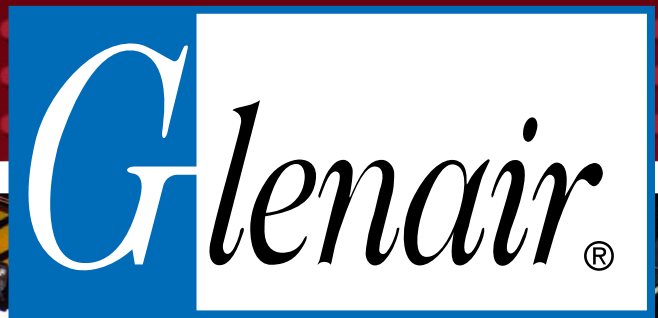




# MIL-DTL-38999 Cylindrical Connectors

*Hermetics, Filters, Environmentals, Feed-Thrus, Lanyards, Sav-Cons® and More!*

United States ■ United Kingdom ■ Germany ■ France ■ Nordic ■ Italy ■ Spain ■ Japan

1st Edition • September, 2008

# 1000 Hour Grey™

## The Advanced Formula Ni-PTFE Plating Process for EMC Applications



 **Cadmium Free  
RoHS-Compliant  
Plating Process Breaks  
1000 Hour Corrosion  
Protection Barrier!**

The MIL-DTL-38999 Rev. L detail specification establishes several new cadmium-free conductive plating options including high-performance nickel-fluorocarbon polymer. The Glenair advanced formula **1000 Hour Grey™** plating process (Ni-PTFE) meets all D38999 performance requirements including a shell-to-shell conductivity maximum 2.5 millivolt drop potential. **1000 Hour Grey™** delivers outstanding performance in a broad range of land, sea, air and space interconnect applications. The non-reflective, non-magnetic, gun-metal gray surface finish is an ideal choice for tactical military systems with extraordinary corrosion protection and EMC requirements.

### **Advanced Durability, Conductivity, and Lubricity Plus Outstanding Corrosion Resistance!**

The mechanical, electrical and environmental performance of **1000 Hour Grey™** is truly outstanding, far surpassing that of other metal alloy/fluorocarbon polymer plating solutions:

- |                                                    |                                    |
|----------------------------------------------------|------------------------------------|
| ■ Salt spray 1000 Hrs. static,<br>500 hrs. dynamic | ■ Hexavalent chromium free         |
| ■ Low shell-to-shell resistance                    | ■ Potassium formate resistant      |
| ■ -55°C to 175°C temp. Rating                      | ■ Max 2.5 Millivolt drop potential |
| ■ 336+ hrs. sulfur dioxide resistance              | ■ 500+ Mating cycles               |
| ■ Non-magnetic                                     | ■ Low outgassing                   |
| ■ Cadmium free                                     | ■ RoHS compliant                   |
| ■ Low coefficient of friction                      | ■ Plating code: MT                 |



**Glenair, Inc.**

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# MIL-DTL-38999

## Qualified Connectors and Derivatives

**A** Introduction to MIL-DTL-38999 Cylindrical Connectors



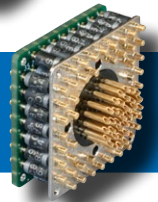
**A**

**B** Hermetic Connectors



**B**

**C** EMI/EMP Filter Connectors



**C**

**D** Environmental Connectors



**D**

**E** Twinax and Quadrax Connectors



**E**

**F** Bulkhead Feed-Thrus



**F**

**G** Sav-Con® Connector Savers



**G**

**H** Connector Accessories and Tools



**H**

Turn to Individual Sections for Detailed Table of Contents

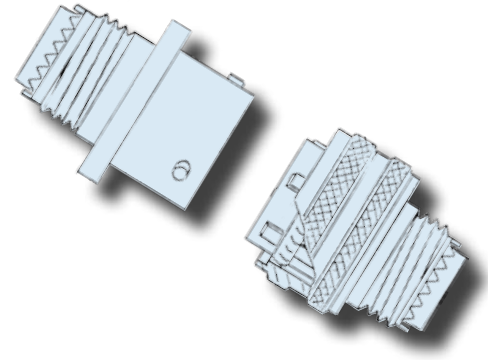


# MIL-DTL-38999 Environmental Class Connectors Overview

## Series I

# MIL-DTL-38999 Environmental Class Connector Overview

MIL-DTL-38999 is a high-performance connector family designed for cable-to-panel I/O applications in military aerospace and other demanding situations. Environmental class plugs and receptacles—with high-density insert arrangements (up to 128 contacts)—are available with crimp removable contacts, PC tails, and solder cups. Glenair manufactures a wide range of environmental class MIL-DTL-38999 type connectors including lanyard-release products, composite and specialty metal cable plugs and receptacles, and Coax contact equipped products. This table describes the most basic attributes for the environmental class products supplied by Glenair.



### Series Description

Scoop-Proof 3-Point Bayonet Coupling

### Supported Contact Types and Gauges

12, 16, 20, and 22 gauge contacts, standard density and 22 gauge high density arrangements; 3 to 128 contacts. Crimp, solder and PCB tails.

### Coupling/Mating Design

Bayonet coupling; quick disconnect; positive locking, keyed.

### EMI Shielding

Conductive plating and thick shell wall cross-sections provide effective EMI shielding to 40 dB minimum at 10 GHz.

### Vibration and Shock

Excellent resistance to vibration and shock with no electrical discontinuity and no disengagement of the mated connectors per MIL-DTL-38999 (paragraph 3.26)

### Mating Speed

120 ° or 1/3 turn to full mate

### Materials

Aluminum, Composite or Stainless Shells, Silicone Seals per ZZ-R-765, Beryllium Copper Alloy, Gold Plated Contacts

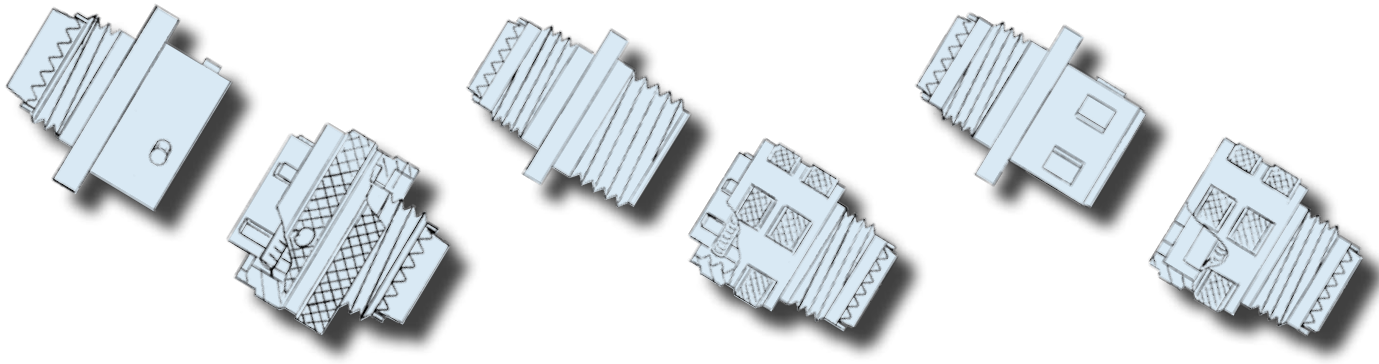
# MIL-DTL-38999 Environmental Class Connectors Overview



## Series II

## Series III

## Series IV



### Low-Profile 3-Point Bayonet Coupling

12, 16, 20, and 22 gauge contacts, standard density and 22 gauge high density arrangements; 3 to 128 contacts. Crimp, solder and PCB tails.

Bayonet coupling design, quick disconnect, captive, keyed.

Conductive plating and thick shell wall cross-sections provide effective EMI shielding to 40 dB minimum at 10 GHz.

Excellent resistance to vibration and shock with no electrical discontinuity and no disengagement of the mated connectors per MIL-DTL-38999 (paragraph 3.26)

120 ° or 1/3 turn to full mate

Aluminum or Stainless Steel Shells, Silicone Seals per ZZ-R-765, Beryllium Copper Alloy, Gold Plated Contacts

### Scoop-Proof, Triple Start, Self-Locking

12, 16, 20, and 22 gauge contacts, standard density and 22 gauge high density arrangements; 3 to 128 contacts. Crimp, solder and PCB tails.

Triple-start threaded coupling design, rapid advance, self-locking and full-mate indicator, keyed.

Shell to shell bottoming, grounding fingers, conductive plating and thick shell wall cross-sections provide effective EMI shielding to 65 dB minimum at 10 GHz

Excellent resistance to vibration and shock with no electrical discontinuity and no disengagement of the mated connectors per MIL-DTL-38999 (paragraph 3.26)

360 ° or one full turn to full mate

Aluminum, CRES and Composite Shells, Silicone Seals per ZZ-R-765, Beryllium Copper Alloy, Gold Plated Contacts

### Scoop-Proof, Breech Lock

12, 16, 20, and 22 gauge contacts, standard density and 22 gauge high density arrangements; 3 to 128 contacts. Crimp, solder and PCB tails.

Breech lock coupling design, rapid advance, self-locking, keyed.

Shell to shell bottoming, grounding fingers, conductive plating and thick shell wall cross-sections provide effective EMI shielding to 65 dB minimum at 10 GHz. Grounding before engagement of contacts.

Excellent resistance to vibration and shock with no electrical discontinuity and no disengagement of the mated connectors per MIL-DTL-38999 (paragraph 3.26)

90° or 1/4 turn to full mate

Aluminum Shells, Silicone Seals per ZZ-R-765, Beryllium Copper Alloy, Gold Plated Contacts



## MIL-DTL-38999 Hermetic Connectors Overview

# A MIL-DTL-38999 Hermetic Connectors

Hermetic connectors, such as the qualified MIL-DTL-38999 Series I, II, III and IV supplied by Glenair, are designed for use in pressurized or severe environmental applications. Typical environments include geophysical, medical and military aerospace—in fact, the requirement for connector hermeticity was originally driven by military electronic applications. Hermeticity is generally defined as the state or condition of being air or gas tight. In interconnect

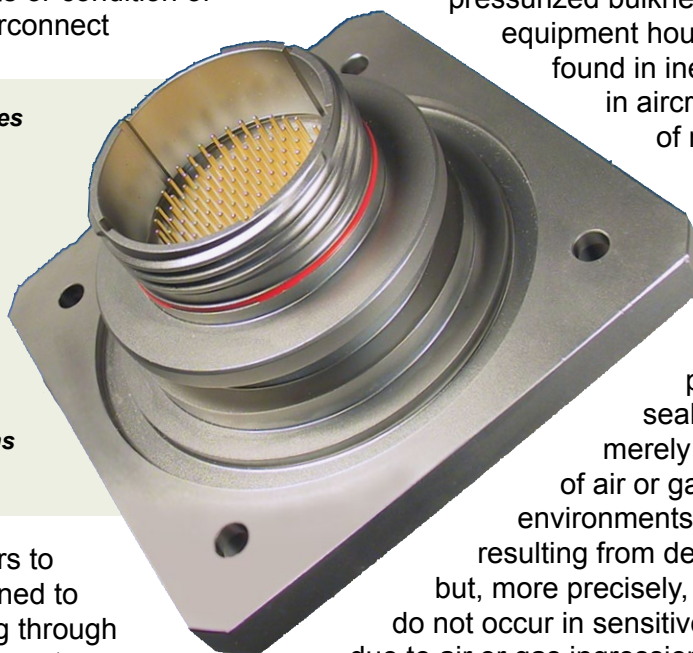
in dielectric breakdown, corrosion, and loss of insulation resistance between conductors (a properly built plug assembly on the non-vacuum side is adequately sealed with conventional environmental protections and so is impervious to moisture ingress).

The classic hermetic application is a receptacle feed-through penetrating a pressurized bulkhead, or a pressurized equipment housing—such as is found in inertial navigation units in aircraft. The introduction of moisture-laden air into such an enclosure may be enough to produce false readings and other malfunctions in the device. The ultimate purpose of hermetic sealing then is not merely to avert the ingress of air or gas into pressurized environments to prevent corrosion resulting from dew point condensation, but, more precisely, to insure malfunctions do not occur in sensitive electronic systems due to air or gas ingressions.

Connector hermeticity may be negatively affected both by the permeability of shell materials and the quality of the sealing technology. Metal materials are typically chosen due to their relative impermeability to gas, although certain plastics may also be used. Glenair typically specifies stainless steel, carbon steel, titanium or Kovar for its hermetic products, as all these base materials provide an effective barrier against gas ingress.

But even metal materials are permeable to gas leakage to some degree, and the minimal permeability of metal materials can be worsened when weld and solder joints are formed between

*Glenair typically specifies stainless steel, carbon steel, titanium or Kovar for its hermetic products to provide an effective barrier against gas ingress and corrosion caused by dew point condensation. The hermetic sealing helps insure against damage to sensitive electronic systems and components.*



applications, “hermetic” refers to packaging technology designed to prevent gasses from passing through pressure barriers via the connector, as it is important to prevent any moisture in the leaked gas from condensing inside the pressurized enclosure. The point at which moisture will condense is called the “dew point”—or the precise moment when humidity, pressure, and temperature allows condensation to form.

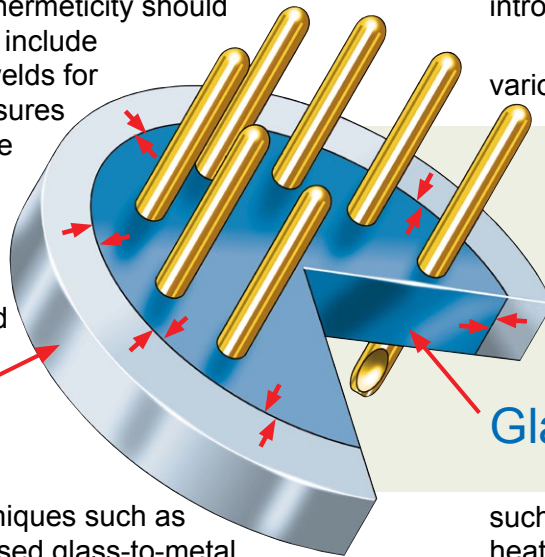
When an electric current must pass through a high-pressure differential barrier, the potential exists for gases, and, in some rare cases, particulate matter, to penetrate the barrier and, as described above, to form condensation in the equipment enclosure. In the receptacle cabling on the vacuum side of the barrier this may result

# MIL-DTL-38999 Hermetic Connectors Overview



connector shell materials and the base material of the bulkhead. Electrode coatings used in welding readily attract moisture in the work causing micro cracks and fissures. If other stresses are present, such as vibration and shock, micro-cracking can progress to larger fissures visible to the human eye. Optimizing hermeticity should therefore always include examination of welds for any cracks or fissures that could provide a leakage path. Although moderately effective sealing may be produced

**Metal  
Shell**



Glass is an excellent insulator, bonds well to metallic surfaces and is extremely corrosion resistant. And because of its robust mechanical strength and resistance to radical changes in temperature and pressure, glass seals are extremely resistant to any cracking which may introduce leaks into the hermetic package.

Fused glass seals may be produced from various recipes of ground, non-crystalline solids

*In Matched Seal hermetics, thermal expansion of the glass and metal materials are nearly the same. The stress in the glass is therefore relatively small—an important factor in the design of Micro-D hermetic connectors, due to varying degrees of stress on the glass caused by the rectangular shape.*

**Glass Insulator**

with simple techniques such as epoxy potting, fused glass-to-metal seals are usually specified in high-reliability applications.

such as silicates, borates and phosphates. When heated to high temperature and then cooled, these materials fuse into an amorphous solid called glass.

In hermetic connector manufacturing, the glass material is introduced either as separate glass beads or as a pre-formed glass seal insulator tooled to precise dimensions. The glass must be exactly selected for each application according to its ability to form a strong bond with the chosen metal materials. Electrical properties, such as high withstanding voltage and dielectric strength are also considered as is thermal and shock stability.

Depending on the style of connector being produced (rectangular versus circular, for example) two distinct categories of glass-seal hermetics may be specified. These are known as Matched and Mismatched (or Compression) Seals.

In Matched Seal hermetics, the thermal expansion and contraction of the glass and metal materials are relatively close, usually within 10% of each other, resulting in a product in which the stress in the glass is relatively small.



*In hermetic connector manufacturing, the glass material is introduced either as separate glass beads or as a pre-formed glass seal insulator tooled to precise dimensions. The glass must be exactly selected for each application according to its ability to form a strong bond with the metal materials.*

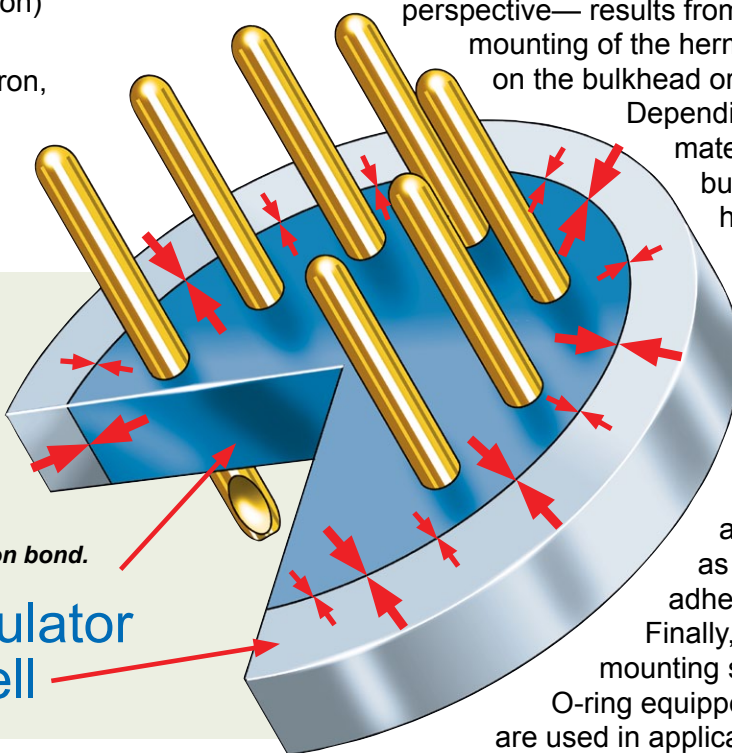
## MIL-DTL-38999 Hermetic Connectors Overview

**A** Matched Seals are extremely important in glass hermetic connectors such as the Micro-D, since the rectangular shape of the connector shell can exert varying degrees of stress on the glass. At ambient temperatures, the glass is well wetted (bonded) to the metal shell and contacts, but under little or no pressure or stress. Matched Seals can withstand high thermal and mechanical shocks, and are generally easier to manufacture than Mismatched (Compression) Hermetic Seals.

Kovar, a combination of iron, nickel and cobalt, is the material of choice for Match Seal hermetic receptacles—both shells and contacts.

*In Mismatched (Compression) Seals, the thermal expansion/contraction of the metal exceeds that of the glass. During cooling, the metal contracts into the already solidifying glass to form an extremely robust compression bond.*

**Glass Insulator  
Metal Shell**



Kovar is a low-expansion metal with a coefficient of expansion rating matched to the glass material that forms the hermetic seal.

In Mismatched (Compression) Seals, the thermal expansion/contraction of the metal exceeds that of the glass. During the firing process, the metal materials, usually stainless steel, expand at a greater rate than the glass. During cooling, the metals contract back into the already solidifying glass to form an extremely robust compression bond. This type of seal is consequently the most frequently specified for connectors used in extreme, high-pressure applications since the seal produced is reliable to

pressures as high as 14,000 psi (1000 bars). The MIL-DTL-38999 connector falls into this category.

The total potential for leakage in a hermetic connector is the sum of any permeation which may occur via the metal materials themselves through cracks or open pores, and any leakage that may result from a defective seal. An additional source of leakage—uncontrolled

from the connector manufacturer's perspective—results from sub-standard mounting of the hermetic package on the bulkhead or enclosure.

Depending on the surface material of the bulkhead, hermetic

receptacles may be welded or soldered in place. Low temperature brazing is also possible in certain applications as is the use of adhesive sealants.

Finally, mechanical mounting seals such as O-ring equipped jam-nut mounts are used in applications where the cost or difficulty of welding or soldering is impractical.

Regardless of the choice of mounting technology, care must be given to ensure inadvertent leakage paths are not introduced. It is also important to note that vapor condensation in vacuum enclosures may be affected by the material makeup of component parts inside the enclosure. Materials such as silicones, adhesives, lubricants and Teflon insulation can all outgas water vapor, and so contribute to the total vapor pressure inside the enclosure. Vapor pressure directly impacts the condensation dew point of the protected environment.

Hermetic seals are qualified via various methodologies including helium testing and dye penetrant. The purpose of both types of tests is to detect and measure leakage under pressure. The dye penetrant method has the advantage of revealing the exact location of a leak, while Helium testing measures overall leakage within the hermetic device. In both types of tests, a pressure differential between the internal volume of the package and the external environment is created.

The resultant pressure gradient causes the helium or liquid dye to diffuse through the

connector shell, contacts and/or glass seals. Quantitative and qualitative measurements are then taken using appropriate sensing instruments. Glenair MIL-DTL-38999 qualified hermetic connectors are rated to  $1 \times 10^{-6}$  cc/second maximum helium leakage rate.

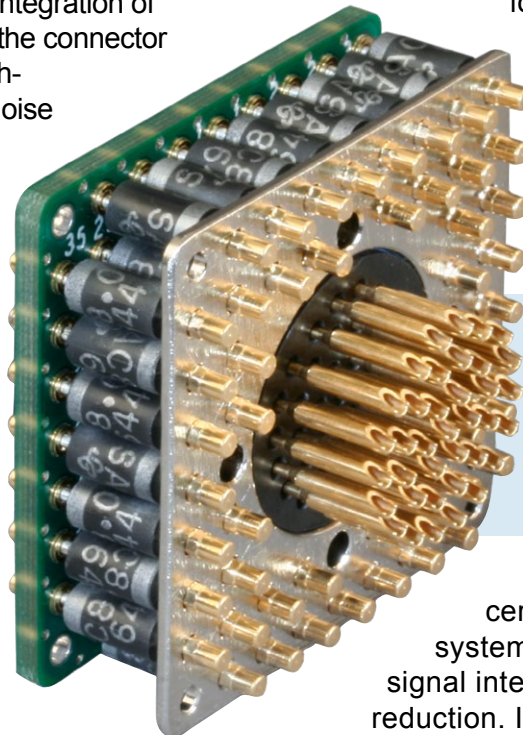
As with other connector classes, customers may specify the connector coupling style (threaded, bayonet, solder mount, etc.) pin or socket count and layout, contact termination type (solder cup, flat eyelet or PCB termination), conductive or non-conductive finish, polarization and so on.

## EMI/EMP Filter Connectors

“Filtering” or suppression of electromagnetic noise within the connector package is reliably accomplished through the integration of capacitors and diodes into the connector to segregate interfering high-frequency or high voltage noise from the desired lower frequency signals. The capacitors strip off the interfering noise from the signal as it passes through the filter device. While various types of capacitor filters are available, perhaps the most widely applied is the Planar Array type.

Planar Arrays are extremely effective at filtering high-frequency interference. Planar Array designs utilize ceramic capacitor arrays and ferrite inductors which externally surround each contact, and may be supplied in a single monolithic block to fit into any connector

size or shape. Planar arrays may be fabricated with different capacitive values on individual pins for additional flexibility in achieving the desired level of EMC. Diodes are used to clamp the voltage below a certain value, thereby protecting the electronic circuitry. They are typically integrated into the connector using a small printed circuit board.



***Ferrite elements  
and capacitors can  
be integrated into any  
connector package  
envelope.***

Using filter technology has certain advantages to the electrical system engineer, including improved signal integrity as well as size and weight reduction. In addition, filters can be incorporated into an interconnect system late in the research and development process—for example after an unforeseen emission problem has been detected. In every filter application the signal levels

A

and frequency bands must be well understood in order to select the appropriate mode or type of filter technology.

For example, electronic equipment used by avionic systems typically spans the electromagnetic spectrum from a few kilohertz to several gigahertz. At the low end, Omega Navigation, which is used to fix aircraft position within a network of ground based transmitters, operates in the frequency range of 10 to 14 KHz. VHF Omnidirectional Range Finders (VOR) are radio beacons used in point-to-point navigation. They operate from 108 to 118 MHz. Glideslope Systems used during landings operate in the 328 to 335 MHz range. Distance-Measuring Equipment (DME), which gauges the space between the aircraft in the sky and ground-based transponders operate at frequencies of just over 1 GHz.

Clearly, potential EMI in the application environment described above covers a broad

range of frequencies. Filter modes and types are consequently specified according to the EMI frequency ranges which are the source of the actual signal degradation and the operating frequency of the affected device. Certain electrical circuit criteria are also germane to filter selection, including:

- Capacitance Value
- Working Voltage
- Surge Voltage
- Dielectric Withstand Voltage
- Insulation Resistance
- Transient Protection

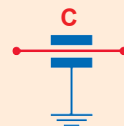
Filter connectors appropriate for use in applications such as those referenced above are broadly identified as 'low-pass' filters (i.e. they let low frequency signals pass through and attenuate higher frequencies). The attenuation curve can

## COMMON FILTER CONNECTOR TYPES

Glenair supplies filter connectors in the following electrical configurations: C, L-C, C-L, and Pi. The following general values may be used in type selection: Single element filter connectors sporting either a single capacitor or inductor yield an insertion loss characteristic of 20dB per decade, dual element filters (capacitor plus an inductor) 40dB per decade, and triple element filters 60dB per decade. Selection is based primarily on source and load impedances but may also be influenced by the level of attenuation required at various frequencies. Please consult the factory for assistance in evaluating insertion loss values.

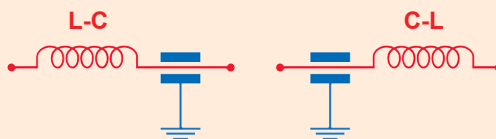
### C Filter

Single capacitor with low self inductance. This configuration is generally used to attenuate high frequency signals. The simple design allows high-frequency EMI to discharge to ground via the surrounding electromagnetic field.



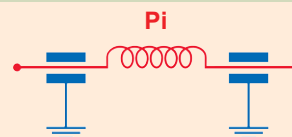
### L-C or C-L Filter

Single capacitor combined with an inductive element. It is commonly used in a circuit with both a low impedance source and a high impedance load or a low impedance load and a high impedance source. The inductive element should face the low impedance.



### Pi Filter

Dual capacitors with a single inductive element positioned between them. The Pi filter provides exceptional high-frequency performance due to its sharper rolloff and is typically used when both source and load impedances are high.

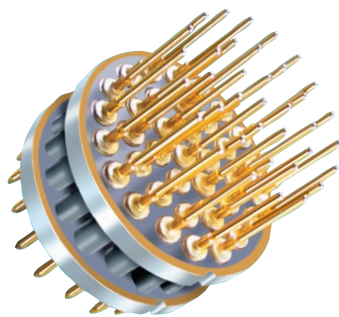


## MIL-DTL-38999 Type Filter Connectors Overview



be shaped using different filter types (different configurations of capacitors and inductors). These types include: Pi Filter, L-C or C-L Filter, and C Filter. These filter connector types are characterized by their relative abilities to filter noise according to capacitance, voltage values and load impedances. The simplest design is the "C", which consists of a single capacitor inserted between the signal line and ground.

While most EMI filter connectors can be used in a working temperature environment from -55° to 125° C, selected designs are optimized for higher operating temperatures. Hermetic filter connectors provide the ultimate protection. The hermetic glass fused design protects the filter assembly while maintaining very low leakage rates.



*A multiway planar array filter device, assembled with its ferrite elements and connector contacts, ready for insertion into the connector shell. The flexible design allows for different capacitive values on individual pins as well as the integration of hybrid contacts such as optical termini.*

Prior to shipping a filtered connector, Glenair offers extensive testing, qualification and burn-in options. Tests range from a simple capacitance (C), insulation resistance (IR), and dielectric withstanding voltage (DWV), to more elaborate options such as RF insertion loss, dissipation factor, Zener/TVS diode test, ground resistance, voltage conditioning and thermal shock.

The Glenair factory, provided with the system attenuation and frequency values, relevant electrical specifications, and connector configuration details, can design an effective filter device for every application (to get started, use the checklist found in the filter connector section of this catalog). In addition to the MIL-DTL-38999 type filter products cataloged in this book, Glenair is able to supply filter technology in virtually any connector package

including our own Series 80 "Mighty Mouse," Mil-C-24308, and MIL-DTL-83513 products. Hybrid electrical/optical filter connectors and hermetic filter designs are a specialty.

### Multilayer Ceramic Planar Capacitor Arrays

Planar, multi-layer ceramic capacitive filters offer reduced size and improved performance compared to discrete discoidal or tubular capacitors. Planar array filter devices have the advantage, especially when compared to capacitive filters integrated at the circuit board level, of being bidirectionally effective at attenuating unwanted noise travelling into and out of equipment enclosures.

As mentioned, the planar array can be designed with different capacitive values on individual pins, and pin groupings, and can also be selectively equipped with surge protection diodes. The ability to accommodate such Transient Voltage Suppressions (TVS) diodes to protect against voltage spikes from transient sources such as EMP, lightning or Electrostatic Discharge (ESD) is an additional strength of the planar array design.

The planar array package can also easily accommodate ferrite elements to add inductance to the filter device. For these reasons and more, the planar array is the most common filter type specified in military aerospace and other high-performance applications. The planar array consists of multiple layers of ceramic dielectric separated by individual sheets of a ceramic tape material screen-printed with a pattern of metal electrodes. The exact configuration of the electrodes—their combined capacitance values, positions vis-a-vis individual contacts, selective grounding to the connector shell, etc.—determines the EMI attenuation properties of the filter device. After the layer-cake of dielectric materials and conductive elements is assembled, it is fired at high temperature to create a unified, monolithic structure. The planar array is fabricated such that the capacitor positions align exactly to the pin layout positions of the connector. When combined with inductive



## MIL-DTL-38999 Type Filter Connectors Overview

**A** ferrite elements, TVS diodes or other special circuitry, the final assembly is ready for insertion into the connector shell. The incorporation of filter elements into a standard cylindrical or rectangular connector will necessarily increase the overall length of the package. The extra real estate is usually added to the inside-the-box (non-mating) side of the connector receptacle. Another approach is to attach a connector adapter, or go-between, outfitted with the filter device, to the connector plug. This approach has the advantage of not requiring any dimensional changes in box design or receptacle connector package.

Often, custom-configured planar arrays, with unique capacitive elements and values, are required to effectively address complex EMI problems such as might be encountered in an avionics bay or in the body of a missile. But many EMI problems can be satisfactorily addressed with standard catalog product designs. As critical EMI problems are often discovered late in the development process—perhaps only after equipment has been installed for use—it is critical that both standard catalog products as well as non-standard designs are delivered with the fastest possible turnaround. Glenair is committed to meeting the most aggressive delivery requirements for planar array type filter connectors.



*Glenair can apply a broad range of custom shell configurations, filter values, TVS technologies—even hybrid fiber optic contacts—into any MIL-DTL-38999 type connector package, including bulkhead feed-thrus and connector savers.*

### Insertion Loss Evaluation

Insertion loss is an important specification to consider in the selection of filter connectors. Insertion loss is a measure of the degradation experienced by a signal when a device, such as a connector, is inserted into the transmission path.

When a filter element performs its job of stripping signal noise from a transmission line, it may attenuate a portion of the desired signal as well. Measured in decibels (dB), insertion loss should be minimized in sensitive electronic systems which may operate at extremely low current levels. Typically, some amount of insertion loss is considered acceptable to accomplish the necessary signal selectivity, since the signal can always be re-amplified post-filtering. However, in many applications, too large a loss may ultimately result in the unacceptable degradation of system performance.

The evaluation of insertion loss is performed over a specific frequency range—i.e., a spectrum that extends from one limiting frequency to another. The intent being to measure signal degradation for each filter type across the actual operating frequencies of the equipment under consideration. Note that each filter type may yield different (theoretical and actual) insertion loss values depending on the specific capacitance and inductance [pF] ratings of the filter elements. Effective EMI/EMP filtering is, therefore, a balance between the purposeful attenuation of signal noise and the unfortunate degradation of signal strength—both conditions directly attributable to the insertion of the filter device into the system.

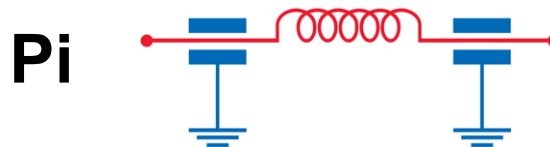
Sensible EMC design should, as a consequence, always incorporate conventional grounding and shielding of interconnect cabling and equipment housings in anticipation of unexpected EMI problems. The tables on the opposite page explain predictable insertion loss [dB] for each filter type (C, L, and Pi), at the available capacitance ratings [pF] across a common frequency range [MHz].

# MIL-DTL-38999 Type Filter Connectors Overview



| INSERTION LOSS                   |    |    |    |    |    |    |    |
|----------------------------------|----|----|----|----|----|----|----|
| Insertion Loss, dB Minimum, 25°C |    |    |    |    |    |    |    |
| Frequency                        | A  | B  | C  | D  | E  | F  | G  |
| 1 MHz                            | 6  | 5  | 3  | –  | –  | –  | –  |
| 10 MHz                           | 24 | 23 | 16 | 8  | 4  | –  | –  |
| 100 MHz                          | 41 | 39 | 35 | 28 | 21 | 10 | 5  |
| 500 - 1000 MHz                   | 50 | 49 | 46 | 41 | 34 | 23 | 17 |

| CAPACITANCE  |                     |
|--------------|---------------------|
| Filter Class | Capacitance         |
| X            | 80000 – 120000 [pF] |
| Y            | 40000 – 60000 [pF]  |
| Z            | 30000 – 45000 [pF]  |
| A            | 19000 – 28000 [pF]  |
| B            | 16000 – 22500 [pF]  |
| C            | 9000 – 16500 [pF]   |
| D            | 4000 – 6000 [pF]    |
| E            | 1650 – 2500 [pF]    |
| F            | 400 – 650 [pF]      |
| G            | 200 – 300 [pF]      |



| INSERTION LOSS                   |    |    |    |    |    |    |     |
|----------------------------------|----|----|----|----|----|----|-----|
| Insertion Loss, dB Minimum, 25°C |    |    |    |    |    |    |     |
| Frequency                        | A  | B  | C  | D  | E  | F  | G   |
| 1 MHz                            | 10 | 8  | 5  | 1  | –  | –  | –   |
| 10 MHz                           | 40 | 35 | 25 | 14 | 8  | 2  | 0.8 |
| 100 MHz                          | 62 | 60 | 57 | 50 | 40 | 15 | 13  |
| 500 - 1000 MHz                   | 66 | 62 | 60 | 58 | 52 | 32 | 22  |

| CAPACITANCE  |                       |
|--------------|-----------------------|
| Filter Class | Capacitance           |
| X            | 1600000 – 240000 [pF] |
| Y            | 80000 – 120000 [pF]   |
| Z            | 60000 – 90000 [pF]    |
| A            | 38000 – 56000 [pF]    |
| B            | 32000 – 45000 [pF]    |
| C            | 18000 – 33000 [pF]    |
| D            | 8000 – 12000 [pF]     |
| E            | 3300 – 5000 [pF]      |
| F            | 800 – 1300 [pF]       |
| G            | 400 – 600 [pF]        |

## APPLICATION NOTES

- Standard voltage rating is 500 V DWV.
- Insertion loss values quoted are for 50Ω impedance and no load condition.
- Classes X, Y and Z are 250 V DWV. Consult factory for additional information.
- Some shell configurations may require extra length for classes X, Y and Z.



## MIL-DTL-38999 Type Filter Connectors Overview

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### Custom Options in Filtered Connectors

Glenair MIL-DTL-38999 type filter connector designs may be optimized for use in a wide range of application environments including avionic systems, down-hole drilling and logging devices, network-centric ground warfare systems, and missile and satellite/space applications. Common electrical customizations include unique capacitance values on individual lines, electrostatic discharge designs, transient voltage suppression diodes, grounded holes and feed-throughs, as well as the incorporation of customer-specified filter architectures including Pi, C, L-C, C-L and T configurations.

Non-standard packaging options in EMI/EMP filter connectors include:

- Hybrid Fiber Optic/Electrical Contacts
- Dual-Flange PCB Mount Designs
- Composite Thermoplastic Shell Materials
- Variable Length PCB Tails
- Piggy-Back Crimp Contacts
- EMI Grounding Fingers and Gaskets
- In-Line, Feed-Through, Plug and Other Shell Styles

### EMP and Transient Voltage Suppression

Electromagnetic Pulse (EMP) refers to intense radio frequency pulses produced by nuclear explosions at high altitudes. Other names for this phenomenon are Nuclear EMP (NEMP), and High-Altitude EMP (HEMP). Like other forms of electromagnetic interference, EMP can have a destructive effect on sensitive electronic devices, if the EMP grounds to an unshielded cable and passes into the electronic device.

EMP hardened equipment is designed to protect vital communications at a time when unhardened devices are likely to fail. Thus it is standard for many military applications to proactively protect certain devices from EMP. This is accomplished, in part, by the integration of Transient Voltage Suppression technologies into the connectors that service the device.

Transient Voltage Suppression (TVS) technologies are designed to shunt voltage transients directly to ground before such surges can damage sensitive electronic equipment. Individual TVS diodes as well as diode modules may be incorporated directly into the filter connector package to provide optimal protection for either individual contacts or groups of contacts without significant increases in connector size or weight. Individual circuit protection diodes and diode modules are available for all connector types and are routinely stocked by Glenair to reduce lead-times. Individual diodes and modules may be screened and tested prior to assembly to ensure reliable performance. Field maintenance and repair of damaged diodes is also possible as both individual diodes and diode modules are easily removed from the connector package. RTCA DO-160 and other electrical performance standards now define acceptable benchmarks for withstanding electromagnetic pulse, lightning strike, or other induced voltage surges in high-reliability systems. Glenair designs all TVS equipped filter connectors to conform to the RTCA DO-160 standard.

## **Composite Connectors and Lightning Strike**

Composite thermoplastic materials, such as the 30% glass filled polyetherimide (PEI) used in Glenair's MIL-DTL-38999 Series II Wall Mount Receptacle Connector have been tested for mechanical and electrical survivability to direct and indirect lightning strike. At issue is the ability of the composite connector shell to maintain its electrical continuity in the event of an intense voltage surge resulting from lightning strike.

In testing in accordance with MIL-STD-1344, items are subjected to waveform 1 and 5B using a high current generator. Items must remain functional without degradation of the unit's electrical performance, including filtering elements and TVS diodes and modules. Waveform 1 and 5B are applied starting at 3Ka increasing to 20Ka checking continuity measurements at set intervals. Waveform 1 is additionally subjected to an oscillatory wave starting at 30Ka and increasing in 10Ka steps until failure in continuity is measured.

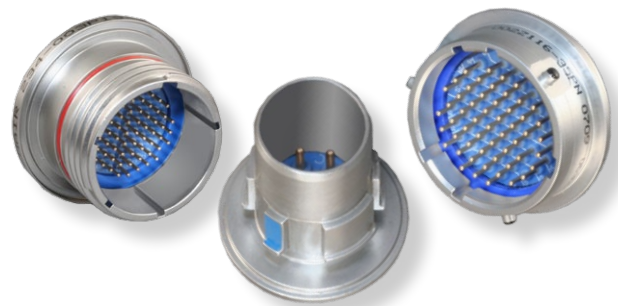
While larger composite connector shell sizes (12 to 24) conform to MIL-STD-1344, smaller sizes (8 and 10) fail the test. Customers should select alternative materials, aluminum or stainless steel, when specifying small connector shell sizes in applications subject to lightning strike.



***Glenair composite connectors and backshell are tested IAW MIL-STD-1344 lightning strike.***

## **Soldering**

Our filter connector engineers are frequently asked about any special handling procedures that are required when soldering PC Tail and Solder-cup contacts. At issue is the potential to damage filter elements due to the high heat of the soldering process. The short answer is that any trained and qualified operator can complete the operation without any special precautions. While it certainly can't hurt to take some basic precautions such as preheating the connector or utilizing a heat sink on individual contacts, our tests have revealed that, under normal conditions, the temperature of the ceramic filter array is not radically raised during solder termination of the contacts. Even in tests where we used a solder iron temperature of 350°C and an extremely long 'touch time' of 90 seconds, no adverse effects were observed. In fact, temperature at the ceramic remained well below 100°C at all times.



## **Hermetic Filter Connectors**

Hermetic class EMI/EMP filter connectors are available throughout our complete range of MIL-DTL-38999 type filter connector products in both Pi and C from 400 pF to 56000 pF. Select either class H2 (stainless steel, electroless nickel), or class XM (composite, electroless nickel).

Hermetic connectors with EMI/EMP filtering are specified for applications as divergent as submarines, orbiting satellites, oil-patch logging equipment or medical devices that require both filtering elements and hermeticity. In addition to their EMI management function, the connectors are deployed to resist moisture ingress in

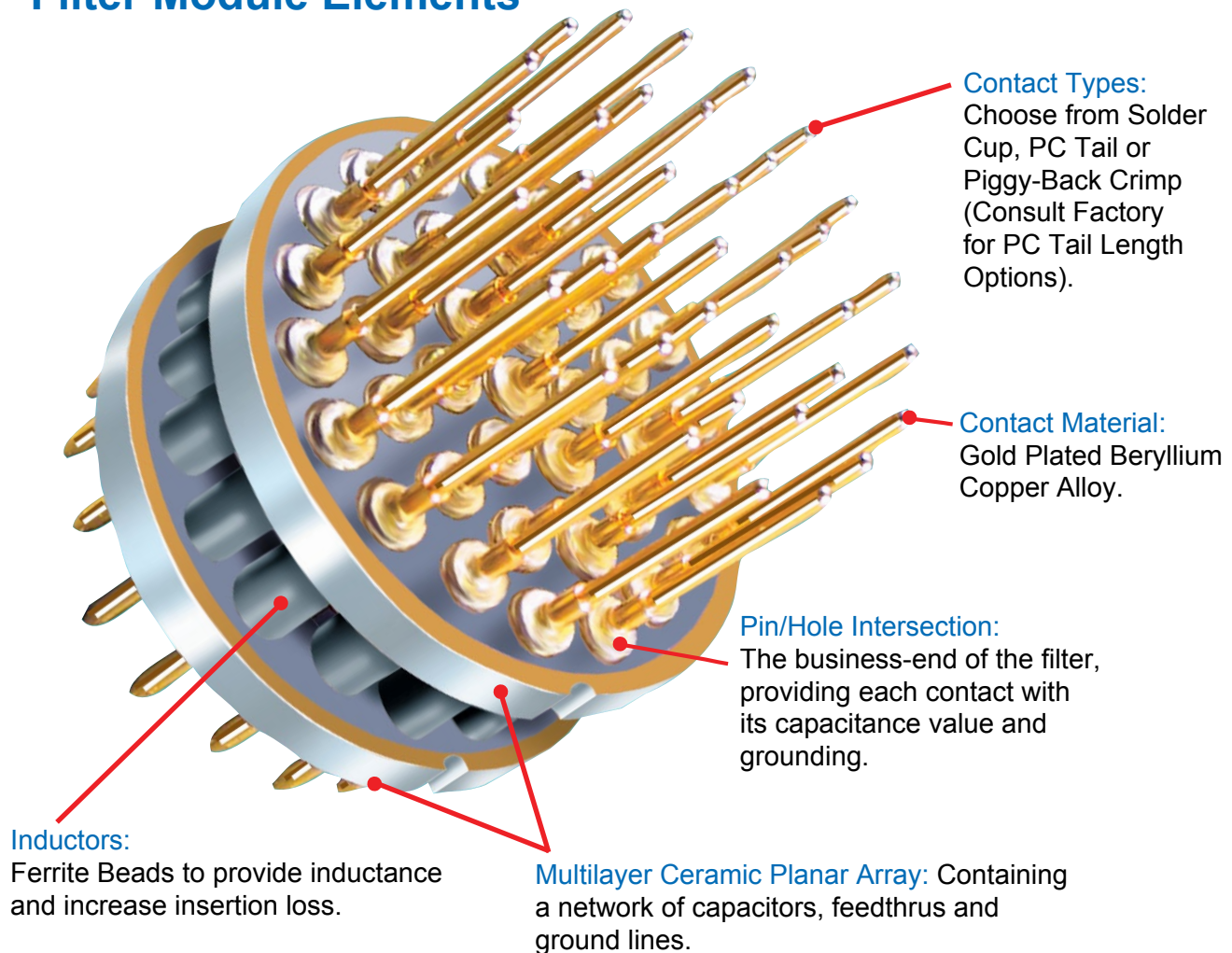
underground applications and to withstand pressure differentials in vacuum chambers, laboratory equipment and commercial and military aircraft. Hermetic filter connectors are constructed from a core component-set that includes the connector shell, the planar array filtering device, a vitreous glass insert and the necessary interfacial sealing.

Shells may be machined from stainless steel or Kovar®, an iron-nickel-cobalt alloy with a coefficient of expansion closely balanced to

the glass inserts. Contacts used in hermetic connectors must be fabricated from high-grade materials that can withstand high-heat, and bond effectively to the vitreous glass seal.

Glenair offers both standard hermetic/filter products compatible with standard MIL-DTL-38999 plugs as well as non-standard designs with unique filter values or voltage suppression technologies. Our goal is to always provide the fastest turnaround in the industry. Please consult the factory for unique packaging requirements.

## Filter Module Elements



## MIL-DTL-38999 Connectors for Space Flight

Nonmetallic materials such as rubber, plastic, adhesives and potting compounds can give off gasses when subjected to a vacuum or high heat. The space industry has adopted a standardized test procedure, ASTM E 595, to evaluate outgassing properties of products that contain polymer materials. In the ASTM test, material samples are heated to 125° C at a vacuum of  $5 \times 10^{-5}$  torr for 24 hours. The test sample is then weighed to calculate the Total Mass Loss (TML), which may not exceed 1.00% of the total initial mass. Likewise the quantity of outgassed matter is weighed to determine the Collected Volatile Condensable Material (CVCM), which may not exceed 0.10% of the original specimen mass.

For space grade applications, Glenair is able to offer both an 8 hour 400° bakeout process as well as a 24 hour 125° thermal vacuum outgassing process on connector products that must conform to NASA screening or other

outgassing standards. Our experience has been that the simpler bakeout process is more than adequate to meet the ASTM E 595 benchmark of 1.00% TML and 0.10% CVCM.

Glenair is well versed in supplying connector products that are optimized for use in space grade applications, and we supply MIL-DTL-38999 type compliant to EEE-INST-002, Table 2G, the recognized standard for space grade connectors. Section C2 "Connectors and Contacts" of NASA EEE-INST-002 provides guidelines for materials used in connectors for space flight applications: Aluminum is a preferred material for connector components, and electroless nickel is the preferred finish. Beryllium copper is a preferred material for contacts. 50 microinch minimum gold plating is the preferred contact finish. LCP is a preferred material for dielectric insulating materials. Specify "M" for aluminum shells with electroless nickel finish.

### OUTGASSING PROPERTIES OF MATERIALS USED IN MIL-DTL-38999 CONNECTORS

| Component                                           | Material                                                                                                 | TML % | TCVML % | Test Reference                                           |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------|---------|----------------------------------------------------------|
| Front and Rear Insulator                            | Liquid Crystal Polymer Vectra C130                                                                       | 0.03  | 0.0     | NASA Test # GSC17478                                     |
| Rear Grommet<br>Interfacial Seal<br>Peripheral Seal | Blended fluorosilicone/silicone elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988 | 0.48  | 0.14    | Glenair testing conducted at NuSil Technology 02/27/2001 |
| Front-To-Rear Insulator<br>Bonding Material         | Eccobond 104 A/B                                                                                         | 0.52  | 0.08    | Emerson & Cuming Data Sheet                              |
| Insulator-to-Rubber Bonding<br>Material             | DC3145 RTV, per MIL-A-46146                                                                              | 1.74  | 0.90    | NASA Test GSFC0191                                       |
| Coupling Nut Retainer                               | Torlon® 4203L                                                                                            | 1.88  | 0.01    | Glenair Test at NuSil Technology 03-12-2003              |
| Coupling Nut Epoxy                                  | Hysol C9-4215                                                                                            | 0.48  | 0.01    | Glenair Test                                             |
| White Epoxy Ink for Silk-screening                  | Markem 7224 White                                                                                        | 0.49  | 0.03    | NASA Test #GSC19899                                      |
| Potting Compound, Solder Cup and PC Tail Connectors | Hysol C9-4215                                                                                            | 0.48  | 0.01    | Glenair Test                                             |
| Potting Compound, Filter Receptacles                | Stycast epoxy, 2850FT/Catalyst 11                                                                        | 0.29  | 0.02    | Mfgr Data Sheet                                          |



## Guidelines for Space-Grade Applications

### MIL-DTL-38999 Connectors for Space Flight

1. Fluorosilicone rubber components such as O-rings and grommets exceed NASA outgassing limits.
2. NASA recommends outgassing processing to reduce outgassing to acceptable levels.
3. An inexpensive oven bakeout has better results than the more costly thermal vacuum outgassing. The higher temperature of the oven bakeout is more effective at removing volatile materials. However, both methods assure compliance with outgassing limits.
4. Glenair Mod 429 codes provide an easy ordering solution, whatever the outgassing option. Spacecraft designers generally avoid the use of ferromagnetic materials, which can become magnetized and can interfere with sensitive instruments. Aluminum shell connectors have a maximum permeability of 2 mu. Hermetic connector pins are iron alloy, a highly magnetic material.
5. Space programs sometimes need cryogenic connectors capable of withstanding temperatures as low as -270° C. D38999 connectors are rated to -65° C. Glenair does not have data to validate these connectors for cryogenic applications. EEE-INST-002 states "...experience has proven it is possible for (non-certified) connector types to be used successfully at cryogenic temperatures. It is recommended that connector samples should be subjected to five cycles of cryogenic temperature...(followed by examination for cracks and DWV)".

#### MIL-DTL-38999 CONNECTOR MATERIALS APPROVED FOR SPACE FLIGHT

| Component                                          | Material                                                                                                                                                                | Notes                          |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Shells, Coupling Nuts, Jam Nuts                    | Aluminum alloy 6061 per ASTM B211, electroless nickel plated                                                                                                            | Approved for Space Flight      |
| Rigid Insulators                                   | Glass-filled liquid crystal polymer (LCP) in accordance with MIL-M-24519, Type GLP-30F                                                                                  | Approved for Space Flight      |
| Contact Retention Clip                             | Beryllium copper, heat-treated, unplated                                                                                                                                | Approved for Space Flight      |
| Grommet, Peripheral Seal, Interfacial Seal, O-ring | Blended fluorosilicone/silicone elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988                                                                | Requires outgassing processing |
| Hermetic Insert                                    | Vitreous glass                                                                                                                                                          | Approved for Space Flight      |
| Pin Contact                                        | Beryllium copper alloy per ASTM B197, 50 microinches gold plated per ASTM B488 Type 3 Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches      | Approved for Space Flight      |
| Pin Contact, Hermetic                              | Nickel-iron alloy per ASTM F30 (Alloy 52), 50 microinches gold plated per ASTM B488 Type 3 Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches | Ferromagnetic material.        |
| Socket Contact                                     | Beryllium copper alloy per ASTM B197, 50 microinches gold plated per ASTM B488 Type 3 Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches.     | Approved for Space Flight      |
| Socket Contact Hood                                | Stainless steel, passivated per AMS-QQ-P-35                                                                                                                             | Approved for Space Flight      |
| Adhesives                                          | RTV and epoxies (see following table for outgassing info)                                                                                                               | Requires outgassing processing |
| Potting Compound, PCB and Solder Cup Versions      | Environmental and Hermetic Connectors: Stycast 2651/Catalyst 9 epoxy encapsulant. Filter Connectors: Stycast 2850FT/Catalyst 11 thermally conductive epoxy encapsulant. | Approved for Space Flight      |
| Filter Element                                     | Multilayer Ceramic Planar Array, ferrite inductors                                                                                                                      | Approved for Space Flight      |

# MIL-DTL-38999 Connector Performance Specifications



| Test                            | Performance Specifications                                                                                                                                                        |                                                  |                                       |                                  |    |                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------|----------------------------------|----|-------------------------------------------------|
| Dielectric Withstanding Voltage | <i>(meets MIL-C-38999, paragraph 3.14)</i><br>Test voltage at sea level — 1300 Volts AC (rms).<br>Wired, assembled, unmated connectors withstand the following:                   |                                                  |                                       |                                  |    |                                                 |
|                                 | 550 VAC (rms) @ 50,000 ft.                                                                                                                                                        |                                                  |                                       |                                  |    |                                                 |
|                                 | 350 VAC (rms) @ 70,000 ft.                                                                                                                                                        |                                                  |                                       |                                  |    |                                                 |
|                                 | 200 VAC (rms) @ 100,000 ft.                                                                                                                                                       |                                                  |                                       |                                  |    |                                                 |
| Insulation Resistance           | <i>(meets MIL-C-38999, paragraph 3.13)</i><br>Unmated connectors shall be tested as specified in <b>test method EIA-364-21</b><br>5000 megohms min. at 25° C                      |                                                  |                                       |                                  |    |                                                 |
| Supported Wire Size             | <i>(meets MIL-DTL-38999, paragraph 3.4.3.1)</i>                                                                                                                                   |                                                  |                                       |                                  |    |                                                 |
|                                 | Contact Size                                                                                                                                                                      |                                                  | Wire Gauge                            |                                  |    |                                                 |
|                                 | 22D                                                                                                                                                                               |                                                  | #22 - #28                             |                                  |    |                                                 |
|                                 | 20                                                                                                                                                                                |                                                  | #20 - #24                             |                                  |    |                                                 |
|                                 | 16                                                                                                                                                                                |                                                  | #16 - #20                             |                                  |    |                                                 |
|                                 | 12                                                                                                                                                                                |                                                  | #12 - #14                             |                                  |    |                                                 |
|                                 | 10                                                                                                                                                                                |                                                  | #10 - #12                             |                                  |    |                                                 |
| EMI Shielding                   | <i>(meets MIL-DTL-38999, paragraph 3.31)</i><br>Effective over a range of 100 MHz to 10 GHz with a minimum 50dB effectiveness at 10GHz, in accordance with test method EIA-364-10 |                                                  |                                       |                                  |    |                                                 |
|                                 | Frequency<br>MHz                                                                                                                                                                  | Leakage Attenuation (dB) Minimum                 |                                       |                                  |    | Series I<br><i>Finishes B, F, N, R, T and Z</i> |
|                                 |                                                                                                                                                                                   | Series II<br><i>Finishes B, F, N, R, T and Z</i> | Series III and IV                     |                                  |    |                                                 |
|                                 |                                                                                                                                                                                   | <i>Classes H, K, and Y</i>                       | <i>Classes F, G, L, N, M, R and S</i> | <i>Classes J, T, W, X, and Z</i> |    |                                                 |
|                                 | 100                                                                                                                                                                               | 65                                               | 80                                    | 90                               | 90 |                                                 |
|                                 | 200                                                                                                                                                                               | 60                                               | 75                                    | 88                               | 88 |                                                 |
|                                 | 300                                                                                                                                                                               | 55                                               | 73                                    | 88                               | 88 |                                                 |
|                                 | 400                                                                                                                                                                               | 55                                               | 71                                    | 87                               | 87 |                                                 |
|                                 | 800                                                                                                                                                                               | 45                                               | 66                                    | 85                               | 85 |                                                 |
|                                 | 1,000                                                                                                                                                                             | 45                                               | 65                                    | 85                               | 85 |                                                 |
|                                 | 1,500                                                                                                                                                                             | —                                                | 59                                    | 76                               | 69 |                                                 |
|                                 | 2,000                                                                                                                                                                             | —                                                | 55                                    | 70                               | 65 |                                                 |
|                                 | 3,000                                                                                                                                                                             | —                                                | 52                                    | 69                               | 61 |                                                 |
|                                 | 4,000                                                                                                                                                                             | —                                                | 50                                    | 68                               | 58 |                                                 |
|                                 | 6,000                                                                                                                                                                             | —                                                | 48                                    | 66                               | 55 |                                                 |
| 10,000                          | —                                                                                                                                                                                 | 45                                               | 65                                    | 50                               |    |                                                 |



# MIL-DTL-38999 Connector Performance Specifications

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| Test                | Performance Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------|-----|----|-----|----|-----|----|-----|----|-----|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|--------|----|
| Thermal Shock       | <i>(meets MIL-C-38999, paragraph 3.7)</i><br>After cycling the connector between -65° C and +175° C, it will meet all applicable electrical and mechanical requirements.                                                                                                                                                                                                                                                                                                                                                                                                |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| Physical Shock      | <i>(meets MIL-C-38999, paragraph 3.27)</i><br>No loosening of parts, cracking or other deleterious results hindering further part operation after 300 G's in each of 3 mutually perpendicular planes.                                                                                                                                                                                                                                                                                                                                                                   |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| Fluid Compatibility | <i>(meets MIL-DTL-38999, paragraph 3.33)</i><br>Designed to function in all fluids encountered in any modern military or aerospace environment                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| Fluid Immersion     | <i>(meets MIL-DTL-38999, paragraph 3.31)</i> <table> <tr> <th>Frequency (MHz)</th><th>50 Leakage Attenuation Minimum (dB)</th></tr> <tr><td>100</td><td>90</td></tr> <tr><td>200</td><td>88</td></tr> <tr><td>300</td><td>87</td></tr> <tr><td>400</td><td>85</td></tr> <tr><td>800</td><td>85</td></tr> <tr><td>1,000</td><td>85</td></tr> <tr><td>1,500</td><td>69</td></tr> <tr><td>2,000</td><td>65</td></tr> <tr><td>3,000</td><td>61</td></tr> <tr><td>4,000</td><td>58</td></tr> <tr><td>6,000</td><td>55</td></tr> <tr><td>10,000</td><td>50</td></tr> </table> | Frequency (MHz) | 50 Leakage Attenuation Minimum (dB) | 100 | 90 | 200 | 88 | 300 | 87 | 400 | 85 | 800 | 85 | 1,000 | 85 | 1,500 | 69 | 2,000 | 65 | 3,000 | 61 | 4,000 | 58 | 6,000 | 55 | 10,000 | 50 |
| Frequency (MHz)     | 50 Leakage Attenuation Minimum (dB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 100                 | 90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 200                 | 88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 300                 | 87                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 400                 | 85                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 800                 | 85                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 1,000               | 85                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 1,500               | 69                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 2,000               | 65                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 3,000               | 61                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 4,000               | 58                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 6,000               | 55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| 10,000              | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| High Impact Shock   | <i>(meets MIL-C-38999, paragraph 3.27)</i><br>Mated connectors, wired with MIL-C-915/60 or /63 cable and equipped with straight environmentally sealed backshells, withstand high impact shock per MIL-S-901.                                                                                                                                                                                                                                                                                                                                                           |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| Vibration           | <i>(meets MIL-C-38999, paragraph 3.26)</i><br>There shall be no electrical discontinuity and there shall be no disengagement of the mated connectors, backing off of the coupling mechanism, evidence of cracking, breaking, or loosening of parts.                                                                                                                                                                                                                                                                                                                     |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| Fungus              | <i>(meets MIL-C-38999, paragraph 4.2.2)</i><br>Materials used in the construction of these connectors shall be fungus inert per certification of method 508.4 of MIL-STD-810                                                                                                                                                                                                                                                                                                                                                                                            |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |
| Corrosion           | <i>(meets MIL-C-38999, paragraph 3.16)</i><br>When tested in accordance with EIA-364-26, meets appropriate electrical and mechanical requirements and shows no exposure of base metal after 500 hours of salt spray                                                                                                                                                                                                                                                                                                                                                     |                 |                                     |     |    |     |    |     |    |     |    |     |    |       |    |       |    |       |    |       |    |       |    |       |    |        |    |

# MIL-DTL-38999 Connector Performance Specifications



| Test                                        | Performance Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                                       |                |                |        |                           |        |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
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| Mating / Unmating Forces                    | <i>(meets MIL-C-38999, paragraph 3.10)</i><br>The coupling torque for mating and unmating of the counterpart connectors and protective covers shall meet the requirements MIL-DTL-38999, paragraph 3.10.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |                                       |                |                |        |                           |        |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
| Durability                                  | <i>(meets MIL-C-38999, paragraph 3.11)</i><br>No electrical or mechanical defects after 500 cycles of engagement and disengagement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |                                       |                |                |        |                           |        |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
| Insert Retention                            | <i>(meets MIL-C-38999, paragraph 3.15)</i><br>Unmated connectors shall retain their inserts in their proper location in the shell and there shall be no evidence of cracking, breaking, separation from the shell, or loosening of parts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                |                                       |                |                |        |                           |        |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
| Contact Retention                           | <i>(meets MIL-C-38999, paragraph 3.23)</i><br>The axial displacement of the contact shall not exceed .012 inch (0.30 mm).<br>No damage to contacts or inserts shall result.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                |                                       |                |                |        |                           |        |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
| Coupling Pin Strength                       | <i>(meets MIL-C-38999, paragraph 3.20)</i> <b>Applicable to series I and II only</b><br>Bayonet coupling pins shall withstand a load of 50 +5, -0 pounds without displacement or perceptible loosening of coupling pins.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |                                       |                |                |        |                           |        |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
| Contact Engagement and Disengagement Forces | <i>(meets MIL-C-38999, paragraph 3.16)</i> <b>Applicable to hermetic connectors with sockets only</b><br>Contact engagement and separating forces shall be within the limits specified in <b>SAE-AS39029</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                |                                       |                |                |        |                           |        |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
| Resistance to Probe Damage                  | <i>(meets MIL-C-38999, paragraph 3.42)</i> <b>Applicable to hermetic connectors with sockets only</b><br>Contacts shall withstand the bending moment and depth of test probe insertion without evidence of damage that would interfere with the mechanical or electrical performance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |                                       |                |                |        |                           |        |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
| EMI Ground Spring Forces                    | <i>(meets MIL-C-38999, paragraph 3.30)</i><br>The forces necessary to engage and separate EMI plugs with receptacle shells shall be within the values specified in the table shown below:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                |                                       |                |                |        |                           |        |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
|                                             | <table><tr><th rowspan="2">Shell size</th><th colspan="4">Axial force for Series I, II, and III</th><th colspan="4">Axial force for Series IV</th></tr><tr><th>Maximum Pounds</th><th>Minimum Newtons</th><th>Maximum Pounds</th><th>Minimum Newton</th><th>Pounds</th><th>Newton</th><th>Pounds</th><th>Newton</th></tr><tr><td>8/9</td><td>25</td><td>111</td><td>0.5</td><td>2</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>10/11</td><td>25</td><td>111</td><td>0.5</td><td>2</td><td>5</td><td>22.3</td><td>0.3</td><td>1.3</td></tr><tr><td>12/13</td><td>30</td><td>133</td><td>0.5</td><td>2</td><td>5</td><td>22.3</td><td>0.3</td><td>1.3</td></tr><tr><td>14/15</td><td>30</td><td>133</td><td>0.5</td><td>2</td><td>6</td><td>26.7</td><td>0.4</td><td>1.8</td></tr><tr><td>16/17</td><td>35</td><td>156</td><td>0.5</td><td>2</td><td>7</td><td>31.1</td><td>0.4</td><td>1.8</td></tr><tr><td>18/19</td><td>35</td><td>156</td><td>0.5</td><td>2</td><td>8</td><td>35.6</td><td>0.5</td><td>2.2</td></tr><tr><td>20/21</td><td>35</td><td>156</td><td>0.5</td><td>2</td><td>9</td><td>40</td><td>0.5</td><td>2.2</td></tr><tr><td>22/23</td><td>35</td><td>156</td><td>0.5</td><td>2</td><td>10</td><td>44.5</td><td>0.5</td><td>2.2</td></tr><tr><td>24/25</td><td>35</td><td>156</td><td>0.5</td><td>2</td><td>10</td><td>44.5</td><td>0.5</td><td>2.2</td></tr></table> | Shell size     | Axial force for Series I, II, and III |                |                |        | Axial force for Series IV |        |        |  | Maximum Pounds | Minimum Newtons | Maximum Pounds | Minimum Newton | Pounds | Newton | Pounds | Newton | 8/9 | 25 | 111 | 0.5 | 2 | - | - | - | - | 10/11 | 25 | 111 | 0.5 | 2 | 5 | 22.3 | 0.3 | 1.3 | 12/13 | 30 | 133 | 0.5 | 2 | 5 | 22.3 | 0.3 | 1.3 | 14/15 | 30 | 133 | 0.5 | 2 | 6 | 26.7 | 0.4 | 1.8 | 16/17 | 35 | 156 | 0.5 | 2 | 7 | 31.1 | 0.4 | 1.8 | 18/19 | 35 | 156 | 0.5 | 2 | 8 | 35.6 | 0.5 | 2.2 | 20/21 | 35 | 156 | 0.5 | 2 | 9 | 40 | 0.5 | 2.2 | 22/23 | 35 | 156 | 0.5 | 2 | 10 | 44.5 | 0.5 | 2.2 | 24/25 | 35 | 156 | 0.5 | 2 | 10 | 44.5 | 0.5 | 2.2 |
|                                             | Shell size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                | Axial force for Series I, II, and III |                |                |        | Axial force for Series IV |        |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Maximum Pounds | Minimum Newtons                       | Maximum Pounds | Minimum Newton | Pounds | Newton                    | Pounds | Newton |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
|                                             | 8/9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 25             | 111                                   | 0.5            | 2              | -      | -                         | -      | -      |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
|                                             | 10/11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 25             | 111                                   | 0.5            | 2              | 5      | 22.3                      | 0.3    | 1.3    |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
|                                             | 12/13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 30             | 133                                   | 0.5            | 2              | 5      | 22.3                      | 0.3    | 1.3    |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
|                                             | 14/15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 30             | 133                                   | 0.5            | 2              | 6      | 26.7                      | 0.4    | 1.8    |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
|                                             | 16/17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 35             | 156                                   | 0.5            | 2              | 7      | 31.1                      | 0.4    | 1.8    |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
|                                             | 18/19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 35             | 156                                   | 0.5            | 2              | 8      | 35.6                      | 0.5    | 2.2    |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
|                                             | 20/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 35             | 156                                   | 0.5            | 2              | 9      | 40                        | 0.5    | 2.2    |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
| 22/23                                       | 35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 156            | 0.5                                   | 2              | 10             | 44.5   | 0.5                       | 2.2    |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |
| 24/25                                       | 35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 156            | 0.5                                   | 2              | 10             | 44.5   | 0.5                       | 2.2    |        |  |                |                 |                |                |        |        |        |        |     |    |     |     |   |   |   |   |   |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |      |     |     |       |    |     |     |   |   |    |     |     |       |    |     |     |   |    |      |     |     |       |    |     |     |   |    |      |     |     |



# MIL-DTL-38999 Contact Performance Specifications

A

| Test                        | Performance Specifications                                                                                                                                                                                                                                   |                        |           |              |                        |                    |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|--------------|------------------------|--------------------|
| Current Rating              | (meets MIL-C-39029, paragraph 1.3.1)                                                                                                                                                                                                                         |                        |           |              |                        |                    |
|                             | Contact Size                                                                                                                                                                                                                                                 | Maximum Amps           |           |              |                        |                    |
|                             |                                                                                                                                                                                                                                                              | Crimp                  | Hermetic  |              |                        |                    |
|                             | 22D                                                                                                                                                                                                                                                          | 5                      | 3         |              |                        |                    |
|                             | 20                                                                                                                                                                                                                                                           | 7.5                    | 5         |              |                        |                    |
|                             | 16                                                                                                                                                                                                                                                           | 13                     | 10        |              |                        |                    |
|                             | 12                                                                                                                                                                                                                                                           | 23                     | 17        |              |                        |                    |
| 10                          | 33                                                                                                                                                                                                                                                           | 24                     |           |              |                        |                    |
| Contact Millivolt Drop      | Contact Size                                                                                                                                                                                                                                                 | Maximum Millivolt Drop |           |              |                        |                    |
|                             |                                                                                                                                                                                                                                                              | Crimp                  | Hermetic  |              |                        |                    |
|                             | 22D                                                                                                                                                                                                                                                          | 73                     | 85        |              |                        |                    |
|                             | 20                                                                                                                                                                                                                                                           | 55                     | 60        |              |                        |                    |
|                             | 16                                                                                                                                                                                                                                                           | 49                     | 85        |              |                        |                    |
|                             | 12                                                                                                                                                                                                                                                           | 42                     | 82        |              |                        |                    |
|                             | 10                                                                                                                                                                                                                                                           | 33                     | 72        |              |                        |                    |
| Contact Resistance at 25° C | (meets MIL-C-38999, paragraph 3.17)                                                                                                                                                                                                                          |                        |           |              |                        |                    |
|                             | Contacts in the mated condition shall meet the contact resistance requirements of the table shown below. Appropriate compensation may be made for resistance in the measured value which is due to an additional length of wire included in the measurement. |                        |           |              |                        |                    |
|                             | Class                                                                                                                                                                                                                                                        | Contact Size           | Wire Size | Test Amperes | Millivolt Drop Maximum |                    |
|                             |                                                                                                                                                                                                                                                              |                        |           |              | Initial                | After Conditioning |
|                             | H, N and Y                                                                                                                                                                                                                                                   | 12                     | 12        | 17           | 85                     | 100                |
|                             |                                                                                                                                                                                                                                                              | 16                     | 16        | 10           | 85                     | 100                |
|                             |                                                                                                                                                                                                                                                              | 20                     | 20        | 5            | 60                     | 75                 |
| 22D                         |                                                                                                                                                                                                                                                              | 22                     | 3         | 85           | 95                     |                    |

## MIL-DTL-38999 CONTACT MATERIALS AND SPECIFICATIONS

| Component             | Material                                                                                                                                                                | Notes                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Pin Contact           | Beryllium copper alloy per ASTM B197, 50 microinches gold plated per ASTM B488 Type 3 Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches      | Approved for Space Flight |
| Pin Contact, Hermetic | Nickel-iron alloy per ASTM F30 (Alloy 52), 50 microinches gold plated per ASTM B488 Type 3 Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches | Ferromagnetic material.   |
| Socket Contact        | Beryllium copper alloy per ASTM B197, 50 microinches gold plated per ASTM B488 Type 3 Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches.     | Approved for Space Flight |
| Socket Contact Hood   | Stainless steel, passivated per AMS-QQ-P-35                                                                                                                             | Approved for Space Flight |

# RoHS Compliant Plating Options for MIL-DTL-38999 Connectors and Accessories



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The 30 May 2008 MIL-DTL-38999 Rev L specification provides guidance on the use of alternative parts with less hazardous or nonhazardous materials. In this regard, the specification provides for a number of alternative plating materials. Users are directed to select the least hazardous plating material that meets the form, fit and function requirements of their application.

Glenair would like to draw our customer's attention to two finish materials that conform to this guidance:

**T – Environment** resisting Nickel fluorocarbon polymer. Conductive Nickel with fluorocarbon polymer additives over a suitable underplate to withstand 500 hours of dynamic salt spray testing.

**Z – Environment** resisting Zinc nickel (conductive) in accordance with ASTM B841 over a suitable underplate to withstand 500 hours of dynamic salt spray testing.

These two plating solutions are both cadmium and hexavalent chromium free, which allows them to be defined as RoHS compliant parts. Here are some additional details on these two surface finishes:

**Temperature Resistance:** Class T - Nickel fluorocarbon polymer (Glenair's MT Ni-PTFE **1,000 Hour Grey™** finish) is rated from -65°C to +175°C. The Class Z - Zinc Nickel (Glenair's ZN finish) is rated from -65°C to +175°C.

**Plating adhesion:** When tested as specified in 4.5.5, there shall be no blistering, peeling, flaking or separation of plating or other damage detrimental to the operation of the connector.

**Dissimilar metals and compatible couples:** Both finishes satisfy prohibitions against dissimilar metal coupling as specified in MIL-STD-889.

**Shell-to-shell conductivity (millivolts):** Both finishes are rated at 2.5 millivolt drop potential.



**Glenair Nickel-PTFE 1,000 Hour Grey™ RoHS Compliant Plating is Now Available for All Environmental Class D38999 Connector Products.**

**Sulfur Dioxide Resistance:** Both finishes pass the requisite 336 hours resistance to Sulfur Dioxide.

Glenair is pleased to make these environmentally-friendly plating finishes available to our MIL-DTL-38999 customers. Both surface finishes provide outstanding mechanical, electrical and environmental performance and many be applied to both aluminum alloy, stainless steel as well as composite thermoplastic versions of our products, including connectors and accessories. Glenair is a leader in the advancement of alternative plating solutions and offers as broad a selection as any manufacturer in our industry.

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# MIL-DTL-38999 Series I, II, III and IV Qualified Hermetic Connectors

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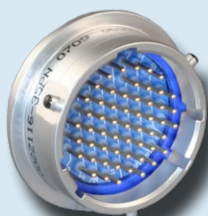
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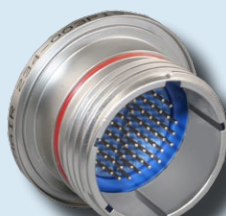
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**Series I**



**Series II**



**Series III**



**Series IV**

## The Full Range of MIL-DTL-38999 Series I, II, III and IV Hermetic Receptacles—*Plus Glenair Commercial Equivalents*

### **Product Applications**

The MIL-DTL-38999 Series I, II, III and IV family of hermetic connectors are ideal for high-pressure/low-leakage applications in air, sea and space environments. Glenair is on the Qualified Product List (QPL) for all configurations of MIL-DTL-38999 Series I through IV pin and socket hermetic connectors. We also offer our D38999 type commercial part numbers for applications that do not require MS qualified products.

### **Materials**

Glenair MIL-DTL-38999 Series I, II, III and IV Hermetic Connectors are made of stainless (CRES) or carbon steel (CRS), with glass

Nickel-iron alloy 52 gold-plated contacts, available in sizes 8, 10, 12, 16, 20 and 22D, depending on the layout chosen, offer a wide selection of insert arrangement options. Solder cup, feed through (PCB Flexprint) and eyelet contact styles are also available.

### **Same-Day Inventory**

Because Glenair makes all its hermetic connectors in-house, including the machining of shells, molding of interfacial seals and firing of hermetic components, we can offer you outstanding availability on stock products and fast turnaround on special orders.

*Same-Day Delivery on Most Common Shell Styles and Layouts*

*Full Range of D38999 Series I thru IV Pin and Socket Insert Arrangements*

*DSCC Approved QPL Hermetics*

*1 x 10<sup>-6</sup> cc/Helium per Second Leakage Rate*

*CRES and CRS Shells with Vitreous Glass Sealing with All Standard Material Options*

*Jam Nut, Solder Mount, Wall Mount and Box Mount Options*



insulators fused to the connector shell, and contacts meeting a leak rate of 1 X 10<sup>-6</sup> cc/Helium per second. Maximum design flexibility is built into the Series I, II, III and IV Military Standard Hermetic Connectors – with a minimum of 2 to a maximum of 128 circuits per connector in a wide variety of contact arrangements IAW MIL-STD-1560. Fluorosilicone rubber interfacial and peripheral seals ensure positive sealing with plug connectors.

*Catalog contents—including part numbers, materials and dimensions—are accurate to the best of our ability when we go to print. Even so, customers are advised to consult the factory for the latest specifications, particularly to confirm critical dimensions such as connector lengths, threads, and so on. When errors or mistakes are brought to our attention, corrected content is posted immediately to [www.glenair.com](http://www.glenair.com).*

## MIL-DTL-38999 Series I, II, III, and IV Hermetic Class Connectors Insert Arrangements (IAW MIL-STD-1560)

|            |      |      |      |      |      |       |       |       |
|------------|------|------|------|------|------|-------|-------|-------|
|            |      |      |      |      |      |       |       |       |
| Series I   | 9-35 | 9-98 | 11-2 | 11-4 | 11-5 | 11-35 | 11-98 | 11-99 |
| Series II  | 8-35 | 8-98 | 10-2 | 10-4 | 10-5 | 10-35 | 10-98 | 10-99 |
| Series III | A35  | A98  | B2   | B4   | B5   | B35   | B98   | B99   |
| Series IV  | ---  | ---  | ---  | ---  | B5   | B35   | B98   | B99   |

|            |      |      |       |       |
|------------|------|------|-------|-------|
|            |      |      |       |       |
| Series I   | 13-4 | 13-8 | 13-35 | 13-98 |
| Series II  | 12-4 | 12-8 | 12-35 | 12-98 |
| Series III | C4   | C8   | C35   | C98   |
| Series IV  | C4   | ---  | C35   | C98   |

|            |      |       |       |       |       |       |
|------------|------|-------|-------|-------|-------|-------|
|            |      |       |       |       |       |       |
| Series I   | 15-5 | 15-15 | 15-18 | 15-19 | 15-35 | 15-97 |
| Series II  | 14-5 | 14-15 | 14-18 | 14-19 | 14-35 | 14-97 |
| Series III | D5   | D15   | D18   | D19   | D35   | D97   |
| Series IV  | D5   | ---   | D18   | D19   | D35   | D97   |

|            |      |      |       |       |       |
|------------|------|------|-------|-------|-------|
|            |      |      |       |       |       |
| Series I   | 17-6 | 17-8 | 17-26 | 17-35 | 17-99 |
| Series II  | 16-6 | 16-8 | 16-26 | 16-35 | 16-99 |
| Series III | E6   | E8   | E26   | E35   | E99   |
| Series IV  | E6   | E8   | E26   | E35   | ---   |

|            |       |       |       |       |       |       |
|------------|-------|-------|-------|-------|-------|-------|
|            |       |       |       |       |       |       |
| Series I   | 19-11 | 19-28 | 19-32 | 19-35 | 19-30 | 19-45 |
| Series II  | 18-11 | 18-28 | 18-32 | 18-35 | 18-30 | 18-45 |
| Series III | F11   | F28   | F32   | F35   | F30   | F45   |
| Series IV  | F11   | ---   | F32   | F35   | ---   | ---   |



# MIL-DTL-38999 Series I, II, III, and IV Hermetic Class Connectors Insert Arrangements (IAW MIL-STD-1560)



D38999 QPL  
Hermetics

B

|                |          |          |          |                  |          |
|----------------|----------|----------|----------|------------------|----------|
|                |          |          |          |                  |          |
| Series I       | 21-11    | 21-16    | 21-35    | 21-41            |          |
| Series II      | 20-11    | 20-16    | 20-35    | 20-41            |          |
| Series III, IV | G11, G11 | G16, G16 | G35, G35 | G41, G41         |          |
|                |          |          |          |                  |          |
| Series I       | 21-24    | 21-25    | 21-27    | 21-29            | 21-39    |
| Series II      | 20-24    | 20-25    | 20-27    | --               | 20-39    |
| Series III, IV | G24, G24 | G25, --- | G27, --- | G29, ---         | G39, --- |
|                |          |          |          |                  |          |
| Series I       | 23-21    | 23-35    | 23-53    | 23-55            | 23-32    |
| Series II      | 22-21    | 22-35    | 22-53    | 22-55            | 22-32    |
| Series III, IV | H21, H21 | H35, H35 | H53, --- | H55, H55         | H32, --- |
|                |          |          |          |                  |          |
| Series I       | 23-34    | 23-36    | 23-97    | 23-99            |          |
| Series II      | 22-34    | 22-36    | 22-97    | 22-99            |          |
| Series III, IV | H34, --- | H36, --- | H97, --- | H99, ---         |          |
|                |          |          |          |                  |          |
| Series I       | 25-29    | 25-35    | 25-61    | 25-4             |          |
| Series II      | 24-29    | 24-35    | 24-61    | 24-4             |          |
| Series III, IV | J29, J29 | J35, J35 | J61, J61 | J4, J4           |          |
|                |          |          |          |                  |          |
| Series I       | 25-43    | 25-19    | 25-24    | J-11             |          |
| Series II      | 24-43    | 24-19    | 24-24    | (Series IV Only) |          |
| Series III, IV | J43, J43 | J19, J19 | J24, J24 |                  |          |





# MIL-DTL-38999 Series I, II, III, and IV Hermetic Class Connectors Layouts and Pin Counts

B

| Shell Size and Insert Arrangements |              |                   | Number of Pins |    |    |    |
|------------------------------------|--------------|-------------------|----------------|----|----|----|
| MS Series I                        | MS Series II | D38999 Series III | 22D            | 20 | 16 | 12 |
| 9-35                               | 8-35         | A35               | 6              |    |    |    |
| 9-98                               | 8-98         | A98               |                | 3  |    |    |
| 11-2                               | 10-2         | B2                |                |    | 2  |    |
| 11-4                               | 10-4         | B4                |                | 4  |    |    |
| 11-5                               | 10-5         | B5                |                | 5  |    |    |
| 11-35                              | 10-35        | B35               | 13             |    |    |    |
| 11-98                              | 10-98        | B98               |                | 6  |    |    |
| 11-99                              | 10-99        | B99               |                | 7  |    |    |
| 13-4                               | 12-4         | C4                |                |    | 4  |    |
| 13-8                               | 12-8         | C8                |                | 8  |    |    |
| 13-35                              | 12-35        | C35               | 22             |    |    |    |
| 13-98                              | 12-98        | C98               |                | 10 |    |    |
| 15-5                               | 14-5         | D5                |                |    | 5  |    |
| 15-15                              | 14-15        | D15               |                | 14 | 1  |    |
| 15-18                              | 14-18        | D18               |                | 18 |    |    |
| 15-19                              | 14-19        | D19               |                | 19 |    |    |
| 15-35                              | 14-35        | D35               | 37             |    |    |    |
| 15-97                              | 14-97        | D97               |                | 8  | 4  |    |
| 17-6                               | 16-6         | E6                |                |    |    | 6  |
| 17-8                               | 16-8         | E8                |                |    | 8  |    |
| 17-26                              | 16-26        | E26               |                | 26 |    |    |
| 17-35                              | 16-35        | E35               | 55             |    |    |    |
| 17-99                              | 16-99        | E99               |                | 21 | 2  |    |
| 19-11                              | 18-11        | F11               |                |    | 11 |    |
| 19-28                              | 18-28        | F28               |                | 26 | 2  |    |
| 19-30                              | 18-30        | F30               |                | 29 | 1  |    |
| 19-32                              | 18-32        | F32               |                | 32 |    |    |
| 19-35                              | 18-35        | F35               | 66             |    |    |    |
| 19-45                              | 18-45        | F45               | 67             |    |    |    |
| 21-11                              | 20-11        | G11               |                |    |    | 11 |
| 21-16                              | 20-16        | G16               |                |    | 16 |    |
| 21-24                              | 20-24        | G24               |                | 24 |    |    |
| 21-25                              | 20-25        | G25               |                | 25 |    |    |
| 21-27                              | 20-27        | G27               |                | 27 |    |    |
| 21-35                              | 20-35        | G35               | 79             |    |    |    |
| 21-39                              | 20-39        | G39               |                | 37 | 2  |    |
| 21-41                              | 20-41        | G41               |                | 41 |    |    |
| 23-21                              | 22-21        | H21               |                |    | 21 |    |
| 23-32                              | 22-32        | H32               |                | 32 |    |    |
| 23-34                              | 22-34        | H34               |                | 34 |    |    |
| 23-35                              | 22-35        | H35               | 100            |    |    |    |
| 23-36                              | 22-36        | H36               |                | 36 |    |    |
| 23-53                              | 22-53        | H53               |                | 53 |    |    |
| 23-55                              | 22-55        | H55               |                | 55 |    |    |
| 23-97                              | 22-97        | H97               |                |    | 16 |    |
| 23-99                              | 22-99        | H99               |                |    | 11 |    |
| 25-4                               | 24-4         | J4                |                | 48 | 8  |    |
| 25-19                              | 24-19        | J19               |                |    |    | 19 |
| 25-24                              | 24-24        | J24               |                |    | 12 | 12 |
| 25-29                              | 24-29        | J29               |                |    | 29 |    |
| 25-35                              | 24-35        | J35               | 128            |    |    |    |
| 25-37                              | N/A          | J37               | 37             |    | 37 | 16 |
| 25-43                              | 24-43        | J43               |                | 23 | 20 |    |
| 25-61                              | 24-61        | J61               |                | 61 |    |    |

| Shell Size / Insert Arrangements | Number of Pins |    |    |    |    |
|----------------------------------|----------------|----|----|----|----|
| D38999 Series IV                 | 22D            | 20 | 16 | 12 | 10 |
| B5                               |                | 5  |    |    |    |
| B35                              | 13             |    |    |    |    |
| B98                              |                | 6  |    |    |    |
| B99                              |                | 7  |    |    |    |
| C4                               |                |    | 4  |    |    |
| C35                              | 22             |    |    |    |    |
| C98                              |                | 10 |    |    |    |
| D5                               |                |    | 5  |    |    |
| D18                              |                | 18 |    |    |    |
| D19                              | 37             | 19 |    |    |    |
| D35                              |                |    |    |    |    |
| D97                              |                | 8  | 4  |    |    |
| E6                               |                |    |    | 6  |    |
| E8                               |                |    | 8  |    |    |
| E26                              |                | 26 |    |    |    |
| E35                              | 55             |    |    |    |    |
| F11                              |                |    | 11 |    |    |
| F32                              |                | 32 |    |    |    |
| F35                              | 66             |    |    |    |    |
| G11                              |                |    |    | 11 |    |
| G16                              |                |    | 16 |    |    |
| G35                              | 79             |    |    |    |    |
| G41                              |                | 41 |    |    |    |
| H21                              |                |    | 21 |    |    |
| H35                              | 100            |    |    |    |    |
| H55                              |                | 55 |    |    |    |
| J4                               |                | 48 | 8  |    |    |
| J11                              |                | 2  |    |    | 9  |
| J19                              |                |    |    | 19 |    |
| J24                              |                |    | 12 | 12 |    |
| J29                              |                |    | 29 |    |    |
| J35                              | 128            |    |    |    |    |
| J43                              |                | 23 | 20 |    |    |
| J61                              |                | 61 |    |    |    |
| J37                              |                |    | 37 |    |    |

# MIL-DTL-38999 Series I, II, III and IV Hermetic Class Connectors Material Specifications



D38999 QPL  
Hermetics

**TABLE I: HERMETIC CLASS MATERIALS**

|                                                    |                                                                                                                                                                          |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shell, Barrel Coupling and Jam Nut (Hermetic)      | Stainless steel per AMS-QQ-S-763                                                                                                                                         |
| Shell, Barrel, Coupling Nut and Jam Nut (Hermetic) | Carbon Steel per ASTM-B545 or ASTM-B339                                                                                                                                  |
| Front and Rear Insulators                          | Glass-filled liquid crystal polymer (LCP) in accordance with MIL-M-24519, Type GLP-30F                                                                                   |
| Grommet, Peripheral Seal and Interfacial Seal      | Blended elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988                                                                                         |
| Hermetic Insert                                    | Vitreous glass                                                                                                                                                           |
| Pin Contact (Hermetic)                             | Nickel-iron alloy per ASTM F30 (Alloy 52), 50 microinches gold plated per ASTM B488 Type 3 Code C Class 1, 27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches |
| Socket Contact (Hermetic)                          | Copper Alloy, Gold Plated IAW ASTM B488, Type 3, Code C                                                                                                                  |
| Adhesives                                          | Silicone and epoxy                                                                                                                                                       |
| Potting Compound, PCB and Solder Cup Versions      | Environmental and Hermetic Connectors: High-strength epoxy, Hysol EE4215. Filter Connectors: Stycast 2850FT/Catalyst 11 thermally conductive epoxy encapsulant.          |

**B**

**TABLE II: HERMETIC CLASS FINISHES**

| Plating Code                                       | Material        | Finish                  | Specification             |
|----------------------------------------------------|-----------------|-------------------------|---------------------------|
| <b>Glenair Commercial Equivalent Plating Codes</b> |                 |                         |                           |
| Z1                                                 | Stainless Steel | Passivate               | AMS-QQ-P-35               |
| FT                                                 | Carbon Steel    | Fused Tin Plate         | ASTM-B545 or ASTM-B339    |
| ZL                                                 | Stainless Steel | Electrodeposited Nickel | SAE-AMS-QQ-N-290, Class 2 |
| <b>MIL-DTL-38999 Plating Codes</b>                 |                 |                         |                           |
| D                                                  | Carbon Steel    | Fused Tin Plate         | ASTM-B545 or ASTM-B339    |
| E                                                  | Stainless Steel | Passivate               | AMS-QQ-P-35               |
| N                                                  | Stainless Steel | Electrodeposited Nickel | SAE-AMS-QQ-N-290, Class 2 |

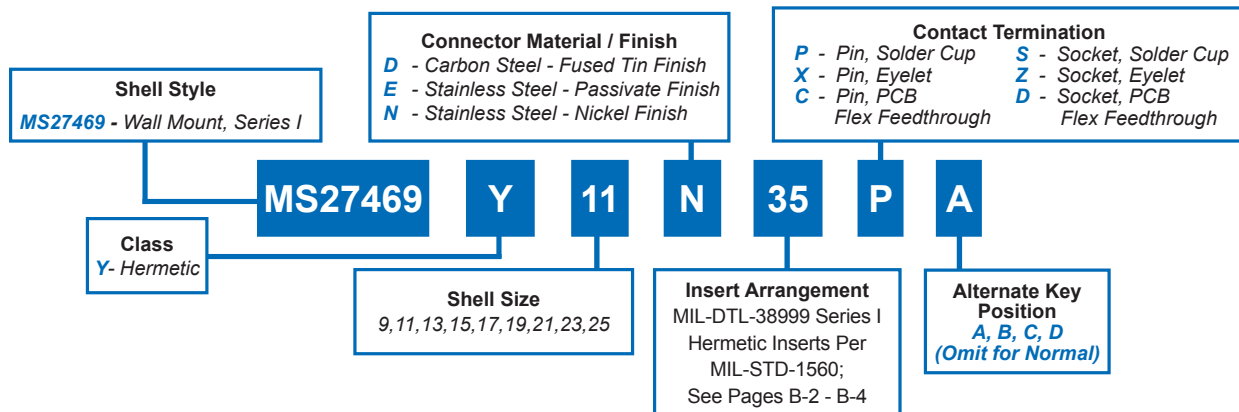


# MS27469

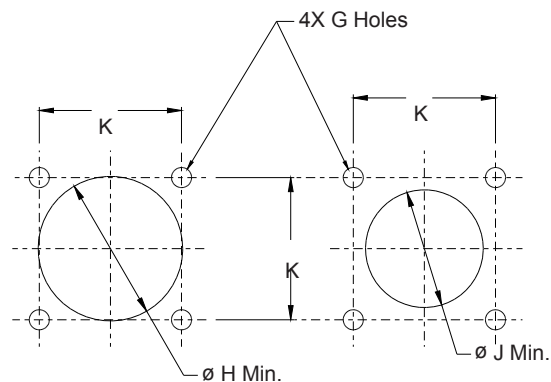
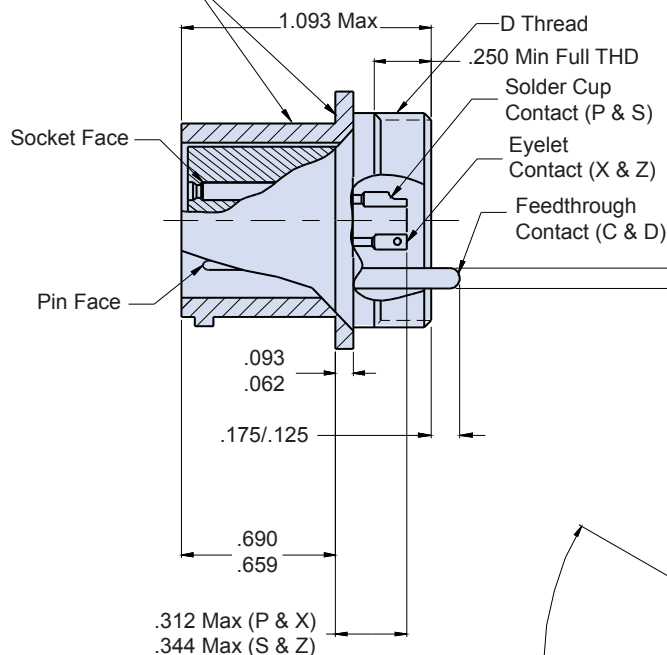
## Wall Mount Hermetic Receptacle

### MIL-DTL-38999 Series I

#### How To Order: MS

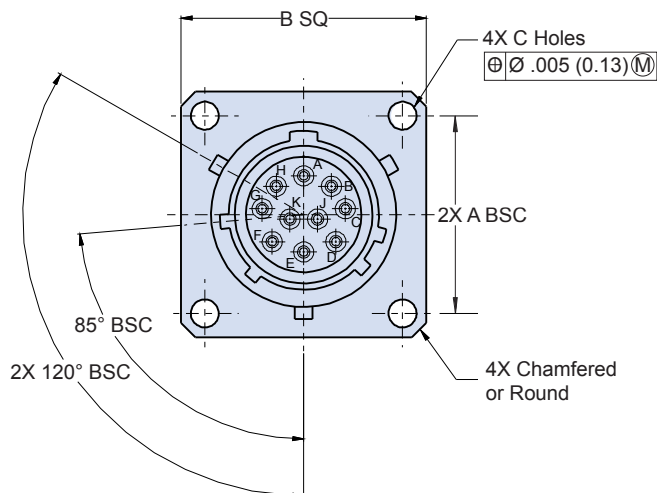


Marking Location  
(Either Location)



Back Panel Mounting

Front Panel Mounting



Dimensions in Inches (millimeters) are subject to change without notice.

# 231-100-H0

## Wall Mount Hermetic Receptacle

### MIL-DTL-38999 Series I Type



#### How To Order: Commercial

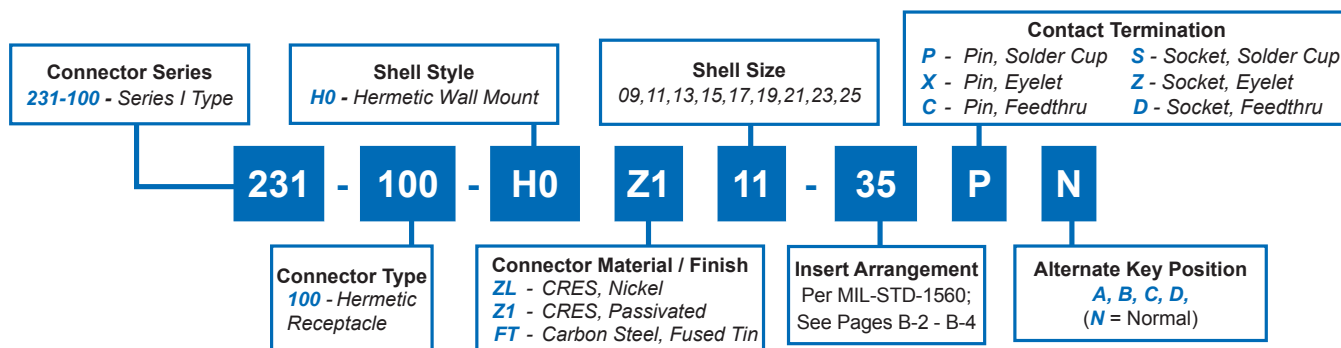


TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | A BSC       | B SQ<br>±.016(0.4) | ø C HOLES<br>.123(3.1) | D THREADS         |
|------------|-------------|--------------------|------------------------|-------------------|
| 9/09       | .719(18.3)  | .938(23.8)         | .133(3.4)<br>.123(3.1) | .6875-24 UNEF-2A  |
| 11         | .812(20.6)  | 1.031(26.2)        | .133(3.4)<br>.123(3.1) | .8125-20 UNEF-2A  |
| 13         | .906(23.0)  | 1.125(28.6)        | .133(3.4)<br>.123(3.1) | .9375-20 UNEF-2A  |
| 15         | .969(24.6)  | 1.219(31.0)        | .133(3.4)<br>.123(3.1) | 1.0625-18 UNEF-2A |
| 17         | 1.062(27.0) | 1.312(33.3)        | .133(3.4)<br>.123(3.1) | 1.1875-18 UNEF-2A |
| 19         | 1.156(29.4) | 1.438(36.5)        | .133(3.4)<br>.123(3.1) | 1.3125-18 UNEF-2A |
| 21         | 1.250(31.8) | 1.562(39.7)        | .133(3.4)<br>.123(3.1) | 1.4375-18 UNEF-2A |
| 23         | 1.375(34.9) | 1.688(42.9)        | .157(4.0)<br>.142(3.6) | 1.5625-18 UNEF-2A |
| 25         | 1.500(38.1) | 1.812(46.0)        | .157(4.0)<br>.142(3.6) | 1.6875-18 UNEF-2A |

TABLE I (CONTINUED):  
CONNECTOR DIMENSIONS

| SHELL SIZE | ø G HOLES<br>±.005(0.1) | ø H MIN     | ø J MIN     | K<br>±.005(0.1) |
|------------|-------------------------|-------------|-------------|-----------------|
| 9/09       | .128(3.3)               | .656(16.7)  | .697(17.7)  | .719(18.3)      |
| 11         | .128(3.3)               | .796(20.2)  | .822(20.9)  | .812(20.6)      |
| 13         | .128(3.3)               | .921(23.4)  | .947(24.1)  | .906(23.0)      |
| 15         | .128(3.3)               | 1.047(26.6) | 1.072(27.2) | .968(24.6)      |
| 17         | .128(3.3)               | 1.218(30.9) | 1.197(30.4) | 1.062(27.0)     |
| 19         | .128(3.3)               | 1.296(32.9) | 1.322(33.6) | 1.156(29.4)     |
| 21         | .128(3.3)               | 1.421(36.1) | 1.447(36.8) | 1.250(31.8)     |
| 23         | .154(3.9)               | 1.546(39.3) | 1.572(39.9) | 1.375(34.9)     |
| 25         | .154(3.9)               | 1.672(42.5) | 1.697(43.1) | 1.500(38.1)     |

Dimensions in Inches (millimeters) are subject to change without notice.

