1	2037-8129-92	1	C	58, 303	1.375 [34.93]	1052092-1	2037-5056-00
-3502	1052178-1	2037-8052-92	2	D	142, 400	1.375 [34.93]	1052072-1 1052071-1	2037-5007-02 2037-5007-00
*-3602	1086723-1	2037-8162-92	2	D	142, 400	1.375 [34.93]	1052072-1 1052071-1	2037-5007-02 2037-5007-00

\* No safety wire holes.  
<sup>1</sup> Category A: solder sleeve; Categories B, C and D: crimp sleeve.  
<sup>2</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

**SMA Connectors (MIL-PRF-39012) — For Flexible Cable** (Continued)

**Straight Jacks**



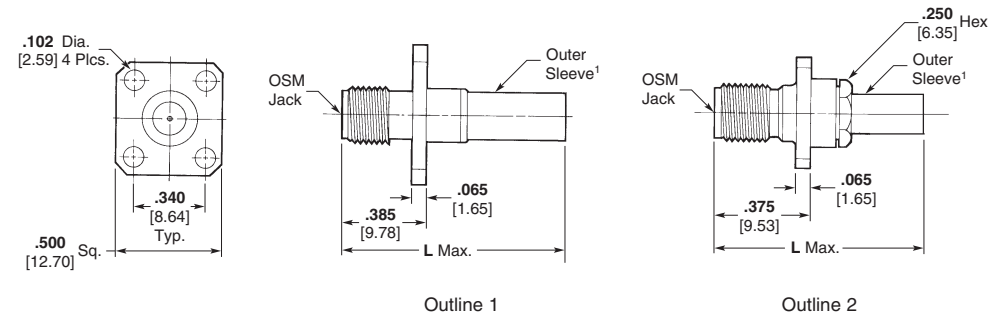
Military Part No. M39012/57	TE Part No.	Reference <sup>2</sup> Part No. (Ref. Only)	Outline	Cat. <sup>1</sup>	RG/U Cable	Dim. L	COTS Part No.	Reference <sup>2</sup> Part No. (Ref. Only)
B3011	1051904-1	2032-8011-92	1	B	178	1.265 [32.13]	1051869-1 1051868-1	2032-5026-02 2032-5026-00
B3012	1051905-1	2032-8012-92	1	B	174, 316	1.265 [32.13]	1051855-1	2032-5003-02
B3013	1051906-1	2032-8013-92	2	B	122	1.265 [32.13]	—	—
B3014	1051907-1	2032-8014-92	2	B	58	1.265 [32.13]	1051866-1	2032-5021-00
B3015	1051908-1	2032-8015-92	2	B	142	1.265 [32.13]	1051861-1	2032-5007-00
B3016	1051909-1	2032-8016-92	2	B	223	1.265 [32.13]	1051861-1	2032-5007-00
B3017	1051910-1	2032-8017-92	2	B	303	1.265 [32.13]	1051866-1	2032-5021-00
B3018	1051911-1	2032-8018-92	1	B	178	1.265 [32.13]	1 -1 1051868-1	2032-5026-02 2032-5026-00
B3019	1051912-1	2032-8019-92	1	B	174, 316	1.265 [32.13]	1051855-1	2032-5003-02
B3020	1051913-1	2032-8020-92	2	B	122	1.265 [32.13]	—	—
B3021	1051914-1	2032-8021-92	2	B	58	1.265 [32.13]	1051866-1	2032-5021-00
B3022	1051915-1	2032-8022-92	2	B	142	1.265 [32.13]	1051861-1	2032-5007-00
B3023	1051916-1	2032-8023-92	2	B	223	1.265 [32.13]	1051861-1	2032-5007-00
B3024	1051917-1	2032-8024-92	2	B	303	1.265 [32.13]	1051866-1	2032-5021-00
-3025	1051918-1	2032-8025-92	1	C	178	1.265 [32.13]	1051869-1 1051868-1	2032-5026-02 2032-5026-00
-3026	1051919-1	2032-8026-92	1	C	174, 316	1.265 [32.13]	1051855-1	2032-5003-02
-3027	1051920-1	2032-8027-92	2	C	122	1.265 [32.13]	—	—
-3028	1051921-1	2032-8028-92	2	C	142, 223	1.265 [32.13]	1051861-1	2032-5007-00
-3029	1051922-1	2032-8029-92	2	C	58, 303	1.265 [32.13]	1051866-1	2032-5021-00
-3502	1051923-1	2032-8052-92	2	D	142, 400	1.265 [32.13]	1051861-1	2032-5007-00

<sup>1</sup> Category A: solder sleeve; Categories B, C and D: crimp sleeve.  
<sup>2</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).



**SMA Connectors (MIL-PRF-39012) — For Flexible Cable** (Continued)

**Panel Mount Jacks**



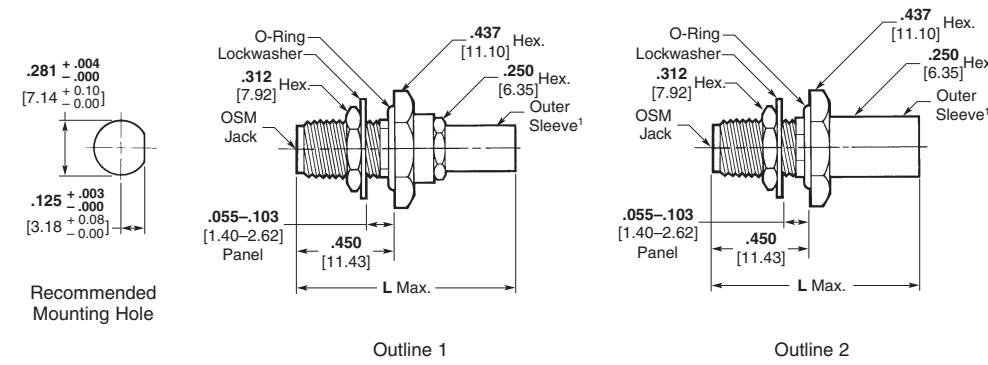
RF Connectors

Military Part No. M39012/58	TE Part No.	Reference <sup>2</sup> Part No. (Ref. Only)	Outline	Cat. <sup>1</sup>	RG/U Cable	Dim. L	COTS Part No.	Reference <sup>2</sup> Part No. (Ref. Only)
B3011	1052042-1	2036-8011-92	2	B	178	1.265 [32.13]	1052024-1	2036-5004-02
B3012	1254028-1	2036-8012-92	2	B	174, 316	1.265 [32.13]	1052024-1	2036-5004-02
B3013	1484499-1	2036-8013-92	1	B	122	1.265 [32.13]	—	—
B3014	1484500-1	2036-8014-92	1	B	58	1.265 [32.13]	—	—
B3015	1052043-1	2036-8015-92	1	B	142	1.265 [32.13]	—	—
B3016	1484501-1	2036-8016-92	1	B	223	1.265 [32.13]	—	—
B3017	1484502-1	2036-8017-92	1	B	303	1.265 [32.13]	1087843-1	2036-5014-02
B3018	1052044-1	2036-8018-92	2	B	178	1.265 [32.13]	1052030-1	2036-5016-00
B3019	1484503-1	2036-8019-92	2	B	174, 316	1.265 [32.13]	1052024-1	2036-5004-02
B3020	1484504-1	2036-8020-92	1	B	122	1.265 [32.13]	—	—
B3021	1484505-1	2036-8021-92	1	B	58	1.265 [32.13]	1087843-1	2036-5014-02
B3022	1052045-1	2036-8022-92	1	B	142	1.265 [32.13]	—	—
B3023	1484506-1	2036-8023-92	1	B	223	1.265 [32.13]	—	—
B3024	1484507-1	2036-8024-92	1	B	303	1.265 [32.13]	1087843-1	2036-5014-02
-3025	1052046-1	2036-8025-92	2	C	178	1.125 [28.58]	1052030-1	2036-5016-00
-3026	1052047-1	2036-8026-92	2	C	174, 316	1.125 [28.58]	1052024-1	2036-5004-02
-3027	1052048-1	2036-8027-92	1	C	122	1.125 [28.58]	—	—
-3028	1052049-1	2036-8028-92	1	C	142, 223	1.125 [28.58]	—	—
-3029	1052050-1	2036-8029-92	1	C	58, 303	1.125 [28.58]	—	—
-3502	1052051-1	2036-8052-92	1	D	142, 400	1.125 [28.58]	—	—

<sup>1</sup> Category A: solder sleeve; Categories B, C and D: crimp sleeve.  
<sup>2</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

**SMA Connectors (MIL-PRF-39012) — For Flexible Cable** (Continued)

**Bulkhead Jacks**

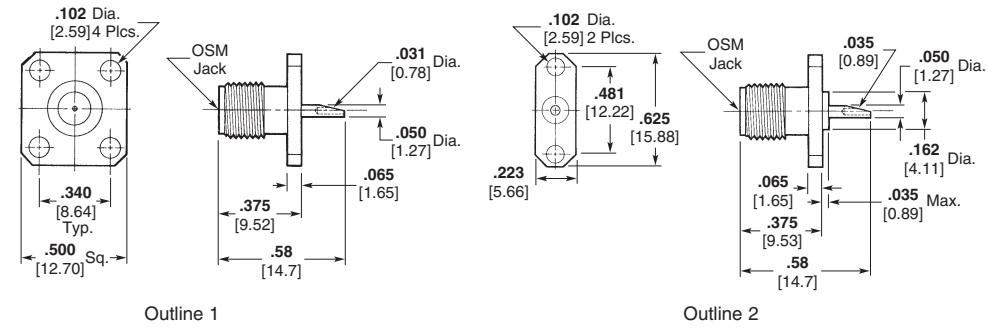


Military Part No. M39012/59	TE Part No.	Reference <sup>2</sup> Part No. (Ref. Only)	Outline	Cat. <sup>1</sup>	RG/U Cable	Dim. L	COTS Part No.	Reference <sup>2</sup> Part No. (Ref. Only)
B3011	1362216-1	2034-8011-92	1	B	178	1.265 [32.13]	1051951-1 1051950-1	2034-5031-02 2034-5031-00
B3012	1051986-1	2034-8012-92	1	B	174, 316	1.265 [32.13]	1051933-1	2034-5005-00
B3013	1083993-1	2034-8013-92	2	B	122	1.265 [32.13]	—	—
B3014	1331293-1	2034-8014-92	2	B	58	1.265 [32.13]	—	—
B3015	1253627-1	2034-8015-92	2	B	142	1.265 [32.13]	—	—
B3016	1221165-1	2034-8016-92	2	B	223	1.265 [32.13]	—	—
B3017	1484542-1	2034-8017-92	2	B	303	1.265 [32.13]	—	—
B3018	1051987-1	2034-8018-92	1	B	178	1.265 [32.13]	1051951-1 1051950-1	2034-5031-02 2034-5031-00
B3019	1051988-1	2034-8019-92	1	B	174, 316	1.265 [32.13]	1051933-1	2034-5005-00
B3020	1484543-1	2034-8020-92	2	B	122	1.265 [32.13]	—	—
B3021	1087842-1	2034-8021-92	2	B	58	1.265 [32.13]	—	—
B3022	1051989-1	2034-8022-92	2	B	142	1.265 [32.13]	—	—
B3023	1051990-1	2034-8023-92	2	B	223	1.265 [32.13]	—	—
B3024	1051991-1	2034-8024-92	2	B	303	1.265 [32.13]	—	—
-3025	1051992-1	2034-8025-92	1	C	178	1.125 [28.58]	1051951-1 1051950-1	2034-5031-02 2034-5031-00
-3026	1051994-1	2034-8026-92	1	C	174, 316	1.125 [28.58]	1051933-1	2034-5005-00
-3027	1051995-1	2034-8027-92	2	C	122	1.125 [28.58]	—	—
-3028	1051996-1	2034-8028-92	2	C	142, 223	1.125 [28.58]	—	—
-3029	1051997-1	2034-8029-92	2	C	58, 303	1.125 [28.58]	—	—
-3502	1051998-1	2034-8052-92	2	D	142, 400	1.265 [32.13]	—	—

<sup>1</sup> Category A: solder sleeve; Categories B, C and D: crimp sleeve.  
<sup>2</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

**SMA Connectors (MIL-PRF-39012) — Panel Mount**

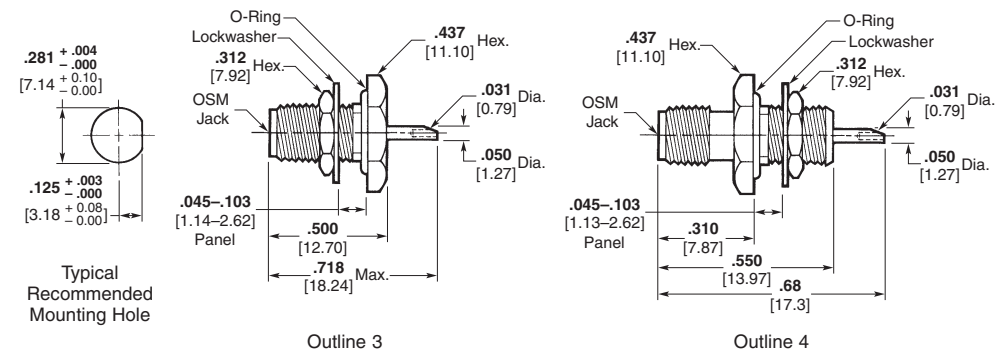
**Panel Mount Receptacles**



Military Part No. M39012/60	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-3001	1052924-1	2052-8001-92	1	1052422-1 1052421-1	2052-0000-02 2052-0000-00
-3002	1052926-1	2052-8002-92	2	1052534-1 1052533-1	2052-1300-02 2052-1300-00

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

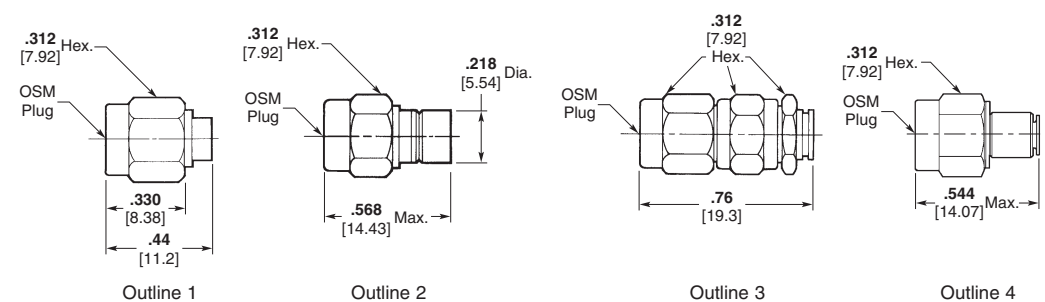
**Bulkhead Mount Receptacles**



Military Part No. M39012/61	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-3001	1053118-1	2056-8011-92	3	—	—
-3002	1484516-1	2058-8012-92	4	1053133-1	2058-0000-00

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.



**SMA Connectors (MIL-PRF-39012) — For Semi-Rigid Cable**
**Straight Plugs**


Military Part No. M39012/79	TE Part No.	Reference <sup>4</sup> Part No. (Ref. Only)	Outline	Category	RG/U Cable	COTS Part No.	Reference <sup>4</sup> Part No. (Ref. Only)
B3001	1050774-1	2001-8001-92	1	B	405	1050548-1 1050547-1	2001-5032-02 2001-5032-00
B3002	1050776-1	2001-8002-92	1	B	402	1050525-1 1050524-1	2001-5003-02 2001-5003-00
B3003	1050777-1	2001-8003-92	3	B	405	—	—
B3003	1050813-1	2001-8991-92	2 <sup>1</sup>	B	405	1050598-1	2001-5385-02
B3003	1089686-1 <sup>2</sup>	2001-8203-92	2	B	405	—	—
B3004	1050779-1	2001-8004-92	3	B	402	—	—
B3004	1050792-1 <sup>2</sup>	2001-8204-92	2	B	402	—	—
-3007	1050781-1	2001-8007-92	3	E	405	—	—
-3008	1050783-1	2001-8008-92	3	E	402	—	—
*B3101	1050785-1	2001-8101-92	1	B	405	1050548-1 1050547-1	2001-5032-02 2001-5032-00
*B3102	1050786-1	2001-8102-92	1	B	402	1050525-1 1050524-1	2001-5003-02 2001-5003-00
*B3103	1050787-1	2001-8103-92	3	B	405	—	—
*B3103	1050797-1 <sup>2</sup>	2001-8303-92	2	B	405	1050744-1	2001-7685-02
*B3103	1050812-1	2001-8981-92	2 <sup>1</sup>	B	405	1050598-1	2001-5385-02
*B3103	227868-1 <sup>3</sup>	—	4	B	405	—	—
*B3104	1050788-1	2001-8104-92	3	B	402	—	—
*B3104	1050799-1	2001-8304-92	2	B	402	—	—
*B3104	227743-1 <sup>3</sup>	—	4	B	402	—	—
*-3107	1050789-1	2001-8107-92	3	E	405	—	—
*-3108	1050790-1	2001-8108-92	3	E	402	—	—
-3207	228639-3 <sup>3</sup>	—	4	F	405	—	—
*-3307	228639-1 <sup>3</sup>	—	4	F	405	—	—
*-3308	228634-1 <sup>3</sup>	—	4	F	402	—	—
AF8627286-2	221447-1	—	4	—	405	—	—

\* No safety wire holes.

<sup>1</sup> Low profile version; overall length .393 [9.98] max.

<sup>2</sup> OSCC solderless compression crimp version.

<sup>3</sup> Use Hand Tool Kit Part Number 59981-1 which includes Die Set Part Number 312253-2 and Locator Part Number 220221-2.

<sup>4</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

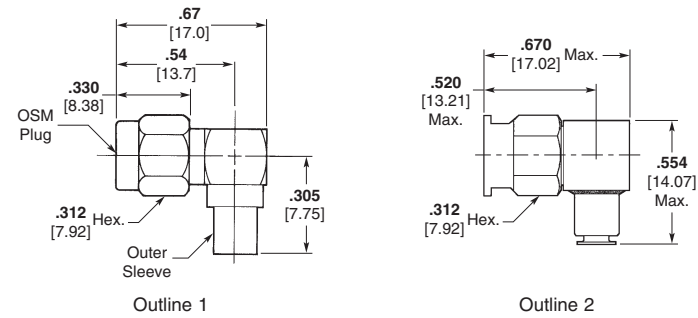
See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

DSCC Part Number	TE Part No.	Reference <sup>1</sup> Part No. Part No.	Outline	RG/U Cable	COTS Part No.	Reference <sup>1</sup> Part No. Part No.
84149SSG	1050605-1	2001-5397-02	1	402	—	—
84149SSG-1	1050629-1	2001-5557-02	1	402	1050525-1 1050524-1	2001-5003-02 2001-5003-00
84149SSGA	1050609-1	2001-5431-02	1	405	—	—
84149SSGA-1	1050631-1	2001-5558-02	1	405	1050770-1 1050769-1	2001-7985-02 2001-7985-00

<sup>1</sup> -02 indicates passivated stainless steel finish. -00 indicates gold plated finish.

**SMA Connectors (MIL-PRF-39012) — For Semi-Rigid Cable** (Continued)

**Right Angle Plugs**



RF Connectors

Military Part No. M39012/80	TE Part No.	Reference <sup>2</sup> Part No. (Ref. Only)	Outline	Category	RG/U Cable	COTS Part No.	Reference <sup>2</sup> Part No. (Ref. Only)
B3003	1051163-1	2007-8003-92	1	B	405	—	—
B3004	1051164-1	2007-8004-92	1	B	402	—	—
-3005	1051165-1	2007-8005-92	1	E	405	1051114-1 1051113-1	2007-5055-02 2007-5055-00
-3006	1051166-1	2007-8006-92	1	E	402	1051110-1 1051109-1	2007-5054-02 2007-5054-00
-3007	1051168-1	2007-8007-92	1	E	405	1051114-1 1051113-1	2007-5055-02 2007-5055-00
-3008	1051170-1	2007-8008-92	1	E	402	1051110-1 1051109-1	2007-5054-02 2007-5054-00
*B3103	1051173-1	2007-8103-92	1	B	405	1051114-1 1051113-1	2007-5055-02 2007-5055-00
*B3104	1051174-1	2007-8104-92	1	B	402	1051110-1 1051109-1	2007-5054-02 2007-5054-00
*-3105	1051175-1	2007-8105-92	1	E	405	1051114-1 1051113-1	2007-5055-02 2007-5055-00
*-3106	1051176-1	2007-8106-92	1	E	402	1051110-1 1051109-1	2007-5054-02 2007-5054-00
*-3107	1051177-1	2007-8107-92	1	E	405	1051114-1 1051113-1	2007-5055-02 2007-5055-00
*-3108	1051178-1	2007-8108-92	1	E	402	1051110-1 1051109-1	2007-5054-02 2007-5054-00
-3207	228583-3	—	2	F	405	—	—
*-3307	228583-1	—	2	F	405	—	—
-3308	228626-1	—	2	F	402	—	—

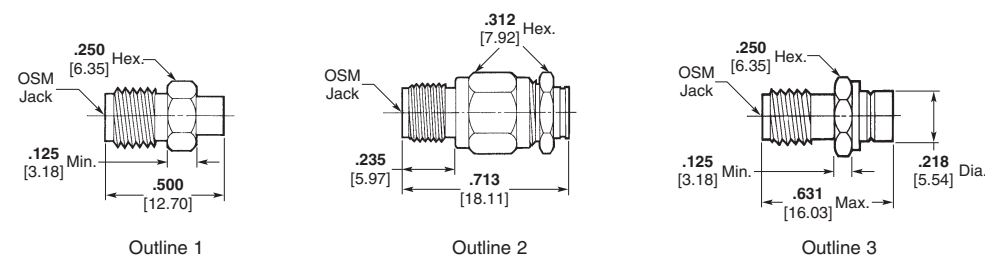
\* No safety wire holes.  
<sup>1</sup> Use Hand Tool Kit Part Number 59981-1 which includes Die Set Part Number 312253-1 and Locator Part Number 312173-1  
<sup>2</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

DSCC Part Number	TE Part No.	Reference <sup>1</sup> Part No. Part No.	Outline	RG/U Cable	COTS Part No.	Reference <sup>1</sup> Part No. Part No.
85037SSG	1051119-1	2007-5115-02	1	402	1051110-1 1051109-1	2007-5054-02 2007-5054-00
85037SSGA	1051120-1	2007-5116-02	1	405	1051114-1 1051113-1	2007-5055-02 2007-5055-00

<sup>1</sup> -02 indicates passivated stainless steel finish. -00 indicates gold plated finish.

**SMA Connectors (MIL-PRF-39012) — For Semi-Rigid Cable** (Continued)

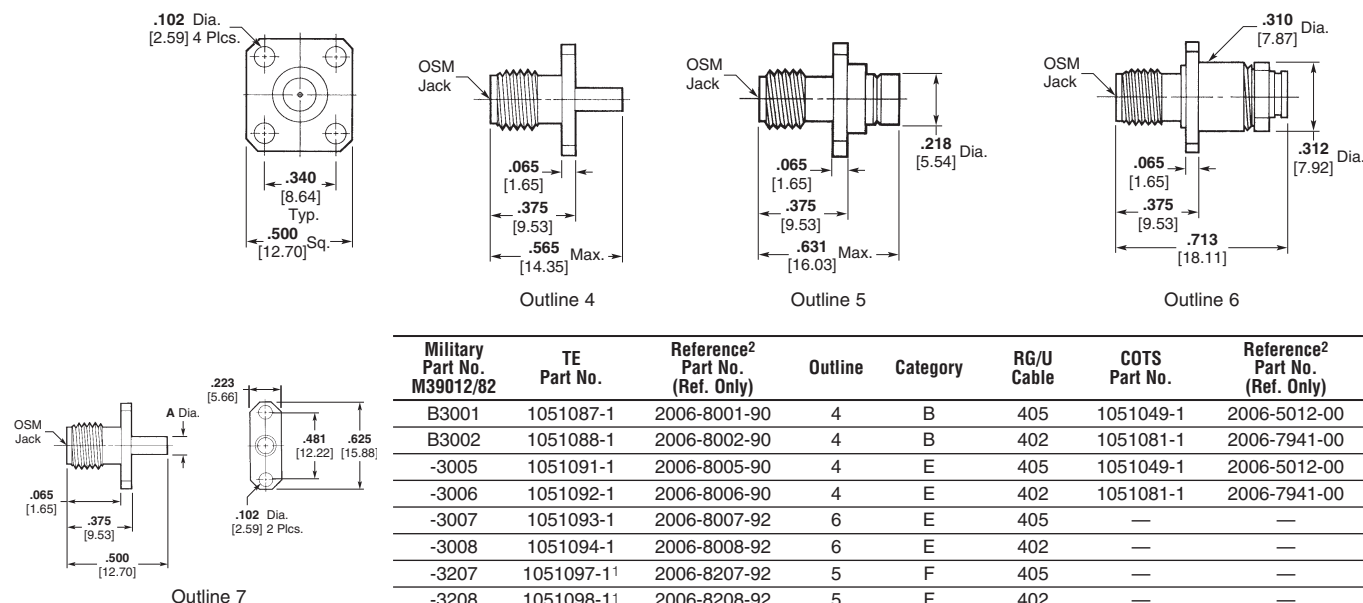
**Straight Jacks**



Military Part No. M39012/81	TE Part No.	Reference <sup>2</sup> Part No. (Ref. Only)	Outline	Category	RG/U Cable	COTS Part No.	Reference <sup>2</sup> Part No. (Ref. Only)
B3001	1050923-1	2002-8001-90	1	B	405	1050859-1	2002-5016-00
B3002	1050924-1	2002-8002-90	1	B	402	1050854-1	2002-5015-00
-3005	1050926-1	2002-8005-90	1	E	405	1050859-1	2002-5016-00
-3006	1050928-1	2002-8006-90	1	E	402	1050854-1	2002-5015-00
-3007	1050929-1	2002-8007-92	2	E	405	—	—
-3008	1050931-1	2002-8008-92	2	E	402	—	—
-3207	1050934-1 <sup>1</sup>	2002-8207-92	3	F	405	—	—
-3208	1050935-1 <sup>1</sup>	2002-8208-92	3	F	402	—	—

<sup>1</sup> OSCC solderless compression crimp version.  
<sup>2</sup> -92 indicates passivated stainless steel finish. -90 and -00 indicate gold plated finish.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling.

**Panel Mount Jacks**



Military Part No. M39012/82	TE Part No.	Reference <sup>2</sup> Part No. (Ref. Only)	Outline	Category	RG/U Cable	COTS Part No.	Reference <sup>2</sup> Part No. (Ref. Only)
B3001	1051087-1	2006-8001-90	4	B	405	1051049-1	2006-5012-00
B3002	1051088-1	2006-8002-90	4	B	402	1051081-1	2006-7941-00
-3005	1051091-1	2006-8005-90	4	E	405	1051049-1	2006-5012-00
-3006	1051092-1	2006-8006-90	4	E	402	1051081-1	2006-7941-00
-3007	1051093-1	2006-8007-92	6	E	405	—	—
-3008	1051094-1	2006-8008-92	6	E	402	—	—
-3207	1051097-1 <sup>1</sup>	2006-8207-92	5	F	405	—	—
-3208	1051098-1 <sup>1</sup>	2006-8208-92	5	F	402	—	—

<sup>1</sup> OSCC solderless compression crimp version.  
<sup>2</sup> -92 indicates passivated stainless steel finish. -90 and -00 indicate gold plated finish.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling.

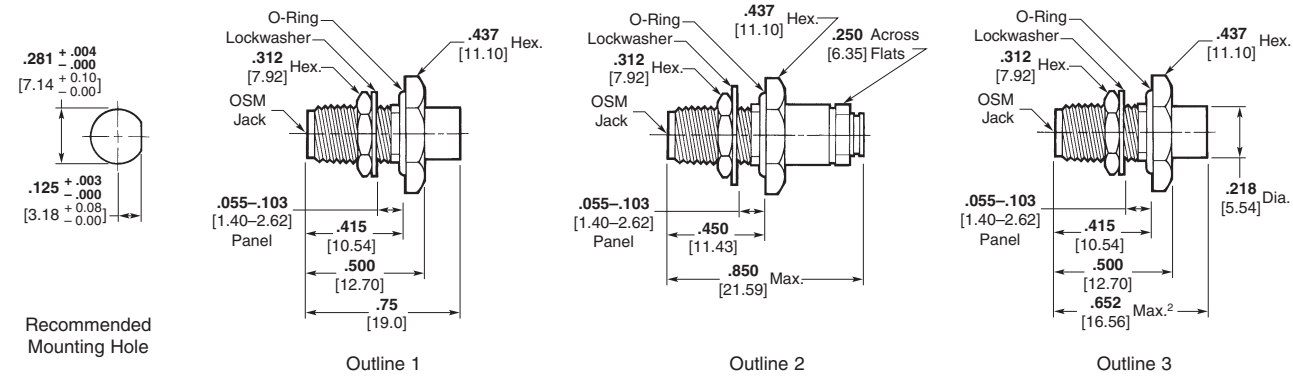
DSCC Part Number	TE Part No.	Reference <sup>1</sup> Part No. Part No.	Outline	RG/U Cable	COTS Part No.	Reference <sup>1</sup> Part No. Part No.
85022SSG	1051063-1	2006-5151-00	7	402	—	—
85022SSG-1	1221162-1	2006-5192-00	7	402	1051052-1	2006-5013-00
85022SSGA	1051062-1	2006-5150-00	7	405	—	—
85022SSGA-1	1051067-1	2006-5193-00	7	405	1051046-1	2006-5010-00

<sup>1</sup> -02 indicates passivated stainless steel finish. -00 indicates gold plated finish.



**SMA Connectors (MIL-PRF-39012) — For Semi-Rigid Cable** (Continued)

**Bulkhead Mount Jacks**



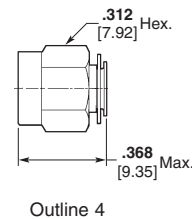
2

RF Connectors

Military Part No. M39012/83	TE Part No.	Reference <sup>3</sup> Part No. (Ref. Only)	Outline	Category	RG/U Cable	COTS Part No.	Reference <sup>3</sup> Part No. (Ref. Only)
B3001	1051022-1	2004-8001-90	1	B	405	1051018-1	2004-7985-00
B3002	1051023-1	2004-8002-90	1	B	402	1051013-1	2004-7941-00
-3005	1051026-1	2004-8005-90	1	E	405	1051018-1	2004-7985-00
-3006	1051027-1	2004-8006-90	1	E	402	1051013-1	2004-7941-00
-3007	1051028-1	2004-8007-92	2	E	405	—	—
-3008	1051029-1	2004-8008-92	2	E	402	—	—
-3207	1051032-1 <sup>1,2</sup>	2004-8207-92	3	F	405	—	—
-3208	1051033-1 <sup>1,2</sup>	2004-8208-92	3	F	402	1051005-1	2004-7641-02

<sup>1</sup> OSCC Solderless Compression Crimp version.  
<sup>2</sup> Category F Only: Overall Length; .620 [15.75] Max.  
<sup>3</sup> -92 and -02 indicate passivated stainless steel finish. -90 and -00 indicate gold plated finish.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling.

**Straight Plugs, without Contact**

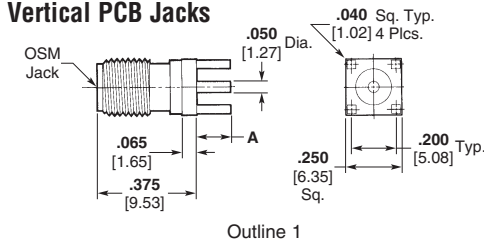


Military Part No. M39012/92	TE Part No.	Reference Part No. (Ref. Only)	Outline	Category	RG/U Cable
B3101	227531-1 <sup>2</sup>	—	4	B	402
-3301	228635-1	—	4	F	402

<sup>2</sup> Use Hand Tool Kit Part Number 59981-1 which includes Die Set Part Number 312253-1 and Locator Part Number 220220-2.  
 See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling.

**SMA Connectors (MIL-PRF-39012) — Printed Circuit Board Mount**

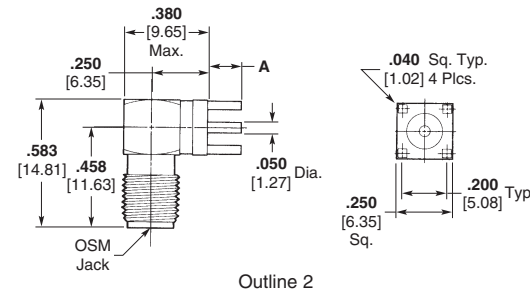
**Vertical PCB Jacks**



Outline 1

Military Part No. M39012/93	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-3001	1053372-1	2062-8001-90	1	.155 3.94	1053354-1	2062-0000-00
-3002	1053374-1	2062-8002-90	1	.125 3.18	—	—
-3003	1053376-1	2062-8003-90	1	.093 2.36	—	—

**Right Angle PCB Jacks**



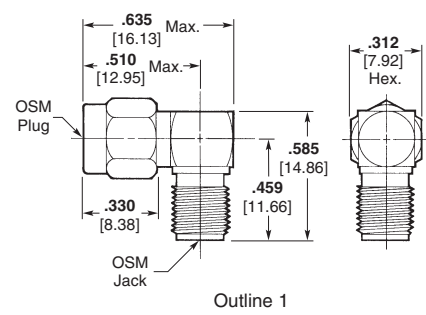
Outline 2

Military Part No. M39012/94	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-3001	1053396-1	2064-8001-90	2	.155 3.94	1053378-1	2064-0000-00
-3002	1053398-1	2064-8002-90	2	.125 3.18	—	—
-3003	1053400-1	2064-8003-90	2	.093 2.36	—	—

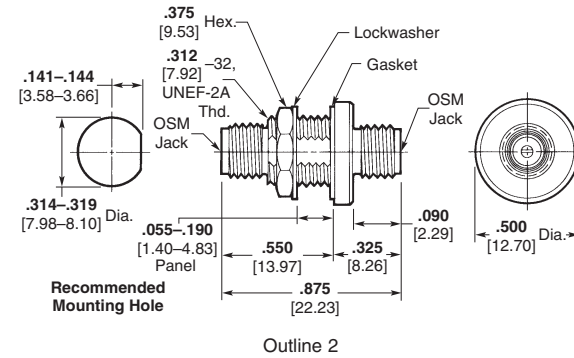
<sup>1</sup> -90 and -00 indicate gold plated finish.

**SMA In-Series Adapters (MIL-A-55339)**

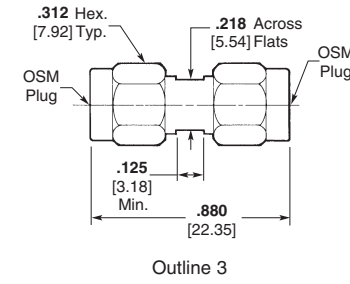
**MIL-A-55339**



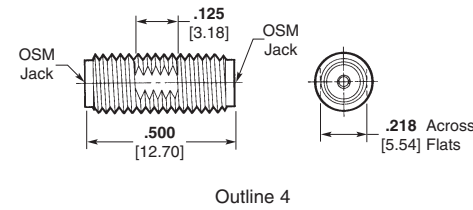
Outline 1



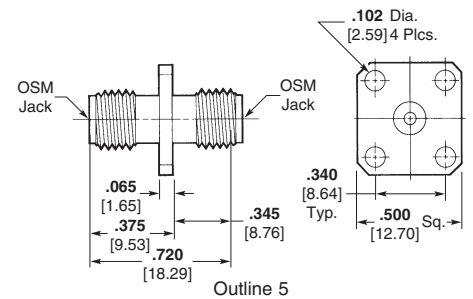
Outline 2



Outline 3



Outline 4



Outline 5

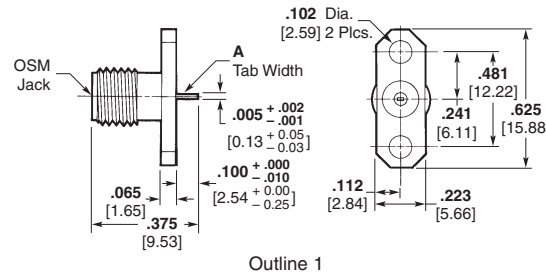
Military Part No. M55339	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
/02-30001	1055091-1	2088-8001-92	1	1055065-1 1055064-1	2088-0000-02 2088-0000-00
/28-30001	1054986-1	2084-8001-92	2	1054875-1 1054874-1	2084-1100-02 2084-1100-00
/28-30002	1054988-1	2084-8002-92	5	—	—
/29-30001	1053765-1	2081-8001-92	3	1053635-1 1053634-1	2081-0000-02 2081-0000-00
*/29-30101	1053767-1	2081-8101-92	3	1053635-1 1053634-1	2081-0000-02 2081-0000-00
/31-30001	1053633-1	2080-8001-92	4	1053489-1 1053488-1	2080-0000-02 2080-0000-00

\* No safety wire holes.

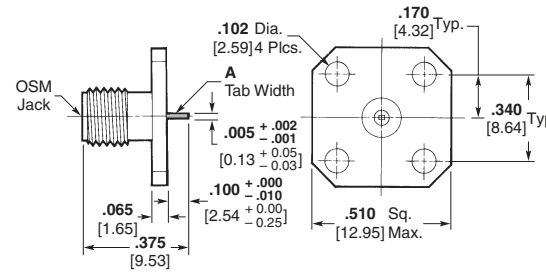
<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

**SMA Receptacles (MIL-C-83517) — Panel Mount**

**Panel Mount Jacks, Solder Tab**



Outline 1



Outline 2

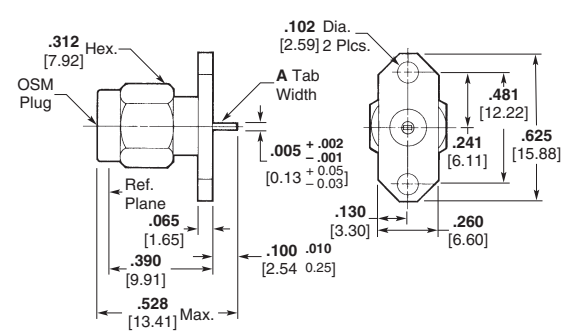
Military Part No. M83517/1	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-31001	1052928-1	2052-8003-92	1	.020 ±.002 0.51 ±.051	—	—
-31002	1052930-1	2052-8004-92	1	.050 ±.001 1.27 ±.025	1052577-1	2052-1658-02
-31003	1052932-1	2052-8005-92	2	.020 ±.002 0.51 ±.051	1052898-1 1052897-1	2052-5636-02 2052-5636-00
-31004	1052934-1	2052-8006-92	2	.050 ±.001 1.27 ±.025	1052566-1 1052565-1	2052-1618-02 2052-1618-00
-32001	1052927-1	2052-8003-90	1	.020 ±.002 0.51 ±.051	—	—
-32002	1052929-1	2052-8004-90	1	.050 ±.001 1.27 ±.025	1052577-1	2052-1658-02
-32003	1052931-1	2052-8005-90	2	.020 ±.002 0.51 ±.051	1052898-1 1052897-1	2052-5636-02 2052-5636-00
-32004	1052933-1	2052-8006-90	2	.050 ±.001 1.27 ±.025	1052566-1 1052565-1	2052-1618-02 2052-1618-00

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -90 and -00 indicate gold plated finish.

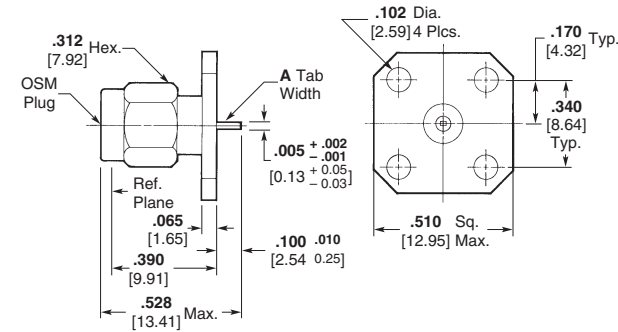


RF Connectors

**Panel Mount Plugs, Solder Tab**



Outline 3



Outline 4

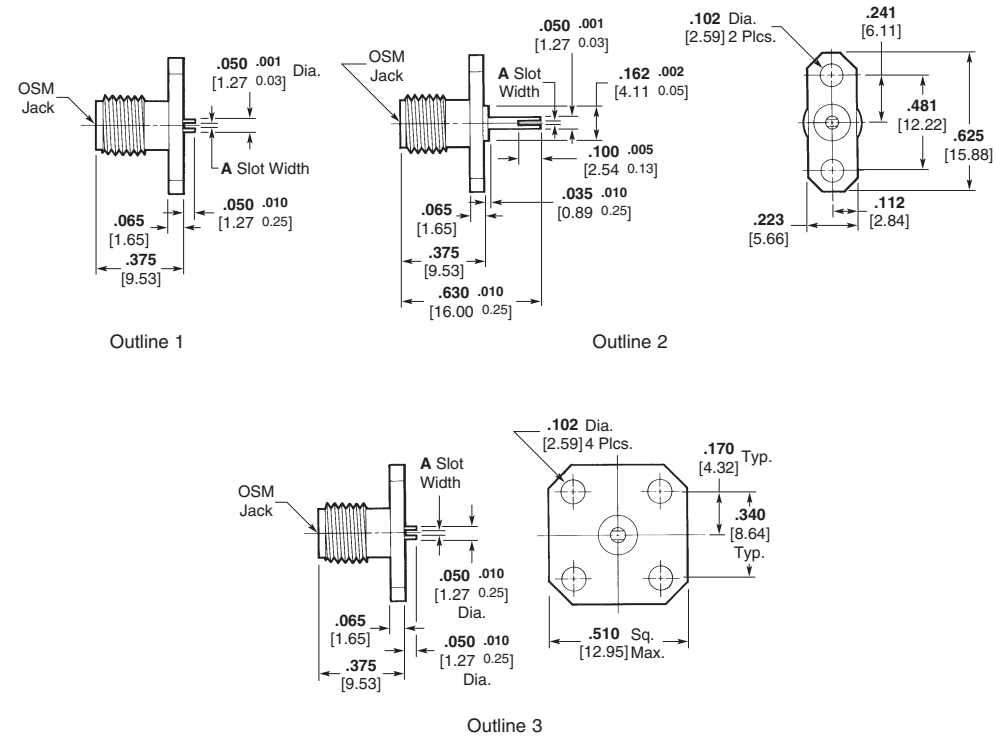
Military Part No. M83517/2	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A
-31001	1052409-1	2051-8001-92	3	.020 ±.002 0.51 ±.051
-31002	1052411-1	2051-8002-92	3	.050 ±.001 1.27 ±.025
-31003	1052413-1	2051-8003-92	4	.020 ±.002 0.51 ±.051
-31004	1052415-1	2051-8004-92	4	.050 ±.001 1.27 ±.025

Military Part No. M83517/2	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A
-32001	1052408-1	2051-8001-90	3	.020 ±.002 0.51 ±.051
-32002	1052410-1	2051-8002-90	3	.050 ±.001 1.27 ±.025
-32003	1052412-1	2051-8003-90	4	.020 ±.002 0.51 ±.051
-32004	1052414-1	2051-8004-90	4	.050 ±.001 1.27 ±.025

<sup>1</sup> -92 indicates passivated stainless steel finish.  
-90 indicates gold plated finish.

**SMA Receptacles (MIL-C-83517) — Panel Mount (Continued)**

**Panel Mount Jacks,  
Slotted Contact**

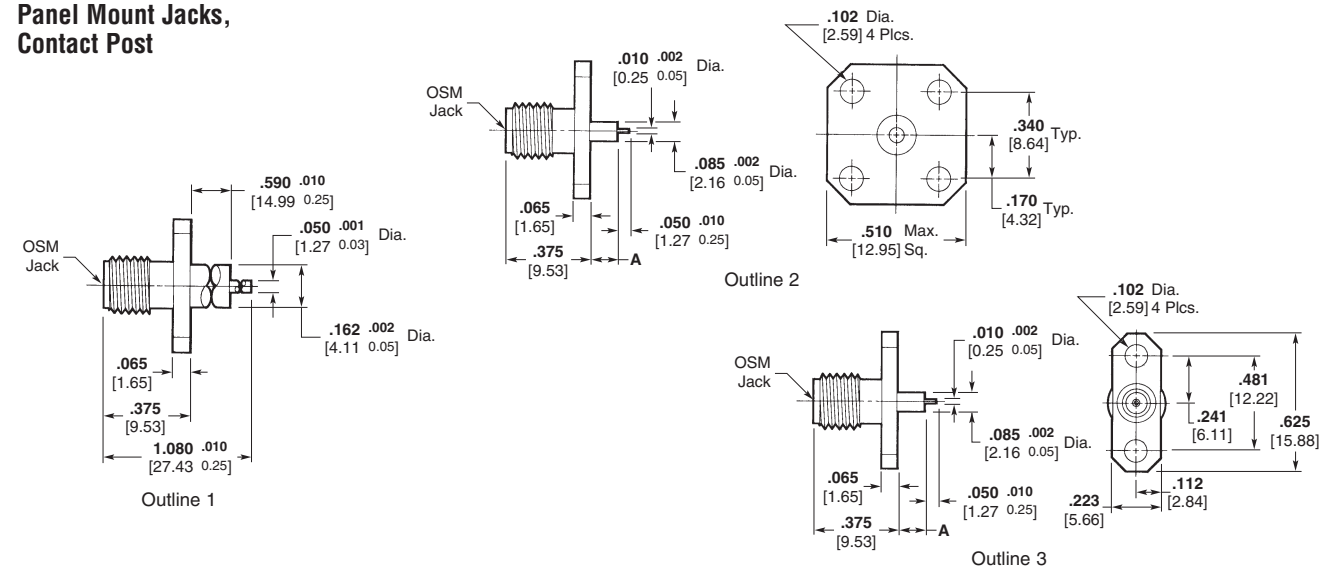


Military Part No. M83517/3	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-31001	1052936-1	2052-8007-92	1	.012 +.003/-0.001 0.30 +0.08/-0.03	1251095-1	2052-1650-02
-31002	1052938-1	2052-8008-92	1	.018 +.003/-0.001 0.46 +0.08/-0.03	—	—
-31003	1052940-1	2052-8009-92	1	.028 +.003/-0.001 0.71 +0.08/-0.03	—	—
-31004	1052942-1	2052-8010-92	3	.012 +.003/-0.001 0.30 +0.08/-0.03	—	—
-31005	1052944-1	2052-8011-92	3	.018 +.003/-0.001 0.46 +0.08/-0.03	1052563-1	2052-1612-02
-31006	1052946-1	2052-8012-92	3	.028 +.003/-0.001 0.71 +0.08/-0.03	—	—
-31007	1052948-1	2052-8013-92	2	.025 ±.002 0.64 ±0.05	—	—
-32001	1052935-1	2052-8007-90	1	.012 +.003/-0.001 0.30 +0.08/-0.03	1251095-1	2052-1650-02
-32002	1052937-1	2052-8008-90	1	.018 +.003/-0.001 0.46 +0.08/-0.03	—	—
-32003	1052939-1	2052-8009-90	1	.028 +.003/-0.001 0.71 +0.08/-0.03	—	—
-32004	1052941-1	2052-8010-90	3	.012 +.003/-0.001 0.30 +0.08/-0.03	—	—
-32005	1052943-1	2052-8011-90	3	.018 +.003/-0.001 0.46 +0.08/-0.03	1052563-1	2052-1612-02
-32006	1052945-1	2052-8012-90	3	.028 +.003/-0.001 0.71 +0.08/-0.03	—	—
-32007	1052947-1	2052-8013-90	2	.025 ±.002 0.64 ±0.05	—	—

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -90 indicates gold plated finish.

**SMA Receptacles (MIL-C-83517) — Panel Mount (Continued)**

**Panel Mount Jacks, Contact Post**



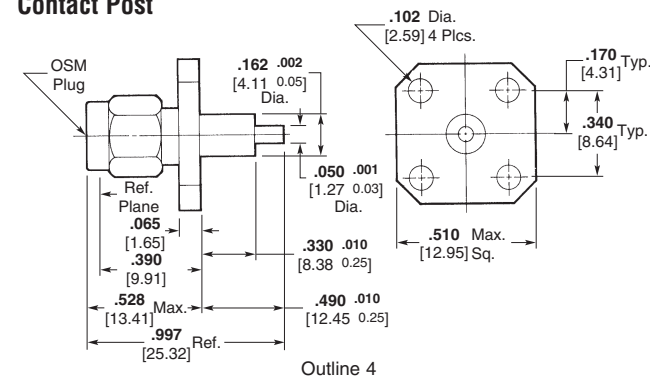
2

RF Connectors

Military Part No. M83517/4	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-31001	1052950-1	2052-8014-92	3	.057 ±.003 1.45 ±.076	—	—
-31002	1052952-1	2052-8015-92	3	.125 ±.003 3.18 ±.076	1052902-1 1052901-1	2052-5674-02 2052-5674-00
-31003	1052954-1	2052-8016-92	2	.057 ±.003 1.45 ±.076	—	—
-31004	1052956-1	2052-8017-92	2	.125 ±.003 3.18 ±.076	1052528-1 1052527-1	2052-1215-02 2052-1215-00
-31005	1052958-1	2052-8018-92	1	N/A	1052523-1 1052522-1	2052-1201-02 2052-1201-00
-32001	1052949-1	2052-8014-90	3	.057 ±.003 1.45 ±.076	—	—
-32002	1052951-1	2052-8015-90	3	.125 ±.003 3.18 ±.076	1052902-1 1052901-1	2052-5674-02 2052-5674-00
-32003	1052953-1	2052-8016-90	2	.057 ±.003 1.45 ±.076	—	—
-32004	1052955-1	2052-8017-90	2	.125 ±.003 3.18 ±.076	1052528-1 1052527-1	2052-1215-02 2052-1215-00
-32005	1052957-1	2052-8018-90	1	N/A	1052523-1 1052522-1	2052-1201-02 2052-1201-00

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -90 and -00 indicate gold plated finish.

**Panel Mount Plugs, Contact Post**

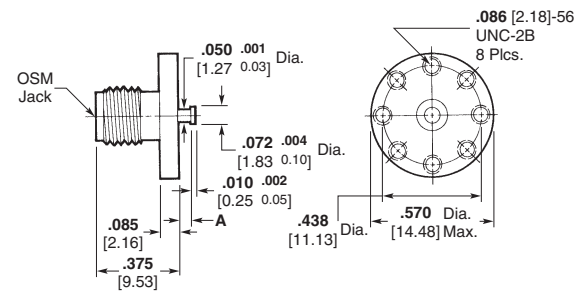


Military Part No. M83517/5	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline
-31001	1052417-1	2051-8005-92	4
-32001	1052416-1	2051-8005-90	4

<sup>1</sup> -92 indicates passivated stainless steel finish. -90 indicates gold plated finish.

**SMA Receptacles (MIL-C-83517) — Surface Launch**

**Surface Launch Jacks**

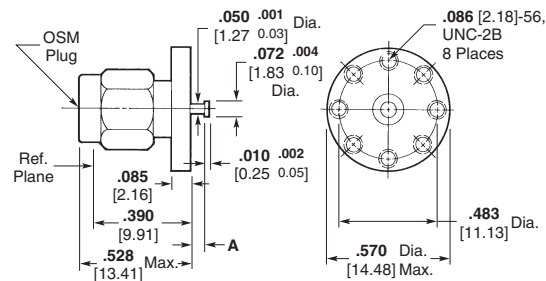


Outline 1

Military Part No. M83517/6	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-31001	1053423-1	2066-8001-92	1	.060 ±.003 1.52 ±0.08	—	—
-31002	1053425-1	2066-8002-92	1	.120 ±.003 3.05 ±0.08	1053415-1	2066-1403-00
-32001	1053422-1	2066-8001-90	1	.060 ±.003 1.52 ±0.08	—	—
-32002	1053424-1	2066-8002-90	1	.120 ±.003 3.05 ±0.08	1053415-1	2066-1403-00

<sup>1</sup> -92 indicates passivated stainless steel finish. -90 and -00 indicate gold plated finish.

**Surface Launch Plugs**

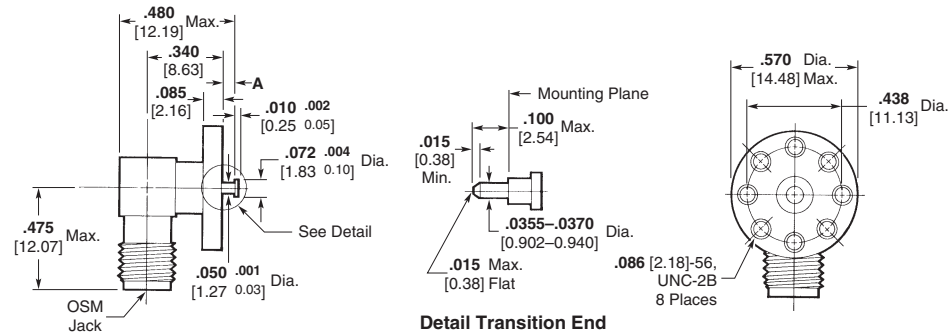


Outline 2

Military Part No. M83517/7	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A
-31001	1053429-1	2067-8001-92	2	.060 ±.003 1.52 ±0.08
-31002	1053431-1	2067-8002-92	2	.120 ±.003 3.05 ±0.08
-32001	1053428-1	2067-8001-90	2	.060 ±.003 1.52 ±0.08
-32002	1053430-1	2067-8002-90	2	.120 ±.003 3.05 ±0.08

<sup>1</sup> -92 indicates passivated stainless steel finish. -90 indicates gold plated finish.

**Surface Launch Right Angle Jacks**



Detail Transition End

Outline 3

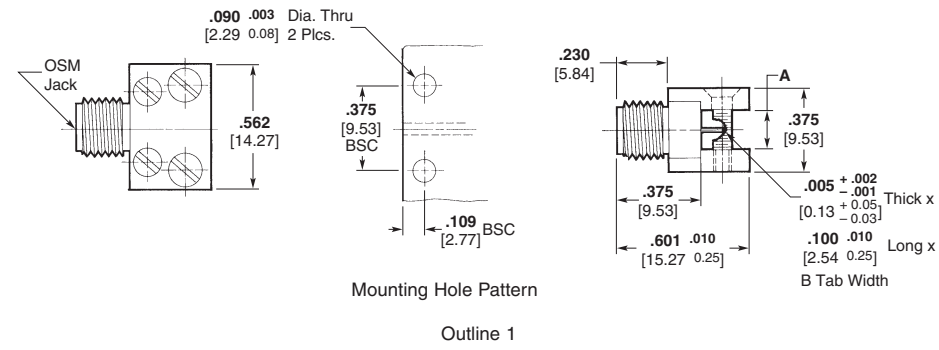
Military Part No. M83517/8	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-31001	1053451-1	2068-8001-92	3	.060 ±.003 1.52 ±0.08	1053438-1	2068-5156-00
-31002	1053453-1	2068-8002-92	3	.120 ±.003 3.05 ±0.08	—	—
-32001	1053450-1	2068-8001-90	3	.060 ±.003 1.52 ±0.08	1053438-1	2068-5156-00
-32002	1053452-1	2068-8002-90	3	.120 ±.003 3.05 ±0.08	—	—

<sup>1</sup> -92 indicates passivated stainless steel finish. -90 and -00 indicate gold plated finish.

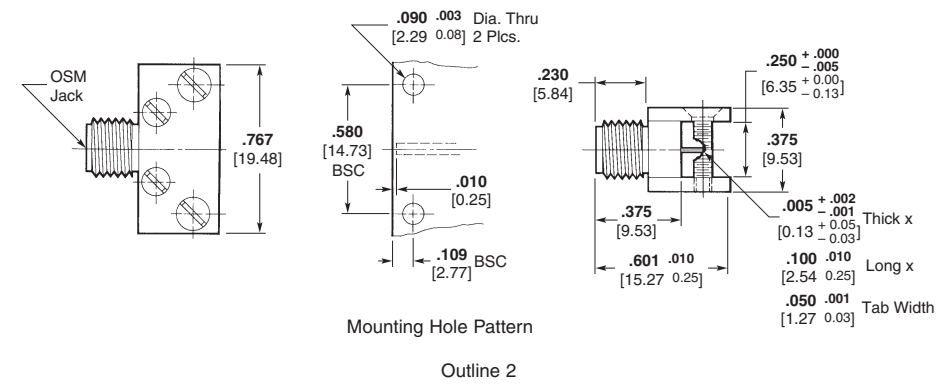


**SMA Receptacles (MIL-C-83517) — End Launch**

**End Launch Jacks**



Mounting Hole Pattern  
Outline 1



Mounting Hole Pattern  
Outline 2

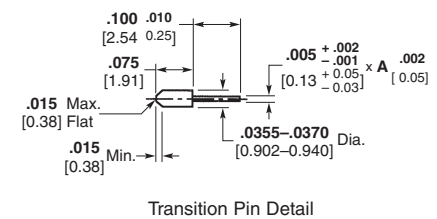
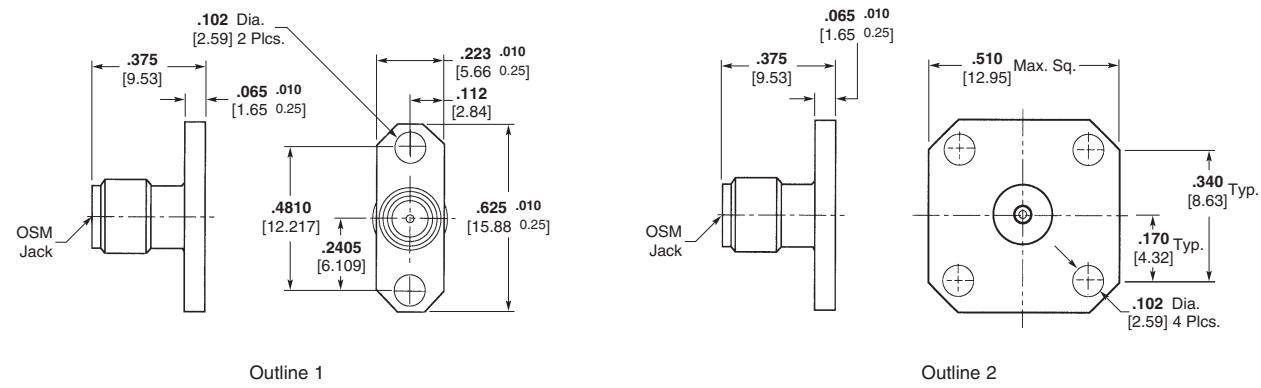
2  
 RF Connectors

Military Part No. M83517/9	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A	Dimension B	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-31001	1053476-1	2070-8001-92	1	.057-.064 1.45-1.63	.025 ± .002 0.64 ± 0.05	—	—
-31002	1053478-1	2070-8002-92	1	.120-.127 3.05-3.23	.050 ± .001 1.27 ± 0.03	1053465-1	2070-5068-02
-31003	1053480-1	2070-8003-92	1	.245-.250 6.22-6.35	.050 ± .001 1.27 ± 0.03	1053467-1	2070-5069-02
-31004	1053482-1	2070-8004-92	2	N/A	N/A	—	—
-32001	1053475-1	2070-8001-90	1	.057-.064 1.45-1.63	.025 ± .002 0.64 ± 0.05	—	—
-32002	1053477-1	2070-8002-90	1	.120-.127 3.05-3.23	.050 ± .001 1.27 ± 0.03	1053465-1	2070-5068-02
-32003	1053479-1	2070-8003-90	1	.245-.250 6.22-6.35	.050 ± .001 1.27 ± 0.03	1053467-1	2070-5069-02
-32004	1053481-1	2070-8004-90	2	N/A	N/A	—	—

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -90 indicates gold plated finish.

**SMA Receptacles (MIL-C-83517) — Field Replaceable Launchers**

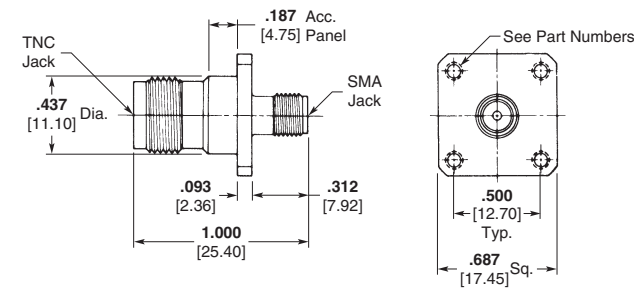
**Field Replaceable Launchers**



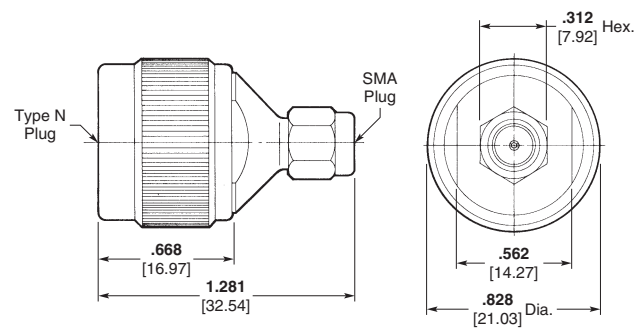
Military Part No. M83517/10	TE Part No.	Reference <sup>1</sup> Part No. (Ref. Only)	Outline	Dimension A	COTS Part No.	Reference <sup>1</sup> Part No. (Ref. Only)
-31001	1052959-1	2052-8019-92	1	—	1052646-1	2052-3359-02
-31003	1052962-1	2052-8021-92	2	—	1052643-1	2052-3358-02
-31005	1052963-1	2052-8023-92	1	.020 ±.002 0.51 ± 0.05	—	—
-31006	1484518-1	2052-8024-92	1	.050 ±.002 1.27 ± 0.05	—	—
-31015	1484519-1	2052-8033-92	2	.020 ±.002 0.51 ± 0.05	1052643-1	2052-3358-02
-31016	1484520-1	2052-8034-92	2	.050 ±.002 1.27 ± 0.05	—	—
-32001	1484521-1	2052-8019-90	1	—	1052646-1	2052-3359-02
-32003	1052961-1	2052-8021-90	2	—	1052643-1	2052-3358-02
-32005	1484522-1	2052-8023-90	1	.020 ±.002 0.51 ± 0.05	—	—
-32006	1484523-1	2052-8024-90	1	.050 ±.002 1.27 ± 0.05	—	—
-32015	1484524-1	2052-8033-90	2	.020 ±.002 0.51 ± 0.05	—	—
-32016	1484525-1	2052-8034-90	2	.050 ±.002 1.27 ± 0.05	—	—

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -90 indicates gold plated finish.

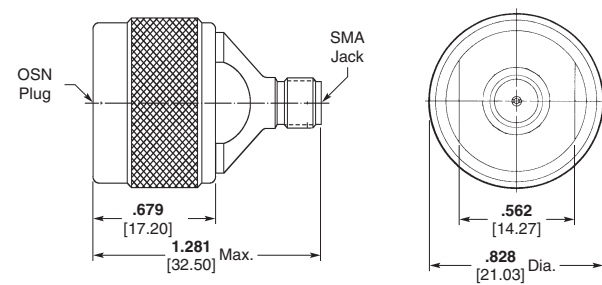
Between Series Adapters



Outline 78



Outline 80



Outline 83

DSCC Part Number	Reference Part Number (Ref. Only)	Outline	Description	TE Part Number
8501814FP-1 <sup>1</sup>	3180-4034-02 <sup>1</sup>	78	SMA Jack to TNC Jack	1057848-1
8501814FP-2 <sup>2</sup>	3180-4036-02 <sup>2</sup>	78	SMA Jack to TNC Jack	1080294-1
8604412SP-1	3081-4002-02	80	SMA Plug to Type N Plug	1057371-1
8604412SP-4	3082-4031-02	83	Type N Plug to SMA Jack	1057403-1

<sup>1</sup> .125 [3.20] Dia. Typ. (4 Plcs.)

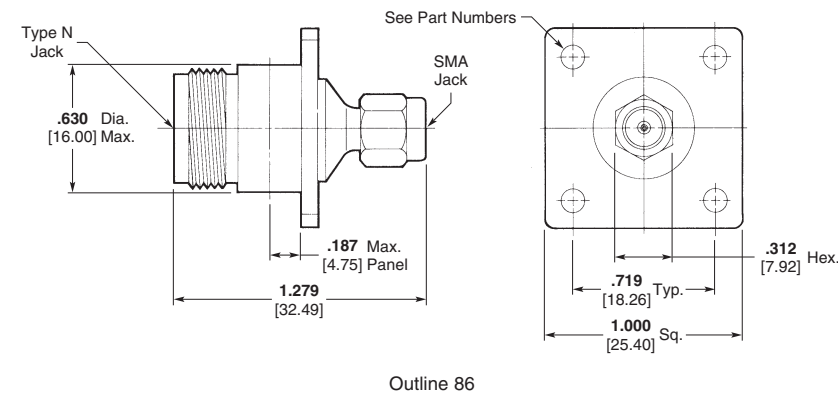
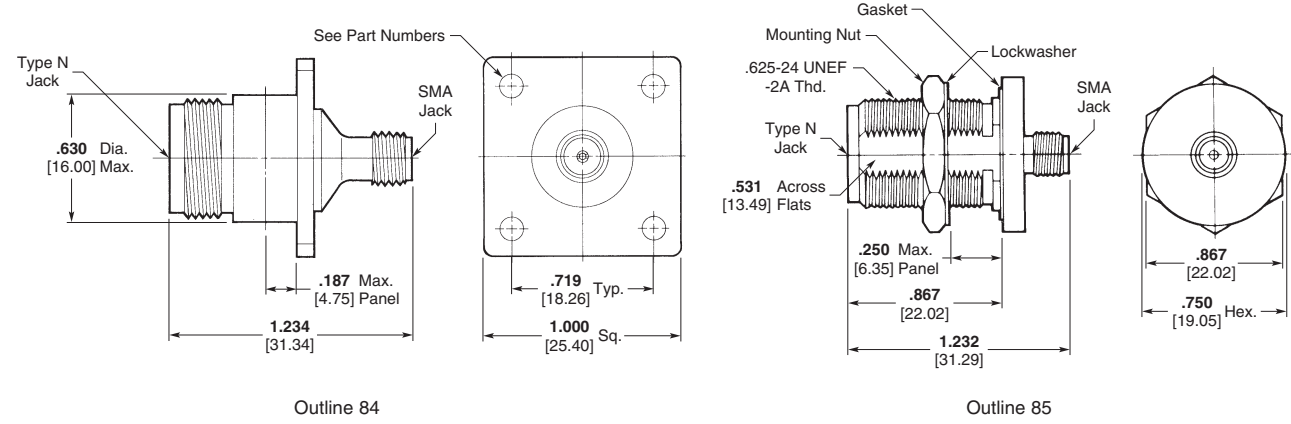
<sup>2</sup> Tapped holes to accommodate 3-56 UNF mounting screws.

2

RF Connectors

\* Defense Electronics Supply Center, Dayton, Ohio

Between Series Adapters (Continued)



DSCC Part Number	Reference Part Number (Ref. Only)	Outline	Description	TE Part Number
8503812FP-1 <sup>1</sup>	3080-4010-02 <sup>1</sup>	84	SMA Jack to Type N Jack	1057354-1
8503812FP-2 <sup>2</sup>	3080-4015-02 <sup>2</sup>	84	SMA Jack to Type N Jack	1057357-1
8503812FP-3	3084-4001-00	85	SMA Jack to Type N Jack	1057465-1
8503812FP-4 <sup>1</sup>	3082-4028-02 <sup>1</sup>	86	SMA Plug to Type N Jack	1057402-1
8503812FP-5 <sup>2</sup>	3082-4029-02 <sup>2</sup>	86	SMA Plug to Type N Jack	1252992-1
8503812FP-6 <sup>1</sup>	3080-4019-02 <sup>1</sup>	84	SMA Jack to Type N Jack	1057359-1
8503812FP-7 <sup>2</sup>	3080-4020-02 <sup>2</sup>	84	SMA Jack to Type N Jack	1087866-1

<sup>1</sup> .125 [3.20] Dia. Typ. (4 Plcs.)

<sup>2</sup> Tapped holes to accommodate 3-56 UNF mounting screws.

\* Defense Electronics Supply Center, Dayton, Ohio

**SMPM Micro-Miniature Push-on Coaxial Connectors**

**Product Facts**

- Push-on style interconnect, allowing control of the mating forces when mating multiple connectors
- 30% smaller than SMP interconnects
- Complies with MIL-STD-348A



2  
 RF Connectors

**Description**

A high performance micro-miniature, push-on coaxial interconnect system. Extremely small size interconnection that offers a versatile solution for high density packaging, allowing center-to-center spacing of 0.135".

**Applications**

Military and Aerospace applications for communications, radar systems, antennas.

Industrial applications that require a rugged, densely packaged RF interconnect system.

**Product Offering**

- Shrouds; flange mount, thread-in and press-in (full detent and smooth bore)
- Hermetic shrouds (single and dual positions)
- Edge mount PCB shrouds
- Thru-hole mount PCB shrouds
- Surface mount PCB shrouds (full detent, smooth bore and catcher's mitt designs)
- Adapters, custom lengths and spring loaded options
- Straight and right-angle jacks for .047 cable

**Electrical Performance**

- VSWR** — 1.50:1 max to 40 GHz
- Impedance** — 50 ohm
- Contact Resistance** — Center - 6 milliohms max, Outer - 2 milliohms max.
- Insulation Resistance** — 5000 megohms min.
- Dielectric Withstanding Voltage** — 225 Vrms min.
- Insertion Loss** — 0.12 dB max. typical

**Mechanical**

- Force to Engage** — 4.5 lbs. typical full detent; 2.5 lbs. typical smooth bore
- Force to Disengage** — 6.5 lbs. typical full detent; 1.5 lbs. typical smooth bore
- Radial Misalignment** — ±.010"
- Vibration** — EIA-364-28, Test condition III
- Mechanical Shock** — EIA-364-27, Method G
- Durability** — EIA-364-9, 100 cycles min.

**Material and Finish**

- Housings and Center Contacts** — Beryllium Copper per ASTM-B-196; gold plate over nickel plate
- Dielectric** — PTFE Fluorocarbon per ASTM-D-1457
- Shrouds** — Stainless steel per ASTM-A582 Type 303; passivate per ASTM-A380
- Hermetic Seal** — Glass bead

**Standards and Specifications**

MIL-STD-348A

**General Specifications**

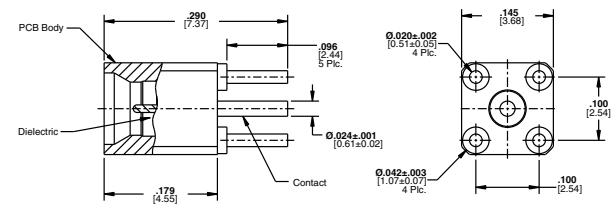
- Temperature Range** — -55 to +125 °C
- Voltage Rating** — 150 volts AC

**Environmental Performance**

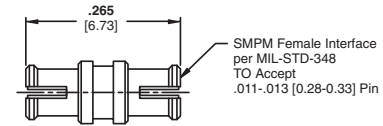
- Thermal Shock** — EIA-364-32, 5 cycles
- Humidity-temperature** — EIA-364-31 Method III, 10 cycles
- Salt Spray Corrosion** — EIA-364-26, Condition B
- Temperature Life** — EIA-364-17, Method A, test condition 5

**SMPM Micro-Miniature Push-on Coaxial Connectors** (Continued)

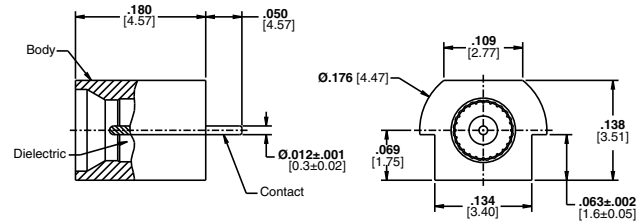
**Vertical Through-Hole PCB Mount — Part No. 1757644-1**



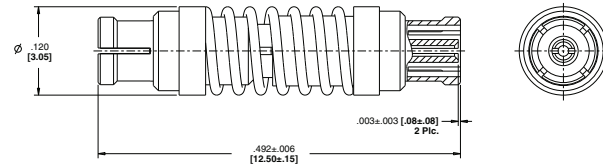
**Female Bullet Adapter — Part No. 1757256-1**



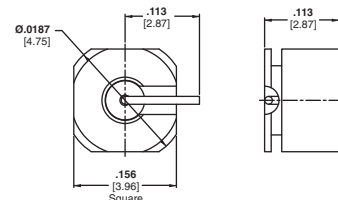
**PCB Edge Mount — Part No. 1757640-1 Full Detent  
1757640-2 Smooth Bore**



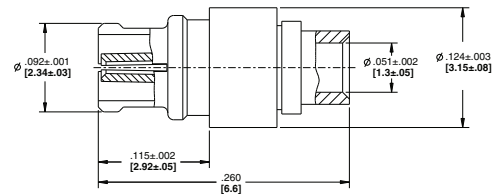
**Jack to Jack, Adapter, Spring Bullet — Part No. 1757257-1**



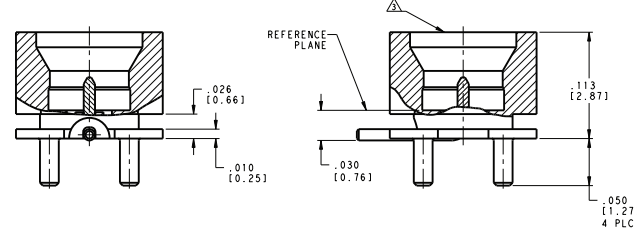
**PCB Surface Mount, Smooth Bore — Part No. 1757253-1 Smooth Bore  
1757254-1 Full Detent**



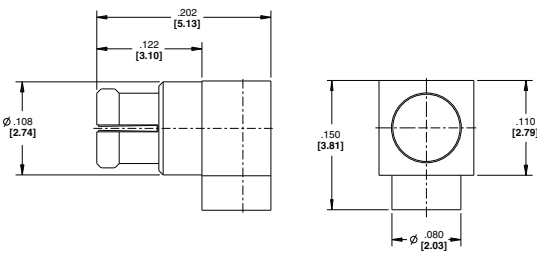
**Cable Jack, Straight — Part No. 1757642-1 — .047 dia. cable  
1996328-1 — .086 dia. cable**



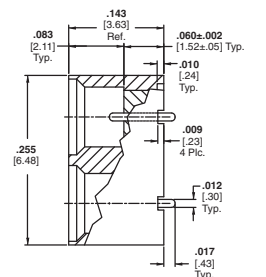
**PCB Surface Mount, — Part No. 1757639-1 Full Detent  
Through-hole Legs**



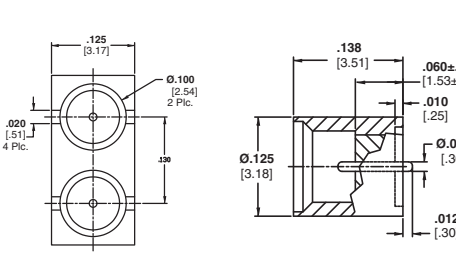
**Cable Jack, Right-Angle — Part No. 1757643-1 — .047 dia. cable**



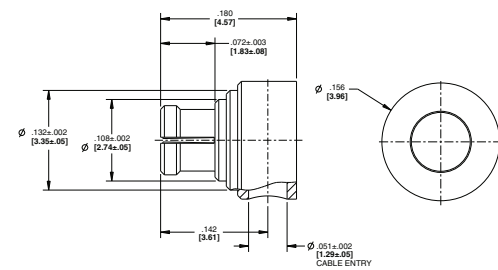
**Hermetic, Smooth Bore, 2 Pos.  
Part No. 1663434-1**



**Hermetic Smooth Bore  
Part No. 1663433-1**



**Cable Jack, Right-Angle — Part No. 1757638-1 — .047 dia. cable**

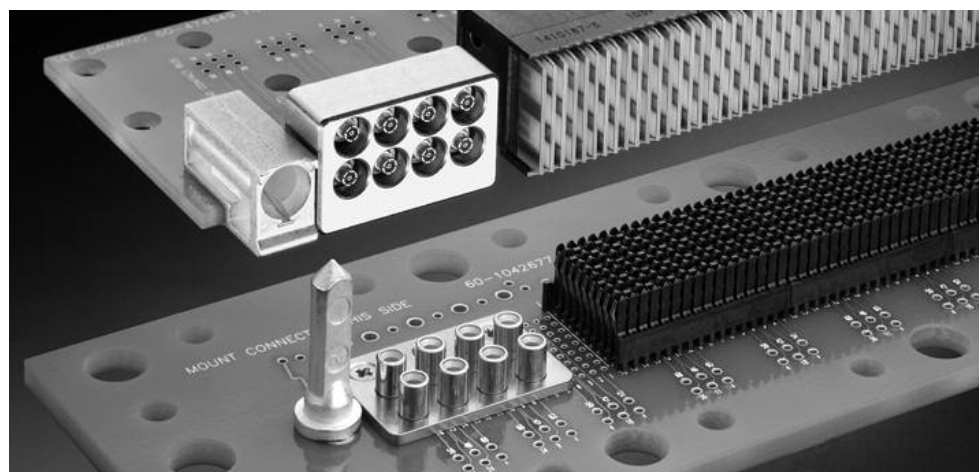




**Multi-position Backplane RF Modules**

**Product Facts**

- Modular design permits application specific configuration with high RF contact count
  - Float mounted jack maintains positive RF ground
  - .240 center-to-center spacing
  - High channel to channel isolation
  - 4 and 8 position modules are designed to meet the requirements of VITA 67.1 and VITA 67.2
  - RF contacts are available for a variety of low loss cables
- Compliant pin backplane contacts are available**
- RF cable assemblies



2

RF Connectors

**Description**

Modular, high density, blind-mate RF backplane connection system combining a high performance, broad bandwidth multi-position RF interconnect in a customer configurable platform.

**Applications**

- Backplane/daughter card applications
- Electronic countermeasure systems
- Land & sea anti-ballistic signal processing
- UAV electronic sensing and processing
- Avionics & ground based radar systems
- Ground base stations & communication systems
- Central computing, satellite on-board & ship-board computing

**Standards & Specs**

Materials and plating meet the requirements of MIL-PRF-39012

SMPM RF contact interfaces IAW MIL-STD-348

**Description**

Designed to meet the vibration, environmental and corrosion resistance requirements of ANSI/VITA 47

Designed and qualified IAW VITA 67.0; VITA 67.1 and VITA 67.2

Product Specification: 108-2443

IS Sheet: 408-10387

Test Report: 501-748

**Materials**

Center Contacts: Beryllium copper, gold plated

Connector Housings: Beryllium copper, gold plated

Module Body: Type 303 Corrosion resistant steel, with passivation treatment and aluminum alloy 6061-T6, with Trivalent chromate conversion coating

Springs: Nickel plated music wire or Type 316 corrosion resistant steel, with passivation treatment

Insulators: PTFE

**Mechanical**

Durability: EIA-364-9, 500 mating cycles (smooth bore)

Vibration: EIA-364-28, Test Condition III

Mechanical Shock: EIA-364-27, Method G

Operating Temperature: -55°C to +85°C

Humidity/Temperature Cycling: EIA-364-31, Method III

**Physical or Other Properties**

Misalignment: Axial float: .079 (2.0mm) min.

Radial Misalignment: +/- .010 min.

Force to Engage: 18.75 N (4.2 lbf) typical

Force to Disengage: 3.25 N (0.73 lbf) typical

Float Mount Preload: 0.52 N (2.3 lbf) lbs. typical

Float Mount Force at Full Deflection: 20.0 N (5.0 lbf) lbs. typical

**Note:** all values are typical for a single RF contact.

**Multi-position Backplane RF Modules** (Continued)

**Electrical**

**Impedance** — 50 ohm

**Frequency** — P.C.B. Mounted

Contacts - DC — 6.0 GHz

Semi-Rigid Cable Contacts - DC — 26.5 GHz

Flexible Cable Contacts - DC — 20 GHz

**VSWR** — 1.15:1 to 20 GHz; 1.25 max. to 26.5 GHz

**Insertion Loss** — .12 sqrt f (GHz) dB max.

**Insulation Resistance** — 5000 megaohms min.

**DWV @ Sea Level** — 325 Vrms min.

**Contact Resistance** — Center

6 milliohms max., outer 2 milliohms max.

**Isolation (Channel to Channel)** —

SHF (3-30 GHz): >100 dB

VHF/UHF (30 MHz-3 GHz): >120 dB

HF (3-30 MHz): >140 dB

**RF Power @ 105 C (C.W. Ave.)** —

VHF/UHF/SHF (30 MHz-30GHz):

>20 dBm

HF (3-30 MHz): >30 dBm

**Note:** The maximum operating frequency is limited by the specifications of the selected cable.

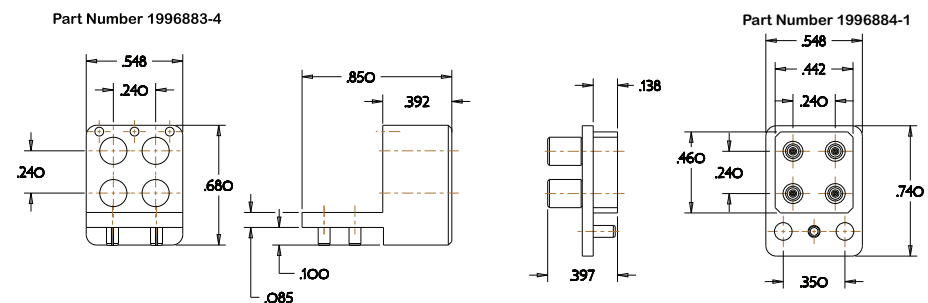
**Part Dimensions**

Dimensions are in inches

**4 Position**

Part Number 1996883-4 — VITA 67.1 Daughter Card Module

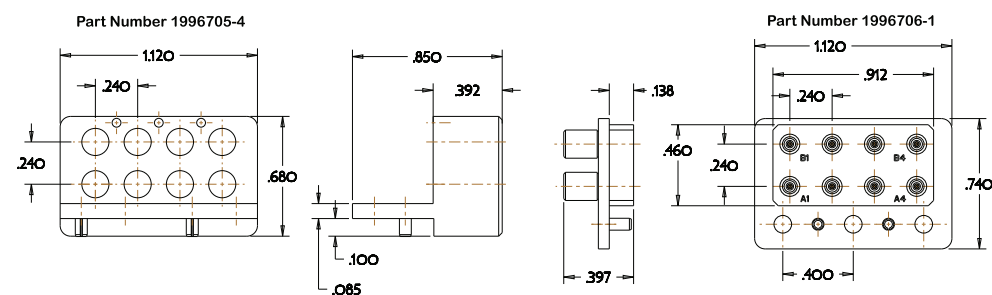
Part Number 1996884-1 — VITA 67.1 Backplane Module



**8 Position**

Part Number 1996705-4 — VITA 67.2 Daughter Card Module

Part Number 1996706-1 — VITA 67.2 Backplane Module



SMPM Contacts for Daughtercard modules:

.047 semi-rigid cable: 1996771-1

.086 semi-rigid cable: 1996390-1

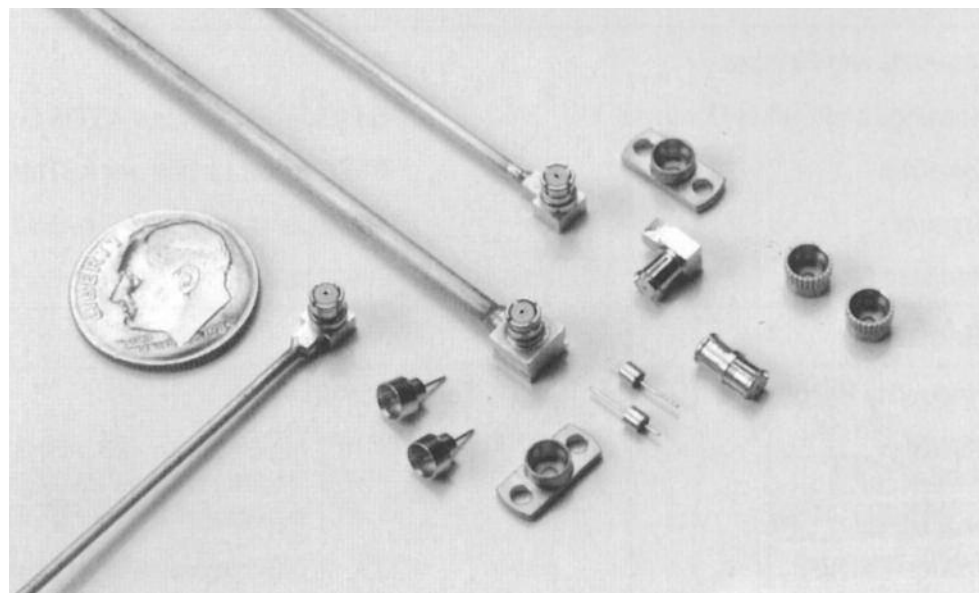
Consult TE for flexible cable/contact compatibility

**Note:** Other configurations and options are available, contact TE.

**SMP Micro-Miniature Push-On Coaxial Connectors**

**Features**

- Intermateable with Gilbert GPO™ Series
- Enhanced performance features
- Simplified Assembly
- DSCC Approved



2  
 RF Connectors

SMP micro-miniature push-on coaxial connectors provide solutions for today's modular designs with denser packaging requirements. The extremely small size of the SMP offers a versatile solution for high density packaging allowing connector center-to-center spacing of 0.17 [4.32]. The push-on interface facilitates easier assembly and test with a positive snap-in feature to indicate a fully mated connection. The rugged SMP interface can better withstand harsh environments of mechanical shock and vibration, typically found in military or aerospace related applications. This SMP connector

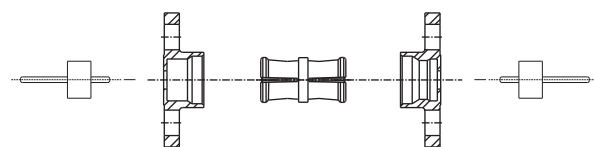
interface is the standard used by Defense Electronics Supply Center (DSCC) to generate the SMP push-on connector series. For DSCC Part Numbers, see page 2-31.

SMP connectors can be your design solution for mechanical packaging and frequency response. The SMP interface provides 0.010" of radial misalignment for critical blindmate applications. Mating forces are strictly controlled for reliable connections per mated pair or when simultaneously mating multiple connectors. Cable jacks include an anti-rocking ring for reliable mechanical performance for harsh

operating environments. SMP connectors offer enhanced broadband VSWR performance of 1.15:1 max thru 26.5GHz and 1.70:1 max thru 40GHz.

Standard design SMP configurations include cable connectors, straight and right-angle, for 0.047 and 0.085 semi-rigid cable, full detent, limited detent and smooth bore mating shrouds that can be bulk-head or flange mounted and glass feedthroughs for coax to circuit launchers. In-series adapters for module-to-module intermating and between series adapters for integrating or testing systems or components parameters.

**SMP Shroud and Jack-to-Jack Adapter Assembly**



Gilbert GPO Series — Trademark of Corning Incorporated

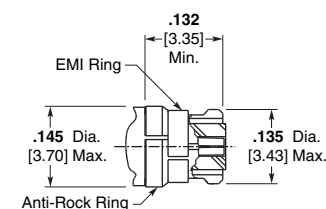
**SMP Micro-Miniature Push-On Coaxial Connectors** (Continued)

**Specifications**

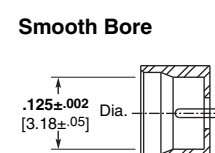
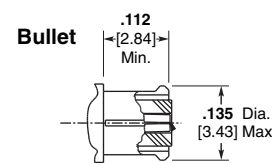
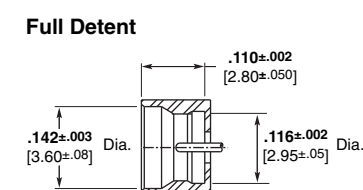
<b>General</b>	
Materials and Finishes	
Housings and Center Contacts	Beryllium Copper per ASTM-B-196; gold plate over nickel plate
Dielectric	PTFE Fluorocarbon per ASTM-D-1457
Shrouds	Stainless steel per ASTM-A582 Type 303; passivate per ASTM-A380
Hermetic Seal	Glass bead
<b>Electrical</b>	
Frequency Range	dc - 40.0 GHz
VSWR	1.10:1 Maximum dc - 23.0 GHz
	1.15:1 Maximum 23.0 - 26.5 GHz
	1.70:1 Maximum 40.0 GHz
Voltage Rating	335 Vrms maximum at sea level
Insertion Loss	0.10 f √(GHz) dB
Insulation Resistance	5000 megohms minimum
Dielectric Withstanding Voltage	500 volts (VRMS minimum)
RF High Potential	325 volts (VRMS minimum) @ 5 MHz
Impedance	50 ohms nominal
RF Leakage	-80dB to 3 GHz, -65dB from 3 to 26.5 GHz minimum
Contact Resistance	Initial center contact 6.0 milliohms maximum
	Outer contact 2.0 milliohms maximum
<b>Mechanical</b>	
Durability	100 mating cycles minimum - (full detent)
Radial Misalignment	±0.010 minimum
Axial Misalignment	.000/.010
Force to Engage	full detent 15.0 lbs. maximum
	limited detent 10.0 lbs. maximum
	smooth bore 2.0 lbs. maximum
Force to Disengage	full detent 5.0 lbs. minimum
	limited detent 2.0 lbs. minimum
	smooth bore 0.5 lbs. minimum
Center Contact Retention	1.5 lbs. minimum axial force
<b>Environmental</b>	
Operating Temperature	-85°F to +329°F [-65°C to +165°C]
Vibration	per MIL-STD-202, method 204, test condition D
Shock	per MIL-STD-202, method 213, test condition I
Thermal Shock	per MIL-STD-202, method 107, test condition B
Moisture Resistance megohms	per MIL-STD-202, method 106, except step 7b shall be omitted. Resistance shall be 1000 within 5 minutes after removal from humidity.

**Interface Dimensions**

**Jack**



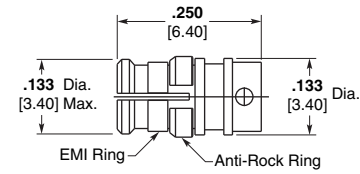
**Shroud**



**Note:** These dimensions comply with MIL-STD-348.

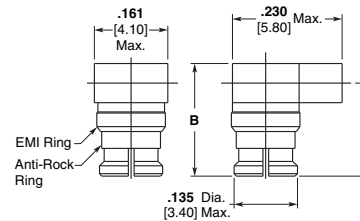
**SMP Micro-Miniature Push-On Coaxial Connectors** (Continued)

**Straight Cable Jack, Solder Attachment**



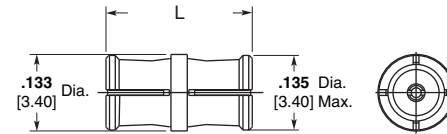
Cable	Reference Part No. (Ref. only)	Part No.	DSCC Part No.
.047 Semi-Rigid	2902-5005-62	1056521-1	94008ZCG-2
.085 Semi-Rigid (RG-405)	2902-5006-62	1056522-1	94008ZCG-1

**Right-Angle Cable Jack, Solder Attachment**



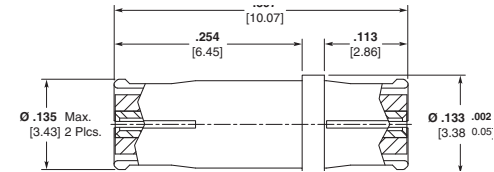
Cable	Dim. A	Dim. B	Reference Part No. (Ref. only)	Part No.	DSCC Part No.
.047 Semi-Rigid	.190 4.80	.230 5.80	2908-5006-62	1056550-1	94008ZCG-4
.085 Semi-Rigid (RG-405)	.209 5.30	.265 6.70	2908-5007-62	1056551-1	94008ZCG-3

**Jack to Jack Adapter (Bullet)**



Dim. L	Reference Part No. (Ref. only)	Part No.	DSCC Part No.
.254 6.45	2980-5004-62	1056703-1	94007ZCG-1
.397 10.07	2980-5005-62	1757023-1	94007ZCG-2

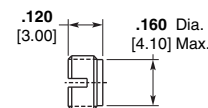
**Jack to Jack Adapter (SMP)**



DSCC Part No.	RG/U Cable	Part No.
94007ZCG-2	—	1757023-1

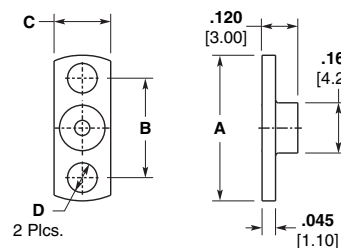
**Shrouds**

**Shroud — Threaded**



Description	Reference Part No. (Ref. only)	Part No.
Full Detent	2998-5045-02	1056745-1
Limited Detent	2998-5043-02	1056743-1
Smooth Bore	2998-5044-02	1056744-1

**Shroud — 2 Hole Flange Surface Mount**



TE Part No.	Dimension				Shroud Design	DSCC Part No.
	A	B	C	D		
1056740-1					Full Detent	94007ZSP-3
1757024-1	.328 8.33	.187 4.75	.098 2.49	.480 12.19	Limited Detent	94007ZSP-3L
1757025-1					Smooth Bore	94007ZSP-3S
1056741-1					Full Detent	94007ZSP-4
1757026-1	.481 12.22	.223 5.66	.102 2.59	.625 15.88	Limited Detent	94007ZSP-4L
1757027-1					Smooth Bore	94007ZSP-4S
1056742-1					Full Detent	94007ZSP-5
1757028-1	.282 7.16	.165 4.19	.073 1.85	.400 10.16	Limited Detent	94007ZSP-5L
1757029-1					Smooth Bore	94007ZSP-5S
1757030-1	.352 8.94	.235 5.97	.073 1.85	.470 11.94	Smooth Bore	94007ZSP-6SC

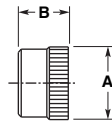


RF Connectors

**SMP Micro-Miniature Push-On Coaxial Connectors** (Continued)

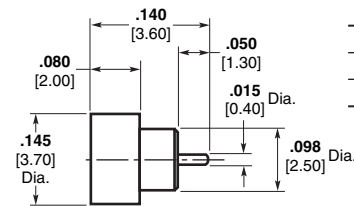
**Shrouds** (Continued)

**Shroud — Press Fit**



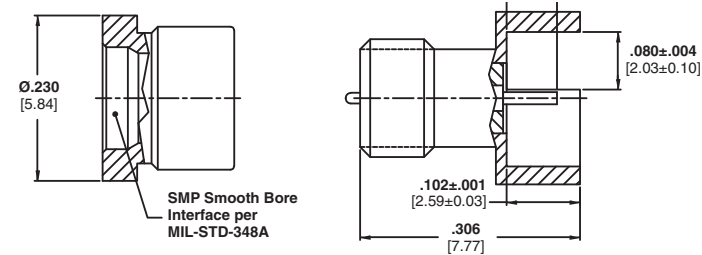
Description	Dim. A	Dim. B	Reference Part No. (Ref. only)	Part No.
Full Detent	.182 4.60	.115 2.90	2998-5005-02	1056726-1
Limited Detent	.174 4.40	.120 3.00	2998-5033-02	1056734-1
	.154 3.90	.080 2.00	2998-5035-02	1056736-1

**Shroud — Solder-In Hermetic**



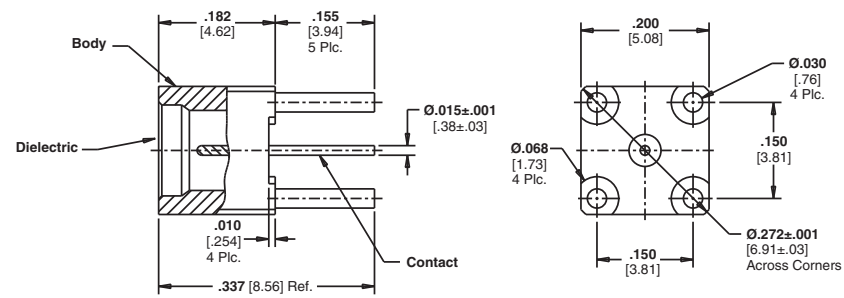
Description	Reference Part No. (Ref. only)	Part No.
Full Detent	2998-5054-94	1056750-1
Limited Detent	2998-5055-94	1056751-1
Smooth Bore	2998-5056-94	1056752-1

**PCB Plug, Bulkhead Mount, Smooth Bore**



Part No.
1663678-1

**PCB Thru-Hole Mount, Smooth Bore**



Part No.
1663679-1

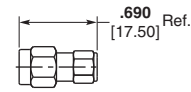


**SMP Micro-Miniature Push-On Coaxial Connectors** (Continued)

**Between Series Adapters**

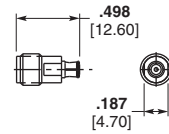
Between Series Coaxial Transmission Line Adapters provide convenient transitions between popular series coaxial connectors. The adapter design provides a minimum length consistent with good electrical performance. The small size, low VSWR, and broad frequency coverage permits a wide range of applications in both measurement and systems use.

**SMA Plug – SMP Plug**



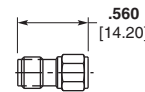
**Part Number 1056706-1**  
Reference Part No. (Ref. only)  
2981-2241-00

**SMA Jack – SMP Jack**



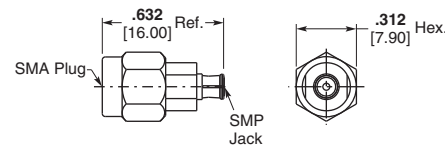
**Part Number 1056702-1**  
Reference Part No. (Ref. only)  
2980-2240-00

**SMA Jack – OSMP Plug**



**Part Number 1056707-1**  
Reference Part No. (Ref. only)  
2982-2240-00

**SMP Jack – SMA Plug**



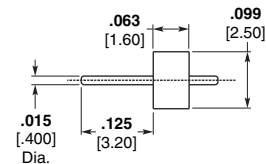
**Part Number 1056708-1**  
Reference Part No. (Ref. only)  
2982-2241-00



RF Connectors

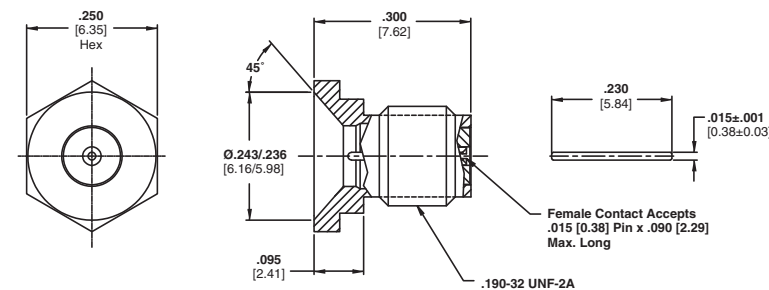
**Miscellaneous**

**Glass Bead Assembly**



Reference Part No. (Ref. only)	Part No.
2998-5022-94	1056728-1

**Plug Assembly, Thread-In with Sliding Pin**



Part No.
1663670-1

**OSSP Subminiature Modular Blind Mate Connectors**
**Features**

- Subminiature version of OSP (BMA) Blind Mate Connectors
- For space savings
- Family of connectors and adapters



## METRIC

Dimensions in this OSSP section are millimeters over inches. All other pages are inches over millimeters.

OSSP connectors are a subminiature version of the OSP (BMA) blind mate series. Connectors in this series incorporate the design elements of the OSP (BMA) interface including the float and mismatch features. OSSP blind mates are about 40% smaller than OSP (BMA) connectors and

are designed to be used in applications where space is at a premium.

A complete family of OSSP connectors and adapters is available including cable connectors, fixed and float mount panel connectors and hermetic connectors. Rigid mount units will func-

tion to specifications up to  $\pm .064$  [ $\pm .0025$ ] radial misalignment with the mating plug connector.

Applications requiring greater than  $\pm .064$  [ $\pm .0025$ ] radial misalignment can use either the float design or floating connector plates with guide pins.

**Engineering Data**

Impedance —	50 ohms
Frequency —	dc to 28.0 GHz
Temperature Rating —	-65° to 125° C

**Electrical**

VSWR —	1.05 + .01f (GHz)
RF Transmission Loss —	.040 x $\sqrt{f}$ (GHz)
Insulation Resistance —	5,000 megohms min.
Contact Resistance —	
Center Contact	6.0 milliohms max.
Outer Contact	3.0 milliohms max.
Outer Contact to Cable	0.5 milliohms max.
Dielectric Withstanding Voltage —	675 volts RMS
Corona Extinction Voltage at 70,000 Ft.—	250 volts min.
RF High Potential at 5 MHz —	675 volts RMS
RF Leakage Interface Only —	-(90-fGHz) dB min. (fully mated)
Power Handling —	300W at 3 GHz (sea level) and room temperature

**Environmental**

Corrosion —	Method 101, Condition B, MIL-STD-202
Vibration —	Method 204, Condition D, 20G's, MIL-STD-202
Shock —	Method 213, Condition I, 100G's, MIL-STD-202
Temperature Cycling —	Method 107, Condition B, MIL-STD-202
Moisture Resistance —	Method 106, MIL-STD-202

**Material**

Housing —	Corrosion resistant steel Type 303 (stainless) per ASTM A484 and A582
Center Contact —	Beryllium copper per ASTM-B-196
Dielectric —	TFE fluorocarbon per ASTM-D-1457
Gasket (O'Ring) —	MIL-P-25732

**Mechanical**

Force to Engage —	3 pounds max.
Force to Disengage —	1.5 pounds max.
Center Contact Retention —	4 pounds min.
Durability —	1,000 Cycles
Radial Misalignment —	
Rigid Mount	$\pm .06$ [ $\pm .0025$ ]
Float Mount	$\pm .51$ [ $\pm .020$ ]

**Mating Characteristics**

Jack Connector —		
Center Contact Socket	Oversize test Pin —	.533 + .003 [.0210 + .0001] dia.
	Test Pin Finish —	16 micro inch max.
	Insertion Depth —	.76/1.14 [.030/.045]
	Number of Insertions —	3
Insertion Force	Test Pin —	.528 + .003 [.0208 + .0001] dia.
	Test Pin Finish —	16 micro inch
	Insertion Force —	3 pounds max.
Withdrawal Force	Test Pin —	.495 + .003 [.0195 - .0001] dia.
	Test Pin Finish —	16 micro inch max.
	Insertion Depth —	1.27/1.91 [.050/.075]
	Withdrawal —	1/2 ounce min.

**Finish**

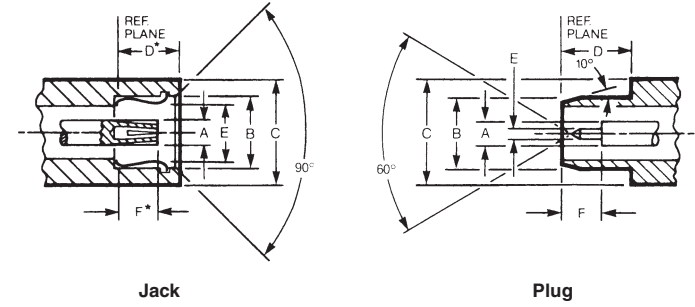
Center Contact —	Gold plate per MIL-G-45204, Type II, Class 0 over nickel plate per QQ-N-290, Class 2 or passivate per ASTM-A380
Housing —	Gold plate per MIL-G-45204, Type II, Class 0 over nickel plate per QQ-N-290, Class 2 or passivate per ASTM-A380

**OSSP Subminiature Modular Blind Mate Connectors** (Continued)

**Interface Mating Dimensions**

The connector interface, specifically designed for multiple interconnects, maintains reliable performance over the typical mechanical tolerance required in cost effective packaging.

The interface test data shows excellent performance is maintained with mating gaps up to .015 inch.



Description	Dimensions					
	A	B	C	D	E	F
Jack	1.22 0.48	Nom. 3.91 .154 Min.	5.33 .210	Ref. 5.00 .197	Nom.* 3.35 .132 Max.	3.23 .127 Max.*
Plug	1.22 0.48	Nom. 3.56 .140 Nom.	5.33 .210	Ref. 5.00 .199	Min. 0.51 .020 Nom.	3.25 .128 Min.

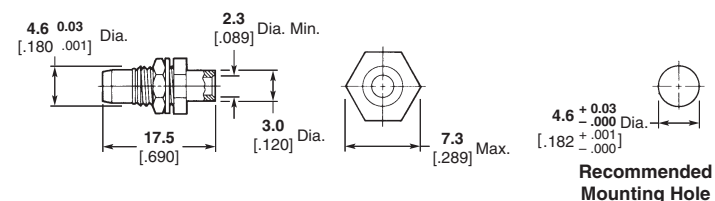
\*With spring bottomed.

2  
 RF Connectors

**OSSP Subminiature Modular Blind Mate Connectors** (Continued)

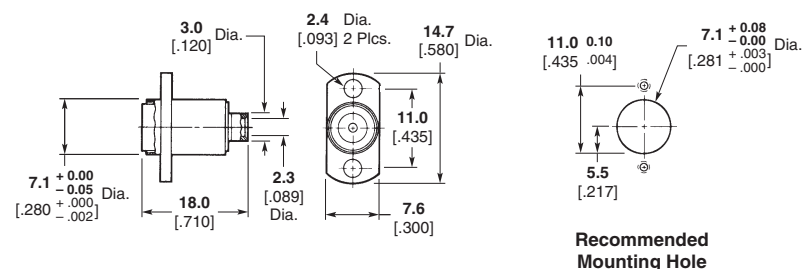
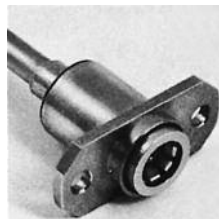
For Semi-Rigid Cable, 2.16 [.085] Dia.,  
Direct Solder Attachment

**Bulkhead Feedthrough  
Cable Plug — Rear Mount**



Cable	Plating	Reference Part No.	Part No.
RG-405/U, 2.16 [.085]	Gold	4703-7985-00	1255511-1

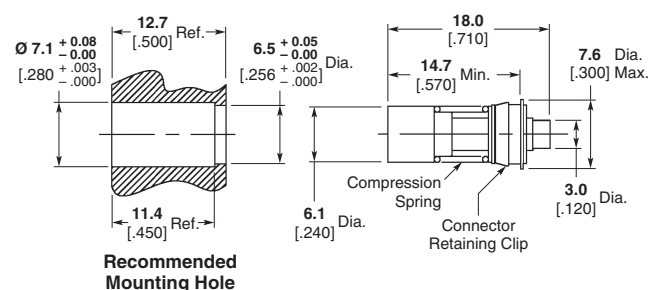
**Flange Mount Cable Jack —  
Floating Rear Mount**



Cable	Reference Part No.	Part No.
RG-405/U, 2.16 [.085]	4706-7985-02	1059868-1

Finish: Inner housing that is soldered to cable is gold plated. Outer housing is passivated stainless steel.  
When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

**Feedthru Snap-In**

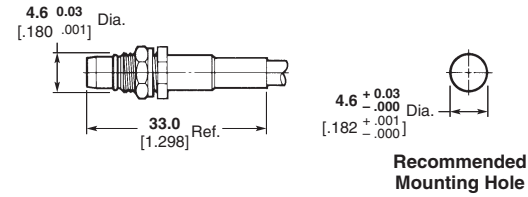


Cable	Reference Part No.	Part No.
RG-405/U, 2.16 [.085]	4710-7985-00	1059874-1

**OSSP Subminiature Modular Blind Mate Connectors** (Continued)

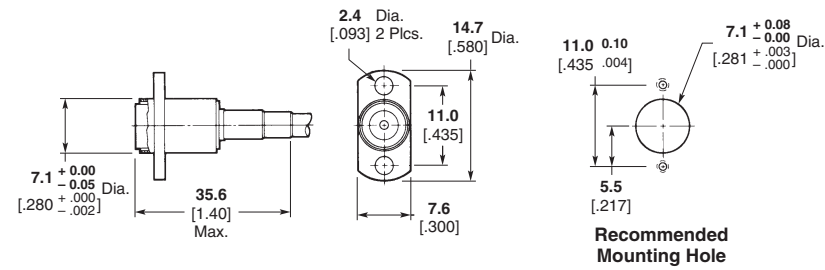
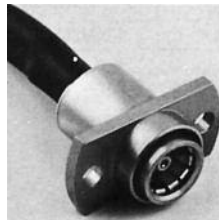
For Flexible Cable,  
Crimp Attachment

**Bulkhead Feedthrough  
Cable Plug — Rear Mount**



Cable	Plating	Reference Part No. (Ref. Only)	Part No.
RG-174/U, 188/U, 316U	Passivated Stainless Steel	4733-7388-02	1059886-1

**Flange Mount  
Cable Jack —  
Floating Rear Mount**



Cable	Plating	Reference Part No. (Ref. Only)	Part No.
RG-188/U, 316 Double Braided Only	Passivated Stainless Steel	4736-7316-02	1059888-1
RG-174/U, 188/U, 316U	Passivated Stainless Steel	4736-5001-02	1059887-1

2

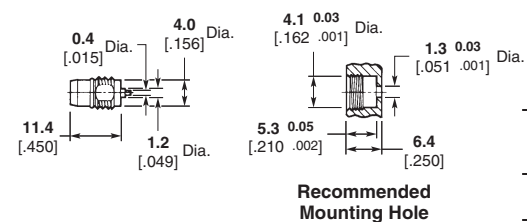
  
 RF Connectors

**OSSP Subminiature Modular Blind Mate Connectors** (Continued)

**For Panel Mount**

**Straight Terminal**

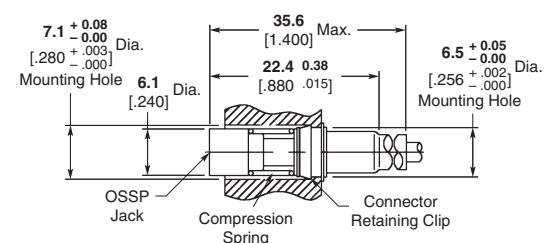
**Threaded Installation —  
Panel Feedthrough Plug  
Receptacle**



**Recommended  
Mounting Hole**

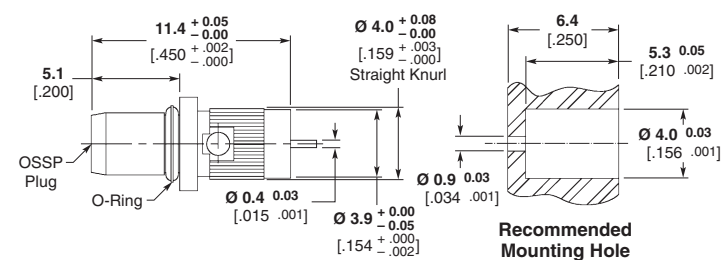
Plating	Reference Part No. (Ref. Only)	Part No.
Passivated Stainless Steel	4757-5006-02	1059903-1

**Feedthru Snap-In  
Cable Jack**



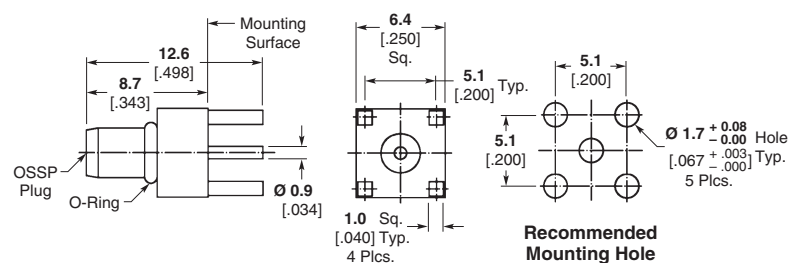
Reference Part No. (Ref. Only)	Part No.
4740-7388-00	1059889-1

**PCB Vertical Plug**



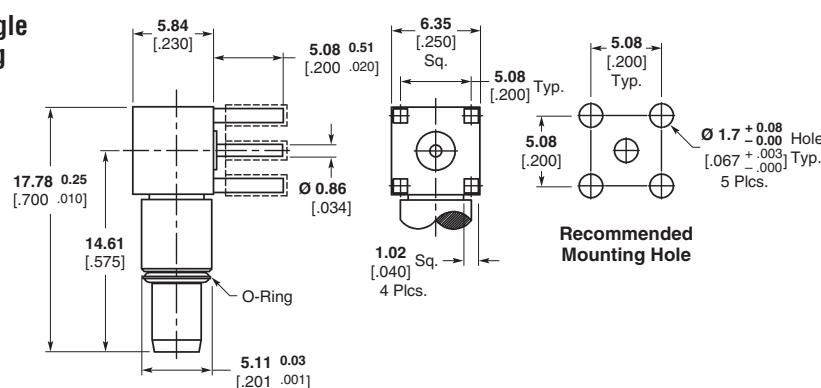
Reference Part No. (Ref. Only)	Part No.
4757-1154-02	1059901-1

**Press-In Plug**



Reference Part No. (Ref. Only)	Part No.
4763-0000-00	1059919-1

**PCB Right Angle  
Bulkhead Plug**



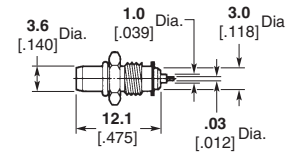
Part No.
1484546-1



**OSSP Subminiature Modular Blind Mate Connectors** (Continued)

**Hermetically Sealed**

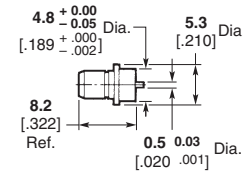
**Metal to Metal  
Formable Gasket —  
Panel Feedthrough Plug  
Receptacle**



VSWR (GHz)	RF Leakage (dB)	Plating	Reference Part No. (Ref. Only)	Part No.
1.06 + .01f	-(85-fGHz)	Gold	4757-5014-00	1059905-1

Recommended Mounting Hole Detail A at bottom of this page.

**Solder and Braze-In  
Panel Feedthrough Plug  
Receptacle**

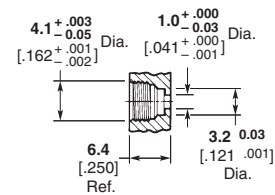


VSWR (GHz)	RF Leakage (dB)	Plating	Reference Part No. (Ref. Only)	Part No.
1.06 + .01f	-(85-fGHz)	Gold	4757-3204-00	1059902-1

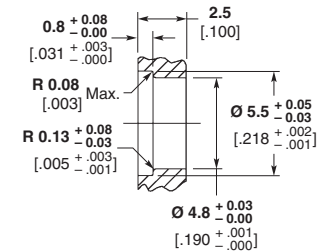
Recommended Mounting Hole Detail B at bottom of this page.

**Recommended  
Mounting Hole Detail for  
Hermetically Sealed**

**Detail A\***



**Detail B\***



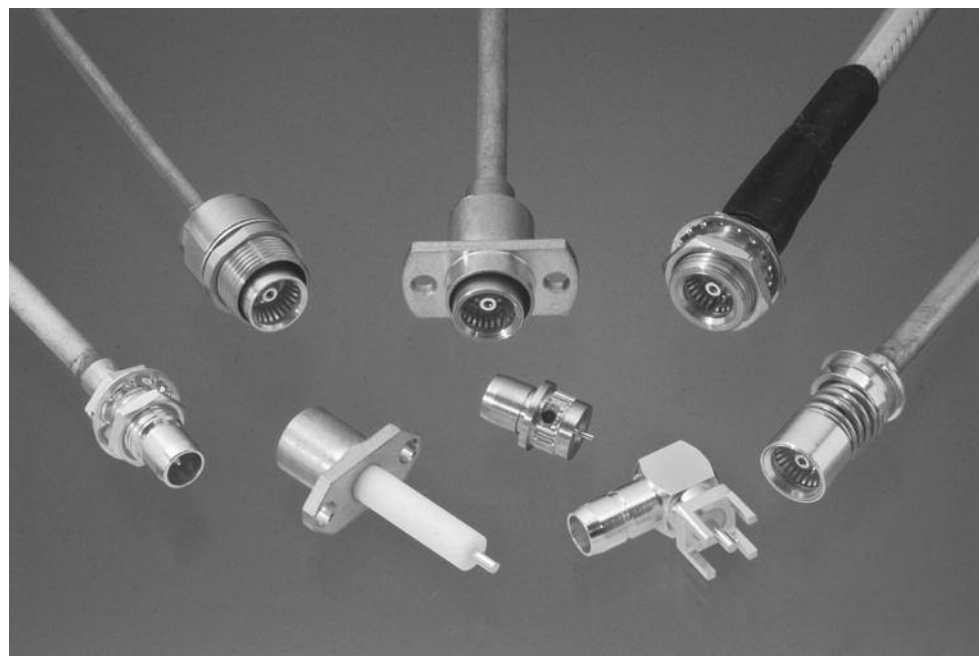
\*Consult appropriate Instruction Sheet for complete mounting procedure.

2  
 RF Connectors

**OSP (BMA) Miniature Modular Blind Mate Connectors**

**Features**

- Interface designed for multiple interconnects
- For high performance microwave system requirements
- Bulkhead or panel mount
- For semi-rigid cable



OSP (BMA) miniature connectors for semi-rigid cable meet high performance requirements for microwave multiple interconnects. Standard units are available in bulkhead or panel mount designs for either direct solder or OSCC solderless compression crimp attachment. Complete tooling for both versions is located in the Tool Section of this catalog.

Jack connectors are available in either float or rigid mount. Rigid mount units will function to specifications up to  $\pm .10$  [.004] radial misalignment with the mating plug connector. Applications requiring greater than  $\pm .10$  [.004] radial misalignment can use either the float design or floating connector plates with guide pins. The OSCC Solderless Compression Crimp attach-

ment meets high performance requirements for microwave system applications. The cable attachment is permanent and highly reliable.

Ease of assembly permits users unskilled in soldering techniques to rapidly produce cable assemblies with consistently excellent mechanical and electrical performance.

**METRIC**

Dimensions in this OSP (BMA) section are millimeters over inches. All other pages are inches over millimeters.

**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

The specifications given refer specifically to mated pair of Part Numbers 1059410-1 and 1059402-1 (RG 402) and 1059412-1 and 1059404-1 (RG 405). Specifications on other connectors are available on request.

The general electrical, mechanical and environmental specifications in the following table are recommended for procurement documents or drawings.

	<b>Engineering Data</b>		
Impedance —	50 ohms		
Frequency —	dc to 22.0 GHz		
Temperature Rating —	-65° to 125° C		
	<b>Electrical</b>	<b>RG 402 (.141) Semi-Rigid</b>	<b>RG 405 (.085) Semi-Rigid</b>
VSWR —			
dc - 18.0 GHz	1.02 + .005f (GHz)	1.05 + .005f (GHz)	
18.0 - 22.0 GHz	1.02 + .008f (GHz)	1.05 + .009f (GHz)	
RF Transmission Loss —	.03 x $\sqrt{f}$ (GHz)	.03 x $\sqrt{f}$ (GHz)	
Insulation Resistance —	5,000 megohms min.	5,000 megohms min.	
Contact Resistance —			
Center Contact	2.0 milliohms max.	2.0 milliohms max.	
Outer Contact	2.0 milliohms max.	2.0 milliohms max.	
Outer Contact to Cable	0.5 milliohms max.	0.5 milliohms max.	
Dielectric Withstanding Voltage —	1500 volts RMS	1000 volts RMS	
Corona Extinction Voltage at 70,000 Ft.—	375 volts min.	335 volts min.	
RF High Potential at 5 MHz —	1,000 volts RMS	670 volts RMS	
RF Leakage Interface Only —	-(90-fGHz) dB min. (fully mated)	-(90-fGHz) dB min. (fully mated)	
Power Handling —	300W at 3 GHz (sea level) and room temperature		
	<b>Environmental</b>		
Corrosion —	Method 101, Condition B, MIL-STD-202		
Vibration —	Method 204, Condition D, 20G's, MIL-STD-202		
Shock —	Method 213, Condition I, 100G's, MIL-STD-202		
Temperature Cycling —	Method 107, Condition B, MIL-STD-202		
Moisture Resistance —	Method 106, MIL-STD-202		
	<b>Material</b>		
Housing —	Corrosion resistant steel Type 303 (stainless) per ASTM A484 and A582		
Center Contact —	Beryllium copper per ASTM-B-196		
Dielectric —	TFE fluorocarbon per ASTM-D-1457		
Gasket (O'Ring) —	MIL-P-25732		
	<b>Mechanical</b>		
Force to Engage —	3 pounds max.		
Force to Disengage —	1.5 pounds max.		
Center Contact Retention —	6 pounds min.		
Durability —	5,000 Cycles		
Radial Misalignment —			
Rigid Mount	±.10 [±.004]		
Float Mount	±.51 [±.020]		
	<b>Mating Characteristics</b>		
Jack Connector —			
Center Contact Socket	Oversize test Pin —	.945 + .003 [.0372 + .0001] dia.	
	Test Pin Finish —	16 micro inch	
	Insertion Depth —	.76/1.14 [.030/.045]	
	Number of Insertions —	3	
Insertion Force	Test Pin —	.940 + .003 [.0370 + .0001] dia.	
	Test Pin Finish —	16 micro inch	
	Insertion Depth —	1.27/1.91 [.050/.075]	
	Insertion Force —	3 pounds max.	
Withdrawal Force	Test Pin —	.90 + .003 [.0355 - .0001] dia.	
	Test Pin Finish —	16 micro inch	
	Insertion Depth —	1.27/1.91 [.050/.075]	
	Withdrawal —	1 ounce min.	
	<b>Finish</b>		
Center Contact —	Gold plate per MIL-G-45204, Type II, Class 1 over copper plate per MIL-C-14550		
Housing —	Gold plate per MIL-G-45204, Typ II, Class 0 over nickel plate per QQ-N-290, Class 2 or passivate per ASTM-A380		



RF Connectors

All dimensions shown are nominal. Contact the factory for specific tolerances.

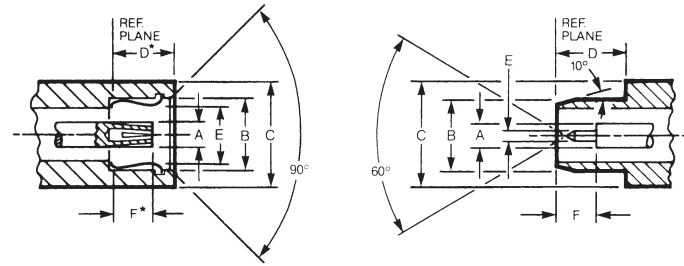
**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

**Interface Mating Dimensions**

The connector interface, specifically designed for multiple interconnects, maintains reliable performance over the typical mechanical tolerance required in cost effective packaging.

The interface test data shows excellent performance is maintained with mating gaps up to 0.38 [.015].

Meets MIL-STD-348 Figure 321. Intermateable to BMA Connectors.



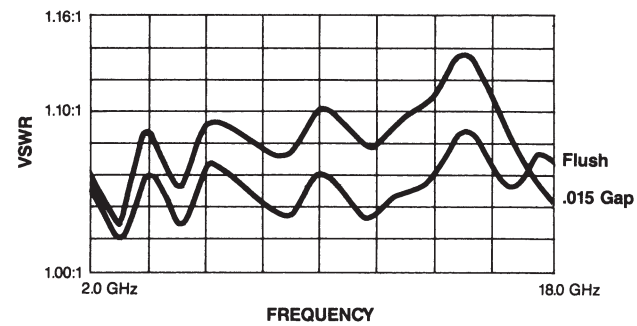
Jack

Plug

Letter	Dimensions
A	1.78 .070 Nom.
B	5.72 .225 Min.
C	7.62 .300 Ref.
D	5.00 .197 Nom.*
E	5.08 .200 Max.
F	3.23 .127 Max.*

Letter	Dimensions
A	1.78 .070 Nom.
B	5.33 .210 Nom.
C	7.62 .300 Ref.
D	5.05 .199 Min.
E	0.91 .036 Nom.
F	3.25 .128 Min.

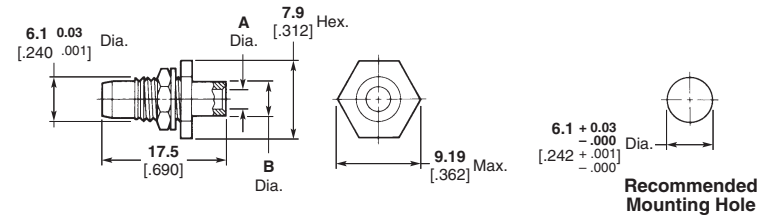
\*With spring bottomed



**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

For Semi-Rigid Cable, 2.16 [.085] and 3.58 [.141] Dia., Direct Solder Attachment

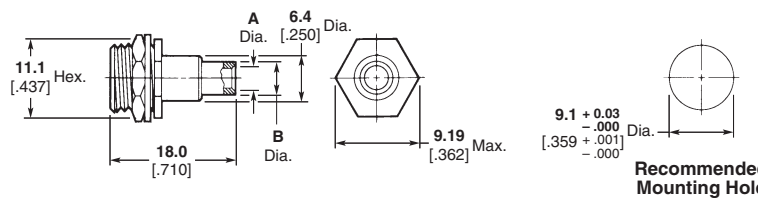
**Bulkhead Feedthrough Cable Plug Rear Mount**



Cable	Plating	Dimensions		Reference Part No. (Ref. Only)	Part No.
		A	B		
RG-402/U 3.58 .141	Gold	3.7 .144	4.6 .180	4503-7941-00	1059402-1
RG-405/U 2.16 .085	Gold	2.3 .089	3.0 .120	4503-7985-00	1059404-1*

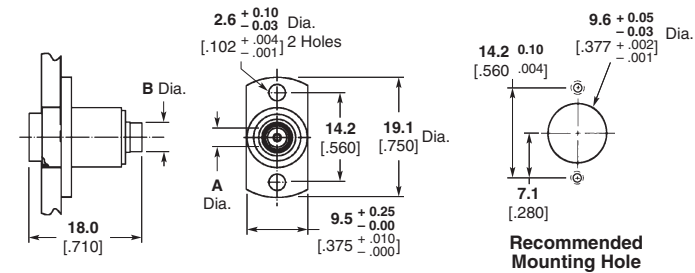
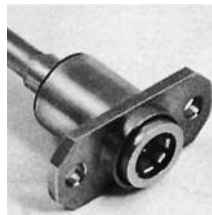
\*Non-SCD.

**Bulkhead Feedthrough Cable Jack Rigid Rear Mount**



Cable	Plating	Dimensions		Reference Part No. (Ref. Only)	Part No.
		A	B		
RG-402/U 3.58 .141	Gold	3.7 .144	4.6 .180	4504-7941-00	1059410-1
RG-405/U 2.16 .085	Gold	2.3 .089	3.0 .120	4504-7985-00	1059412-1

**Flange Mount Cable Jack Floating Rear Mount**



Cable	Dimensions		Reference Part No. (Ref. Only)	Part No.
	A	B		
RG-402/U 3.58 .141	3.7 .144	4.6 .180	4506-7941-02	1059453-1
RG-405/U 2.16 .085	2.3 .089	3.0 .120	4506-7985-02	1059456-1

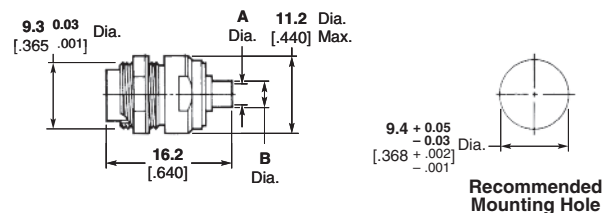
Finish: Inner housing that is soldered to cable is gold plated. Outer housing is passivated stainless steel.  
When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

2  
RF Connectors

**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

For Semi-Rigid Cable, 2.16 [.085] and 3.58 [.141] Dia., Direct Solder Attachment (Continued)

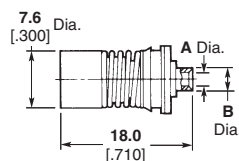
**Low Profile – Bulkhead Feedthrough Cable Jack – Floating Rear Mount**



Cable	Plating	Dimensions		Reference Part No. (Ref. Only)	Part No.
		A	B		
RG-402/U 3.58 .141	Gold	3.7 .144	4.6 .180	4522-7941-02	1059505-1
RG-405/U 2.16 .085	Gold	2.3 .089	3.0 .120	4522-7985-02	1059506-1

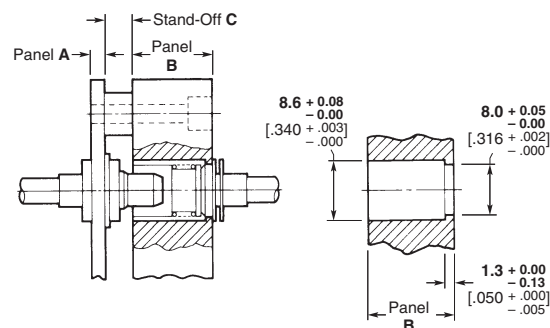
When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

**Low Profile – Panel Feedthrough Cable Jack – Floating Rear Mount**



Cable	Plating	Dimensions		Reference Part No. (Ref. Only)	Part No.
		A	B		
RG-402/U 3.58 .141	Gold	3.7 .144	4.6 .180	4510-7941-00	1059465-1
RG-405/U 2.16 .085	Gold	2.3 .089	3.0 .120	4510-7985-00	1059467-1

Recommended removal tool part number 1059774-1 is described in Tool Section.  
When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.



Recommended Mounting Detail

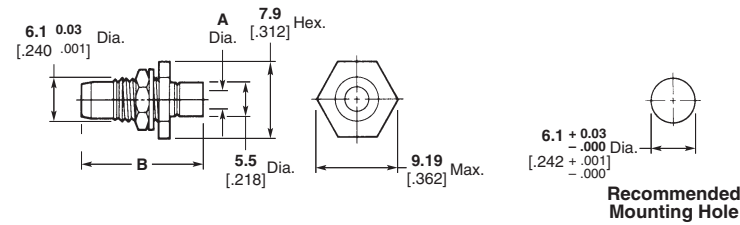
Panel A ±.003	Panel B ±.003	Stand-Off Panel C +.050/-0.000
2.3 .090	9.5 .375	7.2 .285
2.3 .090	11.1 .438	5.6 .222
2.3 .090	12.7 .500	4.1 .160
3.2 .125	9.5 .375	6.4 .250
3.2 .125	11.1 .438	4.7 .187
3.2 .125	12.7 .500	3.2 .125



**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

For Semi-Rigid Cable, 2.16 [.085] and 3.58 [.141] Dia.,  
OSCC Solderless Compression Crimp Attachment

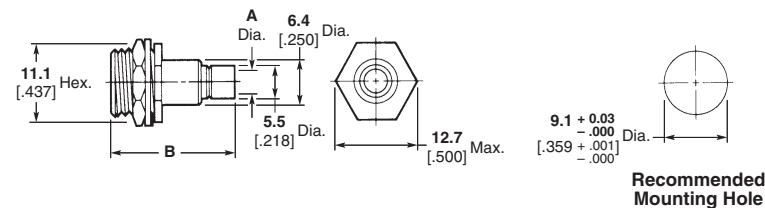
**Bulkhead Feedthrough  
Cable Plug  
Fixed Rear Mount**



Cable	Plating	Dim. A	Dim. B		Reference Part No. (Ref. Only)	Part No.
			Before Crimping	After Crimping		
RG-405/U 2.16 .085	Passivated Stainless Steel	2.2 .088	19.8 .782	17.2 .677	4503-7685-02	1059399-1

Outline drawing shows after crimp dimensions.

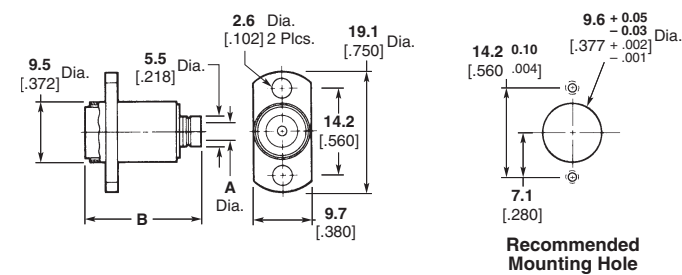
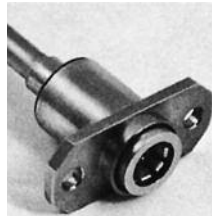
**Bulkhead Feedthrough  
Cable Jack  
Fixed Rear Mount**



Cable	Plating	Dim. A	Dim. B		Reference Part No. (Ref. Only)	Part No.
			Before Crimping	After Crimping		
RG-402/U 3.58 .141	Passivated Stainless Steel	3.6 .143	21.1 .830	18.2 .715	4504-7641-02	1059408-1

Outline drawing shows after crimp dimensions.

**Flange Mount Cable Jack  
Floating Rear Mount**



Cable	Plating	Dim. A	Dim. B		Reference Part No. (Ref. Only)	Part No.
			Before Crimping	After Crimping		
RG-402/U 3.58 .141	Passivated Stainless Steel	3.6 .143	22.6 .891	19.8 .780	4506-7641-02	1059451-1
RG-405/U 2.16 .085	Passivated Stainless Steel	2.2 .088	22.6 .891	19.8 .780	4506-7685-02	1059452-1

Outline drawing shows after crimp dimensions.

When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

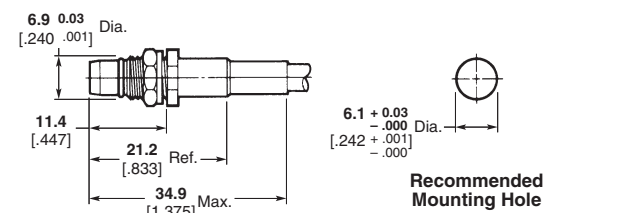
**2**

RF Connectors

**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

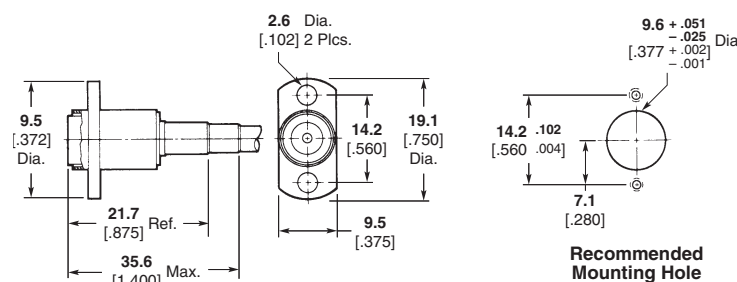
**For Flexible Cable,  
Crimp Attachment**

**Bulkhead Feedthrough  
Cable Plug  
Rear Mount**



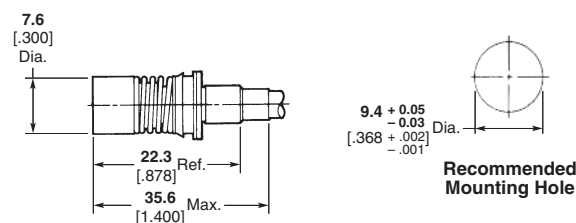
Cable	Plating	Reference Part No. (Ref. Only)	Part No.
RG-174/U, 179, 187, 188, 316	Passivated Stainless Steel	4533-7388-02	1059523-1

**Flange Mount Cable Jack  
Floating Rear Mount**



Cable	Plating	Reference Part No. (Ref. Only)	Part No.
RG-55/U, 142, 223, 400	Passivated Stainless Steel	4536-7341-02	1059540-1
RG-174/U, 179, 187, 188, 316	Passivated Stainless Steel	4536-7388-02	1059541-1
RG-178, Double Braid	Passivated Stainless Steel	4536-5014-02	1058572-1

**Low Profile – Panel  
Feedthrough Cable Jack –  
Rear Mount**



Cable	Plating	Reference Part No. (Ref. Only)	Part No.
RG-174/U, 179, 187, 188, 316	Passivated Stainless Steel	4540-7388-02	1059551-1

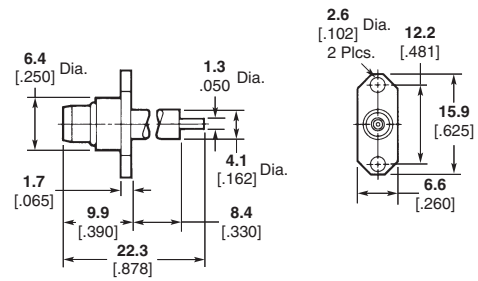
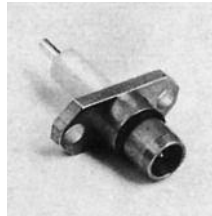
Refer to Recommended Mounting Hole Detail for Semi-Rigid Cable Low Profile Feedthrough Cable Jack. Recommended removal tool part number 1059774-1 is described in Tool Section.

**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

**Panel Mount**

**Straight Terminal**

**2-Hole Flange Mount Plug Receptacle**

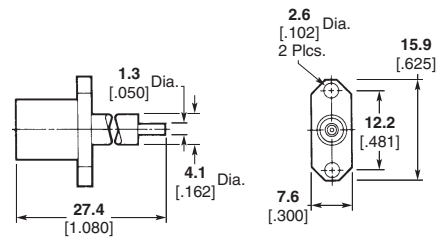
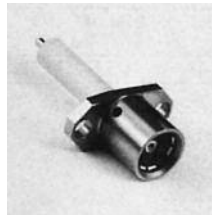


Plating	Reference Part No. (Ref. Only)	Part No.
Passivated Stainless Steel	4551-1352-02	1049678-1

2

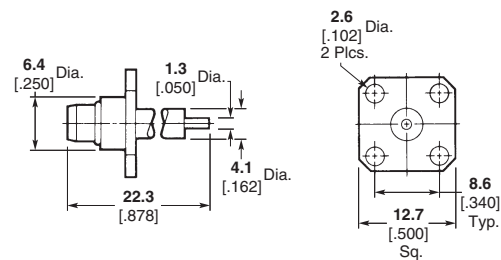
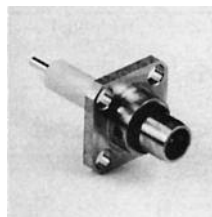
RF Connectors

**2-Hole Flange Mount Jack Receptacle**



Plating	Reference Part No. (Ref. Only)	Part No.
Passivated Stainless Steel	4552-1352-02	1059596-1

**4-Hole Flange Mount Plug Receptacle**



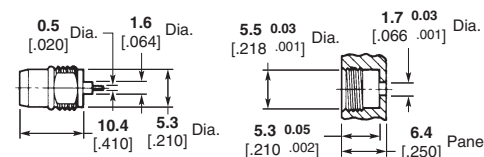
Plating	Reference Part No. (Ref. Only)	Part No.
Passivated Stainless Steel	4551-1201-02	1329846-1

**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

**Panel Mount** (Continued)

**Straight Terminal**

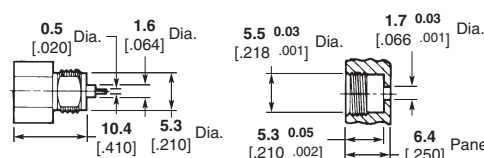
**Threaded Installation –  
Panel Feedthrough Plug  
Receptacle**



**Recommended  
Mounting Hole**

Plating	Reference Part No. (Ref. Only)	Part No.
Passivated Stainless Steel	4557-5009-02	<b>1059617-1</b>

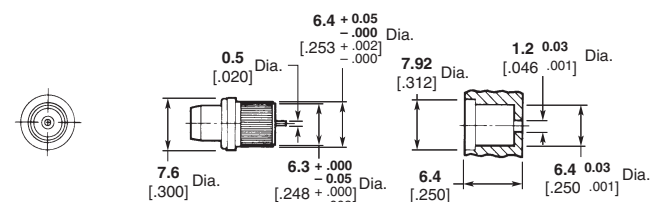
**Threaded Installation –  
Panel Feedthrough Jack  
Receptacle**



**Recommended  
Mounting Hole**

Plating	Reference Part No. (Ref. Only)	Part No.
Passivated Stainless Steel	4558-5009-02	<b>1059657-1</b>

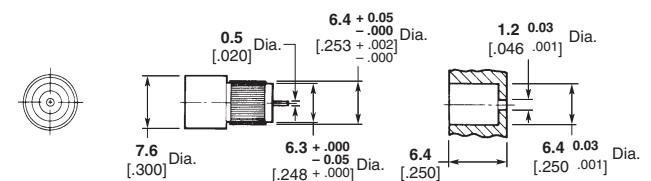
**Press Fit Installation –  
Panel Feedthrough Plug  
Receptacle**



**Recommended  
Mounting Hole**

Plating	Reference Part No. (Ref. Only)	Part No.
Passivated Stainless Steel	4557-5368-02	<b>1059651-1</b>

**Press Fit Installation –  
Panel Feedthrough Jack  
Receptacle**



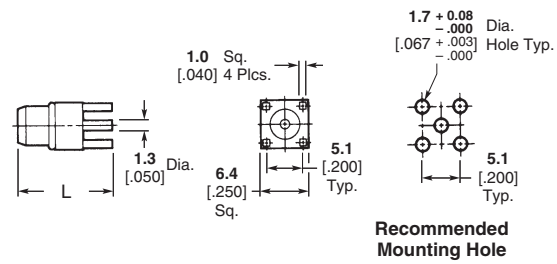
**Recommended  
Mounting Hole**

Plating	Reference Part No. (Ref. Only)	Part No.
Passivated Stainless Steel	4558-1154-02	<b>1059654-1</b>

**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

**Panel Mount** (Continued)

**Straight Terminal Printed Circuit Board  
Straight Plug Receptacle –  
Captured Contact**

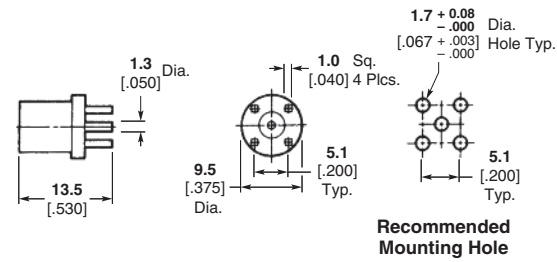
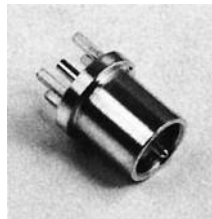


Plating	Reference Part No. (Ref. Only)	Part No.	Dim. L
Gold	4563-0000-00	1059684-1	12.7 .500
Gold	—	1663572-1	21.9 .862



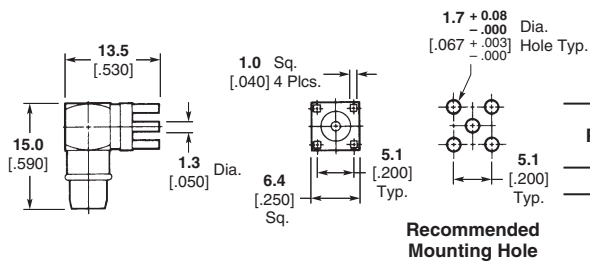
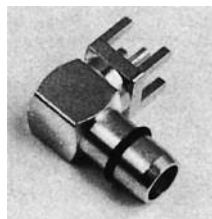
RF Connectors

**Straight Jack Receptacle –  
Captured Contact**



Plating	Reference Part No. (Ref. Only)	Part No.
Gold	4562-0000-00	1059681-1

**Right Angle Plug Receptacle – Captured Contact**

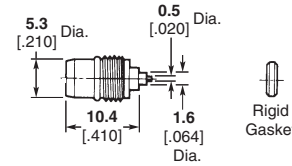


Plating	Reference Part No. (Ref. Only)	Part No.
Gold	4565-0000-00	1059691-1

**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

**Hermetically Sealed**

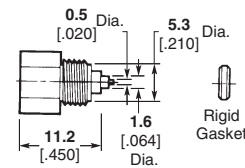
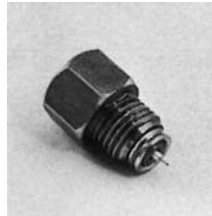
**Metal-To-Metal  
Rigid Gasket Seal –  
Panel Feedthrough Plug  
Receptacle**



VSWR (GHz)	RF Leakage (dB)	Plating	Reference Part No. (Ref. Only)	Part No.
1.04 + .009f	-(90-fGHz)	Passivated stainless steel	4557-5119-02	<b>1059632-1</b>

Installation Thermal Limit: 250°C.  
Recommended Mounting Hole Detail A follows, page 2-64.

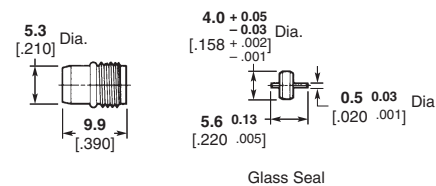
**Rigid Gasket Seal –  
Panel Feedthrough Jack  
Receptacle**



VSWR (GHz)	RF Leakage (dB)	Plating	Reference Part No. (Ref. Only)	Part No.
1.04 + .009f	-(90-fGHz)	Passivated stainless steel	4558-5119-02	<b>1059665-1</b>

Installation Thermal Limit: 250°C.  
Recommended Mounting Hole Detail A follows, page 2-64.

**Field Replaceable  
Solder and Braze-In  
Panel Feedthrough Plug  
Receptacle**



VSWR (GHz)	RF Leakage (dB)	Plating	Reference Part No. (Ref. Only)	Part No.
1.06 + .01f	-(90-fGHz)	Passivated stainless steel	4557-5329-02	<b>1059637-1</b>

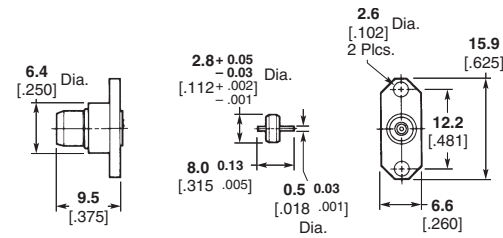
Recommended Mounting Detail B or E follows, page 2-64.



**OSP (BMA) Miniature Modular Blind Mate Connectors** (Continued)

**Hermetically Sealed**  
(Continued)

**2-Hole Flange Mount Plug Receptacle With EMI/RFI Gasket – 0.5 [.018] Dia. Contact**



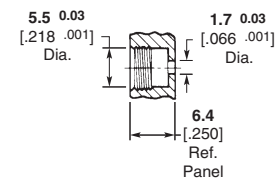
VSWR (GHz)	RF Leakage (dB)	Plating	Reference Part No. (Ref. Only)	Part No.
1.06 + .01f	–(90-fGHz)	Passivated stainless steel	4551-3357-02	<b>1059572-1</b>

Recommended Mounting Detail D follows at bottom of this page.

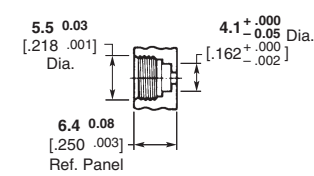
2  
 RF Connectors

**Recommended Mounting Hole Detail**

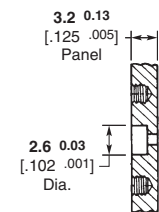
**Detail A\***



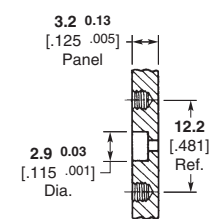
**Detail B\* (6.35 [.250] Panel Thickness)**



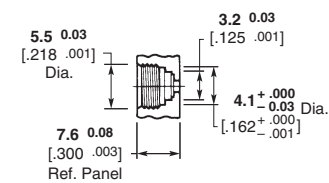
**Detail C\***



**Detail D\***



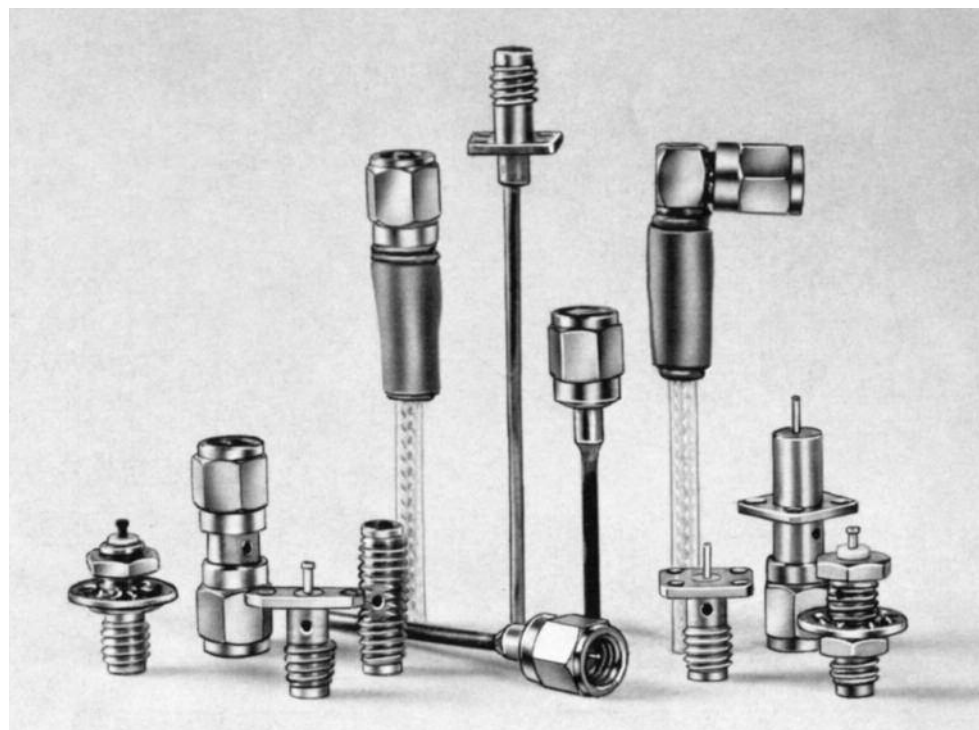
**Detail E\***



\*Consult appropriate Instruction Sheet for complete mounting details.

**OSMM Microminiature Connectors**

**Introduction**



The microminiature series has been developed to meet the increasing demand for smaller connector size. This series is small, but still very rugged for its relative size.

The interface mating design insures precise outer shell alignment before engagement of the inner contacts. The OSMM Series is compatible with smaller diameter semi-rigid cable.

**Design and Construction**

All shell and body parts are made of stainless steel for ruggedness and long life. The dielectric is PTFE fluorocarbon. The center contacts are made of beryllium copper, gold plated. The coupling thread is .138-40 UNF thread.

**Types**

The OSMM Series connectors are available for appro-

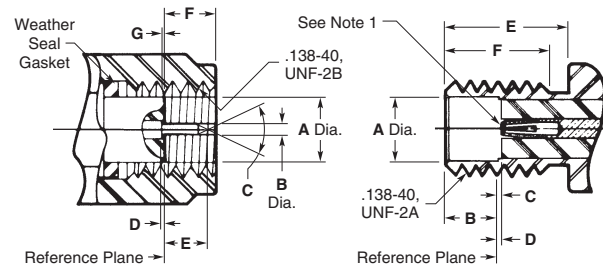
priate size semi-rigid and flexible coaxial cables. Panel and bulkhead mount are also available to provide complete flexibility to component and system design.

**Application**

Typical applications include requirements from low RF to high microwave frequencies. The higher order moding for this series is above 45.0 GHz, but the primary feature is the microminiature size.

**OSMM Microminiature Connectors** (Continued)

**Interface Mating Dimensions**



**Plug**

Dim.	Min.	Max.
A	.0930 2.36	.0946 2.43
B	.0150 0.38	.0163 0.42
C	60°	90°
D	.000 0.00	.010 0.25
E	.055 1.40	.070 1.78
F	.065 1.65	.099 2.29
G	.000 0.00	.010 0.25

**Jack**

Dim.	Min.	Max.
A	.096 2.44	.097 2.46
B	.076 1.98	.082 2.08
C	.000 0.00	.010 0.25
D	.000 0.00	.010 0.25
E	.175 4.45	—
F	.140 3.56	—

1. ID to meet VSWR and contact resistance when mated with .0155 +.0008/-0.0005 [0.0394 +.0203/-0.127] dia. pin.
2. When fully engaged, the two reference planes must coincide with metal to metal contact.



RF Connectors

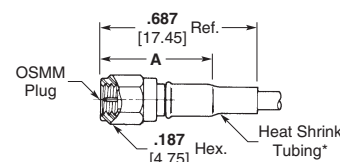
**Specifications**

Requirement	MIL-C-39012 Applicable Paragraph	Detail
<b>General</b>		
Material	3.3	Steel corrosion resistant per ASTM-A-582 and ASTM-A-484, Type 303. Beryllium copper per ASTM B 196. PTFE Fluorocarbon per ASTM-D-1457.
Finish which	3.31	Center contacts shall be gold plated to a min. thickness of .00005 [0.0013] in accordance with MIL-G-45204, Typ I, Grade C. All other metal parts shall be finished as to provide a connector meets the corrosion requirements.
Design	3.4	The design shall be such that the outline shown in this catalog and the interface dimensions of MIL-STD-348A are met.
<b>Electrical</b>		
Insulation Resistance	3.11	The insulation resistance shall not be less than 5,000 megohms.
Corona Level	3.22	The connector shall not exhibit breakdown when the voltage is 150 volts rms at 70,000 ft.
Dielectric Withstanding Voltage	3.17	The magnitude of the test voltage shall be 500 volts rms at sea level.
RF High Potential	3.23	The withstanding voltage is 375 volts rms at 5 MHz. Leakage current is not applicable.
Contact Resistance	3.16	Center contact resistance: 3.5 milliohms max. Outer contact resistance: 2.8 milliohms max.
VSWR	3.14	No military slash sheet applies. Consult factory. Frequency range dependent on cable used.
RF Leakage	3.26	No military slash sheet applies. Consult factory.
Insertion Loss	3.27	No military slash sheet applies. Consult factory. Frequency range dependent on cable used.
<b>Mechanical</b>		
Force to Engage	3.5.1	The torque required to engage and disengage shall not exceed 1 in.-lbs. The longitudinal force is not applicable.
Coupling Nut Retention	3.25	40 lbs. min. Applicable for plug connectors only.
Coupling Proof Torque	3.6	4 in.-lbs. min. Applicable for plug connectors only.
Cable Retention	3.24	No military slash sheet applies. Consult factory.
Mating Characteristics	3.7	Applicable to jack connectors only. Oversize pin .0165 [0.419] min. dia., .045 [1.14] deep; insertion force 3 lbs. max. with .0163 [0.414] min. dia. pin; withdrawal force 0.5 oz. min. with .015 [0.38] max. dia. pin.
Connector Durability	3.15	The connector to be tested and its mating connector shall be subjected to 500 insertion and withdrawal cycles at 12 cycles per minute max. The connector shall show no evidence of mechanical failure and shall meet the mating characteristic requirements.
Recommended Mating Torque	—	2 in.-lbs.
<b>Environmental</b>		
Vibration	3.18	Specification MIL-STD-202, method 204, test condition D.
Shock	3.19	Specification MIL-STD-202, method 213, test condition I.
Thermal Shock	3.20	No military slash sheet applies. Consult factory.
Corrosion (Salt Spray)	3.13	Specification MIL-STD-202, method 101, test condition B.
Moisture Resistance	3.21	Specification MIL-STD-202, method 106. No measurements at high humidity. Insulation resistance shall be at least 200 megohms within 5 minutes of removal from humidity.

**OSMM Microminiature Connectors** (Continued)

**For Flexible and Semi-Rigid Cables**

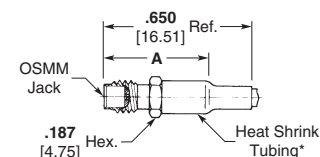
**Straight Cable Plug**



Cable	Attachment	Dim. A	Reference Part No. (Ref. only)	Part Number
RG 196/U Flexible	Crimp	.450 Ref. 11.40	4031-7196-00	1059057-1
.047 Dia.* Semi-Rigid	Direct Solder	.360 Ref. 9.20	4001-7947-00	1058955-1

\* Semi-rigid versions do not use heat shrink tubing. Finish: Gold plate.

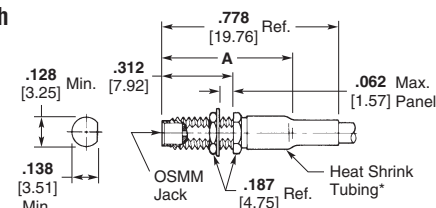
**Straight Cable Jack**



Cable	Attachment	Dim. A	Reference Part No. (Ref. only)	Part Number
.047 Dia.* Semi-Rigid	Direct Solder	.330 Ref. 8.40	4002-7947-00	—

\* Semi-rigid versions do not use heat shrink tubing. Finish: Gold plate.

**Bulkhead Feedthrough Cable Jack**

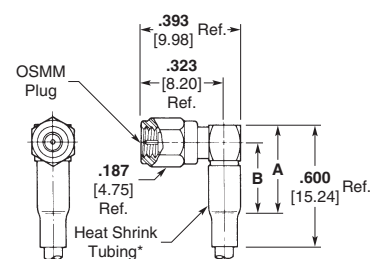


**Recommended Mounting Hole**

Cable	Attachment	Dim. A	Reference Part No. (Ref. only)	Part Number
RG 196/U Flexible	Crimp	.565 Ref. 14.40	4034-7196-00	1059060-1
.047 Dia.* Semi-Rigid	Direct Solder	.458 Ref. 11.60	4004-7947-00	1058990-1

\* Semi-rigid versions do not use heat shrink tubing. Finish: Gold plate.

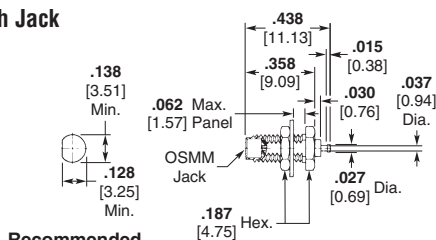
**Right-Angle Cable Plug**



Cable	Attachment	Dim. A	Dim. B	Reference Part No. (Ref. only)	Part Number
.047 Dia.* Semi-Rigid	Direct Solder	.256 Ref. 6.50	.178 Ref. 4.50	4007-7947-00	1058993-1

\* Semi-rigid versions do not use heat shrink tubing. Finish: Gold plate.

**Bulkhead Feedthrough Jack**

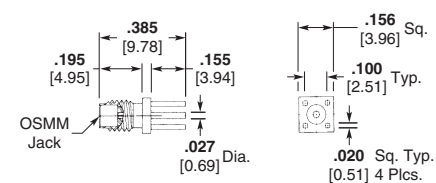


**Recommended Mounting Hole**

Description	Reference Part No. (Ref. only)	Part Number
Captured Center Contact* Turret Terminal Rear Mount	4056-0000-00	—

\* Contact captivation per U.S. patent number 3,292,117. Finish: Gold plate.

**Printed Circuit Board Straight Jack**

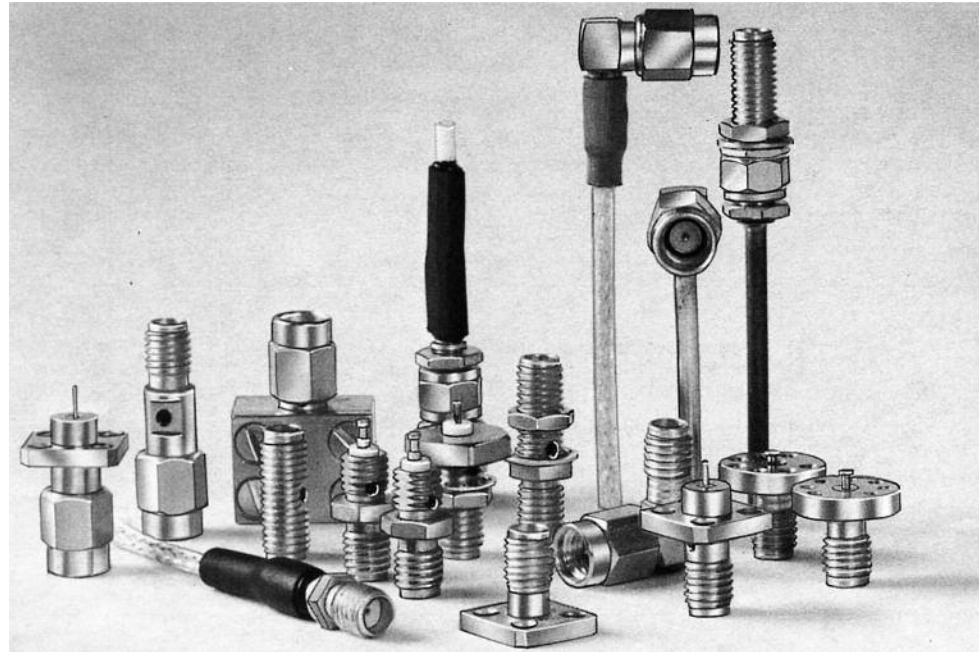


Description	Reference Part No. (Ref. only)	Part Number
Captured Center Contact* Straight Terminal	4062-0000-00	1059081-1

\* Contact captivation per U.S. patent number 3,292,117. Finish: Gold plate.

**SSMA Subminiature Coaxial Connectors**

**Introduction**



**2**  
RF Connectors

The success of the SMA connector created a need for a smaller version for reduced packaging requirements. The SSMA series was designed to a size compatible with smaller diameter semi-rigid cable. The coupling thread is 10-36 UNS thread.

**Design and Construction**

As with the SMA series, all shell and body parts are made of stainless steel for ruggedness and long life. The dielectric is solid PTFE fluorocarbon. The center contacts are made of beryllium copper, gold plated.

**Types**

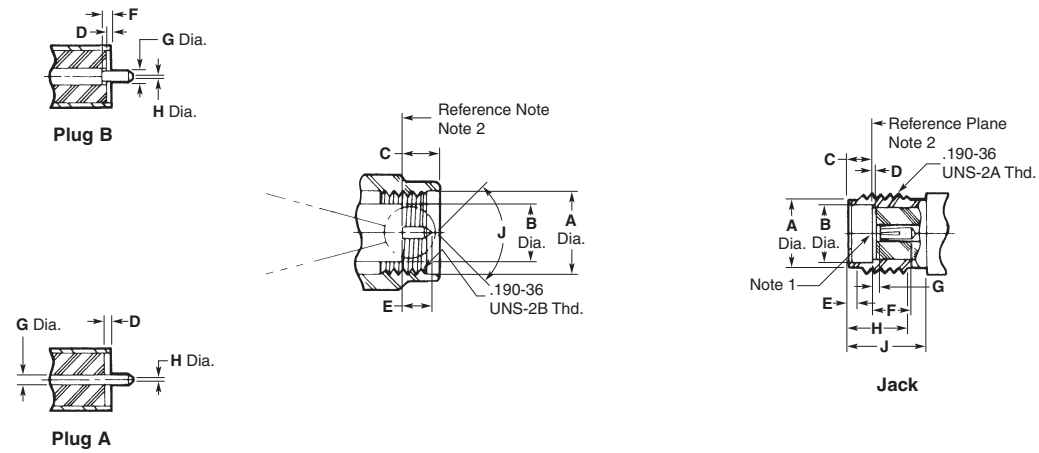
SSMA connectors are available for both semi-rigid and flexible coaxial cable. Panel and bulkhead mount, strip transmission line type, microstrip transmission type and hermetically sealed connectors and in-series adapters give designers complete flexibility for component and system design.

**Upper Operating Frequency Limits**

The standard SSMA series allows operation to 38.0 GHz. The extended frequency SSMA series allows high order mode free operation beyond 40.0 GHz. The extended frequency series directly mates with the standard SSMA series with minimum discontinuity.

**SSMA Subminiature Coaxial Connectors** (Continued)

**Interface Mating Dimensions**



Plug			Jack		
Dim.	Min.	Max.	Dim.	Min.	Max.
A	.196 4.98	.202 5.13	A	.153 3.89	.160 4.06
B	.124 3.15	.127 3.22	B	.127 3.23	.130 3.30
C	.100 2.54	.133 3.38	C	.075 1.91	.077 1.96
D	.000 0.00	.007 0.25	D	.000 0.00	.007 0.25
E	.050 1.27	.065 1.65	E	.020 0.51	.040 1.02
F	.000 0.00	.010 0.25	F	.075 1.91	—
G	.020 0.50	.021 0.53	G	.000 0.00	.010 0.25
H	.000 0.00	.010 0.25	H	.190 4.83	.210 5.33
J	70°	95°	J	.230 5.84	—

1. ID to meet VSWR and contact resistance when mated with .020 +.0008/-0.0005 [0.51 +.0203/-0.0127] dia. pin.
2. When fully engaged, the two reference planes must coincide with metal to metal contact.



**SSMA Subminiature Coaxial Connectors** (Continued)

**Specifications**

<b>General</b>	
Materials	Steel corrosion resistant per ASTM-A-582 and ASTM-A-484, Type 303. Beryllium copper per ASTM B 196. PTFE Fluorocarbon per ASTM-D-1457.
Finishes which	Center contacts shall be gold plated to a min. thickness of .00005 [0.0013] in accordance with MIL-G-45204, Typ I, Grade C. All other metal parts shall be finished as to provide a connector meets the corrosion requirements.
Design	The design shall be such that the outline shown in this catalog and the interface dimensions of MIL-STD-348A are met.
<b>Electrical</b>	
Insulation Resistance	The insulation resistance shall not be less than 5,000 megohms.
Corona Level	The connector shall not exhibit breakdown when the voltage is 190 volts rms at 70,000 ft.
Dielectric Withstanding Voltage	The magnitude of the test voltage shall be 750 volts rms at sea level.
RF High Potential	The withstanding voltage is 500 volts rms at 5 MHz. Leakage current is not applicable.
Contact Resistance	Center contact resistance: 2 milliohms max. Outer contact resistance: 2 milliohms max.
VSWR	Refer to applicable military slash sheet or consult factory. Frequency range dependent on cable used.
RF Leakage	Refer to applicable military slash sheet or consult factory.
Insertion Loss	Refer to applicable military slash sheet or consult factory. Frequency range dependent on cable use.
<b>Mechanical</b>	
Force to Engage	The torque required to engage and disengage shall not exceed 2 in.-lbs. The longitudinal force is not applicable.
Coupling Nut Retention	60 lbs. min. Applicable for plug connectors only.
Coupling Proof Torque	5 in.-lbs. min. Applicable for plug connectors only.
Cable Retention	Refer to applicable military slash sheet or consult factory.
Mating Characteristics	Applicable to jack connectors only. Reference MIL-STD-348A for dimensions; oversize pin .021 [0.53] min. dia., .045 [1.14] deep; insertion force 3 lbs. max. with .0208 [0.528] min. dia. pin; withdrawal force 1 oz. min. with .0195 [0.495] max. dia. pin.
Connector Durability	The connector to be tested and its mating connector shall be subjected to 500 insertion and withdrawal cycles at 12 cycles per minute max. The connector shall show no evidence of mechanical failure and shall meet the mating characteristic requirements.
Recommended Mating Torque	5 in.-lbs.
<b>Environmental</b>	
Vibration	Specification MIL-STD-202, method 204, test condition D.
Shock	Specification MIL-STD-202, method 213, test condition I.
Thermal Shock	Refer to applicable military slash sheet or consult factory.
Corrosion (Salt Spray)	Specification MIL-STD-202, method 101, test condition B.
Moisture Resistance	Specification MIL-STD-202, method 106. No measurements at high humidity. Insulation resistance shall be at least 200 megohms within 5 minutes of removal from humidity.



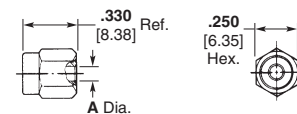
RF Connectors

**SSMA Subminiature Coaxial Connectors** (Continued)

**For Semi-Rigid Cable**

**.085 [2.16] Dia. Direct Solder Attachment**

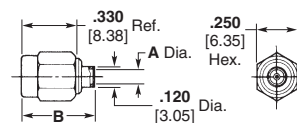
**Straight Cable Plug (Without Center Contact)**



Part No.	Reference Part No. (Ref. Only)	Dim. A	RG/U Cable
1045370-1	1001-7985-02	.088 2.22 Min.	405

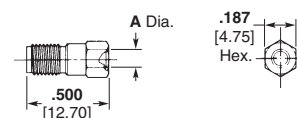
**Electrical**  
DC — 40.0 GHz

**Straight Cable Plug (With Center Contact)**



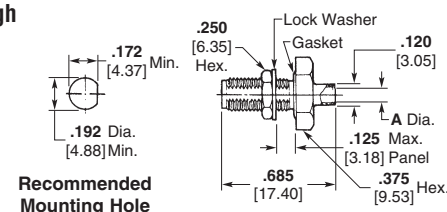
Part No.	Reference Part No. (Ref. Only)	Dim. A	Dim. B	RG/U Cable	DSCC Part No.
1045351-1	1001-5004-02	.088 2.22 Min.	.447 11.35 Ref.	405	—
1045358-1	1001-5045-92	.088 2.22 Min.	.467 11.86 Ref.	405	86116ZSG

**Straight Cable Jack (With Center Contact)**



Part No.	Reference Part No. (Ref. Only)	Dim. A	RG/U Cable
1045381-1	1002-7985-00	.088 2.22 Min.	405

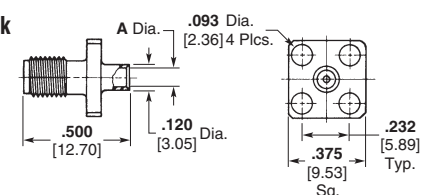
**Bulkhead Feed-through Cable Jack**



**Recommended Mounting Hole**

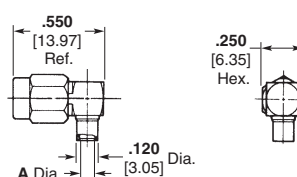
Part No.	Reference Part No. (Ref. Only)	Dim. A	RG/U Cable	DSCC Part No.
1045401-1	1004-7985-00	.088 2.22 Min.	405	—
1045398-1	1004-5005-90	.088 2.22 Min.	405	86117ZSG

**Flange Mount Cable Jack**



Part No.	Reference Part No. (Ref. Only)	Dim. A	RG/U Cable
1045410-1	1006-7985-00	.088 2.22 Min.	405

**Right-Angle Cable Plug**



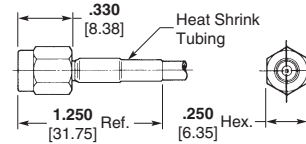
Part No.	Reference Part No. (Ref. Only)	Dim. A	RG/U Cable	DSCC Part No.
1045423-1	1007-7985-02	.088 2.22 Min.	405	—
1045418-1	1007-5015-92	.088 2.22 Min.	405	86118ZSG

Finish: Passivated stainless steel, -02. For gold plated coupling nut, change the Part Number suffix from -02 to -00.  
Inner housing that is soldered to cable is gold plated.  
Refer to recommended assembly tools in Application Tooling Section.

**SSMA Subminiature Coaxial Connectors** (Continued)

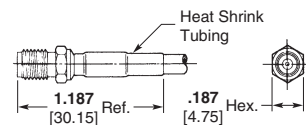
**For Flexible Cable — Solder Attachment**

**Straight Cable Plug<sup>1</sup>**



Part No.	Reference Part No. (Ref. Only)	RG/U Cable
1045477-1	1031-5001-02	178/U, 196
1045482-1	1031-5002-02	174/U, 179, 187, 188, 316

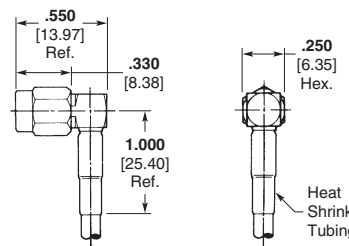
**Straight Cable Jack**



Part No.	Reference Part No. (Ref. Only)	RG/U Cable
1045496-1	1032-5001-00	178/U, 196
1045497-1	1032-5002-00	174/U, 179, 187, 188, 316

Finish: Gold plated. Inner housing that is soldered to cable is gold plated.

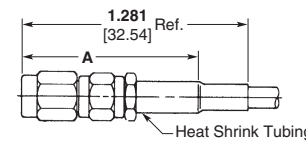
**Right-Angle Cable Plug<sup>1</sup>**



Part No.	Reference Part No. (Ref. Only)	RG/U Cable
1045507-1	1037-5001-00	178/U, 196
1045508-1	1037-5001-02	178/U, 196
1045511-1	1037-5002-02	174/U, 179, 187, 188, 316

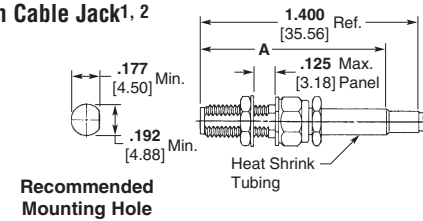
**For Flexible Cable — Crimp Attachment**

**Straight Cable Plug<sup>1, 2</sup>**



Part No.	Reference Part No. (Ref. Only)	Dim. A	RG/U Cable	DSCC Part No.
1045489-1	1031-7188-02	1.062 Ref. 26.97	174/U, 179, 187, 188, 316	—
1045486-1	1031-5031-92	1.062 Ref. 26.97	174, 316, 179	86119ZSG

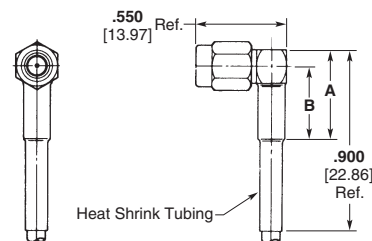
**Bulkhead Feed-through Cable Jack<sup>1, 2</sup>**



Recommended Mounting Hole

Part No.	Reference Part No. (Ref. Only)	Dim. A	RG/U Cable
1045506-1	1034-7196-02	1.050 Ref. 26.67	178/U, 196
1045503-1	1034-7188-02	1.180 Ref. 29.97	174/U, 179, 187, 188, 316

**Right-Angle Cable Plug<sup>1, 2</sup>**



Part No.	Reference Part No. (Ref. Only)	Dim. A	Dim. B	RG/U Cable	DSCC Part No.
1045520-1	1037-7188-02	.625 Ref. 15.88	.525 Ref. 13.34	174/U, 179, 187, 188, 316	—
1045517-1	1037-5032-92	.625 Ref. 15.88	.525 Ref. 13.34	174, 316, 179	86120ZSG

Refer to recommended assembly tools in Application Tooling Section.

1. Finish: Passivated stainless steel, -02. For gold plated coupling nut, change the Part Number suffix from -02 to -00. Inner housing that is soldered to cable is gold plated.
2. Captured contact.
3. Non-captured contact

2

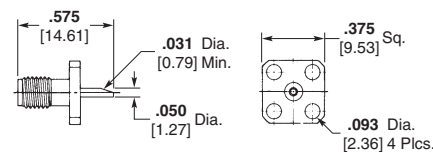
RF Connectors

**SSMA Subminiature Coaxial Connectors** (Continued)

**Panel Mount Receptacles**

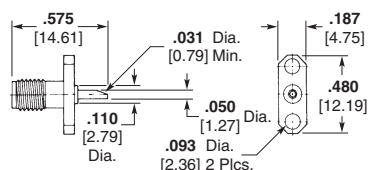
**Solder Pot Terminals**

**Flange Mount Jack Receptacle<sup>1</sup>**



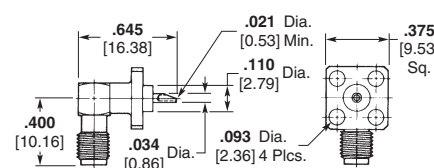
Reference Part No. (Ref. Only)	Part No.
1052-0000-00	1045568-1

**Flange Mount Jack Receptacle<sup>1</sup>**



Reference Part No. (Ref. Only)	Part No.
1052-1300-02	1045582-1

**Flange Mount Jack Receptacle<sup>1</sup>**



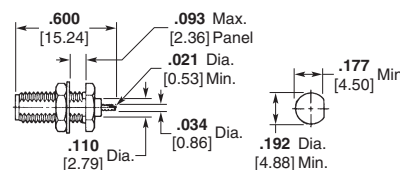
Reference Part No. (Ref. Only)	Part No.
1054-5005-02	1045621-1

**Bulkhead Mount Receptacles**

**Solder Pot Terminals**

**Bulkhead Feed-through Jack Receptacles<sup>1</sup>**

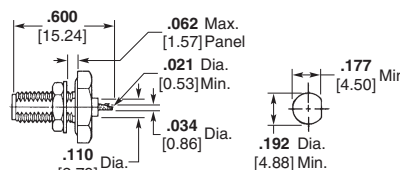
**Rear Mount**



**Recommended Mounting Hole**

Reference Part No. (Ref. Only)	Part No.
1056-0000-02	1045630-1

**Rear Mount (With "O" Ring)**



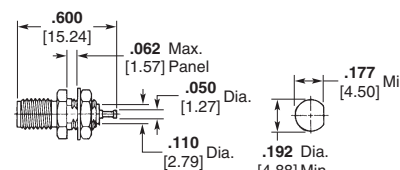
**Recommended Mounting Hole**

Reference Part No. (Ref. Only)	Part No.
1056-1100-02	1045632-1

**Turret Terminal**

**Bulkhead Feed-through Jack Receptacle<sup>1</sup>**

**Front Mount**



**Recommended Mounting Hole**

Reference Part No. (Ref. Only)	Part No.
1058-0000-02	1045637-1

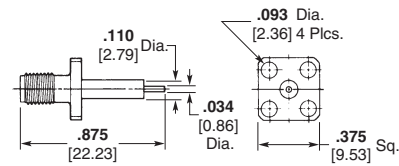
Finish: Passivated stainless steel, -02. For gold plate, change the Part Number suffix from -02 to -00.  
1. Captured Center Contact.

**SSMA Subminiature Coaxial Connectors** (Continued)

**Panel Mount Receptacles**

**Straight Terminal**

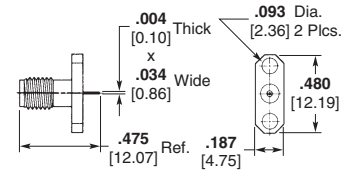
**Flange Mount Jack Receptacle<sup>2</sup>**



Reference Part No. (Ref. Only)	Part No.
1052-1200-02	1045576-1
1052-1201-02	1045578-1

**Tab Terminal**

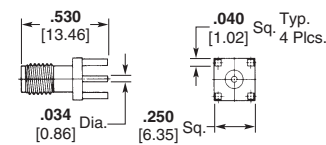
**Flange Mount Jack Receptacle<sup>2</sup>**



Reference Part No. (Ref. Only)	Part No.
1052-1302-02	1045586-1

**Printed Circuit Boards**

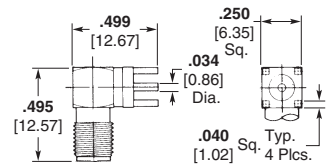
**Straight Jack**



Reference Part No. (Ref. Only)	Part No.
1062-0000-00	1045672-1

Finish: Gold plate.

**Right-Angle Jack**

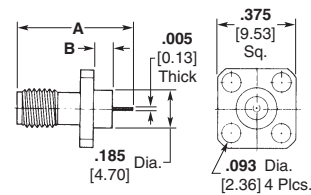


Reference Part No. (Ref. Only)	Part No.
1064-0000-00	1045677-1

**Circuits**

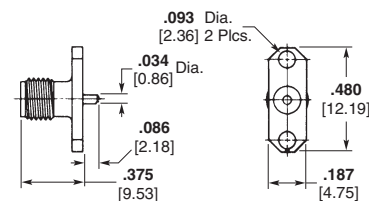
**Microstrip Transmission Line Circuits, Flange Mount Jack<sup>1</sup>**

**Tab Terminal**



Reference Part No. (Ref. Only)	Part No.	Dim. A	Dim. B
1052-1132-00	1045573-1	.600 Ref. 15.24	.125 Ref. 3.18

**Solderless Compression Terminal**



Reference Part No. (Ref. Only)	Part No.
1052-5013-00	1045607-1

Finish: Passivated stainless steel, -02. For gold plate, change the Part Number suffix from -02 to -00.

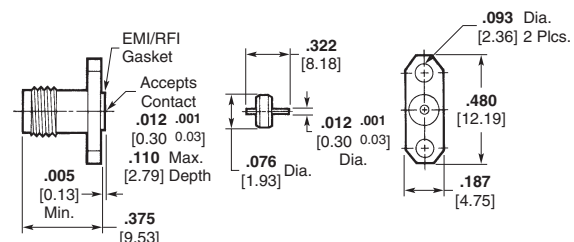
1. Captured center contact.
2. Non-captured center contact.



RF Connectors

**SSMA Subminiature Coaxial Connectors** (Continued)

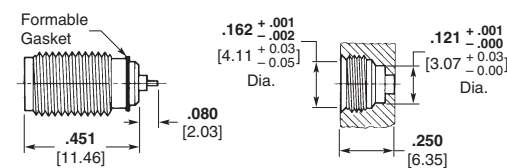
**Hermetically Sealed  
Metal-To-Metal Hermetic Seal  
Jack Receptacle With EMI/RFI  
Gasket, Field Replaceable  
Solder and Braze-In<sup>1, 4</sup>**



Reference Part No. (Ref. Only)	Part No.
1052-3355-02	1045598-1

**Electrical**  
VSWR (GHz) —  $1.07 \pm .01f$   
RF Leakage (dB) —  $-(100 - f\text{GHz})$

**Feed-through Jack Receptacle,  
Formable Gasket<sup>2, 4</sup>**



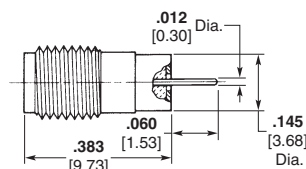
Reference Part No. (Ref. Only)	Part No.
1058-5014-00	1045651-1

**Electrical**  
VSWR (GHz) —  $1.05 \pm .01f$   
RF Leakage (dB) —  $-(100 - f\text{GHz})$

**Mechanical**  
Installation Thermal Limit —  $250^\circ\text{C}$

**Recommended  
Mounting Hole**

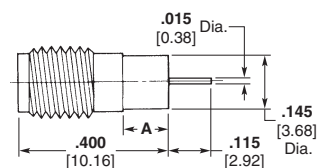
**Feed-through Jack Receptacle,  
Solder and Braze-In<sup>3</sup>**



Reference Part No. (Ref. Only)	Part No.
1058-3203-00	1045647-1

**Electrical**  
VSWR (GHz) —  $1.05 \pm .014f$   
RF Leakage (dB) —  $-(100 - f\text{GHz})$

**Panel Feed-through Jack  
Receptacle, Solder and  
Braze-In**



Reference Part No. (Ref. Only)	Part No.	Dim. A
1058-3121-00	1045643-1	$.093$ 2.36
1058-3123-00	1045646-1	$.187$ 4.75

Finish: Gold plate.

1. Finish: Passivated stainless steel, -02. For gold plate, change the Part Number suffix from -02 to -00.
2. Finish: Gold plate, -00. For passivated stainless steel, change the Part Number suffix from -00 to -02. For nickel plate, change the suffix from -00 to -10.
3. Finish: Gold plate, -00. This unit has a unique self-matching compensation step, allowing direct attachment to the substrate, resulting in minimal package size.
4. Refer to recommended assembly tools in Application Tooling section.



**SSMA Subminiature Coaxial Connectors** (Continued)

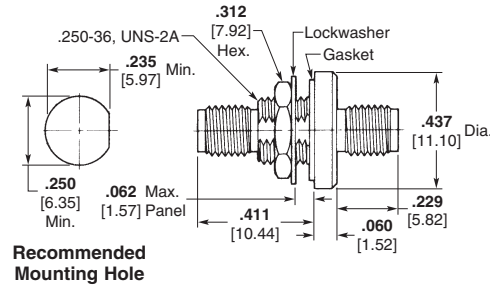
**Hermetically Sealed**  
(Continued)

**Panel Feed-through  
Hermetic Adapter**

**Jack to Jack<sup>1</sup>**



**Electrical**  
VSWR (GHz) — 1.10 + .01f  
RF Leakage (dB) — -(100 - fGHz)



Reference Part No. (Ref. Only)	Part No.
1084-1100-00	1045725-1



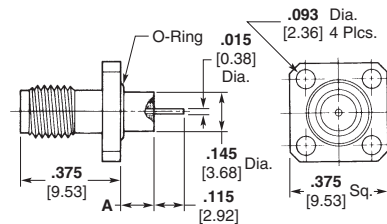
RF Connectors

**O-Ring Gasket Hermetic Seal**

**Flange Mount Jack Receptacle<sup>1, 2</sup>**



**Electrical**  
VSWR (GHz) — 1.05 + .01f  
RF Leakage (dB) — -(70 - fGHz)

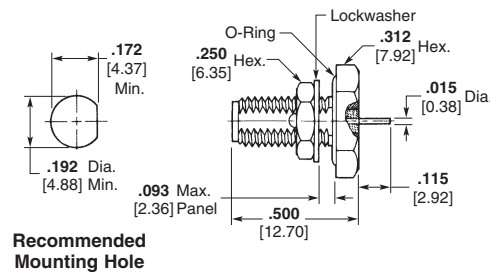


Reference Part No. (Ref. Only)	Part No.	Dim. A
1052-3121-00	1045593-1	.093 2.36

**Rear Mount Jack Receptacle<sup>1, 2</sup>**



**Electrical**  
VSWR (GHz) — 1.05 + .014f  
RF Leakage (dB) — -(70 - fGHz)

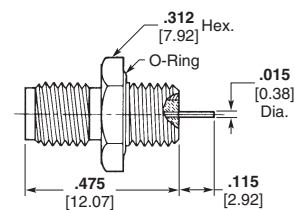


Reference Part No. (Ref. Only)	Part No.
1056-3100-00	1045633-1

**Bulkhead Feed-through  
Front Mount Jack Receptacle**



**Electrical**  
VSWR (GHz) — 1.05 + .01f  
RF Leakage (dB) — -(70 - fGHz)



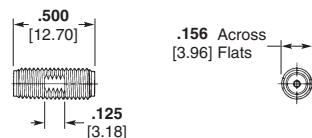
Reference Part No. (Ref. Only)	Part No.
1058-3100-00	1045642-1

1. Finish: Gold plate, -00. For passivated stainless steel, change the Part Number suffix from -00 to -02.  
2. On passivated versions (-02), pins are pre-tinned using Sn60 solder.

**SSMA Subminiature Coaxial Connectors** (Continued)

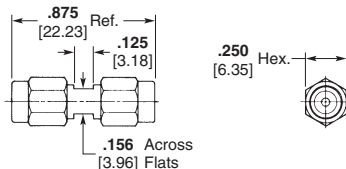
**In-Series Adapters**

**Jack to Jack Adapter**



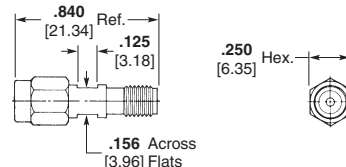
Reference Part No. (Ref. Only)	Part No.
1080-0000-02	1045701-1

**Plug to Plug Adapter**



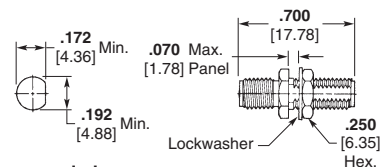
Reference Part No. (Ref. Only)	Part No.
1081-0000-02	1045704-1

**Plug to Jack Adapter (Connector Saver)**



Reference Part No. (Ref. Only)	Part No.
1082-0000-02	1045708-1

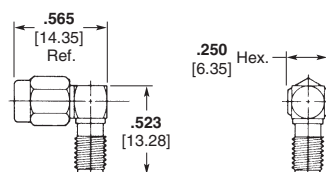
**Bulkhead Mount Jack to Jack Adapter**



**Recommended Mounting Hole**

Reference Part No. (Ref. Only)	Part No.
1084-0000-02	1045723-1

**Right-Angle Plug to Jack Adapter**



Reference Part No. (Ref. Only)	Part No.
1088-0000-02	1045747-1

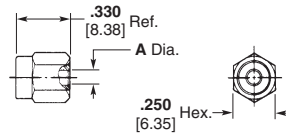
Finish: Passivated stainless steel, -02. For gold plate, change the Part Number suffix from -02 to -00.

**SSMA Subminiature Coaxial Connectors** (Continued)

**High Frequency For Semi-Rigid Cable**

**.085 [2.16] and .070 [1.78] Dia. — Direct Solder Attachment**

**Straight Cable Plug (Without Center Contact)<sup>1, 3</sup>**



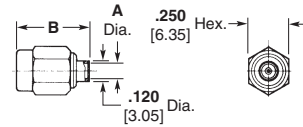
**Specifications**

**Nominal Impedance** — 50 ohms  
**Frequency Range** — dc to 40 GHz  
**Voltage Standing Wave Ratio** — 1.07 + .010 f (GHz)

**Insertion Loss** —  $.04 \times \sqrt{f(\text{GHz})}$  = dB max.  
**Voltage Rating** — 250 volts RMS max. working voltage

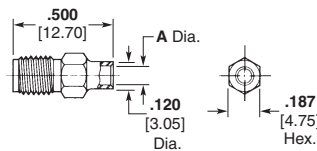
Reference Part No. (Ref. Only)	Part No.	Dim. A	RG/U Cable	Cable Dielectric
1001-7985-00	1045369-1	.087 2.2	405	Solid PTFE

**Straight Cable Plug Center Contact<sup>1, 3</sup>**



Reference Part No. (Ref. Only)	Part No.	Dim. A	Dim. B	RG/U Cable	Cable Dielectric
1401-7985-00	1046477-1	.088 2.22	.447 11.35	405	Solid PTFE

**Straight Cable Jack<sup>3</sup>**

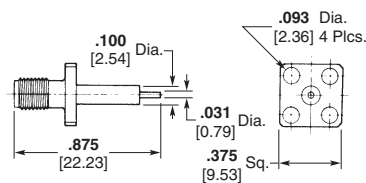


Reference Part No. (Ref. Only)	Part No.	Dim. A	RG/U Cable	Cable Dielectric
1402-7985-00	1046479-1	.088 2.22	405	Solid PTFE

Finish: Gold plate.

**Panel Mount — Straight Terminal**

**Flange Mount Jack Receptacle<sup>2, 4</sup>**



Reference Part No. (Ref. Only)	Part No.
1452-1201-02	1086451-1

1. Finish: Gold plated, -00. For passivated stainless steel coupling nut, change the Part Number suffix from -00 to -02. Inner housing that is soldered to cable is gold plated.
2. Finish: Passivated stainless steel, -02. For gold plate, change the Part Number suffix from -02 to -00.
3. Refer to recommended assembly tools in Application Tooling Section.
4. Captured center contact.

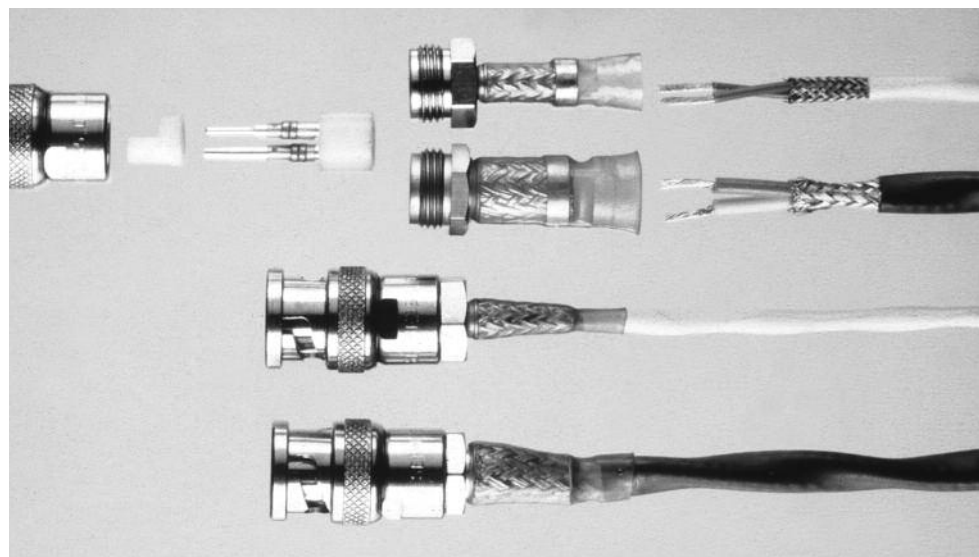


RF Connectors

**RF One-Step BNC/TNC Connectors**

**Product Facts**

- Easy, quick installation
- Outstanding cable-retention force
- Solder-solder connection type (center conductor and braid)
- One-step termination for easy, quick installation and lower installed cost
- Exceptional cable retention force to withstand high vibration and frequent mates and unmates
- Fully soldered center conductor and braid
- Excellent built-in strain relief against vibration and excessive handling
- Long-term reliability
- Controlled soldering termination
- Use with standard RG/U cables and Raychem brand Cheminax cables
- Three product sizes to accommodate a wide range of cables
- Meets performance requirements of MIL-PRF-39012 up to 2.8 GHz



**Applications**

One-Step BNC/TNC connectors are single-piece assemblies for terminating the center conductor and the braid of a broad range of coaxial cables.

The connectors are fully intermateable with MIL-PRF-39012 connectors and are available in 50-ohm and 75-ohm versions.

Specifications	Installation
TE Connectivity RB-115	For proper installation of these devices, the correct heating tool and reflector attachment must be used. Any one of the following Raychem heating tools is recommended: • Steinel® Model HL1802E • CV-1981
	Refer to TE installation procedure RPIP 683-00 for detailed instructions.

**RF One-Step BNC/TNC Connectors** (Continued)

**Product Options and Part Numbering System**

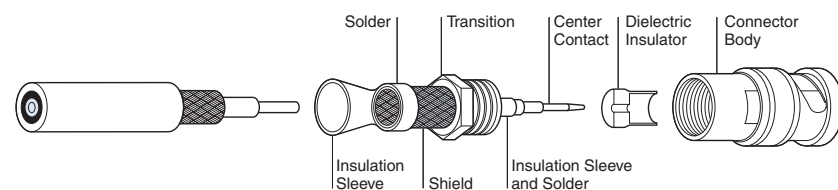
RXX - XX - X - XX	Connector Style		Connector Type		
	Dash No. -XX	Style	TNC	BNC	
-00		Straight plug			
-01		Right-angle plug			
-02		Straight bulkhead jack			
-03		Straight jack			
-04		Straight panel jack			
<b>Connector size</b> L = Large M = Medium S = Small  50 = 50 ohms 75 = 75 ohms  D = Nickel-plated brass body, gold-plated brass pin  B = BNC T = TNC					

**2**  
RF Connectors

Example: RBD-50-L-00 is a BNC connector, 50 ohms, large size, with straight plug body.

**RF One-Step BNC/TNC Connectors** (Continued)

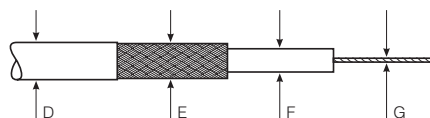
**Product Characteristics**



Material	
Center contact	Gold-plated beryllium copper (female) Gold-plated brass (male)
Dielectric insulator	PTFE
Transition	Silver-plated brass
Connector body	Nickel-plated brass
Solder and flux	Sn63Pb37, RMA flux
Braided shield	Tin-plated copper wire per ASTM B3
Insulation sleeve	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride, transparent blue
Strain relief/sealing sleeve	Radiation-crosslinked, heat-shrinkable modified polyolefin with adhesive, black
Typical Performance	
Dielectric withstand voltage	1500 V
Insulation resistance	5000 megohms
Temperature rating	-55°C to 150°C [-67°F to 302°F]
Contact resistance-straight	Inner = 1.5 milliohms, outer = 1.0 milliohm
Contact resistance — right-angle	Inner = 2.5 milliohms, outer = 1.5 milliohms
Cable retention force	295N (66 lb) to 822N (196 lb)
Voltage rating	500 V RMS
Connector durability	500 mating cycles minimum
Electrical Performance	
Nominal impedance	50 and 75 ohms
Frequency range	Up to 2.8 GHz

**Part Selection Process**

1. From Product Options and Part Numbering System on page 2-35, select the connector style you need (BNC or TNC, plug or jack, male or female contacts).
2. From the tables that follow, find the appropriate table for the connector style you selected.
3. From the appropriate table, select the connector part number based on the RG cable type or Raychem cable part number. For cable types not shown use the cable dimensions.  
Note: The cable dimensions in each table are keyed to the diagram below.





**RF One-Step BNC/TNC Connectors** (Continued)

Impedance (ohms)	Cable Type		Cable Dimensions				Part No.
	RG Cables	Raychem Cables	D (Min.-Max.)	E (Min.-Max.)	F (Max.)	G (Max.)	
<b>BNC Straight Plugs, Male Contacts</b>							
50	RG-174, RG-178, RG-188, RG-196, RG-316	5026A1311, 5028A1317, 5030A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RBD-50-S-00
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.00 [.118]	1.25 [.050]	RBD-50-M-00
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RBD-50-L-00
75	RG-179, RG-187	7530A1317	1.50-5.00 [.060-.217]	5 0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RBD-75-S-00
75	—	7524A1311, 7528A1317	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.70 [.126]	1.25 [.050]	RBD-75-M-00
75	RG-6, RG-11, RG-12, RG-59, RG-144, RG-216	—	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.3 [.287]	2.45 [.100]	RBD-75-L-00
<b>BNC Right-Angle Plugs, Male Contacts</b>							
50	RG-174, RG-178, RG-188, RG-196, RG-316	5026A1311, 5028A1317, 5030A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RBD-50-S-01
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.00 [.118]	1.25 [.050]	RBD-50-M-01
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00-12.50 [.197-.500]	4.1-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RBD-50-L-01
75	RG-179, RG-187	7530A1317	1.50-5.50 [.060-.217]	0.9-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RBD-75-S-01
75	—	524A1311, 7528A1317	3.50-7.00 [.138-.276]	2.1-5.00 [.083-.197]	3.70 [.146]	1.25 [.050]	RBD-75-M-01
75	RG-6, RG-11, RG-12, RG-59, RG-144, RG-216	—	5.00-12.50 [.197-.500]	4.1-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RBD-75-L-01
<b>BNC Straight Bulkhead Jacks, Female Contacts</b>							
50	RG-174, RG-178, RG-188, RG-196, RG-316	5026A1311, 5028A1317, 5030A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RBD-50-S-02
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.00 [.118]	1.25 [.050]	RBD-50-M-02
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RBD-50-L-02
75	RG-179, RG-187	7530A1317	1.50-5.00 [.060-.217]	5 0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RBD-75-S-02
75	—	75 7524A1311, 7528A1317	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.70 [.146]	1.25 [.050]	RBD-75-M-02
75	RG-6, RG-11, RG-12, RG-59, RG-144, RG-216	—	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RBD-75-L-02
<b>BNC Straight Jacks, Female Contacts</b>							
50	RG-174, RG-178, RG-188, RG-196, RG-316	5026A1311, 5028A1317, 5030A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RBD-50-S-03
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.00 [.118]	1.25 [.050]	RBD-50-M-03
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RBD-50-L-03
75	RG-179, RG-187	7530A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RBD-75-S-03
75	—	75 7524A1311, 7528A1317	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.70 [.146]	1.25 [.050]	RBD-75-M-03
75	RG-6, RG-11, RG-12, RG-59, RG-144, RG-216	—	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RBD-75-L-03
<b>BNC Straight Panel Jacks, Female Contacts</b>							
50	RG-174, RG-178, RG-188, RG-196, RG-316	5026A1311, 5028A1317, 5030A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RBD-50-S-04
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.00 [.118]	1.25 [.050]	RBD-50-M-04
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RBD-50-L-04
75	RG-179, RG-187	7530A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RBD-75-S-04
75	—	7524A1311, 7528A1317	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.70 [.146]	1.25 [.050]	RBD-75-M-04
75	RG-6, RG-11, RG-12, RG-59, RG-144, RG-216	—	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RBD-75-L-04

2  
RF Connectors

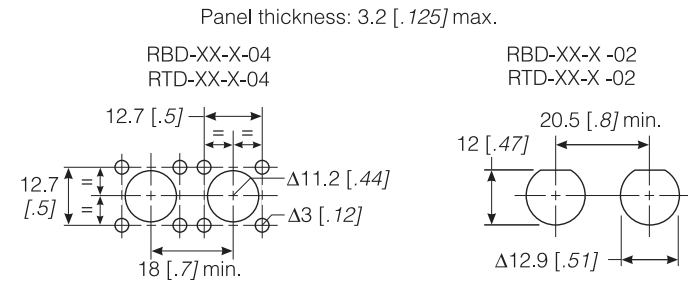
**RF One-Step BNC/TNC Connectors** (Continued)

**TNC Coaxial Connectors**

Impedance (ohms)	Cable Type		Cable Dimensions				Part No.
	RG Cables	Raychem Cables	D (Min.-Max.)	E (Min.-Max.)	F (Max.)	G (Max.)	
<b>TNC Straight Plugs, Male Contacts</b>							
50	RG-174, RG-178, RG-188, RG-196, RG-316	5026A1311, 5028A1317, 5030A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RTD-50-S-00
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.00 [.118]	1.25 [.050]	RTD-50-M-00
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RTD-50-L-00
75	RG-179, RG-187	7530A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RTD-75-S-00
75	—	7524A1311, 7528A1317	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.70 [.146]	1.25 [.050]	RTD-75-M-00
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RTD-75-L-00
<b>TNC Straight Jacks, Female Contacts</b>							
50	RG-174, RG-178, RG-188, RG-196, RG-316	5026A1311, 5028A1317, 5030A1317	1.5-5.5 [.060-.217]	0.9-3.0 [.035-.118]	1.55 [.060]	0.65 [.025]	RTD-50-S-03
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.5-7.0 [.138-.276]	2.1-5.0 [.083-.197]	3.0 [.118]	1.25 [.050]	RTD-50-M-03
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.0-12.5 [.197-.500]	4.1-9.5 [.161-.375]	7.3 [.287]	2.45 [.100]	RTD-50-L-03
75	RG-179, RG-187	7530A1317	1.5-5.5 [.060-.217]	0.9-3.0 [.035-.118]	1.55 [.060]	0.65 [.025]	RTD-75-S-03
75	—	7524A1311, 7528A1317	3.5-7.0 [.138-.276]	2.1-5.0 [.083-.197]	3.7 [.146]	1.25 [.050]	RTD-75-M-03
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.0-12.5 [.197-.500]	4.1-9.5 [.161-.375]	7.3 [.287]	2.45 [.100]	RTD-75-L-03
<b>TNC Straight Panel Jacks, Female Contacts</b>							
50	RG-174, RG-178, RG-188, RG-196, RG-316	5026A1311, 5028A1317, 5030A1317	1.5-5.5 [.060-.217]	0.9-3.0 [.035-.118]	1.55 [.060]	0.65 [.025]	RTD-50-S-04
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.5-7.0 [.138-.276]	2.1-5.0 [.083-.197]	3.0 [.118]	1.25 [.050]	RTD-50-M-04
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.0-12.5 [.197-.500]	4.1-9.5 [.161-.375]	7.3 [.287]	2.45 [.100]	RTD-50-L-04
75	RG-179, RG-187	7530A1317	1.5-5.5 [.060-.217]	0.9-3.0 [.035-.118]	1.55 [.060]	0.65 [.025]	RTD-75-S-04
75	—	7524A1311, 7528A1317	3.5-7.0 [.138-.276]	2.1-5.0 [.083-.197]	3.7 [.146]	1.25 [.050]	RTD-75-M-04
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.0-12.5 [.197-.500]	4.1-9.5 [.161-.375]	7.3 [.287]	2.45 [.100]	RTD-75-L-04

**RF One-Step BNC/TNC Connectors** (Continued)

**TNC Coaxial Connectors**



2 RF Connectors

Impedance (ohms)	Cable Type		Cable Dimensions				Part No.
	RG Cables	Raychem Cables	D (Min.-Max.)	E (Min.-Max.)	F (Max.)	G (Max.)	
<b>TNC Straight Bulkhead Jacks, Female Contacts</b>							
50	RG-174, RG-178, RG-188, RG-196, RG-316	5026A1311, 5028A1317, 5030A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RTD-50-S-02
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.5-7.0 [.138-.276]	2.10-5.00 [.083-.197]	3.00 [.118]	1.25 [.050]	RTD-50-M-02
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.0-12.5 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RTD-50-L-02
75	RG-179, RG-187	7530A1317	1.5-5.5 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RTD-75-S-02
75	—	7524A1311, 7528A1317	3.5-7.0 [.138-.276]	2.10-5.00 [.083-.197]	3.70 [.146]	1.25 [.050]	RTD-75-M-02
75	RG-6, RG-11, RG-12, RG-59, RG-144, RG-216	—	5.0-12.5 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RTD-75-L-02
<b>TNC Right-Angle Plugs, Male Contacts</b>							
50	RG-174, RG-178, RG-188, RG-196, RG-316	5026A1311, 5028A1317, 5030A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RTD-50-S-01
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.00 [.118]	1.25 [.050]	RTD-50-M-01
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00-12.50 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RTD-50-L-01
75	RG-179, RG-187	7530A1317	1.50-5.50 [.060-.217]	0.90-3.00 [.035-.118]	1.55 [.060]	0.65 [.025]	RTD-75-S-01
75	—	7524A1311, 7528A1317	3.50-7.00 [.138-.276]	2.10-5.00 [.083-.197]	3.70 [.146]	1.25 [.050]	RTD-75-M-01
75	RG-6, RG-11, RG-12, RG-59, RG-144, RG-216	—	5.0-12.5 [.197-.500]	4.10-9.50 [.161-.375]	7.30 [.287]	2.45 [.100]	RTD-75-L-01

**Application Tooling**

**Hand Tools**

TE Connectivity CERTI-CRIMP Hand Tools are our top-of-the-line crimping tools featuring the original ratcheted crimp control. All tools are designed to exacting specifications, and manufactured using high quality materials to provide long service life. Recommended for low production runs, repairs and prototype work, and applications requiring consistent, highly-reliable terminations. See Catalog 65780 for further information.

**Typical CERTI-CRIMP Hand Tools with Integral (Non-Interchangeable) Dies**



**Part Number 58537-1**  
(used with PRO-CRIMPER Tool Frame 354940-1)  
for 50 Ohm BNC Dual Crimp MIL Type Connectors



**Part Number 220015-1**  
for 50 Ohm N Connectors



**CERTI-CRIMP Hand Tool with Interchangeable Dies**



**Part Number 69710**

**Hand Tool Kit for SMA and Blindmate Connectors**

**Part Number 59981-1**



Item Description	Part Numbers	
	TE	Military (M22520/)
Hand Tool	59980-1	36-01
Plug Locator (without Center Contact)	220220-2	36-06
Plug Locator (with Center Contact)	220221-2	36-04
Jack Locator	220222-2	36-05
Die Set for RG-402/U Cable (.141 [3.58] O.D.)	312253-1	36-03
Die Set for RG-405/U Cable (.086 [2.18] O.D.)	312253-2	36-02
Cutoff Fixture	311395-1	36-09
Cable Dressing Fixture	311396-1	36-07
Trimmer Tool	312317-1	36-08
Cable Bend Fixture Assembly Includes following 6 items:	220224-1	36-10
Bend Segment, RG-402/U (.125 [3.18] Radius)	311386-1	36-11
Bend Segment, RG-402/U (.250 [6.35] Radius)	311386-2	36-12
Bend Segment, RG-405/U	311386-3	36-13
Tool Holder	311392-1	—
Limiting Pin	307581-1	—
Conforming Block	312067-1	—
Hex Wrench	21027-6	—
Carrying Case	13126-1	—
Insert, Case	13127-1	—

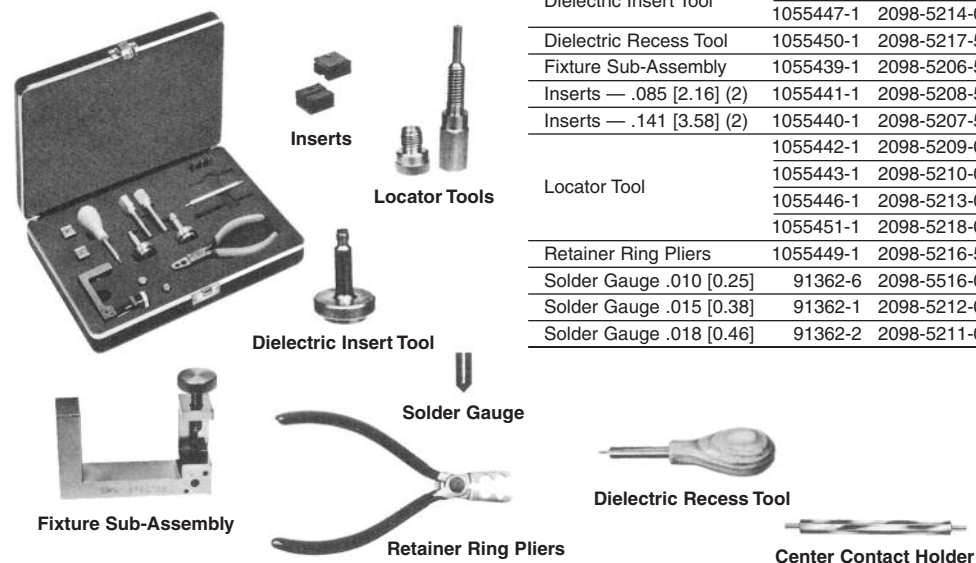
**Application Tooling** (Continued)

**Solder Assembly Kit  
Brass SMA Connectors**

Kit Part Number 1055420-1

(Reference Kit Part Number 2098-5066-54)

For installation of SMA connectors to .035 [0.89] and .141 [3.58] diameter semi-rigid cable



Item Description	Part No.	Reference Part No. (Ref. Only)
Center Contact Holder	1055454-1	2098-5221-10
Dielectric Insert Tool	1055448-1	2098-5215-02
	1055447-1	2098-5214-02
Dielectric Recess Tool	1055450-1	2098-5217-54
Fixture Sub-Assembly	1055439-1	2098-5206-54
Inserts — .085 [2.16] (2)	1055441-1	2098-5208-54
Inserts — .141 [3.58] (2)	1055440-1	2098-5207-54
	1055442-1	2098-5209-02
	1055443-1	2098-5210-02
Locator Tool	1055446-1	2098-5213-02
	1055451-1	2098-5218-02
Retainer Ring Pliers	1055449-1	2098-5216-54
Solder Gauge .010 [0.25]	91362-6	2098-5516-02
Solder Gauge .015 [0.38]	91362-1	2098-5212-02
Solder Gauge .018 [0.46]	91362-2	2098-5211-02

2  
RF Connectors

**Universal Compression  
Crimp Tool**

Kit Part Number 1055835-1  
(Reference Kit Part Number 2598-5200-54)

TE Connectivity Universal Compression Crimp Tool offers the ability to rapidly produce cable assemblies using solderless compression crimp connectors with semi-rigid cables. This universal assembly tool kit will attach SMA, OSP (BMA), N and TNC series connectors to .141 [3.58], .085 [2.16] and .250 [6.35] cable quickly and consistently with excellent mechanical and electrical results.

The tool kit permits single hand assembly. Anvils and cable supports can be quickly changed. Crimp lengths can be adjusted from .001 [.025] to 1.000 [25.4] in increments of .001 [.025]. Sharp radius bends in cables are easily accommodated. The kit contains:



Description	Part No.	Reference Part No. (Ref. Only)
Crimp Frame	1055831-1	2598-5196-54
Calibration Gauge	1055832-1	2598-5197-54
.141 [3.58] Cable Support	1055833-1	2598-5198-54
.085 [2.16] Cable Support	1055834-1	2598-5199-54
SMA Plug Anvil	1055836-1	2598-5201-54
SMA Jack Anvil	1055837-1	2598-5202-54
Type N Plug Anvil	1055838-1	2598-5203-54
Type N Jack Anvil	1055839-1	2598-5204-54
TNC Plug Anvil	1055840-1	2598-5205-54
TNC Jack Anvil	1055841-1	2598-5206-54
OSP (BMA) Plug Anvil	1055842-1	2598-5207-54
OSP (BMA) Jack Anvil	1055843-1	2598-5208-54

All tools may be purchased separately.

**Application Tooling** (Continued)

**MIL-C-22520/10-01  
Equivalent Hex Crimp Kit**  
Kit Part Number 1055236-1  
(Reference Kit Part Number 2098-0105-54)

For military specified applications requiring quick and efficient cable to connector attachment. Five popular hex die sizes are available to crimp the outer cable conductor to connector housings.



Die Change Tool



Crimp Tool



Hex Die

**The kit contains:**

Description	Part Number	Reference Part Number (Ref. Only)
Crimp Tool	1060713-1	9098-5105-54
Die Change Tool	1060716-1	5698-5014-54
Hex Die — A, B, C	1060714-1	5698-5015-54
Hex Die — D, E	1060715-1	5698-5016-54

All tools may be purchased separately.  
For the assembly of SMA connectors,  
Accessory Kit Part Number 1055421-1 is required.

**A basic instruction sheet, included with the kit, aids in proper die selection**

Hex Die Part Number	Reference Hex Die Part Number (Ref. Only)	Die	Hex Size ±.003 [0.08]	For Use With RG/U Cable
1060714-1	5698-5015-54	A	.105 2.67	178B & 196A
		B	.213 5.41	55B, 58C, 141A, 142B, 223, 303, & 400
		C	.128 3.25	174, 174B, 179, 187A, 188A, & 316
1060715-1	5698-5016-54	D	.178 4.52	180B, 195A, & 122
		E	.255 6.48	59, 62A, 71B, 210, & 302

**Additional Dies Available**

Hex Die Part Number	Reference Hex Die Part Number (Ref. Only)	Hex Size ±.003 [0.08]	For Use With RG/U Cable
1055270-1	2098-0323-54	.151 3.84	RD316 Double Braid

**SMA Crimp Tool  
Accessory Kit**  
Kit Part Number 1055421-1  
(Reference Kit Part Number 2098-5067-54)

For installation of SMA connectors to flexible braided cable. Crimp type SMA connectors require Hex Crimp Kit Part Number 1055236-1.

**The kit contains:**

Description	Part Number	Reference Part Number (Ref. Only)
Center Contact Holder	1055454-1	2098-5221-10
Locator Tool	1055446-1	2098-5213-02
Locator Tool	1055451-1	2098-5218-02
Solder Gauge .015 [0.38]	91362-1	2098-5212-02

All tools may be purchased separately.



Locator Tool



Solder Gauge



Center Contact Holder



**Application Tooling** (Continued)

**Stripping Tools**

The hand-operated TE Connectivity Coaxial Cable Stripper features interchangeable, color-coded blade cassettes and V-blocks to accommodate 2- or 3-step stripping for cable diameters ranging from 2.54 [.10] through 7.62 [.30]. You strip cable by simply clamping and rotating the tool around the cable. See Instruction Sheet IS 2766 for further information.



For Use With Connector Type	Tool No.
BNC Single Crimp	603995-1
BNC Commercial and UHF Miniature	603995-2
UHF Standard	603995-3
BNC MIL Type Dual Crimp	603995-5
BNC Commercial Dual Crimp	603995-6

**Semi-Rigid Cable Tooling**

The tools listed here are designed specifically to strip and terminate semi-rigid cable. These tools operate basically the same as the flexible cable tools, in that they produce uniform terminations time after time, without heat damage from soldering.

**Hand Tool for BNC and TNC Semi-Rigid Cable Connectors**



**Part Number 59980-1**  
Frame only — does not include dies and locator

**Manual Trim and Point Tool**

TE offers a manual tool that performs both trimming and pointing operations. Tools are available for .141 [3.58] and .085 [2.16] diameter semi-rigid cable. These hand-operated tools are ideally suited for engineering, small production runs or field use. They feature tungsten carbide cutters for durability up to 30 times longer than the life of a high speed steel cutter. Replacement cutters are interchangeable and may be purchased separately.



**Replacement Cutters**

**Trimmer: Part Number 1055813-1**  
**Pointer: Part Number 1055814-1**

Tool Part Number	Reference Tool Part Number (Ref. Only)	Cable	Trim Length
1055811-1	2598-5116-54	RG-402/U (.141 [3.58])	.085 Fixed 2.16
1055815-1	2598-5120-54	RG-405/U (.085 [2.16])	.070 Fixed 1.78
1055823-1	2598-5137-54	RG-402/U (.141 [3.58])	Adjustable*
1055824-1	2598-5138-54	RG-405/U (.085 [2.16])	Adjustable*

\*Adjustable trim length from .050 [1.27] to .140 [3.56].

**Replacement Collets**

Part Number	Reference Part Number (Ref. Only)	Cable
1055825-1	2598-5145-54	RG-402/U (.141 [3.58])
1055827-1	2598-5167-54	RG-405/U (.085 [2.16])

**Cable Benders for Semi-Rigid Cable**



Cable Bender

Description	Part Number	Reference Part Number (Ref. Only)	Bend Radius*
Cable Bender for RG-405/U (.085 [2.16])	1055479-1	2098-5287-54	1/4 [6.4] 3/8 [9.8]
Cable Bender for RG-402/U (.141 [3.58])	1055478-1	2098-5286-54	3/8 [9.8] 1/2 [12.7]

\*Radius of the bend is measured from the centerline of the cable.

**Trimming Tools for Semi-Rigid Cable**

For soldered semi-rigid cable connectors using the cable center conductor as its contact. These tools are optional for most installations but recommended for optimum connector performance.



Trim Tool

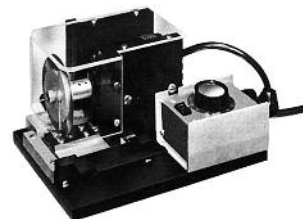
Description	Part Number	Reference Part Number (Ref. Only)
Trim Tool for SMA Connectors RG-402/U (.141 [3.58])	1055455-1	2098-5272-02
Trim Tool for SSMA Connectors RG-405/U (.085 [2.16])	1055465-1	2098-5269-02

2  
RF Connectors

**Application Tooling** (Continued)

**Cable Trimmers for Production**

TE Connectivity cable trimmers are designed for production trimming of RG-402/U (.141 [3.58]) and RG-405/U (.085 [2.16]) coaxial cables in preparation for connector installation. The trimming operation produces an unusually clean, burr-free cut with minimum smear. The length and depth of cut are adjustable. Replacement hardware can be used with either tool.


**Cable Trimmers**

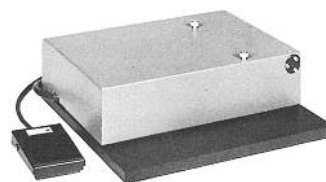
Description	Part Number	Reference Part Number (Ref. Only)
RG-402/U (.141 [3.58])	1055526-1	2098-5676-54
RG-405/U (.085 [2.16])	1055530-1	2098-5686-54

**Replacement Hardware**

Description	Part Number	Reference Part Number (Ref. Only)
Saw Blade	1055524-1	2098-5674-54
Trim Saw Block (.141 [3.58])	1055527-1	2098-5678-54
Trim Saw Block (.085 [2.16])	1055528-1	2098-5679-54

**Cable Pointers for Production**

TE cable pointers are designed to point straight and bent cables and are adjustable for desired center conductor length. The cable pointers cut 90° point on copper as well as copper-clad center conductors.


**Cable Pointers**

Description	Part Number	Reference Part Number (Ref. Only)	Cable	Replacement Cutter Part Number	Reference Replacement Cutter Part Number (Ref. Only)
Single Pointer	1055525-1	2098-5675-54	RG-402/U (.141 [3.58])	1055529-1	2098-5681-54
Single Pointer	1080269-1	2098-5685-54	RG-405/U (.085 [2.16])		

**Interface Inspection Gauges**

TE offers Connector Interface Gauges. They have shock proof and fully jeweled dial indicators. The rugged construction of the dial mechanism minimizes the need for repair or replacement.

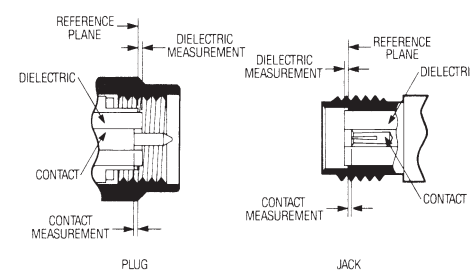
The gauge heads are manufactured from a corrosion resistant, hardening stainless steel which is heat treated for longer life. All critical surfaces are ground and lapped for precision fit and superior surface finish. The heads are securely fastened onto the dial indicator for no movement between the gauge head and the dial indicator

spindle allowing for precise measurements.

Like the gauge heads, the plungers are specially designed to provide strength and durability.



Connector	Type	Gauge Kit Part Number	Reference Gauge Kit Part Number (Ref. Only)
SMA	Jack	1055496-1	2098-5455-54
	Plug	1055497-1	2098-5456-54

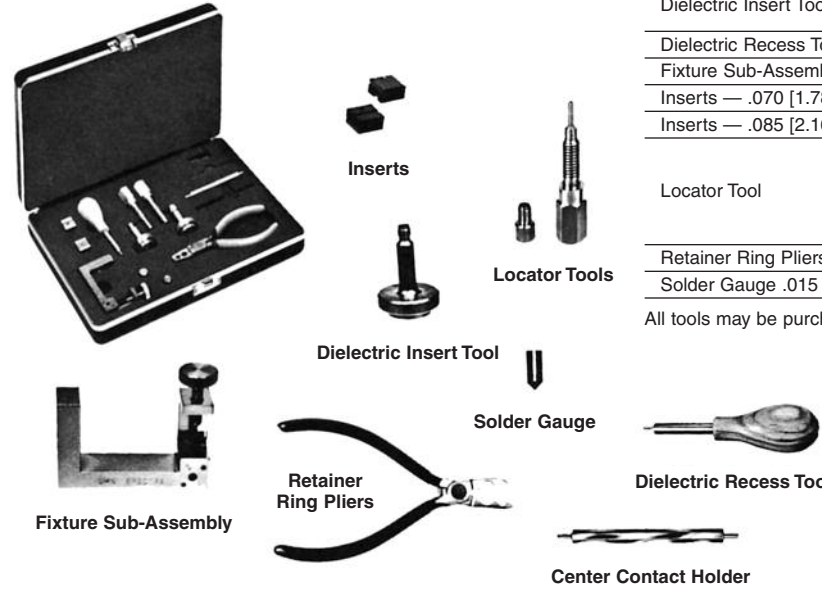

**SMA Interface Example**

**Application Tooling** (Continued)

**SSMA Connectors**

**Kit Part Number 1055466-1**  
(Reference Kit Part Number 2098-5270-54)

For installation of SSMA connectors to .070 [1.78] and .085 [2.16] diameter semi-rigid cable.



Item Description	Part No.	Reference Part No. (Ref. Only)
Center Contact Holder	1055463-1	2098-5237-10
Dielectric Insert Tool	1055458-1	2098-5233-02
	1055459-1	2098-5234-02
Dielectric Recess Tool	1055460-1	2098-5235-54
Fixture Sub-Assembly	1055439-1	2098-5206-54
Inserts — .070 [1.78] (2)	1055547-1	2098-5831-54
Inserts — .085 [2.16] (2)	1055441-1	2098-5208-54
	1055461-1	2098-5236-02
Locator Tool	1055464-1	2098-5238-02
	1055456-1	2098-5231-02
	1055457-1	2098-5232-02
Retainer Ring Pliers	1055449-1	2098-5216-54
Solder Gauge .015 [0.38]	91362-1	2098-5212-02

All tools may be purchased separately.

**Econo-Crimp Assembly Kit**

**Kit Part Number 1055779-1**  
(Reference Kit Part Number 2598-5005-54)

For quick and efficient cable to connector attachment. Five popular hex die sizes are available to crimp the outer cable conductor to connector housings.



Item Description	Part No.	Reference Part No. (Ref. Only)
Crimp Tool	1055780-1	2598-5006-54
Hex Die — A, B, C	1055781-1	2598-5007-54
Hex Die — D, E	1055782-1	2598-5008-54

All tools may be purchased separately. For the assembly of SMA connectors, Accessory Kit Part Number 2098-5067-54 is required. For SSMA connectors, Accessory Kit Part Number 2098-5272-54 is required.

Hex Die Part Number	Reference Hex Die Part Number (Ref. Only)	Die	Hex Size ±.003 [0.08]	For Use With RG/U Cable
1055781-1	2598-5007-54	A	.105 2.67	178B & 196A
		B	.213 5.41	55B, 58C, 141A, 142B, 223, 303, & 400
		C	.128 3.25	174, 174B, 179, 187A, 188A, & 316
1055782-1	2598-5008-54	D	.178 4.52	180B, 195A, & 122
		E	.255 6.48	59, 62A, 71B, 210, & 302

**SSMA Crimp Tool Accessories**

**Kit Part Number 1055467-1**  
(Reference Kit Model Number T-550)

For installation of SSMA connectors to flexible braided cable. Crimp type SSMA connectors require Hex Crimp Kit Part Number 1055779-1.



Description	Part Number	Reference Part Number (Ref. Only)
Center Contact Holder	1055463-1	2098-5237-10
Locator Tool	1055461-1	2098-5236-02
	1055464-1	2098-5238-02

All tools may be purchased separately.

2  
RF Connectors

**Cross Reference**

Military Part Number	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.	Military Part Number	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.
	2031-5011-00 2031-5011-02		1051660-1 1051661-1	M39012/55B3014	2031-5055-00 2031-8014-92	1051768-1	1051678-1
M39012/01B0012		225092-7		M39012/55B3015	2031-5005-00 2031-5005-02 2031-8015-92	1051769-1	1051650-1 1051651-1
M39012/01B0013		51692-4		M39012/55B3016	2031-5005-00 2031-5005-02 2031-8016-92	1051770-1	1051650-1 1051651-1
M39012/01B007		225092-2		M39012/55B3019		225532-4	221117-2
M39012/01B008		225092-1		M39012/55B3019	2031-5012-00 2031-5012-02 2031-8019-92	1056413-1	1051664-1 1051665-1
M39012/02B008		225093-2		M39012/55B3021		225532-1	
M39012/03B0004		225094-2		M39012/55B3022		225532-3	221117-1
M39012/03B0005		225094-1		M39012/55B3023		1-225532-0	
M39012/05B0002		225014-2		M39012/55B3024		225532-9	
M39012/05B0002		225389-2		M39012/55B3112	2031-5012-00 2031-5012-02 2031-8112-92	1051664-1 1051665-1 1051797-1	
M39012/05B0003		225014-3		M39012/55B3113	2031-8113-92	1051798-1	
M39012/16B0004	2-331350-1			M39012/55B3114	2031-5055-00 2031-8114-92	1051678-1 1051799-1	
M39012/16B0007	2-331350-9			M39012/55B3115	2031-5005-00 2031-5005-02 2031-8115-92	1051650-1 1051651-1 1051800-1	
M39012/16B0008	331350			M39012/55B3116	2031-5005-00 2031-5005-02 2031-8116-92	1051650-1 1051651-1 1051801-1	
M39012/17B0004	2-331351-1			M39012/55B3119	2031-5012-00 2031-5012-02 2031-8119-92	1051804-1	1051664-1 1051665-1
M39012/17B0008	331351			M39012/56-3006	2037-8006-92	1052149-1	
M39012/19-0102	221313-2			M39012/56-3007	2037-5006-00 2037-5006-02 2037-8007-92		1052066-1 1052067-1
M39012/19B0003	1-331693-1			M39012/56-3008	2037-8008-92	1052152-1	
M39012/19B0007	331693			M39012/56-3009	2037-5005-00 2037-5005-02 2037-8009-92	1052154-1	1052062-1 1052063-1
M39012/26B0005	225550-2			M39012/56-3010	2037-5005-00 2037-5005-02 2037-8010-92	1052155-1	1052062-1 1052063-1
M39012/26B0006	225550-6			M39012/56-3025	2037-5100-00 2037-5100-02 2037-8025-92	1052171-1	1052097-1 1052098-1
M39012/26B0007	225550-3			M39012/56-3026	2037-5008-00 2037-5008-02 2037-8026-92	1052173-1	1052075-1 1052076-1
M39012/26B0016	225550-1			M39012/56-3027	2037-8027-92	1052174-1	
M39012/27B0005	225551-2			M39012/56-3028	2037-5007-00 2037-5007-02 2037-8028-92	1052176-1	1052071-1 1052072-1
M39012/27B0006	225551-6			M39012/56-3029	2037-5056-00 2037-8029-92	1052177-1	1052092-1
M39012/27B0015	225551-5			M39012/56-3106	2037-8106-92	1052179-1	
M39012/27B0016	225551-1			M39012/56-3107	2037-5006-00 2037-5006-02 2037-8107-92	1052181-1	1052066-1 1052067-1
M39012/29B0005	225348-2			M39012/56-3108	2037-8108-92	1052182-1	
M39012/55-3006	2031-8006-92	1051757-1		M39012/56-3109	2037-5005-00 2037-5005-02 2037-8109-92	1052184-1	1052062-1 1052063-1
M39012/55-3007	2031-8007-92	1051759-1		M39012/56-3110	2037-5005-00 2037-5005-02 2037-8110-92	1052185-1	1052062-1 1052063-1
M39012/55-3009	2031-8009-92	1051762-1		M39012/56-3125	2037-5100-00 2037-5100-02 2037-8125-92	1052201-1	1052097-1 1052098-1
M39012/55-3025	2031-5102-00 2031-5102-02 2031-8025-92	1051780-1	1051686-1 1051687-1	M39012/56-3126	2037-5008-00 2037-5008-02 2037-8126-92	1052203-1	1052075-1 1052076-1
M39012/55-3026	2031-5012-00 2031-5012-02 2031-8026-92	1051782-1	1051664-1 1051665-1	M39012/56-3127	2037-8127-92	1052204-1	
M39012/55-3028	2031-5011-00 2031-5011-02 2031-8028-92	1051785-1	1051660-1 1051661-1				
M39012/55-3029	2031-8029-92	1051787-1					
M39012/55-3106	2031-8106-92	1051789-1					
M39012/55-3107	2031-8107-92	1051791-1					
M39012/55-3109	2031-8109-92	1051794-1					
M39012/55-3125	2031-5102-00 2031-5102-02 2031-8125-92	1051810-1	1051686-1 1051687-1				
M39012/55-3126	2031-5012-00 2031-5012-02 2031-8126-92	1051812-1	1051664-1 1051665-1				
M39012/55-3128	2031-5011-00 2031-5011-02 2031-8128-92	1051815-1	1051660-1 1051661-1				
M39012/55-3129	2031-8129-92	1051816-1					
M39012/55-3502	2031-5011-00 2031-5011-02 2031-8052-92	1051788-1	1051660-1 1051661-1				
M39012/55-3602	2031-5011-00 2031-5011-02 2031-8162-92	1051817-1	1051660-1 1051661-1				
M39012/55B3011	2031-5102-00 2031-5102-02 2031-8011-92	1051764-1	1051686-1 1051687-1				
M39012/55B3012	2031-5102-00 2031-5102-02 2031-8012-92	1051766-1	1051664-1 1051665-1				

COTS part numbers are commercial equivalents and are not military qualified.



**Cross Reference** (Continued)

Military Part Number	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.	Military Part Number	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.
M39012/56-3128	2037-5007-00 2037-5007-02 2037-8128-92	1052206-1	1052071-1 1052072-1	M39012/56B3123	2037-5007-00 2037-5007-02 2037-8123-92	1052198-1	1052071-1 1052072-1
M39012/56-3129	2037-5056-00 2037-8129-92	1052207-1	1052092-1	M39012/56B3124	2037-5056-00 2037-8124-92	1052199-1	1052092-1
M39012/56-3502	2037-5007-00 2037-5007-02 2037-8052-92	1052178-1	1052071-1 1052072-1	M39012/57-3025	2032-5026-00 2032-5026-02 2032-8025-92	1051918-1	1051868-1 1051869-1
M39012/56-3602	2037-5007-00 2037-5007-02 2037-8162-92	1086723-1	1052071-1 1052072-1	M39012/57-3026	2032-5003-02 2032-8026-92	1051919-1	1051855-1
M39012/56B3011	2037-5008-00 2037-5008-02 2037-8011-92	1052156-1	1052075-1 1052076-1	M39012/57-3027	2032-8027-92	1051920-1	
M39012/56B3012	2037-8012-92	1052157-1		M39012/57-3028	2032-5007-00 2032-8028-92	1051921-1	1051861-1
M39012/56B3013	2037-8013-92	1052158-1		M39012/57-3029	2032-5021-00 2032-8029-92	1051922-1	1051866-1
M39012/56B3014	2037-5056-00 2037-8014-92	1052159-1	1052092-1	M39012/57-3502	2032-5007-00 2032-8052-92	1051923-1	1051861-1
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M39012/56B3016	2037-5007-00 2037-5007-02 2037-8016-92	1052161-1	1052071-1 1052072-1	M39012/57B3012	2032-5003-02 2032-8012-92	1051905-1	1051855-1
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M39012/56B3020	2037-8020-92	1052166-1		M39012/57B3016	2032-8016-92	1051909-1	1051861-1
M39012/56B3021	2037-5056-00 2037-8021-92	1052167-1	1052092-1	M39012/57B3017	2032-5021-00 2032-8017-92	1051910-1	1051866-1
M39012/56B3022		225609-3		M39012/57B3018	2032-5026-00 2032-5026-02 2032-8018-92	1051911-1	1051868-1 1051869-1
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M39012/56B3024	2037-5056-00 2037-8024-92	1052170-1	1052092-1	M39012/57B3021	2032-5021-00 2032-8021-92	1051914-1	1051866-1
M39012/56B3111	2037-5100-00 2037-5100-02 2037-8111-92	1052186-1	1052097-1 1052098-1	M39012/57B3022	2032-5007-00 2032-8022-92	1051915-1	1051861-1
M39012/56B3112	2037-5008-02 2037-5008-00 2037-8112-92	1052187-1	1052076-1 1052075-1	M39012/57B3023	2032-5007-00 2032-8023-92	1051916-1	1051861-1
M39012/56B3113	2037-8113-92	1052188-1		M39012/57B3024	2032-5021-00 2032-8024-92	1051917-1	1051866-1
M39012/56B3114	2037-5056-00 2037-8114-92	1052189-1	1052092-1	M39012/58-3025	2036-5016-00 2036-8025-92	1052046-1	1052030-1
M39012/56B3115	2037-5007-00 2037-5007-02 2037-8115-92	1052190-1	1052071-1 1052072-1	M39012/58-3026	2036-5004-02 2036-8026-92	1052047-1	1052024-1
M39012/56B3116	2037-5007-00 2037-5007-02 2037-8116-92	1052191-1	1052071-1 1052072-1	M39012/58-3027	2036-8027-92	1052048-1	
M39012/56B3117	2037-5056-00 2037-8117-92	1052192-1	1052092-1	M39012/58-3028	2036-8028-92	1052049-1	
M39012/56B3118	2037-5008-00 2037-5008-02 2037-8118-92	1052193-1	1052075-1 1052076-1	M39012/58-3029	2036-8029-92	1052050-1	
M39012/56B3119	2037-5008-00 2037-5008-02 2037-8119-92	1052194-1	1052075-1 1052076-1	M39012/58-3502	2036-8052-92	1052051-1	
M39012/56B3120	2037-8120-92	1052195-1		M39012/58B3011	2036-5004-02 2036-8011-92	1052042-1	1052024-1
M39012/56B3121	2037-5056-00 2037-8121-92	1052196-1	1052092-1	M39012/58B3012	2036-5004-02 2036-8012-92	1254028-1	1052024-1
M39012/56B3122	2037-5007-00 2037-5007-02 2037-8122-92	1052197-1	1052071-1 1052072-1	M39012/58B3013	2036-8013-92	1484499-1	
				M39012/58B3014	2036-8014-92	1484500-1	
				M39012/58B3015	2036-8015-92	1052043-1	
				M39012/58B3016	2036-8016-92	1484501-1	
				M39012/58B3017	2036-5014-02 2036-8017-92	1484502-1	1087843-1
				M39012/58B3018	2036-5016-00 2036-8018-92	1052044-1	1052030-1
				M39012/58B3019	2036-5004-02 2036-8019-92	1484503-1	1052024-1
				M39012/58B3020	2036-8020-92	1484504-1	
				M39012/58B3021	2036-5014-02 2036-8021-92	1484505-1	1087843-1

COTS part numbers are commercial equivalents and are not military qualified.

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RF Connectors

**Cross Reference** (Continued)

Military Part Number	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.	Military Part Number	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.
M39012/58B3022	2036-8022-92	1052045-1					
M39012/58B3023	2036-8023-92	1484506-1					
M39012/58B3024	2036-5014-02 2036-8024-92	1484507-1	1087843-1	M39012/79B3102	2001-5003-00 2001-5003-02 2001-8102-92	1050786-1	1050524-1 1050525-1
M39012/59-3025	2034-5031-00 2034-5031-02 2034-8025-92	1051992-1	1051950-1 1051951-1	M39012/79B3103		227868-1	
M39012/59-3026	2034-5005-00 2034-8026-92	1051994-1	1051933-1	M39012/79B3103	2001-8103-92	1050787-1	
M39012/59-3027	2034-8027-92	1051995-1		M39012/79B3103	2001-7685-02 2001-8303-92	1050797-1	1050744-1
M39012/59-3028	2034-8028-92	1051996-1		M39012/79B3103	2001-5385-02 2001-8981-92	1050812-1	1050598-1
M39012/59-3029	2034-8029-92	1051997-1		M39012/79B3104		227743-1	
M39012/59-3502	2034-8052-92	1051999-1		M39012/79B3104	2001-8104-92	1050788-1	
M39012/59B3011	2034-5031-00 2034-5031-02 2034-8011-92	1362216-1	1051950-1 1051951-1	M39012/79B3104	2001-8304-92	1050799-1	
M39012/59B3012	2034-5005-00 2034-8012-92	1051986-1	1051933-1	M39012/80-3005	2007-5055-00 2007-5055-02 2007-8005-92	1051165-1	1051113-1 1051114-1
M39012/59B3013	2034-8013-92	1083993-1		M39012/80-3006	2007-5054-00 2007-5054-02 2007-8006-92	1051166-1	1051109-1 1051110-1
M39012/59B3014	2034-8014-92	1331293-1		M39012/80-3007	2007-5055-00 2007-5055-02 2007-8007-92	1051168-1	1051113-1 1051114-1
M39012/59B3015	2034-8015-92	1253627-1		M39012/80-3008	2007-5054-00 2007-5054-02 2007-8008-92	1051170-1	1051109-1 1051110-1
M39012/59B3016	2034-8016-92	1221165-1		M39012/80-3105	2007-5054-00 2007-5054-02 2007-8105-92	1051175-1	1051109-1 1051110-1
M39012/59B3017	2034-8017-92	1484542-1		M39012/80-3106	2007-5055-00 2007-5055-02 2007-8106-92	1051176-1	1051113-1 1051114-1
M39012/59B3018	2034-5031-00 2034-5031-02 2034-8018-92	1051987-1	1051950-1 1051951-1	M39012/80-3107	2007-5054-00 2007-5054-02 2007-8107-92	1051177-1	1051109-1 1051110-1
M39012/59B3019	2034-5005-00 2034-8019-92	1051988-1	1051933-1	M39012/80-3108	2007-8108-92	1051178-1	
M39012/59B3020	2034-8020-92	1484543-1		M39012/80-3207		228583-3	
M39012/59B3021	2034-8021-92	1087842-1		M39012/80-3207		228583-5	
M39012/59B3022	2034-8022-92	1051989-1		M39012/80-3307		228583-1	
M39012/59B3023	2034-8023-92	1051990-1		M39012/80-3308		228626-1	
M39012/59B3024	2034-8024-92	1051991-1		M39012/80-3308		228626-5	
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M39012/60-3002	2052-1300-00 2052-1300-02 2052-8002-92	1052926-1	1052533-1 1052534-1	M39012/80B3004	2007-8004-92	1051164-1	
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M39012/79-3107	2001-8107-92	1050789-1		M39012/81-3007	2002-8007-92	1050929-1	
M39012/79-3108	2001-8108-92	1050790-1		M39012/81-3008	2002-8008-92	1050931-1	
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M39012/79-3307		228639-1		M39012/81-3208	2002-8208-92	1050935-1	
M39012/79-3308		228634-1		M39012/81B3001	2002-5016-00 2002-8001-90	1050923-1	1050859-1
M39012/79-AF867286-2		221447-1		M39012/81B3002	2002-5015-00 2002-8002-90	1050924-1	1050854-1
M39012/79B3001	2001-5032-00 2001-5032-02 2001-8001-92	1050774-1	1050547-1 1050548-1	M39012/82-3005	2006-5012-00 2006-8005-90	1051091-1	1051049-1
M39012/79B3002	2001-8002-92	1058590-1		M39012/82-3006	2006-7941-00 2006-8006-90	1051092-1	1051081-1
M39012/79B3002	2001-5003-00 2001-5003-02 2001-8002-92	1050776-1	1050524-1 1050525-1	M39012/82-3007	2006-8007-92	1051093-1	
M39012/79B3003	2001-8003-92	1050777-1		M39012/82-3008	2006-8008-92	1051094-1	
M39012/79B3003	2001-5385-02 2001-8991-92	1050813-1	1050598-1	M39012/82-3207	2006-8207-92	1051097-1	
M39012/79B3003	2001-8203-92	1089686-1		M39012/82-3208	2006-8208-92	1051098-1	
M39012/79B3004	2001-8004-92	1050779-1					
M39012/79B3004	2001-8204-92	1050792-1					
M39012/79B3101	2001-5032-00 2001-5032-02 2001-8101-92	1050785-1	1050547-1 1050548-1				

COTS part numbers are commercial equivalents and are not military qualified.



**Cross Reference** (Continued)

Military Part Number	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.	Military Part Number	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.
M39012/82B3001	2006-5012-00 2006-8001-90	1051087-1	1051049-1		2052-8006-90	1052933-1	
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M39012/83-3005	2004-7985-00 2004-8005-90	1051026-1	1051018-1	M83517/2-31002	2051-8002-92	1052411-1	
M39012/83-3006	2004-7941-00 2004-8006-90	1051027-1	1051013-1	M83517/2-31003	2051-8003-92	1052413-1	
M39012/83-3007	2004-8007-92	1051028-1		M83517/2-31004	2051-8004-92	1052415-1	
M39012/83-3008	2004-8008-92	1051029-1		M83517/2-32001	2051-8001-90	1052408-1	
M39012/83-3207	2004-8207-92	1051032-1		M83517/2-32002	2051-8002-90	1052410-1	
M39012/83-3208	2004-7641-02 2004-8208-92	1051033-1	1051005-1	M83517/2-32003	2051-8003-90	1052412-1	
M39012/83B3001	2004-7985-00 2004-8001-90	1051022-1	1051018-1	M83517/2-32004	2051-8004-90	1052414-1	
M39012/83B3002	2004-7941-00 2004-8002-90	1051023-1	1051013-1	M83517/3-31001	2052-1650-02 2052-8007-92	1052936-1	1251095-1
M39012/92-3201	2001-8201-92	1050791-1		M83517/3-31002	2052-8008-92	1052938-1	
M39012/92-3301		228635-1		M83517/3-31003	2052-8009-92	1052940-1	
M39012/92-3301		228635-6		M83517/3-31004	2052-8010-92	1052942-1	
M39012/92-3301	2001-8301-92	1050796-1		M83517/3-31005	2052-1612-02 2052-8011-92	1052944-1	1052563-1
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M39012/93-3002	2062-8002-90	1053374-1		M83517/3-32007	2052-8013-90	1052947-1	
M39012/93-3003	2062-8003-90	1053376-1		M83517/4-31001	2052-8014-92	1052950-1	
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M39012/94-3002	2064-8002-90	1053398-1		M83517/4-31003	2052-8016-92	1052954-1	
M39012/94-3003	2064-8003-90	1053400-1		M83517/4-31004	2052-1215-00 2052-1215-02 2052-8017-92	1052956-1	1052527-1 1052528-1
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M55339/29-30001	2081-0000-00 2081-0000-02 2081-8001-92	1053765-1	1053634-1 1053635-1	M83517/4-32003	2052-8016-90	1052953-1	
M55339/29-30101	2081-0000-00 2081-0000-02 2081-8101-92	1053767-1	1053634-1 1053635-1	M83517/4-32004	2052-1215-00 2052-1215-02 2052-8017-90	1052955-1	1052527-1 1052528-1
M55339/31-30001	2080-0000-00 2080-0000-02 2081-8001-92	1053633-1	1053488-1 1053489-1	M83517/4-32005	2052-1201-00 2052-1201-02 2052-8018-90	1052957-1	1052522-1 1052523-1
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M83517/1-31002	2052-1658-02 2052-8004-92	1052930-1	1052577-1	M83517/5-32002	2051-8005-90	1052416-1	
M83517/1-31003	2052-5636-00 2052-5636-02 2052-8005-92	1052932-1	1052897-1 1052898-1	M83517/6-31001	2066-8001-92	1053423-1	
M83517/1-31004	2052-1618-00 2052-1618-02 2052-8006-92	1052934-1	1052565-1 1052566-1	M83517/6-31002	2066-1403-00 2066-8002-92	1053425-1	1053415-1
M83517/1-32001	2052-8003-90	1052927-1		M83517/6-32001	2066-8001-90	1053422-1	
M83517/1-32002	2052-1658-02 2052-8004-90	1052929-1	1052577-1	M83517/6-32002	2066-1403-00 2066-8002-90	1053424-1	1053415-1
M83517/1-32003	2052-5636-00 2052-5636-02 2052-8005-90	1052931-1	1052897-1 1052898-1	M83517/7-31001	2067-8001-92	1053429-1	
M83517/1-32004	2052-1618-00 2052-1618-02		1052565-1 1052566-1	M83517/7-31002	2067-8002-92	1053431-1	
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				M83517/7-32002	2067-8002-90	1053430-1	
				M83517/8-31001	2068-5156-00 2068-8001-92	1053451-1	1053438-1
				M83517/8-31002	2068-8002-92	1053453-1	
				M83517/8-32001	2068-5156-00 2068-8001-90	1053450-1	1053438-1

COTS part numbers are commercial equivalents and are not military qualified.



**Cross Reference** (Continued)

Military Part Number	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.	Military Part Number	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.
M83517/8-32002	2068-8002-90	1053452-1			2052-8021-92	1052962-1	
M83517/9-31001	2070-8001-92	1053476-1		M83517/10-31004	2052-8023-92	1052963-1	
M83517/9-31002	2070-5068-02 2070-8002-92	1053478-1	1053465-1	M83517/10-31005	2052-8023-92	1052963-1	
M83517/9-31003	2070-5069-02 2070-8003-92	1053480-1	1053467-1	M83517/10-31006	2052-8024-92	1484518-1	
M83517/9-31004	2070-8004-92	1053482-1		M83517/10-31015	2052-3358-02 2052-8033-92	1484519-1	1052643-1
M83517/9-32001	2070-8001-90	1053475-1		M83517/10-31016	2052-8034-92	1484520-1	
M83517/9-32002	2070-5068-02 2070-8002-90	1053477-1	1053465-1	M83517/10-32001	2052-3359-02 2052-8019-90	1484521-1	1052646-1
M83517/9-32003	2070-5069-02 2070-8003-90	1053479-1	1053467-1	M83517/10-32003	2052-3358-02 2052-8021-90	1052961-1	1052643-1
M83517/9-32004	2070-8004-90	1053481-1		M83517/10-32005	2052-8023-90	1484522-1	
M83517/10-31001	2052-3359-02 2052-8019-92	1052959-1	1052646-1	M83517/10-32006	2052-8024-90	1484523-1	
M83517/10-31003	2052-3358-02		1052643-1	M83517/10-32015	2052-8033-90	1484524-1	
				M83517/10-32016	2052-8034-90	1484525-1	

**DSCC Cross Reference**

DSCC Part No.	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.	DSCC Part No.	Reference Part Number (Ref. Only)	TE Part No.	COTS Part No.
84149SSG	2001-5397-02	1050605-1		86119ZSG	1031-5031-92	1045486-1	
84149SSG-1	2001-5557-02 2001-5003-00 2001-5003-02	1050629-1	1050524-1 1050525-1	86120ZSG	1037-5032-92	1045517-1	
84149SSGA	2001-5431-02	1050609-1		94008ZCG-2	2902-5005-62	1056521-1	
84149SSGA-1	2001-5558-02 2001-7985-00 2001-7985-02	1050631-1	1050769-1 1050770-1	94008ZCG-1	2902-5006-62	1056522-1	
85022SSG	2006-5151-00	1051063-1		94008ZCG-4	2908-5006-62	1056550-1	
85022SSG-1	2006-5192-00 2006-5013-00	1221162-1	1051052-1	94008ZCG-3	2908-5007-62	1056551-1	
85022SSGA	2006-5150-00	1051062-1		94007ZCG-1	2980-5004-62	1056703-1	
85022SSGA-1	2006-5193-00 2006-5010-00	1051067-1	1051046-1	94007ZCG-2		1757023-1	
85037SSG	2007-5115-02 2007-5054-00 2007-5054-02	1051119-1	1051109-1 1051110-1	8501814FFP-1	3180-4034-02	1057848-1	
85037SSGA	2007-5116-02 2007-5055-00 2007-5055-02	1051120-1	1051113-1 1051114-1	8501814FFP-2	3180-4036-02	1080294-1	
86116ZSG	1001-5045-92	1045358-1		8604412SP-1	3081-4002-02	1057371-1	
86117ZSG	1004-5005-90	1045398-1		8604412SP-4	3082-4031-02	1057403-1	
86118ZSG	1007-5015-92	1045418-1		8503812FFP-1	3080-4010-02	1057354-1	
				8503812FFP-2	3080-4015-02	1057357-1	
				8503812FFP-3	3084-4001-00	1057465-1	
				8503812FFP-4	3082-4028-02	1057402-1	
				8503812FFP-5	3082-4029-02	1252992-1	
				8503812FFP-6	3080-4019-02	1057359-1	
				8503812FFP-7	3080-4020-02	1087866-1	

**Cheminax Coaxial Cables Cross Reference**

	5024A3314	Cable to RF Part Numbers 5020A1611	5030L1134
SMA Plug	1996810-1	1996811-1	1996812-1
SMA R/A Plug	1996813-1	1996814-1	1996815-1
SMA BHD Jack	1996816-1	1996817-1	1996818-1
BNC Plug	1996819-1	1996820-1	1996821-1
BNC BHD Jack	1996822-1	1996823-1	1996824-1
TNC Plug	1996825-1	1996826-1	1996827-1
TNC BHD Jack	1996828-1	1996829-1	1996830-1

COTS part numbers are commercial equivalents and are not military qualified.

**NANONICS Coaxial Connectors Introduction**



**2**  
RF Connectors

The NANONICS 50 ohm coaxial connector system combines the benefits of the rectangular DUALOBE connectors while offering the flexibility to terminate up to nine coaxial contacts within the same metal connector housing. Furthermore, with this unique design, five signal

contacts, terminated with 30 AWG or smaller discrete wire, can also be integrated into this connector package. These connectors are typically used in applications with frequencies up to 20 GHz.

RG-178 coax cable is the standard cable used on these connectors. The

receptacle coax connector is also available in a horizontal surface mount configuration allowing for wire to board applications. Harness assemblies and custom configurations can also be accommodated.

**Specifications**

**Technical and Performance Data**

**Electrical**

**Contact Resistance** — .003 - .008 ohms

**Current Rating** — 1 amp max. per contact

**Dielectric Withstanding Voltage** — Volts RMS 60 Hz at room ambient conditions. At sea level 500V. At 70,000 ft. 150V.

**Insulation Resistance** — 5000 megohms min. (@ 500 VDC) at room ambient conditions.

**Magnetic Permeability** — 2 mu max.

**Temperature Range** — -55°C to +125°C

**Outer Coaxial Contacts** — BeCu Alloy plated with gold per MIL-G-45204 over nickel

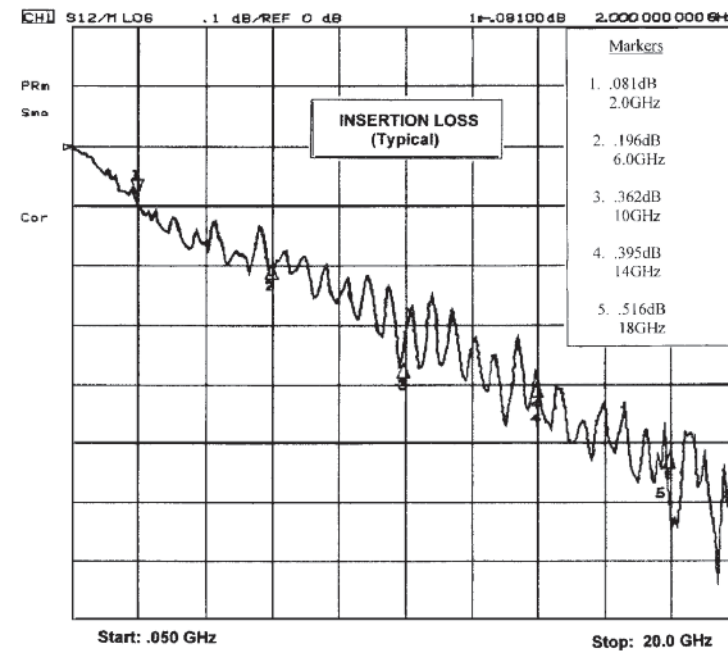
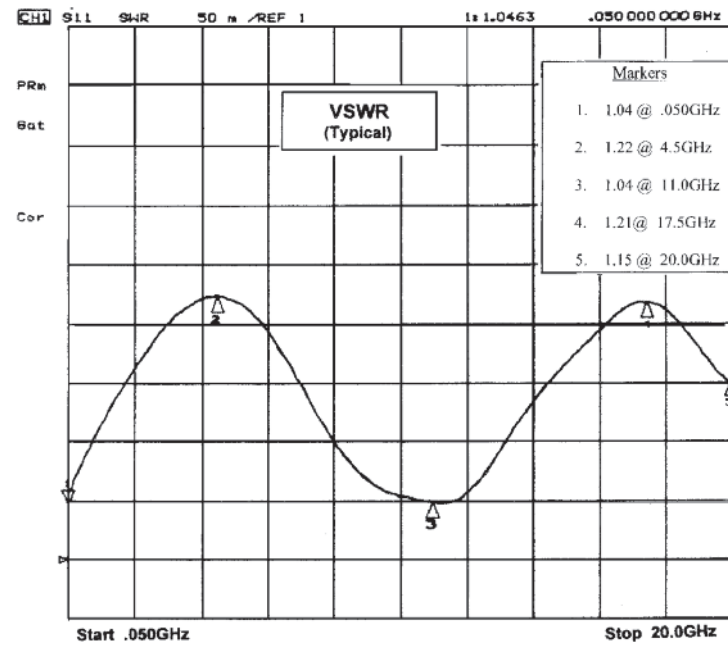
**Dielectric Insert** — PTFE

**Braid Termination** — Soldered to outer coaxial contacts with Sn63Pb37 solder

**Backpotting** — Standard for wire terminations

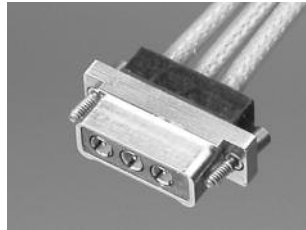
**NANONICS Typical VSWR and Insertion Loss**

**Note:** Insertion Loss of 30 AWG Coax Cable @ (50 Ohm) is approximately 1.0db/ft. @ 3 GHz. The connector system with 6" of coax on each side, is better than 1.5db @ 3 GHz.

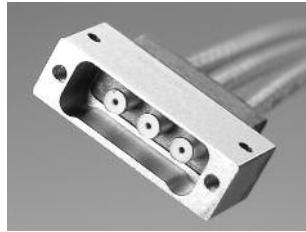


**NANONICS 50 Ohm Coax Connectors**

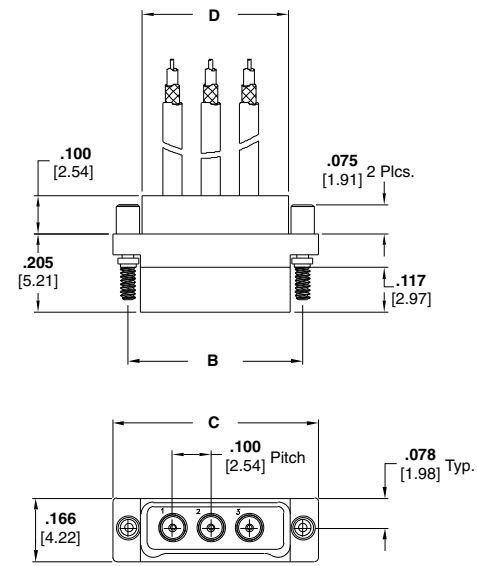
**2**  
RF Connectors



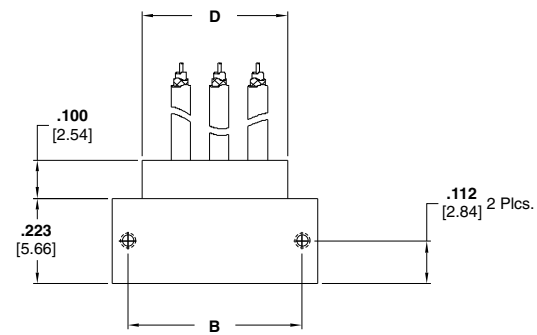
Plug



Receptacle



Plug Assembly  
Drawing Number 1589070



Receptacle Assembly  
Drawing Number 1589071

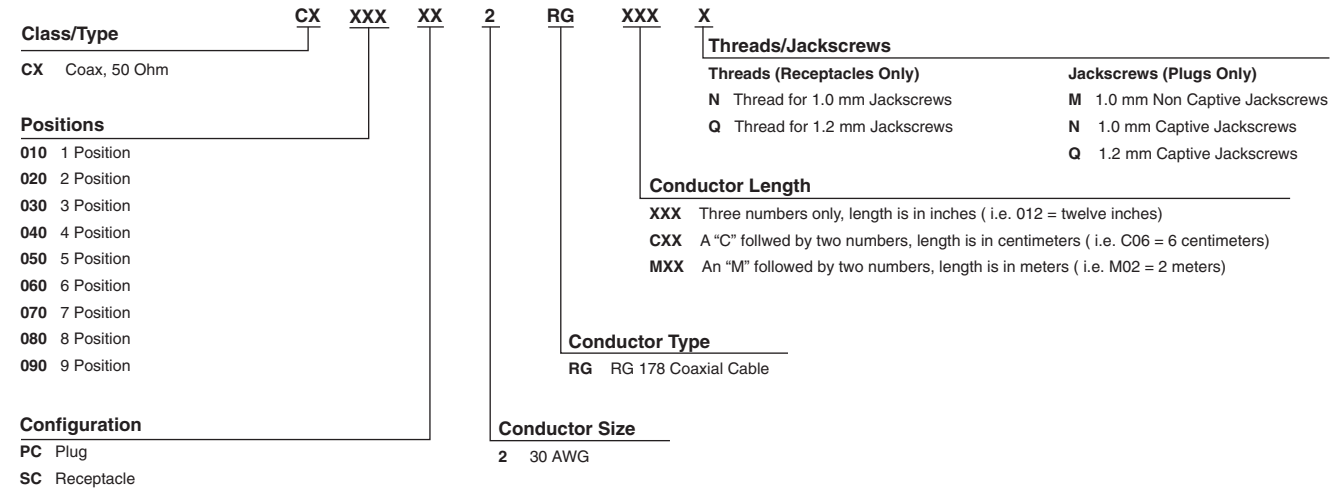
**Product Facts**

- Metal Shell
- Standard Sizes: 1-9
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

Size	Dimensions			No. Coax
	B	C	D	
1	0.254 [6.45]	0.335 [8.51]	0.180 [4.57]	1
2	0.354 [8.99]	0.435 [11.05]	0.280 [7.11]	2
3	0.454 [11.53]	0.535 [13.59]	0.380 [9.65]	3
4	0.554 [14.07]	0.635 [16.13]	0.480 [12.19]	4
5	0.654 [16.61]	0.735 [18.67]	0.580 [14.73]	5
6	0.754 [19.15]	0.835 [21.21]	0.680 [17.27]	6
7	0.854 [21.69]	0.935 [23.75]	0.780 [19.81]	7
8	0.954 [24.23]	1.035 [26.29]	0.880 [22.35]	8
9	1.054 [26.77]	1.135 [28.83]	0.980 [24.89]	9

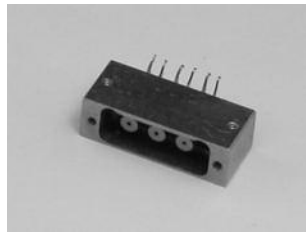
**Part Numbering Guideline for NANONICS 50 Ohm Coax Connectors**

**Coax Only Connectors - Wire Terminations**

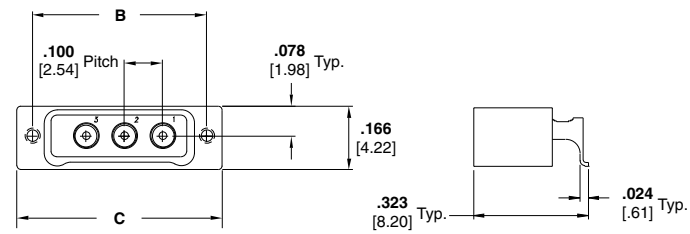
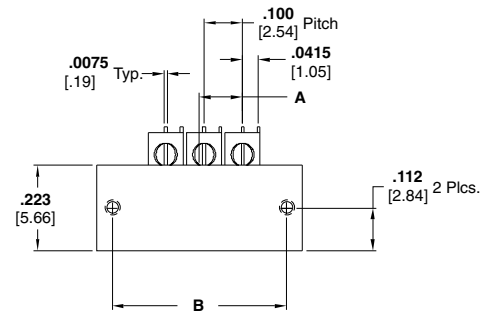




**NANONICS Horizontal SMT 50 Ohm Coax Connectors**



Surface Mount



Receptacle Assembly  
Drawing Number 1589072

2  
RF Connectors

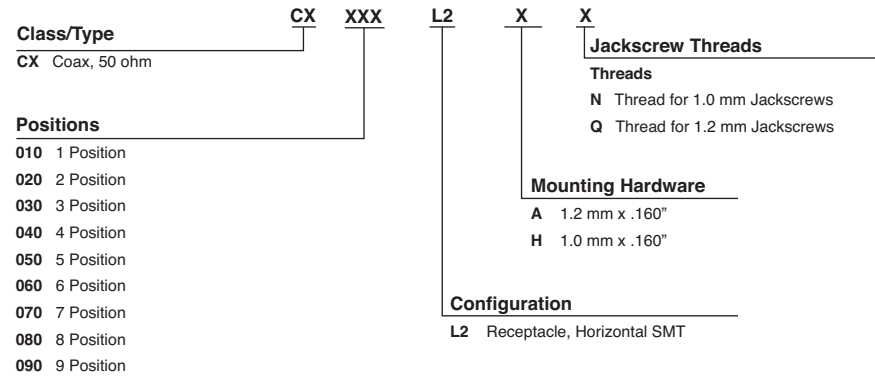
**Product Facts**

- Metal Shell
- Standard Sizes: 1-9
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

Size	Dimensions			No. Coax
	A	B	C	
1	0.0125 [.32]	0.254 [6.45]	0.335 [8.51]	1
2	0.0625 [1.59]	0.354 [8.99]	0.435 [11.05]	2
3	0.1125 [2.86]	0.454 [11.53]	0.535 [13.59]	3
4	0.1625 [4.13]	0.554 [14.07]	0.635 [16.13]	4
5	0.2125 [5.40]	0.654 [16.61]	0.735 [18.67]	5
6	0.2625 [6.67]	0.754 [19.15]	0.835 [21.21]	6
7	0.3125 [7.94]	0.854 [21.69]	0.935 [23.75]	7
8	0.3625 [9.21]	0.954 [24.23]	1.035 [26.29]	8
9	0.4125 [10.48]	1.054 [26.77]	1.135 [28.83]	9

**Part Numbering Guideline for NANONICS Horizontal SMT 50 Ohm Coax Connectors**

**Coax Only Connectors - SMT Termination**

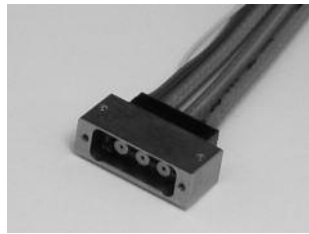


**NANONICS 50 Ohm Coax with Mixed Signal Connectors**

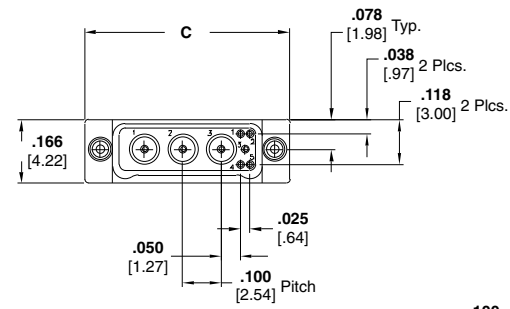
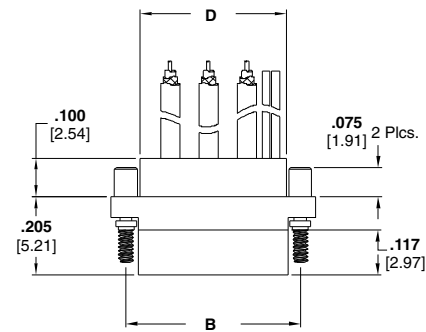
**2**  
RF Connectors



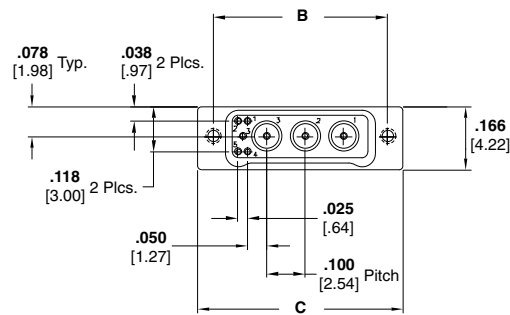
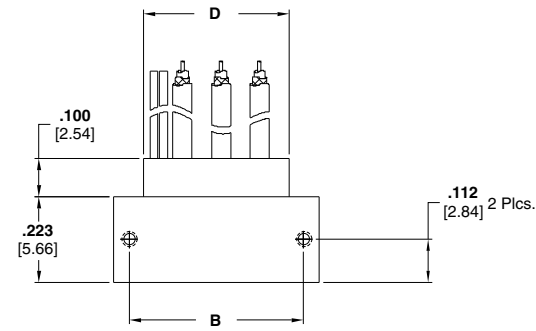
Plug



Receptacle



Plug Assembly  
Drawing Number 1589068



Receptacle Assembly  
Drawing Number 1589069

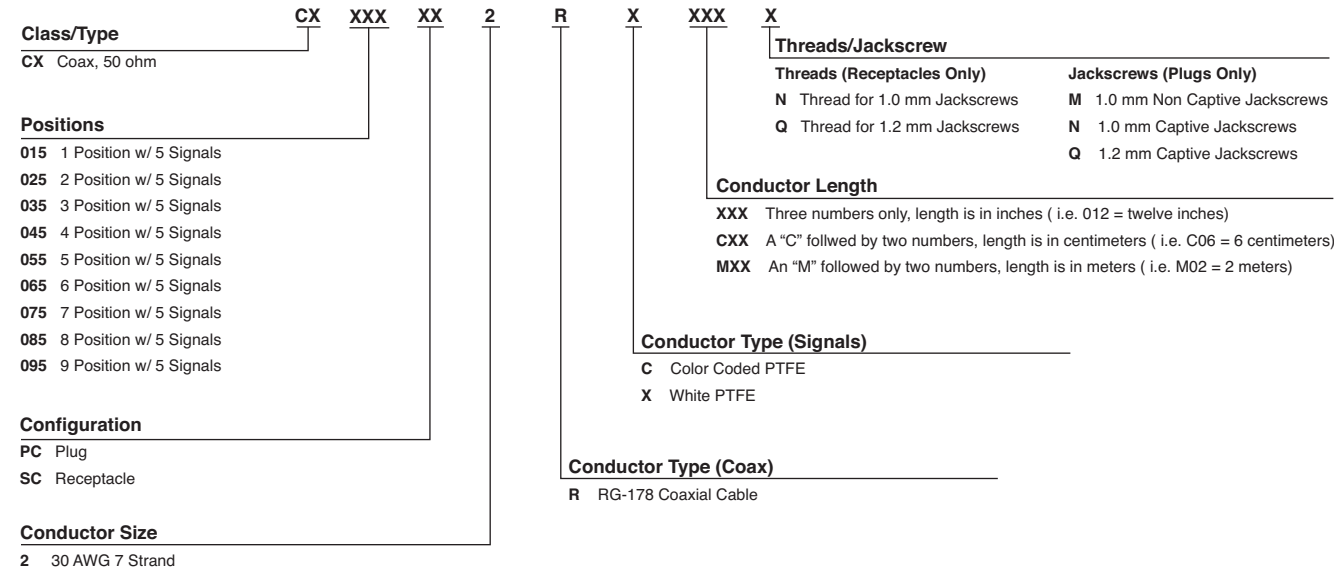
**Product Facts**

- Metal Shell
- Standard Sizes: 1-9 coaxial contacts with 5 signal contacts
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

Size	Dimensions			No. Coax
	B	C	D	
1	0.254 [6.45]	0.335 [8.51]	0.180 [4.57]	1
2	0.354 [8.99]	0.435 [11.05]	0.280 [7.11]	2
3	0.454 [11.53]	0.535 [13.59]	0.380 [9.65]	3
4	0.554 [14.07]	0.635 [16.13]	0.480 [12.19]	4
5	0.654 [16.61]	0.735 [18.67]	0.580 [14.73]	5
6	0.754 [19.15]	0.835 [21.21]	0.680 [17.27]	6
7	0.854 [21.69]	0.935 [23.75]	0.780 [19.81]	7
8	0.954 [24.23]	1.035 [26.29]	0.880 [22.35]	8
9	1.054 [26.77]	1.135 [28.83]	0.980 [24.89]	9

**Part Numbering Guideline for NANONICS 50 Ohm Coax with Mixed Signal Connectors**

**Coax w/ Mixed Signal Connectors - Wire Terminations**



**Part Number Index Cross Reference**

NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number
<b>Coax Only</b>		<b>Coax with Mixed Signals</b>		<b>Horizontal SMT Coax</b>	
CX010PC2RG006N	0-1589070-1	CX015PC2RC012	0-1589068-1	CX010L2AQ	1-1589072-3
CX010PC2RG018N	0-1589070-2	CX015PC2RC012N	0-1589068-5	CX010L2HN	0-1589072-1
CX010PC2RG048Q	2-1589070-8	CX015SC2RC012N	0-1589069-1	CX020L2HN	1-1589072-2
CX010PC2RG072N	0-1589070-3	CX035PC2RC006N	0-1589068-2	CX030L23N	0-1589072-2
CX010PC2RGC10Q	2-1589070-1	CX035PC2RC018N	0-1589068-3	CX030L23Q	0-1589072-5
CX010SC2RG048Q	2-1589071-3	CX035SC2RC006N	0-1589069-2	CX030L2HN	0-1589072-3
CX020PC2RG018N	0-1589070-4	CX035SC2RC018N	0-1589069-3	CX040L2AQ	1-1589072-0
CX020PC2RG048N	2-1589070-5	CX045PC2RC006N	0-1589068-4	CX040L2HN	1-1589072-6
CX020PC2RG060N	1-1589070-8	CX045PC2RC036N	0-1589068-9	CX050L23Q	0-1589072-6
CX020SC2RG012N	2-1589071-0	CX045PC2RC036Q	1-1589068-0	CX050L2HN	0-1589072-9
CX020SC2RG018N	2-1589071-5	CX045SC2RC006N	0-1589069-4	CX060L2AQ	1-1589072-1
CX020SC2RG024N	0-1589071-8	CX045SC2RC006Q	0-1589069-7	CX060L2HN	1-1589072-5
CX020SC2RG024Q	2-1589071-8	CX055PC2RC006N	0-1589068-6	CX070L2AQ	1-1589072-4
CX020SC2RG060N	2-1589071-2	CX055SC2RC006N	0-1589069-5	CX080L2HN	0-1589072-4
CX030PC2RG006N	0-1589070-5	CX095PC2RC006N	0-1589068-7		
CX030PC2RG012	0-1589070-6	CX095PC2RC036N	0-1589068-8		
CX030PC2RG012N	0-1589070-7	CX095SC2RC006N	0-1589069-6		
CX030PC2RG018N	0-1589070-8				
CX030PC2RG020Q	0-1589070-9				
CX030PC2RG048N	2-1589070-4				
CX030PC2RG060N	2-1589070-6				
CX030SC2RG006N	0-1589071-3				
CX030SC2RG012	0-1589071-4				
CX030SC2RG012N	1-1589071-8				
CX030SC2RG060N	2-1589071-1				
CX040PC2RG012N	1-1589070-0				
CX040PC2RG030N	1-1589070-1				
CX040PC2RG039Q	3-1589070-7				
CX040PC2RG060N	1-1589070-7				
CX040SC2RG012	0-1589071-5				
CX040SC2RG024N	0-1589071-7				
CX050PC2RG006N	1-1589070-4				
CX050SC2RG006N	1-1589071-9				
CX060PC2RG012N	3-1589070-8				
CX060PC2RG012Q	3-1589070-3				
CX060PC2RG018N	3-1589070-5				
CX060PC2RG036N	3-1589070-0				
CX060PC2RG072N	3-1589070-1				
CX060PC2RG144N	3-1589070-2				
CX060PC2RGC10Q	2-1589070-0				
CX060SC2RG012Q	2-1589071-6				
CX070PC2RGC10Q	2-1589070-3				
CX080PC2RG006N	2-1589070-2				
CX080PC2RG012N	3-1589070-9				
CX080PC2RG012Q	3-1589070-4				
CX080PC2RG018N	3-1589070-6				
CX080PC2RG024N	2-1589070-9				
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CX080SC2RG012Q	2-1589071-7				
CX080SC2RG015N	1-1589071-7				
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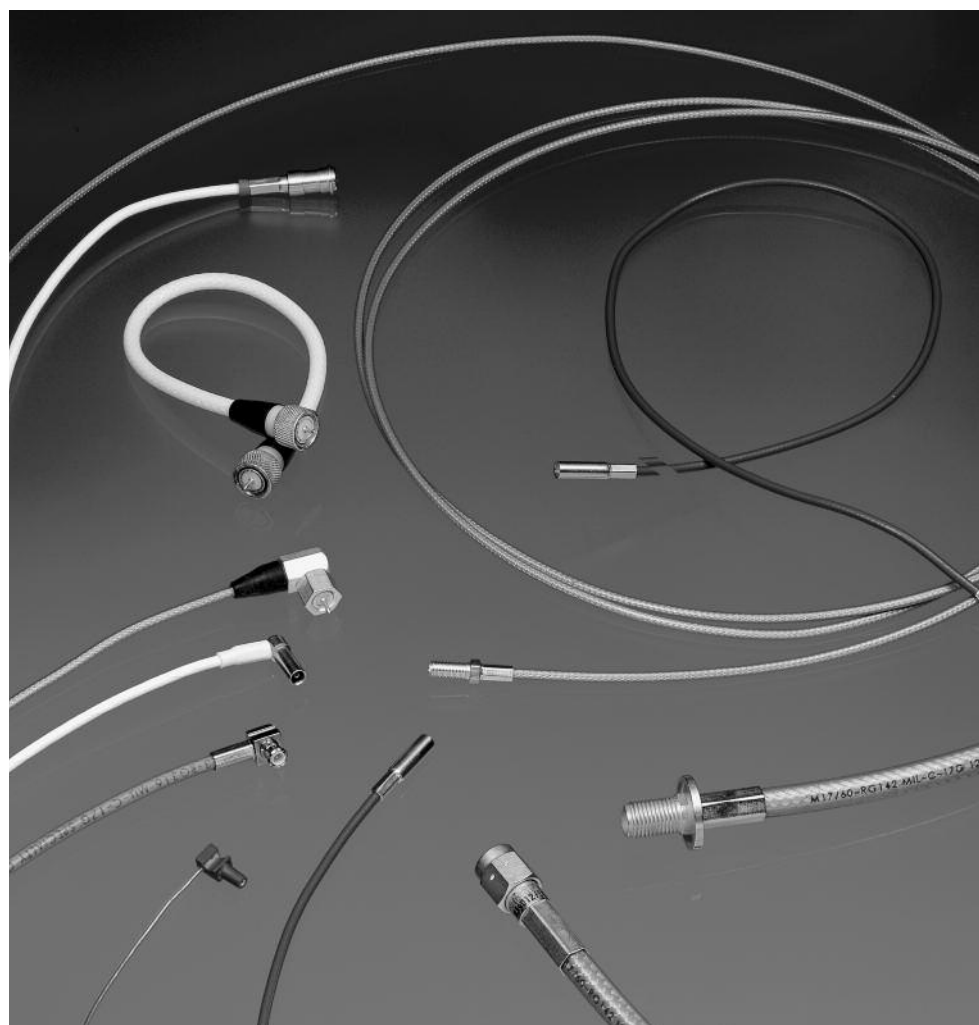
2

RF Connectors

**MICRODOT Coaxial Connectors Introduction**

**Product Facts**

- Designed to accept 50, 70 and 93 ohm miniature coaxial cables
- Three types of connectors: Screw-on Series, Slide-on Series and Quick-Connect Series
- Temperature range —  
 -85°F to +257°F [-65°C to +125°C] (with neoprene gasket or bend relief cap)  
 -80°F to 392°F [-62°C to +200°C] (with silicone gasket or bend relief cap)
- Dielectric Withstanding Voltage — 1000 volts RMS at sea level
- Contact Resistance — 3 milliohms max., D.C.
- Captive Contacts — Terminated connector contacts captivated from movement in both directions



MICRODOT Standard Coaxial Connectors are designed to accept 50, 70, and 93 Ohm miniature coaxial cables. These connectors are available as Screw-On Series, Slide-On Series, or Quick-Connect Series. The Screw-On Series is intermateable with

the Gold Plated Crimp Style Coaxial Connector Series and offers the dependability of a threaded coupling. For enhanced safety, choose connectors with wire holes. Choose Slide-On Series for the fastest, most convenient mating and unmating.

The Quick-Connect Series offers the convenience of Slide-On coupling with added retention provided by a snap ring located on the jack/receptacle side. Consult TE Connectivity for special cable accommodations and mounting features.



**MICRODOT Standard Connectors**

**Performance Data Summary**  
For Standard Connectors

**Mechanical**

**Captive Contacts** — Terminated connector contacts captivated from movement in both directions.

**Cable Retention** —  
50 Ohm connectors, 15 lb. min.<sup>1</sup>  
70 Ohm connectors, 25 lb. min.<sup>1</sup>  
93 Ohm connectors, 35 lb. min.<sup>1</sup>

**Recommended Coupling Torque (Threaded Interface)** —  
8 inch/pounds max.

**Recommended Receptacle Mounting Torque (All Series)** —  
8 inch/pounds max.

**Unmating Force (Slide-On Series)** —  
1-7 pounds.

**Contact Protection (Unmated)** —  
Pin contact protected by coupling nut (threaded series)<sup>2</sup> or by housing (Quick-Connect and Slide-On Series). Socket protected by insulator and housing.

**Assembly Methods**

**Straight Plugs & Jacks** —

**Cable Inner Conductor** — Soldered to contact.

**Cable Shield** — Crimped to jerk ring (solder optional).

**Angle Plugs** —

**Cable Inner Conductor** — Soldered to contact.

**Cable Shield** — Soldered to ring & housing.

**Environmental**

**Temperature Range (Continuous Service)** — -85°F to +257°F [-65°C to +125°C] (with Neoprene gasket or bend relief cap). -80°F to 392°F [-62°C to +200°C] (with Silicone gasket or bend relief cap).

**Vibration<sup>3,4</sup>** — MIL-STD-202, Method 204, Test condition B (15 G peak). No physical damage or electrical discontinuities in excess of 1 microsecond.

**Shock<sup>3,4</sup>** — MIL-STD-202, Method 213, Test Condition H. No physical damage or electrical discontinuity after shock.

**Thermal Shock** — MIL-STD-202, Method 107, Test Condition B.

**Moisture Resistance<sup>5</sup>** — MIL-STD-202, Method 106.

**Salt Spray<sup>5</sup>** — MIL-STD-202, Method 101, Test Condition B (48 hours).

**Electrical**

**Impedance** — Designed to be compatible with 50, 70, or 93 Ohm miniature coaxial cable.

**Dielectric Withstanding Voltage** — 1000 volts RMS at sea level.

**Contact Resistance** — 3 milliohms max., D.C.

**Current Capacity** — 3 amps, D.C.

**Insulation Resistance** — 5 x 10<sup>3</sup> Megohms min. @ 500 volts D.C.

**Voltage Standing Wave Ratio<sup>5</sup> (VSWR)** — Typical 50 Ohm series, 1.2 max. to 2 GHz.

**Materials**

**Housing, Nut, Jerk Ring** — Brass per ASTM-B-16.

**Insulator** — PTFE per ASTM-D-1710.

**Pin Contact (Plugs)** — Brass per ASTM-B-16.

**Socket Contact (Jacks & Receptacles)** — Beryllium Copper per ASTM-B-196.

**Bend Relief Caps (Plugs & Jacks)** — Neoprene or Silicone Rubber per ZZ-R-765.

**Gaskets (Jacks & Receptacles)** — Neoprene or Silicone Rubber per ZZ-R-765.

**Lockwasher** — #425 Bronze Alloy.

**Plating**

**Contacts** — Gold per MIL-G-45204, Type II, Grade C, Class 1.

**Housing, Nut, Jerk Ring, Lockwasher** — Silver per QQ-S-365, Type II, Grade A, .0002 [.005] min.

**Notes:**

<sup>1</sup>Termination to cables with foamed dielectrics excluded. Straight connector jerk rings must be soldered to cable shield.

<sup>2</sup>Pin protector required. See individual connector specifications.

<sup>3</sup>Screw-On Series, threaded interface.

<sup>4</sup>TE Connectivity recommends the use of safety wired connectors in vibration and shock environment. See individual specifications for connectors with safety wire holes.

<sup>5</sup>VSWR is a system specification. Where performance is critical, purchase TE cable assemblies with Screw-On or Quick-Connect Series connectors and specify VSWR testing and mating connector part number.



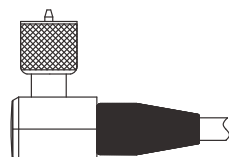
RF Connectors

**MICRODOT Standard Connectors — Screw-On Series**



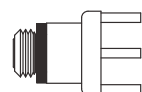
**Plug**

S-50 Ohm Series	S-70 Ohm Series	S-93 Ohm Series
032-0021-0001	032-0010-0001	032-0011-0001
032-0023-0001	032-0022-0001	032-0017-0001
032-0025-0001	032-0067-0001	032-0066-0001
032-0033-0001	032-0078-0001	032-0071-0001
032-0097-0001	032-0222-0001	032-0092-0001
032-0098-0001	052-0092-0001	032-0099-0001
032-0155-0001		052-0200-0001
032-0156-0001		
052-0213-0001		
052-0235-0001		
052-0235-0003		
052-0370-0001		
052-0542-0001		



**Right-Angle Plug**

S-50 Ohm Series	S-70 Ohm Series	S-93 Ohm Series
032-0015-0001	032-0013-0001	032-0014-0001
052-0204-0001	052-0299-0001	032-0068-0001
052-0215-0001	052-0379-0001	032-0153-0001
052-0337-0001		052-0207-0001
		052-0298-0001
		052-0304-0022



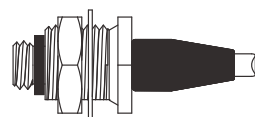
**Printed Circuit Receptacle**

S-50 Ohm Series	S-70 Ohm Series	S-93 Ohm Series
031-0059-0001	031-0069-0001	031-0067-0001
031-0062-0001		031-0080-0001
051-0450-0001		



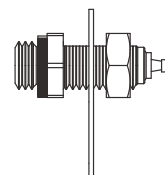
**Jack**

S-50 Ohm Series	S-70 Ohm Series	S-93 Ohm Series
031-0034-0001	031-0036-0001	031-0037-0001
051-0467-0001	031-0090-0001	031-0088-0001



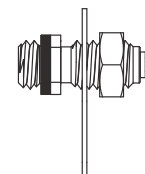
**Bulkhead Jack**

S-50 Ohm Series	S-70 Ohm Series	S-93 Ohm Series
031-0033-0001	031-0048-0001	031-0032-0001
		031-0089-0001



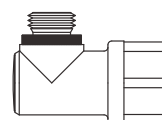
**Receptacle**

S-50 Ohm Series	S-70 Ohm Series	S-93 Ohm Series
031-0050-0001	031-0051-0001	031-0052-0001
051-0318-0001		



**Receptacle**

S-50 Ohm Series	S-70 Ohm Series	S-93 Ohm Series
031-0001-0001	031-0017-0001	031-0016-0001
031-0001-0003	031-0018-0001	031-0019-0001
031-0002-0001		031-0046-0001
031-0003-0001		
031-0024-0001		
051-0125-0001		

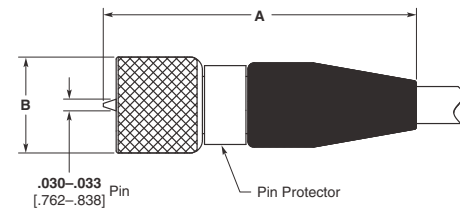
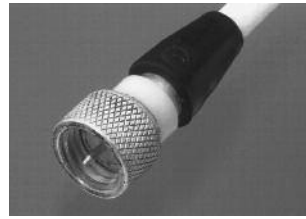


**Right-Angle Printed Circuit Receptacle**

S-50 Ohm Series	S-70 Ohm Series	S-93 Ohm Series
031-0061-0001	031-0072-0001	031-0073-0001
051-0459-0001		

**MICRODOT Standard Connectors — Screw-On Series** (Continued)

**Plugs**  
**S-50, 70 & 93**



RF Connectors

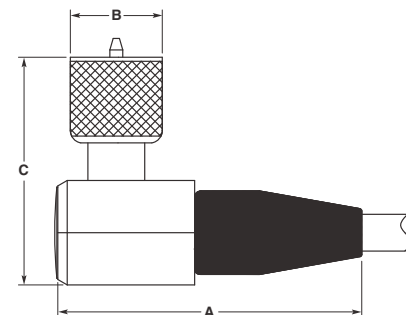
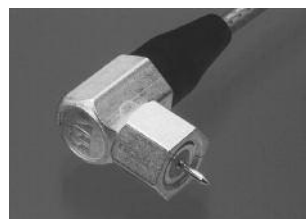
Part No.	Dim. A	Dim. B	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
<b>S-50 Series (50 Ohm) .190 [4.83] -32 UNF-2B Thread</b>							
032-0021-0001	.745 18.92	.230 5.84 Dia.	.087 2.21	<sup>1</sup> Solderless Assembly	408-8521	RF-ASMB-88	010-0003-0000
032-0023-0001	.745 18.92	.230 5.84 Dia.	.087 2.21	<sup>1</sup>	408-8522	RF-ASMB-89	010-0003-0000
032-0025-0001	.745 18.92	.230 5.84 Dia.	.093 2.36	<sup>1</sup> Solderless Assembly	408-8521	RF-ASMB-88	010-0003-0000
032-0033-0001	.745 18.92	.230 5.84 Dia.	.093 2.36	<sup>1</sup>	408-8522	RF-ASMB-89	010-0003-0000
032-0097-0001	.745 18.92	.250 6.35 Hex.	.087 2.21	<sup>1</sup> Solderless Assembly, Hex Nut	408-8521	RF-ASMB-88	010-0003-0000
032-0098-0001	.745 18.92	.250 6.35 Hex.	.087 2.21	Hex Nut	408-8522	RF-ASMB-89	010-0003-0000
032-0155-0001	.700 17.78	.250 6.35 Hex.	.088 2.24	<sup>1,2</sup> Hex Nut, .187 [4.75] Hex Cable Clamp Nut	408-8522	RF-ASMB-89	010-0003-0000
032-0156-0001	.700 17.78	.250 6.35 Dia.	.088 2.24	<sup>1,2</sup> .187 [4.75] Hex Cable Clamp Nut	408-8522	RF-ASMB-89	010-0003-0000
052-0213-0001	.745 18.92	.250 6.35 Hex.	.087 2.21	<sup>1</sup> Solderless, Hex Nut w/ Safety Wire Holes, .021 [0.53] Wire Max.	408-8521	RF-ASMB-88	010-0003-0000
052-0235-0001	.745 18.92	.250 6.35 Hex.	.087 2.21	<sup>1,2</sup> Hex Nut	408-8522	RF-ASMB-89	010-0003-0000
052-0235-0003	.745 18.92	.250 6.35 Hex.	.087 2.21	<sup>1,2</sup> Hex Nut w/ Safety Wire Holes, .021 [0.53] Wire Max.	408-8522	RF-ASMB-89	010-0003-0000
052-0370-0001	.745 18.92	.250 6.35 Hex.	.093 2.36	<sup>1</sup> Hex Nut, Designed for Dual Shield Cable	408-8522	RF-ASMB-89	010-0003-0000
052-0542-0001	.745 18.92	.250 6.35 Hex.	.087 2.21	<sup>1</sup> Hex Nut	408-8522	RF-ASMB-89	010-0003-0000
<b>S-70 Series (70 Ohm) .216 [5.49] -32 UNEF-2B Thread</b>							
032-0010-0001	.760 19.30	.255 6.48 Dia.	.093 2.36	<sup>1</sup> Solderless Assembly	408-8521	RF-ASMB-88	010-0004-0000
032-0022-0001	.760 19.30	.255 6.48 Dia.	.093 2.36	<sup>1</sup>	408-8525	RF-ASMB-95	010-0004-0000
032-0067-0001	.755 19.18	.255 6.48 Dia.	.108 2.74	<sup>1</sup>	408-8522	RF-ASMB-89	010-0035-0000
032-0078-0001	.755 19.18	.255 6.48 Dia.	.108 2.74	<sup>1</sup> Solderless Assembly	408-8521	RF-ASMB-88	010-0035-0000
032-0222-0001	.760 19.30	.281 7.14 Hex.	.093 2.36	<sup>1</sup> Hex Nut w/ Safety Wire Holes, .014 [0.35] Wire Max.	408-8525	RF-ASMB-95	010-0004-0000
052-0092-0001	.760 19.30	.255 6.48 Dia.	.093 2.36	<sup>2</sup>	408-8525	RF-ASMB-95	010-0004-0000
<b>S-93 Series (93 Ohm) .250 [6.35] -32 UNEF-2B Thread</b>							
032-0011-0001	.760 19.30	.320 8.13 Dia.	.134 3.40	<sup>1</sup> Solderless Assembly	408-8521	RF-ASMB-88	010-0005-0000
032-0017-0001	.760 19.30	.320 8.13 Dia.	.134 3.40	<sup>1</sup>	408-8525	RF-ASMB-95	010-0005-0000
032-0066-0001	.950 24.13	.350 8.89 Dia.	.154 3.91	<sup>1</sup> Silicone Bend Relief Cap	408-8523	RF-ASMB-90	—
032-0071-0001	.760 19.30	.320 8.13 Dia.	.134 3.40	<sup>1</sup> Cable Inner Conductor, .031 [0.78] Max.	408-8525	RF-ASMB-95	010-0005-0000
032-0092-0001	.760 19.30	.320 8.13 Dia.	.155 3.94	<sup>1</sup>	408-8525	RF-ASMB-95	010-0044-0000
032-0099-0001	.760 19.30	.312 7.92 Hex.	.134 3.40	<sup>1</sup> Hex Nut	408-8525	RF-ASMB-95	010-0005-0000
052-0200-0001	.760 19.30	.312 7.92 Hex.	.134 3.40	<sup>1</sup> Hex Nut w/ Safety Wire Holes, .015 [0.38] Wire Max.	408-8525	RF-ASMB-95	010-0005-0000

<sup>1</sup>Pin protected.

<sup>2</sup>Hole in ferrule permits soldering to clamp ring and shield for increased cable pullout strength.

**MICRODOT Standard Connectors — Screw-On Series** (Continued)

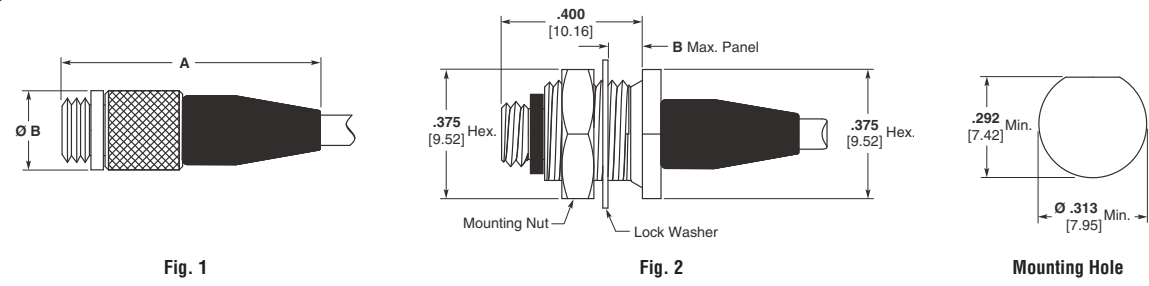
**Right-Angle Plugs**  
S-50, 70 & 93



Part No.	Dim. A	Dim. B	Dim. C	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
<b>S-50 Series (50 Ohm) .190 [4.83] -32 UNF-2B Thread</b>								
032-0015-0001	.735 18.67	.225 5.72 Dia.	.570 14.48	.092 2.34		408-8520	RF-ASMB-87	010-0016-0000
052-0204-0001	.735 18.67	.250 6.35 Hex.	.570 14.48	.092 2.34	Hex Nut	408-8520	RF-ASMB-87	010-0016-0000
052-0215-0001	.735 18.67	.250 6.35 Hex.	.570 14.48	.092 2.34	Hex Nut w/ Safety Wire Holes, .021 [.533] Wire Max.	408-8520	RF-ASMB-87	010-0016-0000
052-0337-0001	.745 18.92	.225 5.72 Dia.	.570 14.48	.111 2.82	Dual Shield Cable	408-8520	RF-ASMB-87	010-0016-0000
<b>S-70 Series (70 Ohm) .216 [5.49] -32 UNEF-2B Thread</b>								
032-0013-0001	.745 18.92	.255 6.48 Dia.	.570 14.48	.111 2.82		408-8520	RF-ASMB-87	010-0016-0000
052-0299-0001	.745 18.92	.281 7.14 Hex.	.570 14.48	.111 2.82	Hex Nut w/ Safety Wire Holes, .014 [.355] Wire Max.	408-8520	RF-ASMB-87	010-0016-0000
052-0379-0001	.745 18.92	.281 7.14 Hex.	.570 14.48	.111 2.82	Hex Nut	408-8520	RF-ASMB-87	010-0016-0000
<b>S-93 Series (93 Ohm) .250 [6.35] -32 UNEF-2B Thread</b>								
032-0014-0001	.745 18.92	.320 8.13 Dia.	.630 16.00	.134 3.40		408-8520	RF-ASMB-87	010-0017-0000
032-0068-0001	.745 18.92	.320 8.13 Dia.	.630 16.00	.155 3.94		408-8520	RF-ASMB-87	010-0017-0000
032-0153-0001	.745 18.92	.312 7.92 Hex.	.630 16.00	.155 3.94	Hex Nut	408-8520	RF-ASMB-87	010-0017-0000
052-0207-0001	.745 18.92	.312 7.92 Hex.	.630 16.00	.134 3.40	Hex Nut	408-8520	RF-ASMB-87	010-0017-0000
052-0298-0001	.745 18.92	.312 7.92 Hex.	.630 16.00	.134 3.40	Hex Nut w/ Safety Wire Holes, .015 [.381] Wire Max.	408-8520	RF-ASMB-87	010-0017-0000
052-0304-0022	.745 18.92	.312 7.92 Hex.	.630 16.00	.155 3.94	Hex Nut w/ Safety Wire Holes, .015 [.381] Wire Max., Silicone Bend Relief Cap	408-8520	RF-ASMB-87	010-0017-0000

**MICRODOT Standard Connectors — Screw-On Series** (Continued)

**Jacks**  
**S-50, 70 & 93**



RF Connectors

Part No.	Fig.	Dim. A	Dim. B	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
<b>S-50 Series (50 Ohm) .190 [4.83] -32 UNF-2A Thread</b>								
031-0033-0001	2	.870 22.10	.140 3.56	.088 2.24		408-8522	RF-ASMB-89	010-0003-0000
031-0034-0001	1	.750 19.05	.235 5.97	.087 2.21		408-8522	RF-ASMB-89	010-0003-0000
051-0467-0001	1	.720 18.30	.235 5.97	.079 2.01	Hex Collet Cable Clamp	408-8522	RF-ASMB-89	010-0003-0000
<b>S-70 Series (70 Ohm) .216 [5.49] -32 UNEF-2A Thread</b>								
031-0036-0001	1	.760 19.30	.255 6.48	.093 2.36		408-8522	RF-ASMB-89	010-0004-0000
031-0048-0001	2	.880 22.35	.140 3.56	.093 2.36		408-8525	RF-ASMB-95	010-0004-0000
031-0090-0001	1	.760 19.30	.255 6.48	.109 2.77		408-8522	RF-ASMB-89	010-0035-0000
<b>S-93 Series (93 Ohm) .250 [6.35] -32 UNEF-2A Thread</b>								
031-0032-0001	2	.880 22.35	.155 3.94	.134 3.40		408-8525	RF-ASMB-95	010-0005-0000
031-0037-0001	1	.760 19.30	.320 8.13	.134 3.40		408-8525	RF-ASMB-95	010-0005-0000
031-0088-0001	1	1.000 25.40	.320 8.13	.154 3.91		408-8533	RF-ASMB-106	—
031-0089-0001	2	.750 19.05	.140 3.56	.154 3.91	No Mounting Flat, Hex Nut Cable Clamp	408-8524	RF-ASMB-92	—

**MICRODOT Standard Connectors — Screw-On Series** (Continued)

**Receptacles**

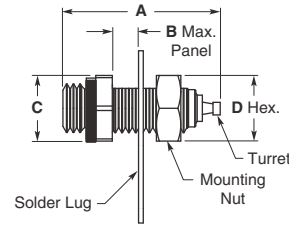


Fig. 1

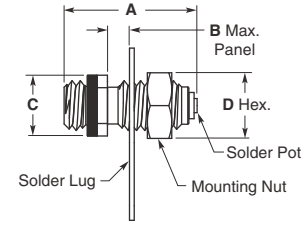
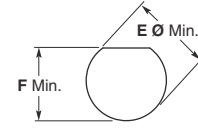


Fig. 2



Mounting Hole for Fig. 1 & 2

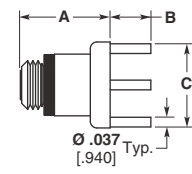


Fig. 3

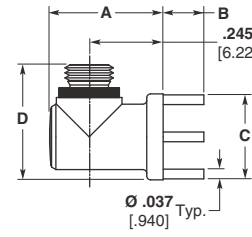
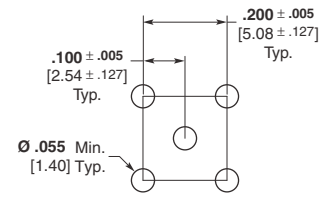


Fig. 4



Mounting Pattern for Fig. 3 & 4

Part No.	Fig.	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Dim. F	Special Features	
<b>S-50 Series (50 Ohm) .190 [4.83] -32 UNF-2A Thread</b>									
031-0001-0001	2	.515 13.08	.080 2.03	.187 4.75	Wrench Flats	.250 6.35	.191 4.85	— No Mounting Flat	
031-0001-0003	2	.510 12.95	.110 2.80	.187 4.75	Wrench Flats	.250 6.35	.191 4.85	— No Mounting Flat	
031-0002-0001	2	.515 13.08	.150 3.81	.187 4.75	Wrench Flats	.250 6.35	.191 4.85	— No Mounting Flat	
031-0003-0001	2	.255 6.48	—	.187 4.75	Wrench Flats	—	.190 4.83	-32 — No Nut or Solder Lug, Threads into Panel	
031-0024-0001	2	.555 14.10	.120 3.05	.344 8.74	Wrench Flats	.438 11.13	.345 8.76	— Housing Isolated by Nylon Insulator	
031-0050-0001	1	.605 15.37	.160 4.06	.250 6.35	Hex.	.250 4.75	.191 4.85	.173 4.39	
031-0059-0001	3	.340 8.64	.155 3.93	.330 8.38	Dia.	—	—	—	
031-0061-0001	4	.425 10.80	.155 3.93	.330 8.38	Dia.	.480 12.20	—	—	
031-0062-0001	3	.345 8.76	.250 6.35	.330 8.38	Dia.	—	—	—	
051-0125-0001	2	.315 8.00	.125 3.18	.187 4.75	Wrench Flats	—	.138 3.50	— No Mounting Thread, Solder or Press into Panel	
051-0318-0001	1	.605 15.37	.160 4.06	.250 6.35	Hex.	.250 4.75	.191 4.85	.173 4.39	w/ Safety Wire Holes, .014 [.355] Wire Max.
051-0450-0001	3	.340 8.64	.050 1.27	.330 8.38	Dia.	—	—	—	
051-0459-0001	4	.425 10.80	.155 3.93	.330 8.38	Dia.	.480 12.20	—	— 3 Outer Legs	
<b>S-70 Series (70 Ohm) .216 [5.49] -32 UNEF-2A Thread</b>									
031-0017-0001	2	.555 14.10	.100 2.54	.250 6.35	Hex.	.281 7.14	.217 5.51	— No Mounting Flat	
031-0018-0001	2	.555 14.10	.160 4.06	.250 6.35	Hex.	.281 7.14	.217 5.51	— No Mounting Flat	
031-0051-0001	1	.605 15.37	.160 4.06	.250 6.35	Hex.	.281 7.14	.217 5.51	.197 5.00	
031-0069-0001	3	.340 8.64	.155 3.94	.330 8.38	Dia.	—	—	—	
031-0072-0001	4	.425 10.80	.155 3.94	.330 8.38	Dia.	.480 12.20	—	—	



**MICRODOT Standard Connectors — Screw-On Series** (Continued)

**Receptacles** (Continued)

Part No.	Fig.	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Dim. F	Special Features
<b>S-93 Series (93 Ohm) .250 [6.35] -32 UNEF-2A Thread</b>								
031-0016-0001	2	.555 14.10	.100 2.54	.312 7.92	Hex.	.312 7.92	.251 6.38	— No Mounting Flat
031-0019-0001	2	.555 14.10	.160 2.54	.312 7.92	Hex.	.312 7.92	.251 6.38	— No Mounting Flat
031-0046-0001	2	.555 3.05	.120 3.05	.345 8.76	Wrench Flats	.438 11.13	.345 8.76	— Housing Isolated by Nylon Insulator
031-0052-0001	1	.605 15.37	.160 2.54	.312 7.92	Hex.	.312 7.92	.251 6.38	.232 5.89
031-0067-0001	3	.340 8.64	.155 3.94	.330 8.38	Dia.	—	—	—
031-0073-0001	4	.425 10.80	.155 3.94	.330 8.38	Dia.	.480 12.20	—	—
031-0080-0001	3	.345 8.76	.250 6.35	.330 8.38	Dia.	—	—	—

2

RF Connectors

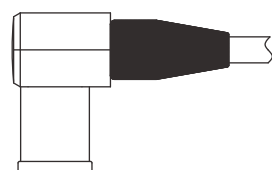
**MICRODOT Standard Connectors — Slide-On Series**

All plugs shown below mate with all jacks/receptacles shown below.



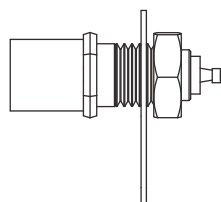
**Plug**

SOS-50 Ohm Series	SOS-70 Ohm Series	SOS-93 Ohm Series
032-0055-0001	032-0060-0001	032-0077-0001
	032-0087-0001	032-0084-0001



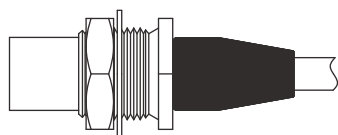
**Right-Angle Plug**

SOS-50 Ohm Series	SOS-70 Ohm Series	SOS-93 Ohm Series
032-0063-0001	032-0062-0001	032-0059-0001
		032-0083-0001



**Plug Receptacle**

SOS-50 Ohm Series	SOS-70 Ohm Series	SOS-93 Ohm Series
032-0042-0001	032-0042-0001	032-0042-0001
052-0061-0001	052-0061-0001	052-0061-0001
052-0471-0001	052-0471-0001	052-0471-0001



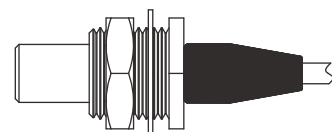
**Bulkhead Plug**

SOS-50 Ohm Series	SOS-70 Ohm Series	SOS-93 Ohm Series
032-0056-0001	032-0061-0001	032-0058-0001



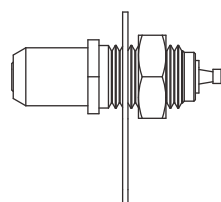
**Jack**

SOS-50 Ohm Series	SOS-70 Ohm Series	SOS-93 Ohm Series
031-0053-0001	031-0095-0001	031-0063-0001
		031-0093-0001



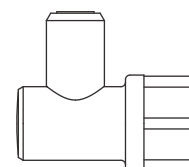
**Bulkhead Jack**

SOS-50 Ohm Series	SOS-70 Ohm Series	SOS-93 Ohm Series
031-0054-0001		031-0064-0001
		031-0094-0001



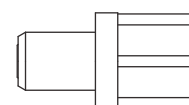
**Receptacle**

SOS-50 Ohm Series	SOS-70 Ohm Series	SOS-93 Ohm Series
031-0049-0001	031-0049-0001	031-0049-0001
051-0258-0001	051-0258-0001	051-0258-0001
051-0325-0001	051-0325-0001	051-0325-0001



**Right-Angle Printed Circuit Receptacle**

SOS-50 Ohm Series	SOS-70 Ohm Series	SOS-93 Ohm Series
031-0070-0001	031-0070-0001	031-0070-0001



**Printed Circuit Receptacle**

SOS-50 Ohm Series	SOS-70 Ohm Series	SOS-93 Ohm Series
031-0060-0001	031-0060-0001	031-0060-0001
031-0065-0001	031-0065-0001	031-0065-0001

**MICRODOT Standard Connectors — Slide-On Series (Continued)**

**Straight Plugs**

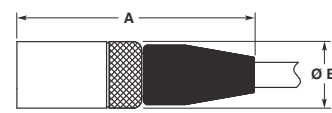
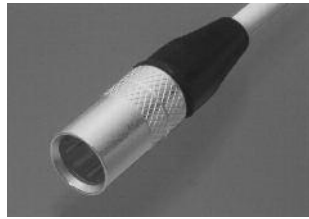


Fig. 1

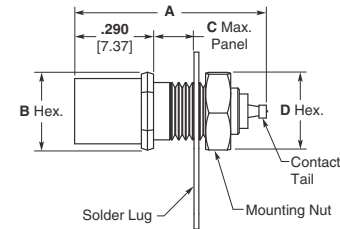


Fig. 2  
Plug Receptacle

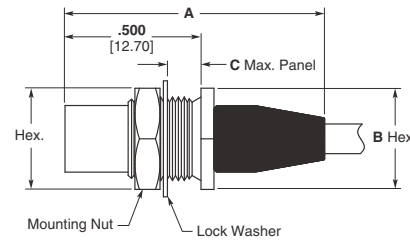
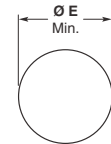


Fig. 3  
Bulkhead Plug



Mounting Hole  
for Fig. 2 & 3



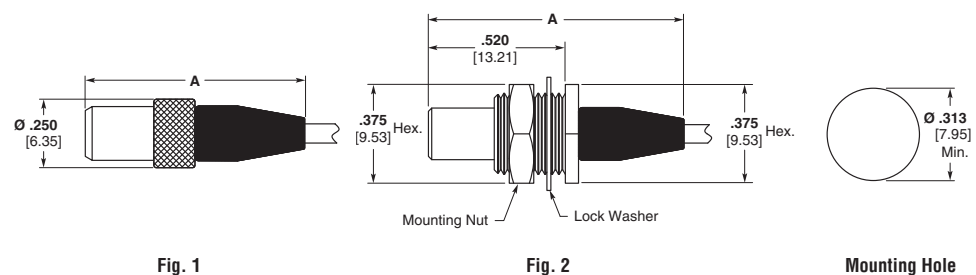
RF Connectors

Part No.	Fig.	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Cable Max. Jacket	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
<b>SOS-50 Series (50 Ohm)</b>											
032-0042-0001	2	.705 17.91	.250 6.35	.160 4.06	.281 7.14	.217 5.51	—	Turret Pin Contact Tail	—	—	—
032-0055-0001	1	.870 22.10	.250 6.35	—	—	—	.088 2.24	—	408-8526	RF-ASMB-97	010-0007-0000
032-0056-0001	3	.950 24.13	.375 9.53	.145 3.68	.375 9.53	.313 7.95	.088 2.24	—	408-8526	RF-ASMB-97	010-0007-0000
052-0061-0001	2	.750 19.05	.250 6.35	.160 4.06	.281 7.14	.217 5.51	—	Solder Pot Contact Tail	—	—	—
052-0471-0001	2	.590 14.99	.250 6.35	.095 2.41	.281 7.14	.217 5.51	—	Straight Pin Contact Tail <sup>1</sup>	—	—	—
<b>SOS-70 Series (70 Ohm)</b>											
032-0042-0001	2	.705 17.91	.250 6.35	.160 4.06	.281 7.14	.217 5.51	—	Turret Pin Contact Tail	—	—	—
032-0060-0001	1	.880 22.35	.250 6.35	—	—	—	.093 2.36	—	408-8529	RF-ASMB-102	010-0007-0000
032-0061-0001	3	.960 24.38	.375 9.53	.145 3.68	.375 9.53	.313 7.95	.093 2.36	—	408-8526	RF-ASMB-97	010-0007-0000
032-0087-0001	1	.880 22.35	.250 6.35	—	—	—	.108 2.24	—	408-8526	RF-ASMB-97	010-0036-0000
052-0061-0001	2	.750 19.05	.250 6.35	.160 4.06	.281 7.14	.217 5.51	—	Solder Pot Contact Tail	—	—	—
052-0471-0001	2	.590 14.99	.250 6.35	.095 2.41	.281 7.14	.217 5.51	—	Straight Pin Contact Tail <sup>1</sup>	—	—	—
<b>SOS-93 Series (93 Ohm)</b>											
032-0042-0001	2	.705 17.91	.250 6.35	.160 4.06	.281 7.14	.217 5.51	—	Turret Pin Contact Tail	—	—	—
032-0058-0001	3	.960 24.38	.375 9.53	.145 3.68	.375 9.53	.313 7.95	.134 3.40	—	408-8529	RF-ASMB-102	010-1008-0000
032-0077-0001	1	.880 22.35	.250 6.35	—	—	—	.134 3.40	—	408-8529	RF-ASMB-102	010-1008-0000
032-0084-0001	1	1.06 26.92	.250 6.35	—	—	—	.154 3.91	—	408-8523	RF-ASMB-90	—
052-0061-0001	2	.750 19.05	.250 6.35	.160 4.06	.281 7.14	.217 5.51	—	Solder Pot Contact Tail	—	—	—
052-0471-0001	2	.590 14.99	.250 6.35	.095 2.41	.281 7.14	.217 5.51	—	Straight Pin Contact Tail <sup>1</sup>	—	—	—

<sup>1</sup>Lockwasher supplied in place of solder lug.

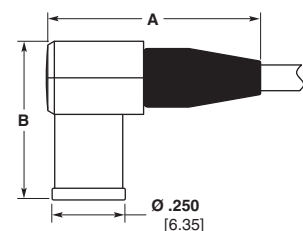
**MICRODOT Standard Connectors — Slide-On Series** (Continued)

**Jacks**



Part No.	Fig.	Dim. A	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
<b>SOS-50 Series (50 Ohm)</b>							
031-0053-0001	1	.800 20.32	.088 2.24		408-8531	RF-ASMB-104	010-0007-0000
031-0054-0001	2	.970 24.64	.088 2.24		408-8531	RF-ASMB-104	010-0007-0000
<b>SOS-70 Series (70 Ohm)</b>							
031-0095-0001	1	.810 20.57	.108 2.74		408-8531	RF-ASMB-104	010-0036-0000
<b>SOS-93 Series (93 Ohm)</b>							
031-0063-0001	1	.810 20.57	.134 3.40		408-8530	RF-ASMB-103	010-1008-0000
031-0064-0001	2	.980 24.89	.134 3.40		408-8530	RF-ASMB-103	010-1008-0000
031-0093-0001	1	1.100 27.94	.154 3.91	.305 [7.75] Dia. Over B.R. Cap	408-8532	RF-ASMB-105	—
031-0094-0001	2	.750 19.05	.154 3.91	Hex Nut Cable Clamp	408-8524	RF-ASMB-92	—

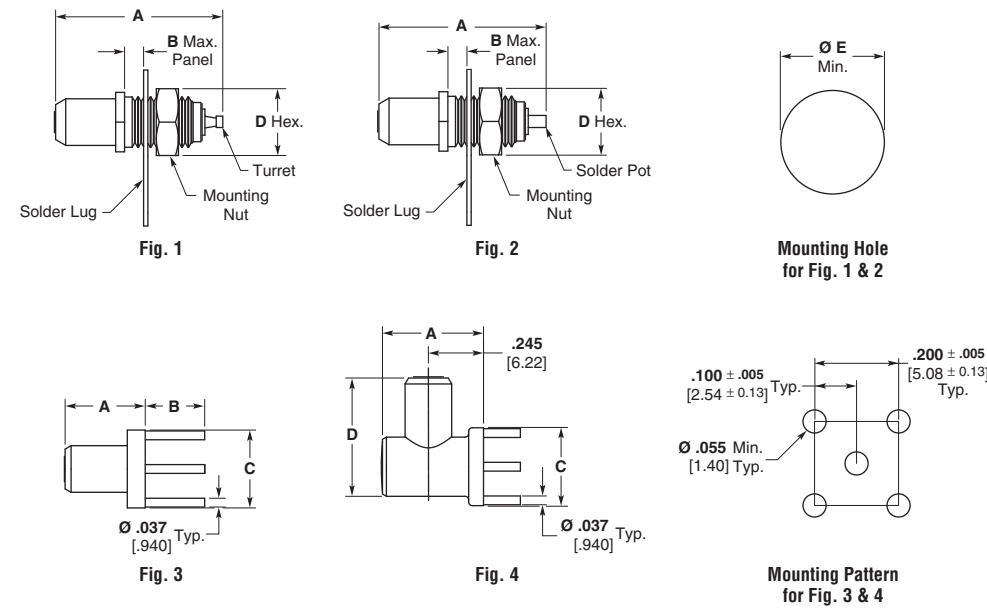
**Right-Angle Plugs**



Part No.	Dim. A	Dim. B	Cable Max. O.D.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
<b>SOS-50 Series (50 Ohm)</b>							
032-0063-0001	.735 18.67	.545 13.84	.092 2.34		408-8520	RF-ASMB-87	010-0016-0000
<b>SOS-70 Series (70 Ohm)</b>							
032-0062-0001	.745 18.92	.545 13.84	.111 2.82		408-8520	RF-ASMB-87	010-0016-0000
<b>SOS-93 Series (93 Ohm)</b>							
032-0059-0001	.745 18.92	.605 15.37	.134 3.40		408-8520	RF-ASMB-87	010-0017-0000
032-0083-0001	.745 18.92	.605 15.37	.155 3.94		408-8520	RF-ASMB-87	010-0017-0000

**MICRODOT Standard Connectors — Slide-On Series** (Continued)

**Receptacles**



**2**

RF Connectors

Part No.	Fig.	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Special Features
<b>SOS-50 (50 Ohm), SOS-70 (70 Ohm), &amp; SOS-93 (93 Ohm) Series</b>							
031-0049-0001	1	.715 18.16	.160 4.06	.250 6.35	Hex.	.281 7.14	.217 5.51
031-0060-0001	3	.340 8.64	.155 3.94	.330 8.38	Dia.	—	—
031-0065-0001	3	.340 8.64	.250 6.35	.330 8.38	Dia.	—	—
031-0070-0001	4	.425 10.79	.155 3.94	.330 8.38	Dia.	.540 13.72	—
051-0258-0001	2	.715 18.16	.160 4.06	.250 6.35	Hex.	.281 7.14	.217 5.51
051-0325-0001	1	.570 14.48	.140 3.56	.250 6.35	Hex.	—	.216-32 5.49 Thd. No Nut or Lockwasher, Threads into Panel

**MICRODOT Standard Connectors — Quick-Connect Series**



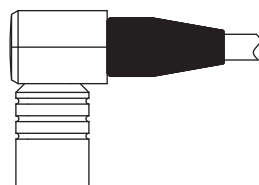
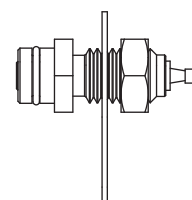
**Plug**

QC-50 Ohm Series	QC-70 Ohm Series	QC-93 Ohm Series
032-0002-0001	032-0016-0001	032-0012-0001
032-0030-0001	032-0031-0001	032-0032-0001
	032-0079-0001	032-0072-0001



**Jack**

QC-50 Ohm Series	QC-70 Ohm Series	QC-93 Ohm Series
031-0038-0001		031-0040-0001

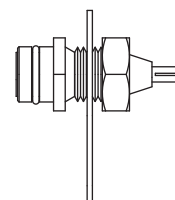


**Right-Angle Plug**

QC-50 Ohm Series	QC-70 Ohm Series	QC-93 Ohm Series
032-0026-0001	032-0027-0001	032-0020-0001
		052-0228-0001

**Receptacle**

QC-50 Ohm Series	QC-70 Ohm Series	QC-93 Ohm Series
031-0057-0001	031-0057-0001	031-0058-0001
		031-0085-0001



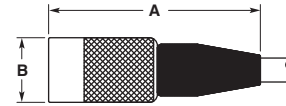
**Receptacle**

QC-50 Ohm Series	QC-70 Ohm Series	QC-93 Ohm Series
031-0004-0001	031-0004-0001	031-0020-0001
031-0005-0001	031-0005-0001	031-0021-0001
031-0006-0001	031-0006-0001	
051-0586-0001	051-0586-0001	



**MICRODOT Standard Connectors — Quick-Connect Series** (Continued)

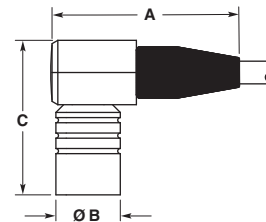
**Straight Plugs**



RF Connectors

Part No.	Dim. A	Dim. B	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
<b>QC-50 Series (50 Ohm)</b>							
032-0002-0001	.820 20.83	.250 6.35	.093 2.36	Solderless Assembly	408-8527	RF-ASMB-100	010-0007-0000
032-0030-0001	.820 20.83	.250 6.35	.093 2.36		408-8526	RF-ASMB-97	010-0007-0000
<b>QC-70 Series (70 Ohm)</b>							
032-0016-0001	.830 21.08	.250 6.35	.093 2.36	Solderless Assembly	408-8527	RF-ASMB-100	010-0007-0000
032-0031-0001	.830 21.08	.250 6.35	.093 2.36		408-8529	RF-ASMB-102	010-0007-0000
032-0079-0001	.840 21.34	.250 6.35	.108 2.74		408-8526	RF-ASMB-97	010-0036-0000
<b>QC-93 Series (93 Ohm)</b>							
032-0012-0001	.845 21.46	.312 7.92	.134 3.40	Solderless Assembly	408-8527	RF-ASMB-100	010-0008-0000
032-0032-0001	.845 21.46	.312 7.92	.134 3.40		408-8529	RF-ASMB-102	010-0008-0000
032-0072-0001	1.050 26.67	.312 7.92	.154 3.91	Mates with 031-0085-0001 Only	408-8523	RF-ASMB-90	—

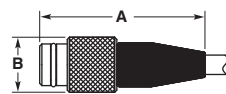
**Right-Angle Plugs**



Part No.	Dim. A	Dim. B	Dim. C	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
<b>QC-50 Series (50 Ohm)</b>								
032-0026-0001	.735 18.67	.250 6.35	.605 15.37	.092 2.34		408-8520	RF-ASMB-87	010-0016-0000
<b>QC-70 Series (70 Ohm)</b>								
032-0027-0001	.745 18.92	.250 6.35	.605 15.37	.111 2.82		408-8520	RF-ASMB-87	010-0016-0000
<b>QC-93 Series (93 Ohm)</b>								
032-0020-0001	.745 18.92	.312 7.92	.635 16.13	.134 3.40		408-8520	RF-ASMB-87	010-0017-0000
052-0228-0001	.745 18.92	.312 7.92	.720 18.29	.155 3.94	Mates with 031-0085-0001 Only	408-8520	RF-ASMB-87	010-0017-0000

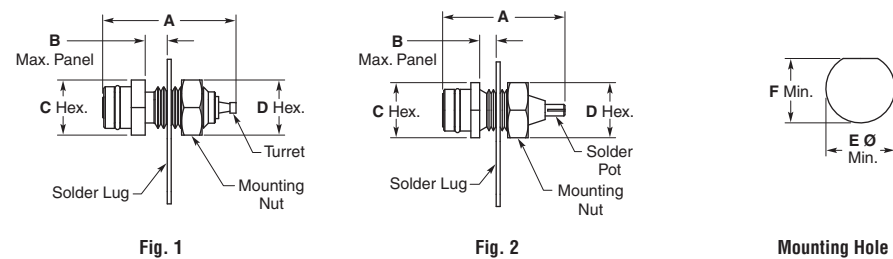
**MICRODOT Standard Connectors — Quick-Connect Series** (Continued)

**Jacks**



Part No.	Dim. A	Dim. B	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
<b>QC-50 Series (50 Ohm)</b>							
031-0038-0001	.750 19.05	.250 6.35	.093 2.36		408-8531	RF-ASMB-104	010-0007-0000
<b>QC-93 Series (93 Ohm)</b>							
031-0040-0001	.760 19.30	.320 8.13	.134 3.40		408-8530	RF-ASMB-103	010-1009-0000

**Receptacles**



Part No.	Fig.	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Dim. F	Special Features
<b>QC-50 Series (50 Ohm) &amp; QC-70 Series (70 Ohm)</b>								
031-0004-0001	2	.555 14.10	.095 2.41	.250 6.35	.250 6.35	.191 4.85	—	No Mounting Flat
031-0005-0001	2	.555 14.10	.165 4.19	.250 6.35	.250 6.35	.191 4.85	—	No Mounting Flat
031-0006-0001	2	.250 6.35	—	.250 6.35	—	.190-32 4.83 Thd	—	No Nut or Solder Lug, Threads into Panel
031-0057-0001	1	.605 15.37	.165 4.19	.250 6.35	.250 6.35	.191 4.85	.173 4.39	
051-0586-0001	2	.555 14.10	.165 4.19	.250 6.35	.250 6.35	.191 4.85	—	No Mounting Flat, Split Solder Lug
<b>QC-93 Series (93 Ohm)</b>								
031-0020-0001	2	.555 14.10	.095 2.41	.312 7.92	.312 7.92	.251 6.38	—	No Mounting Flat
031-0021-0001	2	.555 14.10	.165 4.19	.312 7.92	.312 7.92	.251 6.38	—	No Mounting Flat
031-0058-0001	1	.605 15.37	.160 4.06	.312 7.92	.312 7.92	.251 6.38	.232 5.89	
031-0085-0001	1	.715 18.16	.165 4.19	.312 7.92	.312 7.92	.251 6.38	—	No Mounting Flat, Mates with 032-0072-0001 & 052-0228-0001 Only

**MICRODOT Standard Connectors — Twinax Series**

**Twinax Plugs:** ☺  
For cables with two inner conductors and one shield

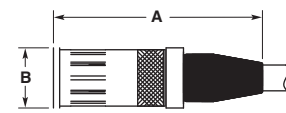


Fig. 1  
Slide-On Series

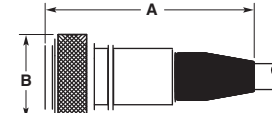


Fig. 2  
Screw-On Series



RF Connectors

Part No.	Fig.	Dim. A	Dim. B	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
032-0088-0001	1	1.085 27.56	.312 7.92	.167 4.24		408-8528	RF-ASMB-101	010-0031-0000
032-0093-0001	1	1.085 27.56	.312 7.92	.123 3.12		408-8528	RF-ASMB-101	010-0031-0000
052-0229-0001	2	1.085 27.56	.440 11.18	.123 3.12		408-8517	RF-ASMB-61	010-0172-0000
052-0324-0001	2	1.095 27.81	.440 11.18	.167 4.24		408-8517	RF-ASMB-61	010-0172-0000

**Twinax Receptacles and Jacks:** ☺

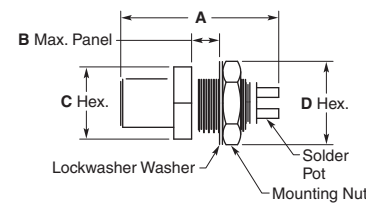


Fig. 1  
Slide-On Series

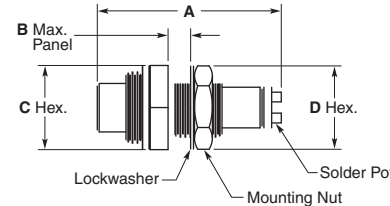


Fig. 2  
Slide-On Series or Screw-On Series

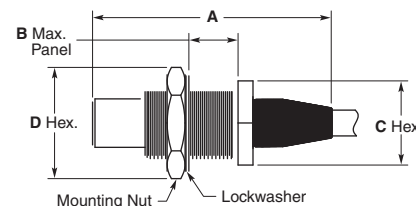
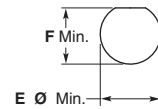


Fig. 3  
Slide-On Series or Screw-On Series



Mounting Hole

Part No.	Fig.	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Dim. F	Cable Max. Jacket	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
031-0098-0001	1	.812 20.62	.155 3.94	.375 9.53	.375 9.53	.313 7.95	.292 7.42	—		—	—	—
051-0248-0001	2	.960 24.38	.155 3.94	.437 11.10	.375 9.53	.313 7.95	.292 7.42	—		—	—	—
051-0358-0001	3	1.060 26.92	.075 <sup>1</sup> 1.91	.437 11.10	.500 12.7	.376 9.55	.351 8.92	.167 4.24	Lockwasher not included	408-8516	RF-ASMB-44	010-0186-0000
051-0389-0001	3	1.255 31.88	.255 <sup>2</sup> 6.48	.437 11.10	.500 12.7	.376 9.55	.351 8.92	.167 4.24		408-8516	RF-ASMB-44	010-0186-0000

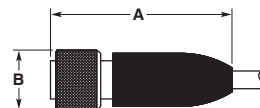
<sup>1</sup>.075 [1.91] Max. Panel when mated with a Screw-On plug, .180 [4.57] Max. Panel when mated with a Slide-On plug.

<sup>2</sup>.255 [6.48] Max. Panel when mated with a Screw-On plug, .360 [9.14] Max. Panel when mated with a Slide-On plug.

**MICRODOT Standard Connectors — Triax Series and Terminals**

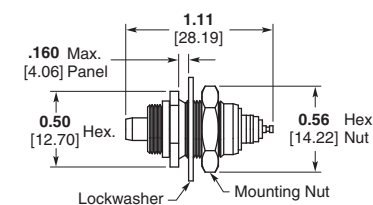
**Triax Plugs:** ☉

For cables with one inner conductor and two isolated shields

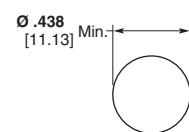


Part No.	Dim. A	Dim. B	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.	Assembly Tool
052-0130-0001	1.37 34.80	.440 11.18 Dia.	.124 3.15		408-8514	RF-ASMB-20	—
052-0138-0001	1.37 34.80	.440 11.18 Dia.	.183 4.65		408-8515	RF-ASMB-21	—
052-0593-0001	1.37 34.80	.438 11.13 Hex.	.214 5.44	Hex Nut w/ Safety Wire Holes, .027 [.686] Wire Max.	408-8518	RF-ASMB-73	—

**Triax Receptacle:** ☉

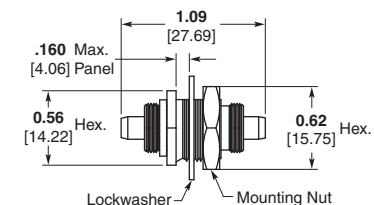


Part Number 051-0618-0001

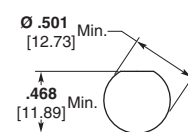


Mounting Hole

**Triax Adapter:** ☉



Part Number 053-0161-0001  
Mates with Triax Plug, Both Ends



Mounting Hole

**Terminals**

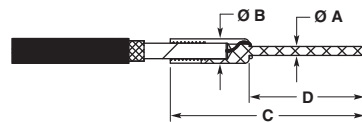


Fig. 1

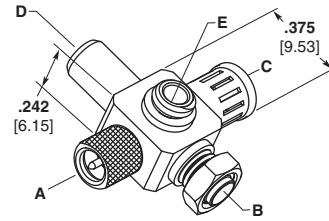


Fig. 2

Part No.	Fig.	Dim. A	Dim. B	Dim. C	Dim. D	Cable Max. Dielectric	Cable Max. Inner Conductor
053-0354-0003	1	.030 .762	.080 2.03	.630 16.00	.375 9.53	.050 1.27	.015 .381
053-0249-0001	1	.030 .762	.105 2.67	.630 16.00	.375 9.53	.071 1.80	.021 .533
053-0495-0001	1	.030 .762	.125 3.18	.880 22.35	.610 15.49	.083 2.11	.022 .559
053-0656-0001	1	.030 .762	.145 3.68	.880 22.35	.375 9.53	.108 2.74	.023 .584
053-0294-0002	1	.030 .762	.145 3.68	.880 22.35	.625 15.88	.108 2.74	.023 .584
033-0115-0002	2	.040 1.02	.063 1.60	.255 6.48	.100 2.54	.042 1.07	.023 .584
033-0116-0001	2	.040 1.02	.094 2.39	.300 7.62	.100 2.54	.068 1.73	.023 .584
033-0117-0001	2	.040 1.02	.140 3.56	.350 8.89	.200 5.08	.108 2.74	.023 .584
053-0154-0001	1	.041 1.04	.080 2.03	.430 10.92	.175 4.45	.050 1.27	.019 .483
053-0250-0001	1	.041 1.04	.080 2.03	.505 12.83	.250 6.35	.050 1.27	.019 .483
053-0020-0003	1	.041 1.04	.080 2.03	.630 16.00	.375 9.53	.050 1.27	.015 .381
053-0021-0003	1	.041 1.04	.105 2.67	.630 16.00	.375 9.53	.071 1.80	.023 .584
053-0267-0003	1	.041 1.04	.105 2.67	.875 22.23	.625 15.88	.071 1.80	.023 .584
053-0265-0001	2	.041 1.04	.128 3.25	.505 12.83	.250 6.35	.102 2.59	.021 .533
053-0230-0001	2	.041 1.04	.128 3.25	.630 16.00	.375 9.53	.102 2.59	.018 .457
053-0155-0001	1	.041 1.04	.145 3.68	.430 10.82	.175 4.45	.108 2.74	.023 .584
053-0022-0003	1	.041 1.04	.145 3.68	.630 16.00	.375 9.53	.108 2.74	.023 .584
053-0388-0001	2	.042 1.07	.098 2.49	.500 12.70	.250 6.35	.065 1.65	.021 .533
053-0251-0001	2	.042 1.07	.098 2.49	.630 16.00	.375 9.53	.065 1.65	.021 .533

Terminals are gold plated.  
See applicable MICRODOT drawing for solder and crimp instructions.

**MICRODOT Standard Connectors — Module Blocks**



The five faces of basic block can be used to mount any one of 10 different terminations. The 5 faces are coded with letters as shown above. The 10 terminations are coded with Nos. 1–10. Part number, to be complete, must show face location and termination Nos.

desired. (Ex: illustration shows 033-0042—A2—B7—C6—D5—E1) Ordering part number will be converted to a MICRODOT assigned number at time of ordering.

We do not stock complete assemblies.

Size	Part No.	Dim. H
50 Ohm	033-0042*	.250 6.35
70 Ohm	033-0043*	.250 6.35
93 Ohm	033-0044*	.300 7.62

\*Part number to be completed by customer. A Computer Part Number will be assigned by TE Connectivity.



RF Connectors

**Interfaces/Terminations**

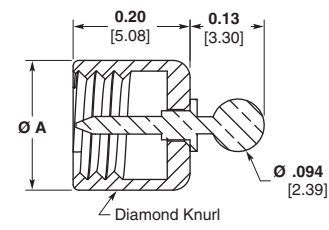
Termination Number	1	2	3	4	5	6
Mating Type	S	S	QC	QC	SOS	SOS
Description	Receptacle	Plug with Knurl Nut	Receptacle	Plug	Receptacle	Plug
	<b>Thread</b>	<b>Thread</b> <b>Dia.</b>		<b>Dia.</b>		<b>Dia.</b>
50 Series	.190-32 UNF 4.83	.190-32 UNF 4.83	.230 5.84	.250 6.35		.250 6.35
70 Series	.216-32 UNEF 5.49	.216-32 UNEF 5.49	.255 6.48	.250 6.35		.250 6.35
93 Series	.250-32 UNEF 6.35	.250-32 UNEF 6.35	.320 8.13	.312 7.92		.250 6.35

**Interfaces/Terminations (Continued)**

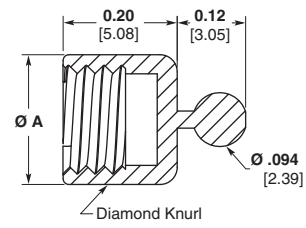
Termination Number	7	8	9	10			
Mating Type	—	—	S	S			
Description	Bulkhead Stud	Bulkhead Receptacle	Plug with Hex. Nut	Plug, Hex. Nut With Wire Holes			
	<b>Thread</b>	<b>Thread</b> <b>Hex.</b> <b>Min. Hole Dia.</b> <b>Min. Hole Height</b>	<b>Thread</b> <b>Hex.</b>	<b>Thread</b> <b>Hex.</b>			
50 Series	.190-32 UNF 4.83	.190-32 UNF 4.83	.250 6.35	.191 4.85	.173 4.39	.190-32 UNF 4.83	.250 6.35
70 Series	.190-32 UNF 4.83	.216-32 UNEF 5.49	.281 7.14	.217 5.51	.197 5.00	.216-32 UNEF 5.49	.281 7.14
93 Series	.190-32 UNF 4.83	.250-32 UNEF 6.35	.312 7.92	.251 6.38	.232 5.89	.250-32 UNEF 6.35	.312 7.92

**MICRODOT Standard Connectors — Caps, Hoods**

**Caps, Screw-On Series  
For Receptacles and Jacks**



**Fig. 1  
With Grounding Pin**



**Fig. 2  
Without Grounding Pin**

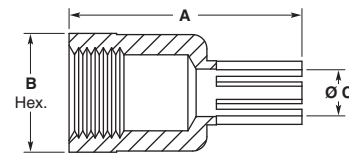
Part No.	Fig.	Dim. A
<b>S-50 Series</b>		
033-0046-0001	1	.235 5.97
033-0056-0001	2	.235 5.97
<b>S-70 Series</b>		
033-0047-0001	1	.255 6.48
033-0057-0001	2	.255 6.48
<b>S-93 Series</b>		
033-0048-0001	1	.315 8.00
033-0058-0001	2	.315 8.00

**Material** — Brass per QQ-B-626

**Finish** — Silver plate per QQ-S-365, .0002 [.005] min.

**Note:** All caps can be supplied with .094 [2.39] Dia. bead chain and end ring. When ordering, specify chain length and end ring hole size (.130 [3.30], .140 [3.56], .167 [4.24], or .193 [4.90] Dia.)

**Receptacle Hoods**



Part No.	Dim. A	Dim. B	Dim. C	Thread	For Receptacle Series
033-0067-0001	.490 12.45	.250 6.35	.098 2.49	.190-32 UNF 4.83	S-50, QC-50, QC-70
033-0068-0001	.490 12.45	.250 6.35	.114 2.90	.216-32 UNEF 5.49	S-70, SOS-50, SOS-70, SOS-93
033-0069-0001	.490 12.45	.312 7.92	.156 3.96	.250-32 UNEF 6.35	S-93, QC-93
033-0084-0001	.490 12.45	.250 6.35	.156 3.96	.216-32 UNEF 5.49	S-70, SOS-50, SOS-70, SOS-93
053-0147-0001	.840 21.34	.437 11.10	.156 3.96	.375-32 UNEF 9.53	Twinax/Triax Receptacle

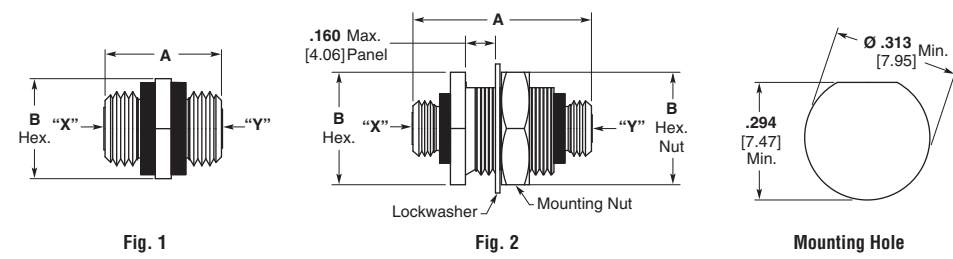
**Material** — Brass per QQ-B-626

**Finish** — Silver plate per QQ-S-365, .0002 [.005] min.



**MICRODOT Standard Connectors — Adapters**

**Feed-Thru Adapters for Screw-On Series**



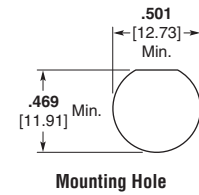
Part No.	Fig.	Dim. A	Dim. B	End "X" Is	End "Y" Is
033-0001-0001	1	.300 7.62	.250 6.35	S-50 Receptacle	S-50 Receptacle
033-0053-0001	2	.600 15.24	.375 9.53	S-50 Receptacle	S-50 Receptacle
033-0023-0001	1	.400 10.16	.250 6.35	S-70 Receptacle	S-70 Receptacle
033-0054-0001	2	.600 15.24	.375 9.53	S-70 Receptacle	S-70 Receptacle
033-0036-0001	1	.410 10.41	.312 7.92	S-93 Receptacle	S-93 Receptacle
033-0055-0001	2	.600 15.24	.375 9.53	S-93 Receptacle	S-93 Receptacle



RF Connectors

**BNC and TNC/MICRODOT Adapters for Screw-On, Slide-On, and Quick-Connect Series**

For mating BNC/TNC connectors to MICRODOT standard connectors.

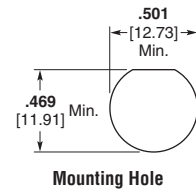


End "A" Is:	Configuration	End "B" Is:	50 Series Part No.	70 Series Part No.	93 Series Part No.
BNC Plug		Screw-On (S) Type Plug	033-0103-0001	033-0107-0001	033-0111-0001
BNC Plug		Screw-On Type Receptacle	033-0101-0001	033-0105-0001	033-0109-0001
BNC Receptacle		Screw-On (S) Type Plug	033-0104-0001	053-0108-0001	033-0112-0001
BNC Receptacle		Screw-On (S) Type Receptacle	033-0102-0001	033-0106-0001	033-0110-0001
BNC Bulkhead Receptacle		Screw-On (S) Type Plug	033-0127-0001 <sup>1</sup>	—	033-0129-0001 <sup>1</sup>

<sup>1</sup>Mounting information: Housing Hex. .688 [17.48], Mtg. Nut Hex. .625 [15.88], Max. Panel .090 [2.29].

**MICRODOT Standard Connectors — Adapters** (Continued)

**BNC and TNC/MICRODOT Adapters for Screw-On, Slide-On, and Quick-Connect Series** (Continued)



End "A" Is:	Configuration	End "B" Is:	50 Series Part No.	70 Series Part No.	93 Series Part No.
BNC Bulkhead Receptacle		Screw-On (S) Type Receptacle	033-0090-0001 <sup>1</sup>	033-0125-0001 <sup>1</sup>	033-0126-0001 <sup>1</sup>
TNC Plug		Screw-On (S) Type Receptacle	033-0141-0001	033-0143-0001	033-0145-0001
TNC Receptacle		Screw-On (S) Type Receptacle	033-0153-0001	—	—
BNC Plug		Slide-On (SOS) Type Plug	053-0339-0001	053-0339-0001	053-0339-0001
BNC Plug		Slide-On (SOS) Type Receptacle	033-0081-0001	033-0081-0001	033-0081-0001
BNC Receptacle		Slide-On (SOS) Type Plug	033-0092-0001	033-0092-0001	033-0092-0001
BNC Receptacle		Slide-On (SOS) Type Receptacle	033-0082-0001	033-0082-0001	033-0082-0001
BNC Bulkhead Receptacle		Slide-On (SOS) Type Receptacle	033-0124-0001 <sup>1</sup>	033-0124-0001 <sup>1</sup>	033-0124-0001 <sup>1</sup>
BNC Plug		Quick-Connect (QC) Type Receptacle	033-0093-0001	033-0093-0001	033-0097-0001
BNC Receptacle		Quick-Connect (QC) Type Receptacle	033-0094-0001	033-0094-0001	—

<sup>1</sup>Mounting information: Housing Hex. .688 [17.48], Mtg. Nut Hex. .625 [15.88], Max. Panel .090 [2.29].

**MICRODOT Gold Plated Crimp Style Coaxial Connectors**

**Performance Data Summary**

For Gold Plated Crimp Style Coaxial Connectors

**Mechanical**

**Captive Contacts** — Terminated connector contacts captivated from movement in both directions.

**Cable Retention** —  
50 Ohm connectors, 15 lb. min.  
70 Ohm connectors, 25 lb. min.  
93 Ohm connectors, 25 lb. min.

**Recommended Coupling Torque (Threaded Interface)** —  
8 inch/pounds max. [.904 Nm]

**Recommended Receptacle Mounting Torque (Threaded Interface)** — 8 inch/pounds max. [.904 Nm]

**Contact Protection (Unmated)** —  
Pin contact protected by coupling nut.  
Socket protected by insulator and housing.

**Assembly Methods**

**Straight Plugs & Jacks** —  
**Cable Inner Conductor** — Crimped to contact.

**Cable Shield** — Crimped under housing.

**Right-Angle Plugs** —  
**Cable Inner Conductor** — Crimped to contact.

**Cable Shield** — Crimped under housing.

**Environmental**

**Temperature Range (Continuous Service)** — -80°F to +392°F. [-62°C to +200°C].

**Vibration<sup>1,2</sup>** — MIL-STD-202, Method 204, Test condition B (15 G peak). No physical damage or electrical discontinuities in excess of 1 microsecond.

**Shock<sup>1,2</sup>** — MIL-STD-202, Method 213, Test Condition H. No physical damage or electrical discontinuity after shock.

**Thermal Shock** — MIL-STD-202, Method 107, Test Condition C.

**Moisture Resistance<sup>1</sup>** — MIL-STD-202, Method 106.

**Salt Spray<sup>1</sup>** — MIL-STD-202, Method 101, Test Condition B (48 hours).

**Electrical**

**Impedance** — Designed to be compatible with 50, 70, or 93 Ohm miniature coaxial cable.

**Dielectric Withstanding Voltage** — 1000 volts RMS at sea level.

**Contact Resistance** — 4 milliohms max., D.C.

**Contact Capacity** — 3 amps, D.C.

**Insulation Resistance** — 5 x 10<sup>3</sup> Megohms min. @ 500 volts D.C.

**Voltage Standing Wave Ratio<sup>3</sup> (VSWR)** — Typical 50 Ohm series, 1.2 max. to 2 GHz.

**Materials**

**Housing, Nut, Inner Sleeve** — Brass per ASTM-B-16, 35% Zinc.

**Insulator** — PTFE per ASTM-D-1710.

**Pin & Socket Contacts** — Beryllium Copper per ASTM-B-196.

**Middle Sleeve** — Copper Alloy.

**Facial Seal, Sealing Sleeve & Gasket** — Silicone Rubber per ZZ-R-765.

**Lockwasher** — #425 Bronze Alloy.

**Plating**

**Contacts, Housing, Nut, Inner Sleeve, Middle Sleeve, Lockwasher** — Gold per MIL-G-45204, Type II, Grade C, Class 1.

**Notes:**

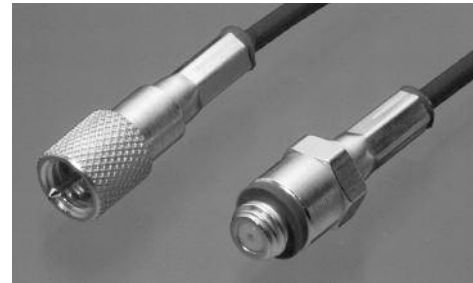
<sup>1</sup>Screw-On Series threaded interface.

<sup>2</sup>TE Connectivity recommends the use of wired connectors in vibration and shock environments. See individual specifications for connectors with wire holes.

<sup>3</sup>VSWR is a system specification. Where performance is critical, purchase TE cable assemblies (See page 2-138) and specify VSWR testing and mating connector part numbers.