HERMETIC LEAK RATE MOD CODES

| Designator | Required Leak Rate                         |
|------------|--------------------------------------------|
| -585A      | 1 x 10 <sup>-10</sup> cc Helium per second |
| -585B      | 1 x 10 <sup>-9</sup> cc Helium per second  |
| -585C      | 1 x 10 <sup>-8</sup> cc Helium per second  |

TABLE II: CONTACT SIZE

PRINTED CIRCUIT TAIL CONFIGURATIONS  
CONTACT STYLE C AND D

SIZE 12 AND SIZE 16

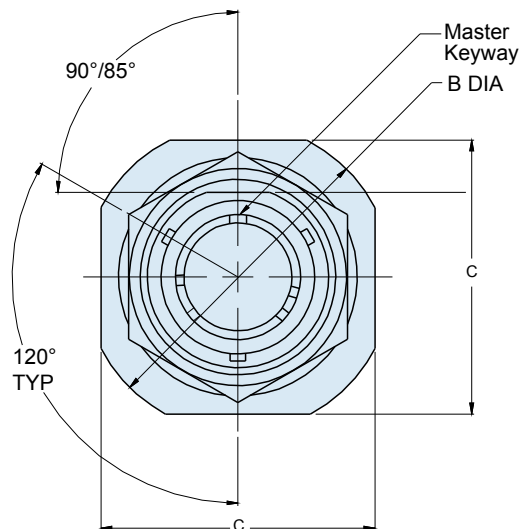
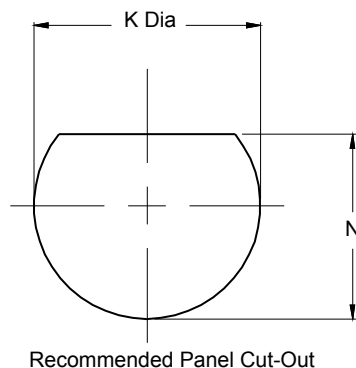
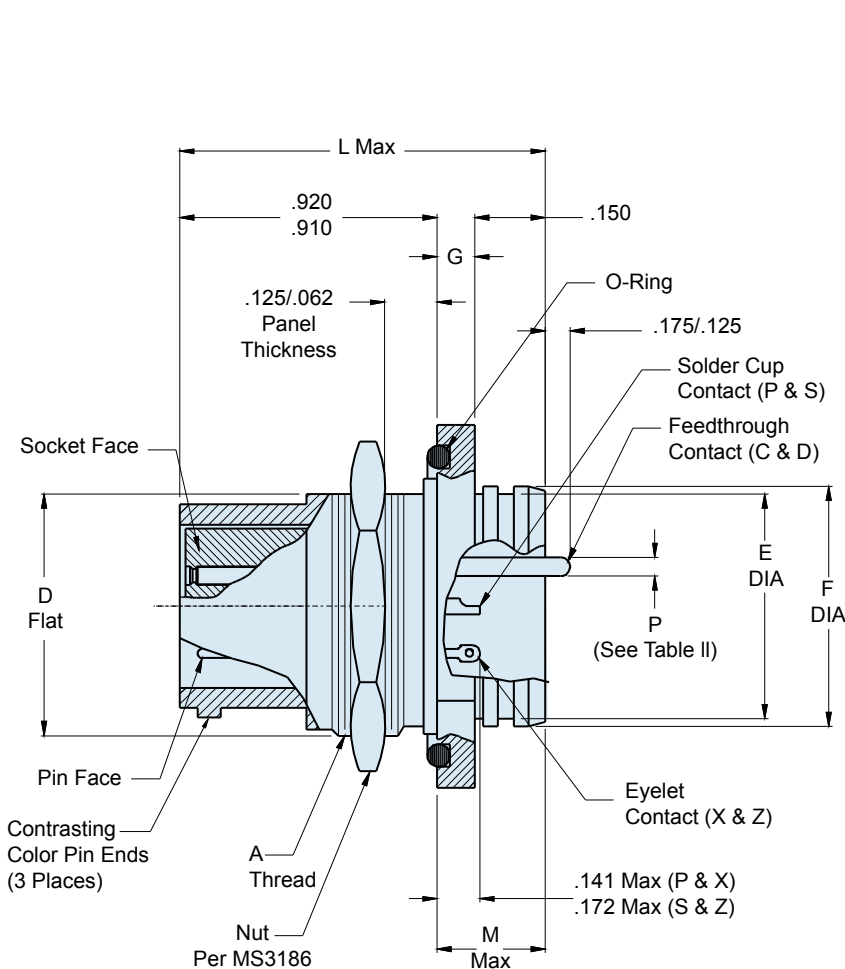
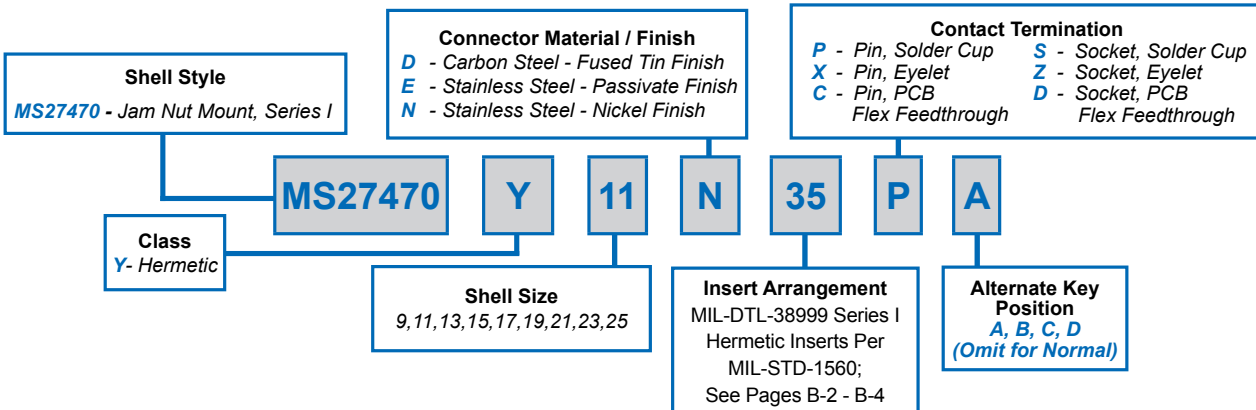
SIZE 22D AND SIZE 20

| Contact Size | ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |

WIRE ACCOMMODATION

| Contact Size | Wire Gauge |
|--------------|------------|
| 22D          | #22 - #28  |
| 20           | #20 - #24  |
| 16           | #16 - #20  |
| 12           | #12 - #14  |

**How To Order: MS**



# MS27470 Jam Nut Mount Hermetic Receptacle MIL-DTL-38999 Series I



D38999 QPL  
Hermetics

## How To Order: Commercial

|                                                    |                                                                                                                  |                                                                       |                                                                                                                                                |                |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>Connector Series</b><br>231 - Series I Type     | <b>Shell Style</b><br>H7 - Hermetic Jam Nut Mount                                                                | <b>Shell Size</b><br>09, 11, 13, 15, 17, 19, 21, 23, 25               | <b>Contact Termination</b><br>P - Pin, Solder Cup S - Socket, Solder Cup<br>X - Pin, Eyelet Z - Socket, Eyelet<br>C - Pin, PCB D - Socket, PCB |                |
| <b>231</b>                                         | <b>- 100</b>                                                                                                     | <b>- H7</b>                                                           | <b>Z1</b>                                                                                                                                      | <b>11 - 35</b> |
| <b>Connector Type</b><br>100 - Hermetic Receptacle | <b>Connector Material / Finish</b><br>ZL - CRES, Nickel<br>Z1 - CRES, Passivated<br>FT - Carbon Steel, Fused Tin | <b>Insert Arrangement</b><br>Per MIL-STD-1560;<br>See Pages B-2 - B-4 | <b>Alternate Key Position</b><br>A, B, C, D,<br>(N = Normal)                                                                                   |                |
|                                                    |                                                                                                                  |                                                                       | <b>P</b>                                                                                                                                       | <b>N</b>       |

B

TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | A THREAD CLASS 2A | B DIA ±.016(0.4) | C ±.016(0.4) | D FLAT ±.005(0.1) | E DIA ±.011(0.3) | F DIA ±.005(0.1) |
|------------|-------------------|------------------|--------------|-------------------|------------------|------------------|
| 9/09       | .6875-24 UNEF     | 1.188(30.2)      | 1.062(27.0)  | .65(16.5)         | .602(15.3)       | .648(16.5)       |
| 11         | .8125-20 UNEF     | 1.375(34.9)      | 1.25(31.8)   | .75(19.1)         | .726(18.4)       | .772(19.6)       |
| 13         | 1.000-20 UNEF     | 1.5(38.1)        | 1.375(34.9)  | .937(23.8)        | .852(21.6)       | .898(22.8)       |
| 15         | 1.125-18 UNEF     | 1.625(41.3)      | 1.5(38.1)    | 1.061(26.9)       | .978(24.8)       | 1.024(26.0)      |
| 17         | 1.250-18 UNEF     | 1.75(44.5)       | 1.625(41.3)  | 1.186(30.1)       | 1.102(28.0)      | 1.148(29.2)      |
| 19         | 1.375-18 UNEF     | 1.938(49.2)      | 1.812(46.0)  | 1.311(33.3)       | 1.228(31.2)      | 1.274(32.4)      |
| 21         | 1.500-18 UNEF     | 2.062(52.4)      | 1.938(49.2)  | 1.436(36.5)       | 1.352(34.3)      | 1.398(35.5)      |
| 23         | 1.625-18 UNEF     | 2.188(55.6)      | 2.062(52.4)  | 1.561(39.6)       | 1.478(37.5)      | 1.524(38.7)      |
| 25         | 1.750-18 UNS      | 2.312(58.7)      | 2.188(55.6)  | 1.686(42.8)       | 1.602(40.7)      | 1.648(41.9)      |

TABLE I (CONTINUED): CONNECTOR DIMENSIONS

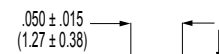
| SHELL SIZE | G ±.016 (0.4) | K DIA ±.005 (0.1) | L MAX        | M MAX      | N +.000 -.002 (.05) |
|------------|---------------|-------------------|--------------|------------|---------------------|
| 9/09       | .109 (2.8)    | .698 (17.7)       | 1.200 (30.5) | .280 (7.1) | .698 (17.7)         |
| 11         | .109 (2.8)    | .830 (21.1)       | 1.200 (30.5) | .280 (7.1) | .830 (21.1)         |
| 13         | .109 (2.8)    | 1.015 (25.8)      | 1.200 (30.5) | .280 (7.1) | 1.015 (25.8)        |
| 15         | .109 (2.8)    | 1.140 (29.0)      | 1.200 (30.5) | .280 (7.1) | 1.140 (29.0)        |
| 17         | .109 (2.8)    | 1.265 (32.1)      | 1.200 (30.5) | .280 (7.1) | 1.265 (32.1)        |
| 19         | .140 (3.6)    | 1.390 (35.3)      | 1.231 (31.3) | .311 (7.9) | 1.390 (35.3)        |
| 21         | .140 (3.6)    | 1.515 (38.5)      | 1.231 (31.3) | .311 (7.9) | 1.515 (38.5)        |
| 23         | .140 (3.6)    | 1.640 (41.7)      | 1.231 (31.3) | .311 (7.9) | 1.640 (41.7)        |
| 25         | .140 (3.6)    | 1.765 (44.8)      | 1.231 (31.3) | .311 (7.9) | 1.765 (44.8)        |

TABLE II: CONTACT SIZE

PRINTED CIRCUIT TAIL CONFIGURATIONS  
CONTACT STYLE C AND D



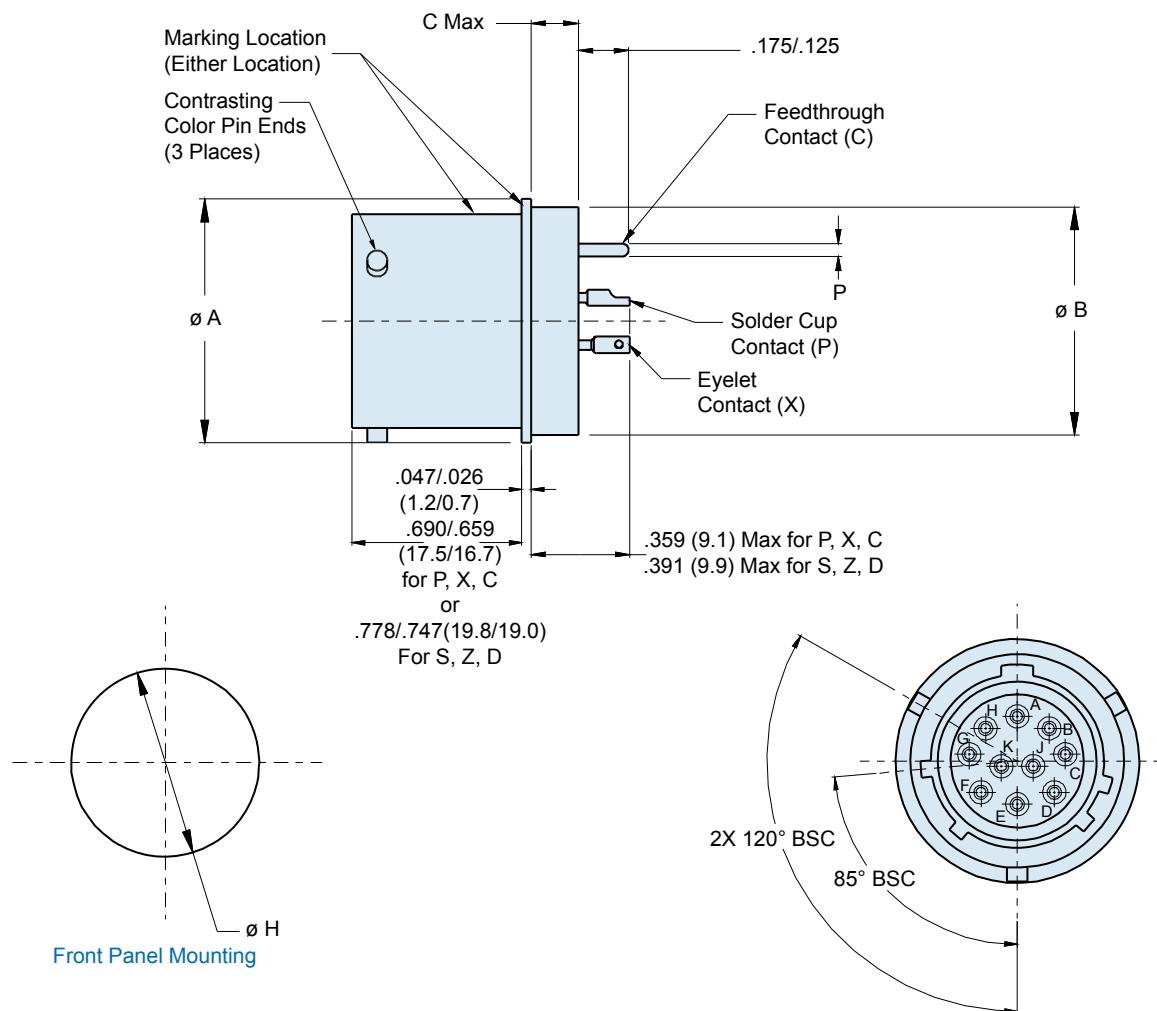
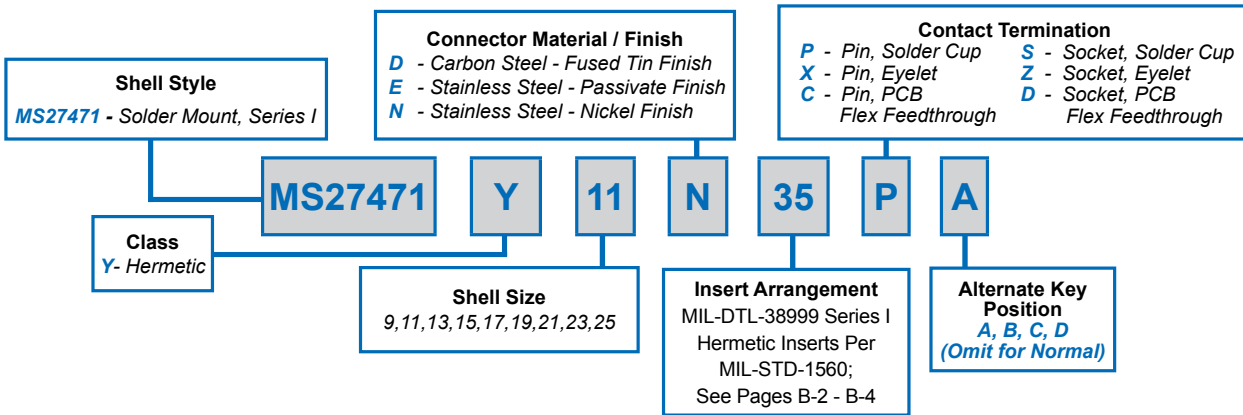
SIZE 12 AND SIZE 16



SIZE 22D AND SIZE 20

| Contact Size | ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |

**How To Order: MS**

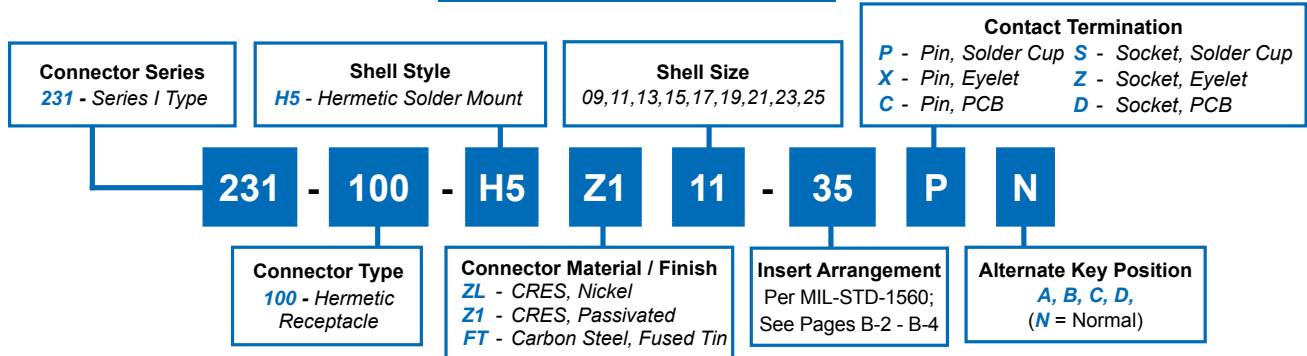


**MS27471**  
**Solder Mount Hermetic Receptacle**  
**MIL-DTL-38999 Series I**



D38999 QPL  
 Hermetics

**How To Order: Commercial**



**B**

**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | ø A<br>±.016(0.4) | ø B                        | C<br>MAX  | ø H<br>±.005(0.1) |
|------------|-------------------|----------------------------|-----------|-------------------|
| 9/09       | .750(19.1)        | .673(17.1)<br>.667(16.9)   | .187(4.7) | .680(17.3)        |
| 11         | .844(21.4)        | .782(19.9)<br>.776(19.7)   |           | .789(20.0)        |
| 13         | .969(24.6)        | .907(23.0)<br>.901(22.9)   |           | .914(23.2)        |
| 15         | 1.094(27.8)       | 1.032(26.2)<br>1.027(26.1) |           | 1.038(26.4)       |
| 17         | 1.218(30.9)       | 1.157(29.4)<br>1.151(29.2) |           | 1.164(29.6)       |
| 19         | 1.312(33.3)       | 1.251(31.8)<br>1.245(31.6) |           | 1.258(32.0)       |
| 21         | 1.438(36.5)       | 1.376(35.0)<br>1.370(34.8) |           | 1.383(35.1)       |
| 23         | 1.563(39.7)       | 1.501(38.1)<br>1.495(38.0) | .218(5.5) | 1.508(38.3)       |
| 25         | 1.688(42.9)       | 1.626(41.3)<br>1.620(41.1) |           | 1.643(41.7)       |

**TABLE II: CONTACT SIZE**

PRINTED CIRCUIT TAIL CONFIGURATIONS  
 CONTACT STYLE C AND D



SIZE 12 AND SIZE 16

.050 ± .015  
 (1.27 ± 0.38)

SIZE 22D AND SIZE 20

| Contact Size | ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |

**How To Order: MS**

**Shell Style**  
**MS27475 - Wall Mount, Series II**

**Connector Material / Finish**  
**D** - Carbon Steel - Fused Tin Finish  
**E** - Stainless Steel - Passivate Finish  
**N** - Stainless Steel - Nickel Finish

**Contact Termination**  
**P** - Pin, Solder Cup  
**X** - Pin, Eyelet  
**C** - Pin, PCB  
**S** - Socket, Solder Cup  
**Z** - Socket, Eyelet  
**D** - Socket, PCB  
Flex Feedthrough

**Class**  
**Y** - Hermetic

**MS27475**

**Y**

**10**

**N**

**35**

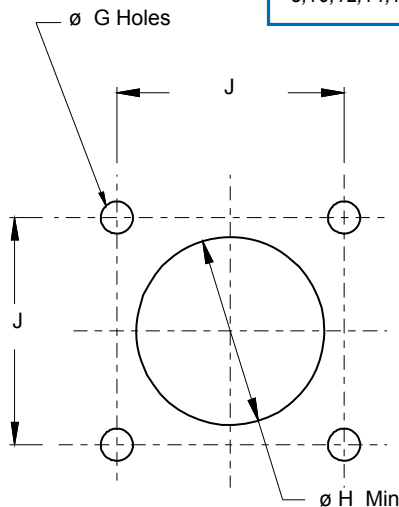
**P**

**A**

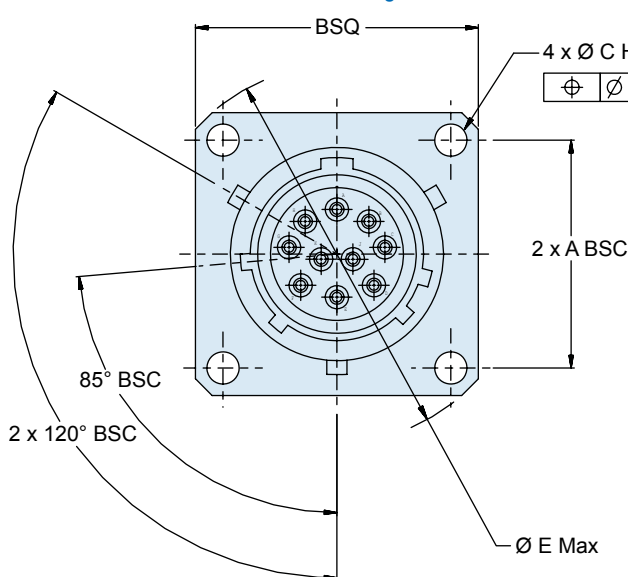
**Shell Size**  
8, 10, 12, 14, 16, 18, 20, 22, 24

**Insert Arrangement**  
MIL-DTL-38999 Series II  
Hermetic Inserts Per  
MIL-STD-1560;  
See Pages B-2 - B4

**Alternate Key Position**  
**A, B, C, D**  
(Omit for Normal)

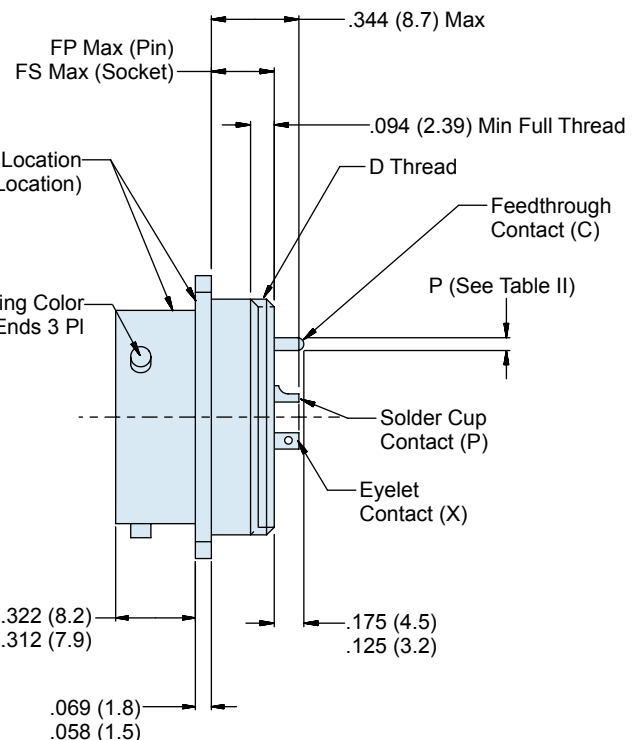


**Front Panel Mounting**



**Marking Location**  
(Either Location)

**Contrasting Color**  
Pin Ends 3 PI



# MS27475

## Wall Mount Hermetic Receptacle

### MIL-DTL-38999 Series II



D38999 QPL  
Hermetics

#### How To Order: Commercial

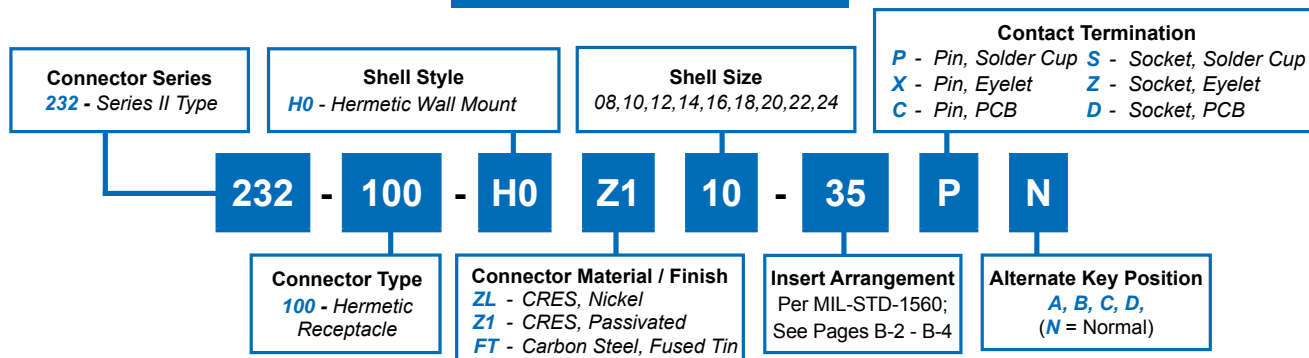


TABLE I: CONNECTOR DIMENSIONS

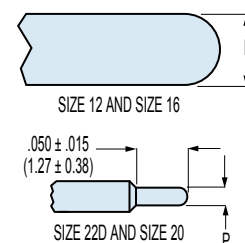
| SHELL SIZE | A BSC       | B SQ MAX    | ø C HOLES              | D Threads (UNEF-2A) | ø E MAX     | FP MAX         | FS MAX         |
|------------|-------------|-------------|------------------------|---------------------|-------------|----------------|----------------|
| 8/08       | .594(15.1)  | .828(21.0)  | .130(3.3)<br>.115(2.9) | .5625-24            | 1.078(27.4) | .250<br>(6.35) | .375<br>(9.5)  |
| 10         | .719(18.3)  | .954(24.2)  |                        | .6875-24            | 1.256(31.9) |                |                |
| 12         | .812(20.6)  | 1.047(26.6) |                        | .8125-20            | 1.391(35.3) |                |                |
| 14         | .906(23.0)  | 1.141(29.0) |                        | .9375-20            | 1.516(38.5) |                |                |
| 16         | .969(24.6)  | 1.234(31.3) |                        | 1.0625-18           | 1.641(41.7) |                |                |
| 18         | 1.062(27.0) | 1.328(33.7) |                        | 1.1875-18           | 1.766(44.9) |                |                |
| 20         | 1.156(29.4) | 1.453(36.9) |                        | 1.3125-18           | 1.891(48.0) |                |                |
| 22         | 1.250(31.8) | 1.578(40.1) | .157(4.0)<br>.142(3.6) | 1.4375-10           | 2.016(51.2) | .375<br>(9.53) | .406<br>(10.3) |
| 24         | 1.375(34.9) | 1.703(43.3) |                        | 1.5625-18           | 2.204(56.0) |                |                |

TABLE I (CONTINUED):  
CONNECTOR DIMENSIONS

| SHELL SIZE | ø G HOLES              | ø H MIN     | ø J BSC     |
|------------|------------------------|-------------|-------------|
| 8          | .133(3.4)<br>.123(3.1) | .570(14.5)  | .594(15.1)  |
| 10         |                        | .690(17.5)  | .719(18.3)  |
| 12         |                        | .820(20.8)  | .812(20.6)  |
| 14         |                        | .940(23.9)  | .906(23.0)  |
| 16         |                        | 1.070(27.2) | .969(24.6)  |
| 18         |                        | 1.190(30.2) | 1.062(27.0) |
| 20         |                        | 1.320(33.5) | 1.156(29.4) |
| 22         | .159(4.0)              | 1.440(36.6) | 1.250(31.8) |
| 24         | .149(3.8)              | 1.570(39.9) | 1.375(34.9) |

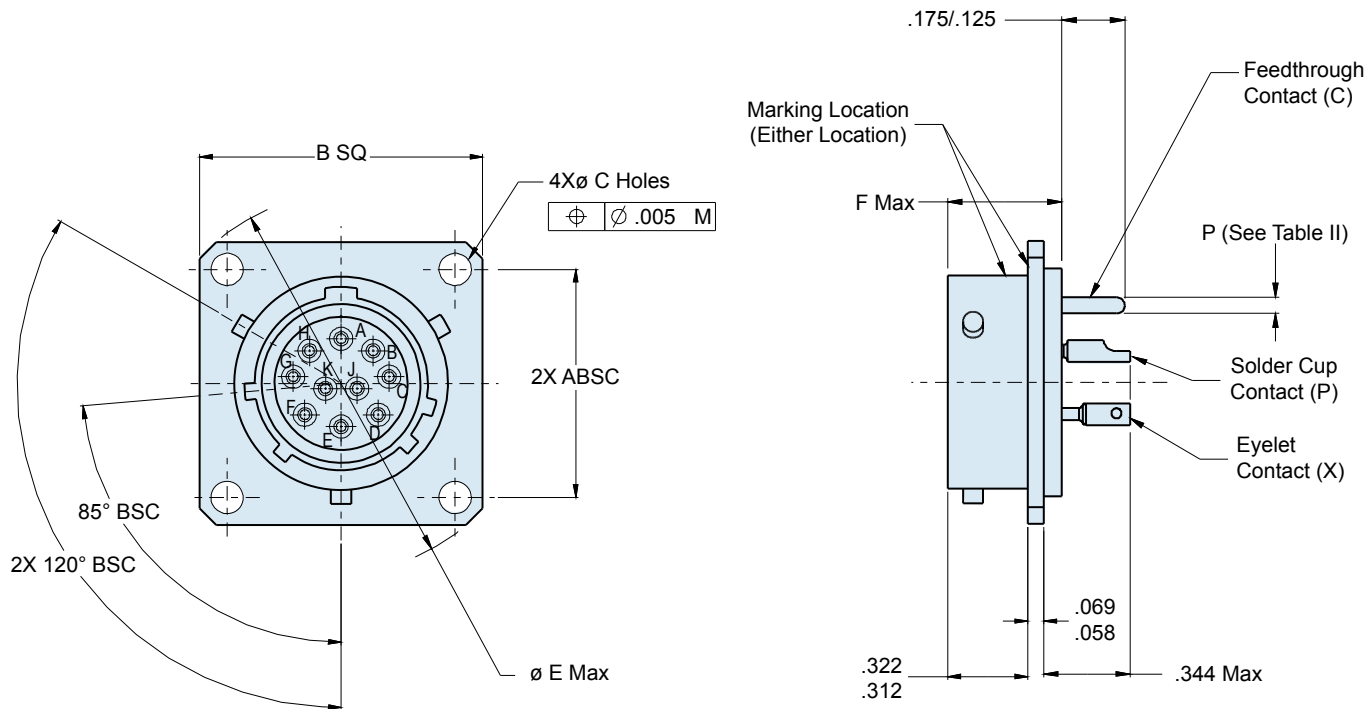
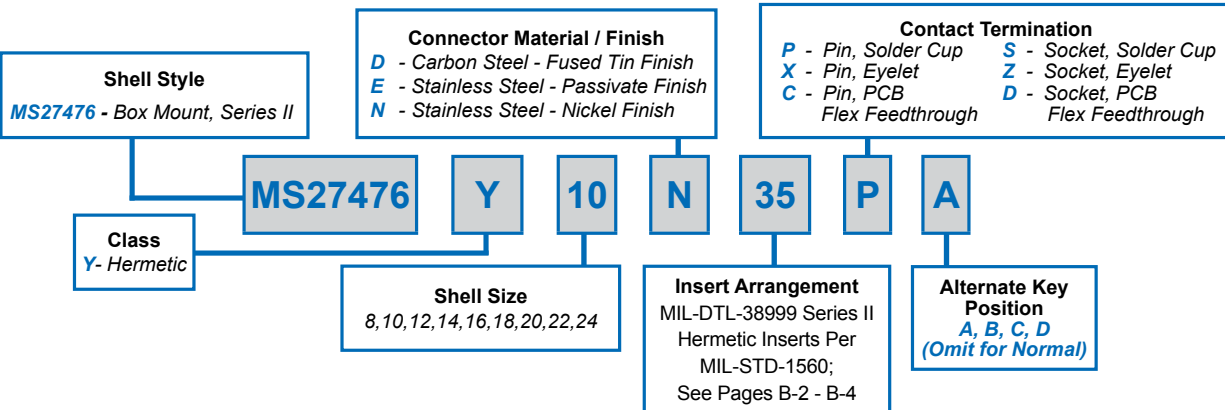
TABLE II: CONTACT SIZE

PRINTED CIRCUIT TAIL CONFIGURATIONS  
CONTACT STYLE C AND D



| Contact Size | ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |

**How To Order: MS**



# MS27476

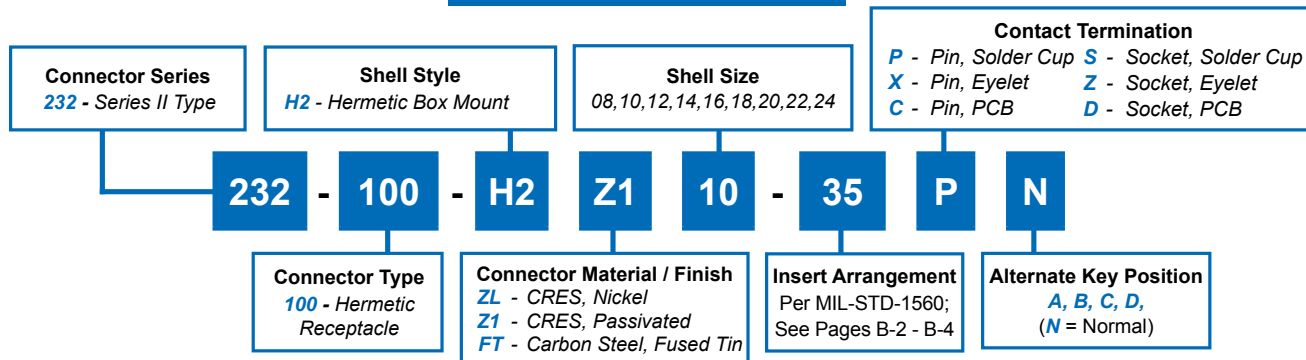
## Box Mount Hermetic Receptacle

### MIL-DTL-38999 Series II



D38999 QPL  
Hermetics

#### How To Order: Commercial



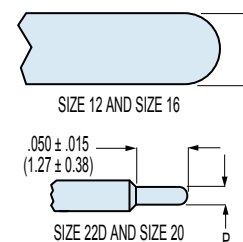
B

TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | A BSC       | B SQ MAX    | Ø C HOLES              | Ø E MAX     | F MAX      |
|------------|-------------|-------------|------------------------|-------------|------------|
| 8/08       | .594(15.1)  | .828(21.0)  | .130(3.3)<br>.115(2.9) | 1.078(27.4) | .453(11.5) |
| 10         | .719(18.3)  | .954(24.2)  |                        | 1.266(32.2) |            |
| 12         | .812(20.6)  | 1.047(26.6) |                        | 1.391(35.3) |            |
| 14         | .906(23.0)  | 1.141(29.0) |                        | 1.516(38.5) |            |
| 16         | .969(24.6)  | 1.234(31.3) |                        | 1.641(41.7) |            |
| 18         | 1.062(27.0) | 1.328(33.7) |                        | 1.766(44.9) |            |
| 20         | 1.156(29.4) | 1.453(36.9) |                        | 1.891(48.0) |            |
| 22         | 1.250(31.8) | 1.578(40.1) |                        | 2.016(51.2) |            |
| 24         | 1.375(34.9) | 1.703(43.3) | .157(4.0)<br>.142(3.6) | 2.204(56.0) | .484(12.3) |

TABLE II: CONTACT SIZE

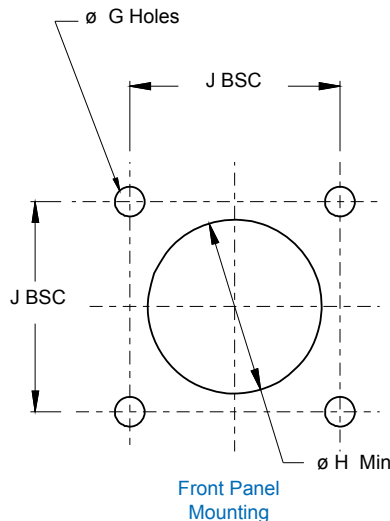
PRINTED CIRCUIT TAIL CONFIGURATIONS  
CONTACT STYLE C AND D



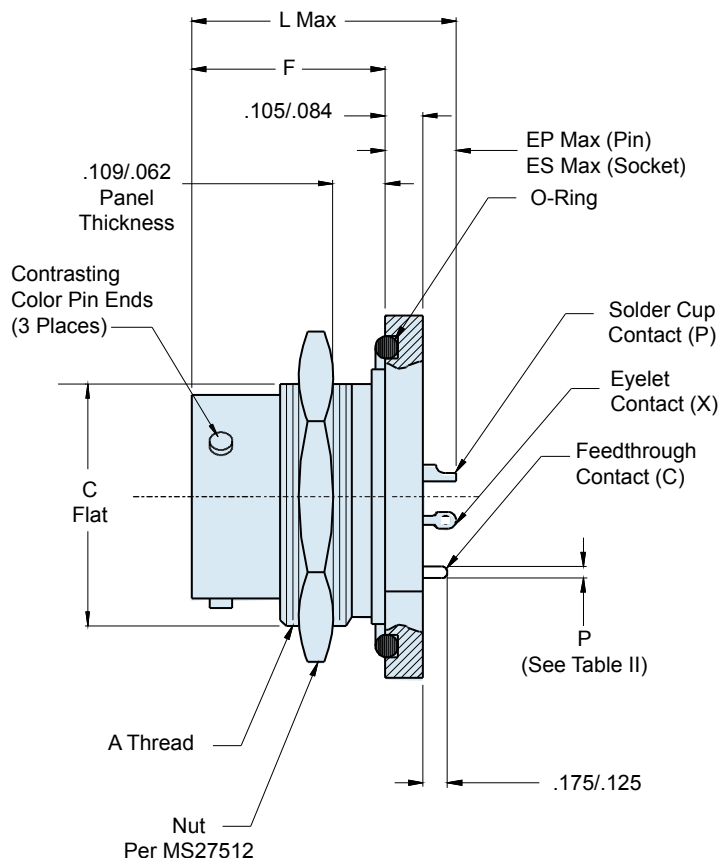
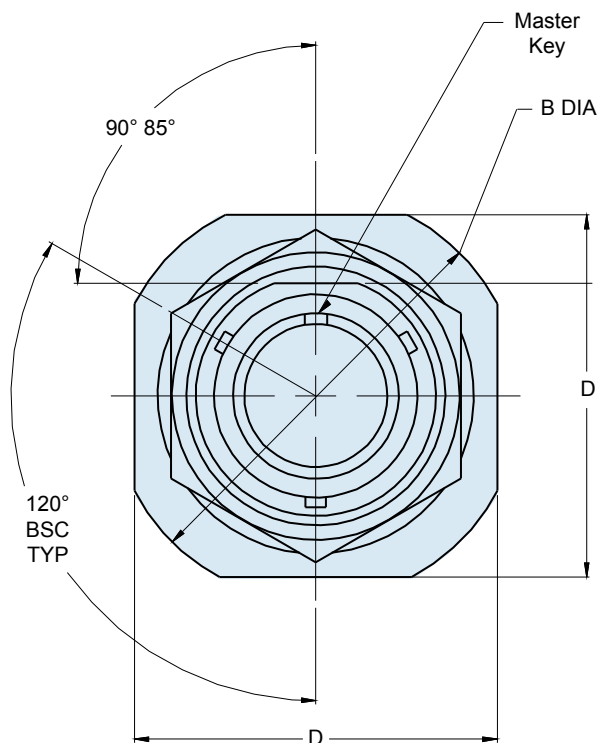
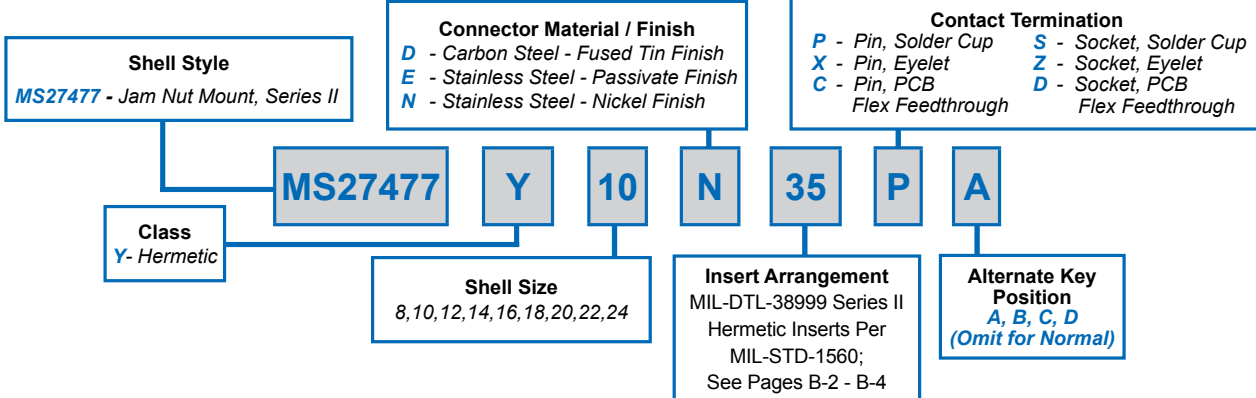
| Contact Size | Ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |

TABLE I (CONTINUED):  
CONNECTOR DIMENSIONS

| SHELL SIZE | Ø G HOLES              | Ø H MIN     | Ø J BSC     |
|------------|------------------------|-------------|-------------|
| 8/08       | .133(3.4)<br>.123(3.1) | .570(14.5)  | .594(15.1)  |
| 10         |                        | .690(17.5)  | .719(18.3)  |
| 12         |                        | .820(20.8)  | .812(20.6)  |
| 14         |                        | .940(23.9)  | .906(23.0)  |
| 16         |                        | 1.070(27.2) | .969(24.6)  |
| 18         |                        | 1.190(30.2) | 1.062(27.0) |
| 20         |                        | 1.320(33.5) | 1.156(29.4) |
| 22         |                        | 1.440(36.6) | 1.250(31.8) |
| 24         | .159(4.0)<br>.149(3.8) | 1.570(39.9) | 1.375(34.9) |



**How To Order: MS**



# MS27477

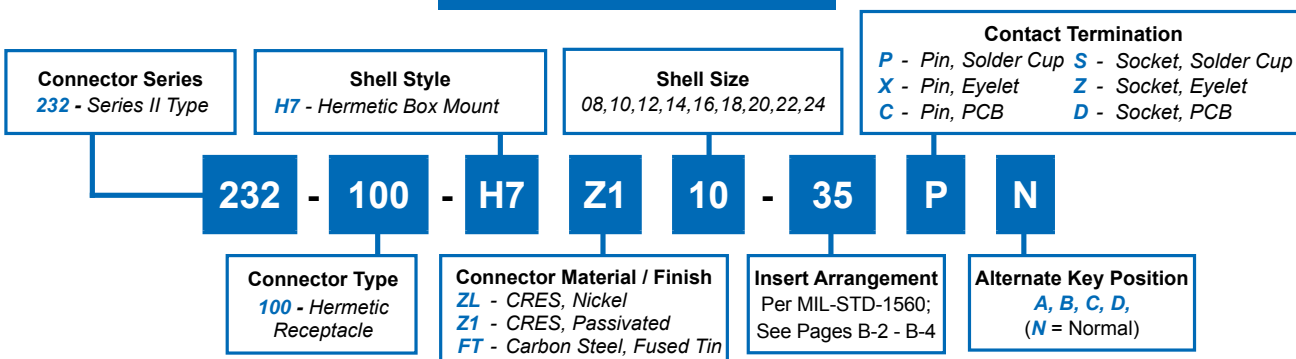
## Jam Nut Mount Hermetic Receptacle

### MIL-DTL-38999 Series II



D38999 QPL  
Hermetics

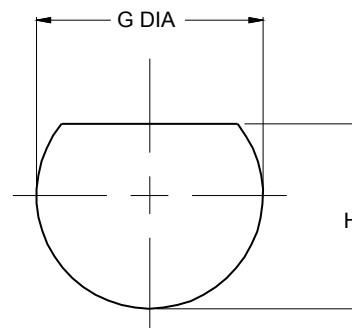
#### How To Order: Commercial



B

TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | A THREAD CLASS 2A | B DIA ±.016(0.4) | C FLAT ±.004(0.1) | D A/F ±.016(0.4) |
|------------|-------------------|------------------|-------------------|------------------|
| 8/08       | .875-20 UNEF      | 1.375(34.9)      | .815(20.7)        | 1.25(31.8)       |
| 10         | 1.000-20 UNEF     | 1.5(38.1)        | .939(23.9)        | 1.375(34.9)      |
| 12         | 1.125-18 UNEF     | 1.625(41.3)      | 1.063(27.0)       | 1.5(38.1)        |
| 14         | 1.250-18 UNEF     | 1.75(44.5)       | 1.188(30.2)       | 1.625(41.3)      |
| 16         | 1.375-18 UNEF     | 1.938(49.2)      | 1.318(33.5)       | 1.781(45.2)      |
| 18         | 1.500-18 UNEF     | 2.016(51.2)      | 1.438(36.5)       | 1.890(48.0)      |
| 20         | 1.625-18 UNEF     | 2.141(54.4)      | 1.563(39.7)       | 2.016(51.2)      |
| 22         | 1.750-18 UNS      | 2.265(57.5)      | 1.688(42.9)       | 2.140(54.4)      |
| 24         | 1.875-16 UN       | 2.39(60.7)       | 1.813(46.1)       | 2.265(57.5)      |



Recommended Panel Cut-Out

TABLE I (CONTINUED): CONNECTOR DIMENSIONS

| SHELL SIZE | EP MAX     | ES MAX     | F ±.005(0.1) | G DIA ±.005(0.1) | H ±.005(0.1) | L MAX      |
|------------|------------|------------|--------------|------------------|--------------|------------|
| 8/08       | .281 (7.1) | .359 (9.1) | .438(11.1)   | .889(22.6)       | .828(21.0)   | .724(18.4) |
| 10         | .281 (7.1) | .359 (9.1) | .438(11.1)   | 1.015(25.8)      | .952(24.2)   | .724(18.4) |
| 12         | .281 (7.1) | .359 (9.1) | .438(11.1)   | 1.139(28.9)      | 1.076(27.3)  | .724(18.4) |
| 14         | .281 (7.1) | .359 (9.1) | .438(11.1)   | 1.264(32.1)      | 1.201(30.5)  | .724(18.4) |
| 16         | .281 (7.1) | .359 (9.1) | .438(11.1)   | 1.389(35.3)      | 1.331(33.8)  | .724(18.4) |
| 18         | .281 (7.1) | .359 (9.1) | .438(11.1)   | 1.515(38.5)      | 1.451(36.9)  | .724(18.4) |
| 20         | .250 (6.4) | .344 (8.7) | .464(11.8)   | 1.640(41.7)      | 1.576(40.0)  | .719(18.3) |
| 22         | .250 (6.4) | .344 (8.7) | .464(11.8)   | 1.745(44.3)      | 1.701(43.2)  | .719(18.3) |
| 24         | .250 (6.4) | .344 (8.7) | .464(11.8)   | 1.890(48.0)      | 1.826(46.4)  | .719(18.3) |

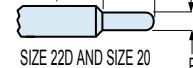
TABLE II: CONTACT SIZE

PRINTED CIRCUIT TAIL CONFIGURATIONS  
CONTACT STYLE C AND D



SIZE 12 AND SIZE 16

.050 ± .015  
(1.27 ± 0.38)



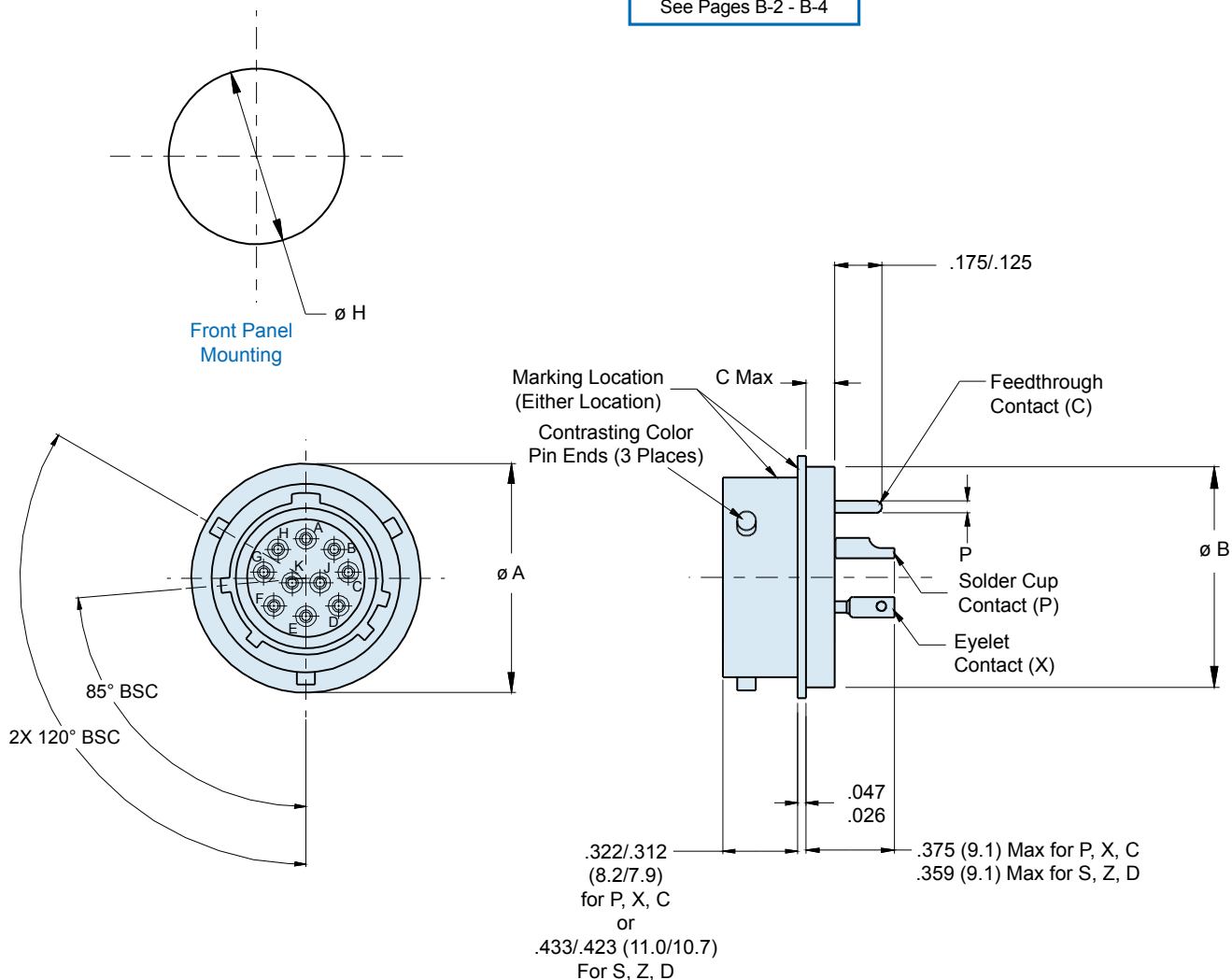
SIZE 22D AND SIZE 20

| Contact Size | ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |

# MS27478 Solder Mount Hermetic Receptacle MIL-DTL-38999 Series II

## How To Order: MS

|                                                                |                                                                                                                                                                                 |                                                                                                                                                                                                                                     |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Shell Style</b><br><b>MS27478</b> - Solder Mount, Series II | <b>Connector Material / Finish</b><br><b>D</b> - Carbon Steel - Fused Tin Finish<br><b>E</b> - Stainless Steel - Passivate Finish<br><b>N</b> - Stainless Steel - Nickel Finish | <b>Contact Termination</b><br><b>P</b> - Pin, Solder Cup<br><b>X</b> - Pin, Eyelet<br><b>C</b> - Pin, PCB Flex Feedthrough<br><b>S</b> - Socket, Solder Cup<br><b>Z</b> - Socket, Eyelet<br><b>D</b> - Socket, PCB Flex Feedthrough |
| <b>Class</b><br><b>Y</b> - Hermetic                            | <b>MS27478</b>                                                                                                                                                                  | <b>Y</b>                                                                                                                                                                                                                            |
|                                                                | <b>10</b>                                                                                                                                                                       | <b>N</b>                                                                                                                                                                                                                            |
|                                                                | <b>35</b>                                                                                                                                                                       | <b>P</b>                                                                                                                                                                                                                            |
|                                                                | <b>A</b>                                                                                                                                                                        | <b>A</b>                                                                                                                                                                                                                            |
|                                                                | <b>Shell Size</b><br>8, 10, 12, 14, 16, 18, 20, 22, 24                                                                                                                          | <b>Insert Arrangement</b><br>MIL-DTL-38999 Series II<br>Hermetic Inserts Per<br>MIL-STD-1560;<br>See Pages B-2 - B-4                                                                                                                |
|                                                                |                                                                                                                                                                                 | <b>Alternate Key Position</b><br><b>A, B, C, D</b><br>(Omit for Normal)                                                                                                                                                             |



# MS27478

## Solder Mount Hermetic Receptacle

### MIL-DTL-38999 Series II



D38999 QPL  
Hermetics

#### How To Order: Commercial

|                                                    |                                                  |                                                                                                                  |                                                                                                                                                                     |                                                              |
|----------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| <b>Connector Series</b><br>232 - Series II Type    | <b>Shell Style</b><br>H5 - Hermetic Solder Mount | <b>Shell Size</b><br>08, 10, 12, 14, 16, 18, 20, 22, 24                                                          | <b>Contact Termination</b><br>P - Pin, Solder Cup    S - Socket, Solder Cup<br>X - Pin, Eyelet        Z - Socket, Eyelet<br>C - Pin, PCB            D - Socket, PCB |                                                              |
| <b>232</b>                                         | <b>- 100</b>                                     | <b>- H5</b>                                                                                                      | <b>Z1</b>                                                                                                                                                           | <b>10</b>                                                    |
| <b>Connector Type</b><br>100 - Hermetic Receptacle |                                                  | <b>Connector Material / Finish</b><br>ZL - CRES, Nickel<br>Z1 - CRES, Passivated<br>FT - Carbon Steel, Fused Tin | <b>Insert Arrangement</b><br>Per MIL-STD-1560;<br>See Pages B-2 - B-4                                                                                               | <b>Alternate Key Position</b><br>A, B, C, D,<br>(N = Normal) |
|                                                    |                                                  | <b>- 35</b>                                                                                                      | <b>P</b>                                                                                                                                                            | <b>N</b>                                                     |

B

TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | ø A<br>±.011(0.3) | ø B                        | C<br>MAX  | ø H<br>±.005(0.1) |
|------------|-------------------|----------------------------|-----------|-------------------|
| 8/08       | .688(17.5)        | .557(14.)<br>.557(14.1)    | .125(3.2) | .570(14.5)        |
| 10         | .798(20.3)        | .673(17.1)<br>.667(16.9)   |           | .680(17.3)        |
| 12         | .907(23.0)        | .782(19.9)<br>.776(19.7)   |           | .789(20.0)        |
| 14         | 1.032(26.2)       | .907(23.0)<br>.901(22.9)   |           | .914(23.2)        |
| 16         | 1.157(29.4)       | 1.032(26.2)<br>1.027(26.1) |           | 1.039(26.4)       |
| 18         | 1.282(32.6)       | 1.157(29.4)<br>1.151(29.2) |           | 1.164(29.6)       |
| 20         | 1.376(35.0)       | 1.251(31.8)<br>1.245(31.6) |           | 1.258(32.0)       |
| 22         | 1.501(38.1)       | 1.376(35.0)<br>1.370(34.8) | .156(4.0) | 1.383(35.1)       |
| 24         | 1.626(41.3)       | 1.501(38.1)<br>1.495(38.0) |           | 1.508(38.3)       |

TABLE II: CONTACT SIZE

| PRINTED CIRCUIT TAIL CONFIGURATIONS<br>CONTACT STYLE C AND D |                              |
|--------------------------------------------------------------|------------------------------|
|                                                              |                              |
| Contact Size                                                 | ø P                          |
| 22D                                                          | .011 (0.28)<br>.015 (0.38)   |
| 20                                                           | .024 (0.61)<br>.028 (0.71)   |
| 16                                                           | .0635 (1.61)<br>.0615 (1.56) |
| 12                                                           | .095 (2.41)<br>.093 (2.36)   |

**How To Order: MS**

**Basic Specification**  
*D38999*

**Connector Material / Finish**  
*N* - CRES, Nickel  
*Y* - CRES, Passivated

**Insert Arrangement**  
Per MIL-STD-1560;  
See Pages B2 - B4

**Alternate Key Position**  
*A, B, C, D, E*  
(*N* = Normal)

**D38999**

**/21**

**Y**

**B**

**35**

**P**

**N**

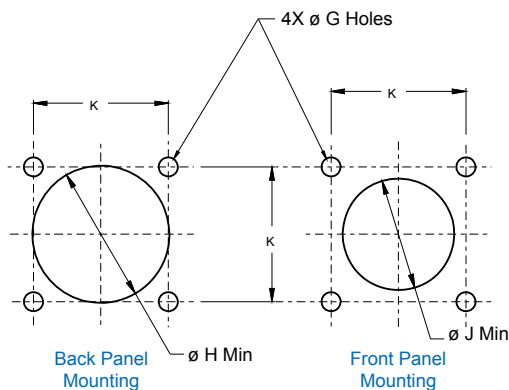
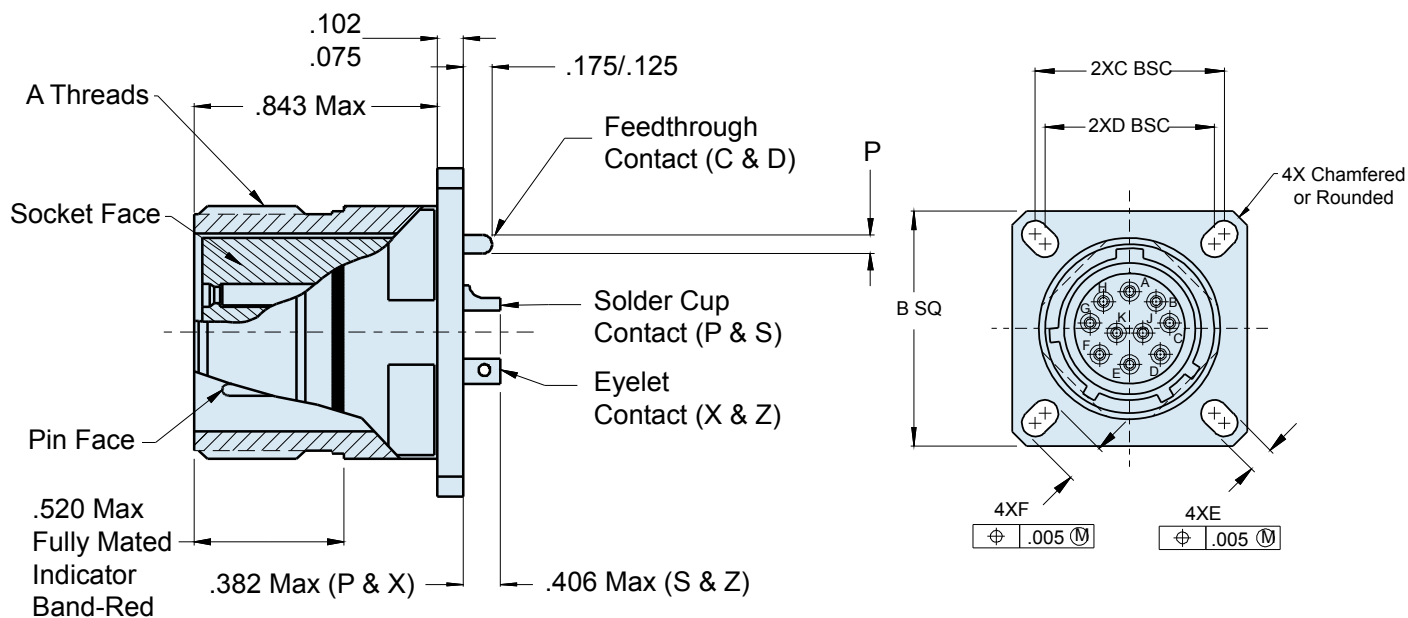
**Shell Style**  
*/21* - Box Mount

**Shell Size**

*A* - 9    *F* - 19  
*B* - 11    *G* - 21  
*C* - 13    *H* - 23  
*D* - 15    *J* - 25  
*E* - 17

**Contact Termination**

*P* - Pin, Solder Cup    *S* - Socket, Solder Cup  
*X* - Pin, Eyelet    *Z* - Socket, Eyelet  
*C* - Pin, PCB    *D* - Socket, PCB  
Flex Feedthrough    Flex Feedthrough



# D38999/21

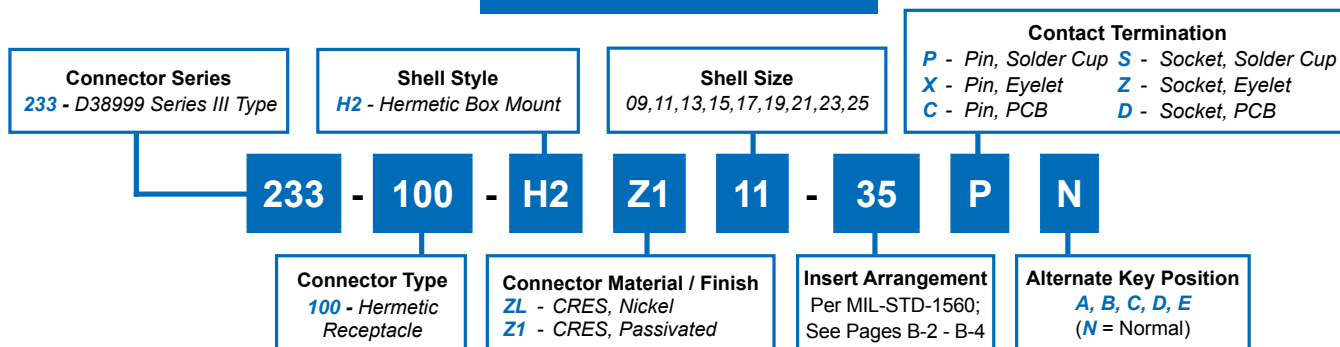
## Box Mount Hermetic Receptacle

### MIL-DTL-38999 Series III



D38999 QPL  
Hermetics

#### How To Order: Commercial



B

TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE CODE | SHELL SIZE | A THREAD             | B SQ<br>±.012(0.3) | C BSC       | D BSC       | E<br>±.008(0.2) | F<br>±.008(0.2) |
|-----------------|------------|----------------------|--------------------|-------------|-------------|-----------------|-----------------|
| A               | 9/09       | .6250-.1P-.3L-TS-2A  | .937(23.8)         | .719(18.3)  | .594(15.1)  | .128(3.3)       | .216(5.5)       |
| B               | 11         | .7500-.1P-.3L-TS-2A  | 1.031(26.2)        | .812(20.6)  | .719(18.3)  | .128(3.3)       | .194(4.9)       |
| C               | 13         | .8750-.1P-.3L-TS-2A  | 1.126(28.6)        | .906(23.0)  | .812(20.6)  | .128(3.3)       | .194(4.9)       |
| D               | 15         | 1.0000-.1P-.3L-TS-2A | 1.220(31.0)        | .969(24.6)  | .906(23.0)  | .128(3.3)       | .194(4.9)       |
| E               | 17         | 1.1875-.1P-.3L-TS-2A | 1.311(33.3)        | 1.062(27.0) | .969(24.6)  | .128(3.3)       | .194(4.9)       |
| F               | 19         | 1.2500-.1P-.3L-TS-2A | 1.437(36.5)        | 1.156(29.4) | 1.062(27.0) | .128(3.3)       | .194(4.9)       |
| G               | 21         | 1.3750-.1P-.3L-TS-2A | 1.563(39.7)        | 1.250(31.8) | 1.156(29.4) | .128(3.3)       | .194(4.9)       |
| H               | 23         | 1.5000-.1P-.3L-TS-2A | 1.689(42.9)        | 1.375(34.9) | 1.250(31.8) | .154(3.9)       | .242(6.1)       |
| J               | 25         | 1.6250-.1P-.3L-TS-2A | 1.811(46.0)        | 1.500(38.1) | 1.375(34.9) | .154(3.9)       | .242(6.1)       |

TABLE I (CONTINUED): CONNECTOR DIMENSIONS

| SHELL SIZE CODE | SHELL SIZE | Ø G HOLES<br>±.005(0.1) | Ø H MIN     | Ø J MIN     | K<br>±.005(0.1) |
|-----------------|------------|-------------------------|-------------|-------------|-----------------|
| A               | 9/09       | .128(3.3)               | .656(16.7)  | .516(13.1)  | .719(18.3)      |
| B               | 11         | .128(3.3)               | .781(19.8)  | .625(15.9)  | .812(20.6)      |
| C               | 13         | .128(3.3)               | .921(23.4)  | .750(19.1)  | .906(23.0)      |
| D               | 15         | .128(3.3)               | 1.047(26.6) | .906(23.0)  | .968(24.6)      |
| E               | 17         | .128(3.3)               | 1.218(30.9) | 1.016(25.8) | 1.062(27.0)     |
| F               | 19         | .128(3.3)               | 1.296(32.9) | 1.142(35.9) | 1.156(29.4)     |
| G               | 21         | .128(3.3)               | 1.421(36.1) | 1.266(32.2) | 1.250(31.8)     |
| H               | 23         | .154(3.9)               | 1.546(39.3) | 1.375(34.9) | 1.375(34.9)     |
| J               | 25         | .154(3.9)               | 1.672(42.5) | 1.484(37.7) | 1.500(38.1)     |

TABLE II: CONTACT SIZE

PRINTED CIRCUIT TAIL CONFIGURATIONS  
CONTACT STYLE C AND D



SIZE 12 AND SIZE 16

.050 ± .015  
(1.27 ± 0.38)

SIZE 22D AND SIZE 20

| Contact Size | Ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |

**How To Order: MS**

**Basic Specification**  
**D38999**

**Connector Material / Finish**  
**N** - CRES, Nickel  
**Y** - CRES, Passivated

**Insert Arrangement**  
Per MIL-STD-1560;  
See Pages B2 - B4

**Alternate Key Position**  
**A, B, C, D, E**  
(**N** = Normal)

**D38999**

**/23**

**Y**

**B**

**35**

**P**

**N**

**Shell Style**

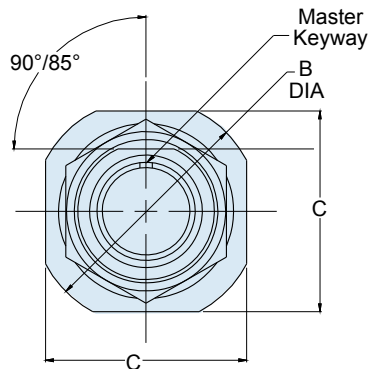
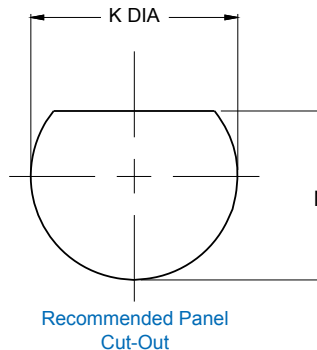
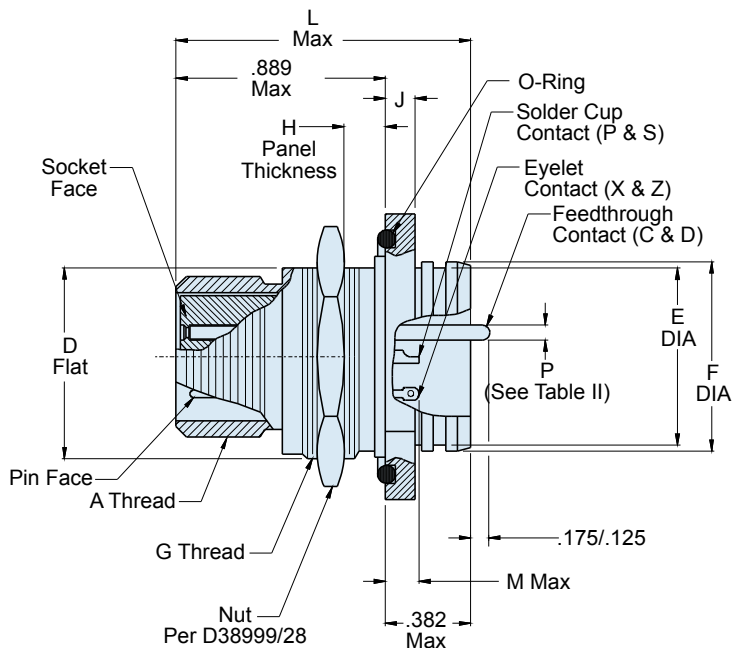
**/23 - Jam Nut Mount**

**Shell Size**

**A** - 9    **F** - 19  
**B** - 11    **G** - 21  
**C** - 13    **H** - 23  
**D** - 15    **J** - 25  
**E** - 17

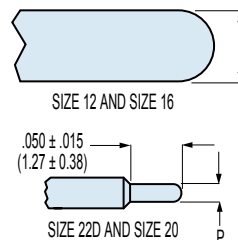
**Contact Termination**

**P** - Pin, Solder Cup    **S** - Socket, Solder Cup  
**X** - Pin, Eyelet    **Z** - Socket, Eyelet  
**C** - Pin, PCB    **D** - Socket, PCB  
Flex Feedthrough    Flex Feedthrough



**TABLE II: CONTACT SIZE**

**PRINTED CIRCUIT TAIL CONFIGURATIONS**  
**CONTACT STYLE C AND D**



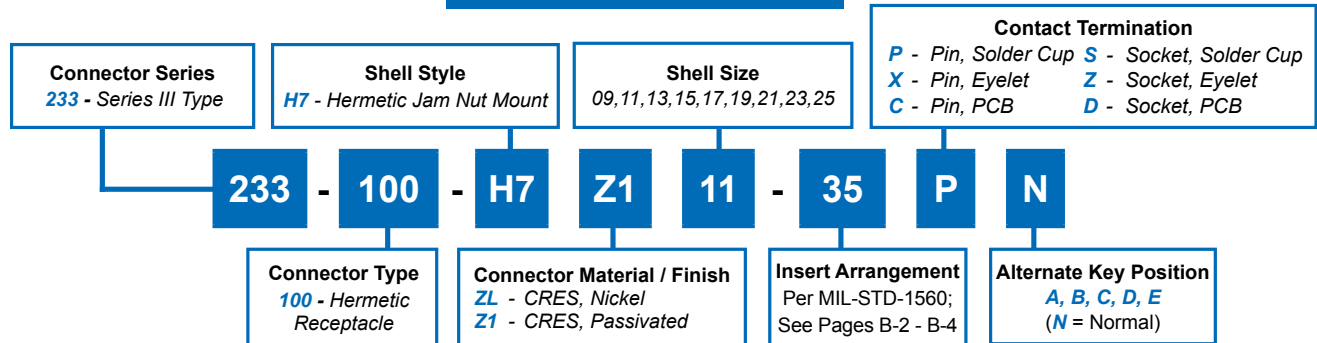
| Contact Size | ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |

# D38999/23 Jam Nut Mount Hermetic Receptacle MIL-DTL-38999 Series III



D38999 QPL  
Hermetics

## How To Order: Commercial



B

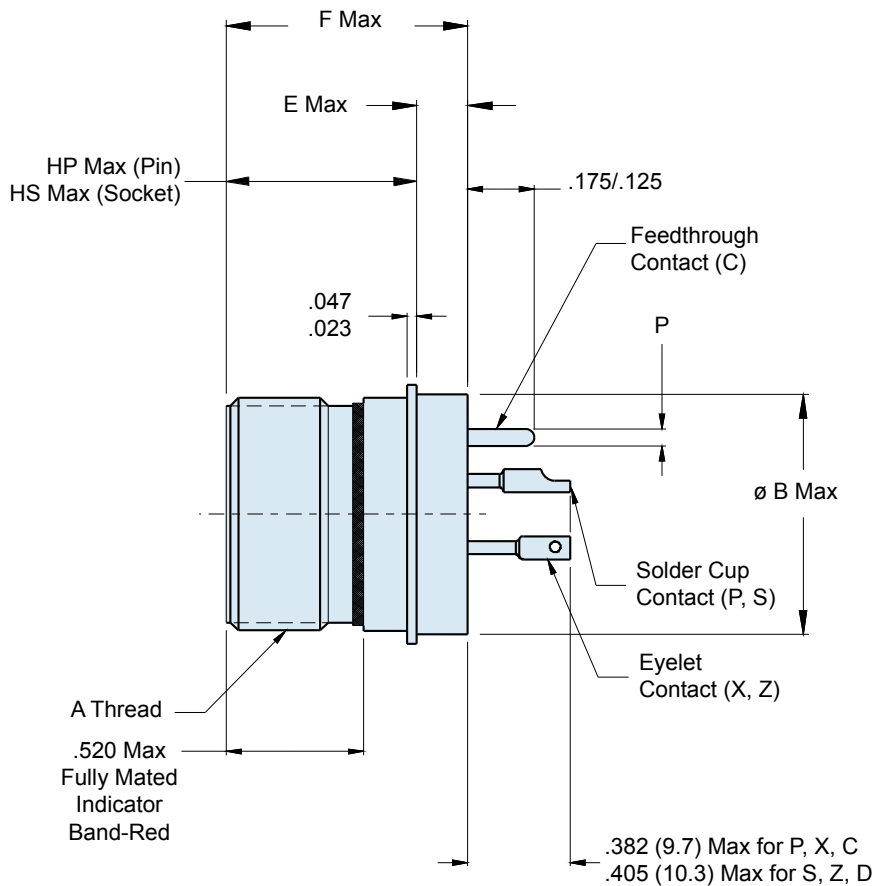
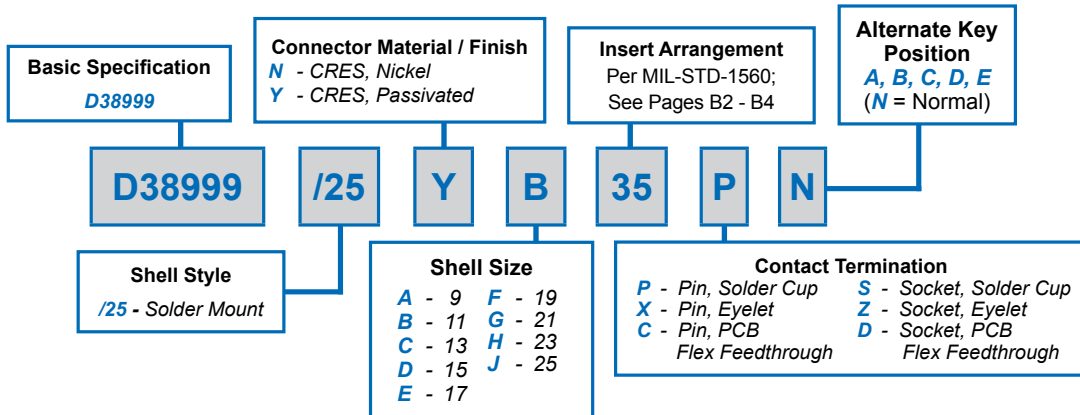
TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE CODE | SHELL SIZE | A THREAD<br>-0.1P-0.03L-<br>TS | B DIA                      | C A/F<br>±.015(0.4) | D FLAT<br>±.005(0.1) | E DIA<br>±.012(0.3) | F DIA                      | G THREAD<br>ISO METRIC | H<br>±.032(0.8) |
|-----------------|------------|--------------------------------|----------------------------|---------------------|----------------------|---------------------|----------------------------|------------------------|-----------------|
| A               | 9/09       | 0.625                          | 1.200(30.5)<br>1.178(29.9) | 1.063(27.0)         | .650(16.5)           | .603(15.3)          | .653(16.6)<br>.642(16.3)   | M17 X 1.0-6g           | .094(2.4)       |
| B               | 11         | 0.750                          | 1.385(35.2)<br>1.363(34.6) | 1.252(31.8)         | .750(19.1)           | .725(18.4)          | .775(19.7)<br>.764(19.4)   | M20 X 1.0-6g           | .094(2.4)       |
| C               | 13         | 0.875                          | 1.511(38.4)<br>1.489(37.8) | 1.374(34.9)         | .937(23.8)           | .851(21.6)          | .905(23.0)<br>.894(22.7)   | M25 X 1.0-6g           | .094(2.4)       |
| D               | 15         | 1.000                          | 1.637(41.6)<br>1.615(41.0) | 1.500(38.1)         | 1.061(26.9)          | .977(24.8)          | 1.031(26.2)<br>1.020(25.9) | M28 X 1.0-6g           | .094(2.4)       |
| E               | 17         | 1.187                          | 1.763(44.8)<br>1.741(44.2) | 1.626(41.3)         | 1.186(30.1)          | 1.103(28.0)         | 1.153(29.3)<br>1.142(29.0) | M32 X 1.0-6g           | .094(2.4)       |
| F               | 19         | 1.250                          | 1.948(49.5)<br>1.926(48.9) | 1.811(46.0)         | 1.311(33.3)          | 1.229(31.2)         | 1.278(32.5)<br>1.268(32.2) | M35 X 1.0-6g           | .094(2.4)       |
| G               | 21         | 1.375                          | 2.074(52.7)<br>2.051(52.1) | 1.937(49.2)         | 1.436(36.5)          | 1.351(34.3)         | 1.405(35.7)<br>1.394(35.4) | M38 X 1.0-6g           | .094(2.4)       |
| H               | 23         | 1.500                          | 2.200(55.9)<br>2.177(55.3) | 2.063(52.4)         | 1.561(39.6)          | 1.477(37.5)         | 1.531(38.9)<br>1.520(38.6) | M41 X 1.0-6g           | .094(2.4)       |
| J               | 25         | 1.625                          | 2.322(59.0)<br>2.300(58.4) | 2.189(55.6)         | 1.686(42.8)          | 1.603(40.7)         | 1.653(42.0)<br>1.642(41.7) | M44 X 1.0-6g           | .094(2.4)       |

TABLE I: (Continued) CONNECTOR DIMENSIONS

| J<br>±.008(0.2) | K DIA<br>±.005 (0.1)      | L MAX       | M MAX     |           | N<br>±.005 (0.1)          |
|-----------------|---------------------------|-------------|-----------|-----------|---------------------------|
|                 |                           |             | P&X       | S&Z       |                           |
| .106(2.7)       | .703/.693 (17.86/17.60)   | 1.149(29.2) | .208(5.3) | .232(5.9) | .657/.655 (16.69/16.70)   |
| .106(2.7)       | .835/.825 (20.96/20.96)   | 1.149(29.2) | .208(5.3) | .232(5.9) | .771/.769 (19.58/19.53)   |
| .106(2.7)       | 1.020/1.010 (25.65/25.65) | 1.153(29.3) | .200(5.1) | .224(5.7) | .955/.953 (24.26/24.21)   |
| .106(2.7)       | 1.145/1.135 (28.83/28.83) | 1.153(29.3) | .200(5.1) | .224(5.7) | 1.085/1.083 (27.56/27.51) |
| .106(2.7)       | 1.270/1.260 (32.01/32.00) | 1.153(29.3) | .200(5.1) | .224(5.7) | 1.210/1.208 (30.73/30.68) |
| .138(3.5)       | 1.395/1.385 (35.43/35.18) | 1.185(30.1) | .200(5.1) | .224(5.7) | 1.335/1.333 (33.91/33.86) |
| .138(3.5)       | 1.520/1.510 (38.60/38.35) | 1.185(30.1) | .200(5.1) | .224(5.7) | 1.460/1.458 (37.08/37.03) |
| .138(3.5)       | 1.645/1.635 (41.78/41.53) | 1.185(30.1) | .200(5.1) | .224(5.7) | 1.585/1.583 (40.26/40.21) |
| .138(3.5)       | 1.770/1.760 (44.96/44.70) | 1.185(30.1) | .200(5.1) | .224(5.7) | 1.710/1.708 (43.43/43.38) |

**How To Order: MS**



# D38999/25 Solder Mount Hermetic Receptacle MIL-DTL-38999 Series III



D38999 QPL  
Hermetics

## How To Order: Commercial

|                                                                |                                                  |                                                                                  |                                                                                                                                                                     |           |
|----------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Connector Series</b><br>233 - Series III Type               | <b>Shell Style</b><br>H5 - Hermetic Solder Mount | <b>Shell Size</b><br>09, 11, 13, 15, 17, 19, 21, 23, 25                          | <b>Contact Termination</b><br>P - Pin, Solder Cup    S - Socket, Solder Cup<br>X - Pin, Eyelet        Z - Socket, Eyelet<br>C - Pin, PCB            D - Socket, PCB |           |
| <b>233</b>                                                     | <b>- 100</b>                                     | <b>- H5</b>                                                                      | <b>Z1</b>                                                                                                                                                           | <b>11</b> |
|                                                                |                                                  | <b>- 35</b>                                                                      | <b>P</b>                                                                                                                                                            | <b>N</b>  |
| <b>Connector Type</b><br>100 - Hermetic Receptacle             |                                                  | <b>Connector Material / Finish</b><br>ZL - CRES, Nickel<br>Z1 - CRES, Passivated | <b>Insert Arrangement</b><br>Per MIL-STD-1560;<br>See Pages B-2 - B-4                                                                                               |           |
| <b>Alternate Key Position</b><br>A, B, C, D, E<br>(N = Normal) |                                                  |                                                                                  |                                                                                                                                                                     |           |

B

TABLE I: CONNECTOR DIMENSIONS

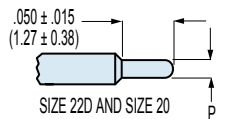
| SHELL SIZE CODE | SHELL SIZE | A THREAD             | ø B MAX     | ø C MAX     | ø D ±.005(0.1) | E MAX     | F MAX      | HP MAX     | HS MAX     |
|-----------------|------------|----------------------|-------------|-------------|----------------|-----------|------------|------------|------------|
| A               | 9/09       | .6250-.1P-.3L-TS-2A  | .673(17.1)  | .764(19.4)  | .680(17.3)     | .201(5.1) | .937(23.8) | .677(17.2) | .764(19.4) |
| B               | 11         | .7500-.1P-.3L-TS-2A  | .783(19.9)  | .858(21.8)  | .789(20.0)     | .201(5.1) | .937(23.8) | .677(17.2) | .764(19.4) |
| C               | 13         | .8750-.1P-.3L-TS-2A  | .909(23.1)  | .980(24.9)  | .914(23.2)     | .201(5.1) | .937(23.8) | .677(17.2) | .764(19.4) |
| D               | 15         | 1.0000-.1P-.3L-TS-2A | 1.031(26.2) | 1.106(28.1) | 1.038(26.4)    | .201(5.1) | .937(23.8) | .677(17.2) | .764(19.4) |
| E               | 17         | 1.1875-.1P-.3L-TS-2A | 1.157(29.4) | 1.232(31.3) | 1.164(29.6)    | .201(5.1) | .937(23.8) | .677(17.2) | .764(19.4) |
| F               | 19         | 1.2500-.1P-.3L-TS-2A | 1.252(31.8) | 1.323(33.6) | 1.258(32.0)    | .201(5.1) | .937(23.8) | .677(17.2) | .764(19.4) |
| G               | 21         | 1.3750-.1P-.3L-TS-2A | 1.378(35.0) | 1.449(36.8) | 1.383(35.1)    | .201(5.1) | .937(23.8) | .677(17.2) | .764(19.4) |
| H               | 23         | 1.5000-.1P-.3L-TS-2A | 1.504(38.2) | 1.575(40.0) | 1.508(38.3)    | .232(5.9) | .969(24.6) | .677(17.2) | .764(19.4) |
| J               | 25         | 1.6250-.1P-.3L-TS-2A | 1.626(41.3) | 1.701(43.2) | 1.643(41.7)    | .232(5.9) | .969(24.6) | .677(17.2) | .764(19.4) |

TABLE II: CONTACT SIZE

PRINTED CIRCUIT TAIL CONFIGURATIONS  
CONTACT STYLE C AND D

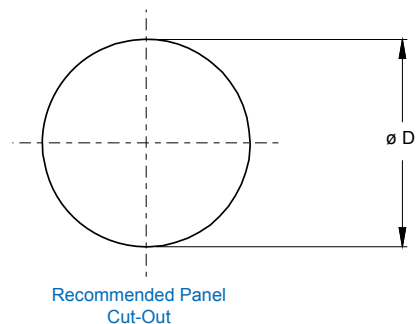
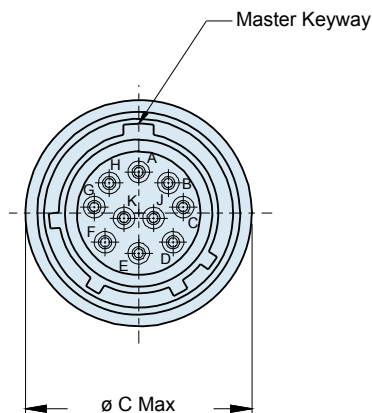


SIZE 12 AND SIZE 16

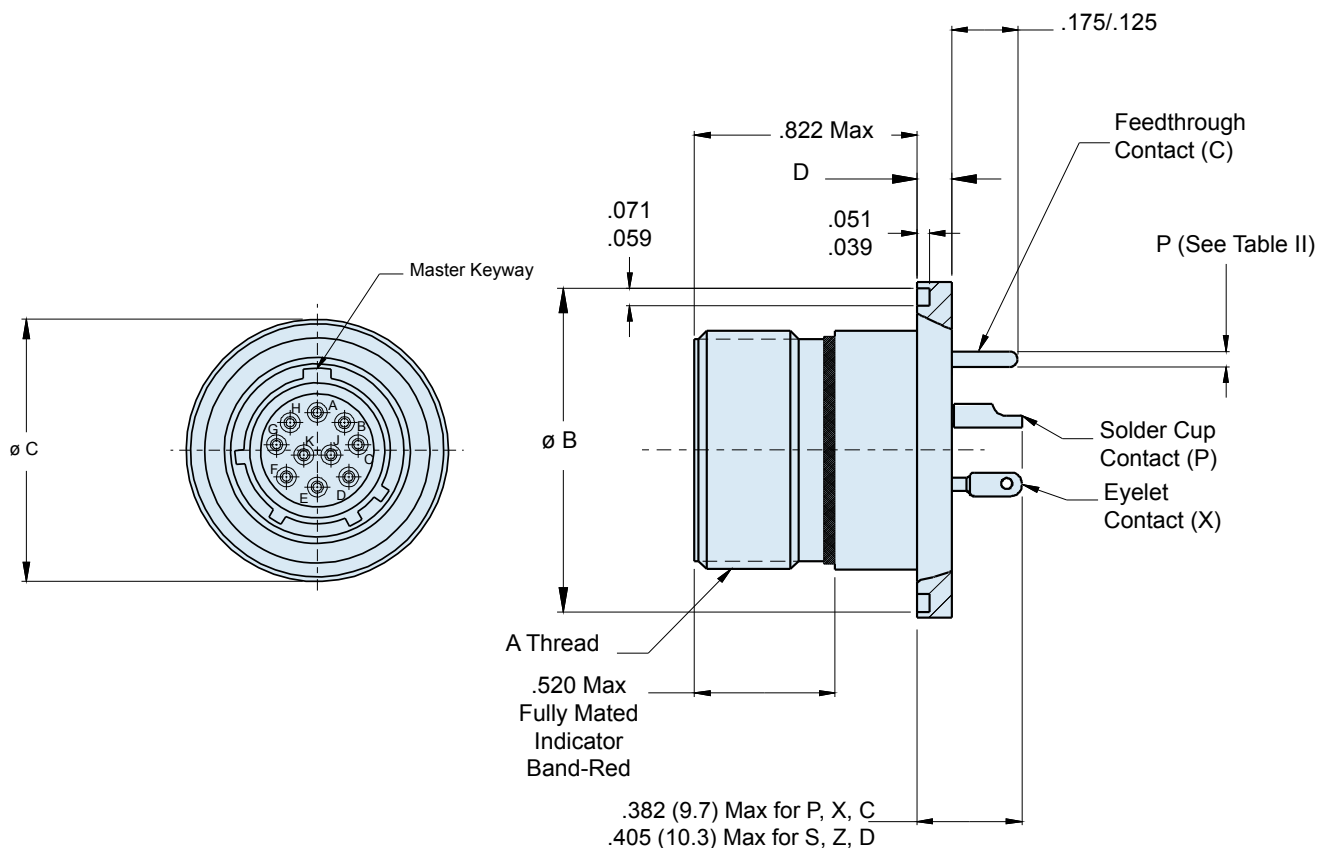
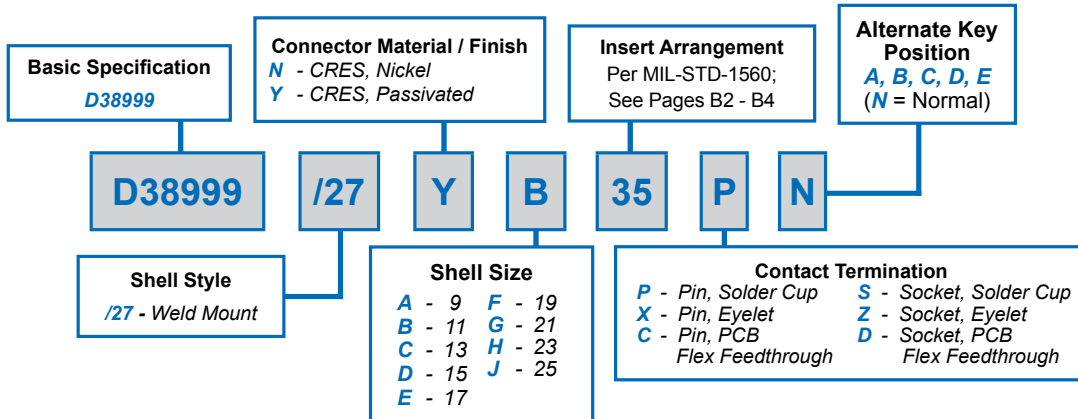


SIZE 22D AND SIZE 20

| Contact Size | ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |



**How To Order: MS**



Consult Factory for Recommended Panel Cutout Dimensions

# D38999/27

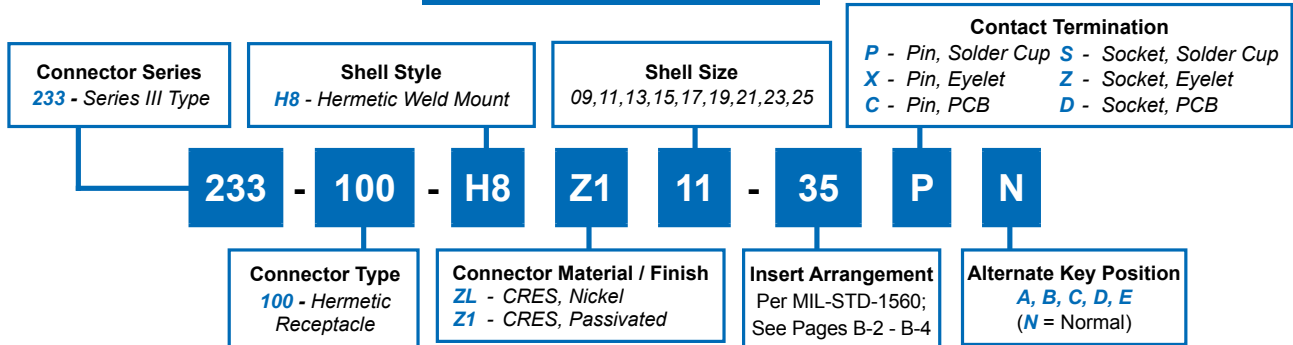
## Weld Mount Hermetic Receptacle

### MIL-DTL-38999 Series III



D38999 QPL  
Hermetics

#### How To Order: Commercial



B

TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE CODE | SHELL SIZE | A THREAD             | Ø B                          | Ø C                          | Ø D                      |
|-----------------|------------|----------------------|------------------------------|------------------------------|--------------------------|
| A               | 9/09       | .6250-.1P-.3L-TS-2A  | .941 (23.9)<br>.929 (23.6)   | .984 (25.0)<br>.972 (24.7)   | .134 (3.4)<br>.118 (3.0) |
| B               | 11         | .7500-.1P-.3L-TS-2A  | 1.063 (27.0)<br>1.051 (27.0) | 1.106 (28.1)<br>1.094 (27.8) | .134 (3.4)<br>.118 (3.0) |
| C               | 13         | .8750-.1P-.3L-TS-2A  | 1.189 (30.2)<br>1.177 (28.9) | 1.232 (31.3)<br>1.220 (31.0) | .134 (3.4)<br>.118 (3.0) |
| D               | 15         | 1.0000-.1P-.3L-TS-2A | 1.315 (33.4)<br>1.303 (33.1) | 1.358 (34.5)<br>1.346 (34.2) | .134 (3.4)<br>.118 (3.0) |
| E               | 17         | 1.1875-.1P-.3L-TS-2A | 1.402 (35.6)<br>1.390 (35.3) | 1.445 (36.7)<br>1.433 (36.4) | .134 (3.4)<br>.118 (3.0) |
| F               | 19         | 1.2500-.1P-.3L-TS-2A | 1.547 (39.3)<br>1.535 (39.0) | 1.591 (40.4)<br>1.579 (40.1) | .134 (3.4)<br>.118 (3.0) |
| G               | 21         | 1.3750-.1P-.3L-TS-2A | 1.689 (42.9)<br>1.677 (42.6) | 1.732 (44.0)<br>1.720 (43.7) | .134 (3.4)<br>.118 (3.0) |
| H               | 23         | 1.5000-.1P-.3L-TS-2A | 1.854 (47.1)<br>1.842 (46.8) | 1.898 (48.2)<br>1.886 (47.4) | .165 (4.2)<br>.149 (3.8) |
| J               | 25         | 1.6250-.1P-.3L-TS-2A | 1.941 (49.3)<br>1.929 (49.0) | 1.984 (50.4)<br>1.972 (50.1) | .165 (4.2)<br>.149 (3.8) |

TABLE II: CONTACT SIZE

| PRINTED CIRCUIT TAIL CONFIGURATIONS<br>CONTACT STYLE C AND D |                              |
|--------------------------------------------------------------|------------------------------|
|                                                              |                              |
| Contact Size                                                 | Ø P                          |
| 22D                                                          | .011 (0.28)<br>.015 (0.38)   |
| 20                                                           | .024 (0.61)<br>.028 (0.71)   |
| 16                                                           | .0635 (1.61)<br>.0615 (1.56) |
| 12                                                           | .095 (2.41)<br>.093 (2.36)   |

**How To Order: MS**

**Basic Specification**

**D38999**

**Connector Material / Finish**

**N** - CRES, Nickel  
**Y** - CRES, Passivated

**Insert Arrangement**

Per MIL-STD-1560;  
See Pages B2 - B4

**Alternate Key Position**

**A, B, C, D, K, L, M, R, U**  
(**N** = Normal)

**D38999**

**/41**

**Y**

**B**

**35**

**P**

**N**

**Shell Style**

**/41 - Box Mount**

**Shell Size**

**B** - 11 **F** - 19  
**C** - 13 **G** - 21  
**D** - 15 **H** - 23  
**E** - 17 **J** - 25

**Contact Termination**

**P** - Pin, Solder Cup **S** - Socket, Solder Cup  
**X** - Pin, Eyelet **Z** - Socket, Eyelet  
**C** - Pin, PCB **D** - Socket, PCB  
Flex Feedthrough Flex Feedthrough

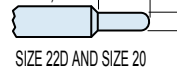
**TABLE II: CONTACT SIZE**

**PRINTED CIRCUIT TAIL CONFIGURATIONS  
CONTACT STYLE C AND D**



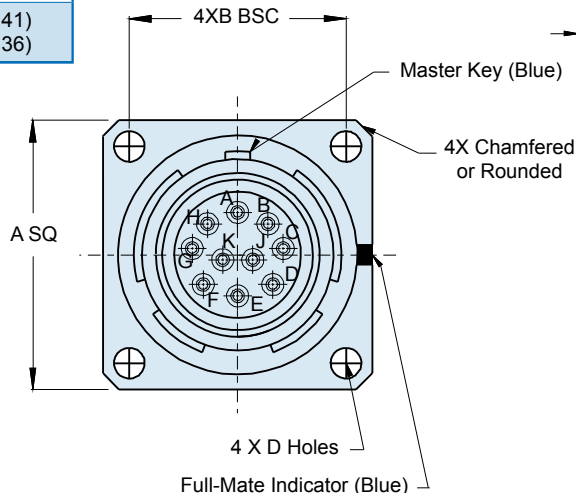
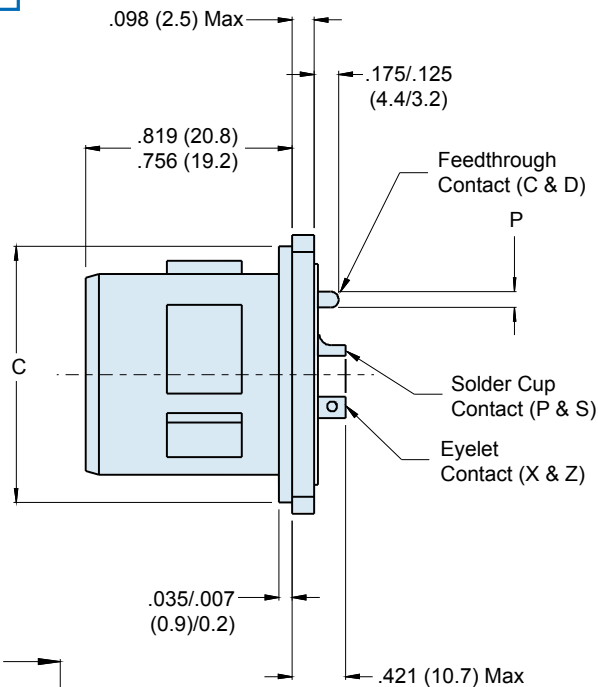
SIZE 12 AND SIZE 16

$.050 \pm .015$   
(1.27  $\pm$  0.38)



SIZE 22D AND SIZE 20

| Contact Size | $\phi$ P                     |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |



# D38999/41 Box Mount Hermetic Receptacle MIL-DTL-38999 Series IV



D38999 QPL  
Hermetics

## How To Order: Commercial

|                                                    |                                               |                                                                                  |                                                                                                                                                                |                                                                       |             |                                                                            |          |
|----------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------|----------------------------------------------------------------------------|----------|
| <b>Connector Series</b><br>234 - Series IV Type    | <b>Shell Style</b><br>H2 - Hermetic Box Mount | <b>Shell Size</b><br>11, 13, 15, 17, 19, 21, 23, 25                              | <b>Contact Termination</b><br>P - Pin, Solder Cup   S - Socket, Solder Cup<br>X - Pin, Eyelet       Z - Socket, Eyelet<br>C - Pin, PCB         D - Socket, PCB |                                                                       |             |                                                                            |          |
| <b>234</b>                                         | <b>- 100</b>                                  | <b>- H2</b>                                                                      | <b>Z1</b>                                                                                                                                                      | <b>11</b>                                                             | <b>- 35</b> | <b>P</b>                                                                   | <b>N</b> |
| <b>Connector Type</b><br>100 - Hermetic Receptacle |                                               | <b>Connector Material / Finish</b><br>ZL - CRES, Nickel<br>Z1 - CRES, Passivated |                                                                                                                                                                | <b>Insert Arrangement</b><br>Per MIL-STD-1560;<br>See Pages B-2 - B-4 |             | <b>Alternate Key Position</b><br>A, B, C, D, K, L, M, R, U<br>(N = Normal) |          |

B

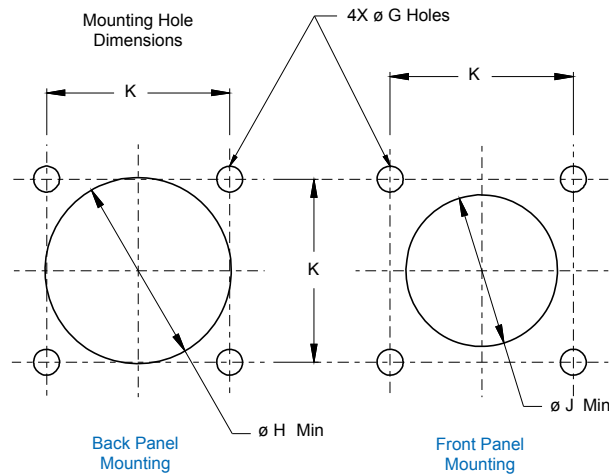
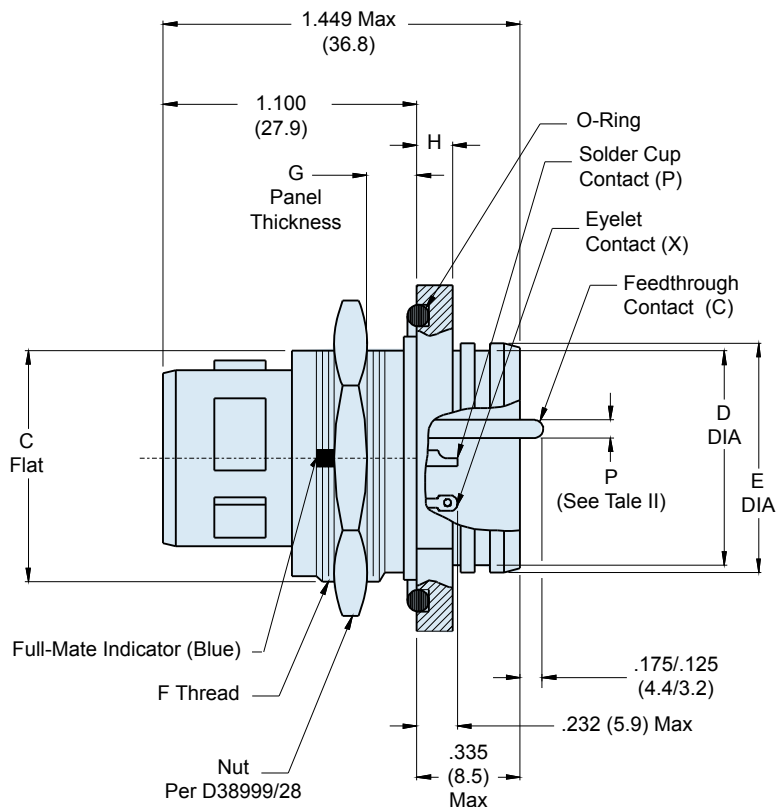
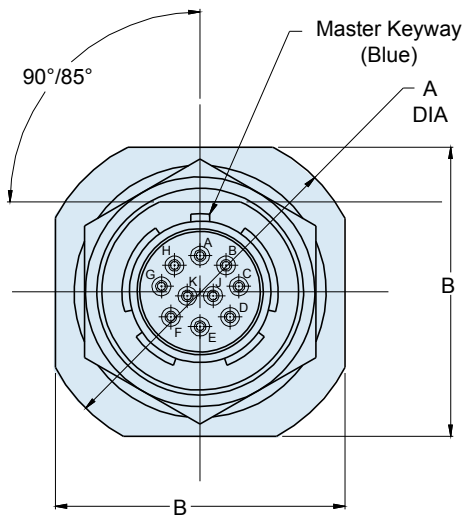
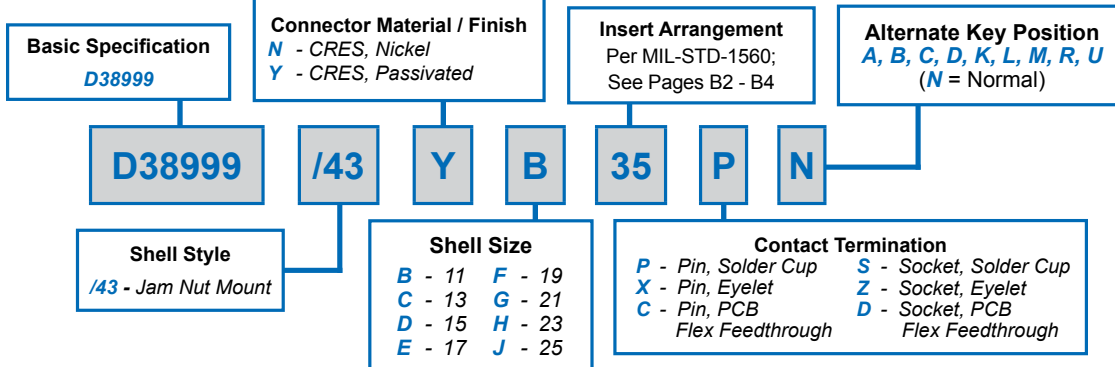


TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE CODE | SHELL SIZE | A SQ                       | B BSC       | C DIA                      | D DIA                  | øG HOLES ±.005(0.1) | ø H MIN     | ø J MIN     | K ±.005(0.1) |
|-----------------|------------|----------------------------|-------------|----------------------------|------------------------|---------------------|-------------|-------------|--------------|
| B               | 11         | 1.051(26.7)<br>1.008(25.6) | .812(20.6)  | .793(20.1)<br>.778(19.8)   | .138(3.5)<br>.122(3.1) | .128(3.3)           | .781(19.8)  | .625(15.9)  | .812(20.6)   |
| C               | 13         | 1.145(29.1)<br>1.102(28.0) | .906(23.0)  | .919(23.3)<br>.904(23.0)   | .138(3.5)<br>.122(3.1) | .128(3.3)           | .921(23.4)  | .750(19.1)  | .906(23.0)   |
| D               | 15         | 1.240(31.5)<br>1.197(30.4) | .969(24.6)  | 1.044(26.5)<br>1.029(26.1) | .138(3.5)<br>.122(3.1) | .128(3.3)           | 1.047(26.6) | .906(23.0)  | .968(24.6)   |
| E               | 17         | 1.334(33.9)<br>1.291(32.8) | 1.062(27.0) | 1.170(29.7)<br>1.155(29.3) | .138(3.5)<br>.122(3.1) | .128(3.3)           | 1.218(30.9) | 1.016(25.8) | 1.062(27.0)  |
| F               | 19         | 1.460(37.1)<br>1.417(36.0) | 1.156(29.4) | 1.294(32.9)<br>1.279(32.5) | .138(3.5)<br>.122(3.1) | .128(3.3)           | 1.296(32.9) | 1.142(29.0) | 1.156(29.4)  |
| G               | 21         | 1.583(40.2)<br>1.539(39.1) | 1.250(31.8) | 1.419(36.0)<br>1.404(35.7) | .138(3.5)<br>.122(3.1) | .128(3.3)           | 1.421(36.1) | 1.266(32.2) | 1.250(31.8)  |
| H               | 23         | 1.709(43.4)<br>1.665(42.3) | 1.375(34.9) | 1.544(39.2)<br>1.529(38.8) | .157(4.0)<br>.142(3.6) | .154(3.9)           | 1.546(39.3) | 1.375(34.9) | 1.375(34.9)  |
| J               | 25         | 1.835(46.6)<br>1.791(45.5) | 1.500(38.1) | 1.670(42.4)<br>1.654(42.0) | .157(4.0)<br>.142(3.6) | .154(3.9)           | 1.672(42.5) | 1.484(37.7) | 1.500(38.1)  |

**How To Order: MS**



# D38999/43 Jam Nut Mount Hermetic Receptacle MIL-DTL-38999 Series IV



D38999 QPL  
Hermetics

## How To Order: Commercial

|                                                    |                                                   |                                                                                  |                                                                                                                                                |                                                                            |
|----------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| <b>Connector Series</b><br>234 - Series IV Type    | <b>Shell Style</b><br>H7 - Hermetic Jam Nut Mount | <b>Shell Size</b><br>11, 13, 15, 17, 19, 21, 23, 25                              | <b>Contact Termination</b><br>P - Pin, Solder Cup S - Socket, Solder Cup<br>X - Pin, Eyelet Z - Socket, Eyelet<br>C - Pin, PCB D - Socket, PCB |                                                                            |
| <b>234</b>                                         | <b>100</b>                                        | <b>H7</b>                                                                        | <b>Z1</b>                                                                                                                                      | <b>11</b>                                                                  |
| <b>Connector Type</b><br>100 - Hermetic Receptacle |                                                   | <b>Connector Material / Finish</b><br>ZL - CRES, Nickel<br>Z1 - CRES, Passivated | <b>Insert Arrangement</b><br>Per MIL-STD-1560;<br>See Pages B-2 - B-4                                                                          | <b>Alternate Key Position</b><br>A, B, C, D, K, L, M, R, U<br>(N = Normal) |
|                                                    |                                                   | <b>35</b>                                                                        | <b>P</b>                                                                                                                                       | <b>N</b>                                                                   |

TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE CODE | SHELL SIZE | A DIA                      | B FLATS ±.018(0.5) | C FLAT                     | D DIA                      | E DIA ±.010(0.3) | F THREAD ISO METRIC | G ±.033(0.8) | H ±.012(0.3) |
|-----------------|------------|----------------------------|--------------------|----------------------------|----------------------------|------------------|---------------------|--------------|--------------|
| B               | 11         | 1.385(35.2)<br>1.362(34.6) | 1.250(31.8)        | .754(19.2)<br>.745(18.9)   | .733(18.6)<br>.716(18.2)   | .769(19.5)       | M20 X 1.0-6g        | .092(2.3)    | .106(2.7)    |
| C               | 13         | 1.511(38.4)<br>1.488(37.8) | 1.376(35.0)        | .941(23.9)<br>.932(23.7)   | .858(21.8)<br>.839(21.3)   | .899(22.8)       | M25 X 1.0-6g        | .092(2.3)    | .106(2.7)    |
| D               | 15         | 1.637(41.6)<br>1.614(41.0) | 1.502(38.2)        | 1.065(27.1)<br>1.056(26.8) | .984(25.0)<br>.968(24.6)   | 1.025(26.0)      | M28 X 1.0-6g        | .092(2.3)    | .106(2.7)    |
| E               | 17         | 1.763(44.8)<br>1.740(44.2) | 1.624(41.2)        | 1.190(30.2)<br>1.181(30.0) | 1.110(28.2)<br>1.091(27.7) | 1.147(29.1)      | M32 X 1.0-6g        | .092(2.3)    | .106(2.7)    |
| F               | 19         | 1.948(49.5)<br>1.925(48.9) | 1.813(46.1)        | 1.316(33.4)<br>1.306(33.2) | 1.236(31.4)<br>1.220(31.0) | 1.273(32.3)      | M35 X 1.0-6g        | .092(2.3)    | .137(3.5)    |
| G               | 21         | 2.074(52.7)<br>2.051(52.1) | 1.939(49.3)        | 1.441(36.6)<br>1.431(36.3) | 1.358(34.5)<br>1.342(34.1) | 1.399(35.5)      | M38 X 1.0-6g        | .092(2.3)    | .137(3.5)    |
| H               | 23         | 2.200(55.9)<br>2.177(55.3) | 2.061(52.3)        | 1.565(39.8)<br>1.556(39.5) | 1.484(37.7)<br>1.468(37.3) | 1.525(38.7)      | M41 X 1.0-6g        | .092(2.3)    | .137(3.5)    |
| J               | 25         | 2.326(59.1)<br>2.299(58.4) | 2.187(55.5)        | 1.692(43.0)<br>1.681(42.7) | 1.610(40.9)<br>1.594(40.5) | 1.647(41.8)      | M44 X 1.0-6g        | .092(2.3)    | .137(3.5)    |

TABLE I (CONTINUED):  
CUT-OUT DIMENSIONS

| SHELL SIZE CODE | J DIA                          | K                              |
|-----------------|--------------------------------|--------------------------------|
| B               | .835 (21.21)<br>.825 (20.96)   | .771 (19.58)<br>.761 (19.33)   |
| C               | 1.020 (25.91)<br>1.010 (25.65) | .955 (24.26)<br>.945 (24.00)   |
| D               | 1.145 (29.08)<br>1.133 (28.78) | 1.085 (27.56)<br>1.075 (27.31) |
| E               | 1.270 (32.26)<br>1.260 (32.00) | 1.210 (30.73)<br>1.200 (30.48) |
| F               | 1.395 (35.43)<br>1.385 (35.18) | 1.335 (33.91)<br>1.325 (33.66) |
| G               | 1.520 (38.61)<br>1.510 (38.35) | 1.460 (37.08)<br>1.450 (36.83) |
| H               | 1.645 (41.78)<br>1.635 (41.53) | 1.585 (40.26)<br>1.575 (40.01) |
| J               | 1.770 (44.96)<br>1.760 (44.70) | 1.710 (43.43)<br>1.700 (43.18) |

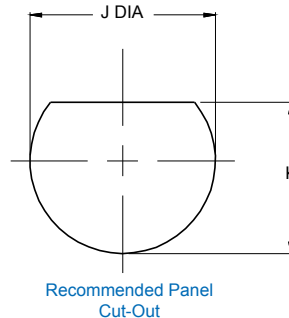
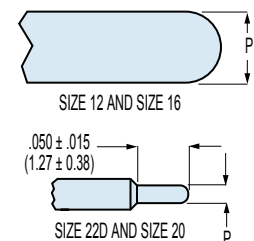


TABLE II: CONTACT SIZE

PRINTED CIRCUIT TAIL CONFIGURATIONS  
CONTACT STYLE C AND D



| Contact Size | ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |

**How To Order: MS**

**Basic Specification**  
*D38999*

**Connector Material / Finish**  
*N - CRES, Nickel*  
*Y - CRES, Passivated*

**Insert Arrangement**  
Per MIL-STD-1560;  
See Pages B2 - B4

**Alternate Key Position**  
*A, B, C, D, K, L, M, R, U*  
(*N* = Normal)

**D38999**

**/45**

**Y**

**B**

**35**

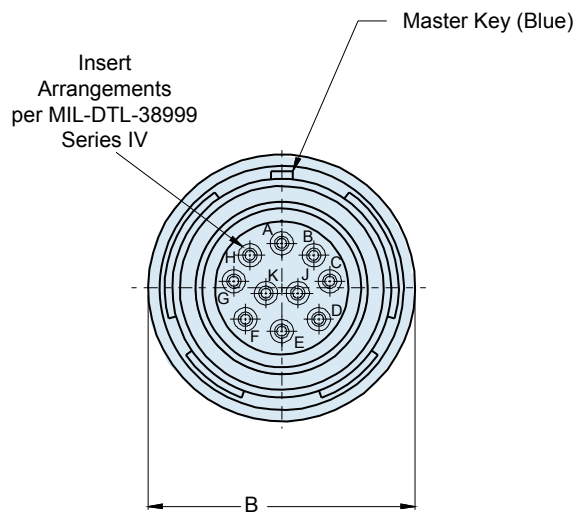
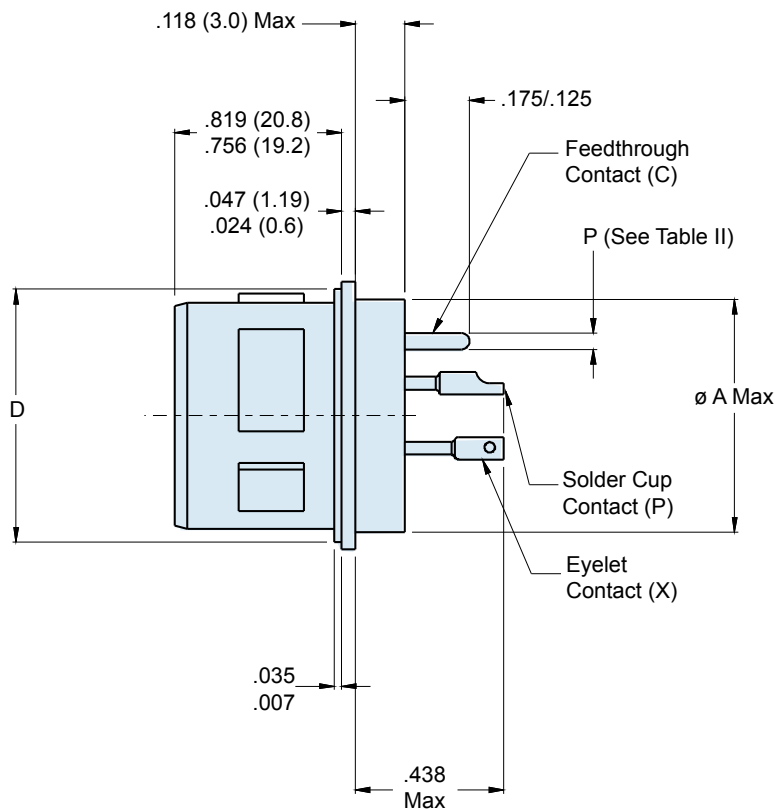
**P**

**N**

**Shell Style**  
*/45 - Solder Mount*

**Shell Size**  
*B - 11 F - 19*  
*C - 13 G - 21*  
*D - 15 H - 23*  
*E - 17 J - 25*

**Contact Termination**  
*P - Pin, Solder Cup S - Socket, Solder Cup*  
*X - Pin, Eyelet Z - Socket, Eyelet*  
*C - Pin, PCB D - Socket, PCB*  
*Flex Feedthrough Flex Feedthrough*



# D38999/45 Solder Mount Hermetic Receptacle MIL-DTL-38999 Series IV



D38999 QPL  
Hermetics

## How To Order: Commercial

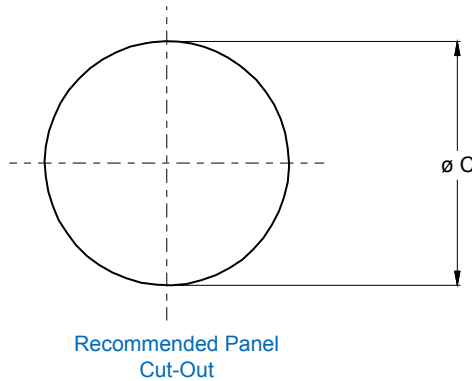
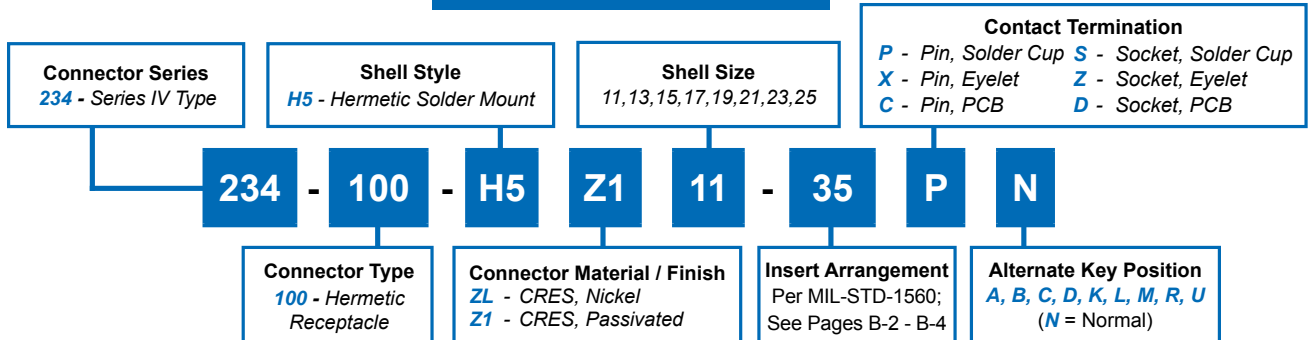
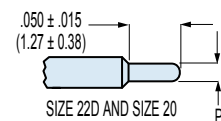


TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE CODE | SHELL SIZE | ø A MAX     | ø B MAX     | ø C ±.005(0.1) | D                          |
|-----------------|------------|-------------|-------------|----------------|----------------------------|
| B               | 11         | .783(19.9)  | .862(21.9)  | .789(20.0)     | .793(20.1)<br>.778(19.8)   |
| C               | 13         | .909(23.1)  | .988(25.1)  | .914(23.2)     | .919(23.3)<br>.904(23.0)   |
| D               | 15         | 1.035(26.3) | 1.110(28.2) | 1.038(26.4)    | 1.044(26.5)<br>1.028(26.1) |
| E               | 17         | 1.157(29.4) | 1.236(31.4) | 1.164(29.6)    | 1.170(29.7)<br>1.155(29.3) |
| F               | 19         | 1.252(31.8) | 1.331(33.8) | 1.258(32.0)    | 1.294(32.9)<br>1.279(32.5) |
| G               | 21         | 1.378(35.0) | 1.457(37.0) | 1.383(35.1)    | 1.419(36.0)<br>1.404(35.7) |
| H               | 23         | 1.504(38.2) | 1.583(40.2) | 1.508(38.3)    | 1.544(39.2)<br>1.528(38.8) |
| J               | 25         | 1.630(41.4) | 1.705(43.3) | 1.643(41.7)    | 1.670(42.4)<br>1.654(42.0) |

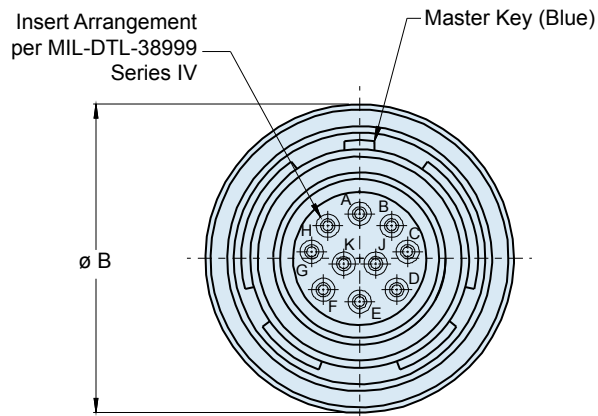
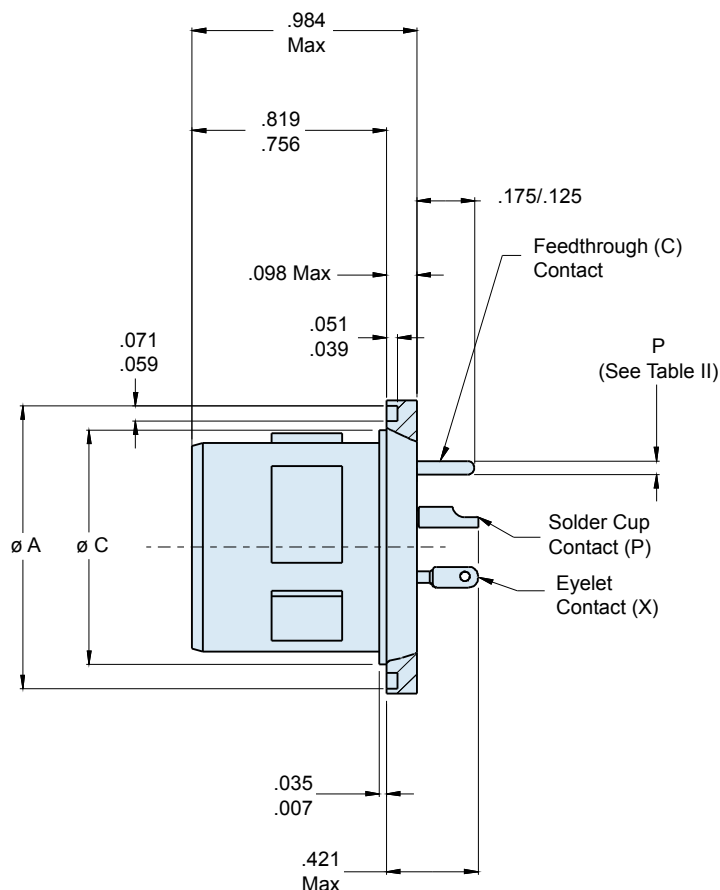
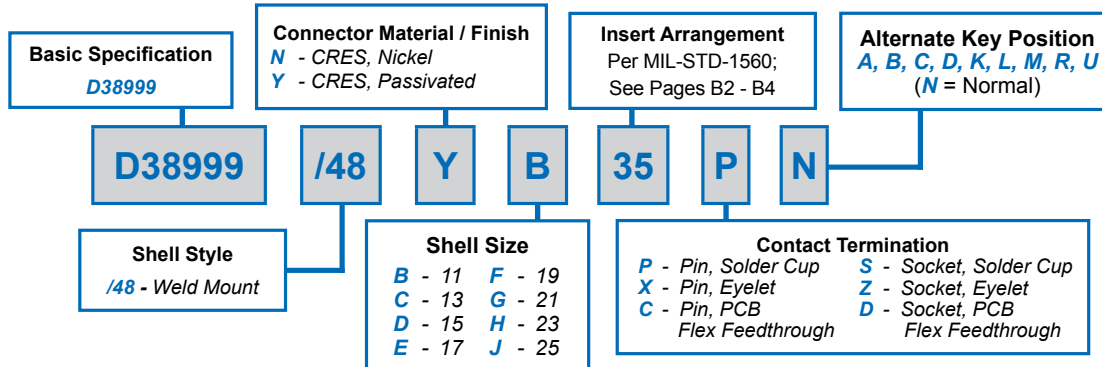
TABLE II: CONTACT SIZE

PRINTED CIRCUIT TAIL CONFIGURATIONS  
CONTACT STYLE C AND D



| Contact Size | ø P                          |
|--------------|------------------------------|
| 22D          | .011 (0.28)<br>.015 (0.38)   |
| 20           | .024 (0.61)<br>.028 (0.71)   |
| 16           | .0635 (1.61)<br>.0615 (1.56) |
| 12           | .095 (2.41)<br>.093 (2.36)   |

**How To Order: MS**



Consult Factory for Recommended Panel Cutout Dimensions

# D38999/48 Weld Mount Hermetic Receptacle MIL-DTL-38999 Series IV



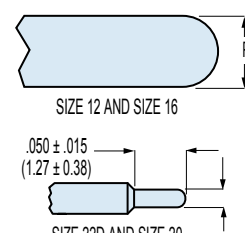
D38999 QPL  
Hermetics

## How To Order: Commercial

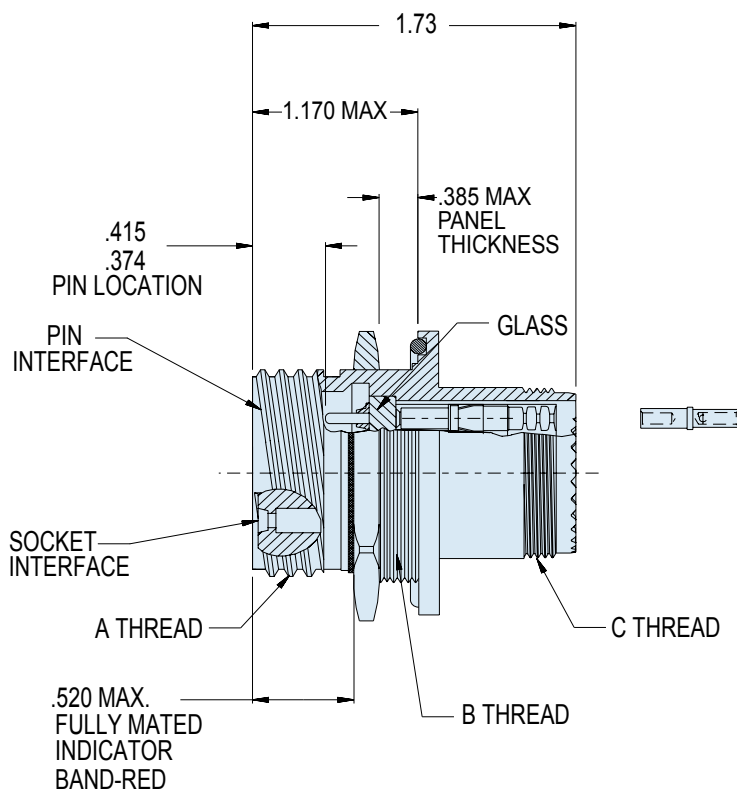
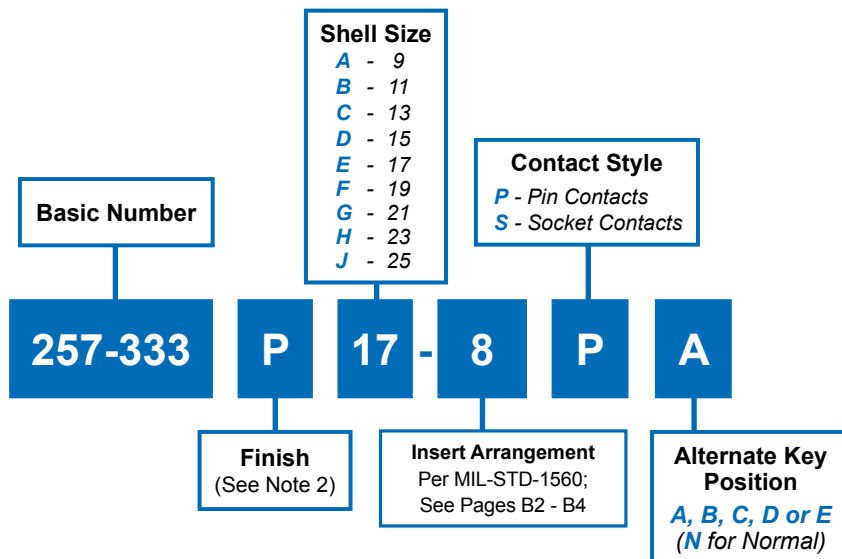
|                                                    |                                                |                                                                                  |                                                                                                                                                               |                                                                            |
|----------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| <b>Connector Series</b><br>234 - Series IV Type    | <b>Shell Style</b><br>H8 - Hermetic Weld Mount | <b>Shell Size</b><br>11, 13, 15, 17, 19, 21, 23, 25                              | <b>Contact Termination</b><br>P - Pin, Solder Cup   S - Socket, Solder Cup<br>X - Pin, Eyelet      Z - Socket, Eyelet<br>C - Pin, PCB         D - Socket, PCB |                                                                            |
| <b>234</b>                                         | <b>- 100</b>                                   | <b>- H8</b>                                                                      | <b>Z1</b>                                                                                                                                                     | <b>11 - 35</b>                                                             |
| <b>Connector Type</b><br>100 - Hermetic Receptacle |                                                | <b>Connector Material / Finish</b><br>ZL - CRES, Nickel<br>Z1 - CRES, Passivated | <b>Insert Arrangement</b><br>Per MIL-STD-1560;<br>See Pages B-2 - B-4                                                                                         | <b>Alternate Key Position</b><br>A, B, C, D, K, L, M, R, U<br>(N = Normal) |

B

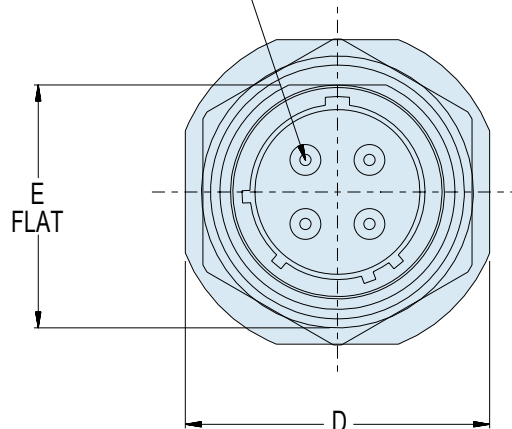
| TABLE I: CONNECTOR DIMENSIONS |            |                              |                              |                              |
|-------------------------------|------------|------------------------------|------------------------------|------------------------------|
| SHELL SIZE CODE               | SHELL SIZE | ø A                          | ø B                          | ø C                          |
| B                             | 11         | 1.035 (26.3)<br>1.024 (26.0) | 1.106 (28.1)<br>1.094 (27.8) | .793 (20.1)<br>.778 (19.8)   |
| C                             | 13         | 1.161 (29.5)<br>1.150 (29.2) | 1.232 (31.3)<br>1.220 (31.0) | .919 (23.3)<br>.904 (23.0)   |
| D                             | 15         | 1.287 (32.7)<br>1.276 (32.4) | 1.358 (34.5)<br>1.346 (34.2) | 1.044 (26.5)<br>1.029 (26.1) |
| E                             | 17         | 1.374 (34.9)<br>1.362 (34.6) | 1.445 (36.7)<br>1.433 (36.4) | 1.170 (29.7)<br>1.155 (29.3) |
| F                             | 19         | 1.520 (38.6)<br>1.508 (38.3) | 1.591 (40.4)<br>1.579 (40.1) | 1.294 (32.9)<br>1.279 (32.5) |
| G                             | 21         | 1.661 (42.2)<br>1.650 (41.9) | 1.732 (44.0)<br>1.720 (43.7) | 1.419 (36.0)<br>1.404 (35.7) |
| H                             | 23         | 1.827 (46.4)<br>1.815 (46.1) | 1.898 (48.2)<br>1.886 (47.4) | 1.544 (39.2)<br>1.529 (38.8) |
| J                             | 25         | 1.913 (48.6)<br>1.902 (48.3) | 1.984 (50.4)<br>1.972 (50.1) | 1.669 (42.4)<br>1.654 (42.0) |

| TABLE II: CONTACT SIZE                                                                                                                                |                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| PRINTED CIRCUIT TAIL CONFIGURATIONS<br>CONTACT STYLE C AND D<br> |                              |
| Contact Size                                                                                                                                          | ø P                          |
| 22D                                                                                                                                                   | .011 (0.28)<br>.015 (0.38)   |
| 20                                                                                                                                                    | .024 (0.61)<br>.028 (0.71)   |
| 16                                                                                                                                                    | .0635 (1.61)<br>.0615 (1.56) |
| 12                                                                                                                                                    | .095 (2.41)<br>.093 (2.36)   |

**B**



INSERT ARRANGEMENT  
PER-MIL-STD-1560



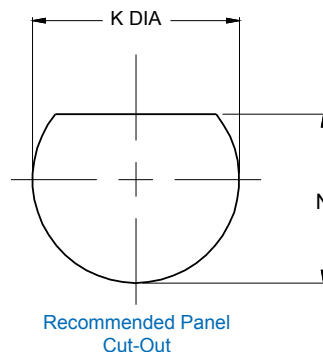
# 257-333 Hermetic Jam Nut Receptacle with Crimp Removable Socket Contacts MIL-DTL-38999 Series III Type



D38999 QPL  
Hermetics

TABLE I (CONTINUED):  
CUT-OUT DIMENSIONS

| SHELL<br>SIZE | K DIA<br>± .005 (0.1) | N<br>± .005 (0.1) |
|---------------|-----------------------|-------------------|
| A             | .693 (17.60)          | .657 (16.70)      |
| B             | .825 (20.96)          | .771 (19.59)      |
| C             | 1.010 (25.65)         | .955 (24.26)      |
| D             | 1.135 (28.83)         | 1.085 (27.56)     |
| E             | 1.260 (32.01)         | 1.210 (30.73)     |
| F             | 1.385 (35.18)         | 1.335 (33.91)     |
| G             | 1.510 (38.35)         | 1.460 (37.08)     |
| H             | 1.635 (41.53)         | 1.585 (40.26)     |
| J             | 1.760 (44.70)         | 1.710 (43.43)     |



B

TABLE I: CONNECTOR DIMENSIONS

| SHELL<br>SIZE | SHELL SIZE<br>CODE | A<br>THREAD         | B<br>THREAD     | C<br>THREAD     | D<br>+/- .016<br>(MM) | E<br>+/- .004-.006<br>(MM) |
|---------------|--------------------|---------------------|-----------------|-----------------|-----------------------|----------------------------|
| 9             | A                  | .6250-.1P.3L-TS-2A  | M17x1-6g 0.100R | M12x1-6g 0.100R | 1.062 (2.70)          | 0.651 (1.65)               |
| 11            | B                  | .7500-.1P.3L-TS-2A  | M20x1-6g 0.100R | M15x1-6g 0.100R | 1.252 (3.18)          | 0.751 (1.91)               |
| 13            | C                  | .8750-.1P.3L-TS-2A  | M25x1-6g 0.100R | M18x1-6g 0.100R | 1.374 (3.49)          | 0.938 (2.38)               |
| 15            | D                  | 1.000-.1P.3L-TS-2A  | M28x1-6g 0.100R | M22x1-6g 0.100R | 1.500 (3.81)          | 1.062 (2.70)               |
| 17            | E                  | 1.1875-.1P.3L-TS-2A | M32x1-6g 0.100R | M25x1-6g 0.100R | 1.626 (4.13)          | 1.187 (3.01)               |
| 19            | F                  | 1.250-.1P.3L-TS-2A  | M35x1-6g 0.100R | M28x1-6g 0.100R | 1.811 (4.60)          | 1.312 (3.33)               |
| 21            | G                  | 1.375-.1P.3L-TS-2A  | M38x1-6g 0.100R | M31x1-6g 0.100R | 1.937 (4.92)          | 1.437 (3.65)               |
| 23            | H                  | 1.500-.1P.3L-TS-2A  | M41x1-6g 0.100R | M34x1-6g 0.100R | 2.063 (5.24)          | 1.562 (3.97)               |
| 25            | J                  | 1.625-.1P.3L-TS-2A  | M44x1-6g 0.100R | M37x1-6g 0.100R | 2.189 (5.56)          | 1.687 (4.28)               |

## APPLICATION NOTES

- Assembly to be identified with Glenair's name and part number and date code, space permitting.
- Material/finishes:  
Shell Receptacle, Jam Nut – CRES Passivated (Z1), CRES/NI (P)  
Pin Contact – alloy 52 / gold plated  
Socket Contact – copper alloy / gold plated  
Insulator – fused vitreous glass / N.A.  
Insulators – high grade rigid dielectric  
Seals—fluorosilicone / N.A.
- Crimp removable socket contacts to conform to:  
MIL-C-39029/57-358 – size 16;  
MIL-C-39029/57-357 – size 20;  
and MIL-C-39029/57-354 – size 22D (supplied loose)  
Supply 1 extra contact for each size used.

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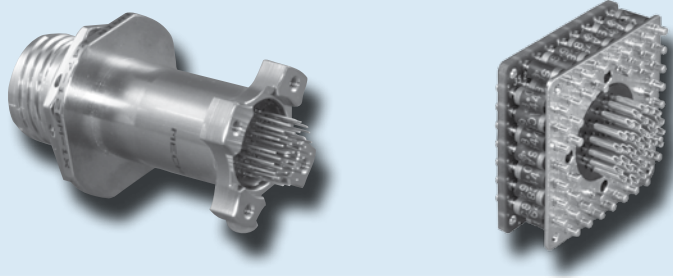
# Glenair MIL-DTL-38999 Type Filter Connectors

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## MIL-DTL-38999 Type EMI/EMP Filter Connectors



EMI/EMP  
Filters



### PRODUCT FEATURES

- All Filter Connector Styles Meet or Exceed Applicable Military Standards
- C and Pi Circuit Filters from 400 pF to 240,000 pF
- All Connector Series are Intermateable with Standard (Non-Filtered) Plugs and Connector Adapters
- Broadest Range of Insert Arrangements for MIL-DTL-38999 Series I, II, III and IV
- PC Tail, Solder Cup and Crimp-Contact Versions
- Space-Grade Bake-Out Processing Available
- Transient Voltage Suppression Diodes Available

## The Industry's Best Short Lead-Time Source for Planar Array Type EMI/EMP Filter Connectors

C

### Military Standard Type Series

Glenair's family of circular military standard type EMI/EMP filter connectors is designed to meet stringent military/aerospace performance requirements. Each connector series is offered with standard low-pass Pi or C filter arrays, or with customized filters to meet specific frequency and capacitance requirements. Thermally conductive epoxy protects the filter package from mechanical and heat stress and also provides a waterproof seal. All filtered receptacles are intermateable with standard plugs and connector savers, and each respective series of connectors is supplied with a range of shell styles in both environmental and hermetic configurations. Please see the "How to Order" page for available styles for each series:

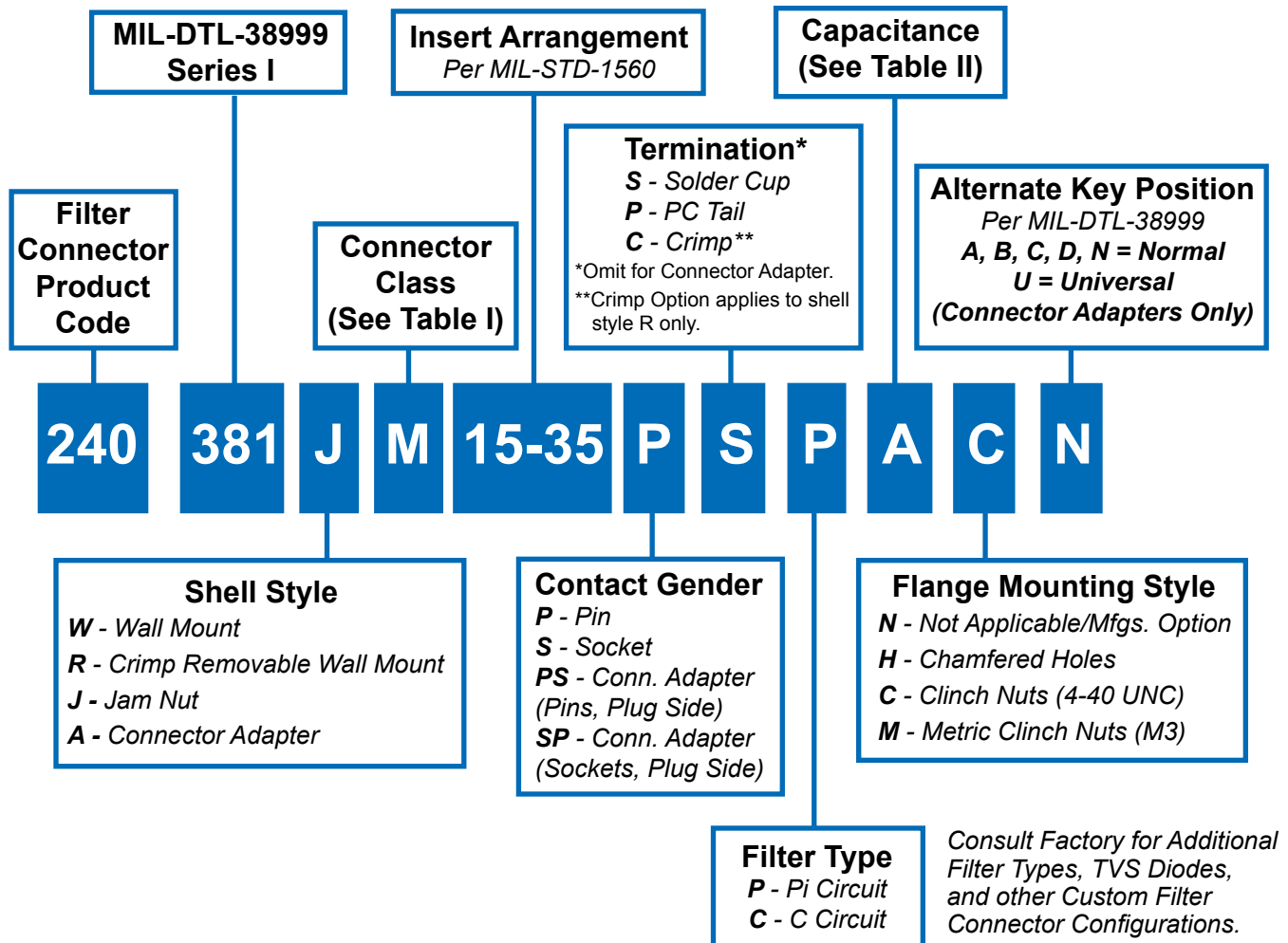
|                              |      |                               |      |
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### MATERIAL AND FINISHES

|                                               |                                                                                                                                                                                                 |                                                                                   |  |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|
| Contacts                                      | Beryllium Copper Alloy, 50 µ Inch Gold Plated per ASTM B488 Type 3, Code C, Class 1,27 over Nickel Underplate per QQ-N-290 Class 2. Socket Contact Hood: Corrosion Resistant Steel, Passivated. |                                                                                   |  |
| Insulator                                     | Liquid crystal Polymer (LCP) per MIL-M-24519 GLP-30F, 30% Glass-Filled                                                                                                                          |                                                                                   |  |
| Interfacial Seal, O-Ring, and Peripheral Seal | Flourosilicone Elastomer per A-A-59588, Color Blue                                                                                                                                              |                                                                                   |  |
| Shell, Jam Nut Material                       | Aluminum Alloy per ASTM B 211 or ASTM B 221 or Corrosion Resistant Steel per AMS-QQ-S-763                                                                                                       |                                                                                   |  |
| Shell and Jam Nut Finish                      | Code M:                                                                                                                                                                                         | Electroless Nickel per AMS-C-26074 (96 Hour Salt Spray)                           |  |
|                                               | Code NF:                                                                                                                                                                                        | Olive Drab Cadmium per AMS-QQ-P-416 over Electroless Nickel (500 Hour Salt Spray) |  |
|                                               | Code P:                                                                                                                                                                                         | Stainless Steel with Electro-Deposited Nickel                                     |  |
|                                               | Code MT:                                                                                                                                                                                        | Ni-PTFE 1000 Hour Grey™ (Nickel Flourocarbon Polymer) per MIL-DTL-38999 Rev. L    |  |
| Potting Compound                              | Thermally Conductive Epoxy                                                                                                                                                                      |                                                                                   |  |



# Glenair MIL-DTL-38999 Series I Type Scoop-Proof Filter Connector with Bayonet Coupling Master How to Order • Part Number Breakdown



**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                                     |
|-----|---------------|-----------------|--------------------------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                                     |
| MT  | Environmental | Aluminum        | Ni-PTFE 1000 Hour Grey™<br>Nickel Fluorocarbon Polymer |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel                   |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel                               |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel                    |

**TABLE II: CAPACITOR ARRAY CODE CAPACITANCE RANGE**

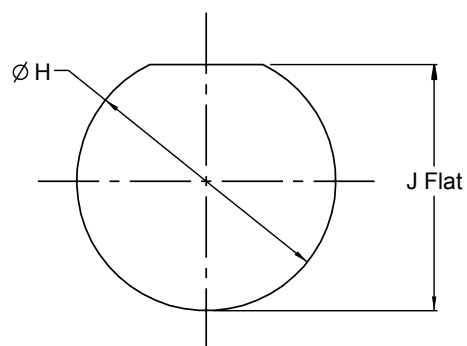
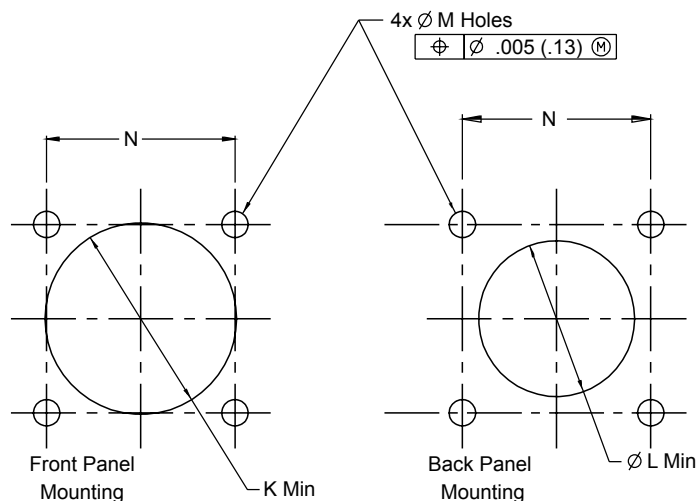
| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.

# Glenair MIL-DTL-38999 Series I Type Scoop-Proof Filter Connector with Bayonet Coupling Reference Information



EMI/EMP  
Filters

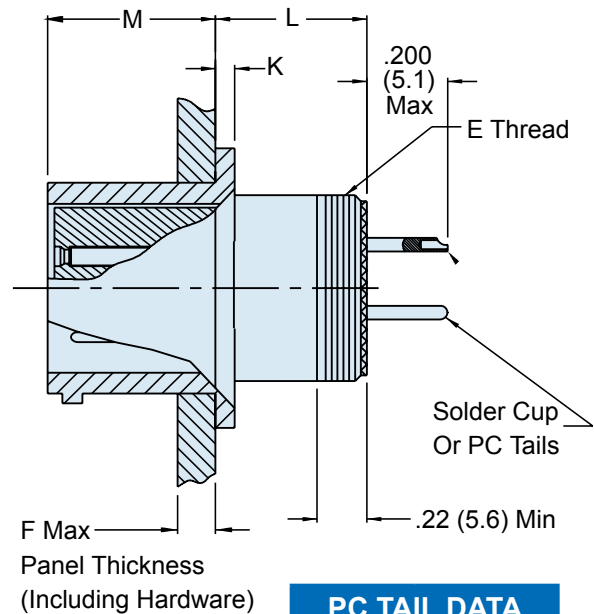
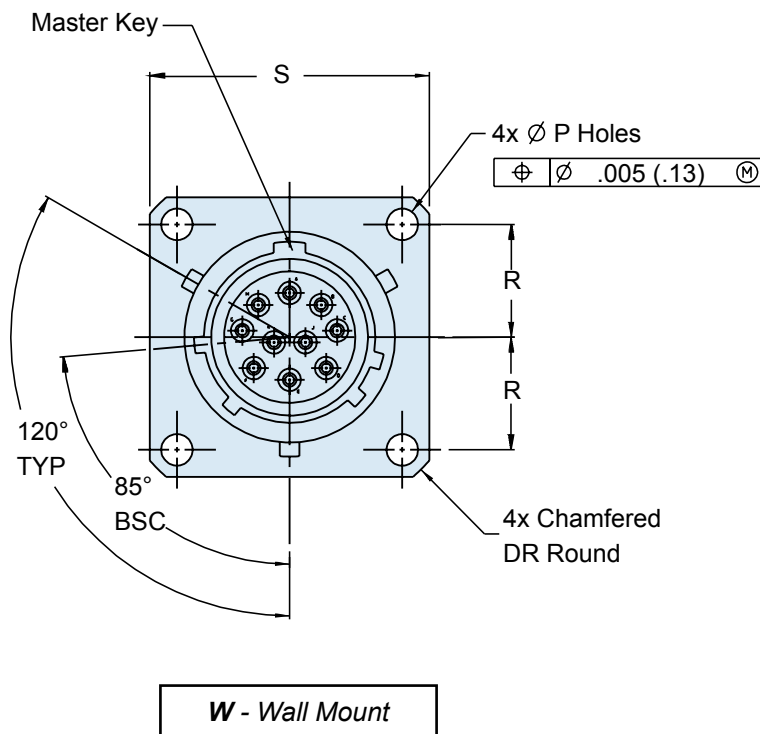
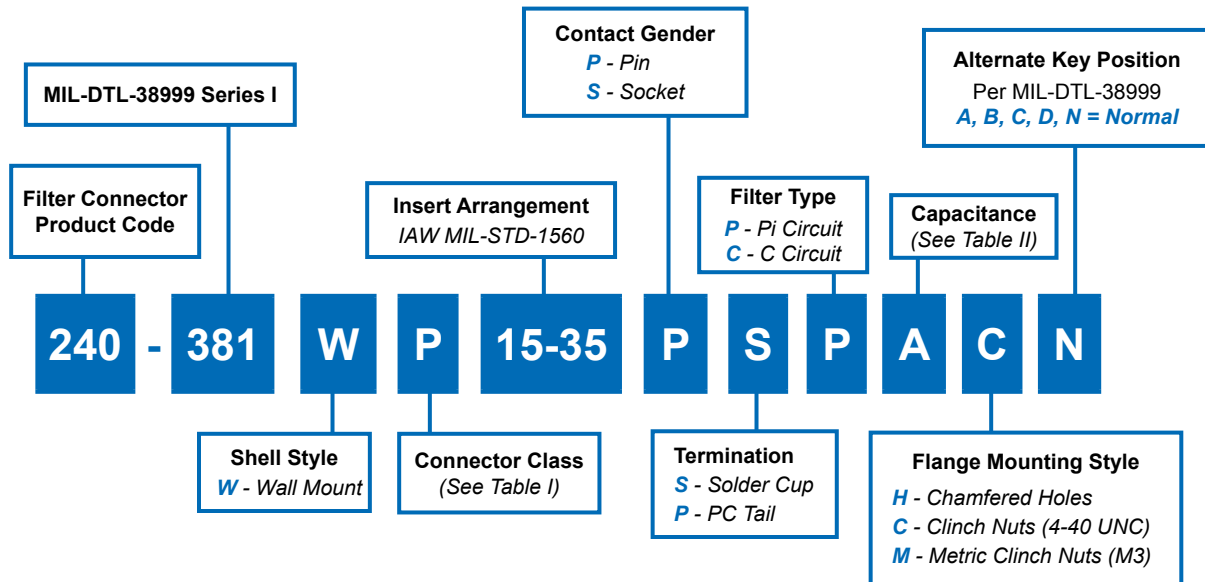


| MIL-DTL-38999 Series I<br>Square Flange Panel Cutouts |            |              |              |                          |              |
|-------------------------------------------------------|------------|--------------|--------------|--------------------------|--------------|
| Shell Size Code                                       | Shell Size | ø K Min      | ø L Min      | M Holes                  | N BSC        |
| A                                                     | 09         | .656 (16.7)  | .516 (13.1)  | .133 (3.4)<br>.123 (3.1) | .719 (18.3)  |
| B                                                     | 11         | .796 (20.2)  | .625 (15.9)  | .133 (3.4)<br>.123 (3.1) | .812 (20.6)  |
| C                                                     | 13         | .922 (23.4)  | .750 (19.1)  | .133 (3.4)<br>.123 (3.1) | .906 (23.0)  |
| D                                                     | 15         | 1.047 (26.6) | .906 (23.0)  | .133 (3.4)<br>.123 (3.1) | .969 (24.6)  |
| E                                                     | 17         | 1.219 (31.0) | 1.016 (25.8) | .133 (3.4)<br>.123 (3.1) | 1.062 (27.0) |
| F                                                     | 19         | 1.297 (32.9) | 1.141 (29.0) | .133 (3.4)<br>.123 (3.1) | 1.156 (29.4) |
| G                                                     | 21         | 1.422 (36.1) | 1.266 (32.2) | .133 (3.4)<br>.123 (3.1) | 1.250 (31.8) |
| H                                                     | 23         | 1.547 (39.3) | 1.375 (34.9) | .159 (4.0)<br>.149 (3.8) | 1.375 (34.9) |
| J                                                     | 25         | 1.672 (42.5) | 1.484 (37.7) | .155 (3.9)<br>.145 (3.7) | 1.500 (38.1) |

| MIL-DTL-38999 Series I<br>Jam Nut Panel Cutout |            |                              |                              |
|------------------------------------------------|------------|------------------------------|------------------------------|
| SHELL SIZE CODE                                | SHELL SIZE | ø H                          | J                            |
| A                                              | 09         | .710 (18.0)<br>.700 (17.8)   | .670 (17.0)<br>.660 (16.8)   |
| B                                              | 11         | .835 (21.2)<br>.825 (21.0)   | .771 (19.6)<br>.761 (19.3)   |
| C                                              | 13         | 1.020 (25.9)<br>1.010 (25.7) | .955 (24.3)<br>.945 (24.0)   |
| D                                              | 15         | 1.145 (29.1)<br>1.135 (28.8) | 1.085 (27.6)<br>1.075 (27.3) |
| E                                              | 17         | 1.270 (32.3)<br>1.260 (32.0) | 1.210 (30.7)<br>1.200 (30.5) |
| F                                              | 19         | 1.395 (35.4)<br>1.385 (35.2) | 1.335 (33.9)<br>1.325 (33.7) |
| G                                              | 21         | 1.520 (38.6)<br>1.510 (38.4) | 1.460 (37.1)<br>1.450 (36.8) |
| H                                              | 23         | 1.645 (41.8)<br>1.635 (41.5) | 1.585 (40.3)<br>1.575 (40.0) |
| J                                              | 25         | 1.770 (45.0)<br>1.760 (44.7) | 1.710 (43.4)<br>1.700 (43.2) |

## APPLICATION NOTES

- Materials/Finishes: Shells, Barrel, Coupling Nut, Jam Nut - See Table I  
Insulators - high grade rigid dielectric/N.A.  
Seals - Fluorosilicone  
PC Tail & Solder Cup contacts: 50µ" Gold over 50µ" Nickel
- Assembly to be identified with Glenair's name, part number, and date code - space permitting.
- Insert Arrangement in accordance with MIL-STD-1560.  
(Arrangement shown for reference only)
- EMI Circular Filter Receptacle connector designed to meet requirements of MIL-STD-2120 and MIL-DTL-38999, Series I.
- All contacts to have identical filter value. Other filter arrangements available, contact factory.
- Electrical Ratings: DWV- 500 VDC Min.; Standard Operating Voltage 200 Volts DC; Current Rating 5 Amps (size 22);
- Insulation Resistance: 5000 MegOhms Min. at 200 VDC.
- Operating Temperature -55°C to +125°C (Env Class Connectors)
- Other filter styles (C-L, L-C, Unbalanced PI, Multi-Stage, Multi-Value) are available, please consult the factory.
- Metric Dimensions (mm) are indicated in parentheses.



| PC TAIL DATA |              |
|--------------|--------------|
| Contact Size | PC Tail Ø    |
| 22D          | .020<br>.018 |
| 20           | .024<br>.029 |
| 16           | .038<br>.042 |

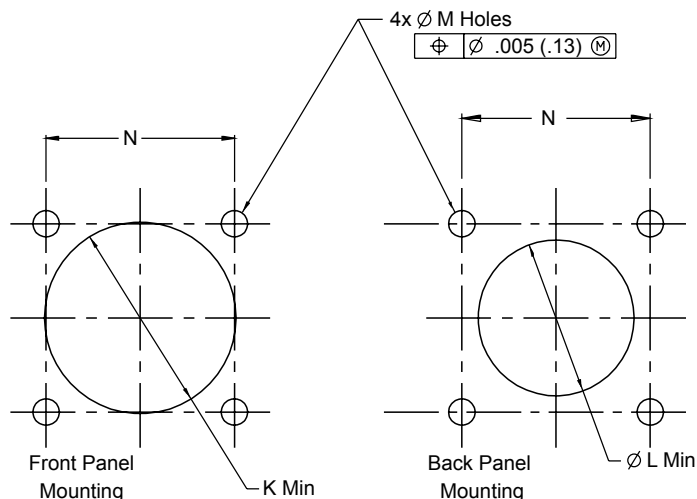
# 240-381W MIL-DTL-38999 Series I Type Filter Connector Wall Mount Receptacle



EMI/EMP  
Filters

**MIL-DTL-38999 Series I  
Square Flange Panel Cutouts**

| Shell Size Code | Shell Size | Ø K Min      | Ø L Min      | M Holes                  | N BSC        |
|-----------------|------------|--------------|--------------|--------------------------|--------------|
| A               | 09         | .656 (16.7)  | .516 (13.1)  | .133 (3.4)<br>.123 (3.1) | .719 (18.3)  |
| B               | 11         | .796 (20.2)  | .625 (15.9)  | .133 (3.4)<br>.123 (3.1) | .812 (20.6)  |
| C               | 13         | .922 (23.4)  | .750 (19.1)  | .133 (3.4)<br>.123 (3.1) | .906 (23.0)  |
| D               | 15         | 1.047 (26.6) | .906 (23.0)  | .133 (3.4)<br>.123 (3.1) | .969 (24.6)  |
| E               | 17         | 1.219 (31.0) | 1.016 (25.8) | .133 (3.4)<br>.123 (3.1) | 1.062 (27.0) |
| F               | 19         | 1.297 (32.9) | 1.141 (29.0) | .133 (3.4)<br>.123 (3.1) | 1.156 (29.4) |
| G               | 21         | 1.422 (36.1) | 1.266 (32.2) | .133 (3.4)<br>.123 (3.1) | 1.250 (31.8) |
| H               | 23         | 1.547 (39.3) | 1.375 (34.9) | .159 (4.0)<br>.149 (3.8) | 1.375 (34.9) |
| J               | 25         | 1.672 (42.5) | 1.484 (37.7) | .155 (3.9)<br>.145 (3.7) | 1.500 (38.1) |



**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.

**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                                     |
|-----|---------------|-----------------|--------------------------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                                     |
| MT  | Environmental | Aluminum        | Ni-PTFE 1000 Hour Grey™<br>Nickel Fluorocarbon Polymer |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel                   |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel                               |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel                    |

**DIMENSIONS**

| SHELL SIZE | E THREADS         | F MAX      | K<br>+ .015 (.4)<br>- .000 (0) | L MAX       | M<br>+ .000 (0)<br>- .005 (.13) | Ø P<br>+ .010 (.3)<br>- .005 (.13) | R<br>BSC     | S<br>+/- .020 (5.1) |
|------------|-------------------|------------|--------------------------------|-------------|---------------------------------|------------------------------------|--------------|---------------------|
| 9          | .6875-24 UNEF-2A  | .234 (5.9) | .085 (2.2)                     | .469 (11.9) | .820 (20.8)                     | .128 (3.3)                         | .3595 (9.1)  | .938 (23.8)         |
| 11         | .8125-20 UNEF-2A  | .234 (5.9) | .085 (2.2)                     | .469 (11.9) | .820 (20.8)                     | .128 (3.3)                         | .406 (10.3)  | 1.031 (26.2)        |
| 13         | .9375-20 UNEF-2A  | .234 (5.9) | .085 (2.2)                     | .469 (11.9) | .820 (20.8)                     | .128 (3.3)                         | .453 (11.5)  | 1.125 (28.6)        |
| 15         | 1.0625-18 UNEF-2A | .234 (5.9) | .085 (2.2)                     | .469 (11.9) | .820 (20.8)                     | .128 (3.3)                         | .4845 (12.3) | 1.219 (31.0)        |
| 17         | 1.1875-18 UNEF-2A | .234 (5.9) | .085 (2.2)                     | .469 (11.9) | .820 (20.8)                     | .128 (3.3)                         | .531 (13.5)  | 1.312 (33.3)        |
| 19         | 1.3125-18 UNEF-2A | .234 (5.9) | .085 (2.2)                     | .469 (11.9) | .820 (20.8)                     | .128 (3.3)                         | .578 (14.7)  | 1.438 (36.5)        |
| 21         | 1.4375-10 UNEF-2A | .204 (5.2) | .115 (2.9)                     | .500 (12.7) | .820 (20.8)                     | .128 (3.3)                         | .625 (15.9)  | 1.562 (39.7)        |
| 23         | 1.5625-18 UNEF-2A | .204 (5.2) | .115 (2.9)                     | .500 (12.7) | .790 (20.1)                     | .147 (3.7)                         | .6875 (17.5) | 1.688 (42.9)        |
| 25         | 1.6875-18 UNEF-2A | .193 (4.9) | .115 (2.9)                     | .500 (12.7) | .790 (20.1)                     | .147 (3.7)                         | .750 (19.1)  | 1.688 (42.9)        |

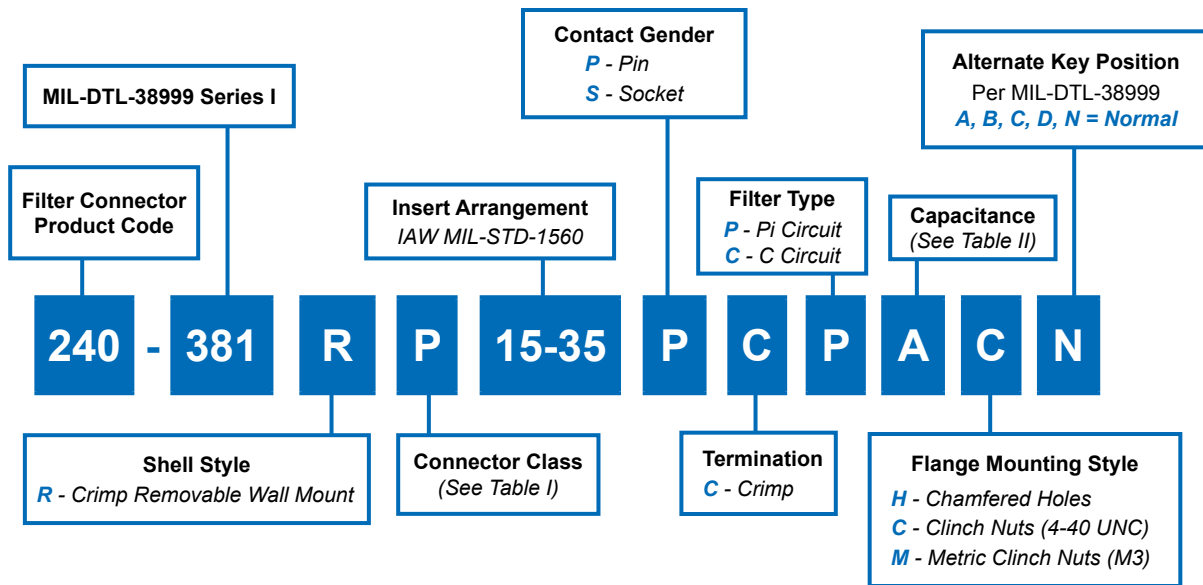


# 240-381R

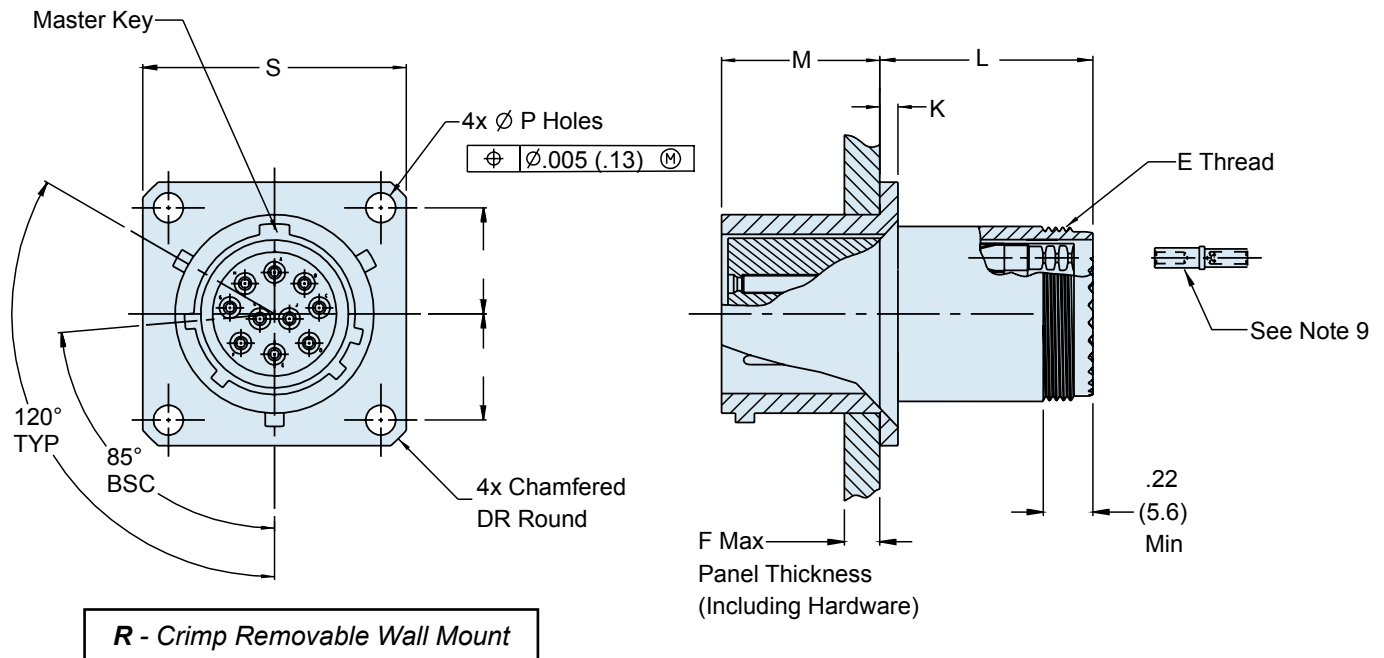
## MIL-DTL-38999 Series I Type Filter Connector

### Wall Mount Receptacle

### with Crimp Removable Socket Contacts



**NOTE:** Crimp removable socket contacts to conform to MIL-C-39029/57-358, Size 16, MIL-C-39029/57-357 Size 20, and MIL-C-39029/57-354 Size 22D (Supplied loose).



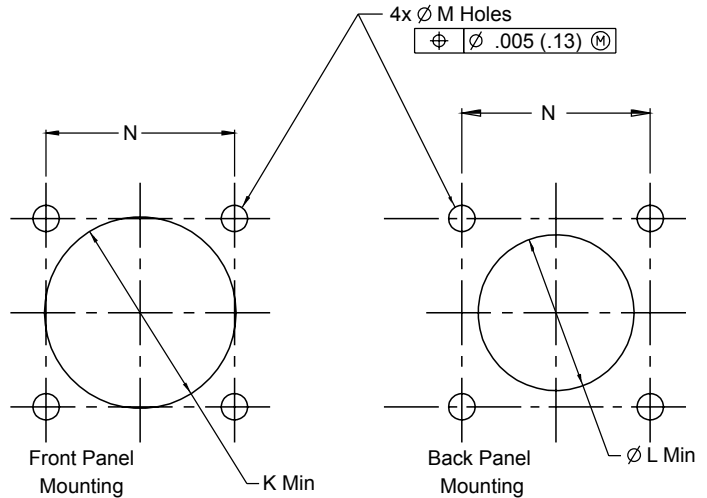
**240-381R**  
**MIL-DTL-38999 Series I Type Filter Connector**  
**Wall Mount Receptacle**  
**with Crimp Removable Socket Contacts**



EMI/EMP  
Filters

**MIL-DTL-38999 Series I**  
**Square Flange Panel Cutouts**

| Shell Size Code | Shell Size | Ø K Min      | Ø L Min      | M Holes                  | N BSC        |
|-----------------|------------|--------------|--------------|--------------------------|--------------|
| A               | 09         | .656 (16.7)  | .516 (13.1)  | .133 (3.4)<br>.123 (3.1) | .719 (18.3)  |
| B               | 11         | .796 (20.2)  | .625 (15.9)  | .133 (3.4)<br>.123 (3.1) | .812 (20.6)  |
| C               | 13         | .922 (23.4)  | .750 (19.1)  | .133 (3.4)<br>.123 (3.1) | .906 (23.0)  |
| D               | 15         | 1.047 (26.6) | .906 (23.0)  | .133 (3.4)<br>.123 (3.1) | .969 (24.6)  |
| E               | 17         | 1.219 (31.0) | 1.016 (25.8) | .133 (3.4)<br>.123 (3.1) | 1.062 (27.0) |
| F               | 19         | 1.297 (32.9) | 1.141 (29.0) | .133 (3.4)<br>.123 (3.1) | 1.156 (29.4) |
| G               | 21         | 1.422 (36.1) | 1.266 (32.2) | .133 (3.4)<br>.123 (3.1) | 1.250 (31.8) |
| H               | 23         | 1.547 (39.3) | 1.375 (34.9) | .159 (4.0)<br>.149 (3.8) | 1.375 (34.9) |
| J               | 25         | 1.672 (42.5) | 1.484 (37.7) | .155 (3.9)<br>.145 (3.7) | 1.500 (38.1) |



**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                                     |
|-----|---------------|-----------------|--------------------------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                                     |
| MT  | Environmental | Aluminum        | Ni-PTFE 1000 Hour Grey™<br>Nickel Fluorocarbon Polymer |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel                   |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel                               |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel                    |

**TABLE II: CAPACITOR ARRAY CODE**  
**CAPACITANCE RANGE**

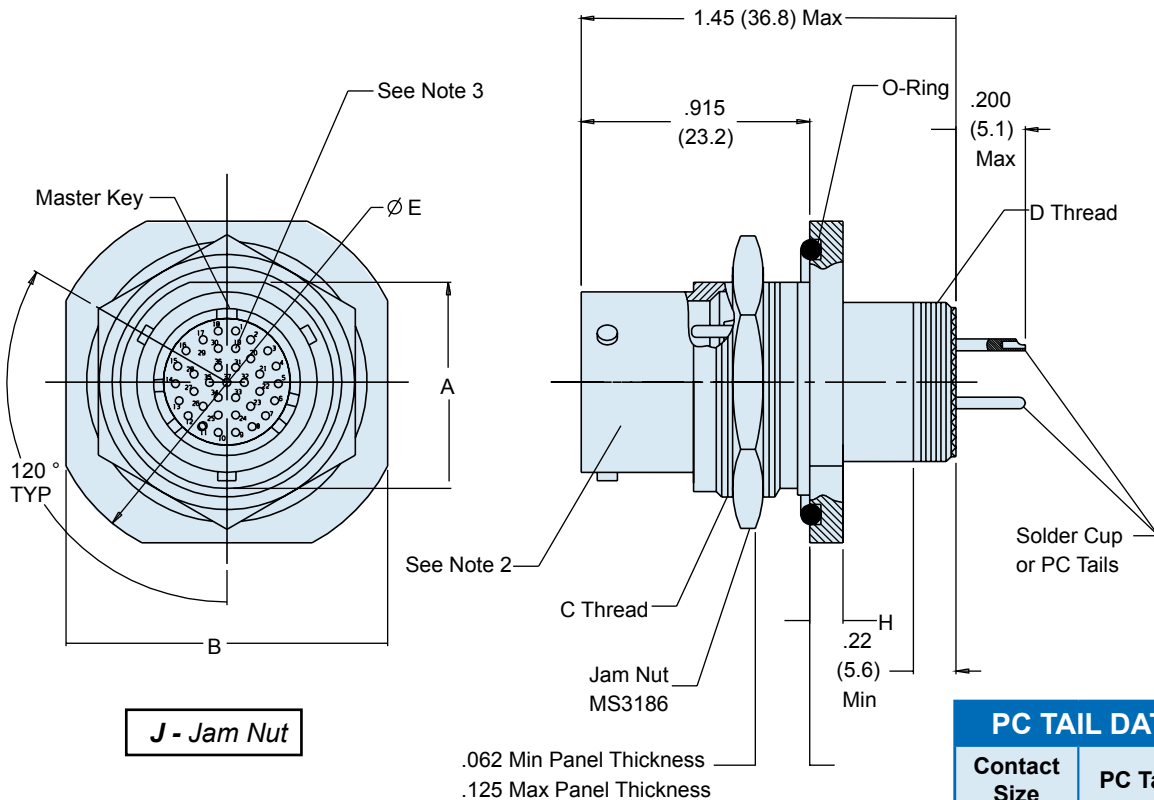
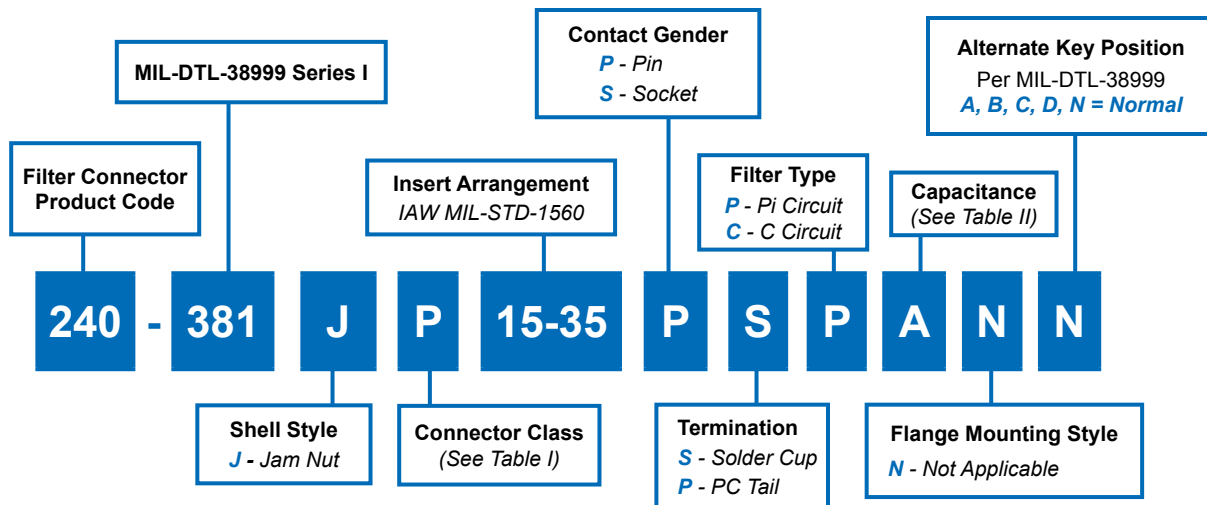
| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.

**DIMENSIONS**

| SHELL SIZE | E THREADS         | F MAX      | K<br>+ .015 (.4)<br>- .000 (0) | L MAX         | M<br>+ .000 (0)<br>- .005 (.13) | Ø P<br>+ .010 (.3)<br>- .005 (.13) | R<br>BSC     | S<br>+/- .020 (5.1) |
|------------|-------------------|------------|--------------------------------|---------------|---------------------------------|------------------------------------|--------------|---------------------|
| 9          | .6875-24 UNEF-2A  | .234 (5.9) | .085 (2.2)                     | 1.170 (29.7)  | .820 (20.8)                     | .128 (3.3)                         | .3595 (9.1)  | .938 (23.8)         |
| 11         | .8125-20 UNEF-2A  | .234 (5.9) | .085 (2.2)                     | 1.170 (29.7)  | .820 (20.8)                     | .128 (3.3)                         | .406 (10.3)  | 1.031 (26.2)        |
| 13         | .9375-20 UNEF-2A  | .234 (5.9) | .085 (2.2)                     | 1.170 (29.7)  | .820 (20.8)                     | .128 (3.3)                         | .453 (11.5)  | 1.125 (28.6)        |
| 15         | 1.0625-18 UNEF-2A | .234 (5.9) | .085 (2.2)                     | 1.170 (29.7)  | .820 (20.8)                     | .128 (3.3)                         | .4845 (12.3) | 1.219 (31.0)        |
| 17         | 1.1875-18 UNEF-2A | .234 (5.9) | .085 (2.2)                     | 1.170 (29.7)  | .820 (20.8)                     | .128 (3.3)                         | .531 (13.5)  | 1.312 (33.3)        |
| 19         | 1.3125-18 UNEF-2A | .234 (5.9) | .085 (2.2)                     | 1.170 (29.7)  | .820 (20.8)                     | .128 (3.3)                         | .578 (14.7)  | 1.438 (36.5)        |
| 21         | 1.4375-10 UNEF-2A | .204 (5.2) | .115 (2.9)                     | 1.200 (30.48) | .820 (20.8)                     | .128 (3.3)                         | .625 (15.9)  | 1.562 (39.7)        |
| 23         | 1.5625-18 UNEF-2A | .204 (5.2) | .115 (2.9)                     | 1.200 (30.48) | .790 (20.1)                     | .147 (3.7)                         | .6875 (17.5) | 1.688 (42.9)        |
| 25         | 1.6875-18 UNEF-2A | .193 (4.9) | .115 (2.9)                     | 1.200 (30.48) | .790 (20.1)                     | .147 (3.7)                         | .750 (19.1)  | 1.688 (42.9)        |

# 240-381J MIL-DTL-38999 Series I Type Filter Connector Jam Nut Receptacle



**J - Jam Nut**

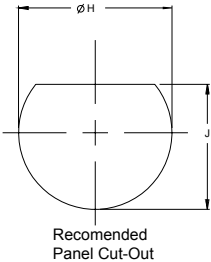
## PC TAIL DATA

| Contact Size | PC Tail Ø    |
|--------------|--------------|
| 22D          | .020<br>.018 |
| 20           | .024<br>.029 |
| 16           | .038<br>.042 |

# 240-381J MIL-DTL-38999 Series I Type Filter Connector Jam Nut Receptacle



EMI/EMP  
Filters



**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.

**MIL-DTL-38999 Series I  
Jam Nut Panel Cutout**

| SHELL<br>SIZE<br>CODE | SHELL<br>SIZE | Ø H                          | J                            |
|-----------------------|---------------|------------------------------|------------------------------|
| A                     | 09            | .710 (18.0)<br>.700 (17.8)   | .670 (17.0)<br>.660 (16.8)   |
| B                     | 11            | .835 (21.2)<br>.825 (21.0)   | .771 (19.6)<br>.761 (19.3)   |
| C                     | 13            | 1.020 (25.9)<br>1.010 (25.7) | .955 (24.3)<br>.945 (24.0)   |
| D                     | 15            | 1.145 (29.1)<br>1.135 (28.8) | 1.085 (27.6)<br>1.075 (27.3) |
| E                     | 17            | 1.270 (32.3)<br>1.260 (32.0) | 1.210 (30.7)<br>1.200 (30.5) |
| F                     | 19            | 1.395 (35.4)<br>1.385 (35.2) | 1.335 (33.9)<br>1.325 (33.7) |
| G                     | 21            | 1.520 (38.6)<br>1.510 (38.4) | 1.460 (37.1)<br>1.450 (36.8) |
| H                     | 23            | 1.645 (41.8)<br>1.635 (41.5) | 1.585 (40.3)<br>1.575 (40.0) |
| J                     | 25            | 1.770 (45.0)<br>1.760 (44.7) | 1.710 (43.4)<br>1.700 (43.2) |

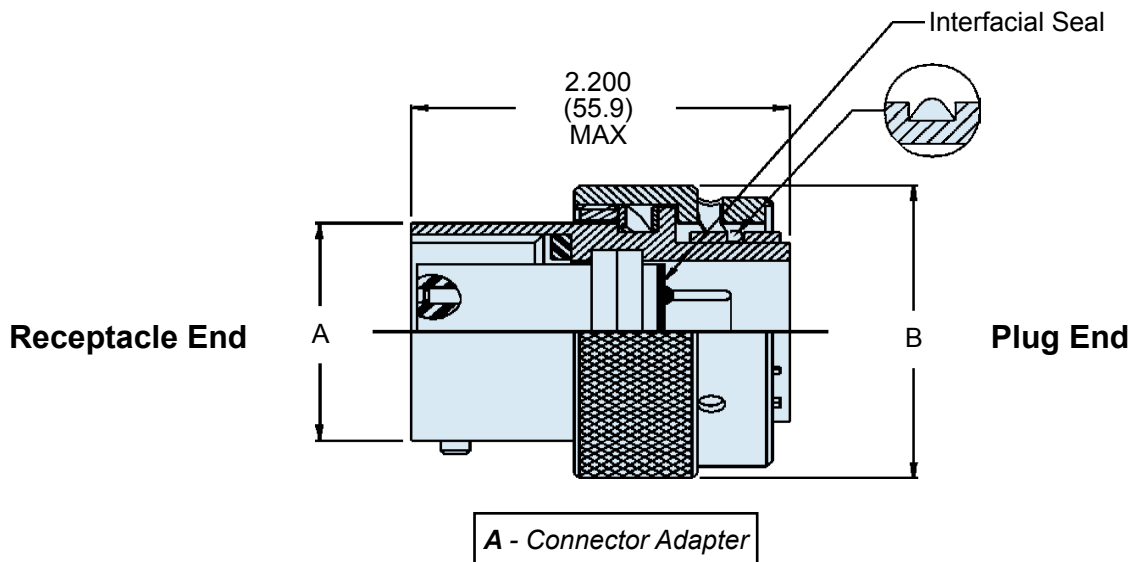
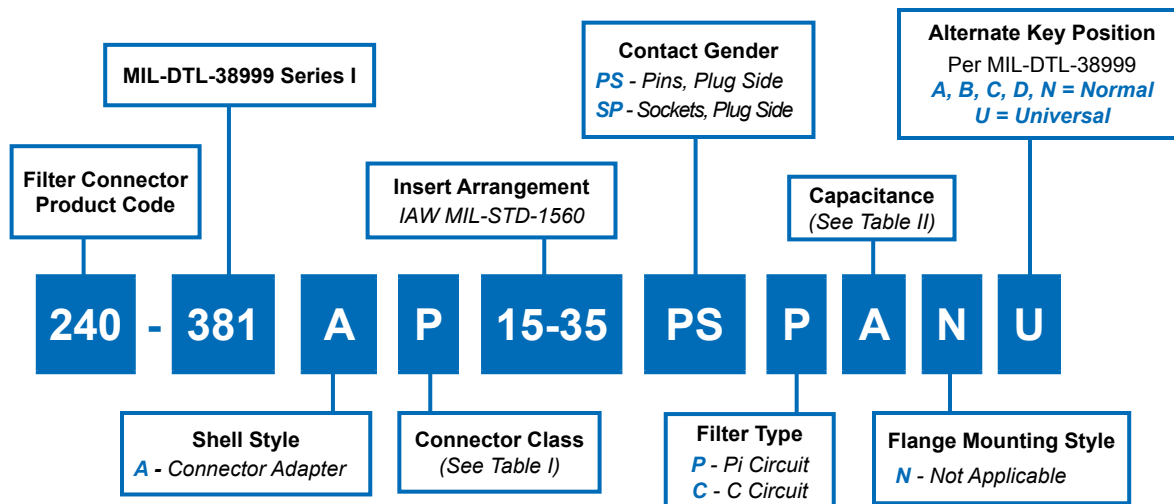
**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL           | FINISH DESCRIPTION                                     |
|-----|---------------|--------------------|--------------------------------------------------------|
| M   | Environmental | Aluminum           | Electroless Nickel                                     |
| MT  | Environmental | Aluminum           | Ni-PTFE 1000 Hour Grey™<br>Nickel Fluorocarbon Polymer |
| NF  | Environmental | Aluminum           | Cadmium O.D. Over Electroless<br>Nickel                |
| P   | Environmental | Stainless<br>Steel | Electro-Deposited Nickel                               |
| ZN  | Environmental | Aluminum           | Zinc-Nickel Over Electroless Nickel                    |

**DIMENSIONS**

| SHELL<br>SIZE | A                            | B                            | C THREAD<br>CLASS 2A<br>UNEF PLATED | D THREAD<br>CLASS 2A<br>UNEF PLATED | E<br>DIA     | F                            | G<br>DIA                     | H                        |
|---------------|------------------------------|------------------------------|-------------------------------------|-------------------------------------|--------------|------------------------------|------------------------------|--------------------------|
| 9             | .855 (21.7)<br>.645 (16.4)   | 1.078 (27.4)<br>1.046 (26.6) | .6875-24                            | .4375-28                            | 1.188 (30.2) | .670 (17.0)<br>.661 (16.8)   | .709 (18.0)<br>.700 (17.8)   | .120 (3.0)<br>.100 (2.5) |
| 11            | .755 (19.2)<br>.745 (18.9)   | 1.266 (32.2)<br>1.234 (31.3) | .8125-20                            | .5625-24                            | 1.375 (34.9) | .771 (19.6)<br>.762 (19.4)   | .834 (21.2)<br>.825 (21.0)   | .120 (3.0)<br>.100 (2.5) |
| 13            | .942 (23.9)<br>.932 (23.7)   | 1.391 (35.3)<br>1.359 (34.5) | 1.0000-20                           | .8875-24                            | 1.500 (38.1) | .955 (24.3)<br>.946 (24.0)   | 1.019 (25.9)<br>1.010 (25.7) | .120 (3.0)<br>.100 (2.5) |
| 15            | 1.066 (27.1)<br>1.056 (26.8) | 1.516 (38.5)<br>1.484 (37.7) | 1.1250-18                           | .8125-20                            | 1.625 (41.3) | 1.085 (27.6)<br>1.076 (27.3) | 1.144 (29.1)<br>1.135 (28.8) | .120 (3.0)<br>.100 (2.5) |
| 17            | 1.191 (30.3)<br>1.181 (30.0) | 1.641 (41.7)<br>1.609 (40.9) | 1.2500-18                           | .9375-20                            | 1.750 (44.5) | 1.210 (30.7)<br>1.201 (30.5) | 1.269 (32.2)<br>1.260 (32.0) | .120 (3.0)<br>.100 (2.5) |
| 19            | 1.316 (33.4)<br>1.306 (33.2) | 1.828 (46.4)<br>1.796 (45.6) | 1.3750-18                           | 1.0625-18                           | 1.938 (49.2) | 1.335 (33.9)<br>1.326 (33.7) | 1.394 (35.4)<br>1.385 (35.2) | .151 (3.8)<br>.130 (3.3) |
| 21            | 1.441 (36.6)<br>1.431 (36.3) | 1.954 (49.6)<br>1.922 (48.8) | 1.5000-18                           | 1.1875-18                           | 2.062 (52.4) | 1.460 (37.1)<br>1.451 (36.9) | 1.519 (38.6)<br>1.510 (38.4) | .151 (3.8)<br>.130 (3.3) |
| 23            | 1.566 (39.8)<br>1.556 (39.5) | 2.078 (52.8)<br>2.046 (52.0) | 1.6250-18                           | 1.3125-18                           | 2.188 (55.6) | 1.585 (40.3)<br>1.578 (40.1) | 1.644 (41.8)<br>1.635 (41.5) | .151 (3.8)<br>.130 (3.3) |
| 25            | 1.691 (43.0)<br>1.681 (42.7) | 2.204 (56.0)<br>2.172 (55.2) | 1.7500-18                           | 1.4375-18                           | 2.312 (58.7) | 1.710 (43.4)<br>1.701 (43.2) | 1.769 (44.9)<br>1.760 (44.7) | .151 (3.8)<br>.130 (3.3) |

# 240-381A MIL-DTL-38999 Series I Filter Connector Connector Adapter



\* Please consult factory for Pin/Pin and/or Socket/Socket contact arrangements.

# 240-381A MIL-DTL-38999 Series I Filter Connector Connector Adapter



EMI/EMP  
Filters

**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                                      |
|-----|---------------|-----------------|---------------------------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                                      |
| MT  | Environmental | Aluminum        | Ni-PTFE 1000 Hour Grey™<br>Nickel Fluorocarbon Polymer) |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel                    |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel                                |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel                     |

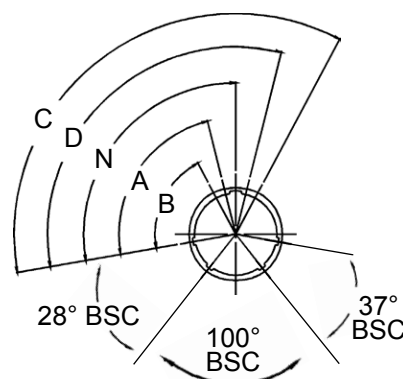
**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.

**SHELL DIAMETER**

| Shell Size | A Max        | B Max        |
|------------|--------------|--------------|
| 09         | .573 (14.6)  | .910 (23.1)  |
| 11         | .701 (17.8)  | 1.035 (26.3) |
| 13         | .851 (21.6)  | 1.210 (30.7) |
| 15         | .976 (24.8)  | 1.330 (33.8) |
| 17         | 1.101 (28.0) | 1.455 (37.0) |
| 19         | 1.208 (30.7) | 1.570 (39.9) |
| 21         | 1.333 (33.9) | 1.695 (43.1) |
| 23         | 1.458 (37.0) | 1.800 (45.7) |
| 25         | 1.583 (40.2) | 1.925 (48.9) |



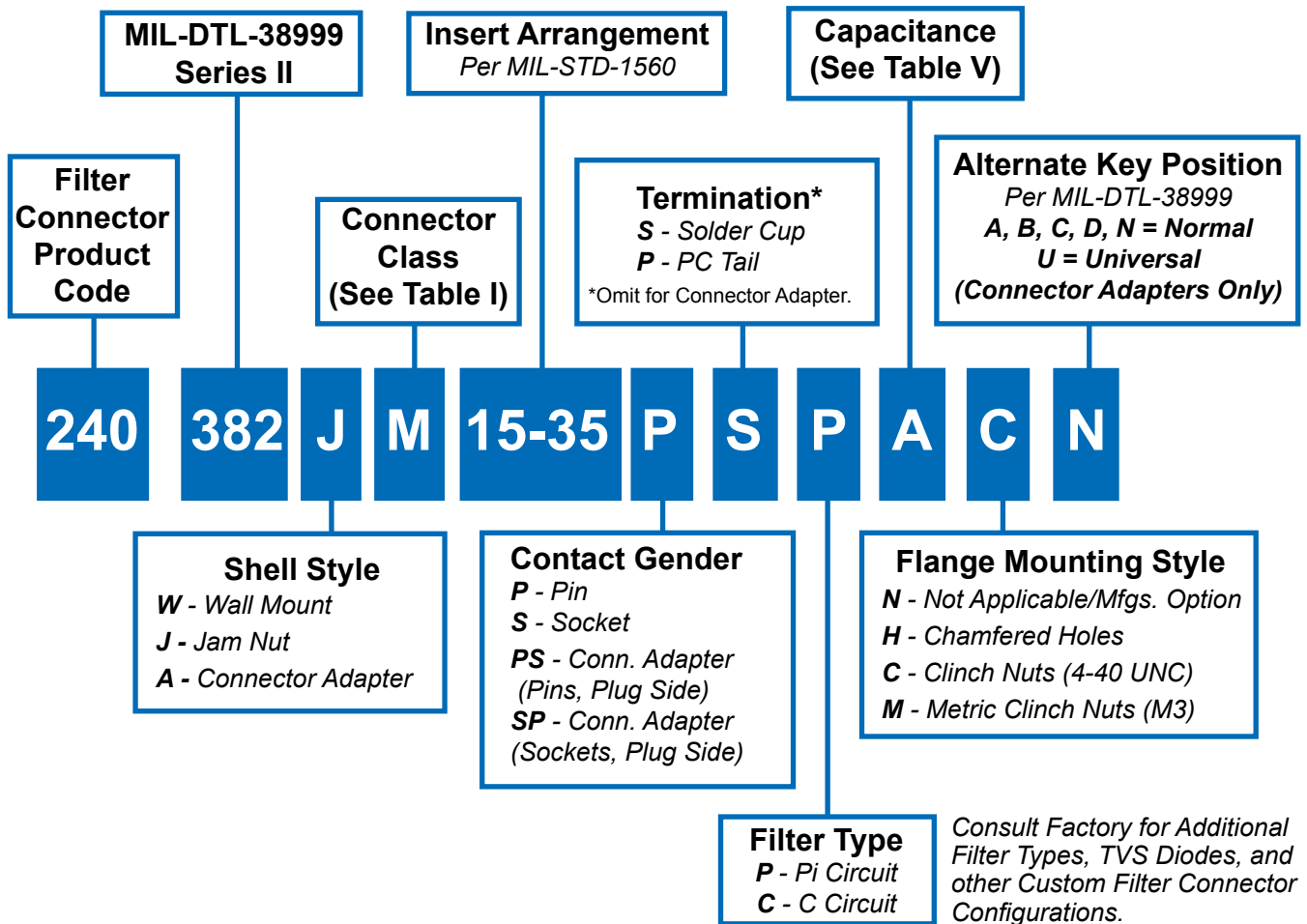
**MASTER KEY POSITION**

| NORMAL | A°  | B°  | C°   | D°   |
|--------|-----|-----|------|------|
| 100°   | 79° | 66° | 134° | 121° |



# Glenair MIL-DTL-38999 Series II Type Low-Profile Filter Connector with Bayonet Coupling

Master How to Order • Part Number Breakdown



**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                                     |
|-----|---------------|-----------------|--------------------------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                                     |
| MT  | Environmental | Aluminum        | Ni-PTFE 1000 Hour Grey™<br>Nickel Fluorocarbon Polymer |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel                   |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel                               |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel                    |
| H2  | Hermetic      | Stainless Steel | Electroless Nickel                                     |

**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

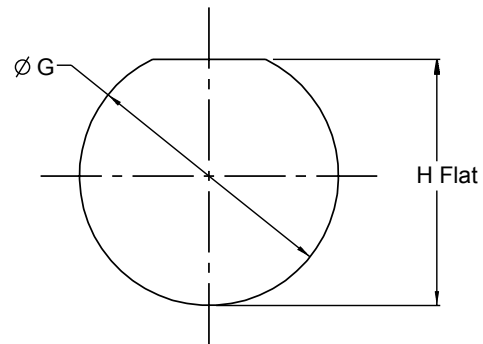
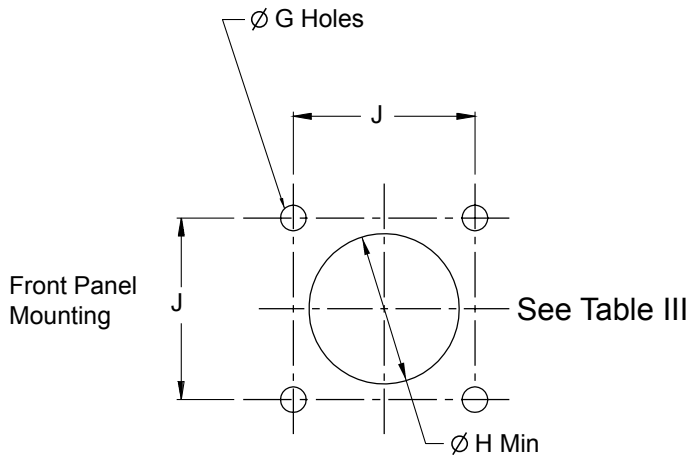
| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV - Please consult factory.