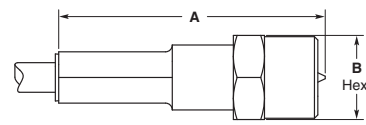


RF Connectors

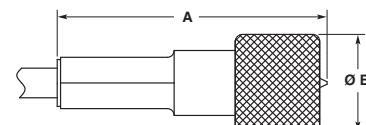


**MICRODOT Gold Plated Crimp Style Coaxial Connectors — Screw-On Series**

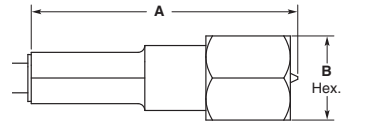
**Straight Plugs**



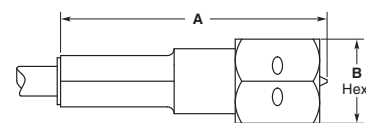
**Fig. 1**  
Partial Hex. Nut



**Fig. 2**  
Knurl Nut



**Fig. 3**  
Full Hex. Nut



**Fig. 4**  
Hex. Nut w/ 3 Safety Wire Holes

Part No.	Fig.	Dim. A	Dim. B	Cable Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.
<b>50 Ohm Series .190 [4.83] -32 UNF-2B Thread</b>							
132-0112-0001	1	.800 20.32	.250 6.35	.088 2.24		408-8508	RF-ASMB-8
132-0112-0002	2	.800 20.32	.250 6.35	.088 2.24		408-8508	RF-ASMB-8
132-0112-0003	3	.800 20.32	.250 6.35	.088 2.24		408-8508	RF-ASMB-8
132-0112-0004	4	.800 20.32	.250 6.35	.088 2.24		408-8508	RF-ASMB-8
132-0113-0001	1	.800 20.32	.250 6.35	.088 2.24	With environmental seal	408-8508	RF-ASMB-8
132-0113-0002	2	.800 20.32	.250 6.35	.088 2.24	With environmental seal	408-8508	RF-ASMB-8
132-0113-0003	3	.800 20.32	.250 6.35	.088 2.24	With environmental seal	408-8508	RF-ASMB-8
132-0113-0004	4	.800 20.32	.250 6.35	.088 2.24	With environmental seal	408-8508	RF-ASMB-8
132-0114-0001	1	.800 20.32	.250 6.35	.110 2.79		408-8508	RF-ASMB-8
132-0114-0002	2	.800 20.32	.250 6.35	.110 2.79		408-8508	RF-ASMB-8
132-0114-0003	3	.800 20.32	.250 6.35	.110 2.79		408-8508	RF-ASMB-8
132-0114-0004	4	.800 20.32	.250 6.35	.110 2.79		408-8508	RF-ASMB-8
132-0115-0001	1	.800 20.32	.250 6.35	.110 2.79	With environmental seal	408-8508	RF-ASMB-8
132-0115-0002	2	.800 20.32	.250 6.35	.110 2.79	With environmental seal	408-8508	RF-ASMB-8
132-0115-0003	3	.800 20.32	.250 6.35	.110 2.79	With environmental seal	408-8508	RF-ASMB-8
132-0115-0004	4	.800 20.32	.250 6.35	.110 2.79	With environmental seal	408-8508	RF-ASMB-8
132-0509-0002	2	.800 20.32	.250 6.35	.116 2.95	Dual shield cable version of RG 188 & 316	408-8508	RF-ASMB-8
<b>70 Ohm Series .216 [5.49] -32 UNEF-2B Thread</b>							
132-0200-0001	1	.800 20.32	.281 7.14	.110 2.79		408-8508	RF-ASMB-8
132-0200-0002	2	.800 20.32	.290 7.37	.110 2.79		408-8508	RF-ASMB-8
132-0200-0003	3	.800 20.32	.281 7.14	.110 2.79		408-8508	RF-ASMB-8
132-0200-0004	4	.800 20.32	.281 7.14	.110 2.79		408-8508	RF-ASMB-8
132-0201-0001	1	.800 20.32	.281 7.14	.110 2.79	With environmental seal	408-8508	RF-ASMB-8
132-0201-0002	2	.800 20.32	.290 7.37	.110 2.79	With environmental seal	408-8508	RF-ASMB-8
132-0201-0003	3	.800 20.32	.281 7.14	.110 2.79	With environmental seal	408-8508	RF-ASMB-8
132-0201-0004	4	.800 20.32	.281 7.14	.110 2.79	With environmental seal	408-8508	RF-ASMB-8

**MICRODOT Gold Plated Crimp Style Coaxial Connectors — Screw-On Series** (Continued)

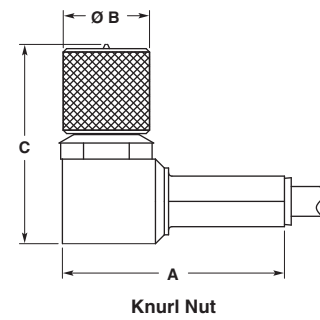
**Straight Plugs** (Continued)

Part No.	Fig.	Dim. A	Dim. B	Cable Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.
<b>93 Ohm Series .250 [6.35] -32 UNEF-2B Thread</b>							
132-0300-0001	1	.795 20.19	.312 7.92	.155 3.94		408-8508	RF-ASMB-8
132-0300-0002	2	.795 20.19	.320 8.13	.155 3.94		408-8508	RF-ASMB-8
132-0300-0003	3	.795 20.19	.312 7.92	.155 3.94		408-8508	RF-ASMB-8
132-0300-0004	4	.795 20.19	.312 7.92	.155 3.94		408-8508	RF-ASMB-8
132-0301-0001	1	.795 20.19	.312 7.92	.155 3.94	With environmental seal	408-8508	RF-ASMB-8
132-0301-0002	2	.795 20.19	.320 8.13	.155 3.94	With environmental seal	408-8508	RF-ASMB-8
132-0301-0003	3	.795 20.19	.312 7.92	.155 3.94	With environmental seal	408-8508	RF-ASMB-8
132-0301-0004	4	.795 20.19	.312 7.92	.155 3.94	With environmental seal	408-8508	RF-ASMB-8

2

RF Connectors

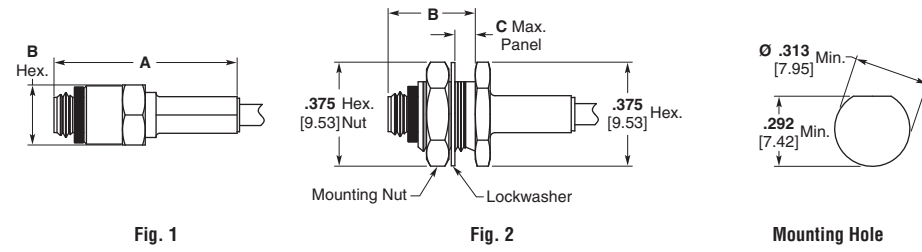
**Right-Angle Plugs**



Part No.	Dim. A	Dim. B	Dim. C	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.
<b>50 Ohm Series .190 [4.83] -32 UNF-2B Thread</b>							
132-0116-0002	.660 16.76	.250 6.35	.620 15.75	.088 2.24		408-8509	RF-ASMB-11
132-0117-0002	.660 16.76	.250 6.35	.620 15.75	.088 2.24	With environmental seal	408-8509	RF-ASMB-11
132-0118-0002	.695 17.65	.250 6.35	.650 16.51	.110 2.79		408-8509	RF-ASMB-11
132-0119-0002	.695 17.65	.250 6.35	.650 16.51	.110 2.79	With environmental seal	408-8509	RF-ASMB-11
<b>70 Ohm Series .216 [5.49] -32 UNEF-2B Thread</b>							
132-0202-0002	.695 17.65	.290 7.37	.650 16.51	.110 2.79		408-8509	RF-ASMB-11
132-0203-0002	.695 17.65	.290 7.37	.650 16.51	.110 2.79	With environmental seal	408-8509	RF-ASMB-11
<b>93 Ohm Series .250 [6.35] -32 UNEF-2B Thread</b>							
132-0302-0002	.710 18.03	.320 8.13	.680 17.27	.155 3.94		408-8509	RF-ASMB-11
132-0303-0002	.710 18.03	.320 8.13	.680 17.27	.155 3.94	With environmental seal	408-8509	RF-ASMB-11

**MICRODOT Gold Plated Crimp Style Coaxial Connectors — Screw-On Series** (Continued)

**Jacks**

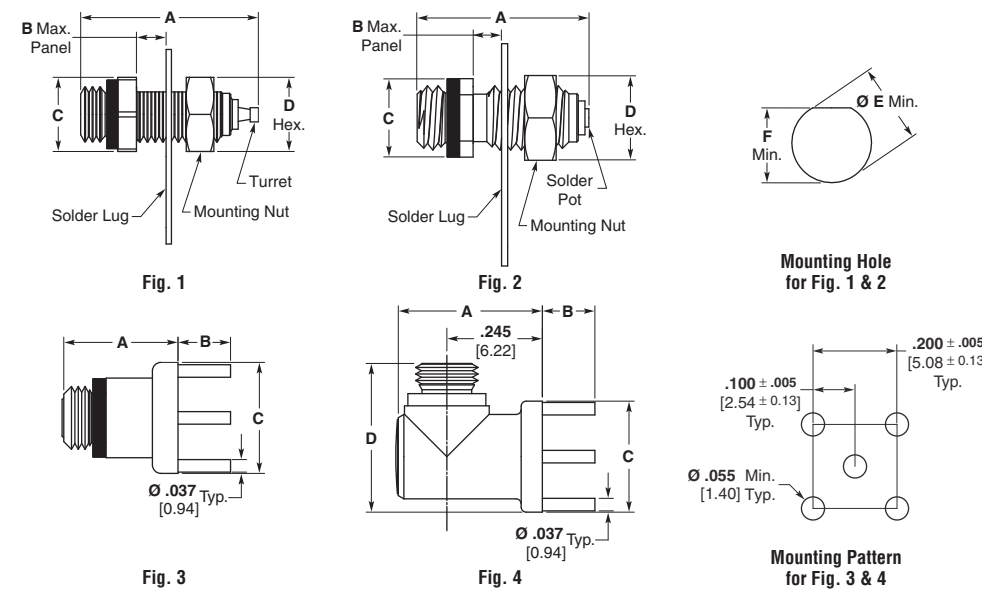


Part No.	Fig.	Dim. A	Dim. B	Dim. C	Cable Jacket Max.	Special Features	Instruction Sheet No.	Former MICRODOT I.S. No.
<b>50 Ohm Series .190 [4.83] -32 UNF-2B Thread</b>								
131-0134-0001	1	.770 19.56	.250 6.35	—	.088 2.24		408-8508	RF-ASMB-8
131-0135-0001	2	.770 19.56	.360 9.14	.105 2.67	.088 2.24		408-8508	RF-ASMB-8
131-0136-0001	1	.770 19.56	.250 6.35	—	.110 2.79		408-8508	RF-ASMB-8
131-0137-0001	2	.770 19.56	.360 9.14	.105 2.67	.110 2.79		408-8508	RF-ASMB-8
131-0150-0001	1	.770 19.56	.250 6.35	—	.116 2.95	Dual Shield Cable Version of RG 188 & 316	408-8508	RF-ASMB-8
131-0151-0001	2	.770 19.56	.360 9.14	.105 2.67	.116 2.95	Dual Shield Cable Version of RG 188 & 316	408-8508	RF-ASMB-8
<b>70 Ohm Series .216 [5.49] -32 UNEF-2B Thread</b>								
131-0200-0001	1	.770 19.56	.281 7.14	—	.110 2.79		408-8508	RF-ASMB-8
131-0201-0001	2	.770 19.56	.360 9.14	.100 2.54	.110 2.79		408-8508	RF-ASMB-8
<b>93 Ohm Series .250 [6.35] -32 UNEF-2B Thread</b>								
131-0300-0001	1	.760 19.30	.312 7.92	—	.155 3.94		408-8508	RF-ASMB-8
131-0301-0001	2	.760 19.30	.350 8.89	.095 2.41	.155 3.94		408-8508	RF-ASMB-8



**MICRODOT Gold Plated Crimp Style Coaxial Connectors — Screw-On Series (Continued)**

**Receptacles**



2

  
 RF Connectors

Part No.	Fig.	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Dim. F	Special Features
<b>50 Ohm Series .190 [4.83] -32 UNF-2A Thread</b>								
131-0138-0002	1	.605 15.37	.160 4.06	.250 6.35	Hex.	.250 6.35	.191 4.85	.173 4.39
131-0139-0002	2	.515 13.08	.150 3.81	.187 4.75	Wrench Flats	.250 6.35	.191 4.85	— No Mounting Flat
131-0140-0001	2	.255 6.48	—	.187 4.75	Wrench Flats	—	.190 4.83	—32 Thd. — No Nut or Solder Lug, Threads into Panel
131-0141-0002	3	.340 8.64	.155 3.94	.330 8.38	Dia.	—	—	—
131-0142-0002	4	.425 10.80	.155 3.94	.330 8.38	Dia.	.480 12.19	—	—
<b>70 Ohm Series .216 [5.49] -32 UNEF-2A Thread</b>								
131-0202-0002	1	.605 15.37	.160 4.06	.250 6.35	Hex.	.281 7.14	.217 5.51	.197 5.00
131-0705-0001	3	.340 8.64	.155 3.94	.330 8.38	Dia.	—	—	—
<b>93 Ohm Series .250 [6.35] -32 UNEF-2A Thread</b>								
131-0303-0002	3	.340 8.64	.155 3.94	.330 8.38	Dia.	—	—	—
131-0304-0001	4	.425 10.80	.155 3.94	.330 8.38	Dia.	.480 12.19	—	—
131-0904-0001	1	.605 15.37	.160 4.06	.312 7.92	Hex.	.312 7.92	.251 6.38	.232 5.89

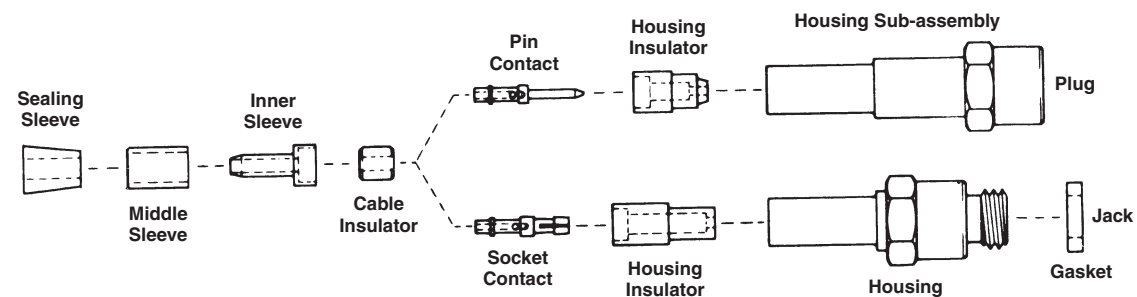
**Gold Plated Crimp Style Coaxial Connectors Assembly Tools**

**Table 1. Contact Crimp Tools**

MICRODOT Part No.	Manufacturers Part No.
010-0065-0000	Astro Tool A-810-3

**Table 2. Housing Crimp Tools**

MICRODOT Part No.	Thomas & Betts Part No.	Max. Cable Diameter
010-0081-0000	WT-400	.088 [2.24]
010-0082-0000	WT-402	.110 [2.79]
010-0083-0000	WT-406	.155 [3.94]



**MICRODOT LEPRA/CON Ultra-Miniature Connectors**

**Performance Data Summary**  
For LEPRA/CON Connectors

**Mechanical**

**Captive Contacts** — Terminated connector contacts captivated from movement in both directions.

**Cable Retention** — 10 lb. min. when properly assembled to RG196/U and RG178/U cable.

**Recommended Coupling Torque (Threaded Interface)** — 24 inch/ounces max.

**Recommended Receptacle Mounting Torque (All Series)** — 24 inch/ounces max.

**Typical Cable Acceptance Dimensions** — Inner conductor: .012 [0.31] nom. Dielectric: .039 [0.99] max. Shield: .059 [1.50] max. Jacket: .081 [2.06] max.

**Contact Protection (Unmated)** — Twist pin contact protected from damage by insulator. Tube socket protected by connector housing.

**Assembly Methods**

**Straight Plugs & Jacks** — Cable Inner Conductor: Crimped to contact. Cable Shield: Crimped under housing.

**Right-Angle Plugs** — Cable Inner Conductor: Soldered to contact. Cable Shield: Crimped under housing.

**Environmental**

**Temperature Range (Continuous Service)** — -85°F to +392°F [-65°C to +200°C].

**Vibration<sup>1,2</sup>** — MIL-STD-202, Method 204, Test Condition B (15 G peaks). No physical damage or electrical discontinuities in excess of 1 microsecond.

**Shock<sup>1,2</sup>** — MIL-STD-202, Method 213, Test Condition H. No physical damage or electrical discontinuity after shock.

**Thermal Shock** — MIL-STD-202, Method 107, Test Condition C.

**Moisture Resistance<sup>1</sup>** — MIL-STD-202, Method 106.

**Salt Spray<sup>1</sup>** — MIL-STD-202, Method 101, Test Condition B (48 hours).

**Electrical**

**Impedance** — Designed to be compatible with 50 Ohm coaxial cable RG178/U.

**Dielectric Withstanding Voltage** — 450 volts RMS at sea level, 250 volts RMS at 50,000 ft [15,240 m], 150 volts RMS at 70,000 ft. [21,336 m]

**Contact Resistance** — 8 milliohms max., D.C.

**Contact Capacity** — 3 amps, D.C.

**Insulation Resistance** — 10<sup>4</sup> Megohms min. @ 500 volts D.C.

**Voltage Standing Wave Ratio<sup>3</sup> (VSWR)** — Typical 50 Ohm Series, 1.2 Maximum to 2 GHz.

**Materials**

**Housing, Nut, Ferrule** — Brass per ASTM-B-16.

**Insulator** — PTFE per ASTM-D-1710.

**Pin & Socket Contact** — Copper Alloy.

**Crimp Sleeve** — Copper Alloy.

**Lockwasher** — #425 Bronze Alloy.

**Plating**

**Contacts, Housing, Nut, Ferrule, Crimp Sleeve, Lockwasher** — Gold per MIL-G-45204, Type II, Grade C, Class 1.

**Notes:**

<sup>1</sup>Screw-On Series, threaded interface.

<sup>2</sup>TE Connectivity recommends the use of safety wired connectors in vibration and shock environments. See individual specifications with wire holes.

<sup>3</sup>VSWR is a system specification. Where performance is critical, purchase TE cable assemblies with Screw-On connectors (See page 2-140) and specify VSWR testing and mating connector part numbers.

**MICRODOT LEPRA/CON Ultra-Miniature Connectors — Screw-On Series**

**Featuring Twist Pin, Pin and Socket Contacts, Standard Interface**



MICRODOT twist pin, pin and socket contacts are used in LEPRA/CON connectors. Twist pin contact pins are produced from beryllium copper material with a gold-plated finish and constructed with helically-wound stress free cable of spring copper around a highly conductive soft copper core, terminated with a hemispherical weld. Twist pin

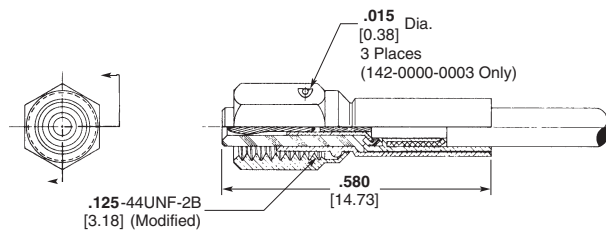
contacts contain seven self-wiping spring surfaces, designed for consistent continuity and very low noise level. Twist pin contacts are self-aligning because of the contact-engaging-end configuration. The sockets are a closed entry tubular-type contact, made of gold-plated copper alloy.

The connectors are designed to be used with coaxial cables RG196/U and RG178/U.

The connectors are designed with the contacts completely protected for reliability. The use of twist pin contacts makes the connectors very rugged for their size.

**2**

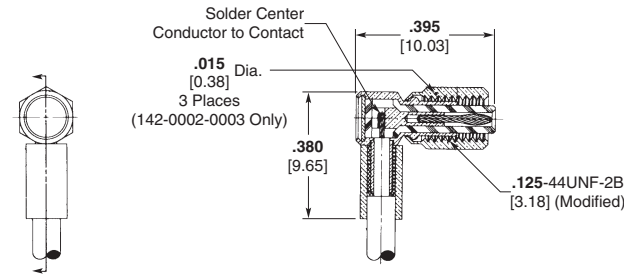
RF Connectors



**Straight Plugs<sup>1</sup>**

Part No.	Nut Style
142-0000-0001	.156 [3.96] Hex.
142-0000-0002	.160 [4.06] Dia. Knurl
142-0000-0003	.156 [3.96] Hex. w/ Safety Wire Holes

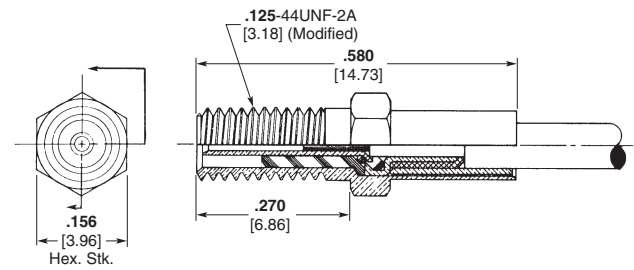
Assembly instructions: RF-ASMB-12



**Right-Angle Plug<sup>1</sup>**

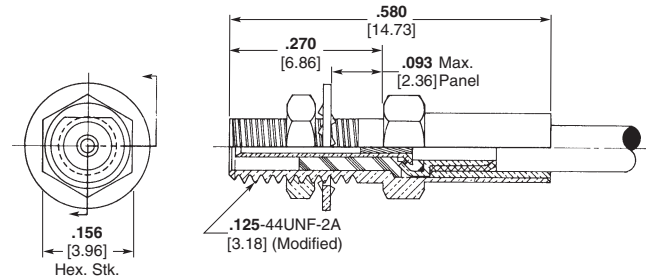
Part No.	Nut Style
142-0002-0001	.156 [3.96] Hex.
142-0002-0002	.160 [4.06] Dia. Knurl
142-0002-0003	.156 [3.96] Hex. w/ Safety Wire Holes

Assembly instructions: RF-ASMB-13



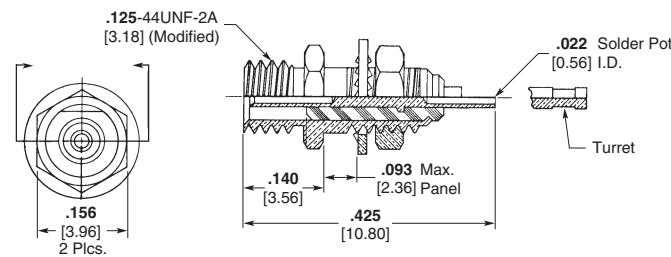
**Jack<sup>1</sup>**

Part Number 141-0000-0001  
Instruction Sheet Number 408-8510  
Former MICRODOT I.S. Number RF-ASMB-12



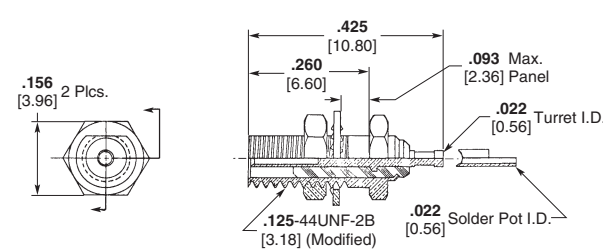
**Bulkhead Jack<sup>1</sup>**

Part Number 141-0001-0001  
Instruction Sheet Number 408-8510  
Former MICRODOT I.S. Number RF-ASMB-12



**Front Mount Receptacle<sup>1</sup>**

Part No.	Contact Tail
141-0002-0001	Turret
141-0002-0002	Solder Pot



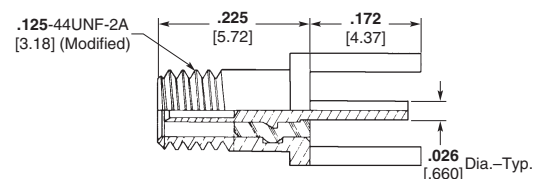
**Rear Mount Receptacle<sup>1</sup>**

Part No.	Contact Tail
141-0003-0001	Turret
141-0003-0002	Solder Pot

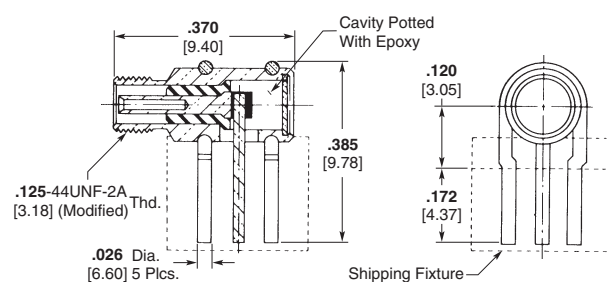
<sup>1</sup>Mounting hole pattern and assembly tools shown on page 2-134.

**MICRODOT LEPRA/CON Ultra-Miniature Connectors — Screw-On Series** (Continued)

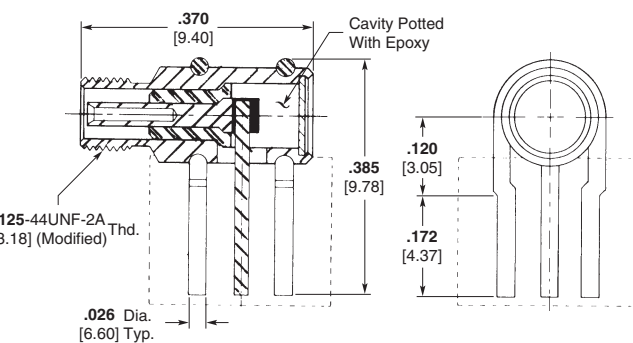
Featuring Twist Pin,  
Pin and Socket Contacts,  
Standard Interface (Continued)



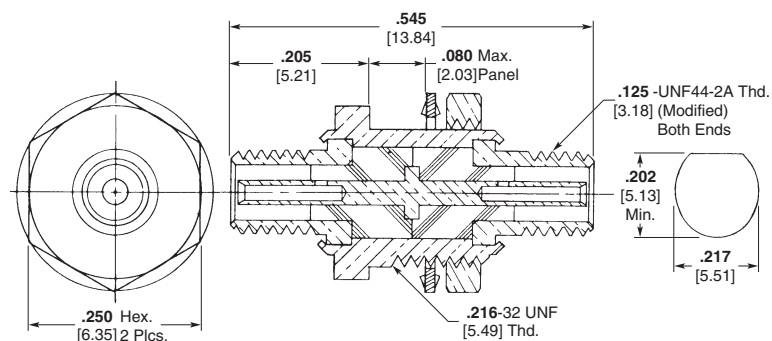
**Straight Printed Circuit Receptacle\***  
Part No. 141-0004-0001



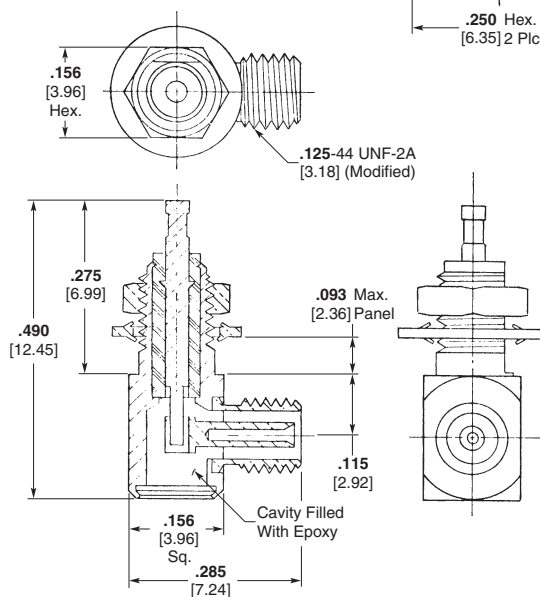
**Right-Angle Printed Circuit Receptacle\***  
(Small Mounting Pattern)  
Part Number 141-0019-0001



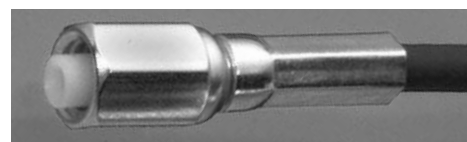
**Right-Angle Printed Circuit Receptacle\***  
(Standard Mounting Pattern)  
Part Number 141-0010-0001



**Feed-Thru Bulkhead Adapter**  
(Both Ends are Receptacle Interface)  
Part Number 143-0005-0001



**Right-Angle Receptacle\***  
Part Number 141-0013-0001



**Straight Plug**

\*Mounting hole pattern and assembly tools shown on page 2-134.

**MICRODOT LEPRA/CON Ultra-Miniature Connectors — Screw-On Series** (Continued)

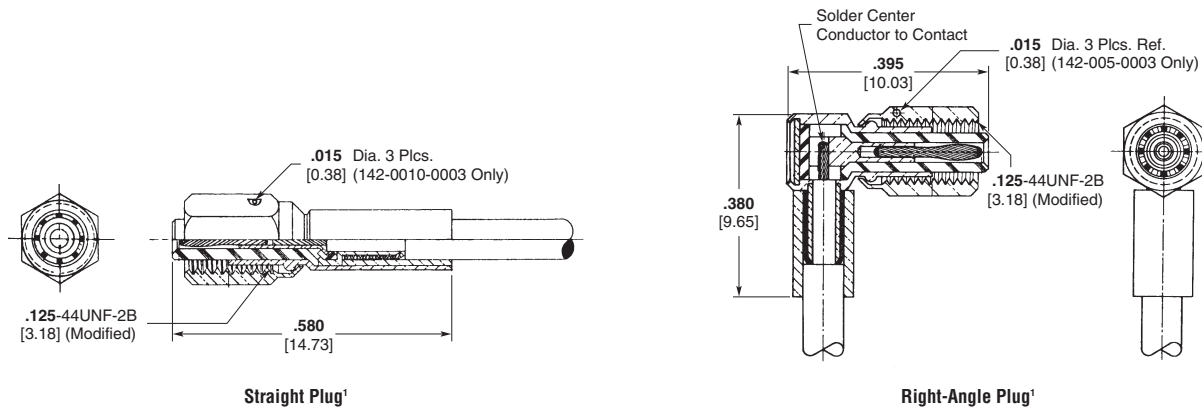
**Featuring Twist Pin, Pin and Socket Contacts with Locking Interface**

The MICRODOT LEPRA/CON coaxial connector series is now offered with a unique locking interface feature. This new coupling design permits the user to lock the coaxial plug, when mated to its receptacle, preventing any axial rotation. This

adaptation is especially popular on connector installations requiring straight or 90° cable terminations firmly held in a fixed position. The locking interface is especially suited for telecommunications and instrumentation applications.

**2**

RF Connectors



Part No.	Nut Style
142-0010-0001	.156 [3.96] Hex.
142-0010-0002	.160 [4.06] Dia. Knurl
142-0010-0003	.156 [3.96] Hex. w/ Safety Wire Holes

Assembly instructions: RF-ASMB-12, 142-0010-0001

Part No.	Nut Style
142-0005-0001	.156 [3.96] Hex.
142-0005-0002	.160 [4.06] Dia. Knurl
142-0005-0003	.156 [3.96] Hex. w/ Safety Wire Holes

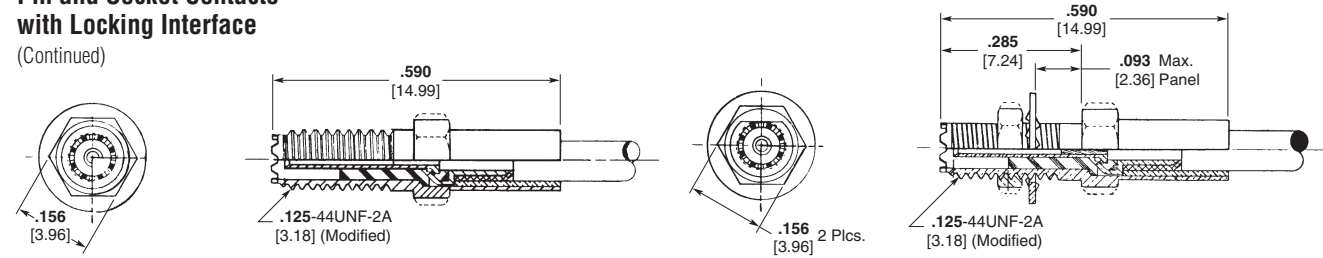
Assembly instructions: RF-ASMB-13, 142-0005-0001

<sup>1</sup>Assembly tools; page 2-134.

**MICRODOT LEPRA/CON Ultra-Miniature Connectors — Screw-On Series** (Continued)

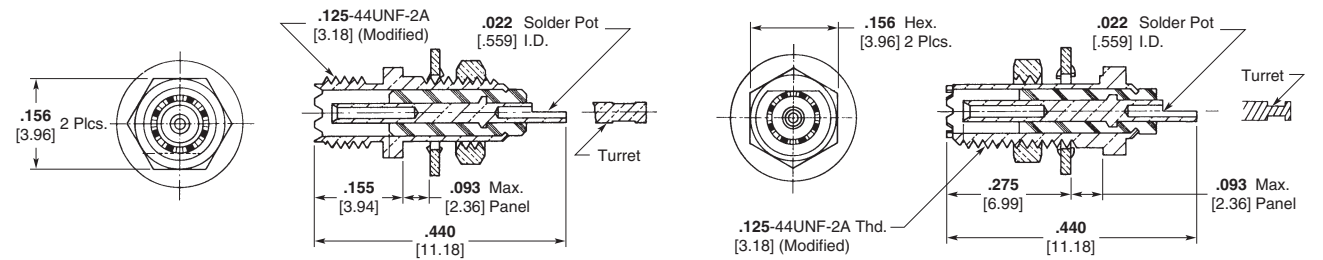
**Featuring Twist Pin, Pin and Socket Contacts with Locking Interface**

(Continued)



**Straight Jack<sup>1</sup>**  
**Part Number 141-0017-0001**  
**Instruction Sheet Number 408-8510**  
**Former MICRODOT I.S. Number RF-ASMB-12**

**Bulkhead Jack<sup>1</sup>**  
**Part Number 141-0014-0001**  
**Instruction Sheet Number 408-8510**  
**Former MICRODOT I.S. Number RF-ASMB-12**

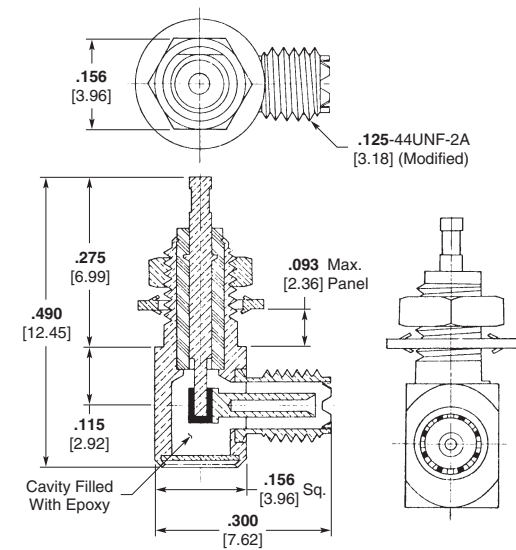


**Front Mount Receptacle<sup>1</sup>**

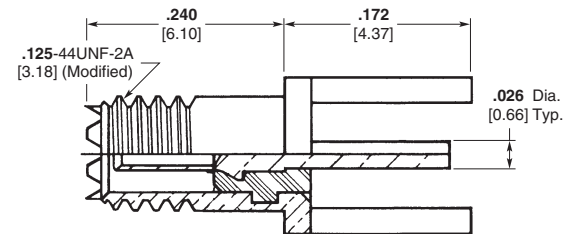
**Rear Mount Receptacle w/ Locking Interface<sup>1</sup>**

Part No.	Contact Tail
141-0012-0001	Solder Pot
141-0012-0002	Turret

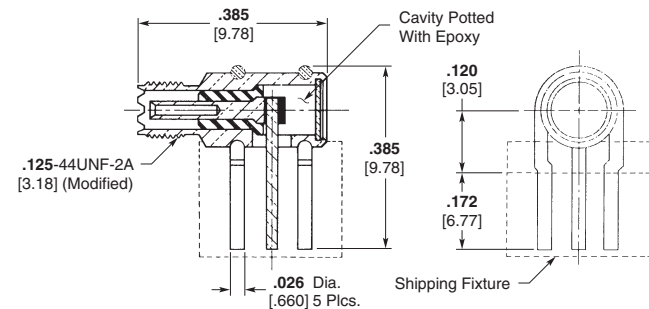
Part No.	Contact Tail
141-0011-0001	Turret
141-0011-0002	Solder Pot



**Right-Angle Receptacle<sup>1</sup>**  
**Part Number 141-0020-0001**



**Straight Printed Circuit Receptacle<sup>1</sup>**  
**Part Number 141-0015-0001**



**Right-Angle Printed Circuit Receptacle<sup>1</sup>**  
**Part Number 141-0023-0001**

<sup>1</sup>Mounting hole pattern and assembly tools shown on page 2-134.



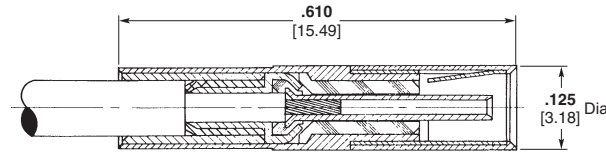
**MICRODOT LEPRA/CON Ultra-Miniature Connectors — Slide-On Series**

Featuring Twist Pin,  
Pin and Socket Contacts

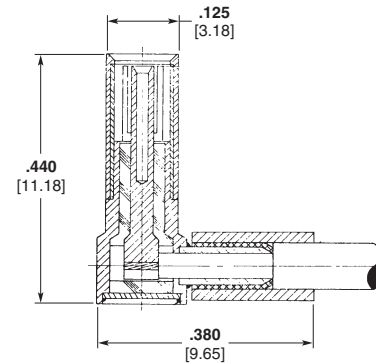
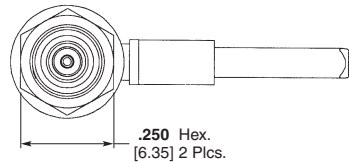


LEPRA/CON Slide-On Connectors offer a convenient mating style along with Ultra-miniature size. Inner contacts are twist pin tubular sockets in plugs and twist pin contacts for jacks and receptacles. Positive housing contact is provided by a three finger contact in the plug housing.

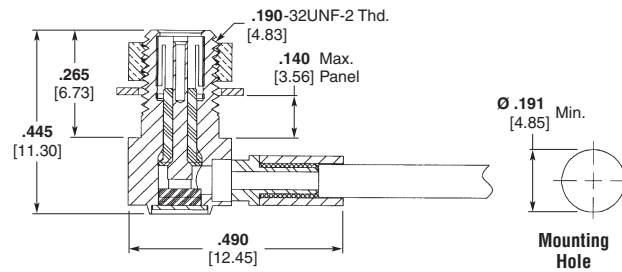
2

  
 RF Connectors


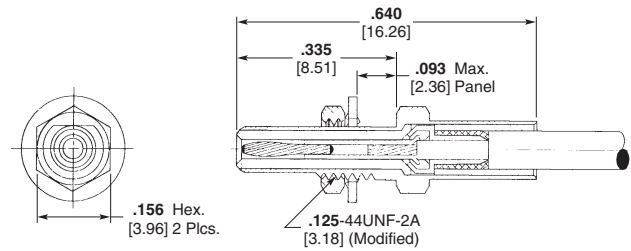
**Straight Plug<sup>1</sup>**  
 Part Number 142-1000-0001  
 Instruction Sheet Number 408-8512  
 Former MICRODOT I.S. Number RF-ASMB-15



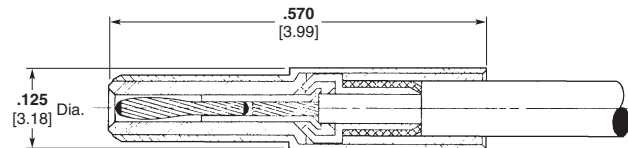
**Right-Angle Plug<sup>1</sup>**  
 Part Number 142-1002-0001  
 Instruction Sheet Number 408-8513  
 Former MICRODOT I.S. Number RF-ASMB-16



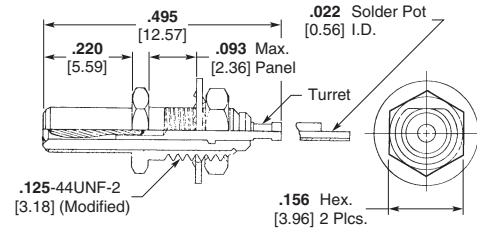
**Right-Angle Bulkhead Mount Plug<sup>1</sup>**  
 Part Number 142-1021-0001  
 Instruction Sheet Number 408-8519  
 Former MICRODOT I.S. Number RF-ASMB-76



**Straight Bulkhead Jack<sup>1</sup>**  
 Part Number 141-1001-0001  
 Instruction Sheet Number 408-8512  
 Former MICRODOT I.S. Number RF-ASMB-15



**Straight Jack<sup>1</sup>**  
 Part Number 141-1000-0001  
 Instruction Sheet Number 408-8512  
 Former MICRODOT I.S. Number RF-ASMB-15



**Front Mount Receptacle<sup>1</sup>**

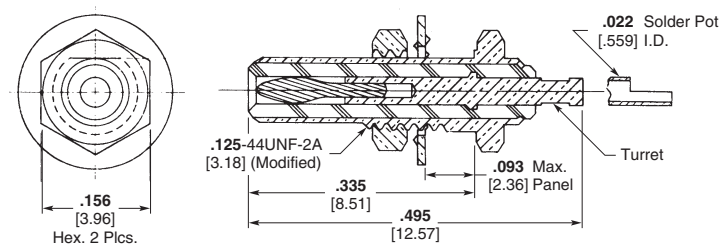
Part No.	Contact Tail
141-1002-0001	Turret
141-1002-0002	Solder Pot

<sup>1</sup>Mounting hole and assembly tools shown on page 2-134.

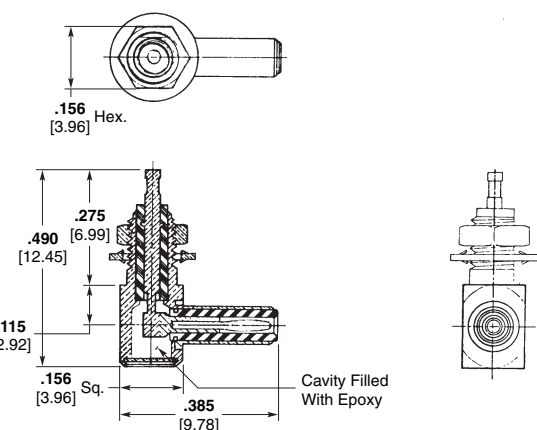
**MICRODOT LEPRA/CON Ultra-Miniature Connectors — Slide-On Series** (Continued)

**Featuring Twist Pin, Pin and Socket Contacts**

(Continued)



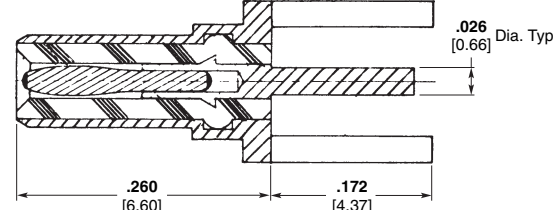
**Rear Mount Receptacle**



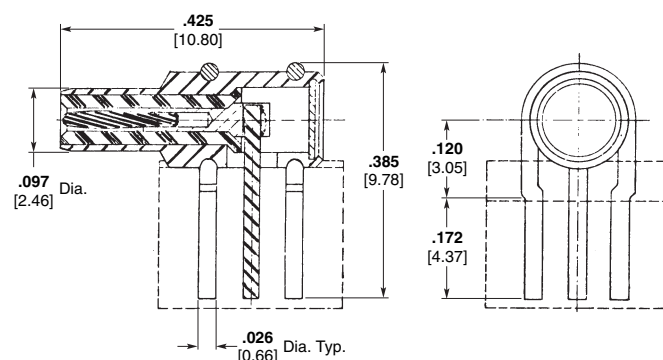
**Right-Angle Receptacle**  
Mounting Hole Shown Below  
Part Number 141-1012-0001

Part No.	Contact Tail
141-1003-0001	Turret
141-1003-0002	Solder Pot

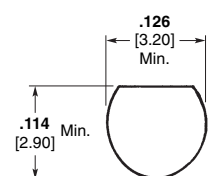
Mounting Hole shown below.



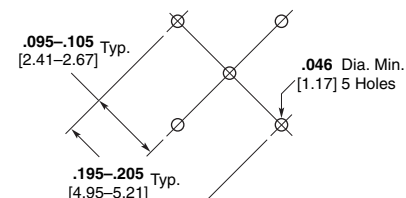
**Straight Printed Circuit Receptacle**  
Mounting Hole Pattern Shown Below  
Part Number 141-1004-0001



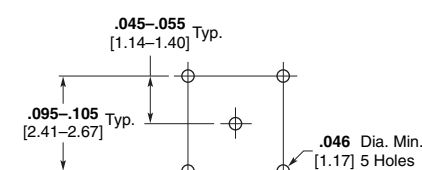
**Right-Angle Printed Circuit Receptacle**  
Mounting Hole Pattern Shown Below  
Part Number 141-1005-0001



**Bulkhead Receptacle Mounting Hole**



**Standard Pattern**



**Small Pattern**  
Connectors 141-0019-0001  
and 141-0023-0001 Only

**Printed Circuit Receptacle Mounting Hole Pattern**

**LEPRA/CON Connector Assembly Tools**



**Housing Crimp Tool**

Part No.	Thomas & Betts Part No.
010-0132-0000	WT-419



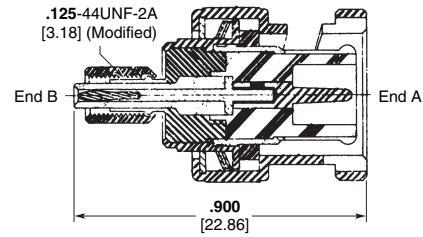
**Contact Crimp Tool**

Connector	Contact Crimp No.	Astro Tool Part No.
Straight Connector Only	010-0150-0000	A-826-1
141-1001-0001	010-0161-0000	827

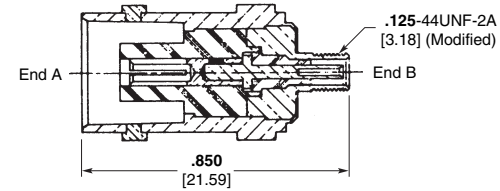
**MICRODOT LEPRA/CON Ultra-Miniature Connectors** (Continued)

**BNC / LEPRA/CON Connector Adapters**

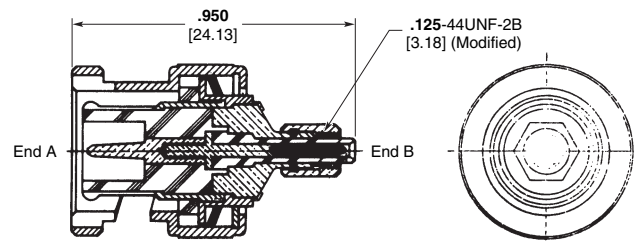
2
  
 RF Connectors



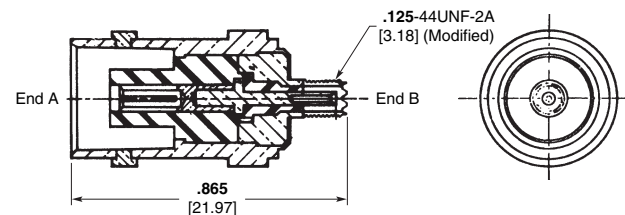
End "B" is MICRODOT Screw-On Plug      End "A" is BNC Plug  
 Part Number 143-0001-0001



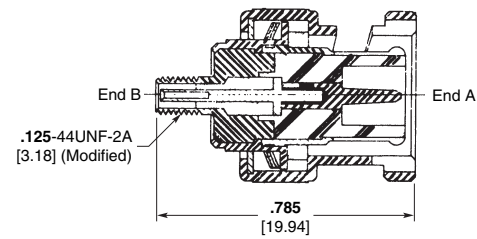
End "A" is BNC Receptacle      End "B" is MICRODOT Screw-On Receptacle  
 Part Number 143-0003-0001



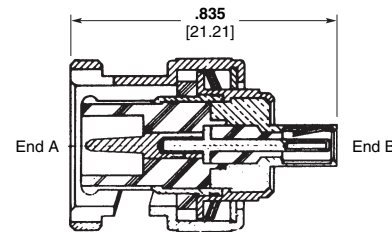
End "A" is BNC Plug      End "B" is MICRODOT Screw-On Plug with Locking Interface  
 Part Number 143-0029-0001



End "A" is BNC Receptacle      End "B" is MICRODOT Screw-On Receptacle with Locking Interface  
 Part Number 143-0032-0001



End "B" is Screw-On Receptacle      End "A" is BNC Plug  
 Part Number 143-0002-0001

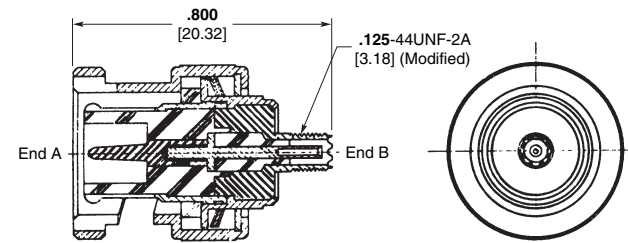


End "A" is BNC Plug      End "B" is MICRODOT Slide-On Plug  
 Part Number 143-1000-0001

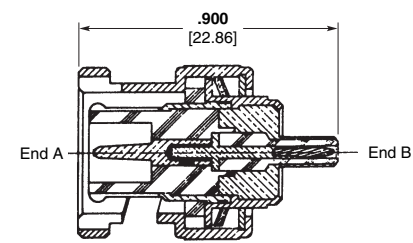
**MICRODOT LEPRA/CON Ultra-Miniature Connectors** (Continued)

**BNC / LEPRA/CON Connector Adapters**

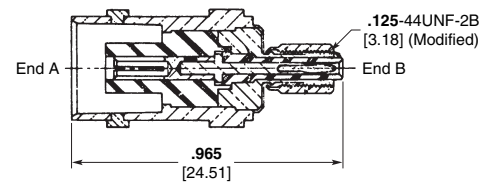
(Continued)



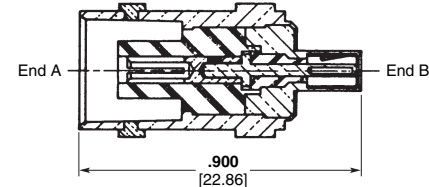
End "A" is BNC Plug      End "B" is MICRODOT Receptacle with Locking Interface  
Part Number 143-0031-0001



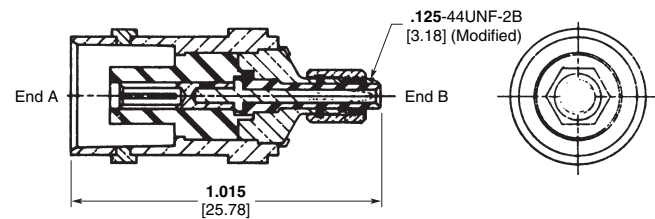
End "A" is BNC Plug      End "B" is MICRODOT Slide-On Receptacle  
Part Number 143-1002-0001



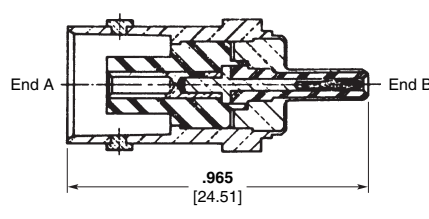
End "A" is BNC Receptacle      End "B" is MICRODOT Screw-On Plug  
Part Number 143-0004-0001



End "A" is BNC Receptacle      End "B" is MICRODOT Slide-On Plug  
Part Number 143-1001-0001



End "A" is BNC Receptacle      End "B" is MICRODOT Screw-On Plug with Locking Interface  
Part Number 143-0030-0001

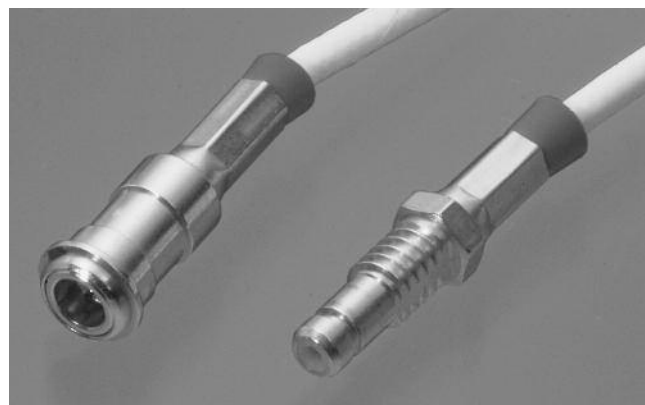


End "A" is BNC Receptacle      End "B" is MICRODOT Slide-On Receptacle  
Part Number 143-1003-0001

**MICRODOT LEPRA/CON Ultra-Miniature Connectors — Snap-Lock Series**

**Product Facts**

- Simple coupling design eliminates the need for tools and saves assembly time
- Positive locking mechanism provides its own fail-safe features
- Inspection of the mated connector is fast, simple and effective
- Push-Pull design allows higher panel density
- Quick-connect and disconnect features



2  
 RF Connectors

**Performance Data Summary**  
For Snap-Lock Connectors

**Electrical**

**Impedance** — Designed to be compatible with 50 Ohm coaxial cables (Dual Shield RG 196).

**Dielectric Withstanding Voltage** — 450 volts RMS at sea level (Operating).

**Contact Resistance** — 8 milliohms max. at 3 amps. Average resistance: 4 milliohms

**Insulation Resistance** — 10<sup>4</sup> megohms min.

**Voltage Standing Wave Ratio (VSWR)** — 3.4 max., 1.3 min. to 12 GHz.

**Environmental**

**Temperature Range** — -85°F to +257°F [-65°C to +125°C].

**Vibration** — MIL-STD-202, Method 204, Test condition D. No change in electrical discontinuity in excess of 1 microsecond.

**Shock** — MIL-STD-202, Method 213A, Test Condition C. No electrical discontinuity or evidence of physical damage.

**Mechanical**

**Cable Acceptance Dimensions** —

**Center conductor** — .012 [0.31] nom.

**Dielectric** — .040 [1.02] max.

**Shield** — .080 [2.03] max.

**Jacket** — .090 [2.29] max..

**All-Crimp Assembly** —

Center contacts and shield are crimped individually.

**Durability** — 500 mating cycles.

**Materials**

**Body and Body Components** — Brass per QQ-B-626 Comp 360.

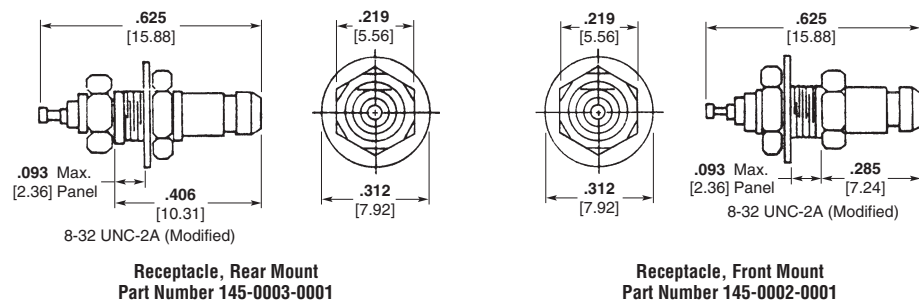
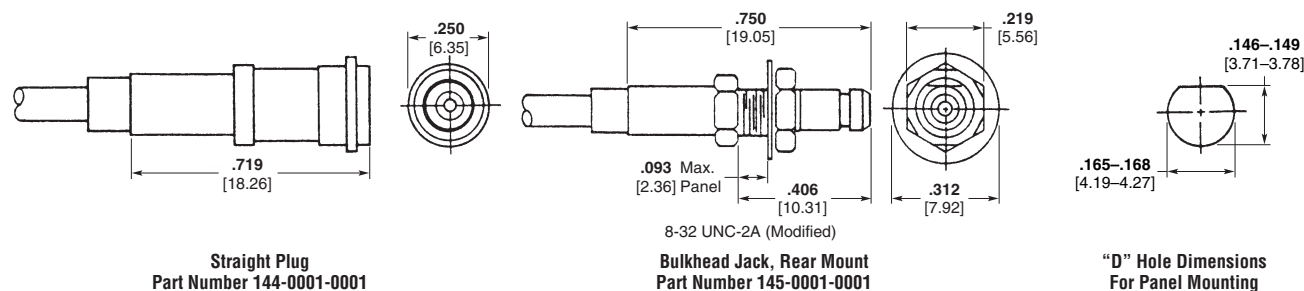
**Contact Material** — Copper Alloy.

**Crimp Sleeves** — Leaded Copper.

**Insulators** — PTFE per ASTM-D-1710.

**Lockwashers** — #425 Bronze Alloy.

**Plating** — Gold per MIL-G-45204, Type II, Grade C, Class 1.



**Connector/Cable Assembly Crimp Tools — Center Contact and Shield**

Tool	Part No.
SKT & Pin Crimp	010-1004-0000
Housing Crimp	010-0081-0000

**MICRODOT Cable Assemblies**

**Capability**

The experience TE Connectivity has gained through years of pioneering efforts in the development of MICRODOT miniaturized cable and connectors is available to customers in the assembly of complex cable/connector combinations. This experience offers the customer low cost and

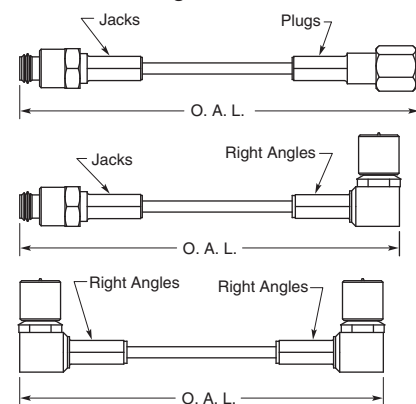
no tooling charges, precision construction, thorough inspection and prompt delivery. The capability also makes it possible for the designer to specify a complete assembly or harness with the understanding that TE will deliver a custom fabrication equal in quality to the MICRODOT compo-

nents it contains. These assemblies are made to the customer's specifications or are designed by the Company's experienced engineers to fit particular requirements. Special features are light weight, reduced size, high operating temperatures and comprehensive layouts.

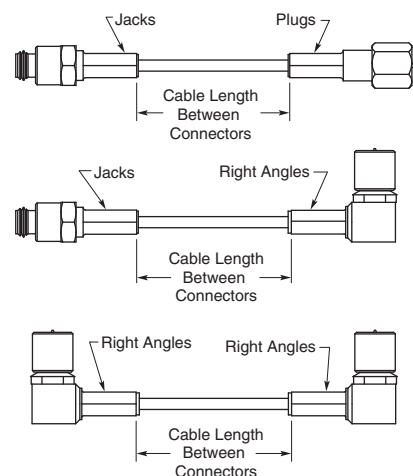
**How To Order**

1. Specify MICRODOT part numbers
  - A. Connector, one end
  - B. Connector, other end
  - C. Cable

2. Specify normal length
  - A. Overall length



- B. Or length between connectors



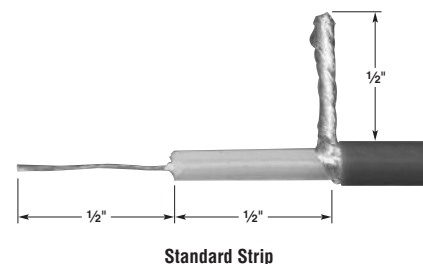
3. Specify length tolerance
  - A. Standard tolerance

Assembly Length	Tolerance
0 thru 12-1/2"	±1/8"
Over 12-1/2" thru 1000"	±1% rounded to nearest 1/4"
Over 1000"	±1% rounded to nearest 1"

- B. Special tolerance
 Tolerances as close as ±.5% are available for most cable assemblies at a premium rate. Consult TE Connectivity for details.

4. Specify cable strip (Applies to cable assemblies with only one connector)

- A. Not stripped
  - B. Standard strip



- C. Special strip - specify style

Example:

Connector:  
 142-1000-0001 one end  
 142-1002-0001 other end

Length:  
 36" overall, standard tolerance



**MICRODOT Cable Assemblies** (Continued)

**Mating Interface Chart**

Plugs			Jacks and Receptacles		
Series	Description	Page	Series	Description	Page
S50	Standard	2-105, 2-106	S50	Standard	2-107, 2-108
50 Ohm	Gold Plated Crimp Style	2-124, 2-125	50 Ohm	Gold Plated Crimp Style	2-126, 2-127
50 Ohm	Cap	2-120	50 Ohm	Feed Thru Adapter	2-121, 2-122
S70	Standard	2-105, 2-106	S70	Standard	2-107, 2-108
70 Ohm	Gold Plated Crimp Style	2-124, 2-125	70 Ohm	Gold Plated Crimp Style	2-126, 2-127
70 Ohm	Cap	2-120	70 Ohm	Feed Thru Adapter	2-121, 2-122
S93	Standard	2-105, 2-106	S93	Standard	2-107, 2-109
93 Ohm	Gold Plated Crimp Style	2-125	93 Ohm	Gold Plated Crimp Style	2-126, 2-127
93 Ohm	Cap	2-120	93 Ohm	Feed Thru Adapter	2-121, 2-122
SOS 50	Standard	2-110, 2-111	SOS 50	Standard	2-110, 2-113
SOS 70	Standard	2-111, 2-112	SOS 70	Standard	2-112, 2-113
SOS 93	Standard	2-111, 2-112	SOS 93	Standard	2-112, 2-113
QC 50	Standard	2-114, 2-115	QC 50	Standard	2-114
QC 70	Standard	2-115	QC 70	Standard	2-114
QC 93	Standard	2-115	QC 93	Standard	2-114
Screw-On	Twinax	2-117	Screw-On	Twinax	2-117
Slide-On	Twinax	2-117	Slide-On	Twinax	2-117
Screw-On	Triax	2-118	Screw-On	Triax	2-118
Screw-On	LEPRA/CON Connector	2-129	Screw-On	LEPRA/CON Connector	2-129, 2-130
Screw-On	LEPRA/CON Connector Interlocking Interface	2-131	Screw-On	LEPRA/CON Connector Interlocking Interface	2-132
Slide-On	LEPRA/CON Connector	2-133	Slide-On	LEPRA/CON Connector	2-133, 201



RF Connectors

**MICRODOT Cable Acceptance Dimensions**

**Standard Connectors**

**Screw-On Series**

Straight Plugs — Page 2-105

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Max. Inner Conductor
<b>S-50</b>				
032-0021-0001	.087 2.21	.061 1.55	.050 1.27	.013 .330
032-0023-0001	.087 2.21	.061 1.55	.041 1.04	.015 .381
032-0025-0001	.093 2.36	.068 1.73	.050 1.27	.013 .330
032-0033-0001	.093 2.36	.077 1.96	.047 1.00	.015 .381
032-0097-0001	.087 2.21	.061 1.55	.050 1.27	.015 .381
032-0098-0001	.087 2.21	.061 1.55	.041 1.04	.015 .381
032-0155-0001	.088 2.24	.061 1.55	.041 1.04	.015 .381
032-0156-0001	.088 2.24	.061 1.55	.041 1.04	.015 .381
052-0213-0001	.087 2.21	.061 1.55	.050 1.27	.013 .330
052-0235-0001	.087 2.21	.061 1.55	.041 1.04	.015 .381
052-0235-0003	.087 2.21	.061 1.55	.041 1.04	.015 .381
052-0370-0001	.093 2.36	.068 1.73	.041 1.04	.015 .381
052-0542-0001	.087 2.21	.061 1.55	.041 1.04	.015 .381
<b>S-70</b>				
032-0010-0001	.093 2.36	.075 1.91	.061 1.55	.013 .330
032-0022-0001	.093 2.36	.075 1.91	.059 1.50	.015 .381
032-0067-0001	.108 2.74	.079 2.01	.059 1.50	.015 .381
032-0078-0001	.108 2.74	.079 2.01	.061 1.55	.013 .330
032-0222-0001	.093 2.36	.075 1.91	.059 1.50	.015 .381
052-0092-0001	.093 2.36	.075 1.91	.059 1.50	.015 .381
<b>S-93</b>				
032-0011-0001	.134 3.40	.118 2.99	.100 2.54	.013 .330
032-0017-0001	.134 3.40	.118 2.99	.100 2.54	.015 .381
032-0066-0001	.154 3.91	.118 2.99	.101 2.67	.015 .381
032-0071-0001	.134 3.40	.118 2.99	.097 2.446	.031 .787
032-0092-0001	.155 3.94	.125 3.18	.107 2.72	.015 .381
032-0099-0001	.134 3.40	.118 2.99	.100 2.54	.015 .381
052-0200-0001	.134 3.40	.118 2.99	.100 2.54	.015 .381

**MICRODOT Cable Acceptance Dimensions** (Continued)

**Screw-On Series** (Continued)  
**Right-Angle Plugs** — Page 2-106

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Nom. Inner Conductor
<b>S-50</b>				
032-0015-0001	.092 2.34	.060 1.52	Any	.012 .305
052-0204-0001	.092 2.34	.060 1.52	Any	.012 .305
052-0215-0001	.092 2.34	.060 1.52	Any	.012 .305
052-0337-0001	.111 2.81	.074 1.88	Any	.012 .305
<b>S-70</b>				
032-0013-0001	.111 2.81	.074 1.88	Any	.012 .305
052-0299-0001	.111 2.81	.074 1.88	Any	.012 .305
052-0379-0001	.111 2.81	.074 1.88	Any	.012 .305
<b>S-93</b>				
032-0014-0001	.134 3.40	.123 3.12	Any	.012 .305
032-0068-0001	.155 3.94	.118 2.99	Any	.012 .305
032-0153-0001	.155 3.94	.118 2.99	Any	.012 .305
052-0207-0001	.134 3.40	.123 3.12	Any	.012 .305
052-0298-0001	.134 3.40	.123 3.12	Any	.012 .305
052-0304-0022	.155 3.94	.118 2.99	Any	.012 .305

**Jacks** — Page 2-107

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Max. Inner Conductor
<b>S-50</b>				
031-0033-0001	.088 2.24	.061 1.55	.041 1.04	.021 .533
031-0034-0001	.087 2.21	.061 1.55	.041 1.04	.021 .533
051-0467-0001	.079 2.01	.061 1.55	.041 1.04	.021 .533
<b>S-70</b>				
031-0036-0001	.093 2.36	.075 1.91	.059 1.50	.021 .533
031-0048-0001	.093 2.36	.075 1.91	.059 1.50	.021 .533
031-0090-0001	.109 2.77	.079 2.01	.059 1.50	.021 .533
<b>S-93</b>				
031-0032-0001	.134 3.40	.118 2.99	.100 2.54	.021 .533
031-0037-0001	.134 3.40	.118 2.99	.100 2.54	.021 .533
031-0088-0001	.154 3.91	.118 2.99	.101 2.57	.021 .533
031-0089-0001	.154 3.91	.118 2.99	.101 2.57	.021 .533

**2**  
 RF Connectors

**MICRODOT Cable Acceptance Dimensions** (Continued)

**Slide-On Series**

**Straight Plugs** — Page 2-111

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Max. Inner Conductor
<b>SOS-50</b>				
032-0055-0001	.088 2.24	.058 1.47	.041 1.04	.015 .381
032-0056-0001	.088 2.24	.058 1.47	.041 1.04	.015 .381
<b>SOS-70</b>				
032-0060-0001	.093 2.36	.075 1.71	.059 1.50	.015 .381
032-0061-0001	.093 2.36	.075 1.71	.059 1.50	.015 .381
032-0087-0001	.108 2.74	.079 2.01	.059 1.50	.015 .381
<b>SOS-93</b>				
032-0058-0001	.134 3.40	.118 2.99	.100 2.54	.015 .381
032-0077-0001	.134 3.40	.118 2.99	.100 2.54	.015 .381
032-0084-0001	.154 3.91	.118 2.99	.101 2.57	.015 .381

**Right-Angle Plugs** — Page 2-112

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Nom. Inner Conductor
<b>SOS-50</b>				
032-0063-0001	.092 2.34	.060 1.52	Any	.012 .305
<b>SOS-70</b>				
032-0062-0001	.111 2.82	.074 1.88	Any	.012 .305
<b>SOS-93</b>				
032-0059-0001	.134 3.40	.123 3.12	Any	.012 .305
032-0083-0001	.155 3.94	.118 2.99	Any	.012 .305

**Jacks** — Page 2-112

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Max. Inner Conductor
<b>SOS-50</b>				
031-0053-0001	.088 2.24	.061 1.55	.041 1.04	.021 .533
031-0054-0001	.088 2.24	.061 1.55	.041 1.04	.021 .533
<b>SOS-70</b>				
031-0095-0001	.108 2.74	.079 2.01	.059 1.50	.021 .533
<b>SOS-93</b>				
031-0063-0001	.134 3.40	.118 2.99	.100 2.54	.021 .533
031-0064-0001	.134 3.40	.118 2.99	.100 2.54	.021 .533
031-0093-0001	.154 3.91	.118 2.99	.101 2.57	.021 .533
031-0094-0001	.154 3.91	.118 2.99	.101 2.57	.021 .533

**Quick-Connect Series**  
Straight Plugs — Page 2-115

**MICRODOT Cable Acceptance Dimensions** (Continued)

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Max. Inner Conductor
<b>QC-50</b>				
032-0002-0001	.093 2.36	.058 1.47	Any	.013 .330
032-0030-0001	.093 2.36	.058 1.47	.041 1.04	.015 .381
<b>QC-70</b>				
032-0016-0001	.093 2.36	.075 1.91	.061 1.55	.013 .330
032-0031-0001	.093 2.36	.075 1.71	.059 1.50	.015 .381
032-0079-0001	.108 2.74	.079 2.01	.059 1.50	.015 .381
<b>QC-93</b>				
032-0012-0001	.134 3.40	.118 2.99	.100 2.54	.013 .330
032-0032-0001	.134 3.40	.118 2.99	.100 2.54	.015 .381
032-0072-0001	.154 3.91	.118 2.99	.101 2.57	.015 .381

**Right-Angle Plugs** — Page 2-115

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Nom. Inner Conductor
<b>QC-50</b>				
032-0026-0001	.092 2.34	.060 1.52	Any	.012 .305
<b>QC-70</b>				
032-0027-0001	.111 2.82	.074 1.88	Any	.012 .305
<b>QC-93</b>				
032-0020-0001	.134 5.40	.123 3.12	Any	.012 .305
052-0228-0001	.155 3.94	.118 2.99	Any	.012 .305

**Jacks** — Page 2-116

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Max. Inner Conductor
<b>QC-50</b>				
031-0038-0001	.093 2.36	.061 1.55	.041 1.04	.021 .533
<b>QC-93</b>				
031-0040-0001	.134 3.40	.118 2.99	.100 2.54	.021 .533

**Twinax Plugs** — Page 2-117

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Max. Inner Conductor
032-0088-0001	.167 4.24	.142 3.60	.061 1.55	.014 .356
032-0093-0001	.123 3.12	.092 2.34	.042 1.07	.014 .356
052-0229-0001	.123 3.12	.092 2.34	.042 1.07	.014 .356
052-0324-0001	.167 4.24	.142 3.61	.061 1.55	.014 .356

**Jacks** — Page 2-117

Connector Part No.	Max. Jacket	Max. Shield	Max. Dielectric	Max. Inner Conductor
051-0358-0001	.167 4.24	.142 3.60	.061 1.55	.020 .508
051-0389-0001	.167 4.24	.142 3.61	.061 1.55	.020 .508

2  
 RF Connectors

**MICRODOT Cable Acceptance Dimensions** (Continued)

**Triax Plugs** — Page 2-118

Connector Part No.	Max. Jacket	Max. Outer Shield	Max. Outer Dielectric	Max. Inner Shield	Max. Inner Dielectric	Max. Inner Conductor
052-0130-0001	.124 3.15	Single Shield	.085 2.26	Single Shield	.041 1.04	.014 .356
052-0138-0001	.183 4.65	Single Shield	.146 3.71	.118 2.99	.107 2.72	.014 .356
052-0593-0001	.214 5.44	Single Shield	.166 4.22	.161 4.09	.131 3.33	.020 .508

**Gold Plated Crimp Style Coaxial Connectors**

**Straight Plugs** — Pages 2-124, 2-125

Connector Part No.	Max. Jacket	Max. Dielectric	Nom. Inner Conductor
<b>50 Ohm Series</b>			
132-0112-000*	.088 2.24	.039 .991	.012 .305
132-0113-000*	.088 2.24	.039 .991	.012 .305
132-0114-000*	.110 2.79	.070 1.78	.012 .305
132-0115-000*	.110 2.79	.070 1.78	.012 .305
132-0509-0002	.116 2.95	.070 1.78	.012 .305
<b>70 Ohm Series</b>			
132-0200-000*	.110 2.79	.070 1.78	.012 .305
132-0201-000*	.110 2.79	.070 1.78	.012 .305
<b>93 Ohm Series</b>			
132-0300-000*	.155 3.94	.107 2.72	.012 .305
132-0301-000*	.155 3.94	.107 2.72	.012 .305

**Right-Angle Plugs** — Page 2-125

Connector Part No.	Max. Jacket	Max. Dielectric	Nom. Inner Conductor
<b>50 Ohm Series</b>			
132-0116-0002	.088 2.24	.039 .991	.012 .305
132-0117-0002	.088 2.24	.039 .991	.012 .305
132-0118-0002	.110 2.79	.074 1.88	.012 .305
132-0119-0002	.110 2.79	.074 1.88	.012 .305
<b>70 Ohm Series</b>			
132-0202-0002	.110 2.79	.074 1.88	.012 .305
132-0203-0002	.110 2.79	.074 1.88	.012 .305
<b>93 Ohm Series</b>			
132-0302-0002	.155 3.94	.107 2.72	.012 .305
132-0303-0002	.155 3.94	.107 2.72	.012 .305



**MICRODOT Cable Acceptance Dimensions** (Continued)

**Gold Plated Crimp Style Coaxial Connectors** (Continued)  
**Jacks** — Page 2-126

Connector Part No.	Max. Jacket	Max. Dielectric	Nom. Inner Conductor
<b>50 Ohm Series</b>			
131-0134-0001	.088 2.24	.039 .991	.012 .305
131-0135-0001	.088 2.24	.039 .991	.012 .305
131-0136-0001	.110 2.79	.070 1.78	.012 .305
131-0137-0001	.110 2.79	.070 1.78	.012 .305
<b>70 Ohm Series</b>			
131-0200-0001	.110 2.79	.070 1.78	.012 .305
131-0201-0001	.110 2.79	.070 1.78	.012 .305
<b>93 Ohm Series</b>			
131-0300-0001	.155 3.94	.107 2.72	.012 .305
131-0301-0001	.155 3.94	.107 2.72	.012 .305

**LEPRA/CON Connectors**  
**All** — Pages 2-129 to 2-137

Connector Part No.	Max. Jacket	Max. Dielectric	Nom. Inner Conductor
All	.081 2.06	.040 1.02	.012 .305

**2**  
 RF Connectors

**MICRODOT Hermetic Connectors**

**Coaxial Screw-On,  
Slide-On Series**



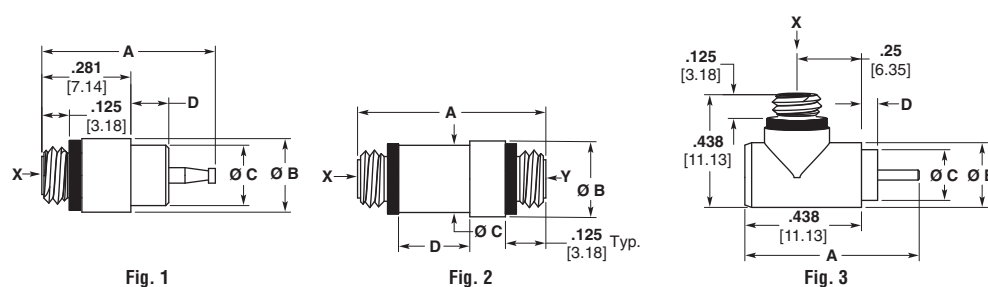
**Material and Finish**

50 Connector uses 10-32 thread.  
 70 Connector uses 12-32 thread.  
 93 Connector uses 1/4-32 thread.  
**Housing (1)** — Cold rolled steel silver plate.  
**Gasket (2)** — Neoprene or silicone rubber.  
**Insulator (3)** — PTFE.  
**Glass Seal (4)**  
**Center Contact (5)** — Nickel Iron alloy contact with slotted turret type solder pot (other terminations available).

**Service and Performance Data**

**Temperature Range** — -65°F to 450°F [-54°C to 232°C].  
**Electrical** — 750 VAC working voltage.  
**Performance** — 1200 VAC test at sea level.  
**Insulation Resistance** — 5000 megohms at 500 VDC (room temperature).  
**Shock** — 100 G's minimum.  
**Pressure** — 100 PSI minimum.  
**Leak Rate Per Seal** — Less than 1.04 x 10<sup>-6</sup> cc/sec. (.001 Micron cubic ft/hr) of 100% helium tested at one atmosphere pressure differential far exceeding requirements of MIL-C-26500 and MIL-C-26482.  
**Plating** — Silver unless otherwise specified.

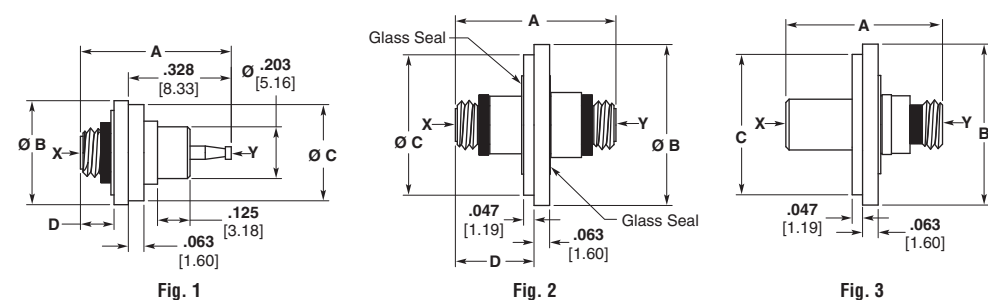
**Bulkhead Solder Mount**



Part No.	Fig.	A	B Dia.	C Dia. ±.015	D	X*	Y*
051-0049-0001	1	.563 14.30	.25 6.35	.200 5.08	.125 3.18	S-50	—
051-0056-0001	1	.563 14.30	.313 7.95	.251 6.38	.125 3.18	S-93	—
053-0228-0001	2	.594 15.09	.25 6.35	.227 5.77	.234 5.94	S-50	S-50
051-0315-0001	3	.656 16.66	.25 6.35	.195 4.95	.063 1.60	S-50	—

\* "S" indicates Screw-On Series  
 Dimensions are subject to change without notice.

**Bulkhead Solder Mount,  
Panel Insulated**



Part No.	Fig.	A	B Dia.	C Dia.	D	X*	Y*
051-0232-0001	1	.563 14.30	.406 10.31	.370 9.40	.172 4.37	S-50	—
053-0227-0001	2	.609 15.47	.625 15.88	.540 13.72	.297 7.54	S-50	S-50
053-0412-0001	2	.609 15.47	.625 15.88	.540 13.72	.297 7.54	S-93	S-93
053-0028-0001	3	.609 15.47	.625 15.88	.540 13.72	.297 7.54	SOS-50	S-50

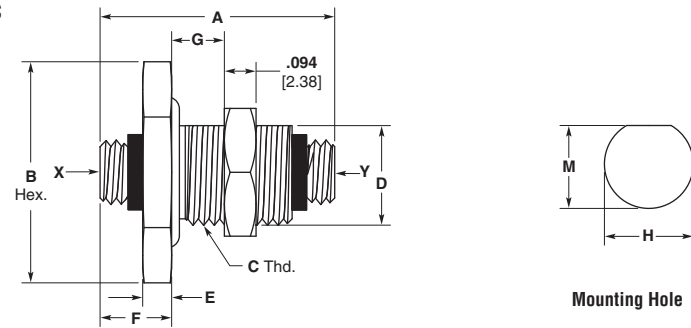
\* "S" indicates Screw-On Series; "SOS" indicates Slide-On Series  
 Dimensions are subject to change without notice.

**MICRODOT Hermetic Connectors** (Continued)

**Coaxial Screw-On, Slide-On Series**

(Continued)

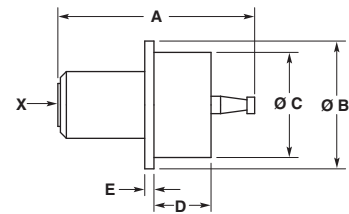
**Microminiature Coaxial Receptacles**



Part No.	A	B Hex.	C Thd.	D	E	F	G	H	M	X*	Y*
053-0455-0001	.688 17.46	.563 14.29	5/16-32 UNEF-2A	.297 7.54	.094 2.38	.203 5.16	.25 6.35	.312 7.92	.291 7.39	S-50	S-50
053-0636-0001	.922 23.42	.625 15.88	3/8-32 UNEF-2A	.344 8.73	.078 1.98	.203 5.16	.438 11.11	.375 9.53	.347 8.81	S-93	S-93

\* "S" indicates Screw-On Series  
Dimensions are subject to change without notice.

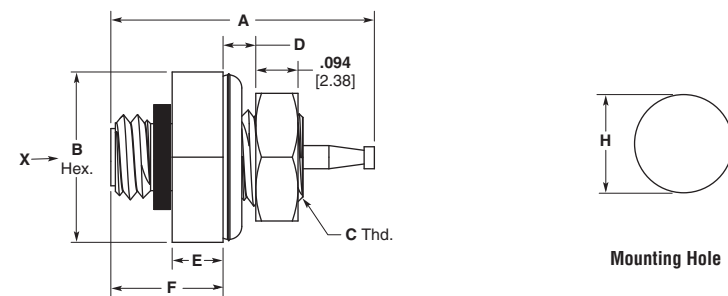
**Solder Mount Slide-On Series Receptacles**



Part No.	A	B Dia.	C Dia. ±.015	D	E	X*
051-0134-0001	.563 14.29	.375 9.53	.309 7.85	.172 4.37	.031 .794	SOS-50, 70, 93
051-0158-0001	.563 14.29	.25 6.35	.200 5.08	.125 3.18	.047 1.19	SOS-50, 70, 93

\* "SOS" indicates Slide-On Series  
Dimensions are subject to change without notice.

**Single Hole Mount Receptacles**



Part No.	A	B Hex.	C Thd.	D	E	F	H	X*
051-0249-0001	.563 14.29	.375 9.53	12-32 UNEF-2A	.078 1.98	.109 2.78	.234 5.95	.218 5.54	S-50
051-0154-0001	.656 16.67	.625 15.88	3/8-32 UNEF-2A	.156 3.97	.078 1.98	.203 5.16	.375 9.53	S-93

\* "S" indicates Screw-On Series  
Dimensions are subject to change without notice.

**2**

RF Connectors

**Appendix A - Theory and Application**

**Theory and Application**

As a leading manufacturer of RF products, TE Connectivity produces a large variety of coaxial connectors. The proper selection and application of these connectors requires a knowledge of factors not involved in other types of connectors and terminals. The following paragraphs have been prepared to improve understanding of the theory behind RF connectors:

**Basic RF Theory<sup>1</sup>**

RF energy travels by electromagnetic waves, and it is primarily the frequency of these waves that we are interested in. Briefly, if an oscillating voltage source is connected to a cable, a continuous electromagnetic wave will propagate along the cable. A sensor placed at some point on the cable would indicate a varying voltage (E field) as well as a current and magnetic field (H field) as the wave travels past it. This is called an electromagnetic wave because both electric and magnetic fields are varying. The wave shape is initially determined by the variation of the source with time.

Figure 7 shows the radiant energy spectrum. Visible light, radio, television, x-rays and Gamma rays are all phenomenon of electromagnetic waves at different frequencies. This introduction will treat only those that are generated by an electrical source and propagated along a physical cable or other transmission media. That is, frequencies above zero and up to about 50 gigahertz.

<sup>1</sup>The majority of the technical terms, relative to RF and coaxial cable and connectors, used here-in and throughout this catalog are defined in the Glossary of Terms in Section 11.

Frequency or Wavelengths	Designation	Applications
0 - 29.9 KHz	VLF (Very Low Frequency)	Commercial AC electricity, deep depth sounders, ultrasonic grinders, sonic oscillators
30 - 299.9 KHz	LF (Low sonar Frequency)	Shallow-to-medium depth sounders
300 - 2999.9 KHz	MF (Medium Frequency)	Commercial AM radio broadcasting, marine radio telephone, direction finders
3 - 29.9 MHz	HF (High Frequency)	Citizen band radio, amateur radio, international broadcasting
30 - 299.9 MHz	VHF (Very High Frequency)	VHF television (Channels 2 thru 13), commercial FM radio broadcasting, amateur radio, fire and police radio
300 - 2999.9 MHz	UHF (Ultra-high Frequency)	UHF television (Channels 14 thru 83), microwave ovens, aeronautical radionavigation
3 - 29.9 GHz	SHF (Super High Frequency)	Microwave communications, marine radar, aircraft tracking and airborne radars
30 - 299.9 GHz	EHF (Extremely High Frequency)	Space communications, radio astronomy

- Notes:**  
 1. KHz = Kilohertz (1 thousand cycles per second)  
 2. MHz = Megahertz (1 million cycles per second)  
 3. GHz = Gigahertz (1 billion cycles per second)

Figure 7

**Radiant Energy Spectrum**

In the following paragraphs we will discuss waves in greater detail, including the relationship of frequency and wave length, how pulses are formed and used, how each differs from the other and the problems involved in their transmission.

**Sine Waves**

An RF wave is a sine wave, meaning that it smoothly swings from zero to a positive peak value, then back down past zero to a negative peak value, then back to zero to complete a 360 electrical degree cycle. The positive and negative peaks are always equal in amplitude. The two qualities which characterize this type of wave are amplitude and frequency (f). Figure 8 shows these two characteristics. Amplitude refers to the peak value attained by the wave and corresponds to voltage. Frequency refers to the number of oscillations per second. For example, the sign wave in Figure 8(B) has completed 12 cycles in one second. Therefore, we would say that this wave has a frequency of 12 cycles per second or 12 Hertz. The time for one complete cycle is defined as the period (T). The relationship between the period and frequency is given by the equation:

$$f = 1 / T \text{ in Hertz}$$

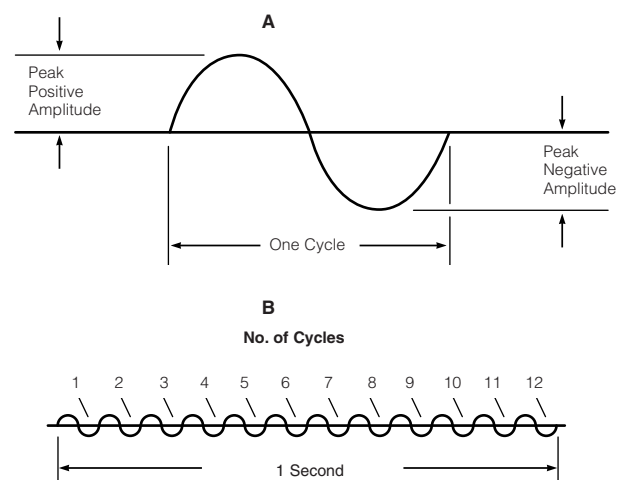


Figure 8

**Typical Sine Wave Characteristics**

The wave travels away from the generator at speeds approaching the speed of light. When an electromagnetic wave travels in a medium other than air or vacuum, the **speed** for the wave is reduced by a factor of the square root of the dielectric constant (ε). The velocity (v) of the propagation of a signal is given by:

$$v = \frac{c}{\sqrt{\epsilon}}$$

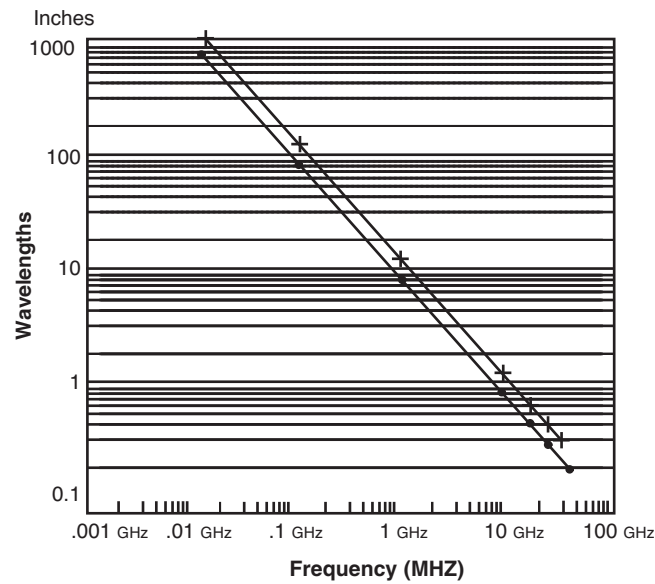
Where c is the speed of light, 3 x 10<sup>8</sup> m/sec or 1.18 x 10<sup>10</sup> in/sec, and ε is the dielectric constant of the medium. (See Table 1 for dielectric constants of various materials)

The **wavelength** of a signal is given by the formula

$$\lambda = v/f = \frac{c}{\sqrt{\epsilon} \times f \text{ (GHz)}} = \frac{1.18 \times 10^{10}}{\sqrt{\epsilon} \times f \text{ (GHz)}} \text{ inches}$$

See Figure 9

Appendix A - Theory and Application (Continued)



Notice that rise time is the time required for the pulse to rise from 10% to 90% of its amplitude — not from zero to maximum. Rise and fall time is perhaps the single most important characteristic of a pulse in today's high-speed digital equipment. Figure 11 shows that the faster the rise and fall time, the more pulses will fit in a given time frame.

2

RF Connectors

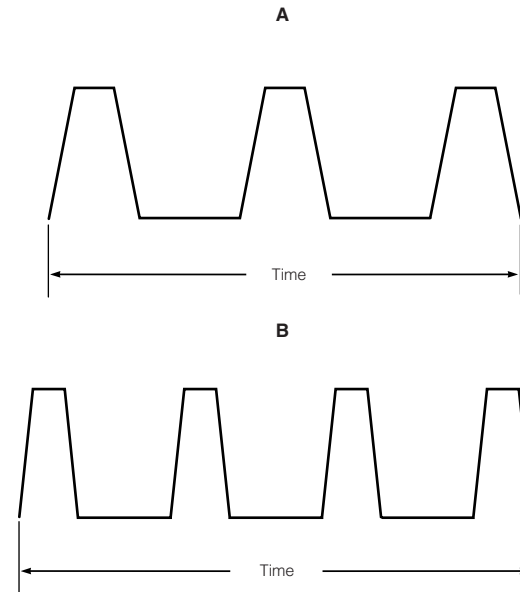


Figure 11

Pulse Rise and Fall Time

Properties of Insulating Materials

Dielectric Material	Dielectric Constant	Operating Temperature Range
TFE	2.03	-70 +250°C
Polyethylene	2.3	-60 +80°C
Nylon	4.6-4.0	-40 +120°C
TPX	2.12	-65 +85°C
Polypropylene	2.25	-40 +105°C
Acetal	3.7	-65 +85°C

Pulses

The sine wave is most often used for communication purposes where intelligence is imposed on the wave by a variation in amplitude (amplitude modulation, AM) or by a variation in frequency (frequency modulation, FM).

Pulses, on the other hand, are primarily used in computers and digital instrumentation. Since pulses are generally used for triggering purposes, the pulse rise/fall time, amplitude and width are the most important. Figure 10 shows a pulse and identifies these characteristics.

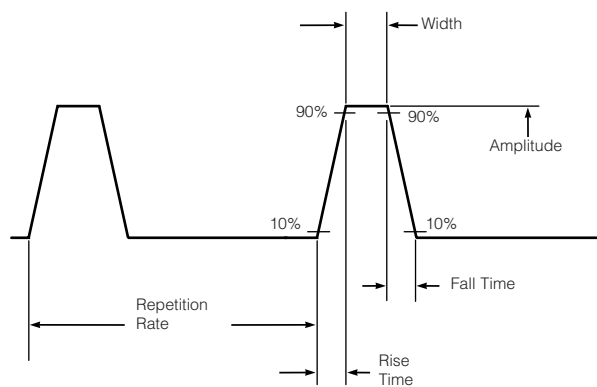


Figure 10

Pulse Characteristics

The bit rate for a system is the maximum rate of pulses per second that a system can process without causing data errors. The maximum performance can also be specified in terms of baud rate. The baud rate is defined as the number of characters (bytes) that are transmitted per second. Generally a character represents 10 bits (7 bits for the information, one parity bit, and two for start and stop, totalling 10).

Now that we know why fast pulses are required, the next problem is how to obtain faster rise times. A pulse is made up of a great number of different frequencies, and the more high frequencies a pulse contains, the faster will be its rise time and the flatter will be its peak. To better understand this, refer to Figure 12. At A, you will see a fundamental frequency (1), its third harmonic (3), and the resultant waveform (S3), which is a combination of 1 and 3. Although this does not yet resemble a square wave, you will note that the rise time is decreased, and a dip appears at the peak. At B of Figure 12, we have added the fifth harmonic. Rise time is further decreased, and the peak is beginning to flatten out. At C the seventh harmonic has been included, and the resultant wave S7 begins to resemble a square wave. As more high frequency harmonics are added to the waveform, it will more closely resemble a square wave, and the squarer it becomes, the faster will be the rise time.

**Appendix A - Theory and Application** (Continued)

Fast rise times and short pulse widths require high frequency components.

Two frequent causes of digital signal degradation can be (1) high capacitance of the transmission line and (2) impedance mismatches of connector transmission line or I/O devices. Selection of an impedance-matched connector on a digital line, especially if short cable assemblies are used, can be as important as connector selection for an RF modulated line. **Reflected pulses out of phase with the original pulse can cause false signals or high error rates in a digital system.**

Since pulses with fast rise times are necessary in high-speed computers, any circuit element which could reduce or attenuate high frequency response is undesirable.

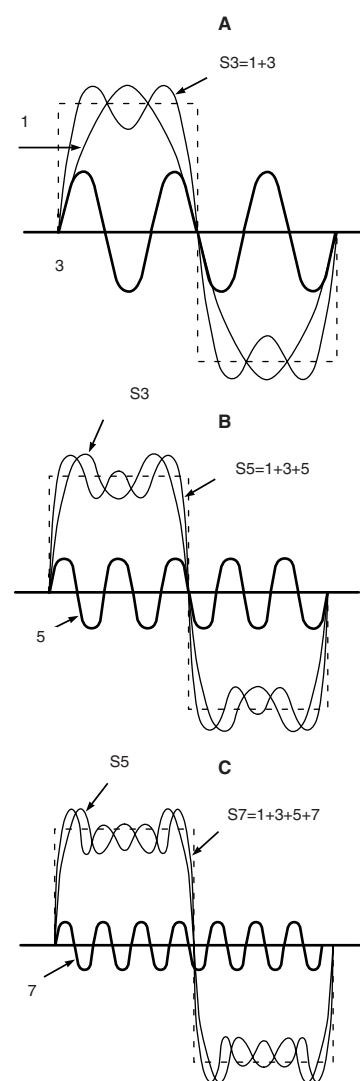


Figure 12

**Development of a Square Wave**
**Signal Integrity and Propagation**

To explain how to maintain signal integrity, it is necessary to review how the signal is configured in a cable and how it propagates. Ignoring digital signals for this discussion we will identify the issues that deal with the integrity of a sine wave. Consider a coaxial cable consisting of an inner conductor surrounded by a dielectric material and then an outer conductor (See Figure 13). The outer conductor may be a braid, a foil, or a solid metal.

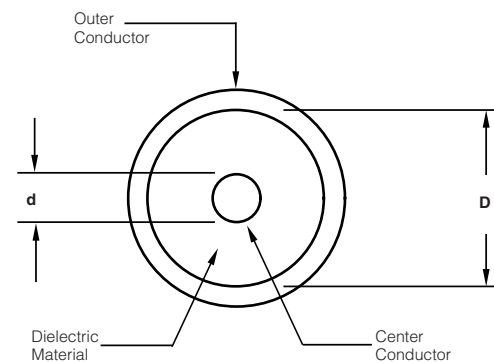


Figure 13

**Diagram of a Cable**

An electromagnetic wave traveling in a coaxial cable produces an electric and a magnetic field between the inner conductor and the outer conductor (Figure 14). The electric (E field) is radial and varies in time. An alternating current flows along the inner conductor and the outer conductor. An oscillating magnetic field (H field) circles the inner conductor.

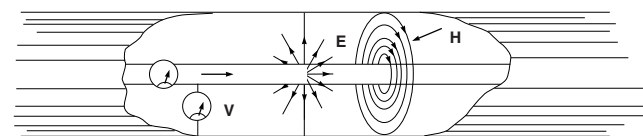


Figure 14

**Electric field (E) and magnetic field (H) belonging to the principal mode in a coaxial line.**

The alternating current on a conductor is not spread throughout the conductor but is strongest at the surface and decays exponentially at points further into the conductor. This is called the skin effect. At a frequency of 1MHz, three skin depths is 0.0078" (95% of the current is within three skin depths of the surface) and at 10GHz three skin depths is 0.00078". As a result, the current is on the outer surface of the inner conductor and the inner surface of the outer conductor over the entire range of interest for most RF systems. The dimensions and material beyond several skin depths have no effect on the wave; gold plated plastic will propagate as well as gold plated copper at sufficiently high frequencies.



**Appendix A - Theory and Application** (Continued)

**Attenuation**

A wave loses energy (attenuates) in several ways: (1) The resistance of the inner and outer conductors is small but can be significant over long lengths and will produce some heat. (2) The dielectric may be lossy; its resistance is high but not infinite, and some energy is lost. (3) Electromagnetic energy radiates at high frequencies; significant energy losses are caused by radiation of electromagnetic energy (the cable acts like an antenna). (4) Energy is reflected due to impedance mismatches. The combination of these four types of losses are referred to as the **insertion loss** of a transmission line system. Connectors have similar losses.

**Characteristic Impedance**

A parameter which defines the behavior of a cable, connector, or any propagating system is **Characteristic Impedance**,  $Z_0$ . The characteristic impedance of a lossless cable is related to the inductance per unit length,  $L$ , and the capacitance per unit length,  $C$ , as follows:

$$Z_0 = \sqrt{L/C} \text{ in ohms}$$

The equivalent circuit of a transmission line is shown in Figure 15.  $R$  represents the conductor resistance for a unit length.

For a coaxial cable the characteristic impedance is given by:

$$Z_0 = \frac{138}{\sqrt{\epsilon}} \times \log_{10} \frac{D}{d} \text{ in ohms}$$

where  $D$  is the inner diameter of the outer conductor and  $d$  is the outer diameter of the inner conductor, respectively. Similar equations apply for other geometries such as two parallel wires.

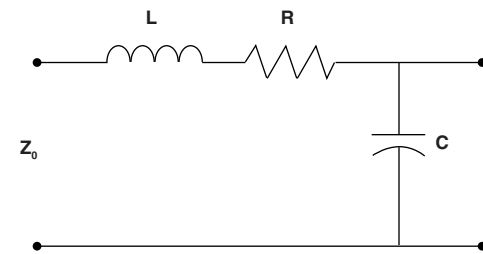


Figure 15

**Typical Transmission Line Schematic**

The maximum power is transferred between two systems if they have the same impedance. This is called impedance matching. However, impedance variations that are short compared to a wavelength can have a negligible effect on signal loss.

Standard impedances are 50 ohm, 75 ohm and 93-125 ohm. Most systems use 50 ohm because it is a compromise between maximum power transmission and minimum line loss. The telephone industry and the broadcast industry use 75 ohm for minimum line attenuation. The need for low capacitance instrumentation cable has produced the 93-125 ohm systems. The higher impedances are generally achieved by changing the conductor diameters and by modifying the dielectric material to add air.

**Reflections**

When the characteristic impedance changes in a transmission line system, part of an incident wave is reflected. The reflection coefficient can be calculated as:

$$\text{Reflection Coefficient} = \rho = \frac{V_i}{V_R} = \frac{Z_R - Z_0}{Z_R + Z_0}$$

Where  $V_i$  and  $Z_0$  are the incident voltage and impedance of the first media.  $V_R$  and  $Z_R$  represent the reflected voltage and impedance of the media that caused the reflection. The decibel loss due to reflection is given by:

$$\text{Return Loss} = 10 \log_{10} \left( \frac{1}{1 - \rho^2} \right) \text{ dB}$$

**VSWR**

The traditional way to determine the reflection coefficient is to measure the standing wave caused by the superposition of the incident wave and the reflected wave. Traditionally the voltage is measured at a series of points using a slotted line. The ratio of the maximum divided by the minimum is the Voltage Standing Wave Ratio (VSWR). The VSWR is infinite for total reflections because the minimum voltage is zero. If no reflection occurs the VSWR is 1.0. VSWR and reflection coefficient are related as follows:

$$\text{VSWR} = (1 + \rho)/(1 - \rho)$$

Most present instrumentation measures the reflection coefficient and calculates the VSWR.

Figure 16 represents the direct relationship between VSWR and its equivalent in return loss (expressed in dB).

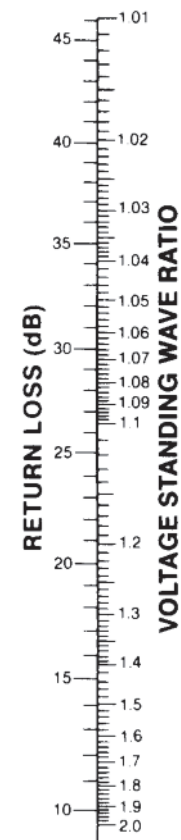


Figure 16

**VSWR vs. Return Loss**
**Multiple Reflections**

If there is a series of impedance changes, each one will have a reflection coefficient. The total reflection coefficient is the vector addition of each of the individual coefficients accounting for the distance between reflections and the reflection of any reflected waves. Even though the calculations are difficult, a total VSWR can still be measured.

Multiple reflections can produce a resonance phenomenon that is unique to wave theory. Properly understood some serious difficulties can be avoided. An example will make the point clear. Consider an electromagnetic wave with a wave-



**Appendix A - Theory and Application** (Continued)

length of 4 inches traveling on a cable that changes from 50 ohms to 25 ohms. The reflection coefficient is -.33, which means that one third of the incident voltage is reflected toward the source. Assume that one inch (one quarter wave-length) down the cable the impedance changes back to 50 ohm. Again, one third of the wave is reflected, but without any phase shift. It travels back to the first interface where one third of this reflected wave is reflected back toward the second interface. Two thirds of the wave is transmitted through the interface and travels back to the source. Since the first (reflected) wave is shifted 180 degrees at the reflection, and the second (transmitted-reflected-transmitted) wave is shifted 180 degrees because it traveled the one inch separation twice, the two waves are in phase. The net result is that the VSWR is much larger because the length of the 25 ohm section was just the right length to cause a resonance. If the length of the 25 ohm section had been one half wave-length, the two waves would have interfered and the VSWR would be at a minimum.

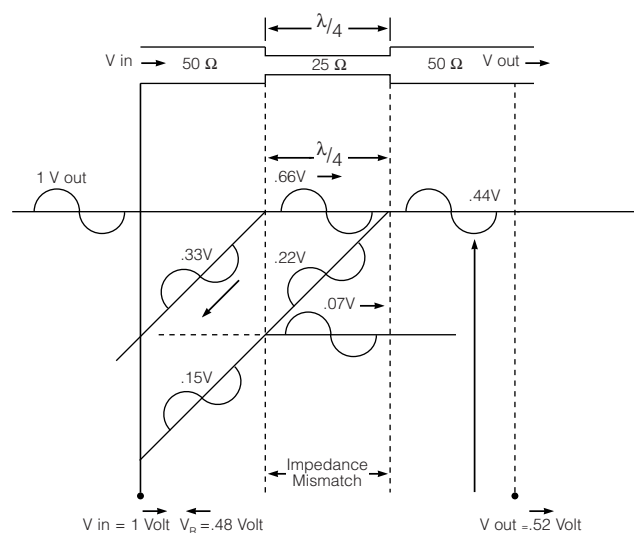


Figure 17

**Multiple Wave Reflections**  
 (Caused by Impedance Mismatch)

In summary, avoid cable lengths, printed circuit board paths, or connectors that are multiple of one quarter ( $\lambda/4$ ,  $3\lambda/4$ , etc.) of the intended signal transmission wavelength. Coaxial cables, when manufactured, also have periodic variations in diameter that result in periodic changes in impedance ( $Z_0$ ), that can cause significant levels of reflected signal (high return loss) at specific frequencies.

**Reflections of Digital Signals**

The previous discussions dealing with attenuation, reflections and standing waves can apply to digital signals with some extra thought.

A single pulse can be thought of as a combination of high frequency sine waves. The maximum frequency component in a square wave pulse can be calculated by this equation:

$$f = 0.35/\text{rise time}$$

where

$$f = \text{GHz when "t" is in nanoseconds}$$

Attenuation of the frequencies necessary to support the short risetime will produce a slower rise and possibly prohibit the pulse from ever reaching the detector. This 'slurring' of the pulse is similar to the behavior of an RC circuit and the attenuation is sometimes called capacitive attenuation.

A series of pulses can demonstrate resonance. If a portion of a pulse is reflected at each interface, it is possible for them to come together and add up to form a new phantom pulse.

The critical frequency here is the bit rate. Think of a sine wave with a frequency the same as the bit rate; if it will resonate in the cable, the pulses will also. Extra pulses caused by resonance might easily result in an error signal from the receiving system requesting a retransmission. The final result would be a communication system that is much slower than intended.

**Cut-off Frequency**

The cut-off frequency of a coaxial transmission line is the frequency at which modes of energy transmission, other than the "TEM" mode, can be generated.

$$f_{co} = \frac{7.5}{\sqrt{\epsilon}(D+d)} \text{ (in GHz)}$$

(D and d are measured in inches)

**Types of Transmission Lines**

**Twin Lead transmission cable** is generally used where impedance matching alone is important, since it provides only minimal shielding. Impedance values of 300 ohms and 600 ohms are common. Lower impedance values require closer spacing of the conductors and are not normally available in this type of cable. A typical application for twin lead cable is in antenna lead wire for television sets.

**Twisted Pair** is a variation of the twin lead type. It consists of two lengths of ordinary hookup wire twisted together. A twisted pair provides relatively constant impedance plus better magnetic shielding than twin lead cables. It is flexible, inexpensive, easy to terminate and is used extensively by the computer industry. However, it should not be used when maximum shielding is required.

Appendix A - Theory and Application (Continued)

**Shielded Twisted Pair Cable** is used to eliminate inductive and capacitive coupling. Twisting cancels out inductive coupling, while the shield eliminates capacitive coupling. Most applications for this cable are between equipment, racks and buildings.

**Flexible (Braided) Coaxial Cable** is by far the most common type of closed transmission line because of its flexibility. It is a coaxial cable, meaning that both the signal and the ground conductors are on the same center axis. The outer conductor is made from fine braided wire, hence the name "braided coaxial cable". This type of cable is used in practically all applications requiring complete shielding of the center conductor. The effectiveness of the shielding depends upon the weave of the braid and the number of braid layers. TE Connectivity manufactures connectors for cable sizes ranging from less than 1/8 in. diameter, for low power applications of around 50 watts, to over 1/2 in. diameter for power of 850 watts at 100 MHz and voltages up to 5000. In addition to power handling capabilities, cables are available for high frequency applications, high and low temperature applications, severe environmental applications and many other specialized uses.

**Triaxial Cable** is used when higher "shielding" efficiency characteristics are required in applications similar to those using shielded twisted pair cable.

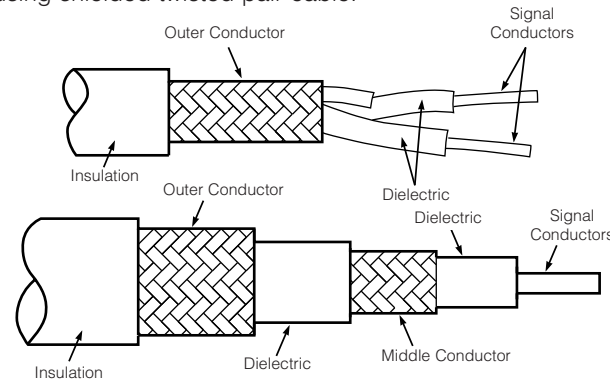


Figure 18

Twin Conductor and Triaxial Cable

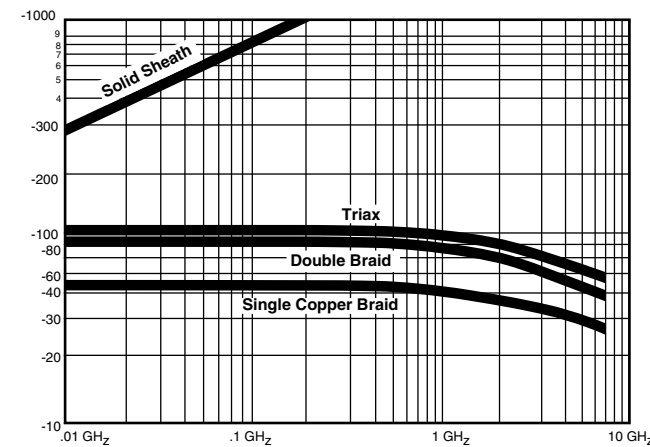


Figure 19

Shielding Efficiencies

Often you will hear the term "shielded cable". This is very similar to coaxial cable except the spacing between center conductor and shield is not carefully controlled during manufacture, resulting in non-constant impedance.

**Semi-rigid Coaxial Cable** uses a solid tubular outer conductor rather than the braided type, so that all the RF energy is contained within the cable. One of the drawbacks of braided cable is that the shielding is not 100% effective, especially at higher frequencies. This is because the braided construction can permit small amounts of short wavelength (high frequency) energy to radiate. Normally this does not present a problem; however, if a higher degree of shielding is required, semi-rigid coaxial cable is recommended. For applications using frequencies higher than 30 GHz a miniature semi-rigid cable is recommended. Various connectors are available from TE to terminate these cables.

**Ribbon Coaxial Cable** is a relatively recent TE innovation which combines the advantages of both ribbon cable and coaxial cable. TE currently provides both the cable and the insulation displacing coaxial connector to terminate the cable. Each individual coaxial cable consists of the signal conductor, dielectric, a foil shield and a drain wire which is in continuous contact with the foil. The entire assembly is then covered with an outer insulating jacket. The unique manufacturing feature of this cable is the precise placement of the drain wires to permit gang stripping of the outer jacket and foil. The major advantage of this cable is the speed and ease with which it can be mass terminated with the TE insulation displacement technique. They can also be separated into individual coaxial lines and terminated with standard coaxial connectors as required.

2

RF Connectors

**Appendix B - Typical Coaxial Cable Specifications**

**Abbreviations**

**Dielectric**

PE .....Solid polyethylene  
 PTEE .....Solid polytetrafluoroethylene  
 PIB .....Polyisobutylene, Type B, per MIL-C-17  
 Rubber .....Per MIL-C-17D  
 Sil .....Silicone rubber  
 PS .....Polystyrene

**Conductors and Braid Materials**

AL .....Aluminum  
 SCAAI .....Silver covered copper covered aluminum  
 BC.....Bare copper  
 SC.....Silver covered copper  
 CCS .....Copper covered steel  
 TC .....Tinned copper  
 SCCS.....Silver covered copper covered steel

SCCad Br.....Silver covered cadmium bronze  
 GS.....Galvanized steel  
 TCCS .....Tin copper covered steel  
 SSC .....Silver covered strip  
 HR.....High resistance wire  
 SA.....Silver covered alloy

**Jacket Material**

PVC-I.....Black polyvinylchloride, contaminating, Type I, per MIL-C-17D  
 PVC-II.....Gray polyvinylchloride, noncontaminating, Type II, per MIL-C-17D  
 PVC-IIA.....Black polyvinylchloride, noncontaminating, Type IIA, per MIL-C-17D  
 PE-III.....Clear polyethylene  
 PE-III A.....High molecular weight, black polyethylene, Type IIIA, per MIL-C-17D  
 FG Braid V .....Fiberglass, impregnated, Type V, per MIL-C-17D  
 FEP-IX .....Fluorinated ethylene propylene, Type IX, per MIL-C-17D  
 PUR .....Polyurethane, black specific compounds  
 SIL/DAC-VI.....Dacron braid over silicone rubber, Type VI, per MIL-C-17D  
 Rubber .....Per MIL-C-17D

RG/U Type Cable	Inner Conductor	Dielectric Material	DOD	Number/Type of Shielding Braids	Jacket Material	O.D.	Weight (lb/ft)	Nom. Imped. (Ohms)	Nom. Cap p/ft	Max. Operating Temp. (C°)	Max. Operating Voltage (Volts RMS)	Comments
8	2.17 .0855 7/0.72 BC .0285	PE	7.24 .285	1/BC	PVC-I	10.29 .405	.106	52	29.5	-40 +80	4000	Use RG213
8A	2.17 .0855 7/0.72 BC .0285	PE	7.24 .285	.285 1/BC	PVC-IIA	10.29 .405	.106	52	29.5	-40 +80	5000	Use RG213
9	2.17 .0855 7/0.72 SC .0285	PE	7.11 .280	2/Inner SC Outer BC	PVC-II	10.67 .420	.140	51	30.0	-40 +80	4000	Use RG214
9A	2.17 .0855 7/0.72 SC .0285	PE	7.11 .280	2/SC	PVC-II	10.67 .420	.140	51	30.0	-40 +80	4000	Use RG214
9B	2.17 .0855 7/0.72 SC .0285	PE	7.11 .280	2/SC	PVC-IIA	10.67 .420	.150	50	30.8	-40 +80	5000	Use RG214
11	1.21 .0477 7/0.4 TC .0159	PE	7.24 .285	1/BC	PVC-I	10.29 .405	.096	75	20.6	-40 +80	4000	Use up to 100 MHz
11A	1.21 .0477 7/0.4 TC .0159	PE	7.24 .285	1/BC	PVC-IIA	10.29 .405	.096	75	20.6	-40 +80	5000	Use up to 1000 Mhz
55	0.81 BC .0320	PE	2.95 .116	2/TC	PE-III	5.08 .200	.032	53.5	28.5	-55 +80	1900	Use RG55B
55A	0.89 SC .0350	PE	2.95 .116	2/SC	PVC-IIA	5.08 .200	.034	50	30.8	-40 +80	1900	Use RG223
55B	0.81 SC .0320	PE	2.95 .116	2/TC	PE-III A	5.08 .200	.033	53.5	28.5	-55 +80	1900	Use up to 1000 MHz
58	0.81 BC .0320	PE	2.95 .116	1/TC	PVC-I	4.95 .195	.029	53.5	28.5	-40 +80	1900	Use RG58B
58A	0.9 .0355	PE	2.95 .116	1/TC	PVC-I	4.95 .195	.029	52	28.5	-40 +80	1900	Use RG58C
58B	0.81 BC .0320	PE	2.95 .116	1/TC	PVC-IIA	4.95 .195	.029	53.5	28.5	-40 +80	1900	Use up to 1000 MHz
58C	0.9 .0355 19/0.8 TC .0071	PE	2.95 .116	1/TC	PVC-IIA	4.95 .195	.029	50	30.8	-40 +80	1900	Extra Flexible Version RG58B
59	0.64 CCS .0253	PE	3.71 .146	1/BC	PVC-I	6.15 .242	.032	73	21.0	-40 +80	2300	Use RG59B
59A	0.64 CCS .0253	PE	3.71 .146	1/BC	PVC-IIA	6.15 .242	.032	73	21.0	-40 +80	2300	Use RG59B
59B	0.58 CCS .0230	PE	3.71 .146	1/BC	PVC-IIA	6.15 .242	.032	75	20.6	-40 +80	2300	Use up to 1000 MHz

**Appendix B - Typical Coaxial Cable Specifications** (Continued)

RG/U Type Cable	Inner Conductor	Dielectric Material	DOD	Number/Type of Shielding Braids	Jacket Material	O. D.	Weight (lb/ft)	Nom. Imped. (Ohms)	Nom. Cap pf/ft	Max. Operating Temp. (C°)	Max. Operating Voltage (Volts RMS)	Comments
62A	0.64 CCS .0253	Air-space PE	3.71 .146	1/BC	PVC-IIA	6.15 .242	.038	93	13.5	-40 +80	750	Low Capacitance
62B	0.61 .0240 7/0.2 CCS .0080	Air-space PE	3.71 .146	1/BC	PVC-IIA	6.15 .242	.038	93	13.5	-40 +80	750	Extra Flexible RG62A
71	0.64 CCS .0253	Air-space PE	3.71 .146	2/TC	PVC-I	6.22 .245	.046	93	13.5	-40 +80	750	Use RG71B
71A	0.64 CCS .0253	Air-space PE	3.71 .146	2/TC	PE-III	6.22 .245	.046	93	13.5	-55 +80	750	Use RG71B
71B	0.64 CCS .0253	Air-space PE	3.71 .146	2/TC	PE-IIIA	6.22 .245	.046	93	13.5	-55 +80	750	Low Capacitance
122	0.76 .0300 7/0.13 TC .0050	PE	2.44 .096	1/TC	PVC-IIA	4.06 .160	.016	50	29.4	-40 +80	1900	Use up to 1000 MHz
124	0.64 TCCS .0253	Taped PTFE	3.43 .135	1/TC	FG Braid-V	6.1 .240	.210	73	20.3	-55 +250	2300	Use RG140
140	0.64 SCCS .0250	PTFE	3.71 .146	1/SC	FG Braid-V	5.92 .233	.056	75	19.5	-55 +250	2300	See RG302 for FEP Jacket
141	0.91 SCCS .0359	PTFE	2.95 .116	1/SC	FG Braid-V	4.83 .190	.036	50	29.4	-55 +250	1900	Use RG141A
141A	0.99 SCCS .0390	PTFE	2.95 .116	1/SC	FG Braid-V	4.83 .190	.036	50	29.4	-55 +250	1900	See RG303 for FEP Jacket
142	0.91 SCCS .0359	PTFE	2.95 .116	2/SC	FG Braid-V	4.95 .195	.047	50	29.4	-55 +250	1900	Use RG142A
142A	0.99 SCCS .0390	PTFE	2.95 .116	2/SC	FG	4.95 .195	.047	50	29.4	-50 +250	1900	See RG142B for FEP Jacket
142B	0.99 SCCS .0390	PTFE	2.95 .116	2/SC	FEP	4.95 .195	.047	50	29.4	-55 +250	1900	Standard Center Cond. Available
174	0.48 .0189 7/0.16 CCS .0063	PE	1.52 .060	1/TC	PVC	2.54 .100	.008	50	30.8	-40 +80	1500	Miniature Data Transmission
178	0.3 .0120 7/0.1 SCCS .0040	PTFE	0.91 .036	1/SC	KEL-F	1.83 .072	.0054	50	29.4	-40 +150	1000	Use RG178B
178B	0.3 .0120 7/0.1 SCCS .0040	PTFE	0.86 .034	1/SC	FEP-IX	1.83 .072	.0054	50	29.4	-55 +200	1000	High Strength Cond. Available
179	0.3 .0120 7/0.1 SCCS .0040	PTFE	1.45 .057	1/SC	KEL-F	2.54 .100	.010	70	20.4	-55 +150	1200	Use RG179B
180B	0.3 .0120 7/0.1 SCCS .0040	PTFE	2.59 .102	1/SC	KEP-IX	3.56 .140	.019	95	15.4	-55 +200	1500	High Strength Cond. Available
188	0.51 .0201 7/0.17 SCCS .0067	PTFE	1.52 .060	1/SC	PTFE	2.67 .105	.011	50	29.4	-55 +250	1200	Use RG316
188A	0.51 .0201 7/0.17 SCCS .0067	PTFE	1.52 .060	1/SC	PTFE	2.67 .105	.011	50	29.4	-55 +250	1200	Use RG316
195A	0.3 .0120 7/0.1 SCCS .004	PTFE	2.59 .102	1/SC	PTFE	3.68 .145	.020	95	15.4	-55 +250	1500	Use RG180B
210	0.64 SCCS .0253	Air-Space PTFE	3.71 .146	1/SC	FG Braid-V	6.15 .242	.040	93	13.5	-55 +250	750	High Temp. Low Capacitance
213	2.26 .0888 7/0.75 BC .0296	PE	7.24 .285	1/BC	PVC-IIA	10.29 .405	.099	50	30.8	-40 +80	5000	Use up to 1000 MHz
214	2.26 .0888 7/0.75 SC .0296	PE	7.24 .285	2/SC	PVC-IIA	10.0 .425	.126	50	30.8	-40 +80	5000	Use up to 10,000 MHz

2

RF Connectors

**Appendix B - Typical Coaxial Cable Specifications** (Continued)

RG/U Type Cable	Inner Conductor	Dielectric Material	DOD	Number/Type of Shielding Braids	Jacket Material	O. D.	Weight (lb/ft)	Nom. Imped. (Ohms)	Nom. Cap p/ft	Max. Operating Temp. (C°)	Max. Operating Voltage (Volts RMS)	Comments
216	<b>1.21</b> 0.0477 7/ <b>0.75</b> BC 0.0159	PE	<b>7.24</b> 0.285	2/BC	PVC-IIA	<b>10.8</b> 0.425	.114	75	20.6	-40 +80	5000	Use up to 1000 MHz
223	<b>0.89</b> SC 0.035	PE	<b>2.95</b> 0.116	2/SC	PVC-IIA	<b>5.36</b> 0.211	.034	50	30.8	-40 +80	1900	Use up to 10,000 MHz
225	<b>2.38</b> 0.0936 7/ <b>0.79</b> SC 0.0312	PTFE	<b>7.24</b> 0.285	2/SC	FG Braid-V	<b>10.92</b> 0.430	.180	50	29.4	-55 +250	5000	See RG393 for FEP Jacket
302	<b>0.64</b> SCCS 0.0250	PTFE	<b>3.71</b> 0.146	1/SC	FEP-IX	<b>5.11</b> 0.201	.030	75	19.5	-55 +200	2300	FEP Jacketed RG140
303	<b>0.99</b> SCCS 0.0390	PTFE	<b>2.95</b> 0.116	1/SC	FEP-IX	<b>4.32</b> 0.170	.088	50	29.4	-55 +200	1900	FEP Jacketed RG141A
316	<b>0.51</b> 0.0201 7/ <b>0.17</b> SCCS 0.0067	PTFE	<b>1.52</b> 0.060	1/SC	FEDP-IX	<b>2.59</b> 0.102	.012	50	29.4	-55 +200	1200	FEP Jacketed RG188A
400	<b>0.98</b> 0.0385 19/ <b>0.2</b> SPC 0.0077	PTFE	<b>2.95</b> 0.116	2/SC	FEP-IX	<b>4.95</b> 0.195	.050	50	29.3	-55 +200	1900	—
402	<b>0.91</b> SCCS 0.0360	PTFE	<b>3.02</b> 0.119	<b>3.58</b> OD .141 Copper Tube	None	<b>3.58</b> 0.141	.032	50	29.3	-40 +125	2500	Semi-rigid
405	<b>0.51</b> SCCS 0.0201	PTFE	<b>1.68</b> 0.066	<b>2.18</b> OD .086 Copper Tube	None	<b>2.19</b> 0.0865	.015	50	29.4	-40 +125	1500	Semi-rigid



**Appendix C - Maximum Power Handling Capabilities for Cables**

**Average Input Power in Watts**

RG/U Type Cable	Frequency in MHz								
	10	50	100	200	400	1,000	3,000	5,000	10,000
5, 5A, 5B	2,000	800	550	350	230	125	60	40	22
8, 8A, 10A, 213, 215	3,700	1,300	850	540	350	190	95	65	37
9, 9A, 9B, 214	3,700	1,300	850	540	350	190	95	65	37
11, 11A, 12, 12A, 13, 13A, 216	2,500	1,000	650	400	260	150	70	50	26
217	6,000	2,000	1,200	800	480	260	120	85	50
22, 22B	1,700	650	430	280	190	110	50	38	20
55, 55A, 55B, 223	800	310	205	137	90	53	28	20	10
58, 58B	730	280	180	125	85	50	25	17	—
58A, 58C	650	225	170	110	75	44	22	15	—
59, 59A, 59B	1,300	480	310	200	135	77	40	27	15
62, 62A, 71, 71A, 71B	1,300	480	310	200	135	77	40	27	15
62B	1,150	420	280	180	120	69	35	25	14
115, 115A, 165, 225, 393	25,000	9,500	6,300	4,300	2,800	1,700	880	620	350
108, 108A	340	145	100	70	50	30	15	—	—
122	540	205	140	90	60	35	18	12	—
140, 141, 141A, 142, 142B, 302, 303, 400, 402	9,000	3,500	2,400	1,600	1,100	650	350	245	140
143, 143A	11,500	4,600	3,200	2,100	1,450	850	460	330	190
144	25,000	9,500	6,300	4,300	2,800	1,700	880	620	350
161, 179, 179A, 179B, 187, 187A	1,600	780	570	420	310	200	110	76	41
174, 174A	170	72	50	36	25	16	—	—	—
178, 178A, 178B, 196, 196A	710	340	240	170	123	78	41	28	14
180, 180A, 180B, 195, 195A	2,500	1,100	800	570	400	250	135	93	50
188, 188A, 316	1,250	600	450	330	240	160	80	57	30
210	8,500	3,300	2,300	1,600	1,100	620	310	220	140

**Note:** Values above 3 GHz vary considerably depending on construction.

**Conditions:**

Ambient — 104°F [40°C]

Altitude — Sea level

Center Conductor Temperature — 176°F [80°C] for polyethylene, 392°F [200°C] for PTFE



RF Connectors

**Appendix D - Nominal Loss Characteristics for Cables**

**Decibels per Hundred Feet**

RG/U Type Cable	Frequency in MHz								
	10	50	100	200	400	1,000	3,000	5,000	10,000
5, 5A, 5B	.80	1.40	2.90	4.30	6.40	11.00	22.00	30.00	52.00
8, 8A, 10A, 213, 215	.66	1.50	2.20	3.20	4.60	9.00	19.00	28.00	47.00
9, 9A, 9B, 214	.66	1.50	2.20	3.20	4.60	9.00	19.00	28.00	47.00
11, 11A, 12, 12A, 13, 13A, 216	.66	1.50	2.20	3.20	4.60	9.00	19.00	28.00	—
217	.41	1.00	1.40	2.10	3.10	5.80	13.00	19.00	31.00
22, 22B	1.20	2.80	4.20	6.30	9.50	—	—	—	—
55, 55A, 55B, 223	1.35	3.00	4.30	6.00	8.80	16.50	36.00	51.00	85.00
58, 58B	1.20	3.10	4.60	7.00	10.00	17.50	38.00	—	—
58A, 58C	1.40	3.30	4.90	7.30	11.00	20.00	41.00	—	—
59, 59A, 59B	1.10	2.30	3.30	4.70	6.70	11.50	25.50	41.00	—
62, 62A, 71, 71A, 71B	.90	1.90	2.80	3.70	5.20	8.50	18.40	29.50	—
62B	.90	2.10	3.00	4.30	6.10	10.50	23.50	36.00	—
115, 115A, 165, 225, 393	.60	1.40	2.10	3.10	4.50	7.50	14.00	21.00	35.00
108, 108A	2.30	5.20	7.50	11.00	16.00	26.20	54.00	—	—
122	1.60	4.40	6.90	11.00	16.60	29.20	57.20	89.00	—
140, 141, 141A, 142, 142B, 302, 303, 400, 402	1.20	2.70	3.90	5.50	8.00	13.00	26.00	36.00	62.00
143, 143A	.85	1.80	2.50	3.80	5.70	9.70	18.10	26.10	40.70
144	.38	1.00	1.60	2.30	3.80	7.00	15.10	—	—
161, 179, 179A, 179B, 187, 187A	5.00	7.90	9.80	12.70	15.80	25.00	43.00	62.50	135.00
174, 174A	3.80	6.50	8.90	12.00	17.50	31.00	64.30	97.00	185.00
178, 178A, 178B, 196, 196A	5.30	10.00	13.30	20.00	27.50	45.00	78.00	115.00	172.00
180, 180A, 180B, 195, 195A	3.10	4.20	5.10	7.30	10.40	16.50	36.00	49.50	89.00
188, 188A, 316	3.80	7.90	11.50	15.00	20.00	30.00	58.00	79.00	133.00
210	.23	.58	.85	1.30	1.90	3.10	6.50	9.00	15.00

**Note:** Values above 3 GHz vary considerably depending on construction.

**Conditions**

Ambient —68°F [20°C]

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**3**

Ruggedized Fiber Optic Connectors



**Ruggedized Fiber Optic Products**

**Product Facts**

■ **Expanded Beam**

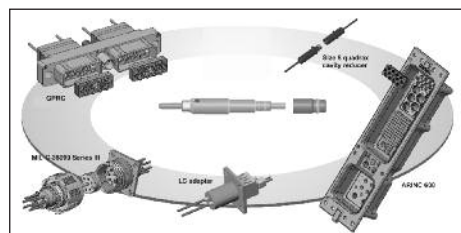
- PRO BEAM Sr.Connectors
- PRO BEAM Jr.Connectors
- PRO BEAM Mini Connectors
- Mini 38999
- Mini ARINC
- Mini GPRC
- Size 16 M29504 EB/4 and /5 varieties

■ **Physical Contact Technology**

- ARINC 801 MM and SM
- M29504 /4 and /5 MM and SM
- MC Series
  - MC3
  - MC3
  - MC5
  - MC6
  - MC801
- Rugged Single Channel (RSC)
- Sealed Circular LC ODVA Conforming Connector

TE Connectivity (TE) is proud to offer a full rugged fiberoptic product family. With TE's complete selection that includes world class Physical Contact and Expanded Beam technologies that include MC series of high density contact, a Rugged Single Channel and MT ribbon fiber as well as global industry standards of EN4165 and ARINC 801 along with our M83526/20 and /21 qualified products and wide variety of Expanded Beam technologies the end user is guaranteed a complete choice that meets their cost and optical performance needs in multiple industries.

For specific information, please contact your local TE Sales Representative.



ARINC 801 Optical Termini



Expanded Beam Products



MC5 (JN1130) multiway connectors



EN4165 derivatives



MC4



MC3 (JN1146) multiway connectors



MIL-T-29504

**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.



RSC (JN1148) single way connector



MC6

**Ruggedized Fiber Optic Products** (Continued)

**Expanded Beam Products**

**Product Facts**

- PRO BEAM Sr., PRO BEAM Jr. and PRO BEAM Mini Connector field deployable interconnects
- ARINC 600 connectors, with inserts/holder blocks designed for Mini Expanded Beam — up to 128 channels on size 3 ARINC 600
- MIL-C-38999 Series III shell size 11 and 15 style circular connectors — Cable assemblies up to 8 fibers
- Unique Modular Design, for use with multimode and singlemode fiber
- Tactical cables, cable reels, backpacks
- Cable assembly and termination services
- Ball lens expands cross-sectional area of light over 200 times for multimode and over 2000 times for singlemode
- Rugged hermaphroditic construction (i.e., same insert mates to each other)
- Physically non-contacting mating conditions; no wear, installed fiber ferrule protected by ball lens

**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

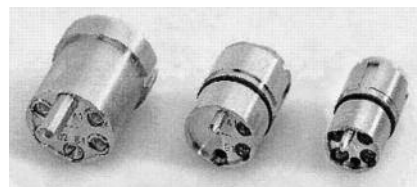
**Key Features**

Fiber Optic Interconnect/Cable System using Expanded Beam technology, which physically expands and collimates the transmission signal into an optical beam over 14 times its original diameter (the cross sectional area of the light beam increases over 200 times for multimode optical signals). For singlemode signals, the collimated beam is over 45 times its

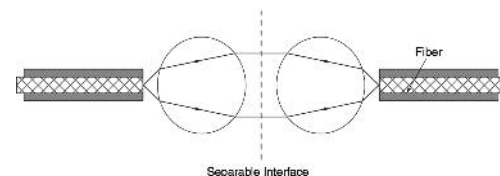
**Product Facts**

- No wear on fiber optic interface; Very vibration resistant
- Easy to handle, easy to clean. Durable connection that is highly resistant to dirt/debris
- Singlemode or multimode
- Common 850/1300 Dual Wavelength, 1310, or 1550 nm wavelengths
- Easy alignment for low-loss, repeatable performance
- Consistent overall optical “link budget” assured
- Low sensitivity to thermal fluctuations and interface contamination
- Repeatable low-loss performance in harsh environments

**Expanded Beam Technology**



From left to right: PRO BEAM Sr., PRO BEAM Jr. & Mini Expanded Beam inserts.



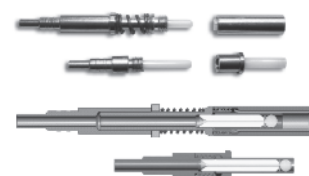
Expanded Beam Principle

original diameter (the cross-sectional area of the light beam increases over 2,000 times.). It is then refocused back down onto the core of the receiving fiber. This approach provides ease of alignment and low sensitivity to thermal changes and contamination. High strength, precision connector housings enhance a durable connection, optimizing low loss and repeatable performance.

**Applications**

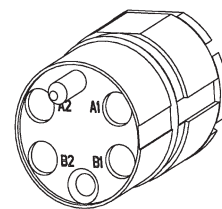
Suitable for field-deployable communications, marine ship-to-shore applications, security systems, mobile diagnostic units, oil and gas exploration and other harsh environment applications demanding strength, durability and reliable performance in conditions of multiple coupling/decouplings, blindmate situations, and high vibration.

**EB termini**



- Durable non-contacting interface assures ease of use/cleaning
- Termini designed to replace existing M29504/4 and /5 physical contact termini that fits the Size 16 AWG cavity of a D389999 III connector
- MM and SM termini designs

**Expanded Beam Inserts**



- PRO BEAM Sr. Insert — the original, larger format, Field Tactical, hermaphroditic Connector System
- PRO BEAM Jr. Insert — the second generation, reduced size, Field Tactical Connector System — a TE Connectivity original design
- Mini Expanded Beam Insert for multi-channel small form factor — the smallest expanded beam multi-channel insert in the industry, another TE Connectivity original design

3

Ruggedized Fiber Optic Connectors

**Expanded Beam Products**

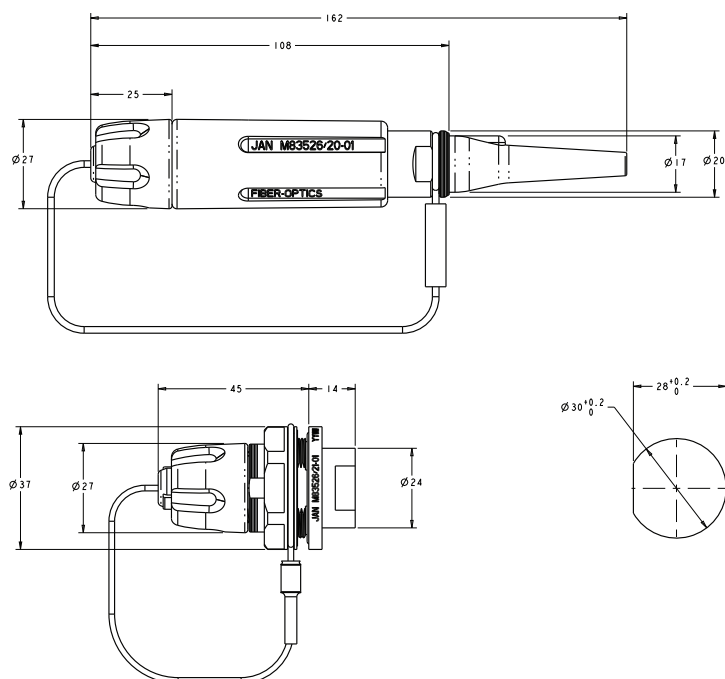
**MIL-Qualified Connectors M83526/20 and M83526/21**

The original now has a MIL-qualified version. The benchmark PRO BEAM Jr. connector series was the model for the MIL-DTL-83526/20 and /21 specifications. TE is now the first to gain full qualification to these specifications with TE's M83526/20 and M83526/21 connectors.

**Product Facts**

- MIL-qualified to MIL-DTL-83526/20B and MIL-DTL-83526/21B
- QPD- (Qualified Products Database) listed on <http://qpldocs.dla.mil/>
- VG-approval to VG 95319-100 and -101
- Fully intermateable and interoperable with the benchmark PRO BEAM Jr. connector series
- TE's patented Interference-Fit expanded beam design technology yields unmatched high performance and high reliability

**TECHNICAL DOCUMENTS**  
**408-32093 M83526/20 Plug**  
**408-32107 M83526/21 Bulkhead**  
<http://te.com/documents>  
**Mil-DTL-83526/20B**  
**Mil-DTL-83526/21B**  
<http://quicksearch.dla.mil>



**MIL-DTL-83526 Connector Assembly Part Numbers**

P/N	Part Number	Description
M83526/20-01	2064556-1	4 x 850/1300 MM Plug
M83526/20-02	2064557-1	4 x 1310 SM Plug
M83526/20-03	2064558-1	4 x 1550 SM Plug
M83526/20-04	2064559-1	2 x 850/1300 MM Plug
M83526/20-05	2064560-1	2 x 1310 SM Plug
M83526/20-06	2064561-1	2 x 1550 SM Plug
M83526/21-01	2064562-1	4 x 850/1300 MM Bulkhead
M83526/21-02	2064563-1	4 x 1310 SM Bulkhead
M83526/21-03	2064564-1	4 x 1550 SM Bulkhead
M83526/21-04	2064565-1	2 x 850/1300 MM Bulkhead
M83526/21-05	2064566-1	2 x 1310 SM Bulkhead
M83526/21-06	2064567-1	2 x 1550 SM Bulkhead

VG numbers assigned as reference docs. Mil spec detail sheets will be formal guidance for orders  
MIL-DTL-83426/20 = VG 95319-100  
MIL-DTL-83426/21 = VG 95319-101

**MFOCA - Mixed Mode**

P/N	DLA P/N	Type	Channels	Color
1516546-1	10023-03	Plug	2 MM + 2 SM	Brown
1516547-1	10023-01	Plug	2 SM	Green
1516548-1	10023-02	Plug	2 MM	Black
1516702-1	10024-03	Bulkhead	2 MM + 2 SM	Brown
1516703-1	10024-01	Bulkhead	2 SM	Green
1516704-1	10024-02	Bulkhead	2 MM	Black

\* for cable assembly applications please contact your local TE representative



**Expanded Beam Products** (Continued)

**PRO BEAM Mini Connectors**

TE Connectivity is pleased to announce the natural extension from our PRO BEAM Sr. and Jr. Connector product lines.

The PRO BEAM Mini Connector saves space and weight and is perfect for high density applications. The product offers the same durability as its larger counterparts.



PRO BEAM Sr., Jr. & Mini Connectors



PRO BEAM Mini Plug Connector

3

Ruggedized Fiber Optic Connectors

**Connector Assembly**

- 1 Shell Kit
- 1 Insert Kit
- 1 Cable Adapter Kit\*
- X Ferrule Kits (X = No. of optical channels)

\*Not applicable for Low Profile

**PRO BEAM Mini Connector Shell Kits**

Type	Mount Style	Attribute Difference	Part Number			
			(HA Aluminum)	(OD Aluminum)	(NiAlBronze)	(Black Aluminum)
Plug	D-Hole	EPDM Grip	1828698-1	N/A	1828698-2	N/A
		Low Profile - Buffered Fiber	1828699-1	1828699-2 ♦	1828699-3	1828699-4
Bulkhead	Square Flange	Low Profile - 1.8 Jacketed	1985140-1	1985140-2 ♦	1985140-3	1985140-4
		Sealed	1918185-1	1918185-3	1918185-2	1918185-4
		Low Profile - Buffered Fiber	1828826-1	*	*	*
		Neutrik Cutout-Drop-In	1918603-1	*	*	*

\* Contact TE for availability.

**PRO BEAM Mini Insert Kits**

Description	Part Number
2 x 850 / 1300 nm Dual Multimode	1374759-4
2 x 1310 nm Singlemode	1588129-2
2 x 1550 nm Singlemode	1588128-2
4 x 850 / 1300 nm Dual Multimode	1374759-2
4 x 1310 nm Singlemode	1588129-3
4 x 1550 nm Singlemode	1588128-3

**PRO BEAM Mini Ferrule Kits**

Fiber Hole Size	Mode	PRO BEAM Connector	Part Number
125 µm	SM	Mini	1754700-1
126 µm	SM	Mini	1754700-2
126 µm	MM	Mini	1754699-1

**PRO BEAM Mini Cable Adapter Kits For Plug**

Cable Diameter	Part Number	
	Aluminum	NiAlBronze
5.1 mm	1828700-1	1828700-5
5.6 mm	1828700-2	1828700-6
6.2 mm	1828700-3	1828700-7
6.7 mm	1828700-4	1828700-8

**PRO BEAM Mini Cable Adapter Kits For Sealed Bulkhead**

Cable Diameter	Part Number
5.1 mm	1516228-1
5.6 mm	1516228-2
6.2 mm	1516228-3

**Note:** Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.



Standard color black for Polymer Grip Rings, Cap and Boots. Alternate colors available upon request.

**Expanded Beam Products** (Continued)

**PRO BEAM Mini Connectors**

**Performance Specifications**

**Optical, Multimode Version**

**Insertion Loss, Typical\* —**

0.7 dB @ 1300 nm and 850 nm dual wavelength

**Optical, Singlemode Version**

**Insertion Loss, Typical\* —**

0.8 dB @ 1310 nm or 1550 nm optimized wavelength

**Return Loss\*\* —** > 34 dB @ 1310 nm or 1550 nm optimized wavelength

\*When tested with reference quality launch/receive cable assemblies

\*\*RL Tested Open Ended

**Mechanical**

**Vibration, Sinusoidal —**

10 - 500 Hz, 3 directions;  
0.75 mm amplitude @ 10g acceleration

**Bump —** 4,000 Bumps, 3 directions @ 40g acceleration

**Free Fall —** 500 falls on concrete; Severity 1.2 m

**Coupling Endurance —** 3,000 couplings

**Weight —**  
Plug — 50 grams, typical  
D-Hole bulkhead — 39 grams, typical

**Temperature**

**Operational Temperature —** -40°C/+85°C

**Storage Temperature —** -55°C/+85°C

**Temperature, Cyclic —** -55°C/+85°C

**Humidity (Damp Heat) —** 95% RH

**Immersion**

**Water —** 5 m depth (plug) -  
2 m (Bulkhead)

**Pressure**

**Low Pressure —** 25 kPa @ -55°C

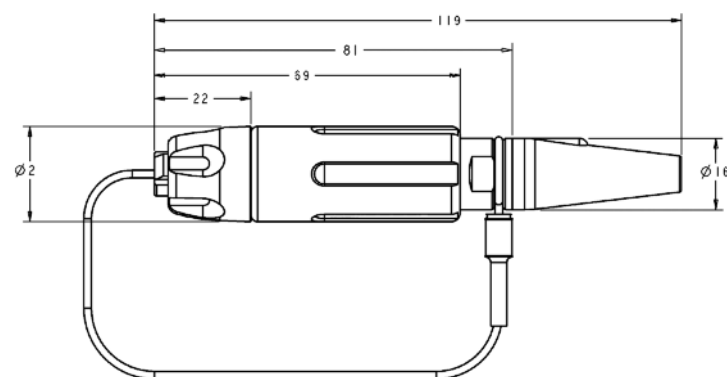
**Material and Finish**

**Shell Alloy —** Aluminum; or nickel aluminum bronze (high saline environment)

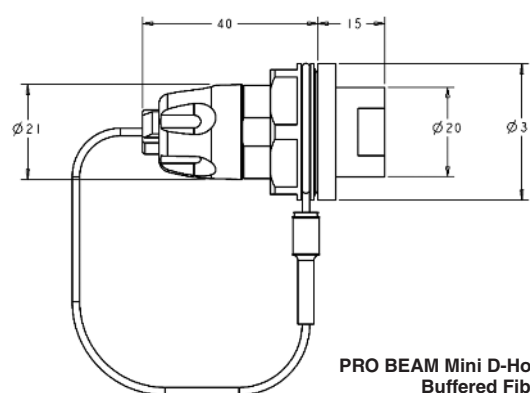
**Plating (For Aluminum Shells Only) —** clear hard anodized; or green chromate conversion zinc or black zinc - nickel alloy (PRO BEAM Mini Bulkheads only)

**Technical Documents**

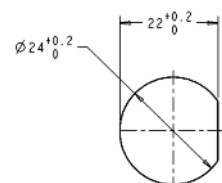
408-10065 Plug  
408-10067 Square Flange Bulkhead  
408-10069 Low Profile D-Hole Bulkhead  
408-10076 Sealed D-Hole Bulkhead  
<http://www.te.com/documents>



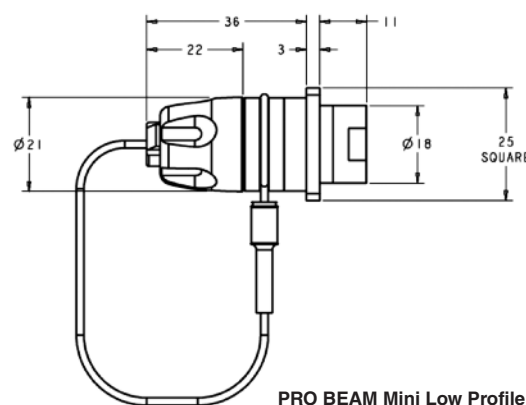
PRO BEAM Mini Cable Connector, Plug



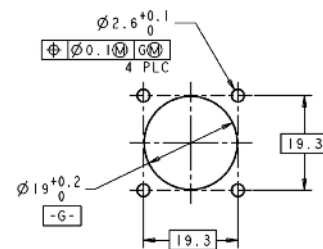
PRO BEAM Mini D-Hole Bulkhead Connector, Buffered Fiber, Low Profile



Recommended Panel Cutout



PRO BEAM Mini Low Profile, Square Flange Mount Bulkhead Connector

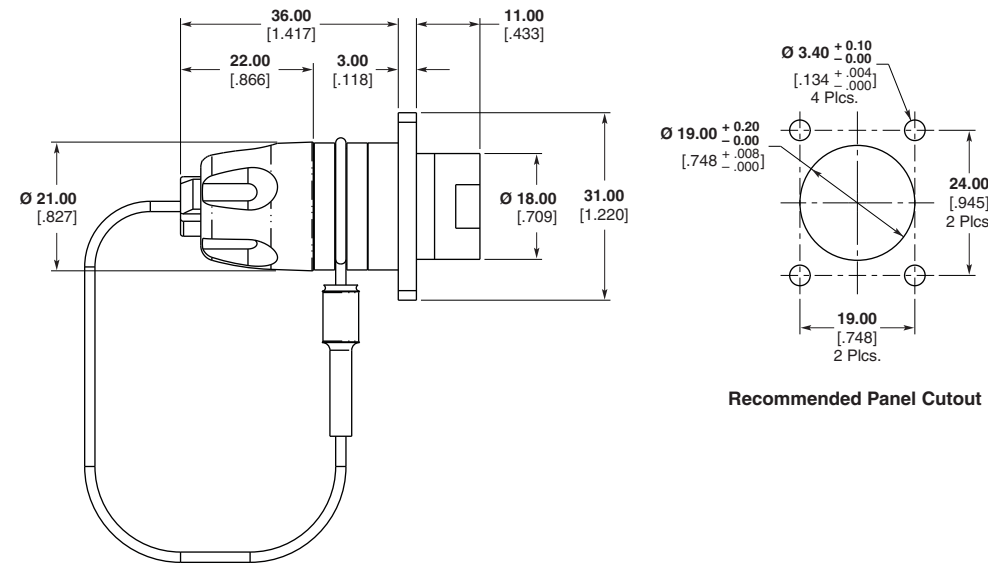


Recommended Panel Cutout

Expanded Beam Products (Continued)

PRO BEAM Mini Connectors

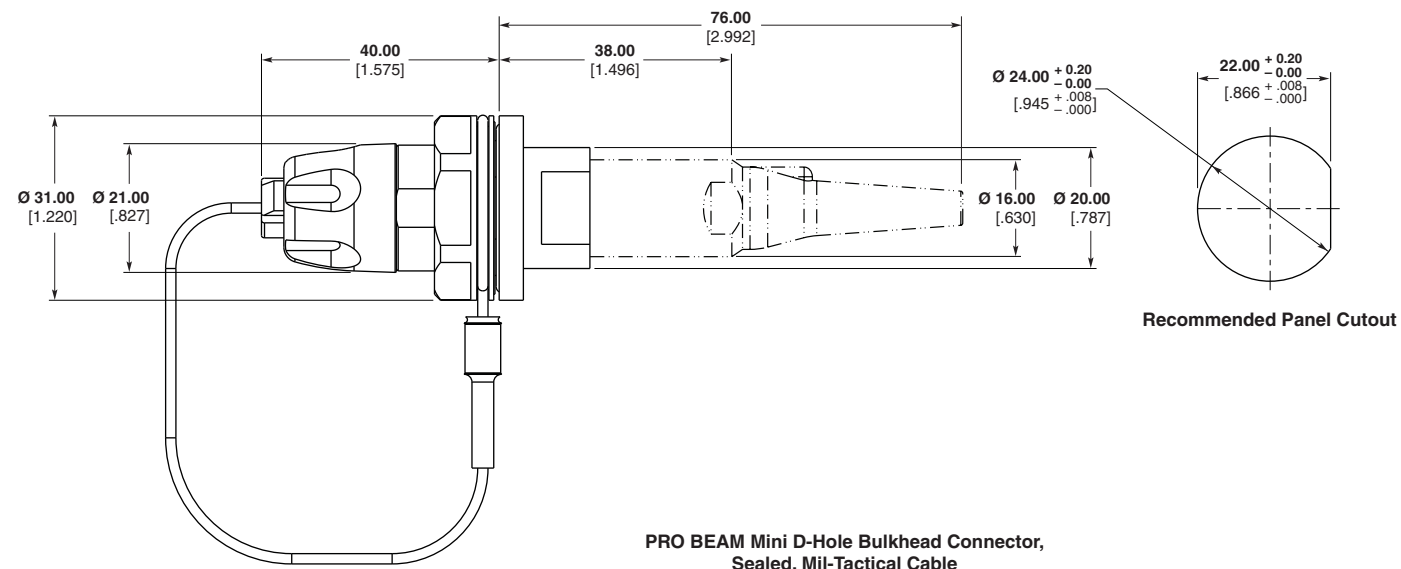
(Continued)



PRO BEAM Mini Low Profile,  
Alternate Square Flange Mount Bulkhead Connector

3

Ruggedized Fiber Optic Connectors



PRO BEAM Mini D-Hole Bulkhead Connector,  
Sealed, Mil-Tactical Cable

Expanded Beam Products (Continued)

**PRO BEAM Jr. Connectors**

**Performance Specifications**

**Optical, Multimode Version**

**Insertion Loss, Typical\***—  
0.7 dB @ 1300 nm and 850 nm dual wavelength

**Optical, Singlemode Version**

**Insertion Loss, Typical\***—  
0.8 dB @ 1310 nm or 1550 nm optimized wavelength

**Return Loss\*\***— > 34 dB @ 1310 nm or 1550 nm optimized wavelength

\*When tested with reference quality launch/receive cable assemblies

\*\*RL Tested Open Ended

**Mechanical**

**Vibration, Sinusoidal**—

10 - 500 Hz, 3 directions;  
0.75 mm amplitude @ 10g acceleration

**Bump**— 4,000 Bumps, 6 directions @ 50g acceleration

**Free Fall**— 500 falls on concrete; Severity 1.2 m

**Coupling Endurance**—  
3,000 couplings

**Weight**—  
Plug — 123 grams, typical  
D-Hole bulkhead — 102 grams, typical

**Temperature**

**Operational Temperature**—  
-40°C/+85°C

**Storage Temperature**—  
-55°C/+85°C

**Temperature, Cyclic**—  
-55°C/+85°C

**Humidity (Damp Heat)**—95% RH

**Immersion**

**Water**— 15 m depth (plug) -  
15 m (Bulkhead)

**Material and Finish**

**Shell Alloy**— Aluminum; or nickel aluminum bronze (high saline environment)

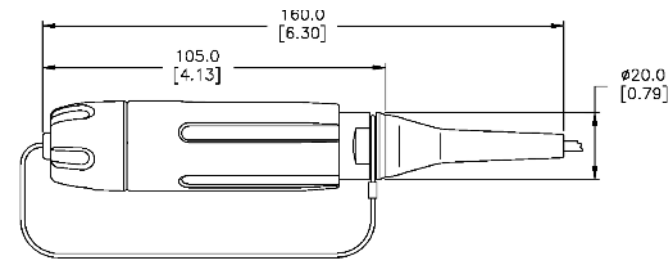
**Plating (For Aluminum Shells Only)**— clear hard anodized; or green chromate conversion zinc or black zinc - nickel alloy (PRO BEAM Jr. Bulkheads only)

**Bulkhead Connector Panel Thicknesses**

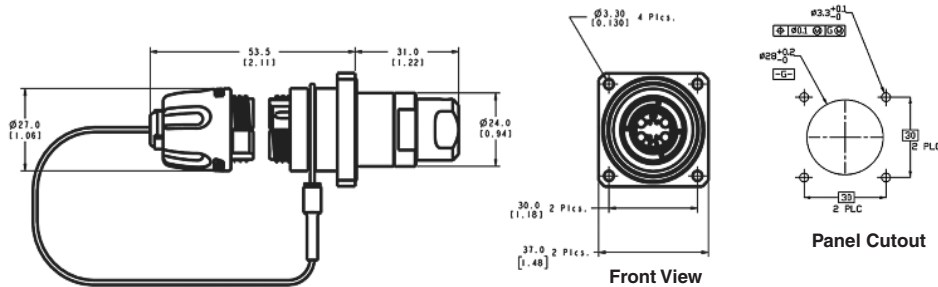
**PRO BEAM Jr. Bulkhead Connector D-Hole**— 4 mm max.

**PRO BEAM Jr. Bulkhead Connector Square Flange**— 6 mm max.

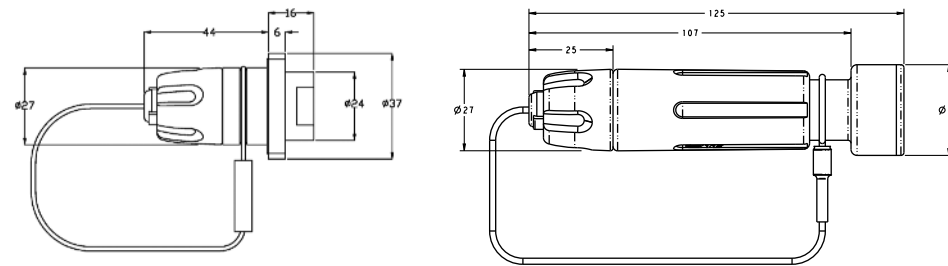
Standard color black for Polymer Grip Rings, Cap and Boots. Alternate colors available upon request.



PRO BEAM Jr. Cable Connector, Plug

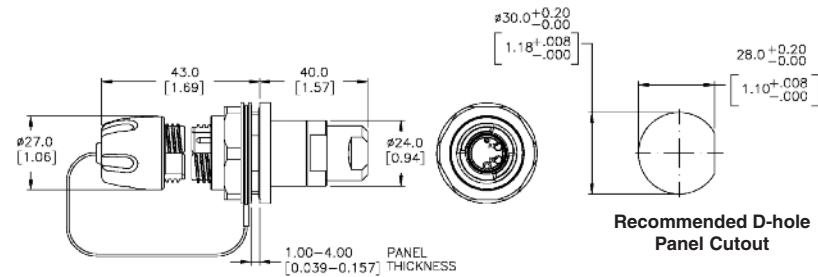


PRO BEAM Jr. Square Flange Mount Bulkhead Connector

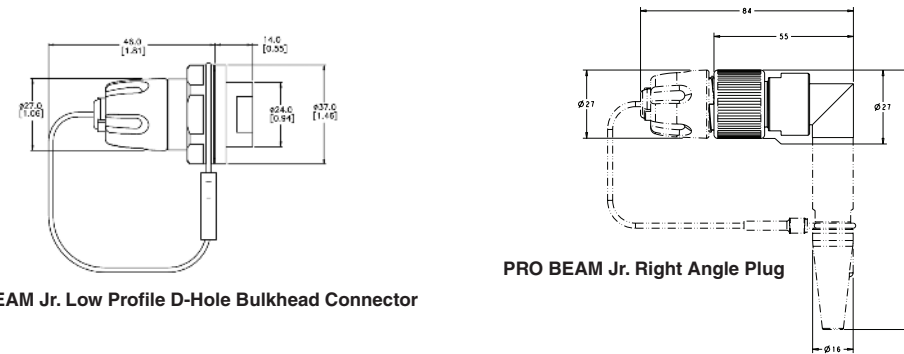


PRO BEAM Jr., Low Profile, Square Flange Mount Bulkhead Connector

PRO BEAM Jr., Loopback Plug Connector



PRO BEAM Jr. D-Hole Standard Bulkhead Connector without Boot

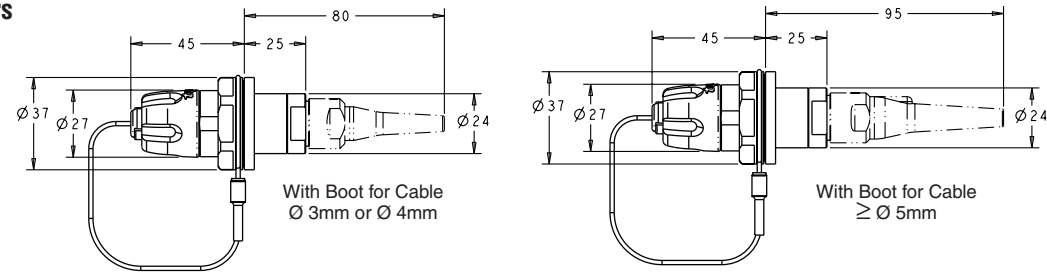


PRO BEAM Jr. Low Profile D-Hole Bulkhead Connector

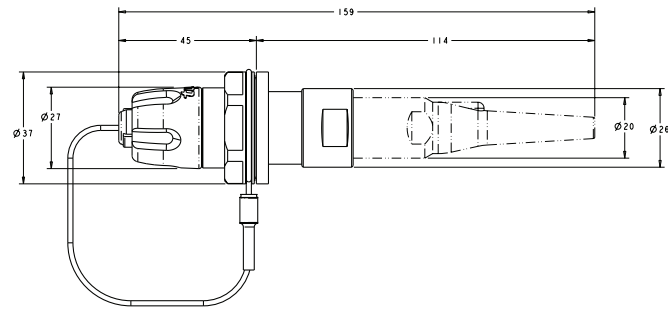
PRO BEAM Jr. Right Angle Plug

**Expanded Beam Products** (Continued)

**PRO BEAM Jr. Connectors**



**PRO BEAM Jr. Standard Bulkhead Connector, with Boot**



**PRO BEAM Jr. Sealed Bulkhead Connector**

**3**

Ruggedized Fiber Optic Connectors

**Expanded Beam Products** (Continued)

**PRO BEAM Jr. Connectors**

(Continued)

**Connector Assembly**

- 1 Shell Kit
- 1 Insert Kit
- 1 Cable Adapter Kit\*
- X Ferrule Kits (X = No. of optical channels)

Part Numbers listed are Shell alloy = aluminum Plating = hard anodized. Consult TE Connectivity for other plating/material options such as non-cadmium olive drab or RoHS-compliant black Zn/Ni.

**PRO BEAM Jr. Connector Shell Kits**

Description	Alloy		
	Hard Anodized Aluminum Part Number	NiAlBz Part Number	Black Zinc Aluminum Part Number
PRO BEAM Jr. Plug w/EPDM rubber	1918937-1	1918937-2	—
PRO BEAM Jr. Right-Angle Plug Kit	1985915-1	—	—
PRO BEAM Jr. D-Hole Low Profile, Buffered Fiber Bulkhead	1693741-1	1693741-2	1754445-3
PRO BEAM Jr. D-Hole Low Profile, Simplex Cable Bulkhead	6828413-1	—	6828413-2
PRO BEAM Jr. D-Hole Standard Bulkhead	1918939-1	1918939-2	1918941-2
PRO BEAM Jr. D-Hole Sealed Bulkhead	1918940-1	1918940-2	1918940-4
PRO BEAM Jr. Square Flange Low Profile Buffered Fiber Bulkhead	1754439-1	1754439-2	1754447-3
PRO BEAM Jr. Square Flange Standard Bulkhead	1918943-1	1918943-2	—

**PRO BEAM Jr. Loopback Plug Assembly**

Description	Part Number
4 x 850 / 1300nm Multimode, 62.5/125 µm fiber	1516506-1
4 x 850 / 1300nm Multimode, OM3 50/125 µm fiber	1516506-2
4 x 1310nm Singlemode	1516506-3
4 x 1550nm Singlemode	1516506-4

**PRO BEAM Jr. Insert Kits**

Description	Part Number
2 x 850 / 1300nm Multimode	1515743-1
2 x 1310nm Singlemode	1515739-1
2 x 1550nm Singlemode	1516040-1
4 x 850 / 1300nm Multimode	1515747-1
4 x 1310nm Singlemode	1515740-1
4 x 1550nm Singlemode	1516041-1

**Ferrule Kits**

Fiber Hole Size	Mode	PRO BEAM	Part Number
125 m	SM	Jr.	1588908-2
126 m	SM	Jr.	1588908-1
126 m	MM	Jr.	1588700-1

**PRO BEAM Jr. Connector Plug & Sealed Bulkhead Cable Adapter Kits**

Cable Dia. Max.	Aluminum Plug Part Number	NiAlBz Plug Part Number	Aluminum Sealed Bulkhead Part Number	NiAlBz Sealed Bulkhead Part Number	Black Zn-Ni Part Number
3.2	1918931-1	1918931-9	1918932-1	1918932-9	2-1918932-5
3.6	1918931-2	1-1918931-0	1918932-2	1-1918932-0	2-1918932-6
4.2	1918931-3	1-1918931-1	1918932-3	1-1918932-1	2-1918932-7
5.2	1918931-4	1-1918931-2	1918932-4	1-1918932-2	2-1918932-8
5.7	1918931-5	1-1918931-3	1918932-5	1-1918932-3	2-1918932-9
6.2	1918931-6	1-1918931-4	1918932-6	1-1918932-4	3-1918932-0
6.7	1918931-7	1-1918931-5	1918932-7	1-1918932-5	3-1918932-1
7.5 (breakout cable only)	1918931-8	1-1918931-6	1918932-8	1-1918932-6	3-1918932-2

**PRO BEAM Jr. Connector Standard Bulkhead Cable Adapter Kits\***

Cable Dia. Max.	Aluminum with Boot Part Number	NiAlBz with Boot Part Number	Black Zn-Ni Part Number	Aluminum without Boot Part Number	NiAlBz without Boot Part Number	Black Zn-Ni Part Number
3.2	1918933-1	1918933-9	2-1918933-5	1918934-1	1918934-8	2-1918934-2
4.1	1918933-2	1-1918933-0	2-1918933-6	1918934-2	1918934-9	2-1918934-3
5.1	1918933-3	1-1918933-1	2-1918933-7	1918934-3	1-1918934-0	2-1918934-4
5.5	1918933-4	1-1918933-2	2-1918933-8	1918934-4	1-1918934-1	2-1918934-5
6.0	1918933-5	1-1918933-3	2-1918933-9	1918934-5	1-1918934-2	2-1918934-6
4 x 3.00	1918933-8	1-1918933-6	3-1918933-2	1918934-7	1-1918934-4	2-1918934-8

\* Standard Cable Adapter. Not applicable for Low Profile.

**Note:** Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

**Technical Documents**

**Product Specification**

108-2177 Design Objectives

**Application Specification**

114-13099

**Instruction Sheets**

408-10250 Grounding and Standard D-Hole Bulkhead

408-10222 Plug

408-10249 Sealed D-Hole Bulkhead

408-8834 Low Profile Square Flange Bulkhead

408-8840 Low Profile D-Hole Bulkhead

408-10251 Standard Square Flange Bulkhead

408-10018 Low Profile D-Hole Simplex Cable Bulkhead

408-10252 7.5 Cable Adapter

<http://www.te.com/documents>



**Expanded Beam Products** (Continued)

**PRO BEAM Jr. Connectors**

(Continued)

**Spare Parts & Tools**

**Technical Documents**

**Product Specifications**

408-8857 Curing Fixtures for PRO BEAM Jr. and Sr. Connectors

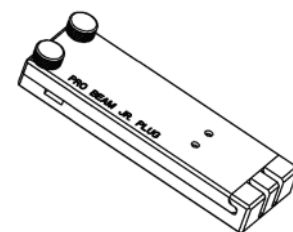
408-8828 Cleaning Procedure for EB C/A's

**Tooling Specifications**

408-8795 Crimp Tool with Die Set for PRO BEAM Jr. and Sr. Connectors

408-10022 Die Assembly for Mini and Jr. Circular Crimps

<http://www.te.com/documents>



**Curing Fixtures**

Connector	Part Number
PRO BEAM Jr. Cable Plug (having cable with KEVLAR strength member fiber)	1693797-1
PRO BEAM Jr. Sealed D-Hole Bulkhead	
PRO BEAM Jr. Standard D-Hole and Square Flange Bulkhead	1693800-1
PRO BEAM Jr. Low Profile Buffered Fiber Bulkhead	1754122-1

Instruction Sheet 408-8857. Available at [www.te.com](http://www.te.com)

**Cable Crimp Components**

Description	Part Number
Crimp Sleeve (use with all PRO BEAM Jr. Connector Crimp Support sizes)	1918497-1
3.2 mm Crimp Support	1918498-1
4.2 mm Crimp Support	1918498-2
5.2 mm Crimp Support	1918498-3
5.7 mm Crimp Support	1918498-4
6.2 mm Crimp Support	1918498-5
6.7 mm Crimp Support	1918498-6
Square Crimp Support for (4) 3 mm Cables	1985319-1

**Ferrule Kits**

Fiber Hole Size	Mode	PRO BEAM	Part Number
125 µm	SM	Jr.	1588908-2
126 µm	SM	Jr.	1588908-1
126 µm	MM	Jr.	1588700-1

**Protective Caps**

Description	PRO BEAM	Part Number
Standard cap, for D-Hole Bulkhead	Jr.	1515868-1
Standard cap, for Flange Mount Bulkhead	Jr.	1515787-2
Standard cap, for connector plug	Jr.	1515867-1

**Termination Kit**

Part Number
1828650-1



Ruggedized Fiber Optic Connectors

KEVLAR is a trademark of E. I. du Pont de Nemours and Company.

**Note:** All part numbers are RoHS compliant.

**Expanded Beam Products** (Continued)

**PRO BEAM Sr. Connectors**

**Performance Specifications**

**Optical, Multimode Version**

**Insertion Loss, Typical\* —**

0.7 dB @ 1300 nm and 850 nm dual wavelength

**Optical, Singlemode Version**

**Insertion Loss, Typical\* —**

0.8 dB @ 1310 nm or 1550 nm optimized wavelength

**Return Loss\*\* — > 34 dB**

@ 1310 nm or 1550 nm optimized wavelength

\*When tested with reference quality launch/receive cable assemblies

\*\*RL Tested Open Ended

**Mechanical**

**Vibration, Sinusoidal —**

10 - 500 Hz, 3 directions; 0.75 mm amplitude @ 10g acceleration

**Bump —** 4,000 Bumps, 6 directions, @ 50g acceleration

**Free Fall —** 500 falls on concrete; Severity 1.2 m

**Coupling Endurance —**

3,000 couplings

**Weight —**

Plug — 290 grams, typical

Chassis bulkhead — 150 grams, typical

**Temperature**

**Operational Temperature —**

-40°C/+85°C

**Storage Temperature —** -55°C/+85°C

**Temperature, Cyclic —** -55°C/+85°C

**Humidity (Damp Heat) —** 95% RH

**Immersion**

**Water —** 5 m depth (plug), 2 m (Bulkhead)

**Material and Finish**

**Shell Alloy —** Aluminum; or nickel aluminum bronze (high saline environment)

**Plating (For Aluminum Shells Only) —** clear hard anodized or black zinc - nickel alloy (PRO BEAM Sr. bulkheads only)

**Bulkhead Connector Panel Thicknesses**

**PRO BEAM Sr. D-Hole Connector —** 6.5 mm max.

**PRO BEAM Sr. Square Flange Connector —** 8.5 mm max.

**Technical Documents**

**Product Specifications**

408-8799 Plug

408-8800 D-Hole Bulkhead

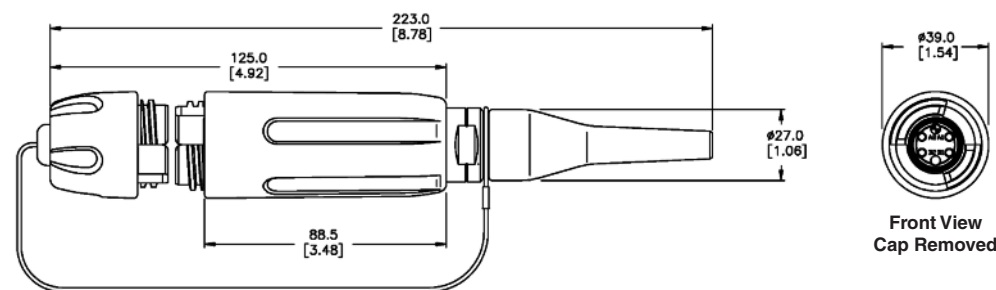
408-8877 Square Flange Bulkhead

**Application Specification**

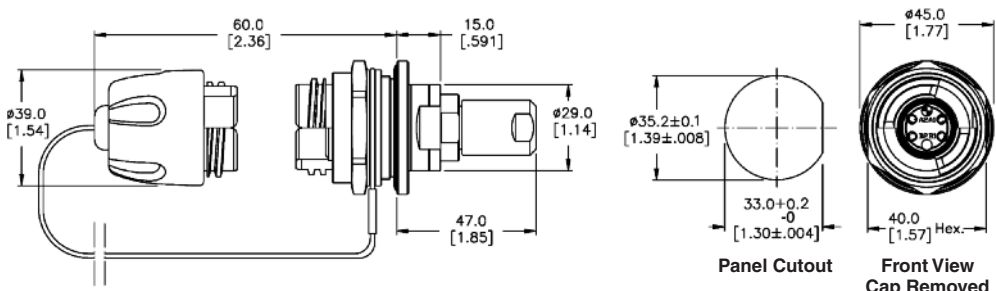
114-13122

<http://www.te.com/documents>

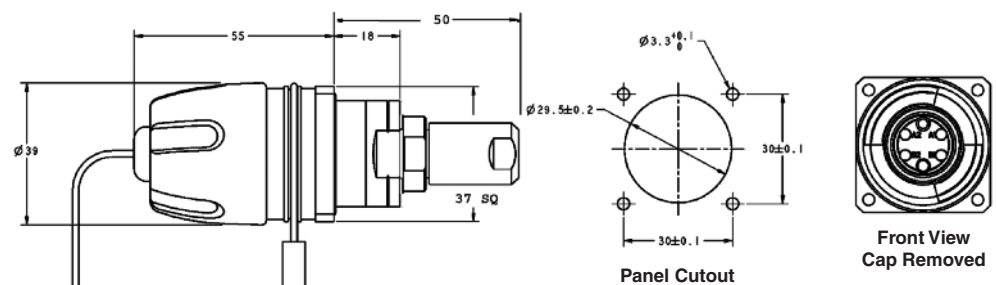
Standard color black for Polymer Grip Rings, Cap and Boots. Alternate colors available upon request.



PRO BEAM Sr. Cable Connector, Plug



PRO BEAM Sr. D-Hole Bulkhead Connector with Standard Cable Adapter



PRO BEAM Sr. Square Flange Mount Bulkhead Connector with Standard Cable Adapter

**Expanded Beam Products** (Continued)

**PRO BEAM Sr. Connectors**

(Continued)

**Connector Assembly**

- 1 Shell Kit
- 1 Insert Kit
- 1 Cable Adapter Kit\*
- X Ferrule Kits (X = No. of optical channels)

\*Not applicable for Low Profile

Part numbers listed are Shell alloy = aluminum Plating = hard anodized. Consult TE Connectivity for other plating/material options such as NiAlBz for Naval applications, or other plating options such as RoHS-compliant black Zn-Ni.



**Technical Documents**

**Product Specifications**

408-8857 Curing Fixtures for PRO BEAM Jr. and Sr. Connectors

408-8828 Cleaning Procedure for EB C/A's

**Tooling Specifications**

408-8795 Crimp Tool with Die Set for PRO BEAM Jr. and Sr. Connectors

<http://www.te.com/documents>

PRO BEAM Sr. Connector Shell Kits	Alloy	
	Aluminum Part Number	NiAlBz Part Number
PRO BEAM Sr. Plug w/EPDM rubber	1754842-1	1754842-2
PRO BEAM Sr. D-Hole Standard Bulkhead	1754843-1	1754843-2
PRO BEAM Sr. Square Flange Standard Bulkhead	1754844-1	1754844-2

PRO BEAM Sr. Insert Kits	Part Number
2 x 850 / 1300 nm Multimode	1693001-1
2 x 1310 nm Singlemode	1515734-2
4 x 850 / 1300 nm Multimode	1693001-2
4 x 1310 nm Singlemode	1515735-1
8 x 850/1300 nm Multimode	1516256-1
8 x 1310 nm Singlemode	1516258-1
8 x 1550 nm Singlemode	1516258-2

**PRO BEAM Sr. Ferrule Kits**

Fiber Hole Size	Mode	Insert Application	Part Number
125 µm	SM	2 & 4 Channel	1515941-1
126 µm	SM	2 & 4 Channel	1515941-2
126 µm	MM	2 & 4 Channel	1588801-1
125 µm	SM	8 Channel	1985635-1
126 µm	SM	8 Channel	1985635-2
126 µm	MM	8 Channel	1985107-1

**PRO BEAM Sr. Connector Plug Adapter Kits**

Cable Dia. (Max.)	Alloy	
	Aluminum Part Number	NiAlBz Part Number
5.10 .201	1515940-1	1515940-2
5.65 .222	1515940-3	1515940-4
6.20 .244	1515940-5	1515940-6
6.70 .264	1515940-7	1515940-8

**PRO BEAM Sr. Connector Standard Bulkhead Cable Adapter Kits**

Cable Dia. (Max.)	Style	Alloy	
		Aluminum Part Number	NiAlBz Part Number
5.20 .205	Standard Cable Adapter	1516229-3	1516229-7
5.70 .224	Standard Cable Adapter	1516229-2	1516229-6
Buffered Fiber	Low Profile Adapter	1516229-4	1516229-8
6.70 .264	Standard Cable Adapter	1-1516229-3	1-1516229-4
4 x 3 mm	Standard Cable Adapter	1516229-1	1-1516229-5

**Note:** All part numbers are RoHS compliant.



Ruggedized Fiber Optic Connectors

Expanded Beam Products (Continued)

**38999 Style EB for Harsh Environments**

**Product Facts**

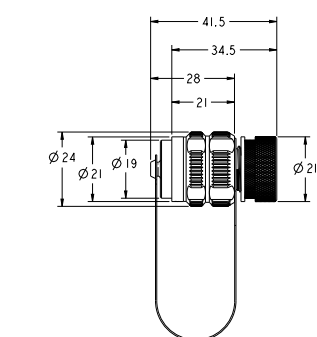
- Available in shell size 11, housed on D38999 Series III style shells for harness applications
- Multiple options available for backshells. Consult your local TE Connectivity Sales Representative
- Shell polarizations A through E available upon request

**Standard Material and Finish**

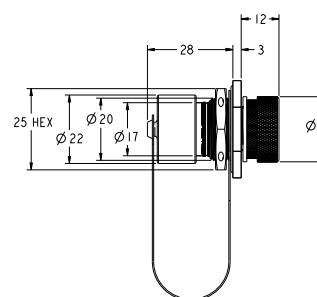
**Shell Alloy** — Aluminum  
**Plating** — Nickel or green chromated zinc or RoHS-compliant black chromated zinc-nickel alloy

\*Refer to customer drawing for dash number designation

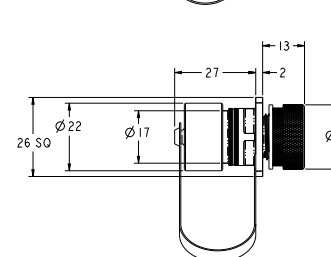
For part number details and plating options, contact your local TE Connectivity Sales Representative.



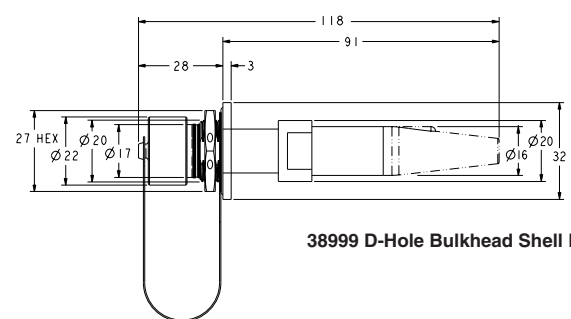
**38999 Plug Shell Kit for mini EB**



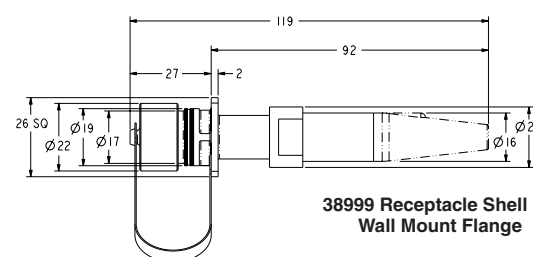
**38999 Jam-Nut Receptacle Shell Kit for mini EB**



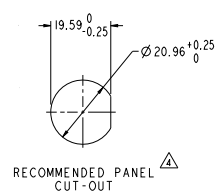
**38999 Shell Kit Wall Mount Receptacle for mini EB**



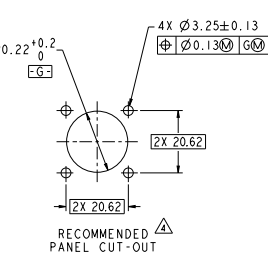
**38999 D-Hole Bulkhead Shell Kit**



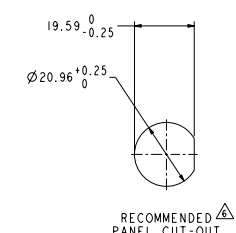
**38999 Receptacle Shell Kit Wall Mount Flange**



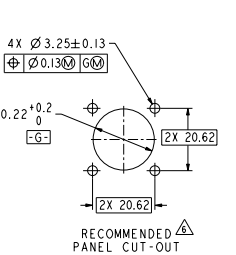
RECOMMENDED PANEL CUT-OUT



RECOMMENDED PANEL CUT-OUT



RECOMMENDED PANEL CUT-OUT



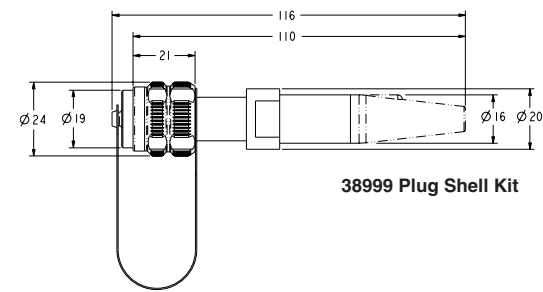
RECOMMENDED PANEL CUT-OUT

**ASSEMBLY CAPABILITIES**  
 TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

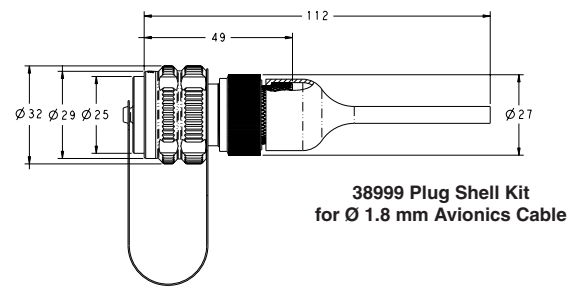
Note: All part numbers are RoHS compliant.

Expanded Beam Products (Continued)

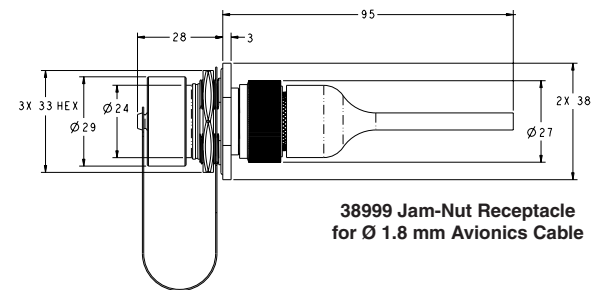
38999-style EB for Harsh Environments (Continued)



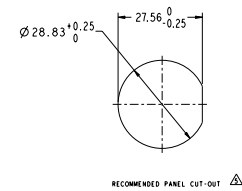
38999 Plug Shell Kit



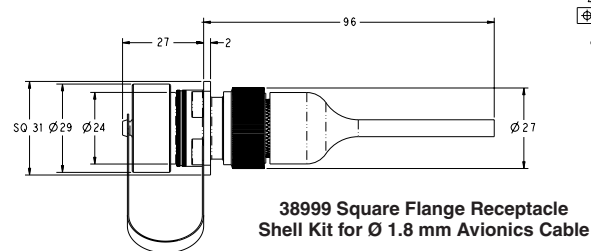
38999 Plug Shell Kit for Ø 1.8 mm Avionics Cable



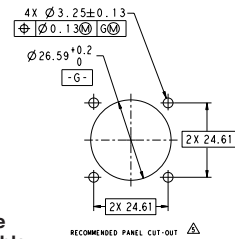
38999 Jam-Nut Receptacle for Ø 1.8 mm Avionics Cable



RECOMMENDED PANEL CUT-OUT



38999 Square Flange Receptacle Shell Kit for Ø 1.8 mm Avionics Cable



RECOMMENDED PANEL CUT-OUT

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Ruggedized Fiber Optic Connectors

**Expanded Beam Products** (Continued)

**38999-style EB for Harsh Environments** (Continued)

**Size 11 Shield Kit**

Use with:	Mini EB 38999 Connector Shell Kits (N-Key)								
	Ø1.8 mm Max Avionics Cable			MIL-Tactical Distribution Cable			Buffered Fiber Only		
	Electroless Ni Plate	OD Zn	Black Zn-Ni	Electroless Ni Plate	OD Zn	Black Zn-Ni	Electroless Ni Plate	OD Zn	Black Zn-Ni
Plug:	6754518-1	1754518-7 ♦	6754518-7	1985021-1	1985021-7 ♦	—	1918883-1	1918883-7 ♦	1-1918883-3
Jam-Nut Receptacle:	6754519-1	1754519-7 ♦	6754519-7	2064163-1	2064163-7 ♦	—	1918884-1	1918884-7 ♦	1-1918884-3
Flange-Mount Receptacle:	6754520-1	1754520-7 ♦	6754520-7	2064166-1	2064166-7 ♦	—	1918885-1	1918885-7 ♦	1-1918885-3

\* Contact TE Connectivity for availability.

**Size 15 Shield Kit**

Use with:	2.2 mm Ø Max Avionics Cable		End Nut Backshell for Non-Jacketed Cable	
	Electroless Nickel Plate	Black Zinc Nickel	Electroless Nickel Plate	Black Zinc Nickel
Plug:	1516342-1	1516342-7	1516338-1	1516338-7
Jam-Nut Receptacle:	1516343-1	1516343-7	1516339-1	1516339-7
Flange-Mount Receptacle:	1516344-1	1516344-7	1516340-1	1516340-7

**Cable Adapter Kits For 38999 Mini EB Mil-Tactical**

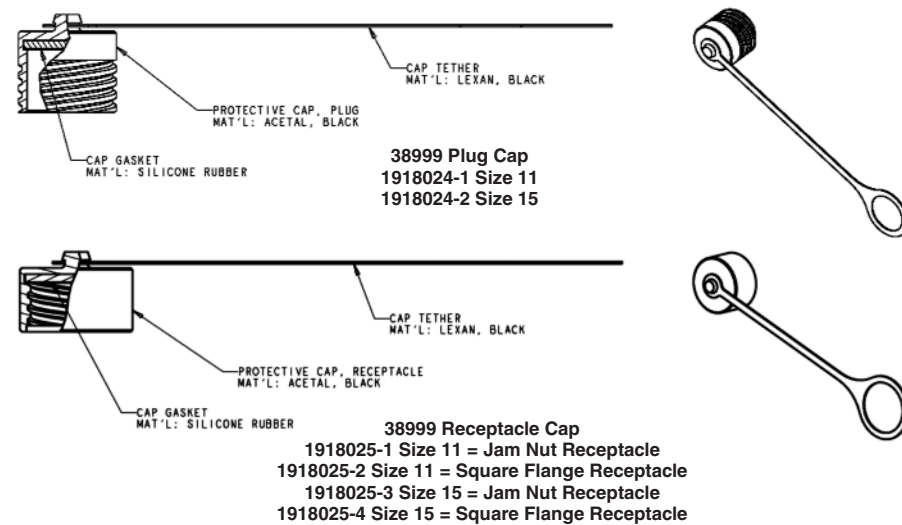
Cable Diameter	Part Number
5.1 mm	1516228-1
5.6 mm	1516228-2
6.2 mm	1516228-3

**Insert Kits**

Description	Part Number
Mini 2 x 850 / 1300 nm Dual Multimode	1374759-4
Mini 2 x 1310 nm Singlemode	1588129-2
Mini 2 x 1550 nm Singlemode	1588128-2
Mini 4 x 850 / 1300 nm Dual Multimode	1374759-2
Mini 4 x 1310 nm Singlemode	1588129-3
Mini 4 x 1550 nm Singlemode	1588128-3
8 x 850/1300 nm Multimode	1516256-1
8 x 1310 nm Singlemode	1516258-1
8 x 1550 nm Singlemode	1516258-2

**Ferrule Kits**

Fiber Hole Size	Mode	Insert Type	Part Number
125 µm	SM	Mini	1754700-1
126 µm	SM	Mini	1754700-2
126 µm	MM	Mini	1754699-1
125 µm	SM	8 Channel	1985635-1
126 µm	SM	8 Channel	1985635-2
126 µm	MM	8 Channel	1985107-1



Note: Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.



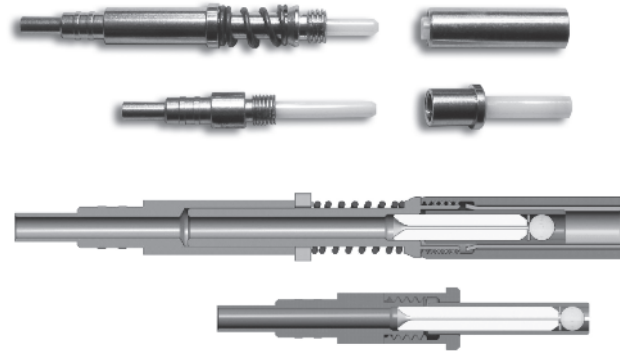
**Expanded Beam Products** (Continued)

**EB termini**

**Product Facts**

- Durable non-contacting interface assures ease of use/cleaning
- Termini designed to replace existing M29504/4 and /5 physical contact termini that fits the Size 16 AWG cavity of a D38999 III connector
- MM and SM termini designs

EB termini are combination of inserts (containing the lens) and EB termini (for terminating the fiber).



Ruggedized Fiber Optic Connectors

**Cable Assemblies and Accessories**

**Product Facts**

- Ruggedized cable assemblies custom tailored for field use in harsh environments
- Heavy-duty light-weight cable reel organizes and protects connectors and cable for easy pay-out and safe storage
- Options for 500 meter reels include special backpack harnesses, a separate reel stand, or a combination reel and reel stand

**Featured Cable Assemblies**



**TFOCA to PRO BEAM Jr. Plug Cable Assembly**  
1828536-1 ♦

**LP D-Hole Bulkhead to 4 ST 62.5/125 on 1.8 mm cable**  
6828454-1 ♦

**Plug to Plug (100 meters)**  
6754475-2

**Typical Reels and Reel Stands for Field-Deployable Cable Assemblies**



1918930-1



Tactical Reel/Drum Options

**Cable Reels**

**Reel Capacity (Random Lay)**

Cable Diameter	Notes/Description	Flange Diameter	Part Number
5.8 mm			
186 M	Reel & Reel Stand Combination Reel can be detached from stand without tools	310 mm	1918930-1
247 M	Reel*	310 mm	1754515-1
462 M	Reel*	370 mm	1754515-2
816 M	Reel*	460 mm	1754515-3
1052 M	Reel*	510 mm	1754515-4

\* See Accessories options below

**PRO BEAM Jr. Kits**

**PRO BEAM Jr. Termination Kit**  
1828650-1

**Cleaning Kit**  
1828335-2

TFOCA-II is a trademark of Amphenol Fiber Systems International.

**Note:** Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

**Cable Assemblies and Accessories** (Continued)

**ASSEMBLY CAPABILITIES**  
 TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.



Backpack with Reel



Reel with Stand "Static Frame"



Backpack Harness

3

Ruggedized Fiber Optic Connectors

**Accessories**

Description	Reel Diameter	Part Number
Backpack	370 mm Dia. Reel	1754516-1*
Backpack	460 mm Dia. Reel	1754516-2*
Backpack	510 mm Dia. Reel	1754516-3*
Static Frame	500 mm Dia. Max	1754517-1*
Static Frame	700 mm Dia. Max	1754517-2*

\* Reel must be ordered separately.

**Note:** For lower cost alternative options. Please contact your local TE Connectivity Sales Representative or TE Product Information Center at 1-800-522-6752.

**Tactical Optical Cable**

**Non-Metallic Tactical Field Deployable Fiber Optic Cable**

**Product Facts**

- All terrain field deployable cable, up to 4 fibers, singlemode or multimode
- Developed for deployment under the most demanding conditions
- Tight buffered fibers are protected by Aramid yarns and a tough ruggedized polyurethane sheath
- Tested in accordance with MIL-PRF-85045
- Flexible, water resistant, high crush resistant, and lightweight,
- Designs available to be resilient against radiation exposure

**Technical Data**

**Mil-Standard Distribution Cable — 2 Fiber Singlemode**

**Attenuation** — ≤ 0.5 dB/km @ 1310 nm / ≤ 0.5 dB/km @ 1550 nm  
**Diameter** — 5.8 mm  
**Weight** — 25 kg/km  
**Minimum Bending Radius** — 29 mm  
**Crush Resistance** — 2000 N/cm  
**Operating Temperature** — -55° C to +85° C

**Mil-Standard Distribution Cable — 4 Fiber Singlemode**

**Attenuation** — ≤ 0.5 dB/km @ 1310 nm / ≤ 0.5 dB/km @ 1550 nm  
**Diameter** — 5.8 mm  
**Weight** — 27 kg/km  
**Minimum Bending Radius** — 28 mm  
**Crush Resistance** — 2000 N/cm  
**Operating Temperature** — -55° C to +85° C

**Mil-Standard Distribution Cable — 2 Fiber Multimode**

**Fiber Type** — 50 μm/125 μm and 62.5/125  
**Attenuation** — ≤ 3.5 dB/km @ 850 nm / ≤ 1.0 dB/km @ 1300 (62.5/125); ≤ 3.5 dB/km @ 850 nm / ≤ 1.5 dB/km @ 1300 (50/125)

**Mil-Standard Distribution Cable — 4 Fiber Multimode**

**Fiber Type** — 50 μm/125 μm and 62.5/125  
**Attenuation** — ≤ 3.5 dB/km @ 850 nm / ≤ 1.0 dB/km @ 1300 (62.5/125); ≤ 3.5 dB/km @ 850 nm / ≤ 1.5 dB/km @ 1300 (80/125)

Other fibers (i.e. Polyimide, Silicon buffer, Carbon coated, radiation hardened, etc.) are available upon request.

Contact TE Connectivity or your local TE Sales Representative for part numbers, pricing, and availability.

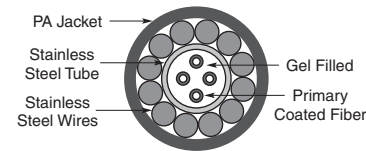
**ARMOR-LIGHT Tactical Field Deployable Fiber Optic Cable for Extreme Environments (Metallic for Rodent Proof)**



**4-Color Optical Fiber Cable Specification for Armored Cable for Ruggedized Applications**

**Construction:**

- 4-color coded fibers
- Fiber types 50/125/250 μm, 62.5/125/250 μm and 9/125/250 μm
- Stainless steel gel filled tube
- Stainless steel wire
- Jacket — Nylon, black



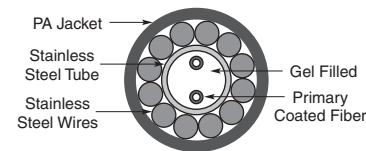
Fiber Type	Part Number	Outside Dia. (mm)	Weight kg/km	Max. Attenuation dB/km				Bandwidth MHz-km	
				850 nm	1300 nm	1310 nm	1550 nm	850 nm	1300 nm
62.5/125	1588957-1	3.8	24	3.5	1.0	X	X	160	500
50/125	1588957-2	3.8	24	2.7	0.9	X	X	400	1200
SM	1588957-4	3.8	24	X	X	0.40	0.25	X	X

**Notes:** 35 mm recommended bend radius.  
3.1 kN breaking strength.

**2-Color Optical Fiber Cable Specification for Armored Cable for Ruggedized Applications**

**Construction:**

- 2-color coded fibers
- Fiber types 50/125/250 μm, 62.5/125/250 μm and 9/125/250 μm
- Stainless steel gel filled tube
- Stainless steel wire
- Jacket — Nylon, black



Fiber Type	Part Number	Outside Dia. (mm)	Weight kg/km	Max. Attenuation dB/km				Bandwidth MHz-km	
				850 nm	1300 nm	1310 nm	1550 nm	850 nm	1300 nm
62.5/125	1693808-1	3.8	24	3.5	1.0	X	X	160	500
50/125	1693808-2	3.8	24	2.7	0.9	X	X	400	1200
SM	1693808-4	3.8	24	X	X	0.40	0.25	X	X

**Notes:** 35 mm recommended bend radius.  
3.1 kN breaking strength.

**Note:** All part numbers are RoHS compliant.

**Commercial Fiber Optic Mechanical Splicing Kit**

**Light Crimp Splice**

Part Number: 1985368-1

**Product Facts**

- Terminates 250 micron coated, 900 micron tight-buffered fibers and 2.0 mm jacketed cable
- Attenuation (typical): ≤0.1dB
- Return Loss (at ambient; 18° to 28° C): ≥20 dB multimode ≥35 dB single-mode
- Operating Temperature: -25° to 70° C
- Storage Temperature: -40° to 85° C
- Tensile retention: 250 micron coated: 2.0 N 900 micron buffered: 3.0 N Jacketed: 50.0 N



Part Number: 1516626-1

The KITCO 0831-8238 Kit Provides a low cost, highly reliable, solution for the repair of Tactical Fiber Optic Cables featuring the TE Connectivity Mechanical Splice. The Kit contains all of the tools and materials required to make (3) three four channel cable repairs, including the JPS-400 Splice Protection Sleeve. An Ideal solution in a tactical environment when system reliability is essential, not an option!

**The TFOCA Military/ Commercial Fiber Optic Mechanical Splicing Kit contains the following items:**

- 2 JPS-400 Splice Protection Sleeves
- 12 Mechanical Splices
- Light Crimp Splice
- Precision Cleaver
- Crimp Tool with Crimp Die
- Splice Holder with Strip Template
- Cleaning Materials
- Tool Roll with all Required Tools
- Support for LC/SC Light Crimp Connectors
- Lightweight, rugged Case



Part Number: 1516516-1

**JPS Splice Enclosure**

Part Number: 1516516-1

The JPS 400 Splice Enclosure is designed to protect TFOCA cable that has been repaired with any mechanical splice or fusion splicer. Designed & evaluated by the United States Marine Corps, this product works in all field applications, even in severe or harsh battlefield environments. Simple to install and easy to re-enter, yet flexible enough to conform to the diameter of a reel

when re-wound. The JPS 400 is ideal for both TFOCA AND TFOCA Second Generation applications.

There are two high-grade brass retention assemblies that use both the jacket and the Aramid yarn found in TFOCA cable to provide strain relief & secure the fiber inside the waterproof housing. A waterproof compression gasket prevents water and other contaminants from entering the housing.

**JPS 400 Mechanical Properties & Performance Specifications:**

- High-grade formulated polyamide conduit & threaded adapters
- Self-extinguishing, low smoke, halogen & cadmium free
- Temperature Range: -50C to +105C continuous, 150C short term
- Chemical resistance to fuels, mineral oils, fats, and alkalies
- Specifically designed for external application in traction industry
- Size: 15" x .630" (ID) x .932" (OD)
- Re-enterable & Re-usable
- Conforms to TFOCA reel sizes
- Cable Size Range: .196"-.394"
- Pull Strength (Load Test): 250 lbs
- Waterproof

Ser Number	RFP Specification	Compliance to RFP specification YES/NO	In case of non-compliance deviation from RFP to be specified in unambiguous terms
(a)	Splicing Capability	For up to 1-4 splices SM & MM	Y
(b)	Water Proofing Standard	IP64 class for the hard cover case	Y
(c)	Tube Protection class	Better than IP67 (24 h @ 5000 mm)	IP68
(d)	Time taken to repair a cable	Fast & reliable cable repair within 10 min - 30 min (1F, 4F)	Y
(e)	Maximum Attenuation for Mechanical splices	Typical value < 0.2 db @ 1300 nm	Y
(f)	Should be able to splice Armored/ Ruggedized cable (as offered by the vender)	Yes	Y
(g)	Reusable components	100% reusable components (except mechanical splice protector)	Y
(h)	Temperature range	Operating Temp:-10°C - 50°C Non-Operating Temp: -40°C 71°C	
(j)	Weight	< 4.2 kg	Do not have kit. TE has kit in India.
(k)	Dimensions (max)	410x33x202mm	Do not have kit. TE has kit in India.
(l)	Tensile load of cable after repair	No Change	250 lbs



Ruggedized Fiber Optic Connectors

**Optical Test Set for Fiber Optic Cables**

Designed for harsh environments

**Product Facts**

- Especially designed to support the installation of optical links in the field
- Able to test both cable drums and entire links
- Powered by batteries with high autonomy
- Suitable for diagnostics and construction teams
- Easy to use, ergonomic, rugged design
- Suitable for cable length up to 10 km
- Supports up to 4 fibers per cable with various types of connectors



**Diagnostic Features**

**Power Meter**

The optical power from any source can easily be measured with the power meter function.

**Optical Source**

A continuous optical signal is generated and transmitted with selectable output power.

**Drum Test / Cable Test**

Test of an entire cable drum with automatic good/bad indication. The test of an entire cable is realized with a 2nd KPG-opt or a loop connector.

**Test Frames (optional)**

The KPG-opt can generate specific test frames as used in optical networks and LOS systems.

**Optical Tester**

Description	Part Number
850 nm 38999 III Size 11 Optical Test Kit	1918016-1
850/1300 nm PRO BEAM Jr. Optical Test Kit	1918016-2
1310 nm PRO BEAM Jr. Optical Test Kit	1985006-1

For additional wavelength testers, contact your local TE Connectivity Sales Representative.

Protective Case
1918082-1

**Note:** All part numbers are RoHS compliant.



**Fiber Optic Accessories**

**Hand Held Visual Fault Locator (VFL)**

**Product Facts**

- 650 nm (visible) Class 2 1.0 mW max Diode Laser
- Continuous and flashing (2-3 Hz pulsed) modes
- Rugged rubber shell and body design modeled after a popular military connector
- Lanyard attached dust cover
- Standard 2.5 mm adapter for SC, ST, and FC connectors
- Optional 1.25 mm adapter for LC and MU connectors.
- Unique design allows adapter to permanently reside on VFL so it is not misplaced allowing user to choose 1.25 mm or 2.5 mm
- Uses 1 “AA” style battery for >30 hours of continuous use
- Soft-sided belt case for convenience and storage



The TE Connectivity Hand Held Visual Fault Locator (VFL) is a rugged and affordable solution for identifying breaks and bending in optical fibers and cabling. Its powerful, red (650 nm) laser provides the ability to locate damaged, broken, or tightly bent fibers that cause undesirable attenuation in your system.

The jacket of the cable will glow red at the location of the fault. The FLASH button

allows the user to toggle between continuous or pulsed mode. The compact, rugged, and balanced design is based upon a popular harsh environment fiber optic connector. The single “AA” style battery is good for >30 hours of continuous use and the soft-sided protective case with belt loop provides a convenient and protective means of storage.

**Applications**

Affordable VFL Solution for:

- Identifying breaks, bends, and other damage in optical fibers
- Tracing fiber paths
- Identifying termination errors
- Continuity testing

**Product Dimensions**

- Length** — 18.5 cm [7.283 in]
- Width** — 2.2 cm [0.866 in]
- Thickness** — 2.2 cm [0.866 in]
- Weight (w/battery)** — 150 g [0.33 lb]

Description	Part Number
Hand Held Visual Fault Locator	1828352-1
1.25 mm Adapter for Hand Held VFL	1828353-1
Includes Part Numbers 1828352-1 and 1828353-1	1828352-2

**3**

Ruggedized Fiber Optic Connectors

**Expanded Beam Avionics-Related Standards and Specifications**

**ARINC 600, 664, 763 and 801**

**ARINC 664 — Aircraft Data Network**

TE Connectivity's ARINC Connectors with Mini Expanded Beam inserts will meet/exceed all 100 Base-FX Ethernet LAN applications

**ARINC 763 — Avionics Network Server System**

TE's ARINC 600 Connectors are designed to meet/exceed 100 Base-FX Ethernet LAN applications.

**Network Server Unit (NSU)** — can use ARINC 600 Size 1 connector with up to 8 Expanded Beam fiber optic channels (two Mini Expanded Beam inserts in cavity C)

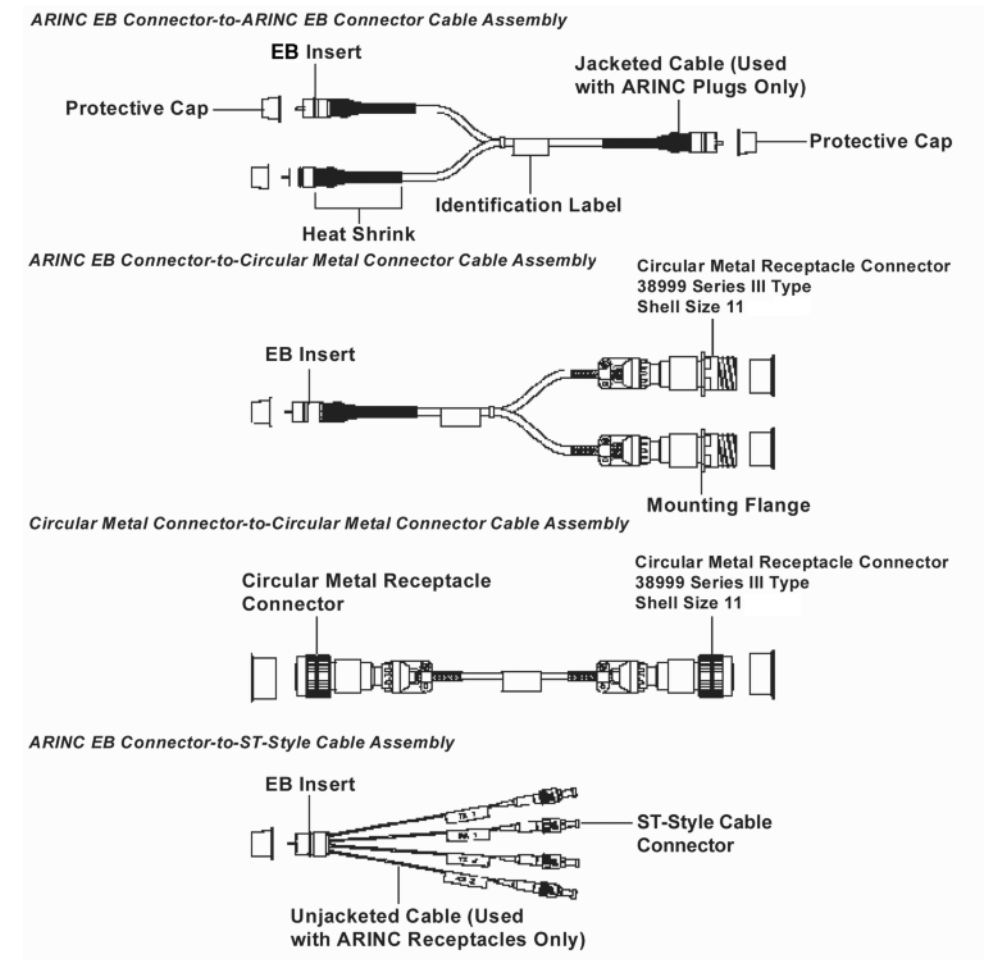
**Server Interface Unit (SIU)** — can use ARINC 600 Size 3 connector with up to 16 Expanded Beam fiber optic channels (four Mini Expanded Beam inserts in cavity F)

**Integrated Network Server Unit (INSU)** — can use ARINC 600 Size 3 connector with up to 16 Expanded Beam fiber optic channels (four Mini Expanded Beam inserts in cavity F)

**ARINC 801 — Fiber Optics Working Group**

TE provides a single reference point for Flight Level Optics that are multi-sourced.

**Typical Assemblies for In-Flight Network Applications**



**Typical Assemblies**

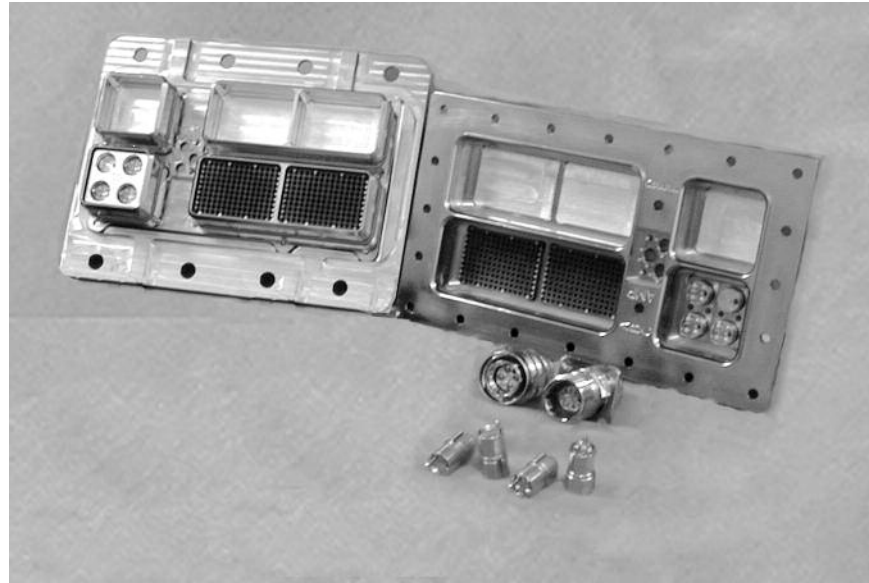


**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

ARINC 600 and 404

Product Facts

- For Mini Expanded Beam Inserts
- For use in 100 base-FX Ethernet LAN applications per ARINC 664 and ARINC 763
- Insert holders designed to ARINC 600, Supplement 13 or to specific customer needs for Mini Expanded Beam inserts
- Drop-In Insert Holders utilize Standard ARINC 600 Retainers
  - Hard Stop on Plug Side
  - Spring-Loaded Stop on Receptacle Side
  - Captive Hardware
- Facial Sealing — Optional
  - Bonded to Receptacle Block Mating Face
  - Raised Collar Seal around Optics Insert compresses against Chamfer on Plug Block Mating Face

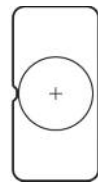


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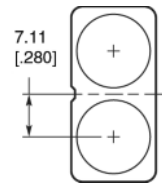
Ruggedized Fiber Optic Connectors

ARINC 600 Insert Holders for Mini-Expanded Beam Contacts

Size 1  
Power Cavities

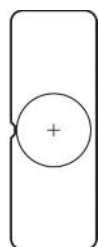


ARINC 600, 1 Position  
1MP

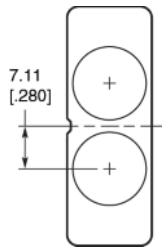


ARINC 600, 2 Position  
2MP

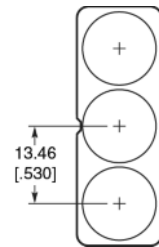
Size 1  
Signal Cavities



ARINC 600, 1 Position  
1MS



ARINC 600, 2 Position  
2MS



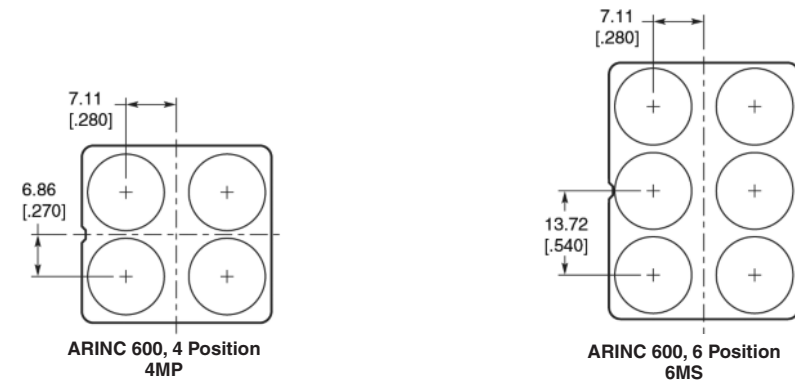
ARINC 600, 3 Position  
3MS

**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

See next page for Size 2 / 3 Power and Signal Cavities

ARINC 600 and 404 (Continued)

Size 2 / 3  
Power and Signal Cavities



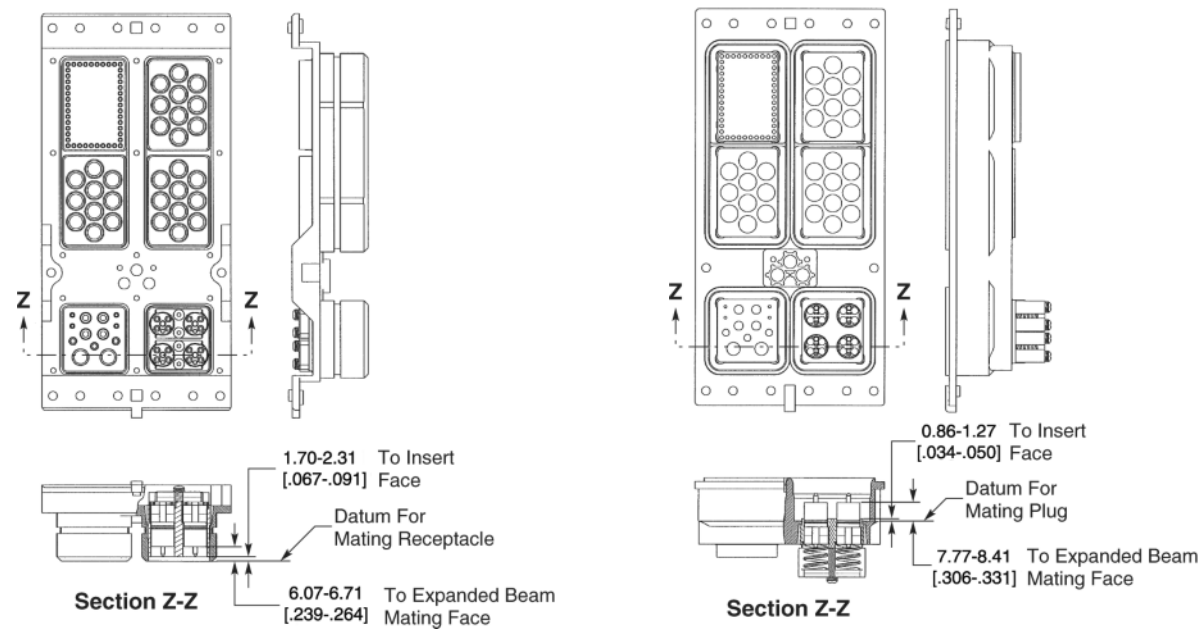
Rack and Panel Mini Insert Kits

Description	Part Number
2 x 850 / 1300 nm Dual Multimode	1374759-3
2 x 1310 nm Singlemode	1588839-3
2 x 1550 nm Singlemode	1754622-3
4 x 850 / 1300 nm Dual Multimode	1374759-1
4 x 1310 nm Singlemode	1588839-1
4 x 1550 nm Singlemode	1754622-4

Ferrule Kits

Fiber Hole Size	Mode	PRO BEAM Connector	Part Number
125 μm	SM	Mini	1754700-1
126 μm	SM	Mini	1754700-2
126 μm	MM	Mini	1754699-1

ARINC 600 Insert Holders  
for Mini-Expanded Beam  
Contacts



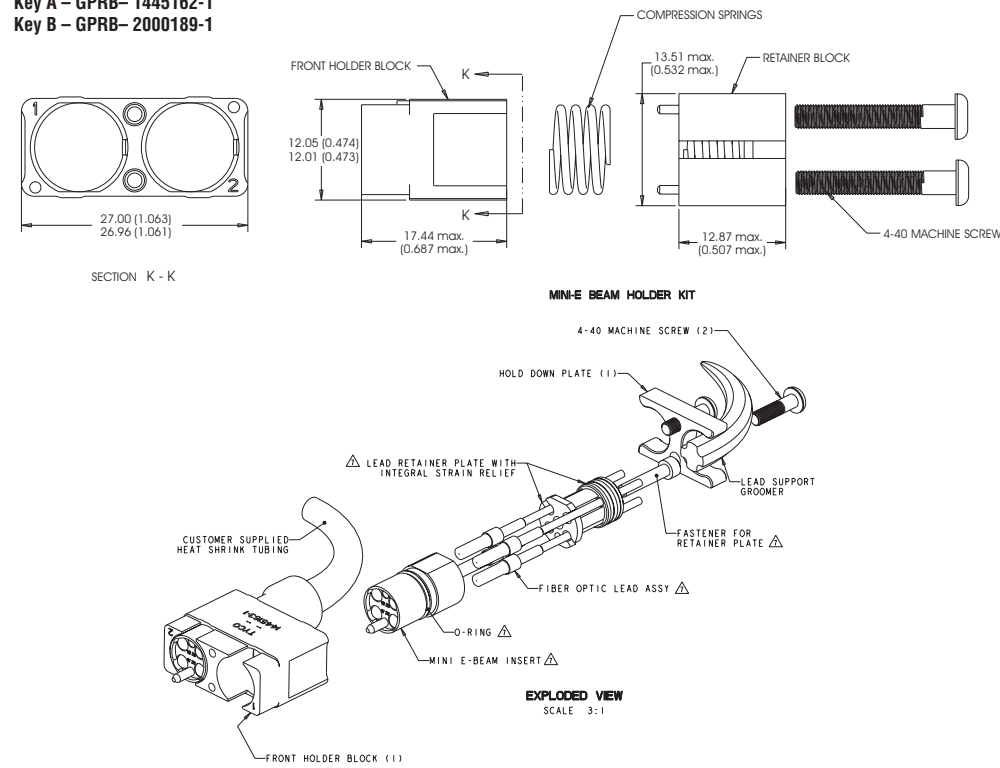
Typical Layout for Plug

Typical Layout for Receptacle

ARINC 600 and 404 (Continued)

M2 Mini-Expanded Beam  
Insert Holders for GPRB

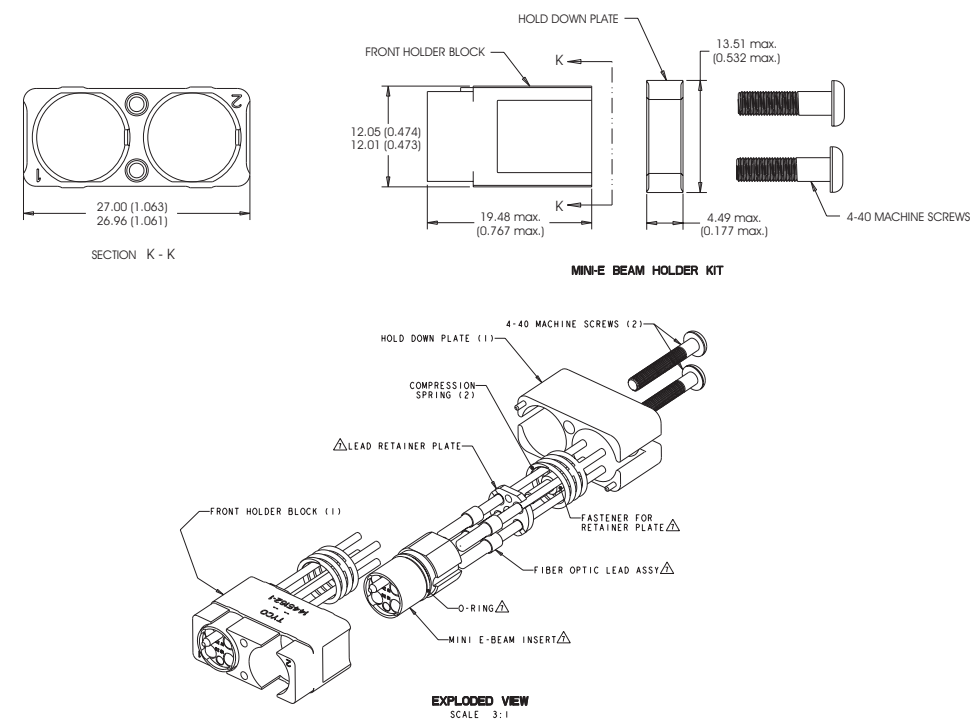
Holder Kit, Pin (Spring-Loaded), Mini-Expanded Beam  
Key A – GPRB- 1445162-1  
Key B – GPRB- 2000189-1



3

Ruggedized Fiber Optic Connectors

Holder Kit, Socket (Fixed), Mini-Expanded Beam,  
Key A – GPRB –1445163-1  
Key B – GPRB –2000190-1



**ARINC 600 and 404** (Continued)

**Insert Kits for GPRB Holders**

**Rack and Panel Mini Insert Kits**

Description	Part Number
2 x 850 / 1300 nm Dual Multimode	1374759-3
2 x 1310 nm Singlemode	1588839-3
2 x 1550 nm Singlemode	1754622-3
4 x 850 / 1300 nm Dual Multimode	1374759-1
4 x 1310 nm Singlemode	1588839-1
4 x 1550 nm Singlemode	1754622-4

**Ferrule Kits**

Fiber Hole Size	Mode	PRO BEAM Connector	Part Number
125 µm	SM	Mini	1754700-1
126 µm	SM	Mini	1754700-2
126 µm	MM	Mini	1754699-1

**Comparative on Expanded Beam Inserts**

**Comparative on Expanded Beam Inserts' weight and Insertion Forces when applied to an ARINC housing**

- ARINC 600 connector mated pair size 2 = 440 grams (without copper contacts)
- ARINC style Mini and Junior size Expanded Beam inserts = 5 pounds insertion force each when applied to the Rack and Panel ARINC Connector inserts
- Signal Cavity Optical Holder insert (i.e.: holds up to six mini inserts with four fiber ball lenses each or up to 24 fibers each insert set) = @ 30 grams
- Power Cavity Optical Holder insert (i.e.: holds up to four mini inserts with four fiber ball lenses each or up to 16 fibers each insert set) = @ 20 grams
- Insert mated pair PRO BEAM Jr. Connector insert set = @ 41.79 grams
- Insert mated pair Connector insert set = @ 16.17 grams
- Fiber = single fiber ≤ 4 kg / km
- Fiber = four fiber jacketed with a support member ≤ 24 kg / km
- Static spring force per mated Expanded Beam insert pair = 5 lbs.



Physical Contact & Technology

ARINC 801 Optical Termini

Product Facts

- Optical termini for use with GPR, ARINC 600, circular MIL-DTL-38999 connectors.
- Industry Standard 1.25 mm ceramic ferrule
- Compatible with 1.5-2.2 mm Tight jacket and loose tube cable construction:
  - MT - Tight jacket cable
  - ML - Loose tube cable
- SM / MM versions

Materials

- Housings — Nickel Plated Copper
- Ferrule — Zirconia
- Spring — Stainless Steel
- Crimp Sleeve — Nickel Plated Copper
- Protective Cover — Silicone

Optical Performance

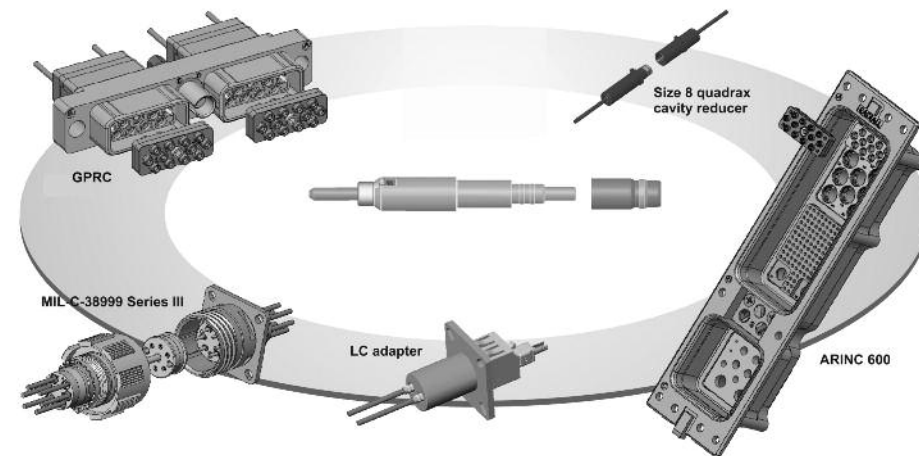
Singlemode, 1310 nm/1550 nm (UPC):

- Attenuation, Mean — 0.15dB
- Return Loss — > 50dB

Multimode, 850 nm/1310 nm:

- Attenuation, Mean — 0.10dB
- Return Loss — > 20dB

ARINC 801 Optical Termini  
one common terminus for all types of connectors



3

Ruggedized Fiber Optic Connectors

Mechanical / Environmental Performance

Test Description	Standard	ARINC 801 Optical Termini in GPR A & B Connector	ARINC 801 Optical Termini in 38999 Connector	ARINC 801 Optical Termini in ARINC 600 Connector
Thermal Shock	SAE-AS-13441 met 1003.1	-55C /+100C	-55C /+100C	-55C /+100C
Temperature Life	TIA/EIA 455-20A	500h @ +100C	500h @ +100C	500h @ +100C
Vibration	TIA/EIA 455-11	8h/axis 3.8g <sup>2</sup> /Hz 43 G rms	8h/axis 3.8g <sup>2</sup> /Hz 43 G rms	8h/axis 0.2g <sup>2</sup> /Hz 16.4 G rms
Shock	TIA/EIA 455-14A	300 G - 3ms	300 G - 3ms	50G - 11ms
Mate/Unmate (GPR/ARINC 600)	SAE-AS-13441 met 2016	100 Cycles	N/A	100 Cycles
Mate/Unmate (38999)	TIA/EIA 455-21A	N/A	500 Cycles	N/A
Maint. Aging	SAE-AS-13441 met 2002-1	10 Cycles	10 Cycles	10 Cycles
Salt Spray	SAE-AS-13441 met 1001.1 cond C	96 hr	500 hr	48 hr
Cable Ret. (1.8 mm)	SAE-AS-13441 met 2009-1	68N	68N	68N
Humidity (GPR/38999)	TIA/EIA 455-5 met B7A	10 cycles / 24h 90% RH -25C/+65C	10 cycles / 24h 90% RH -25C/+65C	N/A
Humidity (ARINC 600)	TIA/EIA 455-5 met B	N/A	N/A	10 cycles / 24h 90% RH -25C/+65C
Altitude Imm.	TIA/EIA 455-15	10,000 ft (69.6kPa)	10,000 ft (69.6kPa)	10,000 ft (69.6kPa)



Physical Contact & Technology (Continued)

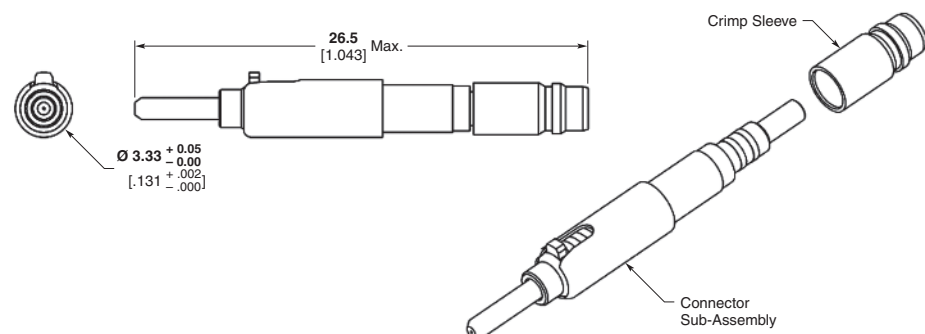
**ARINC 801 Optical Termini**  
(Continued)

There are three types of ARINC 801 Optical Termini available dependent upon cable structure.

TE Connectivity has multiple connector types/families available for the ARINC 801 Optical Termini System.

These are:

- General Purpose Rectangular Connectors
  - F5 & F12 Inserts
- MIL-DTL-38999 connectors
  - 13-04, 15-06, 21-16
- ARINC 600
  - F12 combinations and F36
- Quadrax Cavity Reducers
- Motherboard & Daughtercard Solutions



**ARINC 801 Optical Termini Part Numbers**

Cable Dia.	Cable Structure ML (loose & tight) MT (ultra tight)	S/M Fiber 125.3 μm PC/UPC	S/M Fiber 125.3 μm APC	M/M Fiber 128 μm PC
0.9mm Buffer	—	*	*	*
1.5 - 2.2 mm	ML	1918614-1	1918616-1	1828199-1
1.5 - 2.2 mm	MT	1918615-1	1918617-1	1828200-1

Consult your local TE Sales Representative for additional options.  
\* Contact TE for availability.

Accessories	Part Number
Dust Cap	1985335-1
100 Pc Bulk Pack	1985335-2

**ARINC 801 Cavity Reducers**

Size 8 Quadrax	Part Number	ARINC 801 Cavity Reducer
Pin Quadrax adapter for ARINC 801 Optical Termini in Quadrax FR type cavity	1757727-1	Quadrax cavity reducer (FR/FR) for receptacle shell
Pin Quadrax adapter for ARINC 801 Optical Termini in Quadrax RR type cavity	1757710-1	Quadrax cavity reducer (RR/RR) for receptacle shell
Socket Quadrax adapter for ARINC 801 Optical Termini in Quadrax RR type cavity	1757711-1	Quadrax cavity reducer (RR/RR) for plug shell

**Cable Structure**

	Loose Structure	Tight Structure	Ultra Tight Structure
Movement between fiber & 900 μm buffer	Yes	No	No
Movement between 900 μm & cable jacket	Yes	Yes	No

**Adapters**

Type	Version	Alignment Sleeve	Part Number	Dim. (page 3-32)
ARINC 801 Optical Termini to ARINC 801 Optical Termini	Simplex Bulkhead Feedthrough Type	Ceramic Zirconia	1828996-1	Fig. 1
ARINC 801 Optical Termini to ARINC 801 Optical Termini	Simplex Straight	Ceramic Zirconia	1828997-1	Fig. 2
ARINC 801 Optical Termini to LC	Simplex LC Panel Cutout	Ceramic Zirconia	1828979-1	Fig. 3
ARINC 801 Optical Termini to LC	Duplex LC Panel Cutout	Ceramic Zirconia	1828980-1	Fig. 4
ARINC 801 Optical Termini to LC	Duplex MIL-DTL-38999 Panel Cutout	Ceramic Zirconia	1828995-1	Fig. 5

**Tools**

Description/Function	Part Number
Metal Extraction Tool (M81 969/1-03)	91066-3
Plastic Extraction Tool (M81 969/1403)	M81969/14-03
Daniels Right Angle Insertion Tool	DAK83-16*
Daniels Right Angle Removal Tool	DRK83-16*

\* Contact Daniels Manufacturing Corporation

**Note:** All part numbers are RoHS compliant.

**Connector Options:**  
For part numbers, details, and / or additional connector types and arrangements, contact your local TE Sales Representative.

**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

Physical Contact & Technology (Continued)

**F12 ARINC 801  
Insert Assemblies**



**Product Facts**

- ARINC 801 approved
- Optical termini for use with GPR, ARINC 600, circular MIL-DTL-38999 connectors
- Industry Standard 1.25 mm ceramic ferrule
- Compatible with 1.5-2.2 mm tight jacket and loose tube cable construction:
  - MT - Tight jacket cable
  - ML – Loose tube cable
- Singlemode (SM) and Multimode (MM) versions
- ARINC 801 Optical Termini part numbers:  
 1828199-1 MM/ML Version  
 1828200-1 MM/MT Version  
 1918614-1 SM/ML Version  
 1918616-1 SM/ML Version-APC  
 1918615-1 SM/MT Version  
 1918617-1 SM/MT Version-APC

**Materials:**

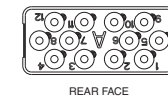
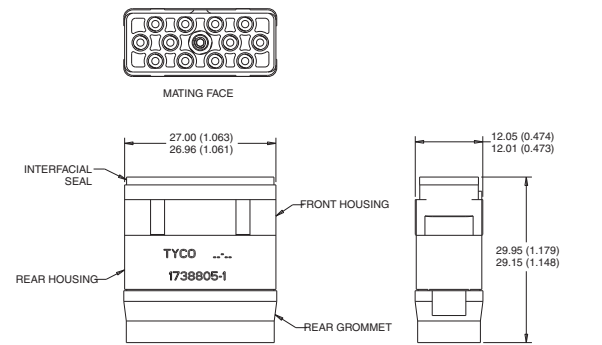
- Housings** – Nickel Plated Copper
- Ferrule** – Zirconia
- Spring** – Stainless Steel
- Crimp Sleeve** – Nickel Plated Copper
- Protective Cover** – Silicone

**Optical Performance**

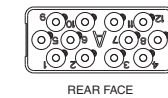
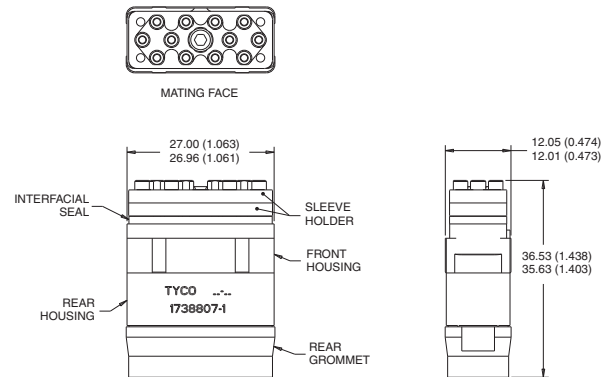
- Singlemode**, 1310 nm/1550 nm (UPC)
  - Attenuation, Mean** – 0.15dB
  - Return Loss** - >50dB
- Multimode**, 850 nm, 1310 nm
  - Attenuation, Mean** – 0.10dB
  - Return Loss** - >20dB

**Assembly Capabilities**

TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales Representative for assistance.

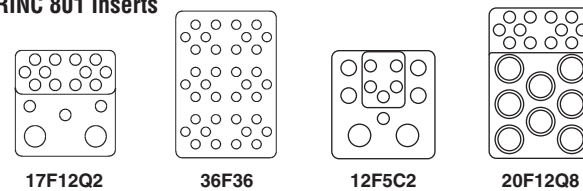


REAR FACE  
Insert Assembly, without Sleeve Holder,  
Environmental, F12  
Key A 1738805-1  
Key B 1738806-1



REAR FACE  
Insert Assembly, with Sleeve Holder,  
Environmental, F12, Key A  
GPRB  
Key A 1738807-1  
Key B 1738808-1

**ARINC 801 Inserts**



ARINC 801 Inserts and Cavity Reducers accept ARINC 801 Optical Termini.

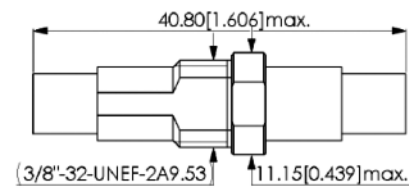
**Note:** All part numbers are RoHS compliant.



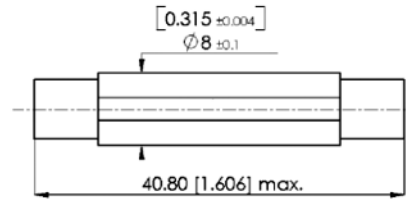
Ruggedized Fiber Optic Connectors

Physical Contact & Technology (Continued)

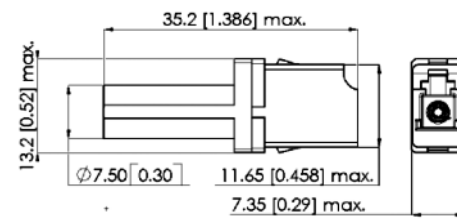
ARINC 801 Optical Termini Adapter Dimensions



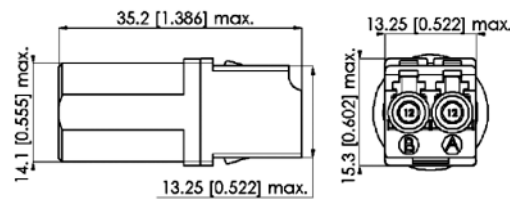
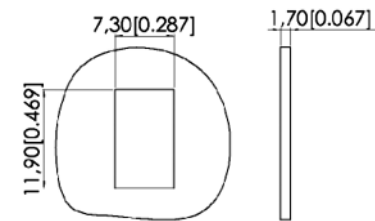
Terminus to Terminus Bulkhead Feedthrough  
Figure 1



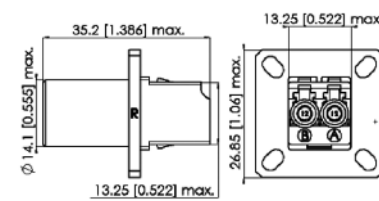
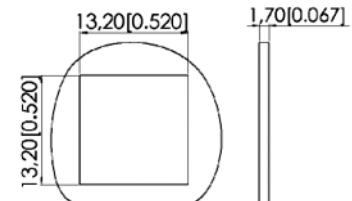
Terminus to Terminus Straight  
Figure 2



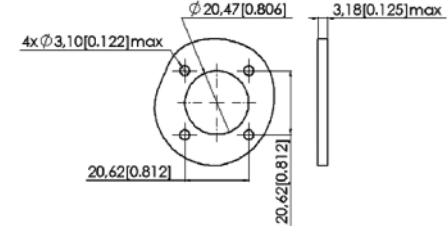
Terminus to LC Simplex  
Figure 3



Terminus to LC Duplex, LC Panel  
Figure 4



Terminus to LC Duplex, MIL-DTL-38999 Panel Cutout  
Figure 5



**Physical Contact & Technology** (Continued)

Most of the tools included in the Termination Kit are commonly used in the fiberoptic industry (strippers, cutting pliers and all accessories for fiber and cable preparation). The items in the table below are specially made for the ARINC 801 Optical Termini System. Their use is highly recommended to achieve mechanical and optical performances.

**ARINC 801 Optical Termini Termination Kit**  
Part Number 1828644-X



Qty -2	Qty -1	Description	Part Number	Item #
1	1	Label, Termination Kit	1918887-1	28
1	1	Insertion and Extraction Tool	91066-3	27
2	2	1.25 mm Swab	1828355-1	26
1	1	LC Polishing Bushing	1754074-1	25
1	1	Polishing Plate	501197-1	24
1	1	Polishing Pad	501523-1	23
10	10	0.3 µm Polishing Film	228433-5	22
5	5	Fine Diamond Polishing Film	503887-1	21
10	10	5 µm Polishing Film	228433-8	20
15	15	9 µm Polishing Film	1374484-1	19
1	1	Cleave Tool	504064-1	18
1	—	Curing Oven Block	1918510-1	17
1	—	Curing oven	502130-1	16
1	1	Resin injector tips	1918509-2	15
1	1	Resin injector	1918509-1	14
5	5	Epoxy, 353ND	504035-1	13
10	10	Alcohol Fiber Wipe	501857-2	12
1	1	Inner Ferrule Shaping Tool	1918511-1	11
1	1	Hexagonal key	19840-5	10
1	1	Fiber Stripping tool (125 µm)	1754708-1	9
1	1	Handtool	58532-1	8
1	1	Die-set, ARINC 801 Optical Termini	1828889-1	7
1	1	KEVLAR Shears	1278637-1	6
1	1	Cable Jacket Strip Tool	1278531-1	5
1	—	1.25 mm Microscope Adapter	1754765-1	4
1	—	200x Microscope	1754767-1	3
1	—	Carrying case, Weekender	1918881-1	2
—	1	Carrying case, Attache	1918834-1	1

The following tools are necessary for product termination but are not included in the kit: Alcohol, canned air, and clean cloth. Other accessories available include ruler, tweezers, cleaning tip, roller adhesive tape, moss cable support and permanent ink markers.

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Ruggedized Fiber Optic Connectors

**Tool Kit Contents**

Item #	Comp Part Number	Description	-1	-2	-3	-4
1	1278540-1	Soft Carry Bag	1	—	—	—
2	1754767-1	200x Microscope	1	—	—	—
3	1754765-1	LC Microscope adapter	1	—	—	—
4	6374613-5	LC - SC 50/125 cable assembly	2	—	—	—
5	6374615-5	LC - SC 62.5/125 cable assembly	2	—	—	—
6	1918808-1	1.25 mm swab	2	2	—	—
7	1918810-1	OPTIPOP C Card Cleaner	2	5	—	—
8	1828349-1	Optical Loss Test Set	1	—	1	—
9	1828350-1	OLTS 1.25 mm detector cap	1	—	1	—
10	1828352-1	Visual Fault Locator	1	—	1	—
11	1828353-1	VFL 1.25 mm Adapter	1	—	1	—
12	1828465-1	Label, Service Kit	1	—	1	—
13	1918222-1	Inspection, Hand Held Digital Probe Kit	—	—	—	1
14	1918223-1	1.25 mm Adapter, Digital Probe	—	—	—	1

-1 inspection, cleaning & testing  
-2 cleaning  
-3 testing  
-4 Hand Held Digital Probe Kit

**Note:** All part numbers are RoHS compliant.

KEVLAR is a trademark of E.I. du Pont de Nemours and Company.  
OPTIPOP is a trademark of NTT Advanced Technology Corporation.

**ARINC 801 Optical Termini Service Tool Kit (Inspection, testing & cleaning)**  
Part Number 1828335-1

**ARINC 801 Optical Termini Service Tool Kit (Cleaning only)**  
Part Number 1828335-2

**ARINC 801 Optical Termini Service Tool Kit (Testing only)**  
Part Number 1828335-3

**ARINC 801 Optical Termini Service Tool Kit (Hand Held Digital Probe Kit)**  
Part Number 1828335-4



**Ruggedized Fiber Optic Products** (Continued)

**MIL-T-29504 Style Optical Connector Range**

**Product Facts**

- Manufactured to meet the requirements of MIL-T-29504/4 and 5
- Proven in both rotary and fixed-wing aerospace applications
- Sprung loaded socket contacts ensure consistent pressure and performance levels

The range of MIL-T style optical contacts is designed specifically for use with the MIL-DTL-38999 Series III connectors within the standard size 16 cavity.



**Optical Inserts for EN4165 and ARINC 809**

**Product Facts**

- Interchangeable modular inserts
- Easy use insertion / extraction tool
- Easy access to optical contacts for cleaning maintenance
- Compliments DMC-M multiway modular connector range

TE has designed a comprehensive range of Fiber optic inserts to further enhance our EN4165 connector range. To date the modular inserts can accommodate MC5, MC6 ribbon, Arinc 801 and EN4531 optical contacts.



**Fiber Optical Insert for DMC-M**

**Product Facts**

- Light weight composite
- Colour coded
- Modularity
- Screw coupling

An optical insert is available for the popular DMC-M connector which enables six standard MC5 contact to be incorporated into a single insert package or 12 way MC6 or 4 way Arinc 801 contacts.



**RSC-v**

**Product Facts**

- Suitable for singlemode applications
- Good return loss measurements
- Tuneable PC variant for optimum performance

APC version of the ever popular RSC connector range. The RSC-V is available with either an angled polish (APC) or a tuneable physical contact (PC) variant.





### Ruggedized Circular Connectors

#### 38999

##### Product Facts

- **100% Scoop Proof**
- **High strength Aluminium shells**
- **Superior flourosilicone seals provide maximum tear resistance and sealing memory**
- **Threaded coupling with self locking for anti-vibration integrity**

Military circular connector qualified to MIL-DTL-38999, Series III for fiber optic MIL-T-29504 style termini. Rugged design offers maximum performance for shock and vibration, environmental, moisture and corrosion resistance and provides effective EMI shielding.



3

Ruggedized Fiber Optic Connectors

**MC3 MKII Fiber Optic Multiway Connectors**

**MC3 MKII Fiber Optic Multiway Connectors**

**Product Facts**

- **Insert-to-insert keying assists precision alignment**
- **Individually rear insertable/removable optical contacts enable easy assembly**
- **Backshells and adaptors available for most single and multifiber cable types**

**General Specifications**

**Fiber type** – Multi and Singlemode fiber  
 Ranging from 5 to 200µm core diameters  
**Channels** – 5, 8 and 12 Optical channels  
**Cable size** – 1.5 mm to 3.0 mm outer jacket

**Materials**

**Shell** – Aluminium; nickel plated  
 Aluminium; cadmium plate olive drab  
 Aluminium bronze (special order)

**Contact body**

**Arcap** – Titanium  
**Ferrule** – Zirconia

**Alignment sleeve** – Zirconia

**Seals** – Fluorosilicone or nitrile

**Plating** – Aluminium, nickel plated  
 Aluminium, cadmium plate olive drab  
 Aluminium bronze (special order)

**Optical Performance**

**Insertion loss** - 0.25dB typical\*

**Return loss** - 40dB typical\*

**Repeatability** - Typically better than 0.1db with 50/125µm fiber

**Environmental Specification**

**Temperature**

**High temperature endurance** - +155°C\*

**Low temperature endurance** - -65°C\*

**Durability** - Greater than 500 mating cycles

**Vibration**

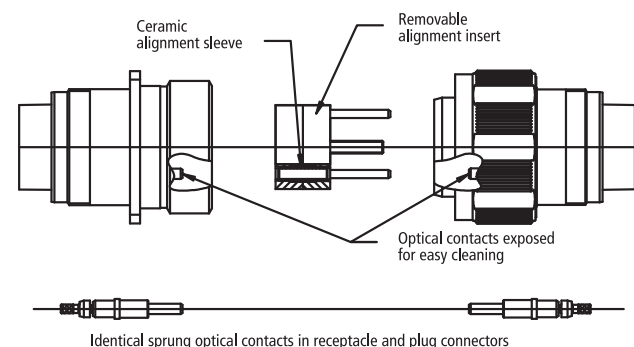
**Sinusoidal** - 5-3000Hz, 30g

**Bump** - 4000 bumps, 40g

The MC3 range of high performance connectors incorporates individual optical contacts inserted from the rear.

The removable socket insert allows for easy access to the optical faces to aid cleaning and maintenance.

The MC3 MkII range has the same removable alignment insert feature as the MC3 for easycleaning (which can be specified in either receptacle or plug), and is suitable for use with most single-mode and multimode optical fibres with core diameters from 5 to 200µm. 5, 8 and 12 optical channels are accommodated in the MIL-C-38999 Series III style connector shells. The MC3 MkII connector range has been tested and approved for use in severe environments.



**Key Features**

- Precision Zirconia ceramic ferrules and alignment sleeves ensure superior, repeatable optical performance with physical contact polishing techniques
- Insert-to-insert keying assists precision alignment
- Individually rear insertable/removable optical contacts enable easy assembly
- Easily removable alignment sleeve insert facilitates simple cleaning and maintenance
- Colored band indicates full mating
- Identical optical contacts are spring loaded in both plug and receptacle to maintain physical contact even under severe shock or vibration conditions (rigid contact option available for receptacle)
- Simple termination process and tooling
- Backshells and adaptors available for most single and multifiber cable types
- MIL-C-38999 Series III anti-vibration coupling mechanism and tri-start thread
- Alternative shell keyway orientations provide protection from inadvertent mis-mating
- Dynamic 'O' ring seal between mating shells provides water submersion capability

\*fiber and polishing process dependent

**MC3 MKII Fiber Optic Multiway Connectors** (Continued)

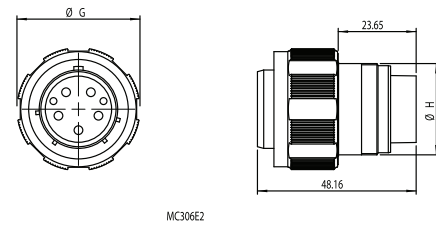
**Insert Arrangement**

Size - Arrangement	A	B1	B2	C1	C2	D	Thread E	Thread F tri-start dimensions (inches)	ØG	ØH	ØJ	ØK	ØL
19-5	36.58	29.35	26.98	5	3.5	27.84	M28 x 1.0	1.250	37.92	27.7	35.4	36.92	29.46
23-8	42.98	34.92	31.75	6.23	4	33.84	M34 x 1.0	1.500	44.12	33.7	41.75	43.12	35.81
25-12	46.02	38.11	34.92	6.23	4	36.84	M37 x 1.0	1.625	47.35	36.7	44.93	46.35	38.99

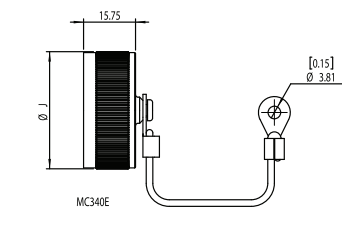
**Dimensional Information**

All dimensions in inches (except threads). To complete part number for ordering see 'ordering information'

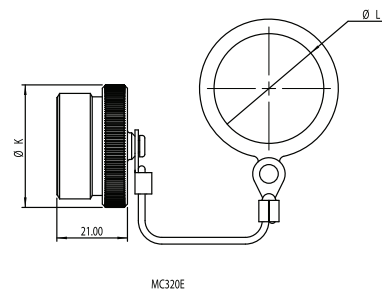
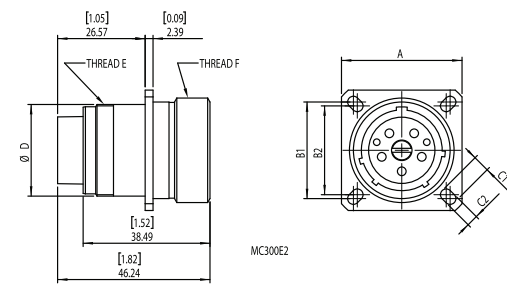
**Plug**



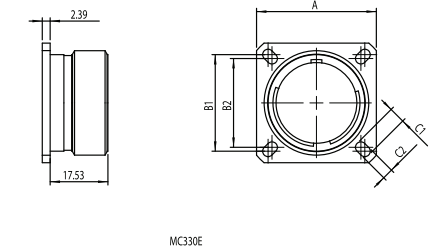
**Procap**



**Receptacle**



**Dummy Receptacle**



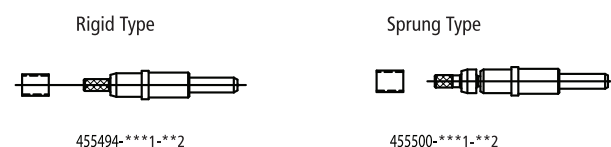
**3**

Ruggedized Fiber Optic Connectors

**MC3 MKII Fiber Optic Multiway Connectors** (Continued)

**Optical Contacts (ordered separately)**

Optical contacts are supplied with a profile formed optical end face and are available for singlemode or multimode fibers. Contacts are available in either sprung or rigid versions, depending upon application (rigid contacts should be used in bulkhead receptacles only).



Optical Contacts (ordered separately)

Options are as follows:

\*\*\*1 Optical hole Ø 'A' fiber size (see table 1)

\*\*2 Cable type (see table 2)

Please note: for type 00 (\*\*2) the cable crimp sleeve is not supplied i.e. for terminating buffered fiber.

**Table 1 (\*\*\*)**

Rigid Contact		Sprung Contact	
Part number (multimode) 455***-***1-**2	Part number (singlemode) 455***-***1-**2	Part number (multimode) 455***-***1-**2	Part number (singlemode) 455***-***1-**2
455494-128-**2	455617-126-**2	455500-128-**2	455500-128-**2
455494-145-**2	455617-127-**2	455500-145-**2	455500-145-**2
455494-162-**2		455500-162-**2	
455494-176-**2		455500-176-**2	
455494-232-**2		455500-232-**2	
455494-283-**2		455500-283-**2	
455737-232-**2		455500-1MM-**2	
		455738-232-**2	

**Table 2 (\*\*\*)**

Contact Type		Cable Type		Crimp Dies (see note)		
Rigid	Sprung	Plain buffer	Tight jacket cable	Crimp Sleeve	Part number	A / F
455494-***1-00	455500-***1-00	900µm-	-	-	455608	1.64 / 1.74
455617-***1-00	455616-***1-00	900µm	-	-	455608	1.64 / 1.74
455494-***1-01	455500-***1-01	-	Ø2.5 OD	455610-01	455608	3.10 / 3.12
455617-***1-01	455616-***1-01	-	Ø2.5 OD	455610-01	455608	3.10 / 3.12
455494-***1-02	455500-***1-02	-	Ø1.8 OD	455610-02	455608	3.10 / 3.12
455617-***1-02	455616-***1-02	-	Ø1.8 OD	455610-02	455608	3.10 / 3.12
455494-***1-03	455500-***1-03	-	Ø3.0 OD	455610-03	455608	3.56 / 3.48
455617-***1-03	455616-***1-03	-	Ø3.0 OD	455610-03	455608	3.56 / 3.48
455494-***1-04	455500-***1-04	-	Ø2.1 OD	455610-04	455608	3.10 / 3.12
455617-***1-04	455616-***1-04	-	Ø2.1 OD	455610-04	455608	3.10 / 3.12
-	455500-1MM-00	-	Ø2.2 OD	-	455697	2.62 / 2.72
455737-***1-00	455738-***1-00	-	Ø1.5 OD	-	455478	2.27 / 2.37

Please note: for alternative sizes, please consult technical sales.

Cable Type / Description	Cable Ø O/D mm
Multiway cable, with 900µm buffered fiber and peripheral strain relief	3.5
	4.5
	5.0
	5.5
	6.0
Multiway cable, various constructions - e.g. central strain relief	7.0
	Backshells are available for a range of multiway cables, please consult technical sales

Please note: Crimp dies are used with crimp tool 451716 (Erma 29020).

**MC3 MKII Fiber Optic Multiway Connectors** (Continued)

**Ordering Information**

**Series:**

**Style:**  
 00 = Bulkhead receptacle  
 06 = Plug  
 07 = Jam nut receptacle  
 20 = Protective plug  
 30 = Dummy receptacle  
 40 = Protective cap receptacle

**MkII:**  
 2 for 00 Bulkhead receptacle, 06 plug and 07 Jam nut Receptacle only. Otherwise omitted

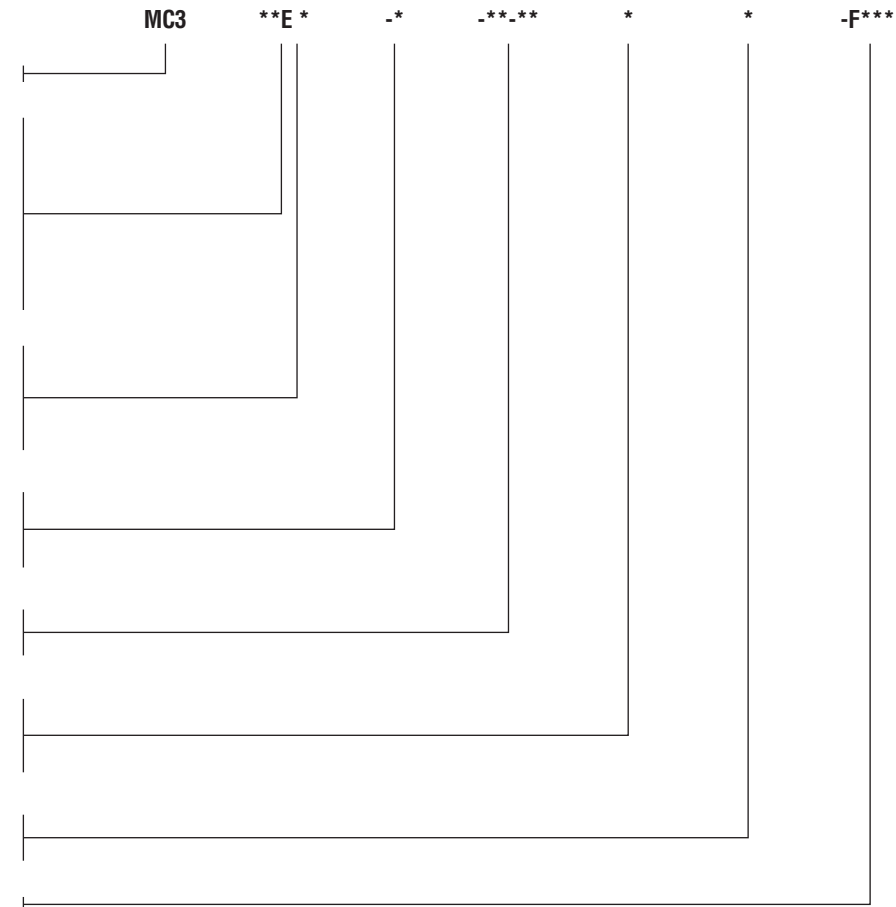
**Shell finish:**  
 N = Nickel plated  
 C = Cadmium plated olive drab

**Shell size - no. of channels:**  
 19-5, 23-8, 25-12

**Insert type**  
 P, S (S type includes the removable alignment insert)

**Shell orientation:**  
 N, B, C, E, F and 'U' Universal

**Modification code:**



Ruggedized Fiber Optic Connectors

**Example part numbers:**  
 Connector MC300E2-N-19-5SN  
 Protective cap MC340E-N-19  
 Dummy receptacle MC330E-N-19

**Accessories / Essential Tooling Information**  
 For comprehensive tooling and consumable listing refer to technical sales.

- Quality Approvals**
- Civil Aviation Authority A8-1
  - BS EN ISO 9001
  - Military Spec Approvals 38999
  - BS9000 and CECC
  - Underwriters Laboratories
  - BS EN ISO9001:2000 (BSI)
  - BS/EN 9100:2003 (BSI)
  - AS9100 Rev B (BSI)
  - AS9120:2002 (BSI)
  - EASA Part 21 Subpart G (CAA)
  - BS9000 (BSI)
  - Underwriters Laboratories (UL)
  - Military Spec Approvals 38999 (DSCC)

**MC4 Series - Duplex Fiber Optic Connectors**

**MC4 Series - Duplex Fiber Optic Connectors**

**Product Facts**

- **Insert-to-insert keying assists precision alignment**
- **Individually rear insertable/removable optical contacts enable easy assembly**
- **Backshells and adaptors available for most single and multifiber cable types**

**General Specifications**

**Optical**

**Attenuation** – Less than 0-4dB (50/125µm)

**Repeatability** – Better than 0.2dB

**Fiber types** – 50, 62.5, 85/125µm  
100/140µm 200/280µm

**Cable types**

Tight jacket 2.5mm dia  
Duplex 4.5mm OD  
For other cable sizes consult Technical Sales

**Materials**

**Shell** - Aluminium alloy. Nickel plated

**Ferrule** - Zirconia Alignment sleeve: Zirconia

**Seals** - Fluorosilicone

**Backshells** - Aluminium alloy. Nickel plated Mechanical

**Temperature range** – +65°C to +155°C\*

The MC4 Duplex optical fiber connector is based upon shell size 9 Mil-C 38999 Series III making this an extremely compact environmentally sealed 2-way connector. The MC4 is suitable for use with most multimode and singlemode fibers with core diameters of 9 to 200µm. Simplex and duplex constructions can

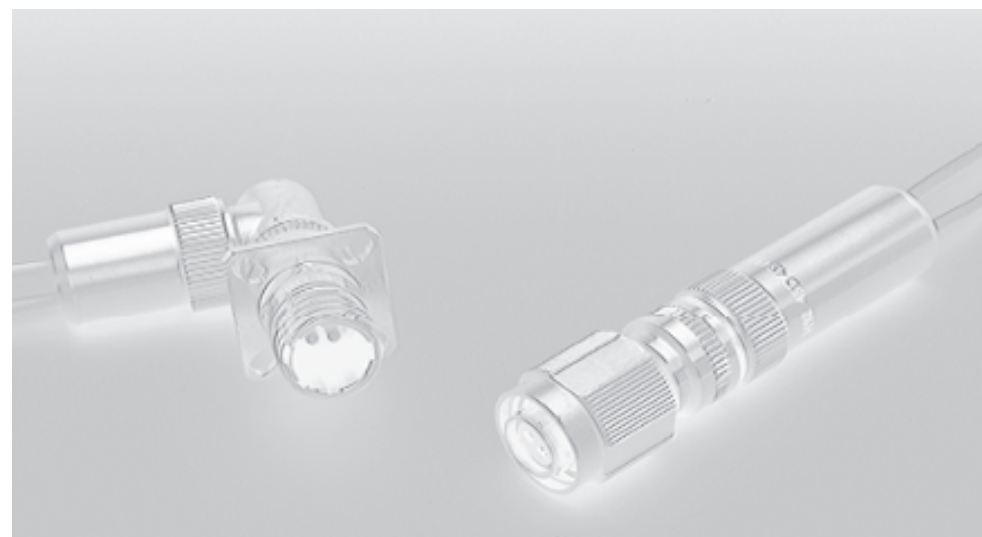
be accommodated with suitable connector backshells.

Precision ceramic ferrules and alignment sleeves ensure optical performance and reliability over an extended service life.

The optical ferrules are sprung loaded in both the plug and receptacle shells.

This provides an axial load equalization ensuring that butt joint contact is maintained even when the connector is subjected to vibration levels in excess of 30g.

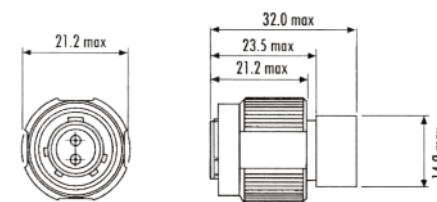
This coupling nut is built in antivibration clicker mechanism to prevent inadvertent uncoupling under adverse vibration conditions.



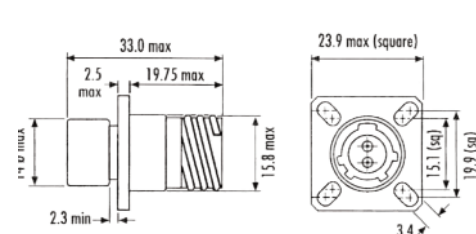
**Quality Approvals**

- Civil Aviation Authority A8-1
- BS EN ISO 9001
- Military Spec Approvals 38999
- Underwriters Laboratories (UL)

**Backplane Module - PN 2000973-1**



**Daughtercard Module - PN 2000974-1**



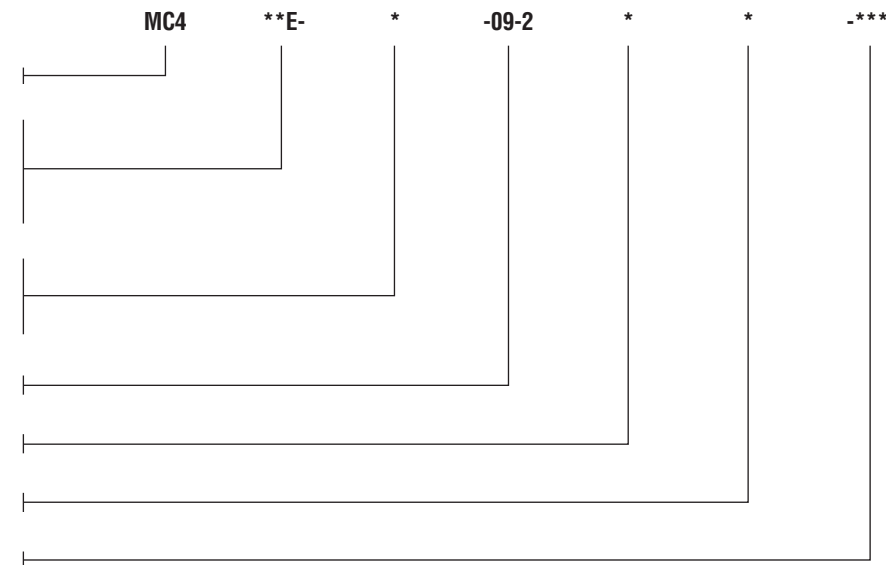
\*Cable and epoxy dependant  
Mechanical endurance: Not less than 500 matings



**MC4 Series - Duplex Fiber Optic Connectors** (Continued)

**Ordering Information**

- Series:**
- Style:**  
00 = Bulkhead receptacle  
06 = Plug  
07 = Jam nut
- Shell finish:**  
N = Nickel plated  
C = Cadmium plated olive drab
- Shell size - no. of channels** – 09-2
- Insert type** – P Pin, S Socket
- Shell orientation** – N, A, B, C, D, E
- Modification code**



Example part number: Bulkhead Receptacle MC400E-C-09-2SN, Plug MC406E-C-09-2PN

**MC4 Essential Tooling**

Part No.	Description and Use	Notes
<b>Connector Assembly Tooling</b>		
454335	Fiber stripping tool	Hozan
453228	Fiber cleaving tool	
454342	Crimp tool	
<b>Polishing Tools and Materials</b>		
454899	Polishing jig	
454539	Rubber pads	2 required
454539	Lapping film set comprises:	
454481	Coarse disk (10 off)	available separately
454482	DR diamond disc	available separately
454483	DM diamond disc	available separately
454484	Polishing disc (10 off)	
<b>Consumable Materials</b>		
454257	Epoxy kit (353ND)	
450490	Spatula	
454297	Syringe (x6)	
<b>Ferrules</b>		
454900-126	Fiber size 125µm	not supplied with connector
454900-141	Fiber size 140µm	not supplied with connector
454900-145	Fiber size 140µm	not supplied with connector
454900-283	Fiber size 280µm	not supplied with connector

Note: Additional tooling may be required specific to cable types (consult technical sales)  
For comprehensive tooling and consumable listing refer to technical sales



Ruggedized Fiber Optic Connectors

### MC5 - High Density Fiber Optic Multiway

#### Product Facts

- **Insert-to-insert keying assists precision alignment**
- **Individually rear insertable/removable optical contacts enable easy assembly**
- **Backshells and adaptors available for most single and multifiber cable types**

#### General Specifications

**Fiber type** – Suitable for fibres with core diameters 5-200um

**Channels** – 2, 4, 6, 8, 10, 18, and 30 channels

**Cable size** – 1.8 mm, 2.1 mm and 2.5 mm jacket

#### Materials

**Shell** – Composite (qualified to MIL-C-38999)

**Contact body** – Arcap

**Ferrule** – Zirconia

**Alignment sleeve** – Zirconia

**Seals** – Fluorosilicone

**Plating** – Nickel plate

#### Optical Performance

**Insertion loss** - 0.25dB typical\*

**Return loss** -40 dB typical

**Repeatability** - Typically better than 0.1dB (with 50/125µm fiber)

#### Environmental Specification

##### Temperature

**High temperature endurance** - +150°C, 760 hours

**Low temperature endurance** -65°C, 500 hours

**Durability** - >1500 mating cycles

##### Vibration

**Sinusoidal** - 5-3000Hz, 40g, 10 hours

**Random** - 25-2000Hz, 5g2/Hz (50g rms), 16 hrs

The MC5 high density range is the very latest advance in high performance multi-channel fiber optic connectors, capable of sustained performance over a wide range of environmental conditions. The MC5 uses the most recent developments in precision ceramic ferrules and lightweight

MIL-C-38999 Series III connector shell materials, combined with purpose designed inserts to ensure the optical performance meets the requirements of high reliability optical systems. Compact sprung loaded, precision optical contacts are individually insertable / removable for

ease of assembly. Extensive testing has confirmed excellent performance under the most demanding environmental conditions with the MC5 chosen as the standard multiway fiber optic connector for the European Fighter Aircraft, Typhoon.



#### Key Features

- Compact 1.25mm precision zirconia ceramic ferrules
- Alignment sleeves ensure superior, repeatable optical performance with physical contact polishing techniques
- Purpose designed inserts, and insert-to-insert keying assist precision alignment
- Individually rear insertable / removable optical contacts enable easy assembly and maintenance
- Easily removable alignment sleeve insert facilitates simple cleaning and maintenance
- Color band indicates full mate condition
- Identical optical contacts are spring loaded in both plug and receptacle to maintain physical contact even under severe shock or vibration conditions (rigid contact option available for receptacle)
- Simple termination process and tooling
- Composite lightweight, high strength, corrosion resistant connector shells
- MIL-C-38999 Series III anti-vibration coupling mechanism, and tri-start thread
- Extensive range including 1,2,4,6,8,10 and 30 way connectors
- Available in both plug socket / receptacle pin and plug pin / receptacle socket configurations

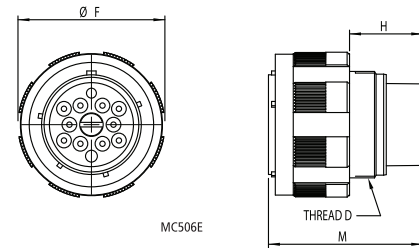
\*fiber and polishing process dependent

**MC5 - High Density Fiber Optic Multiway** (Continued)

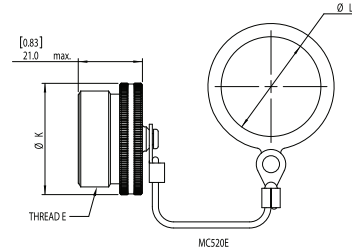
**Dimensional Information**

All dimensions in inches (except threads). To complete part number for ordering see 'ordering information'.

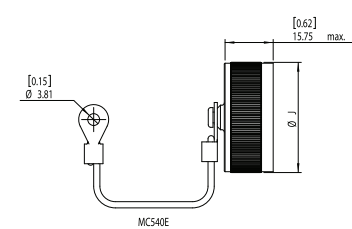
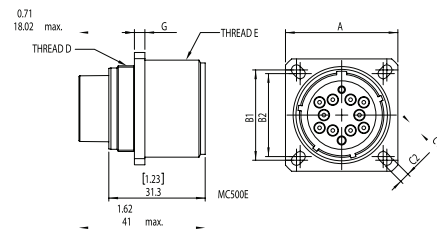
**Plug**



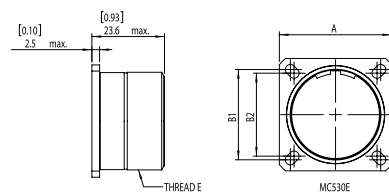
**Procap**



**Receptacle**



**Dummy Receptacle**



Ruggedized Fiber Optic Connectors

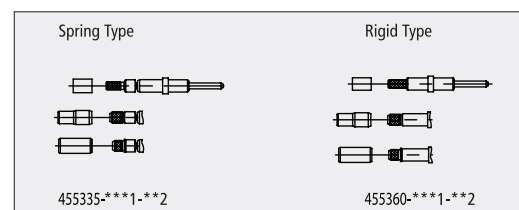
**Dimensional Information (cont)**

Size - Arrangement	A Max	B1	B2	C1 Min	C2 Min	Thread D	Thread E tri-start dimensions (inches)	ØF Max	G Max	H Max	M Max	ØJ Max	ØK Max	ØL Min
11-2	26.4	20.62	18.26	4.84	3.16	M15 X 1.0	0.75000	24.94	3.52	19.9	40.86	N/D	N/D	16.51
13-4	28.81	23.01	20.62	4.84	3.16	M18 X 1.0	0.8750	29.34	3.52	19.9	40.86	26.06	27.56	19.56
15-6	31.2	24.61	23.01	4.31	3.16	M22 X 1.0	1.0000	32.46	3.52	19.9	40.86	N/D	N/D	22.86
17-8	33.51	26.97	24.61	4.84	3.16	M25 X 1.0	1.1875	35.66	3.52	19.9	40.86	34.16	35.46	26.04
19-10	36.71	29.36	26.97	4.84	3.16	M28 X 1.0	1.2500	38.46	3.52	19.7	40.86	35.66	37.16	29.21
21-18	39.91	31.75	29.36	4.84	3.16	M31 X 1.0	1.3750	41.66	4.33	19.7	40.86	N/D	N/D	32.39
23-24	43.11	34.93	31.75	6.06	3.83	M34 X 1.0	1.5000	44.86	4.33	19.7	40.86	42.06	43.36	35.56
25-30	46.21	38.1	34.93	6.06	3.83	M37 X 1.0	1.6250	47.98	4.33	19.7	40.86	45.16	46.6	38.74

**MC5 - High Density Fiber Optic Multiway**

**MC5 Optical Termini  
(ordered separately)**

Optical contacts are supplied with a profile formed optical end face and are available for singlemode or multimode fibers. Contacts are available in either sprung or rigid versions, depending upon application (rigid contacts should be used in bulkhead receptacles only).



Options are as follows:

\*\*\*1 = Optical hole Ø 'A' (fiber size) (see table 1) \*\*2 = Cable type (see table 2)

Please note: for type 00 (\*\*2) the cable crimp sleeve is not supplied i.e. for terminating buffered fiber.

**Table 1 (\*\*\*)**

Sprung contact part number	Rigid contact part number
455335-***1-**2	455360-***1-**2
455335-125-**2	455360-125-**2
455335-126-**2	455360-126-**2
455335-127-**2	455360-127-**2
455335-128-**2	455360-128-**2
455335-144-**2	455360-144-**2
455335-159-**2	455360-159-**2
455335-172-**2	455360-172-**2
455335-175-**2	455360-175-**2

**Table 2 (\*\*\*)**

Contact		Contact		Crimp Dies (see note)	
Sprung	Rigid	Plain buffer	Tight jacket cable	Part number	A / F
455335-***1-00	455360-***1-00	900µm	-	457440	1.25 / 1.35
455335-***1-01	455360-***1-01	-	Ø2.1 OD	457440	2.27 / 2.37
455335-***1-02	455360-***1-02	-	Ø1.8 OD	457440	2.62 / 2.52 and 2.37 / 2.27
455335-***1-0	455360-***1-03	-	Ø2.5 OD	457440	2.74 / 2.84

Please note: for alternative sizes, consult technical sales.

**MC5 Backshells for Multiway Cables (ordered separately)**

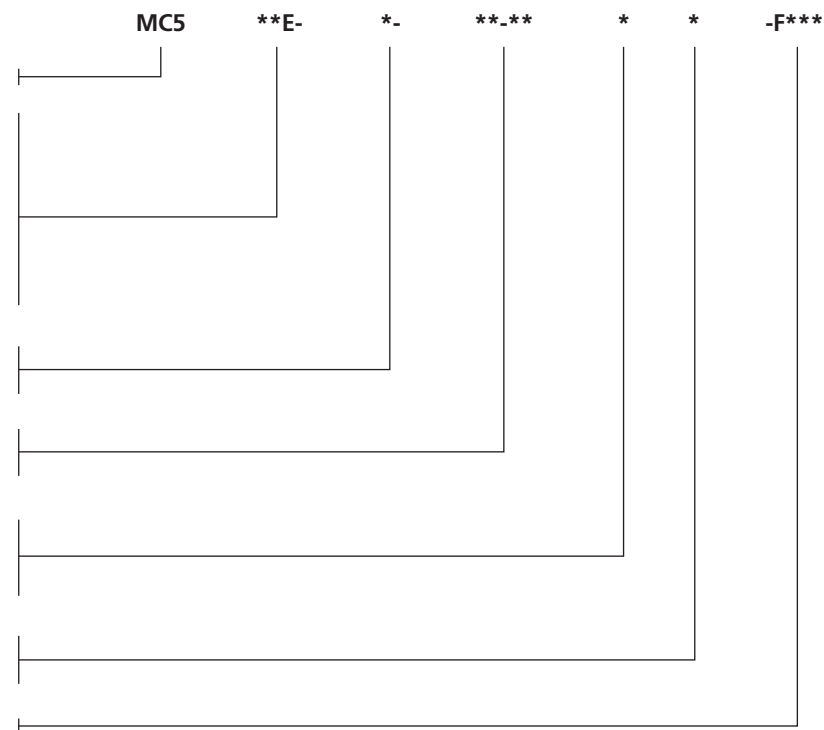
Cable Type / Description	Cable Ø O/D mm
Multiway cable, with 900µm buffered fiber and peripheral strain relief	3.5
	4.5
	5.0
	5.5
	6.0
	7.0
Multiway cable, various constructions - e.g. central strain relief	Backshells are available for a range of multiway cables, please consult technical sales

Please note: Crimp dies are used with crimp tool 451716 (Erma 29020).

**MC5 - High Density Fiber Optic Multiway** (Continued)

**Ordering Information**

- Series:**
- Style:**  
 00 = Bulkhead receptacle  
 06 = Plug  
 07 = Jam nut  
 20 = Protective cap plug  
 30 = Dummy receptacle  
 40 = Protective receptacle
- Shell finish:**  
 N Nickel plated
- Shell size - no. of channels:**  
 11-2, 13-4, 15-6, 17-8, 19-10, 21-18,  
 23-24, 25-30
- Insert type**  
 P, S (S type includes the removable  
 alignment insert)
- Shell orientation:**  
 N, A, B, C
- Modification code:**



**Example part numbers:**  
 Connector MC500E-N-17-8SN  
 Protective cap MC540E-N-17  
 Dummy receptacle MC530E-N-17

**Accessories / Essential Tooling Information**

MC5 Fiber Optic Module for DMC-M Connectors

The MC5 DMC-M high performance fiber optic modules are manufactured from a high performance material for corrosion resistance and features a rugged construction. The common MC5 optical contact is rigid or sprung loaded and common to both plug and receptacle to maintain physical contact even under severe shock or vibration.

**Quality Approvals**

- Civil Aviation Authority A8-1
- BS EN ISO 9001
- Military Spec Approvals 38999
- BS9000 and CECC
- Underwriters Laboratories
- BS EN ISO9001:2000 (BSI)
- BS/EN 9100:2003 (BSI)
- AS9100 Rev B (BSI)
- AS9120:2002 (BSI)
- EASA Part 21 Subpart G (CAA)
- BS9000 (BSI)
- Underwriters Laboratories (UL)
- Military Spec Approvals 38999 (DSCC)



Ruggedized Fiber Optic Connectors

**MC6 - Fiber Optic Ribbon Cable Connector**

**MC6 - Fiber Optic Ribbon Cable Connector**

**Product Facts**

- **Insert-to-insert keying assists precision alignment**
- **Individually rear insertable/removable optical contacts enable easy assembly**
- **Backshells and adaptors available for most single and multifiber cable types**

**Fiber Type:**

**Channels** – 2 to 72

**Cable size** – Telecom grade cable  
Aerospace grade cable

**Materials**

**Shell** – Composite (MIL-C-38999)

**Contact body** – Nickel/cadmium plated composite polymer

**Ferrule** – Thermoplastic

**Alignment Pin:**

**Seals** – Fluorosilicone

**Plating** – Nickel

The MC6 high density, fiber optic connector series is now further enhanced with the option for industry standard MT Ferrule inserts. The insert accommodates 2 to 72 channels and can be supplied pre-terminated if required. The MC6 uses the

compact MIL-C-38999 Series III, shell size 11 body, also used on the proven MC5 connector. It has a lightweight, corrosion resistant, metal-plated composite shell which provides high strength and durability, combined with EMC shielding.

The result is a very compact, rugged, environmentally sealed solution for a wide range of applications, such as avionics, data bus and in-flight entertainment systems.



**Key Features**

- Common contact single or multimode MT ferrules MIL-C-38999 Series III anti-vibration coupling with tri-start thread
- Easily accessible Angled Physical Contact (APC) and Physical Contact (PC) faces for cleaning and maintenance
- Rear release contact using size 8 extraction tools Retrofit triple rear seal available
- Color band indicating full mating
- The use of industry standard MT interface and a variety of housing options ensures integration into new and existing systems
- Interchangeable with MIL-C-38999 Series III



**MC6 - Fiber Optic Ribbon Cable Connector** (Continued)

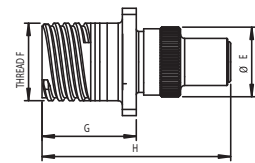
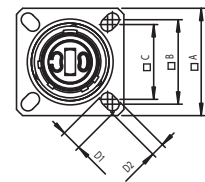
**Optical Performance**

For more information contact technical sales on +44 (0) 1424 858358 or fiber@deutsch.net

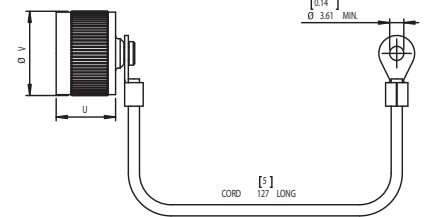
**Dimensional Information**

All dimensions in millimeters unless otherwise stated. To complete part number for ordering see Ordering Information.

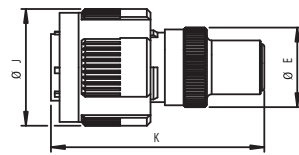
**MC6 Receptacle**



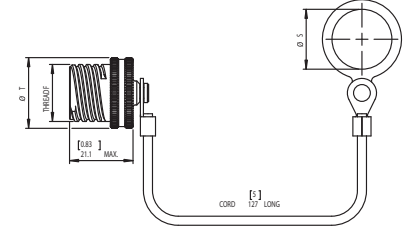
**Protective Cap Receptacle MC640E-N-11**



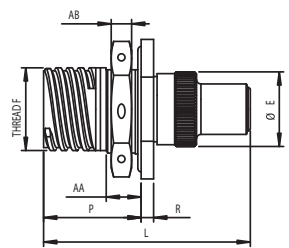
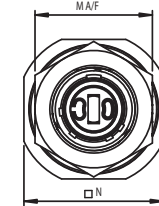
**MC6 Plug**



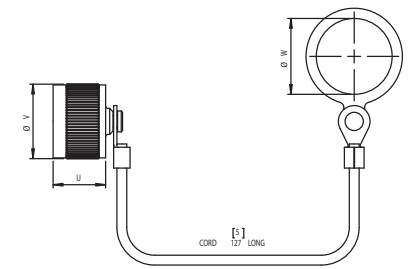
**Procap Plug MC620E-N-11**



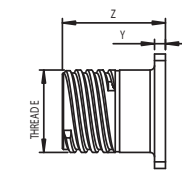
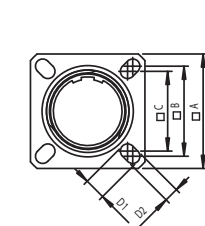
**Jam Nut**



**Protective Cap Receptacle**



**Dummy Receptacle MC630E-N-11**



3  
 Ruggedized Fiber Optic Connectors

**MC6 - Fiber Optic Ribbon Cable Connector** (Continued)

**Contact and Tooling Information**

A Max	B Nom	C Nom	D1 Min	D2 Min	ØE Max	Thread F Tri-start (inches)	G Max	H Max	ØJ Max	K Max	L Max
26.40	20.62	18.26	4.84	3.16	17.10	0.7500"	23.20	46.50	24.95	46.00	47.50

M A/F	N Max	P Max	R Max	ØS Min	ØT Max	U Max	ØV Max	ØW Min	ØX Max	Y Max	Z Max	AA Max	AB Max
27	32.00	22.30	2.96	19.55	23.46	16.16	22.96	22.86	8.01	2.76	23.76	7.80	4.81

**Ordering Information**

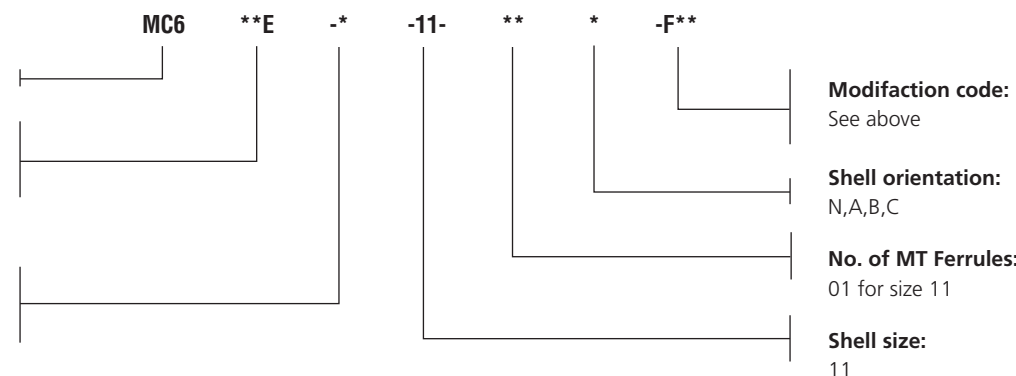
**Series:**

**Style:**

- 00 = Bulkhead receptacle
- 06 = Plug
- 07 = Jam nut

**Shell finish:**

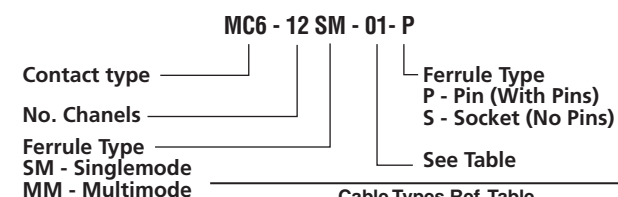
- N Nickel plated
- C = Cadmium plated



**Optical Termini**



MC6 MT contact



Cable Types Ref. Table		
Part No.	Cable	
	Description	Jacket Size
MC6 - *** - 01*	Ruggedized Aerospace Oval Multi Fiber Cable	3.95mm x 1.60mm Max.
MC6 - *** - 02*	Round Multi Fiber Cable	Ø3.96mm Max.

**Accessories / Essential Tooling Information**

MC6 Fiber Optic Module for DMC-M Connectors

The MC6 DMC-M high performance fiber optic modules are manufactured from a high performance material for corrosion resistance and features a rugged construction. The common MC6 optical contact is rigid or sprung loaded and common to both plug and receptacle to maintain physical contact even under severe shock or vibration.

**Quality Approvals**

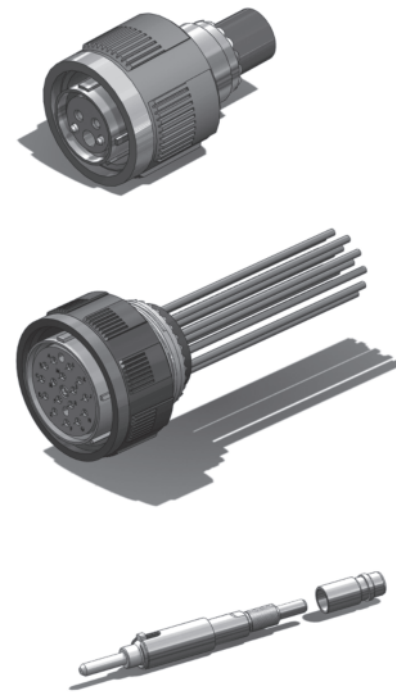
- Civil Aviation Authority A8-1
- BS EN ISO 9001
- Military Spec Approvals 38999
- BS9000 and CECC
- Underwriters Laboratories
- BS EN ISO9001:2000 (BSI)
- BS/EN 9100:2003 (BSI)
- AS9100 Rev B (BSI)
- AS9120:2002 (BSI)
- EASA Part 21 Subpart G (CAA)
- BS9000 (BSI)
- Underwriters Laboratories (UL)
- Military Spec Approvals 38999 (DSCC).

**MC801 Connector**

**MC801 Connector**

**Product Facts**

- Uses precision ARINC 801 fiber optic termini (typical multi-mode insertion loss is less than 0.15 dB).
- Removable alignment sleeve insert for easy cleaning of fiber optic termini
- Three stages of alignment: shell-to-shell keys, guide pins and ceramic alignment sleeves
- Includes all of the features of standard D38999 straight plug and panel mount receptacle shells
- Scoop-proof connector design
- Option for alternate keys and keyways



Ruggedized Fiber Optic Connectors

**Insert Arrangements**

11-02 13-04 15-06 17-08  
19-12 21-16 23-24 25-32

**Materials**

Composite and Aluminium

**Finishes**

Electroless Nickel and Olive drab cadmium

**A801 Termini**

- Genderless termini allows for use on both sides of a connector
- The Alignment sleeves are contained in a separate carrier which is removable for easier end-face maintenance
- Ultra Precision ceramic ferrules and sleeves ensure accurate fiber-to-fiber alignment
- Termini are keyed to provide anti-rotation
- Termini body is crimped to the cable providing a Pull-Proof solution

**Performance expected**

- Insertion Loss at 850 Nm 0.30 dB max., 0.15 dB typical for multi-mode
- Return Loss 850 Nm -20 dB max - 40 dB typical multi-mode

### Ruggedized Singleway Connector (RSC)

#### Ruggedized Singleway Connector (RSC)

##### Product Facts

- **Insert-to-insert keying assists precision alignment**
- **Individually rear insertable/removable optical contacts enable easy assembly**
- **Backshells and adaptors available for most single and multifiber cable types**

**Fiber Type** – 8, 50, 62.5, 85/125µm  
 100/140µm  
 200/230µm  
 200/280µm  
 200/300µm

**Cable size** – 1.6mm to 5mm  
 Simplex tight jacket Kevlar reinforced secondary buffered fiber

##### Materials

**Shell** – Arcap  
**Contact body** – Arcap  
**Ferrule** – Zirconia  
**Alignment sleeve** – Zirconia  
**Seals** – Fluorosilicone  
**Plating** – Nickel

##### Optical Performance

**Insertion loss** – 0.25dB typical  
**Return loss** – -40dB typical\*  
**Repeatability** – Better than 0.2dB

##### Temperature

**High temperature endurance** – +155°C\*  
**Low temperature endurance** – -65°C\*

**Durability** – not less than 500 matings

TE's RSC range of high performance fiber optic connectors are manufactured from Arcap for corrosion resistance and feature a rugged construction, incorporating environmental sealing and an anti-vibration coupling mechanism. The optical contact is sprung loaded and common to both plug and receptacle to maintain physical contact even under severe shock or vibration. The RSC range is suitable for both singlemode and multimode applications, and features easily accessible fiber faces for cleaning purposes.



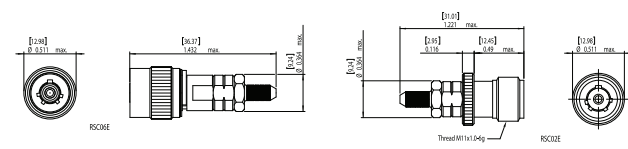
##### Key Features

- Precision Zirconia ceramic ferrule and alignment sleeve to ensure superior repeatable optical performance with physical contact polishing techniques
- Manufactured from Arcap for corrosion resistance
- Easy access to ferrule to facilitate simple cleaning and maintenance
- Common ferrule carriers for the plug and receptacle
- Optical contact is sprung loaded in both the plug and receptacle to maintain physical contact even under severe shock or vibration
- Simple termination process and tooling
- Anti-vibration coupling mechanism
- Six alternative shell keyway orientations provide protection from inadvertent mis-mating
- Able to accommodate various sizes of multimode and singlemode fiber - (8/125, 50/125, 62.5/125, 100/140, 200/280µm)
- Able to accommodate various sizes of simplex cable (1.6mm - 5mm)
- Compatible with HA Connector series

**Ruggedized Singleway Connector (RSC) (Continued)**

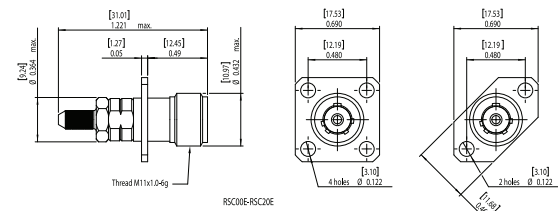
**Dimensional Information**

All dimensions in inches (except threads). To complete part number for ordering see 'ordering information'

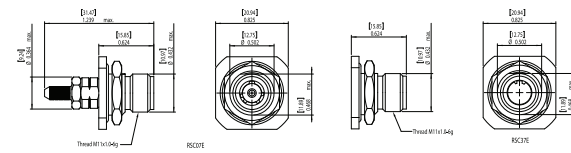


**Plug**

**Free Receptacle**

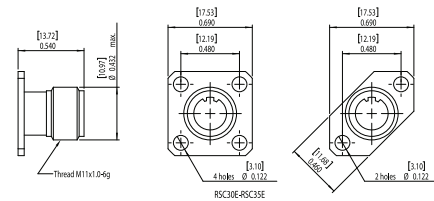


**Receptacles**

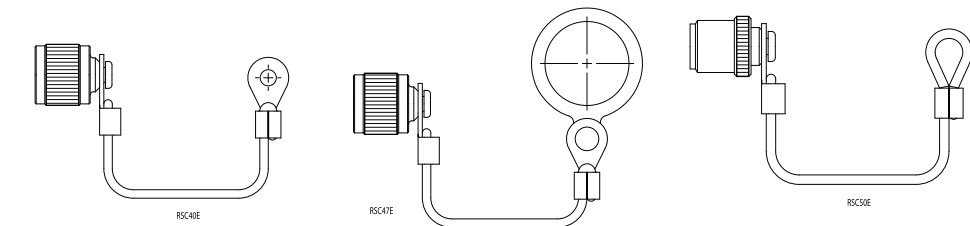


**Jam Nut Receptacle**

**Dummy Receptacle**



**Dummy Receptacles and Mounting**



**Procap**



Ruggedized Fiber Optic Connectors

**Ruggedized Singleway Connector (RSC) (Continued)**

**Ordering Information**

**Series:**

**Shell style:**

- 00 = Bulkhead receptacle
- 06 = Plug
- 07 = Jam nut
- 20 = Protective cap plug
- 30 = Dummy receptacle
- 40 = Protective receptacle

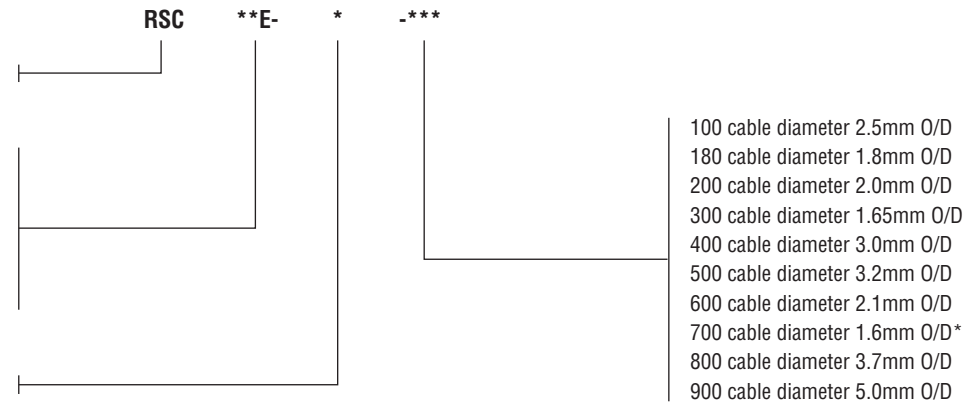
**Shell orientation:**

- N, A, B, C, D, E

\*Special glass braid

For other cable types, please consult the sales office.

Example part number: RSC06E-N-100  
RSC plug, 'N' orientation, 2.5mm cable



**Optical Contacts**

(Must be ordered separately)

Mode	Fiber size	Part number
Singlemode	8/125µm	456099SM-126
	50, 62.5/125µm	456099-126
	100/140µm	456099-145
	100/172µm	456099-176
Multimode	200/220µm	456099-224
	200/230µm	456099-232
	200/280µm (flat faced)	454103-283
	200/300µm	453800-305

**Accessories**

Fixing	Dummy receptacle part number	Protective cap part number
4 hole	RSC30E	RSC40E
2 hole	RSC35E	
Jam nut	RSC37E	RSC47E

Please contact technical support for termination tools and consumables.

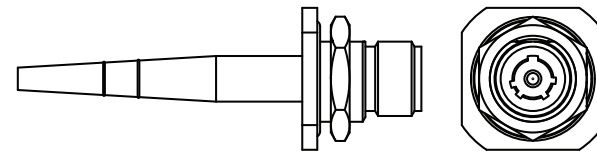
**Hermetic Receptacle (RSC07HE)**

**Key Features**

- Compatible with the RSC plug connector
- Leak rate < 1x10<sup>-6</sup> cc/s
- 125°C temperature rating

**Dimensional Information**

All dimensions in inches (except threads). To complete part number for ordering see 'ordering information'



**Ordering Information**

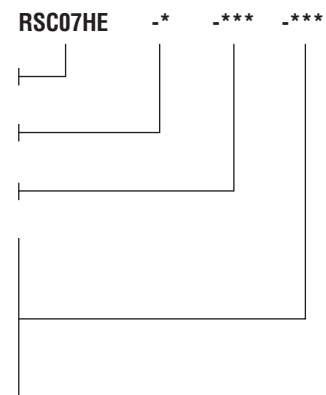
**Series:**

**Shell orientation** - N, A, B, C, D, E

**Fiber size** - 125, 140, 280µm

**Pigtail length** - cms

Example part number: (pigtail cable 900µm buffer only)  
RSC07HE-N-283-100 receptacle, pigtail, 'N' orientation, 280µm fiber, 100cm cable



**Quality Approvals**

- Civil Aviation Authority A8-1
- BS EN ISO 9001
- Military Spec Approvals 38999
- BS9000 and CECC
- Underwriters Laboratories
- BS EN ISO9001:2000 (BSI)
- BS/EN 9100:2003 (BSI)
- AS9100 Rev B (BSI)
- AS9120:2002 (BSI)
- EASA Part 21 Subpart G (CAA)
- BS9000 (BSI)
- Underwriters Laboratories (UL)
- Military Spec Approvals 38999 (DSCC)



**Sealed Circular LC ODVA**

**Sealed Circular LC ODVA Conforming Connector**

**Product Facts**

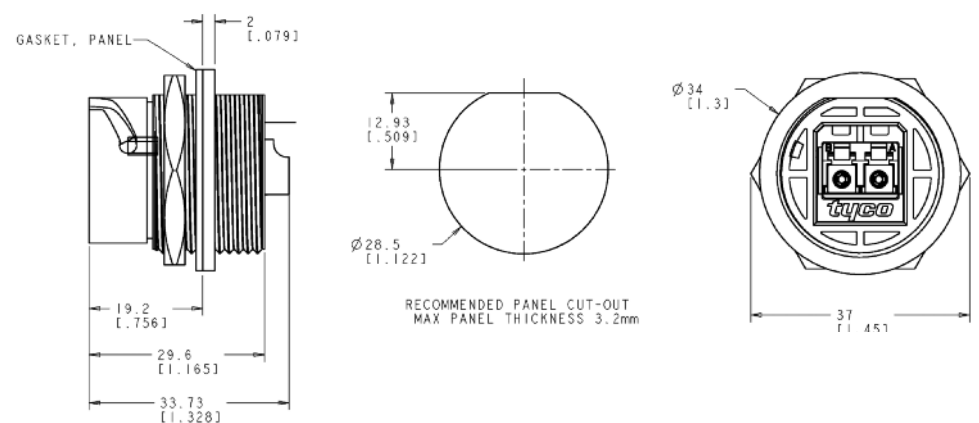
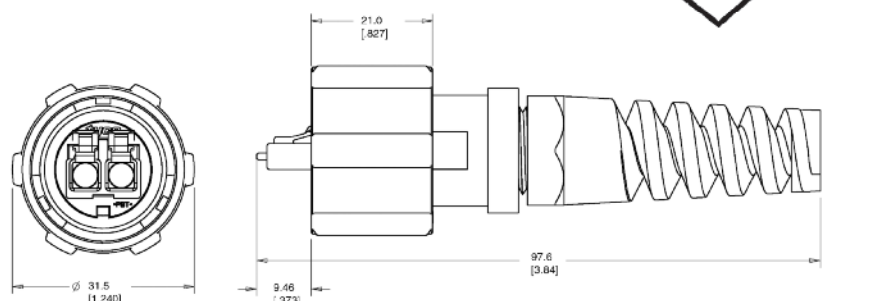
- IP67 rated to ensure protection from dust and water immersion
  - LC connector qualified to Telcordia GR-326 and TIA/EIA 568B.3
  - Temperature range of -40°C to 85°C
  - Bayonet-style mechanical lock
  - Flame retardant materials per UL 94 V-0
  - Dual mounting bulkhead design
  - Singlemode and multimode fiber
  - Can be used with cable types 9/125, 50/125 and 62.5/125
  - LC to LC internal to the box Jumpers
  - LC connector accepts tactical cable with 4.5 mm – 7.5 mm OD
  - ODVA Conforming Plug to X interface on tactical with break out
  - ODVA Conforming Plug to Plug on tactical cable
  - Build to customer need
- Applications**
- The LC ODVA Conforming Connector is ideal for:
- Harsh environments where chemicals, corrosive gases and liquids are commonplace
  - Inside and outside industrial plant and equipment that interface with industrial Ethernet networks
  - Remote interface applications such as towers and antennae as well as FTTX in PON and at the home applications
  - Mobile routers and internet hardware



**Plug Part Numbers:**  
 1828618-1 (Multimode)  
 1828618-2 (Singlemode)

**Receptacle Part Numbers:**  
 1828619-1 (Multimode)  
 1828619-2 (Singlemode)

**Plug & Receptacle Cap Part Numbers:**  
 Plug Cap 1828740-1  
 Receptacle Cap 1918177-1



**Standard Cable Assemblies**

Part Number	Description
1828935-X	ODVA LC Interface, 62.5, 2 Fiber
1828936-X	ODVA LC Interface, Singlemode, 2 Fiber

Note: X = length in meters



Ruggedized Fiber Optic Connectors

Note: All part numbers are RoHS compliant.

**Rugged Circular Connectors**

**EMPIRE**

**Product Facts**

- Facilitates the implementation of fiber sensors within composites
- Protection of fiber at composite entry/exit point
- Receptacle connector physically embedded within composite material
- Available as panel edge or surface mount configuration

A unique, patent pending Fiber Optic connector technology that allows designers to reliably connect embedded optical fibers to external monitoring equipment, eliminating the problems of fixed 'flying lead' connections to the structure. See TE.com for additional information.



**Fiber Optic Cable Assemblies and Harnesses**

**Product Facts**

- Custom designs available
- Custom lengths for harnessing
- Dedicated Fiber Optic harness facility
- Capability to work closely with customer to fully define requirements

TE also has dedicated design and manufacturing resources available to provide rugged and reliable Fiber optic harnesses for Aerospace, Military communications, Railways, Autosport and Industrial equipment.



**Rugged Board Level Connector**

**Ruggedized Optical Backplane Interconnect for VITA 66**

**Product Facts**

- Receptacle designed to maximize optical performance
- Connectors accommodate up to two MT ferrules
- Locating post features helps ensure proper position on the backplane and module boards
- Common protective cover is made of anti-static material
- Plug (daughtercard) connector housing contains a slot feature to facilitate cleaning the MT interfaces
- Receptacle (backplane) connector includes two robust guide pins for blind-mating
- Receptacle connector insert floats relative to the shell, providing  $\pm 0.25\text{mm}$  planar floating alignment capability
- Connector mounting screws contain pre-applied Nylok patch to withstand vibration

**Mechanical**

**Mating Force (per 12-fiber MT ferrule)** – Min: 7.8N [1.75 lb]  
Max: 11.8N [2.65lb]

**Durability** – 100 cycles, tested per EIA-455-21

**Shock** – 50G, sawtooth, 11 msec pulse duration, tested per TIA/EIA-455-14, condition E

**Random Vibration** – 11.95 G (rms), 50-2000 Hz, 2 hrs per plane - tested per TIA/EIA-455-11, test condition V1-D

**Materials**

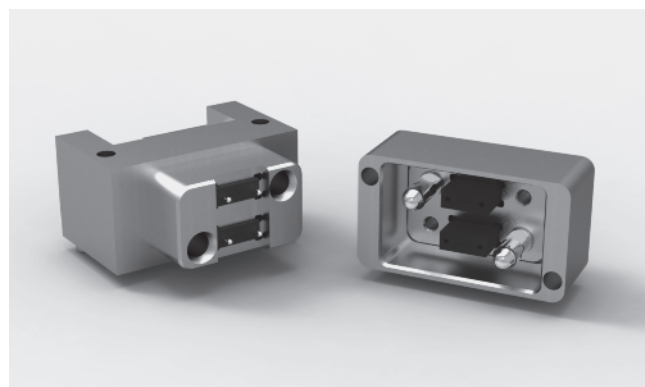
**Connector shell & housing** – Aluminum alloy 6061, clear-chromate conversion-coated (RoHS compliant)

**Alignment posts & screws** – Stainless Steel, 300 series, passivated (RoHS-compliant)

TE Connectivity's (TE) Ruggedized Optical Backplane interconnect system provides a high-density, blind-mate optical interconnect in a backplane/daughtercard configuration. The fiber optic (ribbon) cable

interconnect is fed through the backplane to removable system modules using MT ferrules. TE offers the optical system in both a receptacle (backplane) and mating plug (daughtercard) connectors which interconnect up to two MT ferrules, each accomo-

dating up to 24 fiber paths. Other options are available using industry standard ARINC 801 fiber terminus and TE's Expanded Beam, Pro Beam interface in a four-fiber configuration.

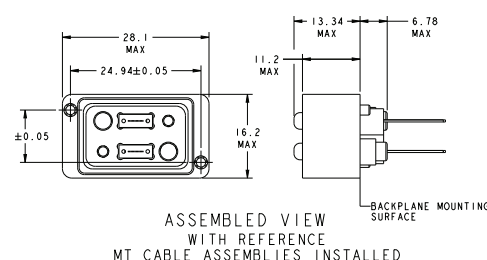


**Key Features**

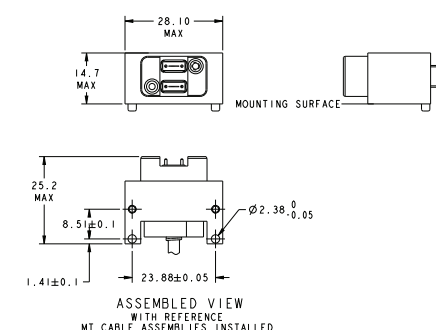
- Receptacle designed to maximize optical performance
- Connectors accommodate up to two MT ferrules
- Locating post features help ensure proper position on the backplane and module boards
- Common protective cover is made of anti-static material
- Plug (daughtercard) connector housing contains a slot feature to facilitate cleaning the MT interfaces
- Receptacle (backplane) connector includes two robust guide pins for blind-mating
- Receptacle connector insert floats relative to the shell, providing  $\pm 0.25\text{mm}$  planar floating alignment capability
- Connector mounting screws contain pre-applied Nylok patch to withstand vibration

Interface	Part No.	
	Backplane	Daughtercard
VITA 66.1: MT	2000973-1	2000974-1
MT Ferrule Kit (12 Fiber, Multimode)	2102866-1	2102866-2

**Backplane Module - PN 2000973-1**



**Daughtercard Module - PN 2000974-1**



**3 Ruggedized Fiber Optic Connectors**

**Navy CID Approved Epoxy Applied**

**Tight Jacketed LC Connectors**

**Product Facts**

- Multimode or singlemode
- Simplex or duplex
- Tested using MIL-PRF-85045/16 2.0 mm cable
- LC Commercial Item Description (CID) interim approval by the Naval Surface Warfare Center, Dahlgren Division

**Application**

- In Flight Networks
- Shipboard Applications
- Aero Market

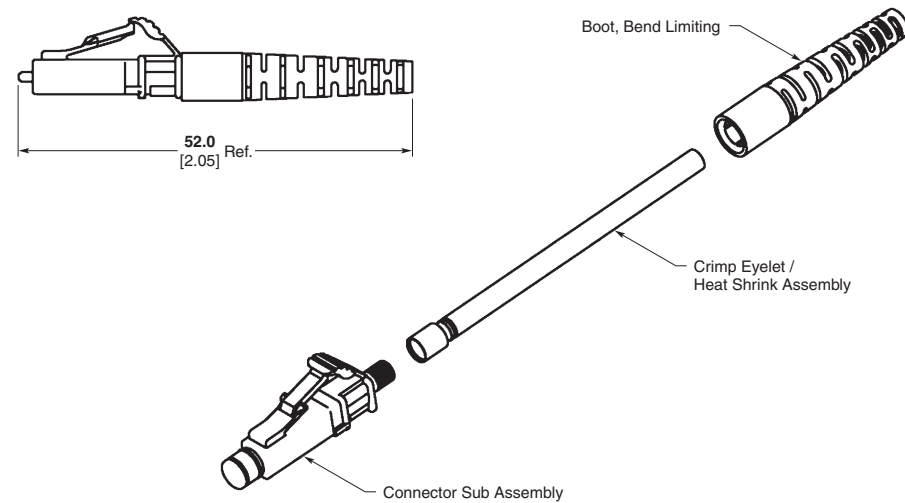
The Tight Jacket LC Connector is a robust design for rugged applications including but not limited to:

- Extreme temperatures -55°C to +110°C
- Excessive vibration or physical shock

Test reports available upon request.

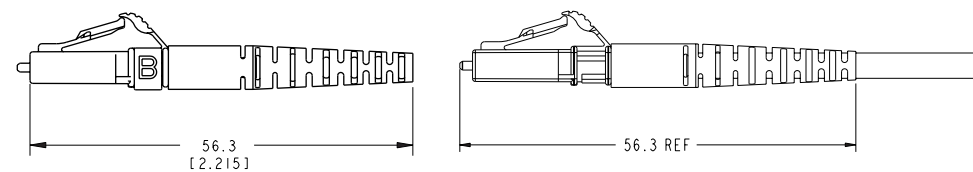


The tight jacketed LC Connectors are non pull-proof versions of the standard connectors that are designed for use with tight construction cable. Unlike standard connectors, this design allows the jacket and buffer to move together, reducing the chances of micro-bends and fiber breakage.



Fiber Type	Kit Part Number	Description
Singlemode (blue body & straight boot)	6828095-X	Simplex, 1.6–2.0 mm
	6828130-X	Duplex, 1.6–2.0 mm
	1918228-X	Simplex, 2.4 mm
	2123524-X	Duplex, 1.6–2.0 mm, transceiver optimized
Multimode (beige body & straight boot)	6828094-X	Simplex, 1.6–2.0 mm
	6828129-X	Duplex, 1.6–2.0 mm
	1918153-X	Simplex, 2.4 mm
	2123265-X	Simplex, 2.4 mm, transceiver optimized

**Note:** X = -1 for individual package, -2 for bulk package. Instruction Sheet 408-10014. See <http://www.te.com/documents>. Duplex Clip Available (Part Number 1754371-1).



**Note:** All part numbers are RoHS compliant.

**SC Connectors**

**Tight Jacketed SC Connectors**

**Product Facts**

- Multimode or singlemode
- Simplex or duplex
- Tested using MIL-PRF-85045/16 2.0 mm cable
- SC Commercial Item Description (CID) interim approval by Naval Surface Warfare Center, Dahlgren Division

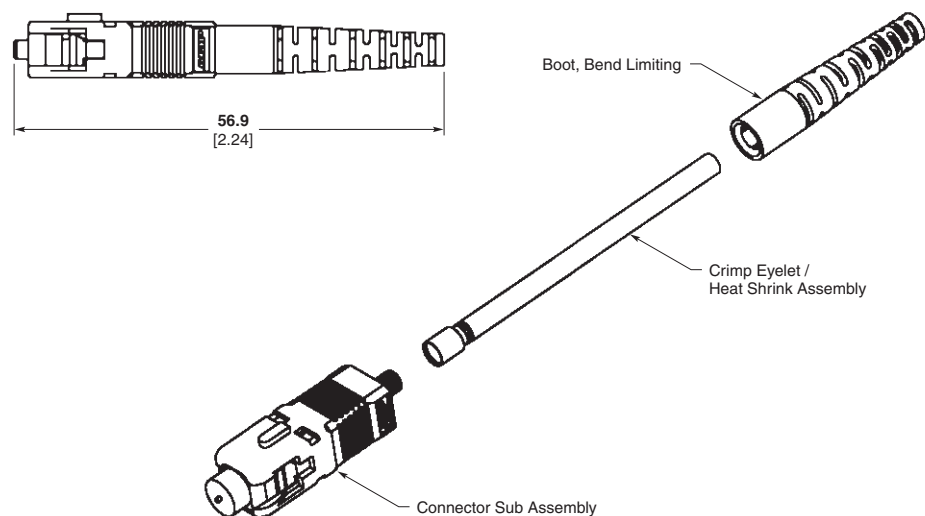
**Application**

- In Flight Networks
- Shipboard Applications
- Aero Market



The tight jacketed SC Connectors are non pull-proof versions of the standard connectors that are designed for use with tight construction cable. Unlike

standard connectors, this design allows the jacket and buffer to move together, reducing the chances of micro-bends and fiber breakage.



**Tight Jacketed SC Connector Kits**

Fiber Type	Kit Part Number	Description
Singlemode (blue body & straight boot)	6828100-X	Simplex, 1.6–2.0 mm
	1828573-X	Duplex, 1.6–2.0 mm
	1918227-X	Simplex, 2.4 mm
Multimode (beige body & straight boot)	6828099-X	Simplex, 1.6–2.0 mm
	1828574-X	Duplex, 1.6–2.0 mm
	1918154-X	Simplex, 2.4 mm

**Note:** X = -1 for individual package, -2 for bulk package. Instruction Sheet 408-10015. See <http://www.te.com/documents>.

**Note:** All part numbers are RoHS compliant.

**3**

Ruggedized Fiber Optic Connectors



**LC Plus — Navy Approved**

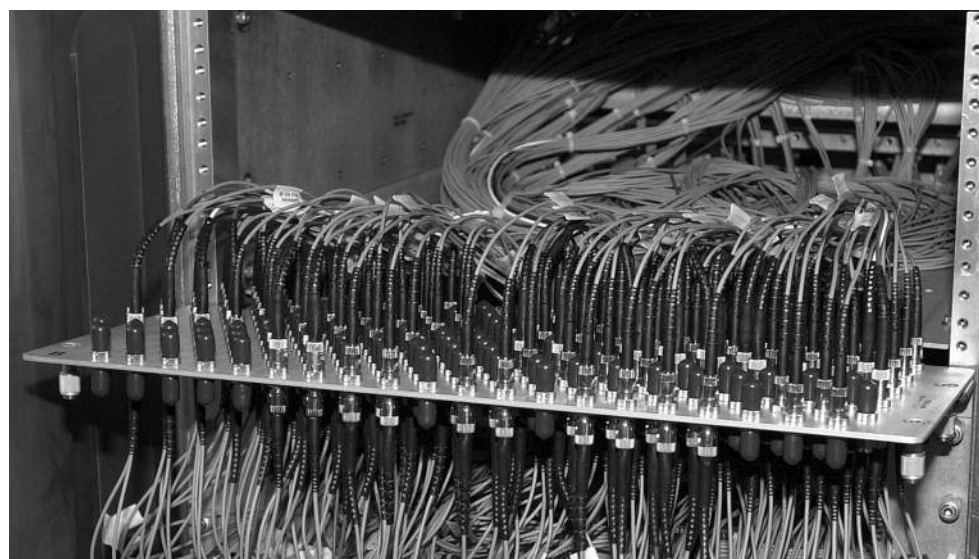
**LC, SC and LightCrimp Plus ST Approved by U.S. Navy for Use On Board Ships**

**LightCrimp Plus ST Fiber Optic Connector Features and Benefits:**

- LightCrimp Plus technology delivers the ability to terminate the fiber optic ST connector with mechanical tools by the ferrule being factory polished and terminated to the connector body
- The mechanical process enables a simple strip, clean, cleave crimp process that improves process time and eases the complexity of the installation

**Termination Kits:**

- The LightCrimp Plus MM ST part 2064757-1 has a dedicated termination kit, part number 2064764-1, suggested for its implementation. TE provides a wide variety of tools required to prepare and terminate LightCrimp Plus ST connectors.



Whether you're designing local area networks, communications systems or equipment, innovative fiber optic applications begin with innovative fiber optic products. TE Connectivity offers a complete line of fiber optic products to help your designs make light work for you.

TE's comprehensive fiber connector line delivers virtually all industry-standard connections, including LightCrimp Plus ST-Style and epoxy applied Tight Jacketed LC and SC and many others. They bring fiber to the desk at a cost that is competitive with copper.

**LightCrimp Plus ST Fiber Optic Connectors**

TE LightCrimp Plus ST-Style connectors are available in single or multimode configurations and can be crimped to the fiber. Any, they can install in under two minutes, without epoxy.

TE recently obtained approval from the U.S. Navy for its Multimode LightCrimp Plus ST Connector. This connector has been added to the "Navy Recommended Fiber Optic Components Parts List" located at <https://fiberoptics.nswc.navy.mil/>,

and is currently listed under the TE part number **(2064757-1)**. In addition, it is listed under the CID number A-A-59917. This approval is the latest in this series and joins the approved status of the LC and SC tight construction epoxy optic connectors listed on the components parts list.



**LightCrimp Plus ST**

\* Commercial Item Description



**LC Plus — Navy Approved** (Continued)

**Combination  
LIGHTCRIMP PLUS  
SC/ST/LC Termination Kit  
Part Number 1985162-1**



**Note:** All part numbers are RoHS compliant.

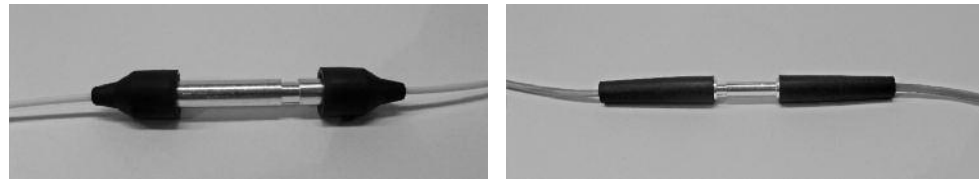
**3**

Ruggedized Fiber Optic Connectors

**LightCrimp Splice**

**Product Facts**

- Terminates 250 µm coated, 900 µm tight-buffered fibers and 2.0 mm jacketed cable
- Attenuation (typical): ≤ 0.1 dB
- Return Loss (at ambient; 18°–28° C): ≥ 20 dB multimode ≥ 35 dB single-mode
- Operating Temperature: -25 to 70° C
- Storage Temperature: -40 to 85° C
- Tensile retention:  
250 µm coated: 2.0 N  
900 µm buffered: 3.0 N  
Jacketed: 50.0 N
- Fast, easy fiber splicing
- No epoxy required
- No set-up required
- No workstation required
- Ideal for low-fiber count cables
- Same LightCrimp Splice for single-mode and multimode 125 µm diameter fibers
- Kit includes rugged case



LightCrimp splices provide rugged, miniaturized form-factor that assures consistent crimp quality, dependability, and performance that rivals fusion splices. LightCrimp splices have been tested in accordance with IEC 61300 procedures, with an operating temperature range extending from -25° C to +70° C.

LightCrimp splices have been designed to meet TIA 568-C.3, IEC 61753 Cat U, and EN optical requirements.

LightCrimp splices provide the proven performance based on technology used to install more than one million LightCrimp Plus connectors.

**Navy approved CID commercial item.  
Description #A-A59917**

Description	Part Number
LightCrimp Splice for 250 µm, 900 µm and 2.0 mm Jacketed Cable	1985368-1
LightCrimp Splice Termination Tool Kit	2064764-1



**LightCrimp PLUS Kit  
Part Number 1985801-1**

Capable of terminating:  
In Line Mechanical Splice  
Part Number 1985368-1  
and LightCrimp PLUS  
LC/SC

**Part Numbers:**

- 2123277-1 & -2 Simplex MM LC
- 2123278-1 & -2 Duplex MM LC
- 2123279-1 Simplex SM
- 2123280-1 Duplex SM



**Offshore Optical Connectors and Cable Assembly**

**9316 Optic**

**Product Facts**

- Dry Mate connection
- Explosion proof area
- Multiway up to 12 FO
- Operating pressure up to 40 bar
- Single or Multimode fibers can be combined
- Backshell custom design available

9316 series has been designed to withstand the most severe environments in marine and offshore applications.

A special care was taken concerning:

- Easy handling
- Mechanical stress
- Use in polluted environments
- Use in hazardous areas



**Showet**

**Product Facts**

- Hybrid product 4 FO and 4 copper contacts
- SplashZone connector
- Operating pressure up to 80 bar
- Single or Multimode fibers can be combined

Combines optical and copper connectivity in a single shell. Supporting both signals and control copper cabling and single-mode and multimode optical fibers to allow the replacement of multiple connectors by one.

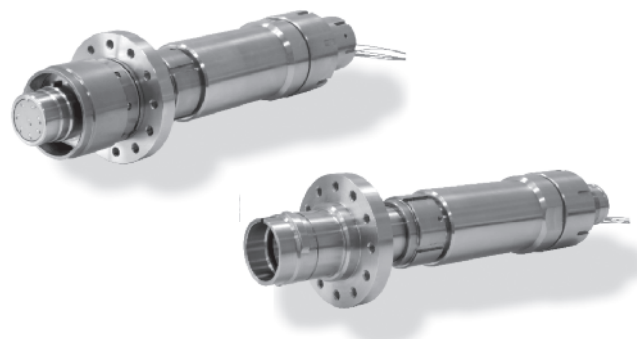


**MOD**

**Product Facts**

- Explosion proof area
- SplashZone connector
- Multiway up to 8 FO
- Operating pressure up to 40 bar
- Single or Multimode fibres can be combined

MOD is an explosion-proof connector suited to topside application, quick connect/disconnect coupling for reliable operation in hazardous environments such as FPSO turrets.



**D03000**

**Product Facts**

- Optical Subsea Wet Mateable
- ROV, Bulkhead, Stab plate and Diver versions
- Custom design available
- Back Reflection <-45dB
- Insertion loss <0.5dB
- 100 matings
- Single or Multimode fibers can be combined

D03000 is a high performing choice for optical applications requiring up to 12 channels and the ability to withstand operational water depths to 4500 m.

Optimized for Subsea Fiber Optic Distribution systems and connections to Subsea Trees.



**3**

Ruggedized Fiber Optic Connectors

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**4**

Rack and Panel Connectors



Introduction

Product Facts

- Designed to meet relevant ARINC 600 Connector specifications
- Available in three sizes as well as custom versions
- Low mating-force contacts — suitable for ARINC 404 and ARINC 600 Connectors
- Full range of contact inserts
- Custom backshells available in configurations to suit any application. Contact TE Connectivity for detailed information.

Specifications

Temperature Range —

-85°F to 257°F [-65°C to 125°C]

Mating and Unmating Forces —

(Max. after 3 cycles)

Size 1 — 27 pounds [120 N]

Size 2 — 60 pounds [267 N]

Size 3 — 105 pounds [467 N]

Contact Retention against axial load —

Size 22 — 12 pounds [53 N]

Size 20 — 20 pounds [89 N]

Size 16 — 25 pounds [111 N]

Size 12 — 30 pounds [133 N]

Coaxial — 35 pounds [156 N]

(In testing, exposure to rated loads produced no contact damage and resulted in displacement less than .015 [0.38])

Voltage/Current Ratings —

Contact	AWG	Max. Current (A)
Size 22	22	5.0
Size 20	20	7.5
Size 16	16	13.0
Size 12	12	23.0

Durability — 500 cycles min. —

mating and unmating (In testing, wired mated connectors cycled at a rate slower than 300 cycles per hour, showed no apparent damage or contact resistance greater than rated values)

High Temperature Tolerance —

1000 hours min. at 257°F [125°C]

(Wired, mated connectors)

Salt Spray Tolerance — As specified

by MIL-STD-1344, method 1001, Condition B

Fluid Imperviousness — MIL-L-23699; MIL-H-5606: 1:3 mix isopropyl alcohol and mineral spirits (Test immersions of mated connectors in these fluids caused no evident deterioration)

Vibration and Shock Tolerance —

Per MIL-STD-1344, methods 2004-1 and 2005-1 (Testing to these conditions, including vibration for 8 hours in each of 3 mutually perpendicular axes, caused no visible cracking, breaking or loosening of parts, and no discontinuities exceeding 1 microsecond)



**Humidity Tolerance** — Insulation resistance 1 megohm min., 1-2 hours after exposure to humidity per MIL-STD-1344, Method 1002-1, Type II; 5000 megohm min. after 24 hours at 77°F [25°C].

**Dielectric Withstanding Voltage** — (Min.) 1500 VAC, RMS 60 Hz at sea level; 500 VAC, RMS 60 Hz at 50,000 ft. [15240 M] (Testing at rated voltages for 60 seconds produced no flash over and 1 mA leakage, max.)

**Insulation Resistance** — 1000 megohms min. (Test conducted on unmated connector after 30 min. exposure to 248°F-257°F [120°C-125°C])

**Contact Resistance** — Mated pairs tested per MIL-STD-1344, Method 3004-1

**Technical Document** — ARINC 600 Product Specification 108-10050

ARINC 600 Connectors are used in virtually all airframes and today's state-of-the-art avionics equipment. From collision avoidance (TCAS, TAWS) to in-flight entertainment/networking, new avionics equipment demands higher data transmission rates. Whether it's Fibre Channel, or 100-Base-T or 100-Base-FX Ethernet and beyond, TE has the insert

configurations and copper and fiber hardware (Quadax contacts, RF, ARINC 801 inserts and Mini-Expanded Beam Fiber Optics) to meet the need. Standard industry configurations are available. For designs that require custom configurations, TE will work with you to provide the connector solution required.

ARINC 600 Connectors represent a new generation of standardized rack and panel connectors for aircraft applications. Compared to the preceding ARINC 404 standard, the new avionics connectors feature significantly reduced mating forces; increased numbers of contacts in housings proportioned to thinner black-box shapes; and floating, front-release keying.

ARINC 600 Connectors capitalize on the new design by adding unique features while maintaining intermateability. For instance, TE contact inserts

are field replaceable and manufactured to precise tolerances.

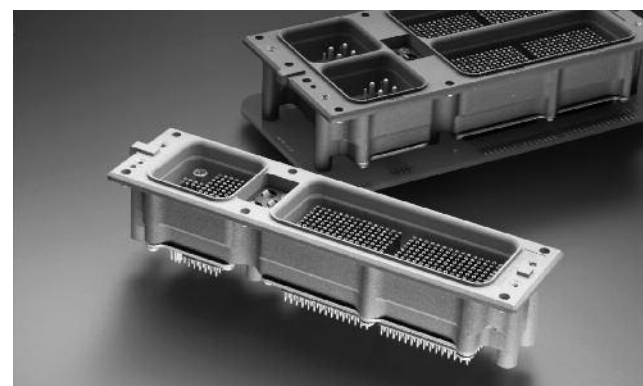
TE contacts for ARINC 600 Connectors are applied with standard crimping tools—the same ones used for ARINC 404 contacts. Automatic crimping equipment is available for higher productivity and lower applied costs. The benefits of ARINC 600 reduced engagement force contacts (for example: size 22 contacts averaging 1.5 ounces [0.42 N]) can be realized in ARINC 404 connectors through the use of the interchangeable ARINC 600 contacts. ARINC 600 coaxial contacts also are crimp applied for reliable, solder-free installation.

It is easy to specify ARINC 600 Connectors by descriptive part numbers. An example of a descriptive part number is shown on page 4-5, with an explanation of each component of the part number and page references for complete information.

**ARINC 600 Next Generation Connector**

**Product Facts**

- Completely inter-mateable with existing ARINC 600 plug connectors
- “Monoblock” single-piece inserts that simplify the manufacturing process, saving cost
- Stamped and formed, selectively plated size 22 contacts provide substantial cost savings while delivery excellent performance and reliability
- Equivalent electrical performance vs. current design
- Available in either Solder Tail or Press-fit (eye of the needle) designs
- Up to 10% weight savings per connector (depending on insert arrangement)



**Description**

Whether it's collision avoidance, in-flight entertainment, or air-to-ground communications, today's Avionics manufacturers face a challenging economic environment and an ever-increasing demand for weight

reduction. In response to these market demands, TE has developed a revolutionary Next Generation ARINC 600 receptacle connector that offers the “perfect solution” for Avionics manufacturers seeking reduced cost and weight.

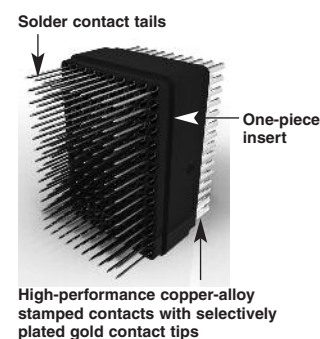
TE's Next Generation ARINC 600 receptacle uses proven connector design principles that represent breakthrough technologies in the ARINC 600 connector marketplace.

**Applications**

- Avionics boxes: IFE, IFN, Flight control and communications
- Military ground vehicles

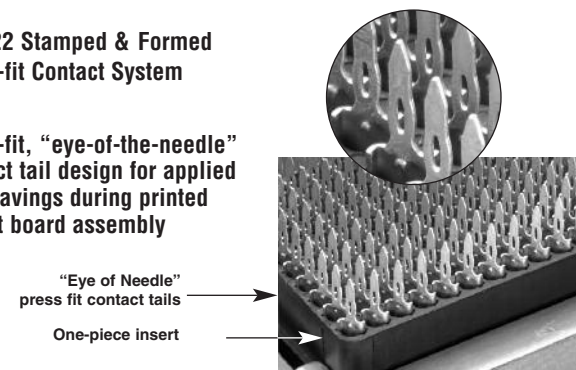
**Size 22 Stamped & Formed Solder Tail Contact System**

Solder tail contact design for complete backwards compatibility with legacy contact and PCB designs



**Size 22 Stamped & Formed Press-fit Contact System**

Press-fit, “eye-of-the-needle” contact tail design for applied cost savings during printed circuit board assembly



**Standards and Specifications**

- Product Specifications** — (Solder Tail): 108-2423 (EON Design): 108-2384
- ARINC 600 - 18** — Air Transport Avionics Equipment Interfaces
- Product Validation Test Report** — 502-1263
- Application Specification (EON Design)** — 114-13272
- Mechanical**
- Mating and Unmating Forces (Max. after 3 cycles)** — Size 2 — 60 pounds (267 N) Size 3 — 105 pounds (467 N)
- Contact Retention against Axial Load** — Size 22 — 12 pounds (53 N)

- Durability** — 500 cycles min — mating and unmating (In testing, wired mated connectors cycled at a rate slower than 300 cycles per hour, showed no apparent damage or contact resistance greater than rated values)
- Vibration and Shock Tolerance** — Per MIL-STD-1344, methods 2004-1 and 2005-1 (Testing to these conditions, including vibration for 8 hours in each of 3 mutually perpendicular axes, caused no visible cracking, breaking or loosening of parts, and no discontinuities exceeding 1 microsecond)
- Environmental Temperature Range** — -85°F to 257°F (-65°C to 125°C) Process capability rating: the contact and insert shall be capable of withstanding wave solder processing (270°C for 10

- seconds) and vapor phase processing (260°C for 2 minutes)
- High Temperature Tolerance** — 1000 hours min. at 257°F (125°C) (Wired, mated connectors)
- Salt Spray Tolerance** — As specified by MIL-STD-1344, method 1001, Condition B
- Fluid Imperviousness** — MIL-L-23699; MIL-H-5606: 1:3 mix isopropyl alcohol and mineral spirits (Test immersions of mated connectors in these fluids caused no evident deterioration)
- Humidity Tolerance** — Insulation resistance 1 megohm min., 1-2 hours after exposure to humidity per MIL-STD-1344, Method 1002-1, Type II; 5000 megohms min. after 24 hours at 77°F (25°C)

- Electrical Dielectric Withstanding Voltage** — (Min.) 1500 VAC rms 60 Hz at sea level; 500 VAC rms 60 Hz at 50,000 ft. (15240 m) — (Tested at rated voltages for 60 seconds produced no flash over and 1 mA leakage, max.)
- Insulation Resistance** — 1000 megohms min. (Test conducted on unmated connector after 30 min. exposure to 248°F-257°F (120°C-125°C))
- Contact Resistance** — Mated pairs tested per MIL-STD-1344, Method 3004-1
- Voltage/Current Ratings** —

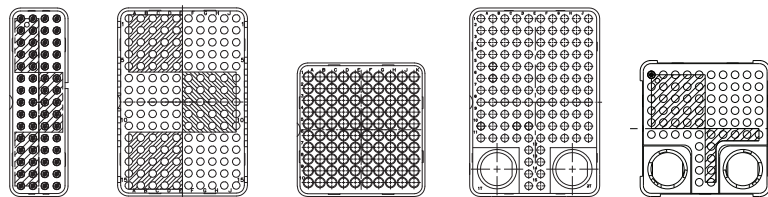
Contact	AWG	Max. Current (A)
Size 22	22	5.0

4 Rack and Panel Connectors



**ARINC 600 Next Generation Connector** (Continued)

P/N	Connector Description	Module A	Module B	Module C	Module D	Module E	Module F
1218049-4	ARINC600,RCPT ASSY,SZ2,SPCL_MONOBLK	150	150	13C2			
1218098-3	ARINC600,CONN ASY,RCPT,SZ3,FR,NG	150	150	13C2	150	150	13C2
1218644-3	RCPT ASSY,SIZE2,FR,ARINC600,NG	150	150	13C2			
1218657-2	RCPT ASSY,SZ2,FR,ARINC600,NG	150	150	13C2			
1484373-2	ARINC600,RCPT ASSY,SZ 2,NG	150	11Q11	13C2			
1663556-2	RCPT ASSY,SZ2,ARINC600,NG	120T2	120T2	11Q2			
1757544-3	ARINC600,RCPT ASSY,SZ2,150/36F36/13C2	150	36F36	13C2			
1757544-4	ARINC600,RCPT ASSY,SZ2,150/36F36/13C2	150	36F36	13C2			
1757691-2	A600R,SZ2,(C4/120T2/13C2),Next Gen	C4	120T2	13C2			
1757814-2	A600R,SZ3,150/150/13C2/150/150/DUMM,NG	150	150	13C2	150	150	BLANK
1757875-2	A600,RCPT 120T2/150/13C2,NG	120T2	150	13C2			
1883712-2	A600R,SZ2,RCPT 150/150/85, Next Gen	150	150	85			
1883712-3	A600R,SZ2,RCPT 150/150/85, Next Gen	150	150	85			
1883910-2	A600R,SZ3,RCPT 150X4/13C2/100,NG	150	150	13C2	150	150	100
1996549-2	A600R,SZ3,150/150/13C2/150/150/13C2	150	150	13C2	150	150	13C2
1996655-2	A600R,SZ3,150/150/11Q2X2,sel. loading,NG	150	150	11Q2	150	150	11Q2
1996689-3	A600 RECEPT, SZ2,(11Q11/150/59) NG	11Q11	150	59			
2101123-2	A600 SZ2,RCPT150,110,11Q2,sel. loaded,NG	150	110	11Q2			
2101246-2	A600R,SZ2,150/150/13C2,sel.load,NG	150	150	13C2			
2101300-2	A600R,SZ2,150/11Q11/13C2,NG	150	11Q11	13C2			
2101472-2	A600R,SZ8,150/150/11Q2/150/150/11Q2,NG	150	150	11Q2	150	150	11Q2
2101697-1	ARINC600,SZ2,RDPT,150/150/13C2,s&f conts	150	150	13C2			
2101867-2	A600 SZ2,RECEPT,Q11/150/13C2,NG	11Q11	150	13C2			
2101882-2	A600 SZ3,150/85/150/150/Q6,CHRM,FR.250	150	BLANK	85	150	150	6Q6
2157023-2	A600 SZ1,RECEPTACLE ASSY,60/60/5Q2	60	60	5Q2			
2157232-1	ARINC600,RCPT,SZ2,150/150/100,STP/FRM	150	150	100			
2157609-2	ARINC600,RCPT,SZ3,150X4/11Q2X2,NG	150	150	11Q2	150	150	11Q2
2157736-1	ARINC600,RCPT,SZ1,30T2/60 (s/f)/4	30T2	60	4C4			
2157747-1	ARINC600,RCPT,SZ2,150/150/100	150	150	100			
2157778-1	ARINC600,RCPT,SZ3,150X4/100X2	150	150	100	150	150	100
2221242-2	SZ2, Rec Assy,150/150/13C2, Next Gen SL	150	150	13C2			
2221246-1	SZ2, Recept Assy,150/150/34, NG	150	150	34			
2221247-1	SZ2, Recept Assy,150/150/13C2, Next Gen	150	150	13C2			
2221248-1	SZ2, Recept Assy,150/150/Blank, Next Gen,SL	150	150	Blank			
2221249-1	SZ2, Recept Assy,150/150/100, Next Gen,SL	150	150	100			
2221251-1	SZ1, Recept Assy,60/60/Blank, Next Gen,SL	60	60	Blank			
2221252-1	SZ2, Recept Assy,150/150/13C2, Next Gen	150	150	13C2			
2221350-1	SZ2, Rec Assy,120T2/150/100, Select Load	120T2	150	100			
2221351-1	SZ3, Rec Assy,150/150/59/150/150/100,NG	150	150	59	150	150	100
2221352-1	SZ3, Rec,110/150/68Q2/11Q11/11Q11/6Q6,NG	110	150	68Q2	11Q11	11Q11	6Q6
2221353-1	SZ3, Rec,121/11Q11/100/150/11Q11/100,NG	121	11Q11	100	150	11Q11	100
2221354-1	SZ3, Rec,121/150/68Q2/150/11Q11/6Q6,NG	121	150	68Q2	150	11Q11	6Q6
2221355-1	SZ3, Rec,121/150/100/150/11Q11/6Q6,NG	121	150	100	150	11Q11	6Q6
2221356-1	SZ3, Rec,121/150/68Q2/11Q11/11Q11/6Q6,NG	121	150	68Q2	11Q11	11Q11	6Q6
2221376-1	SZ3, Rec,150/150/13C2/150/150/100,NG	150	150	13C2	150	150	100
2221379-1	SZ2, Rec. Assy,150/150/85,NG	150	150	85			
2221380-1	SZ2, Rec. Assy,150/150/13C2,NG	150	150	13C2			
2221424-1	SZ3, Rec,121/150/59/11Q11/11Q11/6Q6,NG	150	150	59	11Q11	11Q11	6Q6
2221473-1	SZ1, Rec Assy,30T2/60/4,SZ12	30T2	60	C4			
2221549-2	ARINC600,RCPT ASSY,SZ2,60/60/100, NG	60	60	100			
2221614-2	SZ3, Rec,10T10/121/100/121/121/13C2,NG	10T10	121	100	121	121	13C2
2221825-1	SZ2, Rec. Assy,150/126/100,NG	150	126	100			
2221902-1	SZ1, Rec. Assy,60/60/5C2	60	60	5C2			
2221904-1	SZ2, Rec. Assy,150/150/68Q2	150	150	68Q2			
2221905-1	SZ2, Rec. Assy,150/150/85	150	150	85			
2221906-1	SZ2, Rec. Assy,150/150/13C2	150	150	13C2			
2221908-1	SZ2, Rec. Assy,150/150/13C2	150	150	13C2			
2221951-3	SZ2, Rec. Assy,150/121/13C2 NG	150	121	13C2			
2221968-2	A600, Rec. Assy,SZ2, (C4/120T2/13C2), NG	C4	120T2	13C2			
2221981-1	SZ3, REC, 150/150/13C2/150/150/68Q2, NG	150	150	13C2	150	150	68Q2
2286064-1	ARINC600 RECEPT ASSY 150/150/13C2	150	150	13C2			
2286150-1	120T2/11Q11/11Q2 RECEPT	120T2	11Q11	11Q2			
2286395-1	ARINC600 RECEPT 121/150/6Q6	121	150	6Q6			
2286543-1	150/110/11Q2 SELECT LOAD	150	110	11Q2			



**60 pos    150 pos    100 pos    120 T2    68Q2**

**Ordering Information**

**Descriptive Part Numbering System**

Use this guide to construct descriptive part numbers for ARINC 600 Connectors. Consult the referenced pages for additional information.

**Materials**

**Shell** — Die cast aluminum or machined aluminum per ASTM-B-85

**Insert Retention Plates** — Aluminum alloy

**Finish** — Chemical conversion coating per MIL-C-5541, Class 1A or 3 or electroless nickel per MIL-C-26074, Class 3 or 4, Grade B

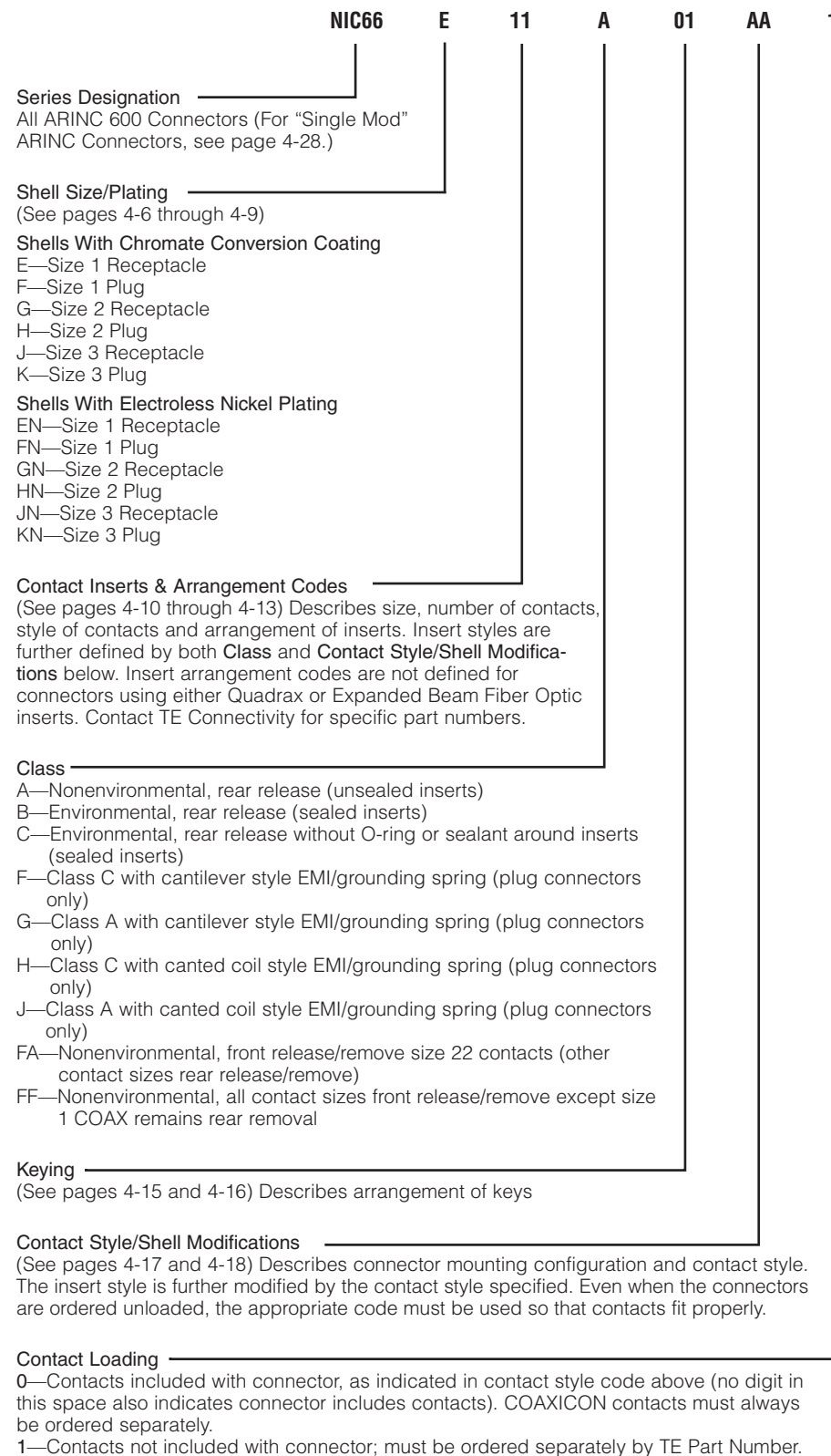
**Screws and Lockwashers** — Steel with chromate over zinc or stainless steel

**Polarizing Keyways** — Zinc alloy

**Polarizing Posts** — Aluminum alloy or stainless steel

**Insulators** — Thermoset or Thermoplastic

**Sample Descriptive Part Number**

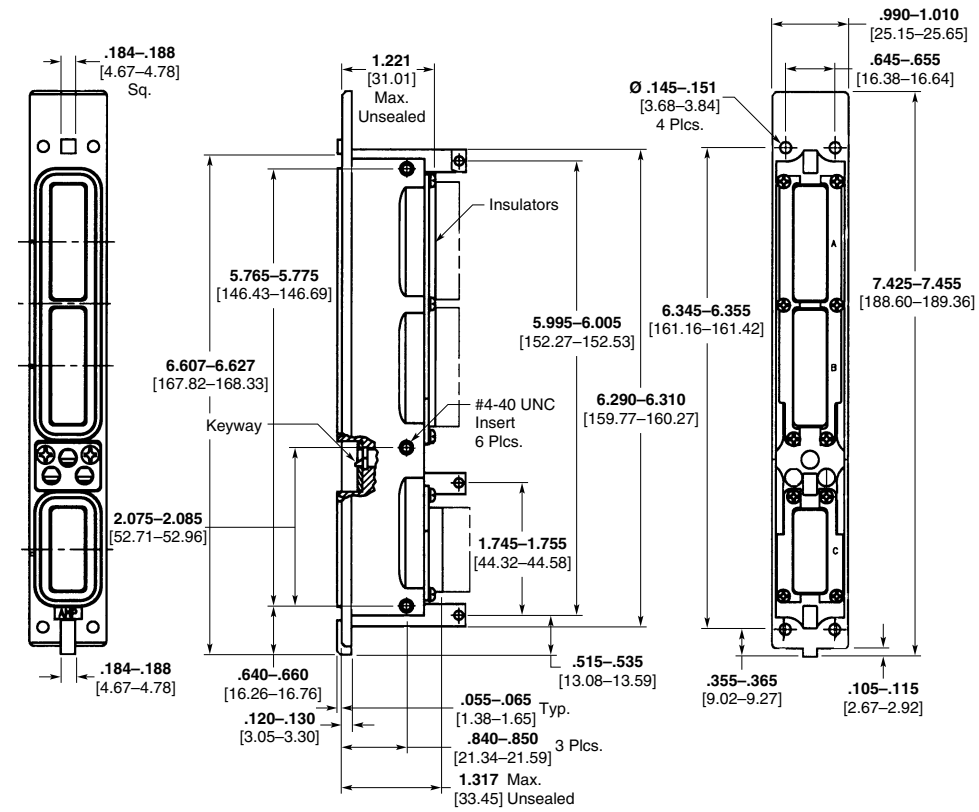


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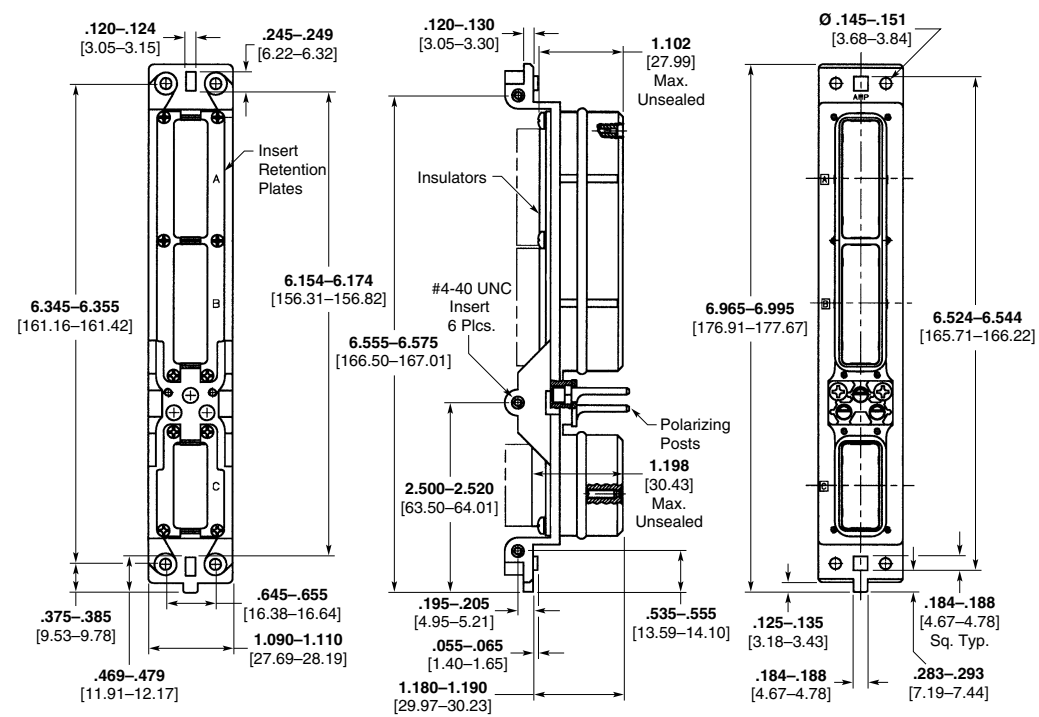
Rack and Panel Connectors

Shell Size 1

Receptacle

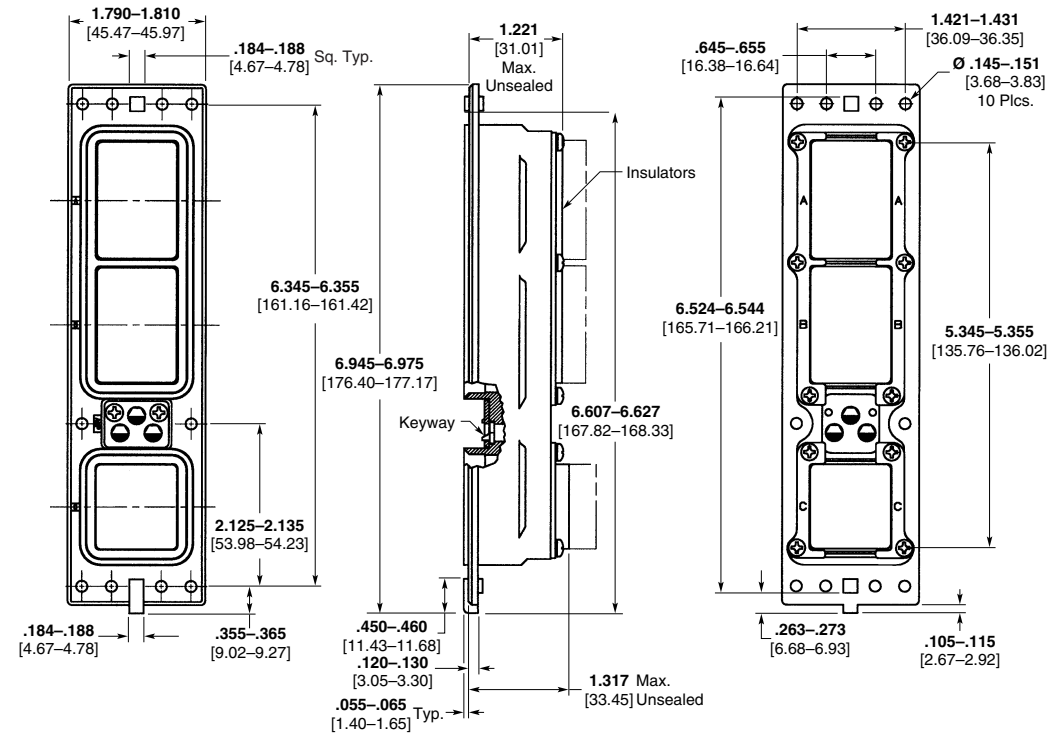


Plug



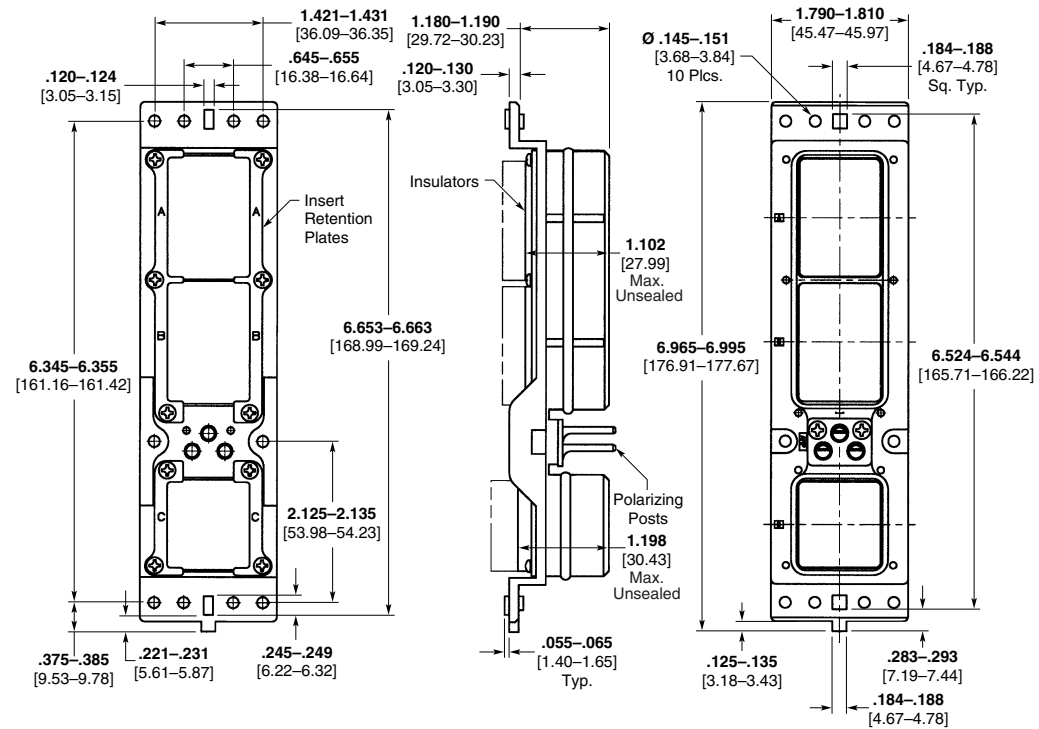
Shell Size 2

Receptacle



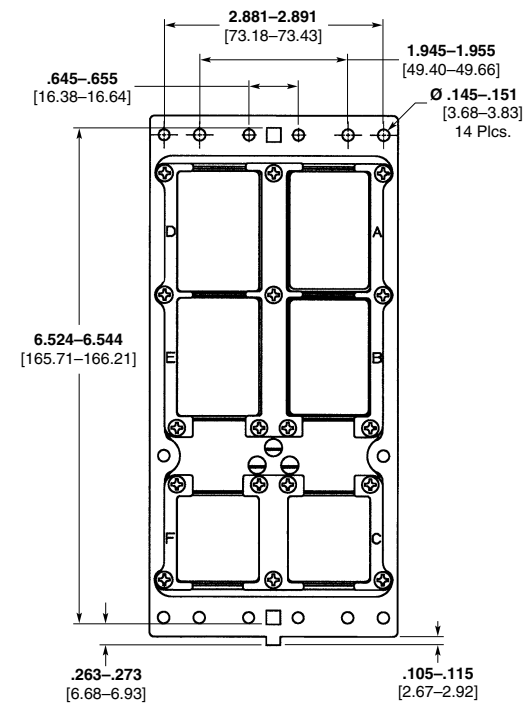
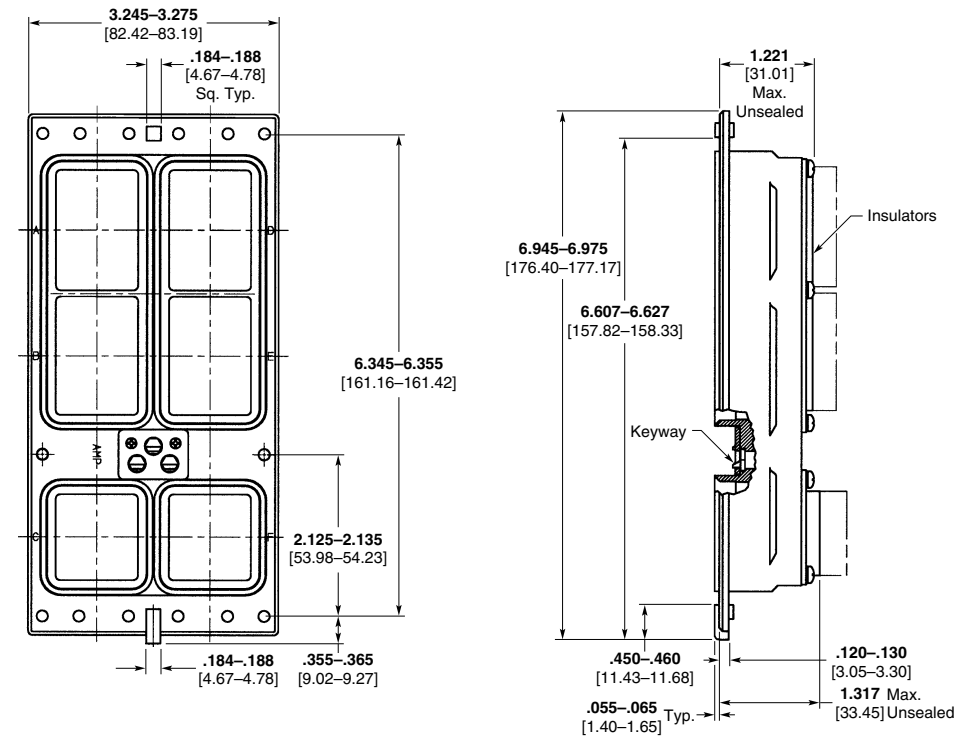
**4**  
Rack and Panel Connectors

Plug



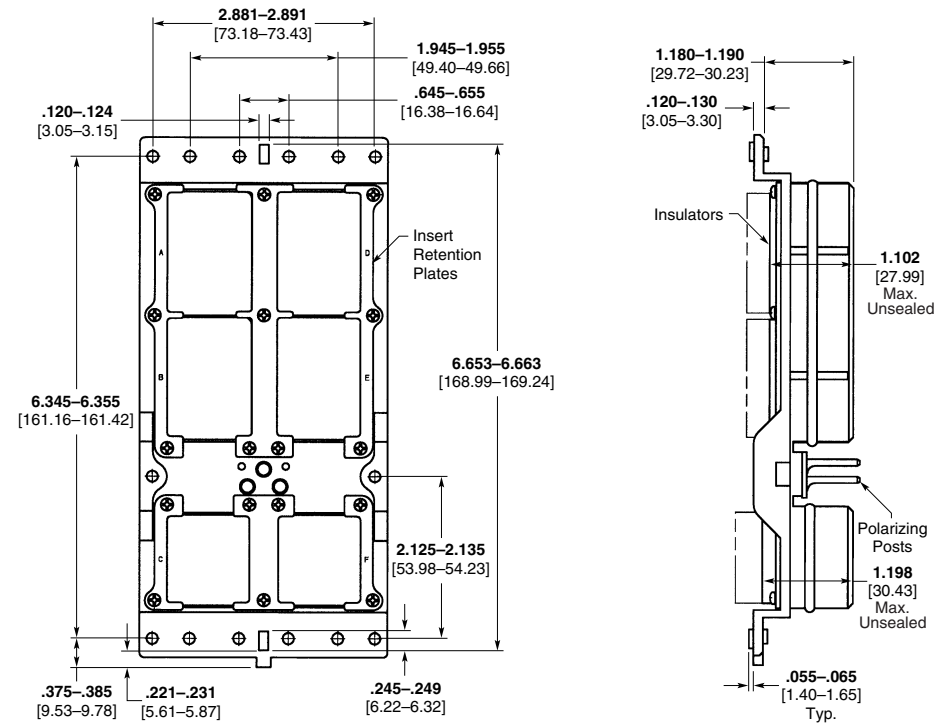
**Shell Size 3**

**Receptacle**

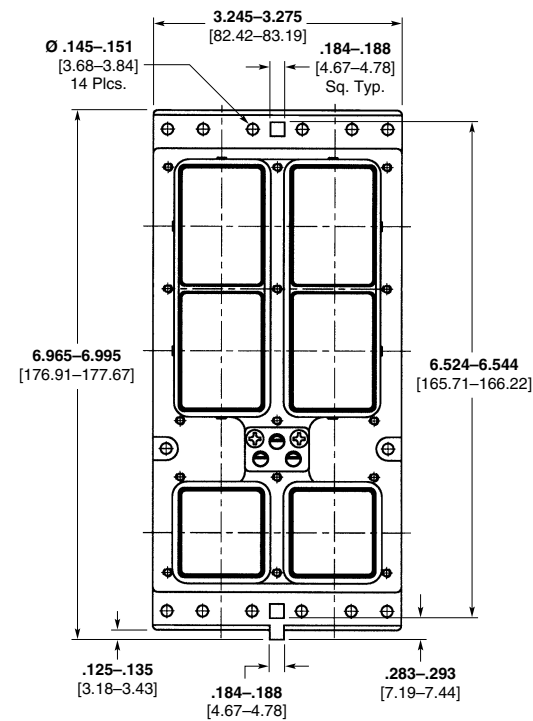


Shell Size 3 (Continued)

Plug



**4**  
Rack and Panel Connectors

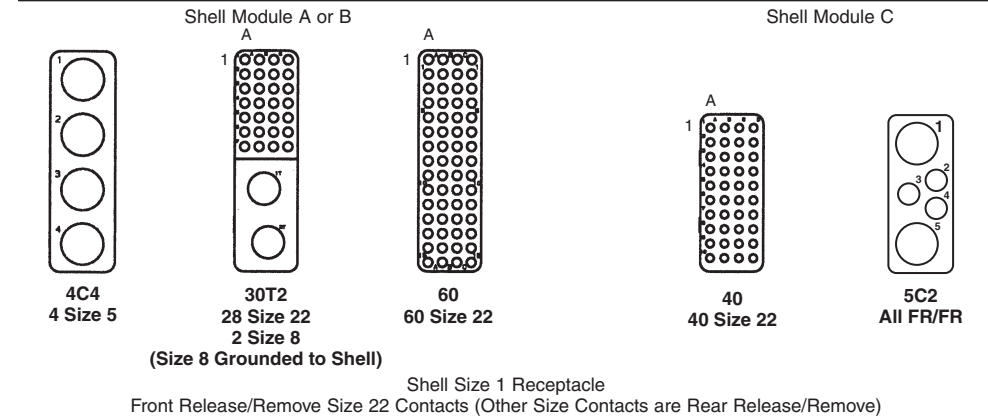
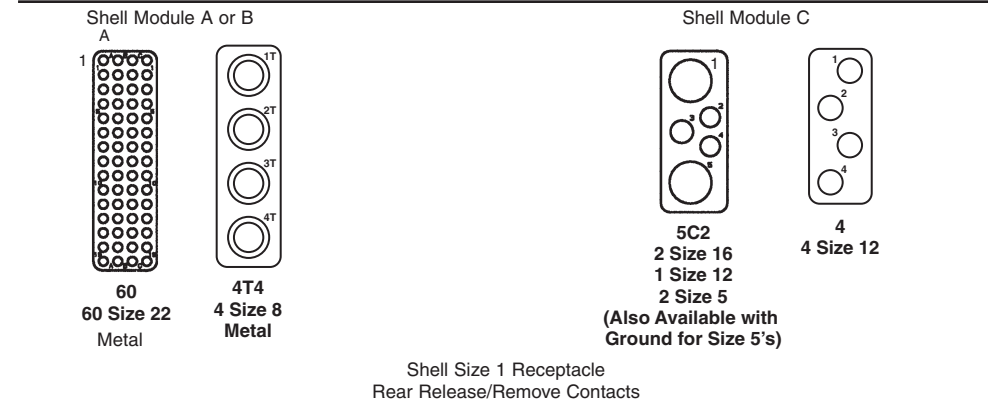
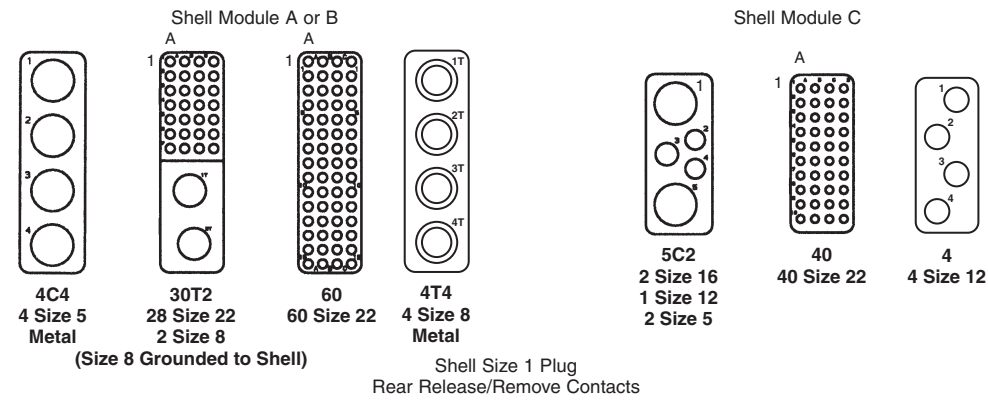




**Contact Inserts and Arrangement Codes**

**Shell Size 1**

Note: For Expanded Beam Fiber Optic Inserts, see page 4-14.