# Glenair MIL-DTL-38999 Series II Type Low-Profile Filter Connector with Bayonet Coupling Reference Information



EMI/EMP  
Filters



**TABLE III: SQUARE FLANGE  
PANEL CUT-OUTS**

| Shell Size | Ø G Holes  | Ø H Min | Ø J BSC |
|------------|------------|---------|---------|
| 8          | .133 (3.4) | .570    | .594    |
|            | .123 (3.1) | (14.5)  | (15.1)  |
| 10         | .133 (3.4) | .690    | .719    |
|            | .123 (3.1) | (17.5)  | (18.3)  |
| 12         | .133 (3.4) | .820    | .812    |
|            | .123 (3.1) | (20.8)  | (20.6)  |
| 14         | .133 (3.4) | .940    | .906    |
|            | .123 (3.1) | (23.9)  | (23.0)  |
| 16         | .133 (3.4) | 1.070   | .969    |
|            | .123 (3.1) | (27.2)  | (24.6)  |
| 18         | .133 (3.4) | 1.190   | 1.062   |
|            | .123 (3.1) | (30.2)  | (27.0)  |
| 20         | .133 (3.4) | 1.320   | 1.156   |
|            | .123 (3.1) | (33.5)  | (29.4)  |
| 22         | .159 (4.0) | 1.440   | 1.250   |
|            | .149 (3.8) | (36.6)  | (31.8)  |
| 24         | .159 (4.0) | 1.570   | 1.375   |
|            | .149 (3.8) | (39.9)  | (34.9)  |

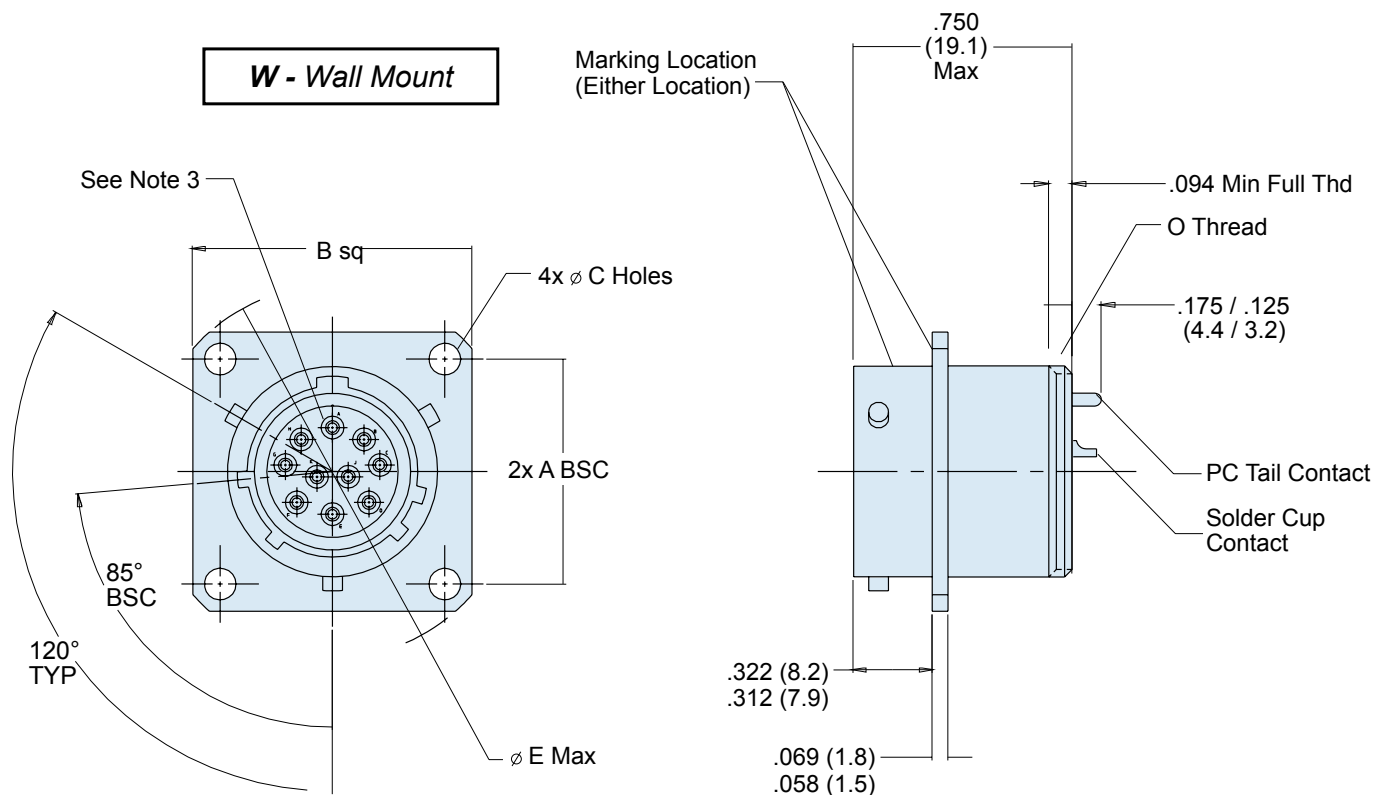
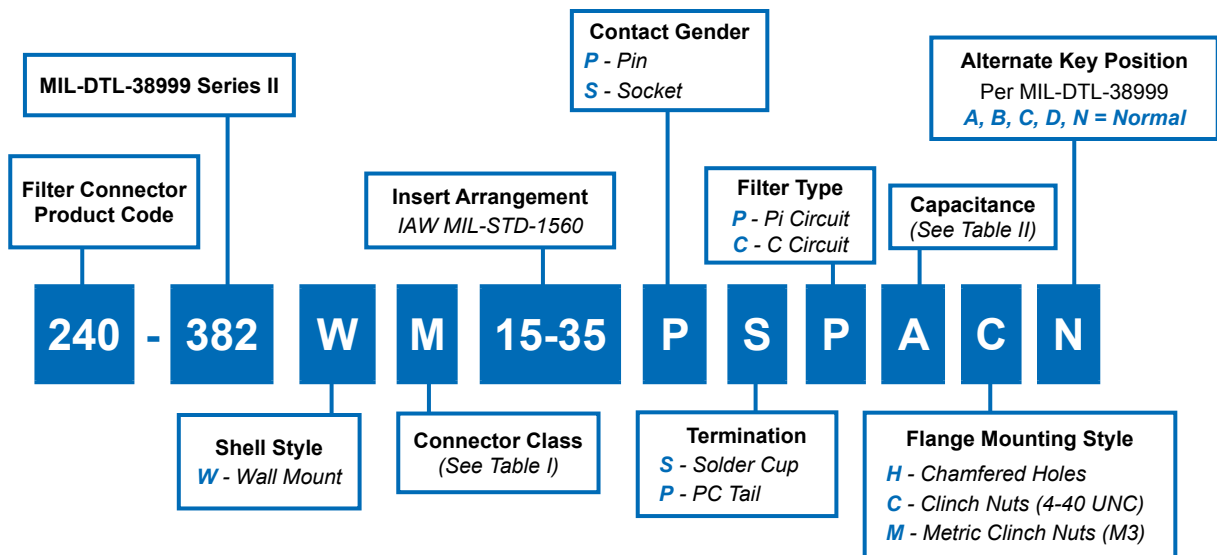
**PANEL IV: JAM-NUT  
PANEL CUT-OUTS**

| SHELL SIZE | Ø G          | H Flat       |
|------------|--------------|--------------|
| 08         | .894 (22.7)  | .833 (21.2)  |
|            | .884 (22.5)  | .823 (20.9)  |
| 10         | 1.020 (25.9) | .957 (24.3)  |
|            | 1.010 (25.7) | .947 (24.1)  |
| 12         | 1.144 (29.1) | 1.081 (27.5) |
|            | 1.134 (28.8) | 1.071 (27.2) |
| 14         | 1.269 (32.2) | 1.206 (30.6) |
|            | 1.259 (32.0) | 1.196 (30.4) |
| 16         | 1.394 (35.4) | 1.336 (33.9) |
|            | 1.384 (35.2) | 1.326 (33.7) |
| 18         | 1.520 (38.6) | 1.456 (37.0) |
|            | 1.510 (38.4) | 1.446 (36.7) |
| 20         | 1.645 (41.8) | 1.581 (40.2) |
|            | 1.635 (41.5) | 1.571 (39.9) |
| 22         | 1.750 (44.5) | 1.706 (43.3) |
|            | 1.740 (44.2) | 1.696 (43.1) |
| 24         | 1.895 (48.1) | 1.831 (46.5) |
|            | 1.885 (47.9) | 1.821 (46.3) |

## APPLICATION NOTES

- Materials/Finishes: Shells, Barrel, Coupling Nut, Jam Nut - See Table I  
Insulators - high grade rigid dielectric/N.A.  
Seals - Fluorosilicone  
PC Tail & Solder Cup contacts: 50µ" Gold over 50µ" Nickel
- Assembly to be identified with Glenair's name, part number, and date code - space permitting.
- Insert Arrangement in accordance with MIL-STD-1560.  
(Arrangement shown for reference only)
- EMI Circular Filter Receptacle connector designed to meet requirements of MIL-STD-2120 and MIL-DTL-38999, Series II.
- All contacts to have identical filter value. Other filter arrangements available, contact factory.
- Electrical Ratings: DWW- 500 VDC; Standard Operating Voltage 200 Volts DC; Current Rating 5 Amps (size 22);
- Insulation Resistance: 5000 MegOhms Min. at 200 VDC.
- Operating Temperature -55°C to +125°C (Env Class Connectors)
- Other filter styles (C-L, L-C, Unbalanced PI, Multi-Stage, Multi-Value) are available, please consult the factory.
- Metric Dimensions (mm) are indicated in parentheses.

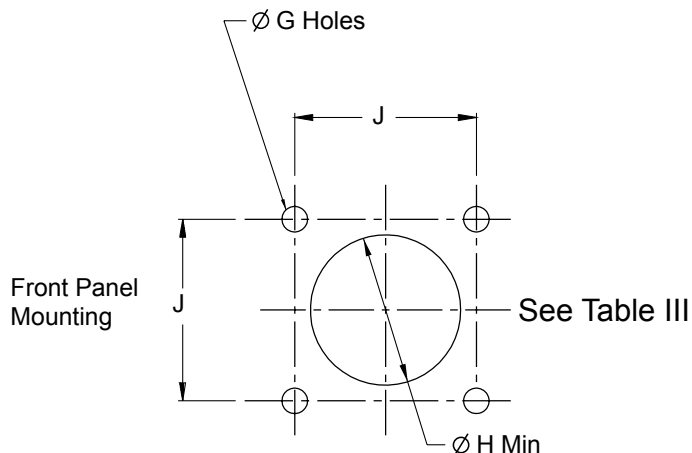
# 240-382W MIL-DTL-38999 Series II Filter Connector Wall Mount Receptacle



**240-382W**  
**MIL-DTL-38999 Series II Filter Connector**  
**Wall Mount Receptacle**



EMI/EMP  
Filters



**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                                     |
|-----|---------------|-----------------|--------------------------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                                     |
| MT  | Environmental | Aluminum        | Ni-PTFE 1000 Hour Grey™<br>Nickel Fluorocarbon Polymer |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel                   |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel                               |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel                    |

**TABLE II: CAPACITOR ARRAY CODE CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.

*Consult Factory for Additional Filter Types, TVS Diodes, and other Custom Filter Connector Configurations.*

**TABLE III: SQUARE FLANGE PANEL CUT-OUTS**

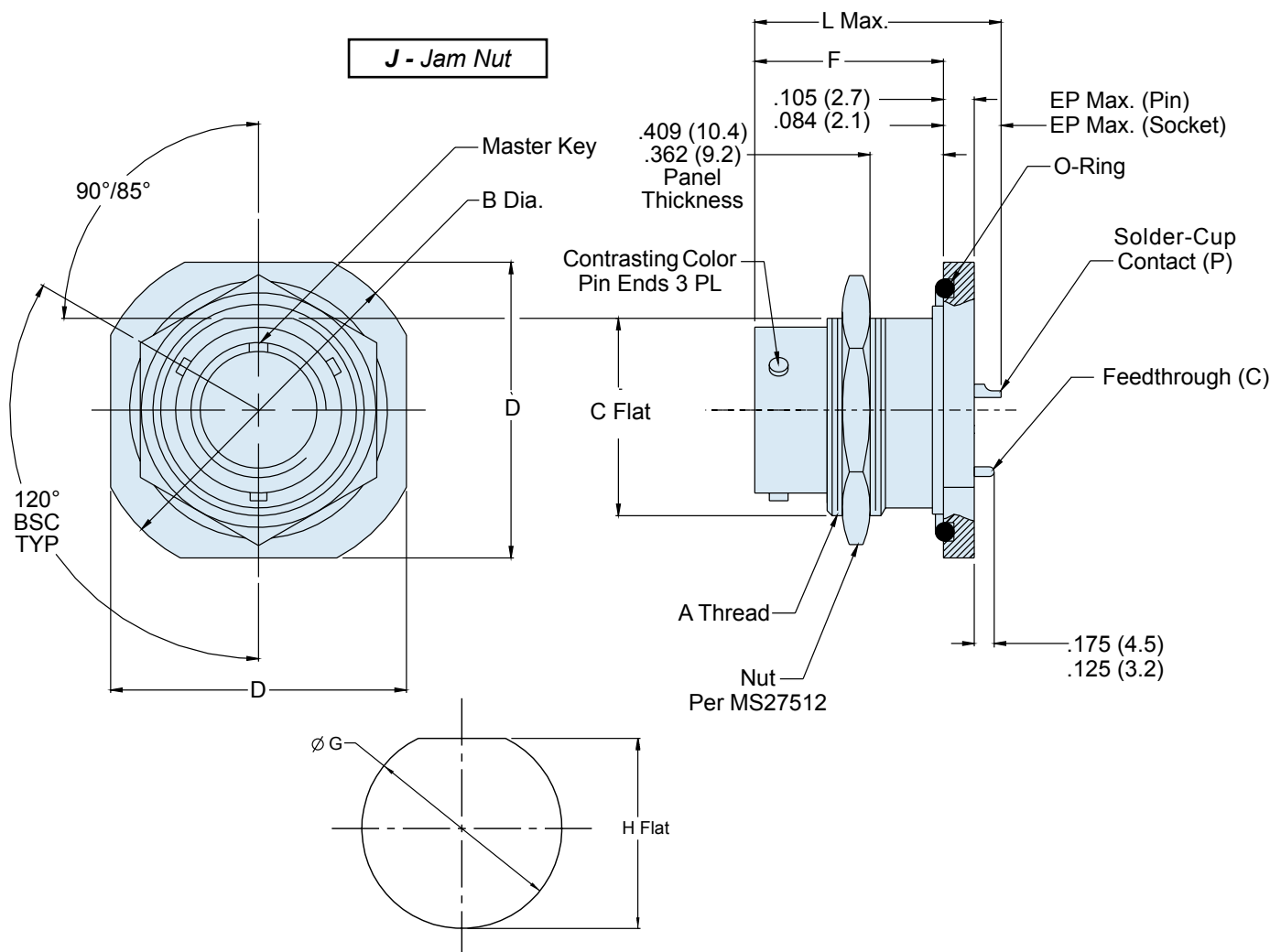
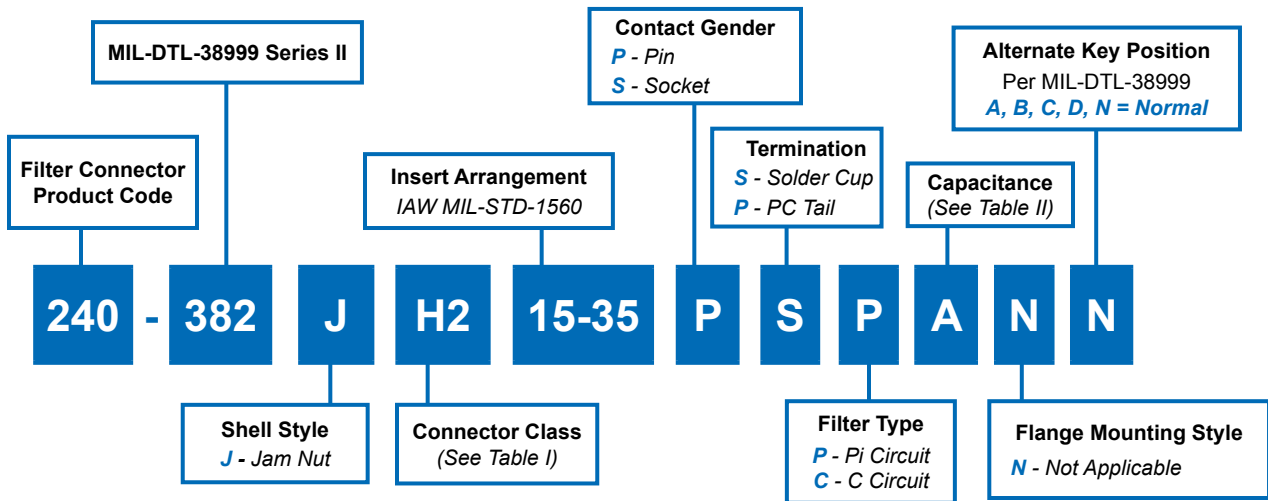
| Shell Size | Ø G Holes  | Ø H Min | Ø J BSC |
|------------|------------|---------|---------|
| <b>8</b>   | .133 (3.4) | .570    | .594    |
|            | .123 (3.1) | (14.5)  | (15.1)  |
| <b>10</b>  | .133 (3.4) | .690    | .719    |
|            | .123 (3.1) | (17.5)  | (18.3)  |
| <b>12</b>  | .133 (3.4) | .820    | .812    |
|            | .123 (3.1) | (20.8)  | (20.6)  |
| <b>14</b>  | .133 (3.4) | .940    | .906    |
|            | .123 (3.1) | (23.9)  | (23.0)  |
| <b>16</b>  | .133 (3.4) | 1.070   | .969    |
|            | .123 (3.1) | (27.2)  | (24.6)  |
| <b>18</b>  | .133 (3.4) | 1.190   | 1.062   |
|            | .123 (3.1) | (30.2)  | (27.0)  |
| <b>20</b>  | .133 (3.4) | 1.320   | 1.156   |
|            | .123 (3.1) | (33.5)  | (29.4)  |
| <b>22</b>  | .159 (4.0) | 1.440   | 1.250   |
|            | .149 (3.8) | (36.6)  | (31.8)  |
| <b>24</b>  | .159 (4.0) | 1.570   | 1.375   |
|            | .149 (3.8) | (39.9)  | (34.9)  |

**TABLE IV: CONNECTOR DIMENSIONS**

| Shell Size | A BSC        | B SQ Max     | Ø C Holes                | D Threads         | Ø E Max      |
|------------|--------------|--------------|--------------------------|-------------------|--------------|
| <b>8</b>   | 0.594 (15.1) | 0.828 (21.0) | .130 (3.3)<br>.115 (2.9) | .5625-24 UNEF-2A  | 1.078 (27.4) |
|            |              |              |                          |                   |              |
| <b>10</b>  | 0.719 (18.3) | 0.954 (24.2) | .130 (3.3)<br>.115 (2.9) | .6875-24 UNEF-2A  | 1.256 (31.9) |
|            |              |              |                          |                   |              |
| <b>12</b>  | 0.812 (20.6) | 1.047 (26.6) | .130 (3.3)<br>.115 (2.9) | .8125-20 UNEF-2A  | 1.391 (35.3) |
|            |              |              |                          |                   |              |
| <b>14</b>  | 0.906 (23.0) | 1.141 (29.0) | .130 (3.3)<br>.115 (2.9) | .9375-20 UNEF-2A  | 1.516 (38.5) |
|            |              |              |                          |                   |              |
| <b>16</b>  | 0.969 (24.6) | 1.234 (31.3) | .130 (3.3)<br>.115 (2.9) | 1.0625-18 UNEF-2A | 1.641 (41.7) |
|            |              |              |                          |                   |              |
| <b>18</b>  | 1.062 (27.0) | 1.328 (33.7) | .130 (3.3)<br>.115 (2.9) | 1.1875-18 UNEF-2A | 1.766 (44.9) |
|            |              |              |                          |                   |              |
| <b>20</b>  | 1.156 (29.4) | 1.453 (36.9) | .130 (3.3)<br>.115 (2.9) | 1.3125-18 UNEF-2A | 1.891 (48.0) |
|            |              |              |                          |                   |              |
| <b>22</b>  | 1.25 (31.8)  | 1.578 (40.1) | .130 (3.3)<br>.115 (2.9) | 1.4375-10 UNEF-2A | 2.016 (51.2) |
|            |              |              |                          |                   |              |
| <b>24</b>  | 1.375 (34.9) | 1.703 (43.3) | .157 (4.0)<br>.142 (3.6) | 1.5625-18 UNEF-2A | 2.204 (56.0) |
|            |              |              |                          |                   |              |



# 240-382J (Hermetic Version Shown) MIL-DTL-38999 Series II Filter Connector Jam Nut Receptacle



# 240-382J (Hermetic Version Shown) MIL-DTL-38999 Series II Filter Connector Jam Nut Receptacle



EMI/EMP  
Filters

**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                                     |
|-----|---------------|-----------------|--------------------------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                                     |
| MT  | Environmental | Aluminum        | Ni-PTFE 1000 Hour Grey™<br>Nickel Fluorocarbon Polymer |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel                   |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel                               |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel                    |
| H2  | Hermetic      | Stainless Steel | Electroless Nickel                                     |

**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

*Consult Factory  
for Additional  
Filter Types,  
TVS Diodes,  
and other  
Custom Filter  
Connector  
Configurations.*

**PANEL IV: JAM-NUT  
PANEL CUT-OUTS**

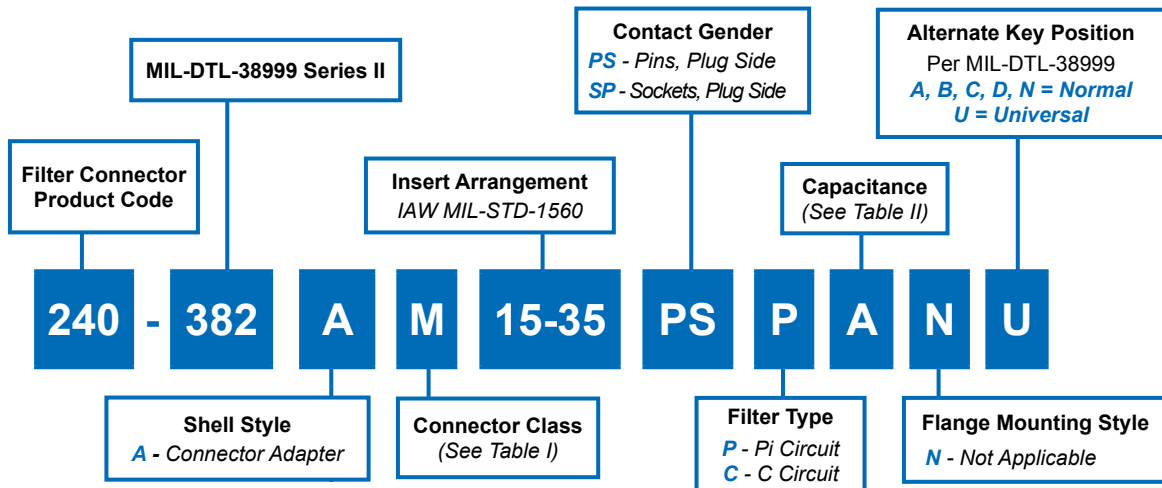
| SHELL<br>SIZE | Ø G                          | H Flat                       |
|---------------|------------------------------|------------------------------|
| 08            | .894 (22.7)<br>.884 (22.5)   | .833 (21.2)<br>.823 (20.9)   |
| 10            | 1.020 (25.9)<br>1.010 (25.7) | .957 (24.3)<br>.947 (24.1)   |
| 12            | 1.144 (29.1)<br>1.134 (28.8) | 1.081 (27.5)<br>1.071 (27.2) |
| 14            | 1.269 (32.2)<br>1.259 (32.0) | 1.206 (30.6)<br>1.196 (30.4) |
| 16            | 1.394 (35.4)<br>1.384 (35.2) | 1.336 (33.9)<br>1.326 (33.7) |
| 18            | 1.520 (38.6)<br>1.510 (38.4) | 1.456 (37.0)<br>1.446 (36.7) |
| 20            | 1.645 (41.8)<br>1.635 (41.5) | 1.581 (40.2)<br>1.571 (39.9) |
| 22            | 1.750 (44.5)<br>1.740 (44.2) | 1.706 (43.3)<br>1.696 (43.1) |
| 24            | 1.895 (48.1)<br>1.885 (47.9) | 1.831 (46.5)<br>1.821 (46.3) |

\* Reduced DWV – Please consult factory.

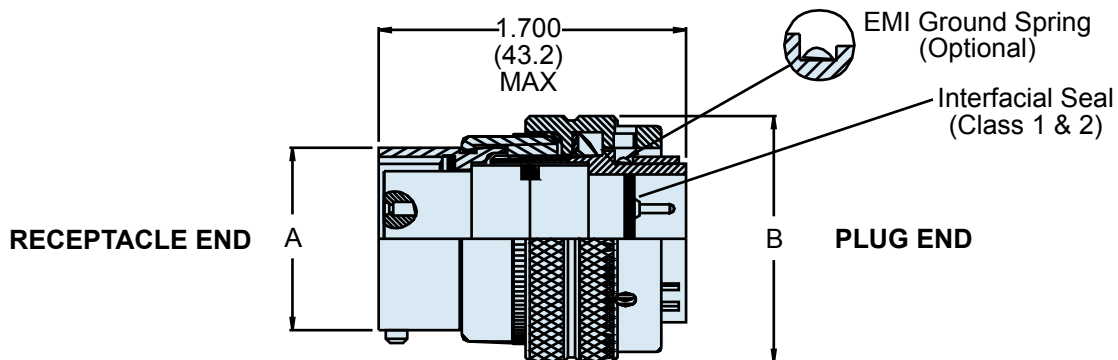
**TABLE III**

| SHELL<br>SIZE | A THREAD<br>.1P- .03L-TS | B DIA.                       | C FLAT                       | D A/F                        | EP MAX.    | ES MAX.    | F                          | G DIA.                       | H                            | L MAX.          |
|---------------|--------------------------|------------------------------|------------------------------|------------------------------|------------|------------|----------------------------|------------------------------|------------------------------|-----------------|
| 08            | .875-20 UNEF             | 1.391 (35.3)<br>1.359 (34.5) | .818 (20.8)<br>.811 (20.6)   | 1.266 (32.2)<br>1.234 (31.3) | .281 (7.1) | .359 (9.1) | .743 (18.9)<br>.733 (18.6) | .894 (22.7)<br>.884 (22.5)   | .833 (21.2)<br>.823 (20.9)   | 1.024<br>(26.0) |
| 10            | 1.000-20 UNEF            | 1.516 (38.5)<br>1.484 (37.7) | .942 (23.9)<br>.935 (23.7)   | 1.391 (35.3)<br>1.359 (34.5) | .281 (7.1) | .359 (9.1) | .743 (18.9)<br>.733 (18.6) | 1.020 (25.9)<br>1.010 (25.7) | .957 (24.3)<br>.947 (24.1)   | 1.024<br>(26.0) |
| 12            | 1.125-18 UNEF            | 1.641 (41.7)<br>1.609 (40.9) | 1.066 (27.1)<br>1.059 (26.9) | 1.516 (38.5)<br>1.484 (37.7) | .281 (7.1) | .359 (9.1) | .743 (18.9)<br>.733 (18.6) | 1.144 (29.1)<br>1.134 (28.8) | 1.081 (27.5)<br>1.071 (27.2) | 1.024<br>(26.0) |
| 14            | 1.250-18 UNEF            | 1.766 (44.9)<br>1.734 (44.0) | 1.191 (30.3)<br>1.184 (30.1) | 1.641 (41.7)<br>1.609 (40.9) | .281 (7.1) | .359 (9.1) | .743 (18.9)<br>.733 (18.6) | 1.269 (32.2)<br>1.259 (32.0) | 1.206 (30.6)<br>1.196 (30.4) | 1.024<br>(26.0) |
| 16            | 1.375-18 UNEF            | 1.954 (49.6)<br>1.922 (48.8) | 1.321 (33.6)<br>1.314 (33.4) | 1.797 (45.6)<br>1.765 (44.8) | .281 (7.1) | .359 (9.1) | .743 (18.9)<br>.733 (18.6) | 1.394 (35.4)<br>1.384 (35.2) | 1.336 (33.9)<br>1.326 (33.7) | 1.024<br>(26.0) |
| 18            | 1.500-18 UNEF            | 2.032 (51.6)<br>2.000 (50.8) | 1.441 (36.6)<br>1.434 (36.4) | 1.906 (48.4)<br>1.874 (47.6) | .281 (7.1) | .359 (9.1) | .743 (18.9)<br>.733 (18.6) | 1.520 (38.6)<br>1.510 (38.4) | 1.456 (37.0)<br>1.446 (36.7) | 1.024<br>(26.0) |
| 20            | 1.625-18 UNEF            | 2.157 (54.8)<br>2.125 (54.0) | 1.566 (39.8)<br>1.559 (39.6) | 2.032 (51.6)<br>2.000 (50.8) | .250 (6.4) | .344 (8.7) | .769 (19.5)<br>.759 (19.3) | 1.645 (41.8)<br>1.635 (41.5) | 1.581 (40.2)<br>1.571 (39.9) | 1.019<br>(25.9) |
| 22            | 1.750-18 UNS             | 2.281 (57.9)<br>2.249 (57.1) | 1.691 (43.0)<br>1.684 (42.8) | 2.156 (54.8)<br>2.124 (53.9) | .250 (6.4) | .344 (8.7) | .769 (19.5)<br>.759 (19.3) | 1.750 (44.5)<br>1.740 (44.2) | 1.706 (43.3)<br>1.696 (43.1) | 1.019<br>(25.9) |
| 24            | 1.875-16 UN              | 2.406 (61.1)<br>2.374 (60.3) | 1.816 (46.1)<br>1.809 (45.9) | 2.281 (57.9)<br>2.249 (57.1) | .250 (6.4) | .344 (8.7) | .769 (19.5)<br>.759 (19.3) | 1.895 (48.1)<br>1.885 (47.9) | 1.831 (46.5)<br>1.821 (46.3) | 1.019<br>(25.9) |

\*Some dimensions do not apply. Consult factory



**A - Connector Adapter**

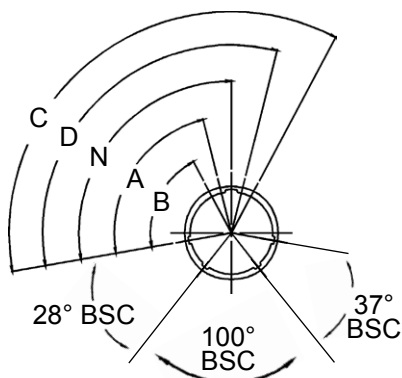


\* Please consult factory for Pin/Pin and/or Socket/Socket contact arrangements.

**240-382A**  
**MIL-DTL-38999 Series II Filter Connector**  
**Connector Adapter**



EMI/EMP  
Filters



**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                                     |
|-----|---------------|-----------------|--------------------------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                                     |
| MT  | Environmental | Aluminum        | Ni-PTFE 1000 Hour Grey™<br>Nickel Fluorocarbon Polymer |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel                   |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel                               |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel                    |

**SHELL DIAMETER**

| Shell Size | A Max        | B Max        |
|------------|--------------|--------------|
| 08         | .474 (12.0)  | .750 (19.1)  |
| 10         | .591 (15.0)  | .859 (21.8)  |
| 12         | .751 (19.1)  | 1.031 (26.2) |
| 14         | .875 (22.2)  | 1.156 (29.4) |
| 16         | 1.001 (25.4) | 1.281 (32.5) |
| 18         | 1.126 (28.6) | 1.391 (35.3) |
| 20         | 1.251 (31.8) | 1.531 (38.9) |
| 22         | 1.376 (35.0) | 1.656 (42.1) |
| 24         | 1.501 (38.1) | 1.777 (45.1) |

**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

*Consult Factory for  
Additional Filter Types,  
TVS Diodes, and other  
Custom Filter Connector  
Configurations.*

**MASTER KEY POSITION**

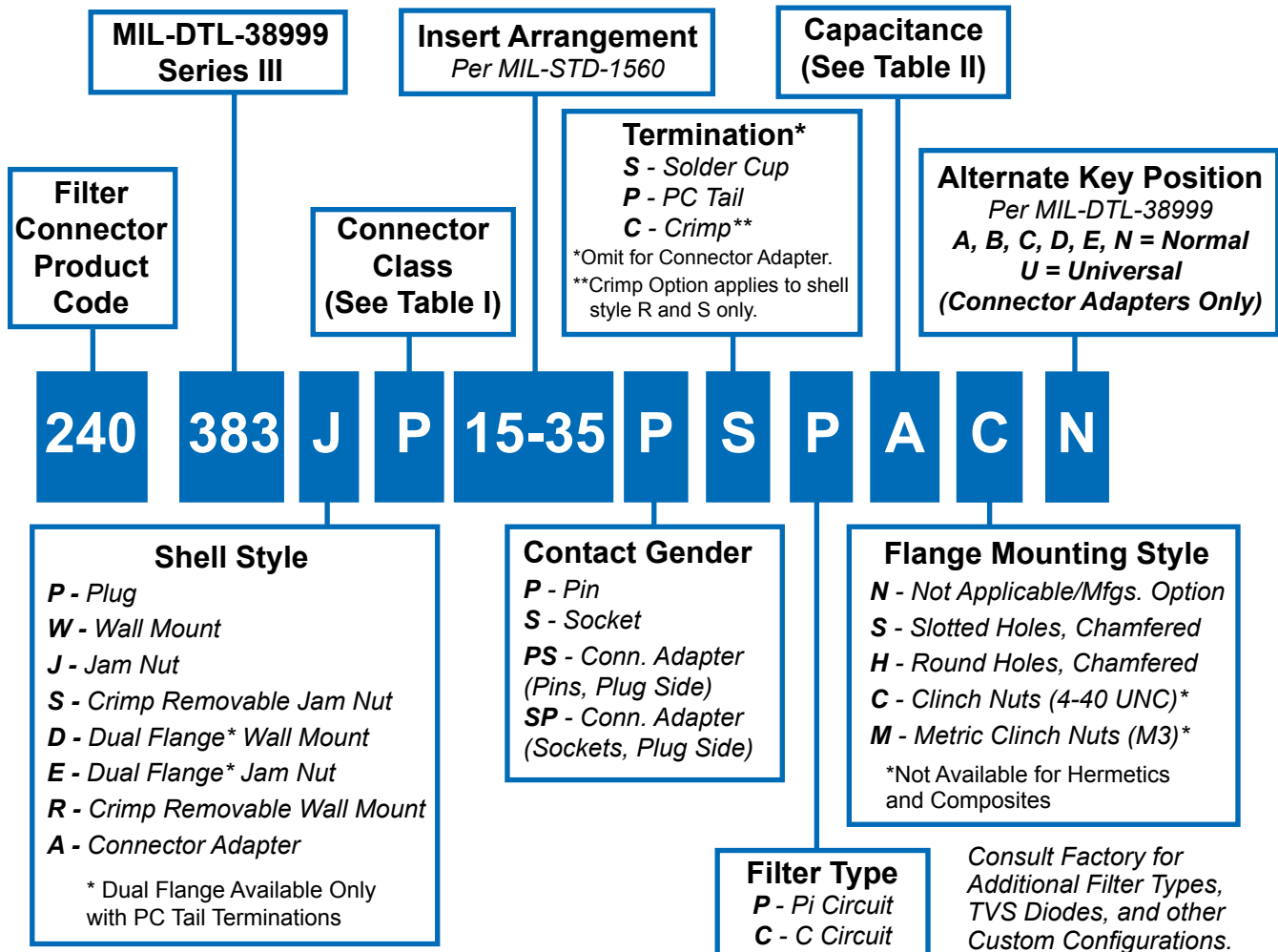
| NORMAL | A°  | B°  | C°   | D°   |
|--------|-----|-----|------|------|
| 100°   | 79° | 66° | 134° | 121° |

\* Reduced DWV – Please consult factory.



# Glenair MIL-DTL-38999 Series III Type Filter Connector with Threaded Coupling

Master How to Order • Part Number Breakdown



**TABLE II: CAPACITOR ARRAY CODE CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV - Please consult factory.

**TABLE I: CONNECTOR CLASS**

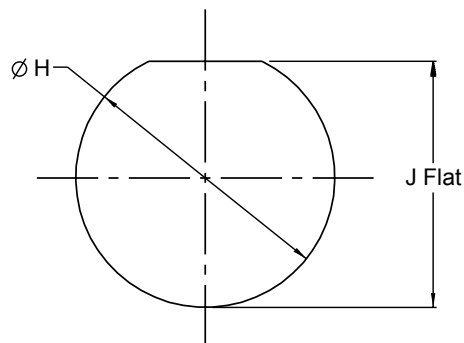
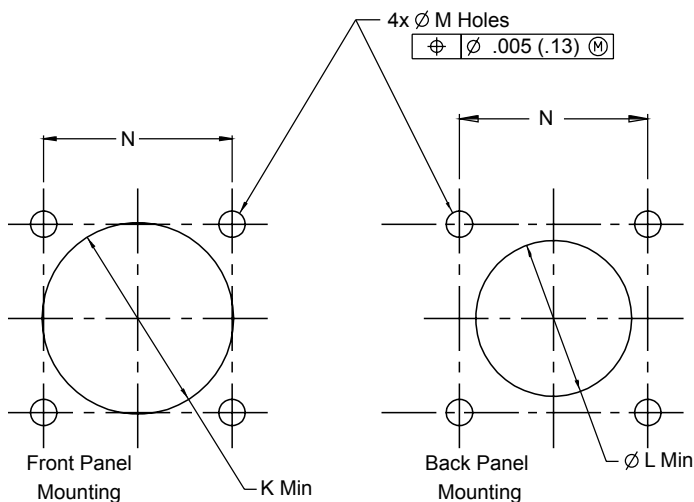
| SYM | CLASS         | MATERIAL  | FINISH DESCRIPTION                    |
|-----|---------------|-----------|---------------------------------------|
| M   | Environmental | Aluminum  | Electroless Nickel                    |
| MT  | Environmental | Aluminum  | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum  | Cad. O.D. Over Electroless Nickel     |
| P   | Environmental | Stainless | Electro-Deposited Nickel              |
| XM  | Environmental | Composite | Electroless Nickel                    |
| XMT | Environmental | Composite | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| XW  | Environmental | Composite | Cad. O.D. Over Electroless Nickel     |
| ZN  | Environmental | Aluminum  | Zinc-Nickel Over Electroless Nickel   |
| H2* | Hermetic      | Stainless | Electroless Nickel                    |

\* Some dimensions do not apply, see sales drawing 240-383JH2

# Glenair MIL-DTL-38999 Series III Type Filter Connector with Threaded Coupling Reference Information



EMI/EMP  
Filters



| MIL-DTL-38999 Series III<br>Square Flange Panel Cutouts |               |              |              |                          |              |
|---------------------------------------------------------|---------------|--------------|--------------|--------------------------|--------------|
| Shell<br>Size<br>Code                                   | Shell<br>Size | Ø K Min      | Ø L Min      | M Holes                  | N BSC        |
| A                                                       | 09            | .656 (16.7)  | .516 (13.1)  | .133 (3.4)<br>.123 (3.1) | .719 (18.3)  |
| B                                                       | 11            | .796 (20.2)  | .625 (15.9)  | .133 (3.4)<br>.123 (3.1) | .812 (20.6)  |
| C                                                       | 13            | .922 (23.4)  | .750 (19.1)  | .133 (3.4)<br>.123 (3.1) | .906 (23.0)  |
| D                                                       | 15            | 1.047 (26.6) | .906 (23.0)  | .133 (3.4)<br>.123 (3.1) | .969 (24.6)  |
| E                                                       | 17            | 1.219 (31.0) | 1.016 (25.8) | .133 (3.4)<br>.123 (3.1) | 1.062 (27.0) |
| F                                                       | 19            | 1.297 (32.9) | 1.141 (29.0) | .133 (3.4)<br>.123 (3.1) | 1.156 (29.4) |
| G                                                       | 21            | 1.422 (36.1) | 1.266 (32.2) | .133 (3.4)<br>.123 (3.1) | 1.250 (31.8) |
| H                                                       | 23            | 1.547 (39.3) | 1.375 (34.9) | .159 (4.0)<br>.149 (3.8) | 1.375 (34.9) |
| J                                                       | 25            | 1.672 (42.5) | 1.484 (37.7) | .155 (3.9)<br>.145 (3.7) | 1.500 (38.1) |

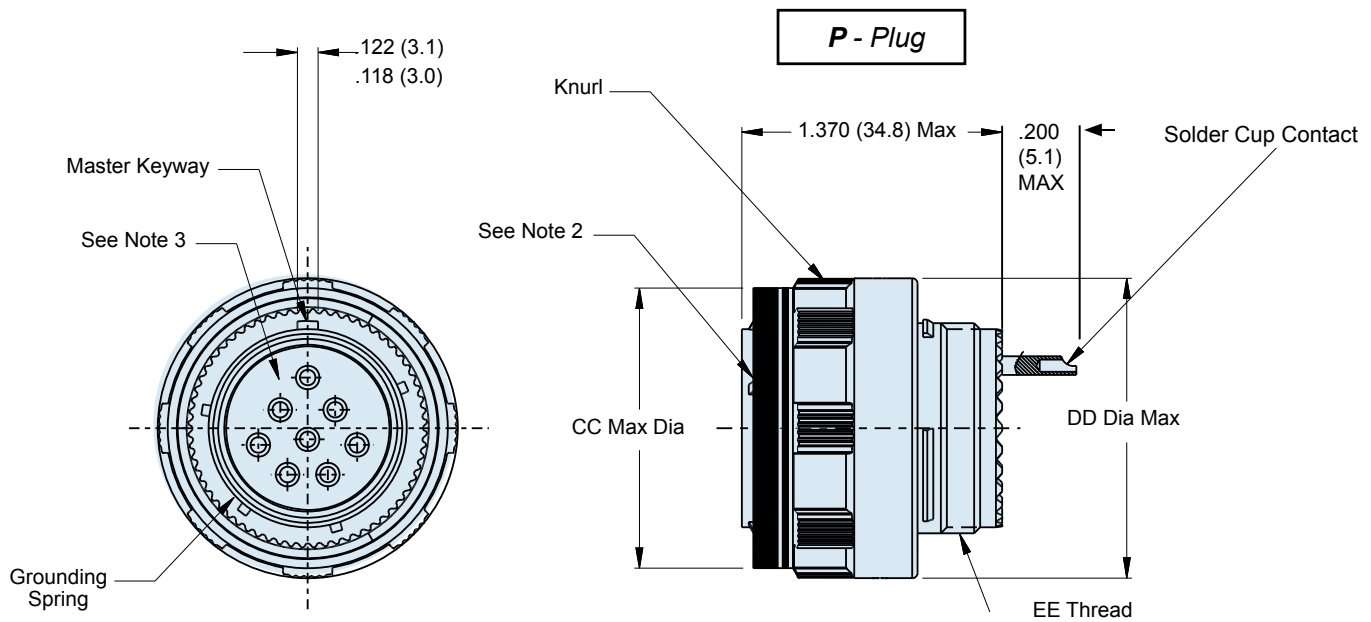
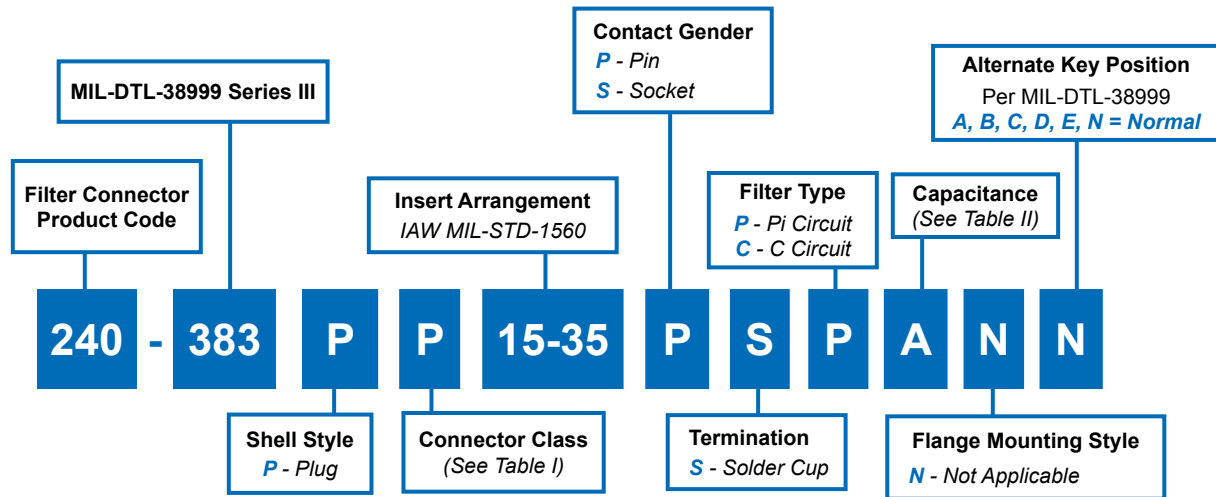
MIL-DTL-38999 Series III  
Jam Nut Panel Cutout

| SHELL<br>SIZE<br>CODE | SHELL<br>SIZE | Ø H                          | J                            |
|-----------------------|---------------|------------------------------|------------------------------|
| A                     | 09            | .710 (18.0)<br>.700 (17.8)   | .670 (17.0)<br>.660 (16.8)   |
| B                     | 11            | .835 (21.2)<br>.825 (21.0)   | .771 (19.6)<br>.761 (19.3)   |
| C                     | 13            | 1.020 (25.9)<br>1.010 (25.7) | .955 (24.3)<br>.945 (24.0)   |
| D                     | 15            | 1.145 (29.1)<br>1.135 (28.8) | 1.085 (27.6)<br>1.075 (27.3) |
| E                     | 17            | 1.270 (32.3)<br>1.260 (32.0) | 1.210 (30.7)<br>1.200 (30.5) |
| F                     | 19            | 1.395 (35.4)<br>1.385 (35.2) | 1.335 (33.9)<br>1.325 (33.7) |
| G                     | 21            | 1.520 (38.6)<br>1.510 (38.4) | 1.460 (37.1)<br>1.450 (36.8) |
| H                     | 23            | 1.645 (41.8)<br>1.635 (41.5) | 1.585 (40.3)<br>1.575 (40.0) |
| J                     | 25            | 1.770 (45.0)<br>1.760 (44.7) | 1.710 (43.4)<br>1.700 (43.2) |

## APPLICATION NOTES

- Materials/Finishes: Shells, Barrel, Coupling Nut, Jam Nut - See Table I  
Insulators - high grade rigid dielectric/N.A.  
Seals - Fluorosilicone  
PC Tail & Solder Cup contacts: 50µ" Gold over 50µ" Nickel
- Assembly to be identified with Glenair's name, part number, and date code - space permitting.
- Insert Arrangement in accordance with MIL-STD-1560.  
(Arrangement shown for reference only)
- EMI Circular Filter Receptacle connector designed to meet requirements of MIL-STD-2120 and MIL-DTL-38999, Series III.
- All contacts to have identical filter value. Other filter arrangements available, contact factory.
- Electrical Ratings: DWV- 500 VDC; Standard Operating Voltage 200 Volts DC; Current Rating 5 Amps (size 22);
- Insulation Resistance: 5000 MegOhms Min. at 200 VDC.
- Operating Temperature -55°C to +125°C (Env Class Connectors)
- Other filter styles (C-L, L-C, Unbalanced PI, Multi-Stage, Multi-Value) are available, please consult the factory.
- Metric Dimensions (mm) are indicated in parentheses.

# 240-383P MIL-DTL-38999 Series III Filter Connector Plug Receptacle



# 240-383P MIL-DTL-38999 Series III Filter Connector Plug Receptacle



EMI/EMP  
Filters

**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL  | FINISH DESCRIPTION                    |
|-----|---------------|-----------|---------------------------------------|
| M   | Environmental | Aluminum  | Electroless Nickel                    |
| MT  | Environmental | Aluminum  | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum  | Cad. O.D. Over Electroless Nickel     |
| P   | Environmental | Stainless | Electro-Deposited Nickel              |
| XM  | Environmental | Composite | Electroless Nickel                    |
| XMT | Environmental | Composite | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| XW  | Environmental | Composite | Cad. O.D. Over Electroless Nickel     |
| ZN  | Environmental | Aluminum  | Zinc-Nickel Over Electroless Nickel   |
| H2* | Hermetic      | Stainless | Electroless Nickel                    |

\* Some dimensions do not apply, see sales drawing 240-383JH2

**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

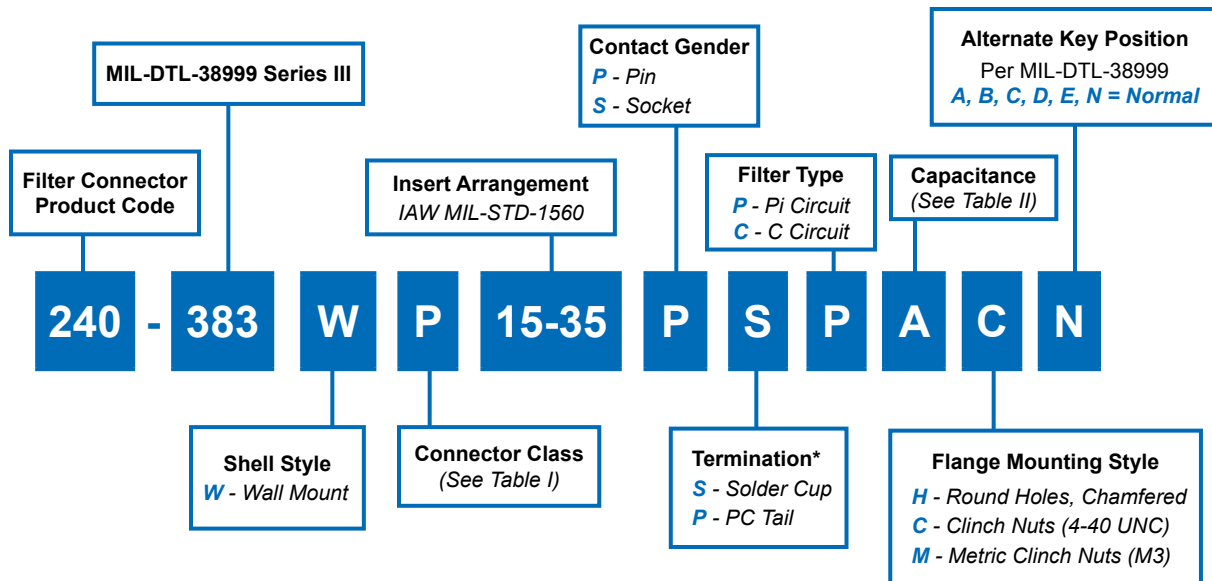
\* Reduced DWV – Please consult factory.

**DIMENSIONS**

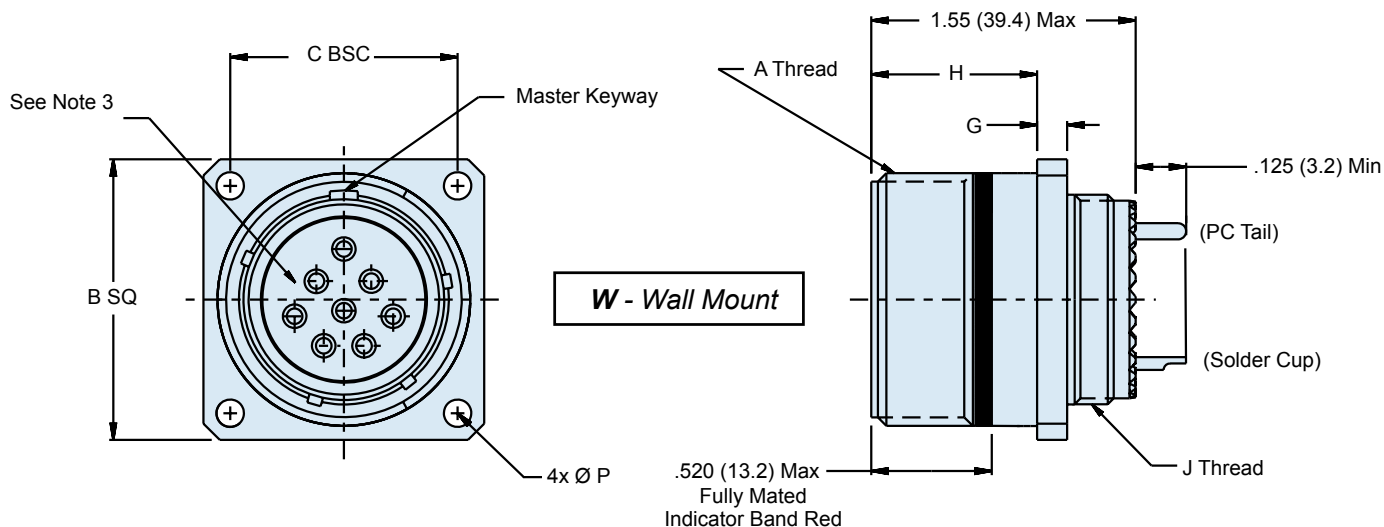
| SHELL<br>SIZE<br>CODE | SHELL<br>SIZE | CC Dia<br>Max | DD Dia<br>Max | EE THREAD           |
|-----------------------|---------------|---------------|---------------|---------------------|
| B                     | 11            | .929 (23.6)   | .984 (25.0)   | M15 X 1.0-6g 0.100R |
| C                     | 13            | 1.110 (28.2)  | 1.157 (29.4)  | M18 X 1.0-6g 0.100R |
| D                     | 15            | 1.232 (31.3)  | 1.280 (32.5)  | M22 X 1.0-6g 0.100R |
| E                     | 17            | 1.358 (34.5)  | 1.406 (35.7)  | M25 X 1.0-6g 0.100R |
| F                     | 19            | 1.469 (37.3)  | 1.516 (38.5)  | M28 X 1.0-6g 0.100R |
| G                     | 21            | 1.594 (40.5)  | 1.642 (41.7)  | M31 X 1.0-6g 0.100R |
| H                     | 23            | 1.720 (43.7)  | 1.768 (44.9)  | M34 X 1.0-6g 0.100R |
| J                     | 25            | 1.843 (46.8)  | 1.890 (48.0)  | M37 X 1.0-6g 0.100R |

*Consult Factory for  
Additional Filter Types,  
TVS Diodes, and other  
Custom Configurations.*

# 240-383W MIL-DTL-38999 Series III Filter Connector Wall Mount Receptacle



Clinch Nuts and Metric Clinch Nuts Not Available for Composites.  
Helicoils and Threaded Inserts/Specials Available Upon Request.



Consult Factory for  
Alternative PC Tail  
Lengths

# 240-383W

## MIL-DTL-38999 Series III Filter Connector

### Wall Mount Receptacle

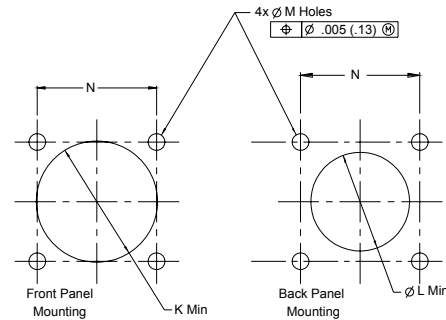


EMI/EMP  
Filters

**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL  | FINISH DESCRIPTION                    |
|-----|---------------|-----------|---------------------------------------|
| M   | Environmental | Aluminum  | Electroless Nickel                    |
| MT  | Environmental | Aluminum  | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum  | Cad. O.D. Over Electroless Nickel     |
| P   | Environmental | Stainless | Electro-Deposited Nickel              |
| XM  | Environmental | Composite | Electroless Nickel                    |
| XMT | Environmental | Composite | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| XW  | Environmental | Composite | Cad. O.D. Over Electroless Nickel     |
| ZN  | Environmental | Aluminum  | Zinc-Nickel Over Electroless Nickel   |
| H2* | Hermetic      | Stainless | Electroless Nickel                    |

\* Some dimensions do not apply, see sales drawing 240-383JH2



**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.

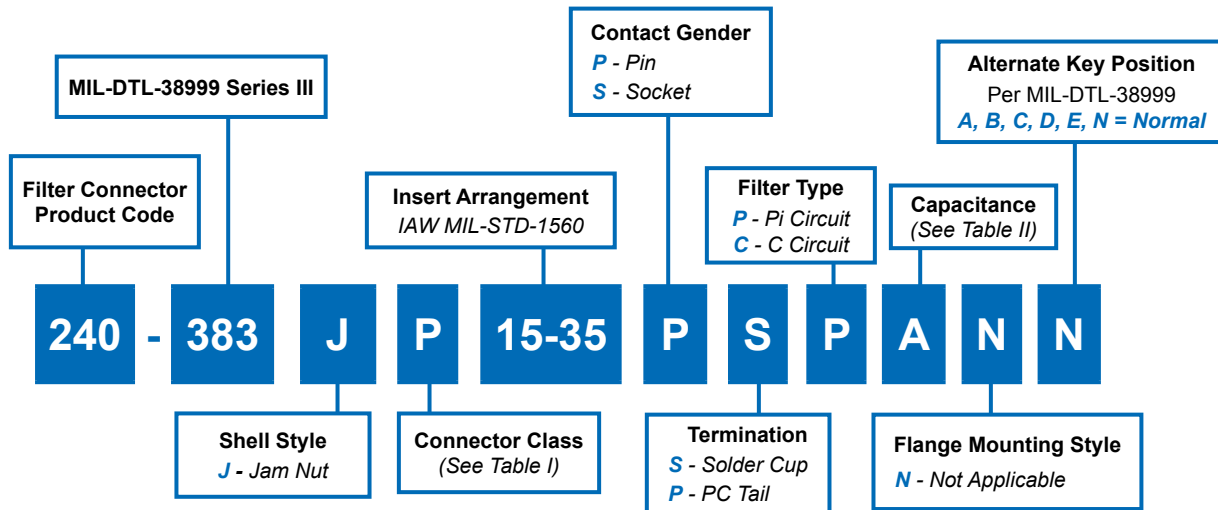
**MIL-DTL-38999 Series III  
Square Flange Panel Cutouts**

| Shell Size Code | Shell Size | Ø K Min      | Ø L Min      | M Holes                  | N BSC        | P Ø ± .010 |
|-----------------|------------|--------------|--------------|--------------------------|--------------|------------|
| A               | 09         | .656 (16.7)  | .516 (13.1)  | .133 (3.4)<br>.123 (3.1) | .719 (18.3)  |            |
| B               | 11         | .796 (20.2)  | .625 (15.9)  | .133 (3.4)<br>.123 (3.1) | .812 (20.6)  |            |
| C               | 13         | .922 (23.4)  | .750 (19.1)  | .133 (3.4)<br>.123 (3.1) | .906 (23.0)  |            |
| D               | 15         | 1.047 (26.6) | .906 (23.0)  | .133 (3.4)<br>.123 (3.1) | .969 (24.6)  | .128 (3.3) |
| E               | 17         | 1.219 (31.0) | 1.016 (25.8) | .133 (3.4)<br>.123 (3.1) | 1.062 (27.0) |            |
| F               | 19         | 1.297 (32.9) | 1.141 (29.0) | .133 (3.4)<br>.123 (3.1) | 1.156 (29.4) |            |
| G               | 21         | 1.422 (36.1) | 1.266 (32.2) | .133 (3.4)<br>.123 (3.1) | 1.250 (31.8) |            |
| H               | 23         | 1.547 (39.3) | 1.375 (34.9) | .159 (4.0)<br>.149 (3.8) | 1.375 (34.9) | .156 (4.0) |
| J               | 25         | 1.672 (42.5) | 1.484 (37.7) | .155 (3.9)<br>.145 (3.7) | 1.500 (38.1) |            |

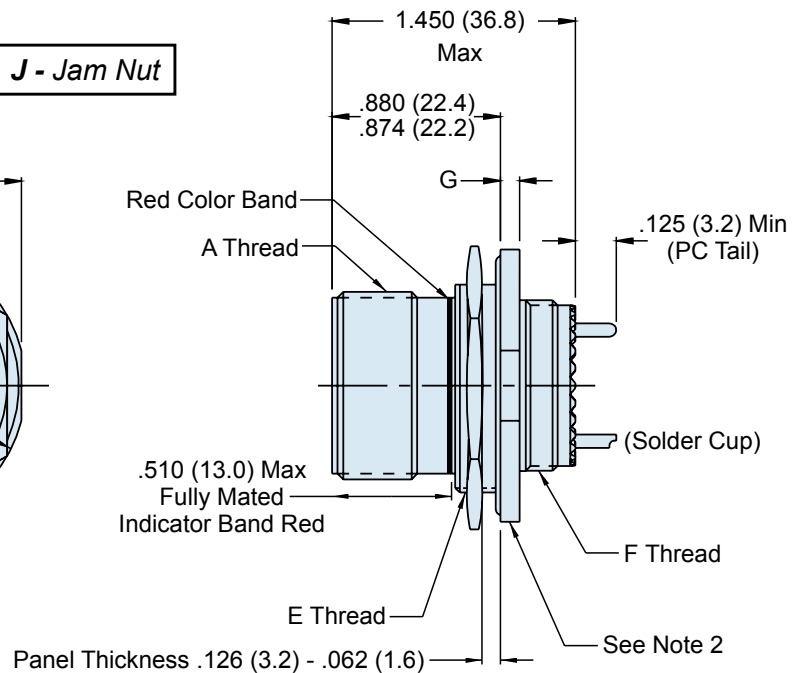
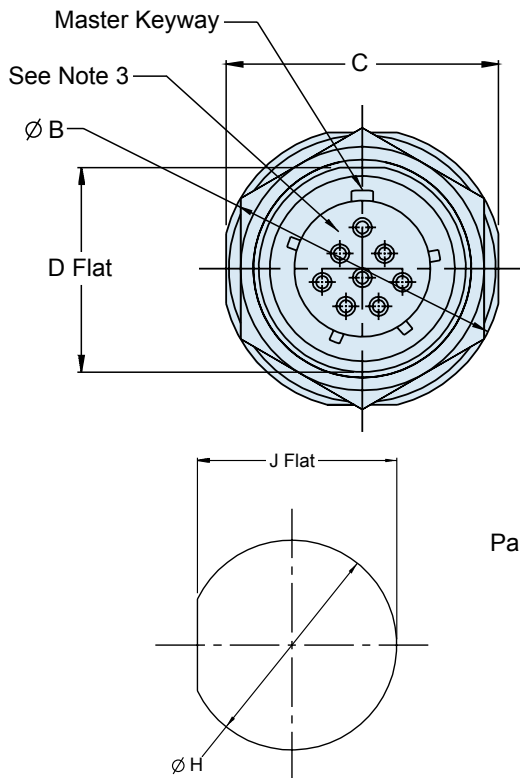
**WALL MOUNT**

| SHELL SIZE CODE | SHELL SIZE | A THREAD             | B SQ                         | C BSC        | D BSC        | E                        | F                        | G                        | H                          | J THREAD            |
|-----------------|------------|----------------------|------------------------------|--------------|--------------|--------------------------|--------------------------|--------------------------|----------------------------|---------------------|
| A               | 09         | .6250-.1P-.3L-TS-2A  | 0.949 (24.1)<br>0.925 (23.5) | .719 (18.3)  | .594 (15.1)  | .136 (3.5)<br>.120 (3.0) | .224 (5.7)<br>.208 (5.3) |                          | .820 (20.8)<br>.771 (19.6) | M12 X 1.0-6g 0.100R |
| B               | 11         | .7500-.1P-.3L-TS-2A  | 1.043 (26.5)<br>1.019 (25.9) | .812 (20.6)  | .719 (18.3)  | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) |                          | .820 (20.8)<br>.771 (19.6) | M15 X 1.0-6g 0.100R |
| C               | 13         | .8750-.1P-.3L-TS-2A  | 1.138 (28.9)<br>1.114 (28.3) | .906 (23.0)  | .812 (20.6)  | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) | .143 (3.6)<br>.083 (2.1) | .820 (20.8)<br>.771 (19.6) | M18 X 1.0-6g 0.100R |
| D               | 15         | 1.000-.1P-.3L-TS-2A  | 1.232 (31.3)<br>1.208 (30.7) | .969 (24.6)  | .906 (23.0)  | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.165 (4.2) |                          | .820 (20.8)<br>.771 (19.6) | M22 X 1.0-6g 0.100R |
| E               | 17         | 1.1875-.1P-.3L-TS-2A | 1.323 (33.6)<br>1.299 (33.0) | 1.062 (27.0) | .969 (24.6)  | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) |                          | .820 (20.8)<br>.771 (19.6) | M25 X 1.0-6g 0.100R |
| F               | 19         | 1.2500-.1P-.3L-TS-2A | 1.449 (36.8)<br>1.425 (36.2) | 1.156 (29.4) | 1.062 (27.0) | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) |                          | .820 (20.8)<br>.771 (19.6) | M28 X 1.0-6g 0.100R |
| G               | 21         | 1.3750-.1P-.3L-TS-2A | 1.575 (40.0)<br>1.551 (39.4) | 1.250 (31.8) | 1.156 (29.4) | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) |                          | .790 (20.1)<br>.741 (18.8) | M31 X 1.0-6g 0.100R |
| H               | 23         | 1.5000-.1P-.3L-TS-2A | 1.701 (43.2)<br>1.677 (42.6) | 1.375 (34.9) | 1.250 (31.8) | .162 (4.1)<br>.146 (3.7) | .250 (6.4)<br>.234 (5.9) | .171 (4.3)<br>.083 (2.1) | .790 (20.1)<br>.741 (18.8) | M34 X 1.0-6g 0.100R |
| J               | 25         | 1.6250-.1P-.3L-TS-2A | 1.823 (46.3)<br>1.799 (45.7) | 1.500 (38.1) | 1.375 (34.9) | .162 (4.1)<br>.146 (3.7) | .250 (6.4)<br>.234 (5.9) |                          | .790 (20.1)<br>.741 (18.8) | M37 X 1.0-6g 0.100R |

# 240-383J MIL-DTL-38999 Series III Filter Connector Jam Nut Receptacle



**J - Jam Nut**



# 240-383J MIL-DTL-38999 Series III Filter Connector Jam Nut Receptacle



EMI/EMP  
Filters

**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL  | FINISH DESCRIPTION                    |
|-----|---------------|-----------|---------------------------------------|
| M   | Environmental | Aluminum  | Electroless Nickel                    |
| MT  | Environmental | Aluminum  | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum  | Cad. O.D. Over Electroless Nickel     |
| P   | Environmental | Stainless | Electro-Deposited Nickel              |
| XM  | Environmental | Composite | Electroless Nickel                    |
| XMT | Environmental | Composite | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| XW  | Environmental | Composite | Cad. O.D. Over Electroless Nickel     |
| ZN  | Environmental | Aluminum  | Zinc-Nickel Over Electroless Nickel   |
| H2* | Hermetic      | Stainless | Electroless Nickel                    |

\* Some dimensions do not apply, see sales drawing 240-383JH2

**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.

**MIL-DTL-38999 Series III  
Jam Nut Panel Cutout**

| SHELL<br>SIZE<br>CODE | SHELL<br>SIZE | Ø H                          | J                            |
|-----------------------|---------------|------------------------------|------------------------------|
| A                     | 09            | .710 (18.0)<br>.700 (17.8)   | .670 (17.0)<br>.660 (16.8)   |
| B                     | 11            | .835 (21.2)<br>.825 (21.0)   | .771 (19.6)<br>.761 (19.3)   |
| C                     | 13            | 1.020 (25.9)<br>1.010 (25.7) | .955 (24.3)<br>.945 (24.0)   |
| D                     | 15            | 1.145 (29.1)<br>1.135 (28.8) | 1.085 (27.6)<br>1.075 (27.3) |
| E                     | 17            | 1.270 (32.3)<br>1.260 (32.0) | 1.210 (30.7)<br>1.200 (30.5) |
| F                     | 19            | 1.395 (35.4)<br>1.385 (35.2) | 1.335 (33.9)<br>1.325 (33.7) |
| G                     | 21            | 1.520 (38.6)<br>1.510 (38.4) | 1.460 (37.1)<br>1.450 (36.8) |
| H                     | 23            | 1.645 (41.8)<br>1.635 (41.5) | 1.585 (40.3)<br>1.575 (40.0) |
| J                     | 25            | 1.770 (45.0)<br>1.760 (44.7) | 1.710 (43.4)<br>1.700 (43.2) |

*Consult Factory for  
Additional Filter Types,  
TVS Diodes, and other  
Custom Configurations.*

**JAM NUT MOUNT**

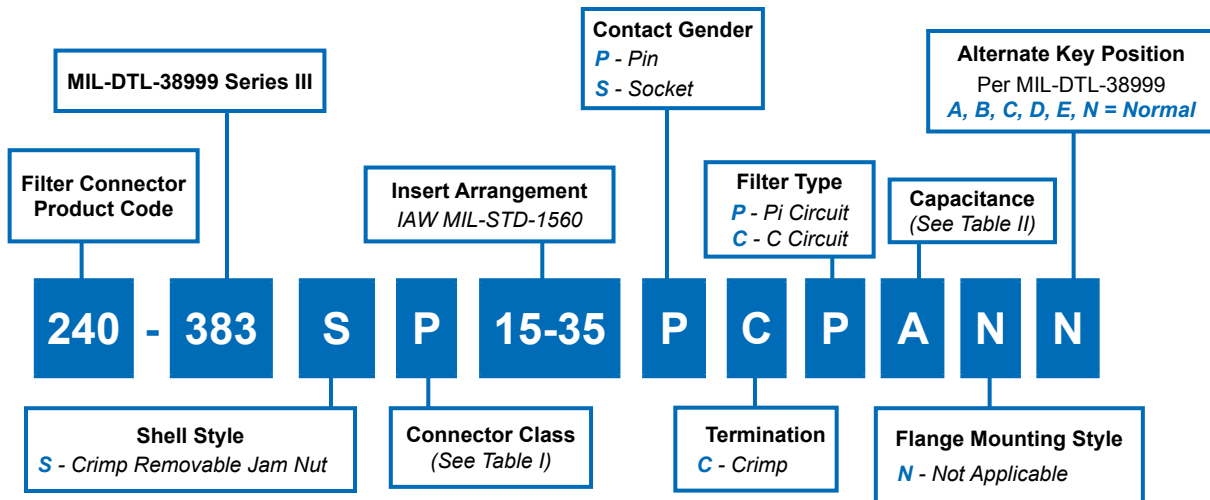
| SHELL<br>SIZE<br>CODE | SHELL<br>SIZE | A THREAD               | Ø B                          | C                            | D                            | E THREAD            | F THREAD            | G                        |
|-----------------------|---------------|------------------------|------------------------------|------------------------------|------------------------------|---------------------|---------------------|--------------------------|
| A                     | 09            | .6250- .1P- .3L-TS-2A  | 1.262 (32.1)<br>1.177 (29.9) | 1.079 (27.4)<br>1.047 (26.6) | .655 (16.6)<br>.645 (16.4)   | M17 X 1.0-6g 0.100R | M12 X 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| B                     | 11            | .7500- .1P- .3L-TS-2A  | 1.386 (35.2)<br>1.362 (34.6) | 1.268 (32.2)<br>1.236 (31.4) | .755 (19.2)<br>.745 (18.9)   | M20 X 1.0-6g 0.100R | M15 X 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| C                     | 13            | .8750- .1P- .3L-TS-2A  | 1.512 (38.4)<br>1.488 (37.8) | 1.390 (35.3)<br>1.358 (34.5) | .942 (23.9)<br>.932 (23.7)   | M25 X 1.0-6g 0.100R | M18 X 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| D                     | 15            | 1.000- .1P- .3L-TS-2A  | 1.638 (41.6)<br>1.614 (41.0) | 1.516 (38.5)<br>1.484 (37.7) | 1.068 (27.1)<br>1.058 (26.8) | M28 X 1.0-6g 0.100R | M22 X 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| E                     | 17            | 1.1875- .1P- .3L-TS-2A | 1.764 (44.8)<br>1.740 (44.2) | 1.642 (41.7)<br>1.610 (40.9) | 1.191 (30.3)<br>1.181 (30.0) | M32 X 1.0-6g 0.100R | M25 X 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| F                     | 19            | 1.2500- .1P- .3L-TS-2A | 1.949 (49.5)<br>1.925 (48.9) | 1.827 (46.4)<br>1.795 (45.6) | 1.316 (33.4)<br>1.306 (33.2) | M35 X 1.0-6g 0.100R | M28 X 1.0-6g 0.100R | .154 (3.9)<br>.114 (2.9) |
| G                     | 21            | 1.3750- .1P- .3L-TS-2A | 2.075 (52.7)<br>2.051 (52.1) | 1.953 (49.6)<br>1.921 (48.8) | 1.441 (36.6)<br>1.431 (36.3) | M38 X 1.0-6g 0.100R | M31 X 1.0-6g 0.100R | .154 (3.9)<br>.114 (2.9) |
| H                     | 23            | 1.5000- .1P- .3L-TS-2A | 2.201 (55.9)<br>2.177 (55.3) | 2.079 (52.8)<br>2.047 (52.0) | 1.566 (39.8)<br>1.556 (39.5) | M41 X 1.0-6g 0.100R | M34 X 1.0-6g 0.100R | .154 (3.9)<br>.114 (2.9) |
| J                     | 25            | 1.6250- .1P- .3L-TS-2A | 2.323 (59.0)<br>2.299 (58.4) | 2.205 (56.0)<br>2.173 (55.2) | 1.691 (43.0)<br>1.681 (42.7) | M44 X 1.0-6g 0.100R | M37 X 1.0-6g 0.100R | .154 (3.9)<br>.114 (2.9) |

# 240-383S

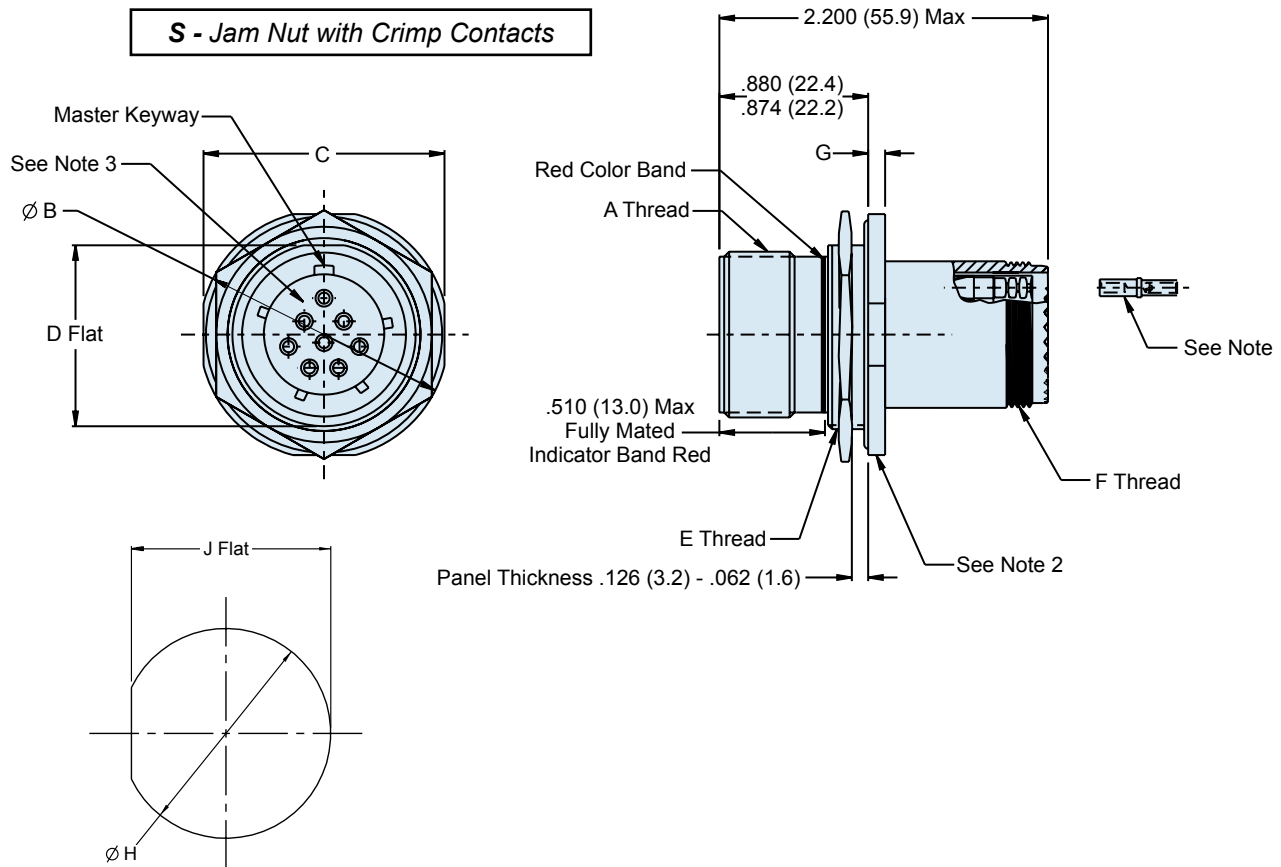
## MIL-DTL-38999 Series III Filter Connector

### Jam Nut Receptacle

### with Crimp Removable Socket Contacts



**NOTE:** Crimp removable socket contacts to conform to MIL-C-39029/57-358, Size 16, MIL-C-39029/57-357 Size 20, and MIL-C-39029/57-354 Size 22D (Supplied loose).



**240-383S**  
**MIL-DTL-38999 Series III Filter Connector**  
**Jam Nut Receptacle**  
**with Crimp Removable Socket Contacts**



EMI/EMP  
Filters

**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL  | FINISH DESCRIPTION                    |
|-----|---------------|-----------|---------------------------------------|
| M   | Environmental | Aluminum  | Electroless Nickel                    |
| MT  | Environmental | Aluminum  | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum  | Cad. O.D. Over Electroless Nickel     |
| P   | Environmental | Stainless | Electro-Deposited Nickel              |
| XM  | Environmental | Composite | Electroless Nickel                    |
| XMT | Environmental | Composite | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| XW  | Environmental | Composite | Cad. O.D. Over Electroless Nickel     |
| ZN  | Environmental | Aluminum  | Zinc-Nickel Over Electroless Nickel   |
| H2* | Hermetic      | Stainless | Electroless Nickel                    |

\* Some dimensions do not apply, see sales drawing 240-383JH2

**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.

**MIL-DTL-38999 Series III  
Jam Nut Panel Cutout**

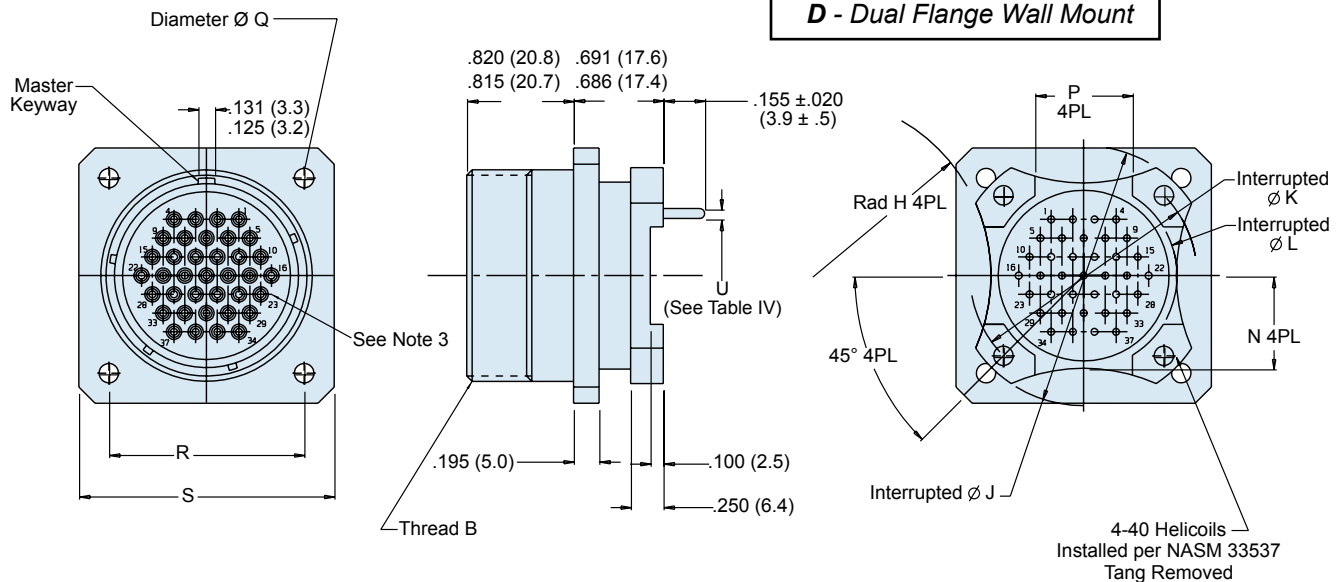
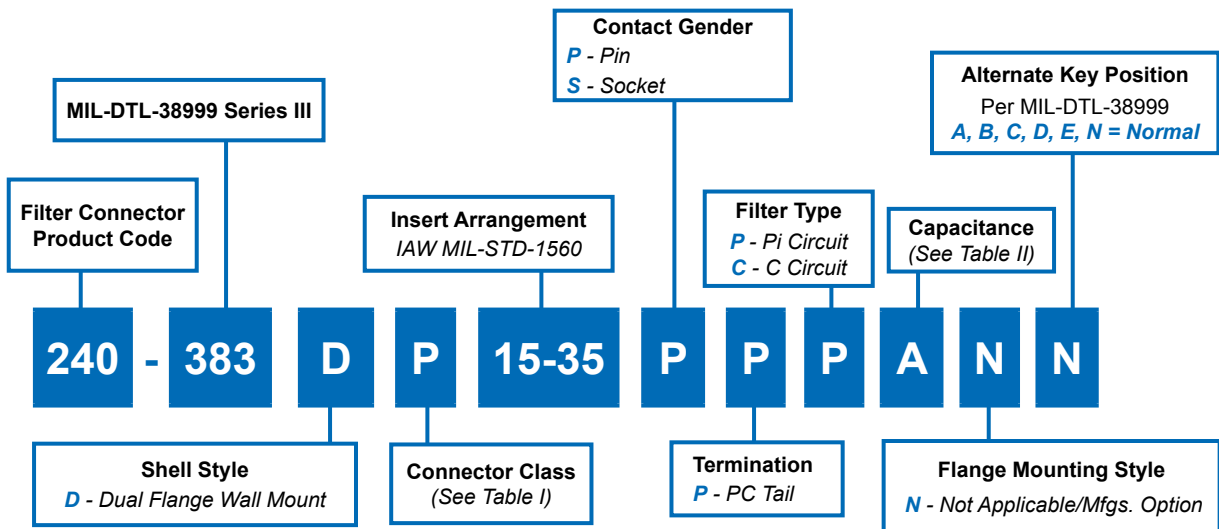
| SHELL<br>SIZE<br>CODE | SHELL<br>SIZE | Ø H                          | J                            |
|-----------------------|---------------|------------------------------|------------------------------|
| A                     | 09            | .710 (18.0)<br>.700 (17.8)   | .670 (17.0)<br>.660 (16.8)   |
| B                     | 11            | .835 (21.2)<br>.825 (21.0)   | .771 (19.6)<br>.761 (19.3)   |
| C                     | 13            | 1.020 (25.9)<br>1.010 (25.7) | .955 (24.3)<br>.945 (24.0)   |
| D                     | 15            | 1.145 (29.1)<br>1.135 (28.8) | 1.085 (27.6)<br>1.075 (27.3) |
| E                     | 17            | 1.270 (32.3)<br>1.260 (32.0) | 1.210 (30.7)<br>1.200 (30.5) |
| F                     | 19            | 1.395 (35.4)<br>1.385 (35.2) | 1.335 (33.9)<br>1.325 (33.7) |
| G                     | 21            | 1.520 (38.6)<br>1.510 (38.4) | 1.460 (37.1)<br>1.450 (36.8) |
| H                     | 23            | 1.645 (41.8)<br>1.635 (41.5) | 1.585 (40.3)<br>1.575 (40.0) |
| J                     | 25            | 1.770 (45.0)<br>1.760 (44.7) | 1.710 (43.4)<br>1.700 (43.2) |

*Consult Factory for  
Additional Filter Types,  
TVS Diodes, and other  
Custom Configurations.*

**JAM NUT MOUNT**

| SHELL<br>SIZE<br>CODE | SHELL<br>SIZE | A THREAD               | Ø B                          | C                            | D                            | E THREAD            | F THREAD            | G                        |
|-----------------------|---------------|------------------------|------------------------------|------------------------------|------------------------------|---------------------|---------------------|--------------------------|
| A                     | 09            | .6250- .1P- .3L-TS-2A  | 1.262 (32.1)<br>1.248 (31.7) | 1.079 (27.4)<br>1.047 (26.6) | .655 (16.6)<br>.645 (16.4)   | M17 X 1.0-6g 0.100R | M12 X 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| B                     | 11            | .7500- .1P- .3L-TS-2A  | 1.386 (35.2)<br>1.362 (34.6) | 1.268 (32.2)<br>1.236 (31.4) | .755 (19.2)<br>.745 (18.9)   | M20 X 1.0-6g 0.100R | M15 X 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| C                     | 13            | .8750- .1P- .3L-TS-2A  | 1.512 (38.4)<br>1.488 (37.8) | 1.390 (35.3)<br>1.358 (34.5) | .942 (23.9)<br>.932 (23.7)   | M25 X 1.0-6g 0.100R | M18 X 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| D                     | 15            | 1.000- .1P- .3L-TS-2A  | 1.638 (41.6)<br>1.614 (41.0) | 1.516 (38.5)<br>1.484 (37.7) | 1.068 (27.1)<br>1.058 (26.9) | M28 X 1.0-6g 0.100R | M22 X 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| E                     | 17            | 1.1875- .1P- .3L-TS-2A | 1.764 (44.8)<br>1.740 (44.2) | 1.642 (41.7)<br>1.610 (40.9) | 1.191 (30.3)<br>1.181 (30.0) | M32 X 1.0-6g 0.100R | M25 X 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| F                     | 19            | 1.2500- .1P- .3L-TS-2A | 1.949 (49.5)<br>1.925 (48.9) | 1.827 (46.4)<br>1.795 (45.6) | 1.316 (33.4)<br>1.306 (33.2) | M35 X 1.0-6g 0.100R | M28 X 1.0-6g 0.100R | .154 (3.9)<br>.114 (2.9) |
| G                     | 21            | 1.3750- .1P- .3L-TS-2A | 2.075 (52.7)<br>2.051 (52.1) | 1.953 (49.6)<br>1.921 (48.8) | 1.441 (36.6)<br>1.431 (36.3) | M38 X 1.0-6g 0.100R | M31 X 1.0-6g 0.100R | .154 (3.9)<br>.114 (2.9) |
| H                     | 23            | 1.5000- .1P- .3L-TS-2A | 2.201 (55.9)<br>2.177 (55.3) | 2.079 (52.8)<br>2.047 (52.0) | 1.566 (39.8)<br>1.556 (39.5) | M41 X 1.0-6g 0.100R | M34 X 1.0-6g 0.100R | .154 (3.9)<br>.114 (2.9) |
| J                     | 25            | 1.6250- .1P- .3L-TS-2A | 2.323 (59.0)<br>2.299 (58.4) | 2.205 (56.0)<br>2.173 (55.2) | 1.691 (43.0)<br>1.681 (42.7) | M44 X 1.0-6g 0.100R | M37 X 1.0-6g 0.100R | .154 (3.9)<br>.114 (2.9) |

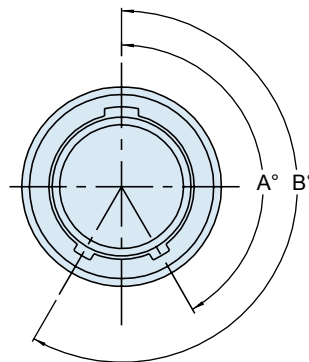
# 240-383D MIL-DTL-38999 Series III Filter Connector Dual Flange Wall Mount Receptacle with P.C.Tails



**TABLE IV**

**ALTERNATE KEY AND KEYWAY POSITION**

| Position | A°   | B°   |
|----------|------|------|
| A        | 150° | 210° |
| B        | 75°  | 210° |
| C        | 95°  | 230° |
| D        | 140° | 275° |



Normal and Alternate Position Key Rotation

**TABLE V:  
PC TAIL DIAMETER**

| Contact Size | ØU                     |
|--------------|------------------------|
| 22D          | .018/.021<br>(0.5/0.5) |
| 20           | .029/.031<br>(0.7/0.8) |
| 16           | .038/.042<br>(1.0/1.1) |

# 240-383D

## MIL-DTL-38999 Series III Filter Connector

### Dual Flange Wall Mount Receptacle with P.C.Tails



EMI/EMP  
Filters

TABLE I: CONNECTOR CLASS

| SYM | CLASS         | MATERIAL  | FINISH DESCRIPTION                    |
|-----|---------------|-----------|---------------------------------------|
| M   | Environmental | Aluminum  | Electroless Nickel                    |
| MT  | Environmental | Aluminum  | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum  | Cad. O.D. Over Electroless Nickel     |
| P   | Environmental | Stainless | Electro-Deposited Nickel              |
| XM  | Environmental | Composite | Electroless Nickel                    |
| XMT | Environmental | Composite | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| XW  | Environmental | Composite | Cad. O.D. Over Electroless Nickel     |
| ZN  | Environmental | Aluminum  | Zinc-Nickel Over Electroless Nickel   |
| H2* | Hermetic      | Stainless | Electroless Nickel                    |

\* Some dimensions do not apply, see sales drawing 240-383JH2

Consult Factory for Additional Filter Types, TVS Diodes, and other Custom Configurations.

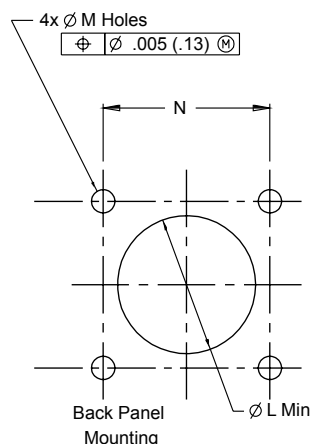
TABLE II: CAPACITOR ARRAY CODE CAPACITANCE RANGE

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV - Please consult factory.