Shell Size	Arrangement Code	Module A	Module B	Module C
1	11	60	60	5C2
1	12	60	BLANK	BLANK
1	13	BLANK	60	BLANK
1	14	BLANK	60	5C2
1	15	60	60	40
1	16	OPEN	60	5C2
1	71	30T2	30T2	40
1	102	60	60	OPEN
1	104	60	OPEN	5C2
1	105	OPEN	OPEN	5C2
1	106	60	4C4	40
1	107	30T2	30T2	40
1	110	60	60	4
1	111	OPEN	30T2	40
1	112	60	4C4	5C2
1	113	60	OPEN	OPEN

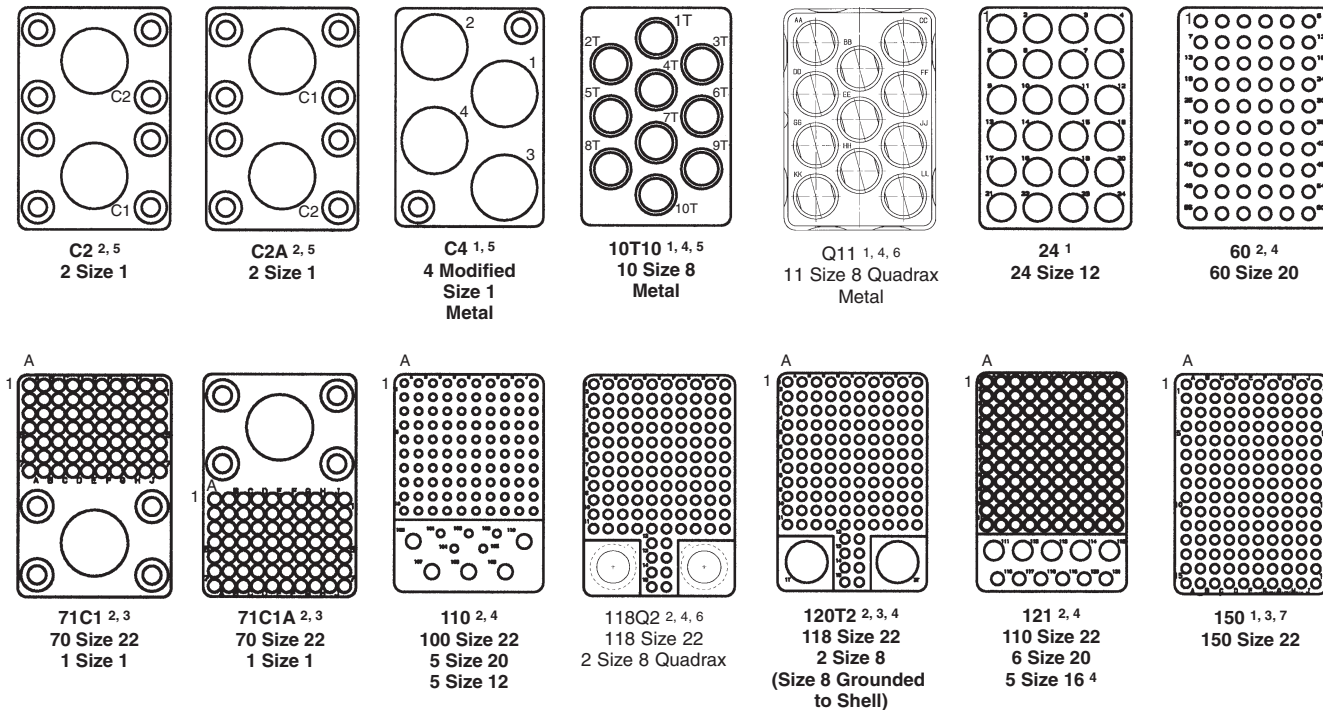
Arrangement codes not shown are available upon request. Contact TE Connectivity.

**Contact Inserts and Arrangement Codes** (Continued)

**Shell Size 2 or 3**

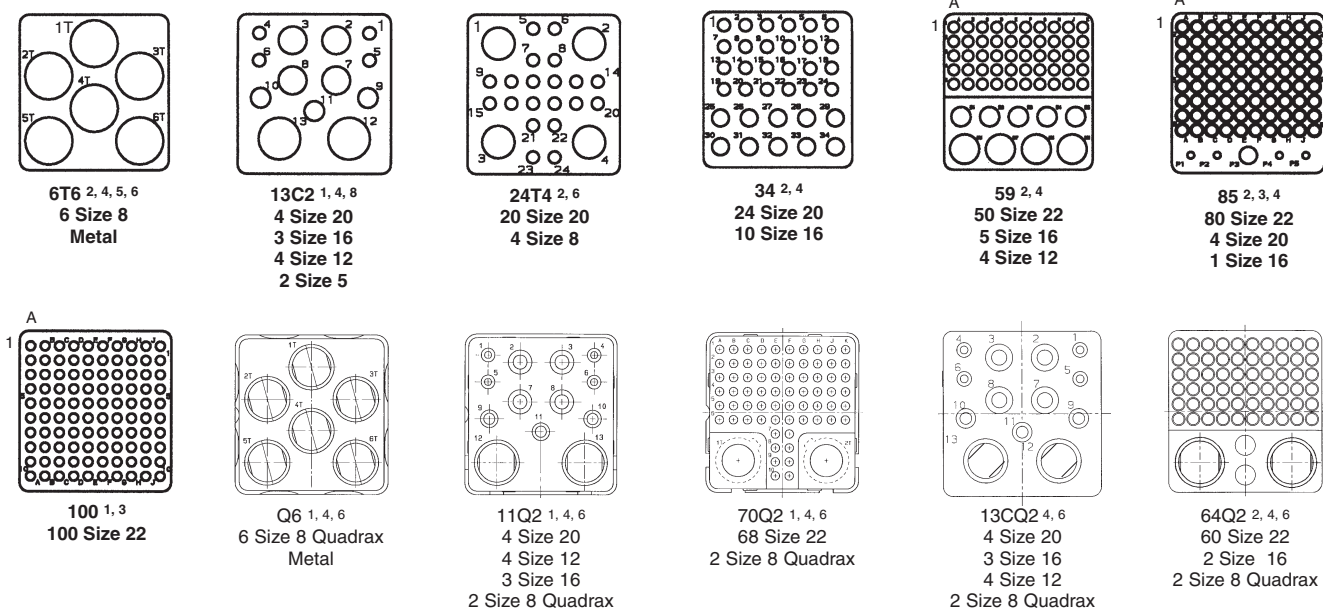
**Note:** For ARINC 801 Inserts and Expanded Beam Fiber Optic Inserts, see page 4-14.

Shell Module A, B, D or E



**4**  
Rack and Panel Connectors

Shell Module C or F



- Notes:**
1. Available for plug or receptacle with rear release/remove contacts.
  2. Available for plug only with rear release/remove contacts.
  3. Available for receptacle only with front release/remove size 22 contacts and rear release/remove other size contacts.
  4. Available for receptacle only with all contacts front release/remove.
  5. Available for receptacle only with all contacts front release/rear remove.
  6. Standard size 8 contacts will not fit in Quadrax size 8 inserts. Also, Quadrax size 8 contacts will not fit into standard size 8 inserts.
  7. Available for plug with front release/remove contacts.
  8. Available with grounding for size 5's.

**Note:** Engaging faces of receptacle inserts are shown

**Contact Inserts and Arrangement Codes** (Continued)

**Shell Size 2**

Shell Size	Arrangement Code	Module A	Module B	Module C	Shell Size	Arrangement Code	Module A	Module B	Module C
2	20	71C1A	71C1	13C2	2	242	150	10T10	13C2
2	21	150	150	13C2	2	245	71C1	71C1	85
2	22	71C1	150	13C2	2	253	C2A	150	13C2
2	23	71C1	71C1	13C2	2	254	C2A	71C1A	100
2	25	150	71C1	13C2	2	255	C2A	71C1A	13C2
2	26	150	150	100	2	256	C2A	71C1	13C2
2	27	C2	71C1	13C2	2	257	C2A	C2A	13C2
2	28	C2	71C1A	85	2	259	C4	C4	85
2	29	150	150	BLANK	2	262	150	60	34
2	30	71C1A	71C1A	13C2	2	266	121	121	85
2	50	71C1	71C1A	13C2	2	268	60	121	59
2	51	BLANK	150	13C2	2	269	10T10	150	13C2
2	52	150	150	85	2	270	150	150	59
2	53	C4	150	13C2	2	271	C4	120T2	13C2
2	54	150	73C3	13C2	2	272	10T10	10T10	85
2	55	150	BLANK	13C2	2	273	121	60	6T6
2	56	150	C2	13C2	2	275	121	60	34
2	57	24	150	13C2	2	279	150	121	13C2
2	58	24	24	6T6	2	284	120T2	120T2	13C2
2	59	C4	C4	13C2	2	286	60	60	34
2	72	120T2	120T2	100	2	287	150	121	59
2	74	121	121	6T6	2	288	150	11Q11	13C2
2	75	121	10T10	6T6	2	289	C4	60	100
2	80	120T2	150	100	2	290	150	150	68Q2
2	81	120T2	120T2	6T6	2	291	121	121	59
2	82	71C1A	150	13C2	2	292	121	121	6Q6
2	83	150	C4	34	2	293	121	11Q11	6Q6
2	84	C4	C4	34	2	294	C4	11Q11	59
2	85	150	150	34	2	295	11Q11	150	13C2
2	86	150	121	100	2	296	11Q11	11Q11	11Q2
2	207	71C1	150	100	2	297	11Q11	60	68Q2
2	208	150	71C1	100	2	298	120T2	BLANK	85
2	209	71C1	71C1	100	2	299	F36	150	85
2	212	71C1	71C1	OPEN	2	300	120T2	120T2	11Q2
2	216	C2A	71C1A	85	2	401	150	100	11Q2
2	220	71C1	C2A	85	2	402	150	60	100
2	234	60	60	13C2	2	403	71C1A	118Q2	12F5C2
2	237	150	120T2	100	2	404	11Q11	150	59
2	240	120T2	10T10	13C2	2	405	24	24	100
2	241	150	150	6T6	2	406	120T2	150	13C2

**Note:** Arrangement codes not shown are available upon request. Contact TE Connectivity.

**Contact Inserts and Arrangement Codes** (Continued)

**Shell Size 3**

Shell Size	Arrangement Code	Module A	Module B	Module C	Module D	Module E	Module F
3	31	150	150	13C2	150	150	13C2
3	32	150	150	100	150	150	13C2
3	33	150	150	13C2	150	150	100
3	34	150	150	100	150	150	100
3	36	C4	C4	13C2	BLANK	150	100
3	37	150	150	85	150	150	85
3	76	120T2	150	34	120T2	150	34
3	77	121	121	6T6	121	121	6T6
3	306	150	71C1	13C2	150	71C1	13C2
3	307	71C1	71C1	13C2	71C1	71C1	13C2
3	308	C2A	C2A	13C2	C2A	150	100
3	309	150	150	13C2	150	71C1	100
3	319	121	120T2	6T6	121	120T2	6T6
3	320	150	60	100	150	60	100
3	322	150	150	100	150	150	34
3	323	150	150	100	71C1	71C1	100
3	325	150	150	13C2	C2A	C2A	13C2
3	326	150	71C1	100	150	150	100
3	327	150	71C1	100	150	150	13C2
3	328	C2A	C2A	13C2	150	150	13C2
3	331	71C1	150	100	150	150	100
3	332	C4	C4	13C2	C4	C4	85
3	333	71C1	71C1	100	71C1	71C1	100
3	335	71C1	C4	100	71C1	C4	100
3	338	C2A	150	100	150	150	100
3	339	C2A	C2A	100	C2A	C2A	100
3	340	C2A	C2A	13C2	C2A	C2A	13C2
3	341	C4	C4	100	C4	C4	100
3	342	C4	C4	13C2	C4	C4	13C2
3	344	24	150	13C2	24	150	13C2
3	346	150	24	100	150	150	34
3	347	150	150	6T6	121	10T10	13C2
3	348	150	150	11Q2	150	150	11Q2
3	349	150	150	13C2	120T2	120T2	100
3	350	C4	C4	13C2	150	150	100
3	351	150	150	13C2	150	6MS	BLANK
3	352	150	150	59	150	6MS	BLANK
3	353	150	150	59	150	6MS	100
3	354	150	150	59	150	150	59
3	355	150	150	59	150	150	100
3	356	150	150	34	150	150	34
3	357	24	24	34	150	150	100
3	358	C4	120T2	100	150	150	13C2
3	359	11Q11	11Q11	6Q6	11Q11	11Q11	6Q6
3	360	11Q11	11Q11	100	11Q11	121	6Q6
3	361	11Q11	150	11Q2	150	150	68Q2
3	362	110	11Q11	6Q6	24	150	6Q6
3	363	150	120T2	100	150	120T2	59
3	364	C4	118Q2	11Q2	C4	118Q2	11Q2
3	365	11Q11	11Q11	85	11Q11	11Q11	85

**4**

Rack and Panel Connectors

**Note:** Arrangement codes not shown are available upon request. Contact TE Connectivity.

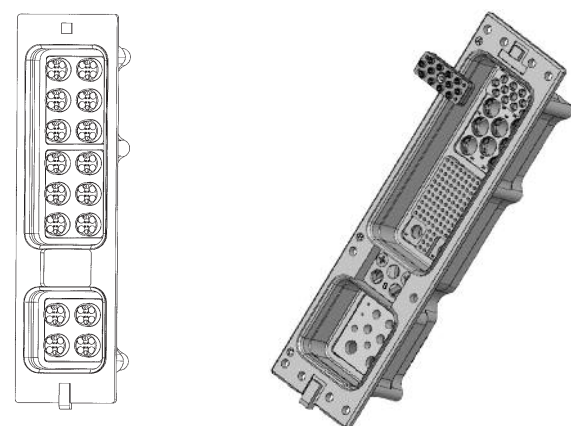
**Fiber Optic Inserts and Cavity Reducers**

Inserts available to accept TE Connectivity Mini-Expanded Beam Fiber Optic Cable Assemblies and ARINC 801 1.25mm Optical Termini. Custom design configurations can be provided.

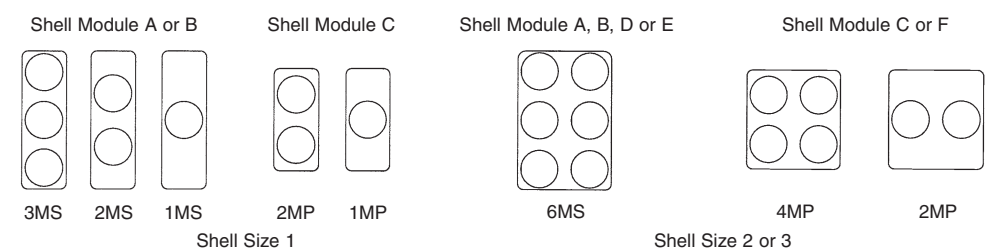
Contact TE for more information about Fiber Optic Connectors and Cable Assemblies, see Section 3.

**Product Facts**

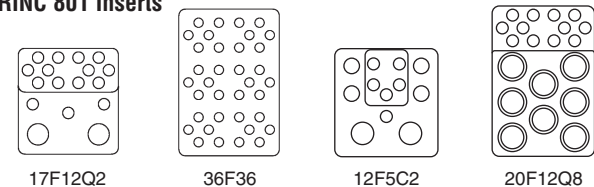
- For Mini-Expanded Beam inserts
- Insert holders designed to ARINC 600, Supplement 18 or to specific customer needs
- For use in 100 base-FX Ethernet LAN applications per ARINC 664 and 763
- Drop-in insert holders utilize standard ARINC 600 retainers
- Sealing available



**Mini-Expanded Beam**



**ARINC 801 Inserts**



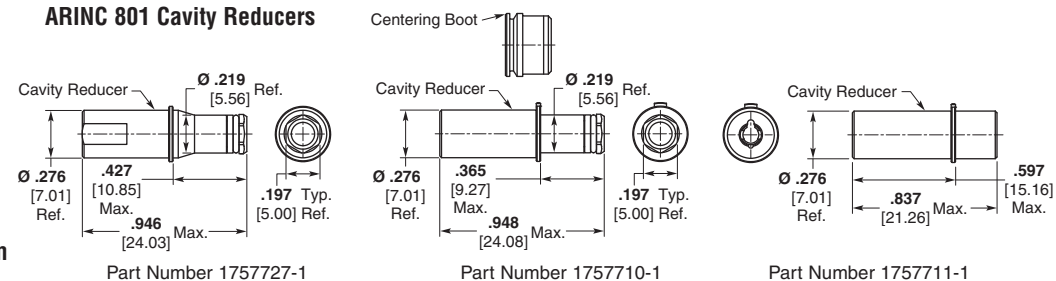
ARINC 801 Inserts and Cavity Reducers accept ARINC 801 Fiber Optic Termini.

**ARINC 801 Optical Termini**

**Product Facts**

- Optical termini for use with GPR, ARINC 600, circular MIL-DTL-38999 connectors
- Industry Standard 1.25mm ceramic ferrule
- Compatible with 1.5-2.2mm Tight jacket and loose tube cable construction:
  - MT - Tight jacket cable
  - ML - Loose tube cable
- SM / MM versions

**ARINC 801 Cavity Reducers**



Size 8 Quadrax	Part Number	ARINC 801 Cavity Reducer
Pin Quadrax adapter for ARINC 801 termini in Quadrax FR type cavity	1757727-1	Quadrax cavity reducer (FR/FR) for receptacle shell
Pin Quadrax adapter for ARINC 801 termini in Quadrax RR type cavity	1757710-1	Quadrax cavity reducer (RR/RR) for receptacle shell
Socket Quadrax adapter for ARINC 801 termini in Quadrax RR type cavity	1757711-1	Quadrax cavity reducer (RR/RR) for plug shell

**ARINC 801 Optical Termini Part Numbers**

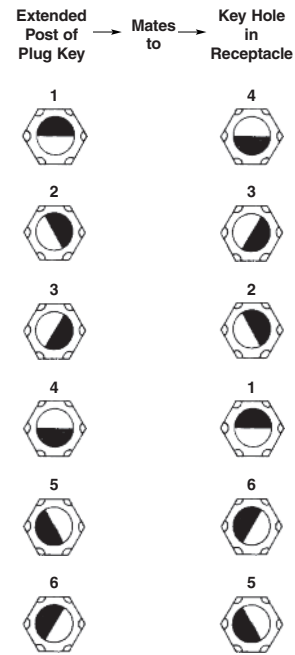
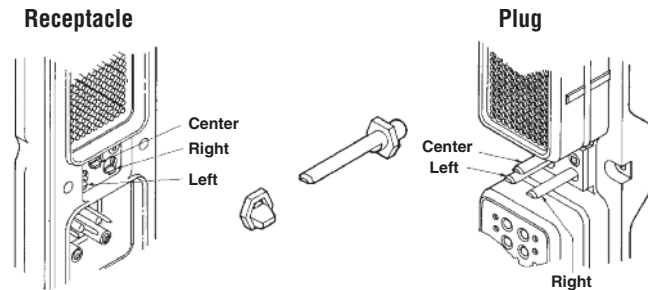
Cable Dia.	Cable Structure ML (loose & tight) MT (ultra tight)	S/M Fiber 125.3 μm PC/UPC	S/M Fiber 125.3 μm APC	M/M Fiber 128 μm PC
0.9mm Buffer	—	*	*	*
1.5 - 2.2mm	ML	1918614-1	1918616-1	1828199-1
1.5 - 2.2mm	MT	1918615-1	1918617-1	1828200-1

Consult your local TE Sales Representative for additional options.  
\* Contact TE for availability.

Keying

Notes:

1. Darkened portion of diagram indicates extended post of plug key; light portion indicates key hole in receptacle keyway.
2. If the keying code is omitted, keying is assembled in the 01 arrangement; the keying code is not stamped on the connector.
3. If the keying code is 00, keying is supplied unassembled.
4. Diagrams show mating face of connector, "Top" up.



Keying Components	Quantity Required Per Connector	Part Numbers	
		Receptacle	Plug
Male Key Post	3	—	1218693-2
Female Keyway	3	208019-1	—
Plate	1	1218692-1	1218692-1
Screw	2	208021-1	208021-1
Kit Containing Above	1	448013-1	448012-1

Keying Code	Plug			Receptacle		
	Left Post	Center Post	Right Post	Left Keyway	Center Keyway	Right Keyway
00	—	—	—	—	—	—
01	1	1	1	4	4	4
02	2	1	1	4	4	3
03	3	1	1	4	4	2
04	4	1	1	4	4	1
05	5	1	1	4	4	6
06	6	1	1	4	4	5
07	1	1	6	5	4	4
08	2	1	6	5	4	3
09	3	1	6	5	4	2
10	4	1	6	5	4	1
11	5	1	6	5	4	6
12	6	1	6	5	4	5
13	1	1	5	6	4	4
14	2	1	5	6	4	3
15	3	1	5	6	4	2
16	4	1	5	6	4	1
17	5	1	5	6	4	6
18	6	1	5	6	4	5
19	1	1	4	1	4	4
20	2	1	4	1	4	3
21	3	1	4	1	4	2
22	4	1	4	1	4	1
23	5	1	4	1	4	6
24	6	1	4	1	4	5
25	1	1	3	2	4	4
26	2	1	3	2	4	3
27	3	1	3	2	4	2
28	4	1	3	2	4	1
29	5	1	3	2	4	6
30	6	1	3	2	4	5
31	1	1	2	3	4	4
32	2	1	2	3	4	3
33	3	1	2	3	4	2
34	4	1	2	3	4	1
35	5	1	2	3	4	6
36	6	1	2	3	4	5
37	1	2	1	4	3	4
38	2	2	1	4	3	3

Keying Code	Plug			Receptacle		
	Left Post	Center Post	Right Post	Left Keyway	Center Keyway	Right Keyway
39	3	2	1	4	3	2
40	4	2	1	4	3	1
41	5	2	1	4	3	6
42	6	2	1	4	3	5
43	1	2	6	5	3	4
44	2	2	6	5	3	3
45	3	2	6	5	3	2
46	4	2	6	5	3	1
47	5	2	6	5	3	6
48	6	2	6	5	3	5
49	1	2	5	6	3	4
50	2	2	5	6	3	3
51	3	2	5	6	3	2
52	4	2	5	6	3	1
53	5	2	5	6	3	6
54	6	2	5	6	3	5
55	1	2	4	1	3	4
56	2	2	4	1	3	3
57	3	2	4	1	3	2
58	4	2	4	1	3	1
59	5	2	4	1	3	6
60	6	2	4	1	3	5
61	1	2	3	2	3	4
62	2	2	3	2	3	3
63	3	2	3	2	3	2
64	4	2	3	2	3	1
65	5	2	3	2	3	6
66	6	2	3	2	3	5
67	1	2	2	3	3	4
68	2	2	2	3	3	3
69	3	2	2	3	3	2
70	4	2	2	3	3	1
71	5	2	2	3	3	6
72	6	2	2	3	3	5
73	1	3	1	4	2	4
74	2	3	1	4	2	3
75	3	3	1	4	2	2
76	4	3	1	4	2	1
77	5	3	1	4	2	6

4

Rack and Panel Connectors





Keying (Continued)

Keying Code	Plug			Receptacle			Keying Code	Plug			Receptacle		
	Left Post	Center Post	Right Post	Left Keyway	Center Keyway	Right Keyway		Left Post	Center Post	Right Post	Left Keyway	Center Keyway	Right Keyway
78	6	3	1	4	2	5	148	4	5	1	4	6	1
79	1	3	6	5	2	4	149	5	5	1	4	6	6
80	2	3	6	5	2	3	150	6	5	1	4	6	5
81	3	3	6	5	2	2	151	1	5	6	5	6	4
82	4	3	6	5	2	1	152	2	5	6	5	6	3
83	5	3	6	5	2	6	153	3	5	6	5	6	2
84	6	3	6	5	2	5	154	4	5	6	5	6	1
85	1	3	5	6	2	4	155	5	5	6	5	6	6
86	2	3	5	6	2	3	156	6	5	6	5	6	5
87	3	3	5	6	2	2	157	1	5	5	6	6	4
88	4	3	5	6	2	1	158	2	5	5	6	6	3
89	5	3	5	6	2	6	159	3	5	5	6	6	2
90	6	3	5	6	2	5	160	4	5	5	6	6	1
91	1	3	4	1	2	4	161	5	5	5	6	6	6
92	2	3	4	1	2	3	162	6	5	5	6	6	5
93	3	3	4	1	2	2	163	1	5	4	1	6	4
94	4	3	4	1	2	1	164	2	5	4	1	6	3
95	5	3	4	1	2	6	165	3	5	4	1	6	2
96	6	3	4	1	2	5	166	4	5	4	1	6	1
97	1	3	3	2	2	4	167	5	5	4	1	6	6
98	2	3	3	2	2	3	168	6	5	4	1	6	5
99	3	3	3	2	2	2	169	1	5	3	2	6	4
100	4	3	3	2	2	1	170	2	5	3	2	6	3
101	5	3	3	2	2	6	171	3	5	3	2	6	2
102	6	3	3	2	2	5	172	4	5	3	2	6	1
103	1	3	2	3	2	4	173	5	5	3	2	6	6
104	2	3	2	3	2	3	174	6	5	3	2	6	5
105	3	3	2	3	2	2	175	1	5	2	3	6	4
106	4	3	2	3	2	1	176	2	5	2	3	6	3
107	5	3	2	3	2	6	177	3	5	2	3	6	2
108	6	3	2	3	2	5	178	4	5	2	3	6	1
109	1	4	1	4	1	4	179	5	5	2	3	6	6
110	2	4	1	4	1	3	180	6	5	2	3	6	5
111	3	4	1	4	1	2	181	1	6	1	4	5	4
112	4	4	1	4	1	1	182	2	6	1	4	5	3
113	5	4	1	4	1	6	183	3	6	1	4	5	2
114	6	4	1	4	1	5	184	4	6	1	4	5	1
115	1	4	6	5	1	4	185	5	6	1	4	5	6
116	2	4	6	5	1	3	186	6	6	1	4	5	5
117	3	4	6	5	1	2	187	1	6	6	5	5	4
118	4	4	6	5	1	1	188	2	6	6	5	5	3
119	5	4	6	5	1	6	189	3	6	6	5	5	2
120	6	4	6	5	1	5	190	4	6	6	5	5	1
121	1	4	5	6	1	4	191	5	6	6	5	5	6
122	2	4	5	6	1	3	192	6	6	6	5	5	5
123	3	4	5	6	1	2	193	1	6	5	6	5	4
124	4	4	5	6	1	1	194	2	6	5	6	5	3
125	5	4	5	6	1	6	195	3	6	5	6	5	2
126	6	4	5	6	1	5	196	4	6	5	6	5	1
127	1	4	4	1	1	4	197	5	6	5	6	5	6
128	2	4	4	1	1	3	198	6	6	5	6	5	5
129	3	4	4	1	1	2	199	1	6	4	1	5	4
130	4	4	4	1	1	1	200	2	6	4	1	5	3
131	5	4	4	1	1	6	201	3	6	4	1	5	2
132	6	4	4	1	1	5	202	4	6	4	1	5	1
133	1	4	3	2	1	4	203	5	6	4	1	5	6
134	2	4	3	2	1	3	204	6	6	4	1	5	5
135	3	4	3	2	1	2	205	1	6	3	2	5	4
136	4	4	3	2	1	1	206	2	6	3	2	5	3
137	5	4	3	2	1	6	207	3	6	3	2	5	2
138	6	4	3	2	1	5	208	4	6	3	2	5	1
139	1	4	2	3	1	4	209	5	6	3	2	5	6
140	2	4	2	3	1	3	210	6	6	3	2	5	5
141	3	4	2	3	1	2	211	1	6	2	3	5	4
142	4	4	2	3	1	1	212	2	6	2	3	5	3
143	5	4	2	3	1	6	213	3	6	2	3	5	2
144	6	4	2	3	1	5	214	4	6	2	3	5	1
145	1	5	1	4	6	4	215	5	6	2	3	5	6
146	2	5	1	4	6	3	216	6	6	2	3	5	5
147	3	5	1	4	6	2							

**Contact Style/Shell Modification Codes**

- AA Crimp, Snap-In Contacts, Rear Release, Standard Mounting
- AB .025 [0.64] Square Post — 208215-1 Contacts, 1-Wrap High, Snap-In, Standard Mounting
- AC .025 [0.64] Square Post — 208215-2 Contacts, 2-Wrap High, Snap-In, Standard Mounting
- AD .025 [0.64] Square Post — 208215-3 Contacts, 3-Wrap High, Snap-In, Standard Mounting
- BA (4) Floating Bushings

#6-32 Clinch Nuts, see Table 1 on page 4-18 for clinch nut locations

- CA (10) #6-32 Clinch Nuts
- CB (4) #6-32 Clinch Nuts
- CC (6) #6-32 Clinch Nuts
- CD (8) #6-32 Clinch Nuts
- CE (14) #6-32 Clinch Nuts

**Captivated Contact Codes**

- DA Captivated Inserts — No Contacts
- DF 208275-7 (.150 [3.81] Extension), Standard Mounting
- DG 208275-3 (.190 [4.83] Extension), Standard Mounting
- DH 208275-4 (.250 [6.35] Extension), Standard Mounting

Clinch Nuts with Captivated Contacts, see Table 1 on page 4-18 for clinch nut locations

- EA (4) #6-32 Clinch Nuts, and 208275-7 Signal Contacts
- EB (4) #6-32 Clinch Nuts, and 208275-3 Signal Contacts
- EC (4) #6-32 Clinch Nuts, and 208275-4 Signal Contacts

**Front Release, standard mounting**

- FA Indicates Front Release Inserts without Contacts
- FB Standard Mounting, 211245-2 Contacts
- FC Standard Mounting, 211245-4 Contacts
- FD Standard Mounting, 211245-6 Contacts
- FE Standard Mounting, 211431-2 Contacts
- FF Standard Mounting, 211431-4 Contacts
- FG Standard Mounting, 211431-6 Contacts
- FH Standard Mounting, 211431-8 Contacts

Front Release Contacts and Clinch Nuts, see Table 1 on page 4-18 for clinch nut locations

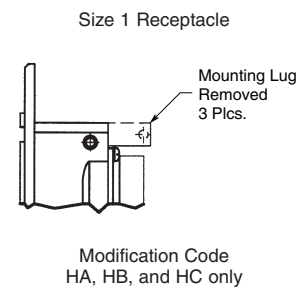
- GA (4) #4-40 Clinch Nuts, 211431-4 Contacts
- GB (6) #4-40 Clinch Nuts, 211431-4 Contacts
- GC (6) #4-40 Clinch Nuts, 211431-6 Contacts
- GD (6) #6-32 Clinch Nuts, 211431-4 Contacts
- GE (10) #4-40 Clinch Nuts, 211431-8 Contacts
- GF (6) #6-32 Clinch Nuts, 211431-2 Contacts
- GG (4) #4-40 Clinch Nuts, 211431-2 Contacts
- GH (4) #6-32 Clinch Nuts, 211431-2 Contacts
- GJ (6) #6-32 Clinch Nuts, 211431-8 Contacts
- GK (4) #6-32 Clinch Nuts, 211431-8 Contacts
- GL (10) #6-32 Clinch Nuts, 211431-4 Contacts
- GM (4) #6-32 Clinch Nuts, 211431-4 Contacts
- GN (4) #6-32 Clinch Nuts, 211245-2 Contacts
- FJ (10) #6-32 Clinch Nuts, 211245-4 Contacts
- FK (6) #6-32 Clinch Nuts, 211245-4 Contacts

#4-40 Clinch Nuts, see Table 1 on page 4-18 for clinch nut locations

- SA (4) #4-40 Clinch Nuts
- SB (6) #4-40 Clinch Nuts
- SC (10) #4-40 Clinch Nuts
- SD (8) #4-40 Clinch Nuts
- SE (14) #4-40 Clinch Nuts
- SF (6) #4-40 Clinch Nuts (Special)

Size 1 Receptacle Shell with Lugs Removed, see drawing below. See Table 1 on page 4-18 for clinch nut locations.

- HA Size 1 Receptacle Shell
- HB Size 1 Receptacle Shell — (4) #4-40 Clinch Nuts
- HC Size 1 Receptacle Shell — with 211431-4 contacts, standard mounting



**4**  
Rack and Panel Connectors

**Contact Style/Shell Modification Codes** (Continued)

**Table 1**

Quantity	Clinch Nut Locations on Mounting Flange (Unless otherwise noted with modification code)		
	Shell Size		
	1	2	3
4	All	4 corners	4 corners
6	N/A	4 corners and 2 at polarizing keys	4 corners and 2 at polarizing keys
6 code SF only	N/A	See Figure 3	N/A
8	N/A	See Figure 4	See Figure 1
10	N/A	All	See Figure 2
14	N/A	N/A	All

Size 3 Receptacle

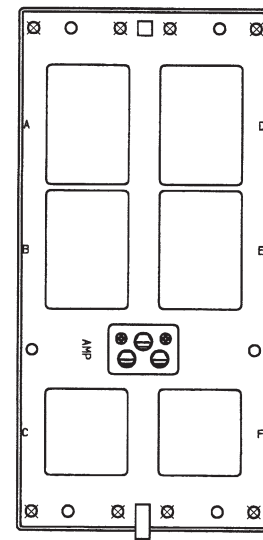


Figure 1  
x = Clinch Nut Installed in These Holes

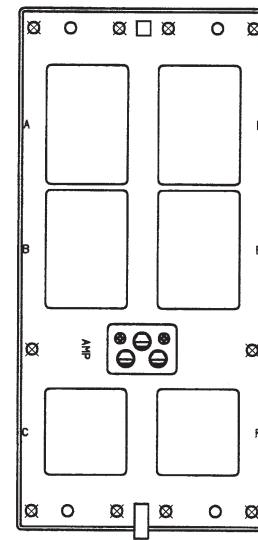


Figure 2  
x = Clinch Nut Installed in These Holes

Size 2 Receptacle

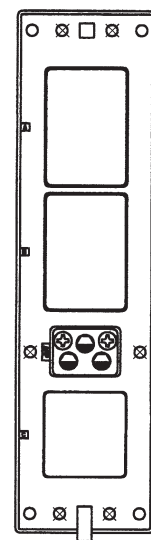


Figure 3  
Modification Code SF Only  
x = Clinch Nut Installed in These Holes

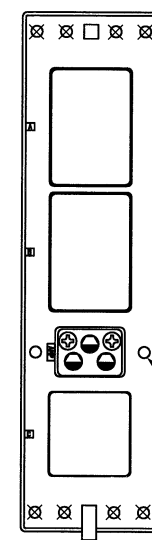


Figure 4  
x = Clinch Nut Installed in These Holes

Ø .186  
[4.72]  
2 Plcs.

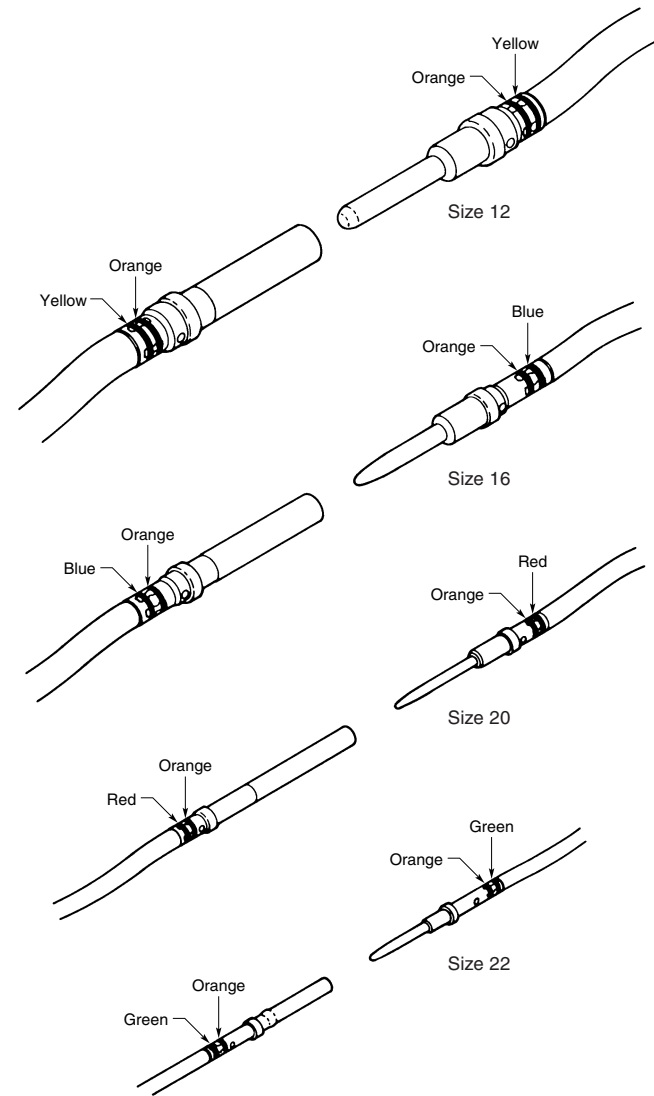
**Crimp, Snap-In Contacts**

**Contact Loading Codes**

0 (or blank) — Contacts included

1 — Contacts not included; must be ordered separately by TE Connectivity Part Number.

**Note:** When connectors are ordered with contacts, the contact style section (AA in the example code at the top of this page) must be specified so that the proper, unloaded inserts are included. COAXICON contacts are not supplied in connector kits and must be ordered separately.



**4**  
Rack and Panel Connectors

**Insertion and Extraction**



Typical Tool

**Crimp, Snap-In, Rear-Release Contacts (also suitable for ARINC 404)**

Average Contact Size	Wire Size		Color Code	Average Engagement Force	Part Numbers		Tooling Part Numbers			Color Code
	AWG	mm <sup>2</sup>			Pin Contact	Socket Contact	Crimp Tool	Positioner	Insertion/Extraction Tool	
22	26-22	0.12-0.4	Green	1.5 oz. [.42 N]	208262-3	208264-2	M22520/2-01	M22520/2-23	91066-1	Green
20	24-20	0.2-0.6	Red	2.0 oz. [.56 N]	208265-3	208267-2	M22520/2-01	M22520/2-08	91066-4	Red
16	20-16	0.5-1.4	Blue	3.0 oz. [.83 N]	208268-3	208270-2	M22520/1-01	M22520/1-02	91066-3	Blue
12	14-12	2-3	Yellow	12.0 oz. [3.34 N]	208271-3	208273-2	M22520/1-01	M22520/1-11	445147-1	—

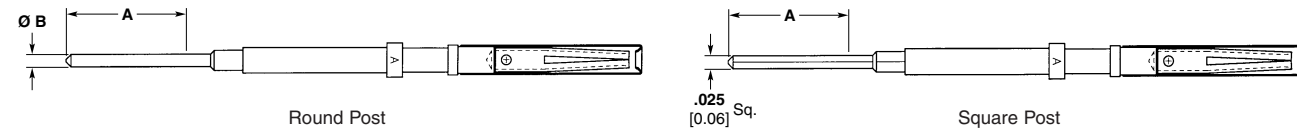
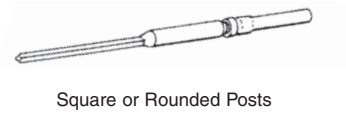
**Posted Contacts**

**Size 22 Posted Contacts**

**Contact Loading**

0 (or blank) — Contacts included

1 — Contacts not included; must be ordered separately.



**Size 22, Snap-In, Rear Release Socket Contacts**

Use Insertion/Extraction Tool  
Part Number 91066-1

**with .025 [0.64] Square Posts**

Number of Wraps	Post Extension from Rear of Insert (Dim. A)	Part Number
1	<b>0.275</b> 6.98	208215-1
2	<b>0.390</b> 9.91	208215-2
3	<b>0.520</b> 13.21	208215-3

**with Round Posts**

Minimum Post Extension from Rear (Dim. A)	Post Diameter (Dim. B)	Part Number
<b>0.190</b> 4.82	<b>0.025</b> 0.64	445814-1
<b>0.230</b> 5.84	<b>0.025</b> 0.64	445814-2
<b>0.180</b> 4.57	<b>0.020</b> 0.51	445814-3

**Size 22, Snap-In, Front Release Socket Contacts**

Use Insertion/Extraction Tool  
Part Number 445815-1

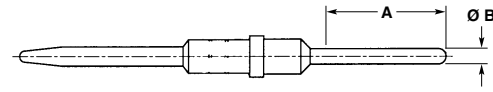
**with Round Posts**

Minimum Post Extension from Rear of Insert (Dim. A)	Post Diameter (Dim. B)	Part Number	Solder Dipped
<b>0.150</b> 3.81	<b>0.025</b> 0.64	211431-2	No
<b>0.250</b> 6.35	<b>0.025</b> 0.64	211431-4	No
<b>0.375</b> 9.52	<b>0.025</b> 0.64	211431-6	No
<b>0.500</b> 12.70	<b>0.025</b> 0.64	211431-8	No
<b>0.150</b> 3.81	<b>0.0195</b> 0.50	1-211431-0	No
<b>0.250</b> 6.35	<b>0.0195</b> 0.50	1-211431-2	No
<b>0.150</b> 3.81	<b>0.030</b> 0.76	1-211431-3	Yes
<b>0.375</b> 9.52	<b>0.030</b> 0.76	1-211431-4	Yes
<b>0.250</b> 6.35	<b>0.025</b> 0.64	1-211431-5	Yes

**with .025 [0.64] Square Posts**

Number of Wraps	Post Extension from Rear of Insert (Dim. A)	Part Number
1	<b>0.250</b> 6.35	211245-2
2	<b>0.375</b> 9.52	211245-4
3	<b>0.500</b> 12.70	211245-6

**Posted Contacts** (Continued)



Size 16  
Part Number 448139

**Front Release/Remove  
Size 12, Posted Pin Contacts**  
Use Insertion/Extraction Tool  
Part Number 445147-1

Minimum Post Extension from Rear of Insert (Dim. A)	Post Diameter (Dim. B)	Part Number	Solder Dipped
<b>0.264</b> 6.70	<b>.079-.083</b> 2.01-2.11	448140-3	No
<b>0.379</b> 9.62	<b>.079-.083</b> 2.01-2.11	448140-6	No
<b>0.264</b> 6.70	<b>.079-.083</b> 2.01-2.11	448140-9	Yes
<b>0.143</b> 3.63	<b>.079-.083</b> 2.01-2.11	448140-8	No

**Front Release/Remove  
Size 16, Posted Pin Contacts**  
Use Insertion/Extraction Tool  
Part Number 91066-3

Minimum Post Extension from Rear of Insert (Dim. A)	Post Diameter (Dim. B)	Part Number	Solder Dipped
<b>0.379</b> 9.62	<b>.048-.052</b> 1.22-1.32	448139-6	No
<b>0.264</b> 6.70	<b>.048-.052</b> 1.22-1.32	1-448139-1	No
<b>0.233</b> 5.91	<b>.048-.052</b> 1.22-1.32	1-448139-4	No
<b>0.264</b> 6.70	<b>.048-.052</b> 1.22-1.32	1-448139-5	Yes
<b>0.143</b> 3.63	<b>.061-.064</b> 1.55-1.63	448139-8	No

**Front Release/Remove  
Size 20, Posted Pin Contacts**  
Use Insertion/Extraction Tool  
Part Number 91066-4

Minimum Post Extension from Rear of Insert (Dim. A)	Post Diameter (Dim. B)	Part Number	Solder Dipped
<b>0.379</b> 9.62	<b>.030-.034</b> 0.76-0.86	2-448138-3	No
<b>0.236</b> 5.99	<b>.030-.034</b> 0.76-0.86	1-448138-2	No
<b>0.272</b> 6.90	<b>.030-.034</b> 0.76-0.86	1-448138-5	No
<b>0.272</b> 6.90	<b>.030-.034</b> 0.76-0.86	1-448138-6	Yes
<b>0.236</b> 5.99	<b>.030-.034</b> 0.76-0.86	1-448138-7	Yes

**4**

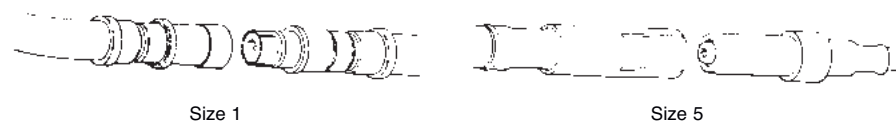
Rack and Panel Connectors



**COAXICON Contacts**

**COAXICON Contacts**

COAXICON Contacts are not supplied in connector kits; they must be ordered separately.



**Size 1 Contacts**

**Performance Characteristics**

- Nominal Impedance**—50 ohms
- Frequency Range**—0 to 5 GHz
- Operating Temperature**— -85°F to +329°F [-65°C to +165°C]
- Operating Voltage (Rated)**— 1000 VAC rms, 60 Hz at Sea Level
- Contact Resistance (Milliohms)**— 1.0 max.—Center Contact  
0.2 max.—Outer Contact
- Insulation Resistance**— 5,000 megohms min. @ 500 vdc per MIL-STD-1344, Method 3003 or MIL-STD-202, Method 302, Cond. B

**Dielectric Withstanding Voltage (60 Hz, rms)**—

- RG 214/U 2500 at Sea Level
- RG 142/U 1900 at Sea Level
- VSWR**—1.35 to 1.00 at 5 GHz
- Insertion/Withdrawal Force**— Insertion (max.) 15 lb [66.72 N]  
Withdrawal (min.) 1 lb [4.45 N]
- Cable Retention**— RG 214/U 125 lb [556 N] min.  
RG 142/U 60 lb [266.9 N] min.

**Thermal Shock**—per MIL-STD-1344, Method 1003, Cond. A or MIL-STD-202, Method 107, Cond. A

**Physical Shock**—per MIL-STD-1344, Method 2004, Cond. D or MIL-STD-202, Method 213, Cond. D except 300 G max.

**Vibration**—per MIL-STD-1344, Method 2005, Cond. VI, Letter J or MIL-STD-202, Method 204, Cond. E except 42 G max.

**Humidity Temperature Cycling**—per MIL-STD-1344, Method 1002, Type II, Cond. A or MIL-STD-202, Method 106

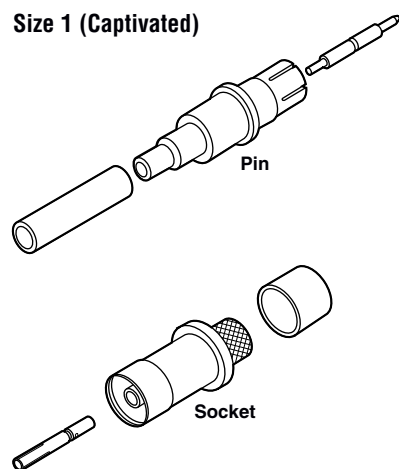
**Salt Spray**—per MIL-STD-1344, Method 1001, Cond. B or MIL-STD-202, Method 101, Cond. B

**Temperature Life**—per MIL-STD-1344, Method 1005, Cond. D or MIL-STD-202, Method 108, Cond. D

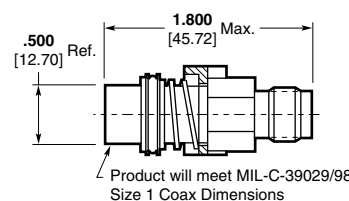
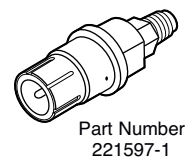
**Material and Finish**

- Contact**—Beryllium Copper per ASTM-B-196/ASTM-B-197, Brass per ASTM-B-16, PTFE per ASTM-D-1710, Silicon Rubber per ZZ-R-765, Gold plate per MIL-G-45204, Nickel plate per QQ-N-290
- Ferrule**—Copper per ASTM-B-188, Tin plate per ASTM-B-545

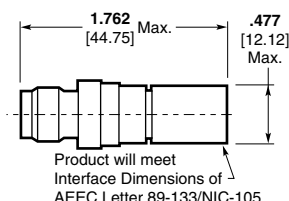
**Size 1 (Captivated)**



**Adapter — Size 1 Pin to SMA Jack**



Adapter Standard Size 1  
Socket to TNC  
Part Number 449908-1



TCAS Size 1  
Socket to TNC Adapter  
Part Number 447346-1

**COAXICON Contacts** (Continued)

Contact Size	RG/U Cable	Contact Part No.		"O" Crimp Tooling			Military Hex Crimp Tooling				Compression Crimp Tooling		
				Center Contact			Center Contact		Ferrule		Tool (M22520/)	Locator (M22520/)	Dies (M22520/)
				Pin	Socket	Tool (M22520/)	Positioner/Die	Ferrule	Tool (M22520/)	Die (M22520/)			
<b>O Crimp</b>													
	402 Semi-Rigid .141 [3.58]	225837-1	—	601966-1 (2-01)	1-601966-9	91905-11 or 91904-11	—	—	—	—	—	—	—
	402 Semi-Rigid .141 [3.58]	222018-1	—	—	—	—	—	—	—	—	59980-1 (36-01)	220220-2 (36-06)	312253-1 (36-03)
Size 1 (for use with 71C1, 71C1A, C2 and C2A inserts)	405 Semi-Rigid .086 [2.18]	222018-2	—	—	—	—	—	—	—	—	59980-1 (36-01)	220220-2 (36-06)	312253-2 (36-02)
	214	—	225831-1 211229-1*	220015-1	—	220015-1	—	—	—	—	—	—	—
	142, 142A, 142B	—	225831-3 446709-1*	91902-11	—	91902-11	—	—	—	—	—	—	—
	393	—	225831-6 446709-3*	220015-1	—	220015-1	—	—	—	—	—	—	—
	Tflex 402	—	1757492-1	—	—	—	—	—	—	—	—	—	—
<b>Military Hex Crimp</b>													
	214	447095-1	447087-1	—	—	—	608650-1 (5-01)	(5-25)	608650-1 (5-01)	(5-25)	—	—	—
Size 1 (for use with 71C1, 71C1A, C2 and C2A inserts)	213	447095-2	447087-2 446709-5*	—	—	—	608650-1 (5-01)	(5-25)	608650-1 (5-01)	(5-25)	—	—	—
	142, 142A, 142B	447095-3	447087-3 446709-6*	—	—	—	608650-1 (5-01)	(5-11)	608650-1 (5-01)	(5-11)	—	—	—
	393	447095-4	447087-4 446709-7* 5-447087-4***	—	—	—	608650-1 (5-01)	(5-25)	608650-1 (5-01)	(5-25)	—	—	—
	ECS 311201	—	447087-5 446709-2*	—	—	—	608650-1 (5-01)	(5-29)	608650-1 (5-01)	(5-29)	—	—	—
SMA Adapter	1757180-1	—	—	—	—	—	—	—	—	—	—	—	
Modified Size 1 Straight Exit (for use with C4 inserts)	214	—	446549-3*	—	—	—	M22520/5-01**	—	—	M22520/5-25	—	—	M22520/5-25
	142	—	446549-1 5-446549-1***	—	—	—	M22520/5-01**	—	—	M22520/5-11	—	—	M22520/5-11
	393	—	446549-5*	—	—	—	M22520/5-01**	—	—	M22520/5-25	—	—	M22520/5-25
	Times AA5886	—	446549-6*	—	—	—	M22520/5-01**	—	—	M22520/5-25	—	—	M22520/5-04
	Times AA5887	—	446549-2*	—	—	—	M22520/5-01**	—	—	M22520/5-29	—	—	M22520/5-29
	ESC 311201	—	446549-4*	—	—	—	M22520/5-01**	—	—	M22520/5-29	—	—	M22520/5-29
	SMA Adapter	446748-1	—	—	—	—	—	—	—	—	—	—	—
	OSP Adapter	1218713-1	—	—	—	—	—	—	—	—	—	—	—
	QMA Adapter	1757859-1	—	—	—	—	—	—	—	—	—	—	—
	Posted Contact	1757669-1	—	—	—	—	—	—	—	—	—	—	—

\*Socket with mounting hardware. Mounting hardware for Size 1 Straight Exit Contacts includes: backup plate, spring, retaining ring, O-ring, washers and screws.  
 \*\*TE Connectivity does not sell Hand Tool M22520/5-01. However, it can be purchased from: Daniels Manufacturing Corp, 6103 Anno Ave., Orlando, FL 32809, 800-327-2432.  
 \*\*\*RoHS compliant Part Number.

- Notes:**
1. SDE die used with hand tool frame 354940-1.
  2. Hardware kit for Size 1 COAXICON Socket Contacts (used on 71C1 or C2 inserts) includes all mounting hardware required (retention plate, washers, O-ring, spring, screws and retention clip). Kit Number 447118-1 (5-447118-1 RoHS Kit Number).
  3. Size 1 COAXICON Pin Contacts require retention plate 211216-2 and four screws 211558-1.
  4. Size 1 COAXICON Pin Contacts with SMA adapter require retention plate 1757203-2 and four screens 211558-1.

4 Rack and Panel Connectors

**COAXICON Contacts** (Continued)

**Size 5 and 8 Contacts**

**Performance Characteristics for size 5 contacts**

**Nominal Impedance** — 50 ohms

**Frequency Range** — 0 to 500 MHz

**Operating Temperature** — -85°F to +329°F [-65°C to +165°C]

**Operating Voltage (Rated)** — 325 VAC rms, 60 Hz

**Contact Resistance (Milliohms)** — Size 5 with RG 58/U cable:  
Center Contact — 10  
Outer Contact — 1.5

**Insulation Resistance** — 5,000 megohms min. @ 500 vdc per MIL-STD-1344, Method 3003 or MIL-STD-202, Method 302, Cond. B

**Dielectric Withstanding Voltage (60 Hz, rms)** — Size 5 with RG 58/U and 316/U cable:  
750 - Sea Level  
350 - 50,000 ft [15 240 m]

**VSWR** — 1.3 to 1.0 @ 500 MHz

**Insertion/Withdrawal Force** — Size 5:

Insertion Force Maximum		Withdrawal Force Minimum	
lb	[N]	lb	[N]
5	22.24	1	4.45

**Cable Retention** —

Sizes 5:  
60 lb [266.9 N]

**Durability** — 500 cycles

**Thermal Shock** — per MIL-STD-1344, Method 1003, Cond. A or MIL-STD-202, Method 107, Cond. A

**Physical Shock** — per MIL-STD-1344, Method 2004, Cond. A or MIL-STD-202, Method 213, Cond. A

**Vibration** — per MIL-STD-1344, Method 2005, Cond. IV or MIL-STD-202, Method 204, Cond. D

**Moisture Resistance** — per MIL-STD-202, Method 106, omit steps 7a and 7b

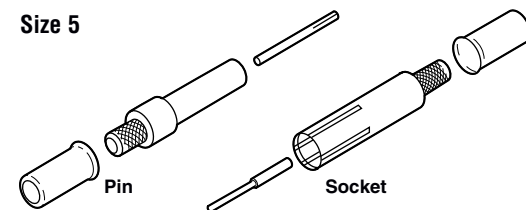
**Salt Spray** — 48 hours per MIL-STD-1344, Method 1001, Cond. B or MIL-STD-202, Method 101, Cond. B

**Material and Finish**

**Contact** — Beryllium copper per ASTM-B-196/ASTM-B-197, Brass per ASTM-B-16, PTFE per ASTM-D-1710, Gold plate per MIL-G-45204, Nickel plate per QQ-N-290

**Ferrule** — Copper per ASTM-B-188, tin plate per ASTM-B-545

Size 5



Size 5 Extraction Tool Part Number 91074-1

Contact Size	RG/U Cable	Contact Part No.		"O" Crimp Tooling			Military Hex Crimp Tooling			
		Pin	Socket	Center Contact			Center Contact		Ferrule	
				Tool (M22520/)	Positioner/Die	Ferrule	Tool (M22520/)	Die (M22520/)	Tool (M22520/)	Die (M22520/)
<b>O Crimp</b>										
5	58C	225790-1	225791-1	601966-1 (2-01)	1-601966-6 K345	91905-1*	—	—	—	—
	400, 142, 142A, 142B	225790-2	225791-2	91904-1*	—	91905-1*	—	—	—	—
	141A	225790-1	225791-1	91904-1*	—	91905-1*	—	—	—	—
	402 Semi-Rigid .141 [3.58]	225790-3	225791-6	91904-1*	—	91905-1*	—	—	—	—
	174, 188, 316	225790-5	225791-3	601966-1 (2-01)	1-601966-6 K345	91905-1*	—	—	—	—
	180, 195	225790-4	225791-8	601966-1 (2-01)	1-601966-6 K345	91905-1*	—	—	—	—
	179, 187	225790-6 5-225790-6**	225791-4 5-225791-4**	601966-1 (2-01)	1-601966-6 K345	91905-1*	—	—	—	—
	178, 196	225790-7	225791-5	601966-1 (2-01)	1-601966-6 K345	220020-1	—	—	—	—
	223	225790-2	225791-2	601966-1 (2-01)	1-601966-6 K345	91905-1*	—	—	—	—
	BMS 13-65-OF	—	1757892-1	—	—	—	—	—	—	—
<b>Military Hex Crimp</b>										
5	316 Double Shield 188 Double Shield	225790-8 5-225790-8**	1-225791-0	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(Y159)
	58C, 141A	447850-1	447851-1	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(5-45B)
	142, 142A, 142B	447850-2	447851-2	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(5-45B)
	402 Semi-Rigid .141 [3.58]	447850-3	447851-3	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(5-45A)
	174, 188, 316	447850-4	447851-4	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(5-37B)

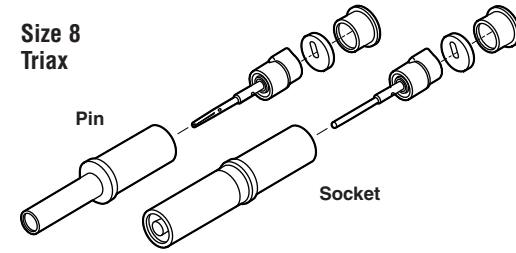
\*SDE die used with hand tool frame 354940-1.

\*\*RoHS compliant Part Number.

**COAXICON Contacts** (Continued)

**Size 8 TWINAX/TRIAX/COAX Contacts**

**Size 8 Triax**



**Size 8 Contact Extraction Tooling**

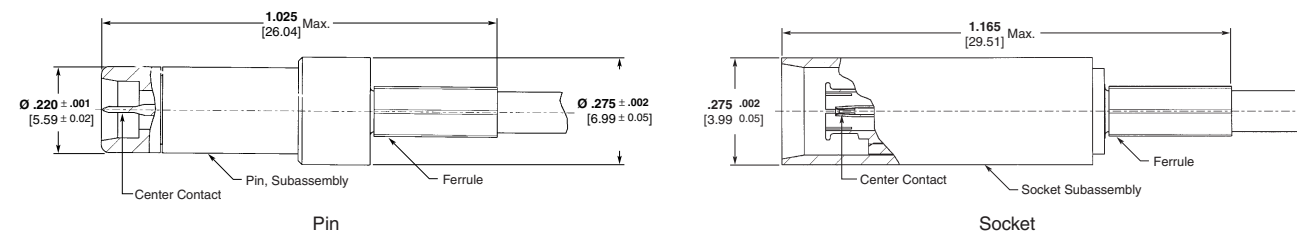
Contact Style	Tool Part Number
Rear Release/Rear Remove	58284-1
Front Release/Front Remove	58284-1
Front Release/Rear Remove	448703-1

Contact Size	Style	Cable	Contact Part No.		Crimp Tooling	Crimp Tooling	
			Pin	Socket		Center Contact	Ferrule
8 TWINAX	RR/RR	M17/176-00002	—	222191-4	Hand Tool Frame  M22520/5-01 (TE Connectivity 608650-1) Crimping Die TE 58316-1 or Daniels Y793 or Y793A or TE Hand Crimping Tool 91907-1*	—	—
	RR/RR	Tensolite 24463/9P025X-2(LD) or 24463/9B017X-2 (LD)	—	222191-5		—	—
	RR/RR	M17/176-00002	222190-4 (short engagement)	—		—	—
	RR/RR	Tensolite 24463/9P025X-2(LD) or 24463/9B017X-2 (LD)	222190-3 (short engagement)	—		—	—
	RR/RR	Tensolite 24463/9P025X-2(LD) or 24463/9B017X-2(LD)	448313-2 (long engagement)	—		—	—
	FR/RR	Tensolite 24463/9P025X-2(LD) or 24463/9B017X-2(LD)	448312-2 (long engagement)	—		—	—
8 TRIAX	FR/FR	Posted (.250 [6.35] min. post extension)	448541-1 (long engagement)	—	—	—	—
8 Coax	RR/RR	M/A-COM FC11Z	—	448543-1	—	—	91907-1*
	RR/RR	M/A-COM FC14Z	—	448543-2	—	—	91907-1*
	RR/RR	RG/U-316, 188	1218687-3 (long engagement)	1218820-1	—	M22520/2-01 (TE 601966-1)	91907-1*
	RR/RR	RG/U-142	1218689-1 (long engagement)	1218821-1	—	—	91907-1*
	RR/RR	BMS 13-65-OF	—	1757891-1	—	—	—
	RR/RR	Adams Russell FC14Z, BMS 13-65-OF	—	448543-2	—	—	—
	RR/RR	DMS2345-62AU	—	448543-3	—	—	—
	RR/RR	BMS 13-65-OF (.218 [5.54] hex crimp)	1757624-1**	—	—	—	—
	FR/RR	M/A-COM FC11Z	448542-1 (long engagement)	—	—	M22520/2-01 (TE 601966-1)	91907-1*
	FR/RR	M/A-COM FC14Z	448542-2 (long engagement)	—	—	—	91907-1*
FR/FR	Posted (.250 [6.35] min. post extension)	448540-2 (long engagement)	—	—	—	—	

\*SDE die used with hand tool frame 354940-1.

\*\*Designed for Quadrax cavity, no key on contact.

**Note:** Size 8 QUADRAX Contacts shown on pages 4-79 to 4-81.



**Size 5 Coax Contacts, Spring Loaded 75 Ohm**

Style	Cable	Contact Part No.		Crimp Tooling	
		Pin	Socket	Center Contact	Braid
Rear Release/Rear Remove	RG/U-179	443971-1	443972-1	Daniels HMR Tool AFM8 or TE Connectivity 601966-1 with Daniels positioner K1289 (socket) or K1288S (pin)	Daniels HX4 with Die-set Y196 cavity A or TE Connectivity 35940-1 with Die-set 58483-1 Cavity B

4 Rack and Panel Connectors

**Traffic Alert and Collision Avoidance System (TCAS) Connectors and Mode S Transponder Connectors**

**Product Facts**

**Plug Connector**

■ **TE Connectivity modified Size 1 coaxial contacts use standard military crimp tooling for reliable connections without the need for special tooling**

■ **TE plug allows repair or replacement of the coaxial contacts without connector disassembly. Two front-release captivated screws release the backup plate**

■ **TE connector conforms to the ARINC 600 specification, for connector intermateability and contact interchangeability**

**Receptacle Connector**

■ **TE modified Size 1 coaxial contact incorporates a SMA jack for easy assembly**

■ **TE connector conforms to the ARINC 600 specification, for connector intermateability and contact interchangeability**

Connector	Description	Part Numbers	Descriptive Part Number
TCAS Plug	Semi-environmental w/o contacts	445717-1	NIC66 K 36 C 40 AA 1
	Semi-environmental w/contacts, w/o coaxial contacts	445717-2	NIC66 K 36 C 40 AA 0
	Non-environmental w/o contacts	445717-3 5-445717-3*	NIC66 K 36 A 40 AA 1
	Non-environmental w/contacts, w/o coaxial contacts	445717-4	NIC66 K 36 A 40 AA 0
	Non-environmental w/o contacts, (8) #6-32 clinch nuts	445717-5	NIC66 K 36 A 40 CD 1
	Semi-environmental w/o contacts, (10) #4-40 clinch nuts	445717-6	NIC66 K 36 A 40 SC 1
TCAS Receptacle	Front release w/o contacts	445718-1	NIC66 J 36 FA 40 FA 1
Mode S Plug	Non-environmental w/contacts, w/o coaxial contacts	208972-5	NIC66 H 23 A 01 AA 0
	Non-environmental w/o contacts	208972-7	NIC66 H 23 A 01 AA 1
	Environmental w/contacts, w/o coaxial contacts	208973-5	NIC66 H 23 B 01 AA 0
	Semi-environmental w/o contacts	208973-6	NIC66 H 23 C 01 AA 1
Mode S Receptacle	Front release w/o contacts	211991-1	NIC66 G 23 FA 01 FA 1

**Note:** All standard ARINC 600 shell modifications are available.

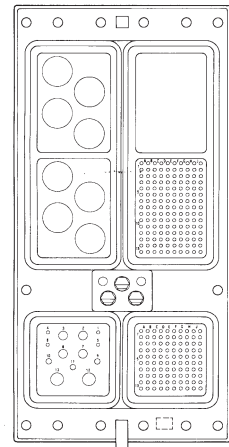
\* RoHS compliant Part Number.

The TCAS System includes one mated pair of Size 3 ARINC 600 connectors, called TCAS Connectors. The plug connector is mounted in the rack, and the receptacle connector is in the avionics box.

The TCAS System also includes one or two mated pairs of Size 2 ARINC 600 Connectors, called Mode S Transponder Connectors. The plug connectors are mounted in the rack, and the receptacle connectors are in the avionics box.

**Traffic Alert and Collision Avoidance System (TCAS) Connectors and Mode S Transponder Connectors** (Continued)

**Contact Requirements**



**TCAS Connector Insert Arrangement (Receptacle Mating Face Shown)**

**Plug Contacts**

No. of Contacts	Contact Size	Contact Sex	Part Number
250	22	pin	208262-3
4	20	socket	208267-2
3	16	socket	208270-2
4	12	socket	208273-2
2	5 coax	socket	***
8	1 coax-Mod.	socket	**

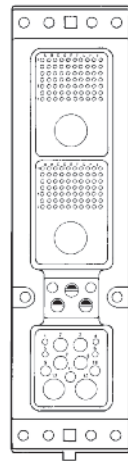
**Receptacle Contacts**

No. of Contacts	Contact Size	Contact Sex	Part Number
250	22	socket	*
4	20	pin	208265-3
3	16	pin	208268-3
4	12	pin	208271-3
2	5 coax	pin	***
8	1 coax-Mod.	pin	**

\* See page 4-20 for part numbers.  
 \*\* See page 4-25 for part numbers.  
 \*\*\* See page 4-24 for part numbers.

**4**

Rack and Panel Connectors



**Mode S Transponder Insert Arrangement**

**Plug Contacts**

No. of Contacts	Contact Size	Contact Sex	Part Number
140	22	pin	208262-3
4	20	socket	208267-2
3	16	socket	208270-2
4	12	socket	208273-2
2	5 coax	socket	***
2	1 coax	socket	**

**Receptacle Contacts**

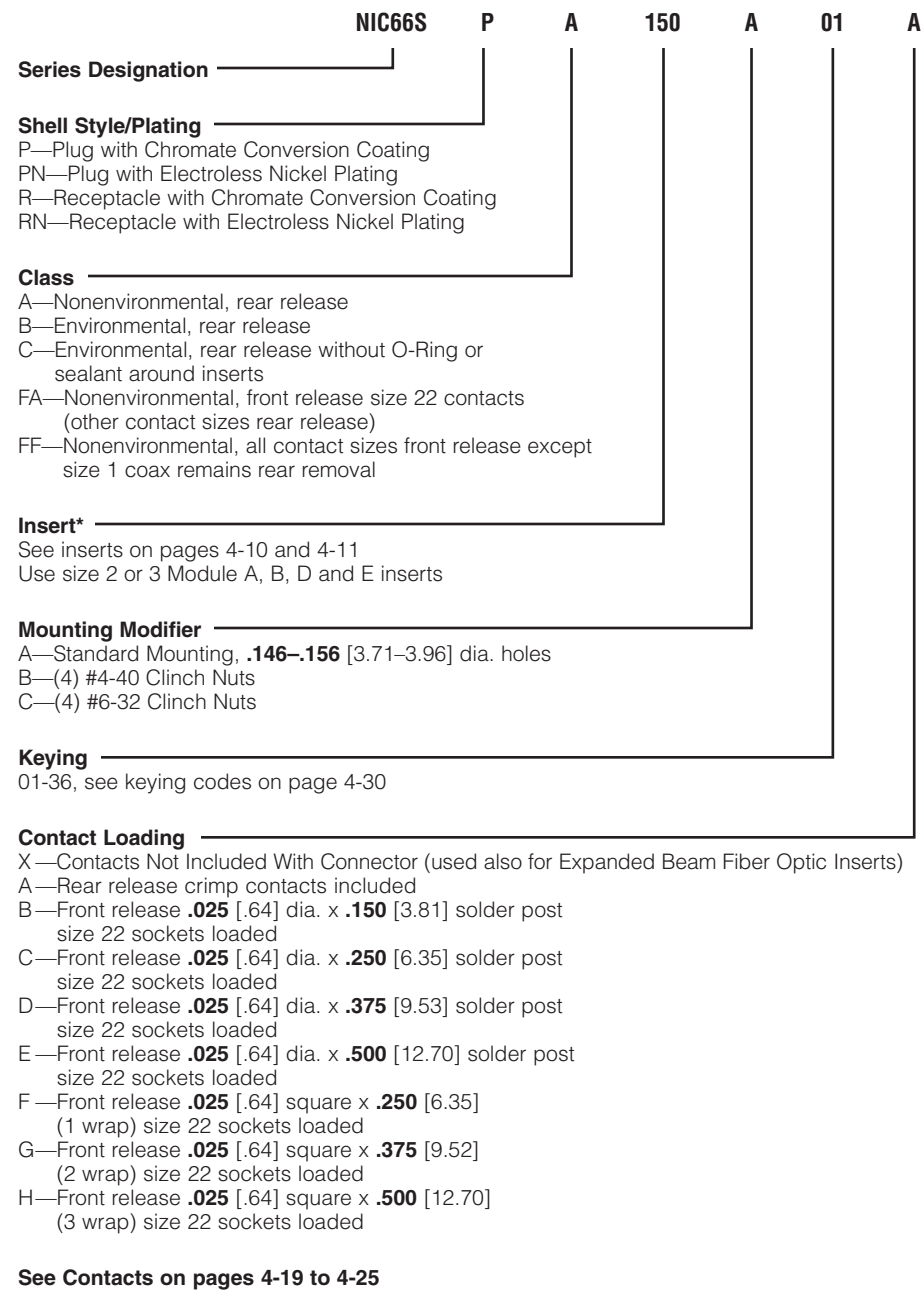
No. of Contacts	Contact Size	Contact Sex	Part Number
140	22	socket	*
4	20	pin	208265-3
3	16	pin	208268-3
4	12	pin	208271-3
2	5 coax	pin	***
2	1 coax	pin	**

\* See page 4-20 for part numbers.  
 \*\* See page 4-23 for part numbers.  
 \*\*\* See page 4-24 for part numbers.



**Single Mod ARINC 600**

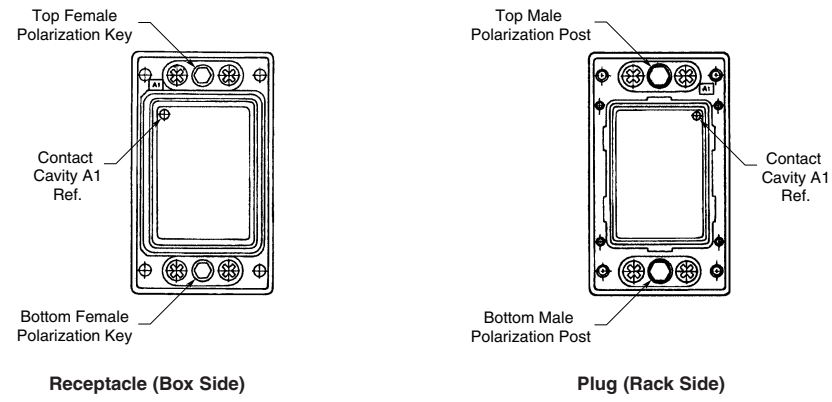
**Descriptive Numbering**



\* Expanded Beam Fiber Optic inserts can also be used — must use signal cavity inserts identified as 1JS, 2JS, 3JS, or 6MS. See page 4-14 or contact TE Connectivity for more information.

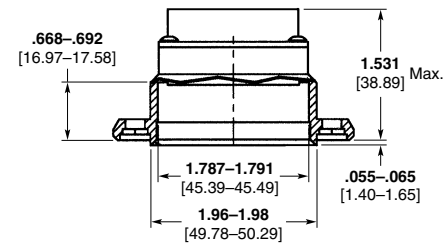
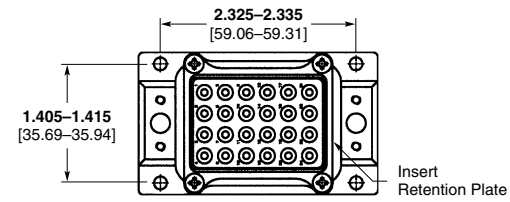
Single Mod ARINC 600 (Continued)

Keying and Polarization

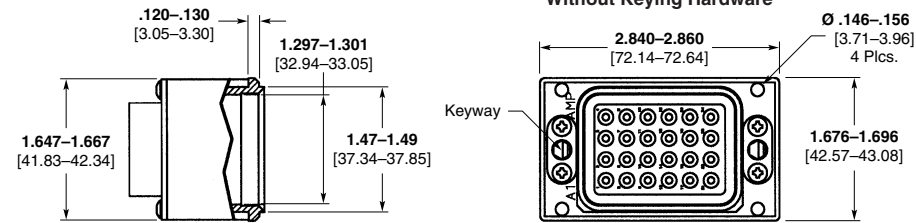


**4**

Rack and Panel Connectors

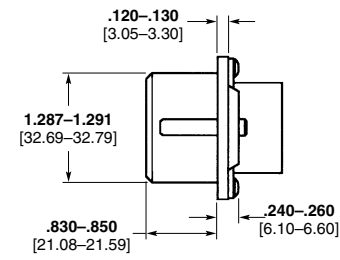


View Shown Without Keying Hardware



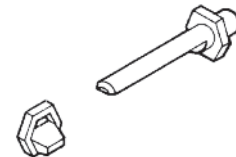
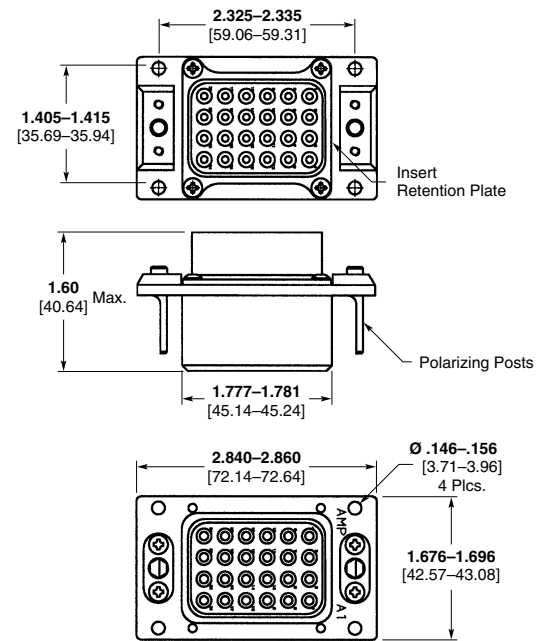
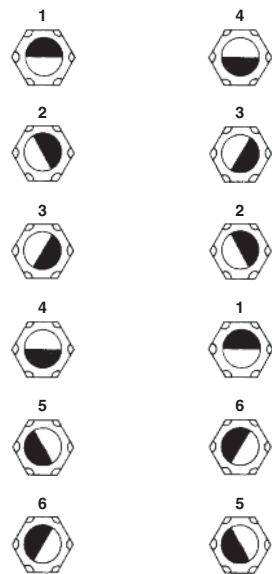
Single Mod Receptacle

Single Mod ARINC 600 (Continued)



Single Mod Plug

Extended Post of Plug Key → Mates to → Key Hole in Receptacle



Keying Code	Receptacle		Plug	
	Top Key	Bottom Key	Top Post	Bottom Post
01	1	1	4	4
02	3	4	2	1
03	2	4	3	1
04	1	4	4	1
05	6	4	5	1
06	5	4	6	1
07	4	5	1	6
08	3	5	2	6
09	2	5	3	6
10	1	5	4	6
11	6	5	5	6
12	5	5	6	6
13	4	6	1	5
14	3	6	2	5
15	2	6	3	5
16	1	6	4	5
17	6	6	5	5
18	5	6	6	5

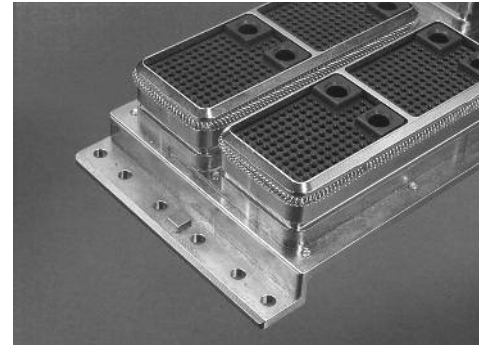
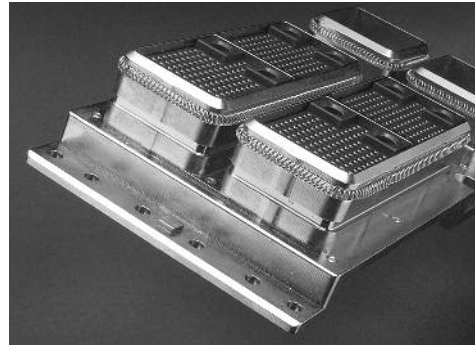
Keying Code	Receptacle		Plug	
	Top Key	Bottom Key	Top Post	Bottom Post
19	4	1	1	4
20	3	1	2	4
21	2	1	3	4
22	4	4	1	1
23	6	1	5	4
24	5	1	6	4
25	4	2	1	3
26	3	2	2	3
27	2	2	3	3
28	1	2	4	3
29	6	2	5	3
30	5	2	6	3
31	4	3	1	2
32	3	3	2	2
33	2	3	3	2
34	1	3	4	2
35	6	3	5	2
36	5	3	6	2

**EMI/Ground Spring**

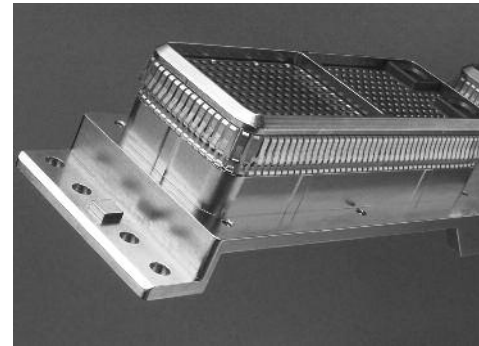
**EMI/Ground Spring Performance Data Comparison**

	Cantilever Style	Canted Coil Style
Mating/Un-mating Force Results Design Objective = < 15 lbs for size 2 shell	6 lbs/3 lbs	14 lbs/6 lbs
Durability	500 min. mating/un-mating cycles	
EMI Test Results (Size 2 Shell) 100 to 1,000 MHz Design Objective = 65 dB @ 100 MHz and 60 dB @ 1,000 MHz	89 dB min. 93 dB average	88 dB min. 92 dB average
Field Repairable	No	Yes

**Canted Coil Spring Design**



**Cantilever Spring Design**

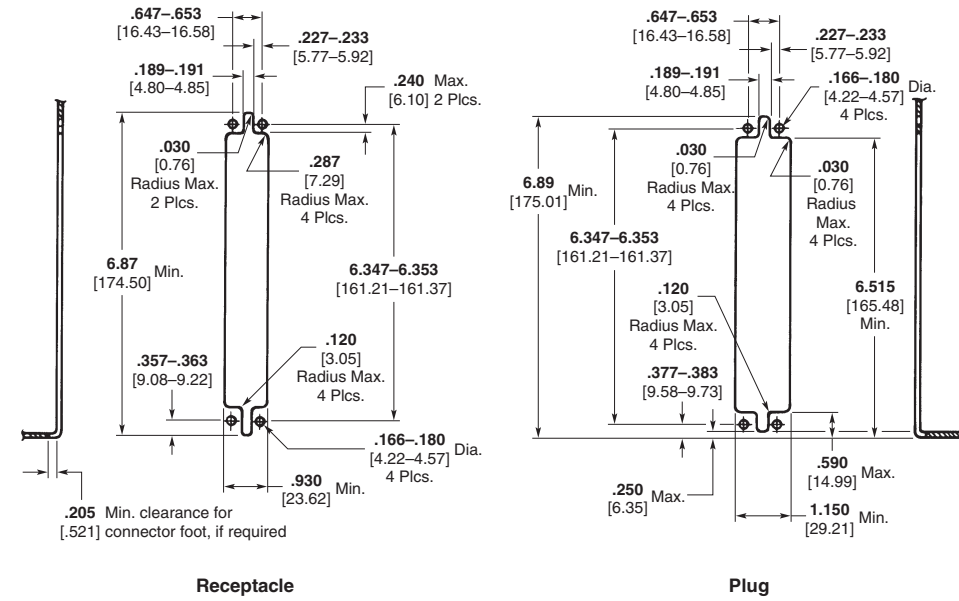


**4**  
Rack and Panel Connectors

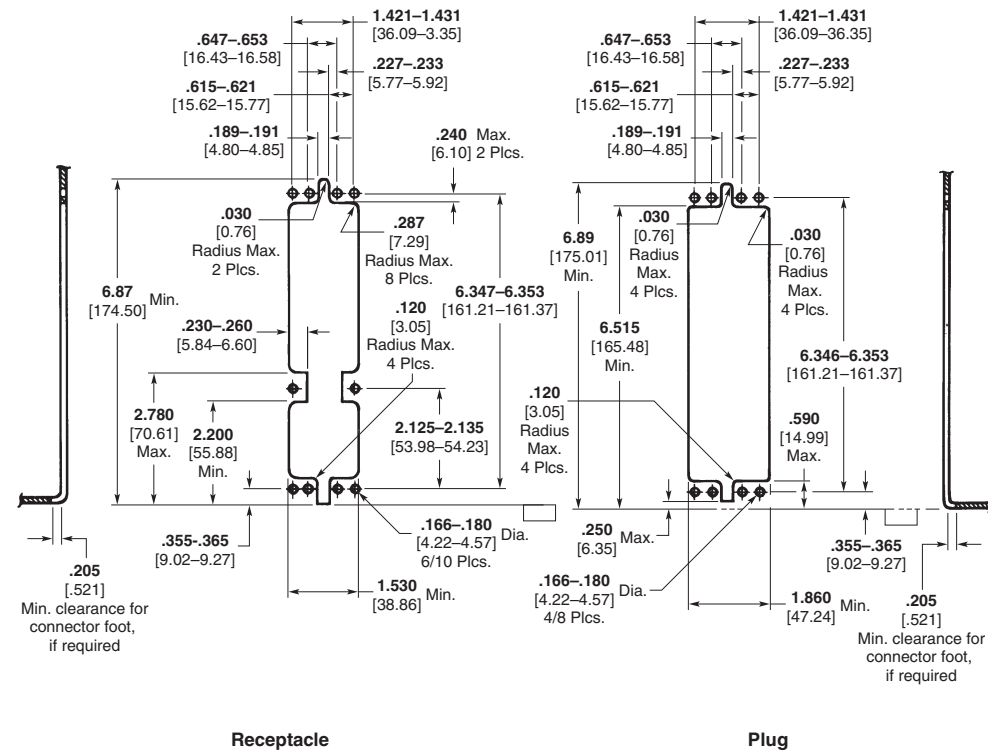
**Note:** ARINC 600 connectors can be supplied with either canted coil spring or cantilever spring design, contact TE Connectivity.

Recommended Panel Cutouts

Shell Size 1



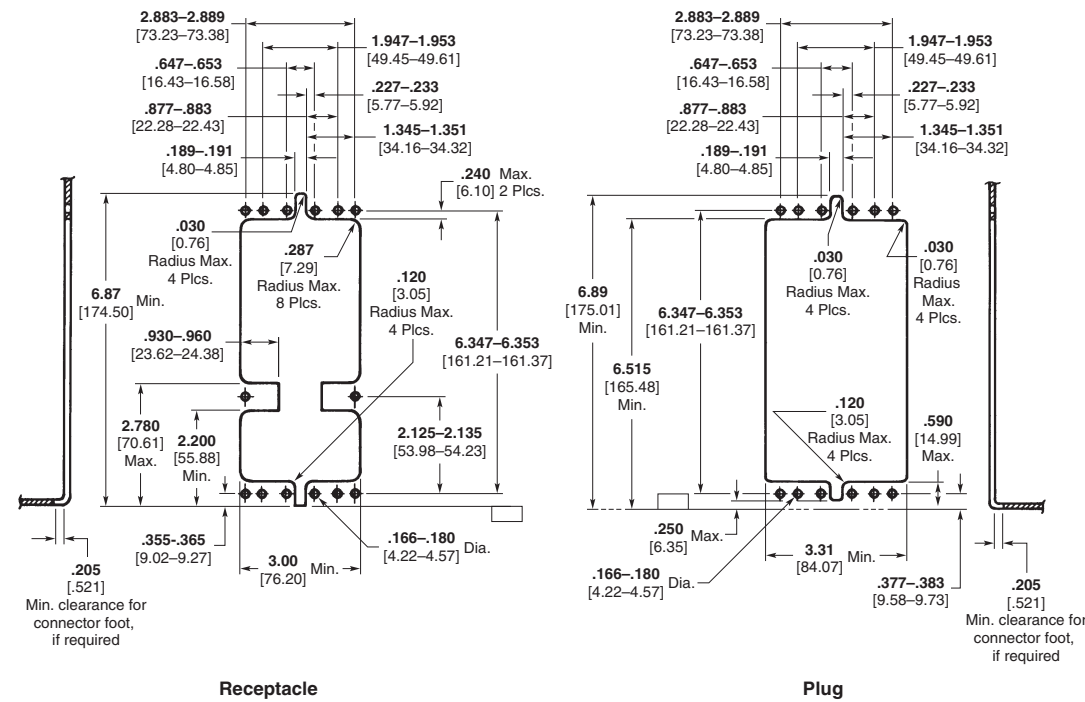
Shell Size 2



**Note:** These drawings are for reference only. For detailed mounting instructions, see the ARINC 600 specification.

Recommended Panel Cutouts (Continued)

Shell Size 3



4 Rack and Panel Connectors

Accessories

Materials and Finish

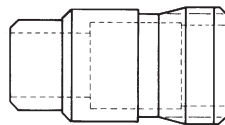
**Body** — Copper alloy, .000015 [0.000381] min. gold per MIL-G-45204 over .000040 [0.00102] min. nickel per QQ-N-290

**End Cap** — PTFE

PTFE is a trademark of E.I. du Pont de Nemours and Company.

Cavity Reducer Pin

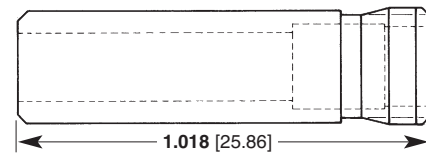
Part Number 446743-1



Size 5 coax to size 12 contact cavity reducer. Insert into size 5 coax cavity to convert to a size 12 power contact cavity.

Cavity Reducer Socket

Part Number 446744-1



Dust Covers, Conductive

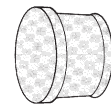


Connector Size(s)	Part Number
1	211600-1
2 & 3	211600-2

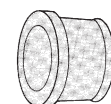
Coaxial Sealing Plug and Boot

Material — Silicone Rubber

Size 5



Plug—Part Number 205975-1



Boot for RG-58C cable—Part Number 205402-2  
Boot for RG-180, -190 cable—Part Number 205402-3

Sealing Plugs

Size 22



Part Number 204760-1  
White PTFE

Size 20



Part Number 203839-1  
Red thermoplastic

Size 16



Part Number 203839-2  
Blue thermoplastic

Size 12



Part Number 205574-1  
Yellow thermoplastic



**Application Tooling and Insertion/Extraction Tooling**

**Hand Crimping Tools**

These standard military-type hand tools terminate screw-machined pins and sockets to wire with an 8-indent crimp per MIL-C-22520.

They are ideal for prototype, field maintenance and other applications where volume is not a factor.

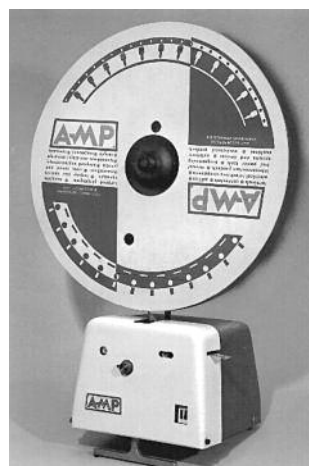
Tool Number 601967-1 is suitable for crimping wire range 26 AWG [0.12–0.15 mm<sup>2</sup>] to 12 AWG [3 mm<sup>2</sup>]. Tool Number 601966-1 is suitable for crimping wire range 32 AWG [0.03 mm<sup>2</sup>] to 20 AWG [0.5–0.6 mm<sup>2</sup>].



**Part Number 601966-1**  
**MIL Number M22520/2-01**

**AMP-TAPEMATIC 4/8 Indent Stripper-Crimper Machine, 599406-7**

Portable bench machine that strips wire and crimps tape-mounted, closed-barrel pin and socket contacts for AMPLIMITE Military, ARINC and CPC connectors. The stripping and crimping heads are accessible through separate openings in the front of the machine. Wire strip length and crimp height are adjustable. The stripping head is pre-set to the proper cutting depth of four standard wire sizes.



**Specifications**

- Width** — 12.5 [317]
- Depth** — 12.5 [317]
- Height** — 10 [254] without reel
- Weight** — 45 lb [20 kg]
- Electrical** — 120 VAC, 60 Hz, 1.3 A
- Wire Range** — 28-20 AWG [0.08-0.5 mm<sup>2</sup>]

**Application Tooling Instruction Sheet Cross Reference**

Tool Number	Instruction Sheet
601966-1	408-7516
601967-1	408-7516
599406-7	408-7516

**Insertion/Extraction Tools, ARINC 600**

Tool Part Number	Product Line	Contact Size	Contact Type	Color Code	Style
91066-1	ARINC 600	22	Signal	Green	Rear Release/Rear Remove
91066-4	ARINC 600	20	Signal	Red	Rear Release/Rear Remove and Front Release/Front Remove
91066-3	ARINC 600	16	Signal	Blue	Rear Release/Rear Remove and Front Release/Front Remove
445147-1	ARINC 600	12	Signal	—	Rear Release/Rear Remove and Front Release/Front Remove
445815-1	ARINC 600	22	Signal	—	Front Release/Front Remove
58284-1	ARINC 600	8	Twinax/Triax/Coax/Quadax	—	Rear Release/Rear Remove and Front Release/Front Remove
448703-1	ARINC 600	8	Twinax/Triax/Coax	—	Front Release/Rear Remove
91074-1	ARINC 600	5	Twinax/Triax/Coax	—	Rear Release/Rear Remove and Front Release/Front Remove

**Cross Reference**

For convenience, certain connectors have been assigned conventional TE Connectivity production part numbers, as shown in this table. These parts may be ordered using the TE numbers or by using descriptive part numbers.

Description	TE Designation	Part Number	RoHS Part Number
Size 1 Receptacle, Unsealed	NIC66E11A00AA0	1-208599-1	—
	NIC66E11A00AA1	1-208599-5	—
	NIC66E11A01AA0	208599-1	5-208599-1
	NIC66E11A01AA1	208599-2	—
	NIC66E11A03AA1	208599-7	5-208599-7
	NIC66E11A11AA0	1-208599-0	—
	NIC66E11A12AA0	1-208599-3	—
	NIC66E11A12CB0	208599-4	—
	NIC66E11A16AA0	208599-9	—
	NIC66E11A19CB1	208599-3	—
	NIC66E11A22AA1	208599-5	—
	NIC66E11A23AA0	208599-8	—
	NIC66E11A50AA0	208599-6	—
Size 1 Receptacle, Sealed	NIC66E11B01AA0	208600-1	—
	NIC66E11B01AA1	208600-2	—
	NIC66E11B54AA0	208600-3	—
Size 1 Receptacle, Front Release	NIC66E11FA01FA1	448482-1	—
	NIC66E11FA01FF0	448482-2	—
Size 1 Plug, Unsealed	NIC66F11A00AA0	208597-7	—
	NIC66F11A01AA0	208597-1	—
	NIC66F11A01AA1	208597-2	—
	NIC66F11A03AA0	208597-4	—
	NIC66F11A03CB1	208597-9	—
	NIC66F11A06CB1	1-208597-3	—
	NIC66F11A08AA1	1-208597-2	6-208597-2
	NIC66F11A08CB0	1-208597-5	—
	NIC66F11A10AA1	1-208597-6	6-208597-6
	NIC66F11A13AA0	208597-5	—
	NIC66F11A13AA1	208597-6	—
	NIC66F12A02AA0	208597-8	—
	NIC66F12A02CB0	1-208597-4	—
	NIC66F14A01AA0	1-208597-0	—
	Size 1 Plug, Sealed	NIC66F11B01AA0	208598-1
NIC66F11B01AA1		208598-2	5-208598-2
NIC66F11B22AA1		208598-4	—
NIC66F11C00AA1		1-208598-2	—
NIC66F11C01AA1		208598-3	—
Size 2 Receptacle, Unsealed	NIC66G21A00AA0	1-208970-4	—
	NIC66G21A01AA0	208970-1	—
	NIC66G21A01AA1	208970-4	—
	NIC66G21A01AC0	208970-2	—
	NIC66G21A01BA1	208970-5	—
	NIC66G21A01CA0	1-208970-1	—
	NIC66G21A01CC0	2-208970-3	—
	NIC66G21A01CC1	208970-6	5-208970-6
	NIC66G21A01SB1	208970-3	5-208970-3
	NIC66G21A01SC1	1-208970-8	—
	NIC66G21A02AA0	1-208970-3	—
	NIC66G21A02AA1	1-208970-2	—
	NIC66G21A02CC0	2-208970-2	—
	NIC66G21A05CC0	2-208970-4	—
	NIC66G21A09CC0	1-208970-0	—
Size 2 Receptacle, Sealed	NIC66G21A19AA0	1-208970-7	—
	NIC66G26A01AA0	1-208970-6	—
	NIC66G21B01AA0	208971-1	—
	NIC66G21B01AA1	208971-2	—
	NIC66G21B04AA0	208971-4	—
NIC66G21B05AA0	208971-3	—	

4 Rack and Panel Connectors

**Cross Reference** (Continued)

Description	TE Designation	Part Number	RoHS Part Number
	NIC66G20FA00FA1	3-211991-3	—
	NIC66G20FA01FA1	3-211991-4	—
	NIC66G20FA03FB0	2-211991-0	—
	NIC66G20FA08FB0	2-211991-1	—
	NIC66G21FA FA1	211991-2	—
	NIC66G21FA00CC1	211991-9	—
	NIC66G21FA01CC1	1-211991-0	—
	NIC66G25FA01FA1	211991-3	—
	NIC66G21FA01FC0	1-211991-1	—
	NIC66G21FA01GD0	211991-5	—
	NIC66G21FA01GJ0	3-211991-5	—
	NIC66G21FA01SB1	211991-6	—
	NIC66G21FA02FF0	1-211991-4	—
Size 2 Receptacle, Front Release	NIC66G21FA04FF0	3-211991-0	—
	NIC66G21FA06GF0	2-211991-7	—
	NIC66G21FA07GD0	3-211991-7	—
	NIC66G21FA09GD0	1-211991-6	—
	NIC66G22FA00CC1	2-211991-4	—
	NIC66G23FA00CC1	2-211991-2	—
	NIC66G23FA01FA1	211991-1	—
	NIC66G23FA02FA1	1-211991-7	—
	NIC66G23FA91FA1	211991-4	—
	NIC66G25FA00CC1	2-211991-3	—
	NIC66G26FA01FA1	211991-8	—
	NIC66G26FA68GD0	1-211991-2	—
	NIC66G29FA01FA1	1-211991-8	—
	NIC66G29FA02FA1	3-211991-6	—
	NIC66H20A AA0	2-208972-8	—
	NIC66H20A00AA0	3-208972-5	8-208972-5
	NIC66H20A08AA1	4-208972-0	9-208972-0
	NIC66H21A00AA0	1-208972-6	—
	NIC66H21A01AA0	208972-1	5-208972-1
	NIC66H21A01AA1	208972-2	—
	NIC66H21A02AA0	1-208972-4	—
	NIC66H21A02AA1	1-208972-2	—
	NIC66H21A03AA0	3-208972-6	—
	NIC66H21A06AA0	3-208972-7	—
	NIC66H21A14AA0	1-208972-1	—
	NIC66H22A01AA1	208972-8	—
	NIC66H22A13AA0	2-208972-0	—
	NIC66H23A00CB1	3-208972-2	—
	NIC66H23A01AA0	208972-5	—
Size 2 Plug, Unsealed	NIC66H23A01AA1	208972-7	5-208972-7
	NIC66H23A01CB1	1-208972-8	—
	NIC66H23A02AA0	2-208972-3	—
	NIC66H23A05AA0	2-208972-1	—
	NIC66H25A01AA0	208972-9	—
	NIC66H25A01AA1	1-208972-0	—
	NIC66H26A00AA1	3-208972-4	—
	NIC66H26A01AA0	1-208972-5	—
	NIC66H26A01AA1	1-208972-3	—
	NIC66H26A01SA1	2-208972-2	—
	NIC66H51A00AA0	2-208972-4	—
	NIC66H52A00AA0	3-208972-0	8-208972-0
	NIC66H52A03AA0	3-208972-9	8-208972-9
	NIC66H53A01AA0	2-208972-5	—
	NIC66H53A08AA0	449836-1	—
	NIC66H54A01AA1	2-208972-9	—
	NIC66H56A09AA0	449837-1	—
	NIC66H272A00AA0	1218867-2	—

**Cross Reference** (Continued)

Description	TE Designation	Part Number	RoHS Part Number
	NIC66H20B03AA0	2-208973-8	—
	NIC66H20B08AA0	2-208973-9	—
	NIC66H20B40AA1	3-208973-8	—
	NIC66H20C00AA0	3-208973-1	—
	NIC66H21B01AA0	208973-1	—
	NIC66H21B01AA1	1-208973-0	—
	NIC66H21B04AA0	1-208973-3	—
	NIC66H21B05AA0	1-208973-2	—
	NIC66H21B06CD0	3-208973-3	—
	NIC66H21B06CD1	3-208973-4	—
	NIC66H21B40AA1	3-208973-9	—
Size 2 Plug, Sealed	NIC66H21C00AA0	3-208973-0	—
	NIC66H21C01AA0	208973-3	—
	NIC66H21C06CD0	3-208973-5	8-208973-5
	NIC66H21C09AA0	3-208973-2	—
	NIC66H21C29AA0	2-208973-0	—
	NIC66H23B01AA0	208973-5	—
	NIC66H23B08AA0	1-208973-4	—
	NIC66H23C01AA1	208973-6	—
	NIC66H25C01AA0	208973-7	—
	NIC66H25C01AA1	208973-8	—
	NIC66H26B01AA1	2-208973-2	—
	NIC66H26B02AA1	1-208973-1	—
	NIC66H52B03AA0	4-208973-0	9-208973-0
	NIC66J31A00AA0	208974-4	—
Size 3 Receptacle, Unsealed	NIC66J31A01AA0	208974-1	—
	NIC66J31A01AA1	208974-3	—
	NIC66J34A01AA0	208974-5	—
Size 3 Receptacle, Sealed	NIC66J31B01AA0	208975-1	—
	NIC66J31B01AA1	208975-3	—
	NIC66J31FA00CA1	1-211992-1	—
	NIC66J31FA01FA1	211992-1	—
	NIC66J31FA01FF0	211992-4	—
Size 3 Receptacle, Front Release	NIC66J31FA01FH0	211992-5	—
	NIC66J31FA03FA1	211992-6	—
	NIC66J31FA27FA1	211992-7	—
	NIC66J32FA00FA1	211992-3	—
	NIC66K31A00AA0	208976-5	—
	NIC66K31A01AA0	208976-1	—
	NIC66K31A01AA1	208976-3	—
Size 3 Plug, Unsealed	NIC66K32A01AA0	208976-7	—
	NIC66K33A01AA0	208976-6	5-208976-6
	NIC66K33A01AA1	208976-2	—
	NIC66K34A01AA0	208976-8	—
	NIC66K36A40CD1	445717-5	—
	NIC66K31B01AA0	208977-1	—
	NIC66K31B01AA1	208977-3	—
	NIC66K31B01BA0	208977-8	—
Size 3 Plug, Sealed	NIC66K31C01AA1	208977-5	—
	NIC66K33B01AA1	208977-2	—
	NIC66K33C01AA1	208977-4	—
	NIC66K34C01AA1	208977-7	—
	NIC66K36C40CD1	1-445717-7	6-445717-7

**4**

Rack and Panel Connectors

**MIL 600 Style Connectors**

**Product Facts**

- **Conforms to MIL-DTL-83527**
- **Sizes: 2, 3, 4**
- **Variety of contact inserts available**
- **Sealing features include grommets, interfacial seals, and wedge stabilizers**
- **Provides EMI shielding**

**Material and Finish**

**Shell** — Aluminum 2024 T4  
**Retainer Plates** — Aluminum alloy  
**Finish** — Chemical chromate conversion over cadmium plate per QQ-P-416  
**Polarizing Posts** — Zinc alloy per ASTM B-86 with electroless nickel plating  
**Polarizing Keys** — Stainless steel 303, passivated  
**Inserts** — Thermoset or Thermoplastic  
**Grommets, Seals** — Fluorosilicone rubber

**Specifications**

**Temperature Range** — -65°C to +125°C  
**Mating and Unmating Forces** — Max after 10 cycles; connectors have a full complement of contacts  
 Size 2 — 325 lbs  
 Size 3 — 400 lbs  
 Size 4 — 475 lbs  
 Contact Retention against axial load — Per MIL-STD-1344, Method 2007  
 Size 22 — 12.0 lbs  
 Size 20 — 20.0 lbs  
 Size 16 — 25.0 lbs  
 Size 12 — 30.0 lbs  
 Size 8 — 25.0 lbs (twinax)  
 Size 5 — 25.0 lbs (coax)

**Voltage/Current Ratings** —

Contact	AWG	Max Current (A)
Size 22	22	5.0
Size 20	20	7.5
Size 16	16	13.0
Size 12	12	23.0

**Dielectric Withstanding Voltage** —

Per MIL-STD-1344, Method 3001

Altitude	AC Volts	60 Hz rms
Sea level	Mated	Unmated
50,000 ft	—	1300 (size 22)
70,000 ft	—	1500 (others)
100,000 ft	800	550
	800	350
	800	200

**Insulation Resistance** —

Per MIL-STD-1344, Method 3003  
 1000 megohms min. at ambient and at 150°C

**Contact Resistance** — Per MIL-STD-1344, Method 3004 and 3002

**Durability** — Per MIL-STD-1344, Method 2016; 500 cycles minimum

**Salt Spray Tolerance** — Per MIL-STD-1344, Method 1001, test condition A; no evidence of exposure of base metal or build-up of corrosion that affects connector testing

**Humidity Tolerance** — Per MIL-STD-1344, Method 1002, Type II  
 Insulation Resistance greater than 1000 megohms before, during and after test

**Fluid Immersion** — Per MIL-STD-1344, Method 1016, fluids tested:  
 i) isopropyl alcohol, j) 1-1-1 trichloroethane, k) Freon TMC; no evidence of deterioration, distortion or material reversion

**Temperature Cycling** — Per MIL-STD-1344, Method 1003 except steps 2 and 4 are 2 minutes maximum duration; step 1 is -65°C; step 3 is +150°C

**High Temperature Tolerance** — 1000 hours min. at 150°C for wired, mated connectors

**Vibration Testing** — Per MIL-STD-1344, Method 2005 (Functional Test Curve: 2 hrs in each of 3 axes; Endurance Test Curve: 2.5 hrs in each of 3 axes); no discontinuity exceeding 1 microsecond, no visible evidence of cracking, breaking or loosening of parts

**Shock Testing** — Per MIL-STD-1344, Method 2004 (Test condition H: 30G, 11 ms, half sine); no discontinuity exceeding 1 microsecond, no visible evidence of cracking, breaking or loosening of parts

**EMI Shielding** — Per DOD-83527 (for a Size 2 shell)

EMI Shielding Eff. Frequency (MHz)	Leakage Attenuation (dB)
100	65
200	63
300	63
400	62
800	60
1000	60

**Shell-to-Shell Conductivity** — Per MIL-STD-1344, Method 3007; Potential drop does not exceed 2.5 millivolts

**MIL-DTL-83527 Style Connectors**

Descriptive Number	TE Connectivity Part Number
M6E2RC150-34WAA01A	1218044-1
M6E2PC150-34WAA01A	443965-1
M6E2PC150-34WAA01A	443102-1
M6E2RC150-100WAA01A	447142-1
M6E2PC24-34WAA01Z	447280-1
M6E2PC150-34WAA01A	443102-1
M6E2PC150-34WAA01A	443965-1
M6E2PC150-100WAA01A	447141-1
M6E3PC150-100-150-100WAA01A	447143-1
M6E3RC150-100-150-100WAA01A	447144-1

**MIL 600 Style Connectors** (Continued)

**MIL-DTL-83527 Connector  
Sample Descriptive  
Part Number**

MIL 600 connector in accordance with MIL-DTL-83527

**M6 E**    **4RC**    **150-100-24-34-60-100**    **W AA 001 A**

**Sealing**  
 E = Sealed per M83527: rear grommet, interfacial seal [rcpt only], o-ring around insert  
 F = Interfacial seal [rcpt only], o-ring around insert (no grommet)  
 G = O-ring around insert (no interfacial seal or grommet)  
 U = unsealed

**Shell size & plating (see pages 4-42 to 4-44)**  
 2 = shell size 2 with two insert cavities (A, B)  
 3 = shell size 3 with four insert cavities (A, B, C, D)  
 4 = shell size 4 with six insert cavities (A, B, C, D, E, F)

**Shell Type**  
 R = receptacle (for box)  
 P = plug (for rack or chassis)

**Shell Plating**  
 C = Cadmium plating (MIL-DTL-83527 standard plating)  
 N = Nickel plating

**Insert Arrangement**  
 Indicates the insert arrangements used within the shell. See available M83527 inserts below. If the shell has six inserts (as in this example) then six insert arrangements are identified. In this example, 150 is for the A cavity, 100 is for B cavity, 24 is for C cavity and so on.

**Insert style (rear release/remove only)**  
 W = All contacts rear release/rear remove, Military contacts per MIL-DTL-83527

**Shell Modifications**  
 AA = standard .151 inch [3.8 mm] diameter mounting holes

**Keying (see page 4-15 and 4-16 for keying codes)**

**Contact Order Code (Contact part numbers listed on page 4-40)**  
 Z = no contacts provided  
 A = rear release crimp signal & power contacts (size 22 through size 12) included; coax/triax/quadrax contacts ordered separately

**4**  
Rack and Panel Connectors

Custom designs can be configured. Contact TE Connectivity for custom versions not defined above.

**MIL-DTL-83527 Inserts**

**Available Insert Arrangements for Cavities A, C & E**

**Available Insert Arrangements for Cavities B, D & F**

**47T2 (47) #20 (2) #8 Twinax**    **60 (60) #20**    **T6 (6) #8 Twinax**    **20T4 (20) #20 (4) #8 Twinax**

**150 (150) #22**    **24 (24) #12**    **126 (120) #22 (6) #16**    **100 (100) #22**    **34 (24) #20 (10) #16**



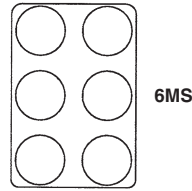
**MIL 600 Style Connectors** (Continued)

**Insert Arrangements —  
Fiber Optics**

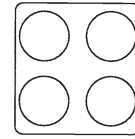
**Mini-Expanded Beam**

Shell Module A, B, D or E

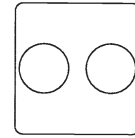
Shell Module C or F



6MS

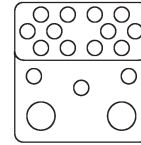


4MP



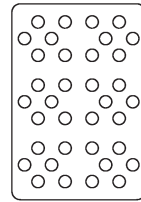
2MP

**Contact Arrangement**



17F12Q2

**Contact Arrangement**



36F36

For ARINC 801 Optical Termini details, see page 4-14

For Mini Expanded Beam insert details, see section 3.

**Military 600 Connector  
Contact Selection Guide  
Crimp, Snap-In,  
Rear-Release Contacts**

**Pin Contacts**

Contact Size	Wire Size AWG	Color Code	Contact Part Number	MIL Part Number (Reference)	Ins/Ext Tool Part Number
22	22-26	Gm/Wh/Violet	211901-5	MIL-C-39029/93-597	91066-1
20	20-24	Grn/Wh/Gray	208265-5	MIL-C-39029/93-598	91066-4
16	16-20	Grn/Or/Wh	213122-5	MIL-C-39029/93-539	91066-3
12	12-14	Grn/Ye1/Blk	213123-5	MIL-C-39029/93-540	445147-1

**Socket Contacts**

Contact Size	Wire Size AWG	Color Code	Contact Part Number	MIL Part Number (Reference)	Ins/Ext Tool Part Number
22	22-26	Blu/Blk/Brn	208264-4	MIL-C-39029/94-601	91066-1
20	20-24	Blu/Blk/Red	208267-4	MIL-C-39029/94-602	91066-4
16	16-20	Blu/Blk/Or	208270-4	MIL-C-39029/94-603	91066-3
12	14-Dec	Blu/Blk/Yel	208273-4	MIL-C-39029/94-604	445147-1

**Size 8 Concentric Twinax Contacts**

Contact Style	For Cable	Contact Part Number	Ins/Ext Tool Part Number
Pin	M17-176-00002	222190-4	58284-1
Socket	M17-176-00002	222191-4	58584-1

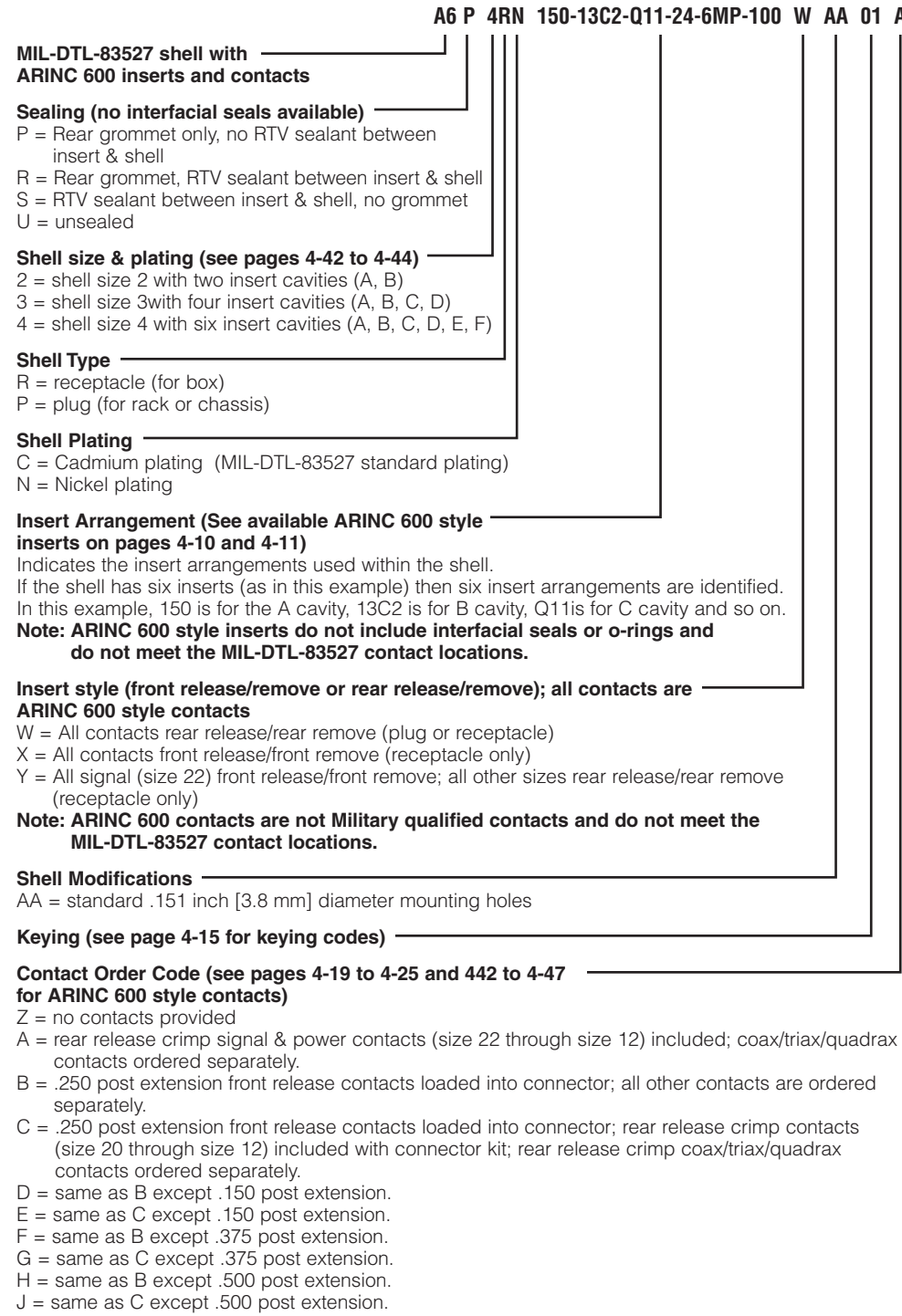
**Size 12 Shielded Contacts**

Contact Style	For Cable	Contact Part Number	MIL Part Number (Reference)	Ins/Ext Tool Part Number
Pin	M17-176-00002	213156-1	M39029/74-400	445147-1
Socket	M17-176-00002	213157-1	M39029/73-397 (with exceptions)	445147-1

**MIL 600 Style Connectors** (Continued)

**MIL-DTL-83527 Shell Configurations with ARINC 600 Style Inserts and Contacts Sample Descriptive Part Number**

**Note:** These connectors do not meet the performance requirements of MIL-DTL-83527.



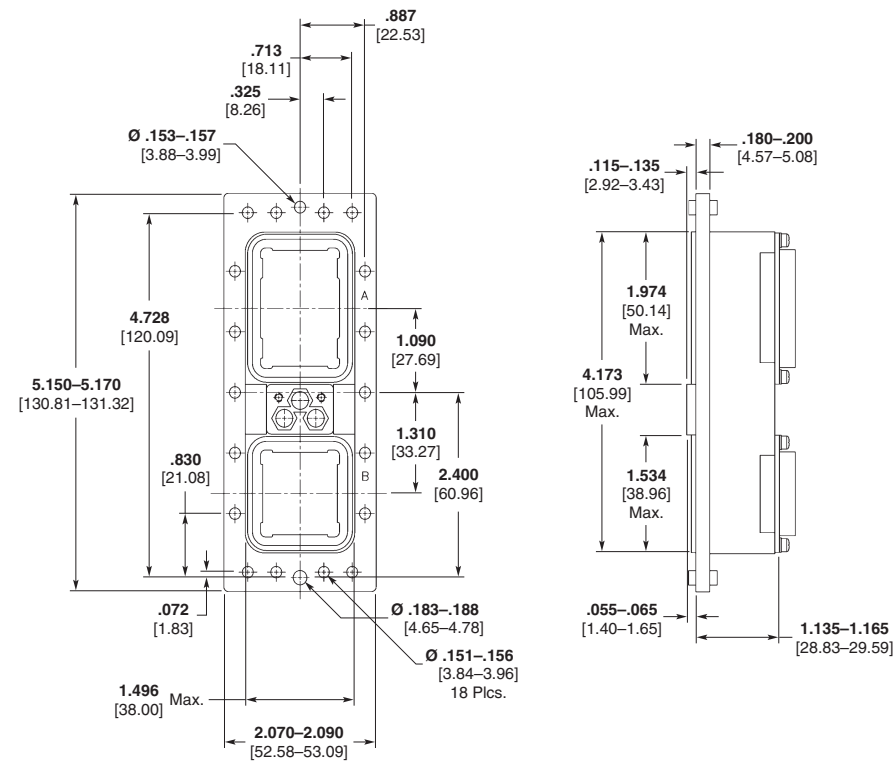
**4**

Rack and Panel Connectors

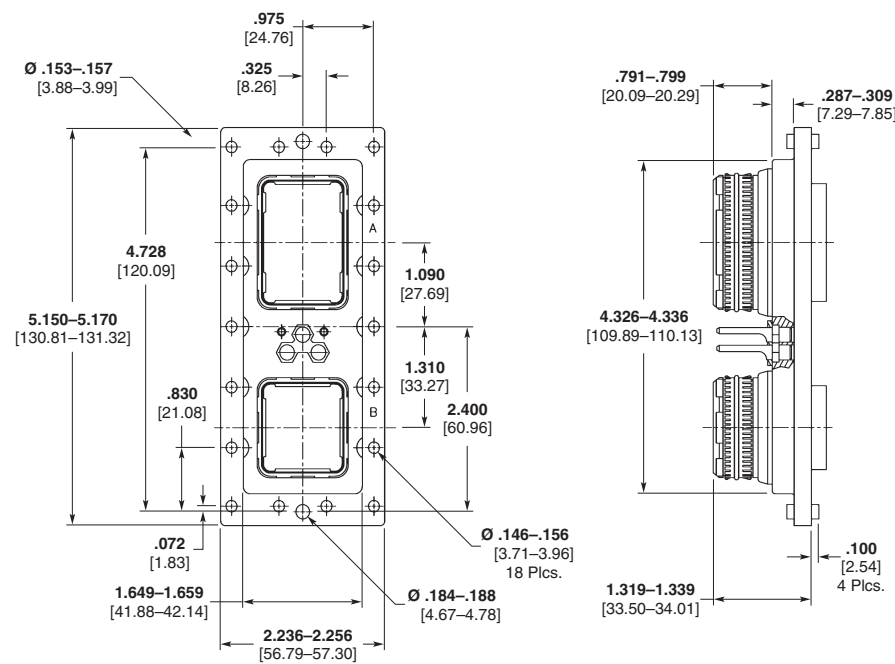
Custom designs can be configured. Contact TE Connectivity for custom versions not defined above.

**MIL 600 Style Connectors** (Continued)

**Receptacle Size 2**

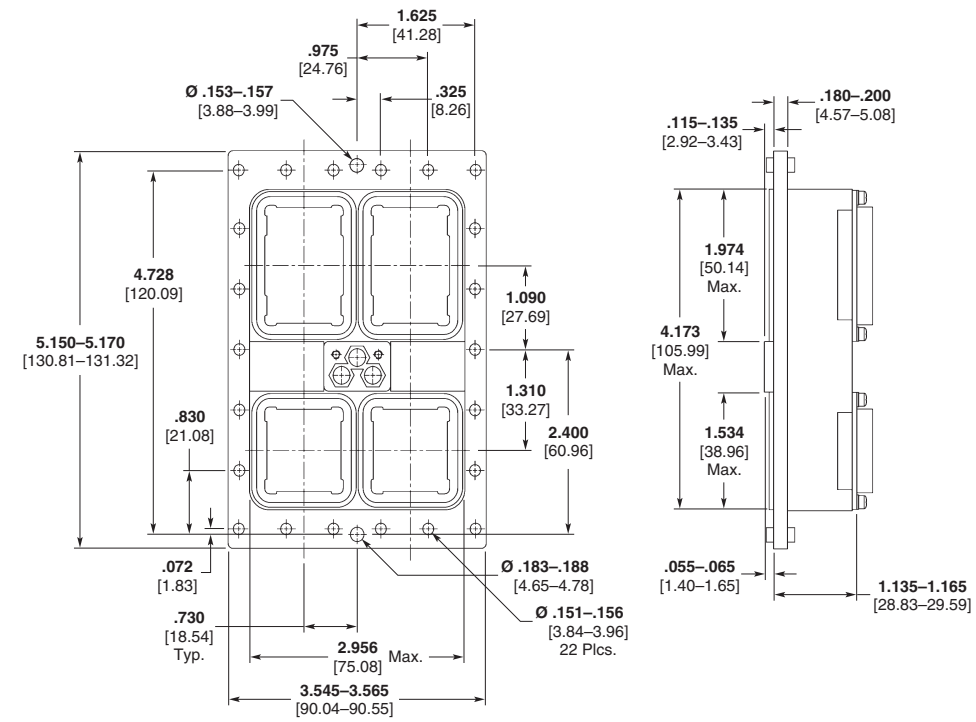


**Plug Size 2**



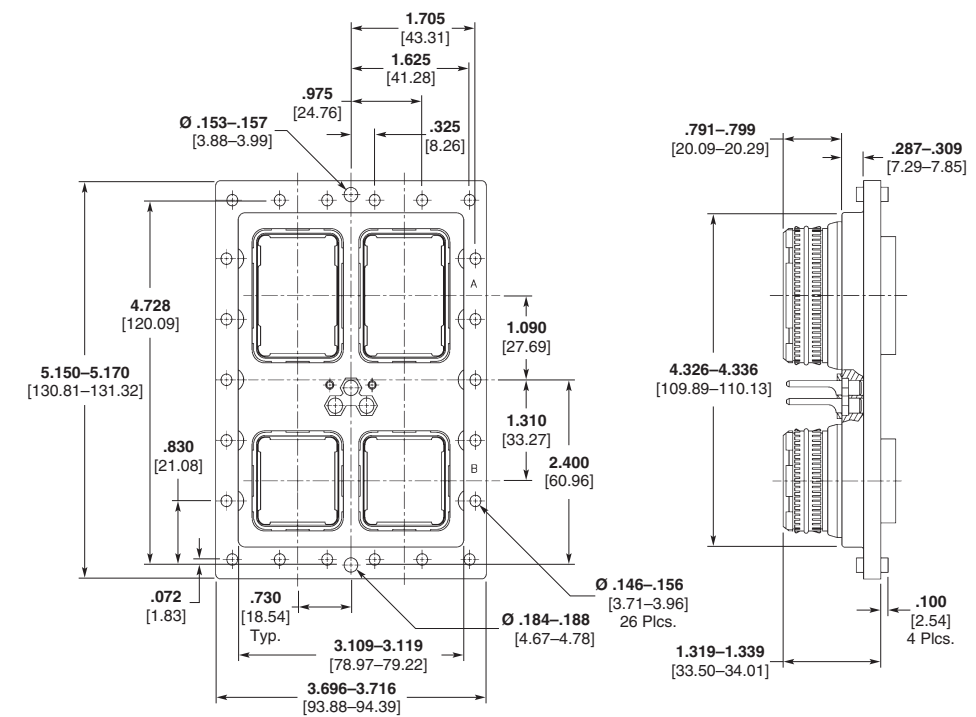
MIL 600 Style Connectors (Continued)

Receptacle Size 3



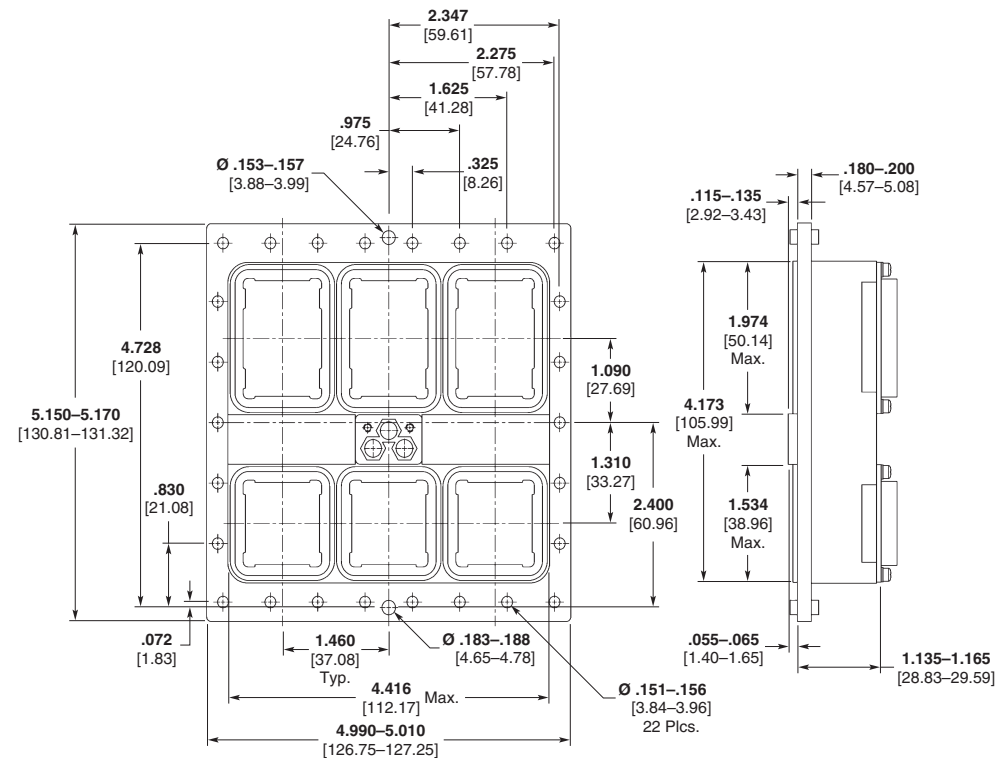
**4**  
Rack and Panel Connectors

Plug Size 3

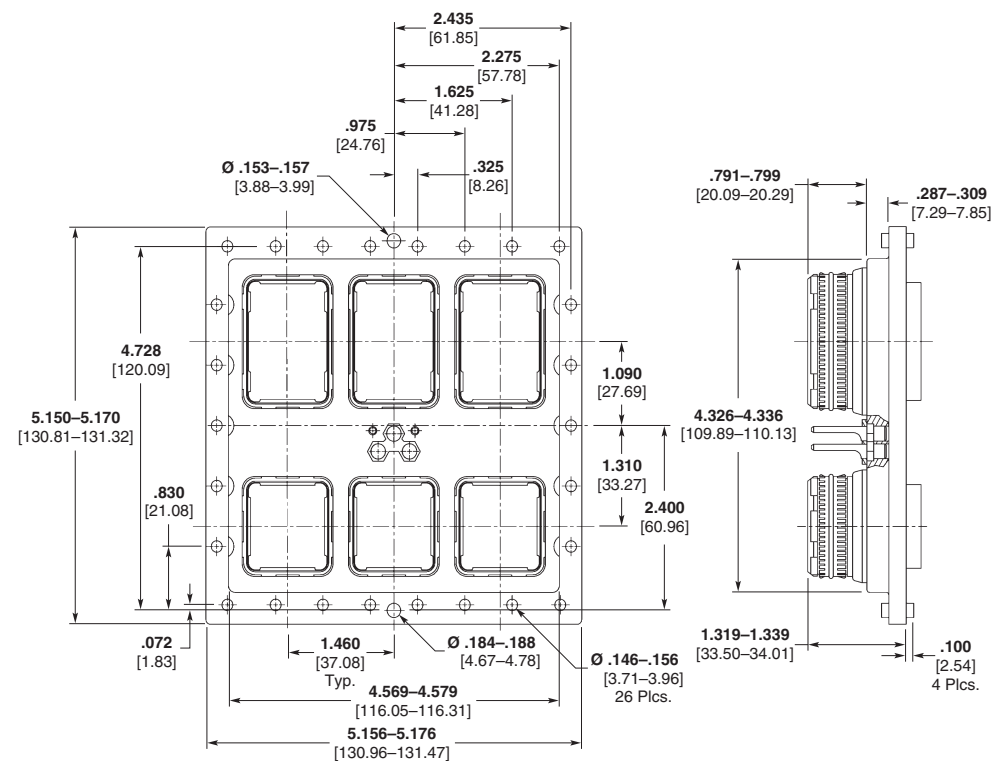


MIL 600 Style Connectors (Continued)

Receptacle Size 4



Plug Size 4



**Introduction**

Connectors with wide range of shell configurations/modifications, contact arrangements and contacts to meet ARINC 404 Specifications. The descriptive part numbering scheme described on the following pages can be used for ordering.

**Commercial Series**

- R — Unsealed
- RM — Interface seal on pin insert
- RME — Environmentally sealed

**Unkeyed Single-Insert Series**

- RMA — Standard size, unkeyed single-insert connectors, unsealed
- RMAE — same as RMA, except sealed

**Military Series**

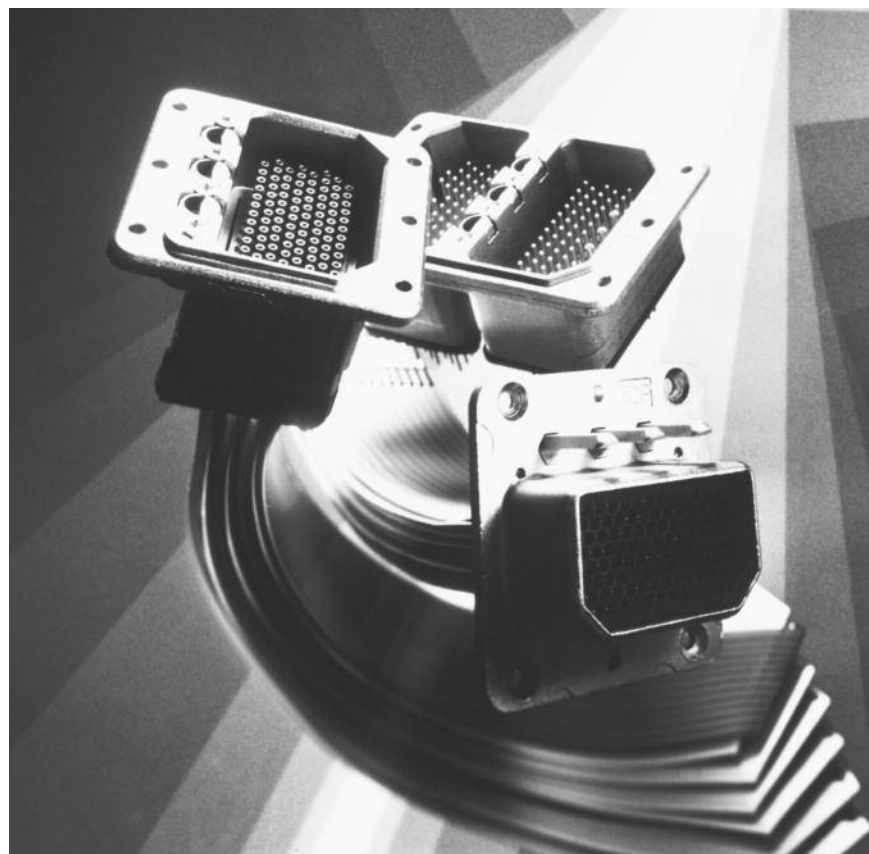
- M — MIL equivalent, unsealed
- MM — MIL equivalent, interface seal on pin inserts
- MME — MIL equivalent, environmentally sealed

**Miniature Series**

- RA — Unsealed
  - RE — Sealed
- Special connectors are also available — including connectors for flexible flat cable, for wire wrap-type terminations, and with contacts for board-mount applications.

Screw-machined pin and socket contacts for connector inserts — signal contact sizes 22, 20, 16 and 12 for terminating wire range of 30 through 12 AWG [0.05–3 mm]. Crimp snap styles for rear-remove, rear-release applications are most common. They can be supplied both in loose-piece form, or can be tape-mounted for high-speed application.

Coax contact sizes 1, 3, 5, 7, 10 and 15 are available.



4

  
 Rack and Panel Connectors

**Material Specifications**

**Shell** — Die-cast aluminum alloy per QQ-A-591; cadmium plated with yellow chromate conversion, or electroless nickel plated per QQ-P-416

**Insert Retention Plates** — (M, MM, R, RM, RME series) Aluminum alloy, blue anodized per MIL-A-8625 or electroless nickel plated per QQ-P-416; (MME series) Aluminum alloy, powder coat blue epoxy; (RA, RE series) Stainless steel, passivated

**Screws and Washers** — Stainless steel, passivated

**Dielectric Hard** — Epoxy

**Dielectric, Interface Seal (Receptacle only) and Wire Sealing Grommets** — Silicone rubber

**Keying Posts and Nuts (Plug Only)** — Stainless steel, passivated

**Keyways (Receptacle Only)** — Commercial — Aluminum

**Performance Specifications**

Environmentally sealed RME series connectors are designed per Military Specification MIL-C-81659 and all signal pin and socket contacts per MIL-C-39029.

**Insulation Resistance** — 5000 megohms

**Dielectric Withstanding Voltage (Unmated at Sea Level)** — Test (contact arrangements 32C2, 33C4, 67 & 106) 1000 volts rms

(all other contact arrangements, except C2 & C3) 1500 volts rms

Operate (contact arrangements 33C4, 67 & 106) 400 volts rms

(all other contact arrangements, except C2 & C3) 500 volts rms

**Temperature Range** — -85°F to 257°F [-65°C to +125°C]

**Contact Current Rating (tested in free air per MIL-C-34029)** —

- (See pages 4-56 to 4-58 for information on coaxial contacts)
- Size 22 (22 AWG wire) [0.3-0.4 mm<sup>2</sup>] 5.0 amps
- Size 20 (20 AWG wire) [0.5-0.6 mm<sup>2</sup>] 7.5 amps
- Size 16 (16 AWG wire) [1.25-1.4 mm<sup>2</sup>] 13.0 amps
- Size 12 (12 AWG wire) [3 mm<sup>2</sup>] 23.0 amps

**Contact Retention** —

- Size 22 15 lb. (min.) [67 N]
- Size 20 20 lb. (min.) [89 N]
- Size 16 25 lb. (min.) [92 N]
- Size 12 30 lb. (min.) [134 N]

**Durability (Mating and Unmating)** — 500 cycles

**Salt Spray** — MIL-STD-1344, Method 1001, Condition B

**Vibration** — MIL-STD-1344, Method 2005, Condition IV



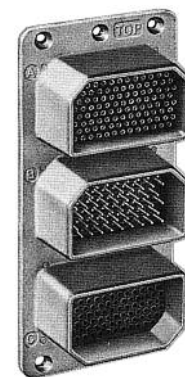
**Ordering Information**

**Descriptive Part Numbering System**

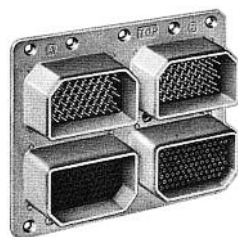
Use this page as a guide to construct part numbers for complete connector packages. Contacts must be ordered separately, except as specified in the Custom Order Code.



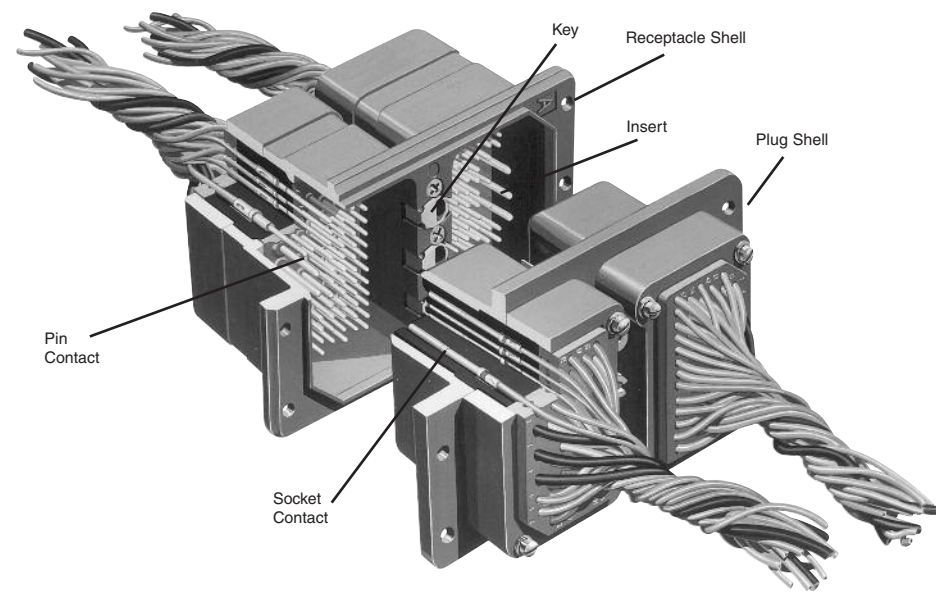
Single-insert receptacle connector shown  
RM 1 R 106S-00 01 (200)



Three-insert plug connector shown  
RM 3 P 106S 57P 106-00 00 (200)



Four-insert plug connector shown  
RME 4 P 106P 106P 106 106S 00 00 (250)



**Note:** Two-Insert Recept. Shell Dlm. (Typ.)—3.075 [78.11] L x 2.000 [50.8] W x 1.665 [42.29] Depth

**Sample Descriptive Part Number**

RME 2 P 57 S 57 S — 00 01 (201)

**Shell**

- Series designator:
- R, M—no seals
- RM, MM—interface seal on pin inserts
- RME, MME—environmentally sealed
- RMA—standard insert size, no keying, unsealed
- RMAE—standard interface, no keying, environmentally sealed
- RA—miniature, unsealed
- RE—miniature, environmentally sealed

**Shell size**

1, 2, 3 or 4 inserts, modules A, B, C, D

**Shell configuration**

- P—Plug
- R—Receptacle

**Contact inserts**

**Contact arrangement** (Module A) (see page 4-47)

**Contact type** (Module A)

- P—Pin
- S—Socket

**Contact arrangement** (Module B) (see page 4-47)

**Contact type** (Module B)

**Modifications to shell mounting** (see pages 4-50 and 4-51)

**Keying** (see page 4-52)

**Custom order instructions** (see page 4-52)

**Contacts** (see pages 4-53 and 4-54 for ordering details)

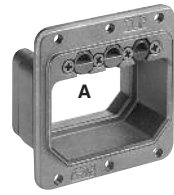
**Sealing boots**

**SPECIAL CONNECTORS**

- Wrap-type assemblies
- Assemblies for flexible flat cable
- RA, RE shells and inserts
- RMA shell

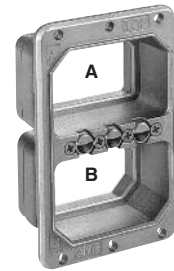
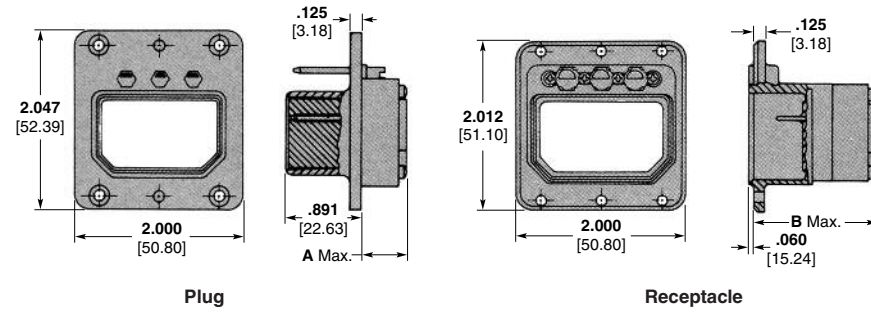
**Note:** RMA/RMAE are only available in single-insert unkeyed shells.

**One- and Two-Insert Shells**



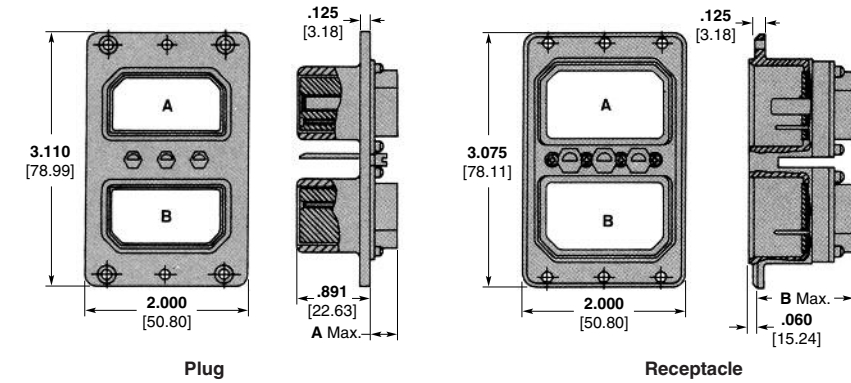
One-Insert Shells  
(Receptacle Shown)

Example: RME 1 P 57S — 00 01 (200)



Two-Insert Shells  
(Receptacle Shown)

Example: RM 2 P 57S 57S — 00 01 (200)



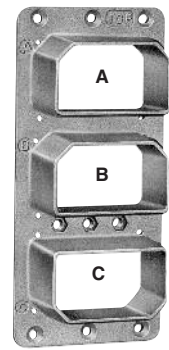
**4**

Rack and Panel Connectors

Maximum extension of connector behind flange, with insert.

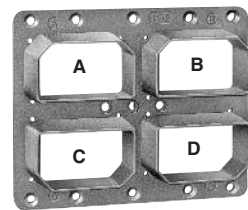
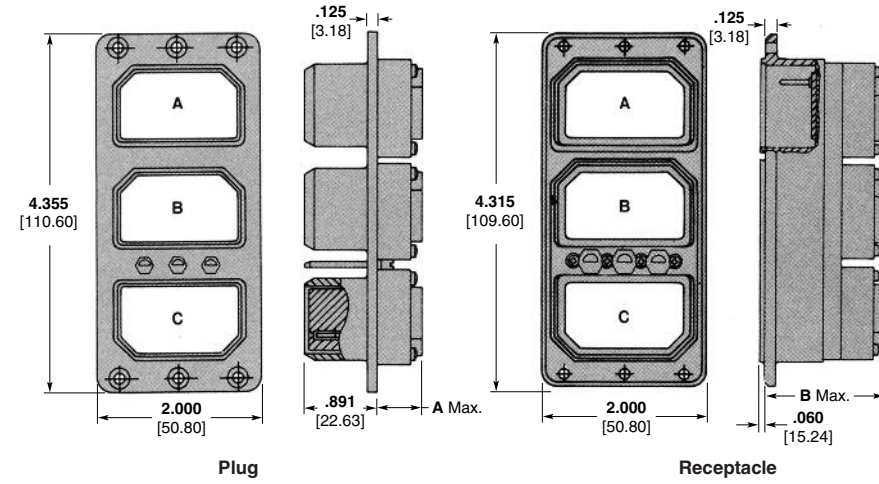
Contact Arrangement	Dimensions			
	A Max. (Plug)		B Max. (Receptacle)	
	R, M, RM, MM	RME, MME	R, M, RM, MM	RME, MME
C2	.075 1.91	.075 1.91	1.016 25.81	1.016 25.81
C3	.075 1.91	.075 1.91	1.016 25.81	1.016 25.81
8	.314 7.98	.534 13.56	1.253 31.83	1.465 37.21
C8	.512 13.00	—	1.452 36.88	—
D8	.314 7.98	.534 13.56	1.253 31.83	1.465 37.21
26	.314 7.98	.534 13.56	1.253 31.83	1.465 37.21
32C2	.529 13.44	.734 18.64	1.465 37.21	1.665 42.29
32C4	.410 10.41	.615 15.62	1.350 33.86	1.555 39.50
33C4	.529 13.44	.734 18.64	1.465 37.21	1.665 42.29
40	.314 7.98	.534 13.56	1.253 31.83	1.465 37.21
40C1	.529 13.44	.734 18.64	1.465 37.21	1.665 42.29
45	.314 7.98	.534 13.56	1.253 31.83	1.465 37.21
57	.314 7.98	.534 13.56	1.253 31.83	1.465 37.21
67	.314 7.98	.534 13.56	1.253 31.83	1.465 37.21
106	.075 1.91	.279 7.09	1.016 25.81	1.219 30.96

Three- and Four-Insert Shells



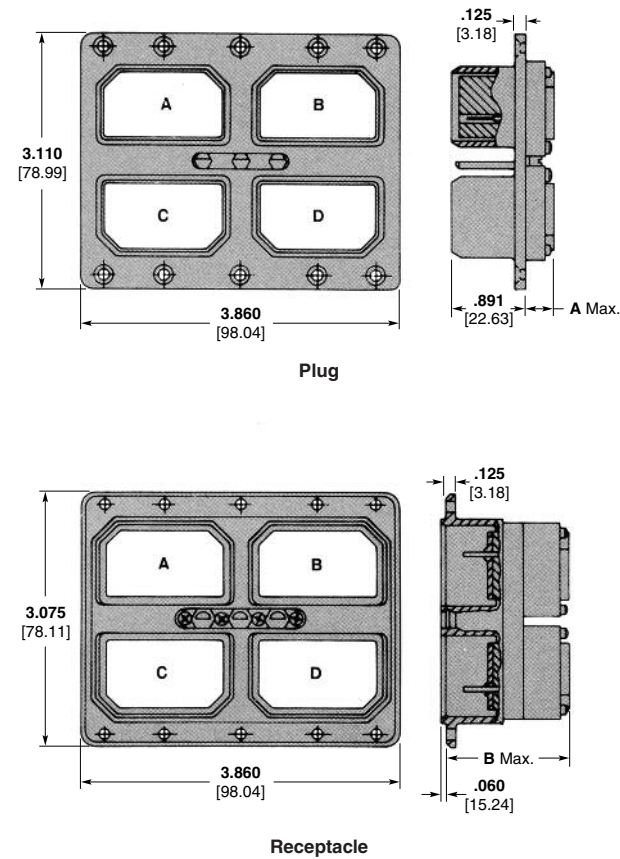
Three-Insert Shells  
(Plug Shown)

Example: RME 3 P 57S 57S 57S — 00 01 (200)



Four-Insert Shells  
(Plug Shown)

Example: RME 4 P 57S 57S 57S 57S — 00 01 (200)



**Note:** Dimensions A and B refer to maximum connector depth with contact inserts installed. These dimensions are tabulated on page 4-47.



Contact Inserts

Inserts for Series R, RM, RME; M, MM, MME, and RMA



Arrangement 106, environmental version shown

Legend

- Size 22 contact cavity
- Size 20 contact cavity
- Size 16 contact or Size 15 COAXICON contact cavity
- Size 12 contact cavity
- COAXICON contact cavity, except Size 15

- Notes:**
- Size 22 socket contacts extend beyond the mating face of inserts; size 22 pin contacts are recessed. Size 20, 16 and 12 pins are exposed; size 20, 16 and 12 sockets are recessed.
  - Mating face of pin-contact insert is shown. Socket-contact insert face is mirror image.



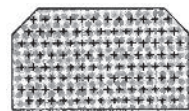
Arrangement 33C4 shown

Inserts for Fiber Optic Connectors

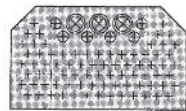
Inserts available to accept Mini-Expanded Beam Fiber Optic Cable Assemblies. Custom design configurations can be provided.

Contact TE Connectivity for additional information, or see page 4-14 in ARINC 600 section, and Expanded Beam Fiber Optics section 3.

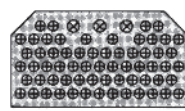
Example: RME 2 P 57S 67S — 00 01 (201)



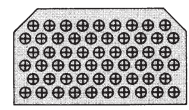
Arrangement 106  
106 Size 22 contacts



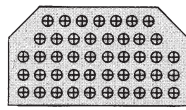
Arrangement 88  
79 Size 22 contacts,  
6 Size 20 contacts,  
3 Size 16 contacts or  
3 Size 15 COAXICON contacts



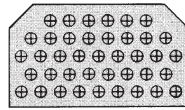
Arrangement 67  
64 Size 20 contacts,  
3 Size 16 contacts or  
3 Size 15 COAXICON contacts



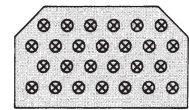
Arrangement 57  
57 Size 20 contacts



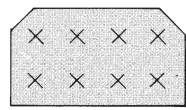
Arrangement 45  
45 Size 20 contacts



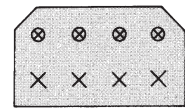
Arrangement 40  
40 Size 20 contacts



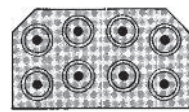
Arrangement 26  
26 Size 16 contacts or  
26 Size 15 COAXICON contacts



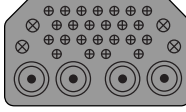
Arrangement 8  
8 Size 12 contacts



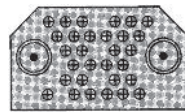
Arrangement D8  
4 Size 12 contacts,  
4 Size 16 contacts or  
4 Size 15 COAXICON contacts



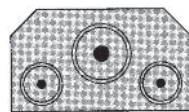
Arrangement C8  
8 Size 9 COAXICON contacts  
For unsealed connectors only



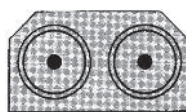
Arrangement 32C4  
4 Size 16 contacts,  
24 Size 20 contacts and  
4 Size 9 COAXICON contacts



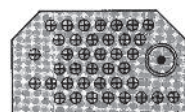
Arrangement 32C2  
30 Size 20 contacts,  
2 Size 5 COAXICON contacts



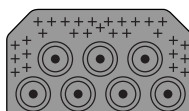
Arrangement C3  
1 Size 3 COAXICON contact,  
2 Size 7 COAXICON contacts  
For unsealed connectors only  
(Consult TE for availability.)



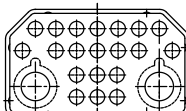
Arrangement C2  
2 Size 1 COAXICON contacts  
For unsealed connectors only  
(Consult TE for availability.)



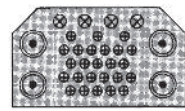
Arrangement 40C1  
39 Size 20 contacts,  
1 Size 5 COAXICON contact



Arrangement 36C7  
7 Size 5 COAXICON contacts,  
29 Size 22 contacts



Arrangement 2202  
2 Size 8 Quadrax contacts  
20 Size 16 contacts

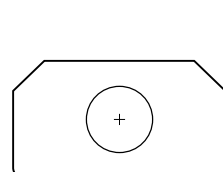


Arrangement 33C4  
25 Size 20 contacts  
4 Size 16 contacts or  
4 Size 15 COAXICON contacts,  
4 Size 5 COAXICON contacts

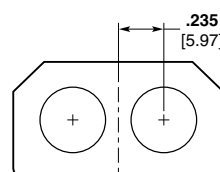
4

Rack and Panel Connectors

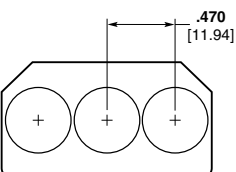
ARINC 404 Insert Holders for Mini Expanded Beam Contacts



ARINC 404, 1 Position, M1



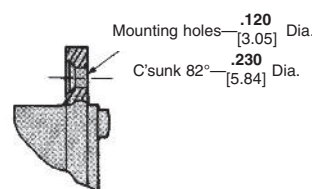
ARINC 404, 2 Position, M2



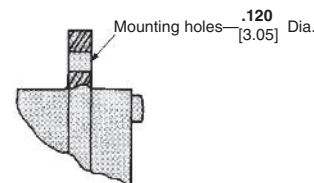
ARINC 404, 3 Position, M3

**Modifications**

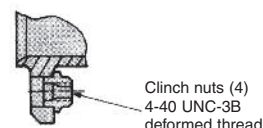
Example: RME 2 P 57S 57S — 00 01 (201)



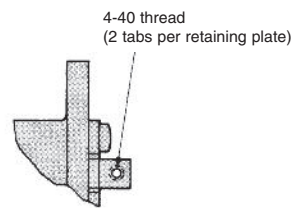
**Modification 00**  
(no modification, plug)



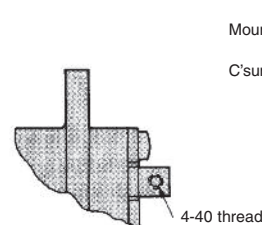
**Modification 00**  
(no modification, receptacle)



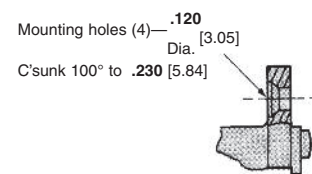
**Modification 01**



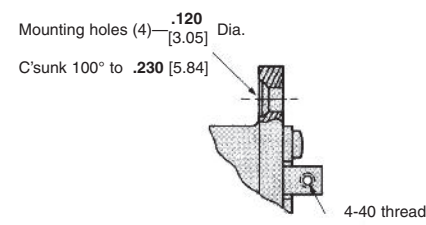
**Modification 02**  
(R, RM, M, MM—attaching tabs)



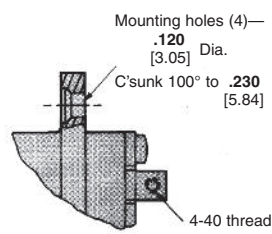
**Modification 02, 70**  
(RME, MME—threaded holes)



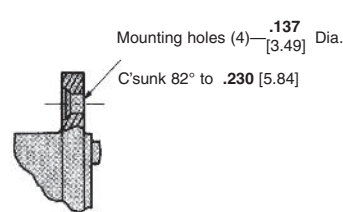
**Modification 03**



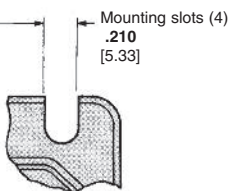
**Modification 04**  
(R, RM, M, MM—attaching tabs)



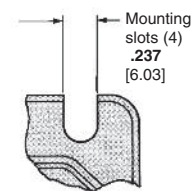
**Modification 04**  
(RME, MME—threaded holes)



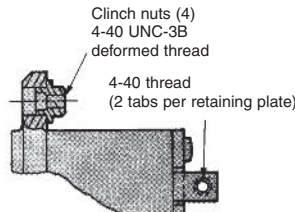
**Modification 08**



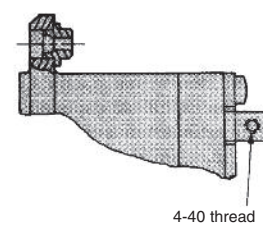
**Modification 12**



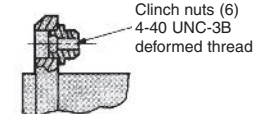
**Modification 13**



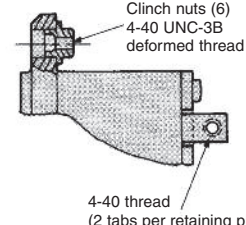
**Modification 17**  
(R, RM, M, MM—attaching tabs)



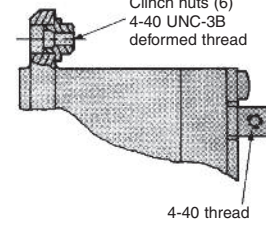
**Modification 17**  
(RME, MME—threaded holes)



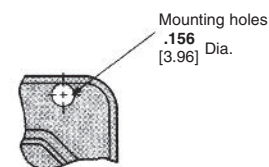
**Modification 18**



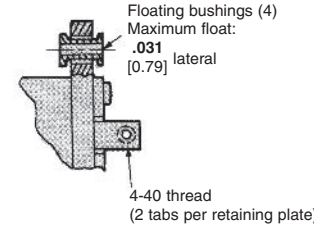
**Modification 19**  
(R, RM, M, MM—attaching tabs)



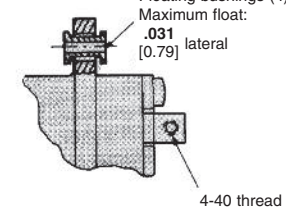
**Modification 19**  
(RME, MME—threaded holes)



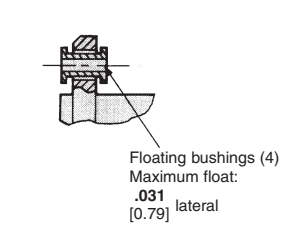
**Modification 20**



**Modification 22**  
(R, RM, M, MM—attaching tabs)



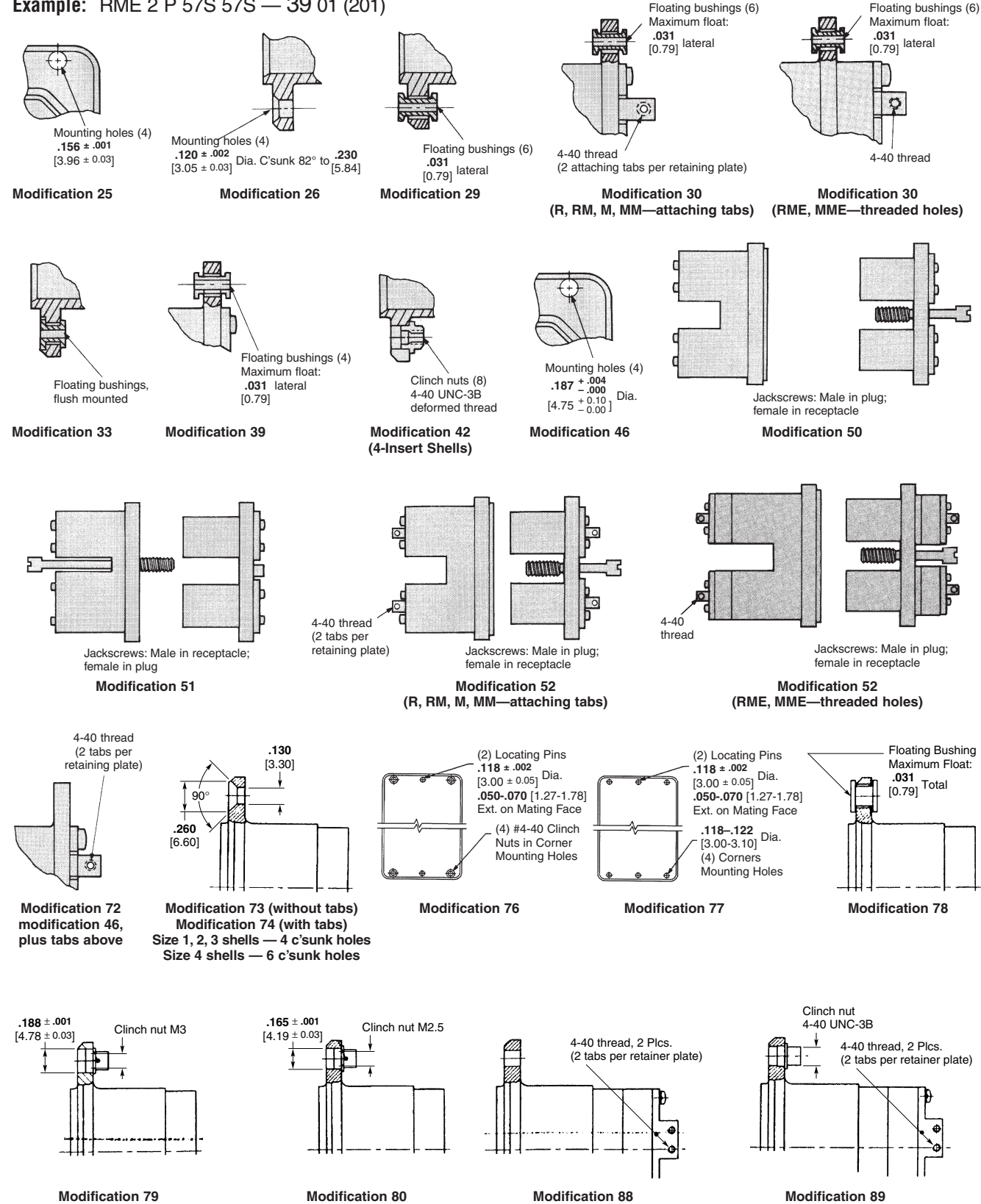
**Modification 22, 71**  
(RME, MME—threaded holes)



**Modification 23, 39**

**Modifications (Continued)**

**Example: RME 2 P 57S 57S — 39 01 (201)**

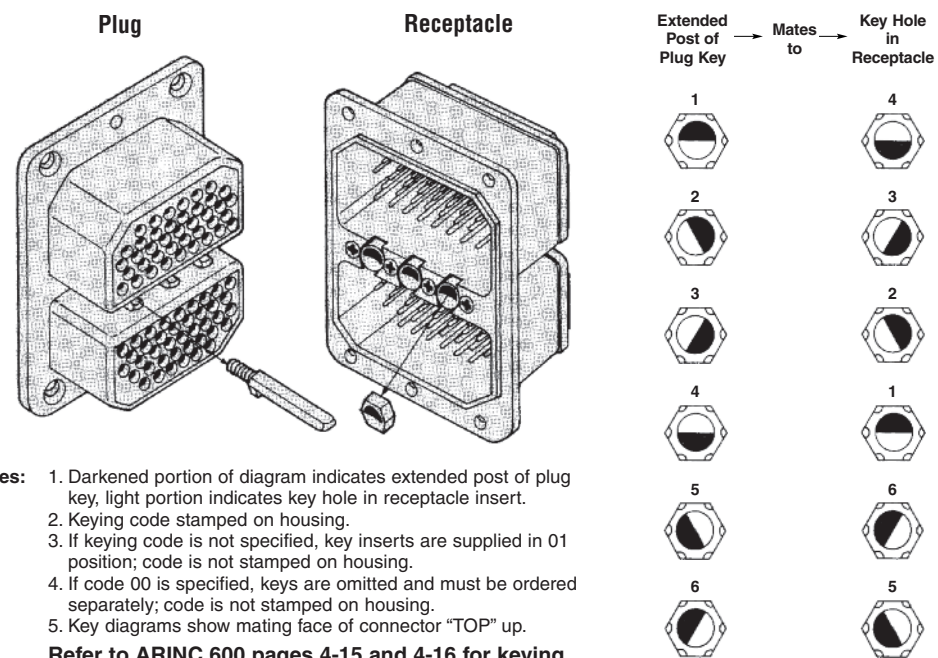


**4**  
Rack and Panel Connectors



**Keying**

**Example:** RME 2 P 57 S 57 S — 00 01 (201)



- Notes:**
1. Darkened portion of diagram indicates extended post of plug key, light portion indicates key hole in receptacle insert.
  2. Keying code stamped on housing.
  3. If keying code is not specified, key inserts are supplied in 01 position; code is not stamped on housing.
  4. If code 00 is specified, keys are omitted and must be ordered separately; code is not stamped on housing.
  5. Key diagrams show mating face of connector "TOP" up.
- Refer to ARINC 600 pages 4-15 and 4-16 for keying codes.**

**Custom Order Code**

**Example:** RME 2 P 57 S 57 S — 00 01 (201)

Code	Description
200	Standard connector kit, <b>including signal contacts</b> ; order coaxial contacts separately. Shell finish: cadmium plated per QQ-P-416 with yellow chromate conversion.
201	200 Custom Order Code <b>without contacts</b> , contacts must be ordered separately by part number.
202	201 Custom Order Code with assembled connector, keying unassembled and packaged in a separate container, contacts must be ordered separately by part number.
203	200 Custom Order Code with inserts and retainer plates unassembled.
204	200 Custom Order Code with spare contacts—3% of contact population per connector per contact size.
206	200 Custom Order Code with keying unassembled and packaged in a separate container.
250	200 Custom Order Code, except shell and retainer plates plated electroless nickel.
400	200 Custom Order Code, except contacts are low insertion force, ARINC 600.

**Size 22 Contacts — Pin Diameter .030 [0.76]**

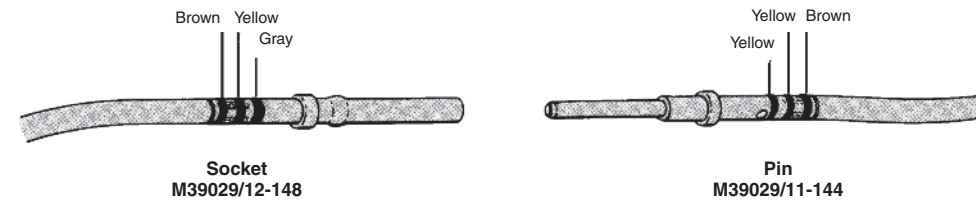
**Standard Contacts**

**Materials**

**Pin and Socket Body** — Copper alloy, plated gold over nickel

**Socket Sleeve** — Passivated stainless steel

**Application Tooling** — See page 4-55



Contact Type	Wire Size AWG mm <sup>2</sup>	Insulation Diameter (Max.)	Tape Mounted Contacts		Loose Piece Contacts		Hand Crimping Tool		AMP-TAPETRONIC Stripper-Crimper	
			Pin	Socket	Pin	Socket	Tool	Positioner	Machine	Funnel
MIL-C-39029	26-22 0.12-0.4	.054 1.37	204873-3	—	204873-4	205103-3	M22520/2-01	M22520/2-23	599406-7	1-125905-2

**Low Force, ARINC 600 connector contacts, suitable for use in ARINC 404 connectors (see page 4-19)**

Low Force ARINC 600*	26-22 0.12-0.4	.054 1.37	—	—	208262-3	208264-2	M22520/2-01	M22520/2-23	—	—
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\*Color coding, two bands: orange and green.

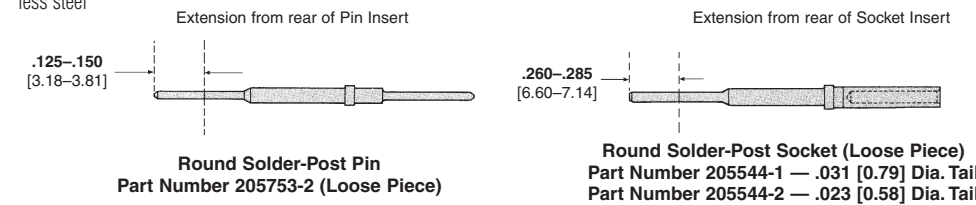
**Round Solder-Post  
Contacts, Solder Post  
Diameter .031 [0.79]**

**Note:** Round solder-post contacts are for use in RM series connectors.

**Materials**

**Pin and Socket Body** — Copper alloy, plated gold over copper

**Socket Sleeve** — Passivated stainless steel



Insertion and extraction tool for all ARINC 404 size 22 contacts:  
MS81969/1-01  
Part Number 91066-1

**4**

Rack and Panel Connectors

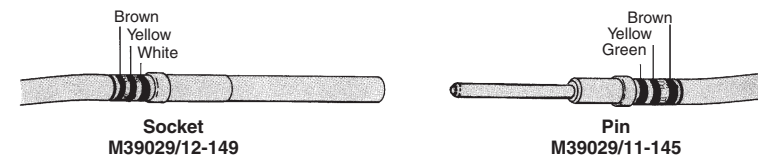
**Size 20 Contacts — Pin Diameter .040 [1.02]**

**Standard Contacts**

**Materials**

**Pin and Socket Body** — Copper alloy, plated gold over nickel

**Socket Sleeve** — Passivated stainless steel



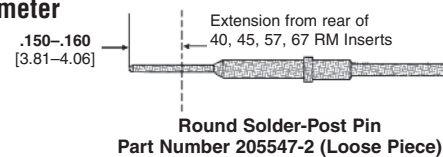
Contact Type	Wire Size AWG mm <sup>2</sup>	Insulation Diameter (Max.)	Tape Mounted Contacts		Loose Piece Contacts		Hand Crimping Tool		AMP-TAPETRONIC Stripper-Crimper	
			Pin	Socket	Pin	Socket	Tool	Positioner	Machine	Funnel
MIL-C-39029	24-20 0.2-.06	.071 1.80	204938-4	205116-2	204938-3	205116-1	M22520/2-01	M22520/2-08	599406-7	125905-1
Type XVII	30-26 0.05-0.15	.071 1.80	205791-4	—	205791-3	205116-5	M22520/2-01	M22520/2-08	599406-7	2-125905-4

**Low Force, ARINC 600 connector contacts, suitable for use in ARINC 404 connectors (see page 4-19)**

Low Force ARINC 600*	24-20 0.2-0.6	.071 1.80	208265-4	—	208265-3	208267-2	M22520/2-01	M22520/2-08	599406-7	125905-1
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\*Color coding, two bands: orange and red.

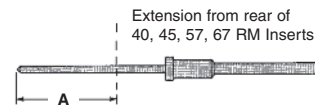
**Round Solder-Post Contact,  
Solder Post Diameter  
.031 [0.79]**



**Material** — Copper alloy, plated gold over nickel

**Wrap-Type Posted Pin,  
.025 [0.64] Square Post**

A	Part Number
.430 10.92	206210-2
.685 17.4	206210-4
.185 4.7	206210-6



Insertion and Extraction Tool for all ARINC 404 size 20 contacts:  
MS81969/1-02  
Part Number 91067-2

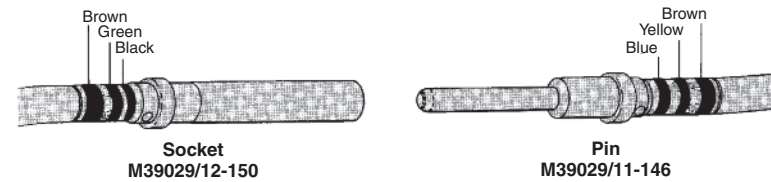
**Size 16 Contacts — Pin Diameter .062 [1.58]**

**Standard Contacts**

**Materials**

**Pin and Socket Body** — Copper alloy, plated gold over nickel

**Socket Sleeve** — Passivated stainless steel



Contact Type	Wire Size AWG mm <sup>2</sup>	Insulation Diameter (Max.)	Tape Mounted Contacts		Loose Piece Contacts		Hand Crimping Tool		AMP-TAPETRONIC Stripper-Crimper	
			Pin	Socket	Pin	Socket	Tool	Positioner	Machine	Funnel
MIL-C-39029	20-16 0.5-1.4	.103 2.62	—	205117-2	204978-3	205117-1	M22520/1-01	M22520/1-02	599406-5	125905-6

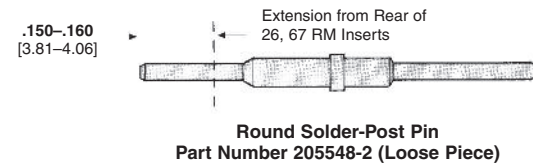
**Low Force, ARINC 600 connector contacts, suitable for use in ARINC 404 connectors (see page 4-19)**

Low Force ARINC 600*	20-16 0.5-1.4	.103 2.62	—	—	208268-3	208270-2	M22520/1-01	M22520/1-02	—	—
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\*Color coding, two bands: orange and blue.

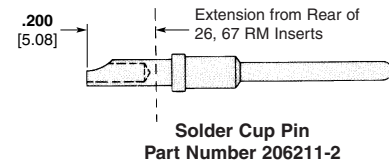
**Round Solder-Post Contact Solder  
Post Diameter .062 [1.575]**

**Material** — Copper alloy, plated gold over nickel



**Solder Cup Pin**

**Material** — Copper alloy, plated gold over nickel



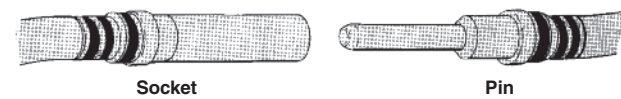
Insertion and Extraction Tool for all size 16 contacts: MS81969/1-03, Part Number 91066-3

**Size 12 Contacts — Pin Diameter .094 [2.39]**

**Materials**

**Pin and Socket Body** — Copper alloy, plated gold over nickel

**Socket Sleeve** — Passivated stainless steel



Contact Type	Wire Size AWG mm <sup>2</sup>	Insulation Diameter (Max.)	Part Numbers			
			Loose Piece Contacts		Hand Crimping Tool	
			Pin	Socket	Tool	Positioner
MIL-C-39029	14-12 2-3	.190 4.83	205763-5	205851-2	M22520/1-01	M22520/1-11

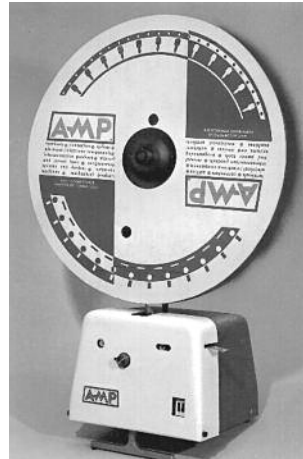
**Low Force, ARINC 600 connector contacts, suitable for use in ARINC 404 connectors (see page 4-19)**

Low Force ARINC 600*	14-12 2-3	.190 4.83	208271-3	208273-2	M22520/1-01	M22520/1-11
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\*Color coding, two bands: orange and yellow.

Insertion and Extraction Tool for all size 12 contacts: Part Number 445147-1

**Application Tooling**



**AMP-TAPEMATIC  
Stripper/Crimper**  
Machine Part Number 599406-7

Portable bench machine that strips wire and crimps tape-mounted, closed-barrel pin and socket contacts for AMPLIMITE Military, ARINC and CPC connectors. The stripping and crimping heads are accessible through separate openings in the front of the machine. Wire strip length and crimp height are adjustable. The stripping head is pre-set to the proper cutting depth of four standard wire sizes.

**Specifications**

- Width** — 12.5 [317]
- Depth** — 12.5 [317]
- Height** — 10 [254] without reel
- Weight** — 45 lb [20 kg]
- Electrical** — 120 VAC, 60 Hz, 1.3 A
- Wire Range** — 28-20 AWG [0.08-0.5 mm<sup>2</sup>]



**Hand Crimping Tool**  
(Tool Number 601966-1)  
Part Number M22520/2-01

This standard military-type hand tool terminates screw-machined pins and sockets to wire with an 8-indent, M22520/2 crimp. It is ideally suited for prototype, field maintenance and other applications where volume production is not a factor.

**Application Tooling Instruction Sheet  
Cross Reference**

Tool Number	Instruction Sheet
601966-1	408-7516
601967-1	408-7516
599406-7	408-7516

**Insertion/Extraction Tools, ARINC 404**

Tool Part Number	Product Line	Contact Size	Contact Type	Color Code	Style
91066-1	ARINC 404	22	Signal	Green	Rear Release/Rear Remove
91067-2	ARINC 404	20	Signal	Red	Rear Release/Rear Remove
91066-3	ARINC 404	16	Signal	Blue	Rear Release/Rear Remove
445147-1	ARINC 404	12	Signal	—	Rear Release/Rear Remove
91066-3	ARINC 404	15	Coax	Blue	Rear Release/Rear Remove
91074-1	ARINC 404	9	Coax	—	Rear Release/Rear Remove
N/A captivated	ARINC 404	7	Coax	—	Rear Release/Rear Remove
91074-1	ARINC 404	5	Coax	—	Rear Release/Rear Remove
N/A captivated	ARINC 404	3	Coax	—	Rear Release/Rear Remove
N/A captivated	ARINC 404	1	Coax	—	Rear Release/Rear Remove

**4**

Rack and Panel Connectors

**COAXICON Contacts**

**Size 1 Contacts**  
(For use in ARINC 404 and ARINC 600 Connectors)

**Performance Characteristics**

**Nominal Impedance** — 50 ohms

**Frequency Range** — 0 to 5 GHz

**Operating Temperature** —  
-85°F to 329°F [-65°C to +165°C]

**Operating Voltage (Rated)** —  
1000 VAC rms, 60 Hz at Sea Level

**Contact Resistance (Milliohms)** —  
1.0 max. — Center Contact  
0.2 max. — Outer Contact

**Insulation Resistance** — 5,000 megohms min. @500 vdc per MIL-STD-1344, Method 3003 or MIL-STD-202, Method 302, Cond. B

**Dielectric Withstanding Voltage (60 Hz, rms)** —  
RG 214/U

2500 at Sea Level

RG 142/U

1900 at Sea Level

**VSWR** — 1.35 to 1.00 at 5 GHz

**Insertion/Withdrawal Force** —

Insertion (max.) 15 lb [66.72 N]

Withdrawal (min.) 1 lb [4.45 N]

**Cable Retention** —

RG 214/U

125 lb [556 N] min.

RG 142/U

60 lb [266.9 N] min.

**Thermal Shock** — per MIL-STD-1344, Method 1003, Cond. A or MIL-STD-202, Method 107, Cond. A

**Physical Shock** — per MIL-STD-1344, Method 2004, Cond. D or MIL-STD-202, Method 213, Cond. D except 300 G max.

**Vibration** — per MIL-STD-1344, Method 2005, Cond. VI, Letter J or MIL-STD-202, Method 204, Cond. E except 42 G max.

**Humidity Temperature Cycling** — per MIL-STD-1344, Method 1002, Type II, Cond. A or MIL-STD-202, Method 106

**Salt Spray** — per MIL-STD-1344, Method 1001, Cond. B or MIL-STD-202, Method 101, Cond. B

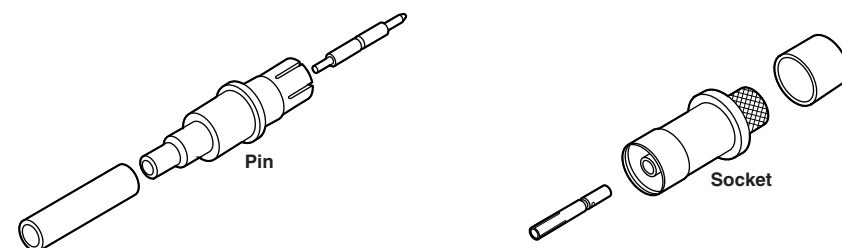
**Temperature Life** — per MIL-STD-1344, Method 1005, Cond. D or MIL-STD-202, Method 108, Cond. D

**Material and Finish**

**Contact** — Beryllium Copper per ASTM-B-196/ASTM-B-197, Brass per ASTM-B-16, PTFE per ASTM-D-1710, Silicon Rubber per ZZ-R-765, Gold plate per MIL-G-45204, Nickel plate per QQ-N-290

**Ferrule** — Copper per ASTM-B-188, Tin plate per ASTM-B-545

**Size 1 (Captivated)**



Contact Size	RG/U Cable	Contact Part No.		"O" Crimp Tooling			Compression Crimp Tooling		
		Pin	Socket	Center Contact	Tool (M22520/)	Positioner/Die	Ferrule	Tool (M22520/)	Locator (M22520/)
1	402 Semi-Rigid .141 [3.58]	225837-1	—	601966-1 (2-01)	1-601966-9	91905-1*	—	—	—
	402 Semi-Rigid .141 [3.58]	222018-1	—	—	—	—	59980-1 (36-01)	220220-2 (36-06)	312253-1 (36-03)
	405 Semi-Rigid .086 [2.18]	222018-2	—	—	—	—	59980-1 (36-01)	220220-2 (36-06)	312253-2 (36-02)
	214	—	225831-1	220015-1	—	220015-1	—	—	—
	142, 142A, 142B	—	225831-3	91902-1*	—	91902-1*	—	—	—
	393	—	225831-6	220015-1	—	220015-1	—	—	—

\* SDE die used with tool frame 354940-1



**COAXICON Contacts** (Continued)

**Size 3 Contacts**  
(For use in ARINC 404 Connectors)

**Performance Characteristics**

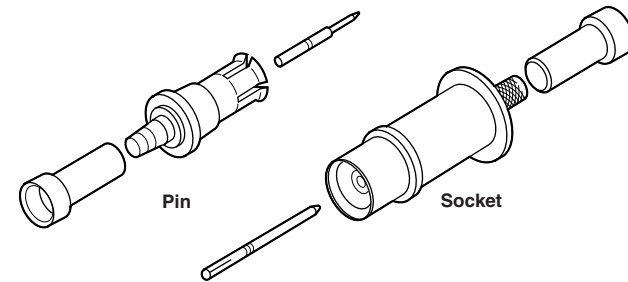
- Nominal Impedance**—50 ohms
- Frequency Range**—0 to 5 Ghz
- Operating Temperature**—  
-85°F to 329°F [-65°C to +165°C]
- Operating Voltage (Rated)**—  
500 V rms, 60 Hz at Sea Level
- Contact Resistance (Milliohms)**—  
Center Contact—2.1 max.  
Outer Contact—0.2 max.
- Insulation Resistance**—  
5,000 megohms min. @ 500 vdc per MIL-STD-1344, Method 3003 or MIL-STD-202, Method 302, Cond. B

**Dielectric Withstanding Voltage (60 Hz, rms)**—  
1500 V rms at Sea Level  
**VSWR**—1.3 to 1.0 at 5 GHz

**Material and Finish**

**Contact**—Beryllium Copper per ASTM-B-196/ASTM-B-197, Brass per ASTM-B-16, PTFE per ASTM-D-1710, Silicon Rubber per ZZ-R-765, Gold plate per MIL-G-45204, Nickel plate per QQ-N-290, Tin plate per MIL-L-46064A  
**Ferrule**—Copper per ASTM-B-188, Tin plate per ASTM-B-545

**Size 3 (Captivated)**



Contact Size	RG/U Cable	Contact Part No.		"O" Crimp Tooling		
		Pin	Socket	Tool (M22520)	Center Contact Positioner/Die	Ferrule
3	58C	226053-1	225792-3	601966-1 (2-01)	2-601966-4 <sup>1</sup> 1-601966-8 <sup>2</sup>	91905-1*
	225	—	225792-5	220015-1	—	220015-1
	214	—	225792-1	220015-1	—	220015-1
3 (Right-Angle)	142, 142A, 142B	228011-1	—	601966-1 (2-01)	1-601966-8	91905-1*

<sup>1</sup> Use with pin contact  
<sup>2</sup> Use with socket contact  
\* SDE die used with tool frame 354940-1

**Size 5, 9 and 15 Contacts**  
(For use in ARINC 404 Connectors)

**Performance Characteristics for size 5, 9 and 15 contacts**

- Nominal Impedance**—50 ohms
- Frequency Range**—0 to 500 MHz
- Operating Temperature**—  
-85°F to 329°F [-65°C to +165°C]
- Operating Voltage (Rated)**—  
325 VAC rms, 60 Hz
- Contact Resistance (Milliohms)**—  
Sizes 5 and 9 with RG 58/U cable:  
Center Contact—10  
Outer Contact—1.5  
Size 15 with RG 316/U cable:  
Center Contact—15  
Outer Contact—2
- Insulation Resistance**—  
5,000 megohms min. @ 500 vdc per MIL-STD-1344, Method 3003 or MIL-STD-202, Method 302, Cond. B

**Dielectric Withstanding Voltage (60 Hz, rms)**—  
Sizes 5 and 9 with RG 58/U and 316/U cable:  
750 at Sea Level  
350 at 50,000 ft [15 240 m]

Size 15 with RG 316/U, 178/U and 196/U cable:  
325 at Sea Level  
150 at 50,000 ft [15 240 m]

**VSWR**—1.3 to 1.0 @ 500 MHz  
**Insertion/Withdrawal Force**—  
Sizes 5 and 9:

Insertion Force Maximum		Withdrawal Force Minimum	
lb	[N]	lb	[N]
5	22.24	1	4.45

Size 15:

Insertion Force Maximum		Withdrawal Force Minimum	
oz	[N]	oz	[N]
35	6.95	5	1.39

**Cable Retention**—  
Sizes 5 and 9:  
60 lb [266.9 N]  
Size 15:  
10 lb [44.5 N]  
**Durability**—500 cycles

**Thermal Shock**—per MIL-STD-1344, Method 1003, Cond. A or MIL-STD-202, Method 107, Cond. A

**Physical Shock**—per MIL-STD-1344, Method 2004, Cond. A or MIL-STD-202, Method 213, Cond. A

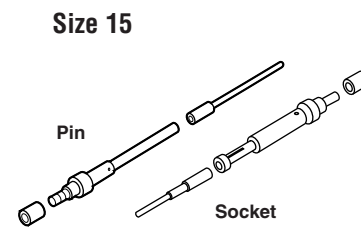
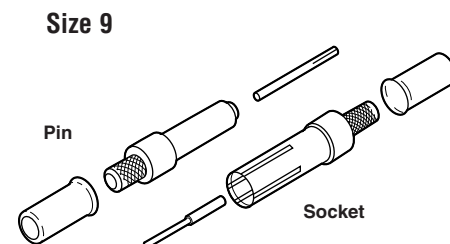
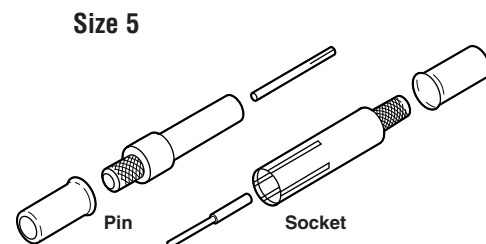
**Vibration**—per MIL-STD-1344, Method 2005, Cond. IV or MIL-STD-202, Method 204, Cond. D

**Moisture Resistance**—per MIL-STD-202, Method 106, omit steps 7a and 7b

**Salt Spray**—48 hours per MIL-STD-1344, Method 1001, Cond. B or MIL-STD-202, Method 101, Cond. B

**Material and Finish**

**Contact**—Beryllium copper per ASTM-B-196/ASTM-B-197, Brass per ASTM-B-16, PTFE per ASTM-D-1710, Gold plate per MIL-G-45204, Nickel plate per QQ-N-290  
**Ferrule**—Copper per ASTM-B-188, tin plate per ASTM-B-545

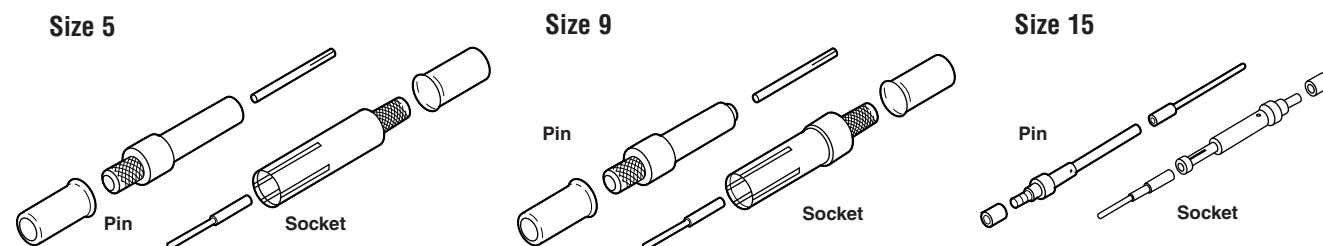




**COAXICON Contacts** (Continued)

**Size 5, 9 and 15 Contacts**

(Continued)



Contact Size	RG/U Cable	Contact Part No.		"O" Crimp Tooling			Military Hex Crimp Tooling			
		Pin	Socket	Center Contact			Center Contact		Ferrule	
				Tool (M22520/)	Positioner/Die (K345)	Ferrule	Tool (M22520/)	Die (M22520/)	Tool (M22520/)	Die (M22520/)
5	58C	225790-1	225791-1	601966-1 (2-01)	1-601966-6 K345	91905-1**	—	—	—	—
	400, 142, 142A, 142B	225790-2	225791-2	220066-2	—	91905-1**	—	—	—	—
	141A	225790-1	225791-1	220066-2	—	91905-1**	—	—	—	—
	402 Semi-Rigid .141 [3.58]	225790-3	225791-6	220066-2	—	91905-1**	—	—	—	—
	174, 188, 316	225790-5	225791-3	601966-1 (2-01)	1-601966-6 K345	91905-1**	—	—	—	—
	180, 195	225790-4	225791-8	601966-1 (2-01)	1-601966-6 K345	91905-1**	—	—	—	—
	179, 187	225790-6 5-225790-6*	225791-4 5-225791-4*	601966-1 (2-01)	1-601966-6 K345	91905-1**	—	—	—	—
	178, 196	225790-7	225791-5	601966-1 (2-01)	1-601966-6 K345	220020-1	—	—	—	—
	223	225790-2	225791-2	601966-1 (2-01)	1-601966-6 K345	91905-1**	—	—	—	—
	316 Double Shield 188 Double Shield	225790-8	1-225791-0	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(Y159)
Military Hex Crimp 5	316 Double Shield 188 Double Shield	225790-8 5-225790-8*	1-225791-0	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(Y159)
	58C, 141A	447850-1	447851-1	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(5-45B)
	142, 142A, 142B	447850-2	447851-2	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(5-45B)
	402 Semi-Rigid .141 [3.58]	447850-3	447851-3	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(5-45A)
	174, 188, 316	447850-4	447851-4	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(5-37B)
9	58C 141A	225935-1	225936-2	601966-1 (2-01)	1-601966-6 K345	91905-1**	—	—	—	—
	174, 188 316	225935-4 5-225935-4*	225936-3 5-225936-3*	601966-1 (2-01)	1-601966-6 K345	91905-1**	—	—	—	—
	142A, 142B	225935-5	225936-5	601966-1 (2-01)	1-601966-6 K345	91905-1**	—	—	—	—
	316 Double Shield 188 Double Shield	225935-6	225936-9	—	—	—	601966-1 (2-01)	1-601966-6 K345	608650-1 (5-01)	(Y159)
	179, 187	225935-7	225936-7	601966-1 (2-01)	1-601966-6 K345	91905-1**	—	—	—	—
	15	188, 316	226782-1	226781-1	601966-1 (2-01)	2-601966-6	601963-2 (4-01)	—	—	—
179, 187		226782-2	226781-2 5-226781-2*	601966-1 (2-01)	2-601966-6	601963-2 (4-01)	—	—	—	—
178, 196		226782-3 5-226782-3*	226781-3	601966-1 (2-01)	2-601966-6	601963-2 (4-01)	—	—	—	—

\* RoHS compliant Part Numbers.  
\*\* SDE die used with tool frame 354940-1.

**Extraction tools:**  
Size 5 and 9 —  
Part Number 91074-1  
Size 15 —  
Part Number 91066-3

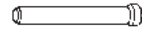
**Plugs, Boots and Caps**

**Sealing Plugs**

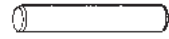
**Size 22**  
Part Number 204760-1  
White PTFE



**Size 20**  
Part Number 203839-1  
Red thermoplastic



**Size 16**  
Part Number 203839-2  
Blue thermoplastic

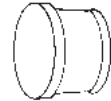


**Size 12**  
Part Number 205574-1  
Yellow thermoplastic

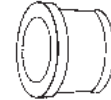


**Coaxial Sealing Plug and Boot**

**Size 5**  
Plug—Part Number 205975-1

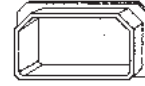


Boot for RG-58C cable—  
Part Number 205402-2  
Boot for RG-180, -190 cable—  
Part Number 205402-3

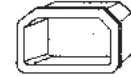


**Dust Covers**

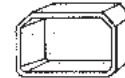
Conductive Receptacle Cap  
Part Number 445918-1  
Conductive Plug Cap  
Part Number 447162-1



Plug Cap  
Part Number 205282-1



Receptacle Cap  
Part Number 205283-1



**4**

Rack and Panel Connectors

**106-Contact Inserts for Flexible Flat Cable**



These custom-made assemblies use TE Connectivity Flexible Flat Conductor Cable which has .050 [1.27] wide conductors, .003 [0.08] thick, on .100 [2.54] centers (or similar, customer-specified cable). The inserts mate with 106-contact

inserts, shown on page 4-49, with size 22 contacts.

The adaptability of flexible flat cable to many uses, the wide variety of contact styles available, and the high quality of TE assembled harnesses make these

inserts particularly attractive. Among their outstanding features are that they require no soldering, welding or potting, and the inserts are repairable by replacement of individual cables.

**Flexible Flat Conductor Cable**

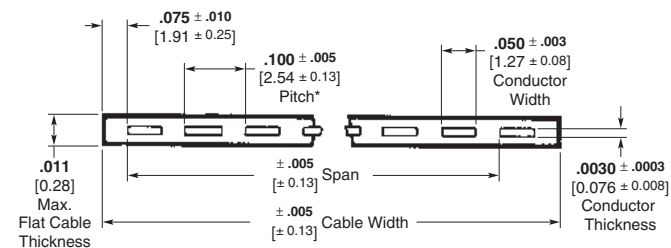
■ Recognized under the Component Program of Underwriters Laboratories Inc., File No. E53793



Consult TE for additional information.

**Specifications**

- Temperature Rating** — -67°F to 221°F [-55°C to +105°C]
- Voltage Rating** — 300 volts per UL Style No. 2646
- Current Rating** — 3 amperes, equivalent 27 AWG [0.1 mm<sup>2</sup>]
- Insulation Resistance** — 5000 megohms (min.)
- Insulation Material** — Polyester
- Flammability** — Self-extinguishing per applicable UL requirement



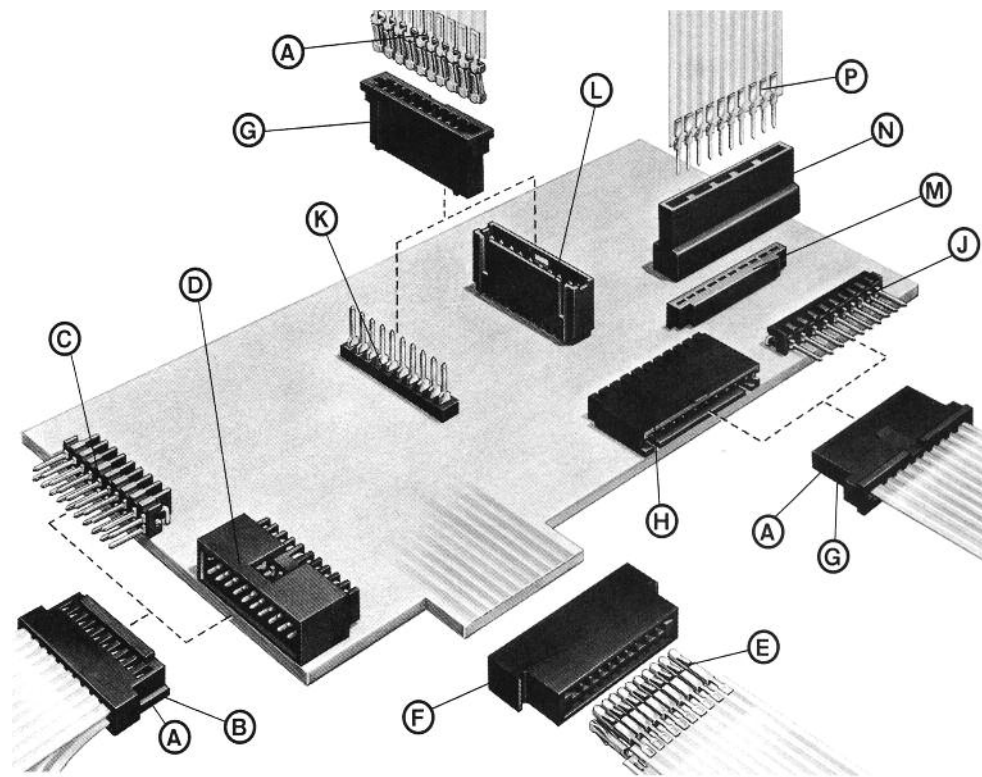
\*Tolerance non-cumulative

**Flexible Flat Cable Applications**

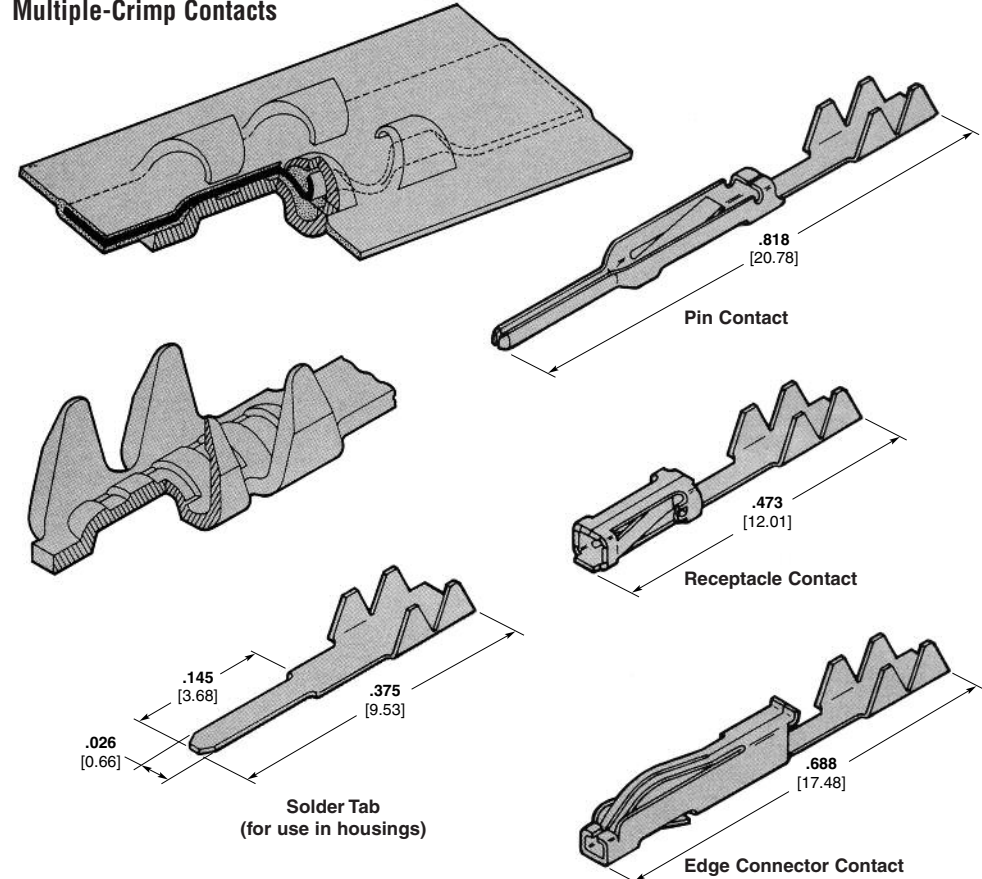
**Design Options**

Some of the many possible applications for flexible flat cable are illustrated here. Additionally, individual cables can be divided for termination with a mixture of various contact styles. For more information consult TE Connectivity.

- A** Receptacle contacts
- B** Double row receptacle housing
- C** .025 [0.64] square post, double-row, right-angle header
- D** .025 [0.64] square post, double-row, right-angle header, shrouded
- E** PC edge connector contacts
- F** PC edge connector housing
- G** Receptacle housing
- H** .025 [0.64] square post, single-row, right-angle header, shrouded
- J** .025 [0.64] square post, single-row, right-angle header
- K** .025 [0.64] square post, single-row, straight header
- L** .025 [0.64] square post, single-row, straight header, shrouded
- M** Polarized SIP Socket
- N** Solder tab housing
- P** Solder tab contacts



**Multiple-Crimp Contacts**



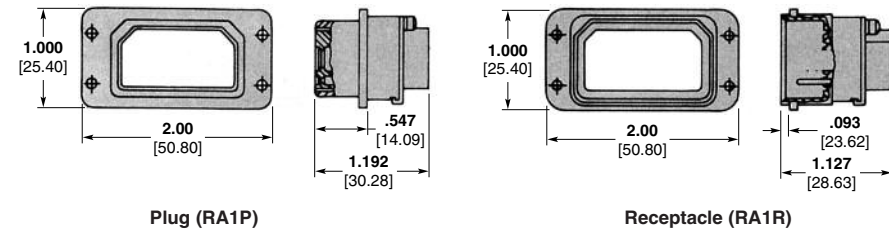
**Special Shells and Inserts**

**Miniature Connectors**

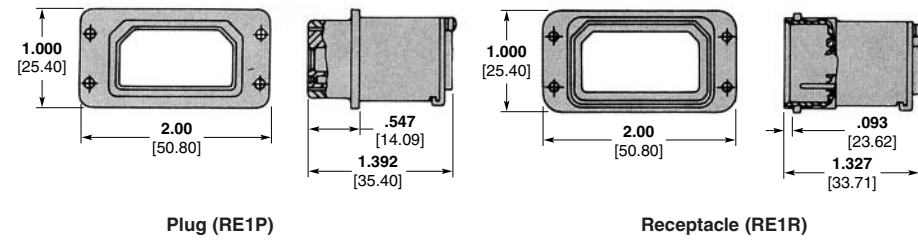
**RA Series (unsealed)**



Example: RA 1 P 32S 00 200

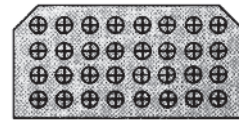


**RE Series (environmentally sealed)**



**Contact Inserts for Miniature Connectors**

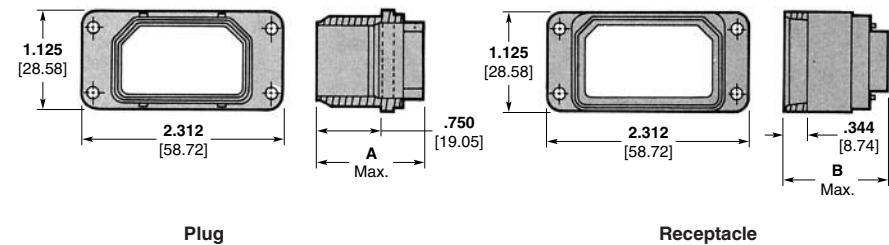
These inserts accept standard contacts shown on pages 4-53 and 4-54.



**Arrangement 32**  
32 Size 20 Contacts

**Standard Size, Unkeyed Connectors**

**RMA Series (unsealed)**



**RMAE Series (environmentally sealed)**

These connectors use inserts shown on page 4-49. The shells are similar to standard series shells, except they are lighter weight and offer no keying provision.

Contact Arrangement	Dimensions			
	A Max. (Plug)		B Max. (Receptacle)	
	RMA	RMAE	RMA	RMAE
106	1.120 28.45	1.320 33.53	1.250 31.75	1.450 36.83
8, D8, 26, 40, 45, 57, 67	1.220 30.99	1.420 36.07	1.350 34.29	1.550 39.40
C8, 32C2, 32C4, 33C4, 40C1	1.420 36.07	1.420 36.07	1.550 39.37	1.550 39.37

4  
Rack and Panel Connectors



**Cross Reference**

Descriptive Part No.	Part No.	RoHS Part No.	Descriptive Part No.	Part No.	RoHS Part No.
M2P106P106P-2300(204)	0-1218229-1	—	RM1P8S-0301(200)	0-1218237-1	—
M2R57P57P-0004(201)	0-1218368-1	—	RM1PD8P-0001(200)	0-0213435-1	5-0213435-1
M2RC8P106S-0104(200)	0-1218919-1	—	RM1R106S-01(200)	0-1218724-1	—
MM2R106S106S-0100(201)	0-1218476-1	—	RM1R32C4P-0101(200)	0-1218039-1	—
MME1P106P-2301(204)	0-1484157-1	—	RM1R33C4P-0001(201)	0-0213436-2	—
MME1P40S-0300(201)	0-1218230-1	—	RM1R33C4P-0101(200)	0-1218040-1	—
MME1P57P-2301(204)	0-1218638-1	—	RM1R33C4P-0101(201)	0-1218040-2	—
MME1R106S-0001(204)	0-1484158-1	—	RM1R40C1S-2301(200)	0-0213436-3	—
MME1R57S-0001(204)	0-1218639-1	—	RM1R40P-0301(201)	0-1218363-1	—
MME2P106PC8S-7101(201)	0-1218239-1	—	RM1R67P-00(200)	0-0213436-4	—
MME2P33C4S106P-29(204)	0-1218735-1	—	RM1R67P-0101(200)	0-1218041-1	—
MME2P33C4SD8S-00(200)	0-1218720-1	—	RM1R67P-0101(201)	0-1218041-2	—
MME2P57P57P-00(204)	0-1218814-1	5-1218814-1	RM1R67P-1848(200)*	0-1218656-1	—
MME2P57S57S-00(201)	0-1218706-1	5-1218706-1	RM1RD8S-0001(200)	0-0213436-1	5-0213436-1
MME2R33C4P106S-00(204)	0-1218745-1	—	RM2P106P106P-00(200)	0-0213437-9	—
MME2R33C4PD8P-00(200)	0-1218619-2	—	RM2P106P106P-00(201)	1-0213437-0	—
MME2R33C4PD8P-00(201)	0-1218619-1	5-1218619-1	RM2P106P106P-0000(201)	0-0445564-4	—
MME2R40P40P-0001(204)	0-1218236-1	—	RM2P106P106P-00(202)	4-0445564-0	—
MME2R57S57S-00(200)	0-1484033-1	—	RM2P106P106P-0401(201)	1-0445564-4	—
MME2R57S57S-00(201)	0-1484033-2	5-1484033-2	RM2P106S106S-0201(200)	3-0445564-6	—
MME3R26P26P26P-1801(200)	0-1218155-1	—	RM2P26PC8P-0001(200)	0-0213437-1	5-0213437-1
R1P106S-2301(201)	0-0213431-1	—	RM2P26S26S-0001(200)	0-0213437-2	5-0213437-2
R1P8S-0201(200)	0-1218133-1	—	RM2P26S26S-2301(201)	0-1218046-1	5-1218046-1
R1R106P-0001(201)	0-0213432-1	—	RM2P32C2P32C2P-0000(201)	0-0445564-0	—
R1R57P-0101(250)	0-1484148-1	—	RM2R32C2P40C1P-0001(200)	0-1218145-1	—
R2P26S33C4S-0001(200)	0-1218637-1	5-1218637-1	RM2P32C2S26S-0031(200)	0-1218876-1	5-1218876-1
R2P57S26S-0301(200)	0-1218361-1	—	RM2P33C4S33C4S-0001(200)	0-1218528-1	—
R2P57S57S-0001(200)	0-0213433-1	—	RM2P33C4S33C4S-0301(200)	0-0213437-4	—
R2P67S106P-3300(202)	2-0445564-0	—	RM2P33C4SC8S-0001(201)	0-0213437-3	—
R2P67S67S-0000(400)	0-1218101-1	—	RM2P33C4SD8S-0301(200)	0-1218228-1	—
R2R106S106S-0104(201)	0-0443098-1	—	RM2P40C1P40C1P-0000(201)	0-0445564-1	—
R2R106S106S-2301(200)	0-0213434-6	—	RM2P40S40S-02(206)	2-0445564-6	—
R2R106S106S-2301(201)	0-0213434-7	—	RM2P40S67S-0301(200)	0-1218226-1	—
R2R26P45P-0101(200)	0-0213434-1	—	RM2P45S45S-0001(200)	2-0445564-4	—
R2R32C4P106S-0101(201)	0-1218404-1	—	RM2P45S57S-00(200)	0-0206442-1	—
R2R45P45P-0101(200)	0-0213434-2	—	RM2P57P57P-0000(201)	0-0445564-2	—
R2R57P26P-0301(201)	0-1218205-1	—	RM2P57S57S-00(200)	0-0213437-5	—
R2R57P57P-0001(201)	0-1218146-1	—	RM2P67P67P-0000(201)	0-0445564-3	—
R2R67P67P-0001(200)	0-0213434-3	—	RM2P67S32C2S-0001(200)	0-0213437-6	5-0213437-6
R2R67P67P-0001(201)	0-0213434-4	—	RM2P67S32C2S-0001(201)	0-0213437-7	—
R2R67P67P-0101(200)	0-0213434-5	5-0213434-5	RM2P67S67S-00(202)	4-0445564-1	—
RA1R32P-00(201)	0-1218080-1	—	RM2P67S67S-0301(200)	0-0213437-8	—
RE1P32S-00(200)	0-1218176-1	—	RM1P67S67S-5001(200)	0-1218045-1	—
RM1P106P-00(202)	0-1218314-1	—	RM2PC8SC8S-0301(201)	1-0445564-7	—
RM1P26S-0001(200)	0-0213435-2	—	RM2R106P106P-0001(201)	1-0213438-3	—
RM1P33C4S-0001(201)	0-0213435-3	—	RM2R106S106S-00(200)	1-0213438-4	—
RM1P33C4S-0001(200)	0-1218182-1	—	RM2R106S106S-00(202)	0-0446913-9	—
RM1P40C1P-0001(200)	0-0213435-5	—	RM2R106S106S-0101(201)	0-1218934-1	—
RM1P40C1S-0001(200)	0-0213435-6	—	RM2R106SD8P-0001(200)	1-0213438-2	—
RM1P40S-0001(201)	0-0213435-4	—	RM2R26P26P-0001(200)	0-0213438-2	5-0213438-2
RM1P40S-0001(200)	0-1218350-1	—	RM2R26SC8S-0001(200)	0-0213438-1	5-0213438-1
RM1P45S-00(200)	0-1218479-2	—	RM2R32C2P40C1P-0001(201)	0-0213438-3	—
RM1P45S-0000(200)	0-1218479-1	5-1218479-1	RM2R33C4P33C4P-0101(200)	0-1218490-1	—
RM1P57S-00(200)	0-0213435-7	—	RM2R33C4P33C4P-2301(200)	0-0213438-6	—
RM1P57S-00(201)	0-0213435-8	—	RM2R33C4P57P-0101(400)	0-1218299-1	—
RM1P57S-0001(200)	0-1218401-1	—	RM2R33C4S33C4S-0001(200)	0-0213438-5	—
RM1P67S-00(200)	0-0213435-9	—	RM2R33C4SC8S-0001(201)	0-0213438-4	—
RM1P67S-0001(200)	0-1218042-1	—	RM2R40C1P67P-00(200)*	0-1218473-1	—
RM1P67S-2366(200)	0-1218756-1	—	RM2R40P40P-0104(200)	0-1218342-1	—

\*Assembly loaded with posted contacts

**Cross Reference** (Continued)

Descriptive Part No.	Part No.	RoHS Part No.	Descriptive Part No.	Part No.	RoHS Part No.
RM2R40P67P-3301(200)	0-1218227-1	—	RME2P106P106P-0301(200)	0-0213441-7	—
RM2R57P57P-0104(200)	0-1218348-1	—	RME2P106P106P-0399(254)	2-0445564-3	—
RM2R67P26P-00(200)	0-0213438-7	—	RME2P106P26P-0001(201)	1-0445564-3	—
RM2R67P32C2P-0001(200)	0-0213438-8	—	RME2P106PD8S-5101(200)	2-0445564-1	—
RM2R67P40C1P-0101(200)	0-0213438-9	—	RME2P106S106S-0001(200)	0-0213441-8	—
RM2R67P57P-00(200)	1-0213438-0	—	RME2P106S26P-0001(201)	1-0445564-5	—
RM2R67P67P-0000(200)	0-0446913-0	—	RME2P106S26P-5001(201)	0-1218207-1	—
RM2R67P67P-00(202)	2-0445564-2	—	RME2P33C4S57S-0001(400)	0-1218300-1	—
RM2R67P67P-0101(200)	1-0213438-1	—	RME2P40S40S-0015(200)	0-1218356-1	—
RM2RC3P67P-0019(201)	0-1218206-1	—	RME2P45S45S-0001(200)	0-0445564-5	—
RM2R67P32C2P-0101(200)	0-0448584-1	—	RME2P45S8P-29 (204)	0-1218895-1	—
RM3P32C2S67S32C2S-0001(201)	0-1218349-1	—	RME2P67S67S-0001(200)	0-0213441-2	5-0213441-2
RM3P40S32C2SC2S-0301(200)	0-1218224-1	—	RME2P67S67S-0101(200)	0-0213441-3	—
RM3PC8S32C2S106P-0001(200)	0-0443969-1	—	RME2P67S67S-0301(200)	0-0213441-4	—
RM3R40P32C2PC2P-3301(200)	0-1218225-1	—	RME2P67S67S-5001(200)	0-1218214-1	—
RM2R40P40P-0104(200)	0-1218342-1	—	RME2P67SD8S-0001(200)	0-0213441-1	—
RM3RC8P32C2P106S-0001(200)*	0-0443970-1	—	RME2P67SD8S-0001(201)	2-0445564-7	—
RM4P106P106P106P88P-00(200)	0-0443174-1	—	RME2P77C2P77C2P-0001(250)	0-0448235-1	—
RM4R88S106S106S106S-00(200)*	0-0443089-1	—	RME2P8S77C2P-0001(250)	0-0448235-2	—
RMA1P26P-00(201)	0-1218202-1	—	RME2PC8SC8S-0301(251)	0-0445564-6	—
RMA1P26S-00(201)	0-1218201-1	—	RME2R106P106P-0001(201)	0-0446913-3	—
RMA1P45S-39(201)	0-1218959-1	—	RME2R106P26S-2301(200)	0-0446913-1	—
RMA1P8S-39(201)	0-1218957-1	—	RME2R106S106S-0001(200)	0-0446913-4	—
RMA1R26P00(201)	0-1218203-1	—	RME2R106S106S-2301(201)	0-0213442-5	—
RMA1R45P-01(201)	0-1218960-1	—	RME2R106S33C4P-0001(201)	0-0213442-3	—
RMA1R8P-01(201)	0-1218958-1	—	RME2R40P8P-0101(201)	0-0213442-1	—
RME1P106P-0301(201)	0-1218354-1	—	RME2R45P8S-00(200)	0-1218894-1	—
RME1P33C4S-0001(200)	0-0213439-1	5-0213439-1	RME2R67P26P-5002(200)	0-1484014-1	—
RME1P40C1S-01(250)	0-1484241-1	—	RME2R67P67P-3301(201)	0-1218343-1	5-1218343-1
RME1P40C1S-01(251)	0-1484241-2	—	RME2R67PD8P-0001(200)	0-0213442-2	—
RME1P40S-0101(200)	0-1218352-1	—	RME2R77C2S77C2S-0001(250)	0-0448227-1	—
RME1R106S-0201(201)	0-1218402-1	—	RME2R8P77C2S-0001(250)	0-0448227-2	—
RME1R33C4P-0001(200)	0-0213440-2	—	RME2RC8S67S-00(200)	0-1218353-1	—
RME1R40C1P-01(250)	0-1484240-1	—	RME3P106P106P106S-0001(200)	0-1218297-1	—
RME1R40C1P-01(251)	0-1484240-2	—	RME3P57P26P26P-2600(201)	0-1218159-1	—
RME1R40P-0001(200)	0-0213440-3	—	RME3P88S106S106S-0001(400)	0-1218358-1	—
RME1R8P-0101(200)	0-0213440-1	—	RME3R57S26S26S-3300(201)	0-1218158-1	—
RME2P106P106P-00(201)	0-0213441-6	—	RME3R67P106S67P-7611(204)	0-1218723-1	—
RME2P106P106P-0001(200)	0-0213441-5	—			

\*Assembly loaded with posted contacts

**4**  
Rack and Panel Connectors



**Cross Reference**

The commercial equivalent connectors listed include contacts in quantities as specified by MIL-C-81659. Military connectors may be ordered without contacts by placing the (201) custom ordering code (page 4-52) behind the TE Connectivity Descriptive Part Number. Connectors with keying installed may also be ordered by specifying it in the TE Descriptive Part Number (page 4-46).

REF MIL Designation	TE Commercial Equivalent	ITT Cannon Designation
MIL-C-81659/29A2-0001	MME1P26P-00	
MIL-C-81659/29A2-0002	MME1P26S-00	DPXBNE-26M-33S-00
MIL-C-81659/29A2-0009	MME1P40P-00	
MIL-C-81659/29A2-0010	MME1P40S-00	DPXBNE-40M-33S-00
MIL-C-81659/29A2-0017	MME1P45P-00	
MIL-C-81659/29A2-0018	MME1P45S-00	DPXBNE-45M-33S-00
MIL-C-81659/29A2-0025	MME1P57P-00	
MIL-C-81659/29A2-0026	MME1P57S-00	DPXBNE-57M-33S-00
MIL-C-81659/29A2-0033	MME1P67P-00	
MIL-C-81659/29A2-0034	MME1P67S-00	DPXBNE-67M-33S-00
MIL-C-81659/29A2-0041	MME1P106P-00	DPXBNE-A106-33P-00
MIL-C-81659/29A2-0042	MME1P106S-00	
MIL-C-81659/29A2-0083	MME1PD8P-00	
MIL-C-81659/29A2-0084	MME1PD8S-00	DPXBNE-D8M-33S-00
MIL-C-81659/31A2-0001	MME1R26P-00	DPXBNE-26M-34P-00
MIL-C-81659/31A2-0002	MME1R26S-00	
MIL-C-81659/31A2-0009	MME1R40P-00	DPXBNE-40M-34P-00
MIL-C-81659/31A2-0010	MME1R40S-00	
MIL-C-81659/31A2-0017	MME1R45P-00	DPXBNE-45M-34P-00
MIL-C-81659/31A2-0018	MME1R45S-00	
MIL-C-81659/31A2-0025	MME1R57P-00	DPXBNE-57M-34P-00
MIL-C-81659/31A2-0026	MME1R57S-00	
MIL-C-81659/31A2-0033	MME1R67P-00	DPXBNE-67M-34P-00
MIL-C-81659/31A2-0034	MME1R67S-00	
MIL-C-81659/31A2-0041	MME1R106P-00	
MIL-C-81659/31A2-0042	MME1R106S-00	DPXBNE-A106-34S-00
MIL-C-81659/31A2-0083	MME1RD8P-00	DPXBNE-D8M-34P-00
MIL-C-81659/31A2-0084	MME1RD8S-00	
MIL-C-81659/33A2-0003	MME2P26P26P-00	
MIL-C-81659/33A2-0004	MME2P26S26S-00	DPX2NE-26MS26MS-33B-00
MIL-C-81659/33A2-0011	MME2P40P40P-00	
MIL-C-81659/33A2-0012	MME2P40S40S-00	DPX2NE-40MD40MD-33B-00
MIL-C-81659/33A2-0019	MME2P45P45P-00	
MIL-C-81659/33A2-0020	MME2P45S45S-00	DPX2NE-45MS45MS-33B-00
MIL-C-81659/33A2-0027	MME2P57P57P-00	
MIL-C-81659/33A2-0028	MME2P57S57S-00	DPX2NE-57MS57MS-33B-00
MIL-C-81659/33A2-0035	MME2P67P67P-00	
MIL-C-81659/33A2-0036	MME2P67S67S-00	DPX2NE-67MS67MS-33B-00
MIL-C-81659/33A2-0043	MME2P106P106P-00	DPX2NE-A106PA106P-33B-00
MIL-C-81659/33A2-0044	MME2P106S106S-00	
MIL-C-81659/33A2-0057	MME2P106S26P-00	
MIL-C-81659/33A2-0058	MME2P106P26S-00	DPX2NE-A106P26MS-33B-00
MIL-C-81659/33A2-0059	MME2P26P106S-00	
MIL-C-81659/33A2-0060	MME2P26S106P-00	DPX2NE-26MSA106P-33B-00
MIL-C-81659/33A2-0071	MME2P67P106S-00	
MIL-C-81659/33A2-0072	MME2P67S106P-00	DPX2NE-67MSA106P-33B-00
MIL-C-81659/33A2-0089	MME2P106S67P-00	
MIL-C-81659/33A2-0090	MME2P106P67S-00	DPX2NE-A106P67MS-33B-00
MIL-C-81659/33A2-0133	MME2P57P106S-00	DPX2NE-57MSA106P-33B-00
MIL-C-81659/33A2-0134	MME2P57S106P-00	
MIL-C-81659/33A2-0147	MME2P57P26P-00	
MIL-C-81659/33A2-0148	MME2P57S26S-00	DPX2NE-57MS26MS
MIL-C-81659/35A2-0003	MME2R26P26P-00	DPX2NE-26MP26MP-34B-00
MIL-C-81659/35A2-0004	MME2R26S26S-00	
MIL-C-81659/35A2-0011	MME2R40P40P-00	DPX2NE-40MP40MP
MIL-C-81659/35A2-0012	MME2R40S40S-00	
MIL-C-81659/35A2-0019	MME2R45P45P-00	DPX2NE-45MP45MP
MIL-C-81659/35A2-0020	MME2R45S45S-00	
MIL-C-81659/35A2-0027	MME2R57P57P-00	DPX2NE-57MP57MP
MIL-C-81659/35A2-0028	MME2R57S57S-00	

MIL-C-81659/35A2 Continued on page 4-65

**Cross Reference** (Continued)

REF MIL Designation	TE Commercial Equivalent	ITT Cannon Designation
MIL-C-81659/35A2-0035	MME2R67P67P-00	DPX2NE-67MP67MP
MIL-C-81659/35A2-0036	MME2R67S67S-00	
MIL-C-81659/35A2-0043	MME2R106P106P-00	
MIL-C-81659/35A2-0044	MME2R106S106S-00	DPX2NE-A106SA106S
MIL-C-81659/35A2-0057	MME2R106S26P-00	DPX2NE-A106S26MP
MIL-C-81659/35A2-0058	MME2R106P26S-00	
MIL-C-81659/35A2-0059	MME2R26P106S-00	DPX2NE-26MPA106S
MIL-C-81659/35A2-0060	MME2R26S106P-00	
MIL-C-81659/35A2-0071	MME2R67P106S-00	DPX2NE-67MPA106S
MIL-C-81659/35A2-0072	MME2R67S106P-00	
MIL-C-81659/35A2-0089	MME2R106S67P-00	DPX2NE-A106S67MP
MIL-C-81659/35A2-0090	MME2R106P67S-00	
MIL-C-81659/35A2-0133	MME2R57P106S-00	DPX2NE-57MPA106S
MIL-C-81659/35A2-0134	MME2R57S106P-00	
MIL-C-81659/35A2-0147	MME2R57P26P-00	DPX2NE-57MP26MP
MIL-C-81659/35A2-0148	MME2R57S26S-00	
MIL-C-81659/37A2-0005	MME3P26P26P26P-00	
MIL-C-81659/37A2-0006	MME3P26S26S26S-00	DPX3NE-78M-33S-00
MIL-C-81659/37A2-0013	MME3P40P40P40P-00	DPX3NE-120M-33S-00
MIL-C-81659/37A2-0014	MME3P40S40S40S-00	
MIL-C-81659/37A2-0021	MME3P45P45P45P-00	
MIL-C-81659/37A2-0022	MME3P45S45S45S-00	DPX3NE-135M-33S-00
MIL-C-81659/37A2-0029	MME3P57P57P57P-00	DPX3NE-171M-33S-00
MIL-C-81659/37A2-0030	MME3P57S57S57S-00	
MIL-C-81659/37A2-0037	MME3P67P67P67P-00	
MIL-C-81659/37A2-0038	MME3P67S67S67S-00	DPX3NE-201M-33S-00
MIL-C-81659/37A2-0045	MME3P106P106P106P-00	DPX3NE-A318-33P-00
MIL-C-81659/37A2-0046	MME3P106S106S106S-00	
MIL-C-81659/37A2-0075	MME3P67P67P106S-00	
MIL-C-81659/37A2-0076	MME3P67S67S106P-00	DPX3NE-240M-33PS-00
MIL-C-81659/37A2-0079	MME3P67P106S67P-00	
MIL-C-81659/37A2-0080	MME3P67S106P67S-00	DPX3NE-A240M-33PS-00
MIL-C-81659/37A2-0091	MME3P106S106S67P-00	
MIL-C-81659/37A2-0092	MME3P106P106P67S-00	DPX3NE-279M-33PS-00
MIL-C-81659/39A2-0005	MME3R26P26P26P-00	DPX3NE-78M-34P-00
MIL-C-81659/39A2-0006	MME3R26S26S26S-00	
MIL-C-81659/39A2-0013	MME3R40P40P40P-00	DPX3NE-120M-34P-00
MIL-C-81659/39A2-0014	MME3R40S40S40S-00	
MIL-C-81659/39A2-0021	MME3R45P45P45P-00	DPX3NE-135M-34P-00
MIL-C-81659/39A2-0022	MME3R45S45S45S-00	
MIL-C-81659/39A2-0029	MME3R57P57P57P-00	DPX3NE-171M-34P-00
MIL-C-81659/39A2-0030	MME3R57S57S57S-00	
MIL-C-81659/39A2-0037	MME3R67P67P67P-00	DPX3NE-201M-34P-00
MIL-C-81659/39A2-0038	MME3R67S67S67S-00	
MIL-C-81659/39A2-0045	MME3R106P106P106P-00	
MIL-C-81659/39A2-0046	MME3R106S106S106S-00	DPX3NE-A318-34S-00
MIL-C-81659/39A2-0075	MME3R67P67P106S-00	DPX3NE-240M-34SP-00
MIL-C-81659/39A2-0076	MME3R67S67S106P-00	
MIL-C-81659/39A2-0079	MME3R67P106S67P-00	DPX3NE-A240M-34SP-00
MIL-C-81659/39A2-0080	MME3R67S106P67S-00	
MIL-C-81659/39A2-0091	MME3R106S106S67P-00	DPX3NE-279M-34SP-00
MIL-C-81659/39A2-0092	MME3R106P106P67S-00	
MIL-C-81659/41A2-0007	MME4P26P26P26P26P-00	
MIL-C-81659/41A2-0008	MME4P26S26S26S26S-00	DPX4NE-104M-33S-00
MIL-C-81659/41A2-0015	MME4P40P40P40P40P-00	
MIL-C-81659/41A2-0016	MME4P40S40S40S40S-00	DPX4NE-160M-33S-00
MIL-C-81659/41A2-0023	MME4P45P45P45P45P-00	
MIL-C-81659/41A2-0024	MME4P45S45S45S45S-00	DPX4NE-180M-33S-00
MIL-C-81659/41A2-0031	MME4P57P57P57P57P-00	
MIL-C-81659/41A2-0032	MME4P57S57S57S57S-00	DPX4NE-228M-33S-00

4 Rack and Panel Connectors

MIL-C-81659/41A2 Continued on page 4-66

**Cross Reference** (Continued)

REF MIL Designation	TE Commercial Equivalent	ITT Cannon Designation
MIL-C-81659/41A2-0039	MME4P67P67P67P67P-00	
MIL-C-81659/41A2-0040	MME4P67S67S67S67S-00	DPX4NE-268M-33S-00
MIL-C-81659/41A2-0047	MME4P106P106P106P106P-00	DPX4NE-A424-33S-00
MIL-C-81659/41A2-0048	MME4P106S106S106S106S-00	
MIL-C-81659/41A2-0061	MME4P26P26P26P26S-00	
MIL-C-81659/41A2-0062	MME4P26S26S26S26P-00	
MIL-C-81659/41A2-0101	MME4P106S106S67P67P-00	
MIL-C-81659/41A2-0102	MME4P106P106P67S67S-00	DPX4NE-346M-33PS-00
MIL-C-81659/43A2-0007	MME4R26P26P26P26P-00	DPX4NE-104M-34P-00
MIL-C-81659/43A2-0008	MME4R26S26S26S26S-00	
MIL-C-81659/43A2-0015	MME4R40P40P40P40P-00	DPX4NE-160M-34P-00
MIL-C-81659/43A2-0016	MME4R40S40S40S40S-00	
MIL-C-81659/43A2-0023	MME4R45P45P45P45P-00	DPX4NE-180M-34P-00
MIL-C-81659/43A2-0024	MME4R45S45S45S45S-00	
MIL-C-81659/43A2-0031	MME4R57P57P57P57P-00	DPX4NE-228M-34P-00
MIL-C-81659/43A2-0032	MME4R57S57S57S57S-00	
MIL-C-81659/43A2-0039	MME4R67P67P67P67P-00	DPX4NE-268M-34P-00
MIL-C-81659/43A2-0040	MME4R67S67S67S67S-00	
MIL-C-81659/43A2-0047	MME4R106P106P106P106P-00	
MIL-C-81659/43A2-0048	MME4R106S106S106S106S-00	DPX4NE-A42A-34P-00
MIL-C-81659/43A2-0061	MME4R26P26P26P26S-00	
MIL-C-81659/43A2-0062	MME4R26S26S26S26P-00	
MIL-C-81659/43A2-0101	MME4R106S106S67P67P-00	DPX4NE-346M-34SP-00
MIL-C-81659/43A2-0102	MME4R106P106P67S67S-00	
MIL-C-81659/61A2-0001	MM1R26P-00	DPXBNE-26M-34P-29
MIL-C-81659/61A2-0002	MM1R26S-00	
MIL-C-81659/61A2-0009	MM1R40P-00	DPXBNE-40M-34P-29
MIL-C-81659/61A2-0010	MM1R40S-00	
MIL-C-81659/61A2-0017	MM1R45P-00	DPXBNE-45M-34P-29
MIL-C-81659/61A2-0018	MM1R45S-00	
MIL-C-81659/61A2-0025	MM1R57P-00	DPXBNE-57M-34P-29
MIL-C-81659/61A2-0026	MM1R57S-00	
MIL-C-81659/61A2-0033	MM1R67P-00	DPXBNE-67M-34P-29
MIL-C-81659/61A2-0034	MM1R67S-00	
MIL-C-81659/61A2-0041	MM1R106P-00	
MIL-C-81659/61A2-0042	MM1R106S-00	DPXBNE-A106-34S-29
MIL-C-81659/61A2-0083	MM1RD8P-00	DPXBNE-D8M-34P-29
MIL-C-81659/61A2-0084	MM1RD8S-00	
MIL-C-81659/62A2-0003	MM2R26P26P-00	DPX2NE-26MP26MP-34B-29
MIL-C-81659/62A2-0004	MM2R26S26S-00	
MIL-C-81659/62A2-0011	MM2R40P40P-00	DPX2NE-40MP40MP-34B-29
MIL-C-81659/62A2-0012	MM2R40S40S-00	
MIL-C-81659/62A2-0019	MM2R45P45P-00	DPX2NE-45MP45MP-34B-29
MIL-C-81659/62A2-0020	MM2R45S45S-00	
MIL-C-81659/62A2-0027	MM2R57P57P-00	DPX2NE-57MP57MP-34B-29
MIL-C-81659/62A2-0028	MM2R57S57S-00	
MIL-C-81659/62A2-0035	MM2R67P67P-00	DPX2NE-67MP67MP-34B-29
MIL-C-81659/62A2-0036	MM2R67S67S-00	
MIL-C-81659/62A2-0043	MM2R106P106P-00	
MIL-C-81659/62A2-0044	MM2R106S106S-00	DPX2NE-A106SA106S-34B-29
MIL-C-81659/62A2-0057	MM2R106S26P-00	DPX2NE-A106S26MP-34B-29
MIL-C-81659/62A2-0058	MM2R106P26S-00	
MIL-C-81659/62A2-0059	MM2R26P106S-00	DPX2NE-26MPA106S-34B-29
MIL-C-81659/62A2-0060	MM2R26S106P-00	
MIL-C-81659/62A2-0071	MM2R67P106S-00	DPX2NE-67MPA106S-34B-29
MIL-C-81659/62A2-0072	MM2R67S106P-00	
MIL-C-81659/62A2-0089	MM2R106S67P-00	DPX2NE-A106S67MP-34B-29
MIL-C-81659/62A2-0090	MM2R106P67S-00	
MIL-C-81659/62A2-0133	MM2R57P106S-00	DPX2NE-57MPA106S-34B-29
MIL-C-81659/62A2-0134	MM2R57S106P-00	

MIL-C-81659/62A2 Continued on page 4-67

**Cross Reference** (Continued)

REF MIL Designation	TE Commercial Equivalent	ITT Cannon Designation
MIL-C-81659/62A2-0147	MM2R57P26P-00	DPX2NE-57MP26MP-34B-29
MIL-C-81659/62A2-0148	MM2R57S26S-00	
MIL-C-81659/63A2-0005	MM3R26P26P26P-00	DPX3NE-78M-34P-29
MIL-C-81659/63A2-0006	MM3R26S26S26S-00	
MIL-C-81659/63A2-0013	MM3R40P40P40P-00	DPX3NE-120M-34P-29
MIL-C-81659/63A2-0014	MM3R40S40S40S-00	
MIL-C-81659/63A2-0021	MM3R45P45P45P-00	DPX3NE-135M-34P-29
MIL-C-81659/63A2-0022	MM3R45S45S45S-00	
MIL-C-81659/63A2-0029	MM3R57P57P57P-00	DPX3NE-171M-34P-29
MIL-C-81659/63A2-0030	MM3R57S57S57S-00	
MIL-C-81659/63A2-0037	MM3R67P67P67P-00	DPX3NE-201M-34P-29
MIL-C-81659/63A2-0038	MM3R67S67S67S-00	
MIL-C-81659/63A2-0045	MM3R106P106P106P-00	
MIL-C-81659/63A2-0046	MM3R106S106S106S-00	DPX3NE-A318-34S-39
MIL-C-81659/63A2-0075	MM3R67P67P106S-00	DPX3NE-240M-34SP-29
MIL-C-81659/63A2-0076	MM3R67S67S106P-00	
MIL-C-81659/63A2-0079	MM3R67P106S67P-00	DPX3NE-A240M-34P-29
MIL-C-81659/63A2-0080	MM3R67S106P67S-00	
MIL-C-81659/63A2-0091	MM3R106S106S67P-00	DPX3NE-279M-34P-29
MIL-C-81659/63A2-0092	MM3R106P106P67S-00	
MIL-C-81659/64A2-0007	MM4R26P26P26P26P-00	DPX4NE-104M-34P-29
MIL-C-81659/64A2-0008	MM4R26S26S26S26S-00	
MIL-C-81659/64A2-0015	MM4R40P40P40P40P-00	DPX4NE-160M-34P-29
MIL-C-81659/64A2-0016	MM4R40S40S40S40S-00	
MIL-C-81659/64A2-0023	MM4R45P45P45P45P-00	DPX4NE-180M-34P-29
MIL-C-81659/64A2-0024	MM4R45S45S45S45S-00	
MIL-C-81659/64A2-0031	MM4R57P57P57P57P-00	DPX4NE-228M-34P-29
MIL-C-81659/64A2-0032	MM4R57S57S57S57S-00	
MIL-C-81659/64A2-0039	MM4R67P67P67P67P-00	DPX4NE-268M-34P-29
MIL-C-81659/64A2-0040	MM4R67S67S67S67S-00	
MIL-C-81659/64A2-0047	MM4R106P106P106P106P-00	
MIL-C-81659/64A2-0048	MM4R106S106S106S106S-00	DPX4NE-A424-34S-39
MIL-C-81659/64A2-0061	MM4R26P26P26P26S-00	
MIL-C-81659/64A2-0062	MM4R26S26S26S26P-00	
MIL-C-81659/64A2-0101	MM4R106S106S67P67P-00	DPX4NE-346M-34SP-29
MIL-C-81659/64A2-0102	MM4R106P106P67S67S-00	
MIL-C-81659/65A2-0001	M1P26P-00	
MIL-C-81659/65A2-0002	M1P26S-00	DPXBNA-26M-33S-00
MIL-C-81659/65A2-0009	M1P40P-00	
MIL-C-81659/65A2-0010	M1P40S-00	DPXBNA-49M-33S-00
MIL-C-81659/65A2-0017	M1P45P-00	
MIL-C-81659/65A2-0018	M1P45S-00	DPXBNA-45M-33S-00
MIL-C-81659/65A2-0025	M1P57P-00	
MIL-C-81659/65A2-0026	M1P57S-00	DPXBNA-57M-33S-00
MIL-C-81659/65A2-0033	M1P67P-00	
MIL-C-81659/65A2-0034	M1P67S-00	DPXBNA-67M-33S-00
MIL-C-81659/65A2-0041	M1P106P-00	DPXBNA-A106-33P-00
MIL-C-81659/65A2-0042	M1P106S-00	
MIL-C-81659/65A2-0083	M1PD8P-00	
MIL-C-81659/65A2-0084	M1PD8S-00	DPXBNA-D8M-33S-00
MIL-C-81659/66A2-0001	M1R26P-00	DPXBNA-26M-34P-00
MIL-C-81659/66A2-0002	M1R26S-00	
MIL-C-81659/66A2-0009	M1R40P-00	DPXBNA-40M-34P-00
MIL-C-81659/66A2-0010	M1R40S-00	
MIL-C-81659/66A2-0017	M1R45P-00	DPXBNA-45M-34P-00
MIL-C-81659/66A2-0018	M1R45S-00	
MIL-C-81659/66A2-0025	M1R57P-00	DPXBNA-57M-34P-00
MIL-C-81659/66A2-0026	M1R57S-00	
MIL-C-81659/66A2-0033	M1R67P-00	
MIL-C-81659/66A2-0034	M1R67S-00	

**4**  
Rack and Panel Connectors

MIL-C-81659/66A2 Continued on page 4-68

**Cross Reference** (Continued)

REF MIL Designation	TE Commercial Equivalent	ITT Cannon Designation
MIL-C-81659/66A2-0041	M1R106P-00	
MIL-C-81659/66A2-0042	M1R106S-00	DPXBNA-A106-34S-00
MIL-C-81659/66A2-0083	M1RD8P-00	DPXBNA-D8M-34P-00
MIL-C-81659/66A2-0084	M1RD8S-00	
MIL-C-81659/67A2-0001	M1R26P-01	DPXBNA-26M-34P-01
MIL-C-81659/67A2-0002	M1R26S-01	
MIL-C-81659/67A2-0009	M1R40P-01	DPXBNA-40M-34P-01
MIL-C-81659/67A2-0010	M1R40S-01	
MIL-C-81659/67A2-0017	M1R45P-01	DPXBNA-45M-34P-01
MIL-C-81659/67A2-0018	M1R45S-01	
MIL-C-81659/67A2-0025	M1R57P-01	DPXBNA-57M-34P-01
MIL-C-81659/67A2-0026	M1R57S-01	
MIL-C-81659/67A2-0033	M1R67P-01	DPXBNA-67M-34P-01
MIL-C-81659/67A2-0034	M1R67S-01	
MIL-C-81659/67A2-0041	M1R106P-01	
MIL-C-81659/67A2-0042	M1R106S-01	DPXBNA-A106-34S-01
MIL-C-81659/67A2-0083	M1RD8P-01	DPXBNA-D8M-34P-01
MIL-C-81659/67A2-0084	M1RD8S-01	
MIL-C-81659/68A2-0001	M1R26P-23	DPXBNA-26M-34P-23
MIL-C-81659/68A2-0002	M1R26S-23	
MIL-C-81659/68A2-0009	M1R40P-23	DPXBNA-40M-34P-23
MIL-C-81659/68A2-0010	M1R40S-23	
MIL-C-81659/68A2-0017	M1R45P-23	DPXBNA-45M-34P-23
MIL-C-81659/68A2-0018	M1R45S-23	
MIL-C-81659/68A2-0025	M1R57P-23	DPXBNA-57M-34P-23
MIL-C-81659/68A2-0026	M1R57S-23	
MIL-C-81659/68A2-0033	M1R67P-23	DPXBNA-67M-34P-23
MIL-C-81659/68A2-0034	M1R67S-23	
MIL-C-81659/68A2-0041	M1R106P-23	
MIL-C-81659/68A2-0042	M1R106S-23	DPXBNA-A106-34S-23
MIL-C-81659/68A2-0083	M1RD8P-23	DPXBNA-D8M-34P-23
MIL-C-81659/68A2-0084	M1RD8S-23	
MIL-C-81659/69A2-0003	M2P26P26P-00	
MIL-C-81659/69A2-0004	M2P26S26S-00	DPX2NA-26MS26MS-33B-00
MIL-C-81659/69A2-0011	M2P40P40P-00	
MIL-C-81659/69A2-0012	M2P40S40S-00	DPX2NA-40MS40MS-33B-00
MIL-C-81659/69A2-0019	M2P45P45P-00	
MIL-C-81659/69A2-0020	M2P45S45S-00	DPX2NA-45MS45MS-33B-00
MIL-C-81659/69A2-0027	M2P57P57P-00	
MIL-C-81659/69A2-0028	M2P57S57S-00	DPX2NA-57MS57MS-33B-00
MIL-C-81659/69A2-0035	M2P67P67P-00	
MIL-C-81659/69A2-0036	M2P67S67S-00	DPX2NA-67MS67MS-33B-00
MIL-C-81659/69A2-0043	M2P106P106P-00	DPX2NA-A106PA106P-33B-00
MIL-C-81659/69A2-0044	M2P106S106S-00	
MIL-C-81659/69A2-0057	M2P106S26P-00	
MIL-C-81659/69A2-0058	M2P106P26S-00	DPX2NA-A106P26MS-33B-00
MIL-C-81659/69A2-0059	M2P26P106S-00	
MIL-C-81659/69A2-0060	M2P26S106P-00	DPX2NA-26MSA106P-33B-00
MIL-C-81659/69A2-0071	M2P67P106S-00	
MIL-C-81659/69A2-0072	M2P67S106P-00	DPX2NA-67MSA106P-33B-00
MIL-C-81659/69A2-0089	M2P106S67P-00	
MIL-C-81659/69A2-0090	M2P106P67S-00	DPX2NA-A106P67MS-33B-00
MIL-C-81659/69A2-0133	M2P57P106S-00	
MIL-C-81659/69A2-0134	M2P57S106P-00	DPX2NA-57MSA106P-33B-00
MIL-C-81659/69A2-0147	M2P57P26P-00	
MIL-C-81659/69A2-0148	M2P57S26S-00	DPX2NA-57MS26MS-33B-00
MIL-C-81659/70A2-0003	M2R26P26P-00	DPX2NA-26MP26MP-34B-00
MIL-C-81659/70A2-0004	M2R26S26S-00	
MIL-C-81659/70A2-0011	M2R40P40P-00	DPX2NA-40MP40MP-34B-00
MIL-C-81659/70A2-0012	M2R40S40S-00	

MIL-C-81659/70A2 Continued on page 4-69



**Cross Reference** (Continued)

REF MIL Designation	TE Commercial Equivalent	ITT Cannon Designation
MIL-C-81659/70A2-0019	M2R45P45P-00	DPX2NA-45MP45MP-34B-00
MIL-C-81659/70A2-0020	M2R45S45S-00	
MIL-C-81659/70A2-0027	M2R57P57P-00	DPX2NA-57MP57MP-34B-00
MIL-C-81659/70A2-0028	M2R57S57S-00	
MIL-C-81659/70A2-0035	M2R67P67P-00	DPX2NA-67MP67MP-34B-00
MIL-C-81659/70A2-0036	M2R67S67S-00	
MIL-C-81659/70A2-0043	M2R106P106P-00	
MIL-C-81659/70A2-0044	M2R106S106S-00	DPX2NA-A106SA106S-34B-00
MIL-C-81659/70A2-0057	M2R106S26P-00	DPX2NA-A106S26MP-34B-00
MIL-C-81659/70A2-0058	M2R106P26S-00	
MIL-C-81659/70A2-0059	M2R26P106S-00	DPX2NA-26MPA106S-34B-00
MIL-C-81659/70A2-0060	M2R26S106P-00	
MIL-C-81659/70A2-0071	M2R67P106S-00	DPX2NA-67MPA106S-34B-00
MIL-C-81659/70A2-0072	M2R67S106P-00	
MIL-C-81659/70A2-0089	M2R106S67P-00	DPX2NA-A106S67MP-34B-00
MIL-C-81659/70A2-0090	M2R106P67S-00	
MIL-C-81659/70A2-0133	M2R57P106S-00	DPX2NA-57MPA106A-34B-00
MIL-C-81659/70A2-0134	M2R57S106P-00	
MIL-C-81659/70A2-0147	M2R57P26P-00	DPX2NA-57MP26MP-34B-00
MIL-C-81659/70A2-0148	M2R57S26S-00	
MIL-C-81659/71A2-0003	M2R26P26P-01	DPX2NA-26MP26MP-34B-01
MIL-C-81659/71A2-0004	M2R26S26S-01	
MIL-C-81659/71A2-0011	M2R40P40P-01	DPX2NA-40MP40MP-34B-01
MIL-C-81659/71A2-0012	M2R40S40S-01	
MIL-C-81659/71A2-0019	M2R45P45P-01	DPX2NA-45MP45MP-34B-01
MIL-C-81659/71A2-0020	M2R45S45S-01	
MIL-C-81659/71A2-0027	M2R57P57P-01	DPX2NA-57MP57MP-34B-01
MIL-C-81659/71A2-0028	M2R57S57S-01	
MIL-C-81659/71A2-0035	M2R67P67P-01	DPX2NA-67MP67MP-34B-01
MIL-C-81659/71A2-0036	M2R67S67S-01	
MIL-C-81659/71A2-0043	M2R106P106P-01	
MIL-C-81659/71A2-0044	M2R106S106S-01	DPX2NA-A106SA106A-34B-01
MIL-C-81659/71A2-0057	M2R106S26P-01	DPX2NA-A106S26MP-34B-01
MIL-C-81659/71A2-0058	M2R106P26S-01	
MIL-C-81659/71A2-0059	M2R26P106S-01	DPX2NA-26MPA106S-34B-01
MIL-C-81659/71A2-0060	M2R26S106P-01	
MIL-C-81659/71A2-0071	M2R67P106S-01	DPX2NA-67MPA106S-34B-01
MIL-C-81659/71A2-0072	M2R67S106P-01	
MIL-C-81659/71A2-0089	M2R106S67P-01	DPX2NA-A106S67MP-34B-01
MIL-C-81659/71A2-0090	M2R106P67S-01	
MIL-C-81659/71A2-0133	M2R57P106S-01	DPX2NA-57MPA106A-34B-01
MIL-C-81659/71A2-0134	M2R57S106P-01	
MIL-C-81659/71A2-0147	M2R57P26P-01	DPX2NA-57MP26MP-34B-01
MIL-C-81659/71A2-0148	M2R57S26S-01	
MIL-C-81659/72A2-0003	M2R26P26P-23	DPX2NA-26MP26MP-34B-23
MIL-C-81659/72A2-0004	M2R26S26S-23	
MIL-C-81659/72A2-0011	M2R40P40P-23	DPX2NA-40MP40MP-34B-23
MIL-C-81659/72A2-0012	M2R40S40S-23	
MIL-C-81659/72A2-0019	M2R45P45P-23	DPX2NA-45MP45MP-34B-23
MIL-C-81659/72A2-0020	M2R45S45S-23	
MIL-C-81659/72A2-0027	M2R57P57P-23	DPX2NA-57MP57MP-34B-23
MIL-C-81659/72A2-0028	M2R57S57S-23	
MIL-C-81659/72A2-0035	M2R67P67P-23	DPX2NA-67MP67MP-34B-23
MIL-C-81659/72A2-0036	M2R67S67S-23	
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MIL-C-81659/72A2-0044	M2R106S106S-23	DPX2NA-A106SA106S-34B-23
MIL-C-81659/72A2-0057	M2R106S26P-23	DPX2NA-A106S26MP-34B-23
MIL-C-81659/72A2-0058	M2R106P26S-23	
MIL-C-81659/72A2-0059	M2R26P106S-23	DPX2NA-26MPA106S-34B-23
MIL-C-81659/72A2-0060	M2R26S106P-23	

4 Rack and Panel Connectors

MIL-C-81659/72A2 Continued on page 4-70



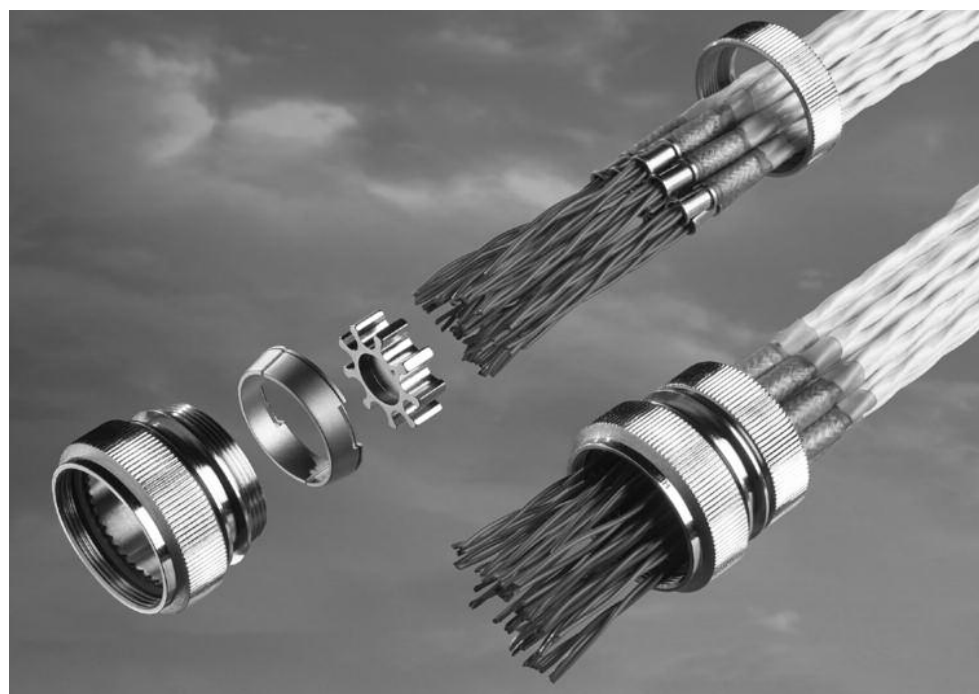
**Cross Reference** (Continued)

REF MIL Designation	TE Commercial Equivalent	ITT Cannon Designation
MIL-C-81659/72A2-0071	M2R67P106S-23	DPX2NA-67MPA106S-34B-23
MIL-C-81659/72A2-0072	M2R67S106P-23	
MIL-C-81659/72A2-0089	M2R106S67P-23	DPX2NA-A106S67MP-34B-23
MIL-C-81659/72A2-0090	M2R106P67S-23	
MIL-C-81659/72A2-0133	M2R57P106S-23	DPX2NA-57MPA106A-34B-23
MIL-C-81659/72A2-0134	M2R57S106P-23	
MIL-C-81659/72A2-0147	M2R57P26P-23	DPX2NA-57MP26MP-34B-23
MIL-C-81659/72A2-0148	M2R57S26S-23	

**Introduction**

**Product Facts**

- Superior EMC/EMI Shielding Performance
- Simple installation
- Easy reentry
- Simplified maintenance and repair
- Excellent mechanical and environmental resistance
- Efficient strain relief
- Flexibility
- Versatility



**4**

Rack and Panel Connectors

**Applications**

TE Connectivity, a longtime leader in harnessing technology, has written a new chapter in EMC shielding with the introduction of the Raychem HexaShield EMC adapter.

Designed to provide EMC protection solutions for both commercial and military applications, HexaShield adapters represent a significant improvement over pig-tail termination methods. By providing 360-degree EMC shielding on the termination area of each individual cable, HexaShield adapters provide outstanding shielding effectiveness.

HexaShield adapters are simple to install, easy to

maintain, and dependably resistant to mechanical and environmental stresses.

**Principal points and features**

- Easy reentry: To insert or remove ferrules from the HexaShield adapter, simply loosen the back nut.
- Superior protection: No degradation of shielding performance.
- Up to four shielded cables accommodated by each ferrule.
- Mechanical and environmental protection equal to backshells complying with MIL-C-85049 Category 3B.
- Strain relief on each individual cable.

- Weight reduction, by possibly eliminating the need for overall shielding.
- Compact size — not exceeding outer diameter of connector.
- Available in straight, 45° and 90° angles, as well as swept and long bodies.

**Simple assembly and installation**

1. Solder cable or wire shield to a ferrule with a Raychem heat-shrinkable SolderShield terminator.
2. Clip ferrule into one of the grounding star cavities.
3. Secure the back nut of the HexaShield adapter so that the conic ring assembly automatically compresses the ferrules.

**Designed to corresponding connector specifications**

Two Platings Available	Raychem Product Specifications
Electroless nickel (MIL-DTL-26074)	RB-110 and RB-114
Olive drab cadmium (QQ-P-416 Type II Class 3)	—

\*Contact TE for additional platings.

**Installation Procedures**

Installation procedure for HET-A-02X and HET-A-04X (RPIP-696-00)	Installation procedure for HET-03X (RPIP-696-03)	General procedure for cylindrical connectors, right-angle body (RPIP-696-07)
General procedure for ARINC 600 Size II connectors (RPIP-696-01)	General procedure for cylindrical connectors, straight body (RPIP-696-04)	—
General procedure for ARINC 600 Size III connectors (RPIP-696-02)	—	—

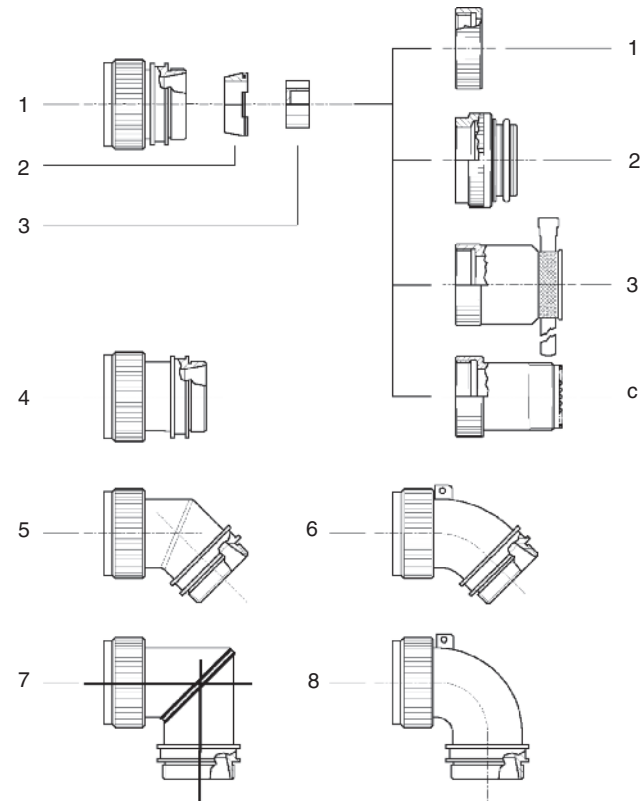
**Kit Descriptions**

**Hexashield Adapters for Circular Connectors: Straight, 45° and 90° Assemblies**

Item	Description
1	Straight adapter assembly
2	Conic ring assembly
3	Star Plain (Standard) Drilled (Option) Split (Option)
4	Straight adapter assembly - "L" version — nominally 0.5" [12.7] longer body
5	45° adapter assembly — welded
6	45° adapter assembly — swept
7	90° adapter assembly — welded
8	90° adapter assembly — swept Standard products shown. Variants available on request.

Split star assemblies are shown on relevant S.C.D's where applicable.

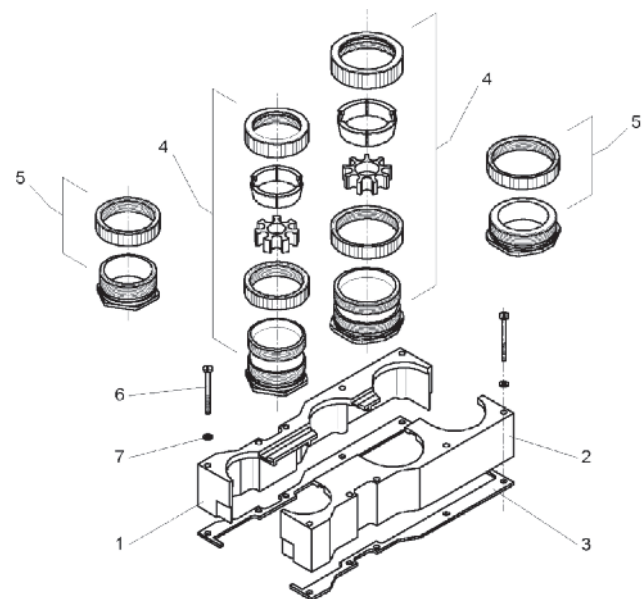
Item	HexaShield Version
-1	Back Nut
-2	Tinel adapter assembly Tinel-Lock ring for single braid
-3	Bandstrap adapter assembly
-C	Conduit adapter



**HexaShield Adapters for ARINC 404/600 Connectors: Sizes 1, 2, 3 and 4 Assemblies**

Item	Description
1	Left side support
2	Right side support
3	Retention bars
4	Body assemblies Body Holding nut Conic ring assembly Star Back nut
5	Cavity plug assemblies Plug Holding nut
6	Pan head screws — 4-40 UNC
7	Spring washers

ARINC 600 Size 2 shown  
Stars are available as plain, drilled or split.  
See relevant S.C.D's for further information

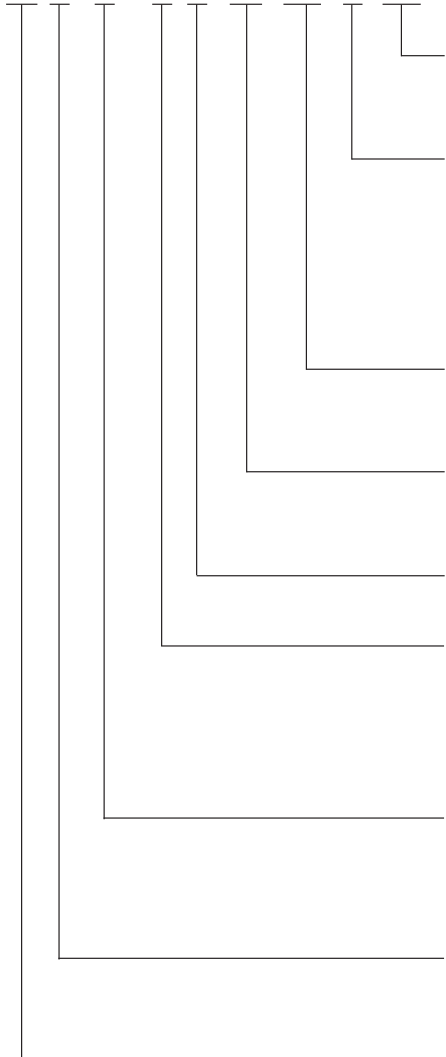


**Ordering Information**

**Part Numbering for Standard Products**

**HexaShield Adapter for Circular Connectors**

HEXYY L -AY -00 S -YY -AY -Y -DS



**Drilled Star:**

See applicable SCD for star options

**Type of Back Nut:**

- 1 = Standard back nut
- 2 = Clamping nut for tinell ring (for overbraid protection)
- 3 = Clamping nut with bandstrap
- C = Clamping nut for conduit applicator

Max. number of ferrules that can be accommodated  
See applicable SCD for options

**HexaShield Size Code:**

See applicable SCD for order number (shell size)

S = Swept version

**Configuration:**

- 00 = Straight body
- 45 = 45 degree angle body
- 90 = 90 degree angle body

**Type of Plating:**

- B = Cadmium plated
- C = Electroless nickel

L = Long body

See applicable SCD for availability

**Connector Code Number:**

- 21 = MIL-C-26482 Series 1
- 40 = MIL-DTL-38999 Series 3 and 4
- 41 = MIL-DTL-38999 Series 1 and 2
- 54 = MIL-DTL-38723 Series 1 and 3
- MIL-C-25482 Series 2

**4**

Rack and Panel Connectors

**Ordering Information** (Continued)

**HexaShield Adapter for Collins Connectors**

**HEXDB-AC-00-A9-1**

00 = Straight body  
90 = Right-angle body

**HexaShield Adapter for ARINC 600 Connectors**

**HEXA6-AY-00-YY-AY-Y**

**Clamping nut version:**

1 = Clamping nut alone  
2 = Clamping nut for tincl ring

**Number of ferrules:**

18 for ARINC 600 size II (A and B cavities)  
25 for ARINC 600 size II (A, B and C cavities)  
18 for ARINC 600 size III (A and B cavities)  
See applicable SCD for options

**ARINC Connector Size:**

02 = ARINC 600 size II  
03 = ARINC 600 size III

**Configuration:**

00 = Straight body  
90 = Right-angle body

**Plating:**

B = Cadmium plated  
C = Electroless nickel

Drilled Stars are standard on ARINC 600 adapters.

**Part Numbering of Ferrule Kits\***

**HET-A-02X** for small-size cable with SolderShield terminator

**HET-A-03X** for connection of unshielded cables  
ferrules with heat-shrinkable tubing (no shield)

**HET-A-04X** for large-size cables with SolderShield terminator

**Type of Plating:**

B = Cadmium plated  
C = Electroless nickel

**HEX07-AX** ferrule — solid blank for use when a HET-A is not needed

**Type of Plating:**

B = Cadmium plated  
C = Electroless nickel

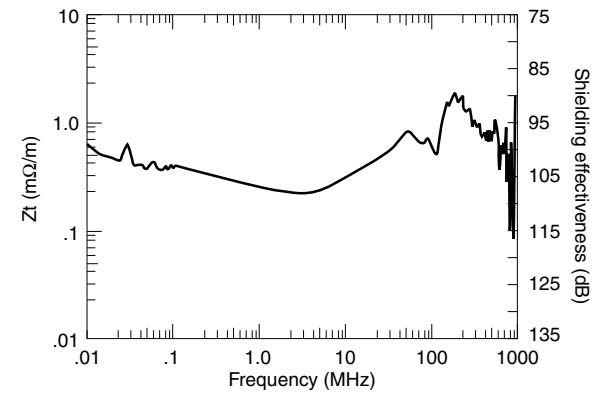
\*Not all part numbers are standard; your local TE Connectivity representative will assist you in selecting the appropriate standard product

**EMC Performance**

**Product Facts**

- Outperforms traditional pigtail termination, especially in HIRF performance
- Withstands 10-kA peak current lightning transients of SAE AE4L-87-3

**Transfer Impedance**



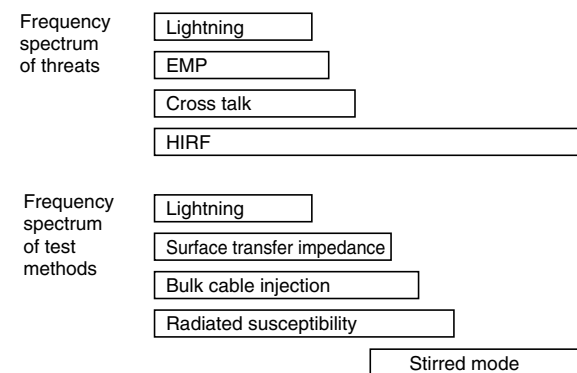
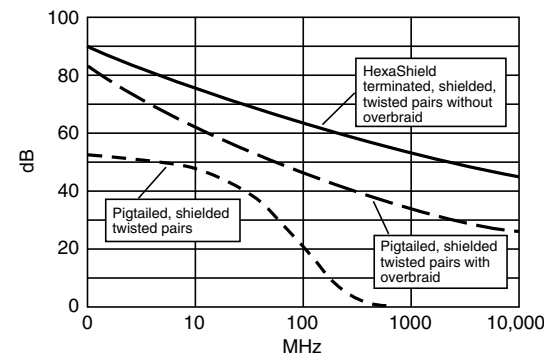
HexaShield size: 23

Cable: Raychem 5024H8424  
(one cable installed)

Test method: CEI 96-1

**Protection Level**

Generalized system performance (Actual system performance in any one test method may differ.)



**4**

Rack and Panel Connectors



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**EMC Performance** (Continued)

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**Typical HexaShield Applications**

Civilian and military aircraft  
Avionics  
Fighter aircraft  
Missiles and launch support systems  
Armored and military support vehicles  
Navy ships (total shipboard hardening)  
Military communications  
Engines (FADEC harness hardening)

**HexaShield Product Range**

Accommodates the following connector types\*:  
MIL-C-26482 Series 1  
MIL-DTL-38999 Series 1, 2, 3, and 4  
MIL-C-26482 Series 2  
MIL-DTL-83723 Series 1 and 3  
DBAD  
ARINC 600  
ARINC 404

\*Please contact TE Connectivity for other connector types and special requests.

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Nanominiature and Microminiature Connectors

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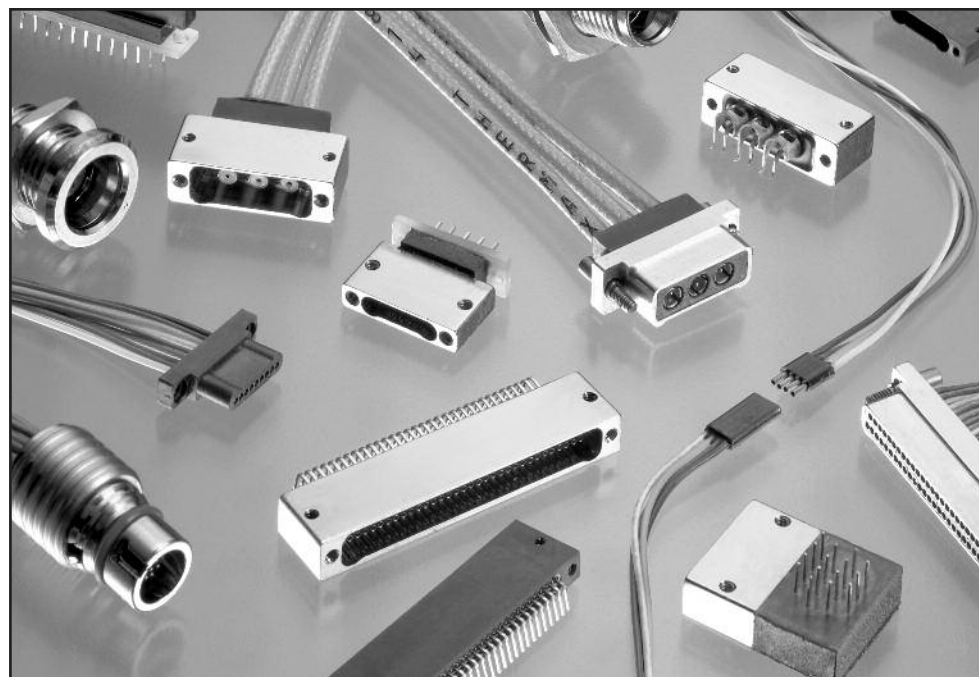
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**5**

Nanominiature and Microminiature Connectors

**NANONICS Nanominiature Connectors Introduction**



Nanominiature connectors constitute a family of interconnect devices with center to center contact spacing of .025". In comparison to other connector families, they are often thought of as the smallest practical connector system for separable interfaces. Despite being smaller, these nanominiature connectors are tested with a few size-related modifications per the guidelines of MIL-DTL-83513 (written for .050" microminiature connectors). Nanominiature connectors combine their appealing size and weight with desired performance attributes such as high reliability, low contact resistance and wide operating temperature range, making

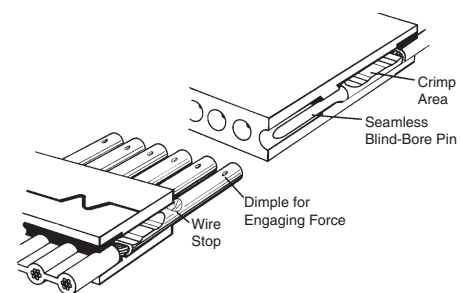
them among the smallest and toughest connectors available to designers.

**The Contact System**

NANONICS connectors utilize the same contact system throughout the entire product family. This contact system uses a "spring socket" as opposed to most connector designs, which use a "spring pin". In this design, the socket member of the contact pair employs a dimple located inside the contact tube. When the pin is engaged with this socket, the dimple creates the desired spring action by forcing the pin to offset to the opposite side of the socket tube. The

result is a gold-on-gold mating area covering a minimum of 180° of the contact surface. This also creates a desirable mating force of no greater than 6 ounces per contact and a resistance of .003 ~ .008 ohms. This type of contact system begins with a pre-plated BeCu alloy material that is then formed to yield a rugged, seamless contact. Both the blind-bore seamless pin and the seamless one piece socket have a burnished gold finish on both the inside and outside surfaces. This gold finish provides contact integrity for superior reliability and environmental performance.

**Contact Configuration**



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**NANONICS Nanominiature Connectors**

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**Technical and Performance Data****Electrical**

**Contact Resistance** — .003 - .008 ohms

**Current Rating** — 1 amp max. per contact

**Dielectric Withstanding Voltage** — Volts RMS 60 Hz at room ambient conditions. At sea level 500V. At 70,000 ft. 150V.

**Insulation Resistance** — 5000 megohms min. (@ 500 VDC) at room ambient conditions.

**Magnetic Permeability** — 2 mu max.

**Mechanical****Contact Engagement & Separation**

— Engaging force is 6.0 oz. max. Separation force is 0.5 oz. min.

**Mating Force Maximum**

— Calculated as 10 oz. multiplied by the number of contacts.

**Environmental**

**Temperature Range** — -200° C to +200° C

**Shock** — No discontinuity in excess of 1 μ sec. when tested in accordance with MIL-STD-1344, Method 2004.1, Test Condition E.

**Vibration** — No discontinuity in excess of 1 μ sec. when tested in accordance with MIL-STD-1344, Method 2005.1, Test Condition IV.

**Solderability** — Connectors shall meet the test requirements of MIL-STD-202, Method 208.

**Durability** — No mechanical or electrical defects detrimental to the function of the connectors after 500 cycles of mating and unmating, without the use of hardware.

**Humidity** — After exposure to humidity as specified by MIL-STD-1344, Method 1002.2, Type II, IR shall be 1 megohm min. (@ 100 VDC) within 2 hours of conditioning and 1000 megohms min. (@ 100 VDC) after 24 hours of conditioning.

**Salt Spray** — Connectors shall meet the performance requirements of contact resistance, mating and unmating forces, and contact retention after being subjected to the 48 hour 5 % solution salt spray test per MIL-STD-1344, Method 1001, Condition B.

**Fluid Immersion** — Unmated connectors after being fully immersed in one of the following fluids, for the prescribed time, will mate at a force of 10 oz. multiplied by the number of contacts or less: Perchloroethylene, 2 hours; Lubricating oil per MIL-L-23699, 20 hours.

**Crimp Tensile Strength** — (Unassembled contacts with crimped stranded wire terminations) Wires will not pull out of the contacts when the following axial load is applied: #30 AWG, 2 lbs.

**Thermal Vacuum Outgassing** — Connectors shall have a maximum total mass loss (TML) of 1.0 % of the original specimen mass and a maximum collected volatile condensable materials (CVCM) content of 0.1 % of the original specimen mass when tested in accordance with SP-R-0022A.

**Material and Finish**

**Contacts** — BeCu alloy plated with gold per MIL-G-45204 Type II over nickel per QQ-N-290.

**Plastic Insulators and Shells** — 30% glassed filled Liquid Crystal Polymer (LCP).

**Metal Shells** — 6061-T6 Aluminum with electroless nickel plating per MIL-C-26074. Stainless steel and gold plated shells are also available.

**5**

Nanominiature and Microminiature Connectors



**NANONICS DUALOBE Rectangular Connectors Introduction**



NANONICS rectangular connectors have earned the distinction of being the most popular and widely utilized style of Nano connectors. These connectors incorporate the DUALOBE polarization scheme. This polarization scheme negates the need for mating guide pins and does not increase the package size. The DUALOBE series of connectors are available in both machined aluminum and molded plastic shells, both in one and two row connector housings. Single row configurations commonly have standard pin counts from 5 to 51, while the higher density two row configurations have pin counts from 9 to 65. These connectors can be terminated in many different ways. Standard configurations include wires, surface mount, thru-hole, solder

cup, "duckbill", and panel mount. Wired harness assemblies and custom configurations can also be accommodated. Such custom configurations include filtered, hermetic, environmentally sealed, and blind mate connectors.

This family of connectors is designed to meet the requirements of MIL-DTL-83513, with a few size related modifications. Designed primarily for the military and aerospace industry, the DUALOBE series is especially well suited when high reliability, coupled with reduced size and weight, are serious design parameters. A clear example of this is the use of NANONICS connectors in such applications as smart munitions, missile defense, aircraft communications, and UAV's. In addition to

the above applications, with the wide temperature range of the DUALOBE connector (-200°C to +200°C), the space and petroleum industries have also found many uses for this connector. The performance and reliability at cryogenic temperatures, along with the low outgassing material properties, has led to an increased usage in space applications. Such applications include nitrogen-cooled optics, low and high earth orbiting satellites, telescopes, deep space probes, orbiters, and rovers. On the opposite end of the spectrum, the petroleum exploration industry utilizes these connectors for their performance and reliability in downhole environments at temperatures exceeding 175°C.

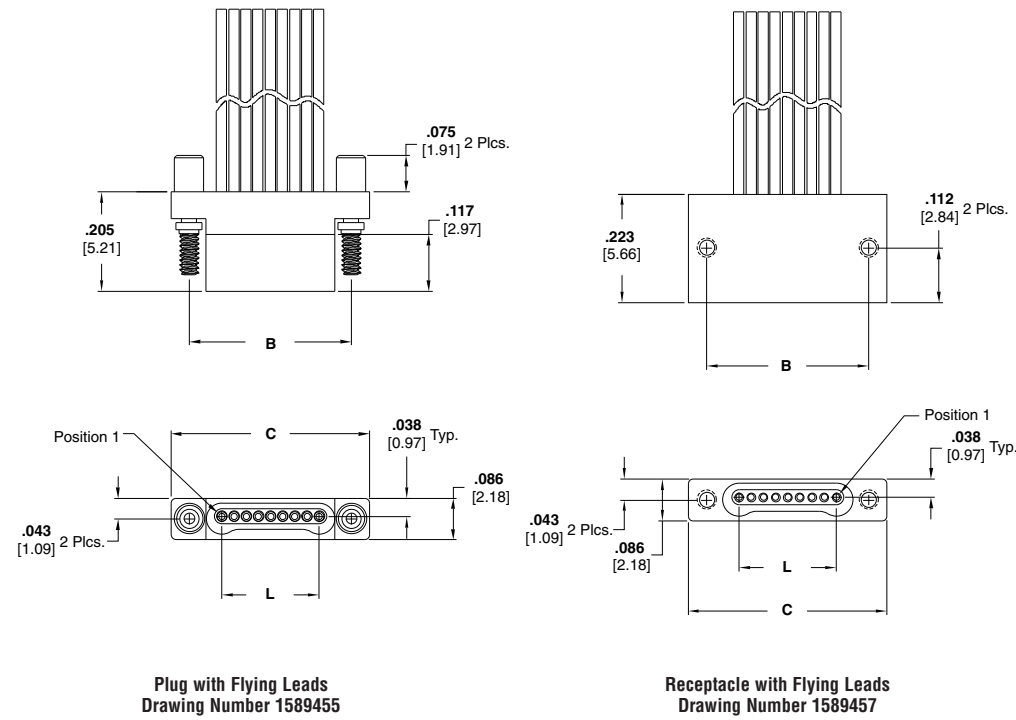
**NANONICS Wired Connectors — Single Row, Flying Leads**



Plug



Receptacle



Plug with Flying Leads  
Drawing Number 1589455

Receptacle with Flying Leads  
Drawing Number 1589457

**5**

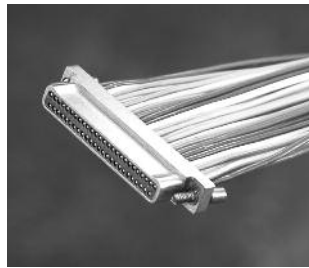
Nanominature and Microminature Connectors

**Product Facts**

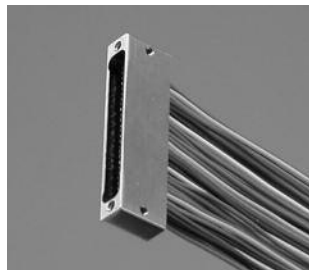
- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

Size	Dimensions		
	B	C	L
5	0.233 [5.92]	0.3085 [7.84]	0.100 [2.54]
9	0.333 [8.46]	0.4085 [10.38]	0.200 [5.08]
15	0.483 [12.27]	0.5585 [14.19]	0.350 [8.89]
25	0.733 [18.62]	0.8085 [20.54]	0.600 [15.24]
37	1.033 [26.24]	1.1085 [28.16]	0.900 [22.86]
51	1.383 [35.13]	1.4585 [37.05]	1.250 [31.75]

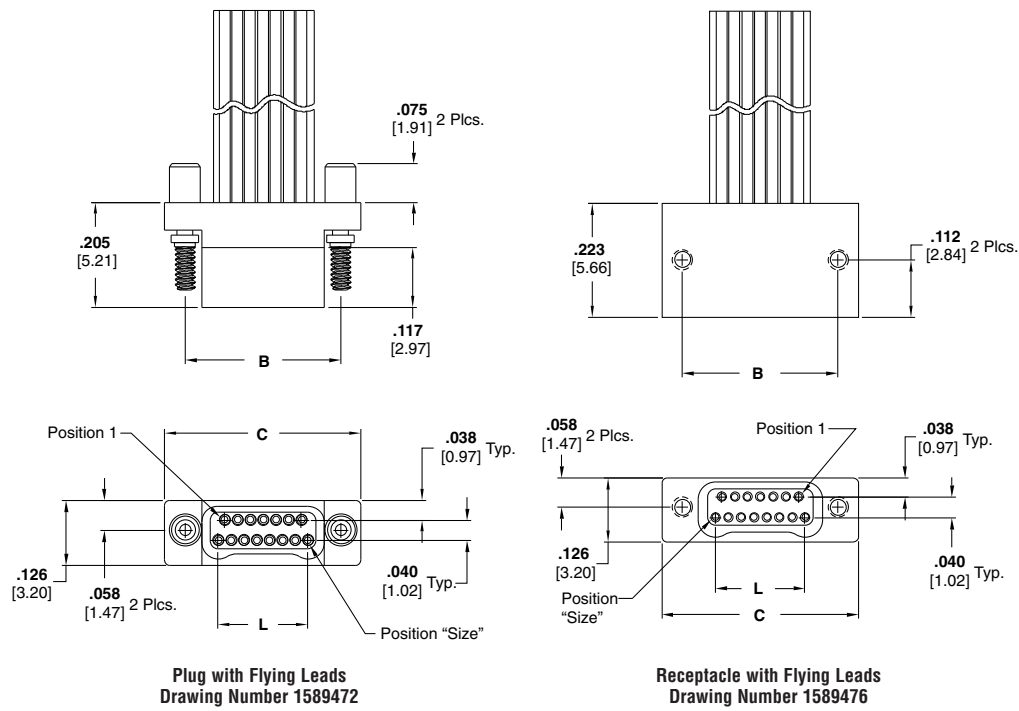
**NANONICS Wired Connectors — Two Row, Flying Leads**



Plug



Receptacle



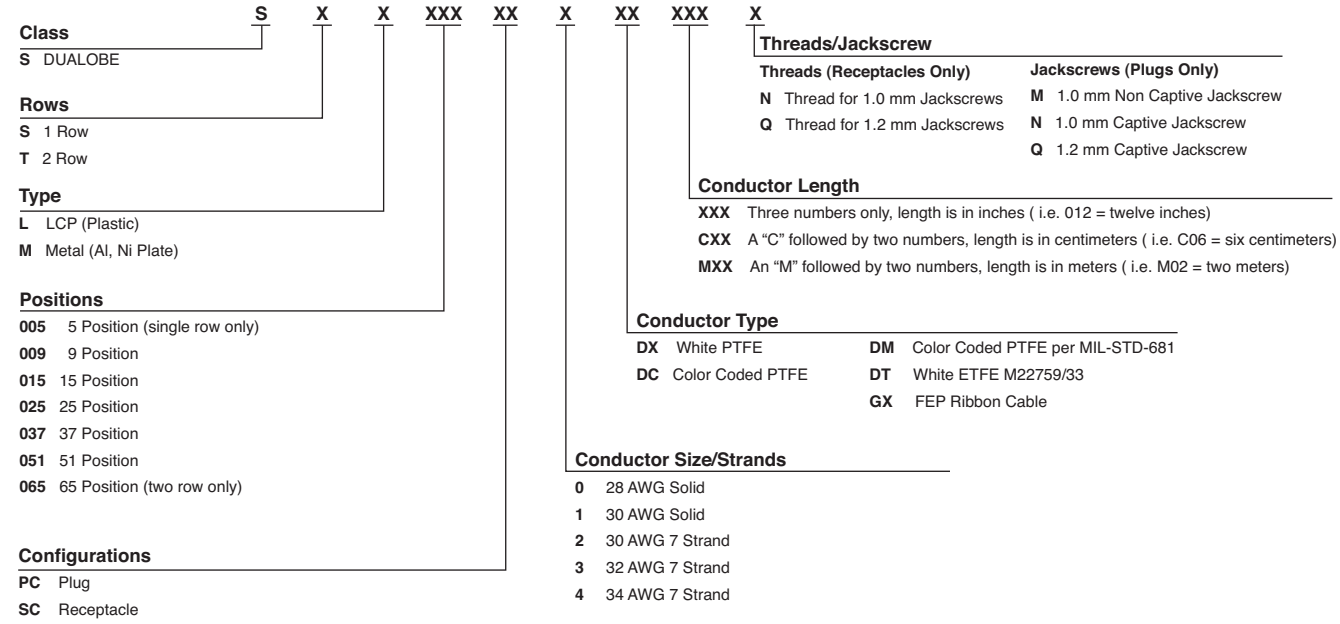
**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

Size	Dimensions		
	B	C	L
9	0.229 [5.82]	0.3085 [7.84]	0.100 [2.54]
15	0.304 [7.72]	0.3835 [9.74]	0.175 [4.45]
25	0.429 [10.90]	0.5085 [12.92]	0.300 [7.62]
37	0.579 [14.71]	0.6585 [16.73]	0.450 [11.43]
51	0.754 [19.15]	0.8335 [21.17]	0.625 [15.88]
65	0.929 [23.60]	1.0085 [25.62]	0.800 [20.32]

**Part Numbering Guideline for NANONICS Wired Connectors**

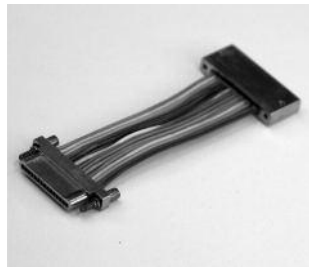
**DUALOBE Connectors - Wire Terminations**



**5**

Nanominature and Microminiature Connectors

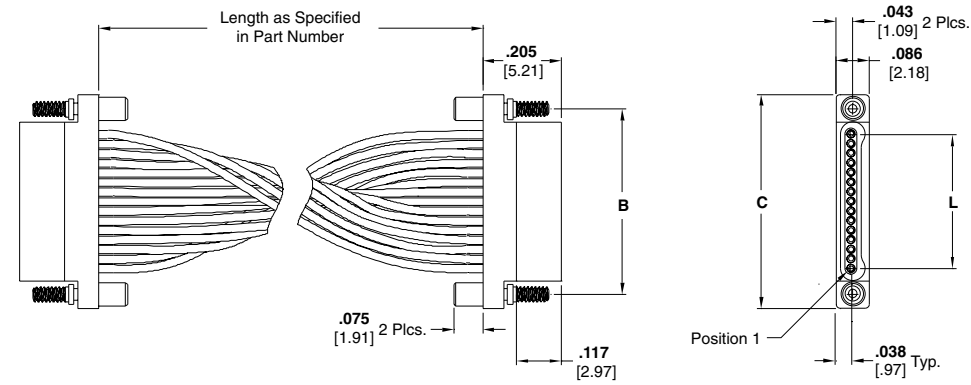
**NANONICS Jumper Assembly Connectors — Single Row**



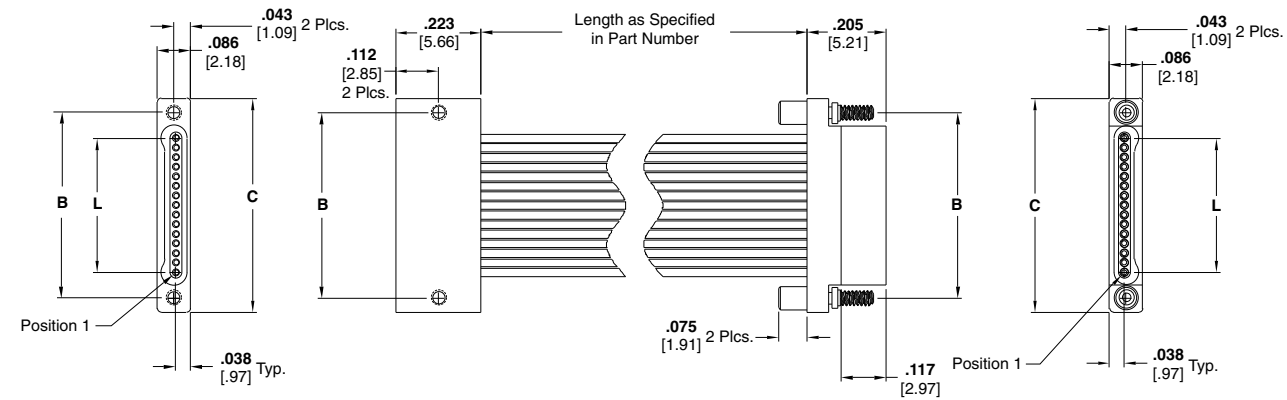
Plug to Receptacle

**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



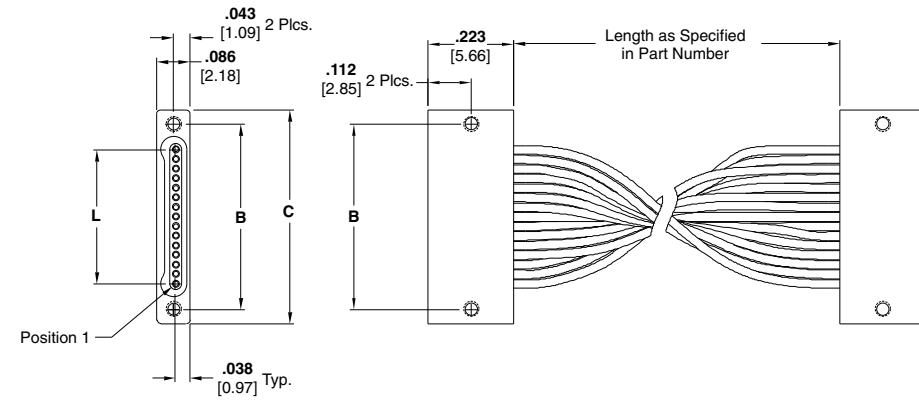
Plug to Plug  
Drawing Number 1589735



Plug to Receptacle  
Drawing Number 1589736

Size	Dimensions		
	B	C	L
5	0.233 [5.92]	0.3085 [7.84]	0.100 [2.54]
9	0.333 [8.46]	0.4085 [10.38]	0.200 [5.08]
15	0.483 [12.27]	0.5585 [14.19]	0.350 [8.89]
25	0.733 [18.62]	0.8085 [20.54]	0.600 [15.24]
37	1.033 [26.24]	1.1085 [28.16]	0.900 [22.86]
51	1.383 [35.13]	1.4585 [37.05]	1.250 [31.75]

**NANONICS Jumper Assembly Connectors — Single Row** (Continued)



Receptacle to Receptacle  
Drawing Number 1589803

Size	Dimensions		
	B	C	L
5	0.233 [5.92]	0.3085 [7.84]	0.100 [2.54]
9	0.333 [8.46]	0.4085 [10.38]	0.200 [5.08]
15	0.483 [12.27]	0.5585 [14.19]	0.350 [8.89]
25	0.733 [18.62]	0.8085 [20.54]	0.600 [15.24]
37	1.033 [26.24]	1.1085 [28.16]	0.900 [22.86]
51	1.383 [35.13]	1.4585 [37.05]	1.250 [31.75]

**5**

Nanominature and Microminiature Connectors



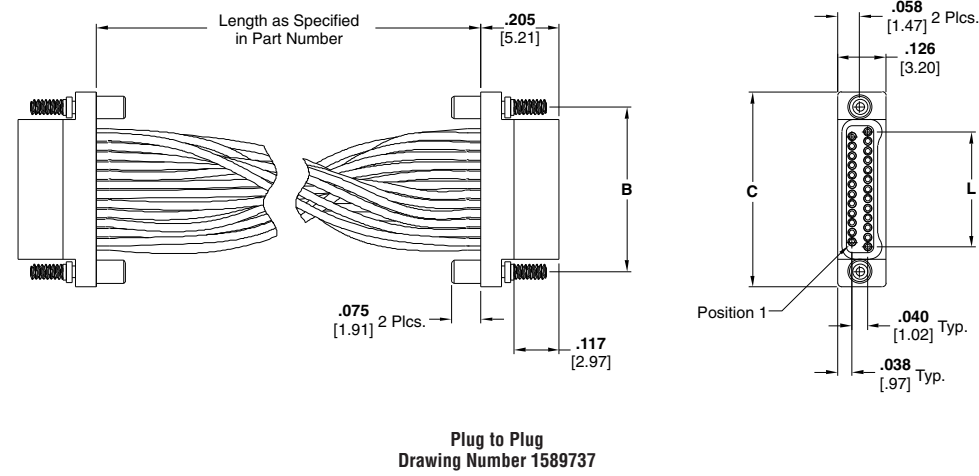
**NANONICS Jumper Assembly Connectors — Two Row**



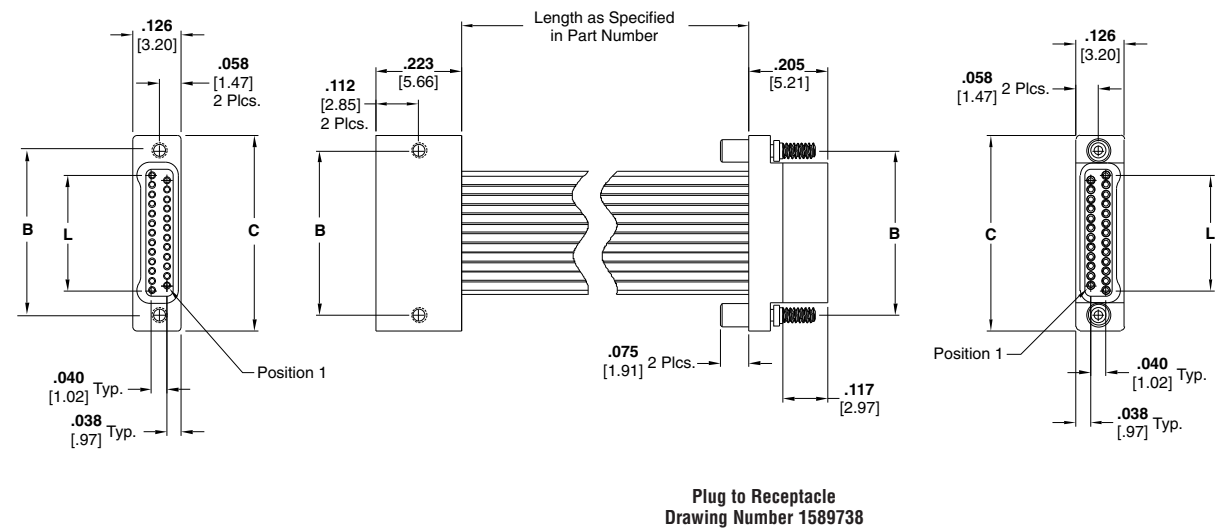
Plug to Receptacle

**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



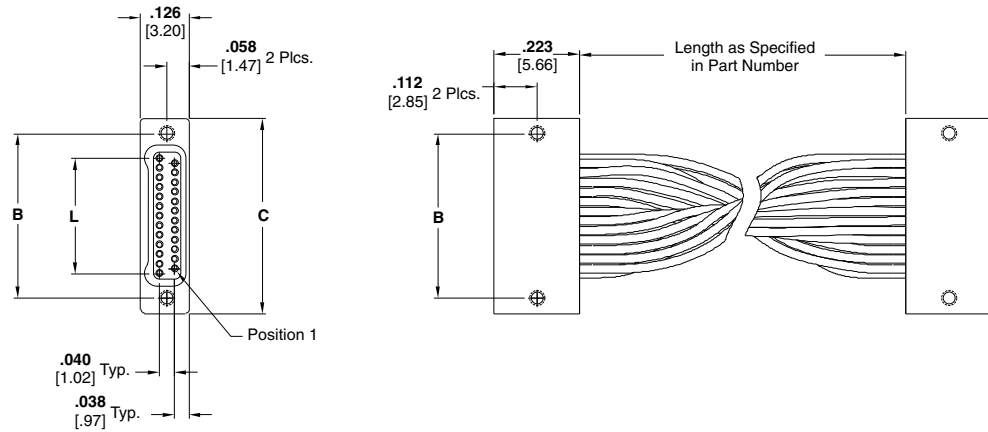
Plug to Plug  
Drawing Number 1589737



Plug to Receptacle  
Drawing Number 1589738

Size	Dimensions		
	B	C	L
9	0.229 [5.82]	0.3085 [7.84]	0.100 [2.54]
15	0.304 [7.72]	0.3835 [9.74]	0.175 [4.45]
25	0.429 [10.90]	0.5085 [12.92]	0.300 [7.62]
37	0.579 [14.71]	0.6585 [16.73]	0.450 [11.43]
51	0.754 [19.15]	0.8335 [21.17]	0.625 [15.88]
65	0.929 [23.60]	1.0085 [25.62]	0.800 [20.32]

**NANONICS Jumper Assembly Connectors — Two Row** (Continued)



Receptacle to Receptacle  
Drawing Number 1589804

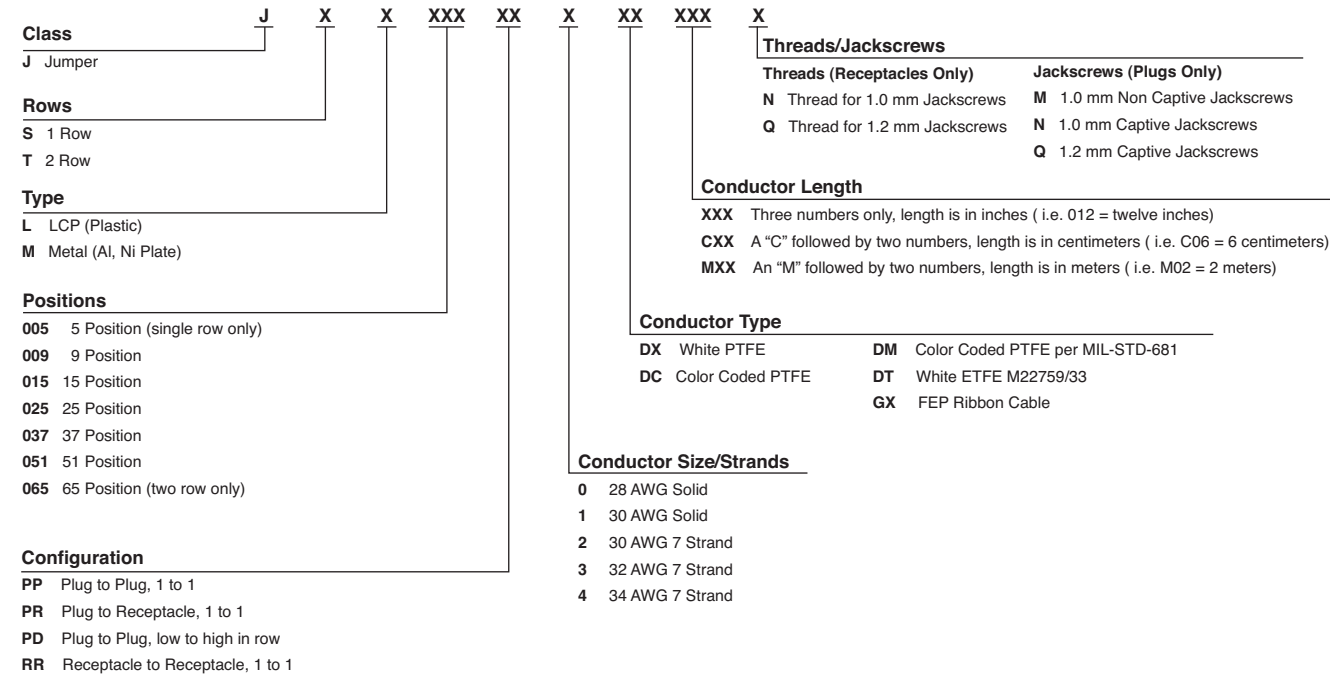
Size	Dimensions		
	B	C	L
9	0.229 [5.82]	0.3085 [7.84]	0.100 [2.54]
15	0.304 [7.72]	0.3835 [9.74]	0.175 [4.45]
25	0.429 [10.90]	0.5085 [12.92]	0.300 [7.62]
37	0.579 [14.71]	0.6585 [16.73]	0.450 [11.43]
51	0.754 [19.15]	0.8335 [21.17]	0.625 [15.88]
65	0.929 [23.60]	1.0085 [25.62]	0.800 [20.32]

**5**

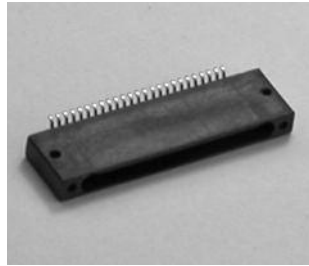
Nanominature and Microminiature Connectors

**Part Numbering Guideline for NANONICS Jumper Assemblies**

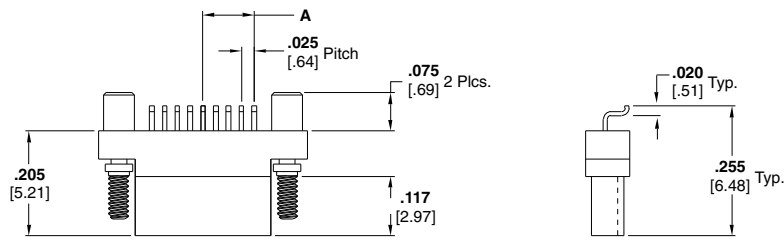
**DUALOBE Connectors - Jumper Terminations**



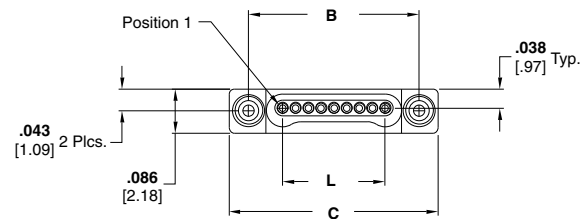
**NANONICS Surface Mount Connectors — Horizontal, Single Row**



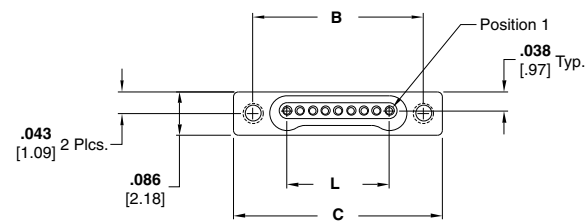
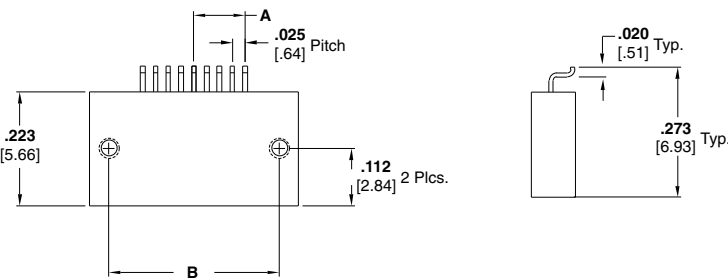
Receptacle



Jackscrews Omitted for Clarity



Plug Assembly  
Drawing Number 1589460



Receptacle Assembly  
Drawing Number 1589462

**Product Facts**

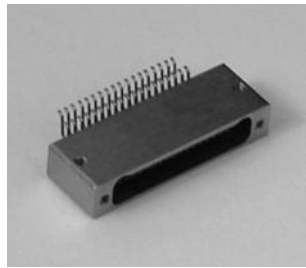
- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website

**5**

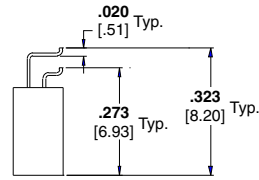
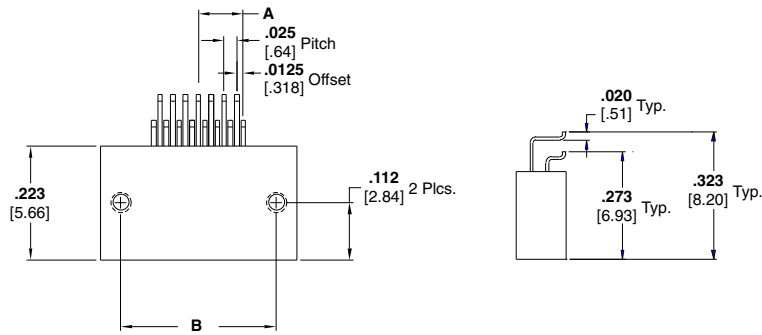
Nanominature and Microminature Connectors

Size	Dimensions			
	A	B	C	L
5	0.050 [1.27]	0.233 [5.92]	0.3085 [7.84]	0.100 [2.54]
9	0.100 [2.54]	0.333 [8.46]	0.4085 [10.38]	0.200 [5.08]
15	0.175 [4.45]	0.483 [12.27]	0.5585 [14.19]	0.350 [8.89]
25	0.300 [7.62]	0.733 [18.62]	0.8085 [20.54]	0.600 [15.24]
37	0.450 [11.43]	1.085 [26.24]	1.1085 [28.16]	0.900 [22.86]
51	0.625 [15.88]	1.383 [35.13]	1.4585 [37.05]	1.250 [31.75]

**NANONICS Surface Mount Connectors — Horizontal, Two Row**

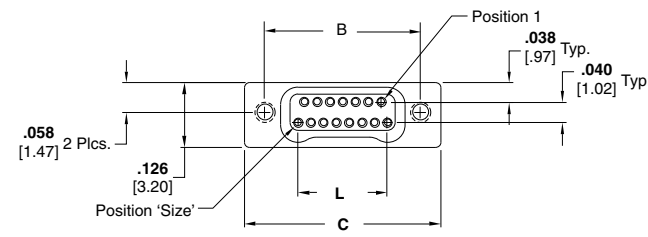


Receptacle

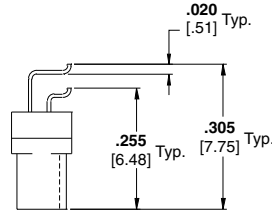
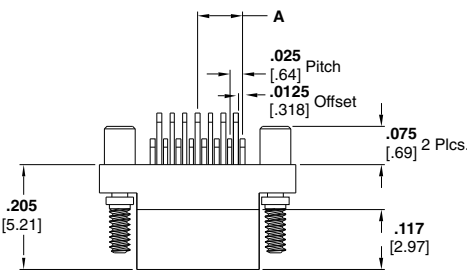


**Product Facts**

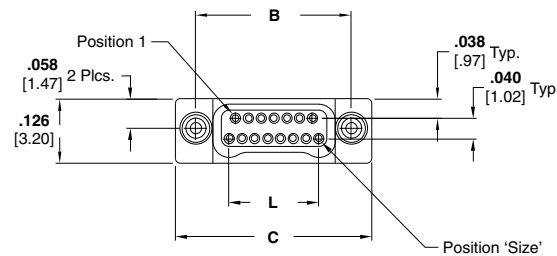
- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website



Receptacle Assembly  
Drawing Number 1589483



Jackscrews Omitted for Clarity



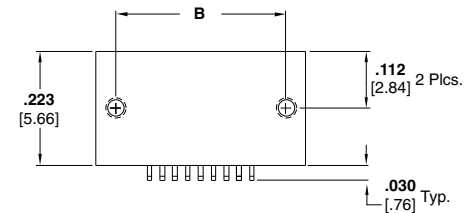
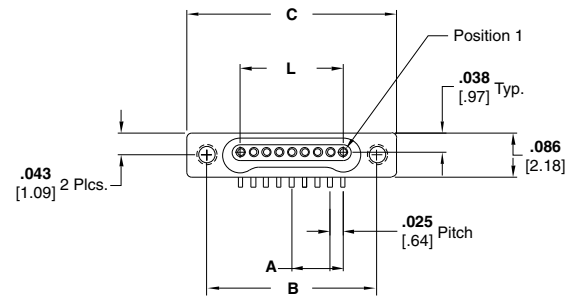
Plug Assembly  
Drawing Number 1589490

Size	Dimensions			
	A	B	C	L
9	0.050 [1.27]	0.229 [5.82]	0.3085 [7.84]	0.100 [2.54]
15	0.075 [2.23]	0.304 [7.72]	0.3835 [9.74]	0.175 [4.45]
25	0.150 [3.81]	0.429 [10.90]	0.5085 [12.92]	0.300 [8.89]
37	0.225 [5.72]	0.579 [14.71]	0.6585 [16.73]	0.450 [11.43]
51	0.313 [7.95]	0.754 [19.15]	0.8335 [21.17]	0.625 [15.88]
65	0.400 [10.16]	0.929 [23.60]	1.0085 [25.62]	0.800 [20.32]

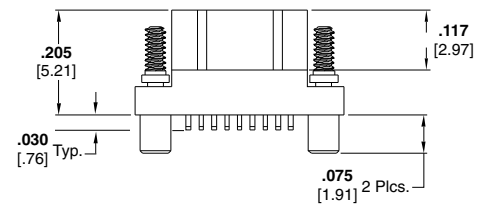
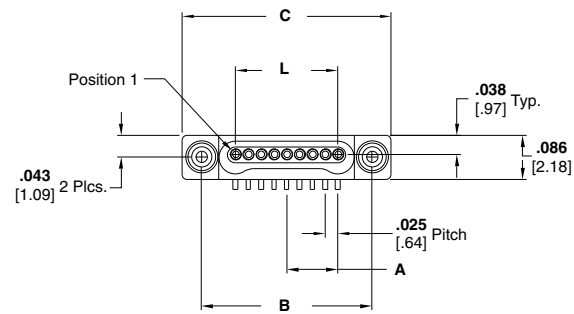
**NANONICS Surface Mount Connectors — Vertical, Single Row**



Receptacle



Receptacle Assembly  
Drawing Number 1589463



Plug Assembly  
Drawing Number 1589465

Size	Dimensions			
	A	B	C	L
5	0.050 [1.27]	0.233 [5.92]	0.3085 [7.84]	0.100 [2.54]
9	0.100 [2.54]	0.333 [8.46]	0.4085 [10.38]	0.200 [5.08]
15	0.175 [4.45]	0.483 [12.27]	0.5585 [14.19]	0.350 [8.89]
25	0.300 [7.62]	0.733 [18.62]	0.8085 [20.54]	0.600 [15.24]
37	0.450 [11.43]	1.085 [26.24]	1.1085 [28.16]	0.900 [22.86]
51	0.625 [15.88]	1.383 [35.13]	1.4585 [37.05]	1.250 [31.75]

**5**

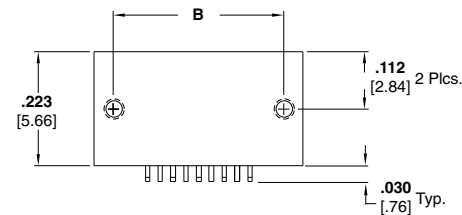
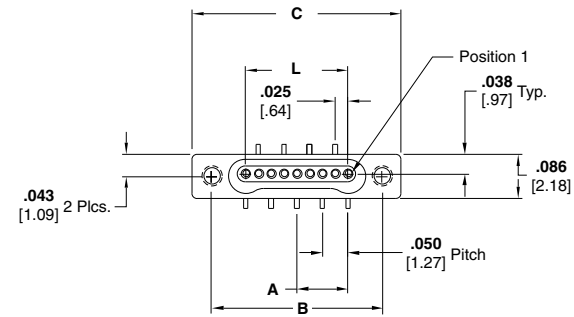
Nanominature and Microminature Connectors



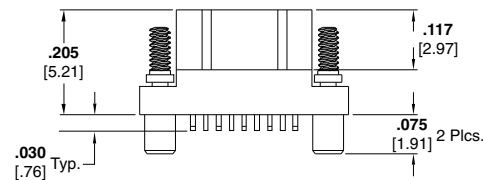
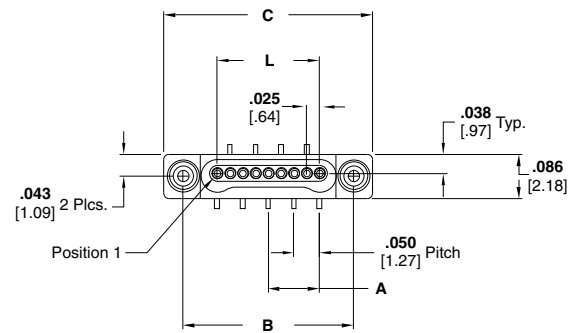
**NANONICS Surface Mount Connectors — Vertical, Single Row with Alternating Leads**

**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website



**Receptacle Assembly**  
Drawing Number 1589464



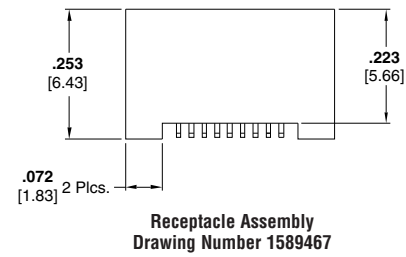
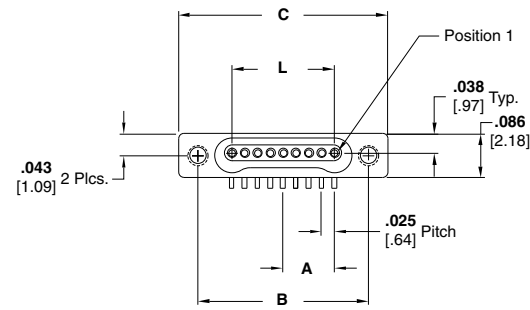
**Plug Assembly**  
Drawing Number 1589466

Size	Dimensions			
	A	B	C	L
5	0.050 [1.27]	0.233 [5.92]	0.3085 [7.84]	0.100 [2.54]
9	0.100 [2.54]	0.333 [8.46]	0.4085 [10.38]	0.200 [5.08]
15	0.175 [4.45]	0.483 [12.27]	0.5585 [14.19]	0.350 [8.89]
25	0.300 [7.62]	0.733 [18.62]	0.8085 [20.54]	0.600 [15.24]
37	0.450 [11.43]	1.085 [26.24]	1.1085 [28.16]	0.900 [22.86]
51	0.625 [15.88]	1.383 [35.13]	1.4585 [37.05]	1.250 [31.75]

**NANONICS Surface Mount Connectors — Vertical, Single Row with Integrated Standoffs**

**Product Facts**

- Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website



Size	Dimensions			
	A	B	C	L
5	0.050 [1.27]	0.233 [5.92]	0.3085 [7.84]	0.100 [2.54]
9	0.100 [2.54]	0.333 [8.46]	0.4085 [10.38]	0.200 [5.08]
15	0.175 [4.45]	0.483 [12.27]	0.5585 [14.19]	0.350 [8.89]
25	0.300 [7.62]	0.733 [18.62]	0.8085 [20.54]	0.600 [15.24]
37	0.450 [11.43]	1.085 [26.24]	1.1085 [28.16]	0.900 [22.86]
51	0.625 [15.88]	1.383 [35.13]	1.4585 [37.05]	1.250 [31.75]

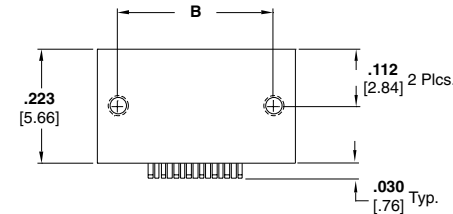
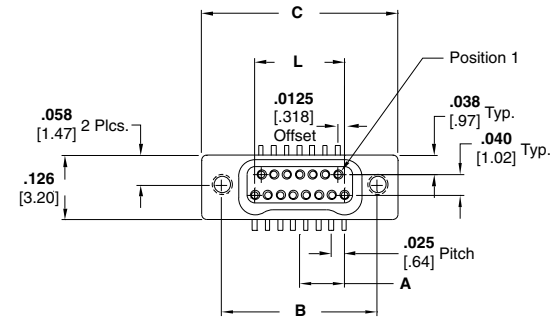
**5**

Nanominature and Microminature Connectors

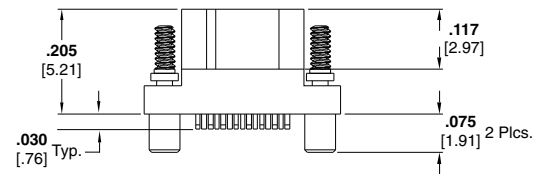
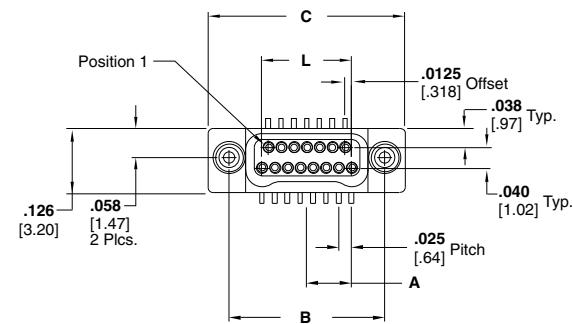
**NANONICS Surface Mount Connectors — Vertical, Two Row**



Receptacle



Receptacle Assembly  
Drawing Number 1589484



Plug Assembly  
Drawing Number 1589485

**Product Facts**

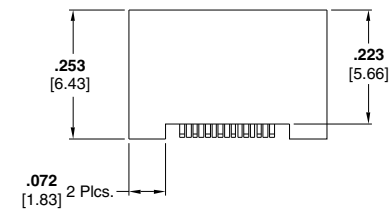
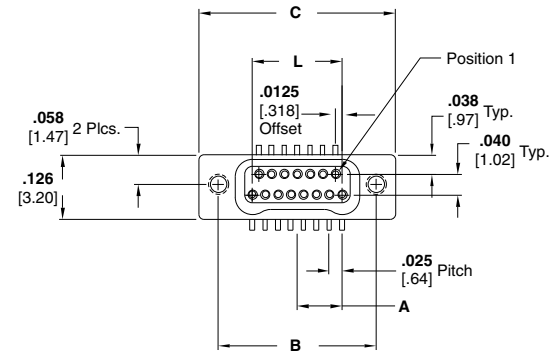
- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website

Size	Dimensions			
	A	B	C	L
9	0.050 [1.27]	0.229 [5.82]	0.3085 [7.84]	0.100 [2.54]
15	0.075 [2.23]	0.304 [7.72]	0.3835 [9.74]	0.175 [4.45]
25	0.150 [3.81]	0.429 [10.90]	0.5085 [12.92]	0.300 [8.89]
37	0.225 [5.72]	0.579 [14.71]	0.6585 [16.73]	0.450 [11.43]
51	0.313 [7.95]	0.754 [19.15]	0.8335 [21.17]	0.625 [15.88]
65	0.400 [10.16]	0.929 [23.60]	1.0085 [25.62]	0.800 [20.32]

**NANONICS Surface Mount Connectors — Vertical, Two Row with Integrated Standoffs**

**Product Facts**

- Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website



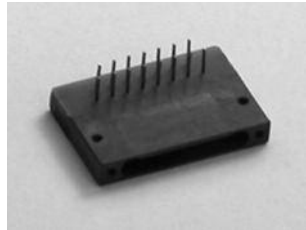
Receptacle Assembly  
Drawing Number 1589486

Size	Dimensions			
	A	B	C	L
9	0.050 [1.27]	0.229 [5.82]	0.3085 [7.84]	.100 [2.54]
15	0.075 [2.23]	0.304 [7.72]	0.3835 [9.74]	.175 [4.45]
25	0.150 [3.81]	0.429 [10.90]	0.5085 [12.92]	.300 [8.89]
37	0.225 [5.72]	0.579 [14.71]	0.6585 [16.73]	.450 [11.43]
51	0.313 [7.95]	0.754 [19.15]	0.8335 [21.17]	.625 [15.88]
65	0.400 [10.16]	0.929 [23.60]	1.0085 [25.62]	.800 [20.32]

**5**

Nanominature and Microminature Connectors

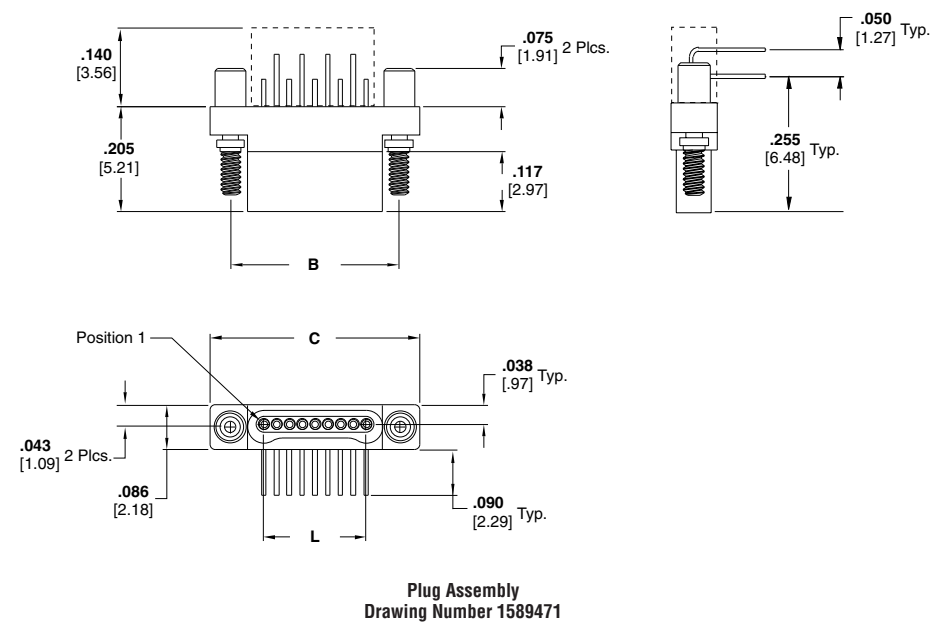
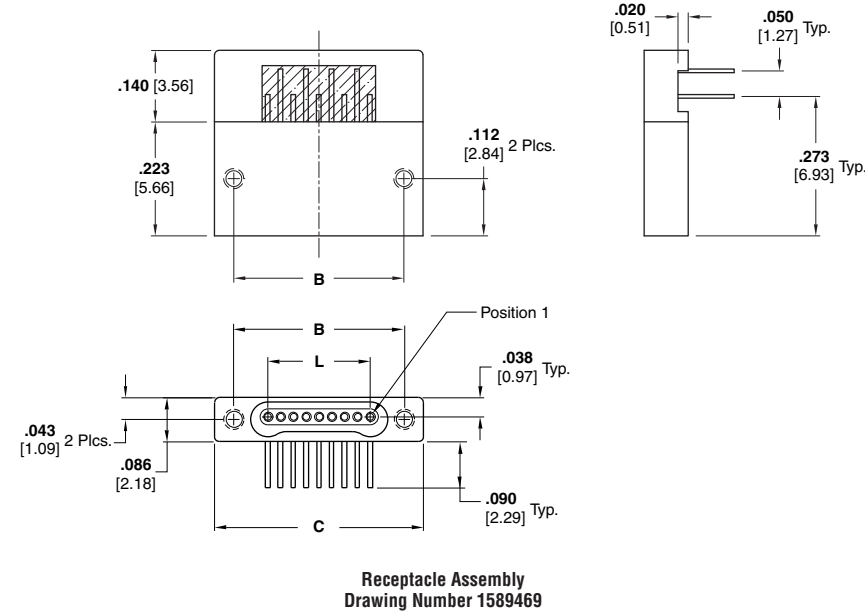
**NANONICS Thru-Hole Connectors — Horizontal, 1 Row to 2 Row, .050 Spacing**



Receptacle

**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Contact TE Connectivity for custom configurations
- Suggested thru-hole layouts are available on the referenced drawings on the TE website



Size	Dimensions		
	B	C	L
5	0.233 [5.92]	0.3085 [7.84]	0.100 [2.54]
9	0.333 [8.46]	0.4085 [10.38]	0.200 [5.08]
15	0.483 [12.27]	0.5585 [14.19]	0.350 [8.89]
25	0.733 [18.62]	0.8085 [20.54]	0.600 [15.24]
37	1.033 [26.24]	1.1085 [28.16]	0.900 [22.86]
51	1.383 [35.13]	1.4585 [37.05]	1.250 [31.75]

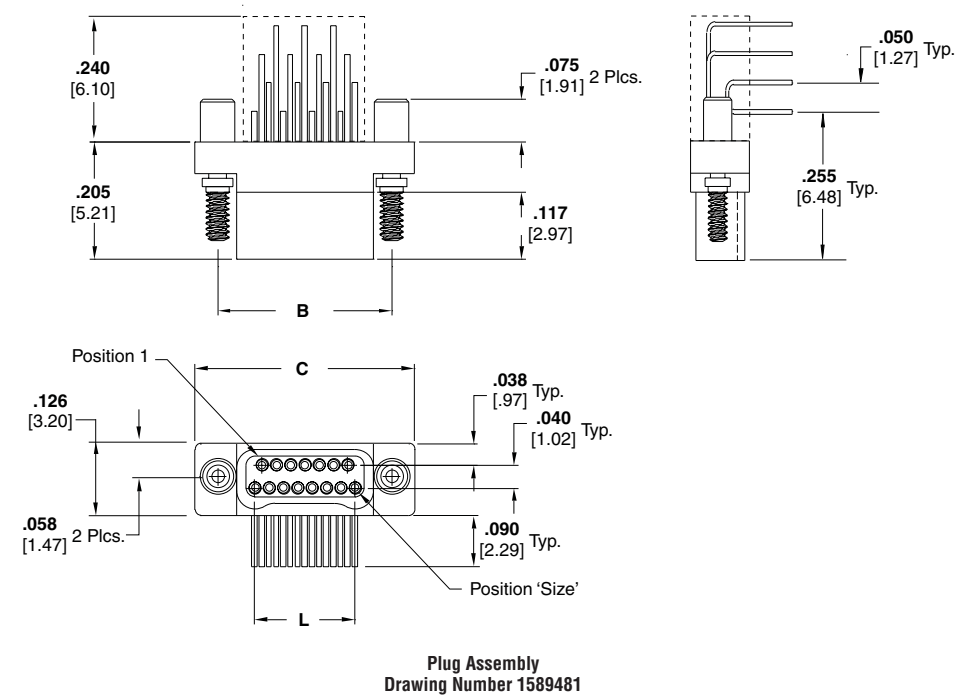
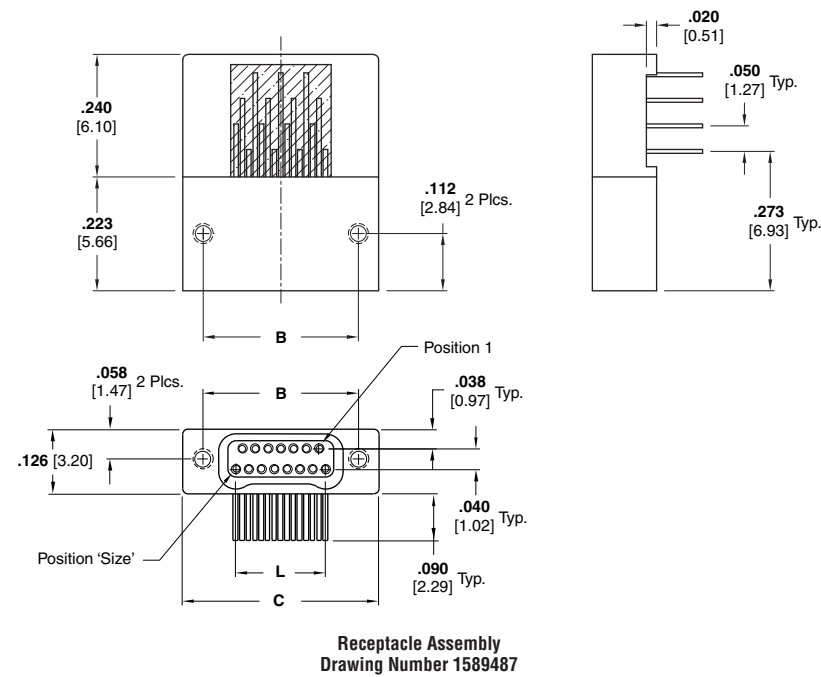
**NANONICS Thru-Hole Connectors — Horizontal, 2 Row to 4 Row, .050 Spacing**



Receptacle

**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations
- Suggested thru-hole layouts are available on the referenced drawings on the TE website



Size	Dimensions		
	B	C	L
9	0.229 [5.82]	0.3085 [7.84]	0.100 [2.54]
15	0.304 [7.72]	0.3835 [9.74]	0.175 [4.45]
25	0.429 [10.90]	0.5085 [12.92]	0.300 [7.62]
37	0.579 [14.71]	0.6585 [16.73]	0.450 [11.43]
51	0.754 [19.15]	0.8335 [21.17]	0.625 [15.88]
65	0.929 [23.60]	1.0085 [25.62]	0.800 [20.32]

**5**

Nanominature and Microminature Connectors



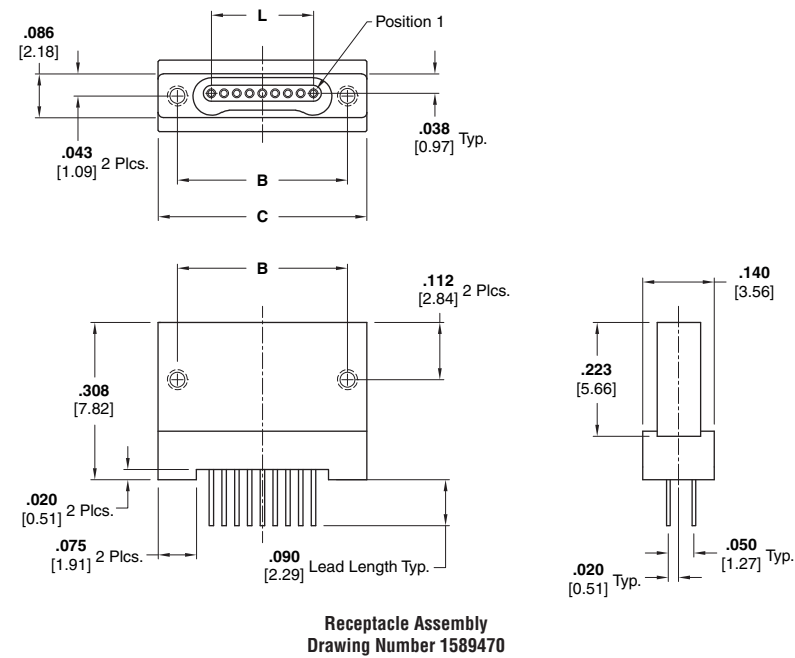
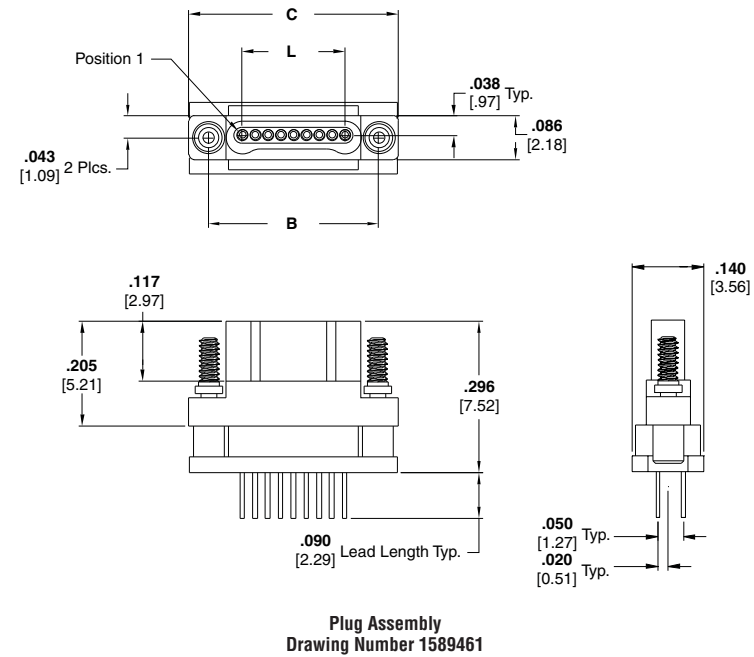
**NANONICS Thru-Hole Connectors — Vertical Mount, 1 Row to 2 Row Connectors, .050 Spacing**



Receptacle

**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37 and 51
- Contact TE Connectivity for custom configurations
- Suggested thru-hole layouts are available on the referenced drawings on the TE website



Size	Dimensions		
	B	C	L
5	0.233 [5.92]	0.3085 [7.84]	0.100 [2.54]
9	0.333 [8.46]	0.4085 [10.38]	0.200 [5.08]
15	0.483 [12.27]	0.5585 [14.19]	0.350 [8.89]
25	0.733 [18.62]	0.8085 [20.54]	0.600 [15.24]
37	1.033 [26.24]	1.1085 [28.16]	0.900 [22.86]
51	1.383 [35.13]	1.4585 [37.05]	1.250 [31.75]

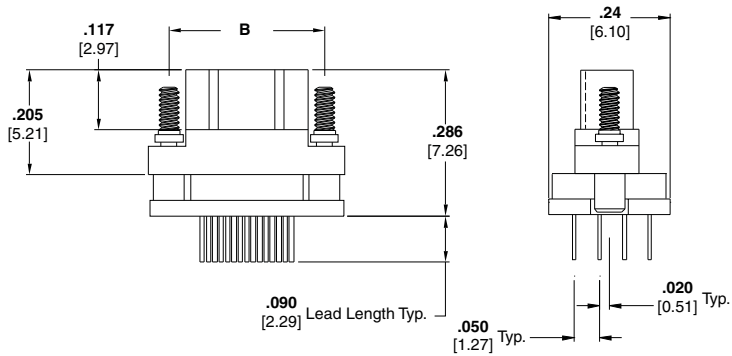
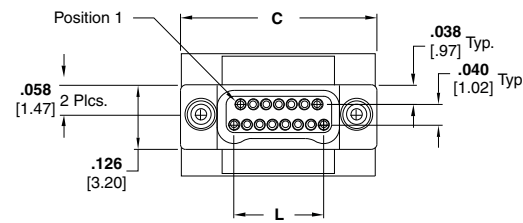
**NANONICS Thru-Hole Connectors — Vertical Mount, 2 Row to 4 Row Connectors, .050 Spacing**



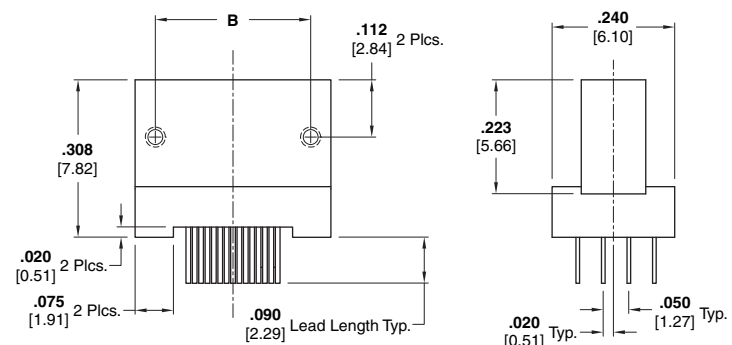
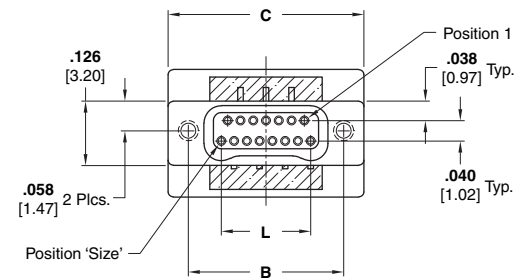
Receptacle

**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations
- Suggested thru-hole layouts are available on the referenced drawings on the TE website



Plug Assembly  
Drawing Number 1589482



Receptacle Assembly  
Drawing Number 1589488

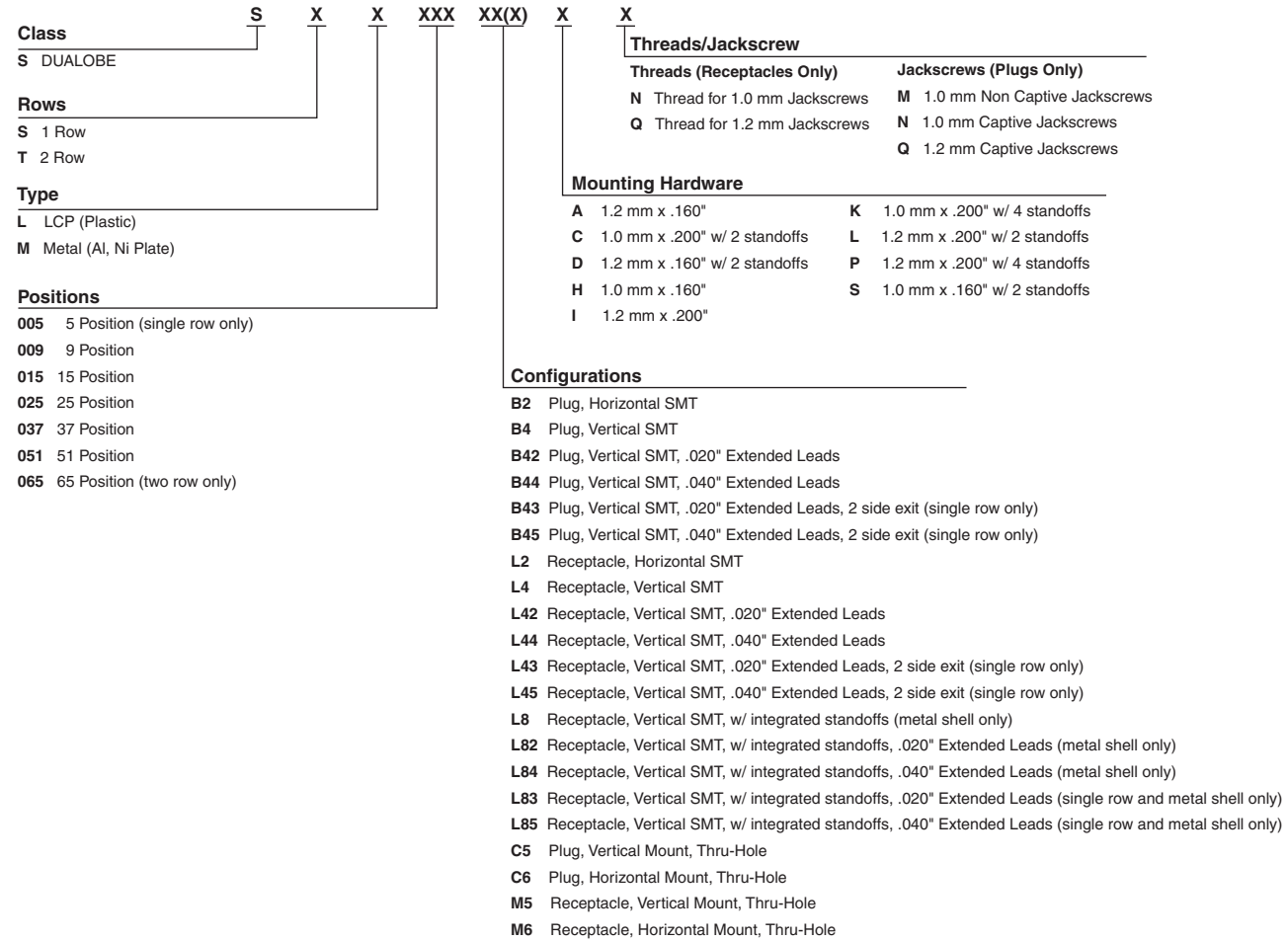
Size	Dimensions		
	B	C	L
9	0.229 [5.82]	0.3085 [7.84]	0.100 [2.54]
15	0.304 [7.72]	0.3835 [9.74]	0.175 [4.45]
25	0.429 [10.90]	0.5085 [12.92]	0.300 [7.62]
37	0.579 [14.71]	0.6585 [16.73]	0.450 [11.43]
51	0.754 [19.15]	0.8335 [21.17]	0.625 [15.88]
65	0.929 [23.60]	1.0085 [25.62]	0.800 [20.32]

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Nanominature and Microminature Connectors

**Part Numbering Guideline for NANONICS Surface Mount and Thru-Hole Connectors**

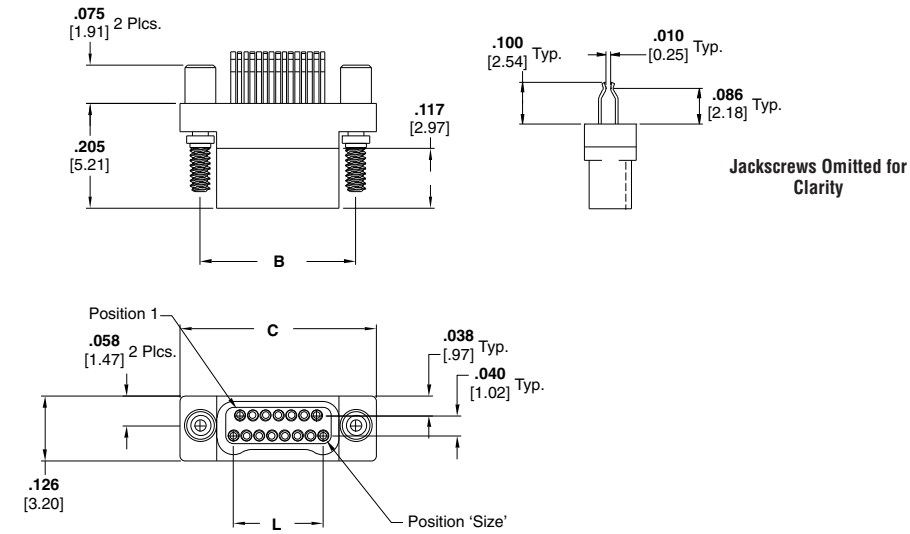
**DUALOBE Connectors - Surface Mount and Thru-Hole Terminations**