TABLE III: DIMENSIONS

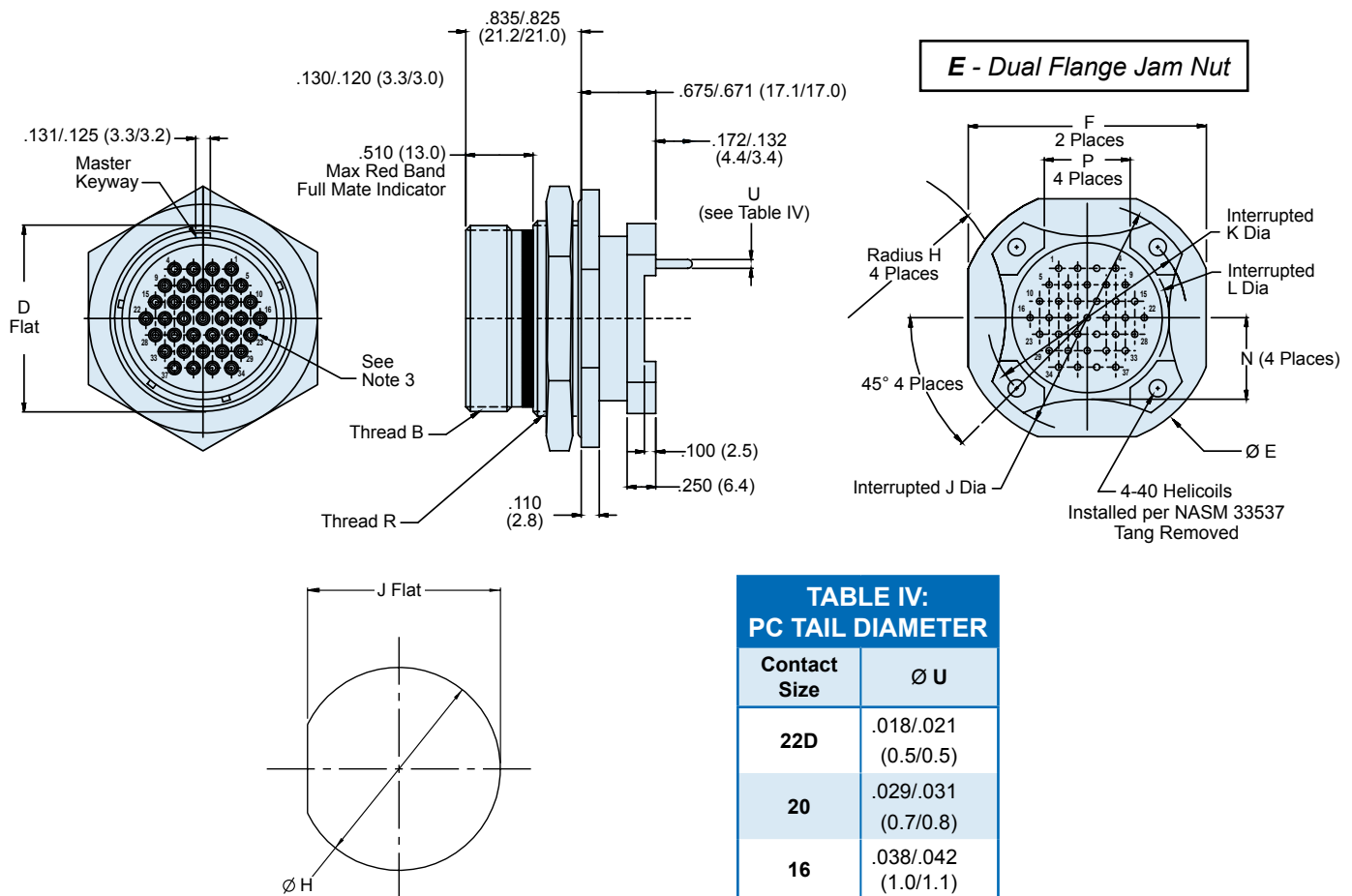
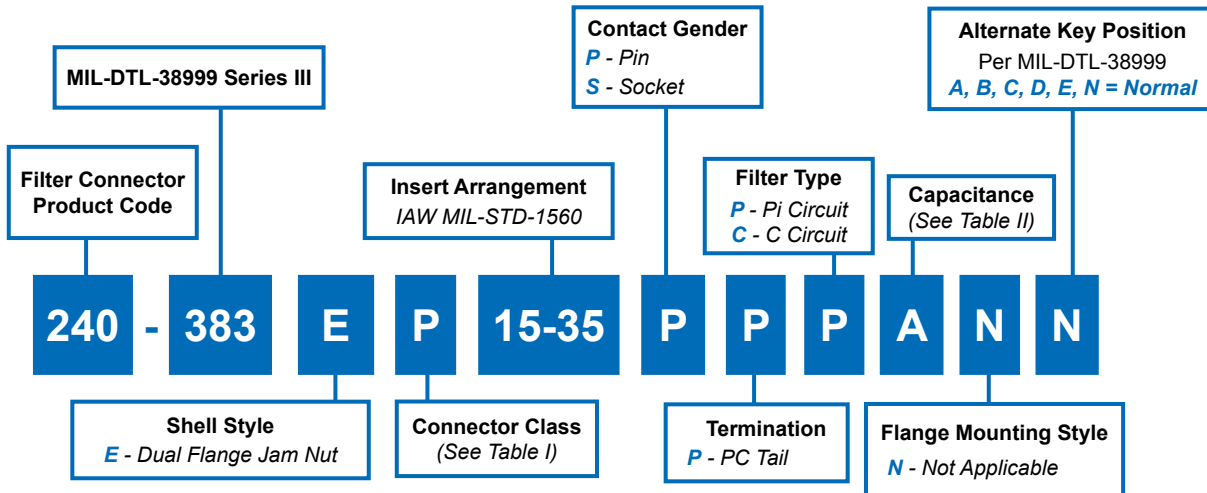
| SHELL SIZE | B THREAD (PLATED)    | P<br>+/- .01 (.25) | R<br>BSC     | S<br>+/- .012 (.3) | Ø J<br>+/- .005 (.13) | Ø K<br>BSC   | Ø L<br>+/- .005 (.13) | H<br>+/- .020 (.51) | N<br>+/- .020 (.51) | Ø Q<br>± .010 |
|------------|----------------------|--------------------|--------------|--------------------|-----------------------|--------------|-----------------------|---------------------|---------------------|---------------|
| 9          | .625-.1P-.3L-TS-2A   | .225 (5.7)         | .719 (18.3)  | .937 (23.8)        | 1.016 (25.8)          | .752 (19.1)  | .532 (13.5)           | .225 (5.7)          | .275 (7.0)          | .128<br>(3.3) |
| 11         | .7500-.1P-.3L-TS-2A  | .250 (6.4)         | .812 (20.6)  | 1.181 (30.0)       | 1.062 (27.0)          | .850 (21.6)  | .595 (15.1)           | .250 (6.4)          | .290 (7.4)          |               |
| 13         | .8750-.1P-.3L-TS-2A  | .250 (6.4)         | .906 (23.0)  | 1.277 (32.4)       | 1.250 (31.8)          | .994 (25.2)  | .720 (18.3)           | .375 (9.5)          | .370 (9.4)          |               |
| 15         | 1.000-.1P-.3L-TS-2A  | .325 (8.2)         | .969 (24.6)  | 1.371 (34.8)       | 1.375 (34.9)          | 1.119 (28.4) | .843 (21.4)           | .438 (11.1)         | .440 (11.2)         |               |
| 17         | 1.1875-.1P-.3L-TS-2A | .375 (9.5)         | 1.062 (27.0) | 1.462 (37.1)       | 1.500 (38.1)          | 1.237 (31.4) | 1.000 (25.4)          | .562 (14.3)         | .495 (12.6)         |               |
| 19         | 1.2500-.1P-.3L-TS-2A | .500 (12.7)        | 1.156 (29.4) | 1.588 (40.3)       | 1.625 (41.3)          | 1.379 (35.0) | 1.125 (28.6)          | .875 (22.2)         | .540 (13.7)         |               |
| 21         | 1.3750-.1P-.3L-TS-2A | .562 (14.3)        | 1.250 (31.8) | 1.714 (43.5)       | 1.750 (44.5)          | 1.489 (37.8) | 1.240 (31.5)          | 1.170 (29.7)        | .625 (15.9)         |               |
| 23         | 1.5000-.1P-.3L-TS-2A | .688 (17.5)        | 1.375 (34.9) | 1.840 (46.7)       | 1.875 (47.6)          | 1.619 (41.1) | 1.328 (33.7)          | 1.250 (31.8)        | .660 (16.8)         | .156<br>(4.0) |
| 25         | 1.6250-.1P-.3L-TS-2A | .750 (19.1)        | 1.500 (38.1) | 1.962 (49.8)       | 2.000 (50.8)          | 1.744 (44.3) | 1.453 (36.9)          | 1.375 (34.9)        | .740 (18.8)         |               |



Panel Cutout Dimensions

| Shell Size | Ø L Min      | M Holes                  | N BSC        |
|------------|--------------|--------------------------|--------------|
| 09         | .516 (13.1)  | .133 (3.4)<br>.123 (3.1) | .719 (18.3)  |
| 11         | .625 (15.9)  | .133 (3.4)<br>.123 (3.1) | .812 (20.6)  |
| 13         | .750 (19.1)  | .133 (3.4)<br>.123 (3.1) | .906 (23.0)  |
| 15         | .906 (23.0)  | .133 (3.4)<br>.123 (3.1) | .969 (24.6)  |
| 17         | 1.016 (25.8) | .133 (3.4)<br>.123 (3.1) | 1.062 (27.0) |
| 19         | 1.141 (29.0) | .133 (3.4)<br>.123 (3.1) | 1.156 (29.4) |
| 21         | 1.266 (32.2) | .133 (3.4)<br>.123 (3.1) | 1.250 (31.8) |
| 23         | 1.375 (34.9) | .159 (4.0)<br>.149 (3.8) | 1.375 (34.9) |
| 25         | 1.484 (37.7) | .155 (3.9)<br>.145 (3.7) | 1.500 (38.1) |

# 240-383E MIL-DTL-38999 Series III Filter Connector Dual Flange Jam Nut Receptacle



**240-383E**  
**MIL-DTL-38999 Series III Filter Connector**  
**Dual Flange Jam Nut Receptacle**



**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL  | FINISH DESCRIPTION                    |
|-----|---------------|-----------|---------------------------------------|
| M   | Environmental | Aluminum  | Electroless Nickel                    |
| MT  | Environmental | Aluminum  | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum  | Cad. O.D. Over Electroless Nickel     |
| P   | Environmental | Stainless | Electro-Deposited Nickel              |
| XM  | Environmental | Composite | Electroless Nickel                    |
| XMT | Environmental | Composite | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| XW  | Environmental | Composite | Cad. O.D. Over Electroless Nickel     |
| ZN  | Environmental | Aluminum  | Zinc-Nickel Over Electroless Nickel   |
| H2* | Hermetic      | Stainless | Electroless Nickel                    |

\* Some dimensions do not apply, see sales drawing 240-383JH2

**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.

**MIL-DTL-38999 Series III  
Jam Nut Panel Cutout**

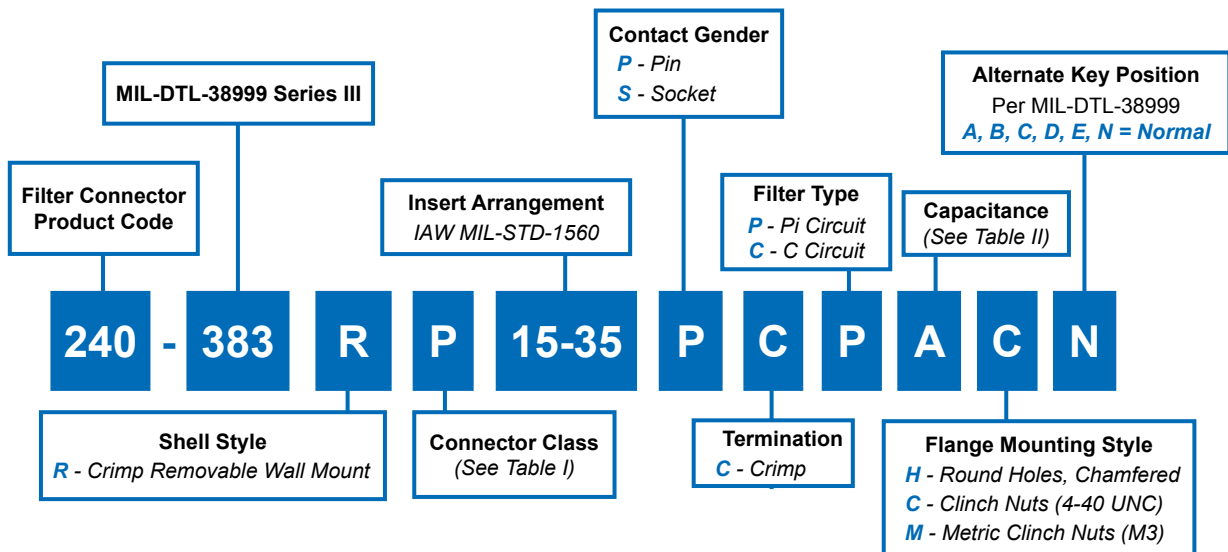
| SHELL SIZE | Ø H                          | J                            |
|------------|------------------------------|------------------------------|
| 09         | .710 (18.0)<br>.700 (17.8)   | .670 (17.0)<br>.660 (16.8)   |
| 11         | .835 (21.2)<br>.825 (21.0)   | .771 (19.6)<br>.761 (19.3)   |
| 13         | 1.020 (25.9)<br>1.010 (25.7) | .955 (24.3)<br>.945 (24.0)   |
| 15         | 1.145 (29.1)<br>1.135 (28.8) | 1.085 (27.6)<br>1.075 (27.3) |
| 17         | 1.270 (32.3)<br>1.260 (32.0) | 1.210 (30.7)<br>1.200 (30.5) |
| 19         | 1.395 (35.4)<br>1.385 (35.2) | 1.335 (33.9)<br>1.325 (33.7) |
| 21         | 1.520 (38.6)<br>1.510 (38.4) | 1.460 (37.1)<br>1.450 (36.8) |
| 23         | 1.645 (41.8)<br>1.635 (41.5) | 1.585 (40.3)<br>1.575 (40.0) |
| 25         | 1.770 (45.0)<br>1.760 (44.7) | 1.710 (43.4)<br>1.700 (43.2) |

*Consult Factory for  
Additional Filter Types,  
TVS Diodes, and other  
Custom Configurations.*

**TABLE III: DIMENSIONS**

| SHELL SIZE | B Thread (Plated)      | D<br>± .005  | Ø E<br>± .012 | F<br>± .016  | P<br>± .010<br>(0.25) | R Thread<br>Metric<br>(Plated) | J Dia<br>± .005<br>(0.13) | K Dia<br>Basic | L Dia<br>± .005<br>(0.13) | H<br>± .020<br>(0.51) | N<br>± .020<br>(0.51) |
|------------|------------------------|--------------|---------------|--------------|-----------------------|--------------------------------|---------------------------|----------------|---------------------------|-----------------------|-----------------------|
| 9          | .625- .1P- .3L-TS-2A   | .651 (16.5)  | 1.250 (31.8)  | 1.063 (27.0) | .225 (5.7)            | M17 x 1-6g-0.10R               | 1.016 (25.8)              | .752 (19.1)    | .532 (13.5)               | .225 (5.7)            | .275 (7.0)            |
| 11         | .7500- .1P- .3L-TS-2A  | .751 (19.1)  | 1.377 (35.0)  | 1.259 (32.0) | .250 (6.4)            | M20 x 1-6g-0.10R               | 1.062 (27.0)              | .850 (21.6)    | .595 (15.1)               | .250 (6.4)            | .290 (7.4)            |
| 13         | .8750- .1P- .3L-TS-2A  | .937 (23.8)  | 1.500 (38.1)  | 1.374 (34.9) | .250 (6.4)            | M25 x 1-6g-0.10R               | 1.250 (31.8)              | .994 (25.2)    | .720 (18.3)               | .375 (9.5)            | .370 (9.4)            |
| 15         | 1.0000- .1P- .3L-TS-2A | 1.063 (27.0) | 1.625 (41.3)  | 1.500 (38.1) | .325 (8.2)            | M28 x 1-6g-0.10R               | 1.375 (34.9)              | 1.119 (28.4)   | .843 (21.4)               | .438 (11.1)           | .440 (11.2)           |
| 17         | 1.8750- .1P- .3L-TS-2A | 1.187 (30.2) | 1.750 (44.5)  | 1.625 (41.3) | .375 (9.5)            | M32 x 1-6g-0.10R               | 1.500 (38.1)              | 1.237 (31.4)   | 1.000 (25.4)              | .562 (14.3)           | .495 (12.6)           |
| 19         | 1.2500- .1P- .3L-TS-2A | 1.311 (33.3) | 1.937 (49.2)  | 1.822 (46.3) | .500 (12.7)           | M35 x 1-6g-0.10R               | 1.625 (41.3)              | 1.379 (35.0)   | 1.125 (28.6)              | .875 (22.2)           | .540 (13.7)           |
| 21         | 1.3750- .1P- .3L-TS-2A | 1.434 (36.4) | 2.063 (52.4)  | 1.940 (49.3) | .562 (14.3)           | M38 x 1-6g-0.10R               | 1.750 (44.5)              | 1.489 (37.8)   | 1.240 (31.5)              | 1.170 (29.7)          | .625 (15.9)           |
| 23         | 1.5000- .1P- .3L-TS-2A | 1.561 (39.7) | 2.190 (55.6)  | 2.073 (52.7) | .688 (17.5)           | M41 x 1-6g-0.10R               | 1.875 (47.6)              | 1.619 (41.1)   | 1.328 (33.7)              | 1.250 (31.8)          | .660 (16.8)           |
| 25         | 1.6250- .1P- .3L-TS-2A | 1.687 (42.9) | 2.311 (58.7)  | 2.189 (55.6) | .750 (19.1)           | M44 x 1-6g-0.10R               | 2.000 (50.8)              | 1.744 (44.3)   | 1.453 (36.9)              | 1.375 (34.9)          | .740 (18.8)           |

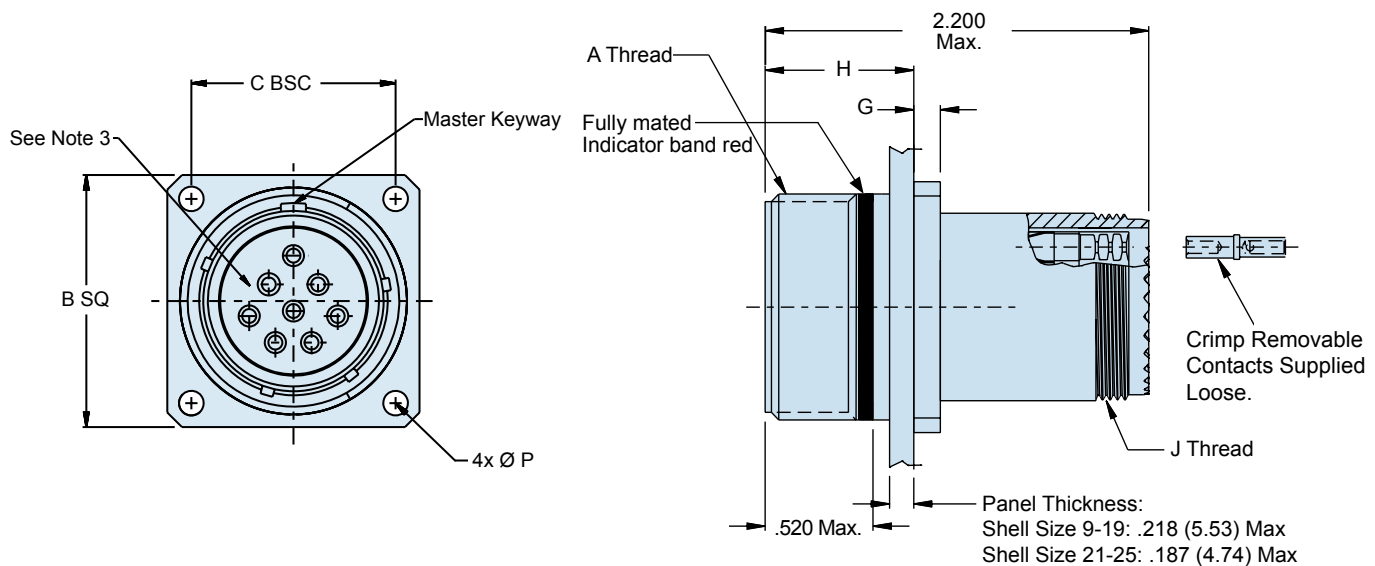
# 240-383R MIL-DTL-38999 Series III Filter Connector Wall Mount Receptacle with Crimp Removable Socket Contacts



**NOTE:** Crimp removable socket contacts to conform to MIL-C-39029/57-358, Size 16, MIL-C-39029/57-357 Size 20, and MIL-C-39029/57-354 Size 22D (Supplied loose).

**Clinch Nuts and Metric Clinch Nuts Not Available for Composites**

**R - Wall Mount with Crimp Removable Socket Contacts**

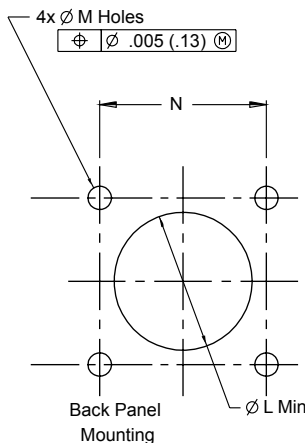


# 240-383R MIL-DTL-38999 Series III Filter Connector Wall Mount Receptacle with Crimp Removable Socket Contacts



EMI/EMP  
Filters

| Panel Cutout Dimensions |              |                          |              |
|-------------------------|--------------|--------------------------|--------------|
| Shell Size              | ø L Min      | M Holes                  | N BSC        |
| 09                      | .516 (13.1)  | .133 (3.4)<br>.123 (3.1) | .719 (18.3)  |
| 11                      | .625 (15.9)  | .133 (3.4)<br>.123 (3.1) | .812 (20.6)  |
| 13                      | .750 (19.1)  | .133 (3.4)<br>.123 (3.1) | .906 (23.0)  |
| 15                      | .906 (23.0)  | .133 (3.4)<br>.123 (3.1) | .969 (24.6)  |
| 17                      | 1.016 (25.8) | .133 (3.4)<br>.123 (3.1) | 1.062 (27.0) |
| 19                      | 1.141 (29.0) | .133 (3.4)<br>.123 (3.1) | 1.156 (29.4) |
| 21                      | 1.266 (32.2) | .133 (3.4)<br>.123 (3.1) | 1.250 (31.8) |
| 23                      | 1.375 (34.9) | .159 (4.0)<br>.149 (3.8) | 1.375 (34.9) |
| 25                      | 1.484 (37.7) | .155 (3.9)<br>.145 (3.7) | 1.500 (38.1) |



Consult Factory for  
Additional Filter Types,  
TVS Diodes, and other  
Custom Configurations.

TABLE I: CONNECTOR CLASS

| SYM | CLASS         | MATERIAL  | FINISH DESCRIPTION                    |
|-----|---------------|-----------|---------------------------------------|
| M   | Environmental | Aluminum  | Electroless Nickel                    |
| MT  | Environmental | Aluminum  | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum  | Cad. O.D. Over Electroless Nickel     |
| P   | Environmental | Stainless | Electro-Deposited Nickel              |
| XM  | Environmental | Composite | Electroless Nickel                    |
| XMT | Environmental | Composite | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| XW  | Environmental | Composite | Cad. O.D. Over Electroless Nickel     |
| ZN  | Environmental | Aluminum  | Zinc-Nickel Over Electroless Nickel   |
| H2* | Hermetic      | Stainless | Electroless Nickel                    |

\* Some dimensions do not apply, see sales drawing 240-383JH2

TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV - Please consult factory.

WALL MOUNT WITH CRIMP CONTACTS

| SHELL SIZE CODE | SHELL SIZE | A THREAD             | B SQ                         | C BSC        | D BSC        | E                        | F                        | G                        | H                          | J THREAD            | PØ ± .010  |
|-----------------|------------|----------------------|------------------------------|--------------|--------------|--------------------------|--------------------------|--------------------------|----------------------------|---------------------|------------|
| A               | 09         | .6250-.1P-.3L-TS-2A  | 0.949 (24.1)<br>0.925 (23.5) | .719 (18.3)  | .594 (15.1)  | .136 (3.5)<br>.120 (3.0) | .224 (5.7)<br>.208 (5.3) |                          | .820 (20.8)<br>.771 (19.6) | M12 X 1.0-6g 0.100R |            |
| B               | 11         | .7500-.1P-.3L-TS-2A  | 1.043 (26.5)<br>1.019 (25.9) | .812 (20.6)  | .719 (18.3)  | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) |                          | .820 (20.8)<br>.771 (19.6) | M15 X 1.0-6g 0.100R |            |
| C               | 13         | .8750-.1P-.3L-TS-2A  | 1.138 (28.9)<br>1.114 (28.3) | .906 (23.0)  | .812 (20.6)  | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) | .143 (3.6)<br>.083 (2.1) | .820 (20.8)<br>.771 (19.6) | M18 X 1.0-6g 0.100R |            |
| D               | 15         | 1.000-.1P-.3L-TS-2A  | 1.232 (31.3)<br>1.208 (30.7) | .969 (24.6)  | .906 (23.0)  | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) |                          | .820 (20.8)<br>.771 (19.6) | M22 X 1.0-6g 0.100R | .128 (3.3) |
| E               | 17         | 1.1875-.1P-.3L-TS-2A | 1.323 (33.6)<br>1.299 (33.0) | 1.062 (27.0) | .969 (24.6)  | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) |                          | .820 (20.8)<br>.771 (19.6) | M25 X 1.0-6g 0.100R |            |
| F               | 19         | 1.2500-.1P-.3L-TS-2A | 1.449 (36.8)<br>1.425 (36.2) | 1.156 (29.4) | 1.062 (27.0) | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) |                          | .820 (20.8)<br>.771 (19.6) | M28 X 1.0-6g 0.100R |            |
| G               | 21         | 1.3750-.1P-.3L-TS-2A | 1.575 (40.0)<br>1.551 (39.4) | 1.250 (31.8) | 1.156 (29.4) | .136 (3.5)<br>.120 (3.0) | .202 (5.1)<br>.186 (4.7) |                          | .790 (20.1)<br>.741 (18.8) | M31 X 1.0-6g 0.100R |            |
| H               | 23         | 1.5000-.1P-.3L-TS-2A | 1.701 (43.2)<br>1.677 (42.6) | 1.375 (34.9) | 1.250 (31.8) | .162 (4.1)<br>.146 (3.7) | .250 (6.4)<br>.083 (2.1) | .171 (4.3)<br>.083 (2.1) | .790 (20.1)<br>.741 (18.8) | M34 X 1.0-6g 0.100R |            |
| J               | 25         | 1.6250-.1P-.3L-TS-2A | 1.823 (46.3)<br>1.799 (45.7) | 1.500 (38.1) | 1.375 (34.9) | .162 (4.1)<br>.146 (3.7) | .250 (6.4)<br>.083 (2.1) |                          | .790 (20.1)<br>.741 (18.8) | M37 X 1.0-6g 0.100R | .156 (4.0) |

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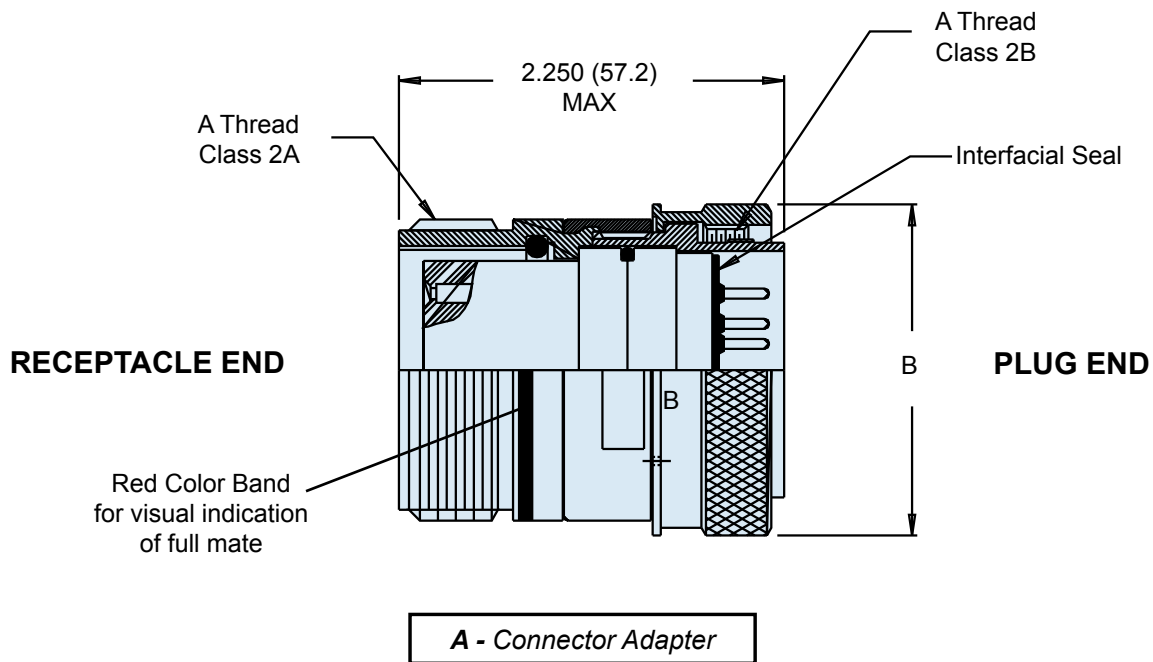
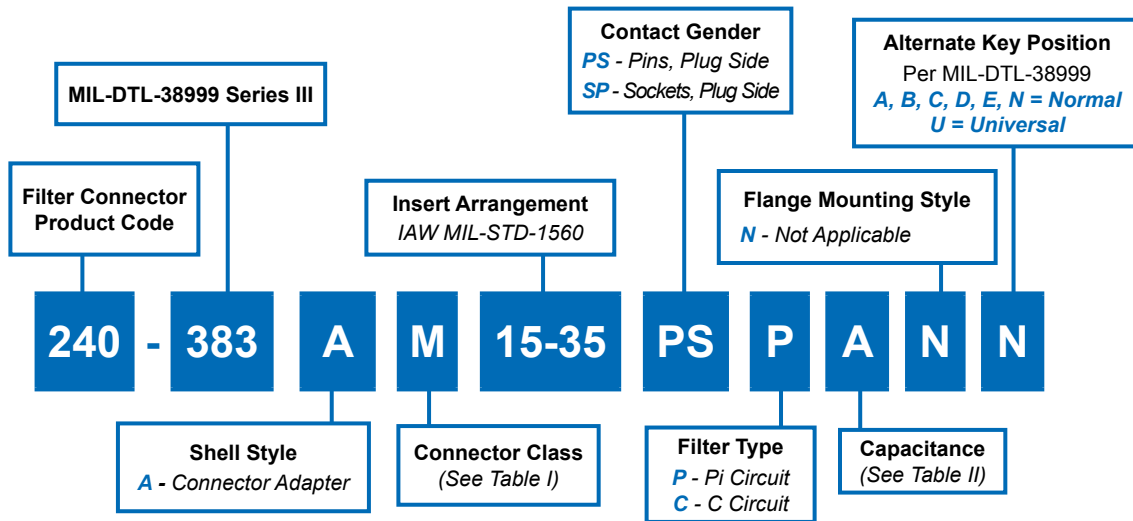
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C-35

E-Mail: sales@glenair.com

# 240-383A MIL-DTL-38999 Series III Filter Connector Connector Adapter



\* Please consult factory for Pin/Pin and/or Socket/Socket contact arrangements.

# 240-383A MIL-DTL-38999 Series III Filter Connector Connector Adapter



EMI/EMP  
Filters

**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL  | FINISH DESCRIPTION                    |
|-----|---------------|-----------|---------------------------------------|
| M   | Environmental | Aluminum  | Electroless Nickel                    |
| MT  | Environmental | Aluminum  | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum  | Cad. O.D. Over Electroless Nickel     |
| P   | Environmental | Stainless | Electro-Deposited Nickel              |
| ZN  | Environmental | Aluminum  | Zinc-Nickel Over Electroless Nickel   |
| H2* | Hermetic      | Stainless | Electroless Nickel                    |

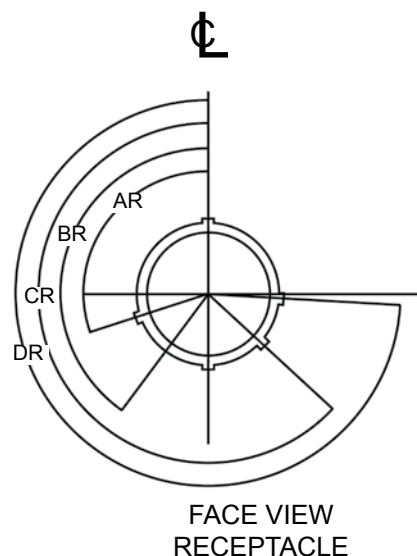
*Consult Factory for  
Additional Filter Types,  
TVS Diodes, and other  
Custom Configurations.*

\* Some dimensions do not apply, see sales drawing 240-383JH2

**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.



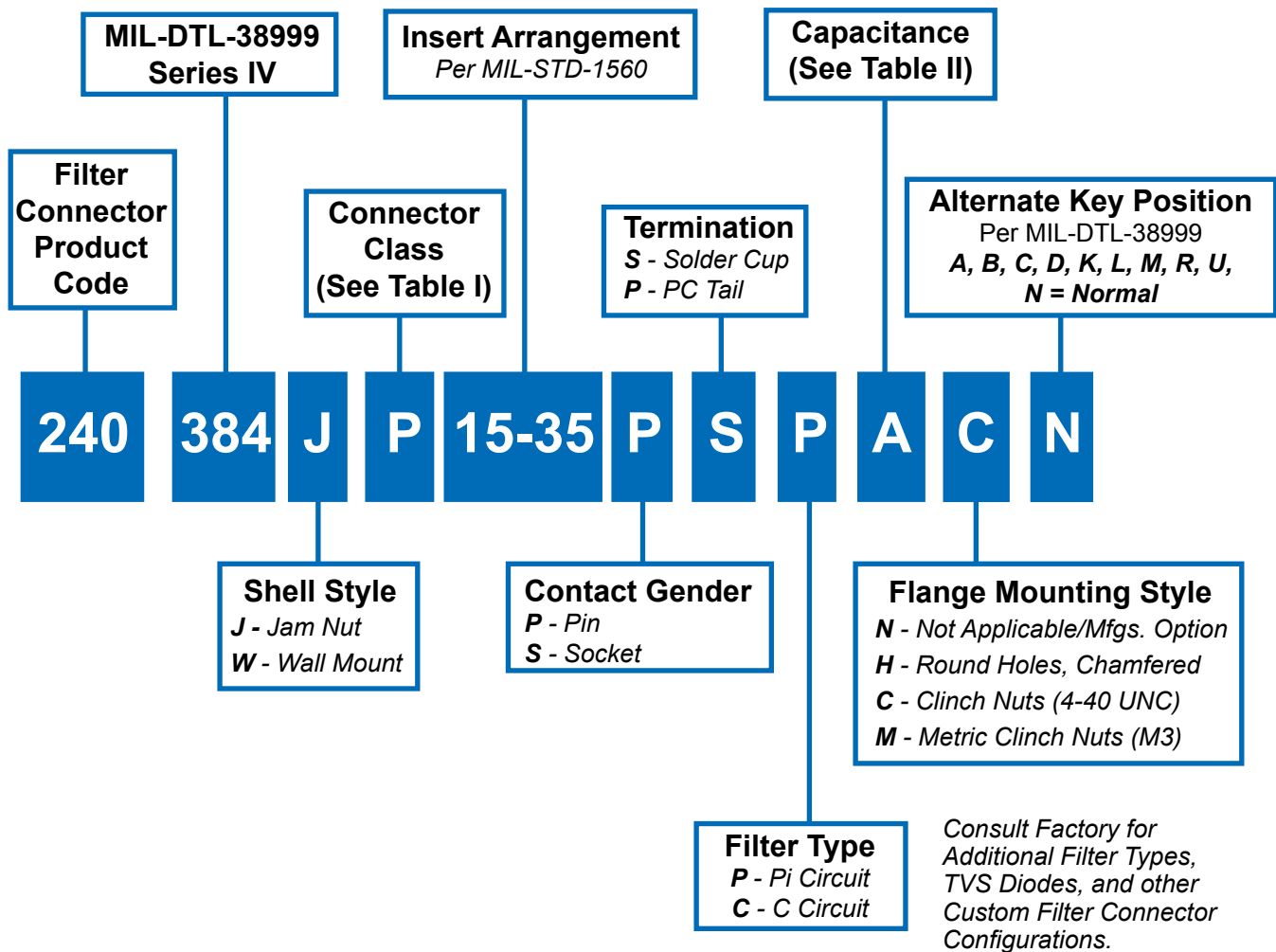
**DIMENSIONS**

| SHELL<br>SIZE<br>CODE | SHELL<br>SIZE | A THREAD CLASS 2       | B DIA. MAX   |
|-----------------------|---------------|------------------------|--------------|
| A-1                   | 09            | .6250- .1P- .3L-TS-2A  | .858 (21.8)  |
| B-1                   | 11            | .7500- .1P- .3L-TS-2A  | .984 (25.0)  |
| C-1                   | 13            | .8750- .1P- .3L-TS-2A  | 1.157 (29.4) |
| D-1                   | 15            | 1.000- .1P- .3L-TS-2A  | 1.280 (32.5) |
| E-1                   | 17            | 1.1875- .1P- .3L-TS-2A | 1.406 (35.7) |
| F-1                   | 19            | 1.2500- .1P- .3L-TS-2A | 1.516 (38.5) |
| G-1                   | 21            | 1.3750- .1P- .3L-TS-2A | 1.642 (41.7) |
| H-1                   | 23            | 1.5000- .1P- .3L-TS-2A | 1.768 (44.9) |
| J-1                   | 25            | 1.6250- .1P- .3L-TS-2A | 1.890 (48.0) |



# Glenair MIL-DTL-38999 Series IV Type Filter Connector with Breech-Lock Coupling

Master How to Order • Part Number Breakdown



**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                    |
|-----|---------------|-----------------|---------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                    |
| MT  | Environmental | Aluminum        | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel  |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel              |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel   |
| H2  | Hermetic      | Stainless Steel | Electroless Nickel                    |

# Glenair MIL-DTL-38999 Series IV Type Filter Connector with Breech-Lock Coupling Reference Information



**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

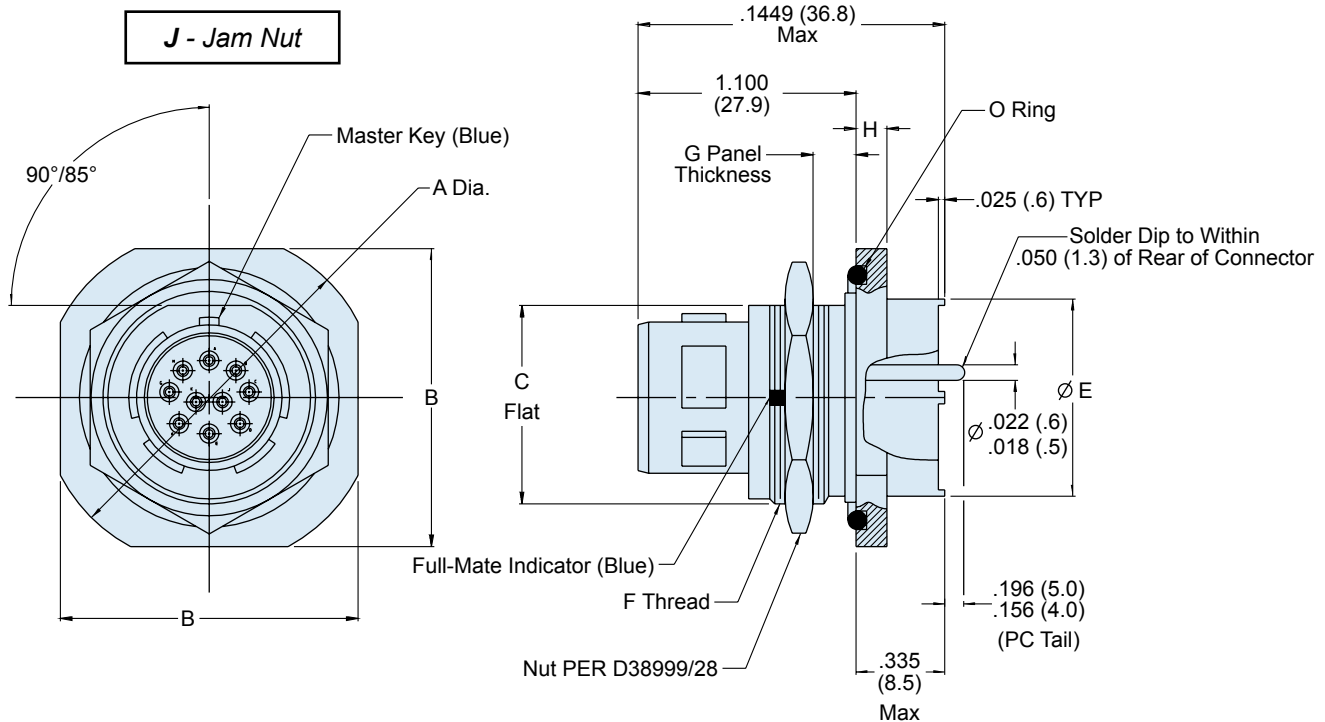
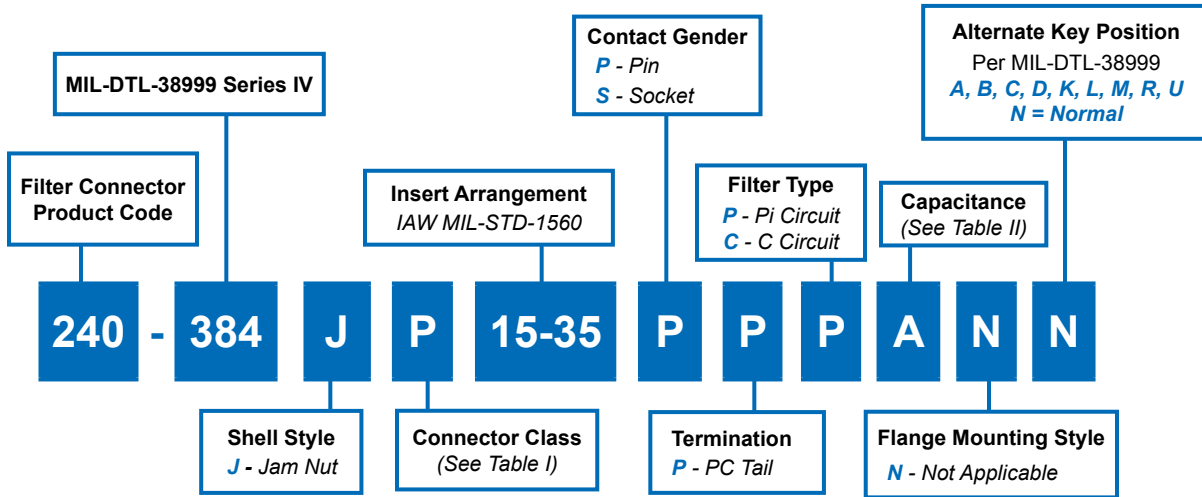
\* Reduced DWV – Please consult factory.

## APPLICATION NOTES

1. Materials/Finishes: Shells, Barrel, Coupling Nut, Jam Nut - See Table I  
Insulators - high grade rigid dielectric/N.A.  
Seals - Fluorosilicone  
PC Tail & Solder Cup contacts: 50µ" Gold over 50µ" Nickel
2. Assembly to be identified with Glenair's name, part number, and date code - space permitting.
3. Insert Arrangement in accordance with MIL-STD-1560.  
(Arrangement shown for reference only)
4. EMI Circular Filter Receptacle connector designed to meet requirements of MIL-STD-2120 and MIL-DTL-38999, Series IV.
5. All contacts to have identical filter value. Other filter arrangements available, contact factory.
6. Electrical Ratings: DWV- 500 VDC; Standard Operating Voltage 200 Volts DC; Current Rating 5 Amps (size 22);
7. Insulation Resistance: 5000 MegOhms Min. at 200 VDC.
8. Operating Temperature -55°C to +125°C (Env Class Connectors)
9. Other filter styles (C-L, L-C, Unbalanced PI, Multi-Stage, Multi-Value) are available, please consult the factory.
10. Metric Dimensions (mm) are indicated in parentheses.



# 240-384J MIL-DTL-38999 Series IV Filter Connector Jam Nut Receptacle



**240-384J**  
**MIL-DTL-38999 Series IV Filter Connector**  
**Jam Nut Receptacle**



EMI/EMP  
Filters

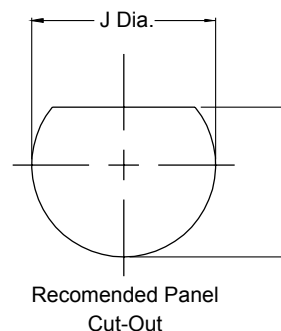
**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                    |
|-----|---------------|-----------------|---------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                    |
| MT  | Environmental | Aluminum        | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel  |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel              |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel   |
| H2  | Hermetic      | Stainless Steel | Electroless Nickel                    |

**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

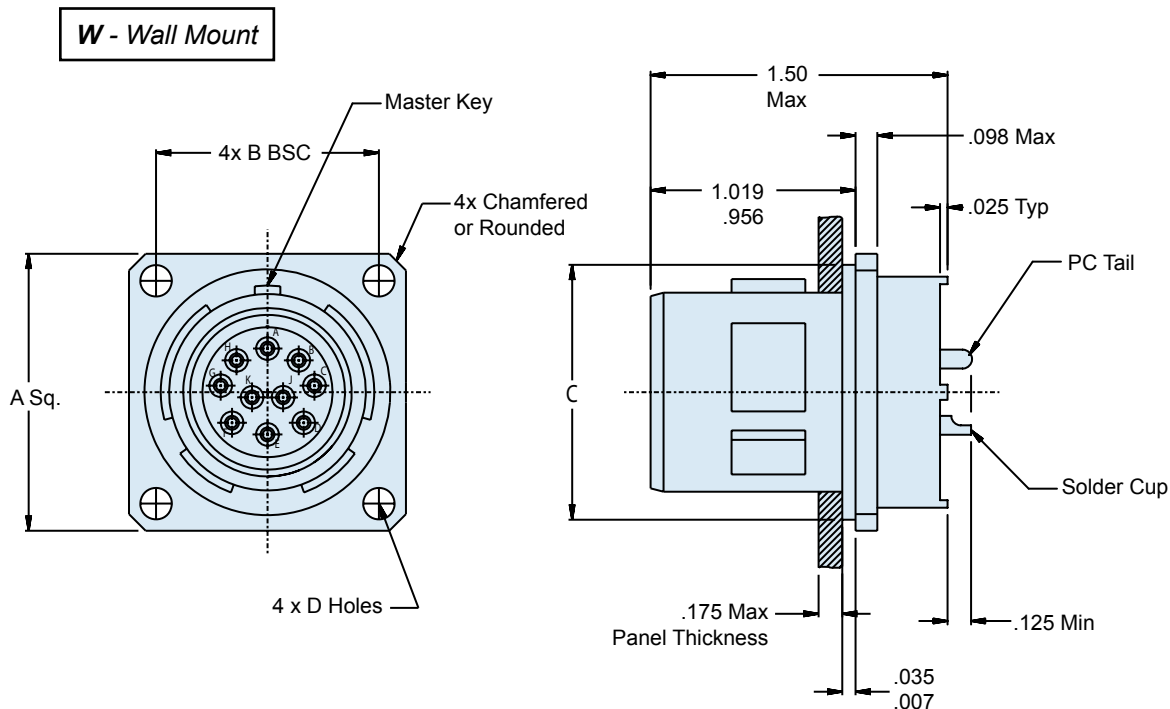
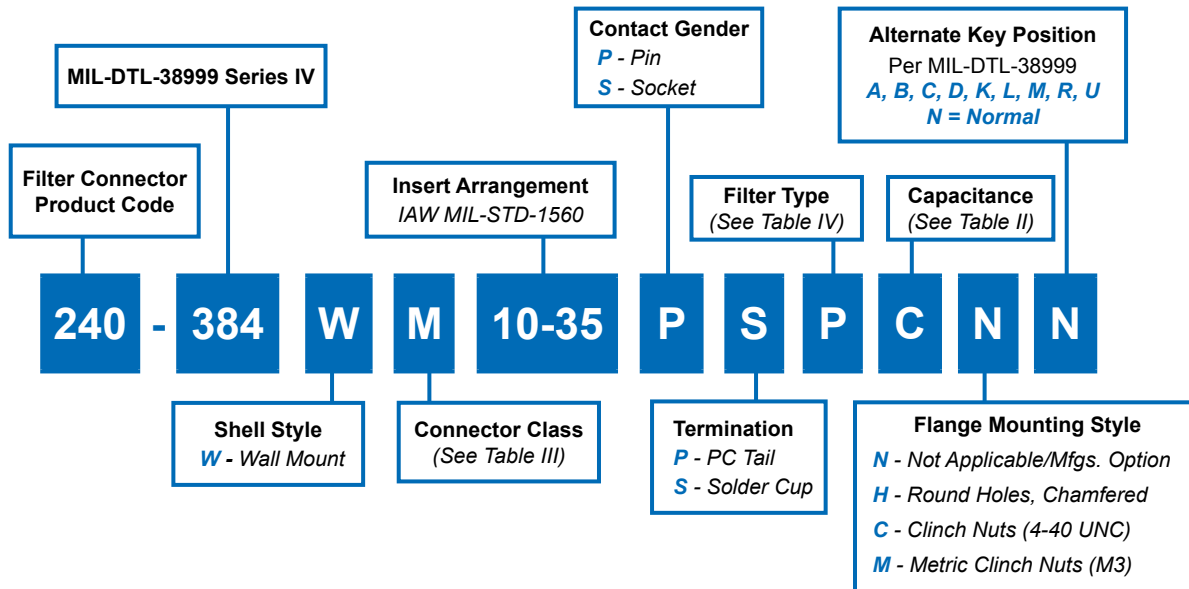
\* Reduced DWV – Please consult factory.



**TABLE III: DIMENSIONS**

| SHELL<br>SIZE<br>CODE | SHELL<br>SIZE | A<br>Diameter                | B                            | C<br>FLAT                    | E<br>DIAMETER                | F THREAD<br>ISO METRIC | G                        | H                        | J<br>Diameter                | K                            |
|-----------------------|---------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------|--------------------------|--------------------------|------------------------------|------------------------------|
| B                     | 11            | 1.385 (35.2)<br>1.362 (34.6) | 1.267 (32.2)<br>1.232 (31.3) | .754 (19.2)<br>.745 (18.9)   | .779 (19.8)<br>.759 (19.3)   | M20 X 1.0-6g           | .125 (3.2)<br>.059 (1.5) | .118 (3.0)<br>.094 (2.4) | .832 (21.1)<br>.822 (20.9)   | .769 (19.5)<br>.759 (19.3)   |
| C                     | 13            | 1.511 (38.4)<br>1.488 (37.8) | 1.393 (35.4)<br>1.358 (34.5) | .941 (23.9)<br>.932 (23.7)   | .909 (23.1)<br>.889 (22.6)   | M25 X 1.0-6g           | .125 (3.2)<br>.059 (1.5) | .118 (3.0)<br>.094 (2.4) | 1.017 (25.8)<br>1.007 (25.6) | .955 (24.3)<br>.945 (24.0)   |
| D                     | 15            | 1.637 (41.6)<br>1.614 (41.0) | 1.519 (38.6)<br>1.484 (37.7) | 1.065 (27.1)<br>1.056 (26.8) | 1.035 (26.3)<br>1.015 (25.8) | M28 X 1.0-6g           | .125 (3.2)<br>.059 (1.5) | .118 (3.0)<br>.094 (2.4) | 1.144 (29.1)<br>1.134 (28.8) | 1.084 (27.5)<br>1.074 (27.3) |
| E                     | 17            | 1.763 (44.8)<br>1.740 (44.2) | 1.641 (41.7)<br>1.606 (40.8) | 1.190 (30.2)<br>1.181 (30.0) | 1.157 (29.4)<br>1.137 (28.9) | M32 X 1.0-6g           | .125 (3.2)<br>.059 (1.5) | .118 (3.0)<br>.094 (2.4) | 1.271 (32.3)<br>1.261 (32.0) | 1.208 (30.7)<br>1.198 (30.4) |
| F                     | 19            | 1.948 (49.5)<br>1.925 (48.9) | 1.830 (46.5)<br>1.795 (45.6) | 1.316 (33.4)<br>1.306 (33.2) | 1.283 (32.6)<br>1.263 (32.1) | M35 X 1.0-6g           | .125 (3.2)<br>.059 (1.5) | .149 (3.8)<br>.125 (3.2) | 1.394 (35.4)<br>1.384 (35.2) | 1.333 (33.9)<br>1.323 (33.6) |
| G                     | 21            | 2.074 (52.7)<br>2.051 (52.1) | 1.956 (49.7)<br>1.921 (48.8) | 1.441 (36.6)<br>1.431 (36.3) | 1.409 (35.8)<br>1.389 (35.3) | M38 X 1.0-6g           | .125 (3.2)<br>.059 (1.5) | .149 (3.8)<br>.125 (3.2) | 1.517 (38.5)<br>1.507 (38.3) | 1.459 (37.1)<br>1.449 (36.8) |
| H                     | 23            | 2.200 (55.9)<br>2.177 (55.3) | 2.078 (52.8)<br>2.043 (51.9) | 1.565 (39.8)<br>1.556 (39.5) | 1.535 (39.0)<br>1.515 (38.5) | M41 X 1.0-6g           | .125 (3.2)<br>.059 (1.5) | .149 (3.8)<br>.125 (3.2) | 1.644 (41.8)<br>1.634 (41.5) | 1.580 (40.1)<br>1.570 (39.9) |
| J                     | 25            | 2.326 (59.1)<br>2.299 (58.4) | 2.204 (56.0)<br>2.169 (55.1) | 1.692 (43.0)<br>1.681 (42.7) | 1.657 (42.1)<br>1.637 (41.6) | M44 X 1.0-6g           | .125 (3.2)<br>.059 (1.5) | .149 (3.8)<br>.125 (3.2) | 1.769 (44.9)<br>1.759 (44.7) | 1.709 (43.4)<br>1.699 (43.2) |

# 240-384W MIL-DTL-38999 Series IV Filter Connector Wall Mount Receptacle



# 240-384W MIL-DTL-38999 Series IV Filter Connector Wall Mount Receptacle



EMI/EMP  
Filters

**TABLE I: CONNECTOR CLASS**

| SYM | CLASS         | MATERIAL        | FINISH DESCRIPTION                    |
|-----|---------------|-----------------|---------------------------------------|
| M   | Environmental | Aluminum        | Electroless Nickel                    |
| MT  | Environmental | Aluminum        | Nickel Fluorocarbon Polymer (Ni-PTFE) |
| NF  | Environmental | Aluminum        | Cadmium O.D. Over Electroless Nickel  |
| P   | Environmental | Stainless Steel | Electro-Deposited Nickel              |
| ZN  | Environmental | Aluminum        | Zinc-Nickel Over Electroless Nickel   |
| H2  | Hermetic      | Stainless Steel | Electroless Nickel                    |

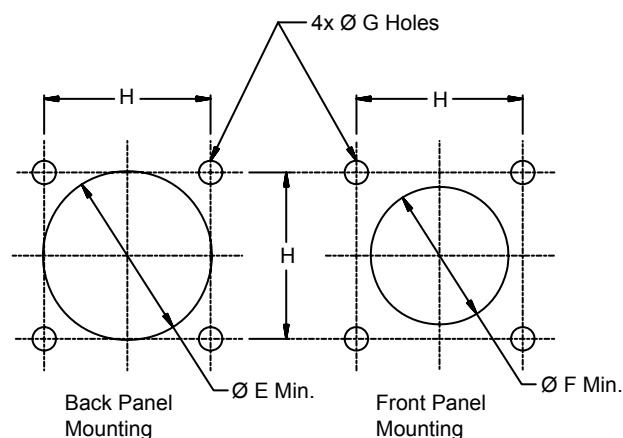
**TABLE IV**

| SYM | Filter Type |
|-----|-------------|
| P   | PI Circuit  |
| C   | C Circuit   |

**TABLE II: CAPACITOR ARRAY CODE  
CAPACITANCE RANGE**

| CLASS | PI - CIRCUIT (pF) | C - CIRCUIT (pF) |
|-------|-------------------|------------------|
| X*    | 160,000 - 240,000 | 80,000 - 120,000 |
| Y*    | 80,000 - 120,000  | 40,000 - 60,000  |
| Z*    | 60,000 - 90,000   | 30,000 - 45,000  |
| A     | 38,000 - 56,000   | 19,000 - 28,000  |
| B     | 32,000 - 45,000   | 16,000 - 22,500  |
| C     | 18,000 - 33,000   | 9,000 - 16,500   |
| D     | 8,000 - 12,000    | 4,000 - 6,000    |
| E     | 3,300 - 5,000     | 1,650 - 2,500    |
| F     | 800 - 1,300       | 400 - 650        |
| G     | 400 - 600         | 200 - 300        |

\* Reduced DWV – Please consult factory.



**TABLE III**

| SHELL<br>SIZE<br>CODE | SHELL<br>SIZE | A<br>Sq        | B<br>BSC | C<br>Diameter  | D<br>Diameter | Ø E<br>Min. | Ø F<br>Min. | Ø G<br>Holes | H              |
|-----------------------|---------------|----------------|----------|----------------|---------------|-------------|-------------|--------------|----------------|
| B                     | 11            | 1.051<br>1.008 | .812     | .793<br>.778   | .138<br>.122  | .781        | .625        | .133<br>.123 | .817<br>.807   |
| C                     | 13            | 1.145<br>1.102 | .906     | .919<br>.904   | .138<br>.122  | .921        | .750        | .133<br>.123 | .911<br>.901   |
| D                     | 15            | 1.240<br>1.197 | .969     | 1.044<br>1.029 | .138<br>.122  | 1.047       | .906        | .133<br>.123 | .973<br>.963   |
| E                     | 17            | 1.334<br>1.291 | 1.062    | 1.170<br>1.155 | .138<br>.122  | 1.218       | 1.016       | .133<br>.123 | 1.067<br>1.057 |
| F                     | 19            | 1.460<br>1.417 | 1.156    | 1.294<br>1.279 | .138<br>.122  | 1.296       | 1.142       | .133<br>.123 | 1.161<br>1.151 |
| G                     | 21            | 1.583<br>1.539 | 1.250    | 1.419<br>1.404 | .138<br>.122  | 1.421       | 1.266       | .133<br>.123 | 1.255<br>1.245 |
| H                     | 23            | 1.709<br>1.665 | 1.375    | 1.544<br>1.529 | .157<br>.142  | 1.546       | 1.375       | .159<br>.149 | 1.380<br>1.370 |
| J                     | 25            | 1.835<br>1.791 | 1.500    | 1.670<br>1.654 | .157<br>.142  | 1.672       | 1.484       | .159<br>.149 | 1.505<br>1.495 |

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# Glenair MIL-DTL-38999 Environmental Class Connectors

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## SECTION D TABLE OF CONTENTS

### GLENAIR ENVIRONMENTAL CLASS CLASS CONNECTORS:

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## Environmental Class MIL-DTL-38999 Type Connectors Built for a Broad Range of Harsh-Environment Applications

### **Product Applications**

Glenair is recognized as trusted supplier of harsh environment electrical connectors built to the MIL-DTL-38999 standard. This section of the catalog presents a selection of the environmental class MIL-DTL-38999 type solutions produced by Glenair. Glenair's expertise in these harsh-environmental interconnect products extends to lanyard release quick-disconnect products, shorting plugs and receptacles, composite and specialty metal plugs and receptacles as well as unique coax and quadrax configurations. We can also supply the interconnects in turnkey harsh application cable sets.

### **Available Insert Arrangements**

Based on industry-standard specifications, Glenair's MIL-DTL-38999 derivative environmental class connector systems are supplied with insert arrangements IAW MIL-STD-1560, or appropriate sub-sets depending on connector series. Consult factory for available insert arrangements.

### **Errata**

*Catalog contents—including part numbers, materials and dimensions—are accurate to the best of our ability when we go to print. When errors or mistakes are brought to our attention, corrected content is posted immediately to [www.glenair.com](http://www.glenair.com).*

*Same-Day Delivery on Many Common Shell Styles and Layouts*

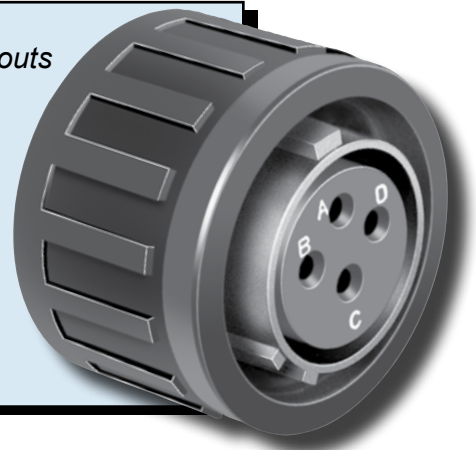
*Selected Range of D38999 Series I thru III Pin and Socket  
Insert Arrangements—Consult Factory for Availability*

*Lightweight, Corrosion-Free Composite Versions*

*Special Lanyard-Release Versions*

*All Standard Material Options, Including Stainless Steel*

*Jam Nut, Solder Mount, Wall Mount and Box Mount Options*



# MIL-DTL-38999 Series I, II and III Type Environmental Class Connectors Insert Arrangements (IAW MIL-STD-1560)

|            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
|------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|            |  |  |  |  |  |  |  |  |
| Series I   | 9-35                                                                              | 9-98                                                                              | 11-2                                                                              | 11-4                                                                              | 11-5                                                                              | 11-35                                                                             | 11-98                                                                             | 11-99                                                                               |
| Series II  | 8-35                                                                              | 8-98                                                                              | 10-2                                                                              | 10-4                                                                              | 10-5                                                                              | 10-35                                                                             | 10-98                                                                             | 10-99                                                                               |
| Series III | A35                                                                               | A98                                                                               | B2                                                                                | B4                                                                                | B5                                                                                | B35                                                                               | B98                                                                               | B99                                                                                 |
| Series IV  | ---                                                                               | ---                                                                               | ---                                                                               | ---                                                                               | B5                                                                                | B35                                                                               | B98                                                                               | B99                                                                                 |

|            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|            |  |  |  |  |
| Series I   | 13-4                                                                              | 13-8                                                                              | 13-35                                                                             | 13-98                                                                             |
| Series II  | 12-4                                                                              | 12-8                                                                              | 12-35                                                                             | 12-98                                                                             |
| Series III | C4                                                                                | C8                                                                                | C35                                                                               | C98                                                                               |
| Series IV  | C4                                                                                | ---                                                                               | C35                                                                               | C98                                                                               |

|            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|            |  |  |  |  |  |  |
| Series I   | 15-5                                                                              | 15-15                                                                             | 15-18                                                                             | 15-19                                                                             | 15-35                                                                             | 15-97                                                                             |
| Series II  | 14-5                                                                              | 14-15                                                                             | 14-18                                                                             | 14-19                                                                             | 14-35                                                                             | 14-97                                                                             |
| Series III | D5                                                                                | D15                                                                               | D18                                                                               | D19                                                                               | D35                                                                               | D97                                                                               |
| Series IV  | D5                                                                                | ---                                                                               | D18                                                                               | D19                                                                               | D35                                                                               | D97                                                                               |

|            |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|            |  |  |  |  |  |
| Series I   | 17-6                                                                                | 17-8                                                                                | 17-26                                                                               | 17-35                                                                               | 17-99                                                                               |
| Series II  | 16-6                                                                                | 16-8                                                                                | 16-26                                                                               | 16-35                                                                               | 16-99                                                                               |
| Series III | E6                                                                                  | E8                                                                                  | E26                                                                                 | E35                                                                                 | E99                                                                                 |
| Series IV  | E6                                                                                  | E8                                                                                  | E26                                                                                 | E35                                                                                 | ---                                                                                 |

|            |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|            |  |  |  |  |  |  |
| Series I   | 19-11                                                                               | 19-28                                                                               | 19-32                                                                               | 19-35                                                                               | 19-30                                                                               | 19-45                                                                               |
| Series II  | 18-11                                                                               | 18-28                                                                               | 18-32                                                                               | 18-35                                                                               | 18-30                                                                               | 18-45                                                                               |
| Series III | F11                                                                                 | F28                                                                                 | F32                                                                                 | F35                                                                                 | F30                                                                                 | F45                                                                                 |
| Series IV  | F11                                                                                 | ---                                                                                 | F32                                                                                 | F35                                                                                 | ---                                                                                 | ---                                                                                 |

Consult factory for available insert arrangements.

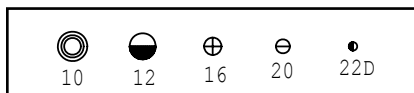


# MIL-DTL-38999 Series I, II and III Type Environmental Class Connectors Insert Arrangements (IAW MIL-STD-1560)



Environmental  
Connectors

|                            |          |          |                  |          |
|----------------------------|----------|----------|------------------|----------|
|                            |          |          |                  |          |
| Series I<br>21-11          | 21-16    | 21-35    | 21-41            |          |
| Series II<br>20-11         | 20-16    | 20-35    | 20-41            |          |
| Series III, IV<br>G11, G11 | G16, G16 | G35, G35 | G41, G41         |          |
|                            |          |          |                  |          |
| Series I<br>21-24          | 21-25    | 21-27    | 21-39            |          |
| Series II<br>20-24         | 20-25    | 20-27    | 20-39            |          |
| Series III, IV<br>G24, G24 | G25, --- | G27, --- | G39, ---         |          |
|                            |          |          |                  |          |
| Series I<br>23-21          | 23-35    | 23-53    | 23-55            | 23-32    |
| Series II<br>22-21         | 22-35    | 22-53    | 22-55            | 22-32    |
| Series III, IV<br>H21, H21 | H35, H35 | H53, --- | H55, H55         | H32, --- |
|                            |          |          |                  |          |
| Series I<br>23-34          | 23-36    | 23-97    | 23-99            |          |
| Series II<br>22-34         | 22-36    | 22-97    | 22-99            |          |
| Series III, IV<br>H34, --- | H36, --- | H97, --- | H99, ---         |          |
|                            |          |          |                  |          |
| Series I<br>25-29          | 25-35    | 25-61    | 25-4             |          |
| Series II<br>24-29         | 24-35    | 24-61    | 24-4             |          |
| Series III, IV<br>J29, J29 | J35, J35 | J61, J61 | J4, J4           |          |
|                            |          |          |                  |          |
| Series I<br>25-43          | 25-19    | 25-24    | J-11             |          |
| Series II<br>24-43         | 24-19    | 24-24    | (Series IV Only) |          |
| Series III, IV<br>J43, J43 | J19, J19 | J24, J24 |                  |          |





# MIL-DTL-38999 Series I, II and III Type Environmental Class Connectors Insert Arrangements (IAW MIL-STD-1560)

| Shell Size and Insert Arrangements |              |                   | Number of Pins |    |    |    |
|------------------------------------|--------------|-------------------|----------------|----|----|----|
| MS Series I                        | MS Series II | D38999 Series III | 22D            | 20 | 16 | 12 |
| 9-35                               | 8-35         | A35               | 6              |    |    |    |
| 9-98                               | 8-98         | A98               |                | 3  |    |    |
| 11-2                               | 10-2         | B2                |                |    | 2  |    |
| 11-4                               | 10-4         | B4                |                | 4  |    |    |
| 11-5                               | 10-5         | B5                |                | 5  |    |    |
| 11-35                              | 10-35        | B35               | 13             |    |    |    |
| 11-98                              | 10-98        | B98               |                | 6  |    |    |
| 11-99                              | 10-99        | B99               |                | 7  |    |    |
| 13-4                               | 12-4         | C4                |                |    | 4  |    |
| 13-8                               | 12-8         | C8                |                | 8  |    |    |
| 13-35                              | 12-35        | C35               | 22             |    |    |    |
| 13-98                              | 12-98        | C98               |                | 10 |    |    |
| 15-5                               | 14-5         | D5                |                |    | 5  |    |
| 15-15                              | 14-15        | D15               |                | 14 | 1  |    |
| 15-18                              | 14-18        | D18               |                | 18 |    |    |
| 15-19                              | 14-19        | D19               |                | 19 |    |    |
| 15-35                              | 14-35        | D35               | 37             |    |    |    |
| 15-97                              | 14-97        | D97               |                | 8  | 4  |    |
| 17-6                               | 16-6         | E6                |                |    |    | 6  |
| 17-8                               | 16-8         | E8                |                |    | 8  |    |
| 17-26                              | 16-26        | E26               |                | 26 |    |    |
| 17-35                              | 16-35        | E35               | 55             |    |    |    |
| 17-99                              | 16-99        | E99               |                | 21 | 2  |    |
| 19-11                              | 18-11        | F11               |                |    | 11 |    |
| 19-28                              | 18-28        | F28               |                | 26 | 2  |    |
| 19-30                              | 18-30        | F30               |                | 29 | 1  |    |
| 19-32                              | 18-32        | F32               |                | 32 |    |    |
| 19-35                              | 18-35        | F35               | 66             |    |    |    |
| 19-45                              | 18-45        | F45               | 67             |    |    |    |
| 21-11                              | 20-11        | G11               |                |    |    | 11 |
| 21-16                              | 20-16        | G16               |                |    | 16 |    |
| 21-24                              | 20-24        | G24               |                | 24 |    |    |
| 21-25                              | 20-25        | G25               |                | 25 |    |    |
| 21-27                              | 20-27        | G27               |                | 27 |    |    |
| 21-35                              | 20-35        | G35               | 79             |    |    |    |
| 21-39                              | 20-39        | G39               |                | 37 | 2  |    |
| 21-41                              | 20-41        | G41               |                | 41 |    |    |
| 23-21                              | 22-21        | H21               |                |    | 21 |    |
| 23-32                              | 22-32        | H32               |                | 32 |    |    |
| 23-34                              | 22-34        | H34               |                | 34 |    |    |
| 23-35                              | 22-35        | H35               | 100            |    |    |    |
| 23-36                              | 22-36        | H36               |                | 36 |    |    |
| 23-53                              | 22-53        | H53               |                | 53 |    |    |
| 23-55                              | 22-55        | H55               |                | 55 |    |    |
| 23-97                              | 22-97        | H97               |                |    | 16 |    |
| 23-99                              | 22-99        | H99               |                |    | 11 |    |
| 25-4                               | 24-4         | J4                |                | 48 | 8  |    |
| 25-19                              | 24-19        | J19               |                |    |    | 19 |
| 25-24                              | 24-24        | J24               |                |    | 12 | 12 |
| 25-29                              | 24-29        | J29               |                |    | 29 |    |
| 25-35                              | 24-35        | J35               | 128            |    |    |    |
| 25-43                              | 24-43        | J43               |                | 23 | 20 |    |
| 25-61                              | 24-61        | J61               |                | 61 |    |    |

| Shell Size / Insert Arrangements | Number of Pins |    |    |    |    |
|----------------------------------|----------------|----|----|----|----|
| D38999 Series IV                 | 22D            | 20 | 16 | 12 | 10 |
| B5                               |                | 5  |    |    |    |
| B35                              | 13             |    |    |    |    |
| B98                              |                | 6  |    |    |    |
| B99                              |                | 7  |    |    |    |
| C4                               |                |    | 4  |    |    |
| C35                              | 22             |    |    |    |    |
| C98                              |                | 10 |    |    |    |
| D5                               |                |    | 5  |    |    |
| D18                              |                | 18 |    |    |    |
| D19                              | 37             | 19 |    |    |    |
| D35                              |                |    |    |    |    |
| D97                              |                | 8  | 4  |    |    |
| E6                               |                |    |    | 6  |    |
| E8                               |                |    | 8  |    |    |
| E26                              |                | 26 |    |    |    |
| E35                              | 55             |    |    |    |    |
| F11                              |                |    | 11 |    |    |
| F32                              |                | 32 |    |    |    |
| F35                              | 66             |    |    |    |    |
| G11                              |                |    |    | 11 |    |
| G16                              |                |    | 16 |    |    |
| G35                              | 79             |    |    |    |    |
| G41                              |                | 41 |    |    |    |
| H21                              |                |    | 21 |    |    |
| H35                              | 100            |    |    |    |    |
| H55                              |                | 55 |    |    |    |
| J4                               |                | 48 | 8  |    |    |
| J11                              |                | 2  |    |    | 9  |
| J19                              |                |    |    | 19 |    |
| J24                              |                |    | 12 | 12 |    |
| J29                              |                |    | 29 |    |    |
| J35                              | 128            |    |    |    |    |
| J43                              |                | 23 | 20 |    |    |
| J61                              |                | 61 |    |    |    |

# MIL-DTL-38999 Series I, II and III Environmental Class Connectors Material Specifications



**TABLE I: MATERIALS**

|                                               |                                                                                  |
|-----------------------------------------------|----------------------------------------------------------------------------------|
| Shell, Barrel, and Coupling Nut               | Aluminum alloy 6061 per ASTM-B211                                                |
| Front and Rear Insulators                     | Glass-filled LCP in accordance with MIL-M-24519, Type GLP-30F                    |
| Contact Retention Clip                        | Beryllium copper, heat-treated, unplated                                         |
| Grommet, Peripheral Seal and Interfacial Seal | Blended elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988 |
| Pin / Socket Contacts (Environmental)         | Copper Alloy / Gold Plate                                                        |
| Socket Contact (Hermetic)                     | Copper Alloy, Gold Plated IAW ASTM B488, Type 3, Code C                          |
| Adhesives                                     | Silicone and epoxy                                                               |
| Potting Compound: PCB and Solder Cup          | High-strength epoxy, Hysol EE4215.                                               |

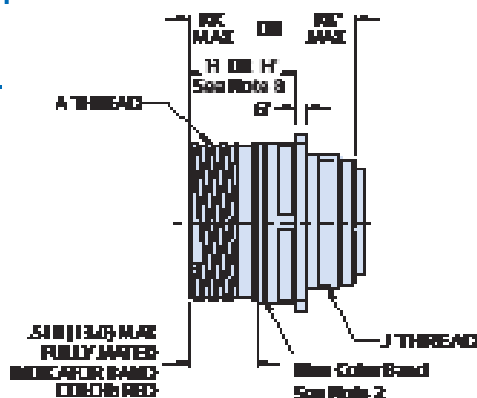
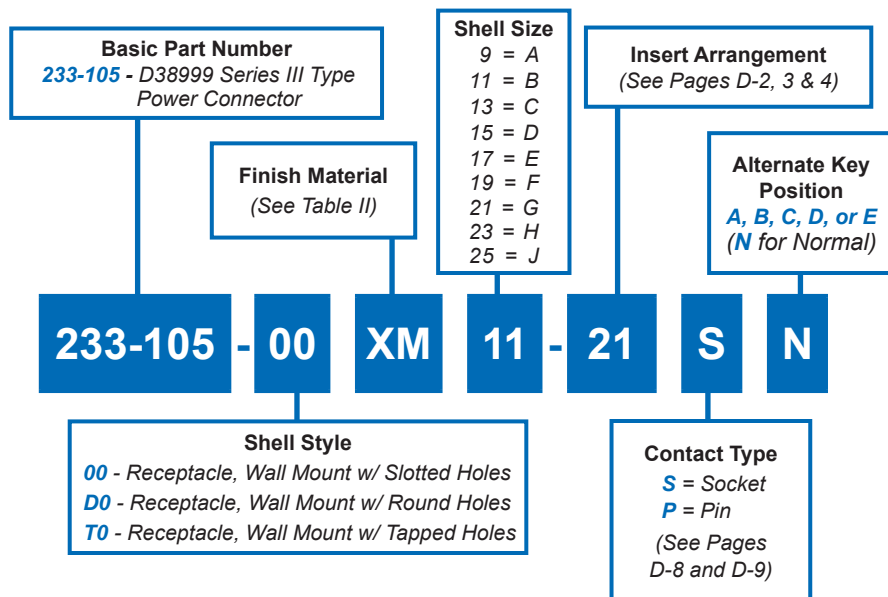
**TABLE II: POPULAR ENVIRONMENTAL CLASS CONNECTOR FINISHES**

| 233-105 | Material        | Finish Description                                               |
|---------|-----------------|------------------------------------------------------------------|
| ME      | Aluminum        | Electroless Nickel                                               |
| MA      | Aluminum        | Electroless Nickel                                               |
| MT      | Aluminum        | Ni-PTFE (Nickel Fluorocarbon Polymer)                            |
| TZ      | Aluminum        | Tin-Zinc (SnZn) Over Electroless Nickel over Suitable Underplate |
| NF      | Aluminum        | Cadmium Plate Olive Drab over Electroless Nickel                 |
| ZR      | Aluminum        | Zinc Nickel, Black over Suitable Underplate                      |
| MN      | Aluminum        | Tri-Nickel Alloy                                                 |
| XW      | Composite       | Cadmium Olive Drab over Electroless Nickel                       |
| XM      | Composite       | Electroless Nickel                                               |
| Z1      | Stainless Steel | Passivate                                                        |
| ZL      | Stainless Steel | Electrodeposited Nickel                                          |
| AB      | Marine Bronze   | None (Clean Only)                                                |

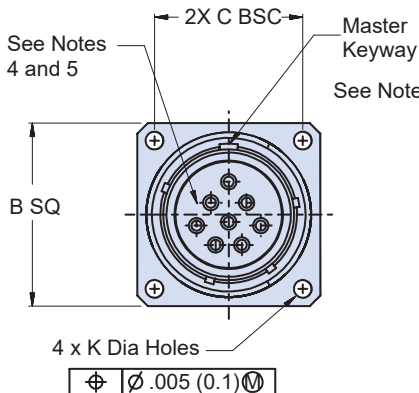
# 233-105-00 MIL-DTL-38999 Series III Type Wall Mount Environmental Receptacle Connector



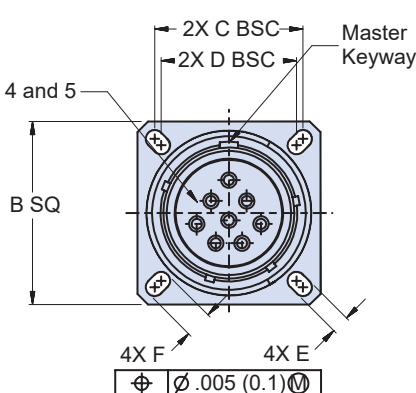
Environmental  
Connectors



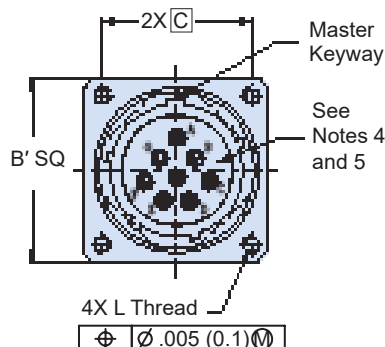
D0 - ROUND HOLES



00 - SLOTTED HOLES



T0 - TAPPED HOLES



Consult factory for available insert arrangements.

## APPLICATION NOTES

### 1. Material/ Finishes:

Shells, Jam Nut - See Table II  
(Composite Jam Nut & Composite Coupling Nut No Plating Required).  
Insulators- High Grade Rigid Dielectric/ N.A.  
Seals- Fluorosilicone/ N.A.

### 2. Blue Color Band indicates rear release retention system.

### 3. Assembly to be identified with Glenair's name, part number and date code space permitting.

### 4. Insert arrangement in accordance with MIL-STD-1560.

### 5. Insert arrangement shown is for reference only.

### 6. Metric dimensions (mm) are in parentheses.

### 7. Composite connectors use dimensions G', H', and KK'.

### 8. For shell style T0 only dimensions H and G' apply.

**TABLE II: FINISH**

| SYM | MATERIAL        | FINISH                                                           | MIL SYM |
|-----|-----------------|------------------------------------------------------------------|---------|
| ME  | Aluminum        | Electroless Nickel                                               | F       |
| MA  |                 | Electroless Nickel                                               | G       |
| MT  |                 | Ni-PTFE (Nickel Fluorocarbon Polymer)                            | T       |
| TZ  |                 | Tin-Zinc (SnZn) Over Electroless Nickel Over Suitable Underplate | V       |
| NF  |                 | Cadmium Plate Olive Drab over Electroless Nickel                 | W       |
| ZR  |                 | Zinc Nickel, Black Over Suitable Underplate                      | Z       |
| MN  |                 | Tri-Nickel Alloy                                                 | AA      |
| XW  | Composite       | Cadmium Olive Drab over Electroless Nickel                       | J       |
| XM  |                 | Electroless Nickel                                               | M       |
| Z1  | Stainless Steel | Passivate                                                        | K       |
| ZL  |                 | Electrodeposited Nickel                                          | S       |
| AB  | Marine Bronze   | None (Clean Only)                                                | -       |

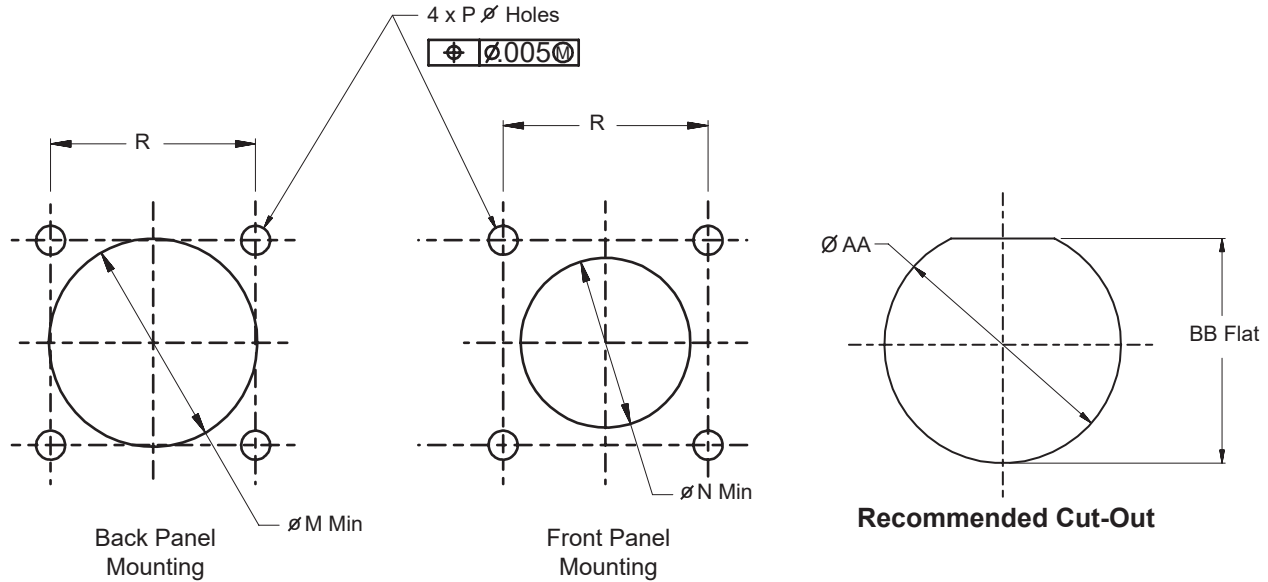
**TABLE III: SHELL SIZE**

| Shell Size Code | Shell Size | A Thread             | B SQ                         | B' SQ                          | C BSC        | D BSC        | E                        | F                        | G                          | H                          | J Thread               | K Holes Dia              |
|-----------------|------------|----------------------|------------------------------|--------------------------------|--------------|--------------|--------------------------|--------------------------|----------------------------|----------------------------|------------------------|--------------------------|
| A               | 9          | .6250-.1P-.3L-TS-2A  | .949 (24.1)<br>.925 (23.5)   | 1.039 (26.39)<br>.999 (25.37)  | .719 (18.3)  | .594 (15.1)  | .136 (3.5)<br>.120 (0.1) | .224 (5.7)<br>.208 (5.3) | .144 (3.7)<br>.083 (2.1)   | .820 (20.8)<br>.768 (19.5) | M12 x 1.0-6g<br>0.100R | .136 (3.5)<br>.120 (3.0) |
| B               | 11         | .7500-.1P-.3L-TS-2A  | 1.043 (26.5)<br>1.019 (25.9) | 1.132 (28.75)<br>1.092 (27.74) | .812 (20.6)  | .719 (18.3)  | .136 (3.5)<br>.120 (0.1) | .202 (5.1)<br>.188 (4.7) | .144 (3.7)<br>.083 (2.1)   | .820 (20.8)<br>.768 (19.5) | M15 x 1.0-6g<br>0.100R | .136 (3.5)<br>.120 (3.0) |
| C               | 13         | .8750-.1P-.3L-TS-2A  | 1.138 (28.9)<br>1.114 (28.3) | 1.226 (31.14)<br>1.186 (30.12) | .906 (23.0)  | .812 (20.6)  | .136 (3.5)<br>.120 (0.1) | .202 (5.1)<br>.188 (4.7) | .144 (3.7)<br>.083 (2.1)   | .820 (20.8)<br>.768 (19.5) | M18 x 1.0-6g<br>0.100R | .136 (3.5)<br>.120 (3.0) |
| D               | 15         | 1.0000-.1P-.3L-TS-2A | 1.232 (31.3)<br>1.208 (30.7) | 1.289 (32.74)<br>1.249 (31.72) | .969 (24.6)  | .906 (23.0)  | .136 (3.5)<br>.120 (0.1) | .202 (5.1)<br>.208 (5.3) | .144 (3.7)<br>.083 (2.1)   | .820 (20.8)<br>.768 (19.5) | M22 x 1.0-6g<br>0.100R | .136 (3.5)<br>.120 (3.0) |
| E               | 17         | 1.1875-.1P-.3L-TS-2A | 1.323 (33.6)<br>1.299 (33.0) | 1.382 (35.10)<br>1.342 (34.09) | 1.062 (27.0) | .969 (24.6)  | .136 (3.5)<br>.120 (0.1) | .202 (5.1)<br>.188 (4.7) | .144 (3.7)<br>.083 (2.1)   | .820 (20.8)<br>.768 (19.5) | M25 x 1.0-6g<br>0.100R | .136 (3.5)<br>.120 (3.0) |
| F               | 19         | 1.2500-.1P-.3L-TS-2A | 1.449 (36.8)<br>1.425 (36.2) | 1.476 (37.49)<br>1.436 (36.47) | 1.156 (29.4) | 1.062 (27.0) | .136 (3.5)<br>.120 (0.1) | .202 (5.1)<br>.188 (4.7) | .144 (3.7)<br>.083 (2.1)   | .820 (20.8)<br>.768 (19.5) | M28 x 1.0-6g<br>0.100R | .136 (3.5)<br>.120 (3.0) |
| G               | 21         | 1.3750-.1P-.3L-TS-2A | 1.575 (40.0)<br>1.551 (39.4) | 1.582 (40.18)<br>1.542 (39.17) | 1.250 (31.8) | 1.156 (29.4) | .136 (3.5)<br>.120 (0.1) | .202 (5.1)<br>.188 (4.7) | .171 (65.2)<br>.083 (39.8) | .790 (20.1)<br>.736 (18.7) | M31 x 1.0-6g<br>0.100R | .136 (3.5)<br>.120 (3.0) |
| H               | 23         | 1.5000-.1P-.3L-TS-2A | 1.701 (43.2)<br>1.677 (42.6) | 1.739 (44.17)<br>1.699 (43.15) | 1.375 (34.9) | 1.250 (31.8) | .162 (4.1)<br>.146 (3.7) | .250 (6.4)<br>.234 (5.9) | .171 (65.2)<br>.083 (39.8) | .790 (20.1)<br>.736 (18.7) | M34 x 1.0-6g<br>0.100R | .162 (4.1)<br>.146 (3.7) |
| J               | 25         | 1.6250-.1P-.3L-TS-2A | 1.823 (46.3)<br>1.799 (45.7) | 1.884 (47.85)<br>1.824 (46.33) | 1.500 (38.1) | 1.375 (34.9) | .162 (4.1)<br>.146 (3.7) | .250 (6.4)<br>.234 (5.9) | .171 (65.2)<br>.083 (39.8) | .790 (20.1)<br>.736 (18.7) | M37 x 1.0-6g<br>0.100R | .162 (4.1)<br>.146 (3.7) |

**233-105-00**  
**MIL-DTL-38999 Series III Type**  
**Wall Mount Environmental Receptacle Connector**



Environmental  
Connectors



**Recommended Mounting Holes  
for Wall Mount Receptacle**

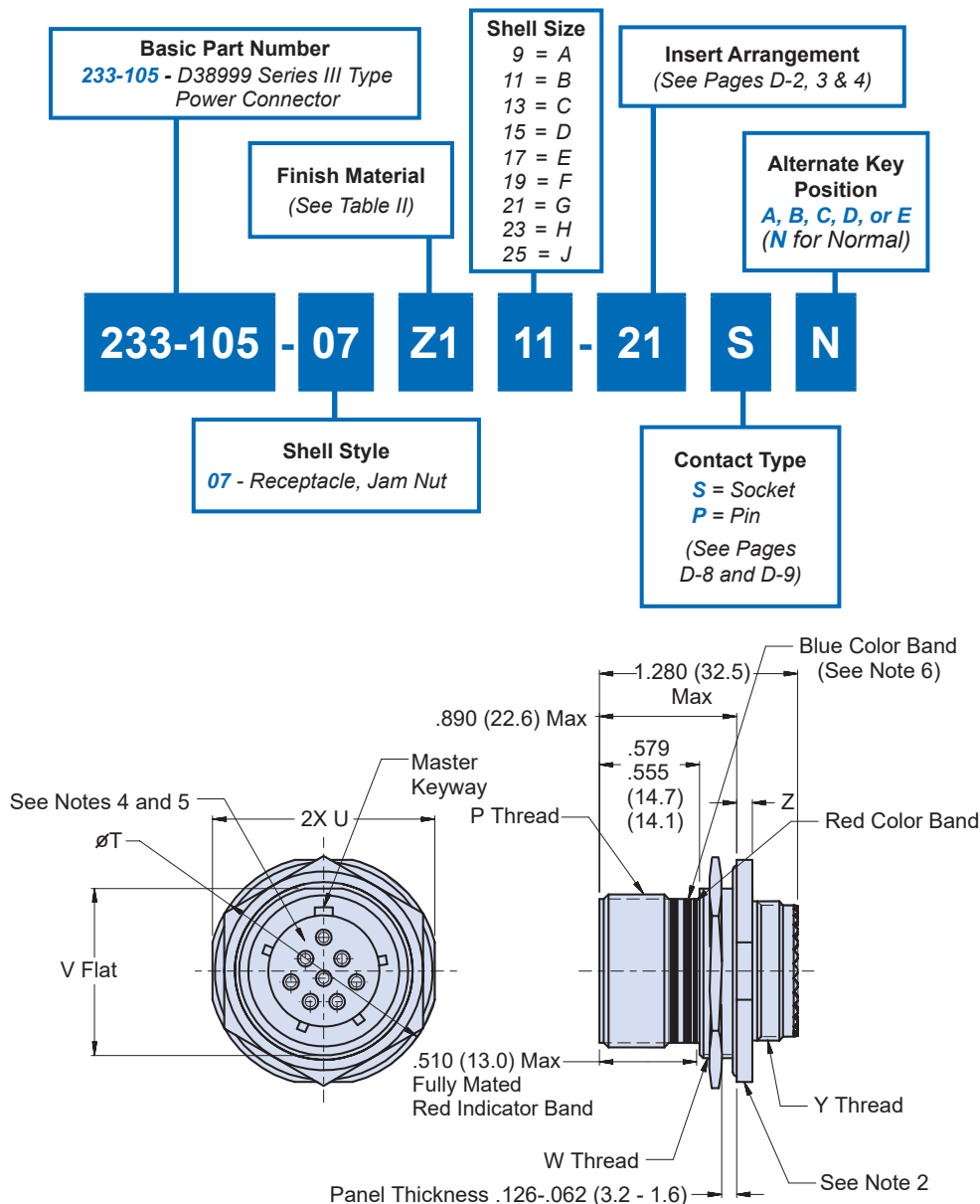
| TABLE IV: SHELL SIZE |            |              |              |              |              |            |              |
|----------------------|------------|--------------|--------------|--------------|--------------|------------|--------------|
| Shell Size Code      | Shell Size | AA Dia       | BB Flat      | M Ø Min      | N Ø Min      | P Ø Holes  | R BSC        |
| A                    | 9          | .703 (17.9)  | .657 (16.7)  | .656 (16.7)  | .516 (13.1)  | .133 (3.4) | .719 (18.3)  |
|                      |            | .693 (17.6)  | .655 (16.6)  |              |              | .123 (3.1) |              |
| B                    | 11         | .835 (21.2)  | .771 (19.6)  | .796 (20.2)  | .625 (15.9)  | .133 (3.4) | .812 (20.6)  |
|                      |            | .825 (21.0)  | .769 (19.5)  |              |              | .123 (3.1) |              |
| C                    | 13         | 1.020 (25.9) | .955 (24.3)  | .922 (23.4)  | .750 (19.1)  | .133 (3.4) | .906 (23.0)  |
|                      |            | 1.010 (25.7) | .943 (24.0)  |              |              | .123 (3.1) |              |
| D                    | 15         | 1.145 (29.1) | 1.085 (27.6) | 1.047 (26.6) | .906 (23.0)  | .133 (3.4) | .969 (24.6)  |
|                      |            | 1.135 (28.8) | 1.083 (27.5) |              |              | .123 (3.1) |              |
| E                    | 17         | 1.270 (32.3) | 1.210 (30.7) | 1.219 (31.0) | 1.016 (25.8) | .133 (3.4) | 1.062 (27.0) |
|                      |            | 1.260 (32.0) | 1.208 (30.7) |              |              | .123 (3.1) |              |
| F                    | 19         | 1.395 (35.4) | 1.335 (33.9) | 1.297 (32.9) | 1.141 (29.0) | .133 (3.4) | 1.156 (29.4) |
|                      |            | 1.385 (35.2) | 1.333 (33.9) |              |              | .123 (3.1) |              |
| G                    | 21         | 1.520 (38.6) | 1.460 (37.1) | 1.422 (36.1) | 1.266 (32.2) | .133 (3.4) | 1.250 (31.8) |
|                      |            | 1.510 (38.4) | 1.458 (37.0) |              |              | .123 (3.1) |              |
| H                    | 23         | 1.645 (41.8) | 1.585 (40.3) | 1.547 (39.3) | 1.375 (34.9) | .159 (4.0) | 1.375 (34.9) |
|                      |            | 1.635 (41.5) | 1.583 (40.2) |              |              | .149 (3.8) |              |
| J                    | 25         | 1.770 (45.0) | 1.710 (43.4) | 1.672 (42.5) | 1.484 (37.7) | .155 (3.9) | 1.500 (38.1) |
|                      |            | 1.760 (44.7) | 1.708 (43.4) |              |              | .145 (3.7) |              |

Metric dimensions (mm) are indicated in parentheses

# 233-105-07

## MIL-DTL-38999 Series III Type

### Jam Nut Environmental Receptacle Connector



Consult factory for available insert arrangements.

#### APPLICATION NOTES

1. Material/ Finishes:  
Shells, Jam Nut - See Table II  
(Composite Jam Nut No Plating Required).  
Insulators- High Grade Rigid Dielectric/ N.A  
Seals- Fluorosilicone/ N.A.
2. Assembly to be identified with Glenair's name, part number and date code space permitting.
3. Modified major diameter 1.252-1.257 (31.80-31.95).
4. Insert arrangement in accordance with MIL-STD-1560.
5. Insert arrangement shown is for reference only.
6. Blue Color Band indicates rear release retention system.
7. Metric dimensions (mm) are in parentheses.

**233-105-07**  
**MIL-DTL-38999 Series III Type**  
**Jam Nut Environmental Receptacle Connector**



Environmental  
Connectors

**TABLE II: FINISH**

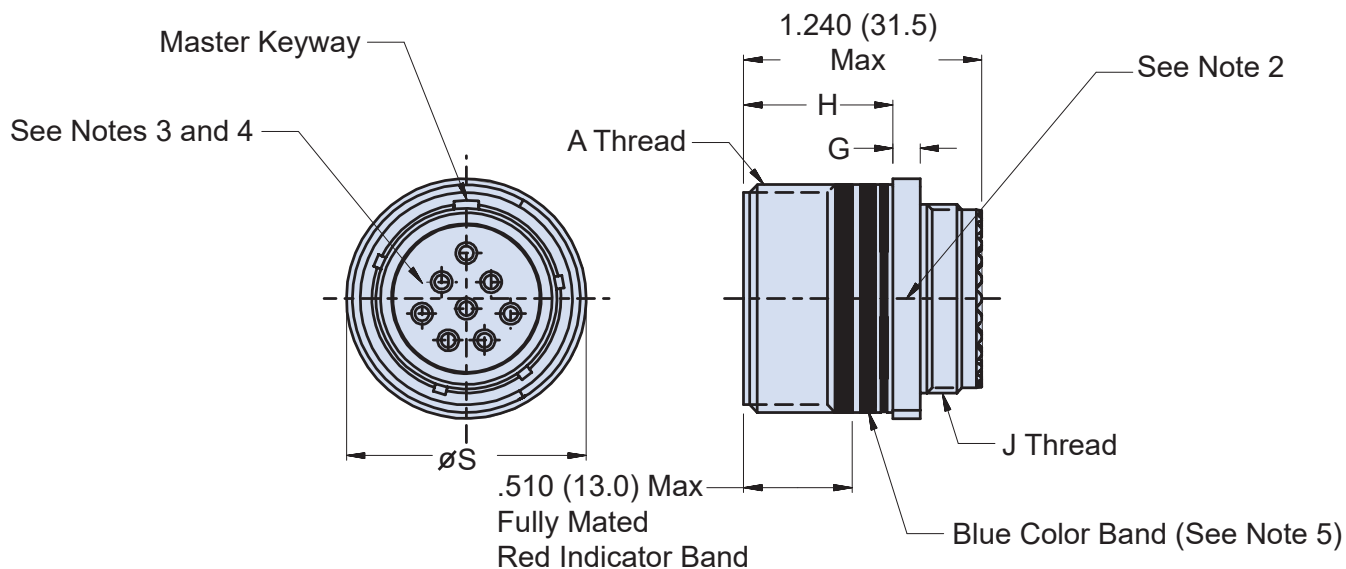
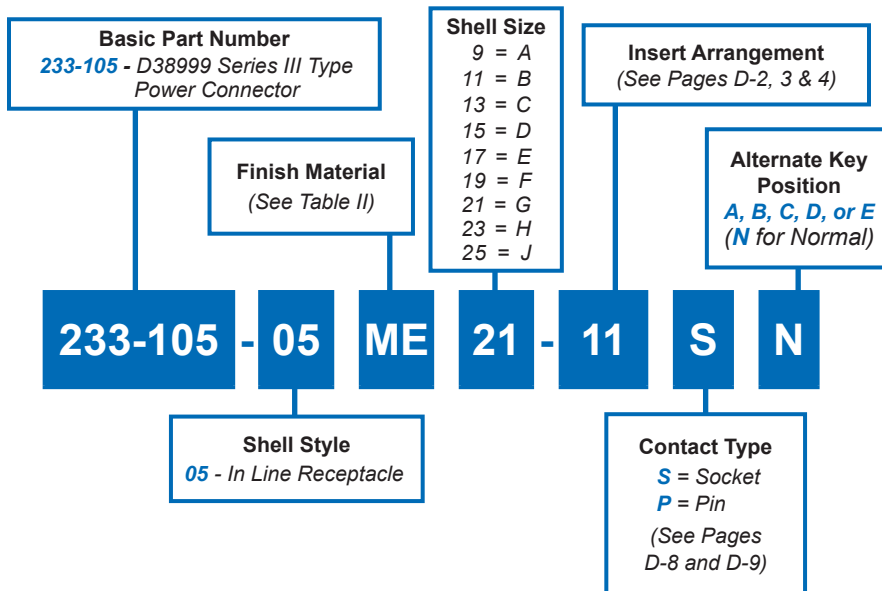
| SYM | MATERIAL        | FINISH                                                           | MIL SYM |
|-----|-----------------|------------------------------------------------------------------|---------|
| ME  | Aluminum        | Electroless Nickel                                               | F       |
| MA  |                 | Electroless Nickel                                               | G       |
| MT  |                 | Ni-PTFE (Nickel Fluorocarbon Polymer)                            | T       |
| TZ  |                 | Tin-Zinc (SnZn) Over Electroless Nickel Over Suitable Underplate | V       |
| NF  |                 | Cadmium Plate Olive Drab over Electroless Nickel                 | W       |
| ZR  |                 | Zinc Nickel, Black Over Suitable Underplate                      | Z       |
| MN  |                 | Tri-Nickel Alloy                                                 | AA      |
| XW  | Composite       | Cadmium Olive Drab over Electroless Nickel                       | J       |
| XM  |                 | Electroless Nickel                                               | M       |
| Z1  | Stainless Steel | Passivate                                                        | K       |
| ZL  |                 | Electrodeposited Nickel                                          | S       |
| AB  | Marine Bronze   | None (Clean Only)                                                | -       |

**TABLE III: SHELL SIZE**

| Shell Size Code | Shell Size | P Thread             | T Dia                        | U                            | V                            | W Thread             | Y Thread            | Z                        |
|-----------------|------------|----------------------|------------------------------|------------------------------|------------------------------|----------------------|---------------------|--------------------------|
| A               | 09         | .6250-.1P-.3L-TS-2A  | 1.200 (30.5)<br>1.178 (29.9) | 1.078 (27.4)<br>1.048 (26.6) | .654 (16.6)<br>.645 (16.4)   | M17 x 1.0-6g 0.100R  | M12 x 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| B               | 11         | .7500-.1P-.3L-TS-2A  | 1.386 (35.2)<br>1.362 (34.6) | 1.268 (32.2)<br>1.236 (31.4) | .755 (19.2)<br>.745 (18.9)   | M20 x 1.0-6g 0.100R  | M15 x 1.0-6g 0.100R |                          |
| C               | 13         | .8750-.1P-.3L-TS-2A  | 1.512 (38.4)<br>1.488 (37.8) | 1.390 (35.3)<br>1.358 (34.5) | .942 (23.9)<br>.932 (23.7)   | M25 x 1.0-6g 0.100R  | M18 x 1.0-6g 0.100R |                          |
| D               | 15         | 1.0000-.1P-.3L-TS-2A | 1.638 (41.6)<br>1.614 (41.0) | 1.516 (38.5)<br>1.484 (37.7) | 1.066 (27.1)<br>1.056 (26.8) | M28 x 1.0-6g 0.100R  | M22 x 1.0-6g 0.100R |                          |
| E               | 17         | 1.1875-.1P-.3L-TS-2A | 1.764 (44.8)<br>1.740 (44.2) | 1.642 (41.7)<br>1.610 (40.9) | 1.191 (30.3)<br>1.181 (30.0) | M32 x 1.0-6g 0.100R* | M25 x 1.0-6g 0.100R |                          |
| F               | 19         | 1.2500-.1P-.3L-TS-2A | 1.949 (49.5)<br>1.925 (48.9) | 1.827 (46.4)<br>1.795 (45.6) | 1.316 (33.4)<br>1.306 (33.2) | M35 x 1.0-6g 0.100R  | M28 x 1.0-6g 0.100R | .153 (3.9)<br>.114 (2.9) |
| G               | 21         | 1.3750-.1P-.3L-TS-2A | 2.075 (52.7)<br>2.051 (52.1) | 1.953 (49.6)<br>1.921 (48.8) | 1.441 (36.6)<br>1.431 (36.3) | M38 x 1.0-6g 0.100R  | M31 x 1.0-6g 0.100R |                          |
| H               | 23         | 1.5000-.1P-.3L-TS-2A | 2.201 (55.9)<br>2.177 (55.3) | 2.079 (52.8)<br>2.047 (52.0) | 1.566 (39.8)<br>1.556 (39.5) | M41 x 1.0-6g 0.100R  | M34 x 1.0-6g 0.100R |                          |
| J               | 25         | 1.6250-.1P-.3L-TS-2A | 2.323 (59.0)<br>2.299 (58.4) | 2.205 (56.0)<br>2.173 (55.2) | 1.691 (43.0)<br>1.681 (42.7) | M44 x 1.0-6g 0.100R  | M37 x 1.0-6g 0.100R |                          |

\*See Note 3

## 233-105-05 MIL-DTL-38999 Series III Type In-Line Environmental Receptacle Connector



Consult factory for available insert arrangements.