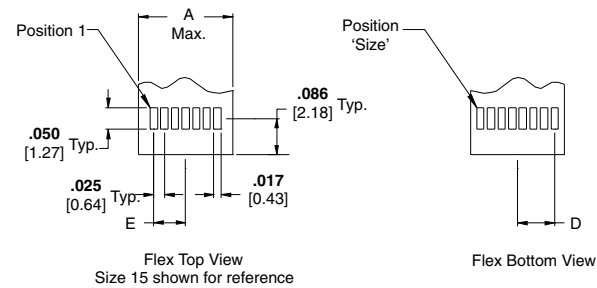
**NANONICS Flex Termination “Duckbill” Connectors — Two Row**

**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations



Plug Assembly  
Drawing Number 1589066



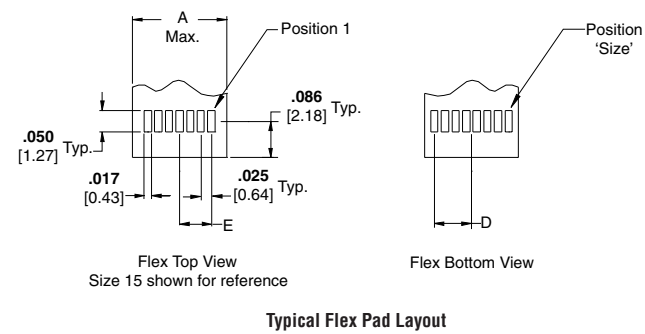
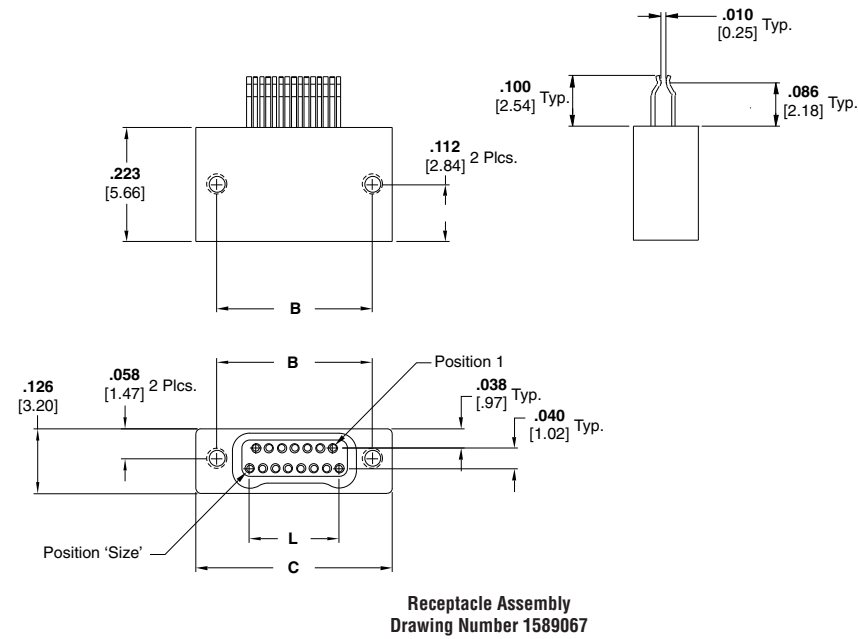
Typical Flex Pad Layout

Size	Dimensions					
	A	B	C	D	E	L
9	0.150 [3.81]	0.229 [5.82]	0.3085 [7.84]	0.0500 [1.27]	0.0375 [0.95]	0.100 [2.54]
15	0.225 [5.72]	0.304 [7.72]	0.3835 [9.74]	0.0875 [2.22]	0.0750 [1.90]	0.175 [4.45]
25	0.350 [8.89]	0.429 [10.90]	0.5085 [12.92]	0.1500 [3.81]	0.1375 [3.49]	0.300 [7.62]
37	0.500 [12.7]	0.579 [14.71]	0.6585 [16.73]	0.2250 [5.72]	0.2125 [5.40]	0.450 [11.43]
51	0.675 [17.1]	0.754 [19.15]	0.8335 [21.17]	0.3125 [7.94]	0.3000 [7.62]	0.625 [15.88]
65	0.850 [21.6]	0.929 [23.60]	1.0085 [25.62]	0.4000 [10.2]	0.3875 [9.84]	0.800 [20.32]

**5**

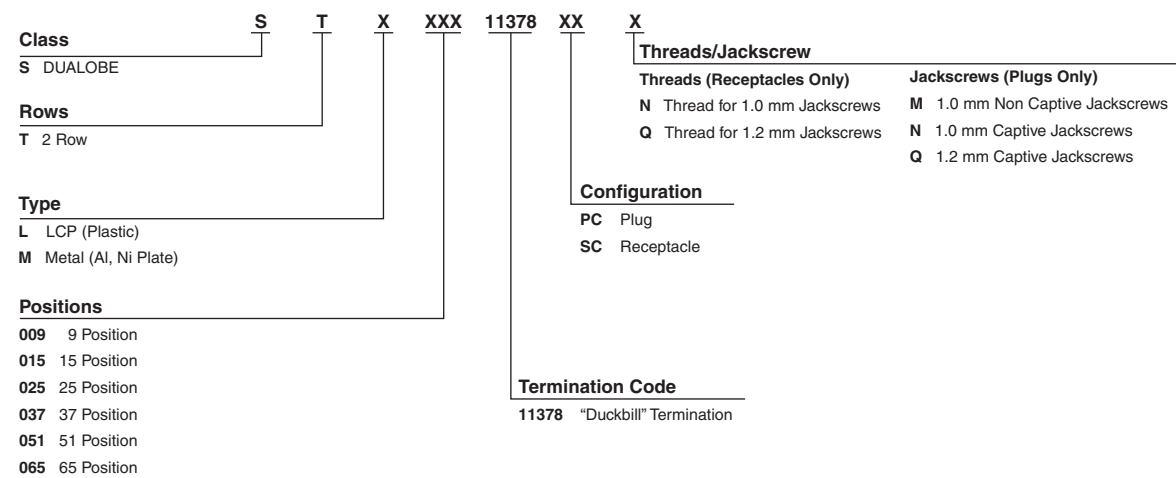
Nanominature and Microminiature Connectors

**NANONICS Flex Termination “Duckbill” Connectors — Two Row** (Continued)



**Part Numbering Guideline for NANONICS Flex Termination “Duckbill” Connectors**

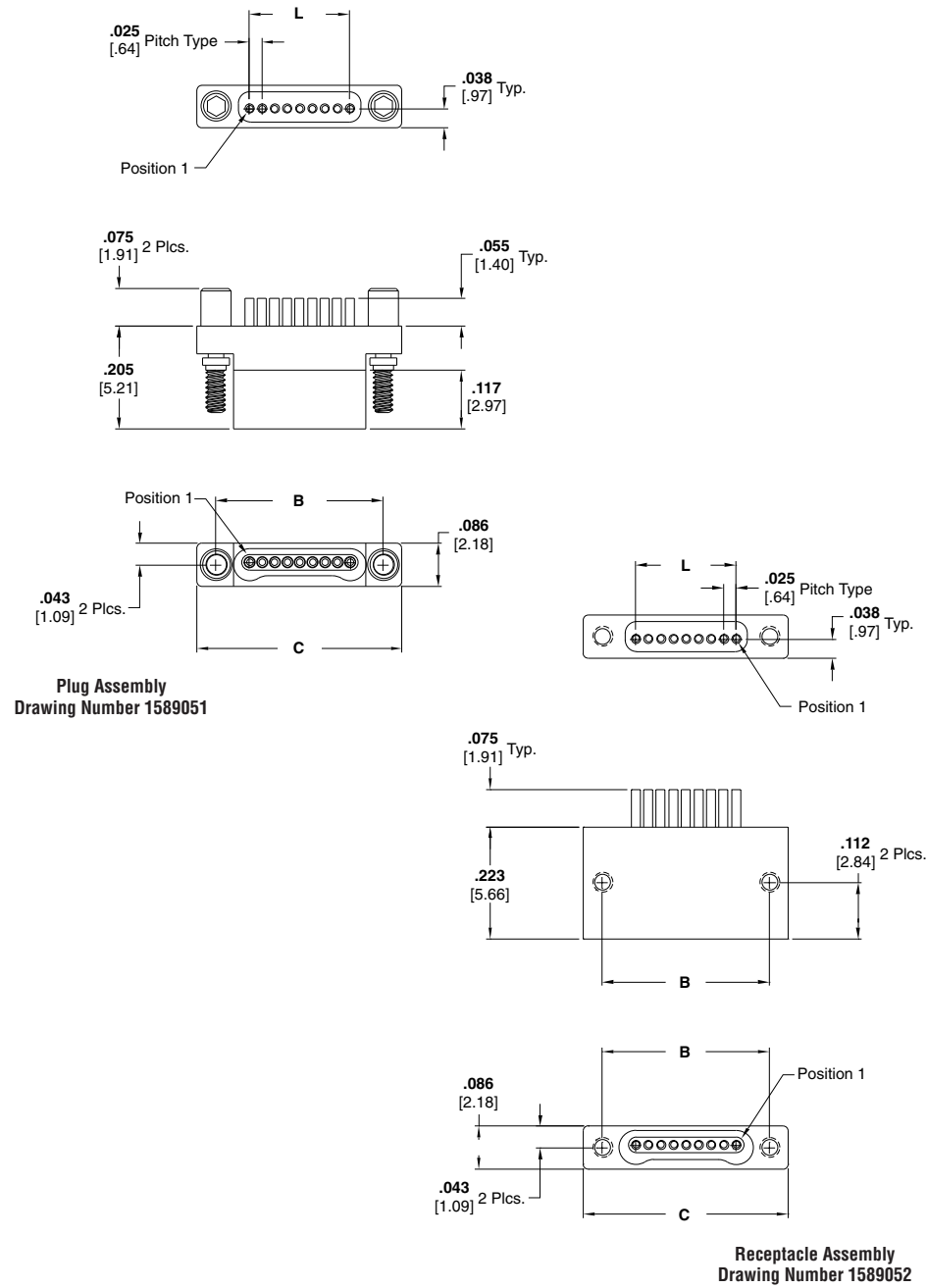
**DUALOBE Connectors - “Duckbill” Termination**



**NANONICS Solder Cup Connectors — Single Row**

**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37 and 51
- Contact TE Connectivity for custom configurations



**5**

Nanotechnology and Microminiature Connectors

Size	Dimensions		
	B	C	L
5	0.233 [5.92]	0.3085 [7.84]	0.100 [2.54]
9	0.333 [8.46]	0.4085 [10.38]	0.200 [5.08]
15	0.483 [12.27]	0.5585 [14.19]	0.350 [8.89]
25	0.733 [18.62]	0.8085 [20.54]	0.600 [15.24]
37	1.033 [26.24]	1.1085 [28.16]	0.900 [22.86]
51	1.383 [35.13]	1.4585 [37.05]	1.250 [31.75]



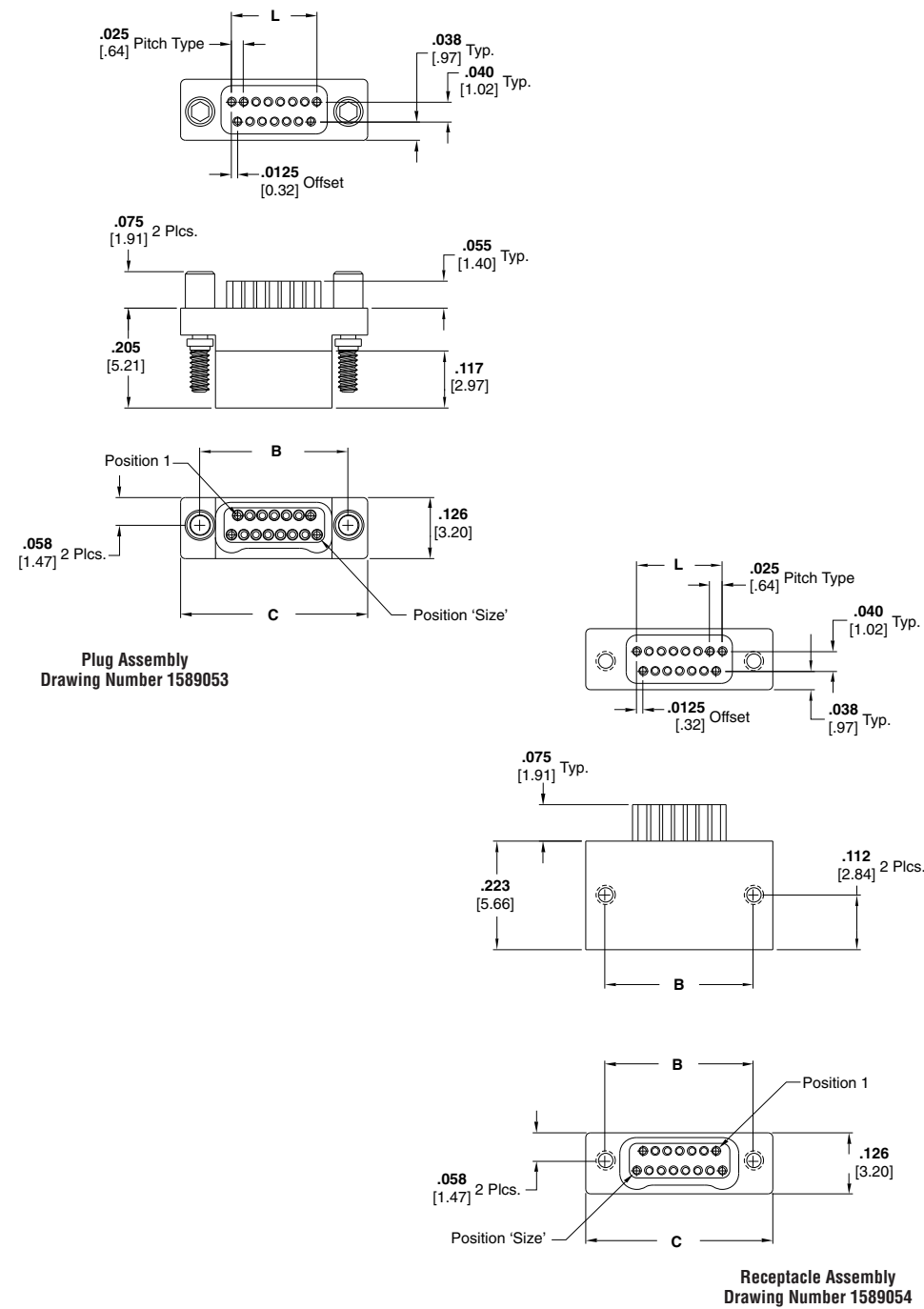
**NANONICS Solder Cup Connectors — Two Row**



Plug



Receptacle



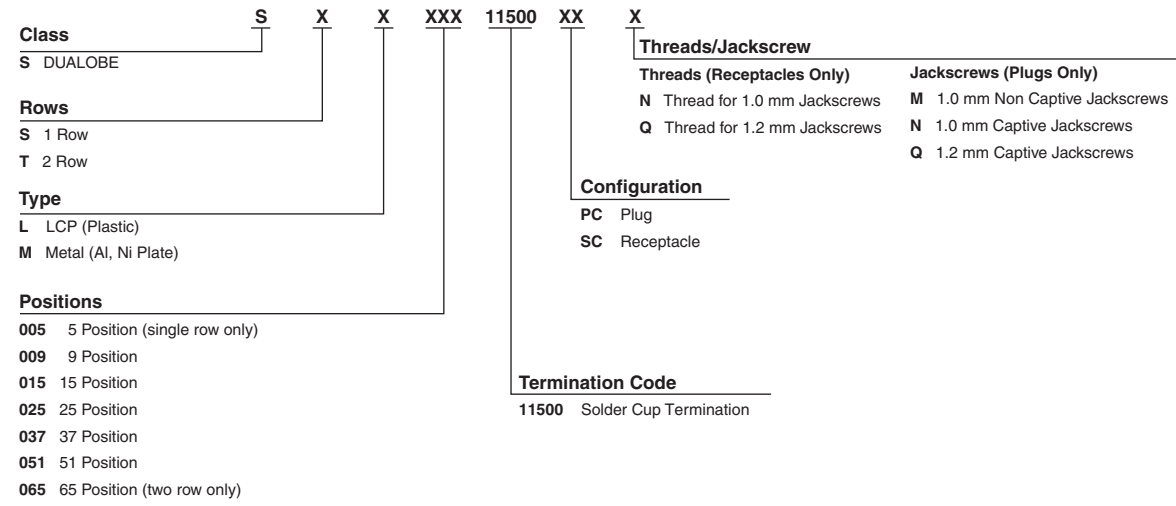
**Product Facts**

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations

Size	Dimensions		
	B	C	L
9	0.229 [5.82]	0.3085 [7.84]	0.100 [2.54]
15	0.304 [7.72]	0.3835 [9.74]	0.175 [4.45]
25	0.429 [10.90]	0.5085 [12.92]	0.300 [7.62]
37	0.579 [14.71]	0.6585 [16.73]	0.450 [11.43]
51	0.754 [19.15]	0.8335 [21.17]	0.625 [15.88]
65	0.929 [23.60]	1.0085 [25.62]	0.800 [20.32]

**Part Numbering Guideline for NANONICS Solder Cup Connectors**

**DUALOBE Connectors - Solder Cup Termination**



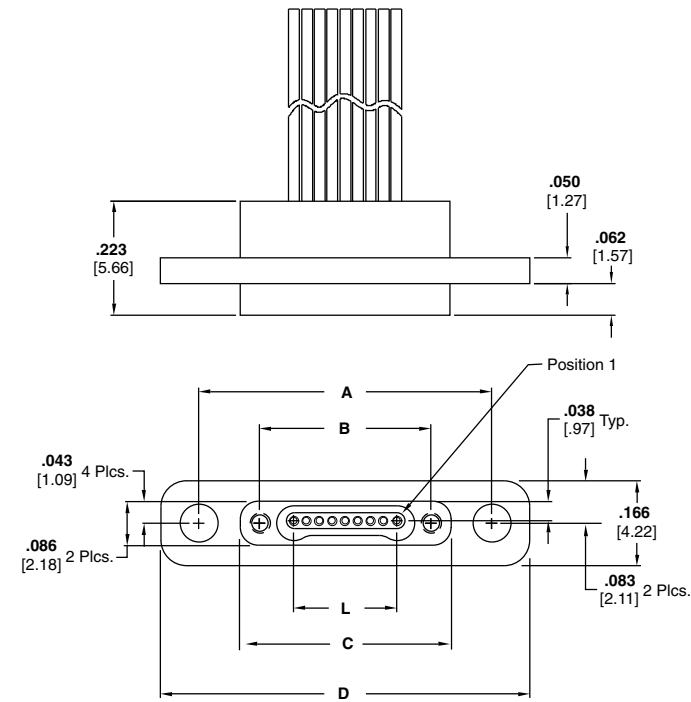
**5**

Nanominature and Microminiature Connectors

**NANONICS Panel Mount Connectors — Single Row, Flying Leads**

**Product Facts**

- Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37 and 51
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



Receptacle Assembly  
Drawing Number 1589851

Size	Dimensions				
	A	B	C	D	L
5	0.470 [11.94]	0.233 [5.92]	0.310 [7.87]	0.620 [15.75]	0.100 [2.54]
9	0.570 [14.48]	0.333 [8.46]	0.410 [10.41]	0.720 [18.29]	0.200 [5.08]
15	0.720 [18.29]	0.483 [12.27]	0.560 [14.22]	0.870 [22.10]	0.350 [8.89]
25	0.970 [24.64]	0.733 [18.62]	0.810 [20.57]	1.120 [28.45]	0.600 [15.24]
37	1.270 [32.26]	1.033 [26.24]	1.110 [28.19]	1.420 [36.07]	0.900 [22.86]
51	1.620 [41.15]	1.383 [35.13]	1.460 [37.08]	1.770 [44.96]	1.250 [31.75]

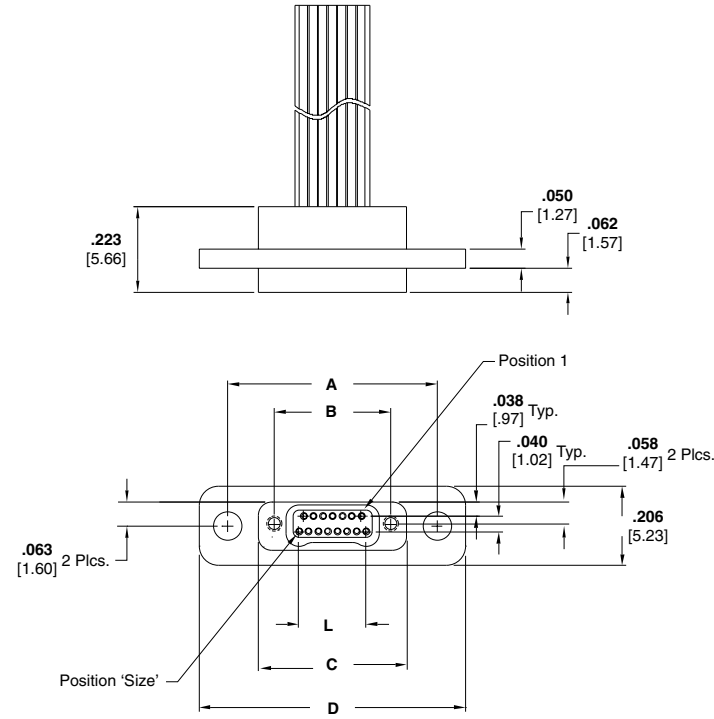
**NANONICS Panel Mount Connectors — Two Row, Flying Leads**



Receptacle

**Product Facts**

- Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations



Receptacle Assembly  
Drawing Number 1589050

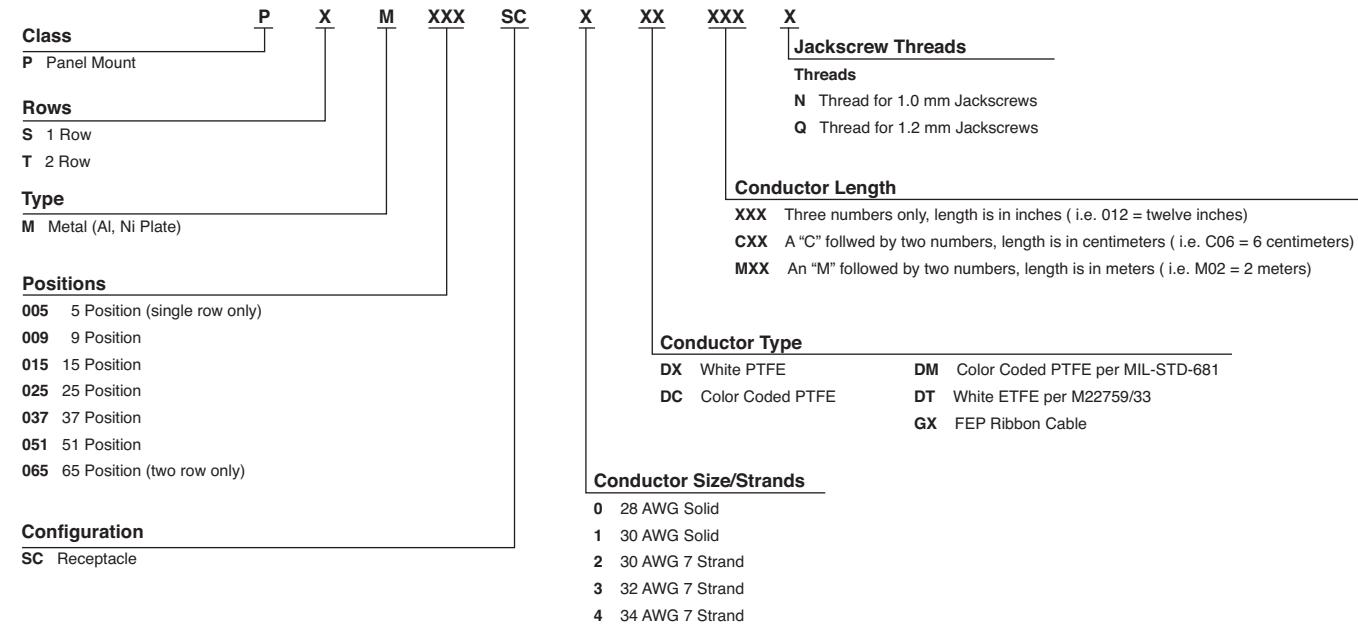
Size	Dimensions				
	A	B	C	D	L
9	0.470 [11.94]	0.229 [5.82]	0.310 [7.87]	0.620 [15.75]	0.100 [2.54]
15	0.545 [13.84]	0.304 [7.72]	0.385 [9.78]	0.695 [17.65]	0.175 [4.45]
25	0.670 [17.02]	0.429 [10.90]	0.510 [12.95]	0.820 [20.83]	0.300 [7.62]
37	0.820 [20.83]	0.579 [14.71]	0.660 [16.76]	0.970 [24.64]	0.450 [11.43]
51	0.995 [25.27]	0.754 [19.15]	0.835 [21.21]	1.145 [29.08]	0.625 [15.88]
65	1.170 [29.72]	0.929 [23.60]	1.010 [25.65]	1.320 [33.53]	0.800 [20.32]

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Nanominature and Microminiature Connectors

**Part Numbering Guideline for NANONICS Panel Mount Connectors**

**DUALOBE Connectors - Panel Mount**



Part Number Index Cross Reference

NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number
<b>Wired Connectors</b>							
SSL005PC0DC006N	0-1589455-2	SSL015SC2DC005N	9-1589457-6	SSM009PC0DC012N	0-1589827-7	SSM015PC2DC003N	8-1589455-6
SSL005PC0DC012N	0-1589455-3	SSL015SC2DC006N	1-1589457-2	SSM009PC0DC024N	5-1589455-3	SSM015PC2DC006	8-1589455-7
SSL005PC0DX012M	7-1589456-3	SSL015SC2DC012N	1-1589457-3	SSM009PC0DM024N	5-1589455-4	SSM015PC2DC006N	8-1589455-8
SSL005PC2DC002N	2-1589827-7	SSL015SC2DC024N	1-1589457-4	SSM009PC0DX012N	5-1589455-5	SSM015PC2DC008N	8-1589455-9
SSL005PC2DC004	0-1589455-4	SSL015SC2DC036N	8-1589457-7	SSM009PC2DC003	5-1589455-6	SSM015PC2DC012	9-1589455-0
SSL005PC2DC006	0-1589455-5	SSL025PC0DC012M	8-1589456-5	SSM009PC2DC003N	5-1589455-7	SSM015PC2DC012M	6-1589456-6
SSL005PC2DC006N	0-1589455-6	SSL025PC2DC006	3-1589455-1	SSM009PC2DC006	5-1589455-8	SSM015PC2DC012N	9-1589455-1
SSL005PC2DC012N	6-1589456-4	SSL025PC2DC006N	3-1589455-2	SSM009PC2DC006N	5-1589455-9	SSM015PC2DC018	9-1589455-2
SSL005PC2DX006N	0-1589455-7	SSL025PC2DC012	3-1589455-3	SSM009PC2DC010N	6-1589455-0	SSM015PC2DC018N	9-1589455-3
SSL005SC0DC006N	0-1589457-1	SSL025PC2DC018N	9-1589456-6	SSM009PC2DC012	6-1589455-1	SSM015PC2DC024	2-1589827-8
SSL005SC2DC006N	0-1589457-2	SSL025PC2DC020N	3-1589455-4	SSM009PC2DC012M	6-1589455-2	SSM015PC2DC024N	9-1589455-4
SSL005SC2DC006N	0-1589457-3	SSL025PC2DC024M	0-1589827-1	SSM009PC2DC012N	6-1589455-3	SSM015PC2DC036N	9-1589455-5
SSL009PC0DC006N	0-1589455-8	SSL025PC2DC024N	7-1589456-8	SSM009PC2DC018	6-1589455-4	SSM015PC2DC048N	9-1589455-6
SSL009PC0DMM03N	0-1589455-9	SSL025PC2DM018M	3-1589455-5	SSM009PC2DC018N	6-1589455-5	SSM015PC2DC060N	9-1589455-7
SSL009PC0DX012M	7-1589456-4	SSL025PC2DX012Q	3-1589455-6	SSM009PC2DC024	6-1589455-6	SSM015PC2DM012N	9-1589456-4
SSL009PC2DC001N	1-1589455-0	SSL025PC2GX006N	3-1589455-7	SSM009PC2DC024N	6-1589455-7	SSM015PC2DM024N	9-1589455-8
SSL009PC2DC003	1-1589455-1	SSL025SC0DC012N	8-1589457-5	SSM009PC2DC036N	6-1589455-8	SSM015PC2DMC20N	9-1589455-9
SSL009PC2DC006N	1-1589455-2	SSL025SC2DC006	1-1589457-5	SSM009PC2DC060N	6-1589455-9	SSM015PC2DMC30N	3-1589827-0
SSL009PC2DC009N	1-1589455-3	SSL025SC2DC006N	1-1589457-6	SSM009PC2DC084N	8-1589456-8	SSM015PC2DMM02N	0-1589456-1
SSL009PC2DC012	1-1589455-4	SSL025SC2DC012N	1-1589457-7	SSM009PC2DCC10N	7-1589455-0	SSM015PC2DT012N	0-1589456-2
SSL009PC2DC012M	1-1589455-5	SSL025SC2DC036N	8-1589457-8	SSM009PC2DCM01N	7-1589455-1	SSM015PC2DX006N	0-1589456-3
SSL009PC2DC012N	1-1589455-6	SSL037PC2DC012N	3-1589455-8	SSM009PC2DCM02N	8-1589456-7	SSM015PC2DX006Q	0-1589456-4
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SSL009PC2DCC10N	1-1589455-9	SSL051PC0DX012M	7-1589456-6	SSM009PC2DM012N	1-1589827-7	SSM015PC2DY006N	0-1589456-9
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SSL009PC2DM018M	2-1589455-1	SSM005PC0DC024N	2-1589827-2	SSM009PC2DX005N	7-1589455-5	SSM015PC2GX018N	1-1589456-1
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SSL009SC2DC003	0-1589457-5	SSM005PC2DC006	4-1589455-2	SSM009PC2DX012N	7-1589455-8	SSM015SC0DC024N	0-1589901-7
SSL009SC2DC006N	0-1589457-6	SSM005PC2DC006N	4-1589455-3	SSM009PC2DX018N	7-1589455-9	SSM015SC2DC003N	4-1589457-1
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SSL015PC2DC008N	2-1589455-5	SSM005PC2DX018N	4-1589455-9	SSM009SC2DC024N	3-1589457-1	SSM015SC2DX006N	4-1589457-8
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SSL015PC2DC012N	2-1589455-7	SSM005PC4DXM01	5-1589455-2	SSM009SC2DC084N	8-1589457-7	SSM015SC2DX024HN	5-1589457-2
SSL015PC2DC016N	0-1589827-8	SSM005SC0DC024N	0-1589901-5	SSM009SC2DCM006N	3-1589457-4	SSM015SC2DY012N	5-1589457-3
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SSL015PC2DC024M	7-1589456-2	SSM005SC2DC012N	2-1589457-0	SSM009SC2DX018N	3-1589457-7	SSM025PC0DC036N	6-1589456-9
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		SSM005SC2DX024HN	2-1589457-3	SSM015PC0DC024N	2-1589827-3	SSM025PC2DC012N	1-1589456-8
		SSM005SC4DX012N	2-1589457-4	SSM015PC0DMM02N	8-1589455-5	SSM025PC2DC012Q	8-1589456-1

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Nanominature and Microminature Connectors



**Part Number Index Cross Reference** (Continued)

NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number
SSM025PC2DC018	1-1589456-9	SSM037SC2DC024N	1-1589901-1	STL009PC3DX030N	2-1589472-1	STL025PC2DC018Q	7-1589788-4
SSM025PC2DC018N	2-1589456-0	SSM037SC2DT012N	0-1589901-2	STL009SC0DC006N	3-1589777-8	STL025PC2DC020N	4-1589472-8
SSM025PC2DC024N	9-1589456-1	SSM037SC2DTC30N	9-1589457-5	STL009SC0DC012N	8-1589477-3	STL025PC2DC030N	4-1589472-9
SSM025PC2DC025N	2-1589456-1	SSM051PC0DC024N	2-1589827-6	STL009SC0DC030N	3-1589777-9	STL025PC2DM010N	5-1589472-0
SSM025PC2DC030N	2-1589456-2	SSM051PC2DC006	4-1589456-5	STL009SC2DC012	0-1589476-6	STL025PC2DT024N	6-1589475-2
SSM025PC2DC036N	2-1589456-3	SSM051PC2DC006N	4-1589456-6	STL009SC2DC012N	0-1589476-7	STL025PC2DY006N	9-1589475-5
SSM025PC2DCC30N	2-1589456-4	SSM051PC2DC012N	4-1589456-7	STL009SC2DC018N	8-1589477-4	STL025PC2GX036	4-1589788-7
SSM025PC2DCC50N	1-1589827-5	SSM051PC2DC018	4-1589456-8	STL009SC2DC036N	0-1589476-8	STL025PC3DX006N	5-1589472-1
SSM025PC2DM018Q	9-1589456-9	SSM051PC2DC024	4-1589456-9	STL009SC2DM036N	2-1589777-7	STL025PC3DX030N	9-1589475-2
SSM025PC2DM024N	8-1589456-3	SSM051PC2DC024N	5-1589456-0	STL009SC3DX024N	0-1589476-9	STL025PC4DX030N	5-1589472-2
SSM025PC2DT012N	1-1589827-8	SSM051PC2DC030N	5-1589456-1	STL015PC0DC006N	2-1589472-2	STL025SC2DC001N	1-1589476-9
SSM025PC2DX006N	2-1589456-5	SSM051PC2DCC06Q	5-1589456-2	STL015PC0DC012Q	2-1589472-3	STL025SC2DC006N	2-1589476-0
SSM025PC2DX012N	2-1589456-6	SSM051PC2DCC30N	9-1589456-3	STL015PC0DMM03N	2-1589472-4	STL025SC2DC012N	2-1589476-1
SSM025PC2DX018N	2-1589456-7	SSM051PC2DM012Q	5-1589456-3	STL015PC1DNC50N	2-1589472-5	STL025SC2DC030N	2-1589476-2
SSM025PC2DX024N	2-1589456-8	SSM051PC2DM018N	6-1589456-7	STL015PC2DC006	2-1589472-6	STL025SC2DC036N	2-1589476-3
SSM025PC2GX006	2-1589456-9	SSM051PC2DM024N	5-1589456-4	STL015PC2DC008	2-1589472-7	STL025SC3DC004N	9-1589477-4
SSM025PC2GX018N	3-1589456-0	SSM051PC2DMC10N	5-1589456-5	STL015PC2DC010N	2-1589472-8	STL025SC3DX030N	0-1589777-5
SSM025PC3DY006N	3-1589456-1	SSM051PC2DMC30N	5-1589456-6	STL015PC2DC012	2-1589472-9	STL037PC2DC010N	5-1589472-3
SSM025PC4DX015N	7-1589456-7	SSM051PC2DNC06Q	5-1589456-7	STL015PC2DC012N	3-1589472-0	STL037PC2DC012	5-1589472-4
SSM025SC0DC024N	0-1589901-8	SSM051PC2DNC15Q	5-1589456-8	STL015PC2DC015N	3-1589472-1	STL037PC2DC012M	5-1589472-5
SSM025SC0DC036N	7-1589457-9	SSM051PC2DT012N	2-1589827-0	STL015PC2DC015Q	8-1589475-1	STL037PC2DC012N	5-1589472-6
SSM025SC2DC006N	8-1589457-6	SSM051PC2DT018N	2-1589827-1	STL015PC2DC018M	3-1589472-2	STL037PC2DC012Q	8-1589788-2
SSM025SC2DC012N	5-1589457-6	SSM051PC2DX008	5-1589456-9	STL015PC2DC018N	3-1589475-9	STL037PC2DC017N	5-1589472-7
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SSM025SC2DC024N	5-1589457-9	SSM051PC2DXM05Q	6-1589456-0	STL015PC2DC036N	3-1589472-4	STL037PC2DC018N	5-1589472-9
SSM025SC2DT012N	0-1589901-1	SSM051PC2DY012N	6-1589456-1	STL015PC2DCC10N	3-1589472-5	STL037PC2DC018Q	2-1589788-4
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SSM025SC2DX018N	6-1589457-1	SSM051SC0DC024N	1-1589901-0	STL015PC2DM048N	3-1589475-1	STL037PC2DC024N	3-1589788-0
SSM025SC2DX024HN	6-1589457-3	SSM051SC2DC018	6-1589457-7	STL015PC2DNC50N	3-1589472-7	STL037PC2DC036M	6-1589472-1
SSM025SC2DX024N	8-1589457-1	SSM051SC2DC018N	6-1589457-8	STL015PC2DX006N	8-1589475-0	STL037PC2DC036N	6-1589472-2
SSM025SC3DY006N	6-1589457-4	SSM051SC2DNC15Q	6-1589457-9	STL015PC2DX010N	3-1589472-8	STL037PC2DC040N	6-1589472-3
SSM037PC0DC006M	1-1589827-2	SSM051SC2DT012N	0-1589901-3	STL015PC2DX036N	3-1589472-9	STL037PC2DCC15N	6-1589472-4
SSM037PC0DC009Q	2-1589827-9	SSM051SC2DT018N	0-1589901-4	STL015PC2DY006N	9-1589475-4	STL037PC2DM010N	6-1589472-5
SSM037PC0DC024N	2-1589827-5	SSM051SC2DT021	7-1589457-1	STL015PC2GX040N	4-1589472-0	STL037PC2DM048N	3-1589475-2
SSM037PC0DC036N	6-1589456-8	SSM051SC2GX012N	7-1589457-3	STL015SC0DMM03N	1-1589476-0	STL037PC2DT024N	6-1589475-1
SSM037PC2DC006	3-1589456-2	STL009PC0DC006N	1-1589788-1	STL015SC2DC005N	8-1589477-5	STL037PC2DY006N	9-1589475-6
SSM037PC2DC006N	3-1589456-3	STL009PC0DC036	7-1589788-6	STL015SC2DC008	1-1589476-1	STL037PC2DY020N	7-1589475-4
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SSM037PC2DC015N	3-1589456-6	STL009PC2DC012	1-1589472-1	STL015SC2DC030N	1-1589476-5	STL037SC2DC012Q	2-1589476-5
SSM037PC2DC018	3-1589456-7	STL009PC2DC012M	6-1589788-9	STL015SC2DC036N	1-1589476-6	STL037SC2DC030N	2-1589476-6
SSM037PC2DC018M	1-1589827-3	STL009PC2DC012N	1-1589472-2	STL015SC2DX010N	1-1589476-7	STL037SC2DC036N	2-1589476-7
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SSM037PC2DC024N	3-1589456-9	STL009PC2DC018M	1-1589472-4	STL025PC0DC006N	6-1589475-4	STL037SC3DC001N	2-1589777-8
SSM037PC2DCM01N	4-1589456-0	STL009PC2DC018N	1-1589472-5	STL025PC0DC012N	3-1589788-3	STL037SC3DX024N	2-1589476-9
SSM037PC2DM024N	8-1589456-4	STL009PC2DC024	3-1589788-7	STL025PC2DC006	4-1589472-1	STL051PC0DXC50N	6-1589472-7
SSM037PC2DT012N	1-1589827-9	STL009PC2DC036N	1-1589472-6	STL025PC2DC006M	5-1589475-7	STL051PC2DC003N	6-1589472-8
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SSM037PC4DX018N	8-1589456-6	STL009PC2DM030N	0-1589788-2	STL025PC2DC015N	4-1589472-6	STL051PC2DC018N	3-1589788-8
SSM037SC0DC024N	0-1589901-9	STL009PC2DM048N	3-1589475-0	STL025PC2DC015Q	8-1589475-2	STL051PC2DC018Q	2-1589788-5
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SSM037SC2DC018	6-1589457-5	STL009PC2GX010N	1-1589472-9	STL025PC2DC018M	7-1589788-3	STL051PC2DC036N	7-1589472-4
SSM037SC2DC018N	6-1589457-6	STL009PC3DX024N	2-1589472-0	STL025PC2DC018N	4-1589472-7	STL051PC2DC040N	7-1589472-5

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STM025PC2DT024N	4-1589788-9	STM025SC3DX030N	0-1589777-4	STM037PC2GX006N	6-1589474-3	STM051PC2DCC20N	8-1589474-5
STM025PC2DT030N	1-1589474-0	STM025SC4DX030N	2-1589477-7	STM037PC3DC012N	6-1589474-4	STM051PC2DCC30N	9-1589475-7
STM025PC2DT036Q	1-1589474-1	STM037PC0DC009N	2-1589474-6	STM037PC3DM024Q	7-1589475-0	STM051PC2DCC50N	3-1589788-5
STM025PC2DT048Q	1-1589474-2	STM037PC0DC009Q	8-1589788-5	STM037SC0DC036N	3-1589777-1	STM051PC2DCC50Q	3-1589788-6
STM025PC2DT084N	6-1589788-4	STM037PC0DC036N	5-1589788-6	STM037SC0DM036N	3-1589777-7	STM051PC2DM018N	8-1589474-6
STM025PC2DX005	1-1589474-3	STM037PC0DM024N	1-1589788-5	STM037SC0DM060N	2-1589777-2	STM051PC2DM024N	7-1589788-0
STM025PC2DX006N	1-1589474-4	STM037PC0DM036N	1-1589788-8	STM037SC0DXC10N	2-1589477-8	STM051PC2DMM01N	8-1589474-7
STM025PC2DX006Q	1-1589474-5	STM037PC0DM060N	2-1589788-1	STM037SC2DC006N	2-1589477-9	STM051PC2DT012N	8-1589474-9
STM025PC2DX010N	1-1589474-6	STM037PC0DXC10N	2-1589474-7	STM037SC2DC006Q	3-1589477-0	STM051PC2DT018N	7-1589788-2
STM025PC2DX012N	1-1589474-7	STM037PC2DC001N	6-1589788-7	STM037SC2DC012HN	0-1589777-9	STM051PC2DT030N	9-1589474-0
STM025PC2DX018N	1-1589474-8	STM037PC2DC003N	2-1589474-8	STM037SC2DC012N	3-1589477-1	STM051PC2DT036N	9-1589474-1
STM025PC2DX048N	1-1589474-9	STM037PC2DC005N	2-1589474-9	STM037SC2DC012Q	9-1589477-0	STM051PC2DT036Q	8-1589788-1
STM025PC2DX072N	6-1589788-6	STM037PC2DC006M	3-1589474-0	STM037SC2DC015N	3-1589477-2	STM051PC2DT072N	9-1589474-2
STM025PC2DY004	2-1589474-0	STM037PC2DC006N	3-1589474-1	STM037SC2DC015Q	8-1589477-9	STM051PC2DX012N	9-1589474-3
STM025PC2DY006	2-1589474-1	STM037PC2DC010Q	6-1589788-1	STM037SC2DC018HN	3-1589477-3	STM051PC2DX012Q	9-1589474-4
STM025PC2DY006N	2-1589474-2	STM037PC2DC012	3-1589474-2	STM037SC2DC018N	3-1589477-4	STM051PC2DX015N	9-1589474-5
STM025PC3DM024Q	6-1589475-9	STM037PC2DC012M	3-1589474-3	STM037SC2DC020Q	3-1589477-5	STM051PC2DX018	9-1589474-6
STM025PC3DX030N	9-1589475-1	STM037PC2DC012N	3-1589474-4	STM037SC2DC024N	3-1589477-6	STM051PC2DX018N	9-1589474-7

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STM051PC2DY015N	9-1589474-8	STM065PC2DM024N	5-1589475-0	<b>Jumper Assemblies</b>		JSM025PP2DC006N	1-1589735-4
STM051PC2GX006N	3-1589475-6	STM065PC2DM036N	6-1589788-2	JSL005PP2DC002N	1-1589735-5	JSM025PP2DX004N	2-1589672-0
STM051PC2GX012N	3-1589788-1	STM065PC2DMC46N	4-1589788-0	JSL009PP2DC006N	0-1589735-8	JSM025PP2DX008N	2-1589672-1
STM051PC2GXM01N	9-1589474-9	STM065PC2DT012N	8-1589475-5	JSL009PP2DX003N	7-1589671-1	JSM025PP2DXC17N	2-1589672-2
STM051SC0DC036N	3-1589777-2	STM065PC2DT018N	1-1589475-8	JSL009PP2DX006N	0-1589735-7	JSM025PP2GX003N	2-1589672-3
STM051SC0DXC10N	4-1589477-5	STM065PC2DT030N	1-1589475-9	JSL009PR2DC012N	7-1589671-2	JSM025PP2GX024N	2-1589672-4
STM051SC1DXC20	4-1589477-6	STM065PC2DTC10N	9-1589788-0	JSL009RR2DX0.5N	7-1589671-3	JSM025PP4DXC20N	2-1589672-5
STM051SC2DC003N	4-1589477-7	STM065PC2DX006N	2-1589475-0	JSL015PD2DX002N	4-1589699-8	JSM025PR2DC006N	2-1589672-6
STM051SC2DC006	4-1589477-8	STM065PC2DX018N	2-1589475-1	JSL015PP2DX001N	0-1589735-2	JSM025PR2DC1.5N	5-1589699-5
STM051SC2DC006N	4-1589477-9	STM065PC2DX036N	2-1589475-2	JSL015PP2DX006N	7-1589671-4	JSM025PR2GX002N	2-1589672-7
STM051SC2DC008Q	3-1589777-5	STM065PC2DY012N	2-1589475-3	JSL025PP2DC012N	0-1589735-1	JSM025RR2DC006N	0-1589803-1
STM051SC2DC012N	5-1589477-0	STM065PC2DY012Q	2-1589788-7	JSL037PD2GX02N	7-1589671-5	JSM037PD2GX02N	0-1589797-2
STM051SC2DC015HN	5-1589477-1	STM065PC2DY024N	2-1589475-4	JSL037PR2DX002N	7-1589671-6	JSM037PD2GX05N	0-1589797-1
STM051SC2DC015N	5-1589477-2	STM065PC2GXM01N	2-1589475-5	JSL037PR2DX003N	0-1589736-2	JSM037PD2GX010N	3-1589672-3
STM051SC2DC016N	5-1589477-3	STM065PC3DM006N	2-1589475-6	JSL051PD2GX010N	7-1589671-7	JSM037PP2DCC06Q	3-1589672-4
STM051SC2DC018HN	5-1589477-4	STM065PC3DX024N	2-1589475-7	JSL051PD2GX017N	7-1589671-8	JSM037PP2DCC08Q	3-1589672-5
STM051SC2DC018N	5-1589477-5	STM065SC0DC036N	3-1589777-3	JSL051PD2GX022N	7-1589671-9	JSM037PP2DX018N	3-1589672-6
STM051SC2DC018Q	5-1589477-6	STM065SC2DC003N	6-1589477-6	JSL051PD2GX030N	8-1589671-0	JSM037PP2GX072N	3-1589672-7
STM051SC2DC036N	5-1589477-7	STM065SC2DC006	6-1589477-7	JSL051PD2GX075N	8-1589671-1	JSM037PR2DTC03N	0-1589736-3
STM051SC2DC036Q	0-1589777-7	STM065SC2DC006N	6-1589477-8	JSL051PD2GX080N	8-1589671-2	JSM051PD2GX010N	4-1589672-7
STM051SC2DC060N	5-1589477-8	STM065SC2DC008Q	3-1589777-6	JSL051PP2DC004N	8-1589671-3	JSM051PD2GX012	4-1589672-8
STM051SC2DC060Q	5-1589477-9	STM065SC2DC012N	6-1589477-9	JSL051PP2GX010N	8-1589671-4	JSM051PD2GX012N	4-1589672-9
STM051SC2DM012N	6-1589477-0	STM065SC2DC012Q	7-1589477-0	JSL051PP2GX015N	8-1589671-5	JSM051PD2GX015N	5-1589672-0
STM051SC2DM024N	4-1589777-2	STM065SC2DC015N	7-1589477-1	JSL051PP2GX017N	8-1589671-6	JSM051PD2GX017N	5-1589672-1
STM051SC2DMM01N	6-1589477-1	STM065SC2DC018	7-1589477-2	JSL051PP2GX022N	8-1589671-7	JSM051PD2GX050N	5-1589672-2
STM051SC2DT012N	0-1589777-3	STM065SC2DC018N	7-1589477-3	JSL051PP2GX075N	8-1589671-8	JSM051PP2DCC12Q	5-1589672-3
STM051SC2DT018N	4-1589777-5	STM065SC2DC018Q	7-1589477-4	JSL051PP2GX080N	8-1589671-9	JSM051PP2GX012	5-1589672-4
STM051SC2DT030N	6-1589477-3	STM065SC2DC024N	7-1589477-5	JSL051PR2GX002	0-1589736-4	JSM051PP2GX012N	5-1589672-5
STM051SC2DX012N	6-1589477-4	STM065SC2DC024Q	7-1589477-6	JSM005PP2DC002N	9-1589671-0	JSM051PP2GX017N	5-1589672-6
STM051SC2DX015N	6-1589477-5	STM065SC2DC036	9-1589477-3	JSM005PP2DC003N	1-1589735-0	JSM051PP2GX022N	5-1589672-7
STM065PC0DC036N	5-1589788-8	STM065SC2DC036HN	7-1589477-7	JSM005PP2DC005N	0-1589735-9	JSM051PP2GX050N	5-1589672-8
STM065PC0DM036N	4-1589788-6	STM065SC2DC036N	7-1589477-8	JSM005PP2DC008	0-1589735-3	JSM051PP2GX075N	5-1589672-9
STM065PC0DM060N	2-1589788-3	STM065SC2DC036Q	0-1589777-8	JSM005PP2DC02.5N	0-1589735-5	JSM051PP2GX080N	6-1589672-0
STM065PC0DMC30Q	9-1589475-8	STM065SC2DM024N	4-1589777-3	JSM005PP2DC072	0-1589735-4	JSM051PR2DC1.5N	5-1589699-6
STM065PC0DMM01Q	4-1589788-8	STM065SC2DT012N	0-1589777-2	JSM005PP2DT150N	9-1589671-1	JSM051PR2GX002N	6-1589672-1
STM065PC2DC003N	0-1589475-1	STM065SC2DT018N	4-1589777-6	JSM009PP2DC002N	9-1589671-5	JTL009PD2GX006N	3-1589729-8
STM065PC2DC006	0-1589475-2	STM065SC2DT030N	7-1589477-9	JSM009PP2DC003N	9-1589671-6	JTL009PD2GX012N	7-1589699-3
STM065PC2DC006N	0-1589475-3			JSM009PP2DC006N	1-1589735-2	JTL009PD2GX018N	3-1589729-9
STM065PC2DC008Q	0-1589475-4			JSM009PP2DC024N	9-1589671-7	JTL009PP2DC012N	0-1589737-3
STM065PC2DC012N	0-1589475-5			JSM009PP2DM005Q	0-1589735-6	JTL009PP2DX006N	1-1589737-7
STM065PC2DC012Q	0-1589475-6			JSM009PR2DC002N	9-1589671-8	JTL009PR2DC018N	5-1589699-8
STM065PC2DC016M	0-1589475-7			JSM009PR2DC006N	9-1589671-9	JTL015PP2DX002N	0-1589737-1
STM065PC2DC016N	0-1589475-8			JSM015PD2DC002N	0-1589672-6	JTL015PP2DX006N	1-1589737-6
STM065PC2DC018M	0-1589475-9			JSM015PD2GX05N	0-1589797-3	JTL015PP2DX008M	9-1589672-5
STM065PC2DC018N	1-1589475-0			JSM015PP2DC004N	1-1589735-1	JTL015PP2DX014N	5-1589699-0
STM065PC2DC018Q	1-1589475-1			JSM015PP2DC006N	1-1589735-3	JTL015PRODC011N	1-1589738-3
STM065PC2DC020N	4-1589475-3			JSM015PP2GX001N	0-1589799-3	JTL015PR2DX008	9-1589672-6
STM065PC2DC024N	1-1589475-2			JSM015PP2GX002N	0-1589799-2	JTL025PD2DC010N	5-1589699-9
STM065PC2DC024Q	1-1589475-3			JSM015PP2GX006N	0-1589799-1	JTL025PD2DC1.25N	5-1589699-7
STM065PC2DC030N	1-1589475-4			JSM015PP2GX014N	0-1589672-7	JTL025PP2DC001M	4-1589737-3
STM065PC2DC036	5-1589475-6			JSM015PP2GX018N	0-1589672-8	JTL025PP2DC001N	4-1589737-2
STM065PC2DC036N	1-1589475-5			JSM015PR2DC001N	0-1589672-9	JTL025PP2DC036N	9-1589672-8
STM065PC2DC072N	1-1589475-6			JSM015PR2DC002N	1-1589672-0	JTL025PP2DCC05N	0-1589737-5
STM065PC2DCC50N	4-1589475-9			JSM015PR2DC003N	1-1589672-1	JTL025PP2DCC07N	9-1589672-9
STM065PC2DCM01N	7-1589475-7			JSM015PR2DC004N	4-1589699-9	JTL025PP2DX002N	0-1589673-1
STM065PC2DCM01Q	8-1589475-9			JSM015PR2DC006N	1-1589672-2	JTL025PP2DX003N	0-1589673-2
STM065PC2DM018N	1-1589475-7			JSM015PR2DX003N	0-1589736-1	JTL025PP2DX010N	0-1589673-3

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JTL025PR0DC007N	1-1589738-4	JTM015PP2DY011N	2-1589737-0	JTM037PP2DX006Q	9-1589674-7	JTM065PR2GX001N	0-1589676-9
JTL025PR2DCM31N	0-1589673-4	JTM015PP2DY022N	2-1589737-1	JTM037PP2DX009Q	9-1589674-8	JTM065RR2DC003	1-1589676-0
JTL037PP2DC012N	4-1589737-0	JTM015PR2DC002N	7-1589673-8	JTM037PP2DX010Q	2-1589737-9		
JTL037PP2DC024N	4-1589737-1	JTM015PR2DC003Q	2-1589738-0	JTM037PP2DX016	9-1589674-9	<b>Surface Mount</b>	
JTL037PP2DC07.5N	0-1589673-5	JTM015PR2DC012M	7-1589673-9	JTM037PP2DX024N	0-1589675-1	SSL005L2AN	0-1589462-5
JTL037PP2DC08.5N	0-1589673-6	JTM015PR2DT001N	8-1589673-0	JTM037PP2DX3.5N	2-1589737-6	SSL005L2HN	0-1589462-6
JTL037PP2DC09.5N	0-1589673-7	JTM015PR2DT002M	0-1589738-2	JTM037PR0DC036M	0-1589675-3	SSL009B2H	0-1589700-2
JTL037PP2DM006N	0-1589737-7	JTM015PR2DX001N	2-1589738-6	JTM037PR2DC003Q	2-1589738-2	SSL009L2AN	0-1589462-7
JTL037PP2DX002N	0-1589673-8	JTM015PR2DX003N	0-1589738-6	JTM037PR2DC005N	1-1589738-2	SSL009L2AQ	0-1589462-8
JTL037PP2DX003N	0-1589673-9	JTM015RR2DC012N	0-1589804-1	JTM037PR2DCC16Q	1-1589738-0	SSL009L2HN	0-1589462-9
JTL037PP2DX006N	1-1589737-5	JTM025PD2GX002N	0-1589798-3	JTM037PR2DT001N	0-1589675-4	SSL009L42HN	0-1589463-1
JTL037PP2DX012	1-1589673-0	JTM025PP2DC001N	4-1589737-7	JTM037PR2DT002M	0-1589738-4	SSL009L43KN	0-1589464-1
JTL037PP2DX012N	2-1589737-7	JTM025PP2DC012N	4-1589737-6	JTM037PR2DX001	1-1589738-1	SSL009L4CN	0-1589463-2
JTL037PR2DC012N	3-1589738-0	JTM025PP2DC018N	3-1589737-3	JTM037PR2DX001N	0-1589675-5	SSL009L4KN	0-1589463-3
JTL037PR2DC024N	3-1589738-1	JTM025PP2DC024N	3-1589737-5	JTM037PR2DX001Q	1-1589738-6	SSL015L2AN	1-1589462-0
JTL037PR2DT024N	1-1589673-1	JTM025PP2DC030N	3-1589737-7	JTM037PR2DX006Q	1-1589738-7	SSL015L2AQ	1-1589462-1
JTL037PR2DX001	0-1589738-9	JTM025PP2DC035N	5-1589737-0	JTM037PR2GX002	0-1589675-6	SSL015L2CN	1-1589462-2
JTL051PP2DC009N	0-1589737-4	JTM025PP2DC2.75N	1-1589737-8	JTM037PR2GX003N	0-1589675-7	SSL015L2H	1-1589462-3
JTL051PP2DX002N	1-1589673-4	JTM025PP2DM024M	3-1589737-2	JTM051PD2DC002N	0-1589798-4	SSL015L2HN	1-1589462-4
JTL051PP2DX006N	1-1589673-5	JTM025PP2DX001N	2-1589674-8	JTM051PD2DT004N	6-1589675-1	SSL015L4N	0-1589463-4
JTL051PP2DX010N	1-1589673-6	JTM025PP2DX012N	2-1589674-9	JTM051PD2XC10N	6-1589675-2	SSL015L4PQ	2-1589463-6
JTL051PP2DX024N	1-1589673-7	JTM025PP2DX018N	3-1589674-0	JTM051PP2DC001N	4-1589737-5	SSL025B2	0-1589460-1
JTL051PR2DC012N	1-1589738-5	JTM025PP2DX022N	3-1589674-1	JTM051PP2DC004N	6-1589675-3	SSL025L23N	1-1589462-5
JTL051PR2DC048	1-1589673-8	JTM025PP2DX03.8M	3-1589674-2	JTM051PP2DC2.5N	7-1589699-4	SSL025L2AN	1-1589462-6
JTL065PP2DC005N	2-1589737-2	JTM025PP2DX03.8N	3-1589674-3	JTM051PP2DT005	0-1589737-2	SSL025L2HN	1-1589462-7
JTL065PP2DC006N	2-1589737-5	JTM025PP2DX040N	2-1589737-4	JTM051PP2DX001N	6-1589675-4	SSL025L42	0-1589463-5
JTL065PP2DC012N	2-1589673-3	JTM025PP2DY006	0-1589737-6	JTM051PP2DX004N	6-1589675-5	SSL037B2H	0-1589700-3
JTL065PP2DCC05N	2-1589673-4	JTM025PP2DY006N	3-1589674-4	JTM051PP2DX009Q	5-1589737-2	SSL037B2N	0-1589460-4
JTL065PP2DX012N	0-1589737-8	JTM025PP2DY020N	3-1589674-5	JTM051PP2DX012N	6-1589675-6	SSL037L2HN	1-1589462-8
JTL065PR2DX002N	0-1589738-8	JTM025PP2DY024N	2-1589737-3	JTM051PP2DX036N	1-1589737-3	SSL037L43KN	0-1589464-2
JTM009PD2DX003N	3-1589673-1	JTM025PR0DXC20N	3-1589674-6	JTM051PP2DX040N	1-1589737-4	SSL051B2	0-1589460-5
JTM009PD2DX006N	3-1589673-2	JTM025PR0DXC30N	3-1589674-7	JTM051PP2DX2.5N	6-1589675-7	SSL051L2CN	1-1589462-9
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JTM009PP2DC012N	4-1589737-8	JTM025PR2DT001N	3-1589674-8	JTM051PR0DC036N	2-1589738-9	SSM005L2HN	2-1589462-1
JTM009PP2DC02.5N	3-1589673-3	JTM025PR2DT002M	0-1589738-1	JTM051PR2DC002N	6-1589675-9	SSM005L2N	4-1589462-8
JTM009PP2DM004N	1-1589737-0	JTM025PR2DT240N	3-1589674-9	JTM051PR2DC003Q	2-1589738-3	SSM005L82HN	0-1589467-3
JTM009PP2DT002N	3-1589673-4	JTM025PR2DX0.5N	4-1589674-0	JTM051PR2DC005	7-1589675-0	SSM005L84HN	0-1589467-4
JTM009PP2DT004N	3-1589673-5	JTM025PR2DX001N	2-1589738-7	JTM051PR2DC006Q	2-1589738-4	SSM005L85HN	0-1589468-1
JTM009PP2DX006N	3-1589673-6	JTM025PR2DX003N	0-1589738-5	JTM051PR2DC018N	0-1589738-7	SSM009B2H	0-1589700-4
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JTM009PR2DCC50N	3-1589673-7	JTM025PR2DX012N	4-1589674-2	JTM051PR2DX002N	7-1589675-2	SSM009L2	2-1589462-2
JTM009PR2DT002M	0-1589738-3	JTM025PR2DX020	4-1589674-3	JTM051PR2GX002	7-1589675-3	SSM009L2AN	2-1589462-3
JTM009PR2DX001N	2-1589738-5	JTM037PD2DC002N	8-1589674-8	JTM051PR2GX006Q	7-1589675-4	SSM009L2AQ	2-1589462-4
JTM015PD2DX006N	0-1589798-1	JTM037PD2DC004N	8-1589674-9	JTM051RR2DC003	7-1589675-5	SSM009L2HN	2-1589462-5
JTM015PD2GX006N	0-1589798-2	JTM037PD2GX012N	9-1589674-0	JTM065PD2GX022N	7-1589699-1	SSM009L2N	2-1589462-6
JTM015PD2GX012N	6-1589673-4	JTM037PD2GX024N	9-1589674-1	JTM065PP2DC004N	1-1589737-2	SSM009L2SN	2-1589462-7
JTM015PP2DC006M	6-1589673-5	JTM037PP0DM006	9-1589674-2	JTM065PP2DMC10Q	3-1589737-1	SSM009L42KN	0-1589463-6
JTM015PP2DC012M	6-1589673-6	JTM037PP0DM006N	3-1589737-9	JTM065PP2DX002N	0-1589676-1	SSM009L44KN	0-1589463-7
JTM015PP2DC02.5N	6-1589673-7	JTM037PP2DC018N	3-1589737-4	JTM065PP2DX004N	0-1589676-2	SSM009L44N	0-1589463-8
JTM015PP2DC05.5N	4-1589737-4	JTM037PP2DC024N	3-1589737-6	JTM065PP2DX006N	0-1589676-3	SSM009L4AQ	2-1589463-7
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JTM015PP2DX001N	6-1589673-9	JTM037PP2DC041N	5-1589737-1	JTM065PR2DC001N	0-1589676-5	SSM009L85HN	0-1589468-2
JTM015PP2DX005Q	2-1589737-8	JTM037PP2DX001.75N	9-1589674-3	JTM065PR2DC003	0-1589676-6	SSM015B2N	1-1589460-3
JTM015PP2DX006N	7-1589673-0	JTM037PP2DX001N	9-1589674-4	JTM065PR2DC003N	0-1589676-7	SSM015B45H	0-1589466-1
JTM015PP2DX009N	7-1589673-1	JTM037PP2DX002N	0-1589737-9	JTM065PR2DX001N	2-1589738-8	SSM015H5	0-1589819-1
JTM015PP2DX024N	7-1589673-2	JTM037PP2DX002Q	3-1589737-0	JTM065PR2DX004N	0-1589676-8	SSM015L2AN	2-1589462-8
JTM015PP2DY003N	1-1589737-9	JTM037PP2DX004N	9-1589674-6	JTM065PR2DX004Q	1-1589738-8	SSM015L2AQ	2-1589462-9

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SSM015L2HN	3-1589462-1	STL009L4KN	0-1589484-3	STL065L44N	2-1589484-1	STM025B2N	0-1589490-4
SSM015L2N	4-1589462-7	STL009L4N	9-1589484-2	STL065L4CQ	2-1589484-2	STM025B42N	0-1589485-5
SSM015L2SN	3-1589462-2	STL015B2N	0-1589490-1	STL065L4KN	2-1589484-3	STM025B44	0-1589485-6
SSM015L44KN	1-1589463-0	STL015B44N	0-1589485-1	STL065T5	0-1589814-1	STM025B44N	1-1589485-9
SSM015L4KN	1-1589463-1	STL015L23N	1-1589483-0	STM009B2N	1-1589490-2	STM025B44Q	1-1589485-7
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SSM015L82HN	0-1589467-2	STL015L2AQ	1-1589483-2	STM009B44Q	1-1589485-5	STM025H44N	0-1589817-1
SSM015L84HN	0-1589467-5	STL015L2CN	1-1589483-3	STM009H2N	0-1589902-4	STM025H5N	0-1589813-2
SSM015L85HN	0-1589468-3	STL015L2HN	1-1589483-4	STM009L23N	2-1589483-9	STM025H5Q	0-1589813-3
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SSM025L42HN	2-1589463-4	STL025B2N	1-1589490-1	STM009L44PQ	2-1589484-7	STM025L44HM	4-1589484-1
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SSM037B2	0-1589460-9	STL025L44KN	9-1589484-4	STM015H2N	0-1589902-3	STM025L4PN	4-1589484-9
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SSM037L2AQ	3-1589462-9	STL025L4KN	1-1589484-4	STM015L2AQ	3-1589483-5	STM025L82CN	2-1589486-9
SSM037L2HN	4-1589462-1	STL025L4PQ	8-1589484-6	STM015L2CN	7-1589483-7	STM025L82HN	0-1589486-3
SSM037L2IQ	5-1589462-1	STL037B2M	1-1589490-3	STM015L2HN	3-1589483-6	STM025L84CN	3-1589486-3
SSM037L42IQ	2-1589463-5	STL037B42	0-1589485-2	STM015L2HQ	3-1589483-7	STM025L84KN	0-1589486-4
SSM037L42KN	1-1589463-9	STL037L23N	1-1589483-9	STM015L2LQ	3-1589483-8	STM025L8HN	0-1589486-9
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SSM051B2H	0-1589700-1	STL037L2KN	9-1589483-7	STM015L44HN	3-1589484-4	STM037B42N	0-1589485-8
SSM051L2AQ	4-1589462-3	STL037L2N	8-1589483-5	STM015L44KN	3-1589484-5	STM037B42Q	1-1589485-8
SSM051L2GQ	5-1589462-0	STL037L42KN	8-1589484-2	STM015L44Q	3-1589484-6	STM037B4N	0-1589485-9
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SSM051L2IQ	4-1589462-5	STL037L4HN	1-1589484-6	STM015L4KN	3-1589484-8	STM037L23N	5-1589483-2
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STL009L2AQ	9-1589483-2	STL051L42KN	1-1589484-7	STM015L82IQ	1-1589486-3	STM037L2IQ	9-1589483-1
STL009L2H	0-1589483-8	STL051L4HN	1-1589484-8	STM015L82LQ	2-1589486-1	STM037L2KN	9-1589483-8
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STL009L42KN	0-1589484-2	STL065L2N	2-1589483-8	STM015L84KN	0-1589486-2	STM037L42HN	5-1589484-2

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STM037L42PQ	8-1589484-3	STM065B2Q	0-1589490-9	SSM009M6CN	1-1589469-9	STL037M6SN	1-1589487-5
STM037L44DQ	8-1589484-0	STM065B42N	1-1589485-1	SSM009M6DQ	2-1589469-0	STL051M5CN	1-1589488-5
STM037L44KN	5-1589484-5	STM065B42Q	2-1589485-1	SSM009M6HN	2-1589469-2	STL051M5KN	5-1589488-4
STM037L44N	8-1589484-9	STM065B44	1-1589485-2	SSM009M6SN	2-1589469-4	STL051M6A	1-1589487-6
STM037L44PQ	5-1589484-6	STM065B44N	1-1589485-6	SSM015C5N	0-1589461-2	STL051M6AN	8-1589487-0
STM037L44Q	5-1589484-7	STM065B44Q	1-1589485-3	SSM015C6N	0-1589471-4	STL051M6HN	6-1589487-7
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STM051L4PQ	7-1589484-1	SSL025M6HN	1-1589469-5	STL025M6D	6-1589487-3	STM015M9AN	0-1589489-1
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STM051L84HN	2-1589486-8	SSM009C6Q	0-1589471-1	STL037M5CN	4-1589488-9	STM025M5CN	2-1589488-8
STM051L8HN	1-1589486-0	SSM009M5CN	0-1589470-5	STL037M5LQ	1-1589488-3	STM025M5HN	2-1589488-9
		SSM009M5HN	0-1589470-6			STM025M5LQ	3-1589488-0

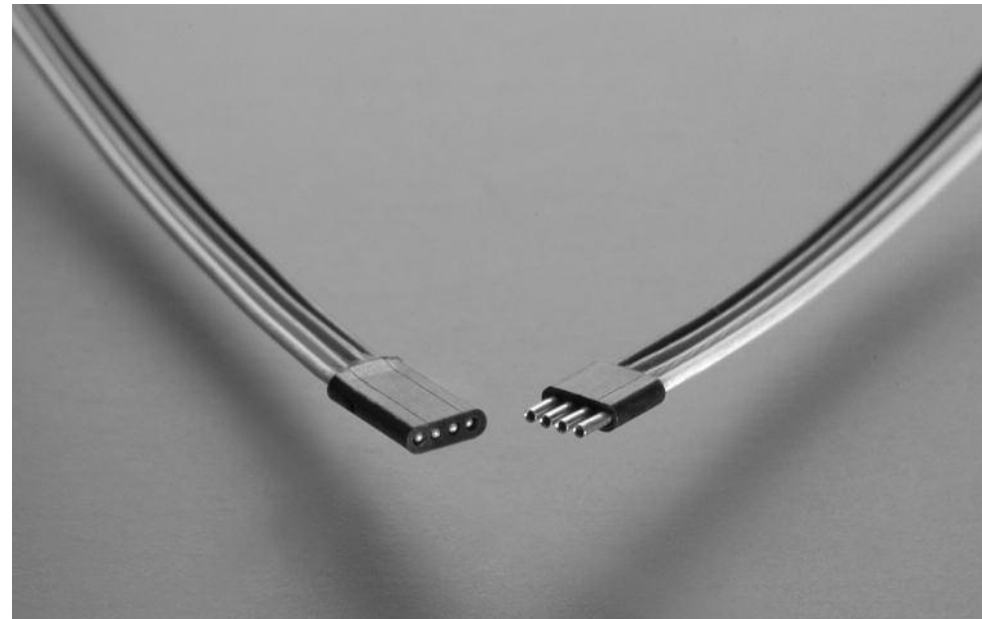
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STM025M6CN	3-1589487-0	STM065M5LQ	4-1589488-6	SSL00911500PC	0-1589051-2	STM06511500SCQ	1-1589054-6
STM025M6DQ	3-1589487-1	STM065M5N	4-1589488-7	SSL00911500PCN	0-1589051-3	<b>Panel Mount</b>	
STM025M6HN	3-1589487-2	STM065M5SN	6-1589488-9	SSL00911500SCN	0-1589052-2	PSM005SC2DC024N	0-1589851-2
STM025M6IQ	5-1589487-9	STM065M6	5-1589487-0	SSL01511500PCM	0-1589051-4	PSM009SC2DC060N	0-1589851-1
STM025M6N	3-1589487-3	STM065M6AQ	7-1589487-3	SSL01511500PCN	0-1589051-5	PTM009SC2DC060N	0-1589050-7
STM025M6Q	3-1589487-4	STM065M6CN	5-1589487-1	SSL01511500SCN	0-1589052-3	PTM015SC2DC024N	0-1589050-4
STM025M6SN	3-1589487-5	STM065M6HN	5-1589487-3	SSM00511500PC	1-1589051-4	PTM015SC2DC060N	0-1589050-5
STM025M9AN	0-1589489-2	STM065M6KN	6-1589487-2	SSM00511500PCH	0-1589051-6	PTM025SC2DC060N	0-1589050-6
STM025M9HN	0-1589489-4	STM065M6SN	5-1589487-4	SSM00511500PCN	0-1589051-7	PTM037SC2DC018N	0-1589050-3
STM037C5	0-1589482-9	<b>Flex Termination "Duckbill"</b>		SSM00511500SCN	0-1589052-4	PTM065SC2DC018N	0-1589050-2
STM037C5N	1-1589482-6	STL00911378PC	0-1589066-3	SSM00911500PC	0-1589051-8		
STM037C5Q	1-1589482-2	STL00911378PCN	0-1589066-4	SSM00911500PCN	0-1589051-9		
STM037C6N	0-1589481-5	STL00911378PCN	0-1589066-4	SSM00911500SCN	1-1589052-1		
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STM037M5AN	3-1589488-3	STL01511378PCN	0-1589066-5	SSM01511500SC	0-1589052-5		
STM037M5AQ	5-1589488-7	STL02511378PCN	0-1589066-6	SSM01511500SCN	1-1589052-0		
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STM037M5PQ	3-1589488-7	STL05111378PCN	0-1589066-8	SSM05111500PCN	1-1589051-3		
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STM051M5AQ	3-1589488-9	STM05111378PC	1-1589066-6	STM00911500PCN	0-1589053-7		
STM051M5CN	4-1589488-0	STM05111378PCM	1-1589066-7	STM00911500SCN	0-1589054-5		
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STM051M6HN	4-1589487-5	STM06511378SCN	1-1589067-0	STM02511500PCN	1-1589053-1		
STM051M6N	7-1589487-2			STM02511500PCQ	2-1589053-3		
STM051M6PQ	4-1589487-6			STM02511500SC	0-1589054-8		
STM051M6SN	4-1589487-7			STM02511500SCN	0-1589054-9		
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STM065C5Q	0-1589482-5			STM05111500PCN	1-1589053-4		
STM065C6	0-1589481-7			STM05111500PCQ	1-1589053-5		
STM065C6N	0-1589481-8			STM05111500SCN	1-1589054-1		
STM065M5AQ	7-1589488-0			STM05111500SCQ	1-1589054-5		
STM065M5CN	4-1589488-4			STM06511500PC	1-1589053-6		

**5**

Nanominature and Microminature Connectors

**NANONICS Strip Connectors Introduction**



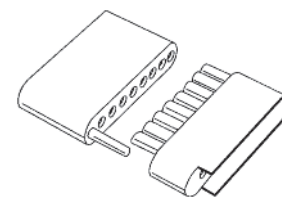
The NANONICS strip connectors are the smallest connectors in the NANONICS product line. They are molded from LCP and are ideal for applications where the height and weight of the connector is a serious design parameter. Just .040" in height, these

connectors are well suited for low-profile applications. Standard sizes are 4, 9, and 15, while 25, 37, and 51 are also available upon request. Standard configurations include wired, surface mount, or thru-hole terminations.

Guide pins are available for polarization. Harness assemblies and custom configurations can also be accommodated.

**Polarization**

Polarization of the strips is accomplished with the use of optional polarizing guide posts.

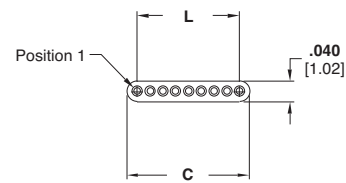
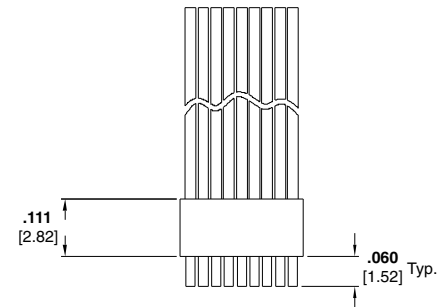
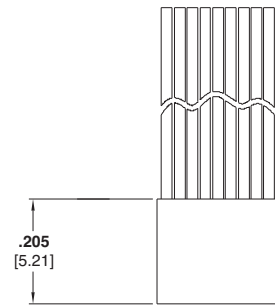


**Polarization Position  
"T" Shown**

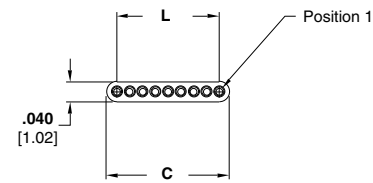
**NANONICS Wired Connectors — Unshrouded, Flying Leads**

**Product Facts**

- Plastic Shell
- Standard Sizes: 4, 9, 15, 25, 37 and 51
- Polarization positions are optional
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



**Plug Assembly**  
Drawing Number 1589448



**Receptacle Assembly**  
Drawing Number 1589449

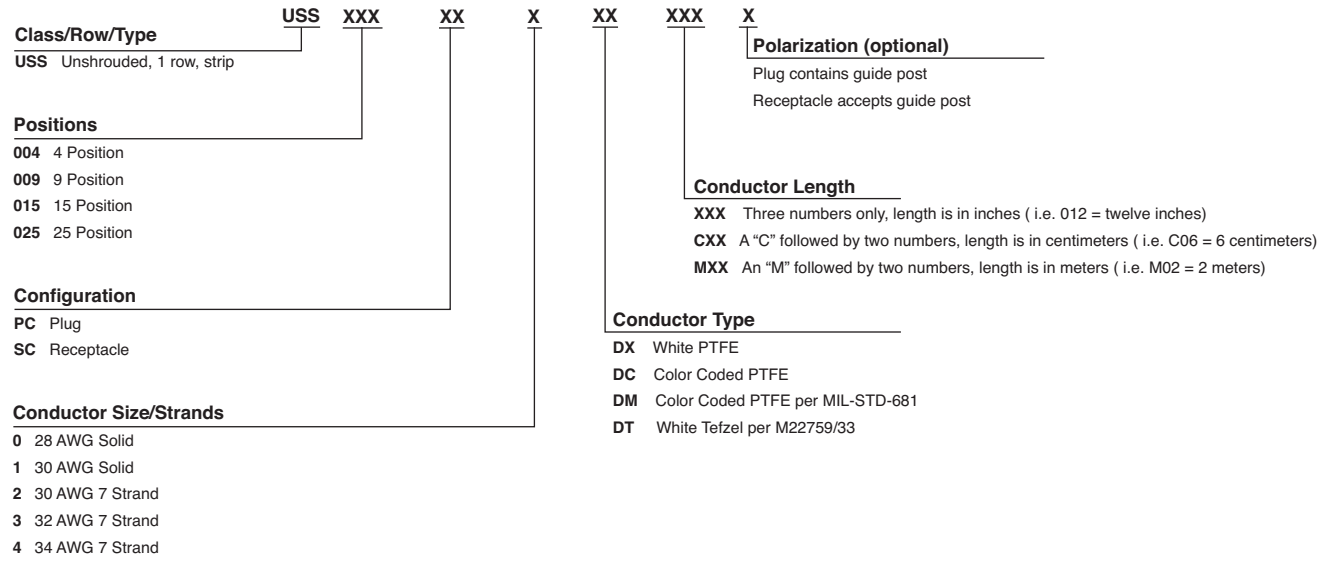
**5**

Nanominature and Microminiature Connectors

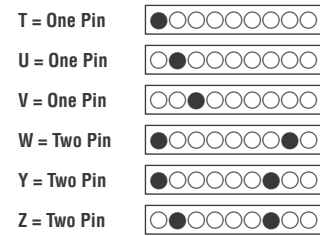
Size	Dimensions	
	C	L
4	0.115 [2.92]	0.075 [1.91]
9	0.240 [6.10]	0.200 [5.08]
15	0.390 [9.91]	0.350 [8.89]
25	0.640 [16.26]	0.600 [15.24]
37	0.940 [23.88]	0.900 [22.86]
51	1.290 [32.77]	1.250 [31.75]

**Part Numbering Guideline for NANONICS Strip Wired Connectors**

**Strip Connectors - Wire Terminations**



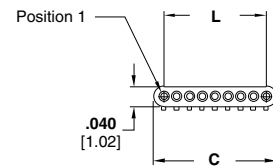
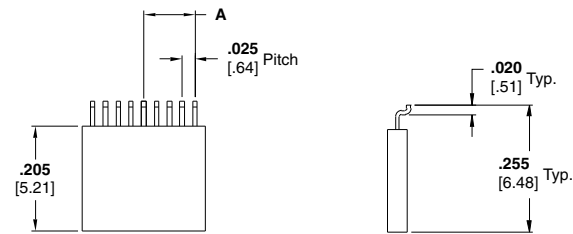
**Polarization (Strip Type Only)**



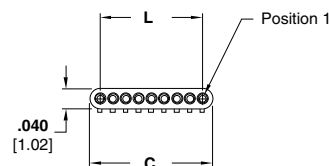
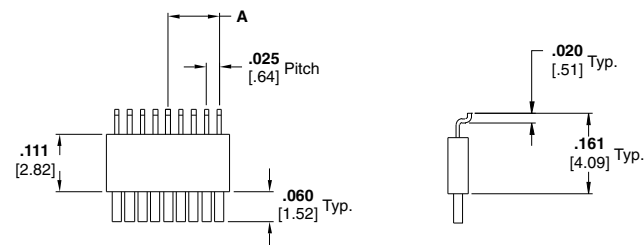
**NANONICS Surface Mount Connectors — Unshrouded**

**Product Facts**

- Plastic Shell
- Standard Sizes: 4, 9, 15, 25, 37 and 51
- Polarization positions are optional
- Contact TE Connectivity for custom configurations
- Suggested Pad Layouts are available on the referenced drawings on the TE website



**Plug Assembly**  
Drawing Number 1589451



**Receptacle Assembly**  
Drawing Number 1589452

**5**

Nanominature and Microminature Connectors

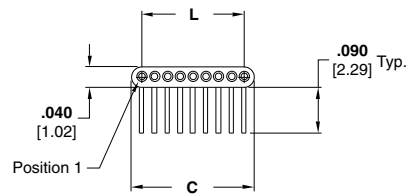
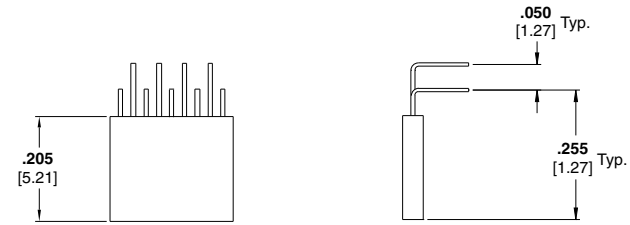
Size	Dimensions		
	A	C	L
4	0.0375 [0.95]	0.115 [2.92]	0.075 [1.91]
9	0.1000 [2.54]	0.240 [6.10]	0.200 [5.08]
15	0.1750 [4.45]	0.390 [9.91]	0.350 [8.89]
25	0.3000 [7.62]	0.640 [16.26]	0.600 [15.24]
37	0.4500 [11.43]	0.940 [23.88]	0.900 [22.86]
51	0.6250 [15.88]	1.290 [32.77]	1.250 [31.75]



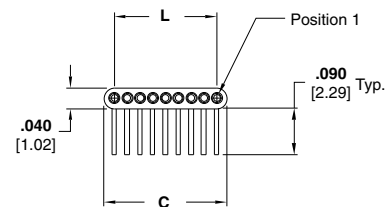
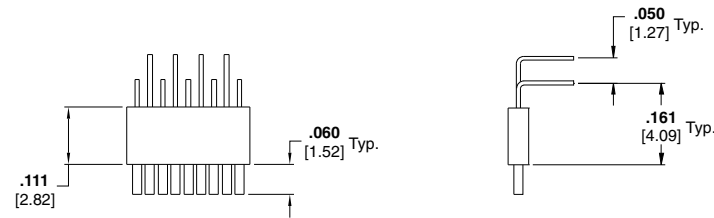
**NANONICS Thru-Hole Connectors — Unshrouded, Horizontal,  
1 Row to 2 Row, .050 Spacing**

**Product Facts**

- Plastic Shell
- Standard Sizes: 4, 9, 15, 25, 37 and 51
- Polarization positions are optional
- Contact TE Connectivity for custom configurations
- Suggested Thru-Hole Layouts are available on the referenced drawings on the TE website



**Plug Assembly**  
Drawing Number 1589453

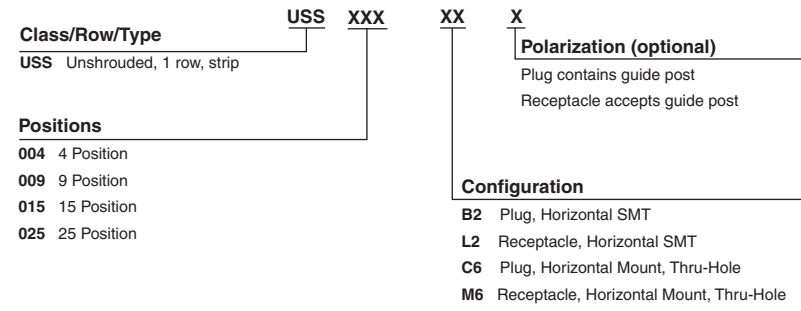


**Receptacle Assembly**  
Drawing Number 1589454

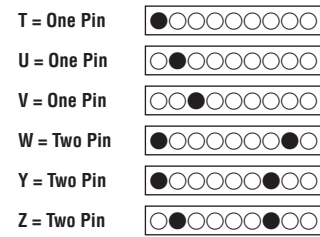
Size	Dimensions	
	C	L
4	0.115 [2.92]	0.075 [1.91]
9	0.240 [6.10]	0.200 [5.08]
15	0.390 [9.91]	0.350 [8.89]
25	0.640 [16.26]	0.600 [15.24]
37	0.940 [23.88]	0.900 [22.86]
51	1.290 [32.77]	1.250 [31.75]

**Part Numbering Guideline for NANONICS Surface Mount and Thru-Hole Termination**

**Strip Connectors - Surface Mount and Thru-Hole Terminations**



**Polarization (Strip Type Only)**



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Nanominature and Microminiature Connectors

**Part Number Index Cross Reference**

NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number	NANONICS Part Number	TE Part Number
<b>Wire Terminations</b>		USS004SC3DC018	1-1589449-8	USS009SC3DC036	7-1589449-6	<b>Surface Mount</b>	
USS004PC2DC003	0-1589448-1	USS004SC3DX004T	1-1589449-9	USS009SC3DX004T	4-1589449-4	USS004B2	0-1589451-1
USS004PC2DC006	0-1589448-2	USS004SC4DXC30	8-1589449-2	USS015PC1DC036T	7-1589448-3	USS004B2T	0-1589451-2
USS004PC2DC006T	5-1589448-5	USS009PC0DC006T	1-1589448-6	USS015PC1DC036W	7-1589448-4	USS004B4	0-1589775-1
USS004PC2DC008	6-1589448-8	USS009PC2DC006	1-1589448-7	USS015PC2DC006	3-1589448-5	USS004B45T	0-1589450-1
USS004PC2DC012	0-1589448-3	USS009PC2DC006W	1-1589448-8	USS015PC2DC012	3-1589448-6	USS004B4T	3-1589683-2
USS004PC2DC012T	0-1589448-4	USS009PC2DC008U	5-1589448-2	USS015PC2DC012T	3-1589448-7	USS004L2	0-1589452-1
USS004PC2DC012U	0-1589448-5	USS009PC2DC012	1-1589448-9	USS015PC2DC012V	3-1589448-8	USS004L2T	0-1589452-2
USS004PC2DC024	0-1589448-6	USS009PC2DC012T	2-1589448-0	USS015PC2DC018	3-1589448-9	USS009B2	0-1589451-3
USS004PC2DC036	0-1589448-7	USS009PC2DC012V	2-1589448-1	USS015PC2DC018V	5-1589448-6	USS009B2T	0-1589451-5
USS004PC2DC036T	0-1589448-8	USS009PC2DC018V	2-1589448-2	USS015PC2DMC60T	4-1589448-0	USS009B2TE	1-1589451-5
USS004PC2DCC20T	5-1589448-9	USS009PC2DC024	2-1589448-3	USS015PC2DX004T	4-1589448-1	USS009B2Z	0-1589451-6
USS004PC2DCC30	0-1589448-9	USS009PC2DC036	2-1589448-4	USS015PC2DX012	4-1589448-2	USS009B43T	5-1589683-6
USS004PC2DCM01	5-1589448-7	USS009PC2DC036T	2-1589448-5	USS015PC2DX024T	4-1589448-3	USS009B4T	5-1589683-7
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USS004PC2DMC40	7-1589448-1	USS009PC2DCM01	5-1589448-8	USS015SC2DC006	4-1589449-6	USS009L2V	0-1589452-6
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USS004PC2GX024	1-1589448-4	USS009PC2GX012	3-1589448-4	USS015SC2DX004T	5-1589449-1	USS025B4T	8-1589683-6
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USS004PC4DXC10	7-1589448-0	USS009SC0DC006T	7-1589449-0	USS015SC2DX018T	5-1589449-2	USS025L4T	8-1589683-7
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USS004SC2DC003	0-1589449-2	USS009SC2DC006	2-1589449-1	USS015SC3DX004T	5-1589449-3	USS037B2T	1-1589451-4
USS004SC2DC003T	0-1589449-3	USS009SC2DC006W	2-1589449-2	USS025PC2DC006	4-1589448-4	USS037L2	1-1589452-1
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USS004SC2DC008	8-1589449-0	USS009SC2DC012T	2-1589449-6	USS025SC2DC006	5-1589449-4	<b>Thru-Hole</b>	
USS004SC2DC012	0-1589449-6	USS009SC2DC012Z	2-1589449-7	USS025SC2DC012	7-1589449-4	USS004C6	0-1589453-1
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USS004SC2DC012U	0-1589449-8	USS009SC2DC018T	2-1589449-9	USS037PC1DXC20	4-1589448-6	USS004M6	0-1589454-1
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USS004SC2DMM01	7-1589449-2	USS009SC2DM012T	8-1589449-8	USS037SC2DX006T	5-1589449-7		
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USS004SC2DX012T	1-1589449-5	USS009SC2DX012	4-1589449-1				
USS004SC2GX006	1-1589449-6	USS009SC2GX006	4-1589449-2				
USS004SC2GX024	1-1589449-7	USS009SC2GX012	4-1589449-3				

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**MICRODOT Microminiature Connectors Introduction**

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MICRODOT Connector products have a sixty-year heritage of leadership in precision design and manufacturing of innovative interconnects. These products offer interconnect solutions for a broad range of applications in the Military, Aerospace, Marine, and Space Industries.

The MICRODOT reputation for hands-on experience and outstanding technical support is now enhanced as part of TE Connectivity Corporation.

From standard Mil-Spec configurations to custom designs, we have the Micro-D, subminiature and ultra-miniature coaxial, and cylindrical connectors

to meet your need, whether it is build-to-print assemblies, or total turn-key assembly program management. MICRODOT connectors have met the rigorous demands imposed in manned space flight, military and commercial satellites, and geophysical exploration.

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## Nanominiature and Microminiature Connectors

**MICRODOT Microminiature D Connectors Introduction**

**Product Facts**

- Designed for both military and commercial applications
- Low engaging force is achieved by the manner in which Twist Pin Contacts are designed
- The metal shell and plastic shell are available with solder cup and solid or stranded wire terminations
- Mating force maximum is 10 oz. [2.78N] times the number of contacts
- Durability — No known mechanical or electrical issues detrimental to the function of the connectors after 500 cycles of mating and unmating
- Current Rating — 3 amps max per contact



MICRODOT Connectors MCK and MCD High Density Microminiature “D” Connectors described in this catalog comprise a complete connector system, which is adaptable to a numerous variety of form factors. Low engaging force is achieved by the manner in which the twist pin contacts are designed. By constructing the male contact as a breathing helical spring, electrical contact is achieved at many points around the periphery of the pin bundle rather than at a few discrete

points, as in conventional pin designs. Normal twist pin engagement force is 6 oz. [1.67N] typically and 8 oz. [2.22N] maximum. The low force twist pins exhibit an engaging force of 4 oz. [1.11N] typically and 5 oz. [1.39N] maximum. The MCK and MCD Series of connectors featured in this catalog are designed to meet the applicable requirements of MIL-DTL-83513, for intermateability, interchangeability, and performance. Designed for both military and commercial applications, the MCK's

and MCD's are especially well suited for use in miniaturized airborne and space electronics, computers, and test equipment. The metal shell MCK's and plastic shell MCD's are available with solder cup, and solid or stranded wire terminations. MCK transition blocks are standard for printed circuit board mounting. Custom termination configurations for both MCK and MCD can be accommodated. Micro D's are also supplied in wired harness assemblies.

**MICRODOT MCK/MCD/MCDM Series Metal and Plastic Shell Connectors**

**Technical and Performance Data**

(Applicable to MCK, MCD and MCDM unless otherwise noted)

**Electrical**

**Contacts** — Pin 24 AWG twist pin, Socket 24 AWG precision machined barrel or Stamped and Formed 24 AWG Pin and Socket. Wire Range 24 AWG to 30 AWG solid and stranded.

**Contact Resistance** — (voltage drop) 25 millivolts max. at 3 amps, 77°± 7.4°F [25°± 3° C].

**Current Rating** — 3 amps max. per contact.

**Dielectric Withstanding Voltage** — Volts RMS 60 Hz at room ambient. At sea level 600V At 70,000 ft. [21,336 m] 150V

**Insulation Resistance** — 5,000 megohms min. (@ 500 VDC) at ambient room temperature.

**Magnetic Permeability** — 2 mu max.

**Mechanical**

**Contact Spacing** — .050 [1.27mm] centers.

**Contact Engagement & Separation** — Standard contact engaging force is 6.0 oz. [1.67N] (8.0 oz. [2.22N] max.). Separation force is 0.5 [.14N] oz. min.

**Mating Force Maximum** — Calculated as 10 oz. times the number of contacts.

**Environmental**

**Temperature Range** — -67°F to 257°F [-55° C to +125°C] for MCK/MCD, -67°F to 302°F [-55°C to +150°C] for MCDM.

**Vibration** — No discontinuity in excess of 1 µ second when tested in accordance with EIA-364-28, test condition IV.

**Solderability** — Connectors shall pass the test requirements of MIL-STD-202, Method 208

**Shock** — No discontinuity in excess of 1 µ second when tested in accordance with EIA-364-27, test condition E.

**Durability** — No mechanical or electrical defects detrimental to the function of the connectors after 500 cycles of mating and unmating.

**Humidity** — After exposure to humidity as specified EIA-364-31, Method II, IR shall be 1 megohm minimum following step 7a of EIA-364-31 section 4.3.6.1 and 1000 megohms minimum after 24 hours of conditioning per EIA-364-31.

**Salt Spray** — Connectors shall meet the performance requirements of contact resistance, mating and unmating forces, and contact retention after being subjected to the 48 hour 5% solution salt spray test per EIA-364-26, Condition B.

**Fluid Immersion** — Unmated connectors after being fully immersed in one of the following fluids, for the prescribed time, will mate at a force of 10 oz. [2.78N] times the number of contacts or less: Perchloroethylene, 2 hours;

Lubricating oil per MIL-L-23699, 20 hours.

**Insert Retention** — Inserts will withstand a 50 lb. [34N/cm<sup>2</sup>] per square inch load in either direction.

**Crimp Termination Tensile Strength** — (Unassembled contacts with crimped stranded wire terminations) Wires will not pull out of contacts when the following axial loads are applied: 24 AWG, 5 lbs. [22.24N]; 26 AWG, 4 lbs. [17.79N]; 28 AWG, 3 lbs. [13.34N]

**Outgassing** — When tested in accordance with SP-R-0022, Total Mass Loss (TML) shall be less than 1.0% and Volatile Condensable Material (VCM) shall be less than 0.1% of the original specimen.

**Materials and Finishes**

**Contacts** — Copper alloy plated with .000050 [.00127] gold over copper flash per MIL-G-45204 Type II.

**Hardware** — see pages 5-61 and 5-62.

**MCK-Metal Shell** —

Insulator — Liquid crystal polymer (LCP) per ASTM D5138, or Polyphenylene sulfide per ASTM D4067 or MIL-M-24519

Interfacial Seal — Fluorosilicone Rubber per MIL-R-25988 (socket side only)

Body Shell — Aluminum alloy-high grade plated

Cadmium per QQ-P-416

Nickel, electroless per AMS 2404

**Transition Block Shell** —

Liquid crystal polymer (LCP) per ASTM D5138, or Polyphenylene sulfide per ASTM D4067 or MIL-M-24519

Potting Material — Epoxy, Black

**MCD-Plastic Shell** —

Insulator/Body — Polyester, glass filled per MIL-M-24519, Liquid crystal polymer (LCP) per ASTM D5138, or Polyphenylene sulfide per ASTM D4067 or MIL-M-24519

**Wire Terminations** —

Solid copper per QQ-W-343 gold plated per MIL-DTL-45204

Stranded PTFE insulated per MIL-W-16878

Stranded PTFE insulated per MIL-W-22759/11, /33

Solid copper per QQ-W-343, solder dipped (Transition block)

**MCDM-Metal Shell** —

Insulator — Diallyl Phthalate per MIL-M-14, Type SDG-F

Body Shell — Aluminum alloy—high grade, nickel plated



Nanominiature and Microminiature Connectors

**Twist Pin, Pin and Socket Contacts**

The contact spring member normally found in socket contacts has been eliminated by creating a breathing helical spring principle on the pin contact — smaller, more durable contacts can be manufactured economically.



Wire range 24-36 AWG solid & stranded.

MIL-DTL-83513 — Only the descriptive legend in bold italic is applicable to current MIL-DTL-83513 configurations; MIL-DTL-83513/1 through /4 — MCKS metal shell; MIL-DTL-83513/6 through /9 — MCD plastic shell.

In addition, MIL-DTL-83513 solid copper wire termination is specified 25 AWG, 0.5; and 1.0 [25.4] lengths only and stranded insulated wire termination is specified 26 AWG, 18.0 [457.2] and 36.0 [914.4] lead lengths only. Hardware for MIL-DTL-83513 configurations is specified separately by the M83513/5-XX designation. M83513/1 through /4 and /6 through /9 specify no hardware (B). Mounting/mating hardware is shown on page 5-61 with the applicable military nomenclature. The MICRODOT catalog part number for a MIL-DTL-83513 configuration may be constructed to include the desired hardware.

See pages 5-78 through 5-82 for M83513/ cross reference.



**MICRODOT How To Specify MCK and MCD Connectors**

**Metal Shell**

Connector Series **MCK** — **N1** — **B** — **37** — **P**

MCK — Twist Pin & Drawn Socket  
MCKS — Stamp & Formed Pin & Socket

Shell Finish  
C1 — Cadmium, Clear  
C2 — Cadmium, Yellow Chromate  
N1 — Nickel, Electroless

Hardware (See Pages 5-79 and 5-80)  
B — No Hardware  
F — Float Bushing  
KM — Jackscrew, Slotted Head, High Profile (9-51)  
HM — Jackscrew, Slotted Head, High Profile (100)  
LM — Jackscrew, Slotted Head, Low Profile (9-51)  
JM — Jackscrew, Slotted Head, Low Profile (100)  
QM — Jackscrew, Allen Head, High Profile (9-51)  
TM — Jackscrew, Allen Head, High Profile (100)  
RM — Jackscrew, Allen Head, Low Profile (9-51)  
NM — Jackscrew, Allen Head, Low Profile (100)  
P — Jackpost Assembly (9-51)  
S — Jackpost Assembly (100)  
X — Lockscrew, Slotted Head  
Y — Lockscrew, Allen Head  
Z — Clip and Key (Clip Mount Only)

Layout  
9, 15, 21, 25, 31, 37, 51, 100  
See contact arrangement

Contact Type  
P — Pin (Plug)  
S — Socket (Receptacle)

**S** — Solder pots 26 AWG max.  
X — Special, not described by legend.

6 — **A** — 1 — 18.0  
Lead Length in Inches (Min.)

Insulation Color or Finish  
1 — All white wire 6 — Bare (unfinished)  
2 — All yellow wire 7 — Color coded per MIL-STD-681, System 1  
3 — All gray wire 8 — Special color code  
4 — Gold plated 9 — 10 Solid color repeating per MIL-DTL-83513  
5 — Tin dipped gold plated

Wire Type  
Per MIL-W-16878 {  
A — Type E, 7 strand  
B — Type ET, 7 strand  
C — Type E, 19 strand  
D — Type ET, 19 strand  
F — 7 strand per MIL-W-22759/11 (28 AWG only)  
G — 19 strand per MIL-C-22759/11 (26 AWG only), 24 AWG  
L — Copper, Solid (25 AWG only)  
Q — Stranded per MIL-W-22759/33 (26 AWG only)

Wire Size  
4 — 24 AWG 5 — 25 AWG 6 — 26 AWG 8 — 28 AWG 0 — 30 AWG

**Plastic Shell**

Connector Series **MCD** — **R3** — **B** — **37** — **P**

Insulator Type/Material  
G2 — Clip Mount, polyester, natural  
G3 — Screw Mount, polyester, natural, .093 Fig.  
R2 — Clip Mount, Ryton  
R3 — Screw Mount, Liquid Crystal Polymer or Polyphenylene Sulfide

Hardware (See Pages 5-79 and 5-80)  
B — No Hardware  
F — Float Bushing  
KM — Jackscrew, Slotted Head, High Profile  
LM — Jackscrew, Slotted Head, Low Profile  
QM — Jackscrew, Allen Head, High Profile  
RM — Jackscrew, Allen Head, Low Profile  
P — Jackpost Assembly  
X — Lockscrew, Slotted Head  
Y — Lockscrew, Allen Head  
Z — Clip and Key (Clip Mount Only)

Layout  
9, 15, 21, 25, 31, 37, 51  
See contact arrangement

Contact Type  
P — Pin (Plug)  
S — Socket (Receptacle)

**S** — Solder pots 26 AWG max.  
X — Special — Does not fit description below.

6 — **A** — 1 — 18.0  
Lead Length in Inches (Min.)

Insulation Color or Finish  
1 — All white wire 6 — Bare (unfinished)  
2 — All yellow wire 7 — Color coded per MIL-STD-681, System 1  
3 — All gray wire 8 — Special color code  
4 — Gold plated 9 — 10 Solid color repeating per MIL-DTL-83513  
5 — Tin dipped gold plated

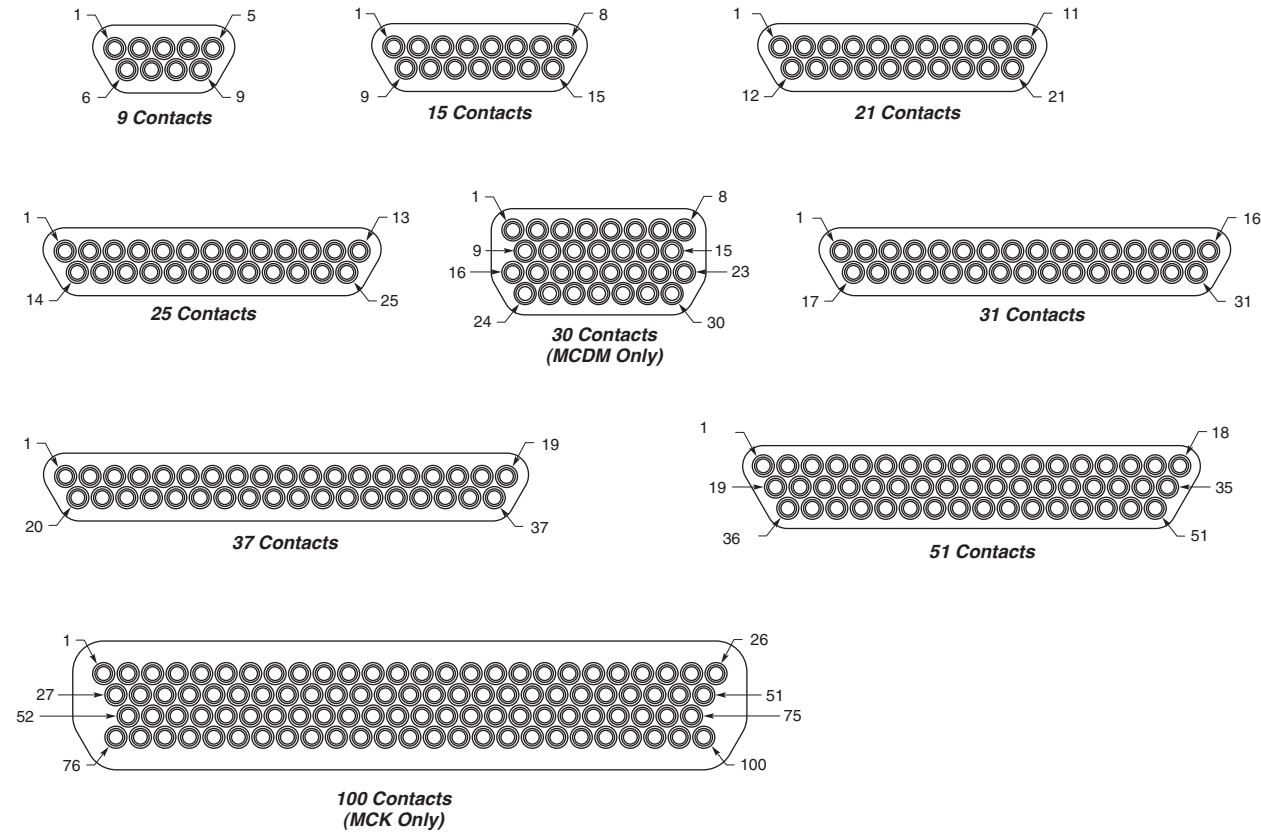
Wire Type  
Per MIL-W-16878 {  
A — Type E, 7 strand  
B — Type ET, 7 strand  
C — Type E, 19 strand  
D — Type ET, 19 strand  
F — 7 strand per MIL-W-22759/11 (28 AWG only)  
G — 19 strand per MIL-C-22759/11 (26 AWG only), 24 AWG  
L — Copper, Solid (25 AWG only)  
Q — Stranded per MIL-W-22759/33 (26 AWG only)

Wire Size  
4 — 24 AWG 5 — 25 AWG 6 — 26 AWG 8 — 28 AWG 0 — 30 AWG

Note: Items in bold italic are qualified to MIL-DTL-83513.

**MICRODOT Contact Arrangements**

Face View of Pin Insert  
(Socket Side is Mirror Image)



**5**

Nanominiature and Microminiature Connectors

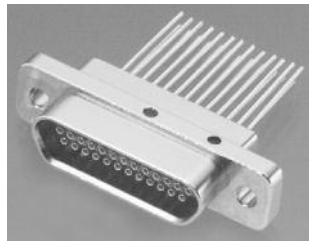
**Note:** MCK metal shells are not designed to intermate or interchange with MCD plastic shells. If metal/plastic intermating is desired, use MCDM Series Metal Shell on pages 5-72 and 5-73 with MCD Series Plastic Shell on page 5-58.

**MICRODOT MCK Series Metal Shell Connectors**

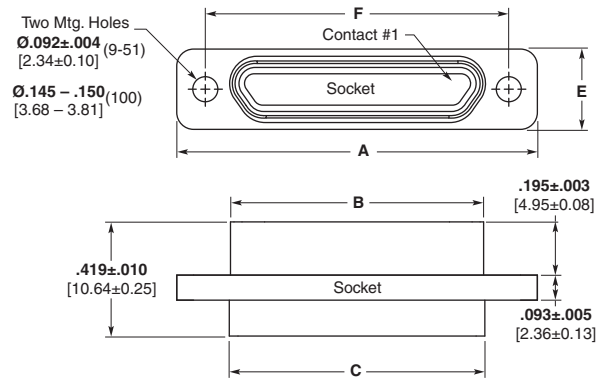
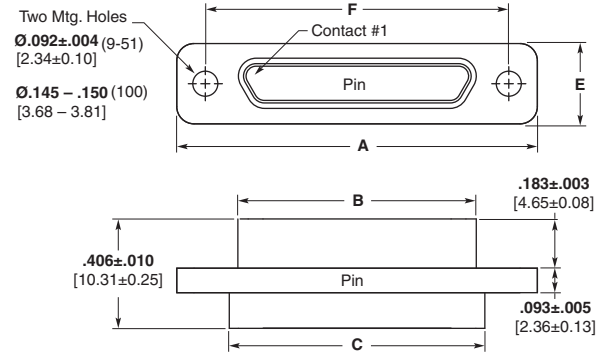
**Dimensions per MIL-DTL-83513**



Plug  
(Pin side)



Receptacle  
(Socket side)

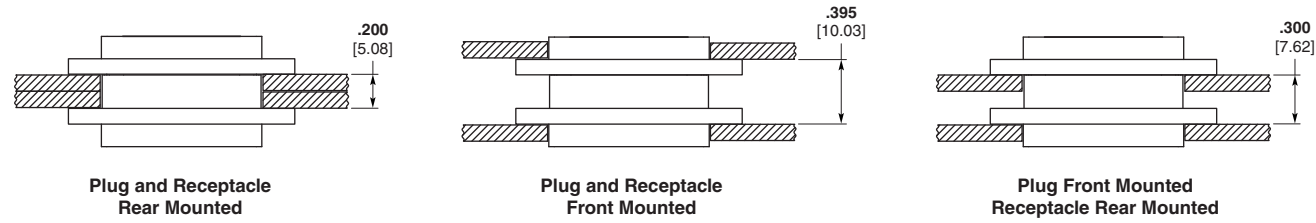


Part Number	A $\pm .010$ [.254]	B Max.	C $+0.010$ [.254] $-0.018$ [.457]	D Max	E $\pm .010$ [.254]	F $\pm .005$ [.127]
MCK**- 9P***	.775 19.68	.3338 8.48	.390 9.91	.270 6.86	.298 7.57	.565 14.35
MCK**- 9S***	.775 19.68	.4018 10.21	.390 9.91	.270 6.86	.298 7.57	.565 14.35
MCK**- 15P***	.925 23.50	.4838 12.29	.540 13.72	.270 6.86	.298 7.57	.715 18.16
MCK**- 15S***	.925 23.50	.5518 14.02	.540 13.72	.270 6.86	.298 7.57	.715 18.16
MCK**- 21P***	1.075 27.30	.6338 16.10	.690 17.53	.270 6.86	.298 7.57	.865 21.97
MCK**- 21S***	1.075 27.30	.7018 18.05	.690 17.53	.270 6.86	.298 7.57	.865 21.97
MCK**- 25P***	1.175 29.84	.7338 18.64	.790 20.07	.270 6.86	.298 7.57	.965 24.51
MCK**- 25S***	1.175 29.84	.8018 20.37	.790 20.07	.270 6.86	.298 7.57	.965 24.51
MCK**- 31P***	1.325 33.66	.8838 22.45	.940 23.88	.270 6.86	.298 7.57	1.115 28.32
MCK**- 31S***	1.325 33.66	.9518 24.18	.940 23.88	.270 6.86	.298 7.57	1.115 28.32
MCK**- 37P***	1.475 37.46	1.0338 26.26	1.090 27.69	.270 6.86	.298 7.57	1.265 32.13
MCK**- 37S***	1.475 37.46	1.1018 27.99	1.090 27.69	.270 6.86	.298 7.57	1.265 32.13
MCK**- 51P***	1.425 36.20	.9838 24.99	1.040 26.42	.310 7.87	.341 8.66	1.215 30.86
MCK**- 51S***	1.425 36.20	1.0518 26.72	1.040 26.42	.310 7.87	.341 8.66	1.215 30.86
MCK**- 100P***	2.160 54.86	1.3838 35.15	1.432 36.37	.360 9.15	.384 9.75	1.800 45.71
MCK**- 100S***	2.160 54.86	1.508 38.30	1.432 36.37	.360 9.15	.384 9.75	1.800 45.71

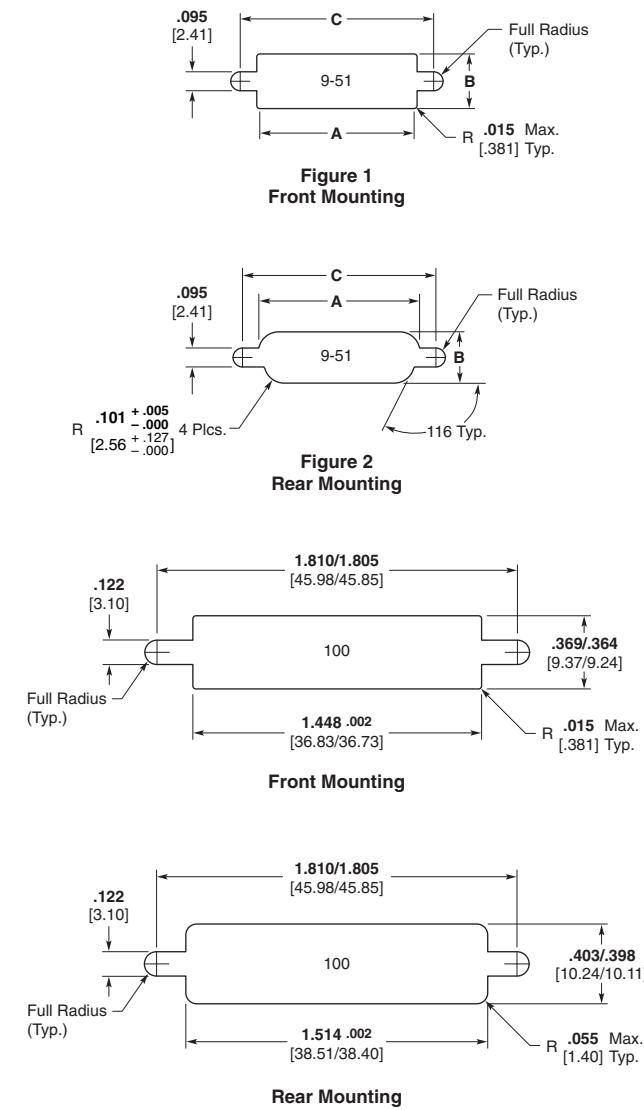
P = Pin, S = Socket

**MICRODOT MCK Series Metal Shell Connectors Panel Mounting — Cutout Dimensions**

**Panel Mounting Dimensions — MCK**



**Panel Cutout Dimensions — MCK**



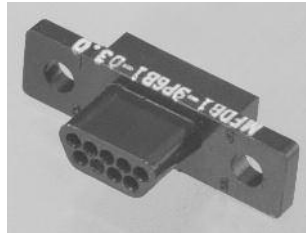
Number of Contacts	Fig.	A + .004 [.102] - .000 [.000]	B + .004 [.102] - .000 [.000]	C + .005 [.127] - .000 [.000]
9	1	.404 10.26	.274 6.96	.570 14.48
	2	.406 10.31	.257 6.53	.570 14.48
15	1	.554 14.07	.274 6.96	.720 18.29
	2	.556 14.12	.257 6.53	.720 18.29
21	1	.704 17.88	.274 6.96	.870 22.10
	2	.706 17.93	.257 6.53	.870 22.10
25	1	.804 20.42	.274 6.96	.970 24.64
	2	.806 20.47	.257 6.53	.970 24.64
31	1	.954 24.23	.274 6.96	1.120 28.45
	2	.956 24.28	.257 6.53	1.120 28.45
37	1	1.104 28.04	.274 6.96	1.270 32.26
	2	1.106 28.09	.257 6.53	1.270 32.26
51	1	1.054 26.77	.314 7.98	1.220 30.99
	2	1.056 26.82	.300 7.62	1.220 30.99

**5**

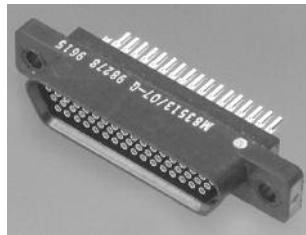
Nanminiature and Microminiature Connectors

**MICRODOT MCD Series Plastic Shell Connectors**

**Screw Mount Dimensions Per MIL-DTL-83513**

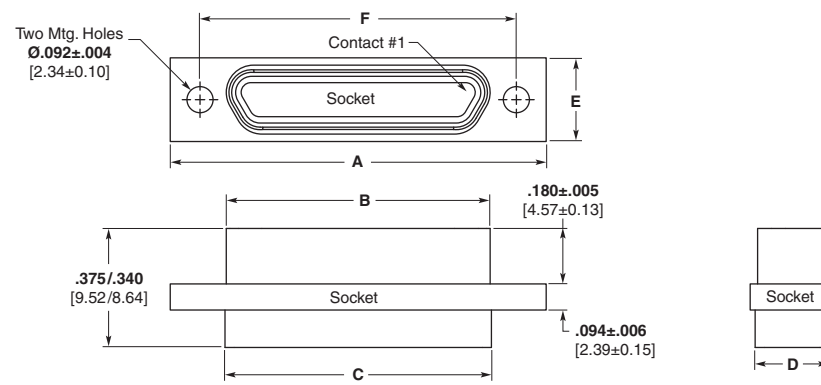
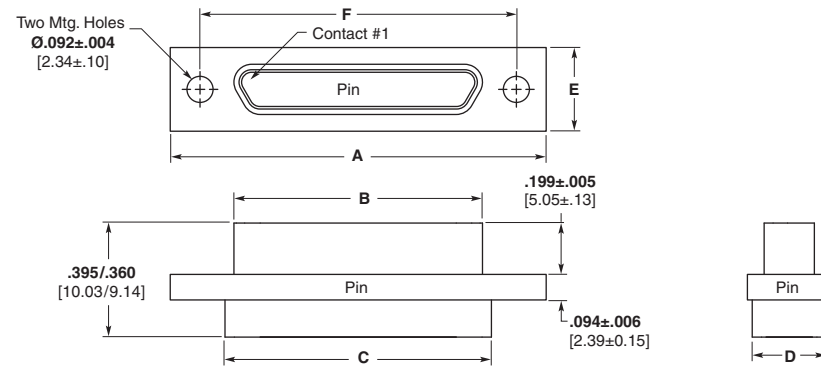


Plug  
(Pin side)



Receptacle  
(Socket side)

Liquid Crystal Polymer or Polyphenylene Sulfide — MCDR3\* per MIL-DTL-83513



Note: MCD Plastic Screw Mount Series is intermateable with MCDM Metal Series Connectors (Pages 5-72 and 5-73).

Part Number	A ± .010 [.254]	B Max.	C +.010 [.254] -0.018 [.457]	D Max	E ±.010 [.254]	F ± .005 [.127]	Avg. Weight lbs. ± 5% [grams]
MCD**- 9P***	.778 19.76	.2918 7.412	.398 10.11	.173 4.39	.208 5.28	.565 14.35	.0017 0.77
MCD**- 9S***	.778 19.76	.3798 9.647	.398 10.11	.173 4.39	.208 5.28	.565 14.35	.0016 0.72
MCD**- 15P***	.928 23.57	.4418 11.222	.548 13.92	.173 4.39	.208 5.28	.715 18.16	.0024 1.08
MCD**- 15S***	.928 23.57	.5298 13.457	.548 13.92	.173 4.39	.208 5.28	.715 18.16	.0023 1.04
MCD**- 21P***	1.078 27.38	.5918 15.032	.698 17.73	.173 4.39	.208 5.28	.865 21.97	.0035 1.59
MCD**- 21S***	1.078 27.38	.6798 17.267	.698 17.73	.173 4.39	.208 5.28	.865 21.97	.0034 1.54
MCD**- 25P***	1.178 29.92	.6918 17.572	.798 20.27	.173 4.39	.208 5.28	.965 24.51	.0042 1.90
MCD**- 25S***	1.178 29.92	.7798 19.807	.798 20.27	.173 4.39	.208 5.28	.965 24.51	.0037 1.67
MCD**- 31P***	1.328 33.73	.8418 21.382	.948 24.08	.173 4.39	.208 5.28	1.115 28.32	.0053 2.40
MCD**- 31S***	1.328 33.73	.9298 23.617	.948 24.08	.173 4.39	.208 5.28	1.115 28.32	.0048 2.17
MCD**- 37P***	1.478 37.54	.9918 25.192	1.098 27.89	.173 4.39	.208 5.28	1.265 32.13	.0057 2.58
MCD**- 37S***	1.478 37.54	1.0798 27.427	1.098 27.89	.173 4.39	.208 5.28	1.265 32.13	.0051 2.31
MCD**- 51P***	1.428 36.27	.9418 23.922	1.048 26.62	.220 5.59	.250 6.35	1.215 30.86	.0072 3.26
MCD**- 51S***	1.428 36.27	1.0298 26.157	1.048 26.62	.220 5.59	.250 6.35	1.215 30.86	.0063 2.85

P = Pin, S = Socket

Note: Weight given is with .500 [12.7] uninsulated, solid, 24 AWG gold plated copper pigtailed.

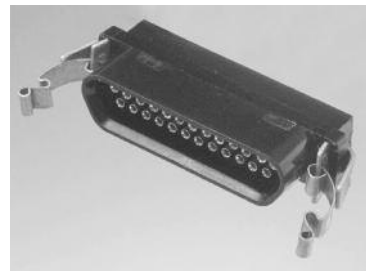
\*See "How to Specify" for description, on page 5-54.

**MICRODOT MCD Series Plastic Shell Connectors** (Continued)

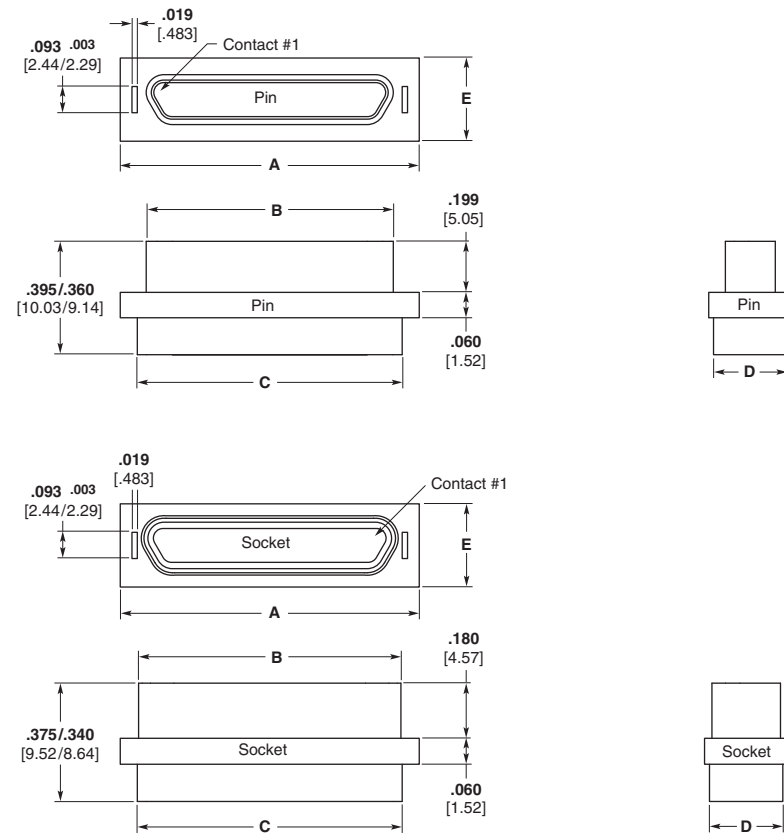
**Clip Mount — MCD**



Plug  
(Pin side)



Receptacle  
(Socket side)



**5**

Nanominature and Microminiature Connectors

**Note:** Clip Mount not covered by current issue of MIL-DTL-83513.

Part Number	A ±.005 [.127]	B Max.	C ±.010 [.254]	D ±.010 [.254]	E ±.005 [.127]	Avg. Weight lbs. ± 5% [grams]
MCD**- 9P***	.506 12.85	.2918 74.12	.398 10.11	.165 4.19	.208 5.28	.0017 0.77
MCD**- 9S***	.506 12.85	.3798 96.47	.398 10.11	.165 4.19	.208 5.28	.0016 0.72
MCD**- 15P***	.656 16.66	.4418 112.22	.548 13.92	.165 4.19	.208 5.28	.0024 1.08
MCD**- 15S***	.656 16.66	.5298 134.57	.548 13.92	.165 4.19	.208 5.28	.0023 1.04
MCD**- 21P***	.806 20.47	.5918 150.32	.698 17.73	.165 4.19	.208 5.28	.0035 1.59
MCD**- 21S***	.806 20.47	.6798 172.67	.698 17.73	.165 4.19	.208 5.28	.0034 1.54
MCD**- 25P***	.906 23.01	.6918 175.72	.798 20.27	.165 4.19	.208 5.28	.0042 1.90
MCD**- 25S***	.906 23.01	.7798 198.07	.798 20.27	.165 4.19	.208 5.28	.0037 1.67
MCD**- 31P***	1.056 26.82	.8418 213.82	.948 24.08	.165 4.19	.208 5.28	.0053 2.40
MCD**- 31S***	1.056 26.82	.9298 236.17	.948 24.08	.165 4.19	.208 5.28	.0048 2.17
MCD**- 37P***	1.206 30.63	.9918 251.92	1.098 27.89	.165 4.19	.208 5.28	.0057 2.58
MCD**- 37S***	1.206 30.63	1.0798 274.27	1.098 27.89	.165 4.19	.208 5.28	.0051 2.31
MCD**- 51P***	1.156 29.36	.9418 239.22	1.048 26.62	.208 5.28	.250 6.35	.0072 3.26
MCD**- 51S***	1.156 29.36	1.0298 261.57	1.048 26.62	.208 5.28	.250 6.35	.0063 2.85

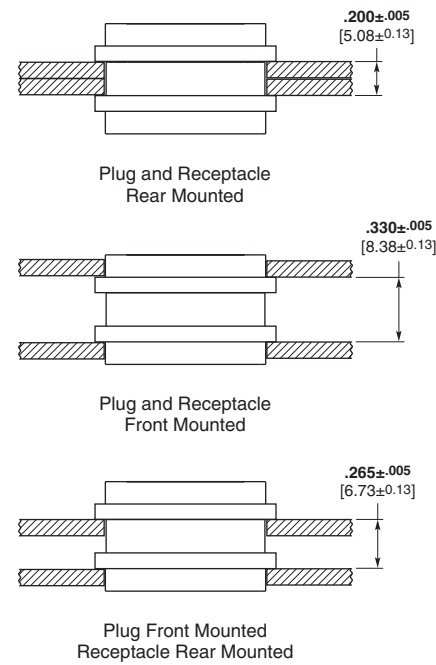
P = Pin, S = Socket  
**Note:** Weight given is with .500 [12.7] uninsulated, solid, 24 AWG gold plated copper pigtailed.  
 \*See "How to Specify" for description, on page 5-54.



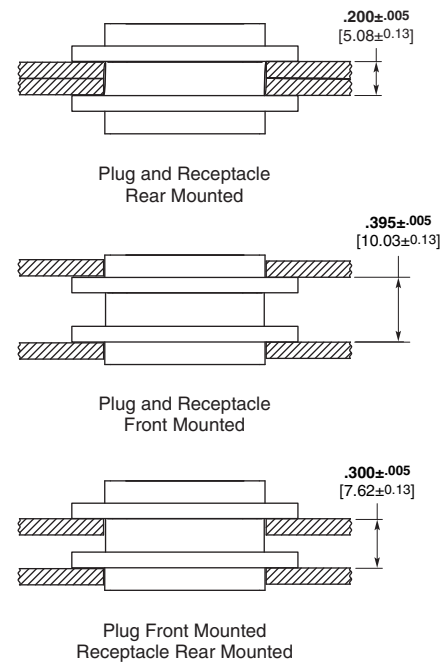
**MICRODOT MCD Series Plastic Shell Connectors Panel Mounting — Cutout Dimensions**

**Panel Mounting Dimensions — MCD**

**Clip Mount**



**Screw Mount**



**Panel Cutout Dimensions — MCD**

**Clip Mounting**

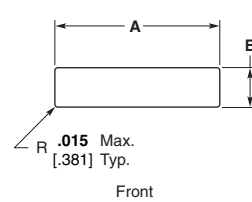


Figure 1

**Screw Mounting**

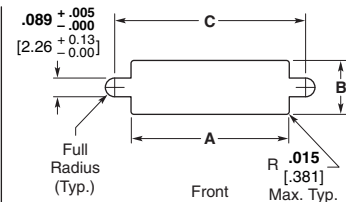


Figure 2

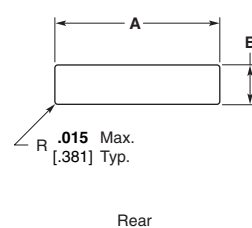


Figure 3

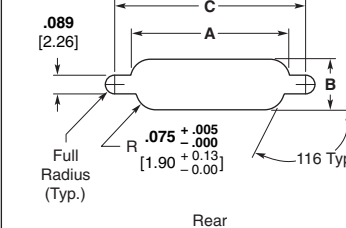


Figure 4

Notes: Front mounting preferred.

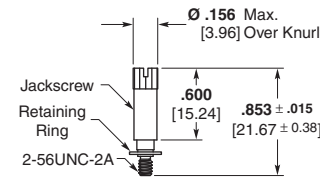
Number of Contacts	Fig.	A + .004 [1.02] - .000 [0.00]	B + .004 [1.02] - .000 [0.00]	C + .005 [1.27] - .000 [0.00]
9	1	.438 [11.13]	.177 [4.50]	—
	2	.412 [10.46]	.177 [4.50]	.570 [14.48]
	3	.438 [11.13]	.222 [5.64]	—
	4	.384 [9.75]	.222 [5.64]	.570 [14.48]
15	1	.588 [14.93]	.177 [4.50]	—
	2	.562 [14.27]	.177 [4.50]	.720 [18.29]
	3	.588 [14.93]	.222 [5.64]	—
	4	.534 [13.56]	.222 [5.64]	.720 [18.29]
21	1	.738 [18.75]	.177 [4.50]	—
	2	.712 [18.08]	.177 [4.50]	.870 [22.10]
	3	.738 [18.75]	.222 [5.64]	—
	4	.684 [17.37]	.222 [5.64]	.870 [22.10]
25	1	.838 [21.29]	.177 [4.50]	—
	2	.812 [20.62]	.177 [4.50]	.970 [24.64]
	3	.838 [21.29]	.222 [5.64]	—
	4	.784 [19.91]	.222 [5.64]	.970 [24.64]
31	1	.988 [25.10]	.177 [4.50]	—
	2	.962 [24.43]	.177 [4.50]	1.120 [28.45]
	3	.988 [25.10]	.222 [5.64]	—
	4	.934 [23.72]	.222 [5.64]	1.120 [28.45]
37	1	1.138 [28.91]	.177 [4.50]	—
	2	1.112 [28.24]	.177 [4.50]	1.270 [32.26]
	3	1.138 [28.91]	.222 [5.64]	—
	4	1.084 [27.53]	.222 [5.64]	1.270 [32.26]
51	1	1.088 [27.64]	.224 [5.69]	—
	2	1.062 [26.97]	.224 [5.69]	1.220 [30.99]
	3	1.088 [27.64]	.264 [6.71]	—
	4	1.034 [26.26]	.264 [6.71]	1.220 [30.99]

**MICRODOT Mounting and Coupling Hardware**

**For Screw Mount MCK, MCKS, MCD and MCDM**

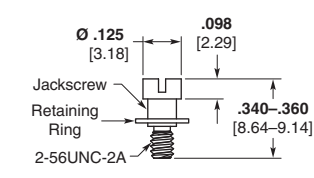
**9-51 Contacts Slot Head**

(KM)



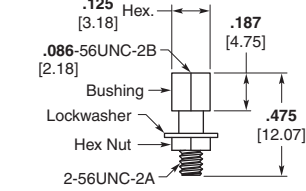
**Part Number 5-1532137-8  
Jackscrew Assembly  
High Profile  
M83513/5-06  
(KM) S96-0002-0084**

(LM)



**Part Number 5-1532137-7  
Jackscrew Assembly  
Low Profile  
M83513/5-05  
(LM) S96-0002-0085**

(P)

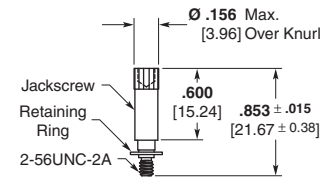


**Part Number 5-1532137-9  
Jackpost Assembly  
(P) S96-0002-0009  
M83513/5-07**

P mates with KM, LM, QM and RM Jackscrew Assemblies.

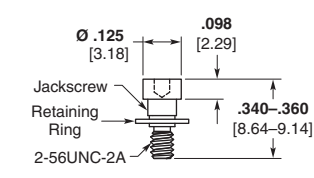
**9-51 Contacts 1/16" Allen Head**

(QM)



**Part Number 5-1532137-6  
Jackscrew Assembly  
High Profile  
M83513/5-03  
(QM) S96-0002-0086**

(RM)



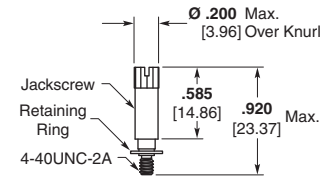
**Part Number 5-1532137-5  
Jackscrew Assembly  
Low Profile  
M83513/5-02  
(RM) S96-0002-0087**

**Notes:**

1. Jackpost Assemblies will accommodate .094 [2.39] max. thickness panel.
2. Letter(s) in parentheses is to assist in ordering hardware with the connector (See "How To Specify" page 5-54).
3. **Items in bold italic are qualified to MIL-DTL-83513.**
4. Mounting torque values and mating torque values are per MIL-DTL-83513/5.

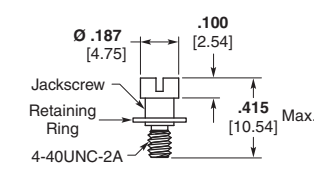
**100 Contacts Slot Head**

(HM)



**Part Number 6-1532137-3  
Jackscrew Assembly  
High Profile  
M83513/5-16  
(HM) S96-0002-0088**

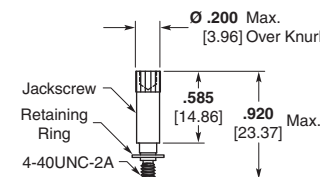
(JM)



**Part Number 6-1532137-2  
Jackscrew Assembly  
Low Profile  
M83513/5-15  
(JM) S96-0002-0089**

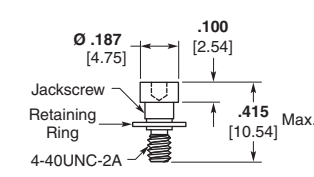
**100 Contacts 1/16" Allen Head**

(TM)



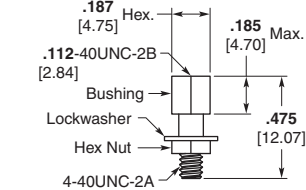
**Part Number 6-1532137-1  
Jackscrew Assembly  
High Profile  
M83513/5-13  
(TM) S96-0002-0090**

(NM)



**Part Number 6-1532137-0  
Jackscrew Assembly  
Low Profile  
M83513/5-12  
(NM) S96-0002-0091**

(S)



**Part Number 6-1532137-4  
Jackpost Assembly  
(S) S96-0002-0060  
M83513/5-17**

S mates with HM, JM, TM and NM Jackscrew Assemblies.

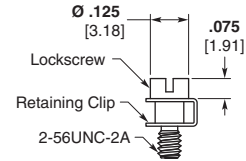
**5**

Nanominiature and Microminiature Connectors

**MICRODOT Mounting and Coupling Hardware** (Continued)

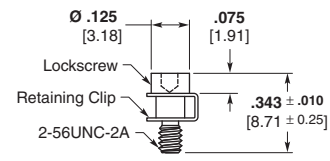
**For Screw Mount MCK, MCD and MCDM** (Continued)

**Slot Head (X)**



**Part Number 4-1532137-3**  
**Lockscrew Assembly**  
**096-0002-0008**

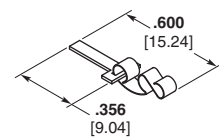
**1/16" Allen Head (Y)**



**Part Number 1495164-1**  
**Lockscrew Assembly**  
**096-0002-0013**

**For Clip Mount — MCD**

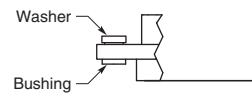
**(Z)**



**Part Number 1466018-1**  
**Mounting Key and Clip**  
**P/N 096-0001-0000**  
**(2 Required)**

**For Float Mount — MCK, MCD and MCDM**

**(F)**



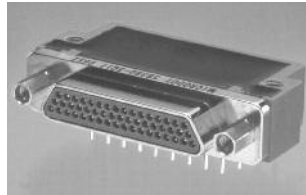
**Float Mount Bushing**  
**(Factory Installed)**

**Notes:**

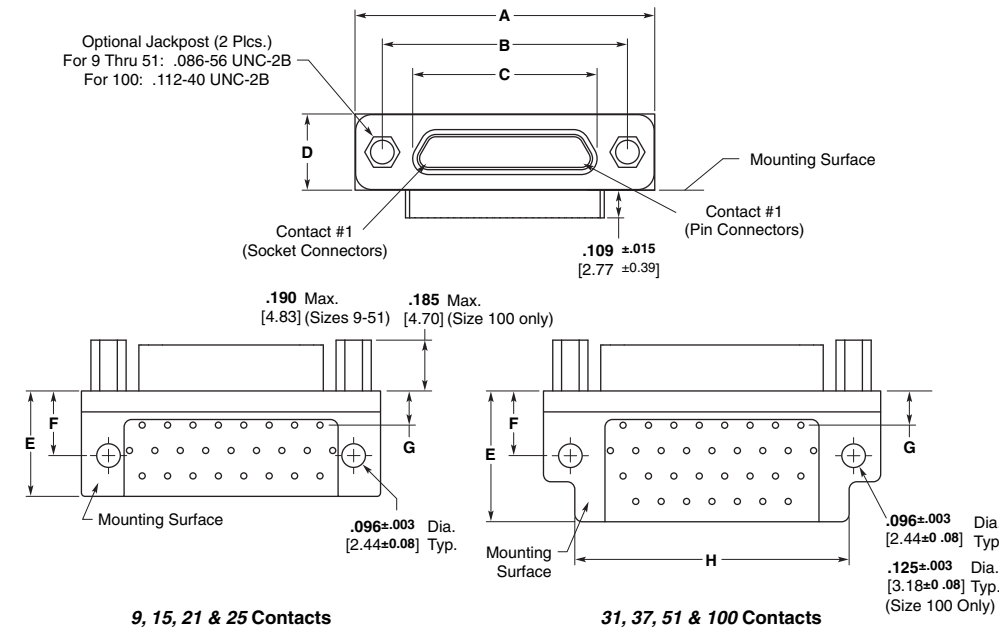
1. Jackpost Assemblies will accommodate .094 [2.39] max. thickness panel.
2. Letter(s) in parentheses is to assist in ordering hardware with the connector (See "How To Specify" page 5-54).
3. Hardware ordered separately should be ordered in pairs; i.e. 2 pcs. P/N 096-0002-0013 per connector half.

**MICRODOT MCK Transition Blocks**

**RT1 — Right-Angle Termination Configuration**



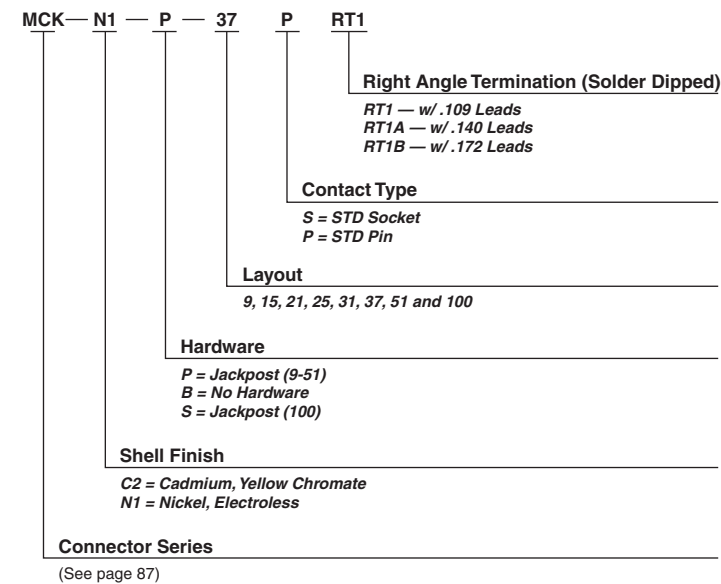
MIL-DTL-83513/10 through /15 configurations. 90° — Narrow Profile termination configurations. See pages 5-78 to 5-82 for M83513 cross references.



**5**

Nanominature and Microminiature Connectors

**How To Specify**



**Notes:**

1. For terminal identification see page 5-65.
2. Grid pattern for all configurations is .100 x .100 [2.54 x 2.54].
3. Lead lengths shown are for RT1.
4. Items in **bold italic** are qualified to MIL-DTL-83513.

**MICRODOT MCK Transition Blocks** (Continued)

**RT1 — Right-Angle Termination Configuration**

(Continued)

Part Number	A Max.	B ± 005 [.127]	C Max.	D Max.	E Max.	F + .010 [.254]	G + .010 [.254]	H Max.
<i>MCK-**-*- 9PRT1</i>	.787 19.99	.565 14.35	<b>.3338</b> 8.48	<b>.308</b> 7.83	<b>.425</b> 10.80	<b>.250</b> 6.35	<b>.230</b> 5.84	—
<i>MCK-**-*- 9SRT1</i>	.787 19.99	.565 14.35	<b>.4018</b> 10.21	<b>.308</b> 7.83	<b>.425</b> 10.80	<b>.250</b> 6.35	<b>.230</b> 5.84	—
<i>MCK-**-*- 15PRT1</i>	.937 23.80	.715 18.16	<b>.4838</b> 12.29	<b>.308</b> 7.83	<b>.425</b> 10.80	<b>.250</b> 6.35	<b>.130</b> 3.30	—
<i>MCK-**-*- 15SRT1</i>	.937 23.80	.715 18.16	<b>.5518</b> 14.02	<b>.308</b> 7.83	<b>.425</b> 10.80	<b>.250</b> 6.35	<b>.130</b> 3.30	—
<i>MCK-**-*- 21PRT1</i>	<b>1.087</b> 27.61	<b>.865</b> 21.97	<b>.6338</b> 16.10	<b>.308</b> 7.83	<b>.425</b> 10.80	<b>.250</b> 6.35	<b>.130</b> 3.30	—
<i>MCK-**-*- 21SRT1</i>	<b>1.087</b> 27.61	<b>.865</b> 21.97	<b>.7018</b> 17.83	<b>.308</b> 7.83	<b>.425</b> 10.80	<b>.250</b> 6.35	<b>.130</b> 3.30	—
<i>MCK-**-*- 25PRT1</i>	<b>1.187</b> 30.15	<b>.965</b> 24.51	<b>.7338</b> 18.64	<b>.308</b> 7.83	<b>.425</b> 10.80	<b>.250</b> 6.35	<b>.130</b> 3.30	—
<i>MCK-**-*- 25SRT1</i>	<b>1.187</b> 30.15	<b>.965</b> 24.51	<b>.8018</b> 20.37	<b>.308</b> 7.83	<b>.425</b> 10.80	<b>.250</b> 6.35	<b>.130</b> 3.30	—
<i>MCK-**-*- 31PRT1</i>	<b>1.337</b> 33.96	<b>1.115</b> 28.32	<b>.8838</b> 22.45	<b>.308</b> 7.83	<b>.525</b> 13.34	<b>.250</b> 6.35	<b>.130</b> 3.30	<b>1.090</b> 27.69
<i>MCK-**-*- 31SRT1</i>	<b>1.337</b> 33.96	<b>1.115</b> 28.32	<b>.9518</b> 24.18	<b>.308</b> 7.83	<b>.525</b> 13.34	<b>.250</b> 6.35	<b>.130</b> 3.30	<b>1.090</b> 27.69
<i>MCK-**-*- 37PRT1</i>	<b>1.487</b> 37.77	<b>1.265</b> 32.13	<b>1.0338</b> 26.26	<b>.308</b> 7.83	<b>.525</b> 13.34	<b>.250</b> 6.35	<b>.130</b> 3.30	<b>1.190</b> 30.23
<i>MCK-**-*- 37SRT1</i>	<b>1.487</b> 37.77	<b>1.265</b> 32.13	<b>1.1018</b> 27.99	<b>.308</b> 7.83	<b>.525</b> 13.34	<b>.250</b> 6.35	<b>.130</b> 3.30	<b>1.190</b> 30.23
<i>MCK-**-*- 51PRT1</i>	<b>1.435</b> 36.45	<b>1.215</b> 30.86	<b>.9838</b> 24.99	<b>.351</b> 8.92	<b>.660</b> 16.76	<b>.300</b> 7.62	<b>.150</b> 3.81	<b>1.230</b> 31.24
<i>MCK-**-*- 51SRT1</i>	<b>1.435</b> 36.45	<b>1.215</b> 30.86	<b>1.0518</b> 26.72	<b>.351</b> 8.92	<b>.660</b> 16.76	<b>.300</b> 7.62	<b>.150</b> 3.81	<b>1.230</b> 31.24
<i>MCK-**-*- 100PRT1</i>	<b>2.175</b> 55.25	<b>1.800</b> 45.72	<b>1.3838</b> 35.15	<b>.394</b> 10.01	<b>1.010</b> 25.65	<b>.400</b> 10.16	<b>.200</b> 5.08	<b>1.825</b> 46.36
<i>MCK-**-*- 100SRT1</i>	<b>2.175</b> 55.25	<b>1.800</b> 45.72	<b>1.508</b> 38.30	<b>.394</b> 10.01	<b>1.010</b> 25.65	<b>.400</b> 10.16	<b>.200</b> 5.08	<b>1.825</b> 46.36

P = Pin, S = Socket

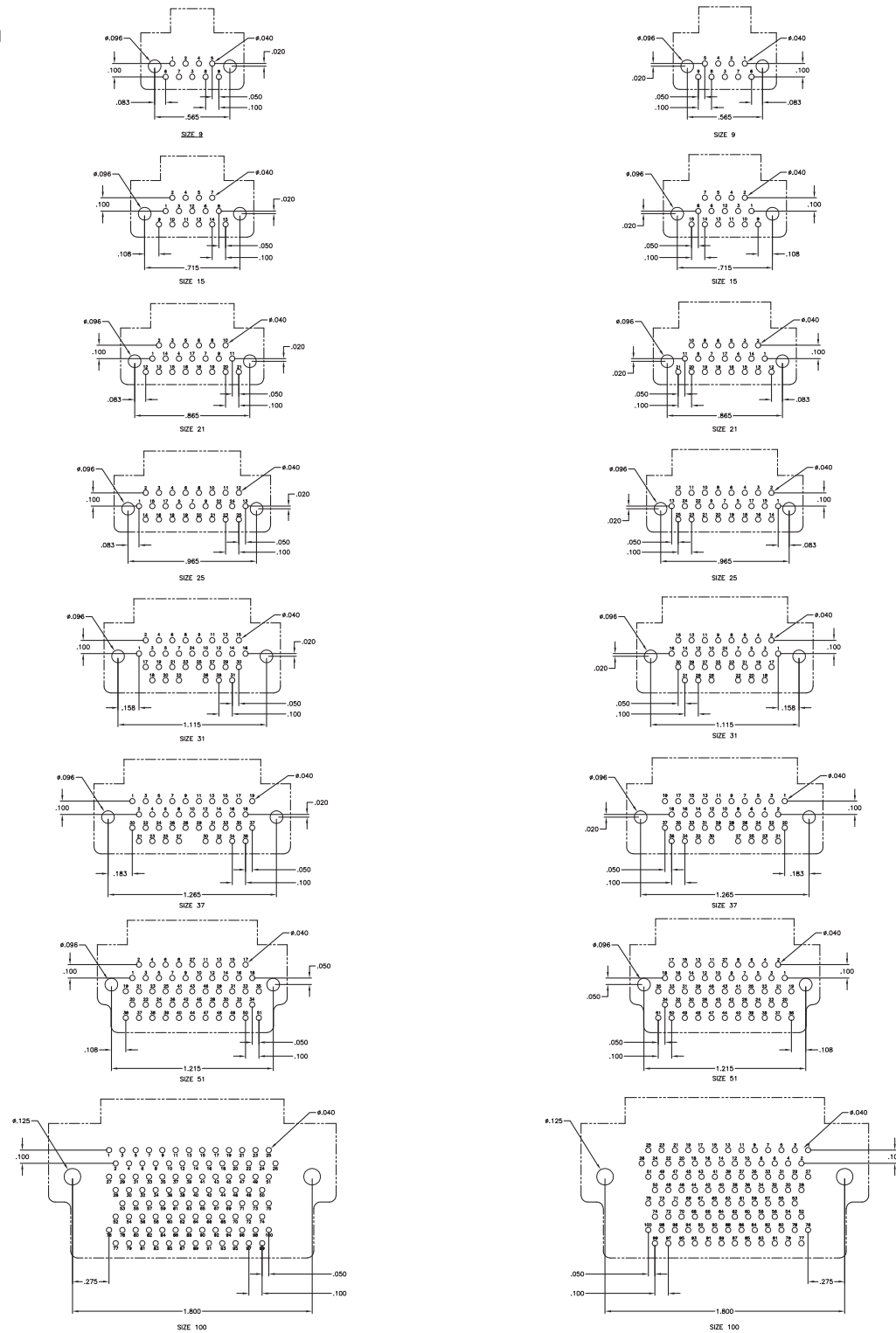
Note: Items in bold italic are qualified to MIL-DTL-83513.

**MICRODOT MCK Transition Blocks** (Continued)

**RT1 — Right-Angle Termination Configuration**

(Continued)

View is of termination side of plug connector. For receptacle, use mirror image. (Except 100 contacts)



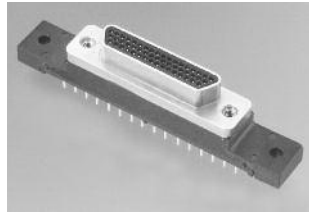
**5**

Nanominature and Microminiature Connectors

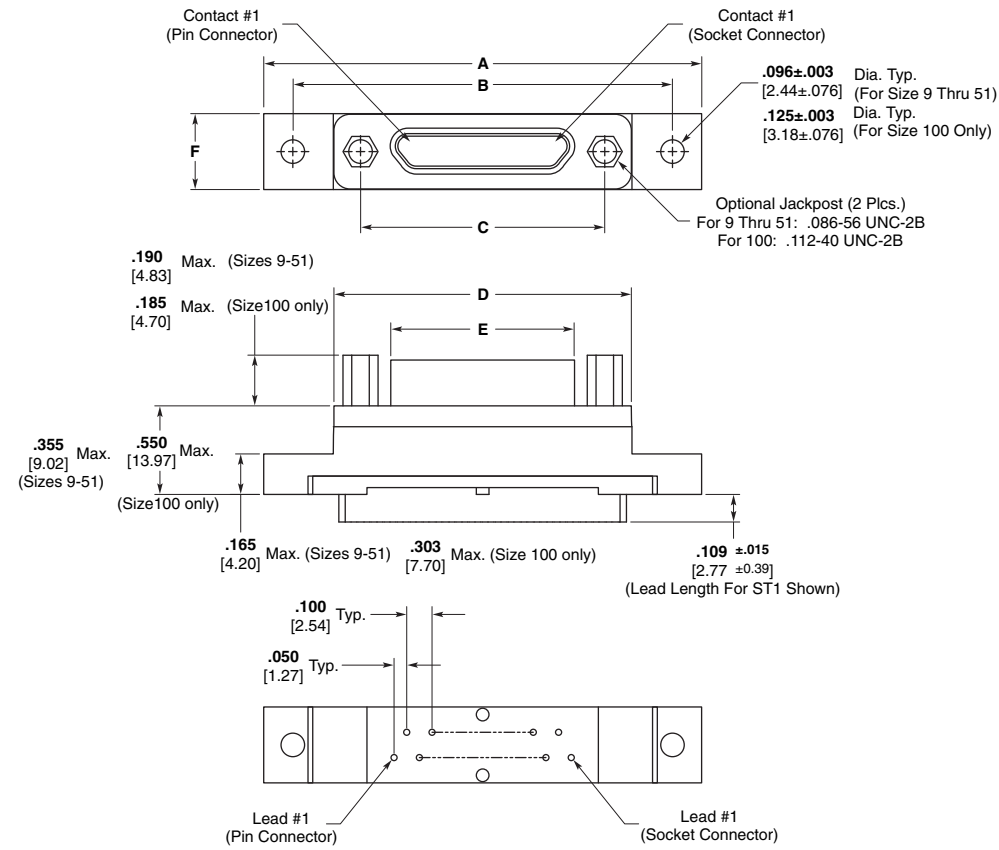


**MICRODOT MCK Transition Blocks** (Continued)

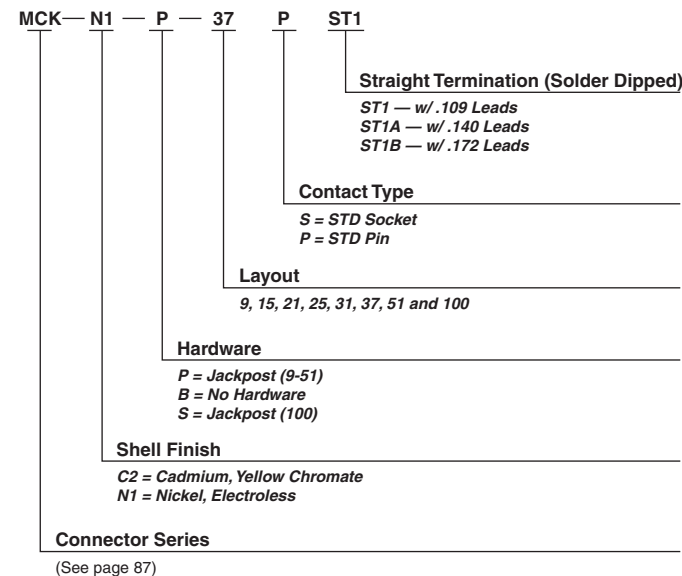
**ST1 — Straight Termination Configuration**



MIL-DTL-83513/22 through /27 configurations. 180° — Narrow Profile termination configurations. See pages 5-78 to 5-82 for M83513 cross references.



**How To Specify**



**Notes:**

- For terminal identification see page 5-81.
- Grid pattern for all configurations is  $.100 \times .100$  [2.54 x 2.54].
- Lead lengths shown are for ST1.
- Items in bold italic are qualified to MIL-DTL-83513.

**MICRODOT MCK Transition Blocks** (Continued)

**ST1 — Straight Termination Configuration** (Continued)

Part Number	A Max.	B ± .007 [.178]	C ± .005 [.127]	D Max.	E Max.	F Max.
<i>MCK-**-*- 9PST1</i>	<b>1.390</b> 35.31	<b>1.150</b> 29.21	<b>.565</b> 14.35	<b>.885</b> 22.48	<b>.3338</b> 8.48	<b>.308</b> 7.83
<i>MCK-**-*- 9SST1</i>	<b>1.390</b> 35.31	<b>1.150</b> 29.21	<b>.565</b> 14.35	<b>.885</b> 22.48	<b>.4018</b> 10.21	<b>.308</b> 7.83
<i>MCK-**-*- 15PST1</i>	<b>1.390</b> 35.31	<b>1.150</b> 29.21	<b>.715</b> 18.16	<b>.945</b> 24.00	<b>.4838</b> 12.29	<b>.308</b> 7.83
<i>MCK-**-*- 15SST1</i>	<b>1.390</b> 35.31	<b>1.150</b> 29.21	<b>.715</b> 18.16	<b>.945</b> 24.00	<b>.5518</b> 14.02	<b>.308</b> 7.83
<i>MCK-**-*- 21PST1</i>	<b>1.690</b> 42.93	<b>1.450</b> 36.83	<b>.865</b> 21.97	<b>1.185</b> 30.10	<b>.6338</b> 16.10	<b>.308</b> 7.83
<i>MCK-**-*- 21SST1</i>	<b>1.690</b> 42.93	<b>1.450</b> 36.83	<b>.865</b> 21.97	<b>1.185</b> 30.10	<b>.7018</b> 17.83	<b>.308</b> 7.83
<i>MCK-**-*- 25PST1</i>	<b>1.740</b> 44.20	<b>1.500</b> 38.10	<b>.965</b> 24.51	<b>1.275</b> 32.39	<b>.7338</b> 18.64	<b>.308</b> 7.83
<i>MCK-**-*- 25SST1</i>	<b>1.740</b> 44.20	<b>1.500</b> 38.10	<b>.965</b> 24.51	<b>1.275</b> 32.39	<b>.8018</b> 20.37	<b>.308</b> 7.83
<i>MCK-**-*- 31PST1</i>	<b>2.040</b> 51.82	<b>1.800</b> 45.72	<b>1.115</b> 28.32	<b>1.575</b> 40.01	<b>.8838</b> 22.45	<b>.308</b> 7.83
<i>MCK-**-*- 31SST1</i>	<b>2.040</b> 51.82	<b>1.800</b> 45.72	<b>1.115</b> 28.32	<b>1.575</b> 40.01	<b>.9518</b> 24.18	<b>.308</b> 7.83
<i>MCK-**-*- 37PST1</i>	<b>2.340</b> 59.44	<b>2.100</b> 53.34	<b>1.265</b> 32.13	<b>1.875</b> 47.63	<b>1.0338</b> 26.26	<b>.308</b> 7.83
<i>MCK-**-*- 37SST1</i>	<b>2.340</b> 59.44	<b>2.100</b> 53.34	<b>1.265</b> 32.13	<b>1.875</b> 47.63	<b>1.1018</b> 27.99	<b>.308</b> 7.83
<i>MCK-**-*- 51PST1</i>	<b>2.270</b> 57.66	<b>2.000</b> 50.80	<b>1.215</b> 30.86	<b>1.775</b> 45.09	<b>.9838</b> 24.99	<b>.351</b> 8.92
<i>MCK-**-*- 51SST1</i>	<b>2.280</b> 57.91	<b>2.000</b> 50.80	<b>1.215</b> 30.86	<b>1.775</b> 45.09	<b>1.0518</b> 26.72	<b>.351</b> 8.92
<i>MCK-**-*- 100PST1</i>	<b>3.250</b> 82.55	<b>2.800</b> 71.12	<b>1.800</b> 45.72	<b>2.585</b> 65.66	<b>1.3838</b> 35.15	<b>.460</b> 11.68
<i>MCK-**-*- 100SST1</i>	<b>3.250</b> 82.55	<b>2.800</b> 71.12	<b>1.800</b> 45.72	<b>2.585</b> 65.66	<b>1.508</b> 38.30	<b>.460</b> 11.68

P = Pin, S = Socket

**5**

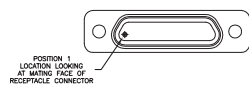
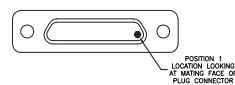
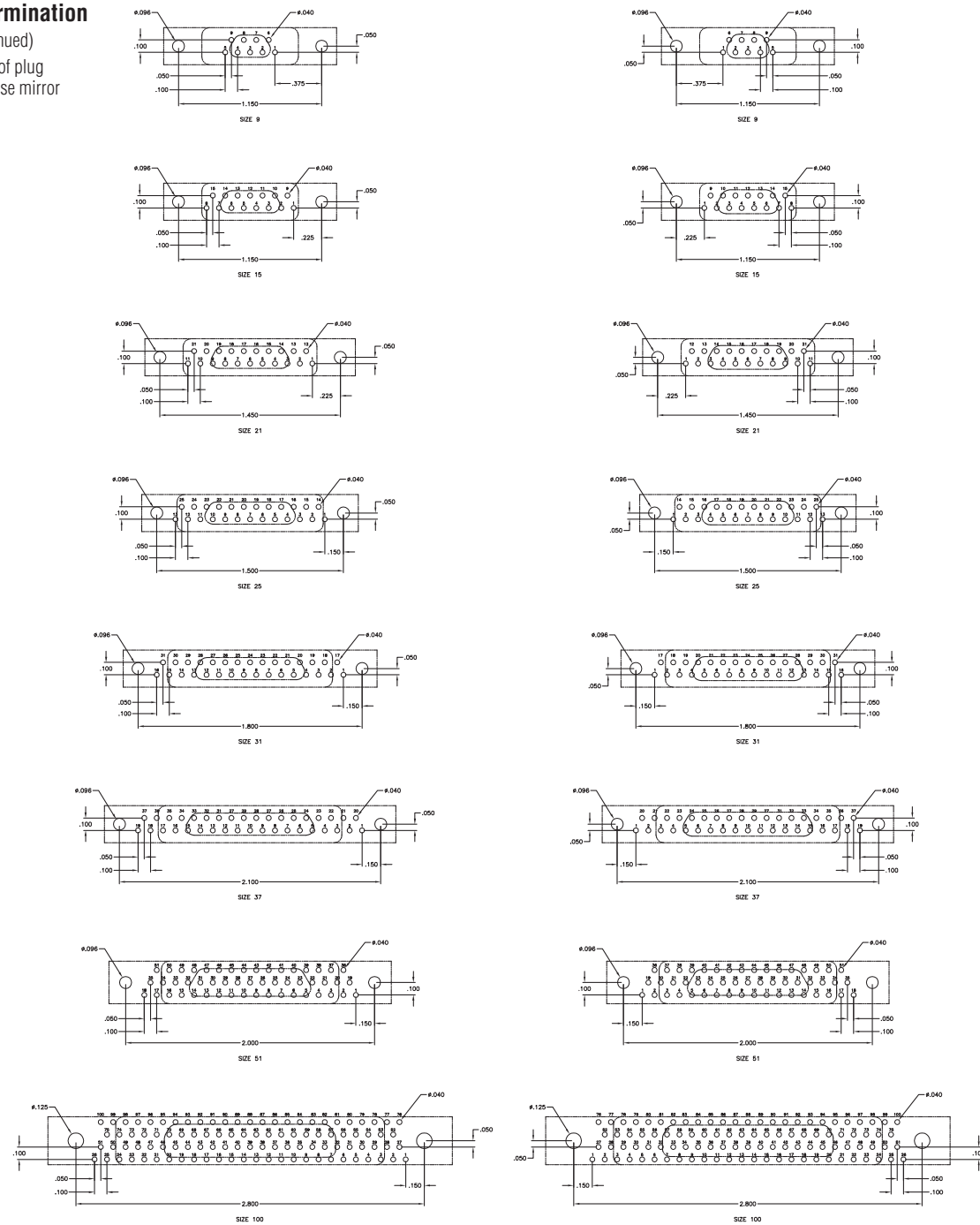
Nanominature and Microminiature Connectors

Note: Items in bold italic are qualified to MIL-DTL-83513.

**MICRODOT MCK Transition Blocks** (Continued)

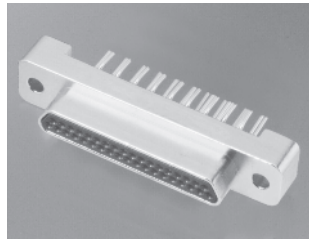
**ST1 — Straight Termination Configuration** (Continued)

View is of termination side of plug connector. For receptacle, use mirror image.

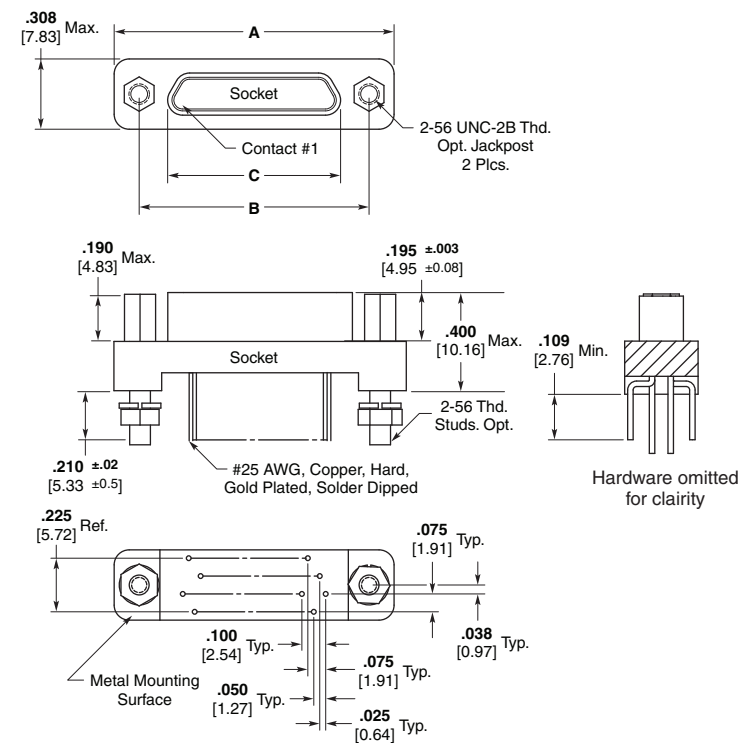
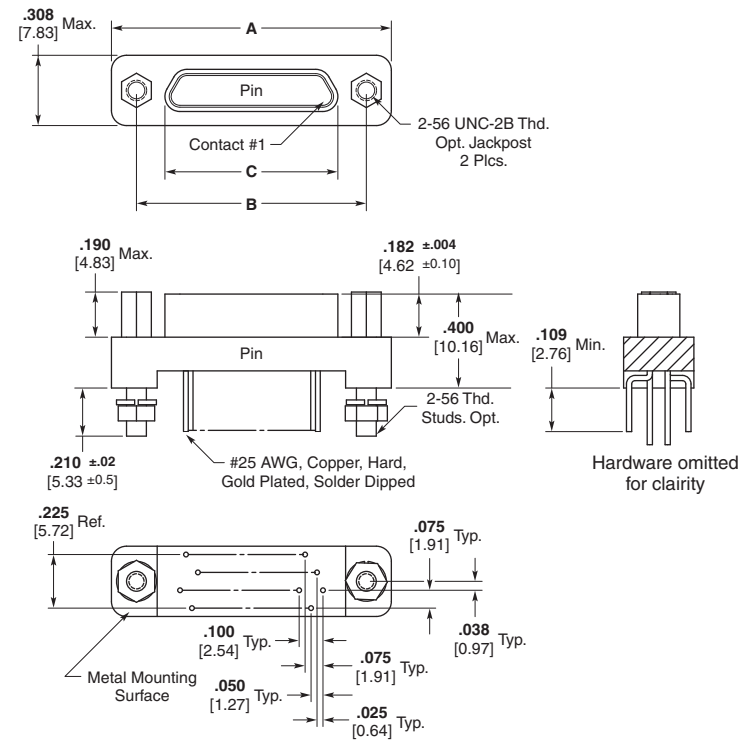


**MICRODOT MCK ST2 Series Straight Mount PCB Connectors**

**MCK with Cactus Bend Termination**



- Meets MIL-DTL-83513 Performance requirements
- Single metal shell with no Transition Block
- Low profile and light weight
- .100 [2.54] x .075 [1.91] grid pattern
- Design allows lower cost construction

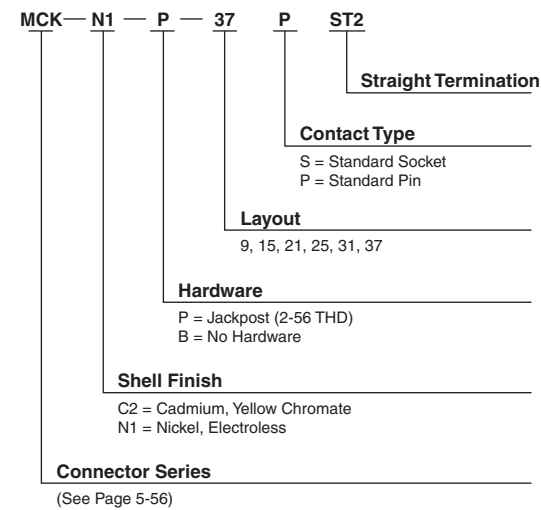


**5** Nanominiature and Microminiature Connectors

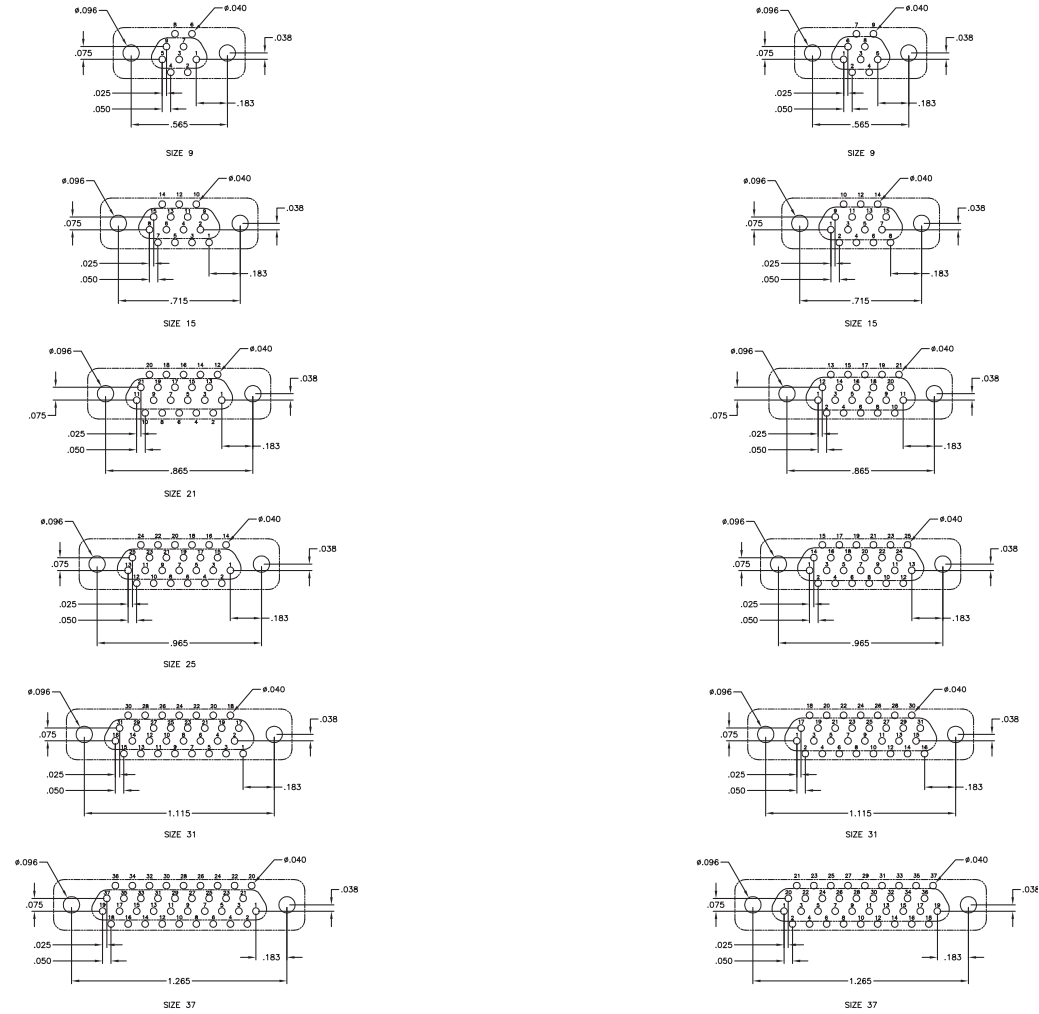
**MICRODOT MCK ST2 Series Straight Mount PCB Connectors** (Continued)

Part Number	A Max.	B ± .005	C Max.
MCK-**-*- 9 PST2	.785 19.94	.565 14.35	.333 8.46
MCK-**-*- 9 SST2	.785 19.94	.565 14.35	.402 10.21
MCK-**-*- 15 PST2	.935 23.75	.715 18.16	.483 12.27
MCK-**-*- 15 SST2	.935 23.75	.715 18.16	.552 14.02
MCK-**-*- 21 PST2	1.085 27.56	.865 21.97	.633 16.08
MCK-**-*- 21 SST2	1.085 27.56	.865 21.97	.702 17.83
MCK-**-*- 25 PST2	1.185 30.10	.965 24.51	.733 18.62
MCK-**-*- 25 SST2	1.185 30.10	.965 24.51	.802 20.37
MCK-**-*- 31 PST2	1.335 33.91	1.115 28.32	.883 22.43
MCK-**-*- 31 SST2	1.335 33.91	1.115 28.32	.952 24.18
MCK-**-*- 37 PST2	1.485 37.72	1.265 32.13	1.033 26.24
MCK-**-*- 37 SST2	1.485 37.72	1.265 32.13	1.102 27.99

**How To Specify**



**MICRODOT MCK ST2 Series Straight Mount PCB Connectors (Continued)**



**5**

Nanominature and Microminiature Connectors





**MICRODOT MCDM Series Metal Shell Connectors**

**Technical & Performance Data**

**Performance**

**Contact Resistance** — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms, using standard #24 solid copper leads when measured directly behind the crimp joints of the mated pin and socket contacts. The average resistance value at 100 microvolts is 4.8 milliohms.

**Dielectric Withstanding Voltage (60 Hz rms room temperature)** —

Solder Pots — 600 VAC at sea level; 150 VAC at 70,000 feet [21,336 m].

Wire Terminations — 750 VAC at sea level; 200 VAC at 70,000 feet [21,336 m].

**Vibration (Per MIL-STD-202C, Method 204-A, Condition D)** — No discontinuity in excess of 1 microsecond during twelve 20 minute sweeps from 10 to 2,000 CPS at .06 double amplitude or 20 G forces, whichever is less.

**Corrosion Resistance (Per MIL-STD-202C, Method 101B, Condition B)** — Both mated and unmated samples do not exceed the

maximum allowable contact resistance (8 milliohms) when subjected to the 48 hour salt spray test.

**Durability** — The contact resistance after 500 mating cycles is less than the maximum allowable, 8 milliohms.

**Insulation Resistance** — Greater than 5,000 megohms at room temperature for the materials listed under "Materials".

**Maximum Current Carrying Capacity** — No. 24 contact, 3 amperes. It must be recognized, however, that all the wires to a connector will not carry their maximum current under all environmental conditions due to wire temperature.

**Contact Engaging and Separation Forces** — 6 oz. [1.67N] maximum (eng.); 0.5 oz. [.14N] minimum (sep.).

**Temperature Range (Operating)** — Diallyl phthalate -67°F to 257°F [-55°C to +125°C].

**Materials**

**Insulator** — Diallyl phthalate per MIL-M-14, Type SDG-F, Liquid Crystal Polymer (LCP) per ASTM D5138, or RYTON per ASTM D4067.

**Contacts** — Pin Contact — Copper alloy and beryllium copper alloy make up the complete construction. Socket Contact — Copper alloy.

**Body Shell** — High grade aluminum alloy.

**Finishes**

**Contacts** — Standard finish is 0.000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

**Body Shell** — Electroless nickel per AMS 2404.

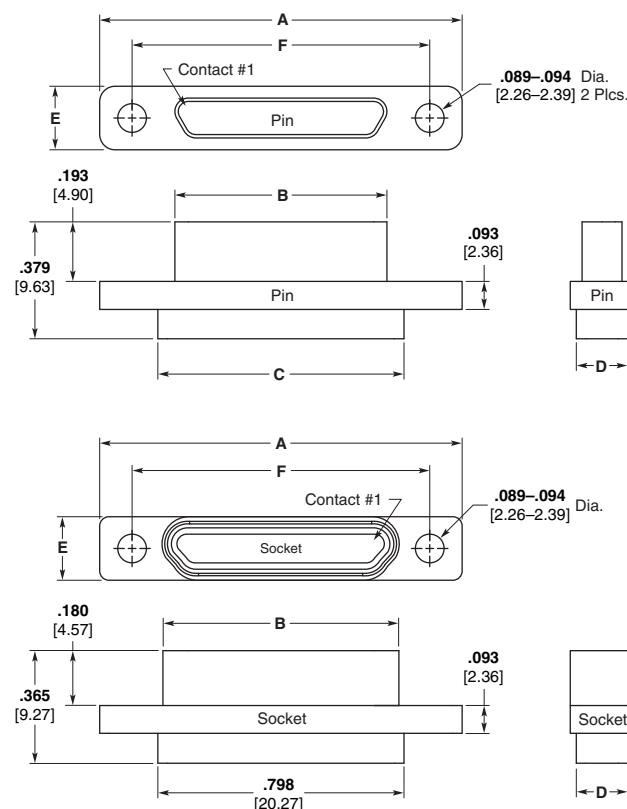
**Note:** Insulators are molded into their metal shells — No bonded joint is used.

**Screw Mount**



The only metal shell connector that mates with all existing plastic types. This line is ideal for external use and other applications requiring frequent disconnect and remating. When durability and reliability are paramount the metal shell connector is unsurpassed — it eliminates the need for retrofitting where new metal shell varieties must mate with older plastic types.

Originally designed for military applications, they are currently used for commercial requirements, including computers.

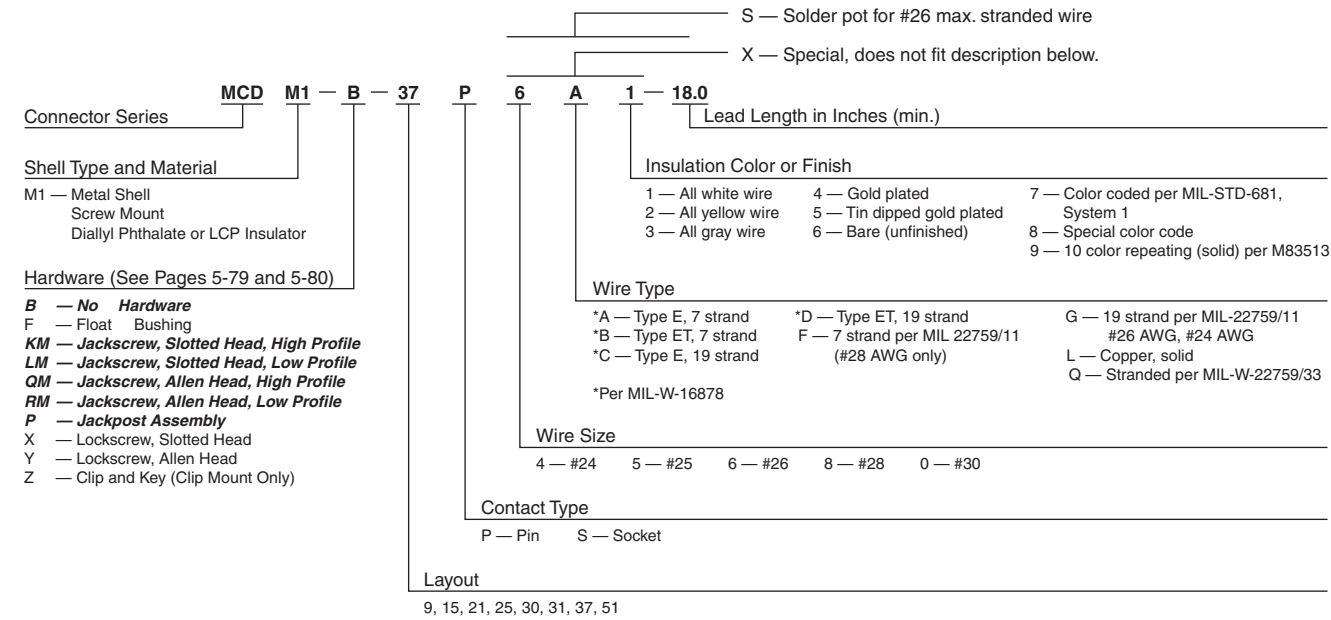


RYTON is a trademark of Chevron Chemical Company LLC.

**MICRODOT MCDM Series Metal Shell Connectors** (Continued)

**Screw Mount** (Continued)

**How To Specify**



**5**

Nanominature and Microminiature Connectors

Part Number	A ± .005 [±.127]	B ± .005 [±.127]	C ± .010 [±.254]	D ± .010 [±.254]	E ± .005 [±.127]	F ± .005 [±.127]	Avg. Weight lbs. ± 5% [grams]
MCDM1-9P***	.780 19.81	.290 7.36	.398 10.11	.165 4.19	.208 5.28	.565 14.35	.003 1.36
MCDM1-9S***	.780 19.81	.365 9.27	.398 10.11	.165 4.19	.208 5.28	.565 14.35	.003 1.36
MCDM1-15P***	.930 23.62	.440 11.18	.548 13.92	.165 4.19	.208 5.28	.715 18.16	.004 1.81
MCDM1-15S***	.930 23.62	.515 13.08	.548 13.92	.165 4.19	.208 5.28	.715 18.16	.004 1.81
MCDM1-21P***	1.080 27.43	.590 14.99	.698 17.73	.165 4.19	.208 5.28	.865 21.97	.005 2.26
MCDM1-21S***	1.080 27.43	.665 16.89	.698 17.73	.165 4.19	.208 5.28	.865 21.97	.005 2.26
MCDM1-25P***	1.180 29.97	.690 17.53	.798 20.27	.165 4.19	.208 5.28	.965 24.51	.006 2.72
MCDM1-25S***	1.180 29.97	.765 19.43	.798 20.27	.165 4.19	.208 5.28	.965 24.51	.005 2.26
MCDM1-30P***	.930 23.62	.435 11.05	.548 13.92	.252 6.40	.295 7.49	.715 18.16	.007 3.17
MCDM1-30S***	.930 23.62	.515 13.08	.548 13.92	.252 6.40	.295 7.49	.715 18.16	.007 3.17
MCDM1-31P***	1.330 33.78	.840 21.34	.948 16.46	.165 4.19	.208 5.28	1.115 28.32	.007 3.17
MCDM1-31S***	1.330 33.78	.915 23.24	.948 16.46	.165 4.19	.208 5.28	1.115 28.32	.006 2.72
MCDM1-37P***	1.480 37.59	.990 25.15	1.098 27.89	.165 4.19	.208 5.28	1.270 32.26	.007 3.17
MCDM1-37S***	1.480 37.59	1.065 27.05	1.098 27.89	.165 4.19	.208 5.28	1.270 32.26	.007 3.17
MCDM1-51P***	1.430 36.32	.940 23.88	1.048 26.62	.208 5.28	.250 6.35	1.215 30.86	.009 4.08
MCDM1-51S***	1.430 36.32	1.015 25.78	1.048 26.62	.208 5.28	.250 6.35	1.215 30.86	.008 3.62

Note: Weight given is with .500 [12.7] uninsulated, solid, 24 AWG gold plated copper pigtails.

**MICRODOT MCDM Series Metal Shell RF COMBOMATE Connectors**

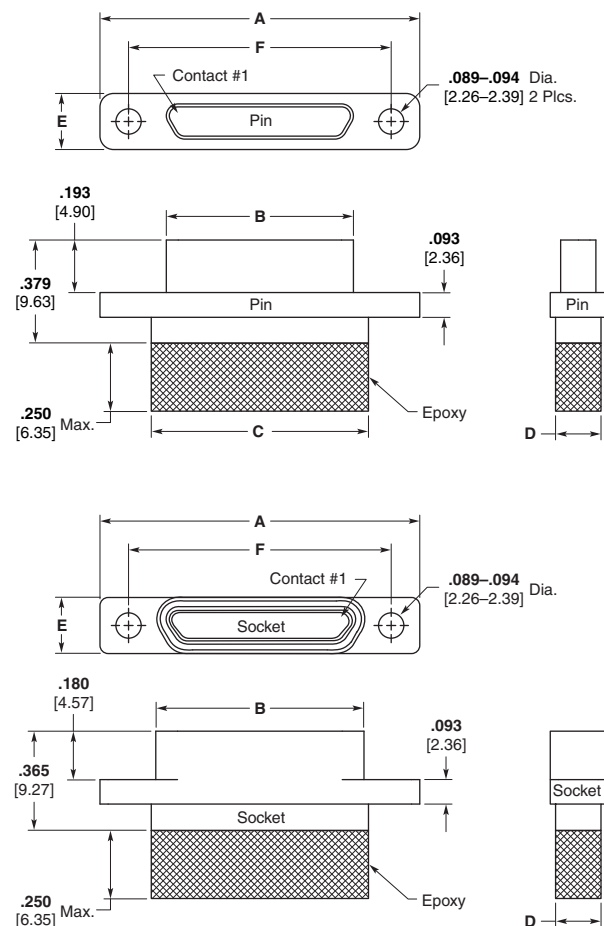
**Screw Mount Coaxial Terminations**

Available *now* — RF Performance in standard subminiature rectangular connectors, with VSWR values of 1.01 to 1.10 in frequencies ranging in DC to 2.3 GHz. This is the COMBOMATE Connector.

This series of connectors incorporates the same metal shells and twist pin contacts used in the widely accepted, high reliability, MCDM Series.

The RF COMBOMATE Connector Series will accommodate RG 196 A/U or RG 178 B/U coaxial cable terminated in a unique manner in standard, already tooled insert layouts. This feature results in savings in cost, time and space.

The RF COMBOMATE Connector Series will accommodate a maximum of 17 RG 196 A/U or RG 178 B/U cables in an area of less than .225 sq. inches [14.51 mm<sup>2</sup>]. Mixed layouts with coaxial terminations and standard AWG 24, 26 and 28 are also immediately available in 7 different shell sizes. The overall envelope and mounting dimensions of equivalent size of COMBOMATE Connectors are exactly the same as the standard MCDM Series.



**Performance Data — Coaxial Terminations**

**Impedance** — 49.0 to 51.0 Ohms.

**Voltage Standing Wave Ratio (VSWR)** — 1.01:1 to 1.10:1 at frequency ranging in DC to 2.3 GHz.

**Dielectric Withstanding Voltage (60 Hz rms room temperature)** — 750 VAC at sea level; 200 VAC at 70,000 feet [21,336 m].

	(Actual Test Data) Crosstalk (Between Adjacent Lines)			
	1 to 2	2 to 3	3 to 4	4 to 5
30 MHz	60.0 db	59.8 db	60.7 db	60.0 db
100 MHz	49.1 db	48.3 db	51.7 db	50.6 db
175 MHz	42.6 db	41.4 db	47.2 db	47.0 db
500 MHz	38.0 db	38.8 db	39.5 db	40.0 db
1000 MHz	31.6 db	32.0 db	30.0 db	32.5 db
2000 MHz	22.4 db	22.5 db	22.3 db	20.8 db
3000 MHz	21.5 db	23.9 db	21.4 db	24.2 db

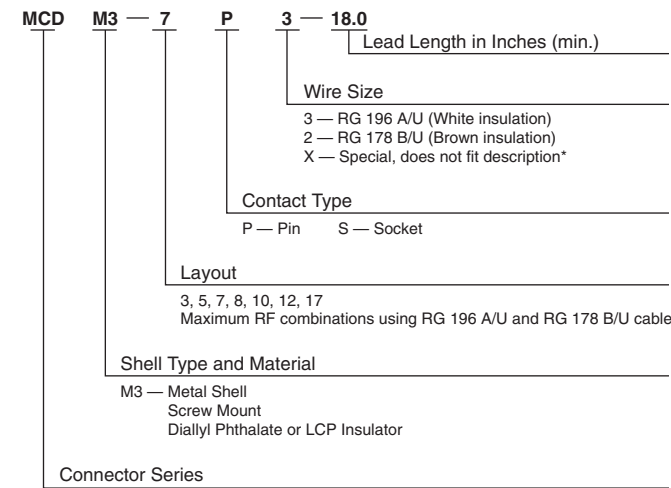
Sample	Insertion Loss				
	#1	#2	#3	#4	#5
30 MHz	.08 db	.08 db	.08 db	.08 db	.08 db
100 MHz	.24 db	.24 db	.25 db	.25 db	.25 db
175 MHz	.35 db	.36 db	.36 db	.34 db	.32 db
500 MHz	.58 db	.50 db	.60 db	.58 db	.48 db
1000 MHz	1.25 db	1.33 db	1.36 db	1.35 db	1.24 db
2000 MHz	1.48 db	1.71 db	1.42 db	1.40 db	1.45 db
3000 MHz	2.66 db	2.45 db	2.74 db	2.86 db	2.84 db

**Note:** Verification of all test data is on file at TE Connectivity and is available upon request. All test runs using RG 196 A/U.

**MICRODOT MCDM Series Metal Shell RF COMBOMATE Connectors** (Continued)

**Screw Mount Coaxial Terminations** (Continued)

**How To Specify**



\***Ordering Criteria:** A wide variety of contact combinations, coaxial and power mixed, are available. Contact TE Connectivity for additional arrangement numbers.

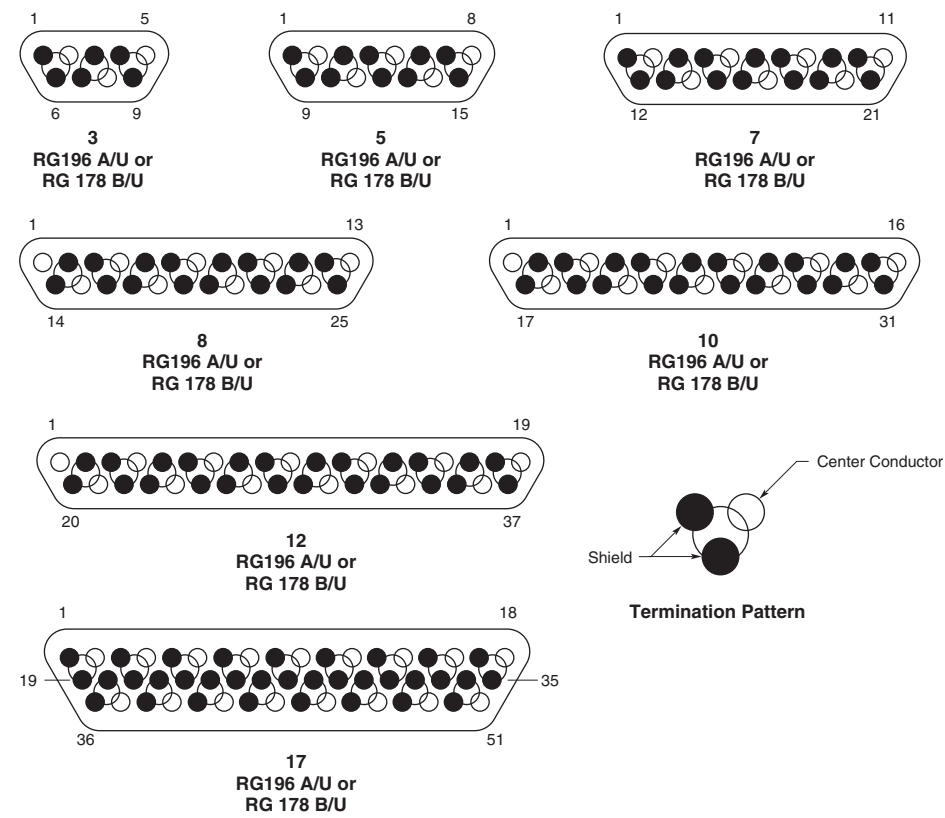
**5**

Nanominature and Microminiature Connectors

Part Number	A ± .005 [± .127]	B ± .005 [± .127]	C Max.	D Max.	E ± .005 [± .127]	F ± .005 [± .127]
MCDM3-3P**	.780 19.81	.290 7.36	.408 10.36	.200 5.08	.208 5.28	.565 14.35
MCDM3-3S**	.780 19.81	.365 9.27	.408 10.36	.200 5.08	.208 5.28	.565 14.35
MCDM3-5P**	.930 23.62	.440 11.18	.558 14.17	.200 5.08	.208 5.28	.715 18.16
MCDM3-5S**	.930 23.62	.515 13.08	.558 14.17	.200 5.08	.208 5.28	.715 18.16
MCDM3-7P**	1.080 27.43	.590 14.99	.708 17.98	.200 5.08	.208 5.28	.865 21.97
MCDM3-7S**	1.080 27.43	.665 16.89	.708 17.98	.200 5.08	.208 5.28	.865 21.97
MCDM3-8P**	1.180 29.97	.690 17.53	.808 20.52	.200 5.08	.208 5.28	.965 24.51
MCDM3-8S**	1.180 29.97	.765 19.43	.808 20.52	.200 5.08	.208 5.28	.965 24.51
MCDM3-10P**	1.330 33.78	.840 21.34	.958 24.33	.200 5.08	.208 5.28	1.115 28.32
MCDM3-10S**	1.330 33.78	.915 23.24	.958 24.33	.200 5.08	.208 5.28	1.115 28.32
MCDM3-12P**	1.480 37.59	.990 25.15	1.108 27.89	.200 5.08	.208 5.28	1.270 32.26
MCDM3-12S**	1.480 37.59	1.065 27.05	1.108 27.89	.200 5.08	.208 5.28	1.270 32.26
MCDM3-17P**	1.430 36.32	.940 23.88	1.058 26.87	.245 6.22	.250 6.35	1.215 30.86
MCDM3-17S**	1.430 36.32	1.015 25.78	1.058 26.87	.245 6.22	.250 6.35	1.215 30.86

**MICRODOT MCDM Series Metal Shell RF COMBOMATE Connectors** (Continued)

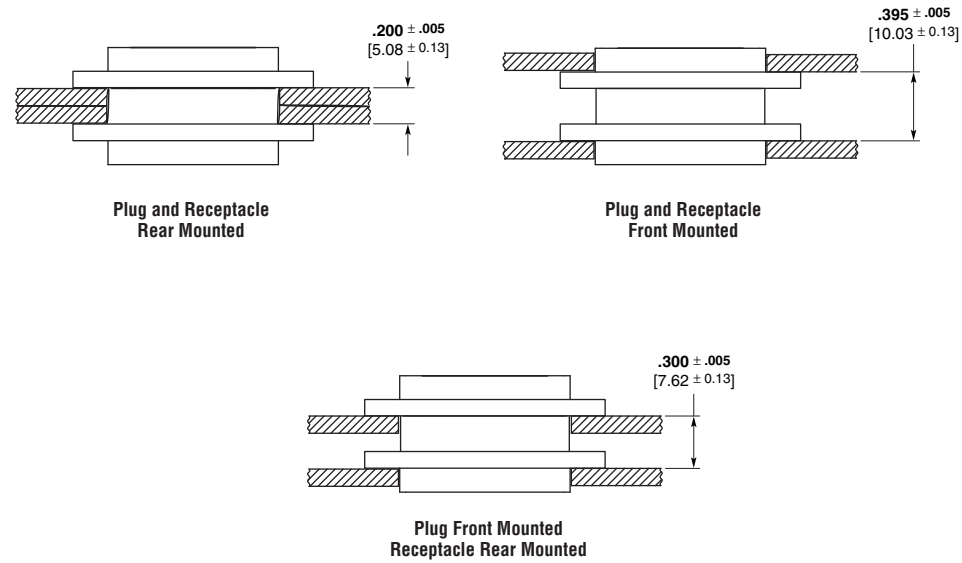
**Contact Arrangement as Viewed from the Engaging Face of the Pin Side**



**Note:** The above contact arrangements are the maximum densities that can be obtained in each shell size when using RG 196 A/U or RG 178 B/U cable.

**MICRODOT MCDM Series Metal Shell Connectors Panel Mounting — Cutout Dimensions**

**Panel Mounting Dimensions — MCDM**



**5**

Nanominature and Microminiature Connectors

**Panel Cutout Dimensions**

**Screw Mounting**

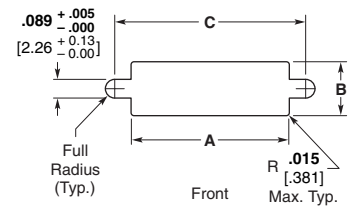


Figure 1

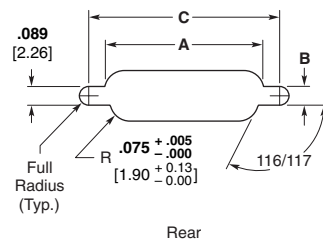


Figure 2

Note: Front mounting preferred.

Number of Contacts	Fig.	A		B		C	
		+ .004 [+ .102] - .000 [- .000]	+ .004 [+ .102] - .000 [- .000]	+ .004 [+ .102] - .000 [- .000]	+ .005 [+ .127] - .000 [- .000]		
9	1	.412 [10.46]	.177 [4.50]	.570 [14.48]			
	2	.384 [9.75]	.222 [5.64]	.570 [14.48]			
15	1	.562 [14.27]	.177 [4.50]	.720 [18.29]			
	2	.534 [13.56]	.222 [5.64]	.720 [18.29]			
21	1	.712 [18.08]	.177 [4.50]	.870 [22.10]			
	2	.684 [17.37]	.222 [5.64]	.870 [22.10]			
25	1	.812 [20.62]	.177 [4.50]	.970 [24.64]			
	2	.784 [19.91]	.222 [5.64]	.970 [24.64]			
31	1	.962 [24.43]	.177 [4.50]	1.120 [28.45]			
	2	.934 [23.72]	.222 [5.64]	1.120 [28.45]			
37	1	1.112 [28.24]	.177 [4.50]	1.270 [32.26]			
	2	1.084 [27.53]	.222 [5.64]	1.270 [32.26]			
51	1	1.062 [26.97]	.224 [5.69]	1.220 [30.99]			
	2	1.034 [26.26]	.264 [6.71]	1.220 [30.99]			

**MIL-DTL-83513 Cross Reference**

**MCKS (Metal Shell)**

Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.
M83513/01-A*	MCKS**-B- 9PS	M83513/03-E06*	MCKS**-B- 31P5L4-1.0	M83513/03-A14*	MCKS**-B- 9P6G9-72.0
M83513/01-B*	MCKS**-B- 15PS	M83513/03-F06*	MCKS**-B- 37P5L4-1.0	M83513/03-B14*	MCKS**-B- 15P6G9-72.0
M83513/01-C*	MCKS**-B- 21PS	M83513/03-G06*	MCKS**-B- 51P5L4-1.0	M83513/03-C14*	MCKS**-B- 21P6G9-72.0
M83513/01-D*	MCKS**-B- 25PS	M83513/03-H06*	MCKS**-B-100P5L4-1.0	M83513/03-D14*	MCKS**-B- 25P6G9-72.0
M83513/01-E*	MCKS**-B- 31PS	M83513/03-A07*	MCKS**-B- 9P5L5-0.5	M83513/03-E14*	MCKS**-B- 31P6G9-72.0
M83513/01-F*	MCKS**-B- 37PS	M83513/03-B07*	MCKS**-B- 15P5L5-0.5	M83513/03-F14*	MCKS**-B- 37P6G9-72.0
M83513/01-G*	MCKS**-B- 51PS	M83513/03-C07*	MCKS**-B- 21P5L5-0.5	M83513/03-G14*	MCKS**-B- 51P6G9-72.0
M83513/01-H*	MCKS**-B-100PS	M83513/03-D07*	MCKS**-B- 25P5L5-0.5	M83513/03-H14*	MCKS**-B-100P6G9-72.0
M83513/02-A*	MCKS**-B- 9SS	M83513/03-E07*	MCKS**-B- 31P5L5-0.5	M83513/03-A15*	MCKS**-B- 9P6Q1-72.0
M83513/02-B*	MCKS**-B- 15SS	M83513/03-F07*	MCKS**-B- 37P5L5-0.5	M83513/03-B15*	MCKS**-B- 15P6Q1-72.0
M83513/02-C*	MCKS**-B- 21SS	M83513/03-G07*	MCKS**-B- 51P5L5-0.5	M83513/03-C15*	MCKS**-B- 21P6Q1-72.0
M83513/02-D*	MCKS**-B- 25SS	M83513/03-H07*	MCKS**-B-100P5L5-0.5	M83513/03-D15*	MCKS**-B- 25P6Q1-72.0
M83513/02-E*	MCKS**-B- 31SS	M83513/03-A08*	MCKS**-B- 9P5L5-1.0	M83513/03-E15*	MCKS**-B- 31P6Q1-72.0
M83513/02-F*	MCKS**-B- 37SS	M83513/03-B08*	MCKS**-B- 15P5L5-1.0	M83513/03-F15*	MCKS**-B- 37P6Q1-72.0
M83513/02-G*	MCKS**-B- 51SS	M83513/03-C08*	MCKS**-B- 21P5L5-1.0	M83513/03-G15*	MCKS**-B- 51P6Q1-72.0
M83513/02-H*	MCKS**-B-100SS	M83513/03-D08*	MCKS**-B- 25P5L5-1.0	M83513/03-H15*	MCKS**-B-100P6Q1-72.0
M83513/03-A01*	MCKS**-B- 9P6G1-18.0	M83513/03-E08*	MCKS**-B- 31P5L5-1.0	M83513/03-A16*	MCKS**-B- 9P6Q9-72.0
M83513/03-B01*	MCKS**-B- 15P6G1-18.0	M83513/03-F08*	MCKS**-B- 37P5L5-1.0	M83513/03-B16*	MCKS**-B- 15P6Q9-72.0
M83513/03-C01*	MCKS**-B- 21P6G1-18.0	M83513/03-G08*	MCKS**-B- 51P5L5-1.0	M83513/03-C16*	MCKS**-B- 21P6Q9-72.0
M83513/03-D01*	MCKS**-B- 25P6G1-18.0	M83513/03-H08*	MCKS**-B-100P5L5-1.0	M83513/03-D16*	MCKS**-B- 25P6Q9-72.0
M83513/03-E01*	MCKS**-B- 31P6G1-18.0	M83513/03-A09*	MCKS**-B- 9P6Q1-18.0	M83513/03-E16*	MCKS**-B- 31P6Q9-72.0
M83513/03-F01*	MCKS**-B- 37P6G1-18.0	M83513/03-B09*	MCKS**-B- 15P6Q1-18.0	M83513/03-F16*	MCKS**-B- 37P6Q9-72.0
M83513/03-G01*	MCKS**-B- 51P6G1-18.0	M83513/03-C09*	MCKS**-B- 21P6Q1-18.0	M83513/03-G16*	MCKS**-B- 51P6Q9-72.0
M83513/03-H01*	MCKS**-B-100P6G1-18.0	M83513/03-D09*	MCKS**-B- 25P6Q1-18.0	M83513/03-H16*	MCKS**-B-100P6Q9-72.0
M83513/03-A02*	MCKS**-B- 9P6G1-36.0	M83513/03-E09*	MCKS**-B- 31P6Q1-18.0	M83513/04-A01*	MCKS**-B- 9S6G1-18.0
M83513/03-B02*	MCKS**-B- 15P6G1-36.0	M83513/03-F09*	MCKS**-B- 37P6Q1-18.0	M83513/04-B01*	MCKS**-B- 15S6G1-18.0
M83513/03-C02*	MCKS**-B- 21P6G1-36.0	M83513/03-G09*	MCKS**-B- 51P6Q1-18.0	M83513/04-C01*	MCKS**-B- 21S6G1-18.0
M83513/03-D02*	MCKS**-B- 25P6G1-36.0	M83513/03-H09*	MCKS**-B-100P6Q1-18.0	M83513/04-D01*	MCKS**-B- 25S6G1-18.0
M83513/03-E02*	MCKS**-B- 31P6G1-36.0	M83513/03-A10*	MCKS**-B- 9P6Q1-36.0	M83513/04-E01*	MCKS**-B- 31S6G1-18.0
M83513/03-F02*	MCKS**-B- 37P6G1-36.0	M83513/03-B10*	MCKS**-B- 15P6Q1-36.0	M83513/04-F01*	MCKS**-B- 37S6G1-18.0
M83513/03-G02*	MCKS**-B- 51P6G1-36.0	M83513/03-C10*	MCKS**-B- 21P6Q1-36.0	M83513/04-G01*	MCKS**-B- 51S6G1-18.0
M83513/03-H02*	MCKS**-B-100P6G1-36.0	M83513/03-D10*	MCKS**-B- 25P6Q1-36.0	M83513/04-H01*	MCKS**-B-100S6G1-18.0
M83513/03-A03*	MCKS**-B- 9P6G9-18.0	M83513/03-E10*	MCKS**-B- 31P6Q1-36.0	M83513/04-A02*	MCKS**-B- 9S6G1-36.0
M83513/03-B03*	MCKS**-B- 15P6G9-18.0	M83513/03-F10*	MCKS**-B- 37P6Q1-36.0	M83513/04-B02*	MCKS**-B- 15S6G1-36.0
M83513/03-C03*	MCKS**-B- 21P6G9-18.0	M83513/03-G10*	MCKS**-B- 51P6Q1-36.0	M83513/04-C02*	MCKS**-B- 21S6G1-36.0
M83513/03-D03*	MCKS**-B- 25P6G9-18.0	M83513/03-H10*	MCKS**-B-100P6Q1-36.0	M83513/04-D02*	MCKS**-B- 25S6G1-36.0
M83513/03-E03*	MCKS**-B- 31P6G9-18.0	M83513/03-A11*	MCKS**-B- 9P6Q9-18.0	M83513/04-E02*	MCKS**-B- 31S6G1-36.0
M83513/03-F03*	MCKS**-B- 37P6G9-18.0	M83513/03-B11*	MCKS**-B- 15P6Q9-18.0	M83513/04-F02*	MCKS**-B- 37S6G1-36.0
M83513/03-G03*	MCKS**-B- 51P6G9-18.0	M83513/03-C11*	MCKS**-B- 21P6Q9-18.0	M83513/04-G02*	MCKS**-B- 51S6G1-36.0
M83513/03-H03*	MCKS**-B-100P6G9-18.0	M83513/03-D11*	MCKS**-B- 25P6Q9-18.0	M83513/04-H02*	MCKS**-B-100S6G1-36.0
M83513/03-A04*	MCKS**-B- 9P6G9-36.0	M83513/03-E11*	MCKS**-B- 31P6Q9-18.0	M83513/04-A03*	MCKS**-B- 9S6G9-18.0
M83513/03-B04*	MCKS**-B- 15P6G9-36.0	M83513/03-F11*	MCKS**-B- 37P6Q9-18.0	M83513/04-B03*	MCKS**-B- 15S6G9-18.0
M83513/03-C04*	MCKS**-B- 21P6G9-36.0	M83513/03-G11*	MCKS**-B- 51P6Q9-18.0	M83513/04-C03*	MCKS**-B- 21S6G9-18.0
M83513/03-D04*	MCKS**-B- 25P6G9-36.0	M83513/03-H11*	MCKS**-B-100P6Q9-18.0	M83513/04-D03*	MCKS**-B- 25S6G9-18.0
M83513/03-E04*	MCKS**-B- 31P6G9-36.0	M83513/03-A12*	MCKS**-B- 9P6Q9-36.0	M83513/04-E03*	MCKS**-B- 31S6G9-18.0
M83513/03-F04*	MCKS**-B- 37P6G9-36.0	M83513/03-B12*	MCKS**-B- 15P6Q9-36.0	M83513/04-F03*	MCKS**-B- 37S6G9-18.0
M83513/03-G04*	MCKS**-B- 51P6G9-36.0	M83513/03-C12*	MCKS**-B- 21P6Q9-36.0	M83513/04-G03*	MCKS**-B- 51S6G9-18.0
M83513/03-H04*	MCKS**-B-100P6G9-36.0	M83513/03-D12*	MCKS**-B- 25P6Q9-36.0	M83513/04-H03*	MCKS**-B-100S6G9-18.0
M83513/03-A05*	MCKS**-B- 9P5L4-0.5	M83513/03-E12*	MCKS**-B- 31P6Q9-36.0	M83513/04-A04*	MCKS**-B- 9S6G9-36.0
M83513/03-B05*	MCKS**-B- 15P5L4-0.5	M83513/03-F12*	MCKS**-B- 37P6Q9-36.0	M83513/04-B04*	MCKS**-B- 15S6G9-36.0
M83513/03-C05*	MCKS**-B- 21P5L4-0.5	M83513/03-G12*	MCKS**-B- 51P6Q9-36.0	M83513/04-C04*	MCKS**-B- 21S6G9-36.0
M83513/03-D05*	MCKS**-B- 25P5L4-0.5	M83513/03-H12*	MCKS**-B-100P6Q9-36.0	M83513/04-D04*	MCKS**-B- 25S6G9-36.0
M83513/03-E05*	MCKS**-B- 31P5L4-0.5	M83513/03-A13*	MCKS**-B- 9P6G1-72.0	M83513/04-E04*	MCKS**-B- 31S6G9-36.0
M83513/03-F05*	MCKS**-B- 37P5L4-0.5	M83513/03-B13*	MCKS**-B- 15P6G1-72.0	M83513/04-F04*	MCKS**-B- 37S6G9-36.0
M83513/03-G05*	MCKS**-B- 51P5L4-0.5	M83513/03-C13*	MCKS**-B- 21P6G1-72.0	M83513/04-G04*	MCKS**-B- 51S6G9-36.0
M83513/03-H05*	MCKS**-B-100P5L4-0.5	M83513/03-D13*	MCKS**-B- 25P6G1-72.0	M83513/04-H04*	MCKS**-B-100S6G9-36.0
M83513/03-A06*	MCKS**-B- 9P5L4-1.0	M83513/03-E13*	MCKS**-B- 31P6G1-72.0	M83513/04-A05*	MCKS**-B- 9S5L4-0.5
M83513/03-B06*	MCKS**-B- 15P5L4-1.0	M83513/03-F13*	MCKS**-B- 37P6G1-72.0	M83513/04-B05*	MCKS**-B- 15S5L4-0.5
M83513/03-C06*	MCKS**-B- 21P5L4-1.0	M83513/03-G13*	MCKS**-B- 51P6G1-72.0	M83513/04-C05*	MCKS**-B- 21S5L4-0.5
M83513/03-D06*	MCKS**-B- 25P5L4-1.0	M83513/03-H13*	MCKS**-B-100P6G1-72.0	M83513/04-D05*	MCKS**-B- 25S5L4-0.5



**MIL-DTL-83513 Cross Reference** (Continued)

**MCKS (Metal Shell)** (Continued)

Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.
M83513/04-E05*	MCKS**-B- 31S5L4-0.5	M83513/04-D09*	MCKS**-B- 25S6Q1-18.0	M83513/04-C13*	MCKS**-B- 21S6G1-72.0
M83513/04-F05*	MCKS**-B- 37S5L4-0.5	M83513/04-E09*	MCKS**-B- 31S6Q1-18.0	M83513/04-D13*	MCKS**-B- 25S6G1-72.0
M83513/04-G05*	MCKS**-B- 51S5L4-0.5	M83513/04-F09*	MCKS**-B- 37S6Q1-18.0	M83513/04-E13*	MCKS**-B- 31S6G1-72.0
M83513/04-H05*	MCKS**-B-100S5L4-0.5	M83513/04-G09*	MCKS**-B- 51S6Q1-18.0	M83513/04-F13*	MCKS**-B- 37S6G1-72.0
M83513/04-A06*	MCKS**-B- 9S5L4-1.0	M83513/04-H09*	MCKS**-B-100S6Q1-18.0	M83513/04-G13*	MCKS**-B- 51S6G1-72.0
M83513/04-B06*	MCKS**-B- 15S5L4-1.0	M83513/04-A10*	MCKS**-B- 9S6Q1-36.0	M83513/04-H13*	MCKS**-B-100S6G1-72.0
M83513/04-C06*	MCKS**-B- 21S5L4-1.0	M83513/04-B10*	MCKS**-B- 15S6Q1-36.0	M83513/04-A14*	MCKS**-B- 9S6G9-72.0
M83513/04-D06*	MCKS**-B- 25S5L4-1.0	M83513/04-C10*	MCKS**-B- 21S6Q1-36.0	M83513/04-B14*	MCKS**-B- 15S6G9-72.0
M83513/04-E06*	MCKS**-B- 31S5L4-1.0	M83513/04-D10*	MCKS**-B- 25S6Q1-36.0	M83513/04-C14*	MCKS**-B- 21S6G9-72.0
M83513/04-F06*	MCKS**-B- 37S5L4-1.0	M83513/04-E10*	MCKS**-B- 31S6Q1-36.0	M83513/04-D14*	MCKS**-B- 25S6G9-72.0
M83513/04-G06*	MCKS**-B- 51S5L4-1.0	M83513/04-F10*	MCKS**-B- 37S6Q1-36.0	M83513/04-E14*	MCKS**-B- 31S6G9-72.0
M83513/04-H06*	MCKS**-B-100S5L4-1.0	M83513/04-G10*	MCKS**-B- 51S6Q1-36.0	M83513/04-F14*	MCKS**-B- 37S6G9-72.0
M83513/04-A07*	MCKS**-B- 9S5L5-0.5	M83513/04-H10*	MCKS**-B-100S6Q1-36.0	M83513/04-G14*	MCKS**-B- 51S6G9-72.0
M83513/04-B07*	MCKS**-B- 15S5L5-0.5	M83513/04-A11*	MCKS**-B- 9S6Q9-18.0	M83513/04-H14*	MCKS**-B-100S6G9-72.0
M83513/04-C07*	MCKS**-B- 21S5L5-0.5	M83513/04-B11*	MCKS**-B- 15S6Q9-18.0	M83513/04-A15*	MCKS**-B- 9S6Q1-72.0
M83513/04-D07*	MCKS**-B- 25S5L5-0.5	M83513/04-C11*	MCKS**-B- 21S6Q9-18.0	M83513/04-B15*	MCKS**-B- 15S6Q1-72.0
M83513/04-E07*	MCKS**-B- 31S5L5-0.5	M83513/04-D11*	MCKS**-B- 25S6Q9-18.0	M83513/04-C15*	MCKS**-B- 21S6Q1-72.0
M83513/04-F07*	MCKS**-B- 37S5L5-0.5	M83513/04-E11*	MCKS**-B- 31S6Q9-18.0	M83513/04-D15*	MCKS**-B- 25S6Q1-72.0
M83513/04-G07*	MCKS**-B- 51S5L5-0.5	M83513/04-F11*	MCKS**-B- 37S6Q9-18.0	M83513/04-E15*	MCKS**-B- 31S6Q1-72.0
M83513/04-H07*	MCKS**-B-100S5L5-0.5	M83513/04-G11*	MCKS**-B- 51S6Q9-18.0	M83513/04-F15*	MCKS**-B- 37S6Q1-72.0
M83513/04-A08*	MCKS**-B- 9S5L5-1.0	M83513/04-H11*	MCKS**-B-100S6Q9-18.0	M83513/04-G15*	MCKS**-B- 51S6Q1-72.0
M83513/04-B08*	MCKS**-B- 15S5L5-1.0	M83513/04-A12*	MCKS**-B- 9S6Q9-36.0	M83513/04-H15*	MCKS**-B-100S6Q1-72.0
M83513/04-C08*	MCKS**-B- 21S5L5-1.0	M83513/04-B12*	MCKS**-B- 15S6Q9-36.0	M83513/04-A16*	MCKS**-B- 9S6Q9-72.0
M83513/04-D08*	MCKS**-B- 25S5L5-1.0	M83513/04-C12*	MCKS**-B- 21S6Q9-36.0	M83513/04-B16*	MCKS**-B- 15S6Q9-72.0
M83513/04-E08*	MCKS**-B- 31S5L5-1.0	M83513/04-D12*	MCKS**-B- 25S6Q9-36.0	M83513/04-C16*	MCKS**-B- 21S6Q9-72.0
M83513/04-F08*	MCKS**-B- 37S5L5-1.0	M83513/04-E12*	MCKS**-B- 31S6Q9-36.0	M83513/04-D16*	MCKS**-B- 25S6Q9-72.0
M83513/04-G08*	MCKS**-B- 51S5L5-1.0	M83513/04-F12*	MCKS**-B- 37S6Q9-36.0	M83513/04-E16*	MCKS**-B- 31S6Q9-72.0
M83513/04-H08*	MCKS**-B-100S5L5-1.0	M83513/04-G12*	MCKS**-B- 51S6Q9-36.0	M83513/04-F16*	MCKS**-B- 37S6Q9-72.0
M83513/04-A09*	MCKS**-B- 9S6Q1-18.0	M83513/04-H12*	MCKS**-B-100S6Q9-36.0	M83513/04-G16*	MCKS**-B- 51S6Q9-72.0
M83513/04-B09*	MCKS**-B- 15S6Q1-18.0	M83513/04-A13*	MCKS**-B- 9S6G1-72.0	M83513/04-H16*	MCKS**-B-100S6Q9-72.0
M83513/04-C09*	MCKS**-B- 21S6Q1-18.0	M83513/04-B13*	MCKS**-B- 15S6G1-72.0		

\*C = Cadmium or N = Nickel (space applications only)  
 \*\*C2 = Cadmium or N1 = Nickel (space applications only)

**Hardware**

Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.
M83513/05-02	"A. HD, J/S, L.F. #2"	M83513/05-05	"S. HD, J/S, L.F. #2"	M83513/05-07	"JACKPOST ASSY #2"
M83513/05-12	"A. HD, J/S, L.F. #4"	M83513/05-15	"S. HD, J/S, L.F. #4"	M83513/05-17	"JACKPOST ASSY, #4"
M83513/05-03	"A. HD, J/S, H.F. #2"	M83513/05-06	"S. HD, J/S, H.F. #2"		
M83513/05-13	"A. HD, J/S, H.F. #4"	M83513/05-16	"S. HD, J/S, H.F. #4"		

**MCDR (Plastic Shell)**

Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.
M83513/06-A	MCDR3-B- 9PS	M83513/07-G	MCDR3-B-51SS	M83513/08-F02	MCDR3-B-37P6G1-36.0
M83513/06-B	MCDR3-B-15PS	M83513/08-A01	MCDR3-B- 9P6G1-18.0	M83513/08-G02	MCDR3-B-51P6G1-36.0
M83513/06-C	MCDR3-B-21PS	M83513/08-B01	MCDR3-B-15P6G1-18.0	M83513/08-A03	MCDR3-B- 9P6G9-18.0
M83513/06-D	MCDR3-B-25PS	M83513/08-C01	MCDR3-B-21P6G1-18.0	M83513/08-B03	MCDR3-B-15P6G9-18.0
M83513/06-E	MCDR3-B-31PS	M83513/08-D01	MCDR3-B-25P6G1-18.0	M83513/08-C03	MCDR3-B-21P6G9-18.0
M83513/06-F	MCDR3-B-37PS	M83513/08-E01	MCDR3-B-31P6G1-18.0	M83513/08-D03	MCDR3-B-25P6G9-18.0
M83513/06-G	MCDR3-B-51PS	M83513/08-F01	MCDR3-B-37P6G1-18.0	M83513/08-E03	MCDR3-B-31P6G9-18.0
M83513/07-A	MCDR3-B- 9SS	M83513/08-G01	MCDR3-B-51P6G1-18.0	M83513/08-F03	MCDR3-B-37P6G9-18.0
M83513/07-B	MCDR3-B-15SS	M83513/08-A02	MCDR3-B- 9P6G1-36.0	M83513/08-G03	MCDR3-B-51P6G9-18.0
M83513/07-C	MCDR3-B-21SS	M83513/08-B02	MCDR3-B-15P6G1-36.0	M83513/08-A04	MCDR3-B- 9P6G9-36.0
M83513/07-D	MCDR3-B-25SS	M83513/08-C02	MCDR3-B-21P6G1-36.0	M83513/08-B04	MCDR3-B-15P6G9-36.0
M83513/07-E	MCDR3-B-31SS	M83513/08-D02	MCDR3-B-25P6G1-36.0	M83513/08-C04	MCDR3-B-21P6G9-36.0
M83513/07-F	MCDR3-B-37SS	M83513/08-E02	MCDR3-B-31P6G1-36.0	M83513/08-D04	MCDR3-B-25P6G9-36.0



Nanminiature and Microminiature Connectors



MIL-DTL-83513 Cross Reference (Continued)

MCDR (Plastic Shell) (Continued)

Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.
M83513/08-E04	MCDR3-B-31P6G9-36.0	M83513/08-B13	MCDR3-B-15P6G1-72.0	M83513/09-F05	MCDR3-B-37S5L4-0.5
M83513/08-F04	MCDR3-B-37P6G9-36.0	M83513/08-C13	MCDR3-B-21P6G1-72.0	M83513/09-G05	MCDR3-B-51S5L4-0.5
M83513/08-G04	MCDR3-B-51P6G9-36.0	M83513/08-D13	MCDR3-B-25P6G1-72.0	M83513/09-A06	MCDR3-B- 9S5L4-1.0
M83513/08-A05	MCDR3-B- 9P5L4-0.5	M83513/08-E13	MCDR3-B-31P6G1-72.0	M83513/09-B06	MCDR3-B-15S5L4-1.0
M83513/08-B05	MCDR3-B-15P5L4-0.5	M83513/08-F13	MCDR3-B-37P6G1-72.0	M83513/09-C06	MCDR3-B-21S5L4-1.0
M83513/08-C05	MCDR3-B-21P5L4-0.5	M83513/08-G13	MCDR3-B-51P6G1-72.0	M83513/09-D06	MCDR3-B-25S5L4-1.0
M83513/08-D05	MCDR3-B-25P5L4-0.5	M83513/08-A14	MCDR3-B- 9P6G9-72.0	M83513/09-E06	MCDR3-B-31S5L4-1.0
M83513/08-E05	MCDR3-B-31P5L4-0.5	M83513/08-B14	MCDR3-B-15P6G9-72.0	M83513/09-F06	MCDR3-B-37S5L4-1.0
M83513/08-F05	MCDR3-B-37P5L4-0.5	M83513/08-C14	MCDR3-B-21P6G9-72.0	M83513/09-G06	MCDR3-B-51S5L4-1.0
M83513/08-G05	MCDR3-B-51P5L4-0.5	M83513/08-D14	MCDR3-B-25P6G9-72.0	M83513/09-A07	MCDR3-B- 9S5L5-0.5
M83513/08-A06	MCDR3-B- 9P5L4-1.0	M83513/08-E14	MCDR3-B-31P6G9-72.0	M83513/09-B07	MCDR3-B-15S5L5-0.5
M83513/08-B06	MCDR3-B-15P5L4-1.0	M83513/08-F14	MCDR3-B-37P6G9-72.0	M83513/09-C07	MCDR3-B-21S5L5-0.5
M83513/08-C06	MCDR3-B-21P5L4-1.0	M83513/08-G14	MCDR3-B-51P6G9-72.0	M83513/09-D07	MCDR3-B-25S5L5-0.5
M83513/08-D06	MCDR3-B-25P5L4-1.0	M83513/08-A15	MCDR3-B- 9P6Q1-72.0	M83513/09-E07	MCDR3-B-31S5L5-0.5
M83513/08-E06	MCDR3-B-31P5L4-1.0	M83513/08-B15	MCDR3-B-15P6Q1-72.0	M83513/09-F07	MCDR3-B-37S5L5-0.5
M83513/08-F06	MCDR3-B-37P5L4-1.0	M83513/08-C15	MCDR3-B-21P6Q1-72.0	M83513/09-G07	MCDR3-B-51S5L5-0.5
M83513/08-G06	MCDR3-B-51P5L4-1.0	M83513/08-D15	MCDR3-B-25P6Q1-72.0	M83513/09-A08	MCDR3-B- 9S5L5-1.0
M83513/08-A07	MCDR3-B- 9P5L5-0.5	M83513/08-E15	MCDR3-B-31P6Q1-72.0	M83513/09-B08	MCDR3-B-15S5L5-1.0
M83513/08-B07	MCDR3-B-15P5L5-0.5	M83513/08-F15	MCDR3-B-37P6Q1-72.0	M83513/09-C08	MCDR3-B-21S5L5-1.0
M83513/08-C07	MCDR3-B-21P5L5-0.5	M83513/08-G15	MCDR3-B-51P6Q1-72.0	M83513/09-D08	MCDR3-B-25S5L5-1.0
M83513/08-D07	MCDR3-B-25P5L5-0.5	M83513/08-A16	MCDR3-B- 9P6Q9-72.0	M83513/09-E08	MCDR3-B-31S5L5-1.0
M83513/08-E07	MCDR3-B-31P5L5-0.5	M83513/08-B16	MCDR3-B-15P6Q9-72.0	M83513/09-F08	MCDR3-B-37S5L5-1.0
M83513/08-F07	MCDR3-B-37P5L5-0.5	M83513/08-C16	MCDR3-B-21P6Q9-72.0	M83513/09-G08	MCDR3-B-51S5L5-1.0
M83513/08-G07	MCDR3-B-51P5L5-0.5	M83513/08-D16	MCDR3-B-25P6Q9-72.0	M83513/09-A09	MCDR3-B- 9S6Q1-18.0
M83513/08-A08	MCDR3-B- 9P5L5-1.0	M83513/08-E16	MCDR3-B-31P6Q9-72.0	M83513/09-B09	MCDR3-B-15S6Q1-18.0
M83513/08-B08	MCDR3-B-15P5L5-1.0	M83513/08-F16	MCDR3-B-37P6Q9-72.0	M83513/09-C09	MCDR3-B-21S6Q1-18.0
M83513/08-C08	MCDR3-B-21P5L5-1.0	M83513/08-G16	MCDR3-B-51P6Q9-72.0	M83513/09-D09	MCDR3-B-25S6Q1-18.0
M83513/08-D08	MCDR3-B-25P5L5-1.0	M83513/09-A01	MCDR3-B- 9S6G1-18.0	M83513/09-E09	MCDR3-B-31S6Q1-18.0
M83513/08-E08	MCDR3-B-31P5L5-1.0	M83513/09-B01	MCDR3-B-15S6G1-18.0	M83513/09-F09	MCDR3-B-37S6Q1-18.0
M83513/08-F08	MCDR3-B-37P5L5-1.0	M83513/09-C01	MCDR3-B-21S6G1-18.0	M83513/09-G09	MCDR3-B-51S6Q1-18.0
M83513/08-G08	MCDR3-B-51P5L5-1.0	M83513/09-D01	MCDR3-B-25S6G1-18.0	M83513/09-A10	MCDR3-B- 9S6Q1-36.0
M83513/08-A09	MCDR3-B- 9P6Q1-18.0	M83513/09-E01	MCDR3-B-31S6G1-18.0	M83513/09-B10	MCDR3-B-15S6Q1-36.0
M83513/08-B09	MCDR3-B-15P6Q1-18.0	M83513/09-F01	MCDR3-B-37S6G1-18.0	M83513/09-C10	MCDR3-B-21S6Q1-36.0
M83513/08-C09	MCDR3-B-21P6Q1-18.0	M83513/09-G01	MCDR3-B-51S6G1-18.0	M83513/09-D10	MCDR3-B-25S6Q1-36.0
M83513/08-D09	MCDR3-B-25P6Q1-18.0	M83513/09-A02	MCDR3-B- 9S6G1-36.0	M83513/09-E10	MCDR3-B-31S6Q1-36.0
M83513/08-E09	MCDR3-B-31P6Q1-18.0	M83513/09-B02	MCDR3-B-15S6G1-36.0	M83513/09-F10	MCDR3-B-37S6Q1-36.0
M83513/08-F09	MCDR3-B-37P6Q1-18.0	M83513/09-C02	MCDR3-B-21S6G1-36.0	M83513/09-G10	MCDR3-B-51S6Q1-36.0
M83513/08-G09	MCDR3-B-51P6Q1-18.0	M83513/09-D02	MCDR3-B-25S6G1-36.0	M83513/09-A11	MCDR3-B- 9S6Q9-18.0
M83513/08-A10	MCDR3-B- 9P6Q1-36.0	M83513/09-E02	MCDR3-B-31S6G1-36.0	M83513/09-B11	MCDR3-B-15S6Q9-18.0
M83513/08-B10	MCDR3-B-15P6Q1-36.0	M83513/09-F02	MCDR3-B-37S6G1-36.0	M83513/09-C11	MCDR3-B-21S6Q9-18.0
M83513/08-C10	MCDR3-B-21P6Q1-36.0	M83513/09-G02	MCDR3-B-51S6G1-36.0	M83513/09-D11	MCDR3-B-25S6Q9-18.0
M83513/08-D10	MCDR3-B-25P6Q1-36.0	M83513/09-A03	MCDR3-B- 9S6G9-18.0	M83513/09-E11	MCDR3-B-31S6Q9-18.0
M83513/08-E10	MCDR3-B-31P6Q1-36.0	M83513/09-B03	MCDR3-B-15S6G9-18.0	M83513/09-F11	MCDR3-B-37S6Q9-18.0
M83513/08-F10	MCDR3-B-37P6Q1-36.0	M83513/09-C03	MCDR3-B-21S6G9-18.0	M83513/09-G11	MCDR3-B-51S6Q9-18.0
M83513/08-G10	MCDR3-B-51P6Q1-36.0	M83513/09-D03	MCDR3-B-25S6G9-18.0	M83513/09-A12	MCDR3-B- 9S6Q9-36.0
M83513/08-A11	MCDR3-B- 9P6Q9-18.0	M83513/09-E03	MCDR3-B-31S6G9-18.0	M83513/09-B12	MCDR3-B-15S6Q9-36.0
M83513/08-B11	MCDR3-B-15P6Q9-18.0	M83513/09-F03	MCDR3-B-37S6G9-18.0	M83513/09-C12	MCDR3-B-21S6Q9-36.0
M83513/08-C11	MCDR3-B-21P6Q9-18.0	M83513/09-G03	MCDR3-B-51S6G9-18.0	M83513/09-D12	MCDR3-B-25S6Q9-36.0
M83513/08-D11	MCDR3-B-25P6Q9-18.0	M83513/09-A04	MCDR3-B- 9S6G9-36.0	M83513/09-E12	MCDR3-B-31S6Q9-36.0
M83513/08-E11	MCDR3-B-31P6Q9-18.0	M83513/09-B04	MCDR3-B-15S6G9-36.0	M83513/09-F12	MCDR3-B-37S6Q9-36.0
M83513/08-F11	MCDR3-B-37P6Q9-18.0	M83513/09-C04	MCDR3-B-21S6G9-36.0	M83513/09-G12	MCDR3-B-51S6Q9-36.0
M83513/08-G11	MCDR3-B-51P6Q9-18.0	M83513/09-D04	MCDR3-B-25S6G9-36.0	M83513/09-A13	MCDR3-B- 9S6G1-72.0
M83513/08-A12	MCDR3-B- 9P6Q9-36.0	M83513/09-E04	MCDR3-B-31S6G9-36.0	M83513/09-B13	MCDR3-B-15S6G1-72.0
M83513/08-B12	MCDR3-B-15P6Q9-36.0	M83513/09-F04	MCDR3-B-37S6G9-36.0	M83513/09-C13	MCDR3-B-21S6G1-72.0
M83513/08-C12	MCDR3-B-21P6Q9-36.0	M83513/09-G04	MCDR3-B-51S6G9-36.0	M83513/09-D13	MCDR3-B-25S6G1-72.0
M83513/08-D12	MCDR3-B-25P6Q9-36.0	M83513/09-A05	MCDR3-B- 9S5L4-0.5	M83513/09-E13	MCDR3-B-31S6G1-72.0
M83513/08-E12	MCDR3-B-31P6Q9-36.0	M83513/09-B05	MCDR3-B-15S5L4-0.5	M83513/09-F13	MCDR3-B-37S6G1-72.0
M83513/08-F12	MCDR3-B-37P6Q9-36.0	M83513/09-C05	MCDR3-B-21S5L4-0.5	M83513/09-G13	MCDR3-B-51S6G1-72.0
M83513/08-G12	MCDR3-B-51P6Q9-36.0	M83513/09-D05	MCDR3-B-25S5L4-0.5	M83513/09-A14	MCDR3-B- 9S6G9-72.0
M83513/08-A13	MCDR3-B- 9P6G1-72.0	M83513/09-E05	MCDR3-B-31S5L4-0.5	M83513/09-B14	MCDR3-B-15S6G9-72.0

**MIL-DTL-83513 Cross Reference** (Continued)

**MCDR (Plastic Shell)** (Continued)

Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.
M83513/09-C14	MCDR3-B-21S6G9-72.0	M83513/09-C15	MCDR3-B-21S6Q1-72.0	M83513/09-C16	MCDR3-B-21S6Q9-72.0
M83513/09-D14	MCDR3-B-25S6G9-72.0	M83513/09-D15	MCDR3-B-25S6Q1-72.0	M83513/09-D16	MCDR3-B-25S6Q9-72.0
M83513/09-E14	MCDR3-B-31S6G9-72.0	M83513/09-E15	MCDR3-B-31S6Q1-72.0	M83513/09-E16	MCDR3-B-31S6Q9-72.0
M83513/09-F14	MCDR3-B-37S6G9-72.0	M83513/09-F15	MCDR3-B-37S6Q1-72.0	M83513/09-F16	MCDR3-B-37S6Q9-72.0
M83513/09-G14	MCDR3-B-51S6G9-72.0	M83513/09-G15	MCDR3-B-51S6Q1-72.0	M83513/09-G16	MCDR3-B-51S6Q9-72.0
M83513/09-A15	MCDR3-B- 9S6Q1-72.0	M83513/09-A16	MCDR3-B- 9S6Q9-72.0		
M83513/09-B15	MCDR3-B-15S6Q1-72.0	M83513/09-B16	MCDR3-B-15S6Q9-72.0		

**MCK (Metal Shell)**

Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.
M83513/10-A01*N	MCK**-B- 9PRT1	M83513/12-H03*P	MCK**-S-100PRT1B	M83513/15-H03*N	MCK**-B-100SRT1B
M83513/10-B01*N	MCK**-B- 15PRT1	M83513/13-A01*N	MCK**-B- 9SRT1	M83513/15-H03*P	MCK**-S-100SRT1B
M83513/10-C01*N	MCK**-B- 21PRT1	M83513/13-B01*N	MCK**-B- 15SRT1	M83513/22-A01*N	MCK**-B- 9PST1
M83513/10-D01*N	MCK**-B- 25PRT1	M83513/13-C01*N	MCK**-B- 21SRT1	M83513/22-B01*N	MCK**-B- 15PST1
M83513/10-E01*N	MCK**-B- 31PRT1	M83513/13-D01*N	MCK**-B- 25SRT1	M83513/22-C01*N	MCK**-B- 21PST1
M83513/10-F01*N	MCK**-B- 37PRT1	M83513/13-E01*N	MCK**-B- 31SRT1	M83513/22-D01*N	MCK**-B- 25PST1
M83513/10-A01*P	MCK**-P- 9PRT1	M83513/13-F01*N	MCK**-B- 37SRT1	M83513/22-E01*N	MCK**-B- 31PST1
M83513/10-B01*P	MCK**-P- 15PRT1	M83513/13-A01*P	MCK**-P- 9SRT1	M83513/22-F01*N	MCK**-B- 37PST1
M83513/10-C01*P	MCK**-P- 21PRT1	M83513/13-B01*P	MCK**-P- 15SRT1	M83513/22-A01*P	MCK**-P- 9PST1
M83513/10-D01*P	MCK**-P- 25PRT1	M83513/13-C01*P	MCK**-P- 21SRT1	M83513/22-B01*P	MCK**-P- 15PST1
M83513/10-E01*P	MCK**-P- 31PRT1	M83513/13-D01*P	MCK**-P- 25SRT1	M83513/22-C01*P	MCK**-P- 21PST1
M83513/10-F01*P	MCK**-P- 37PRT1	M83513/13-E01*P	MCK**-P- 31SRT1	M83513/22-D01*P	MCK**-P- 25PST1
M83513/10-A02*N	MCK**-B- 9PRT1A	M83513/13-F01*P	MCK**-P- 37SRT1	M83513/22-E01*P	MCK**-P- 31PST1
M83513/10-B02*N	MCK**-B- 15PRT1A	M83513/13-A02*N	MCK**-B- 9SRT1A	M83513/22-F01*P	MCK**-P- 37PST1
M83513/10-C02*N	MCK**-B- 21PRT1A	M83513/13-B02*N	MCK**-B- 15SRT1A	M83513/22-A02*N	MCK**-B- 9PST1A
M83513/10-D02*N	MCK**-B- 25PRT1A	M83513/13-C02*N	MCK**-B- 21SRT1A	M83513/22-B02*N	MCK**-B- 15PST1A
M83513/10-E02*N	MCK**-B- 31PRT1A	M83513/13-D02*N	MCK**-B- 25SRT1A	M83513/22-C02*N	MCK**-B- 21PST1A
M83513/10-F02*N	MCK**-B- 37PRT1A	M83513/13-E02*N	MCK**-B- 31SRT1A	M83513/22-D02*N	MCK**-B- 25PST1A
M83513/10-A02*P	MCK**-P- 9PRT1A	M83513/13-F02*N	MCK**-B- 37SRT1A	M83513/22-E02*N	MCK**-B- 31PST1A
M83513/10-B02*P	MCK**-P- 15PRT1A	M83513/13-A02*P	MCK**-P- 9SRT1A	M83513/22-F02*P	MCK**-B- 37PST1A
M83513/10-C02*P	MCK**-P- 21PRT1A	M83513/13-B02*P	MCK**-P- 15SRT1A	M83513/22-A02*P	MCK**-P- 9PST1A
M83513/10-D02*P	MCK**-P- 25PRT1A	M83513/13-C02*P	MCK**-P- 21SRT1A	M83513/22-B02*P	MCK**-P- 15PST1A
M83513/10-E02*P	MCK**-P- 31PRT1A	M83513/13-D02*P	MCK**-P- 25SRT1A	M83513/22-C02*P	MCK**-P- 21PST1A
M83513/10-F02*P	MCK**-P- 37PRT1A	M83513/13-E02*P	MCK**-P- 31SRT1A	M83513/22-D02*P	MCK**-P- 25PST1A
M83513/10-A03*N	MCK**-B- 9PRT1B	M83513/13-F02*P	MCK**-P- 37SRT1A	M83513/22-E02*P	MCK**-P- 31PST1A
M83513/10-B03*N	MCK**-B- 15PRT1B	M83513/13-A03*N	MCK**-B- 9SRT1B	M83513/22-F02*P	MCK**-P- 37PST1A
M83513/10-C03*N	MCK**-B- 21PRT1B	M83513/13-B03*N	MCK**-B- 15SRT1B	M83513/22-A03*N	MCK**-B- 9PST1B
M83513/10-D03*N	MCK**-B- 25PRT1B	M83513/13-C03*N	MCK**-B- 21SRT1B	M83513/22-B03*N	MCK**-B- 15PST1B
M83513/10-E03*N	MCK**-B- 31PRT1B	M83513/13-D03*N	MCK**-B- 25SRT1B	M83513/22-C03*N	MCK**-B- 21PST1B
M83513/10-F03*N	MCK**-B- 37PRT1B	M83513/13-E03*N	MCK**-B- 31SRT1B	M83513/22-D03*N	MCK**-B- 25PST1B
M83513/10-A03*P	MCK**-P- 9PRT1B	M83513/13-F03*N	MCK**-B- 37SRT1B	M83513/22-E03*N	MCK**-B- 31PST1B
M83513/10-B03*P	MCK**-P- 15PRT1B	M83513/13-A03*P	MCK**-P- 9SRT1B	M83513/22-F03*N	MCK**-B- 37PST1B
M83513/10-C03*P	MCK**-P- 21PRT1B	M83513/13-B03*P	MCK**-P- 15SRT1B	M83513/22-A03*P	MCK**-P- 9PST1B
M83513/10-D03*P	MCK**-P- 25PRT1B	M83513/13-C03*P	MCK**-P- 21SRT1B	M83513/22-B03*P	MCK**-P- 15PST1B
M83513/10-E03*P	MCK**-P- 31PRT1B	M83513/13-D03*P	MCK**-P- 25SRT1B	M83513/22-C03*P	MCK**-P- 21PST1B
M83513/10-F03*P	MCK**-P- 37PRT1B	M83513/13-E03*P	MCK**-P- 31SRT1B	M83513/22-D03*P	MCK**-P- 25PST1B
M83513/11-G01*N	MCK**-B- 51PRT1	M83513/13-F03*P	MCK**-P- 37SRT1B	M83513/22-E03*P	MCK**-P- 31PST1B
M83513/11-G01*P	MCK**-P- 51PRT1	M83513/14-G01*N	MCK**-B- 51SRT1	M83513/22-F03*P	MCK**-P- 37PST1B
M83513/11-G02*N	MCK**-B- 51PRT1A	M83513/14-G01*P	MCK**-P- 51SRT1	M83513/23-G01*N	MCK**-B- 51PST1
M83513/11-G02*P	MCK**-P- 51PRT1A	M83513/14-G02*N	MCK**-B- 51SRT1A	M83513/23-G01*P	MCK**-P- 51PST1
M83513/11-G03*N	MCK**-B- 51PRT1B	M83513/14-G02*P	MCK**-P- 51SRT1A	M83513/23-G02*N	MCK**-B- 51PST1A
M83513/11-G03*P	MCK**-P- 51PRT1B	M83513/14-G03*N	MCK**-B- 51SRT1B	M83513/23-G02*P	MCK**-P- 51PST1A
M83513/12-H01*N	MCK**-B-100PRT1	M83513/14-G03*P	MCK**-P- 51SRT1B	M83513/23-G03*N	MCK**-B- 51PST1B
M83513/12-H01*P	MCK**-S-100PRT1	M83513/15-H01*N	MCK**-B-100SRT1	M83513/23-G03*P	MCK**-P- 51PST1B
M83513/12-H02*N	MCK**-B-100PRT1A	M83513/15-H01*P	MCK**-S-100SRT1	M83513/24-H01*N	MCK**-B-100PST1
M83513/12-H02*P	MCK**-S-100PRT1A	M83513/15-H02*N	MCK**-B-100SRT1A	M83513/24-H01*P	MCK**-S-100PST1
M83513/12-H03*N	MCK**-B-100PRT1B	M83513/15-H02*P	MCK**-S-100SRT1A	M83513/24-H02*N	MCK**-B-100PST1A

**5**

Nanominature and Microminiature Connectors

**MIL-DTL-83513 Cross Reference** (Continued)

**MCK (Metal Shell)** (Continued)

Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.	Military Part No.	MICRODOT Part No.
M83515/24-H02*P	MCK-**-S-100PST1A	M83513/25-C02*N	MCK-**-B- 21SST1A	M83513/25-B03*P	MCK-**-P- 15SST1B
M83513/24-H03*N	MCK-**-B-100PST1B	M83513/25-D02*N	MCK-**-B- 25SST1A	M83513/25-C03*P	MCK-**-P- 21SST1B
M83513/24-H03*P	MCK-**-S-100PST1B	M83513/25-E02*N	MCK-**-B- 31SST1A	M83513/25-D03*P	MCK-**-P- 25SST1B
M83513/25-A01*N	MCK-**-B- 9SST1	M83513/25-F02*N	MCK-**-B- 37SST1A	M83513/25-E03*P	MCK-**-P- 31SST1B
M83513/25-B01*N	MCK-**-B- 15SST1	M83513/25-A02*P	MCK-**-P- 9SST1A	M83513/25-F03*P	MCK-**-P- 37SST1B
M83513/25-C01*N	MCK-**-B- 21SST1	M83513/25-B02*P	MCK-**-P- 15SST1A	M83513/26-G01*N	MCK-**-B- 51SST1
M83513/25-D01*N	MCK-**-B- 25SST1	M83513/25-C02*P	MCK-**-P- 21SST1A	M83513/26-G01*P	MCK-**-P- 51SST1
M83513/25-E01*N	MCK-**-B- 31SST1	M83513/25-D02*P	MCK-**-P- 25SST1A	M83513/26-G02*N	MCK-**-B- 51SST1A
M83513/25-F01*N	MCK-**-B- 37SST1	M83513/25-E02*P	MCK-**-P- 31SST1A	M83513/26-G02*P	MCK-**-P- 51SST1A
M83513/25-A01*P	MCK-**-P- 9SST1	M83513/25-F02*P	MCK-**-P- 37SST1A	M83513/26-G03*N	MCK-**-B- 51SST1B
M83513/25-B01*P	MCK-**-P- 15SST1	M83513/25-A03*N	MCK-**-B- 9SST1B	M83513/26-G03*P	MCK-**-P- 51SST1B
M83513/25-C01*P	MCK-**-P- 21SST1	M83513/25-B03*N	MCK-**-B- 15SST1B	M83513/27-H01*N	MCK-**-B-100SST1
M83513/25-D01*P	MCK-**-P- 25SST1	M83513/25-C03*N	MCK-**-B- 21SST1B	M83513/27-H01*P	MCK-**-S-100SST1
M83513/25-E01*P	MCK-**-P- 31SST1	M83513/25-D03*N	MCK-**-B- 25SST1B	M83513/27-H02*N	MCK-**-B-100SST1A
M83513/25-F01*P	MCK-**-P- 37SST1	M83513/25-E03*N	MCK-**-B- 31SST1B	M83515/27-H02*P	MCK-**-S-100SST1A
M83513/25-A02*N	MCK-**-B- 9SST1A	M83513/25-F03*N	MCK-**-B- 37SST1B	M83513/27-H03*N	MCK-**-B-100SST1B
M83513/25-B02*N	MCK-**-B- 15SST1A	M83513/25-A03*P	MCK-**-P- 9SST1B	M83513/27-H03*P	MCK-**-S-100SST1B

\*C = Cadmium or N = Nickel (space applications only)

\*\*C2 = Cadmium or N1 = Nickel (space applications only)



**MICRODOT Rectangular Connectors Introduction**

**Product Facts**

- Designed for both military and commercial applications
- Well-suited for external conditions
- Precise contact alignment with extremely low engaging forces
- Product offering consists of metal shell, plastic shell, panel mount, printed circuit board and strip connectors
- Metal shell connector promotes high durability and reliability



**5**

Nanominature and Microminature Connectors

Twist Pin contact High Density Microminature Connectors described in this catalog comprise a complete contact system which is adaptable to a numerous variety of form factors. Precise contact alignment, with extremely low engaging forces, results from the manner in which the Twist Pin contact system is packaged — by constructing the male contact as a breathing helical spring, electrical contact is achieved at many points around the periphery of the pin bundle.

Featured in this catalog is the twist pin contact line, which accommodates round wire and Flat Conductor Cable (FCC), Edgeboard Connectors.

Applications requiring frequent mating and disconnect call for the metal shell connector version. This style connector promotes high durability and reliability.

Designed for both military and aerospace applications, this latest innovation is especially well-suited to use in external conditions. This catalog also features light-weight plastic

connectors in a strip (MCS) format as well as JACKMATE Connectors (MCJ Series) format for small package application requiring high reliability.

Edgeboard applications are covered in this catalog with a special High Density Standard Module (HDSM) Connector as well as MIL-DTL-55302 (MCEM) Connectors. The high mating forces of these larger connectors are greatly reduced with the use of the low force twist pins and sockets which are standard for this product line.

**MICRODOT Twist Pin Contact Data**

**Twist Pin — 24 gauge  
Pin and Socket Contacts**

The contact spring member normally found in socket contacts has been eliminated by creating a breathing helical spring principle on the pin contact — smaller, more durable contacts can be manufactured economically.



Wire range 24-36 AWG solid & stranded.



**Stamped and Formed  
24 gauge Pin and Socket contact**

The Stamped and Formed Pin contact utilizes a 4 beam design that will achieve 8 points of contact. The crimped version of the Stamped and Formed contact will

accept a 24AWG-36AWG stranded wire. The Solder pot version of the Stamped and Formed contact is a one piece design that eliminates the need for a solder pot adapter.

**MICRODOT MCE Series Plastic Shell Edgeboard Connectors**

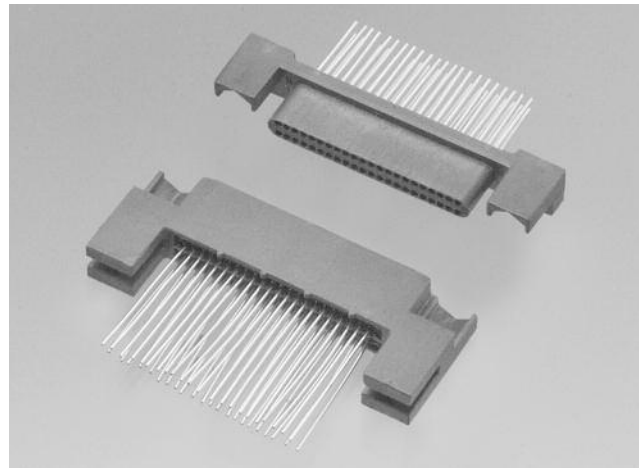
**Plastic Shell Edge Board Connectors**

Designed for commercial applications requiring frequent disconnect and connect, including data recorders and computers. Mother board connector can be ordered to fit any pattern on your circuit board.

This new connector features the proven twist pin contact with precision contact alignment with extremely low engaging forces.

Units are available with contacts as few as 40 and as many as 110. Wire sizes 28 through 24, any type of plating or color coding, any kind of wire termination including wire wrap — a high degree of flexibility for your military or commercial application.

Two hexagonal polarizing keys can provide up to 36 different key combinations are supplied.



40 Contacts

**Technical & Performance Data — Twist Pin Plastic Shell Connectors**

**Electrical**

**Contact Resistance** — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms, using standard 24 AWG solid copper leads when measured directly behind the crimp joints of the mated pin and socket contacts. The average resistance value at 100 microvolts is 4.8 milliohms.

**Dielectric Withstanding Voltage** — 800 VAC RMS at sea level (600 for solder pots); 200 VAC RMS at 70,000 feet [21,336m] (150 for solder pots).

**Corrosion Resistance (Per MIL-STD-202C, Method 101B, Condition B)** — Both mated and unmated samples do not exceed the maximum allowable contact resistance (8 milliohms) when subjected to the 48 hour salt spray test.

**Durability** — The contact resistance after 500 mating cycles is less than the maximum allowable, 8 milliohms.

**Insulation Resistance** — Greater than 5,000 megohms at room temperature.

**Maximum Current Carrying Capacity** — No. 24 contact 3 amperes. It must be recognized however, that all the wires to a connector will not carry their maximum current under all environmental conditions due to wire temperature.

**Mechanical**

**Contact Engaging & Separation Forces** — 8.0 oz. max. [2.24N] (eng.), 0.5 oz. min. [.14N] (sep.)

**Environmental**

**Temperature Range (Operating)** — -67°F to 257°F [-55° C to +125°C].

**Vibration (Per MIL-STD-202C, Method 204A, Condition D)** — No discontinuity in excess of 1 μ sec. during twelve 20 minute sweeps from 10 to 2000 CPS at .06 double amplitude or 20 G forces, whichever is less.

**Materials**

**Insulator** — Liquid Crystal Polymer (LCP) per ASTM D5138 or Polyphenylene Sulfide per MIL-M-24519 or ASTM D4067.

**Contacts**

**Pin contact** — Copper alloy and beryllium copper alloy make up the complete construction.

**Socket contact** — Copper alloy.

**Hardware** — Corrosion resistant stainless steel.

**Finishes**

**Insulator** — None.

**Contacts** — Standard finish is 0.000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

**Hardware** — Passivated per QQ-P-35.

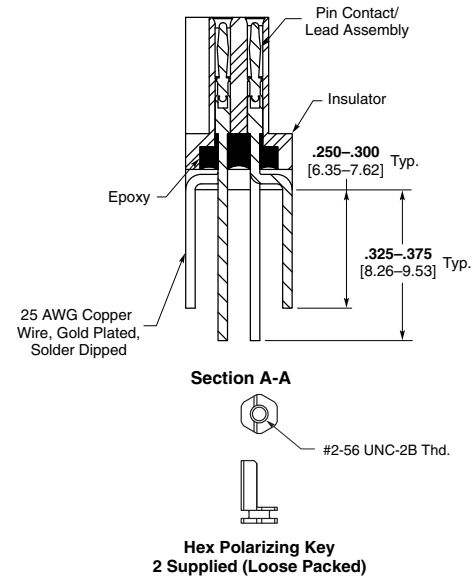
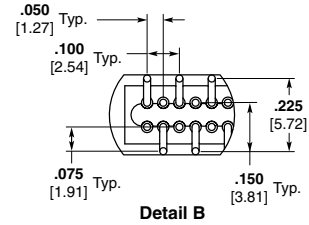
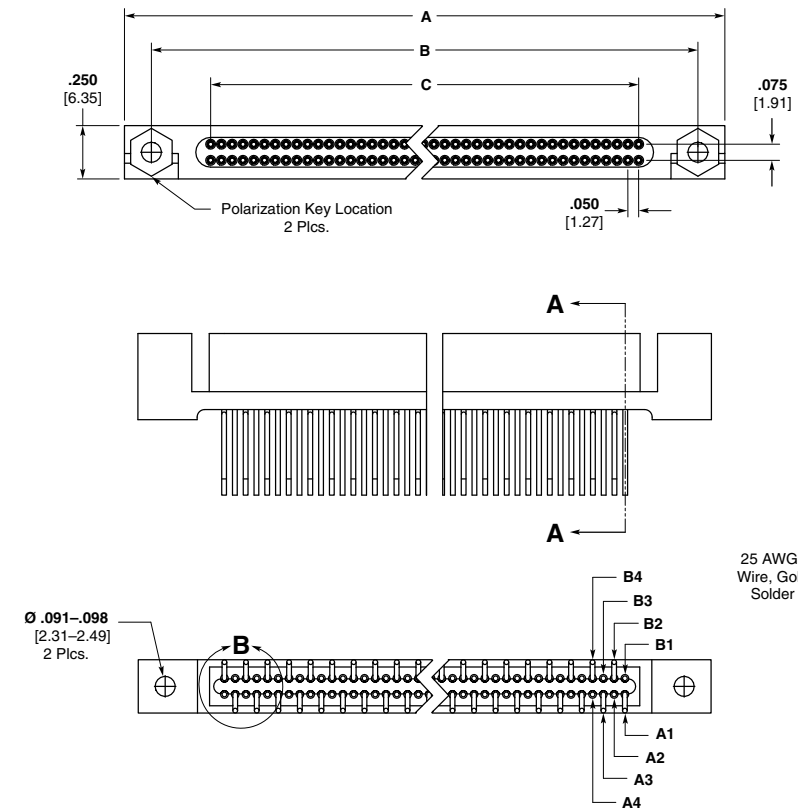
**5**

Nanominature and Microminature Connectors

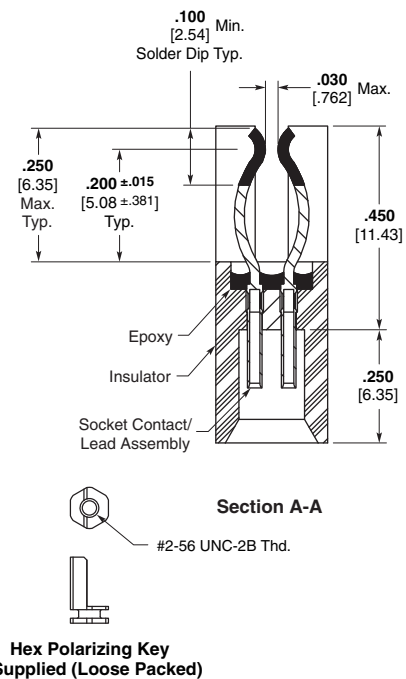
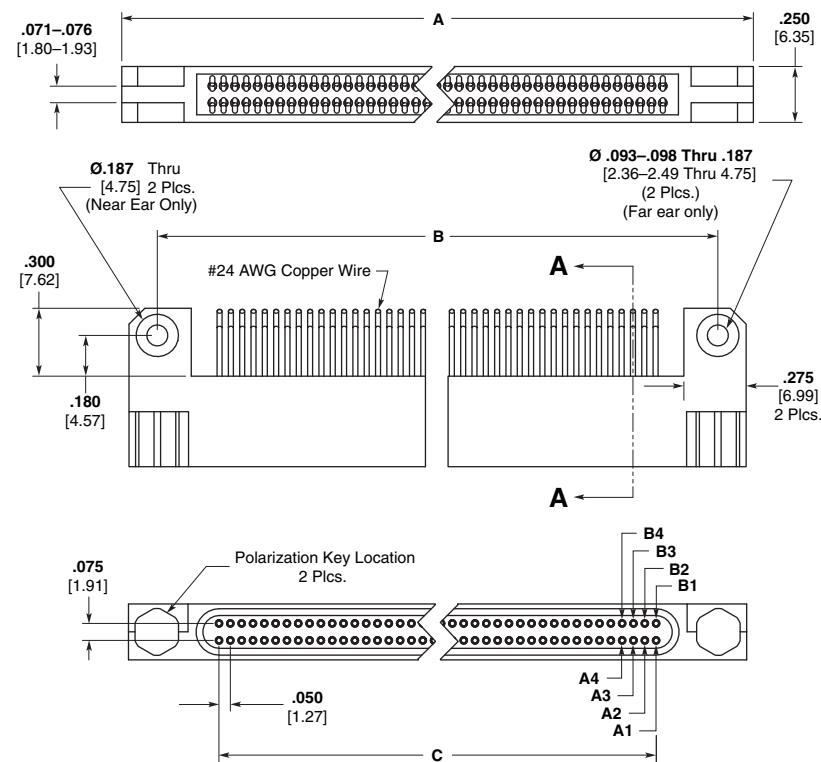


**MICRODOT MCE Series Plastic Shell Edgeboard Connectors** (Continued)

**Mother Board (Pin Side)**



**Daughter Board (Socket Side)**



**MICRODOT MCE Series Plastic Shell Edgeboard Connectors** (Continued)

**Dimensions for .062 [1.57] PC Board**

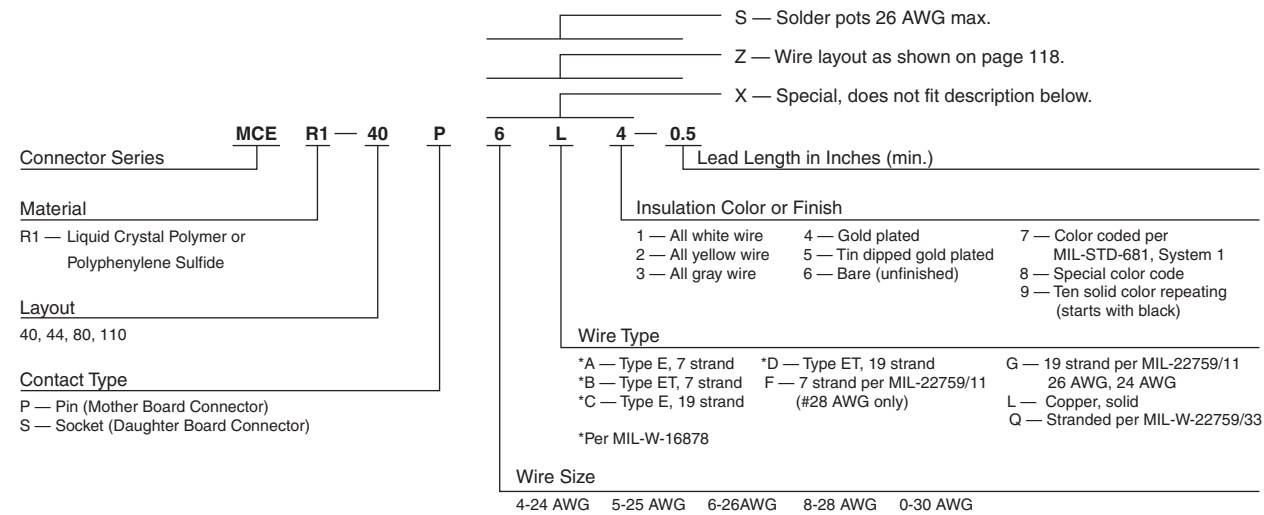
No. of Contacts	A ± .010 [± .254]	B ± .005 [± .127]	C Basic
40	1.750 44.45	1.500 38.10	.950 24.13
44	1.850 46.99	1.600 40.64	1.050 26.67
80	2.750 69.85	2.500 63.50	1.950 49.53
110	3.500 88.90	3.250 82.55	2.700 68.58

**Notes:** For PC Boards of different widths, consult TE Connectivity.

**5**

Nanominature and Microminature Connectors

**How To Specify**

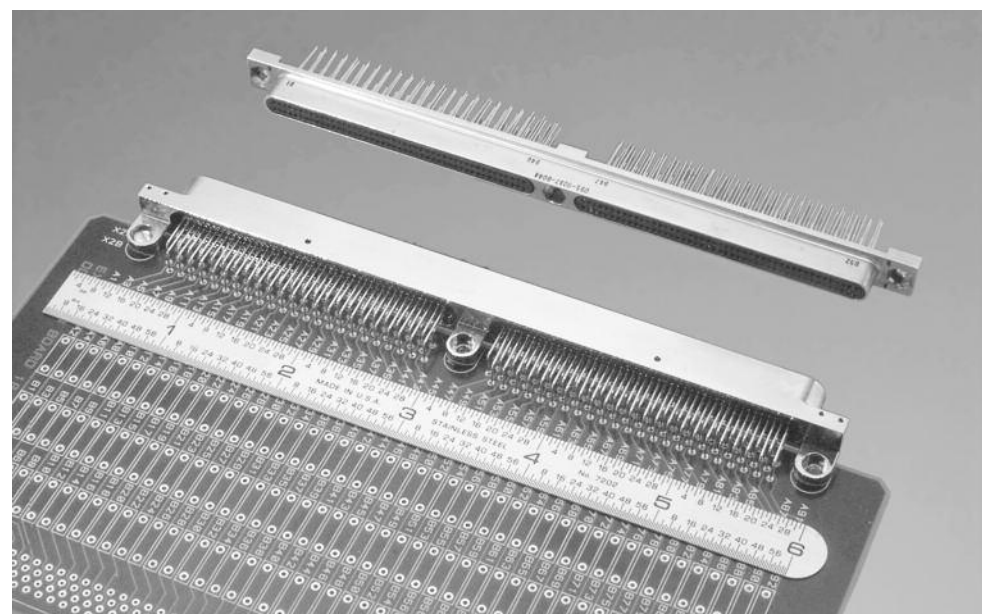


**Mounting** — Holes on the Daughter Board side can be modified.

**MICRODOT MCEM Series Metal Shell Edgeboard Connectors**

**Metal Shell Edge Board Connectors**

- Meets MIL-DTL-55302 performance requirements
- Layouts 128 and 184 are QPL to slash sheets 120, 121, 122 and 123
- Connectors are available in 40, 44, 80, 110, 128, 152, and 184 positions
- Utilizes low force twist pins and our low force sockets. Mating forces in the 3 to 4 oz. [.83 to 1.11N] range per contact are typical with low force pin and low force socket
- Designed for surface mounting and through-the-board mounting
- Available termination
  - Mother board (pin side) — cactus bend
  - Daughter board (socket side) — coke bottle, right-angle bend to “A” or “B” side
  - Solder pots, and variety of other wire terminations for pin and socket connectors available at customer's request
- Two hexagonal polarizing keys (per MIL-DTL-55302 slash sheet 124) are provided. Jackscrew hardware is available. For programmable keying/jacking modifications consult TE Connectivity



In addition to the plastic versions of the 2 piece edgeboard connectors, a metal shell assembly is designed and tooled. The metal shells are made of aluminum alloy. The insert material is Diallyl phthalate, Polyphenylene sulfide (RYTON), or Liquid Crystal Polymer (LCP). The technical and performance data is

essentially the same as that shown for the MCDM Series on page 5-72. These are rugged, durable connectors and are ideal for use in areas of high density packaging and where frequent connect and disconnects are required. Designed initially for applications in airborne data recorders, computers and associated

equipment in navigational systems. The mother board connector can be ordered to fit any pattern on the circuit board. The units can also be provided with contacts on .100 [2.54] spacing which results in .100 [2.54] grid pattern.

**Performance Data**

**Electrical**

**Contact Resistance** — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms. The average resistance value at 100 microvolts is 4.8 milliohms.

**Dielectric Withstanding Voltage** — 800 VAC RMS at sea level (600 for solder pots); 200 VAC RMS at 70,000 feet [21,336m] (150 for solder pots).

**Durability** — Less than the maximum allowable, 8 milliohms after 500 mating cycles.

**Insulation Resistance** — Greater than 5,000 megohms at room ambient temperature.

**Maximum Current Carrying Capacity** — No. 24 contact 3 amperes.

**Mechanical**

**Contact Engaging & Separation Forces** — 5.0 oz. max. [1.39N] (eng.), 0.5 oz. min. [.14N] (sep.).

**Environmental**

**Temperature Range** — -67°F to 302°F [-55° C to +150°C] for Diallyl Phthalate; -67°F to 257°F [-55° C to +125°C] for Polyphenylene Sulfide.

**Vibration** — No discontinuity in excess of 1 μ sec. during twelve 20 minute sweeps from 10 to 2000 CPS at .06 double amplitude or 20 G forces, whichever is less.

**Materials and Finish**

**Shells** — High grade aluminum alloy, electroless nickel plated per AMS 2404.

**Insulator** — Diallyl Phthalate per MIL-M-14, Type SDG-F (for 128 & 184); Polyphenylene Sulfide per MIL-M-24519 or ASTM D4067 (for 40, 44, 80, 110 & 152), or Liquid Crystal Polymer per ASTM D5138.

**Contacts** —

**Pin (low force)** — beryllium and OFHC copper, gold plated.

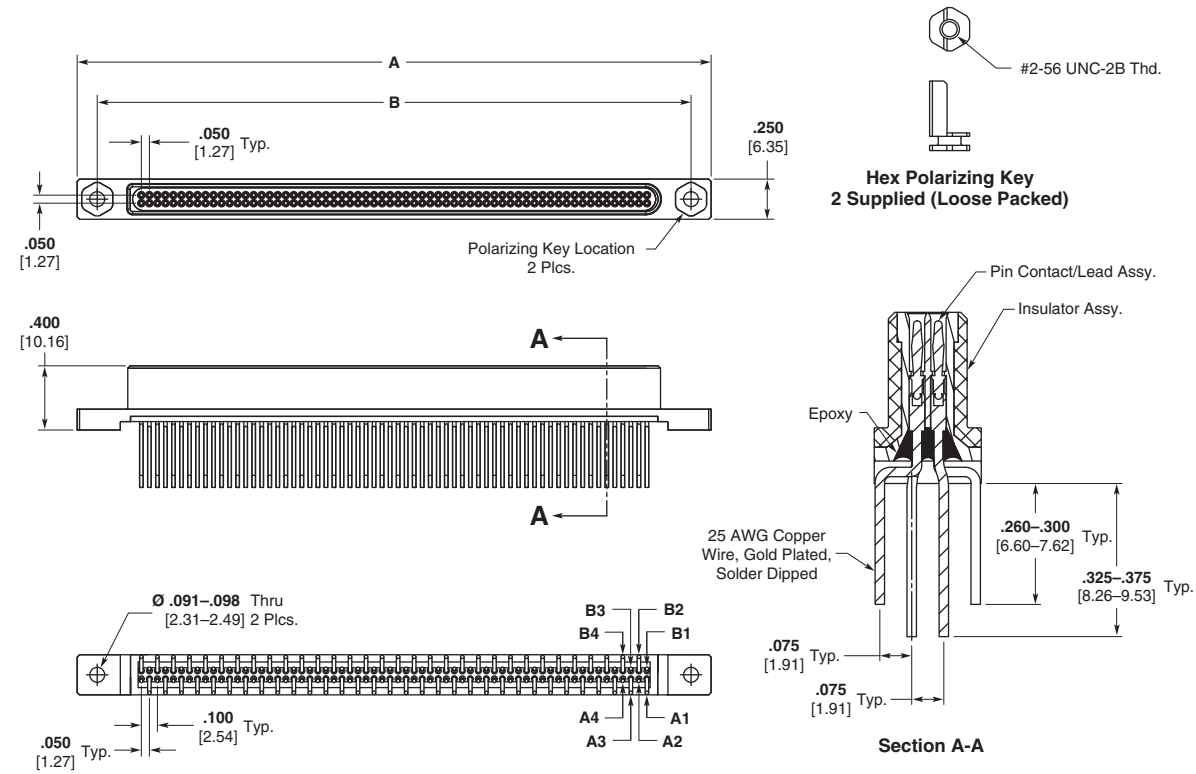
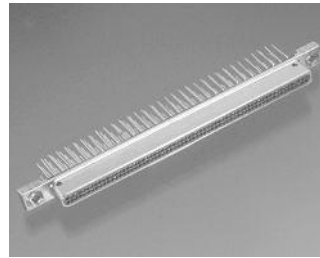
**Socket (low force)** — Copper alloy, gold plated.

**Hardware** — Corrosion resistant stainless steel, passivated.

RYTON is a trademark of Chevron Chemical Company LLC.

**MICRODOT MCEM Series Metal Shell Edgeboard Connectors** (Continued)

**Mother Board (Pin Side)**  
**40, 44, 80, 110, 128 & 152**  
**Positions**



**5**

Nanminiature and Microminiature Connectors

**Dimensions for .062 [1.57] PC Board**

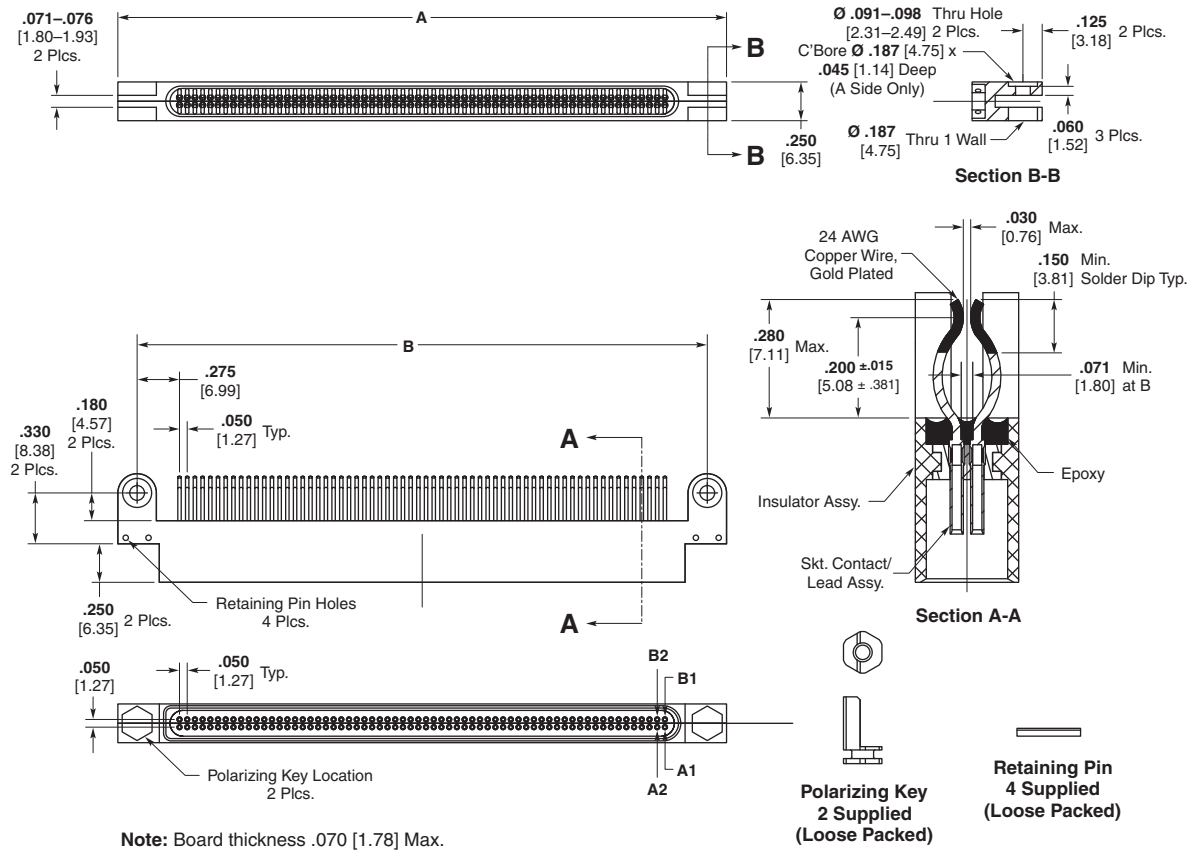
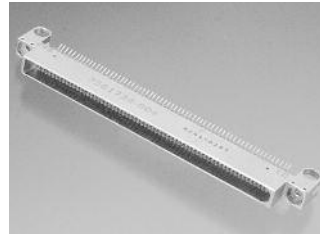
No. of Contacts	A ± .010 [± .254]	B ± .005 [± .127]
40	<b>1.750</b> 44.45	<b>1.500</b> 38.10
44	<b>1.850</b> 46.99	<b>1.600</b> 40.64
80	<b>2.750</b> 69.85	<b>2.500</b> 63.50
110	<b>3.500</b> 88.90	<b>3.250</b> 82.55
<b>128</b>	<b>3.950</b> 100.33	<b>3.700</b> 93.98
152	<b>4.550</b> 115.57	<b>4.330</b> 109.98

**Note:** For PC Boards of different widths, consult TE Connectivity.

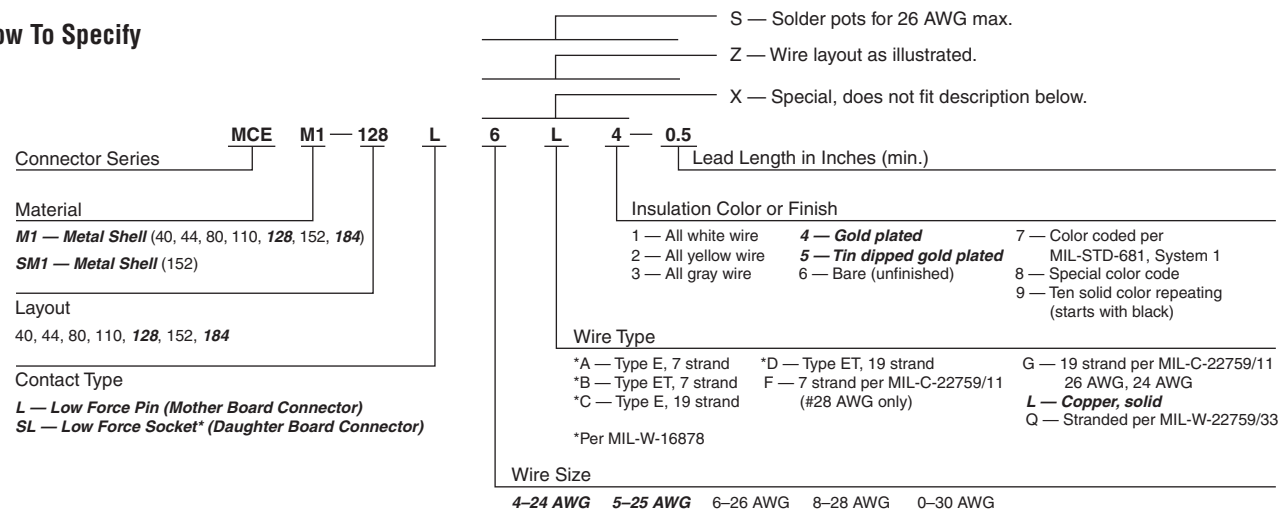
Items in bold italic are qualified to MIL-DTL-55302.  
 Configuration shown is per MIL-DTL-55302/120.

**MICRODOT MCEM Series Metal Shell Edgeboard Connectors** (Continued)

**Daughter Board  
(Socket Side)**  
40, 44, 80, 110, 128 & 152  
Positions



**How To Specify**

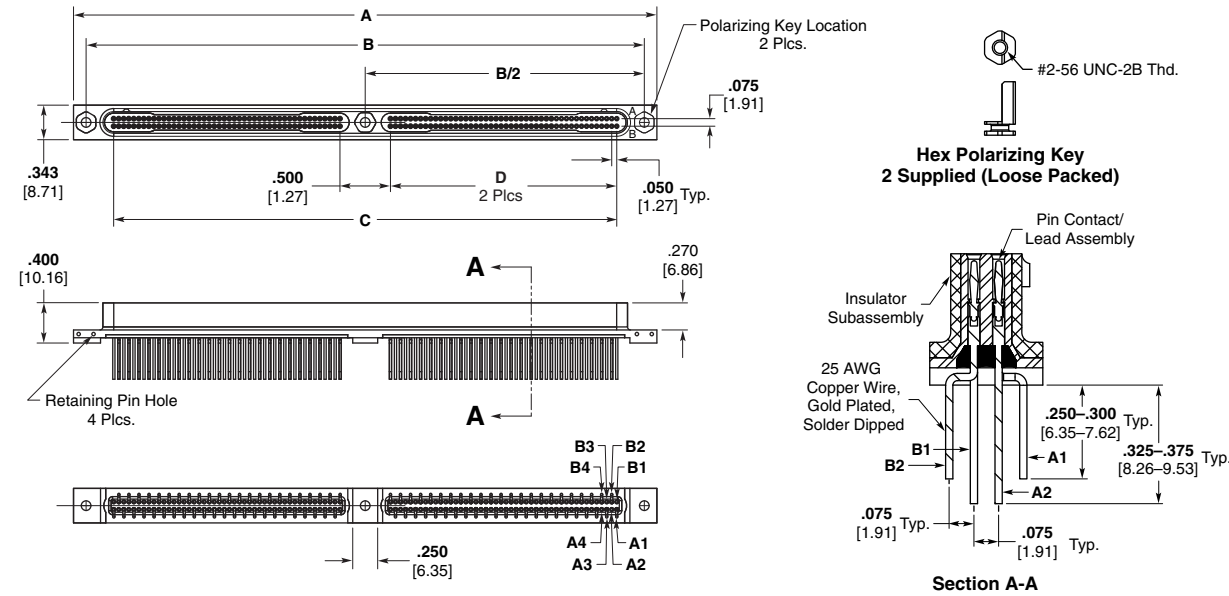


Items in bold italic are qualified to MIL-DTL-55302. Configuration shown is per MIL-DTL-55302/121.

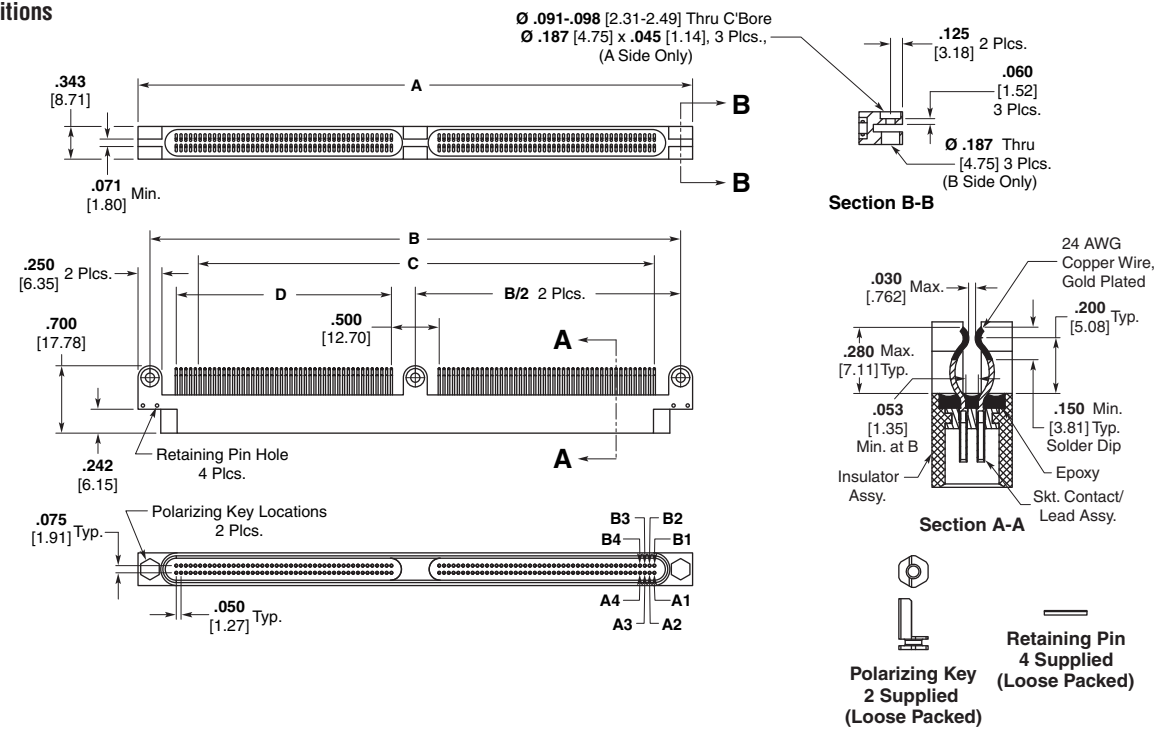
Polarization — Hexagonal hardware is supplied with connector.  
 Mounting — Standard mounting holes are shown. Consult TE Connectivity for modifications.

**MICRODOT MCEM Series Metal Shell Edgeboard Connectors** (Continued)

**Mother Board (Pin Side)**  
184 Positions



**Daughter Board (Socket Side)**  
184 Positions



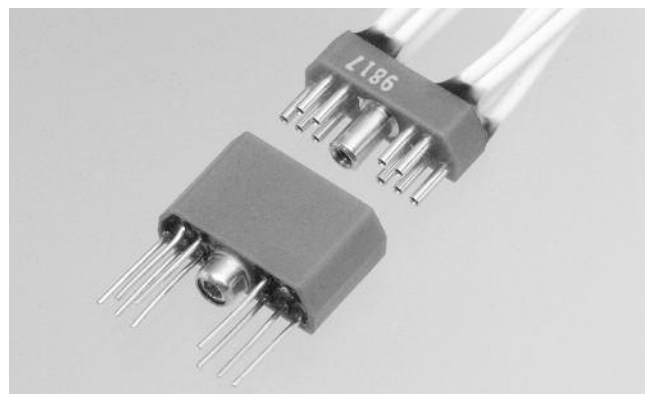
No. of Contacts	A $\pm .010$ [ $\pm .254$ ]	B $\pm .005$ [ $\pm .127$ ]	C Basic	D Basic
184	5.800 147.32	5.550 140.97	5.000 127.00	2.250 57.15

5

Nanominature and Microminature Connectors



**MICRODOT JACKMATE MCJ(M) Series Plastic (Metal) Shell Center Jackscrew Connectors**



JACKMATE Connectors are the first Twist Pin contact assemblies designed to accommodate center jackscrews that provide jacking action when mating or unmating the connectors. Although the units were initially developed for high density cord-to-cord or in-line applications, either plug or receptacle can be

adapted to a PC board. The jacking hardware consists of a threaded bushing and a captivated jackscrew which are made of corrosion resistant stainless steel and are molded into the JACKMATE Connector Insulator.

The twist pin contacts are on .050 [1.27] center-to-

center linear spacing and contact terminations are available in solid wire or stranded wire. There is a high degree of flexibility with this JACKMATE connector design for commercial or military applications.

Available on MCJ(M) Series Plastic (Metal) Shells.

**MICRODOT JACKMATE MCJ Series Plastic Shell Center Jackscrew Connectors**

**JACKMATE Technical & Performance Data for Plastic Shell**

**Electrical**

**Contact Resistance** — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms, using standard 24 AWG solid copper leads when measured directly behind the crimp joints of the mated pin and socket contacts. The average resistance value at 100 microvolts is 4.8 milliohms.

**Dielectric Withstanding Voltage (60 Hz rms room temperature)** —

**Solder Pots** — 600 VAC at sea level; 150 VAC at 70,000 feet [21,336m]

**Wire Terminations** — 750 VAC at sea level; 200 VAC at 70,000 feet [21,336m].

**Corrosion Resistance (Per MIL-STD-202C, Method 101B, Condition B)** — Both mated and unmated samples do not

exceed the maximum allowable contact resistance (8 milliohms) when subjected to the 48 hour salt spray test.

**Durability** — The contact resistance after 500 mating cycles is less than the maximum allowable, 8 milliohms.

**Insulation Resistance** — Greater than 5,000 megohms at room temperature for the materials listed under "Materials".

**Maximum Current Carrying Capacity** — No. 24 contact 3 amperes. It must be recognized, however, that all the wires to a connector will not carry their maximum current under all environmental conditions due to wire temperature.

**Mechanical**

**Contact Engaging & Separation Forces** — 8.0 oz. max. [2.22N] (eng.), 0.5 oz. min. [.14N] (sep.).

**Environmental**

**Temperature Range (Operating)** — -67°F to 257°F [-55° C to 125°C].

**Vibration (Per MIL-STD-202C, Method 204-A, Condition D)** — No discontinuity in excess of 1 μ sec. during twelve 20 minute sweeps from 10 to 2000 CPS at .06 double amplitude or 20 G forces, whichever is less.

**Materials**

**Insulator** — Glass filled Nylon Type 6.

**Contacts** —

**Pin contact** — copper alloy and beryllium copper alloy make up the complete construction

**Socket contact** — copper alloy.

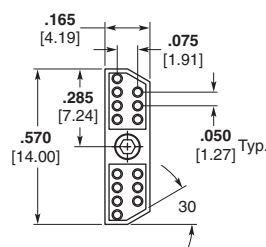
**Hardware** — Corrosive resistant stainless steel.

**Finishes**

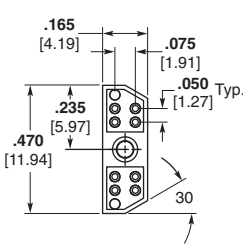
**Contacts** — Standard finish is 0.000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

**Hardware** — Passivated Per QQ-P-35.

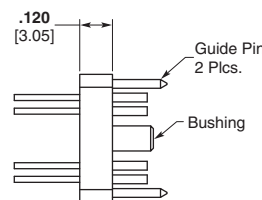
**10 & 14 Contact Layout**



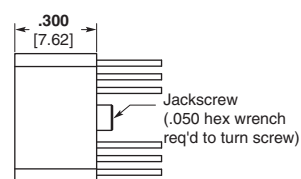
14 Layout



10 Layout



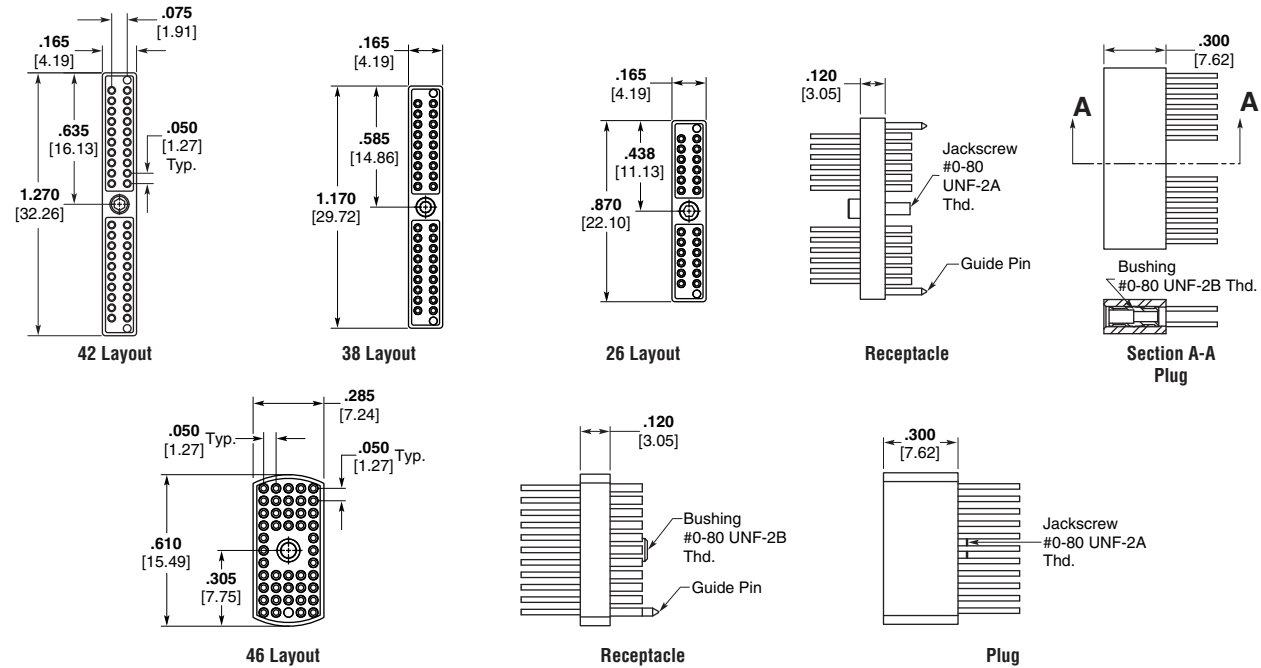
Receptacle



Plug

**MICRODOT JACKMATE MCJ Series Plastic Shell Center Jackscrew Connectors** (Continued)

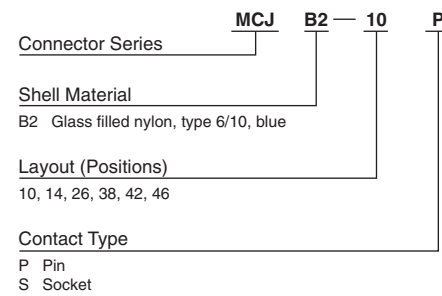
**26, 38 & 46 Contact Layout**



**5**

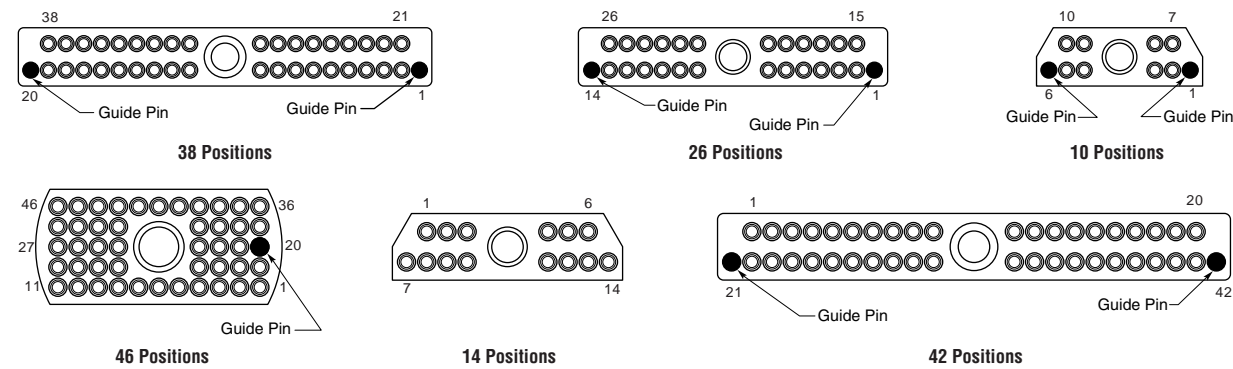
Nanominature and Microminature Connectors

**How To Specify**



4	L	4	0.5
Lead Length in Inches (min.)			
Insulation Color or Finish			
1 All white wire	4 Gold plated	7 Color coded per MIL-STD-681, System 1	
2 All yellow wire	5 Tin dipped gold plated	8 Special color code	
3 All gray wire	6 Bare (unfinished)	9 Ten solid color repeating (starts with black)	
Wire Type			
*A Type E, 7 strand	*D Type ET, 19 strand	G 19 strand per MIL-C-22759/11	
*B Type ET, 7 strand	F 7 strand per MIL-C-22759/11	26 AWG, 24 AWG	
*C Type E, 19 strand	(#28 AWG only)	L Copper, solid	
*Per MIL-W-16878			
Wire Size			
4—24 AWG	5—25 AWG	6—26 AWG	8—28 AWG 0—30 AWG

**Contact Arrangement as Viewed from the Engaging Face of the Pin Side**



Guide pin locations illustrated are for standards configuration only. Any location is available. Guide pins are supplied in socket connectors and blank cavities are in pin connector.

**MICRODOT JACKMATE MCJM Series Metal Shell Center Jackscrew Connectors**

**Technical and Performance Data for Metal Shell**

**Electrical**

**Contact Resistance** — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms, using standard 24 AWG solid copper leads when measured directly behind the crimp joints of the mated pin and socket contacts. The average resistance value at 100 microvolts is 4.8 milliohms.

**Dielectric Withstanding Voltage (60 Hz rms room temperature)** —

**Solder Pots** — 600 VAC at sea level; 150 VAC at 70,000 feet [21,336m].

**Wire Terminations** — 750 VAC at sea level; 200 VAC at 70,000 feet [21,336m].

**Corrosion Resistance (Per MIL-STD-202C, Method 101B, Condition B)** — Both mated and unmated samples do not exceed the maximum allowable contact resistance (8 milliohms) when subjected to the 48 hour salt spray test.

**Durability** — The contact resistance after 500 mating cycles is less than the maximum allowable, 8 milliohms.

**Insulation Resistance** — Greater than 5,000 megohms at room temperature for the materials listed under "Materials".

**Maximum Current Carrying Capacity** — No. 24 contact 3 amperes. It must be recognized, however, that all the wires to a connector will not carry their maximum current under all environmental conditions due to wire temperature.

**Mechanical**

**Contact Engaging & Separation Forces** — 8.0 oz. max. [2.22N] (eng.), 0.5 oz. min. [.14N] (sep.).

**Environmental**

**Temperature Range (Operating)** — -67°F to 302°F [-55°C to 150°C] for Diallyl Phthalate.

**Vibration (Per MIL-STD-202C, Method 204-A, Condition D)** — No discontinuity in excess of 1 μ sec. during twelve 20 minute sweeps from 10 to 2000 CPS at .06 double amplitude or 20 G forces, whichever is less.

**Materials**

**Insulator** — Diallyl Phthalate per MIL-M-14, Type SDG-F.

**Contacts**

**Pin contact** — copper alloy and beryllium copper alloy make up the complete construction;

**Socket contact** — copper alloy.

**Body Shells**

**Pin body shell** — stainless steel, Types 304, Condition A per QQ-S-766;

**Socket body shell** — aluminum alloy per QQ-A-591, A-380 alloy.

**Hardware** — Corrosion resistant stainless steel.

**Finishes**

**Contacts** — Standard finish is 0.000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

**Body Shells**

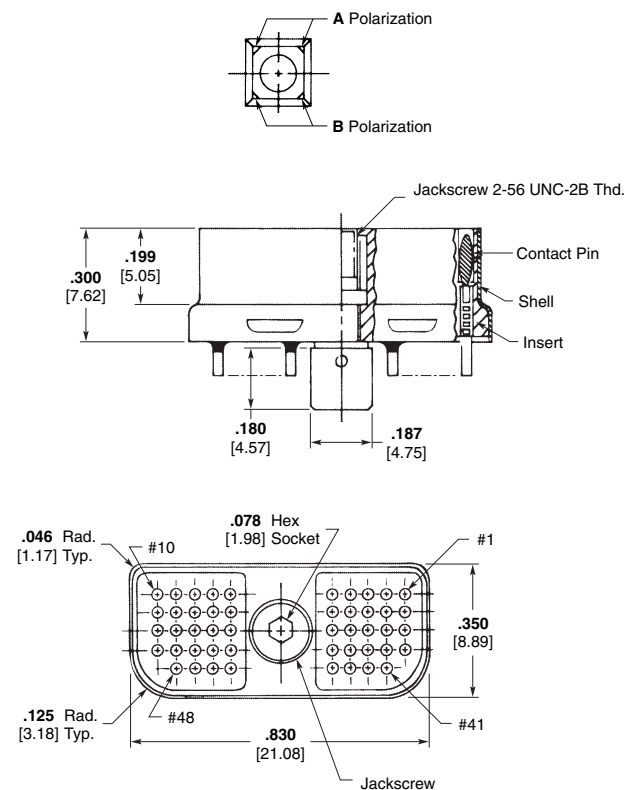
**Pin body shell** — passivated per MIL-F-14072 (E-300);

**Socket body shell** — electroless nickel per AMS 204, Class 3, except thickness is 0.001/0.0015 [0.025/0.038].

**Hardware** — Passivated per QQ-P-35.

**Note:** Insulators are molded into their metal shells —  
No bonded joint is used.  
Standard material used unless otherwise specified.

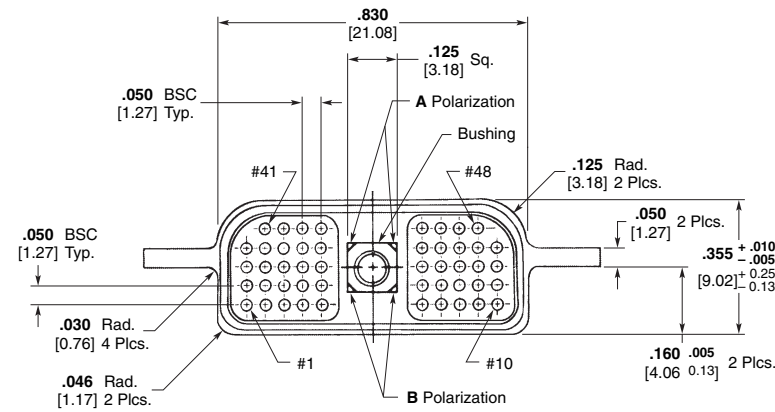
**Plug (Pin Side)  
Shell Type M1**



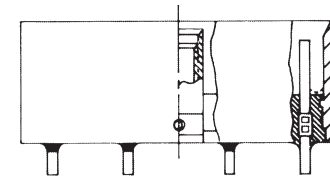
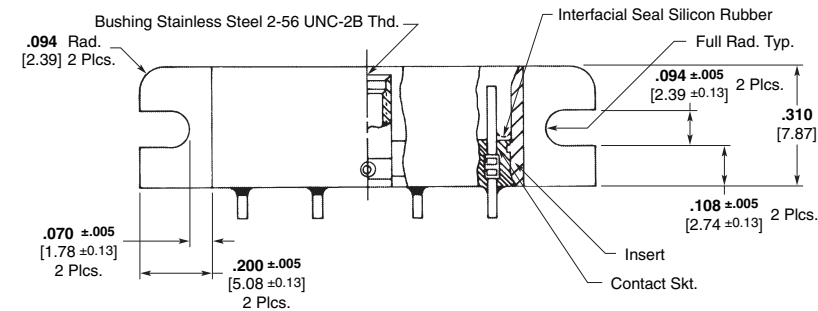
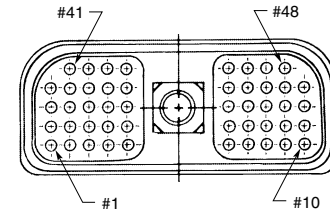
**MICRODOT JACKMATE MCJM Series Metal Shell Center Jackscrew Connectors** (Continued)

**Receptacle (Socket Side)**

**Shell Type M1**



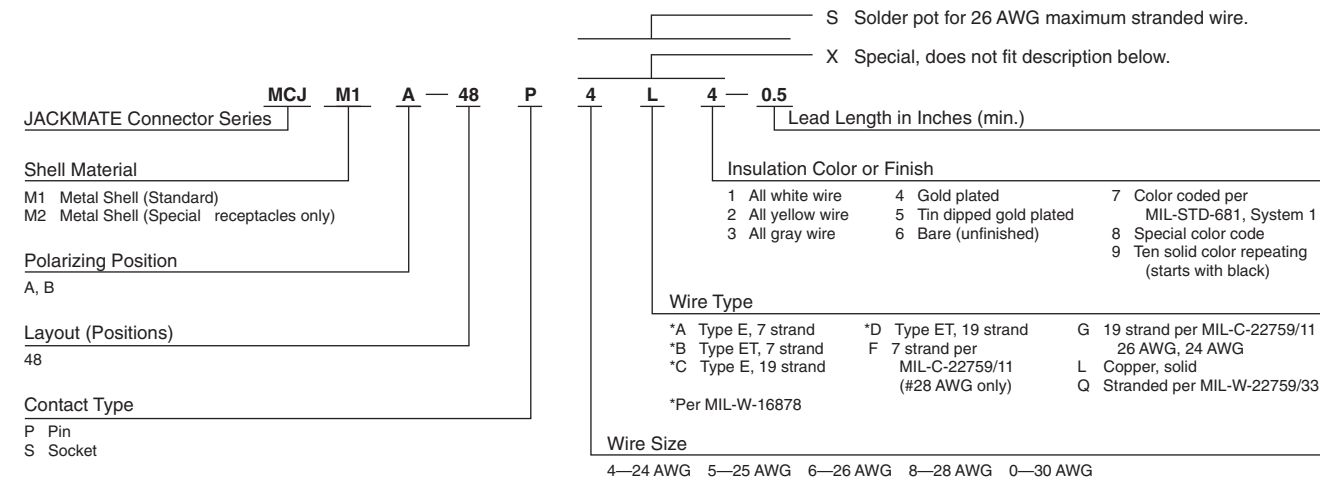
**Shell Type M2**



**5**

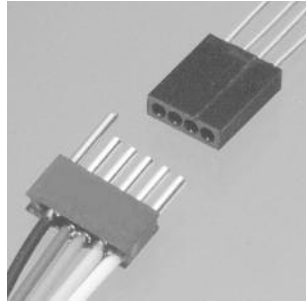
Nanominature and Microminature Connectors

**How To Specify**

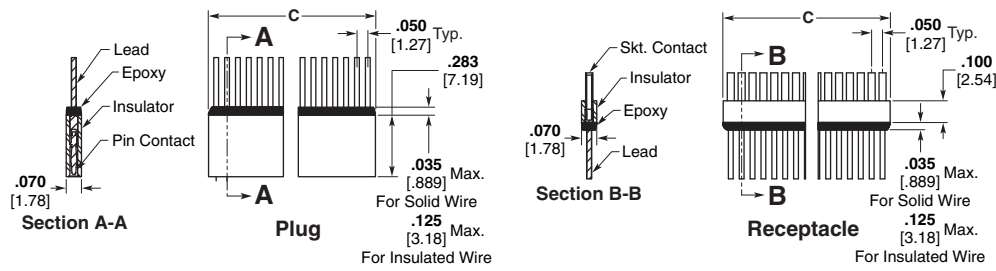


**MICRODOT MCS Series Strip Connectors**

**Strip Connectors**



**MCS Plastic Strip**



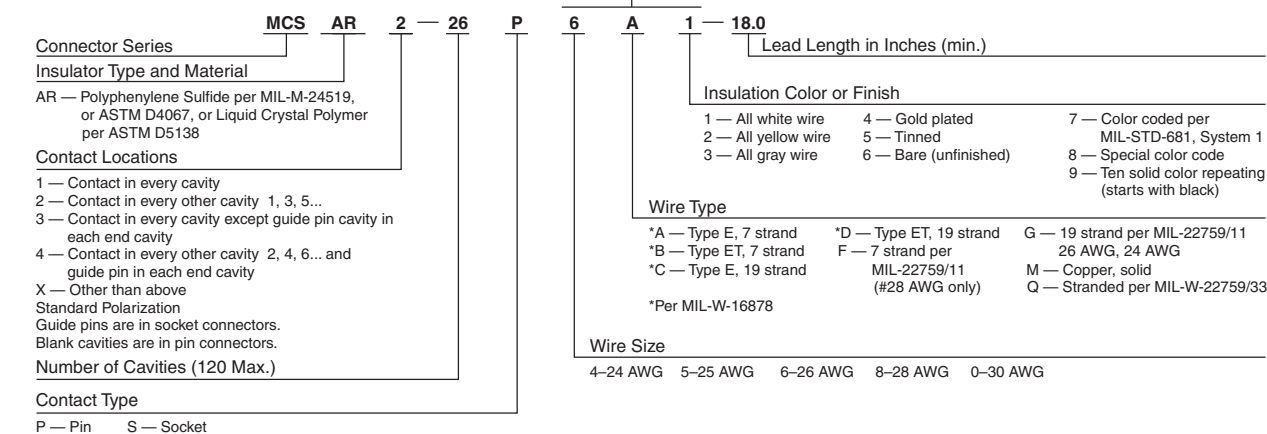
Part No. By Size	C Max.
MCSAR*-1**	.070 [1.78]
MCSAR*-2**	.120 [3.05]
MCSAR*-3**	.170 [4.32]
MCSAR*-4**	.220 [5.59]
MCSAR*-5**	.270 [6.86]
MCSAR*-6**	.320 [8.13]
MCSAR*-7**	.420 [10.67]
MCSAR*-8**	.420 [10.67]
MCSAR*-9**	.470 [11.94]
MCSAR*-10**	.520 [13.21]
MCSAR*-11**	.570 [14.48]
MCSAR*-12**	.620 [15.75]
MCSAR*-13**	.670 [17.02]
MCSAR*-14**	.720 [18.29]
MCSAR*-15**	.770 [19.56]
MCSAR*-16**	.820 [20.83]
MCSAR*-17**	.870 [22.10]
MCSAR*-18**	.920 [23.37]
MCSAR*-19**	.970 [24.64]
MCSAR*-20**	1.020 [25.91]
MCSAR*-21**	1.070 [27.18]
MCSAR*-22**	1.120 [28.45]
MCSAR*-23**	1.170 [29.72]
MCSAR*-24**	1.220 [30.99]
MCSAR*-25**	1.270 [32.26]
MCSAR*-26**	1.320 [33.53]
MCSAR*-27**	1.370 [34.80]
MCSAR*-28**	1.420 [36.07]
MCSAR*-29**	1.470 [37.34]
MCSAR*-30**	1.520 [38.61]

Part No. By Size	C Max.
MCSAR*-31**	1.570 [39.88]
MCSAR*-32**	1.620 [41.15]
MCSAR*-33**	1.670 [42.42]
MCSAR*-34**	1.720 [43.69]
MCSAR*-35**	1.770 [44.96]
MCSAR*-36**	1.820 [46.23]
MCSAR*-37**	1.870 [47.50]
MCSAR*-38**	1.920 [48.77]
MCSAR*-39**	1.970 [50.04]
MCSAR*-40**	2.020 [51.31]
MCSAR*-41**	2.070 [52.58]
MCSAR*-42**	2.120 [53.85]
MCSAR*-43**	2.170 [55.12]
MCSAR*-44**	2.220 [56.39]
MCSAR*-45**	2.270 [57.66]
MCSAR*-46**	2.320 [58.93]
MCSAR*-47**	2.370 [60.20]
MCSAR*-48**	2.420 [61.47]
MCSAR*-49**	2.470 [62.74]
MCSAR*-50**	2.520 [64.01]
MCSAR*-51**	2.570 [65.28]
MCSAR*-52**	2.620 [66.55]
MCSAR*-53**	2.670 [67.82]
MCSAR*-54**	2.720 [69.09]
MCSAR*-55**	2.770 [70.36]
MCSAR*-56**	2.820 [71.63]
MCSAR*-57**	2.870 [72.90]
MCSAR*-58**	2.920 [74.17]
MCSAR*-59**	2.970 [75.44]
MCSAR*-60**	3.020 [76.71]

Part No. By Size	C Max.
MCSAR*-61**	3.070 [77.98]
MCSAR*-62**	3.120 [79.25]
MCSAR*-63**	3.170 [80.52]
MCSAR*-64**	3.220 [81.79]
MCSAR*-65**	3.270 [83.06]
MCSAR*-66**	3.320 [84.33]
MCSAR*-67**	3.370 [85.60]
MCSAR*-68**	3.420 [86.87]
MCSAR*-69**	3.470 [88.14]
MCSAR*-70**	3.520 [89.41]
MCSAR*-71**	3.570 [90.68]
MCSAR*-72**	3.620 [91.95]
MCSAR*-73**	3.670 [93.22]
MCSAR*-74**	3.720 [94.49]
MCSAR*-75**	3.770 [95.76]
MCSAR*-76**	3.820 [97.03]
MCSAR*-77**	3.870 [98.30]
MCSAR*-78**	3.920 [99.57]
MCSAR*-79**	3.970 [100.84]
MCSAR*-80**	4.020 [102.11]
MCSAR*-81**	4.070 [103.38]
MCSAR*-82**	4.120 [104.65]
MCSAR*-83**	4.170 [105.92]
MCSAR*-84**	4.220 [107.19]
MCSAR*-85**	4.270 [108.46]
MCSAR*-86**	4.320 [109.73]
MCSAR*-87**	4.370 [111.00]
MCSAR*-88**	4.420 [112.27]
MCSAR*-89**	4.470 [113.54]
MCSAR*-90**	4.520 [114.81]

Part No. By Size	C Max.
MCSAR*-91**	4.570 [116.08]
MCSAR*-92**	4.620 [117.35]
MCSAR*-93**	4.670 [118.62]
MCSAR*-94**	4.720 [119.89]
MCSAR*-95**	4.770 [121.16]
MCSAR*-96**	4.820 [122.43]
MCSAR*-97**	4.870 [123.70]
MCSAR*-98**	4.920 [124.97]
MCSAR*-99**	4.970 [126.24]
MCSAR*-100**	5.020 [127.51]
MCSAR*-101**	5.070 [128.78]
MCSAR*-102**	5.120 [130.05]
MCSAR*-103**	5.170 [131.32]
MCSAR*-104**	5.220 [132.59]
MCSAR*-105**	5.270 [133.86]
MCSAR*-106**	5.320 [135.13]
MCSAR*-107**	5.370 [136.40]
MCSAR*-108**	5.420 [137.67]
MCSAR*-109**	5.470 [138.94]
MCSAR*-110**	5.520 [140.21]
MCSAR*-111**	5.570 [141.48]
MCSAR*-112**	5.620 [142.75]
MCSAR*-113**	5.670 [144.02]
MCSAR*-114**	5.720 [145.29]
MCSAR*-115**	5.770 [146.56]
MCSAR*-116**	5.820 [147.83]
MCSAR*-117**	5.870 [149.10]
MCSAR*-118**	5.920 [150.37]
MCSAR*-119**	5.970 [151.64]
MCSAR*-120**	6.020 [152.91]

**How To Specify**



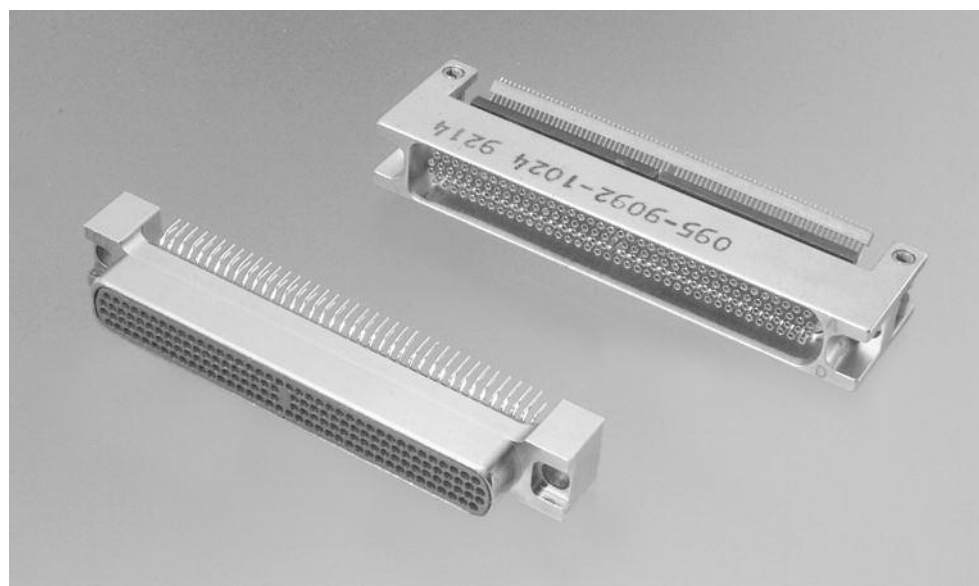


**MICRODOT High Density Standard Module (HDSM) Connectors**

**Features**

- Designed for surface mounting on both daughter board and mother board for increased circuit density
- Basic design offers 38, 78, 120, 152, 200, 304, and 400 contact designs
- High reliability twist pin and socket per MIL-DTL-83513 and MIL-DTL-55302
- Connector permits lateral movement of daughter board to accommodate clamping of the heatsink
- Plated through-hole mounting available
- Available with flying leads
- Extender card option available
- Typical mating force for 304 contacts is 38 pounds
- Designed to withstand vapor phase soldering
- Two rotatable (six position) polarizing keys are provided accommodating 36 possible combinations
- Jackscrew hardware available; consult TE Connectivity
- Different modular inserts may be specified to include coax (Pixi/Con), fiber optic or other special contacts
- Inserts may be partially or fully loaded and installed in the connector shell in various configurations

**Note:** HDSM Connectors may require additional hardware for Rack and Panel Mount Systems



The MICRODOT HDSM connector is designed for 4 row .050 [1.27] pitch density with a special low force twist pin that meets all requirements of MIL-DTL-55302 and MIL-DTL-83513. This high density connector allows the use of construction to double the packaging density with surface mount capability.

**Performance Data Summary**

**Electrical**

**Contacts** — Pin 24 AWG twist pin, Socket #24 AWG, Wire range 24 AWG to 32 AWG solid and stranded.

**Contact Resistance (voltage drop)** — 25 millivolts max. at 3 amps, 25° ± 3° C.

**Current Rating** — 3 amps max. per contact

**Dielectric Withstanding Voltage** — Test in accordance with EIA-364-20, Method a, Test Condition IV. Volts RMS 60Hz at room ambient: 600V for Solder Pots at Sea Level. 150V for Solder Pots at 70,000 ft. [21,336m]. 500V for Wire Terminations at Sea Level. 200V for Wire Terminations at 70,000 ft.

**Insulation Resistance** — 5,000 megohms min. at room ambient.

**Magnetic Permeability** — 2 mμ max.

**Mechanical**

**Contact Spacing** — .050 [1.27] centers

**Contact Engagement & Separation** — 5.0 oz max. [1.39N] (eng.) 0.5 oz. min. [.14N] 3.5 oz. typ. [.97N] (sep.) force.

**Materials and Finishes**

**Contacts** — Copper alloy plated with .000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

**Metal Shell** —  
**Insulator** — Liquid Crystal Polymer (LCP) per ASTM D5138 or Polyphenylene Sulfide per MIL-M-24519 or ASTM D4067

**Body Shell** — Aluminum alloy plated Nickel, electroless per MIL-C-26074.

**Environmental**

**Temperature Range** — -67°F to 257°F [-55° C to +125° C].

**Vibration** — No discontinuity in excess of 1 μ second when tested in accordance with EIA-364-28, test condition III.

**Insulator Retention** — Inserts will withstand a 50 lb. per square inch load in either direction.

**Shock** — No discontinuity in excess of 1 μ second when tested in accordance with EIA-364-27, test condition A.

**Durability** — No mechanical or electrical defects detrimental to the function of the connectors after 500 cycles of mating and unmating. (Caution: Mating force increases during durability cycling may be noted).

**Humidity** — After exposure to humidity as specified by EIA-364-31, Method IV, Test Condition B, IR shall be 1 megohm minimum following step 7a of EIA-364-31 section 4.3.6.1 and 1000 megohms minimum after 24 hours of conditioning per EIA-364-31.

**Salt Spray** — Connectors shall meet the performance requirements of contact resistance, mating and unmating forces, and contact retention after being subjected to the 48 hour 5% solution salt spray test per EIA-364-26, Condition B.

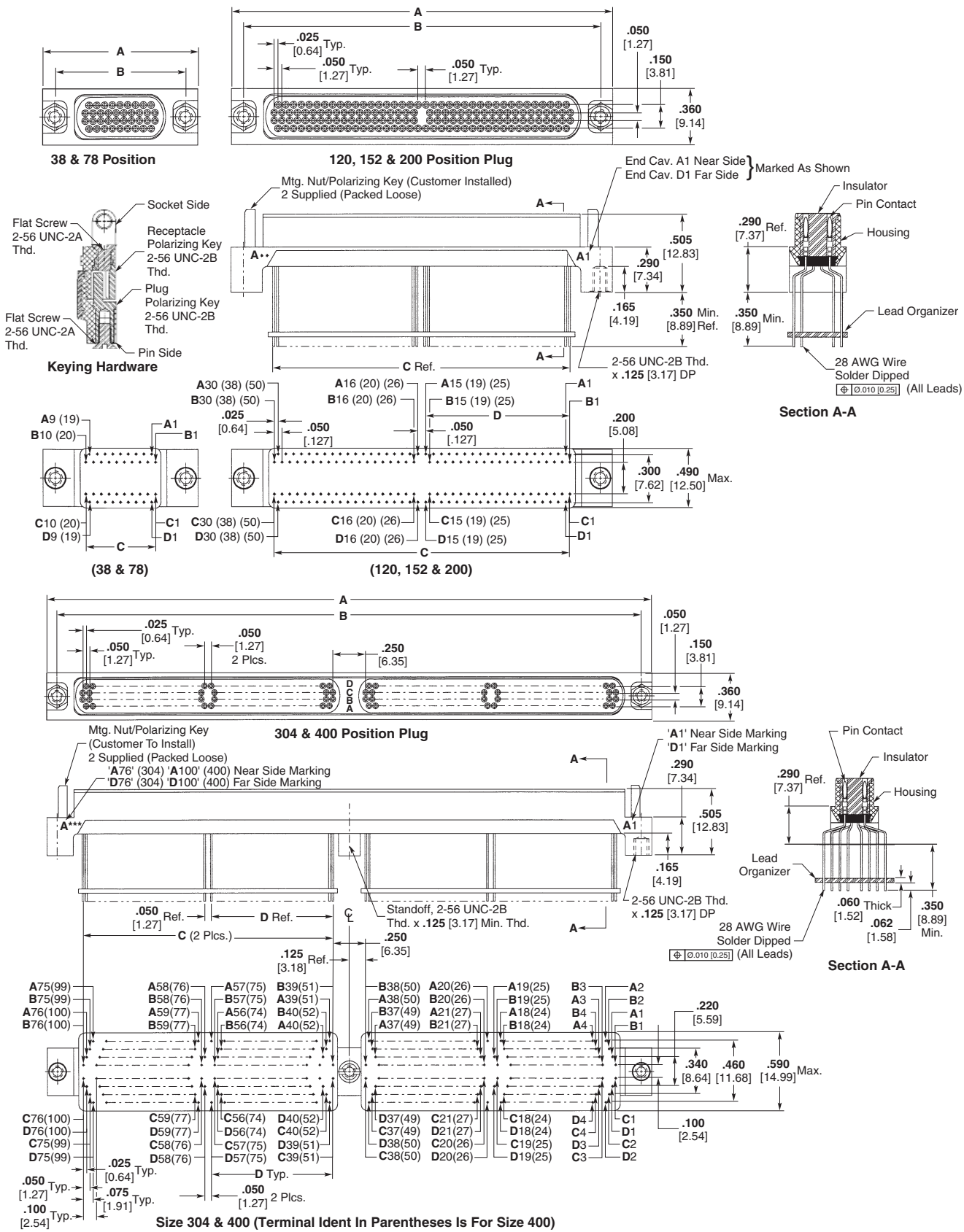
**Crimp Termination Tensile Strength** — Unassembled contacts with crimped stranded wire terminations will not pull out of contacts when the following axial loads are applied: 24 AWG, 5 lbs., 26 AWG, 4 lbs., 28 AWG, 3 lbs.

**5**

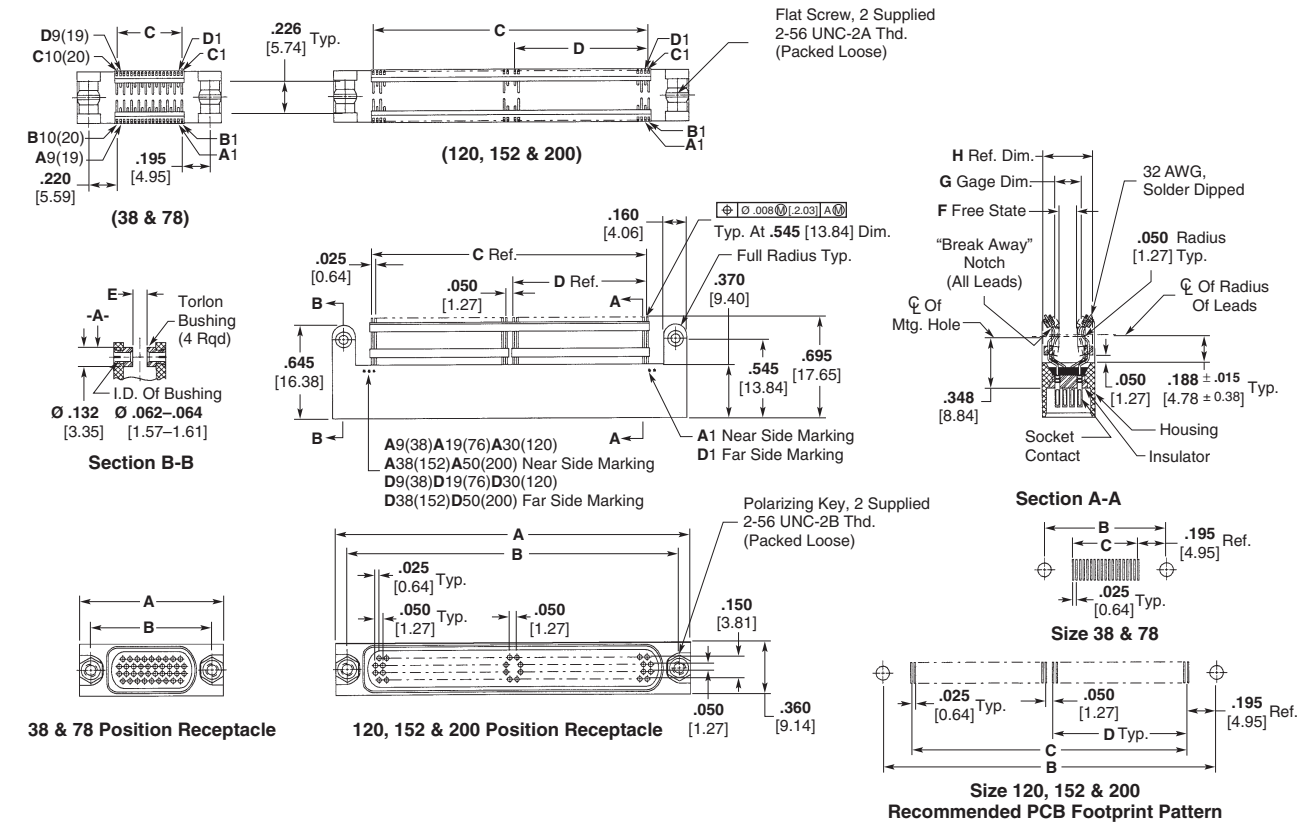
Nanominature and Microminature Connectors



**MICRODOT High Density Standard Module (HDSM) Connectors** (Continued)

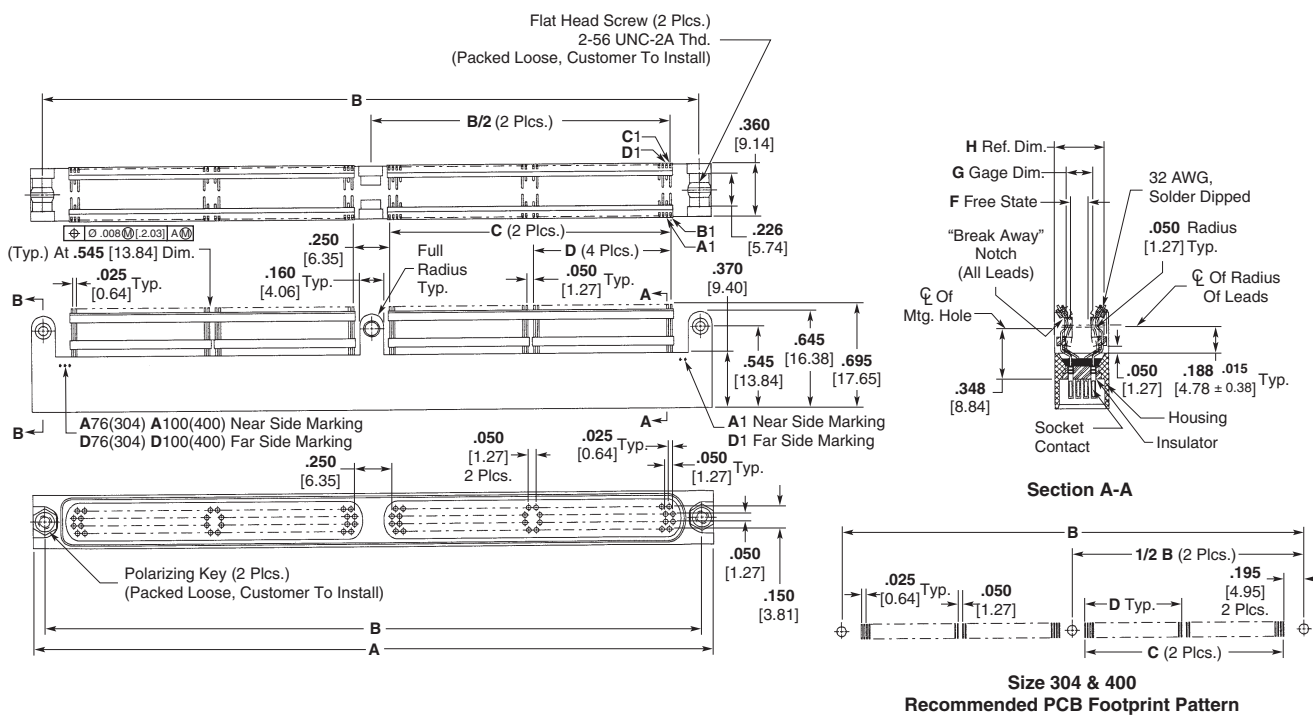


MICRODOT High Density Standard Module (HDSM) Connectors (Continued)



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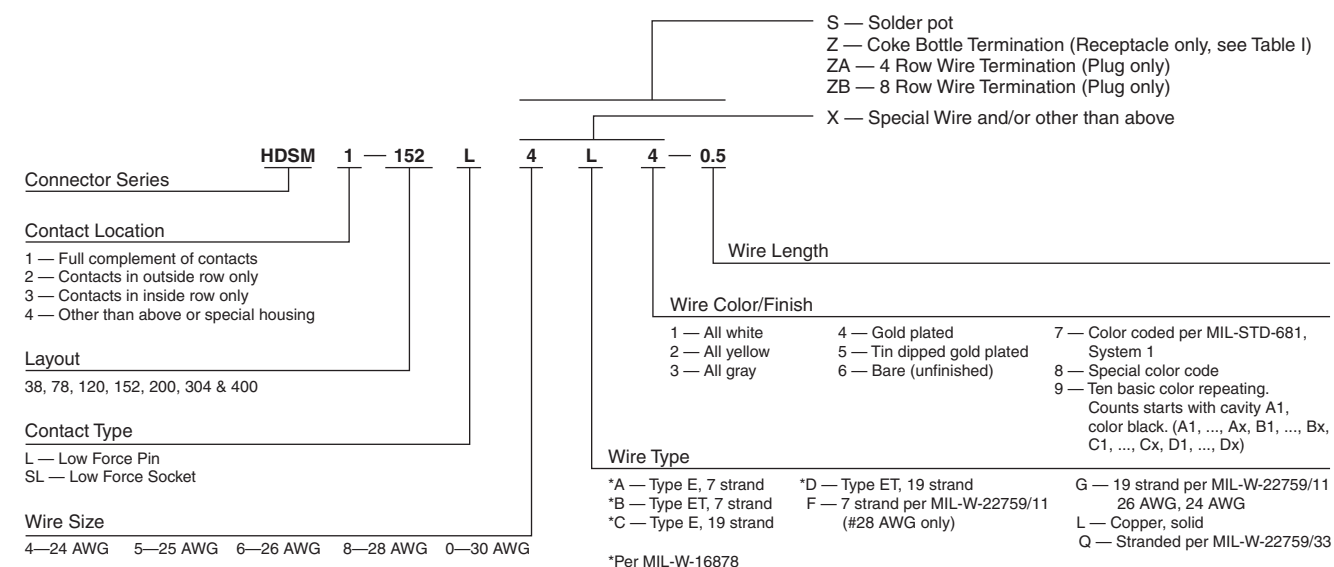
Nanminiature and Microminiature Connectors



**MICRODOT High Density Standard Module (HDSM) Connectors** (Continued)

No. of Cavities	A Dim.	B Dim.	C Dim.	D Dim.
<b>Single Bay</b>				
38	1.000 25.40	.840 21.34	.450 11.43	—
78	1.500 38.10	1.340 34.04	.950 24.13	—
120	2.050 52.07	1.890 48.01	1.500 38.10	.725 18.42
152	2.450 62.23	2.290 58.17	1.900 48.26	.925 23.50
200	3.050 77.47	2.890 73.41	2.500 63.50	1.225 31.12
<b>Double Bay</b>				
304	4.600 116.84	4.440 112.78	1.900 48.26	.925 23.50
400	5.800 147.32	5.640 143.26	2.500 63.50	1.225 31.12

**How To Specify**



**Table I**

Dash No.	Gap Between Bushing "E"	F Dim.	G Dim.	H Dim. (Ref.)
1	.100 2.54	.120 3.05	.180 4.57	.330 8.38
2	.093 2.36	.060 1.52	.150 3.81	.330 8.38
3	.118 2.99	.235 5.97	.260 6.60	.483 12.27
4	.145 3.68	.120 3.05	.180 4.57	.330 8.38

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**Introducing CeeLok FAS-T Connectors, Cable Assemblies, and Associated Products**

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TE's CeeLok FAS-T connector is **one of the most rugged, small form factor, 10 Gigabit Ethernet, field terminable I/O connector** in the Aerospace, Defense and Marine marketplace. It has been designed to

perform in some of the most extreme environments in the industry, while providing substantial size and weight savings via its small shell size 8 form factor. TE also offers associated products such as Band

Straps, Termination Devices, Molded Boots, Wire and Cable and complete harnessing capabilities that complement this exciting new connector.

**CeeLok FAS-T Connector**

**Product Facts**

- 1 Gbit-Ethernet and 10 Gbit-Ethernet when used with Cat 5e, Cat 6A or Cat 7 cables
- Crimp snap, 39029-style contacts for easy termination and field repairability
- Backshell integrated in plug body provides low profile, low cost, low weight strain relief and EMI protection
- T-shaped pin pattern improves SI through uniform crosstalk cancellation



- Compatible with multiple braid terminations, adaptor styles and seal boots
- Scoop-proof design
- Insert assembly mechanically retained for ≤ 25 lb. retention force
- Robust coupling ring mechanism
- Size 8 shell saves weight and space



**Applications**

- 1 Gbit-Ethernet or 10 Gbit-Ethernet in extreme aerospace, defense and marine environments such as:

**Military**

- Rotary and Fixed Wing
- Ground Vehicles
- Soldier Systems
- Missiles and Smart Munitions
- Space
- Shipboard
- C4I

**Commercial and Civilian Aircraft**

- In Flight Entertainment & Connectivity
- Production Breaks (high speed signal)
- Avionics
- Communication Systems

**Electrical**

- 1 Gbit-Ethernet and 10 Gbit-Ethernet when used with Cat5e, Cat6A or Cat7 cables
- Electrical performance specifications:
  - Insulation resistance: 5000 mega-ohms ambient, 1000 mega-ohms at 175°C

- Dielectric withstanding voltage: 500 VAC sea level, 100 VAC @ 70,000 ft.
- Shielding effectiveness per MIL-DTL-38999
- Shell to shell conductivity - 5mV initial, 10mV final

**Mechanical**

- Performance specifications:
  - Vibration, Sine: MIL-DTL-38999 Series III (60G), 4 hrs per axis, no elevated temperature
  - Vibration, Random: EIA-364-28 Condition VI Letter J (43.92G)
  - Durability: 500 mating cycles
  - Contact Retention: 10 lb. min.
  - Coupling Torque: 8 in-lb. max.

**Environmental Properties**

- Operating Temperature: -65°C to +175°C
- Sealing:
  - Altitude Immersion: 70,000 ft. (mated condition)
  - IP67: Mated condition
  - IPX6 (water jet): Receptacle, panel mounted (unmated condition)
- Corrosion Resistance: 500 hr. Salt Mist - Black Zinc Nickel per AMS-2417

**Materials**

Shell: Shells available in Electroless Nickel or Black Zinc for DOD-Approved, RoHS compliant, corrosion resistance (500 hr Salt Mist)

Insert: High temperature thermoplastic for excellent temperature endurance. Low dielectric constant for superior signal integrity.

Contacts: BeCu alloy

**Standards and Specifications**

Product Specification: 108-2482  
 Application Specification: 114-32025  
 Instruction Sheet: 408-32046  
 Test Report: 501-134002

**Application Tooling**

Hand Crimp Tool: M22520/2-01  
 Crimp Positioner: TE PN 2217375-1  
 Insertion/Extraction Tool: TE PN 2217376-1



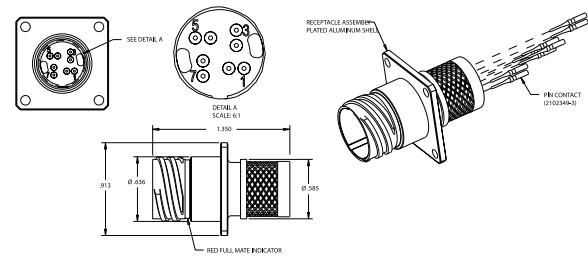
High Speed I/O's



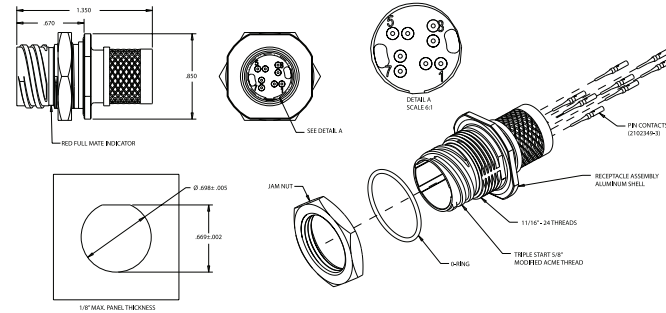
**CeeLok FAS-T Connector (Continued)**

**Product Dimensions**

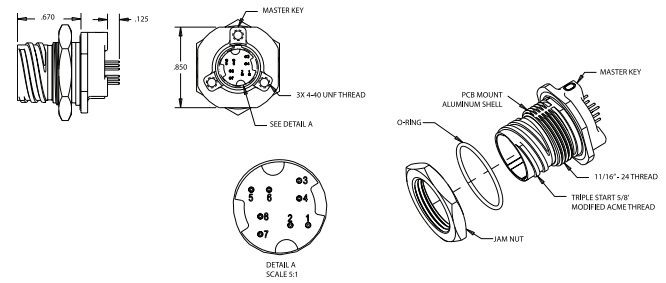
**Boxmount Receptacle Kit Assembly  
Part Number 2102343**



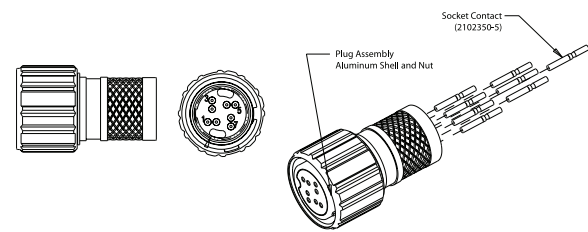
**Receptacle Kit Assembly  
Part Number 2102352**



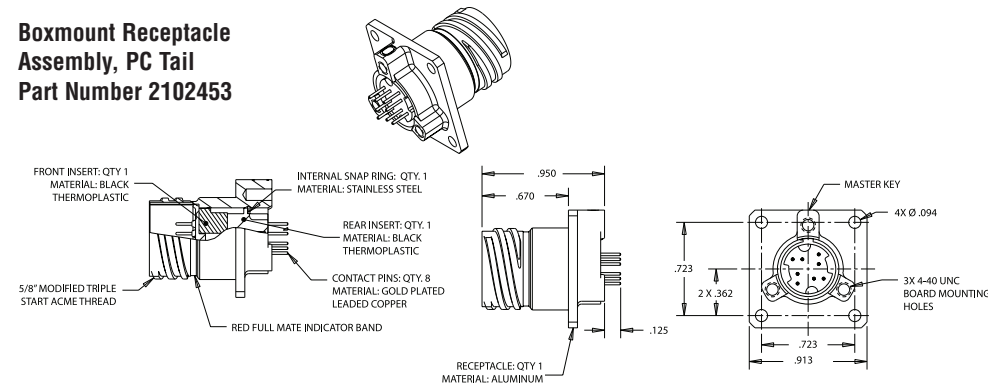
**Jam Nut Receptacle Assembly, PC Tail  
Part Number 2102351**



**Plug Kit Assembly  
Part Number 2102353**

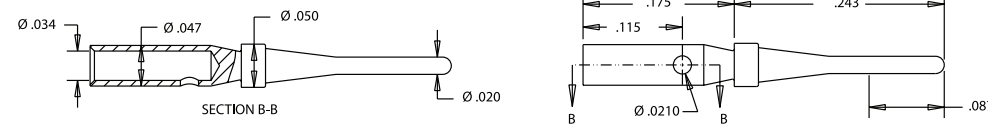


**Boxmount Receptacle Assembly, PC Tail  
Part Number 2102453**

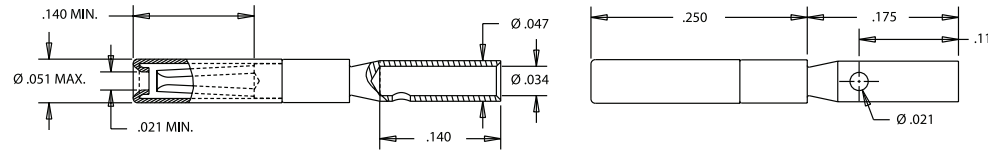


CeeLok FAS-T Connector (Continued)

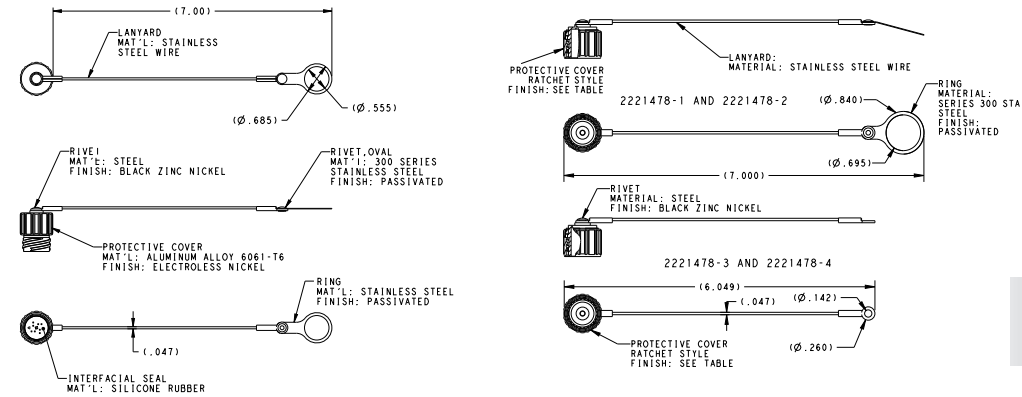
**Pin Contact**  
24-26 AWG  
Part Number 2102349-3



**Socket Contact**  
24-26 AWG, Hooded  
Part Number 2102350-5



**Protective Cover Cap, Plug**  
Part Number 2221682-1



**Protective Cover Cap, Receptacle**  
Part Number 2221478-1

**Product Offering**

TE Part Numbers	Description	Plating	Key
2102343-1	Receptacle Kit, Boxmount	EINi	N
2102343-2	Receptacle Kit, Boxmount	Black ZnNi	N
2102343-3	Receptacle Kit, Boxmount	EINi	A
2102343-4	Receptacle Kit, Boxmount	Black ZnNi	A
2102343-5	Receptacle Kit, Boxmount	EINi	B
2102343-6	Receptacle Kit, Boxmount	Black ZnNi	B
2102351-1	Jam Nut Receptacle, PC Tail	EINi	N
2102351-2	Jam Nut Receptacle, PC Tail	Black ZnNi	N
2102351-3	Jam Nut Receptacle, PC Tail	EINi	A
2102351-4	Jam Nut Receptacle, PC Tail	Black ZnNi	A
2102351-5	Jam Nut Receptacle, PC Tail	EINi	B
2102351-6	Jam Nut Receptacle, PC Tail	Black ZnNi	B
2102352-1	Receptacle Kit	EINi	N
2102352-2	Receptacle Kit	Black ZnNi	N
2102352-3	Receptacle Kit	EINi	A
2102352-4	Receptacle Kit	Black ZnNi	A
2102352-5	Receptacle Kit	EINi	B
2102352-6	Receptacle Kit	Black ZnNi	B
2102353-1	Plug Kit	EINi	N
2102353-2	Plug Kit	Black ZnNi	N
2102353-3	Plug Kit	EINi	A
2102353-4	Plug Kit	Black ZnNi	A
2102353-5	Plug Kit	EINi	B
2102353-6	Plug Kit	Black ZnNi	B
2102453-1	Boxmount Receptacle, PC Tail	EINi	N
2102453-2	Boxmount Receptacle, PC Tail	Black ZnNi	N
2102453-3	Boxmount Receptacle, PC Tail	EINi	A
2102453-4	Boxmount Receptacle, PC Tail	Black ZnNi	A
2102453-5	Boxmount Receptacle, PC Tail	EINi	B
2102453-6	Boxmount Receptacle, PC Tail	Black ZnNi	B

6  
 High Speed I/O's

**Cable Assemblies**

**Product Facts**

- End-to-end systems solutions provider
- Quick design turnaround using in-house software
- Full electrical and environmental testing capability
- Certified test processes and equipment ensures optimal signal integrity
- Qualified assembly experts
- Complete lot traceability
- Reliability in harsh environments
- ISO 9001: AS 9100 certified



**Description**

- TE supplies proven technology for high bandwidth data links to customers in the aerospace, ground systems and marine industries. Military cable requirements are designed, manufactured and tested to perform reliably in harsh environments.
- Proper cable assembly is critical to realizing the full potential of the cable and connector technologies. TE's lightweight military cables and connector solutions are designed to reduce size and remove weight from your application, leading to benefits that include reduced fuel consumption and increased payload capacity.

**Protocols**

- Data assemblies can be developed with the CeeLok FAS-T connector for the following high speed protocols:
- 100BASE-T Ethernet
  - 1000BASE-T Ethernet
  - 10GBASE-T Ethernet
  - USB 2.0

**Electrical**

- Testing capabilities include:
- DWV/IR
  - Characteristic Impedance
  - Return Loss/VSWR
  - Insertion Loss
  - Crosstalk
  - Attenuation
  - Eye Diagrams, etc.

**Mechanical Tests Available:**

- Vibration
- Mechanical Shock
- Mechanical Durability

**Environmental Tests Available:**

- Salt Spray
- Thermal Shock / Temperature Life
- Humidity / Fluid Immersion

**Test Lab**



**Termination Devices**

**Product Facts**

- Available with and without pigtails
- Simple, quick termination
- Center or end strip for ease of termination
- Handles wide range of high data rate cables and diameters



**Description**

- TE's SolderSleeve shield terminators attach a ground lead to cable shield for the purpose of grounding the EMI on the shield.

**Environmental**

- Operating Temperature: -55°C to +200°C
- Environmentally sealed
- Mechanically robust

**Physical or Other Properties**

- Terminates Tin, Silver and Nickel flat or round braids
- Provides 360° of shielding

**Product Offering**

Contact TE for a complete listing of SolderSleeve Shield Terminators.

**Band Straps**

**Product Facts**

- Quick, easy, cost-effective and reliable termination of braided metallic shielding
- Low profile, one-piece design eliminates EMI leakage paths
- Band should be double wrapped to provide effective shield termination



**Description**

- TE's CRES-Lock band strap provides a quick, easy, cost-effective and reliable termination of braided metallic shielding to the CeeLok FAS-T connector.
- Approved for aerospace and defense, the CRES-Lock band straps have successfully passed shock, vibration and environmental testing.

**Material**

- Passivated 304 stainless steel - 8" long x .125" wide

**Electrical**

- Operating Temperature: -65°C to +200°C
- Electrical Resistance: Meets ≤1.0 milliohm requirement of AS85049/128
- Corrosion Resistance: 500 hr. salt spray

**Mechanical**

- Tensile Strength: 200 lb.
- Braid Retention: Meets 100 lb. requirement of AS85049/128
- Application Tooling: Micro Tie-Dex II, A30199

**Product Offering**

TE Part Numbers	Description
BND-0812-S	Band Strap



High Speed I/O's

**Molded Products**

**Product Facts**

- Only one boot needed for lower inventory cost
- Boots available in 3 configurations - conforms to the installation
- Boot materials of various temperature angles for ease of installation in different environments
- Epoxy sealing kits available



**Description**

- Backshell boots (molded parts) add sealing and strain relief to the wires and cables used with the CeeLok FAS-T connectors. When provided with pre-applied adhesives, these heat shrinkable boots install quickly with high reliability sealing to IP67 levels.
- Backshell boots can be either straight, 45 or 90 degrees in shape to fit a variety of installation needs.

**Application Tooling**

- HL1910E or the HG-501A ThermoGun heat gun and appropriate hot air reflectors

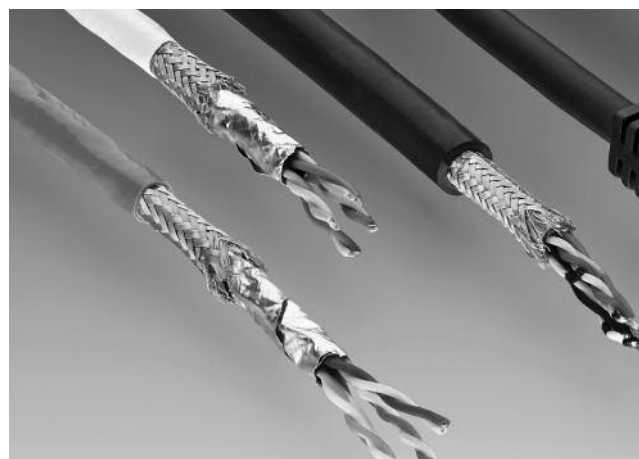
**Product Offering**

Part Number	Description - Straight Boot	Part Number	Description - 90° Boot	Operating Temperature
878182-000	202K132-12-0	878183-000	222K132-12-0	-55°C to 200°C
481350-000	202K132-25/225-0	131250-000	222K132-25/225-0	-75°C to 150°C
878495-000	202K132-25-0	878512-000	222K132-25-0	-75°C to 150°C
879222-000	202K132-25/86-0	879268-000	222K132-25/86-0	-55°C to 120°C
879514-000	202K132-4/42-0	879515-000	222K132-4/42-0	-20°C to 60°C
822542-000	202K132-4-0	822548-000	222K132-4-0	-55°C to 135°C
830903-000	202K121-4/42-0	273122-000	222K121-4/42-0	-20°C to 60°C

**High Data Rate Cables**

**CABLE PROTOCOLS**

- **ETHERNET:**
  - Quadrx (100BaseT, 100 Mbit/s)
  - Cat 5e (1000 BaseT or Gigabit Ethernet, 1 Gbit/s)
  - IEEE 1394
  - USB



**Description**

- Lightweight, ruggedized high speed copper cables complete the CeeLok FAS-T connector end-to-end solution. Designs are available to meet a number of common data protocols, and can be customized to meet mission critical needs such as EMI, fluid resistance, and flammability.
- These high data rate cables utilize specialized polymer formulations, developed by TE that allow better

mechanical and thermal performance in harsh environments. These polymer formulations enable the cables to be smaller and lighter weight because of TE's thin wall technology.

- For aerospace applications, TE has developed a state-of-the-art patented foaming process which affords better signal transmission through the dielectric. This lightweight material is rated to withstand temperatures up to 200°C, and is FAA approved.

- For marine applications, TE developed a ruggedized zero halogen jacket that passes the rigorous military standards for flammability while meeting stringent smoke and toxicity requirements.
- TE also offers solutions to couple with the CeeLok FAS-T connector in marine and ground system markets where fluid resistance and flexibility are paramount.

**Cable Protocol Details**

- Operating temperature range from -55°C to +200°C
- Size range: 22 AWG to 28 AWG
- FAA approval
- Electrical testing capability including skew and eye patterns
- Full range of EMI shielding options
- Customized and hybrid designs available



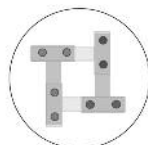
**CeeLok FAS-T Nano Circular Connectors**

**Product Facts**

■ **High Speed Performance**

1 or 10 GbE rates for high-speed transmission of data, ideal for tight link budgets

T-shaped pin pattern improves signal integrity through uniform cross talk cancellation



■ **Space and Weight Savings**

Nanominature size enables high-speed connectivity in an extremely small space envelope

Lightweight NANONICS housing available in push-pull or threaded coupling for a broad-range of applications and uses

■ **Versatile**

Available in board-mount and cable-applied versions

■ **Rugged**

Withstands the harsh operating environment typical of Aerospace, Defense and Marine applications



The latest addition to TE's line of high speed copper I/O connectors, CeeLok FAS-T nano circular takes the noise cancellation technology of the original CeeLok FAS-T connector and re-engineers it to fit our standard NANONICS connector shell. The new connector delivers up to 10 GbE speeds in nanominature form factor, creating an industry-leading combination of high-speed, small size and low weight.

**Description**

TE Connectivity's (TE) CeeLok FAS-T Nano Circular connector is a rugged, nano-miniature I/O connector capable of meeting 10 GbE performance. The patented, noise-cancelling contact configuration minimizes cross talk making it ideal for a variety of markets.

**Applications**

Typical applications include:

- Military Weapons
- Ground Support Systems
- Soldier Worn Applications
- Avionics
- Instrumentation
- Down-hole Telemetry Tools

**Mechanical**

- Vibration, Sine: 10-2000 Hz, 20g (EIA-364-28, Test Condition IV)
- Vibration, Random: 50-2000 Hz, 46.3g (EIA-364-28, Test Condition V, Letter K)
- Mating Cycles (Min): 250 Electroless Nickel plated aluminum shells
- Mechanical Shock: 300g, 3ms, Half-sine (EIA364-27, Test Condition D)
- Weights: Push-pull plug with a straight backshell and 1 meter of TurboTwin cable weighs less than 13g. A PCB mount receptacle weighs less than 3g.

**Electrical**

- 10 GbE using Madison Cable's TurboTwin cable (factory terminated)
- IR: 5000 MOhms ambient; 1000 MOhms at temperature
- DWV: 500 VAC Sea Level; 100 VAC @ 70,000 feet

**Environmental**

- Operating Temperature: -55°C to +125°C\*
- Sealing: Immersion: IP68, Mated Water Jet: IPX6, Mated Dust: IP6X, Mated

\*This is utilizing high-temp Madison TurboTwin cable.



High Speed I/O's



**CeeLok FAS-T Nano Circular Connectors** (Continued)

**Standards and Specifications**

Product Specification:  
108-32048

Qualification Test Report:  
501-134021

**Material**

Shells: Electroless Nickel  
Plated Aluminum (standard)  
or Passivated Stainless Steel  
(increased durability)

Insert: High temperature  
thermoplastic for excellent  
temperature endurance  
and superior signal integrity

Contacts:  
Gold plated BeCu Alloy

**Accessories**

Straight braid-clamp style  
backshells as well as right-  
angle versions are factory  
installed. Right-angle  
backshells can be oriented in  
8 different directions. See PN  
chart below.

Note: for Band straps and Molded Parts -  
contact TE Connectivity

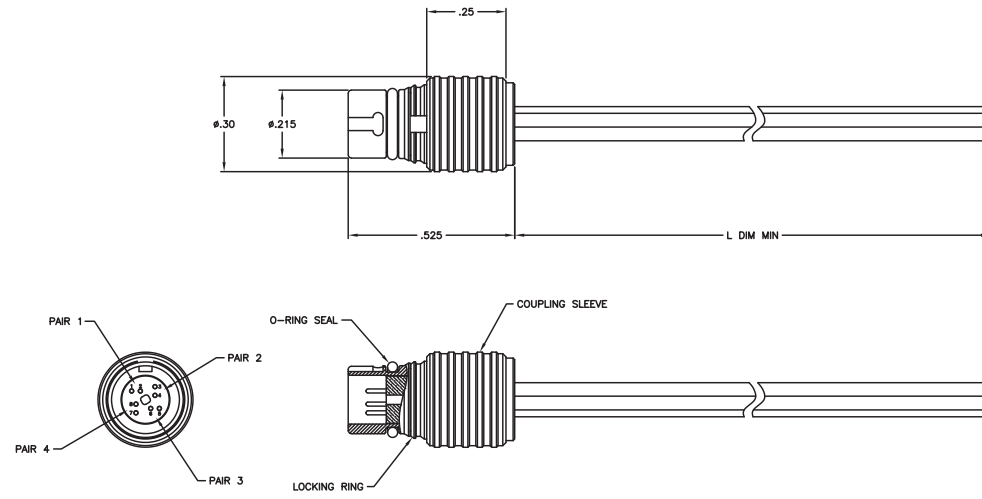
**Part Numbers**

TE Part Numbers	Position	Description
1925248-1 *	8	Quick disconnect, metal, plug, 30 AWG 10G TurboTwin pair, 36°
1925249-1	8	Quick disconnect, metal, plug, 30 AWG 10G TurboTwin pair, 36°, straight braid clamp backshell
1925250-1	8	Quick disconnect, metal, 30 AWG 10G TurboTwin pair, 36°, right-angle braid clamp backshell, orientation 5
1925251-1 *	8	Threaded coupling, metal, plug, 30 AWG 10G TurboTwin pair, 36°
1925252-1 *	8	Threaded coupling, metal, plug, 30 AWG 10G TurboTwin pair, 36°, straight braid clamp backshell
1925253-1	8	Threaded coupling, metal, plug, 30 AWG 10G TurboTwin pair, 36°, right-angle braid clamp backshell, orientation 5
1925254-1	8	Flanged coupling quick disconnect, metal, plug, 30 AWG 10G TurboTwin pair, 36°
1925255-1	8	Flanged coupling quick disconnect, metal, plug, 30 AWG 10G TurboTwin pair, 36°, straight braid clamp backshell
1925256-1	8	Flanged coupling quick disconnect, metal, plug, 30 AWG 10G TurboTwin pair, 36°, right angle braid clamp backshell, orientation 5
1925257-1	8	Quick disconnect, metal, receptacle, 30 AWG 10G TurboTwin pair, 36° front flush mount
1925258-1	8	Quick disconnect, metal, receptacle, 30 AWG 10G TurboTwin pair, 36°, rear panel mount
1925259-1	8	Quick disconnect, metal, receptacle, 30 AWG 10G TurboTwin pair, 36°, rear panel mount, straight braid clamp backshell
1925260-1	8	Quick disconnect, metal, receptacle, 30 AWG 10G TurboTwin pair, 36°, rear panel mount, right angle braid clamp backshell, orientation 5
1925261-1	8	Quick disconnect, metal, receptacle, vertical PCB mount, through-hole, 10GbE, .125" tin/lead solder dipped leads, panel mount

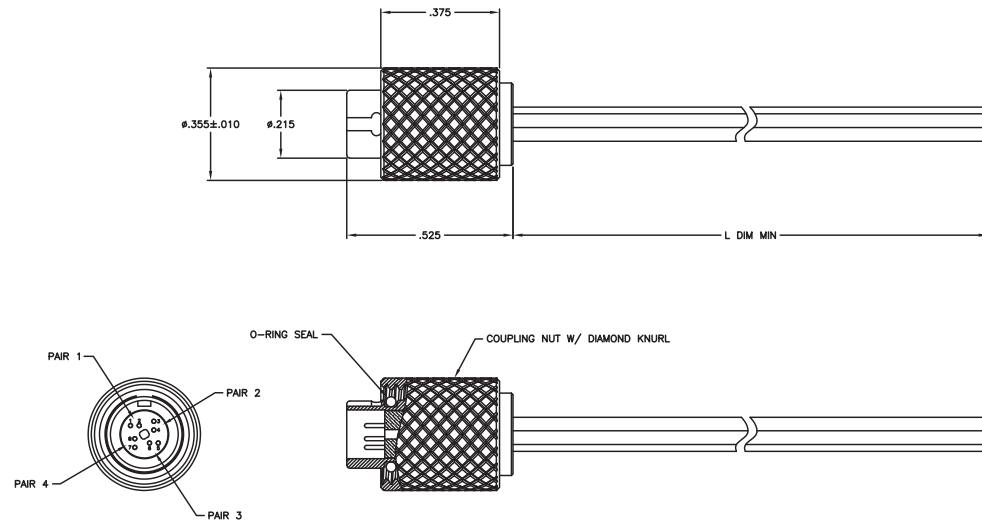
\*Drawings shown on pages 6-11 and 6-12.

**CeeLok FAS-T Nano Circular Connectors (Continued)**

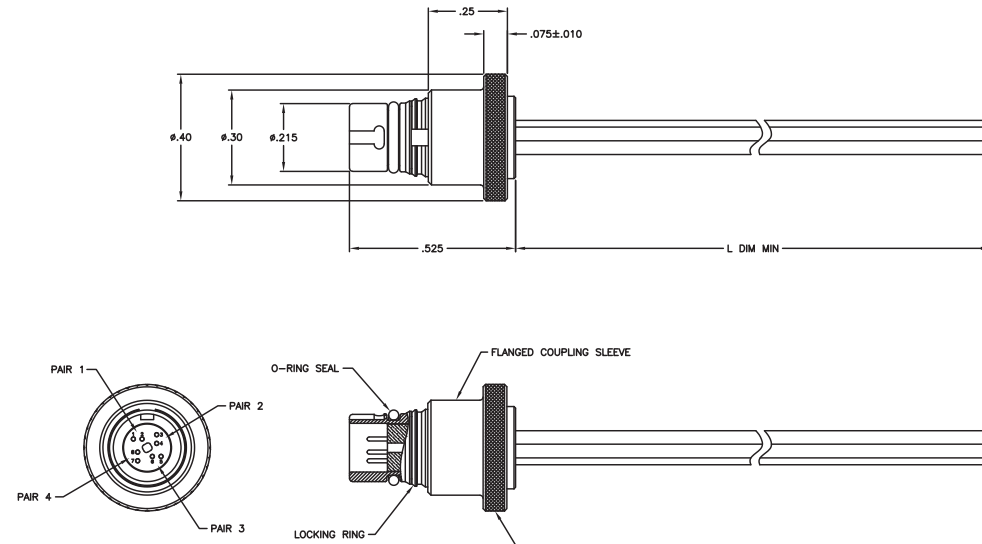
**Part Number 1925248-1  
Quick Disconnect Plug**



**Part Number 1925251-1  
Threaded Coupling Plug**



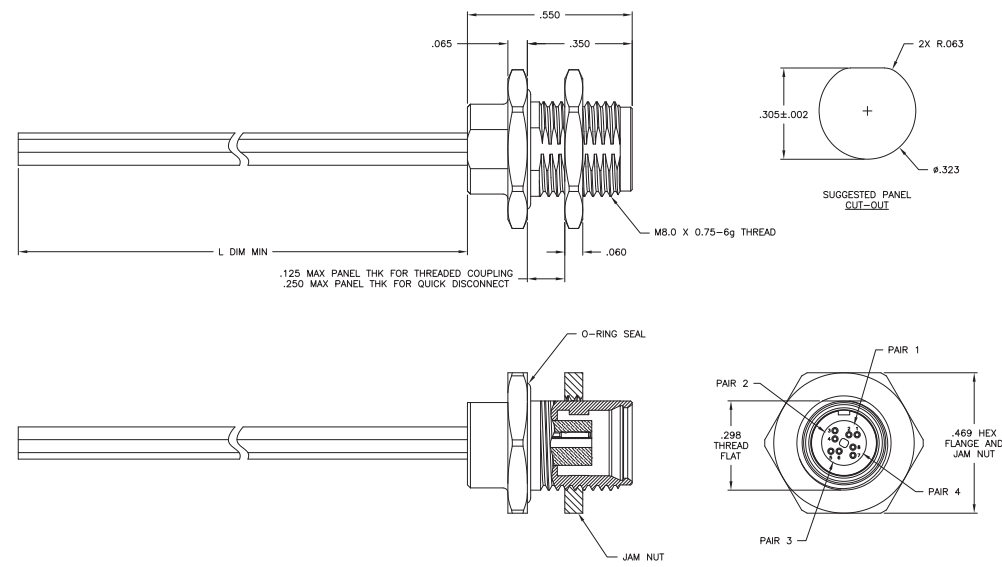
**Part Number 1925254-1  
Flanged Coupling Plug**



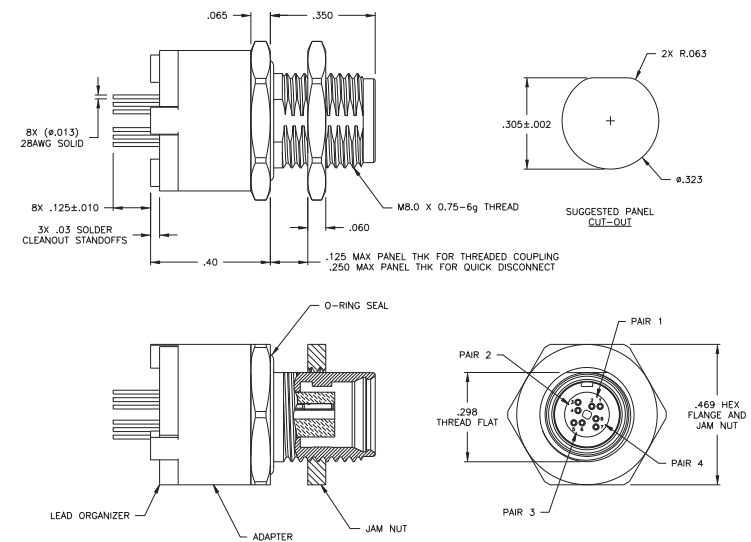
**6**  
High Speed I/O's

**CeeLok FAS-T Nano Circular Connectors (Continued)**

**Part Number 1925258-1  
Quick Disconnect Receptacle**



**Part Number 1925261-1  
Quick Disconnect Vertical PCB  
Mount Receptacle**



Introduction

Product Facts

- 2 mm centerlines
- Designed per ARINC 600 — Supplement 18
- Fits into keyed connector inserts for connectors such as: ARINC 404 & 600, General Purpose Rectangular (GPR), MIL-DTL-38999 style, BACC65/EPXB, and custom interconnects
- Patented single piece dielectric design simplifies termination and improves reliability
- Size 8 contacts are designed for standard hex crimp per M2252/5-01 and M22520/5-45
- 24 AWG internal contacts are designed for crimp tooling M22520/2-01 and Daniels K-709
- Shells are keyed for proper orientation inside connector insert blocks
- Rear Release/Rear Remove cable versions and Front Release/Front Remove PCB versions
- Uses standard insertion/extraction tool
- Meets ASTM E595 outgassing limits for spacecraft materials



A multi-signal contact system consisting of two differential pairs (matched impedance) used with quadaxial Ethernet and Fiber Channel cables. Available in shell size 8 (keyed); 24 AWG pin and socket contacts, Hex Crimp version as well as pin PCB tail solderable versions. Adaptable to a variety of connectors (ARINC 600, 404, D-Subminiature connectors, MIL-DTL-38999 style, etc.)

Designed for use in high speed applications such as Gigabit Ethernet, IEEE 802.3Z and Fiber Channel X3T11.2 for use on Commercial Avionics Systems, Aircraft Data Networks, Military Communications, In-Flight Entertainment, and Space applications.

Materials

**Contacts, Shells, Ferrules** — Copper alloy with gold over nickel finish. One-piece thermoplastic dielectric.

Performance Characteristics

**Maximum Mating Force per Contact Assembly** — 2.75 lbf.

**Minimum Un-mating Force per Contact Assembly** — 1.25 lbf.

**Durability** — 500 mating/unmating cycles

Typical Electrical Performance

**Bandwidth** — as high as 3 GHz (see characterization chart on page 6-10)

**Data Rate** — in excess of 2 Gb/s

**Characteristic Impedance** — 100 ohms ± 10 ohms

**Maximum Voltage Rating** — 500 Vrms @ sea level

**Dielectric Withstanding Voltage** — 1000 VAC rms between any two contacts @ sea level; 500 VAC rms between any contact and outer shell @ sea level

Technical Documents

Product Specifications —

- 108-2131 Quadrax Cable and PCB Connectors
- 108-2199 Quadrax MIL-DTL-38999 Style Connectors
- 108-2311 Quadrax 4Q4 In-Line D-Sub Style Connectors

Test Reports

- 501-574 Quadrax Cable and PCB Connectors
- 501-660 Quadrax MIL-DTL-38999 Style Connectors
- 501-738 Quadrax 4Q4 In-Line D-Sub Style Connectors
- 502-1182 Quadrax Rectangular Connector
- Qualified to Boeing Spec. BPS-C-193

Application Specifications

- 114-13123 Quadrax Rectangular Connectors and Quadrax Contacts
- 114-13163 Quadrax Circular Connectors and Quadrax Contacts
- 114-13190 In-Line Quadrax/Twinax Connectors
- 114-13233 Quadrax D-Sub Connectors and Quadrax Contacts

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High Speed I/O's

**Electrical Characteristics**

- Designed for use with 100 ohm and 150 ohm characteristic impedance star quad cable. Reference contact chart on page 10.
- Signal integrity testing was completed per SFF-8410 (see engineering test report 502-1182).
- Characteristic impedance: 100 ohm ± 10 ohm nominal (measured 102.85 ohms)
- Near end cross talk (NEXT) in the time domain: 0.89% measured on Tek 11801C Digital Sampling Oscilloscope
- Eye Patterns (Differential Mode, 1 meter and 11.2 meter cable test lengths)
- The minimum output eye opening for a 1 V launch voltage measured at 50% of the period is:
  - 1 meter, 100 MHz Eye Opening 928.53 mV
  - 1 meter, 1.25 GHz Eye Opening 839.77 mV
  - 11.2 meter, 100 MHz Eye Opening 761.60 mV
  - 11.2 meter, 1.25 GHz Eye Opening 315.20 mV

**Return Loss**

**1 Meter Cable Length**

Frequency MHz	dB	VSWR*
50	34.33	1.039
62	36.03	1.032
102	40.21	1.02
502	21.21	1.191
1002	13.34	1.549
1954	9.32	2.039
2950	10.27	1.884

**11.2 Meter Cable Length**

Frequency MHz	dB	VSWR*
50	35.26	1.035
62	36.87	1.029
102	38.90	1.023
502	26.02	1.105
1002	14.62	1.456
1798	11.74	1.698
2502	13.34	1.549
3702	6.54	2.781

\*calculated

**Insertion Loss**

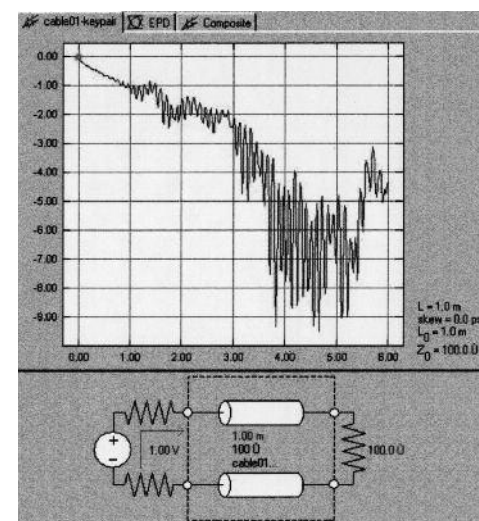
**1 Meter Cable Length**

Frequency MHz	dB
50	0.13
62	0.19
102	0.27
502	0.87
1002	1.39
2002	2.48
3002	3.29

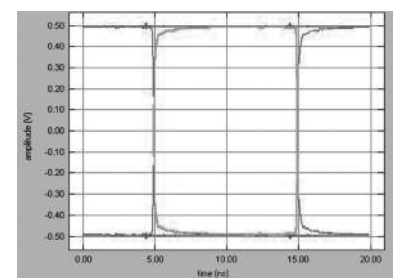
**11.2 Meter Cable Length**

Frequency MHz	dB
50	1.87
62	2.13
102	2.72
502	6.38
1002	10.06
1798	15.69
2502	19.47
3702	28.20

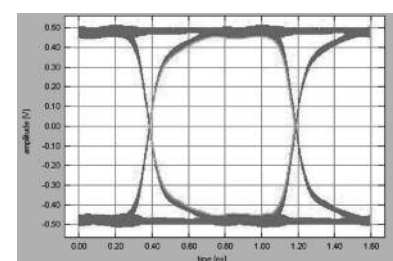
**Typical Insertion Loss  
1 Meter Length, 100 Ohm Cable**



**Eye Pattern, 100 Ohm Cable  
(Time Domain Measurement of Voltage vs. Time)**

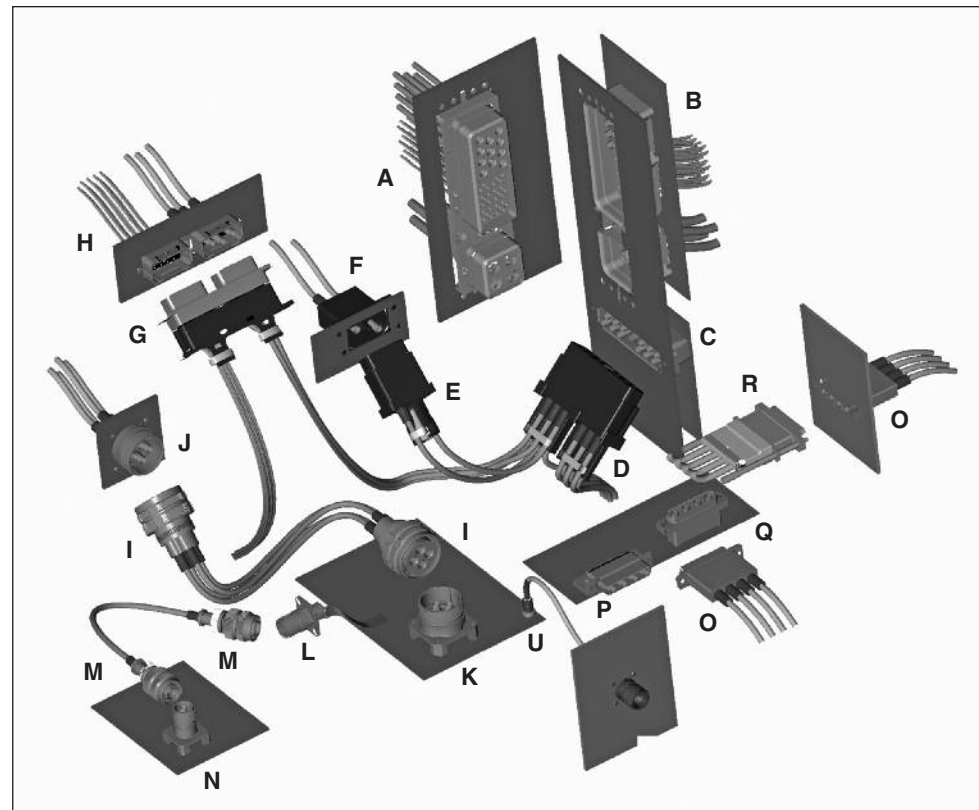


100 Mb/s Data Rate



1 Gb/s Data Rate

Product Family Overview



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High Speed I/O's

Legend

**ARINC 600 Connectors:**

- A Size 2 Plug Assembly with Q11 Quadrax Insert
- B Size 2 Receptacle Assembly with Q11 PCB Tail Quadrax

**Quadrax Rectangular Connectors:**

- C 12 Position Receptacle
- D 12 Position Plug Assembly with Strain Relief and Seal Boots
- E 2 Position Plug Assembly with Strain Relief and Seal Boots
- F 2 Position Panel Mount Receptacle with Strain Relief and Seal Boots
- U Direct Attach

**General Purpose Rectangular Connectors:**

- G GPRB2 Plug, Dual Insert Configuration w/3 Pos. Quadrax Insert
- H GPRB2 Receptacle, Dual Insert Configuration w/3 Pos. Quadrax insert

**38999 Style Circular Connectors:**

- I Size 19 Plug, 4Q4 Quadrax arrangement with Seal Boots
- J Size 19 Receptacle, 4Q4 Quadrax arrangement, Panel Mount Configuration w/Seal Boots
- K Size 19 Receptacle, 4Q4 Quadrax arrangement, PCB Mount
- L Size 9 Receptacle, 1Q1 Quadrax arrangement, Panel Mount w/Custom Flex Circuit Assembly for direct attachment to printed circuit board
- M Size 9 Plug, 1Q1 Quadrax arrangement with Seal Boot
- N Size 9 Receptacle, 1Q1 Quadrax arrangement, PCB Mount

**D-Sub Style Quadrax Rectangular Connectors:**

- O Plug with Seal Boots
- P Receptacle, for right-angle PCB mount
- Q Receptacle, for vertical PCB mount
- R Cable Receptacle with Seal Boots



**Quadrax Contacts**



**Product Facts**

- **Patented one-piece dielectric inserts for easy assembly and lowest applied cost**
- **Available with silicone seal boots rated for 50,000 ft. altitude immersion**
- **Crimp type, screw machined, 24 AWG contacts**
- **Quadrax size 8 shells are keyed per ARINC 600 for correct orientation inside connector inserts**
- **Twinax contacts: Qualification tests pending**
- **Direct Attach to PCB**
  - **Asymmetric standoff leg provides built-in keying to PCB board**
- **Internally keyed contacts for MIL-DTL-38999 connectors**
  - **One-piece dielectric inserts for easy assembly and lowest applied cost**

**PC Tail Contacts**

Part Number	Description	Dim. A
1445626-1	Contact, Pin, Solder Tail	.228 [5.79]
1445626-2	Contact, Pin, Solder Tail	.422 [10.72]
1445626-3	Contact, Pin, Solder Tail	.181 [4.60]
1445626-4	Contact, Pin, Solder Tail	.297 [7.54]
1445626-5*	Contact, Pin, Solder Tail	.297 [7.54]

**Crimp Style Contacts<sup>1</sup>**

Part Number	Description	Hex Crimp
1445692-1	Contact Kit, Pin, Crimp	.218
1445692-3**	Contact Kit, Pin, Crimp, with wire seal boot	.218
1445692-4 ***	Contact Kit, Pin, Crimp, with wire seal boot*	—
1445693-1	Contact Kit, Socket, Crimp	.218
1445693-3**	Contact Kit, Socket, Crimp, with wire seal boot	.218
1445693-4 ****	Contact Kit, Socket, Crimp, with wire seal boot	—
1445692-5**	Contact Kit, Pin, Crimp with wire seal boot	.218
1445692-6	Contact Kit, Pin, Crimp	.218
1445693-5**	Contact Kit, Socket, Crimp with wire seal boot	.218
1445693-6	Contact Kit, Socket, Crimp	.218

Reference cables: Tensolite NF24Q100, NF26Q100, 24443/03130X-4(LD), 24443/9P025X-4(LD); Raychem CEC-RWC-18687, Raychem CEC-RWC-18664

Reference cables: DRAKA F4703-3, F4704-4—insulation diameter is larger

		Hex Crimp
1877039-1	Contact Kit, Pin, Crimp	.231
1877039-2**	Contact Kit, Pin, Crimp with wire seal boot	.231
1877040-1	Contact Kit, Socket, Crimp	.231
1877040-2**	Contact Kit, Socket, Crimp with wire seal boot	.231

Reference cables: Tensolite 26473/02006X-4(LD); Raychem CEC-RWC-18684, Raychem CEC-RWC-18680

\*Tails are solder dipped  
 \*\*Used with Quadrax rectangular and circular connectors  
 \*\*\*Qualified to Boeing BACC47GA1  
 \*\*\*\*Qualified to Boeing BACC47GB1  
 (1) For other cables, contact TE.



**Size 8 Quadrax Contacts**

Part Number	Description	Hex Crimp
1811010-1	Socket kit with heat-shrink tubing	.218
1811269-1	Pin kit with heat-shrink tubing	.218



**PC Tail Contact – Direct Attach to PCB**

Part Number	Description	Tail Length	Dim A
1954576-1	150 Ohm	.125 [3.18]	.250 [6.35]
1954576-2	100 Ohm	.125 [3.18]	.270 [6.86]
1954576-3	100 Ohm	.205 [5.21]	.270 [6.86]



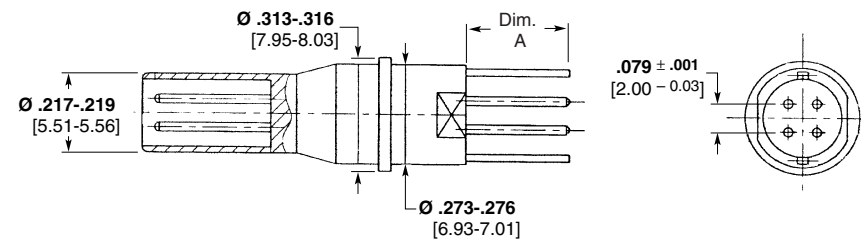
**Size 8 Differential Twinax Contacts**

Part Number	Description	Hex Crimp
1811865-1	Assembly, Pin, Twinax	.218
1811866-1	Assembly, Socket, Twinax	.218

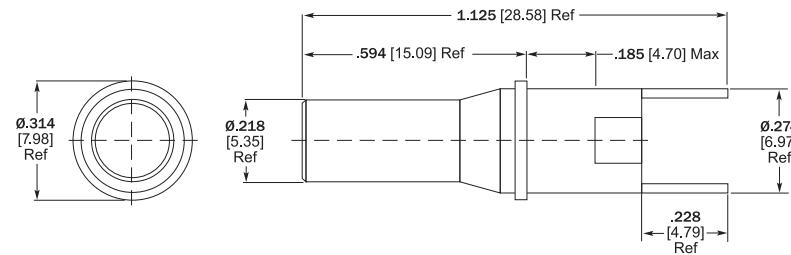
See page 6-13 for Application Specifications

**Quadrax Contacts** (Continued)

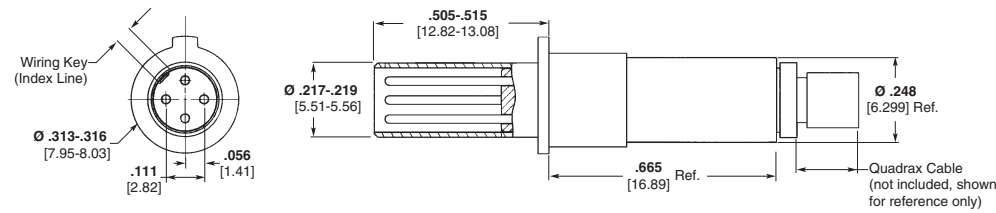
**Size 8 Quadrax PCB Pin Contact**  
**Front Release/  
 Front Remove Design**  
**Part No. 1445626-1\*\***  
 \*\*various tail lengths



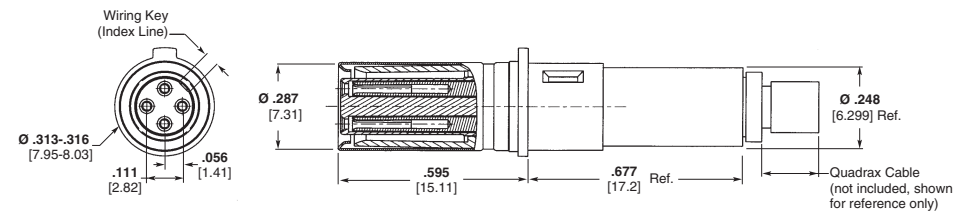
**Blank**  
**Front Release/  
 Front Remove Design**  
**Part No. 1604940-2**



**Size 8 Quadrax Pin Contact —  
 Crimp Style**  
**Rear Release/  
 Rear Remove Design**  
**Part No. 1445692-1\***  
 \*-3 with boot

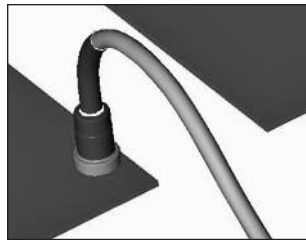


**Size 8 Quadrax Socket Contact —  
 Crimp Style**  
**Rear Release/  
 Rear Remove Design**  
**Part No. 1445693-1\***  
 \*-3 with boot



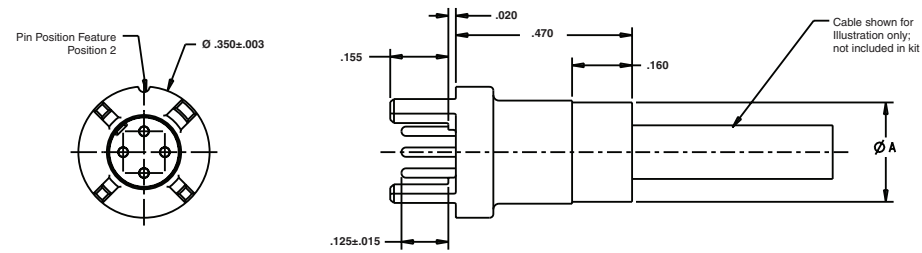
**6**  
 High Speed I/O's

**Quadrax Contacts** (Continued)



**PC Tail Contact – Direct Attach to PCB**

- 100 and 150 ohm Systems
- Simple Direct Attach to PCB without connector for component reduction
- Designed from ARINC size 8 Quadrax contacts
- Low cost solution from both assembly and component ends



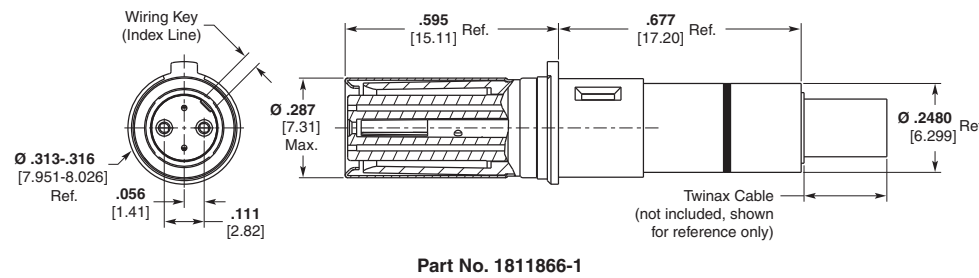
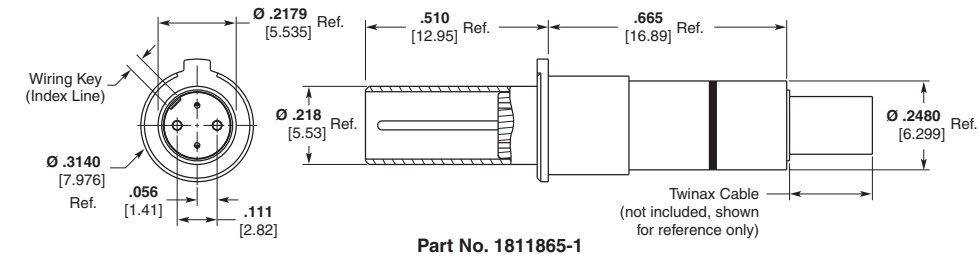
Part Number 1954576-1, -2: B = .125  
 Part Number 1954576-3: B = .205

Part Number	Impedance ( $\Omega$ )	Dim A (Max)	Dim B
1954576-1	150	.270 [6.86]	.125 [3.18]
1954576-2	100	.250 [6.35]	.125 [3.18]
1954576-3	100	.250 [6.35]	.205 [5.21]

**100 Ohm Differential Pair Twinax Contact**

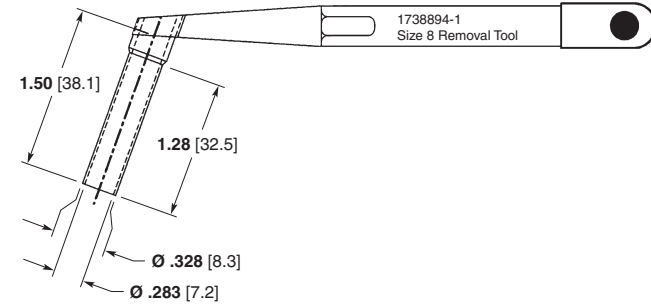
- Designed to meet the requirements of ARINC Specification 810 for 100 ohm size 8 non-concentric twin-axial contacts
- Works in all connectors accepting ARINC 600 style Quadrax contacts

**Size 8 Differential Twinax Contacts**

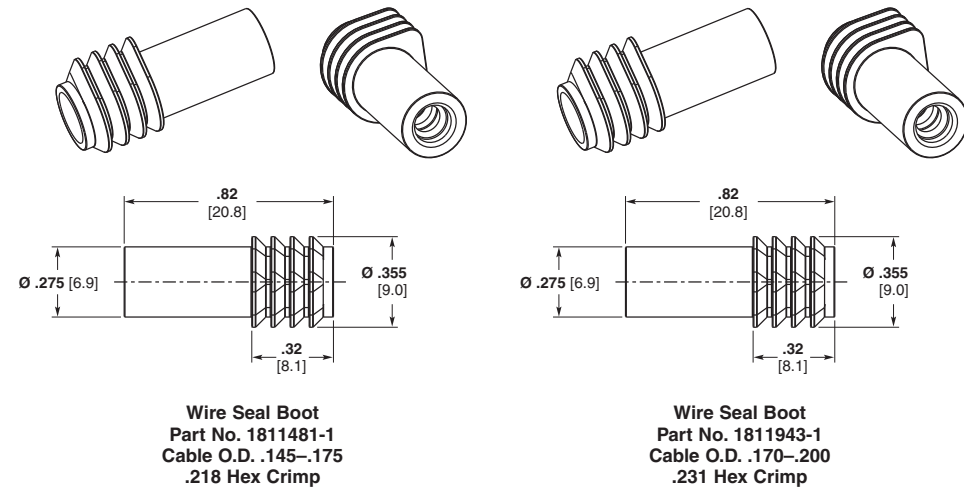


**Quadrax/Twinax Contact Accessories**

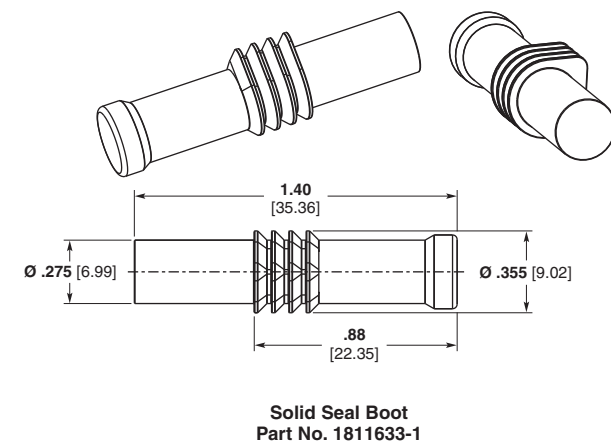
**Size 8 Quadrax Extraction  
Tool Part No. 1738894-1**



**Seal Boots**



**6**  
High Speed I/O's



### ARINC Size 8 Quadrax Connectors

#### Product Facts

- Utilizes four size 24 screw-machined contacts with standard crimp tooling per M22520/2-01 and M22520/5-01 for ease of termination
- Front release/front removable PCB mount contact design for use in ARINC 600 receptacle connectors
- Rear release/rear remove crimp contact design for use in ARINC 600 plug connectors & receptacles
- Quadrax housing is keyed to assure mating alignment
- Contacts are on 2 mm centerline per ARINC 600 specification
- To extract Quadrax contact from connector insert, use Extraction Tool Part Number 1738894-1
- Per Supplement 18 to ARINC Specification 600



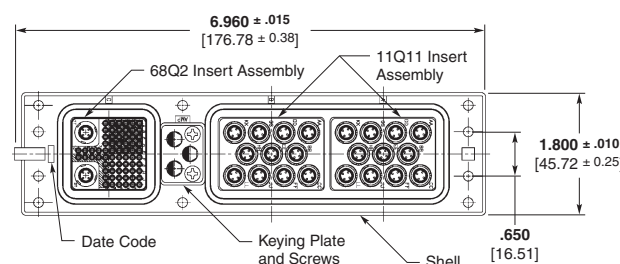
#### ARINC Size 2 Connectors

Part Number	Type	Insert Arrangement			Style	Shell Features	Contacts
		A	B	C			
1484406-2	Receptacle	Q11	Q11	68Q2	Front Release Front Remove	Electroless Nickel Plated, no clinch nuts	Size 22 signal & Quadrax contacts supplied loaded in inserts; post extension = .25 [6.35]
1484407-2	Plug	Q11	Q11	68Q2	Rear Release Rear Remove	Electroless Nickel Plated, no clinch nuts	Crimp style size 22 signal and Quadrax contacts supplied unloaded
1663032-1	Receptacle	150	150	11Q2	Front Release Front Remove	Chromate with six 4-40 clinch nuts	Signal, Power and Quadrax contacts supplied loaded in inserts; post extension = .25 [6.35]
1663900-1	Receptacle	Q11	Q11	85	Front Release Front Remove	Chromate, no clinch nuts	Signal, Power and Quadrax contacts supplied loaded in inserts; post extension = .25 [6.35]
1484620-1	Receptacle	Q11	Q11	85	Front Release Front Remove	Electroless Nickel Plated, with ten 4-40 clinch nuts	Signal, Power and Quadrax contacts supplied loaded in inserts; post extension = .15 [3.81]
1484621-1	Plug	Q11	Q11	85	Rear Release Rear Remove	Electroless Nickel Plated, no clinch nuts	Crimp contacts

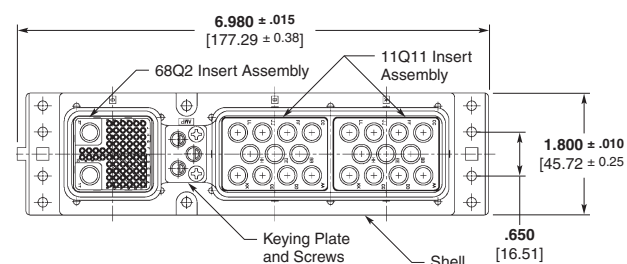
#### ARINC Size 3 Connectors

Part Number	Type	Insert Arrangement			Style	Shell Features	Contacts
		A D	B E	C F			
1663018-1	Receptacle	150 150	150 150	11Q2 11Q2	Front Release/ Front Remove	Electroless Nickel Plated	No contacts
1663018-2	Receptacle	150 150	150 150	11Q2 11Q2	Front Release/ Front Remove	Electroless Nickel Plated	Signal, Power and Quadrax contacts supplied loaded in inserts; post extension signal and power = .25 [6.35]; Quadrax = .200 [5.08]
1663018-3	Receptacle	150 150	150 150	11Q2 11Q2	Front Release Front Remove	Chromate with fourteen 6-32 clinch nuts	Signal, Power and Quadrax contacts supplied loaded in inserts; post extension = .25 [6.35]
1663019-1	Plug	150 150	150 150	11Q2 11Q2	Rear Release Rear Remove	Electroless Nickel Plated	No contacts
1663019-2	Plug	150 150	150 150	11Q2 11Q2	Rear Release Rear Remove	Electroless Nickel Plated	Crimp contacts
1663019-3	Plug	150 150	150 150	11Q2 11Q2	Rear Release Rear Remove	Chromate	Crimp contacts

Note: Custom insert combinations available upon request. Contact TE.



**Receptacle, Assembly Size 2  
Front Release/Front Remove  
Part No. 1484406-2 shown**

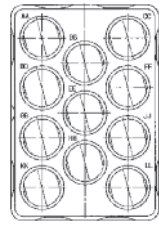


**Plug, Assembly Size 2  
Rear Release/Rear Remove  
Part No. 1484407-2 shown**

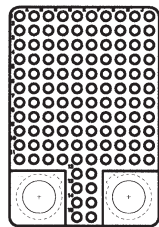
**ARINC Size 8 Quadrax Connectors** (Continued)

**Contact Inserts & Arrangement Codes — Shell Size 2 or 3**

**Shell Module A, B, D or E**

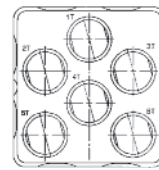


**Q11 1, 2, 3**  
11 Size 8 Quadrax Metal

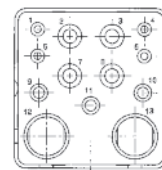


**118Q2 2,3,4**  
118 Size 22  
2 Size 8 Quadrax

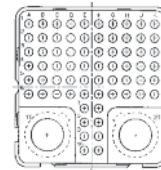
**Shell Module C or F**



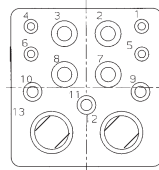
**Q6 1, 2, 3**  
6 Size 8 Quadrax Metal



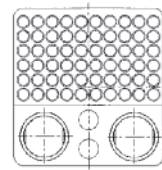
**11Q2 1, 2, 3**  
4 Size 20  
4 Size 12  
3 Size 16  
2 Size 8 Quadrax



**68Q2 2, 3, 4**  
68 Size 22  
2 Size 8 Quadrax



**13CQ2 2, 3**  
4 Size 20  
3 Size 16  
4 Size 12  
2 Size 8 Quadrax



**62Q2 2, 3, 4**  
60 Size 22  
2 Size 16  
2 Size 8 Quadrax

**Note:**

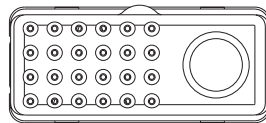
1. Available for plug or receptacle with rear release/remove contacts.
2. Available for receptacle only with all contacts front release/remove.
3. Standard size 8 contacts will not fit in Quadrax size 8 inserts. Also, Quadrax size 8 contacts will not fit into standard size 8 inserts.
4. Available for plug only with all contacts rear release/remove.

For complete listing of all ARINC 600 insert arrangements, reference catalog 1308940.

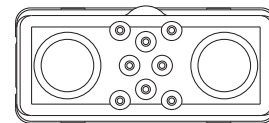
**6**

High Speed I/O's

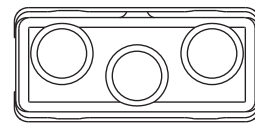
**GPRB Insert Arrangements<sup>1,2</sup>**



**25QI3**



**10Q23**



**3Q33**

**Keying:**



**Note:**

1. Pin inserts: Mating faces shown above.
2. In a GPRB2 shell, one insert must be "A" keyed and the other one must be "B" keyed (See at right).
3. Size 8 cavity applicable for use with Arinc 600 Quadrax or Twinax contacts.

For complete listing of all General Purpose Rectangular insert arrangements, reference catalog 1654763.



## Rectangular Connectors

### Product Facts

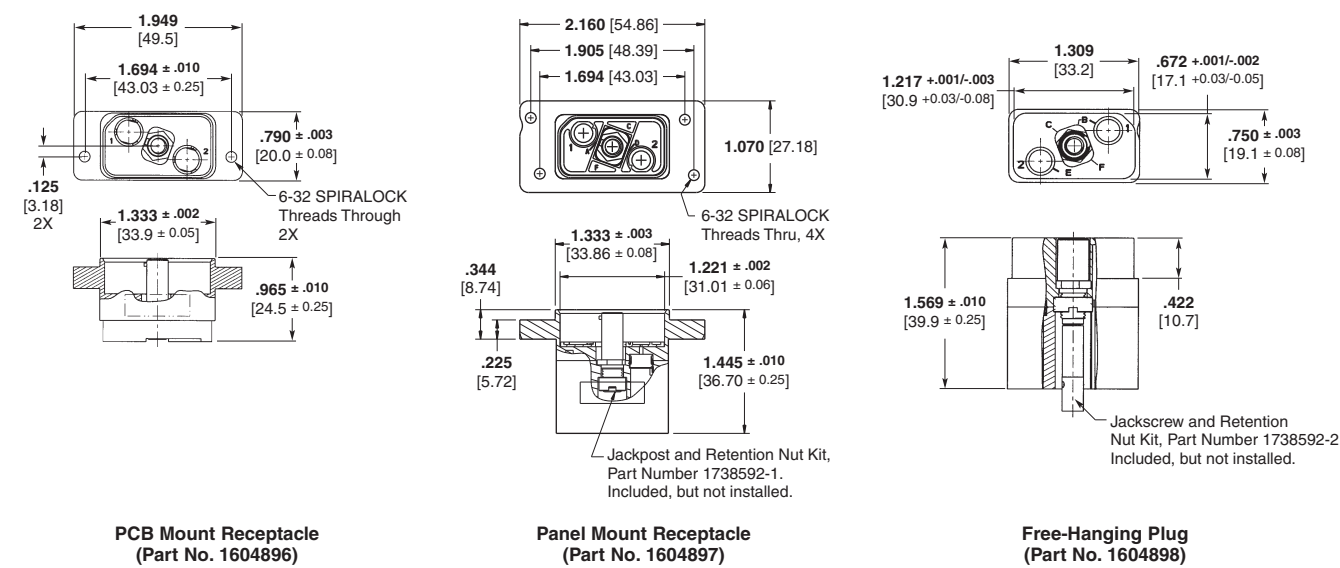
- High performance rectangular connector
- Available in 2, 4, and 12 positions
- Designed for use with wire seal boots and rated for use up to 50,000 ft. altitude
- Center jackscrew design for fast, reliable mating
- Aluminum shells are keyed and polarized, and are available with lightweight plastic backshell strain reliefs
- Provides excellent density in a rectangular profile for packaging flexibility.
- Qualified to Boeing Part Standard BPS-C-193



Position	Part Number	Type	Mounting Style	Style	Polarization	Note:
2	1604896-2*	Receptacle	PCB	Front Release/Front Remove	Flat	
	1604897-5*	Receptacle	Panel Mount	Rear Release/Rear Remove	Flat	
	1604898-5*	Plug	Free-Hanging	Rear Release/Rear Remove	Flat	
	1604905-1*	Backshell - (1 pc)	—	—	—	Use w/1604897-5 or 1604898-5
4	1738949-2*	Receptacle	PCB	Front Release/Front Remove	Flat	
	1738950-2*	Receptacle	Panel Mount	Rear Release/Rear Remove	Flat	
	1738951-2*	Plug	Free-Hanging	Rear Release/Rear Remove	Flat	
	1738955-1*	Backshell - (1 pc)	—	—	—	Use w/1738950-2 or 1738951-2
12	1604798-2*	Receptacle	PCB	Front Release/Front Remove	Flat	
	1604799-5*	Receptacle	Panel Mount	Rear Release/Rear Remove	Flat	
	1604800-5*	Plug	Free-Hanging	Rear Release/Rear Remove	Flat	
	1604874-1*	Backshell - Receptacle (2 pc)	—	—	—	Use w/1604799-5
	1604874-2*	Backshell - Plug (2 pc)	—	—	—	Use w/1604800-5

\*Jackscrew/Jackpost hardware included but not installed

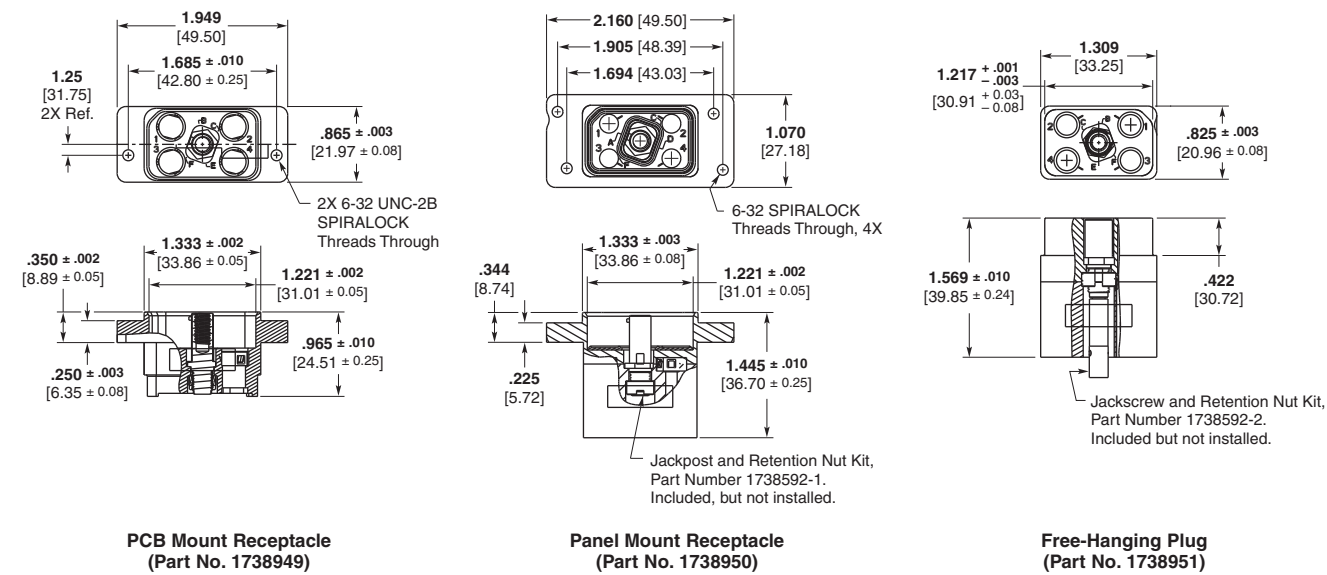
### 2 Position



SPIRALOCK is a trademark of Detroit Tool Industries Corporation.

**Rectangular Connectors** (Continued)

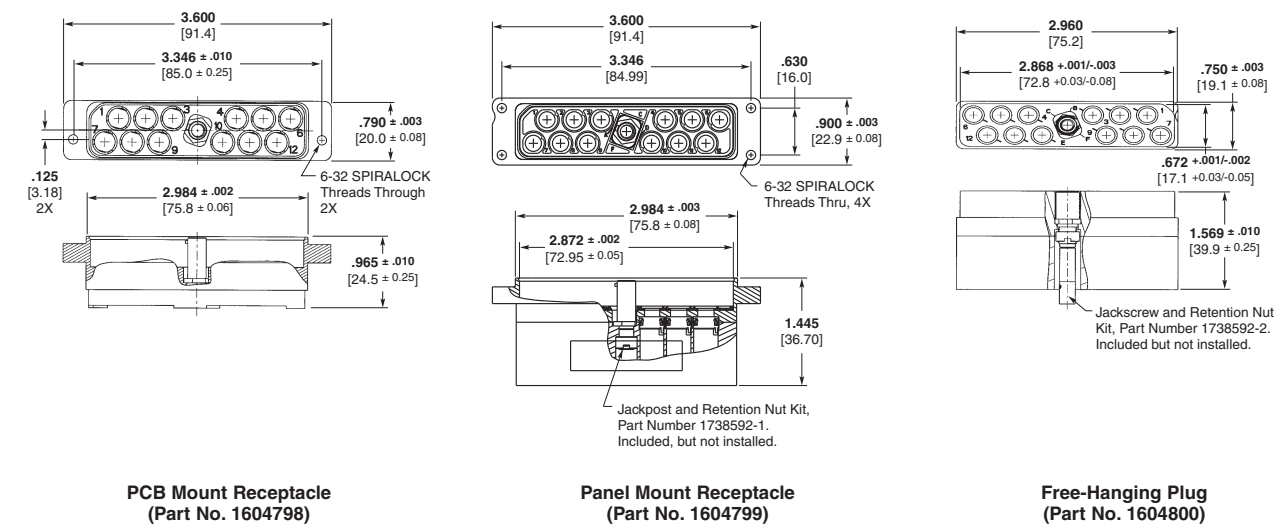
**4 Position**



6

High Speed I/O's

**12 Position**



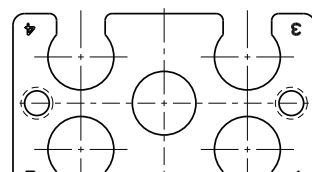
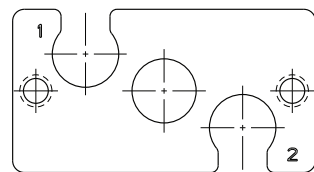
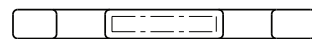
SPIRALOCK is a trademark of Detroit Tool Industries Corporation.

**Rectangular Connectors** (Continued)

**Accessories**

**2 Position Low Profile Seal Retainer**  
Part No. 2101752-1

**4 Position Low Profile Seal Retainer**  
Part No. 2157322-1

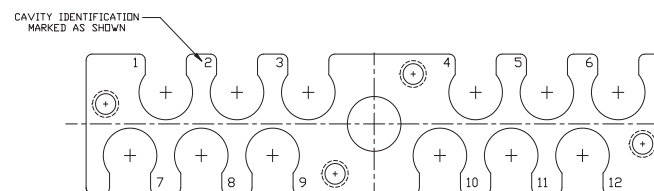
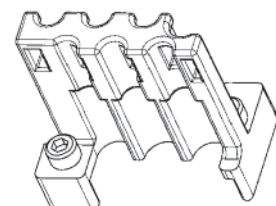


ORIENTATION OF BOOT SEAL PLATE FOR PLUG APPLICATION

ORIENTATION OF BOOT SEAL PLATE FOR PLUG APPLICATION

**12 Position Backshell/Strain Relief Kit**  
Part No. 1996373-1 for receptacle;  
Part No. 1996373-2 for plug

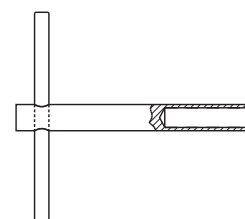
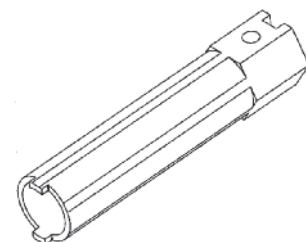
**12 Position Low Profile Seal Retainer**  
Part No. 1996544-2



ORIENTATION OF SEAL BOOT PLATE FOR PLUG APPLICATIONS

**Wrench, Retention Nut, Jackscrew and Jackpost, Quadrax Rectangular Connector**  
Part No. 1604972-1

**Wrench, Retention Nut, T-handle Tool**  
Part No. 1950030-1

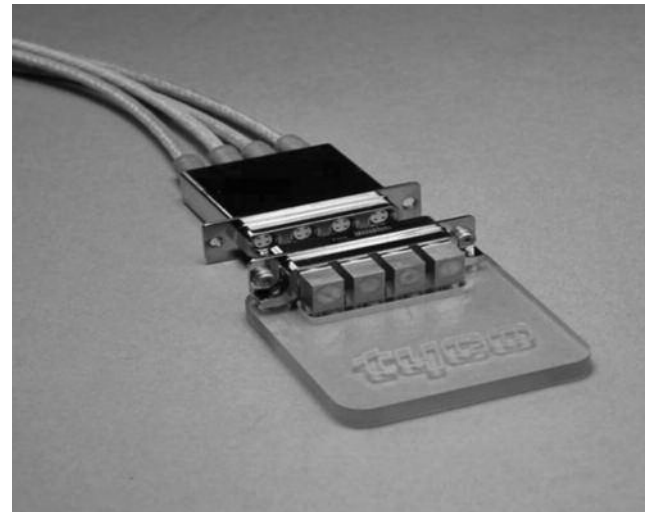


**Rectangular Connectors** (Continued)

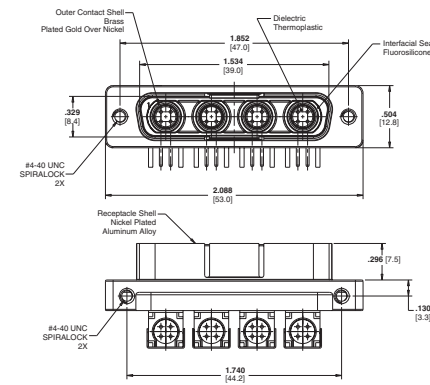
**Low Profile Rectangular Connector Assemblies**

**Product Facts**

- Designed to provide a ruggedized in-line solution for Quadrax cable to printed circuit board mount applications, in a blind-mateable D-subminiature configuration
- Quadrax contacts ground directly to connector shell

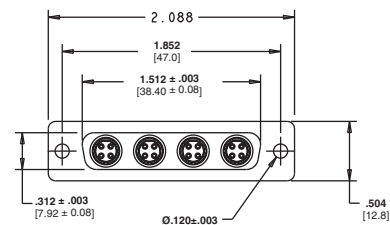


**4Q4**



**Right Angle PCB Mount Receptacle**  
(Part No. 2000314)

Accepts standard AMPLIMITE Boardlock Hardware (sold separately).



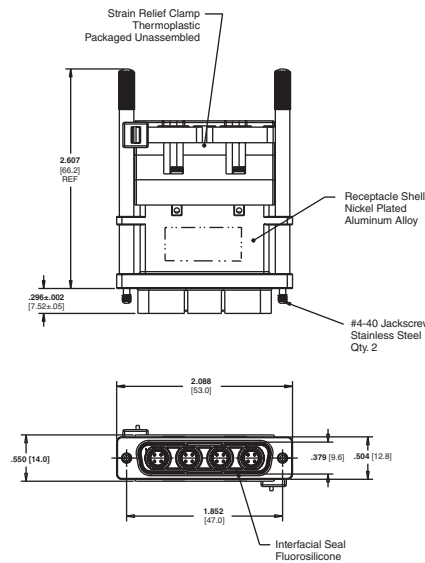
**Panel-Mount or Free-Hanging Plug Kit**  
(Part No. 2000317)

Socket Contacts included in Kit. Accepts standard AMPLIMITE Screwlock Hardware (sold separately).

**Female Screwlock**  
Part No. 212447-1

**Nut Driver Part No. 811262-1**

For assembling female screwlocks to connector flange.



**Free-Hanging Receptacle Kit**  
(Part No. 2000263)

Jackscrews, Strain Relief, and Crimp Pin Contacts included in kit.



High Speed I/O's

**Custom MIL-DTL-38999 Series III Style Circular Connectors**

**Product Facts**

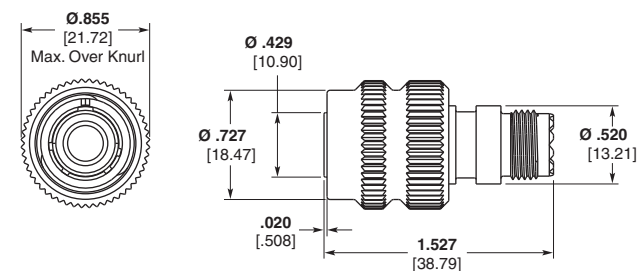
- Available in various shell sizes: 9 (1Q1), 17 (2Q2), 19 (4Q4) and 25 (8Q8)
- Designed for use with wire seal boots for sealing and optimized alignment
- Front metal-shell design provides a full ground plane
- Lightweight composite rear shell available in size 19 for reduced weight
- Accepts standard backshells



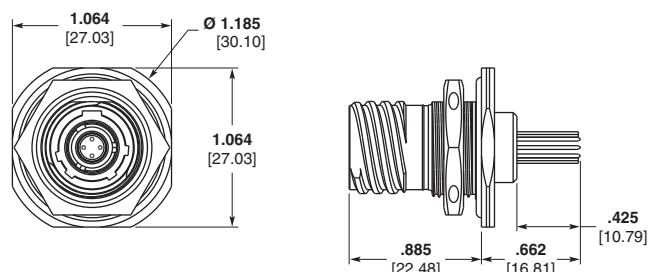
Shell Size	Part Number	Type	Description
9	1877384	Plug	Single Quadrax, RR-RR
	1738916	Receptacle	38999 Style, Single Quadrax, FR-FR, Jam Nut Style, with PC Tail Contacts
	1811184	Receptacle	38999 Style, Single Quadrax, FR-FR, PCB Mount with Stand-offs and PC Tail Contacts
	2157694	Receptacle	38999 Style, Single Quadrax, with 1 Contact, FR-FR, Jam Nut Style, Series III
17	1877775	Plug	38999 Style, Arrangement 2Q2, RR-RR
	1877774	Receptacle	38999 Style, Arrangement 2Q2, RR-RR
	2157455	Receptacle	38999 Style, Arrangement 2Q2, FR-FR, PCB Mount
	2157695	Receptacle	38999 Style, with 2 Quadrax Contacts, Arrangement 2Q2, FR-FR, Jam Nut Style, Series III
19	1811902	Plug	38999 Style, Arrangement 4Q4, RR-RR
	1738974	Receptacle	38999 Style, with 4 Quadrax Contacts, FR-FR
	1877732	Receptacle	38999 Style, with 4 Quadrax Contacts, FR-FR, with PC Tail Contacts
	1811901	Receptacle	38999 Style, Arrangement 4Q4, RR-RR
21	2157696	Receptacle	38999 Style, with 4 Quadrax Contacts, Arrangement 2Q2, FR-FR, Jam Nut Style, Series III
	1954355	Plug	38999 Style, Arrangement 4Q4, FR-FR, Series III
23	1954353	Receptacle	38999 Style, Arrangement 4Q4, FR-FR, Series III, with PC Tail Contacts
	1877921	Plug	38999 Style, Arrangement 6Q6, Series III
25	1954577	Receptacle	38999 Style, Arrangement 6Q6, Series III
	1811928	Plug	38999 Style, Arrangement 8Q8, RR-RR
	1811927	Receptacle	38999 Style, Arrangement 8Q8, RR-RR
	2101395	Receptacle	38999 Style, Arrangement 8Q8, FR-FR, with PC Tail Contacts

See TE Customer Drawing for finish options

**Plug, Shell Size 9  
Single Quadrax, RR-RR  
Part No. 1877384**



**Receptacle, Shell Size 9,  
38999 Style  
Single Quadrax, FR-FR  
Jam Nut Style  
Part No. 1738916**

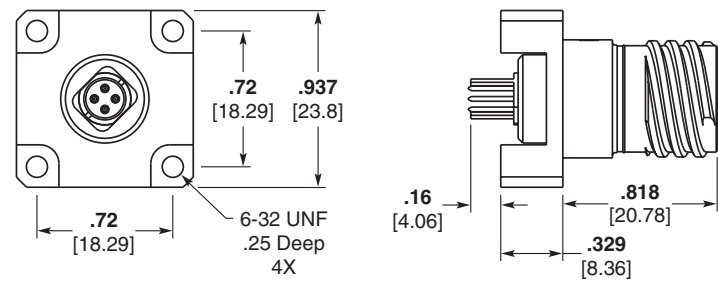


**Contacts sold separately  
(unless noted) see page 6-16**

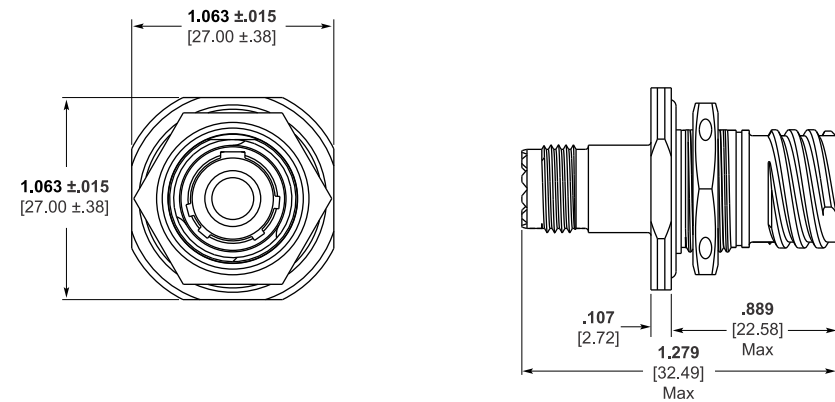
**Custom MIL-DTL-38999 Series III Style Circular Connectors** (Continued)

Receptacle, Shell Size 9,  
38999 Style  
Single Quadrax, FR-FR  
PCB Mount with Stand-offs

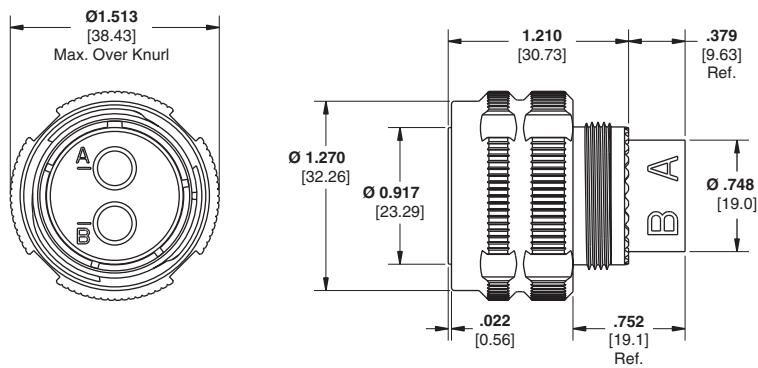
Part No. 1811184  
(with PC tail contacts)



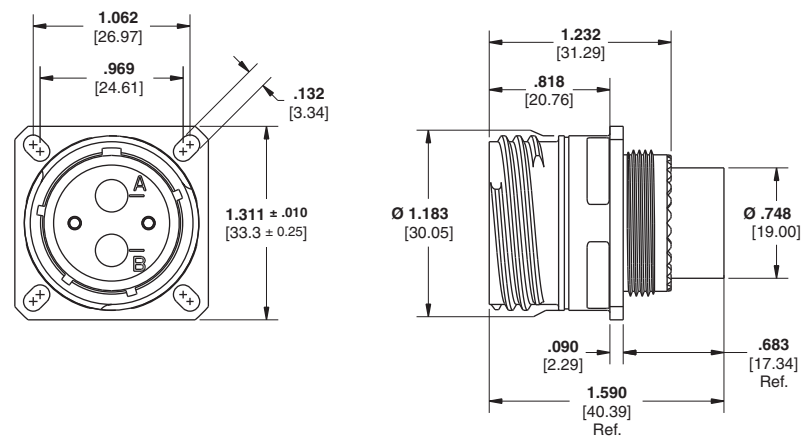
Receptacle, Shell Size 9  
38999 Style  
Single Quadrax, FR-FR  
Jam Nut Style  
Part No. 2157694



Plug, Shell Size 17,  
38999 Style  
Arrangement 2Q2, RR-RR  
Part No. 1877775



Receptacle, Shell Size 17  
38999 Style  
Arrangement 2Q2, RR-RR  
Part No. 1877774



6

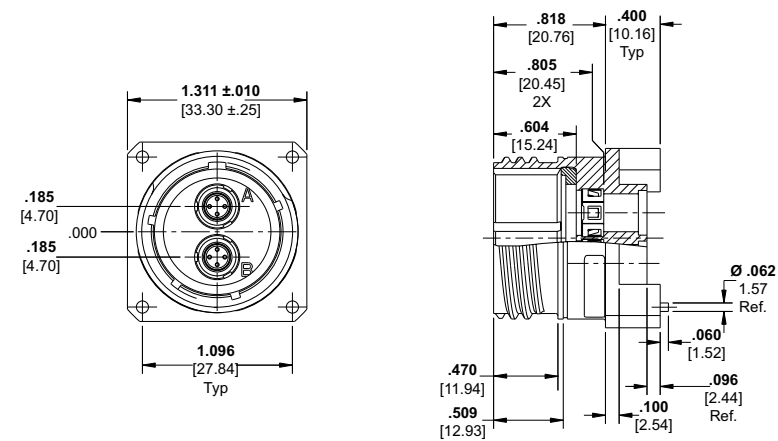
High Speed I/O's

Contacts sold separately  
(unless noted) see page 6-16

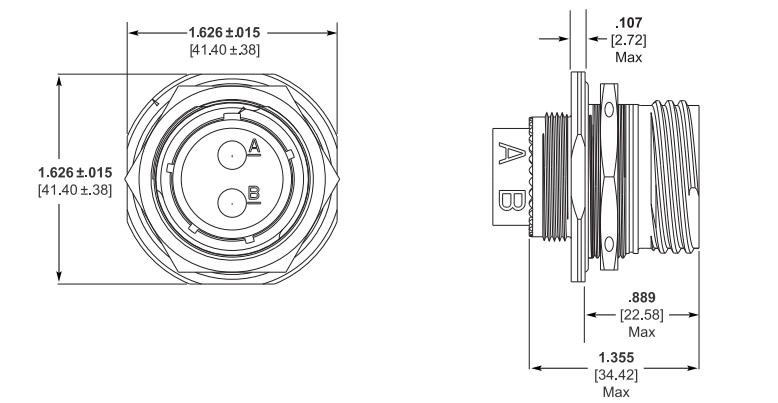


**Custom MIL-DTL-38999 Series III Style Circular Connectors** (Continued)

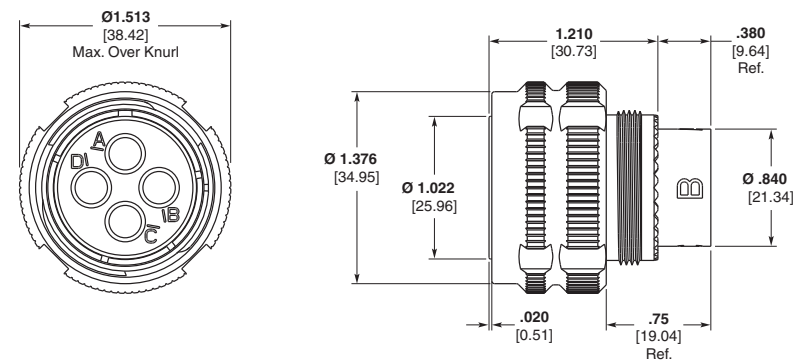
Receptacle, Shell Size  
1738999 Style  
Arrangement 2Q2, FR-FR  
Part No. 2157455



Receptacle, Shell Size  
1738999 Style  
Arrangement 2Q2, FR-FR  
Jam Nut Style  
Part No. 2157695



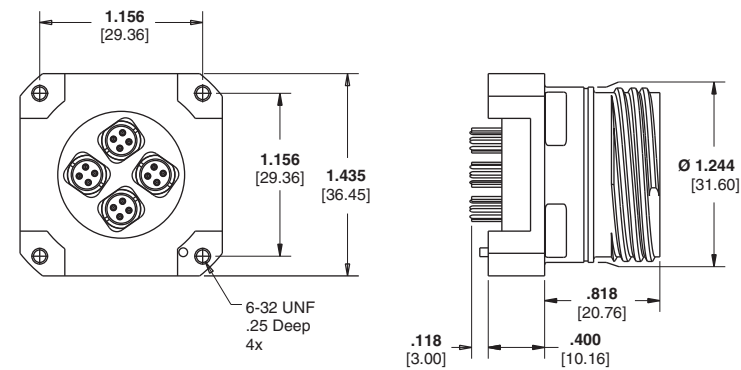
Plug, Shell Size 19  
38999 Style  
Arrangement 4Q4, RR-RR  
Part No. 1811902



Receptacle, Shell Size 19,  
38999 Style w/4 Quadrax  
Contacts, FR-FR

Part No. 1877732  
(w/ PC Tail Contacts)

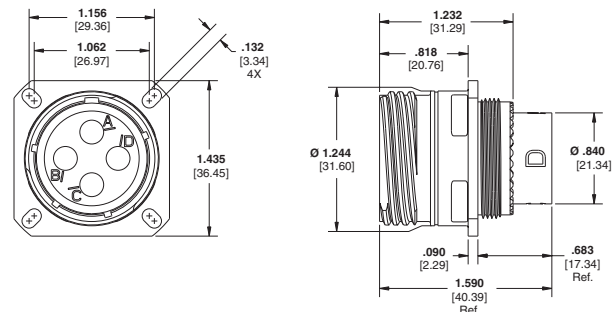
Part No. 1738974  
(connector only)



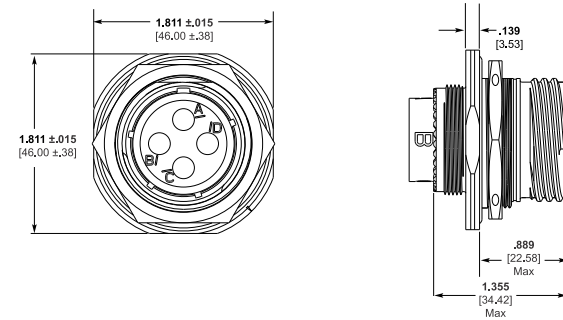
Contacts sold separately  
(unless noted) see page 6-16

**Custom MIL-DTL-38999 Series III Style Circular Connectors** (Continued)

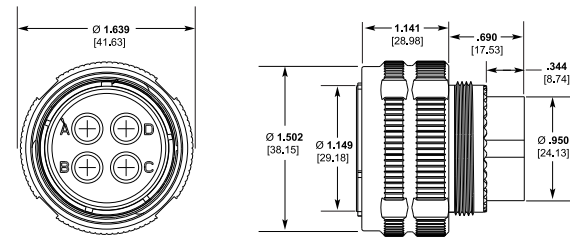
**Receptacle, Shell Size 19,  
38999 Style  
Arrangement 4Q4, RR-RR  
Part No. 1811901**



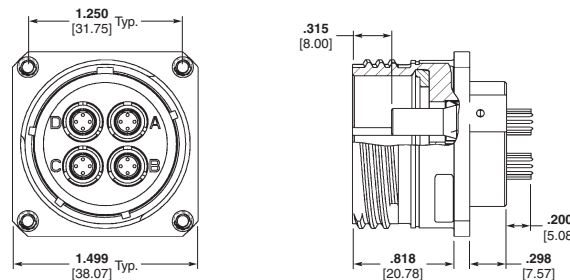
**Receptacle, Shell Size  
1938999 Style  
Arrangement 4Q4, FR-FR  
Jam Nut Style  
Part No. 2157696**



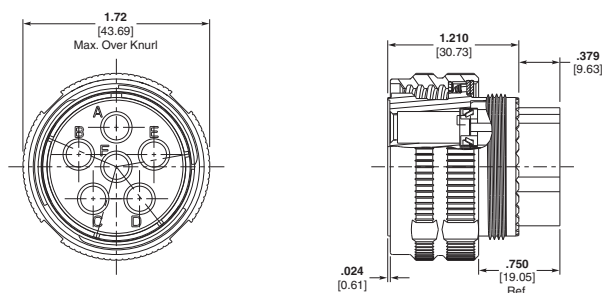
**Plug, Shell Size 21,  
38999 Style  
Arrangement 4Q4, FR-FR  
Series III  
Part No. 1954355**



**Receptacle, Shell Size 21,  
38999 Style  
Arrangement 4Q4, FR-FR  
Series III  
Part No. 1954353**



**Plug, Shell Size 23,  
38999 Style  
Arrangement 6Q6,  
Series III  
Part No. 1877921**

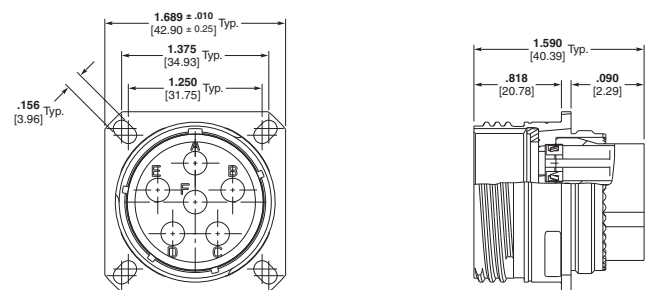


**Contacts sold separately  
(unless noted) see page 6-16**

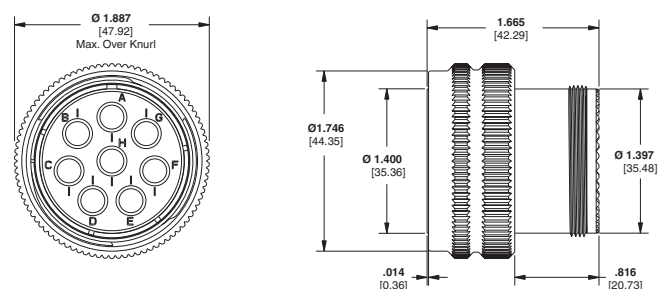
**6**  
High Speed I/O's

**Custom MIL-DTL-38999 Series III Style Circular Connectors** (Continued)

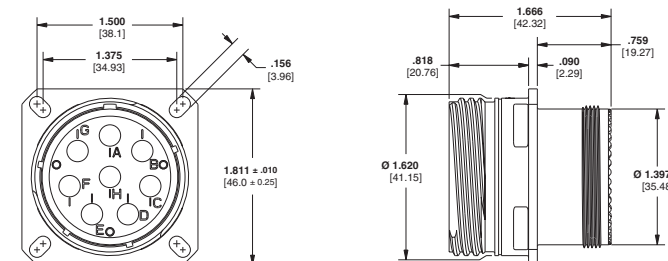
**Receptacle, Shell Size 23,  
M38999 Style  
Arrangement 6Q6,  
Series III  
Part No. 1954577**



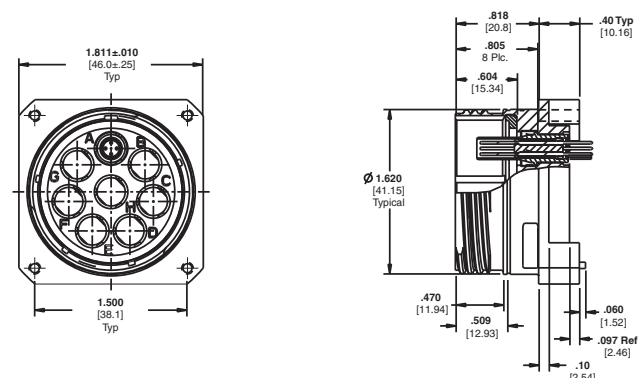
**Plug, Shell Size 25  
38999 Style  
Arrangement 8Q8, RR-RR  
Part No. 1811928**



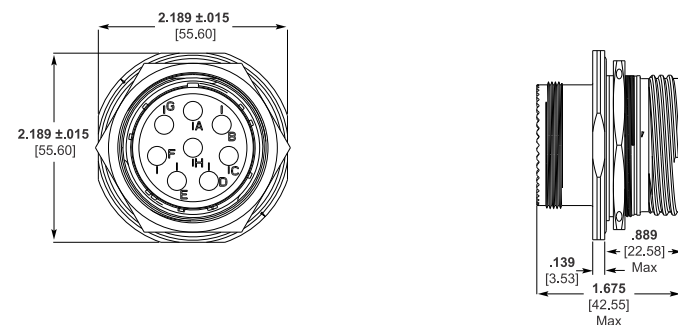
**Receptacle, Shell Size 25  
38999 Style  
Arrangement 8Q8, RR-RR  
Part No. 1811927**



**Receptacle, Shell Size 25  
38999 Style  
Arrangement 8Q8, FR-FR  
Part No. 2101395  
(w/ PC Tail Contacts)**



**Receptacle, Shell Size 25  
38999 Style  
Arrangement 8Q8  
Jam Nut  
Part No. 2157628**

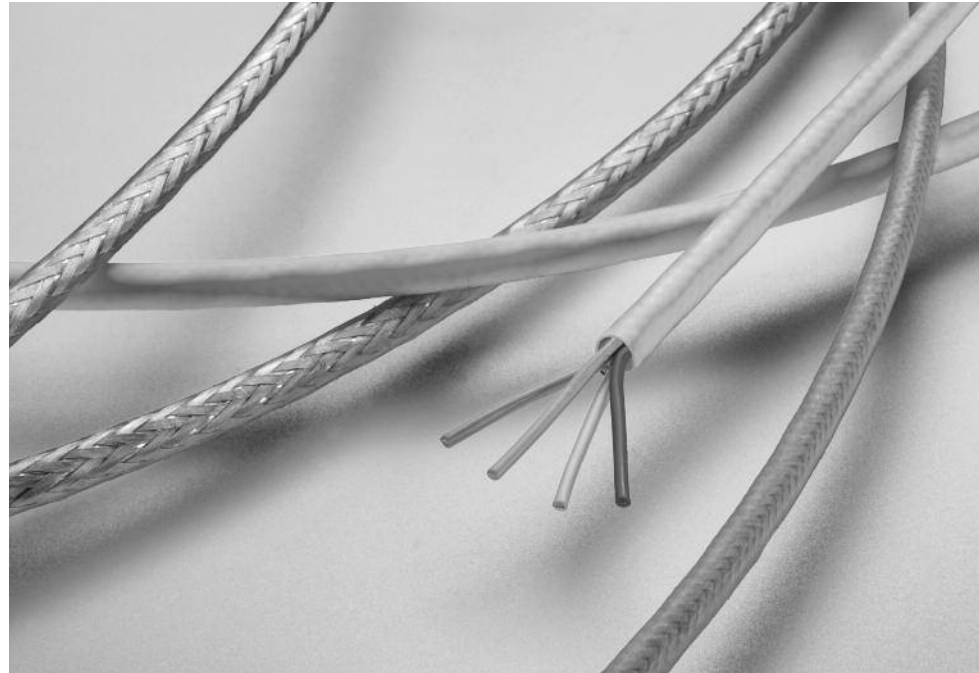


**Contacts sold separately  
(unless noted) see page 6-16**

**QUADLITE Quadraxial Cables**

**Product Facts**

- 100 ohm and 150 ohm cables
- Materials rated from -65°C to +200°C
- Low outgassing materials (PTFE, FEP)
- Custom design capabilities
- Proven technologies and materials
- Lightweight
- Low smoke and low toxicity
- Available in 150°C and 200°C rated construction



TE's Quadlite family of lightweight, fluoropolymer cables are for use in high speed, high bandwidth applications such as 100Base-T, Gigabit Ethernet, IEEE 1394 and Fiber Channel employed in commercial avionics systems, aircraft data networks, in-flight entertainment systems and military communications.

The Quadlite cables are designed to meet the flammability requirements of FAR Part 25 and the rigorous smoke and toxicity requirements found in commercial aerospace standards such as EN3475.

Quadlite cables are to be used with the Quadrax contacts and connectors.

**Applications**

Cables are used in communications, control and instrumentation for:

- In-Flight Entertainment
- Satellite TV
- Flight Subsystems
- Military Communications

**Materials**

**Dielectrics** — Foamed FEP

**Jacket** — FEP

**Standards and Specifications**

- TE Specification 1200
- ANSI/TIA-568-B.2
- IEEE 1394
- ARINC 664

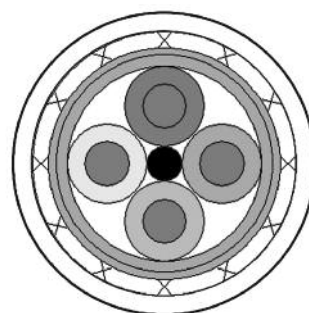
6 High Speed I/O's

**QUADLITE Quad coaxial Cables** (Continued)

**100Base-T Ethernet Cables**  
**100 Ohms - 150°C**

TE Part No.	CEC-RWC-18634		CEC-RWC-18664		CEC-RWC-18666	
Conductor AWG Size (19 Strand)	26		24		22	
Conductor Material:	SCCA		SCCA		SCC	
Nom. Conductor Diameter (in.):	0.0185		0.0235		0.0295	
Insulation Material:	Formed FEP		Formed FEP		Formed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.037		0.042		0.057	
Nom. Cable OD (in.):	0.145		0.154		0.195	
Nom. Cable Weight (lb/1 kft):	17.7		20.3		32.0	
Shield Material:	TCC		TCC		TCC	
Jacket Material:	FEP		FEP		FEP	
Impedance ± 10% (Ω):	100		100		100	
Temp. Rating:	150°C		150°C		150°C	
Nom. Capacitance (pF/ft):	13.5		13.0		12.9	
Nom. Attenuation (dB/100 m):						
1 MHz	4.0		2.2		1.6	
10 MHz	10.5		6.8		5.9	
100 MHz	36.0		24.8		21.0	
	<b>10 MHz</b>	<b>100 MHz</b>	<b>10 MHz</b>	<b>100 MHz</b>	<b>10 MHz</b>	<b>100 MHz</b>
Min. NEXT (dB)	50	35	50	35	50	35
Min. SRL (dB)	23	16	23	16	23	16

TE Part No.	CEC-RWC-20555		CEC-RWC-20333	
Conductor AWG Size (19 Strand)	26		24	
Conductor Material:	SCCA		SCCA	
Nom. Conductor Diameter (in.):	0.0185		0.0235	
Insulation Material:	Formed FEP		Formed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.037		0.042	
Nom. Cable OD (in.):	0.144		0.153	
Nom. Cable Weight (lb/1 kft):	18.7		22.2	
Shield Material:	TCC		TCC	
Jacket Material:	FEP		FEP	
Impedance ± 10% (Ω):	100		100	
Temp. Rating:	150°C		150°C	
Nom. Capacitance (pF/ft):	13.5		13.0	
Nom. Attenuation (dB/100 m):				
1 MHz	4.0		2.2	
10 MHz	10.5		6.8	
100 MHz	36.0		24.8	
	<b>10 MHz</b>	<b>100 MHz</b>	<b>10 MHz</b>	<b>100 MHz</b>
Min. NEXT (dB)	50	35	50	35
Min. SRL (dB)	23	16	23	16



100Base-T Ethernet

**QUADLITE Quad coaxial Cables** (Continued)

**100Base-T Ethernet Cables**  
**100 Ohms - 200°C**

TE Part No.	CEC-RWC-18658		CEC-RWC-18687		CEC-RWC-18665	
Conductor AWG Size (19 Strand)	26		24		22	
Conductor Material:	SCCA		SCCA		SCC	
Nom. Conductor Diameter (in.):	0.0185		0.0235		0.0295	
Insulation Material:	Formed FEP		Formed FEP		Formed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.037		0.042		0.057	
Nom. Cable OD (in.):	0.144		0.153		0.194	
Nom. Cable Weight (lb/1 kft):	18.7		22.2		34.3	
Shield Material:	SCC		SCC		SCC	
Jacket Material:	FEP		FEP		FEP	
Impedance ± 10% (Ω):	100		100		100	
Temp. Rating:	200°C		200°C		200°C	
Nom. Capacitance (pF/ft):	13.5		13.0		12.9	
Nom. Attenuation (dB/100 m):						
1 MHz	4.0		2.2		1.6	
10 MHz	10.5		6.8		5.9	
100 MHz	36.0		24.8		21.0	
	<b>10 MHz</b>	<b>100 MHz</b>	<b>10 MHz</b>	<b>100 MHz</b>	<b>10 MHz</b>	<b>100 MHz</b>
Min. NEXT (dB)	50	35	50	35	50	35
Min. SRL (dB)	23	16	23	16	23	16

**6**  
High Speed I/O's



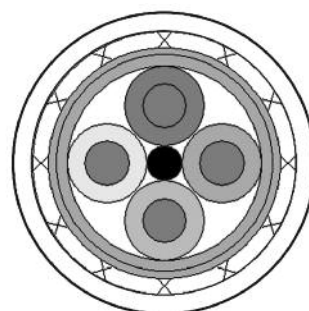
**QUADLITE Quad coaxial Cables** (Continued)

**Fiber Channel Cables  
150 Ohms - 150°C**

TE Part No.	CEC-RWC-18680	CEC-RWC-18681	CEC-RWC-18682
Conductor AWG Size (19 Strand)	26	24	22
Conductor Material:	SCCA	SCCA	SCC
Nom. Conductor Diameter (in.):	0.0185	0.0235	0.0295
Insulation Material:	Formed FEP	Formed FEP	Formed FEP
Nom. Insulation OD ± 0.002 (in.):	0.058	0.077	0.094
Nom. Cable OD (in.):	0.193	0.224	0.281
Nom. Cable Weight (lb/1 kft):	23.4	38.3	57.2
Shield Material:	TCC	TCC	TCC
Jacket Material:	FEP	FEP	FEP
Impedance ± 10% (Ω):	150	150	150
Temp. Rating:	150°C	150°C	150°C
Nom. Capacitance (pF/ft):	6.0	6.0	6.0
Nom. Attenuation (dB/100 m):			
531 MHz	13	11	9
1062 MHz	21	17	13

**150 Ohms - 200°C**

TE Part No.	CEC-RWC-18684	CEC-RWC-18685	CEC-RWC-18686
Conductor AWG Size (19 Strand)	26	24	22
Conductor Material:	SCCA	SCCA	SCC
Nom. Conductor Diameter (in.):	0.0185	0.0235	0.0295
Insulation Material:	Formed FEP	Formed FEP	Formed FEP
Nom. Insulation OD ± 0.002 (in.):	0.058	0.077	0.094
Nom. Cable OD (in.):	0.192	0.247	0.284
Nom. Cable Weight (lb/1 kft):	25.8	38.3	57.2
Shield Material:	SCC	SCC	SCC
Jacket Material:	FEP	FEP	FEP
Impedance ± 10% (Ω):	150	150	150
Temp. Rating:	200°C	200°C	200°C
Nom. Capacitance (pF/ft):	6.0	6.0	6.0
Nom. Attenuation (dB/100 m):			
531 MHz	13	11	9
1062 MHz	21	17	13



Fiber Channel

**QUADLITE Quad coaxial Cables** (Continued)

**4-Pair Cat 5E Constructions**  
**100 Ohms - 150°C/200°C**

TE Part No.	CEC-RWC-20412		CEC-RWC-21064		CEC-RWC-20638	
Conductor AWG Size (19 Strand)	24		24		26 (7 strand)	
Conductor Material:	SCHSCA		SCC		SCC	
Nom. Conductor Diameter (in.):	0.0235		0.0235		0.019	
Insulation Material:	Formed FEP		Formed FEP		Formed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.046		0.046		0.036	
Nom. Cable OD (in.):	0.279		0.249		0.204	
Nom. Cable Weight (lb/1 kft):	46.2		39.5		29.8	
Shield Material:	TCC		TCC		SCC	
Jacket Material:	FEP		XL-ETFE		FEP	
Impedance ± 10% (Ω):	100		100		100	
Temp. Rating:	150°C		150°C		150°C	
Nom. Capacitance (pF/ft):	13.5		13.5		13.5	
Nom. Attenuation (dB/100 m):						
1 MHz	2.4		2.2		2.4	
100 MHz	7.5		6.8		8.8	
100 MHz	26.4		24.8		30.5	
	<b>10 MHz</b>	<b>100 MHz</b>	<b>10 MHz</b>	<b>100 MHz</b>	<b>10 MHz</b>	<b>100 MHz</b>
Min. NEXT (dB)	50	35	50	35	50	35
Min. SRL (dB)	25	19	25	19	23	16

**Cat 6 Constructions**  
**100 Ohms - 100°C/90°C**

TE Part No.	CEC-RWC-20837		CEC-RWC-21088	
Conductor AWG Size (19 Strand)	23		23	
Conductor Material:	Bare Copper		Bare Copper	
Nom. Conductor Diameter (in.):	0.021		0.021	
Insulation Material:	Foamed PE		PE	
Nom. Insulation OD ± 0.002 (in.):	0.046		0.046	
Nom. Cable OD (in.):	0.350		0.249	
Nom. Cable Weight (lb/1 kft):	52.6		39.5	
Shield Material:	TCC		TCC	
Jacket Material:	FDR-25		Raythane	
Impedance ± 10% (Ω):	100		100	
Temp. Rating:	100°C		100°C	
Nom. Capacitance (pF/ft):	13.5		13.5	
Nom. Attenuation (dB/100 m):				
1 MHz	1.8		1.8	
100 MHz	5.5		5.5	
100 MHz	18.3		18.3	
250 MHz	30.4		30.4	
	<b>10 MHz</b>	<b>250 MHz</b>	<b>10 MHz</b>	<b>250 MHz</b>
Min. NEXT (dB)	70	52	70	52
Min. SRL (dB)	36	24	36	24

**6**

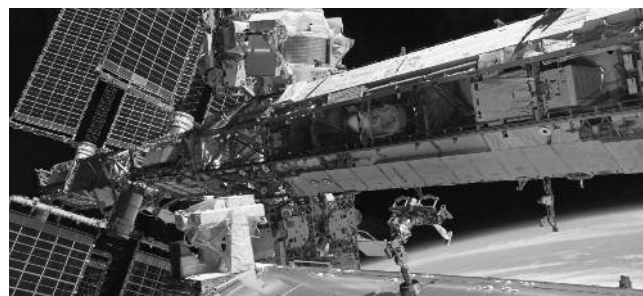
High Speed I/O's

**Custom Solutions**

**Spacecraft Applications**

**Product Facts**

- Quadrax contacts and QUADLITE cables meet ASTM E595 outgassing limits for spacecraft applications



**Custom Cable and Flex Assemblies**

**Product Facts**

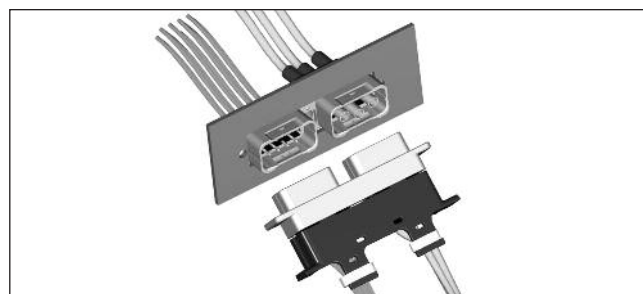
- Quadrax contacts and connectors can be provided as custom cable and flex assemblies for customer specific applications



**General Purpose Rectangular (GPR) Connector Assemblies (See Catalog 1654763)**

**Product Facts**

- Quadrax inserts are available for the rugged, modular General Purpose Rectangular connector, facilitating the mix of high speed signals with a variety of other power, fiber optic, signal, and coax insert configurations in a single connector system



This product is sold by TE under license from Radiall S.A.

**Single Splice Quadrax Part No. 1996500**

**Product Facts**

- Provides field repairable splicing mechanism
- Ideally suited for a Quadrax cable production break where space is limited



**Contact TE for additional information on any of these custom solutions.**

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**NANONICS Environmentally Sealed Circular Connectors**

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Circular Connectors

**Introduction**

**Product Facts**

- Five shell body size ranging from 14 mm diameter to 27 mm diameter
- Chromate or black chromate finish
- Panel-mount receptacles: IP68 rated with potted, solder cup or pcb termination
- Cable-attach plugs and receptacles: solder cup termination
- Push/pull self-locking mating and unmating
- Scoop proof, blindmating
- Full range of insert configurations
  - Power
  - Signal
  - Power and signal
- Up to 122 signal contacts
- Up to 20 A current rating
- Multiple keying options



**Technical Documents**

- Product Specification — 108-127005
- Qualification Test Report — 501-127002

**Performance Characteristics**

- Environmental**
- Temperature Range — -65°C to +125°C
- Salt Spray — 96 hr
- Temperature Life — 1000 hr at 125°C (wired, mated connectors)
- Hydrostatic Pressure — Panel-mount receptacle, IP68, 1 m submersion for 2 hr

**Electrical**

- Low-Level Contact Resistance — See Table 1
- Dielectric Withstanding Voltage — See Table 2
- Insulation Resistance — 5000 megohms min. 100 megohms min. at elevated temperature (125°C)

**Mechanical**

- Random Vibration — 15 grms between 10-2000 Hz
- Mechanical Shock — 50 g half-sine pulse of 3 ms duration
- Durability — 1000 mating cycles

**Materials**

- Shells — Chromate- or black chromate-plated brass
- Contacts — Gold-plated copper alloy
- Dielectric — Thermoplastic, PEEK

**Introduction**

TE Connectivity Circular HD Connectors offer the ease of push/pull, self-locking mating for I/O applications. The small, high-density connectors have the advantage of blind mating into small spaces that may normally require

clearance for hand tightening to mate. The connectors are widely used in military and civilian use, including radio equipment, medical equipment, test equipment, audio and video equipment, data acquisition and industrial control.

**Table 1: Contact and Wire Information**

Contact Dia. (mm)	Solder Cup Dia. (mm)	Wire Size (Max)		Contact Resistance (mΩ)	Separation Force (N), Contact Pair
		AWG	mm <sup>2</sup>		
0.5	0.4	28	0.06	21	0.15-0.6
0.7	0.6	24	0.15	21	0.2-0.6
0.9	0.8	22	0.38	5	0.5-1
1.3	1.2	18	0.62	3	0.8-2
1.6	1.8	16	2.0	2.5	0.5-2
2.0	2.0	14	2.0	2	1-3
2.3	2.1	12	3.0	1.5	2-3
3.0	3.1	10	5.0	1	4-7

**Table 2: Insert Dielectric Withstanding Voltage**

Insert Configuration	VAC @ Height	
	Sea Level	70,000 ft (21,336 m)
I	1000	250
II	875	225
III	725	175

**Descriptive Information: Sample of Descriptive Part Number**

	Shell Size	Shell Finish	Connector Type/ Gender	Insert Layout	Contact Layout	Keying Options
	3	B	p	053	1	1
<b>Shell Size Series</b>	<ul style="list-style-type: none"> <li>1</li> <li>2</li> <li>3</li> <li>4</li> <li>5</li> </ul>					
<b>Shell Finish</b>	<ul style="list-style-type: none"> <li><b>B</b> Black Chromate</li> <li><b>N</b> Natural Chromate</li> </ul>					
<b>Connector Type/Gender</b>	<ul style="list-style-type: none"> <li><b>P</b> Plug, Cable Attach</li> <li><b>R</b> Receptacle, Cable Attach</li> <li><b>A</b> Receptacle, Panel Mount, Wire Attach</li> <li><b>B</b> Receptacle, Panel Mount, Board-Mount</li> </ul>					
<b>Insert Layout</b>	See Individual Shell Size Series Pages for Insert Layout Code					
<b>Contact Layout</b>	<ul style="list-style-type: none"> <li><b>1</b> – Receptacle with Sockets</li> <li><b>2</b> – Plug with Pins</li> <li><b>3</b> – Receptacle with Pins</li> <li><b>4</b> – Plug with Sockets</li> </ul>					
<b>Keying Options</b>	<ul style="list-style-type: none"> <li><b>1</b> – Single Key</li> <li><b>2</b> – Double Key</li> <li><b>3</b> – Triple Key</li> </ul>					

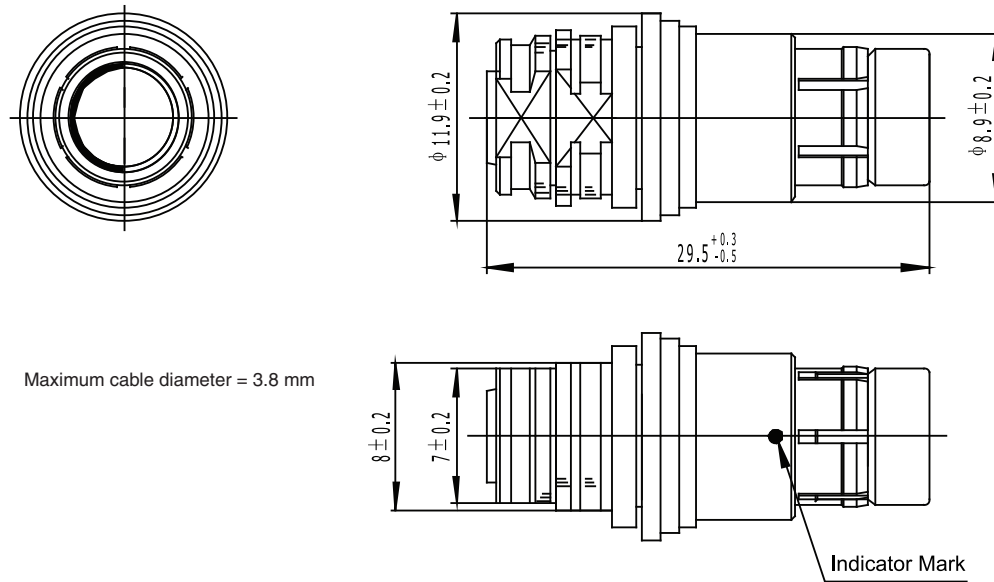


Circular Connectors

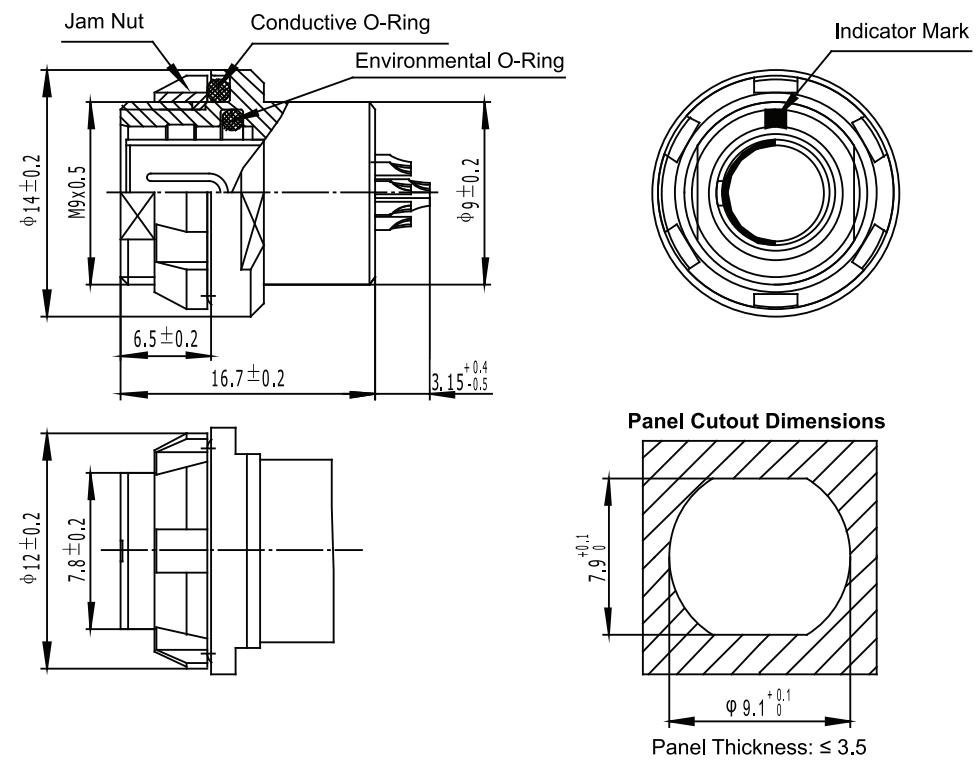


Shell Series 1

Free-Hanging Cable-Attach Plug

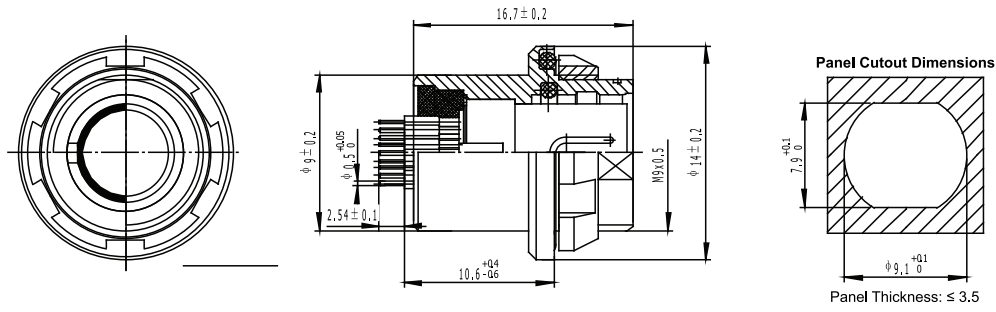


Panel-Mount Wire Termination Receptacle



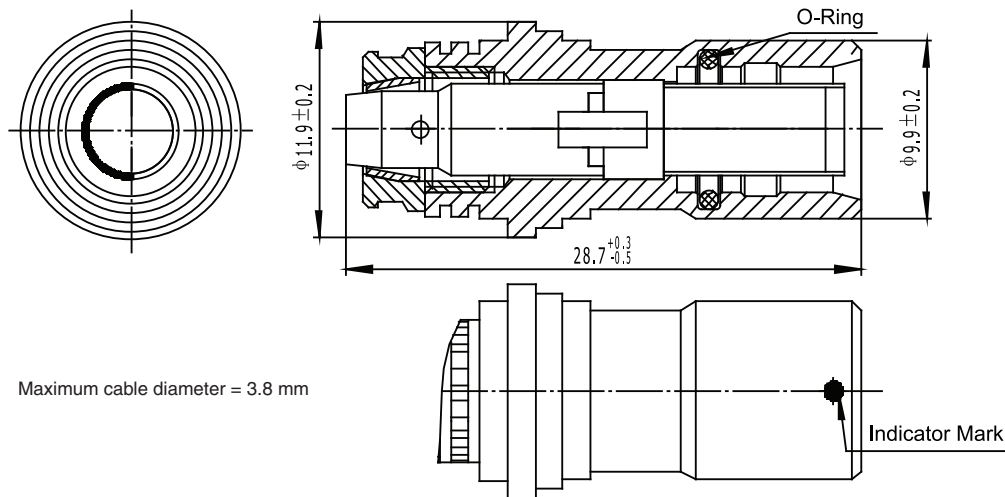
**Shell Series 1** (Continued)

**Panel-Mount, Board-Mount  
Receptacle**



**Note:** Available for 0.5, 0.7, and 0.9-mm-dia contacts

**Free-Hanging Cable-Attach  
Receptacle**



**7**  
Circular Connectors

**Shell Series 1 Contact Arrangements**

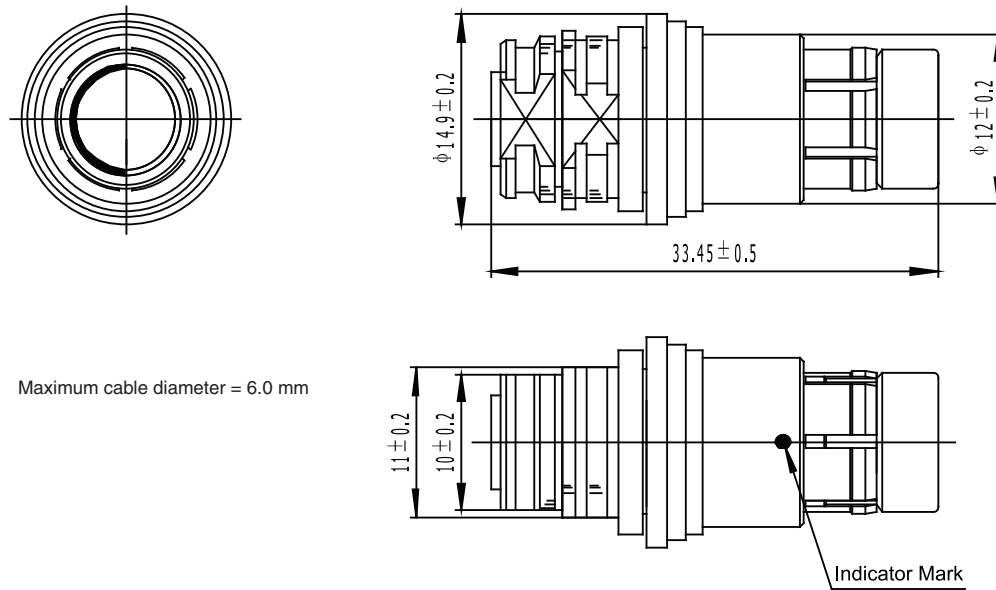
**Contact Arrangement**

Receptacle (A) Socket Contacts	Plug (B) Pin Contacts	Receptacle (A) Pin Contacts	Plug (B) Socket Contacts	Layout Code	No. of Contacts (Contact Dia.)	Current Rating (A)	DWV*
				051	2 (0.9 mm)	6.3	II
				052	3 (0.9 mm)	5.5	II
				053	4 (0.7 mm)	3.8	III
				054	5 (0.7 mm)	3.6	III
				056	7 (0.5 mm)	1.5	III
				059	9 (0.5 mm)	1.0	III

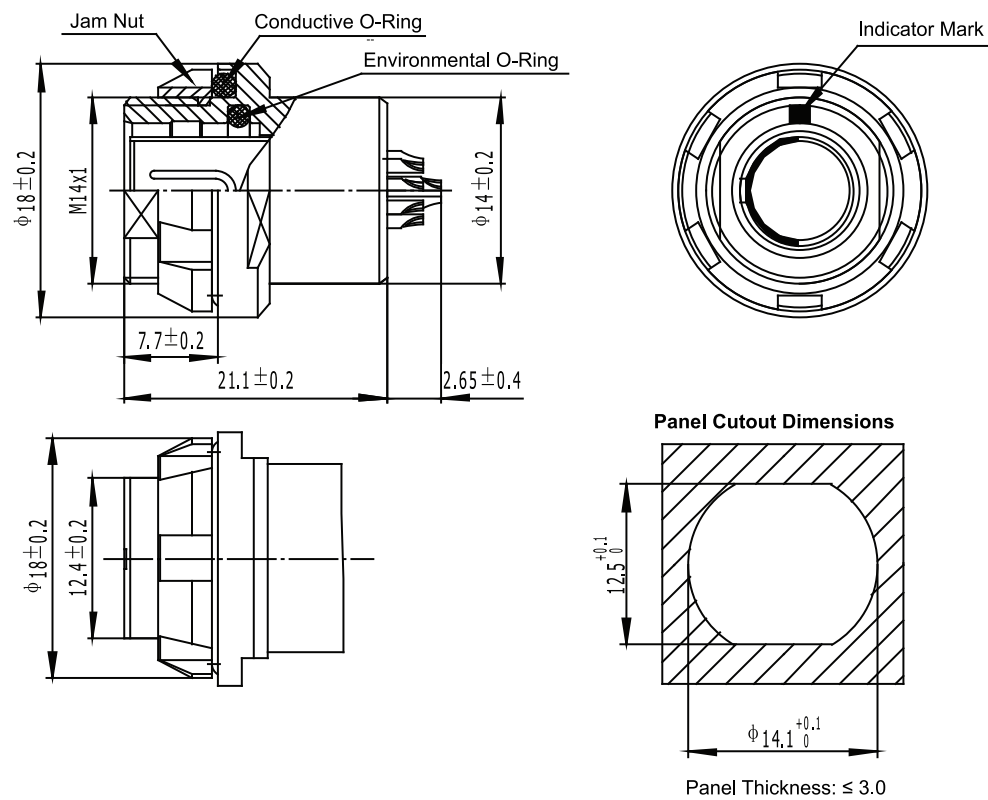
\*Dielectric Withstanding Voltage: See Table 2, page 2

**Shell Series 2**

**Free-Hanging Cable-Attach Plug**



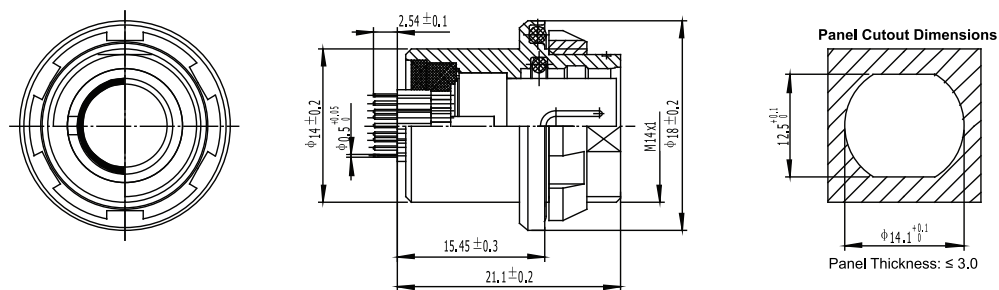
**Panel-Mount Wire Termination Receptacle**



**7**  
Circular Connectors

**Shell Series 2** (Continued)

**Panel-Mount, Board-Mount Receptacle**



Note: Available for 0.5, 0.7, and 0.9-mm-dia contacts

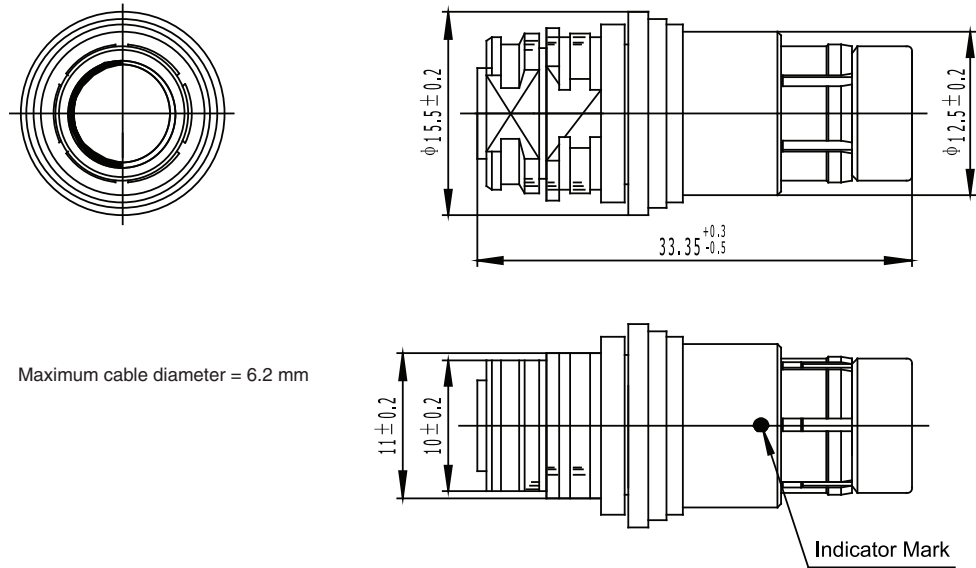
**Contact Arrangement**

Receptacle (A) Socket Contacts	Plug (B) Pin Contacts	Receptacle (A) Pin Contacts	Plug (B) Socket Contacts	Layout Code	No. of Contacts (Contact Dia.)	Current Rating (A)	DWV*
				051	2 (1.3 mm)	9	I
				052	3 (1.3 mm)	8.5	I
				053	4 (0.9 mm)	5.0	II
				054	5 (0.9 mm)	4.8	II
				056	6 (0.7 mm)	3.5	II
				057	7 (0.7 mm)	3.2	II
				058	8 (0.7 mm)	2.5	III
				062	12 (0.5 mm)	1.5	III

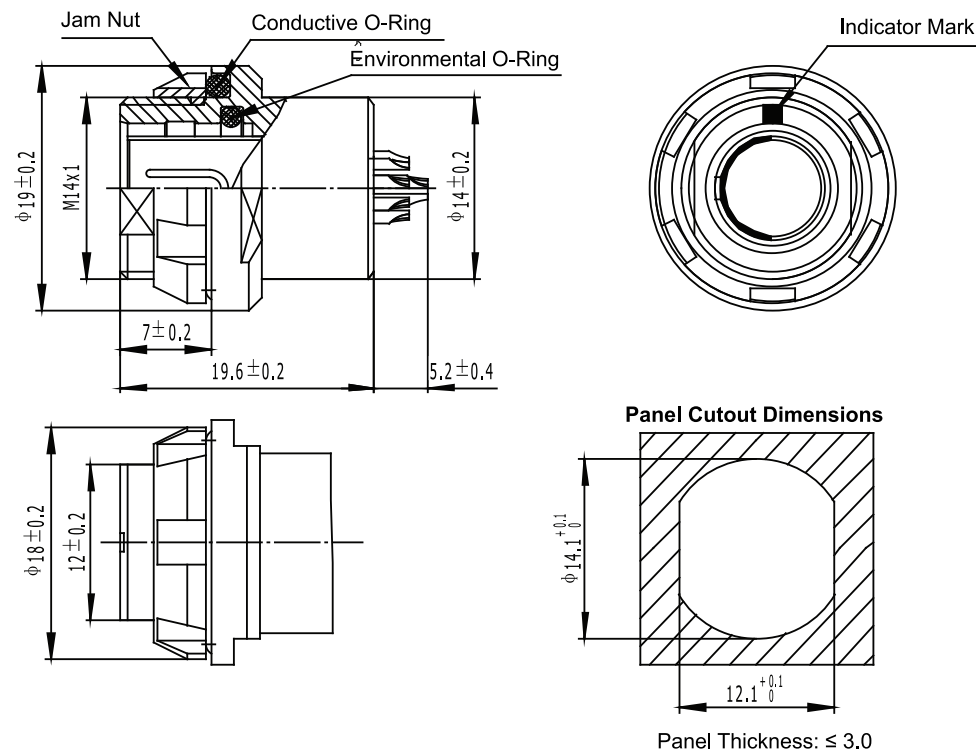
\*Dielectric Withstanding Voltage: See Table 2, page 2

**Shell Series 3**

**Free-Hanging Cable-Attach Plug**



**Panel-Mount Wire Termination Receptacle**

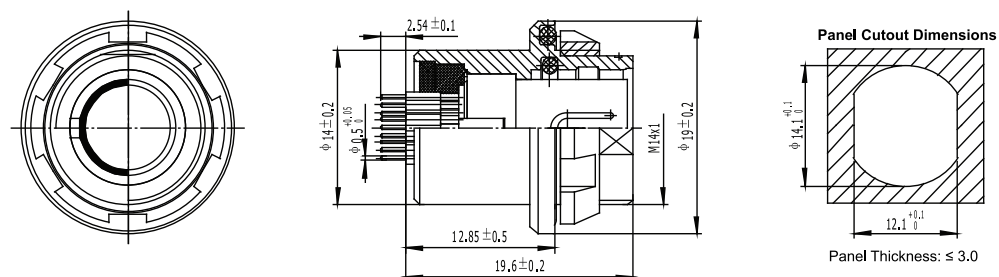


**7**  
Circular Connectors



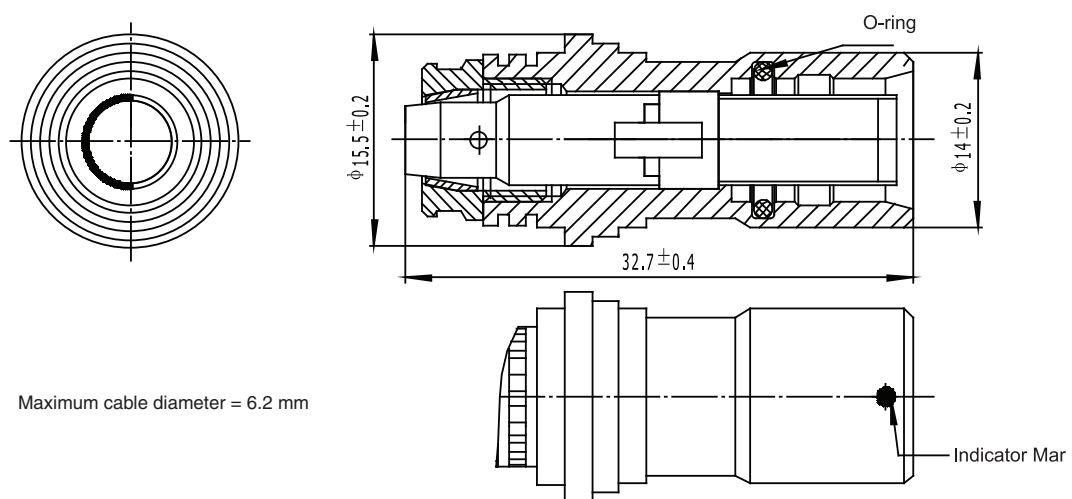
**Shell Series 3** (Continued)

**Panel-Mount, Board-Mount Receptacle**



Note: Available for 0.5, 0.7-mm-dia contacts

**Free-Hanging Cable-Attach Receptacle**



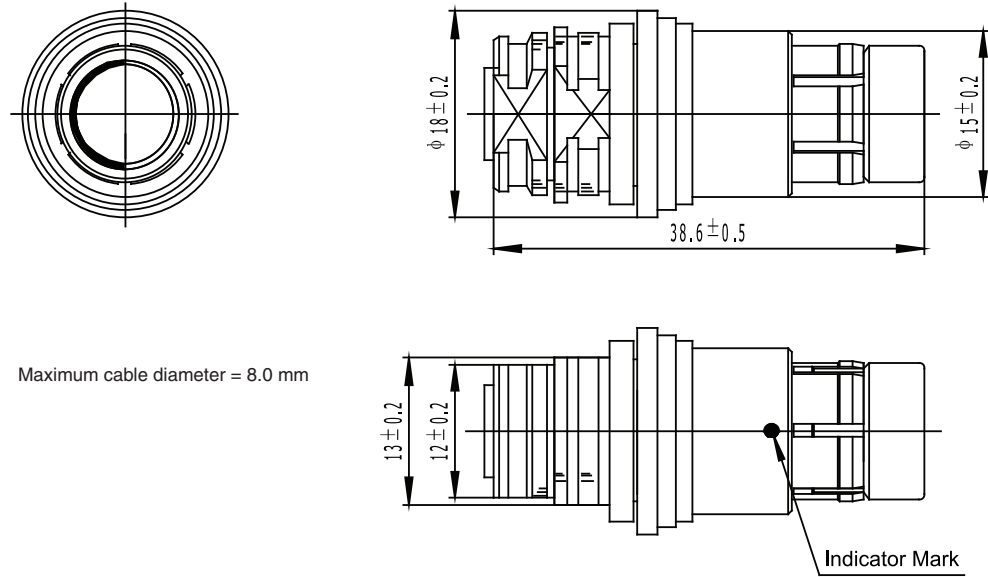
**Contact Arrangement**

Receptacle (A) Socket Contacts	Plug (B) Pin Contacts	Receptacle (A) Pin Contacts	Plug (B) Socket Contacts	Layout Code	No. of Contacts (Contact Dia.)	Current Rating (A)	DWV*
				010	10 (0.7 mm)	3.2	II
				012	12 (0.7 mm)	3.0	II
				019	19 (0.5 mm)	1.8	III

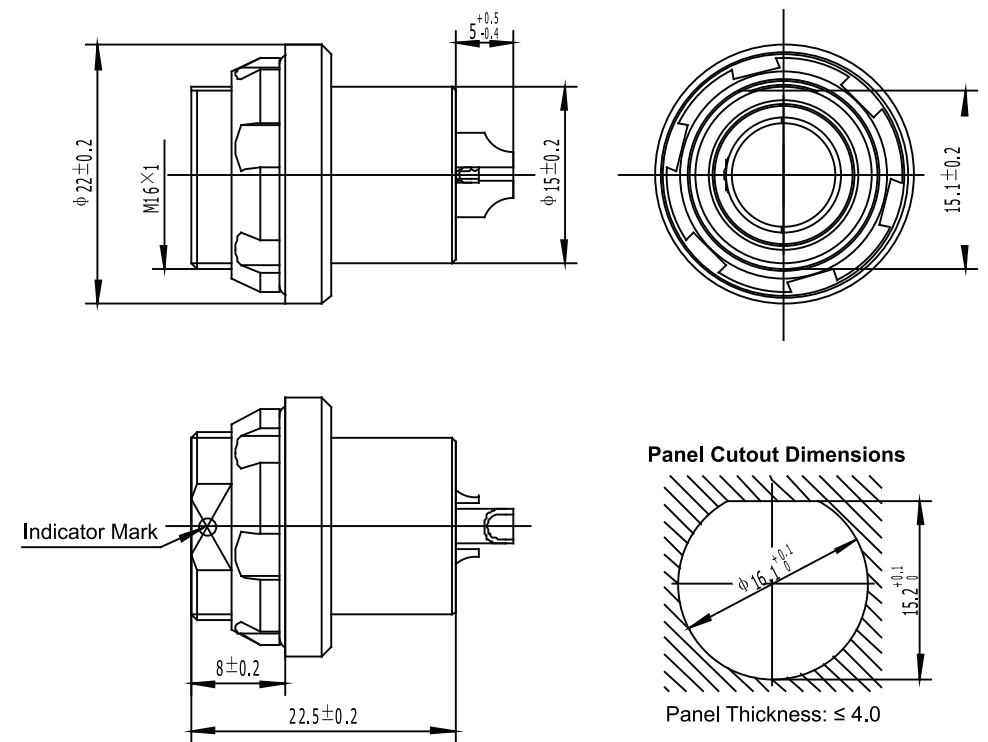
\*Dielectric Withstanding Voltage: See Table 2, page 2

**Shell Series 4**

**Free-Hanging Cable-Attach Plug**



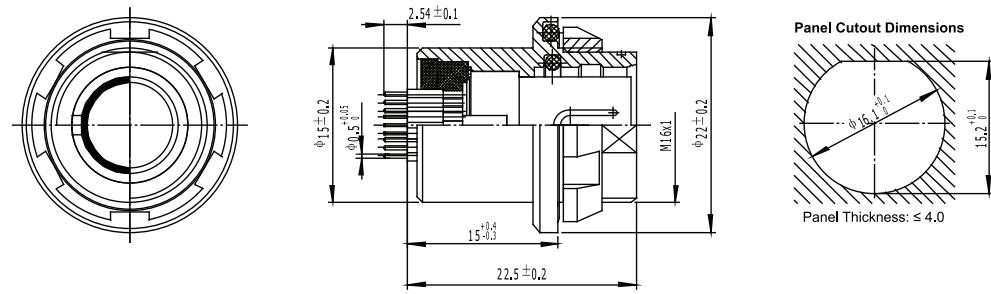
**Panel-Mount Wire Termination Receptacle**



**7**  
Circular Connectors

**Shell Series 4** (Continued)

**Panel-Mount, Board-Mount  
Receptacle**



**Note:** Available for 0.5, 0.7, and 0.9-mm-dia contacts



**Shell Series 4 Contact Arrangements**

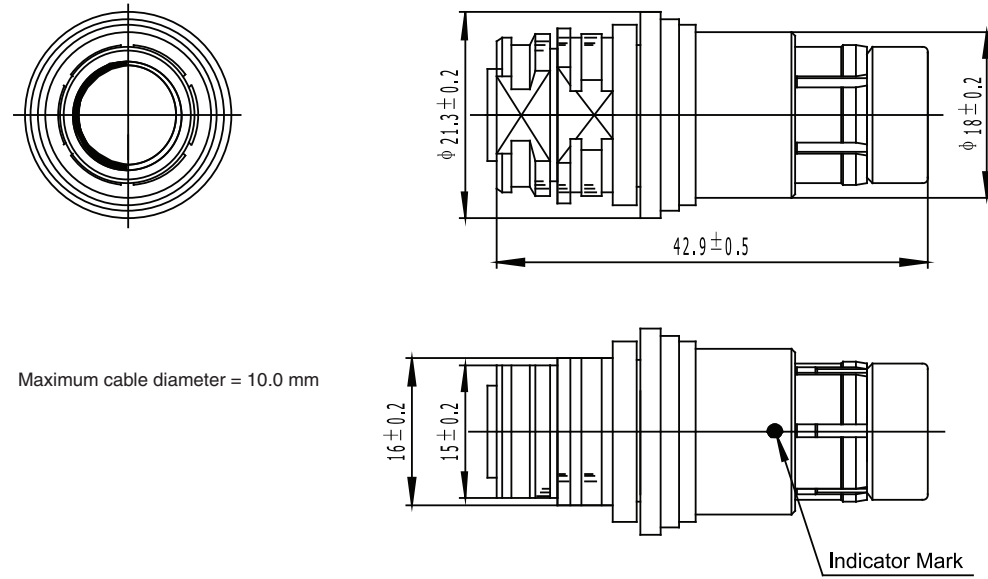
**Contact Arrangement**

Receptacle (A) Socket Contacts	Plug (B) Pin Contacts	Receptacle (A) Pin Contacts	Plug (B) Socket Contacts	Layout Code	No. of Contacts (Contact Dia.)	Current Rating (A)	DWV*
				051	2 (1.6 mm)	15	I
				040	3 (1.6 mm)	13	I
				037	4 (1.3 mm)	8	II
				087	2 (2.3 mm) 2 (0.9 mm)	20 2.0	II
				053	5 (1.3 mm)	7.5	II
				065	6 (0.9 mm)	4.5	II
				054	7 (0.9 mm)	4.5	II
				066	8 (0.9 mm)	4.5	II
				055	1 (1.3 mm) 8 (0.9 mm)	8.0 4.0	II
				056	11 (0.9 mm)	4.0	II
				086	16 (0.7 mm)	2.8	III
				092	19 (0.7 mm)	2.5	III

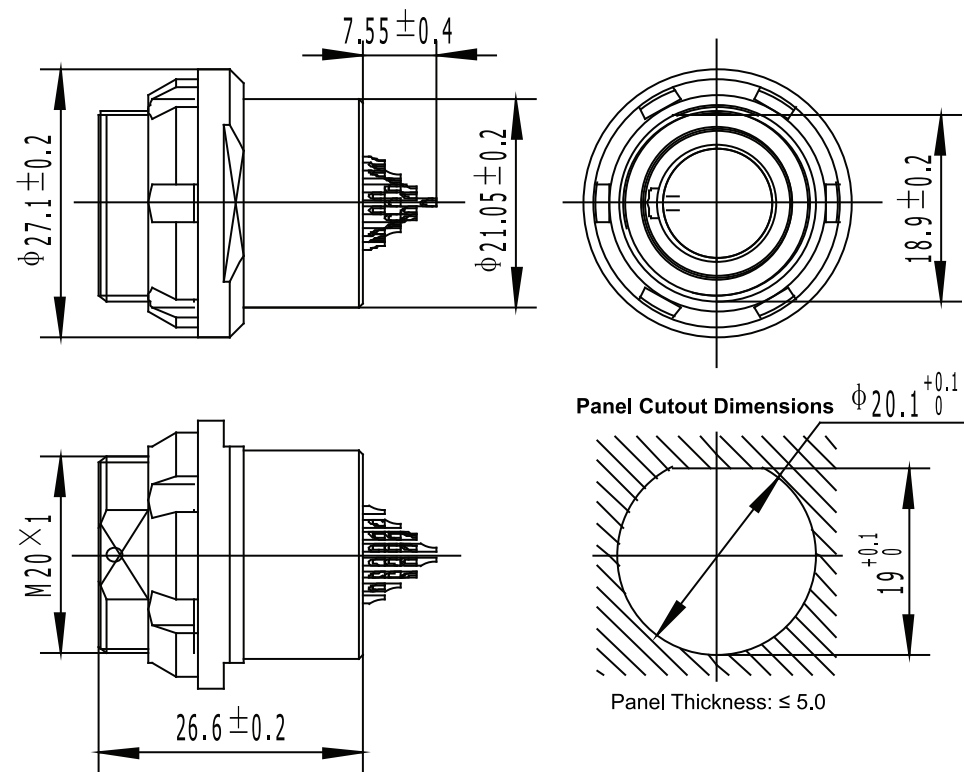
\*Dielectric Withstanding Voltage: See Table 2, page 2

**Shell Series 5**

**Free-Hanging Cable-Attach Plug**

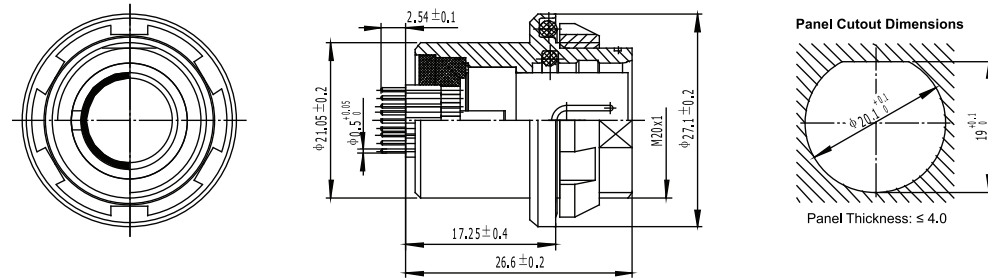


**Panel-Mount Wire Termination Receptacle**



**Shell Series 5** (Continued)

**Panel-Mount, Board-Mount Receptacle**



Note: Available for 0.5, 0.7, and 0.9-mm-dia contacts

**Contact Arrangement**

Receptacle (A) Socket Contacts	Plug (B) Pin Contacts	Receptacle (A) Pin Contacts	Plug (B) Socket Contacts	Layout Code	No. of Contacts (Contact Dia.)	Current Rating (A)	DWV*
				051	2 (2.0 mm)	18	I
				087	2 (3.0 mm)	20	I
				052	3 (2.0 mm)	16	I
				053	4 (2.0 mm)	14	II
				054	1 (2.0 mm) 6 (1.3 mm)	19 5.0	II
				067	8 (1.3 mm)	7.2	II
				101	1 (2.0 mm) 8 (1.3 mm)	19 4.0	II
				062	10 (1.3 mm)	6.3	II
				069	12 (1.3 mm)	5.5	II



Circular Connectors

\*Dielectric Withstanding Voltage: See Table 2, page 2



**Shell Series 5 Contact Arrangements** (Continued)

**Contact Arrangement**

Receptacle (A) Socket Contacts	Plug (B) Pin Contacts	Receptacle (A) Pin Contacts	Plug (B) Socket Contacts	Layout Code	No. of Contacts (Contact Dia.)	Current Rating (A)	DWV*
				104	3 (1.3 mm) 10 (0.7 mm)	10 1	II
				058	15 (0.9 mm)	2.7	II
				110	4 (1.6 mm) 12 (0.7 mm)	10 0.5	II
				038	18 (0.9 mm)	3.2	III
				102	27 (0.7 mm)	2.2	III
				093	24 (0.7 mm)	2.5	III
				122	40 (0.5 mm)	1	III
				137	10 (0.7 mm) 27 (0.5 mm)	2.2 1	III

\*Dielectric Withstanding Voltage: See Table 2, page 2



**Connector Accessories**

**Sealing Boots**



**Table 1: Contact and Wire Information**

Series, Free-Hanging Connector	Cable Diameter Range (in)	Part No.	
		Boot Description (Straight)	Boot Description (90°)
Series 1	> 0.15	202A111-3/42-0	222A111-3/42-0
Series 2	0.15-0.24	202A111-3/42-0	222A111-3/42-0
	0.21-0.24	202A121-3/42-0	222A121-3/42-0
Series 3	0.15-0.24	202A111-3/42-0	222A111-3/42-0
	0.21-0.24	202A121-3/42-0	222A121-3/42-0
Series 4	0.21-0.31	202A121-3/42-0	222A121-3/42-0
Series 5	0.26-0.39	202A132-3/42-0	222A132-3/42-0

**Note:** If the cable diameter falls below the minimum diameter heat shrink tubing may be used to shim the boot. All boots are pre-coated with Raychem /42 hot-melt adhesive.

**Dust Caps**



**Table 2: Insert Dielectric Withstanding Voltage**

Series	Part No.	
	Plug	Receptacle
Series 1	2157014-1	2157015-1
Series 2	2101580-1	2101579-1
Series 3	2157927-1	2157928-1
Series 4	2157929-1	2157930-1
Series 5	2101580-2	2101579-2

**7**

Circular Connectors

**Cross Reference: Descriptive Part Number to TE Part Number**

Shell Series	Type	Configuration	Descriptive Part No.	TE Part No.
1	Panel-Mount Receptacle	3 Pos Sockets, PCB Tails, Single Key	1-B-B-052-1-1	2157738-1
		7 Pos Sockets, PCB Tails, Double Key	1-B-B-056-1-2	2157951-1
		7 Pos Sockets, PCB Tails, Single Key	1-B-B-056-1-1	2157949-1
		9 Pos Sockets, PCB Tails, Double Key	1-B-B-059-1-2	2157952-1
		9 Pos Sockets, PCB Tails, Single Key	1-B-B-059-1-1	2157950-1
	Plug	3 Pos Pins, Solder Cup Tails, Single Key	1-B-P-052-2-1	2157739-1
		7 Pos Pins, Solder Cup Tails, Double Key	1-B-P-056-2-2	2157947-1
		7 Pos Pins, Solder Cup Tails, Single Key	1-B-P-056-2-1	2157945-1
		9 Pos Pins, Solder Cup Tails, Double Key	1-B-P-059-2-2	2157948-1
		9 Pos Pins, Solder Cup Tails, Single Key	1-B-P-059-2-1	2157946-1
2	Panel-Mount Receptacle	7 Pos Sockets, PCB Tails, Single Key	2-B-B-057-1-1	2101553-1
		7 Pos Sockets, PCB Tails, Double Key	2-B-B-057-1-2	2101553-2
		7 Pos Sockets, Solder Cup Tails, Single Key	2-B-A-057-1-1	2101676-1
		7 Pos Sockets, Solder Cup Tails, Double Key	2-B-A-057-1-2	2101676-2
		8 Pos Sockets, PCB Tails, Single Key	2-B-B-058-1-1	2157375-1
		8 Pos Sockets, PCB Tails, Double Key	2-B-B-058-1-2	2157375-2
		8 Pos Sockets, PCB Tails, Third Key	2-B-B-058-1-3	2157375-3
	Plug	12 Pos Sockets, PCB Tails, Double Key	2-B-B-062-1-2	2157538-2
		12 Pos Sockets, PCB Tails, Single Key	2-B-B-062-1-1	2157538-1
		7 Pos Pins, Solder Cup Tails, Single Key	2-B-P-057-2-1	2101550-1
		7 Pos Pins, Solder Cup Tails, Double Key	2-B-P-057-2-2	2101550-2
		8 Pos Pins, Solder Cup Tails, Single Key	2-B-P-058-2-1	2157376-1
		8 Pos Pins, Solder Cup Tails, Double Key	2-B-P-058-2-2	2157376-2
		8 Pos Pins, Solder Cup Tails, Third Key	2-B-P-058-2-3	2157376-3
4	Panel-Mount Receptacle	12 Pos Pins, Solder Cup Tails, Double Key	2-B-P-062-2-2	2157539-2
		12 Pos Pins, Solder Cup Tails, Single Key	2-B-P-062-2-1	2157539-1
		4 Pos Pins, Solder Cup Tails, Single Key	4-B-A-087-3-1	2157468-1
	Plug	4 Pos Pins, Solder Cup Tails, Double Key	4-B-A-087-3-2	2157468-2
		19 Pos Sockets, PCB Tails, Single Key	4-B-B-092-1-1	2157342-1
		19 Pos Sockets, Solder Cup Tails, Single Key	4-B-A-092-1-1	2157343-1
		4 Pos Sockets, Solder Cup Tails, Single Key	4-B-P-087-4-1	2157469-1
5	Panel-Mount Receptacle	4 Pos Sockets, Solder Cup Tails, Double Key	4-B-P-087-4-2	2157469-2
		19 Pos Pins, Solder Cup Tails, Single Key	4-B-P-092-2-1	2157344-1
		40 Pos Sockets, PCB Tails, Single Key	5-B-B-122-1-1	2101549-1
	Plug	40 Pos Sockets, Solder Cup Tails, Single Key	5-B-A-122-1-1	2101677-1
		40 Pos, Sockets, PCB Tails, Double Key	5-B-B-122-1-2	2101549-2
		40 Pos, Sockets, Solder Cup Tails, Double Key	5-B-A-122-1-2	2101677-2
		40 Pos Pins, Solder Cup Tails, Double Key	5-B-P-122-2-2	2101551-2
		40 Pos Pins, Solder Cup Tails, Single Key	5-B-P-122-2-1	2101551-1

**Metal-Shell Micro Circular Connectors**

**Compatible**

USB 2.0 signal compatible

**Flexible Configurations**

Three coupling styles:

- Push-pull
- Bayonet
- Threaded

Common internal design for all three coupling styles

Two types of well-established contacts:

- Pin and socket
- Spring probe

**Reliable**

Individual O-rings on all contacts provide improved sealing

IP67 sealing

Metal adapter for shield termination and overmolding:

**Versatile**

Signal only and hybrid signal/power versions

Solder cup wire termination; solder tails for receptacle board mounting

Jam nut style, rear panel mounting

**High-Performance Materials**

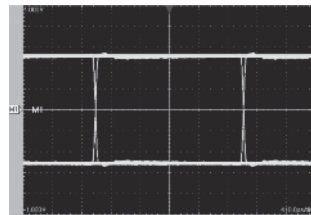
LCP insulator material

Brass shell with black tin-nickel plating, rated at more than 120 hours salt spray  
30 to 26 AWG wire range (24 AWG when using 7-strand and solid conductors)

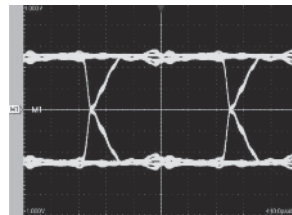


**Eye Pattern: Spring Probe Contact System**  
Mask per USB 2.0 Specification, 480 Mb/s

**Input**



**Output**



**Performance Characteristics**

**Electrical**

**Current-Carrying Capacity** — 2 amps max.

**Operating Voltage** —200 VAC max

**Termination Resistance** —30 milliohms max.

**Mechanical and Environmental**

**Durability** —2000 mating cycles

**Operating Temperature** —55°C to +150°C

**Sealing** — IP67

**Materials**

**Shell** —Brass, black tin-nickel plated

**Insert** —LCP

**Contacts** —Brass, plated gold over nickel

**O-Ring** —Fluorosilicone

**Technical Documents**

**Product Specification** —  
108-78938 (for 7 and 19 pin)  
108-78967 (for 14 and 30 pin)

**Qualification Test Report** —  
501-78493 (for 7 and 19 pin)  
501-78526 (for 14 and 30 pin)

**7**  
Circular Connectors

**Metal-Shell Micro Circular Connectors** (Continued)

**Signal Connectors: Pin and Socket Contacts**

Shell Size	No. of Pos.	Coupling	Keying	Part No.				
				CPlug Solder Cups	Receptacle Solder Cups	Receptacle, Solder Tail		
M11	7	Push-Pull	N	2174219-1	2174222-1	2174225-1		
			A	2174219-2	2174222-2	2174225-2		
			B	2174219-3	2174222-3	2174225-3		
		Bayonet	N	2174220-1	2174223-1	2174226-1		
			A	2174220-2	2174223-2	2174226-2		
			B	2174220-3	2174223-3	2174226-3		
		Threaded	N	2174221-1	2174224-1	2174227-1		
			A	2174221-2	2174224-2	2174227-2		
			B	2174221-3	2174224-3	2174227-3		
		M14	19	Push-Pull	N	2174210-1	2174213-1	2174216-1
					IA	2174210-2	2174213-2	2174216-2
					B	2174210-3	2174213-3	2174216-3
Bayonet	N			2174211-1	2174214-1	2174217-1		
	A			2174211-2	2174214-2	2174217-2		
	B			2174211-3	2174214-3	2174217-3		
Threaded	N			2174212-1	2174215-1	2174218-1		
	A			2174212-2	2174215-2	2174218-2		
	B			2174212-3	2174215-3	2174218-3		

**Signal Connectors: Spring Probe Contacts**

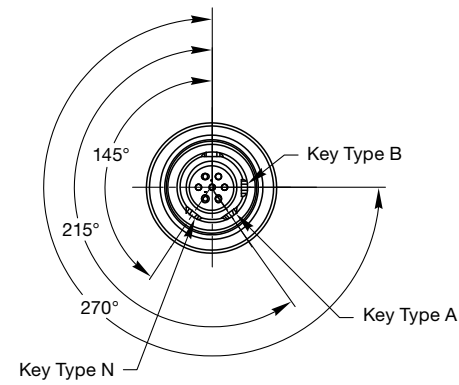
Shell Size	No. of Pos. (Signal)	Coupling	Keying	Part No.				
				CPlug Solder Cups	Receptacle Solder Cups	Receptacle, Solder Tail		
M11	7	Bayonet	N	2174201-1	2174205-1	2174208-1		
			A	2174201-2	2174205-2	2174208-2		
			B	2174201-3	2174205-3	2174208-3		
		Threaded	N	2174202-1	2174206-1	2174209-1		
			A	2174202-2	2174206-2	2174209-2		
			B	2174202-3	2174206-3	2174209-3		
		Push-Pull	N	2174191-1	2174194-1	2174197-1		
			A	2174191-2	2174194-2	2174197-2		
			B	2174191-3	2174194-3	2174197-3		
		M14	19	Bayonet	N	2174192-1	2174195-1	2174198-1
					IA	2174192-2	2174195-2	2174198-2
					B	2174210-3	2174213-3	2174216-3
Threaded	N			2174193-1	2174196-1	2174199-1		
	A			2174193-2	2174196-2	2174199-2		
	B			2174193-3	2174196-3	2174199-3		

**Hybrid Signal + Power Connectors: Pin and Socket Contacts**

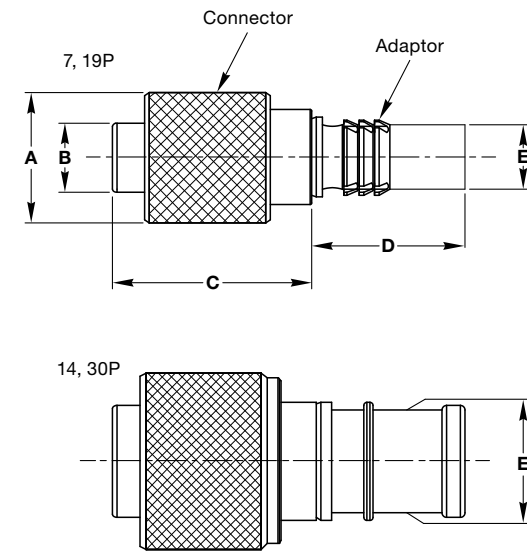
Shell Size	No. of Pos.	Coupling	Keying	Part No.		
				CPlug Solder Cups	Receptacle Solder Cups	Receptacle, Solder Tail
M15	14 (12 Signal, 2 Power)	Bayonet	N	2201481-1	—	2201482-1
M22	30 (28 Signal, 2 Power)	Threaded	N	2201712-1	—	2201713-1

**Metal-Shell Micro Circular Connectors** (Continued)

**Keying**

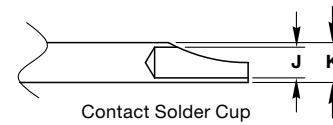


**Plug Connectors, Solder Cup**



Coupling	No. of Pos.	Power Contacts	A (Dia.)	B (Dia.)	C	D		E	Key Type
						Short Version	Long Version		
Push-Pull	7	—	14	6.96	21.45	8.42	15.48	6.89	N, A, B
	19	—	17	9.36	21.85	8.42	15.48	8.65	N, A, B
Bayonet	7	—	14	7.62	21.45	8.42	15.48	6.89	N, A, B
	19	—	17	10.16	21.75	8.42	15.48	8.65	N, A, B
	14	2	19	12.16	21.95	19.4	20.3	12	N
Threaded	7	—	14	7.62	21.45	8.42	15.48	6.89	N, A, B
	19	—	16	10.16	21.45	8.42	15.48	8.65	N, A, B
	30	2	25	18.4	13.3	16	24	19.1	N

**Contact Solder Cup Dimensions**



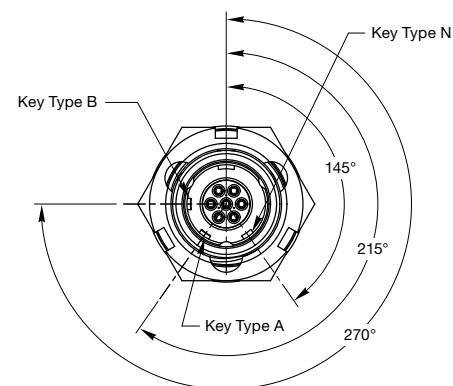
No. of Pos.	Power Contacts	Signal		Power	
		J	K	J	K
7, 19	—	0.65	0.85	—	—
14	2	0.9	1.15	1.2	1.5
30	2	0.76	1	1	1.3

7 Circular Connectors

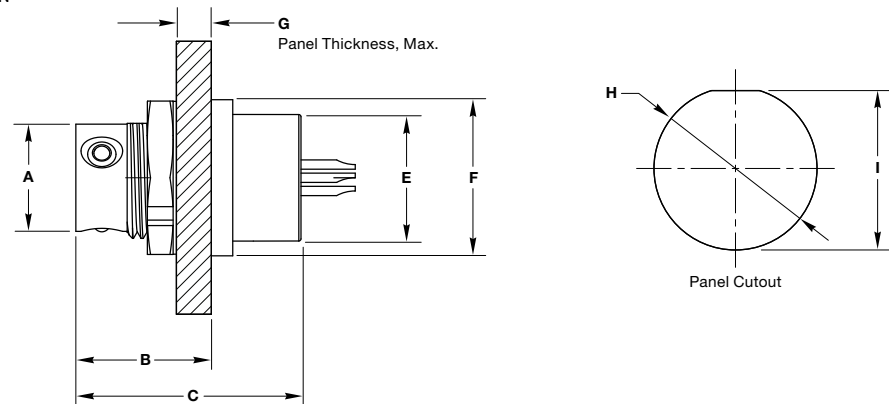


**Metal-Shell Micro Circular Connectors** (Continued)

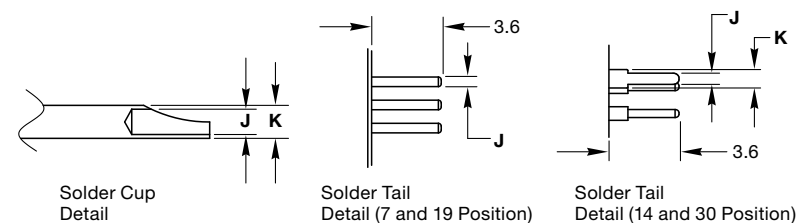
**Keying**



**Receptacle Connectors**



Coupling	No. of Pos.	A (Dia.)	B	C	E (Dia.)	F (Dia.)	G
Push-Pull	7	9.82	12.41	20.64	11.6	14.3	3.2
	19	12.36	12.41	20.73	13.4	18	3.2
Bayonet	7	9.85	15.41	20.6	11.6	14.3	2.8
	19	12.05	15.41	20.5	14.4	18	2.8
	14	14.05	15.41	20.7	14.7	—	3.0
Threaded	7	10.54	13.44	18.6	11.6	14.3	3.2
	19	13.34	13.44	18.4	14.4	18	3.2
	30	—	13.15	19.7	19.3	—	3.6



**Contacts**

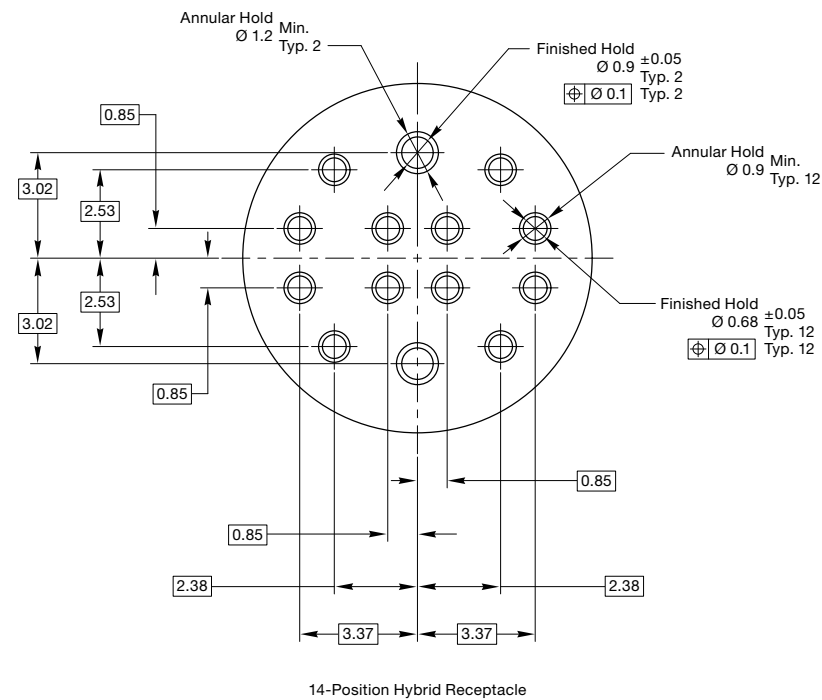
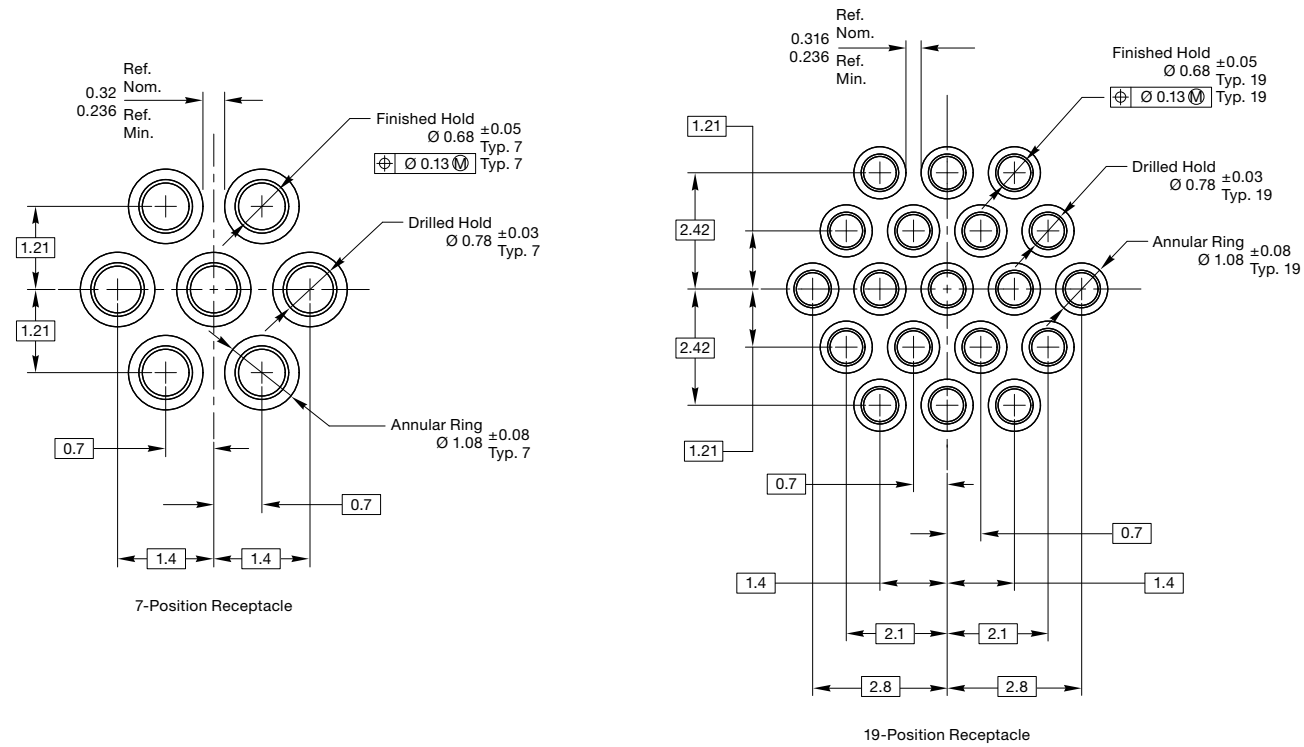
Contact Type	No. of Pos.	Power Contacts	Signal		Power	
			J	K	J	K
Solder Cup	7, 19	—	0.65	0.85	—	—
	7, 19	—	.5	—	—	—
Solder Tail	14	2	.5	.85	.7	1.15
	30	2	.5	.85	.7	1.16

**Panel Cutout Dimensions**

Shell Size	H (Dia.)	I
M11	11.2	10.95
M14	14.4	13.5
M15	16.2	15.3
M22	22.5	21.5

**Metal-Shell Micro Circular Connectors** (Continued)

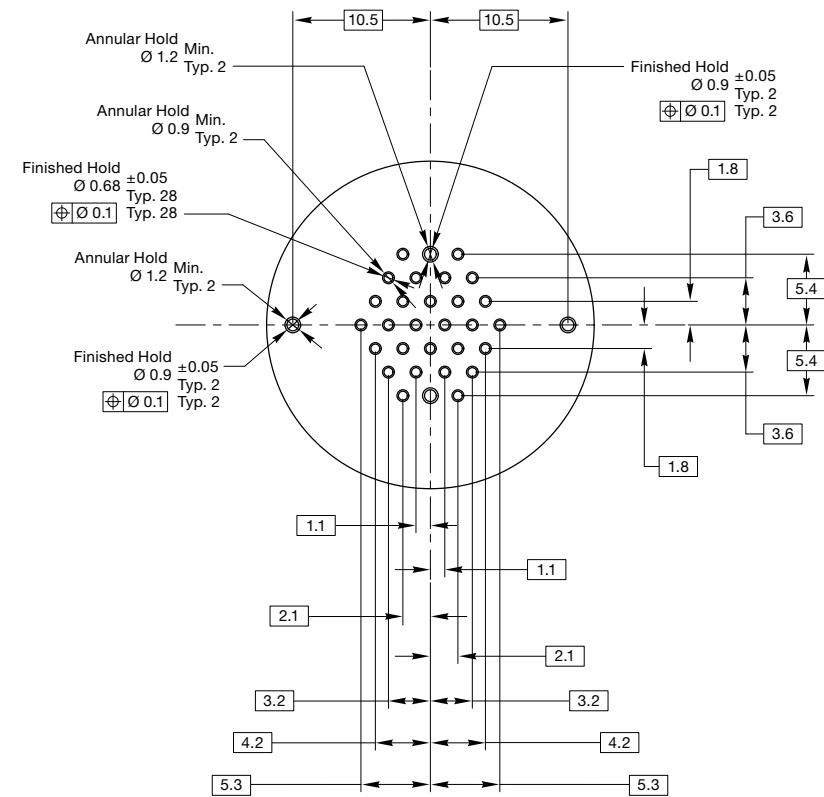
**PCB Layouts for Solder Tail Receptacles**



**7**  
Circular Connectors

**Metal-Shell Micro Circular Connectors** (Continued)

**PCB Layouts for Solder Tail Receptacles**



**Accessories**

**Dust Caps**

Shell Size	Coupling	Part No.	
		Plug	Receptacle
M11	Push-Pull	*	2201013-x
	Bayonet	2229015-x	2201014-x
	Threaded	*	2201015-x
M14	Push-Pull	*	2201011-x
	Bayonet	*	2201010-x
	Threaded	*	2201012-x
M15	Bayonet	*	*
M22	Threaded	*	*

-x suffix is length of wire rope: -1 = 70 mm • -2 = 100 mm • -3 = 120 mm • -4 = 150 mm.  
 \*Consult TE.

**NANONICS Environmentally Sealed Circular Connectors Introduction**



NANONICS environmentally sealed circular offering represents one of the industry's smallest and most reliable connector designs. These connectors are ideally suited for applications where high density and reliability, and reduced size and weight are serious design parameters. Along with these attributes, they also meet the immersion requirements of IP68, more specifically, one meter of water for two hours, in a mated condition only. Utilizing the same contact

system and materials as the DUALOBE rectangular series of connectors, the circular connectors are manufactured to the performance specifications of MIL-DTL-83513.

The plug connectors are offered in both a quick disconnect or threaded coupling configuration, and the receptacle connectors are offered in either a front panel mount or rear panel mount configuration. The quick disconnect plug will mate with both the front and

rear panel mount receptacles, while the threaded coupling plug will only mate with the rear panel mount receptacle. These connectors are available in pin counts of 7, 19, and 44. Optional backshells are also available for the plug connectors and the rear panel mount receptacle. Ideal for cable-to-cable, cable-to-panel, or cable-to-board applications, TE Connectivity can also accommodate harness assemblies and custom configurations.

**7**

Circular Connectors

**Specifications**

**Technical and Performance Data**

**Electrical**

**Contact Resistance** — .003 - .008 ohms

**Current Rating** — 1 amp max. per contact

**Dielectric Withstanding Voltage** — Volts RMS 60 Hz at room ambient conditions. At sea level 500V. At 70,000 ft. 150V.

**Insulation Resistance** — 5000 megohms min. (@ 500 VDC) at room ambient conditions.

**Magnetic Permeability** — 2 mu max.

**Temperature Range** — -55°C to +200°C

**Durability** — 250 mates/demates

**Jam Nut Torque** —

7 Pos. — 6 in-lbs. max.

19 Pos. — 8 in-lbs. max.

44 Pos. — 10 in-lbs. max.

**Coupling Nut Torque** —

7 Pos. — 6 in-lbs. max.

19 Pos. — 8 in-lbs. max.

44 Pos. — 10 in-lbs. max.

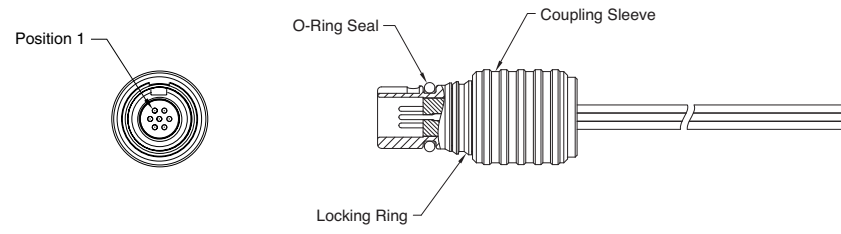
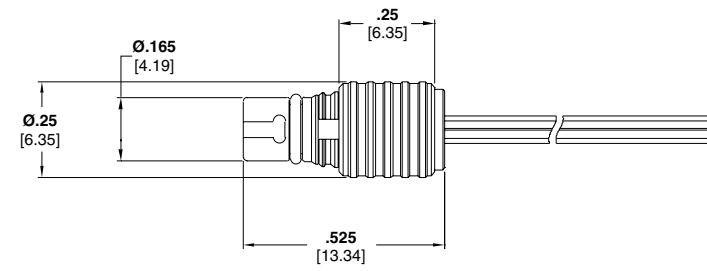
**NANONICS Quick Disconnect — Plug Assemblies**



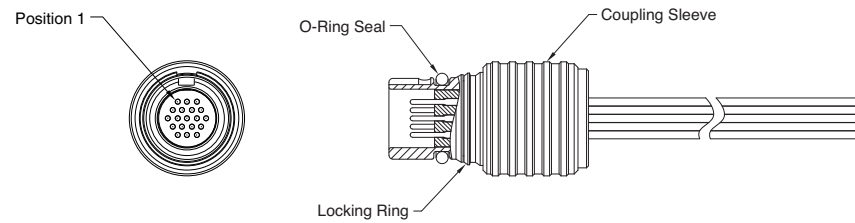
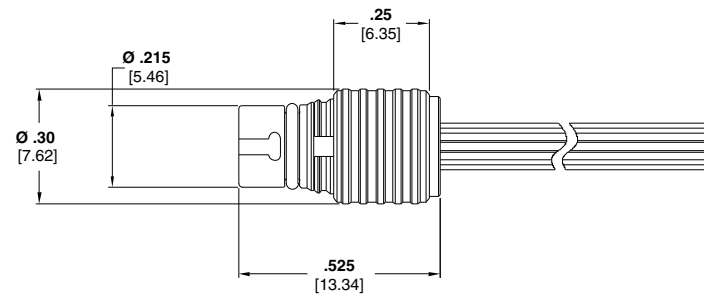
19 Position

**Product Facts**

- Metal Shell
- Positions: 7, 19 and 44
- Environmental O-ring seal
- Push-Pull quick-disconnect coupling
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

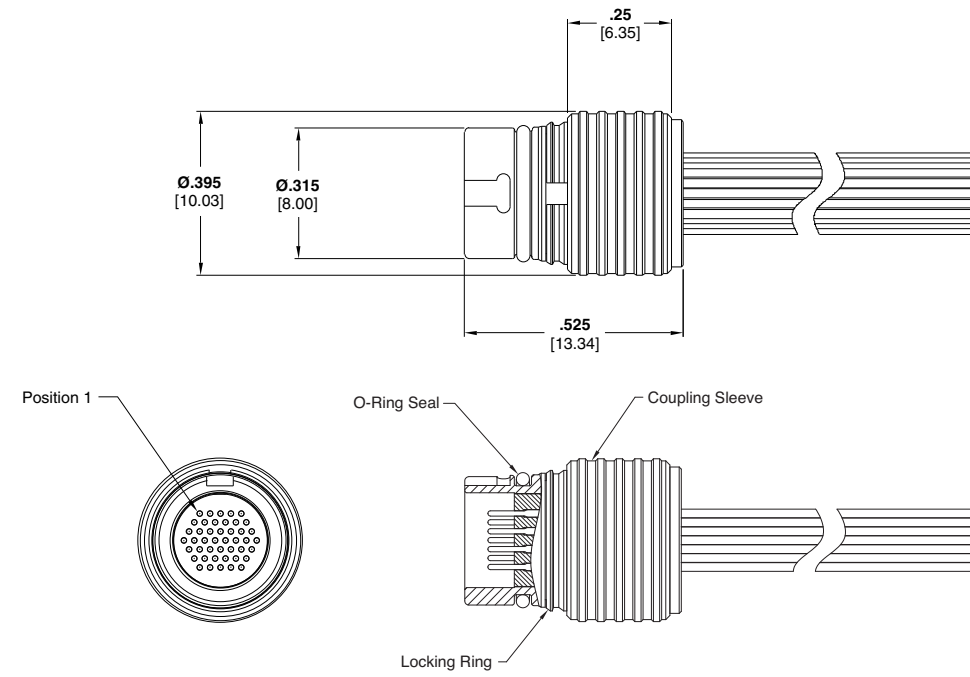


7 Position  
Drawing Number 1589055



19 Position  
Drawing Number 1589057

**NANONICS Quick Disconnect — Plug Assemblies** (Continued)



**44 Position**  
**Drawing Number 1589059**

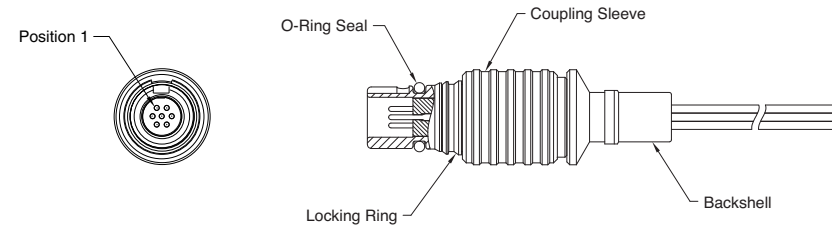
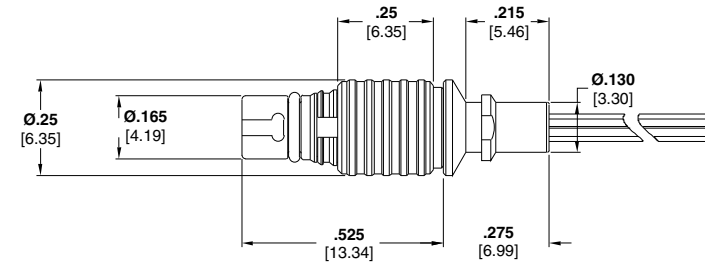




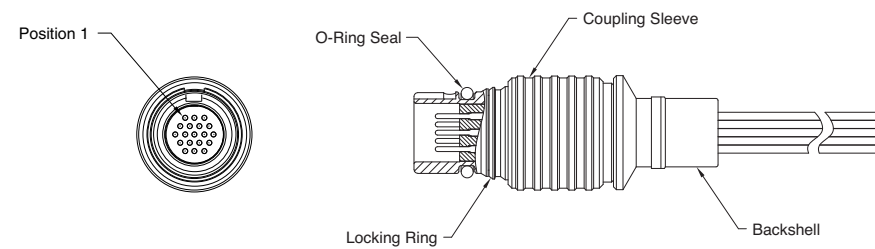
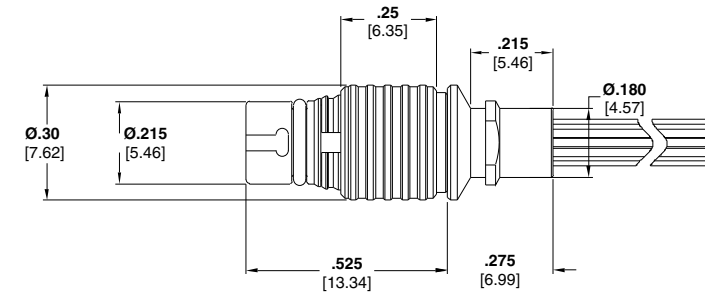
**NANONICS Quick Disconnect — Plug Assemblies with Backshells**

**Product Facts**

- Metal Shell
- Positions: 7, 19 and 44
- Environmental O-ring seal
- Factory wired to your specifications
- Backshell installed at factory
- Contact TE Connectivity for custom configurations

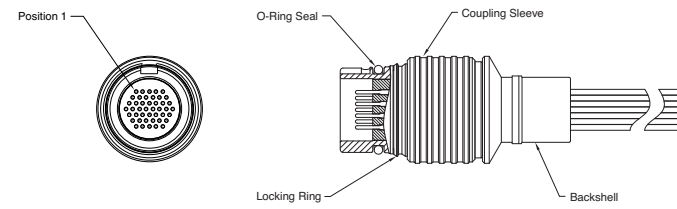
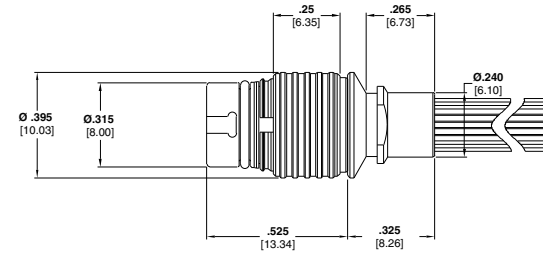


**7 Position**  
Drawing Number 1589691



**19 Position**  
Drawing Number 1589692

**NANONICS Quick Disconnect — Plug Assemblies with Backshells** (Continued)

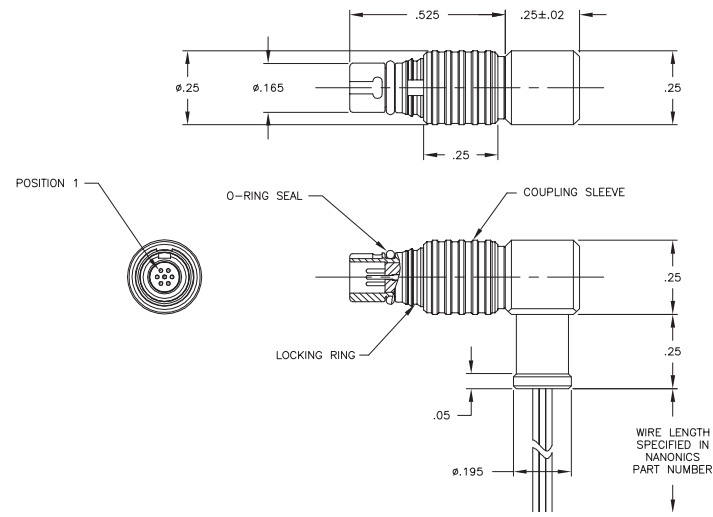


**44 Position**  
**Drawing Number 1589693**

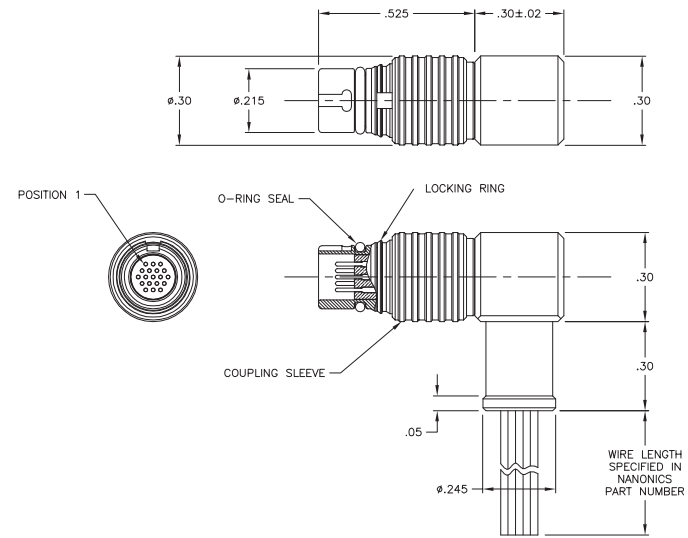
**7**

Circular Connectors

**NANONICS Quick Disconnect — Plug Assemblies with Backshells**

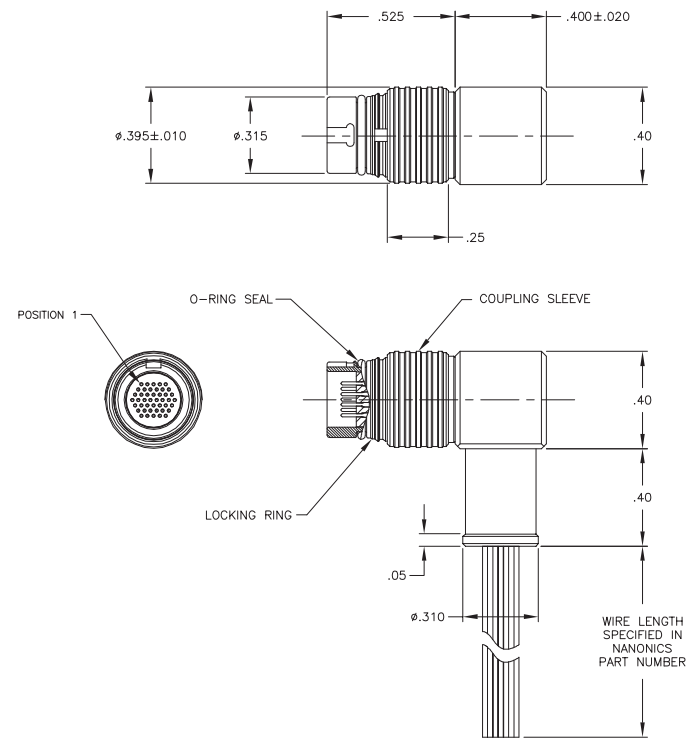


**7 Position**  
**Drawing Number 1925026**



**19 Position**  
**Drawing Number 1925027**

**NANONICS Quick Disconnect — Plug Assemblies with Backshells (Continued)**



**44 Position**  
**Drawing Number 1925028**

**7**

Circular Connectors

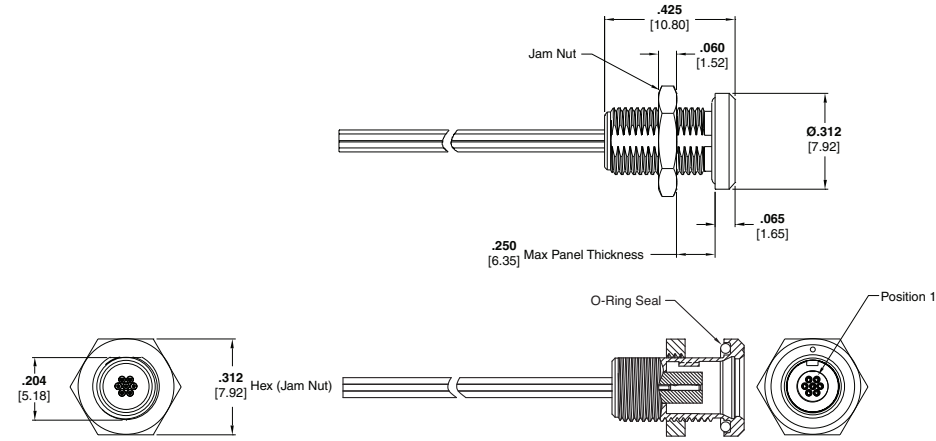
**NANONICS Quick Disconnect — Receptacle Assemblies, Flush Mount**



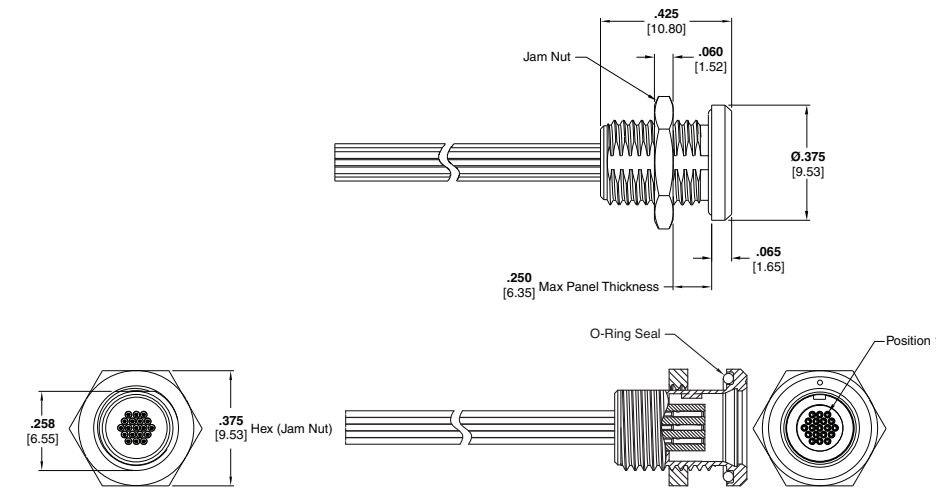
19 Position

**Product Facts**

- Metal Shell
- Positions: 7, 19 and 44
- Bulkhead O-ring seal
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

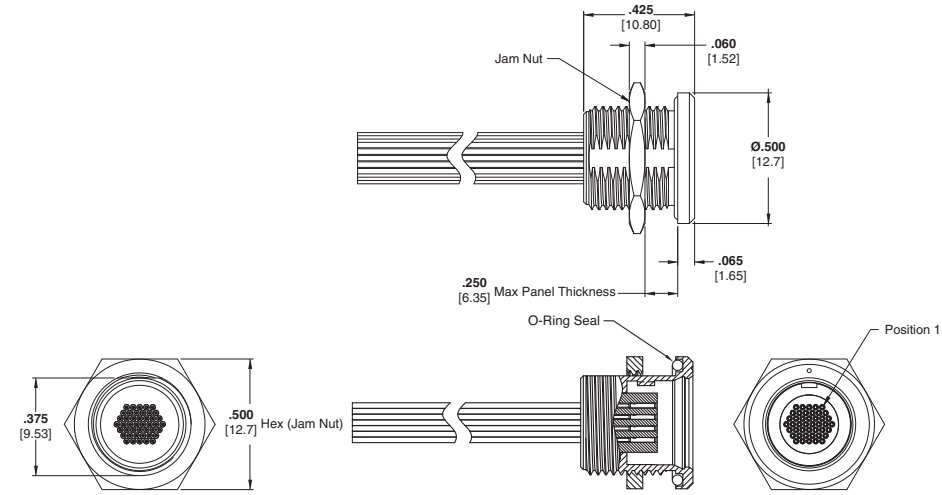


7 Position  
Drawing Number 1589056



19 Position  
Drawing Number 1589058

**NANONICS Quick Disconnect — Receptacle Assemblies, Flush Mount** (Continued)



**44 Position**  
**Drawing Number 1589690**

**7**

Circular Connectors



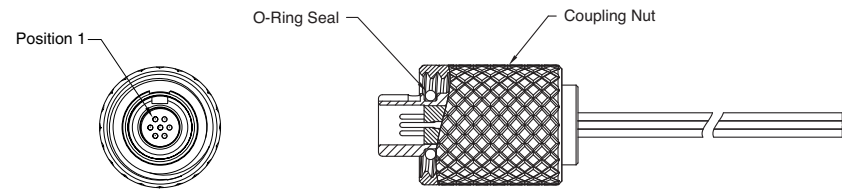
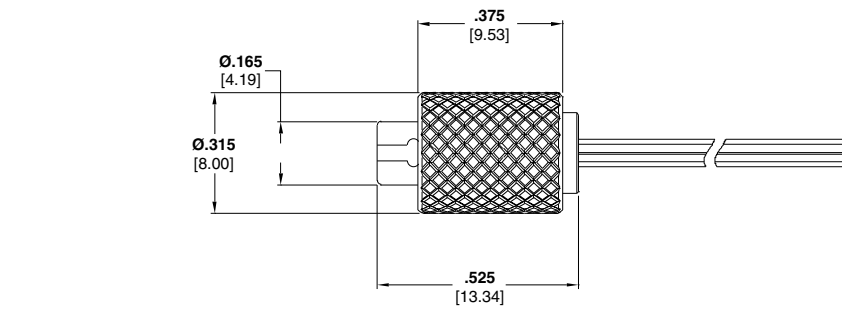
**NANONICS Threaded Coupling — Plug Assemblies**



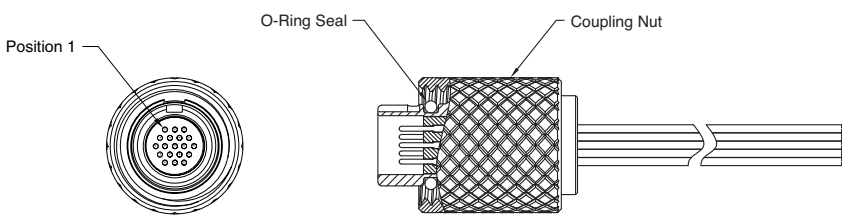
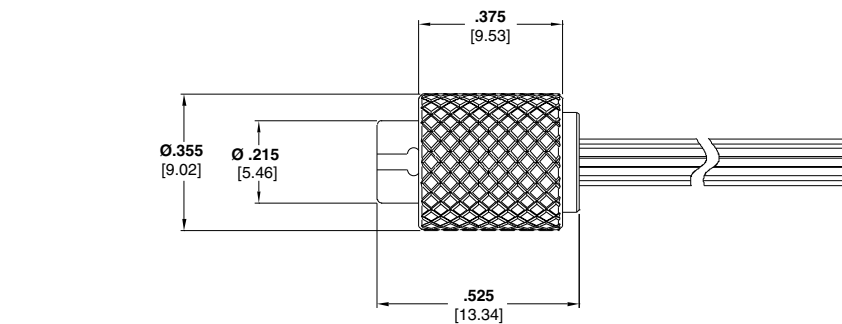
19 Position

**Product Facts**

- Metal Shell
- Positions: 7, 19 and 44
- Environmental O-ring seal
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

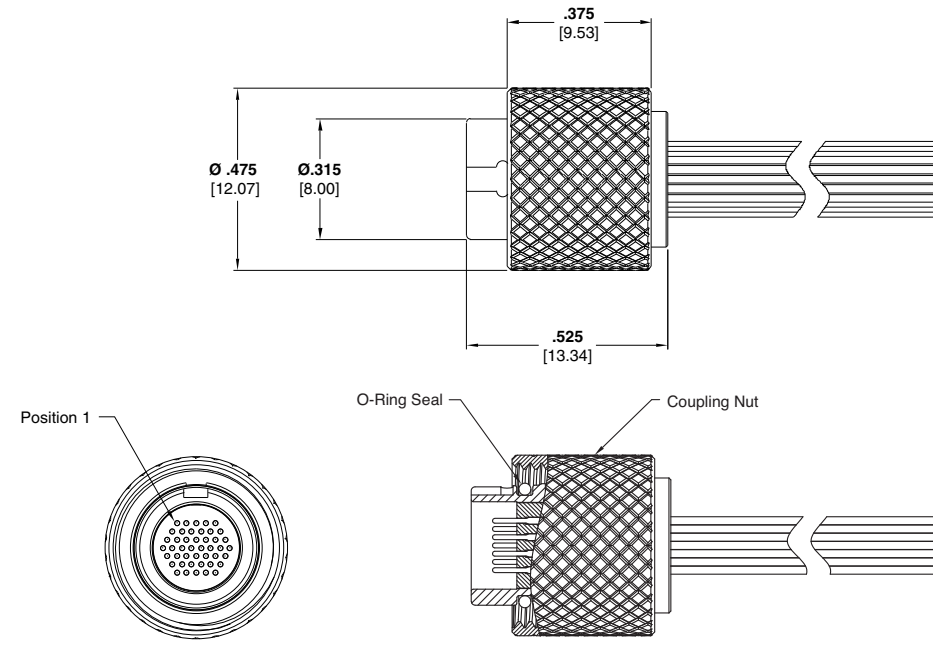


7 Position  
Drawing Number 1589063



19 Position  
Drawing Number 1589064

**NANONICS Threaded Coupling — Plug Assemblies** (Continued)



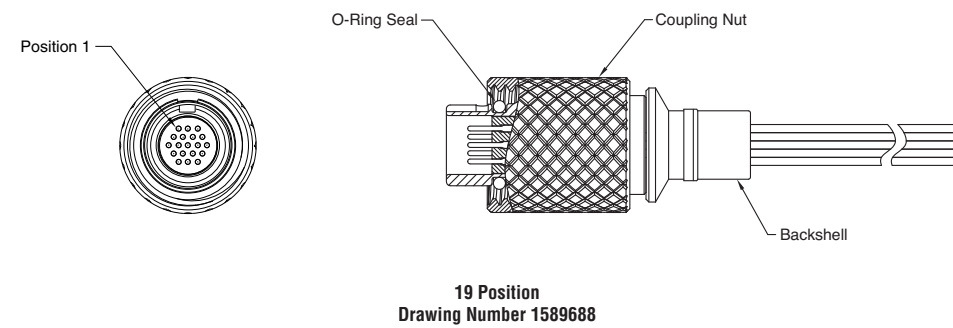
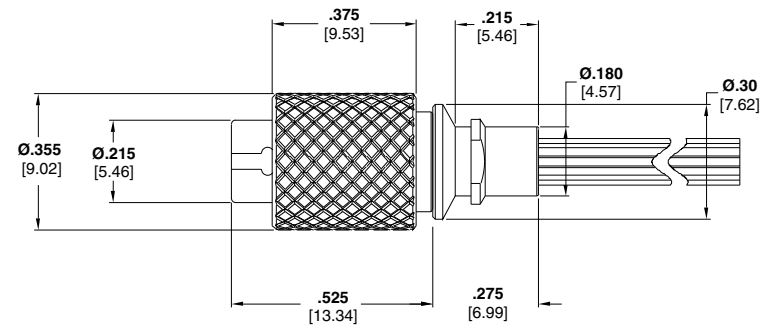
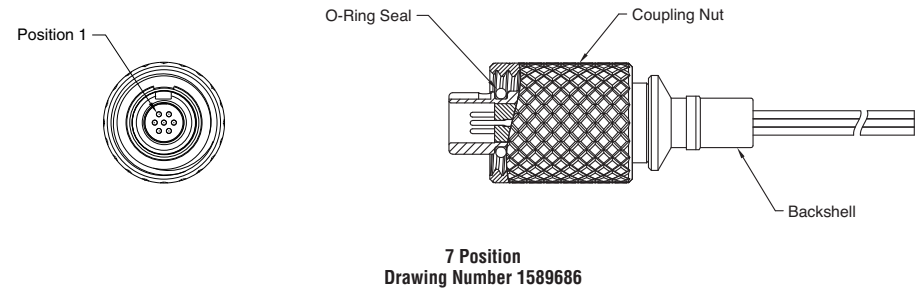
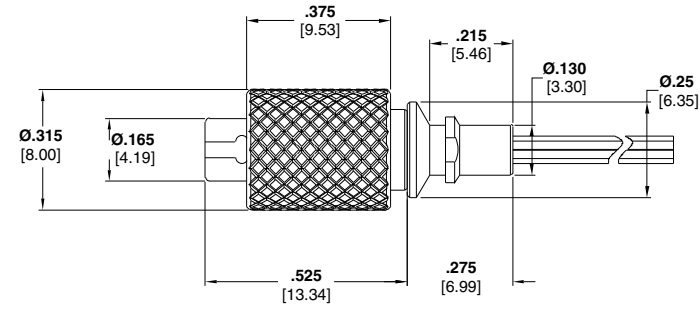
**44 Position**  
**Drawing Number 1589065**



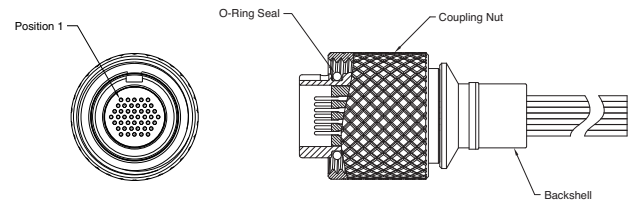
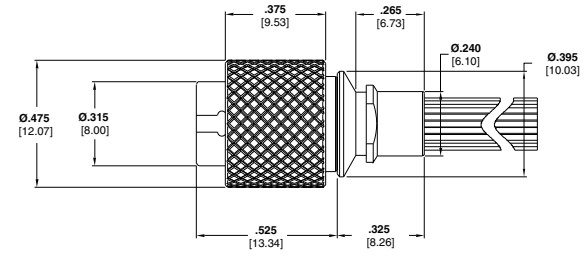
**NANONICS Threaded Coupling — Plug Assemblies with Backshells**

**Product Facts**

- Metal Shell
- Positions: 7, 19 and 44
- Environmental O-ring seal
- Factory wired to your specifications
- Backshell installed at factory
- Contact TE Connectivity for custom configurations



**NANONICS Threaded Coupling — Plug Assemblies with Backshells** (Continued)

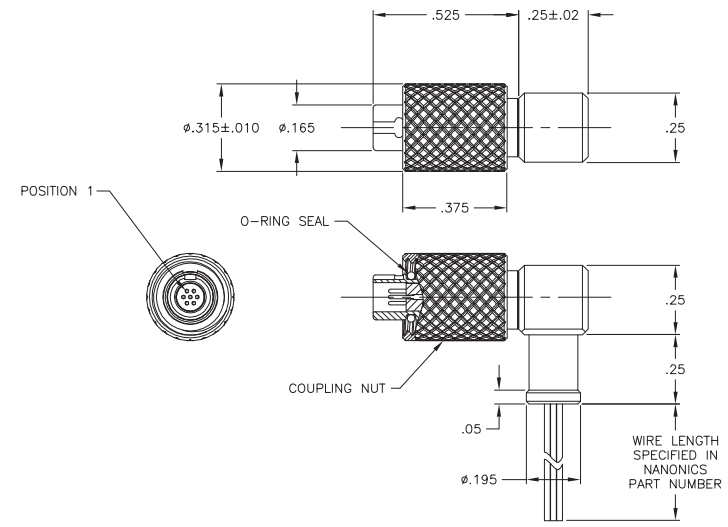


**44 Position**  
**Drawing Number 1589694**

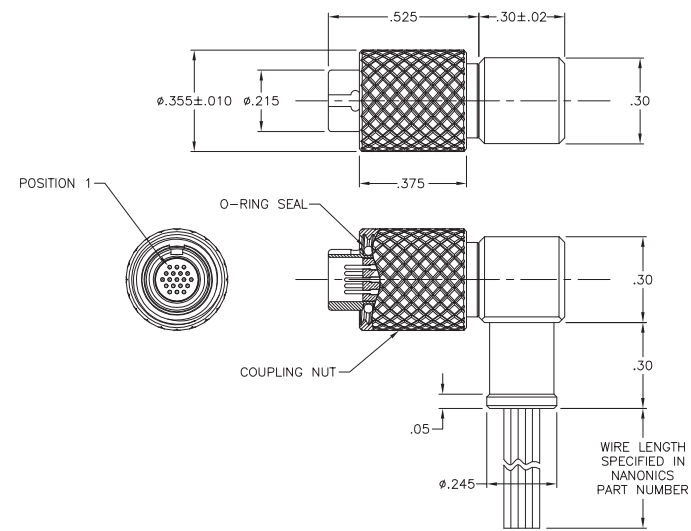
**7**

Circular Connectors

**NANONICS Threaded Coupling — Plug Assemblies with Backshells** (Continued)

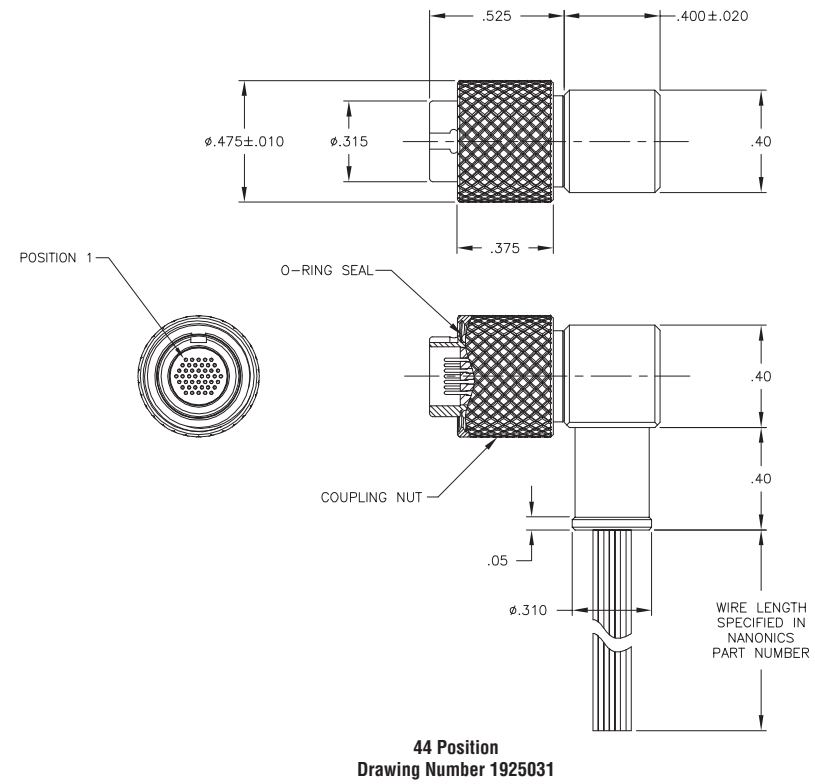


**7 Position**  
**Drawing Number 1925029**



**19 Position**  
**Drawing Number 1925030**

**NANONICS Threaded Coupling — Plug Assemblies with Backshells** (Continued)



**7**

Circular Connectors

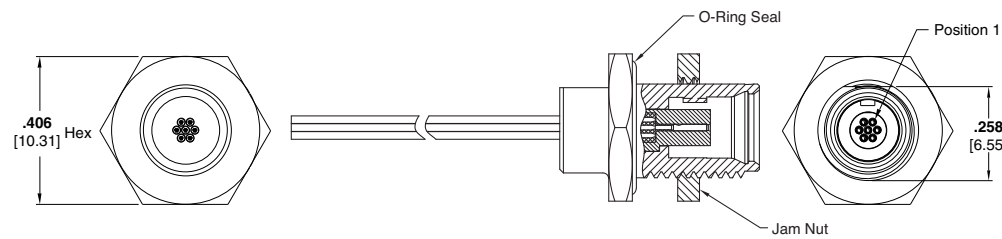
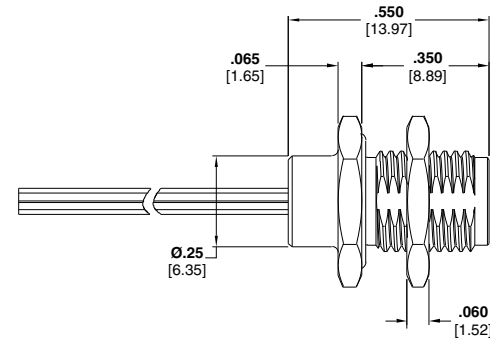
**NANONICS Threaded Coupling/Quick Disconnect — Receptacle Assemblies, Panel Mount**



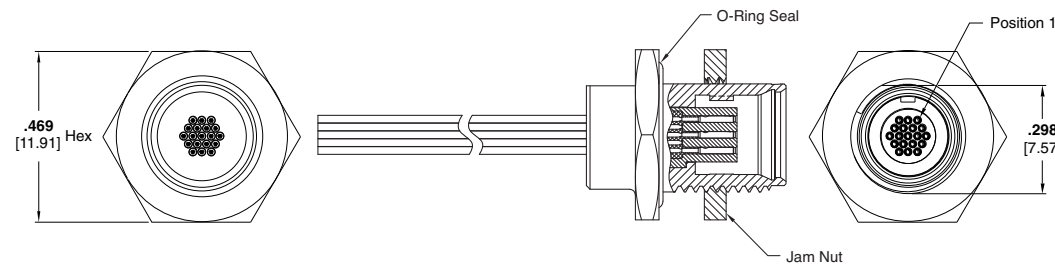
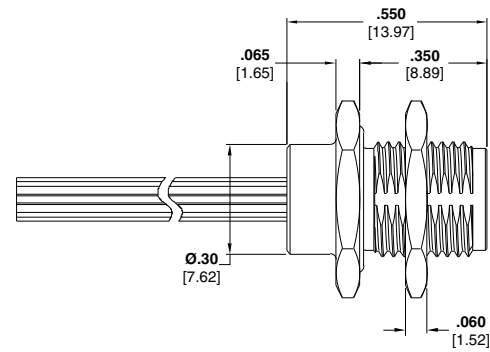
19 Position

**Product Facts**

- Metal Shell
- Positions: 7, 19 and 44
- Bulkhead O-ring seal
- Factory wired to your specifications
- Panel Mount receptacle mates with the Quick Disconnect Plug and the Threaded Coupling Plug
- Contact TE Connectivity for custom configurations



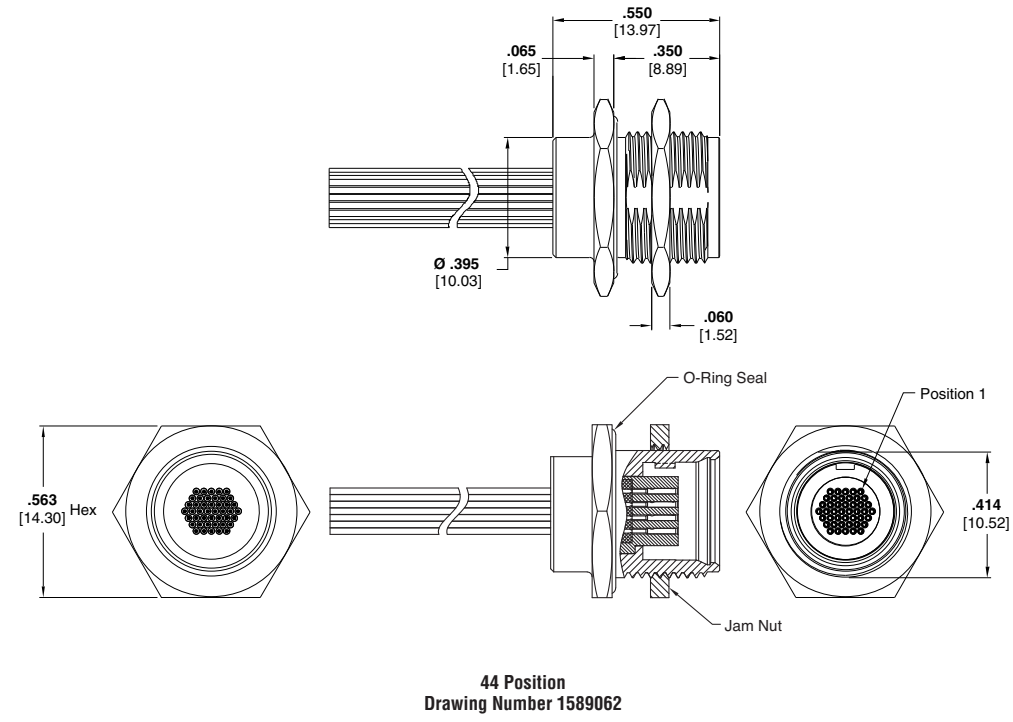
7 Position  
Drawing Number 1589060



19 Position  
Drawing Number 1589061



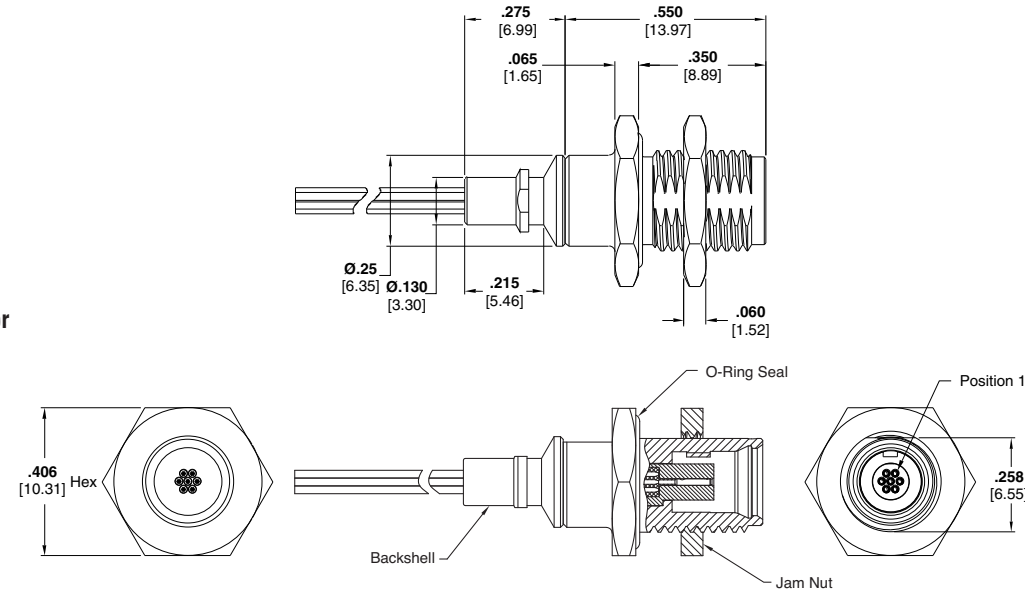
**NANONICS Threaded Coupling/Quick Disconnect — Receptacle Assemblies, Panel Mount**  
(Continued)



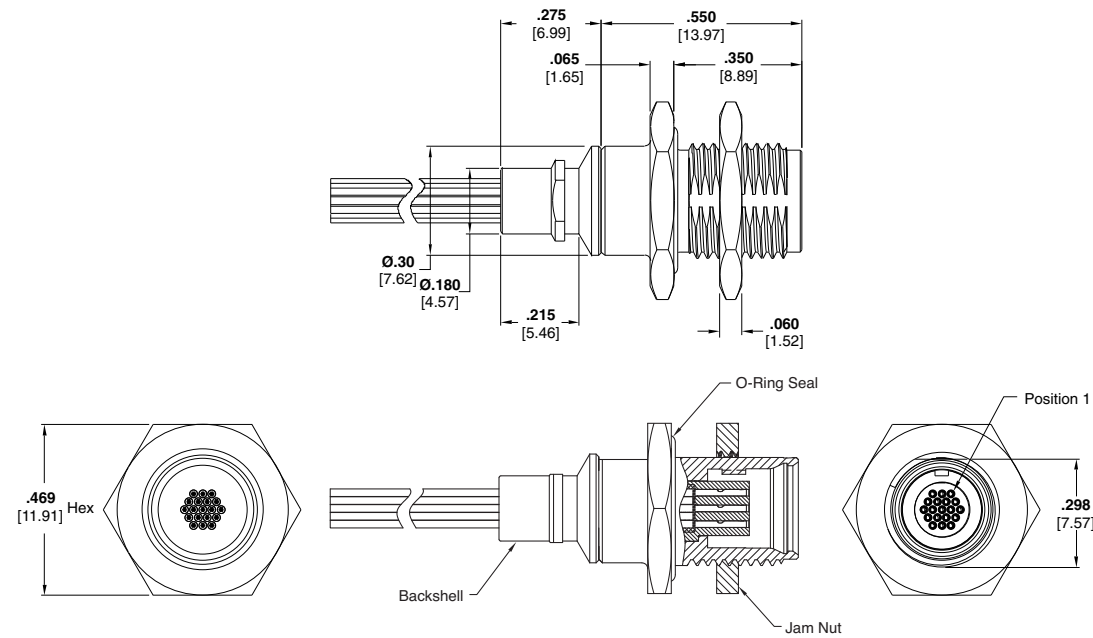
**NANONICS Threaded Coupling/Quick Disconnect —  
Panel Mount Receptacle Assemblies w/Backshells**

**Product Facts**

- Metal Shell
- Positions: 7, 19 and 44
- Bulkhead O-ring seal
- Factory wired to your specifications
- Panel Mount receptacle mates with the Quick Disconnect Plug and the Threaded Coupling Plug
- Contact TE Connectivity for custom configurations

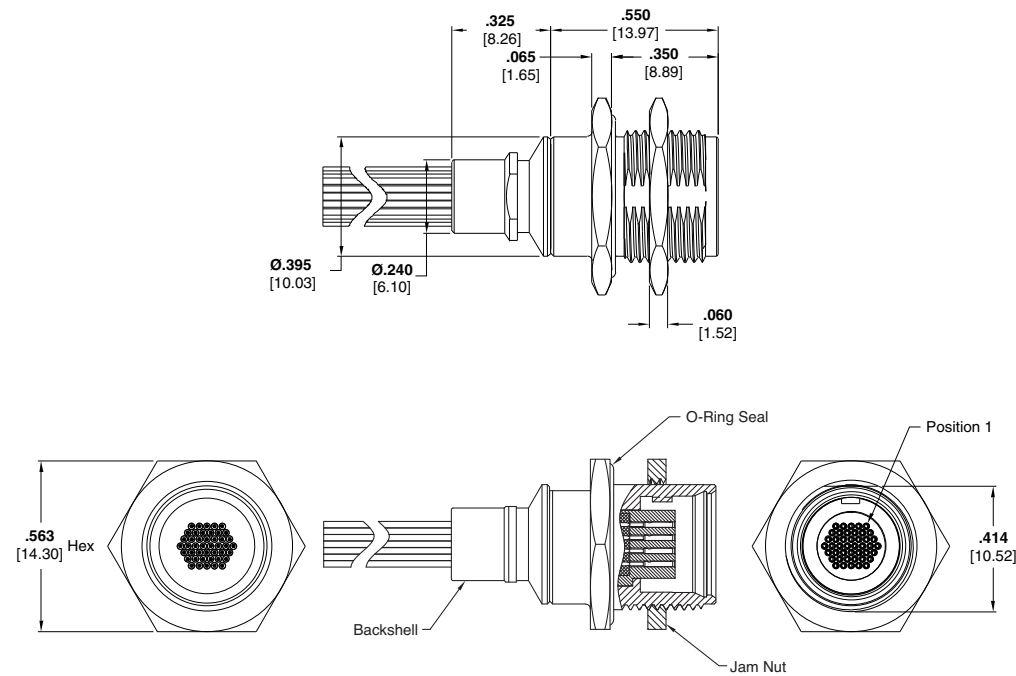


**Receptacle Assembly 7 Position  
Drawing Number 1589685**



**Receptacle Assembly 19 Position  
Drawing Number 1589687**

**NANONICS Threaded Coupling/Quick Disconnect —  
Panel Mount Receptacle Assemblies w/Backshells** (Continued)



Receptacle Assembly 44 Position  
Drawing Number 1589695



Circular Connectors

**Part Numbering Guideline for NANONICS Environmentally Sealed  
Circular Connectors**

**Circular Connectors - Wire Terminations**

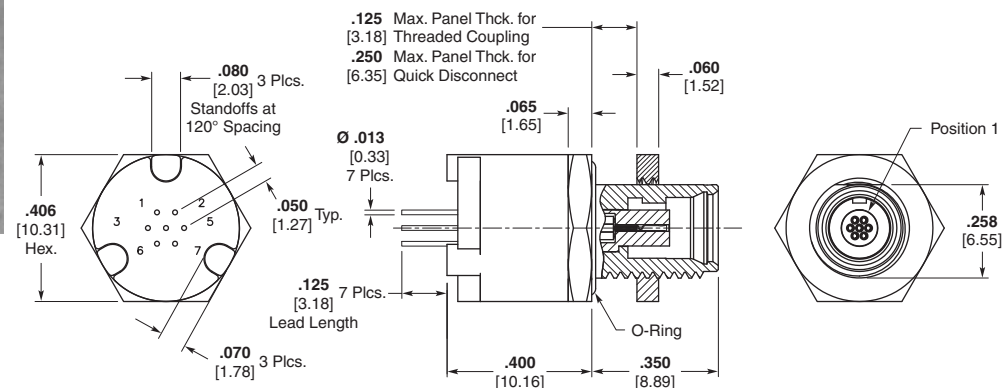
Class/Type	XXX	XXX	XX	X	XX	XXX	X	(XX)	Features (Optional - cannot be used on front panel mount)
<b>QCM</b> Quick Disconnect, Circular, Metal									<b>B</b> Straight Backshell
<b>TCM</b> Threaded Coupling, Circular, Metal (TCM leadoff for plug only)									<b>RX</b> Right Angle Backshell (refer to catalog image for X backshell orientation)
<b>FCM</b> Flanged Coupling, Quick Disconnect, Metal (plugs only)									
<b>Positions</b>									
<b>007</b> 7 Position									
<b>019</b> 19 Position									
<b>044</b> 44 Position									
<b>Configuration</b>									
<b>PC</b> Plug									
<b>SC</b> Receptacle									
<b>Conductor Size/Strands</b>									
<b>0</b> 28 AWG Solid									
<b>1</b> 30 AWG Solid									
<b>2</b> 30 AWG 7 Strand									
<b>3</b> 32 AWG 7 Strand									
<b>4</b> 34 AWG 7 Strand									
<b>Conductor Type</b>									
<b>DX</b> White PTFE per M16878/6									
<b>DC</b> PTFE Color Coded per M16878/6									
<b>DM</b> PTFE Color Coded per MIL-STD-681 (10 solid colors repeating)									
<b>DT</b> White ETFE per M22759/33									
<b>Mounting (Receptacles Only)</b>									
<b>P</b> Rear Panel Mount									
<b>F</b> Front Panel Mount									
<b>Conductor Length</b>									
<b>XXX</b> Three numbers only, length is in inches ( i.e. 012 = twelve inches)									
<b>CXX</b> A "C" followed by two numbers, length is in centimeters ( i.e. C06 = 6 centimeters)									
<b>MXX</b> An "M" followed by two numbers, length is in meters ( i.e. M02 = 2 meters)									

**NANONICS Thru-Hole, Receptacle Assemblies, Vertical Mount**

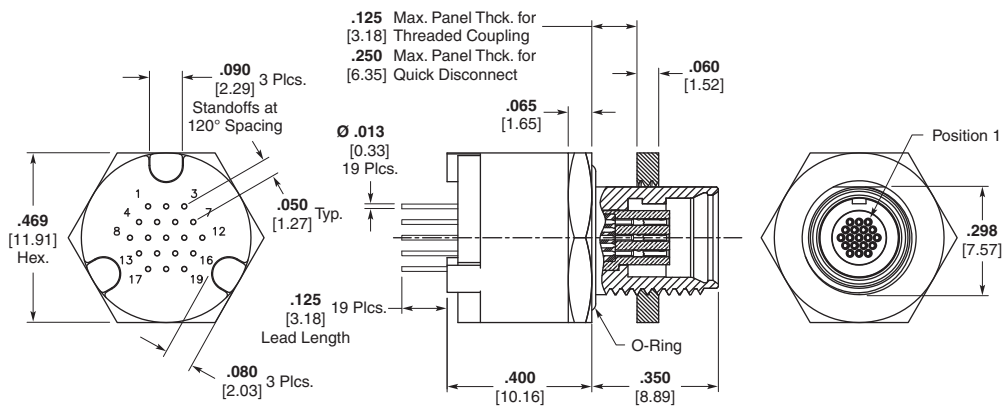


**Product Facts**

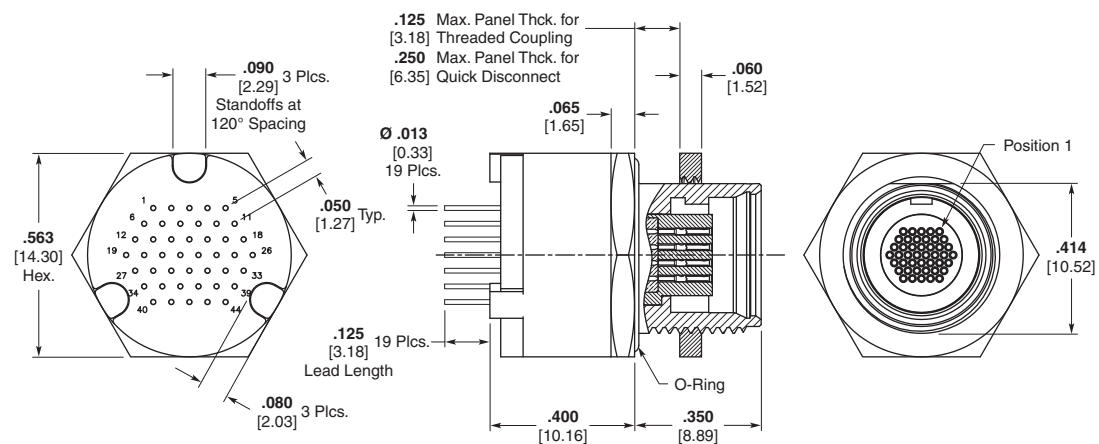
- Metal Shell
- Positions: 7, 19 and 44
- Bulkhead O-ring seal
- Mates with Quick Disconnect Plug and Threaded Coupling Plug
- Contact TE Connectivity for custom configurations



**Receptacle Assembly 7 Position**  
Drawing Number 1589953



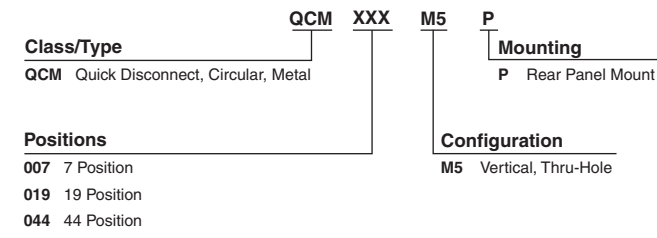
**Receptacle Assembly 19 Position**  
Drawing Number 1589954



**Receptacle Assembly 44 Position**  
Drawing Number 1589955

**Part Numbering Guideline for NANONICS Board Mount Termination Circular Connectors**

**Circular Connectors - Board Mount Terminations**



Circular Connectors

Part Number Index Cross Reference

NANONICS Part Number	Tyco Electronics Part Number	NANONICS Part Number	Tyco Electronics Part Number	NANONICS Part Number	Tyco Electronics Part Number	NANONICS Part Number	Tyco Electronics Part Number
<b>Quick Disconnect</b>				<b>Threaded Coupling</b>			
QCM007PC2DC003	0-1589055-1	QCM019PC2DCC10	1-1589057-1	QCM044SC2DC019PB	0-1589695-1	TCM044PC2DC036	0-1589065-8
QCM007PC2DC006	0-1589055-2	QCM019PC2DMC150	1-1589057-2	QCM044SC2DC020F	0-1589690-1	TCM044PC2DC036B	0-1589694-5
QCM007PC2DC006B	0-1589691-5	QCM019PC2DMC150B	0-1589692-4	QCM044SC2DC020P	1-1589062-2	TCM044PC2DC202B	0-1589694-7
QCM007PC2DC012	0-1589055-3	QCM019PC2DMC46	0-1589057-8	QCM044SC2DC024F	0-1589690-8	TCM044PC2DC036	1-1589065-1
QCM007PC2DC012B	0-1589691-1	QCM019PC2DMM01	1-1589057-0	QCM044SC2DC024P	1-1589062-6	TCM044PC2DM120	1-1589065-6
QCM007PC2DC018B	0-1589691-2	QCM019PC2DXC30	0-1589057-9	QCM044SC2DC036P	0-1589062-5	TCM044PC2DM120B	0-1589694-6
QCM007PC2DC020	0-1589055-6	QCM019SC0DC012F	0-1589058-1	QCM044SC2DC060F	0-1589690-6	TCM044PC2DMC46	1-1589065-0
QCM007PC2DC020B	0-1589691-9	QCM019SC0DC036P	1-1589061-4	QCM044SC2DC080P	1-1589062-1		
QCM007PC2DC028	1-1589055-3	QCM019SC0DC15P	0-1589061-1	QCM044SC2DC180F	0-1589690-2		
QCM007PC2DC036B	0-1589691-3	QCM019SC0DM012F	1-1589058-7	QCM044SC2DM036P	0-1589062-9		
QCM007PC2DC040	0-1589055-8	QCM019SC0DM072F	0-1589058-2	QCM044SC2DM120P	1-1589062-0		
QCM007PC2DC072	0-1589055-9	QCM019SC0DMC30P	1-1589061-2	QCM044SC2DMC16P	0-1589062-6		
QCM007PC2DCC20B	0-1589691-6	QCM019SC0DXC15P	0-1589061-2	QCM044SC2DMC46P	0-1589062-7		
QCM007PC2DCC30	1-1589055-0	QCM019SC2DC003F	1-1589058-8	QCM044SC2DMC50P	1-1589062-7		
QCM007PC2DCC50B	1-1589691-0	QCM019SC2DC003P	0-1589061-3	QCM044SC3DC012F	0-1589690-7		
QCM007PC2DCM01	1-1589055-4	QCM019SC2DC006F	0-1589058-3				
QCM007PC2DCM02	1-1589055-8	QCM019SC2DC006P	0-1589061-4				
QCM007PC2DCM03	1-1589055-5	QCM019SC2DC012F	1-1589058-6				
QCM007PC2DMC150	1-1589055-6	QCM019SC2DC012P	0-1589061-5				
QCM007PC2DMC150B	0-1589691-7	QCM019SC2DC018F	0-1589058-4				
QCM007PC2DMC46	1-1589055-1	QCM019SC2DC020F	0-1589058-5				
QCM007PC2DMC50	1-1589055-7	QCM019SC2DC020P	0-1589061-6				
QCM007PC2DMC50B	0-1589691-8	QCM019SC2DC024P	1-1589061-5				
QCM007PC2DX006B	0-1589691-4	QCM019SC2DC036P	0-1589061-7				
QCM007SC2DC003P	0-1589060-1	QCM019SC2DC180F	1-1589058-4				
QCM007SC2DC004P	0-1589060-2	QCM019SC2DCC30P	0-1589061-8				
QCM007SC2DC006F	0-1589056-1	QCM019SC2DM006PB	0-1589687-2				
QCM007SC2DC006P	0-1589060-3	QCM019SC2DM024P	1-1589061-6				
QCM007SC2DC012P	0-1589060-4	QCM019SC2DM027PB	0-1589687-1				
QCM007SC2DC012PB	0-1589685-2	QCM019SC2DM036P	1-1589061-0				
QCM007SC2DC018PB	0-1589685-3	QCM019SC2DMC05F	1-1589058-5				
QCM007SC2DC020F	0-1589056-2	QCM019SC2DMC16F	0-1589058-6				
QCM007SC2DC020P	1-1589060-1	QCM019SC2DMC30P	1-1589061-3				
QCM007SC2DC036P	0-1589060-7	QCM019SC2DMC46F	0-1589058-7				
QCM007SC2DC036PB	0-1589685-4	QCM019SC2DXC30F	0-1589058-8				
QCM007SC2DCC15F	0-1589056-9	QCM019SC2DXC30P	0-1589061-9				
QCM007SC2DCC15P	1-1589060-4	QCM019SC4DX006P	1-1589061-1				
QCM007SC2DCC20F	0-1589056-7	QCM044PC2DC003	0-1589059-1				
QCM007SC2DCC30F	0-1589056-3	QCM044PC2DC006	0-1589059-2				
QCM007SC2DCC30P	0-1589060-9	QCM044PC2DC006B	0-1589693-1				
QCM007SC2DM003P	1-1589060-0	QCM044PC2DC012	0-1589059-4				
QCM007SC2DM006PB	0-1589685-5	QCM044PC2DC012B	0-1589693-2				
QCM007SC2DM050PB	0-1589685-1	QCM044PC2DC020	0-1589059-6				
QCM007SC2DMC05F	0-1589056-8	QCM044PC2DC030	0-1589059-7				
QCM007SC2DMC16F	0-1589056-4	QCM044PC2DC036	1-1589059-1				
QCM007SC2DMC46F	0-1589056-5	QCM044PC2DC040	1-1589059-2				
QCM007SC2DX006F	0-1589056-6	QCM044PC2DC050	1-1589059-0				
QCM007SC2DYC15P	1-1589060-2	QCM044PC2DC060B	0-1589693-3				
QCM007SC2DYM02P	1-1589060-5	QCM044PC2DC120B	0-1589693-4				
QCM007SC2DYM1.5P	1-1589060-3	QCM044PC2DC180B	0-1589693-5				
QCM019PC0DC012	0-1589057-1	QCM044SC0DM036P	1-1589062-3				
QCM019PC0DM072B	0-1589692-1	QCM044SC0DM048P	1-1589062-4				
QCM019PC2DC003	0-1589057-3	QCM044SC0DM060P	1-1589062-5				
QCM019PC2DC006	0-1589057-4	QCM044SC2DC003P	0-1589062-1				
QCM019PC2DC006B	0-1589692-3	QCM044SC2DC006F	0-1589690-3				
QCM019PC2DC012	0-1589057-5	QCM044SC2DC006P	0-1589062-2				
QCM019PC2DC020	0-1589057-6	QCM044SC2DC012F	0-1589690-4				
QCM019PC2DC020B	0-1589692-5	QCM044SC2DC012P	0-1589062-3				
QCM019PC2DC120B	0-1589692-2	QCM044SC2DC018F	0-1589690-5				
		QCM044SC2DC018P	0-1589062-8				

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Introduction



- |  |   |  |
|--|---|--|
| <p><b>1</b> Custom 4-cavity receptacle shell</p> <p><b>2</b> GPRB2 vertical shell &amp; strain relief assembly</p> <p><b>3</b> GPRB2 GAIN shell - with spring-loaded, floatmounting design</p> <p><b>4</b> GPRB1 plug shell w/F12 ARINC 801 insert and termini installed</p> | <p><b>5</b> F12 ARINC 801 sleeve holder</p> <p><b>6</b> Size 22 posted PC tail pin, Size 20 crimp pin, Size 5 Coax contacts</p> <p><b>7</b> GPRB2 receptacle shell, with 30 &amp; 40 position inserts installed</p> <p><b>8</b> 30 position insert with terminated Size 20 Pin contacts installed</p> | <p><b>9</b> Custom 40 position pin insert with PC tail contacts installed</p> <p><b>10</b> GPRA plug shell assembly and 14M socket insert assembly</p> <p><b>11</b> GPRA 14M pin insert assembly</p> <p>This product is sold by TE under license from Radiall S.A.</p> |
|--|---|--|

8
 Rectangular Pin and Socket Connectors

**Introduction**

**Product Facts**

- **A high density solution compared to circular connectors**
  - Slim shell design with high contact density
  - Stackable shells that do not require additional space for locking and unlocking the connectors
  - Uses two to three times less space
- **A versatile solution suitable for disconnect panels or equipment with three mounting styles:**
  - Rack
  - Cable to cable
  - Panel mounting
- **A modular concept with a large variety of options**
  - Shell can accommodate a wide variety of inserts for signal, power, coax, data bus and fiber optic contacts
  - Optional grounding blocks (to meet FAA HIRF requirements)
  - Pin and socket inserts can be mounted on either plug or receptacle shells
- **A cost savings and user friendly solution**
  - Inserts can be wired in the shop and later installed in the shells
  - A common panel cut out eases the connector installation and reduces cost
  - Inserts can be easily installed and removed from the shell
  - Inserts and shells are keyed to prevent mismatching
  - Standard MIL tools for contact crimping and contact insertion/extraction
  - Field replaceable subassemblies
  - Vibration resistant self-locking threads

**A Smart Connector**

The General Purpose Rectangular A & B Series connectors complement our ARINC connectors and provide additional flexibility with improved performance in a smaller mating area compared to standard circular Mil-Spec connectors.

The GPRA and GPRB series offer a wide range of solutions based on two insert sizes, a large variety of shells and contacts. GPRA inserts are a good option for low density applications whereas GPRB inserts offer twice the density of GPRA inserts. In addition, the concept is completely modular and expandable.

They can also be easily tailored for custom requirements, such as shell modifications for additional inserts.

**Technical Documents**

**Product Specification:**

108-2398

**Test Report:**

501-734

**New Features**

**Connector Interface**

**Connectors for Galley Insert (GAIN) Equipment:**

- Page 8-32 lists the GPRB2 shells, insert arrangements, contacts, seal plugs, strain reliefs and cable that will be used, per ARINC 810. This is the standard connector interface for new galley equipment such as ovens and beverage makers for new commercial aircraft. This includes the twin-axial cable and contacts needed for the CANbus data bus system used for GAIN

**Shells**

**GPRB1**

- Shells have been improved to a greater level of performance under vibration. Also EMI performance has been maintained while eliminating the need for separate EMI springs.

**Contacts**

Size 22 Socket Contact with integral spring clip

An economy version socket contact is available for size 22 contacts and uses M39029 style interface.

**Insert Arrangements**

- New insert configurations for high speed data transmission - both fiber and quadrax

- GPRB - Fiber Optics

F12 - holds up to 12 ARINC 801 fiber optic termini (see page 8-24)

M2 - holds two 4-channel Mini-Expanded Beam inserts (see page 8-25)

- GPRB - Quadrax/Twinax

These size 8 quadrax contacts can be used in three insert arrangements - 10Q2, 25Q1 and 3Q3

These feature the exclusive TE one-piece dielectric that makes our quadrax and twinax contacts the easiest to install. If sealing is required with quadrax or twinax contacts, there is a size 8 seal boot assembly available (see page 8-30). Use of this seal boot provides 50,000 foot altitude immersion protection as tested per Boeing Spec BPS-C-179.

- GPRB - Power

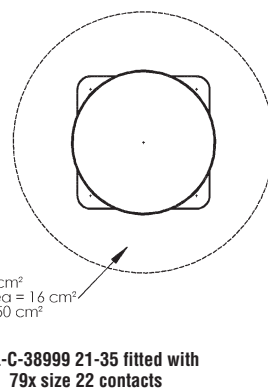
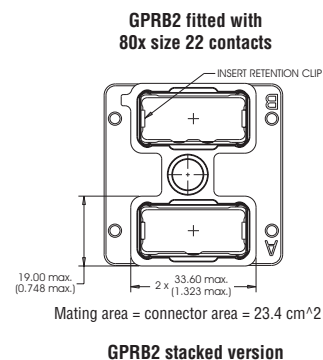
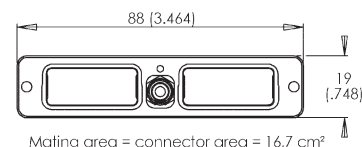
These inserts all accommodate Size 5 Power Contacts - P3, 13P1, 20P1 and 25P1

- GPRB - Signal

Features 48 Size 22 contacts in a standard GPRB insert

**Note:**

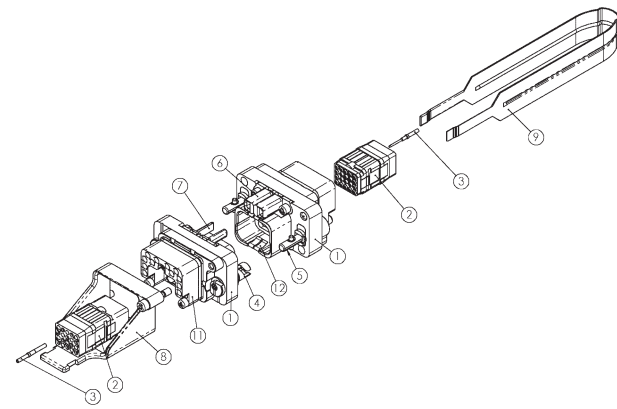
Quadrax contacts available for use are listed in our Quadrax catalog #1654012.



**Introduction** (Continued)

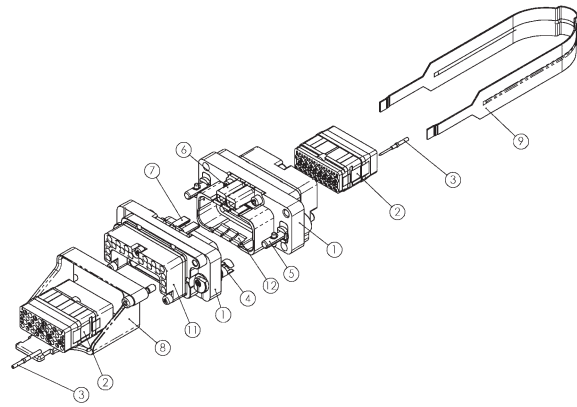
**GPR A1**

2 quarter-turn fasteners  
 16 keying positions  
 Max. density:  
 20 x 22 contacts



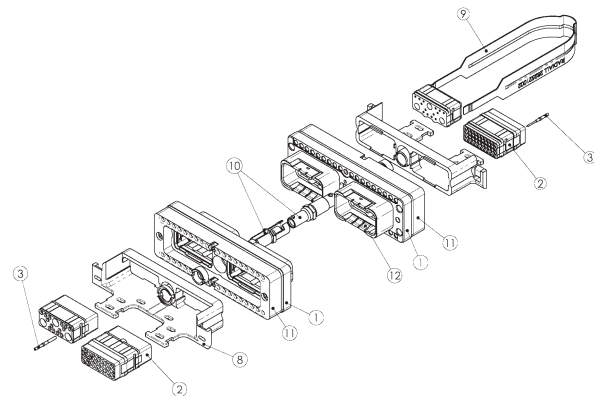
**GPR B1**

2 quarter-turn fasteners  
 16 keying positions  
 Max. density:  
 40 x 22 contacts



**GPR B2**

1 central jackscrew/jacknut  
 12 keying positions  
 Max. density:  
 80 x 22 contacts



- ① shell
- ② insert
- ③ contact
- ④ & ⑤ locking device
- ⑥ & ⑦ polarization device
- ⑧ backshell
- ⑨ insert insertion/extraction tool
- ⑩ locking & polarization device
- ⑪ grounding block
- ⑫ grounding springs

**8**

Rectangular Pin and Socket Connectors

**Performance Characteristics**

**Contacts**

Electrical characteristics conform to MIL-C-39029 Type A

**Electrical Characteristics**  
**Grounding Block Contact**

	Contact with Wire Size	Current Amps
Contact to Contact	Contact + 20 AWG	7.5
Contact to Mounting Surface	Contact + 20 AWG	7.5

**Contacts**

Contact	Barrel	Contact Size	Size of Conductors standard cables		Outer Dia. of Cables (mm)		Current (A) per Contact
			AWG	Min.	Max.		
22	22	22	22	0.86	1.45	5	
			24	0.86	1.45	3	
			26	0.86	1.45	2	
20	20	20	20	1.02	1.80	7.5	
			22	1.02	1.80	5	
			24	1.02	1.80	3	
18	16	16	16	1.73	2.62	13	
			18	1.73	2.62	13	
			20	1.73	2.62	7.5	
12	12	12	12	2.46	3.43	23	
			14	2.46	3.43	17	
8	8	8	8	4.80	5.75	46	
5 <sup>1</sup>	8	8	8	4.80	5.75	80	
			10	4.80	5.75	33	

<sup>1</sup> Size 5 contacts are not part of MIL-C-39029 type A.

**EMI Shielding Effectiveness**

Frequency (MHz)	Leakage Attenuation (dB)
100	65
200	63
300	63
400	62
500	60
600	60

**Mechanical Characteristics**

**Mating/Unmating Durability** — 100 cycles

**Mating Torque for GPRB2 Jackscrew** — 1.2 Nm [11 in. lbs.]

**Random Vibration** —

GPRA & legacy GPRB1 — 20g (MIL-STD-1344/Method 2005.1, test condition 4)

GPRB1 (new aluminum & composite versions) & GPRB2 — random vibration,

26.4g (rms) (MIL-STD-1344/Method 2005.1, test condition 6, letter G)

**Shock** — 50g (MIL-STD-1344/Method 2004.1, test condition A)

**Environmental Characteristics**

**Temperature Range** — -65°C to +175°C [-85°F to +347°F]

**Temperature Life** — 1000 h @ 155°C [311°F]

**Salt Spray** — 96 hours (nickel plating) (MIL-STD-1344/Method 1001.1, test condition A)

**Humidity** — 10 days

**Altitude Immersion** — 3 cycles at 15,240 m [50,000 ft.] (MIL-STD-1344/Method 1004.1)

**Fluid Immersion** — (MIL-STD-1344/Method 1016)

**Dielectric Withstanding Voltage (MIL-STD-1344/Method 3001.1.1 with Leakage Current < 1 mΩ)**

Level	Voltage (VRMS)
Sea level	1500
15,240 m [50,000 feet]	800

**Insulation Resistance (MIL-STD-1344/Method 3003.1)**

Ambient Temperature	> 5,000 MΩ
175°C [347°F]	> 200 MΩ

**Other Characteristics**

**Shell to Shell Conductivity** — < 2.5 mΩ

**Operating Voltage** — 400 Vrms or 500 Vdc at sea level

**Voltage Stability (Ground Block)** — Maximum variation 4mV (MIL-T-81714)

**Magnetic Permeability** — < 2

**Comparative Tracking Index** — 250 V

**Contact Retention** — (MIL-STD-1344/Method 2007.1 on terminated connectors)

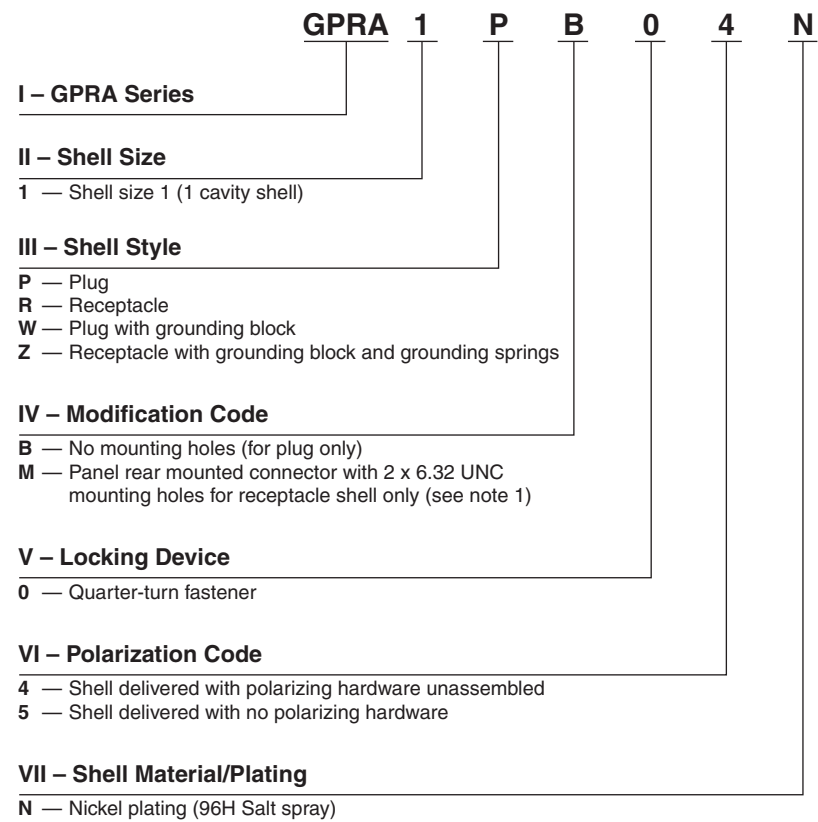
Contact Size	Retention Force	Max. Displacement
Ground Block	88 N [20 lbs.]	0.3 mm [.012 in.]
22	53.4 N [12 lbs.]	0.38 mm [.015 in.]
20	89 N [20 lbs.]	0.38 mm [.015 in.]
16	111.2 N [25 lbs.]	0.38 mm [.015 in.]
12	133.45 N [30 lbs.]	0.38 mm [.015 in.]

**Insert Retention** — 500 N [112 lbs.] (MIL-STD-1344/Method 2010.1)

**GPRA1 Shell Descriptive Part Number Format**

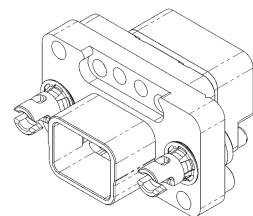
**Descriptive Part Numbering System**

Use this guide to construct descriptive part numbers for GPRA1 shells. Refer to table below for the corresponding TE Connectivity Part Number.

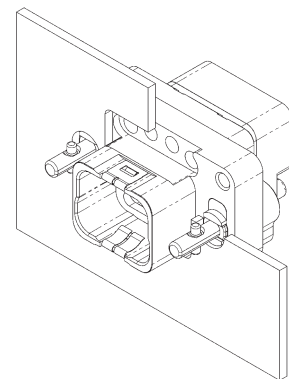


Note 1: Self-locking mounting holes are designed for rear panel mounting.

Size	Style	Modification	Locking Device	Polarization Hardware	Plating	Descriptive Part Number	TE Part Number
1	Plug	No mounting holes	1/4-Turn Fastener	Kit: Shell & Hardware Unassembled	Nickel	GPRA1PB04N	1738228-1
				No Hardware		GPRA1PB05N	1738229-1
	Kit: Shell & Hardware Unassembled			GPRA1WB04N		1738230-1	
	No Hardware			GPRA1WB05N		1738231-1	
	Receptacle	Rear Panel Mount, with two 6-32 UNC holes		Kit: Shell & Hardware Unassembled		GPRA1RM04N	1738232-1
				No Hardware		GPRA1RM05N	1738233-1
	Kit: Shell & Hardware Unassembled			GPRA1ZM04N		1738234-1	
	No Hardware			GPRA1ZM05N		1738235-1	



GPRA1WB05N



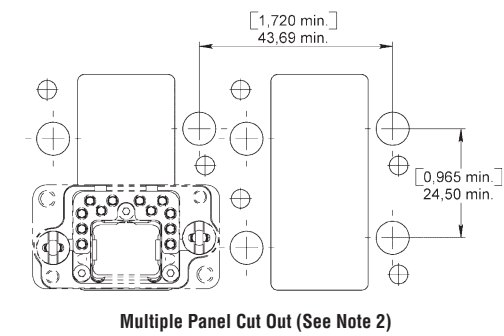
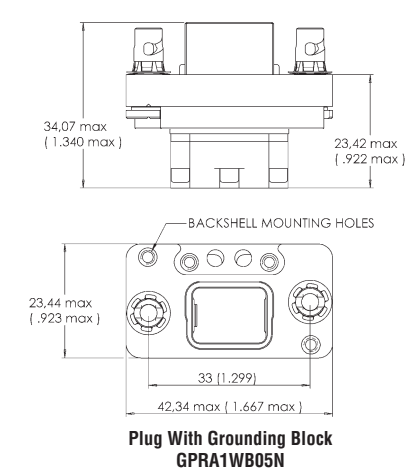
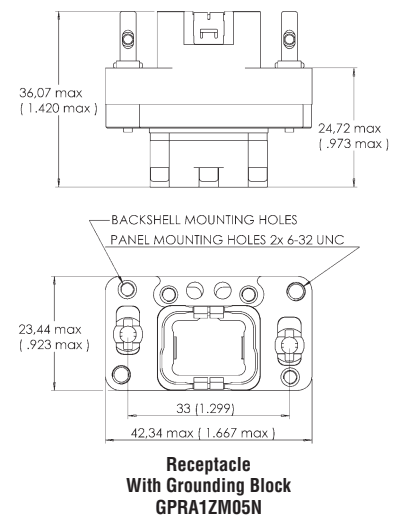
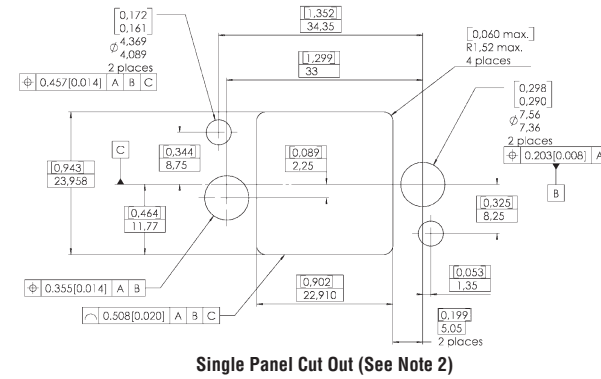
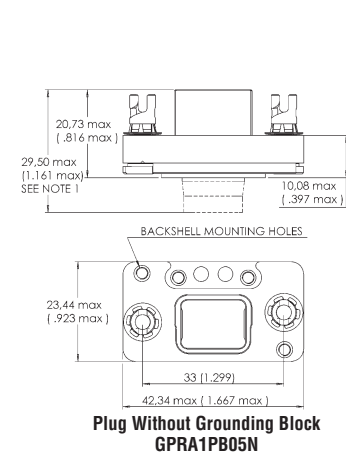
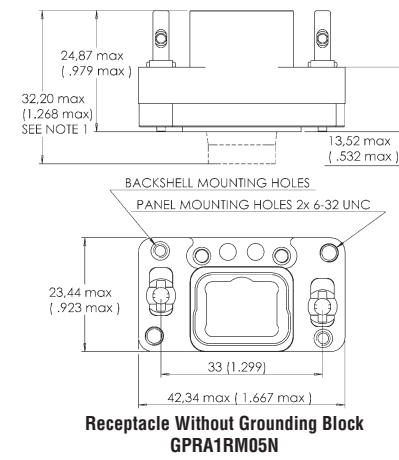
GPRA1ZM05N  
Panel Rear Mounted Connector

8

Rectangular Pin and Socket Connectors



**GPRA1 Shell Dimensions**



**Note 1:** Maximum dimension for inserts with grommets (Part Number GPRAE and GPRAH)  
**Note 2:** Rear mounting side view with key post oriented to the upper side (receptacle only)

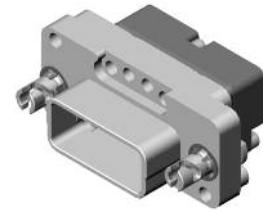


**GPRB1 Shell Descriptive Part Number Format**

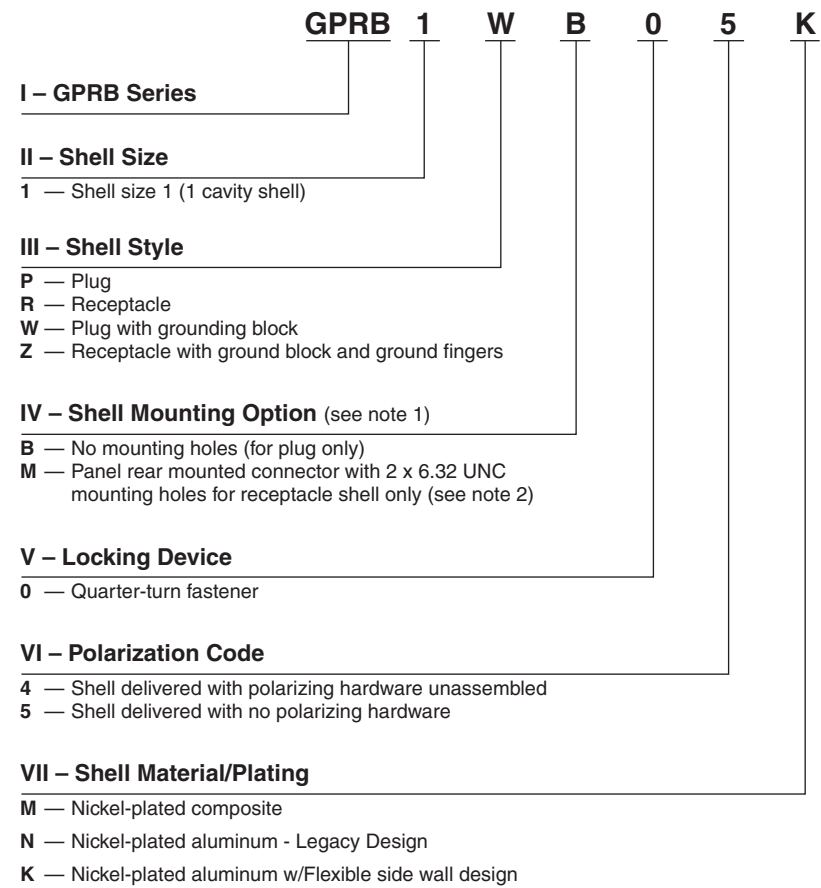
**Descriptive Part Numbering System**

Use this guide to construct descriptive part numbers for GPRB1 shells. Refer to table below for the corresponding TE Part Number.

Note: Legacy designs are not backward compatible with the improved B1 shell designs.



GPRB1WB05N



Note 1: Recommended locking torque: 1.6 Nm (14.161 in-lbs) for metallic shell and 1 Nm (8.85 in-lbs) min. 1.1 Nm (9.73 in-lbs) max. for composite shell.

Note 2: Self-locking mounting holes are designed for rear panel mounting.

**Legacy Design - Aluminum**

Size	Style	Modification	Locking Device	Polarization Hardware	Shell Material	Descriptive Part Number	TE Part Number
1	Plug	No mounting holes	1/4-Turn Fastener	Kit: Shell & Hardware Unassembled	Aluminum	GPRB1PB04N	1738236-1
				No Hardware		GPRB1PB05N	1738237-1
	Kit: Shell & Hardware Unassembled			GPRB1WB04N		1738238-1	
	No Hardware			GPRB1WB05N		1738239-1	
	Receptacle	Rear Panel Mount, with two 6-32 UNC holes	Kit: Shell & Hardware Unassembled	GPRB1RM04N		1738240-1	
			No Hardware	GPRB1RM05N		1738241-1	
	Kit: Shell & Hardware Unassembled		GPRB1ZM04N	1738242-1			
	No Hardware		GPRB1ZM05N	1738243-1			

**Flexible Sidewall Design - Composite & Aluminum**

Size	Style	Modification	Locking Device	Polarization Hardware	Shell Material	Descriptive Part Number	TE Part Number
1	Plug	No mounting holes	1/4-Turn Fastener	Kit: Shell & Hardware Unassembled	Composite	GPRB1PB04M	1811680-1
					Aluminum	—	—
	Composite				GPRB1WB04M	1954285-1	
	Aluminum				GPRB1WB04K	1877943-1	
	Receptacle	Rear Panel Mount, with two 6-32 UNC holes	Composite		GPRB1RM04M	2000142-1	
			Aluminum		—	—	
	Composite		GPRB1ZM04M		1954284-1		
	Aluminum		GPRB1ZM04K		1877945-1		

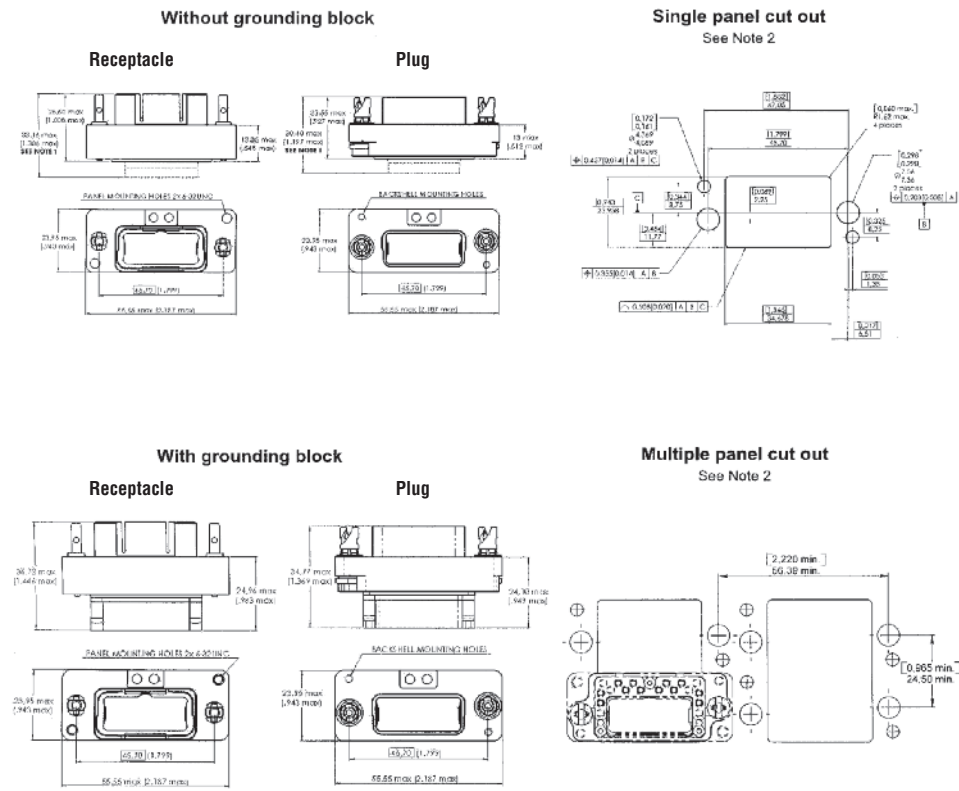


Rectangular Pin and Socket Connectors

**GPRB1 Shell Dimensions - Flexible Sidewall Design**

**Product Facts**

- A high density solution compared to circular connectors
- Shell-to-shell grounding with integral grounding springs - does not require separate spring clip components
- Improved vibration performance
- New 1/4-turn fastener profile with reduced risk of breakage
- L-shaped keys – easier to install and remove, each face is identified, shape decrease risk of incorrect assembly



Note 1: Maximum dimension for inserts with grommets (Part Number GPRBE and GPRBH)  
 For inserts without grommets, max. dimensions will be for the receptacle 25.55 mm - 1.006 in. and for the plug 23.52 mm - .926 in.

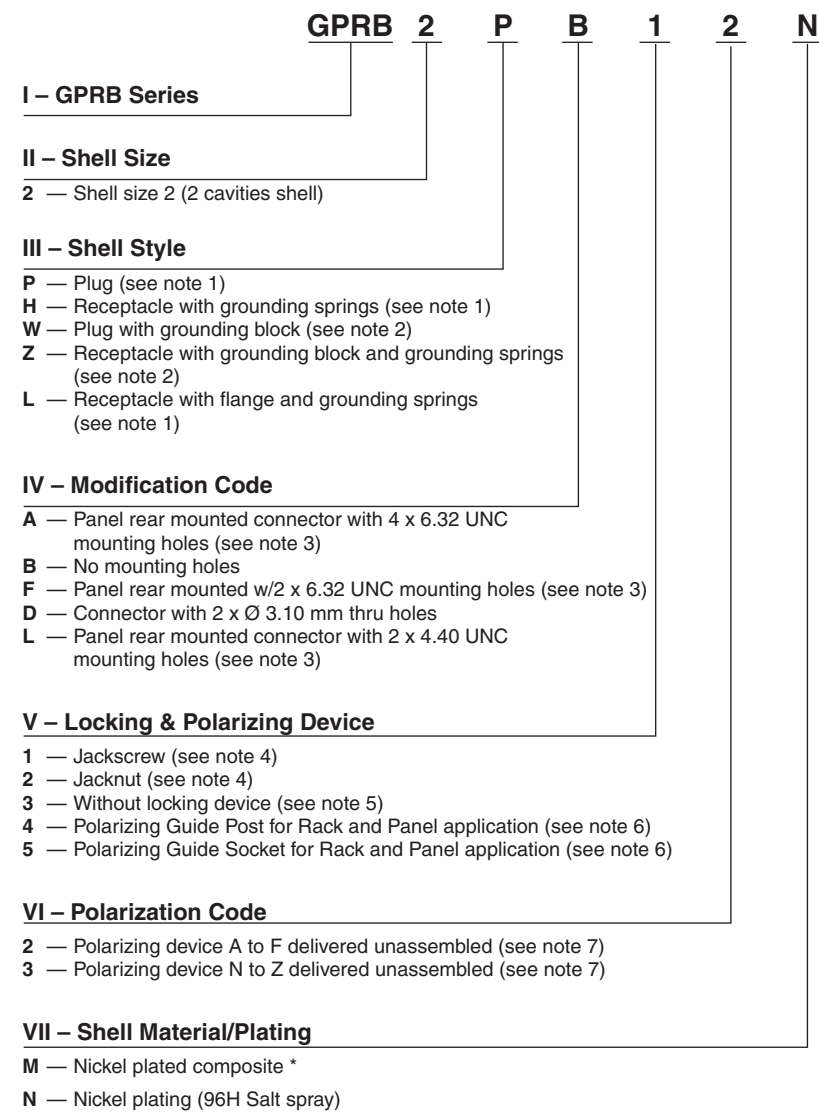
For inserts with optical contacts F12 and 12F6, the max. dimensions will be for the receptacle 38.70 mm - 1.524 in. and for the plug 36.00 mm - 1.148 in.

Note 2: Rear mounting side view with key post oriented to the upper side (receptacle only)

**GPRB2 (Horizontal) Shell Descriptive Part Number Format**

**Descriptive Part Numbering System**

Use this guide to construct descriptive part numbers for GPRB2 shells. Refer to page 8-12 for the corresponding TE Part Number.



- Notes: 1. The standard modification codes for these shells are B, D or L.  
 2. With modification codes A or B only.  
 3. Self-locking mounting holes are designed for rear panel mounting.  
 4. Jackscrew/Jacknut can be mounted on either plug or receptacle shell. However, the standard options are:  
 —Jackscrew for plug shells  
 —Jacknut for receptacle shells  
 5. Option 3 in paragraph V cancels the polarization code paragraph IV, i.e. the shell is delivered with no polarizing device.  
 6. Pin/Socket polarization guides can be mounted on either plug or receptacle shells. However, the standard options are:  
 —Pin polarization guide for plug shells  
 —Socket polarization guide for receptacle shells  
 7. Polarizing device is delivered unassembled, it must be locked with resin by the user (LOCTITE™ 272 must be used).  
 —if no polarizing device is required, omit this step and go to VII.



Rectangular Pin and Socket Connectors

\*Contact TE Connectivity

**GPRB2 (Horizontal) Shell Descriptive Part Number Format** (Continued)

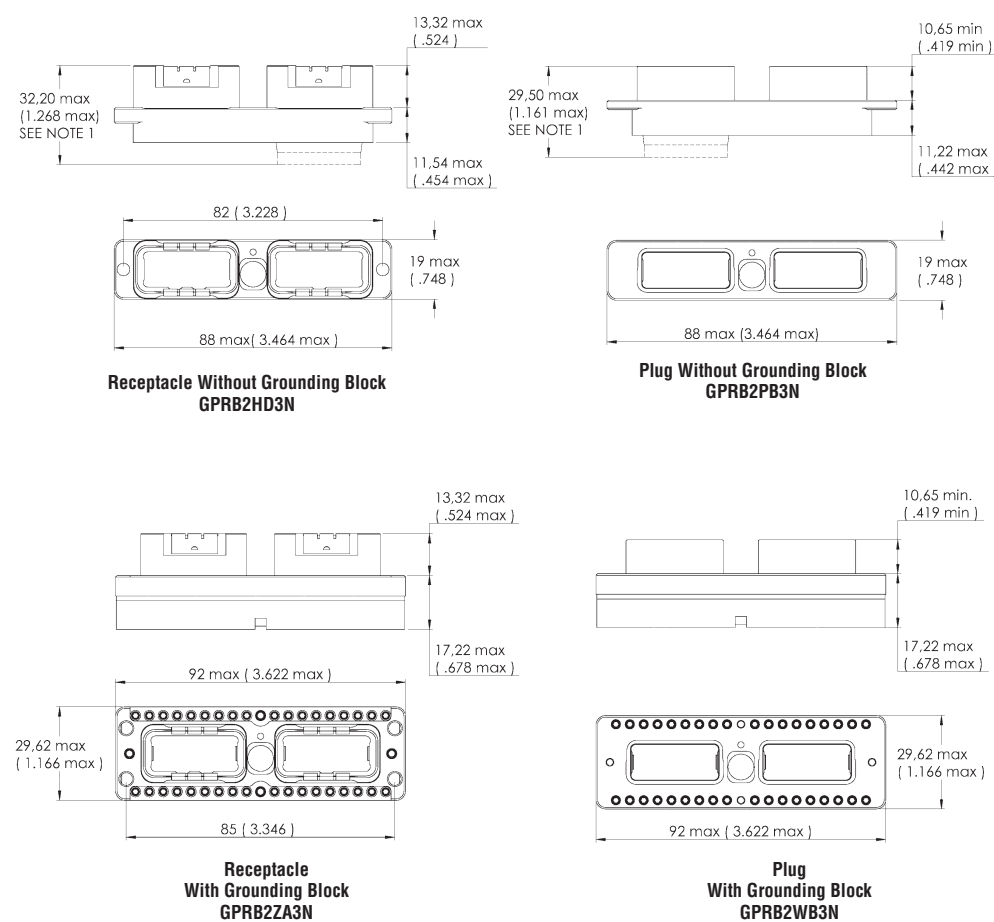
Size	Style	Modification	Locking & Polarization Device	Polarization Hardware	Plating	Descriptive Part Number	TE Part Number	
2	Plug	No mounting holes	N/A	N/A	Nickel	GPRB2PB3N	1738244-1	
			Jackscrew	Kit: Shell & A-F Hardware Unassembled		GPRB2PB12N	1738245-1	
			Polarizing Guide Post	Kit: Shell & N-Z Hardware Unassembled		GPRB2PB13N	1738246-1	
				Kit: Shell & A-F Hardware Unassembled		GPRB2PB42N	1738247-1	
		Connector with two thru-holes [3.10 mm Dia.]	N/A	N/A		GPRB2PB43N	1738248-1	
			Jackscrew	Kit: Shell & A-F Hardware Unassembled		GPRB2PD3N	1738249-1	
			Polarizing Guide Post	Kit: Shell & N-Z Hardware Unassembled		GPRB2PD12N	1738250-1	
				Kit: Shell & A-F Hardware Unassembled		GPRB2PD13N	1738251-1	
		Rear Panel Mount, with two 4-40 UNC holes	N/A	N/A		GPRB2PD42N	1738252-1	
			Jackscrew	Kit: Shell & A-F Hardware Unassembled		GPRB2PD43N	1738253-1	
			Polarizing Guide Post	Kit: Shell & N-Z Hardware Unassembled		GPRB2PL3N	1738254-1	
				Kit: Shell & A-F Hardware Unassembled		GPRB2PL12N	1738255-1	
	Plug, with Grounding Block	No mounting holes	N/A	N/A		GPRB2PL13N	1738256-1	
			Jackscrew	Kit: Shell & A-F Hardware Unassembled		GPRB2PL42N	1738257-1	
			Polarizing Guide Post	Kit: Shell & N-Z Hardware Unassembled		GPRB2PL43N	1738258-1	
				Kit: Shell & A-F Hardware Unassembled		GPRB2WB3N	1738259-1	
		Rear Panel Mount, with four 6-32 UNC holes	N/A	N/A		GPRB2WB12N	1738260-1	
			Jackscrew	Kit: Shell & A-F Hardware Unassembled		GPRB2WB13N	1738261-1	
			Polarizing Guide Post	Kit: Shell & N-Z Hardware Unassembled		GPRB2WB42N	1738262-1	
				Kit: Shell & A-F Hardware Unassembled		GPRB2WB43N	1738263-1	
		Receptacle, with Grounding Springs	No mounting holes	N/A		N/A	GPRB2WA3N	1738264-1
				Jacknut		Kit: Shell & A-F Hardware Unassembled	GPRB2WA12N	1738265-1
				Polarizing Guide Socket		Kit: Shell & N-Z Hardware Unassembled	GPRB2WA13N	1738266-1
						Kit: Shell & A-F Hardware Unassembled	GPRB2WA42N	1738267-1
Connector with two thru-holes [3.10 mm Dia.]	N/A		N/A	GPRB2WA43N	1738268-1			
	Jacknut		Kit: Shell & A-F Hardware Unassembled	GPRB2HB3N	1738269-1			
	Polarizing Guide Socket		Kit: Shell & N-Z Hardware Unassembled	GPRB2HB22N	1738270-1			
			Kit: Shell & A-F Hardware Unassembled	GPRB2HB23N	1738271-1			
Rear Panel Mount, with two 4-40 UNC holes	N/A		N/A	GPRB2HB52N	1738272-1			
	Jacknut		Kit: Shell & A-F Hardware Unassembled	GPRB2HB53N	1738273-1			
	Polarizing Guide Socket		Kit: Shell & N-Z Hardware Unassembled	GPRB2HD3N	1738274-1			
			Kit: Shell & A-F Hardware Unassembled	GPRB2HD22N	1738275-1			
Rear Panel Mount, with two 6-32 UNC holes	N/A	N/A	GPRB2HD23N	1738276-1				
	Jacknut	Kit: Shell & A-F Hardware Unassembled	GPRB2HD52N	1738277-1				
	Polarizing Guide Socket	Kit: Shell & N-Z Hardware Unassembled	GPRB2HD53N	1738278-1				
		Kit: Shell & A-F Hardware Unassembled	GPRB2HL3N	1738279-1				
Receptacle, with Flange & Grounding Springs	No mounting holes	N/A	N/A	GPRB2HL22N	1738280-1			
		Jacknut	Kit: Shell & A-F Hardware Unassembled	GPRB2HL23N	1738281-1			
		Polarizing Guide Socket	Kit: Shell & N-Z Hardware Unassembled	GPRB2HL52N	1738282-1			
			Kit: Shell & A-F Hardware Unassembled	GPRB2HL53N	1738283-1			
	Connector with two thru-holes [3.10 mm Dia.]	N/A	N/A	GPRB2HF3N	1738279-2			
		Jacknut	Kit: Shell & A-F Hardware Unassembled	GPRB2HF22N	1738280-2			
		Polarizing Guide Socket	Kit: Shell & N-Z Hardware Unassembled	GPRB2HF23N	1738281-2			
			Kit: Shell & A-F Hardware Unassembled	GPRB2HF52N	1738282-2			
	Mount, with two 4-40 UNC holes	N/A	N/A	GPRB2HF53N	1738283-2			
		Jacknut	Kit: Shell & A-F Hardware Unassembled	GPRB2LB3N	1738284-1			
		Polarizing Guide Socket	Kit: Shell & N-Z Hardware Unassembled	GPRB2LB22N	1738285-1			
			Kit: Shell & A-F Hardware Unassembled	GPRB2LB23N	1738286-1			
Rear Panel Mount, with two 6-32 UNC holes	N/A	N/A	GPRB2LB52N	1738287-1				
	Jacknut	Kit: Shell & A-F Hardware Unassembled	GPRB2LB53N	1738288-1				
	Polarizing Guide Socket	Kit: Shell & N-Z Hardware Unassembled	GPRB2LD3N	1738289-1				
		Kit: Shell & A-F Hardware Unassembled	GPRB2LD22N	1738290-1				
Rear Panel Mount, with two 6-32 UNC holes	N/A	N/A	GPRB2LD23N	1738291-1				
	Jacknut	Kit: Shell & A-F Hardware Unassembled	GPRB2LD52N	1738292-1				
	Polarizing Guide Socket	Kit: Shell & N-Z Hardware Unassembled	GPRB2LD53N	1738293-1				
		Kit: Shell & A-F Hardware Unassembled	GPRB2LL3N	1738294-1				
Rear Panel Mount, with two 6-32 UNC holes	N/A	N/A	GPRB2LL22N	1738295-1				
	Jacknut	Kit: Shell & A-F Hardware Unassembled	GPRB2LL23N	1738296-1				
	Polarizing Guide Socket	Kit: Shell & N-Z Hardware Unassembled	GPRB2LL52N	1738297-1				
		Kit: Shell & A-F Hardware Unassembled	GPRB2LL53N	1738298-1				
Rear Panel Mount, with two 6-32 UNC holes	N/A	N/A	GPRB2LF3N	1738294-2				
	Jacknut	Kit: Shell & A-F Hardware Unassembled	GPRB2LF22N	1738295-2				
	Polarizing Guide Socket	Kit: Shell & N-Z Hardware Unassembled	GPRB2LF23N	1738296-2				
		Kit: Shell & A-F Hardware Unassembled	GPRB2LF52N	1738297-2				
Rear Panel Mount, with two 6-32 UNC holes	N/A	N/A	GPRB2LF53N	1738298-2				
	Jacknut	Kit: Shell & A-F Hardware Unassembled						
	Polarizing Guide Socket	Kit: Shell & N-Z Hardware Unassembled						
		Kit: Shell & A-F Hardware Unassembled						

**GPRB2 (Horizontal) Shell Descriptive Part Number Format** (Continued)

Size	Style	Modification	Locking & Polarization Device	Polarization Hardware	Plating	Descriptive Part Number	TE Part Number
2	Receptacle, with Grounding Block & Grounding Springs	No mounting holes	N/A	N/A	Nickel	GPRB2ZB3N	1738299-1
			Jacknut	Kit: Shell & A-F Hardware Unassembled		GPRB2ZB22N	1738300-1
				Kit: Shell & N-Z Hardware Unassembled		GPRB2ZB23N	1738301-1
			Polarizing Guide Socket	Kit: Shell & A-F Hardware Unassembled		GPRB2ZB52N	1738302-1
				Kit: Shell & N-Z Hardware Unassembled		GPRB2ZB53N	1738303-1
			N/A	N/A		GPRB2ZA3N	1738304-1
		Rear Panel Mount, with four 6-32 UNC holes	Jacknut	Kit: Shell & A-F Hardware Unassembled		GPRB2ZA22N	1738305-1
				Kit: Shell & N-Z Hardware Unassembled		GPRB2ZA23N	1738306-1
			Polarizing Guide Socket	Kit: Shell & A-F Hardware Unassembled		GPRB2ZA52N	1738307-1
				Kit: Shell & N-Z Hardware Unassembled		GPRB2ZA53N	1738308-1

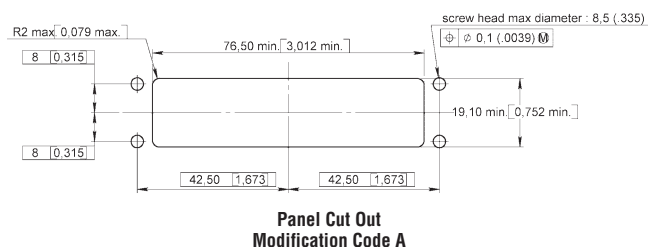
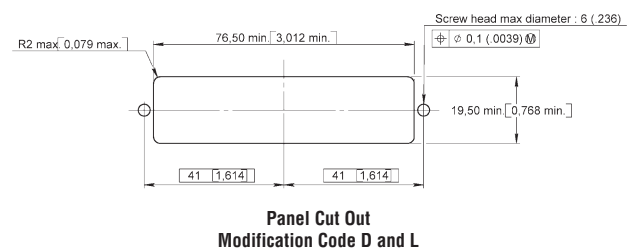
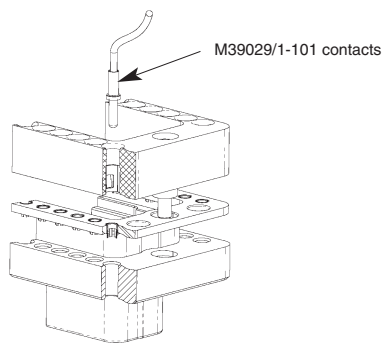
**8**  
Rectangular Pin and Socket Connectors

**GPRB2 (Horizontal) Shell Dimensions**



**Grounding Block**

A solution for high-intensity radiated electromagnetic frequencies. The patented design provides a direct grounding to the shell.



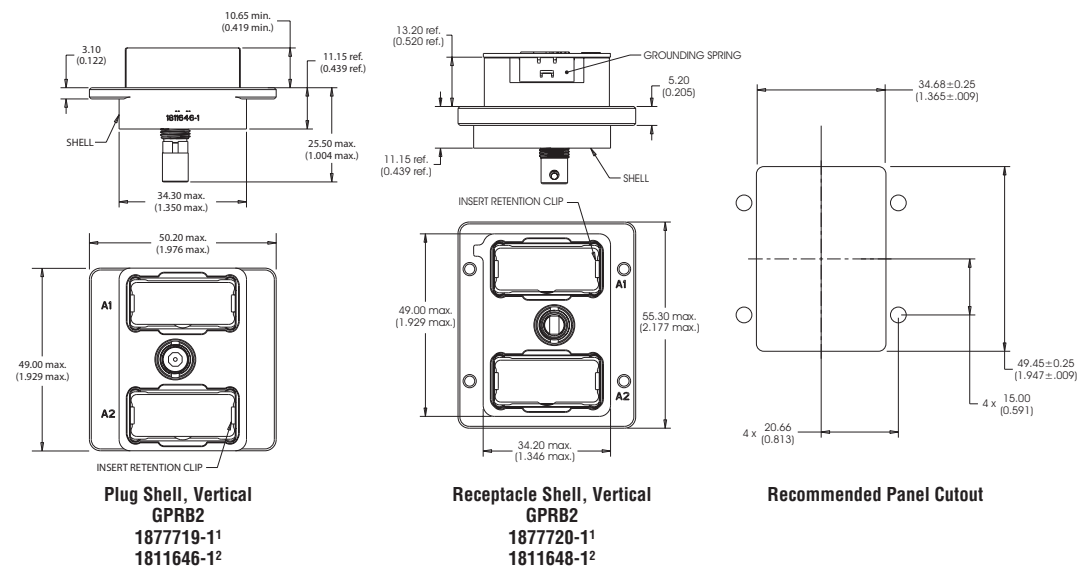
**Note 1:** Maximum dimension for inserts with grommets (Part Number GPRBE and GPRBH)

**GPRB2 Vertical (Square) Shell and Strain Relief Dimensions**

**Shell Kits with Two Cavities for Key-A Inserts**

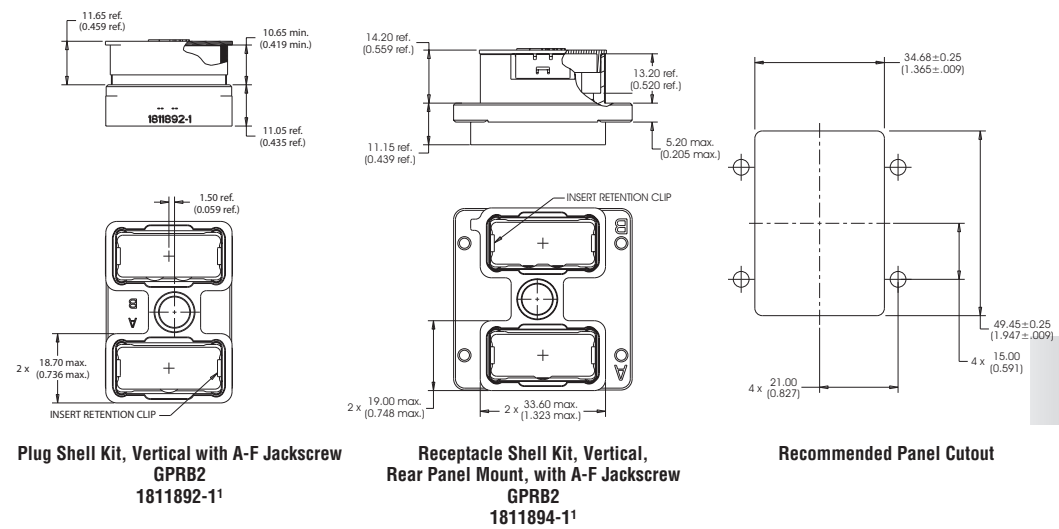
<sup>1</sup>Kit: Shell & A-F hardware unassembled

<sup>2</sup>Assembly: Hardware assembled in polarization position E

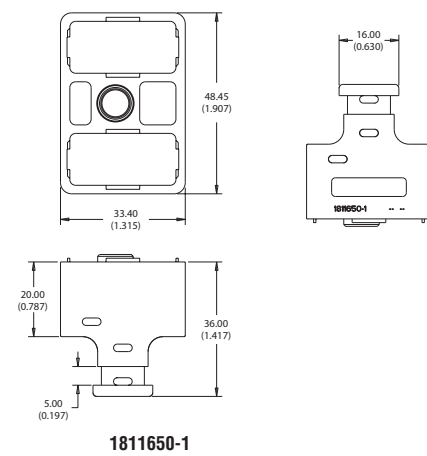


**Shell Kits with Two Cavities for Key-A and Key-B Inserts**

<sup>1</sup>Kit: Shell & A-F hardware unassembled



**Strain Relief Kit, Vertical GPRB2**



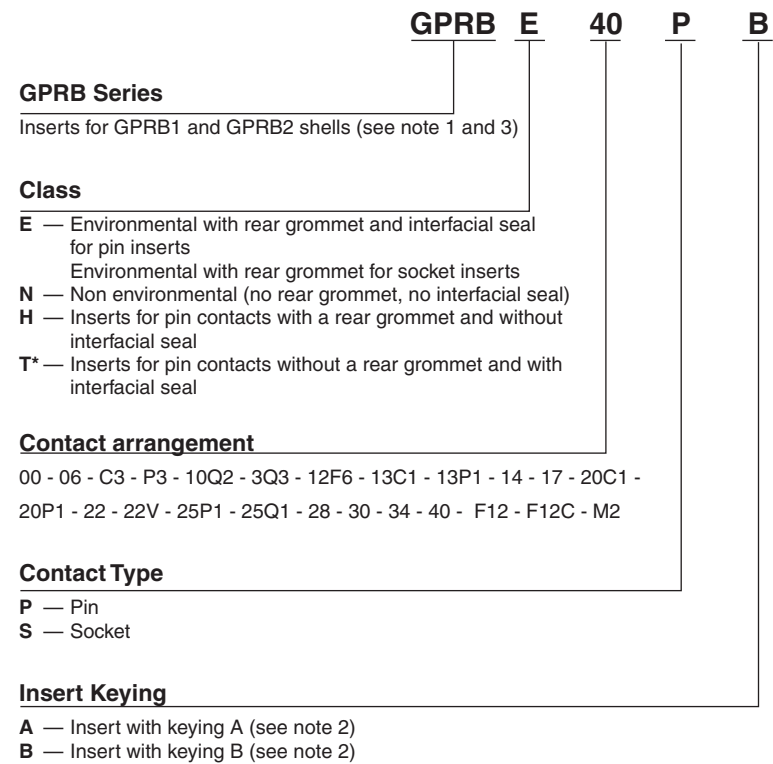
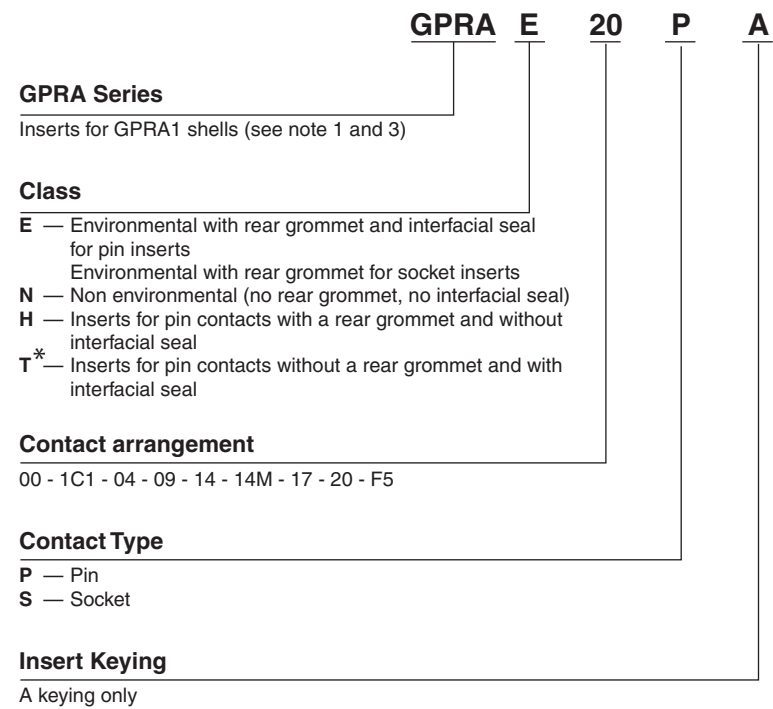
Rectangular Pin and Socket Connectors



**Insert Descriptive Part Number Format**

**Descriptive Part Numbering System**

Use this guide to construct descriptive part numbers for GPRA & B inserts. Refer to pages 8-16 to 8-19 for the corresponding TE Part Number.



Notes: 1. Inserts are designed for rear release contacts.  
 2. For GPRB2 shells, use one insert keyed A and one insert keyed B.  
 For GPRB1 shells, use one insert keyed A only.  
 3. Pin and socket inserts can be installed in either plug or receptacle shell.

\*Contact TE

**Insert Descriptive Part Number Format** (Continued)

**GPRA Insert Part Numbers**

Series	Contact Arrangement	Contact Type	Classification	Keying	Descriptive Part Number	TE Part Number
A	00	N/A	Dummy Insert	N/A	GPRAN00	1738049-1
	1C1	Pin	Environmental, with Rear Grommet & Interfacial Seal		GPRAE1C1PA	1738050-1
			Insert with Rear Grommet, without Interfacial Seal		GPRAH1C1PA	1738051-1
			Non-environmental (no Grommet or Seal)		GPRAN1C1PA	1738052-1
		Socket	Environmental, with Rear Grommet		GPRAE1C1SA	1738053-1
			Non-environmental (no Grommet or Seal)		GPRAN1C1SA	1738054-1
			04	Pin	Environmental, with Rear Grommet & Interfacial Seal	
	Insert with Rear Grommet, without Interfacial Seal				GPRAH04PA	1738056-1
	Non-environmental (no Grommet or Seal)				GPRAN04PA	1738057-1
	Socket	Environmental, with Rear Grommet			GPRAE04SA	1738058-1
		Non-environmental (no Grommet or Seal)			GPRAN04SA	1738059-1
		09		Pin	Environmental, with Rear Grommet & Interfacial Seal	
	Insert with Rear Grommet, without Interfacial Seal				GPRAH09PA	1738061-1
	Non-environmental (no Grommet or Seal)				GPRAN09PA	1738062-1
	Socket		Environmental, with Rear Grommet		GPRAE09SA	1738063-1
			Non-environmental (no Grommet or Seal)		GPRAN09SA	1738064-1
			14	Pin	Environmental, with Rear Grommet & Interfacial Seal	
	Insert with Rear Grommet, without Interfacial Seal				GPRAH14PA	1738066-1
	Non-environmental (no Grommet or Seal)				GPRAN14PA	1738067-1
	Socket	Environmental, with Rear Grommet			GPRAE14SA	1738068-1
		Non-environmental (no Grommet or Seal)			GPRAN14SA	1738069-1
		14M		Pin	Environmental, with Rear Grommet & Interfacial Seal	
	Insert with Rear Grommet, without Interfacial Seal				GPRAH14MPA	1738071-1
	Non-environmental (no Grommet or Seal)				GPRAN14MPA	1738072-1
	Socket		Environmental, with Rear Grommet		GPRAE14MSA	1738073-1
			Non-environmental (no Grommet or Seal)		GPRAN14MSA	1738074-1
			17	Pin	Environmental, with Rear Grommet & Interfacial Seal	
	Insert with Rear Grommet, without Interfacial Seal				GPRAH17PA	1738076-1
Non-environmental (no Grommet or Seal)		GPRAN17PA			1738077-1	
Socket	Environmental, with Rear Grommet			GPRAE17SA	1738078-1	
	Non-environmental (no Grommet or Seal)			GPRAN17SA	1738079-1	
	20	Pin		Environmental, with Rear Grommet & Interfacial Seal		GPRAE20PA
Insert with Rear Grommet, without Interfacial Seal				GPRAH20PA	1738081-1	
Non-environmental (no Grommet or Seal)				GPRAN20PA	1738082-1	
Socket		Environmental, with Rear Grommet		GPRAE20SA	1738083-1	
		Non-environmental (no Grommet or Seal)		GPRAN20SA	1738084-1	
		F5	ARINC 801 Termini	Environmental, without Sleeve Holder		GPRAEF5PA
Environmental, with Sleeve Holder				GPRAEF5SA	1954044-1	



Rectangular Pin and Socket Connectors

**Insert Descriptive Part Number Format** (Continued)

**GPRB Insert Part Numbers**

Series	Contact Arrangement	Contact Type	Classification	Keying	Descriptive Part Number	TE Part Number	
B	00	N/A	Dummy Insert	N/A	GPRBN00	1738085-1	
			Environmental, with Rear Grommet & Interfacial Seal	A	GPRBEC3PA	1738086-1	
	C3	Pin	Insert with Rear Grommet, without Interfacial Seal	A	GPRBHC3PA	1738087-1	
				B	GPRBHC3PB	1738092-1	
		Non-environmental (no Grommet or Seal)	A	GPRBNC3PA	1738088-1		
			B	GPRBNC3PB	1738093-1		
	Socket	Environmental, with Rear Grommet	A	GPRBEC3SA	1738089-1		
			B	GPRBEC3SB	1738094-1		
		Non-environmental (no Grommet or Seal)	A	GPRBNC3SA	1738090-1		
			B	GPRBNC3SB	1738095-1		
	P3	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBEP3PA	1954321-1	
				B	GPRBEP3PB	1954322-1	
			Insert with Rear Grommet, without Interfacial Seal	A	GPRBHP3PA	1954724-1	
				B	GPRBHP3PB	1954739-1	
		Non-environmental (no Grommet or Seal)	A	GPRBNP3PA	1954325-1		
			B	GPRBNP3PB	1954326-1		
			Environmental, with Rear Grommet	A	GPRBEP3SA	1954327-1	
				B	GPRBEP3SB	1954328-1	
	Socket	Non-environmental (no Grommet or Seal)	A	GPRBNP3SA	1954329-1		
			B	GPRBNP3SB	1954330-1		
		06	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE06PA	1738096-1
					B	GPRBE06PB	1738101-1
	Insert with Rear Grommet, without Interfacial Seal			A	GPRBH06PA	1738096-2	
			B	GPRBH06PB	1738101-3		
	Non-environmental (no Grommet or Seal)		A	GPRBN06PA	1738096-3		
			B	GPRBN06PB	1738101-4		
		Socket	Environmental, with Rear Grommet	A	GPRBE06SA	1738099-1	
	B			GPRBE06SB	1738104-1		
	Non-environmental (no Grommet or Seal)		A	GPRBN06SA	1738099-2		
			B	GPRBN06SB	1738104-2		
	13C1	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE13C1PA	1738106-1	
				B	GPRBE13C1PB	1738111-1	
			Insert with Rear Grommet, without Interfacial Seal	A	GPRBH13C1PA	1738107-1	
				B	GPRBH13C1PB	1738112-1	
		Non-environmental (no Grommet or Seal)	A	GPRBN13C1PA	1738108-1		
			B	GPRBN13C1PB	1738113-1		
			Environmental, with Rear Grommet	A	GPRBE13C1SA	1738109-1	
				B	GPRBE13C1SB	1738114-1	
	Socket	Non-environmental (no Grommet or Seal)	A	GPRBN13C1SA	1738110-1		
			B	GPRBN13C1SB	1738115-1		
		13P1	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE13P1PA	1954331-1
					B	GPRBE13P1PB	1954332-1
Insert with Rear Grommet, without Interfacial Seal	A			GPRBH13P1PA	1954333-1		
	B		GPRBH13P1PB	1954334-1			
Non-environmental (no Grommet or Seal)	A		GPRBN13P1PA	1954335-1			
	B		GPRBN13P1PB	1954336-1			
	Socket	Environmental, with Rear Grommet	A	GPRBE13P1SA	1954337-1		
B			GPRBE13P1SB	1954338-1			
Non-environmental (no Grommet or Seal)		A	GPRBN13P1SA	1954339-1			
B	GPRBN13P1SB	1954340-1					

**Insert Descriptive Part Number Format** (Continued)

**GPRB Insert Part Numbers** (Continued)

Series	Contact Arrangement	Contact Type	Classification	Keying	Descriptive Part Number	TE Part Number		
B	14	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE14PA	1738116-1		
				B	GPRBE14PB	1738121-1		
			Insert with Rear Grommet, without Interfacial Seal	A	GPRBH14PA	1738117-1		
				B	GPRBH14PB	1738122-1		
			Non-environmental (no Grommet or Seal)	A	GPRBN14PA	1738118-1		
				B	GPRBN14PB	1738123-1		
		Socket	Environmental, with Rear Grommet	A	GPRBE14SA	1738119-1		
				B	GPRBE14SB	1738124-1		
			Non-environmental (no Grommet or Seal)	A	GPRBN14SA	1738120-1		
				B	GPRBN14SB	1738125-1		
			17	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE17PA	1738126-1
						B	GPRBE17PB	1738131-1
	Insert with Rear Grommet, without Interfacial Seal	A			GPRBH17PA	1738127-1		
		B			GPRBH17PB	1738132-1		
	Non-environmental (no Grommet or Seal)	A			GPRBN17PA	1738128-1		
		B			GPRBN17PB	1738133-1		
	Socket	Environmental, with Rear Grommet	A	GPRBE17SA	1738129-1			
			B	GPRBE17SB	1738134-1			
		Non-environmental (no Grommet or Seal)	A	GPRBN17SA	1738130-1			
			B	GPRBN17SB	1738135-1			
		20C1	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE20C1PA	1738136-1	
					B	GPRBE20C1PB	1738141-1	
	Insert with Rear Grommet, without Interfacial Seal			A	GPRBH20C1PA	1738137-1		
				B	GPRBH20C1PB	1738142-1		
	Non-environmental (no Grommet or Seal)			A	GPRBN20C1PA	1738138-1		
				B	GPRBN20C1PB	1738143-1		
	Socket		Environmental, with Rear Grommet	A	GPRBE20C1SA	1738139-1		
				B	GPRBE20C1SB	1738144-1		
			Non-environmental (no Grommet or Seal)	A	GPRBN20C1SA	1738140-1		
				B	GPRBN20C1SB	1738145-1		
20P1			Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE20P1PA	1954341-1	
					B	GPRBE20P1PB	1954342-1	
	Insert with Rear Grommet, without Interfacial Seal	A		GPRBH20P1PA	1954723-1			
		B		GPRBH20P1PB	1954344-1			
	Non-environmental (no Grommet or Seal)	A		GPRBN20P1PA	1954345-1			
		B		GPRBN20P1PB	1954346-1			
	Socket	Environmental, with Rear Grommet	A	GPRBE20P1SA	1954347-1			
			B	GPRBE20P1SB	1954348-1			
		Non-environmental (no Grommet or Seal)	A	GPRBN20P1SA	1954349-1			
			B	GPRBN20P1SB	1954350-1			
		22	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE22PA	1738146-1	
					B	GPRBE22PB	1738151-1	
Insert with Rear Grommet, without Interfacial Seal	A			GPRBH22PA	1738146-2			
	B			GPRBH22PB	1738151-2			
Non-environmental (no Grommet or Seal)	A			GPRBN22PA	1738146-3			
	B			GPRBN22PB	1738151-3			
Socket	Environmental, with Rear Grommet		A	GPRBE22SA	1738149-1			
			B	GPRBE22SB	1738154-1			
	Non-environmental (no Grommet or Seal)		A	GPRBN22SA	1738149-2			
			B	GPRBN22SB	1738154-2			
	22V		Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE22VPA	2033990-1	
					B	GPRBE22VPB	2033995-1	
		A		GPRBE22VSA	2000126-1			
Socket		Environmental, with Rear Grommet	A	GPRBE22VSA	2000126-1			
			B	GPRBE22VSB	2033996-1			
			B	GPRVE22VSB	2033996-1			



Rectangular Pin and Socket Connectors

**Insert Descriptive Part Number Format** (Continued)

**GPRB Insert Part Numbers** (Continued)

Series	Contact Arrangement	Contact Type	Classification	Keying	Descriptive Part Number	TE Part Number		
B	28	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE28PA	1738156-1		
				B	GPRBE28PB	1738161-1		
			Insert with Rear Grommet, without Interfacial Seal	A	GPRBH28PA	1738157-1		
				B	GPRBH28PB	1738162-1		
			Non-environmental (no Grommet or Seal)	A	GPRBN28PA	1738158-1		
				B	GPRBN28PB	1738163-1		
		Socket	Environmental, with Rear Grommet	A	GPRBE28SA	1738159-1		
				B	GPRBE28SB	1738164-1		
			Non-environmental (no Grommet or Seal)	A	GPRBN28SA	1738160-1		
				B	GPRBN28SB	1738165-1		
			30	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE30PA	1738166-1
						B	GPRBE30PB	1738171-1
	Insert with Rear Grommet, without Interfacial Seal	A			GPRBH30PA	1738167-1		
		B			GPRBH30PB	1738172-1		
	Non-environmental (no Grommet or Seal)	A			GPRBN30PA	1738168-1		
		B			GPRBN30PB	1738173-1		
	Socket	Environmental, with Rear Grommet		A	GPRBE30SA	1738169-1		
				B	GPRBE30SB	1738174-1		
		Non-environmental (no Grommet or Seal)		A	GPRBN30SA	1738170-1		
				B	GPRBN30SB	1738175-1		
		34		Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE34PA	1738176-1
						B	GPRBE34PB	1738181-1
	Insert with Rear Grommet, without Interfacial Seal		A		GPRBH34PA	1738177-1		
			B		GPRBH34PB	1738182-1		
	Non-environmental (no Grommet or Seal)		A		GPRBN34PA	1738178-1		
			B		GPRBN34PB	1738183-1		
	Socket		Environmental, with Rear Grommet	A	GPRBE34SA	1738179-1		
				B	GPRBE34SB	1738184-1		
			Non-environmental (no Grommet or Seal)	A	GPRBN34SA	1738180-1		
				B	GPRBN34SB	1738185-1		
			40	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE40PA	1738186-1
						B	GPRBE40PB	1738191-1
	Insert with Rear Grommet, without Interfacial Seal	A			GPRBH40PA	1738186-2		
		B			GPRBH40PB	1738191-2		
	Non-environmental (no Grommet or Seal)	A			GPRBN40PA	1738186-3		
		B			GPRBN40PB	1738191-3		
Socket	Environmental, with Rear Grommet	A		GPRBE40SA	1738189-1			
		B		GPRBE40SB	1738194-1			
	Non-environmental (no Grommet or Seal)	A		GPRBN40SA	1738189-2			
		B		GPRBN40SB	1738194-2			
	48	Pin		Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE48PA	2102227-1	
					B	GPRBE48PB	2102227-2	
Insert with Rear Grommet, without Interfacial Seal			A	GPRBH48PA	2102227-3			
			B	GPRBH48PB	2102227-4			
Insert with Interfacial Seal Only			A	GPRBT48PA	2102228-1			
			B	GPRBT48PB	2102228-2			
Socket		Non-environmental (no Grommet or Seal)	A	GPRBN48PA	2102229-1			
			B	GPRBN48PB	2102229-2			
		Environmental, with Rear Grommet	A	GPRBE48SA	2102229-3			
			B	GPRBE48SB	2102229-4			
		Non-environmental (no Grommet or Seal)	A	GPRBN48SA	2102230-1			
			B	GPRBN48SB	2102230-2			

**Insert Descriptive Part Number Format** (Continued)

**GPRB Insert Part Numbers** (Continued)

Series	Contact Arrangement	Contact Type	Classification	Keying	Descriptive Part Number	TE Part Number
B	25P1	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE25P1PA	2000108-1
				B	GPRBE25P1PB	2033997-1
		Socket	Environmental, with Rear Grommet	A	GPRBE25P1SA	2033989-1
				B	GPRBE25P1SB	2033998-1
	25Q1	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE25Q1PA	1811121-1
				B	GPRBE25Q1PB	1877567-1
		Socket	Environmental, with Rear Grommet	A	GPRBE25Q1SA	1811122-1
				B	GPRBE25Q1SB	1877568-1
	10Q2	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE10Q2PA	1877702-1
				B	GPRBE10Q2PB	1877706-1
				A	GPRBN10Q2PA	2000143-1
		Socket	Environmental, with Rear Grommet	A	GPRBE10Q2SA	1877704-1
				B	GPRBE10Q2SB	1877708-1
				A	GPRBN10Q2SA	1954067-1
	3Q3	Pin	Environmental, with Rear Grommet & Interfacial Seal	A	GPRBE3Q3PA	1877694-1
				B	GPRBE3Q3PB	1877698-1
		Socket	Environmental, with Rear Grommet	A	GPRBE3Q3SA	1877696-1
				B	GPRBE3Q3SB	1877700-1
	F12	ARINC 801 Termini	Environmental, without Sleeve Holder	A	GPRBEF12PA	1738805-1
				B	GPRBEF12PB	1738806-1
			Environmental, with Sleeve Holder	A	GPRBEF12SA	1738807-1
				B	GPRBE2F12SB	1738808-1
	F12C	ARINC 801 Termini	Environmental, without Sleeve Holder	A	GPRBEF12CPA	2000856-1
				B	GPRBEF12CPB	2000857-1
Environmental, with Sleeve Holder			A	GPRBEF12CSA	2000858-1	
			B	GPRBF12CSB	2000859-1	
12F6	ARINC 801 Termini	Environmental, without Sleeve Holder	A	GPRBE12F6PA	2000860-1	
			B	GPRBE12F6PB	2000861-1	
		Environmental, with Sleeve Holder	A	GPRBE12F6SA	2000862-1	
			B	GPRBE12F6SB	2000863-1	
M2	Mini-Expanded Beam	Spring-loaded Half	A	GPRBEM2PA	1445162-1	
			B	GPRBEM2PB	2000189-1	
		Fixed Half	A	GPRBEM2SA	1445163-1	
			B	GPRBEM2SB	2000190-1	



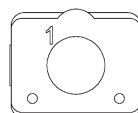
Rectangular Pin and Socket Connectors

**Insert Arrangements**

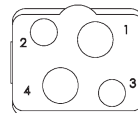
**GPRA Inserts<sup>1</sup>**



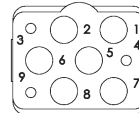
**00**  
Dummy Insert



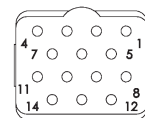
**1C1**  
1 x Size 5 Contacts



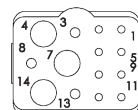
**04**  
2 x Size 15 or 16 Contacts  
2 x Size 12 Contacts



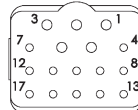
**09**  
3 x Size 20 Contacts  
6 x Size 15 or 16 Contacts



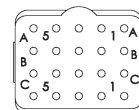
**14**  
14 x Size 20 Contacts



**14M**  
8 x Size 22 Contacts  
3 x Size 20 Contacts  
3 x Size 15 or 16 Contacts



**17**  
12 x Size 22 Contacts  
5 x Size 20 Contacts



**20**  
20 x Size 22 Contacts

**Note**

<sup>1</sup> Pin inserts: Mating faces shown above.

<sup>2</sup> In a GPRB2 shell, one insert must be "A" keyed and the other one must be "B" keyed (See at right).

<sup>3</sup> Size 8 cavity applicable for use with ARINC 600 Quadrax or Twinax contacts.

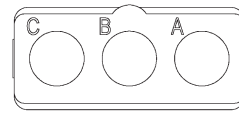


Insert Arrangements (Continued)

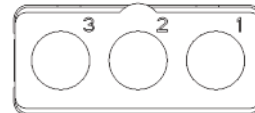
GPRB Inserts<sup>1, 2</sup>



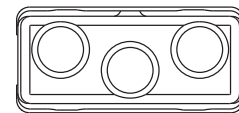
**00**  
Dummy Insert



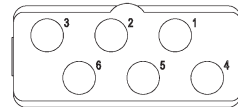
**C3**  
3 x Size 5 Coax Contacts



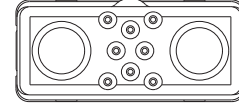
**P3**  
3 x Size 5 Power Contacts



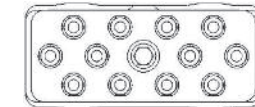
**3Q3<sup>3</sup>**  
3 x Size 8 Quadrax Contacts



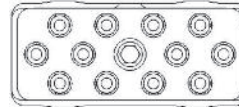
**06**  
6 x Size 12 Contacts



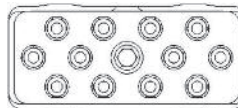
**10Q2<sup>3</sup>**  
8 x Size 20 Contacts  
2 x Size 8 Quadrax Contacts



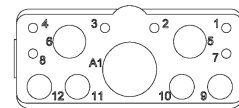
**12F6**  
6 x size 16 Optical ARINC 801 terminations  
6 size 16 special electrical contacts



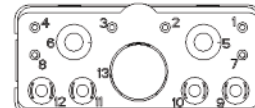
**F12C**  
(high grade thermoplastic)  
12 x size 16  
Optical ARINC 801 terminations



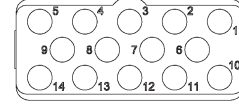
**F12 (aluminum)**  
12 x size 16  
Optical ARINC 801 terminations



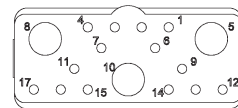
**13C1**  
2 x Size 12 Contacts  
4 x Size 15 or 16 Contacts  
6 x Size 20 Contacts  
1 x Size 5 Coax Contacts



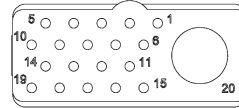
**13P1**  
2 x Size 12 Contacts  
4 x Size 15 or 16 Contacts  
6 x Size 20 Contacts  
1 x Size 5 Power Contacts



**14**  
14 x Size 15 or 16 Contacts



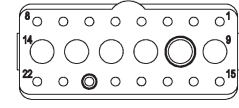
**17**  
14 x Size 20 Contacts  
3 x Size 12 Contacts



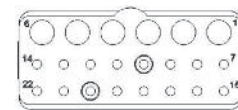
**20C1**  
19 x Size 20 Contacts  
1 x Size 5 Coax Contacts



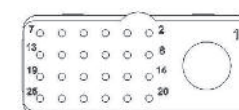
**20P1**  
19 x Size 20 Contacts  
1 x Size 5 Power Contacts



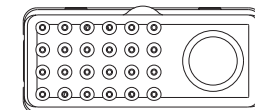
**22**  
16 x Size 20 Contacts  
6 x Size 15 or 16 Contacts



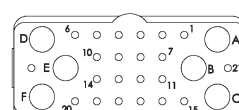
**22V**  
16 x size 20 contacts  
6 x size 16 contacts



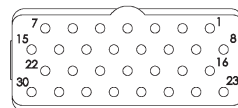
**25P1**  
24 x size 22 contacts  
1 x size 8 power contacts



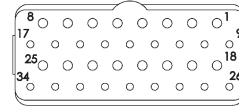
**25Q1<sup>3</sup>**  
24 x Size 22 Contacts  
1 x Size 8 Quadrax Contacts



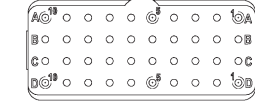
**28**  
22 x Size 22 Contacts  
6 x Size 15 or 16 Contacts



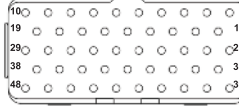
**30**  
30 x Size 20 Contacts



**34**  
18 x Size 22 Contacts  
16 x Size 20 Contacts



**40**  
40 x Size 22 Contacts



**48**  
48 x Size 22 Contacts

Keying:



Bussed inserts available for arrangements 13, 30, and 40.  
Contact TE Connectivity.  
Mini Expanded Beam inserts - see page 8-25

**Note**

- <sup>1</sup> Pin inserts: Mating faces shown above.
- <sup>2</sup> In a GPRB2 shell, one insert must be "A" keyed and the other one must be "B" keyed (See at right).
- <sup>3</sup> Size 8 cavity applicable for use with ARINC 600 Quadrax or Twinax contacts.

8  
Rectangular Pin and Socket Connectors

**Insert Assemblies for High Speed Applications**

**F12, F12C & 12F6  
ARINC 801 Insert  
Assemblies**



**Product Facts**

- F12C inserts now available in composite material
- ARINC 801 approved
- Optical termini for use with GPR, ARINC 600, circular MIL-DTL-38999 connectors.
- Industry Standard 1.25 mm ceramic ferrule
- Compatible with 1.5-2.2 mm tight jacket and loose tube cable construction:
- MT - Tight jacket cable
- ML – Loose tube cable
- Single mode (SM) and Multimode (MM) versions
- ARINC 801 termini part numbers: 1828199-1 MM/ML Version 1828200-1 MM/MT Version 1918614-1 SM/ML Version 1918616-1 SM/ML Version-APC 1918615-1 SM/MT Version 1918617-1 SM/MT Version - APC

**Materials:**

- Housings** – Nickel Plated Copper
- Ferrule** – Zirconia
- Spring** – Stainless Steel
- Crimp Sleeve** – Nickel Plated Copper
- Protective Cover** – Silicone

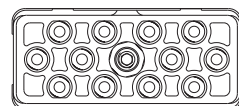
**Optical Performance**

- Single mode**, 1310 nm/1550 nm (UPC)
  - Attenuation, Mean** – 0.15 dB
  - Return Loss** - >50 dB
- Multimode**, 850 nm, 1310 nm
  - Attenuation, Mean** – 0.10 dB
  - Return Loss** - >20 dB

**Assembly Capabilities**

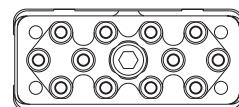
TE has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales Representative for assistance.

Insert Assembly, without Sleeve Holder, Environmental Aluminum Housings, F12 Key A 1738805-1 Key B 1738806-1



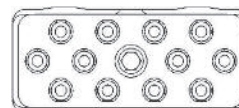
Composite Housings, F12C Key A 2000856-1 Key B 2000857-1

Insert Assembly, with Sleeve Holder, Environmental, Aluminum Housings, F12 GPRB Key A 1738807-1 Key B 1738808-1



Composite Housings, F12C Key A 2000858-1 Key B 2000859-1

Insert Assembly, without Sleeve Holder, Environmental, 12F6 GPRB Key A 2000860-1 Key B 2000861-1



Insert Assembly, with Sleeve Holder, Environmental, 12F6 Key A 2000862-1 Key B 2000863-1

**ARINC 801 Cavity Reducers**

Size 8 Quadrax	Part Number	ARINC 801 Cavity Reducer
Pin Quadrax adapter for ARINC 801 termini in Quadrax FR type cavity	1757727-1	Quadrax cavity reducer (FR/FR) for receptacle shell
Pin Quadrax adapter for ARINC 801 termini in Quadrax RR type cavity	1757710-1	Quadrax cavity reducer (RR/RR) for receptacle shell
Socket Quadrax adapter for ARINC 801 termini in Quadrax RR type cavity	1757711-1	Quadrax cavity reducer (RR/RR) for plug shell

**ARINC 801 Optical Termini Part Numbers**

Cable Dia.	Cable Structure ML (loose & tight) MT (ultra tight)	S/M Fiber 125.3 µm PC/UPC	S/M Fiber 125.3 µm APC	M/M Fiber 128 µm PC
0.9 mm Buffer	—	*	*	*
1.5 - 2.2 mm	ML	1918614-1	1918616-1	1828199-1
1.5 - 2.2 mm	MT	1918615-1	1918617-1	1828200-1

Consult your local TE Sales Representative for additional options.  
\* Contact TE for availability.

**Insert Assemblies for High Speed Applications** (Continued)

**M2 Mini-Expanded Beam Insert Holders**

**Product Facts**

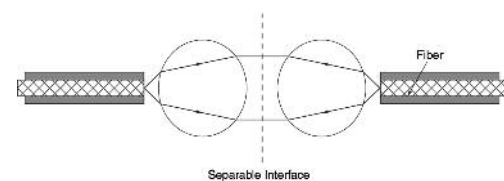
- No wear on fiber optic interface; Very vibration resistant
- Easy to handle, easy to clean. Durable connection that is highly resistant to dirt/debris.
- Singlemode or multimode
- Common 850/1300 dual wavelength, 1310 nm, or 1550 nm wavelengths
- Easy alignment for low-loss repeatable performance
- Consistent overall optical “link budget” assured
- Low sensitivity to thermal fluctuations and interface contamination
- Repeatable low-loss performance in harsh environments.

**Expanded Beam Products**

- Ball lens expands cross-sectional area of light over 200 times for multimode and over 2000 times for singlemode
- Rugged hermaphroditic construction (i.e., same insert mates to each other)
- Physically non-contacting mating conditions; no wear, installed fiber ferrule protected by ball lens
- PRO BEAM Mini Connector field deployable interconnects
- Insert/holder blocks designed for Mini-Expanded Beam
- Common insert for 1- through 4-channels
- Unique Modular Design, for use with multimode and singlemode fiber.
- Cable assembly and termination services

**Expanded Beam Insert**

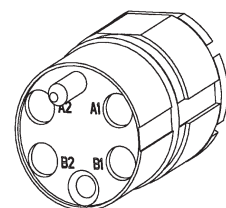
- Mini-Expanded Beam insert for multi-channel small form factor – the smallest expanded beam multi-channel insert in the industry a TE Connectivity exclusive.



Expanded Beam Principle

Fiber Optic interconnect/cable system using Expanded Beam technology, which physically expands and collimates the transmission signal into an optical beam over 14 times its original diameter (the cross sectional area of the light beam increases over 200 times for multimode optical signals). For singlemode signals, the collimated beam is over 45 times its original diameter

(the cross-sectional area of the light beam increases over 2,000 times). It is then refocused back down onto the core of the receiving fiber. This approach provides ease of alignment and low sensitivity to thermal changes and contamination. High strength, precision connector housings enhance a durable connection, optimizing low loss and repeatable performance.



Expanded Beam Inserts

Suitable for aerospace, avionics, field-deployable communications, marine ship-to-shore applications, security systems, mobile diagnostic units, oil and gas exploration and other harsh environment applications demanding strength, durability and reliable performance in conditions of multiple couplings/decouplings, blindmate situations, and high vibration.



Rectangular Pin and Socket Connectors

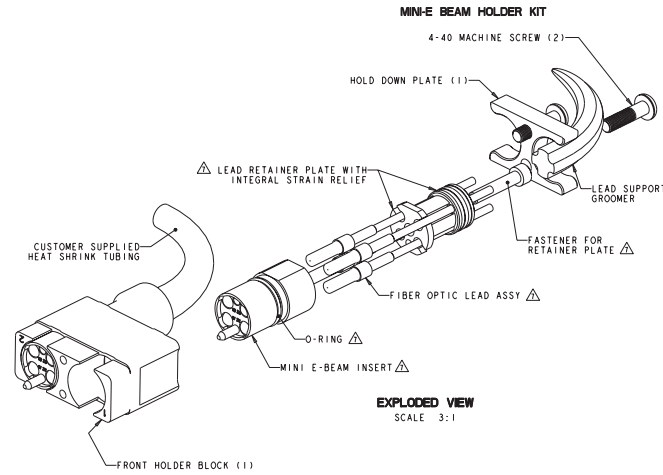
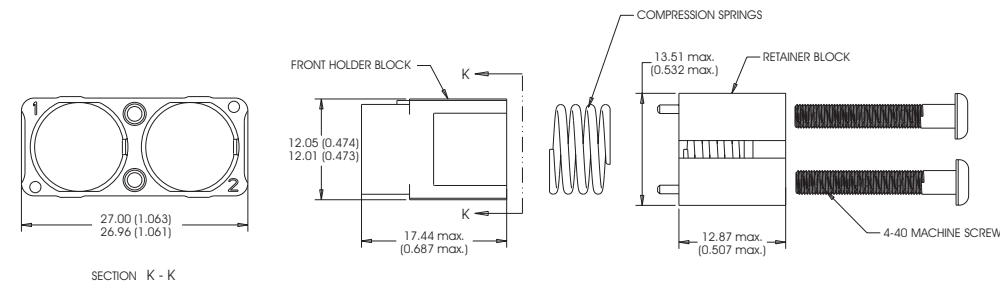
**Assembly Capabilities**

TE has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales Representative for assistance.

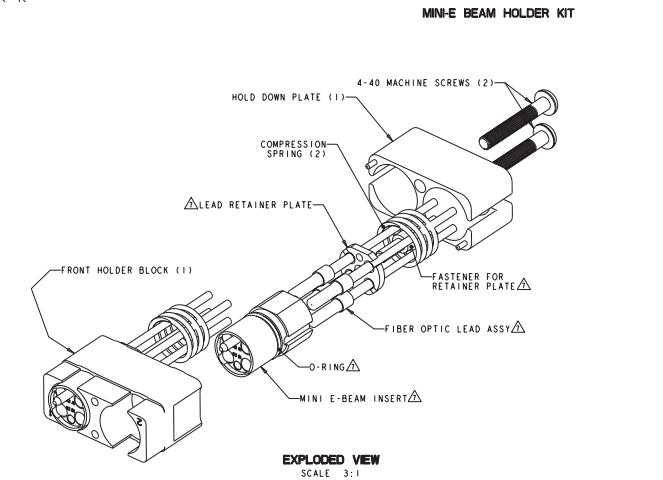
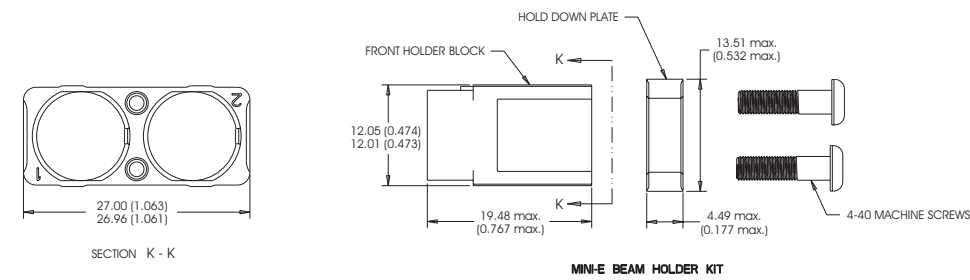
Insert Assemblies for High Speed Applications (Continued)

**M2 Mini-Expanded Beam Insert Holders**  
(Continued)

**Holder Kit, Pin (Spring-Loaded),  
Mini-Expanded Beam**  
Key A – GPRB-1445162-1  
Key B – GPRB-2000189-1



**Holder Kit, Socket (Fixed),  
Mini-Expanded Beam**  
Key A – GPRB-1445163-1  
Key B – GPRB-2000190-1



Insert Assemblies for High Speed Applications (Continued)

**24 Position Fiber Optic Connector**

for use with ARINC 801 termini

**Application Specification:**

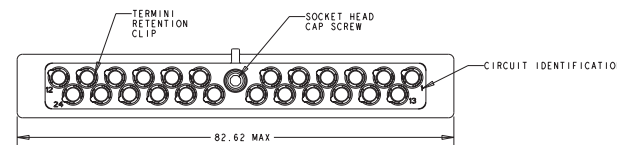
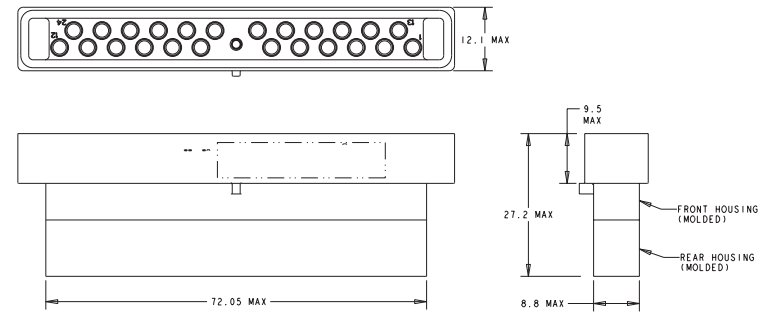
114-13192

**Product Specification:**

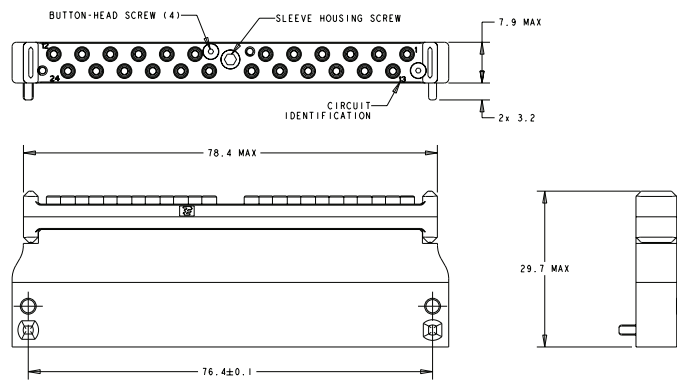
108-2247

**Qualification Test Report:**

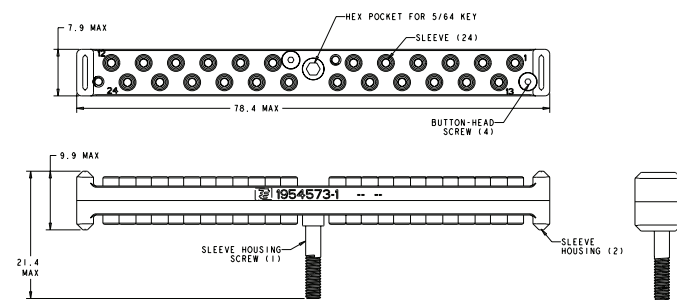
501-680



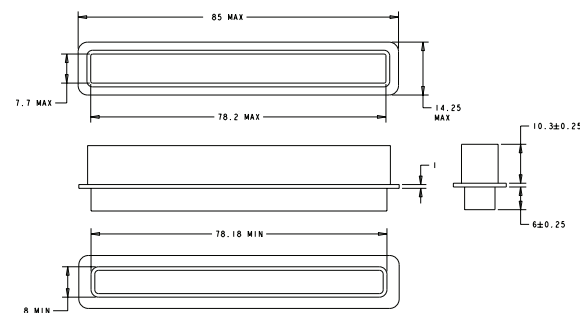
**Backplane Connector Kit  
1738969-1**



**Module Connector  
1738960-2**



**Sleeve Holder Assembly  
1954573-1**



**Dust Cover  
1877519-1**

**8**

Rectangular Pin and Socket Connectors



**Contact and Application Tool Part Numbers**

Form	Contact Size	Wire Size	Type	Contacts TE P/N	Contact Crimp Tools & Positioners				Contact Insertion/Removal Tools		
					Crimp Tool TE P/N	Crimp Tool MIL P/N	Positioner TE P/N	Positioner MIL P/N	TE Part Number	MIL Part Number	
Crimp Contacts	22	22 - 24 - 26	Pin	1738007-1	601966-1	M22520/2-01	601966-8	M22520/2-23	91066-1	M81969/1-01	
			Socket	1738008-1							
			Socket*	1954077-2							
	22 - Reduced Crimp Barrel	28 - 30	Pin	1738009-1	601966-1	M22520/2-01	601966-5	M22520/2-08	91067-2	M81969/1-02	
			Socket	1738010-1							
	20	20 - 22 - 24	Pin	1738011-1	601966-1	M22520/2-01	601966-5	M22520/2-08	91067-2	M81969/1-02	
			Socket	1738012-1							
	16	16 - 18 - 20	Pin	1738013-1	601967-1	M22520/1-01	601967-2	M22520/1-02	91066-3	M81969/1-03	
			Socket	1738014-1							
	16 - Reduced Crimp Barrel	20 - 22 - 24	Pin	1738015-1	601967-1	M22520/1-01	601967-2	M22520/1-02	91066-3	M81969/1-03	
			Socket	1738016-1							
	12	12 - 14	Pin	1738017-1	601967-1	M22520/1-01	601967-2	M22520/1-02	1738327-1	M81969/28-02	
			Socket	1738018-1							
	8	8 - 10	Pin	1996474-1	601967-1	M22520/1-01	601967-2	M22520/1-02	58284-1	M81969/28-03	
Socket			1996475-1								
5	8 - 10	Pin	1738019-1	N/A	M22520/23-01 & M22520/23-02	Locator 1738331-1	N/A	91074-1	M81969/28-01		
		Socket	1954722-1								
16 - Mating End 20-Crimp Barrel	20 - 22 - 24	Ground Block Contact	2-592404-1 M39029/1-101	601966-1	M22520/2-01	N/A	M22520/2-02 or /2-11	592105-1	M81969/14-11 or /14-02		
Form	Contact Size	Wire Size	Type	Contacts TE P/N	Center Conductor / Contact Crimp Tools & Positioners			Outer Conductor Crimp Tools & Die Sets		Contact Insertion/Removal Tools	
					Crimp Tool TE P/N	Crimp Tool MIL P/N	Positioner TE P/N MIL P/N	Crimp Tool TE P/N MIL P/N	Die Set TE P/N MIL P/N	TE P/N	MIL P/N
Coaxial Crimp Contacts	5	RG142 RG223 KX23	Pin	1738021-1	601966-1	M22520/2-01	1738332-1 N/A	608650-1 M22520/5-01	1738336-1 M22520/5-05	91074-1	M81969/28-01
			Socket	1738022-1							
	5	RG174 RG316 KX22	Pin	1738023-1	601966-1	M22520/2-01	1738332-1 N/A	608650-1 M22520/5-01	1738336-1 M22520/5-05	91074-1	M81969/28-01
			Socket	1738024-1							
	15	RG174 RG179 RG316 - KX22	Pin	1738025-1	601966-1	M22520/2-01	1738332-1 N/A	608650-1 M22520/5-01	1738336-1 M22520/5-05	91074-1	M81969/28-01
			Socket	1738026-1							
	15	RG178 KX21 ST	Pin	1738027-1	601966-1	M22520/2-01	1738332-1 N/A	608650-1 M22520/5-01	1738336-1 M22520/5-05	91066-3	M81969/1-03
			Socket	1738028-1							
	15	KX21 DT	Pin	1738029-1	601966-1	M22520/2-01	1738332-1 N/A	608650-1 M22520/5-01	1738336-1 M22520/5-05	91066-3	M81969/1-03
			Socket	1738030-1							
15	UT .047	Pin	1738031-1	601966-1	M22520/2-01	1738332-1 N/A	608650-1 M22520/5-01	1738336-1 M22520/5-05	91066-3	M81969/1-03	
		Socket	1738032-1								
Concentric Twinax Crimp Contacts	5	PAN61421 M17/176-0002	Pin	1738033-1	608650-1	M22520/5-01	1738338-1 N/A	608650-1 M22520/5-01	1738336-1 M22520/5-05	91074-1	M81969-28-01
			Socket	1738034-1							

\* Economy socket

**Contact and Application Tool Part Numbers** (Continued)

Form	Contact Size	Hex Crimp Number	Reference Cables	Type	Contacts PN	Contact Insertion/Extraction
ARINC 600 QUADRAX Contacts	8	0.218	Tensolite NF24Q100, NF26Q100, 24443/03130X-4 (LD), 2443/P025X-4 (LD), Raychem CEC-RWC-18687, CEC-RWC-18664	Pin	1445692-1	58284-1 M81969/28-03
				Socket	1445693-1	
			DRAKA F4703-3, F4704-4	Pin	1445692-6	
			Socket	1445693-6		
		Tensolite 26473/02006X-4 (LD), Raychem CEC-RWC-18684, CEC-RWC-18680	Pin	1877039-1		
			Socket	1877040-1		
Differential Pair TWINAX Contacts	8	—	Raychem 100 ohm Twinaxial 0024T1426	Seal Assembly	1877626-2	M81969/28-03
				Pin	1811865-1	
				Socket	1811866-1	
Differential Pair TWINAX Contacts	8	—	Raychem 120 ohm Twinaxial 1726A1424	Seal Assembly	1954046-1	M81969/28-03
				Pin	1811865-3	
				Socket	1811866-3	
				Seal Assembly	1954046-1	

**ARINC 801 Optical Termini Part Numbers**

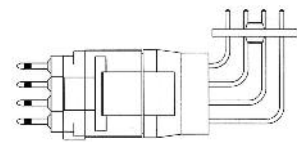
Cable Dia.	Cable Structure ML (loose & tight) MT (ultra tight)	S/M Fiber 125.3 µm PC/UPC	S/M Fiber 125.3 µm APC	M/M Fiber 128 µm PC
0.9mm Buffer	—	*	*	*
1.5 - 2.2mm	ML	1918614-1	1918616-1	1828199-1
1.5 - 2.2mm	MT	1918615-1	1918617-1	1828200-1

Consult your local TE Sales Representative for additional options.  
\* Contact TE for availability.

**PC Tail Contacts**

Inserts pre-assembled with PC tail contacts with straight or right-angle termination are available — Consult TE.

Posted Contacts – Rear Release/Remove					
Form	Contact Size	Type	Tail Diameter	Tail Length	Part Number
Posted Contacts	22	Pin	0.63	12.6	1738709-1
	20	Pin	0.63	13.35	1738710-1
	16	Pin	1.32	14.45	1996452-2
	12	Pin	2.03	13.60	1738711-1
	8	Pin	4.04	26.63	2000499-1
	5	Pin	4.55	26.66	2000500-1



Right Angle Posted Pin Contact / Insert Assemblies			
Form	Insert Arrangement		Part Number
Insert assemblies with right-angle pin contacts installed; insert assy. also includes pin spacer	06	GPRBE06PA	1996453-1
		GPRBE06PB	1996453-2
	40	GPRBE40PA	1996454-1
		GPRBE40PB	1996454-2
	25Q1*	GPRBE25Q1PA	1996481-1
		GPRBE25Q1PB	1996481-2

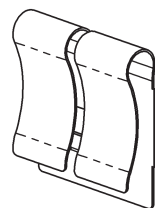
\*with Twinax contact installed in Size 8 cavity  
Other insert arrangements available upon request.

8 Rectangular Pin and Socket Connectors



**Spare Parts and Tools**

**Spare Parts**



Grounding Spring  
Part Number 1738199-1

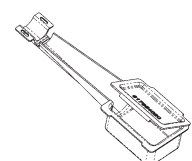
**GPRA and GPRB Series**

Part Number	Description	To Be Used With
1738199-1	Grounding Spring	GPRA
1738200-1	Dust Cap – Plug Shell	GPRA
1738201-1	Dust Cap – Receptacle Shell	GPRA
1738203-1	Jacknut – A/B/C/D/E/F	GPRB2
1738204-1	Jacknut – N/R/W/X/Y/Z	GPRB2
1738205-1	Jackscrew – A/B/C/D/E/F	GPRB2
1738206-1	Jackscrew – N/R/W/X/Y/Z	GPRB2
1738207-1	Polarizing Guide Socket – A/B/C/D/E/F	GPRB2 Rack & Panel application
1738208-1	Polarizing Guide Socket– N/R/W/X/Y/Z	GPRB2 Rack & Panel application
1738209-1	Polarizing Guide Post – A/B/C/D/E/F	GPRB2 Rack & Panel application
1738210-1	Polarizing Guide Post – N/R/W/X/Y/Z	GPRB2 Rack & Panel application
1738213-1	Dust Cap – Plug Shell	GPRB1
1738214-1	Dust Cap – Receptacle Shell	GPRB1
1738211-1	Dust Cap – Plug Shell	GPRB2
1738212-1	Dust Cap – Receptacle Shell	GPRB2
1877328-1	Anti-Static Dust Cap – Plug Shell	GPRB2
1877329-1	Anti-Static Dust Cap – Receptacle Shell	GPRB2
1738400-1	Grounding Spring	GPRB1 & B2
1738428-1	Polarization Key, Male	GPRA & legacy GPRB1
1738429-1	Polarization Key, Female	GPRA & legacy GPRB1
1738440-1	Key Retention Plate Assembly	GPRA & legacy GPRB1
1877985-1	Polarization Key, Pin	GPRB1 (for flexible sidewall design)
1877986-1	Polarization Key, Socket	GPRB1 (for flexible sidewall design)

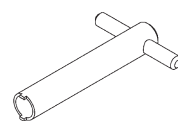
**Tools**

**GPRA and GPRB Series**

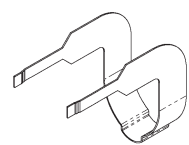
Part Number	Description	To Be Used With
1738215-1	Insert extraction tool	GPRA
1738216-1	Allen wrench locking system	GPRA, GPRB1
1738217-1	Insert handling case	GPRA, GPRB1 & B2
1738218-1	Insert extraction tool	GPRB1 & B2
1738219-1	Right-angle insert extraction tool	GPRB1 & B2
1738220-1	Spanner wrench for locking device w/1/4 inch adapter	GPRB2
1738221-1	Spanner wrench for locking device w/handle	GPRB2



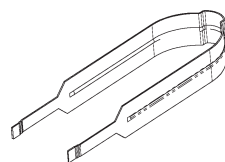
Insert Handling Case  
Part Number 1738217-1



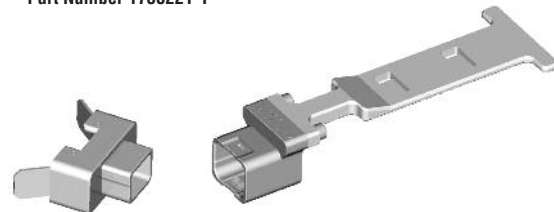
Spanner Wrench for Locking Device  
with Handle  
Part Number 1738221-1



Right-Angle Insert Extraction Tool  
Part Number 1738219-1



Insert Extraction Tool  
Part Number 1738218-1



Stainless steel testing tools are available to check the wiring of the inserts without the shell — Consult TE.

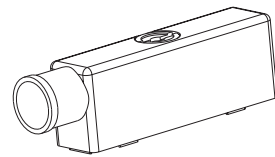
**EMI Backshells and Strain Reliefs**

**GPRB Series**

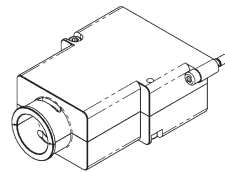
Part Number	Description	Used With
1738310-1	Straight strain relief	GPRB1
1738311-1	45° strain relief	GPRB1
1738312-1	Straight backshell	GPRB1
1738313-1	Straight strain relief	GPRB2
1738314-1	Backshell for shielded termination	GPRB2
1738315-1	Backshell for screened twisted-pair cables	GPRB2
1738316-1	Backshell for large sized wire harnesses	GPRB2
1811650-1	Straight Strain Relief	GPRB2-Vertical

**GPRA Series**

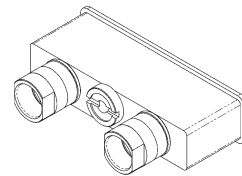
Part Number	Description
1738317-1	Straight strain relief
1738318-1	45° strain relief
1738319-1	Straight backshell



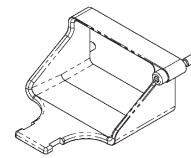
Backshell Kit, 90° Exit Contact TE



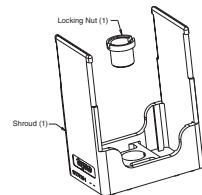
Straight Backshell Part Number 1738312-1



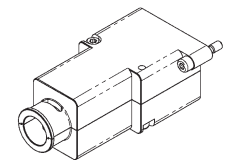
Backshell for Shielded Termination Part Number 1738314-1



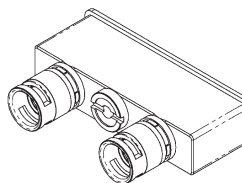
Straight Strain Relief Part Number 1738310-1



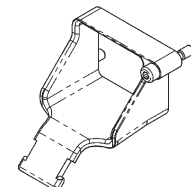
Vertical Strain Relief Kit, Fiber Optic Part Number 187736-1



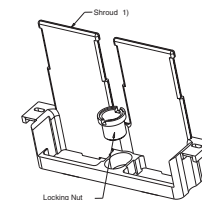
Straight Backshell Part Number 1738319-1



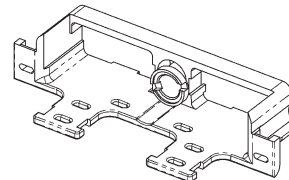
Backshell for Screened Twisted Pair Cables Part Number 1738315-1



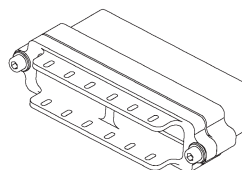
45° Strain Relief Part Number 1738318-1



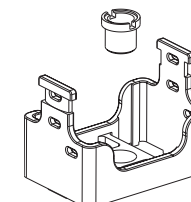
Horizontal Strain Relief Kit, Fiber Optic Part Number 187788-1



Straight Strain Relief Part Number 1738313-1



Backshell for Large Sized Wire Harnesses Part Number 1738316-1



GPRB2 Vertical Strain Relief Part Number 1811650-1



Rectangular Pin and Socket Connectors

**Galley Insert (GAIN) Connectors**

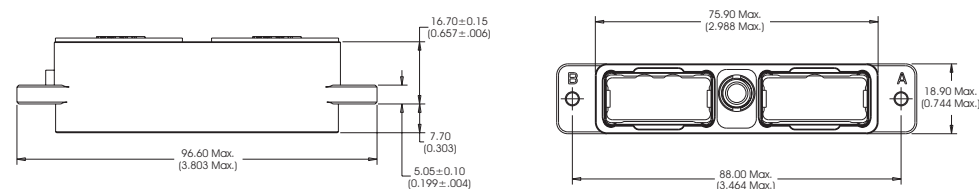


**Product Facts**

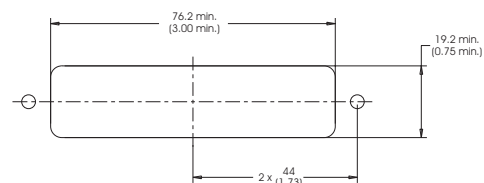
- Designed for ARINC 810 – standard interfaces for Galley Insert (GAIN) Equipment
- Spring-Loaded, float-mounting plug shell design allows ±1 mm variation in the mating direction
- Blind mating guide pin & socket accept ±2 mm/ 2° lateral misalignment
- Product incorporates:
  - Size 22 signal contacts
  - Size 12 power contacts
  - Size 8 twinax contacts
- 500 mating cycles durability

**Application Specification:**

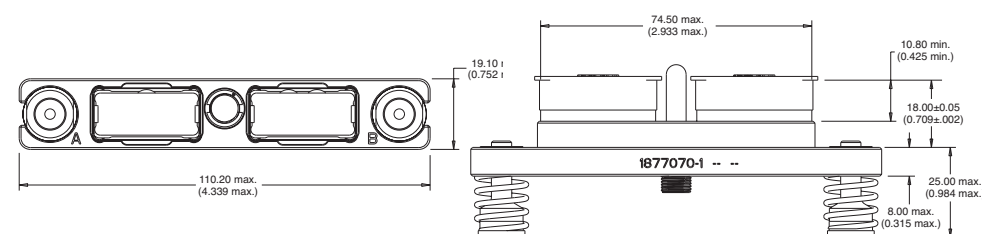
114-13220



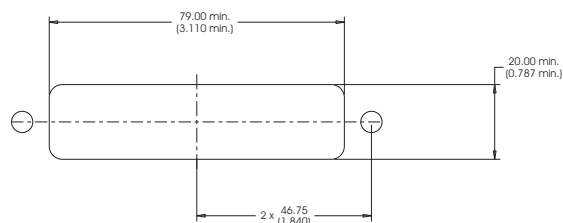
**Receptacle Shell, Front Panel Mount, with Guide Socket  
GPRB2  
1811119-1**



**Recommended Panel Cutout**



**Plug Shell, Spring-Loaded, Float-Mounting  
GPRB2  
1877070-1**



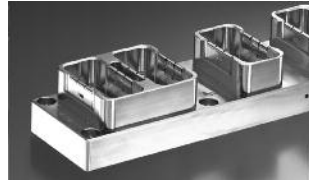
**Recommended Panel Cutout**

Description	Part Number	Ref. Catalog Page
Fully Assembled Receptacle	1877652-1	8-32
Fully Assembled Plug	1877646-1	8-32
Receptacle Shell Assembly	1811119-1	8-32
Plug Shell Assembly	1877070-1	8-32
25Q1 Pin Insert Assembly	1811121-1	8-20, 8-32
25Q1 Socket Insert Assembly	1811122-1	8-20, 8-32
06 Pin Insert Assembly	1738101-1	8-18, 8-32
06 Socket Insert Assembly	1738104-1	8-18, 8-32
Size 22 Pin Contact	1738007-1	8-28, 8-32
Size 22 Socket Contact	1738008-1	8-28, 8-32
Size 12 Pin Contact	1738017-1	8-28, 8-32
Size 12 Socket Contact	1738018-1	8-28, 8-32
Size 8 Twinax Pin Contact	1811865-3	8-28, 8-31
Size 8 Twinax Socket Contact	1811866-3	8-29, 8-32
Size 22 Sealing Plug	592104-4	8-32
Strain Relief (Straight)	1738313-1	8-31, 8-32
Dust Cap, Plug	1738211-1	8-30, 8-32
Dust Cap, Receptacle	1738212-1	8-30, 8-32
Seal Assembly, Size 8, GPR	1954046-1	8-29, 8-32
120 Ohm Twinaxial Cable	1726A1424	8-29

**Custom Shells**

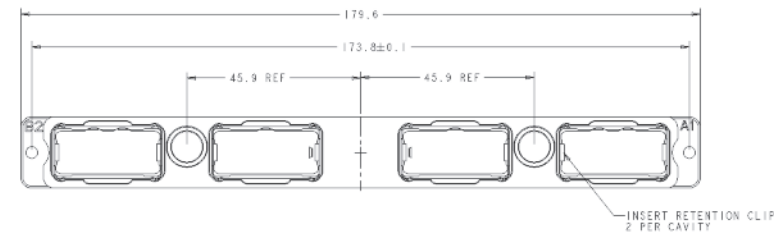
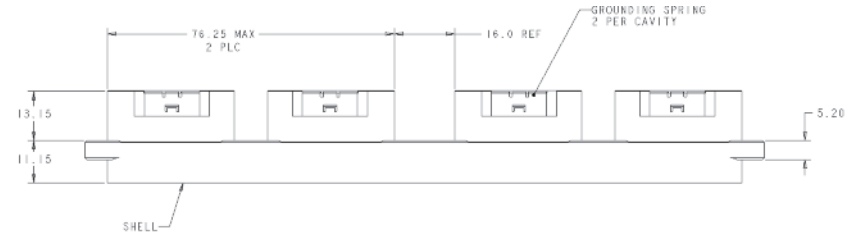
**Custom Shells**

This custom 4-cavity receptacle shell was developed and serves as the rear panel of the customer's enclosure.

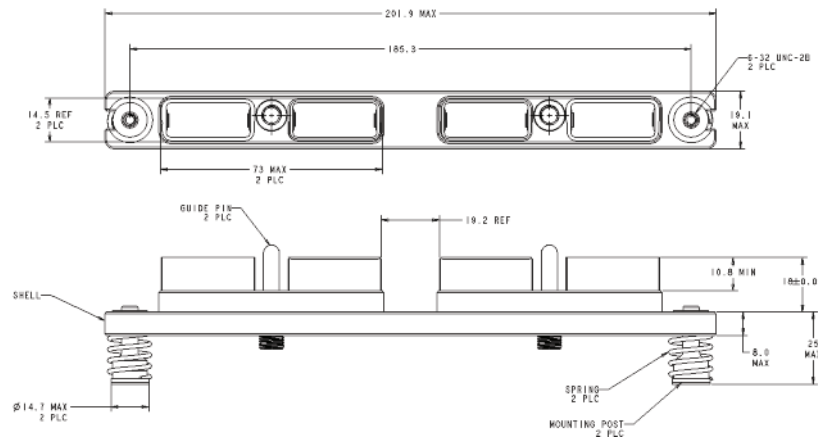


**GPRB4 (Horizontal) Shell Dimensions**

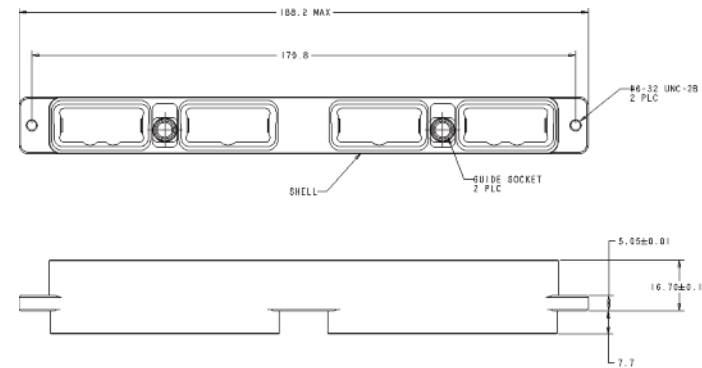
**Shell Kits with Four Cavities**



Receptacle, w/(2) thru holes  
1996487-1



Plug, w/ spring loaded float mount  
1996488-1



Receptacle, front panel mount, w/ (2) 6-32 holes

**8**

Rectangular Pin and Socket Connectors

**Custom Solutions and In Development Products**

The GPRA & B Connector Series offers a comprehensive range of standard components that allows the user to build a connector to meet his requirements. However, standard shells might not be compatible with the user's application;

alternate solutions are available to meet the customer's specific requirements with limited investment by using standard inserts and contacts. Some of these are shown below.

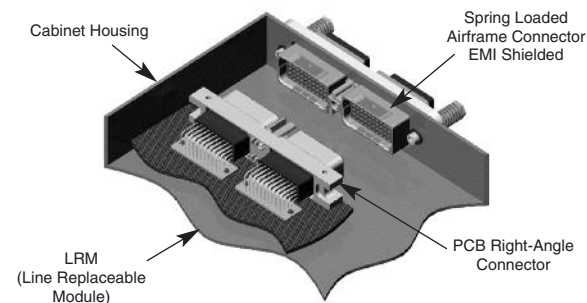
**Multicavity Racked Shells**

GPRB shells can be built in any format from 4 to 20 cavities for either panel or rack applications and with or without grounding blocks. These shells accommodate standard inserts.



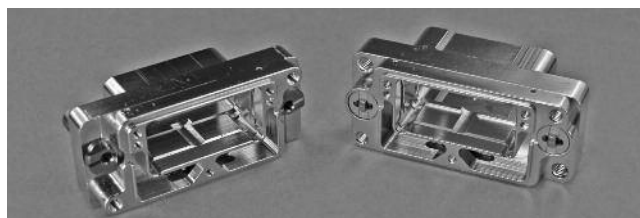
**Solution for IMA (Integrated Modular Avionics)**

A right-angle contact printed circuit board connector which allows direct mating with an airframe connector has been developed. It is fitted with special rack features: spring loaded shell, EMI shield frame and 4 polarization posts with 256 combinations.



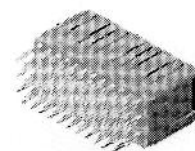
**Composite Shells (in development)**

Low weight, Skydrol® resistant composite shells have been developed.



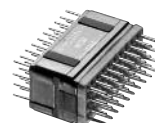
**High Density Insert - 48 Position**

To save space and weight and to accommodate density demand in electronic equipment.



**Custom Inserts**

Inserts are available with PC Tail contacts pre-assembled, such as this 40-position pin assembly.

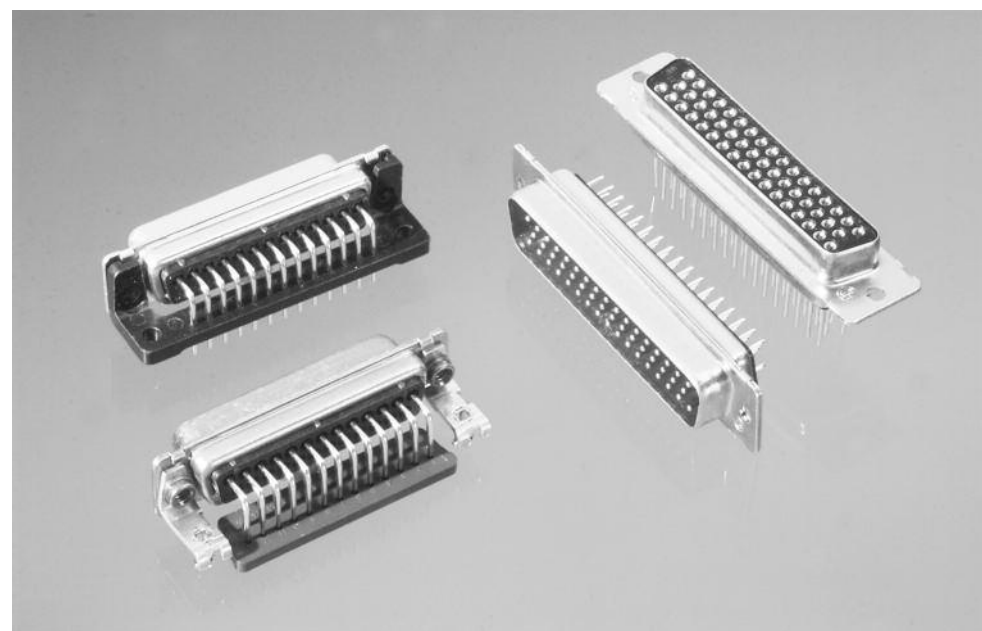


SKYDROL is a registered trademark of Solutia Inc.

**AMPLIMITE Subminiature Connectors**
**Introduction**
**Product Facts**

- Military qualified connectors conform to the latest amendments of MIL-DTL-24308
- Industrial versions available that use the same manufacturing process of MIL-C-24308 connectors
- Non-magnetic versions available per NASA spec, or with rubber grommet on rear of NASA-type connector
- **ULTRA-LITE AMPLIMITE** non-magnetic connectors save weight and improve EMI shielding vs. brass shell NASA-style connectors
- AS39029 contacts offer reliability and economies of high speed termination by automatic machine
- Connector savers (feed-through) preserve permanently mounted connectors in high use applications
- Choice of sizes — Size 1 through 5 for Series 109, standard density with 9, 15, 25, 37 and 50 contacts; Size 1 through 6 for Series 90, high density with 15, 26, 44, 62, 78 and 104 contacts
- Series 109 standard density connectors are available with cavities for power or coaxial contacts mixed with size 20 signal contacts
- Right-angle and straight PC board connectors in Series 109, standard density
- Preloaded, straight-posted connectors available in Series 90, high density
- Preloaded, solder cup connectors available in Series 109, standard density
- Produced under a Quality Management System certified to ISO 9001

A copy of the certificate is available upon request



AMPLIMITE Military Subminiature D Connectors are compact pin and socket connectors especially designed for high density packages. They are ideally suited for applications such as military equipment, ground support devices, computer peripheral equipment, modems and industrial instrumentation.

In addition to the complete selection of standard military subminiature D-type connectors, TE Connectivity offers special application versions such as connectors which mix power/coax cavities with size 20 signal contacts; feed-through connectors which provide a disposable interface for high use applications; and special non-magnetic connectors with a rubber grommet on the rear, for strain relief.

Series 109 and Series 90 military connectors conform

to the latest amendments of the MIL-DTL-24308 specification and thus are interchangeable with similar connectors in the same sizes from other manufacturers. A broad range of connectors is included in this catalog, complemented by a variety of commercial cable clamps and mating hardware, which can be found in catalog 1307612.

Each AMPLIMITE crimp connector has metal clips which retain the pins and sockets after they are loaded into the inserts from the rear.

Series 109 connectors accept size 20 contacts, while Series 90 connectors accept size 22 contacts. Cavity spacing conforms to military specifications.

Size 20 and size 22 pins and sockets are designed for an 8-indent crimp. They are supplied loose-piece for

crimping in a standard M22520/2 hand operated tool or tape-mounted for high speed application by an AMP-TAPEMATIC Stripper/Crimper Machine.

Series 90 and Series 109 connectors preloaded with contacts are available for printed circuit board mounting.

Special Series 109 connectors with power/coax cavities accept power contacts for 18 through 8 AWG [0.8-8 mm<sup>2</sup>] wire or coaxial contacts for RG/U 174, 188A and 316 cable, in combination with standard size 20 signal contacts.

A complete range of non-military AMPLIMITE subminiature D connectors, contacts and accessories are shown in catalog 1307612, available on request from TE.

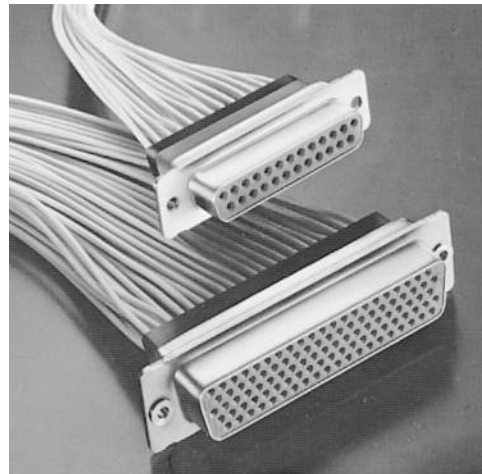
**8**

## Rectangular Pin and Socket Connectors

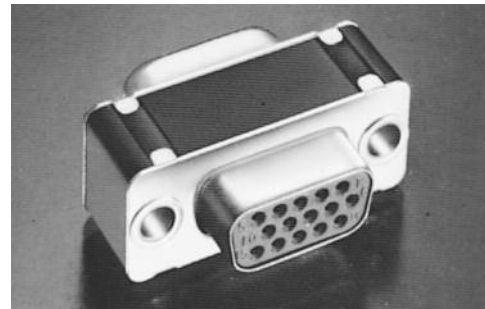


**AMPLIMITE Subminiature Connectors** (Continued)

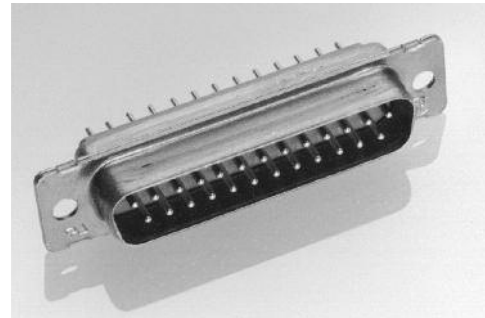
**Introduction** (Continued)



Connectors for crimp, snap-in contacts are available in both series, standard shells and non-magnetic, plus non-magnetic with rear rubber grommet.



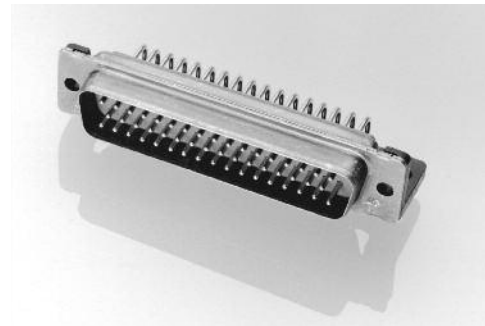
Connector savers extend life in high-use applications.



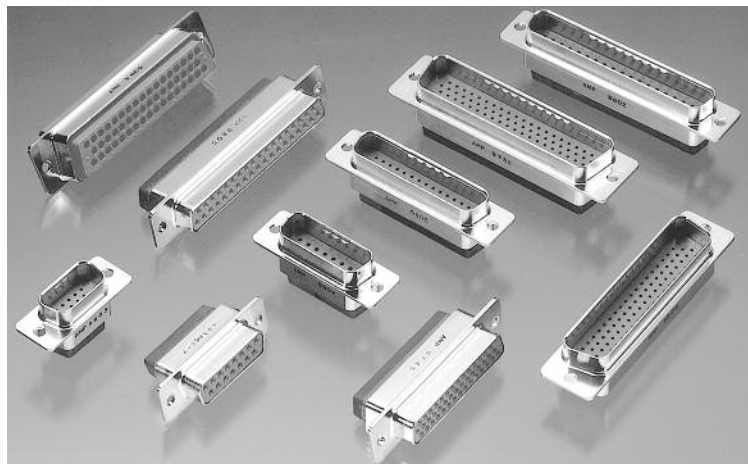
Straight posted versions available in both (Series 109) standard density and (Series 90) high density connectors.