### APPLICATION NOTES

- Material/ Finishes:  
Shells - See Table II  
Insulator- High Grade Rigid Dielectric/ N.A  
Seals- Fluorosilicone/ N.A.
- Assembly to be identified with Glenair's name, part number and date code space permitting.
- Insert arrangement in accordance with MIL-STD-1560.
- Insert arrangement shown is for reference only.
- Blue Color Band indicates rear release retention system.
- Metric Dimensions (mm) are indicated in parentheses.

**233-105-05**  
**MIL-DTL-38999 Series III Type**  
**In-Line Environmental Receptacle Connector**



Environmental  
Connectors

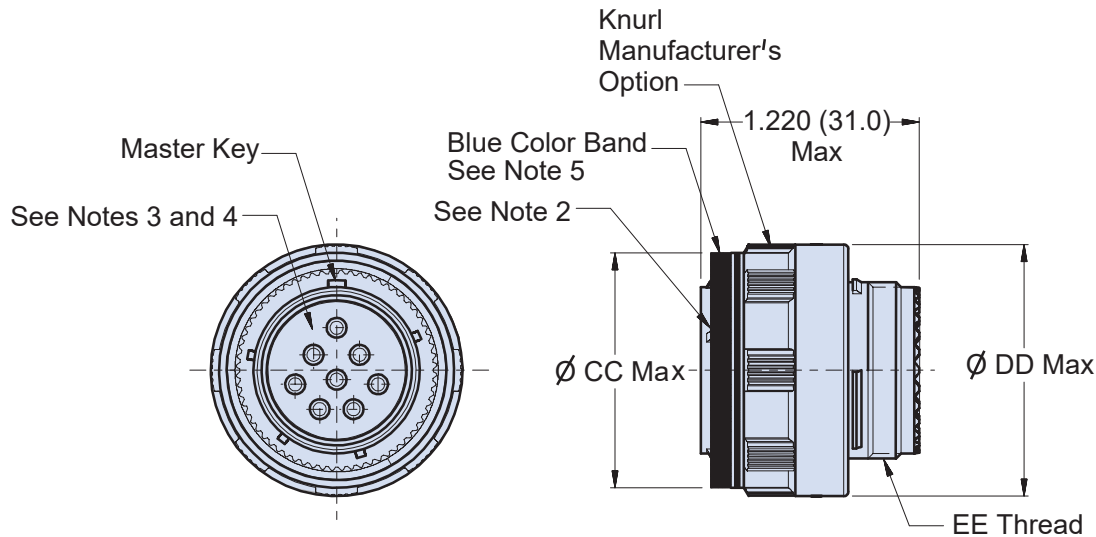
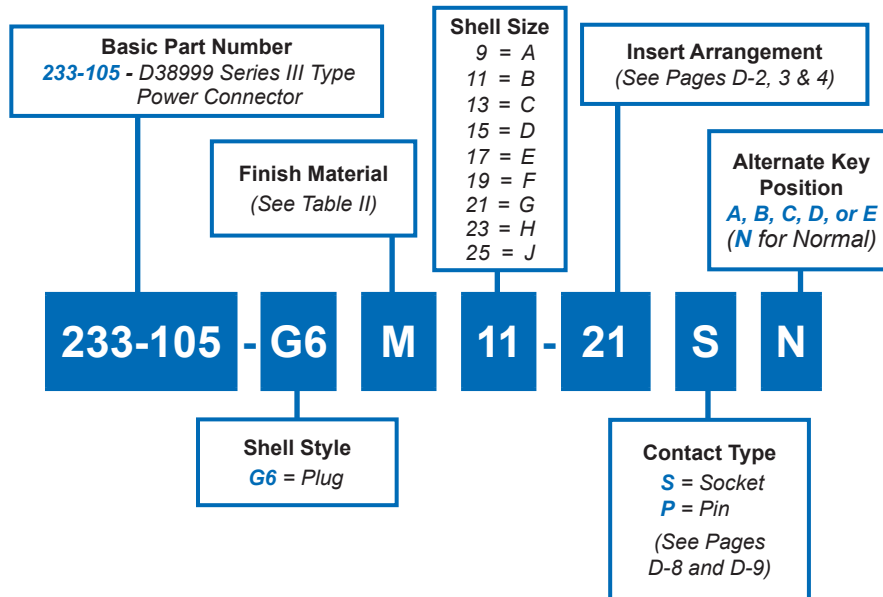
**TABLE II: FINISH**

| SYM | MATERIAL        | FINISH                                                           | MIL SYM |
|-----|-----------------|------------------------------------------------------------------|---------|
| ME  | Aluminum        | Electroless Nickel                                               | F       |
| MA  |                 | Electroless Nickel                                               | G       |
| MT  |                 | Ni-PTFE (Nickel Fluorocarbon Polymer)                            | T       |
| TZ  |                 | Tin-Zinc (SnZn) Over Electroless Nickel Over Suitable Underplate | V       |
| NF  |                 | Cadmium Plate Olive Drab over Electroless Nickel                 | W       |
| ZR  |                 | Zinc Nickel, Black Over Suitable Underplate                      | Z       |
| MN  |                 | Tri-Nickel Alloy                                                 | AA      |
| XW  | Composite       | Cadmium Olive Drab over Electroless Nickel                       | J       |
| XM  |                 | Electroless Nickel                                               | M       |
| Z1  | Stainless Steel | Passivate                                                        | K       |
| ZL  |                 | Electrodeposited Nickel                                          | S       |
| AB  | Marine Bronze   | None (Clean Only)                                                | -       |

**TABLE III: SHELL SIZE**

| Shell Size Code | Shell Size | A Thread             | G                          | H                          | S Max Dia    | J Thread            |
|-----------------|------------|----------------------|----------------------------|----------------------------|--------------|---------------------|
| A               | 09         | .6250-.1P-.3L-TS-2A  | .144 (3.7)<br>.083 (2.1)   | .823 (20.9)<br>.768 (19.5) | .858 (21.8)  | M12 x 1.0-6g 0.100R |
| B               | 11         | .7500-.1P-.3L-TS-2A  | .144 (3.7)<br>.083 (2.1)   | .823 (20.9)<br>.768 (19.5) | .984 (25.0)  | M15 x 1.0-6g 0.100R |
| C               | 13         | .8750-.1P-.3L-TS-2A  | .144 (3.7)<br>.083 (2.1)   | .823 (20.9)<br>.768 (19.5) | 1.157 (29.4) | M18 x 1.0-6g 0.100R |
| D               | 15         | 1.0000-.1P-.3L-TS-2A | .144 (3.7)<br>.083 (2.1)   | .823 (20.9)<br>.768 (19.5) | 1.280 (32.5) | M22 x 1.0-6g 0.100R |
| E               | 17         | 1.1875-.1P-.3L-TS-2A | .144 (3.7)<br>.083 (2.1)   | .823 (20.9)<br>.768 (19.5) | 1.406 (35.7) | M25 x 1.0-6g 0.100R |
| F               | 19         | 1.2500-.1P-.3L-TS-2A | .144 (3.7)<br>.083 (2.1)   | .823 (20.9)<br>.768 (19.5) | 1.516 (38.5) | M28 x 1.0-6g 0.100R |
| G               | 21         | 1.3750-.1P-.3L-TS-2A | .171 (65.2)<br>.083 (39.8) | .791 (20.0)<br>.736 (18.7) | 1.642 (41.7) | M31 x 1.0-6g 0.100R |
| H               | 23         | 1.5000-.1P-.3L-TS-2A | .171 (65.2)<br>.083 (39.8) | .791 (20.0)<br>.736 (18.7) | 1.768 (44.9) | M34 x 1.0-6g 0.100R |
| J               | 25         | 1.6250-.1P-.3L-TS-2A | .171 (65.2)<br>.083 (39.8) | .791 (20.0)<br>.736 (18.7) | 1.890 (48.0) | M37 x 1.0-6g 0.100R |

## 233-105-G6 MIL-DTL-38999 Series III Type Environmental Plug Connector



Consult factory for available insert arrangements.

### APPLICATION NOTES

1. Material/ Finishes:  
Barrel, Coupling Nut - See Table II  
(Composite Coupling Nut - No Plating Required).  
Insulators- High Grade Rigid Dielectric/ N.A  
Seals- Fluorosilicone/ N.A.
2. Assembly to be identified with Glenair's name, part number and date code space permitting.
3. Insert arrangement in accordance with MIL-STD-1560.
4. Insert arrangement shown is for reference only.
5. Blue Color Band indicates rear release retention system.
7. Metric Dimensions (mm) are indicated in parentheses.

**233-105-G6**  
**MIL-DTL-38999 Series III Type**  
**Environmental Plug Connector**



Environmental  
Connectors

**TABLE II: FINISH**

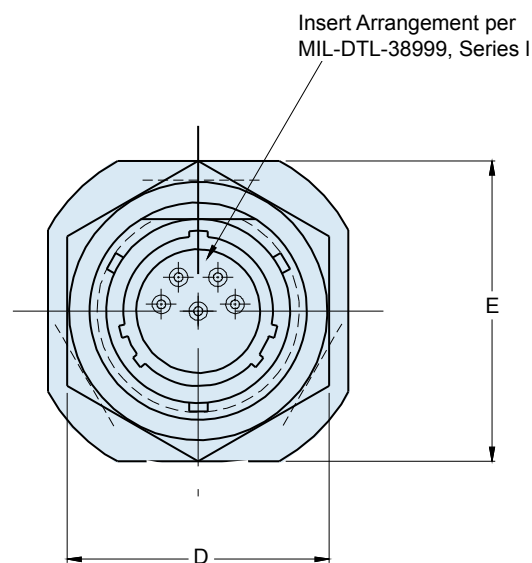
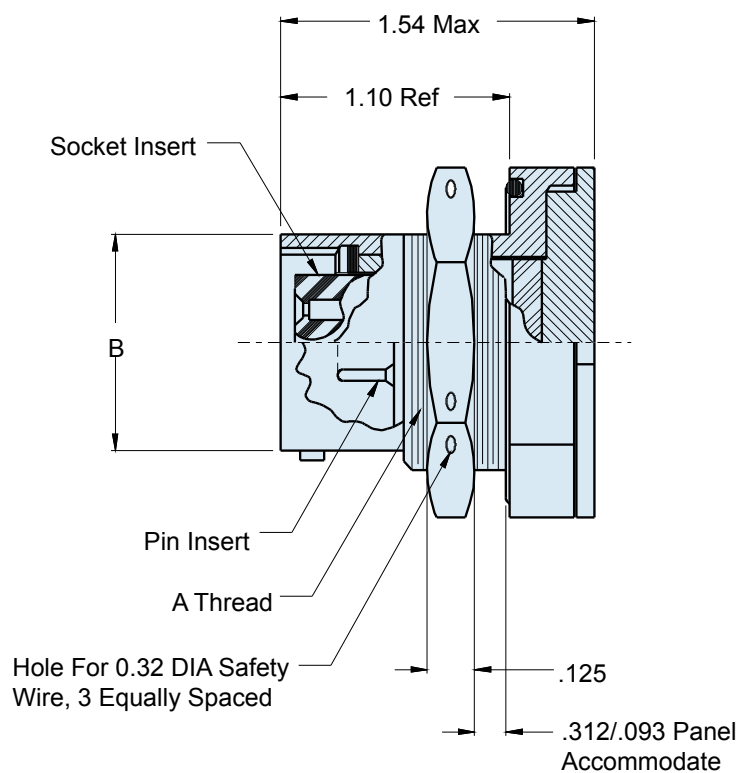
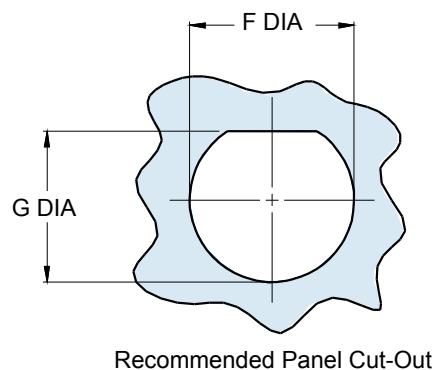
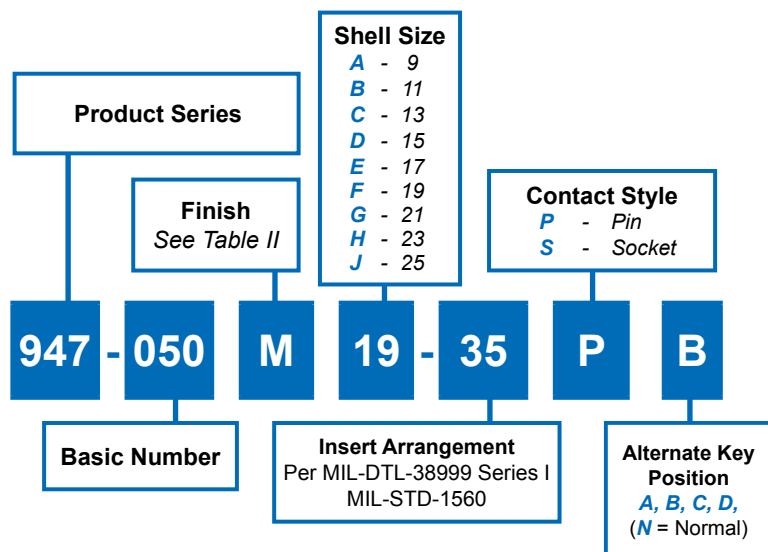
| SYM | MATERIAL        | FINISH                                                           | MIL SYM |
|-----|-----------------|------------------------------------------------------------------|---------|
| ME  | Aluminum        | Electroless Nickel                                               | F       |
| MA  |                 | Electroless Nickel                                               | G       |
| MT  |                 | Ni-PTFE (Nickel Fluorocarbon Polymer)                            | T       |
| TZ  |                 | Tin-Zinc (SnZn) Over Electroless Nickel Over Suitable Underplate | V       |
| NF  |                 | Cadmium Plate Olive Drab over Electroless Nickel                 | W       |
| ZR  |                 | Zinc Nickel, Black Over Suitable Underplate                      | Z       |
| MN  |                 | Tri-Nickel Alloy                                                 | AA      |
| XW  | Composite       | Cadmium Olive Drab over Electroless Nickel                       | J       |
| XM  |                 | Electroless Nickel                                               | M       |
| Z1  | Stainless Steel | Passivate                                                        | K       |
| ZL  |                 | Electrodeposited Nickel                                          | S       |
| AB  | Marine Bronze   | None (Clean Only)                                                | -       |

D

**TABLE III: SHELL SIZE**

| Shell Size Code | Shell Size | CC Max Dia   | DD Max Dia   | EE Thread           |
|-----------------|------------|--------------|--------------|---------------------|
| A               | 09         | .811 (20.6)  | .858 (21.8)  | M12 x 1.0-6g 0.100R |
| B               | 11         | .929 (23.6)  | .984 (25.0)  | M15 x 1.0-6g 0.100R |
| C               | 13         | 1.110 (28.2) | 1.157 (29.4) | M18 x 1.0-6g 0.100R |
| D               | 15         | 1.232 (31.3) | 1.280 (32.5) | M22 x 1.0-6g 0.100R |
| E               | 17         | 1.358 (34.5) | 1.406 (35.7) | M25 x 1.0-6g 0.100R |
| F               | 19         | 1.469 (37.3) | 1.516 (38.5) | M28 x 1.0-6g 0.100R |
| G               | 21         | 1.594 (40.5) | 1.642 (41.7) | M31 x 1.0-6g 0.100R |
| H               | 23         | 1.720 (43.7) | 1.768 (44.9) | M34 x 1.0-6g 0.100R |
| J               | 25         | 1.843 (46.8) | 1.890 (48.0) | M37 x 1.0-6g 0.100R |

# 947-050 Jam Nut Mount Shorting Receptacle MIL-DTL-38999 Series I Type



**947-050**  
**Jam Nut Mount Shorting Receptacle**  
**MIL-DTL-38999 Series I Type**



**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | A THREAD CLASS 2A | B DIA MAX   | D HEX       | E FLATS     | F DIA ±.005(0.1) | G +.000-.005 (0-0.1) |
|------------|-------------------|-------------|-------------|-------------|------------------|----------------------|
| 09         | 11/16-24 UNEF     | .573(14.6)  | .875(22.2)  | 1.062(27.0) | .703(17.9)       | .699(17.8)           |
| 11         | 13/16-20 UNEF     | .701(17.8)  | 1.000(25.4) | 1.250(31.8) | .827(21.0)       | .769(19.5)           |
| 13         | 1 -20 UNEF        | .851(21.6)  | 1.188(30.2) | 1.375(34.9) | 1.015(25.8)      | .955(24.3)           |
| 15         | 1 1/8-18 UNEF     | .976(24.8)  | 1.312(33.3) | 1.500(38.1) | 1.140(29.0)      | 1.084(27.5)          |
| 17         | 1 1/4-18 UNEF     | 1.101(28.0) | 1.438(36.5) | 1.625(41.3) | 1.265(32.1)      | 1.208(30.7)          |
| 19         | 1 3/8-18 UNEF     | 1.208(30.7) | 1.562(39.7) | 1.812(46.0) | 1.390(35.3)      | 1.333(33.9)          |
| 21         | 1 1/2-18 UNEF     | 1.333(33.9) | 1.688(42.9) | 1.938(49.2) | 1.515(38.5)      | 1.459(37.1)          |
| 23         | 1 5/8-18 UNEF     | 1.458(37.0) | 1.812(46.0) | 2.062(52.4) | 1.640(41.7)      | 1.580(40.1)          |
| 25         | 1 3/4-18 UNS      | 1.583(40.2) | 2.000(50.8) | 2.188(55.6) | 1.765(44.8)      | 1.709(43.4)          |

**TABLE II: FINISH**

| SYM | MATERIAL | FINISH                                                           |
|-----|----------|------------------------------------------------------------------|
| A   | Aluminum | Cadmium Plate/Bright Dip                                         |
| B   |          | Cadmium Plate/Olive Drab                                         |
| E   |          | Gold Iridite                                                     |
| J   |          | Gold Iridite over Cadmium Plate over Nickel Plate                |
| L   |          | Cadmium Plate/Olive Drab over Nickel Plate (500-Hour Salt Spray) |
| M   |          | Electroless Nickel                                               |
| N   |          | Cadmium Plate/Olive Drab over Nickel Plate                       |
| NF  |          | Cadmium Plate/Olive Drab over Nickel Plate (500 Hour Salt Spray) |
| P   |          | Nickel Plate                                                     |
| T   |          | Cadmium Plate over Nickel Plate                                  |
| W   |          | Leached Iridite                                                  |
| Y   |          | Gold Iridite over Cadmium Plate                                  |
| Z   |          | Special per Purchase Order                                       |

\*Consult Factory for Additional Plating Options

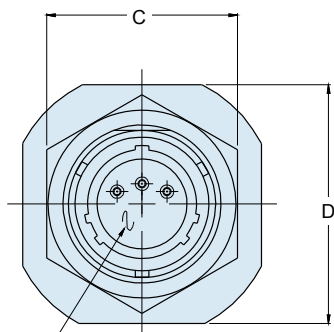
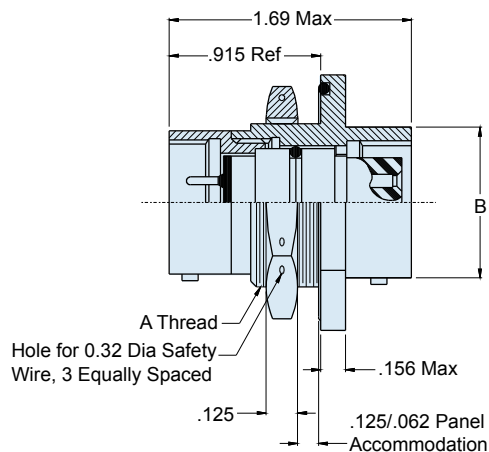
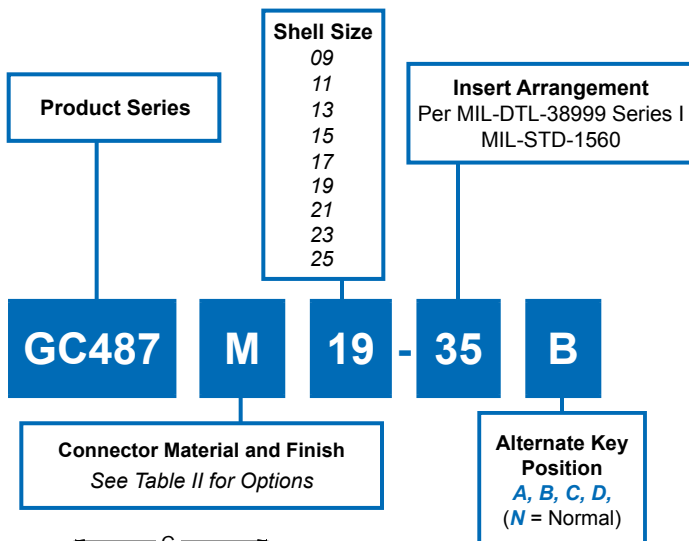
**APPLICATION NOTES**

- Assembly identified with manufacturer's name and part number, space permitting.
- Material/finish:  
 Shell assembly, jam nut, locking coupling nut—aluminum alloy/  
 see Table II  
 Contacts—copper alloy/gold plate
- Insulators—high grade dielectric/N.A.  
 Bayonet pins—CRES/passivate  
 Ground wafer—copper/tin plate  
 Conductive seal—Consil II/N.A.  
 Metric Dimensions (mm) are indicated in parentheses.

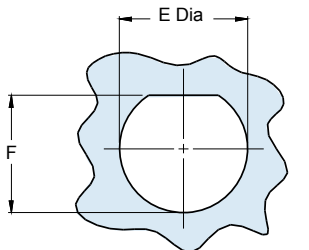
# GC487

## Shorting Bulkhead Feed-Thru

### MIL-DTL-38999 Series I Type



Insert Arrangement, per  
MIL-C-38999, Series I



Recommended Panel Cut-Out

TABLE II: FINISH

| SYM | FINISH                                                   |
|-----|----------------------------------------------------------|
| M   | Electroless Nickel                                       |
| MT  | Ni-PTFE 1000 Hour Grey™<br>(Nickel-Fluorocarbon Polymer) |
| NF  | Cadmium O.D. Over<br>Electroless Nickel                  |
| N   | Cadmium O.D. Over<br>Nickel Plate                        |

TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | A THREAD CLASS 2A | B DIA MAX   | C HEX       | D FLATS     | E DIA ±.005(0.1) | F +.000-.005 (0-0.1) |
|------------|-------------------|-------------|-------------|-------------|------------------|----------------------|
| 09         | 11/16-24 UNEF     | .573(14.6)  | .875(22.2)  | 1.062(27.0) | .703(17.9)       | .669(17.0)           |
| 11         | 13/16-20 UNEF     | .701(17.8)  | 1.000(25.4) | 1.250(31.8) | .827(21.0)       | .769(19.5)           |
| 13         | 1 -20 UNEF        | .851(21.6)  | 1.188(30.2) | 1.375(34.9) | 1.015(25.8)      | .955(24.3)           |
| 15         | 1 1/8-18 UNEF     | .976(24.8)  | 1.312(33.3) | 1.500(38.1) | 1.140(29.0)      | 1.084(27.5)          |
| 17         | 1 1/4-18 UNEF     | 1.101(28.0) | 1.438(36.5) | 1.625(41.3) | 1.265(32.1)      | 1.208(30.7)          |
| 19         | 1 3/8-18 UNEF     | 1.208(30.7) | 1.562(39.7) | 1.812(46.0) | 1.390(35.3)      | 1.333(33.9)          |
| 21         | 1 1/2-18 UNEF     | 1.333(33.9) | 1.688(42.9) | 1.938(49.2) | 1.515(38.5)      | 1.459(37.1)          |
| 23         | 1 5/8-18 UNEF     | 1.458(37.0) | 1.812(46.0) | 2.062(52.4) | 1.640(41.7)      | 1.580(40.1)          |
| 25         | 1 3/4-18 UNS      | 1.583(40.2) | 2.000(50.8) | 2.188(55.6) | 1.765(44.8)      | 1.709(43.4)          |

### APPLICATION NOTES

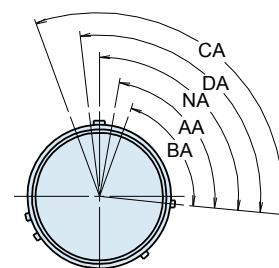
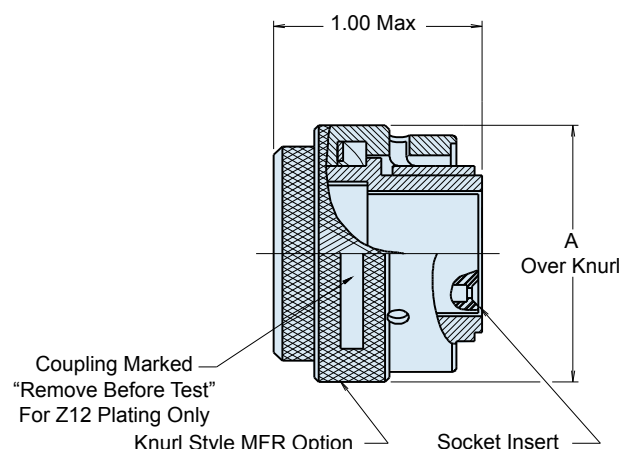
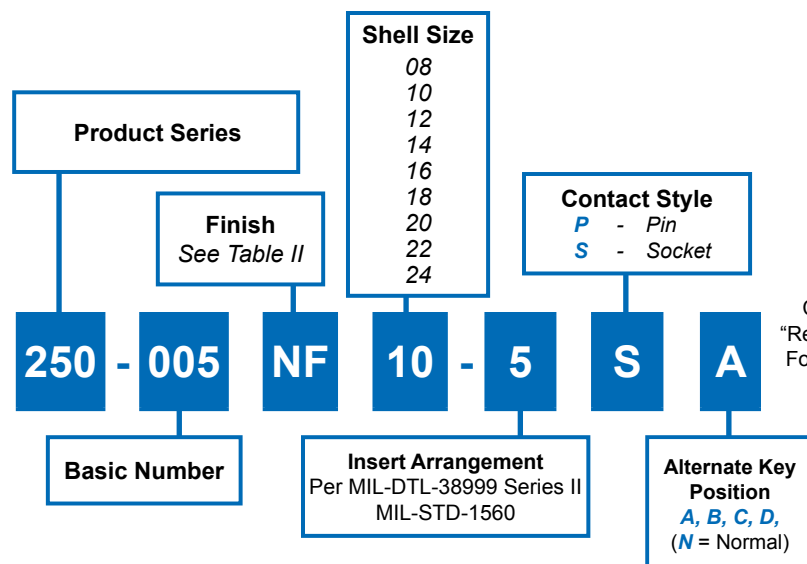
- Assembly identified with manufacturer's name and part number, space permitting
- Material/finish:  
Shell assembly, jam nut, lock ring—al alloy/see Table II
- Contacts—copper alloy/gold plate  
Bayonet pins—CRES/passivate  
O-rings, interfacial & peripheral seals—silicone/N.A.  
Insulators—high grade rigid dielectric/ N.A.

3. Metric Dimensions (mm) are indicated in parentheses

# 250-005 Shorting Plug MIL-DTL-38999 Series II Type



Environmental  
Connectors



**Figure 1**  
Master Keyway Position  
Face View Shown  
Insert Arrangement Does  
Not Rotate With Master Keyway

**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | A MAX       | ALTERNATE KEYWAY POSITIONS |     |     |      |      |
|------------|-------------|----------------------------|-----|-----|------|------|
|            |             | NA                         | AA  | BA  | CA   | DA   |
| 08         | .750(19.1)  | 100A                       | 82A | -   | -    | 118A |
| 10         | .859(21.8)  | 100A                       | 86A | 72A | 128A | 114A |
| 12         | 1.031(26.2) | 100A                       | 80A | 68A | 132A | 120A |
| 14         | 1.156(29.4) | 100A                       | 79A | 66A | 134A | 121A |
| 16         | 1.281(32.5) | 100A                       | 82A | 70A | 130A | 118A |
| 18         | 1.406(35.7) | 100A                       | 82A | 72A | 130A | 118A |
| 20         | 1.531(38.9) | 100A                       | 82A | 70A | 130A | 118A |
| 22         | 1.641(41.7) | 100A                       | 85A | 74A | 126A | 115A |
| 24         | 1.766(44.9) | 100A                       | 85A | 74A | 126A | 115A |

**TABLE II: FINISH**

| SYM | FINISH                                                   |
|-----|----------------------------------------------------------|
| M   | Electroless Nickel                                       |
| MT  | Ni-PTFE 1000 Hour Grey™<br>(Nickel-Fluorocarbon Polymer) |
| NF  | Cadmium O.D. Over<br>Electroless Nickel                  |
| N   | Cadmium O.D. Over<br>Nickel Plate                        |

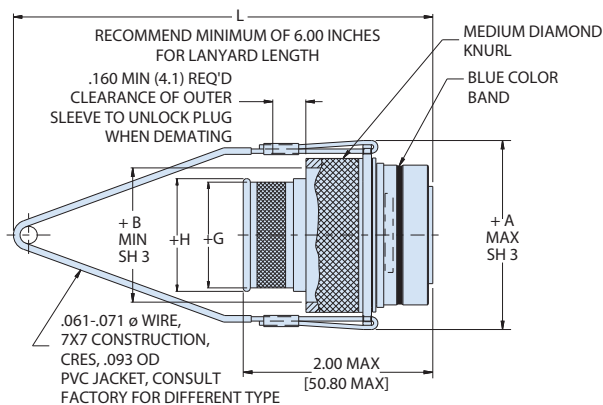
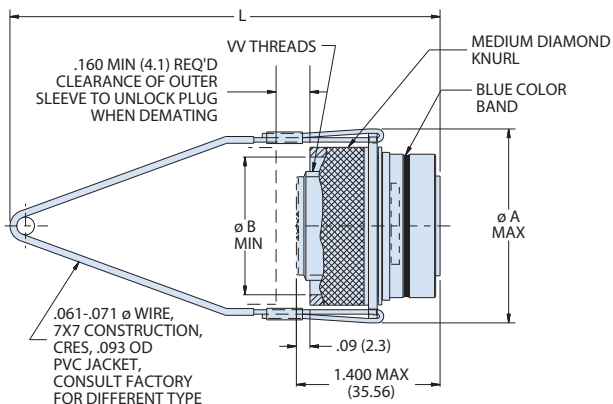
## APPLICATION NOTES

- Assembly identified with manufacturer's name, part number and date code.
- All contacts are shorted to each other and to the shell, max resistance between contacts and shell shall be 2.5 milliohms.
- Material/Finish:  
Barrel, coupling nut, cover—aluminum alloy/see Table II  
Contacts, grounding ring—copper alloy/gold plate  
Grounding wafer—copper/tin plate  
Wave washer—CRES/passivate  
Insulators—high grade rigid dielectric/N.A.
- Metric Dimensions (mm) are indicated in parentheses.

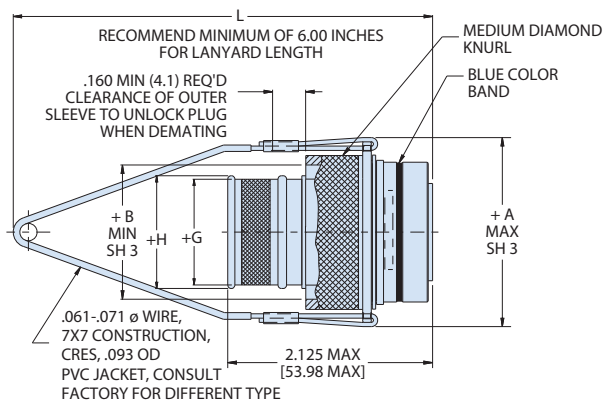
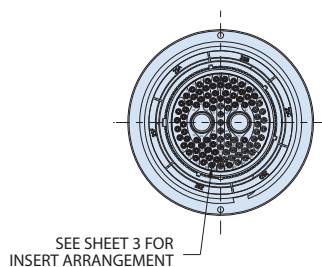
## MIL-DTL-38999 Series III Type

### 233-223 Electrical connector, quick disconnect plug

| Part Number Development |                                                                                                                                                                                                                                                                         |   |    |    |    |   |   |   |   |   |      |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|----|----|---|---|---|---|---|------|
| Sample Part Number      | 233-223                                                                                                                                                                                                                                                                 | B | G6 | ME | 25 | - | 8 | E | P | N | -991 |
| Series / Basic Part No. | 233-223 = Electrical Connector, Quick Disconnect Plug                                                                                                                                                                                                                   |   |    |    |    |   |   |   |   |   |      |
| Rear Accessory Options  | - = Accessory Thread and Teeth<br><b>B</b> = Intergrated Backshell Boot Adapter<br><b>S</b> = Intergrated Backshell Single Band                                                                                                                                         |   |    |    |    |   |   |   |   |   |      |
| Plug                    |                                                                                                                                                                                                                                                                         |   |    |    |    |   |   |   |   |   |      |
| Material / Finish       | <b>ME</b> = Aluminum Alloy, Electroless Nickel<br><b>NF</b> = Aluminum Alloy, Olive Drab-Cadmium Over Nickel<br><b>MT</b> = Aluminum Alloy, Nickel Fluorocarbon Polymer<br><b>Z1</b> = Stainless Steel, Passivated <b>ZL</b> = Stainless Steel, Electrodeposited Nickel |   |    |    |    |   |   |   |   |   |      |
| Shell Size              | See Dimensions table                                                                                                                                                                                                                                                    |   |    |    |    |   |   |   |   |   |      |
| Ground Option           | <b>G</b> = Common Ground   - = None                                                                                                                                                                                                                                     |   |    |    |    |   |   |   |   |   |      |
| Insert Arrangement      | MIL-STD-1560                                                                                                                                                                                                                                                            |   |    |    |    |   |   |   |   |   |      |
| Lanyard Length Code     | See Lanyard Length Code table                                                                                                                                                                                                                                           |   |    |    |    |   |   |   |   |   |      |
| Conact Style            | <b>A</b> = Pin Less Contact <b>P</b> = Pin Insert Contacts<br><b>B</b> = Socket Less Contact <b>S</b> = Socket Insert Contacts                                                                                                                                          |   |    |    |    |   |   |   |   |   |      |
| Alternate Polarization  | <b>A, B, C, D, E, N</b> = Normal                                                                                                                                                                                                                                        |   |    |    |    |   |   |   |   |   |      |
| Optional Mod Code       | Optional mod code 991 is added to end of part to control lanyard straight pulling force. At max 22 LBF (100 newton) pull test is performed without contact.                                                                                                             |   |    |    |    |   |   |   |   |   |      |



S - SINGLE BAND



B - BOOT GROOVE

# MIL-DTL-38999 Series III Type

## 233-223 Electrical connector, quick disconnect plug

| Dimensions |                 |              |              |                  |
|------------|-----------------|--------------|--------------|------------------|
| Shell Size | Shell Size Code | A Max        | B Min        | Vv Thread        |
| 09         | A               | 1.800 (45.7) | 0.977 (24.8) | M12 x1-6g-0.100R |
| 11         | B               | 1.846 (46.9) | 1.003 (25.5) | M15 x1-6g-0.100R |
| 13         | C               | 1.972 (50.1) | 1.177 (29.9) | M18 x1-6g-0.100R |
| 15         | D               | 2.078 (52.8) | 1.299 (33.0) | M22 x1-6g-0.100R |
| 17         | E               | 2.204 (56.0) | 1.425 (36.2) | M25 x1-6g-0.100R |
| 19         | F               | 2.330 (59.2) | 1.535 (39.0) | M28 x1-6g-0.100R |
| 21         | G               | 2.472 (62.8) | 1.661 (42.2) | M31 x1-6g-0.100R |
| 23         | H               | 2.594 (65.9) | 1.787 (45.4) | M34 x1-6g-0.100R |
| 25         | J               | 2.704 (68.7) | 1.909 (48.5) | M37 x1-6g-0.100R |

| Separation Pull Forces Maximum |                             |                              |
|--------------------------------|-----------------------------|------------------------------|
| Shell Size                     | Straight Pull Lbs. (Newton) | 15 Degree Pull Lbs. (Newton) |
| 9                              | 44.96 (200)                 | 55.08 (245)                  |
| 11                             | 44.96 (200)                 | 55.08 (245)                  |
| 13                             | 44.96 (200)                 | 55.08 (245)                  |
| 15                             | 44.96 (200)                 | 55.08 (245)                  |
| 17                             | 89.92 (400)                 | 100.04 (445)                 |
| 19                             | 89.92 (400)                 | 100.04 (445)                 |
| 21                             | 89.92 (400)                 | 100.04 (445)                 |
| 23                             | 89.92 (400)                 | 100.04 (445)                 |
| 25                             | 89.92 (400)                 | 100.04 (445)                 |

| Lanyard Length Code |               |      |               |      |               |      |               |
|---------------------|---------------|------|---------------|------|---------------|------|---------------|
| Code                | L ± .236 (±6) | Code | L ± .236 (±6) | Code | L ± .236 (±6) | Code | L ± .236 (±6) |
| A                   | 4.016(102)    | G    | 7.007(178)    | M    | 10.000(254)   | U    | 13.031(331)   |
| B                   | 4.527(115)    | H    | 7.519(191)    | N    | 10.511(267)   | V    | 14.015(356)   |
| C                   | 5.000(127)    | I    | 7.992(203)    | P    | 11.023(280)   | W    | 15.000(381)   |
| D                   | 5.511(140)    | J    | 8.503(216)    | R    | 11.535(293)   | X    | 16.023(407)   |
| E                   | 6.024(153)    | K    | 9.015(229)    | S    | 12.007(305)   | Y    | 17.007(432)   |
| F                   | 6.535(166)    | L    | 9.527(242)    | T    | 12.519(318)   | Z    | 18.031(458)   |

| Integral Backshell |               |               |
|--------------------|---------------|---------------|
| Shell Size         | + G           | + H           |
| 11                 | 0.535 (13.59) | 0.585 (14.86) |
| 13                 | 0.643 (16.33) | 0.703 (17.86) |
| 15                 | 0.800 (20.32) | 0.860 (21.84) |
| 17                 | 0.930 (23.62) | 0.980 (24.89) |
| 19                 | 1.040 (26.42) | 1.100 (27.94) |
| 21                 | 1.155 (29.34) | 1.215 (30.86) |
| 23                 | 1.273 (32.33) | 1.333 (33.86) |
| 25                 | 1.391 (35.33) | 1.451 (36.86) |

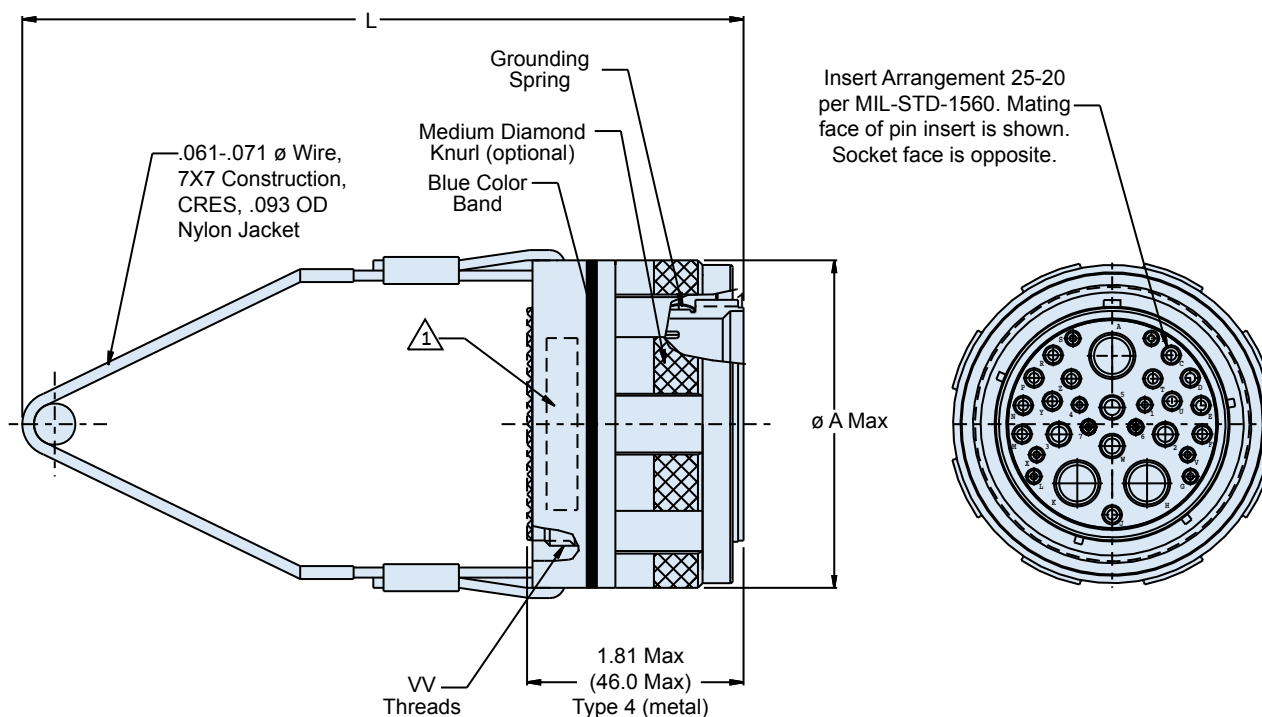
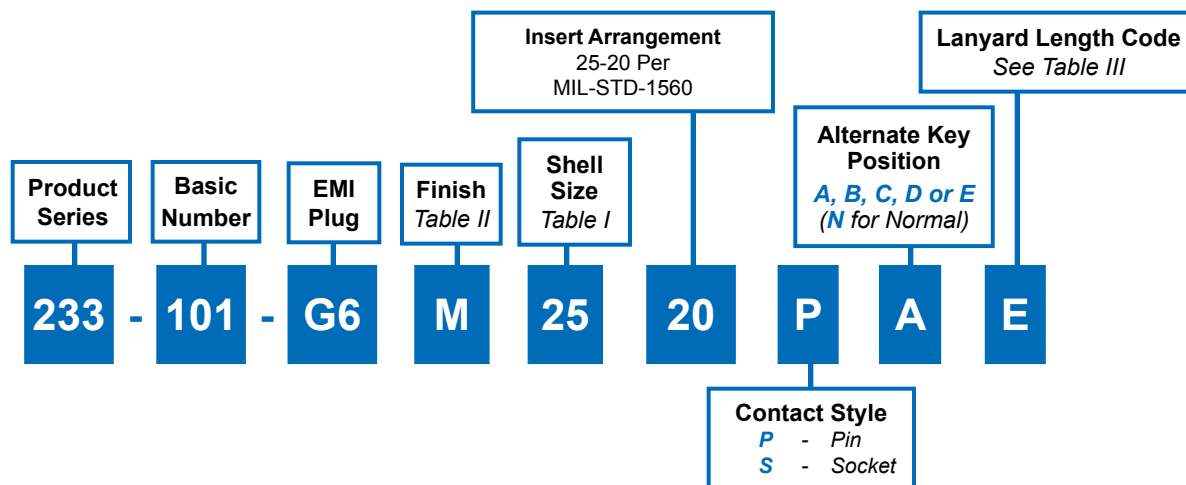
| Supplied Components |                         |                            |                          |                                    |
|---------------------|-------------------------|----------------------------|--------------------------|------------------------------------|
| Contact Size        | Contact Pin Part Number | Contact Socket Part Number | Sealing Plug Part Number | Insertion/Removal Tool Part Number |
| 23                  | M39029/122-670          | M39029/121-663             | M27488-23                | M81969/1-05                        |
| 22D                 | M39029/58-360           | M39029/56-348              | M27488-22                | M81969/14-01                       |
| 20                  | M39029/58-363           | M39029/56-351              | M27488-20                | M81969/14-10                       |
| 16                  | M39029/58-364           | M39029/56-352              | M27488-16                | M81969/14-03                       |
| 12                  | M39029/58-365           | M39029/56-353              | M27488-12                | M81969/14-04                       |
| 12                  | M39029/102-558 Coax     | M39029/103-559 Coax        | M27488-12                | M81969/14-04                       |
| 8                   | M39029/60-367 Coax      | M39029/59-366 Coax         | M27488-8                 | M81969/14-06                       |
| 8                   | M39029/90-529 Twinax    | M39029/91-530 Twinax       | M27488-8                 | M81969/14-06                       |

### NOTES

- This connector mates with DOD-C-38999/20, /21, /23, /24, /25, and /27.
- Blue color band indicates rear release retention system.
- Dim b is clearance to accommodate Mil-C-85049 accessories.
- For backshell extender consult factory.
- All contacts, insertion / removal tool, and sealing plug to be ordered separately.
- Connector 233-223 is commercial equivalent of D38999/29, /30 and /31 type 2. Glenair test data #GT-15-107, and #GT-16-176
- Ground plane option only available for insert arrangement where all contacts are shielded type.
- Banding Port Option:
  - B = integrated backshell boot adapter over all dimension is 2.125 Max for size 11-25-not offered for size 9
  - S = integrated backshell single band over all dimension is 2.00 Max. For size 11-25- not offered for size 9.
- Coupling nut clearance is for backshell. Boot and overmold O.D must be less than ø B dimensions.
- Material/finish
  - Shell, coupling sleeve, lanyard ring, inner sleeve, locking-al alloy or cres/ see Lanyard Length Code table
  - Contacts - copper alloy/gold plate
  - Insulators - high grade rigid dielectric/ N.A.
  - Seals - fluorosilicone/N.A.

# 233-101-G6

## Type 4 Lanyard Release Plug for MIL-STD-1760 and Other MIL-DTL-38999 Series III Type Hybrid Signal, Power, Coax and Twinax Arrangements



# 233-101-G6

## Type 4 Lanyard Release Plug for MIL-STD-1760 and Other MIL-DTL-38999 Series III Type Hybrid Signal, Power, Coax and Twinax Arrangements



Environmental  
Connectors

**TABLE I: CONNECTOR DIMENSIONS**

| SHELL<br>SIZE | SHELL<br>SIZE CODE | A<br>MAX      | W THREAD         |
|---------------|--------------------|---------------|------------------|
| 09            | A                  | 1.00 (25.4)   | M12 x1-6g-0.100R |
| 11            | B                  | 1.110 (28.19) | M15 x1-6g-0.100R |
| 13            | C                  | 1.972 (50.1)  | M18x1-6g-0.100R  |
| 15            | D                  | 2.078 (52.8)  | M22x1-6g-0.100R  |
| 17            | E                  | 2.204 (56.0)  | M25x1-6g-0.100R  |
| 19            | F                  | 2.330 (59.2)  | M28x1-6g-0.100R  |
| 21            | G                  | 2.472 (62.8)  | M31x1-6g-0.100R  |
| 23            | H                  | 2.594 (65.9)  | M34x1-6g-0.100R  |
| 25            | J                  | 2.704 (68.7)  | M37x1-6g-0.100R  |

**TABLE II: FINISH**

| Symbol    | Finish                                      |
|-----------|---------------------------------------------|
| <b>M</b>  | Al alloy, Electroless Nickel                |
| <b>Z1</b> | CRES, Passivated                            |
| <b>ZL</b> | CRES, Electrodeposited Nickel               |
| <b>NF</b> | Al alloy, Olive Drab Cadmium<br>over Nickel |

**TABLE III: LANYARD LENGTH CODE**

| CODE | L ± .236 (±6) | CODE | L ± .236 (±6) | CODE | L ± .236 (±6) | CODE | L ± .236 (±6) |
|------|---------------|------|---------------|------|---------------|------|---------------|
| A    | 4.016(102)    | G    | 7.007(178)    | M    | 10.000(254)   | U    | 13.031(331)   |
| B    | 4.527(115)    | H    | 7.519(191)    | N    | 10.511(267)   | V    | 14.015(356)   |
| C    | 5.000(127)    | I    | 7.992(203)    | P    | 11.023(280)   | W    | 15.000(381)   |
| D    | 5.511(140)    | J    | 8.503(216)    | R    | 11.535(293)   | X    | 16.023(407)   |
| E    | 6.024(153)    | K    | 9.015(229)    | S    | 12.007(305)   | Y    | 17.007(432)   |
| F    | 6.535(166)    | L    | 9.527(242)    | T    | 12.519(318)   | Z    | 18.031(458)   |

**TABLE IV: SUPPLIED COMPONENTS**

| Contact<br>Size | Contact Pin<br>Part Number | Contact Socket<br>Part Number | Sealing Plug<br>Part Number | Insertion/Removal<br>Tool Part Number |
|-----------------|----------------------------|-------------------------------|-----------------------------|---------------------------------------|
| 22D             | M39029/58-360              | M39029/56-348                 | M27488-22                   | M81969/14-01                          |
| 20              | M39029/58-363              | M39029/56-351                 | M27488-20                   | M81969/14-10                          |
| 16              | M39029/58-364              | M39029/56-352                 | M27488-16                   | M81969/14-03                          |
| 12              | M39029/58-365              | M39029/56-353                 | M27488-12                   | M81969/14-04                          |
| 12              | M39029/102-558 Coax        | M39029/103-559 Coax           | M27488-12                   | M81969/14-04                          |
| 8               | M39029/60-367 Coax         | M39029/59-366 Coax            | M27488-8                    | M81969/14-06                          |
| 8               | M39029/90-529 Twinax       | M39029/91-530 Twinax          | M27488-8                    | M81969/14-06                          |

### APPLICATION NOTES

- Assembly to be identified with Glenair's name and part number.
- Material/finishes:  
Shell, coupling sleeve, lanyard ring—Aluminum alloy or CRES per Table I  
Retaining clips—Beryllium copper/gold plated  
Insulators—High grade rigid dielectric/NA  
Wave spring, retaining rings—Cres  
Grounding Spring—Beryllium copper/electroless nickel  
Seals—fluorosilicone/NA
- This connector mates with D38999/20 and /24,
- Dimensions in parenthesis are metric and for reference.
- Blue color band indicates rear release retention system.
- Connectors to be supplied with contacts, insertion/removal tools and sealing plugs. Quantity of contacts includes spares (see Table IV).

# 2570-1269 ARINC 828 MIL-DTL-38999 Series III Type Quadrax Plug/Receptacle for EFB Standard

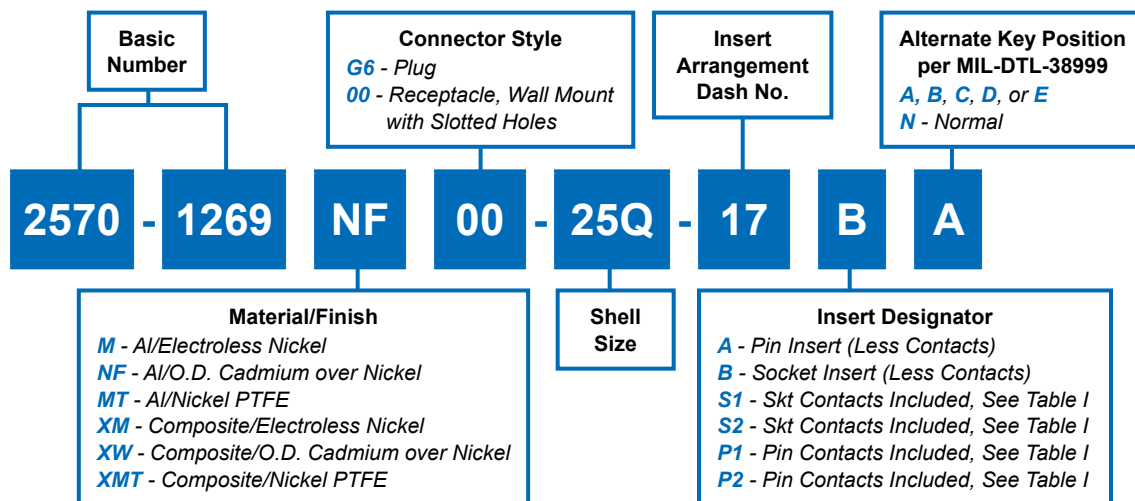
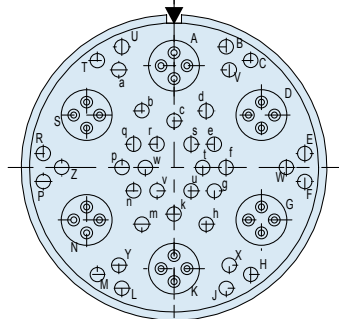
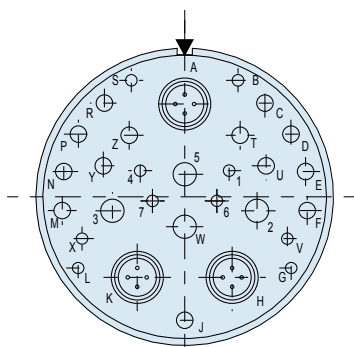


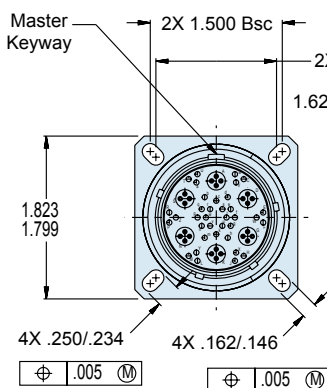
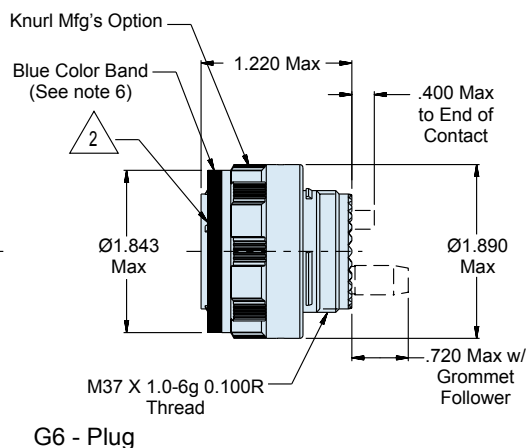
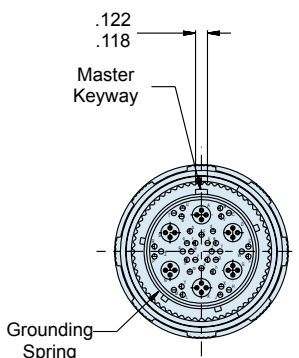
FIGURE 1: INSERT ARRANGEMENTS



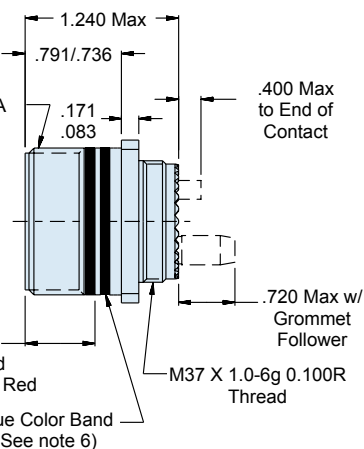
Arrangement 25Q-17  
36 #22 Contacts  
6 #8 Quadrax Contacts  
(J2, J3, J4)



Arrangement 25Q-20  
(IAW prEN 3645-001)  
10 #20 Contacts  
13 #16 Contacts  
4 #12 Contacts  
3 #8 Quadrax Contacts  
(J1)



00-Wall Mount Receptacle  
With Slotted Holes



**2570-1269**  
**ARINC 828**  
MIL-DTL-38999 Series III Type  
**Quadrax Plug/Receptacle for EFB Standard**



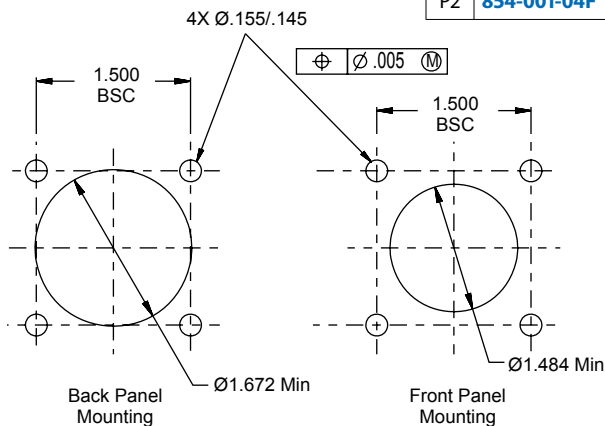
**Table I: Cross-Reference to ARINC 828 Connectors (Wall Mount Receptacle)**

| ARINC 828 (Receptacle) | Glenair Conn P/N (See Notes 3 and 4)   | Quadrax Contact Socket P/N                          | Qty | Reference Cable Accommodated                                     |
|------------------------|----------------------------------------|-----------------------------------------------------|-----|------------------------------------------------------------------|
| J1                     | <a href="#">2570-1269M00-25Q-20BA</a>  | Not Supplied (To Be Ordered Separately. See Note 5) |     |                                                                  |
|                        | <a href="#">2570-1269M00-25Q-20S1A</a> | <a href="#">854-002-02F</a>                         | 3   | PIC E51424;TENSOLITE NF24Q100; BMS 13-72T03C04G024*; ECS 422404* |
|                        | <a href="#">2570-1269M00-25Q-20S2A</a> | <a href="#">854-002-04F</a>                         | 3   | PIC E50424*; ABS 1503KD24*                                       |
| J2                     | <a href="#">2570-1269M00-25Q-17BA</a>  | Not Supplied (To Be Ordered Separately. See Note 5) |     |                                                                  |
|                        | <a href="#">2570-1269M00-25Q-17S1A</a> | <a href="#">854-002-02F</a>                         | 6   | PIC E51424;TENSOLITE NF24Q100; BMS 13-72T03C04G024*; ECS 422404* |
|                        | <a href="#">2570-1269M00-25Q-17S2A</a> | <a href="#">854-002-04F</a>                         | 6   | PIC E50424*; ABS 1503KD24*                                       |
| J3                     | <a href="#">2570-1269M00-25Q-17BB</a>  | Not Supplied (To Be Ordered Separately. See Note 5) |     |                                                                  |
|                        | <a href="#">2570-1269M00-25Q-17S1B</a> | <a href="#">854-002-02F</a>                         | 6   | PIC E51424;TENSOLITE NF24Q100; BMS 13-72T03C04G024*; ECS 422404* |
|                        | <a href="#">2570-1269M00-25Q-17S2B</a> | <a href="#">854-002-04F</a>                         | 6   | PIC E50424*; ABS 1503KD24*                                       |
| J4                     | <a href="#">2570-1269M00-25Q-17BC</a>  | Not Supplied (To Be Ordered Separately. See Note 5) |     |                                                                  |
|                        | <a href="#">2570-1269M00-25Q-17S1C</a> | <a href="#">854-002-02F</a>                         | 6   | PIC E51424;TENSOLITE NF24Q100; BMS 13-72T03C04G024*; ECS 422404* |
|                        | <a href="#">2570-1269M00-25Q-17S2C</a> | <a href="#">854-002-04F</a>                         | 6   | PIC E50424*; ABS 1503KD24*                                       |

**Table II: Quadrax Contact Pin P/N for Plug Connector**

|    | Quadrax Contact Pin P/N     | Reference Cable Accommodated                                     |
|----|-----------------------------|------------------------------------------------------------------|
| P1 | <a href="#">854-001-02F</a> | PIC E51424;TENSOLITE NF24Q100; BMS 13-72T03C04G024*; ECS 422404* |
| P2 | <a href="#">854-001-04F</a> | PIC E50424*; ABS 1503KD24*                                       |

Recommended  
Panel Mounting Holes  
(Receptacle)



**Table III: Signal/Power Contact P/N (to be supplied w/ "P" or "S")**

| Pin/Socket | Contact Size | Contact P/N                   |
|------------|--------------|-------------------------------|
| Pin        | 22           | <a href="#">M39029/58-360</a> |
|            | 20           | <a href="#">M39029/58-363</a> |
|            | 16           | <a href="#">M39029/58-364</a> |
|            | 12           | <a href="#">M39029/58-365</a> |
| Socket     | 22           | <a href="#">M39029/56-348</a> |
|            | 20           | <a href="#">M39029/56-351</a> |
|            | 16           | <a href="#">M39029/56-352</a> |
|            | 12           | <a href="#">M39029/56-353</a> |

**APPLICATION NOTES**

- Material/Finishes:  
Receptacle, Barrel, Coupling Nut - See P/N Development  
Insulators - High Grade Rigid Dielectric  
Seals - Fluorosilicone  
Grounding Spring - BeCu Alloy  
Quadrax Contacts -  
Pin - See 854-001-XX (XX Denotes Cable Type, See Table II)  
Socket - See 854-002-XX (XX Denotes Cable Type, See Table I)  
Grommet Follower - 687-754-8-X  
Signal/Power Contacts - When insert designator is P\* or S\*, the Signal/Power contacts in Table III will be shipped with connector, as required, along with Quadrax contacts.
- Insert arrangement is in accordance with MIL-STD-1560 and Figure 1
- Common EFB connector material/finish IAW ARINC 828 is Al/ Electroless Nickel, code "M". Other material/finishes are also available, see P/N development for ordering.
- All "J\*" connectors, as defined in ARINC 828, are receptacles and their contacts are sockets. The mating plug connectors with pin contacts are not defined in the standard, and can be ordered as shown in P/N development.
- Glenair connector is designed to accept Glenair Quadrax contacts only.
- Blue color band indicates rear release system.

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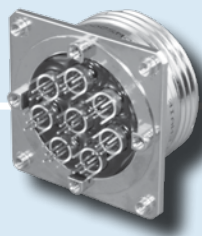
# Glenair Twinax and Quadrax MIL-DTL-38999 Type Connectors

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## MIL-DTL-38999 Twinax and Quadrax Connector for Reliable High-Speed Applications

### Product Applications

Glenair is recognized as trusted supplier of harsh environment electrical connectors built to the MIL-DTL-38999 standard. Both quadrax and twinax appear to have unique but equally beneficial qualities. The quadrax connector has four pins connected to a single cable, providing two-way Ethernet data communications. The twinax connector with two pins, provides one-way communication. Two twinax connectors and two wires are required for two-way communications which adds up to about 50% more weight than a quadrax connection. Twinax connectors have proven to be highly reliable and easy to maintain. Quadrax connectors are more difficult to maintain in the field and are yet to be thoroughly proven for reliability. Depending on the application, the end user will prefer one or the other (for example,

Airbus prefers Quadrax while Boeing prefers twinax) which is why Glenair offers both.

### Available Insert Arrangements

Based on industry-standard specifications, Glenair's MIL-DTL-38999 derivative environmental class connector systems are supplied with insert arrangements IAW MIL-STD-1560, or appropriate sub-sets depending on connector series. Consult factory for available insert arrangements.

### Errata

*Catalog contents—including part numbers, materials and dimensions—are accurate to the best of our ability when we go to print. When errors or mistakes are brought to our attention, corrected content is posted immediately to [www.glenair.com](http://www.glenair.com).*

*Same-Day Delivery on Many Common Shell Styles and Layouts*

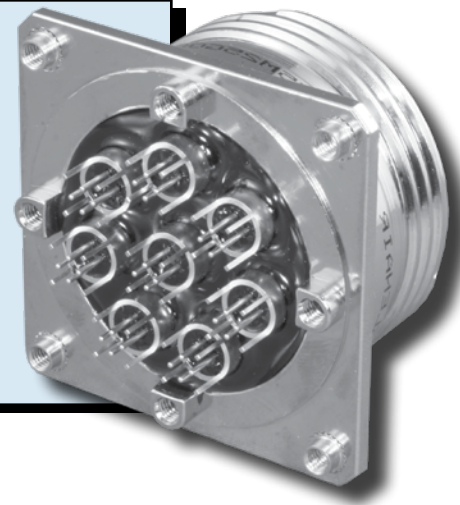
*Selected Range of D38999 Series I thru III Pin and Socket Insert Arrangements—Consult Factory for Availability*

*Lightweight, Corrosion-Free Composite Versions*

*Special Lanyard-Release Versions*

*All Standard Material Options, Including Stainless Steel*

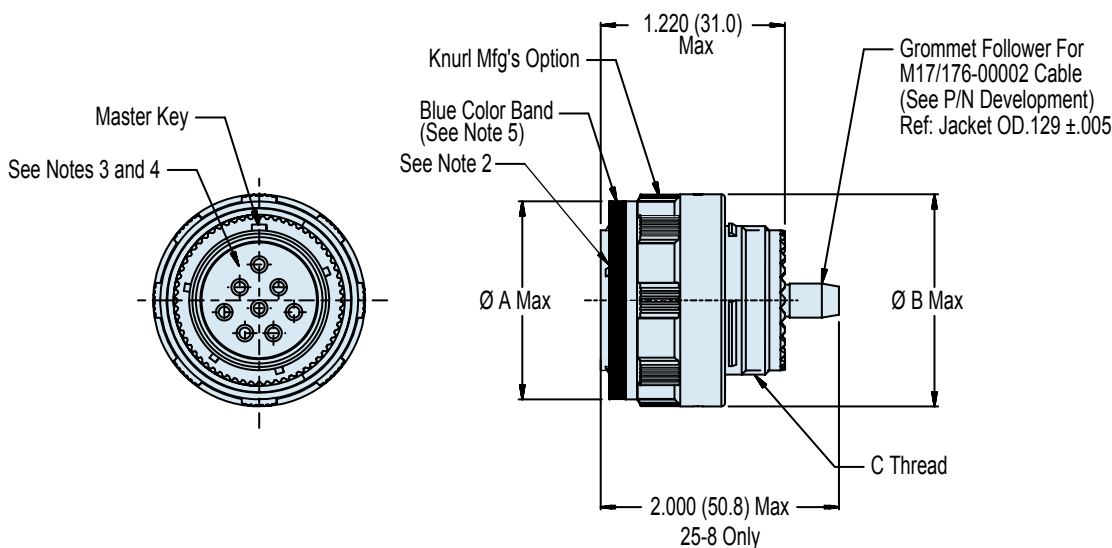
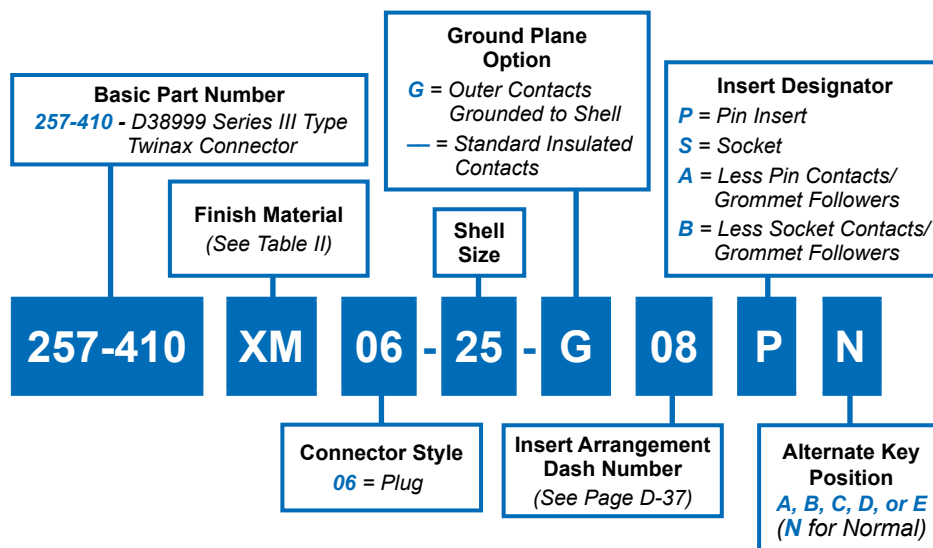
*Jam Nut, Solder Mount, Wall Mount and Box Mount Options*



# 257-410

## Metal or Composite Ground Plane Twinax Connector

### 8GA • MIL-DTL-38999 Series III Type



#### APPLICATION NOTES

- Material/Finishes:  
Plug barrel/Coupling nut - See Table II.  
(Composite coupling is unplated).  
Insulator - Aluminum alloy/Conductive plate  
or high-grade thermoplastic.  
Contact retainer clips - HT BeCu/Conductive plate.  
Seals - Fluorosilicone/N.A.
- Assembly to be identified with Glenair's name, partnumber  
and date code, space permitting.
- Insert arrangements are in accordance with MIL-STD-1560  
(See page D-37).
- Insert arrangement shown is for reference only.
- Blue color band indicates rear release retention system.
- Ground plane performance: per Table II, between outer  
contact and plug barrel (see part number development).
- For P and S, plug is supplied with contacts P/N M39029/90-  
529 (Pin) or M39029/91-530 (Socket) and Grommet Follower  
P/N 687-643-8-1 (No spares/sealing plugs provided).
- Metric dimensions (mm) are in parentheses.

**257-410**  
**Metal or Composite Ground Plane Twinax Connector**  
**8GA • MIL-DTL-38999 Series III Type**



**TABLE I: SHELL SIZE**

| Shell Size | A Dia Max    | B Dia Max    | C Thread            |
|------------|--------------|--------------|---------------------|
| <b>09</b>  | .811 (20.6)  | .858 (21.8)  | M12 x 1.0-6g 0.100R |
| <b>21</b>  | 1.594 (40.5) | 1.642 (41.7) | M31 x 1.0-6g 0.100R |
| <b>23</b>  | 1.720 (43.7) | 1.768 (44.9) | M34 x 1.0-6g 0.100R |
| <b>25</b>  | 1.843 (46.8) | 1.890 (48.0) | M37 x 1.0-6g 0.100R |

**TABLE II: MATERIAL/FINISH and GROUND PLANE**

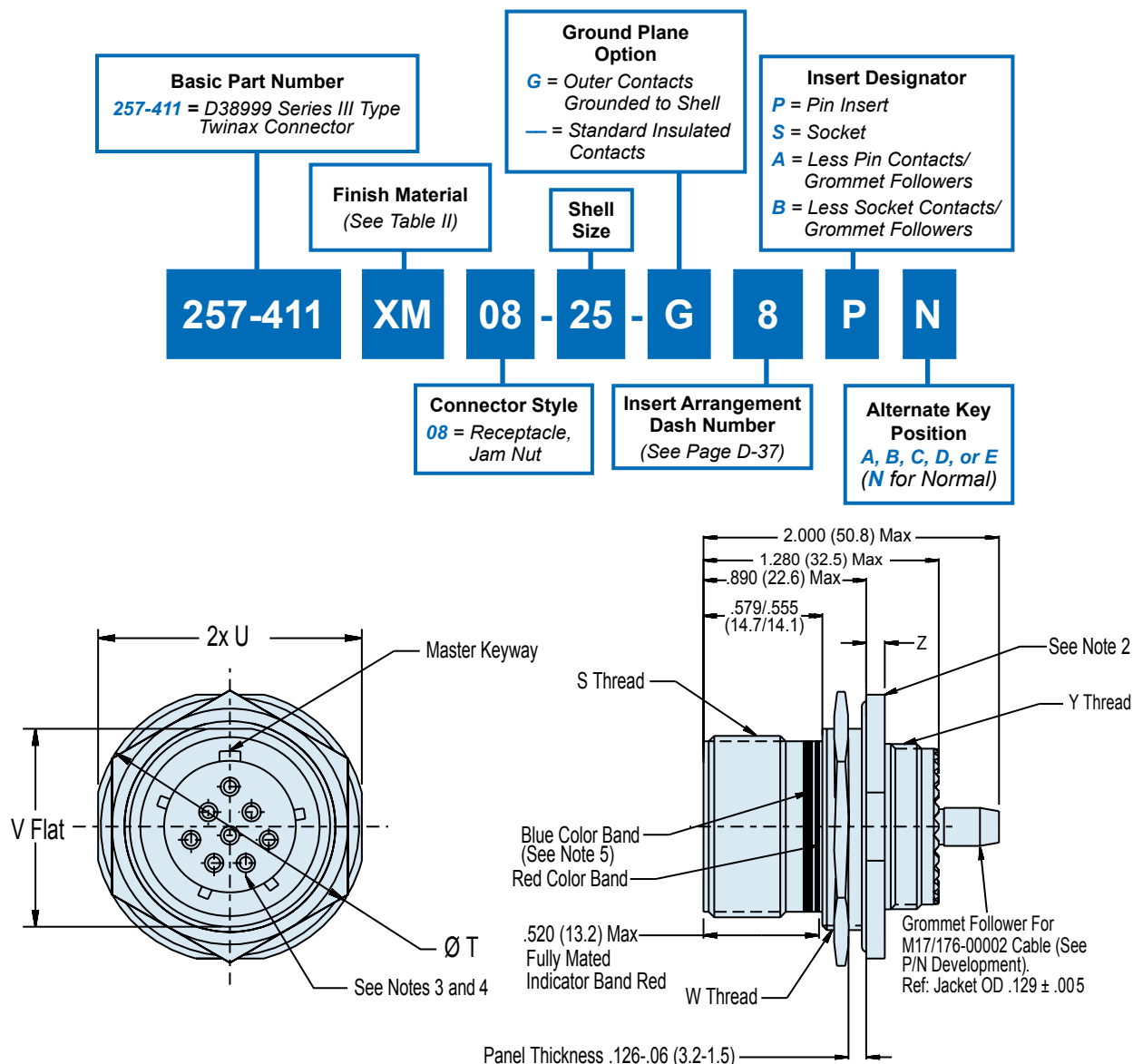
| Sym       | Material  | Finish                               | Ground Plane  |
|-----------|-----------|--------------------------------------|---------------|
| <b>M</b>  | Aluminum  | Electroless Nickel                   | <b>1 mV</b>   |
| <b>NF</b> |           | Cadmium O.D. Over Electroless Nickel | <b>2.5 mV</b> |
| <b>XM</b> | Composite | Electroless Nickel                   | <b>3.0 mV</b> |
| <b>XW</b> |           | Cadmium O.D. over Electroless Nickel | <b>3.0 mV</b> |

Consult Factory for Additional Plating Options

# 257-411

## Twinax Receptacle Connector

Jam Nut Mount • Metal or Composite  
Ground Plane • 8GA • MIL-DTL-38999 Series III Type



### APPLICATION NOTES

- Material/Finishes:  
Receptacle and Jam Nut - See Table II.  
(Composite coupling is unplated).  
Insulators - Aluminum alloy/Conductive plate or high-grade thermoplastic.  
Contact retainer clips - HT BeCu/Conductive plate.  
Seals - Fluorosilicone/N.A.
- Assembly to be identified with Glenair's name, partnumber and date code, space permitting.
- Insert arrangements are in accordance with MIL-STD-1560 (See page D-37).
- Insert arrangement shown is for reference only.
- Blue color band indicates rear release retention system.
- Ground plane performance: per Table II, between outer contact and plug barrel (see part number development).
- For P and S, receptacle is supplied with contacts P/N M39029/90-529 (Pin) or M39029/91-530 (Socket) and Grommet Follower P/N 687-643-8-1 (No spares/sealing plugs provided).
- Metric dimensions (mm) are in parentheses.

**257-411**  
**Twinax Receptacle Connector**  
 Jam Nut Mount • Metal or Composite  
 Ground Plane • 8GA • MIL-DTL-38999 Series III Type



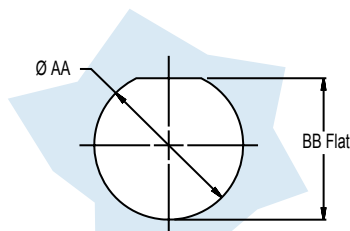
**TABLE I: MATERIAL/FINISH and GROUND PLANE**

| Sym       | Material  | Finish                               | Ground Plane  |
|-----------|-----------|--------------------------------------|---------------|
| <b>M</b>  | Aluminum  | Electroless Nickel                   | <b>1 mV</b>   |
| <b>NF</b> |           | Cadmium O.D. Over Electroless Nickel | <b>2.5 mV</b> |
| <b>XM</b> | Composite | Electroless Nickel                   | <b>3.0 mV</b> |
| <b>XW</b> |           | Cadmium O.D. over Electroless Nickel | <b>3.0 mV</b> |

Consult Factory for Additional Plating Options

**TABLE II: JAM NUT MOUNT**

| Shell Size | S Thread             | T Dia                        | U                            | V                            | W Thread            | Y Thread            | Z                        |
|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------------|---------------------|--------------------------|
| <b>9</b>   | .6250-.1P-.3L-TS2A   | 1.201 (30.5)<br>1.177 (44.9) | 1.079 (27.4)<br>1.047 (26.6) | .655 (16.6)<br>.645 (16.4)   | M17 x 1.0-6g 0.100R | M12 x 1.0-6g 0.100R | .122 (3.1)<br>.083 (2.1) |
| <b>21</b>  | 1.3750-.1P-.3L-TS-2A | 2.075 (52.7)<br>2.051 (52.1) | 1.953 (49.6)<br>1.921 (48.8) | 1.441 (36.6)<br>1.431 (36.3) | M38 x 1.0-6g 0.100R | M31 x 1.0-6g 0.100R |                          |
| <b>23</b>  | 1.5000-.1P-.3L-TS-2A | 2.201 (55.9)<br>2.177 (55.3) | 2.079 (52.8)<br>2.047 (52.0) | 1.566 (39.8)<br>1.556 (39.5) | M41 x 1.0-6g 0.100R | M34 x 1.0-6g 0.100R | .153 (3.9)<br>.114 (2.9) |
| <b>25</b>  | 1.6250-.1P-.3L-TS-2A | 2.323 (59.0)<br>2.299 (58.4) | 2.205 (56.0)<br>2.173 (55.2) | 1.691 (43.0)<br>1.681 (42.7) | M44 x 1.0-6g 0.100R | M37 x 1.0-6g 0.100R |                          |

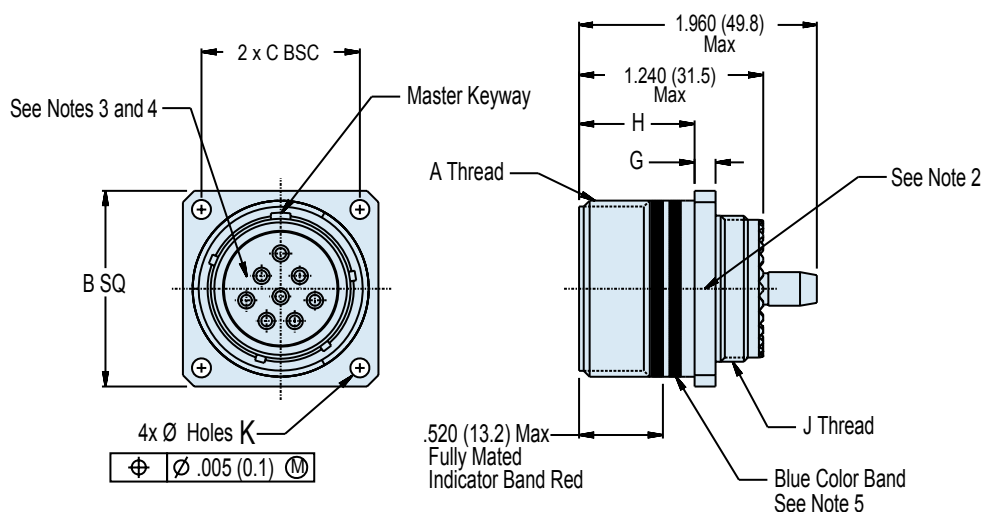
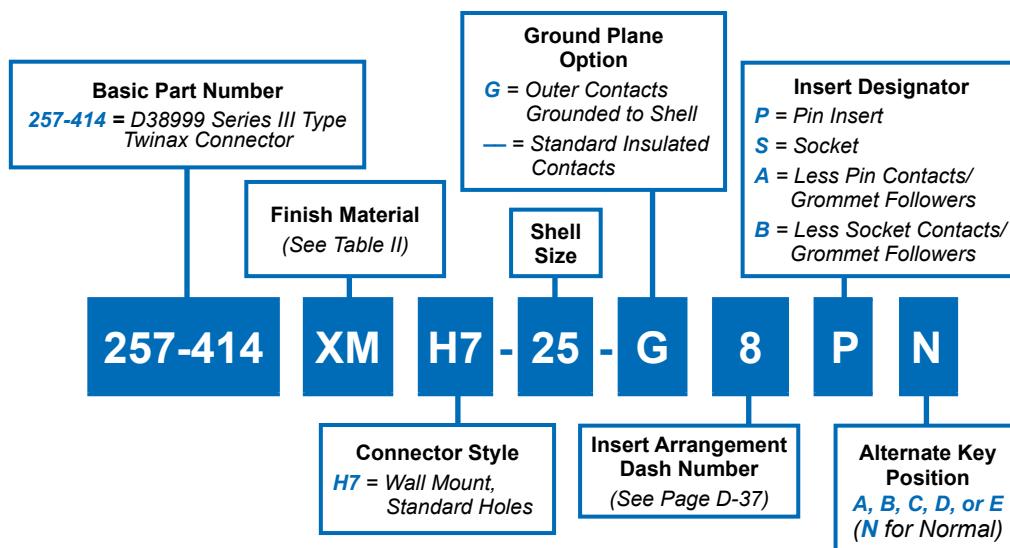


**RECOMMENDED PANEL CUT OUT**  
 (See Table III)

**TABLE III: CUT-OUT**

| Shell Size | AA Dia Max                   | BB                           |
|------------|------------------------------|------------------------------|
| <b>09</b>  | .710 (18.0)<br>.700 (17.8)   | .670 (17.0)<br>.660 (16.8)   |
| <b>21</b>  | 1.520 (38.6)<br>1.510 (38.4) | 1.460 (37.1)<br>1.450 (36.8) |
| <b>23</b>  | 1.645 (41.8)<br>1.635 (41.5) | 1.585 (40.3)<br>1.575 (40.0) |
| <b>25</b>  | 1.770 (45.0)<br>1.760 (44.7) | 1.710 (43.4)<br>1.700 (43.2) |

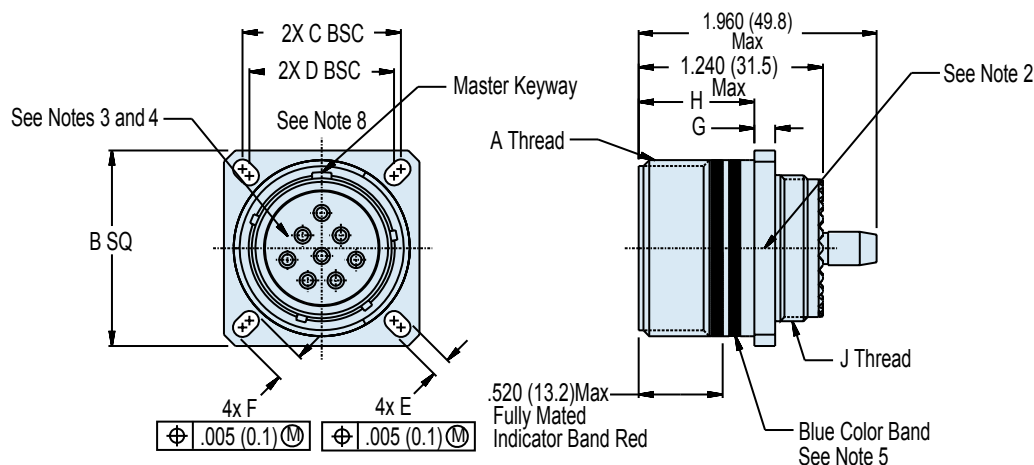
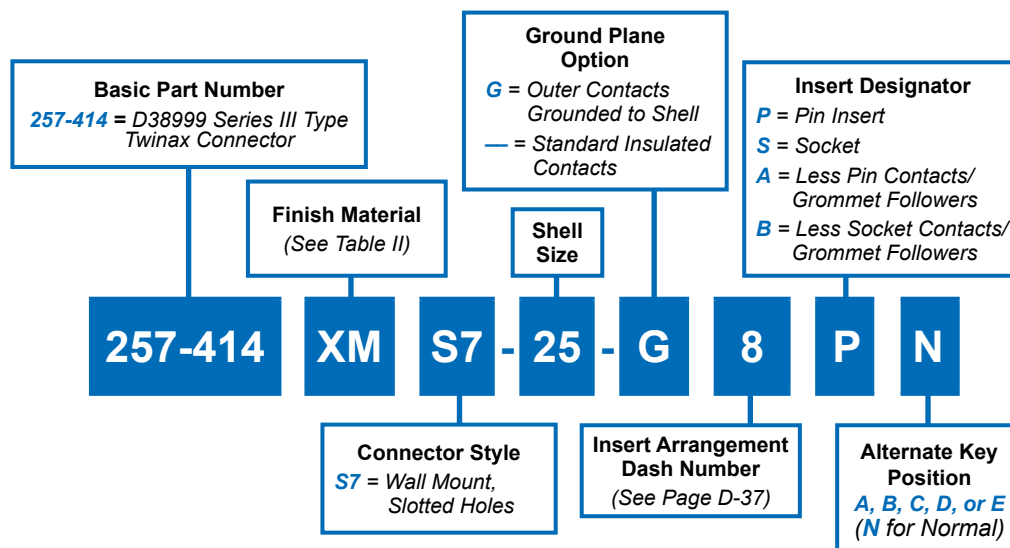
# 257-414 (H7) Metal or Composite Twinax Receptacle Connector Box Mount with Standard Holes Ground Plane • 8GA • MIL-DTL-38999 Series III Type



## APPLICATION NOTES

- Material/Finishes:  
Receptacle and Jam Nut - See Table II.  
(Composite coupling is unplated).  
Insulators - Aluminum alloy/Conductive plate or high-grade thermoplastic.  
Contact retainer clips - HT BeCu/Conductive plate.  
Seals - Fluorosilicone/N.A.
- Assembly to be identified with Glenair's name, partnumber and date code, space permitting.
- Insert arrangements are in accordance with MIL-STD-1560 (See page D-37).
- Insert arrangement shown is for reference only.
- Blue color band indicates rear release retention system.
- Ground plane performance: per Table II, between outer contact and plug barrel (see part number development).
- For P and S, receptacle is supplied with contacts P/N M39029/90-529 (Pin) or M39029/91-530 (Socket) and Grommet Follower P/N 687-643-8-1 (No spares/sealing plugs provided).
- Metric dimensions (mm) are in parentheses.

**257-414 (S7)**  
**Metal or Composite Twinax Receptacle Connector**  
**Box Mount with Slotted Holes**  
**Ground Plane • 8GA • MIL-DTL-38999 Series III Type**



### APPLICATION NOTES

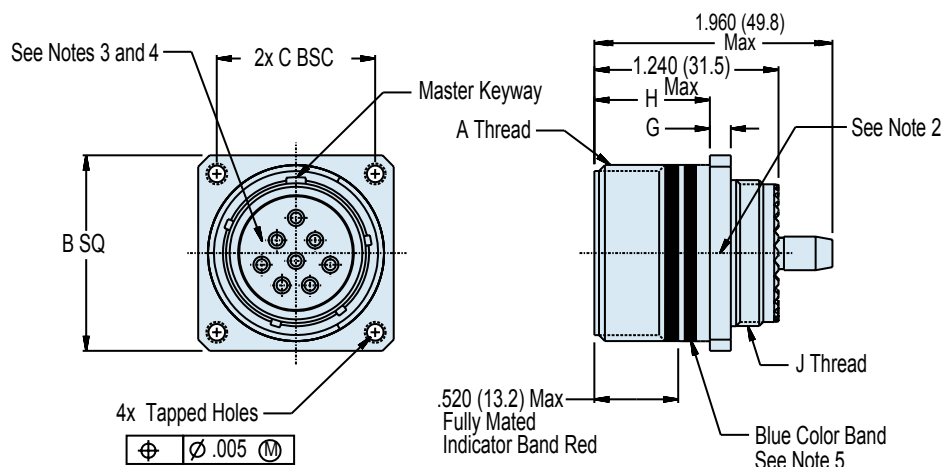
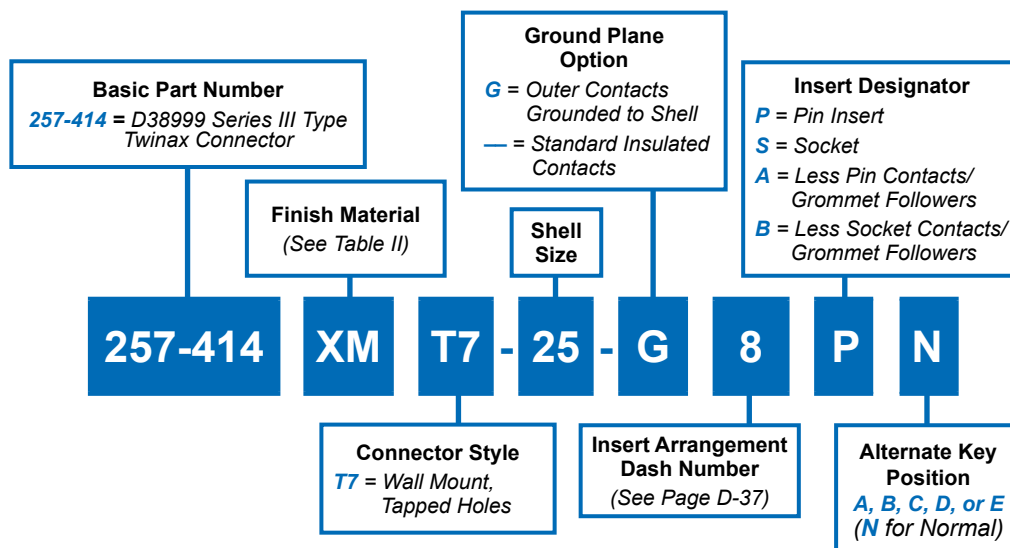
- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. Material/Finishes:<br/> Receptacle and Jam Nut - See Table II.<br/> (Composite coupling is unplated).<br/> Insulators - Aluminum alloy/Conductive plate<br/> or high-grade thermoplastic.<br/> Contact retainer clips - HT BeCu/Conductive plate.<br/> Seals - Fluorosilicone/N.A.</li> <li>2. Assembly to be identified with Glenair's name, partnumber<br/> and date code, space permitting.</li> <li>3. Insert arrangements are in accordance with MIL-STD-1560<br/> (See page D-37).</li> </ol> | <ol style="list-style-type: none"> <li>4. Insert arrangement shown is for reference only.</li> <li>5. Blue color band indicates rear release retention system.</li> <li>6. Ground plane performance: per Table II, between outer<br/> contact and plug barrel (see part number development).</li> <li>7. For P and S, receptacle is supplied with contacts P/N<br/> M39029/90-529 (Pin) or M39029/91-530 (Socket) and<br/> Grommet Follower P/N 687-643-8-1 (No spares/sealing plugs<br/> provided).</li> <li>8. Metric dimensions (mm) are in parentheses.</li> </ol> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# 257-414 (T7)

## Metal or Composite Twinax Receptacle Connector

### Box Mount with Tapped Holes

#### Ground Plane • 8GA • MIL-DTL-38999 Series III Type



### APPLICATION NOTES

- Material/Finishes:  
Receptacle and Jam Nut - See Table II. (Composite coupling is unplated).  
Insulators - Aluminum alloy/Conductive plate or high-grade thermoplastic.  
Contact retainer clips - HT BeCu/Conductive plate.  
Seals - Fluorosilicone/N.A.
- Assembly to be identified with Glenair's name, partnumber and date code, space permitting.
- Insert arrangements are in accordance with MIL-STD-1560 (See page D-37).
- Insert arrangement shown is for reference only.
- Blue color band indicates rear release retention system.
- Ground plane performance: per Table II, between outer contact and plug barrel (see part number development).
- For P and S, receptacle is supplied with contacts P/N M39029/90-529 (Pin) or M39029/91-530 (Socket) and Grommet Follower P/N 687-643-8-1 (No spares/sealing plugs provided).
- Metric dimensions (mm) are in parentheses.