Coax or power contacts can be mixed with signal contacts.



Right-angle board mount connectors for Series 109, standard density connections.



**ULTRA-LITE AMPLIMITE** Connectors for state-of-the-art weight savings and EMI performance.



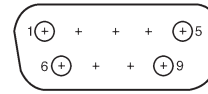
The Series 109 and 90 Blindmate Plug connectors are designed to prevent butting of contacts during mating.



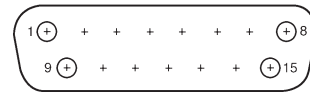
**AMPLIMITE Connectors, Series 109**

**Series 109 Connectors  
(Standard Density)**

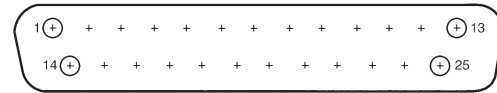
**Insert Arrangements**



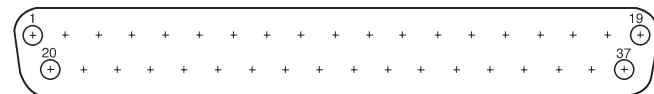
**9 Position  
(Shell Size 1)  
MS 18273-1**



**15 Position  
(Shell Size 2)  
MS 18274-1**



**25 Position  
(Shell Size 3)  
MS 18275-1**



**37 Position  
(Shell Size 4)  
MS 18276-1**



**50 Position  
(Shell Size 5)  
MS 18277-1**

**Note:** Mating face of plug shown; receptacle is mirror image.

**Performance Specifications**

All Series 109 AMPLIMITE military connectors conform to the latest amendments of military specification MIL-DTL-24308. For more detailed information refer to MIL-DTL-24308.

All Series 109 Connectors are designed for a -67°F to 257°F [-55°C to +125°C] temperature range.

Series 109 contact current rating for Crimp Snap Connectors for MIL-C-39029 7.5 amps in free air.

Series 109 contact current rating for PCB Mount Connectors 5.0 amps per 108-1770.

**Technical Documents List**

The following technical documents cover the application and performance of AMPLIMITE Series 109 Connectors, contacts, tooling and accessories.

**Military Specifications**

MIL-DTL-24308 Connectors, Electric, Rectangular, Miniature Polarized Shell, Rack and Panel, General Specifications for

AS39029 Contacts, Electrical Connector, General Specification for

**NASA Specification**

GSFC-S-311-P-4 Non-Magnetic Connectors, General Specification for

**Instruction Sheets**

- 408-7516 Application Tooling for MIL-C-39029 Contacts
- 408-7634 Application and Maintenance for Hand Crimping Tool 90302-1
- 408-7694-1 Application and Maintenance for Hand Crimping Tool 90312-1
- 408-7954 Application and Maintenance for Hand Crimping Tool 90374-1
- 408-7508 Insertion/Extraction Tools 91067-1, 91067-2 and 91067-3
- 408-7837 Female Screwlock Kit 205817-1 and Male Screw/Retainer Kit 211883-5



Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors, Series 109** (Continued)

**Size 20 Crimp Contacts for Series 109 Connectors (AS39029)**

**Size 20 Crimp, Snap-In Contacts .040 [1.02] Pin Diameter**

**Material and Finish**

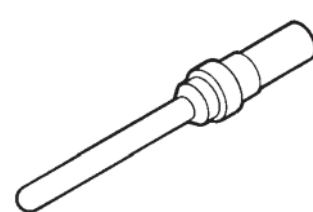
**Pin and Socket Body —**

**Pin and Socket Body** — Copper alloy, gold flash .000050–.000100 [0.00127–0.00254] thick nickel underplate.

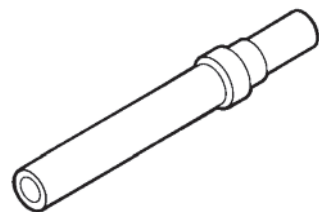
**Mating Area** — Copper alloy, plated gold .000050 min thick over .000050–.000100 [0.00127–0.00254] thick nickel underplate.

**Contact Body & Mating Area** — Copper alloy, plated gold .000050–.000100 [0.00127–0.00254] thick over .000050–.000100 [0.00127–0.00254] thick nickel underplate.

**Socket Hood** — Passivated stainless steel.



**Pin**  
M39029/64-369  
(Supersedes M24308/11-1)



**Socket**  
M39029/63-368  
(Supersedes M24308/10-1)

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. (Max.)	Contact Configuration	Tape Mounted Contacts Part Number	Loose Piece Contacts		Hand Tool		Contact Color Band
				Military Part No. (M39029/)	AMP Part No.	Tool No. (M22520/)	Positioner No. (M22520/)	
20-24 0.6-0.2	.072 1.83	Pin	205089-2 <sup>a</sup>	64-369	205089-1 <sup>a</sup>	02-01	02-08	orange, blue, white
		Socket	205090-2 <sup>a</sup>	63-368	205090-1 <sup>a</sup>	02-01	02-08	orange, blue, gray
20-24 0.6-0.2	.072 1.83	Pin	1-205089-3 <sup>b</sup>	64-369	1-205089-2 <sup>b</sup>	02-01	02-08	orange, blue, white
		Socket	1-205090-0 <sup>b</sup>	63-368	205090-9 <sup>b</sup>	02-01	02-08	orange, blue, gray

Tape mounted contacts are used in the AMP-TAPEMATIC Stripper/Crimper Machine Part Number **599406-7** (page 8-89).

- Notes:**
1. These contacts are used in Series 109 military connectors.
  2. Insertion/Extraction Tool Part Number **91067-2** (Military Part Number **M81969/1-02**) is used to install and remove pin and socket contacts.
  3. See Instruction Sheet 408-7516 for wire length, tool and selector settings.
  4. Color bands are read in the direction of terminal (wire barrel) end to mating end.

**Size 20 Crimp Contacts for Series 109 Connectors (Industrial Grade)**

**Size 20 Crimp, Snap-In Contacts .040 [1.02] Pin Diameter**

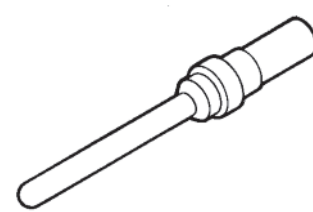
**Material and Finish**

**Pin and Socket Body —**

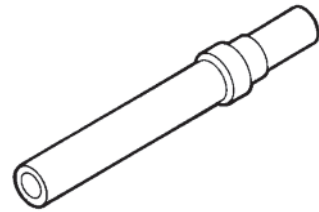
**Pin Body** — Brass, plated gold .000030 [0.00076] min thick over .000050–.000150 [0.00127–0.00381] thick nickel underplate.

**Socket Body** — Brass, plated gold .000010 [0.00025] min thick over .000050–.000150 [0.00127–0.00381] thick nickel underplate.

**Socket Clip** — Copper alloy, plated gold .000050 [0.00013] min thick over .000050–.000150 [0.00127–0.00381] thick nickel underplate.



**Pin**



**Socket**

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. (Max.)	Contact Configuration	Tape Mounted Contacts Part Number	Loose Piece Contacts Part Number	Hand Tool	
					Tool No. (M22520/)	Positioner No. (M22520/)
20-24 0.6-0.2	.072 1.83	Pin	1218266-4	1218266-3	02-01	02-08
		Socket	1218267-4	1218267-3	02-01	02-08
18 0.8	.083 2.11	Pin	1218266-2	1218266-1	02-01	02-08
		Socket	1218267-2	1218267-1	02-01	02-08

Tape mounted contacts are used in the AMP-TAPEMATIC Stripper/Crimper Machine Part Number **599406-7** (page 8-89).

- Notes:**
1. These contacts are used in Series 109 connectors.
  2. Insertion/Extraction Tool Part Number **91067-2** (Military Part Number **M81969/1-02**) is used to install and remove pin and socket contacts.
  3. See Instruction Sheet 408-7516 for wire length, tool and selector settings.

**AMPLIMITE Connectors, Series 109** (Continued)

**Size 20 Posted Contacts for Series 109 Connectors**

**Material and Finish**

**Pin and Socket Body** —  
Leaded nickel copper or beryllium copper, plated per chart below

**Socket Hood** —  
See chart below

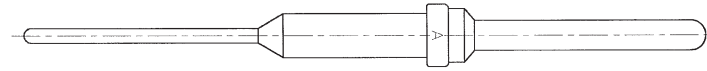


**Pin and Socket Insertion/Extraction Tool**

AMP Part Number 91067-2 or  
MIL Number M81969/1-02  
Insertion tip, for replacement  
Part Number 126195-3  
Extraction tip, for replacement  
Part Number 126195-4

**Notes:**

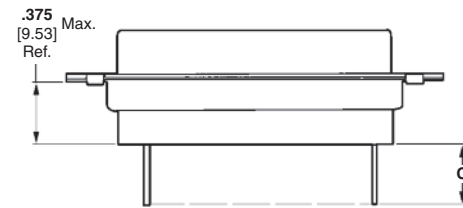
1. Contacts on this page can be used with connectors on pages 8-43 to 8-48, 8-62, 8-63 and 8-84.
2. Mating End of pin and socket complies with MIL-C-39029.
3. See page 8-91 for PCB layouts.



**Pin**  
(See Drawing Number 212565 for Latest Configuration)



**Socket**  
(See Drawing Number 208778 for Latest Configuration)



**Post Extension When Used in a Standard Connector**



Rectangular Pin and Socket Connectors

Post Diameter ± .002 [± .050]	Post Extension C ± .025 [± 0.63]	Part Numbers		Contact Plating	Socket Hood Material and Finish
		Pin	Socket		
.018 0.46	.325 8.25	1-212565-0	1-208778-0	Gold .000050-.000100 [0.00127-0.00254] thick over .000150-.000250 [0.00381-0.00635] thick copper underplate	Passivated Stainless Steel
.018 0.46	.325 8.25	—	1-208778-1	Gold .000050-.000100 [0.00127-0.00254] thick over .000050-.000150 [0.00127-0.00381] thick nickel underplate	Passivated Stainless Steel
.018 0.46	.240 6.10	—	1-208778-2	Gold .000050-.000100 [0.00127-0.00254] thick over .000150-.000250 [0.00381-0.00635] thick copper underplate	Passivated Stainless Steel

**AMPLIMITE Connectors, Series 109** (Continued)

**Size 20 Posted Contacts for Series 109 Connectors (High Current Upgrade Program)**

The High Current Size 20 contact has been designed to fit into the Series 109 AMPLIMITE Connectors per MIL-C-24308.

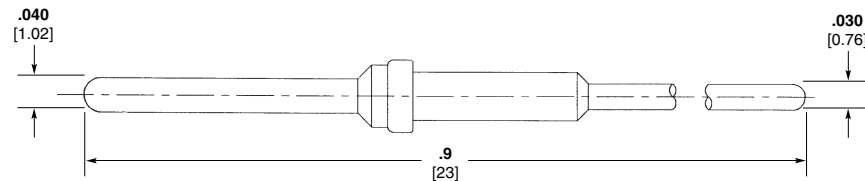
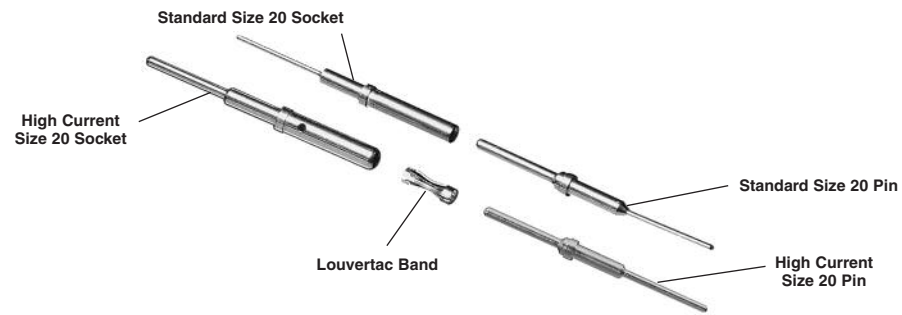
**Material**

**Body** — Copper Alloy  
**Louvertac Band** — Beryllium Copper

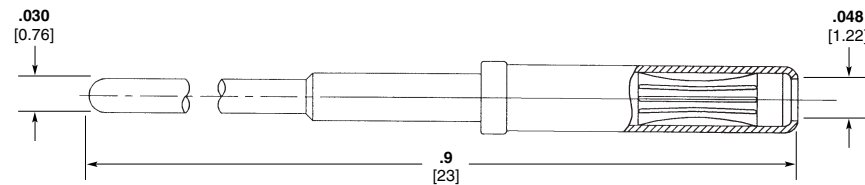
**Finish**

**Body** — Gold  
**Louvertac Band** — Gold

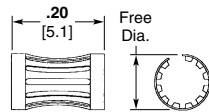
**Current-Carrying Capacity.** The High Current Size 20 contact with a 20 gage wire attached to the .030 [0.762] diameter solder tail acquired an initial 86°F [30°C] T-Rise of 11.85 amps in free air.



Pin Part Number 194081-1

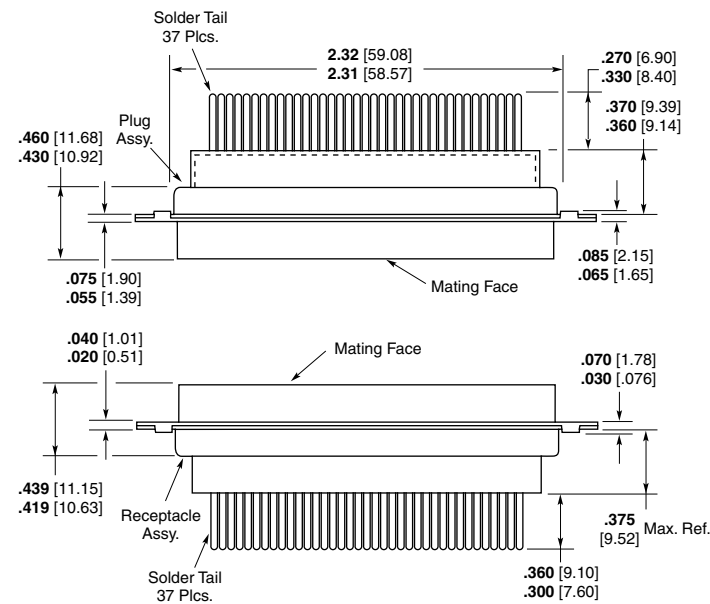


Socket Part Number 194083-1



Multiple contact point due to hyperbolic shape.

The contacts can be sold loose piece or installed into any of the MIL Standard connectors.



Typical Fully-Loaded 37 Position Plug and Receptacle

**Note: 1. High Current contacts with Louvertac bands are NOT intermateable with any other contact.**



Pin and Socket Insertion/Extraction Tool

Part Number 91067-2 or MIL number M81969/1-02  
 Insertion tip, for replacement Part Number 126195-3  
 Extraction tip, for replacement Part Number 126195-4

**AMPLIMITE Connectors, Series 109** (Continued)

**Crimp, Series 109, Standard Density Connectors (MIL Qualified)**

**Material and Finish**

**Shell** — Steel, cadmium plated

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel

**Related Product Data**

**Cavity Identification** — page 8-39

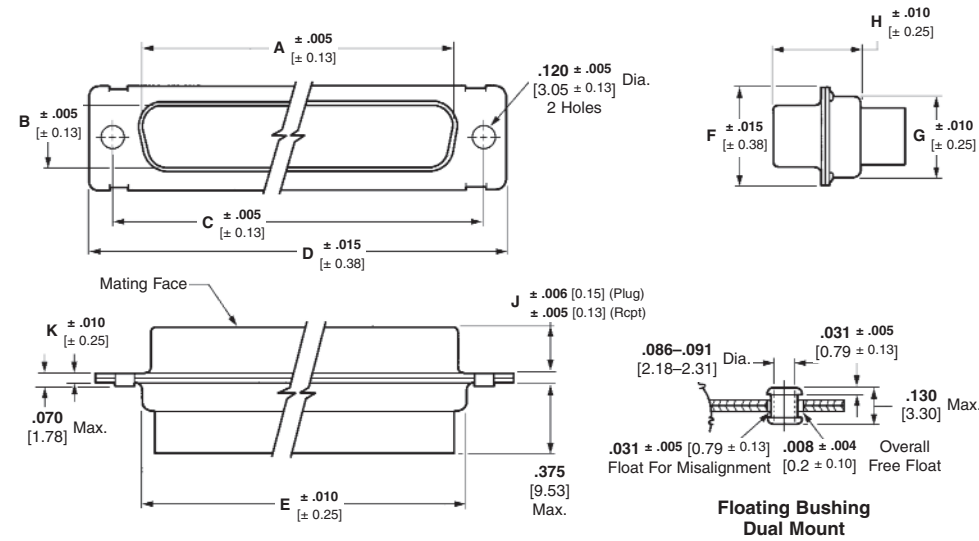
**Contacts** — pages 8-40 to 8-42

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**Attention: Connector Marking**

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



**Series 109 Plugs per MIL-DTL-24308**

No. of Contact Pos. (Shell Size)	Dimensions										Standard Mount		Floating Bushing Mount		Description
	A (Inside)	B (Inside)	C	D	E	F	G	H	J	K	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	
9 (1)	.666 16.92	.329 8.36	.984 24.99	1.213 30.81	.759 19.28	.494 12.55	.422 10.72	.422 10.72	.235 5.97	.030 0.76	4-259F 4-1F	205162-1 205556-2	4-324F 4-302F	205412-1 205486-2	Plug only Plug with pins
15 (2)	.994 25.25	.329 8.36	1.312 33.32	1.541 39.14	1.083 27.51	.494 12.55	.422 10.72	.422 10.72	.235 5.97	.030 0.76	4-260F 4-2F	205164-1 205558-2	4-325F 4-303F	205408-1 205409-2	Plug only Plug with pins
25 (3)	1.534 38.96	.329 8.36	1.852 47.04	2.088 53.04	1.625 41.3	.494 12.55	.422 10.72	.426 10.82	.230 5.84	.039 0.99	4-261F 4-3F	205166-1 205560-2	4-326F 4-304F	205413-1 205487-2	Plug only Plug with pins
37 (4)	2.182 55.42	.329 8.36	2.500 63.5	2.729 69.32	2.272 57.71	.494 12.55	.422 10.72	.426 10.82	.230 5.84	.039 0.99	4-262F 4-4F	205168-1 205562-2	4-327F 4-305F	205414-1 205488-2	Plug only Plug with pins
50 (5)	2.079 52.81	.441 11.2	2.406 61.11	2.635 66.93	2.178 55.32	.605 15.37	.534 13.56	.426 10.82	.230 5.84	.039 0.99	4-263F 4-5F	205170-1 205564-2	4-328F 4-306F	205415-1 205431-2	Plug only Plug with pins

**Series 109 Receptacles per MIL-DTL-24308**

No. of Contact Pos. (Shell Size)	Dimensions										Standard Mount		Floating Bushing Mount		Description
	A (Outside)	B (Outside)	C	D	E	F	G	H	J	K	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	
9 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.759 19.28	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.030 0.76	2-281F 2-1F	205161-1 205555-2	2-292F 2-23F	205416-1 205483-2	Recept. only Recept. with sockets
15 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	1.083 27.51	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.030 0.76	2-282F 2-2F	205163-1 205557-2	2-293F 2-24F	205417-1 205433-2	Recept. only Recept. with sockets
25 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	1.625 41.3	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.039 0.99	2-283F 2-3F	205165-1 205559-2	2-294F 2-25F	205418-1 205484-2	Recept. only Recept. with sockets
37 (4)	2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	2.272 57.71	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.039 0.99	2-284F 2-4F	205167-1 205561-2	2-295F 2-26F	205419-1 205485-2	Recept. only Recept. with sockets
50 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	2.178 55.32	.605 15.37	.534 13.56	.429 10.9	.243 6.17	.039 0.99	2-285F 2-5F	205169-1 205563-2	2-296F 2-27F	205420-1 205432-2	Recept. only Recept. with sockets

- Notes:**
- Size 20 contacts supplied with connectors are loose piece.
  - "F" is stamped on connectors following M24308 Part Number as required. "F" designates cadmium shell plating.
  - See pages 8-99 through 8-103 (Military to AMP Part Number cross reference) for additional part numbers.



**AMPLIMITE Connectors, Series 109** (Continued)

**Crimp, Series 109,  
Standard Density Connectors  
(MIL Qualified) — Zinc Plated  
RoHS Compliant**

**Material and Finish**

**Shell** — Steel, zinc plated

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel

**Related Product Data:**

**Cavity Identification** — page 8-39

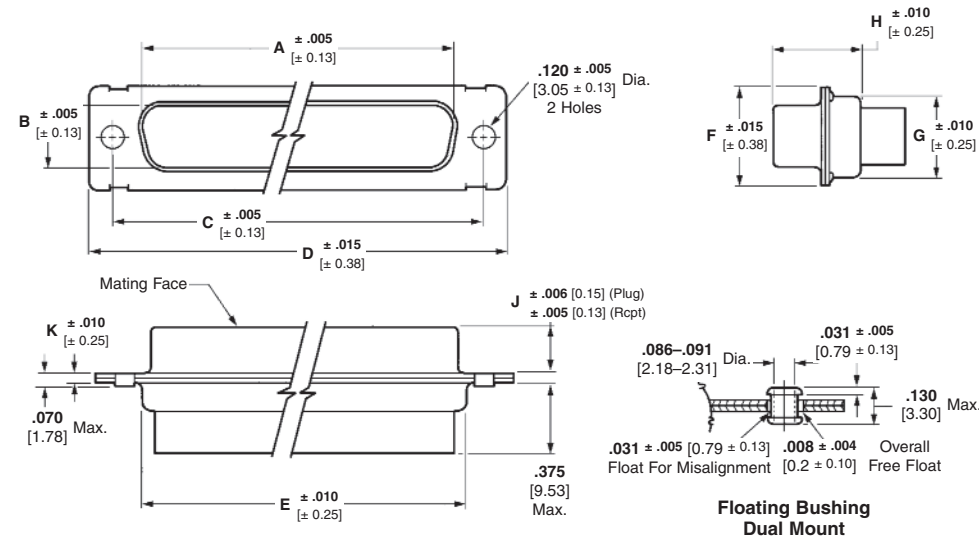
**Contacts** — pages 8-40 to 8-42

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**Attention: Connector Marking**

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



**Series 109 Plugs per MIL-DTL-24308**

No. of Contact Pos. (Shell Size)	Dimensions										Standard Mount		Floating Bushing Mount		Description
	A (Inside)	B (Inside)	C	D	E	F	G	H	J	K	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	
9 (1)	.666	.329	.984	1.213	.759	.494	.422	.422	.235	.030	4-259	1757819-1	4-324	1757821-1	Plug only
	16.92	8.36	24.99	30.81	19.28	12.55	10.72	10.72	5.97	0.76	4-1	1757819-6	4-302	1757821-6	Plug with pins
15 (2)	.994	.329	1.312	1.541	1.083	.494	.422	.422	.235	.030	4-260	1757819-2	4-325	1757821-2	Plug only
	25.25	8.36	33.32	39.14	27.51	12.55	10.72	10.72	5.97	0.76	4-2	1757819-7	4-303	1757821-7	Plug with pins
25 (3)	1.534	.329	1.852	2.088	1.625	.494	.422	.426	.230	.039	4-261	1757819-3	4-326	1757821-3	Plug only
	38.96	8.36	47.04	53.04	41.3	12.55	10.72	10.82	5.84	0.99	4-3	1757819-8	4-304	1757821-8	Plug with pins
37 (4)	2.182	.329	2.500	2.729	2.272	.494	.422	.426	.230	.039	4-262	1757819-4	4-327	1757821-4	Plug only
	55.42	8.36	63.5	69.32	57.71	12.55	10.72	10.82	5.84	0.99	4-4	1757819-9	4-305	1757821-9	Plug with pins
50 (5)	2.079	.441	2.406	2.635	2.178	.605	.534	.426	.230	.039	4-263	1757819-5	4-328	1757821-5	Plug only
	52.81	11.2	61.11	66.93	55.32	15.37	13.56	10.82	5.84	0.99	4-5	1-1757819-0	4-306	1-1757821-0	Plug with pins

**Series 109 Receptacles per MIL-DTL-24308**

No. of Contact Pos. (Shell Size)	Dimensions										Standard Mount		Floating Bushing Mount		Description
	A (Outside)	B (Outside)	C	D	E	F	G	H	J	K	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	
9 (1)	.643	.311	.984	1.213	.759	.494	.422	.429	.243	.030	2-281	1757820-1	2-292	1757822-1	Recept. only
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	10.9	6.17	0.76	2-1	1757820-6	2-23	1757822-6	Recept. with sockets
15 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.429	.243	.030	2-282	1757820-2	2-293	1757822-2	Recept. only
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	10.9	6.17	0.76	2-2	1757820-7	2-24	1757822-7	Recept. with sockets
25 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.429	.243	.039	2-283	1757820-3	2-294	1757822-3	Recept. only
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	10.9	6.17	0.99	2-3	1757820-8	2-25	1757822-8	Recept. with sockets
37 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.429	.243	.039	2-284	1757820-4	2-295	1757822-4	Recept. only
	54.84	7.9	63.5	69.32	57.71	12.55	10.72	10.9	6.17	0.99	2-4	1757820-9	2-26	1757822-9	Recept. with sockets
50 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.429	.243	.039	2-285	1757820-5	2-296	1757822-5	Recept. only
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	10.9	6.17	0.99	2-5	1-1757820-0	2-27	1-1757822-0	Recept. with sockets

**Notes:** 1. Size 20 contacts supplied with connectors are loose piece.  
2. See pages 8-99 through 8-103 (Military to AMP Part Number cross reference) for additional part numbers.



**AMPLIMITE Connectors, Series 109** (Continued)

**Crimp, Series 109, Standard Density Connectors (Industrial Grade)**

**Material and Finish**

**Shell** — Steel, zinc plated

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel

**Related Product Data**

**Cavity Identification** — page 8-39

**Contacts** — pages 8-40 to 8-42

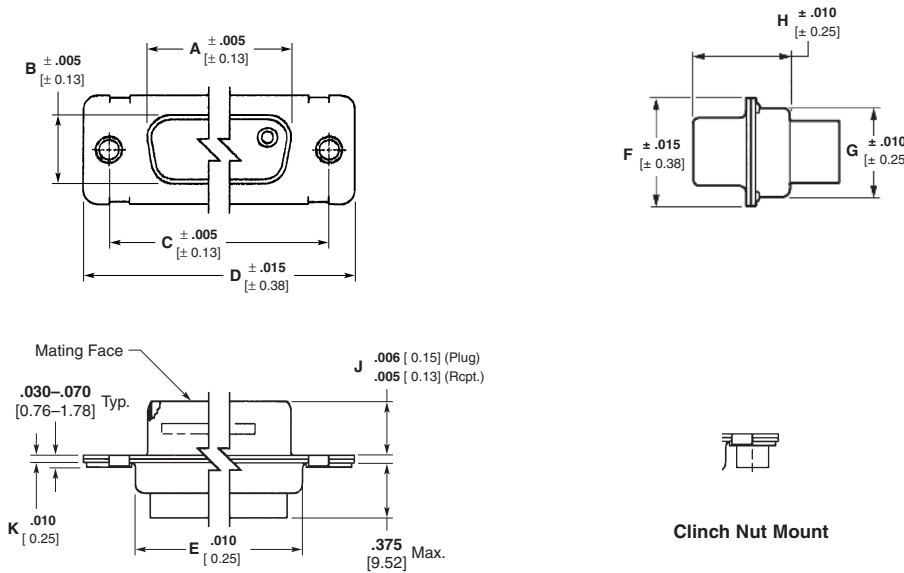
**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**Attention: Connector Marking**

Connector marking may differ from package marking.

**Note:** Meets requirements of MIL-DTL-24308



**Series 109 Plugs**

No. of Contact Pos. (Shell Size)	Dimensions										Standard Mount Part Number	Description
	A (Inside)	B (Inside)	C	D	E	F	G	H	J	K		
9 (1)	.666 16.92	.329 8.36	.984 24.99	1.213 30.81	.759 19.28	.494 12.55	.422 10.72	.422 10.72	.235 5.97	.030 0.76	1218748-1	Plug only
15 (2)	.994 25.25	.329 8.36	1.312 33.32	1.541 39.14	1.083 27.51	.494 12.55	.422 10.72	.422 10.72	.235 5.97	.030 0.76	1218748-2	Plug only
25 (3)	1.534 38.96	.329 8.36	1.852 47.04	2.088 53.04	1.625 41.3	.494 12.55	.422 10.72	.426 10.82	.230 5.84	.039 0.99	1218748-3	Plug only
37 (4)	2.182 55.42	.329 8.36	2.500 63.5	2.729 69.32	2.272 57.71	.494 12.55	.422 10.72	.426 10.82	.230 5.84	.039 0.99	1218748-4	Plug only
50 (5)	2.079 52.81	.441 11.2	2.406 61.11	2.635 66.93	2.178 55.32	.605 15.37	.534 13.56	.426 10.82	.230 5.84	.039 0.99	1218748-5	Plug. only

Clinch Nut Mount available, contact TE.

**Series 109 Receptacles**

No. of Contact Pos. (Shell Size)	Dimensions										Clinch Nut Mount Part Number	Description
	A (Inside)	B (Inside)	C	D	E	F	G	H	J	K		
9 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.759 19.28	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.030 0.76	1218749-1	Recept. only
15 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	1.083 27.51	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.030 0.76	1218749-2	Recept. only
25 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	1.625 41.3	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.039 0.99	1218749-3	Recept. only
37 (4)	2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	2.272 57.71	.494 12.55	.422 10.72	.429 10.9	.243 6.17	.039 0.99	1218749-4	Recept. only
50 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	2.178 55.32	.605 15.37	.534 13.56	.429 10.9	.243 6.17	.039 0.99	1218749-5	Recept. only

Standard Mount available, contact TE.



Rectangular Pin and Socket Connectors



**AMPLIMITE Connectors, Series 109** (Continued)

**Non-Magnetic Crimp Plugs, Series 109, Standard Density Connectors (NASA Qualified)**

**Connector Material and Finish**

**Shell** — Brass, gold plated

**Insert** — Approved material per MIL-DTL-24308

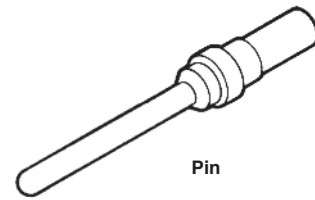
**Retention Clips** — Copper alloy

**Related Product Data**

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97



Pin

**Pin Contact**

Wire Size Range	AMP Part No. / NASA No.
26-28 0.15-0.08	206794-2 —
20-24 0.6-0.2	205089-4 G-10-P1

Strip length .140 [3.56]

Max. insulation diameter .072 [1.83]

Hand tool M22520/2-01 or AMP Part Number 601966-1

Positioner M22520/2-08 or AMP Part Number 601966-5

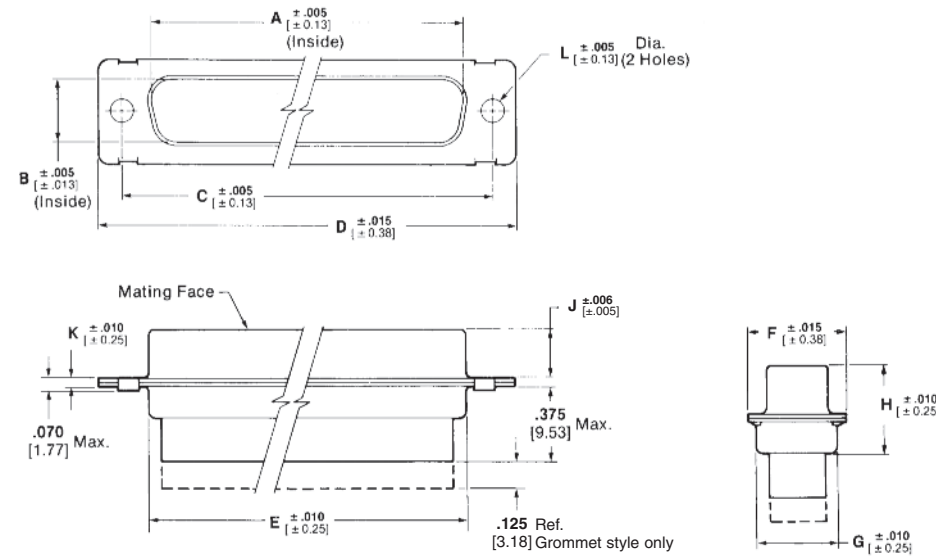
**Contact Material and Finish**

Copper alloy plated gold

.000050–.000100 [0.00127–0.00254]

thick over .000100–.000150

[0.00254–0.00381] copper underplate



**Non-Magnetic Plugs per NASA Specification**

No. of Contact Pos. (Shell Size)	Dimensions											NASA Number	AMP Part Number
	A	B	C	D	E	F	G	H	J	K	L		
9 (1)	.666	.329	.984	1.213	.759	.494	.422	.422	.235	.030	.154	311P409-1P-B-15	207252-1
	16.92	8.36	24.99	30.81	19.28	12.55	10.72	10.72	5.97	0.76	3.91		
15 (2)	.994	.329	1.312	1.541	1.083	.494	.422	.422	.235	.030	.154	311P409-2P-B-15	206798-1
	25.25	8.36	33.32	39.14	27.51	12.55	10.72	10.72	5.97	0.76	3.91		
25 (3)	1.534	.329	1.852	2.088	1.625	.494	.422	.426	.230	.039	.154	311P409-3P-B-15	206800-1
	38.96	8.36	47.04	53.04	41.3	12.55	10.72	10.82	5.84	0.99	3.91		
37 (4)	2.182	.329	2.500	2.729	2.272	.494	.422	.426	.230	.039	.154	311P409-4P-B-15	206802-1
	55.42	8.36	63.5	69.32	57.71	12.55	10.72	10.82	5.84	0.99	3.91		
50 (5)	2.079	.441	2.406	2.635	2.178	.605	.534	.426	.230	.039	.154	311P409-5P-B-15	206804-1
	52.81	11.20	61.11	66.93	55.32	15.37	13.56	10.82	5.84	0.99	3.91		

**Non-Magnetic Plugs With Silicone Rubber Rear Grommet<sup>1</sup>**

No. of Contact Pos. (Shell Size)	Dimensions											Part Number
	A	B	C	D	E	F	G	H	J	K	L	
9 (1)	.666	.329	.984	1.213	.759	.494	.422	.422	.235	.030	.120	211638-4
15 (2)	.994	.329	1.312	1.541	1.083	.494	.422	.422	.235	.030	.120	
25 (3)	1.534	.329	1.852	2.088	1.625	.494	.422	.426	.230	.039	.120	211640-4
37 (4)	2.182	.329	2.500	2.729	2.272	.494	.422	.426	.230	.039	.120	
50 (5)	2.079	.441	2.406	2.635	2.178	.605	.534	.426	.230	.039	.120	211642-4
	52.81	11.20	61.11	66.93	55.32	15.37	13.56	10.82	5.84	0.99	3.05	

<sup>1</sup> Grommet provided for cable strain relief.



Pin and Socket Insertion/Extraction Tool

AMP Part Number 91067-2 or MIL Number M81969/1-02

Insertion tip, for replacement Part Number 126195-3

Extraction tip, for replacement Part Number 126195-4

**AMPLIMITE Connectors, Series 109** (Continued)

**Non-Magnetic Crimp Receptacles, Series 109, Standard Density Connectors (NASA Qualified)**

**Connector Material and Finish**

**Shell** — Brass, gold plated

**Insert** — Approved material per MIL-DTL-24308

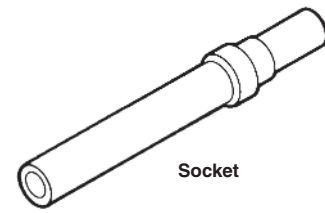
**Retention Clips** — Copper alloy

**Related Product Data**

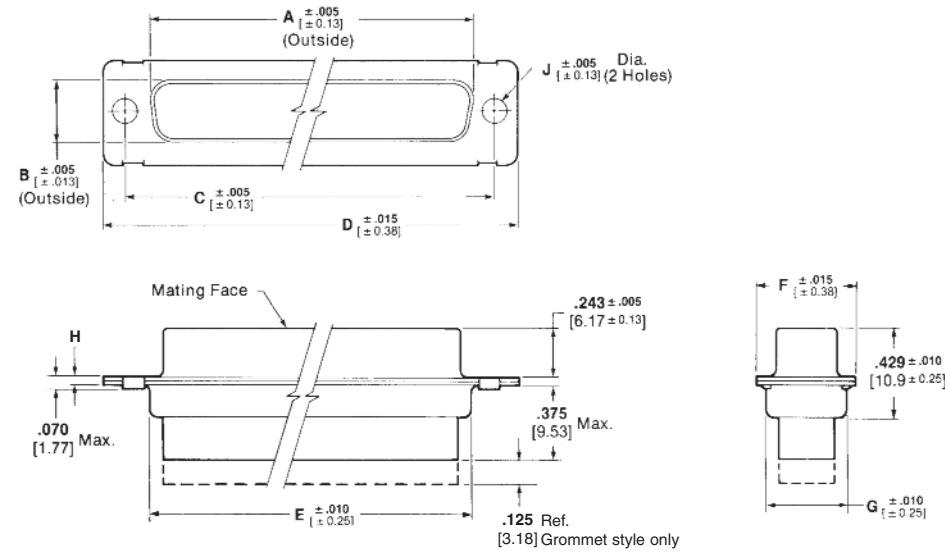
**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97



Socket



**Non-Magnetic Receptacles per NASA Specification**

Socket Contact	
Wire Size Range	AMP Part No. / NASA No.
26-28 0.15-0.08	206795-1
20-24 0.6-0.2	206793-1 G-10-S1

Strip length .140 [3.56]  
Max. insulation diameter .072 [1.83]  
Hand tool M22520/2-01 or AMP Part Number 601966-1  
Positioner M22520/2-08 or AMP Part Number 601966-5

**Contact Material and Finish**

Copper alloy plated gold  
.000050-.000100 [0.00127-0.00254] thick over .000100-.000150 [0.00254-0.00381] copper underplate

No. of Contact Pos. (Shell Size)	Dimensions										NASA Number	AMP Part Number
	A	B	C	D	E	F	G	H	J			
9 (1)	.643	.311	.984	1.213	.759	.494	.422	.030	.154	311P409-1S-B-15	207253-1	
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	0.76	3.91			
15 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.030	.154	311P409-2S-B-15	206799-1	
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	0.76	3.91			
25 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.039	.154	311P409-3S-B-15	206801-1	
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	0.99	3.91			
37 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.039	.154	311P409-4S-B-15	206803-1	
	55.42	7.9	63.5	69.32	57.71	12.55	10.72	0.99	3.91			
50 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.039	.154	311P409-5S-B-15	206805-1	
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	0.99	3.91			

**Non-Magnetic Receptacles With Silicone Rubber Rear Grommet<sup>1</sup>**



Pin and Socket Insertion/Extraction Tool

AMP Part Number 91067-2 or MIL Number M81969/1-02  
Insertion tip, for replacement Part Number 126195-3  
Extraction tip, for replacement Part Number 126195-4

No. of Contact Pos. (Shell Size)	Dimensions										Part Number
	A	B	C	D	E	F	G	H	J		
9 (1)	.643	.311	.984	1.213	.759	.494	.422	.030	.120	211633-4	
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	0.76	3.05		
15 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.030	.120	211634-4	
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	0.76	3.05		
25 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.039	.120	211635-4	
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	0.99	3.05		
37 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.039	.120	211636-4	
	54.84	7.9	63.5	69.32	57.71	12.55	10.72	0.99	3.05		
50 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.039	.120	211637-4	
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	0.99	3.05		

<sup>1</sup> Grommet provided for cable strain relief.

**AMPLIMITE Connectors, Series 109** (Continued)

**Crimp, Blindmate Plugs, Series 109, Standard Density Connectors**

**Materials and Finish**

**1 Shell, Front** — Aluminum alloy, cadmium plated with yellow chromate

**2 Shell, Front** — Aluminum alloy, zinc plated with yellow trichromate

**1 Shell, Rear** — Steel, cadmium plated with yellow chromate

**2 Shell, Rear** — Steel, zinc plated with yellow trichromate

**Insert Assembly** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel

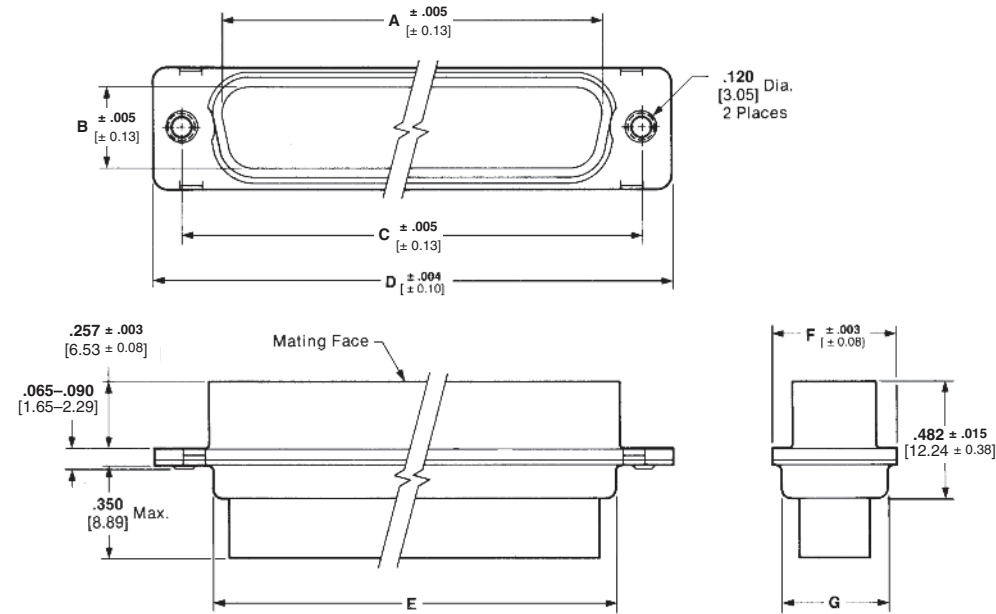
**Related Product Data**

**Cavity Identification** — page 8-39

**Contacts** — pages 8-40 to 8-42

**Mounting Specifications** — page 8-90

Mating information contained on page 8-90 does not pertain to Blindmate design. Flange to flange spacing can be a max. of .270 [6.86].



No. of Contact Pos. (Shell Size)	Dimensions							Part Number
	A	B	C	D	E	F	G	
9 (1)	.656 16.66	.324 8.23	.984 24.99	1.224 31.09	.769/1.750 19.53/19.05	.506 12.85	.432/.413 10.97/10.49	445005-11 5-445005-12
15 (2)	.984 25.0	.324 8.23	1.312 33.32	1.552 39.42	1.093/1.074 27.76/27.28	.506 12.85	.432/.413 10.97/10.49	445006-11 5-445006-12
25 (3)	1.524 38.71	.324 8.23	1.852 47.04	2.099 53.31	1.635/1.616 41.53/41.05	.506 12.85	.432/.413 10.97/10.49	445007-11 5-445007-12
37 (4)	2.172 55.17	.324 8.23	2.500 63.5	2.740 69.60	2.282/2.263 57.96/57.48	.506 12.85	.432/.413 10.97/10.49	445008-11 5-445008-12
50 (5)	2.082 52.88	.444 11.28	2.406 61.11	2.646 67.21	2.188/2.167 55.58/55.04	.617 15.67	.544/.525 13.82/13.34	445009-11 5-445009-12

<sup>1</sup> See Material and Finish above.

<sup>2</sup> See Material and Finish for RoHS compliant Part Numbers above.

**Note:** See page 5-182 for Blindmate coax/signal combinations.

**AMPLIMITE Connectors, Series 109** (Continued)

**Straight PCB, Series 109, Standard Density Connectors (MIL Qualified)**

**Material and Finish**

**Shell** — Steel, cadmium plated

**Insert** — Approved material per MIL-DTL-24308

**Contact** — Copper alloy plated gold over nickel underplate\*

**Spacer** — Aluminum alloy, Iridite finish

**Related Product Data**

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

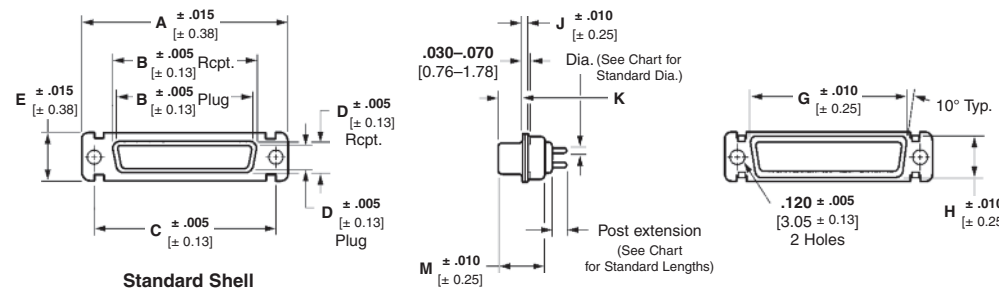
**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 7-91 or TE Connectivity customer drawing.

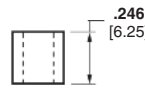
\***Socket Body** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

**Mating Area** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

**Plug Body** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel



MS Shell Size	Connector Style	Dimensions									
		A	B	C	D	E	G	H	J	K	M
1	Plug	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.759 19.28	.422 10.72	.030 0.76	.238/.229 6.04/5.81	.422 10.72
	Receptacle	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	.248/.238 6.29/6.04	.429 10.90
2	Plug	1.541 39.14	.994 25.25	1.312 33.32	.329 8.36	.494 12.55	1.083 27.51	.422 10.72	.030 0.76	.238/.229 6.04/5.81	.422 10.72
	Receptacle	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	.248/.238 6.29/6.04	.429 10.90
3	Plug	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	1.625 41.28	.422 10.72	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.088 53.04	1.511 38.38	1.852 47.04	.311 7.90	.494 12.55	1.625 41.28	.422 10.72	.030 0.76	.248/.238 6.29/6.04	.429 10.90
4	Plug	2.729 69.32	2.182 55.42	2.500 63.5	.329 8.36	.494 12.55	2.272 57.71	.422 10.72	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.729 69.32	2.159 54.84	2.500 63.5	.311 7.90	.494 12.55	2.272 57.71	.422 10.72	.030 0.76	.248/.238 6.29/6.04	.429 10.90
5	Plug	2.635 66.93	2.079 52.81	2.406 61.11	.441 11.20	.605 15.37	2.178 55.32	.534 13.56	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.635 66.93	2.064 52.43	2.406 61.11	.423 10.74	.605 15.37	2.178 55.32	.534 13.55	.030 0.76	.248/.238 6.29/6.04	.429 10.90



Spacer

**Receptacle Assemblies**

Shell Size	No. Pos.	Post Dia.	Post Ext. ±.020 [±0.51]	Zinc Plated Shells		Cadmium Plated Shells	
				Military Part No. M24308/	Part No.	Military Part No. M24308/	Part No.
1	9	.030 0.76	.156 3.96	23-1	1757828-1	23-1F	443975-1
2	15	.030 0.76	.156 3.96	23-2	1757828-2	23-2F	443975-2
3	25	.030 0.76	.156 3.96	23-3	1757828-3	23-3F	443975-3
4	37	.030 0.76	.156 3.96	23-4	1757828-4	23-4F	443975-4
5	50	.030 0.76	.156 3.96	23-5	1757828-5	23-5F	443975-5
1	9	.030 0.76	.188 4.78	23-7	1757830-1	23-7F	443976-1
2	15	.030 0.76	.188 4.78	23-8	1757830-2	23-8F	443976-2
3	25	.030 0.76	.188 4.78	23-9	1757830-3	23-9F	443976-3
4	37	.030 0.76	.188 4.78	23-10	1757830-4	23-10F	443976-4
5	50	.030 0.76	.188 4.78	23-11	1757830-5	23-11F	443976-5
1	9	.040 1.02	.156 3.96	23-13	1757832-1	23-13F	443977-1
2	15	.040 1.02	.156 3.96	23-14	1757832-2	23-14F	443977-2
3	25	.040 1.02	.156 3.96	23-15	1757832-3	23-15F	443977-3
4	37	.040 1.02	.156 3.96	23-16	1757832-4	23-16F	443977-4
5	50	.040 1.02	.156 3.96	23-17	1757832-5	23-17F	443977-5
1	9	.040 1.02	.188 4.78	23-19	1757834-1	23-19F	443978-1
2	15	.040 1.02	.188 4.78	23-20	1757834-2	23-20F	443978-2
3	25	.040 1.02	.188 4.78	23-21	1757834-3	23-21F	443978-3
4	37	.040 1.02	.188 4.78	23-22	1757834-4	23-22F	443978-4
5	50	.040 1.02	.188 4.78	23-23	1757834-5	23-23F	443978-5

**Plug Assemblies**

Shell Size	No. Pos.	Post Dia.	Post Ext. ±.020 [±0.51]	Zinc Plated Shells		Cadmium Plated Shells	
				Military Part No. M24308/	Part No.	Military Part No. M24308/	Part No.
1	9	.030 0.76	.156 3.96	24-1	1757827-1	24-1F	1218124-1
2	15	.030 0.76	.156 3.96	24-2	1757827-2	24-2F	1218124-2
3	25	.030 0.76	.156 3.96	24-3	1757827-3	24-3F	1218124-3
4	37	.030 0.76	.156 3.96	24-4	1757827-4	24-4F	1218124-4
5	50	.030 0.76	.156 3.96	24-5	1757827-5	24-5F	1218124-5
1	9	.030 0.76	.188 4.78	24-7	1757829-1	24-7F	1218125-1
2	15	.030 0.76	.188 4.78	24-8	1757829-2	24-8F	1218125-2
3	25	.030 0.76	.188 4.78	24-9	1757829-3	24-9F	1218125-3
4	37	.030 0.76	.188 4.78	24-10	1757829-4	24-10F	1218125-4
5	50	.030 0.76	.188 4.78	24-11	1757829-5	24-11F	1218125-5
1	9	.040 1.02	.156 3.96	24-13	1757831-1	24-13F	1218126-1
2	15	.040 1.02	.156 3.96	24-14	1757831-2	24-14F	1218126-2
3	25	.040 1.02	.156 3.96	24-15	1757831-3	24-15F	1218126-3
4	37	.040 1.02	.156 3.96	24-16	1757831-4	24-16F	1218126-4
5	50	.040 1.02	.156 3.96	24-17	1757831-5	24-17F	1218126-5
1	9	.040 1.02	.188 4.78	24-19	1757833-1	24-19F	1218127-1
2	15	.040 1.02	.188 4.78	24-20	1757833-2	24-20F	1218127-2
3	25	.040 1.02	.188 4.78	24-21	1757833-3	24-21F	1218127-3
4	37	.040 1.02	.188 4.78	24-22	1757833-4	24-22F	1218127-4
5	50	.040 1.02	.188 4.78	24-23	1757833-5	24-23F	1218127-5



Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors, Series 109** (Continued)

**Straight PCB, Series 109,  
Standard Density Connectors  
(Industrial Grade)**

**Material and Finish**

**Shell** — Steel, cadmium or zinc plated

**Insert** — Approved material per MIL-DTL-24308

**Contact** — Copper alloy plated gold over nickel underplate\*

**Spacer** — Aluminum alloy, Iridite finish

**Related Product Data**

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

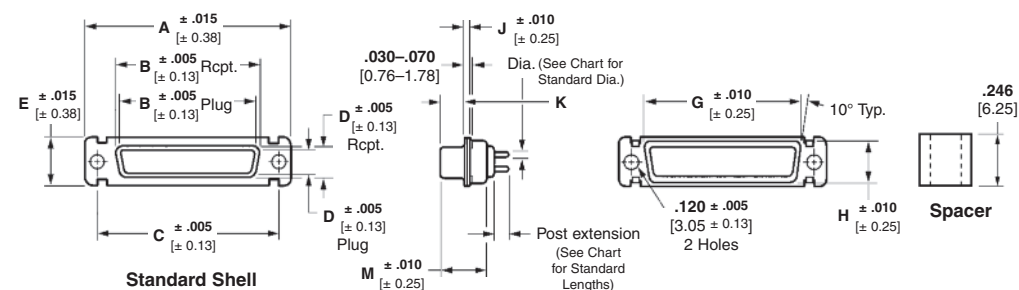
**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.

**\*a Socket Body and Mating Area** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

**Plug Body and Mating Area** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

**b Mating Area** — Copper alloy with .000030 [0.00076] min. gold plate over .000050 [0.00127] min. nickel underplate

**Product Specification** — 108-1770



MS Shell Size	Connector Style	Dimensions									
		A	B	C	D	E	G	H	J	K	M
1	Plug	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.759 19.28	.422 10.72	.030 0.76	.238/.229 6.04/5.81	.422 10.72
	Receptacle	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	.248/.238 6.29/6.04	.429 10.90
2	Plug	1.541 39.14	.994 25.25	1.312 33.32	.329 8.36	.494 12.55	1.083 27.51	.422 10.72	.030 0.76	.238/.229 6.04/5.81	.422 10.72
	Receptacle	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	.248/.238 6.29/6.04	.429 10.90
3	Plug	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	1.625 41.28	.422 10.72	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.088 53.04	1.511 38.38	1.852 47.04	.311 7.90	.494 12.55	1.625 41.28	.422 10.72	.030 0.76	.248/.238 6.29/6.04	.429 10.90
4	Plug	2.729 69.32	2.182 55.42	2.500 63.5	.329 8.36	.494 12.55	2.272 57.71	.422 10.72	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.729 69.32	2.159 54.84	2.500 63.5	.311 7.90	.494 12.55	2.272 57.71	.422 10.72	.030 0.76	.248/.238 6.29/6.04	.429 10.90
5	Plug	2.635 66.93	2.079 52.81	2.406 61.11	.441 11.20	.605 15.37	2.178 55.32	.534 13.56	.039 0.99	.236/.224 5.99/5.68	.426 10.82
	Receptacle	2.635 66.93	2.064 52.43	2.406 61.11	.423 10.74	.605 15.37	2.178 55.32	.534 13.55	.030 0.76	.248/.238 6.29/6.04	.429 10.90

**AMPLIMITE Connectors, Series 109** (Continued)

**Straight PCB, Series 109, Standard Density Connectors (Industrial Grade)** (Continued)

**Material and Finish**

**Shell** — Steel, see below

**1 Tin Plated RoHS Compliant**

**Finish** — Tin .000400–.000550 [0.01020–0.01400] thick over copper .000050 [0.00127] min. thick

**2 Zinc Plated RoHS Compliant**

**Finish** — Zinc .000200–.000400 [0.00508–0.01016] thick, yellow trivalent chromate

**Insert** — Approved material per MIL-DTL-24308

**Contact** — Copper alloy plated gold over nickel underplate\*

**Spacer** — Aluminum alloy, Iridite finish

**Related Product Data**

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.

**\*aSocket Body and Mating Area** —

.000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

**Plug Body and Mating Area** —

.000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

**bMating Area** — Copper alloy with .000030 [0.00076] min. gold plate over .000050 [0.00127] min. nickel underplate

**Product Specification** — 108-1770

Shell Size	No. Pos.	Post Dia.	Post Ext. ± .020 [± 0.51]	Receptacle Part Number		
				Tin Plated Shells <sup>a</sup>	Tin Plated Shells <sup>b</sup>	Zinc Plated RoHS Shells <sup>a,2</sup>
1	9	.030 0.76	.156 3.96	1218826-1 <sup>1</sup>	1218293-1 <sup>1</sup>	1218289-1
2	15	.030 0.76	.156 3.96	1218826-2 <sup>1</sup>	1218293-2 <sup>1</sup>	1218289-2
3	25	.030 0.76	.156 3.96	1218826-3 <sup>1</sup>	1218293-3 <sup>1</sup>	1218289-3
4	37	.030 0.76	.156 3.96	1218826-4 <sup>1</sup>	1218293-4 <sup>1</sup>	1218289-4
5	50	.030 0.76	.156 3.96	1218826-5 <sup>1</sup>	1218293-5 <sup>1</sup>	1218289-5
1	9	.030 0.76	.188 4.78	1218827-1 <sup>1</sup>	1218294-1 <sup>1</sup>	1218290-1
2	15	.030 0.76	.188 4.78	1218827-2 <sup>1</sup>	1218294-2 <sup>1</sup>	1218290-2
3	25	.030 0.76	.188 4.78	1218827-3 <sup>1</sup>	1218294-3 <sup>1</sup>	1218290-3
4	37	.030 0.76	.188 4.78	1218827-4 <sup>1</sup>	1218294-4 <sup>1</sup>	1218290-4
5	50	.030 0.76	.188 4.78	1218827-5 <sup>1</sup>	1218294-5 <sup>1</sup>	1218290-5
1	9	.040 1.02	.156 3.96	—	—	1218291-1
2	15	.040 1.02	.156 3.96	—	—	1218291-2
3	25	.040 1.02	.156 3.96	—	—	1218291-3
4	37	.040 1.02	.156 3.96	—	—	1218291-4
5	50	.040 1.02	.156 3.96	—	—	1218291-5
1	9	.040 1.02	.188 4.78	1218829-1 <sup>1</sup>	—	1218292-1
2	15	.040 1.02	.188 4.78	1218829-2 <sup>1</sup>	—	1218292-2
3	25	.040 1.02	.188 4.78	1218829-3 <sup>1</sup>	—	1218292-3
4	37	.040 1.02	.188 4.78	1218829-4 <sup>1</sup>	—	1218292-4
5	50	.040 1.02	.188 4.78	1218829-5 <sup>1</sup>	—	1218292-5

1 See Tin Plated RoHS compliant finish above.  
2 See Zinc Plated RoHS compliant finish above.

Shell Size	No. Pos.	Post Dia.	Post Ext. ± .020 [± 0.51]	Plug Part Number	
				Tin Plated Shells <sup>a</sup>	Zinc Plated RoHS Shells <sup>a,2</sup>
1	9	.030 0.76	.156 3.96	1218374-1 <sup>1</sup>	1218378-1
2	15	.030 0.76	.156 3.96	1218374-2 <sup>1</sup>	1218378-2
3	25	.030 0.76	.156 3.96	1218374-3 <sup>1</sup>	1218378-3
4	37	.030 0.76	.156 3.96	1218374-4 <sup>1</sup>	1218378-4
5	50	.030 0.76	.156 3.96	1218374-5 <sup>1</sup>	1218378-5
1	9	.030 0.76	.188 4.78	1218375-1 <sup>1</sup>	1218379-1
2	15	.030 0.76	.188 4.78	1218375-2 <sup>1</sup>	1218379-2
3	25	.030 0.76	.188 4.78	1218375-3 <sup>1</sup>	1218379-3
4	37	.030 0.76	.188 4.78	1218375-4 <sup>1</sup>	1218379-4
5	50	.030 0.76	.188 4.78	1218375-5 <sup>1</sup>	1218379-5
1	9	.040 1.02	.156 3.96	—	1218380-1
2	15	.040 1.02	.156 3.96	—	1218380-2
3	25	.040 1.02	.156 3.96	—	1218380-3
4	37	.040 1.02	.156 3.96	—	1218380-4
5	50	.040 1.02	.156 3.96	—	1218380-5
1	9	.040 1.02	.188 4.78	1218377-1 <sup>1</sup>	1218381-1
2	15	.040 1.02	.188 4.78	1218377-2 <sup>1</sup>	1218381-2
3	25	.040 1.02	.188 4.78	1218377-3 <sup>1</sup>	1218381-3
4	37	.040 1.02	.188 4.78	1218377-4 <sup>1</sup>	1218381-4
5	50	.040 1.02	.188 4.78	1218377-5 <sup>1</sup>	1218381-5

2 See Tin Plated RoHS compliant finish above.  
3 See Zinc Plated RoHS compliant finish above.



Rectangular Pin and Socket Connectors



**AMPLIMITE Connectors, Series 109** (Continued)

**Straight PCB, Series 109,  
Make First/Break Last  
Sub-D Connectors  
(Industrial Grade)**

**Material and Finish**

**Shell** — Steel, cadmium or tin plated

**Insert** — Polyester per MIL-M-24519

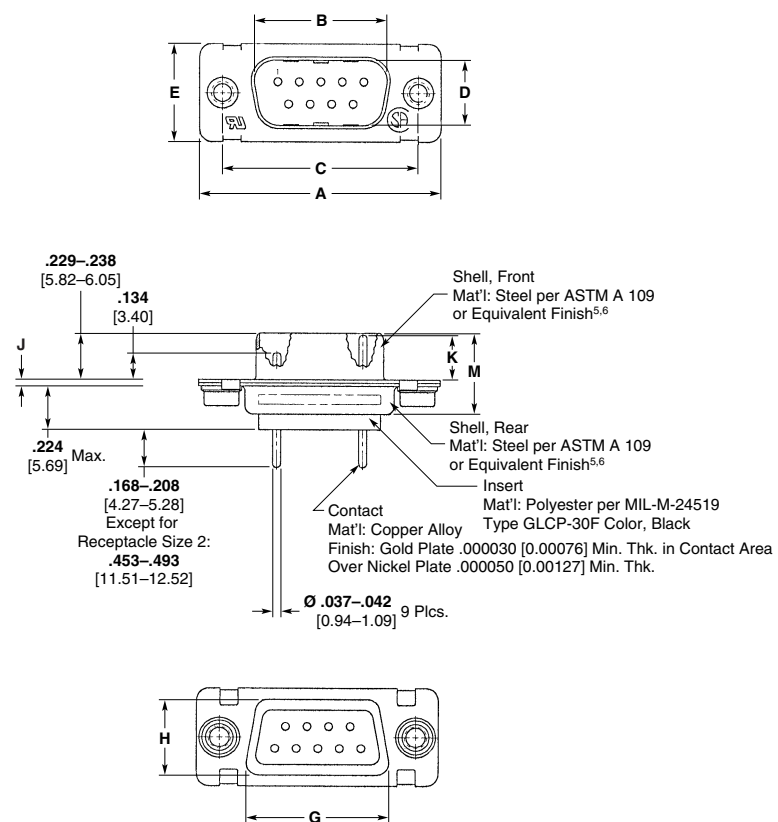
**Contact** — Copper alloy with .000030 [0.00076] min. gold plate over .000050 [0.00127] min. nickel underplate

**3 Regular Length Contact Location:**  
1, 6, and 9

**4 Short Length Contact Location:**  
2 thru 5, 7, and 8

**5 Finish** — Cadmium per QQ-P-416

**6 Finish** — Tin plated per MIL-T-10727



MS Shell Size	Connector Style	Dimensions									
		A	B	C	D	E	G	H	J	K	M
1	Plug	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.759 19.28	.422 10.72	.020/.040 0.51/1.02	.223 5.66	.412/.432 10.46/10.97
	Receptacle	1.213 30.81	.643 16.33	.984 24.99	.311 7.90	.494 12.55	.759 19.28	.422 10.72	.238/.248 6.05/6.30	.178 4.52	.419/.439 10.64/11.15
2	Receptacle	1.541 39.14	.971 24.66	1.312 33.32	.311 7.90	.494 12.55	1.083 27.51	.422 10.72	.238/.248 6.05/6.30	.178 4.52	.419/.439 10.64/11.15
3	Plug	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	1.625 41.28	.422 10.72	.029/.049 0.74/1.24	.217 5.51	.416/.435 10.57/11.07

**Plug Assemblies**

Shell Size	No. Pos.	Post Dia.	Plug Part Number	
			Tin Plated Shells	Cadmium Plated Shells
1	9	.037/.043 0.94/1.09	443638-2	443638-1
3	25	.037/.043 0.94/1.09	443631-2	443631-1

**Receptacle Assemblies**

Shell Size	No. Pos.	Post Dia.	Plug Part Number	
			Tin Plated Shells	Cadmium Plated Shells
1	9	.037/.043 0.94/1.09	443637-2	443637-1
2	15	.037/.043 0.94/1.09	443646-2	443646-1



**AMPLIMITE Connectors, Series 109** (Continued)

**Right-Angle, PCB Plugs,  
Series 109, Standard  
Density Connectors  
(MIL Qualified)**

**Material and Finish**

**Shell** — Steel, cadmium plated

**Insert and Post Spacer** — Approved material per MIL-DTL-24308

**Contact** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate

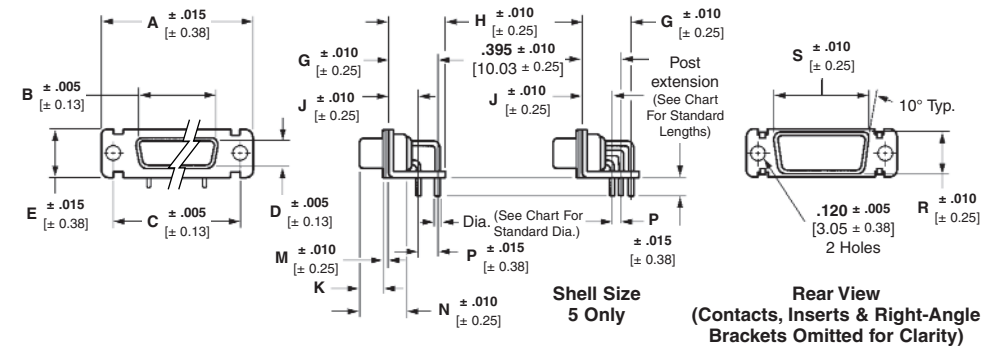
**Related Product Data**

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.



MS Shell Size	Connector Style	Dimensions														
		A	B	C	D	E	G	H	J	K	M	N	P	R	S	
1	Plug	1.213	.666	.984	.329	.494	.395	.484	.283	.238/.229	.030	.422	.112	.422	.759	
		30.81	16.92	24.99	8.36	12.55	10.03	12.29	7.19	6.04/5.81	0.76	10.72	2.84	10.72	19.28	
2	Plug	1.541	.994	1.312	.329	.494	.395	.484	.283	.238/.229	.030	.422	.112	.422	1.083	
		39.14	25.25	33.33	8.36	12.55	10.03	12.29	7.19	6.04/5.81	0.76	10.72	2.84	10.72	27.51	
3	Plug	2.088	1.534	1.852	.329	.494	.395	.484	.283	.236/.224	.039	.426	.112	.422	1.625	
		53.04	38.96	47.04	8.36	12.55	10.03	12.29	7.19	5.99/5.68	0.99	10.82	2.84	10.72	29.59	
4	Plug	2.729	2.182	2.500	.329	.494	.395	.484	.283	.236/.224	.039	.426	.112	.422	2.272	
		69.32	55.42	63.5	8.36	12.55	10.03	12.29	7.19	5.99/5.68	0.99	10.82	2.84	10.72	57.71	
5	Plug	2.635	2.079	2.406	.441	.605	.507	.594	.283	.236/.224	.039	.426	.112	.534	2.178	
		66.93	52.81	61.11	10.44	15.37	12.88	15.09	7.19	5.99/5.68	0.99	10.82	2.84	13.56	55.32	

**Plug Assemblies — .030 [0.76] Post Dia.**

Shell Size	No. Pos.	Post Ext. ±.020 [± 0.51]	Zinc Plated Shells		Cadmium Plated Shells	
			Military Part No. M24308/	Part No.	Military Part No. M24308/	Part No.
1	9	.125 3.18	24-25	1757835-1	24-25F	1218440-1
2	15	.125 3.18	24-26	1757835-2	24-26F	1218440-2
3	25	.125 3.18	24-27	1757835-3	24-27F	1218440-3
4	37	.125 3.18	24-28	1757835-4	24-28F	1218440-4
5	50	.125 3.18	24-29	1757835-5	24-29F	1218440-5
1	9	.156 3.96	24-31	1757837-1	24-31F	1218441-1
2	15	.156 3.96	24-32	1757837-2	24-32F	1218441-2
3	25	.156 3.96	24-33	1757837-3	24-33F	1218441-3
4	37	.156 3.96	24-34	1757837-4	24-34F	1218441-4
5	50	.156 3.96	24-35	1757837-5	24-35F	1218441-5
1	9	.188 4.78	24-49	1757839-1	24-49F	1218444-1
2	15	.188 4.78	24-50	1757839-2	24-50F	1218444-2
3	25	.188 4.78	24-51	1757839-3	24-51F	1218444-3
4	37	.188 4.78	24-52	1757839-4	24-52F	1218444-4
5	50	.188 4.78	24-53	1757839-5	24-53F	1218444-5

**Plug Assemblies — .040 [1.02] Post Dia.**

Shell Size	No. Pos.	Post Ext. ±.020 [± 0.51]	Zinc Plated Shells		Cadmium Plated Shells	
			Military Part No. M24308/	Part No.	Military Part No. M24308/	Part No.
1	9	.125 3.18	24-37	1757841-1	24-37F	1218442-1
2	15	.125 3.18	24-38	1757841-2	24-38F	1218442-2
3	25	.125 3.18	24-39	1757841-3	24-39F	1218442-3
4	37	.125 3.18	24-40	1757841-4	24-40F	1218442-4
5	50	.125 3.18	24-41	1757841-5	24-41F	1218442-5
1	9	.156 3.96	24-43	1757843-1	—	—
2	15	.156 3.96	24-44	1757843-2	—	—
3	25	.156 3.96	24-45	1757843-3	—	—
4	37	.156 3.96	24-46	1757843-4	—	—
5	50	.156 3.96	24-47	1757843-5	—	—
1	9	.188 4.78	24-55	1757845-1	24-55F	1218445-1
2	15	.188 4.78	24-56	1757845-2	24-56F	1218445-2
3	25	.188 4.78	24-57	1757845-3	24-57F	1218445-3
4	37	.188 4.78	24-58	1757845-4	24-58F	1218445-4
5	50	.188 4.78	24-59	1757845-5	24-59F	1218445-5

Note: The suffix "F" on M24308 part numbers designates cadmium shell plating.

8 Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors, Series 109** (Continued)

**Right-Angle, PCB Receptacles, Series 109, Standard Density Connectors (MIL Qualified)**

**Material and Finish**

**Shell** — Steel, cadmium or zinc plated

**Insert and Post Spacer** — Approved material per MIL-DTL-24308

**Contacts** —

**Socket Body** — Copper alloy with

.000050 [0.00127] min. gold plate over

.000050 [0.00127] min. nickel underplate

**Mating Area** — Copper alloy with

.000050 [0.00127] min. gold plate over

.000050 [0.00127] min. nickel underplate

**Related Product Data**

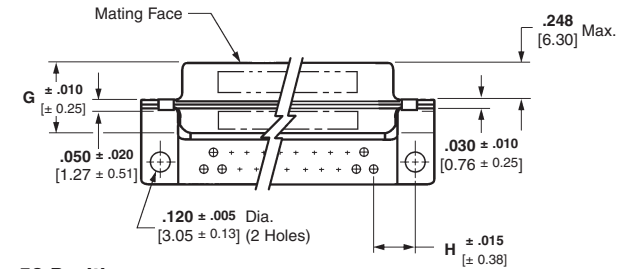
**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

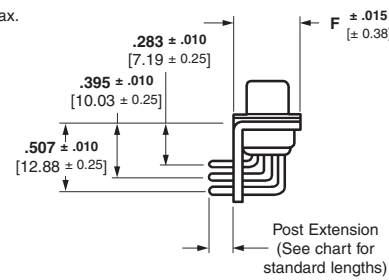
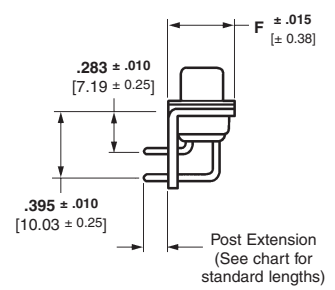
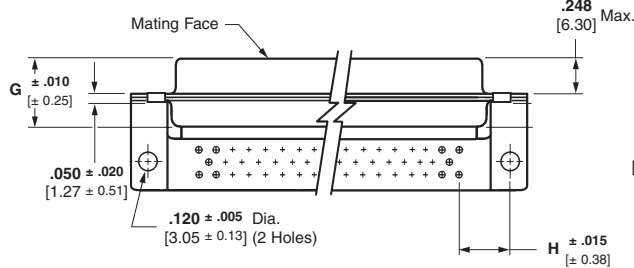
**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.

**9, 15, 25 and 37 Positions**

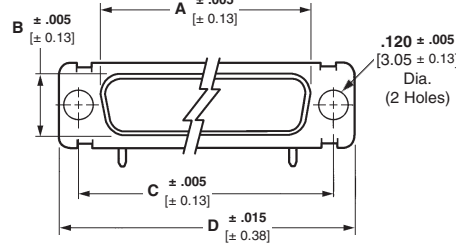


**50 Positions**



**Receptacle Assemblies**

No. of Contact Pos. (Shell Size)	Dimensions						
	A (Outside)	B (Outside)	C	D	F	G	H
9 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.494 12.55	.429 10.97	.276 7.01
15 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	.494 12.55	.429 10.97	.278 7.06
25 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	.494 12.55	.429 10.97	.274 6.96
37 (4)	2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	.494 12.55	.429 10.97	.272 6.91
50 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	.605 15.37	.429 10.97	.333 8.46



**Receptacle Assemblies — .030 [0.76] Post Dia.**

Shell Size	No. Pos.	Post Ext. ±.020 [± 0.51]	Zinc Plated Shells		Cadmium Plated Shells	
			Military Part No. M24308/	Part No.	Military Part No. M24308/	Part No.
1	9	.125 3.18	23-25	1757836-1	23-25F	1218434-1
2	15	.125 3.18	23-26	1757836-2	23-26F	1218434-2
3	25	.125 3.18	23-27	1757836-3	23-27F	1218434-3
4	37	.125 3.18	23-28	1757836-4	23-28F	1218434-4
5	50	.125 3.18	23-29	1757836-5	23-29F	1218434-5
1	9	.156 3.96	23-31	1757838-1	23-31F	1218408-1
2	15	.156 3.96	23-32	1757838-2	23-32F	1218408-2
3	25	.156 3.96	23-33	1757838-3	23-33F	1218408-3
4	37	.156 3.96	23-34	1757838-4	23-34F	1218408-4
5	50	.156 3.96	23-35	1757838-5	23-35F	1218408-5
1	9	.188 4.78	23-49	1757840-1	23-49F	1218437-1
2	15	.188 4.78	23-50	1757840-2	23-50F	1218437-2
3	25	.188 4.78	23-51	1757840-3	23-51F	1218437-3
4	37	.188 4.78	23-52	1757840-4	23-52F	1218437-4
5	50	.188 4.78	23-53	1757840-5	23-53F	1218437-5

**Receptacle Assemblies — .040 [1.02] Post Dia.**

Shell Size	No. Pos.	Post Ext. ±.020 [± 0.51]	Zinc Plated Shells		Cadmium Plated Shells	
			Military Part No. M24308/	Part No.	Military Part No. M24308/	Part No.
1	9	.125 3.18	23-37	1757842-1	23-37F	1218435-1
2	15	.125 3.18	23-38	1757842-2	23-38F	1218435-2
3	25	.125 3.18	23-39	1757842-3	23-39F	1218435-3
4	37	.125 3.18	23-40	1757842-4	23-40F	1218435-4
5	50	.125 3.18	23-41	1757842-5	23-41F	1218435-5
1	9	.156 3.96	23-43	1757844-1	23-43F	1218436-1
2	15	.156 3.96	23-44	1757844-2	23-44F	1218436-2
3	25	.156 3.96	23-45	1757844-3	23-45F	1218436-3
4	37	.156 3.96	23-46	1757844-4	23-46F	1218436-4
5	50	.156 3.96	23-47	1757844-5	23-47F	1218436-5
1	9	.188 4.78	23-55	1757846-1	23-55F	1218438-1
2	15	.188 4.78	23-56	1757846-2	23-56F	1218438-2
3	25	.188 4.78	23-57	1757846-3	23-57F	1218438-3
4	37	.188 4.78	23-58	1757846-4	23-58F	1218438-4
5	50	.188 4.78	23-59	1757846-5	23-59F	1218438-5

Note: The suffix "F" on M24308 part numbers designates cadmium shell plating.

**AMPLIMITE Connectors, Series 109** (Continued)

**Right-Angle, PCB Plugs, Series 109, Standard Density Connectors (Industrial Grade)**

**Material and Finish**

**Shell** — Steel, see below

**1 Tin Plated RoHS Compliant**

**Finish** — Tin .000400-.000550 [0.01020-0.01400] thick over copper .000050 [0.00127] min. thick

**2 Zinc Plated RoHS Compliant**

**Finish** — Zinc .000200-.000400 [0.00508-0.01016] thick, yellow trivalent chromate

**Insert and Post Spacer** — Approved material per MIL-DTL-24308

**Contact** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate

**Related Product Data**

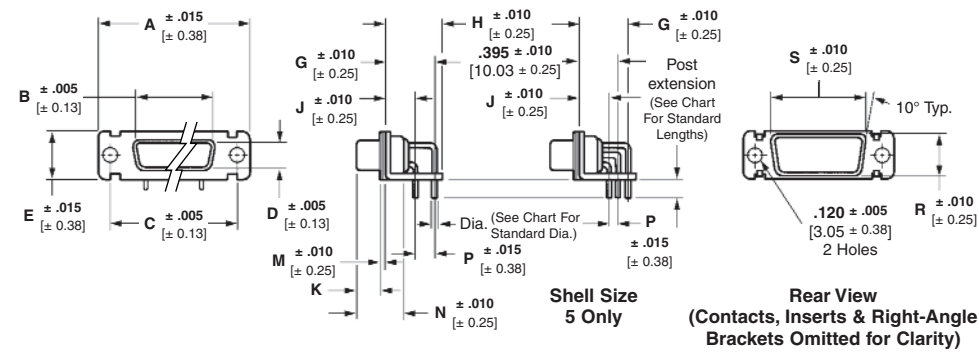
**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.

**Product Specification** — 108-1770



MS Shell Size	Connector Style	Dimensions														
		A	B	C	D	E	G	H	J	K	M	N	P	R	S	
1	Plug	1.213	.666	.984	.329	.494	.395	.484	.283	.238/.229	.030	.422	.112	.422	.759	
		30.81	16.92	24.99	8.36	12.55	10.03	12.29	7.19	6.04/5.81	0.76	10.72	2.84	10.72	19.28	
2	Plug	1.541	.994	1.312	.329	.494	.395	.484	.283	.238/.229	.030	.422	.112	.422	1.083	
		39.14	25.25	33.33	8.36	12.55	10.03	12.29	7.19	6.04/5.81	0.76	10.72	2.84	10.72	27.51	
3	Plug	2.088	1.534	1.852	.329	.494	.395	.484	.283	.236/.224	.039	.426	.112	.422	1.625	
		53.04	38.96	47.04	8.36	12.55	10.03	12.29	7.19	5.99/5.68	0.99	10.82	2.84	10.72	29.59	
4	Plug	2.729	2.182	2.500	.329	.494	.395	.484	.283	.236/.224	.039	.426	.112	.422	2.272	
		69.32	55.42	63.5	8.36	12.55	10.03	12.29	7.19	5.99/5.68	0.99	10.82	2.84	10.72	57.71	
5	Plug	2.635	2.079	2.406	.441	.605	.507	.594	.283	.236/.224	.039	.426	.112	.534	2.178	
		66.93	52.81	61.11	10.44	15.37	12.88	15.09	7.19	5.99/5.68	0.99	10.82	2.84	13.56	55.32	

**Plug Assemblies — .030 [0.76] Post Dia.**

Shell Size	No. Pos.	Post Ext. ±.020 [± 0.51]	Part Number	
			Tin Plated Shells <sup>1</sup>	Zinc Plated RoHS Shells <sup>2</sup>
1	9	.125 3.18	1218830-1	1218831-1
2	15	.125 3.18	1218830-2	1218831-2
3	25	.125 3.18	1218830-3	1218831-3
4	37	.125 3.18	1218830-4	1218831-4
5	50	.125 3.18	1218830-5	1218831-5
1	9	.156 3.96	1218832-1	1218833-1
2	15	.156 3.96	1218832-2	1218833-2
3	25	.156 3.96	1218832-3	1218833-3
4	37	.156 3.96	1218832-4	1218833-4
5	50	.156 3.96	1218832-5	1218833-5
1	9	.188 4.78	1218838-1	1218839-1
2	15	.188 4.78	1218838-2	1218839-2
3	25	.188 4.78	1218838-3	1218839-3
4	37	.188 4.78	1218838-4	1218839-4
5	50	.188 4.78	1218838-5	1218839-5

**Plug Assemblies — .040 [1.02] Post Dia.**

Shell Size	No. Pos.	Post Ext. ±.020 [± 0.51]	Part Number	
			Tin Plated Shells <sup>1</sup>	Zinc Plated RoHS Shells <sup>2</sup>
1	9	.125 3.18	1218834-1	1218835-1
2	15	.125 3.18	1218834-2	1218835-2
3	25	.125 3.18	1218834-3	1218835-3
4	37	.125 3.18	1218834-4	1218835-4
5	50	.125 3.18	1218834-5	1218835-5
1	9	.156 3.96	—	1218837-1
2	15	.156 3.96	—	1218837-2
3	25	.156 3.96	—	1218837-3
4	37	.156 3.96	—	1218837-4
5	50	.156 3.96	—	1218837-5
1	9	.188 4.78	1218840-1	1218841-1
2	15	.188 4.78	1218840-2	1218841-2
3	25	.188 4.78	1218840-3	1218841-3
4	37	.188 4.78	1218840-4	1218841-4
5	50	.188 4.78	1218840-5	1218841-5

<sup>3</sup> See Zinc Plated RoHS compliant finish above.

<sup>2</sup> See Tin Plated RoHS compliant finish above.

<sup>3</sup> See Zinc Plated RoHS compliant finish above.



Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors, Series 109** (Continued)

**Right-Angle, PCB Receptacles, Series 109, Standard Density Connectors (Industrial Grade)**

**Material and Finish**

**Shell** — Steel, see below for finish options

**Tin Plated RoHS Compliant Finish**

— Tin .000400–.000550 [0.01020–0.01400] thick over copper .000050 [0.00127] min. thick

**Zinc Plated RoHS Compliant**

— Zinc .000200–.000400 [0.00508–0.01016] thick, yellow trivalent chromate

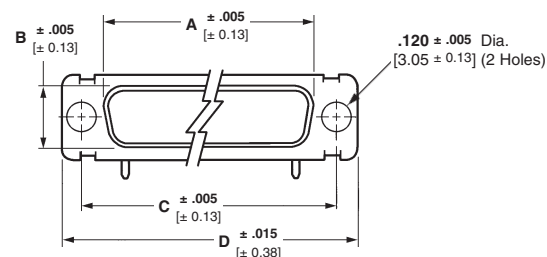
**Insert and Post Spacer** — Approved material per MIL-DTL-24308

**Contacts** —

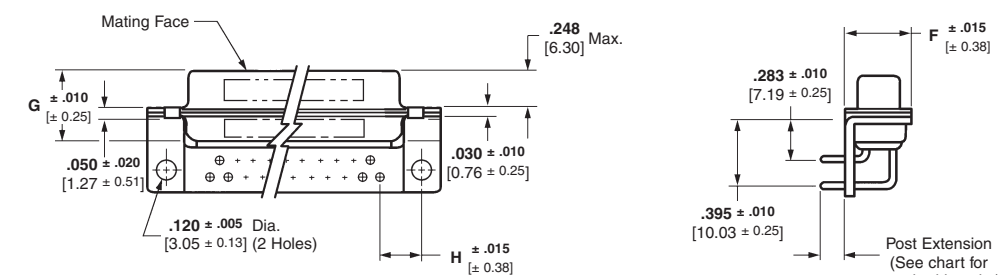
**Socket Body** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel under-plate

**Mating Area** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel under-plate

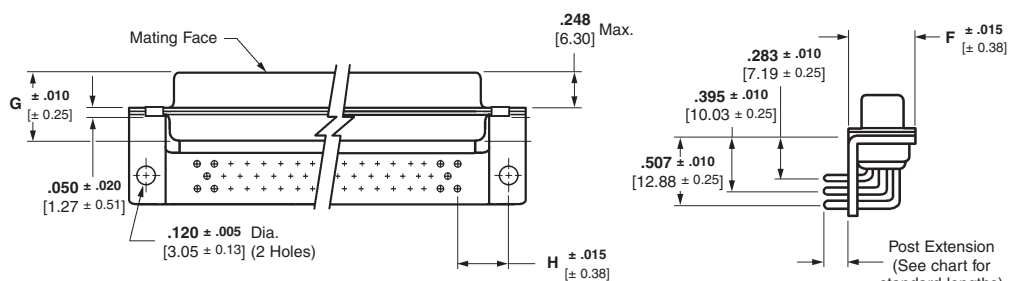
**Mating Area** — Copper alloy with .000030 [0.00076] min. gold plate over .000050 [0.00127] min. nickel under-plate



**9, 15, 25 and 37 Positions**



**50 Positions**



**Related Product Data**

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.

**Product Specification** — 108-1770

**Receptacle Assemblies**

No. of Contact Pos. (Shell Size)	Dimensions						
	A (Outside)	B (Outside)	C	D	F	G	H
9 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.494 12.55	.429 10.97	.276 7.01
15 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	.494 12.55	.429 10.97	.278 7.06
25 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	.494 12.55	.429 10.97	.274 6.96
37 (4)	2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	.494 12.55	.429 10.97	.272 6.91
50 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	.605 15.37	.429 10.97	.333 8.46

**AMPLIMITE Connectors, Series 109** (Continued)

**Right-Angle, PCB Receptacles, Series 109, Standard Density Connectors (Industrial Grade)** (Continued)

**Material and Finish**

**Shell** — Steel

**Insert and Post Spacer** — Approved material per MIL-DTL-24308

**Contacts** —

**Socket Body** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel under-plate

<sup>a</sup>**Mating Area** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel under-plate

<sup>b</sup>**Mating Area** — Copper alloy with .000030 [0.00076] min. gold plate over .000050 [0.00127] min. nickel under-plate

**Related Product Data**

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.

**Product Specification** — 108-1770

**Receptacle Assemblies — .030 [0.76] Post Dia.**

Shell Size	No. Pos.	Post Ext. ± .020 [± 0.51]	Part Number		
			Tin Plated Shells <sup>b</sup>	Tin Plated Shells <sup>a</sup>	Zinc Plated Shells <sup>a</sup>
1	9	.125 3.18	1218842-1	1218844-1	1218843-1
2	15	.125 3.18	1218842-2	1218844-2	1218843-2
3	25	.125 3.18	1218842-3	1218844-3	1218843-3
4	37	.125 3.18	1218842-4	1218844-4	1218843-4
5	50	.125 3.18	1218842-5	1218844-5	1218843-5
1	9	.156 3.96	1218845-1	1218847-1	1218846-1
2	15	.156 3.96	1218845-2	1218847-2	1218846-2
3	25	.156 3.96	1218845-3	1218847-3	1218846-3
4	37	.156 3.96	1218845-4	1218847-4	1218846-4
5	50	.156 3.96	1218845-5	1218847-5	1218846-5
1	9	.188 4.78	1218854-1	1218856-1	1218855-1
2	15	.188 4.78	1218854-2	1218856-2	1218855-2
3	25	.188 4.78	1218854-3	1218856-3	1218855-3
4	37	.188 4.78	1218854-4	1218856-4	1218855-4
5	50	.188 4.78	1218854-5	1218856-5	1218855-5

**Receptacle Assemblies — .040 [1.02] Post Dia.**

Shell Size	No. Pos.	Post Ext. ± .020 [± 0.51]	Part Number		
			Tin Plated Shells <sup>b</sup>	Tin Plated Shells <sup>a</sup>	Zinc Plated Shells <sup>a</sup>
1	9	.125 3.18	1218848-1	1218850-1	1218849-1
2	15	.125 3.18	1218848-2	1218850-2	1218849-2
3	25	.125 3.18	1218848-3	1218850-3	1218849-3
4	37	.125 3.18	1218848-4	1218850-4	1218849-4
5	50	.125 3.18	1218848-5	1218850-5	1218849-5
1	9	.156 3.96	—	—	1218852-1
2	15	.156 3.96	—	—	1218852-2
3	25	.156 3.96	—	—	1218852-3
4	37	.156 3.96	—	—	1218852-4
5	50	.156 3.96	—	—	1218852-5
1	9	.188 4.78	1218857-1	1218859-1	1218858-1
2	15	.188 4.78	1218857-2	1218859-2	1218858-2
3	25	.188 4.78	1218857-3	1218859-3	1218858-3
4	37	.188 4.78	1218857-4	1218859-4	1218858-4
5	50	.188 4.78	1218857-5	1218859-5	1218858-5



Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors, Series 109** (Continued)

**Right-Angle, PCB Plugs, Series 109, with One Piece Insert (Industrial Grade)**

**Material and Finish**

**Shell** — Steel, see below

**1 Tin Plated Finish** — Tin  
.000400-.000550 [0.01020-0.01400]  
thick over copper .000050 [0.00127]  
min. thick

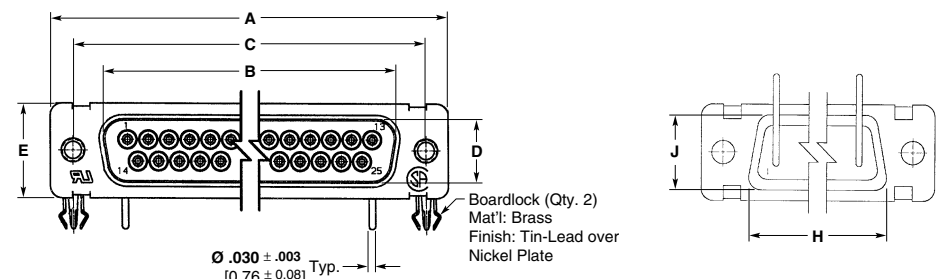
**2 Zinc Plated RoHS Compliant Finish** — Zinc .000200-.000400  
[0.00508-0.01016] thick, yellow trivalent  
chromate

**Insert** — Thermoplastic

**Contact Material** — Brass or  
Beryllium copper

**Contact Finish** — Gold with .000010  
[0.00025] min. gold plate over .000050  
[0.00127] min. nickel underplate

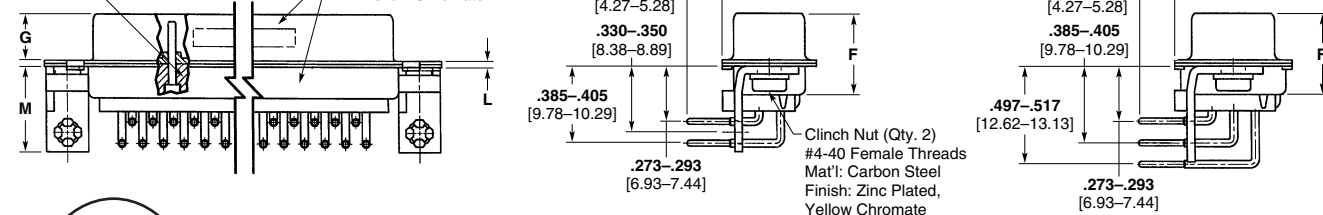
**Interfacial Seal** — Fluorosilicone



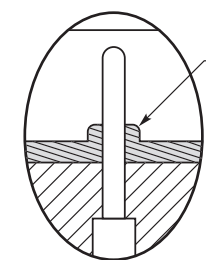
**3 and 5 Positions (with Interfacial Seal)**

**Insert**  
Size 1 to 4 Material: LCP,  
Type GLCP-30F  
Size 5 Material: PPS,  
Type GST-40F  
Color: Black

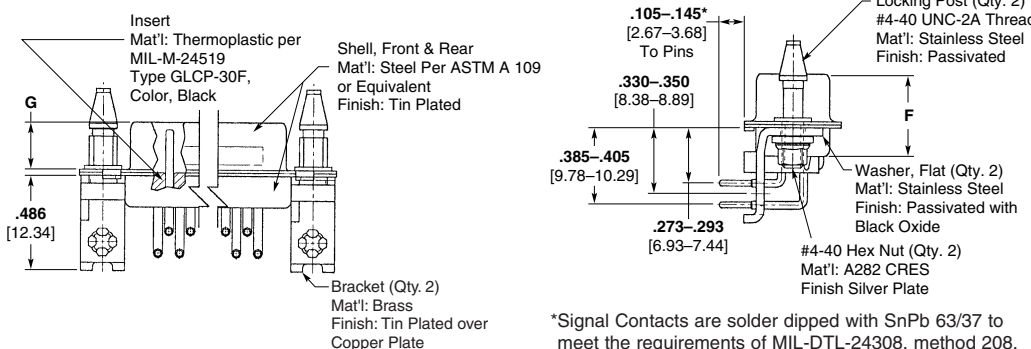
**Shell, Front & Rear**  
Mat'l: Steel Per ASTM A 109  
or Equivalent Finish:  
Zinc Plated per ASTM-B-633  
Yellow Chromate



**9 Position (with Locking Post)**



**Interfacial Seal (unbonded)**  
Mat'l: Fluorosilicone



\*Signal Contacts are solder dipped with SnPb 63/37 to meet the requirements of MIL-DTL-24308, method 208.

MS Shell Size	Connector Style	Dimensions										
		A	B	C	D	E	F	G	H	J	L	M
1	Plug	1.198/1.228	.661/.671	.979/.989	.324/.334	.479/.509	.412/.432	.229/.238	.749/.769	.412/.432	.020/.040	—
		30.43/31.19	16.21/16.46	24.87/25.12	8.23/8.48	12.17/12.93	10.46/10.97	5.82/6.05	19.02/19.53	10.46/10.97	0.51/1.02	—
3	Plug	2.073/2.103	1.529/1.539	1.847/1.857	.324/.334	.479/.509	.416/.436	.224/.236	1.615/1.635	.412/.432	.029/.049	.435/.443
		52.65/53.42	38.25/38.51	46.91/47.17	8.23/8.48	12.17/12.93	10.57/11.07	5.69/5.99	41.02/41.53	10.46/10.97	0.74/1.24	11.05/11.25
5	Plug	2.620/2.650	2.074/2.084	2.401/2.411	.436/.446	.590/.620	.416/.436	.224/.236	2.168/2.188	.524/.544	.029/.049	.490/.498
		66.55/67.31	52.30/52.55	60.99/61.24	11.07/11.33	14.99/15.75	10.57/11.07	5.69/5.99	55.07/55.58	13.31/13.82	0.74/1.24	12.45/12.65

**Plug Assemblies — .030 [0.76] Post Dia.**

Shell Size	No. Pos.	With interfacial Seal	Part Number	
			Tin Plated Shells <sup>1</sup>	Zinc Plated RoHS Shells <sup>2</sup>
1	9	No	1218606-6	—
3	25	Yes	—	1218538-3
5	50	Yes	—	1218538-5

<sup>1</sup> See Material and Finish above.

<sup>2</sup> See RoHS compliant Material and Finish above.



**AMPLIMITE Connectors, Series 109** (Continued)

**Right-Angle, PCB Receptacles, Series 109, with One Piece Insert (Industrial Grade)**

**Material and Finish**

**Shell** — Steel, tin plated

**1 Tin Plated RoHS Compliant**

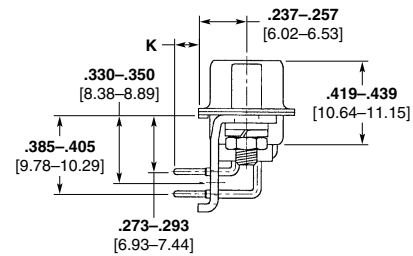
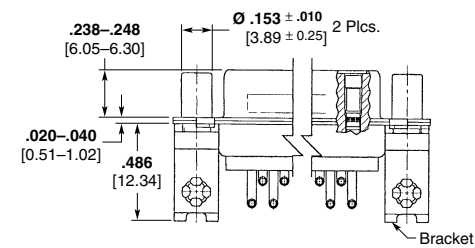
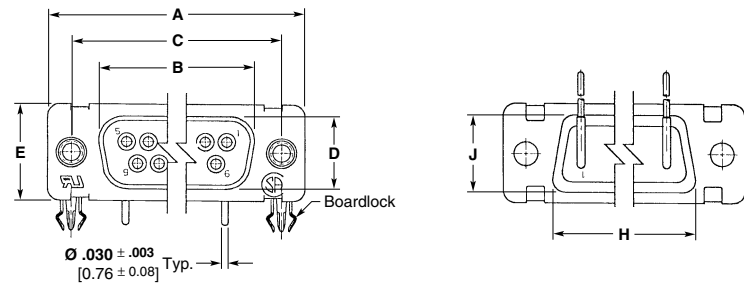
**Finish** — Tin .000400–.000550 [0.01020–0.01400] thick over copper .000050 [0.00127] min. thick

**Insert** — Thermoplastic

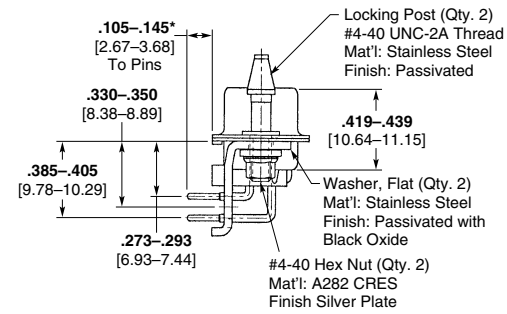
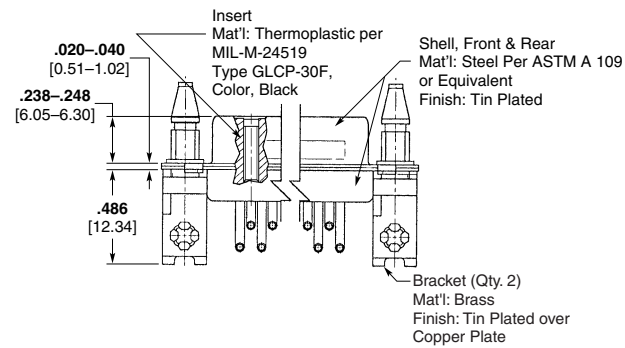
**Contact Material** — Brass or Beryllium copper

**Contact Finish** — Gold with .000010 [0.00025] min. gold over .000050 [0.00127] min. nickel underplate

9 Position



9 Position (with Locking Post)



\*Signal Contacts are solder dipped with SnPb 63/37 to meet the requirements of MIL-DTL-24308, method 208.



Rectangular Pin and Socket Connectors

MS Shell Size	Connector Style	Dimensions									Part Number
		A	B	C	D	E	H	J	K		
1	Receptacle	<b>1.198/1.228</b>	<b>.638/648</b>	<b>.979/989</b>	<b>.306/316</b>	<b>.479/509</b>	<b>.749/769</b>	<b>.412/432</b>	<b>.105/145</b>	1218665-11	
		30.43/31.19	16.21/16.46	24.87/25.12	7.77/8.03	12.17/12.93	19.02/19.53	10.46/10.97	2.67/3.68	1218665-6 <sup>1</sup>	
							<b>.749/769</b>	<b>.412/432</b>	—	1218607-6 <sup>1</sup>	
						19.02/19.53	10.46/10.97				

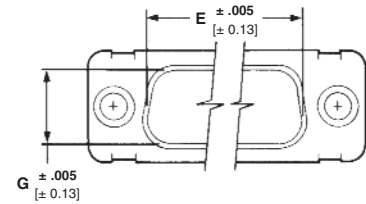
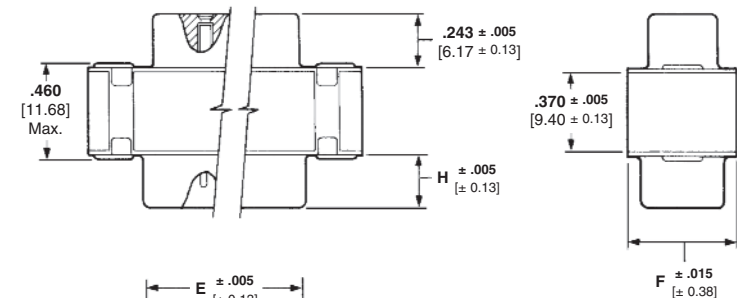
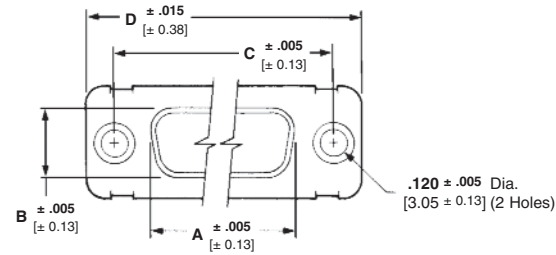
<sup>1</sup> See Material and Finish above.  
<sup>2</sup> See RoHS compliant Material and Finish above.



**AMPLIMITE Connectors, Series 109** (Continued)

**Connector Savers, Series 109, Standard Density**

Connector savers prolong the life of permanently installed connectors which would otherwise be subjected to repeated cycles of mating and unmating, in applications such as test interfaces or on testing devices.



**Material and Finish**

**Standard** —  
**Shell** — Steel, cadmium plated  
**Contact Body** — Beryllium copper with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate  
**Socket Hood** — Passivated stainless steel  
**Insert** — Glass filled polyester  
**Spacer** — Black nylon

**Non Magnetic** —  
**Shell** — Brass, gold plated  
**Contact Body** — Beryllium copper with .000050 [0.00127] min. gold plate over .000100 [0.00254] min. copper underplate  
**Socket Hood** — Brass with .000050 [0.00127] min. gold over .000100 [0.00254] min. copper underplate  
**Insert** — Glass filled polyester  
**Spacer** — Black nylon

No. of Contact Pos. (Shell Size)	Dimensions							
	A (outside)	B (outside)	C	D	E (inside)	F	G (inside)	H
9 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.666 16.92	.494 12.55	.329 8.36	.235 5.97
15 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	.994 25.25	.494 12.55	.329 8.36	.235 5.97
25 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	1.534 38.96	.494 12.55	.329 8.36	.230 5.84
37 (4)	2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	2.182 55.42	.494 12.55	.329 8.36	.230 5.84
50 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	2.079 52.81	.605 15.37	.441 11.20	.230 5.84

No. of Contact Pos. (Shell Size)	Standard (Cadmium Plated Steel Shell)	Non-Magnetic (Gold Plated Brass Shell)
9 (1)	212559-1	212559-2
15 (2)	212560-1	212560-2
25 (3)	212561-1	212561-2
37 (4)	212562-1	212562-2
50 (5)	212563-1	212563-2

**AMPLIMITE Connectors, Series 109 Cross Reference**

**Material and Finish**

**Shell** — Steel, tin plated per ASTM-B-545, .000400–.000550 [0.01016–0.01397] thick.

**Insert** — Approved material per MIL-DTL-24308.

**Retention Clips** — Stainless steel or copper alloy.

**Related Product Data**

**Series 109 Connectors** — page 8-43

**Attention: Connector Marking**

Connector marking may differ from package marking.

**Note:** Meets 48 hr. salt spray requirements of MIL-DTL-24308.

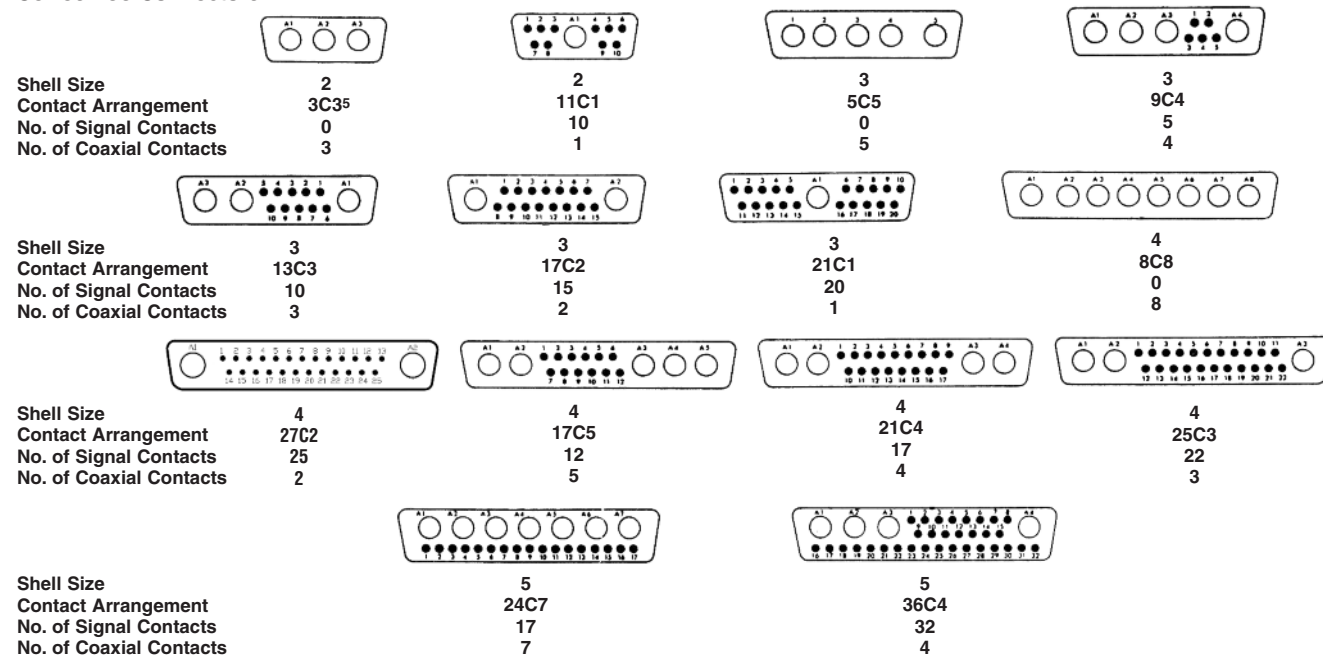
**Series 109 Connectors**

No. of Contact Pos. (Shell Size)	Part Number	Description	Dimensions
9 (1)	205162-6	Plug Only	Refer to page 8-43
	205162-5	Plug Only with Grounding Indents	
	205161-5	Receptacle Only	
15 (2)	205164-6	Plug Only	Refer to page 8-43
	205164-5	Plug Only with Grounding Indents	
	205163-5	Receptacle Only	
25 (3)	205166-5	Plug Only	Refer to page 8-43
	205166-4	Plug Only with Grounding Indents	
	205165-4	Receptacle Only	
37 (4)	205168-7	Plug Only	Refer to page 8-43
	205168-6	Plug Only with Grounding Indents	
	205167-5	Receptacle Only	
50 (5)	205170-5	Plug Only	Refer to page 8-43
	205170-4	Plug Only with Grounding Indents	
	205169-4	Receptacle Only	



**AMPLIMITE Connectors, Coax Mix**

**Crimp, Power/Coax/Signal  
Combination Standard Density,  
Series 109 Connectors**



**Material and Finish**

**Shell** — Steel or copper alloy  
**a** .000200 [.0000079] min. thick plating.  
**b** .000400 [.0000157] min. thick plating.  
**Plating** — Cadmium, tin, gold or zinc

**Insert** — Approved material per MIL-DTL-24308  
**Retention Clips** — Stainless steel or copper alloy

**Contact Selection**

**Standard:**  
 Size 8 coax: Table I, page 8-66  
 Size 8 power: page 8-65  
 Size 20 signal: pages 8-40 to 8-42, 8-46 and 8-47

Insert Arrangement	Standard									
	Cad Plated Steel Shell (.120 Mounting Hole)		RoHS Zinc Plated Steel Shell (.120 Mntg. Hole)		RoHS Tin Plated Steel Shell (.120 Mntg. Hole) <sup>a</sup>		NASA Gold Plated Brass (.120 Mounting Hole)		NASA Gold Plated Brass (.154 Mounting Hole)	
	Plug (Pin)	Receptacle (Socket)	Plug (Pin)	Receptacle (Socket)	Plug <sup>6</sup> (Pin)	Receptacle (Socket)	Plug (Pin)	Receptacle (Socket)	Plug (Pin)	Receptacle (Socket)
3C3	448153-1	445705-4	5-448153-1	5-445705-4	448153-4 <sup>6</sup>	445705-1	448153-2	445705-2	448153-3	445705-3
11C1	211111-1	211112-1	5-211111-1	5-211112-1	211111-4 <sup>6</sup>	211112-4	211111-2	211112-2	211111-3	211112-3
5C5	212491-1	212059-1	5-212491-1	5-212059-1	212491-3 <sup>6</sup>	212059-3	212491-6	212059-2	212491-7	212059-6
9C4	212498-1	212502-1	5-212498-1	5-212502-1	212498-4 <sup>6</sup>	212502-5	212498-2	212502-2	212498-3	212502-3
13C3	208810-1	208811-1	5-208810-1	5-208811-1	208810-2 <sup>6</sup>	208811-2	208810-3	208811-3	208810-4	208811-4
17C2	212506-1	212510-1	5-212506-1	5-212510-1	212506-5 <sup>6</sup>	212510-4	212506-2	212510-2	212506-4	212510-3
21C1	212522-1	212526-1	5-212522-1	5-212526-1	212522-2 <sup>6</sup>	212526-2	212522-3	212526-3	212522-4	212526-4
8C8	446405-1	445730-1	5-446405-1	5-445730-1	446405-4 <sup>6</sup>	445730-5	446405-2	445730-3	446405-3	445730-4
27C2	212538-1	212542-1	5-212538-1	5-212542-1	212538-4 <sup>6</sup>	212542-4	212538-2	212542-2	212538-3	212542-3
17C5	212514-1	212518-1	5-212514-1	5-212518-1	212514-5 <sup>6</sup>	212518-5	212514-3	212518-3	212514-4	212518-4
21C4	212530-1	212534-1	5-212530-1	5-212534-1	212530-4 <sup>6</sup>	212534-4	212530-2	212534-2	212530-3	212534-3
25C3	208742-1	208551-1	5-208742-1	5-208551-1	208742-4 <sup>6</sup>	208551-4	208742-2	208551-2	208742-3	208551-3
24C7	208743-1	208552-1	5-208743-1	5-208552-1	208743-4 <sup>6</sup>	208552-4	208743-2	208552-2	208743-6	208552-5
36C4	208744-1	208550-1	5-208744-1	5-208550-1	208744-5 <sup>6</sup>	208550-4	208744-3	208550-2	208744-4	208550-3

**Notes:**  
 1. NASA connectors listed above are qualified to NASA specification 311-P-405. See pages 8-104 and 8-105 for NASA cross reference.  
 2. Plug insert arrangements shown. Receptacle arrangement is mirror image.  
 3. Cable clamp/strain relief hardware cannot be used with these arrangements.  
 4. See pages 8-93 and 8-94 for PCB layouts.  
 5. The 3C3 arrangement can be mated 180°. Contact TE Connectivity or call Technical Support for keyed Part Numbers, 1218654-1 and 1218655-1.  
 6. Tin plated plugs only include grounding indents.

**AMPLIMITE Connectors, Coax Mix** (Continued)

**Crimp, Power/Coax/Signal  
Combination Standard Density,  
Series 109 Connectors**

(Continued)

**Material and Finish**

**Shell** — Steel or copper alloy  
**a** .000200 [.0000079] min. thick plating.  
**b** .000400 [.0000157] min. thick plating.

**Plating** — Cadmium, tin-lead, tin,  
gold or zinc

**Insert** — Approved material per  
MIL-DTL-24308

**Retention Clips** — Stainless steel or  
copper alloy

**Contact Selection**

**Blindmate:**

Size 8 coax: Table II, page 8-67  
 Size 8 power: page 8-65  
 Size 20 signal: pages 8-40 to  
 8-42, 8-46 and 8-47

Insert Arrange- ment	Blindmate			
	Cad Plated Steel Shell (.120 Mounting Hole)		RoHS Zinc Plated Steel Shell (.120 Mntg. Hole)	
	Plug (Pin)	Receptacle (Socket)	Plug (Pin)	Receptacle (Socket)
3C3	447717-1	447718-1	5-447717-1	5-447718-1
11C1	447721-1	447722-1	5-447721-1	5-447722-1
5C5	446630-1	212049-3	—	5-212049-3
9C4	445701-1	212051-2	—	—
13C3	447723-1	212057-2	5-447723-1	5-212057-2
17C2	447724-1	212053-3	5-447724-1	5-212053-3
21C1	447727-1	212055-2	—	—
8C8	447719-1	447720-1	5-447719-1	5-447720-1
27C2	447732-1	447733-1	—	—
17C5	447725-1	447726-1	—	—
21C4	447728-1	445726-1	—	5-445726-1
25C3	447730-1	447731-1	—	—
24C7	446631-1	445000-2	—	—
36C4	446710-1	446711-1	5-446710-1	5-446711-1

**Notes:**

1. Plug insert arrangements shown. Receptacle arrangement is mirror image.
2. Cable clamp/strain relief hardware cannot be used with these arrangements.
3. See pages 8-93 and 8-94 for PCB layouts.
4. **Blindmate** plugs feature a chamfered lead-in on the front shell, which is constructed of aluminum alloy. See page 8-48 for shell dimensions. **Blindmate** receptacles feature float bushings installed in the mounting holes. See pages 8-43 and 8-44 for shell dimensions.
5. The 3C3 arrangement can be mated 180°. Contact TE Connectivity or call Technical Support for keyed Part Numbers, 1218654-1 and 1218655-1.
6. All connector plugs with grounding indents except the cadmium plated.

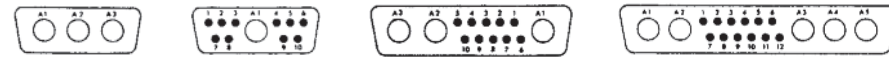


Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors, Coax Mix** (Continued)

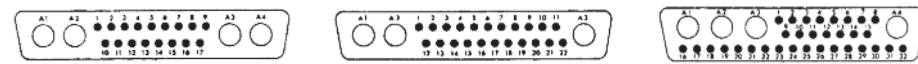
**Boardmount Power/Coax/  
Signal/Combination Standard  
Density, Series 109 Connectors**

Shell Size  
Contact Arrangement  
No. of Signal Contacts  
No. of Coaxial Contacts



2	2	3	4
3C3 <sup>a</sup>	11C1	13C3	17C5
0	10	10	12
3	1	3	5

Shell Size  
Contact Arrangement  
No. of Signal Contacts  
No. of Coaxial Contacts



4	4	5
21C4	25C3	36C4
17	22	32
4	3	4

**Material and Finish**

**Shell** — Steel or copper alloy

**Plating** — Cadmium or tin

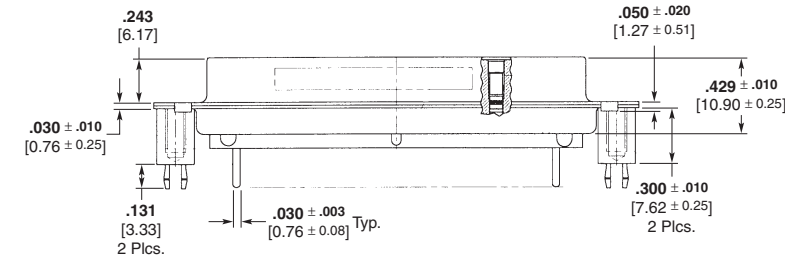
**a Tin Plated Finish** — Tin  
.000400-.000550 [0.01020-0.01400]  
thick over .000050 [0.00127] copper  
min.

**b Tin Plated RoHS Compliant  
Finish** — Tin .000200-.000400  
[0.00508-0.01016] thick over .000100-  
.000200 [0.00254-0.00508] copper

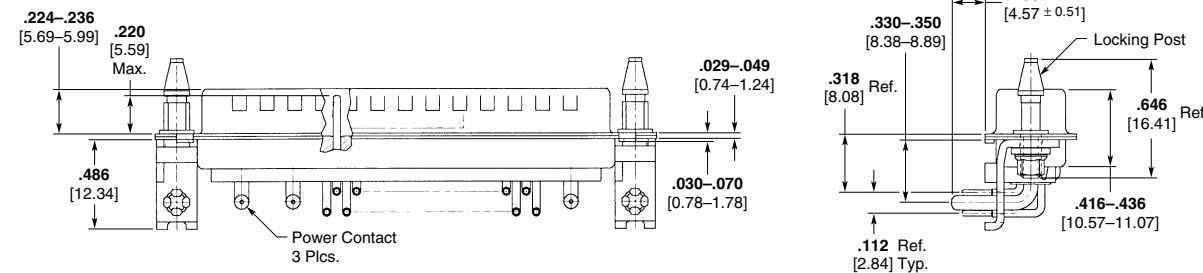
**Insert** — Approved material per  
MIL-DTL-24308

**Contact Selection  
Standard (If not shown with  
connector):**

Size 8 coax: Table I, page 8-66  
Size 8 power: page 8-65



Typical Vertical Receptacle



Typical Right-Angle Plug

Contact Config.	Shell Plating	Style	Hardware Options		4-40 Standoff			Contacts		Spacers	Part Number
			Screwlocks	Boardlocks	Clinchnuts	w/ Boardlocks	Locking Posts	Power	Coax		
3C3	Tin	Vertical Recept.	No	No	No	Yes	No	No	No	No	1218896-1a
11C1	Cad.	Vertical Plug	No	No	No	No	No	No	Yes	Yes	1218128-1a
11C1	Cad.	Vertical Recept.	No	No	No	No	No	No	Yes	Yes	1218129-1a
13C3	Tin	Vertical Plug	No	No	No	Yes	No	No	No	No	1218816-1a
17C5	Tin	Right-Angle Plug	Yes	Yes	No	No	No	Yes	No	No	1218939-1a
21C4	Tin	Vertical Recept.	No	No	No	Yes	No	No	No	No	1218887-1a
25C3	Tin	Right-Angle Plug	No	Yes	No	No	Yes	Yes	No	No	1218611-1a
36C4	Tin	Vertical Recept.	No	Yes	No	Yes	No	No	No	No	1218807-1a 5-1218807-1b

**Notes:**

1. Plug insert arrangements shown. Receptacle arrangement is mirror image.
  2. See TE Connectivity customer drawing for PCB layouts.
  3. The 3C3 arrangement can be mated 180°. Contact your TE Sales Engineer or call Technical Support for keyed Part Numbers.
- <sup>a</sup> See Tin Plated finish above.  
<sup>b</sup> See Tin Plated RoHS compliant finish above.

**AMPLIMITE Connectors, Coax Mix** (Continued)

**Size 8 Contacts (Power) for Standard Density, Series 109 Power/Coax/Signal Connectors**

**Crimp Contacts**

**Material and Finish**

Copper alloy, plated gold over nickel underplate

**Retention Clips** — Stainless steel or phosphor bronze

**Note:** clip may differ from view shown

**Product Specification**

**For Crimp Contacts** — 108-10045 (current rating and wire size)

**For PCB Contacts** — 108-10045-1

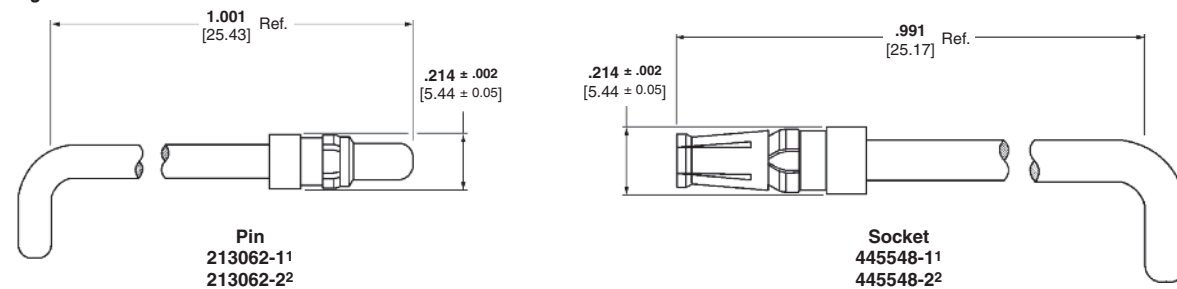
**Hand Crimp Tool** — AMP 608651-1 with positioner AMP 608651-2

**Extraction Tool** — 318813-1

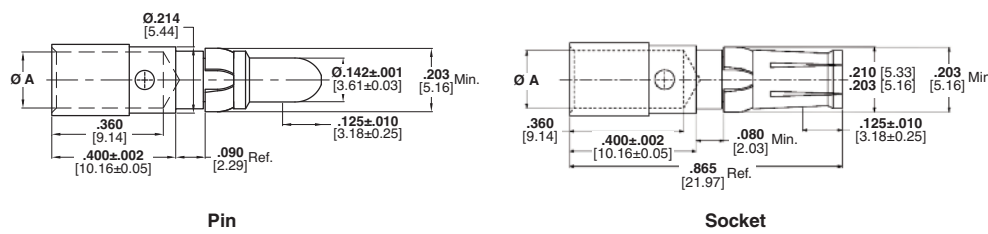
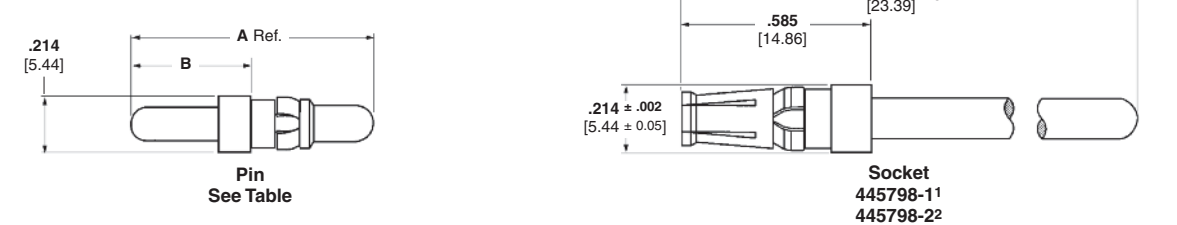
**Printed Circuit Board Contacts**

(Use these contacts only with the **Standard** connectors on pages 8-62 and 8-63. Do not use with **Blindmate** connectors.)

**Right-Angle**



**Vertical**



Wire Size Range AWG	mm <sup>2</sup>	Dim. A	Part Numbers					
			50 Gold Pins <sup>3</sup>	30 Gold Pins <sup>3</sup>	50 Gold Sockets	30 Gold Sockets	Blindmate 50 Gold Pins	30 Blindmate Gold Pins
8 <sup>2</sup>	8	.230 5.84	211159-1	211159-3	211161-1	211161-3	1218385-1	—
10 <sup>2</sup>	5	.185 4.69	211159-2	211159-4	211161-2	211161-4	—	—
12-14	2-3	.150 3.81	212007-1	212007-2	212008-1	212008-2	1218483-1	1218483-2
16-18	0.8-1.4	.102 2.59	212013-1 <sup>1</sup>	212013-2 <sup>1</sup>	212014-1 <sup>1</sup>	212014-2 <sup>1</sup>	—	—

- Notes:** 1. 16-18 size use 608668-1 with Positioner 608668-2.  
 2. Retention clip shown is for 12-14, 16-18 Awg. See TE Connectivity customer drawing for 8, 10 AWG Retention Clip.  
 3. Use these contacts only with the **Standard** connectors on pages 8-62 and 8-63. Do not use with **Blindmate** connectors.

8 Rectangular Pin and Socket Connectors

Part Number	Dim A	Dim B
449379-1 <sup>1</sup>	.931 [23.65]	.461 [11.71]
449379-2 <sup>1</sup>	.845 [21.46]	.375 [9.52]
1-449379-0 <sup>2</sup>	.931 [23.65]	.461 [11.71]
1-449379-1 <sup>2</sup>	.845 [21.46]	.375 [9.52]

- Note:** 1. Standard connector, .000050 [0.00127] gold plating.  
 2. Standard connector, .000030 [0.00076] gold plating.

**AMPLIMITE Connectors, Coax Mix** (Continued)

**RF Contacts for Standard Density, Series 109 Power/Coax/Signal Connectors**

**Performance Characteristics**

**Frequency Range** — 0 to 500 MHz

**Operating Voltage, Max.** — 275 vac rms @ sea level

**Termination Resistance, Max.** — Center Contact — 6.0 milliohms  
Outer Contact — 3.0 milliohms

**Insulation Resistance, Min.** — 5,000 megohms @ 500 vdc

**Dielectric Withstanding Voltage** — Sea Level — 800 Volts rms  
30,000 ft [9,144 m] — 525 volts rms  
70,000 ft [21,336m] — 275 volts rms

**VSWR to 500MHz, Max.**

Pin/Socket	VSWR
Straight/Straight	1.30
Right-Angle/Straight	1.35
Right-Angle/Right-Angle	1.40

**RF Crosstalk** — 90dB @ 5-500 MHz

**Mating Force, Max.** — 4.0 lb [17.8 N]

**Unmating Force, Min.** — 2.0 oz [0.556 N]

**Contact Retention** — 20 lb [89 N]

**Contact Durability** — 500 cycles

Cable RG/U	Force	
	lb	[N]
316, 188, 174, 179, 179A, 179B	20	89
188-type Double-Braid	35	155.8
142, 142A, 142B	50	222.5

**Operating Temperature** — 131°F to 257°F [55°C to +125°C]

**Thermal Shock** — 131°F to 257°F [55°C to +125°C] per MIL-STD-1344, Method 1003, Cond. A

**Physical Shock** — 50 G's per MIL-STD-1344, Method 2004, Cond. A

**Vibration** — MIL-STD-1344, Method 2005, Cond. II

**Moisture Resistance** — 240 hours per MIL-STD-1344, Method 1002, Cond. II

**Salt Fog** — 48 hours per MIL-STD-1344, Method 1001, Cond. B

**Extraction Tool Numbers**

**Subminiature D Housings** — 58095-1 AMPLIMITE Connector

**AMP-HDI Connector Housings** — 58095-2

**Material and Finish**

**Brass** — per QQ-B-626 and MIL-C-50

**Phosphor Bronze** — per QQ-B-750

**Beryllium Copper** — per QQ-C-530

**PTFE** — per MIL-P-19468

**Nylon** — per MIL-M-20693

**Finish**

**a Bright Tin-Lead Plating** — per ASTM-B-571

**b Bright Tin Plating** — per ASTM-B-545

**Copper Plating** — per MIL-C-14550

**Gold Plating** — per MIL-G-45204

**Nickel Plating** — per QQ-N-290

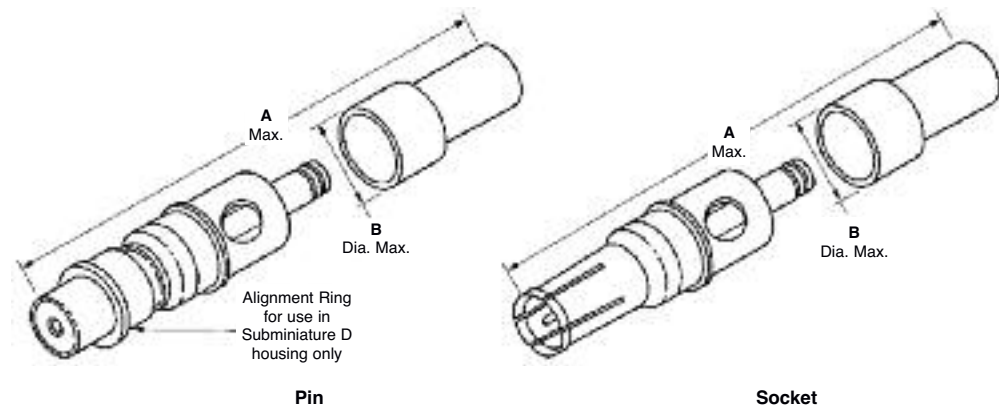
**Extraction Tool** — 318813-1

**Hand Crimp Tool** — 69710-1

**Pneu. Crimp Tool** — 69365-8

**Dies for Crimp Tools** — See table

**Instruction Sheet** — 408-6755 Size 8 Coaxial RF 50-Ohm and Non-Impedance Matched Pin and Socket Contact Kits



**Table I - Standard**

RG/U Cable	Dimensions A B		Contact Part Numbers				Die Insert for Tools
			Non-Impedance Matched		50 Ohm		
			Pin	Socket	Pin	Socket	
178, 178A, 178B 196, 196A	.950 24.13	.235 5.94	228618-5a 5-228618-5b	—	—	—	59993-1
174, 316 188, 188A	.956 24.28	.234 5.94	228618-1a 5-228618-1b	228596-1a 5-228596-1b	221980-1	1883630-1	59993-1
179, 179A, 179B 187, 187A, 161 Belden 9221	.956 24.28	.234 5.94	228618-2a 5-228618-2b	228596-2a 5-228596-2b	221980-3	—	59993-1
188-Type Double Braid	.956 24.28	.234 5.94	228618-3	228596-3	—	—	59993-1
142, 142A, 142B 400, Belden 9246	1.080 27.43	.255 6.48	228618-4a 5-228618-4b	228596-4a 5-228596-4b	—	—	58212-1

**Notes:**

1. Non Impedance Matched contacts and 50 ohm contacts are not intermateable.
  2. Use these contacts only with the **Standard** connectors on pages 8-62 and 8-64.
- <sup>a</sup> See Material and Finish above.  
<sup>b</sup> See Material and Finish for RoHS compliant Part Numbers above.



**AMPLIMITE Connectors, Coax Mix** (Continued)

**RF Contacts for Standard Density, Series 109 Power/Coax/Signal Connectors**

(Continued)

**Material and Finish**

**Center Contacts** — Beryllium Copper or Brass per QQ-B-626, per QQ-C-530, gold plated

**Outer Contacts** — Beryllium copper per QQ-C-530, gold plated

**Plugs** — Beryllium copper per QQ-C-530, gold plated

**Jack** — Stainless steel per ASTM-A-582, gold plated

**Shells** — Stainless steel per ASTM-A-582, passivated

**Panel Shells** — Brass per QQ-B-626, nickel plated

**Dielectrics** — PTFE per ASTM-D-1457

**Grip Rings** — Brass per MIL-C-50 or Beryllium Copper per QQ-C-530, nickel plated

**Springs** — Steel wire per QQ-W-470

**Bushings** — Stainless steel per ASTM-A-582, passivated

**Retention Springs** — Beryllium Copper per QQ-C-530, Tin-Lead Plated

**Finishes**

Passivate per QQ-P-35

Gold per MIL-G-45204

Nickel per QQ-N-290

Tin-Lead per ASTM-B-545

**Performance Characteristics**

**Electrical Characteristics**

**Nominal Impedance** — 50 ohms

**Frequency Range** —

2.8 mm: 0 to 26.5 GHz

2.8 mm for size 8 cavities: 0 to 40 GHz

**Operating Voltage** —

RG-402/U Cable (3.58 [.141] O.D.)

500 volts rms at 60 Hz (sea level)

125 volts rms at 60 Hz

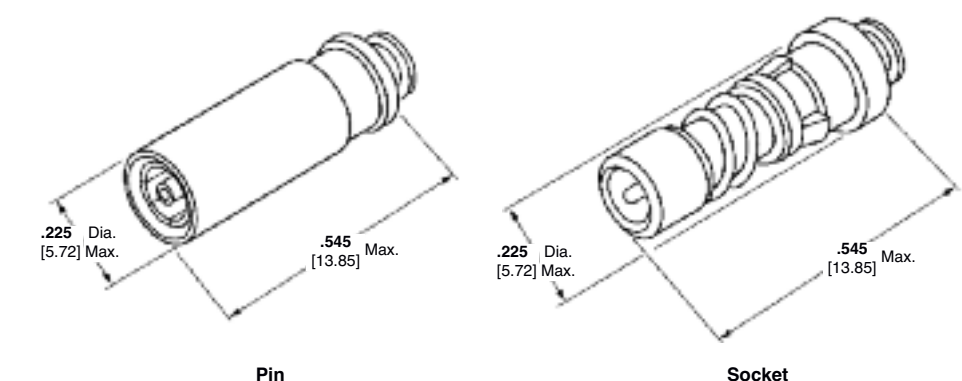
(21 336 m [70,000 ft])

RG-405/U Cable (2.18 [.086] O.D.)

335 volts rms at 60 Hz (sea level)

85 volts rms at 60 Hz

70,000 ft [21,336 m]



**Table II - 2.8 mm Blindmate**

RG/U Cable	Contact Type	Part Number	Crimp Tool	Die Set	Locator	Insertion Tool	Extraction Tool
405 Semi-Rigid .086 [2.18]	Pin (Plug)	413242-1	59980-1	312253-2	852113-1	852115-1	2-305183-0
	Socket (Jack)	413249-1	59980-1	312253-2	852114-1	—	318813-1

**Note:**

1. Use these contacts only with the **Blindmate** connectors on page 8-63.

**Mechanical Characteristics**

**Cable Retention** —

RG-402/U Cable (3.58 [.141] O.D.)—

60 lb [266.9 N], min.

RG-405/U Cable (2.18 [.086] O.D.)—

30 lb [133.4 N], min.

**Connector Mating Force** —

2.8 mm: 3 lbs Max.

**Environmental Characteristics**

**Temperature Range** —

–85°F to +221°F [–65°C to +105°C]

**Technical Documents**

**Instruction Sheet** —

408-9582 Insertion tool 852115-1 for blindmate 2.8mm plug contact 413242-1

408-9585 Blindmate 2.8mm contacts for semi-rigid .086 in. coaxial cable



Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors, Coax Mix Cross Reference**

**Material and Finish**

**Shell** — Steel, tin plated per ASTM-B-545, .000400–.000550 [0.01016–0.01397] thick.

**Insert** — Approved material per MIL-DTL-24308.

**Retention Clips** — Stainless steel or copper alloy.

**Related Product Data**

**Coax Mix Connectors** — page 8-62

**Attention: Connector Marking**

Connector marking may differ from package marking.

**Note:** Meets 48 hr. salt spray requirements of MIL-DTL-24308.

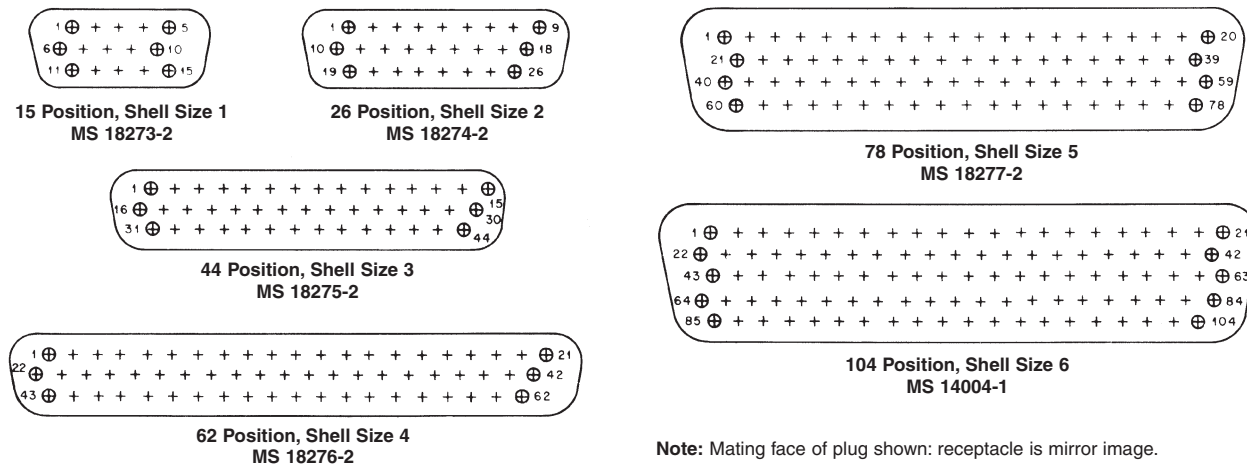
**Coax Mix Connectors**

Insert Arrangement (Shell Size)	Part Number	Description	Dimensions
11C1 (2)	—	Plug Only	Refer to page 8-43
	211111-6	Plug Only with Grounding Indents	
	211112-6	Receptacle Only	
21C1 (3)	212522-7	Plug Only	Refer to page 8-43
	212522-6	Plug Only with Grounding Indents	
	212526-6	Receptacle Only	
5C5 (3)	1-212491-0	Plug Only	Refer to page 8-43
	212491-9	Plug Only with Grounding Indents	
	1-212059-0	Receptacle Only	
21C4 (4)	212530-6	Plug Only	Refer to page 8-43
	212530-5	Plug Only with Grounding Indents	
	212534-5	Receptacle Only	
24C7 (5)	208743-5	Plug Only	Refer to page 8-43
	208743-7	Plug Only with Grounding Indents	
	208552-6	Receptacle Only	

**AMPLIMITE Connectors, Series 90**

**Series 90 Connectors**

**Insert Arrangements**



**Note:** Mating face of plug shown: receptacle is mirror image.

**Performance Specifications**

All Series 90 AMPLIMITE military connectors conform to the latest amendments of military specification MIL-DTL-24308. For more detailed information, refer to MIL-DTL-24308.

All Series 90 connectors are designed for a -67°F to 257°F [-55°C to +125°C] temperature range.

**Technical Documents List**

The following is a list of technical documents that cover the application and performance of AMPLIMITE Series 90 military connectors, contacts, tooling and accessories.

**Military Specifications**

- MIL-DTL-24308 Connectors, Electric, Rectangular, Miniature Polarized Shell, Rack and Panel, General Specifications for
- MIL-C-39029 Contacts, Electrical Connector, General Specification for

**NASA Specification**

- GSFC-S-311-P-4 Non-Magnetic Connectors, General Specification for

**Instruction Sheets**

- 408-7516 Application Tooling for MIL-C-39029 Contacts
- 408-7610 Application and Maintenance for Hand Crimping Tool 90294-1
- 408-7508 Insertion/Extraction Tools 91067-1, 91067-2 and 91067-3
- 408-7837 Female Screwlock Kit 205817-8 and Male Screw/Retainer Kit 211883-5



Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors, Series 90** (Continued)

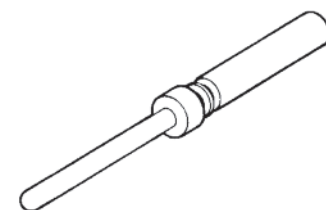
**Size 22 Crimp Contacts for Series 90 Connectors (AS39029)**
**Snap-In Contacts .030 [0.76] Pin Diameter**
**Material and Finish**

**a Contact Body** — Copper alloy plated gold .00005 [0.000127] min. thick. over nickel underplate

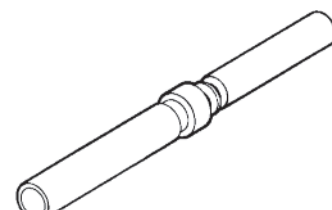
**a Mating Area** — Gold .00005 [0.00127] min. thick. over nickel underplate

**b Contact Body and Mating Area** — Gold min. .00005 [0.00127] min. thick. over nickel underplate

**Socket Hood** — Passivated stainless steel



**Pin**  
M39029/58-360  
(Supersedes M24308/13-1)



**Socket**  
M39029/57-354  
(Supersedes M24308/12-1)

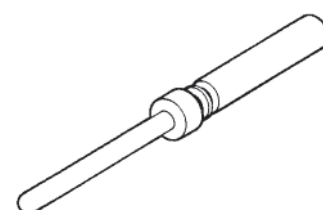
Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. (Max.)	Contact Configuration	Tape Mounted Contacts <sup>1</sup>			Loose Piece Contacts		Hand Tool		Contact Color Bands
			AMP Part No.	Military Part No. (AS39029)	AMP Part No.	Tool No. (M22520/)	Positioner No. (M22520/)			
22-28 0.4-0.8	.054 1.38	Pin	204370-5 <sup>a</sup>	58-360	204370-2 <sup>a</sup>	02-01	02-09	orange, blue, black		
		Socket	204351-2 <sup>a</sup>	57-354	204351-1 <sup>a</sup>	02-01	02-06	orange, green, yellow		
22-28 0.4-0.8	.054 1.38	Pin	1-204370-2 <sup>b</sup>	58-360	1-204370-3 <sup>b</sup>	02-01	02-09	orange, blue, black		
		Socket	204351-6 <sup>b</sup>	57-354	204351-5 <sup>b</sup>	02-01	02-06	orange, green, yellow		

<sup>1</sup>Tape mounted contacts are used in the AMP-TAPEMATIC Stripper/Crimper Machine Part Number **599406-7** (page 8-89).

- Notes:**
1. These contacts are used in Series 90 military connectors.
  2. Insertion/Extraction Tool Part Number **91067-1** (Military Part Number **M81969/1-04**) is used to install and remove pin and socket contacts.
  3. See Instruction Sheet 408-7516 for wire length, tool and selector settings.
  4. Color bands are read in the direction of terminal (wire barrel) end to mating end.

**Size 22 Crimp Contacts for Series 90 Connectors (Industrial Grade)**
**Snap-In Contacts .030 [0.76] Pin Diameter**
**Material and Finish**

**Pin Body** — Copper alloy with .000050-.000100 [0.00127-0.00254] gold plate over .000050-.000150 [0.00127-0.00381] nickel underplate



**Pin**

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. (Max.)	Contact Configuration	Tape Mounted Contacts <sup>1</sup>		Loose Piece Contacts		Hand Tool	
			Part Number	Part Number	Tool No. (M22520/)	Positioner No. (M22520/)		
22-28 0.4-0.8	.054 1.38	Pin	1218699-2	1218699-1	02-01	02-09		
		Socket	—	—	—	—		

<sup>1</sup>Tape mounted contacts are used in the AMP-TAPEMATIC Stripper/Crimper Machine Part Number **599406-7** (page 8-89).

- Notes:**
1. These contacts are used in Series 90 connectors.
  2. Insertion/Extraction Tool Part Number **91067-1** (Military Part Number **M81969/1-04**) is used to install and remove pin and socket contacts.
  3. See Instruction Sheet 408-7516 for wire length, tool and selector settings.

**AMPLIMITE Connectors, Series 90** (Continued)

**Size 22 Posted Contacts for Series 90 Connectors**

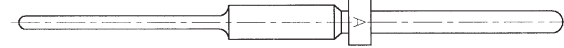
**Material and Finish**

**Pin and Socket Body** — Leaded nickel copper or beryllium copper

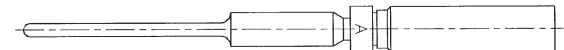
**Socket Hood** — See chart below



**Pin and Socket Insertion/Extraction Tool**



**Pin**  
(See Drawing Number 207683 for Latest Configurations)



**Socket**  
(See Drawing Number 207684 for Latest Configurations)

AMP Part Number 91067-1 or MIL Part Number M81969/1-04  
Insertion tip, for replacement Part Number 126237-1  
Extraction tip, for replacement Part Number 126195-2

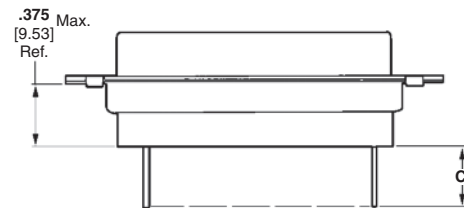
**Notes:**

1. Contacts on this page can be used with connectors on pages 8-72 to 8-78, 8-85. See page 8-92 for PCB layouts.
2. Mating End of pin and socket complies with MIL-C-39029.

Post Diameter ± .002 [± .050]	Post Extension C ± .025 [± 0.63]	Part Numbers		Contact Plating	Socket Hood Material and Finish
		Pin	Socket		
.018 0.46	.175 4.45	207683-6	207684-3	Pin .000050-.000100 [0.00127-0.00254] thick gold plate over	Brass or Beryllium copper with .000050-.000100 [0.00127-0.00254] thick gold plate over .000100-.000250 [0.00254-0.00635] thick copper underplate
	.275 6.99	207683-2	207684-1	Socket .000050-.000100 [0.00127-0.00254] thick gold plate over .000100-.000250 [0.00254-0.00635] thick copper underplate	
	.525 13.34	207683-4	207684-2	Pin .000050-.000100 [0.00127-0.00254] thick gold plate over .000100-.000250 [0.00254-0.00635] thick copper underplate	
.025 0.64	.275 6.99	207683-8	207684-4	Pin .000050-.000100 [0.00127-0.00254] thick gold plate over .000100-.000250 [0.00254-0.00635] thick nickel underplate	Passivated Stainless Steel
	.525 13.34	—	207684-5	Socket .000050-.000100 [0.00127-0.00254] thick gold plate over .000100-.000250 [0.00254-0.00635] thick nickel underplate	
.018 0.46	.275 6.99	—	207684-5	Pin .000050-.000100 [0.00127-0.00254] thick gold plate over .000100-.000250 [0.00254-0.00635] thick nickel underplate	Passivated Stainless Steel
	.525 13.34	207683-9	—	Socket .000050-.000100 [0.00127-0.00254] thick gold plate over .000100-.000250 [0.00254-0.00635] thick nickel underplate	
.175 4.45	.175 4.45	1-207683-1	—	Pin .000050-.000100 [0.00127-0.00254] thick gold plate over .000200-.000250 [0.00508-0.00635] thick nickel underplate	—



Rectangular Pin and Socket Connectors



**Post Extension When Used in a Standard Connector**

**AMPLIMITE Connectors, Series 90** (Continued)

**Crimp Plugs, Series 90, High Density Connectors**

**(MIL Qualified)**

**Material and Finish**

**Shell** — Steel, cadmium plated, yellow chromate

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel or copper alloy

**(Industrial Grade)**

**Material and Finish**

**Shell** — Steel, zinc plated, yellow trivalent chromate or tin plated with grounding indents (not shown)

**Insert** — Polyphenylene Sulfide (PPS)

**Retention Clips** — Stainless steel or copper alloy

**Related Product Data**

**Cavity Identification** — page 8-69

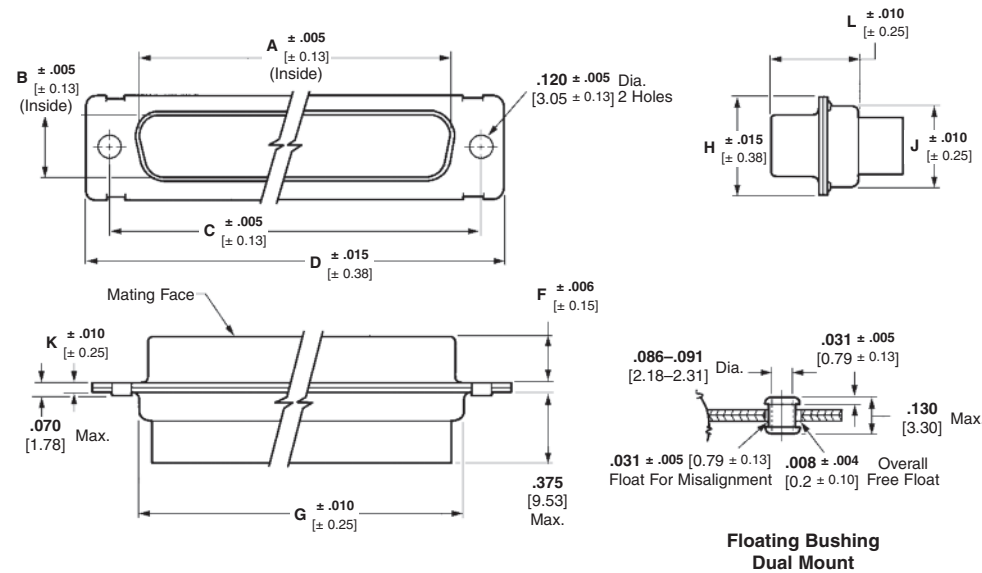
**Contacts** — pages 8-70 and 8-71

**Mounting, Mating Dimensions** — page 8-90

**Accessories** — pages 8-95 to 8-97

**Attention: MIL Qualified Connector Marking**

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



No. of Contact Pos. (Shell Size)	Dimensions										MIL Qualified				Description	Industrial Grade <sup>3</sup> Standard Mount RoHS Part No.
											Standard Mount		Floating Bushing Mount			
	A	B	C	D	F	G	H	J	K	L	Military Part No. <sup>2</sup> M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.		
15 (1)	.666	.329	.984	1.213	.235	.759	.494	.422	.030	.422	4-264F	204501-1	4-329F	204525-1	Plug only	1218746-1 <sup>4</sup> 204501-5 <sup>5</sup>
	16.92	8.36	24.99	30.81	5.97	19.28	12.55	10.72	0.76	10.72	4-11F	204513-2	4-307F	204537-2	Plug with pins <sup>1</sup>	—
26 (2)	.994	.329	1.312	1.541	.235	1.083	.494	.422	.030	.422	4-265F	204503-1	4-330F	204527-1	Plug only	1218746-2 <sup>4</sup> 204503-4 <sup>5</sup>
	25.25	8.36	33.32	39.14	5.97	27.51	12.55	10.72	0.76	10.72	4-12F	204515-2	4-308F	204539-2	Plug with pins <sup>1</sup>	—
44 (3)	1.534	.329	1.852	2.088	.230	1.625	.494	.422	.039	.426	4-266F	204505-1	4-331F	204529-1	Plug only	1218746-3 <sup>4</sup> 204505-5 <sup>5</sup>
	38.96	8.36	47.04	53.04	5.84	4.13	12.55	10.72	0.99	10.82	4-13F	204517-2	4-309F	204541-2	Plug with pins <sup>1</sup>	—
62 (4)	2.182	.329	2.500	2.729	.230	2.272	.494	.422	.039	.426	4-267F	204507-1	4-332F	204531-1	Plug only	1218746-4 <sup>4</sup> 204507-5 <sup>5</sup>
	55.42	8.36	63.5	69.32	5.84	57.7	12.55	10.72	0.99	10.82	4-14F	204519-2	4-310F	204543-2	Plug with pins <sup>1</sup>	—
78 (5)	2.079	.441	2.406	2.635	.230	2.178	.605	.534	.039	.426	4-268F	204509-1	4-333F	204533-1	Plug only	1218746-5 <sup>4</sup> 204509-7 <sup>5</sup>
	52.81	11.2	61.11	66.93	5.84	55.32	15.37	13.56	0.99	10.82	4-15F	204521-2	4-311F	204545-2	Plug with pins <sup>1</sup>	—
104 (6)	2.212	.503	2.500	2.729	.230	2.302	.668	.596	.039	.426	4-269F	204511-1	4-334F	204535-1	Plug only	1218746-6 <sup>4</sup>
	56.18	12.78	63.5	69.32	5.84	58.47	16.97	15.14	0.99	10.82	4-16F	204523-2	4-312F	204547-2	Plug with pins <sup>1</sup>	—

**Notes:** See pages 8-99 through 8-103 (military to AMP Part Number cross reference) for additional part numbers.  
<sup>1</sup> Size 22 contacts supplied with connectors are loose piece.  
<sup>2</sup> "F" is stamped on connectors following **M24308** part number as required. "F" designates cadmium shell plating.  
<sup>3</sup> Meets requirements of MIL-DTL-24308.  
<sup>4</sup> Zinc plated.  
<sup>5</sup> Tin plated.

**AMPLIMITE Connectors, Series 90** (Continued)

**Crimp Plugs, Series 90, High Density Connectors — Zinc Plated, RoHS Compliant**

**(MIL Qualified)**

**Material and Finish**

**Shell** — Steel, zinc plated

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel or copper alloy

**(Industrial Grade)**

**Material and Finish**

**Shell** — Steel, zinc plated

**Insert** — Polyphenylene Sulfide (PPS)

**Retention Clips** — Stainless steel or copper alloy

**Related Product Data**

**Cavity Identification** — page 8-69

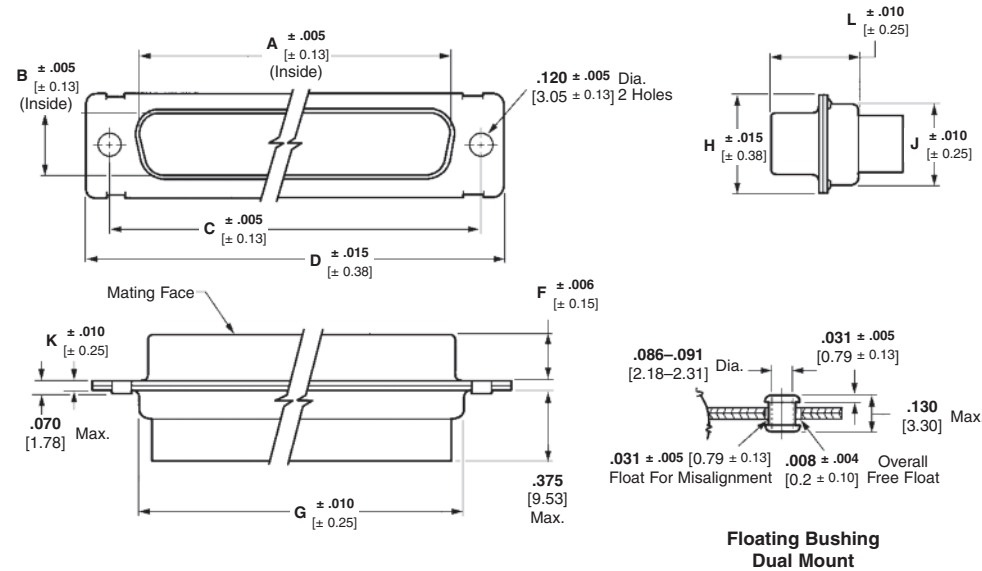
**Contacts** — pages 8-70 and 8-71

**Mounting, Mating Dimensions** — page 8-90

**Accessories** — pages 8-95 to 8-97

**Attention: MIL Qualified Connector Marking**

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



No. of Contact Pos. (Shell Size)	Dimensions											MIL Qualified			
	A	B	C	D	F	G	H	J	K	L	Standard Mount		Floating Bushing Mount		
												Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.
15 (1)	.666 16.92	.329 8.36	.984 24.99	1.213 30.81	.235 5.97	.759 19.28	.494 12.55	.422 10.72	.030 0.76	.422 10.72		4-264 4-11	1757823-1 1757823-7	4-329 4-307	1757825-1 1757825-7
26 (2)	.994 25.25	.329 8.36	1.312 33.32	1.541 39.14	.235 5.97	1.083 27.51	.494 12.55	.422 10.72	.030 0.76	.422 10.72		4-265 4-12	1757823-2 1757823-8	4-330 4-308	1757825-2 1757825-8
44 (3)	1.534 38.96	.329 8.36	1.852 47.04	2.088 53.04	.230 5.84	1.625 41.3	.494 12.55	.422 10.72	.039 0.99	.426 10.82		4-266 4-13	1757823-3 1757823-9	4-331 4-309	1757825-3 1757825-9
62 (4)	2.182 55.42	.329 8.36	2.500 63.5	2.729 69.32	.230 5.84	2.272 57.7	.494 12.55	.422 10.72	.039 0.99	.426 10.82		4-267 4-14	1757823-4 1-1757823-0	4-332 4-310	1757825-4 1-1757825-0
78 (5)	2.079 52.81	.441 11.2	2.406 61.11	2.635 66.93	.230 5.84	2.178 55.32	.605 15.37	.534 13.56	.039 0.99	.426 10.82		4-268 4-15	1757823-5 1-1757823-1	4-333 4-311	1757825-5 1-1757825-1
104 (6)	2.212 56.18	.503 12.78	2.500 63.5	2.729 69.32	.230 5.84	2.302 58.47	.668 16.97	.596 15.14	.039 0.99	.426 10.82		4-269 4-16	1757823-6 1-1757823-2	4-334 4-312	1757825-6 1-1757825-2

**Notes:** See pages 8-99 through 8-103 (military to AMP Part Number cross reference) for additional part numbers.



**AMPLIMITE Connectors, Series 90** (Continued)

**Crimp Receptacles, Series 90, High Density Connectors**

**(MIL Qualified)**

**Material and Finish**

**Shell** — Steel, cadmium plated

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel or copper alloy

**(Industrial Grade)**

**Material and Finish**

**Shell** — Steel, zinc plated, yellow trivalent chromate or tin plated

**Insert** — Polyphenylene Sulfide (PPS)

**Retention Clips** — Stainless steel or copper alloy

**Related Product Data**

**Cavity Identification** — page 8-69

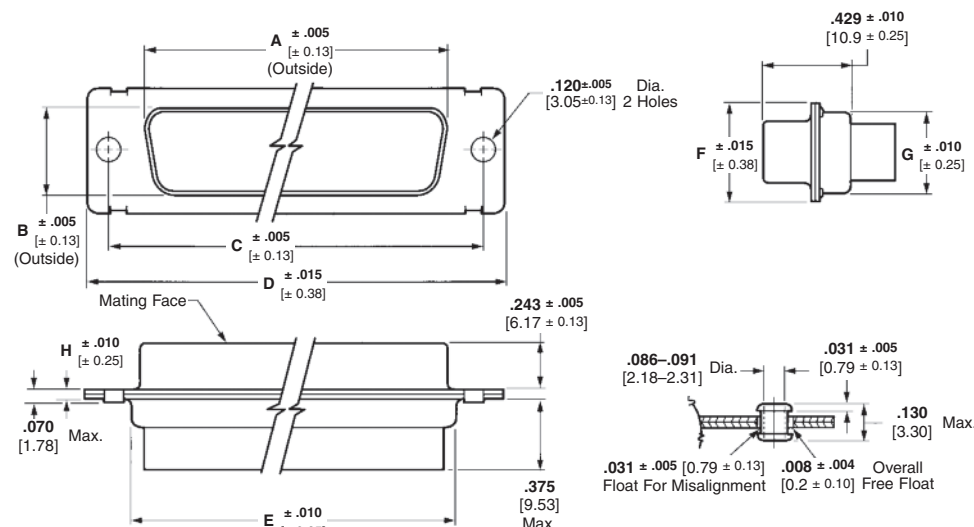
**Contacts** — pages 8-70 and 8-71

**Mounting, Mating Dimensions** — page 8-90

**Accessories** — pages 8-95 to 8-97

**Attention: Connector Marking**

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



**Floating Bushing Dual Mount**



**Clinch Nut Mount**

No. of Contact Pos. (Shell Size)	Dimensions								MIL Qualified				Description	Industrial Grade <sup>3</sup> RoHS Part No.
	A	B	C	D	E	F	G	H	Standard Mount		Floating Bushing Mount			
	Military Part No. <sup>2</sup> M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.		
15 (1)	.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.759 19.28	.494 12.55	.422 10.72	.030 0.76	2-286F	204500-1	2-297F	204524-1	Recept. only	1218747-14 204500-45
26 (2)	.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	1.083 27.51	.494 12.55	.422 10.72	.030 0.76	2-287F	204502-1	2-298F	204526-1	Recept. only	1218747-24 204502-45
44 (3)	1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	1.625 41.3	.494 12.55	.422 10.72	.039 0.99	2-288F	204504-1	2-299F	204528-1	Recept. only	1218747-34 204504-55
62 (4)	2.159 54.84	.311 8.36	2.500 63.5	2.729 69.32	2.272 57.7	.494 12.55	.422 10.72	.039 0.99	2-289F	204506-1	2-300F	204530-1	Recept. only	1218747-44
78 (5)	2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	2.178 55.32	.605 15.37	.534 13.56	.039 0.99	2-290F	204508-1	2-301F	204532-1	Recept. only	1218747-54
104 (6)	2.189 55.6	.485 12.32	2.500 63.5	2.729 69.32	2.302 58.47	.668 16.97	.596 15.14	.039 0.99	2-291F	204510-1	2-302F	204534-1	Recept. only	1218747-64
									2-11F	204512-2	2-28F	204536-2	Recept. with sockets <sup>1</sup>	—
									2-12F	204514-2	2-29F	204538-2	Recept. with sockets <sup>1</sup>	—
									2-13F	204516-2	2-30F	204540-2	Recept. with sockets <sup>1</sup>	—
									2-14F	204518-2	2-31F	204542-2	Recept. with sockets <sup>1</sup>	—
									2-15F	204520-2	2-32F	204544-2	Recept. with sockets <sup>1</sup>	—
									2-16F	204522-2	2-33F	204546-2	Recept. with sockets <sup>1</sup>	—

**Notes:** See pages 8-99 through 8-103 (military to AMP Part Number cross reference) for additional part numbers.

<sup>1</sup> Size 22 contacts supplied with connectors are loose piece.

<sup>2</sup> "F" is stamped on connectors following **M24308** part number as required. "F" designates cadmium shell plating.

<sup>3</sup> Meets requirements of MIL-DTL-24308.

<sup>4</sup> Clinch Nut Mount, Zinc plated.

<sup>5</sup> Standard Mount, Tin plated.

**AMPLIMITE Connectors, Series 90** (Continued)

**Crimp Receptacles, Series 90, High Density Connectors — Zinc Plated, RoHS Compliant**

**(MIL Qualified)**

**Material and Finish**

**Shell** — Steel, zinc plated

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel or copper alloy

**(Industrial Grade)**

**Material and Finish**

**Shell** — Steel, zinc plated

**Insert** — Polyphenylene Sulfide (PPS)

**Retention Clips** — Stainless steel or copper alloy

**Related Product Data**

**Cavity Identification** — page 8-69

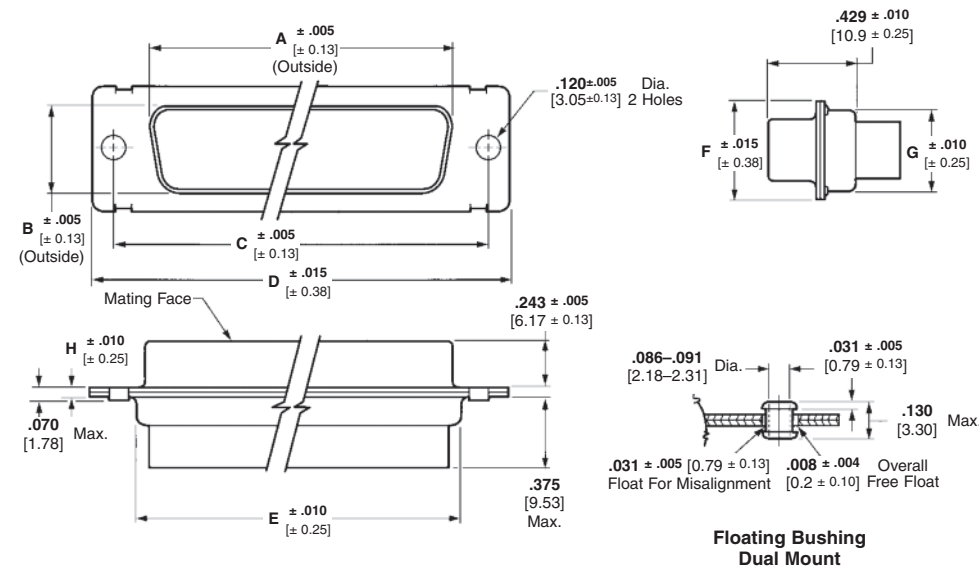
**Contacts** — pages 8-70 and 8-71

**Mounting, Mating Dimensions** — page 8-90

**Accessories** — pages 8-95 to 8-97

**Attention: Connector Marking**

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



No. of Contact Pos. (Shell Size)	MIL Qualified													Description
	Dimensions								Standard Mount		Floating Bushing Mount			
	A	B	C	D	E	F	G	H	Military Part No. M24308/	AMP Part No.	Military Part No. M24308/	AMP Part No.		
15 (1)	.643	.311	.984	1.213	.759	.494	.422	.030	2-286	1757824-1	2-297	1757826-1	Recept. only	
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	0.76	2-11	1757824-7	2-28	1757826-7	Recept. with sockets <sup>1</sup>	
26 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.030	2-287	1757824-2	2-298	1757826-2	Recept. only	
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	0.76	2-12	1757824-8	2-29	1757826-8	Recept. with sockets <sup>1</sup>	
44 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.039	2-288	1757824-3	2-299	1757826-3	Recept. only	
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	0.99	2-13	1757824-9	2-30	1757826-9	Recept. with sockets <sup>1</sup>	
62 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.039	2-289	1757824-4	2-300	1757826-4	Recept. only	
	54.84	8.36	63.5	69.32	57.7	12.55	10.72	0.99	2-14	1-1757824-0	2-31	1-1757826-0	Recept. with sockets <sup>1</sup>	
78 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.039	2-290	1757824-5	2-301	1757826-5	Recept. only	
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	0.99	2-15	1-1757824-1	2-32	1-1757826-1	Recept. with sockets <sup>1</sup>	
104 (6)	2.189	.485	2.500	2.729	2.302	.668	.596	.039	2-291	1757824-6	2-302	1757826-6	Recept. only	
	55.6	12.32	63.5	69.32	58.47	16.97	15.14	0.99	2-16	1-1757824-2	2-33	1-1757826-2	Recept. with sockets <sup>1</sup>	

Notes: See pages 8-99 through 8-103 (military to AMP Part Number cross reference) for additional part numbers.

**AMPLIMITE Connectors, Series 90** (Continued)

**Non-Magnetic Crimp Plugs, Series 90, High Density Connectors (NASA Qualified)**

**Connector Material and Finish**

**Shell** — Brass, gold plated

**Insert** — Approved material per MIL-DTL-24308

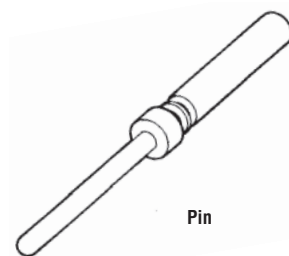
**Retention Clips** — Copper alloy

**Related Product Data**

Cavity Identification — page 8-69

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97



Pin

Wire Size Range	AMP Part No. / NASA No.
22-28 0.4-0.08	204370-8 G-08-P1
26-28 0.15-0.08	206495-3 —

Max. insulation diameter .054 [1.38]

Hand tool AMP Part Number 601966-1 or MIL Part Number M22520/2-01

Positioner AMP Part Number 601966-6 or MIL Part Number M22520/2-09

**Contact Material and Finish**

Copper alloy, .000050-.000100 [0.00127-0.00254] thick gold plate over .000100-.000150 [0.00254-0.00381] thick copper underplate

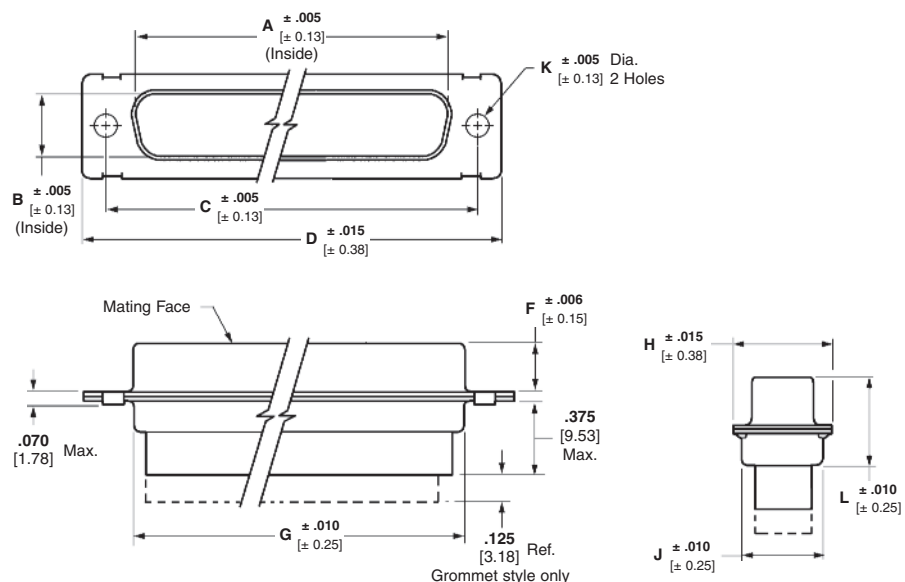


**Pin and Socket Insertion/Extraction Tool**

AMP Part Number 91067-1 or MIL Part Number M81969/1-04

Insertion tip, for replacement Part Number 126237-1

Extraction tip, for replacement Part Number 126195-2



**Non-Magnetic Plugs per NASA Specification**

No. of Contact Pos. (Shell Size)	Dimensions											NASA Part Number	AMP Part Number
	A	B	C	D	F	G	H	J	L	K			
15 (1)	.666	.329	.984	1.213	.235	.759	.494	.422	.422	.154	.120	311P407-1P-B-15	206498-1
	16.92	8.36	24.99	30.81	5.97	19.28	12.55	10.72	10.72	3.91	3.05	311P407-1P-B-12	206498-4
26 (2)	.994	.329	1.312	1.541	.235	1.083	.494	.422	.422	.154	.120	311P407-2P-B-15	206500-1
	25.25	8.36	33.32	39.14	5.97	27.51	12.55	10.72	10.72	3.91	3.05	311P407-2P-B-12	206500-4
44 (3)	1.534	.329	1.852	2.088	.230	1.625	.494	.422	.426	.154	.120	311P407-3P-B-15	206063-2
	38.96	8.36	47.04	53.04	5.84	41.3	12.55	10.72	10.82	3.91	3.05	311P407-3P-B-12	206063-4
62 (4)	2.182	.329	2.500	2.729	.230	2.272	.494	.422	.426	.154	.120	311P407-4P-B-15	206502-1
	55.42	8.36	63.5	69.32	5.84	57.7	12.55	10.72	10.82	3.91	3.05	311P407-4P-B-12	206502-4
78 (5)	2.079	.441	2.406	2.635	.230	2.178	.605	.534	.426	.154	.120	311P407-5P-B-15	206504-1
	52.81	11.20	61.11	66.93	5.84	55.32	15.37	13.56	10.82	3.91	3.05	311P407-5P-B-12	206504-4
104 (6)	2.212	.503	2.500	2.729	.230	2.302	.668	.596	.426	.154	.120	311P407-6P-B-15	206066-2
	56.18	12.78	63.5	69.32	5.84	58.47	16.97	15.14	10.82	3.91	3.05	311P407-6P-B-12	206066-4

**Non-Magnetic Plugs With Silicone Rubber Rear Grommet<sup>1</sup>**

No. of Contact Pos. (Shell Size)	Dimensions											AMP Part Number
	A	B	C	D	F	G	H	J	K	L		
15 (1)	.666	.329	.984	1.213	.235	.759	.494	.422	.422	.120	.422	211673-4
	16.92	8.36	24.99	30.81	5.97	19.28	12.55	10.72	10.72	3.05	10.72	
26 (2)	.994	.329	1.312	1.541	.235	1.083	.494	.422	.422	.120	.422	211674-4
	25.25	8.36	33.32	39.14	5.97	27.51	12.55	10.72	10.72	3.05	10.72	
44 (3)	1.534	.329	1.852	2.088	.230	1.625	.494	.422	.426	.120	.426	211675-4
	38.96	8.36	47.04	53.04	5.84	41.3	12.55	10.72	10.82	3.05	10.82	
62 (4)	2.182	.329	2.500	2.729	.230	2.272	.494	.422	.426	.120	.426	211676-4
	55.42	8.36	63.5	69.32	5.84	57.7	12.55	10.72	10.82	3.05	10.82	
78 (5)	2.079	.441	2.406	2.635	.230	2.178	.605	.534	.426	.120	.426	211677-4
	52.81	11.20	61.11	66.93	5.84	55.32	15.37	13.56	10.82	3.05	10.82	
104 (6)	2.212	.503	2.500	2.729	.230	2.302	.668	.596	.426	.120	.426	211678-4
	56.18	12.78	63.5	69.32	5.84	58.47	16.97	15.14	10.82	3.05	10.82	

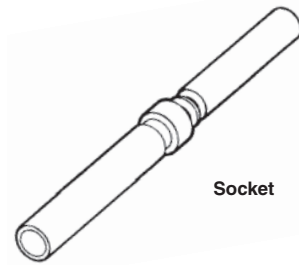
<sup>1</sup> Grommet provided for cable strain relief.

**AMPLIMITE Connectors, Series 90** (Continued)

**Non-Magnetic Crimp Receptacles, Series 90, High Density Connectors (NASA Qualified)**

**Connector Material and Finish**  
**Shell** — Brass, gold plated  
**Insert** — Approved material per MIL-DTL-24308  
**Retention Clips** — Copper alloy

**Related Product Data**  
**Cavity Identification** — page 8-69  
**Mounting, Mating Specifications** — page 8-90  
**Accessories** — pages 8-95 to 8-97



Socket

Wire Size Range	AMP Part No. / NASA No.
22-28 0.4-0.08	206071-1 G-08-S1
26-28 0.15-0.08	206496-1 —

Max. insulation diameter .054 [1.38]  
 Hand tool AMP Part Number 601966-1 or MIL Part Number M22520/2-01  
 Positioner AMP Part Number 601966-4 or MIL Part Number M22520/2-06

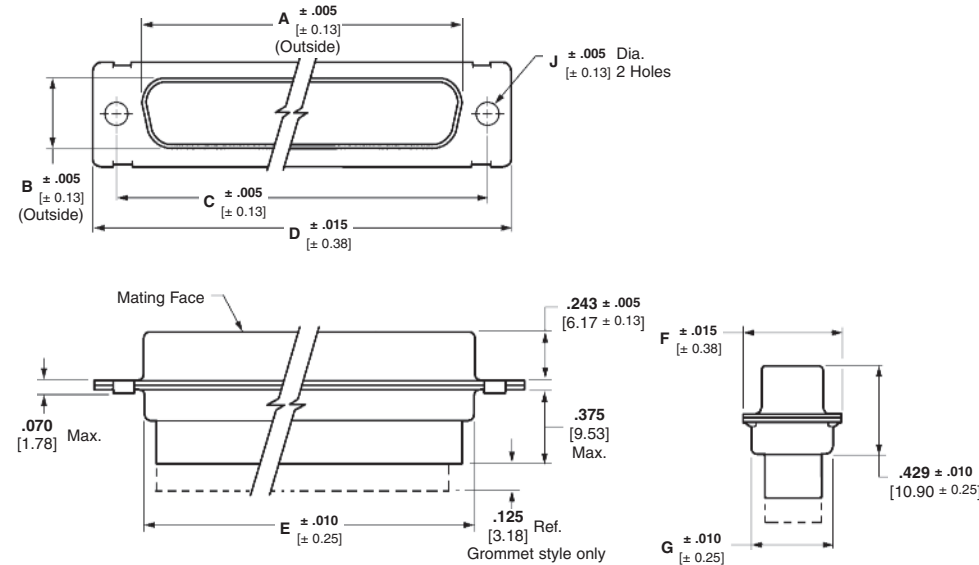
**Contact and Hood Material and Finish**

Copper alloy, .000050-.000100 [0.00127-0.0254] thick gold plate over .000100-.000150 [0.0254-0.00381] thick copper underplate



Pin and Socket Insertion/Extraction Tool

AMP Part Number 91067-1 or MIL Part Number M81969/1-04  
 Insertion tip, for replacement Part Number 126237-1  
 Extraction tip, for replacement Part Number 126195-2



**Non-Magnetic Receptacles per NASA Specification**

No. of Contact Pos. (Shell Size)	Dimensions								NASA Part Number	AMP Part Number
	A	B	C	D	E	F	G	J		
15 (1)	.643	.311	.984	1.213	.759	.494	.422	.154	311P407-1S-B-15	206499-1
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	3.91	311P407-1S-B-12	206499-4
26 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.154	311P407-2S-B-15	206501-1
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	3.91	311P407-2S-B-12	206501-4
44 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.154	311P407-3S-B-15	206064-2
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	3.91	311P407-3S-B-12	206064-4
62 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.154	311P407-4S-B-15	206503-1
	54.84	7.9	63.5	69.32	57.7	12.55	10.72	3.91	311P407-4S-B-12	206503-4
78 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.154	311P407-5S-B-15	206505-1
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	3.91	311P407-5S-B-12	206505-4
104 (6)	2.189	.485	2.500	2.729	2.302	.668	.596	.154	311P407-6S-B-15	206065-2
	55.6	12.32	63.5	69.32	58.47	16.97	15.14	3.91	311P407-6S-B-12	206065-4

**Non-Magnetic Receptacles With Silicone Rubber Rear Grommet<sup>1</sup>**

No. of Contact Pos. (Shell Size)	Dimensions								AMP Part Number
	A	B	C	D	E	F	G	J	
15 (1)	.643	.311	.984	1.213	.759	.494	.422	.120	211667-4
	16.33	7.9	24.99	30.81	19.28	12.55	10.72	3.05	
26 (2)	.971	.311	1.312	1.541	1.083	.494	.422	.120	211668-4
	24.66	7.9	33.32	39.14	27.51	12.55	10.72	3.05	
44 (3)	1.511	.311	1.852	2.088	1.625	.494	.422	.120	211669-4
	38.38	7.9	47.04	53.04	41.3	12.55	10.72	3.05	
62 (4)	2.159	.311	2.500	2.729	2.272	.494	.422	.120	211670-4
	54.84	7.9	63.5	69.32	57.7	12.55	10.72	3.05	
78 (5)	2.064	.423	2.406	2.635	2.178	.605	.534	.120	211671-4
	52.43	10.74	61.11	66.93	55.32	15.37	13.56	3.05	
104 (6)	2.189	.485	2.500	2.729	2.302	.668	.596	.120	211672-4
	55.6	12.32	63.5	69.32	58.47	16.97	15.14	3.05	

<sup>1</sup> Grommet provided for cable strain relief.

**AMPLIMITE Connectors, Series 90** (Continued)

**Crimp Blindmate Plugs, Series 90, High Density Connectors**

**Material and Finish**

**Shell, Front** — Aluminum alloy, cadmium plated with yellow chromate

**1 Shell, Front for RoHS Compliant**

— Aluminum alloy, zinc plated with yellow trivalent chromate

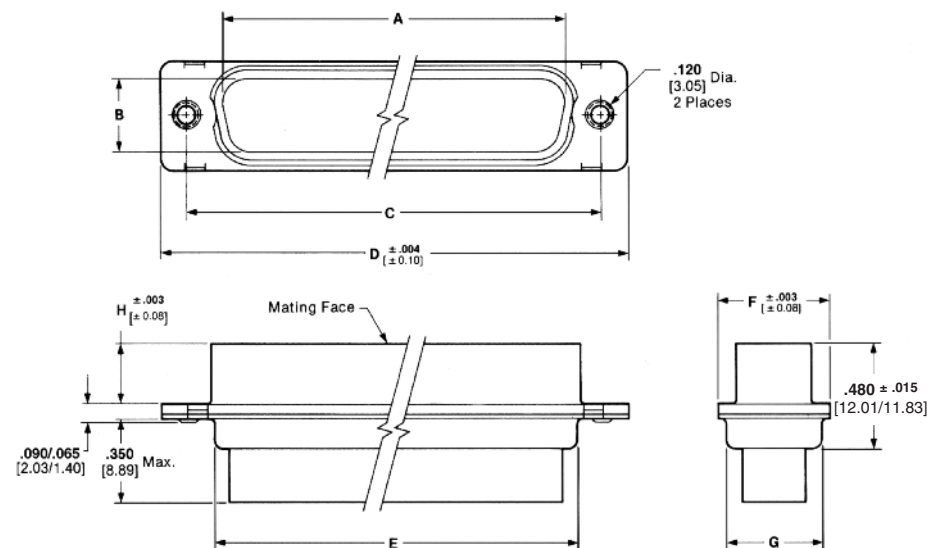
**Shell, Rear** — Steel, cadmium plated with yellow chromate

**1 Shell, Rear for RoHS Compliant**

— Steel, zinc plated with yellow trivalent chromate

**Insert Assembly** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel



**Related Product Data**

**Cavity Identification** — page 8-69

**Contacts** — pages 8-70 and 8-71

**Mounting Specifications** — page 8-90

Flange to flange spacing can be a max. of .270 [6.86] for Blindmate connectors.

No. of Contact Pos. (Shell Size)	Dimensions								Part Number
	A	B	C	D	E	F	G	H	
15 (1)	.656 16.66	.324 8.23	.984 24.99	1.224 31.09	.769/1.750 19.53/19.05	.506 12.85	.432/.413 10.97/10.49	.257 6.53	213153-1
26 (2)	.984 25.0	.324 8.23	1.312 33.32	1.552 39.42	1.093/1.074 27.76/27.28	.506 12.85	.432/.413 10.97/10.49	.257 6.53	445010-1
44 (3)	1.524 38.71	.324 8.23	1.852 47.04	2.099 53.31	1.635/1.616 41.53/41.05	.506 12.85	.432/.413 10.97/10.49	.257 6.53	445011-1 5-445011-11
62 (4)	2.172 55.17	.324 8.23	2.500 63.5	2.740 69.6	2.282/2.263 57.96/57.48	.506 12.85	.432/.413 10.97/10.49	.257 6.53	213118-1
78 (5)	2.082 52.88	.444 11.28	2.406 61.11	2.646 67.21	2.188/2.167 55.58/55.04	.617 15.67	.544/.525 13.82/13.34	.257 6.53	445012-1 5-445012-11
104 (6)	2.212 56.18	.503 12.78	2.500 63.5	2.740 69.6	2.302 58.47	.680 17.27	.606/.587 15.39/14.91	.267 6.78	212933-3

<sup>1</sup> See Material and Finish for RoHS compliant Part Numbers above.

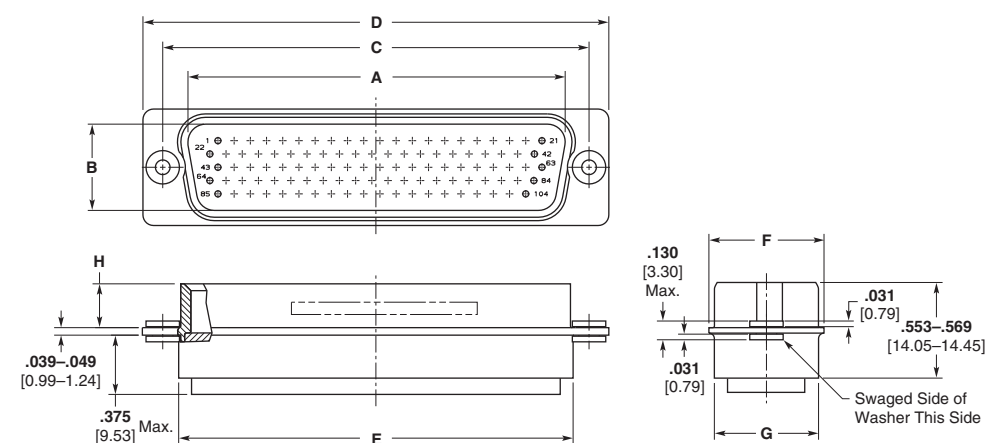
**Blindmate Plugs with Floating Bushings**

**Material and Finish**

**Shell** — Aluminum alloy per 6061, cadmium plated per QQ-P-416, Type II, Class 2 over copper per MIL-C-14550, Class 4.

**Insert Assembly** — Diallyl phthalate per MIL-M-14, Type SDG-F; or polyester per MIL-M-24519, Type GPT-30F; or polyphenylene sulfide (PPS) per MIL-M-24519, Type GST-40F.

**Floating Bushing/Washer** — Stainless steel per ASTM-A-582, passivated per QQ-P-35B. Floats .008 ± .004 [0.20 ± 0.10] vertically and .031 [0.79] horizontally.



**Related Product Data**

**Cavity Identification** — page 8-69

**Contacts** — pages 8-70 and 8-71

**Mounting Specifications** — page 8-90

Flange to flange spacing can be a max. of .270 [6.86] for Blindmate connectors.

No. of Contact Pos. (Shell Size)	Dimensions								Part Number
	A	B	C	D	E	F	G	H	
104 (6)	2.213/2.217 56.21/56.31	.504/.508 12.80/12.90	2.495/2.505 63.37/63.63	2.714/2.744 68.94/69.70	2.307/2.319 58.60/58.90	.673/.683 17.09/17.35	.602/.614 15.29/15.59	.254/.260 6.45/6.60	1757207-6
44 (3)	1.522/1.526 38.66/38.76	.321/.327 8.15/8.31	1.847/1.857 46.91/47.17	2.073/2.103 52.65/53.42	1.630/1.642 41.40/41.71	.499/.509 12.67/12.93	.432/.444 10.97/11.28	.254/.260 6.45/6.60	1757207-3

**Note:** Additional sizes available upon request.



**AMPLIMITE Connectors, Series 90** (Continued)

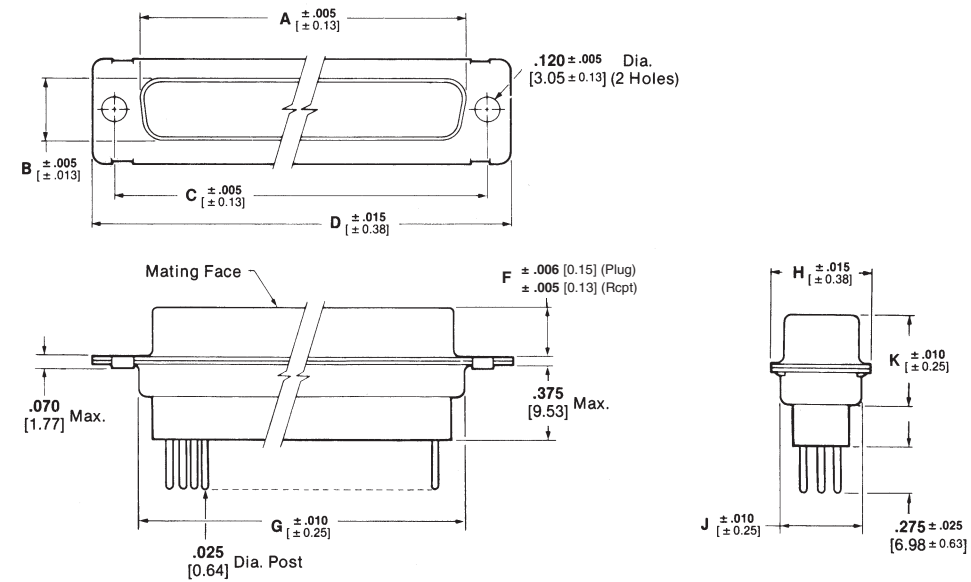
**Straight PCB, Series 90, High Density Connectors (Industrial Grade)**

**Material and Finish**

- 1 **Shell** — Steel, cadmium plated
- 2 **Shell for RoHS Compliant** — Steel, zinc plated
- Insert** — Polyphenylene Sulfide (PPS)
- Retention Clips** — Stainless steel

**Related Product Data**

- Cavity Identification** — page 8-69
- Contacts** — page 8-71
- Mounting, Mating Dimensions** — page 8-90
- Accessories** — pages 8-95 to 8-97
- PCB Layouts** — See page 8-92 or TE Connectivity customer drawing



Replacement Pin Contact  
Part Number 207683-8

**Plugs**

No. of Contact Pos. (Shell Size)	Dimensions										Part Number
	A (Inside)	B (Inside)	C	D	F	G	H	J	K		
15 (1)	.666	.329	.984	1.213	.235	.759	.494	.422	.422	208866-11	
	16.92	8.36	24.99	30.81	5.97	19.28	12.55	10.72	10.72	5-208866-12	
26 (2)	.994	.329	1.312	1.541	.235	1.083	.494	.422	.422	208867-11	
	25.25	8.36	33.32	39.14	5.97	27.51	12.55	10.72	10.72	5-208867-12	
44 (3)	1.534	.329	1.852	2.088	.230	1.625	.494	.422	.426	208868-11	
	38.96	8.36	47.04	53.04	5.84	41.3	12.55	10.72	10.82	5-208868-12	
62 (4)	2.182	.329	2.500	2.729	.230	2.272	.494	.422	.426	208869-11	
	55.42	8.36	63.5	69.32	5.84	57.7	12.55	10.72	10.82	5-208869-12	
78 (5)	2.079	.441	2.406	2.635	.230	2.178	.605	.534	.426	208870-11	
	52.81	11.20	61.11	66.93	5.84	55.32	15.37	13.56	10.82	5-208870-12	
104 (6)	2.212	.503	2.500	2.729	.230	2.302	.668	.596	.426	208871-11	
	56.18	12.78	63.5	69.32	5.84	58.47	16.97	15.14	10.82	5-208871-12	

<sup>1</sup> See Material and Finish above.  
<sup>2</sup> See Material and Finish for RoHS compliant Part Numbers above.

Replacement Socket Contact  
Part Number 207684-4

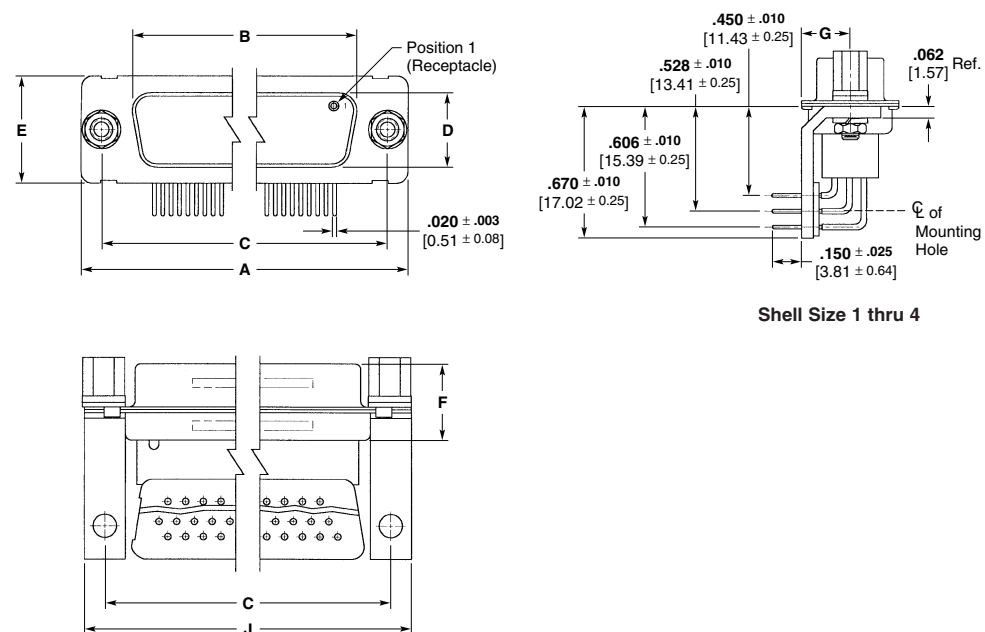
**Receptacles**

No. of Contact Pos. (Shell Size)	Dimensions										Part Number
	A (Outside)	B (Outside)	C	D	F	G	H	J	K		
15 (1)	.643	.311	.984	1.213	.243	.759	.494	.422	.429	208872-11	
	16.33	7.9	24.99	30.81	6.17	19.28	12.55	10.72	10.9	5-208872-12	
26 (2)	.971	.311	1.312	1.541	.243	1.083	.494	.422	.429	208873-11	
	24.66	7.9	33.32	39.14	6.17	27.51	12.55	10.72	10.9	5-208873-12	
44 (3)	1.511	.311	1.852	2.088	.243	1.625	.494	.422	.429	208874-11	
	38.38	7.9	47.04	53.04	6.17	41.3	12.55	10.72	10.9	5-208874-12	
62 (4)	2.159	.311	2.500	2.729	.243	2.272	.494	.422	.429	208875-11	
	54.84	7.9	63.5	69.32	6.17	57.7	12.55	10.72	10.9	5-208875-12	
78 (5)	2.064	.423	2.406	2.635	.243	2.178	.605	.534	.429	208876-11	
	52.43	10.74	61.11	66.93	6.17	55.32	15.37	13.56	10.9	5-208876-12	
104 (6)	2.189	.485	2.500	2.729	.243	2.302	.668	.596	.429	208877-11	
	55.6	12.32	63.5	69.32	6.17	58.47	16.97	15.14	10.9	5-208877-12	

<sup>1</sup> See Material and Finish above.  
<sup>2</sup> See Material and Finish for RoHS compliant Part Numbers above.

**AMPLIMITE Connectors, Series 90** (Continued)

**Right-Angle PCB, Series 90,  
with Female Screwlocks**
**Material and Finish**
**Shell** — Brass, gold over copper plated

**Insert** — Diallyl phthalate or polyester or Polyphenylene Sulfide (PPS)


Shell Size 1 thru 4

**Plugs**

No. of Contact Pos. (Shell Size)	Dimensions								Part Number
	A	B	C	D	E	F	G	J	
15 (1)	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.422 10.72	.246 ± .010 6.25 ± 0.25	1.204 30.58	1-593326-7
26 (2)	1.541 39.14	.994 25.25	1.312 33.32	.329 8.36	.494 12.55	.422 10.72	.246 ± .010 6.25 ± 0.25	1.532 38.91	1-593326-8
44 (3)	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	.426 10.82	.246 ± .010 6.25 ± 0.25	2.077 52.76	1-593326-9
62 (4)	2.729 69.32	2.182 55.42	2.500 63.50	.329 8.36	.494 12.55	.426 10.82	.246 ± .010 6.25 ± 0.25	2.720 69.09	2-593326-0
78 (5)	2.635 66.93	2.079 52.81	2.406 61.11	.441 11.20	.605 15.37	.426 10.82	.246 ± .010 6.25 ± 0.25	2.626 66.70	2-593326-1
104 (6)	2.729 69.32	2.213 56.21	2.500 63.50	.503 12.78	.668 16.97	.426 10.82	.246 ± .010 6.25 ± 0.25	2.720 69.09	2-593326-2

**Receptacles**

No. of Contact Pos. (Shell Size)	Dimensions								Part Number
	A	B	C	D	E	F	G	J	
15 (1)	1.213 30.81	.643 16.33	.984 24.99	.311 7.90	.494 12.55	.422 10.72	.248 ± .010 6.30 ± 0.25	1.204 30.58	1-593327-7
26 (2)	1.541 39.14	.971 24.66	1.312 33.32	.311 7.90	.494 12.55	.422 10.72	.248 ± .010 6.30 ± 0.25	1.532 38.91	1-593327-8
44 (3)	2.088 53.04	1.511 38.38	1.852 47.04	.311 7.90	.494 12.55	.426 10.82	.248 ± .010 6.30 ± 0.25	2.077 52.76	1-593327-9
62 (4)	2.729 69.32	2.159 54.84	2.500 63.50	.311 7.90	.494 12.55	.426 10.82	.248 ± .010 6.30 ± 0.25	2.720 69.09	2-593327-0
78 (5)	2.635 66.93	2.064 52.43	2.406 61.11	.423 10.74	.605 15.37	.426 10.82	.248 ± .010 6.30 ± 0.25	2.626 66.70	2-593327-1
104 (6)	2.729 69.32	2.188 55.58	2.500 63.50	.485 12.32	.668 16.97	.426 10.82	.248 ± .010 6.30 ± 0.25	2.726 69.24	2-593327-2



**AMPLIMITE Connectors, Series 90** (Continued)

**Connector Savers,  
Series 90, High Density  
Connectors**

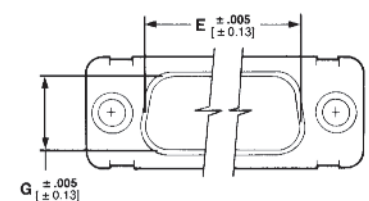
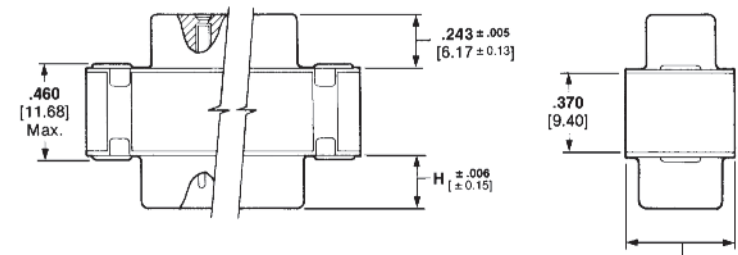
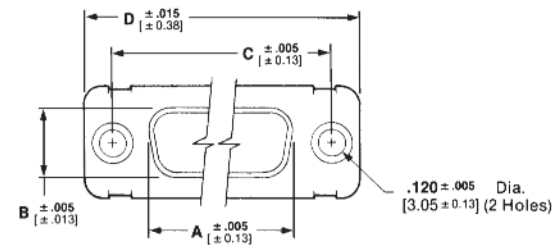
Connector savers prolong the life of permanently installed connectors which would otherwise be subjected to repeated cycles of mating and unmating, in applications such as test interfaces or on testing devices.

**Material and Finish  
Standard**

- Shell** — Steel, cadmium plated
- Contact Body** — Beryllium copper, .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate
- Socket Hood** — Passivated stainless steel
- Insert** — Polyphenylene Sulfide (PPS)
- Spacer** — Black nylon

**Non Magnetic**

- Shell** — Brass, gold plated
- Contact Body** — Beryllium copper, .000050 [0.00127] min. gold plate over .000050 [0.00127] min. copper underplate
- Socket Hood** — Brass, .000050 [0.00127] min. gold plate over .000100 [0.00254] min. copper underplate
- Insert** — Polyphenylene Sulfide (PPS)
- Spacer** — Black nylon



Dimensions							
A (Outside)	B (Outside)	C	D	E (Inside)	F	G (Inside)	H
.643 16.33	.311 7.9	.984 24.99	1.213 30.81	.666 16.92	.494 12.55	.329 8.36	.235 5.97
.971 24.66	.311 7.9	1.312 33.32	1.541 39.14	.994 25.25	.494 12.55	.329 8.36	.235 5.97
1.511 38.38	.311 7.9	1.852 47.04	2.088 53.04	1.534 38.96	.494 12.55	.329 8.36	.230 5.84
2.159 54.84	.311 7.9	2.500 63.5	2.729 69.32	2.182 55.42	.494 12.55	.329 8.36	.230 5.84
2.064 52.43	.423 10.74	2.406 61.11	2.635 66.93	2.079 52.81	.605 15.37	.441 11.20	.230 5.84
2.189 55.60	.485 12.32	2.500 63.5	2.729 69.32	2.212 56.18	.668 16.97	.503 12.78	.230 5.84

No. of Contact Pos. (Shell Size)	Standard (Cadmium Over Steel)	Non-Magnetic (Gold Over Brass)
15 (1)	211010-1	211010-4
26 (2)	211011-1	211011-4
44 (3)	211012-1	211012-4
62 (4)	211013-1	211013-4
78 (5)	211014-1	211014-4
104 (6)	211015-1	211015-4



Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors, Series 90 Cross Reference**

**Material and Finish**

**Shell** — Steel, tin plated per ASTM-B-545, .000400–.000550 [0.01016–0.01397] thick.

**Insert** — Approved material per MIL-DTL-24308.

**Retention Clips** — Stainless steel or copper alloy.

**Related Product Data**

**Series 90 Connectors** — pages 8-72 to 8-75

**Attention: Connector Marking**

Connector marking may differ from package marking.

**Note:** Meets 48 hr. salt spray requirements of MIL-DTL-24308.

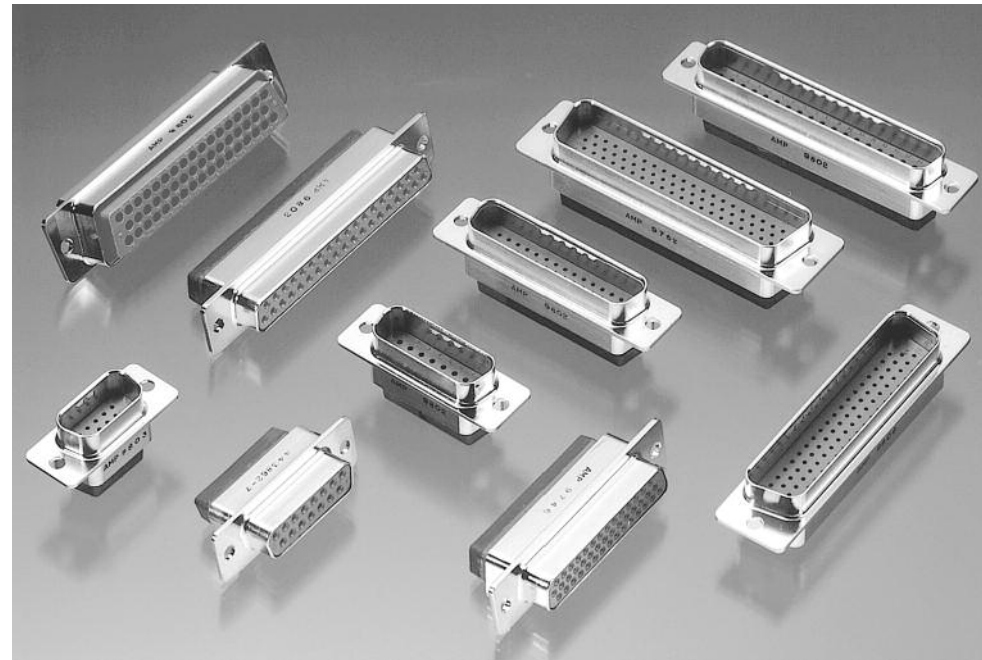
**Series 90 Connectors**

No. of Contact Pos. (Shell Size)	Part Number	Description	Dimensions
15 (1)	204501-6	Plug Only	Refer to pages 6-69 to 6-72
	204501-5	Plug Only with Grounding Indents	
	204500-4	Receptacle Only	
26 (2)	204503-5	Plug Only	Refer to pages 6-69 to 6-72
	204503-4	Plug Only with Grounding Indents	
	204502-4	Receptacle Only	
44 (3)	204505-6	Plug Only	Refer to pages 6-69 to 6-72
	204505-5	Plug Only with Grounding Indents	
	204504-5	Receptacle Only	
62 (4)	204507-6	Plug Only	Refer to pages 6-69 to 6-72
	204507-5	Plug Only with Grounding Indents	
	204506-6	Receptacle Only	
78 (5)	204509-7	Plug Only	Refer to pages 6-69 to 6-72
	204509-8	Plug Only with Grounding Indents	
	204508-5	Receptacle Only	
104 (6)	—	Plug Only	Refer to pages 6-69 to 6-72
	—	Plug Only with Grounding Indents	
	—	Receptacle Only	

**AMPLIMITE Connectors, ULTRA-LITE Connectors**

**Product Facts**

- One-piece aluminum shells for light-weight and enhanced EMI performance
- Connectors are typically 15–20% lighter than brass counterparts
- Intermates/interchanges with existing designs
- Enhanced EMI performance over brass shells by 10–20 dB
- Series 109 Plugs & Receptacles shell size 1 through 5 (9-50 positions)
- Series 90 Plugs & Receptacles in shell size 1 through 6 (15-104 positions)
- Can be provided with or without grommet
- Plug shells include grounding indents
- Designed to meet NASA 311P
- Designed to meet MIL-DTL-24308D specification
- DSCC Drawings 99012 through 99015



**Material and Finish**

**Housing Material** — Polyphenylene Sulfide (PPS)

**Shell Finish** — .000050 [0.00127] min. gold plate over .00100–.00125 [0.0254–0.0318] nickel underplate

**Shell Material** — Aluminum alloy

**Temperature Range** —

–67°F to 257°F [–55°C to 125°C]

**Voltage Rating** — 300 V

**Current Rating** — Contact current rating per MIL-C-39029  
 Size 20 — 7.5 amps in free air  
 Size 22 — 5.0 amps in free air (refer to MIL Spec. for cable specifications)

**Low Level Termination**

**Resistance** — 11 Ohm max. 109 Series, 17 milliohms only for 90 Series per MIL-C-39029

**Performance Characteristics**

**Dielectric Withstanding Voltage** — 1000 VAC between adjacent pos.

**Insulation Resistance** — Min. 1000 milliohm between adjacent pos.

**Voltage Rating** — 300 V

**Durability** — Up to 500 matings/cycle  
**Vibration** — 3.13 G's RMS between 5–500 Hz 15 minutes per plane

**Physical Shock** — 18 drops, half-sine 30 G's at 11 millisecond

**Temperature Range** — –67°F to 257°F [–55°C to 125°C]

**Thermal Shock** — –67°F to 257°F [–55°C to 125°C]

**Temperature-Humidity** — 77°F to 149°F [+25°C to +65°C] at 95% relative humidity

**Corrosion** — Mixed flowing gas, class II

**Product Specifications** — 108-1834 (Design objectives)

**Weight Comparisons for the AMPLIMITE Connector Series 90 (1) PC AL vs the (2) PC Brass NASA Grade Connector Assemblies**

**Receptacles**

Shell Size	Connector Position	Aluminum Shell Assy. Without Grommet	Brass Shell Assy. Without Grommet	Brass to Aluminum % Difference Without Grommet
1	15	4	5.2	23.1%
2	26	6.2	7.5	17.3%
3	44	9	10.9	17.4%
4	62	12.4	15.3	19.0%
5	78	15.3	17.9	14.5%
6	104	17.2	20	14.0%

Note: All weight values are in grams.

**Plugs**

Shell Size	Connector Position	Aluminum Shell Assy. Without Grommet	Brass Shell Assy. Without Grommet	Brass to Aluminum % Difference Without Grommet
1	15	3.6	4.6	21.7%
2	26	5.3	6.2	14.5%
3	44	7.8	10.3	24.3%
4	62	10.9	14.1	22.7%
5	78	12.7	15.9	20.1%
6	104	14.3	17.5	18.3%

Note: All weight values are in grams.



Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors, ULTRA-LITE Connectors** (Continued)

**ULTRA-LITE Connector Plugs and Receptacles, Series 109**

**Connector Material and Finish**

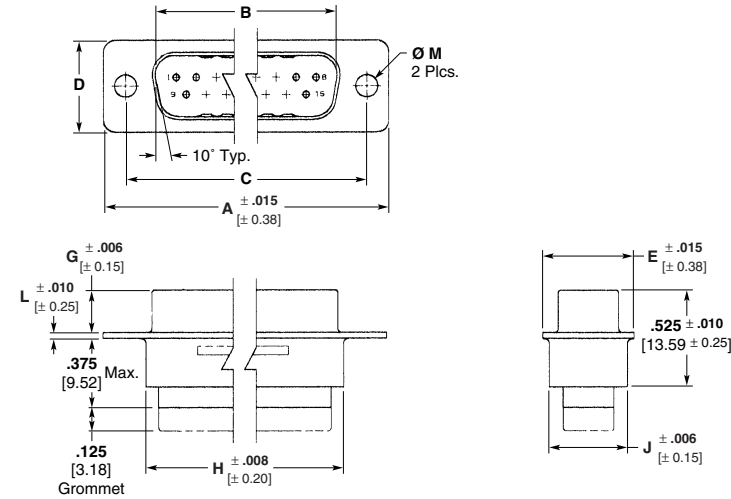
**Shell** — Aluminum alloy, gold plated per MIL-G-45204 over nickel per MIL-C-26074.

**Insert** — Blue diallyl phthalate per MIL-M-14 or black Polyphenylene Sulfide (PPS) per MIL-M-24519 or blue thermoplastic per MIL-M-24519

**Retention Clips** — Beryllium copper

**Grommet** — Silicon rubber per ZZ-R-765, color: red

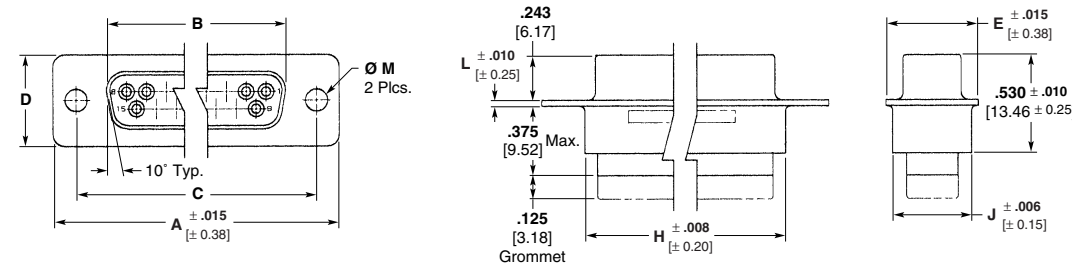
**Contacts** — Uses size 20 crimp or posted contacts, ref. pages 8-40 to 8-42.



**Plugs**

No. of Contact Pos. (Shell Size)	Dimensions									NASA <sup>1</sup> Part Number for reference only	AMP RoHS Part Number	
	A	B	C	D	E	G	H	J	L		M = .120 [3.05]	M = .154 [3.91]
9 (1)	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.235 5.97	.770 19.56	.438 11.13	.030 0.76	311P409-1P-B-15	1218234-1 1218234-6*	1883005-1
15 (2)	1.541 39.14	.994 25.25	1.312 33.32	.329 8.36	.494 12.55	.235 5.97	1.094 27.79	.438 11.13	.030 0.76	311P409-2P-B-15	1218234-2 1218234-7*	1883005-2
25 (3)	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	.230 5.84	1.636 41.55	.438 11.13	.039 0.99	311P409-3P-B-15	1218234-3 1218234-8*	1883005-3
37 (4)	2.729 69.32	2.182 55.42	2.500 63.50	.329 8.36	.494 12.55	.230 5.84	2.284 58.01	.438 11.13	.039 0.99	311P409-4P-B-15	1218234-4 1218234-9*	1883005-4
50 (5)	2.635 66.93	2.079 52.81	2.406 61.11	.441 11.20	.605 15.38	.230 5.84	2.189 55.60	.550 13.97	.039 0.99	311P409-5P-B-15	1218234-5 1-1218234-0*	1883005-5

\*Rubber Grommet



**Receptacles**

No. of Contact Pos. (Shell Size)	Dimensions									NASA <sup>1</sup> Part Number for reference only	AMP RoHS Part Number	
	A	B	C	D	E	H	J	L	M = .120 [3.05]		M = .154 [3.91]	
9 (1)	1.213 30.81	.643 16.33	.984 24.99	.311 7.90	.494 12.55	.770 19.56	.438 11.13	.030 0.76	311P409-1S-B-15	1218235-1 1218235-6*	1883006-1	
15 (2)	1.541 39.14	.971 24.66	1.312 33.32	.311 7.90	.494 12.55	1.094 27.79	.438 11.13	.030 0.76	311P409-2S-B-15	1218235-2 1218235-7*	1883006-2	
25 (3)	2.088 53.04	1.511 38.38	1.852 47.04	.311 7.90	.494 12.55	1.636 41.55	.438 11.13	.039 0.99	311P409-3S-B-15	1218235-3 1218235-8*	1883006-3	
37 (4)	2.729 69.32	2.159 54.84	2.500 63.50	.311 7.90	.494 12.55	2.284 58.01	.438 11.13	.039 0.99	311P409-4S-B-15	1218235-4 1218235-9*	1883006-4	
50 (5)	2.635 66.93	2.064 52.43	2.406 61.11	.423 10.74	.605 15.38	2.189 55.60	.550 13.97	.039 0.99	311P409-5S-B-15	1218235-5 1-1218235-0*	1883006-5	

\*Rubber Grommet

<sup>1</sup>Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.

**AMPLIMITE Connectors, ULTRA-LITE Connectors** (Continued)

**ULTRA-LITE Connector Plugs and Receptacles, Series 90**

**Connector Material and Finish**

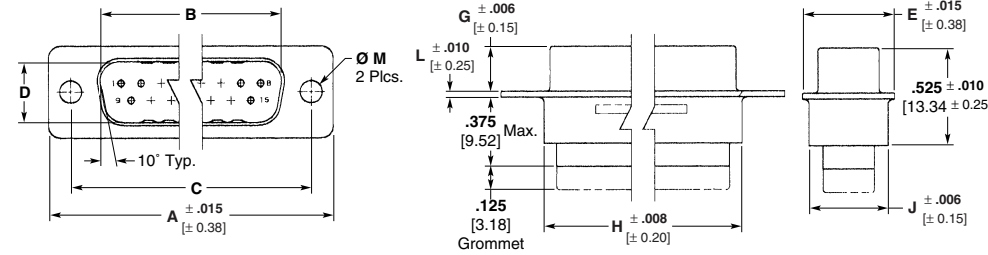
**Shell** — Aluminum alloy, gold plated per MIL-G-45204 over nickel per MIL-C-26074.

**Insert** — Blue diallyl phthalate per MIL-M-14 or black Polyphenylene Sulfide (PPS) per MIL-M-24519 or blue thermoplastic per MIL-M-24519

**Retention Clips** — Beryllium copper

**Grommet** — Silicon rubber per ZZ-R-765, color: red

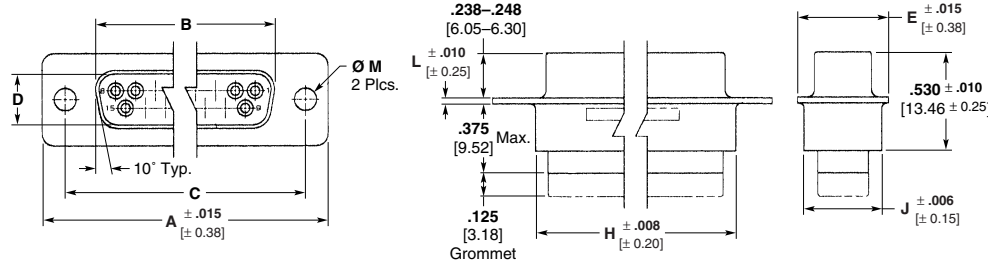
**Contacts** — Uses size 22 crimp and posted contacts, ref. pages 8-70 and 8-71.



**Plugs**

No. of Contact Pos. (Shell Size)	Dimensions									NASA <sup>1</sup> Part Number for reference only	AMP RoHS Part Number	
	A	B	C	D	E	G	H	J	L		M = .120 [3.05]	M = .154 [3.91]
15 (1)	1.213 30.81	.666 16.92	.984 24.99	.329 8.36	.494 12.55	.235 5.97	.770 19.56	.438 11.13	.030 0.76	311P407-1P-B-15	1218232-1 1218232-7*	1883007-1
26 (2)	1.541 39.14	.994 25.25	1.312 33.32	.329 8.36	.494 12.55	.235 5.97	1.094 27.79	.438 11.13	.030 0.76	311P407-2P-B-15	1218232-2 1218232-8*	1883007-2
44 (3)	2.088 53.04	1.534 38.96	1.852 47.04	.329 8.36	.494 12.55	.230 5.84	1.636 41.55	.438 11.13	.039 0.99	311P407-3P-B-15	1218232-3 1218232-9*	1883007-3
62 (4)	2.729 69.32	2.182 55.42	2.500 63.50	.329 8.36	.494 12.55	.230 5.84	2.284 58.01	.438 11.13	.039 0.99	311P407-4P-B-15	1218232-4 1-1218232-0*	1883007-4
78 (5)	2.635 66.93	2.079 52.81	2.406 61.11	.441 11.20	.605 15.38	.230 5.84	2.189 55.60	.550 13.97	.039 0.99	311P407-5P-B-15	1218232-5 1-1218232-1*	1883007-5
104 (6)	2.729 69.32	2.212 56.18	2.500 63.50	.503 12.78	.668 16.97	.230 5.84	2.313 58.75	.608 15.44	.039 0.99	311P407-6P-B-15	1218232-6 1-1218232-2*	1883007-6

\*Rubber Grommet



**Receptacles**

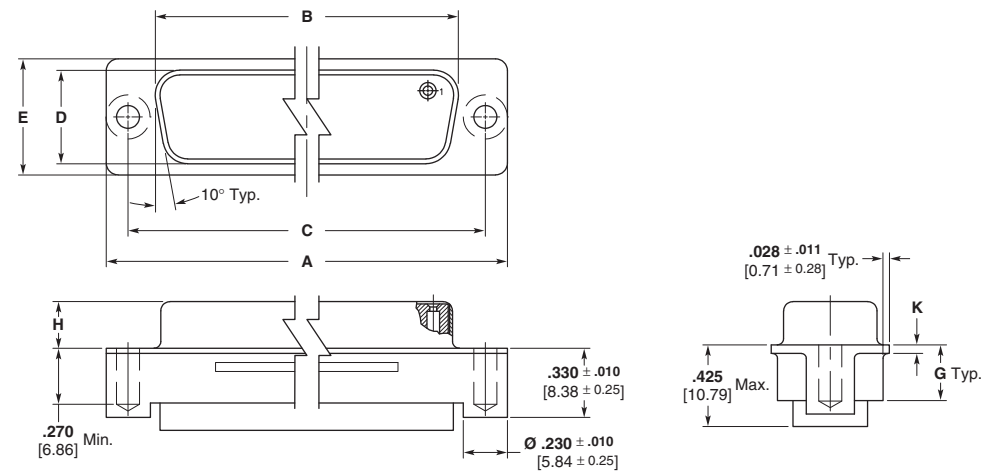
No. of Contact Pos. (Shell Size)	Dimensions									NASA <sup>1</sup> Part Number for reference only	AMP RoHS Part Number	
	A	B	C	D	E	H	J	L	M = .120 [3.05]		M = .154 [3.91]	
15 (1)	1.213 30.81	.644 16.36	.984 24.99	.311 7.90	.494 12.55	.770 19.56	.438 11.13	.030 0.76	311P407-1S-B-15	1218233-1 1218233-7*	-1	
26 (2)	1.541 39.14	.972 24.69	1.312 33.32	.311 7.90	.494 12.55	1.094 27.79	.438 11.13	.030 0.76	311P407-2S-B-15	1218233-2 1218233-8*	1883008-2	
44 (3)	2.088 53.04	1.512 38.40	1.852 47.04	.311 7.90	.494 12.55	1.636 41.55	.438 11.13	.039 0.99	311P407-3S-B-15	1218233-3 1218233-9*	1883008-3	
62 (4)	2.729 69.32	2.160 54.86	2.500 63.50	.311 7.90	.494 12.55	2.284 58.01	.438 11.13	.039 0.99	311P407-4S-B-15	1218233-4 1-1218233-0*	1883008-4	
78 (5)	2.635 66.93	2.065 52.45	2.406 61.11	.423 10.74	.605 15.38	2.189 55.60	.550 13.97	.039 0.99	311P407-5S-B-15	1218233-5 1-1218233-1*	1883008-5	
104 (6)	2.729 69.32	2.190 55.63	2.500 63.50	.485 12.32	.668 16.97	2.313 58.75	.608 15.44	.039 0.99	311P407-6S-B-15	1218233-6 1-1218233-2*	1883008-6	

\*Rubber Grommet

<sup>1</sup>Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.

**AMPLIMITE Connectors, ULTRA-LITE Connectors** (Continued)

**ULTRA-LITE Connector  
Plugs and Receptacles,  
Series 109, Crimp**  
Meets EU Directive  
2002/95/EC RoHS



**Plugs**

No. of Contact Pos. (Shell Size)	Dimensions									NASA <sup>1</sup> Part Number for reference only	AMP Part Number
	A	B	C	D	E	G ± .010 [0.25]	H	K			
9 (1)	1.208/1.218 30.68/30.94	.661/1.671 16.79/17.04	.979/1.989 24.87/25.12	.324/1.334 8.23/8.48	.489/1.499 12.42/12.67	.294 7.47	.229/2.241 5.82/6.12	.035 0.89		311P409-1P-B-440	1883053-1
15 (2)	1.536/1.546 39.01/39.27	.989/1.999 25.12/25.37	1.307/1.317 33.20/33.45	.324/1.334 8.23/8.48	.489/1.499 12.42/12.67	.294 7.47	.229/2.241 5.82/6.12	.035 0.89		311P409-2P-B-440	1883053-2
25 (3)	2.083/2.093 52.91/53.16	1.529/1.239 38.84/39.09	1.848/1.857 46.91/47.17	.324/1.334 8.23/8.48	.489/1.499 12.42/12.67	.299 7.59	.224/2.236 5.69/5.99	.044 1.12		311P409-3P-B-440	1883053-3
37 (4)	2.724/2.734 69.20/69.44	2.177/2.187 55.30/55.55	2.495/2.505 63.37/63.63	.324/1.334 8.23/8.48	.489/1.499 12.42/12.67	.299 7.59	.224/2.236 5.69/5.99	.044 1.12		311P409-4P-B-440	1883053-4
50 (5)	2.630/2.640 66.80/67.06	2.074/2.084 52.68/52.93	2.401/2.411 60.99/61.24	.436/1.446 11.07/11.33	.500/1.610 15.24/15.49	.299 7.59	.224/2.236 5.69/5.99	.044 1.12		311P409-5P-B-440	1883053-5

**Receptacles**

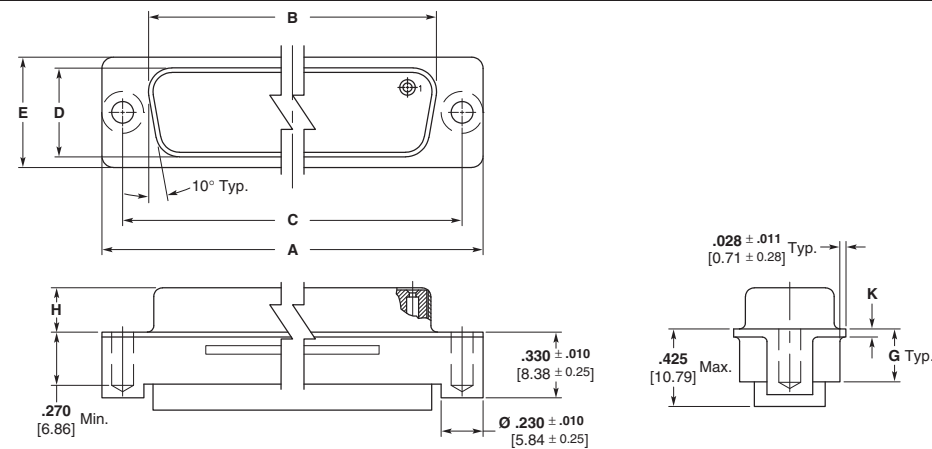
No. of Contact Pos. (Shell Size)	Dimensions									NASA <sup>1</sup> Part Number for reference only	AMP Part Number
	A	B	C	D	E	G ± .010 [0.25]	H	K			
9 (1)	1.208/1.218 30.68/30.94	.638/1.648 16.21/16.46	.979/1.989 24.87/25.12	.306/1.316 7.77/8.03	.489/1.499 12.42/12.67	.290 7.37	.270 6.86	.035 0.89		311P409-1S-B-440	1883054-1
15 (2)	1.536/1.546 39.01/39.27	.966/1.976 24.54/24.79	1.307/1.317 33.20/33.45	.306/1.316 7.77/8.03	.489/1.499 12.42/12.67	.290 7.37	.270 6.86	.035 0.89		311P409-2S-B-440	1883054-2
25 (3)	2.083/2.093 52.91/53.16	1.506/1.516 38.25/38.51	1.847/1.857 46.91/47.17	.306/1.316 7.77/8.03	.489/1.499 12.42/12.67	.290 7.37	.270 6.86	.044 1.12		311P409-3S-B-440	1883054-3
37 (4)	2.724/2.734 69.20/69.44	2.154/2.164 54.71/54.97	2.495/2.505 63.37/63.63	.306/1.316 7.77/8.03	.489/1.499 12.42/12.67	.290 7.37	.270 6.86	.044 1.12		311P409-4S-B-440	1883054-4
50 (5)	2.630/2.640 66.80/67.06	2.059/2.069 52.30/52.55	2.401/2.411 60.99/61.24	.418/1.428 10.62/10.87	.600/1.610 15.24/15.49	.290 7.37	.270 6.86	.044 1.12		311P409-5S-B-440	1883054-5

<sup>1</sup>Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.



**AMPLIMITE Connectors, ULTRA-LITE Connectors** (Continued)

**ULTRA-LITE Connector Plugs and Receptacles, Series 109, Crimp** (Continued)  
Meets EU Directive 2002/95/EC RoHS



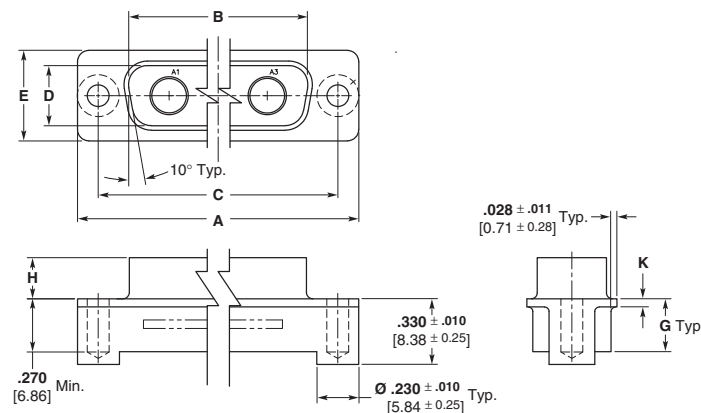
**Plugs**

No. of Contact Pos. (Shell Size)	Dimensions									NASA <sup>1</sup> Part Number for reference only	AMP Part Number
	A	B	C	D	E	G ± .010 [0.25]	H	K			
15 (1)	1.208/1.218 30.68/30.94	.661/1.671 16.79/17.04	.979/1.989 24.87/25.12	.324/1.334 8.23/8.48	.489/1.499 12.42/12.67	.294 7.47	.229/2.241 5.82/6.12	.035 0.89		311P407-1P-B-440	1883055-1
26 (2)	1.536/1.546 39.01/39.27	.989/1.999 25.12/25.37	1.307/1.317 33.20/33.45	.324/1.334 8.23/8.48	.489/1.499 12.42/12.67	.294 7.47	.229/2.241 5.82/6.12	.035 0.89		311P407-2P-B-440	1883055-2
44 (3)	2.083/2.093 52.91/53.16	1.529/1.539 38.84/39.09	1.847/1.857 46.91/47.17	.324/1.334 8.23/8.48	.489/1.499 12.42/12.67	.299 7.59	.224/2.236 5.69/5.99	.044 1.12		311P407-3P-B-440	1883055-3
62 (4)	2.724/2.734 69.20/69.44	2.177/2.187 55.30/55.55	2.495/2.505 63.37/63.63	.324/1.334 8.23/8.48	.489/1.499 12.42/12.67	.299 7.59	.224/2.236 5.69/5.99	.044 1.12		311P407-4P-B-440	1883055-4
78 (5)	2.630/2.640 66.80/67.06	2.074/2.084 52.68/52.93	2.401/2.411 60.99/61.24	.436/1.446 11.07/11.33	.600/1.610 15.24/15.49	.299 7.59	.224/2.236 5.69/5.99	.044 1.12		311P407-5P-B-440	1883055-5

**Receptacles**

No. of Contact Pos. (Shell Size)	Dimensions									NASA <sup>1</sup> Part Number for reference only	AMP Part Number
	A	B	C	D	E	G ± .010 [0.25]	H	K			
15 (1)	1.208/1.218 30.68/30.94	.638/1.648 16.21/16.46	.979/1.989 24.87/25.12	.306/1.316 7.77/8.03	.489/1.499 12.42/12.67	.290 7.37	.243 6.17	.035 0.89		311P407-1S-B-440	1883056-1
26 (2)	1.536/1.546 39.01/39.27	.966/1.976 24.54/24.79	1.307/1.317 33.20/33.45	.306/1.316 7.77/8.03	.489/1.499 12.42/12.67	.290 7.37	.243 6.17	.035 0.89		311P407-2S-B-440	1883056-2
44 (3)	2.083/2.093 52.91/53.16	1.506/1.516 38.25/38.51	1.847/1.857 46.91/47.17	.306/1.316 7.77/8.03	.489/1.499 12.42/12.67	.290 7.37	.243 6.17	.044 1.12		311P407-3S-B-440	1883056-3
62 (4)	2.724/2.734 69.20/69.44	2.154/2.164 54.71/54.97	2.495/2.505 63.37/63.63	.306/1.316 7.77/8.03	.489/1.499 12.42/12.67	.290 7.37	.243 6.17	.044 1.12		311P407-4S-B-440	1883056-4
78 (5)	2.630/2.640 66.80/67.06	2.059/2.069 52.30/52.55	2.401/2.411 60.99/61.24	.418/1.428 10.62/10.87	.600/1.610 15.24/15.49	.290 7.37	.243 6.17	.044 1.12		311P407-5S-B-440	1883056-5

**ULTRA-LITE Connector Plugs and Receptacles, Coax Mix**



Insert Arrangement (Shell Size)	Dimensions									NASA Part Number	AMP Part Number
	A	B	C	D	E	G ± .010 [0.25]	H	K			
3C3 (2)	1.536/1.546 39.01/39.27	.989/1.999 25.12/25.37	1.307/1.317 33.20/33.45	.324/1.334 8.23/8.48	.489/1.499 12.42/12.67	.294 7.47	.229/2.241 5.82/6.12	.035 0.89		311P405-7P-B-440	1883057-1
3C3 (2)	1.536/1.546 39.01/39.27	.966/1.976 24.54/24.79	1.307/1.317 33.20/33.45	.306/1.316 7.77/8.03	.489/1.499 12.42/12.67	.290 7.37	.243 6.17	.035 0.89		311P405-7S-B-440	1883058-1
5C5 (3)	2.083/2.093 52.91/53.16	1.529/1.539 38.84/39.09	1.847/1.857 46.91/47.17	.324/1.334 8.23/8.48	.489/1.499 12.42/12.67	.299 7.59	.224/2.236 5.69/5.99	.044 1.12		311P405-10P-B-440	1883059-1
5C5 (3)	2.083/2.093 52.91/53.16	1.506/1.516 38.25/38.51	1.847/1.857 46.91/47.17	.306/1.316 7.77/8.03	.489/1.499 12.42/12.67	.290 7.37	.243 6.17	.044 1.12		311P405-10S-B-440	1883060-1

<sup>1</sup>Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.



**AMPLIMITE Connectors, ULTRA-LITE Connectors** (Continued)

**ULTRA-LITE AMPLIMITE Connector Part Numbers vs. NASA's 311P Part Numbers and DSCC Part Numbers**

**AMPLIMITE Connector Series 90 (High Density Sub "D"'s)**

DSCC <sup>1</sup> Part No. w/Grommet for reference only	DSCC <sup>1</sup> Part No. w/out Grommet for reference only	NASA <sup>1</sup> Part No. w/out Grommet for reference only	Plug / Receptacle	Shell Size	Position	ULTRA-LITE Connectors	
						Part No. w/out Grommet	Part No. with Grommet
99012SAFPRA-1	99012NAFPR-1	311P407-1P-B-12	Plug	1	15	1218232-1	1218232-7
99012SAFPRA-2	99012NAFPR-2	311P407-2P-B-12	Plug	2	26	1218232-2	1218232-8
99012SAFPRA-3	99012NAFPR-3	311P407-3P-B-12	Plug	3	44	1218232-3	1218232-9
99012SAFPRA-4	99012NAFPR-4	311P407-4P-B-12	Plug	4	62	1218232-4	1-1218232-0
99012SAFPRA-5	99012NAFPR-5	311P407-5P-B-12	Plug	5	78	1218232-5	1-1218232-1
99012SAFPRA-6	99012NAFPR-6	311P407-6P-B-12	Plug	6	104	1218232-6	1-1218232-2
99014SAESR-1	99014NAESR-1	311P407-1S-B-12	Receptacle	1	15	1218233-1	1218233-7
99014SAESR-2	99014NAESR-2	311P407-2S-B-12	Receptacle	2	26	1218233-2	1218233-8
99014SAESR-3	99014NAESR-3	311P407-3S-B-12	Receptacle	3	44	1218233-3	1218233-9
99014SAESR-4	99014NAESR-4	311P407-4S-B-12	Receptacle	4	62	1218233-4	1-1218233-0
99014SAESR-5	99014NAESR-5	311P407-5S-B-12	Receptacle	5	78	1218233-5	1-1218233-1
99014SAESR-6	99014NAESR-6	311P407-6S-B-12	Receptacle	6	104	1218233-6	1-1218233-2

**AMPLIMITE Connector Series 109 (Standard Density Sub "D"'s)**

DSCC <sup>1</sup> Part No. w/Grommet for reference only	DSCC <sup>1</sup> Part No. w/out Grommet for reference only	NASA <sup>1</sup> Part No. w/out Grommet for reference only	Plug / Receptacle	Shell Size	Position	ULTRA-LITE Connectors	
						Part No. w/out Grommet	Part No. with Grommet
99013SAEPR-1	99013NAEPR-1	311P409-1P-B-12	Plug	1	9	1218234-1	1218234-7
99013SAEPR-2	99013NAEPR-2	311P409-2P-B-12	Plug	2	15	1218234-2	1218234-8
99013SAEPR-3	99013NAEPR-3	311P409-3P-B-12	Plug	3	25	1218234-3	1218234-9
99013SAEPR-4	99013NAEPR-4	311P409-4P-B-12	Plug	4	37	1218234-4	1-1218234-0
99013SAEPR-5	99013NAEPR-5	311P409-5P-B-12	Plug	5	50	1218234-5	1-1218234-1
99015SAESR-1	99015NAESR-1	311P409-1S-B-12	Receptacle	1	9	1218235-1	1218235-7
99015SAESR-2	99015NAESR-2	311P409-2S-B-12	Receptacle	2	15	1218235-2	1218235-8
99015SAESR-3	99015NAESR-3	311P409-3S-B-12	Receptacle	3	25	1218235-3	1218235-9
99015SAESR-4	99015NAESR-4	311P409-4S-B-12	Receptacle	4	37	1218235-4	1-1218235-0
99015SAESR-5	99015NAESR-5	311P409-5S-B-12	Receptacle	5	50	1218235-5	1-1218235-1

<sup>1</sup>Tyco Electronic part numbers are not DSCC or NASA qualified parts but can replace referenced NASA part numbers.

**AMPLIMITE Connectors**

**Application Tools for Series 109 (Size 20) Crimp Contacts**



**Pin and Socket Insertion/Extraction Tool**

AMP Part Number 91067-2 or MIL Part Number M81969/1-02  
 Insertion tip, for replacement Part Number 126195-3  
 Extraction tip, for replacement Part Number 126195-4



**AMP-TAPEMATIC Stripper/Crimper Machine Part Number 599406-7**  
**Funnel Part Number 125905-1 for Size 20 Contacts**

The AMP-TAPEMATIC Stripper/Crimper Machine strips wire and applies an 8-indent crimp termination per MIL-C-22520. The machine terminates pin and socket contacts which are tape mounted and reel fed. It offers production rates of up to 1200 finished leads per hour, provides overall lower applied costs and maintains a high degree of termination reliability.



**Hand Crimping Tool AMP Part Number 601966-1 or MIL Part Number M22520/2-01**  
**Positioner AMP Part Number 601966-5 or MIL Part Number M22520/2-08**

This standard military-type hand tool terminates pins and sockets to wire with an 8-indent, M22520/2 crimp. It is ideally suited for prototype, field maintenance and other applications where volume production is not a factor.

**Application Tools for Series 90 (Size 22) Crimp Contacts**



**Pin and Socket Insertion/Extraction Tool**

AMP Part Number 91067-1 or MIL Part Number M81969/1-04  
 Insertion tip, for replacement Part Number 126237-1  
 Extraction tip, for replacement Part Number 126195-2



**AMP-TAPEMATIC Stripper/Crimper Machine Part Number 599406-7**  
**Funnel Part Number 125905-2 for Size 22 Contacts**

The AMP-TAPEMATIC Stripper/Crimper Machine strips wire and applies an 8-indent crimp termination per MIL-C-22520. The machine terminates pin and socket contacts which are tape mounted and reel fed. It offers production rates of up to 1200 finished leads per hour, provides overall lower applied costs and maintains a high degree of termination reliability.



**Hand Crimping Tool AMP Part Number 601966-1 or MIL Part Number M22520/2-01**  
**Positioner (Pin) AMP Part Number 601966-6 or MIL Part Number M22520/2-09**  
**Positioner (Socket) AMP Part Number 601966-4 or MIL Part Number M22520/2-06**

This standard military-type hand tool terminates pins and sockets to wire with an 8-indent, M22520/2 crimp. It is ideally suited for prototype, field maintenance and other applications where volume production is not a factor.

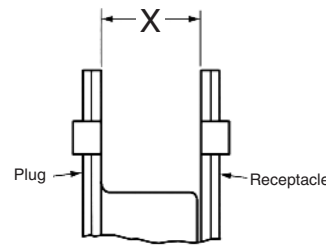


Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors** (Continued)

**Mating and Mounting Specifications for Series 109 and Series 90 Connectors**

**Plug Receptacle Mating**



**Shell Sizes 1 and 2** —  
x = .280/.250 [7.11/6.35]

**Shell Sizes 3, 4, 5 and 6** —  
x = .271/.241 [6.88/6.12]

**Blindmate Connectors (all sizes)** —  
x = .270 [6.86] max.

The X dimension is necessary for full mating of connector halves. This dimension must be taken into consideration when determining the method of mounting, panel thickness, etc.



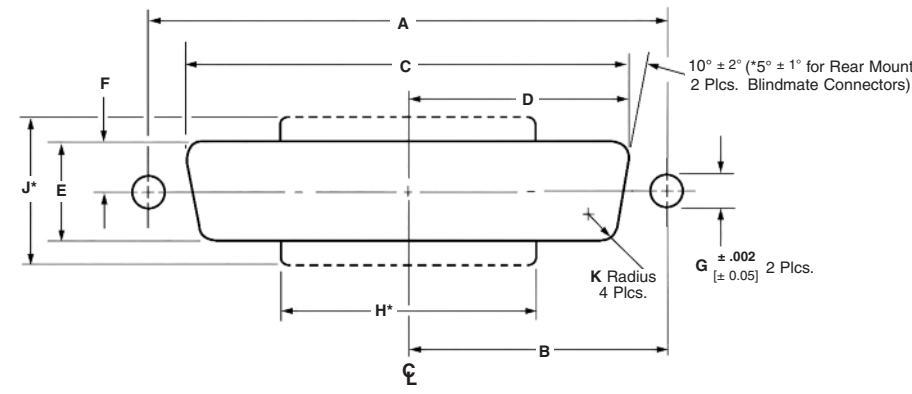
**AMPLIMITE Plug, Front-Panel Mounted**



**AMPLIMITE Receptacle, Rear-Panel Mounted**

**Attention: Front-Panel Mount**

When front mounting a MIL-DTL-24308 connector utilizing the tab method of securing shell halves, it is recommended to utilize a .032 [0.81] thick washer (not supplied) to prevent deformation of connector flange.



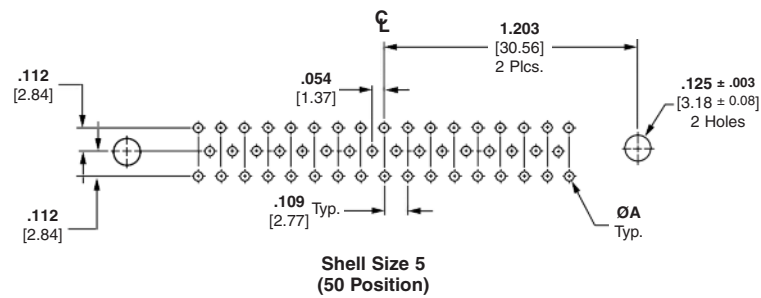
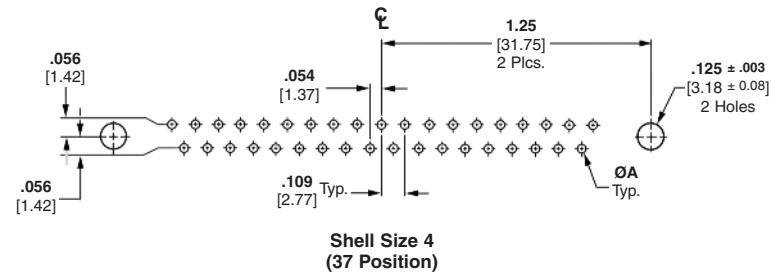
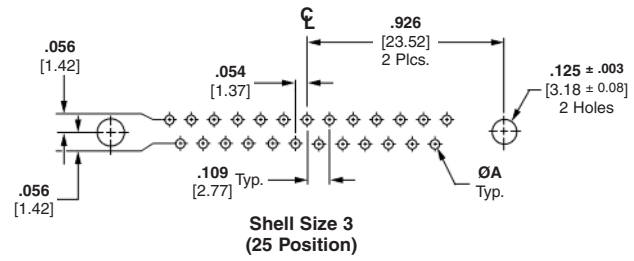
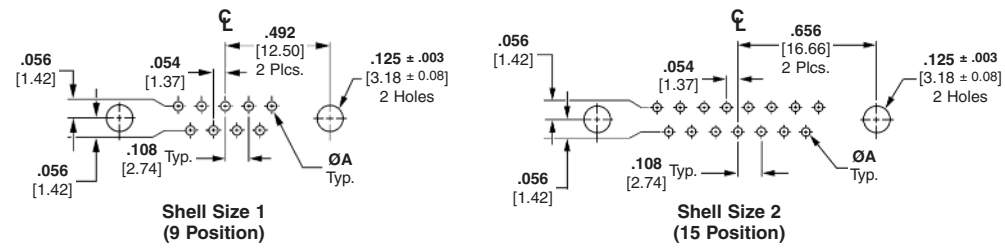
**Panel Cutout**

Shell Size (No. of Contact Pos.)		Mounting Method		Dimensions										
Series 109 Connectors	Series 90 Connectors	Front/Rear Panel	With/Without Flouting Bushing	A	B	C	D	E	F	G	H*	J*	K	
1 (9 Pos.)	1 (15 Pos.)	Front	With	.906	.453	.545	.273	.088	—	—	—	—	.083	
			Without	.874	.437	.513	.257	.120	—	—	—	—	2.11	
		Rear	With	.984	.492	.838	.419	.481	.241	.088	.332	.662	—	.132
			Without	24.99	12.5	21.29	10.64	12.22	6.12	2.24	8.43	16.81	—	3.35
2 (15 Pos.)	2 (26 Pos.)	Front	With	1.234	.617	.545	.273	.088	—	—	—	—	.083	
			Without	1.202	.601	.513	.257	.120	—	—	—	—	2.11	
		Rear	With	1.312	.656	1.166	.583	.481	.241	.088	.665	.662	—	.132
			Without	33.32	16.66	29.62	14.81	12.22	6.12	2.24	6.64	16.81	—	3.35
3 (25 Pos.)	3 (44 Pos.)	Front	With	1.775	.888	.545	.273	.088	—	—	—	—	.083	
			Without	1.743	.872	.513	.257	.120	—	—	—	—	2.11	
		Rear	With	1.852	.926	1.706	.853	.481	.241	.088	1.197	.662	—	.132
			Without	47.04	23.52	43.33	21.67	12.22	6.12	2.24	30.4	16.81	—	3.35
4 (37 Pos.)	4 (62 Pos.)	Front	With	2.423	1.212	.545	.273	.088	—	—	—	—	.083	
			Without	2.391	1.196	.513	.257	.120	—	—	—	—	2.11	
		Rear	With	2.500	1.250	2.354	1.777	.481	.241	.088	1.845	.662	—	.132
			Without	63.5	31.75	59.79	29.9	12.22	6.12	2.24	46.86	16.81	—	3.35
5 (50 Pos.)	5 (78 Pos.)	Front	With	2.329	1.165	.655	.328	.088	—	—	—	—	.083	
			Without	2.297	1.149	.623	.312	.120	—	—	—	—	2.11	
		Rear	With	2.406	1.203	2.250	1.125	.587	.294	.088	1.740	.772	—	.132
			Without	61.11	30.56	57.15	28.58	14.91	7.47	2.24	44.2	19.61	—	3.35
6 (104 Pos.)	6 (104 Pos.)	Front	With	2.218	1.109	.555	.278	.120	1.708	.740	—	—	.083	
			Without	2.218	1.109	.555	.278	.120	1.708	.740	—	—	2.11	
		Rear	With	2.453	1.227	.717	.359	.088	—	—	—	—	—	.083
			Without	2.421	1.211	.685	.343	.120	—	—	—	—	—	2.11
Rear	With	2.500	1.250	2.388	1.194	.654	.327	.088	1.875	.835	—	.132		
	Without	63.5	31.75	60.66	30.33	16.61	8.31	2.24	47.64	21.21	—	3.35		

\* Panel cutout configuration with these dimensions provides clearance for mounting connectors with cable clamp assemblies.

**AMPLIMITE Connectors** (Continued)

**PCB Layouts — Series 109**  
(Standard Density)



Post Diameter	ØA
.018 [0.46]	.028 [0.71] — .038 [0.96]
.025 [0.64]	.035 [0.89] — .045 [1.14]
.030 [0.76]	.040 [1.02] — .050 [1.27]
.040 [1.02]	.050 [1.27] — .060 [1.52]

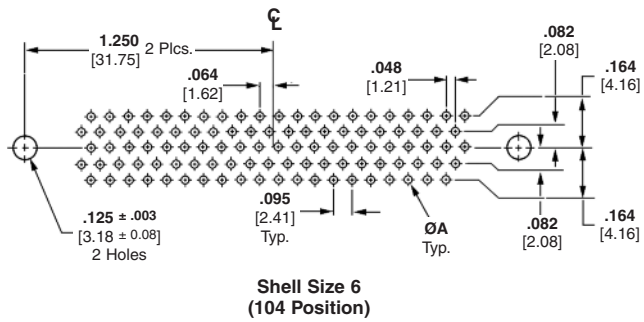
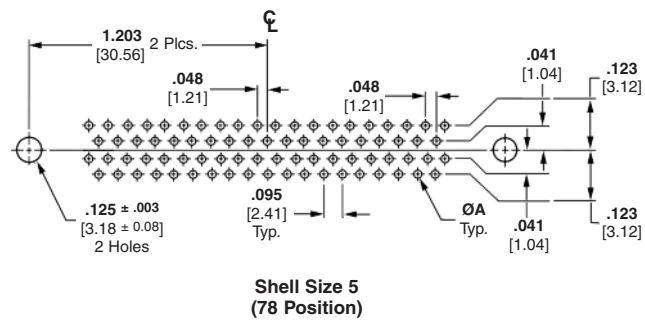
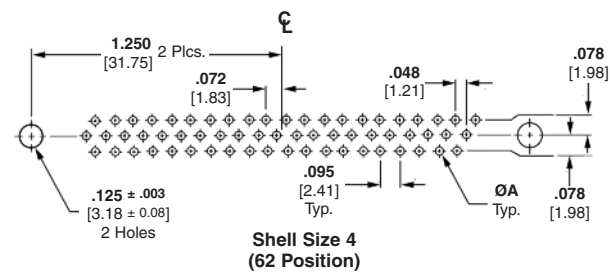
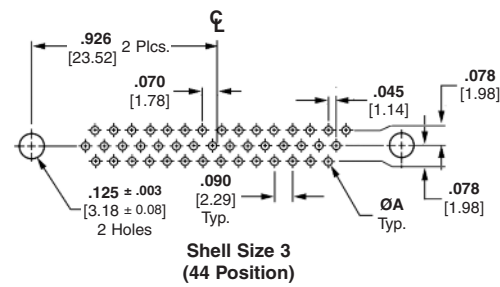
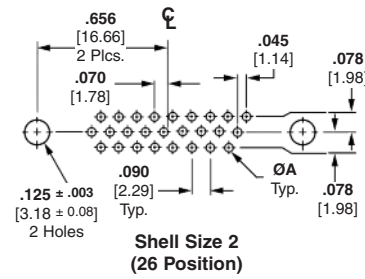
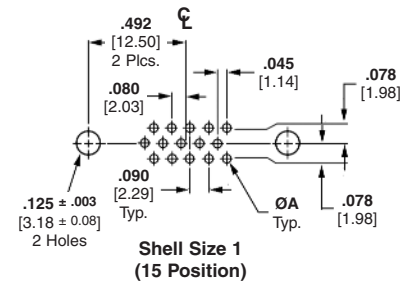
- Notes:**
1. Mating face of plug is shown, receptacle is mirror image.
  2. PCB mounting hole diameters are provided for connectors with .120 [3.05] diameter mounting holes. For connectors with .154 [3.91] mounting holes, use PCB mounting hole diameter .160 ± .003 [4.06 ± 0.08].
  3. PCB layouts illustrated above serve as a guide only; they are not to be used for actual design or construction of customer equipment. Consult TE Connectivity customer print for detailed PC board layout requirements.

**8**

Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors** (Continued)

**PCB Layouts — Series 90**  
(High Density)

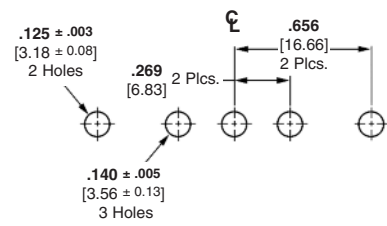


Post Diameter	ØA
.018 [0.46]	.028 [0.71] — .038 [0.96]
.025 [0.64]	.035 [0.89] — .045 [1.14]
.030 [0.76]	.040 [1.02] — .050 [1.27]
.040 [1.02]	.050 [1.27] — .060 [1.52]

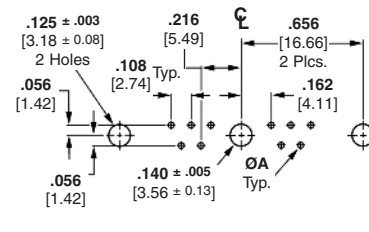
- Notes:**
1. Mating face of plug is shown, receptacle is mirror image.
  2. PCB mounting hole diameters are provided for connectors with .120 [3.05] diameter mounting holes. For connectors with .154 [3.91] mounting holes, use PCB mounting hole diameter .160 ± .003 [4.06 ± 0.08].
  3. PCB layouts illustrated above serve as a guide only; they are not to be used for actual design or construction of customer equipment. Consult TE Connectivity customer print for detailed PCB layout requirements.

**AMPLIMITE Connectors** (Continued)

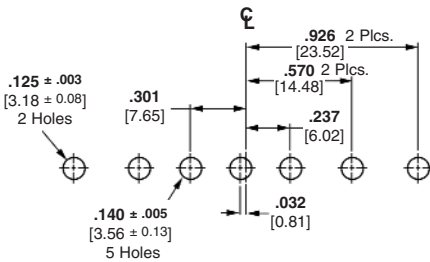
**PCB Layouts**  
(Power/Coax/Signal)



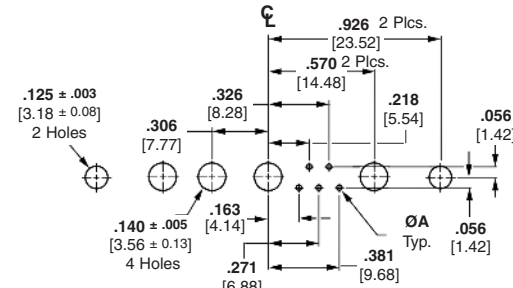
3C3



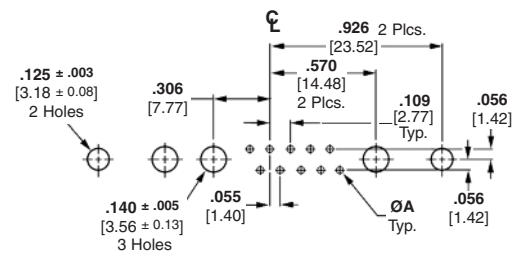
11C1



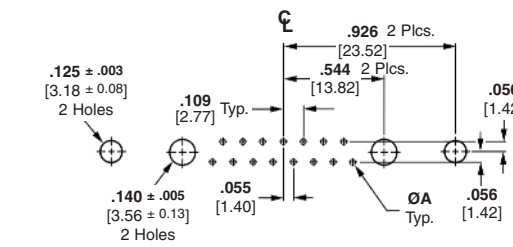
5C5



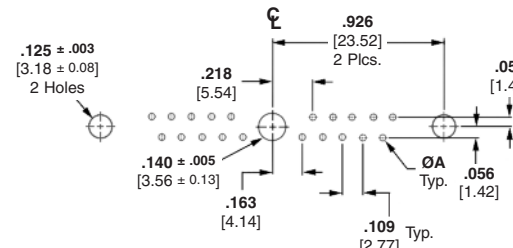
9C4



13C3



17C2



21C1

Post Diameter	ØA
.018 [0.46]	.028 [0.71] — .038 [0.96]
.025 [0.64]	.035 [0.89] — .045 [1.14]
.030 [0.76]	.040 [1.02] — .050 [1.27]
.040 [1.02]	.050 [1.27] — .060 [1.52]

- Notes:** 1. Mating face of plug is shown, receptacle is mirror image.  
 2. PCB mounting hole diameters are provided for connectors with .120 [3.05] diameter mounting holes. For connectors with .154 [3.91] mounting holes, use PCB mounting hole diameter .160 ± .003 [4.06 ± 0.08].  
 3. PC layouts illustrated above serve as a guide only; they are not to be used for actual design or construction of customer equipment. Consult TE Connectivity customer print for detailed PC board layout requirements.

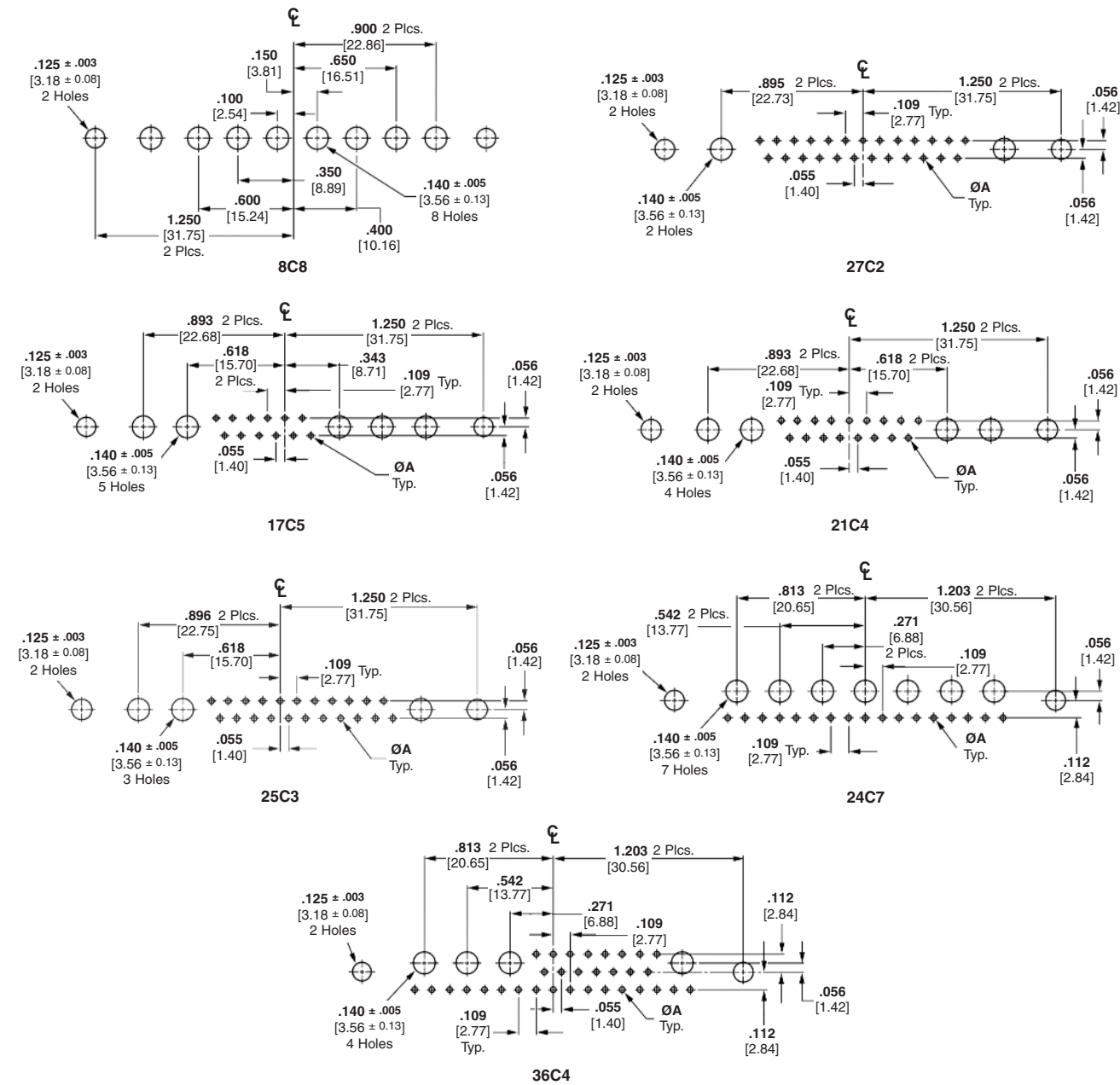
8

Rectangular Pin and Socket Connectors



**AMPLIMITE Connectors** (Continued)

**PCB Layouts**  
(Power/Coax/Signal) (Continued)



Post Diameter	ØA
.018 [0.46]	.028 [0.71] – .038 [0.96]
.025 [0.64]	.035 [0.89] – .045 [1.14]
.030 [0.76]	.040 [1.02] – .050 [1.27]
.040 [1.02]	.050 [1.27] – .060 [1.52]

- Notes:**
1. Mating face of plug is shown, receptacle is mirror image.
  2. PCB mounting hole diameters are provided for connectors with .120 [3.05] diameter mounting holes. For connectors with .154 [3.91] mounting holes, use PCB mounting hole diameter .160 ± .003 [4.06 ± 0.08].
  3. PC layouts illustrated above serve as a guide only; they are not to be used for actual design or construction of customer equipment. Consult TE Connectivity customer print for detailed PC board layout requirements.



**AMPLIMITE Connectors** (Continued)

**Accessories**

**Female Screwlocks for Metal-Shell Connectors**

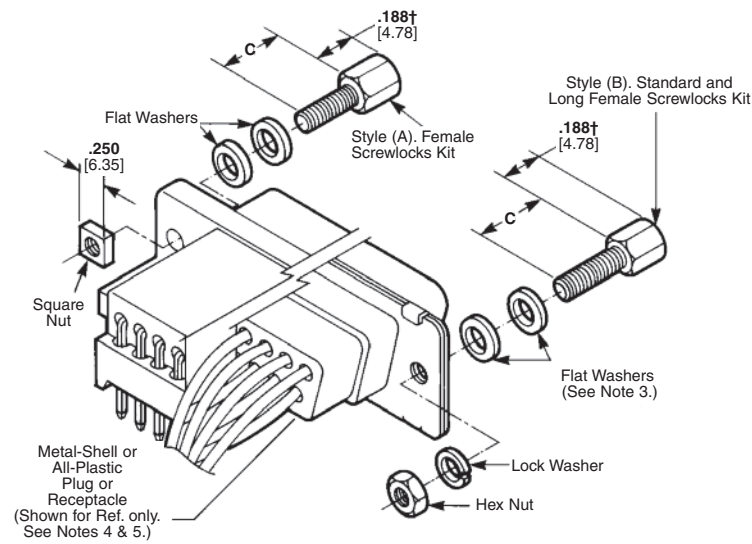
**Material and Finish**

**Standard Steel Parts** — Cold rolled steel per ASTM A108, zinc plated per ASTM B633, Type II, Class SC1

**Stainless Steel** — Passivated stainless steel

**Technical Documents**

**Instruction Sheet** — 408-7837



**Nut Driver, Part Number 811262-1**  
(Used for assembling female screwlocks to connector flange)

Connector Used with	Style	Dim. C	Thread Size	Finish	Steel Kit Number		Stainless Steel	
					Individual	Bulk Packed	Standard Kit	Long Special
6	(B)	.312 7.93	4-40	Yellow Chromate	5205817-1	5205817-2	—	—
				Clear Chromate	5205817-3	5205817-4	—	—
			M3 (Metric)	Yellow Chromate	5207872-1	—	—	—
				Clear Chromate	5207872-3	—	—	—
.090 Thick Panels †	(B)	.312 7.93	4-40	Yellow Chromate	5748271-3	—	—	—
6	(B)	.312 7.93	4-40	Yellow Chromate	—	—	212447-1	—
6	(B)	.500 12.7	4-40	Yellow Chromate	—	—	—	212452-1

**Individual Screwlocks**

(Washers and Nuts not included)

Connector Used with	Style	Dimension C	Thread Size	Finish	Screwlocks	
					Individual	Bulk Packed
6	(B)	.312 7.93	4-40	Yellow Chromate	5205818-2	—
				Clear Chromate	5205818-3	—
				Clear Chromate	5748558-3	748558-4
			M2.6** (Metric)	Clear Chromate	5749765-3	—
			4-40	Yellow Chromate	5748270-2†	—
			M3*** (Metric)	Clear Chromate	5747404-3	—
	(Special)	.185 4.70	4-40	Clear Chromate	5747877-3	—

Each part is individually bulk packed for multiple kit orders.  
 With captivated star washer. No additional hardware included.  
 †Part Number 5748270-2 and 5748271-1 Dimension .158 [4.01]  
 \*\*M2.6 is the female thread size. The male thread size is 4-40.  
 \*\*\*M3 is the female thread size. The male thread size is 4-40.

- Notes:**
- All parts are packaged unassembled.
  - Each female screwlock kit is comprised of two assemblies as illustrated above.
  - One or two flat washers may be required for panel thicknesses less than .060 [1.52]. Female screwlocks are not recommended for panel thicknesses greater than .060 [1.52].
  - Female screwlocks with 2-56 thread size are to be used with cable clamps with mounting flanges. Female screwlocks with 4-40 and M3 (Metric) thread sizes can be used with all other cable clamps.
- Notes:**
- Female screwlocks mate with male screw retainers (page 8-96).
  - Series 90 and 109 Connectors without eyelets or floating bushings.

**8**

Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors** (Continued)

**Accessories** (Continued)

**Male Screw Retainers for Metal-Shell Connectors**

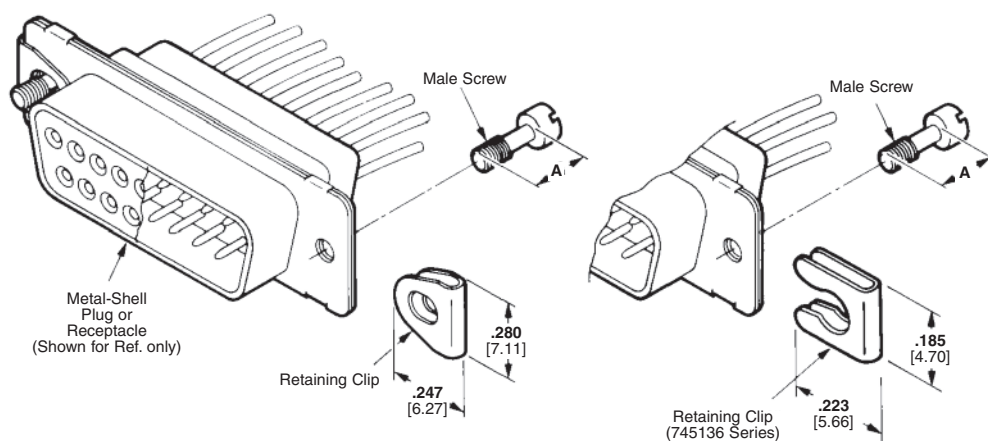
**Material and Finish**

**Male Screw** — Steel, zinc plated clear or yellow chromate

**Retaining Clip** — .012 [0.31] stainless steel

**Technical Documents**

**Instruction Sheet** — 408-7837



Male Screw Finish	Thread Size	Dimension A	Male Screw Retainer Kit No.	
			Individual	Bulk Packed*
Yellow Chromate	4-40	.220 5.59	5205980-1	5205980-3
		.200 5.08	5745136-1	5745136-2
	M3 (Metric)	.225 5.72	5207871-1	—
Clear Chromate	4-40	.220 5.59	5205980-4	5205980-5
		.200 5.08	5745136-3	5745136-4

\*Each part is individually bulk packed for multiple kit orders.

**Notes:** 1. All parts are packaged unassembled.

2. Each kit is comprised of two male screws and two retaining clips. Male screw retainers are also furnished as part of cable clamp kits (pages 8-95 and 8-96).

**Notes:** 3. Male screw retainers mate with female screwlocks (page 8-95) and with metal-shell board mount connectors featuring 4-40 threaded inserts or female screwlocks.

**Notes:** 4. Retaining clip must be assembled onto connector flanges with threaded hole toward wire side of connector.

**Stainless Steel Kit**

**Materials**

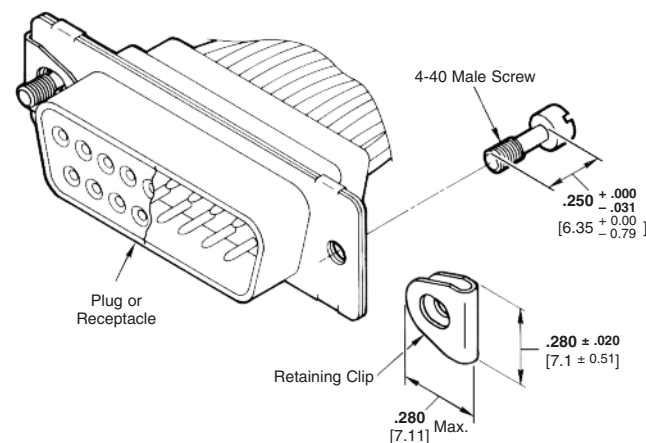
**All Parts** — Stainless steel, passivated per QQ-P-35B.

AMP Part Number 211883-5 or MIL Part Number M24308/25-6P

**Notes:**

- Each kit includes two screws and two retainers.
- Retainer is assembled onto connector flange with threaded hole toward the wire side of the connector.

**Male Screw Retainer Kits**



**AMPLIMITE Connectors** (Continued)

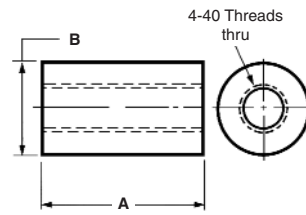
**Accessories** (Continued)

**Standard Bushings**  
(for Connectors with  
Straight Posted Contacts,  
PC Board Mounted)

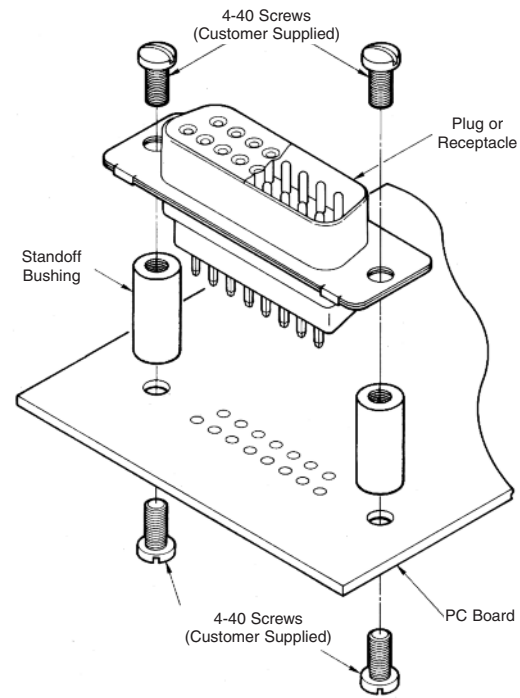
**Material**  
Aluminum

**Kit Numbers**

\*Parts are individually bulk packed for multiple kit orders.



**Note:** Standoff Bushings are used with a plug or receptacle of PC board mounted connectors.



Part No.	Dim. A	Dim. B	Packaged
5205933-3	.435 11.05	.250 6.35	2 Per Bag
5205933-4	.435 11.05	.250 6.35	*Bulked Pack
443279-2	.246 6.25	.190 4.83	2 Per Bag
443279-3	.246 6.25	.190 4.83	*Bulk Pack

**Dust Covers**

Dust covers for subminiature D connectors are not manufactured by TE Connectivity. They may be purchased from:\*\*

**Caplugs**

2150 Elmwood Avenue  
Buffalo, NY 14207  
Phone: (716) 876-9855  
Fax: (716) 874-1680

See Catalog 1307612 for additional hardware such as cable clamps, strain reliefs, etc.

**Notes:**

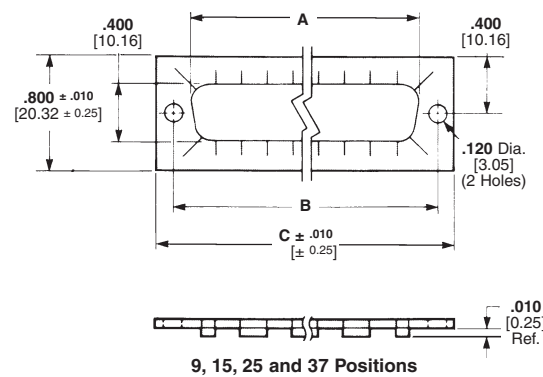
1. There are no cable clamp/strain relief hardware available for size 6 connectors.

2. Cable clamp/strain relief hardware cannot be used with the Power/Coax/Combination Product shown on pages 8-62 to 8-64 of this catalog.

\*\* Caplugs is not an affiliate of TE.

**EMI/RFI Gaskets**

**Material and Finish**  
Brass, .006 [0.15] thick;  
bright tin-lead plated



Shell Size (No. of Contact Pos.)	Dimensions			Gasket Part No.
	A	B	C	
1 (9)	.746 18.95	.984 24.99	1.220 30.99	747024-3
2 (15)	1.074 27.28	1.312 33.32	1.555 39.50	747025-3
3 (25)	1.614 41.00	1.852 47.04	2.100 53.34	745776-3
4 (37)	2.266 57.56	2.500 63.50	2.730 69.34	745777-3



Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors** (Continued)

**Accessories** (Continued)

**Shielded Cable Clamps**  
45° Exit

**Product Facts**

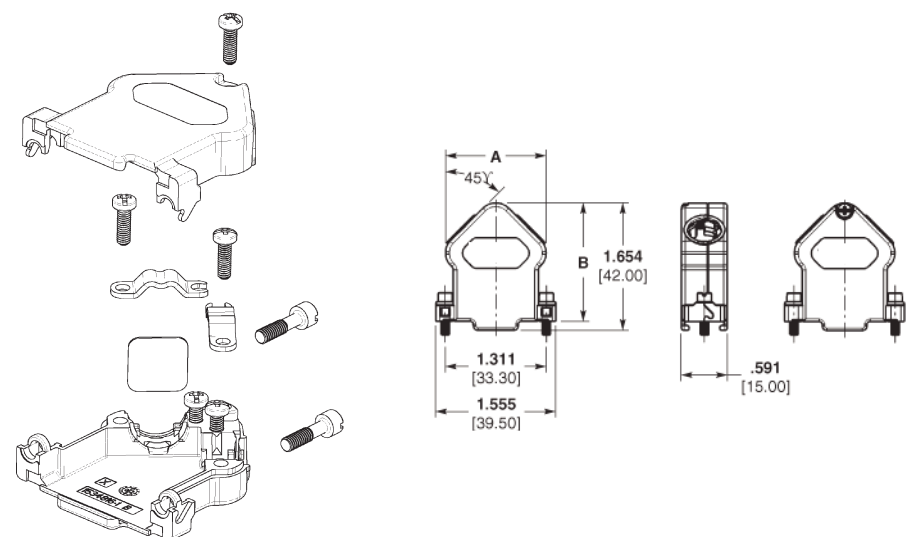
- Dual cable entry
- Rugged and durable diecast construction
- Available in 9 to 37 way (shell sizes 1 to 4)
- Choice of screw cable clamp or crimped ferrule
- Blanking plate included for single cable entry applications
- Supplied with jackscrews for locking with mating connector

**Material and Finish**

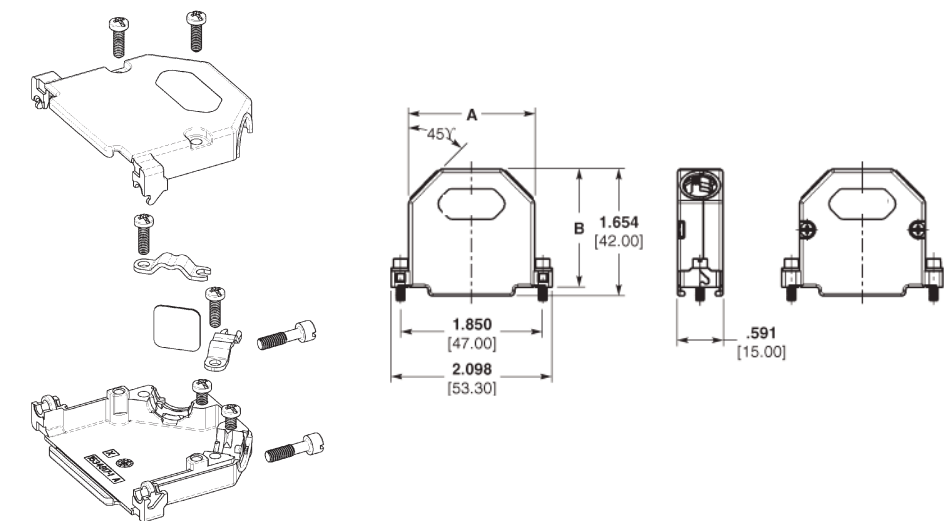
**Cable Clamp Housing** — Zinc alloy, plated bright nickel

**Screws and Cable Clamps** — Steel, zinc plate with supplementary chromate

**Dummy Plate** — Steel



Shell Size	Dimensions		Max. Cable Dia.	4-40 Mounting Screw	Cable Clamp Kit No.	Cable Clamp Kit No. for Coax Contacts
	A	B				
1	1.063 27.00	1.378 35.00	.354	Phillips Head	1534805-1	—
			9.00	Hex Head	1534805-2	—
			.365	Phillips Head	—	1534806-1
			9.27	Hex Head	—	1534806-2
2	1.299 33.00	1.535 39.00	.433	Phillips Head	1534807-1	—
			11.00	Hex Head	1534807-2	—
			.430	Phillips Head	—	1534808-1
			10.92	Hex Head	—	1534808-2



Shell Size	Dimensions		Max. Cable Dia.	4-40 Mounting Screw	Cable Clamp Kit No.	Cable Clamp Kit No. for Coax Contacts
	A	B				
3	1.642 41.70	1.535 39.00	.433	Phillips Head	1534809-1	—
			11.00	Hex Head	1534809-2	—
			.430	Phillips Head	—	1534810-1
			10.92	Hex Head	—	1534810-2
4	2.291 58.20	1.535 39.00	.433	Phillips Head	1534811-1	—
			11.00	Hex Head	1534811-2	—
			.430	Phillips Head	—	1534812-1
			10.92	Hex Head	—	1534812-2

**AMPLIMITE Connectors vs. MIL-DTL-24308 Cross Reference**

This list is provided for reference only. In the event that a discrepancy exists between this catalog and the respective military QPL, then the QPL shall take precedence.

MILITARY PART NUMBER FOR ORDERING	MILITARY PART NUMBER ON CONNECTOR	AMP PART NUMBER FOR ORDERING	AMP PART NUMBER ON CONNECTOR	REMARKS (All connectors provided with contacts unless otherwise specified)	
/1	M24308/1-1F	M24308/1-1F	593007-1	593007-1	
	M24308/1-2F	M24308/1-2F	593007-2	593007-2	
	M24308/1-3F	M24308/1-3F	593007-3	593007-3	
	M24308/1-4F	M24308/1-4F	593007-4	593007-4	
	M24308/1-5F	M24308/1-5F	593007-5	593007-5	
	M24308/1-12F	M24308/1-12F	593008-1	593008-1	
	M24308/1-13F	M24308/1-13F	593008-2	593008-2	
	M24308/1-14F	M24308/1-14F	593008-3	593008-3	
	M24308/1-15F	M24308/1-15F	593008-4	593008-4	
	M24308/1-16F	M24308/1-16F	593008-5	593008-5	
	M24308/1-23F	M24308/1-23F	593009-1	593009-1	
	M24308/1-24F	M24308/1-24F	593009-2	593009-2	
	M24308/1-25F	M24308/1-25F	593009-3	593009-3	
	M24308/1-26F	M24308/1-26F	593009-4	593009-4	
	M24308/1-27F	M24308/1-27F	593009-5	593009-5	
	/2	M24308/2-1F	M24308/2-1F	205555-2	205555-2
M24308/2-2F		M24308/2-2F	205557-2	205557-2	
M24308/2-3F		M24308/2-3F	205559-2	205559-2	
M24308/2-4F		M24308/2-4F	205561-2	205561-2	
M24308/2-5F		M24308/2-5F	205563-2	205563-2	
M24308/2-6F		M24308/2-1F	205555-3	205555-2	WITH TOOL
M24308/2-7F		M24308/2-2F	205557-3	205557-2	WITH TOOL
M24308/2-8F		M24308/2-3F	205559-3	205559-2	WITH TOOL
M24308/2-9F		M24308/2-4F	205561-3	205561-2	WITH TOOL
M24308/2-10F		M24308/2-5F	205563-3	205563-2	WITH TOOL
M24308/2-11F		M24308/2-11F	204512-2	204512-2	
M24308/2-12F		M24308/2-12F	204514-2	204514-2	
M24308/2-13F		M24308/2-13F	204516-2	204516-2	
M24308/2-14F		M24308/2-14F	204518-2	204518-2	
M24308/2-15F		M24308/2-15F	204520-2	204520-2	
M24308/2-16F		M24308/2-16F	204522-2	204522-2	
M24308/2-17F		M24308/2-11F	204512-3	204512-2	WITH TOOL
M24308/2-18F		M24308/2-12F	204514-3	204514-2	WITH TOOL
M24308/2-19F		M24308/2-13F	204516-3	204516-2	WITH TOOL
M24308/2-20F		M24308/2-14F	204518-3	204518-2	WITH TOOL
M24308/2-21F		M24308/2-15F	204520-3	204520-2	WITH TOOL
M24308/2-22F		M24308/2-16F	204522-3	204522-2	WITH TOOL
M24308/2-23F		M24308/2-23F	205483-2	205483-2	
M24308/2-24F		M24308/2-24F	205433-2	205433-2	
M24308/2-25F		M24308/2-25F	205484-2	205484-2	
M24308/2-26F		M24308/2-26F	205485-2	205485-2	
M24308/2-27F		M24308/2-27F	205432-2	205432-2	
M24308/2-28F		M24308/2-28F	204536-2	204536-2	
M24308/2-29F		M24308/2-29F	204538-2	204538-2	
M24308/2-30F		M24308/2-30F	204540-2	204540-2	
M24308/2-31F		M24308/2-31F	204542-2	204542-2	
M24308/2-32F		M24308/2-32F	204544-2	204544-2	
M24308/2-33F		M24308/2-33F	204546-2	204546-2	
M24308/2-281F		M24308/2-1F	205161-1	205555-2	LESS CONTACTS
M24308/2-282F		M24308/2-2F	205163-1	205557-2	LESS CONTACTS
M24308/2-283F		M24308/2-3F	205165-1	205559-2	LESS CONTACTS
M24308/2-284F		M24308/2-4F	205167-1	205561-2	LESS CONTACTS
M24308/2-285F		M24308/2-5F	205169-1	205563-2	LESS CONTACTS
M24308/2-286F		M24308/2-11F	204500-1	204512-2	LESS CONTACTS
M24308/2-287F		M24308/2-12F	204502-1	204514-2	LESS CONTACTS
M24308/2-288F	M24308/2-13F	204504-1	204516-2	LESS CONTACTS	
M24308/2-289F	M24308/2-14F	204506-1	204518-2	LESS CONTACTS	
M24308/2-290F	M24308/2-15F	204508-1	204520-2	LESS CONTACTS	
M24308/2-291F	M24308/2-16F	204510-1	204522-2	LESS CONTACTS	

Note: The suffix "F" on M24308 part numbers designates cadmium shell plating.

**AMPLIMITE Connectors vs. MIL-DTL-24308 Cross Reference** (Continued)

MILITARY PART NUMBER FOR ORDERING	MILITARY PART NUMBER ON CONNECTOR	AMP PART NUMBER FOR ORDERING	AMP PART NUMBER ON CONNECTOR	REMARKS <small>(All connectors provided with contacts unless otherwise specified)</small>
<b>/2</b> M24308/2-292F	M24308/2-23F	205416-1	205483-2	LESS CONTACTS
M24308/2-293F	M24308/2-24F	205417-1	205433-2	LESS CONTACTS
M24308/2-294F	M24308/2-25F	205418-1	205484-2	LESS CONTACTS
M24308/2-295F	M24308/2-26F	205419-1	205485-2	LESS CONTACTS
M24308/2-296F	M24308/2-27F	205420-1	205432-2	LESS CONTACTS
M24308/2-297F	M24308/2-28F	204524-1	204536-2	LESS CONTACTS
M24308/2-298F	M24308/2-29F	204526-1	204538-2	LESS CONTACTS
M24308/2-299F	M24308/2-30F	204528-1	204540-2	LESS CONTACTS
M24308/2-300F	M24308/2-31F	204530-1	204542-2	LESS CONTACTS
M24308/2-301F	M24308/2-32F	204532-1	204544-2	LESS CONTACTS
M24308/2-302F	M24308/2-33F	204534-1	204546-2	LESS CONTACTS
M24308/2-342F	M24308/2-342F	211525-2	211525-2	
M24308/2-343F	M24308/2-343F	211526-2	211526-2	
M24308/2-344F	M24308/2-344F	211527-2	211527-2	
M24308/2-345F	M24308/2-345F	211528-2	211528-2	
M24308/2-346F	M24308/2-346F	211529-2	211529-2	
M24308/2-347F	M24308/2-347F	211536-2	211536-2	
M24308/2-348F	M24308/2-348F	211537-2	211537-2	
M24308/2-349F	M24308/2-349F	211538-2	211538-2	
M24308/2-350F	M24308/2-350F	211539-2	211539-2	
M24308/2-351F	M24308/2-351F	211540-2	211540-2	
M24308/2-352F	M24308/2-352F	211541-2	211541-2	
M24308/2-482F	M24308/2-342F	211525-1	211525-2	LESS CONTACTS
M24308/2-483F	M24308/2-343F	211526-1	211526-2	LESS CONTACTS
M24308/2-484F	M24308/2-344F	211527-1	211527-2	LESS CONTACTS
M24308/2-485F	M24308/2-345F	211528-1	211528-2	LESS CONTACTS
M24308/2-486F	M24308/2-346F	211529-1	211529-2	LESS CONTACTS
M24308/2-487F	M24308/2-347F	211536-1	211536-2	LESS CONTACTS
M24308/2-488F	M24308/2-348F	211537-1	211537-2	LESS CONTACTS
M24308/2-489F	M24308/2-349F	211538-1	211538-2	LESS CONTACTS
M24308/2-490F	M24308/2-350F	211539-1	211539-2	LESS CONTACTS
M24308/2-491F	M24308/2-351F	211540-1	211540-2	LESS CONTACTS
M24308/2-492F	M24308/2-352F	211541-1	211541-2	LESS CONTACTS
<b>/3</b> M24308/3-1F	M24308/3-1F	593002-1	593002-1	
M24308/3-2F	M24308/3-2F	593002-2	593002-2	
M24308/3-3F	M24308/3-3F	593002-3	593002-3	
M24308/3-4F	M24308/3-4F	593002-4	593002-4	
M24308/3-5F	M24308/3-5F	593002-5	593002-5	
M24308/3-12F	M24308/3-12F	593004-1	593004-1	
M24308/3-13F	M24308/3-13F	593004-2	593004-2	
M24308/3-14F	M24308/3-14F	593004-3	593004-3	
M24308/3-15F	M24308/3-15F	593004-4	593004-4	
M24308/3-16F	M24308/3-16F	593004-5	593004-5	
<b>/4</b> M24308/4-1F	M24308/4-1F	205556-2	205556-2	
M24308/4-2F	M24308/4-2F	205558-2	205558-2	
M24308/4-3F	M24308/4-3F	205560-2	205560-2	
M24308/4-4F	M24308/4-4F	205562-2	205562-2	
M24308/4-5F	M24308/4-5F	205564-2	205564-2	
M24308/4-6F	M24308/4-1F	205556-3	205556-2	WITH TOOL
M24308/4-7F	M24308/4-2F	205558-3	205558-2	WITH TOOL
M24308/4-8F	M24308/4-3F	205560-3	205560-2	WITH TOOL
M24308/4-9F	M24308/4-4F	205562-3	205562-2	WITH TOOL
M24308/4-10F	M24308/4-5F	205564-3	205564-2	WITH TOOL
M24308/4-11F	M24308/4-11F	204513-2	204513-2	
M24308/4-12F	M24308/4-12F	204515-2	204515-2	
M24308/4-13F	M24308/4-13F	204517-2	204517-2	
M24308/4-14F	M24308/4-14F	204519-2	204519-2	
M24308/4-15F	M24308/4-15F	204521-2	204521-2	
M24308/4-16F	M24308/4-16F	204523-2	204523-2	

Note: The suffix "F" on M24308 part numbers designates cadmium shell plating.



**AMPLIMITE Connectors vs. MIL-DTL-24308 Cross Reference** (Continued)

MILITARY PART NUMBER FOR ORDERING	MILITARY PART NUMBER ON CONNECTOR	AMP PART NUMBER FOR ORDERING	AMP PART NUMBER ON CONNECTOR	REMARKS <small>(All connectors provided with contacts unless otherwise specified)</small>
<b>/4</b> M24308/4-17F	M24308/4-11F	204513-3	204513-2	WITH TOOL
M24308/4-18F	M24308/4-12F	204515-3	204515-2	WITH TOOL
M24308/4-19F	M24308/4-13F	204517-3	204517-2	WITH TOOL
M24308/4-20F	M24308/4-14F	204519-3	204519-2	WITH TOOL
M24308/4-21F	M24308/4-15F	204521-3	204521-2	WITH TOOL
M24308/4-22F	M24308/4-16F	204523-3	204523-2	WITH TOOL
M24308/4-259F	M24308/4-1F	205162-1	205556-2	LESS CONTACTS
M24308/4-260F	M24308/4-2F	205164-1	205558-2	LESS CONTACTS
M24308/4-261F	M24308/4-3F	205166-1	205560-2	LESS CONTACTS
M24308/4-262F	M24308/4-4F	205168-1	205562-2	LESS CONTACTS
M24308/4-263F	M24308/4-5F	205170-1	205564-2	LESS CONTACTS
M24308/4-264F	M24308/4-11F	204501-1	204513-2	LESS CONTACTS
M24308/4-265F	M24308/4-12F	204503-1	204515-2	LESS CONTACTS
M24308/4-266F	M24308/4-13F	204505-1	204517-2	LESS CONTACTS
M24308/4-267F	M24308/4-14F	204507-1	204519-2	LESS CONTACTS
M24308/4-268F	M24308/4-15F	204509-1	204521-2	LESS CONTACTS
M24308/4-269F	M24308/4-16F	204511-1	204523-2	LESS CONTACTS
M24308/4-302F	M24308/4-302F	205486-2	205486-2	
M24308/4-303F	M24308/4-303F	205409-2	205409-2	
M24308/4-304F	M24308/4-304F	205487-2	205487-2	
M24308/4-305F	M24308/4-305F	205488-2	205488-2	
M24308/4-306F	M24308/4-306F	205431-2	205431-2	
M24308/4-307F	M24308/4-307F	204537-2	204537-2	
M24308/4-308F	M24308/4-308F	204539-2	204539-2	
M24308/4-309F	M24308/4-309F	204541-2	204541-2	
M24308/4-310F	M24308/4-310F	204543-2	204543-2	
M24308/4-311F	M24308/4-311F	204545-2	204545-2	
M24308/4-312F	M24308/4-312F	204547-2	204547-2	
M24308/4-324F	M24308/4-302F	205412-1	205486-2	LESS CONTACTS
M24308/4-325F	M24308/4-303F	205408-1	205409-2	LESS CONTACTS
M24308/4-326F	M24308/4-304F	205413-1	205487-2	LESS CONTACTS
M24308/4-327F	M24308/4-305F	205414-1	205488-2	LESS CONTACTS
M24308/4-328F	M24308/4-306F	205415-1	205431-2	LESS CONTACTS
M24308/4-329F	M24308/4-307F	204525-1	204537-2	LESS CONTACTS
M24308/4-330F	M24308/4-308F	204527-1	204539-2	LESS CONTACTS
M24308/4-331F	M24308/4-309F	204529-1	204541-2	LESS CONTACTS
M24308/4-332F	M24308/4-310F	204531-1	204543-2	LESS CONTACTS
M24308/4-333F	M24308/4-311F	204533-1	204545-2	LESS CONTACTS
M24308/4-334F	M24308/4-312F	204535-1	204547-2	LESS CONTACTS
<b>/5</b> M24308/5-1F	M24308/5-1F	593036-1	593036-1	
M24308/5-2F	M24308/5-2F	593036-2	593036-2	
M24308/5-3F	M24308/5-3F	593036-3	593036-3	
M24308/5-4F	M24308/5-4F	593036-4	593036-4	
M24308/5-5F	M24308/5-5F	593036-5	593036-5	
M24308/5-12F	M24308/5-12F	593037-1	593037-1	
M24308/5-13F	M24308/5-13F	593037-2	593037-2	
M24308/5-14F	M24308/5-14F	593037-3	593037-3	
M24308/5-15F	M24308/5-15F	593037-4	593037-4	
M24308/5-16F	M24308/5-16F	593037-5	593037-5	
M24308/5-23F	M24308/5-23F	593038-1	593038-1	
M24308/5-24F	M24308/5-24F	593038-2	593038-2	
M24308/5-25F	M24308/5-25F	593038-3	593038-3	
M24308/5-26F	M24308/5-26F	593038-4	593038-4	
M24308/5-27F	M24308/5-27F	593038-5	593038-5	
<b>/23</b> M24308/23-1F	M24308/23-1F	443975-1	443975-1	
M24308/23-2F	M24308/23-2F	443975-2	443975-2	
M24308/23-3F	M24308/23-3F	443975-3	443975-3	
M24308/23-4F	M24308/23-4F	443975-4	443975-4	
M24308/23-5F	M24308/23-5F	443975-5	443975-5	

**Note:** The suffix "F" on M24308 part numbers designates cadmium shell plating.



**AMPLIMITE Connectors vs. MIL-DTL-24308 Cross Reference** (Continued)

MILITARY PART NUMBER FOR ORDERING	MILITARY PART NUMBER ON CONNECTOR	AMP PART NUMBER FOR ORDERING	AMP PART NUMBER ON CONNECTOR	REMARKS <small>(All connectors provided with contacts unless otherwise specified)</small>
<b>/23</b> M24308/23-7F	M24308/23-7F	443976-1	443976-1	
M24308/23-8F	M24308/23-8F	443976-2	443976-2	
M24308/23-9F	M24308/23-9F	443976-3	443976-3	
M24308/23-10F	M24308/23-10F	443976-4	443976-4	
M24308/23-11F	M24308/23-11F	443976-5	443976-5	
M24308/23-13F	M24308/23-13F	443977-1	443977-1	
M24308/23-14F	M24308/23-14F	443977-2	443977-2	
M24308/23-15F	M24308/23-15F	443977-3	443977-3	
M24308/23-16F	M24308/23-16F	443977-4	443977-4	
M24308/23-17F	M24308/23-17F	443977-5	443977-5	
M24308/23-19F	M24308/23-19F	443978-1	443978-1	
M24308/23-20F	M24308/23-20F	443978-2	443978-2	
M24308/23-21F	M24308/23-21F	443978-3	443978-3	
M24308/23-22F	M24308/23-22F	443978-4	443978-4	
M24308/23-23F	M24308/23-23F	443978-5	443978-5	
M24308/23-25F	M24308/23-25F	1218434-1	1218434-1	
M24308/23-26F	M24308/23-26F	1218434-2	1218434-2	
M24308/23-27F	M24308/23-27F	1218434-3	1218434-3	
M24308/23-28F	M24308/23-28F	1218434-4	1218434-4	
M24308/23-29F	M24308/23-29F	1218434-5	1218434-5	
M24308/23-31F	M24308/23-31F	1218408-1	1218408-1	
M24308/23-32F	M24308/23-32F	1218408-2	1218408-2	
M24308/23-33F	M24308/23-33F	1218408-3	1218408-3	
M24308/23-34F	M24308/23-34F	1218408-4	1218408-4	
M24308/23-35F	M24308/23-35F	1218408-5	1218408-5	
M24308/23-37F	M24308/23-37F	1218435-1	1218435-1	
M24308/23-38F	M24308/23-38F	1218435-2	1218435-2	
M24308/23-39F	M24308/23-39F	1218435-3	1218435-3	
M24308/23-40F	M24308/23-40F	1218435-4	1218435-4	
M24308/23-41F	M24308/23-41F	1218435-5	1218435-5	
M24308/23-43F	M24308/23-43F	1218436-1	1218436-1	
M24308/23-44F	M24308/23-44F	1218436-2	1218436-2	
M24308/23-45F	M24308/23-45F	1218436-3	1218436-3	
M24308/23-46F	M24308/23-46F	1218436-4	1218436-4	
M24308/23-47F	M24308/23-47F	1218436-5	1218436-5	
M24308/23-49F	M24308/23-49F	1218437-1	1218437-1	
M24308/23-50F	M24308/23-50F	1218437-2	1218437-2	
M24308/23-51F	M24308/23-51F	1218437-3	1218437-3	
M24308/23-52F	M24308/23-52F	1218437-4	1218437-4	
M24308/23-53F	M24308/23-53F	1218437-5	1218437-5	
M24308/23-55F	M24308/23-55F	1218438-1	1218438-1	
M24308/23-56F	M24308/23-56F	1218438-2	1218438-2	
M24308/23-57F	M24308/23-57F	1218438-3	1218438-3	
M24308/23-58F	M24308/23-58F	1218438-4	1218438-4	
M24308/23-59F	M24308/23-59F	1218438-5	1218438-5	
<b>/24</b> M24308/24-1F	M24308/24-1F	1218124-1	1218124-1	
M24308/24-2F	M24308/24-2F	1218124-2	1218124-2	
M24308/24-3F	M24308/24-3F	1218124-3	1218124-3	
M24308/24-4F	M24308/24-4F	1218124-4	1218124-4	
M24308/24-5F	M24308/24-5F	1218124-5	1218124-5	
M24308/24-7F	M24308/24-7F	1218125-1	1218125-1	
M24308/24-8F	M24308/24-8F	1218125-2	1218125-2	
M24308/24-9F	M24308/24-9F	1218125-3	1218125-3	
M24308/24-10F	M24308/24-10F	1218125-4	1218125-4	
M24308/24-11F	M24308/24-11F	1218125-5	1218125-5	
M24308/24-13F	M24308/24-13F	1218126-1	1218126-1	
M24308/24-14F	M24308/24-14F	1218126-2	1218126-2	
M24308/24-15F	M24308/24-15F	1218126-3	1218126-3	
M24308/24-16F	M24308/24-16F	1218126-4	1218126-4	
M24308/24-17F	M24308/24-17F	1218126-5	1218126-5	

**AMPLIMITE Connectors vs. MIL-DTL-24308 Cross Reference** (Continued)

MILITARY PART NUMBER FOR ORDERING	MILITARY PART NUMBER ON CONNECTOR	AMP PART NUMBER FOR ORDERING	AMP PART NUMBER ON CONNECTOR	REMARKS (All connectors provided with contacts unless otherwise specified)	
/24	M24308/24-19F	M24308/24-19F	1218127-1	1218127-1	
	M24308/24-20F	M24308/24-20F	1218127-2	1218127-2	
	M24308/24-21F	M24308/24-21F	1218127-3	1218127-3	
	M24308/24-22F	M24308/24-22F	1218127-4	1218127-4	
	M24308/24-23F	M24308/24-23F	1218127-5	1218127-5	
	M24308/24-25F	M24308/24-25F	1218440-1	1218440-1	
	M24308/24-26F	M24308/24-26F	1218440-2	1218440-2	
	M24308/24-27F	M24308/24-27F	1218440-3	1218440-3	
	M24308/24-28F	M24308/24-28F	1218440-4	1218440-4	
	M24308/24-29F	M24308/24-29F	1218440-5	1218440-5	
	M24308/24-31F	M24308/24-31F	1218441-1	1218441-1	
	M24308/24-32F	M24308/24-32F	1218441-2	1218441-2	
	M24308/24-33F	M24308/24-33F	1218441-3	1218441-3	
	M24308/24-34F	M24308/24-34F	1218441-4	1218441-4	
	M24308/24-35F	M24308/24-35F	1218441-5	1218441-5	
	M24308/24-37F	M24308/24-37F	1218442-1	1218442-1	
	M24308/24-38F	M24308/24-38F	1218442-2	1218442-2	
	M24308/24-39F	M24308/24-39F	1218442-3	1218442-3	
	M24308/24-40F	M24308/24-40F	1218442-4	1218442-4	
	M24308/24-41F	M24308/24-41F	1218442-5	1218442-5	
	M24308/24-43F	M24308/24-43F	1218443-1	1218443-1	
	M24308/24-44F	M24308/24-44F	1218443-2	1218443-2	
	M24308/24-45F	M24308/24-45F	1218443-3	1218443-3	
	M24308/24-46F	M24308/24-46F	1218443-4	1218443-4	
	M24308/24-47F	M24308/24-47F	1218443-5	1218443-5	
	M24308/24-49F	M24308/24-49F	1218444-1	1218444-1	
	M24308/24-50F	M24308/24-50F	1218444-2	1218444-2	
	M24308/24-51F	M24308/24-51F	1218444-3	1218444-3	
	M24308/24-52F	M24308/24-52F	1218444-4	1218444-4	
	M24308/24-53F	M24308/24-53F	1218444-5	1218444-5	
	M24308/24-55F	M24308/24-55F	1218445-1	1218445-1	
	M24308/24-56F	M24308/24-56F	1218445-2	1218445-2	
	M24308/24-57F	M24308/24-57F	1218445-3	1218445-3	
	M24308/24-58F	M24308/24-58F	1218445-4	1218445-4	
	M24308/24-59F	M24308/24-59F	1218445-5	1218445-5	
/25	M24308/25-6P	—	211883-5	—	Male screw retainer kit
/26	M24308/26-1P	—	212447-1	—	Female screwlock kit
	M24308/26-1	—	205817-8	—	Female screwlock kit

Note: The suffix "F" on M24308 part numbers designates cadmium shell plating.  
The suffix "P" designates passivated stainless steel.



Rectangular Pin and Socket Connectors

**AMPLIMITE Connectors vs. M39029, M22520 and M81969 Cross Reference**

MILITARY PART NUMBER FOR ORDERING	AMP PART NUMBER FOR ORDERING	REMARKS (All connectors provided with contacts unless otherwise specified)
M39029/57-354	204351-1	Size 22 Socket
M39029/58-360	204370-2	Size 22 Pin
M39029/63-368	205090-1	Size 20 Socket
M39029/64-369	205089-1	Size 20 Pin
M22520/2-01	601966-1	Crimp Tool
M22520/2-06	601966-4	Size 22 Socket Positioner
M22520/2-08	601966-5	Size 20 Positioner
M22520/2-09	601966-6	Size 22 Pin Positioner
M81969/1-02	91067-2	Size 20 Ins/Ext Tool
M81969/1-04	91067-1	Size 22 Ins/Ext Tool

**AMPLIMITE Connectors vs. NASA Power/Coax/Signal Combination Cross Reference**

AMP PART NUMBER	ASSEMBLY NASA P/N 311-P-4/	DESCRIPTION
448153-2	05-7P-B-12	PLUG,3C3,NON-MAG.,120 MTG HOLE
448153-3	05-7P-B-15	PLUG,3C3,NON-MAG.,154 MTG HOLE
448154-2	05-8P-B-12	PLUG,7C2,NON-MAG.,120 MTG HOLE
448154-3	05-8P-B-15	PLUG,7C2,NON-MAG.,154 MTG HOLE
211111-2	05-9P-B-12	PLUG,11C1,NON-MAG.,120 MTG HOLE
211111-3	05-9P-B-15	PLUG,11C1,NON-MAG.,154 MTG HOLE
212491-6	05-10P-B-12	PLUG,5C5,NON-MAG.,120 MTG HOLE
212491-7	05-10P-B-15	PLUG,5C5,NON-MAG.,154 MTG HOLE
212498-2	05-11P-B-12	PLUG,9C4,NON-MAG.,120 MTG HOLE
212498-3	05-11P-B-15	PLUG,9C4,NON-MAG.,154 MTG HOLE
208810-3	05-12P-B-12	PLUG,13C3,NON-MAG.,120 MTG HOLE
208810-4	05-12P-B-15	PLUG,13C3,NON-MAG.,154 MTG HOLE
212506-2	05-13P-B-12	PLUG,17C2,NON-MAG.,120 MTG HOLE
212506-4	05-13P-B-15	PLUG,17C2,NON-MAG.,154 MTG HOLE
212522-3	05-14P-B-12	PLUG,21C1,NON-MAG.,120 MTG HOLE
212522-4	05-14P-B-15	PLUG,21C1,NON-MAG.,154 MTG HOLE
446405-2	05-15P-B-12	PLUG,8C8,NON-MAG.,120 MTG HOLE
446405-3	05-15P-B-15	PLUG,8C8,NON-MAG.,154 MTG HOLE
212514-3	05-17P-B-12	PLUG,17C5,NON-MAG.,120 MTG HOLE
212514-4	05-17P-B-15	PLUG,17C5,NON-MAG.,154 MTG HOLE
212530-2	05-18P-B-12	PLUG,21C4,NON-MAG.,120 MTG HOLE
212530-3	05-18P-B-15	PLUG,21C4,NON-MAG.,154 MTG HOLE
208742-2	05-20P-B-12	PLUG,25C3,NON-MAG.,120 MTG HOLE
208742-3	05-20P-B-15	PLUG,25C3,NON-MAG.,154 MTG HOLE
212538-2	05-21P-B-12	PLUG,27C2,NON-MAG.,120 MTG HOLE
212538-3	05-21P-B-15	PLUG,27C2,NON-MAG.,154 MTG HOLE
208743-2	05-22P-B-12	PLUG,24C7,NON-MAG.,120 MTG HOLE
208743-6	05-22P-B-15	PLUG,24C7,NON-MAG.,154 MTG HOLE
208744-3	05-23P-B-12	PLUG,36C4,NON-MAG.,120 MTG HOLE
208744-4	05-23P-B-15	PLUG,36C4,NON-MAG.,154 MTG HOLE
445705-2	05-7S-B-12	RECPT,3C3,NON-MAG.,120 MTG HOLE
445705-3	05-7S-B-15	RECPT,3C3,NON-MAG.,154 MTG HOLE
211112-2	05-9S-B-12	RECPT,11C1,NON-MAG.,120 MTG HOLE
211112-3	05-9S-B-15	RECPT,11C1,NON-MAG.,154 MTG HOLE
212059-2	05-10S-B-12	RECPT,5C5,NON-MAG.,120 MTG HOLE
212059-6	05-10S-B-15	RECPT,5C5,NON-MAG.,154 MTG HOLE
212502-2	05-11S-B-12	RECPT,9C4,NON-MAG.,120 MTG HOLE
212502-3	05-11S-B-15	RECPT,9C4,NON-MAG.,154 MTG HOLE
208811-3	05-12S-B-12	RECPT,13C3,NON-MAG.,120 MTG HOLE
208811-4	05-12S-B-15	RECPT,13C3,NON-MAG.,154 MTG HOLE
212510-2	05-13S-B-12	RECPT,17C2,NON-MAG.,120 MTG HOLE
212510-3	05-13S-B-15	RECPT,17C2,NON-MAG.,154 MTG HOLE
212526-3	05-14S-B-12	RECPT,21C1,NON-MAG.,120 MTG HOLE
212526-4	05-14S-B-15	RECPT,21C1,NON-MAG.,154 MTG HOLE
445730-3	05-15S-B-12	RECPT,8C8,NON-MAG.,120 MTG HOLE
445730-4	05-15S-B-15	RECPT,8C8,NON-MAG.,154 MTG HOLE
212518-3	05-17S-B-12	RECPT,17C5,NON-MAG.,120 MTG HOLE
212518-4	05-17S-B-15	RECPT,17C5,NON-MAG.,154 MTG HOLE
212534-2	05-18S-B-12	RECPT,21C4,NON-MAG.,120 MTG HOLE
212534-3	05-18S-B-15	RECPT,21C4,NON-MAG.,154 MTG HOLE
208551-2	05-20S-B-12	RECPT,25C3,NON-MAG.,120 MTG HOLE
208551-3	05-20S-B-15	RECPT,25C3,NON-MAG.,154 MTG HOLE
212542-2	05-21S-B-12	RECPT,27C2,NON-MAG.,120 MTG HOLE
212542-3	05-21S-B-15	RECPT,27C2,NON-MAG.,154 MTG HOLE
208552-2	05-22S-B-12	RECPT,24C7,NON-MAG.,120 MTG HOLE
208552-5	05-22S-B-15	RECPT,24C7,NON-MAG.,154 MTG HOLE
208550-2	05-23S-B-12	RECPT,36C4,NON-MAG.,120 MTG HOLE
208550-3	05-23S-B-15	RECPT,36C4,NON-MAG.,154 MTG HOLE

**AMPLIMITE Connectors vs. NASA Series 109 and 90 Cross Reference**

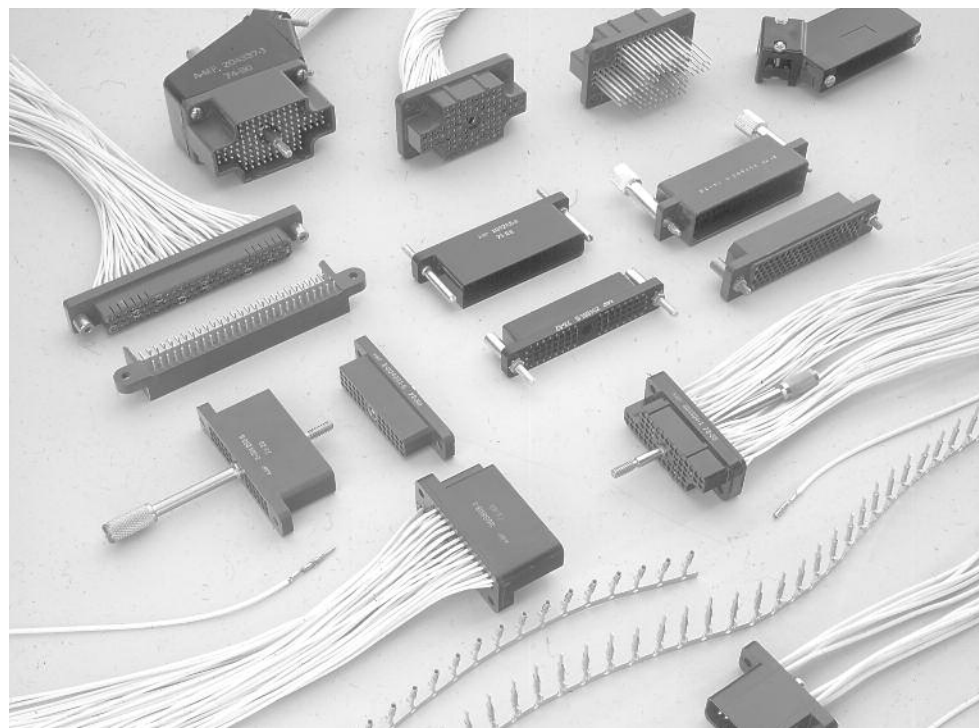
NASA PART NUMBER FOR ORDERING	NASA PART NUMBER ON CONNECTOR	AMP PART NUMBER FOR ORDERING	AMP PART NUMBER ON CONNECTOR	REMARKS <small>(All connectors provided with contacts unless otherwise specified)</small>
311P407-1P-B-15	311P407-1P-B-15	206498-1	206498-1	LESS CONTACTS
311P407-1P-B-12	311P407-1P-B-12	206498-4	206498-4	LESS CONTACTS
311P407-2P-B-15	311P407-2P-B-15	206500-1	206500-1	LESS CONTACTS
311P407-2P-B-12	311P407-2P-B-12	206500-4	206500-4	LESS CONTACTS
311P407-3P-B-15	311P407-3P-B-15	206063-2	206063-2	LESS CONTACTS
311P407-3P-B-12	311P407-3P-B-12	206063-4	206063-4	LESS CONTACTS
311P407-4P-B-15	311P407-4P-B-15	206502-1	206502-1	LESS CONTACTS
311P407-4P-B-12	311P407-4P-B-12	206502-4	206502-4	LESS CONTACTS
311P407-5P-B-15	311P407-5P-B-15	206504-1	206504-1	LESS CONTACTS
311P407-5P-B-12	311P407-5P-B-12	206504-4	206504-4	LESS CONTACTS
311P407-6P-B-15	311P407-6P-B-15	206066-2	206066-2	LESS CONTACTS
311P407-6P-B-12	311P407-6P-B-12	206066-4	206066-4	LESS CONTACTS
311P407-1S-B-15	311P407-1S-B-15	206499-1	206499-1	LESS CONTACTS
311P407-1S-B-12	311P407-1S-B-12	206499-4	206499-4	LESS CONTACTS
311P407-2S-B-15	311P407-2S-B-15	206501-1	206501-1	LESS CONTACTS
311P407-2S-B-12	311P407-2S-B-12	206501-4	206501-4	LESS CONTACTS
311P407-3S-B-15	311P407-3S-B-15	206064-2	206064-2	LESS CONTACTS
311P407-3S-B-12	311P407-3S-B-12	206064-4	206064-4	LESS CONTACTS
311P407-4S-B-15	311P407-4S-B-15	206503-1	206503-1	LESS CONTACTS
311P407-4S-B-12	311P407-4S-B-12	206503-4	206503-4	LESS CONTACTS
311P407-5S-B-15	311P407-5S-B-15	206505-1	206505-1	LESS CONTACTS
311P407-5S-B-12	311P407-5S-B-12	206505-4	206505-4	LESS CONTACTS
311P407-6S-B-15	311P407-6S-B-15	206065-2	206065-2	LESS CONTACTS
311P407-6S-B-12	311P407-6S-B-12	206065-4	206065-4	LESS CONTACTS
311P409-1P-B-15	311P409-1P-B-15	207252-1	207252-1	LESS CONTACTS
311P409-1P-B-12	311P409-1P-B-12	207252-2	207252-2	LESS CONTACTS
311P409-2P-B-15	311P409-2P-B-15	206798-1	206798-1	LESS CONTACTS
311P409-2P-B-12	311P409-2P-B-12	206798-2	206798-2	LESS CONTACTS
311P409-3P-B-15	311P409-3P-B-15	206800-1	206800-1	LESS CONTACTS
311P409-3P-B-12	311P409-3P-B-12	206800-2	206800-2	LESS CONTACTS
311P409-4P-B-15	311P409-4P-B-15	206802-1	206802-1	LESS CONTACTS
311P409-4P-B-12	311P409-4P-B-12	206802-2	206802-2	LESS CONTACTS
311P409-5P-B-15	311P409-5P-B-15	206804-1	206804-1	LESS CONTACTS
311P409-5P-B-12	311P409-5P-B-12	206804-2	206804-2	LESS CONTACTS
311P409-1S-B-15	311P409-1S-B-15	207253-1	207253-1	LESS CONTACTS
311P409-1S-B-12	311P409-1S-B-12	207253-2	207253-2	LESS CONTACTS
311P409-2S-B-15	311P409-2S-B-15	206799-1	206799-1	LESS CONTACTS
311P409-2S-B-12	311P409-2S-B-12	206799-2	206799-2	LESS CONTACTS
311P409-3S-B-15	311P409-3S-B-15	206801-1	206801-1	LESS CONTACTS
311P409-3S-B-12	311P409-3S-B-12	206801-2	206801-2	LESS CONTACTS
311P409-4S-B-15	311P409-4S-B-15	206803-1	206803-1	LESS CONTACTS
311P409-4S-B-12	311P409-4S-B-12	206803-2	206803-2	LESS CONTACTS
311P409-5S-B-15	311P409-5S-B-15	206805-1	206805-1	LESS CONTACTS
311P409-5S-B-12	311P409-5S-B-12	206805-2	206805-2	LESS CONTACTS
G-08-P1		204370-8		SIZE 22 PIN
G-08-S1		206071-1		SIZE 22 SOCKET
G-10-P1		205089-4		SIZE 20 PIN
G-10-S1		206793-1		SIZE 20 SOCKET

Rectangular Pin and Socket Connectors

High Density Rectangular Connectors

Product Facts

- Plug and receptacle connectors are molded plastic blocks categorized by the number of contact positions and type of material
- The pin body is fabricated from brass and conforms to MIL-C-50 or ASTM-B-36. The plating is gold per MIL-G-45204 over nickel per QQ-N-290. The retention spring sleeve is fabricated from stainless steel and conforms to QQ-S-766.
- The socket body is made of brass per MIL-C-50 or ASTM-B-36. Plating is gold per MIL-G-45204 over nickel per QQ-N-290. The stainless steel retention spring sleeve conforms to QQ-S-766
- Shields and cable clamps are molded polysulfone components conforming to MIL-P-46120
- Brass keying pins and sockets conform to QQ-B-626 or ASTM-B-16, with zinc plating per QQ-Z-325 or stainless steel per QQ-S-763
- Locking rings, washers, bushings, retaining rings, nuts and screws are stainless steel conforming to QQ-S-763 or QQ-S-766
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476



High Density Rectangular (HDR) connectors are designed in response to ever-increasing demands for miniaturization. The grid spacing of .100 x .100 [2.54 x 2.54] provides density for a connector accommodating a 20 thru 30 AWG [0.6 thru 0.05 mm<sup>2</sup>] wire range.

A variety of contact configurations and platings permits great design flexibility. Machine terminated, crimp snap-in contacts are available for the entire wire range. Also available are .025 [0.64] square posts on pin and socket contacts suitable for wrap-type wiring.

This unique connector is available in 12, 24, 36, 48, 54 and 106 positions in a rectangular housing. A special 95-position connector rounds out this group of rack and panel configured connectors.

A two piece, 80-position connector has been developed for printed circuit boards.

Versatility is designed into this family of connectors. Housings are available with or without center fasteners. Housing material for most connectors is diallyl phthalate or phenolic. When

mounting connectors with jackscrews, the receptacle half should be mounted to the chassis or panel. The turnable jackscrews should be positioned on the plug half containing the cable assembly.

Tooling for terminating leads is also available to meet production requirements. For limited production or prototype applications, the CERTI-CRIMP hand tool is ideal. Automatic machines are designed to fit various in-plant production needs.

Technical Features

- Available Number of Positions — 12, 24, 36, 48, 54, 106
- Center Spacing — .100 [2.54] x .100 [2.54]
- Housing material — Diallyl Phthalate or Phenolic
- Flammability Rating — UL 94V-0, UL File No. E28476
- Contact Material — Brass
- Contact Finish — .000030 [0.00076] Au
- Contact Size — 20
- Wire Size Range — 20–30 AWG

Termination Resistance —

AWG	Gold	Tin
20	8.0	16.5
24	14.5	27.0
26	22.0	—
30	48.0	—

Connector Mating Per Circuit — Gold 25 oz./Contact

Performance Characteristics Dielectric Withstanding Voltage — 1000 VAC

Insulation Resistance — DAP 50,000 megohms min. (initial), Phenolic 5000 megohms min. (initial)

Voltage Rating — 440 VAC Sea Level @ 3 Amp max.

Connector Mating/Unmating — Gold 25 oz. max., Tin 50 oz. max.

Contact Retention Force — DAP — 5.0 lb., Phenolic — 7.5 lb.

Durability — 500 Matings per Cycle Gold, 250 Matings per Cycle Tin

Temperature Range — DAP –85°F to 257°F [–65°C to 125°C], Phenolic –131°F to 302°F [55°C to 150°C]

Thermal Shock — DAP –85°F to 257°F [–65°C to 125°C], Phenolic –131°F to 302°F [55°C to 125°C]

Maximum Current — 3 Amp max.

Wire Size —

AWG	Test Current
20	3.0
24	2.25
26	1.75
30	1.00

Technical Documents

- Product Specifications — Connectors/PC Board Headers — 108-10015
- Application Specification — 114-10002
- Instruction Sheet — 408-7357, 408-7472, 408-7484



**High Density Rectangular Connectors** (Continued)

**Contacts**

**Type XI Crimp Snap-In Contacts**

**Contact Size** — 20

**Pin Diameter** — .040 [1.02]

**Plated as follows**

**A** — .000030 [0.00076] gold over .000050 [0.00127] nickel

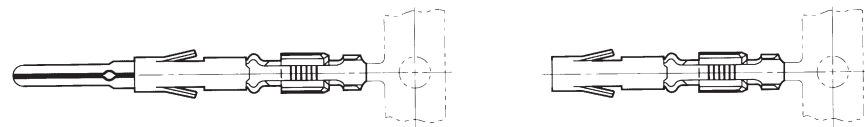
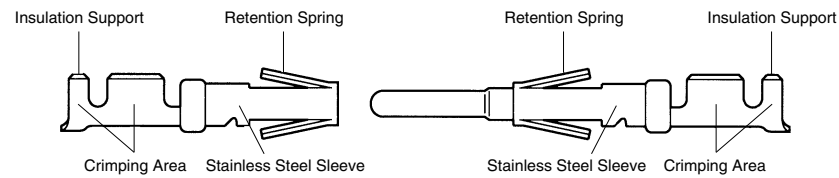
**B** — Gold flash over .000050 [0.00127] nickel on entire contact with additional .000030 [0.00076] gold in contact area

**Contact Sleeve** — Stainless Steel

**Insertion Tool**



Part Number 91042-1



Pin

Socket

Wire Size Range AWG	mm <sup>2</sup>	Ins. Dia. Max.	Contact Finish	Part Numbers				CERTI-CRIMP Hand Tool No.	Quick-Change Applicator No.	
				Strip Form		Loose Piece			AMP-O-ELECTRIC Machine Model G	AMP-O-MATIC Stripper/Crimper II Machine
				Pin	Socket	Pin	Socket			
20-24	0.6-0.2	.062 1.57	A	203816-1	203802-1	203816-3	203802-3	91544-1	—	466904-1
			B	203816-2	203802-2	203816-4	203802-4			
26-30	0.15-0.05	.048 1.22	A	203874-1	203875-1	203874-3	203875-3	90223-5	—	—
			B	203874-2	203875-2	203874-4	203875-4			

**Wrap-Type Contacts with  
.025 x .025 [0.64 x 0.64]  
Posts**

**Contact Size** — 20

**Pin Diameter** — .040 [1.02]

**Plated as follows**

**A** — .000030 [0.00076] gold over .000050 [0.00127] nickel

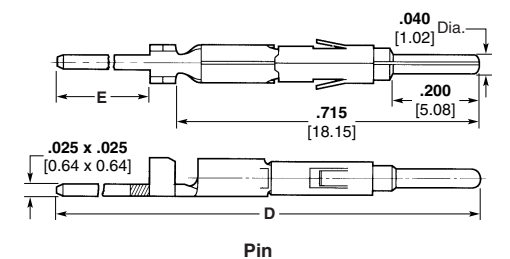
**B** — Gold flash over .000050 [0.00127] nickel on entire contact with additional .000030 [0.00076] gold in contact area

**Contact Sleeve** — Stainless Steel

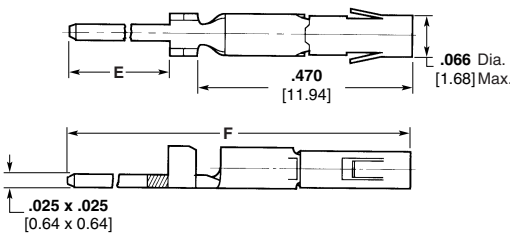
**Extraction Tool**



Part Number 91038-3



Pin



Socket

Max. Terminations Per Post	Dimensions			Contact Finish	Contact Part Numbers*	
	D	E	F		Pin	Socket
1	1.022	.257	.767	A	1-205171-0	1-205172-0
	25.96	6.53	19.48	B	205171-7	205172-7
2	1.236	.471	.981	A	1-205171-1	1-205172-1
	31.39	11.96	24.92	B	205171-8	205172-8
3	1.450	.685	1.195	A	1-205171-2	1-205172-2
	36.83	17.40	30.35	B	205171-9	205172-9

\*Loose piece contacts for maintenance and repair only. Packaged 100 pieces per bag.



Rectangular Pin and Socket Connectors

High Density Rectangular Connectors (Continued)

Housings

12, 24, 36, & 48 Positions

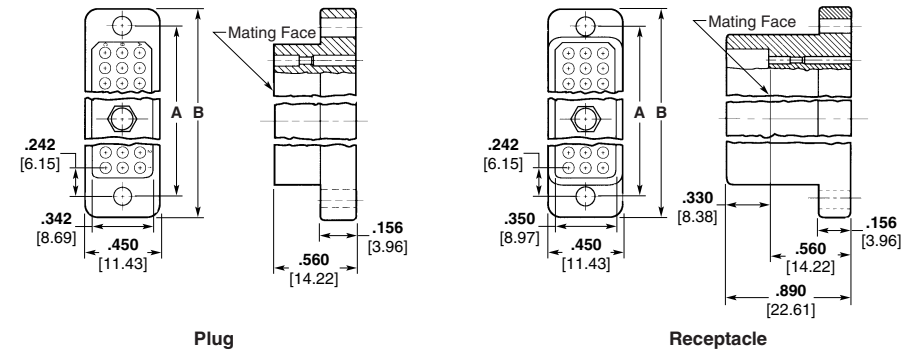
Material — See chart on page 8-109

Related Product Data

Contacts — page 8-107

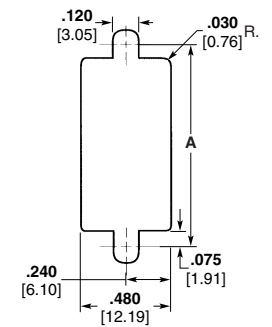
Accessories — pages 8-115 and 8-116

Technical Documents — page 8-106



Plug

Receptacle



Recommended Panel Cutout

54 Position

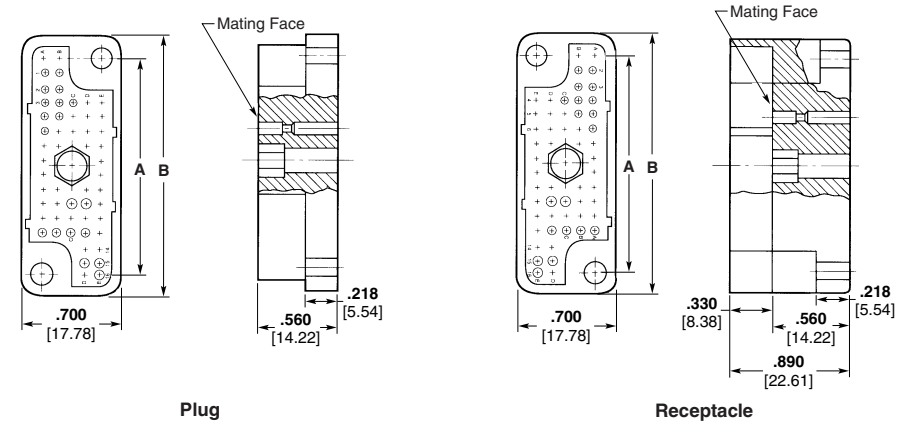
Material — See chart on page 8-109

Related Product Data

Contacts — page 8-107

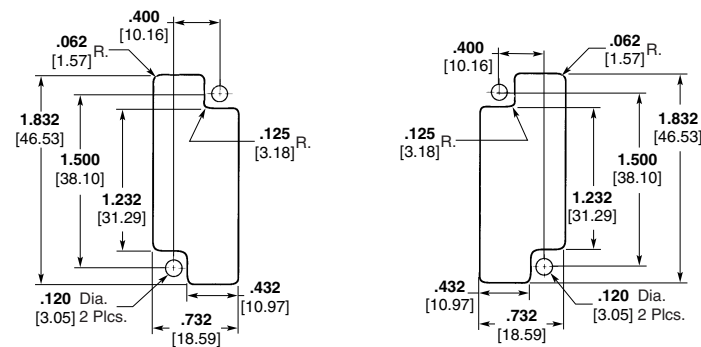
Accessories — pages 8-115 and 8-116

Technical Documents — page 8-106



Plug

Receptacle



Recommended Panel Cutout



High Density Rectangular Connectors (Continued)

Housings (Continued)

106 Position

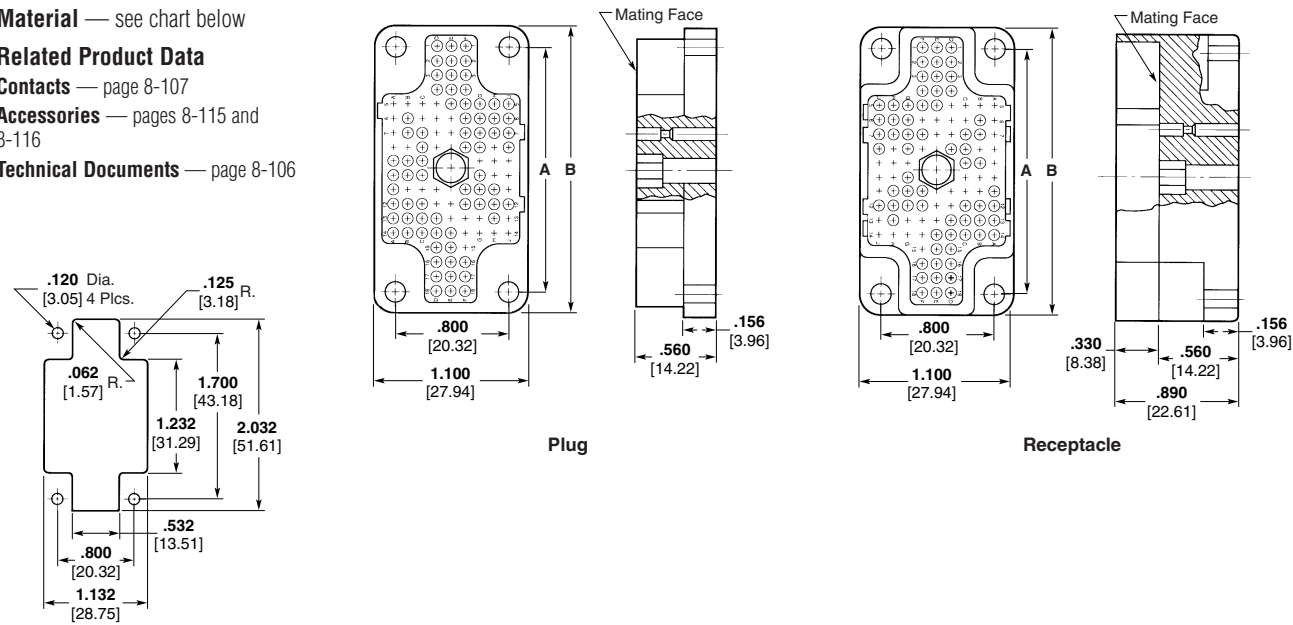
Material — see chart below

Related Product Data

Contacts — page 8-107

Accessories — pages 8-115 and 8-116

Technical Documents — page 8-106



Recommended Panel Cutout

Center Fastener	No. of Positions	Dimensions		Center Fastener Type	Part Numbers			
		A	B		Plug Half		Receptacle Half	
					Phenolic	Diallyl Phthalate	Phenolic	Diallyl Phthalate
With Center Fastener	12	1.084	1.334	Fixed Female	204727-1	204727-2	—	204728-2
		24.43	33.88	Long Male Turnable	—	—	204740-1	204740-2
	24	1.484	1.734	Fixed Female	204729-1	204729-2	—	—
				Long Male Turnable	—	204741-2	204742-1	204742-2
		37.69	44.04	Short Male Turnable	—	—	—	204742-4
	36	1.884	2.134	Fixed Female	204731-1	204731-2	—	204732-2
				Long Male Turnable	204743-1	204743-2	204744-1	204744-2
		47.85	54.20	Short Male Turnable	204743-3	—	—	—
	48	2.284	2.534	Fixed Female	204733-1	—	204734-1	204734-2
				Long Male Turnable	—	204745-2	204746-1	204746-2
		58.01	64.36	Short Male Turnable	—	204745-4	—	—
	54	1.500	1.800	Fixed Female	204735-1	—	204736-1	—
Long Male Turnable				204747-1	204747-2	204748-1	204748-2	
38.10		45.72	Short Male Turnable	—	—	—	204748-4	
106	1.700	2.000	Fixed Female	204737-1	204737-2	204738-1	204738-2	
			Long Male Turnable	204749-1	204749-2	204750-1	204750-2	
	43.18	50.80	Short Male Turnable	—	204749-4	—	204750-4	
Without Center Fastener	12	1.084	1.334	—*	204281-2	2-204281-2	204282-2	—
	24	1.484	1.734	—*	—	2-204281-4	204282-4	2-204282-4
	36	1.884	2.134	—*	204281-6	2-204281-6	204282-6	2-204282-6
	48	2.284	2.534	—*	204281-8	2-204281-8	204282-8	—
	54	1.500	1.800	—*	203804-1	203804-2	203803-1	203803-2
	106	1.700	2.000	—*	204260-1	204260-2	204259-1	204259-2

\*See page 8-115 for jackscrews.

**High Density Rectangular Connectors** (Continued)

**Housings** (Continued)

**95 Position Connector with Jackscrews**

**Material**

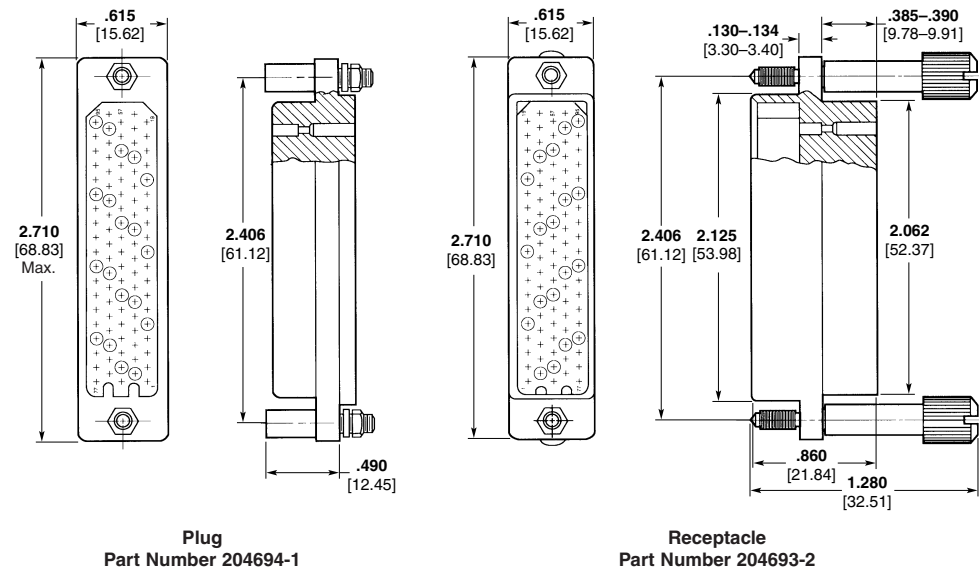
Housing — Diallyl Phthalate

Jackscrews — Stainless Steel

**Related Product Data**

Contacts — page 8-107

Technical Documents — page 8-106



**95 Position Connector with Floating Bushings**

**Material**

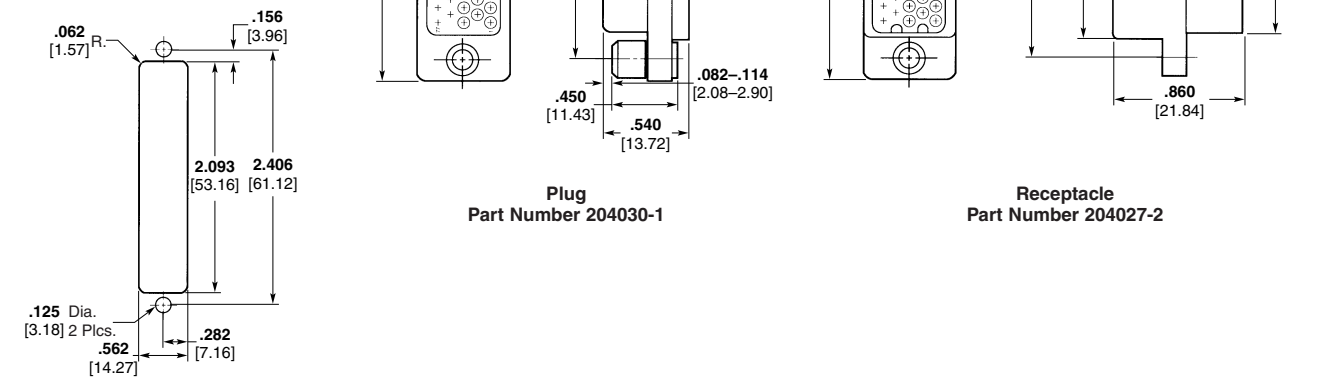
Housing — Diallyl Phthalate

Floating Bushings — Stainless Steel

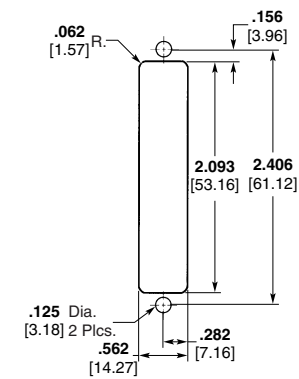
**Related Product Data**

Contacts — page 8-107

Technical Documents — page 8-106



**Recommended Panel Cutout**



**Note:** Marking on receptacles are on wiring side only.

**High Density Rectangular Connectors** (Continued)

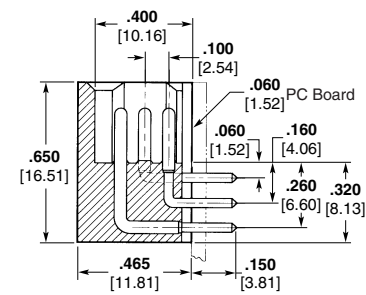
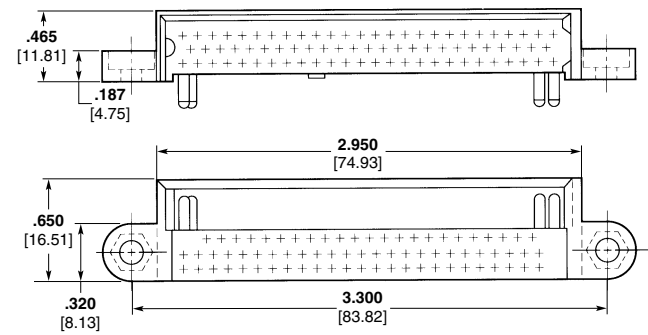
**Printed Circuit Board Connector**

**80 Position Pin Header**

**Material and Finish**

**Housing** — Diallyl Phthalate

**Contacts** — Brass Plated .000030  
[0.00076] Gold over .000030 [0.00076]  
Nickel



Part Number 204818-4

**80 Position Plug with Floating Bushings**

**Material and Finish**

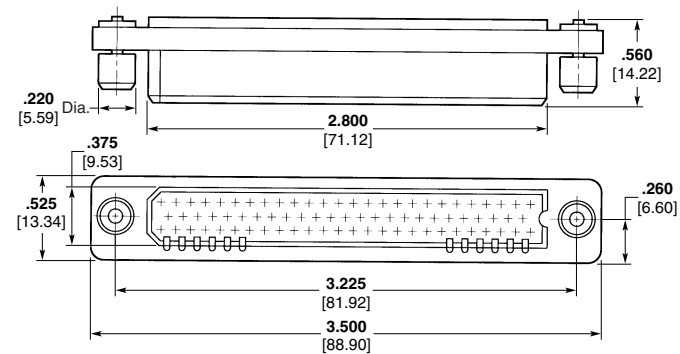
**Housing** — Diallyl Phthalate

**Floating Bushings** — Stainless Steel

**Related Product Data**

**Contacts** — page 8-107

**Technical Documents** — page 8-106



Part Number 204819-1

**8**

Rectangular Pin and Socket Connectors

High Density Rectangular Connectors (Continued)

**Preloaded Housings,  
.025 x .025 [0.64 x 0.64]  
Posted Contacts for  
Automatic Wiring**

**12, 24, 36, & 48 Position**

**Material and Finish**

**Housing** — See Chart

**Contact Body** —

Brass Plated as follows

**A** — .000030 [0.00076] Gold over  
.000050 [0.00127] Nickel

**B** — Gold Flash over .000050  
[0.00127] Nickel on entire contact, with  
additional .000030 [0.00076] Gold in  
contact area

**Contact Sleeve** — Stainless Steel

**Related Product Data**

**Contact Size** — 20

**Pin Diameter** — .040 [1.02]

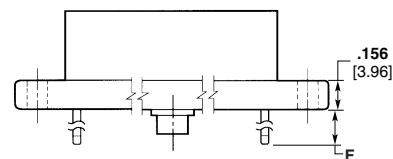
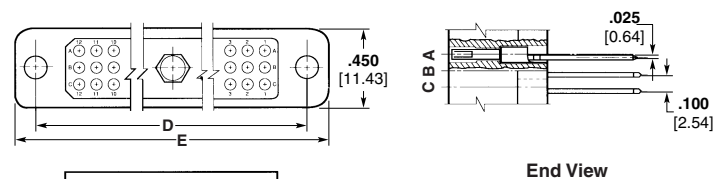
**Current Rating** — 3.0 Amperes  
(20 AWG [0.5–0.6 mm<sup>2</sup>] wire)

**Replacement Contacts** —  
page 8-107

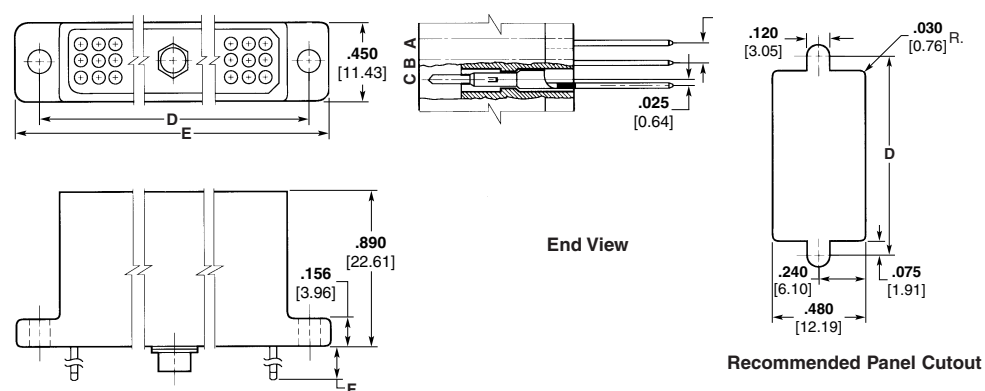
**Mateable Connectors** —  
pages 5-226 and 5-227

**Technical Documents** — page 8-106

**Plug Assembly**



**Receptacle Assembly**



No. of Positions	Dimensions		Contact Finish	Max. Termination Per Post	Dim. F	Part Numbers			
	D	E				Plug Assembly Socket Contacts		Receptacle Assembly Pin Contacts	
						Phenolic	Diallyl Phthalate	Phenolic	Diallyl Phthalate
12	1.084 27.43	1.334 33.88	A	1	.242 6.15	—	—	—	2-204682-8
					.670 17.02	—	—	—	3-204682-0
24	1.484 37.69	1.734 44.04	A	1	.242 6.15	—	6-204683-4	1-204684-9	—
				3	.670 17.02	—	6-204683-6	2-204684-1	3-204684-0
			B	1	.242 6.15	6-204683-1	7-204683-0	—	—
				3	.670 17.02	6-204683-3	—	2-204684-7	—
36	1.884 48.85	2.134 54.20	A	1	.242 6.15	—	—	1-204686-9	2-204686-8
				3	.670 17.02	5-204685-7	6-204685-6	—	3-204686-0
			B	1	.242 6.15	—	—	—	3-204686-4
				3	.670 17.02	6-204685-3	7-204685-2	—	3-204686-6
48	2.284 58.01	2.534 64.36	A	1	.242 6.15	5-204687-5	—	—	2-204688-8
				3	.670 17.02	5-204687-7	6-204687-6	—	3-204688-0
			B	1	.242 6.15	—	7-204687-0	—	—
				3	.670 17.02	6-204687-3	7-204687-2	—	—

**Notes:** 1. Markings on receptacle assembly are on wiring side only.  
2. In addition to combinations listed, all sizes are available with or without female jackscrews. Plugs are available with pins, and receptacles are available with sockets. Consult TE Connectivity for details.  
3. Fixed female jackscrews are included with these assemblies.

**High Density Rectangular Connectors** (Continued)

**Preloaded Housings,  
.025 x .025 [0.64 x 0.64]  
Posted Contacts for  
Automatic Wiring** (Continued)

**54 Position**

**Material and Finish**

**Housing** — See Chart

**Contact Body** —

Brass Plated as follows

**A** — .00030 [0.00076] Gold over  
.00050 [0.00127] Nickel

**B** — Gold Flash over .00050  
[0.00127] Nickel on entire contact, with  
additional .00030 [0.00076] Gold in  
contact area

**Contact Sleeve** — Stainless Steel

**Related Product Data**

**Contact Size** — 20

**Pin Diameter** — .040 [1.02]

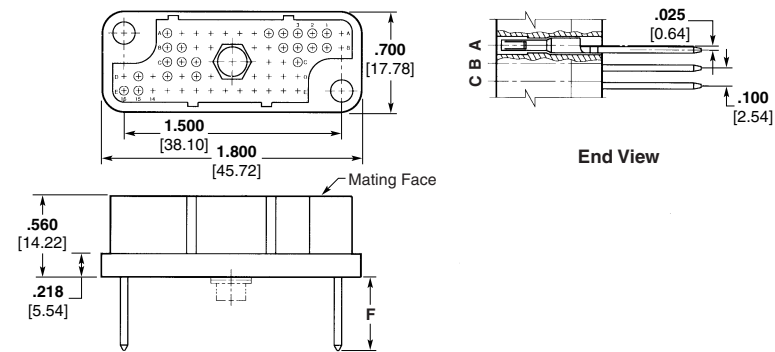
**Current Rating** — 3.0 Amperes  
(20 AWG [0.5–0.6 mm<sup>2</sup>] wire)

**Replacement Contacts** —  
page 8-107

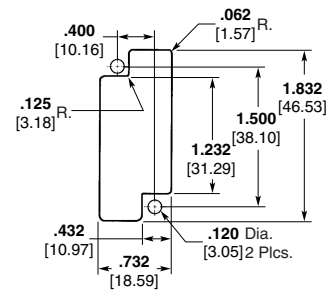
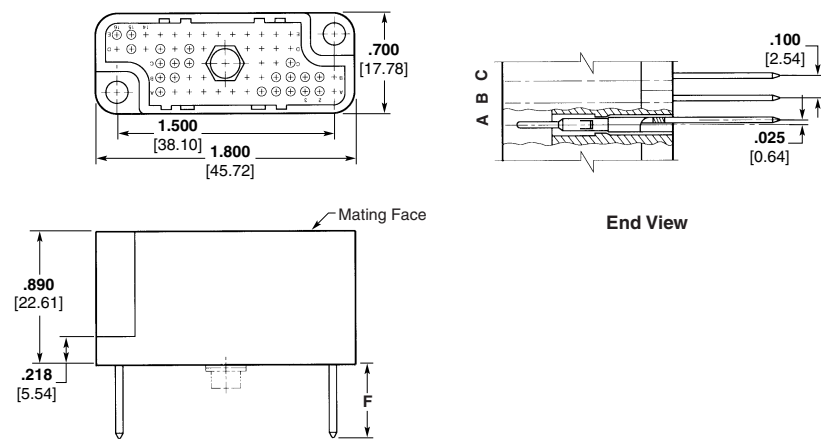
**Mateable Connectors** —  
pages 5-226 and 5-227

**Technical Documents** — page 8-106

**Plug Assembly**



**Receptacle Assembly**



**Recommended Panel Cutout  
for Receptacle**

Contact Finish	Max. Termination Per Post	Dim. F	Part Numbers			
			Plug Assembly Socket Contacts		Receptacle Assembly Pin Contacts	
			Phenolic	Diallyl Phthalate	Phenolic	Diallyl Phthalate
A	1	.242 6.15	5-204689-5	6-204689-4	1-204690-9	—
	2	.456 11.58	5-204689-6	6-204689-5	—	—
	3	.670 17.02	5-204689-7	6-204689-6	2-204690-1	3-204690-0
B	1	.242 6.15	6-204689-1	—	—	—
	3	.670 17.02	—	7-204689-2	2-204690-7	—

- Notes:**
1. Markings on receptacle assembly are on wiring side only.
  2. In addition to combinations listed, all sizes are available with or without female jackscrews. Plugs are available with pins, and receptacles are available with sockets. Consult TE Connectivity for details.
  3. Fixed female jackscrews are included with these assemblies.



Rectangular Pin and Socket Connectors

High Density Rectangular Connectors (Continued)

**Preloaded Housings,  
.025 x .025 [0.64 x 0.64]  
Posted Contacts for  
Automatic Wiring (Continued)**

**106 Position**

**Material and Finish**

**Housing** — See Chart

**Contact Body** —

Brass Plated as follows

**A** — .00030 [0.00076] Gold over

.00050 [0.00127] Nickel

**B** — Gold Flash over .00050

[0.00127] Nickel on entire contact, with

additional .00030 [0.00076] Gold in

contact area

**Contact Sleeve** — Stainless Steel

**Related Product Data**

**Contact Size** — 20

**Pin Diameter** — .040 [1.02]

**Current Rating** — 3.0 Amperes

(20 AWG [0.5–0.6 mm<sup>2</sup>] wire)

**Replacement Contacts** —

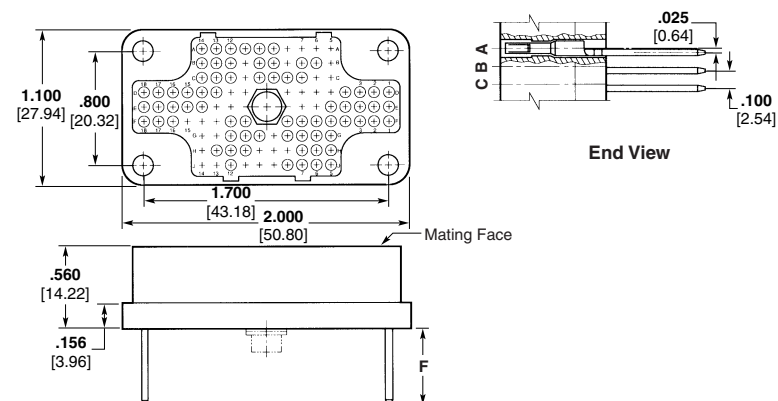
page 8-107

**Mateable Connectors** —

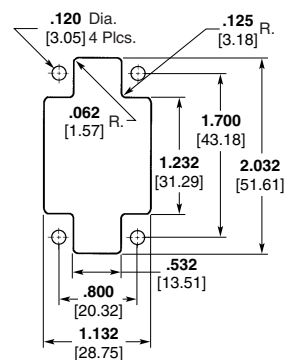
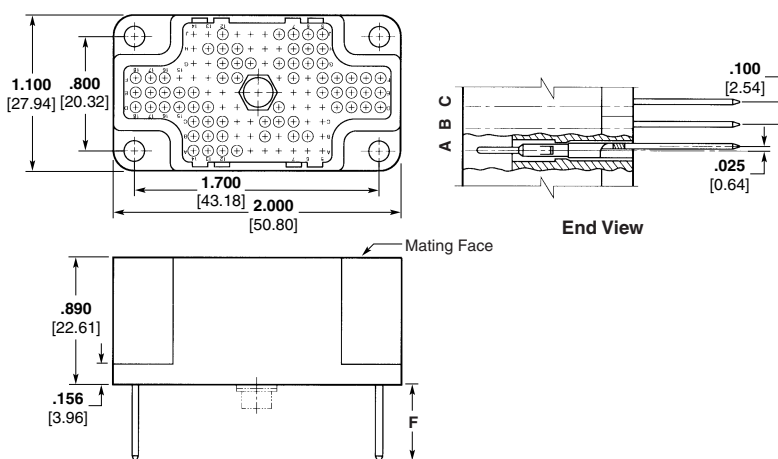
pages 5-226 and 5-227

**Technical Documents** — page 8-106

**Plug Assembly**



**Receptacle Assembly**



Recommended Panel Cutout

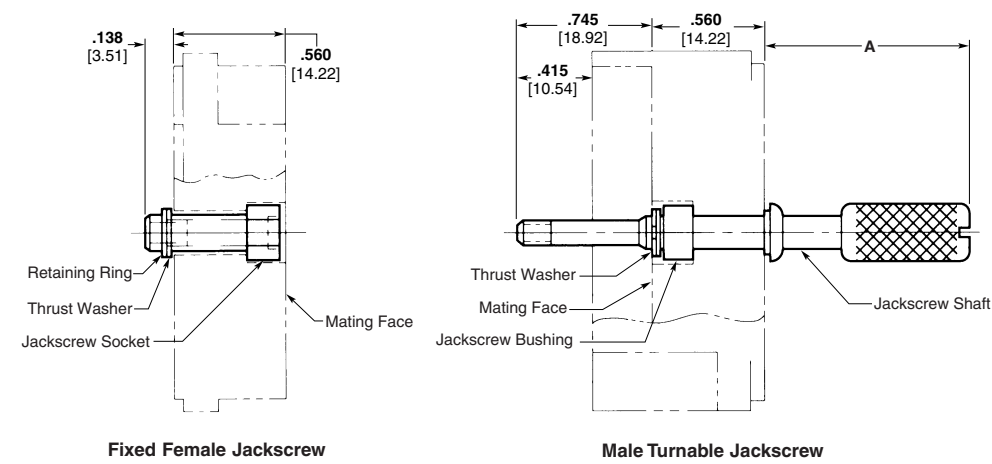
Contact Finish	Max. Termination Per Post	Dim. F	Part Numbers			
			Plug Assembly Socket Contacts		Receptacle Assembly Pin Contacts	
			Phenolic	Diallyl Phthalate	Phenolic	Diallyl Phthalate
A	1	.242 6.15	5-204691-5	—	—	2-204692-8
	3	.670 17.02	5-204691-7	6-204691-6	2-204692-1	3-204692-0
B	1	.242 6.15	6-204691-1	7-204691-0	—	3-204692-4
	3	.670 17.02	6-204691-3	7-204691-2	2-204692-7	3-204692-6

- Notes:**
1. Markings on receptacle assembly are on wiring side only.
  2. In addition to combinations listed, all sizes are available with or without female jackscrews. Plugs are available with pins, and receptacles are available with sockets. Consult TE Connectivity for details.
  3. Fixed female jackscrews are included with these assemblies.

**High Density Rectangular Connectors** (Continued)

**Accessories**

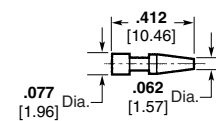
**Center Fasteners**



No. of Positions	Type	A	Part No.
	Fixed Female	—	204299-1
12, 24 36, 48	Short Male Turnable	1.01 25.65	204298-1
	Long Male Turnable	1.76 44.70	204298-2
54, 106	Fixed Female	—	203879-1
	Short Male Turnable	1.01 25.65	203880-1
	Long Male Turnable	1.76 44.70	203880-2

**Note:** Short male jackscrews cannot be used with shield and cable clamp assemblies.

**Keying**



**Keying Plug**  
Part Number 205120-1

Material	Pin			Socket	
	Dim. L	Dim. M	Part No.	Dim. L	Part No.
Zinc Plated Brass	1.100 27.94	.515 13.08	203881-1	1.045 26.54	203882-1
Stainless Steel	1.100 27.94	.515 13.08	203881-2	1.045 26.54	203882-2
Zinc Plated Brass	1.300 33.02	.725 18.42	205694-1	—	—

**8**

Rectangular Pin and Socket Connectors



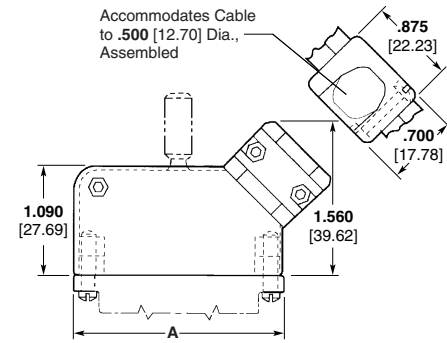
**High Density Rectangular Connectors** (Continued)

**Accessories** (Continued)

**45° Shield and Cable Clamps**

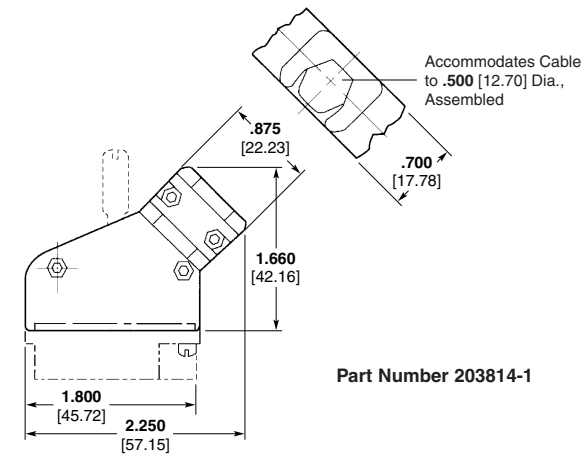
**Material** — Black Polysulfone

**12, 24, 36 & 48 Position**



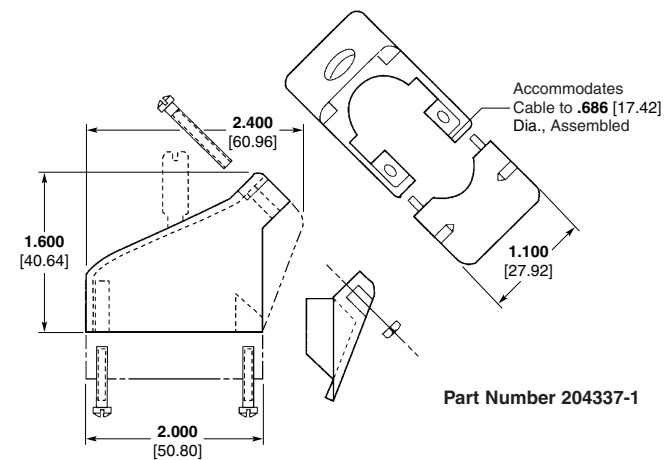
No. of Positions	Dim. A	Part No.
12	1.334 33.88	205083-1
24	1.734 44.04	205083-2
36	2.134 54.20	205083-3
48	2.534 64.36	205083-4

**54 Position**



Part Number 203814-1

**106 Position**



Part Number 204337-1

**High Density Rectangular Connectors** (Continued)

**Application Tooling**

Type XI crimp/snap-in contacts may be applied with hand tools, semi-automatic bench equipment or fully-automatic lead-making machines.

**CERTI-CRIMP II Straight Action Hand Tools (SAHT)**



Premium grade hand tools. Feature ratchet control to provide complete crimp cycle. Die sets close in a straight line. Include a contact locator and wire stop, plus an insulation crimp adjustment lever, when applicable. Approximate weight 1.3 lb [0.59 kg].

**AMP-O-LECTRIC Model "K" Terminating Machine, 1-471273-3**

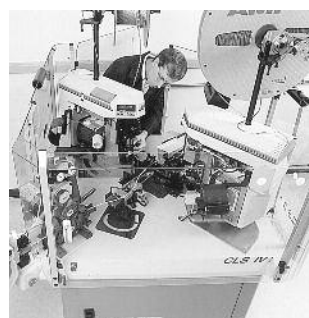


Semiautomatic bench machine for use with standard-style applicators. It is an electrically-powered, clutched, flywheel-energy-style machine, equipped with a mechanical strip feed mechanism. Products commonly applied with this machine include AMP splices, AMPLIVAR splices, and FASTON flag receptacles.

**Specifications**

**Width** — 21 [533]  
**Depth** — 20 [508]  
**Height** — 24 [610] without reel  
**Weight** — 230 lb [104 kg]  
**Electrical** — 120 VAC, 60 Hz, 6 A  
**Air** — 90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m³/s] when required with air-feed applicators  
**Wire Range** — 26-10 AWG [0.12-6 mm²] solid or stranded, depending on product applied  
 For more information, contact TE Connectivity.

**AMPOMATOR CLS IV+ Lead-Making Machines, 356500-1, -2**



Fully-automatic machines that measure, cut, strip and terminate single leads. Microprocessor-controlled, and programmed and operated using an easy-to-follow, menu-driven touchscreen. Features include direct-drive terminating units with precision crimp height adjustment, fully programmable setups, wire runout and splice detection, and motorized pre-feed with wire straightener. Crimp quality monitoring is also available.

**Specifications**

**Width** — 159 [4 040]  
**Depth** — 68 [1 730]  
**Height** — 86 [2 185] with 24 [610] dia. reel  
**Weight** — 2 000 lb [907 kg]  
**Electrical** — 220 VAC, 50 or 60 Hz, single phase, 25 A, with neutral and ground  
**Air** — 90 psi [6.21 bar], 15 scfm [0.0071 m³/s] sustained  
**Wire Range** — 26-10 AWG [0.12-6 mm²] stranded, 26-16 AWG [0.12-1.4 mm²] solid  
**Lead Lengths** — 3-90 [76.2-2 285], 90-1 000 [2 285-25 400] with long lead conveyors  
 For more information, request Catalog 124324.

**Crimp Quality Monitor (CQM), 1320420-1, -2**



This unique system provides 100% on-the-fly crimp inspection. It measures the crimp height of each termination, and evaluates the quality of each crimp. If a crimp is questionable, the monitor alerts the operator with both visual and audible alarms. It also provides ports for printing and networking. When used with AMP-O-LECTRIC Model "G" Termination Machines, the monitor is mounted to the machine. When used with AMPOMATOR CLS IV+ Lead-Making Machines, it is integrated into the machine's operating system.

**Specifications**

**Width** — 8.8 [220]  
**Depth** — 8.1 [205]  
**Height** — 4.6 [115]  
**Weight** — 5 lb [2.3 kg]  
**Electrical** — 100-240 VAC, 50/60 Hz, 3.2 A  
 For more information, request Catalog 82275.



Rectangular Pin and Socket Connectors

**High Density Rectangular Connectors** (Continued)

**Application Tooling**

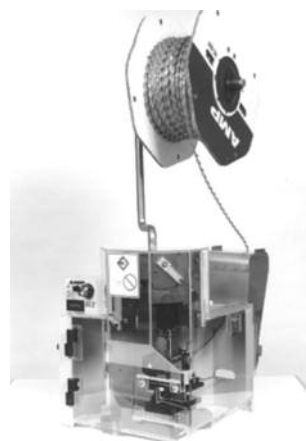
(Continued)

**AMP-O-LECTRIC Model "G" Terminating Machines, 354500-1, -9, -11**


Semiautomatic bench machines for crimping reeled terminals and contacts, featuring a quiet and reliable direct motor drive, microprocessor controls for ease of setup and operation, and guarding and lighting designed for operator convenience. All models are equipped with either manual or automatic precision adjustment of crimp height. Machine-mounted sensors are available for crimp quality monitoring using conventional miniature-style applicators.

**Specifications**

**Width** — 18.7-25.3 [475-643] depending on applicator type  
**Depth** — 21.5-28.1 [546-713] depending on applicator type  
**Height** — 20 [508]  
**Weight** — 240 lb [110 kg]  
 Electrical — 120 or 220 VAC, 50 or 60 Hz; 310 VA  
**Air** — 90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m<sup>3</sup>/s] when required with air-feed applicators  
**Wire Range** — 26-10 AWG [0.12-6 mm<sup>2</sup>] solid or stranded, depending on product applied  
 For more information, request Catalog 65828.

**Entry Level Terminator (ELT), 1338600-1, -2, -3, -4, -5, -6**


Semiautomatic Bench Terminator for side- and end-feed reeled terminals and contacts. The ELT uses a DC motor with gear box drive. The result is a small-footprint design that is fast and quiet. Cycle time is less than 0.400 seconds with an operation sound level of 76dBa. With a crimp force capacity of 3,000 pounds, the ELT is available for all but the highest crimp force applications. A wide range of optional equipment is also available to meet your specific application requirements.

**Specifications**

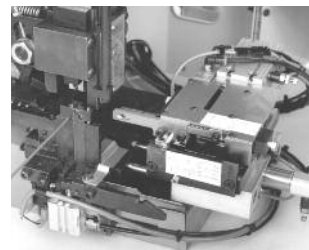
**Width** — 16.8 [427]  
**Depth** — 20.6 [523]  
**Height** — 20 [510] without reel support  
**Weight** — approx. 150 lb [68 kg]  
**Electrical** — 100-240 VAC, 50/60 Hz, 6A (Note: Avg <1 A at 120 VAC when used as a bench-top unit at 2,000 cycles per hour operating rate)  
**Air** — 90-100 psi [6.21-6.90 bar], 6 scfm [0.00282 m<sup>3</sup>/s] when required for use with air-feed applicators (Note: Optional Air Feed Valve Assembly Required)  
**Wire Range** — Up to 14 AWG [2.5 mm<sup>2</sup>]  
 For more information, request catalog 1308382.

**AMP-O-MATIC Stripper/Crimper Machine, 1320895-1**


Semiautomatic bench crimping machines that also strip the wire, and are therefore used for terminating jacketed cable. Feature manual precision adjustment of crimp height, keyed strip blades for faster, more accurate setups, and an efficient scrap removal system. All adjustments can be made from the front of the machines without special tools. Available with crimp quality monitoring.

**Specifications**

**Width** — 14 [355]  
**Depth** — 18 [457]  
**Height** — 33 [838] without reel  
**Weight** — 150 lb [68 kg]  
**Electrical** — 120 VAC, 50 or 60 Hz, .5 A  
**Air** — 80-100 psi [5.52-6.90 bar], 3.5 scfm [0.00165 m<sup>3</sup>/s]  
**Wire Range** — 32-14 AWG [0.03-2 mm<sup>2</sup>]  
 For more information, request Catalog 65004.

**Stripping Module**


The combination of the Stripping Module with the Entry Level Terminator (ELT) or the AMP-O-LECTRIC Model G Terminator provides an economical and proficient method of stripping wire and crimping terminals on the same machine. Wires are stripped moments before crimping, meaning there is virtually no chance of damaging wire conductors during handling or storage. Once the wire is fed into the start sensor the Stripping Module does the rest, improving placement accuracy.

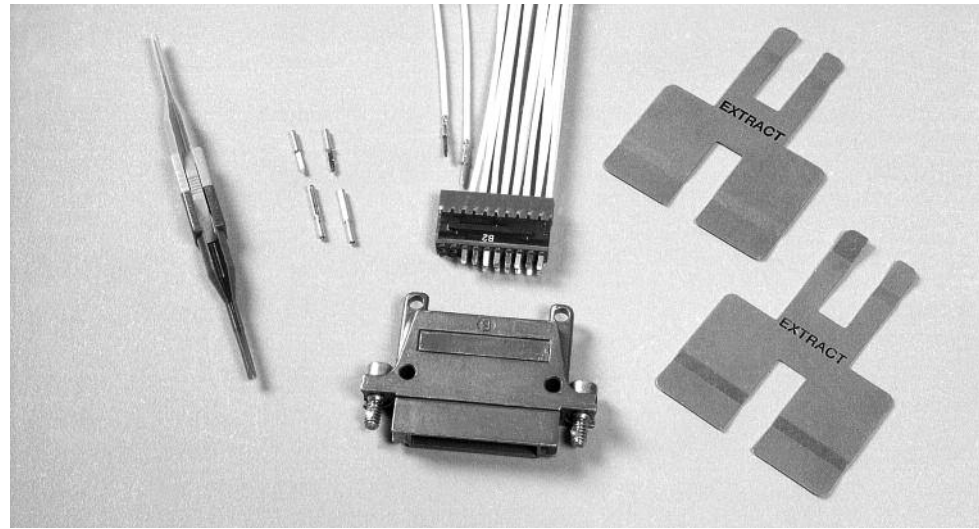
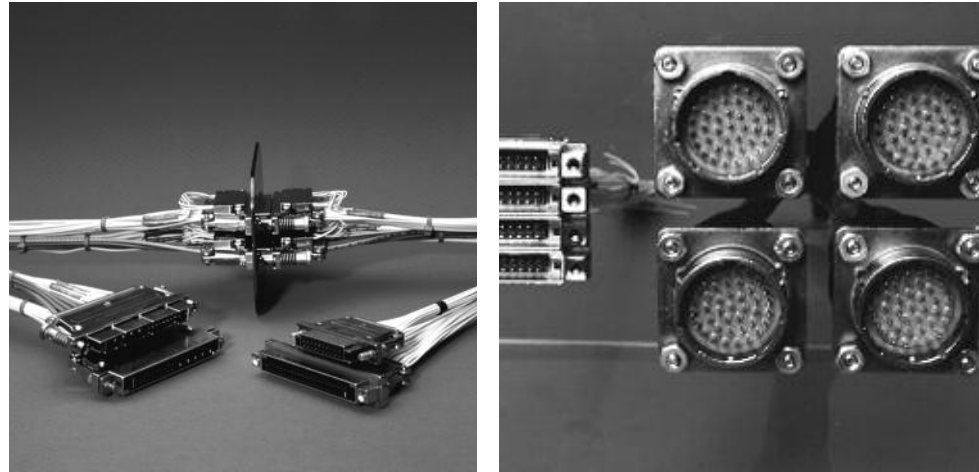
**Specifications**

**Wire Range Base Module** — 0.03 mm<sup>2</sup> - 2.0 mm<sup>2</sup> (32-14 AWG) (30-32 AWG may require special kit.)  
**Max. Insulation** — .200 [5.08]  
**Cable Breakout** — > 1.100 [29.00]  
**Strip Length** — .100 - .400 [2.50 - 10.16]  
**Noise** — Less than 82 dBA (Typical at operator position with standard mechanical feed applicator)  
**Weight** — 4.53 Kilograms (10 lb)  
**Height** — 5.000 [127.00]  
**Electrical** — 100-240 VAC, 50/60 Hz, single phase current, obtains power from the terminator  
**Air** — 620-760 kPa (90-100 psi), 2.83 liters/sec (6 scfm)  
**Wire Sensor** — Gold plated contacts with laser etched target  
 For more information, request Catalog 1309085.

**Introduction**

**Product Facts**

- Low-profile rectangular design for high packaging density
- Environmental sealing for aerospace applications
- Modular components for design versatility and logistics savings
- Lightweight materials for weight savings
- Quick-disconnect or jackscrew mating hardware



**System**

TE Connectivity MTC product line is a complete modular connector system consisting of lightweight, environmentally sealed miniature rectangular connectors (shell housings with removable inserts) and individually removable rear-release contacts.

**Components**

MTC connectors are now available with quick-disconnect mating hardware, EME shielding accessories, and modular inserts that can accommodate a mix of signal and power crimp contacts and coaxial contacts. The need for special termination tooling

has been minimized, while the ease of manufacturing and maintenance has been improved.

**Configurations**

MTC rectangular connectors using jack screws or quick-disconnect hardware can be stacked or panel-mounted next to each other without any provision for grip space, a feature that can save significant panel area.

MTC connectors are available in 1-inch and 2-inch configurations. Modular removable inserts with size 22 and/or size 16 contact cavities can be combined into the 1-inch and 2-inch MTC housings.

**Inserts**

MTC inserts are available in 20-cavity and 5-cavity versions. The 20-cavity insert accepts size 20-22 (24 AWG to 20 AWG wire) crimp contacts. The 5-cavity insert accepts size 16-14 crimp contacts. Insertion/extraction of the contacts is rear release.

**Note:**

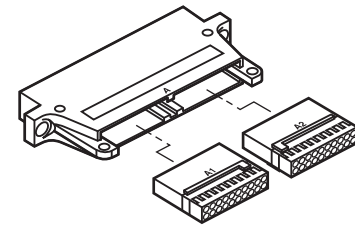
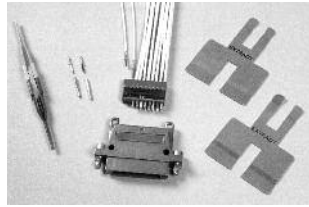
Other configurations are available in the MTC family (size 12 contacts; 50 mil spacing for double density; accessories). Please contact TE.

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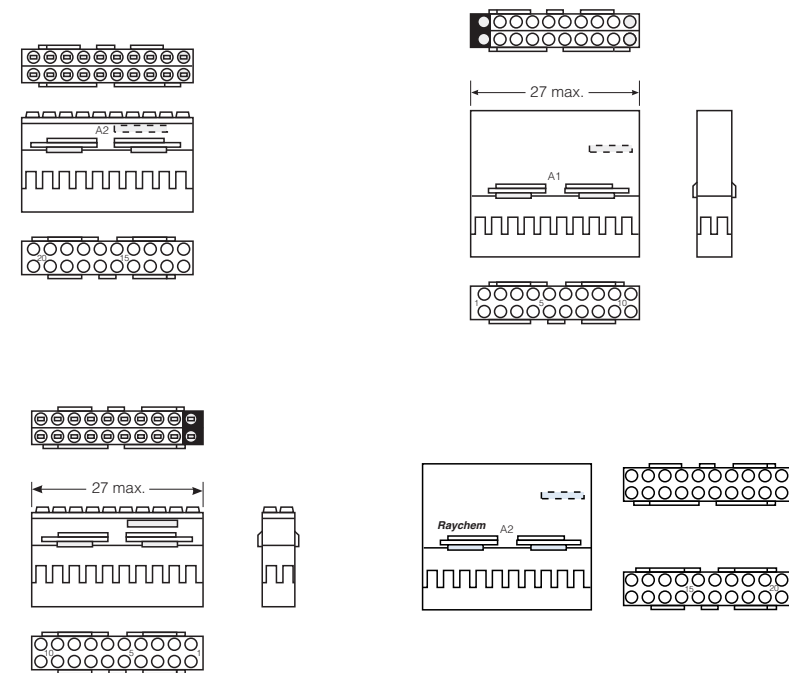
Rectangular Pin and Socket Connectors



**20-Cavity Inserts**



2-inch shell with inserts



MTCP-122-20 inserts are used with MTC100 1-inch and 2-inch shells. The 1-inch shell takes:

- One MTCP-122-20P (pin contact) **or**
- One MTCP-122-20S (socket contact)

The 2-inch shell takes:

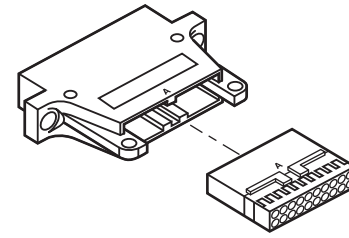
- One MTCP-122-20P1 and one MTCP-122-20P2 (pin contact) **or**
- One MTCP-122-20S1 and one MTCP-122-20S2 (socket contact)

**2 x 20 Cavity Inserts  
(Size 20-22)—2-Inch Shell**

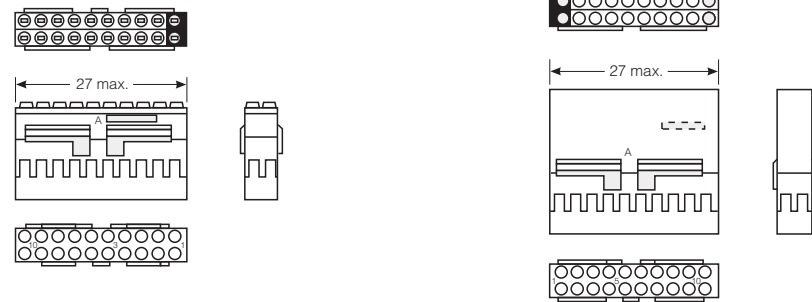
Pin Insert	Socket Insert
MTCP-122-20P1	MTCP-122-20S1
MTCP-122-20P2	MTCP-122-20S2

**20-Cavity Inserts** (Continued)

**1 x 20 Cavity Inserts (Size 20-22)—1-Inch Shell**



1-inch shell with insert



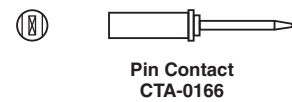
Pin Insert	Socket Insert
MTCP-122-20P	MTCP-122-20S

**Contacts for 20-Cavity Inserts**

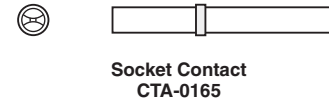
The contacts for 20-cavity inserts must be ordered separately. They are:

- CTA-0166—pin contact
- CTA-0165—socket contact

Contacts accept 24 AWG to 20 AWG wires.



Pin Contact  
CTA-0166



Socket Contact  
CTA-0165

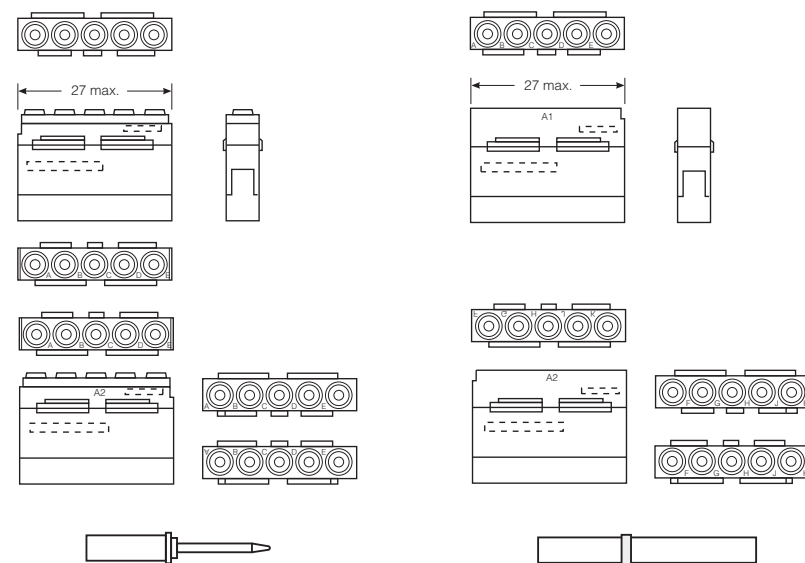
Tools		Tools	
Positioner for pin contact	CE-1605900	Positioner for socket contact	CE-1606000
Installation process	ES-61413	Installation process	ES-61413
Contact removal tool (plastic)	CTA-1160	Contact removal tool (plastic)	CTA-1160
Extraction tool for MTCP inserts	CTA-0161	Extraction tool for MTCP inserts	CTA-0161

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Rectangular Pin and Socket Connectors

### 5-Cavity Inserts

#### 5-Cavity Inserts (Size 16)



MTCP-116-05 inserts are used with MTC100 1-inch and 2-inch shells.

The 1-inch shell takes:

- One MTCP-116-05-P1 (pin contact) **or**
- One MTCP-116-05-S1 (socket contact)

The 2-inch shell takes:

- One MTCP-116-05P1 and one MTC-116-05P2 (pin contact) **or**
- One MTCP-116-05-S1 and one MTCP-116-05-S2 (socket contact)

#### 5-Cavity Inserts (Size 16)

Pin Insert	Socket Insert
MTCP-116-05P1	MTCP-116-05S1
MTCP-116-05P2	MTCP-116-05S2

#### Contacts for 5-Cavity Inserts

The contacts for 5-cavity inserts must be ordered separately. They include:

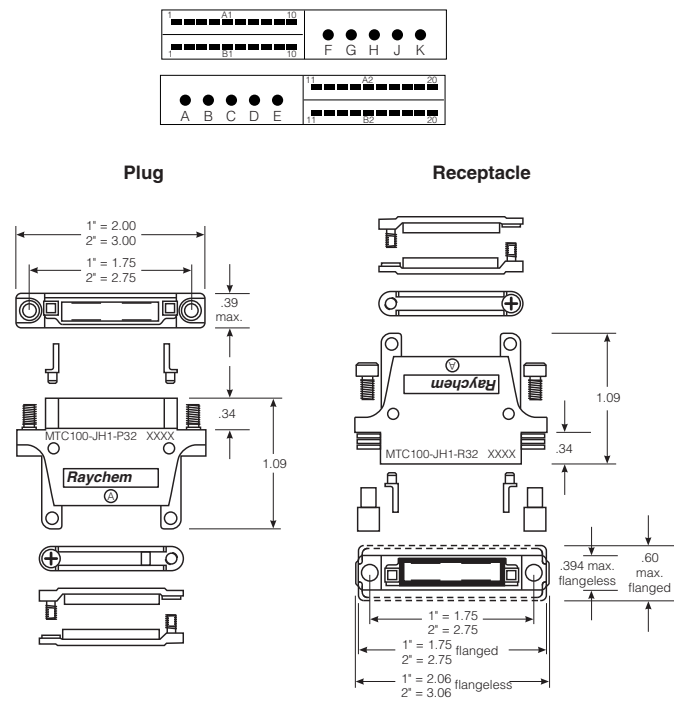
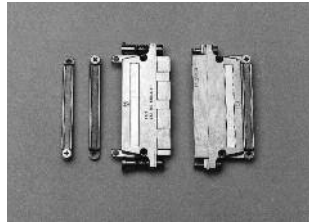
- CTA-0079 - pin contact (MS 27493-16) (MIL-C-39029/58 intermateable)
- CTA-0078 - socket contact (MS 27491-16) (MIL-C-39029/57 intermateable)
- D-602-0140 - coaxial pin contact (MIL-C-39029/76 intermateable)
- D-602-0171 - coaxial socket contact (MIL-C-39029/78 intermateable)

Other contacts designed for M38999 Series II connectors can be used.

Pin Contact	Socket Contact
D-602-0140 (coaxial)	D-602-0171 (coaxial)
CTA-0079 (power)	CTA-0078 (power)



**Hybrid Inserts**



**Hybrids**

Hybrid insert combinations of size 22 and size 16 contact cavities are also possible.

**2-Inch Shell—Hybrid Assembly**

Power and signal

**Shells**

MTC connector housing shells are available with nickel plating (48-hr salt spray performance) or cadmium over nickel plating (500-hr salt spray performance).

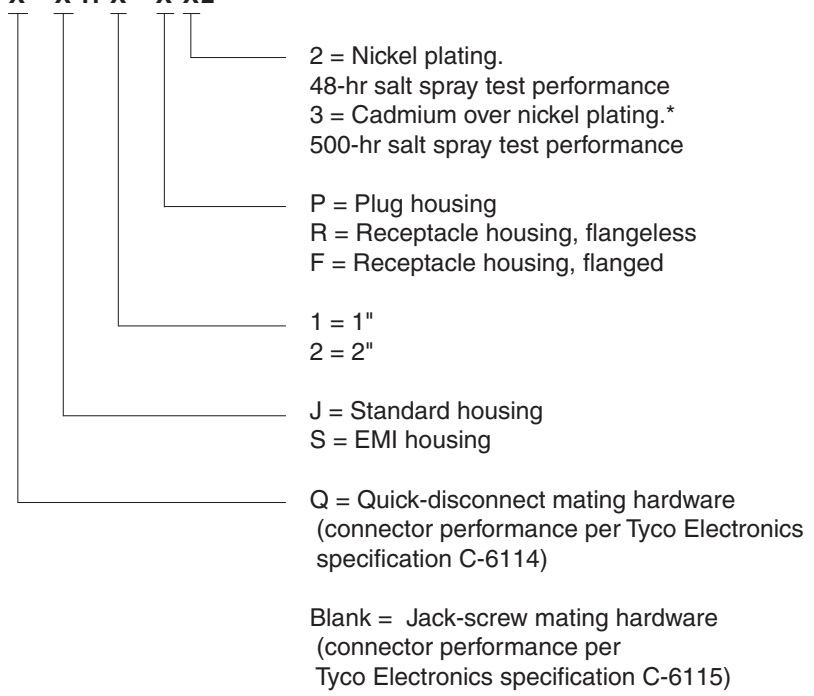
MTC connector housings are offered with quick-disconnect or jack-screw mating hardware. Each connector shell is polarized and has 64 user-defined keying combinations. Lightweight, low-profile EME backshells are also available for increased shielding effectiveness of the connector.



Rectangular Pin and Socket Connectors

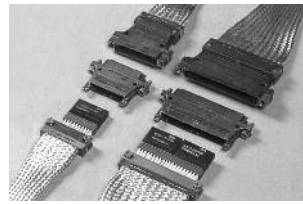
**MTC Shells Ordering Information**

**M T C 1 0 0 X - X H X - X X2**



\*Some combinations of shells, mating hardware and EME shielding accessories are not available.  
Contact TE Connectivity for product information.

**Accessories**

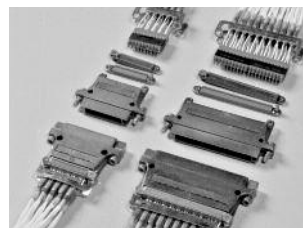


**Low-Profile EME Backshells**

Lightweight rectangular EME backshells connect the overall bundle shield to the MTC connector housing. Individual cable shields can also be terminated to the backshell braid by using SolderSleeve devices.

The backshell is mounted on the MTC housing via the cable clamp screws.

MTC backshell features include a low profile, light weight, and Level II EME performance.



**MTC Shield-Grounding BusBars**

MTC shield-grounding busbars allow for simple, cost-effective termination of cable shielding to MTC aluminum housings.

Two-inch shield-grounding busbars terminate up to 20 shielded twisted pairs on a 2-inch MTC connector. The individual shields are terminated to “fingers” on the busbar with SolderSleeve devices.

The busbar is mounted on the MTC housing via cable clamp screws.

MTC busbar features include a simple termination, cost effectiveness, light weight, and Level I EME performance.



**EME Shielding Accessories for MTC Connectors**

**Grounding Block (Externally attached)**

Allows for cable shield termination grounding on the MTC shell housing via crimp-removable contacts. This grounding scheme allows individual cables to be removed from the connector without cutting a ganged ground connection. Sufficient ground contacts are available to handle shielded twisted-pair cables.

**EME Backshell Adapters**

- CHA-0275 2-inch adapter (plug or receptacle)
- CHA-0276 1-inch adapter (plug or receptacle)

**Shield-Grounding Busbars**

- CTA-0022 1-inch busbar (with 5 SolderSleeve terminators)
- CTA-0023 2-inch busbar (with 10 SolderSleeve terminators)

**Grounding Block**

- CHA-0305 1-inch grounding block receptacle shell
- CHA-0306 2-inch grounding block receptacle shell
- CHA-0307 1-inch grounding block plug shell
- CHA-0308 2-inch grounding block plug shell

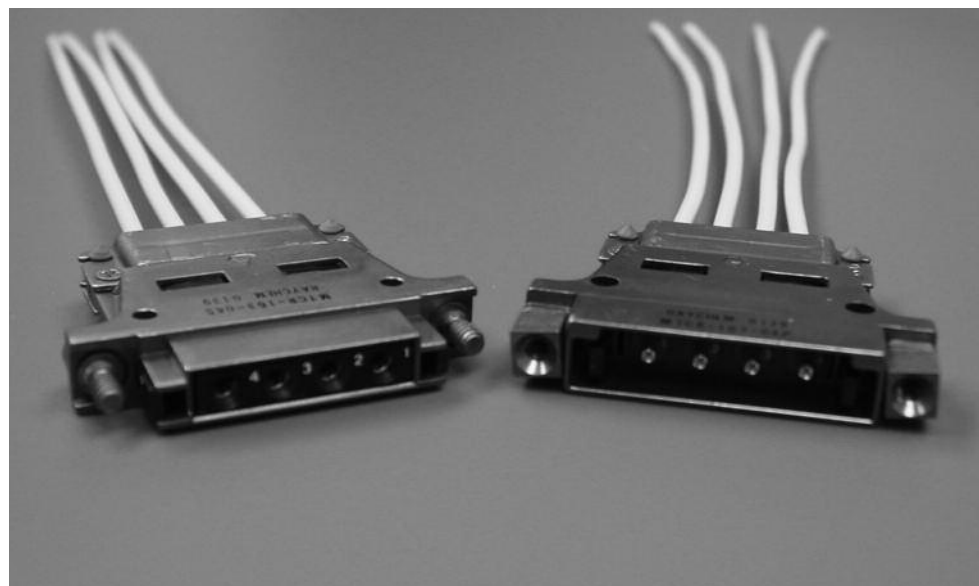
**8**

Rectangular Pin and Socket Connectors

### MTCR Size 12 Connectors

#### Product Facts

- Low-profile rectangular design for high packaging density
- Environmental sealing for aerospace applications
- 64 user-defined keying positions for logistics savings
- 4 contact cavities per 1" shell



TE Connectivity MTCR connectors are rectangular, lightweight, and environmentally-sealed, with individually removable rear-release size 12 contacts.

The MTCR connector's size 12 cavities accept four standard MIL-C-83723 Series III contacts for twisted pairs, coax, triax, and 12 to 14 AWG power cables.

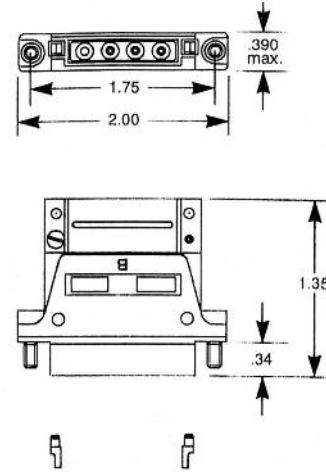
MTCR connectors are available with flanged receptacles and a variety of accessories, including EME backshells.

MTCR connectors are qualified to TE Specification C-6115.

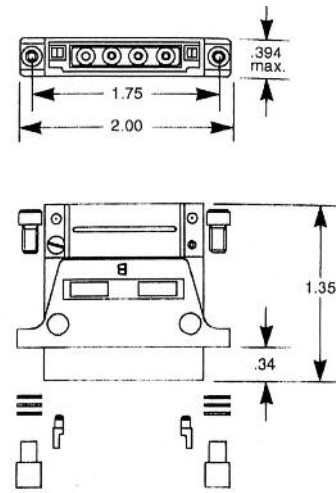
**MTCR Size 12 Connectors** (Continued)

**Connectors**

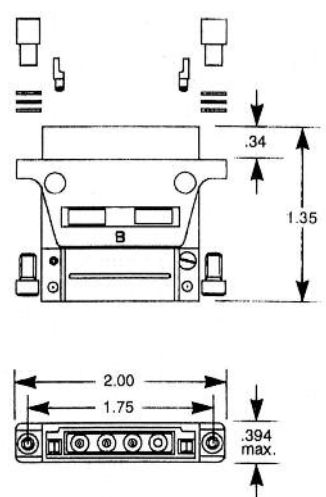
**Pin-Cavity Plug Shell**  
MTCR-163-04P



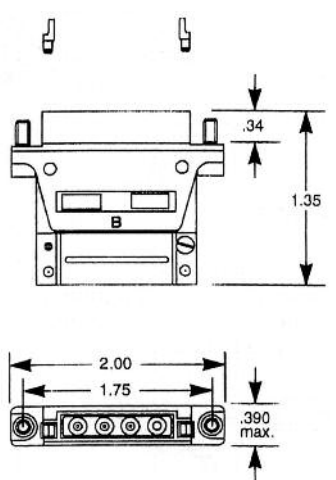
**Pin-Cavity Receptacle Shell**  
MTCR-103-04P



**Socket-Cavity Plug Shell**  
MTCR-163-04S



**Socket-Cavity Receptacle Shell**  
MTCR-103-04S



**Contacts**

Cable Type	12 AWG Power Cable	0.100" Max. Coaxial Cable	0.126" Max Coaxial Cable	Twisted Pair Cable
Pin Contact	CTA-0114 (MIL-C-39029/4)	D-602-0094 (MIL-C-39029/74)	D-602-0106 (MIL-C-39029/74)	D-602-0104 (MIL-C-39029/74)
Socket Contact	CTA-0115 (MIL-C-39029/5)	D-602-0095 (MIL-C-39029/73)	D-602-0107 (MIL-C-39029/73)	D-602-0105 (MIL-C-39029/73)

Note:  
Various options are available. Please see customer drawings or contact TE Connectivity.

**Tooling**

Sealing Plugs (for unused cavities): MS27488-12  
Contact Insertion/Removal Tool: M81969/14-04

8 Rectangular Pin and Socket Connectors

**EME Shielding Accessories for MTC Connectors**

**Low Profile EME Backshells**

**Product Facts**

- Low profile
- Lightweight
- Level II EME performance for hardened applications\*

**MTC Busbar**

**Product Facts**

- Simple termination
- Lightweight
- Cost effective
- Level I EME performance\*



TE Connectivity Raychem brand of MTC Shield-Grounding Busbars allow for simple, cost-effective termination of cable shielding to MTC aluminum housings.

Two-inch shield-grounding busbars terminate up to 20 shielded twisted pairs on a 2" MTC connector. The individual shields are terminated to "fingers" on the busbar with Raychem brand Solder Sleeve devices.

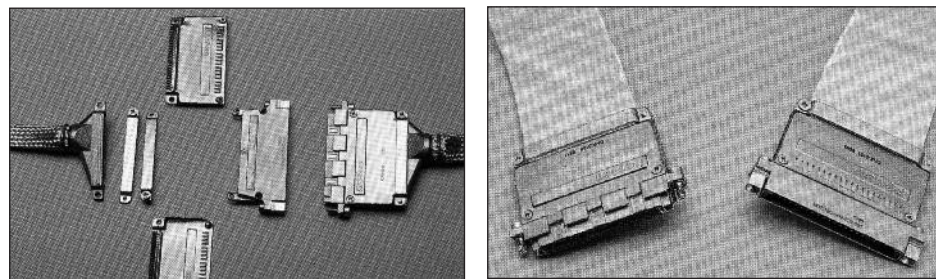
The busbar is mounted on the MTC housing via the cable clamp screws.

TE also offers lightweight, rectangular EME backshells that connect the overall bundle shield to the MTC connector housing.

Individual cable shields can also be terminated to the backshell braid by using Raychem brand Solder Sleeve devices.

The backshell is mounted on the MTC housing via the cable clamp screws.

**Screening**



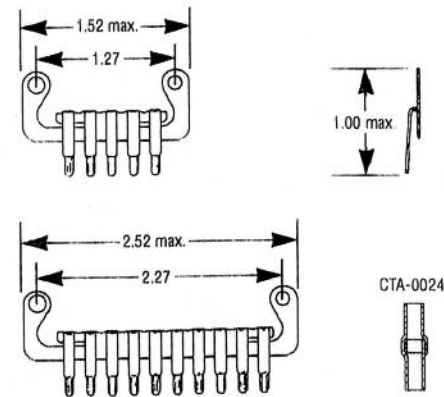
\*Per TE Specifications C-6111 for connectors with fixed contacts and C-6115 for connectors with removable contacts.



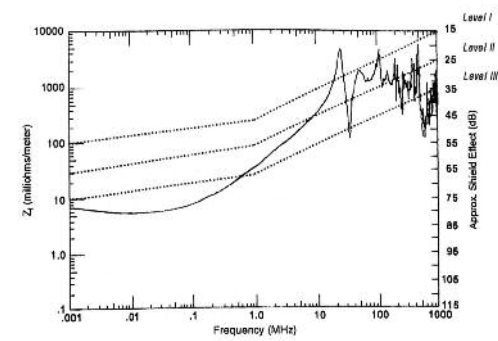
**EME Shielding Accessories for MTC Connectors** (Continued)

**Shielding-Grounding Busbars**

- CTA-0022 = 1-inch busbar (with 5 SolderSleeve terminators)
- CTA-0023 = 2-inch busbar (with 10 SolderSleeve terminators)
- CTA-0024 = SolderSleeve terminator

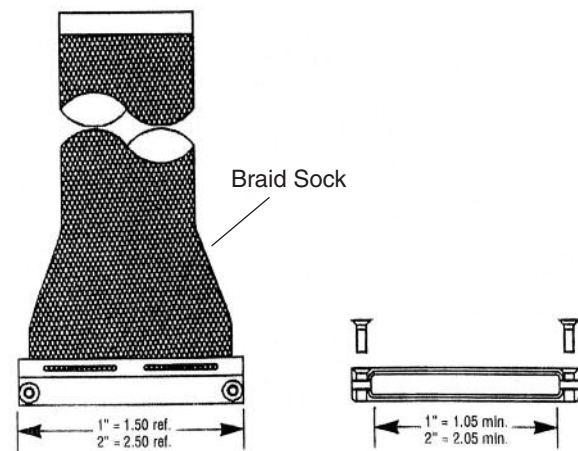


**Typical Surface Transfer Impedance ( $Z_t$ )**  
2-inch CTA-0023 (with shielded twisted pairs)

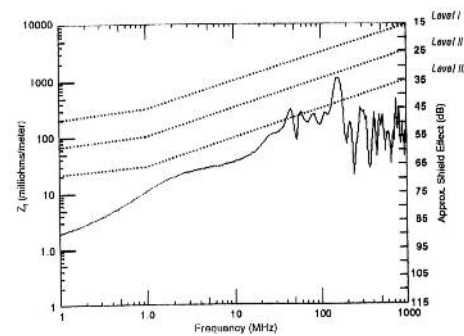


**EME Backshell Adapters**

- CHA-0275 = 2-inch adapter (plug or receptacle)
- CHA-0276 = 1-inch adapter (plug or receptacle)



**Typical Surface Transfer Impedance ( $Z_t$ )**  
1-inch CTA-0276 (with overall shielded wire bundle)



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Rectangular Pin and Socket Connectors



**MTC Boxmount Connectors**

**Size 22 Connectors**

**Product Facts**

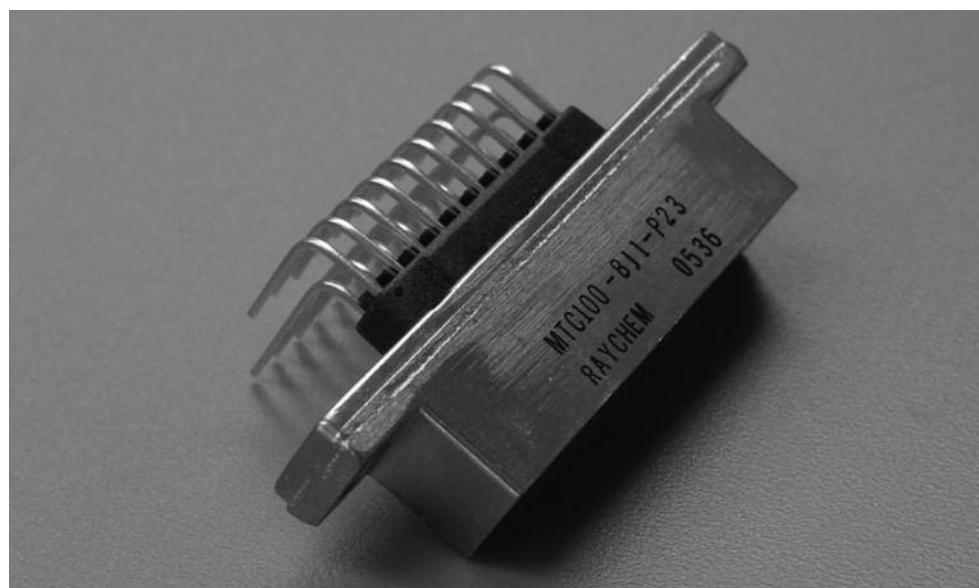
- Fixed size 22 contacts on 100-mil centers
- Compact, lightweight design
- Variety of configurations
- Termination flexibility:

Direct mount onto circuit boards  
Solderless wire wrap  
Variety of SolderSleeve terminations

**Size 16 Connectors**

**Product Facts**

- Removable size 16 MIL-C-38999 Series II contacts on 200-mil centers
- Compact, lightweight design



TE Connectivity offers an extensive line of MTC boxmounted connectors to complement the MTC cable connectors.

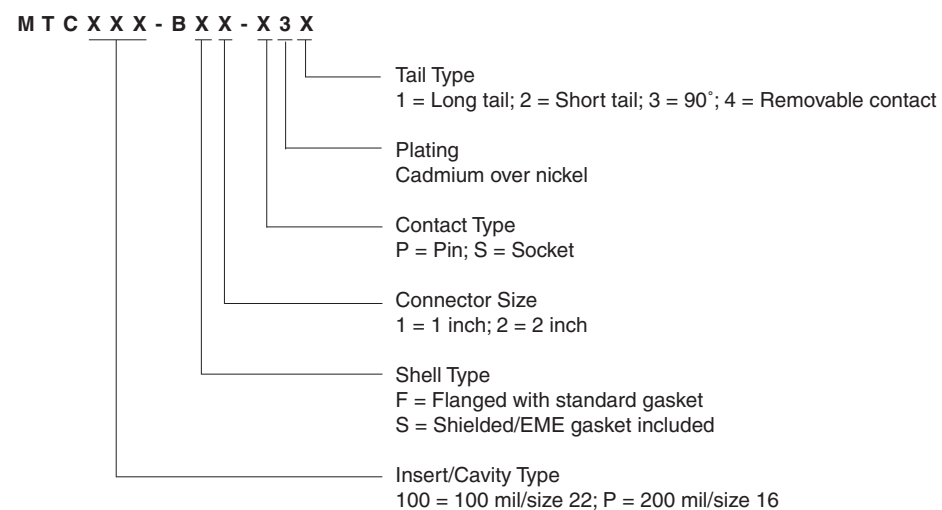
MTC boxmount connectors are lightweight, high-density, one-piece receptacles with fixed pin or socket inserts.

Boxmounted MTC connectors allow for a high density of interconnections while utilizing a minimum of interior box space.

MTC boxmounts are available with either size 22 or size 16 contacts.



**Boxmount Connector Part Numbers**



**MTC Selection Guide**

Total Number	Contacts		Arrangement	Possible Round Wire		Possible Flat Cable		Family Shell	Shell Size
	Number	Size		AWG Min.	AWG Max.	AWG Min.	AWG Max.		
4	4	12		16	12			MTCR	1
5	5	16		20	16			MTC100	1
10	2x5	16		20	16			MTC100	2
10	10 Dummy wafer	22		26	20	24	22	MTC100	1
20	2x10	22		26	20	24	22	MTC100	1
20	20 Dummy wafer	26		28	24		28	MTC50	1
20	2x10 Dummy wafer	22		26	20	24*	22*	MTC100	2
20	20 Dummy wafer	22		26	20	24	22	MTC100	2
25	5 2x10	16 22		20 26	16 20	24	22	MTC100	2
30	10 20	22 26		26 28	20 24	24	22 28	MTC50	1
40	2x20	26		28	24		28	MTC50	1
40	20 2x10	22		26	20	24*	22*	MTC100	2
40	4x10	22		26	20	24*	22*	MTC100	2
40	40 Dummy wafer	26		28	24		28	MTC50	2
40	2x20	22		26	20	24	22	MTC100	2
60	20 40	22 26		26 28	20 24	24	22 28	MTC50	2
60	2x10 40	22 26		26 28	20 24	24*	22* 28	MTC50	2
80	2x40	26		28	24		28	MTC50	2

\*Two 4-way wafers FCC cannot be mounted together in a same size 2 shell.

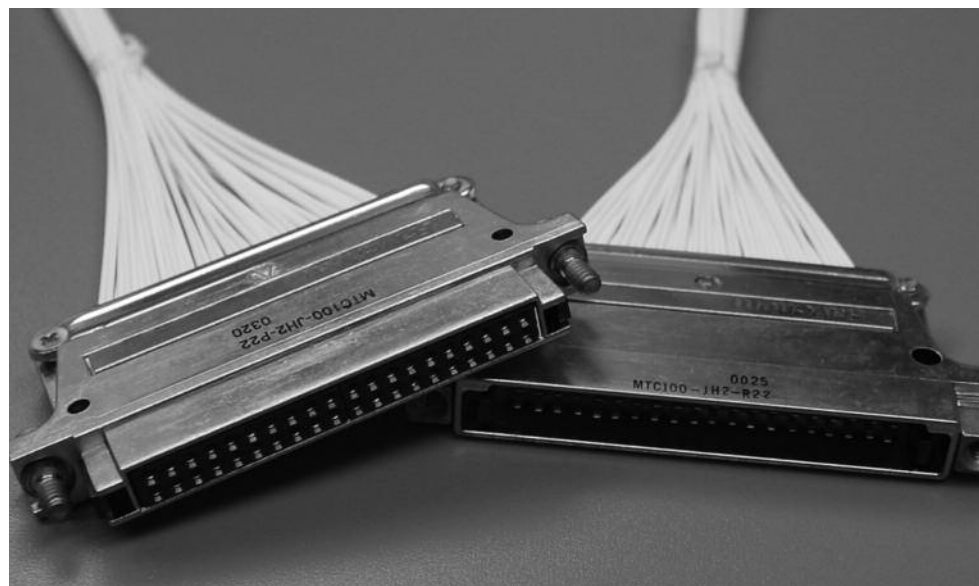
**8**

Rectangular Pin and Socket Connectors

### MTC100 Connectors

#### Product Facts

- 10 or 20 contacts size 22  
2.54 mm (0.100 in.) spacing
- 20 or 40 contacts size 22  
2.54 mm (0.100 in.) spacing
- Round wire 20-26 AWG or  
flat cable 22-24 AWG
- -65°C to +125°C  
-65°C to +150°C
- TE Connectivity  
Specification C-6111
- Three shell finishes: Black  
anodized (non-conductive),  
Nickel plated (conductive)  
and Cadmium over nickel  
(500 h salt spray)



The basic connector consists of the following modular components: two shells (plug and receptacle), mounting hardware and keying pins. In each shell are included two removable wafers with either 10 or 20 fixed contacts, 2.54mm (0.100 in.) spacing.

These wafers, pin or socket, are available in two versions to receive either round wire or flat conductor cable or flexible printed circuits. It is recommended to use TE flat cable with rectangular section conductors, perfectly adapted to the contacts shape of the connector.

The wafers use a tuning fork type contact design, which corresponds to the requirements of MIL-C-28754. Both pin and socket contacts are fixed in the wafer. The pin contact is molded into the wafer while the socket contact has a degree of free movement.

Environmental sealing is achieved by:

- an integral interfacial seal which is attached to the face of the pin wafer. This seal is compressed when the connector is mated.

- a thermoplastic material which seals the wafer body to the wire during soldering

The MTC100 is available in two sizes:

**Size 1:**  
20 contacts, 2.54mm (0.100 in.) spacing 2 rows of contacts

**Size 2:**  
40 contacts, 2.54mm (0.100 in.) spacing 2 rows of contacts



The connector contact is terminated to the wire by controlled soldering using a heat-shrinkable SolderSleeve. This well-known technology achieves a high degree of electrical performance and allows semi-automated termination.

The EME protection continuity can be achieved

by additional components. Polarization of shells and wafers prevents mis-mating.

**MTC100 Connectors** (Continued)

**Technical Specification**

Materials	
Shell	Aluminum alloy per QQ-A-591
Shell Finish	Nickel plated (MIL-C-26074) or Black anodized (MIL-C-8625) or Cadmium plated (QQ-P-416)
Hardware	Passivated stainless steel
Wafer	Polyarylene thermoplastic
Interfacial Seal	Silicone elastomer
Termination Insulation	Transparent blue heat-shrinkable radiation cross-linked PVF2
Contact	Engaging end: copper alloy gold plated over nickel underplate per MIL-G-45204; type 1, Grade C, class 1 Termination end: Sn 63 pre-tinning (125°C) or SN96 (150°C) per QQ-S-571
Technical Data and Performance	
Contact Spacing	2.54 mm
Insulation Resistance	5000 MΩmin. / 23°C
DWV	1500 VAC-RMS 50-60 Hz/Sea level 1500 V eff (round wire) 1000 V eff (flat conductor flat cable)
Current Rating	1.5A per request
Temperature Range	-65°C to 125°C or -65°C to 150°C
Contact Resistance (low current)	MIL-STD-1344 method 3002 before aging 18mΩ/ after aging 21 mΩ wire size 0.4mm <sup>2</sup>
Shell to shell conductivity (except black anodized non-conductive)	2.5mV (1 A dc)
Vibration	MIL-STD-1344, method 2005 condition VI-Letter J
Mechanical Shock	MIL-STD-1344, method 2004 condition D
Temperature Aging	1000 h 125°C 1000 MΩmin. at T max. 5000 MΩmin. 23°C
Humidity	90-98% RH 10 cycles 100 MΩmin.
Altitude Immersion	30 minutes at 21000 M 5000MΩmin. (MIL-STD-1344, method 1004)
Salt Spray	5% salt / 48h or 500 h (cadmium plated) (MIL-STD-1344 method 1001 Condition B)
Fluid Resistance	MIL-STD-1344 method 1016
Contact engagement and separation forces	Engagement: 3.3 N Max. per contact Separation: 0.2 N min. per contact
Durability	500 cycles (including mounting hardware)
Contact Retention	45 N min. (MIL-STD-1344 method 2007)
Wafer Retention	Size 1: 178N Size 2: 356N (MIL-STD-1344, method 2010)
Wire Sizes	FCC MIL-C-49059: 0.25mm <sup>2</sup> -0.4mm <sup>2</sup> (22-24 AWG) Round wire 0.15mm <sup>2</sup> -0.34mm <sup>2</sup> (20-26 AWG) For AWG 18 or 20, contact TE Connectivity.



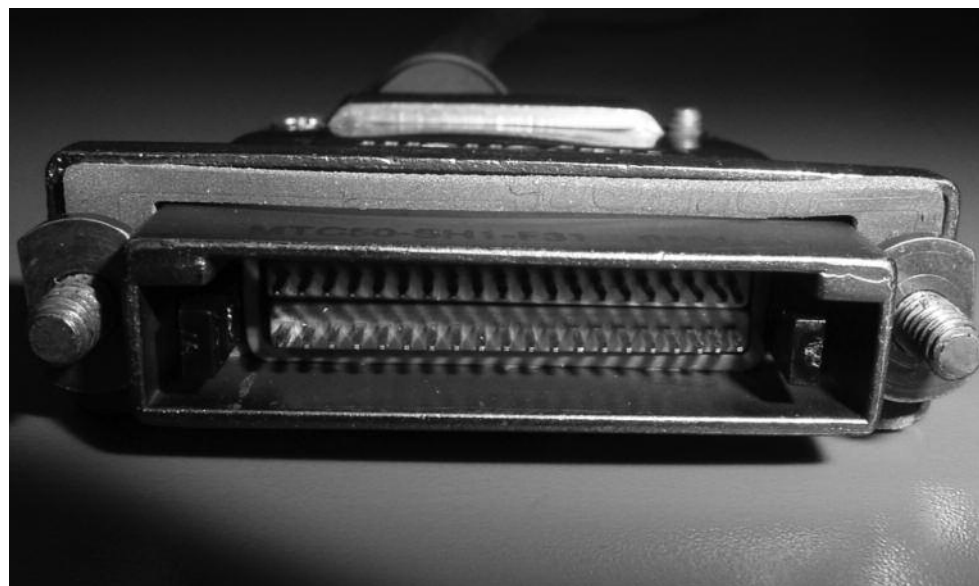
Rectangular Pin and Socket Connectors



### MTC50 Connectors

#### Product Facts

- 20 or 40 contacts size 26  
1.27 mm (0.050 in.) spacing
- 40 or 80 contacts size 26  
1.27 mm (0.050 in.) spacing
- AWG 24-28 (round wire) or  
28 (flat cable)
- -65°C to +125°C
- TE Connectivity  
Specification C-6111
- Three shell finishes: Black  
anodized (non-conductive),  
Nickel plated (conductive)  
and Cadmium over nickel  
(500 h salt spray)



The basic connector consists of the following modular components: two shells (plug and receptacle), mounting hardware and keying pins. In each shell are included two removable wafers with either 20 or 40 fixed contacts, 1.27mm spacing.

These wafers, pin or socket, are available in two versions to receive either round wire or flat conductor cable or flexible printed circuits. It is recommended to use TE flat cable with rectangular section conductors, perfectly adapted to the contacts shape of the connector.

The wafers use a tuning fork type contact design. Both pin and socket contacts are fixed in the wafer. The pin contact is molded into the wafer while the socket contact has a degree of free movement.

Environmental sealing is achieved by:

- an integral interfacial seal which is attached to the face of the pin wafer. This seal is compressed when the connector is mated.
- a thermoplastic material which seals the wafer body to the wire during soldering

The MTC50 is available in two sizes:

**Size 1:**  
40 contacts, 1.27mm (0.050 in.) spacing 2 rows of contacts

**Size 2:**  
80 contacts, 1.27 mm (0.050 in.) spacing 2 rows of contacts

The connector contact is terminated to the wire by controlled soldering using a heat-shrinkable boot. This well-known technology achieves a high degree of electrical performance and allows semi-automated termination.

The EME protection continuity can be achieved by additional components. Polarization of shells and wafers prevents mis-mating.



**MTC50 Connectors** (Continued)

**Technical Specification**

Materials	
Shell	Aluminum alloy per QQ-A-591
Shell Finish	Nickel plated (MIL-C-26074) or Black anodized (MIL-C-8625) or Cadmium plated (QQ-P-416)
Hardware	Passivated stainless steel
Wafer	Polyarylene thermoplastic
Interfacial Seal	Silicone elastomer
Termination Insulation	Transparent blue heat-shrinkable radiation cross-linked PVF2
Contact	Engaging end: copper alloy gold plated over nickel underplate per MIL-G-45204; type 1, Grade C, class 1 Termination end: Sn 63 pre-tinning (125°C) or SN96 (150°C) per QQ-S-571
Technical Data and Performance	
Contact Spacing	1.27 mm
Insulation Resistance	5000 MΩmin. / 23°C
DWV	750 VAC-RMS 50-60 Hz/Sea level
Current Rating	1.5A per request
Temperature Range	-65°C to 125°C
Contact Resistance (low current)	Wire size/before aging/after aging 0.1mm <sup>2</sup> 43mΩ/51mΩ
Shell to shell conductivity (except black anodized non-conductive)	2.5mV (1 A dc)
Vibration	MIL-STD-1344, method 2005 condition VI-Letter J
Mechanical Shock	MIL-STD-1344, method 2004 condition D
Temperature Aging	1000 h 125°C 1000 MΩmin. 125°C 5000 MΩmin. 23°C
Humidity	MIL-STD-1344 Method 1002 Type II, 100 MΩmin.
Altitude Immersion	30 minutes at 21000 M 5000MΩmin. (MIL-STD-1344, method 1004)
Salt Spray	5% salt / 48h or 500 h (cadmium plated) (MIL-STD-1344 method 1001 Condition B)
Fluid Resistance	MIL-STD-1344 method 1016
Contact engagement and separation forces	Engagement: 2.20 N Max. per contact Separation: 0.14 N min. per contact
Durability	500 cycles (including mounting hardware)
Contact Retention	22 N min. (MIL-STD-1344 method 2007)
Wafer Retention	Size 1: 178N Size 2: 356N (MIL-STD-1344, method 2010)
Wire Sizes	FCC MIL-C-49059: 0.1mm <sup>2</sup> (28 AWG) Round wire 0.1mm <sup>2</sup> -0.15mm <sup>2</sup> (24-28 AWG)

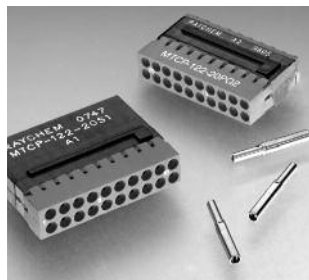


Rectangular Pin and Socket Connectors

**MTCP 20 Cavity Inserts**

**Product Facts**

- 20 cavity inserts
- Size 22-20 contacts



MTCP inserts have been redesigned to include size 22 cavity which can accept 22-20 crimp contacts.

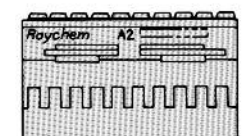
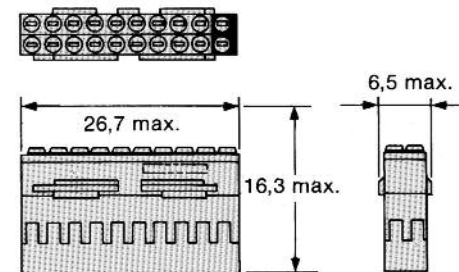
Insertion/extraction of contacts are rear release.

This series completes the MTC100 and MTC50 mass termination families. It extends the crimp version product range from size 12 (MTCR) to size 16 and 20 (MTCP).

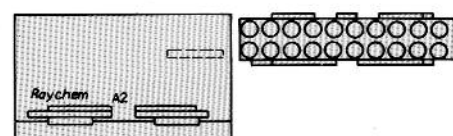
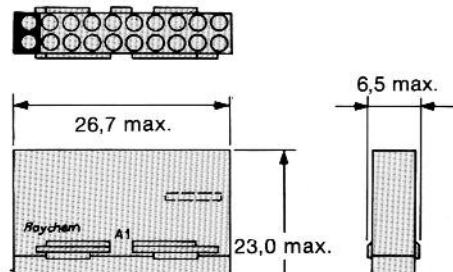
MCTP 22-20 inserts are intermateable and changeable with MTC100 connectors.

They keep the same high performance level.

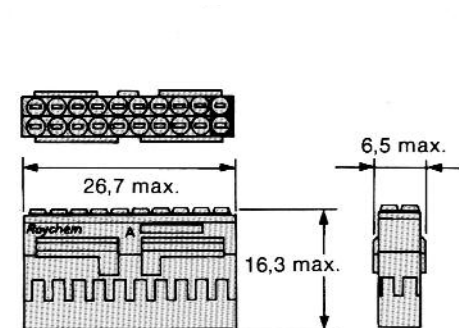
**2" shell Pin Insert**  
 MTCP-122-20P1  
 MTCP-122-20P2



**2" shell Socket Insert**  
 MTCP-122-20S1  
 MTCP-122-20S2



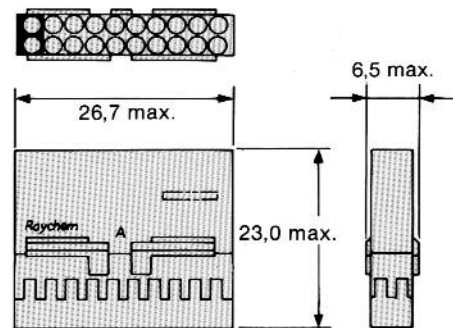
**1" shell Pin Insert**  
 MTCP-122-20P



**Pin Contact**  
 CTA-0166



**1" shell Socket Insert**  
 MTCP-122-20S



**Socket Insert**  
 CTA-0165



- Contact removal tool (plastic): CTA-1160
- Extraction tool for MTCP inserts: CTA-0161
- Positioner for pin contact: CE-1605900
- Positioner for socket socket: CE-1606000



**MTCT High Performance Modular Rectangular Connectors**

for use with ARINC 801 Optical Termini

**Product Facts**

- Available in aluminum or corrosion resisting steel
- Utilizes the industry standard ARINC 801 optical termini - no empty cavities requiring sealing
- Mating hardware options - available in quick disconnect or jack screw styles for optimized space utilization
- Accommodates four ARINC 801 optical termini
- Enhanced MTCT mating interface
- Uses commonly available tooling for installation - no need to carry extra specialized tooling



TE Connectivity MTCT connector is a compact, lightweight design connector for use with ARINC 801 fiber optic termini.

Ideal for applications such as avionics, in-flight entertainment systems, communications, production breaks and other areas.

**Part Number Information**

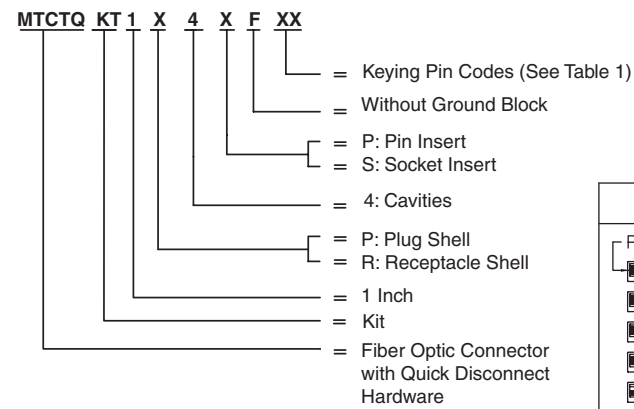


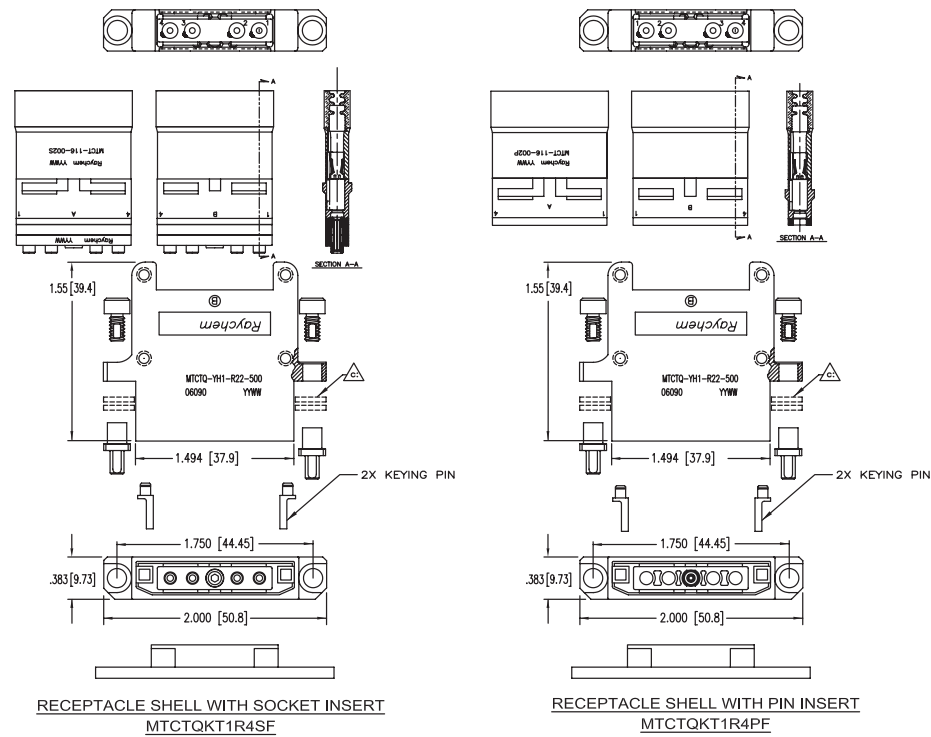
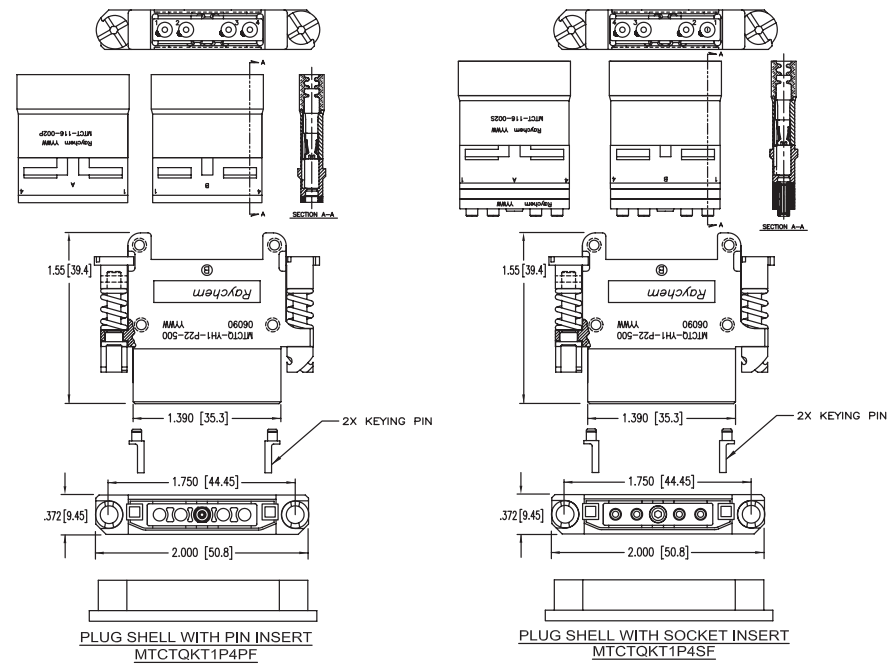
TABLE 1 KEYING CODES

RECEPTACLE	POSITION OF PROJECTING TAB (TYP)	CODE	PLUG
	-A A-		
	-A B-		
	-A C-		
	-A D-		
	-B A-		
	-B B-		
	-B C-		
	-B D-		
	-C A-		
	-C B-		
	-C C-		
	-C D-		
	-D A-		
	-D B-		
	-D C-		
	-D D-		
	-X X-		
	UNKEYED		UNKEYED

8 Rectangular Pin and Socket Connectors

**MTCT High Performance Modular Rectangular Connectors** (Continued)

**Kit, Plug and Receptacle**



**Screening**

**Round Wire**

The following terminal strips must be used to connect screening to the body of an MTC 100 housing:

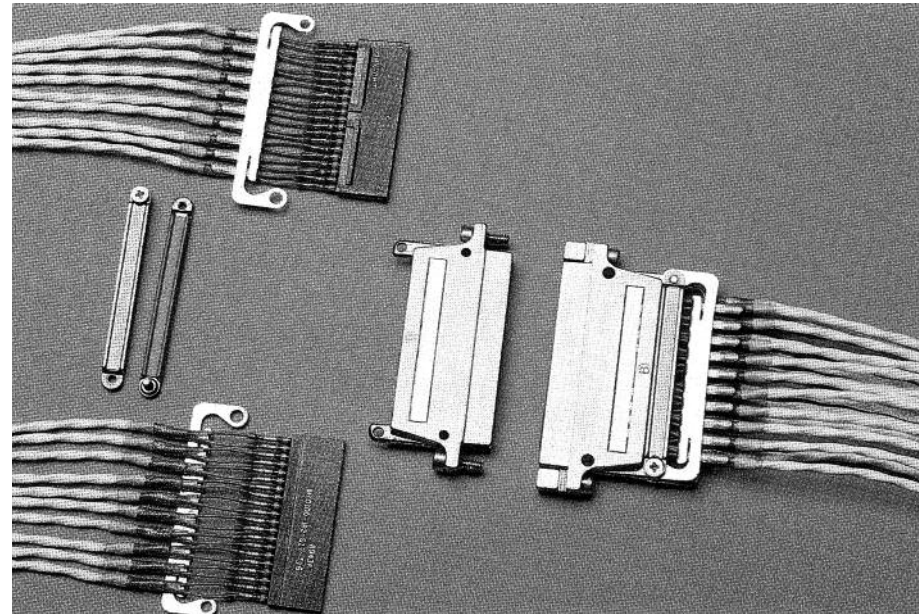
**Size 1 housing:**

Type CTA-0022

**Size 2 housing:**

Type CTA-0023

The strips are connected to the screening using SolderSleeve devices, and secured by the connector cable clamp.



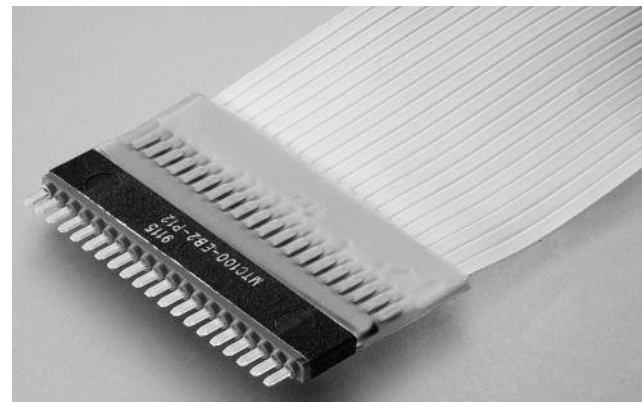
**Ribbon Cable**

With ribbon cables, the screening is provided by a copper strip.

The copper strip is connected using different terminal strips in accordance with the electrical diagram (contact TE Connectivity).

In any case, the terminal strips and block must be connected at the same time in the T.C.W.I. heating device (CE-1404300).

The assembly is contained in the connector housing, and does not alter the overall dimensions of the latter.



Unscreened cable shown above.

**8**

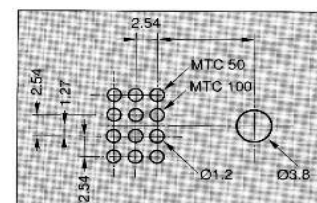
Rectangular Pin and Socket Connectors

**Application and Installation**

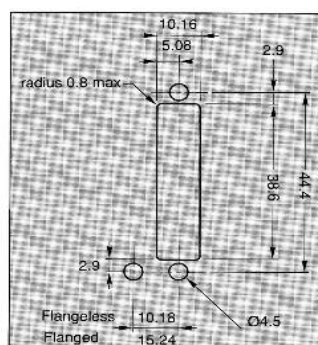
**Panel cut out for boxmount connectors and receptacle shells**

Cut out dimensions opposite are for guidance only. Panel cut out and spacing dimensions must be derived from the current Specification Control Drawing.

**Hole Pattern for PCB**

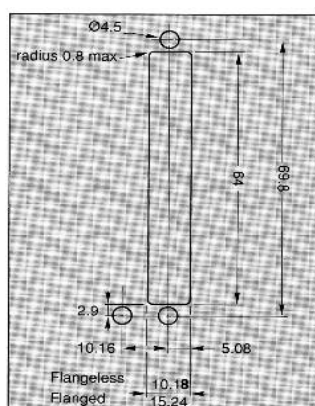


**Panel Cut Out for 1" Shell**



\* (Rear mounting)

**Panel Cut Out for 2" Shell**



**Keying Chart**

Both the shell and the wafer have their own built in polarization.

Keying of the shell is completed by the user. Two square keying pins are supplied with each shell and should be inserted into the square sockets in the shell according to one of the 16 keying codes to the right.

Any "keyed" shell may be modified to a different polarization by repositioning the keying pins.

A triangular keying pin is available, giving up to 64 different polarizations.

**Triangular keying pin:**  
CHA-0036

**Triangular keying chart:**  
D-659-0080

RECEPTACLE	CODE	PLUG
	AA	
	AB	
	AC	
	AD	
	BA	
	BB	
	BC	
	BD	
	CA	
	CB	
	CC	
	CD	
	DA	
	DB	
	DC	
	DD	



**Application and Installation** (Continued)

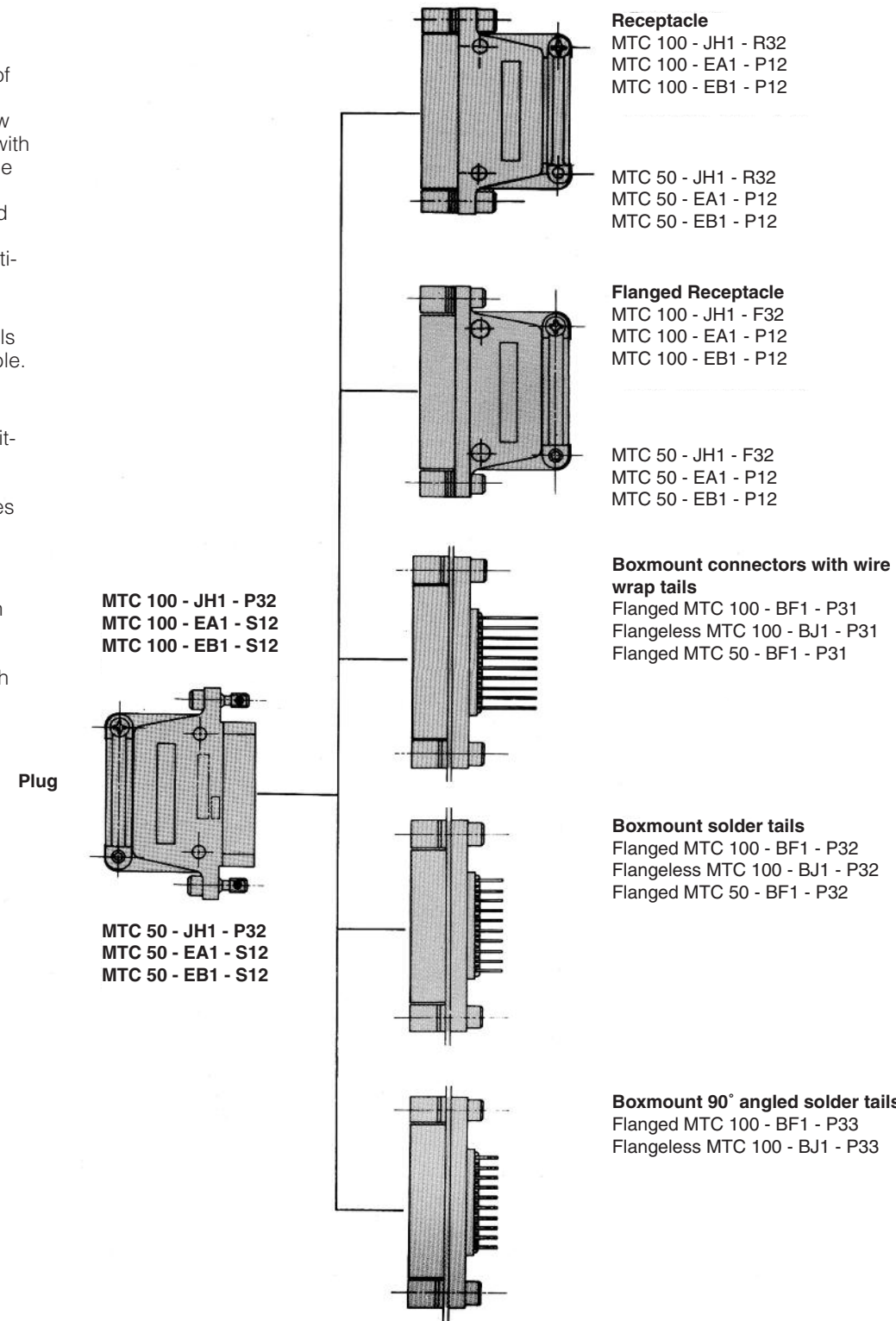
**Mating possibilities**

The mating possibilities of the MTC100 and MTC50 series are depicted below by using a 1" plug shell with cadmium finish. The same mating possibilities are available for 2" shells and other shell finishes. Part numbers should be substituted as necessary.

The wafers shown in the plug and receptacle shells are for flat conductor cable. For round wire wafers, consult text.

Because of the multiple fitting possibilities of pin or socket wafers, the user must ensure that the types of wafer in the plug and receptacle shells match each other.

The MTCR plug shell can only be mated with an MTCR receptacle shell; contact types must match each other.



**8**  
Rectangular Pin and Socket Connectors

**Application and Installation** (Continued)

**Installation dimensions for receptacle shells and box-mount connectors**

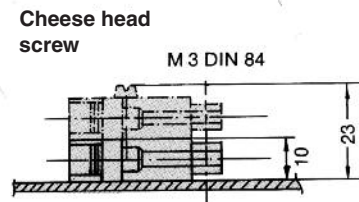
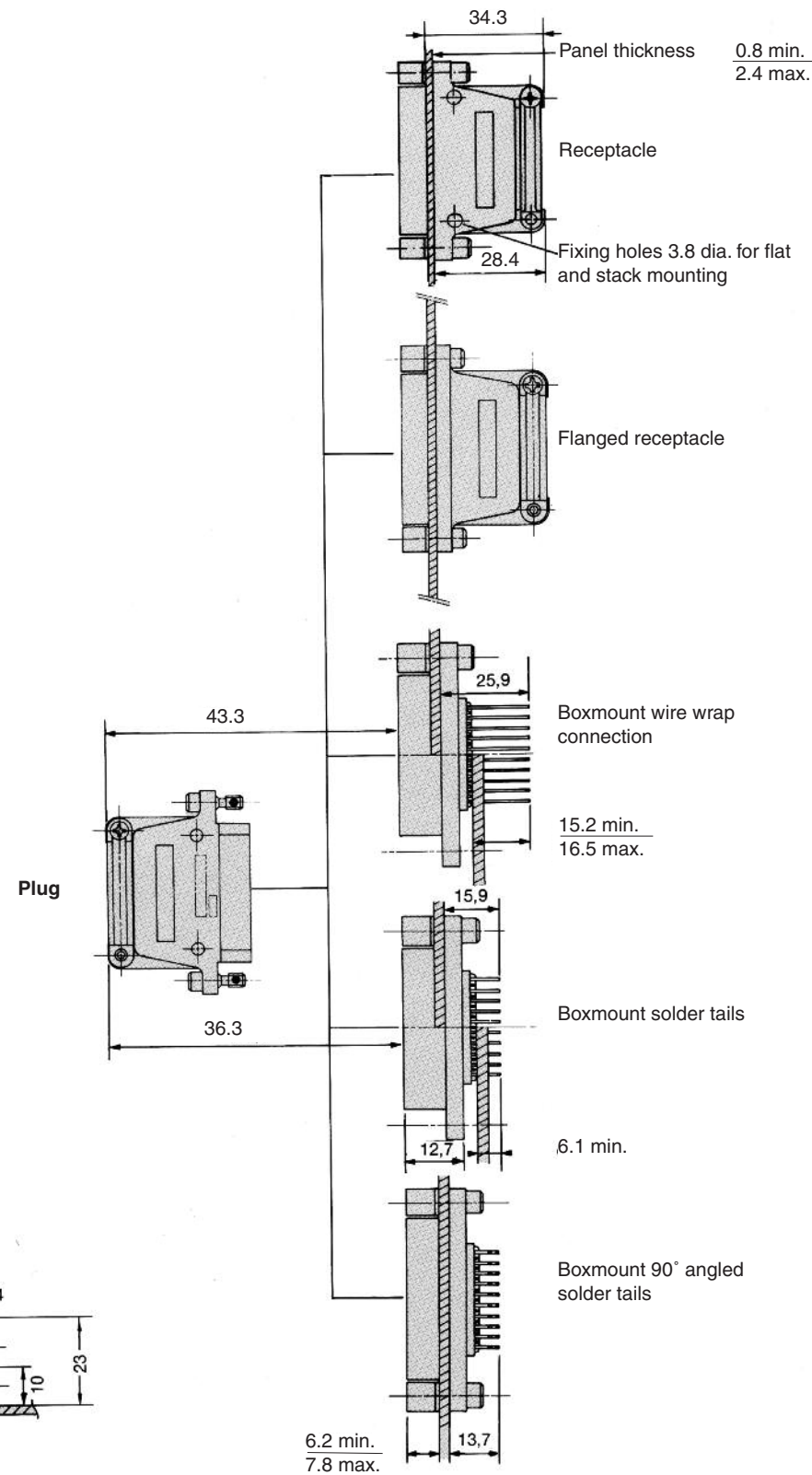
The installation dimensions for the MTC100 and MTC50 series are the same.

All receptacle and box-mount shells are suitable for rear panel mounting. Differences in panel thickness between 0.8mm min. and 2.4mm max. are to be adjusted with the 0.8mm thick spacer washers supplied.

Boxmounts with straight wire wrap or solder tails may also be front panel mounted. Front panel and PCB mounting kits are available (consult TE Connectivity).

All receptacle shells are suitable for flat or stack mounting. It is not necessary to dismantle the stack to remove the mating plug shells.

The MTCR connector has a different cable clamp and is therefore longer than a standard receptacle shell.





**Introduction**

**Product Facts**

- **Modular versatility with Multimate contact capabilities permit multiple combinations of power, signal, coaxial and fiber optic circuits in one basic connector configuration**
- **Choice of shell sizes for housing one, two or three contact modules**
- **Modules available accommodating various circuit arrangements**
- **Polarized shells, with and without floating bushings**
- **Machine-applied terminations provide high production rates at low applied cost**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR 7189**



AMP G Series connectors provide a practical means of mixing various types of electrical circuits in one basic connector configuration. They offer modular versatility as well as Multimate contact capabilities which permit use of multiple combinations of power, signal, coaxial and fiber optic circuits in the same connectors.

The "G" Series connector line provides a choice of shell sizes for housing either one, two, or three

contact modules. The modules, in turn, are available in a variety of circuit densities to accommodate Type XII power contacts; Size 12 Type I and miniature COAXICON contacts (interchangeable in the same contact cavity); and Size 16 Type II, III+, VI, X, subminiature COAXICON contacts.

Each shell includes a retainer plate for easy drop-in assembly of the contact modules. Both shell and retainer are made of cast

aluminum. Shells also are available with and without floating bushings and are polarized with keyways in the receptacles and matching keys in the plugs. The modules are made of either diallyl phthalate or general purpose phenolic.

Complementing the "G" Series modular connectors are latching hardware, cable clamps and strain relief which ensure the integrity of all mated connections.

**Technical Documents**

The following is a list of technical documents covering the application, performance and maintenance of "G" Series Connectors.

**Product Specifications** describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

**108-10002** — AMP G Series Connectors

**108-10037** — Type XII Contacts

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

**Product** —

Connectors, Contacts and Accessories — 408-7171, 408-7184, 408-7189, 408-7190, 408-7230

Locking Latch — 408-7268

Locking Spring — 408-7187

Cable Clamps — 408-7185

Strain Relief — 408-7186, 408-7263

**Tooling** —

Crimping Dies:

Type I Contacts 1 — 408-7225

Type II Contacts — 408-7420, 408-7453

Type XII Contacts — 408-7175

Miniature COAXICON Contacts — 408-1770

Hand Crimping:

Type I Contacts — 408-7192

Type II Contacts — 408-6810, 408-1786, 408-7267

Type III+ Contacts — 408-7414, 408-9819

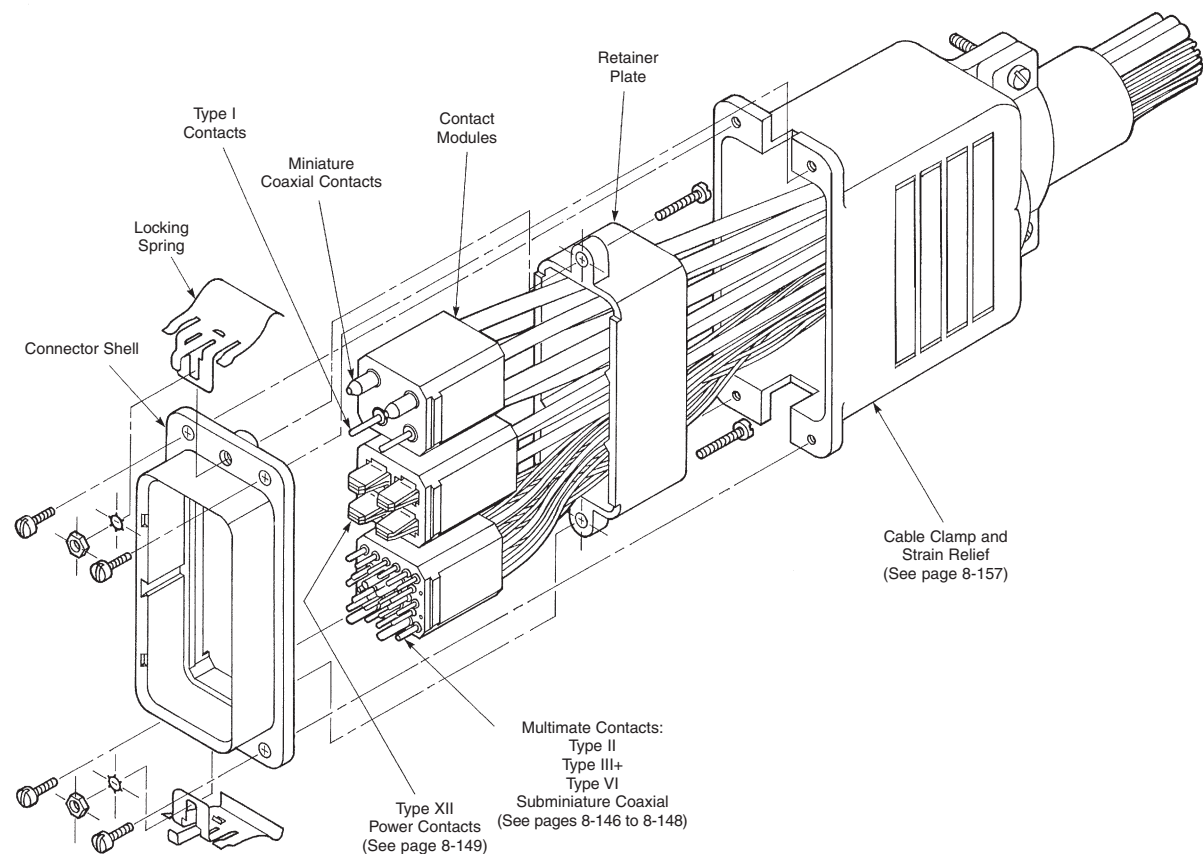
Type VI Contacts — 408-9819, 408-7680, 408-7716

Type XII Contacts — 408-2095



Rectangular Pin and Socket Connectors

Introduction (Continued)



**Contact Current Carrying Capability**

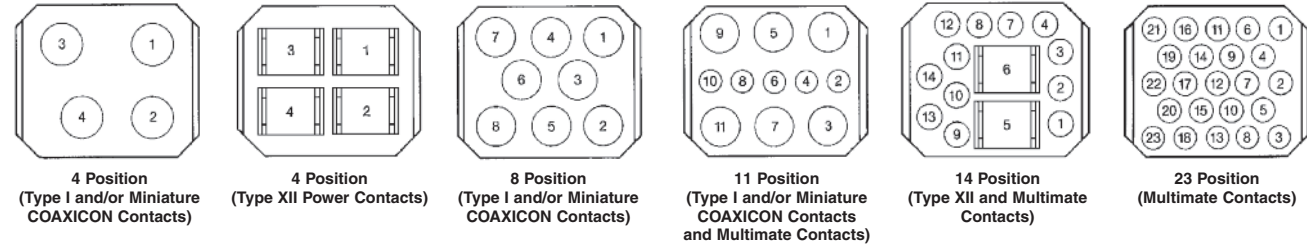
The total current capacity of each contact is dependent upon the heat rise resulting from the combination of electrical loads on all the contacts in the connector arrangement and the maximum ambient temperature in which the connector will be operating. Caution must be taken to assure that these combinations of conditions do not cause the internal temperature of the connector to exceed the maximum operating temperature of the housing material. There are several variables which must be considered when determining the maximum current capability of your application.

These variables are:

- a) Wire Size — Larger wire will carry more current since it has less internal resistance to current flow and generates less heat. The wire also conducts heat away from the connector.
- b) Connector Size — In general, the more circuits in a connector, the less current per contact can be carried.
- c) Ambient Temperature — The higher the ambient temperature, the less current can be carried.

**Module Specifications**

**Contact Modules**



Note: Mating face of Pin Module shown. Socket Module is mirror image.

No. of Positions	Module Will Accommodate These Contact Variations†	Part Numbers			
		Phenolic		Diallyl Phthalate	
		Pin Module	Socket Module	Pin Module	Socket Module
4	4 Type XII Contacts	202624-2	202625-2	—	—
4	4 Miniature COAXICON Contacts or Type I (Size 12) Contacts	—	—	213092-2	213093-2
8	8 Any combination of Miniature COAXICON Contacts and Type I (Size 12) Contacts	—	—	213090-4* 213090-2	213091-4* 213091-2
11	6 Miniature COAXICON Contacts or Type I (Size 12) Contacts and 5 Type II (Size 16), Type III+ (Size 16), Type VI (Size 16) or Subminiature COAXICON Contacts	202648-4	202649-4	202648-2	202649-2
14	2 Type XII Contacts and 12 Type II (Size 16), Type III+ (Size 16), Type VI (Size 16), or Subminiature COAXICON Contacts	202759-2	202760-2	202759-4	202760-4
23	23 Type II (Size 16), Type III+ (Size 16), Type VI (Size 16) or Subminiature COAXICON Contacts	202650-4	202651-4	202650-2	202651-2

\* Type I contacts cannot be used in cavities 1, 2, 7 and 8.  
† Order contacts separately, see below and pages 8-148 to 8-151.

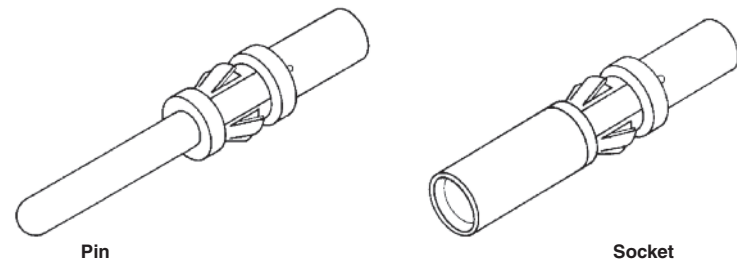
**8**

Rectangular Pin and Socket Connectors

**Multimate Contacts**

**Type I Contacts**

**Contact Size** — 12  
**Pin Diameter** — .094 [2.39]  
**Test Current** — 23 amperes\*  
**Materials**  
**Contact Body** — Copper alloy  
**Spring** — Stainless steel  
**Finish** — .000030 [0.00076] gold over .000030 [0.00076] nickel



\*Note: Current carrying capability depends on wire size, connector size and ambient temperature.

Wire Size Range AWG [mm²]	Wire Strip Length	Ins. Dia. Range	Loose Piece Contact Part No.		Tooling Part Number Contact		
			Pin	Socket	Hand Tool	Dies for Pneumatic Tool 69365	
18-16	0.8-1.4	.234 5.95	No Ins. Support	202421-1	202418-1	90121	90122
14-12	2-3	.234 5.95	No Ins. Support	202422-1	202417-1		

Extraction Tool Part Number 305183-8.

Signal Contacts

Type II, Screw Machined, Crimp

Material

Contact Body — Brass

Retention Spring — Stainless steel

Finish

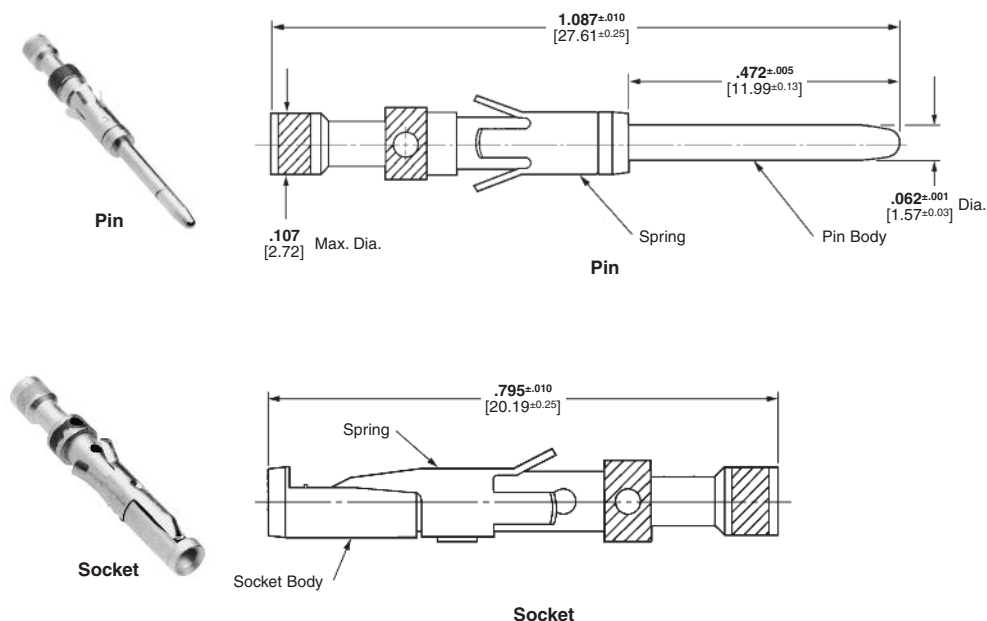
Contact Body — 000030 [0.00076]

gold over .000050 [0.00127]

nickel. Gold thickness controlled

on socket O.D.

Retention Spring — Stainless steel



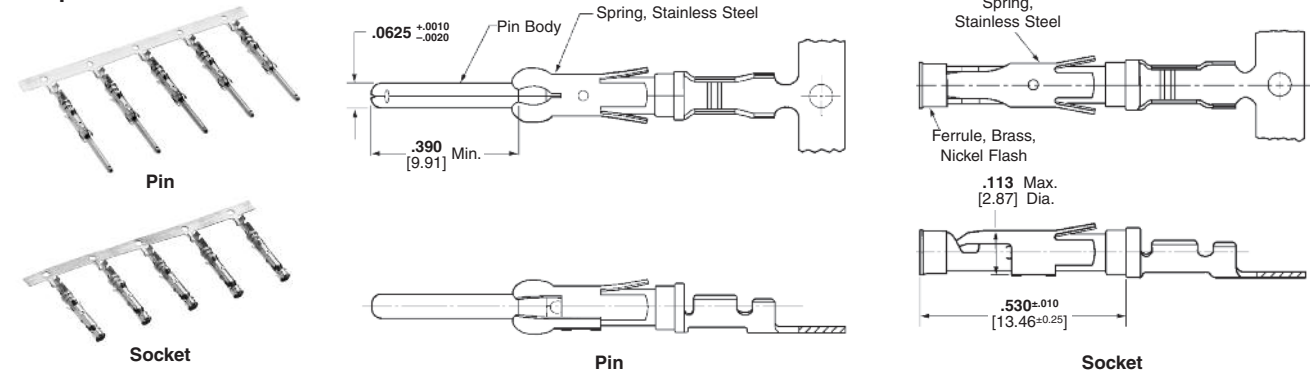
Contact Size 16—Pin Diameter .062 [1.57] (Test Current, 13 Ampere)‡

Wire Size Range	Ins. Dia. Range <sup>1</sup>	Tape Mounted Contact No. <sup>2</sup>		Loose Piece Contact No.		Contact Color Code	Tooling Part No.				
		Pin	Socket	Pin	Socket		Tape Mounted Dies for AMP-TAPETRONIC Machine 69875	Loose Piece Die Set for 626 Pneumatic Tool System	Hand Tool		
28-24	0.08-0.20	—	—	201611-4	—	201611-14	201613-15	Red/Red	90249-2	90230-17	91538-1
				—	—	201334-14	201332-15	Red/Red			or 601967-1
				—	—	202410-14	202411-15	Green			601967-1
24-20	0.2-0.6	—	—	201578-4	—	201578-14	201580-15	Yellow/Red	90249-2	90230-17	91538-1
				201330-6	201328-9	201330-14	201328-15	Yellow/Red			or 58541-1*
18 (Two)	0.9-0.9 (Two)	No. Ins. Support	—	—	202725-14	202726-14	Blue	—	90231-27	91539-1	
18-16	0.8-1.4	No. Ins. Support	—	—	202507-14	202508-15	—	—	—	90136-1	
					200336-6	200333-8	200336-14	200333-14	Blue/Blue	90250-1	90231-27
14	2	No. Ins. Support	—	—	204219-15.6	—	Blue/Blue	—	—	58541-1*	
					212618-2 <sup>3</sup>	201568-3	201570-14	201568-15	Violet/Blue	90250-1	90231-27
					212618-13.6,†	—	—	—	—	58541-1*	
										or 601967-1	

<sup>1</sup> Overall insulation crimp diameter, including crimp barrel, must not exceed .125 [3.18].  
<sup>2</sup> For AMP-TAPETRONIC Machine Part Number 69875, order contacts by Tape Mounted Contact No., plus packaging code "IM REEL" (5000 parts per reel).  
<sup>3</sup> Grounding pin is used to provide a make-first/break-last condition when mating and unmating connector halves.  
<sup>4</sup> Use turret TH502 (1-601967-6) with hand tool 601967-1.  
<sup>5</sup> Use turret TH501 (1-601967-5) with hand tool 601967-1.  
<sup>6</sup> Pin length is .630 ± .005 [16.002 ± .127] on these two pins.  
<sup>7</sup> Die Set requires "C" Head Adapter Part Number 318161-1; Adapter Holder Part Number 356304-1 (with ratchet) or 189928-1 (without); and Power Unit Part Number 189721-2 (hand actuated) or 189722-2 (foot actuated).  
\* Commercial PRO-CRIMPER II Hand Tool for field repair use only. Note: Die Set can be adapted for use with the 626 Pneumatic Tool System.  
† Does not use Hand Tool 91539-1 or 601967-1.  
‡ Single contact, free-air test current is not to be construed as contact rating current. Insertion Tool Part Number 200893-2 (for insulation diameters .070 [1.78] or less). Extraction Tool Part Number 305183.

Signal Contacts (Continued)

Type III+ Precision Formed, Crimp



Material and Finish

Contact Body — Brass  
Retention Spring — Stainless steel

Contact Size 16—Pin Diameter .062 [1.57] (Test Current, 13 Ampere)‡

Wire Size Range		Ins. Dia. Range	Contact Finish	Strip Form Contact No.		Loose Piece Contact No.		Tooling Part No.	
AWG	mm <sup>2</sup>			Pin	Socket	Pin	Socket	Loose Piece Hand Tool	Strip Form Applicators
30-26	0.05-0.15	.040-.060 <sup>1</sup> 1.02-1.52	Bright Tin-Lead	66425-6	66424-6	—	—	91515-1 <sup>5</sup>	466598-□**
			Gold/Nickel <sup>2</sup>	66425-7	66424-7	66429-3	66428-3		
			Sel. Gold/Nickel <sup>3</sup>	66425-8	66424-8	66429-4	66428-4		
26-24	0.12-0.2	.035-.055 <sup>1</sup> 0.89-1.40	Bright Tin-Lead	66393-7	66394-7	—	—	90225-2 <sup>5</sup>	466585-3**
			Gold/Nickel <sup>2</sup>	66393-8	66394-8	66406-4	66405-4		
			Sel. Gold/Nickel <sup>3</sup>	66393-8	66394-8	66406-4	66405-4		
24-20	0.2-0.6	.040-.080 <sup>1</sup> 1.02-2.03	Bright Tin-Lead	66106-6	66108-6	66107-2	66109-2	91515-1 <sup>5</sup> or 58495-1*	466321-□** or 466908-2**
			Gold/Nickel <sup>2</sup>	66106-7	66108-7	66107-3	66109-3		
			Sel. Gold/Nickel <sup>3</sup>	66106-8	66108-8	66107-4	66109-4		
24-20	0.2-0.6	.060-.120 <sup>4</sup> 1.52-3.05	Bright Tin-Lead	66102-7	66104-7	66103-2	66105-2	91515-1 <sup>5</sup> or 58495-1*	466323-□** or 466907-2**
			Gold/Nickel <sup>2</sup>	66102-8	66104-8	66103-3	66105-3		
			Sel. Gold/Nickel <sup>3</sup>	66102-9	66104-9	66103-4	66105-4		
24-20	0.2-0.6	.080-.100 <sup>1</sup> 2.03-2.54	Bright Tin-Lead	66564-6	66563-6	66566-2	66565-2	91542-1 <sup>5</sup>	466383-4** or 466979-1** or 567363-□**
			Gold/Nickel <sup>2</sup>	66564-8	66563-8	66566-4	66565-4		
			Sel. Gold/Nickel <sup>3</sup>	66564-8	66563-8	66566-4	66565-4		
18-16	0.8-1.4	.080-.100 <sup>1</sup> 2.03-2.54	Bright Tin-Lead	66332-5	66331-5	66400-1	66399-1	91523-1 <sup>5</sup> or 90225-2 <sup>5</sup>	466324-□** or 466942-1**
			Gold/Nickel <sup>2</sup>	66332-7	66331-7	66400-3	66399-3		
			Sel. Gold/Nickel <sup>3</sup>	66332-8	66331-8	66400-4	66399-4		
18-16	0.8-1.4	.080-.100 <sup>1</sup> 2.03-2.54	Bright Tin-Lead	66098-7	66100-7	66099-2	66101-2	91505-1 <sup>5</sup> or 91523-1 <sup>5</sup> or 58495-1*	466325-□** or 466906-1**
			Gold/Nickel <sup>2</sup>	66098-8	66100-8	66099-3	66101-3		
			Sel. Gold/Nickel <sup>3</sup>	66098-9	66100-9	66099-4	66101-4		
18-14	0.8-2.0	.080-.100 <sup>1</sup> 2.03-2.54	Bright Tin-Lead	66359-6	66358-6	66361-2	66360-2	91519-1 <sup>5</sup>	466326-□** or 466923-2**
			Gold/Nickel <sup>2</sup>	66359-9	66358-9	66361-3	66360-3		
			Sel. Gold/Nickel <sup>3</sup>	1-66359-0	1-66358-0	66361-4	66360-4		
18-14	0.8-2.0	.110-.150 <sup>4</sup> 2.79-3.81	Bright Tin-Lead	66597-1	66598-1	66602-1	66601-1	91521-1 <sup>5</sup>	466958-1** or 567364-□**
			Gold/Nickel <sup>2</sup>	—	—	—	—		
			Sel. Gold/Nickel <sup>3</sup>	66597-2	66598-2	66602-2	66601-2		

<sup>1</sup> Overall insulation crimp diameter, including crimp barrel, must not exceed .125 [3.18].  
<sup>2</sup> .000015 [0.00038] gold in the mating area over .000030 [0.00076] min. nickel.  
<sup>3</sup> .000030 [0.00076] gold in the mating area over .000030 [0.00076] min. nickel.  
<sup>4</sup> Contacts can only be used in MetriMate, Series 1 (Arr. 23-24), Series 4 (Arr. 23-13M, 23-16M, 23-22M), and VDE connectors.  
<sup>5</sup> To use with the 626 Pneumatic Tool System: remove the crimping head from the Straight Action Hand Tool (SAHT) Assembly, order SAHT Adapter (Contact Technical Support for Part Number), Adapter Holder Part Number 356304-1 (with ratchet) or 189928-1 (without), and Power Unit Part Number 189721-1 (hand actuated) or 189722-1 (foot actuated).  
\* Commercial PRO-CRIMPER II hand tool for field repair only. Note: Die Set can be adapted for use with the 626 Pneumatic Tool System.  
\*\* Contact Technical Support for Automatic Machine Applicator Part Numbers.  
‡ Single contact, free-air test current is not to be construed as contact rating current. Use only for testing.  
Insertion Tool Part Number 91002-1 (for insulation diameters .070 [1.78] or less), Number 200893-2 (for insulation diameters .090 [2.29] max.).  
Extraction Tool Part Number 305183.

8 Rectangular Pin and Socket Connectors



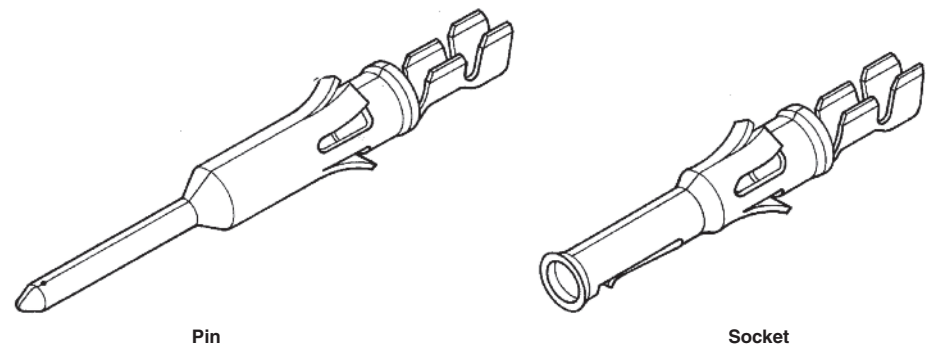
**Multimate Contacts**

**Type VI Contacts**

**Contact Size** — 16  
**Pin Diameter** — .062 [1.57]  
**Test Current** — 13 amperes\*  
**Material** — Copper alloy

**Contact Finish**

**A** — Tin  
**B** — Gold flash over .000050 [0.00127] nickel on entire contact with .000030 [0.00076] selective gold plating on contact area



\*Note: Current carrying capability depends on wire size, connector size and ambient temperature.

Wire Size Range <sup>1</sup>	Ins. Dia. Range	Contact Finish	Contact Part Number (reeled for Standard Applicator)		Contact Part Numbers (reeled for Quick-Change Applicator)		Loose Piece Contact Part No.		Tooling Part Numbers Hand Tool
			Pin	Socket	Pin	Socket	Pin	Socket	
28-26 0.08-0.15	.035-.055 0.89-1.4	A	66585-1	—	66585-2	—	—	—	91515-1 58495-1 <sup>3</sup>
		B	—	—	66585-4	66586-4	66595-2	66596-2	—
24-20 0.2-0.6	.040-.080 1.02-2.03	A	66583-1	66584-1	66583-2	66584-2	66593-1	66594-1	91515-1 58495-1 <sup>3</sup>
		B	—	—	66583-4	66584-4	66593-2	66594-2	—
22-18 0.3-0.9	.055-.110 1.40-2.79	A	66581-1	66582-1	66581-2	66582-2	66591-1	66592-1	90327-1
		B	—	—	66581-4	66582-4	66591-2	66592-2	—
18-16 0.8-1.4	.080-.100 2.03-2.54	A	66579-1	66580-1	66579-2	66580-2	66589-1	66590-1	91515-1 58495-1 <sup>3</sup>
		B	—	—	66579-4	66580-4	66589-2	66590-2	—
14 2	.080-.135 <sup>2</sup> 2.03-3.43	A	66577-1	66578-1	66577-2	66578-2	66587-1	—	91550-1
		B	—	—	66577-4	66578-4	66587-2	66588-2	—

<sup>1</sup> Wire strip length—.156 [.396] (all wire sizes).  
<sup>2</sup> Maximum insulation diameter recommended for “G” Series connectors with Multimate contact cavities is .110 [2.79].  
<sup>3</sup> Economy Hand Tool for field repair only.  
 Insertion Tool Part Number 91002-1 for insulation diameters .070 [1.78] or less.  
 Extraction Tool Part Number 305183.

**Applicator Nos. for Terminating Machines**

Wire Size Range		Model K	Model T	Model G	Model Stripper/Crimper
AWG	mm <sup>2</sup>				
28-26	0.08-0.15	466321-4	466321-3	466321-6	466908-2
24-20	0.2-0.6	466323-4	466323-3	—	466907-2
22-18	0.3-0.9	466384-4	466384-3	—	466914-1
18-16	0.8-1.4	466325-2	466325-1	466325-5	—
14	2	687997-2 <sup>4</sup>	—	—	—
		687997-4 <sup>4</sup>	—	—	—

<sup>4</sup> Insulation Dia. Range—Part Number 687997-2, .080-.105 [2.03-2.67]; Part Number 687997-4, .105-.135 [2.67-3.43].



Multimate Contacts (Continued)

Type XII Power Contacts

Continuous Operating Current

Silver or Gold — 25 amperes max.

Tin-lead — 15 amperes max.

Material — Copper

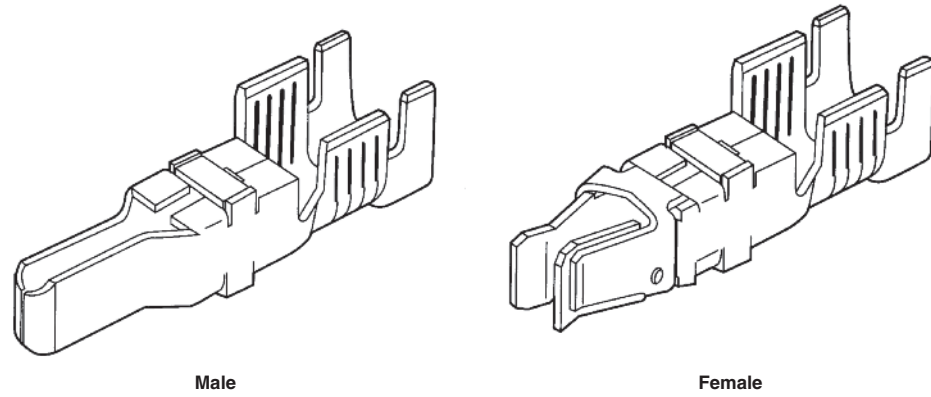
Contact Finish

A — Tin-Lead

B — .000030 [0.00076] selective gold over .000030 [0.00076] nickel

C — .000100 [0.00254] silver plated contacts with lubricant added

D — Tin



Wire Size Range <sup>1</sup>	Ins. Dia. Range	Contact Finish	Strip Form Contact Part Number				Loose Piece Contact Part No.		Die Insert Number for Hand Tool 69710-1 or 626 Pneumatic Tool System**	
			for Standard Applicator		for Quick-Change Applicator*		Male	Female		
AWG	[mm <sup>2</sup> ]		Male	Female	Male	Female	Male	Female		
16 and 14-12	1.25-1.4 and 2-3	.135-.160 and 3.43-4.06	A	66255-1	66740-7	66255-5	1-66740-2	66261-1	66740-8	90145-2 <sup>3</sup> and 90145-14
				66256-1 <sup>2</sup>	—	66256-5 <sup>2</sup>	—	66262-1 <sup>2</sup>	—	
			B	66255-2	66740-5	66255-6	1-66740-1	66261-2	66740-6	
				66256-2 <sup>2</sup>	—	66256-4 <sup>2</sup>	—	66262-2 <sup>2</sup>	—	
			C	66255-7	66740-1	66255-8	66740-9	66261-4	66740-2	
				66256-6 <sup>2</sup>	—	66256-7 <sup>2</sup>	—	66262-4 <sup>2</sup>	—	
			D	1-66255-1	1-66740-9	1-66255-2	2-66740-0	66261-5	2-66740-1	
				66256-8 <sup>2</sup>	—	66256-9 <sup>2</sup>	—	66262-5 <sup>2</sup>	—	
10	5-6	.190-.220 and 4.83-5.59	A	66253-1	66741-7	66253-5	1-66741-2	66259-1	66741-8	90140-1
				66254-1 <sup>2</sup>	—	—	—	66260-1 <sup>2</sup>	—	
			B	66253-2	66741-5	66253-6	1-66741-1	66259-2	66741-6	
				66254-2 <sup>2</sup>	—	—	—	66260-2 <sup>2</sup>	—	
			C	66253-4	66741-1	66253-8	66741-9	66259-4	66741-2	
				66254-4 <sup>2</sup>	—	—	—	66260-4 <sup>2</sup>	—	
			D	66253-4	66741-1	66253-8	66741-9	66259-5	66741-1	
				66254-4 <sup>2</sup>	—	—	—	66260-5 <sup>2</sup>	—	

<sup>1</sup> Wire strip length—.281 [7.14]

<sup>2</sup> Grounding Contact

<sup>3</sup> Die Insert Part Number 90145-2 is for crimping 16 AWG [1.25-1.4 mm<sup>2</sup>] wire

<sup>4</sup> Die Insert Part Number 90145-1 is for crimping 14-12 AWG [2-3 mm<sup>2</sup>] wire

Extraction Tool Part Number 91019-3

\* Quick-Change Applicators for—16-14-12 AWG: Model K—Part Number 567455-2, Model T—Part Number 567455-1, Model G—Part Number 567455-3  
10 AWG: Model K—Part Number 567021-2, Model T—Part Number 567021-1, Model G—Part Number 567021-4

\*\* Use 626 adapter 318161-1



Rectangular Pin and Socket Connectors

**Multimate Contacts** (Continued)

**Miniature COAXICON Contacts**

**Material**

**Outer Shell** — Brass per MIL-C-50

**Center Conductor** — Beryllium copper

**Inner Dielectric** — Polypropylene

**Retention Spring** — Passivated stainless steel

**Ferrule** — Copper

**Finish**

**Outer Shell, Center Conductor** — .000030 [0.00076] gold over .000030 [0.00076] nickel

**Retention Spring** — Nickel per QQ-N-290

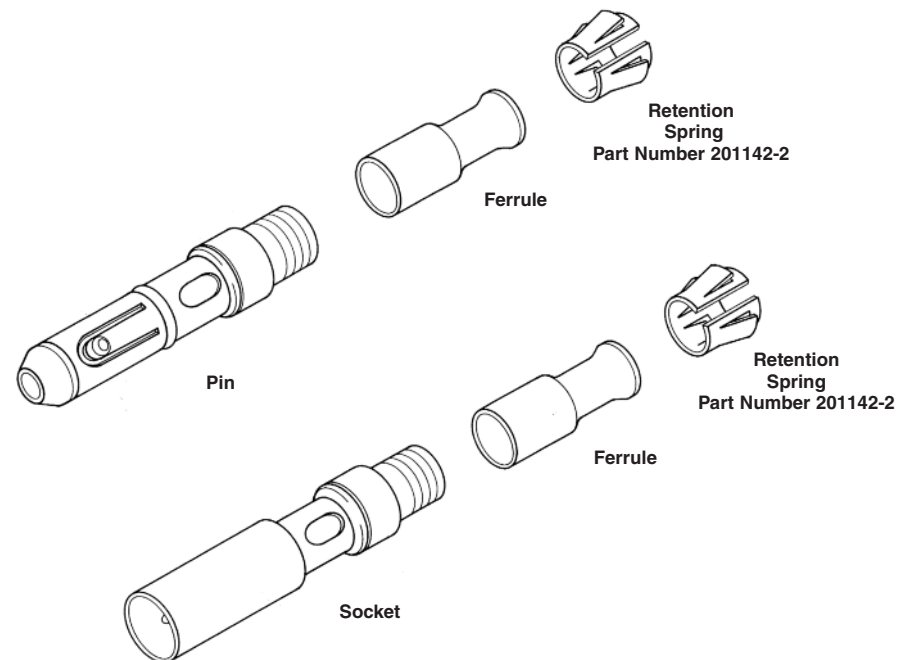
**Ferrule** — Bright tin-lead per MIL-T-10727

**Contacts**

**A** — .000030 [0.00076] gold

**B** — .000100 [0.00254] gold

Test Method for Electronic and Electrical Component Parts: MIL-STD-202



**Selection Chart for Coaxial Cable**

Cable Size (RG/U)	Contact Finish	Loose Piece Contact Part Number		Ferrule Part Number	Tooling Part Number		Tool Handle, Die Insert and Plastic Collar Color Code**
		Pin	Socket		Die Insert for Hand Tool 69710 or 626 Pneumatic Tool System <sup>2</sup>	Hand Tool Number	
55, 55A, 55B, 141, 142, 223	A	201145-4	201146-4	330478	69315-4	69248-4	Blue & Orange
	B	—	201146-9				
58, 58A, 58B, 58C	A	201145-4	201146-4	—	69220-2	—	Blue
	B	—	201146-9				
59, 59A, 59B, 62, 62A, 62B 124, 140, 210 (4-Position Only)	A	201097-1	201098-1	329006	69675-1	91912-4 <sup>1</sup>	Yellow
	B	—	201144-6				
179, 179A, 187, 21-598	A	201143-1	201144-1	328666	69227-2	91912-3 <sup>1</sup>	White
	B	—	201144-6				
180, 180A, 195, 21-597	A	201145-2	201146-2	328664	69222-2	—	Red
	B	1-201145-0	1-201146-0				
178, 178A, 196	A	201511-1	—	328667	69373	69186-2	Brown
174, 188, 316	A	201143-5	201144-5	328666	69227-2	91912-3 <sup>1</sup>	White
	B	201143-7	201144-7				
122	A	201145-1	201146-4	328664	69222-2	45639-2	Red

\* Includes bench mount and foot control.

\*\* Match Plastic Collar and Tool colors for application to cable, Inner Insulator color identifies Wire Barrel of Center Contact

**Note:** A ferrule and retention spring (Part Number 201142-2) are required for each pin and socket.

Extraction Tool Part Number 305183-8

<sup>1</sup> SDE die used with tool frame 354940-1

<sup>2</sup> Use 626 adapter 318161-1

**Multimate Contacts** (Continued)

**Selection Chart for Twisted Pair Leads**

Wire Size Range		Max. Ins. Dia. (Two Wires Combined)	Contact Finish	Loose Piece Contact Part Number		Ferrule Part Number	Tooling Part Number		Tool Handle, Die Insert and Plastic Collar Color Code **
AWG	[mm <sup>2</sup> ]			Pin	Socket		Die Inserts for Hand Tool 69710-1 or 626 Pneumatic Tool System <sup>1</sup>	Hand Tool	
28-26 (Solid)	0.08-0.15	.080 2.03	A	201511-1	—	328667	69373	69186-2	Brown
24-22 (Stranded)	0.2-0.4	.115 2.92	A	201143-5	201144-5	328666	69672	91912-4 <sup>2</sup>	Gray and White
			B	201143-7	201144-7				
24-22 (Solid or Stranded)	0.2-0.4	.160 .406	A	50079-1	50080-1	329029	69222-2	45639-2	Red

**Selection Chart for Shielded Wire**

Cable Size (RG/U)	Contact Finish	Loose Piece Contact Part Number		Ferrule Part Number	Tooling Part Number		Tool Handle, Die Insert and Plastic Collar Color Code **
		Pin	Socket		Die Inserts for Hand Tool 69710 or 626 Pneumatic Tool System <sup>1</sup>	Hand Tool	
No. 26, NAS-702, Class A & C No. 26, MIL-W-16878, Types E & EE No. 24, NAS-702, Class A & C No. 24, MIL-W-16878, Types E & EE No. 22, NAS 702, Class C No. 22, MIL-W-16878, Type E No. 22, MIL-C-7078 A, Type I No. 1 Dielectric, .068 [1.73] O.D.	A	201143-2	201144-2	328666	—	69147-2	Gray
No. 22, NAS-702, Class A No. 22, MIL-C-7078 A, Type II	A	201143-3	201144-3	328666	69227-2	91912-3 <sup>2</sup>	White
No. 22, MIL-C-7078 A, Types I & II No. 2 Dielectric, .075 [1.91] O.D. No. 3 Dielectric, .085 [2.16] O.D.	A	201145-1	201146-4	—	69222-2	45639-2	Red
No. 22, NAS-702, Class B	A	201145-4	201146-4	328663	69220-2	45740-2	Blue
	B	—	201146-9				

**Selection Chart for Various Manufacturers' Cables**

Center Conductor Wire		Dielectric O.D. (Max.)	Cable O.D. Range	Braid	Loose Piece Contact Part No.		Ferrule Part Number	Tooling Part Number		Tool Handle, Die Insert and Plastic Collar Color Code**
AWG/Type	[mm <sup>2</sup> ]				Pin	Socket		Die Inserts for Hand Tool 69710-1 or 626 Pneumatic Tool System <sup>1</sup>	Hand Tool	
Brand Rex T209A 29 AWG	0.7-0.08	.076 1.93	.112-.122 2.84-3.1	Single	—	201146-2	330587	69440	—	Orange
Brand Rex T5788A 26 AWG	0.12-0.15	.106 2.69	.160 4.06	Single	201145-2	201146-2	328664	69222-2	45639-2	Red
32-26 Raychem 0030D1314 Army Ordnance 11207177	0.03-0.15	.129 3.28	.122-.137 3.1-3.48	Single	—	201146-2	330587	69440	—	Orange

\*Includes bench mount and foot control; requires Manual Take-Up Attachment Part Number 69689  
 \*\*Match Plastic Collar and Tool colors for application to cable. Inner Insulator color identifies Wire Barrel of Center Contact.  
**Note:** A ferrule and retention spring (Part Number 201142-2) are required for each pin and socket.  
 Extraction Tool Part Number 305183-8  
<sup>1</sup> Use 626 adapter 318161-1  
<sup>2</sup> SDE die used with tool frame 354940-1



Rectangular Pin and Socket Connectors

**Coaxial Contacts**

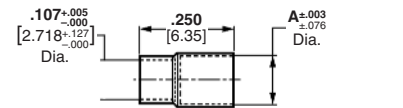
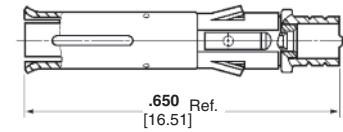
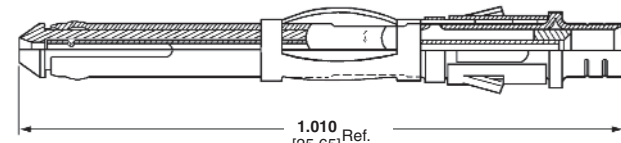
**Subminiature Coax, Size 16  
Precision Formed, Crimp**



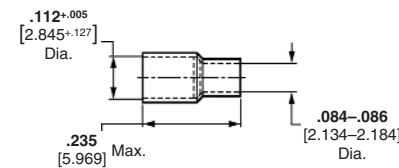
Pin



Socket



**Ferrule**  
Part Number 225088-1— A .120 [3.05] Dia.  
225088-3— A .123 [3.12] Dia.



**Ferrule**  
Part Number 1-332057-0

**Material**

**Outer Shell** — Brass per MIL-C-50

**Center Conductor** — Beryllium copper per QQ-C-533 (Pin); Brass per QQ-B-626 (Socket)

**Inner Dielectric** — Polypropylene

**Retention Spring** — Stainless steel per QQ-S-766

**Ferrule** — Copper per QQ-C-576

**Finish**

**Outer Shell, Center Conductor**— See charts

**Ferrule†** — Bright tin-lead per MIL-T-10727

**Selection Chart for Coaxial Cable**

Cable Size (RG/U)	Contact Finish	Loose Piece Contact No.		Ferrule Part No.	Tooling Part No.	
		Pin	Socket		Die Sets for Hand Tool 69710-1 or 626 Pneumatic Tool System	Hand Tool
178, 196	Gold/Nickel Gold/Copper <sup>1</sup>	226537-2	51565-2	1-332057-0†	69690-2 <sup>3</sup>	69656-2
	Gold/Nickel Gold/Copper <sup>2</sup>	—	51565-5			
196 (Double Braid)	Gold/Nickel Gold/Copper <sup>1</sup>	226537-2	51565-2	225088-1† or 5-225088-14	—	69656-9
	Gold/Nickel Gold/Copper <sup>2</sup>	—	51565-5			
174, 188, 316	Gold/Nickel Gold/Copper <sup>1</sup>	226537-1	51565-1	1-332056-0	69690 <sup>3</sup>	91911-3*
	Gold/Nickel Gold/Copper <sup>2</sup>	226537-4	51565-4			
174 (Double Braid)	Gold/Nickel Gold/Copper <sup>1</sup>	226537-1	51565-1	225088-3 or 5-225088-3 <sup>4</sup>	—	69656-7
	Gold/Nickel Gold/Copper <sup>2</sup>	226537-4	51565-4			
179, 187	Gold/Nickel Gold/Copper <sup>1</sup>	226537-1	51565-1	1-332056-0	69690-1 <sup>3</sup>	91911-4*
	Gold/Nickel Gold/Copper <sup>2</sup>	226537-4	51565-4			
187 (Double Braid)	Gold/Nickel Gold/Copper <sup>1</sup>	226537-1	51565-1	225088-1†	—	69656-8
	Gold/Nickel Gold/Copper <sup>2</sup>	226537-4	51565-4			
161	Gold/Nickel Gold/Copper <sup>1</sup>	226537-1	51565-1	1-332056-0	—	—
	Gold/Nickel Gold/Copper <sup>2</sup>	226537-4	51565-4			

<sup>1</sup> .000030 [0.00076] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000030 [0.00076] gold over .000100 [0.00254] copper—pin center conductor.

<sup>2</sup> .000050 [0.00127] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000050 [0.00127] gold over .000100 [0.00254] copper—pin center conductor.

<sup>3</sup> Die Set requires “C” Head Adapter Part Number 318161-1; Adapter Holder Part Number 356304-1 (with ratchet) or 189928-1 (without); and Power Unit Part Number 189721-2 (hand actuated) or 189722-2 (foot actuated).

<sup>4</sup> RoHS compliant Part Numbers.

† Does not use Hand Tool 45098 or 601967-1.

Extraction Tool Part Number 305183

\* SDE die used with tool frame 354940-1

**Coaxial Contacts** (Continued)

**Subminiature Coax, Size 16 Precision Formed, Crimp**

(Continued)

**Finish**

**Ferrulet** — Bright tin-lead per MIL-T-10727

**Selection Chart for Twisted Pair and Shielded Wire**

Wire Size		Contact Finish	Loose Piece Contact No.		Ferrule Part No.	Tooling Part No.	
AWG	mm <sup>2</sup>		Pin	Socket		Die Sets for Hand Tool 69710-1 or 626 Pneumatic Tool System	Hand Tool
30 (Twisted Pair, Solid)	0.05	Gold/Nickel Gold/Copper <sup>1</sup>	226537-3	51565-3	1-332057-0†	69690-2 <sup>3</sup>	69656-2
		Gold/Nickel Gold/Copper <sup>2</sup>	226537-6	51565-6			
28 (Twisted Pair, Solid)	0.08-0.09	Gold/Nickel Gold/Copper <sup>1</sup>	226537-3	51565-3	1-332057-0†	69690 <sup>3</sup>	91911-3*
		Gold/Nickel Gold/Copper <sup>2</sup>	226537-6	51565-6			
28 (Twisted Pair, Stranded 7 Str., .0050 [0.13] Dia.)	0.08-0.09	Gold/Nickel Gold/Copper <sup>1</sup>	226537-3	51565-3	1-332057-0†	69690-1 <sup>3</sup> or 69690-2 <sup>3</sup>	91911-4* or 69656-2
		Gold/Nickel Gold/Copper <sup>2</sup>	226537-6	51565-6			
26 (Twisted Pair, Solid or Stranded 7 Str., .0063 [0.16] Dia.)	0.12-0.15	Gold/Nickel Gold/Copper <sup>1</sup>	226537-3	51565-3	1-332057-0†	69690 <sup>3</sup>	91911-3*
		Gold/Nickel Gold/Copper <sup>2</sup>	226537-6	51565-6			
26 (Shielded, .075 [1.91] Max. O.D.)	0.12-0.15	Gold/Nickel Gold/Copper <sup>1</sup>	226537-1	51565-1	1-332057-0†	69690-3 <sup>3</sup>	69656-3
		Gold/Nickel Gold/Copper <sup>2</sup>	226537-4	51565-4			

<sup>1</sup> .000030 [0.00076] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000030 [0.00076] gold over .000100 [0.00254] copper—pin center conductor.

<sup>2</sup> .000050 [0.00127] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000050 [0.00127] gold over .000100 [0.00254] copper—pin center conductor.

<sup>3</sup> Die Set requires “C” Head Adapter Part Number 318161-1; Adapter Holder Part Number 356304-1 (with ratchet) or 189928-1 (without); and Power Unit Part Number 189721-2 (hand actuated) or 189722-2 (foot actuated).

† Does not use Hand Tool 45098 or 601967-1.

**Note:** A ferrule is required for each pin and socket. Extraction Tool Part Number 305183.

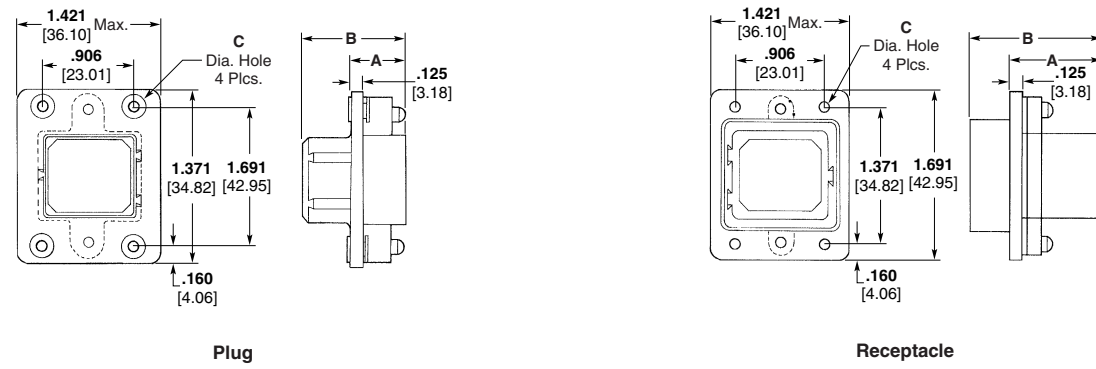
\* SDE die used with tool frame 354940-1



Rectangular Pin and Socket Connectors

**Shell Specifications**

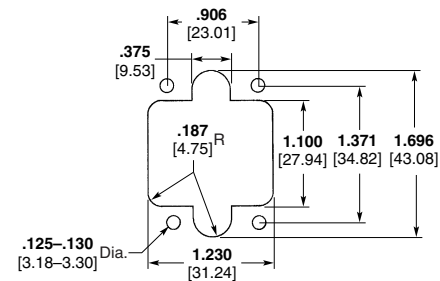
**One-Module Shell**



**Material and Finish**

**Shell and Retainer** — Die cast aluminum, electroless nickel plated (no intentional additions of lead or cadmium)

**Screws and Floating Bushings** — Passivated stainless steel



Recommended Panel Cutout

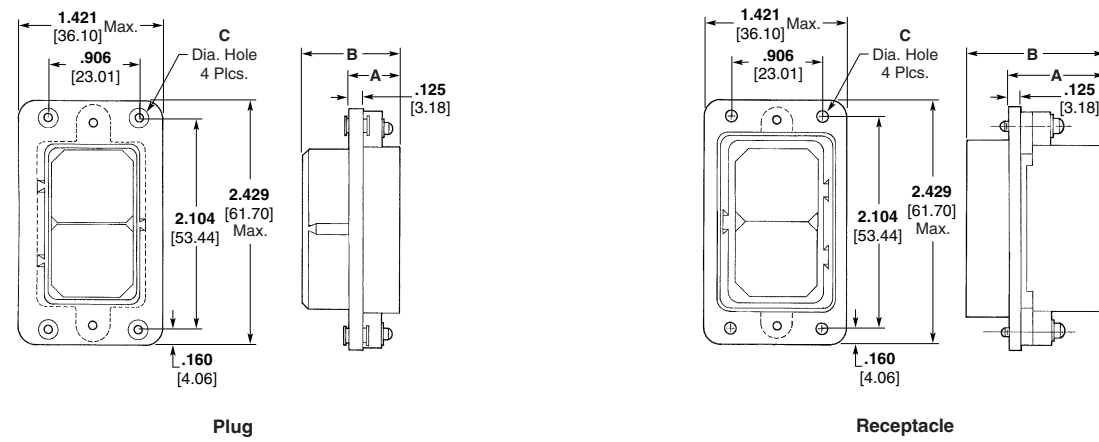
Shell Type	For Pin Module			Shell Part No.	For Socket Module			Shell Part No.
	Dimensions				Dimensions			
	A	B	C		A	B	C	
Receptacle	1.001 25.43	1.509 38.33	.120 3.05	5-202279-3	.595 15.11	1.103 28.02	.120 3.05	5-202279-4
Plug (with Floating Bushings)	.886 22.5	1.416 35.97	.118 3.00	5-202275-4	.480 12.19	1.010 25.65	.118 3.00	5-202275-3
Plug (without Floating Bushings)	.886 22.5	1.416 35.97	.125 3.18	5-202786-2	.480 12.19	1.010 25.65	.125 3.18	5-202786-1

- Notes:**
1. Plugs for pin modules mate with receptacles for socket modules, and plug for socket modules mate with receptacles for pin modules.
  2. Pin and socket modules for these shells are presented on page 8-145.
  3. For cable clamps and latching hardware, see page 8-157.



Shell Specifications (Continued)

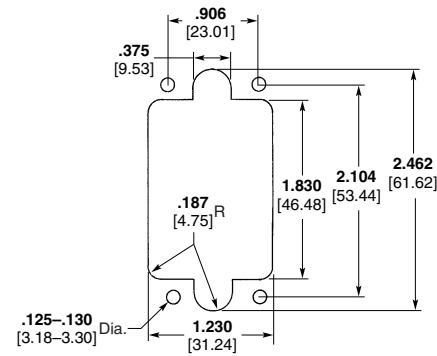
Two-Module Shell



Material and Finish

**Shell and Retainer** — Die cast aluminum, electroless nickel plated (no intentional additions of lead or cadmium)

**Screws and Floating Bushings** — Passivated stainless steel



Recommended Panel Cutout

Shell Type	For Pin Module			Shell Part No.	For Socket Module			Shell Part No.
	Dimensions				Dimensions			
	A	B	C		A	B	C	
Receptacle	1.001 25.43	1.509 38.33	.120 3.05	5-202681-2	.595 15.11	1.103 28.02	.120 3.05	5-202681-3
Plug (with Floating Bushings)	.886 22.5	1.416 35.97	.118 3.00	5-202680-3	.480 12.19	1.010 25.65	.118 3.00	—
Plug (without Floating Bushings)	.886 22.5	1.416 35.97	.125 3.18	5-202789-2	.480 12.19	1.010 25.65	.125 3.18	5-202789-1

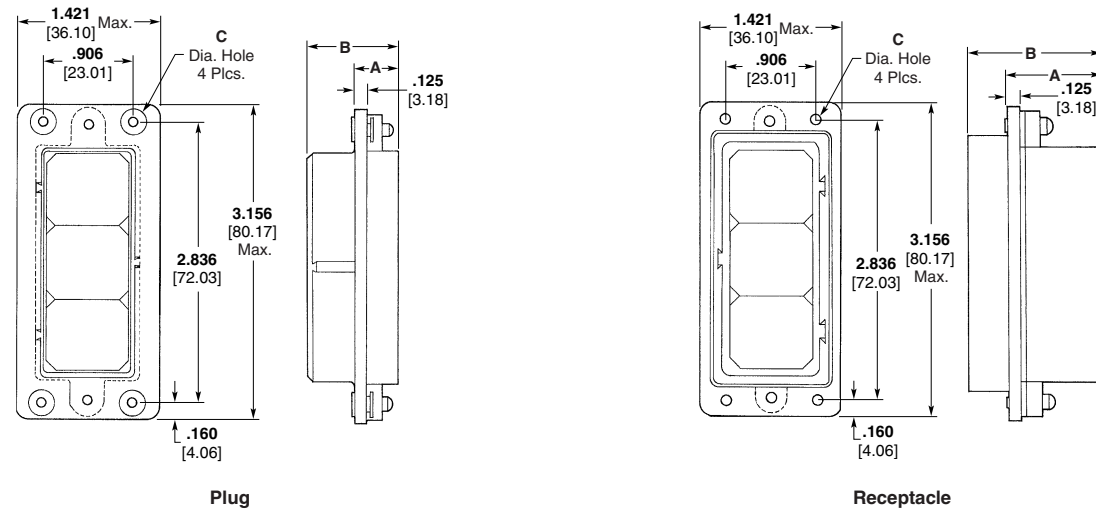
- Notes:**
1. Plugs for pin modules mate with receptacles for socket modules, and plug for socket modules mate with receptacles for pin modules.
  2. Pin and socket modules for these shells are presented on page 8-145.
  3. For cable clamps and latching hardware, see page 8-157.



Rectangular Pin and Socket Connectors

**Shell Specifications** (Continued)

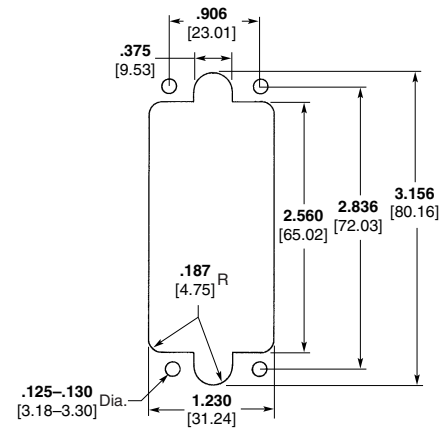
**Three-Module Shell**



**Material and Finish**

**Shell and Retainer** — Die cast aluminum, electroless nickel plated (no intentional additions of lead or cadmium)

**Screws and Floating Bushings** — Passivated stainless steel



**Recommended Panel Cutout**

Shell Type	For Pin Module				For Socket Module			
	Dimensions			Shell Part No.	Dimensions			Shell Part No.
	A	B	C		A	B	C	
Receptacle	1.001 25.43	1.509 38.33	.120 3.05	5-202287-3	.595 15.11	1.103 28.02	.120 3.05	5-202287-4
Plug (with Floating Bushings)	.886 22.5	1.416 35.97	.118 3.00	5-202283-4	.480 12.19	1.010 25.65	.118 3.00	5-202283-3
Plug (without Floating Bushings)	.886 22.5	1.416 35.97	.125 3.18	5-202795-2	.480 12.19	1.010 25.65	.125 3.18	5-202795-1

**Accessories**

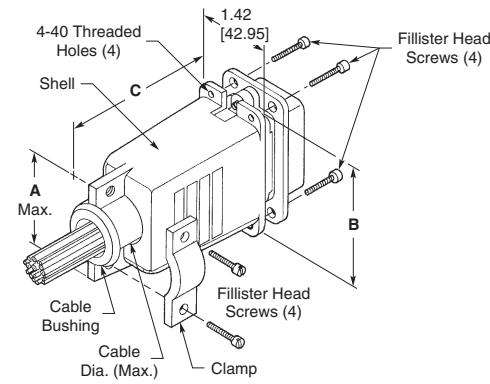
**Cable Clamps, Straight Cable Exit**

**Material and Finish**

**Clamp and Shell** — Die cast aluminum, electroless nickel plated (no intentional additions of lead or cadmium)

**Fillister Head Screws** — Passivated stainless steel

**Cable Bushings** — Rubber, black



Shell Size (No. of Modules)	Dimensions			Cable Dia. (Max.)	Cable Bushings	Cable RoHS Part No.
	A	B	C			
1	1.315 33.4	1.416 35.96	2.625 66.68	.750 19.05	With	5-202764-1*
	1.100 27.94	1.691 42.95	2.625 66.68	.563 14.3	Without	5-202305-3
2	1.820 46.23	2.424 61.57	3.140 69.76	.875 22.23	With	5-202617-1*
3	2.135 54.23	3.156 80.16	3.140 79.76	1.156 29.37	With	6-202301-1**
					Without	6-202301-0

\*Two Cable Bushings are included to provide .625 [15.88] and .250 [6.35] diameter cable outlets.

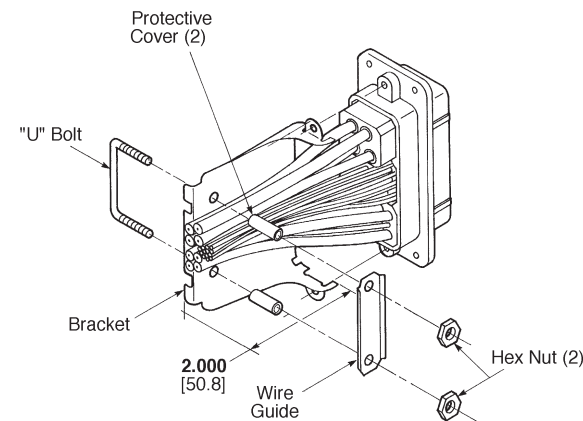
\*\*Four Cable Bushings are included to provide .938 [23.83], .750 [19.05], .625 [15.88] and .250 [6.35] diameter cable outlets.

**Note:** These cable clamps can be used on either a plug or receptacle shell of the appropriate size; refer to pages 8-154 to 8-156.

**Strain Relief (for Three-Module Shell)**

**Part Number 5-202567-1**

**Note:** This strain relief can be used on either a plug or receptacle shell, three-module size only, refer to page 8-156.



**Locking Latch Assembly**

**Part Number 5-202832-1**

(without mounting hardware)

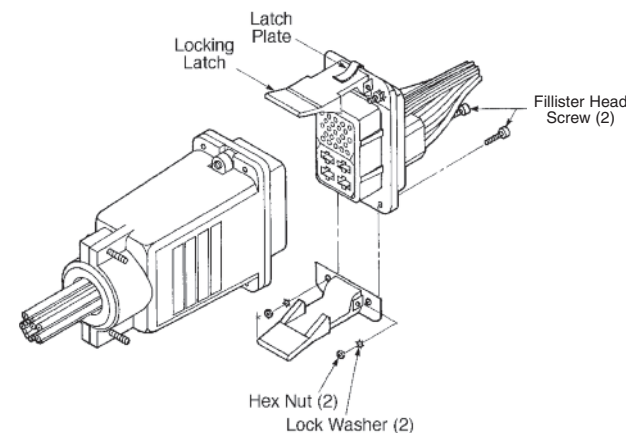
**Part Number 5-202832-2**

(with mounting hardware\*)

\*Mounting hardware includes four lock washers, 4-40 hex nuts and fillister head screws.

**Notes:**

1. Locking Latch Assemblies are packaged two per unit.
2. Locking Latch Assemblies can be used on either a plug or receptacle shell. They cannot be used with shells having floating bushings.
3. Locking Latch Assemblies must be used with a cable clamp.



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Rectangular Pin and Socket Connectors

**Application Tooling**

**CERTI-CRIMP and CERTI-CRIMP II Hand Tools**

These tools are ideal for small production, prototype and experimental applications. They are used for terminating pin and socket contacts to wire and feature the CERTI-CRIMP ratchet device to form accurate crimps each time.



Hand Tool Part Number 69710



CERTI-CRIMP II Straight Action Hand Tool



SDE die in PRO-CRIMPER frame. Go to [www.tooling.te.com](http://www.tooling.te.com) for additional tooling options for SDE dies.

**626 Pneumatic Tool System**



Lightweight, air-operated modular tooling system. Accepts a wide variety of interchangeable heads for crimping various types of contacts, terminals and splices onto wires ranging 6-26 AWG [1.3-0.12 mm<sup>2</sup>], plus coaxial and fiber optic cable. Available with either hand- or foot-actuation switch. Optional ratchet control available to provide complete crimp cycle.

**Specifications**  
**Outside Diameter** — 1.83 [46.5]  
**Length** — 11.6-12.9 [295-327]  
**Grip Span** — 2.19 [55.6] over button/handle  
**Weight** — 2.3-3.3 lb [1.0-1.5 kg]  
**Air** — 90-100 psi [6.21-6.89 bar], 11.14 in<sup>3</sup> [0.00018 m<sup>3</sup>]  
**Cycle Time** — 0.7-0.8 sec (16-14 AWG [1.3-2 mm<sup>2</sup>] PIDG Terminals)  
 For more information, request Catalog 124208.

**AMP-O-LECTRIC Model “K” Terminating Machine, 1-471273-3**



Semiautomatic bench machine for use with standard-style applicators. It is an electrically-powered, clutched, flywheel-energy-style machine, equipped with a mechanical strip feed mechanism. Products commonly applied with this machine include AMP splices, AMPLIVAR splices, and FASTON flag receptacles.

**Specifications**  
**Width** — 21 [533]  
**Depth** — 20 [508]  
**Height** — 24 [610] without reel  
**Weight** — 230 lb [104 kg]  
**Electrical** — 120 VAC, 60 Hz, 6 A  
**Air** — 90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m<sup>3</sup>/s] when required with air-feed applicators  
**Wire Range** — 26-10 AWG [0.12-6 mm<sup>2</sup>] solid or stranded, depending on product applied  
 For more information, contact TE Connectivity.

**AMP-O-LECTRIC Model “G” Terminating Machines, 354500-1, -9, -11**

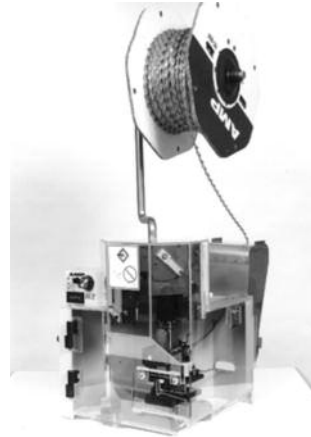


Semiautomatic bench machines for crimping reeled terminals and contacts, featuring a quiet and reliable direct motor drive, microprocessor controls for ease of setup and operation, and guarding and lighting designed for operator convenience. All models are equipped with either manual or automatic precision adjustment of crimp height. Machine-mounted sensors are available for crimp quality monitoring using conventional miniature-style applicators.

**Specifications**  
**Width** — 18.7-25.3 [475-643] depending on applicator type  
**Depth** — 21.5-28.1 [546-713] depending on applicator type  
**Height** — 20 [508]  
**Weight** — 240 lb [110 kg]  
**Electrical** — 120 or 220 VAC, 50 or 60 Hz; 310 VA  
**Air** — 90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m<sup>3</sup>/s] when required with air-feed applicators  
**Wire Range** — 26-10 AWG [0.12-6 mm<sup>2</sup>] solid or stranded, depending on product applied  
 For more information, request Catalog 65828.

**Application Tooling** (Continued)

**Entry Level Terminator (ELT), 1338600-1, -2, -3, -4, -5, -6**



Semiautomatic Bench Terminator for side- and end-feed reeled terminals and contacts. The ELT uses a DC motor with gear box drive. The result is a small-footprint design that is fast and quiet. Cycle time is less than 0.400 seconds with an operation sound level of 76dBA. With a crimp force capacity of 3,000 pounds, the ELT is available for all but the highest crimp force applications. A wide range of optional equipment is also available to meet your specific application requirements.

**Specifications**

**Width** — 16.8 [427]  
**Depth** — 20.6 [523]  
**Height** — 20 [510] without reel support  
**Weight** — approx. 150 lb [68 kg]  
**Electrical** — 100-240 VAC, 50/60 Hz, 6A (Note: Avg <1 A at 120 VAC when used as a bench-top unit at 2,000 cycles per hour operating rate)  
**Air** — 90-100 psi [6.21-6.90 bar], 6 scfm [0.00282 m³/s] when required for use with air-feed applicators (Note: Optional Air Feed Valve Assembly Required)  
**Wire Range** — Up to 14 AWG [2.5 mm²]  
 For more information, request catalog 1308382.

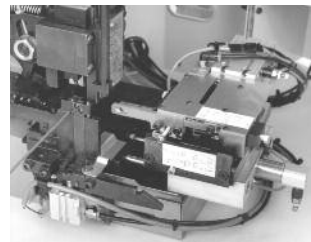
**AMP-O-MATIC Stripper-Crimper Machines, 1320895-1, -2**



Semiautomatic bench crimping machines that also strip the wire, and are therefore used for terminating jacketed cable. Feature manual precision adjustment of crimp height, keyed strip blades for faster, more accurate setups, and an efficient scrap removal system. All adjustments can be made from the front of the machines without special tools. Available with crimp quality monitoring.

**Specifications**

**Width** — 14 [355]  
**Depth** — 18 [457]  
**Height** — 33 [838] without reel  
**Weight** — 150 lb [68 kg]  
**Electrical** — 120 VAC, 50 or 60 Hz, 5 A  
**Air** — 80-100 psi [5.52-6.90 bar], 3.5 scfm [0.00165 m³/s]  
**Wire Range** — 32-14 AWG [0.03-2 mm²]  
 For more information, request Catalog 65004.



The combination of the Stripping Module with the Entry Level Terminator (ELT) or the AMP-O-ELECTRIC Model G Terminator provides an economical and proficient method of stripping wire and crimping terminals on the same machine. Wires are stripped moments before crimping, meaning there is virtually no chance of damaging wire conductors during handling or storage. Once the wire is fed into the start sensor the Stripping Module does the rest, improving placement accuracy.

**Specifications**

**Wire Range Base Module** — 0.03 mm² - 2.0 mm² (32-14 AWG) (30-32 AWG may require special kit.)  
**Max. Insulation** — .200 [5.08]  
**Cable Breakout** — > 1.100 [29.00]  
**Strip Length** — .100 - .400 [2.50 - 10.16]  
**Noise** — Less than 82 dBA (Typical at operator position with standard mechanical feed applicator)  
**Weight** — 4.53 Kilograms (10 lb)  
**Height** — 5.000 [127.00]  
**Electrical** — 100-240 VAC, 50/60 Hz, single phase current, obtains power from the terminator  
**Air** — 620-760 kPa (90-100 psi), 2.83 liters/sec (6 scfm)  
**Wire Sensor** — Gold plated contacts with laser etched target  
 For more information, request Catalog 1309085.

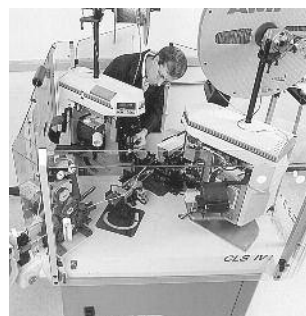
**8**

Rectangular Pin and Socket Connectors



**Application Tooling** (Continued)

**AMPOMATOR CLS IV+ Lead-Making Machines, 356500-1, -2**

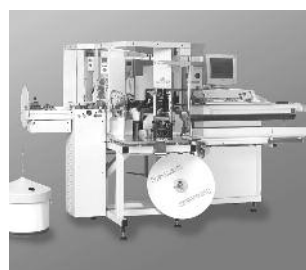


Fully-automatic machines that measure, cut, strip and terminate single leads. Microprocessor-controlled, and programmed and operated using an easy-to-follow, menu-driven touch-screen. Features include direct-drive terminating units with precision crimp height adjustment, fully programmable setups, wire runout and splice detection, and motorized pre-feed with wire straightener. Crimp quality monitoring is also available.

**Specifications**

**Width** — 159 [4 040]  
**Depth** — 68 [1 730]  
**Height** — 86 [2 185] with 24 [610] dia. reel  
**Weight** — 2 000 lb [907 kg]  
**Electrical** — 220 VAC, 50 or 60 Hz, single phase, 25 A, with neutral and ground  
**Air** — 90 psi [6.21 bar], 15 scfm [0.0071 m<sup>3</sup>/s] sustained  
**Wire Range** — 26-10 AWG [0.12-6 mm<sup>2</sup>] stranded, 26-16 AWG [0.12-1.4 mm<sup>2</sup>] solid  
**Lead Lengths** — 3-90 [76.2-2 285], 90-1 000 [2 285-25 400] with long lead conveyors  
 For more information, request Catalog 124324.

**Gamma 333 PC Lead-Making Machine, Three Stations, 1-528324-1**



With its capacity to accommodate an additional processing station on side 1, the Gamma 333 PC can perform a number of new processes. It can produce two-ended crimp leads, process double crimp connections with three different terminals or apply seals on one end of the wire. Tinning and ink jet marking are two further options. Process monitoring is integrated into the system, for accurate trimming and stripping of the wires.

**Specifications**

**Length** — 125 [3137]  
**Width** — 54.2 [1377]  
**Height** — 70.5 [1790]  
**Length Range** — 2.36 in-32.8 ft [60-10,000] (optional 30mm)  
**Cross-Section Range** — AWG 26-AWG 10 [0.125mm<sup>2</sup>-5mm<sup>2</sup>]  
**Noise Level** — <76dB (without crimping modules)  
**Electrical** — 3x208 - 480V, 50-60Hz; 6kVA  
**Compressed Air** — 5-6 bar  
**Air Consumption** — 6.5m<sup>3</sup>/h  
**Weight** — 1850 lbs [840 kg] with two crimping modules  
 For more information, request Catalog 1307901.

**Crimp Quality Monitor (CQM), 1320420-1, -2**



This unique system provides 100% on-the-fly crimp inspection. It measures the crimp height of each termination, and evaluates the quality of each crimp. If a crimp is questionable, the monitor alerts the operator with both visual and audible alarms. It also provides ports for printing and networking. When used with AMP-O-LECTRIC Model “G” Termination Machines, the monitor is mounted to the

machine. When used with AMPOMATOR CLS IV Lead-Making Machines, it is integrated into the machine’s operating system.

**Specifications**

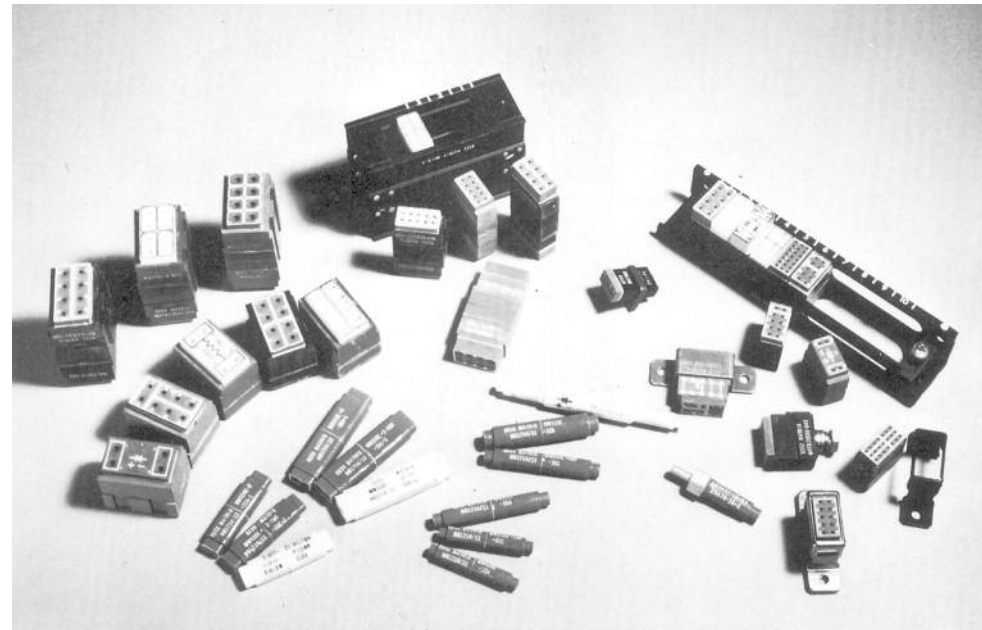
**Width** — 8.8 [220]  
**Depth** — 8.1 [205]  
**Height** — 4.6 [115]  
**Weight** — 5 lb [2.3 kg]  
**Electrical** — 100-240 VAC, 50/60 Hz, 3.2 A  
 For more information, request Catalog 82275.



## Introduction

### Product Facts

- The TJS connections are inherently more reliable than conventional threaded and solder terminations
- The user's wiring is crimped to gold plated pin contacts, conforming to MIL-C-39029/1, which are individually mated to probe-proof gold plated pre-bussed sockets contained within the module and splice
- Modules and Splices — environment proof conforming to the requirements of MIL-T-81714. These modules can be assembled into MIL-T-81714 rails and are individually removable. Brackets are also available to mount individual or triads of modules. The splices are designed to terminate from two to four wires.
- Commercial TJS consists of module blocks (either environmental or non-environmental) designed for custom assembled installations. These can be furnished in pre-assembled arrays in rails or individually with rail kits to accommodate various rows and lengths of modules.
- TJS Connectors also qualified to German Army Standard VG 95212-31/ VG 95231-102/103/105



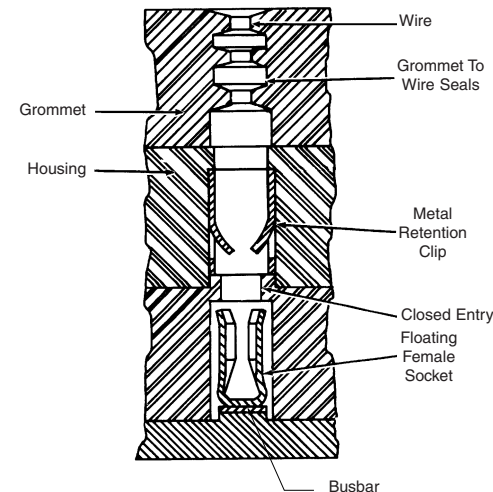
The Terminal Junction System (TJS) provides design engineers with a compact family of modules and splices for interconnecting wires. Both the modules and splices facilitate interconnecting with pre-bussed configurations to which the user's 22 thru 12 AWG wires are terminated with crimped removable pin contacts. Servicing tools required are the commonly available MIL-C-81969/14, plastic tool and MIL-C-22520 crimping tool used

for rear release connector contacts.

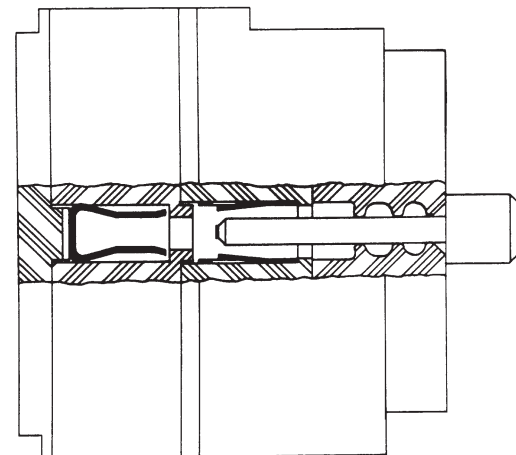
The TJS eliminates many shortcomings of the conventional lug and threaded termination. The TJS has no loose attaching hardware, such as nuts, screws and lock-washers to complete the termination. The TJS saves space and weight over threaded terminations while reducing installation cost. There is complete electrical isolation and optional environmental

sealing grommet in the TJS without user installed busses, barriers, insulating strips, potting and enclosures. The TJS module pre-bussed integral sockets are permanently connected in a variety of bussing arrangements to suit the most exacting circuit requirements. These modules can be user assembled into any required bussing arrangement and contact size permutation.

### Typical Module Construction (Cross-Section)



### Module With Sealing Plug Installed (Cross-Section)



## 8

### Rectangular Pin and Socket Connectors

### Performance Specifications

#### Voltage Rating —

Sizes 22, 20, 16, 12

Altitude	DWV*	Working Voltage
Sea level	1,500 V	600 V
70,000 Feet**	600 V	300 V

Size 21 (22HD)

Altitude	DWV*	Working Voltage
Sea Level	1,000 V	600 V
70,000 Feet**	325 V	300 V

\* DWV = Dielectric Withstanding Voltage

\*\* [21,336m]

#### Contact Voltage Drop (Max.) —

Contact Size	Test Current	Initial	After Conditioning
21 (22HD)	5.0 A	55 mV	65 mV
22	5.0 A	45 mV	50 mV
20	7.5 A	45 mV	50 mV
16	13.0 A	50 mV	55 mV
12	23.0 A	40 mV	45 mV

The MV drop is measured across an adjacent bussed pair of wire contacts.

#### Operating Temperature Range —

Class	Minimum	Maximum
D	-65°C (-85°F)	+200°C (+392°F)

#### Altitude Immersion —

Insulation resistance shall not fall below 5,000 megohms after being subjected to three, 70,000-foot [21,336m] altitude immersion cycles in salt water.

#### Fluid Immersion —

Class D—Extended fluid type

Fluid	Fluid
MIL-H-5606	Hydraulic fluid
MIL-L-23699	Lubricating oil
MIL-T-5624	Aviation fuel
MIL-L-7808	Lubrication oil
MIL-A-8243	Anti-ice fluid
MIL-C-25769	Cleaning fluid
Skydrol	500A & 500B
Aerosafe	2300 & 2300W
Flyjet	III
Esso Oil	Turbo 25

#### Moisture Resistance —

High Humidity (95% RH) 100 megohms min.

After Drying—24 hours 1,000 megohms min.

#### Durability —

No performance degradation after 10 cycles of contact insertion/removal.

#### Vibration —

Class D

Sine, MIL-STD-202, method 204 condition G

Random, MIL-STD-1344, method 2005.

#### Shock —

Class D

MIL-STD-1344, Method 2004

(300 G, 3 milliseconds duration, half-sine).

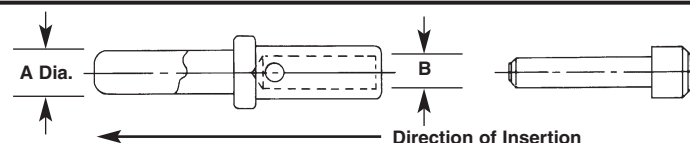
#### Specifications —

QPL-AS390929

SAE-AS39029/1

### Contacts, Sealing Plugs and Assembly Tools

#### Contacts and Sealing Plugs



Size	A Dia.	Size	Part Numbers Pin Contacts		Wire Barrel	Part Numbers Sealing Plugs		
			Commercial	Military		Commercial	Military	B
.039/.041	21(22HD)		592413-1	M39029/1-507	22D	592104-4	MS27488-22	—
.061/.063	22		3-592404-1	M39029/1-100	22	592104-1	MS27488-20	.035/.03
.061/.063	20		2-592404-1	M39029/1-101	20	592104-1	MS27488-20	.048/.05
.076/.078	16		1-592404-1	M39029/1-102	16	592104-2	MS27488-16	.066/.068
.093/.095	12		592404-1	M39029/1-103	12	592104-3	MS27488-12	.098/.102

#### Insertion/Removal Tools

Size	Part Numbers		Color*	Wire Gage	Contact Wire Dia. Min./Max.	Finished Crimp Tool	Turret or Positioner
	Commercial	Military					
21(22HD)	—	M81969/14-01	Grn/Wh	28-22	.030-.054 [.76-1.37]	M22520/2-01	M22520/2-32
22	592105-1	M81969/14-11	Rd/Wh	26-22	.034-.066 [.86-1.68]	M22520/2-01	M22520/2-11
20	592105-1	M81969/14-11	Rd/Wh	24-20	.038-.083 [.97-2.11]	M22520/1-01 or /2-01	M22520/1-02 or /2-02
16	592105-2	M81969/14-03	Blue/Wh	20-16	.060-.101 [1.52-2.57]	M22520/1-01	M22520/1-02
12	—	M81969/14-04	Yel/Wh	14-12	.087-.147 [2.21-3.73]	M22520/1-01	M22520/1-02

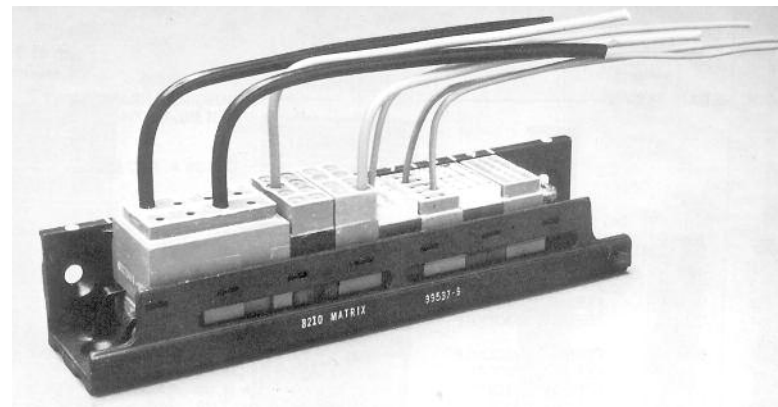
\* Colored end for contact insertion; white end for release/removal.

### Feedback and Feedthru Terminal Junction Modules

MIL-T-81714 Terminal Junction module blocks are available in sizes 12, 16, 20, 22 and 22HD. The size 12 and 16 feedback blocks have eight cavities each. The size 20 and 22 feedback blocks have 10 cavities each (size 22HD has 21 cavities). The feedthru blocks have the same number of cavities situated on both sides of the block.

Military bussing arrangements are available with each size block.

These module blocks and mounting rail assemblies are qualified to MIL-T-81714. The pin contacts are qualified to MIL-C-39029/1.



#### Feedthru

Military Part Numbers Feedthru Modules	AMP Commercial Part Numbers Feedthru Modules	Military Part Numbers Feedthru Modules	AMP Commercial Part Numbers Feedthru Modules
<b>(Class D) Size 20</b>		<b>(Class D) Size 16 (Continued)</b>	
M81714/7-DA1	592608-3	M81714/8-DC1	592604-9
M81714/7-DB1	592608-1	M81714/8-DC2	—
M81714/7-DB2	—	M81714/8-DD1	592604-1
M81714/7-DB3	—	M81714/8-DH1	—
M81714/7-DC1	592608-8	<b>(Class D) Size 12</b>	
M81714/7-DC2	—	M81714/9-DA1	592600-9
M81714/7-DD1	592608-6	M81714/9-DB1	592600-7
M81714/7-DE1	592608-5	M81714/9-DB2	1-592600-3
M81714/7-DJ1	—	M81714/9-DC1	592600-1
<b>(Class D) Size 16</b>		M81714/9-DC2	1-592600-1
M81714/8-DA1	592604-5	M81714/9-DD1	592600-5
M81714/8-DB1	592604-3	M81714/9-DH1	592600-3
M81714/8-DB2	592604-7		

Notes: TE Connectivity has not qualified the Feedthru Modules to MIL-T-81714. The Military part number is shown for reference only.

#### Feedback

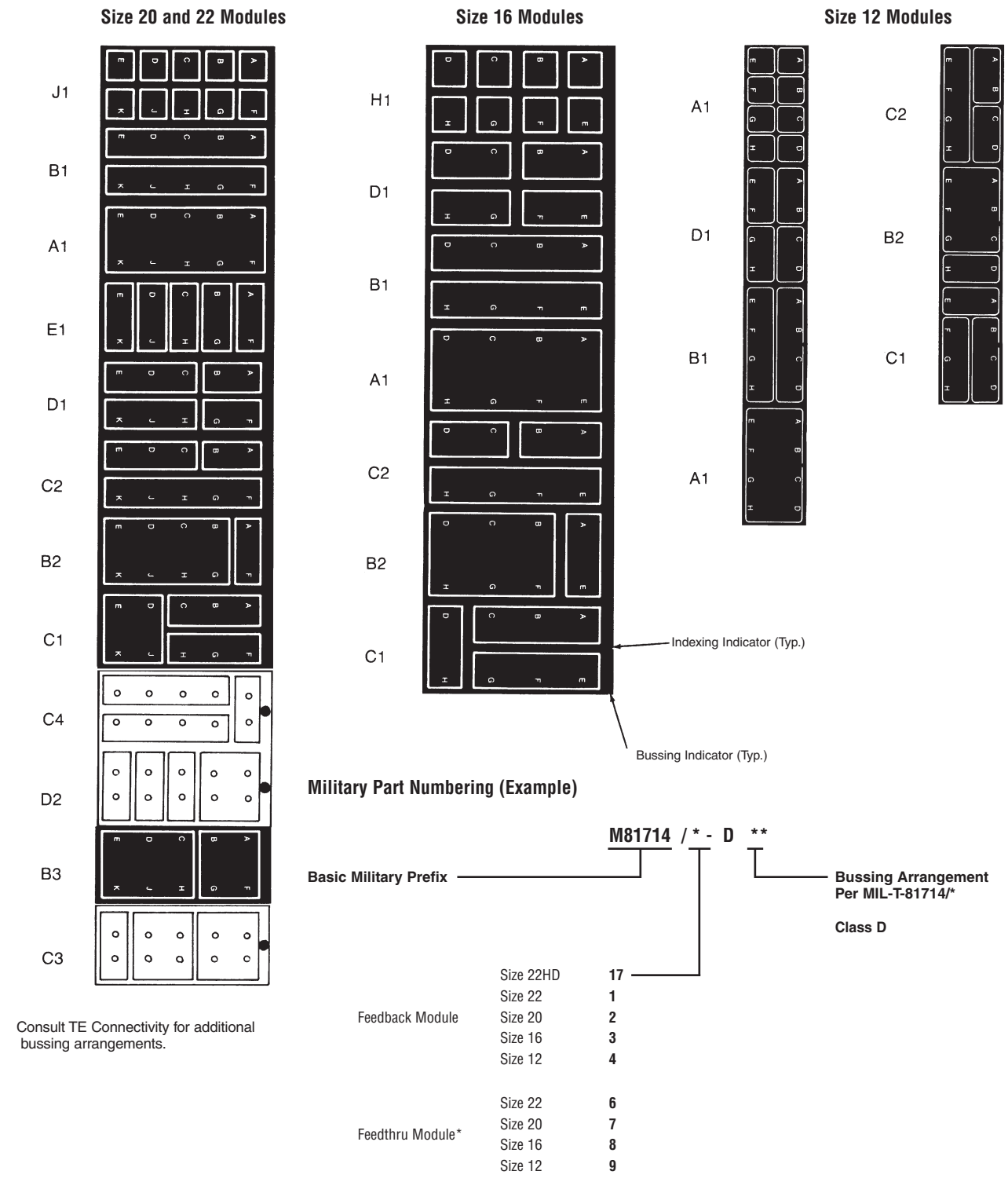
Military Part Numbers Feedback Modules	AMP MIL Qualified Part Numbers Feedback Modules	AMP Commercial Part Numbers Feedback Modules	Military Part Numbers Feedback Modules	AMP MIL Qualified Part Numbers Feedback Modules	AMP Commercial Part Numbers Feedback Modules
<b>(Class D) Size 22</b>			<b>(Class D) SIZE 20</b>		
M81714/1-DA1	—	592633-4	M81714/2-DA1	592624-3	592624-4
M81714/1-DB1	—	592633-2	M81714/2-DB1	592624-1	592624-2
M81714/1-DB2	—	1-592633-2	M81714/2-DB2	1-592624-0	1-592624-1
M81714/1-DB3	—	2-592633-0	M81714/2-DB3	1-592624-8	1-592624-9
M81714/1-DC1	—	1-592633-4	M81714/2-DC1	1-592624-2	1-592624-3
M81714/1-DC2	—	1-592633-0	M81714/2-DC2	2-592624-2	592624-9
M81714/1-DD1	—	592633-8	M81714/2-DD1	592624-7	592624-8
M81714/1-DE1	—	592633-6	M81714/2-DE1	592624-5	592624-6
<b>(Class D) Size 21</b>			<b>(Class D) SIZE 16</b>		
M81714/17-D31	592629-1	592629-2	M81714/3-DA1	592620-5	592620-6
M81714/17-D32	592629-3	592629-4	M81714/3-DB1	592620-3	592620-4
M81714/17-D33	592629-5	592629-6	M81714/3-DB2	592620-9	1-592620-0
M81714/17-D34	592629-7	592629-8	M81714/3-DC1	1-592620-1	1-592620-2
M81714/17-D35	592629-9	1-592629-0	M81714/3-DC2	592620-7	592620-8
M81714/17-D36	4-592629-4	—	M81714/3-DD1	592620-1	592620-2
M81714/17-D37	1-592629-1	1-592629-2	<b>(Class D) SIZE 12</b>		
M81714/17-D38	1-592629-3	1-592629-4	M81714/4-DA1	—	592616-6
			M81714/4-DB1	—	592616-4
M81714/17-D39	1-592629-5	1-592629-6	M81714/4-DB2	—	1-592616-0
M81714/17-D40	1-592629-7	1-592629-8	M81714/4-DC1	—	1-592616-2
M81714/17-D42	4-592629-2	4-592629-0	M81714/4-DC2	—	592616-8
M81714/17-D43	4-592629-3	—	M81714/4-DD1	—	592616-1
M81714/17-D44	1-592629-9	2-592629-0			
M81714/17-D45	4-592629-5	2-592629-2			

## 8

Rectangular Pin and Socket Connectors

**Feedback Terminal Junction Modules**

**Typical Bussing Arrangements**

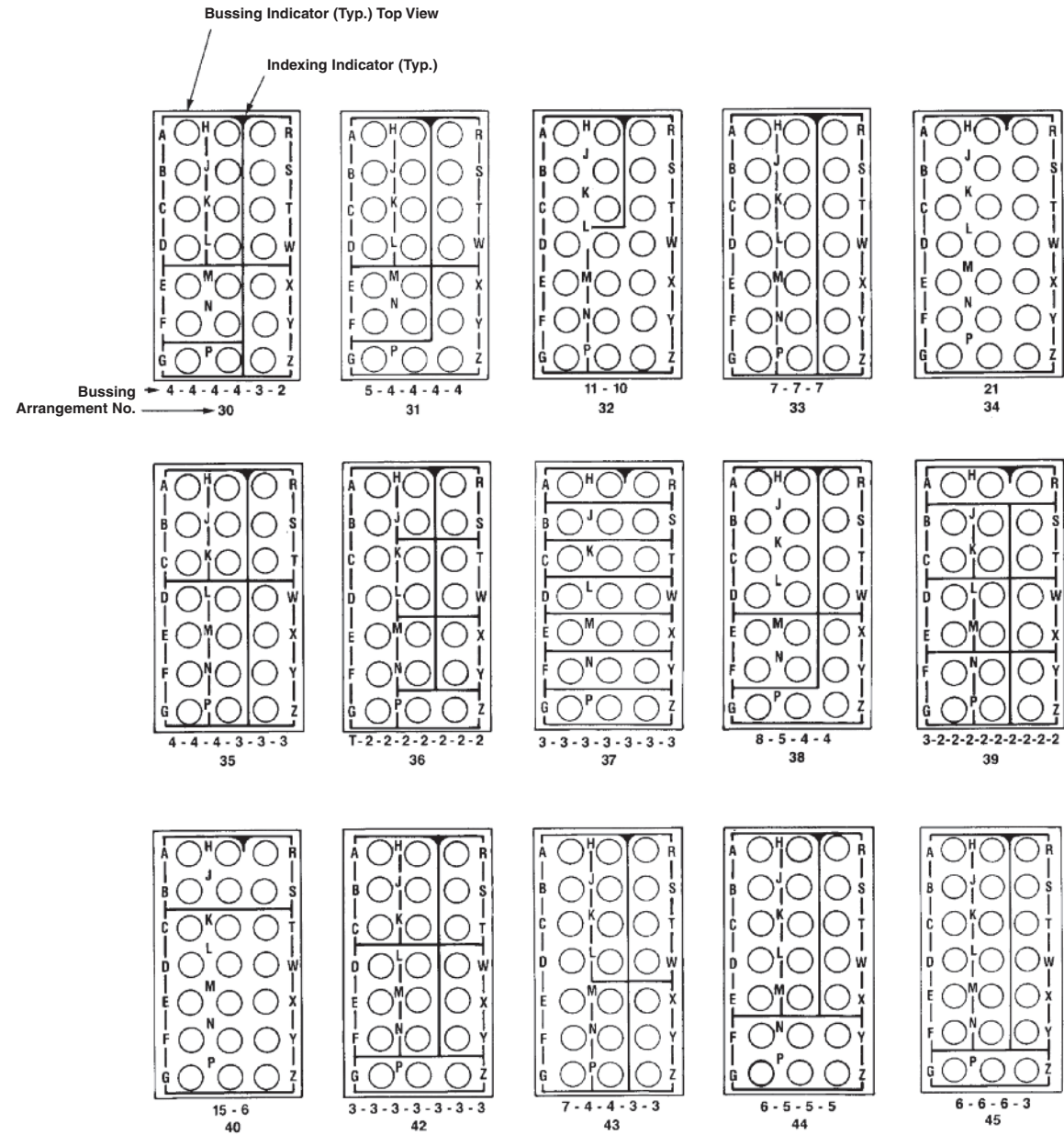


Consult TE Connectivity for additional bussing arrangements.

**Notes:** 1. When ordered to military part number, contacts and sealing plugs are included.  
2. Mounting hardware is not included; order separately. (See pages 8-166 and 8-167.)  
3. Size 16 Module Dim. (Typ.) — (Feedback) .850 [21.59] L x .390 [9.91] W x 1.000 [25.40] H  
(Feedthru) .850 [21.59] L x .390 [9.91] W x 1.830 [46.48] H

**Feedback Terminal Junction Modules** (Continued)

**Typical Bussing Arrangements**  
Size 22HD Military,  
Size 21 Commercial  
Modules



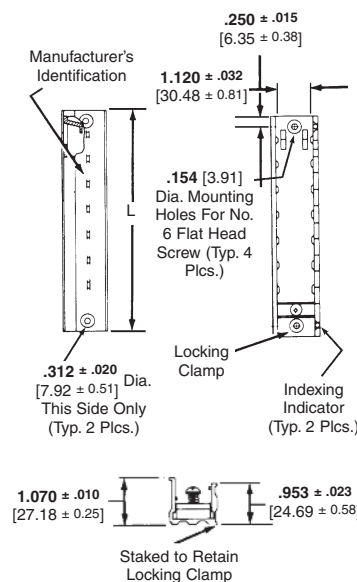
8

Rectangular Pin and Socket Connectors



**Feedback Terminal Junction Modules** (Continued)

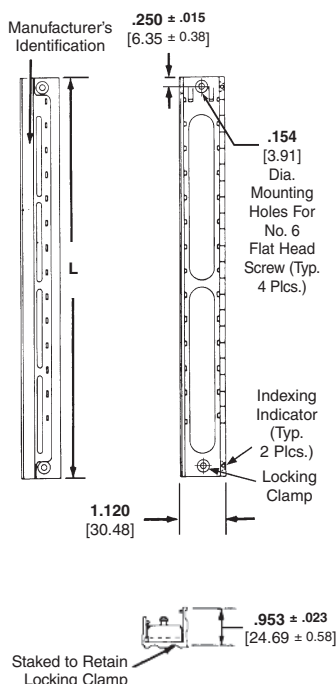
**Mounting Hardware**  
**Standard Weight**  
**Rail Assembly**  
**Part Number 591613**



**Rail Assembly Dimensions**

Length L	591613 and 591621 Part Numbers			
	Standard Weight		Lightweight	
	591613	M81714/5	591621	M81714/16
1.781 [45.24]	-1	—	-1	—
2.171 [55.14]	-2	—	-2	—
2.561 [65.05]	-3	-2	-3	-2
2.951 [74.96]	-4	-3	-4	-3
3.341 [84.86]	-5	-4	-5	-4
3.371 [85.62]	-6	-5	-6	-5
4.121 [104.67]	-7	-6	-7	-6
4.511 [114.58]	-8	-7	-8	-7
4.901 [124.49]	-9	-8	-9	-8
5.291 [134.39]	-10	-1	-10	-1
5.681 [144.30]	-11	-9	-11	-9
6.071 [154.20]	-12	-10	-12	-10
6.461 [164.11]	-13	-11	-13	-11
6.851 [174.02]	-14	-12	-14	-12
7.241 [183.92]	-15	-13	-15	-13
7.631 [193.83]	-16	—	-16	—
8.021 [203.73]	-17	—	-17	—
8.411 [213.64]	-18	—	-18	—
8.801 [223.54]	-19	—	-19	—
9.191 [233.45]	-20	—	-20	—

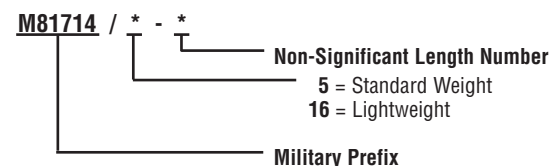
**Lightweight Rail Assembly**  
**Part Number 591621 (weight**  
**savings of up to 40%)**



Rail Assemblies are made of black anodized aluminum alloy. Locking clamp screw is corrosion resistant steel (passivated). Rails will accommodate all sizes and various quantities of feedback modules in any combination.

**Rail Part Numbering**

**Military**



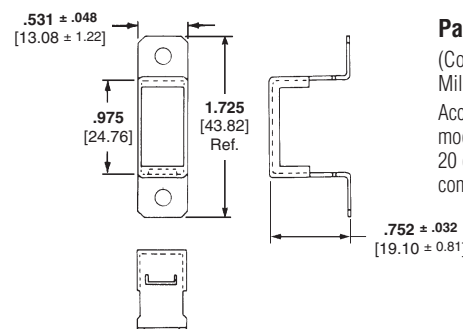
**Note:** Rail Assemblies do not contain module blocks. Order separately.  
(See page 8-163.)

†(based on Size 22, 20, and 16 dimensions)

**Individual Module Mounting**  
**Brackets**

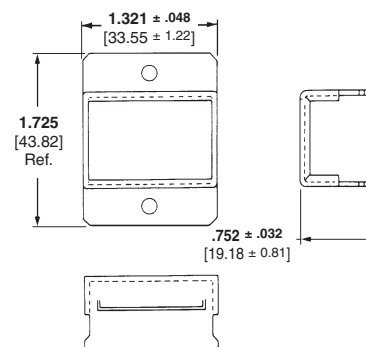
**Part Number 591637-1**

(Commercial equiv. to Military M81714/29-1)  
Accommodates one Size 21, 22, 20 or 16 module.



**Part Number 591638-1**

(Commercial equiv. to Military M81714/29-2)  
Accommodates one Size 12 module or three Size 21, 22, 20 or 16 modules in any combination.

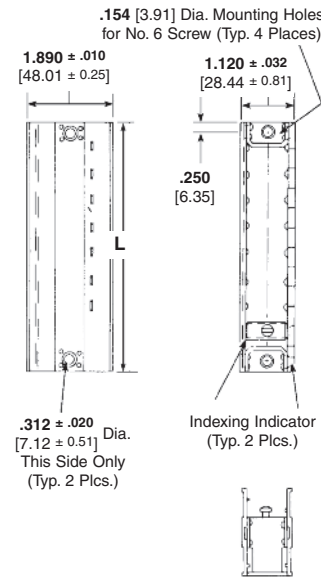




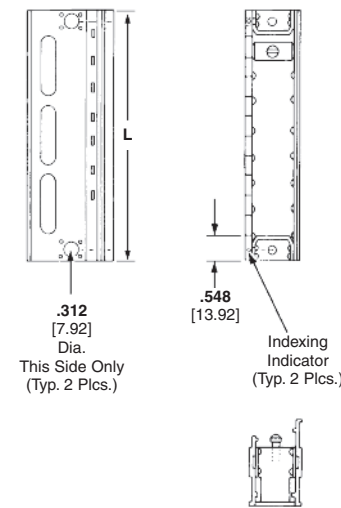
**Feedthru Terminal Junction Modules**

**Mounting Hardware**

**Standard Weight Rail Assembly  
Part Number 591601**



**Lightweight Rail Assembly  
Part Number 591603**



**Rail Assembly Dimensions**

Length L	591601 and 591603 Part Numbers	
	Standard Weight Commercial*	Lightweight Commercial**
	591601	591603
2.041 [51.84]	-1	—
2.431 [61.75]	-2	—
2.821 [71.65]	-3	—
3.211 [81.56]	-4	—
3.601 [91.46]	-5	-4
3.991 [101.37]	-6	-5
4.381 [111.28]	-7	—
4.771 [121.18]	-8	—
5.161 [131.09]	-9	—
5.551 [141.00]	-10	—
5.941 [150.90]	-11	-1
6.331 [160.81]	-12	—
6.721 [170.71]	-13	—
7.111 [180.62]	-14	-2
7.501 [190.52]	-15	-3
7.891 [200.43]	-16	—
8.281 [210.34]	-17	—
8.671 [220.24]	-18	—
9.061 [230.15]	-19	—
9.451 [240.06]	-20	—

Rail Assemblies are made of black anodized aluminum alloy. Locking clamp screw is corrosion resistant steel (passivated). Rails will accommodate all sizes and various quantities of feed thru modules in any combination.

\* Commercial equivalent to M81714/10—\*  
\*\* Commercial equivalent to M81714/14—\*

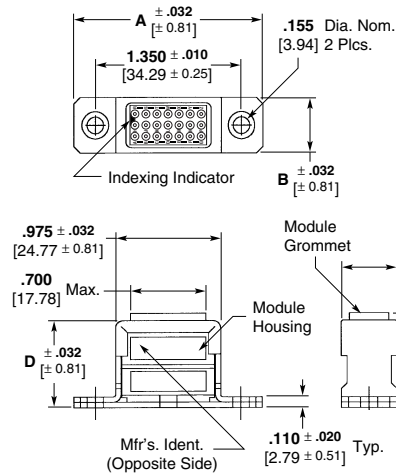
**8**  
Rectangular Pin and Socket Connectors

**Feedback**

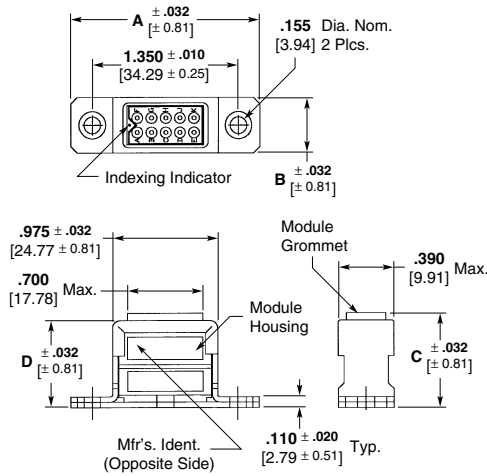
**Grounding Flange Modules**

AMP Grounding Flange Blocks are available in Sizes 22, 20, 16 and 12. All contacts are bussed together and connected to a ground plate made of nickel plated aluminum.

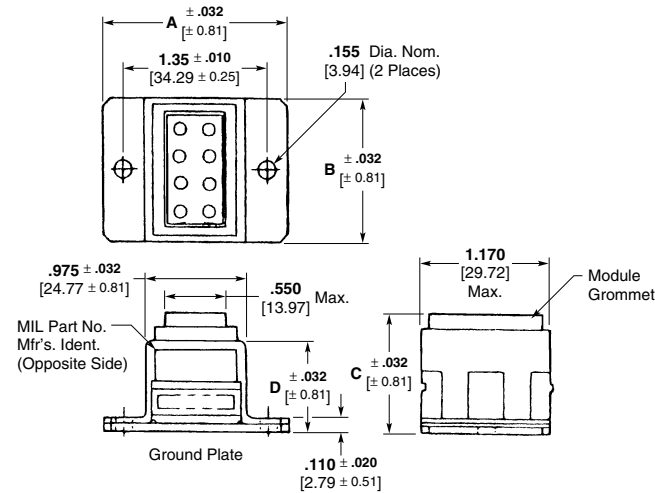
**HD22  
Part Number 592840**



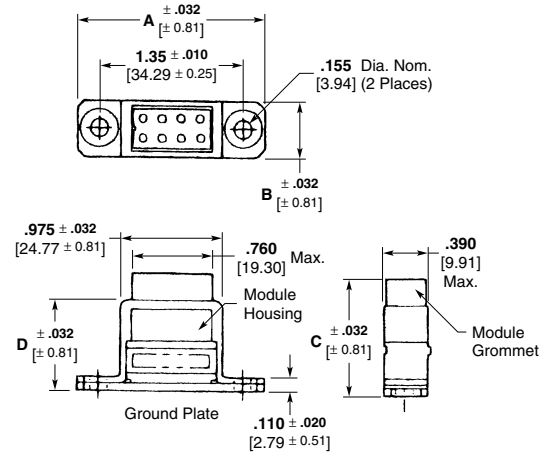
**Size 20, 22  
Part Number 592836**



**Size 12  
Part Number 592820-1**



**Size 16  
Part Number 592830-1**



**Commercial Equivalent to Military M81714/28-\* \*\***

Contact Size	Dimensions				Part Number
	A	B	C	D	
HD22	1.725 43.82	0.515 13.08	0.880 22.35	0.817 20.75	592840-2
22	1.725 43.82	0.515 13.08	0.880 22.35	0.817 20.75	592836-3
20	1.725 43.82	0.515 13.08	0.880 22.35	0.817 20.75	592836-1
16	1.725 43.82	0.515 13.08	1.060 26.92	0.817 20.75	592830-1
12	1.725 43.82	1.305 33.15	1.060 26.92	0.817 20.75	592820-1

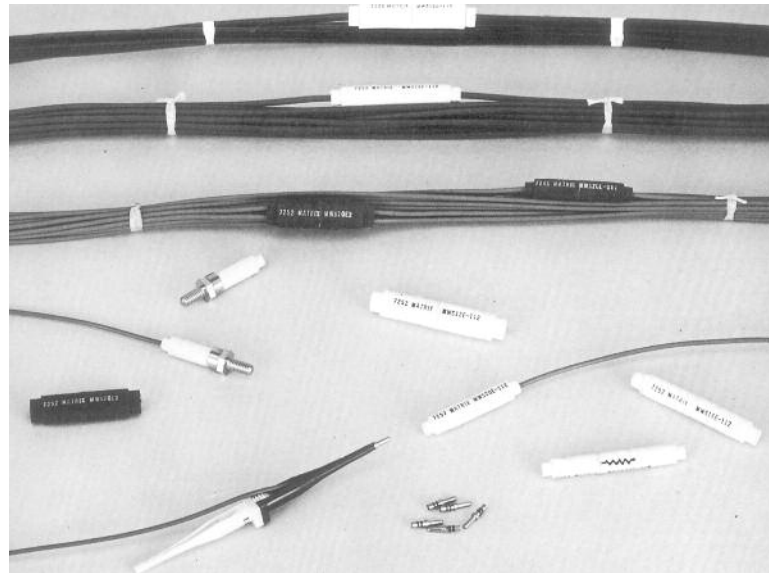
## Wire Splices

### Single Splice

Built and qualified to MIL-T-81714, the commercial Single Wire Splice provides an environmentally reliable, positive and maintainable in-line disconnect between single wires. Their small diameter permits placement within a wire bundle or electrical harness. The standard M39029/1 pin contact is utilized. Single wire splices are available per MIL-T-81714.

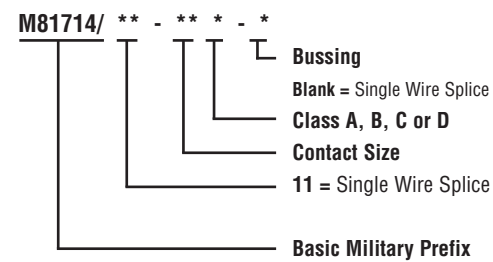
### Double Splice

Provides an environmental in-line disconnect for joining up to four wires. Bussed or unbussed contacts are available permitting the versatility of joining wires in double, triple or quadruple combinations.



### Part Numbering

#### Military



#### Double Spliced

Contact Size	Bussed Part Number	Unbussed Part Number
22	592588-6	—
20	592588-5	592589-1
16	592588-4	—

#### Single Splice

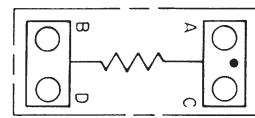
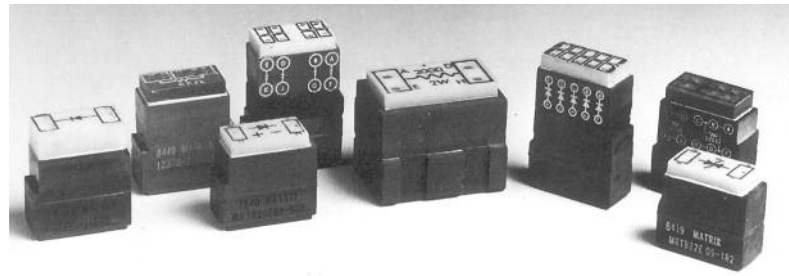
Contact Size	Part Number	MIL Part No. M81714/11
20	592583-3	-20D
16	592583-2	-16D
12	592583-1	-12D

8

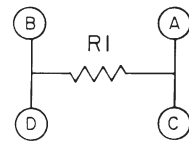
Rectangular Pin and Socket Connectors

**Electronic Module Blocks and Splices**

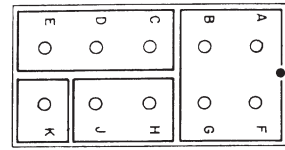
Electronic Modules, Splices and Mounting Hardware are custom engineered to suit the user's application. During design, specific part numbers will be assigned. (see page 8-174.)



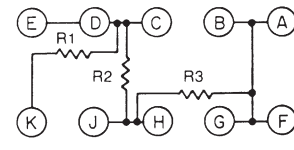
TOP MARKING (TYP)



SCHEMATIC DIAGRAM

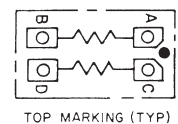


TOP MARKING

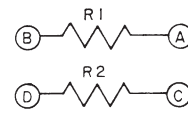


SCHEMATIC DIAGRAM

**Fig. 5A**

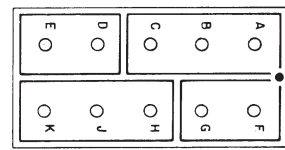


TOP MARKING (TYP)

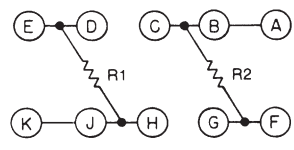


SCHEMATIC DIAGRAM

**Fig. 2A**

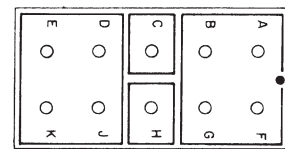


TOP MARKING

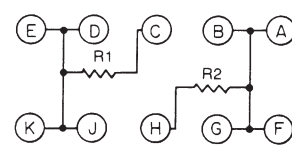


SCHEMATIC DIAGRAM

**Fig. 6A**

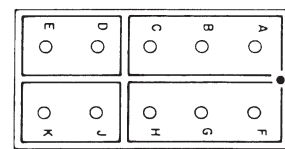


TOP MARKING

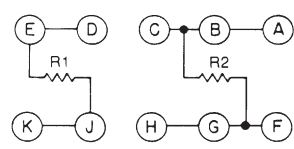


SCHEMATIC DIAGRAM

**Fig. 3A**

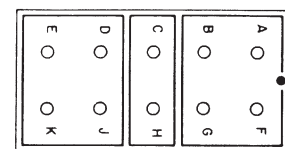


TOP MARKING

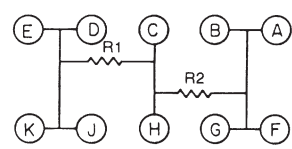


SCHEMATIC DIAGRAM

**Fig. 7A**

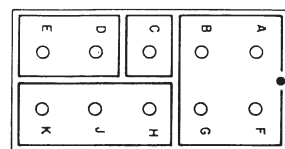


TOP MARKING

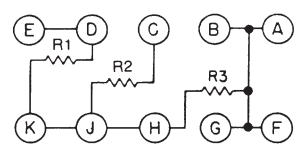


SCHEMATIC DIAGRAM

**Fig. 4A**



TOP MARKING



SCHEMATIC DIAGRAM

**Fig. 8A**

Consult TE Connectivity for additional circuit arrangements.

**Electronic Module Blocks** (Continued)

**Typical Diode Circuit Arrangements**

(See page 8-174 for Part Numbers.)



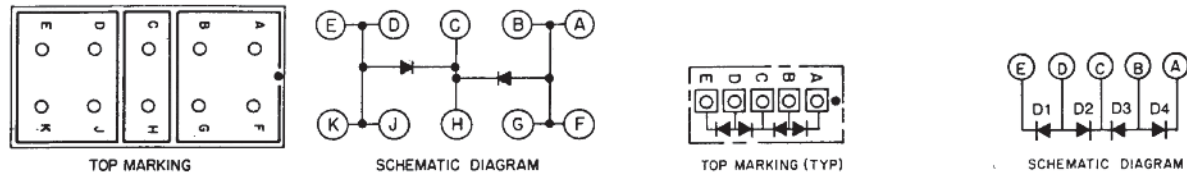
**Fig. 1B**

**Fig. 5B**



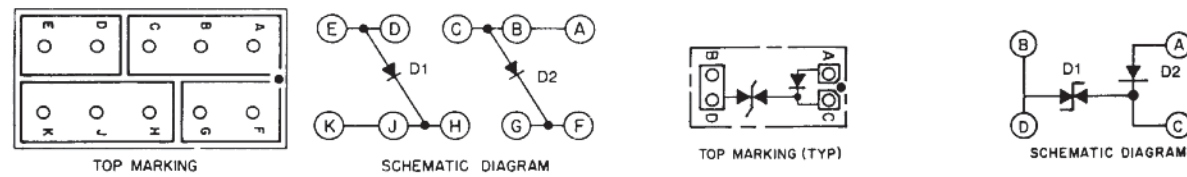
**Fig. 2B**

**Fig. 6B**



**Fig. 3B**

**Fig. 7B**



**Fig. 4B**

**Fig. 8B**



Rectangular Pin and Socket Connectors

Consult TE Connectivity for additional circuit arrangements.

Electronic Module Blocks (Continued)

Typical Combination  
Circuit Arrangements

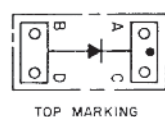


Fig. 1C

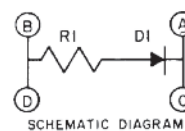


Fig. 5C

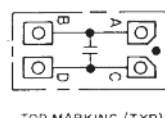
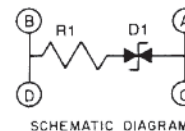
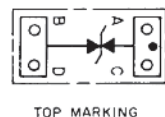


Fig. 2C

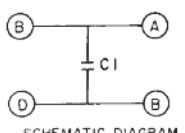


Fig. 6C

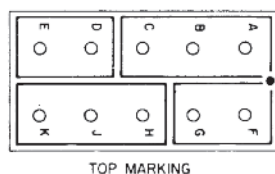
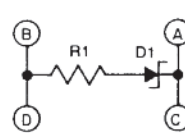
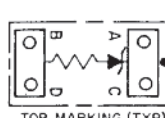


Fig. 3C

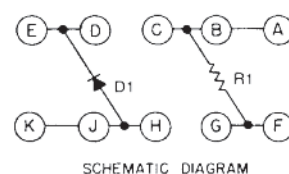


Fig. 7C

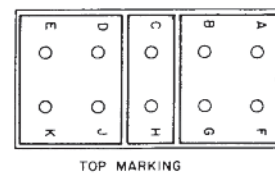
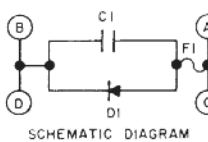
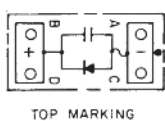


Fig. 4C

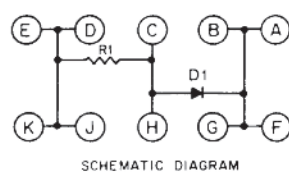
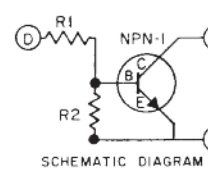
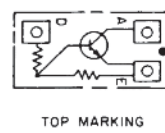


Fig. 8C

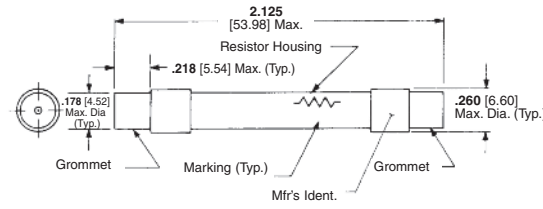


Consult TE Connectivity for additional circuit arrangements.

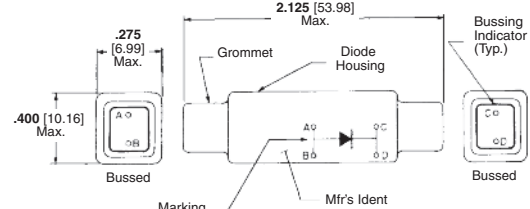


**Commercial Electronic Splices**

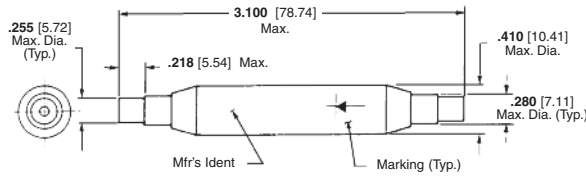
**Various Component Types**



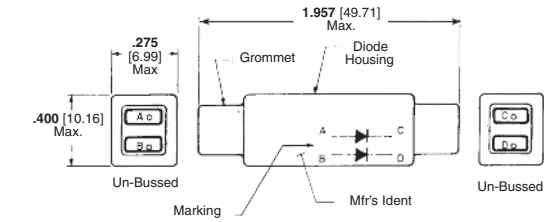
**Fig. 1D**



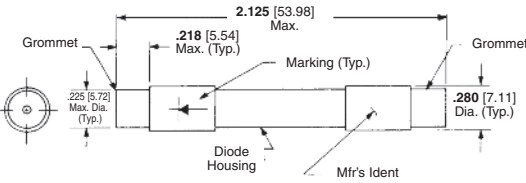
**Fig. 5D**



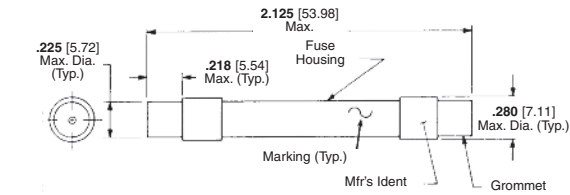
**Fig. 2D**



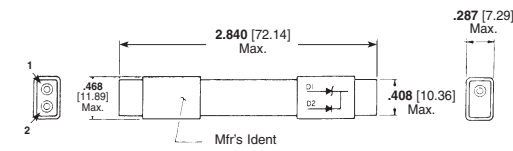
**Fig. 6D**



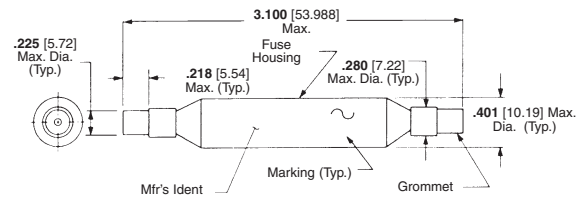
**Fig. 3D**



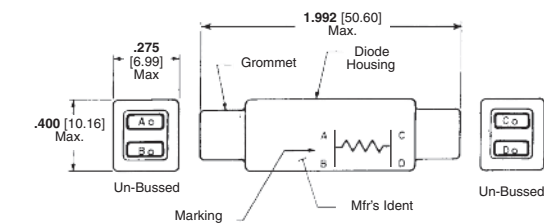
**Fig. 7D**



**Fig. 4D**



**Fig. 8D**



**Fig. 9D**

**8**

Rectangular Pin and Socket Connectors

**Electronic Module Blocks and Splices Part Numbering Information**

Description	Figure	Part Number	RoHS Compliant Part Number	Electrical Information
Module Blocks	Fig. 1A	591872-1	—	R1=1500 Ω RCR07G152JS
		591873-1	—	R1=9100 Ω RLR07C9101GS
		591829-3	—	R1=150 Ω
	Fig. 2A	591899-1	—	R=RLR20C10R0GS 10 Ω
		591892-1	—	R1=R2=127 Ω RNC55H1270FS
		591898-1	5-591898-1	R1=R2=10 Ω RLR20C10R0GS
		591876-1	—	R1=180 Ω RLR07C1800GS R2=487 Ω RLR07C4870FS
		591871-1	5-591871-1	R1=R2=2200 Ω RCR07G222JS
		591875-1	—	R1=180 Ω RLR07C1800GS R2=348 Ω RLR07C3480FS
	Fig. 4A	591911-1	—	R1=34.8 kΩ R2=21.5 kΩ
	Fig. 5B	591854-1	—	D1=D2=D3=D4=D5=JAN1N5618
		591855-1	—	D1=D2=D3=D4=D5=JANTX1N5618
Module Blocks (Diode Circuits)	Fig. 5B	591857-2	—	D1=D2=D3=D4=D5=JANTX1N5618
		592887-1	—	D1=D2=D3=D4=1N4007
	Fig. 1B	591893-2	—	D1=JANTX1N5624
		591894-2	—	D1=JANTX1N751A
		591896-2	—	D1=JANTX1N5552
		591893-2	—	D1=JANTX1N5624
		591894-2	—	D1=JANTX1N751A
		591895-2	5-591895-2	D1=JANTX1N5618
	Fig. 5B	591864-1	5-591864-1	D1=JAN1N5618
		591866-1	—	D1=D2=D3=D4=D5=JANTX1N5554
		591863-1	5-591863-1	D1=D2=D3=D4=D5=JANTX1N5552
		591863-4	—	D1=D2=D3=D4=D5=1N4007
591865-1		—	D1=D2=D3=D4=D5=JANTX1N5618 Class A	
591855-1		—	D1=D2=D3=D4=D5=JANTX1N5618	
Splices	Fig. 2D	591917-1	5-591917-1	R1=RN65C1270F 127 Ω
		591917-3	—	R1=RNC60J1002FS 10 Ω
		591917-4	—	R1=RC20GF681J 680 Ω
		591917-5	—	R1=RLR32C1201GM 1200 Ω
		591917-7	—	R1=RLR32C1000GS 100 Ω
		1-591917-2	—	R1=RLR07C1001GR 1000 Ω
		1-591917-3	—	R1=RLR32C1000GR 100 Ω
	Fig. 3D	591846-2	—	D1=1N5199
	Fig. 4D	591847-3	—	D1=JAN1N5618
	Fig. 5D	591992-1	—	D1=JANTX1N4972 D2=JANTX1N5618
		591841-1	5-591841-1	D1=JAN1N5618
		591889-1	5-591889-1	D1=1N3981
Fig. 6D	591890-1	5-591890-1	D1=1N5367B	
	591842-1	5-591842-1	D1=D2=JAN1N5618	

**Military Cross Reference**

**Note:** Products are also qualified to VG 95212-31/ VG 95231-102/103/105. Please contact TE Connectivity for cross reference.

Military Part Numbers Feedback Modules	AMP MIL Qualified Part Numbers Feedback Modules	AMP Commercial Part Numbers Feedback Modules
<b>(Class A) Size 22</b>		
M81714/1-AA1	—	592634-4
M81714/1-AB1	—	592634-2
M81714/1-AB2	—	1-592634-2
M81714/1-AB3	—	1-592634-7
M81714/1-AC1	—	1-592634-4
M81714/1-AC2	—	1-592634-0
M81714/1-AD1	—	592634-8
M81714/1-AE1	—	592634-6
<b>(Class A) Size 21</b>		
M81714/17-A31	592630-3	592630-4
M81714/17-A32	592630-5	592630-6
M81714/17-A33	592630-7	592630-8
M81714/17-A34	592630-9	1-592630-0
M81714/17-A35	1-592630-1	1-592630-2
M81714/17-A36	1-592630-3	1-592630-4
M81714/17-A37	1-592630-5	1-592630-6
M81714/17-A38	1-592630-7	1-592630-8
M81714/17-A39	1-592630-9	2-592630-0
M81714/17-A40	2-592630-1	2-592630-2
M81714/17-A42	2-592630-3	2-592630-4
M81714/17-A43	4-592630-3	4-592630-4
M81714/17-A44	2-592630-5	2-592630-6
M81714/17-A45	2-592630-7	2-592630-8
<b>(Class A) Size 20</b>		
M81714/2-AA1	592625-5	592625-6
M81714/2-AB1	592625-3	592625-4
M81714/2-AB2	1-592625-3	1-592625-4
M81714/2-AB3	2-592625-1	2-592625-2
M81714/2-AC1	1-592625-5	1-592625-6
M81714/2-AC2	1-592625-1	1-592625-2
M81714/2-AD1	592625-9	1-592625-0
M81714/2-AE1	592625-7	592625-8
<b>(Class A) Size 16</b>		
M81714/3-AA1	592621-7	592621-8
M81714/3-AB1	592621-5	592621-6
M81714/3-AB2	1-592621-1	1-592621-2
M81714/3-AC1	1-592621-3	1-592621-4
M81714/3-AC2	592621-9	1-592621-0
M81714/3-AD1	592621-3	592621-4
<b>(Class A) Size 12</b>		
M81714/4-AA1	—	592617-8
M81714/4-AB1	—	592617-6
M81714/4-AB2	—	1-592617-2
M81714/4-AC1	—	1-592617-4
M81714/4-AC2	—	1-592617-0
M81714/4-AD1	—	592617-4
<b>(Class B) Size 22</b>		
M81714/1-BA1	—	592636-4
M81714/1-BB1	—	592636-2
M81714/1-BB2	—	1-592636-2
M81714/1-BB3	—	1-592636-6
M81714/1-BC1	—	1-592636-4
M81714/1-BC2	—	1-592636-0
M81714/1-BD1	—	592636-8
M81714/1-BE1	—	592636-6
<b>(Class B) Size 21</b>		
M81714/17-B31	592631-3	592631-4
M81714/17-B32	592631-5	592631-6
M81714/17-B33	592631-7	592631-8

Feedback Modules (Class B) Size 21 Continued on page 8-176

**Military Cross Reference** (Continued)

Military Part Numbers Feedback Modules	AMP MIL Qualified Part Numbers Feedback Modules	AMP Commercial Part Numbers Feedback Modules
<b>(Class B) Size 21</b> (Continued)		
M81714/17-B34	592631-9	1-592631-0
M81714/17-B35	1-592631-1	1-592631-2
M81714/17-B36	1-592631-3	1-592631-4
M81714/17-B37	1-592631-5	1-592631-6
M81714/17-B38	4-592631-4	—
M81714/17-B39	1-592631-7	1-592631-8
M81714/17-B40	4-592631-2	—
M81714/17-B42	1-592631-9	2-592631-0
M81714/17-B43	2-592631-1	2-592631-2
M81714/17-B44	2-592631-4	2-592631-5
M81714/17-B45	4-592631-3	—
<b>(Class B) Size 20</b>		
M81714/2-BA1	592627-3	592627-4
M81714/2-BB1	592627-1	592627-2
M81714/2-BB2	1-592627-1	1-592627-2
M81714/2-BB3	1-592627-5	1-592627-6
M81714/2-BC1	1-592627-3	1-592627-4
M81714/2-BC2	592627-9	1-592627-0
M81714/2-BD1	592627-7	592627-8
M81714/2-BE1	592627-5	592627-6
<b>(Class B) Size 16</b>		
M81714/3-BA1	592623-5	592623-6
M81714/3-BB1	592623-3	592623-4
M81714/3-BB2	592623-9	1-592623-0
M81714/3-BC1	1-592623-1	1-592623-2
M81714/3-BC2	592623-7	592623-8
M81714/3-BD1	592623-1	592623-2
<b>(Class B) Size 12</b>		
M81714/4-BA1	—	592619-6
M81714/4-BB1	—	592619-4
M81714/4-BB2	—	1-592619-0
M81714/4-BC1	—	1-592619-2
M81714/4-BC2	—	592619-8
M81714/4-BD1	—	592619-2
<b>(Class C) Size 22</b>		
M81714/1-CA1	—	592635-4
M81714/1-CB1	—	592635-2
M81714/1-CB2	—	1-592635-2
M81714/1-CB3	—	1-592635-6
M81714/1-CC1	—	1-592635-4
M81714/1-CC2	—	1-592635-0
M81714/1-CD1	—	592635-8
M81714/1-CE1	—	592635-6
<b>(Class C) Size 21</b>		
M81714/17-C31	592632-1	592632-2
M81714/17-C32	4-592632-3	—
M81714/17-C33	592632-3	592632-4
M81714/17-C34	592632-5	—
M81714/17-C35	592632-6	592632-7
M81714/17-C36	592632-8	592632-9
M81714/17-C37	1-592632-1	1-592632-2
M81714/17-C38	1-592632-3	—
M81714/17-C39	4-592632-4	—
M81714/17-C40	1-592632-4	1-592632-5
M81714/17-C41	4-592632-1	—
M81714/17-C42	4-592632-5	—
M81714/17-C43	1-592632-6	1-592632-7
M81714/17-C44	1-592632-8	1-592632-9
M81714/17-C45	4-592632-6	—

**Military Cross Reference** (Continued)

Military Part Numbers Feedback Modules	AMP MIL Qualified Part Numbers Feedback Modules	AMP Commercial Part Numbers Feedback Modules
<b>(Class C) Size 20</b>		
M81714/2-CA1	592626-3	592626-4
M81714/2-CB1	592626-1	592626-2
M81714/2-CB2	1-592626-1	1-592626-2
M81714/2-CB3	2-592626-4	1-592626-5
M81714/2-CC1	1-592626-3	1-592626-4
M81714/2-CC2	592626-9	1-592626-0
M81714/2-CD1	592626-7	592626-8
M81714/2-CE1	592626-5	592626-6
<b>(Class C) Size 16</b>		
M81714/3-CA1	592622-5	592622-6
M81714/3-CB1	592622-3	592622-4
M81714/3-CB2	592622-9	1-592622-0
M81714/3-CC1	1-592622-1	1-592622-2
M81714/3-CC2	592622-7	592622-8
M81714/3-CD1	592622-1	592622-2
<b>(Class C) Size 12</b>		
M81714/4-CA1	—	592618-6
M81714/4-CB1	—	592618-4
M81714/4-CB2	—	1-592618-0
M81714/4-CC1	—	1-592618-2
M81714/4-CC2	—	592618-8
M81714/4-CD1	—	592618-2
<b>(Class D) Size 22</b>		
M81714/1-DA1	—	592633-4
M81714/1-DB1	—	592633-2
M81714/1-DB2	—	1-592633-2
M81714/1-DB3	—	2-592633-0
M81714/1-DC1	—	1-592633-4
M81714/1-DC2	—	1-592633-0
M81714/1-DD1	—	592633-8
M81714/1-DE1	—	592633-6
<b>(Class D) Size 21</b>		
M81714/17-D31	592629-1	592629-2
M81714/17-D32	592629-3	592629-4
M81714/17-D33	592629-5	592629-6
M81714/17-D34	592629-7	592629-8
M81714/17-D35	592629-9	1-592629-0
M81714/17-D36	4-592629-4	—
M81714/17-D37	1-592629-1	1-592629-2
M81714/17-D38	1-592629-3	1-592629-4
M81714/17-D39	1-592629-5	1-592629-6
M81714/17-D40	1-592629-7	1-592629-8
M81714/17-D42	4-592629-2	4-592629-0
M81714/17-D43	4-592629-3	—
M81714/17-D44	1-592629-9	2-592629-0
M81714/17-D45	4-592629-5	2-592629-2
<b>(Class D) Size 20</b>		
M81714/2-DA1	592624-3	592624-4
M81714/2-DB1	592624-1	592624-2
M81714/2-DB2	1-592624-0	1-592624-1
M81714/2-DB3	1-592624-8	1-592624-9
M81714/2-DC1	1-592624-2	1-592624-3
M81714/2-DC2	2-592624-2	592624-9
M81714/2-DD1	592624-7	592624-8
M81714/2-DE1	592624-5	592624-6



Rectangular Pin and Socket Connectors

**Military Cross Reference** (Continued)

Military Part Numbers Feedback Modules	AMP MIL Qualified Part Numbers Feedback Modules	AMP Commercial Part Numbers Feedback Modules
<b>(Class D) Size 16</b>		
M81714/3-DA1	592620-5	592620-6
M81714/3-DB1	592620-3	592620-4
M81714/3-DB2	592620-9	1-592620-0
M81714/3-DC1	1-592620-1	1-592620-2
M81714/3-DC2	592620-7	592620-8
M81714/3-DD1	592620-1	592620-2
M81714/4-DA1	—	592616-6
M81714/4-DB1	—	592616-4
M81714/4-DB2	—	1-592616-0
M81714/4-DC1	—	1-592616-2
M81714/4-DC2	—	592616-8
M81714/4-DD1	—	592616-1

Military Part Numbers Wire Splice	AMP MIL Qualified Part Numbers Wire Splice	AMP Commercial Part Numbers Wire Splice
<b>(Class A) Size 22</b>		
M81714/11-22A	—	1-592575-9
<b>(Class A) Size 20</b>		
M81714/11-20A	592575-7	1-592575-8
<b>(Class A) Size 16</b>		
M81714/11-16A	592575-4	1-592575-4
<b>(Class A) Size 12</b>		
M81714/11-12A	592575-1	1-592575-3
<b>(Class B) Size 22</b>		
M81714/11-22B	—	1-592575-6
<b>(Class B) Size 20</b>		
M81714/11-20B	592575-9	2-592575-2
<b>(Class B) Size 16</b>		
M81714/11-16B	592575-6	2-592575-0
<b>(Class B) Size 12</b>		
M81714/11-12B	592575-3	—
<b>(Class C) Size 22</b>		
M81714/11-22C	—	1-592575-5
<b>(Class C) Size 20</b>		
M81714/11-20C	592575-8	2-592575-1
<b>(Class C) Size 16</b>		
M81714/11-16C	592575-5	1-592575-9
<b>(Class C) Size 12</b>		
M81714/11-12C	592575-2	—
<b>(Class D) Size 22</b>		
M81714/11-22D	—	592583-7
<b>(Class D) Size 20</b>		
M81714/11-20D	592583-3	592583-6
<b>(Class D) Size 16</b>		
M81714/11-16D	592583-2	592583-5
<b>(Class D) Size 12</b>		
M81714/11-12D	592583-1	—



**Military Cross Reference** (Continued)

Military Part Numbers Lightweight Feedback Rail Assembly	AMP MIL Qualified Part Numbers Lightweight Feedback Rail Assembly	AMP Commercial Part Numbers Lightweight Feedback Rail Assembly
M81714/16-1	1-591621-0	—
M81714/16-2	591621-3	—
M81714/16-3	591621-4	—
M81714/16-4	591621-5	—
M81714/16-5	591621-6	—
M81714/16-6	591621-7	—
M81714/16-7	591621-8	—
M81714/16-8	591621-9	—
M81714/16-9	1-591621-1	—
M81714/16-10	1-591621-2	—
M81714/16-11	1-591621-3	—
M81714/16-12	1-591621-4	—

Military Part Numbers Feedback Rail Assembly	AMP MIL Qualified Part Numbers Feedback Rail Assembly	AMP Commercial Part Numbers Feedback Rail Assembly
M81714/5-1	1-591613-0	—
M81714/5-2	591613-3	—
M81714/5-3	591613-4	—
M81714/5-4	591613-5	—
M81714/5-5	591613-6	—
M81714/5-6	591613-7	—
M81714/5-7	591613-8	—
M81714/5-8	591613-9	—
M81714/5-9	1-591613-1	—
M81714/5-10	1-591613-2	—
M81714/5-11	1-591613-3	—
M81714/5-12	1-591613-4	—
M81714/5-13	1-591613-5	—

Military Part Numbers Feedthru Modules	AMP MIL Qualified Part Numbers Feedthru Modules	AMP Commercial Part Numbers Feedthru Modules
<b>(Class A) Size 22</b>		
M81714/6-AA1	—	592613-6
M81714/6-AB1	—	592613-4
M81714/6-AB2	—	1-592613-6
M81714/6-AB3	—	2-592613-0
M81714/6-AC1	—	1-592613-8
M81714/6-AC2	—	1-592613-4
M81714/6-AD1	—	1-592613-2
M81714/6-AE1	—	592613-8
M81714/6-AJ1	—	592613-2
<b>(Class A) Size 20</b>		
M81714/7-AA1	—	592609-6
M81714/7-AB1	—	592609-4
M81714/7-AB2	—	1-592609-4
M81714/7-AB3	—	1-592609-8
M81714/7-AC1	—	1-592609-6
M81714/7-AC2	—	1-592609-2
M81714/7-AD1	—	1-592609-0
M81714/7-AE1	—	592609-8
M81714/7-AJ1	—	592609-2

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Rectangular Pin and Socket Connectors

**Military Cross Reference** (Continued)

Military Part Numbers Feedthru Modules	AMP MIL Qualified Part Numbers Feedthru Modules	AMP Commercial Part Numbers Feedthru Modules
<b>(Class A) Size 16</b>		
M81714/8-AA1	—	592605-8
M81714/8-AB1	—	592605-6
M81714/8-AB2	—	1-592605-2
M81714/8-AC1	—	1-592605-4
M81714/8-AC2	—	1-592605-0
M81714/8-AD1	—	592605-4
M81714/8-AH1	—	592605-2
<b>(Class A) Size 12</b>		
M81714/9-AA1	—	592601-8
M81714/9-AB1	—	592601-6
M81714/9-AB2	—	1-592601-2
M81714/9-AC1	—	1-592601-4
M81714/9-AC2	—	1-592601-0
M81714/9-AD1	—	592601-4
M81714/9-AH1	—	592601-2
<b>(Class B) Size 22</b>		
M81714/6-BA1	—	592615-6
M81714/6-BB1	—	592615-4
M81714/6-BB2	—	1-592615-4
M81714/6-BB3	—	1-592615-8
M81714/6-BC1	—	1-592615-6
M81714/6-BC2	—	1-592615-2
M81714/6-BD1	—	1-592615-0
M81714/6-BE1	—	592615-8
M81714/6-BJ1	—	592615-2
<b>(Class B) Size 20</b>		
M81714/7-BA1	—	592611-6
M81714/7-BB1	—	592611-4
M81714/7-BB2	—	1-592611-4
M81714/7-BB3	—	1-592611-8
M81714/7-BC1	—	1-592611-6
M81714/7-BC2	—	1-592611-2
M81714/7-BD1	—	1-592611-0
M81714/7-BE1	—	592611-8
M81714/7-BJ1	—	592611-2
<b>(Class B) Size 16</b>		
M81714/8-BA1	—	592607-8
M81714/8-BB1	—	592607-6
M81714/8-BB2	—	1-592607-2
M81714/8-BC1	—	1-592607-4
M81714/8-BC2	—	1-592607-0
M81714/8-BD1	—	592607-4
M81714/8-BH1	—	592607-2
<b>(Class B) Size 12</b>		
M81714/9-BA1	—	592603-8
M81714/9-BB1	—	592603-6
M81714/9-BB2	—	1-592603-2
M81714/9-BC1	—	1-592603-4
M81714/9-BC2	—	1-592603-0
M81714/9-BD1	—	592603-4
M81714/9-BH1	—	592603-2

**Military Cross Reference** (Continued)

Military Part Numbers Feedthru Modules	AMP MIL Qualified Part Numbers Feedthru Modules	AMP Commercial Part Numbers Feedthru Modules
<b>(Class C) Size 22</b>		
M81714/6-CA1	—	592614-6
M81714/6-CB1	—	592614-4
M81714/6-CB2	—	1-592614-4
M81714/6-CB3	—	1-592614-8
M81714/6-CC1	—	1-592614-6
M81714/6-CC2	—	1-592614-2
M81714/6-CD1	—	1-592614-0
M81714/6-CE1	—	592614-8
M81714/6-CJ1	—	592614-2
<b>(Class C) Size 20</b>		
M81714/7-CA1	—	592610-6
M81714/7-CB1	—	592610-4
M81714/7-CB2	—	1-592610-5
M81714/7-CB3	—	1-592610-9
M81714/7-CC1	—	1-592610-7
M81714/7-CC2	—	1-592610-3
M81714/7-CD1	—	1-592610-1
M81714/7-CE1	—	592610-8
M81714/7-CJ1	—	592610-2
<b>(Class C) Size 16</b>		
M81714/8-CA1	—	592606-8
M81714/8-CB1	—	592606-6
M81714/8-CB2	—	1-592606-2
M81714/8-CC1	—	1-592606-4
M81714/8-CC2	—	1-592606-0
M81714/8-CD1	—	592606-4
M81714/8-CH1	—	592606-2
<b>(Class C) Size 12</b>		
M81714/9-CA1	—	592602-8
M81714/9-CB1	—	592602-6
M81714/9-CB2	—	1-592602-2
M81714/9-CC1	—	1-592602-4
M81714/9-CC2	—	1-592602-0
M81714/9-CD1	—	592602-4
M81714/9-CH1	—	592602-2

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Rectangular Pin and Socket Connectors



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**Engineering Notes**

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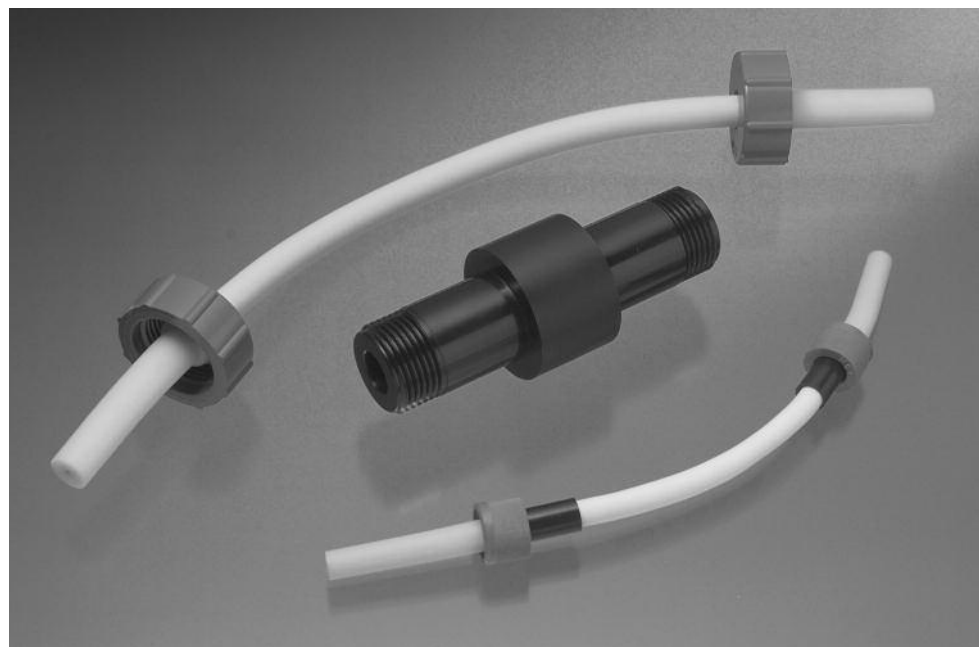


LGH High Voltage Connectors

Introduction

Product Facts

- No exposed high voltage parts
- Space saving — maximum performance from small size and weight
- Fast connect and disconnect
- Wide temperature range — -67°F to +257°F [-55°C to +125°C], continuous
- Positive mating of lead into receptacle
- Hermetically sealed
- RFI shielding — optional
- Fungus, moisture, oil, and chemical resistant
- High altitude operation — at any altitude without voltage derating
- Excellent mechanical strength — resists vibration and shock
- High dielectric strength
- Preassembled — no tools required
- High reliability — operates under extreme environmental conditions
- Unaffected by ultra-violet light
- Corona resistant — virtually unaffected by ozone or corona
- Radiation resistant
- Lead wire remains flexible to -67°F [-55°C]
- Non-toxic insulation — does not give off toxic fumes when burned
- Excellent shelf life
- Meets applicable military specifications
- Color coded for easy identification
- Quick, easy installation



The development of high voltage hermetically sealed connectors and LGH High Voltage Lead Assemblies and Receptacles represented two major advances in the science of high voltage application — both pioneered by TE Connectivity. As a result of this technological advantage, TE is the leading manufacturer of high voltage, high altitude, high temperature lead assemblies and connectors.

In the field of high voltage application, TE has conducted extensive

research, development, quality studies and reliability programs yielding numerous standard products for military and industrial high voltage applications.

LGH High Voltage Lead Assemblies and Receptacles are used in many systems designed to meet or exceed military specifications. A sampling of specifications to which samples of these products have been tested, is listed to the right.

For more information contact TE.

**LGH Test Methods and Conditions**

LGH Leads and Receptacles, LGH 1/4 through LGH 4

**Product Spec.** — 108-36033  
EIA RS-364

**Electrical**

**Dielectric Withstanding Voltage** — EIA-364-20 Condition I (MS202, Method 301)

**Insulation Resistance** — EIA-364-21, (MS202, Method 302)

**Mechanical**

**Vibration, Sinusoidal** — EIA-364-28, Test Condition I, (MS202, Method 201)

**Shock** — EIA-364-27, Method H

**Environmental**

**Barometric Pressure** — Sea Level to 70,000 feet, MIL-Std-202, Method 105, Condition C

**Thermal Shock** — EIA-364-32, 5 cycles -67°F to +257°F [-55°C to +125°C]



**Lead Assemblies and Receptacles**

LGH leads and receptacles find wide application where high voltage is used in harsh environments. LGH leads and receptacles are lightweight, miniature, extremely reliable and they maintain peak performance under high temperature, high altitude applications. They are equally applicable to low temperature, low altitude devices.

Leads and receptacles shown on the following pages are commonly used items. Hundreds of variations of these products are available, as well as custom-made units. Consult TE Connectivity for information on high voltage connectors for applications not satisfied by components listed here.

When ordering LGH items: identify item, list TE part number, and specify quantity. Note: Special packaging, special marking and/or special testing of LGH leads and receptacles are available on request, as well as custom-made assemblies. Consult TE for details.

**Voltage Ratings**

The voltage ratings tabulated here and noted elsewhere apply to LGH molded-end lead assemblies properly mated with appropriate LGH receptacles, which are properly potted or otherwise protected on the back end.

LGH Series	Mating Length/Depth	Normal Capacitance		Wire Size	Operating Voltage* Kilovolts DC	3 Min. Hipot** Kilovolts DC
		pF/ft.	pF/m			
LGH ¼	.25 [6.35]	***	—	22 AWG	5	7.5
LGH ½	.53 [13.46]	55	180	16 AWG	10	15
LGH ½ L	.89 [22.61]	55	180	16 AWG	15	23
LGH 1	.88 [22.35]	35	115	16 AWG	20	30
LGH 1L	1.69 [42.93]	35	115	16 AWG	25	38
LGH 2	1.44 [36.58]	28	144	16 AWG	30	45
LGH 3	1.81 [45.97]	35	115	16 AWG	40	55
LGH 4	2.00 [50.80]	28	144	16 AWG	50	60

\*Sea level to 70,000 ft. [21,336 m], -55°C to +125°C [-67°F to +257°F].  
 \*\*Sea level at 25°C (77°F).  
 \*\*\*LGH ¼ is not shielded

**LGH Lead Assemblies** are manufactured with a silicone rubber end having a specified mating length (see above table) molded onto a 16 AWG white silicone rubber wire. These assemblies provide extreme reliability and safety for high voltage applications in severe environments.

**Specifications**

**Lead Length Tolerance (including pigtail)** — Lengths to 24 [609.6], ±.125 [3.28]; 24 [609.6] and longer, ±1% of length.

**Lead Insulation** — Silicone rubber, durometer reading 60 to 70 (reference MIL-W-16878/8, Type FF); color, white. Lead assemblies with other colors and insulation materials such as PVC and PTFE can be manufactured on request.

**Conductors (per MIL-W-16878/8)** — LGH ½, LGH ½ L, LGH 1, LGH 1L and

LGH 3 lead assemblies contain 41 strands minimum of 32 AWG [0.03 mm<sup>2</sup>] wire, silver plated, to compose a 16 AWG [1.25 mm<sup>2</sup>] stranded conductor .06 nominal O.D. [1.5]; LGH 2 and LGH 4 lead assemblies contain 19 strands minimum of 29 AWG [0.07 mm<sup>2</sup>] wire, silver plated, to compose a 16 AWG [1.25 mm<sup>2</sup>] stranded conductor .06 nominal O.D. [1.5]. Silver plating is per ASTM-B298-58T.

**Pigtail** — Solder dipped  
**Socket** — Bronze per ASTM-140, alloy B, gold plated per MIL-G-45204,

Type II, (0.000030 [0.00076] gold over 0.000030 [0.00076] nickel per QQ-N-290). Socket is crimped to lead wire.

**Cap Materials** — Polycarbonate glass-filled polyester or glass-filled epoxy.

**Molded End** — Silicone rubber per ZZ-R-765, Class Ila and IIb, grade 60.

**Positive Stop Ferrule** — Glass-filled polyester

**Marking** — Per MIL-STD-130  
**Washer** — TFE, electrical grade

**Minimum Bend Radii, nominal**, for cables without additional covering over silicone insulation and for shielded cable.

LGH Series	Insulation Type	
	Standard	Shielded
¼, ½, ½L	.25 6.4	.75 19.0
1, 1L, 3	.50 12.7	1.00 25.4
2, 4	1.00 25.4	1.50 38.1

**Maximum Conductor Resistance**

All Series	4.75 ohms/1000 ft. 15.6 ohms/1000m.
------------	--

**LGH ¼ — 22 AWG (19/34)**



Single End Lead Assembly



Single End Lead Assembly with Positive Stop Ferrule



Shielded Lead Assembly



RFI Shielded Lead Assembly



**Introduction** (Continued)

**LGH Receptacles** are manufactured in molded glass epoxy having a specified mating depth (see table on previous page). When used with LGH lead assemblies they offer the ultimate in dependability, even under harsh environmental conditions. Typical receptacles are shown here. Specific units, with part numbers, are shown by series in the following pages.

**LGH Receptacles for Canned Units**

These receptacles are for hermetically sealed, gas- or oil-filled units, and they are recommended for canned units filled with potting compound.\*\*

\*\*CAUTION: Follow manufacturer's instructions on preparing and handling potting. LGH voltage ratings apply only when a proper bond is achieved between the back end of the receptacle and the compound.

**LGH Receptacles for Cast or Encapsulated Units**

These units are for use where no metal can is required.

**Specifications (All units)**

**Pin Assembly** — Brass per ASTM-B-16 and QQ-B-626; tin plated per MIL-T-10727, Type I or II, .00010" min. thickness.\*

**Body** — Molded glass-filled epoxy

**Marking** — Per MIL-STD-130

**(Canned units only)**

**Solder Flange** — Brass per ASTM-B-16 and QQ-B-626; tin plated per MIL-T-10727, Type I or II, .00010" min. thickness

**Hermeticity** — Leak rate less than  $1 \times 10^{-8}$  cc He/sec. per MIL-STD-202, Method 112B, Cond. C.

\*Hermetically sealed receptacles are plated after molding therefore we cannot guarantee the minimum thickness of copper under plating .000100 [0.00254] on the mating end of the pin contact.



Glass-epoxy receptacle for encapsulated units



Glass-epoxy receptacle for splice application



Hermetically sealed, glass-epoxy receptacle for canned units



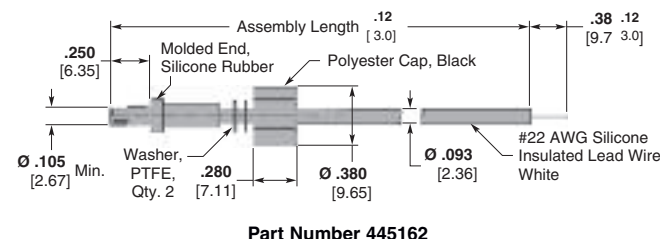
Glass-epoxy, flanged receptacle for bulkhead splice applications



Glass-epoxy, flanged receptacle for bulkhead applications

**LGH Lead Assemblies and Receptacles, 5 KVDC, LGH 1/4**

**Single End Lead Assemblies**

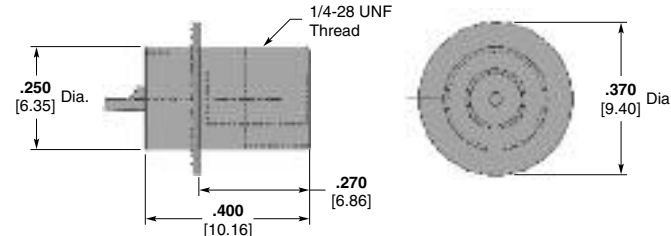


Part Number 445162

Assembly Length	Part Number
6.0 152.4	445162-1
12.0 304.8	445162-2 5-445162-2*
18.0 457.2	445162-3
24.0 609.6	445162-4

\*RoHS compliant Part Number.

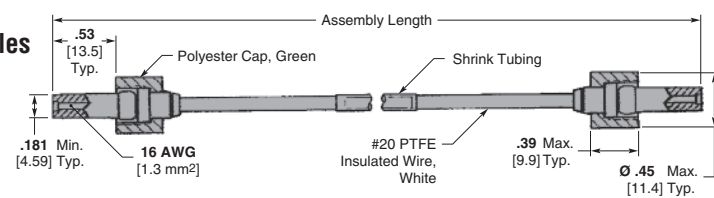
**Receptacle, Metal Flange**



Part Number 445159-1 and Part Number 5-445159-1 (RoHS)

**LGH Lead Assemblies and Receptacles, 10 KVDC, LGH 1/2 (Continued)**

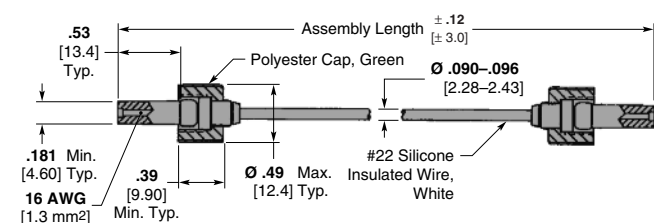
**Double End Lead Assemblies with Positive Stop Ferrules with PTFE Wire**



Part Number 860529

Assembly Length	Part Number
6.0 152.4	860529-2
7.0 177.8	860529-6
10.0 254.0	860529-8
13.0 330.2	1-860529-0
16.0 406.4	860529-4

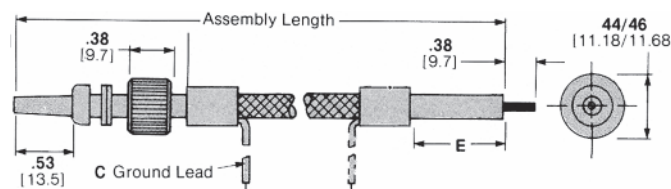
**Double End Lead Assemblies with Positive Stop Ferrules with #22 Wire**



Part Number 449578

Assembly Length	Part Number
11.0 ± .12 279.4 ± 3.0	449578-1

**Shielded Single End Lead Assemblies with Ground Lead**

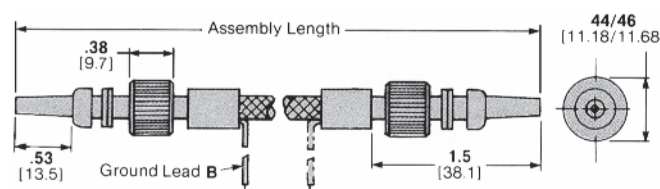


Part Number 846985

Assembly Length	Dims.		Part Number
	C	E	
12.0 304.8	6.0 152.4	2.0 50.8	846985-9 5-846985-9*
18.0 457.2	6.0 152.4	1.5 38.1	2-846985-2
24.0 609.6	6.0 152.4	1.5 38.1	2-846985-3
36.0 914.4	12.0 304.8	2.0 50.8	1-846985-8

\*RoHS compliant Part Number.

**Shielded Double End Lead Assemblies with Ground Lead**



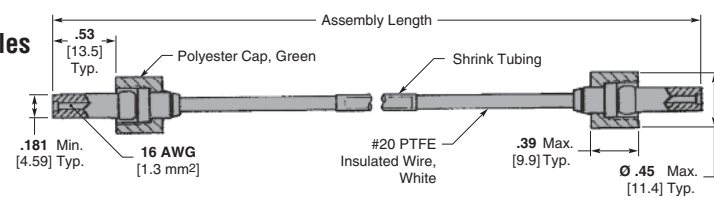
Part Number 858885

Assembly Length	Dim.	Part Number
	B	
12.0 304.8	8.0 203.2	858885-3
18.0 457.2	6.0 152.4	2-858885-7
24.0 609.6	8.0 203.2	858885-4
36.0 914.4	6.0 152.4	2-858885-5 7-858885-5*
48.0 1219.2	6.0 152.4	858885-6

\*RoHS compliant Part Number.

**LGH Lead Assemblies and Receptacles, 10 KVDC, LGH 1/2 (Continued)**

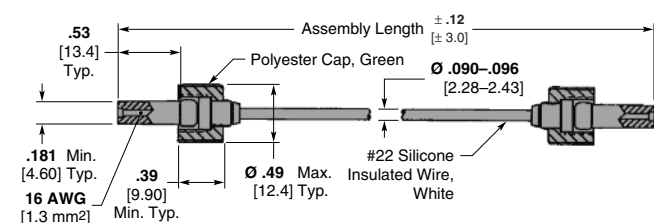
**Double End Lead Assemblies with Positive Stop Ferrules with PTFE Wire**



Part Number 860529

Assembly Length	Part Number
6.0 152.4	860529-2
7.0 177.8	860529-6
10.0 254.0	860529-8
13.0 330.2	1-860529-0
16.0 406.4	860529-4

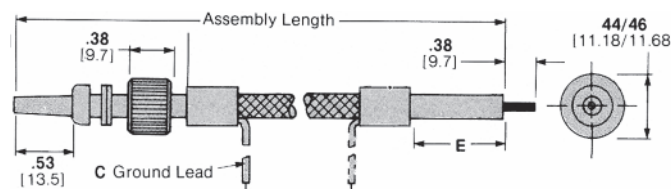
**Double End Lead Assemblies with Positive Stop Ferrules with #22 Wire**



Part Number 449578

Assembly Length	Part Number
11.0 ± .12 279.4 ± 3.0	449578-1

**Shielded Single End Lead Assemblies with Ground Lead**

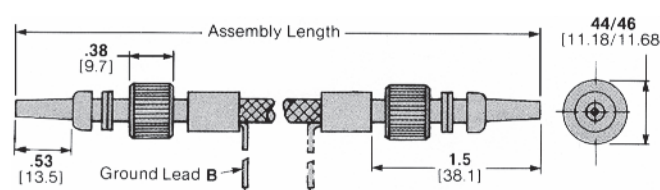


Part Number 846985

Assembly Length	Dims.		Part Number
	C	E	
12.0 304.8	6.0 152.4	2.0 50.8	846985-9 5-846985-9*
18.0 457.2	6.0 152.4	1.5 38.1	2-846985-2
24.0 609.6	6.0 152.4	1.5 38.1	2-846985-3
36.0 914.4	12.0 304.8	2.0 50.8	1-846985-8

\*RoHS compliant Part Number.

**Shielded Double End Lead Assemblies with Ground Lead**



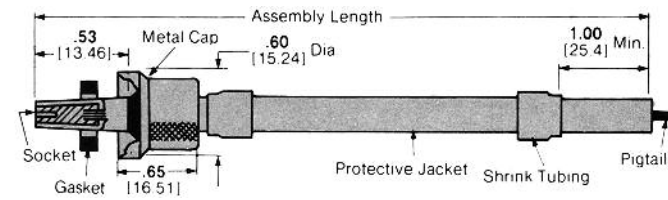
Part Number 858885

Assembly Length	Dim.		Part Number
	B		
12.0 304.8	8.0 203.2		858885-3
18.0 457.2	6.0 152.4		2-858885-7
24.0 609.6	8.0 203.2		858885-4
36.0 914.4	6.0 152.4		2-858885-5 7-858885-5*
48.0 1219.2	6.0 152.4		858885-6

\*RoHS compliant Part Number.

**LGH Lead Assemblies and Receptacles, 10 KVDC, LGH 1/2 (Continued)**

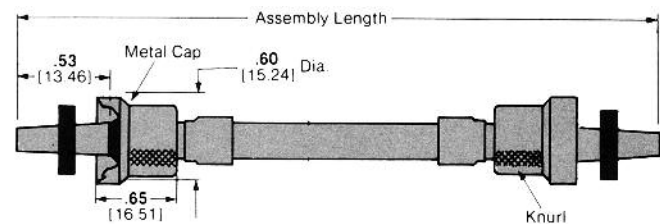
**RFI Shielded Single End Lead Assemblies\***



Part Number 861807

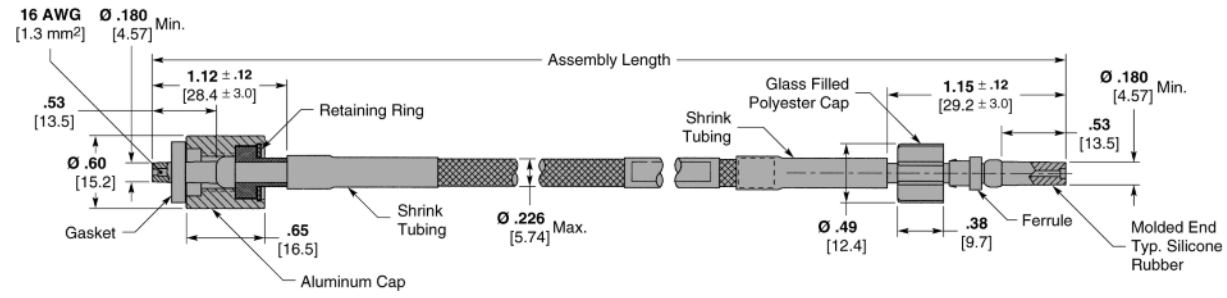
Assembly Length	Part Number
12.0	861807-1
304.8	
18.0	861807-2
457.2	
24.0	861807-7
609.6	
36.0	861807-9
914.4	

**RFI Shielded Double End Lead Assemblies\***



Part Number 861808

Assembly Length	Part Number
12.0	861808-1
304.8	
18.0	861808-9
457.2	
24.0	1-861808-0
609.6	
36.0	1-861808-2
914.4	
48.0	1-861808-6
1219.2	



Part Number 863330-1

Assembly Length	Part Number
18.0	863330-1
457.2	



LGH High Voltage Connectors

\* These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861252-1.



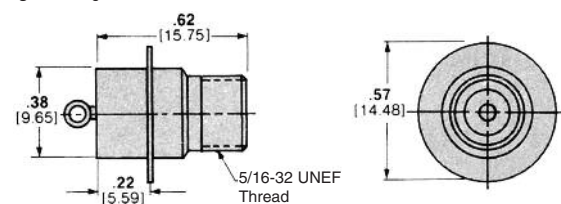
**LGH Lead Assemblies and Receptacles, 10 KVDC, LGH 1/2 (Continued)**

**Glass-Epoxy Receptacles with .53 [13.46] Barrel Depth**

Flanged, for Hermetic Seal  
Part Number 861252-1

RoHS Part Number 5-861252-1

Weight — 2 grams

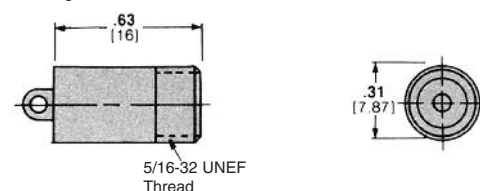


**For Encapsulated Units**

Part Number 830178-1

RoHS Part Number 5-830178-1

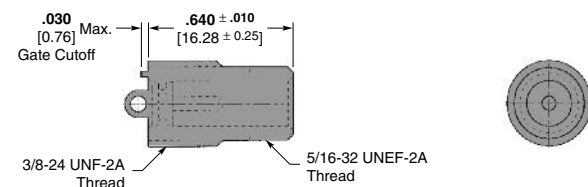
Weight — 1.2 grams



Receptacles are available with gold plated contacts.

**Special Receptacle**

Part Number 448462-1

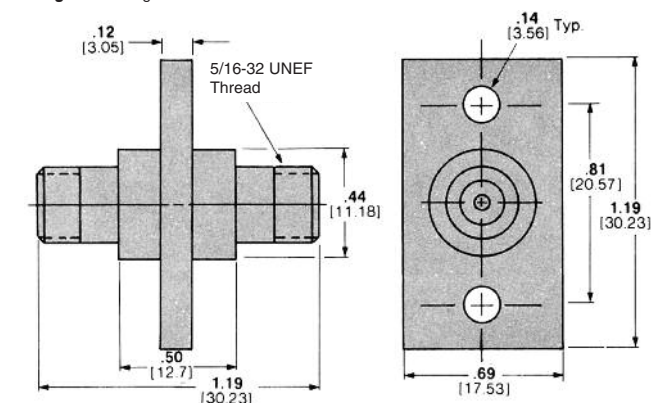


Note: Receptacle will accept a LGH 1/2 lead with a .53 [13.5] molded end length.

**Bolt-mount, Feed-through**

Part Number 830174-1

Weight — 5.8 grams

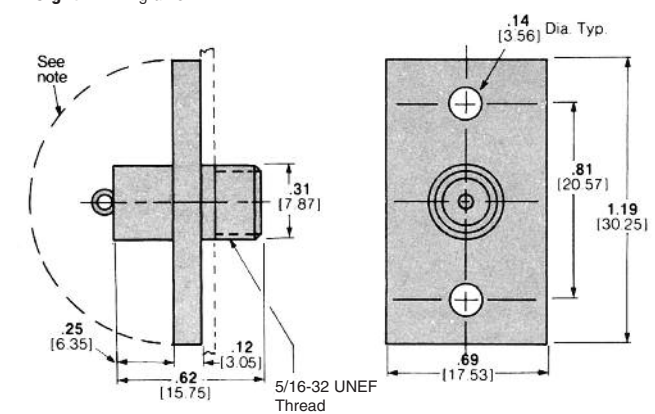


**Flanged, Bolt Mount**

Part Number 830395-1

RoHS Part Number 5-830395-1

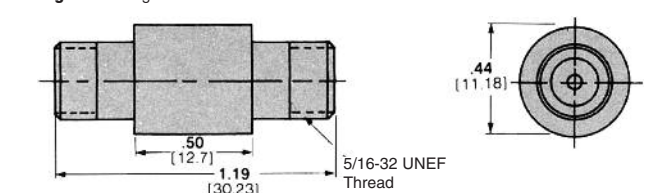
Weight — 4.2 grams



**Splice**

Part Number 830177-1

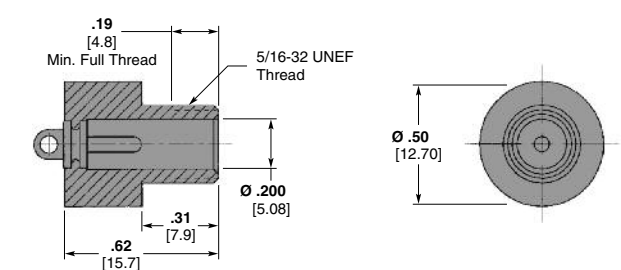
Weight — 3.5 grams



**Receptacle**

Part Number 830200-1

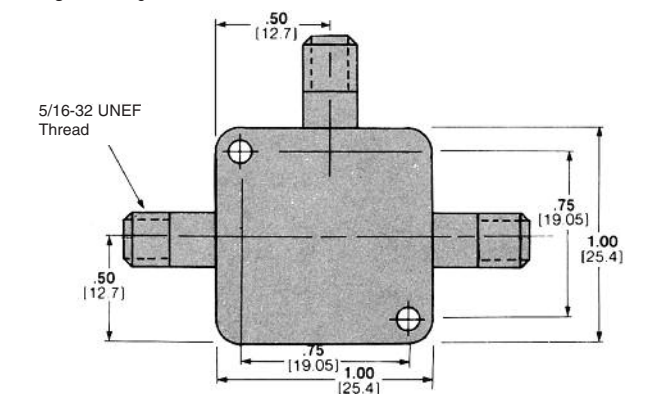
RoHS Part Number 5-830200-1



**T Connector**

Part Number 849418-1

Weight — 15 grams

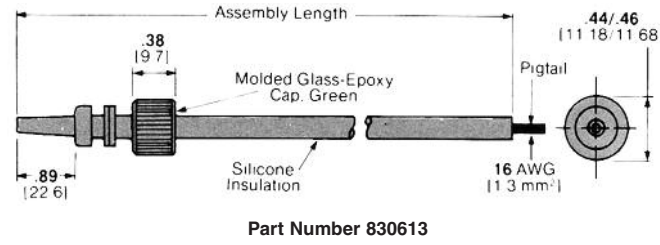


Note: Receptacle to mate with LGH 1/2 Lead Assembly.



**LGH Lead Assemblies and Receptacles, 15 KVDC, LGH 1/2 L**

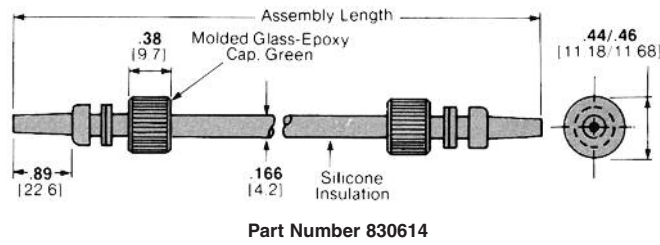
**Single End Lead Assemblies**



Assembly Length	Part Number
6.0 152.4	1-830613-0
12.0 304.8	830613-2 5830613-2*
18.0 457.2	1-830613-2 1-5830613-2*
24.0 609.6	830613-1 5830613-1*
36.0 914.4	830613-7 5830613-7*
48.0 1219.2	1-830613-4 1-5830613-4*

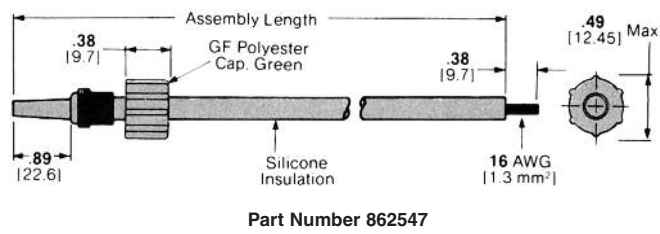
RoHS compliant Part Number.

**Double End Lead Assemblies**



Assembly Length	Part Number
6.0 152.4	1-830614-5
12.0 304.8	830614-2
18.0 457.2	830614-3
24.0 609.6	830614-1
36.0 914.4	1-830614-6
48.0 1219.2	2-830614-5

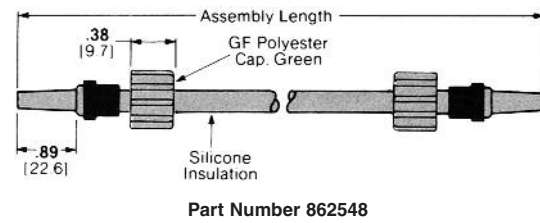
**Single End Lead Assemblies with Positive Stop Ferrules**



Assembly Length	Part Number
6.0 152.4	862547-1
12.0 304.8	862547-4 5-862547-4*
18.0 457.2	862547-6 5-862547-6*
24.0 609.6	862547-8
36.0 914.4	862547-9
48.0 1219.2	1-862547-9 6-862547-9*

RoHS compliant Part Number.

**Double End Lead Assemblies with Positive Stop Ferrules**



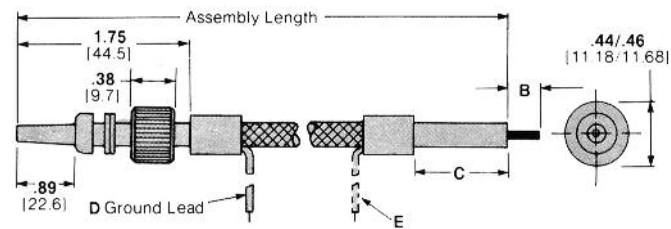
Assembly Length	Part Number
6.0 152.4	862548-1
12.0 304.8	862548-4
18.0 457.2	862548-6
24.0 609.6	862548-8
36.0 914.4	1-862548-6
48.0 1219.2	1-862548-4



LGH High Voltage Connectors

**LGH Lead Assemblies and Receptacles, 15 KVDC, LGH 1/2 L (Continued)**

**Shielded Single End Lead Assemblies**

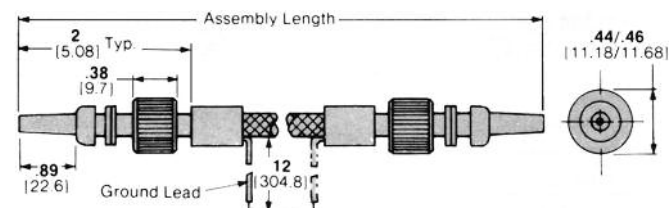


Part Number 858886

Assembly Length	Terminated End		Pigtail End		Part Number	RoHS Part Number
	Ground Lead Length(s) D & E	C	Pigtail Length B			
12.0 304.8	8.0 203.2†	1.5 38.1	.25 6.4	858886-2	5-858886-2	
18.0 457.2	8.0 203.2	3.0 76.2	.38 9.7	1-858886-4	—	
24.0 609.6	12.0 304.8	3.0 76.2	.38 9.7	1-858886-8	—	
36.0 914.4	12.0 304.8*	6.0 152.4	.38 9.7	858886-1	—	
	8.0 203.2†	3.0 76.2	.38 9.7	858886-6	—	

\*One ground lead, pigtail end only.  
†One ground lead, terminated end only.

**Shielded Double End Lead Assemblies**

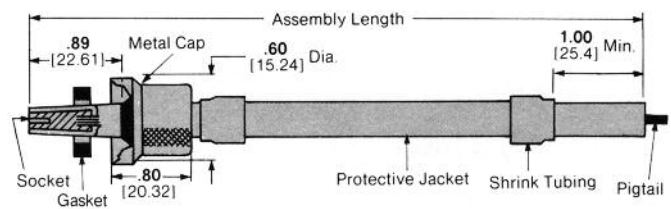


Part Number 858945

Assembly Length	Part Number
12.0 304.8	1-858945-6
18.0 457.2	1-858945-5*
24.0 609.6	2-858945-1
36.0 914.4	858945-3
48.0 1219.2	1-858945-4

\*Two ground leads, 12.0 [304.8] each.

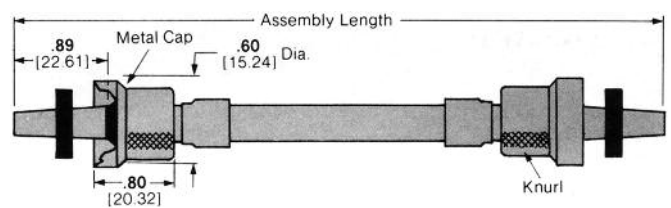
**RFI Shielded Single End Lead Assemblies\***



Part Number 861809

Assembly Length	Part Number
12.0 304.8	861809-1
18.0 457.2	861809-4
24.0 609.6	861809-5
36.0 914.4	861809-6

**RFI Shielded Double End Lead Assemblies\***



Part Number 861810

Assembly Length	Part Number
12.0 304.8	861810-1
18.0 457.2	861810-6
24.0 609.6	861810-7
36.0 914.4	861810-9

\* These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861253-1.

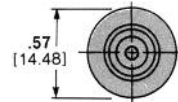
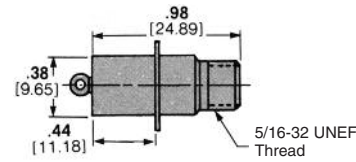
**LGH Lead Assemblies and Receptacles, 15 KVDC, LGH 1/2 L (Continued)**

**Glass-Epoxy Receptacles with .89 [22.61] Barrel Depth**

Flanged, For Hermetic Seal  
Part Number 861253-1

RoHS Part Number 5-861253-1

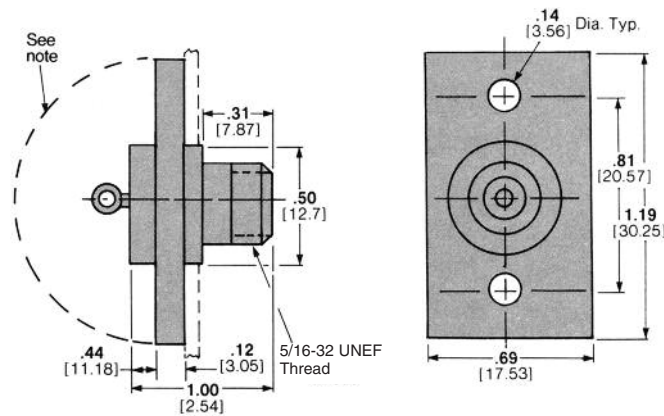
Weight — 3 grams



**Flanged, Bolt Mount**  
Part Number 858857-1

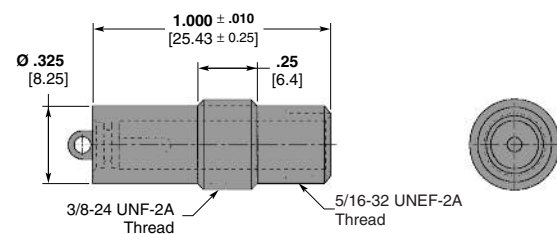
RoHS Part Number 5-858857-1

Weight — 6 grams



**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

**Special Receptacle**  
Part Number 448464-1

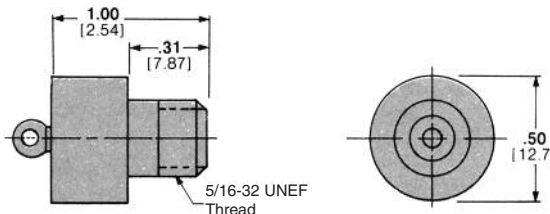


**Note:** Receptacle will accept a LGH 1/2 L lead with a .89 [22.6] molded end length.

**For Encapsulated Units**  
Part Number 858855-1

RoHS Part Number 5-858855-1

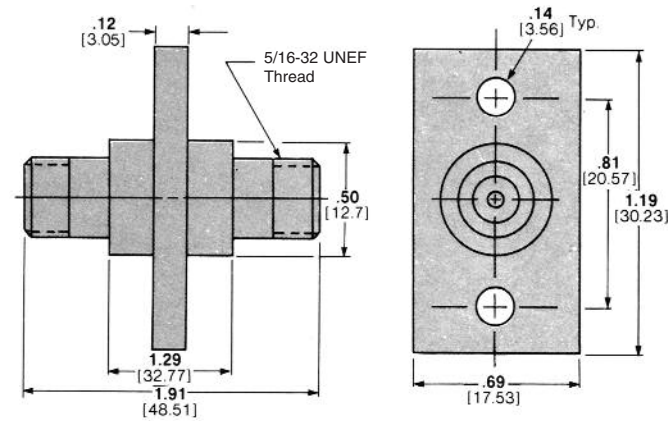
Weight — 3 grams



Receptacles are available with gold plated contacts.

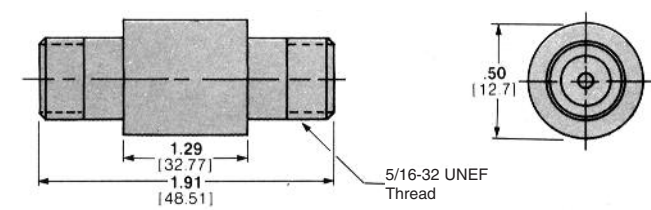
**Bolt-Mount, Feed-Through**  
Part Number 858856-1

Weight — 14 grams



**Splice**  
Part Number 858082-1

Weight — 10.5 grams

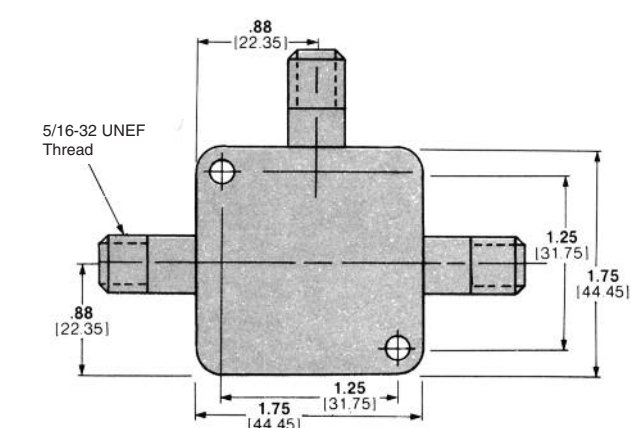


**T Connector**

Part Number 850736-1

RoHS Part Number 5-850736-1

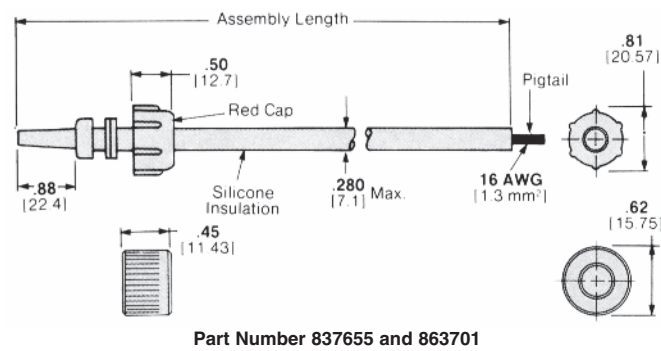
Weight — 23 grams



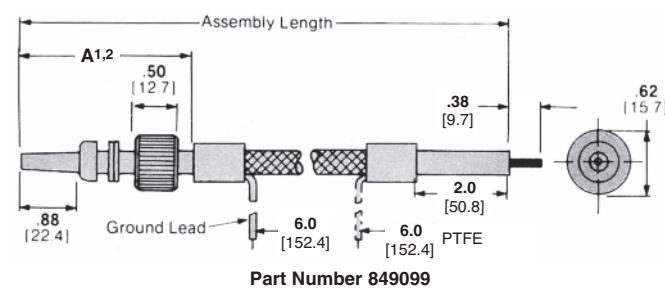
LGH High Voltage Connectors

**LGH Lead Assemblies and Receptacles, 20 KVDC, LGH 1**

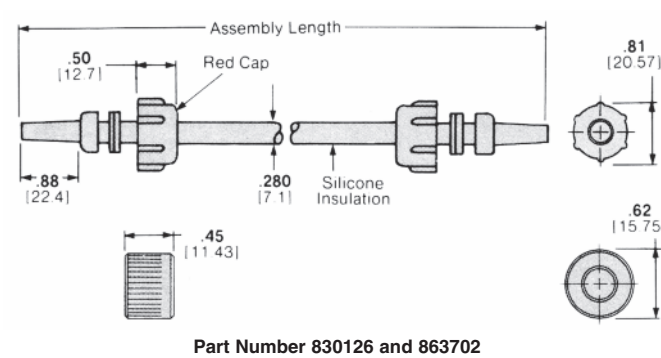
**Single End Lead Assemblies**



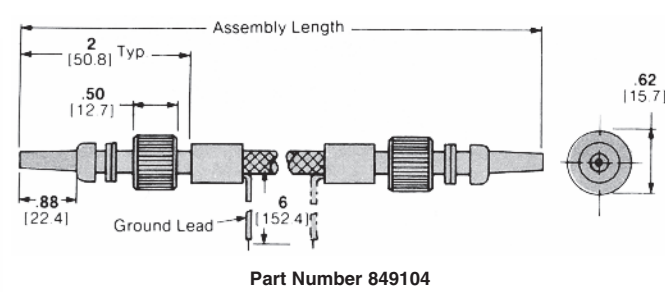
**Shielded Single End Lead Assemblies**



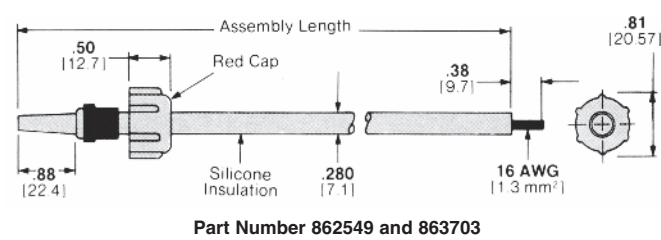
**Double End Lead Assemblies**



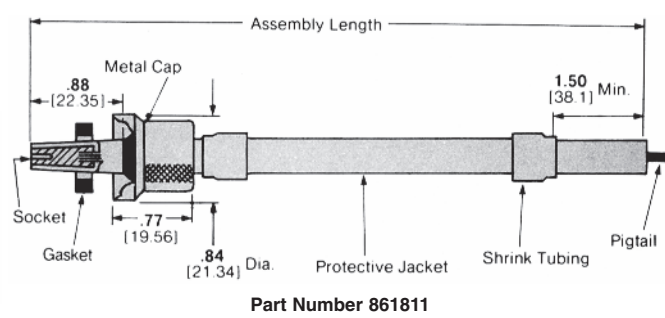
**Shielded Double End Lead Assemblies**



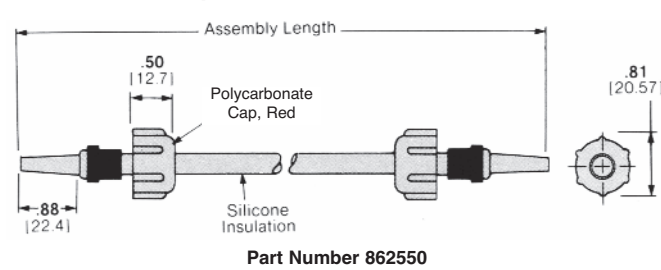
**Single End Lead Assemblies with Positive Stop Ferrules**



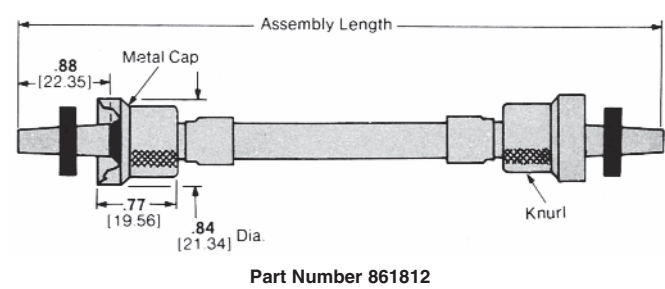
**RFI Shielded Single End Lead Assemblies\***



**Double End Lead Assemblies with Positive Stop Ferrules**



**RFI Shielded Double End Lead Assemblies\***



\* These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861254-1.

**LGH Lead Assemblies and Receptacles, 20 KVDC, LGH 1** (Continued)

**Lead Assemblies** (Continued)

Description	Assembly Length	Part Numbers							
		Polycarbonate Cap		Glass-Filled Polyester Cap		Glass Epoxy Cap		Metal Cap	
		Non-RoHS	RoHS	Non-RoHS	RoHS	Non-RoHS	RoHS		Non-RoHS
Single End Lead Assemblies	6 152.4	837655-7	5837655-7	863701-7	—	—	—	—	
	12 304.8	1-837655-1	1-5837655-1	1-863701-1	1-5863701-1	—	—	—	
	18 457.2	1-837655-0	1-5837655-0	1-863701-0	—	—	—	—	
	24 609.6	837655-8	—	863701-8	5863701-8	—	—	—	
	36 914.4	837655-5	5837655-5	863701-5	5863701-5	—	—	—	
	48 1219.2	1-837655-3	1-5837655-3	1-863701-3	1-5863701-3	—	—	—	
Double End Lead Assemblies	6 152.4	—	—	863702-2	—	830126-2	—	—	
	12 304.8	1-830126-3	—	1-863702-3	—	—	—	—	
	18 457.2	1-830126-2	—	1-863702-2	—	—	—	—	
	24 609.6	1-830126-6	—	1-863702-6	—	—	—	—	
	36 914.4	1-830126-7	—	1-863702-7	—	—	—	—	
	48 1219.2	2-830126-1	—	2-863702-1	—	—	—	—	
Single End Lead Assemblies (with Positive Stop Ferrules)	6 152.4	862549-1	—	863703-1	—	—	—	—	
	12 304.8	862549-4	5-862549-4	863703-4	—	—	—	—	
	18 457.2	862549-6	—	863703-6	—	—	—	—	
	24 609.6	862549-8	—	863703-8	—	—	—	—	
	36 914.4	862549-9	5-862549-9	863703-9	—	—	—	—	
Double End Lead Assemblies (with Positive Stop Ferrules)	6 152.4	862550-1	—	—	—	—	—	—	
	12 304.8	862550-4	—	—	—	—	—	—	
	18 457.2	862550-6	—	—	—	—	—	—	
	24 609.6	862550-8	—	—	—	—	—	—	
	36 914.4	862550-9	—	—	—	—	—	—	
48 1219.2	1-862550-3	—	—	—	—	—	—		
Shielded Single End Lead Assemblies	6 152.4	—	—	—	—	849099-7 <sup>1</sup>	—	—	
	12 304.8	—	—	—	—	1-849099-2 <sup>1</sup>	—	—	
	18 457.2	—	—	—	—	849103-5 <sup>2</sup>	5-849103-5 <sup>2</sup>	—	
	24 609.6	—	—	—	—	849099-9 <sup>1</sup>	—	—	
	36 914.41	—	—	—	—	849103-1† <sup>2</sup>	—	—	
48 1219.2	—	—	—	—	849099-4 <sup>1</sup>	—	—		
Shielded Double End Lead Assemblies	18 457.2	—	—	—	—	1-849103-9 <sup>2</sup>	—	—	
	24 609.6	—	—	—	—	849104-5	—	—	
	36 914.4	—	—	—	—	849104-1	—	—	
	48 1219.2	—	—	—	—	1-849104-6*	—	—	
	12 304.8	—	—	—	—	1-849104-7	6-849104-7	—	
RFI Shielded Single End Lead Assemblies**	18 457.2	—	—	—	—	1-849104-9*	—	—	
	24 609.6	—	—	—	—	849104-3	5-849104-3	—	
	12 304.8	—	—	—	—	—	—	861811-1	
	18 457.2	—	—	—	—	—	—	861811-4	
RFI Shielded Double End Lead Assemblies**	24 609.6	—	—	—	—	—	—	861811-5	
	12 304.8	—	—	—	—	—	—	861812-1	
	18 457.2	—	—	—	—	—	—	861812-4	
	24 609.6	—	—	—	—	—	—	861812-3	
48 1219.2	—	—	—	—	—	—	861812-2		

\*Two ground leads, 6 [152.4] each.  
 \*\*These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861254-1.  
 †One ground lead, terminated end only. <sup>1</sup>A dim. 3.0 [76.2]. <sup>2</sup>A dim. 2.0 [50.8].



LGH High Voltage Connectors



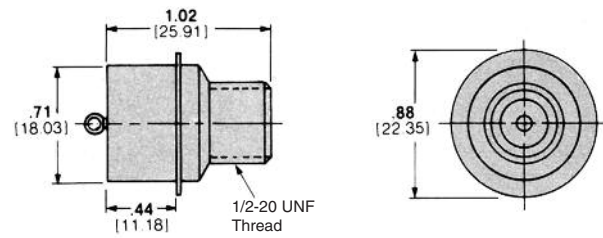
**LGH Lead Assemblies and Receptacles, 20 KVDC, LGH 1** (Continued)

**Glass-Epoxy Receptacles with .88 [22.35] Barrel Depth**

Flanged, for Hermetic Seal  
Part Number 861254-1

RoHS Part Number 5-861254-1

Weight — 5 grams

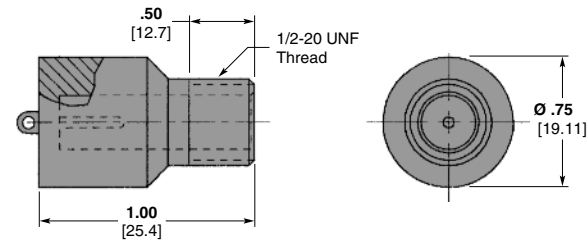


These receptacles are for use with RFI Shielded Lead Assemblies shown on the preceding page.

**Molded Receptacle**

Part Number 850306-3

RoHS Part Number 5-850306-3

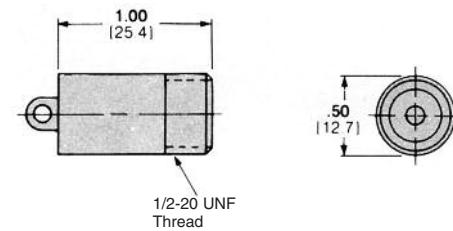


**For Encapsulated Units**

Part Number 834333-2

RoHS Part Number 5-834333-2

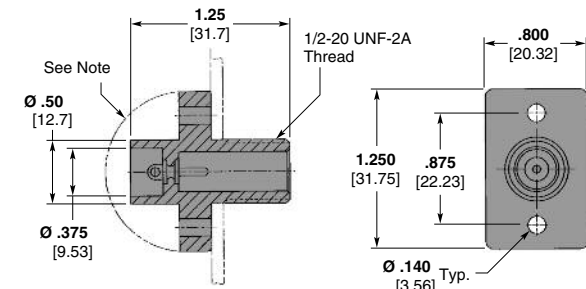
Weight — 4 grams



**Bulkhead Receptacle**

Part Number 449690-1

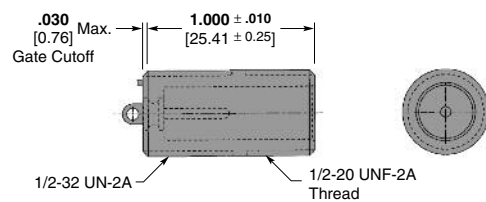
RoHS Part Number 5-449690-1



**Note:** Customer must protect back end against arc-over and breakdown if bulkhead and mounting hardware are metallic and at ground potential.

**Special Receptacle**

Part Number 448463-1

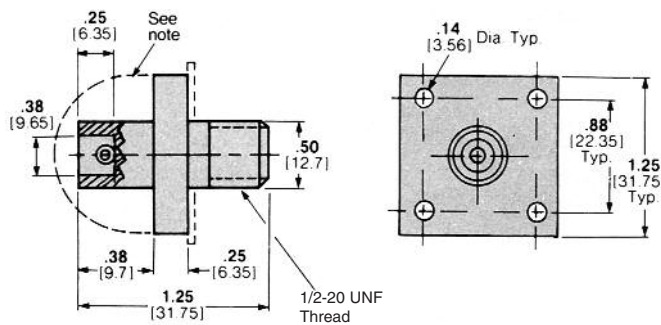


**Flanged, Bolt Mount**

Part Number 858827-1

RoHS Part Number 5-858827-1

Weight — 16 grams



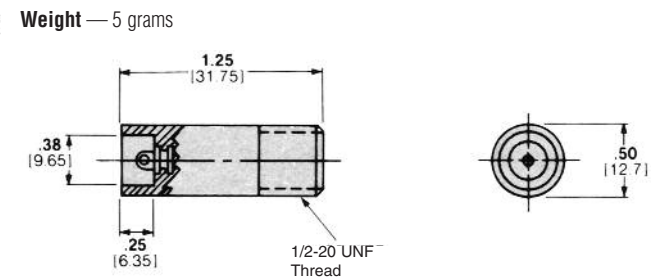
**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

**With Recessed Terminal for Encapsulated Units**

Part Number 849610-3

RoHS Part Number 5-849610-3

Weight — 5 grams



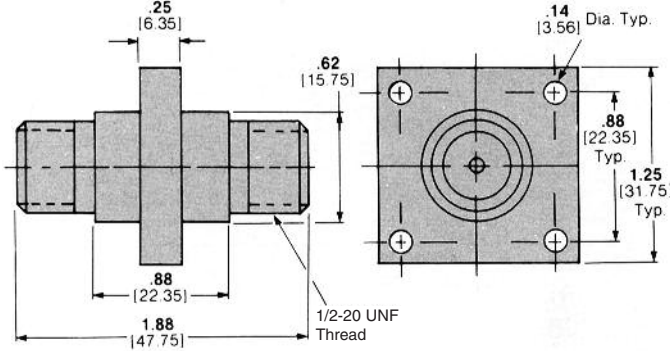
Receptacles are available with gold plated contacts.



**LGH Lead Assemblies and Receptacles, 20 KVDC, LGH 1 (Continued)**

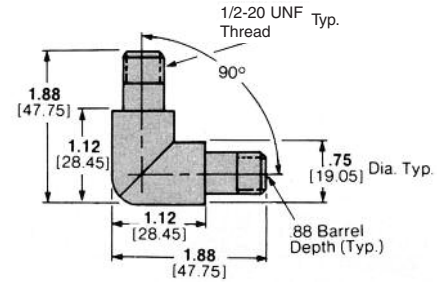
**Glass-Epoxy Receptacles with .88 [22.35] Barrel Depth (Continued)**

**Bolt Mount, Feed-Through**  
**Part Number 846793-1**  
**Weight** — 23 grams



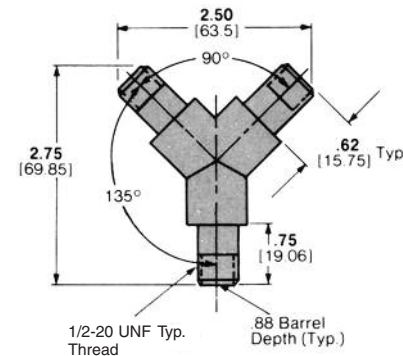
**L-Shape Receptacles with .88 [22.35] Barrel Depth**

**Splice**  
**Part Number 849662-1** —  
**Tin Plated Pins**

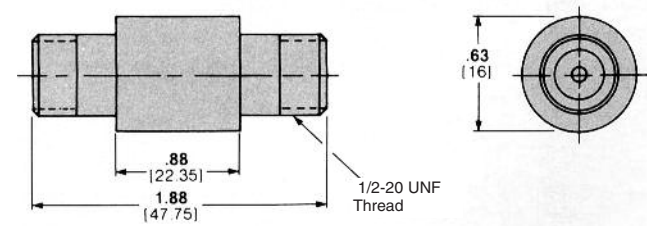


**Y-Shape Receptacles with .88 [22.35] Barrel Depth**

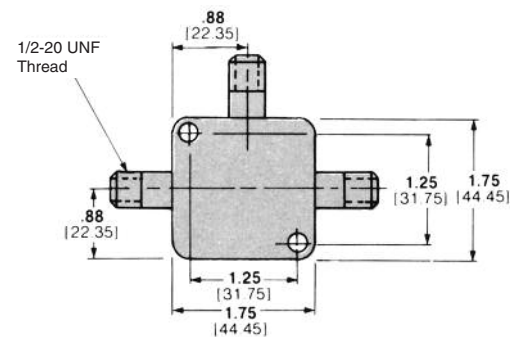
**Splice**  
**Part Number 849693-1** —  
**Tin Plated Pins**



**Splice**  
**Part Number 830149-1**  
**Weight** — 10 grams

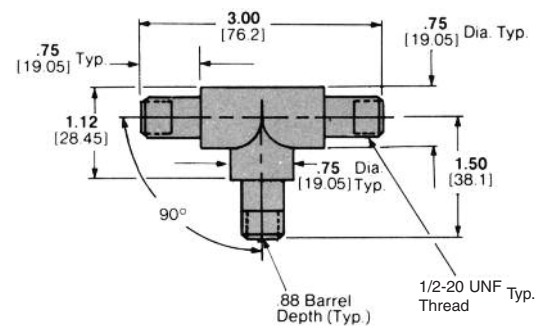


**T-Shape Connector**  
**Part Number 836674-1**  
**RoHS Part Number 5-836674-1**  
**Weight** — 100 grams



**T-Shape Receptacles with .88 [22.35] Barrel Depth**

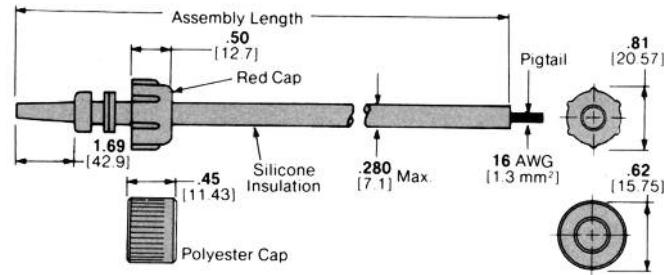
**Splice**  
**Part Number 849671-1** —  
**Tin Plated Pins**



Receptacles are available with gold plated contacts.

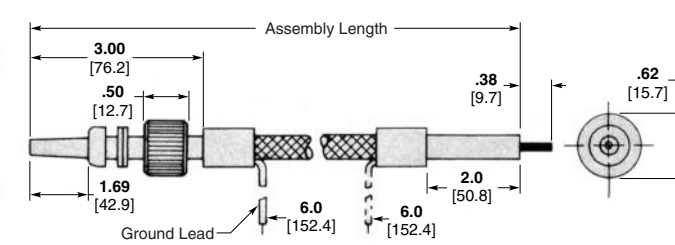
LGH Lead Assemblies and Receptacles, 25 KVDC, LGH 1 L

**Single End Lead Assemblies**



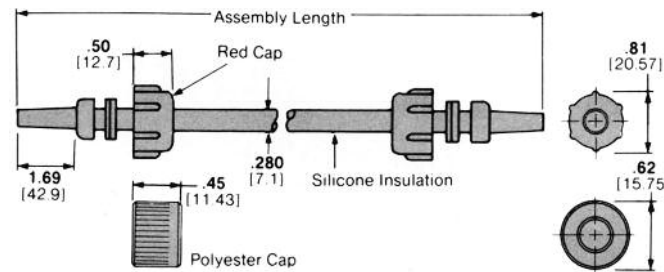
Part Number 830637

**Shielded Single End Lead Assemblies**



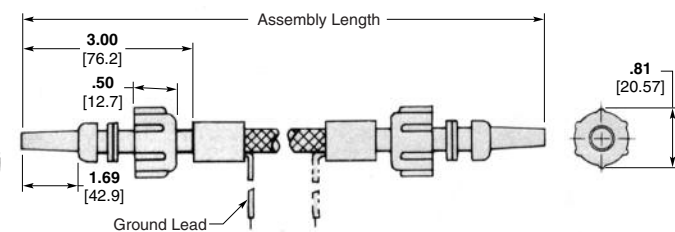
Part Number 846938

**Double End Lead Assemblies**



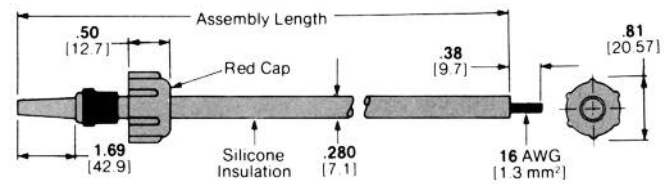
Part Number 830638

**Shielded Double End Lead Assemblies**



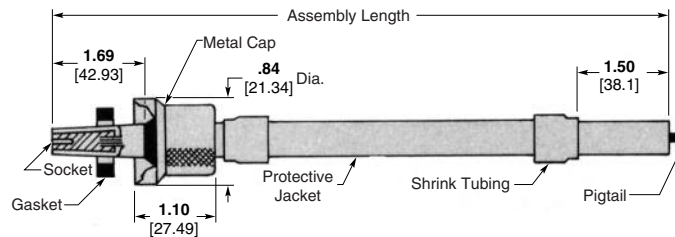
Part Number 849616

**Single End Lead Assemblies with Positive Stop Ferrules**



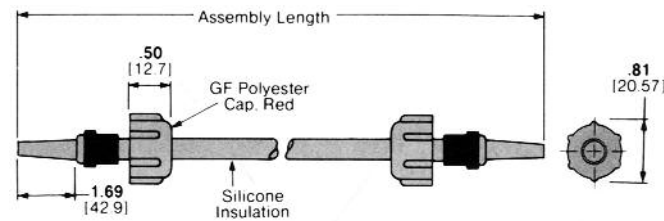
Part Number 862551

**RFI Shielded Single End Lead Assemblies**



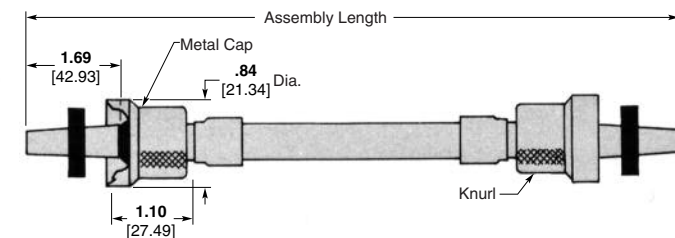
Part Number 861813

**Double End Lead Assemblies with Positive Stop Ferrules**



Part Number 862552

**RFI Shielded Double End Lead Assemblies**



Part Number 861814

**LGH Lead Assemblies and Receptacles, 25 KVDC, LGH 1 L** (Continued)

**Lead Assemblies** (Continued)

Description	Assembly Length	Part Numbers							
		Polycarbonate Cap		Glass-Filled Polyester Cap		Glass Epoxy Cap		Metal Cap	
		Non-RoHS	RoHS	Non-RoHS	RoHS	Non-RoHS	RoHS		Non-RoHS
Single End Lead Assemblies	6 152.4	2-830637-1	—	2-863705-1	—	—	—	—	
	12 304.8	1-830637-2	1-5830637-2	1-863705-2	—	—	—	—	
	18 457.2	1-830637-3	1-5830637-3	1-863705-3	—	—	—	—	
	24 609.6	2-830637-8	2-5830637-8	2-863705-8	7-863705-8	—	—	—	
	36 914.4	830637-5	5830637-5	863705-5	—	—	—	—	
	48 1219.2	2-830637-4	2-5830637-4	2-863705-4	—	—	—	—	
Double End Lead Assemblies	6 152.4	—	—	863706-2	—	830638-2	—	—	
	12 304.8	1-830638-5	—	1-863706-5	—	—	—	—	
	18 457.2	2-830638-0	—	2-863706-0	—	—	—	—	
	24 609.6	830638-9	—	863706-9	—	—	—	—	
	36 914.4	830638-6	—	863706-6	—	—	—	—	
	48 1219.2	1-830638-9	—	1-863706-9	—	—	—	—	
Single End Lead Assemblies (with Positive Stop Ferrules)	6 152.4	862551-1	—	863707-1	—	—	—	—	
	12 304.8	862551-4	5-862551-4	863707-4	—	—	—	—	
	18 457.2	862551-6	—	863707-6	—	—	—	—	
	24 609.6	862551-8	—	863707-8	5-863707-8	—	—	—	
	36 914.4	1-862551-5	—	1-863707-5	—	—	—	—	
	48 1219.2	1-862551-2	—	1-863707-2	6-863707-2	—	—	—	
Double End Lead Assemblies (with Positive Stop Ferrules)	6 152.4	—	—	—	—	862552-1	—	—	
	12 304.8	862552-4	—	—	—	—	—	—	
	18 457.2	862552-6	—	—	—	—	—	—	
	24 609.6	862552-8	—	—	—	—	—	—	
	36 914.4	1-862552-3	—	—	—	—	—	—	
	48 1219.2	1-862552-0	—	—	—	—	—	—	
Shielded Single End Lead Assemblies	18 457.2	—	—	—	—	2-846938-0	—	—	
	24 609.6	—	—	—	—	2-846938-1	—	—	
	36 914.4	—	—	—	—	1-846938-6††	—	—	
	48 1219.2	—	—	—	—	846938-8†	—	—	
Shielded Double End Lead Assemblies	12 304.8	—	—	—	—	849616-7	—	—	
	18 457.2	—	—	—	—	1-849616-5	—	—	
	36 914.4	—	—	—	—	1-849616-0*	—	—	
60 1524.0	—	—	—	—	2-849616-2*	7-849616-2*	—		
RFI Shielded Single End Lead Assemblies**	12 304.8	—	—	—	—	—	—	861813-1	
	24 609.6	—	—	—	—	—	—	861813-2	
	48 1219.2	—	—	—	—	—	—	861813-5	
	12 304.8	—	—	—	—	—	—	861814-1	
RFI Shielded Double End Lead Assemblies	18 457.2	—	—	—	—	—	—	1-861814-9	
	24 609.6	—	—	—	—	—	—	2-861814-1	
	36 914.4	—	—	—	—	—	—	1-861814-5	
	48 1219.9	—	—	—	—	—	—	1-861814-6	

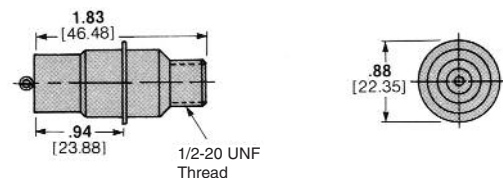
\*Two equal length ground leads.  
 \*\*These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861255-1.  
 †One ground lead, pigtail end only.  
 ††One ground lead, terminated end only. Pigtail End 13 [330.2].



**LGH Lead Assemblies and Receptacles, 25 KVDC, LGH 1 L (Continued)**

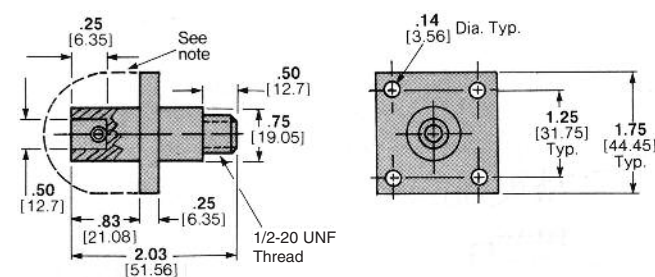
**Glass-Epoxy Receptacles with 1.69 [42.93] Barrel Depth**

Flanged, for Hermetic Seal  
**Part Number 861255-1**  
**RoHS Part Number 5-861255-1**  
 Weight — 17 grams

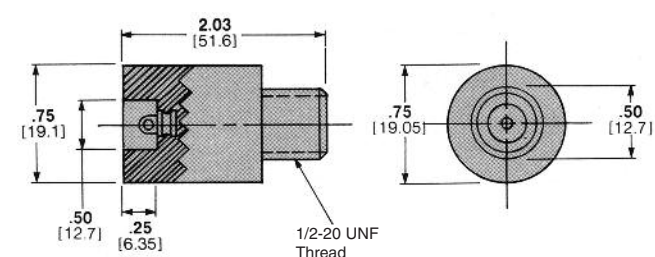


These receptacles are for use with RFI Shielded Leads shown on the preceding page.

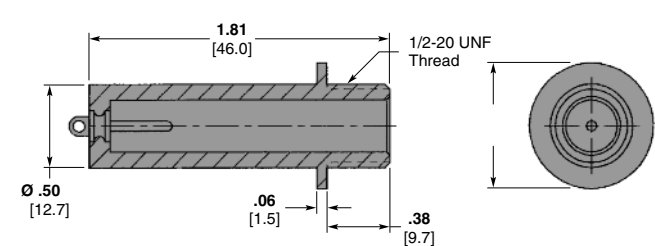
**Flanged, Bolt Mount**  
**Part Number 846814-1**  
**RoHS Part Number 5-846814-1**  
 Weight — 32 grams



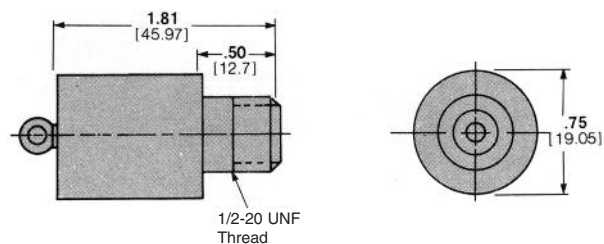
**With Recessed Terminal for Encapsulated Units**  
**Part Number 859058-3**  
 Weight — 16 grams



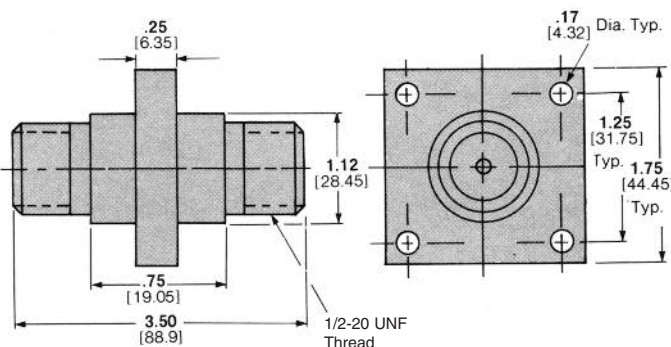
**Flanged Receptacle**  
**Part Number 449925-1**  
 Color — Red



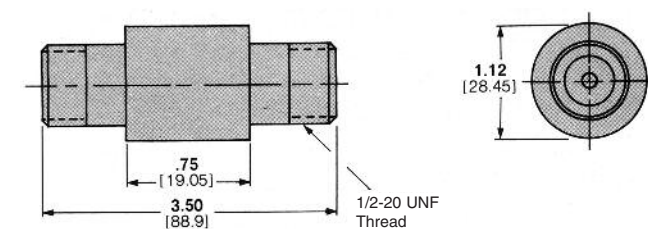
**For Encapsulated Units**  
**Part Number 858868-1**  
**RoHS Part Number 5-858868-1**  
 Weight — 15 grams



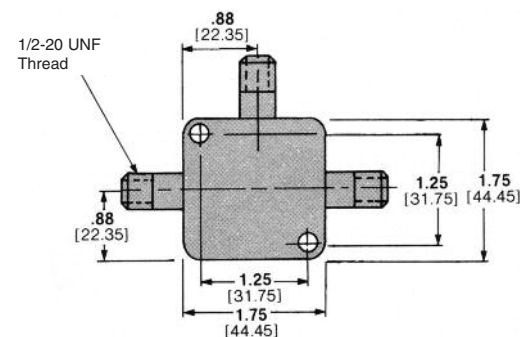
**Bolt-mount, Feed-through**  
**Part Number 858873-1**  
 Weight — 70 grams



**Splice**  
**Part Number 858030-1**  
 Weight — 52 grams



**T-Shape Connector**  
**Part Number 830699-1**  
**RoHS Part Number 5-830699-1**  
 Weight — 110 grams



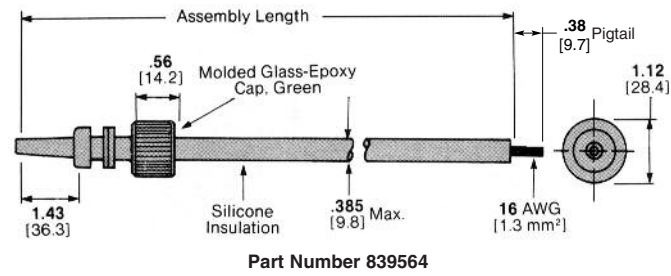
**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

Receptacles are available with gold plated contacts.



**LGH Lead Assemblies and Receptacles, 30 KVDC, LGH 2**

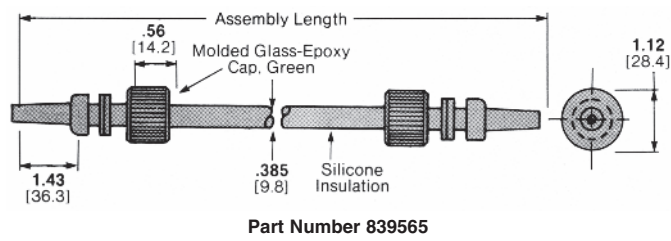
**Single End Lead Assemblies**



Assembly Length	Part Number
6.0 152.4	1-839564-8
12.0 304.8	839564-1 5-839564-1*
18.0 457.2	2-839564-9
24.0 609.6	839564-2 5-839564-2*
36.0 914.4	1-839564-9 6-839564-9*
48.0 1219.2	1-839564-3 6-839564-3*

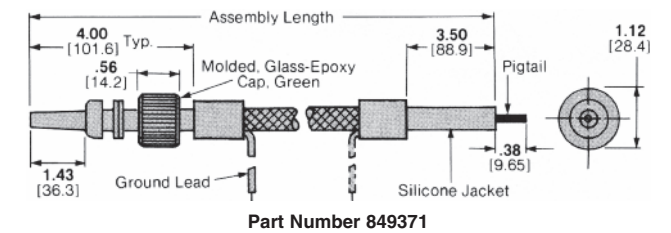
\*RoHS compliant Part Number.

**Double End Lead Assemblies**



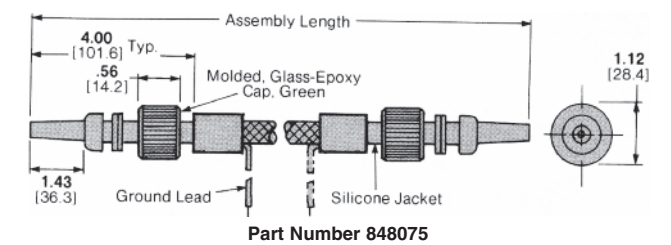
Assembly Length	Part Number
8.0 203.2	1-839565-3
12.0 304.8	839565-1
18.0 457.2	2-839565-9
24.0 609.6	839565-9
36.0 914.4	2-839565-5
48.0 1219.2	839565-6

**Shielded Single End Lead Assemblies**



Assembly Length	Part Number
12.0 304.8	849371-2
18.0 457.2	849371-8
24.0 609.6	849371-3
48.0 1219.2	849371-9

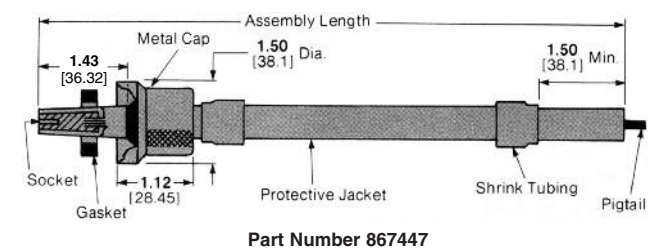
**Shielded Double End Lead Assemblies**



Assembly Length	Part Number
24.0 609.6	1-848075-5
36.0 914.4	1-848075-6
48.0 1219.2	2-848075-2**

\*\*Two ground leads, 6.0 [152.4] each

**RFI Shielded Single End Lead Assemblies\*\*\***



Assembly Length	Part Number
12.0 304.8	867447-1
24.0 609.6	867447-2
36.0 914.4	867447-3
48.0 1219.2	867447-4

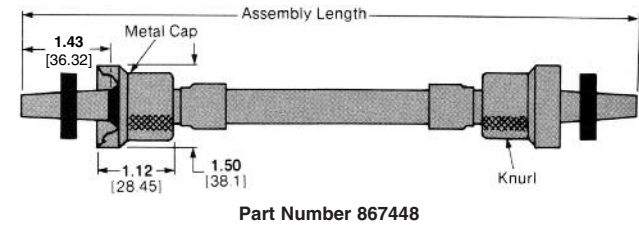
**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in length and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.  
 \*\*\* These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861256-1.



LGH High Voltage Connectors

**LGH Lead Assemblies and Receptacles, 30 KVDC, LGH 2 (Continued)**

**RFI Shielded Double End Lead Assemblies\***

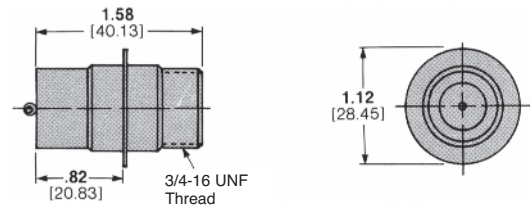


Assembly Length	Part Number
12.0 304.8	867448-1
24.0 609.6	867448-2
36.0 914.4	867448-3
48.0 1219.2	867448-4

**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in length and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.  
\* These RFI Shielded Lead Assemblies mate with receptacle 861256-1.

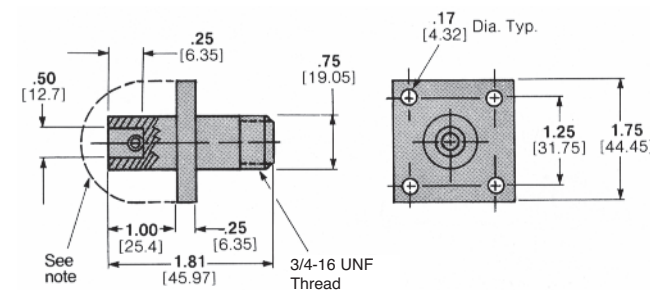
**Glass-Epoxy Receptacles with 1.44 [36.58] Barrel Depth**

**Flanged, for Hermetic Seal**  
**Part Number 861256-1**  
**RoHS Part Number 5-861256-1**  
**Weight** — 20 grams



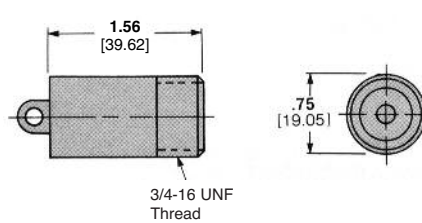
These receptacles are for use with RFI Shielded Leads shown on the preceding page.

**Flanged, Bolt Mount**  
**Part Number 850910-1**  
**RoHS Part Number 5-850910-1**  
**Weight** — 42 grams

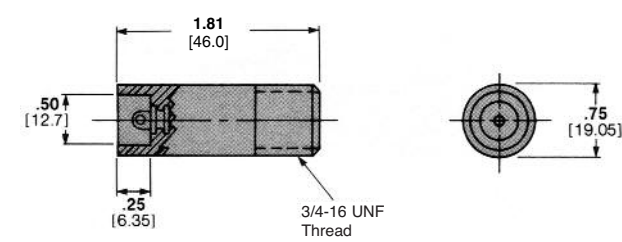


**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

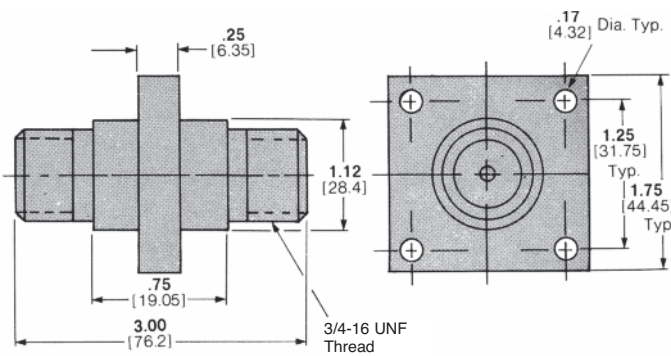
**For Encapsulated Units**  
**Part Number 1-849587-1**  
**RoHS Part Number 1-5849587-1**  
**Weight** — 17 grams



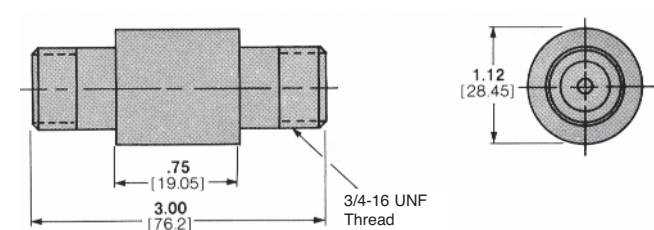
**With Recessed Terminal for Encapsulated Units**  
**Part Number 849588-1**  
**RoHS Part Number 5-849588-1**  
**Weight** — 20 grams



**Bolt-mount, Feed-through**  
**Part Number 850735-1**  
**Weight** — 70 grams



**Splice**  
**Part Number 850555-1**  
**Weight** — 43 grams

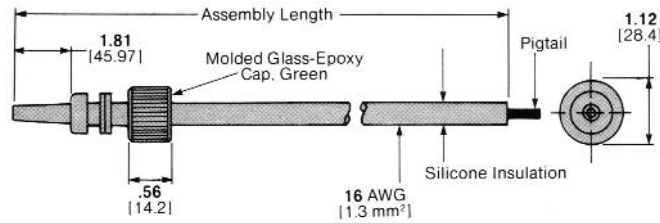


Receptacles are available with gold plated contacts.

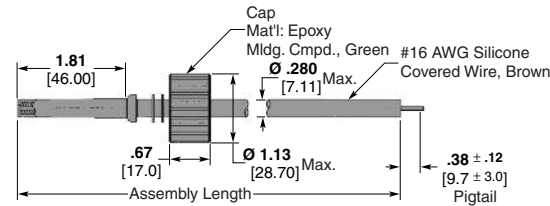


**LGH Lead Assemblies and Receptacles, 40 KVDC, LGH 3**

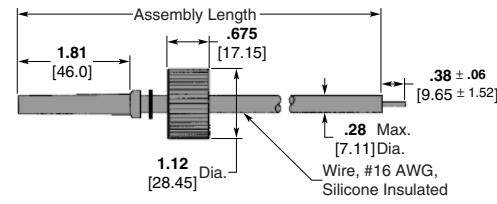
**Single End Lead Assemblies**



Part Number 837975



Part Number 868354

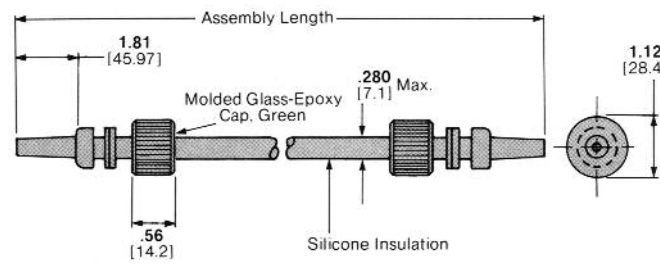


Part Number 869084

Assembly Length	Wire Color	Part Number
6.0	—	837975-6
152.4	—	837975-8
12.0	—	837975-3
304.8	—	5-837975-3*
18.0	—	1-837975-6
457.2	—	6-837975-6*
24.0	—	837975-2
609.6	—	837975-9
914.4	—	5-837975-9*
60.0 ± 1.00	Brown	868354-2
1524.0 ± 25.4	Brown	869084-1
18.0 ± .25	Brown	869084-2
457.2 ± 6.35	Red	869084-3
18.0 ± .25	Red	869084-4
457.2 ± 6.35	Yellow	869084-5
18.0 ± .25	Yellow	869084-6
457.2 ± 6.35	Green	869084-7
18.0 ± .25	Green	869084-8
457.2 ± 6.35	White	869084-9
18.0 ± .25	White	869084-0
457.2 ± 6.35	Red	869084-1
18.0 ± .25	Yellow	869084-2
457.2 ± 6.35	Green	869084-3

\*RoHS compliant Part Number.

**Double End Lead Assemblies**



Part Number 830649

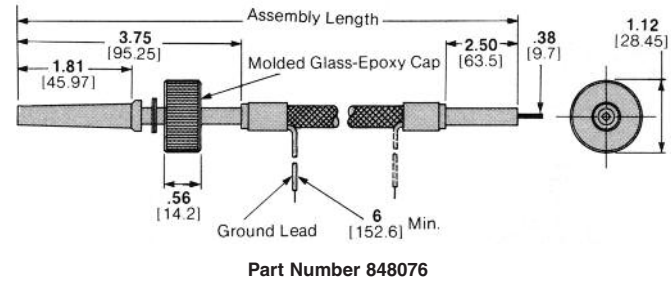
Assembly Length	Part Number
12.0	830649-1
304.8	830649-3
18.0	1-830649-0
457.2	830649-2
24.0	830649-6
609.6	
36.0	
914.4	
48.0	
1219.2	



LGH High Voltage Connectors

**LGH Lead Assemblies and Receptacles, 40 KVDC, LGH 3** (Continued)

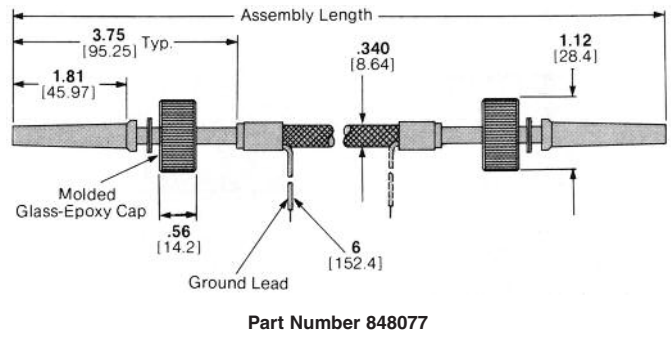
**Shielded Single End Lead Assemblies**



Assembly Length	Part Number
12.0 304.8	1-848076-1
18.0 457.2	848076-5
24.0 609.6	848076-1
36.0 914.4	848076-8**
48.0 1219.2	848076-3 5-848076-3*
360.0 9144.0	2-848076-1
16.25 412.8	2-848076-2 7-848076-2*
29.75 755.7	2-848076-3 7-848076-3*
20.25 514.4	2-848076-4
21.75 552.5	2-848076-5 7-848076-5*
16.25 412.8	2-848076-6 7-848076-6*

All leads are shielded and glass braid covered.  
 \*RoHS compliant Part Number.  
 \*\*Two ground leads each 7" long.

**Shielded Double End Lead Assemblies**



Assembly Length	Part Number
12.0 304.8	848077-4
24.0 609.6	848077-1
48.0 1219.2	848077-3 5-848077-3*

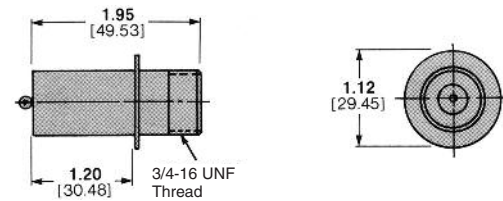
\*RoHS compliant Part Number.

**LGH Lead Assemblies and Receptacles, 40 KVDC, LGH 3 (Continued)**

**Glass-Epoxy Receptacles with 1.81 [45.97] Barrel Depth**

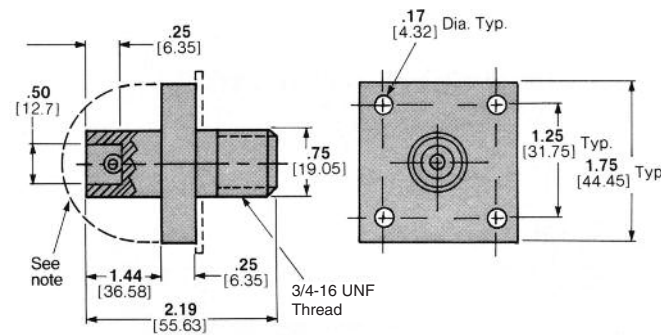
Flanged, For Hermetic Seal  
**Part Number 861257-1**  
**RoHS Part Number 5-861257-1**

Weight — 32 grams



**Flanged, Bolt Mount**  
**Part Number 850911-1**  
**RoHS Part Number 5-850911-1**

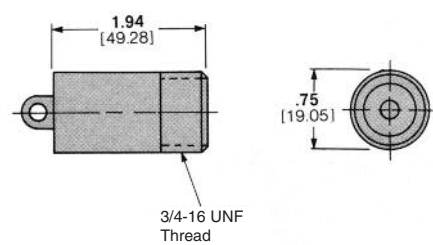
Weight — 53 grams



**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

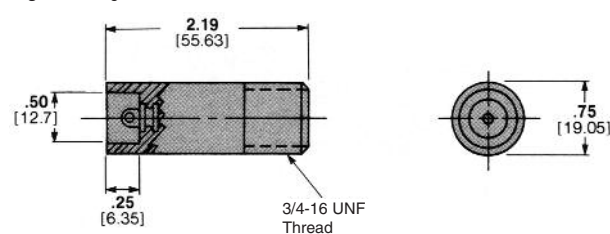
**For Encapsulated Units**  
**Part Number 849587-9**  
**RoHS Part Number 5-849587-9**

Weight — 28 grams



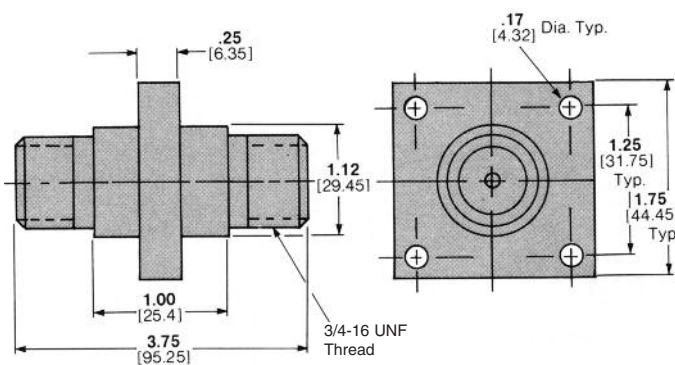
**With Recessed Terminal For Encapsulated Units**  
**Part Number 849588-3**  
**RoHS Part Number 5-849588-3**

Weight — 34 grams



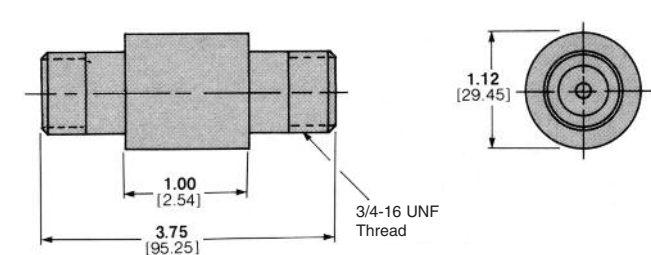
**Bolt-Mount, Feed-Through**  
**Part Number 850909-1**

Weight — 91 grams



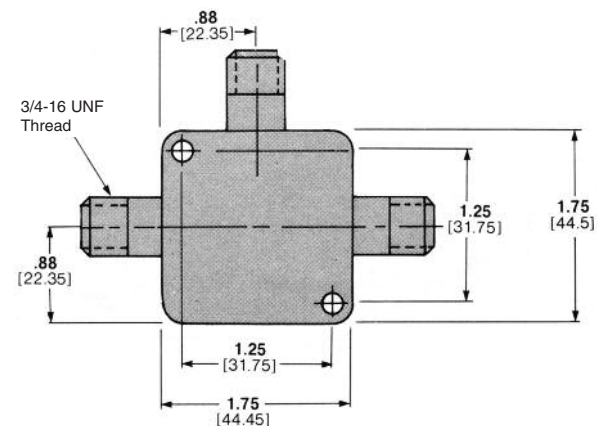
**Splice**  
**Part Number 850908-1**

Weight — 65 grams



**T-Shape Connector**  
**Part Number 860708-1**  
**RoHS Part Number 5-860708-1**

Weight — 135 grams



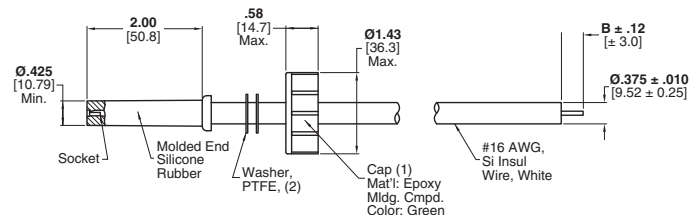
Receptacles are available with gold plated contacts.



LGH High Voltage Connectors

**LGH Lead Assemblies and Receptacles, 50 KVDC, LGH 4**

**Single End Lead Assemblies**

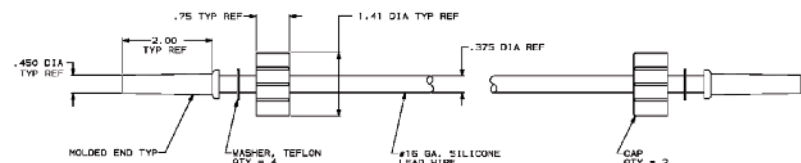


Part Number 846290

Assembly Length	Part Number
6.0	1-846290-7
152.4	
12.0	846290-1
304.8	5-846290-1*
18.0	1-846290-6
457.2	6-846290-6*
24.0	846290-3
609.6	5-846290-3*
36.0	846290-6
914.4	5-846290-6*
48.0	846290-4
1219.2	5-846290-4*

\*RoHS compliant Part Number.

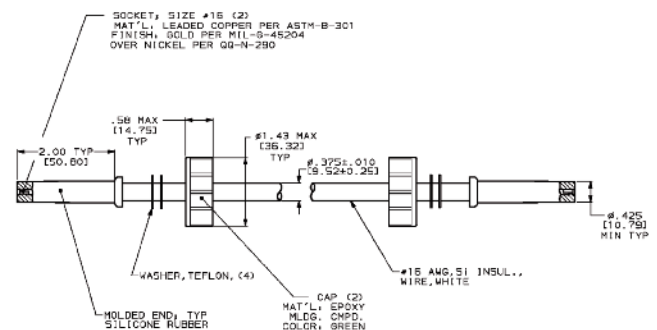
**Double End Lead Assemblies**



Part Number 445217

Assembly Length	Part Number
18.0 ± .12	445217-2
457.2 ± 3.05	
24.0 ± .24	445217-1
609.6 ± 6.10	

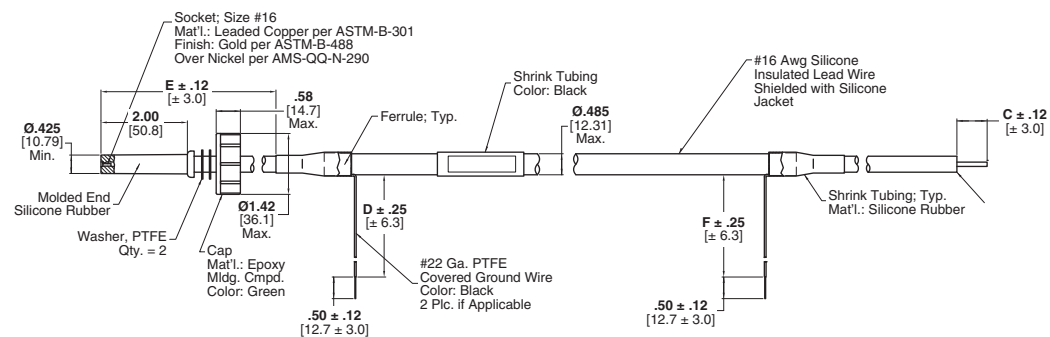
**Double End Lead Assemblies**



Part Number 846291

Assembly Length	Part Number
12.0	846291-1
304.8	
18.0	1-846291-1
457.2	
24.0	846291-3
609.6	
36.0	846291-4
914.4	

**Shielded Single End Lead Assemblies**



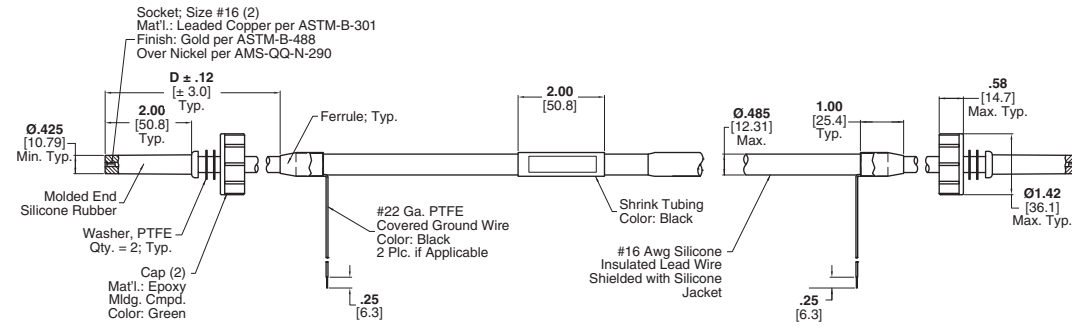
Part Number 848078

Assembly Length	Part Number
24.0	848078-1
609.6	
36.0	2-848078-0
914.4	
48.0	848078-2
1219.2	

**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in length and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.

**LGH Lead Assemblies and Receptacles, 50 KVDC, LGH 4 (Continued)**

**Shielded Double End Lead Assemblies**

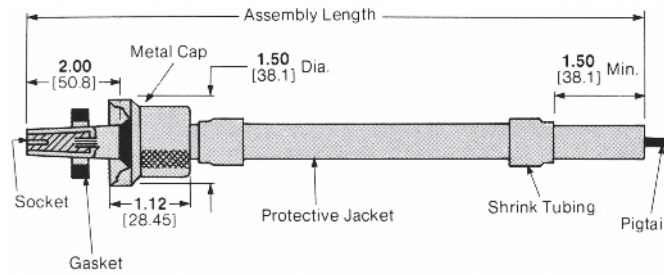


Part Number 846950

Assembly Length	Part Number
12.0	846950-6
304.8	846950-7
48.0	1-846950-0
1219.2	6-846950-0*

\*RoHS compliant Part Number.

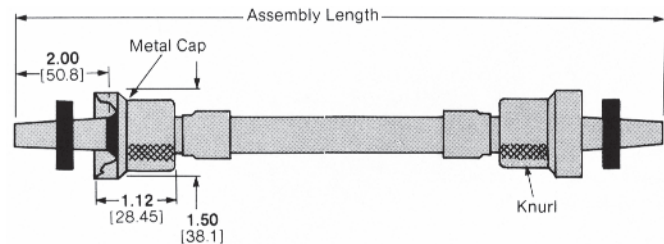
**RFI Shielded Single End Lead Assemblies\***



Part Number 865089

Assembly Length	Part Number
12.0	865089-4
304.8	865089-5
18.0	865089-5
457.2	865089-5
24.0	865089-6
609.6	865089-6
36.0	865089-7
914.4	865089-7
48.0	865089-8
1219.2	865089-8

**RFI Shielded Double End Lead Assemblies\***



Part Number 865090

Assembly Length	Part Number
12.0	865090-4
304.8	865090-4
18.0	865090-7
457.2	865090-7
24.0	865090-1
609.6	865090-1
36.0	865090-5
914.4	5-865090-5*

\*RoHS compliant Part Number.



LGH High Voltage Connectors

**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in length and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.  
 \* These RFI Shielded Lead Assemblies mate with receptacle 861258-1.



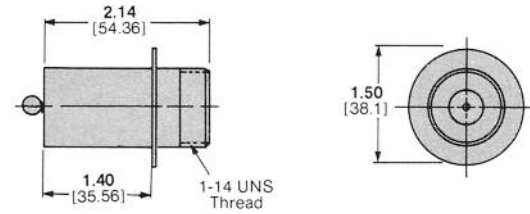
**LGH Lead Assemblies and Receptacles, 50 KVDC, LGH 4 (Continued)**

**Glass-Epoxy Receptacles with 2.00 [50.8] Barrel Depth**

**Flanged, For Hermetic Seal**  
**Part Number 861258-1**

**RoHS Part Number 5-861258-1**

**Weight** — 48 grams

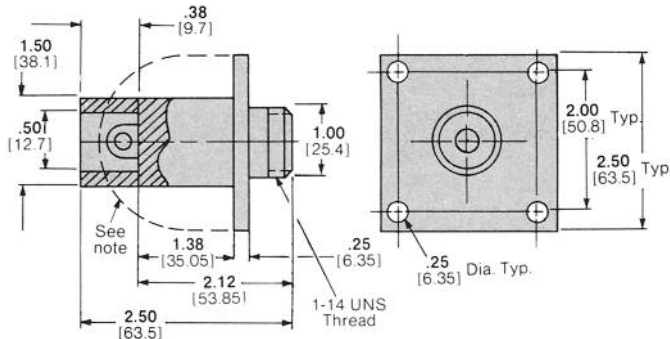


These receptacles are for use with RFI Shielded Leads shown on the preceding page.

**Flanged, Bolt Mount**  
**Part Number 850912-1**

**RoHS Part Number 5-850912-1**

**Weight** — 100 grams



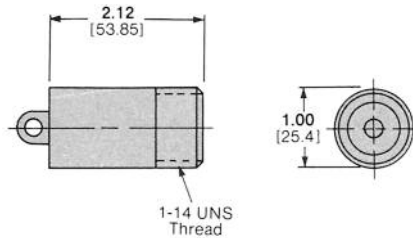
**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

**For Encapsulated Units**

**Part Number 836567-1**

**RoHS Part Number 5-836567-1**

**Weight** — 42 grams

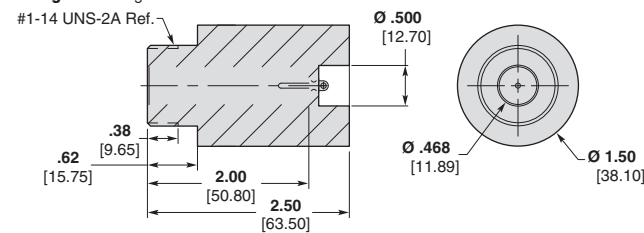


**With Recessed Terminal**  
**For Encapsulated Units**

**Part Number 849853-1**

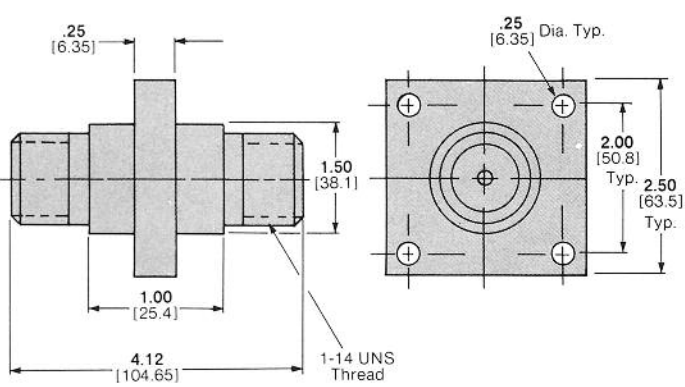
**RoHS Part Number 5-849853-1**

**Weight** — 55 grams



**Bolt-Mount, Feed-Through**  
**Part Number 840468-1**

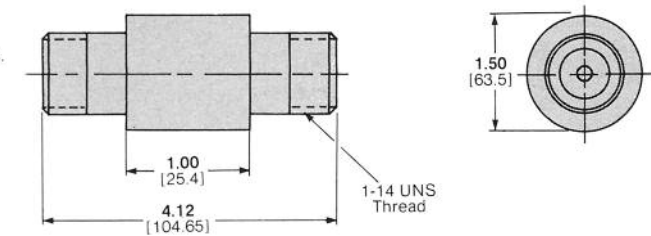
**Weight** — 137 grams



**Splice**

**Part Number 840467-1**

**Weight** — 105 grams

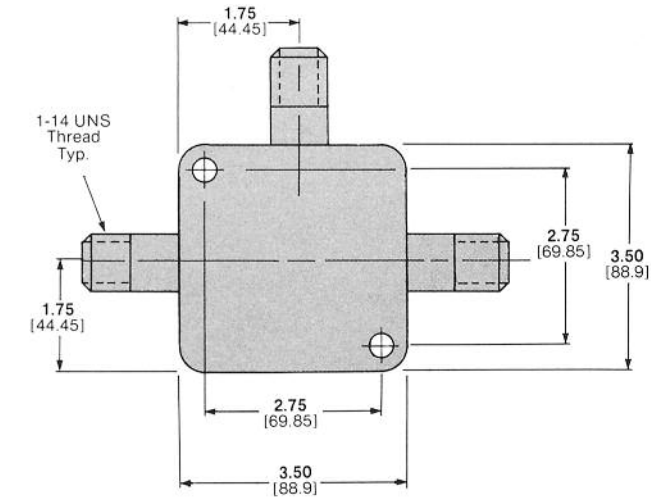


**T-Shape Connector**

**Part Number 850554-1**

**RoHS Part Number 5-850554-1**

**Weight** — 315 grams



Receptacles are available with gold plated contacts.



**Commercial Single Line Connectors**

**Product Facts**

- All parts made of UL Recognized, 94V-0 rated, plastic material
- Designed to exceed minimum creepage and clearance for specified voltages per applicable international specifications
- Available with or without leads
- Maximum flexibility of application through elimination of predetermined lead lengths
- Machine applied terminations provide for lowest applied cost



The AMP family of Commercial Single Line Connectors provides solutions to high-voltage connection problems at low applied cost. The connectors are excellent for commercial application in industrial environments. Ease of application makes them suitable for large-volume production applications. Crimp, snap-in contacts can be machine terminated or hand-tool crimped.

Housings are self-extinguishing plastic, UL rated 94V-0. 10 KVDC connectors accept 20–24 AWG [0.2–0.6 mm<sup>2</sup>] wires. 20 KVDC connectors have contacts which accept 22–20 AWG [0.3–0.6 mm<sup>2</sup>] and 18–16 AWG [0.8–1.4 mm<sup>2</sup>] conductors. Connectors rated for 30 KVDC offer three choices of contact sizes to cover the 16-8 AWG [1.25–8 mm<sup>2</sup>] range.

**Performance Specifications**

**All Series**  
**Altitude** — Sea level to 10,000 feet [3048 m]  
**Temperature** — 59°F to +185°F [15°C to +85°C]  
**Product Specification** — 108-36034

**10 KVDC Connectors**  
**Voltage** — 10 KVDC  
**Current** — 5 amperes, continuous, rms  
**Dielectric Withstanding Test** — 15 KVDC for 3 minutes at sea level, 77°F [25°C]  
**Instruction Sheet** — Part Number 867443-1

**20 KVDC Connectors**  
**Voltage** — 8 KVAC, rms, 60 Hz; 20 KVDC  
**Current** — 7.5 amperes, continuous, rms  
**Dielectric Withstanding Test** — 12 KVAC, rms, 60 Hz for 3 minutes at sea level, 77°F [25°C]; 30 KVDC for 3 minutes at sea level, 77°F [25°C]  
**Instruction Sheets** — Plugs — Part Number 862749-1 Receptacles — Part Number 862755-1

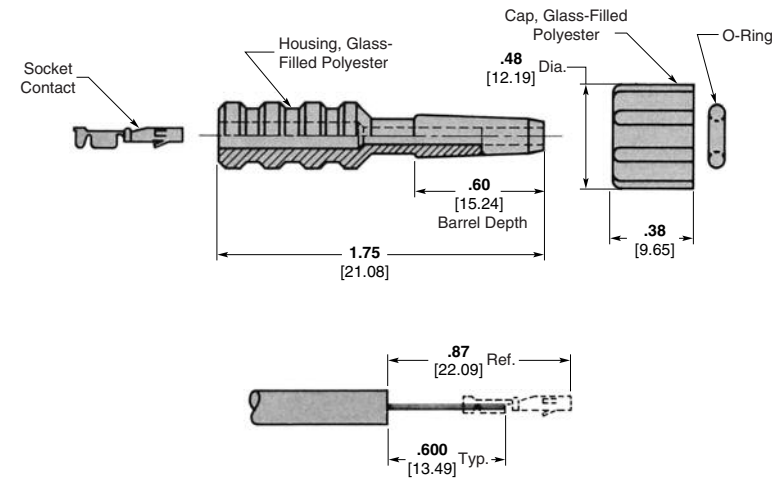
**30 KVDC Connectors**  
**Voltage** — 12 KVAC, rms, 60 Hz; 30 KVDC  
**Current** — 25 amperes, continuous, rms  
**Dielectric Withstanding Test** — 16 KVAC, rms, 60 Hz for 3 minutes at sea level, 77°F [25°C]; 40 KVDC for 3 minutes at sea level, 77°F [25°C]



LGH High Voltage Connectors

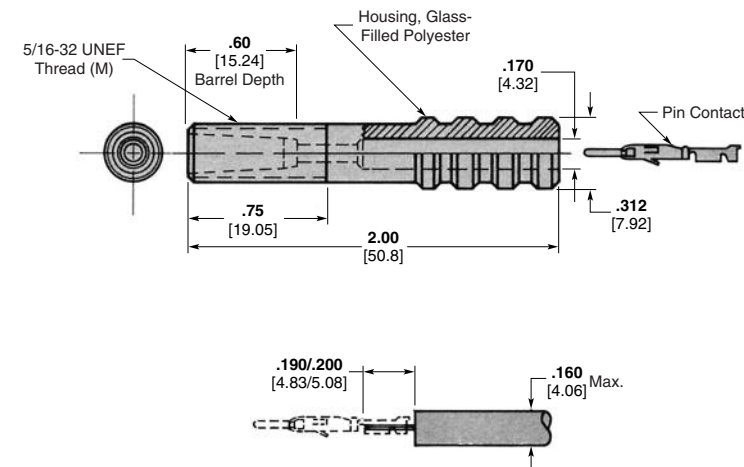
**Commercial Single Line 10 KVDC Connectors**

**Plug Kits**



**Recommended Wire Preparation**  
(Ref. Socket Contact Part Number 203802-6)

**Receptacle Kit**



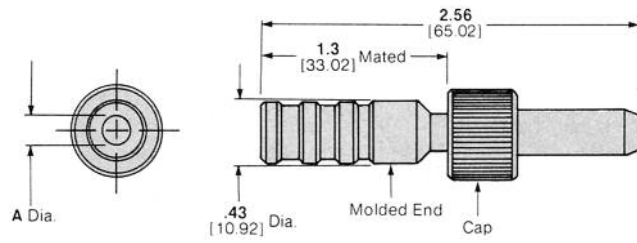
**Recommended Wire Preparation**  
(Ref. Pin Contact Part Number 203816-6)

Voltage Rating	Description	Wire Size		Max. Ins. Dia.	Contact Type	Kit Part Number	Tooling Part Number	
		AWG	mm <sup>2</sup>				Hand Tool	Extraction Tool
10 KVDC	Plug Kits*	20-24	0.2-0.6	.105 2.66	Type XI Socket	867157-1	91544-1	91038-3
				.160 4.06	Type XI Socket	867157-2	91544-1	91038-3
	Receptacle Kit*	20-24	0.2-0.6	.160 4.06	Type XI Pin	867156-1	91544-1	91038-3

\* Contact included with kit.

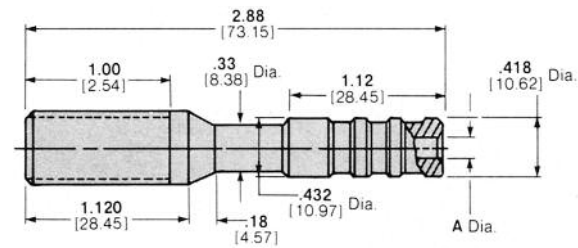
Commercial Single Line 20 KVDC Connectors

Plug Kits

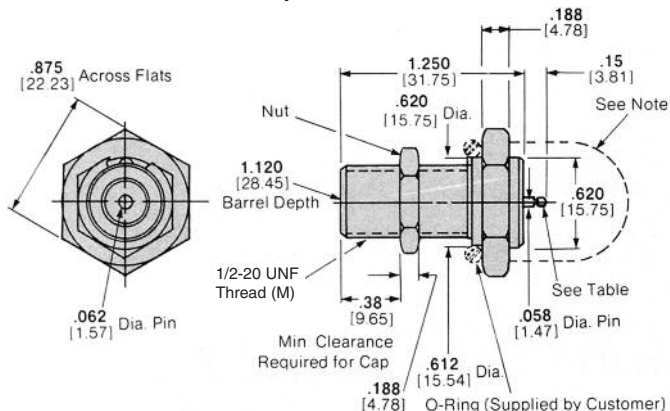


These plugs mate with receptacles shown on this page.

Free-Hanging Receptacle Kits

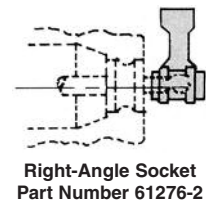
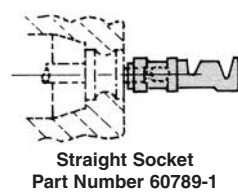
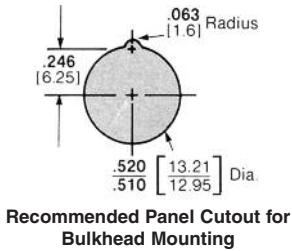
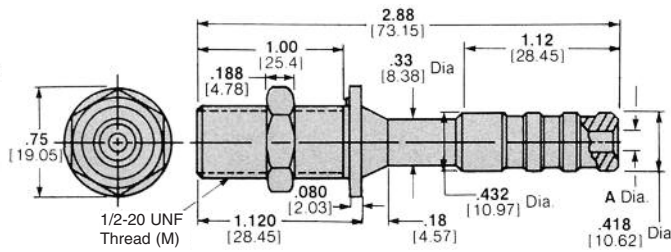


Bulkhead-Mounted Receptacle Kits



**Note:** If bulkhead and mounting hardware are metal at ground potential, the back end of the receptacle must be protected against arc-over and breakdown.

Bulkhead-Mounted Receptacle Kits With Rear Insulation Collar



Voltage Rating	Description	Wire Size		Max. Ins. Dia.	Contact Part Number	Kit Part Number	RoHS Kit Part Number	Tooling Part Number	
		AWG	mm <sup>2</sup>					Hand Tool	Extraction Tool
20 KVDC	Plug Kits*	22-20	0.3-0.6	.185 4.7	66399-1	861610-1	5-861610-1	91523-1	861751-1
		18-16	0.8-1.4		66101-2	861610-3	5-861610-3	91505-1	861751-1
		—	—	—	none	861610-5	5-861610-5	—	861751-1
		22-20	0.3-0.6	.302 7.67	66399-1	861610-4	5-861610-4	91523-1	861751-1
		18-16	0.8-1.4		66101-2	861610-2	5-861610-2	91505-1	861751-1
		—	—		—	none	861610-6	—	—
	22-20	0.3-0.6	66400-1		861753-1	5-861753-1	91523-1	861751-1	
	Free-Hanging Receptacle Kits*	18-16	0.8-1.4	4.7	66099-2	861753-3	—	91505-1	861751-1
		22-20	0.3-0.6	.302	66400-1	861753-4	5-861753-4	91523-1	861751-1
		18-16	0.8-1.4	7.67	66099-2	861753-2	5-861753-2	91505-1	861751-1
		—	—	—	none	861611-1	—	—	—
	Bulkhead-Mounted Receptacle Kits*	—	—	—	60789-1 (Straight)**	861611-2	—	91507-1	—
		—	—	—	61276-2 (Right-Angle)**	861611-3	—	91507-1	—
	Bulkhead-Mounted Receptacle Kits* (with Rear Insulation Collar)	22-20	0.3-0.6	.185 4.7	66400-1	862197-1	—	91523-1	861751-1
		18-16	0.8-1.4		66099-2	862197-3	—	91505-1	861751-1
		—	—	—	none	862197-5	—	—	861751-1
22-20		0.3-0.6	.302 7.67	66400-1	862197-4	—	91523-1	861751-1	
18-16		0.8-1.4		66099-2	862197-2	—	91505-1	861751-1	
—		—		—	none	862197-6	—	—	861751-1
—	—	—		—	—	—	—	—	

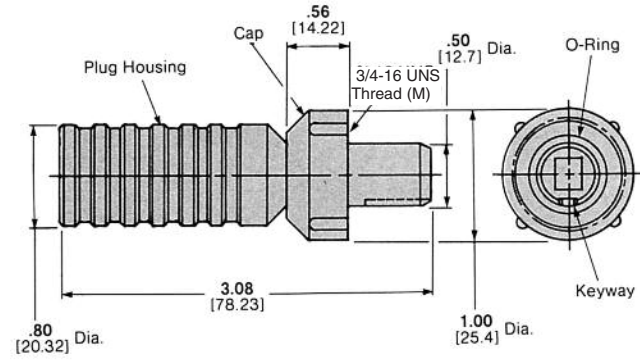
\* Contact included with kit.

\*\* Crimp-on Contacts.