**257-414**  
**Metal or Composite Twinax Receptacle Connector**  
**Dimensions, Finish, Material and Ground Plane**  
**8GA • MIL-DTL-38999 Series III Type**



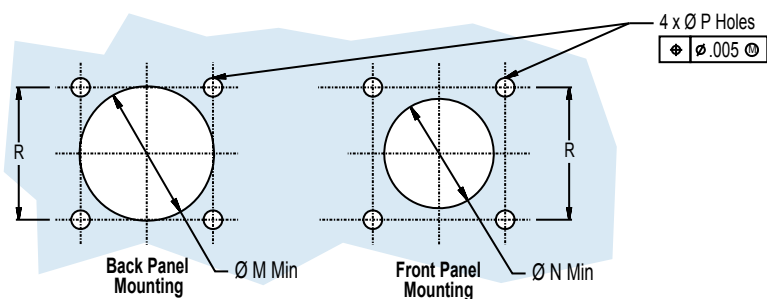
**TABLE I: SHELL SIZE AND DIMENSIONS** (Continued on following page)

| Shell Size | A Thread             | B SQ                         | C BSC        | D BSC<br>(See Note 8) | E                         | F                        | G                        | H                          |
|------------|----------------------|------------------------------|--------------|-----------------------|---------------------------|--------------------------|--------------------------|----------------------------|
| <b>9</b>   | .6250-.1P-.3L-TS-2A  | .949 (24.1)<br>.925 (23.5)   | .719 (18.3)  | .626 (15.9)           | .136 (3.45)<br>.120 (3.0) | .224 (5.7)<br>.208 (5.3) | .144 (3.7)<br>.083 (2.1) | .823 (20.9)<br>.768 (19.5) |
| <b>21</b>  | 1.3750-.1P-.3L-TS-2A | 1.575 (40.0)<br>1.551 (39.4) | 1.156 (29.4) | 1.125 (28.6)          |                           | .202 (5.1)<br>.186 (4.7) |                          |                            |
| <b>23</b>  | 1.5000-.1P-.3L-TS-2A | 1.701 (43.2)<br>1.677 (42.6) | 1.375 (34.9) | 1.250 (31.8)          | .162 (4.1)<br>.146 (3.7)  | .250 (6.4)<br>.234 (5.9) | .171 (4.3)<br>.083 (2.1) | .791 (20.1)<br>.736 (18.5) |
| <b>25</b>  | 1.6250-.1P-.3L-TS-2A | 1.823 (46.3)<br>1.799 (45.7) | 1.500 (38.1) | 1.375 (34.9)          |                           |                          |                          |                            |

**TABLE II: MATERIAL/FINISH and GROUND PLANE**

| Sym       | Material  | Finish                               | Ground Plane  |
|-----------|-----------|--------------------------------------|---------------|
| <b>M</b>  | Aluminum  | Electroless Nickel                   | <b>1 mV</b>   |
| <b>NF</b> |           | Cadmium O.D. Over Electroless Nickel | <b>2.5 mV</b> |
| <b>XM</b> | Composite | Electroless Nickel                   | <b>3.0 mV</b> |
| <b>XW</b> |           | Cadmium O.D. over Electroless Nickel | <b>3.0 mV</b> |

Consult Factory for Additional Plating Options



Recommended Mounting For Wall Mount Receptacles, See Table II

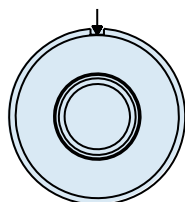
**TABLE I: SHELL SIZE AND CUT-OUT DIMENSIONS** (Table continued from preceding page)

| Shell Size | J Thread            | K Dia                    | L Tapped Holes    | M Dia Min    | N Dia Min    | P Holes                  | R BSC        |
|------------|---------------------|--------------------------|-------------------|--------------|--------------|--------------------------|--------------|
| 9          | M12 x 1.0-6g 0.100R | .136 (3.5)<br>.120 (3.0) | .112-40<br>UNC-2B | .656 (16.7)  | .516 (13.1)  | .133 (8.4)<br>.123 (3.1) | .719 (18.3)  |
| 21         | M31 x 1.0-6g 0.100R |                          |                   | 1.422 (36.1) | 1.266 (32.2) |                          | 1.250 (31.8) |
| 23         | M34 x 1.0-6g 0.100R | .162 (4.1)<br>.146 (3.7) | .138-32<br>UNC-2B | 1.547 (39.3) | 1.375 (34.9) | .159 (4.0)<br>.149 (3.8) | 1.375 (34.9) |
| 25         | M37 x 1.0-6g 0.100R |                          |                   | 1.672 (42.5) | 1.484 (37.7) | .155 (3.9)<br>.145 (3.7) | 1.500 (38.1) |

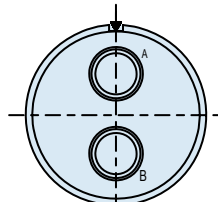
**MIL-DTL-38999 Series III Type  
257-410, 257-411 and 257-414 Twinax Connectors  
Insert Arrangements (IAW MIL-STD-1560)**



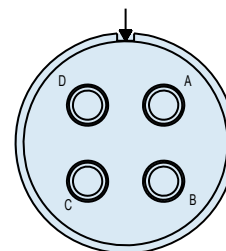
Twinax and  
Quadax  
Connectors



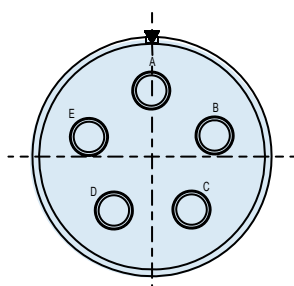
ARRANGEMENT 09-05



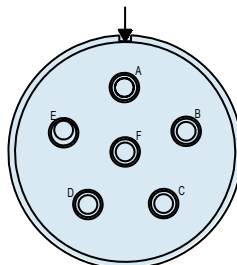
ARRANGEMENT 17-75



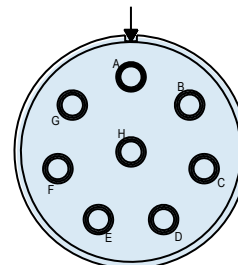
ARRANGEMENT 21-75



ARRANGEMENT 23-05



ARRANGEMENT 23-06



ARRANGEMENT 25-08

**Mating Face of Pin Insert Shown**

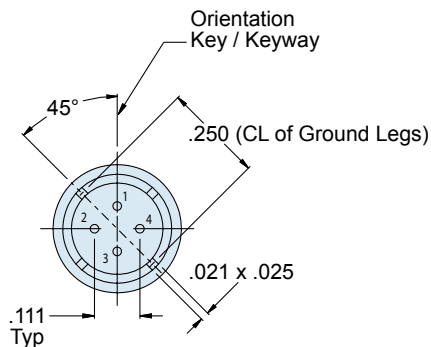
**E**



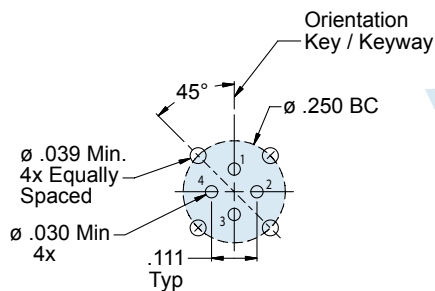
**257-455**  
**Box Mount Quadrax Connector**  
 With PC Tails • MIL-DTL-38999 Series III Type



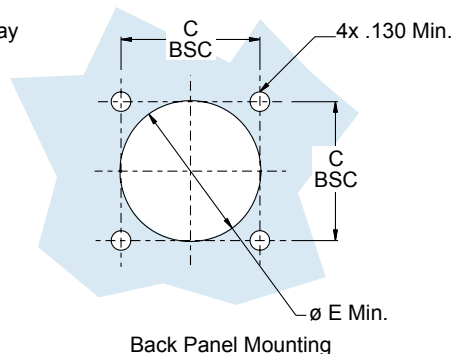
Twinax and  
Quadrax  
Connectors



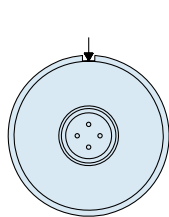
Rear View of Differential Quadrax



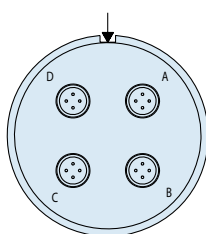
Recommended PCB Layout



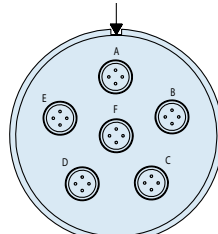
Back Panel Mounting



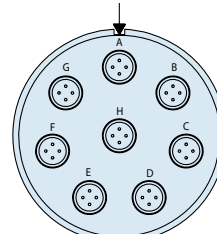
Arrangement 09-5



Arrangement 21-75

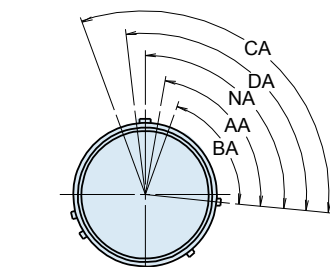


Arrangement 23-06



Arrangement 25-08

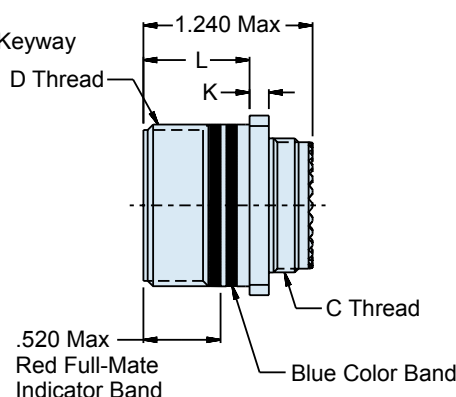
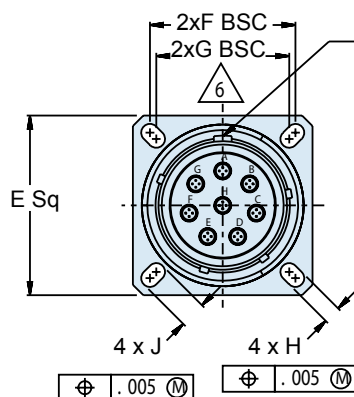
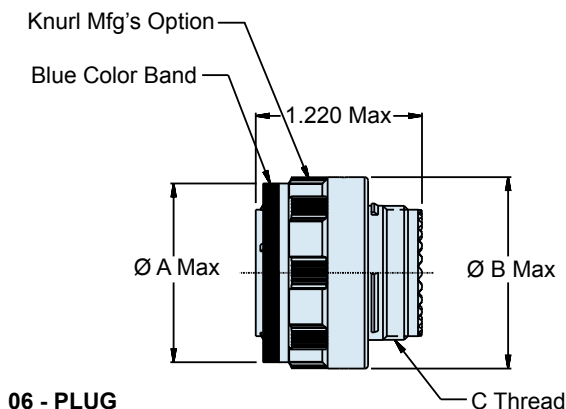
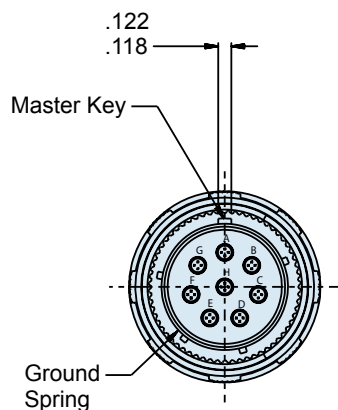
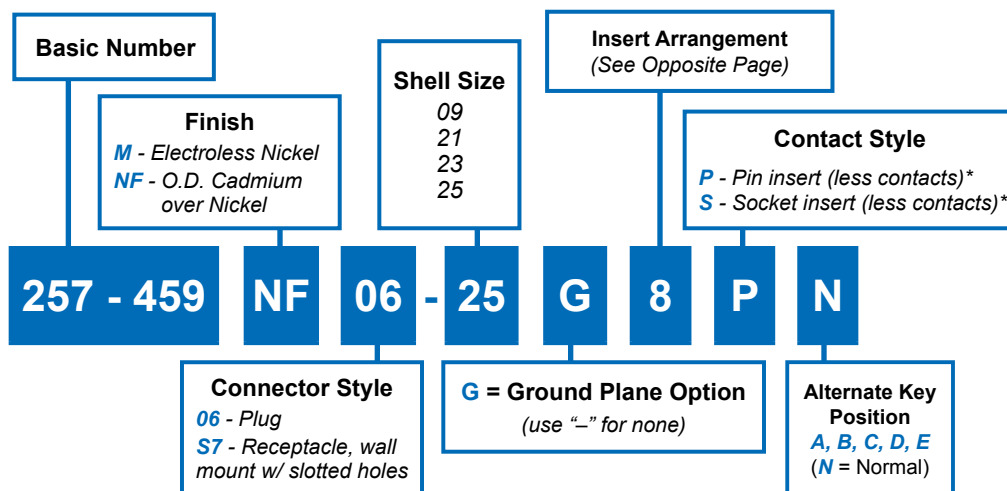
See Quadrax Contact Information on D-24



**Figure 1**  
 Master Keyway Position  
 Face View Shown  
 Insert Arrangement Does  
 Not Rotate With Master Keyway

TABLE I

| Shell Size | A Thread             | B Sq.          | C Bsc. | D Bsc. | Ø E Min. |
|------------|----------------------|----------------|--------|--------|----------|
| 09         | .6250-.1P-.3L-TS-2A  | 1.031<br>1.007 | .719   | .594   | .656     |
| 21         | 1.3750-.1P-.3L-TS-2A | 1.575<br>1.545 | 1.250  | 1.221  | 1.421    |
| 23         | 1.5000-.1P-.3L-TS-2A | 1.701<br>1.677 | 1.375  | 1.360  | 1.546    |
| 25         | 1.6250-.1P-.3L-TS-2A | 1.823<br>1.799 | 1.500  | 1.475  | 1.672    |

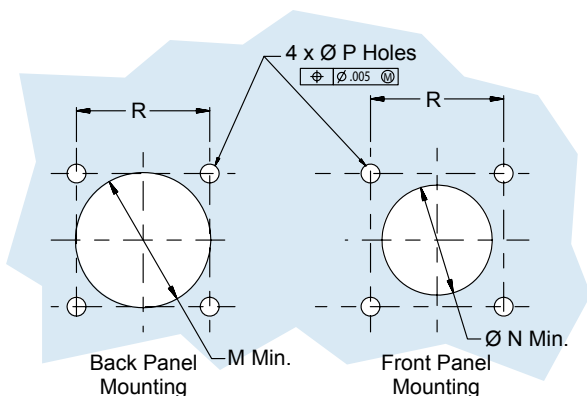


**S7 - WALL MOUNT RECEPTACLE**

# 257-459 (06) or (S7) Plug or Wall Mount Receptacle Quadrax Connector MIL-DTL-38999 Series III Type



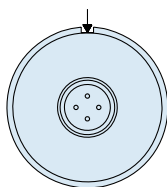
Twinax and  
Quadrax  
Connectors



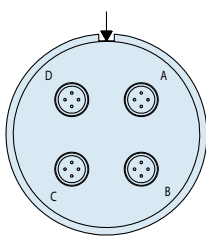
| TABLE I         |            |          |          |                    |
|-----------------|------------|----------|----------|--------------------|
| Shell Size Code | Shell Size | ø A Max. | ø B Max. | C Thread           |
| A               | 09         | .732     | .858     | M12 x 1.0-g 0.100R |
| G               | 21         | 1.508    | 1.642    | M31 x 1.0-g 0.100R |
| H               | 23         | 1.626    | 1.768    | M34 x 1.0-g 0.100R |
| J               | 25         | 1.752    | 1.890    | M37 x 1.0-g 0.100R |

| TABLE II: WALL MOUNT |            |                      |                |       |       |              |              |              |              |
|----------------------|------------|----------------------|----------------|-------|-------|--------------|--------------|--------------|--------------|
| Shell Size Code      | Shell Size | D Thread             | E Sq.          | F BSC | G BSC | H            | J            | K            | L            |
| A                    | 09         | .6250-.1P-.3L-TS-2A  | .949<br>.925   | .719  | .626  | .136<br>.120 | .224<br>.208 | .144<br>.083 | .823<br>.768 |
| G                    | 21         | 1.3750-.1P-.3L-TS-2A | 1.575<br>1.551 | 1.250 | 1.156 |              | .202<br>.186 | .171<br>.083 | .791<br>.736 |
| H                    | 23         | 1.5000-.1P-.3L-TS-2A | 1.701<br>1.667 | 1.375 | 1.250 | .162<br>.146 | .250<br>.234 |              |              |
| J                    | 25         | 1.6250-.1P-.3L-TS-2A | 1.823<br>1.799 | 1.500 | 1.375 |              |              |              |              |

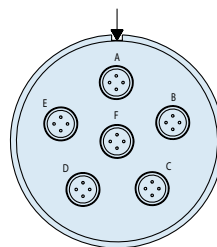
| TABLE III       |            |          |          |              |       |
|-----------------|------------|----------|----------|--------------|-------|
| Shell Size Code | Shell Size | ø M Min. | ø N Min. | P Holes      | R BSC |
| A               | 09         | .656     | .516     | .133<br>.123 | .719  |
| G               | 21         | 1.422    | 1.266    |              | 1.250 |
| H               | 23         | 1.547    | 1.375    | .159<br>.149 | 1.375 |
| J               | 25         | 1.672    | 1.484    | .155<br>.145 | 1.500 |



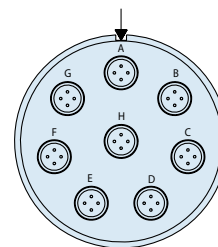
Arrangement 09-5



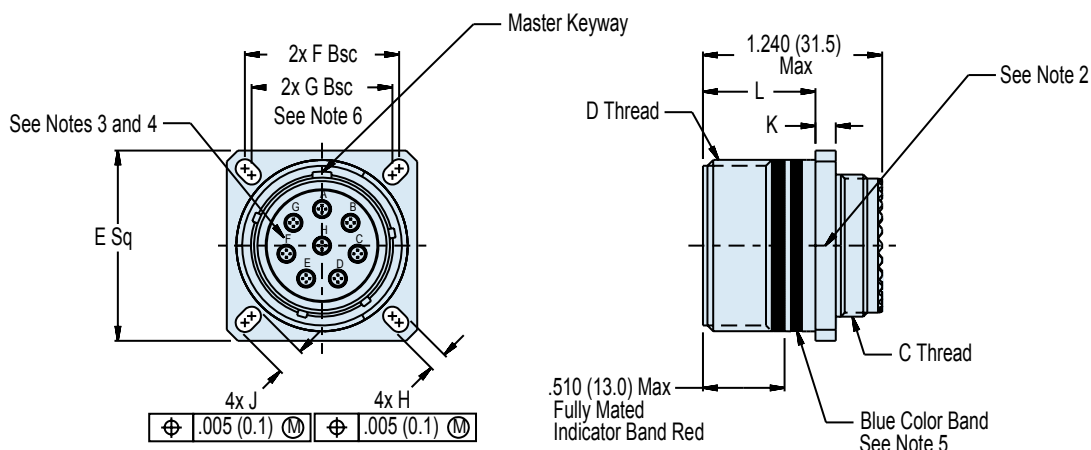
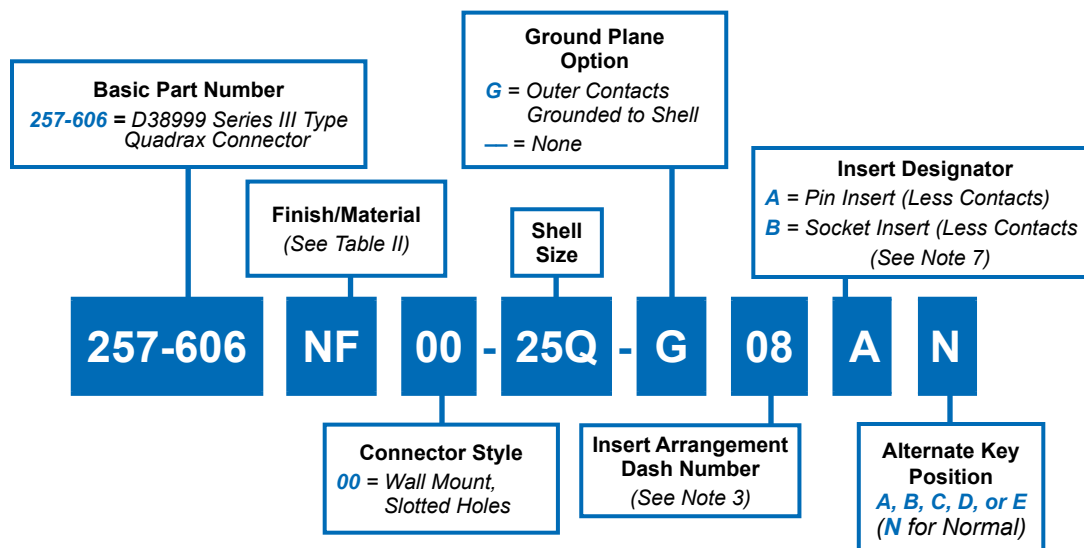
Arrangement 21-75



Arrangement 23-06



Arrangement 25-08

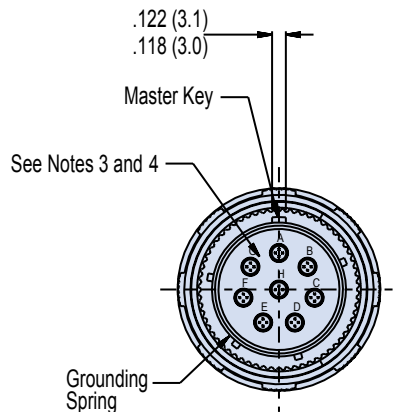
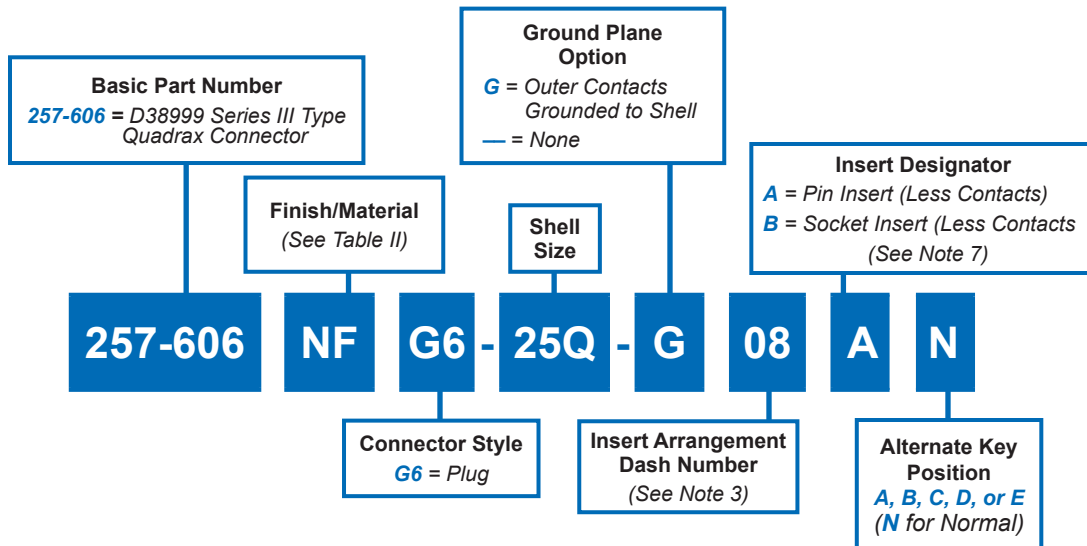


**00-Wall Mount Receptacle  
With Slotted Holes**  
(See Table I)

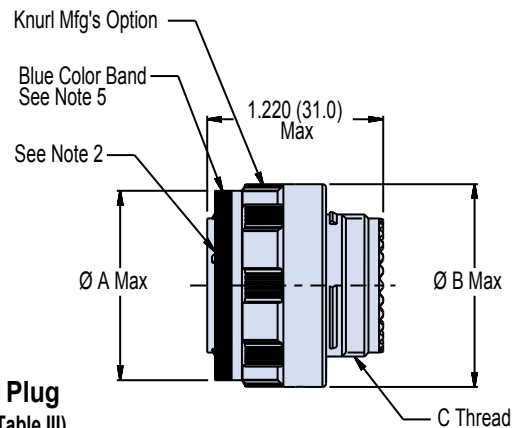
#### APPLICATION NOTES

1. Material/Finish (See Table II).
2. Assembly identified with Glenair's, part number and date code
3. Insert arrangements IAW MIL-STD-1560 and Figure 1.
4. Insert arrangements shown is for reference only.
5. Blue color band indicates rear release retention system.
6. Front panel mount only.
7. Parts will be identified "A" or "B."

**257-606 (G6)**  
**Quadrax Plug Connector**  
**MIL-DTL-38999 Series III Type**



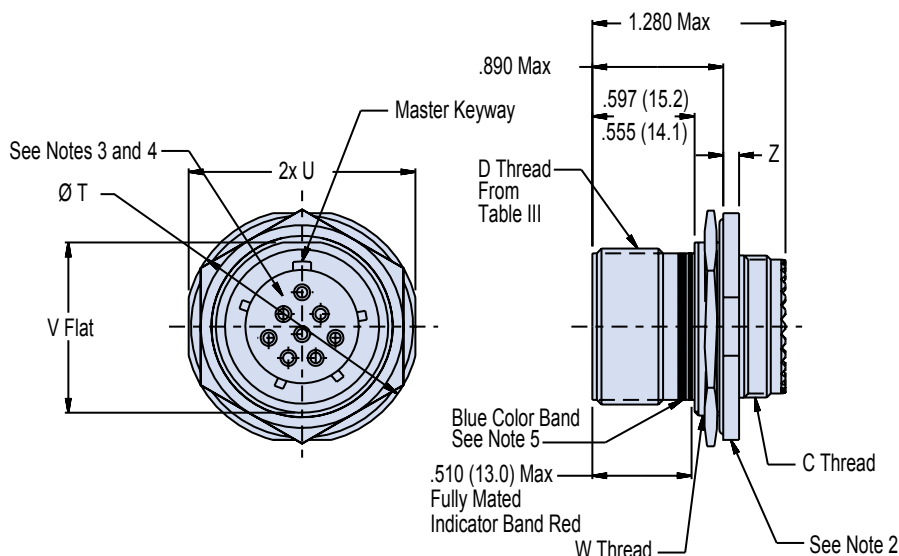
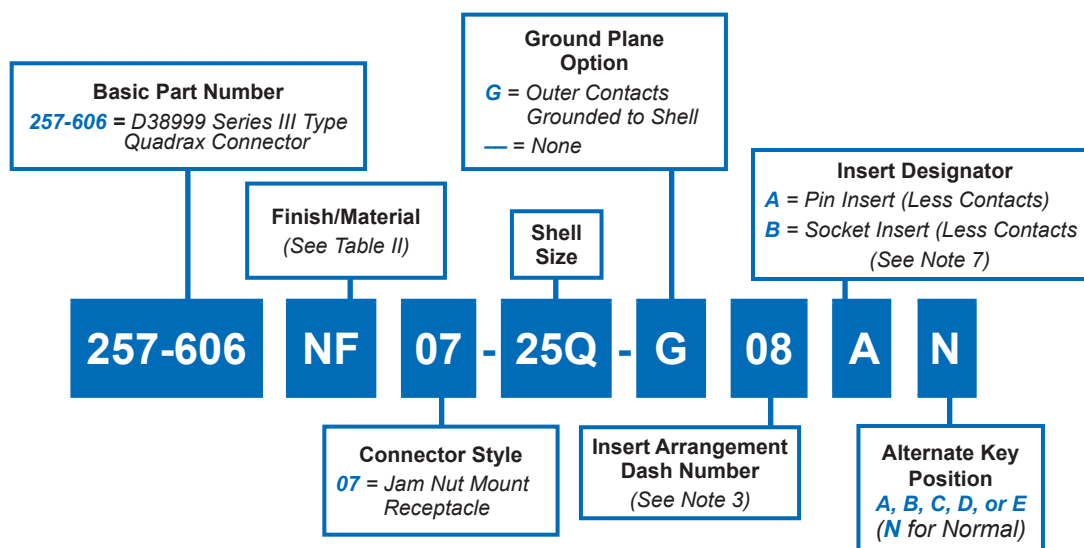
**G6 - Plug**  
 (See Table III)



**APPLICATION NOTES**

1. Material/Finish (See Table II).
2. Assembly identified with Glenair's, part number and date code
3. Insert arrangements IAW MIL-STD-1560 and Figure 1.
4. Insert arrangements shown is for reference only.
5. Blue color band indicates rear release retention system.
6. Front panel mount only.
7. Parts will be identified "A" or "B."

# 257-606 (07) Jam Nut Mount Quadrax Plug Receptacle Connector MIL-DTL-38999 Series III Type



## 07 - Jam Nut Mount Receptacle

(See Table IV)

### APPLICATION NOTES

1. Material/Finish (See Table II).
2. Assembly identified with Glenair's, part number and date code
3. Insert arrangements IAW MIL-STD-1560 and Figure 1.
4. Insert arrangements shown is for reference only.
5. Blue color band indicates rear release retention system.
6. Front panel mount only.
7. Parts will be identified "A" or "B."

**257-606**  
**Quadrax Connector Dimensions,**  
**Finish and Ground Plane • MIL-DTL-38999 Series III Type**



Twinax and  
 Quadrax  
 Connectors

**TABLE I: G6 PLUG DIMENSIONS**

| Shell Size Code | Shell Size | ø A Max.     | ø B Max.     | C Thread            |
|-----------------|------------|--------------|--------------|---------------------|
| <b>A</b>        | <b>09</b>  | .811 (20.6)  | .858 (21.8)  | M12 x 1.0-6g 0.100R |
| <b>B</b>        | <b>11</b>  | .929 (23.6)  | .984 (25.0)  | M15 x 1.0-6g 0.100R |
| <b>E</b>        | <b>17</b>  | 1.358 (34.5) | 1.406 (35.7) | M25 x 1.0-6g 0.100R |
| <b>F</b>        | <b>19</b>  | 1.469 (37.3) | 1.516 (38.5) | M28 x 1.0-6g 0.100R |
| <b>G</b>        | <b>21</b>  | 1.594 (40.5) | 1.642 (41.7) | M31 x 1.0-6g 0.100R |
| <b>H</b>        | <b>23</b>  | 1.720 (43.7) | 1.768 (44.9) | M34 x 1.0-6g 0.100R |
| <b>J</b>        | <b>25</b>  | 1.843 (46.8) | 1.890 (48.0) | M37 x 1.0-6g 0.100R |

**TABLE II: MATERIAL/FINISH and GROUND PLANE**

| Sym       | Material  | Finish                               | Ground Plane  |
|-----------|-----------|--------------------------------------|---------------|
| <b>M</b>  | Aluminum  | Electroless Nickel                   | <b>1 mV</b>   |
| <b>NF</b> |           | Cadmium O.D. Over Electroless Nickel | <b>2.5 mV</b> |
| <b>XM</b> | Composite | Electroless Nickel                   | <b>3.0 mV</b> |
| <b>XW</b> |           | Cadmium O.D. over Electroless Nickel | <b>3.0 mV</b> |

Consult Factory for Additional Plating Options

**TABLE III: 00 WALL MOUNT DIMENSIONS**

| TABLE III: 00 WALL MOUNT DIMENSIONS |            |                      |                              |              |                       |                          |                          |                          |                            |
|-------------------------------------|------------|----------------------|------------------------------|--------------|-----------------------|--------------------------|--------------------------|--------------------------|----------------------------|
| Shell Size Code                     | Shell Size | D Thread             | E Sq.                        | F BSC        | G BSC<br>(See Note 6) | H                        | J                        | K                        | L                          |
| A                                   | 09         | .6250-.1P-.3L-TS-2A  | .949 (24.1)<br>.925 (23.5)   | .719 (18.3)  | .626 (15.9)           | .136 (3.5)<br>.120 (3.0) | .224 (5.7)<br>.208 (5.3) | .144 (3.7)<br>.083 (2.1) | .823 (20.9)<br>.768 (19.5) |
| B                                   | 11         | .7500-.1P-.3L-TS-2A  | 1.043 (26.5)<br>1.019 (25.9) | .812 (20.6)  | .719 (18.3)           |                          | .202 (5.1)<br>.186 (4.7) |                          |                            |
| E                                   | 17         | 1.1875-.1P-.3L-TS-2A | 1.323 (33.6)<br>1.299 (33.0) | 1.062 (27.0) | .969 (24.6)           |                          |                          |                          |                            |
| F                                   | 19         | 1.2500-.1P-.3L-TS-2A | 1.449 (36.8)<br>1.425 (36.2) | 1.156 (29.4) | 1.062 (27.0)          |                          |                          |                          |                            |
| G                                   | 21         | 1.3750-.1P-.3L-TS-2A | 1.575 (40.0)<br>1.551 (39.4) | 1.250 (31.8) | 1.156 (29.4)          |                          | .162 (4.1)<br>.146 (3.7) | .250 (6.4)<br>.234 (5.9) | .171 (4.3)<br>.083 (2.1)   |
| H                                   | 23         | 1.5000-.1P-.3L-TS-2A | 1.701 (43.2)<br>1.667 (42.3) | 1.375 (34.9) | 1.250 (31.8)          |                          |                          |                          |                            |
| J                                   | 25         | 1.6250-.1P-.3L-TS-2A | 1.823 (46.3)<br>1.799 (45.7) | 1.500 (38.1) | 1.375 (34.9)          |                          |                          |                          |                            |

**TABLE II: MATERIAL/FINISH**

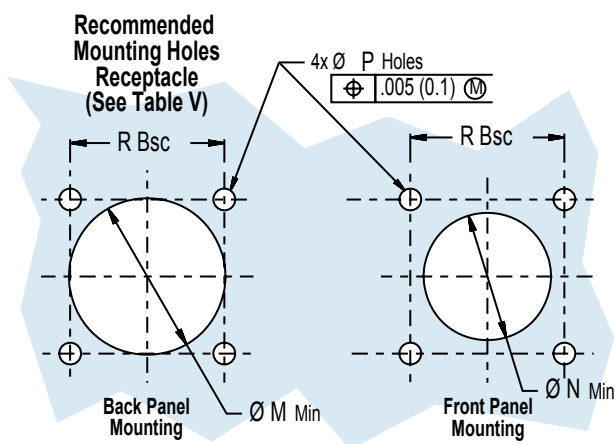
| Sym        | Material  | Finish                                                     |
|------------|-----------|------------------------------------------------------------|
| <b>M</b>   | Aluminum  | Electroless Nickel                                         |
| <b>NF</b>  |           | Cadmium O.D. Over Electroless Nickel                       |
| <b>MT</b>  |           | Ni-PTFE 1,000 Hour Grey™<br>(Nickel Fluorocarbon Polymer)  |
| <b>XM</b>  | Composite | Electroless Nickel                                         |
| <b>XW</b>  |           | Cadmium O.D. Over Electroless Nickel                       |
| <b>XMT</b> |           | Ni-PTFE 1,000 Hour Grey™<br>(Nickel Fluorocarbon Polymer)I |

Consult Factory for Additional Plating Options

**TABLE IV: 07 JAM NUT MOUNT**

| Shell Size Code | Shell Size | øT                           | U                            | V Flat                       | W Thread                            | Z                        |
|-----------------|------------|------------------------------|------------------------------|------------------------------|-------------------------------------|--------------------------|
| <b>A</b>        | <b>09</b>  | 1.200 (30.5)<br>1.178 (29.9) | 1.078 (27.4)<br>1.048 (26.6) | .654 (16.6)<br>.645 (16.4)   | M17 x 1.0-6g 0.100R                 | .122 (3.1)<br>.083 (2.1) |
| <b>B</b>        | <b>11</b>  | 1.386 (35.2)<br>1.362 (34.6) | 1.268 (32.2)<br>1.236 (31.4) | .755 (19.2)<br>.745 (18.9)   | M20 x 1.0-6g 0.100R                 |                          |
| <b>E</b>        | <b>17</b>  | 1.764 (44.8)<br>1.740 (44.2) | 1.642 (41.7)<br>1.610 (40.9) | 1.191 (30.3)<br>1.181 (30.0) | M32 x 1.0-6g 0.100R<br>(See Note 6) |                          |
| <b>F</b>        | <b>19</b>  | 1.949 (49.5)<br>1.925 (48.9) | 1.827 (46.4)<br>1.795 (45.6) | 1.316 (33.4)<br>1.306 (33.2) | M35 x 1.0-6g 0.100R                 | .153 (3.9)<br>.114 (2.9) |
| <b>G</b>        | <b>21</b>  | 2.075 (52.7)<br>2.051 (52.1) | 1.953 (49.6)<br>1.921 (48.8) | 1.441 (36.6)<br>1.431 (36.3) | M38 x 1.0-6g 0.100R                 |                          |
| <b>H</b>        | <b>23</b>  | 2.201 (55.9)<br>2.177 (55.3) | 2.079 (52.8)<br>2.047 (52.0) | 1.566 (39.8)<br>1.556 (39.5) | M41 x 1.0-6g 0.100R                 |                          |
| <b>J</b>        | <b>25</b>  | 2.323 (59.0)<br>2.299 (58.4) | 2.205 (56.0)<br>2.173 (55.2) | 1.691 (43.0)<br>1.681 (42.7) | M44 x 1.0-6g 0.100R                 |                          |

Recommended  
Mounting Holes  
Receptacle  
(See Table V)

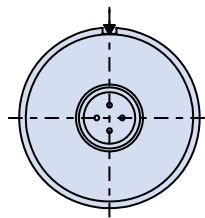

**TABLE V: MOUNTING HOLE DIMENSIONS**

| Shell Size Code | Shell Size | øM Min       | øN Min       | P Holes                  | R BSC        |
|-----------------|------------|--------------|--------------|--------------------------|--------------|
| <b>A</b>        | <b>09</b>  | .656 (16.7)  | .516 (13.1)  | .133 (3.4)<br>.123 (3.1) | .719 (18.3)  |
| <b>B</b>        | <b>11</b>  | .796 (19.5)  | .625 (15.9)  |                          | .812 (20.6)  |
| <b>E</b>        | <b>17</b>  | 1.219 (31.0) | 1.016 (25.8) |                          | 1.062 (27.0) |
| <b>F</b>        | <b>19</b>  | 1.297 (32.4) | 1.141 (29.0) | .159 (4.0)<br>.149 (3.8) | 1.156 (29.4) |
| <b>G</b>        | <b>21</b>  | 1.422 (36.1) | 1.266 (32.2) |                          | 1.250 (31.8) |
| <b>H</b>        | <b>23</b>  | 1.547 (39.3) | 1.375 (34.9) |                          | 1.375 (34.9) |
| <b>J</b>        | <b>25</b>  | 1.672 (42.5) | 1.484 (37.7) | .155 (3.9)<br>.145 (3.7) | 1.500 (38.1) |

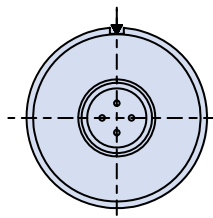
**257-606**  
**Quadrax Connector Insert Arrangements**  
**MIL-DTL-38999 Series III Type (IAW MIL-STD-1560)**



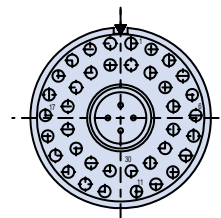
Twinax and  
Quadrax  
Connectors



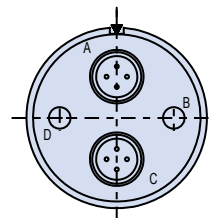
ARRANGEMENT 09Q-05



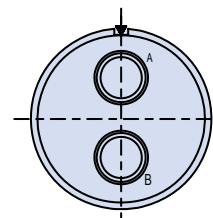
ARRANGEMENT 11Q-01



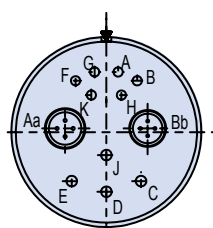
ARRANGEMENT 17Q-02  
 1X SIZE 8 QUADRA  
 38X SIZE 22



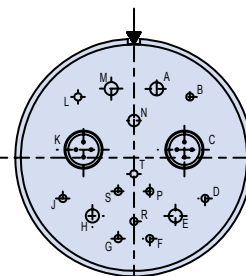
ARRANGEMENT 17Q-22  
 (IAW PREN 3645-001)  
 2X SIZE 8 QUADRA  
 2X SIZE 12



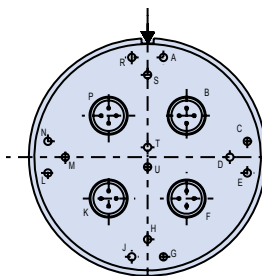
ARRANGEMENT 17Q-75  
 (IAW PREN 3645-001)  
 2X SIZE 8 QUADRA



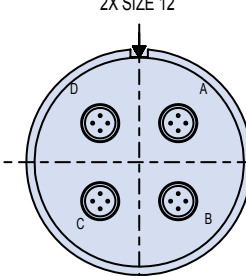
ARRANGEMENT 19Q-12  
 6X SIZE 20  
 4X SIZE 16  
 2X SIZE 8 QUADREX



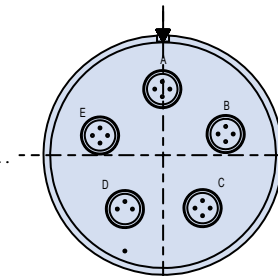
ARRANGEMENT 19Q-17  
 10X SIZE 22D  
 1X SIZE 20  
 4X SIZE 16  
 2X SIZE 8 QUADRA



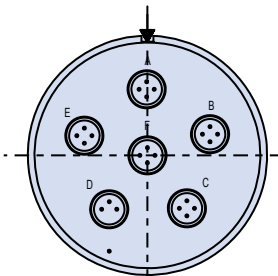
ARRANGEMENT 19Q-18  
 14X SIZE 22D  
 4X SIZE 8 QUADRA



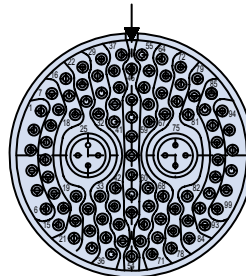
ARRANGEMENT 21Q-75  
 4X SIZE 8 QUADRA



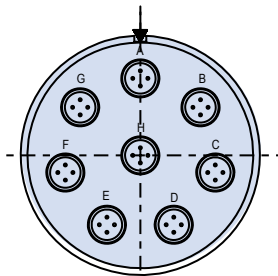
ARRANGEMENT 23Q-05  
 (IAW PREN 3645-001)  
 5X SIZE 8 QUADRA



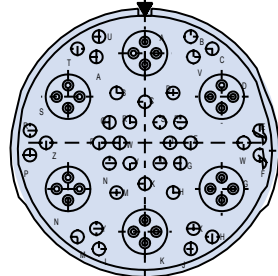
ARRANGEMENT 23Q-06  
 (IAW PREN 3645-001)  
 6X SIZE 8 QUADRA



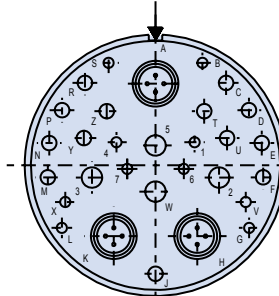
ARRANGEMENT 25Q-07  
 97X SIZE 22  
 2X SIZE 8 QUADRA



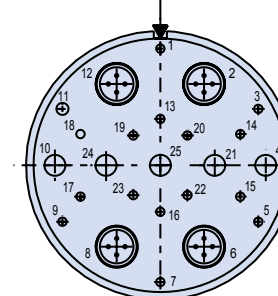
ARRANGEMENT 25Q-08  
 8X SIZE 8 QUADRA



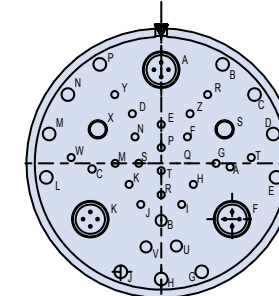
ARRANGEMENT 25Q-17  
 36X SIZE 22  
 6X SIZE 8 QUADRA



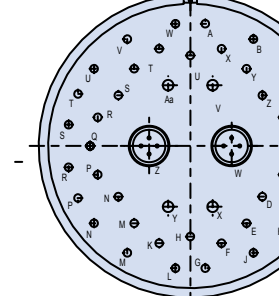
ARRANGEMENT 25Q-20  
 (IAW PREN 3645-001)  
 10X SIZE 20  
 13X SIZE 16  
 4X SIZE 12  
 3X SIZE 8 QUADRA



ARRANGEMENT 25Q-26  
 (IAW PREN 3645-001)  
 16X SIZE 20, 5X SIZE 12  
 4X SIZE 8 QUADRA



ARRANGEMENT 25Q-41  
 22X SIZE 22D, 3X SIZE 20  
 11X SIZE 16, 2X SIZE 12



ARRANGEMENT 25Q-46  
 40X SIZE 20  
 4X SIZE 16

Mating Face of Pin Insert Shown



# 257-616 Twinax and Quadrax PC Tail Contacts MIL-DTL-38999 Series III Type

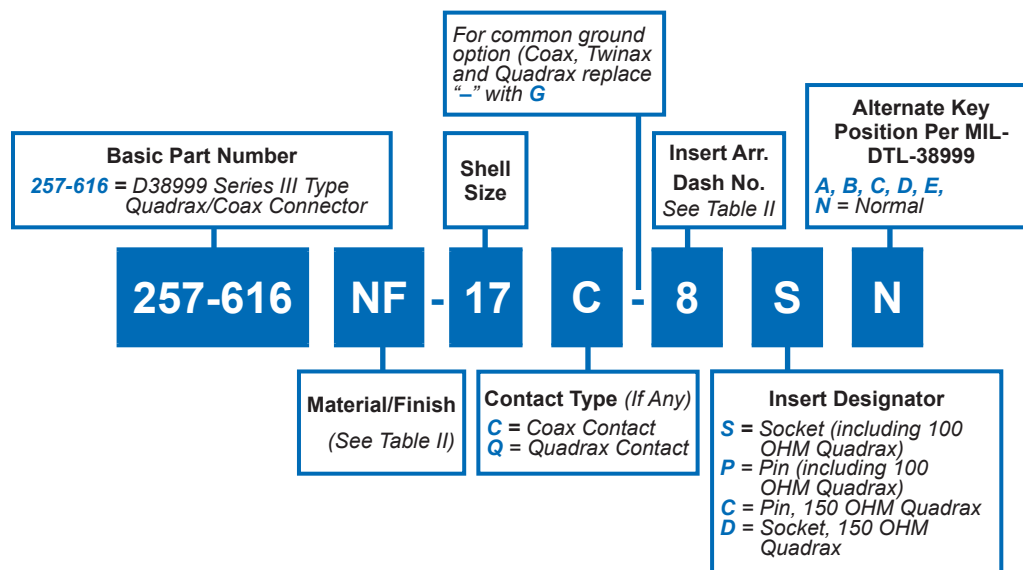


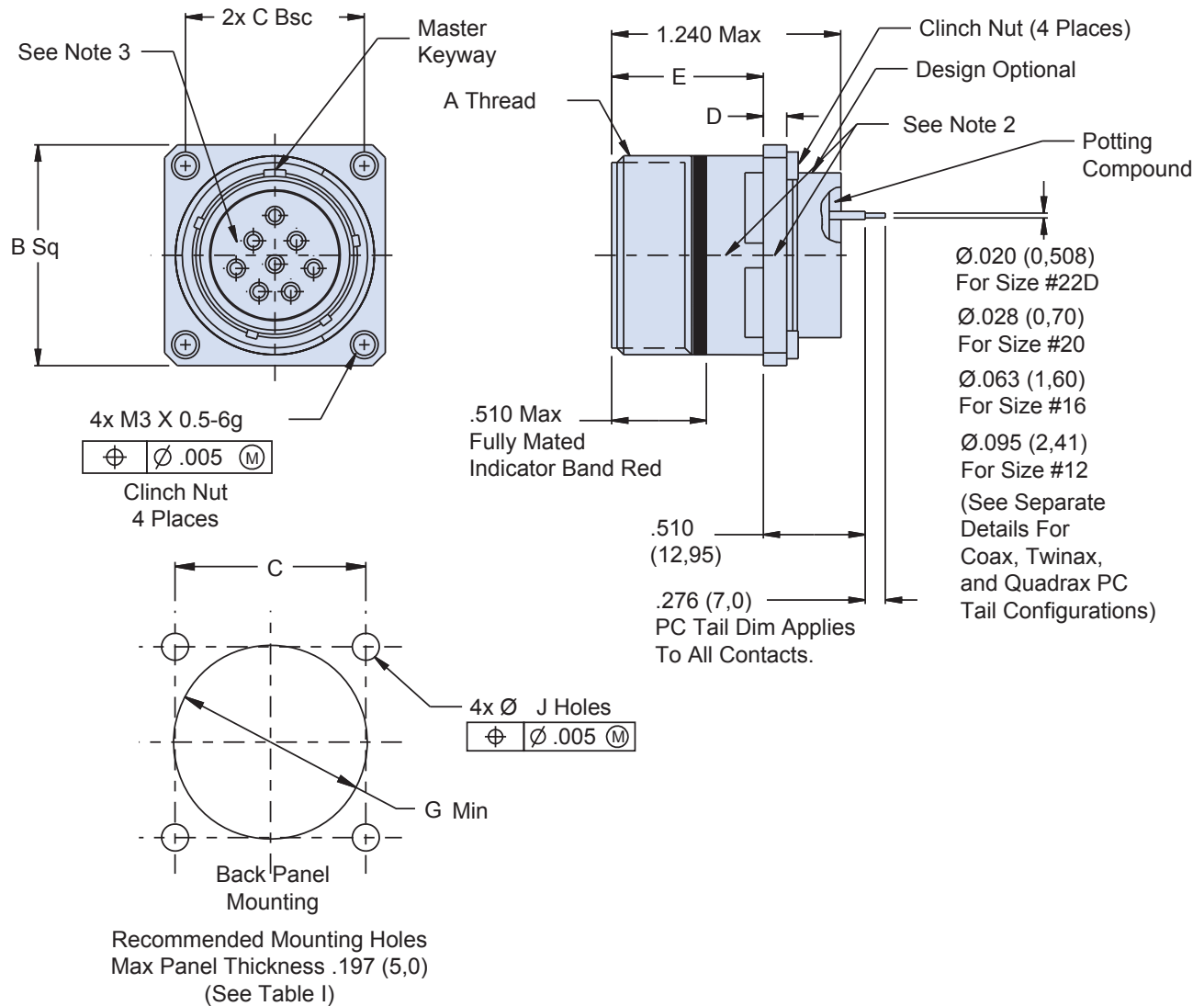
TABLE I: DIMENSIONS

| Shell Size Code | Shell Size | A Thread             | B Sq           |                | C Bsc |       | D                                | E                                  | Ø G   |       | J Holes               |
|-----------------|------------|----------------------|----------------|----------------|-------|-------|----------------------------------|------------------------------------|-------|-------|-----------------------|
|                 |            |                      | In             | mm             | In    | mm    |                                  |                                    |       |       |                       |
| A               | 9          | .6250-1P-.3L-TS-2A   | 1.015<br>1.005 | 25.78<br>25.53 | .719  | 18.26 | .171<br>.083<br>(4.34)<br>(2.11) | .791<br>.736<br>(20.09)<br>(18.64) | 0.656 | 16.66 | .125<br>(3.18)<br>Min |
| B               | 11         | .7500-.1P-.3L-TS-2A  | 1.015<br>1.005 | 25.78<br>25.53 | .812  | 20.62 |                                  |                                    | 0.796 | 20.22 |                       |
| C               | 13         | .8750-.1P-.3L-TS-2A  | 1.218<br>1.186 | 30.94<br>30.12 | .906  | 23.01 |                                  |                                    | 0.921 | 23.39 |                       |
| D               | 15         | 1.0000-.1P-.3L-TS-2A | 1.286<br>1.254 | 32.66<br>31.85 | .969  | 24.61 |                                  |                                    | 1.047 | 26.59 |                       |
| E               | 17         | 1.1875-.1P-.3L-TS-2A | 1.366<br>1.334 | 34.70<br>33.88 | 1.062 | 26.97 |                                  |                                    | 1.219 | 30.96 |                       |
| F               | 19         | 1.2500-.1P-.3L-TS-2A | 1.449<br>1.425 | 36.80<br>36.20 | 1.156 | 29.36 |                                  |                                    | 1.296 | 32.92 |                       |
| G               | 21         | 1.3750-.1P-.3L-TS-2A | 1.575<br>1.545 | 40.01<br>39.24 | 1.250 | 31.75 |                                  |                                    | 1.421 | 36.09 |                       |
| H               | 23         | 1.5000-.1P-.3L-TS-2A | 1.701<br>1.677 | 43.21<br>42.60 | 1.375 | 34.93 |                                  |                                    | 1.547 | 39.29 |                       |
| J               | 25         | 1.6250-.1P-.3L-TS-2A | 1.823<br>1.799 | 46.30<br>45.69 | 1.500 | 38.10 |                                  |                                    | 1.672 | 42.47 |                       |

Table II: Material and Finish

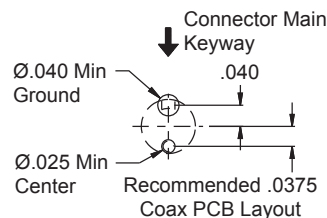
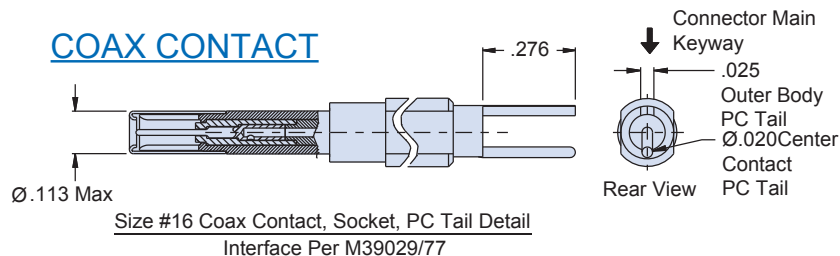
| Symbol | Material | Finish Description                   |
|--------|----------|--------------------------------------|
| M      | Aluminum | Electroless Nickel                   |
| MT     |          | Nickel-PTFE                          |
| NF     |          | Cadmium O.D. Over Electroless Nickel |

**257-616**  
**Twinax and Quadrax PC Tail Contacts**  
**MIL-DTL-38999 Series III Type**

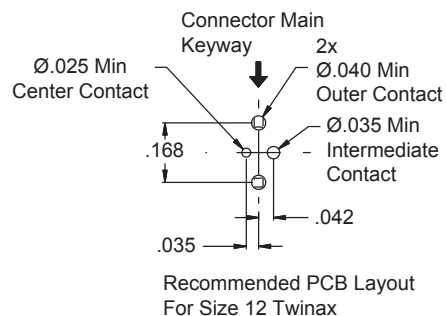
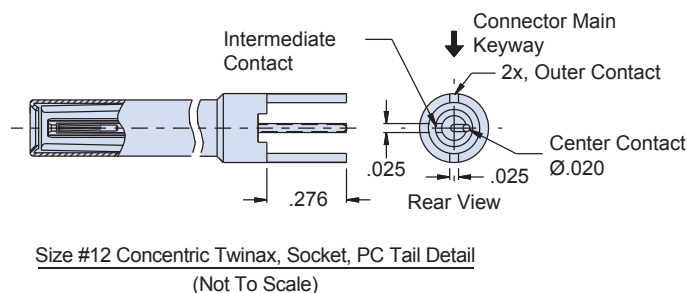
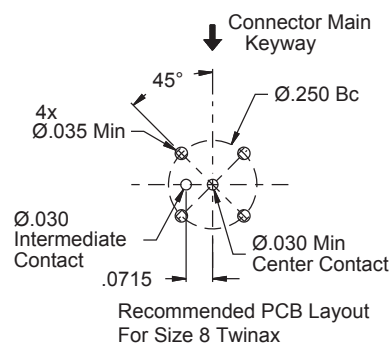
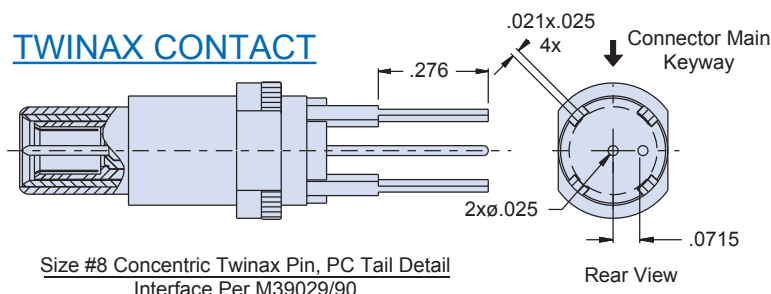


E

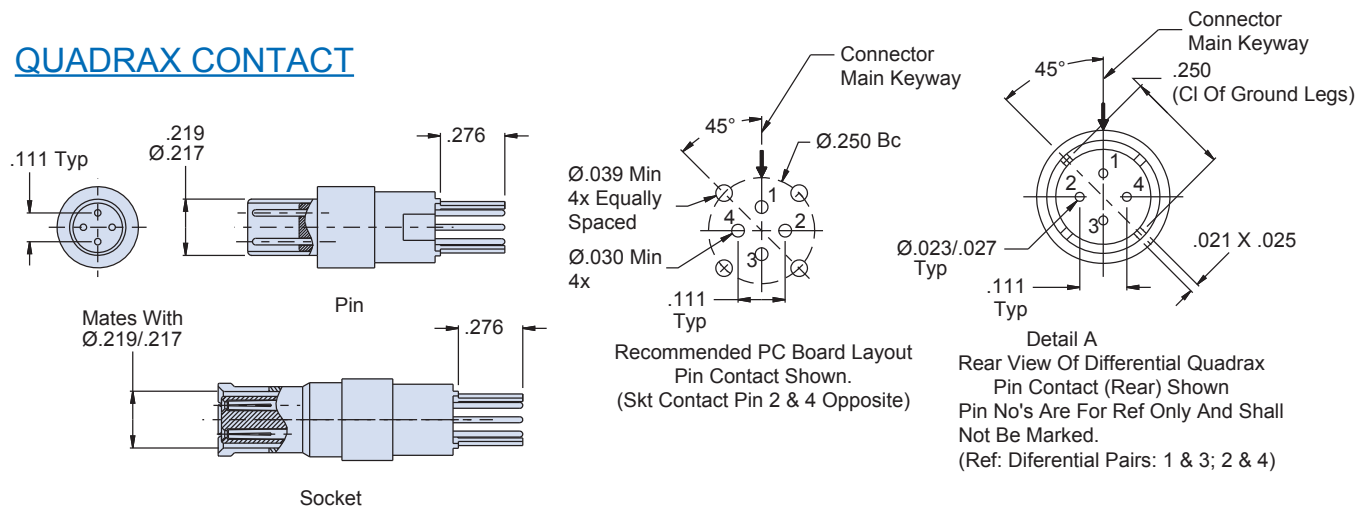
### COAX CONTACT



### TWINAX CONTACT



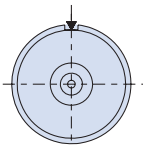
### QUADRAX CONTACT



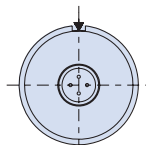
**257-616**  
**Twinax and Quadrax PC Tail Contacts**  
**MIL-DTL-38999 Series III Type Insert Arrangements**



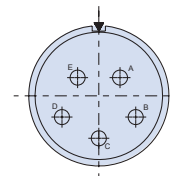
**TABLE II: INSERT ARRANGEMENTS**  
(not all arrangements shown, other arrangements available upon request)



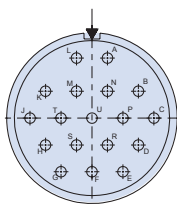
Arrangement 9-5  
Available Only 9G5 (Common Ground Option)  
Size 8 Concentric Twinax



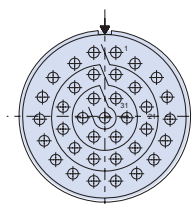
Arrangement 09QG05  
(Common Ground Option Only)  
Size 8 Quadrax Contact



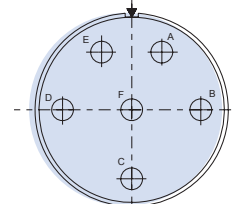
Arrangement 11-5  
Size 20 Contact  
5 Places



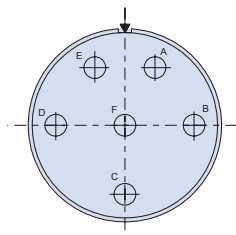
Arrangement 15-18  
Size 20 Contact  
18 Places



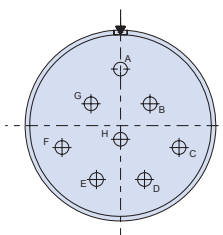
Arrangement 15-35  
Size 22D Contact  
37 Places



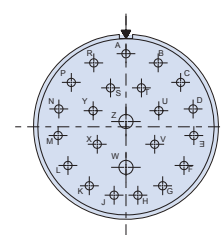
Arrangement 17-6  
Size 12 Contact  
6 Places



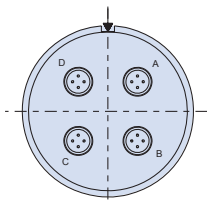
Arrangement 17t-6  
17TG6(Common Ground Option)  
Size 12 Twinax Contact, 6 Places



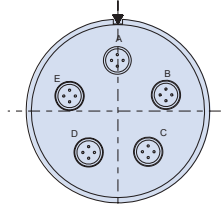
Arrangement 17C-8  
17CG8 (Common Ground Option)  
Size 16 Coax Contact, 8 Places



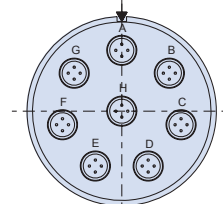
Arrangement 17-99  
Size 16 Skt Contact, 2 Places  
Size 20 Skt Contact, 21 Places



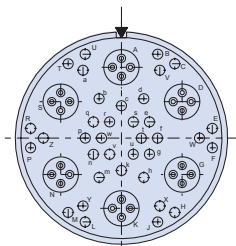
Arrangement 21Q-75  
Size 8 Gage Quadrax, 4 Places



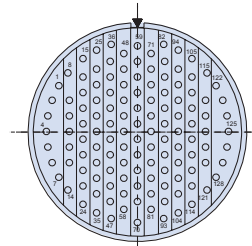
Arrangement 23Q-05  
Size 8 Quadrax, 5 Places



Arrangement 25Q-08  
Size 8 Gage Quadrax, 8 Places



Arrangement 25Q-17  
Size 22D Contact, 36 Places

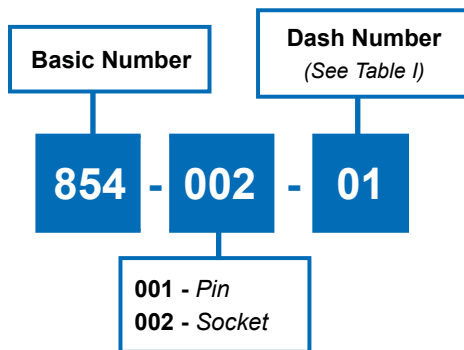


Arrangement 25-35  
Size 22D Contact, 128 Places

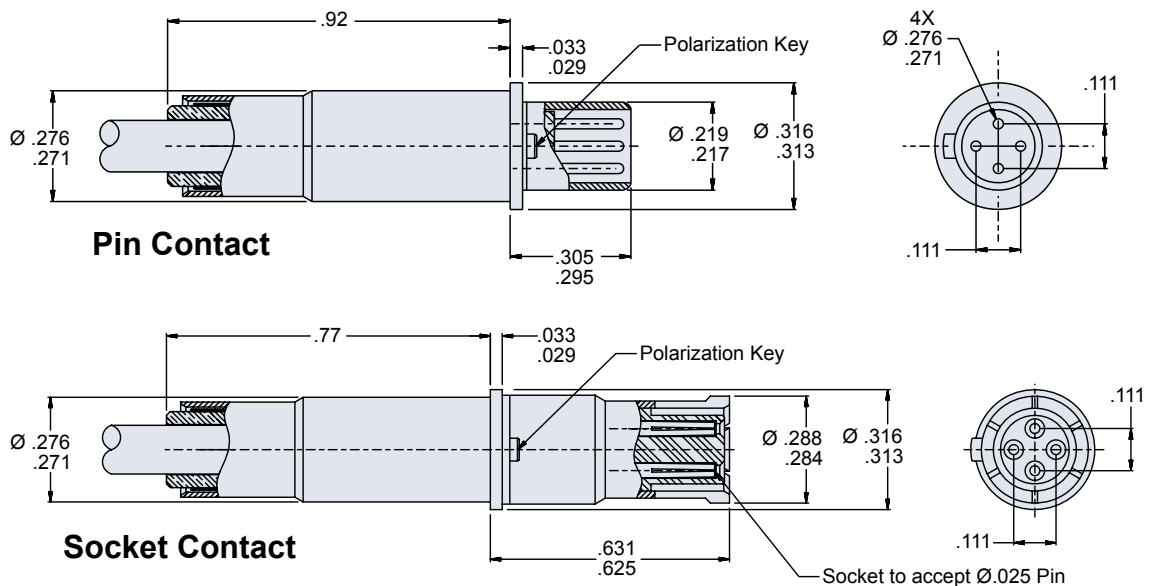
# 854-001 and 854-002 Crimp Quadrax Pin and Socket Contacts MIL-DTL-38999 Series III Type



Twinax and  
Quadrax  
Connectors



| TABLE I     |                       |
|-------------|-----------------------|
| Dash Number | Cables Accomodated    |
| -01         | Tensolite NF26Q100    |
| -02         | Tensolite NF24Q100    |
| -03         | Draka Fileca F 4704-6 |
| -04         | Draka Fileca F 4704-4 |



## PRODUCT ORDERING INFORMATION

| Contact Size | Type    | Glenair Part Number | Military Part Number | Tool Code                    | Cable Type Dash No.         | Wire Size | Sample Contact |
|--------------|---------|---------------------|----------------------|------------------------------|-----------------------------|-----------|----------------|
| #8           | Quadrax | 854-001             | N/A                  | C, J (Inner)<br>K, M (Outer) | -01 - Tensolite NF26Q100    | 26AWG     |                |
|              |         | 854-002             |                      |                              | -02 - Tensolite NF24Q100    | 24AWG     |                |
|              |         |                     |                      |                              | -03 - Draka Fileca F 4704-6 | 26AWG     |                |
|              |         |                     |                      |                              | -04 - Draka Fileca F 4704-4 | 24AWG     |                |

## APPLICATION NOTES

- Assembly to be bagged and tagged with Glenair's name, part number and date code.
- Material/Finish:  
Contact body - Copper alloy / Gold plated  
Inner contacts - Copper alloy / Gold plated  
Crimp ferrule - Brass or equivalent / Gold plated  
Insulator - Teflon, Ultem series 1000 or equivalent
- Electrical Parameters:  
Differential impedance - 100 ohms nominal  
Dielectric withstanding voltage - 500 VRMS  
Insulation resistance - 5000 megohms minimum at 200 VDC
- Contact is designed to accomodate cable listed in table I
- Pin contact shall mate with Glenair socket contact p/n 854-001-xx and fit into Glenair connector series 257-459 only.

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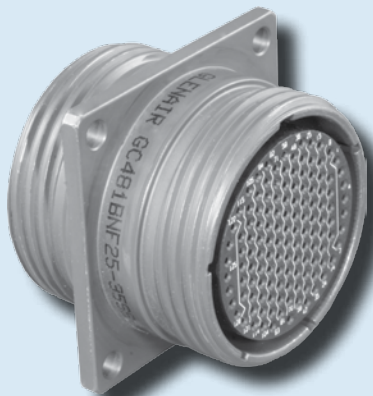
# Glenair Environmental and Hermetic MIL-DTL-38999 Type Bulkhead Feed-Thrus

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## SECTION F TABLE OF CONTENTS

### GLENAIR MIL-DTL-38999 TYPE BULKHEAD FEED-THRUS:

|                                                                                           |      |
|-------------------------------------------------------------------------------------------|------|
| MIL-DTL-38999 Type Bulkhead Feed-Thru Product Features.....                               | F-1  |
| 231-103-H7 Series I Type Jam Nut Mount Hermetic Bulkhead Feed-Thru.....                   | F-2  |
| 231-104-00 Series I Type Wall Mount Environmental Bulkhead Feed-Thru.....                 | F-3  |
| 231-104-07 Series I Type Jam Nut Mount Environmental Bulkhead Feed-Thru.....              | F-4  |
| 231-104-09 Series I Type Jam Nut Mount Env. Plug/Receptacle Bulkhead Feed-Thru.....       | F-5  |
| 947-101 Series I Type Flange Mount Pressure Vessel Penetrator.....                        | F-6  |
| 232-103-H7 Series II Type Jam Nut Mount Hermetic Bulkhead Feed-Thru.....                  | F-7  |
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| 233-103-H7 Series III Type Jam Nut Mount Hermetic Bulkhead Feed-Thru.....                 | F-10 |
| 233-104-00 Series III Type Wall Mount Environmental Bulkhead Feed-Thru.....               | F-11 |
| 233-104-07 Series III Type Jam Nut Mount Environmental Bulkhead Feed-Thru.....            | F-12 |
| 233-103-H9 Series III Type Jam Nut Mount Hermetic Plug/Receptacle Bulkhead Feed-Thru..... | F-13 |
| 947-112 Series III Type Jam Nut Mount Pressure Vessel Penetrator.....                     | F-14 |



## The Widest Range of MIL-DTL-38999 Type Bulkhead Feed-Thru Connectors Available In The Industry.

### Product Applications

Bulkhead feed-thrus eliminate the need to permanently fix cable harnesses to panels—affording increased system flexibility, superior mechanical integrity, and greater serviceability. Glenair hermetic and environmental bulkhead feed-thru connectors are available in MIL-DTL-38999 Series I, II and III configurations. Hermetic Versions are ideally suited for high-pressure/low-leakage applications in air, sea and space environments, meeting a leak rate of  $1 \times 10^{-7}$  cm<sup>3</sup> per second. Environmental versions offer IP67 level sealing.

### Errata

*Catalog contents—including part numbers, materials and dimensions—are accurate to the best of our ability when we go to print. Even so, customers are advised to consult the factory for the latest specifications, particularly to confirm critical dimensions such as connector lengths, threads, and so on. When errors or mistakes are brought to our attention, corrected content is posted immediately to our website: [www.glenair.com](http://www.glenair.com).*

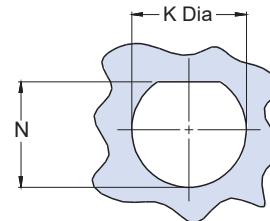
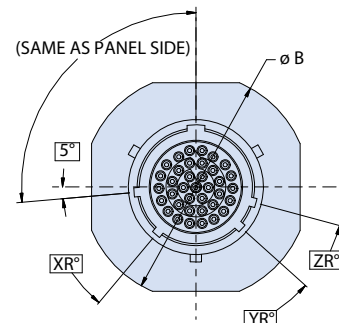
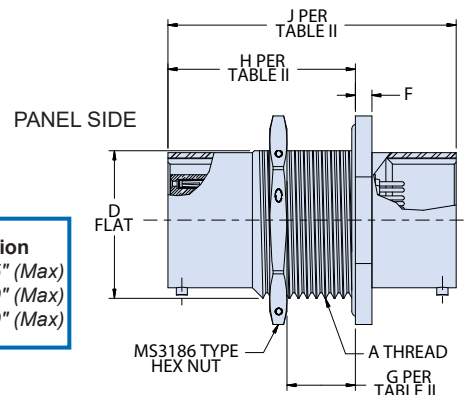
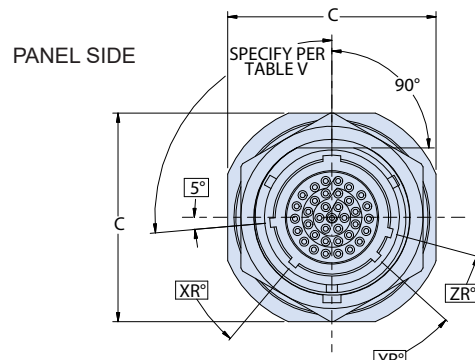
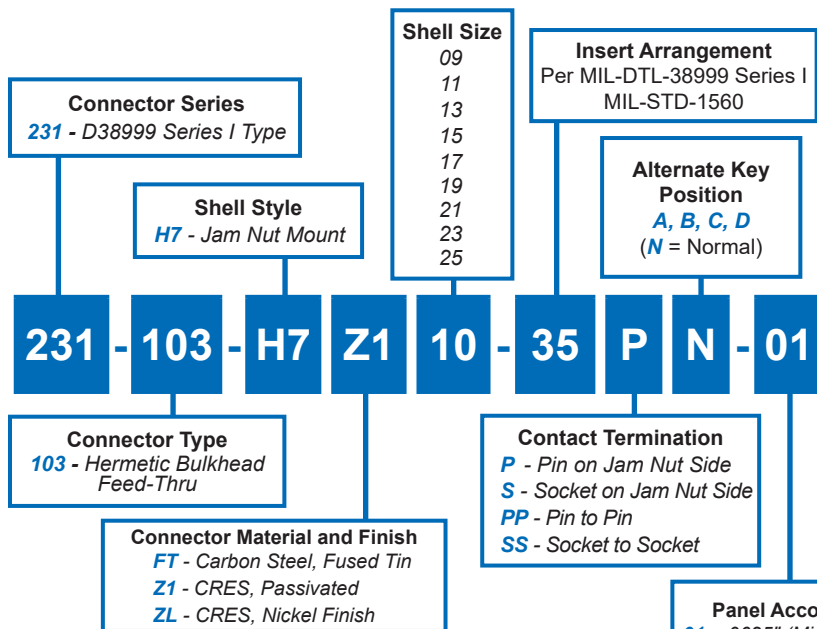
**TABLE I: MATERIALS**

|                                                    |                                                                                                                                                                          |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shell, Barrel, and Coupling Nut (Environmental)    | Aluminum alloy 6061 per ASTM-B211                                                                                                                                        |
| Shell, Barrel Coupling and Jam Nut (Hermetic)      | Stainless steel per AMS-QQ-S-763                                                                                                                                         |
| Shell, Barrel, Coupling Nut and Jam Nut (Hermetic) | Carbon Steel per ASTM-B545 or ASTM-B339                                                                                                                                  |
| Grommet, Peripheral Seal and Interfacial Seal      | Blended elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988                                                                                         |
| Hermetic Insert                                    | Vitreous glass                                                                                                                                                           |
| Feed-Thru Contacts (Environmental)                 | Copper Alloy / Gold Plate                                                                                                                                                |
| Feed-Thru (Hermetic)                               | Nickel-iron alloy per ASTM F30 (Alloy 52), 50 microinches gold plated per ASTM B488 Type 3 Code C Class 1, 27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches |
| Adhesives                                          | Silicone and epoxy                                                                                                                                                       |

**TABLE II: POPULAR FINISHES**

| Plating Code | Material        | Finish                                                        | Specification                                                                                                    |
|--------------|-----------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| M            | Aluminum        | Electroless Nickel                                            | AMS-C-26074                                                                                                      |
| NF           | Aluminum        | Cadmium Plate Olive Drab over Electroless Nickel              | AMS-QQ-P-416, over AMS-C-26074 (1000 Hour Salt Spray)                                                            |
| NC           | Aluminum        | Zinc-Cobalt                                                   | ASTMB840                                                                                                         |
| ZN           | Aluminum        | Olive Drab Zinc-Nickel                                        | Zinc alloy per ASTM B841-91, Class 1 Type E Grade 3 over Electroless nickel per ASTM B733-90 SC2, Type 1 Class 5 |
| MT           | Aluminum        | Ni-PTFE <b>1,000 Hour Grey™</b> (Nickel Fluorocarbon Polymer) | MIL-DTL-38999L (500 Hour Salt Spray)                                                                             |
| AL           | Aluminum        | Pure Electrodeposited Aluminum                                | MIL-DTL-83488 (1000 Hour Salt Spray)                                                                             |
| Z1           | Stainless Steel | Passivate                                                     | AMS-QQ-P-35                                                                                                      |
| FT           | Carbon Steel    | Fused Tin Plate                                               | ASTM-B545 or ASTM-B339                                                                                           |
| ZL           | Stainless Steel | Electrodeposited Nickel                                       | SAE-AMS-QQ-N-290, Class 2                                                                                        |

## 231-103-H7 Jam Nut Mount Hermetic Bulkhead Feed-Thru MIL-DTL-38999 Series I Type



Recommended  
Panel Cut-Out

TABLE II

| Sym | G                        | H             | J             |
|-----|--------------------------|---------------|---------------|
| 01  | .062(1.57) - .125 (3.17) | .920 (23.37)  | 1.700 (43.18) |
| 02  | .062(1.57) - .250(6.35)  | 1.060 (26.92) | 1.850 (46.99) |
| 03  | .062(1.57) - .500(12.70) | 1.310 (33.27) | 2.100 (53.34) |

TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | A THREAD CLASS 2A | B DIA                          | C A/F                          | D FLAT                         | F                          | K Dia                          | N                              |
|------------|-------------------|--------------------------------|--------------------------------|--------------------------------|----------------------------|--------------------------------|--------------------------------|
| 9          | .6875-24 UNEF     | 1.204 (30.58)<br>1.172 (29.77) | 1.078 (27.38)<br>1.046 (26.57) | .655 (16.64)<br>.645 (16.38)   | .125 (3.18)<br>.093 (2.36) | .703 (17.86)<br>.693 (17.60)   | .661 (16.79)<br>.655 (16.64)   |
| 11         | .8125-20 UNEF     | 1.391 (35.33)<br>1.359 (34.52) | 1.266 (32.16)<br>1.234 (31.34) | .755 (19.18)<br>.745 (18.92)   | .125 (3.18)<br>.093 (2.36) | .835 (21.21)<br>.825 (20.96)   | .771 (19.58)<br>.761 (19.33)   |
| 13         | 1.000-20 UNEF     | 1.516 (38.51)<br>1.484 (37.69) | 1.391 (35.33)<br>1.359 (34.52) | .942 (23.93)<br>.932 (23.67)   | .125 (3.18)<br>.093 (2.36) | 1.020 (25.91)<br>1.010 (25.65) | .955 (24.26)<br>.945 (24.00)   |
| 15         | 1.125-18 UNEF     | 1.641 (41.68)<br>1.609 (40.87) | 1.516 (38.51)<br>1.484 (37.69) | 1.066 (27.08)<br>1.056 (26.82) | .125 (3.18)<br>.093 (2.36) | 1.145 (29.08)<br>1.135 (28.83) | 1.085 (27.56)<br>1.075 (27.30) |
| 17         | 1.250-18 UNEF     | 1.766 (44.86)<br>1.734 (44.04) | 1.641 (41.68)<br>1.609 (40.87) | 1.191 (30.25)<br>1.181 (30.00) | .125 (3.18)<br>.093 (2.36) | 1.270 (32.26)<br>1.260 (32.00) | 1.210 (30.73)<br>1.200 (30.48) |
| 19         | 1.375-18 UNEF     | 1.954 (49.63)<br>1.922 (48.82) | 1.828 (46.43)<br>1.796 (45.62) | 1.316 (33.43)<br>1.306 (33.17) | .156 (3.96)<br>.124 (3.15) | 1.395 (35.43)<br>1.385 (35.18) | 1.335 (33.91)<br>1.325 (33.65) |
| 21         | 1.500-18 UNEF     | 2.078 (52.78)<br>2.046 (51.97) | 1.954 (49.63)<br>1.922 (48.82) | 1.441 (36.60)<br>1.431 (36.35) | .156 (3.96)<br>.124 (3.15) | 1.520 (38.61)<br>1.510 (38.35) | 1.460 (37.08)<br>1.450 (36.83) |
| 23         | 1.625-18 UNEF     | 2.204 (55.98)<br>2.172 (55.17) | 2.078 (52.78)<br>2.046 (51.97) | 1.566 (39.78)<br>1.556 (39.52) | .156 (3.96)<br>.124 (3.15) | 1.645 (41.78)<br>1.635 (41.53) | 1.585 (40.26)<br>1.575 (40.00) |
| 25         | 1.750-18 UNS      | 2.328 (59.13)<br>2.296 (58.32) | 2.204 (55.98)<br>2.172 (55.17) | 1.691 (42.95)<br>1.681 (42.70) | .156 (3.96)<br>.124 (3.15) | 1.770 (44.96)<br>1.760 (44.70) | 1.710 (43.43)<br>1.700 (43.18) |

### APPLICATION NOTES

1. Power to a given contact on one end will result in power to contact directly opposite, regardless of identification letter.

2. Hermeticity = less than  $1 \times 10^{-4}$  cc/sec at one atmosphere. Not for use in liquid atmosphere.  
3. Material/finish:

- Shell, nut – CRES/passivated, carbon steel/fused tin or CRES/nickel per QQ-N-290.
- Contacts – Gold Plated. Pin: alloy

- 52; Skt.: copper alloy
- Insulator – fused vitreous glass/N.A.
- Seals – fluorosilicone rubber/N.A.

# 231-104-00

## Wall Mount Environmental Bulkhead Feed-Thru

### MIL-DTL-38999 Series I Type



Bulkhead  
Feed-Thru

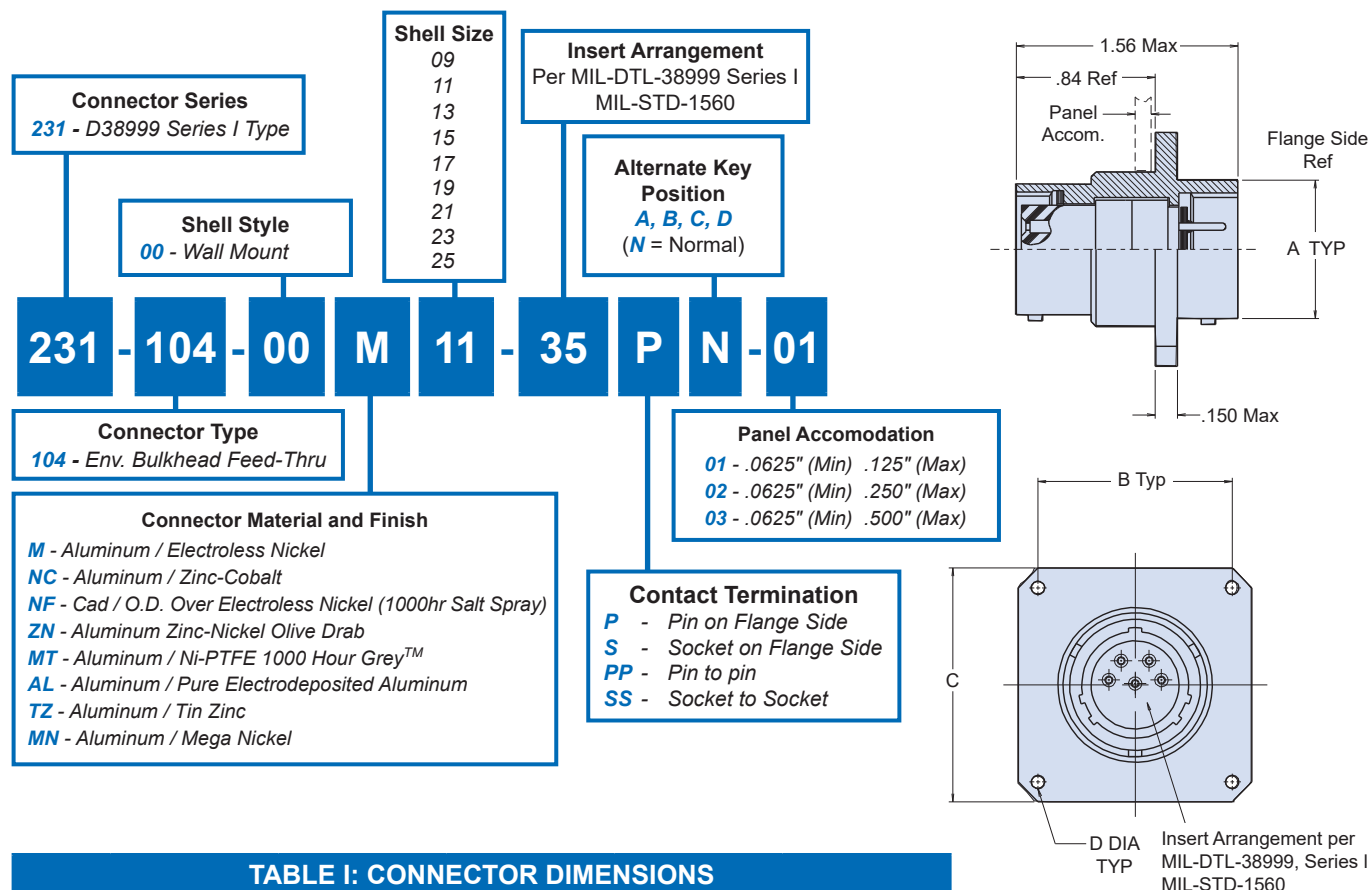
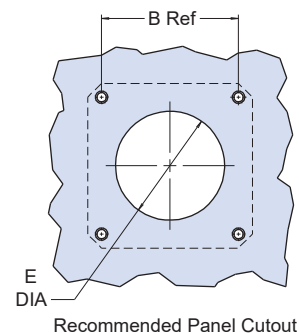


TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | A MAX       | B SQ        | C SQ        | D DIA     | E ±.005(0.1) |
|------------|-------------|-------------|-------------|-----------|--------------|
| 09         | .573(14.6)  | .719(18.3)  | .938(23.8)  | .125(3.2) | .703(17.9)   |
| 11         | .701(17.8)  | .812(20.6)  | 1.031(26.2) | .125(3.2) | .827(21.0)   |
| 13         | .851(21.6)  | .906(23.0)  | 1.125(28.8) | .125(3.2) | 1.015(25.8)  |
| 15         | .976(24.8)  | .969(24.6)  | 1.219(31.0) | .125(3.2) | 1.140(29.0)  |
| 17         | 1.101(28.0) | 1.062(27.0) | 1.312(33.3) | .125(3.2) | 1.265(32.1)  |
| 19         | 1.208(30.7) | 1.156(29.4) | 1.438(36.5) | .125(3.2) | 1.390(35.3)  |
| 21         | 1.333(33.9) | 1.250(31.8) | 1.562(39.7) | .125(3.2) | 1.515(38.5)  |
| 23         | 1.458(37.0) | 1.375(34.9) | 1.688(42.9) | .156(4.0) | 1.640(41.7)  |
| 25         | 1.583(40.2) | 1.500(38.1) | 1.812(46.0) | .156(4.0) | 1.765(44.8)  |

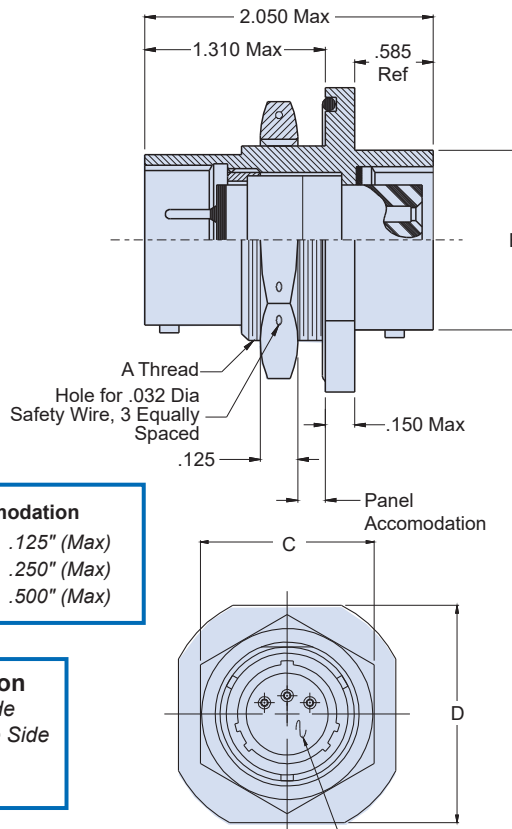
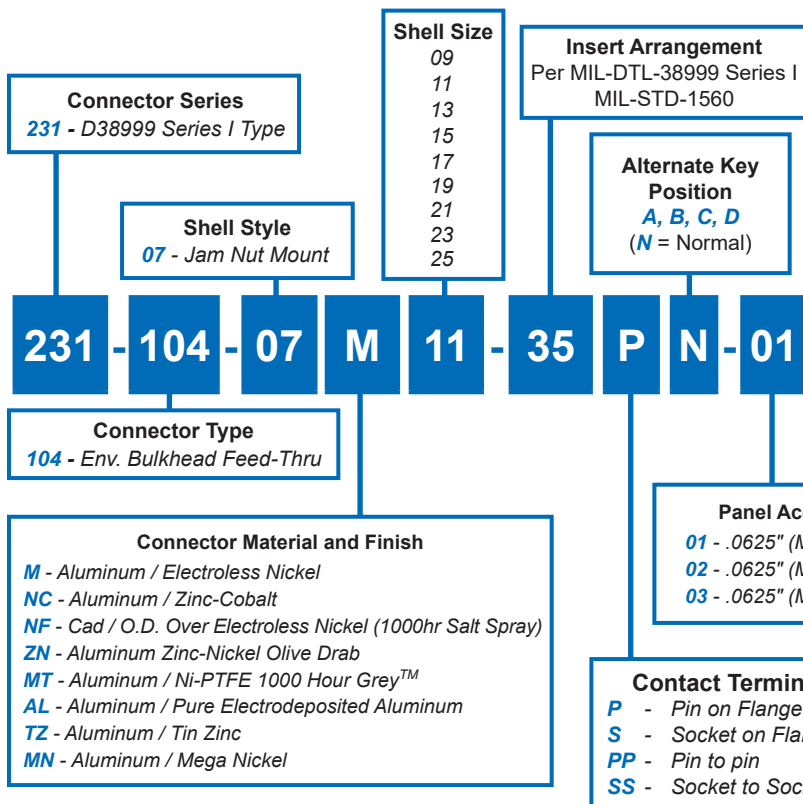


### APPLICATION NOTES

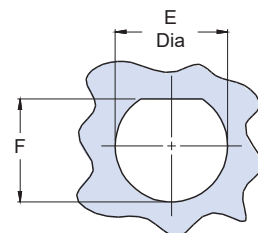
- Material/finish:  
Shells and nuts – Al alloy, 6061-T6, QQ-A-225/8, see Table I (D5)  
Contacts – Leaded nickel copper/gold plate MIL-G-45204, Type II, Class I  
Bayonet pins – AISI 300 series stainless steel/passivate, QQ-P-35  
Hoods – AISI 305 series stainless steel/passivate, QQ-P-35  
Inserts – Epiall 1908  
Seals – Silicone per ZZ-R-765
- Metric Dimensions (mm) are indicated in parentheses.



# 231-104-07 Jam Nut Environmental Bulkhead Feed-Thru MIL-DTL-38999 Series I Type



Insert arrangement, per  
MIL-C-38999, Series I  
MIL-STD-1560



Recommended Panel Cut-Out

TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | A THREAD CLASS 2A | B DIA MAX   | C HEX       | D FLATS     | E DIA ±.005(0.1) | F ±.005(.01) unless indicated otherwise |
|------------|-------------------|-------------|-------------|-------------|------------------|-----------------------------------------|
| 09         | .688-24 UNEF      | .573(14.6)  | .875(22.2)  | 1.062(27.0) | .698 (17.73)     | .661 (16.79)<br>.655 (16.64)            |
| 11         | .813-20 UNEF      | .701(17.8)  | 1.000(25.4) | 1.250(31.8) | .830 (21.08)     | .766 (19.46)                            |
| 13         | 1.000-20 UNEF     | .851(21.6)  | 1.188(30.2) | 1.375(34.9) | 1.015 (26.03)    | .950 (24.13)                            |
| 15         | 1.125-18 UNEF     | .976(24.8)  | 1.312(33.3) | 1.500(38.1) | 1.140 (28.96)    | 1.080 (27.43)                           |
| 17         | 1.250-18 UNEF     | 1.101(28.0) | 1.438(36.5) | 1.625(41.3) | 1.265 (32.13)    | 1.205 (30.61)                           |
| 19         | 1.375-18 UNEF     | 1.208(30.7) | 1.562(39.7) | 1.812(46.0) | 1.390 (35.31)    | 1.330 (33.78)                           |
| 21         | 1.500-18 UNEF     | 1.333(33.9) | 1.688(42.9) | 1.938(49.2) | 1.515 (38.48)    | 1.455 (36.96)                           |
| 23         | 1.625-18 UNEF     | 1.458(37.0) | 1.812(46.0) | 2.062(52.4) | 1.640 (41.66)    | 1.580 (40.13)                           |
| 25         | 1.750-18 UNS      | 1.583(40.2) | 2.000(50.8) | 2.188(55.6) | 1.765 (45.08)    | 1.705 (43.31)                           |

## APPLICATION NOTES

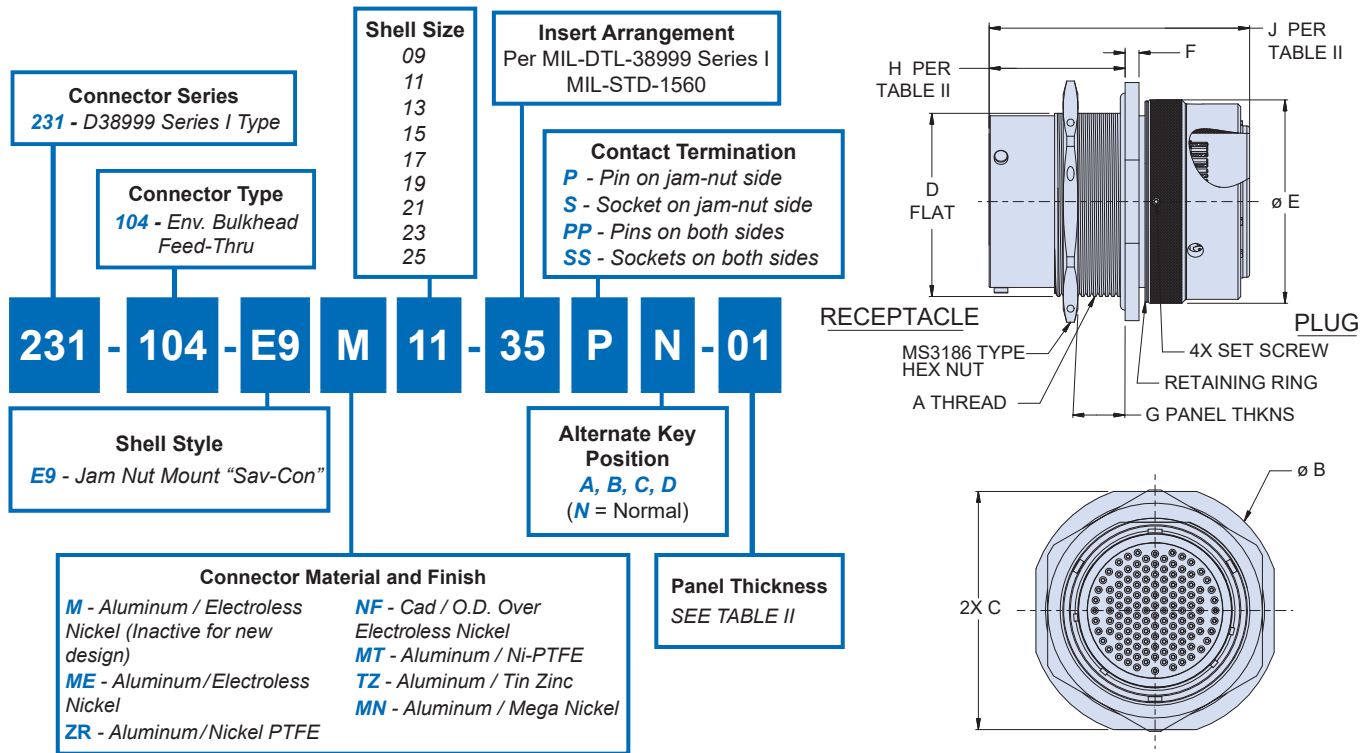
- Power to a given contact on one end will result in power to contact directly opposite regardless of identification letter
- Metric Dimensions (mm) are indicated in parentheses
- Material/finish:  
Shell, locking, jam nut—Al alloy, See Table II Page D-5

Contacts—Copper alloy/gold plate  
Insulators—High grade rigid dielectric/N.A.  
Bayonet Pins—CRES/passivate  
Seals—silicone/N.A.

# 231-104-E9 Jam Nut Mount Environmental Plug/Receptacle Bulkhead Feed-Thru for MIL-DTL-38999 Series I Type

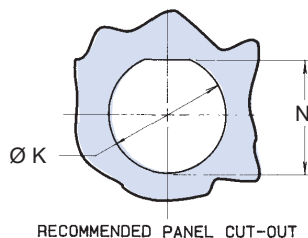


Bulkhead  
Feed-Thru



**TABLE II:  
PANEL  
ACCOMMODATION**

| SYM | G         | H MAX | J MAX |
|-----|-----------|-------|-------|
| 01  | .062-.125 | .920  | 2.050 |
| 02  | .062-.250 | 1.050 | 2.250 |
| 03  | .062-.500 | 1.300 | 2.400 |



**TABLE I: CONNECTOR DIMENSIONS**

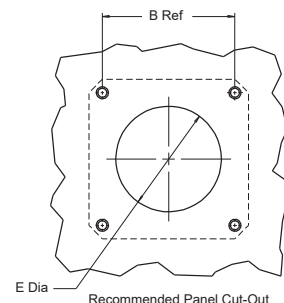
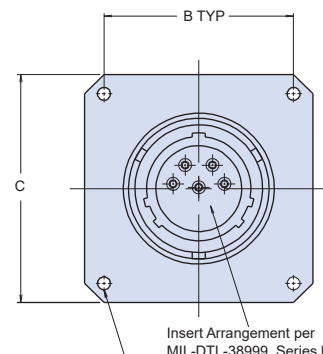
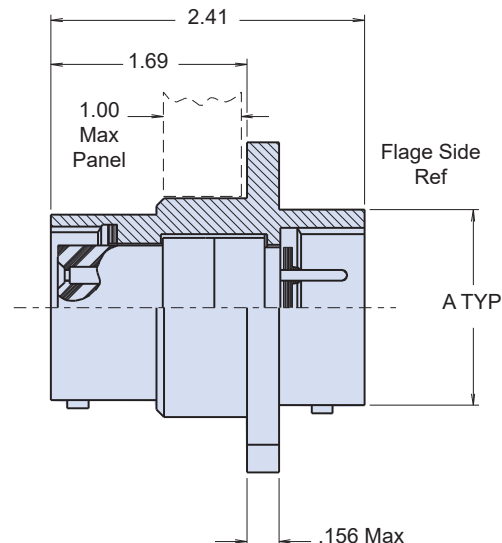
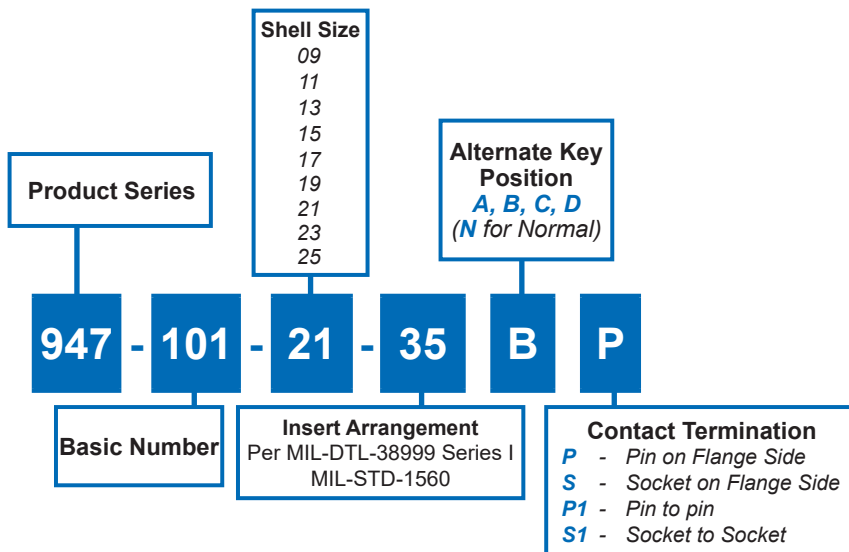
| SHELL SIZE | A THREAD CLASS 2A | ø B                            | C A/F                          | D Flat                         | ø E Max       | F                            | ø K                            | N                              |
|------------|-------------------|--------------------------------|--------------------------------|--------------------------------|---------------|------------------------------|--------------------------------|--------------------------------|
| 9          | .6875-24 UNEF     | 1.204 (30.58)<br>1.172 (29.77) | 1.078 (27.38)<br>1.046 (26.57) | .655 (16.64)<br>.645 (16.38)   | .859 (21.82)  | .125 (3.18)<br>.093 (2.36)   | .703 (17.86)<br>.693 (17.60)   | .661 (16.79)<br>.653 (16.59)   |
| 11         | .8125-20 UNEF     | 1.391 (35.33)<br>1.359 (34.52) | 1.266 (32.16)<br>1.234 (31.34) | 0.755 (19.18)<br>0.745 (18.92) | 0.984 (24.99) | 0.125 (3.18)<br>0.093 (2.36) | 0.835 (21.21)<br>0.825 (20.96) | 0.771 (19.58)<br>0.761 (19.33) |
| 13         | 1.000-20 UNEF     | 1.516 (38.51)<br>1.484 (37.69) | 1.391 (35.33)<br>1.359 (34.52) | 0.942 (23.93)<br>0.932 (23.67) | 1.156 (29.36) | 0.125 (3.18)<br>0.093 (2.36) | 1.020 (25.91)<br>1.010 (25.65) | 0.955 (24.26)<br>0.945 (24.00) |
| 15         | 1.125-18 UNEF     | 1.641 (41.68)<br>1.609 (40.87) | 1.516 (38.51)<br>1.484 (37.69) | 1.066 (27.08)<br>1.056 (26.82) | 1.281 (32.54) | 0.125 (3.18)<br>0.093 (2.36) | 1.145 (29.08)<br>1.135 (28.83) | 1.085 (27.56)<br>1.075 (27.31) |
| 17         | 1.250-18 UNEF     | 1.766 (44.86)<br>1.734 (44.04) | 1.641 (41.68)<br>1.609 (40.87) | 1.191 (30.25)<br>1.181 (30.00) | 1.406 (35.71) | 0.125 (3.18)<br>0.093 (2.36) | 1.270 (32.26)<br>1.260 (32.00) | 1.210 (30.73)<br>1.200 (30.48) |
| 19         | 1.375-18 UNEF     | 1.954 (49.63)<br>1.922 (48.82) | 1.828 (46.43)<br>1.796 (45.62) | 1.316 (33.43)<br>1.306 (33.17) | 1.516 (38.51) | 0.156 (3.96)<br>0.093 (2.36) | 1.395 (35.43)<br>1.385 (35.18) | 1.335 (33.91)<br>1.325 (33.66) |
| 21         | 1.500-18 UNEF     | 2.078 (52.78)<br>2.046 (51.97) | 1.954 (49.63)<br>1.922 (48.82) | 1.441 (36.60)<br>1.431 (36.35) | 1.641 (41.68) | 0.156 (3.96)<br>0.093 (2.36) | 1.520 (38.61)<br>1.510 (38.35) | 1.460 (37.08)<br>1.450 (36.83) |
| 23         | 1.625-18 UNEF     | 2.204 (55.98)<br>2.172 (55.17) | 2.078 (52.78)<br>2.046 (51.97) | 1.566 (39.78)<br>1.556 (39.52) | 1.766 (44.86) | 0.156 (3.96)<br>0.093 (2.36) | 1.645 (41.78)<br>1.635 (41.53) | 1.585 (40.26)<br>1.575 (40.01) |
| 25         | 1.750-18 UNS      | 2.328 (59.13)<br>2.296 (58.32) | 2.204 (55.98)<br>2.172 (55.17) | 1.691 (42.95)<br>1.681 (42.70) | 1.891 (48.03) | 0.156 (3.96)<br>0.093 (2.36) | 1.770 (44.96)<br>1.760 (44.70) | 1.710 (43.43)<br>1.700 (43.18) |

## APPLICATION NOTES

- Material/finish:  
Shell assembly, coupling nut, jam nut, lock ring—Aluminum Alloy, See Part Number Development  
Retaining ring—Ni-Al bronze/clean only  
Contacts—Copper alloy/gold plate  
Bayonet pins, wave washer—CRES/passivate  
O-Ring, interfacial and peripheral seals—fluorosilicone blend/N.A.  
Insulators—High grade rigid dielectric/N.A.  
Ground Ring—Beryllium copper/gold plate
- Metric Dimensions (mm) are indicated in parentheses.