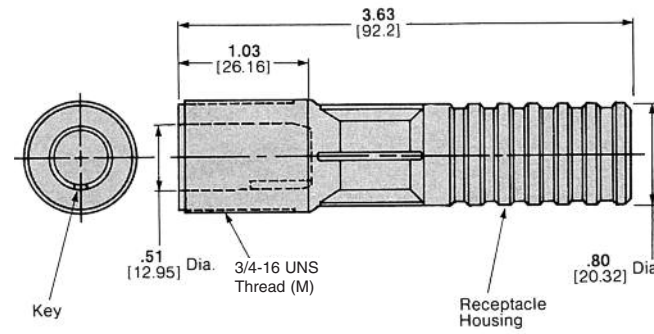


**Commercial Single Line 30 KVDC Connectors**

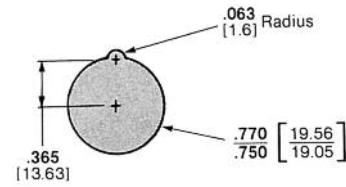
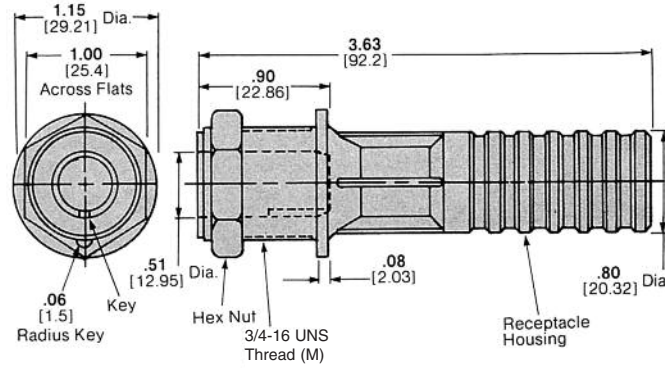
**Plug Kits**



**Free-Hanging Receptacle Kit**



**Bulkhead-Mounted Receptacle Kits With Rear Insulation Collar**



**Recommended Panel Cutout for Bulkhead Mounting**

Voltage Rating	Description	Wire Size		Max. Ins. Dia.	Contact Part Number		Kit Part Number		Tooling Part Number	
		AWG	mm <sup>2</sup>		Non-RoHS	RoHS	Non-RoHS	RoHS	Die Set**	Extraction Tool
30 KVDC	Plug Kits*	10	5-6	.50 12.7	66741-8 (Type XII)	2-66741-1	863103-1	5-863103-1	90140-1	863558-1
		14-12	2-3		66740-8 (Type XII)	2-66740-1	863103-2	5-863103-2	90145-1	863558-1
		16	1.4		66740-8 (Type XII)	2-66740-1	863103-3	5-863103-3	90145-2	863558-1
	Free Hanging Receptacle Kits*	10	5-6	.50 12.7	66259-1 (Type XII)	66259-5	863104-1	5-863104-1	90140-1	863558-1
		16	1.4		66261-1 (Type XII)	—	863104-3	—	90145-2	863558-1
		10	5-6		66259-1 (Type XII)	66259-5	863350-1	5-863350-1	90140-1	863558-1
	Bulkhead-Mounted Receptacle Kits*	14-12	2-3	.50 12.7	66261-1 (Type XII)	66261-5	863350-2	5-863350-2	90145-1	863558-1
		16	1.4		66261-1 (Type XII)	66261-5	863350-3	5-863350-3	90145-2	863558-1

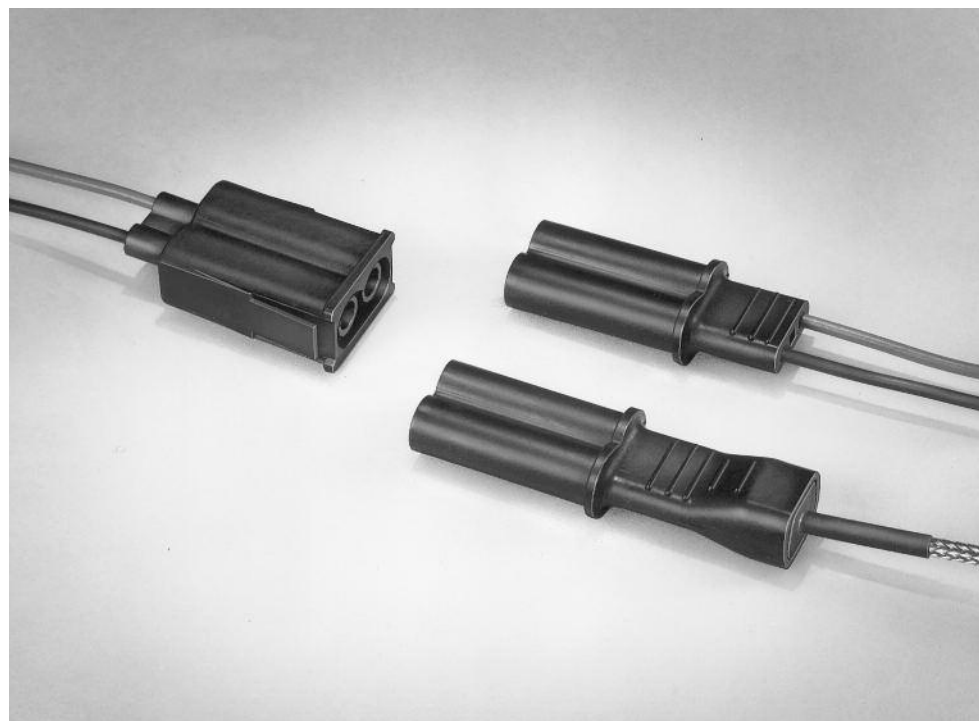
\* Contact included with kit.

\*\* Die Set for Hand Tool Part Number 69710-1 or 626 Pneumatic Tool System.

**Two-Position Connectors, 10 KVDC**

**Product Facts**

- UL recognized 94V-0 rated glass-filled polyester housing
- Standard housing color is black — other colors available
- Operates up to 10 KVDC
- Will withstand a 15 KVDC hipot 3-minute test
- Safe handling of high voltage — deeply recessed contacts and staggered pins
- Lightweight, compact design
- Preassembled connectors furnished with attached leads of virtually any color/length combination
- Connector kits for shielded and unshielded applications include plug, receptacle and contacts
- Crimp, snap-in contacts; pin diameter .062 [1.57]
- Snap-in panel mount receptacle housings — no mounting hardware required
- Temperature range: 5°F to 185°F [-15°C to +85°C]



The AMP Rectangular Two Position LGH connector is designed for high voltage applications where quick bulkhead mounting is desired; the receptacle half has molded wings which allow it to be snapped into a mounting hole. Operating voltage is 10 KVDC; however, increased voltage ratings and ac operating capabilities are possible for specific applications.

These connectors incorporate many outstanding design features for their complete electrical, mechanical and environmental integrity. Such features include: housings made of UL recognized

94V-0 glass-filled polyester; contacts with a 10-ampere rating which will accommodate wire sizes of No. 22–20 AWG [0.3–0.6 mm<sup>2</sup>] and No. 18–16 AWG [0.8–1.4 mm<sup>2</sup>]; polarized plugs and receptacles for proper connector mating; flanged receptacles to facilitate panel and bulkhead mounting; fully protected pins in the plug half and recessed sockets in the receptacle half for safe high-voltage handling; and quick connect/disconnect capability with ramp-type detent mating. Also for maximum handling safety, the pins in the plug housing are stagger-mounted so that the ground or return line

makes before and breaks after the hot line mates and unmates.

The connectors are supplied preassembled (with attached leads) and in kits for shielded or unshielded applications. Each conveniently packaged kit includes a plug, receptacle and pins and sockets that can be hand-tool or machine crimped or soldered to wire. Pre-assembled connectors can be furnished with leads of virtually any length and color. All are fully tested so that they are of the highest quality and meet all performance specifications.



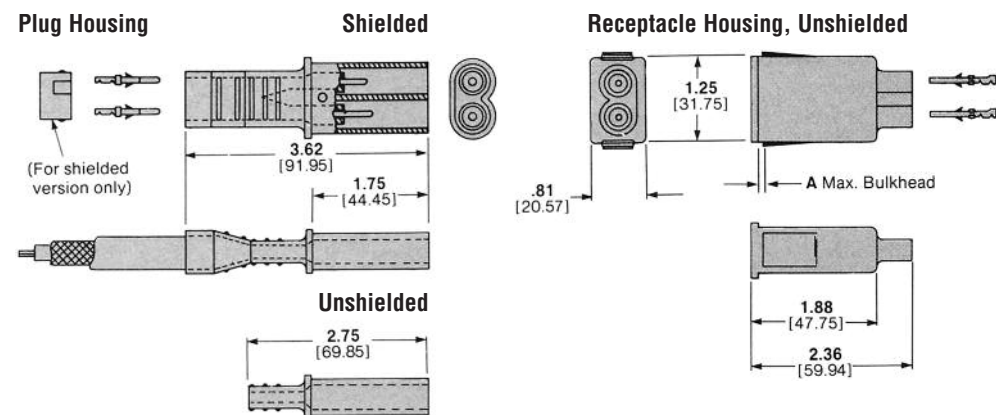
LGH High Voltage Connectors



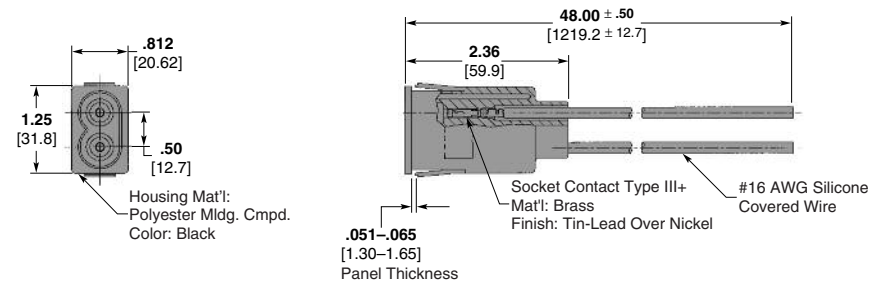
Two-Position Connectors, 10 KVDC (Continued)

Connector Kits  
Shielded and Unshielded

**Material:**  
Housings and End Plate — Glass filled polyester  
Contacts — Type III+, tin-plated brass

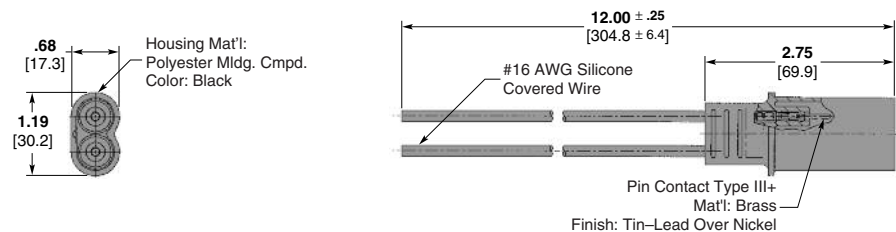


Receptacle Pre-Wired



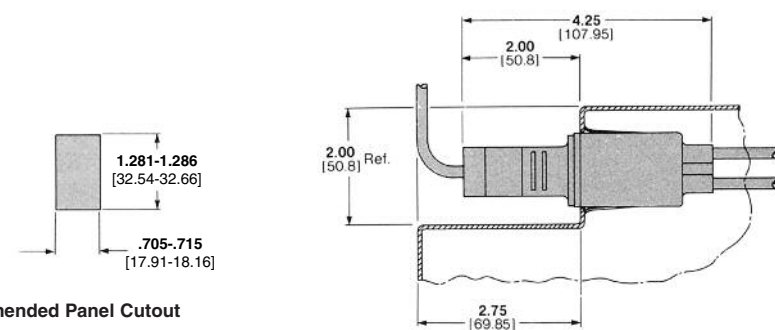
Part Number 443903-1 White Wire  
Part Number 443903-2 UL 3239 Wire, Black  
RoHS Part Number 5-443903-2 UL 3239 Wire, Black

Plug Pre-Wired



Part Number 443904-1 White Wire  
Part Number 443904-2 UL 3239 Wire, Black  
RoHS Part Number 5-443904-2 UL 3239 Wire, Black

Mated Dimensions



Recommended Panel Cutout



**Two-Position Connectors, 10 KVDC** (Continued)

Connector Type	Bulkhead Thickness	Wire Range (AWG)	Insulation Diameter (Max.)	Plug Part Numbers			Receptacle Part Numbers			
				Assembly	Housing	Pin (Type III+) (2 required)	Assembly	Housing	Socket (Type III+) (2 required)	
Shielded	.030 .762	18-16 [0.8-1.4]	.125 [3.18]	862528-1 5-862528-1*	862498-1	66099-2 1-66099-5*	1-862435-2	862382-2	66101-2	
			.200 [5.08]	862528-1 5-862528-1*	862498-1	66099-2 1-66099-5*	1-862435-0	862382-5	66101-2	
		22-20 [0.3-0.6]	.125 [3.18]	862528-2	862498-1	66400-1	1-862435-3	862382-2	66399-1	
			.200 [5.08]	862528-2	862498-1	66400-1	1-862435-1	862382-5	66399-1	
		.062 1.57	18-16 [0.8-1.4]	.125 [3.18]	862528-1 5-862528-1*	862498-1	66099-2 1-66099-5*	862435-1	862382-1	66101-2
				.200 [5.08]	862528-1 5-862528-1*	862498-1	66099-2 1-66099-5*	862435-3 1-862435-5*	862382-4	66101-2 1-66101-9*
	.090 2.29	18-16 [0.8-1.4]	.125 [3.18]	862528-1 5-862528-1*	862498-1	66099-2 1-66099-5*	862435-8	862382-3	66101-2	
			.200 [5.08]	862528-1 5-862528-1*	862498-1	66099-2 1-66099-5*	862435-6	862382-6	66101-2	
	22-20 [0.3-0.6]	.125 [3.18]	862528-2	862498-1	66400-1	862435-9	862382-3	66399-1		
		.200 [5.08]	862528-2	862498-1	66400-1	862435-7	862382-6	66399-1		
	Unshielded	.030 .762	18-16 [0.8-1.4]	.125 [3.18]	862434-1	862383-1	66099-2	1-862435-2	862382-2	66101-2
				.200 [5.08]	862434-3 862434-7*	862383-2	66099-2 1-66099-5*	1-862435-0	862382-5	66101-2
22-20 [0.3-0.6]			.125 [3.18]	862434-2 862434-6*	862383-1	66400-1	1-862435-3	862382-2	66399-1	
			.200 [5.08]	862434-4	862383-2	66400-1	1-862435-1	862382-5	66399-1	
.062 1.57			18-16 [0.8-1.4]	.125 [3.18]	862434-1	862383-1	66099-2	862435-1	862382-1	66101-2
				.200 [5.08]	862434-3 862434-7*	862383-2	66099-2 1-66099-5*	862435-3 1-862435-5*	862382-4	66101-2 1-66101-9*
.090 2.29		18-16 [0.8-1.4]	.125 [3.18]	862434-2 862434-6*	862383-1	66400-1	862435-2	862382-1	66399-1	
			.200 [5.08]	862434-4	862383-2	66400-1	862435-4	862382-4	66399-1	
22-20 [0.3-0.6]		.125 [3.18]	862434-1	862383-1	66099-2	862435-8	862382-3	66101-2		
		.200 [5.08]	862434-3 862434-7*	862383-2	66099-2 1-66099-5*	862435-6	862382-6	66101-2		
22-20 [0.3-0.6]		.125 [3.18]	862434-2 862434-6*	862383-1	66400-1	862435-9	862382-3	66399-1		
		.200 [5.08]	862434-4	862383-2	66400-1	862435-7	862382-6	66399-1		

**Notes:** 1. Hand Tool Part Number 90067-2 and Extraction Tool Part Number 861751-1 are recommended for all contacts; contacts can be machine-applied.  
 2. Fully assembled connectors terminated on specified length leads are available. Consult TE Connectivity.  
 3. Receptacle Housing Dim. (Typ.)—1.25 [31.75] L x 2.36 [59.94] W x .81 [20.57] H.  
 \*RoHS compliant Part Number.

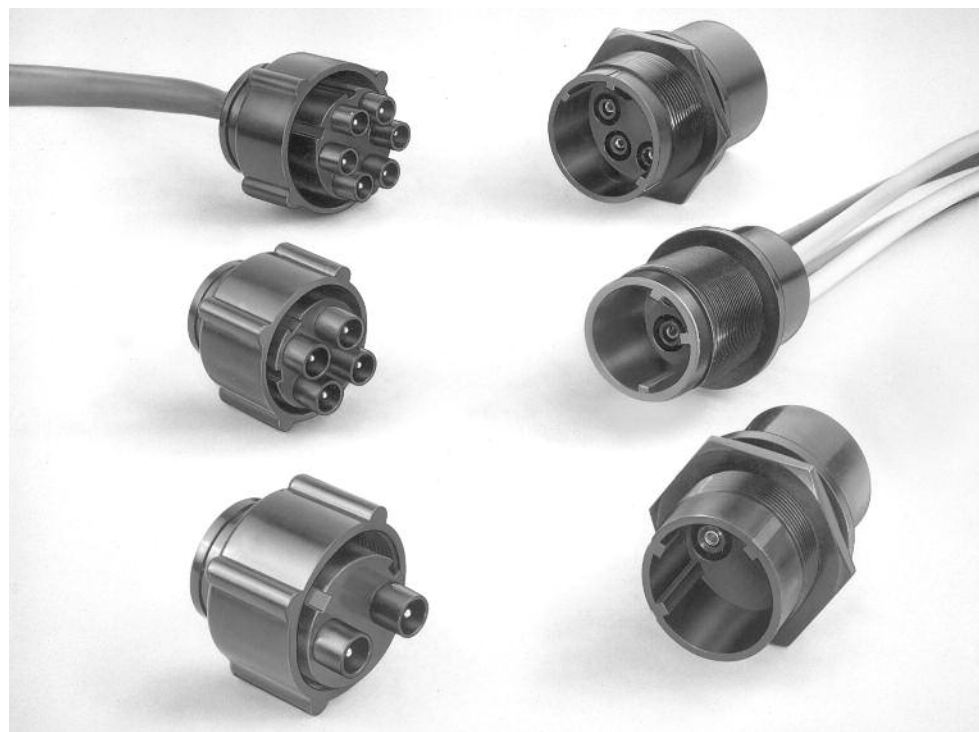


LGH High Voltage Connectors

**Multi-Pin Circular Commercial Connectors, 27 KVDC**

**Product Facts**

- Housing made of UL recognized, 94V-0 rated, self-extinguishing polyester materials
- Standard housing color is black — other colors available
- Operating and storage temperature range: -55°C to +125°C [-67°F to +257°F]
- Operates up to 27 KVDC
- Will withstand a 35 KVDC hipot test
- Safe handling of high-voltage — no exposed contacts
- Lightweight, compact design
- Threaded coupling provides positive, quick connect/disconnect
- Resilient silicone rubber “O” rings provide positive sealing for mated connectors
- Can be panel or bulkhead mounted or used in free-hanging applications
- Size 16 gold-plated contacts with 13 ampere rating accommodate wide range of wire sizes — 24-20 AWG and 18-16-14 AWG — may be hand tool or machine crimped or soldered
- Two shell sizes available: smaller size offers 2-, 3- and 4-contact configurations; larger diameter shell contains 6 or 7 contacts



AMP Multi-Pin Circular Connectors provide reliable, safe, low cost means of connecting high voltages in critical applications and environments. They are lightweight, extremely compact and can be operated within a temperature range of -67°F to 257°F [-55°C to +125°C] and to 27 KVDC.

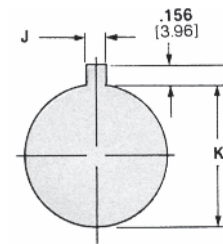
Circular multi-pin high voltage connectors are available in two basic shell sizes offering 2-, 3-, 4-, 6- and 7-

contact configurations. All are equipped with threaded couplings for positive, quick connect/disconnect capability and can be panel or bulkhead mounted or used as free-hanging connectors. They incorporate many outstanding design features to assure their complete electrical, mechanical and environmental integrity.

To satisfy customer requirements, the connectors are supplied pre-assembled

(with attached leads) or in kit form. Each kit includes a plug, receptacle and an appropriate number of pins and sockets that can be hand tool or machine crimped or soldered to wire. Pre-assembled connectors can be furnished with leads of virtually any length and color. All are fully potted and tested so that they are of high quality and meet performance specifications.

**Multi-Pin Circular Commercial Connectors, 27 KVDC** (Continued)



**Recommended Panel Cutout for Bulkhead Mounting**

Mounting Nut — maximum torque is 20 in.-lb. [.225 Nm].

**Material**

- Housing, Cap Nut and Strain Relief** — Glass-reinforced polyester
- O-Ring** — Silicone rubber
- Contacts** — Type II, gold plated per MIL-G-45204
- Instruction Sheet** — IS 408-9169

**Hand Tools**

- 24-20 AWG [0.2-0.6 mm<sup>2</sup>]** — Part Number 58305-1
- 18-16 AWG [0.8-1.4 mm<sup>2</sup>]** — Part Number 45098
- 14 AWG [2 mm<sup>2</sup>]** — Part Number 45098

**Extraction Tool**

Part Number 861751-1

**Component Parts**

- Pin (loose piece)** — 24-20 AWG [0.2-0.6 mm<sup>2</sup>] Part Number 200679-1
- 18-16 AWG [0.8-1.4 mm<sup>2</sup>] Part Number 200681-1
- 14 AWG [2 mm<sup>2</sup>] Part Number 201645-1

**Socket (loose piece)** —

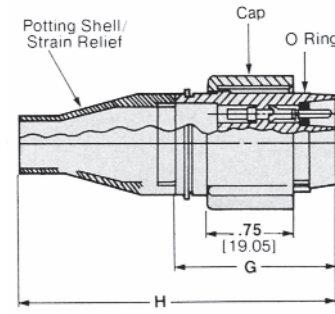
- 24-20 AWG [0.2-0.6 mm<sup>2</sup>] Part Number 201328-1
- 18-16 AWG [0.8-1.4 mm<sup>2</sup>] Part Number 200333-1
- 14 AWG [2 mm<sup>2</sup>] Part Number 201568-1
- O-ring (package of 50) Part Number 862798-1

**Potting shell/strain relief (2, 3 and 4 contact plugs)** — Part Number 862544-1

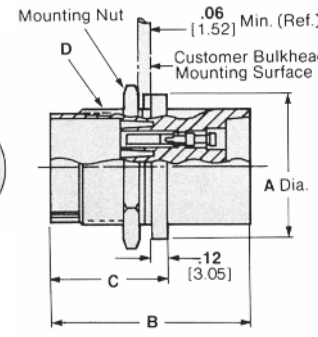
**Potting shell/strain relief (6 and 7 contact plugs)** — Part Number 862695-1

**Potting shell (short, for 6 and 7 contact plugs, 1.125 [28.58] long)** — Part Number 863995-1

**Plug**



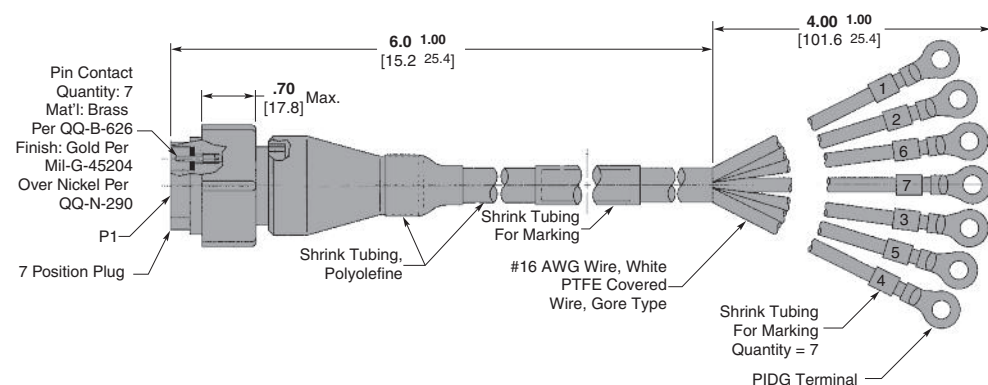
**Receptacle**



**Dimensions**

Contacts	A	B	C	D	E	F	G	H	J	K
2, 3, 4	1.25 31.75	1.75 44.45	1.00 25.4	1 (28 UN) 25.4	.125 3.18	1.31 33.27	1.38 35.05	2.00 50.8	1.56 3.96	1.015–1.031 25.78–26.19
6, 7	1.50 38.1	2.00 50.8	1.06 26.92	1.25 (20 UN) 31.75	.190 4.85	1.56 39.62	1.48 37.59	3.30 83.82	.203 5.16	1.260–1.270 32.00–32.26

**Cable Assembly, 7 Pos. Plug**



**Part Number 447288-1**

**Note:** 4-Pos. Receptacle Housing Dim. (Typ.)— 1.75 [44.45] L x 1.25 [31.75] Dia.

Number of Contacts	Wire Range		Receptacle Kit (with sockets)	Plug Kit (with pins)	Plug (with Strain Relief) and Receptacle Kit
	AWG	mm <sup>2</sup>			
2	24-20	0.2-0.6	859529-4	860261-4	863015-1
	18-16	0.8-1.4	859529-5	860261-5	863015-2
	14*	2	859529-6	860261-6	863015-3
3	24-20	0.2-0.6	859528-4	860263-4	863016-1
	18-16	0.8-1.4	859528-5	860263-5	863016-2
	14*	2	859528-6	860263-6	863016-3
4	24-20	0.2-0.6	859526-4	860265-4	863017-1
	18-16	0.8-1.4	859526-5	860265-5	863017-2
	14*	2	859526-6	860265-6	863017-3
6	24-20	0.2-0.6	859527-4	860267-4	863018-1
	18-16	0.8-1.4	859527-5	860267-5	863018-2
	14*	2	859527-6	860267-6	863018-3
7	24-20	0.2-0.6	861647-7	861648-7	863019-1
	18-16	0.8-1.4	861647-8	861648-8	863019-2
	14*	2	861647-9	861648-9	863019-3

**Note:** Contacts are packaged separately within the connector kit for shipment. Connectors are available with leads attached.

\*Use Type II, Size 16 contacts, with a wire barrel sized to accept 14 AWG conductor.

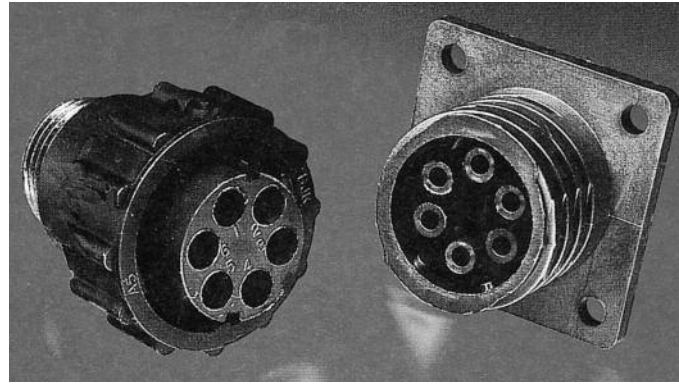


LGH High Voltage Connectors

**Multi-Line High Voltage Connectors**

**Product Facts**

- User configurable high voltage connector
- Cost effective, 6-position
- Operating voltage: 5,000 volts DC
- Operating current: 3 Amps max.
- Quick-turn threaded coupling
- Accepts Type XI size 20 contacts



A cost-effective approach in a plastic circular connector with crimp snap-in contacts. Wherever high voltage is required, this user friendly configuration can operate up to 5,000 volts DC.

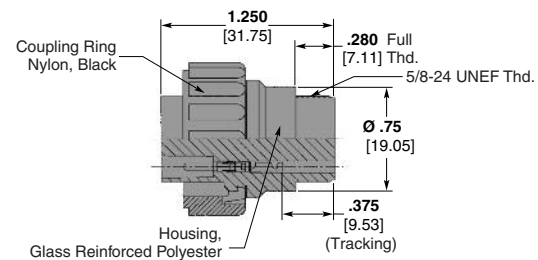
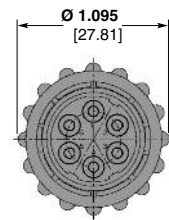
This 6 position connector can be selectively loaded for various high voltage applications such as:

- Materials Handling Equipment
- Medical Equipment
- Computer and Peripheral Equipment
- HV Power Supplies
- Automated Manufacturing Equipment
- Test Equipment

This LGH connector offers an economical solution for your high voltage requirements. This quick-turn coupling connector will also accommodate standard TE Connectivity Circular Plastic Connector backshell accessories.

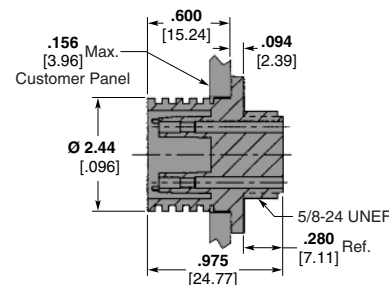
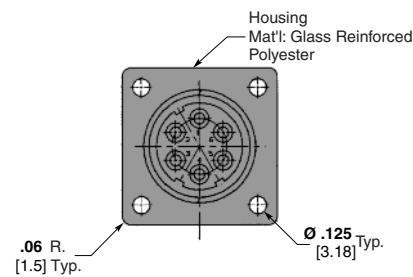
**Material and Mechanical Characteristics**

Housings — UL 94V-0  
 Operating Temperature —  
 -5°F to 185°F [-15° C to 85°C]



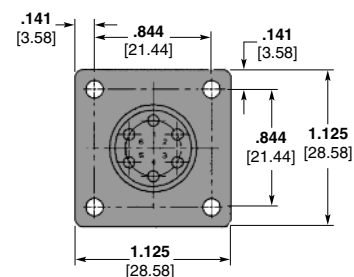
**Part Number 867534-1**

Accepts Pin Contact  
 Part Number 203816-6 for 20-24 AWG wire  
 (Not Supplied with Plug Kit)



**Part Number 867535-1**

Accepts Socket Contact  
 Part Number 203802-6 for 20-24 AWG wire  
 (Not Supplied with Receptacle)





**5-Pin, Metal-Shell Circular Connectors, Military-Type**

**Product Facts**

- Field installable and repairable
- Environmentally sealed
- Bayonet locking cap
- Single dot polarization helps prevent mismatching
- Accepts any MIL-C-38999 backshell arrangement
- Three insert polarizations available
- Rated for 10 KVDC and 10 amps
- Withstands 15 KVDC hipot test
- Safe handling of high voltage — no exposed contacts
- Lightweight, compact design
- Size 16 gold plated contacts with 10 ampere rating accommodates wire range 24-16 AWG [0.2-1.4 mm<sup>2</sup>] and may be hand tool crimped, machine crimped, or soldered
- Can be panel or bulkhead mounted or used in free-hanging applications
- Preassembled connectors furnished with attached leads of virtually any color/length combination
- Removable inserts interchangeable between shell halves
- Positions numbered for easy circuit identification
- Backshell available for bundle shielding
- Operating and storage temperature range: -67°F to +257°F [-55°C to +125°C]

**Material and Finish**

**Shells** — Aluminum chromate coating over nickel plating

**Inserts** — Glass reinforced polyester

**Bayonet Coupling Rings** — Glass reinforced polyester

**O Ring Seals** — Silicone rubber

**Pin and Socket Contacts** — Brass; .00050 [0.013] min. gold plated per MIL-G-45204

**Backshell** — Brass; plated chromate over nickel



AMP 5-Pin Metal Shell Connectors are designed for high voltage circuits, especially in critical applications and harsh environments, such as shipboard applications. The connector is exceptionally lightweight and compact and can be used within a temperature range of -67°F to +257°F [-55°C to +125°C].

The connector incorporates many features for electrical, mechanical and environ-

mental integrity. Such features include: flame retardant, glass-filled thermoplastic polyester inserts; two sets of gold plated size 16 contacts which have a 10 ampere rating and will accommodate a wire size range of 24-16 AWG [0.2-1.4mm<sup>2</sup>]; three insert polarizations; full protection of pins and sockets to permit safer high voltage handling; and resilient seals inside each pin shroud which provide positive sealing for the mated connector.

TE Connectivity supplies the connector either pre-assembled or in kit form. Each conveniently packaged kit includes an appropriate number of pins and sockets that can be hand tool crimped, machine crimped or soldered to wire. Pre-assembled connectors can be furnished with leads of virtually any length. All are tested for highest quality and meets applicable performance specifications.

**Kits**

Description	Part Numbers			
	Kit with Contacts for 16 AWG [1.25-1.4 mm <sup>2</sup> ]		Kit with Contacts for 20 AWG [0.5-0.6 mm <sup>2</sup> ]	
	Non-RoHS	RoHS	Non-RoHS	RoHS
Receptacle, Flange-Mount with Socket Contacts	863754-1	5-863754-1	864062-1	5-864062-1
Plug with Pin Contacts	863753-1	—	864063-1	5-864063-1
Receptacle, Flange-Mount with Pin Contacts	863755-1	5-863755-1	864064-1	—
Plug with Socket Contacts	863752-1	5-863752-1	864065-1	—

**Note:** Backshell is not included with any kits; any MIL-C-38999 backshell may be used or AMP Part Number 864639-2.

**Tooling**

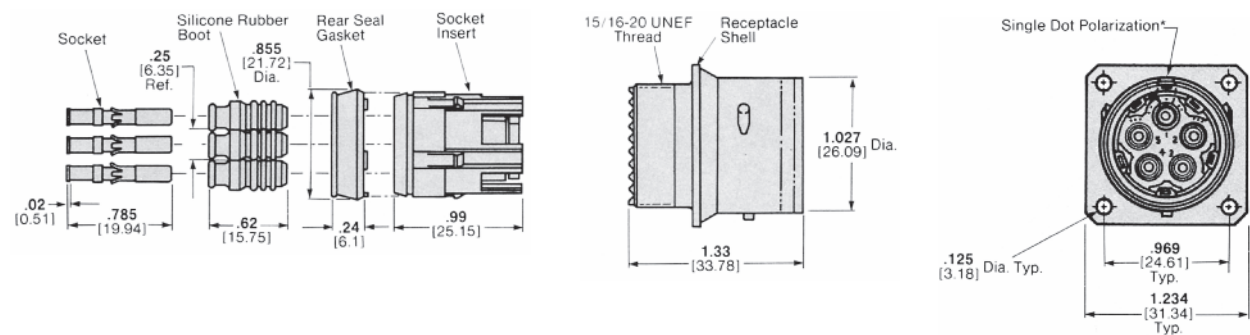
Tool Application	Manufacturer's Name	Part Numbers
Insert Removal	AMP	864437-1
Contact Removal	AMP	305183
Crimp Tool Contact Positioner	Daniels	TP-581
Crimp Tool	Daniels	M22520/1-01
Instruction Sheet	AMP	864886

For more information on 5-Pin Metal Shell Circular Connector to meet your specific requirements, consult TE.

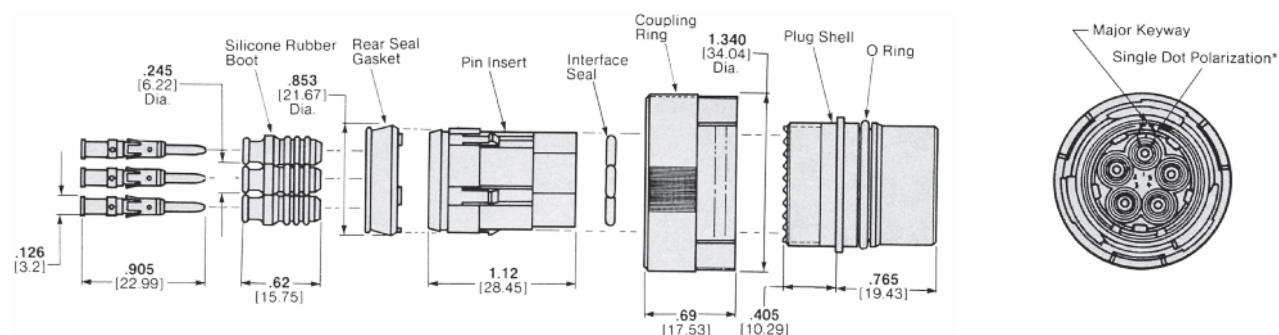


**5-Pin, Metal-Shell Circular Connectors, Military-Type** (Continued)

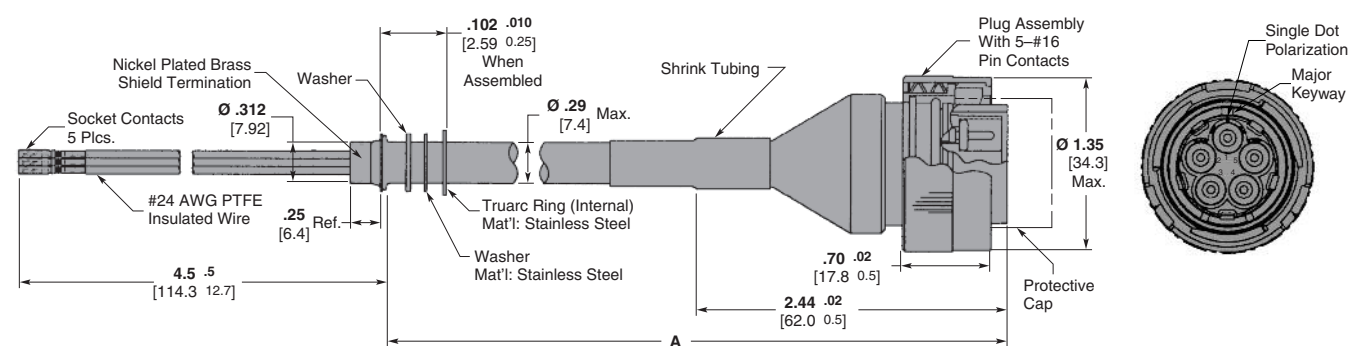
**Receptacle**



**Plug**



**Shielded Cable Assembly**



Dim. A	Part Number	Contact No.	Wire Color
12.60 ± .25 320.0 ± 6.4	864019-1	1	Yellow
50.00 + 3.00 - 0.00 1270.0 + 76.2 - 0.0	864019-2	2	Black
		3	Yellow
		4	Brown
		5	Red
17.50 ± .50 444.5 ± 12.7	864019-3		



**7-Pin, Metal-Shell Circular Connectors, Military-Type**

**Product Facts**

- 15 KVDC operating voltage, up to 70,000 feet [21,336 m]
- Current carrying capacity — 7.5 A continuous per line for 20 AWG wire
- Metal shell available for complete shielding and rugged operation
- Molded-in Size 20 contacts are fully shrouded
- Molded glass epoxy and silicone rubber interface for positive sealing
- Polarized plug and receptacle housings help prevent mismatching
- Designed to meet applicable specifications
- Hermetically sealed receptacles available
- Operating temperature range from -67°F to +257°F [-55°C to +125°C]
- Moisture resistant
- Corona resistant



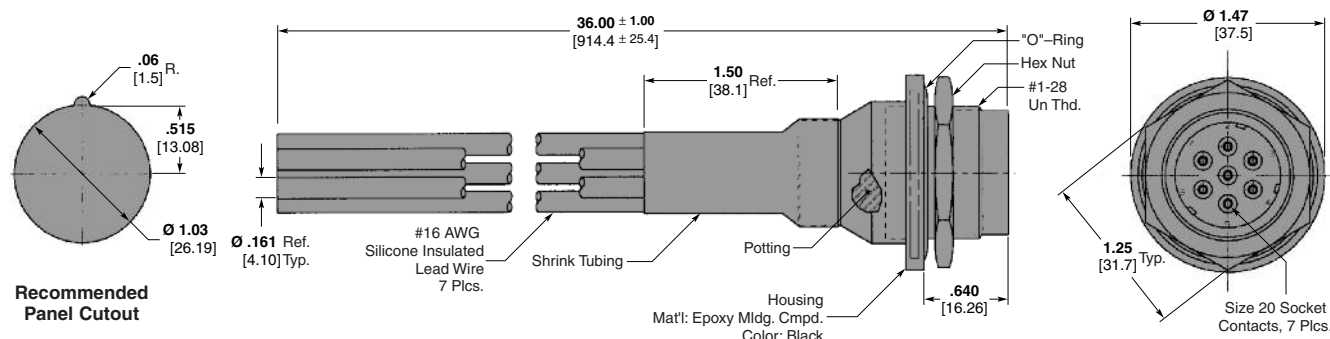
Instruction Sheet — 408-10113

AMP 7-Pin Miniature Circular Connectors, when properly assembled and mated, safely carry 15 KVDC (pin-to-pin and pin-to-ground) through a full range of military environmental requirements. The connectors can carry a continuous current of 7.5 amperes per line when terminated to 20 AWG wire. The receptacle

is hermetic and can be mounted with an O-ring flange or solder flange for various industrial and military applications. This connector family features size 20 gold-plated pins and sockets which are fully shrouded for safe handling, polarized housings to assure proper mating, and

a molded glass epoxy and silicone rubber interface for positive sealing. AMP 7-Pin Miniature Circular Connectors are available in a wide variety of configurations, including a metal shell version for RFI shielding and rugged handling.

**Receptacle Lead Assembly**

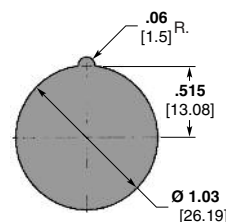


Part Number 867862-1  
RoHS Part Number 5-867862-1

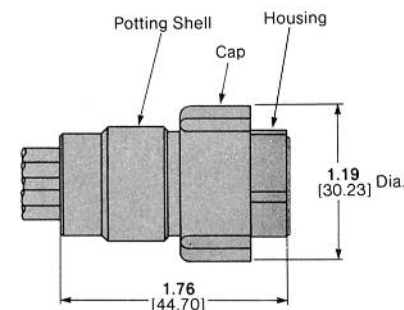


7-Pin, Metal-Shell Circular Connectors, Military-Type (Continued)

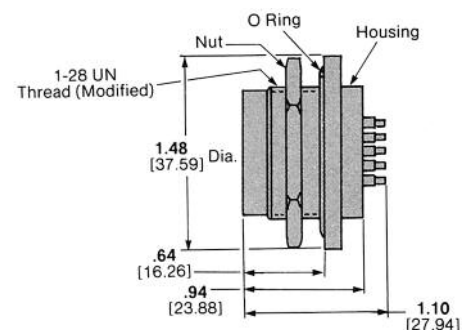
Plastic Shell



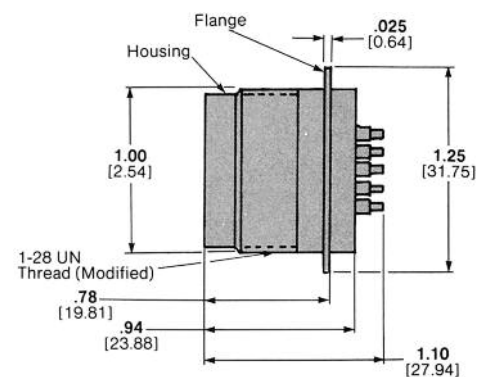
Panel Cutout for Receptacles



Potted Plug Kit  
Part Number 865594-1

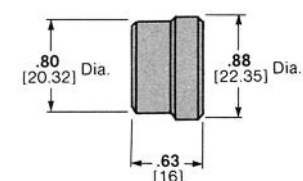


Potted Receptacle  
Part Number 861999-1 (Non-hermetic)  
Part Number 862794-1 (Hermetic Seal)

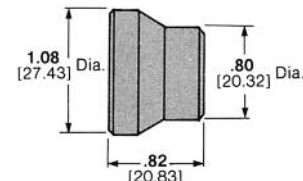


Receptacle for Hermetic Seal,  
Solder-Flange-Mount  
Part Number 862005-1

Potting Shells

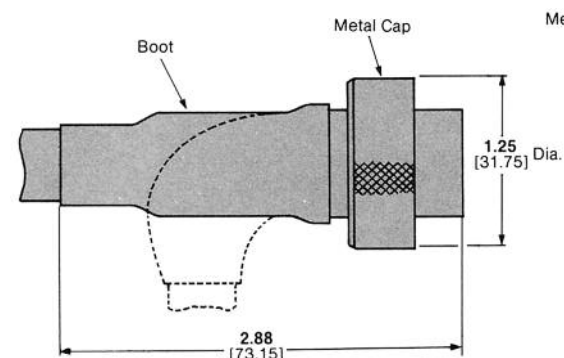


Plug Potting Shell  
Part Number 862544-1

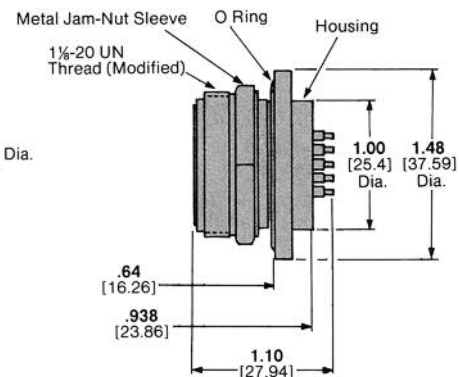


Receptacle Potting Shell  
Part Number 862256-1

Metal Shell



Plug Kit  
Part Number 865656-1 (Straight Boot)  
Part Number 865656-2 (Right-Angle Boot)  
Part Number 865656-3 (No Boot)



Receptacle  
Part Number 862004-1 (Non-hermetic)  
Part Number 866182-1 (Hermetic Seal)

**6-Pin, Subminiature Rectangular Connectors**

**Product Facts**

- **Extremely lightweight** — total weight of mated pair is less than 14 grams
- **Compact design** — requires less than .6 square inch [387 mm<sup>2</sup>] of mounting surface; occupies less than .750 cubic inch [.229 mm<sup>3</sup>] of volume per mated pair
- **Quick connect/disconnect design**
- **Resilient silicone rubber insert in plug half provides positive interfacial seal for mated connector**
- **Withstands 10 KVDC hipot test**
- **Housing styles for potting, chassis slot (channel) mounting, panel mounting and free-hanging applications**
- **Lettered positions for easy circuit identification**
- **Size 22, gold plated contacts with 5 ampere rating accommodate 28 to 22 AWG [0.08 to 0.4 mm<sup>2</sup>] wire**
- **Connectors pre-assembled with leads, fully potted and tested**
- **6 KVDC at 70,000 ft. [21,336m]; -67°F to +257°F [-55°C to +125°C] operating storage temperature**
- **Flame retardant, glass reinforced thermoplastic polyester housings standard color, black**



AMP Subminiature High Voltage Connectors are designed for use in electronic high voltage circuits, especially in critical applications and harsh environments. It is exceptionally lightweight and compact. Can be operated within a temperature range of -67°F to 257°F [-55°C to +125°C] and up to 6 KVDC at an altitude of 70,000 feet [21,336 meters].

The connector incorporates many features for electrical, mechanical and environmental integrity.

TE Connectivity supplies the Subminiature High Voltage Connector in a 6-position size, pre-

assembled with silicone or PTFE insulation. For optimum versatility, connector housings are available for 180° (straight) or 90° (right-angle) rear-entry wiring and in a choice of styles for potting, chassis-slot (channel) mounting, panel mounting and free-hanging applications. Panel-mounted versions can be furnished either with separate "slip-on" metal mounting brackets or with a molded mounting flange that is an integral part of the connector. All connector styles are fully potted (and have been tested for environmental integrity and reliability of performance).

**Material and Finish**

**Housings and Potting Shells** — Thermoplastic polyester, glass-filled, flame retardant; standard color, black

**Contacts** — Beryllium copper; plated .000030 [0.00076] min. gold per MIL-G-45204, over .000030 [0.00076] min. nickel per QQ-N-290

**Mounting Brackets** — Carbon steel, nickel plated

**Mounting Brackets, Slip-on (For Commercial or Military Assemblies with slotted housings)**

**Part Number 861214-2** — Two, .106 [2.69] Dia. Mounting Holes

**Part Number 861215-2** — One, .106 [2.69] Dia. Mounting Hole



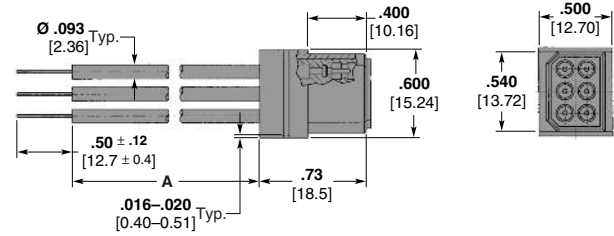
LGH High Voltage Connectors

**6-Pin, Subminiature Rectangular Connectors** (Continued)

**Plug Assemblies and Kits**

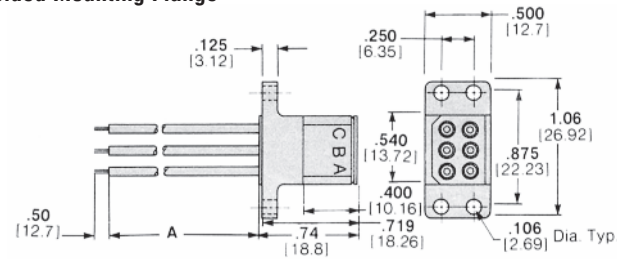
**Flying Leads**

Assembly A Lead Length	Assembly with 22 AWG Silicone
15.00 ± .50 381.0 ± 12.7	867622-1
24.00 ± .50 609.6 ± 12.7	867622-2



Pin No.	Wire Color
A	Yellow
B	Red
C	Brown
D	Blue
E	Green
F	Black

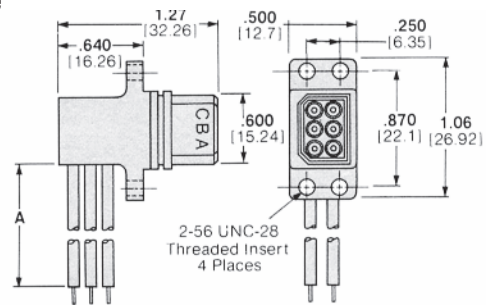
**Molded Mounting Flange**



Assembly Lead Length A	Assembly with 22 AWG Silicone	Assembly with 24 AWG PTFE
12 304.8	867465-1 5-867465-1*	867464-1
24 609.6	867465-2 5-867465-2*	867464-2
36 914.4	867465-3 5-867465-3*	867464-3 5-867464-3*

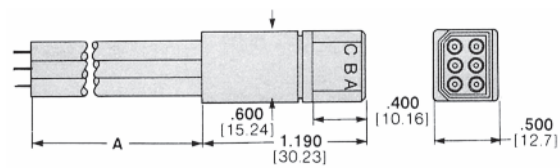
\*RoHS compliant Part Number.

**Right-Angle**



Kit Part Number
448479-1 Kit with Flange

**Slotted Version with Potting Shell**



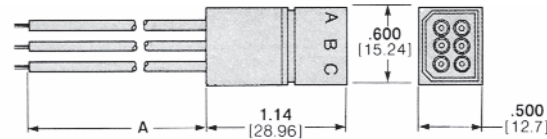
Kit Part Number	Assembly Lead Length A	Assembly with 22 AWG Silicone	Assembly with 24 AWG PTFE
867482-1	12 304.8	867463-1	867462-1
	24 609.6	867463-2 5-867463-2*	867462-2
	36 914.4	867463-3	867462-3

\*RoHS compliant Part Number.

**6-Pin, Subminiature Rectangular Connectors** (Continued)

**Receptacle Assemblies and Kits**

**Slotted**



**Color Coding**

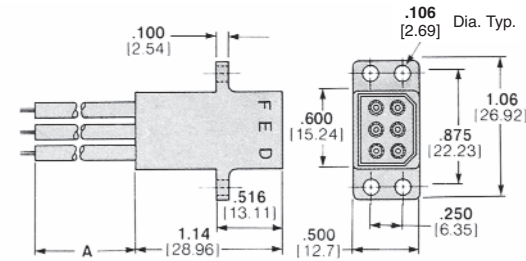
Leads are color coded as tabulated here. Other color leads can be used in custom assemblies.

Kit Part Number	Assembly Lead Length A	Assembly with 22 AWG Silicone	Assembly with 24 AWG PTFE
867483-1	12 304.8	867469-1	867468-1 5-867468-1*
	24 609.6	867469-2	867468-2
	36 914.4	867469-3	867468-3 5-867468-3*

\*RoHS compliant Part Number.

Pin No.	Wire Color
A	Brown
B	Red
C	Green
D	Blue
E	Black
F	White

**Molded Mounting Flange**

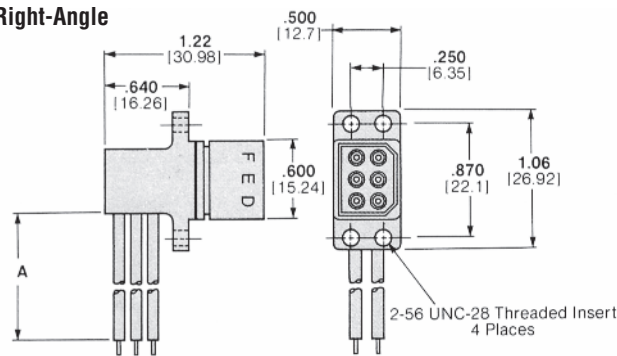


Flange can be placed elsewhere on housing. Consult TE Connectivity.

Kit Part Number	Assembly Lead Length A	Assembly with 22 AWG Silicone	Assembly with 24 AWG PTFE
867484-1	12 304.8	867473-1	867472-1 5-867472-1*
	24 609.6	867473-2 5-867473-2*	867472-2 5-867472-2*
	36 914.4	867473-3	867472-3

\*RoHS compliant Part Number.

**Right-Angle**



**Color Coding**

Leads are color coded as tabulated here. Other color leads can be used in custom assemblies.

Kit Part Number	Assembly Lead Length A	Assembly with 22 AWG Silicone
866047-1	12 304.8	867477-1
	24 609.6	867477-2
	36 914.4	867477-3

Pin No.	Wire Color
A	Brown
B	Red
C	Green
D	Blue
E	Black
F	White

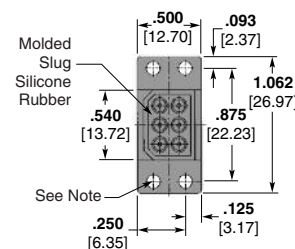
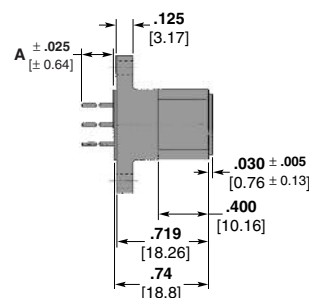
LGH High Voltage Connectors



6-Pin, Subminiature Rectangular Connectors (Continued)

Plug Assemblies

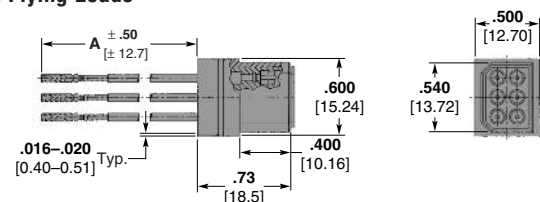
Posts Dia. .025 [0.64]



Dim. A	Part Number
.245 6.22	449810-1
.245 6.22	449810-2
.750 19.05	449810-3

Note: 449810-1 Dia. .106 [2.69], -2 and -3 inserts are #2-56.

Plug Assemblies with Flying Leads

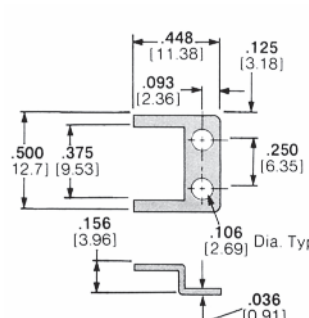


Dim. A	Lead Color	Letter Cavity	Part Number
4.00 101.6	Yellow	A	868021-1 5-868021-1*
4.00 101.6	Red	B	
4.00 101.6	Brown	C	
4.00 101.6	Blue	D	
4.00 101.6	Green	E	
13.00 330.2	Black	F	

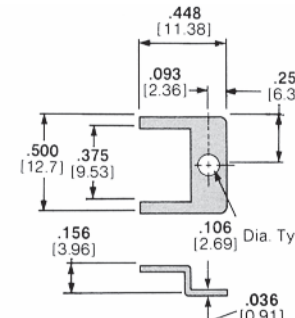
\*RoHS compliant Part Number.

Mounting Brackets

These brackets are for mounting commercial or military assemblies with slotted housings. They are not included in connector kits, nor with assemblies, and they must be ordered separately.

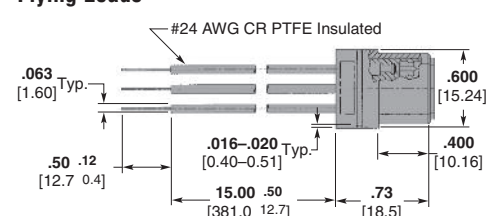


Part Number 861214-2

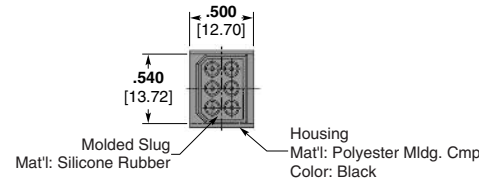


Part Number 861215-2

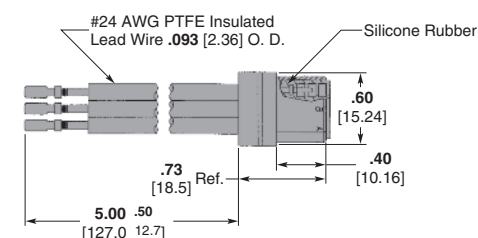
Flying Leads



Part Number 867761-1



Pin No.	Wire Color
A	Yellow
B	Red
C	Brown
D	Blue
E	Green
F	Black



Part Number 445181-1

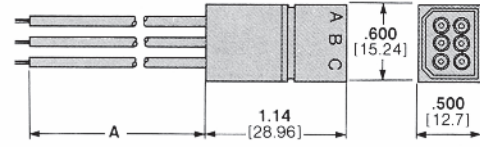
Socket No.	Wire Color
A	Black
B	Red
C	Brown
D	No Lead
E	Yellow
F	Green



**6-Pin, Subminiature Rectangular Connectors** (Continued)

**Receptacle Assemblies**

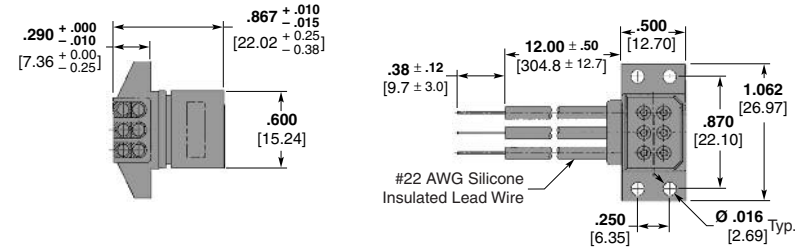
**Slotted**



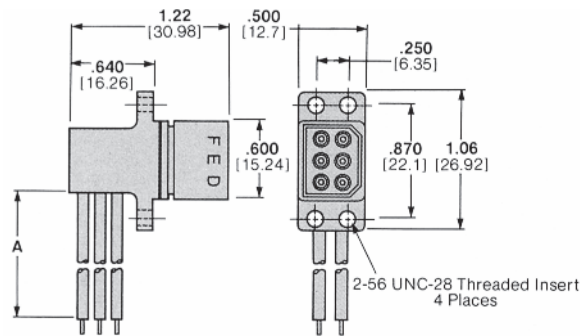
Assembly Lead Length A	Assembly with 22 AWG Silicone	Assembly with 24 AWG PTFE
12 304.8	867471-1 5-867471-1*	867470-1
24 609.6	867471-2	867470-2
36 914.4	867471-3	867470-3

\*RoHS compliant Part Number.

**Right-Angle**



Part Number 443832-1  
RoHS Part Number 5-443832-1



Assembly Lead Length A	Assembly with 22 AWG Silicone	Assembly with 24 AWG PTFE
12 304.8	867479-1 5-867479-1*	867478-1
24 609.6	867479-2 5-867479-2*	867478-2
36 914.4	867479-3	867478-3

\*RoHS compliant Part Number.



LGH High Voltage Connectors

**LGH Micro-Miniature Connectors and Cable Assemblies**

**Product Facts**

- LGH leads and receptacles find wide application where high voltage is used in harsh environments
- Small high voltage power supplies
- Back lighting for LCD flat panel displays
- High voltage for flat panel FED (Field Emissive Displays)
- Small CRT's (Cathode Ray Tubes)
- Commercial and Military Avionics
- A series of miniature high voltage connectors for applications where space is limited
- HV performance in a small lightweight connector
- Operating voltages up to 12 KVDC
- Operation to 100,000 ft. [30,480 m] altitude
- Lead wire remains flexible to - 67°F [-55°C]
- Color coded for easy identification
- Leads are available with silicone, PTFE or silicone coated PTFE
- Connector is fully insulated
- Connectors are available with 26 thru 22 AWG wire



**Materials**

Molded silicone rubber  
 Thermoset and thermoplastic polymers  
 Socket contacts size 22 per MIL-C-39029 size 22

**Electrical Characteristics**

**Operating Voltage** — up to 12 KVDC  
**Current Rating** — 5 amps max. with 22 GA wire

**Mechanical Characteristics**

Small size outside Dia. of .135 [3.43]  
 Leads are preassembled  
 Quick disconnect, push/pull mating

**Operating Temperature** —  
 -67°F to +257°F [-55°C to +125°C]

**Approvals**

Meets applicable military specifications  
 AMP product specifications listed below

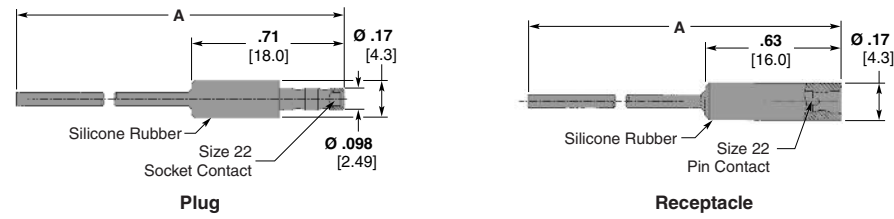
**Technical Documents**

- 135 Series (.135 [3.43] Dia.)** — 108-1788
- 170 Series (.179 [4.55] Dia.)** — 108-1802
- 240 Series (.240 [6.10] Dia.)** — 108-1853
- Surface Mount/Plug Assembly** — 108-1880
- 1, 2, and 3 Position** — 108-1812

**LGH Micro-Miniature Connectors and Cable Assemblies** (Continued)

**170 Series**

**Product Specification** — 108-1802  
**Operating Voltage** — 6 KVDC  
**Test Voltage** — 10 KVDC at 10,000 feet [3,046 m] and -67°F to +257°F [-55°C to +125°C]  
**Durability** — 50 matings and unmating

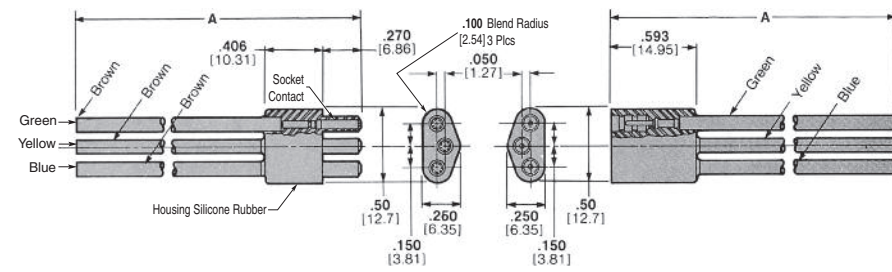


Wire Description	Wire Color	Plug		Receptacle	
		Dim. A	Part Number	Dim. A	Part Number
24 AWG Silicone Coated FEP	Red	12.5 ± .12	1218147-1	12.0 ± .12	1218148-1
		317.5 ± 3.0		48.0 ± .48	

**1, 2 and 3 Position**

**Product Specification** — 108-1812  
**Operating Voltage** — 7.5 KVDC  
**Test Voltage** — 12 KVDC at 10,000 feet [3,048 m] and 5°F to +185°F [-15°C to +85°C]

**3-Position Connectors**



Plug		
Dim. A	Wire Color	Part Number
12	Brown	863743-1
305		863743-2
16	Green Yellow Blue	862424-1
18		862424-2
48		862424-4
1219		

Receptacle	
Dim. A	Part Number
12	862425-1
18	862425-2
24	862425-3
48	862425-4



LGH High Voltage Connectors

**LGH Micro-Miniature Connectors and Cable Assemblies** (Continued)

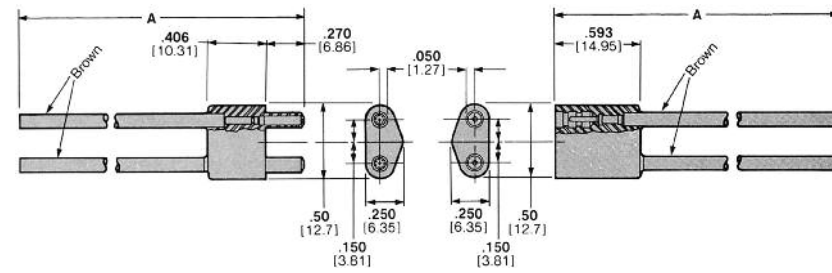
**1, 2 and 3 Position** (Continued)

**Product Specification** — 108-1812

**Operating Voltage** — 7.5 KVDC

**Test Voltage** — 12 KVDC at 10,000 feet [3,048 m] and -5°F to +185°F [-15°C to +85°C]

**2-Position Connectors**



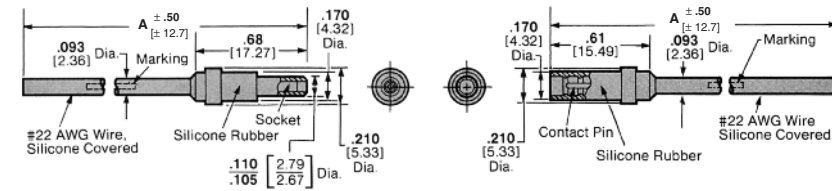
**Plug**

Dim. A	Part Number
12 305	866559-1
16 406	866559-5
18 457	866559-2
24 610	866559-3
48 1219	866559-4

**Receptacle**

Dim. A	Part Number
12 305	866196-1
16 406	866196-5
18 457	866196-2
24 610	866196-3
48 1219	866196-4

**1-Position Connectors**



**Plug**

Dim. A	Wire Color	Part Number
15 381	White	867823-1
30 762	White	867823-2
36 914	Green	867823-3
36 914	White	867823-4
6 152	White	867823-5
40 1016	White	867823-6

**Receptacle**

Dim. A	Wire Color	Part Number
24 610	White	867824-1
24 610	Green	867824-2
6 152	White	867824-3
40 1016	White	867824-4

**Medical Receptacles (Used Primarily for Patient Monitoring)**

**Product Facts**

- Quick connect/disconnect
- 6 and 7 position connector
- Mates to standard medical cable interface
- Operating Voltage — up to 5,000 volts DC
- Operating Temperature — -5°F to 185°F [-15°C to 85°C]
- Operating Current — 10 Amps max.
- Accepts AMP Multi-Mate Pins and Sockets (size 16)
- Four hole flange mount
- Housings made from UL 94V-0 polyester material
- Different colors available
- Polarized for proper mating of connector halves
- TE Connectivity does not manufacture mating plugs or cable assemblies for these receptacles



The AMP line of LGH high voltage products is meeting today's need for medical instrumentation connectors and is prepared for tomorrow's medical breakthroughs.

In use today in a wide variety of medical monitoring equipment, this versatile LGH circular connector offers the industry a wide choice of application options.

**Typical Applications**

- Medical monitoring equipment
- Mates with "standard" medical cable assemblies

**Versatility**

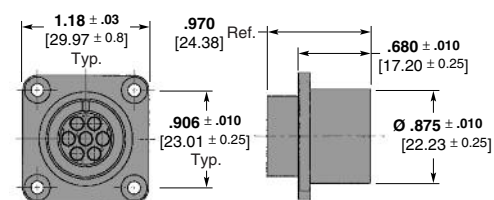
- Choice of crimp or posted, size 16 gold over nickel plated contacts
- Flange mounted for easy installation
- Polarized for safe, positive mating
- Housings available in choice of colors to meet your application



LGH High Voltage Connectors

**Medical Receptacles (Used Primarily for Patient Monitoring)** (Continued)

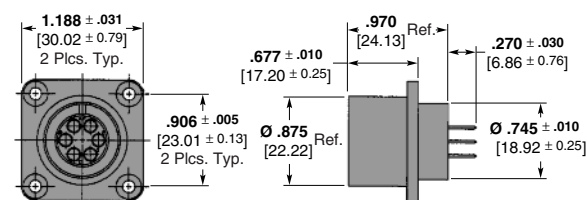
**7 Position  
Housing only no contacts**



Housing Color	Part Number
Black	443065-1
Special Aqua Blue*	443065-3

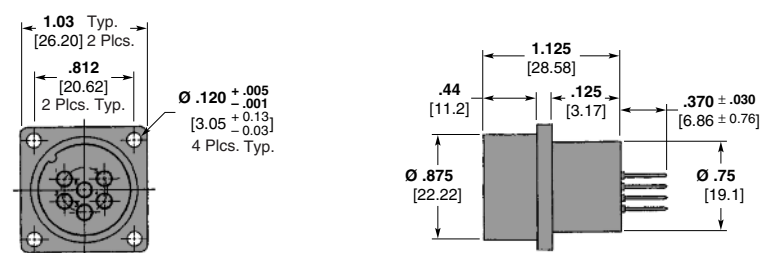
\*PMS (Pantone Matching System) #3145 Uncoated.

**6 Position  
Socket contacts with  
.025 [0.63] Square Posts**



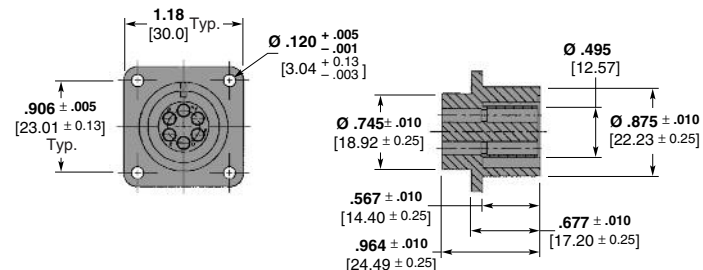
Part Number 447913-1  
RoHS Part Number 5-447913-1

**6 Position  
Pin contacts with  
.025 [0.63] Square Posts**



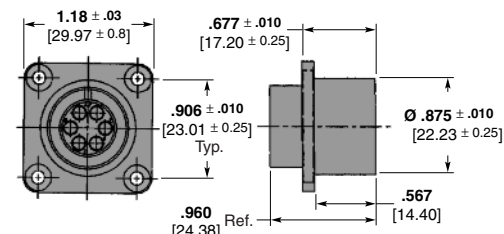
Part Number 447914-1  
RoHS Part Number 5-447914-1

**6 Position  
14S-6S**



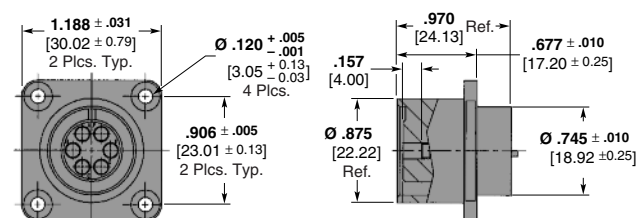
Part Number 449652-1

**6 Position  
MS3102A-14S-6S  
Configuration**



Part Number 864900-1  
RoHS Part Number 5-864900-1 (Supplied with Contacts)  
Part Number 864900-2 (Supplied without Contacts)

**6 Position  
Special 4mm Recess**



Part Number 1218081-1

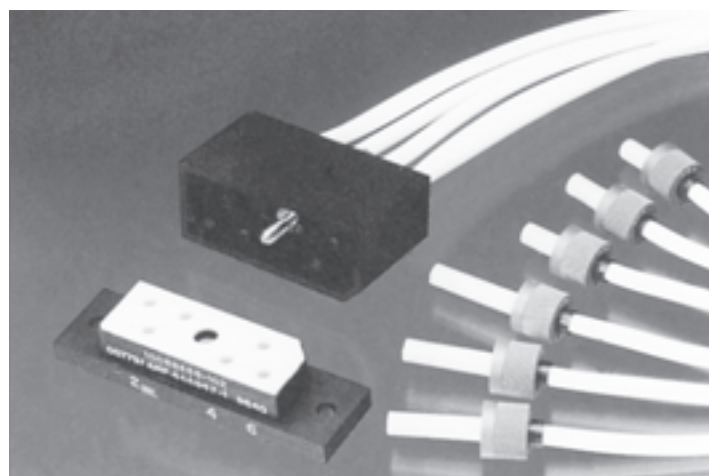


Various Specials

Product Facts

6 Position LGH Connector

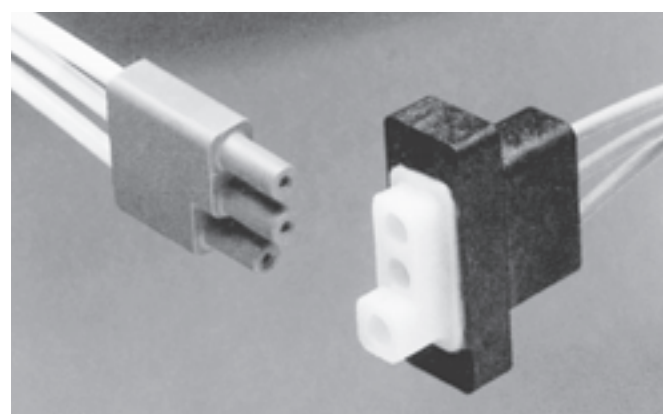
- Laser gyro inertial reference systems application
- Extremely rugged construction
- High flexibility silicone leads
- Size 22 contacts
- No adhesives or potting materials used
- 10,000 volts DC max. operating voltage



6 Position LGH Connector

3 Position LGH Compact Flange Mounted Connector

- Military counter measure systems application
- Missile guidance systems application
- Ultra small diameter silicone coated PTFE wire insulation
- Size 22 contacts
- Plug is available as a kit or with flying leads
- 5,000 volts DC max. operating voltage



3 Position LGH Connector

6 Position LGH Connector brings high voltage to the circuit board

6 LGH leads, insert molded into a glass epoxy housing with a sturdy, center male screwlock form the plug of this extraordinary printed circuit connector system.

3 Position LGH Compact Flange Mounted Connector

Three molded in flying leads in an extremely tough liquid crystal polymer flanged housing make up the receptacle of this compact high performance high voltage connector.

Performance Specifications

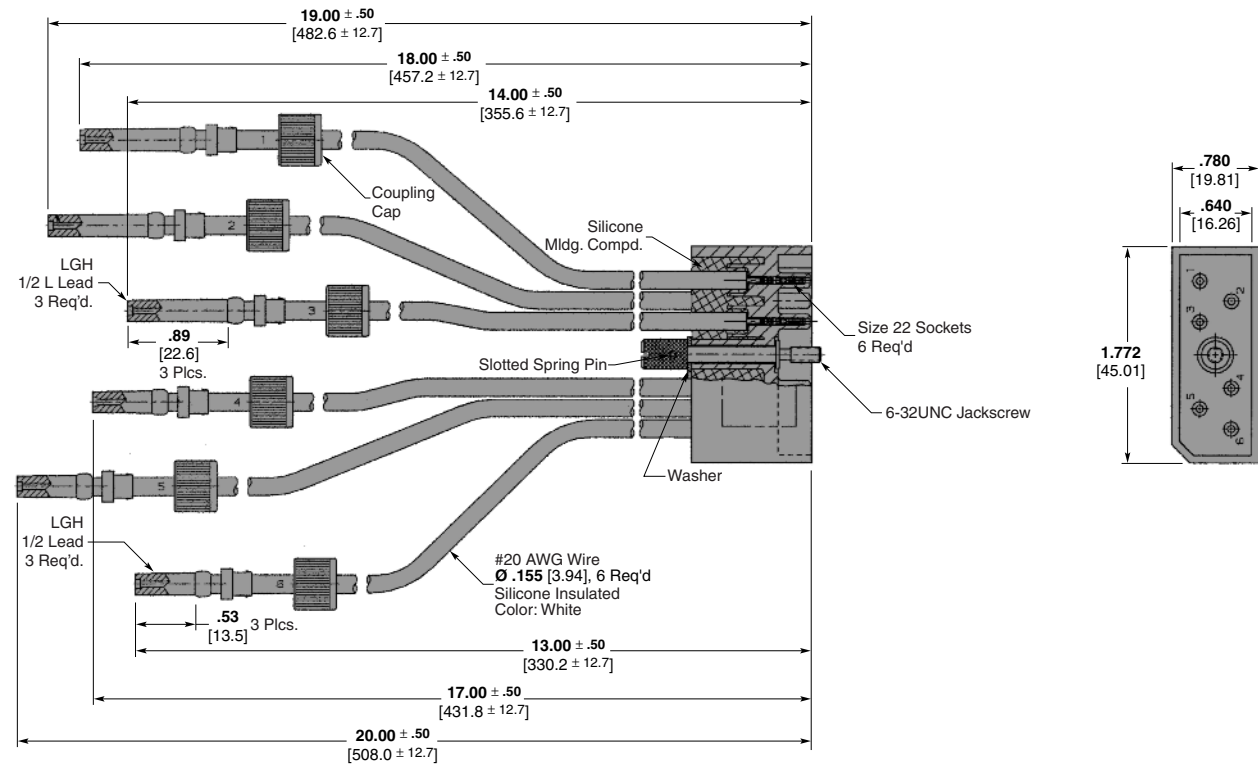
- Operating Temperature Range** — -67°F to +257°F [-55°C to +125°C]
- Operating Altitude Range** — Sea level to 70,000 ft [21336 m].
- Operating Current** — 5 amps max. Polarized interface to assure correct mating



LGH High Voltage Connectors

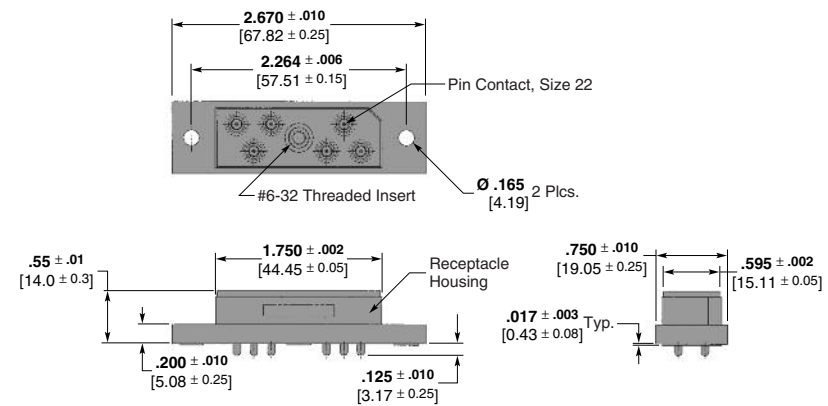
Various Specials (Continued)

**6 Position, 10 KVDC Receptacle, with LGH 1/2 L and LGH 1/2 Positive Stop Leads**



Part Number 446775-1

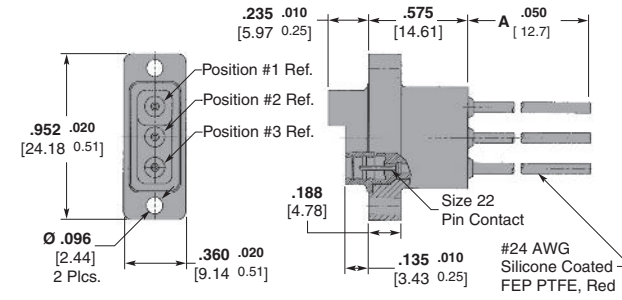
**6 Position, Rectangular Receptacle**



Part Number 446947-1

Various Specials (Continued)

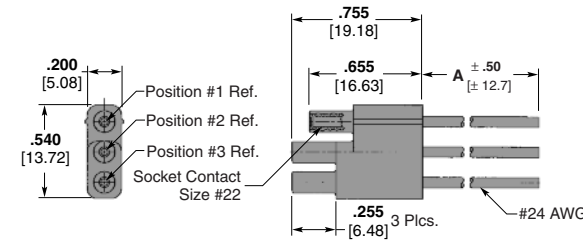
3 Position Receptacles



Dim. A	Part Number
24.00 609.6	443915-1
18.50 469.9	443915-2

Part Numbers 443915-1, -2

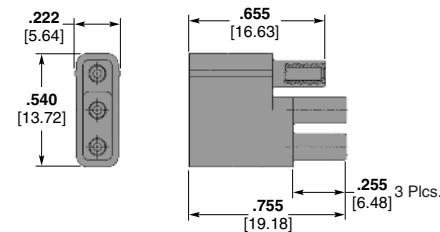
3 Position Plug



Dim. A	Part Number
24.00 609.6	443916-1
48.00 1219.2	443916-2

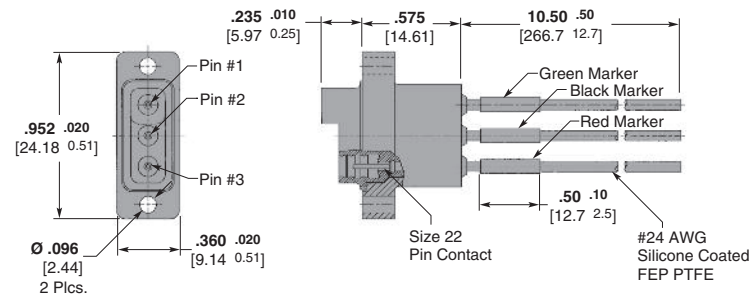
Part Numbers 443916-1, -2

3 Position Plug Kit with 3 Size 22 Socket Contacts



Part Numbers 446900-1 and 446900-2 with Slot

3 Position Receptacle



Part Number 443815-1



LGH High Voltage Connectors

**Various Specials** (Continued)

**Printed Circuit Board Receptacles**

**Product Facts**

- Molded epoxy housings per MIL-M-24357 (GEI-5)
- Small, lightweight, leakproof
- 10 KV, LGH 1/2  
Part Number 866803-1 (with mounting holes)  
Part Number 866804-1 (with threaded mounting holes and potting shell)
- 15 KV, LGH 1/2L  
Part Number 866806-1 (with mounting holes)  
Part Number 866805-1 (with threaded mounting holes and potting shell)
- 20 KV, LGH 1  
Part Number 830632-3 (with mounting holes)



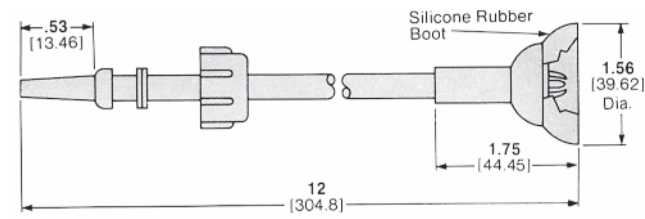
**Multiple Receptacle with Integral, Molded Flange for Bulkhead Applications (Gold Pins)**

- Single, Part Number 867606-4
- Dual, Part Number 861662-4
- Triple, Part Number 861660-4
- Quadruple, Part Number 861658-4
- Quintuple, Part Number 861657-4



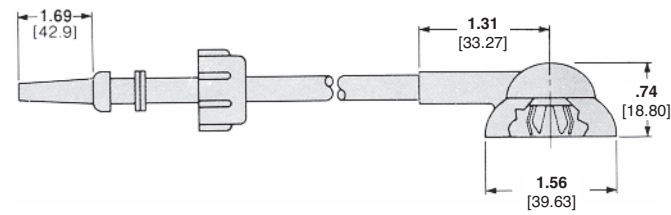
Various Specials (Continued)

**CRT Lead Assemblies**  
J1-21, 10 KV, LGH 1/2



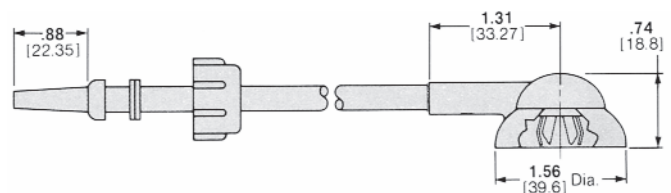
Part Number 848816-2

J1-21, 25 KV, LGH 1L



Assembly Length	Part Number
12 304.8	846977-8
18 457.2	1-846977-1

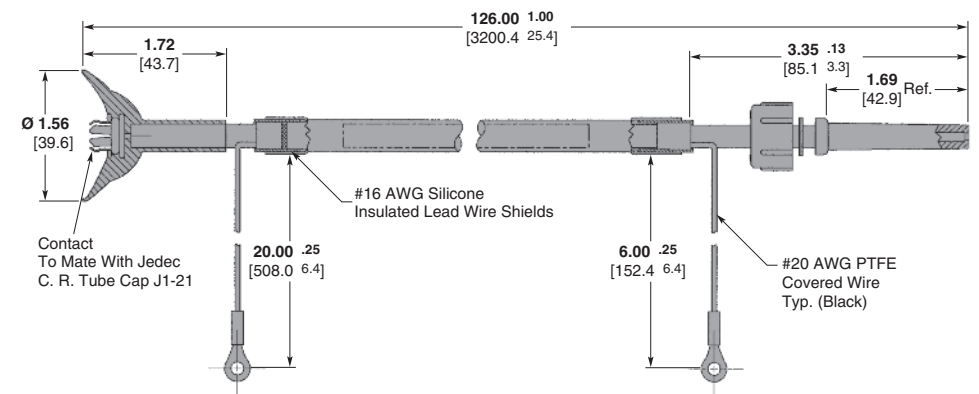
J1-21, 20 KV, LGH 1



Part Number 848588

Assembly Length	Part Number
6 152.4	848588-7
12 304.8	848588-1
18 457.2	848588-4
24 609.6	848588-2
36 914.4	848588-3
48 1219.2	848588-8

J1-21, CRT, LGH 1L



Part Number 867615-2

**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in lengths and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.

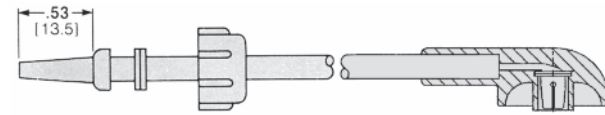
9  
LGH High Voltage Connectors

Various Specials (Continued)

**CRT Lead Assemblies**

(Continued)

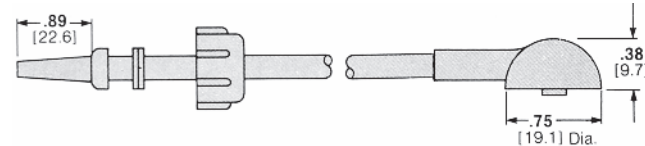
**J1-22, 10 KV, LGH 1/2 Right-Angle**



Part Number 846556

Assembly Length	Part Number
12 304.8	846556-3
18 457.2	846556-5
24 609.6	846556-4

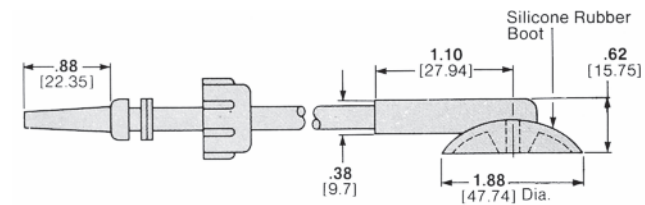
**J1-22, 15 KV, LGH 1/2L**



Part Number 862345

Assembly Length	Part Number
12 304.8	862345-2
18 457.2	862345-1

**J1-22, 20 KV, LGH 1**

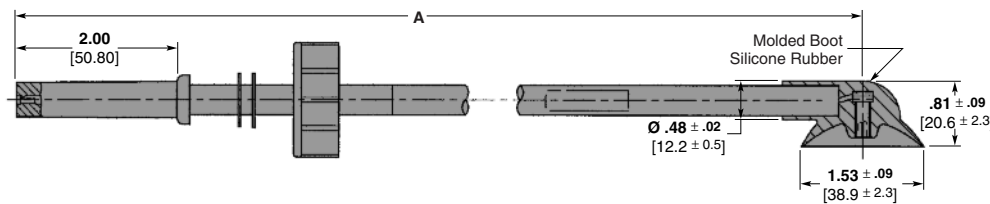


Part Number 849424

Assembly Length	Part Number
12 304.8	849424-7
18 457.2	849424-4 5-849424-4*

\*RoHS compliant Part Number.

**J1-22, 50 KV, LGH 4**



Part Numbers 868373-1, -2

Assembly Length	Part Number
36.0 ± .36 914.4 ± 9.1	868373-1
24.0 ± .36 609.6 ± 9.1	868373-2

**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in lengths and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.



**Various Specials** (Continued)

**CRT-Base Connectors**

**Product Facts**

- Base connections without potting
- Right-angle and straight connections available
- One-piece molded construction
- Environmentally sealed for trouble-free performance
- Operates at rated DC voltages at 70,000 ft. [21,336 m]
- Operating temperature range: -67°F to +257°F [-55°C to +125°C]
- Withstands shock tests per MIL-STD-202, Test Method 102, Condition C
- Excellent system serviceability
- High reliability
- Fully tested harnesses
- Lower applied cost



AMP molded silicone rubber CRT-base connectors are designed to better eliminate the hand wiring approach for CRT-base connections. These connectors offer greater system serviceability and feature highly reliable performance with complete versatility. They have integrally molded high and low voltage leads, as dictated

by particular applications, and a molded boot design which promotes dust and moisture resistance over a long operational life span.

The versatility of the connector design allows customers to purchase either fully wired connectors, or connectors which can be terminated and potted at

their plant. Currently, LGH molded silicone rubber CRT-base connectors are available for a variety of standard 9, 12 and 14 pin tubes. Options include a choice of wire, both low and high voltage, as well as the direction of wire exiting from the connector. Each harness is fully tested prior to shipment.



LGH High Voltage Connectors

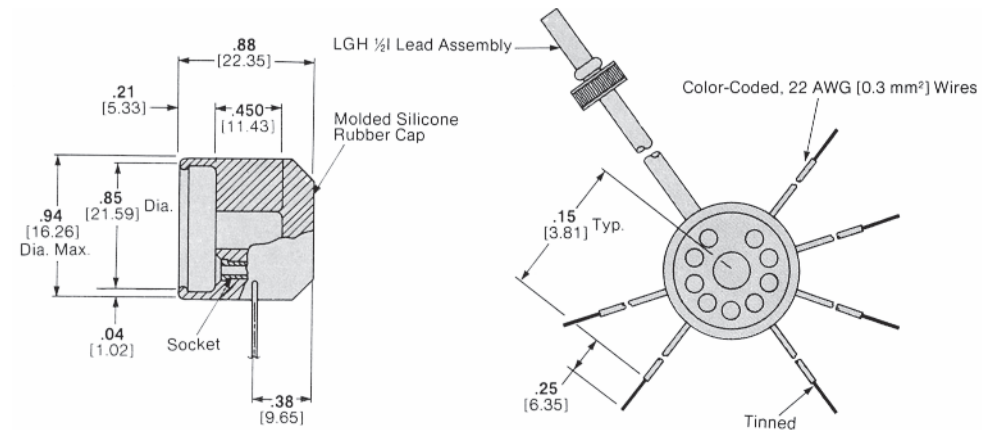
In addition to the connectors listed here, TE Connectivity can furnish a wide variety of CRT-base connectors. Consult TE for details.

Various Specials (Continued)

**CRT-Base Connectors**

(Continued)

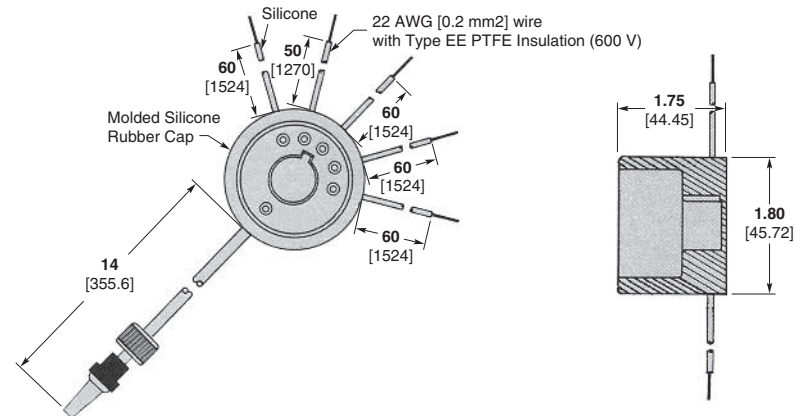
**9 Position CRT-Base Connector**



**Part Number 862481-1**

This connector is one of many available from TE Connectivity for mating with standard JEDEC tube base E9-37.

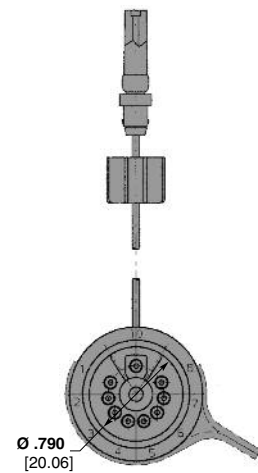
**Typical Right-Angle Lead Exit CRT-Base Connector**



**B6-63 —  
Part Number 867121-1**

This connector is typical of those available from TE for mating with standard JEDEC tube base B5-57, B6-63, B7-51, B10-75, and B12-43.

**11 Position CRT-Base Connector**



**Part Number 443118-2**

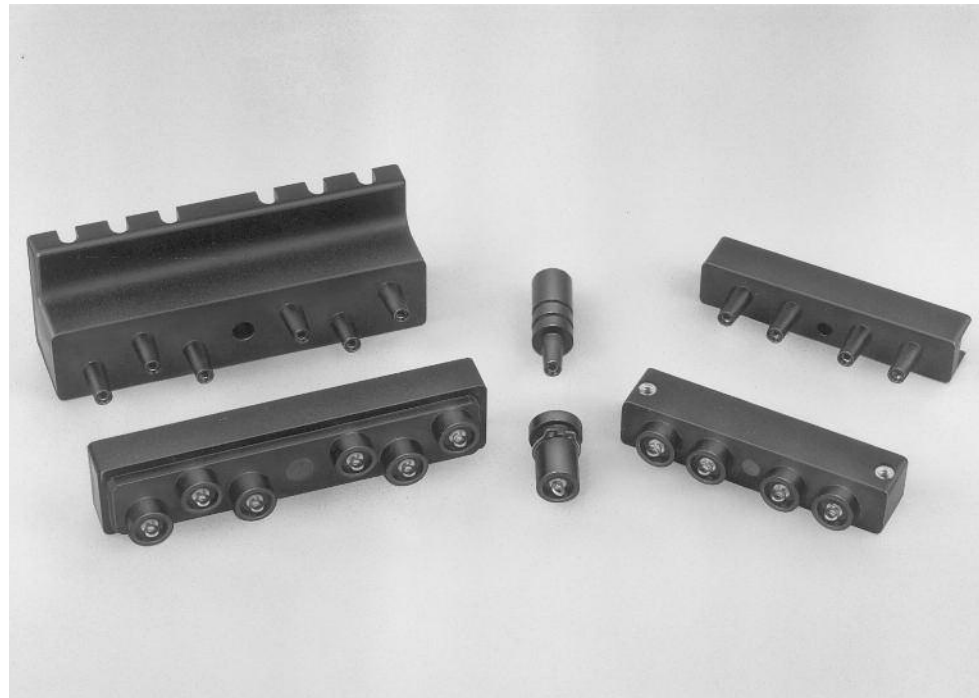
This connector is one of several available from TE for mating with standard JEDEC tube base B9-290. In addition to the connectors listed here, TE can furnish a wide variety of CRT-base connectors. Consult TE for details.

**Various Specials** (Continued)

**Rack and Panel Connectors**

**Product Facts**

- 10 KVDC rating up to 10,000 feet [3,048 m] (continuous)
- Extremely compact
- All plastic design
- Housings can be molded from a variety of materials
- Provides highly reliable drawer-type connections
- Low insertion and extraction forces
- Hipot — 20 KVDC at sea level, two minutes
- Pins and sockets (10-amp rating) are recessed for maximum safety; will accept conductor sizes to 16 AWG [1.25 mm<sup>2</sup>]
- Hermetically sealed version available for soldering to metal bulkhead on single pin connector
- Available with or without leads
- No tools required for field use
- Can be readily adapted for in-line splice applications



This AMP High Voltage Connector family is specifically designed for military applications. It is extremely compact and has a continuous 15 KVDC rating from sea level to an altitude of up to 10,000 feet [3,048 m].

The connector assembly is a rack and panel type especially suited for drawer mounting or free-hanging plug applications. It incorporates many design features for electrical, mechanical and environmental integrity. Such features include: use of a tapered plug to make exact alignment unnecessary; recessed pin and socket contacts to better prevent high voltage exposure; and a resilient silicone rubber

“O” ring in the receptacle for an interfacial seal for the mated connector.

Plug and receptacle housings are molded from durable glass epoxy; pin and socket contacts are made of fine grade brass, gold plated in the mating areas for maximum conductivity. The solder eyelets are capable of accommodating leads with conductor sizes up to 16 AWG [1.25 mm<sup>2</sup>].

To meet customer's exact requirements, we can supply the High Voltage Rack and Panel Connectors with or without leads. Also, because of the basic design of the connectors, slight modifications can be made for in-line space applications.

**Materials**

**Housings** — Molded glass epoxy per MIL-M-24325 (Ships), GEI-5

**Pin and Socket Contacts** — Brass; gold plated per MIL-G-45204

**Solder Eyelets** — Pre-tinned per MIL-T-10727

**“O” Ring (Receptacle Only)** — Silicone Rubber

**Retaining Ring (Receptacle Only)** — Stainless steel per MS 16624



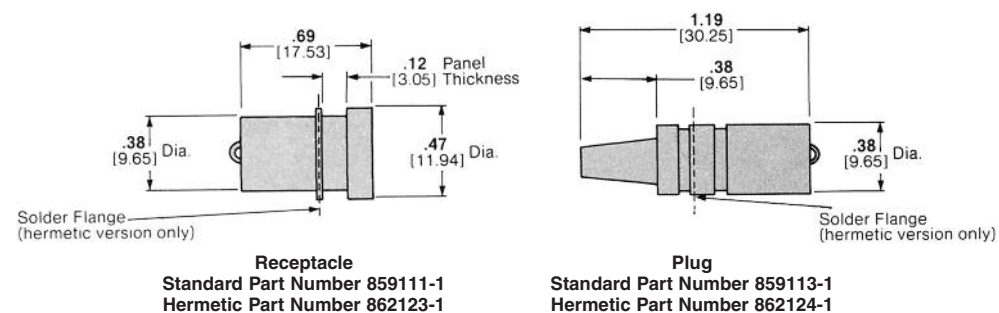
LGH High Voltage Connectors

Various Specials (Continued)

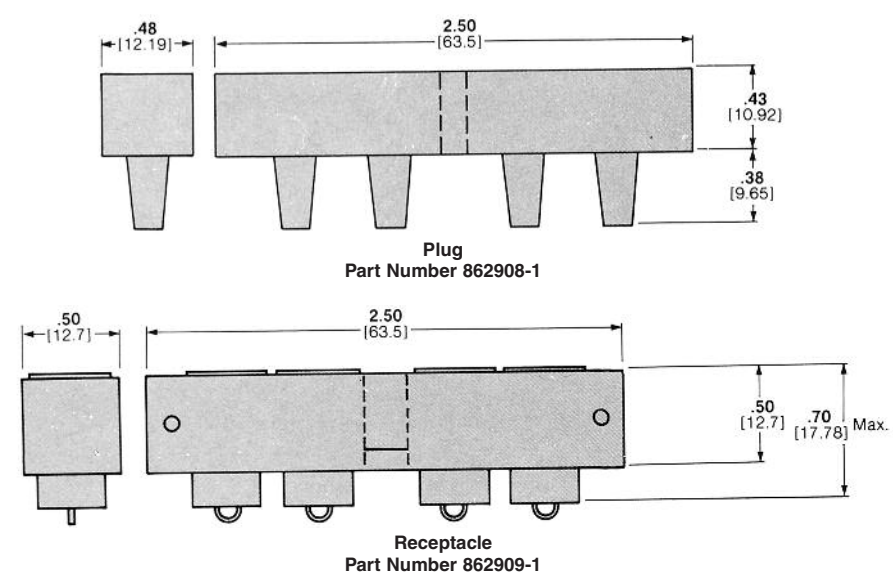
Rack and Panel Connectors

(Continued)

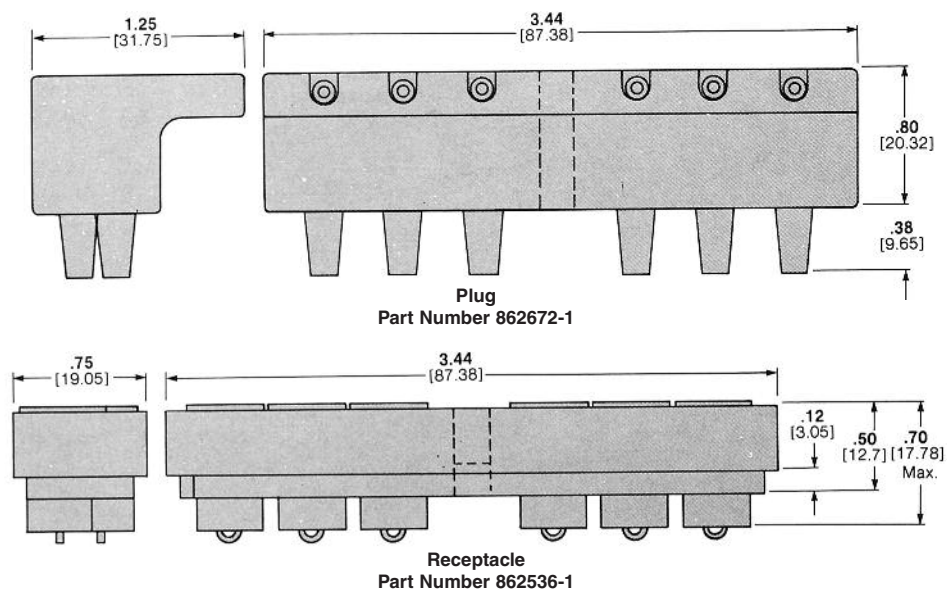
Single Pin



Four Pin



Six Pin



**Notes:** 1. If bulkhead and mounting hardware are metallic and at ground potential, provisions must be made to protect the back end of the receptacle against arc-over and breakdown.  
2. Connectors are available with or without leads. Leads can be furnished in virtually any length, with various insulation materials, in either standard white or a variety of optional colors, and with conductor sizes to 16 AWG [1.25 mm<sup>2</sup>].  
For the High Voltage Rack and Panel Connector to meet your specific requirements, consult TE Connectivity.



Various Specials (Continued)

**Heavy Duty (VRL) RFI-Shielded Lead Assemblies and Receptacles**

**Product Facts**

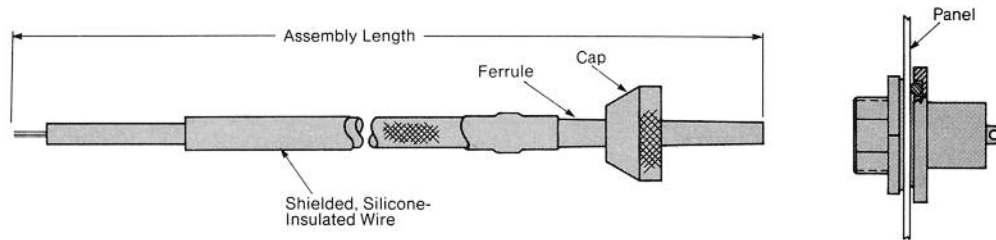
- Extremely rugged design
- Fully shielded against RFI
- Operating and storage temperature range: -67°F to +257°F [-55°C to +125°C]
- Meets wide range of military requirements
- Metal housings can be readily altered to meet a wide variety of mounting and operational requirements



Versatile ruggedized LGH High Voltage Lead Assemblies and Receptacles are designed specifically for use where vibration, shock and handling conditions exist and are ideally suited for both industrial and military applications. This line of lead assemblies and receptacles carries the same voltage, current and altitude

ratings as the corresponding standard LGH connector series when properly mated. VRL cable assemblies feature the integrally molded end to provide positive mating and an excellent seal. They are completely shielded for RFI when mated with the appropriate receptacle. The receptacles are of the molded glass epoxy type

with a protective metal shroud that is hermetically sealed between plastic and metal. These receptacles mate with the single-end ruggedized lead assemblies shown in the same series. Special designs also are available upon request if the standard VRL lead assembly and receptacle designs will not fulfill your immediate needs.



LGH Connector Series	Lead Assemblies			Receptacles		
	Length	Single End	Double End	Jam Nut	Square Flange	Dimensions
1/2 L 15 KVDC	6 152.4	862485-8	—	862295-1	862363-1	1/2-28 UNEF Thread .60 [15.24] Behind Panel .98 [24.89] Overall Length
	12 304.6	862485-3	862294-4			
	18 457.2	—	862294-3			
	36 914.4	—	1-862294-0			
1 L 25 KVDC	12 304.6	862484-7	862444-3	862443-1 5-862443-1*	862362-1	5/8-18 UNEF Thread 1.10 [27.94] Behind Panel 1.84 [46.74] Overall Length
	24 609.6	862484-4	—			
	36 914.4	862484-8	—			
4 50 KVDC	12 304.6	863124-1	863254-1	863125-1	863253-1	1-3/16-18 UNEF Thread 1.55 [39.37] Behind Panel 2.15 [54.61] Overall Length
	24 609.6	863124-2	863254-3			
	36 914.4	863124-3	—			
	48 1219.2	—	863254-4 5-863254-4*			

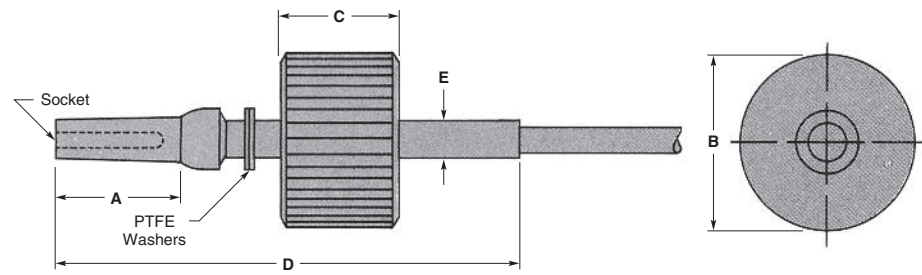
\*RoHS compliant Part Number.



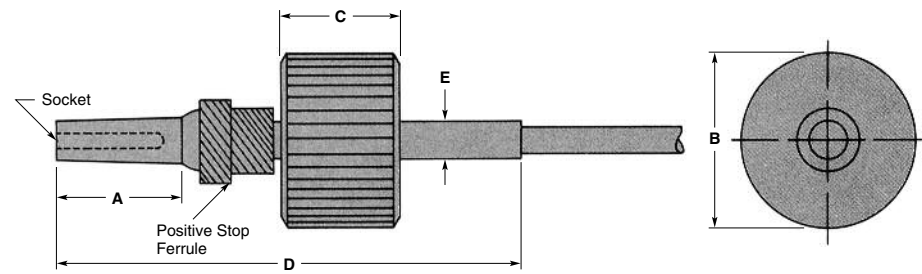
LGH High Voltage Connectors

Various Specials (Continued)

Field Installable Connectors  
Kits for PTFE Insulated Wire



Standard Molded End



Positive Stop Molded End

Connector Description	Dimensions					Wire Diameter	Part Numbers	
	A	B	C	D	E		Molded End	Positive Stop
LGH 1/2 I	.53 13.5	.49 12.5	.38 9.7	2.00 50.8	.160 40.6	.107-.113 2.72-3.37	861076-1	—
						.081-.087 2.06-2.21	861076-2	—
LGH 1/2 LI	.89 22.6	.49 12.5	.38 9.7	2.00 50.8	.160 40.6	.107-.113 2.72-3.37	—	862514-1
						.155-.165 3.94-4.19	—	862128-1
LGH 1 I	.88 22.4	.81 20.57	.50 12.7	3.00 76.2	.280 71.1	.200-.210 5.08-5.33	—	862128-2
						.122-.132 3.10-3.35	—	862128-3
LGH 1 LI	1.69 42.9	.81 20.57	.50 12.7	3.38 85.9	.280 71.1	.155-.165 3.94-4.19	—	862518-1

**Note:** These connectors mate with standard LGH receptacles. Recommended cable is W.L. Gore High Voltage Wire or equivalent.

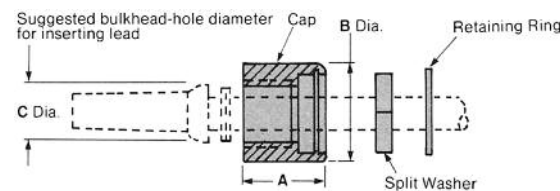


**Accessories**

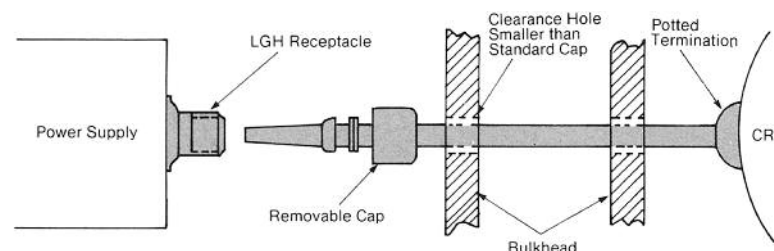
**Removable Cap Kits**

These kits provide a quick and easy means of replacing damaged caps on standard LGH molded-end lead assemblies. Removing leads from bulkheads, enlarging holes in bulkheads or disconnecting leads from potted connections is unnecessary. Simple disconnection of the lead with the damaged cap is the only required step before installing the replacement. These cap kits also can be useful for applications which require threading leads through small openings in bulkheads, as illustrated at right.

**Removable Caps**



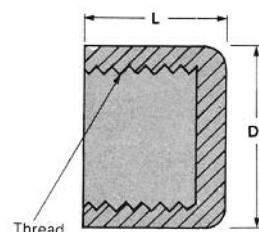
LGH Series	Dimensions			Kit Part Number
	A	B	C	
1/2 I	.50	.50	.28	849275-1
1/2 LI	12.7	12.7	7.11	
1 I	.62	.75	.44	849267-1
1 LI	15.75	19.05	11.18	



**Dirt-Protective Caps**

These caps protect LGH receptacles against damage to the threads and provide protection against accumulation of foreign matter on the insulator barrel and male contact. They are especially useful when receptacles are being shipped or stored.

**Glass-Epoxy Cap**

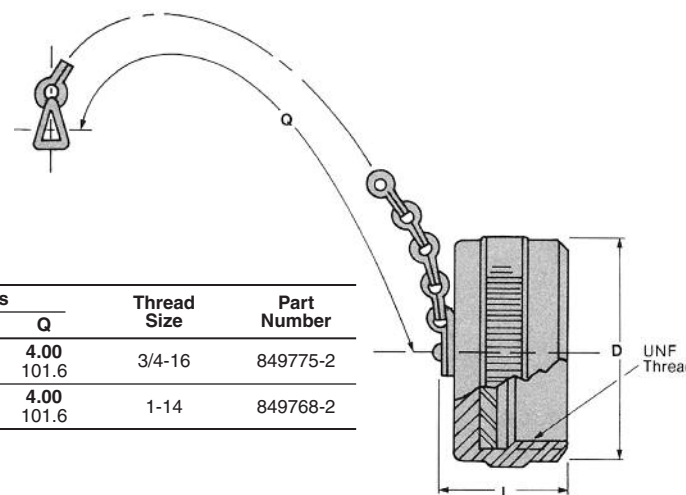


LGH Series	Dimensions		Thread Size	Part Number
	L	D		
1/2 I	.25	.44	5/16-32 (M)	850512-1
1/2 LI	6.35	11.18		
1 I	.50	.63	1/2-20 (M)	850513-1
1 LI	12.7	16		
2 I	.56	1.12	3/4-16 (M)	850514-1
	14.22	28.45		
4 I	.56	1.37	1-14 (M)	850515-1
	14.22	34.8		

Molded glass-epoxy caps meet specifications for MIL-M-24325 (Ships), GEI-5.

Aluminum caps, anodized black per MIL-A-8625, Type I, has an attached retaining chain. A silicone rubber gasket within provides a moisture and dust-proof seal.

**Aluminum Cap**



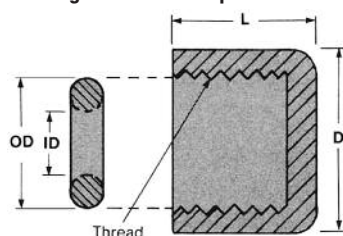
LGH Series	Dimensions			Thread Size	Part Number
	L	D	Q		
2 I	.71	.91	4.00	3/4-16	849775-2
	18.03	23.11	101.6		
4 I	.76	1.21	4.00	1-14	849768-2
	19.3	30.73	101.6		

These protective caps do not replace caps provided with LGH lead assemblies.

**Arcing-Protective Caps**

A multiple output power supply with vacant receptacles can be operated safely at high altitudes without fear of breakdown if floating receptacles are sealed with protective caps shown here.

**Arcing-Protective Cap**



LGH Series	Dimensions				Thread Size	Part Number
	L	D	O.D.	I.D.		
1/2 I	.25	.44	.28	.14	5/16-32	849055-1
1/2 LI	6.35	11.18	7.11	3.56		
1 I	.50	.62	.44	.23	1/2-20	849252-1
1 LI	12.7	15.75	11.18	5.84		
2 I	.56	1.12	.69	.50	3/4-16	849253-1
	14.22	28.45	17.53	12.7		
4 I	.56	1.37	.94	.75	1-14	849254-1
	14.22	34.8	23.88	19.05		

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**LGH Product Worksheet for Ordering Custom Designs**

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1. Customer name and location \_\_\_\_\_
2. Military application? \_\_\_\_\_ Commercial application? \_\_\_\_\_
3. Voltage: Working \_\_\_\_\_ DC \_\_\_\_\_ AC \_\_\_\_\_  
Test (High Potential) \_\_\_\_\_ DC \_\_\_\_\_ AC \_\_\_\_\_  
If AC, what frequency? \_\_\_\_\_ Hz.  
If pulsed DC, what repetition rate and duty cycle? \_\_\_\_\_
4. Current \_\_\_\_\_
5. Temperature: Operating \_\_\_\_\_ °C min. \_\_\_\_\_ °C max.  
Storage \_\_\_\_\_ °C min. \_\_\_\_\_ °C max.
6. Environment: Air \_\_\_\_\_ Oil (specify type) \_\_\_\_\_  
Water/humidity \_\_\_\_\_ Chemical \_\_\_\_\_  
Other (explain) \_\_\_\_\_
7. Altitude: Operating \_\_\_\_\_  
Storage \_\_\_\_\_
8. Hermetic seal required? \_\_\_\_\_ If yes, specify leakage rate: \_\_\_\_\_ ppm
9. What other mechanical or electrical features are required? \_\_\_\_\_
10. Plating desired? \_\_\_\_\_
11. Is a customer specification or drawing attached? \_\_\_\_\_  
If not, what dimensional restrictions apply? \_\_\_\_\_
12. Number of mating cycles needed: \_\_\_\_\_
13. For quoting purposes, what is the initial order quantity? \_\_\_\_\_  
Quantity for first year? \_\_\_\_\_  
Quantity for second year? \_\_\_\_\_
14. When are initial parts required? \_\_\_\_\_

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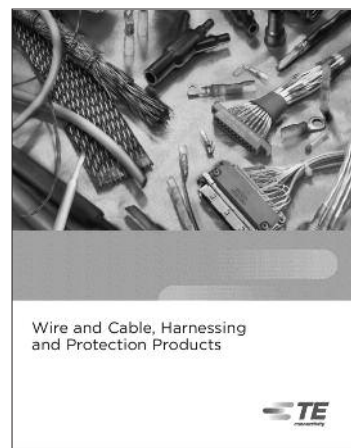
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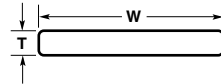
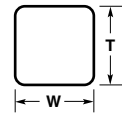
For additional product information on Raychem brand Solder & Crimp Style terminals and splices, refer to catalog 1654025 "Wire and Cable, Harnessing & Protection Products".

**10**

Terminals and Splices

**How to Compute Circular Mil Area of Various Wire Shapes**

**Square or Rectangular Wire**



**U.S. Customary Dimensions**

Multiply the width of the wire cross section in mils by the thickness of the wire cross section in mils by 1.2732 and subtract the radius factor shown below.

$CMA = W \times T \times 1.2732 - \text{radius factor}$

**Metric Dimensions**

Multiply the width of the wire cross section in millimeters by the thickness of the wire cross section in millimeters by 1973.525 and subtract the radius factor shown below.

$CMA = W \times T \times 1973.525 - \text{radius factor}$

**Round Solid Wire AWG**



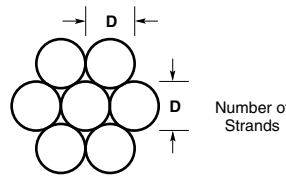
Multiply the diameter in mils by itself.

$CMA = D^2$

Multiply the diameter in millimeters by itself by 1550.003

$CMA = D^2 \times 1550.003$

**Stranded Wire AWG**



Multiply the diameter of one strand (in mils) by itself, and then multiply the result by the total number of strands.

$CMA = D^2 \times N$

Multiply the diameter of one strand in millimeters by itself by the number of strands by 1550.003.

$CMA = D^2 \times N \times 1550.003$

**Conversion Table**

To Convert From	To	Multiply By
CMA	mm <sup>2</sup>	.0005067075
CMA	in <sup>2</sup>	.0000007854
mm <sup>2</sup>	in <sup>2</sup>	.001550003
mm <sup>2</sup>	CMA	1973.525

**Note:** Refer to table listing for circular mil area for common wire sizes.

**Radius Factor, U.S. Customary**

Radius (in.)	Radius Factor To Subtract (CMA)
.010	110
.012	158
.016	280
.020	438
.026	740
.032	1121
.040	1752
.063	4346
.094	9675

Radius must be measured.

**Radius Factor, Metric**

Radius (mm)	Radius Factor To Subtract (CMA)
0.25	106
0.3	153
0.35	208
0.4	272
0.5	424
0.6	611
0.8	1086
1.2	2444

Radius must be measured.

**Cross Reference AMP Closed Barrel Sizes/Metric Cable**

Wire Size in <sup>2</sup> [mm <sup>2</sup> ]	Typical cables (metric)	AMP Code
.00078 [0.5]	16/0.20	22-16
.00116 [0.75]	24/0.20	22-16
.00155 [1.0]	32/0.20 1/1.13	22-16
.00233 [1.5]	30/0.25 1/1.38	22-16, 16-14
.00388 [2.5]	50/0.25 1/1.78	16-14
.00620 [4.0]	56/0.30 7/0.85	12-10
.00930 [6.0]	84/0.30 7/1.04	12-10
.01550 [10]	80/0.40 7/1.35	8
.02480 [16]	126/0.40 7/1.70	6
.03875 [25]	196/0.40 7/2.14	4
.05425 [35]	276/0.40 19/1.53	2
.07750 [50]	396/0.40 19/1.78	1/0
.10850 [70]	360/0.50 19/2.14	2/0
.14725 [95]	475/0.50 19/2.52	3/0
.18600 [120]	608/0.50 37/2.93	231-300 MCM
.23250 [150]	756/0.50 37/2.25	231-300 MCM
.28675 [185]	925/0.50 37/2.52	300-380 MCM
.37200 [240]	1221/0.50 61/2.25	380-478 MCM

**Cross Reference AMP Closed Barrel Sizes/Metric Aircraft Cables**

Wire Size in <sup>2</sup> [mm <sup>2</sup> ]	Typical cables (metric)	AMP Code
.00023 [0.15]	19/0.10	26-22
.00033 [0.21]	19/0.12 7/0.20	26-22, 24-22
.00053 [0.34]	19/0.15	24-22
.00093 [0.60]	19/0.20	22-16, 20
.00144 [0.93]	19/0.25	22-16, 18-16
.00207 [1.34]	19/0.30	16-14, 18-16
.00282 [1.82]	37/0.25	16-14, 18-16
.00465 [3.00]	37/0.32 19/0.45	12-10, 14-12
.00721 [4.65]	37/0.40	12-10
.01304 [8.41]	119/0.30	8
.01993 [12.86]	182/0.30	6
.03221 [20.78]	294/0.30	4
.05005 [32.29]	203/0.45	2
.06040 [38.97]	245/0.45 (Size 1)	2
.07938 [51.21]	322/0.45	1/0
.10354 [66.80]	420/0.45	2/0
.12769 [82.38]	518/0.45	3/0
.16393 [105.76]	665/0.45	4/0

**Terminal Stud Hole Size**

**Use to Select Proper Size Terminal**

The chart shows sizes and dimensions of various studs and the corresponding terminal stud hole sizes used with AMP devices.

For example, with stud #5 (.125 [3.18] Diameter), use AMP device listed for #5 stud (.129 [3.28] Hole Diameter).

Terminal stud hole sizes may easily be checked by fitting sample terminal to black circle. Chart shows cross reference from BA-US-Metric stud sizes.

Stud Size				Stud Dia.	Minimum Terminal Hole Diameter	Stud Size			Stud Dia.	Minimum Terminal Hole Diameter
Imperial	U.S. Cust.	Metric	U.S. Cust.			Metric				
	#0			.060	●	.064				
	#1			.073	●	.077	5/8"	M16	.625	● .651
	#2	M2		.086	●	.090				
8BA	#3			.099	●	.103				
6BA	#4	M2.5		.112	●	.116	3/4"		.750	● .776
	#5	M3		.125	●	.129				
4BA	#6	M3.5		.138	●	.142				
	#8	M4		.164	●	.168	7/8"	M22	.875	● .901
2BA	#10			.190	●	.194				
	#12			.216	●	.220				
	#14			.242	●	.245	1"		1.000	● 1.026
0BA	1/4"	M6		.250	●	.260				
	5/16"	M8		.312	●	.323				
	3/8"	M9.5		.375	●	.385	1 1/8"		1.125	● 1.151
	7/16"			.437	●	.448				
	1/2"	M12		.500	●	.510	1 1/4"		1.250	● 1.276

**10**

Terminals and Splices

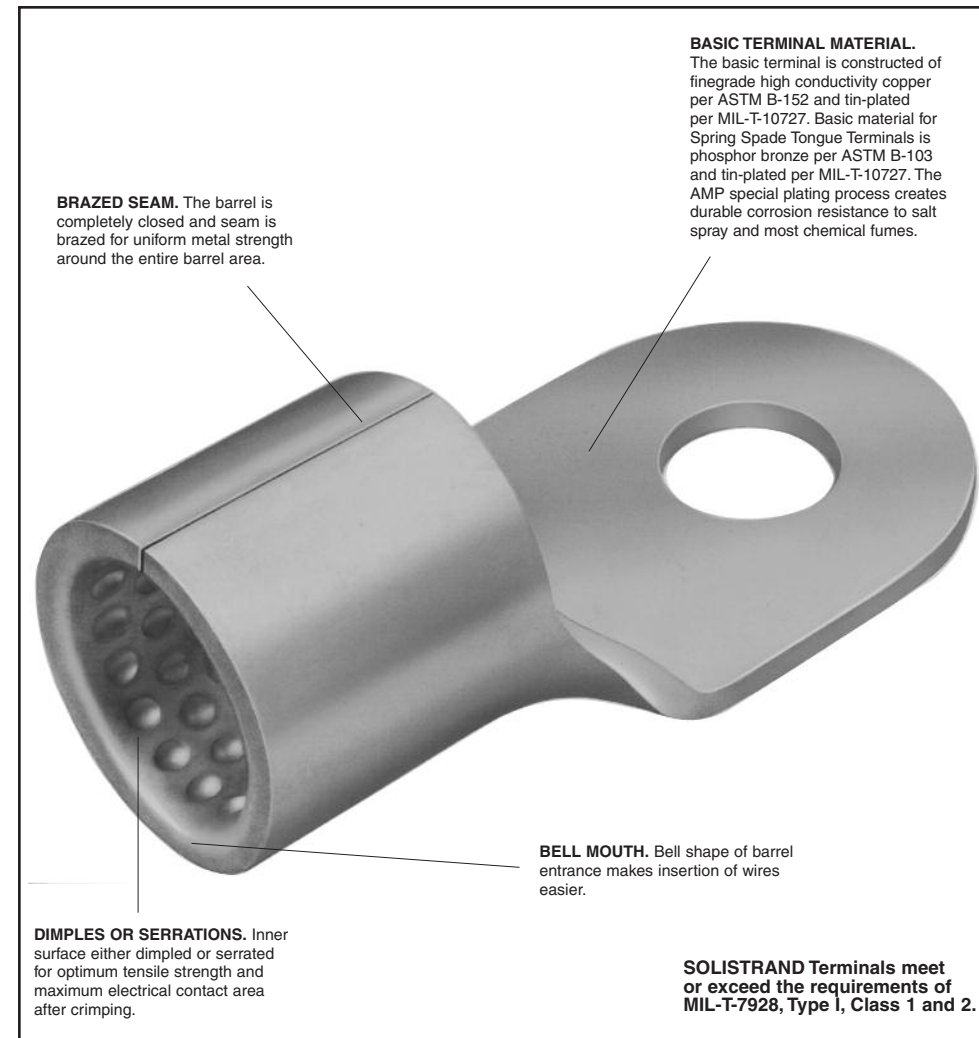
**Introduction**

SOLISTRAND terminals and splices are specially designed to terminate solid and stranded wire, irregular shaped conductors, and combinations of these—still retaining the superior performance characteristics of single-purpose terminals and splices. Because we match the terminal to the tool each termination is uniform, making quality control easy and performance consistent. Corrosion resistance, vibration resistance and tensile strength of these terminals and splices are well within the limits of commercial and military specifications. The SOLISTRAND terminals and splice line includes parallel and butt splices, and flag, ring, spade, hooked, and flanged tongue terminals in sizes from 26 AWG [0.1 mm<sup>2</sup>] through 600 MCM [304 mm<sup>2</sup>].

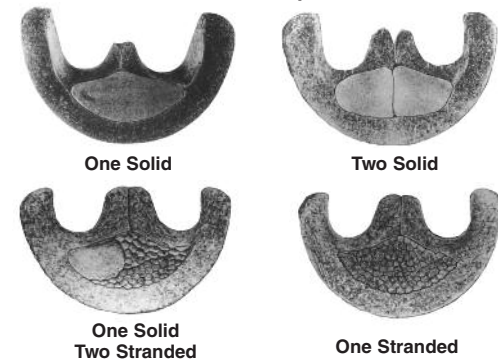
**The Crimp**

The “W” Crimp is one of several time-proven crimp types developed by TE Connectivity. It is not just a “kink” in a metal barrel; not something pinched over electrical wire ends. The “W” Crimp is actually two longitudinal crimps applied with precisely controlled pressure so that the conductor within the barrel flows together into the dimples or serrations of the terminal barrel creating one homogeneous mass of metal. The two indents also help to center conductors within the barrel for uniform crimping of the barrel around the wire. Furthermore, the “W” Crimp permits the use of a shorter terminal barrel, an excellent feature for confined area termination.

The “W” Crimp creates terminations of optimum electrical properties and is completely reliable, giving long service in harsh environments.



**“W” Crimp**



**Temperature Rating: 338°F [170°C] Max.**

**AMP SOLISTRAND Terminals and Splices  
(Use SOLISTRAND Tooling)**

AMP Wire Size	UL Listed File No. E13288	UL LR 7189 Certified
22–16 Solid or Stranded	22–16 Solid or Stranded	22–16 Solid or Stranded
16–14 Solid or Stranded	16–14 Solid or Stranded	16–14 Solid or Stranded
16–14 Heavy Duty Solid or Stranded	16–14 Heavy Duty Stranded	16–14 Heavy Duty Solid or Stranded
14–12 Solid or Stranded	14–12 Stranded	14–12 Solid or Stranded
12–10 Solid or Stranded	12–10 Stranded	12–10 Solid or Stranded
8 thru 600 MCM Solid or Stranded	8 thru 600 MCM Stranded	8 thru 600 MCM Solid or Stranded

**Note:** 22-16 terminals and splices are stamped 22-18 in accordance with MIL-T-7928. Commercial wire range is 22-16.

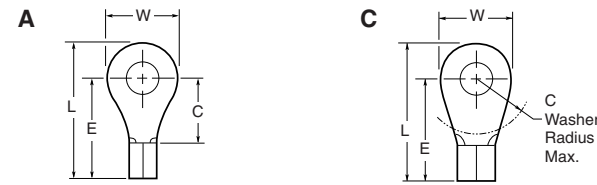


**Ring Tongue Terminals**

**Material and Finish**

**Terminal Body**—Copper per ASTM B-152

**Plating**—Tin per MIL-T-10727



**Military Specification M7928/7**

Wire Size Circular Mils [mm <sup>2</sup> ]	Stud Size	Style	Dimensions				Material Thickness Max.	Wire Barrel I.D. Min.	Class	M7928/7 Dash Number	Part Number
			L Max.	E Max.	C Min.	W					
22-16 509-3,260 [0.26-1.65]	2 M2	A	.449 11.40	.337 8.56	.156 3.96	.218 5.54	.033 0.84	.061 1.55	2	1	34103 2-34103-1
	4	A	.449 11.40	.337 8.56	.156 3.96	.218 5.54	.033 0.84	.061 1.55	2	2	34104* 2-34104-6
	6 M3.5	A	.621 15.77	.462 11.73	.281 7.14	.312 7.92	.033 0.84	.061 1.55	2	3	34110* 2-34110-3
	10	A	.621 15.77	.462 11.73	.281 7.14	.312 7.92	.033 0.84	.061 1.55	2	4	34112* 2-34112-2
	5/16 M8	A	.856 21.74	.618 15.70	.437 11.10	.469 11.91	.033 0.84	.061 1.55	2	5	34114* 2-34114-2
	3/8	A	.995 25.27	.727 18.47	.546 13.87	.531 13.49	.033 0.84	.061 1.55	2	6	34115* 2-34115-2
16-14 2,050-5,180 [1.04-2.62]	4	A	.480 12.19	.352 8.94	.171 4.34	.250 6.35	.033 0.84	.085 2.16	2	11	34119* 2-34119-1
	6 M3.5	A	.590 14.99	.431 10.95	.250 6.35	.312 7.92	.033 0.84	.085 2.16	2	7	321684* 2-321684-1
	10	A	.669 16.99	.510 12.95	.250 6.35	.312 7.92	.033 0.84	.085 2.16	1 & 2	8	320093 2-320093-1
	5/16 M8	A	.855 21.72	.618 15.70	.437 11.10	.469 11.91	.033 0.84	.085 2.16	2	9	34125* 2-34125-6
	3/8	A	.995 25.27	.727 18.47	.546 13.87	.531 13.49	.033 0.84	.085 2.16	2	10	34126* 2-34126-2

**Note:** Part numbers are shown as loose piece over tape mounted product.  
\* Part numbers are available in small quantity packages.

**Military Specification MS20659**

Wire Size Circular Mils [mm <sup>2</sup> ]	Stud Size	Style	Dimensions				Material Thickness Max.	Wire Barrel I.D. Min.	Class	MS20659 Dash Number	Part Number
			L Max.	E Max.	C	W					
12-10 5,180-13,100 [2.62-6.64]	6 M3.5	A	.630 16.00	.487 12.37	.219 5.56	.281 7.14	.042 1.07	.129 3.28	2	165	35476* 2-35476-1
	10	A	.765 19.43	.575 14.61	.302 7.67	.375 9.53	.042 1.07	.129 3.28	1 & 2 2	105	33457* 2-33457-2
	5/16 M8	A	1.004 25.50	.736 18.69	.468 11.89	.531 13.49	.042 1.07	.129 3.28	1 & 2 2	106	33459* 2-33459-6
	3/8	A	1.098 27.89	.799 20.29	.531 13.49	.593 15.06	.042 1.07	.129 3.28	1 & 2	128	33220*
	1/2 M12	A	1.271 32.28	.893 22.68	.625 15.88	.750 19.05	.042 1.07	.129 3.28	2	166	35135
8 13,100-20,800 [6.64-10.5]	8 M4	C	.949 24.10	.743 18.87	.359 9.12	.406 10.31	.051 1.30	.172 4.37	2	140	324061*
	10	C	.949 24.10	.743 18.87	.359 9.12	.406 10.31	.051 1.30	.172 4.37	2	107	31807 2-31807-2*2
	1/4 M6	C	.933 23.70	.696 17.68	.359 9.12	.469 11.91	.051 1.30	.172 4.37	2	141	33461* 2-33461-2*1
	5/16 M8	A	1.074 27.28	.790 20.07	.406 10.31	.562 14.27	.051 1.30	.172 4.37	2	108	31808*
	3/8	A	1.168 29.67	.868 22.05	.531 13.49	.594 15.09	.051 1.30	.172 4.37	2	129	33463*
6 20,800-33,100 [10.5-16.8]	10	C	1.168 29.67	.931 23.65	.531 13.49	.468 11.89	.060 1.52	.232 5.89	2	130	321298*
	1/4 M6	C	1.168 29.67	.931 23.65	.531 13.49	.468 11.89	.060 1.52	.232 5.89	2	109	321598*
	5/16 M8	C	1.246 31.65	.931 23.65	.531 13.49	.625 15.88	.060 1.52	.232 5.89	2	131	33466* 2-33466-3
	3/8	C	1.246 31.65	.931 23.65	.531 13.49	.625 15.88	.060 1.52	.232 5.89	2	110	33467*
	1/2 M12	C	1.840 46.74	1.400 35.56	1.000 25.40	.875 22.23	.060 1.52	.232 5.89	2	143	320344*

**Note:** Part numbers are shown as loose piece over tape mounted product.  
\* Part numbers are available in small quantity packages.  
1 Requires a 69875 standard AMP-TAPETRONIC machine for application.  
2 Requires a 68250-1 Heavy Duty AMP-TAPETRONIC machine for application.

10  
Terminals and Splices

**Ring Tongue Terminals** (Continued)

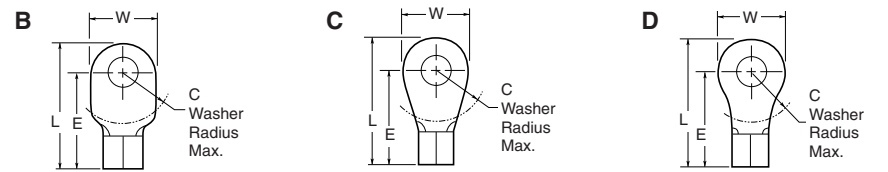
**Material and Finish**

**Terminal Body**—Copper per ASTM B-152

**Plating**—Tin per MIL-T-10727

**Military Specification**

**MS20659** (Continued)



Wire Size Circular Mils [mm <sup>2</sup> ]	Stud Size	Style	Dimensions				Material Thickness Max.	Wire Barrel I.D. Min.	Class	MS20659 Dash Number	Part Number
			L Max.	E Max.	C	W					
4 33,100–52,600 [16.8–26.7]	10	C	1.199 30.45	.946 24.03	.437 11.10	.500 12.70	.073 1.85	.280 7.11	2	144	33114
	1/4 M6	C	1.199 30.45	.946 24.03	.437 11.10	.500 12.70	.073 1.85	.280 7.11	2	111	31811*
	5/16 M8	C	1.324 33.63	1.009 25.63	.500 12.70	.625 15.88	.073 1.85	.280 7.11	2	132	33115
	3/8	C	1.324 33.63	1.009 25.63	.500 12.70	.625 15.88	.073 1.85	.280 7.11	2	112	31812
	1/2 M12	B	1.902 48.31	1.462 37.13	1.000 25.40	.875 22.23	.073 1.85	.296 7.52	2	145	327175*
2 52,600–83,700 [26.7–42.4]	10	B	1.527 38.79	1.212 30.78	.531 13.49	.625 15.88	.073 1.85	.370 9.40	2	146	330301
	1/4 M6	B	1.527 38.79	1.212 30.78	.531 13.49	.625 15.88	.073 1.85	.370 9.40	2	113	320383*
	5/16 M8	B	1.527 38.79	1.212 30.78	.531 13.49	.625 15.88	.073 1.85	.370 9.40	2	147	322870*
	3/8	B	1.527 38.79	1.212 30.78	.531 13.49	.625 15.88	.073 1.85	.370 9.40	2	114	321600*
	7/16	D	1.657 42.09	1.212 30.78	.531 13.49	.890 22.61	.073 1.85	.370 9.40	2	148	320741
1/0 83,700–119,500 [42.4–60.6]	1/4 M6	C	1.925 48.90	1.532 38.91	.625 15.88	.807 20.50	.073 1.85	.444 11.28	2	117	321866
	5/16 M8	C	1.925 48.90	1.532 38.91	.625 15.88	.807 20.50	.073 1.85	.444 11.28	2	151	321867*
	3/8	C	1.925 48.90	1.532 38.91	.625 15.88	.807 20.50	.073 1.85	.444 11.28	2	118	321868
	7/16	C	1.956 49.68	1.529 38.84	.625 15.88	.875 22.23	.073 1.85	.444 11.28	2	152	36918
	1/2 M12	C	1.956 49.68	1.529 38.84	.625 15.88	.875 22.23	.073 1.85	.444 11.28	2	135	36919*
2/0 119,500–150,500 [60.6–76.3]	1/4 M6	C	1.930 49.02	1.550 39.37	.625 15.88	.926 23.52	.083 2.11	.504 12.80	2	153	321869
	5/16 M8	C	1.930 49.02	1.550 39.37	.625 15.88	.926 23.52	.083 2.11	.504 12.80	2	119	321870*
	3/8	C	1.930 49.02	1.550 39.37	.625 15.88	.926 23.52	.083 2.11	.504 12.80	2	120	321871*
	7/16	C	1.930 49.02	1.550 39.37	.625 15.88	.926 23.52	.083 2.11	.504 12.80	2	154	321872
	1/2 M12	C	1.930 49.02	1.550 39.37	.625 15.88	.926 23.52	.083 2.11	.504 12.80	2	136	321873*
3/0 150,500–190,000 [76.3–96.3]	5/16 M8	B	2.112 53.64	1.622 41.20	.625 15.88	1.020 25.91	.094 2.39	.565 14.35	2	155	321874
	3/8	B	2.112 53.64	1.622 41.20	.625 15.88	1.020 25.91	.094 2.39	.565 14.35	2	121	321875*
	7/16	B	2.112 53.64	1.622 41.20	.625 15.88	1.020 25.91	.094 2.39	.565 14.35	2	156	321876
	1/2 M12	B	2.112 53.64	1.622 41.20	.625 15.88	1.020 25.91	.094 2.39	.565 14.35	2	122	321877*
	5/16 M8	B	2.537 64.44	1.985 50.42	1.078 27.38	1.150 29.21	.105 2.67	.635 16.13	2	157	321271
4/0 190,000–231,000 [96.3–117]	3/8	B	2.178 55.32	1.657 42.09	.625 15.88	1.087 27.61	.105 2.67	.635 16.13	2	123	321878*
	7/16	B	2.178 55.32	1.657 42.09	.625 15.88	1.087 27.61	.105 2.67	.635 16.13	2	158	321879
	1/2 M12	B	2.178 55.32	1.657 42.09	.625 15.88	1.087 27.61	.105 2.67	.635 16.13	2	124	321880*
	5/8 M16	B	2.206 56.03	1.644 41.76	.625 15.88	1.150 29.21	.105 2.67	.635 16.13	2	159	36935
	3/4	C	2.732 69.39	2.117 53.77	1.078 27.38	1.275 32.39	.105 2.67	.635 16.13	2	160	322228
7/8 M22	C	2.732 69.39	2.117 53.77	1.078 27.38	1.275 32.39	.105 2.67	.635 16.13	2	137	321625	

\* Part numbers are available in small quantity packages.

**Application Tooling**

**Wire Size Range  
AWG 26 to 6**

Product Type	Wire Size	Hand Tools	Pneumatic Tooling		Dies for 626, Tool Requires Straight Action Adapter 217200-1 or 318161-1 Dies Also Fit 69710-1 Hand Tool	Tooling For Tape Mounted Products	
			Crimping Heads for 626 Tool	Single Wire Range		Multiple Wire Range	Dies for 69875 AMP-TAPETRONIC AMP-O-ELECTRIC Requires Applicator AMPOMATOR CLS IV Requires Applicators
SOLISTRAND terminals	26-22	69363 <sup>2</sup>				768625-1	
	24-20						
	22-16	49935 <sup>2</sup>	314516-1 <sup>4</sup>		47812 <sup>4</sup>	68240-1	
	16-14		314517-1 <sup>4</sup>	679301-1 <sup>4</sup>	47813 <sup>4</sup>	68241-1	
	12-10 & 16-14 HD	58546-1 <sup>3</sup>			47814 <sup>1, 4</sup>	68242-1	
	14-12	49592 <sup>2</sup>	314518-1 <sup>4</sup>			90566-1	
	8		1338757-1 <sup>4</sup>			68243-1	
	6		1338758-1 <sup>5</sup>				

<sup>1</sup> For standard wire only.  
<sup>2</sup> CERTI-CRIMP Hand Tool.  
<sup>3</sup> Contains die set 58545-1. PRO-CRIMPER II commercial tool not approved for UL applications.  
<sup>4</sup> Use with 626 Pneumatic Tool 189721-1 or 189722-1.  
<sup>5</sup> Use with 626 Pneumatic Tool 189721-2 or 189722-2.

**Wire Size Range  
AWG 8 to 600 MCM**

Product Type	Wire Size	Hand Tool	Pneumatic Tooling 69015	Hydraulic Tools With Interchangeable Dies			Tooling For Tape Mounted Product				
				Hydraulic Tools With Self Contained Dies		Hand Tools 1490748-1 and 1490749-1 or Hydraulic Heads 1490745-1, 1490746-1 and 1976230-1	1752788-1 Latch Head	1752786-1 "C" Head	1752868-1 <sup>2</sup> "C" Head	Dies for 69875 AMP-TAPETRONIC	Dies for 68250-1 HD AMP-TAPETRONIC
				Hand Tool	Latch Head					Nest	Indent
Standard Terminals	8	69355 <sup>1</sup>	49956			1490413-1	1490414-1		69216	68243-1	68312-1
	6		48172	59975-1	1673672-1	1490413-2			69217		68313-1
	4	59131	48173			1490413-3	1490414-2		69218		
	2		48174			1490413-4			45433		
	1/0		48183			1490413-5			45436		
	2/0					1490413-6	1490414-3		45439		
	3/0					1490413-7			45442		
	4/0					1490413-8			45445		
	250-300 MCM							48816	69911		
	300-350 MCM							48817	69912		
	400 MCM							48818	69913		
	500-600 MCM							48819	69914		

<sup>1</sup> CERTI-CRIMP Hand Tool.  
<sup>2</sup> These crimping heads are recommended for use only with AMP Hydraulic Foot Pump 1583659-1 and Hydraulic Hand Pump 1583661-1, DYNA-CRIMP Hydraulic Power Units 1804700-1 (115 VAC) and 1804700-2 (230 VAC).

10

Terminals and Splices

**Introduction**

**Product Facts**

- Product available in temperature ranges of 500°F [260°C], 550°F [288°C], 650°F [343°C] and 1200°F [649°C]
- Product employs the famous “W” and “C” crimp
- Wide range of wire sizes
- Complete line of related application tooling
- Accommodates solid and/or stranded conductors



Heat...extreme heat... searing temperatures up to 1200°F [649°C]. This is one of the most challenging environments that electrical/electronic circuitry has ever entered.

If heat is an unavoidable dimension in your circuit design and production, this product is an important ally. In this line of STRATO-THERM terminals and splices, you'll find high temperature circuit hardware. You'll also find solutions to other more familiar circuit problems such as vibration, corrosion and flash-over, when they occur at high temperatures.

Different types of high temperature terminals and splices found in this catalog are as follows:

PIDG Terminals and Splices, and Pre-Insulated Spare Wire Caps — 550°F [288°C] Range

PIDG Insulation Restriction Terminals — 550°F [288°C] Range

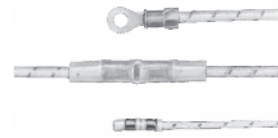
Post-Insulated Terminals and Splices — 550°F [288°C] Range

Uninsulated Terminals and Splices — 650°F [343°C] Range

Uninsulated Terminals and Splices — 1200°F [649°C] Range

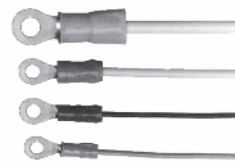
**Introduction** (Continued)

**PIDG Terminals and Splices, and Pre-Insulated Spare Wire Caps**  
**550°F [288°C] Range**



Designed for reliable performance up to 550°F [288°C], this line of ring-tongue terminals, butt splices and spare wire caps features a pre-insulation sleeve of PTFE TFE insulation material. A special funnel entry feature has been added to promote easy entry and proper seating of wire. The body is copper with a choice of gold over nickel plating or nickel plating. The terminal and splice barrel accommodates stranded wire conductors only. The spare wire caps are designed for unstripped wire.

**PIDG Insulation Restriction Terminals**  
**550°F [288°C] Range**



These pre-insulated insulation restriction terminals better prevent the insulation of thin-wall insulation wire from entering the terminal's wire crimp area during the crimping process.

Designed for reliable performance up to 550°F [288°C], these terminals feature a pre-insulation sleeve of PTFE (TFE) insulation material.

Because of features such as a one-piece constructed inner sleeve and a wide funnel entry design which facilitates wire entry, standard STRATO-THERM PIDG tooling may be used to terminate this product.

**Post-Insulated Terminals and Splices**  
**550°F [288°C] Range**



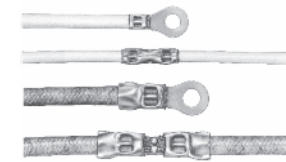
The temperature range of these terminals and splices is 550°F [288°C] for nickel plating and gold over nickel plated copper, and 500°F [260°C] for silver plating. These terminals and splices accommodate solid and/or stranded conductors.

**Uninsulated Terminals and Splices**  
**650°F [343°C] Range**



These terminals and splices are available with and without wire insulation support. Both types are manufactured from electrolytic copper, plated with nickel. In the insulation support type, the support sleeve is fabricated from nickel-silver alloy. Both types accommodate solid or stranded conductors in various combinations. Wire size range is listed in the tabular data section.

**Uninsulated Terminals and Splices**  
**1200°F [649°C] Range**



Nickel material is used for the body of both the terminal and splice. They are available with or without wire insulation support sleeve of nickel-silver alloy material. Accommodating either solid or stranded conductors in different combinations, these terminals and splices are made to cover a broad wire size range, listed in the tabular data section.

Terminals made of alumel and chromel material with nickel-silver alloy sleeves are available for thermocouple applications. When using either alumel or chromel conductors, a terminal of the same material should be selected.

**10**

Terminals and Splices



**Introduction** (Continued)

**Ordering Information**

All terminals and splices are listed according to wire size and type of terminal or splice. If the part number of the terminal or splice is known, refer to the Numerical Index, at the back of this catalog, for page location of tabular data.

In the Tabular Data Section, part numbers are available in either loose piece or tape mounted form.

When ordering tape mounted part numbers, specify the terminal or splice part number, the total quantity of parts desired (if applicable). The chart to the right lists by wire size the type of packaging available and the quantity per package.

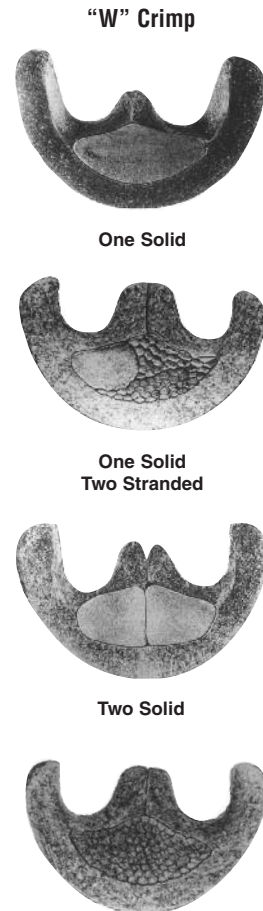
Wire Range AWG	Standard Quantities	
	Loose Piece	Tape Mounted
26-14	1,000	5,000
26-22	—	2,500
12-10	500	2,500
8, 6, 4	100	—
2, 1/2	50	—

**Note:** Package quantities may vary with specific part numbers.

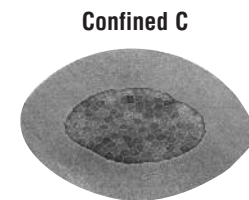
**The Crimp**

All five types of STRATO-THERM terminals and splices provide optimum corrosion and vibration resistance plus outstanding tensile characteristics.

All types, except the STRATO-THERM PIDG terminals, splices and pre-insulated spare wire caps, employ the famous "W" crimp which creates the precise electromechanical properties necessary for solid and/or stranded conductor combinations. A proper crimp will provide a uniform attachment. When mechanical pressure is applied to the terminal barrel, the wire inside is forced into the serrations or dimples of the barrel. Shown are four typical photomicrographs of the "W" crimp, illustrating the results of crimping various conductor combinations. In each case, the action of the crimp has compressed the conductors and the barrel into a homogenous mass.



STRATO-THERM PIDG terminals and splices employ the equally reliable confined "C" crimp plus multiple position insulation support crimp for today's smaller insulated wires. This "C" crimp is especially suited to crimping the terminal barrel and insulation sleeve to stranded wire conductors. The photomicrograph shows the results of "C" crimping. Virtually the same electromechanical properties are obtained as in the "W" crimp. Pre-insulated spare wire caps and post-insulated splices are crimped with an "O" crimp configuration.





**Insulated Terminals and Splices**

**PIDG (Pre-Insulated  
DIAMOND GRIP)  
Ring Tongue Terminals**

**Temperature Rating,  
Material and Finish**

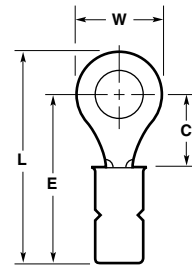
**Insulation** — PTFE

**Terminal Body** — Copper per  
ASTM B152

**Plating** — Nickel per QQ-N-290,  
550°F [288°C]. Gold per MIL-G-  
45204 over Nickel per QQ-N-290  
500°F [260°C]

**Metallic Sleeve** — Copper per  
ASTM B152

**Plating** — Nickel per QQ-N-290,  
550°F [288°C]



**Related Product Data**

**Application Tooling** — pages 10-21  
and 10-22

Wire Size Circular Mils [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions				Terminal Insulation Color	Wire Insulation Diameter Max.	Body Plating <sup>1</sup>	Part Number Loose Piece
			W	C Min.	E Max.	L Max.				
18-16 1,600-2,800 [0.81-1.42]	.033 0.84	4	.218 5.54	.156 3.96	.560 14.22	.672 17.07	Orange	.135 3.43	Nickel	50834
		8 M4	.312 7.92	.281 7.14	.685 17.40	.844 21.44	Orange	.135 3.43	Nickel	50836
		10	.312 7.92	.281 7.14	.685 17.40	.844 21.44	Orange	.135 3.43	Nickel	50836-1
12-10 5,180-13,100 [2.62-6.64]	.042 1.07	8 M4	.375 9.53	.302 7.67	.893 22.68	1.083 27.51	Black	.214 5.44	Nickel	50845-1
		10	.375 9.53	.302 7.67	.893 22.68	1.083 27.51	Black	.214 5.44	Nickel	50845-2
		1/4 M6	.531 13.49	.437 11.10	1.012 25.70	1.280 32.51	Black	.214 5.44	Nickel	50846

<sup>1</sup> Nickel plated parts are to be used with nickel plated wire. Gold plated parts are to be used with silver plated wire.  
**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

**Pre-Insulated  
Spare Wire Caps  
(For Unstripped Wire)**

**Temperature Rating,  
Material and Finish**

**Insulation** — PTFE

**Ring** — Copper per ASTM B152

**Plating** — Nickel per QQ-N-290,  
550°F [288°C]



**Related Product Data**

**Application Tooling** — shown to the  
right



**Tool Part Number  
69272-1**

Wire Insulation Diameter Range	Dimension L Max.	Ring Color	Tool Color Guide	Part Number
.075 – .087 1.91 – 2.21	.500 12.70	Black and Orange	Orange	328859

**10**

Terminals and Splices

**Uninsulated Terminals and Splices**

**SOLISTRAND**  
Heat Resistant  
Ring Tongue Terminals

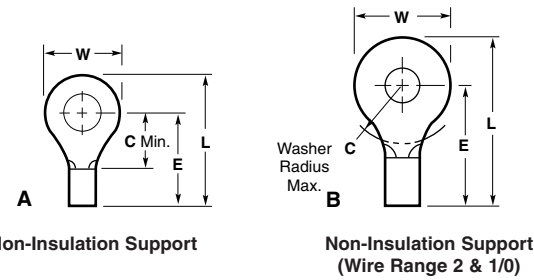
**Temperature Rating,  
Material and Finish**

**Terminal Body**—Copper per  
ASTM B152

**Plating**—Nickel per QQ-N-290,  
650°F [343°C]

**Related Product Data**

**Application Tooling**—pages 10-21  
and 10-22



Wire Size Circular Mils [mm²]	Tongue Material Thickness Max.	Stud Size	Style	Dimensions				Part Number Loose Piece
				W	C	E Max.	L Max.	
22-16 509-3,260 [0.26-1.65]	.033 0.84	6 M3.5	A	.218 5.54	.156 3.96	.337 8.56	.449 11.40	322797
			A	.281 7.14	.250 6.35	.436 11.07	.574 14.58	323219
		8 M4	A	.281 7.14	.250 6.35	.436 11.07	.574 14.58	322798
			A	.281 7.14	.250 6.35	.436 11.07	.574 14.58	322799
16-14 2,050-5,180 [1.04-2.62]	.033 0.84	10	A	.343 8.71	.281 7.14	.462 11.73	.636 16.15	322695*
		1/4 M6	A	.469 11.91	.437 11.10	.618 15.70	.855 21.72	322733
		10	A	.375 9.53	.302 7.67	.575 14.61	.765 19.43	323062
12-10 5,180-13,100 [2.62-6.64]	.042 1.07	5/16 M8	A	.531 13.49	.468 11.89	.736 18.69	1.004 25.50	323064
		10	A	.406 10.31	.359 9.12	.743 18.87	.949 24.10	323165
		1/4 M6	A	.469 11.91	.359 9.12	.696 17.68	.933 23.70	323166
8 13,100-20,800 [6.64-10.5]	.051 1.30	5/16 M8	A	.562 14.27	.406 10.31	.790 20.07	1.074 27.28	323167
		10	A	.468 11.89	.531 13.49	.931 23.65	1.168 29.67	323169
		3/8	A	.625 15.88	.531 13.49	.931 23.65	1.246 31.65	323172
6 20,800-33,100 [10.5-16.8]	.060 1.52	1/4 M6	A	.500 12.70	.437 11.10	.946 24.03	1.199 30.45	323173
		2 52,600-83,700 [26.7-42.4]	.073 1.85	3/8	B	.625 15.88	.540 13.72	1.212 30.78

\*Available in small packaging quantities.

**Uninsulated Terminals and Splices** (Continued)

**SOLISTRAND  
Heat Resistant  
Splices**

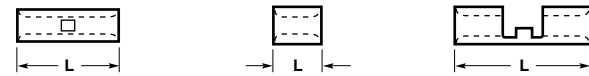
**Temperature Rating,  
Material and Finish**

Splice Body — Copper per  
ASTM B152

Plating — Nickel per QQ-N-290,  
650°F [343°C]

**Related Product Data**

Application Tooling — pages 10-21  
and 10-22



Style-A  
Non-Insulation  
Support  
Butt Splice

Style-B  
Non-Insulation  
Support  
Parallel Splice

Style-C  
Non-Insulation  
Support  
Butt Splice

Wire Size Circular Mils [mm <sup>2</sup> ]	Material Thickness Max.	Style	Dimensions			Part Number Loose Piece
			L Max.	ID Min.	OD Max.	
22-16 509-3,260 [0.26-1.65]	.033 0.84	A	.578 14.68	.061 1.55	.141 3.58	323796
		B	.301 7.65	.061 1.55	.141 3.58	323030
		C	.591 15.01	.061 1.55	.141 3.58	322822
16-14 2,050-5,180 [1.04-2.62]	.033 0.84	A	.567 14.40	.085 2.16	.165 4.19	323795
		B	.301 7.65	.085 2.16	.165 4.19	323794
12-10 5,180-13,100 [2.62-6.64]	.042 1.07	A	.565 14.35	.129 3.28	.226 5.74	323755
		B	.333 8.46	.129 3.28	.226 5.74	323754
8 13,100-20,800 [6.64-10.5]	.051 1.30	B	.375 9.53	.172 4.37	.296 7.52	2-34318-1

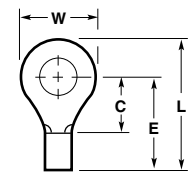
**SOLISTRAND  
High Temperature  
Ring Tongue Terminals**

**Temperature Rating  
and Material**

Terminal Body — Nickel per  
ASTM B162, 1200°F [649°C]

**Related Product Data**

Application Tooling — pages 10-21  
and 10-22



Non-Insulation Support

Wire Size Circular Mils [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Color Code	Stud Size	Dimensions				Part Number Loose Piece
				W	C Min.	E Max.	L Max.	
22-16 509-3,260 [0.26-1.65]	.033 0.84	Orange	4	.218 5.54	.156 3.96	.337 8.56	.449 11.40	321884
			5 M3	.218 5.54	.156 3.96	.337 8.56	.449 11.40	321885
			6 M3.5	.281 7.14	.250 6.35	.431 10.95	.574 14.58	321889*
			8 M4	.281 7.14	.250 6.35	.431 10.95	.574 14.58	321890*
			10	.281 7.14	.250 6.35	.431 10.95	.574 14.58	321891*
			6 M3.5	.250 6.35	.171 4.34	.352 8.94	.480 12.19	322329
16-14 2,050-5,180 [1.04-2.62]	.033 0.84	Orange	8 M4	.343 8.71	.281 7.14	.462 11.73	.636 16.15	322334*
			10	.343 8.71	.281 7.14	.462 11.73	.636 16.15	322335*
			1/4 M6	.468 11.89	.437 11.10	.618 15.70	.855 21.72	322339

\*Available in small packaging quantities.

**10**

Terminals and Splices

**Uninsulated Terminals and Splices** (Continued)

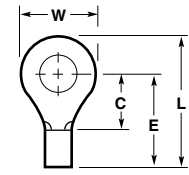
**SOLISTRAND**  
**High Temperature**  
**Ring Tongue Terminals**

**Temperature Rating**  
**and Material**

Terminal Body — Nickel per  
ASTM B162, 1200°F [649°C]

**Related Product Data**

Application Tooling — pages 10-21  
and 10-22



Non-Insulation Support

Wire Size Circular Mils [mm²]	Tongue Material Thickness Max.	Color Code	Stud Size	Dimensions				Part Number Loose Piece
				W	C Min.	E Max.	L Max.	
12-10 5,180-13,100 [2.62-6.64]	.042 1.07	Orange	8 M4	.375 9.53	.281 7.14	.549 13.94	.739 18.77	323745*
			10	.375 9.53	.281 7.14	.549 13.94	.739 18.77	323680*
			1/4 M6	.531 13.49	.468 11.89	.736 18.69	1.004 25.50	323683*
8 13,100-20,800 [6.64-10.5]	.051 1.30	Orange	10	.406 10.31	.359 9.12	.743 18.87	.949 24.10	328822

\*Available in small packaging quantities.

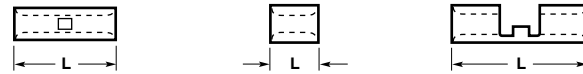
**SOLISTRAND**  
**High Temperature**  
**Splices**

**Temperature Rating**  
**and Material**

Splice Body — Nickel per  
ASTM B162, 1200°F [649°C]

**Related Product Data**

Application Tooling — pages 10-21  
and 10-22



Style-A  
Non-Insulation  
Support  
Butt Splice

Style-B  
Non-Insulation  
Support  
Parallel Splice

Style-C  
Non-Insulation  
Support  
Butt Splice

Wire Size Circular Mils [mm²]	Material Thickness Max.	Color Code	Style	Dimensions			Part Number Loose Piece
				L Max.	ID Min.	OD Max.	
22-16 509-3,260 [0.26-1.65]	.033 0.84	Orange	A	.578 14.68	.061 1.55	.141 3.58	322324*
			B	.301 7.65	.061 1.55	.141 3.58	322326
16-14 2,050-5,180 [1.04-2.62]	.033 0.84	Orange	A	.567 14.40	.085 2.16	.165 4.19	322345
			B	.301 7.65	.085 2.16	.165 4.19	322347
			C	.529 13.44	.085 2.16	.165 4.19	323878
12-10 5,180-13,100 [2.62-6.64]	.042 1.07	Orange	A	.567 14.40	.129 3.28	.226 5.74	323696*
			B	.333 8.46	.129 3.28	.226 5.74	323672
			C	.703 17.86	.129 3.28	.226 5.74	323698

\*Available in small packaging quantities.

**Uninsulated Terminals and Splices** (Continued)

**DIAMOND GRIP  
Heat Resistant  
Ring Tongue Terminals**

**Temperature Rating,  
Material and Finish**

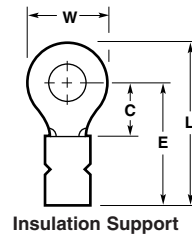
**Terminal Body** — Copper per ASTM B152

**Plating** — Nickel per QQ-N-290, 650°F [343°C]

**Metallic Sleeve** — Nickel Silver per ASTM B122

**Related Product Data**

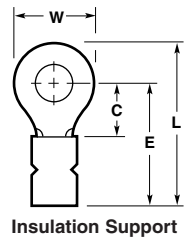
**Application Tooling** — pages 10-21 and 10-22



Wire Size Circular Mills [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions				Wire Insulation Diameter Max.	Part Numbers	
			W	C Min.	E Max.	L Max.		Loose Piece	Tape Mounted
22-16 509-3,260 [0.26-1.65]	.033 0.84	4	.218	.156	.512	.624	.140	322363	—
			5.54	3.96	13.00	15.85	3.56		
		6	.218	.156	.530	.645	.110	323151	—
			5.54	3.96	13.46	16.38	2.79		
		M3.5	.281	.250	.611	.749	.140	323199	—
			7.14	6.35	15.52	19.02	3.56		
		8	.281	.250	.611	.749	.140	322365	—
			7.14	6.35	15.52	19.02	3.56		
		M4	.281	.250	.629	.770	.110	323152	—
			7.14	6.35	15.98	19.56	2.79		
		10	.281	.250	.611	.749	.140	322366	—
			7.14	6.35	15.52	19.02	3.56		
16-14 2,050-5,180 [1.04-2.62]	.033 0.84	10	.343	.281	.637	.811	.170	322375	—
			8.71	7.14	16.18	20.60	4.32		
6	.343	.281	.659	.836	.130	323161	—		
	8.71	7.14	16.74	21.23	3.30				
M3.5	.375	.302	.841	1.034	.230	323066	—		
	9.53	7.67	21.36	26.26	5.84				
12-10 5,180-13,100 [2.62-6.64]	.042 1.07	10	.375	.302	.841	1.034	.230	323068	323068-1
			9.53	7.67	21.36	26.26	5.84		
1/4	.531	.468	1.002	1.273	.230	323069	—		
	13.49	11.89	25.45	32.33	5.84				

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

**DIAMOND GRIP  
High Temperature  
Ring Tongue Terminals**



**Temperature Rating and  
Material**

**Terminal Body** — See table, 1200°F [649°C], Nickel per ASTM B162, Alumel —, Chromel —

**Metallic Sleeve** — Nickel Silver per ASTM B122

**Related Product Data**

**Application Tooling** — pages 10-21 and 10-22

Wire Size Circular Mills [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions				Body Material	Sleeve Color Code	Wire Insulation Diameter Max.	Part Number Loose Piece		
			W	C Min.	E Max.	L Max.						
22-16 509-3,260 [0.26-1.65]	.033 0.84	6 M3.5	.281	.250	.611	.749	Nickel	Orange	.140	321892		
			7.14	6.35	15.52	19.02	3.56					
		8	.281	.250	.611	.749	Nickel	Orange	.140	321893		
			7.14	6.35	15.52	19.02	3.56					
		M4	.312	.281	.637	.796	Nickel	Orange	.140	321897		
			7.92	7.14	16.18	20.22	3.56					
		10	.312	.281	.637	.796	Chromel	Gray	.140	1-321897-0		
			7.92	7.14	16.18	20.22	3.56					
		1/4	.033 0.84	10	.281	.250	.611	.749	Nickel	Orange	.140	321894
					7.14	6.35	15.52	19.02	3.56			
		M6	.312	.281	.637	.796	Nickel	Orange	.140	321898		
			7.92	7.14	16.18	20.22	3.56					
1/4	.033 0.84	M6	.312	.281	.637	.796	Alumel	Green	.140	1-321898-0		
			7.92	7.14	16.18	20.22	3.56					
1/4	.033 0.84	M6	.468	.437	.793	1.031	Nickel	Orange	.140	322320		
			11.89	11.10	20.14	26.19	3.56					

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

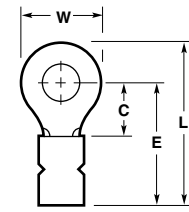
**Uninsulated Terminals and Splices** (Continued)

**DIAMOND GRIP**  
**High Temperature**  
**Ring Tongue Terminals**

**Temperature Rating and Material**

**Terminal Body** — See table, 1200°F [649°C], Nickel per ASTM B162, Alumel —, Chromel —

**Metallic Sleeve** — Nickel Silver per ASTM B122



Insulation Support

**Related Product Data**

**Application Tooling** — pages 10-21 and 10-22

Wire Size Circular Mills [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions				Body Material	Sleeve Color Code	Wire Insulation Diameter Max	Part Number Loose Piece
			W	C Min.	E Max.	L Max.				
16-14 2,050-5,180 [1.04-2.62]	.033 0.84	8 M4	.343 8.71	.281 7.14	.637 16.18	.811 20.60	Nickel	Orange	.170 4.32	322337
		10	.343 8.71	.281 7.14	.637 16.18	.811 20.60	Nickel	Orange	.170 4.32	322338
12-10 5,180-13,100 [2.62-6.64]	.042 1.07	8 M4	.375 9.53	.281 7.14	.815 20.70	1.008 25.60	Nickel	Orange	.230 5.84	323749
			.375 9.53	.281 7.14	.815 20.70	1.008 25.60	Chromel	Gray	.230 5.84	2-323749-1
		10	.375 9.53	.281 7.14	.815 20.70	1.008 25.60	Nickel	Orange	.230 5.84	323750
			.375 9.53	.281 7.14	.815 20.70	1.008 25.60	Alumel	Green	.230 5.84	2-323750-1
1/4 M6	.531 13.49	.468 11.89	1.002 25.45	1.273 32.33	Nickel	Orange	.230 5.84	323751		

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.



**PIDG Terminals and Splices for Thin Wall Cables**

**Product Facts**

- All high and low temperature PIDG STRATO-THERM Terminals and Splices conform to BS 2G 178 — crimped joints for aircraft cables and wires — and meets the requirements of BS G 204, class II
- Temperature Range — -67° to +221°/+302°F [-55° to +105°/+150°C]
- European military & civil program cross references available, i.e. Pannavia, Eurofighter, Concorde, Airbus and other customer platforms

**Low Temperature Range**

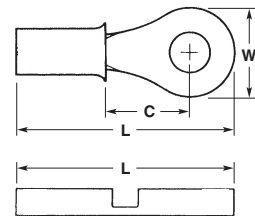
**Related Product Data**

Application Tooling — pages 10-21 and 10-22

- 302°F [150°C] — High temperature
  - D.D.P. No.: GP 10 D
  - Nickel plating over copper barrel PTFE sleeve
  - Not tested up to 190°C and 260°C as set out in BS 2G 178
- 221°F [105°C] — Low temperature
  - D.D.P. No.: GP 17
  - Tin plating over copper barrel
  - Nylon sleeve
  - Compatible with all BS 2G 178 fluids, except BS 3150 and BS M 26
- Dot code feature for additional visual verification of correct cavity to terminal

- association after crimp possible
- Instruction Sheet — 408-1049
- Insulated sleeves are color coded for easy identification
- Used for thin wall cable with tin or nickel plated conductors
- Nickel plated Terminals and Splices are not recommended to crimp with silver plated conductors. Gold plating is recommended for silver plated conductors.
- Inner serrated wire barrel for improved electrical conductivity and high tensile strength

The special PIDG STRATO-THERM Terminal & Splice line for thin wall aircraft cables and wires is used in nearly every Aerospace & Defense platform in Europe. We do offer this line in a low temperature 221°F [105°C] and high temperature 302°F [150°C] profile.



Wire Size	Stud Size			Dimensions (Max.)			Color Code	Wire Insulation Outside Dia.	Part Number	
	+/- .03 [+/- 0.8]	Metric	BA #	UN #	W	L				C
22-24	.119 3.02	M2.5	6	4	.281 7.14	.780 19.80	.25 6.35	Black	.035-.075 0.90-1.90	151438
					.218 5.54	.746 18.94	.265 6.73			151458
					.218 5.54	.652 16.56	.166 4.22			151437
					.281 7.14	.780 19.80	.25 6.35			151439
					.281 7.14	.780 19.80	.25 6.35			151440
20	.171 4.34	M4	3	8	.281 7.14	.780 19.80	.25 6.35	Purple	.043-.079 1.10-2.00	151441
	.197 5.00	—	2	10	.281 7.14	.780 19.80	.25 6.35			152899
	.093 2.36	M2	8	2	.218 5.54	.662 16.81	.166 4.22			152898
	.122 3.10	M2.5	6	4	.218 5.54	.662 16.81	.166 4.22			154924
	.119 3.02	M2.5	6	4	.240 6.09	.882 22.40	.36 9.14			152895
	.148 3.76	M3	4	6	.281 7.14	.787 20.00	.25 6.35			152896
	.145 3.68	M3	4	6	.250 6.35	.882 22.40	.36 9.14			152897
	.148 3.76	M3	4	6	.218 5.54	.662 16.81	.166 4.22			152894
	.171 4.34	M4	3	8	.281 7.14	.787 20.00	.26 6.60			152893
					.312 7.92	.834 21.18	.291 7.39			152891
	.200 5.08	—	2	10	.312 7.92	.834 21.18	.291 7.39			152892
	.199 5.06	—	2	10	.281 7.14	.787 20.00	.26 6.60			152890
	.268 6.81	M6	0	1/4	.469 11.91	1.07 27.13	.447 11.35			152889
	.331 8.41	M8	5/15	5/16	.469 11.91	1.07 27.13	.447 11.35			152888
	.393 9.98	M9.5	3/8	3/8	.469 11.91	1.07 27.13	.447 11.35			

**10**

Terminals and Splices

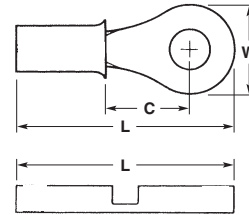
**PIDG Terminals and Splices for Thin Wall Cables** (Continued)

**Low Temperature Range**

(Continued)

**Related Product Data**

Application Tooling — page 10-22



Wire Size	Stud Size				Dimensions (Max.)			Color Code	Wire Insulation Outside Dia.	Part Number	
	+/- .03 [ +/- 0.8]	Metric	BA #	UN #	W	L	C				
18-16	.122 3.10	M2.5	6	4	.218 5.54	.680 17.27	.166 4.22	Orange	.055-.106 1.40-2.70	152887	
	.125 3.18	M2.5	6	4	.240 6.09	.90 22.86	.360 9.14			154927	
	.145 3.68	M3	4	6	.281 7.14	.805 20.44	.26 6.60			152884	
					.132 3.35	.90 22.86	.37 9.39			152885	
	.171 4.34	M4	3	8	.218 5.54	.680 17.27	.166 4.22			152886	
					.312 7.92	.852 21.64	.291 7.39			152882	
	.197 5.00	—	2	10	.281 7.14	.805 20.44	.26 6.60			152883	
					.312 7.92	.852 21.64	.291 7.39			152880	
	.265 6.73	M6	0	1/4	.469 11.91	1.09 27.58	.447 11.35			152881	
	.328 8.33	M8	5/16	5/16	.469 11.91	1.09 27.58	.447 11.35			152879	
	.390 9.90	M9.5	3/8	3/8	.531 13.48	1.23 31.14	.556 14.12			152878	
	14-12	.199 3.02	M2.5	6	4	.240 6.09	.974 24.73			.447 11.35	152877
						.250 6.35	.711 18.05			.181 4.59	154930
		.145 3.68	M3	4	6	.343 8.71	.867 22.02			.291 7.39	152876
.250 6.35						.711 18.05	.181 4.59	152874			
.171 4.34		M4	3	8	.343 8.71	.867 22.02	.291 7.39	152875			
.197 5.00		—	2	10	.343 8.71	.867 22.02	.291 7.39	152873			
.265 6.73	M6	0	1/4	.469 11.91	1.09 27.58	.447 11.35	152872				
.328 8.33	M8	5/16	5/16	.469 11.91	1.09 27.58	.447 11.35	152871				
.390 9.90	M9.5	3/8	3/8	.531 13.48	1.22 31.04	.556 14.12	152870				
							152869				

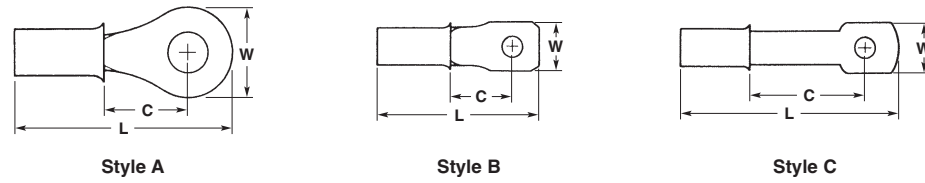
**Splices**

Wire Size	Stud Size				Dimensions (Max.)			Color Code	Wire Insulation Outside Dia.	Part Number
	+/- .03 [ +/- 0.8]	Metric	BA #	UN #	W	L	C			
24-22	—	—	—	—	—	1.125 28.58	—	Black	.035-.075 0.90-1.90	153400
20	—	—	—	—	—	1.135 28.82	—	Purple	.043-.079 1.10-2.00	153401
18-16	—	—	—	—	—	.996 25.30	—	Orange	.055-.106 1.40-2.70	153402
14-12	—	—	—	—	—	.996 25.30	—	White	.091-.126 2.30-3.20	153403

**PIDG Ring Tongue Terminals for Thin Wall Cables**

**High Temperature Range**

Related Product Data  
Application Tooling — page 10-22



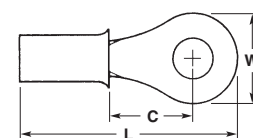
Wire Size	Stud Size			Dimensions (Max.)			Color Code	Wire Insulation Outside Dia.	Style	Part Number	
	+/- .03 [+/- 0.8]	Metric	BA #	UN #	W	L					C
22-24	.119 3.02	M2.5	6	4	.218	.657	.166	Brown	.035-.075 0.90-1.90	A	152642
					5.54	16.68	4.22				152644
					.281	.787	.25				152648
	7.14	19.98	6.35								
	.218	.751	.25								
	5.54	19.08	6.35								
20	.145 3.68	M3	4	6	.218	.657	.166	Grey	.043-.079 1.10-2.00	A	152643
					5.54	16.68	4.22				152645
					.281	.787	.25				152646
	7.14	19.98	6.35								
	.171	.787	.25								
	4.34	19.98	6.35								
18-16	.197 5.00	—	2	10	.281	.787	.244	Orange	.055-.106 1.40-2.70	A	152647
					7.14	20.0	6.20				
	.093 2.36	M2	8	2	.218	.680	.166				152660
					5.54	17.27	4.22				152654
	.122 3.10	M2.5	6	4	.281	.787	.26				152659
					7.14	19.98	6.60				152655
	.148 3.76	M3	4	6	.218	.680	.166				152658
					5.54	17.27	4.22				152656
	.171 4.34	M4	3	8	.281	.787	.26				152657
					7.14	19.98	6.60				152661
.199 5.06	—	2	10	.268	1.08	.447	152662				
				6.81	27.58	11.35	152663				
.331 8.41	M8	5/16	5/16	.469	1.08	.447					
				11.91	27.58	11.35					
.393 9.98	M9.5	3/8	3/8	.469	1.08	.447					
				11.91	27.58	11.35					
.122 3.10	M2.5	6	4	.218	.746	.26	B	153493			
				5.54	18.94	6.60					
.122 3.10	M3	6	4	.218	.681	.166		153103			
				5.54	17.30	4.22					
.145 3.68	M3	4	6	.281	.807	.26		153104			
				7.10	20.50	6.60					
.171 4.34	M4	3	8	.312	.854	.291		153105			
				7.92	21.70	7.39					
.197 5.00	—	2	10	.312	.854	.291	A	153106			
				7.92	21.70	7.39					
.265 6.73	M6	0	1/4	.469	1.09	.447		153107			
				11.91	27.70	11.35					
.328 8.33	M8	5/16	5/16	.469	1.09	.447		153108			
				11.91	27.70	11.35					
.390 9.90	M9.5	3/8	3/8	.531	1.21	.531		153109			
				13.48	30.79	13.48					
.125 3.17	—	—	—	.223	.902	.359	C	153475			
				5.66	22.90	9.11					

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 Terminals and Splices

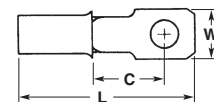
**PIDG Ring Tongue Terminals for Thin Wall Cables** (Continued)

**High Temperature Range**  
(Continued)

**Related Product Data**  
Application Tooling — page 10-22



Style A



Style D

Wire Size	Stud Size			Dimensions (Max.)			Color Code	Wire Insulation Outside Dia.	Style	Part Number	
	+/- .03 [+/- 0.8]	Metric	BA #	UN #	W	L					C
14-12	.119 3.02	M2.5	6	4	.25 6.35	.711 18.06	.181 4.59	White	.091-.126 2.30-3.20	A	153110
	.145 3.68	M3	4	6	.25 6.35	.711 18.06	.181 4.59				153111
	.171 4.34	M4	3	8	.343 8.71	.867 22.02	.291 7.39				153112
	.197 5.00	—	2	10	.343 8.71	.867 22.02	.291 7.39				153113
	.265 6.73	M6	0	1/4	.469 11.91	1.08 27.58	.448 11.39				153114
	.328 8.33	M8	5/16	5/16	.469 11.91	1.08 27.58	.448 11.39				153115
	.390 9.90	M9.5	3/8	3/8	.531 13.48	1.21 30.76	.531 13.48				153116
	.119 3.02	M2.5	6	4	.218 5.44	.798 20.26	.291 7.39				D
10	.119 3.02	M2.5	6	4	.280 7.10	.937 23.79	.213 5.40	Black	.102-.150 2.60-3.80	A	50844
	.145 3.68	M3	4	6	.374 9.50	1.08 27.50	.295 7.50				50845
	.171 4.34	M4	3	8	.374 9.50	1.08 27.50	.295 7.50				50845-1
	.197 5.00	—	2	10	.374 9.50	1.08 27.50	.295 7.50				50845-2
	.265 6.73	M6	0	1/4	.531 13.48	1.28 32.51	.429 10.90				50846
	.328 8.33	M8	5/16	5/16	.531 13.48	1.33 33.70	.461 11.70				50847
	.390 9.90	M9.5	3/8	3/8	.593 15.06	1.40 35.68	.531 13.48				50848

NSA936501	Part Number PEEK	Color	Size	PTFE Equivalent	Hand Tool	NSA936501	Part Number PEEK	Color	Size	PTFE Equivalent	Hand Tool	
TA 2201	1577616-1	Brown	24-22	152642	AWG 24 and AWG 22 576778	TA 1601	1577630-1	Orange	18-16	153103	AWG 18 576780 AWG 16 576781	
TA 2202	1577617-1	Brown	24-22	152643		TA 1602	1577631-1	Orange	18-16	153104		
TA 2203	1577618-1	Brown	24-22	152644		TA 1603	1577632-1	Orange	18-16	153105		
TA 2204	1577619-1	Brown	24-22	152645		TA 1604	1577633-1	Orange	18-16	153106		
TA 2205	1577620-1	Brown	24-22	152646		TA 1605	1577634-1	Orange	18-16	153107		
TA 2206	1577621-1	Brown	24-22	152647		TA 1606	1577635-1	Orange	18-16	153108		
TA 2001	1577622-1	Grey	20	152654	AWG 20 576779	TA 1607	1577636-1	Orange	18-16	153109	AWG 14 576782 AWG 12 576783	
TA 2003	1577623-1	Grey	20	152656		TA 1401	1577637-1	Beige	14-12	153110		
TA 2004	1577624-1	Grey	20	152657		TA 1402	1577638-1	Beige	14-12	153111		
TA 2005	1577625-1	Grey	20	152658		TA 1403	1577639-1	Beige	14-12	153112		
TA 2006	1577626-1	Grey	20	152659		TA 1404	1577640-1	Beige	14-12	153113		
TA 2008	1577627-1	Grey	20	152661		TA 1405	1577641-1	Beige	14-12	153114		
TA 2009	1577628-1	Grey	20	152662		TA 1406	1577642-1	Beige	14-12	153115		
TA 2010	1577629-1	Grey	20	152663		TA 1407	1577643-1	Beige	14-12	153116		
						TA 1001	1577644-1	Black	10	50844		AWG 10 576784
						TA 1002	1577645-1	Black	10	50845		
					TA 1003	1577646-1	Black	10	50845-1			
					TA 1004	1577647-1	Black	10	134265-1			
					TA 1005	1577648-1	Black	10	50846			
					TA 1006	1577649-1	Black	10	50847			
					TA 1007	1577650-1	Black	10	50848			

**Application Tooling**

**Wire Size Range  
AWG 26-10**

Product Type	Wire Size	Hand Tools	Pneumatic Tooling	Tooling For Tape Mounted Products
			Dies for 626 Pneumatic Tools 189721-[ ] and 189722-[ ] require Straight Action Adapter <sup>1</sup> 217200-1 or "C" Head Adapter 318161-1 Dies also fit 69710-1 Hand Tool	Dies for 69875 AMP-TAPETRONIC AMP-O-LECTRIC <sup>2</sup> Requires Applicator AMPOMATOR CLS IV <sup>2</sup> Requires Applicators
Pre-Insulated Terminals	26-24	69692-1	69731	—
	22-20		69732	69936
	18-16	69693-1	69733	69937
	14		69734	—
Pre-Insulated Splices	12-10	—	69735	—
	22-20	—	69327	—
	18-16	—	69328	—
	14-12	—	69329	—

<sup>1</sup> Straight Action Adapter 217200-1 is used with Tools 189721-1 or 189722-1. "C" Head Adapter 318161-1 is used with Tools 189721-2 or 189722-2. Both adapters require the use of non-ratchet tool holder 189928-1 or ratchet tool holder 356304-1.

<sup>2</sup> Call Technical Support for Machine and Applicator part numbers.

**Wire Size Range  
AWG 26-6**

Product Type	Wire Size	Hand Tools	Hydraulic Tools With Interchangeable Dies
			1752868-1 <sup>2</sup> "C" Head
Post Insulated Terminals and Splices	26-24	45730	—
	22-20	46467, 46468 <sup>1</sup>	—
	18-16	46468	—
	8	—	69216
	6	—	69217

<sup>1</sup> Part Number 55235-1 only

<sup>2</sup> These crimping heads are recommended for use only with AMP Hydraulic Foot Pump 1583659-1, Hydraulic Hand Pump 1583661-1, DYNA-CRIMP Hydraulic Power Units 1804700-1 (115 VAC) and 1804700-2 (230 VAC).

**Wire Size Range  
AWG 22-10**

Product Type	Wire Size	Hand Tools	Pneumatic Tooling	Tooling For Tape Mounted Products
			Crimping Heads for 626 Pneumatic Tool 189721-1 and 189722-1 <sup>1</sup>	Dies for 69875 AMP-TAPETRONIC AMP-O-LECTRIC <sup>2</sup> Requires Applicator AMPOMATOR CLS IV <sup>2</sup> Requires Applicators
Uninsulated Terminals and Splices with Insulation Support	22-16	46673 46673-1	—	69930
	16-14	46988 59294	—	69931
	12-10	59461	904870-1	69932
Uninsulated Terminals and Splices with Non-Insulation Support	22-16	—	—	69954
	16-14	46447	217206-1	69955
	12-10	—	—	69956

<sup>1</sup> Crimping Heads require the use of non-ratchet tool holder 189767-1 or ratchet tool holder 356302-1.

<sup>2</sup> Call Technical Support for Machine and Applicator part numbers.

**10**

Terminals and Splices

**Application Tooling** (Continued)

**Wire Size Range  
AWG 8-1/0**

Product Type	Wire Size	Hand Tools	Pneumatic Tooling	Hydraulic Tools With Self Contained Dies		Hydraulic Tools with Interchangeable Dies		
			69015 Head	Hand Tool	Latch Head	Hand Tools 1490748-1 and 1490749-1 or Hydraulic Heads 1490745-1, 1490746-1, and 1976230-1 Nest      Indent	1752868-1 "C" Head	
Uninsulated Terminals and Splices with Non-Insulation Support	8	69355 <sup>1</sup>	49956			1490413-1	1490414-1	69216
	6	—	48172	59975-1	1673672-1	1490413-2		69217
	4	—	48173			1490413-3	1490414-2	69218
	2	—	48174			1490413-4		45433
	1/0	—	48183			1490413-5	1490414-3	45436

<sup>1</sup> CERTI-CRIMP Hand Tool.

<sup>2</sup> These crimping heads are recommended for use only with AMP Hydraulic Hand Pump 1583661-1 and Hydraulic Foot Pump 1583659-1, DYNA-CRIMP Hydraulic Power Units 1804700-1 (115 VAC) and 1804700-2 (230 VAC).

**Tooling for Insulated Terminals**

In order to obtain the best results from AMP terminals and splices, it is important to choose the correct tooling. Each terminal manufactured is matched to a compatible tool. By using

the guidelines, it's easy to select the correct tool for your application. Different types of tooling are available including hand, pneumatic, or hydraulic. So whether you are involved

in large production runs or just maintenance and repair there is a matched tool ideal for your application.



Heavy Head Tool

**Hand Tooling**

For repair, general maintenance or small production runs, hand tooling is the best way to a reliable termination. Easy to use, requiring no external power source, they can be easily carried from job to job. Precision crimp dies ensure a perfect termination.

AMP hand tooling meets all these requirements and more. Our un-surpassed expertise in connection technology has been used to benefit our complete range of tooling. Take for example the CERTI-CRIMP hand tool. There is a CERTI-CRIMP tool available for each terminal range. Every precision die has been constructed to the

finest engineering standards and is strong enough to be used through thousands of crimp terminations. Our ratchet device provides that the crimp cycle is completed before releasing, so it is not either under, or over-crimp any terminal.

For larger terminals a heavy duty hand tool is available which also features a similar patented ratchet device.

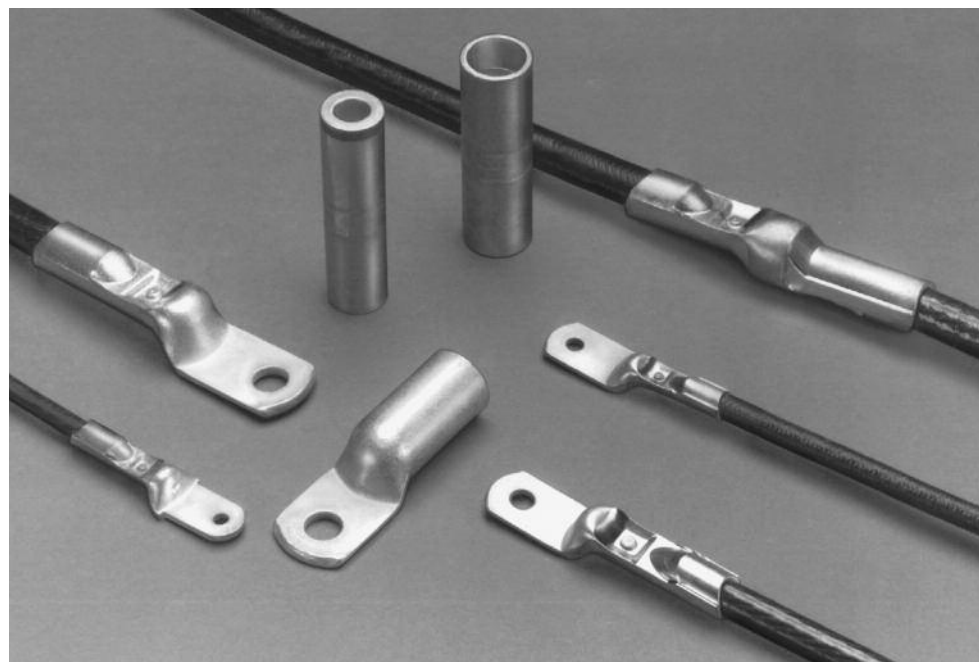
Terminal Type	Wire Size mm <sup>2</sup>	Single Die		
		AWG	Hand Tool	Dot Code
PIDG Terminals for Thin Wall Cables High and Low Temperature	0.25-0.4	24-22	576778	2 dots
	0.6	20	576779	1 dot
	1.0	18	576780	2 dots
	1.2	16	576781	1 dot
	2.0	14	576782	2 dots
	3.0	12	576783	1 dot
	6.0	10	576784	1 dot



**Introduction**

**Product Facts**

- No need for inhibitor agents, thanks to our “dry crimp” technique
- Terminating/splicing capabilities for stranded aluminum wire, plus splicing of aluminum wire to copper wire conductors
- Wide wire-size range — aluminum 8 to 4/0 [8.6 to 110.9 mm<sup>2</sup>] and copper 10 to 3/0 [4.8 to 85.9 mm<sup>2</sup>]
- Efficient production rates, uniform reliability, at low cost — all because of AMP electro-hydraulic DYNA-CRIMP Tooling
- Optimum electrical, environmental, and mechanical performance crimps from AMP three-stage dies
- Portable battery powered hydraulic unit is available and low pressure crimp dies for 2/0 size



**Technical Documents**

**Instruction Sheets**

- 408-2281 — Application Terminals and Splices Tooling
- 408-2453 — Tool 69066/Crimping Die
- 408-9535 — Tool 58422-1

**Product Specifications**

- 108-11011 — Overall Aluminum Wires
- 108-11011-1 — Copper Wires
- 108-11011-2 — High Temp. Wires with Flag Terminals

**Application Specifications**

114-2134

AMP COPALUM Sealed Terminals and Splices are designed especially for solving the inherent problems of terminating aluminum conductors. These connectors are terminated to stranded aluminum wire using a “dry crimp.” This technique eliminates the need for an inhibitor agent to break down the highly tenacious and inert oxides that form on aluminum conductors. An extremely efficient and reliable crimping method, the dry crimp also produces a sealed connection that better prevents re-oxidation and corrosion when intimate terminal/conductor contact is achieved.

AMP COPALUM Sealed Terminals and Splices are available for terminating and splicing stranded aluminum wire in sizes ranging from 8 to 4/0 [8.6 to 110.9 mm<sup>2</sup>] and copper 10 to 3/0 [4.8 to 85.9 mm<sup>2</sup>]. With the capability of splicing aluminum wire to copper wire, these connectors are generally applicable wherever aluminum wire or cable is

used. AMP COPALUM Sealed Terminals and Splices are especially suited for the aerospace industry.

Each connector body is constructed of tin-plated copper and houses a nickel-plated brass insert and funnel. The funnel is designed to better prevent wire strands from hanging up when inserted into the wire barrel. The perforated insert enhances reliability for the terminal and splice when crimped to the aluminum/copper conductors.

During the crimping operation, the relatively soft conductor material extrudes through the insert holes, causing the brittle oxide to be sheared, and clean conductor metal to be brought into intimate contact with the inner surfaces of the body and insert. These areas of extrusion form an air- and moisture-tight seal, minimizing oxidation and corrosion.

Stranded-wire crimping also produces “cold welding” or solid-phase bonding

between each wire strand. During the crimping process, deformation pressure is applied from several planes, causing sufficient plastic flow of the conductor material. This fractures the oxide film on each wire strand and induces different rates of extrusion. The resulting wiping action under pressure produces interstrand bonding, yielding many contact surfaces and a substantial increase in the contact area. Excellent electrical characteristics are thus achieved.

The increase in contact area also decreases the chances of electrical malfunction due to creep, differences in thermal expansion, and corrosion. Also the insert grips the conductor securely, providing a good mechanical connection.

Economical termination of these connectors becomes a reality with the use of the AMP electro-hydraulic DYNA-CRIMP Tool. This tool is equipped with a uniquely designed die that simultaneously produces three distinct crimps.

**10**

Terminals and Splices

**Introduction** (Continued)**Product Evolution**

The AMP Sealed COPALUM terminal and splice product line was established in the 1950's. Originally it had two separate product lines, one for aluminum wire and one for copper wire. Each line had butt connectors and terminals.

The Aluminum wire connector bodies were made of stamped and formed aluminum strip stock and COPALUM terminal connector bodies were made of stamped and formed copper strip stock.

Both products contained a closed cup (cartridge) installed within each wire barrel. This cartridge contained an oxide inhibiting compound with abrasive particles that flowed during crimping into the strand voids (interstices) and mechanically abraded the wire and barrel oxide surfaces. The oxide inhibitor protected the contact surfaces from further oxidation and formed a temporary partial seal between the conductor and the crimped insulation support.

The crimp dies were the two stage type and of the confined crescent design. The first stage crimped the wire barrel and cartridge, while the second stage crimped only the flared cartridge end. This second stage crimp produced the insulation support which was designed as a strain relief.

In the 60's, all copper bodies and perforated inserts were introduced. The industry wanted a dry crimp with a fully sealed body. Some important advantages of the copper design are:

1. Almost all buss contacts are copper. The plated terminal tongue needs no special contact surface treatment against the bolted copper buss. This is the (dynamic), disconnectable part of the connection.
2. The copper wire barrel allows for a natural two step down capacity from an equivalent aluminum wire to copper wire.  
Example—#4 aluminum down to #6 copper.
3. The more dense copper has 100% electrical conductivity compared to aluminum at 61% maximum. Copper compared to aluminum has hardly any mechanical creep; therefore, with the proper crimp, it provides a much more stable crimped (static), permanently sealed connection.
4. Within the circuit design there is always a need to change from high temperature copper wires to lower temperature aluminum wires. With the copper connector, we have the choices of "optional" (4 AL-6 CU) or "primary" (4 AL-4 AL) or "secondary" (6 CU-6CU) all within the same wire barrel and crimp die envelope.
5. During crimping, the hard nickel plated perforated insert digs into and intimately connects the wire and copper body while at the same time increasing the fresh surface contact areas via the holes and extrusion. With this feature, we now have a preferred "dry" connection with the copper to aluminum transition occurring inside the connector body where it is protected and controlled.
6. The barrier walls of the terminal and splice body provide the blind hole required for an environmentally-sealed crimp.
7. The product has a three stage simultaneous crimp design which allows for a very secure electrical crimp, a smooth transition crimp which goes up to the full round sealing crimp. It also has an identification feature and maintains maximum connector wall thickness after crimp.

We made several changes to the product line in the 80's and also changed the part numbers as listed below.

1. The perforated insert was modified without causing a change in connector performance.
2. The internal components were oriented and permanently locked in place during manufacture.
3. Clearer, more permanent marking was introduced with the straight knurl stripes replacing the blue ink stripe guides used to show crimp location.

TE Connectivity continually monitors incoming material for material conformance. Consolidation of production facilities and improved equipment produce more accurate component parts which, after heat treatment and plating, yield an overall higher quality assembly. All customer drawings are now on new formats and are on CAD. Catalog and instructional materials are regularly updated.

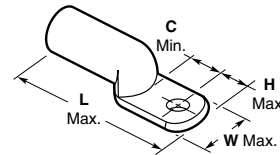
In April 1993, a new application sheet 114-2134 was completed. Also in 1993, we released a whole line of two stud hole terminals, silver plated with high temperature terminals, two 4/O AL style terminals, a new crimp die, and various sheared tongue styles.

Using engineering tools like CAE/CAD/CAM, thermography, and computer driven image analysis on crimp cross-sections, we are able to arrive at and maintain optimum product integrity and reliability.

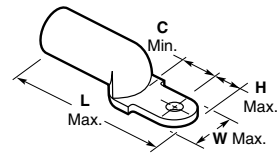
As with all AMP products, we have a continuing program of product and process improvements to promote maximum performance to meet customer's needs.

Single Hole Ring Tongue Terminals

Standard Tongue



Sheared Tongue



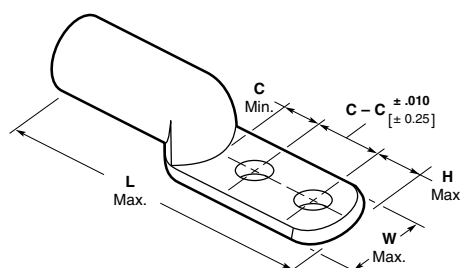
Wire Size Circular Mils mm <sup>2</sup>		Insul. Dia. Range	Tongue Thickness (Nom.)	Stud Size	Tongue Type	Dimensions				Part Number	Weight Grams*	Tooling for Power Unit 1804700-1 or -2	
Aluminum	Copper					H Max.	L Max.	W Max.	C Min.			Heads	Die
8 16564 8.6	10 9354 4.8	.182-200 4.62-5.08	.069 1.75	10	—	.291 7.39	1.66 42.16	.592 15.04	.50 12.70	277147-1	11.0	1752877-1 or 1752787-1	68006
				1/4 6.35						277147-3	—		
				3/8 9.52						277147-2	10.0		
				10						Sheared	.250 6.35		
6 28280 14.6	8 16983 8.8	.225-250 5.72-6.35	.088 2.24	10	—	.310 7.88	1.90 48.26	.627 15.92	.47 11.94	277148-1	16.8	1752877-1 or 1752787-1	68007
				1/4 6.35						277148-2	16.6		
				5/16 7.92						277148-3	16.2		
				3/8 9.52						277148-4	15.3		
4 42420 21.9	6 26818 13.8	.276-305 7.01-7.75	.082 2.08	10	—	.310 7.88	2.00 50.8	.627 15.92	.53 13.46	277154-1	15.2	1752877-1 or 1752787-1	68008
				1/4 6.35						277148-7	15.0		
				3/8 9.52						277149-5	—		
				1/4 6.35						277149-2	19.4		
2 67872 35.0	4 42615 22.0	.340-380 8.64-9.65	.093 2.36	8	—	.310 7.88	2.00 50.8	.627 15.92	.53 13.46	277149-3	18.9	1752877-1 or 1752787-1	68009
				1/4 6.35						277149-4	18.5		
				3/8 9.52						277149-8	18.5		
				1/4 6.35						277150-1	36.0		
1/0 107464 55.5	2 66500 34.3	.425-470 10.79-11.94	.101 2.57	3/8 9.52	Short	.401 10.19	2.51 63.75	.812 20.62	.49 12.45	277150-3	34.0	1752877-1 or 1752787-1	68010-1
				1/4 6.35						277155-1	33.5		
				5/16 7.92						277151-3	—		
				1/4 6.35						277151-1	53.3		
2/0 138168 71.3	1/0 104500 53.9	.500-550 12.7-13.97	.128 3.25	1/4 6.35	Long	.448 11.38	2.73 69.34	.812 20.62	.72 18.29	277151-7	—	1752877-1 or 1752787-1	314964-1 or 68011-1
				3/8 9.52						277151-5	57.0		
				5/16 7.92						277152-1	—		
				1/4 6.35						277152-2	76.3		
3/0 168872 87.2	2/0 133000 68.6	.520-645 13.21-16.38	.132 3.35	3/8 9.52	Long	.451 11.46	3.05 77.47	.911 23.14	.51 12.95	277152-3	80.0	1752877-1 or 1752787-1	314964-1 or 68011-1
				1/2 12.7						277152-4	81.0		
				3/8 9.52						277152-5	78.0		
				3/8 9.52						Long (Narrow)	.430 10.93		
4/0 214928 110.94	3/0 166500 85.94	.590-680 14.99-17.27	.177 4.50	3/8 9.52	—	.440 11.18	3.21 81.53	1.00 25.4	.73 18.54	277153-1	103.0	1752787-1	59877-1
				1/2 12.7						55995-1 (55995-2) 184113-1	100 98.0		

\*Aluminum 8 to 2 = ±3 grams; aluminum 1/0 to 3/0 = ±5 grams

10

Terminals and Splices

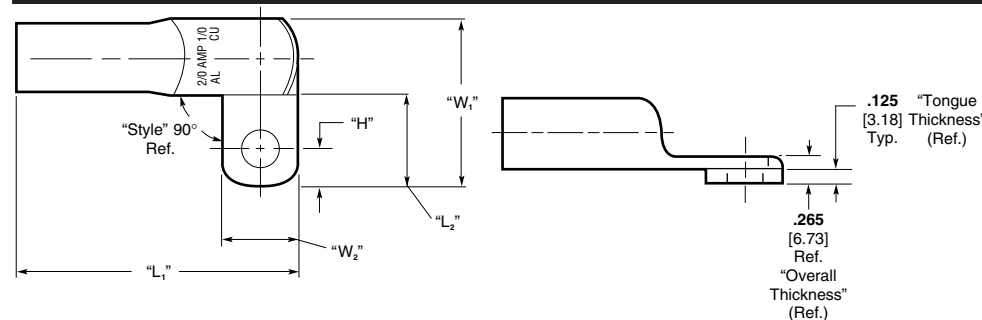
**Double Hole Ring Tongue Terminals**



Wire Size Circular Mils mm <sup>2</sup>		Insul. Dia. Range	Tongue Thickness (Nom.)	Stud Size	Tongue Type	Dimensions					Part Number	Weight Grams*	Tooling for Power Unit 1804700-1 or -2	
Aluminum	Copper					H Max.	L Max.	W Max.	C - C	C Min.			Heads	Die
6 28280 14.6	8 16983 8.8	.225-.250 5.72-6.35	.088 2.24	1/4 6.35	Two Hole	.38 9.65	2.89 73.41	.63 16.00	1.00 25.4	.44 11.18	55832-1 55832-2	24 23	1752877-1 or 1752787-1	68007
				3/8 9.52										
4 42420 21.9	6 26818 13.8	.276-.305 7.01-7.75	.082 2.08	1/4 6.35	Two Hole	.38 9.65	2.94 74.68	.63 16.00	1.00 25.4	.44 11.18	55833-1 (55834-1)	26 25	1752877-1 or 1752787-1	68008
				3/8 9.52										
2 67872 35.0	4 42615 22.0	.340-.380 8.64-9.65	.093 2.36	1/4 6.35	Two Hole	.38 9.65	3.27 83.06	.68 17.27	1.00 25.4	.44 11.18	55835-1 (55836-1)	44 43	1752877-1 or 1752787-1	68009
				3/8 9.52										
1/0 107464 55.5	2 66500 34.3	.425-.470 10.79-11.94	.101 2.57	3/8 9.52	Two Hole	.38 9.65	3.39 86.11	.81 20.57	1.00 25.4	.44 11.18	55837-1 (55838-1)	62	1752877-1 or 1752787-1	68010-1
2/0 138168 71.3	1/0 104500 53.9	.500-.550 12.7-13.97	.128 3.25	3/8 9.52	Two Hole	.38 9.65	3.66 92.96	.91 23.11	1.00 25.4	.44 11.18	55839-1 (55844-1)	91	1752877-1 or 1752787-1	314964-1 or 68011-1
3/0 168872 87.2	2/0 133000 68.6	.520-.645 13.21-16.38	.132 3.35	3/8 9.52	Two Hole	.38 9.65	3.82 97.03	1.00 25.4	1.00 25.4	.44 11.18	55840-1	113	1752787-1	59877-1
4/0 214928 110.94	3/0 166500 85.94	.590-.680 14.99-17.27	.177 4.50	3/8 9.52	Two Hole	.38 9.65	3.72 94.49	1.00 25.4	1.00 25.4	.44 11.18	(55841-1)	113	1752787-1	314948-1

Note: Part numbers with ( ) are silver plated, part numbers without are tin plated.  
\* Aluminum 8 to 2 = ±3 grams; aluminum 1/0 to 4/0 = ±5 grams.

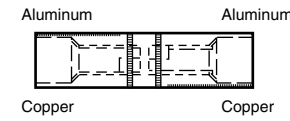
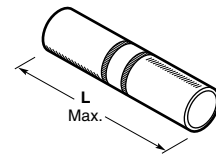
**Flag Terminals**



Wire Size Circular Mils mm <sup>2</sup>		Insul. Dia. Range	Tongue Thickness (Ref.)	Stud Size	Tongue Style	Dimensions					Part Number	Weight Grams*	Tooling for Power Unit 1804700-1 or -2	
Aluminum	Copper					H Max.	L <sub>2</sub> Max.	L <sub>2</sub> Min.	W <sub>1</sub> Max.	W <sub>2</sub> Max.			Heads	Die
2/0 138168 71.3	1/0 104500 53.9	.500-.550 12.7-13.97	.125 3.18	3/8 9.52	One Hole 90° Right Hand	.43 10.9	3.185 80.90	.970 24.64	1.870 47.50	.850 21.59	55982-1	109	1752877-1 or 1752787-1	314964-1 or 68011-1

\* Aluminum 8 to 2 = ±3 grams; aluminum 1/0 to 4/0 = ±5 grams.

**Standard Butt Splices**

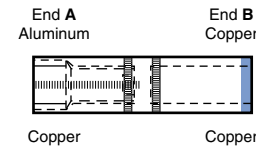
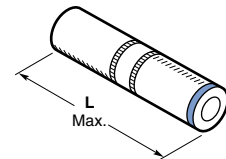


Wire Size* Circular Mills mm <sup>2</sup>		Insul. Dia. Range	L Max.	Part Number	Weight Grams**	Tooling for Power Unit 1804700-1 or -2	
Aluminum	Copper					Heads	Die
8 16564 8.6	10 9354 4.8	.182–.200 4.62–5.08	1.41 35.81	277156-1	10.2	1752877-1 or 1752787-1	68006
6 28280 14.6	8 16983 8.8	.225–.250 5.72–6.35	1.80 45.72	277157-1	16.9	1752877-1 or 1752787-1	68007
4 42420 21.9	6 26818 13.8	.276–.305 7.01–7.75	2.17 55.12	277158-1	26.8	1752877-1 or 1752787-1	68008
2 67872 35.0	4 42615 22.0	.340–.380 8.64–9.65	2.54 64.52	277159-1	50.3	1752877-1 or 1752787-1	68009
1/0 107464 55.5	2 66500 34.3	.425–.470 10.79–11.94	2.67 67.82	277160-1	76.0	1752877-1 or 1752787-1	68010-1
2/0 138168 71.3	1/0 104500 53.9	.500–.550 12.70–13.97	3.01 76.45	277161-1	107.7	1752877-1 or 1752787-1	68011-1 or 314964-1
3/0 168872 87.2	2/0 133000 68.6	.520–.645 13.21–16.38	3.26 82.80	277162-1	127.5	1752787-1	59877-1

\* For aluminum-to-aluminum applications, splices will accept the same wire size at either end. For aluminum-to-copper applications, however, the size of the copper wire must be "stepped down" two wire sizes to compensate for differences in the electrical ratings of copper and aluminum.

\*\* Aluminum 8 to 2 = ±3 grams; aluminum 1/0 to 3/0 = ±5 grams

**Transitional Butt Splices**



Wire Size Circular Mills mm <sup>2</sup>		Insul. Dia. Range		L Max.	Part Numbers	Weight Grams*	Tooling for Power Unit 1804700-1 or -2	
End A	End B	End A	End B				Heads	Die
6 28280 14.6	6 26818 13.8	.225–.250 5.72–6.35	.225–.250 5.72–6.35	1.80 45.72	55984-1**	16	1752877-1 or 1752787-1	68007
4 42420 21.9	8 16983 8.8	.276–.305 7.01–7.75	.210–.255 5.33–6.48	1.91 48.51	277164-1	26.5	1752877-1 or 1752787-1	68008
4 42420 21.9	4 42615 22.0	.276–.305 7.01–7.75	.276–.305 7.01–7.75	2.17 55.12	277165-1**	26.0	1752877-1 or 1752787-1	68008
1/0 107464 55.5	4 42615 22.0	.425–.470 10.80–11.94	.276–.305 7.01–7.75	2.70 68.58	277163-1	92.5	1752877-1 or 1752787-1	68010-1
3/0 168872 87.2	1/0 104500 53.9	.520–.645 13.21–16.38	.430–.495 10.92–12.57	3.26 82.80	277168-1	128.5	1752787-1	59877-1

\* ±10 grams

\*\* Transitional splice test amperage is for aluminum wire.

10
 Terminals and Splices



**Application Tooling**

The AMP COPALUM Sealed Terminals and Splices are designed to be terminated with precision die sets, crimping heads, and hydraulic power units. The die set to use will depend on the conductor material size to be terminated. Both crimping heads can be used for the smaller conductor sizes. The largest conductor sizes will require the use of the heavier head. Hydraulic power can be provided by either the Electric/Hydraulic Power Unit or the Hydraulic Foot Pump.



**Crimping Head  
1752787-1**  
(408-8914)



**Crimping Head  
1752877-1**  
(408-8956)



**Typical Die Set**  
(408-2281)

**DYNA-CRIMP Electric-Hydraulic Power Unit**

The DYNA-CRIMP Power Unit is an electric hydraulic tool. It can accommodate various heads and dies for terminating AMP terminals and splices ranging in size from 8 to 1500 MCM. A complete accessory line is also available with the tool for use in portable and stationary applications as well as for multiple-head crimping.



**DYNA-CRIMP Electric-Hydraulic Power Unit**  
(Includes Pressure Release)

**115 Volts (60 Hz) — 1804700-1**  
**230 Volts (50/60 Hz) — 1804700-2**  
(409-10081)



**Hydraulic Hand Pump**  
1583661-1



**Hydraulic Foot Pump**  
1583659-1

Use with Hose Assembly 1583662-[ ]

Wire Size AWG		Crimp Tool Components		
Aluminum	Copper	Die Sets	Heads	Power Units
8	10	68006		
6	8	68007		
4	6	68008		
2	4	68009	1752877-1*	1804700-1
1/0	2	68010-1	or 1752787-1**	1804700-2
2/0	1/0	68011-1		or 1583659-1
		314964-1		
3/0	2/0	59877-1		
4/0	3/0	314948-1		

\*For aluminum conductor range of 8 through 1/0 and copper conductor range of 10 through 2.  
\*\*For aluminum conductor range of 8 through 4/0 and copper conductor range of 10 through 3/0.  
\*\*\*Portable—low pressure crimp die.

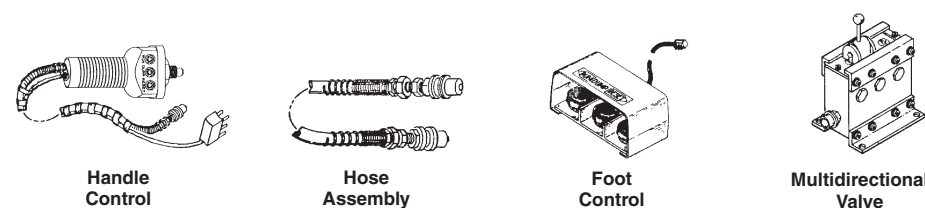
**Accessory Power Controls and Hoses For DYNA-CRIMP Electric-Hydraulic Power Unit**

Consult the table to the right for accessory power controls and hoses. Control and hose accessories must be ordered separately.

If electric hydraulic tool is to be used in portable applications, a handle control and hose assembly should be used.

For stationary applications, a foot switch assembly and hose assembly will be necessary.

Multidirectional valves are used when more than one crimping head is permanently attached to the tool.



For use with Power Unit No.	Accessory Description	Accessory Part Number	Remarks
1804700-1 1804700-2	7 ft. [2.13 m] Handle Control Assembly — Hose and Cord	1901775-1	Pressure Release included with handle control
	15 ft. [4.57 m] Handle Control Assembly — Hose and Cord	1901776-1	
	21 ft. [6.4 m] Handle Control Assembly — Hose and Cord	1901777-1	
1804700-1 1804700-2	15 ft. [4.57 m] Foot Switch Assembly	68284-1	Needs Hose Assembly
	6 ft. [1.83 m] Hose Assembly	1583662-1	68284-1 Foot Switch or Foot Pump Assembly needed with these Hose Assemblies
	10 ft. [3.05 m] Hose Assembly	1583662-2	
20 ft. [6.10 m] Hose Assembly	1583662-3		
1804700-1 1804700-2	3-Way Multi-Directional Valve	1901782-1	For use with Foot Switch only
	3-Way Multi-Directional Valve (Elec. Control)	1901783-1	

[www.tooling.tycoelectronics.com](http://www.tooling.tycoelectronics.com)  
[www.tooling.tycoelectronics.com/europe](http://www.tooling.tycoelectronics.com/europe)



**Introduction**

**Product Facts**

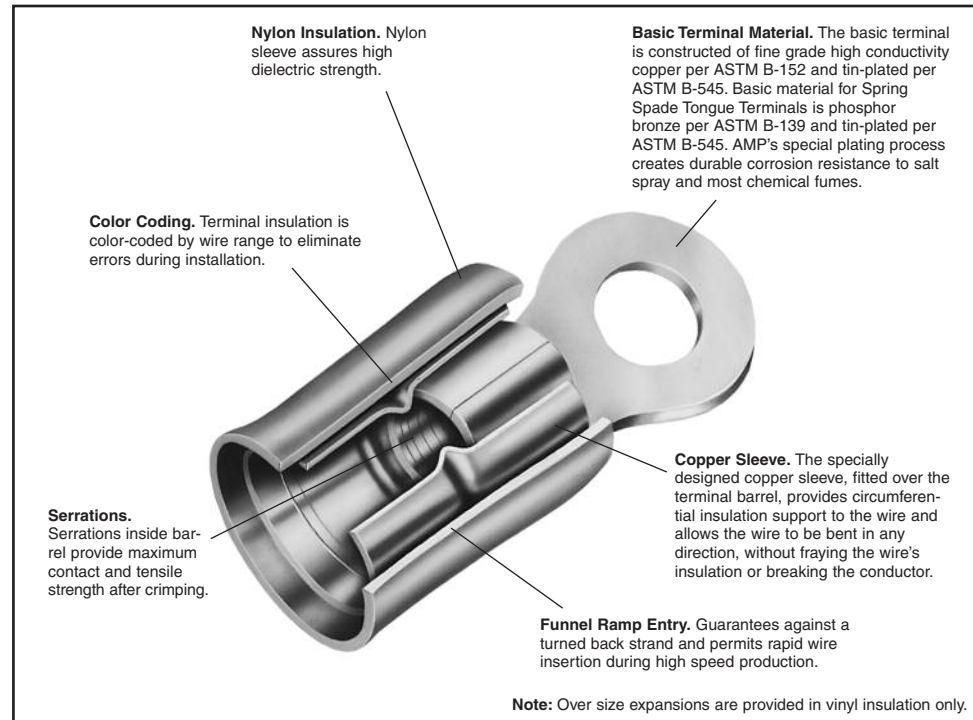
- Pre-insulated terminal designed for complete and uniform reliability in difficult circuit environments
- PIDG Terminals consist of tin plated copper or tin plated phosphor bronze body for spring spades with a copper sleeve and insulation sleeve fitted over terminal barrel
- Design of the tool dies and construction of the terminal ensures uniform insulation thickness under crimping pressure, transmitting this pressure evenly to the center of the crimp area

**The AMP Mated Tool/Terminal Concept**

- AMP compression crimping produces crimps for a given size wire and terminal that are precisely alike in appearance and performance
- Terminal and crimping tool are designed as precisely matched devices
- Dies are precision-engineered from the finest hard-metal alloys
- Crimping pressure is controlled by a ratchet device on the hand tool or a corresponding pre-calibration in the crimping jaws of AMP automated crimping machines

**The Crimp**

- Crimping pressure can neither overstress nor understress the terminal barrel — machined dies fully bottom to the precise crimp height
- Resulting termination is free of contamination
- Resistant to shock and critical environments
- Tensile strength approaches that of the wire itself
- PIDG Terminals meet or exceed the requirements of MIL-T-7928, Type II, Class 1 and 2



**Temperature Rating: 221°F [105°C] Max.**

**AMP PIDG Terminals  
(Use PIDG Tooling)**

AMP Wire Range	UL Listed	LR7189 Certified
22-16	22-16 Solid or Stranded	300 V Max.,
16-14	16-14 Solid or Stranded	221°F [105°C]. Max. <sup>1</sup>
12-10	12-10 Solid or Stranded	

**Note:** 22-16 terminals are stamped 22-18 in accordance with MIL-T-7928.  
<sup>1</sup>UL & CSA—Nylon

**AMP PIDG Nylon Butt Window Splice  
(Use PIDG Tooling)**

AMP Wire Range	UL Listed	LR7189 Certified
22-16	22-16 Stranded or Solid	300 V Max.,
16-14	16-14 Stranded or Solid	221°F [105°C]. Max.
12-10	12-10 Stranded or Solid	

**Note:** 22-16 splices are stamped 22-18 in accordance with MIL-T-7928.

**10**

Terminals and Splices

**Ring Tongue Terminals — Nylon**

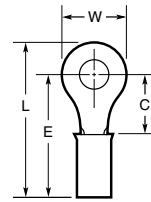
**Material and Finish**

Insulation — Nylon

Terminal Body and Metallic

Sleeve — Copper per ASTM B-152

Plating — Tin per ASTM B-545



**Military Specifications MS25036**

Wire Size Circular Mils [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions			Terminal Insulation Color	Wire Insulation Diameter Max.	Class	MS25036 Dash Numbers	Part Numbers		
			W	C Min.	E Max.					L Max.	Loose Piece	Tape Mounted
26-24 238-475 [0.12-0.24]	.029 0.74	2 M2	.203 5.16	.211 5.36	.632 16.05	.739 18.77	Yellow	.105 2.67	1 & 2	143	54310-1†	—
		4	.203 5.16	.211 5.36	.632 16.05	.736 18.69	Yellow	.105 2.67	1 & 2	144	52189†	—
		6 M3.5	.250 6.35	.243 6.17	.664 16.87	.792 20.12	Yellow	.105 2.67	1 & 2	145	53073†	—
		8 M4	.281 7.14	.250 6.35	.671 17.04	.814 20.68	Yellow	.105 2.67	1 & 2	146	54311-1†	—
		10	.312 7.92	.281 7.14	.702 17.83	.868 22.05	Yellow	.105 2.67	$\frac{1 \& 2}{2}$	147	54312-1†	—
26-22 202-810 [0.10-0.41]	.020 0.51	2 M2	.203 5.16	.211 5.36	.542 13.77	.646 16.41	Yellow	.082 2.08	2	143	323913	—
		4	.203 5.16	.211 5.36	.542 13.77	.646 16.41	Yellow	.082 2.08	2	144	323914*	2-323914-1
		8 M4	.250 6.35	.281 7.14	.612 15.54	.740 18.80	Yellow	.082 2.08	2	146	323916	2-323916-1
		10	.250 6.35	.281 7.14	.612 15.54	.740 18.80	Yellow	.082 2.08	2	147	324075*	2-324075-1
22-16 509-3,260 [0.26-1.65]	.033 0.84	4	.218 5.54	.156 3.96	.560 14.22	.672 17.07	Red	.125 3.18	$\frac{1 \& 2}{2}$	148	320553	—
			.218 5.54	.156 3.96	.560 14.22	.672 17.07	Red	.140 3.56	$\frac{1 \& 2}{2}$	148	31880*	—
		6 M3.5	.218 5.54	.156 3.96	.560 14.22	.672 17.07	Red	.125 3.18	$\frac{1 \& 2}{2}$	101	36149*	—
			.218 5.54	.156 3.96	.560 14.22	.672 17.07	Red	.140 3.56	$\frac{1 \& 2}{2}$	101	36150*	—
		8 M4	.250 6.35	.250 6.35	.654 16.61	.782 19.86	Red	.125 3.18	$\frac{1 \& 2}{2}$	102	51863*	—
			.250 6.35	.250 6.35	.654 16.61	.782 19.86	Red	.140 3.56	$\frac{1 \& 2}{2}$	102	51863-1	—
		10	.312 7.92	.281 7.14	.685 17.40	.844 21.44	Red	.125 3.18	$\frac{1 \& 2}{2}$	149	320551*	—
			.312 7.92	.281 7.14	.685 17.40	.844 21.44	Red	.140 3.56	$\frac{1 \& 2}{2}$	149	31890*	—
		1/4 M6	.312 7.92	.281 7.14	.685 17.40	.844 21.44	Red	.125 3.18	$\frac{1 \& 2}{2}$	103	36153*	—
			.312 7.92	.281 7.14	.685 17.40	.844 21.44	Red	.140 3.56	$\frac{1 \& 2}{2}$	103	36154*	—
		5/16 M8	.469 11.91	.437 11.10	.841 21.36	1.078 27.38	Red	.125 3.18	$\frac{1 \& 2}{2}$	150	320571*	—
			.469 11.91	.437 11.10	.841 21.36	1.078 27.38	Red	.140 3.56	$\frac{1 \& 2}{2}$	150	31894*	—
22-16 509-3,260 [0.26-1.65]	.033 0.84	3/8	.469 11.91	.437 11.10	.841 21.36	1.078 27.38	Red	.125 3.18	$\frac{1 \& 2}{2}$	104	320572*	—
			.469 11.91	.437 11.10	.841 21.36	1.078 27.38	Red	.140 3.56	$\frac{1 \& 2}{2}$	104	31895*	—
		1/2 M12	.531 13.49	.546 13.87	.950 24.13	1.218 30.94	Red	.125 3.18	$\frac{1 \& 2}{2}$	105	320573*	—
			.531 13.49	.546 13.87	.950 24.13	1.218 30.94	Red	.140 3.56	$\frac{1 \& 2}{2}$	105	31897*	—

\*Available in small packaging quantities.

Note: "C" dimension applies from edge of metal wire barrel to center of stud hole.

†Must be crimped with 22-18 or 22-16 PIDG (red) Tooling.

**Ring Tongue Terminals — Nylon** (Continued)

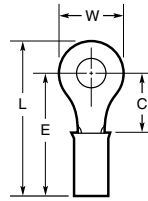
**Material and Finish**

Insulation — Nylon

Terminal Body and Metallic

Sleeve — Copper per ASTM B-152

Plating — Tin per ASTM B-545



**Military Specifications MS25036** (Continued)

Wire Size Circular Mils [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions				Terminal Insulation Color	Wire Insulation Diameter Max.	Class	MS25036 Dash Numbers	Part Numbers	
			W	C Min.	E Max.	L Max.					Loose Piece	Tape Mounted
16-14 2,050-5,180 [1.04-2.62]	.033 0.84	4	.250 6.35	.171 4.34	.575 14.61	.703 17.86	Blue	.150 3.81	1 & 2	152	324159*	—
		6 M3.5	.250 6.35	.171 4.34	.575 14.61	.703 17.86	Blue	.150 3.81	$\frac{1 \& 2}{2}$	106	320561	—
			.312 7.92	.281 7.14	.685 17.40	.844 21.44	Blue	.150 3.81	$\frac{1 \& 2}{2}$	107	51864*	—
		8 M4	.312 7.92	.281 7.14	.685 17.40	.844 21.44	Blue	.150 3.81	$\frac{1 \& 2}{2}$	153	51864-1*	—
			.312 7.92	.281 7.14	.685 17.40	.844 21.44	Blue	.150 3.81	$\frac{1 \& 2}{2}$	108	51864-2*	—
		10 M6	.469 11.91	.437 11.10	.841 21.36	1.078 27.38	Blue	.150 3.81	$\frac{1 \& 2}{2}$	154	320563*	—
			.469 11.91	.437 11.10	.841 21.36	1.078 27.38	Blue	.150 3.81	$\frac{1 \& 2}{2}$	109	320575*	—
		5/16 M8	.469 11.91	.437 11.10	.841 21.36	1.078 27.38	Blue	.150 3.81	$\frac{1 \& 2}{2}$	110	320564*	—
			.531 13.49	.546 13.87	.950 24.13	1.218 30.94	Blue	.150 3.81	$\frac{1 \& 2}{2}$	110	—	2-320564-3
		1/2 M12	.713 18.11	.530 13.46	.934 23.72	1.293 32.84	Blue	.150 3.81	1 & 2	155	328976	—
			6 M3.5	.375 9.53	.302 7.67	.893 22.68	1.083 27.51	Yellow	.230 5.84	$\frac{1 \& 2}{2}$	111	320567*
		.375 9.53		.302 7.67	.893 22.68	1.083 27.51	Yellow	.250 6.35	$\frac{1 \& 2}{2}$	111	35107	—
		8 M4	.375 9.53	.302 7.67	.893 22.68	1.083 27.51	Yellow	.230 5.84	$\frac{1 \& 2}{2}$	156	320568*	—
			.375 9.53	.302 7.67	.893 22.68	1.083 27.51	Yellow	.250 6.35	$\frac{1 \& 2}{2}$	156	35108*	—
10 M6	.375 9.53	.302 7.67	.893 22.68	1.083 27.51	Yellow	.230 5.84	$\frac{1 \& 2}{2}$	112	36161*	—		
	.375 9.53	.302 7.67	.893 22.68	1.083 27.51	Yellow	.250 6.35	$\frac{1 \& 2}{2}$	112	—	2-36161-2		
10 M8	.375 9.53	.302 7.67	.893 22.68	1.083 27.51	Yellow	.250 6.35	$\frac{1 \& 2}{2}$	112	35109*	—		
	.531 13.49	.468 11.89	1.054 26.77	1.322 33.58	Yellow	.230 5.84	$\frac{1 \& 2}{2}$	157	320569*	—		
5/16 M8	.531 13.49	.468 11.89	1.054 26.77	1.322 33.58	Yellow	.250 6.35	$\frac{1 \& 2}{2}$	157	35110*	—		
	.531 13.49	.468 11.89	1.054 26.77	1.322 33.58	Yellow	.230 5.84	$\frac{1 \& 2}{2}$	113	320576*	—		
3/8 M12	.531 13.49	.468 11.89	1.054 26.77	1.322 33.58	Yellow	.250 6.35	$\frac{1 \& 2}{2}$	113	—	2-320576-1		
	.593 15.06	.531 13.49	1.115 28.32	1.414 35.92	Yellow	.230 5.84	$\frac{1 \& 2}{2}$	114	35111*	—		
1/2 M12	.593 15.06	.531 13.49	1.115 28.32	1.414 35.92	Yellow	.250 6.35	1 & 2	114	—	2-35111-1		
	.715 18.16	.474 12.04	1.065 27.05	1.414 35.92	Yellow	.230 5.84	2	158	52077	—		

\*Available in small packaging quantities.

Note: "C" dimension applies from edge of metal wire barrel to center of stud hole.

**10**

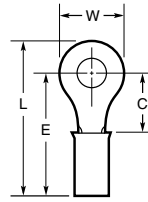
Terminals and Splices

**Ring Tongue Terminals — Insulation Restricting**

**Material and Finish**

**Insulation** — Nylon  
**Terminal Body** — Copper per ASTM B-152  
**Plating** — Tin per ASTM B-545

**Metallic Sleeve** — Copper per ASTM B-152  
**Plating** — Nickel per QQ-N-290 or Tin per ASTM B-545



**Military Specifications M7928/1**

Wire Size Circular Mils [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions				Terminal Insulation Color/ Stripe	Wire Insulation Diameter Max.	Class	M7928/1 Dash Numbers	Part Numbers	
			W	C Min.	E Max.	L Max.					Loose Piece	Tape Mounted
26 304 [0.15]	.029 0.74	2 M2	.203 5.16	.211 5.36	.632 16.05	.739 18.77	Yellow/Black	.026-.055 0.66-1.40	1 & 2	1	53078†	—
		4	.203 5.16	.211 5.36	.632 16.05	.736 18.69	Yellow/Black	.026-.055 0.66-1.40	1 & 2	2	53049†	—
		6 M3.5	.250 6.35	.243 6.17	.664 16.87	.792 20.12	Yellow/Black	.026-.055 0.66-1.40	1 & 2	3	53050†	—
		8 M4	.281 7.14	.250 6.35	.671 17.04	.814 20.68	Yellow/Black	.026-.055 0.66-1.40	1 & 2	4	53051†	—
		10	.312 7.92	.281 7.14	.702 17.83	.863 21.92	Yellow/Black	.026-.055 0.66-1.40	1 & 2	5	53057†	—
24 475 [0.24]	.029 0.74	2 M2	.203 5.16	.211 5.36	.632 16.05	.739 18.77	Yellow/Blue	.031-.055 0.79-1.40	1 & 2	6	53053†	—
		4	.203 5.16	.211 5.36	.632 16.05	.736 18.69	Yellow/Blue	.031-.055 0.79-1.40	1 & 2	7	53054†	—
		6 M3.5	.250 6.35	.243 6.17	.664 16.87	.792 20.12	Yellow/Blue	.031-.055 0.79-1.40	1 & 2	8	53055†	—
		8 M4	.281 7.14	.250 6.35	.671 17.04	.814 20.68	Yellow/Blue	.031-.055 0.79-1.40	1 & 2	9	53056†	—
		10	.312 7.92	.281 7.14	.702 17.83	.860 21.84	Yellow/Blue	.031-.055 0.79-1.40	1 & 2	10	53057†	—
22 754 [0.38]	.033 0.84	4	.218 5.54	.156 3.96	.622 15.80	.734 18.64	Red/Green	.038-.110 0.97-2.79	1 & 2	11	52273*	—
		6 M3.5	.218 5.54	.156 3.96	.622 15.80	.734 18.64	Red/Green	.038-.110 0.97-2.79	1 & 2	12	2-36149-3*	—
		8 M4	.250 6.35	.250 6.35	.716 18.19	.844 21.44	Red/Green	.038-.110 0.97-2.79	1 & 2	13	51863-2* —	51863-5
		8 M4	.312 7.92	.281 7.14	.747 18.97	.906 23.01	Red/Green	.038-.110 0.97-2.79	1 & 2	14	1-320551-2* —	1-320551-5
		1/4 M6	.469 11.91	.437 11.10	.903 22.94	1.140 28.96	Red/Green	.038-.110 0.97-2.79	1 & 2	16	2-320571-3	—
		5/16 M8	.469 11.91	.437 11.10	.903 22.94	1.140 28.96	Red/Green	.038-.110 0.97-2.79	1 & 2	17	2-320572-2	—
		3/8	.531 13.49	.546 13.87	1.012 25.70	1.280 32.51	Red/Green	.038-.110 0.97-2.79	1 & 2	18	2-320573-1	—
		1/2 M12	.713 18.11	.530 13.46	.996 25.30	1.355 34.42	Red/Green	.038-.110 0.97-2.79	1 & 2	19	2-328975-1	—
		10	.312 7.92	.281 7.14	.747 18.97	.906 23.01	Red/Green	.038-.110 0.97-2.79	1 & 2	15	2-36153-3* —	2-36153-6
		4	.218 5.54	.156 3.96	.622 15.80	.734 18.64	Red/Red	.046-.110 1.17-2.79	1 & 2	20	52273-1*	—
20 1,186 [0.60]	.033 0.84	6 M3.5	.218 5.54	.156 3.96	.622 15.80	.734 18.64	Red/Red	.046-.110 1.17-2.79	1 & 2	21	2-36149-4*	—
		6 M3.5	.250 6.35	.250 6.35	.716 18.19	.844 21.44	Red/Red	.046-.110 1.17-2.79	1 & 2	22	51863-3 —	51863-6
		8 M4	.312 7.92	.281 7.14	.747 18.97	.906 23.01	Red/Red	.046-.110 1.17-2.79	1 & 2	23	1-320551-3*	—
		10	.312 7.92	.281 7.14	.747 18.97	.906 23.01	Red/Red	.046-.110 1.17-2.79	1 & 2	24	2-36153-4* —	2-36153-8
		1/4 M6	.469 11.91	.437 11.10	.903 22.94	1.140 28.96	Red/Red	.046-.110 1.17-2.79	1 & 2	25	2-320571-4	—
		5/16 M8	.469 11.91	.437 11.10	.903 22.94	1.140 28.96	Red/Red	.046-.110 1.17-2.79	1 & 2	26	2-320572-3	—
		3/8	.531 13.49	.546 13.87	1.012 25.70	1.280 32.51	Red/Red	.046-.110 1.17-2.79	1 & 2	27	2-320573-2	—
		1/2 M12	.713 18.11	.530 13.46	.996 25.30	1.355 34.42	Red/Red	.046-.110 1.17-2.79	1 & 2	28	2-328975-2	—

\*Available in small packaging quantities.

†Must be crimped with 22-18 or 22-16 PIDG (red) Tooling.

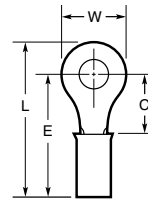
Note: "C" dimension applies from edge of metal wire barrel to center of stud hole.

**Ring Tongue Terminals — Insulation Restricting** (Continued)

**Material and Finish**

**Insulation** — Nylon  
**Terminal Body** — Copper per ASTM B-152  
**Plating** — Tin per ASTM B-545

**Metallic Sleeve** — Copper per ASTM B-152  
**Plating** — Nickel per QQ-N-290 or Tin per ASTM B-545



**Military Specifications M7928/1** (Continued)

Wire Size Circular Mils [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions				Terminal Insulation Color Solid/Stripe	Wire Insulation Diameter Max.	Class	M7928/1 Dash Numbers	Part Numbers	
			W	C Min.	E Max.	L Max.					Loose Piece	Tape Mounted
18 1,900 [0.96]	.033 0.84	4	.218	.156	.622	.734	Red/White	.056-.110	1 & 2	29	52273-2*	—
			5.54	3.96	15.80	18.64	1.42-2.79					
		6	.218	.156	.622	.734	Red/White	.056-.110	1 & 2	30	2-36149-5*	—
			5.54	3.96	15.80	18.64	1.42-2.79					
		M3.5	.250	.250	.716	.844	Red/White	.056-.110	1 & 2	31	51863-4*	—
			6.35	6.35	18.19	21.44	1.42-2.79					
		8	.312	.281	.747	.906	Red/White	.056-.110	1 & 2	32	1-320551-4*	—
			7.92	7.14	18.97	23.01	1.42-2.79					
		M4	.312	.281	.747	.906	Red/White	.056-.110	1 & 2	33	2-36153-5*	—
			7.92	7.14	18.97	23.01	1.42-2.79					
		1/4	.469	.437	.903	1.140	Red/White	.056-.110	1 & 2	34	2-320571-5	—
			11.91	11.10	22.94	28.96	1.42-2.79					
		5/16	.469	.437	.903	1.140	Red/White	.056-.110	1 & 2	35	2-320572-4	—
			11.91	11.10	22.94	28.96	1.42-2.79					
M8	.469	.437	.903	1.140	Red/White	.056-.110	1 & 2	36	2-320573-3	—		
	11.91	11.10	22.94	28.96	1.42-2.79							
3/8	.531	.546	1.012	1.280	Red/White	.056-.110	1 & 2	37	2-328975-3	—		
	13.49	13.87	25.70	32.51	1.42-2.79							
1/2	.713	.530	.996	1.355	Red/White	.056-.110	1 & 2	38	52274	—		
	18.11	13.46	25.30	34.42	1.42-2.79							
M12	.250	.171	.637	.765	Blue/Blue	.063-.130	1 & 2	39	2-320561-3*	—		
	6.35	4.34	16.18	19.43	1.60-3.30							
4	.250	.171	.637	.765	Blue/Blue	.063-.130	1 & 2	40	51864-6*	—		
	6.35	4.34	16.18	19.43	1.60-3.30							
6	.312	.281	.747	.906	Blue/Blue	.063-.130	1 & 2	41	1-51864-0*	—		
	7.92	7.14	18.97	23.01	1.60-3.30							
M3.5	.312	.281	.747	.906	Blue/Blue	.063-.130	1 & 2	42	51864-7*	—		
	7.92	7.14	18.97	23.01	1.60-3.30							
8	.312	.281	.747	.906	Blue/Blue	.063-.130	1 & 2	43	2-320563-3	—		
	7.92	7.14	18.97	23.01	1.60-3.30							
M4	.312	.281	.747	.906	Blue/Blue	.063-.130	1 & 2	44	2-320575-2	—		
	7.92	7.14	18.97	23.01	1.60-3.30							
5/16	.469	.437	.903	1.140	Blue/Blue	.063-.130	1 & 2	45	2-320564-1	—		
	11.91	11.10	22.94	28.96	1.60-3.30							
M8	.469	.437	.903	1.140	Blue/Blue	.063-.130	1 & 2	46	2-328976-1	—		
	11.91	11.10	22.94	28.96	1.60-3.30							
3/8	.531	.546	1.012	1.280	Blue/Blue	.063-.130	1 & 2	47	52274-1	—		
	13.49	13.87	25.70	32.51	1.60-3.30							
1/2	.713	.530	.996	1.355	Blue/Blue	.063-.130	1 & 2	48	2-320561-4	—		
	18.11	13.46	25.30	34.42	1.60-3.30							
M12	.250	.171	.637	.765	Blue/Green	.078-.130	1 & 2	49	51864-8*	—		
	6.35	4.34	16.18	19.43	1.98-3.30							
4	.250	.171	.637	.765	Blue/Green	.078-.130	1 & 2	50	1-51864-1*	—		
	6.35	4.34	16.18	19.43	1.98-3.30							
6	.312	.281	.747	.906	Blue/Green	.078-.130	1 & 2	51	51864-9*	—		
	7.92	7.14	18.97	23.01	1.98-3.30							
M3.5	.312	.281	.747	.906	Blue/Green	.078-.130	1 & 2	52	2-320563-4	—		
	7.92	7.14	18.97	23.01	1.98-3.30							
8	.312	.281	.747	.906	Blue/Green	.078-.130	1 & 2	53	2-320575-3	—		
	7.92	7.14	18.97	23.01	1.98-3.30							
M4	.312	.281	.747	.906	Blue/Green	.078-.130	1 & 2	54	2-320564-2	—		
	7.92	7.14	18.97	23.01	1.98-3.30							
1/4	.469	.437	.903	1.140	Blue/Green	.078-.130	1 & 2	55	2-328976-2	—		
	11.91	11.10	22.94	28.96	1.98-3.30							
5/16	.469	.437	.903	1.140	Blue/Green	.078-.130	1 & 2	54	2-320564-2	—		
	11.91	11.10	22.94	28.96	1.98-3.30							
M8	.469	.437	.903	1.140	Blue/Green	.078-.130	1 & 2	55	2-328976-2	—		
	11.91	11.10	22.94	28.96	1.98-3.30							
3/8	.531	.546	1.012	1.280	Blue/Green	.078-.130	1 & 2	55	2-328976-2	—		
	13.49	13.87	25.70	32.51	1.98-3.30							
1/2	.713	.530	.996	1.355	Blue/Green	.078-.130	1 & 2	55	2-328976-2	—		
	18.11	13.46	25.30	34.42	1.98-3.30							
M12	.250	.171	.637	.765	Blue/Green	.078-.130	1 & 2	55	2-328976-2	—		
	6.35	4.34	16.18	19.43	1.98-3.30							

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Terminals and Splices

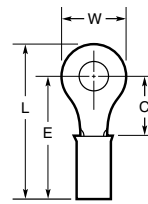
\*Available in small packaging quantities.  
**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

**Ring Tongue Terminals — Insulation Restricting** (Continued)

**Material and Finish**

**Insulation** — Nylon  
**Terminal Body** — Copper per ASTM B-152  
**Plating** — Tin per ASTM B-545

**Metallic Sleeve** — Copper per ASTM B-152  
**Plating** — Nickel per QQ-N-290 or Tin per ASTM B-545



**Military Specifications M7928/1** (Continued)

Wire Size Circular Mils [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions				Terminal Insulation Color Solid/Stripe	Wire Insulation Diameter Max.	Class	M7928/1 Dash Numbers	Part Numbers	
			W	C Min.	E Max.	L Max.					Loose Piece	Tape Mounted
12 6,654 [3.37]	.042 1.07	6 M3.5	.375 9.53	.302 7.67	.958 24.33	1.148 29.16	Yellow/Yellow	.095-.200 2.41-5.08	1 & 2	56	2-36161-5	—
		8 M4	.375 9.53	.302 7.67	.958 24.33	1.148 29.16	Yellow/Yellow	.095-.200 2.41-5.08	1 & 2	57	2-320568-2*	—
		10	.375 9.53	.302 7.67	.958 24.33	1.148 29.16	Yellow/Yellow	.095-.200 2.41-5.08	1 & 2	58	2-36161-3*	—
		1/4 M6	.531 13.49	.468 11.89	1.124 28.55	1.392 35.36	Yellow/Yellow	.095-.200 2.41-5.08	1 & 2	59	2-320569-5	—
		5/16 M8	.531 13.49	.468 11.89	1.124 28.55	1.392 35.36	Yellow/Yellow	.095-.200 2.41-5.08	1 & 2	60	2-320576-2	—
		3/8	.593 15.06	.531 13.49	1.187 30.15	1.486 37.74	Yellow/Yellow	.095-.200 2.41-5.08	1 & 2	61	2-320577-1	—
		1/2 M12	.715 18.16	.474 12.04	1.130 28.70	1.490 37.85	Yellow/Yellow	.095-.200 2.41-5.08	2	62	52077-1	—
		6 M3.5	.375 9.53	.302 7.67	.958 24.33	1.148 29.16	Yellow/Brown	.119-.200 3.02-5.08	1 & 2	63	2-36161-6	—
		8 M4	.375 9.53	.302 7.67	.958 24.33	1.148 29.16	Yellow/Brown	.119-.200 3.02-5.08	1 & 2	64	2-320568-3*	—
		10	.375 9.53	.302 7.67	.958 24.33	1.148 29.16	Yellow/Brown	.119-.200 3.02-5.08	1 & 2	65	2-36161-4	2-36161-8
10 12,066 [6.11]	.042 1.07	1/4 M6	.531 13.49	.468 11.89	1.124 28.55	1.392 35.36	Yellow/Brown	.119-.200 3.02-5.08	1 & 2 2	66	2-320569-6	—
		5/16 M8	.531 13.49	.468 11.89	1.124 28.55	1.392 35.36	Yellow/Brown	.119-.200 3.02-5.08	1 & 2	67	2-320576-3	—
		3/8	.593 15.06	.531 13.49	1.187 30.15	1.486 37.74	Yellow/Brown	.119-.200 3.02-5.08	1 & 2	68	2-320577-2	—
		1/2 M12	.715 18.16	.474 12.04	1.130 28.70	1.490 37.85	Yellow/Brown	.119-.200 3.02-5.08	2	69	52077-2	—
		1/4 M6	.531 13.49	.468 11.89	1.124 28.55	1.392 35.36	Yellow/Brown	.119-.200 3.02-5.08	1 & 2 2	66	2-320569-6	2-320569-8
		5/16 M8	.531 13.49	.468 11.89	1.124 28.55	1.392 35.36	Yellow/Brown	.119-.200 3.02-5.08	1 & 2	67	2-320576-3	—

\*Available in small packaging quantities.

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.



**Rectangular Tongue Terminals**

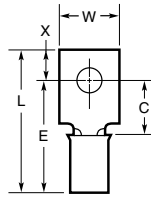
**Material and Finish**

**Insulation**—Nylon

**Terminal Body and Metallic**

**Sleeve**—Copper per ASTM B-152  
except where noted.

**Plating**—Tin per ASTM B-545



**Military Specifications MS17143**

Wire Size Circular Mils [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions					Terminal Insulation Color	Wire Insulation Diameter Max.	Class	M17143 Dash Numbers	Part Numbers			
			W	C Min.	E Max.	L Max.	X					Loose Piece	Tape Mounted		
22-16 500 [0.26-1.65]	.033 0.84	4	.237 6.02	.237 6.02	.643 16.33	.796 20.22	.143 3.63	Red	.140 3.56	1 & 2	19	2-327968-1	—		
			.237 6.02	.404 10.26	.810 20.57	1.015 25.78	.195 4.95	Red	.140 3.56	1 & 2	16	327962	—		
		5 M3	.277 7.04	.277 7.04	.702 17.83	.855 21.72	.143 3.63	Red	.140 3.56	1 & 2	10	2-327950-1	—		
			.237 6.02	.404 10.26	.810 20.57	1.015 25.78	.195 4.95	Red	.140 3.56	1 & 2	13	2-327956-1	—		
		6 M3.5	.302 7.67	.465 11.81	.872 22.15	1.109 28.17	.227 5.77	Red	.140 3.56	1 & 2 2	4	2-327938-1	—		
			—	—	—	—	—	—	—	—	—	—	2-327938-2	—	
		8 M4	.302 7.67	.465 11.81	.872 22.15	1.109 28.17	.227 5.77	Red	.140 3.56	1 & 2 2	7	327944*	—		
			—	—	—	—	—	—	—	—	—	—	—	2-327944-2	
		16-14 2,050-5,180 [1.04-2.62]	.033 0.84	4	.237 6.02	.237 6.02	.643 16.33	.796 20.22	.143 3.63	Blue	.150 3.81	1 & 2	20	2-327970-4	—
					.237 6.02	.404 10.26	.810 20.57	1.015 25.78	.195 4.95	Blue	.150 3.81	1 & 2	17	2-327964-4	—
5 M3	.277 7.04			.277 7.04	.702 17.83	.855 21.72	.143 3.63	Blue	.150 3.81	1 & 2 2	11	2-327952-2	—		
	—			—	—	—	—	—	—	—	—	—	2-327952-6		
6 M3.5	.237 6.02			.404 10.26	.810 20.57	1.015 25.78	.195 4.95	Blue	.150 3.81	1 & 2	14	2-327958-4	—		
	.302 7.67			.465 11.81	.872 22.15	1.109 28.17	.227 5.77	Blue	.150 3.81	1 & 2	5	2-327940-4	—		
8 M4	.302 7.67			.465 11.81	.872 22.15	1.109 28.17	.227 5.77	Blue	.150 3.81	1 & 2	8	2-327946-4	—		
	.390 9.91			.621 15.77	1.039 26.39	1.359 34.52	.310 7.87	Blue	.150 3.81	1 & 2	2	2-327934-2	—		
12-10 5,180-13,100 [2.62-6.64]	.042 1.07			4	.237 6.02	.237 6.02	.831 21.11	.984 24.99	.143 3.63	Yellow	.230 5.84	1 & 2	21	327972	—
					.237 6.02	.404 10.26	.998 25.35	1.203 30.56	.195 4.95	Yellow	.230 5.84	1 & 2	18	327966	—
		5 M3	.277 7.04	.277 7.04	.889 22.58	1.042 26.47	.143 3.63	Yellow	.230 5.84	1 & 2 2	12	327954	—		
			—	—	—	—	—	—	—	—	—	—	2-327954-2		
		6 M3.5	.237 6.02	.404 10.26	.998 25.35	1.203 30.56	.195 4.95	Yellow	.230 5.84	1 & 2 2	15	2-327960-1	—		
			—	—	—	—	—	—	—	—	—	—	2-327960-2		
		8 M4	.302 7.67	.465 11.81	1.044 26.52	1.281 32.54	.227 5.77	Yellow	.230 5.84	1 & 2	6	327942	—		
			.302 7.67	.465 11.81	1.044 26.52	1.281 32.54	.227 5.77	Yellow	.230 5.84	1 & 2	9	327948	—		
		8 M4	.390 9.91	.621 15.77	1.211 30.76	1.531 38.89	.310 7.87	Yellow	.230 5.84	1 & 2	3	327936	—		

\*Available in small packaging quantities.

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

**10**

Terminals and Splices

**Butt Splices**

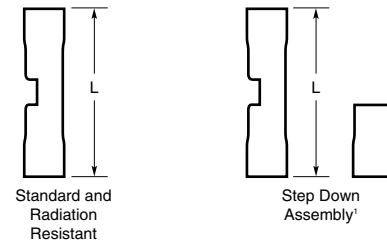
**Material and Finish**

**Insulation Sleeve** — Standard, Step Down Assembly and Nylon

**Radiation Resistant** — Polyvinylidene Fluoride (PVF<sub>2</sub>)

**Splice Body and Insulation Support Sleeve** — Copper per ASTM B-152

**Plating** — Tin per ASTM B-545



**Military Specifications M7928/5**

Wire Size Circular Mils <sup>1</sup> [mm <sup>2</sup> ]	Style	Dimension L Max.	Splice Insulation Color	Wire Insulation Diameter Max.	Class	M7928/5 Dash Numbers	Part Numbers	
							Loose Piece	Tape Mounted
26-24 <sup>2</sup> 238-475 [0.12-0.24]	Standard	.890 22.61	Yellow	.082 2.08	1 & 2	1	323994	—
24-20 320-1,290 [0.16-0.65]		1.035 26.29	Natural	.100 2.54	$\frac{1 \& 2}{2}$	2	323975 —	— 2-323975-3
22-16 <sup>3</sup> 509-3,260 [0.26-1.65]		1.265 32.13	Red	.125 3.18	$\frac{1 \& 2}{2}$	3	320559* —	— 2-320559-4
16-14 2,050-5,180 [1.04-2.62]		1.265 32.13	Blue	.150 3.81	$\frac{1 \& 2}{2}$	4	320562* —	— 2-320562-3
12-10 5,180-13,100 [2.62-6.64]		1.656 42.06	Yellow	.220 5.59	1 & 2	5	320570*	—

\*Available in small packaging quantities.

<sup>1</sup> When using two or more wires in either end of a butt splice, the combined cross sectional area must be within the (CMA) circular mil area range listed.

<sup>2</sup> 26-24 range in accordance with MIL-T-7928.

<sup>3</sup> 22-16 splices are 22-18 range in accordance with MIL-T-7928.

**Military Specifications M7928/6**

Wire Size Circular Mils <sup>1</sup> [mm <sup>2</sup> ]	Style	Dimension L Max.	Splice Insulation Color	Wire Insulation Diameter Max.	Class	M7928/6 Dash Numbers	Part Numbers	
							Loose Piece	Tape Mounted
26-24 <sup>2</sup> 238-475 [0.12-0.24]	Radiation Resistant	.890 22.61	Natural w/ Yellow Stripes	.082 2.08	1 & 2	1	53546-1	—
24-20 320-1,290 [0.16-0.65]		1.035 26.29	Natural w/ White Stripes	.100 2.54	$\frac{1 \& 2}{2}$	2	53547-1 —	— 53547-2
22-16 <sup>3</sup> 509-3,260 [0.26-1.65]		1.265 32.13	Natural w/ Red Stripes	.125 3.18	$\frac{1 \& 2}{2}$	3	53548-1* —	— 53548-2
16-14 2,050-5,180 [1.04-2.62]		1.265 32.13	Natural w/ Blue Stripes	.150 3.81	1 & 2	4	53549-1*	—

\*Available in small packaging quantities.

<sup>1</sup> When using two or more wires in either end of a butt splice, the combined cross sectional area must be within the (CMA) circular mil area range listed.

<sup>2</sup> 26-24 range in accordance with MIL-T-7928.

<sup>3</sup> 22-16 splices are 22-18 range in accordance with MIL-T-7928.

**Application Tooling**

**Insulated Terminals and Splices — 30 to 10 AWG Wire Range**

Description	Wire Range	Tools for Loose Piece Termination					Tools for Tape Mounted Terminations			
		Hand Tools		Pneumatic Tools			Tape Dies for 69875 TAPETRONIC No Applicator Required	Tape Dies for 354500-1 AMP-O-ELECTRIC Model "G" Applicator 567200-3	Tape Dies for AMPOMATOR CLS IV* Applicator 687658-1	Tape Dies for 354500-1 AMP-O-ELECTRIC Model "K" Applicator 567200-2
		Single Wire Range	Multi-Wire Range	Heads for 626 Single Wire Range	Heads for 626 Multi-Wire Range	Dies for 69710-1 <sup>3</sup> 217200-1 <sup>4</sup>				
	30-26	69163—uses 26-22 Terms.	—	—	—	—	—	—	—	
PIDG Terminals & Splices	26-22	46121 <sup>†</sup>	59275 <sup>†</sup>	314537-1	—	69344	69877	69877	69877	69877
	22-16	47386 <sup>†</sup>	59250 <sup>†</sup> 59824-1 <sup>1</sup> 58433-3 <sup>2</sup>	314270-3	679305-1	47806-2	69872* 59826-1 <sup>1</sup>	69872* 59826-1 <sup>1</sup>	69872* 59826-1 <sup>1</sup>	69872* 59826-1 <sup>1</sup>
	16-14	68343-1 (.250 exp.) 47387	59250 <sup>†</sup> 59824-1 <sup>1</sup> 58433-3 <sup>2</sup>	314269-1	679305-1	47807-1	69873* 59827-1 <sup>1</sup>	69873* 59827-1 <sup>1</sup>	69873* 59827-1 <sup>1</sup>	69873* 59827-1 <sup>1</sup>
	12-10	59239-4 <sup>†</sup>	59824-1 <sup>1</sup>	679300-1	679305-1	47808-6 Std.	69874* 69897	69874* 69897	69874* 69897	69874* 69897
	16-14 HD	59287-2 (.300 exp.)	58433-3 <sup>2</sup>	679300-1	679305-1	47808-5 (.300 exp.)	(.300 exp.) 59828-1 <sup>1</sup>	(.300 exp.) 59828-1 <sup>1</sup>	(.300 exp.) 59828-1 <sup>1</sup>	(.300 exp.) 59828-1 <sup>1</sup>

<sup>†</sup>Tooling with adjustable insulation crimp.  
<sup>\*</sup>Same die set/configuration as in hand tools.  
<sup>1</sup>TETRA-CRIMP die configuration.  
<sup>2</sup>PRO-CRIMPER II commercial tool not approved for UL applications.  
<sup>3</sup>69710-1 hand tool.  
<sup>4</sup>626 Pneumatic Tool Adapter

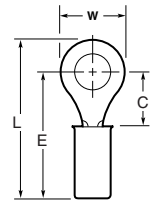
**PIDG Terminal Style**

**Ring Tongue Terminals**

**Material and Finish**

**Terminal Body** — Copper per QQ-C-576 with tin plating per MIL-T-10727 or gold plating per MIL-G-45204 over nickel per QQ-N-290

**Insulation Support Sleeve** — Copper per QQ-C-576 with tin plating per MIL-T-10727  
**Insulation Sleeve** — PVF<sub>2</sub>, natural color



**Military Specifications M7928/4**

Wire Range		Tongue Thickness Max.	Wire Insulation Diameter Max.	Stripe Color Code	Stud Size	Dimensions				Class	M7928/4 Dash Numbers	Part Numbers	
AWG	CMA					C Min.	W	E Max.	L Max.			Tin Plate Loose	Tape Mounted
26-24	202-509	.029 0.74	.082 2.09	Yellow	2 M2	.211 5.36	.203 5.16	.632 16.05	.736 18.69	1 & 2	143	53400-1	—
					4	.211 5.36	.203 5.16	.632 16.05	.736 18.69	1 & 2	144	53401-1	—
					6 M3.5	.243 6.17	.250 6.35	.664 16.87	.792 20.12	1 & 2	145	53402-1	—
					8 M4	.250 6.35	.281 7.13	.671 17.05	.814 20.68	1 & 2	146	53403-1	—
					10	.281 7.14	.312 7.92	.702 17.83	.861 21.87	1 & 2	147	53404-1	—
24-20	320-1,290	.025 0.64	.100 2.54	White	6 M3.5	.281 7.13	.250 6.35	.631 16.03	.774 19.66	1 & 2	—	53809-2	—
					4	.156 3.96	.218 5.54	.560 14.23	.672 17.07	1 & 2	148	53405-1	—
22-16	509-3,250	.033 0.84	.125 3.18	Red	6 M3.5	.156 3.96	.218 5.54	.560 14.23	.672 17.07	1 & 2	101	53406-1	—
					6 M3.5	.250 6.35	.250 6.35	.654 16.62	.782 19.87	1 & 2 2	102	53407-1	—
					8 M4	.281 7.13	.312 7.91	.685 17.4	.844 21.44	1 & 2 2	149	53408-1	—
					10	.281 7.13	.312 7.92	.685 17.4	.844 21.44	1 & 2	103	53409-1	—
					1/4 M6	.437 11.10	.469 11.91	.841 21.36	1.078 27.38	1 & 2 2	150	53410-1	—
					1/4 M6	.437 11.10	.469 11.91	.841 21.36	1.078 27.38	1 & 2	104	53411-1	—
					3/8	.546 13.87	.531 13.49	.950 24.13	1.218 30.94	1 & 2	105	53412-1	—
					1/2 M12	.530 13.46	.713 18.11	.934 23.72	1.293 32.84	1 & 2	151	53413-1	—
					4	.171 4.34	.250 6.35	.575 14.61	.703 17.86	1 & 2	152	53414-1	—
					6 M3.5	.171 4.34	.250 6.35	.575 14.61	.703 17.86	1 & 2	106	53415-1	—
16-14	2,050-5,180	.033 0.84	.150 3.81	Blue	6 M3.5	.281 7.13	.312 7.92	.685 17.4	.844 21.44	1 & 2 2	107	53416-1	—
					6 M3.5	.281 7.13	.312 7.92	.685 17.4	.844 21.44	1 & 2 2	153	53417-1	—
					10	.281 7.13	.312 7.92	.685 17.4	.844 21.44	1 & 2 2	108	53418-1	—
					10	.281 7.13	.312 7.92	.685 17.4	.844 21.44	1 & 2 2	108	—	53418-2
					1/4 M6	.437 11.09	.469 11.91	.841 21.37	1.078 27.39	1 & 2	154	53419-1	—
					5/16 M8	.437 11.09	.469 11.91	.841 21.37	1.078 27.39	1 & 2	109	53420-1	—
					3/8	.546 13.87	.531 13.49	.950 24.13	1.218 30.94	1 & 2	110	53421-1	—
					1/2 M12	.530 13.46	.713 18.11	.934 23.72	1.293 32.84	1 & 2	155	53422-1	—

**10**

Terminals and Splices

**PIDG Terminal Style** (Continued)

**Military Specifications M7928/4**

Wire Range		Tongue Thickness Max.	Wire Insulation Diameter Max.	Stripe Color Code	Stud Size	Dimensions				Class	M7928/4 Dash Numbers	Part Numbers	
AWG	CMA					C Min.	W	E Max.	L Max.			Tin Plate Loose	Tape Mounted
12-10	5,180-13,100	.042 1.07	.230 5.84	Yellow	6	.302	.375	.893	1.083	1 & 2	111	53423-1*	—
					M3.5	7.67	9.53	22.69	27.51				
					8	.302	.375	.893	1.083	1 & 2 2	156	53424-1*	—
					M4	7.67	9.53	22.69	27.51				
					10	.302	.375	.893	1.083	1 & 2 2	112	53425-1*	—
						7.67	9.53	22.69	27.51				
					1/4	.468	.531	1.054	1.322	1 & 2	157	53426-1*	—
					M6	11.88	13.48	26.78	33.58				
5/16	.468	.531	1.054	1.322	1 & 2	113	53427-1*	—					
M8	11.88	13.48	26.78	33.58									
3/8	.531	.593	1.115	1.414	1 & 2	114	53428-1	—					
	13.48	15.06	28.32	35.92									
1/2	.474	.715	1.054	1.414	2	158	53429-1	—					
M12	12.04	18.16	26.78	35.92									

\* Brazed body

**Application Tooling**



Long Handle Tool



T-HEAD Tool



Heavy Head Tool

Wire Size Range		Hand Tools		Pneumatic Tools		
AWG	mm <sup>2</sup>	Style	Part Number	Heads for 626 Single Wire Range	Heads for 626 Multi-Wire Range	Dies for 69710-1 <sup>1</sup> 217200-1 <sup>2</sup>
26-24 & 22-16	0.1-0.2 & 0.26-1.65	Long Handle T-HEAD Tool	47386 59250 59300	314270-3	679305-1	47806-2*
22-16	0.26-1.65	Long Handle	69151-1**	—	—	—
16-14	1.04-2.62	Long Handle T-HEAD Tool	47387 59250	314269-1	679305-1	47807-1*
12-10	2.62-6.64	Heavy Head	59239-4	679300-1	679305-1	47808-6*

\* Maximum tongue width of terminals for use with these dies is .469 [11.91] when used in adapter 217200-1. Flat tongues only.

\*\* For wires with thin wall insulation.

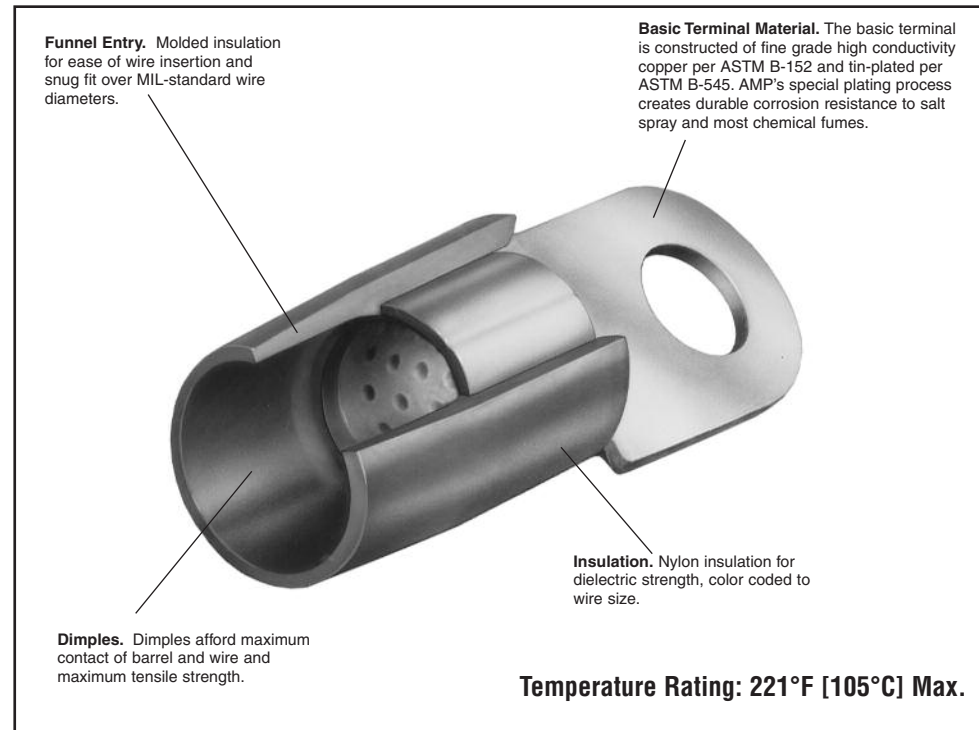
<sup>1</sup> 69710-1 hand tool

<sup>2</sup> 626 Pneumatic Tool Adapter

**Introduction**

**Product Facts**

- Designed to provide insulated terminals and splices for large wire sizes, many of which are used in airborne and ground support applications
- Tested under the procedures stipulated by MIL Spec. MIL-T-7928, they meet and exceed requirements
- Designed and engineered to successfully withstand many vibration, shock and structural stresses, elevated temperatures and other conditions which can adversely affect the circuit requirements in complex air and space flight equipment
- The use of matching AMP tooling for precision crimping which makes all terminations identical
- This uniformity promotes maximum reliability and, coupled with tool die marks on the barrel indicating the wire size and color coding of the insulation sleeve, also serves as a built-in quality control factor
- Pre-insulated with color coded nylon which also acts as insulation support
- Wire size range of terminals is 8 AWG through 4/0 AWG



**Insulated Terminals and Splices — 8 to 4/0 AWG Wire Range**

Description	Wire Size	Tools for Loose Piece Terminations		
		Hand Tools	Dies for Crimp Head 1490746-1 & 1976230-1 & Hydraulic Hand Tool 1490749-1	Dies for Crimp Head 1752877-1 <sup>1</sup> & 1752787-1 <sup>2</sup>
TERMINYL Terminals and Splices	8	—	1490597-1	—
	6	—	1490598-1	—
	4	—	1490599-1	—
	2	—	1490406-1	—
	1/0	—	—	47824
	2/0	—	—	47825
	3/0	—	—	47915
	4/0	—	—	47918
	4 HD	—	—	69463

<sup>1</sup> Heads for Power Units 1804700-1, 1804700-2, 1583659-1 & 1583661-1.  
<sup>2</sup> Large expansion dies.

10  
 Terminals and Splices



**Ring Tongue Terminals**
**Material and Finish**

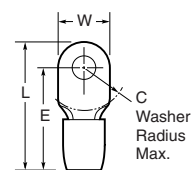
Insulation — Nylon

 Terminal Body — Copper per  
ASTM B-152

Plating — Tin per ASTM B-545

**Related Product Data**

Application Tooling — page 10-42


**Military Specifications MS25036**

Wire Size Circular Mils [mm <sup>2</sup> ]	Tongue Material Thickness Max.	Stud Size	Dimensions				Terminal Insulation Color	Wire Insulation Diameter Max.	Class	MS25036 Dash Numbers	Part Number Loose Piece
			W	C	E Max.	L Max.					
8 13,100-20,800 [6.64-10.5]	.043 1.09	10	.431 10.95	.437 11.10	1.183 30.05	1.402 35.61	Red	.256 6.50	2	115	324043
		1/4 M6	.478 12.14	.437 11.10	1.183 30.05	1.425 36.20	Red	.256 6.50	2	116	324082
		5/16 M8	.587 14.91	.500 12.70	1.246 31.65	1.542 39.17	Red	.256 6.50	2	117	324044
		3/8	.587 14.91	.500 12.70	1.246 31.65	1.542 39.17	Red	.256 6.50	2	118	324045
6 20,800-33,100 [10.5-16.8]	.048 1.22	10	.468 11.89	.421 10.69	1.338 33.99	1.575 40.01	Blue	.314 7.98	2	119	324046
		1/4 M6	.500 12.70	.515 13.08	1.447 36.75	1.700 43.18	Blue	.314 7.98	2	120	324047
		5/16 M8	.625 15.88	.515 13.08	1.447 36.75	1.762 44.75	Blue	.314 7.98	2	121	324048
		3/8	.625 15.88	.515 13.08	1.447 36.75	1.762 44.75	Blue	.314 7.98	2	122	324049
4 33,100-52,600 [16.8-26.7]	.051 1.30	1/4 M6	.546 13.87	.531 13.49	1.536 39.01	1.812 46.02	Yellow	.382 9.70	2	123	324050
		5/16 M8	.679 17.25	.531 13.49	1.536 39.01	1.878 47.70	Yellow	.382 9.70	2	124	324051
		3/8	.679 17.25	.531 13.49	1.536 39.01	1.878 47.70	Yellow	.382 9.70	2	125	324052*
2 52,600-83,700 [26.7-42.4]	.060 1.52	1/4 M6	.679 17.25	.578 14.68	1.705 43.31	2.045 51.94	Red	.468 11.89	2	126	324053
		3/8	.711 18.06	.578 14.68	1.705 43.31	2.063 52.40	Red	.468 11.89	2	127	324054
		1/2 M12	.855 21.72	.578 14.68	1.705 43.31	2.135 54.23	Red	.468 11.89	2	128	324055
1 <sup>1</sup> 83,700-119,500 [42.4-60.6]	.073 1.85	1/4 M6	.807 20.50	.625 15.88	2.033 51.64	2.426 61.62	Blue	.580 14.73	2	129	324056
		3/8	.807 20.50	.625 15.88	2.033 51.64	2.426 61.62	Blue	.580 14.73	2	130	324057
		1/2 M12	.875 22.23	.625 15.88	2.017 51.23	2.454 62.33	Blue	.580 14.73	2	131	324058
1/0 83,700-119,500 [42.4-60.6]	.073 1.85	1/4 M6	.807 20.50	.625 15.88	2.033 51.64	2.426 61.62	Blue	.580 14.73	2	132	324113
		3/8	.807 20.50	.625 15.88	2.033 51.64	2.426 61.62	Blue	.580 14.73	2	133	324057
		1/2 M12	.875 22.23	.625 15.88	2.017 51.23	2.454 62.33	Blue	.580 14.73	2	134	324058
2/0 119,500-150,500 [60.6-76.3]	.083 2.11	5/16 M8	.926 23.52	.625 15.88	2.026 51.46	2.416 61.37	Yellow	.610 15.49	2	135	324083
		3/8	.926 23.52	.625 15.88	2.026 51.46	2.416 61.37	Yellow	.610 15.49	2	136	324084
		1/2 M12	.926 23.52	.625 15.88	2.026 51.46	2.416 61.37	Yellow	.610 15.49	2	137	324085
3/0 150,000-190,000 [76.3-96.3]	.094 2.39	3/8	1.082 27.48	.625 15.88	2.294 58.27	2.794 70.97	Red	.680 17.27	2	138	324185
4/0 190,000-231,000 [96.3-117]	.105 2.67	3/8	1.150 29.21	.625 15.88	2.295 58.29	2.858 75.59	Blue	.765 19.43	2	140	324187
		1/2 M12	1.150 29.21	.625 15.88	2.295 58.29	2.858 75.59	Blue	.765 19.43	2	141	324188

\* Available in small packaging quantities.

<sup>1</sup> TE Connectivity recommends #1/0 AWG terminals for #1 AWG application.

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**Discrete Connectors**

**Product Facts**

- Compliance with MIL-STD-1553B hardware requirements
- Light weight
- Removable pin or socket contacts
- Termination with MIL-STD-1553B data bus cables, including EMP-hardened versions
- Continuous 360° shield coverage
- Rugged constructions
- Termination time of 1 to 2 minutes
- Inspectable solder terminations
- Low-skill assembly
- Reworkable and repairable terminations
- Strain relief built into the design
- Low-voltage drop and high reliability because of precisely controlled solder terminations
- Threaded and bayonet coupling styles
- Low total installed cost
- 1000-hour salt spray resistance
- Lower-cost connectors, for benchtop and mock-up



**Applications**

Designed specifically for MIL-STD-1553B data bus applications, the D-621 connector is intended to be a perfect match for the TE Connectivity airworthy data bus cable. Together they provide durable, reliable, and reworkable interconnection hardware for the MIL-STD-1553B market.

**Specifications/Approvals**

Series	Military	TE
DK-621	MIL-STD-1553B	D-6025

**Discrete Connectors** (Continued)

**Connector Kit Part Numbering System**

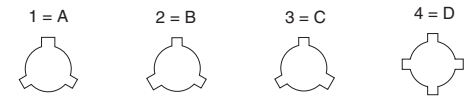
**DK-621-04 XX-XX**

**Contact (supplied in DK-621 kits only)**

P = Pin

S = Socket

**Polarization (bayonet styles only) (jack view)**



**Basic Connector Configurations**

*Threaded styles*

11 = Plug

12 = Jack

*Bayonet styles*

33 = Plug, A polarization

34 = Jack, A polarization

35 = Plug, B polarization

36 = Jack, B polarization

37 = Plug, C polarization

38 = Jack, C polarization

39 = Plug, D polarization

40 = Jack, D polarization

**D-621 connector, kitted with accessories**

**Example:**

DK-621-0434-1P = D-621 connector, kitted with accessories, jack bayonet style with A polarization and pin contact.



**Accessories**

**Product Facts**

- A single source for all harness components
- Products designed to work together



**Applications**

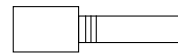
TE Connectivity manufactures all the products needed to build a MIL-STD-1553B data bus network. In addition to the main components (couplers, connectors, contacts, and cables), TE supplies the accessory components that may be necessary to complete a data bus system.

These include:

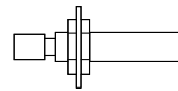
- Bus and stub terminators (spliced-in and connectorized D-621 series).
- Cable splice kits.
- EMI/environment-resistant connector caps.
- Braid terminators and strain relief tubing (for rework applications).
- Cable marking materials.

**Accessories** (Continued)

**Product Selection**



D-621 Plug



D-621 Jack



Splice-in

**Bus and Stub Terminators**

Spliced-in	12-inch Cable				
77-ohm 10612 cable	D-500-0463-612				
77-ohm 10613 cable	D-500-0463-613				
77-ohm 10614 cable	D-500-0463-614				
D-621 Series—Plug	Threaded	Bayonet A	Bayonet B	Bayonet C	Bayonet D
77-ohm pin contact	D-621-0413	D-621-0453	D-621-0454	D-621-0455	D-621-0456
77-ohm socket contact	D-621-0415	D-621-0469	D-621-0470	D-621-0471	D-621-0472
3000-ohm pin contact	D-621-0417	D-621-0457	D-621-0458	D-621-0459	D-621-0476
3000-ohm socket contact	D-621-0407	D-621-0473	D-621-0474	D-621-0475	D-621-0460
D-621 Series—Jack	Threaded	Bayonet A	Bayonet B	Bayonet C	Bayonet D
77-ohm pin contact	D-621-0418	D-621-0477	D-621-0478	D-621-0479	D-621-0480
77-ohm socket contact	D-621-0406	D-621-0461	D-621-0462	D-621-0463	D-621-0464
3000-ohm pin contact	D-621-0423	D-621-0481	D-621-0482	D-621-0483	D-621-0484
3000-ohm socket contact	D-621-0424	D-621-0465	D-621-0466	D-621-0467	D-621-0468
D-621 Series—L	Lanyard 7"	—	—	—	—

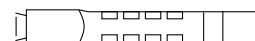
**Connector Caps**



D-621 Series	Threaded	Bayonet A	Bayonet B	Bayonet C	Bayonet D
Plug cap for jack connector Supplied with 7" Lanyard	D-600-0083	D-600-0068	D-600-0068	D-600-0068	D-600-0065

**Cable Splice Kits**

Cables	Flexible Crimp
All data bus cables	D-150-0708-5





**Accessories** (Continued)

**Terminator and Connector and Compatibility — Bayonet and Threaded Connectors**

Panel Thickness	Connector	Contact	Terminator Reference	Mate with	
				Standard Connector	Long Reach Connector
<b>Bayonet Connectors</b>					
<b>Polarity A</b>					
77 Ohm bus terminator	Plug	Pin	D-621-0453(-L)	DK-621-0434-1S	DK-621-0550-1S
	Plug	Socket	D-621-0469(-L)	DK-621-0434-1P	DK-621-0550-1P
	Jack	Pin	D-621-0477(-L)	DK-621-0433-1S	—
3K Ohm stub terminator	Jack	Socket	D-621-0461(-L)	DK-621-0433-1P	—
	Plug	Pin	D-621-0457(-L)	DK-621-0434-1S	DK-621-0550-1S
	Plug	Socket	D-621-0473(-L)	DK-621-0434-1P	DK-621-0550-1P
	Jack	Pin	D-621-0481(-L)	DK-621-0433-1S	—
	Jack	Socket	D-621-0465(-L)	DK-621-0433-1P	—
	Jack	Socket	D-621-0465(-L)	DK-621-0433-1P	—
<b>Polarity B</b>					
77 Ohm bus terminator	Plug	Pin	D-621-0454(-L)	DK-621-0436-2S	DK-621-0548-2S
	Plug	Socket	D-621-0470(-L)	DK-621-0436-2P	DK-621-0548-2P
	Jack	Pin	D-621-0478(-L)	DK-621-0435-2S	—
	Jack	Socket	D-621-0462(-L)	DK-621-0435-2P	—
3K Ohm stub terminator	Plug	Pin	D-621-0458(-L)	DK-621-0436-2S	DK-621-0548-2S
	Plug	Socket	D-621-0474(-L)	DK-621-0436-2P	DK-621-0548-2P
	Jack	Pin	D-621-0482(-L)	DK-621-0435-2S	—
	Jack	Socket	D-621-0466(-L)	DK-621-0435-2P	—
<b>Polarity C</b>					
77 Ohm bus terminator	Plug	Pin	D-621-0455(-L)	DK-621-0438-3S	DK-621-0546-3S
	Plug	Socket	D-621-0471(-L)	DK-621-0438-3P	DK-621-0546-3P
	Jack	Pin	D-621-0479(-L)	DK-621-0437-3S	—
	Jack	Socket	D-621-0463(-L)	DK-621-0437-3P	—
3K Ohm stub terminator	Plug	Pin	D-621-0459(-L)	DK-621-0438-3S	DK-621-0546-3S
	Plug	Socket	D-621-0475(-L)	DK-621-0438-3P	DK-621-0546-3P
	Jack	Pin	D-621-0483(-L)	DK-621-0437-3S	—
	Jack	Socket	D-621-0467(-L)	DK-621-0437-3P	—
<b>Polarity D</b>					
77 Ohm bus terminator	Plug	Pin	D-621-0456(-L)	DK-621-0440-4S	DK-621-0551-4S
	Plug	Socket	D-621-0472(-L)	DK-621-0440-4P	DK-621-0551-4P
	Jack	Pin	D-621-0480(-L)	DK-621-0439-4S	—
	Jack	Socket	D-621-0464(-L)	DK-621-0439-4P	—
3K Ohm stub terminator	Plug	Pin	D-621-0460(-L)	DK-621-0440-4S	DK-621-0551-4S
	Plug	Socket	D-621-0476(-L)	DK-621-0440-4P	DK-621-0551-4P
	Jack	Pin	D-621-0468(-L)	DK-621-0439-4S	—
	Jack	Socket	D-621-0484(-L)	DK-621-0439-4P	—
<b>Threaded Connectors</b>					
77 Ohm bus terminator	Plug	Pin	D-621-0413(-L)	DK-621-0412-S	DK-621-0512-S
	Plug	Socket	D-621-0415(-L)	DK-621-0412-P	DK-621-0512-P
	Jack	Pin	D-621-0418(-L)	DK-621-0411-S	—
	Jack	Socket	D-621-0406(-L)	DK-621-0411-P	—
3K Ohm stub terminator	Plug	Pin	D-621-0417(-L)	DK-621-0412-S	DK-621-0512-S
	Plug	Socket	D-621-0407(-L)	DK-621-0412-P	DK-621-0512-P
	Jack	Pin	D-621-0423(-L)	DK-621-0411-S	—
	Jack	Socket	D-621-0424(-L)	DK-621-0411-P	—

**Accessories** (Continued)

**Triaxial Connectors and Terminator Compatibility — Bayonet and Threaded Connectors**

Panel Thickness	Connector	Contact	Connector Reference	Mate with		
				Connector	77 Ohm Bus Terminator	3K Ohm Stub Terminator
<b>Bayonet Connectors</b>						
<b>Polarity A</b>						
	Plug	Pin	DK-621-0433-1P	DK-621-0434-1S	D-621-0461(-L)	D-621-0465 (-L)
	Plug	Socket	DK-621-0433-1S	DK-621-0434-1P	D-621-0477(-L)	D-621-0481(-L)
Standard	Jack	Pin	DK-621-0434-1P	DK-621-0433-1S	D-621-0461(-L)	D-621-0473(-L)
2.4mm max.	Jack	Socket	DK-621-0434-1S	DK-621-0433-1P	D-621-0453(-L)	D-621-0457(-L)
Long Reach	Jack	Pin	DK-621-0550-1P	DK-621-0433-1S	D-621-0469(-L)	D-621-0473(-L)
12.5mm max.	Jack	Socket	DK-621-0550-1S	DK-621-0433-1P	D-621-0453(-L)	D-621-0457(-L)
<b>Polarity B</b>						
	Plug	Pin	DK-621-0435-2P	DK-621-0436-2S	D-621-0462(-L)	D-621-0474 (-L)
	Plug	Socket	DK-621-0435-2S	DK-621-0436-2P	D-621-0478(-L)	D-621-0458(-L)
Standard	Jack	Pin	DK-621-0436-2P	DK-621-0435-2S	D-621-0470(-L)	D-621-0474(-L)
2.4mm max.	Jack	Socket	DK-621-0436-2S	DK-621-0435-2P	D-621-0454(-L)	D-621-0458(-L)
Long Reach	Jack	Pin	DK-621-0448-2P	DK-621-0435-2S	D-621-0470(-L)	D-621-0467(-L)
12.5mm max.	Jack	Socket	DK-621-0448-2S	DK-621-0435-2P	D-621-0454(-L)	D-621-0483(-L)
<b>Polarity C</b>						
	Plug	Pin	DK-621-0437-3P	DK-621-0438-3S	D-621-0463(-L)	D-621-0467(-L)
	Plug	Socket	DK-621-0437-3S	DK-621-0438-3P	D-621-0479(-L)	D-621-0483(-L)
Standard	Jack	Pin	DK-621-0438-3P	DK-621-0437-3S	D-621-0471(-L)	D-621-0475(-L)
2.4mm max.	Jack	Socket	DK-621-0438-3S	DK-621-0437-3P	D-621-0455(-L)	D-621-0459(-L)
Long Reach	Jack	Pin	DK-621-0446-3P	DK-621-0437-3S	D-621-0471(-L)	D-621-0475(-L)
12.5mm max.	Jack	Socket	DK-621-0446-3S	DK-621-0437-3P	D-621-0455(-L)	D-621-0459(-L)
<b>Polarity D</b>						
	Plug	Pin	DK-621-0439-4P	DK-621-0440-4S	D-621-0464(-L)	D-621-0468(-L)
	Plug	Socket	DK-621-0439-4S	DK-621-0440-4P	D-621-0480(-L)	D-621-0484(-L)
Standard	Jack	Pin	DK-621-0440-4P	DK-621-0439-4S	D-621-0472(-L)	D-621-0476(-L)
2.4mm max.	Jack	Socket	DK-621-0440-4S	DK-621-0439-4P	D-621-0456(-L)	D-621-0460(-L)
Long Reach	Jack	Pin	DK-621-0551-4P	DK-621-0439-4S	D-621-0472(-L)	D-621-0476(-L)
12.5mm max.	Jack	Socket	DK-621-0551-4S	DK-621-0439-4P	D-621-0456(-L)	D-621-0460(-L)
<b>Threaded Connectors</b>						
	Plug	Pin	DK-621-0411-P	DK-621-0412-S	D-621-0406(-L)	D-621-0424(-L)
	Plug	Socket	DK-621-0411-S	DK-621-0412-P	D-621-0418(-L)	D-621-0423(-L)
Standard	Jack	Pin	DK-621-0412-P	DK-621-0411-S	D-621-0415(-L)	D-621-0407(-L)
2.4mm max.	Jack	Socket	DK-621-0412-S	DK-621-0411-P	D-621-0413(-L)	D-621-0417(-L)
Long Reach	Jack	Pin	DK-621-0412-P	DK-621-0411-S	D-621-0415(-L)	D-621-0407(-L)
12.5mm max.	Jack	Socket	DK-621-0412-S	DK-621-0411-P	D-621-0413(-L)	D-621-0417(-L)



Data Bus (MIL-STD-1553B)  
Components

**Accessories** (Continued)

**Triaxial Connectors and Terminator Compatibility — to European norme 3716**

Panel Thickness	Connector	Contact	Connector Reference	Mate with		
				Connector	77 Ohm Bus Terminator	3K Ohm Stub Terminator
<b>Triaxial Connectors</b>						
	Plug	Pin	DK-3716-F101-TP	DK-621-E102-TS	D-621-E077-S	D-621-E03K-S
	Plug	Socket	DK-3716-F101-TS	DK-621-E102-TP	D-621-E077-P	D-621-E03K-P
	Plug	Pin	DK-3716-F201-TP	DK-621-E202-TS	D-621-E077-S	D-621-E03K-S
	Plug	Socket	DK-3716-F201-TS	DK-621-E202-TP	D-621-E077-P	D-621-E03K-P
Standard 2.4mm max.	Jack	Pin	DK-3716-E102-TP	DK-621-F101-TS	D-621-F077-S	D-621-F03K-S
	Jack	Socket	DK-3716-E102-TS	DK-621-F101-TP	D-621-F077-P	D-621-F03K-P
	Jack	Pin	DK-3716-E202-TP	DK-621-F201-TS	D-621-F077-S	D-621-F03K-S
	Jack	Socket	DK-3716-E202-TS	DK-621-F201-TP	D-621-F077-P	D-621-F03K-P
Long Reach 12.5mm max.	Jack	Pin	DK-3716-E112-TP	DK-621-F101-TS	D-621-F077-S	D-621-F03K-S
	Jack	Socket	DK-3716-E112-TS	DK-621-F101-TP	D-621-F077-P	D-621-F03K-P
	Jack	Pin	DK-3716-E212-TP	DK-621-F201-TS	D-621-F077-S	D-621-F03K-S
	Jack	Socket	DK-3716-E212-TS	DK-621-F201-TP	D-621-F077-P	D-621-F03K-P

Panel Thickness	Connector	Contact	Terminator Reference	Mate with	
				Standard Connector	Long Reach Connector
<b>Terminators</b>					
77 Ohm bus terminator	Plug	Pin	DK-3716-F077-P	DK-3716-E#02-TS	DK-3716-E#12K-TS
	Plug	Socket	DK-3716-F077-S	DK-3716-E#02-TP	DK-3716-E#12K-TP
	Jack	Pin	DK-3716-F077-P	DK-3716-E#01-TS	—
	Jack	Socket	DK-3716-F077-S	DK-3716-E#01-TP	—
3K Ohm stub terminator	Plug	Pin	DK-3716-E03K-P	DK-3716-E#02-TS	DK-3716-E#12K-TS
	Plug	Socket	DK-3716-E03K-S	DK-3716-E#02-TP	DK-3716-E#12K-TP
	Jack	Pin	DK-3716-E03K-P	DK-3716-E#01-TS	—
	Jack	Socket	DK-3716-E03K-S	DK-3716-E#01-TP	—

**Triaxial Size 8 Contacts**

**Product Facts**

- One-step termination
- Termination time of 1 to 2 minutes
- No requirements for special termination tools
- No requirements for special skills
- Reworkable and repairable terminations
- Strain relief
- Continuous 360° shield coverage
- Triaxial mating face for least susceptibility to damage
- Rugged construction, because only two parts are being soldered together
- Inspectable solder terminations
- Low voltage drop and high reliability due to precisely controlled solder termination



**Applications**

Contacts provide full shield coverage with a simple, quick, and reliable termination system. 24 AWG twist-pair data bus cables are terminated with triaxial SolderTacts contacts, which fit size 8 cavities of MIL-C-38999, Series 1, 3, or 4 connectors.

brand size 8 triaxial data bus contacts for MIL-C-38999 connectors have interfaces that comply with MIL-C-39029/90 and /91 to provide ease of termination, and intermateability with more cumbersome crimp contacts.

These contacts provide a fast and convenient method of implementing MIL-STD-1553B connections in MIL-STD-1760 applications.

**Specifications/Approvals**

Series	TE
Size 8	D-6002

**Product Selection**

Cable Type	Pin	Socket
10612	DK-602-0156-N-1	DK-602-0157-N-1
10613	DK-602-0156-N-2	DK-602-0157-N-2
10614	DK-602-0156-N-3	DK-602-0157-N-3

**Engineering Notes**



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**12**

Supporting Information



**Equivalents and Conversions**

**Decimal Equivalents**

Fraction of Inch	Decimal of Inch	Decimal Millimeters	Fraction of Inch	Decimal of Inch	Decimal Millimeters
1/64	.0156	0.3969		.5118	13.0000
1/32	.0313	0.7938	33/64	.5156	13.0969
	.0394	1.0000	17/32	.5313	13.4938
3/64	.0469	1.1906	35/64	.5469	13.8906
1/16	.0625	1.5875		.5512	14.0000
5/64	.0781	1.9844	9/16	.5625	14.2875
	.0787	2.0000	37/64	.5781	14.6844
3/32	.0938	2.3813		.5906	15.0000
7/64	.1094	2.7781	19/32	.5938	15.0813
	.1181	3.0000	39/64	.6094	15.4781
1/8	.1250	3.1750	5/8	.6250	15.8750
9/64	.1406	3.5719		.6299	16.0000
5/32	.1563	3.9688	41/64	.6406	16.2719
	.1575	4.0000	21/32	.6563	16.6688
11/64	.1719	4.3656		.6693	17.0000
3/16	.1875	4.7625	43/64	.6719	17.0656
	.1969	5.0000	11/16	.6875	17.4625
13/64	.2031	5.1594	45/64	.7031	17.8594
7/32	.2188	5.5563		.7087	18.0000
15/64	.2344	5.9531	23/32	.7188	18.2563
	.2362	6.0000	47/64	.7344	18.6531
1/4	.2500	6.3500		.7480	19.0000
17/64	.2656	6.7469	3/4	.7500	19.0500
	.2756	7.0000	49/64	.7656	19.4469
9/32	.2813	7.1438	25/32	.7813	19.8438
19/64	.2969	7.5406		.7874	20.0000
5/16	.3125	7.9375	51/64	.7969	20.2406
	.3150	8.0000	13/16	.8125	20.6375
21/64	.3281	8.3344		.8268	21.0000
11/32	.3438	8.7313	53/64	.8281	21.0344
	.3543	9.0000	27/32	.8438	21.4313
23/64	.3594	9.1281	55/64	.8594	21.8281
3/8	.3750	9.5250		.8661	22.0000
25/64	.3906	9.9219	7/8	.8750	22.2250
	.3937	10.0000	57/64	.8906	22.6219
13/32	.4063	10.3188		.9055	23.0000
27/64	.4219	10.7156	29/32	.9063	23.0188
	.4331	11.0000	59/64	.9219	23.4156
7/16	.4375	11.1125	15/16	.9375	23.8125
29/64	.4531	11.5094		.9449	24.0000
15/32	.4688	11.9063	61/64	.9531	24.2094
	.4724	12.0000	31/32	.9688	24.6063
31/64	.4844	12.3031		.9843	25.0000
1/2	.5000	12.7000	63/64	.9844	25.0031
			1	1.0000	25.4000

**Equivalents and Conversions** (Continued)

**Conversion Factors**

Length	Area	Volume	Mass
Inches x 25.40 = Millimeters	Sq. inches x 6.452 = Sq. centimeters	Cu. inches x 16.39 = Cu. centimeters	Ounces x 28.35 = Grams
Millimeters x 0.03937 = Inches	Sq. centimeters x 0.1550 = Sq. inches	Cu. cm. x 0.06102 = Cu. inches	Grams x 0.03527 = Ounces
Feet x 0.3048 = Meters	Sq. feet x 0.0929 = Sq. meters	Cu. feet x 0.02832 = Cu. meters	Pounds x 0.4536 = Kilograms
Meters x 3.281 = Feet	Sq. meters x 10.76 = Sq. feet	Cu. meters x 35.31 = Cu. feet	Kilograms x 2.205 = Pounds
Miles x 1.609 = Kilometers	Sq. miles x 2.59 = Sq. kilometers		Kilograms/km x 0.6214 = Pounds/kft
Kilometers x 0.6214 = Miles	Sq. kilometers x 0.3861 = Sq. miles		Pounds/kft x 1.4881 = Kilograms/km
Ohms/km x 0.3048 = Ohms/kft	Circular mils x 0.7854 = Sq. mil		

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Supporting Information

**Prefixes (SI), Values,  
and Symbols**

Prefix	Value	Symbol	Prefix	Value	Symbol
Tera	10 <sup>12</sup>	T	Deci	10 <sup>-1</sup>	d
Giga	10 <sup>9</sup>	G	Centi	10 <sup>-2</sup>	c
Mega	10 <sup>6</sup>	M	Milli	10 <sup>-3</sup>	m
Kilo	10 <sup>3</sup>	k	Micro	10 <sup>-6</sup>	μ
Hecto	10 <sup>2</sup>	h	Nano	10 <sup>-9</sup>	n
Deca	10 <sup>1</sup>	da	Pico	10 <sup>-12</sup>	p

**Temperature Conversion Formula**

$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1.8$   
 $^{\circ}\text{F} = (^{\circ}\text{C} \times 1.8) + 32$

$^{\circ}\text{F}$	$^{\circ}\text{C}$	$^{\circ}\text{F}$	$^{\circ}\text{C}$	$^{\circ}\text{F}$	$^{\circ}\text{C}$	$^{\circ}\text{F}$	$^{\circ}\text{C}$
-103	-75.00	-30	-34.44	25	-3.89	65	18.33
-101.2	-74.00	-28	-33.33	26	-3.33	66	18.89
-99.4	-73.00	-26	-32.22	27	-2.78	67	19.44
-97.6	-72.00	-24	-31.11	28	-2.22	68	20.00
-95.8	-71.00	-22	-30.00	29	-1.67	69	20.56
-94.0	-70.00	-20	-28.89	30	-1.11	70	21.11
-92.2	-69.00	-18	-27.78	31	-0.56	71	21.67
-90.4	-68.00	-16	-26.67	32	0.00	72	22.22
-88.6	-67.00	-14	-25.56	33	0.56	73	22.78
-86.8	-66.00	-12	-24.44	34	1.11	74	23.33
-85.0	-65.00	-10	-23.33	35	1.67	75	23.89
-83.2	-64.00	-8	-22.22	36	2.22	77	25.00
-81.4	-63.00	-6	-21.11	37	2.78	77	25.00
-79.6	-62.00	-4	-20.00	38	3.33	78	25.56
-77.8	-61.00	-2	-18.89	39	3.89	79	26.11
-76.0	-60.00	0	-17.78	40	4.44	80	26.67
-74.2	-59.00	1	-17.22	41	5.00	81	27.22
-72.4	-58.00	2	-16.67	42	5.56	82	27.78
-70.6	-57.00	3	-16.11	43	6.11	83	28.33
-68.8	-56.00	4	-15.56	44	6.67	84	28.89
-67.0	-55.00	5	-15.00	45	7.22	85	29.44
-65.2	-54.00	6	-14.44	46	7.78	86	30.00
-63.4	-53.00	7	-13.89	47	8.33	87	30.56
-61.6	-52.00	8	-13.33	48	8.89	88	31.11
-59.8	-51.00	9	-12.78	49	9.44	89	31.67
-58.0	-50.00	10	-12.22	50	10.00	90	32.22
-56.2	-49.00	11	-11.67	51	10.56	91	32.78
-54.4	-48.00	12	-11.11	52	11.11	92	33.33
-52.6	-47.00	13	-10.56	53	11.67	93	33.89
-50.8	-46.00	14	-10.00	54	12.22	94	34.44
-49.0	-45.00	15	-0.44	55	12.78	95	35.00
-47.2	-44.00	16	-8.89	56	13.33	96	35.56
-45.4	-43.00	17	-8.33	57	13.89	97	36.11
-43.6	-42.00	18	-7.78	58	14.44	98	36.67
-41.8	-41.00	19	-7.22	59	15.00	99	37.22
-40	-40.00	22	-6.11	60	15.56	100	37.78
-38	-38.89	21	-6.11	61	16.11	101	38.33
-36	-37.78	22	-5.56	62	16.67	102	38.88
-34	-36.67	23	-5.00	63	17.22	103	39.44
-32	-35.56	24	-4.44	64	17.78	104	40.00

**Temperature Conversion Formula** (Continued)

$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1.8$   
 $^{\circ}\text{F} = (^{\circ}\text{C} \times 1.8) + 32$   
 (Continued)

$^{\circ}\text{F}$	$^{\circ}\text{C}$	$^{\circ}\text{F}$	$^{\circ}\text{C}$	$^{\circ}\text{F}$	$^{\circ}\text{C}$	$^{\circ}\text{F}$	$^{\circ}\text{C}$
105	40.55	145	62.78	185	85.00	325	162.78
106	41.11	146	63.33	186	85.55	330	165.56
107	41.66	147	63.88	187	86.11	335	168.33
108	42.22	148	64.44	189	87.22	340	171.11
109	42.77	149	65.00	189	87.22	345	173.89
110	43.33	150	65.56	190	87.78	350	176.67
111	43.88	151	66.11	191	88.33	355	179.44
112	44.44	152	66.66	192	88.88	360	182.22
113	45.00	153	67.22	193	89.44	365	185.00
114	45.55	154	67.77	194	90.00	370	187.78
115	46.11	155	68.33	195	90.55	375	190.55
116	46.66	156	68.88	196	91.11	380	193.33
117	47.22	157	69.44	197	91.66	385	196.11
118	47.77	158	70.00	198	92.22	390	198.89
119	48.33	159	70.55	199	92.77	395	201.67
120	48.89	160	71.11	200	93.33	400	204.44
121	49.44	161	71.66	205	96.11	405	207.22
122	50.00	162	72.22	210	98.89	410	210.00
123	50.55	163	72.77	215	101.67	415	212.78
124	51.11	164	73.33	220	104.44	425	215.56
125	51.67	165	73.89	225	107.22	425	218.33
126	52.22	166	74.44	230	110.00	430	221.11
127	52.77	167	75.00	235	112.78	435	223.89
128	53.33	168	75.55	240	115.56	440	226.67
129	53.88	169	76.11	245	118.33	445	229.44
130	54.44	170	76.67	250	121.11	450	232.22
131	55.00	171	77.22	255	123.89	455	235.00
133	56.11	172	77.77	260	126.67	460	237.78
133	56.11	173	78.33	265	129.44	465	240.55
134	56.66	174	78.88	270	132.22	470	243.33
135	57.22	175	79.44	275	135.00	475	246.11
136	57.77	176	80.00	280	137.78	480	248.89
137	58.33	177	80.55	285	140.55	485	251.67
138	58.88	178	81.11	290	143.33	490	254.44
139	59.44	179	88.66	295	146.11	495	257.22
140	60.00	180	82.22	300	148.89		
141	60.55	181	82.77	305	151.67		
142	61.11	182	83.33	310	154.44		
143	61.66	183	83.88	315	157.22		
144	62.22	184	84.44	320	160.00		

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Supporting Information

**Engineering Notes**



**Glossary of Terms**

**A**

**abrasion-resistance** A measure of the ability of a wire or wire covering to resist damage by mechanical means.

**accelerated aging** A test in which voltage, temperature, or other test parameters are increased above normal operating values to obtain observable deterioration in a relatively short time. The plotted results give service life within the context of the test.

**adapter** A device usually attached to the rear of connectors that provides for the attachment of harnessing components, such as strain-relief clamps, heat-shrinkable boots, and braid.

**adhesive (hot melt)** Dual-wall tubing and precoated molded parts whose inner layer melts and flows when heated, fills voids in the areas being covered, and forms a mechanical bond to the substrate. Unlike an encapsulant, an adhesive forms a mechanical bond to the substrate.

**adhesive liner** Lining that melts and flows inside a sleeve or molded part, filling any voids in between the substrate and the sleeve or molded part. DuraSeal has an adhesive liner.

**aging** Change in the properties of a material over time and under specific conditions. Generally refers to environmental stimulus such as heat and light.

**altitude immersion seal** A seal able to withstand substantial pressure change (for example, from sea level to 75,000 feet).

**amnesia** The tendency over time for a heat-shrinkable elastomeric tubing or molded part to fail to recover completely to its specified recovered size. See shelf life.

**ampacity** See current-carrying capacity.

**amplitude** The magnitude of variation in a changing quantity from its zero value. The word requires modification — as with adjectives such as peak, maximum, rms, etc. — to designate the specific amplitude in question.

**arc voltage** voltage that continues to pass through a surge protector during activation of GDT (approx. 20 volts )

**ASTM (American Society for Testing and Materials)** A nonprofit industry-wide organization that formulates test methods and material specifications, and publishes standards, testing methods, recommended practices, definitions, and other materials.

**attenuation** A reduction in power. It occurs naturally during wave travel through lines, waveguides, space or a medium such as water. It may be produced intentionally by placing an attenuator in a circuit. The amount of attenuation is generally expressed in decibels per unit of length.

**AWG (American Wire Gauge)** The recognized method (in the United States) of specifying conductor size. The higher the gauge number, the smaller the conductor size.

**B**

**back mounted** A connector attached to the inside of a panel or box with its mounting flanges inside the equipment.

**band marking** A continuous circumferential band applied to a wire at regular intervals for identification.

**bare conductor** A conductor not covered with insulating material.

**barrel** 1.) Connector barrel: The section of the terminal, splice, or contact that accommodates the stripped conductor. 2.) Insulation barrel: The section of the terminal, splice, or contact that accommodates the conductor insulation. 3.) Open barrel: The section of a cap that accommodates the conductor.

**batch number** See lot number.

**bayonet coupling** A quick-coupling device for plug and receptacle connectors. Mating is accomplished by rotation of the two parts under pressure.

**beaming** Crosslinking by means of high-energy electrons.

**bellmouth** Flared at the mouth. The rear of a properly crimped wire barrel will have a slight flare (bellmouth) to relieve the strain on the wire strands as they leave the area of high compression and take their natural “lay”. A bellmouth condition may also be present in front of the wire barrel.

**binder** A spiral wrapping of a thread to hold together the members of a cable.

**blocking** The sticking together of insulated wires; usually caused by heat.

**BNC connector** A radio frequency connector covered by Military Specification. It has an impedance of 50 or 75 ohms, and is designed to operate in the 0 to 4 GHz frequency range. It features quick connect/disconnect by pin and cam bayonet coupling.

**body** Main or largest portion of a connector to which other portions are attached.

**bonding temperature** Temperature above which adhesive melts and flows sufficiently to form an adhesive bond between substrates.

**braid** A weave of metal fibers used as a shield covering for an insulated conductor or group of insulated conductors. When flattened it may be used as a grounding strap.

**braid angle** The angle between the braid strands and the axis of the cable.

**breakdown voltage** The voltage at which an insulator or dielectric fails to maintain the applied voltage.

**breakout** A region in a harness assembly where a wire or a group of wires is detached to form a separate, terminated branch. Also known as a transition.

**brittle temperature** The temperature below which a material becomes brittle, often measured by a cold impact test.

**broad-band E** Interference generated over a wide range of frequencies (e.g., automotive ignition noise).

**bulkhead** A term used to define a mounting style of connectors. Bulkhead connectors are designed to be inserted into a panel cutout from the rear (component side) of the panel.

**bunch stranding** A method of twisting individual strands to form a finished stranded conductor. Specifically, a number of strands twisted together in a common direction and with a uniform pitch (or twist) per inch.

**bus** A communal circuit over which data or power is transmitted.

**C**

**cable** Two or more wires in a twisted or parallel configuration. Also, a shielded wire.

**cable clamp** A mechanical clamp attached to the cable side of a termination assembly to support the cable or wire bundle. It provides strain relief and absorbs vibration and shock that would otherwise be transmitted by the cable terminations.

**cable clamp adapter** A mechanical adapter that attaches to the rear of a termination assembly to allow the attachment of a cable clamp.

**cable sealing clamp** A device consisting of a gland nut designed to seal around the jacket of a cable.

**cabler** A machine that mechanically assembles a group of insulated wires.

**cabling** The act of twisting together two or more insulated components to form a cable.

**capacitance** The property of an electrical conductor (dielectric in a capacitor) that permits the storage of energy as a result of electrical displacement. The basic unit of capacitance is the farad, however, measurement is more commonly in microfarads or picofarads.

**carrier** A group of strands or ends used to form a finished braid.

**cavity** A metallic enclosure in some types of tubes and circuits within which resonant fields may be excited at the microwave frequency to which the cavity is tuned. Usually referred to as resonant cavity. See also: contact cavity.

**13**

Glossary of Terms



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**Glossary of Terms** (Continued)

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**characteristic impedance** The ratio of voltage to current at any point along a transmission line on which there are no standing waves.

**chemical resistance** The ability of an insulation to withstand the presence of materials—such as acids, bases, water, salt water, and fuels—that can deteriorate the insulation, or that, if penetrable to the conductor, can cause dielectric loss of insulating qualities.

**Cheminax cables** Raychem's registered trade name for coaxial cables.

**circuit** The interconnection of a number of electrical elements or parts to accomplish a desired function.

**circular mil area (CMA)** A unit of area equal to the area of a circle whose diameter is 1 mil (0.001 inch). Used chiefly in specifying cross-sectional areas of conductors. (See AMP Brochure No. 4402-8, Computing Circular Mil Area for AMP Terminals and Splices).

**clocking** The arrangement of connector inserts, jackscrews, polarizing pins, sockets, keys/keyways, or housing configurations to prevent the mismatching or cross-mating of connectors. See also polarization.

**closed entry contact** A female contact designed to prevent the entry of a pin or probing device having a cross-sectional dimension (diameter) greater than the mating pin.

**coax** See coaxial cable.

**coaxial cable** A transmission line consisting of two conductors concentric with and insulated from each other. In its flexible form it consists of either a solid or stranded center conductor surrounded by a dielectric. A braid is then woven over the dielectric to form an outer conductor. A weatherproof plastic covering, usually vinyl, is placed on top of the braid.

**cold bend** A test conducted by wrapping tubing or cable around a mandrel or by bending it in an arc while at a low temperature.

**cold flow** Permanent deformation of polymeric materials (insulation) at ambient temperature due to mechanical force or pressure (not due to heat softening).

**cold impact** A test performed by subjecting a component to a specified impact during exposure to low temperature. It measures the brittleness of the material.

**cold joint** A soldered joint made with insufficient heat. (Solder hasn't completely flowed and wet the substrate.)

**color code** A means of identifying cable components using solid colors or stripes. Also, the scheme that assigns a number from 0 to 9 for each of 10 colors.

**color stability** The time and temperature ranges within which the color of a material will remain within the specified color limit.

**component** A wire or cable that is combined with other wires or cables to make a multicomponent cable.

**compound** An insulating or jacketing material made by formulating polymeric materials and additives.

**Compound Under Strands (CUS)** A problem that occurs when loose stranding, or overheating during extrusion, allows compounds to get under individual strands of conductor.

**concentric stranding** A method of stranding conductor. Specifically, the final conductor is built up in layers so that the inner diameter of a succeeding layer is always equal to the outer diameter of the underlying layer.

**concentricity** Ratio (expressed as a percentage) of the thinnest to the heaviest wall thickness. Measured on expanded or recovered tubing, or wire insulation, or jacketing.

**conductivity** The capability of a material to carry electrical current, usually expressed as a percentage of copper conductivity (copper being 100%). Specifically, the ratio of the current flow to the potential difference causing the flow. The reciprocal of resistance.

**conductor** The metallic strand or strands used to carry an electric current.

**conductor resistance** The resistance to flow of the electrical current along a conductor. Expressed in ohms/1000 feet. (Usually referenced to 20°C).

**conduit** A tubular raceway for holding wires or cables.

**configuration** Arrangement of contacts in a multiple-contact connector.

**connector** A device used to physically and electrically connect two or more conductors.

**connector classes** Categories based on shape, function, and smallest-size contact in a series.

**connector insert** In connectors with metal shells, the part that holds contacts in proper arrangement while electrically insulating them from each other and from the shell.

**contact** The element in a connector that makes the actual electrical connection. Also the parts of a connector that actually carry the electrical current, and are touched together or separated to control the flow.

**contact crimp** A contact whose rear portion is a hollow cylinder that accepts the conductor. A crimping tool is applied to swage or form the contact metal firmly against the conductor. Sometimes referred to as a solderless contact.

**contact durability** The number of insertion and withdrawal cycles that a connector must be capable of withstanding while remaining within the performance levels of the applicable specification.

**contact engaging and separating force** Force required to either engage or separate contacts. Values are generally established for maximum and minimum forces.

**contact inspection hole** A hole, perpendicular to the cylindrical rear portion of screw machined contacts, used to check the depth to which wire has been inserted into the barrel.

**contact resistance** Measurement of electrical resistance of mated contacts when assembled in a connector under typical service use. Electrical resistance is determined by measuring from the rear of the electrical area of one contact to the rear of the contact area of the mating contact (excluding both crimps) while carrying a specified test current.

**contact size** The diameter of the engagement end of a pin contact; also related to the current-carrying capacity of a contact.

**contact, two-piece** A contact made of two separate parts joined by swedging, brazing or other means of fastening to form a single contact. While this provides the mechanical advantages of two metals, it also has the inherent electrical disadvantage of difference in conductivity.

**continuity** A continuous path for the flow of current in an electrical circuit.

**continuous operating temperature** Maximum temperature at which a component will maintain an acceptable lifetime performance, based on accelerated aging prediction.

**continuous service** Conditions (time, temperature, environment) that describe the lifetime requirements of a component.

**core** 1.) In cables, a component or assembly of components over which additional components, such as a shield or a sheath, are applied.  
2.) Inner wall of dual-wall heat-shrinkable tubing.

**corona** A discharge of electricity appearing as a bluish-purple glow on the surface of, and adjacent to, a conductor when the voltage gradient exceeds a certain critical value. It is caused by the ionization of surrounding air by high voltage.

**coupling ring** The portion of a plug that aids in the mating and demating of a plug and receptacle and holds the plug to the receptacle.

**cover, electrical connector** An item specifically designed to cover the mating end of a connector for mechanical and/or environmental protection. Also known as a dust cover.

**coverage** A calculated percentage that defines the completeness with which a braid or shield covers the surface of the underlying insulated conductor or conductors.

**Glossary of Terms** (Continued)

**crimp** The final configuration of a terminal barrel after the necessary compression forces have been applied to cause a functional union between the terminal barrel and the wire.

**crimp height** A top to bottom measurement of the crimped barrel, using a crimp height comparator in the prescribed manner. (Refer to AMP Instruction Sheet 7424).

**crimping dies** A term used to identify the shaping tools that, when moved toward each other, produce a certain desirable shape to the barrel of the terminal or contact that has been placed between them. Crimping dies are often referred to as die sets or as die inserts.

**crimping head** Tooling containing jaws and linkage for use in pneumatic or hydraulic powered units to crimp loose-piece contacts/terminals that may be too large for hand tool applications.

**crimping tool** A term commonly used to identify a hand held mechanical device that is used to crimp a contact, terminal or splice.

**crosslinking** The formation of bonds between molecular chains in a polymer by means of chemical catalyzation or electron bombardment. The properties of the resulting thermosetting material are usually improved.

**crosslinking by irradiation** A method of crosslinking polymers that makes a nonflowing material. This generally improves the properties of the polymer.

**crosstalk** A magnetic or electrostatic coupling which causes the unwanted transfer of energy from one circuit (disturbing circuit) to another circuit (disturbed circuit)

**crystallinity** The portion of polymer chains that are ordered in a regular (as opposed to amorphous) structure or a crystal lattice. Crystallinity tends to improve mechanical properties and fluid resistance. Crystalline or semi-crystalline materials have a well-defined melting point (shrink temperature) at which the structure becomes disordered and the polymer flows.

**CSA (Canadian Standards Association)** An agency that has developed standard specifications for products with particular emphasis on safety in the end use.

**curing** See thermoset.

**current** A movement or flow of electrons. Also, the measure of this flow, expressed in amperes.

**current-carrying capacity** The maximum current an insulated conductor is capable of carrying without exceeding its insulation- and /or jacket-temperature limitations under specified ambient conditions. Also known as ampacity.

**current rating** The maximum continuous electrical flow of current recommended for a given situation. It is expressed in amperes.

**cutout** The hole, usually round or rectangular, cut into a metal panel in order to mount a connector. The cutout may also include holes for mounting screws or bolts.

**cut-through resistance** Resistance of solid material to penetration by an object (typically a closely controlled knife edge) under conditions of pressure, temperature, and other elements.

**cycle** One complete sequence of values of an alternating quantity, including a rise to maximum in one direction and return to zero; a rise to maximum in the opposite direction and return to zero. The number of cycles occurring in one second is called the frequency.

**D**

**dB** Abbreviation — see decibel.

**D.C. sparkover voltage** defined as the maximum voltage across a device before it discharges the energy to ground when subjected to a slowly rising voltage ramp. A rate of rise of 100V/s is usually chosen for testing purposes.

**decibel** A unit expressing the ratio of two voltages, currents or powers. It is equal to 20 times the common logarithm of the ratio of two voltages across or two currents through equal loads, or 10 times the common logarithm of the two powers. One decibel is approximately the smallest change in audible power that can be recognized by the human ear.

**die closure** Term used to designate a crimping area (crimping chamber) when the dies are fully closed or bottomed. Die closure is checked with go/no go plug gage to insure that the crimp produced by the tooling satisfies the crimp height specification.

**dielectric** A material that serves as an insulator. The amount of resistance to voltage in a given insulation.

**dielectric breakdown** The voltage required to cause an electrical failure or breakthrough of the insulation. Determined by a destructive test. See also breakdown voltage.

**dielectric constant (also K)** The ratio of the capacitance between two electrodes with a solid, liquid, or gaseous dielectric, to the capacitance with air between the electrodes. Also called permittivity and specific inductive capacity. Generally low values are desirable for insulation.

**dielectric strength** The maximum voltage a dielectric can withstand without rupture. Usually expressed as volts per mil.

**dielectric withstanding voltage** The maximum potential gradient that a dielectric material can withstand without failure.

**Direct Current Resistance (DCR)** The resistance offered by any circuit to the flow of direct current.

**direction of lay** The lateral direction in which the strands or elements of a cable run over the top of the cable as they recede from the observer. Expressed as right-hand or left-hand lay.

**discontinuity** Rated interconnection: a broken connection (open circuit) or the loss of a specified connection characteristic. Transient phenomena: Short term (temporary) interruption or unacceptable variation in current or voltage.

**dissipation** Unusable or lost energy, such as the production of unused heat in a circuit.

**dissipation factor** The ratio between the permittivity and the conductivity of a dielectric.

**distortion** An unwanted change or addition to a signal or waveform when it is amplified. This definition excludes noise which is an extraneous signal superimposed on the desired signal.

**drain wire** In a cable, an uninsulated conductor laid over the component, or components, in a foil-shield cable. Used as a ground connection.

**dummy load** A dissipative device used at the end of a transmission line or waveguide to convert transmitted energy into heat, so essentially no energy is radiated outward or reflected back to its source.

**dust cover** See cover, electrical connector.

**E**

**EID** See Expanded ID.

**elastic memory** The ability of a crosslinked polymer to be deformed to some predetermined shape, hold that shape for a period, and then return to its original shape upon the application of heat.

**elastomer** A material that exhibits very low or zero crystallinity and a high degree of flexibility (rubber is a synonym).

**electromagnetic compatibility (EMC)** The ability of an electronic device to operate in its intended environment without its performance being affected by EMI and without generating EMI that will affect other equipment.

**electromagnetic interference (EMI)** Unwanted electrical or electromagnetic energy that causes undesirable responses, degrading performance or complete malfunctions in electronic equipment. See also: noise.

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Glossary of Terms

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**Glossary of Terms** (Continued)

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**electromotive force (emf)** See voltage.

**elongation** The ultimate elongation, or elongation at rupture. Expressed as a percentage of original length.

**EMI** Abbreviation for electromagnetic interference.

**encapsulant** Description related to the way dual-wall tubing products and precoated molded parts melt and flow when heated, filling any void in the area being covered. Unlike an adhesive, an encapsulant does not form a mechanical bond to the substrate.

**encapsulation** Covering and sealing.

**end** The number of fibers or strands per carrier in braiding operations.

**environmentally sealed** A unit is provided with gaskets, seals, grommets, potting or other means to keep out moisture, dust, air or dirt which might reduce or impair its performance.

**epoxy** A family of thermosetting resins usually used as adhesives or encapsulants.

**ETFE (Ethylenetetrafluoroethylene)** A fluoropolymer used as base resin for SPEC 55 wire and HCTE.

**Expanded ID (EID)** The specified minimum (as supplied) internal diameter of tubing.

**expansion ratio** An expression of how much larger the inside diameter of a tubing is before shrinking. Specifically, the relationship of the minimum (expanded) inside diameter of tubing to the maximum (recovered) inside diameter, expressed as a ratio. See also shrink ratio.

**extraction tool** A tool used for removing contacts from a connector body.

**extrusion** A process that conveys plastic insulation material, generally via a screw, through forming dies and subsequently cools the insulation material to form a predetermined shape.

**F**

**feedthrough** A connector or terminal block, usually having double-ended terminals, which permits distribution and bussing of electrical circuits. Also used to describe a bushing in a wall or bulkhead, separating compartments at different pressure levels, with terminations on both sides.

**ferrule** A short tube used to make solderless connections to shielded or coaxial cable. Also molded into the plastic inserts of multiple contact connectors to provide strong, wear-resistant shoulders on which contact retaining springs can bear.

**filler** A material used in a cable construction to fill large interstices, thus providing a round construction; can be shaped, round, or in mastic forms. A nonfunctional member used in a cable to provide a more circular cross section.

**flame-resistant** A descriptor applied to a material that is inherently resistant to burning.

**flame retardant** A descriptor applied to a material that has been made or treated so as to resist burning.

**flat braid** A braided shield composed of flat strands.

**flat cable** A cable with each component in a single, flat plane.

**flat conductor** A conductor having a rectangular cross section, as opposed to a round or square cross section.

**flex life** A measure of the susceptibility of a conductor or other device to failure due to fatigue from repeated bending.

**fluoropolymer** A polymer that contains atoms of fluorine.

**flux** A liquid or solid that, when heated, exercises a cleaning and protective action upon surfaces. Used to promote or facilitate fusion during soldering or welding.

**frequency modulation (fm)** A scheme for modulating a carrier frequency in which the amplitude remains constant but the carrier frequency is displaced in frequency proportionally to the amplitude of the modulating signal. An fm broadcast is practically immune to atmospheric and man-made interference.

**fretting corrosion** A form of accelerated oxidation that appears at the interface of contacting materials undergoing slight cyclic relative motion. All non-nobel metals (tin) are susceptible to some degree of fretting corrosion and will suffer contact resistance increases.

**front mounted** A connector is said to be front mounted when it is attached to the outside of the mating side of a panel. A front mounted connector can only be installed or removed from the outside of the equipment.

**front release contacts** Connector contacts that are released from the front side of the connector and then removed from the back, wire side of the connector.

**full recovery temperature, minimum** See recovery temperature.

**G**

**gauge** A term used to denote the physical size of a wire. See also AWG.

**giga** A prefix meaning one billion (10<sup>9</sup>).

**gigahertz (GHz)** One billion cycles per second (10<sup>9</sup> cps).

**ground** A connection, intentional or accidental, between an electrical circuit and the earth or some conducting body (e.g. chassis) serving in place of earth.

**grounding conductor** A conductor that provides a current return path from an electrical device to ground.

**H**

**hardness** A general term that correlates with strength, rigidity, and resistance to abrasion or penetration. Measured on Shore or Rockwell scales. See also shore.

**harness** A system providing electrical connection between two or more points.

**heat aging** A test that subjects components or materials to temperatures above normal operating values to evaluate changes in performance in order to predict service life. See also accelerated aging.

**heat shock** A test to determine the stability of a material by continuously exposing it to an extremely high temperature for a short period of time. The test was developed both to demonstrate that the material is crosslinked and to observe any problems in dripping, cracking, or flowing.

**heat-shrinkable** A type of plastic material that has been cross-linked. A term describing tubes, sleeves, caps, boots, films or other forms of plastic which shrink to encapsulate, protect or insulate connections, splices, terminations and other configurations.

**hermetic** Airtight, impervious to external influence, as in a hermetic package. Often used to describe metal-to-metal solder or weld-sealed packages.

**hermetic seal** Hermetically sealed connectors are usually multiple contact connectors where the contacts are bonded to the connector by glass or other materials and permits maximum leakage rate of gas through the connector of 1.0 micron ft./hr. at one atmosphere pressure for special applications.

**hertz (Hz)** International standard term for cycles per second. Named after the German physicist Heinrich R. Hertz (e.g., 60 cycles per second is equal to 60 hertz or 60 Hz).

**hookup wire and cable** Wiring used to connect various points in electronic assemblies.



**Glossary of Terms** (Continued)

**hot-melt adhesive** An adhesive that becomes activated by heating. When heated, it melts, flows over the substrate surface, and forms an adhesive bond. Reheating causes the adhesive to remelt.

**I**

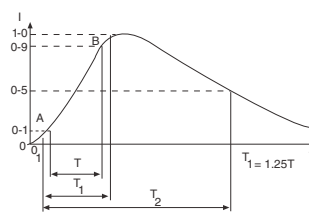
**ID (Internal Diameter)** The inside or internal diameter of a tubing.

**impedance (Z)** The total opposition offered by a component or circuit to the flow of alternating or varying current. Impedance is expressed in ohms and is similar to the actual resistance in a direct current circuit. In computations, impedance is handled as a complex ratio of voltage to current.

**impedance match** A condition in which the impedance of a component or circuit is equal to the internal impedance of the source, or the surge impedance of a transmission line. This gives maximum transfer of energy from the source to the load, as well as minimum reflection and distortion.

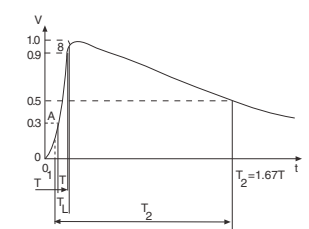
**impulse discharge current**

is defined as the peak current of an impulse which the device can withstand ten times (5 of each polarity at fixed time intervals) without substantially affecting device performance. The test normally used to determine this capacity uses the 8/20ms waveform as depicted at right where  $T_1=8\text{ms}$  and  $T_2=20\text{ms}$ .



**impulse sparkover voltage**

defined as the maximum level of voltage across a device before it discharges the energy to ground when subjected to a voltage impulse. The three common waveform profiles used to determine this capacity are:



**impulse test** A high-voltage test designed to locate pinholes in the insulation of a wire or cable by applying a voltage while the wire or cable is being drawn through an electrode.

**inductance** One cause of reactance. An electromagnetic phenomenon in which the expanding and collapsing of a magnetic field surrounding a conductor or device tends to impede changes in current. The effects of inductance become greater as frequencies increase. The basic unit for inductance is the henry.

**input impedance** The impedance that exists between the input terminals of an amplifier or transmission line when the source is disconnected. The circuit, signal level and frequency must be specified.

**insert** Meltable thermoplastic ring placed within a SolderSleeve device. Aids in encapsulation and sealing.

**insert (connector)** Part that holds the contacts in their proper arrangement and electrically insulates them from each other and from the shell.

**insert arrangement (connector)** The number, spacing, and arrangement of contacts in a termination assembly.

**insert cavity (connector)** A defined hole in the connector insert into which the contacts are inserted.

**insertion loss** The loss in load power due to the insertion of a component, connector or device at some point in a transmission system. Generally expressed in decibels as the ratio of the power received at the load before insertion of the apparatus, to the power received at the load after insertion.

**insertion tool (connector)** A tool used to insert removable contacts into a connector.

**inspection hole** A hole placed at one end of a contact barrel to permit visual inspection, to ensure that the conductor has been inserted to the proper depth in the barrel prior to crimping or soldering.

**insulated terminal** A solderless terminal with an insulated sleeve over the barrel to prevent a short circuit in certain installations.

**insulation crimp** The area of a terminal splice or contact that has been formed around the insulation of a wire.

**insulation, electrical** A nonconductive material usually surrounding or separating two conductive materials. Often called the dielectric in cables designed for high-frequency use.

**insulation grip** The ability of certain crimped terminals to hold firmly in place both the conductor and a small portion of insulation. This prevents the conductor from being exposed due to insulation receding away from the terminal.

**insulation resistance** The electrical resistance between two conductors separated by an insulating material.

**insulation, thermal** A nonconductive material that prevents the passage of heat.

**interconnection** The joining of one individual device with another.

**interface** The two surfaces of a multiple-contact connector that face each other when the connector is assembled.

**interference** An electrical or electromagnetic disturbance that causes undesirable response in electronic equipment.

**interstice** In a cable construction, the space or void left between or around the cabled components.

**irradiation** In insulations, the exposure of the material to high-energy emissions for the purpose of favorably altering the molecular structure via crosslinking.

**J**

**jack** A connecting device into which a plug can be inserted to make circuit connections. The jack may also have contacts which open or close to perform switching functions when the plug is inserted or removed. See also: receptacle.

**jacket** 1.) A material covering over a wire or cable assembly. 2.) Outer covering of a dual-wall heat-shrinkable tubing.

**jackscrew** A screw attached to one half of a two-piece, multiple-contact connector and used to draw both halves together and to separate them.

**K**

**Kapton** DuPont's trade name for polyimide film.

**key (connector)** A short pin or other projection that slides into a mating slot or groove to guide two parts being assembled.

**keying (connector)** Mechanical arrangement of guide pins and sockets, keying plugs, contacts, bosses, slots, keyways, inserts, or grooves in a connector housing, shell or insert that allows connectors of the same size and type to be lined up; used in situations where there is danger of making a wrong connection.

**keyway** The slot or groove in which a key slides.

**kV (kilovolt)** A unit equal to 1000 volts.

**Kynar** Trade name (of Elf Atochem North America) for polyvinylidene fluoride and its copolymers.

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## Glossary of Terms

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**Glossary of Terms** (Continued)

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**L**

**lacing cord or twine** Used for lacing and tying cable forms, hookup wires, cable ends, cable bundles, and wire harness assemblies. Available in various materials and impregnants.

**lanyard** A device, attached to certain quick-disconnect connectors, that permits uncoupling and separation of connector halves by a pull on a wire or cable.

**lay** Refers to direction or sometimes the ratio of lay length to core diameter.

**lay length** A term used in cable manufacturing to denote the distance of advance of one member, or a group of spirally twisted members in one turn, measured axially. The lay of any helical element of a cable or conductor is the axial length of a turn of the helix of that element.

**life cycle** A test to determine the length of time before failure in a controlled, usually accelerated environment.

**line impedance** Impedance as measured across the terminals of a transmission line; frequently the characteristic impedance of the line.

**liner** See core.

**longitudinal change (shrink tubing)** The change in length of tubing when recovered. Expressed in the percent of change from the original length.

**loss** Electrical energy that is dissipated as heat.

**loss factor** The product of the power factor and dielectric constant of an insulating material.

**lot number** The number that identifies one production run of material. Also known as a batch number.

**low-loss dielectric** An insulating material that has a relatively low dielectric loss, such as polyethylene or PTFE.

**lug** A termination, usually crimped or soldered to a conductor, that allows connection to be made with a retaining screw.

**M**

**marking** A printed identification number or symbol applied to the surface of a wire or cable.

**matched impedance** The coupling of two circuits in such a way that the impedance of one circuit equals the impedance of the other.

**mate** To join two connectors in a normal engaging mode.

**maximum discharge current** defined as the peak current of an impulse which the device can withstand once without substantially affecting device performance.

**mega (M)** A prefix meaning one million ( $10^6$ ).

**megarad** A unit for measuring radiation dosage.

**melt/flow index** Measurement of the flow of thermoplastic material under given conditions of temperature and pressure. Expressed as grams per unit of time.

**melting point** The temperature at which crystallinity disappears when crystalline material is heated.

**MIL** A unit equal to one one-thousandth of an inch (.001"); used in measuring the diameter of a conductor or thickness of insulation over a conductor.

**Military Specification** Military requirements. The demand imposed upon a system to meet a military operational need.

**MIL-SPEC** Abbreviation for Military Specification, which is a document the U.S. Government issues to define a product that will be used in military end-use applications.

**milking off** Action that occurs when the inner layer (the encapsulant or adhesive) of the tubing or molded part acts as a lubricant, allowing the tubing to slip off the substrate (because the tubing wants to recover to a smaller diameter).

**minimum full recovery temperature** See recovery temperature.

**mismatch** The condition in which the impedance of a source does not match or equal the impedance of the connected load. This reduces power transfer by causing reflection.

**MO (Manufacturing Order)** A series of operation-work-order cards identifying materials to be used and the type and quantity of products to be manufactured. An MO is controlled and issued by Production Control to the manufacturing operation.

**MOD Code (Material Modification Code)** A code designating a particular stage in the production process. Most MOD codes describe the way the product is packaged.

**MS (Manufacturing Specification)** A set of process instructions used in the manufacturing of tubing products. Customer Logistics, Product Management, or Manufacturing Engineering initiate the MS; Manufacturing Engineering controls it. The product design and quality parameters are provided to Manufacturing Engineering by Product Development and Quality Assurance. Successful trial runs of a new product or design usually precede the initiation of an MS (see SMO). A proprietary Raychem document, an MS is not available to customers.

**multiconductor** More than one component within a single-cable complex.

**multiple-conductor cable** A combination of two or more components cabled together.

**N**

**narrow-band** EMI generated from a device operating at a specific and limited range of frequencies. See also: electromagnetic interference (EMI).

**N Connector** A large radio frequency connector covered by Military Specification. It has an impedance of 50 ohms and is designed to operate in the 0 to 11 GHz frequency range. It has a threaded coupling and is physically larger than a TNC connector.

**nick** A small cut or notch in conductor strands or insulation.

**noise** An extraneous signal in an electrical circuit, capable of interfering with the desired signal. Classes of noise include burst of popcorn noise, intermediate frequency noise at low audio frequencies, white (thermal) noise, etc. Signals from power supply or ground line coupled into an amplifier output may be considered noise.

**nominal** A descriptor applied to a dimension representing the center of the range of tolerance or a value if no tolerance is applied.

**O**

**“O” crimp** An insulation support crimp for open barrel terminals and contacts. In its crimped form it resembles an “O” and conforms to the shape of the round wire insulation. “O” crimp is also used to describe the circumferential crimps used on COAXICON ferrules.

**OFT (Optional Flame Test)** Canadian Standards Association's test for flame-retardance. Tubing with an OFT rating is highly flame-retardant.

**ohm** The unit of measurement for electrical resistance. A circuit is said to have a resistance of one ohm when an applied emf of one volt causes a current of one ampere to flow.

**operating temperature** The maximum internal temperature at which a system, harness, or connector may operate in continuous service; generally expressed as a time and temperature.

**operating temperature range** The range between the maximum and the minimum internal temperature of insulation in a system, harness, or connector in continuous service. The lower limit is determined by low-temperature flex test.

**Optional Flame Test** See OFT.

**Glossary of Terms** (Continued)

**P**

**packaging** The process of physically locating, connecting, and protecting devices or components.

**panel** The side or front (usually metal) of a piece of equipment on which connectors are mounted.

**panel mount** A method of fixing a connector to a board, panel or frame. The mounted connector is usually the receptacle or female connector. The plug or male connector is usually the removable portion.

**PC (Production Control)** Group responsible for directing and regulating the movement of goods through the entire manufacturing cycle, from the requisitioning of raw materials to the delivery of the finished products.

**PCN** See RPN.

**peripheral seal** A seal provided around the periphery of connector inserts to prevent the ingress of fluids or contaminants at the perimeter of mated connectors.

**permeability (chemical)** The passage or diffusion (or rate of passage) of a gas, vapor, liquid or solid through a barrier without physically or chemically affecting it.

**permeability (magnetic)** The measure of how much better a material is than air as a path for magnetic lines of force. Air is assumed to have a permeability of 1.

**permittivity** See dielectric constant.

**pick** The number of crossovers of braiding units per inch of cable.

**pigtail** A short conductor or wire extending from an electrical or electronic device to serve as a jumper or ground connection.

**pin contact** An electrical terminal, usually in a connector. Normally a smaller termination than a lug.

**plastic deformation** Change in dimensions under a load that does not recover when the load is removed.

**plasticizer** A softener or lubricant added to a compound to make it easier to process or more flexible in use.

**plating** The overlaying of a thin coating of metal on metallic components to improve conductivity, facilitate soldering, or prevent corrosion.

**plug** The part of a connector that is normally “removable” from the other, permanently mounted part; usually that half of a two-piece connector that contains the pin contacts.

**plug connector** An electrical connector that is intended to be attached to the free end of a conductor, wire, cable, or bundle, and that couples or mates to a receptacle connector.

**poke through** A term describing stray wires in a solder joint that poke through the insulation.

**polarization (connectors)** A mechanical arrangement of inserts or the shell configuration (referred to as clocking in some instances) that prohibits the mating of mismatched plugs and receptacles. See also clocking.

**polyamide** A polymer formed by the reaction of a diamine and a diacid. Nylons are commercial polyamides characterized by toughness, solvent resistance, and sharp melting point.

**polymer** A material of high molecular weight formed by the chemical union of monomers.

**polyolefin** A family of polymers (such as polyethylene and polypropylene) made from olefin monomers.

**potting** The permanent sealing of the cable end of a connector with a compound or material that thermosets into an elastomer, to exclude moisture and/or to provide strain relief.

**pre-etching** The act of surface preparation before encapsulating.

**pretinned** Description of an electrical component to which solder has been applied prior to soldering.

**pretinned solder cup** Solder cup whose inner surfaces have been precoated with a small amount of solder.

**preform** Usually, the solder ring in a SolderSleeve device.

**primary insulation** The inner member of a dual-wall wire insulation. The insulation applied directly on the conductor. Also referred to as the core. See also core.

**printed circuit board (pcb)** An insulating board serving as a base for a printed circuit. When the printing process is completed, the board may include printed components, as well as printed wiring.

**propagation delay** Time required for an electronic digital device, or transmission network to transfer information from its input to its output.

**propagation delay time** The time between the application of a digital input waveform and the corresponding change in input waveform. It is measured between reference points on the waveforms. The time is generally different for positive-going and negative-going waveforms.

**pulse** A change in the level, over a relatively short period of time, of a signal whose value is normally constant.

**pulse width** The length of time that the pulse voltage is at the transient level. Electronic pulse widths are usually in the millisecond ( $10^{-3}$ ), microsecond ( $10^{-6}$ ) or nanosecond ( $10^{-9}$ ) range.

**push-back** That property of a braid or shield that allows the braid or shield to be pushed back easily along the cable core.

**PVC (Polyvinyl chloride)** A polymer compound used as wire insulation.

**PVDF** Polyvinylidene fluoride.

**Q**

**quality assurance** Systematic, planned, and documented activities designed to provide confidence that a product will meet specifications.

**quality control** Activities that monitor, measure, and control the characteristics of a material, component, or product to documented specifications.

**quick disconnect** A type of connector shell that permits rapid locking and unlocking of two connector halves.

**R**

**RA flux** Rosin-activated flux.

**radiation crosslinking** The act of crosslinking a material with ionizing radiation. (Most Raychem products are radiation crosslinked, with an electron beam as the form of ionizing radiation.) See also crosslinking by irradiation.

**rated temperature** The maximum temperature at which a component can operate for extended periods with acceptable changes in its basic properties.

**rated voltage** The maximum voltage at which an electric component can operate for extended periods without undue degradation.

**rear release contacts** Connector contacts designed to be released and removed from the rear (wire side) of the connector. The removal tool engages the contact from the rear and pulls the contact out of the connector contact retainer.

**receptacle** Usually the fixed or stationary half of a two-piece multiple contact connector. Also the connector half usually mounted on a panel and containing socket contacts.

**recover (heat-shrinkable components)** Activation of the elastic memory principle (usually with heat) to cause a tubing or molded part to return to its original size.

**Recovered ID (RID)** In heat-shrink tubing, the guaranteed maximum internal diameter of tubing after being freely recovered.

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Glossary of Terms



**Glossary of Terms** (Continued)

**recovery temperature** The minimum temperature required to fully shrink a product, that is, for the product to recover completely.

**removable contact** A contact that can be mechanically joined to or removed from an insert. Usually special tools are required to lock the contact in place or remove it for repair or replacement.

**residual impulse** defined as the voltage that will pass through the device prior to activation of the GDT.

**residual voltage** defined as the small amount of voltage left on the line after an impulse passes.

**resistance** A measure of the difficulty in moving electrical current through a conductor or insulation when a voltage is applied. It is measured in ohms.

**resonance** A frequency at which captive reactance and inductive reactance are equal and therefore cancel one another's effects.

**RF** Abbreviation for radio frequency.

**RG/U** Symbol used to designate coaxial cables that are made to Government Specification (e.g., RG-58U; in this designation the "R" means radio frequency, the "G" means Government, the "58" is the number assigned to the government approval, and the "U" means it is a universal specification).

**ribbon cable** Flat cable with conductors that have been individually insulated together. Its structure is usually characterized by individual colors of insulation for each conductor, although a single color may be used for all conductors.

**RID** See Recovered ID.

**rise time** The time required for a component or logic circuit to change from the quiescent to the transient state when an input is applied. (i.e. elapsed time between application of input and attainment of full output level).

**RMA flux** Rosin-mildly-activated flux.

**root mean square (rms)** The effective value of an alternating current, corresponding to the direct current value that will produce the same heating effect.

**rope lay** A type of conductor lay that uses stranded conductors as components to build a larger conductor.

**RPN (Raychem Product Number)** A 10-digit number (such as 123456-4-001) assigned to every standard product and every product manufactured on a special manufacturing order (SMO). The first 6 digits represent the PCN (Product Control Number), followed by a 1-digit MOD Code, and finally a 3-digit suffix. See also MOD Code and SMO.

**RT and RW specifications** Specification that describes standard product properties. Qualification and acceptance inspection criteria are incorporated into RT and RW specifications. RT and RW specifications are issued and controlled by the Specifications Group.

**S**

**SCD (Specification Control Drawing)** Drawing that defines configuration and material parameters. Issued and controlled by the specifications group, SCDs are frequently used in conjunction with RT Specifications for Thermofit products.

**scoop-proof** A feature that prevents the damage of contacts during misaligned mating.

**sealant** Soft, tacky, pliable material that seals where mechanical strength is not required.

**sealed** Environmentally protected by the thermoplastic inserts or core of encapsulant/ adhesive that has melted down around the substrate.

**sealing plug** A plug that is inserted to fill an unoccupied contact aperture in a termination assembly.

**secant modulus** A measure of material stiffness; stiffer material has a higher secant modulus. More specifically, the secant modulus is the ratio of stress (nominal) to corresponding strain at any specified point on the stress-strain curve. It is expressed in force per unit area (usually kilograms per square centimeters or pounds per square inch), and reported together with the specified stress or strain.

**semi-rigid** A cable containing a flexible inner core and a relatively inflexible sheathing.

**service life** Period of time during which the product is expected to perform satisfactorily.

**service loop** The extra cable required at a breakout to facilitate maintenance and servicing.

**service rating** The maximum voltage or current that a termination is designed to carry continuously.

**sheath** The outer covering of a jacket over the insulated conductors to provide mechanical protection for the conductors. Also known as the external conduction surface of a shielded transmission line.

**shelf life** Generally, the length of time a product or material may be stored without deterioration. Specifically, the length of time during which shrink tubing will retain its expanded ID and return to its recovered ID. Usually not a concern—except for some "amnesic" materials. See amnesia.

**shell (connector)** The outside case, usually metallic, into which the insert (body) and contacts are assembled. Shells of mating connector halves usually provide for proper alignment and polarization as well as for protection of projecting contacts.

**shield/shielding (cable)** A conducting envelope, composed of metal strands, which enclose a wire, group of wires or cable so constructed that substantially every point on the surface of the underlying insulation is at ground potential or at some predetermined potential with respect to ground.

**shield/shielding (circuit)** The metal sleeving surrounding one or more of the conductors in a wire circuit to prevent interference, interaction or current leakage. Shielding protects a circuit against crosstalk.

**Shielding Effectiveness (SE)** The reduction in field strength resulting from interposing a metallic barrier between a source and receptor of electromagnetic energy.

**shock (mechanical)** (1) An abrupt impact applied to a stationary object. (2) An abrupt or nonperiodic change in position, characterized by suddenness, and by the development of substantial internal forces.

**shore** A scale for comparing hardness. Higher Shore values represent harder materials. The hardness of a polymer, for example, is usually represented as Shore A or Shore D, with D being harder.

**shrink ratio** An expression of how much the inside diameter of shrink tubing will reduce in size when recovered. The inverse of the expansion ratio. See also expansion ratio.

**shrink temperature, minimum** The minimum temperature at which a product begins to recover.

**SHV** Abbreviation for standard high voltage.

**signal cable** A cable designed to carry current of less than 12 amperes per conductor.

**sine wave** A wave which can be expressed as the sine of a linear function of time, space or both. A waveform, often viewed on an oscilloscope, of a pure alternating current or voltage.

**skew** Any out-of-squareness of the cut end of a piece of tubing after shrinking.

**skin effect** The tendency of alternating currents to flow near the surface of the conductor, thus being restricted to a small part of the total cross-sectional area. This effect increases the resistance and becomes more marked as the frequency rises.

**Glossary of Terms** (Continued)

**sleeve** The insulated or metallic covering over the barrel of a terminal.

**SMO (Special Manufacturing Order)** An order to evaluate manufacturing and production capability for a new or changed design for a customer and to provide development samples of potential products for customers. SMO products are separate and distinct from standard products. New, potential products are usually run as SMO products for a minimum of three times before being considered for manufacture as a standard product.

**solder** An alloy that melts at relatively low temperatures and is used to join metals with higher melt points.

**solder contact** A contact or terminal having a cup, hollow cylinder, eyelet or hook to accept a wire for a conventional soldered termination.

**solder cup** A tubular end of a terminal into which a wire conductor is inserted prior to being soldered.

**solderability** The property of a metal surface that allows it to be readily wetted by molten solder. See also wetting.

**soldering** A process of joining metallic surfaces with solder without melting the base metal.

**SolderSleeve device** A device of flux-coated solder preform encapsulated in a heat-recoverable plastic sleeve. Upon the application of heat, the flux and solder will melt and flow as the sleeve recovers, forcing the solder around and onto the metallic parts being joined, thus forming an electrically insulated and strain-relieved joint.

**solid conductor** A conductor composed of one single strand.

**solvent resistance** The ability of a material to retain physical and electrical properties after being immersed in specific solvents.

**SPC** Silver-plated copper.

**SPC (Statistical Process Control)** The use of statistical techniques such as control charts to analyze a process or its output so as to take appropriate actions to achieve and maintain a state of control and to improve the capability of the process.

**specific gravity** The ratio of the density (mass per unit volume) of a material to that of water.

**specific inductive capacity** See dielectric constant.

**splice** A joint connecting conductors with good mechanical strength and conductivity; a terminal that permanently joins two or more wires.

**standard high voltage (SHV)** A quick connect/disconnect connector series employing a bayonet lock coupling and designated to operate safely up to 5000 volts AC. It is the industry standard connector specified by the National Bureau of Standards (NBS) for high voltage use by the Atomic Energy Commission (AEC).

**standing-wave** Distribution of current and voltage on a transmission line, resulting from two sets of waves traveling in opposite directions.

**standing wave ratio** The ratio between maximum and minimum current or voltage along a line. It is a measure of the mismatch between the load and the line. It is equal to 1 when the line impedance is perfectly matched to the load. (In which case the maximum and minimum are the same, as current and voltage do not vary along the line). The perfect match would be a 1 to 1 ratio.

**strain relief** The technique for or act of removing or lessening the strain or stress on a joint, splice, or termination. SolderSleeve devices provide strain relief.

**strain relief clamp** See cable clamp.

**strand** A single unit of a conductor.

**stranded conductor** A conductor composed of more than one single strand. The strands in stranded conductors are usually twisted or braided together.

**strip** To remove insulation from a wire or cable.

**stripe** A continuous longitudinal or spiral color strip applied on the surface of a wire, cable, or tubing for identification.

**substrate** The material—such as a wire, post, or tab—over which an interconnection device is used.

**super high frequency (shf)** The Federal Communications Commission designation for the band from 3,000 to 30,000 MHz in the radio spectrum.

**surface resistance** The ratio of the direct current applied to an insulation system to the current that passes across the surface of the system.

**T**

**tape wrap** A term denoting a spirally or longitudinally applied tape material wrapped around insulated or uninsulated wire and used as a mechanical barrier.

**TC** Tinned copper.

**tear test** A test to determine the tear strength of an insulating material. Usually includes exposure to given thermal conditions or a programmed series of conditions for prescribed periods of time.

**temperature rating** The maximum temperature at which the insulating material may be used in continuous operation without loss of its basic properties. Usually time dependent.

**tensile** The amount of axial load (longitudinal stress) required to break or pull the wire from the crimped barrel of the terminal, splice or contact.

**tensile strength** The greatest longitudinal stress that a substance or union can bear without tearing or pulling apart. In crimped terminations, it is the greatest longitudinal stress that a terminal can bear without the wire separating from the terminal.

**thermal rating** The effect of heat or cold applied at such a rate that nonuniform thermal expansion or contraction occurs within a given material or combination of materials. In electrical terminations, the effect can cause inserts and other insulation material to pull away from the metal parts.

**thermal shock** The effect of heat or cold applied at such a rate that nonuniform thermal expansion or contraction occurs within a given material or combination materials. The effect can cause inserts and other insulation materials to pull away from metal parts.

**thermochromic indicator** Special compound that changes color when the proper wetting temperature has been reached in the solder joint.

**thermoplastic** A material that softens (melts and flows) when heated and becomes firm when cooled. A type of plastic that can be remelted a number of times without any important change in properties. Nylon, GE's Lexan, and PVC—examples of this type of plastic—are resilient after molding.

**thermoset** A material that hardens or sets when heated and, once set, cannot be resoftened by heating. This application of heat is called "curing."

**thermosetting plastic** A type of plastic in which an irreversible chemical reaction takes place while the plastic is being molded under heat and pressure.

**thermosetting adhesive** A curing adhesive that requires heat to promote curing. This type of plastic will not soften when reheated. See epoxy.

**time-delay** A circuit that delays the transmission of an impulse for a definite and desired period of time.

**TNC Connector** A radio frequency connector covered by Military Specification. It has an impedance of 50 ohms and is designed to operate in a 0 to 11 GHz frequency range. Reliability is assured by a threaded coupling that can be safely wired to prevent accidental disconnect.

**tolerance** The total amount by which a quantity is allowed to vary from nominal; thus, the tolerance is half the algebraic difference between the maximum and minimum limits.

**13**

Glossary of Terms

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**Glossary of Terms** (Continued)

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**traceability** The ability to trace the history, application, or location of an item and like items or activities by means of recorded identification. The lot number/manufacturing order (MO) number, or SMO number used to identify items or groups of items is traceable back to inspection and procurement records.

**transmission cable** Two or more transmission lines. If the structure is flat, it is sometimes called flat transmission cable to differentiate it from a round structure such as a jacketed group of coaxial cables. See also transmission line.

**transmission line** A signal-carrying circuit with controlled electrical characteristics; used to transmit high-frequency or narrow-pulse signals.

**triaxial cable** A concentrically constructed cable, with a common axis, composed of a center conductor, first shield, and second shield, all insulated from each other.

**U**

**UG** Symbol used to describe coaxial connectors that were made to a Government specification. This specification is now obsolete.

**UL (Underwriters' Laboratories)** A nonprofit independent testing organization that operates a listing service for electrical and electronic materials and equipment.

**ultra-high frequency (uhf)** A Federal Communications Commission designation for the band from 300 to 3000 MHz on the radio spectrum. In television — channels 14 to 83 or 470 to 890 MHz.

**ultraviolet degradation** The degradation caused by long-time exposure of a material to sunlight or other ultraviolet rays.

**V**

**velocity of propagation** The ratio of the speed of a radio frequency wave within a cable or dielectric as compared with the same wave in free space.

**very high frequency (vhf)** A Federal Communications Commission designation for the band from 30 to 300 MHz on the radio spectrum.

**voice-frequency (vf)** Any frequency within that part of the radio frequency range essential to speech transmission of a commercial quality (i.e., 300 to 3400 Hz). Also referred to as telephone frequency.

**volt (V)** The unit of measurement for electromotive force (emf). It is equivalent to the force required to produce 1 ampere through a resistance of 1 ohm.

**voltage (E)** The term most often used to designate electrical pressure that exists between two points and is capable of producing a flow of current when a closed circuit is connected between the two points. Voltage is measured in volts, millivolts, microvolts and kilovolts. The terms electromotive force (emf), potential, potential difference and voltage drop are often referred to as voltage.

**voltage breakdown** The voltage necessary to cause insulation failure.

**voltage drop** The voltage developed across a component or conductor by the flow of current through the resistance or impedance of that component or conductor.

**voltage hold over** refers to the maximum line voltage at which recovery of the GDT to its inactive state will take place within a specified period of time (normally 150ms) after an induced lightning pulse (normally 10/1000ms) has been applied.

**voltage rating** The voltage that may be continuously applied to wire.

**volume resistivity** Reciprocal of conductivity; the resistance of a material to the flow of electrical current, usually expressed in ohm-cm.

**VSWR (Voltage Standing Wave Ratio)** A measure of the uniformity of impedance along a transmission line, or the quality of the impedance match between a line and the source or load.

**VW-1** A rating determined by the Underwriters' Laboratories' (UL) optional Vertical Wire Flame Test—the most difficult flame test for tubing. Tubings with a VW-1 rating are highly flame-retardant.

**W**

**wall thickness** The thickness of the applied insulation or jacket.

**water absorption test** A method to determine the water uptake of a material. It is time and temperature dependent.

**water blocking** The sticking together of insulated wires; usually caused by heat.

**wavelength** The distance between two points which are in phase on adjacent waves. It is the distance traveled by the wave in the same span of one cycle. Electromagnetic waves (both light and radio) have a speed in space of about 300,000,000 meters (186,000 miles) per second. Thus wavelength in meters is equal to 300,000,000 divided by frequency.

**wetting (solder)** The formation of a relatively uniform, smooth, unbroken, and adherent film of solder to a base metal. Also, the free flow of solder alloy, with proper application of heat and flux, on a metallic surface to produce an adherent bond.

**wicking** The longitudinal flow of a liquid in a wire or cable construction due to capillary action. (This may also apply to solder.)

**wire** A single conductor covered with insulation.

**wire dress** The orderly arrangement of wires and laced harnesses.

**withstanding voltage** The test voltage an electrical connector can withstand for one minute without showing evidence of electrical breakdown when the voltage is applied between conductors and grounding devices of the connectors in various combinations.

**Z**

**Z** Letter symbol used to represent impedance in ohms.

**Part Number Index**

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