**947-101**  
**Flange Mount Environmental**  
**Bulkhead Feed-Thru**  
**1.00in Panel • MIL-DTL-38999 Series I Type**



**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | A MAX       | B SQ        | C SQ        | D DIA     | E ±.005(0.1) |
|------------|-------------|-------------|-------------|-----------|--------------|
| 09         | .573(14.6)  | .719(18.3)  | .938(23.8)  | .125(3.2) | .703(17.9)   |
| 11         | .701(17.8)  | .812(20.6)  | 1.031(26.2) | .125(3.2) | .827(21.0)   |
| 13         | .851(21.6)  | .906(23.0)  | 1.125(28.8) | .125(3.2) | 1.015(25.8)  |
| 15         | .976(24.8)  | .969(24.6)  | 1.219(31.0) | .125(3.2) | 1.140(29.0)  |
| 17         | 1.101(28.0) | 1.062(27.0) | 1.312(33.3) | .125(3.2) | 1.265(32.1)  |
| 19         | 1.208(30.7) | 1.156(29.4) | 1.438(36.5) | .125(3.2) | 1.390(35.3)  |
| 21         | 1.333(33.9) | 1.250(31.8) | 1.562(39.7) | .125(3.2) | 1.515(38.5)  |
| 23         | 1.458(37.0) | 1.375(34.9) | 1.688(42.9) | .156(4.0) | 1.640(41.7)  |
| 25         | 1.583(40.2) | 1.500(38.1) | 1.812(46.0) | .156(4.0) | 1.765(44.8)  |

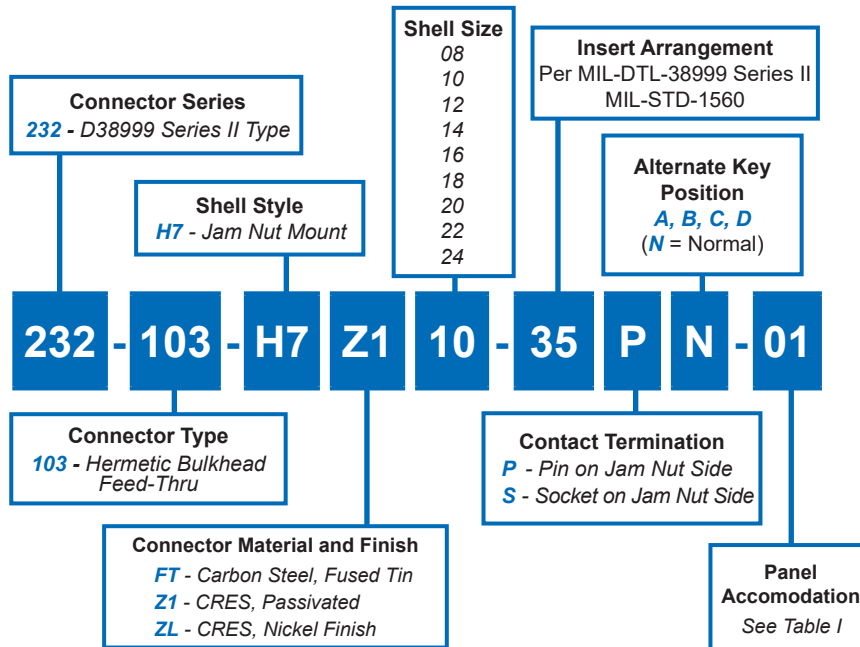
**APPLICATION NOTES**

- Assembly identified with manufacturer's name and part number, space permitting
- Material/finish:  
Shells and nuts—Al alloy, 6061-T6, QQ-A-225/8/cadmium O.D. per QQ-P-416 Type II, Class 3 over electroless nickel, Mil-C-26074, Class 1/2/3/4, Grade A/B/C, 500 hr. salt spray  
Contacts—lead nickel copper/gold plate, MIL-G-45204, Type II,  
Class I  
Bayonet pins—AISI 300 series stainless steel/passivate, QQ-P-35  
Hoods—AISI 305 series stainless steel/passivate, QQ-P-35.  
Inserts—Epiall 1908  
Seals—silicone per ZZ-R-765
- Metric Dimensions (mm) are indicated in parentheses.

# 232-103-H7 Jam Nut Mount Hermetic Bulkhead Feed-Thru MIL-DTL-38999 Series II Type



Bulkhead  
Feed-Thru



## APPLICATION NOTES

1. Power to a given contact on one end will result in power to contact directly opposite, regardless of identification letter.
2. Hermeticity = less than  $1 \times 10^{-7}$  cc/sec at one atmosphere. Not for use in liquid atmosphere.
3. Material/finish:  
Shell, nut - CRES/passivated, carbon steel/fused tin or CRES/nickel per QQ-N-290.  
Contacts - Gold Plated. Pin: alloy 52; Skt.: copper alloy  
Insulator - fused vitreous glass/N.A.  
Seals - fluorosilicone rubber/N.A.
4. Metric dimensions (mm) are indicated in parentheses.

Table I: Panel Accommodation

| Symbol | G Panel Thickness | J         |
|--------|-------------------|-----------|
| 01     | .0625 -.125       | .900 max  |
| 02     | .0625 -.250       | 1.155 max |
| 03     | .0625 -.500       | 1.270 max |

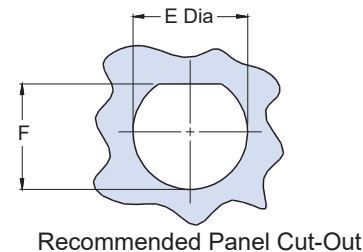
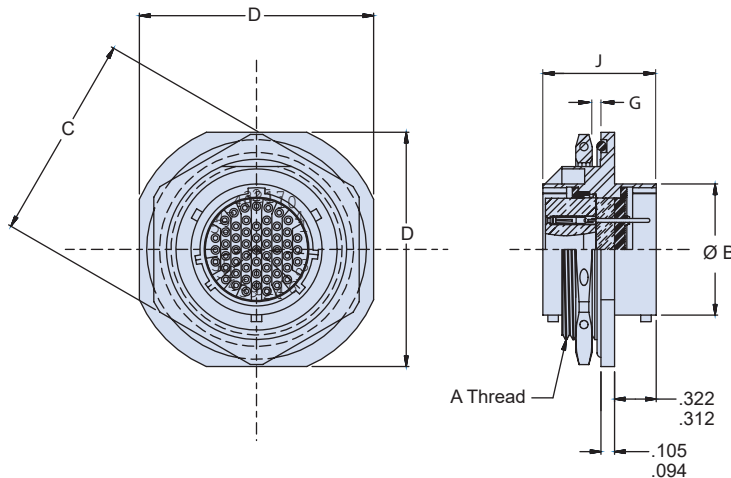


TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | A THREAD CLASS 2A | B DIA MAX   | C HEX       | D FLATS     | E DIA ±.005(0.1) | F +.000-.005 (0-0.1) |
|------------|-------------------|-------------|-------------|-------------|------------------|----------------------|
| 08         | .875-20 UNEF      | .474(12.0)  | 1.062(27.0) | 1.250(31.8) | .885(22.5)       | .830(21.1)           |
| 10         | 1.000-20 UNEF     | .591(15.0)  | 1.188(30.2) | 1.375(34.9) | 1.010(25.7)      | .955(24.3)           |
| 12         | 1.125-18 UNEF     | .751(19.1)  | 1.312(33.3) | 1.500(38.1) | 1.135(28.8)      | 1.085(27.6)          |
| 14         | 1.250-18 UNEF     | .876(22.3)  | 1.438(36.5) | 1.625(41.3) | 1.260(32.0)      | 1.210(30.7)          |
| 16         | 1.375-18 UNEF     | 1.001(25.4) | 1.562(39.7) | 1.781(45.2) | 1.385(35.2)      | 1.335(33.9)          |
| 18         | 1.500-18 UNEF     | 1.126(28.6) | 1.688(42.9) | 1.890(48.0) | 1.510(38.4)      | 1.460(37.1)          |
| 20         | 1.625-18 UNEF     | 1.251(31.8) | 1.812(46.0) | 2.016(51.2) | 1.635(41.5)      | 1.585(40.3)          |
| 22         | 1.750-18 UNS      | 1.376(35.0) | 2.000(50.8) | 2.140(54.4) | 1.760(44.7)      | 1.710(43.4)          |
| 24         | 1.875-16 UN       | 1.501(38.1) | 2.125(54.0) | 2.265(57.5) | 1.885(47.9)      | 1.835(46.6)          |

## 232-104-00 Wall Mount Environmental Bulkhead Feed-Thru MIL-DTL-38999 Series II Type

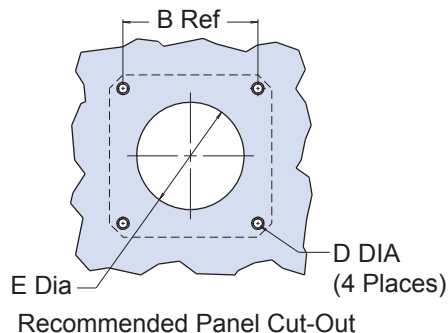
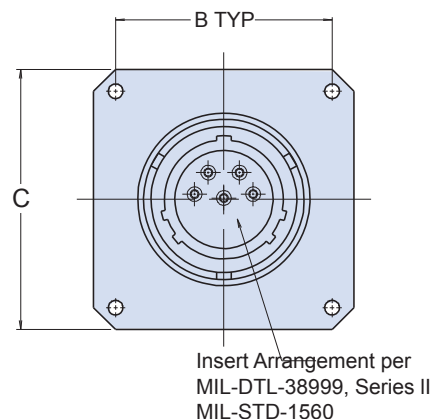
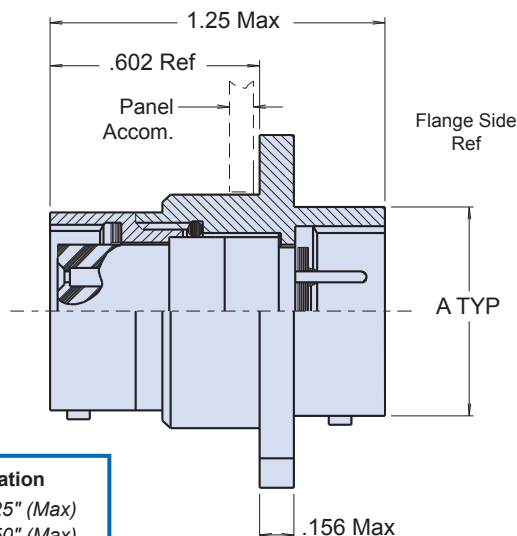
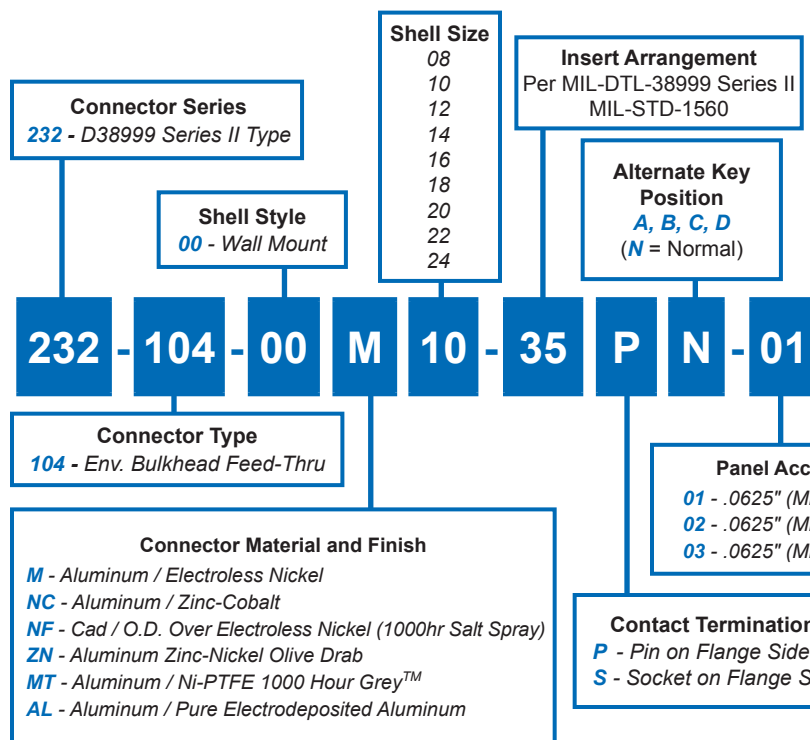


TABLE I: CONNECTOR DIMENSIONS

| SHELL SIZE | A MAX       | B SQ        | C SQ        | D DIA     | E ±.005(0.1) |
|------------|-------------|-------------|-------------|-----------|--------------|
| 08         | .474(12.0)  | .594(15.1)  | .818(20.8)  | .125(3.2) | .580(14.7)   |
| 10         | .591(15.0)  | .719(18.3)  | .944(24.0)  | .125(3.2) | .697(17.7)   |
| 12         | .751(19.1)  | .812(20.6)  | 1.037(26.3) | .125(3.2) | .885(22.5)   |
| 14         | .876(22.3)  | .906(23.0)  | 1.131(28.7) | .125(3.2) | 1.010(25.7)  |
| 16         | 1.001(25.4) | .969(24.6)  | 1.224(31.1) | .125(3.2) | 1.135(28.8)  |
| 18         | 1.126(28.6) | 1.062(27.0) | 1.318(33.5) | .125(3.2) | 1.260(32.0)  |
| 20         | 1.251(31.8) | 1.156(29.4) | 1.443(36.7) | .125(3.2) | 1.385(35.2)  |
| 22         | 1.376(35.0) | 1.250(31.8) | 1.568(39.8) | .125(3.2) | 1.510(38.4)  |
| 24         | 1.501(38.1) | 1.375(34.9) | 1.693(43.0) | .156(4.0) | 1.635(41.5)  |

### APPLICATION NOTES

- Material/Finish:  
Shells and nuts - Al alloy, 6061-T6, QQ-A-225/8, see Table II  
Contacts - Leaded nickel copper - gold plate MIL-G-45204, Type II, Class I.  
Bayonet pins - AISI 300 series stainless steel/passivate, QQ-P-35  
Hoods - AISI 305 series stainless steel/passivate, QQ-P-35.  
Inserts - High grade rigid dielectric/N.A.  
Seals - Silicone/ N.A.
- Metric Dimensions (mm) are indicated in parentheses.

# Too Fat to Fly?



*"Phenomenal  
Performance;  
Itty-Bitty Package"*

## Maybe. But Not Too Big To Be Saved by a Mouse.

One of the biggest challenges facing designers of armored vehicles and other rapid deployment combat platforms is the requirement to build systems which are transportable by air. In critical weight-reduction applications such as these, literally every ounce counts. That's why Glenair invented the Series 80 "Mighty Mouse;" an ultraminiature connector with

all the performance characteristics of standard Mil-Spec products. The "Mighty Mouse" is being used in ground, air and sea applications where extreme levels of weight reduction are not just an option but a necessity. So, if your system is too fat to fly, consider a switch to the mouse. The Glenair "Mighty Mouse": Phenomenal Performance, Itty-Bitty Package.



1211 Air Way

Glendale, California 91201-2497

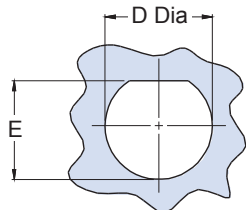
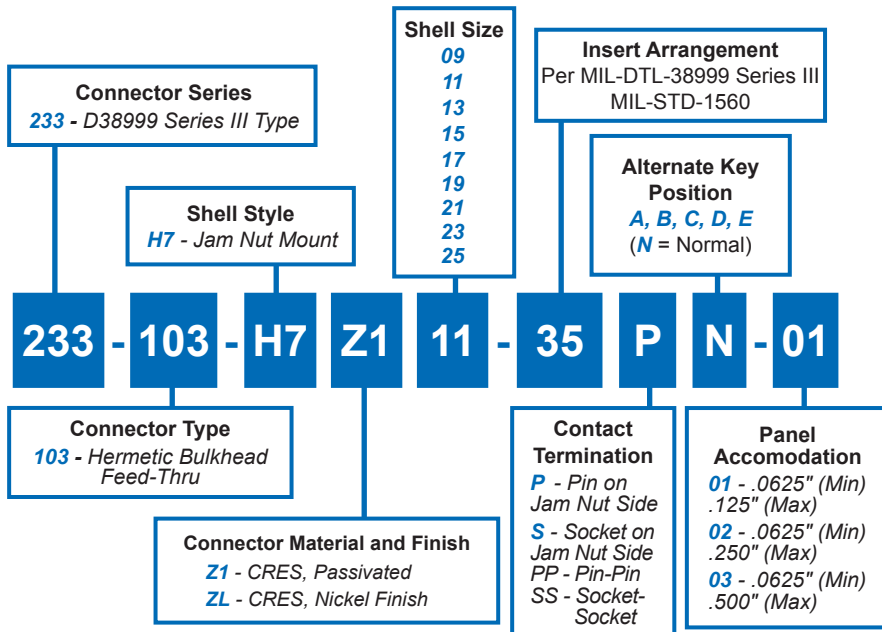
Telephone: 818-247-6000 · Facsimilie: 818-500-9912 · EMail: [sales@glenair.com](mailto:sales@glenair.com)

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# 233-103-H7 Jam Nut Mount Hermetic Bulkhead Feed-Thru MIL-DTL-38999 Series III Type



Recommended Panel Cut-Out

| HERMETIC LEAK RATE MOD CODES |                                            |
|------------------------------|--------------------------------------------|
| Designator                   | Required Leak Rate                         |
| -585A                        | 1 x 10 <sup>-10</sup> cc Helium per second |
| -585B                        | 1 x 10 <sup>-9</sup> cc Helium per second  |
| -585C                        | 1 x 10 <sup>-8</sup> cc Helium per second  |

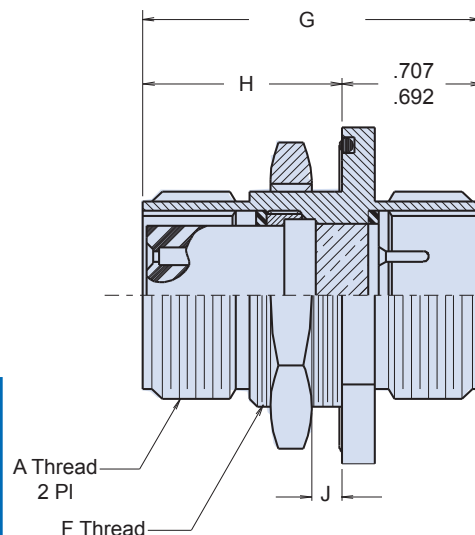
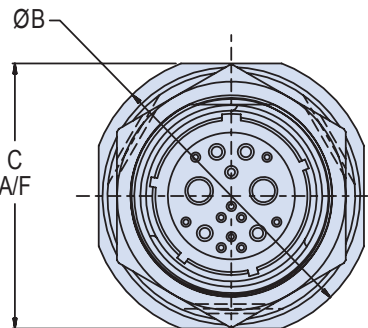


TABLE I: CONNECTOR DIMENSIONS

|     | G Dim, OAL Max | H Dim, Max    | J Dim, Panel               |
|-----|----------------|---------------|----------------------------|
| -01 | 1.650 (41.91)  | .889 (22.58)  | .125 (3.18)<br>.062 (1.57) |
| -02 | 1.780 (45.21)  | 1.090 (27.69) | .250 (6.35)<br>.062 (1.57) |
| -03 | .8750 (51.56)  | 1.340 (34.04) | .500 (12.7)<br>.062 (1.57) |

TABLE II: CONNECTOR DIMENSIONS

| SHELL SIZE | A THREAD<br>0.1 P-0.3L-TS-2 | B DIA         | C             | D DIA                          | E DIM                          | F THREAD<br>METRIC |
|------------|-----------------------------|---------------|---------------|--------------------------------|--------------------------------|--------------------|
| 09         | .6250                       | 1.189 (30.20) | 1.063 (27.00) | .703 (17.86)<br>.693 (17.60)   | .657 (16.69)<br>.655 (16.64)   | M17 x 1.0-6g       |
| 11         | .7500                       | 1.375 (34.93) | 1.252 (31.80) | .835 (21.21)<br>.825 (20.96)   | .771 (19.58)<br>.769 (19.53)   | M20 x 1.0-6g       |
| 13         | .8750                       | 1.500 (38.10) | 1.374 (34.90) | 1.020 (25.91)<br>1.010 (25.65) | .955 (24.26)<br>.953 (24.21)   | M25 x 1.0-6g       |
| 15         | 1.0000                      | 1.626 (41.30) | 1.500 (38.10) | 1.145 (29.03)<br>1.135 (28.83) | 1.085 (27.56)<br>1.083 (27.51) | M28 x 1.0-6g       |
| 17         | 1.1875                      | 1.752 (44.50) | 1.626 (41.30) | 1.270 (32.26)<br>1.260 (32.00) | 1.210 (30.73)<br>1.208 (30.68) | M32 x 1.0-6g       |
| 19         | 1.2500                      | 1.937 (49.20) | 1.811 (46.00) | 1.395 (35.43)<br>1.385 (35.18) | 1.335 (33.91)<br>1.333 (33.86) | M35 x 1.0-6g       |
| 21         | 1.3750                      | 2.063 (52.40) | 1.937 (49.20) | 1.520 (38.61)<br>1.510 (38.35) | 1.460 (37.08)<br>1.558 (39.57) | M38 x 1.0-6g       |
| 23         | 1.5000                      | 2.189 (55.60) | 2.063 (52.40) | 1.645 (41.78)<br>1.635 (41.53) | 1.585 (40.26)<br>1.583 (40.21) | M41 x 1.0-6g       |
| 25         | 1.6250                      | 2.311 (58.70) | 2.189 (55.60) | 1.770 (44.96)<br>1.760 (44.70) | 1.710 (43.34)<br>1.708 (43.38) | M44 x 1.0-6g       |



Insert Arrangement per  
MIL-DTL-38999 Series III  
MIL-STD-1560

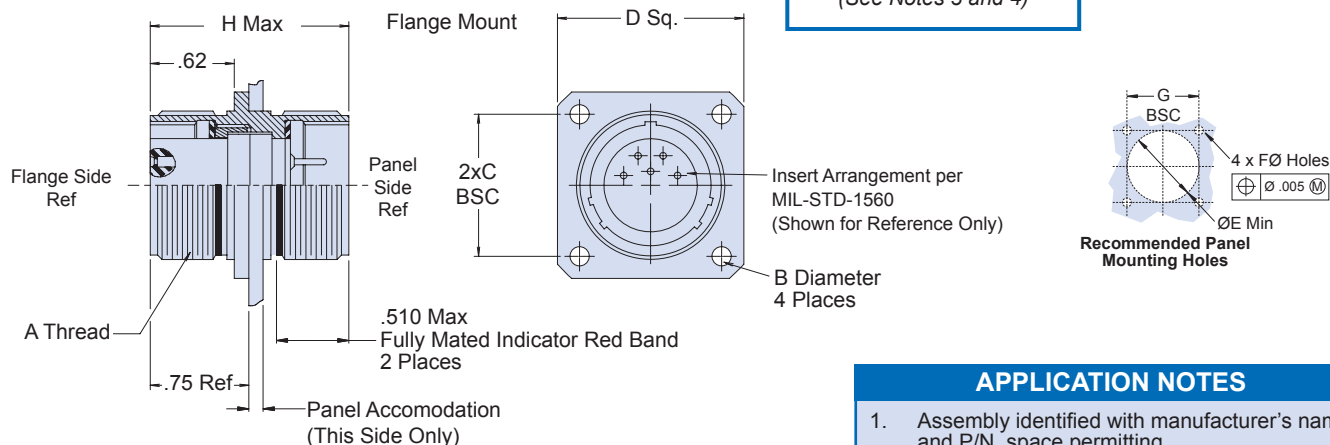
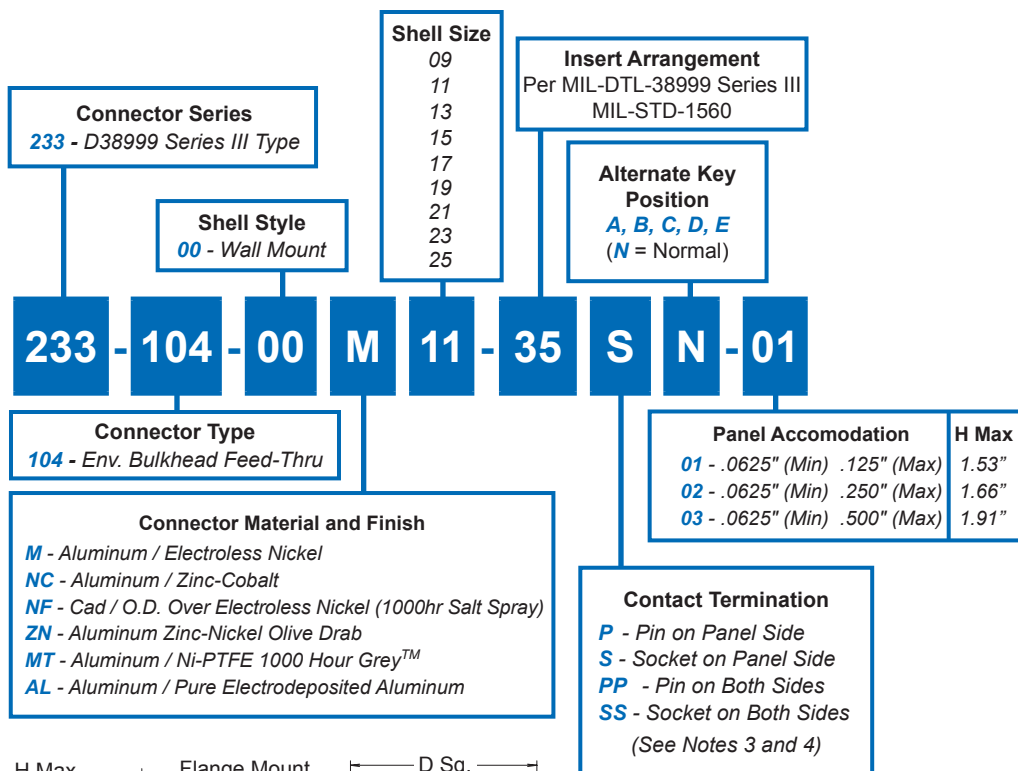
## APPLICATION NOTES

- Power to a given contact on one end will result in power to contact directly opposite, regardless of identification letter.
- Hermeticity = less than 1 x 10<sup>-7</sup> cc/sec at one atmosphere. Not for use in liquid atmosphere.
- Material/finish:  
Shell, nut - CRES/passivated, carbon steel/fused tin or CRES/nickel per QQ-N-290.
- Contacts - Gold Plated. Pin: alloy 52; Skt.: copper alloy  
Insulator - fused vitreous glass/N.A.  
Seals - fluorosilicone rubber/N.A.
- Metric dimensions (mm) are indicated in parentheses.

# 233-104-00 Wall Mount Environmental Bulkhead Feed-Thru MIL-DTL-38999 Series III Type

**Glenair**

Bulkhead  
Feed-Thru



**TABLE I: CONNECTOR DIMENSIONS**

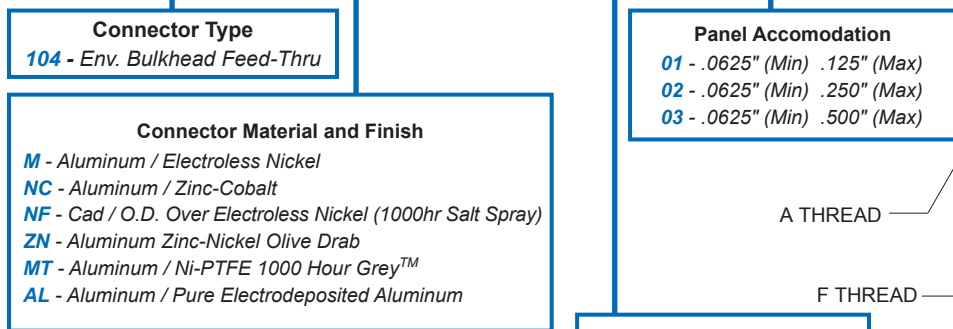
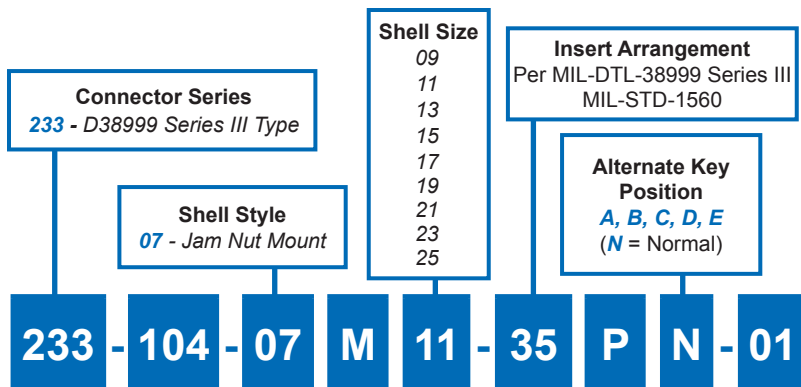
| SHELL SIZE | A THREAD<br>0.1 P-0.3L-2A | B DIA.<br>± 0.010 | C<br>BSC     | D DIM<br>± .020 | Ø E<br>MIN   | Ø F<br>HOLES           | G<br>BSC     |
|------------|---------------------------|-------------------|--------------|-----------------|--------------|------------------------|--------------|
| 09         | .625                      | .128 (3.3)        | .719 (18.3)  | .938 (23.8)     | .656 (16.7)  |                        | .719 (18.3)  |
| 11         | .750                      | .128 (3.3)        | .812 (20.6)  | 1.031 (26.2)    | .796 (20.2)  |                        | .812 (20.6)  |
| 13         | .875                      | .128 (3.3)        | .906 (23.0)  | 1.125 (28.6)    | .922 (23.4)  |                        | .906 (23.0)  |
| 15         | 1.000                     | .128 (3.3)        | .969 (24.6)  | 1.219 (31.0)    | 1.047 (26.6) | .133/.123<br>(3.4/3.1) | .969 (24.6)  |
| 17         | 1.188                     | .128 (3.3)        | 1.062 (27.0) | 1.312 (33.3)    | 1.219 (31.0) |                        | 1.062 (27.0) |
| 19         | 1.250                     | .128 (3.3)        | 1.156 (29.4) | 1.438 (36.5)    | 1.297 (32.9) |                        | 1.156 (29.4) |
| 21         | 1.375                     | .128 (3.3)        | 1.250 (31.8) | 1.562 (39.7)    | 1.422 (36.1) |                        | 1.250 (31.8) |
| 23         | 1.500                     | .156 (4.0)        | 1.375 (34.9) | 1.688 (42.9)    | 1.547 (39.3) | .156/.149<br>(4.0/3.8) | 1.375 (34.9) |
| 25         | 1.625                     | .156 (4.0)        | 1.500 (38.1) | 1.812 (46.0)    | 1.672 (42.5) | .155/.145<br>(3.9/3.7) | 1.500 (38.1) |

## APPLICATION NOTES

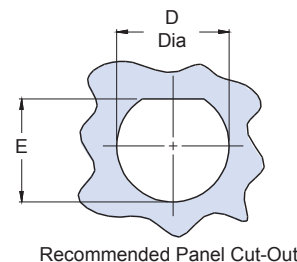
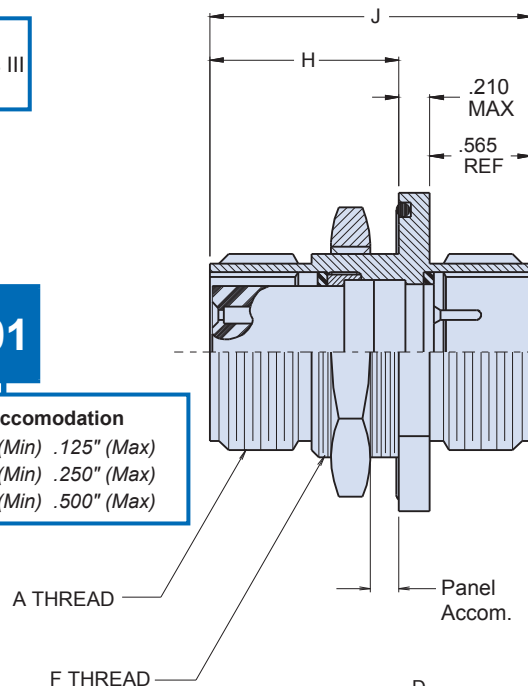
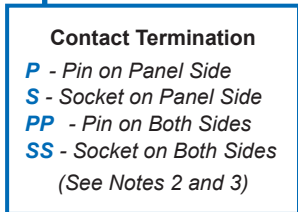
- Assembly identified with manufacturer's name and P/N, space permitting.
- Material/finish:  
Shell, lock ring—Al alloy, see Table II  
Contacts—Copper alloy/gold plate  
Insulators—High grade rigid dielectric/N.A.  
Seals—Silicone/N.A.
- For pin/pin and skt/skt, symmetrical layout only. Consult factory for available insert arrangements.
- Power to a given contact on one end will result in power to contact directly opposite, regardless of identification letter.
- Electrical safety limits must be established by user. Peak voltage, switching surge, transient, etc., should be used to determine the safety application.
- Metric Dimensions (mm) are indicated in parentheses.



# 233-104-07 Jam Nut Mount Environmental Bulkhead Feed-Thru MIL-DTL-38999 Series III Type

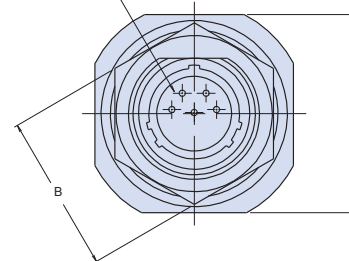


| TABLE II:<br>DASH NUMBERS |              |              |
|---------------------------|--------------|--------------|
| Dash No.                  | J Max        | H Max        |
| 01                        | 1.600 (40.6) | 0.900 (22.9) |
| 02                        | 1.730 (43.9) | 1.020 (25.9) |
| 03                        | 1.980 (50.3) | 1.270 (32.3) |



Recommended Panel Cut-Out

Insert Arrangements per  
MIL-DTL-38999 Series III  
MIL-STD-1560



| TABLE I: CONNECTOR DIMENSIONS |                             |              |              |              |                      |                      |
|-------------------------------|-----------------------------|--------------|--------------|--------------|----------------------|----------------------|
| SHELL SIZE                    | A THREAD<br>0.1 P-0.3L-TS-2 | B DIM        | C DIM<br>MAX | ØD<br>+.005  | E DIM<br>+.000/-.002 | F THREAD<br>CLASS 2A |
| 9                             | .6250                       | .875 (22.2)  | 1.090 (27.7) | .698 (17.7)  | .656 (16.7)          | 11/16-24 UNEF        |
| 11                            | .7500                       | 1.000 (25.4) | 1.280 (32.5) | .830 (21.1)  | .770 (19.6)          | 13/16-20 UNEF        |
| 13                            | .8750                       | 1.250 (31.8) | 1.400 (35.6) | 1.015 (25.8) | .954 (24.2)          | 1-20 UNEF            |
| 15                            | 1.0000                      | 1.375 (34.9) | 1.530 (38.9) | 1.140 (29.0) | 1.084 (27.5)         | 1 1/8-18 UNEF        |
| 17                            | 1.1875                      | 1.500 (38.1) | 1.660 (42.2) | 1.265 (32.1) | 1.207 (30.7)         | 1 1/4-18 UNEF        |
| 19                            | 1.2500                      | 1.625 (41.3) | 1.840 (46.7) | 1.390 (35.3) | 1.334 (33.9)         | 1 3/8-18 UNEF        |
| 21                            | 1.3750                      | 1.750 (44.5) | 1.970 (50.5) | 1.515 (38.5) | 1.459 (40.4)         | 1 1/2-18 UNEF        |
| 23                            | 1.5000                      | 1.875 (47.6) | 2.090 (53.1) | 1.640 (41.7) | 1.584 (40.2)         | 1 5/8-18 UNEF        |
| 25                            | 1.6250                      | 2.000 (50.8) | 2.210 (56.1) | 1.765 (44.8) | 1.709 (43.4)         | 1 3/4-18 UNS         |

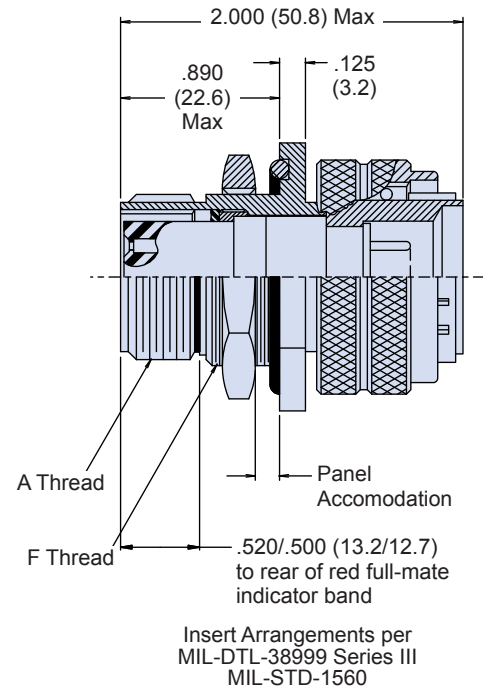
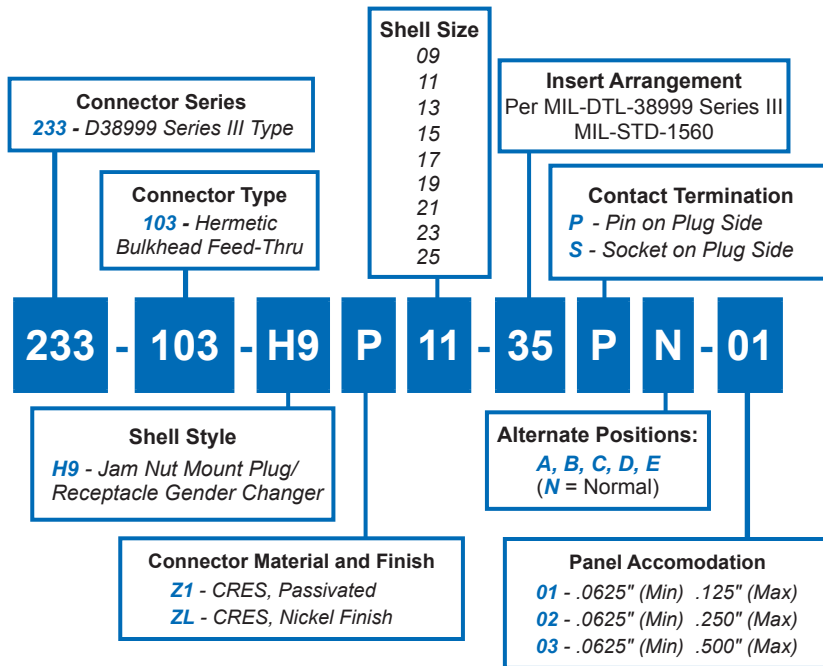
## APPLICATION NOTES

- Assembly identified with manufacturer's name and P/N, space permitting.
- For pin/pin and skt/skt, symmetrical layout only. Consult factory for available insert arrangements.
- Power to a given contact on one end will result in power to contact directly opposite, regardless of identification letter.
- Electrical safety limits must be established by user. Peak voltage, switching surge, transient, etc., should be used to determine the safety application.
- Material/finish:  
Shell, lock ring—Al alloy, see Table II  
Contacts—Copper alloy/gold plate  
Insulators—High grade rigid dielectric/N.A.  
Seals—Silicone/N.A.
- Metric Dimensions (mm) are indicated in parentheses.

**233-103-H9**  
**Jam Nut Mount Hermetic**  
**Plug/Receptacle Bulkhead Feed-Thru**  
**for MIL-DTL-38999 Series III Type**

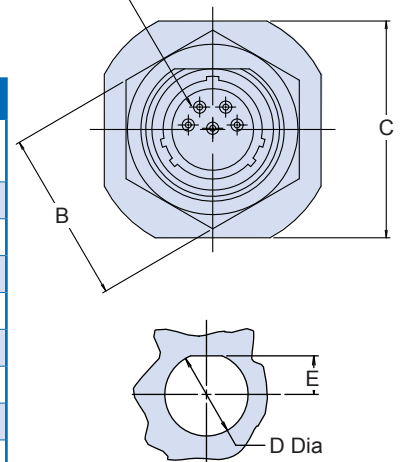


**Bulkhead  
Feed-Thru**



**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | A THREAD<br>0.1 P-0.3L-TS-2 | B DIM       | C DIM<br>MAX | D DIA       | E DIM      | F THREAD<br>x1-6g-0.100R |
|------------|-----------------------------|-------------|--------------|-------------|------------|--------------------------|
| 9          | .6250                       | .945(24.0)  | 1.090(27.7)  | .698(17.7)  | .322(8.9)  | M17                      |
| 11         | .7500                       | 1.063(27.0) | 1.280(32.5)  | .822(20.9)  | .385(9.8)  | M20                      |
| 13         | .8750                       | 1.260(32.0) | 1.400(35.6)  | 1.010(27.6) | .479(12.3) | M25                      |
| 15         | 1.0000                      | 1.417(36.0) | 1.530(38.9)  | 1.135(28.8) | .541(13.7) | M28                      |
| 17         | 1.1875                      | 1.457(37.0) | 1.660(42.2)  | 1.260(32.0) | .604(15.3) | M32                      |
| 19         | 1.2500                      | 1.614(41.0) | 1.840(46.7)  | 1.385(35.2) | .635(16.1) | M35                      |
| 21         | 1.3750                      | 1.811(46.0) | 1.970(50.5)  | 1.510(38.4) | .698(17.7) | M38                      |
| 23         | 1.5000                      | 1.968(50.0) | 2.090(53.1)  | 1.635(41.5) | .760(19.3) | M41                      |
| 25         | 1.6250                      | 2.017(51.2) | 2.210(56.1)  | 1.760(44.7) | .822(20.9) | M44                      |



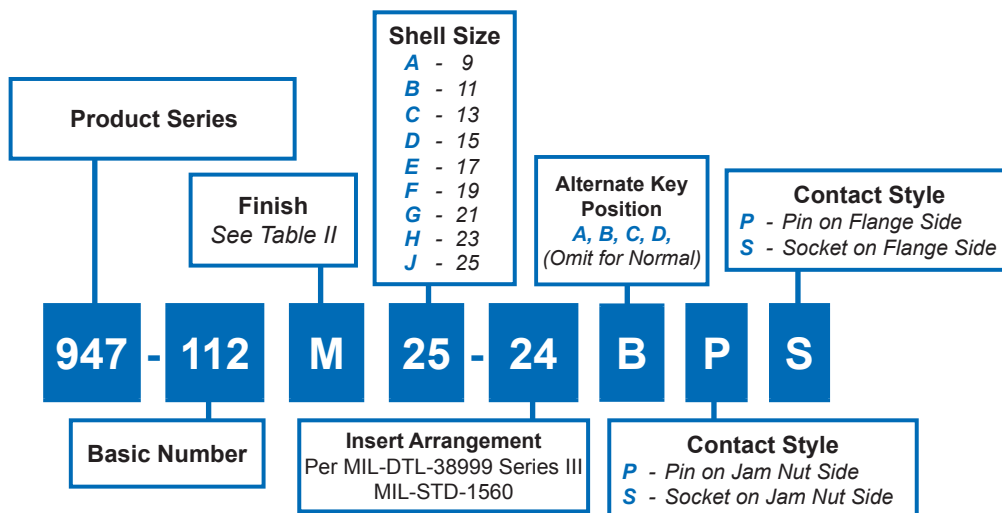
**Recommended  
Panel Cut-Out**

**APPLICATION NOTES**

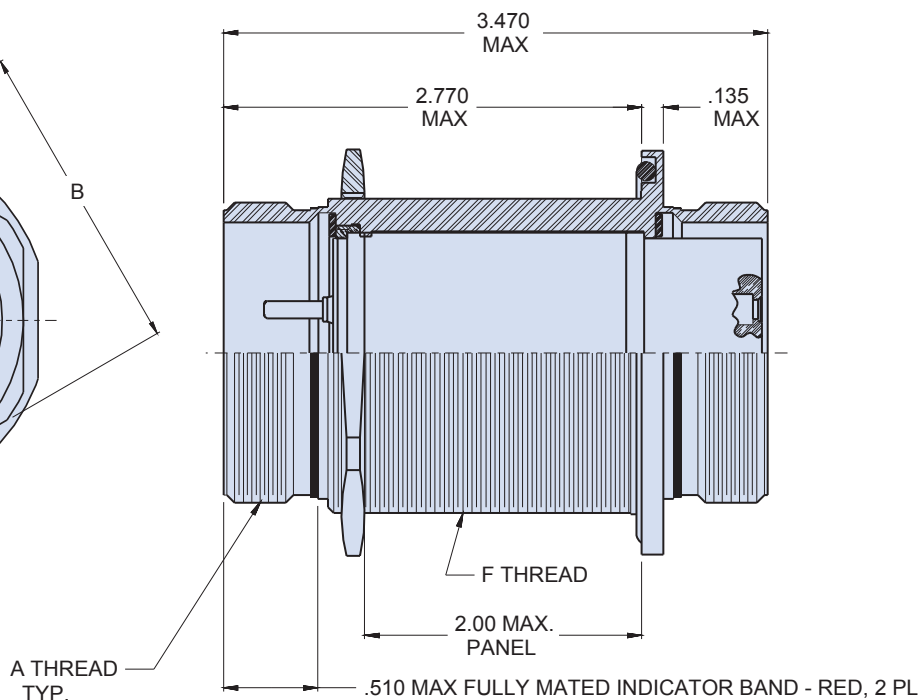
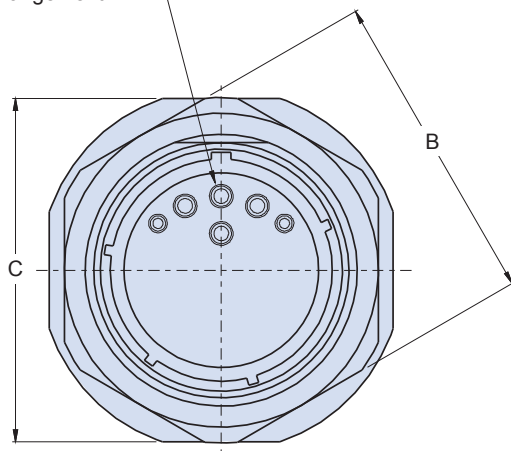
- Power to a given contact on one end will result in power to contact directly opposite, regardless of identification letter.
- Hermeticity = less than  $1 \times 10^{-7}$  cc/sec at one atmosphere. Not for use in liquid atmosphere.
- Material/finish:  
Shell, nut – CRES/passivated, carbon steel/fused tin or CRES/nickel per QQ-N-290.
- Contacts – Gold Plated. Pin: alloy 52; Skt.: copper alloy  
Insulator – fused vitreous glass/N.A.  
Seals – fluorosilicone rubber/N.A.

Metric dimensions (mm) are indicated in parentheses.

## 947-112 MIL-DTL-38999 Series III Type Jam Nut Bulkhead Feed-Thru



See MIL-STD-1560 for  
Insert Arrangement



**947-112**  
**MIL-DTL-38999 Series III Type**  
**Jam Nut Bulkhead Feed-Thru**



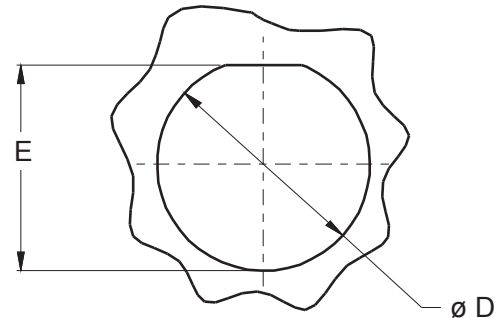
**Bulkhead  
Feed-Thru**

**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | A Thread<br>0.1P-0.3L-TS-2 | B<br>Dimension | C<br>Dimension Max | D<br>Diameter | E<br>Dimension | F Thread<br>x1-6g-0.100R |
|------------|----------------------------|----------------|--------------------|---------------|----------------|--------------------------|
| 09         | .6250                      | .875 (22.2)    | 1.08 (27.4)        | 6.98 (17.7)   | .670 (17.0)    | M17                      |
| 11         | .7500                      | 1.000 (25.4)   | 1.27 (32.3)        | .822 (20.9)   | .771 (19.6)    | M20                      |
| 13         | .8750                      | 1.250 (31.8)   | 1.39 (35.3)        | 1.010 (27.6)  | .995 (25.3)    | M25                      |
| 15         | 1.0000                     | 1.375 (34.9)   | 1.52 (36.9)        | 1.135 (28.8)  | 1.085 (27.6)   | M28                      |
| 17         | 1.1875                     | 1.500 (38.1)   | 1.64 (41.7)        | 1.260 (32.0)  | 1.210 (30.7)   | M32                      |
| 19         | 1.2500                     | 1.625 (41.3)   | 1.83 (46.5)        | 1.385 (35.2)  | 1.335 (33.9)   | M35                      |
| 21         | 1.3750                     | 1.750 (44.5)   | 1.95 (49.5)        | 1.510 (38.4)  | 1.460 (37.1)   | M38                      |
| 23         | 1.5000                     | 1.875 (47.6)   | 2.08 (52.8)        | 1.635 (41.5)  | 1.585 (40.3)   | M41                      |
| 25         | 1.6250                     | 2.000 (50.8)   | 2.20 (55.9)        | 1.760 (44.7)  | 1.710 (43.4)   | M44                      |

**TABLE II: MATERIALS AND FINISH**

| SYM | FINISH                                                                    |
|-----|---------------------------------------------------------------------------|
| B   | Cadmium Plate / Olive Drab                                                |
| J   | Gold Iridite over Cadmium Plate over Nickel                               |
| M   | Electroless Nickel                                                        |
| N   | Cadmium Plate / Olive Drab over Nickel                                    |
| NF  | Cadmium / Olive Drab over Electroless Nickel Nickel (500 Hour Salt Spray) |
| T   | Cadmium Plate / Bright Dip Over Nickel                                    |



**RECOMMENED PANEL CUT-OUT**

**APPLICATION NOTES**

1. Assembly identified with manufacturers name and part number
2. Electrical safety limits must be established by user, peak voltage, switching surge, transient, etc. should be used to determine the safety applications.
3. Material/ Finishes:  
 Shells, Jam Nut - AL Alloy  
 Insulators- High Grade Rigid Dielectric/ N.A  
 Seals- Fluorosilicone/ N.A.

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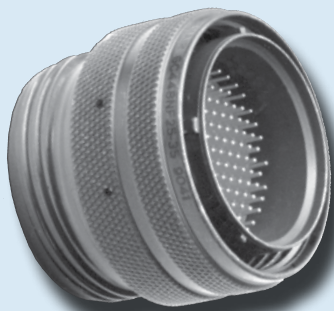
# Glenair MIL-DTL-38999 Type Sav-Con® Connector Savers

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## SECTION G TABLE OF CONTENTS

### GLENAIR MIL-DTL-38999 TYPE CONNECTOR SAVERS:

|                                                                                        |      |
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# The Smart Solution for Preventing Contact Damage and Extending the Service Life of Cable Assemblies

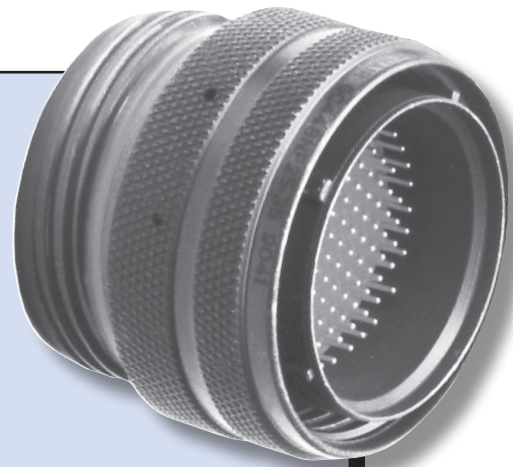
## Product Applications

Glenair Sav-Con® Connector Savers are designed to protect connectors that are subject to repeated mating and unmating cycles. Sav-Con® Connector Savers prevent costly repair or replacement of expensive connectors and cables while preserving the quality and integrity of connector performance. Sav-Con® Connector Savers take the abuse of repeated connection cycles instead of “black box” or other equipment connectors. Equipment connectors that are mated and unmated frequently during manufacturing, check-out phases and environmental test

design adds resistance to a circuit equal to a mated pin and socket contact, thus it has little or no effect on sensitive circuits.

When a Sav-Con® Connector Saver is installed between a receptacle and a plug, the effective additional length is less than the length of an equivalent mated plug and receptacle. When using bayonet coupled Sav-Con® Connector Savers, Glenair recommends our Lock Ring design feature in applications where large cable bundles may

*For MIL-DTL-38999 Series I, II, III, and IV Connectors  
All Standard Materials and Finish Platings  
Environmental and Hermetic Designs Available  
Gender Changers  
Optional Locking Mechanism  
Keyed Polarization*



programs can be protected by Glenair Sav-Con® Connector Savers at considerable savings in time and money.

Glenair Sav-Con® Connector Savers feature one-piece, non-removable pin/socket contacts for maximum reliability and minimum effect on circuit resistance. Each Glenair Sav-Con® Connector Saver series meets the same durability requirements as the Military Specification series with which it mates. The mating portions of the pin-and-socket contacts are in strict compliance with the applicable Military Specification contacts used in each connector series. The one-piece

induce unwanted stress to the coupling mechanism and potential unwanted contact displacement (see page E-2).

*Catalog contents—including part numbers, materials and dimensions—are accurate to the best of our ability when we go to print. Even so, customers are advised to consult the factory for the latest specifications, particularly to confirm critical dimensions such as connector lengths, threads, and so on. When errors or mistakes are brought to our attention, corrected content is posted immediately to our website: [www.glenair.com](http://www.glenair.com).*

# Lock Ring Prevents Accidental Disengagement of Mated Connectors

## *For Bayonet Coupling Only*

### The Coupling Nut:

This feature eliminates the wave spring inside the coupling nut, thus providing positive metal-to-metal bottoming out of the plug side of the Sav-Con® Connector Saver to the mating receptacle. This is a desirable option in the following applications:

### Locking a Sav-Con® to a receptacle:

Locking a Sav-Con® Connector Saver to a receptacle can prevent accidental or unauthorized unmating. This can insure that the equipment receptacle remains in its unused condition prior to delivery.

### Locking a Sav-Con® to reduce lateral forces:

Lateral forces caused by a heavy cable can be reduced when the Sav-Con® Connector Saver is locked to the equipment receptacle. On high-density connectors that have a limited pin-and-socket engagement length, the force applied by a heavy cable can collapse the wave spring and create unwanted discontinuities in the mated contacts.

### Locking a Sav-Con® when delivered to end-user:

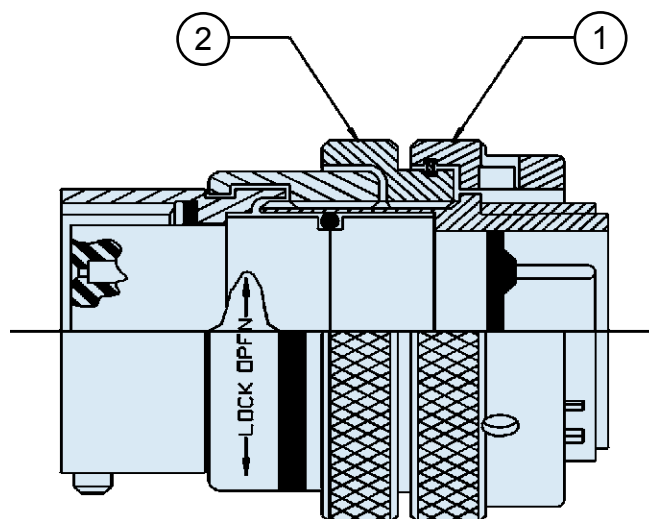
When equipment is delivered to the end-user, the Sav-Con® Connector Saver may be locked to its mating receptacle to insure that the receptacles mounted on the equipment will remain unused until final installation of the equipment.

### Locking a Sav-Con® to a cable mounted plug:

It is often desirable to lock a Sav-Con® Connector Saver on a cable-mounted plug coupler to prevent accidental disconnect of the Sav-Con®.

### *Sav-Con® Lock Ring Engagement and Disengagement Steps:*

1. To engage the plug portion of the saver, first insure that the Lock Ring (2) is in the fully open position by turning the Lock Ring by hand clockwise until it stops.
2. Couple (1) to the Mating receptacle.  
Note: Pins should be visible in the three holes of the Coupling Ring (1).
3. To lock the Sav-con®, turn the Lock Ring (2) counter-clockwise by hand until it stops. This will seat the bayonet pins.
4. Dis-Engagement is the reverse of steps 3 and 2. Turn Lock Ring (2) to the open position clockwise by hand until it stops. Then rotate the Coupling Ring (1) counter-clockwise until all contacts are separated.



**MIL-DTL-38999 Series I, II and III  
Sav-Con® Connector Saver  
Material and Finish Specifications**

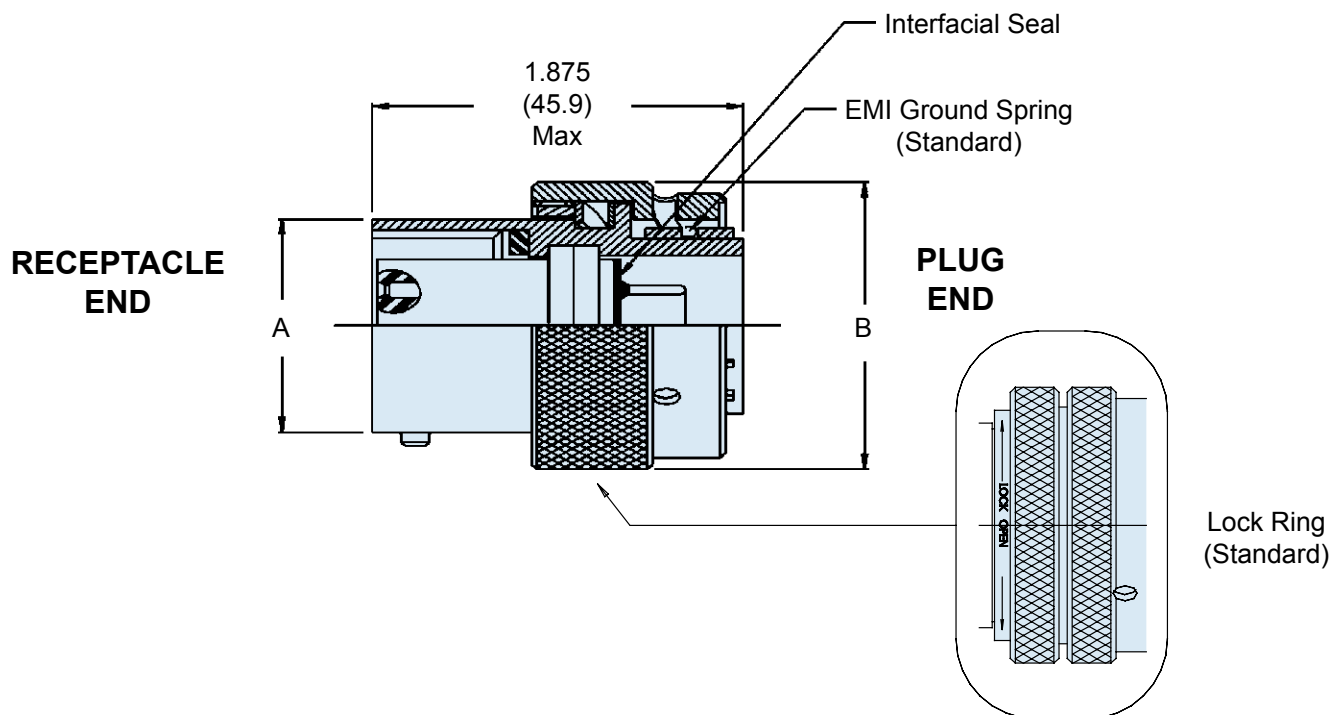
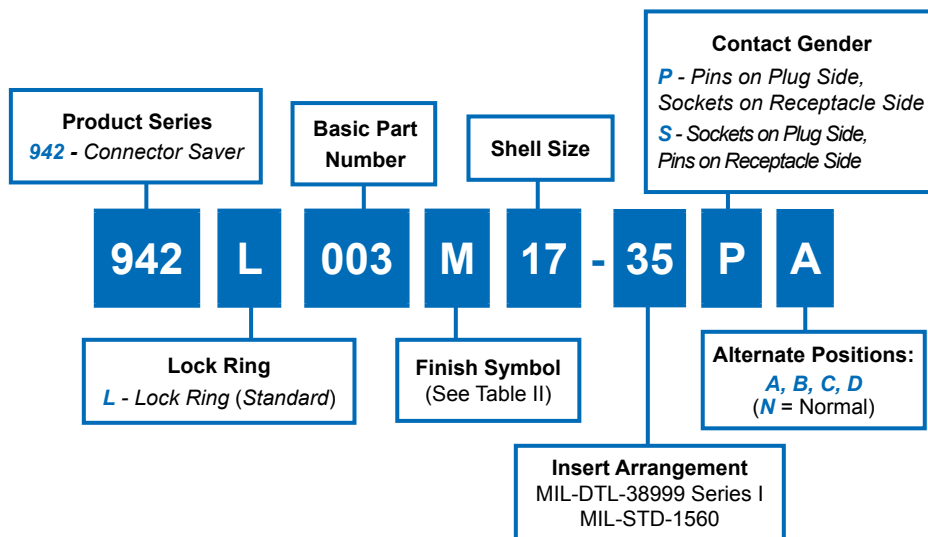


**TABLE I: MATERIALS AND FINISHES**

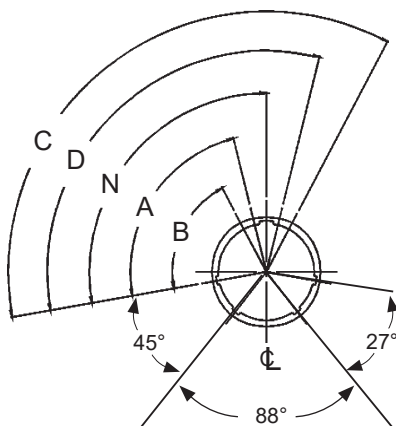
|                                                 |                                                                                                                                                                 |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shell, Barrel, and Coupling Nut (Environmental) | Aluminum alloy 6061-T6 per ASTM-B 211, 221                                                                                                                      |
| Front and Rear Insulators                       | Glass-filled liquid crystal polymer (LCP) in accordance with MIL-M-24519, Type GLP-30F                                                                          |
| Contact Retention Clip                          | Beryllium copper, heat-treated, unplated                                                                                                                        |
| Grommet, Peripheral Seal and Interfacial Seal   | Blended elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988                                                                                |
| Pin / Socket Contacts (Environmental)           | Copper Alloy / Gold Plate                                                                                                                                       |
| Socket Contact Hoods                            | Corrosion Resistant Steel IAW AISI303 Passivate QQ-P-35                                                                                                         |
| Wave Spring (Bayonet Versions)                  | Stainless Steel 17-7PH, Condition C Passivate QQ-P-35                                                                                                           |
| EMI Ground Springs                              | Beryllium Copper, Gold Plate MIL-G-45204                                                                                                                        |
| Adhesives                                       | Silicone and epoxy                                                                                                                                              |
| Potting Compound, PCB and Solder Cup Versions   | Environmental and Hermetic Connectors: High-strength epoxy, Hysol EE4215. Filter Connectors: Stycast 2850FT/Catalyst 11 thermally conductive epoxy encapsulant. |

**TABLE II: MASTER SHELL FINISHES**

| Plating Code | Material        | Finish                                                           | Specification                                                                                                    |
|--------------|-----------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| ME           | Aluminum        | Electroless Nickel                                               | AMS-C-26074                                                                                                      |
| B            | Aluminum        | Cad Plate, Olive Drab                                            | AMS-QQ-P-416, Type II, Class 3                                                                                   |
| NF           | Aluminum        | Cadmium Plate Olive Drab over Electroless Nickel                 | AMS-QQ-P-416, over AMS-C-26074 (1000 Hour Salt Spray)                                                            |
| ZN           | Aluminum        | Olive Drab Zinc-Nickel                                           | Zinc alloy per ASTM B841-91, Class 1 Type E Grade 3 over Electroless nickel per ASTM B733-90 SC2, Type 1 Class 5 |
| MN           | Aluminum        | Mega Nickel                                                      | Tri-Nickel Alloy                                                                                                 |
| MT           | Aluminum        | Ni-PTFE <b>1,000 Hour Grey™</b><br>(Nickel Fluorocarbon Polymer) | MIL-DTL-38999L (500 Hour Salt Spray)                                                                             |
| TZ           | Aluminum        | Tin Zinc                                                         | Tin-Zinc (SnZn) over electroless nickel over suitable underplate                                                 |
| XM           | Composite       | Electroless Nickel                                               | AMS-C-26074                                                                                                      |
| XMT          | Composite       | Ni-PTFE <b>1,000 Hour Grey™</b><br>(Nickel Fluorocarbon Polymer) | MIL-DTL-38999L (2000 Hour Salt Spray)                                                                            |
| XW           | Composite       | Cadmium Olive Drab over Electroless Nickel                       | AMS-QQ-P-416, over AMS-C-26074 (1000 Hour Salt Spray)                                                            |
| Z1           | Stainless Steel | Passivate                                                        | AMS-QQ-P-35                                                                                                      |
| ZL           | Stainless Steel | Electrodeposited Nickel                                          | SAE-AMS-QQ-N-290, Class 2                                                                                        |



**942-003**  
**Sav-Con® Connector Saver**  
**Plug/Receptacle**  
 for Use with MIL-DTL-38999 Series I



FACE VIEW  
RECEPTACLE

**SERIES I: ALTERNATE KEYWAY POSITIONS**

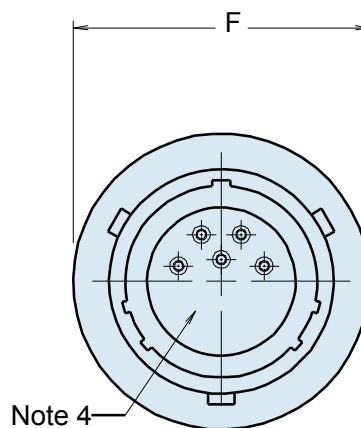
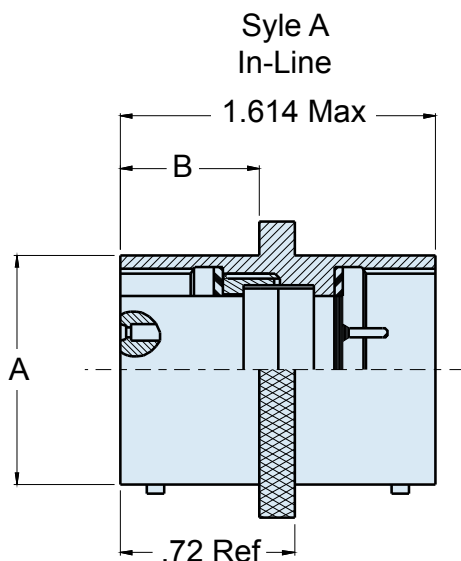
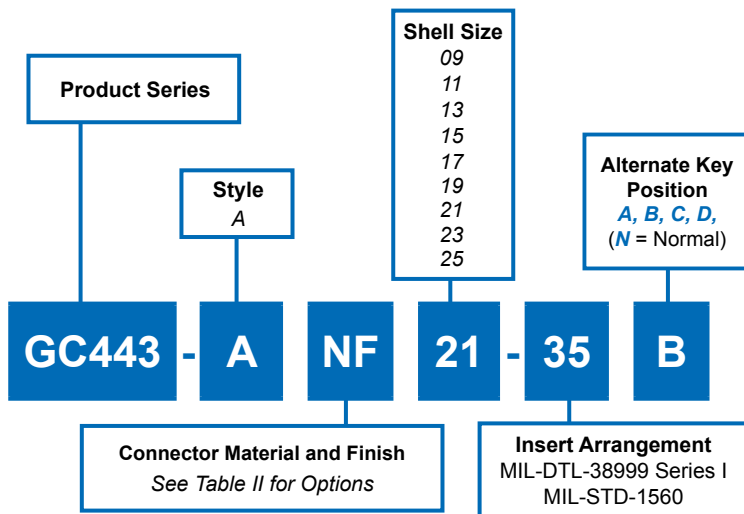
| SHELL SIZE | N° | A° | B° | C°  | D°  |
|------------|----|----|----|-----|-----|
| 09         | 95 | 77 | -- | --  | 113 |
| 11         | 95 | 81 | 67 | 123 | 109 |
| 13         | 95 | 75 | 63 | 127 | 115 |
| 15         | 95 | 74 | 61 | 129 | 116 |
| 17         | 95 | 77 | 85 | 125 | 113 |
| 19         | 95 | 77 | 65 | 125 | 113 |
| 21         | 95 | 77 | 65 | 125 | 113 |
| 23         | 95 | 80 | 69 | 121 | 110 |
| 25         | 95 | 80 | 69 | 121 | 110 |

**TABLE II: SHELL FINISHES**

| Plating Code | Material | Finish                                                |
|--------------|----------|-------------------------------------------------------|
| M            | Aluminum | Electroless Nickel                                    |
| NF           | Aluminum | Cadmium Plate Olive Drab over Electroless Nickel      |
| NC           | Aluminum | Zinc-Cobalt                                           |
| ZN           | Aluminum | Olive Drab Zinc-Nickel                                |
| MT           | Aluminum | Ni-PTFE 1000 Hour Grey™ (Nickel Fluorocarbon Polymer) |

**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | A Max        | B Diameter Max |
|------------|--------------|----------------|
| 09         | .573 (14.6)  | .910 (23.1)    |
| 11         | .701 (17.8)  | 1.035 (26.3)   |
| 13         | .851 (21.6)  | 1.210 (30.7)   |
| 15         | .976 (24.8)  | 1.330 (33.8)   |
| 17         | 1.101 (28.0) | 1.455 (37.0)   |
| 19         | 1.208 (30.7) | 1.570 (39.9)   |
| 21         | 1.333 (33.9) | 1.695 (43.1)   |
| 23         | 1.458 (37.0) | 1.800 (45.7)   |
| 25         | 1.583 (40.2) | 1.925 (48.9)   |



#### APPLICATION NOTES

1. Assembly identified with manufacturer's name and part number, space permitting
  2. Material/finish:  
Shell assembly—Al alloy/see Table II  
Bayonet pins—CRES/passivate
  3. Metric Dimensions (mm) are indicated in parentheses
  4. See MIL-DTL-38999 for Insert Arrangements
- Contacts—copper alloy/gold plate  
Insulators—high-grade rigid dielectric/N.A.  
Interfacial & peripheral seals—silicone/ N.A.

**GC443**  
**In-Line/Flange Mount Receptacle • Plug/Plug**  
**MIL-DTL-38999 Series I Type**

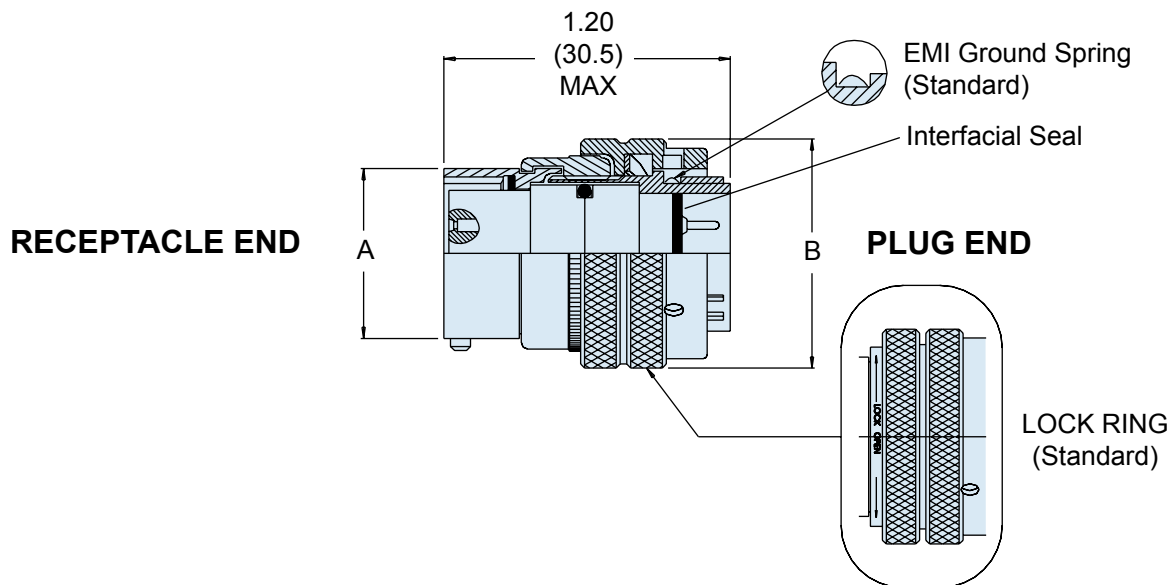
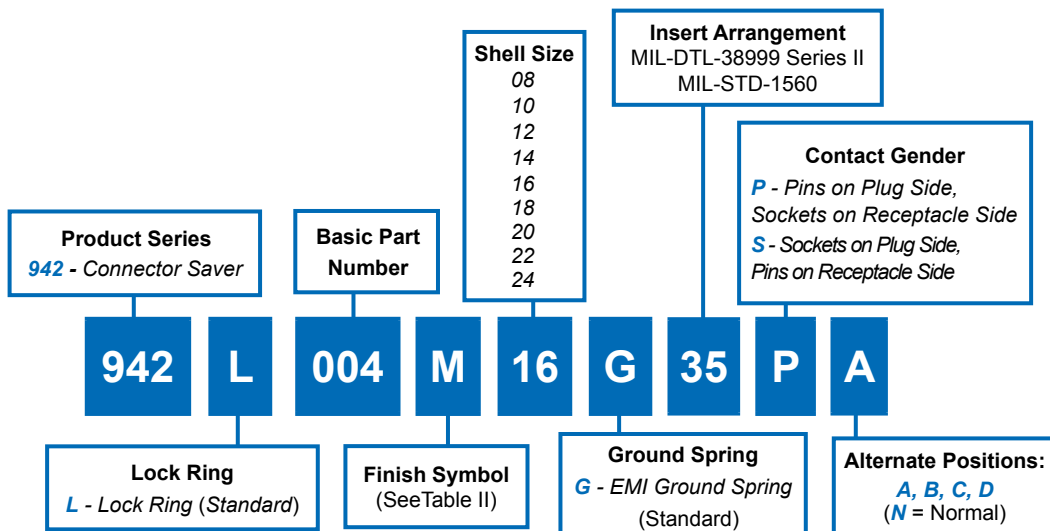


**TABLE II: SHELL FINISHES**

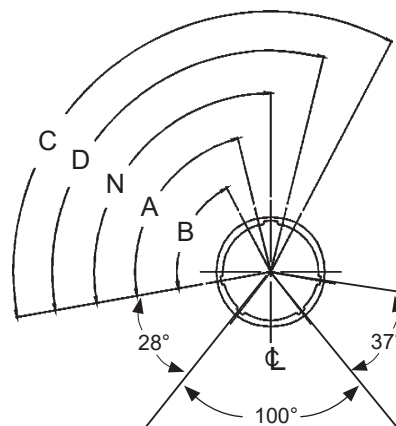
| Plating Code | Material | Finish                                                   |
|--------------|----------|----------------------------------------------------------|
| M            | Aluminum | Electroless Nickel                                       |
| NF           | Aluminum | Cadmium Plate Olive Drab over Electroless Nickel         |
| NC           | Aluminum | Zinc-Cobalt                                              |
| ZN           | Aluminum | Olive Drab Zinc-Nickel                                   |
| MT           | Aluminum | Ni-PTFE 1000 Hour Grey™<br>(Nickel Fluorocarbon Polymer) |

**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | A DIA MAX   | B DIA MAX  | C +.010-.005 (+0.3-0.1) | D DIM       | E DIM ±.020(0.5) | F DIA MAX   |
|------------|-------------|------------|-------------------------|-------------|------------------|-------------|
| 09         | .573(14.6)  | .632(16.1) | .128(3.3)               | .719(18.3)  | .938(23.8)       | .859(21.8)  |
| 11         | .701(17.8)  | .632(16.1) | .128(3.3)               | .812(20.6)  | 1.031(26.2)      | .984(25.0)  |
| 13         | .851(21.6)  | .632(16.1) | .128(3.3)               | .906(23.0)  | 1.125(28.6)      | 1.156(29.4) |
| 15         | .976(24.8)  | .632(16.1) | .128(3.3)               | .969(24.6)  | 1.219(31.0)      | 1.281(32.5) |
| 17         | 1.101(28.0) | .632(16.1) | .128(3.3)               | 1.062(27.0) | 1.312(33.3)      | 1.406(35.7) |
| 19         | 1.208(30.7) | .632(16.1) | .128(3.3)               | 1.156(29.4) | 1.438(36.5)      | 1.516(38.5) |
| 21         | 1.333(33.9) | .602(15.3) | .147(3.7)               | 1.250(31.8) | 1.562(39.7)      | 1.641(41.7) |
| 23         | 1.458(37.0) | .602(15.3) | .147(3.7)               | 1.375(34.9) | 1.688(42.9)      | 1.766(44.9) |
| 25         | 1.583(40.2) | .602(15.3) | .147(3.7)               | 1.500(38.1) | 1.812(46.0)      | 1.891(48.0) |



**942-004**  
**Sav-Con® Connector Saver**  
**Plug/Receptacle**  
 for Use with MIL-DTL-38999 Series II



FACE VIEW  
RECEPTACLE

**SERIES II: ALTERNATE KEYWAY POSITIONS**

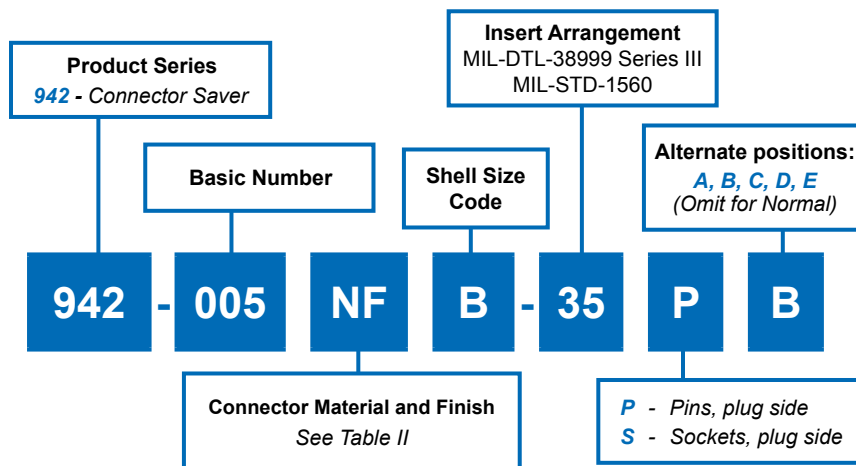
| SHELL SIZE | N°  | A° | B° | C°  | D°  |
|------------|-----|----|----|-----|-----|
| 08         | 100 | 82 | -- | --  | 118 |
| 10         | 100 | 86 | 72 | 128 | 114 |
| 12         | 100 | 80 | 68 | 132 | 120 |
| 14         | 100 | 79 | 66 | 134 | 121 |
| 16         | 100 | 82 | 70 | 130 | 118 |
| 18         | 100 | 82 | 70 | 130 | 118 |
| 20         | 100 | 82 | 70 | 130 | 118 |
| 22         | 100 | 85 | 74 | 126 | 115 |
| 24         | 100 | 85 | 74 | 125 | 115 |

**TABLE II: SHELL FINISHES**

| Plating Code | Material | Finish                                                |
|--------------|----------|-------------------------------------------------------|
| M            | Aluminum | Electroless Nickel                                    |
| NF           | Aluminum | Cadmium Plate Olive Drab over Electroless Nickel      |
| NC           | Aluminum | Zinc-Cobalt                                           |
| ZN           | Aluminum | Olive Drab Zinc-Nickel                                |
| MT           | Aluminum | Ni-PTFE 1000 Hour Grey™ (Nickel Fluorocarbon Polymer) |

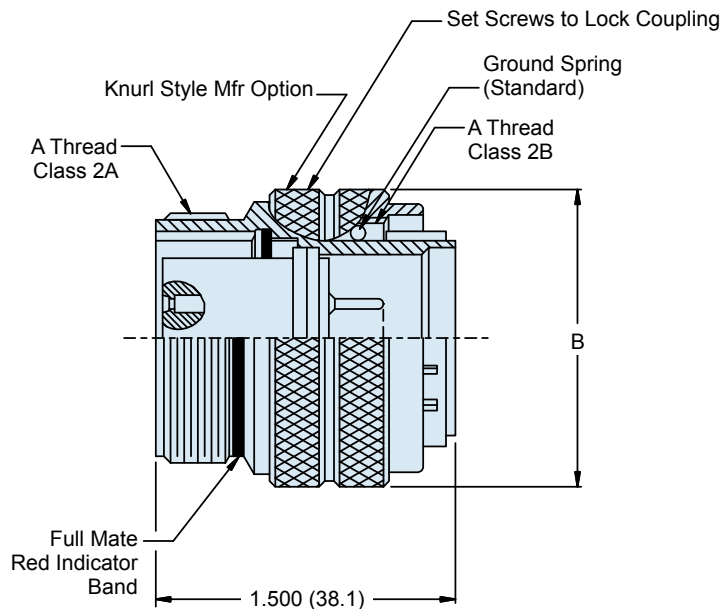
**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | A MAX.       | B MAX.       |
|------------|--------------|--------------|
| 08         | .474 (12.0)  | .750 (19.1)  |
| 10         | .591 (15.0)  | .859 (21.8)  |
| 12         | .751 (19.1)  | 1.031 (26.2) |
| 14         | .875 (22.2)  | 1.156 (29.4) |
| 16         | 1.001 (25.4) | 1.281 (32.5) |
| 18         | 1.126 (28.6) | 1.406 (35.7) |
| 20         | 1.251 (31.8) | 1.531 (38.9) |
| 22         | 1.376 (35.0) | 1.656 (42.1) |
| 24         | 1.501 (38.1) | 1.777 (45.1) |



**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | SHELL SIZE CODE | A THREAD<br>0.1P-0.3L-TS-2 | B DIA<br>MAX |
|------------|-----------------|----------------------------|--------------|
| 09         | A               | .6250                      | .859         |
| 11         | B               | .7500                      | .969         |
| 13         | C               | .8750                      | 1.141        |
| 15         | D               | 1.0000                     | 1.266        |
| 17         | E               | 1.1875                     | 1.391        |
| 19         | F               | 1.2500                     | 1.500        |
| 21         | G               | 1.3750                     | 1.625        |
| 23         | H               | 1.5000                     | 1.750        |
| 25         | J               | 1.6250                     | 1.875        |



**APPLICATION NOTES**

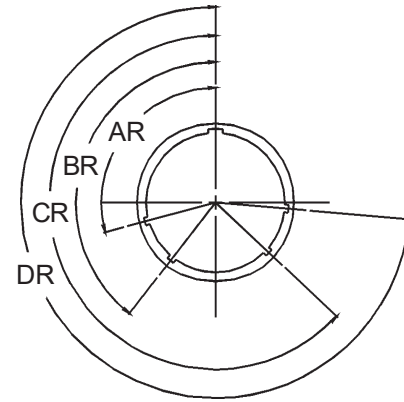
- Assembly features straight-thru double ended socket contacts. Power to a given contact on one end will result in power to contact directly opposite regardless of identification.
  - Metric dimensions (mm) are indicated in parentheses.
  - Material/finish:  
Barrel/shell, coupling nut, lock ring—Al alloy
- Contacts, grounding ring—Copper Al alloy/gold plate  
Detent spring—Corrosion resistant material  
Retaining device—CRES/passivate  
O-ring, interfacial & peripheral seals—Fluorosilicone/N.A.  
Insulators—High grade rigid dielectric/ N.A.

**942-005**  
**Sav-Con® Connector Saver**  
**Plug/Receptacle**  
 for Use with MIL-DTL-38999 Series III



**TABLE II: SHELL FINISHES**

| Plating Code | Material | Finish                                                   |
|--------------|----------|----------------------------------------------------------|
| M            | Aluminum | Electroless Nickel                                       |
| NF           | Aluminum | Cadmium Plate Olive Drab over Electroless Nickel         |
| NC           | Aluminum | Zinc-Cobalt                                              |
| ZN           | Aluminum | Olive Drab Zinc-Nickel                                   |
| MT           | Aluminum | Ni-PTFE 1000 Hour Grey™<br>(Nickel Fluorocarbon Polymer) |



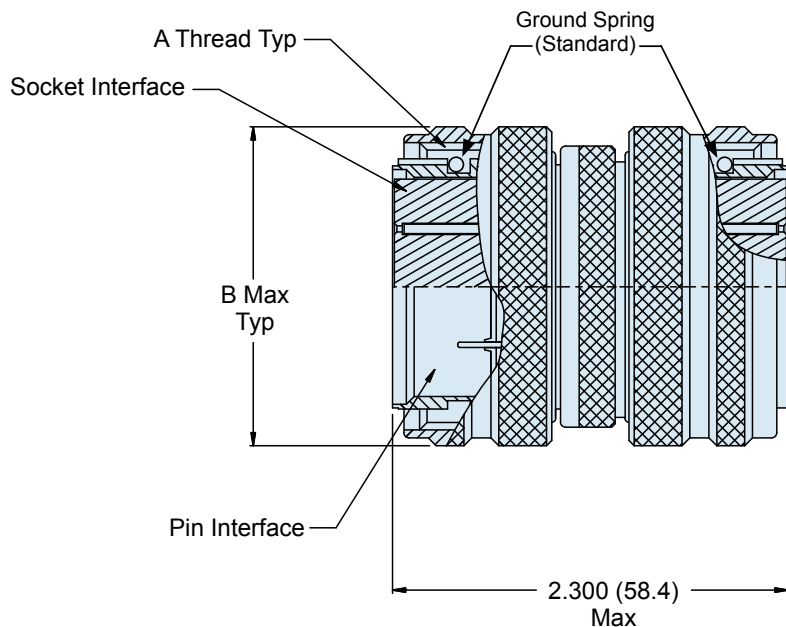
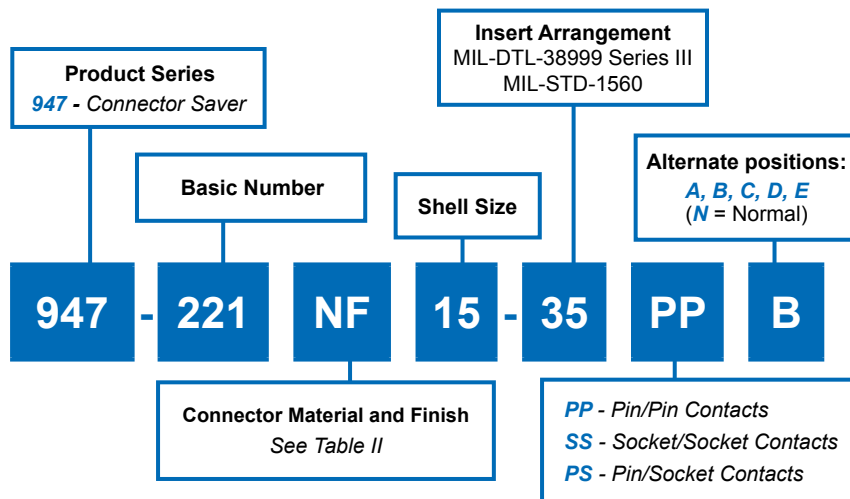
**FACE VIEW  
RECEPTACLE**

**SERIES III: ALTERNATE KEYWAY POSITIONS**

| Shell Size Code | Shell Size Ref | Alternate Keyway Code | AR° | BR° | CR° | DR° |
|-----------------|----------------|-----------------------|-----|-----|-----|-----|
| A               | 09             | N                     | 105 | 140 | 215 | 265 |
|                 |                | A                     | 102 | 132 | 248 | 320 |
|                 |                | B                     | 80  | 118 | 230 | 312 |
|                 |                | C                     | 35  | 140 | 205 | 275 |
|                 |                | D                     | 64  | 155 | 234 | 304 |
|                 |                | E                     | 91  | 131 | 197 | 240 |
| B<br>C<br>D     | 11<br>13<br>15 | N                     | 95  | 141 | 208 | 236 |
|                 |                | A                     | 113 | 156 | 182 | 292 |
|                 |                | B                     | 90  | 145 | 195 | 252 |
|                 |                | C                     | 53  | 156 | 220 | 255 |
|                 |                | D                     | 119 | 146 | 176 | 298 |
|                 |                | E                     | 51  | 141 | 184 | 242 |
| E<br>F          | 17<br>19       | N                     | 80  | 142 | 196 | 293 |
|                 |                | A                     | 135 | 170 | 200 | 310 |
|                 |                | B                     | 49  | 169 | 200 | 244 |
|                 |                | C                     | 66  | 140 | 200 | 257 |
|                 |                | D                     | 62  | 145 | 180 | 280 |
|                 |                | E                     | 79  | 153 | 197 | 272 |
| G<br>H<br>J     | 21<br>23<br>25 | N                     | 80  | 142 | 196 | 293 |
|                 |                | A                     | 135 | 170 | 200 | 310 |
|                 |                | B                     | 49  | 169 | 200 | 244 |
|                 |                | C                     | 66  | 140 | 200 | 257 |
|                 |                | D                     | 62  | 145 | 180 | 280 |
|                 |                | E                     | 79  | 153 | 197 | 272 |



**947-221**  
**Sav-Con® Connector Saver**  
**Plug/Plug In-Line Connector**  
for Use with MIL-DTL-38999 Series III



**TABLE I: CONNECTOR DIMENSIONS**

| SHELL SIZE | A THREAD<br>0.1 P-0.3L-TS-2 | B DIA<br>MAX |
|------------|-----------------------------|--------------|
| 09         | 0.6250                      | .859(21.8)   |
| 11         | 0.7500                      | .969(24.6)   |
| 13         | 0.8750                      | 1.141(29.0)  |
| 15         | 1.0000                      | 1.266(32.2)  |
| 17         | 1.1875                      | 1.391(35.3)  |
| 19         | 1.2500                      | 1.500(38.1)  |
| 21         | 1.3750                      | 1.625(41.3)  |
| 23         | 1.5000                      | 1.750(44.5)  |
| 25         | 1.6250                      | 1.875(47.6)  |

**APPLICATION NOTES**

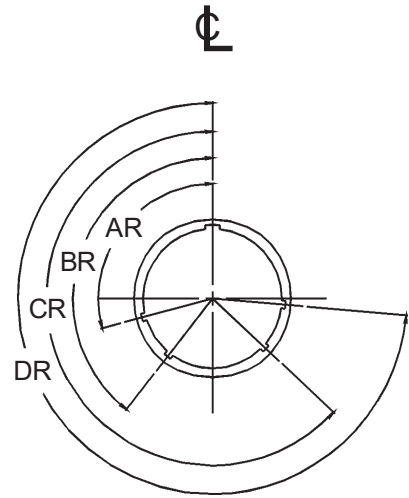
- Assembly features straight-thru double-ended contacts, power to a given contact on one end will result in power to contact directly opposite, regardless of identification.
- Symmetrical layout only, Consult factory for available insert arrangements.
- Metric dimensions (mm) are indicated in parentheses.
- Material/finish:  
Barrel, adapter, junction nuts, coupling nuts—Al alloy/see Table I.  
Insulators—High grade rigid dielectric/N.A.  
Contacts—Copper alloy/gold plate

**947-221**  
**Sav-Con® Connector Saver**  
**Plug/Plug In-Line Connector**  
 for Use with MIL-DTL-38999 Series III



**TABLE II: SHELL FINISHES**

| Plating Code | Material | Finish                                                   |
|--------------|----------|----------------------------------------------------------|
| M            | Aluminum | Electroless Nickel                                       |
| NF           | Aluminum | Cadmium Plate Olive Drab over Electroless Nickel         |
| NC           | Aluminum | Zinc-Cobalt                                              |
| ZN           | Aluminum | Olive Drab Zinc-Nickel                                   |
| MT           | Aluminum | Ni-PTFE 1000 Hour Grey™<br>(Nickel Fluorocarbon Polymer) |



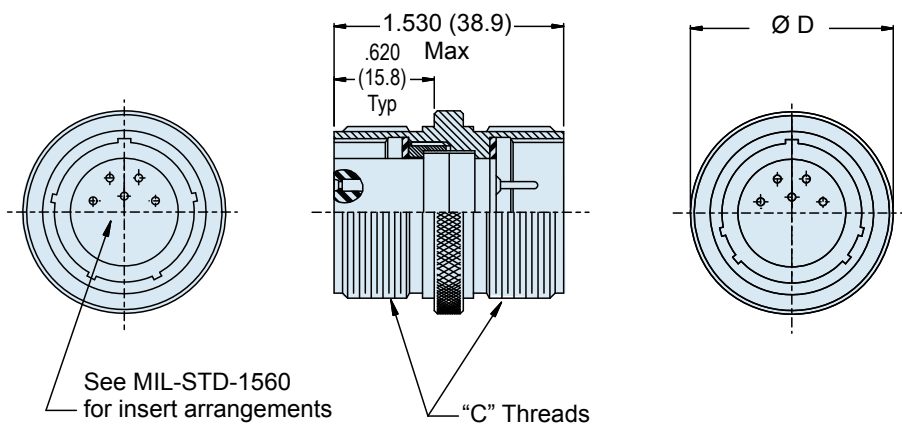
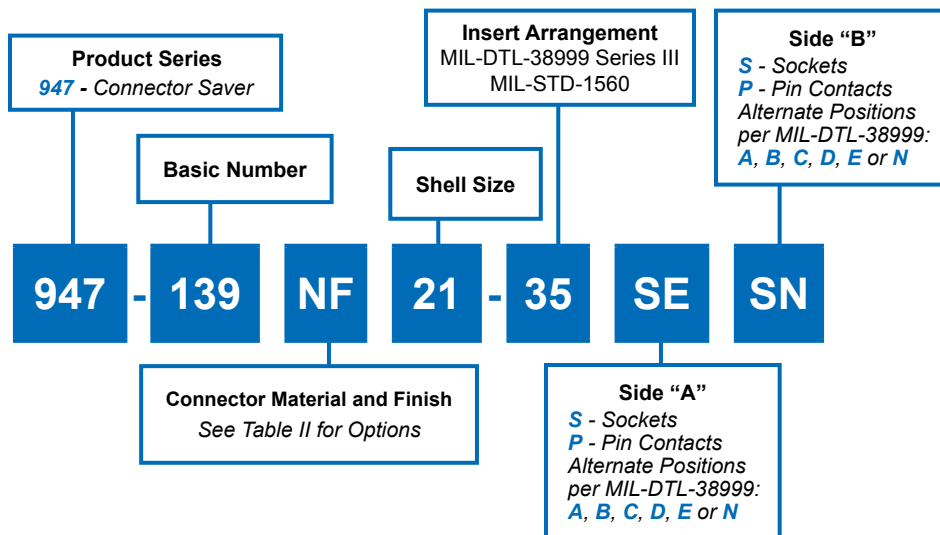
**FACE VIEW  
RECEPTACLE**

**SERIES III: ALTERNATE KEYWAY POSITIONS**

| Shell Size Code | Shell Size Ref | Alternate Keyway Code | AR° | BR° | CR° | DR° |
|-----------------|----------------|-----------------------|-----|-----|-----|-----|
| A               | 09             | N                     | 105 | 140 | 215 | 265 |
|                 |                | A                     | 102 | 132 | 248 | 320 |
|                 |                | B                     | 80  | 118 | 230 | 312 |
|                 |                | C                     | 35  | 140 | 205 | 275 |
|                 |                | D                     | 64  | 155 | 234 | 304 |
|                 |                | E                     | 91  | 131 | 197 | 240 |
| B<br>C<br>D     | 11<br>13<br>15 | N                     | 95  | 141 | 208 | 236 |
|                 |                | A                     | 113 | 156 | 182 | 292 |
|                 |                | B                     | 90  | 145 | 195 | 252 |
|                 |                | C                     | 53  | 156 | 220 | 255 |
|                 |                | D                     | 119 | 146 | 176 | 298 |
|                 |                | E                     | 51  | 141 | 184 | 242 |
| E<br>F          | 17<br>19       | N                     | 80  | 142 | 196 | 293 |
|                 |                | A                     | 135 | 170 | 200 | 310 |
|                 |                | B                     | 49  | 169 | 200 | 244 |
|                 |                | C                     | 66  | 140 | 200 | 257 |
|                 |                | D                     | 62  | 145 | 180 | 280 |
|                 |                | E                     | 79  | 153 | 197 | 272 |
| G<br>H<br>J     | 21<br>23<br>25 | N                     | 80  | 142 | 196 | 293 |
|                 |                | A                     | 135 | 170 | 200 | 310 |
|                 |                | B                     | 49  | 169 | 200 | 244 |
|                 |                | C                     | 66  | 140 | 200 | 257 |
|                 |                | D                     | 62  | 145 | 180 | 280 |
|                 |                | E                     | 79  | 153 | 197 | 272 |



# 947-139 Sav-Con® Connector Saver In-Line Connector for Use with MIL-DTL-38999 Series III



| TABLE I: CONNECTOR DIMENSIONS |                 |         |
|-------------------------------|-----------------|---------|
| SHELL SIZE                    | C THREAD        | Ø D MAX |
| 09                            | .625-1P-.3L-2A  | .859    |
| 11                            | .750-1P-.3L-2A  | .984    |
| 13                            | .875-1P-.3L-2A  | 1.156   |
| 15                            | 1.000-1P-.3L-2A | 1.281   |
| 17                            | 1.187-1P-.3L-2A | 1.406   |
| 19                            | 1.250-1P-.3L-2A | 1.516   |
| 21                            | 1.375-1P-.3L-2A | 1.641   |
| 23                            | 1.500-1P-.3L-2A | 1.766   |
| 25                            | 1.625-1P-.3L-2A | 1.891   |

## APPLICATION NOTES

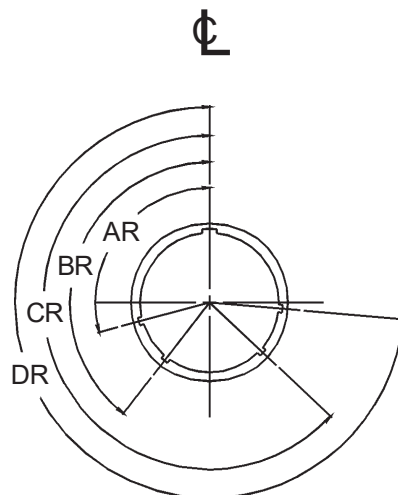
- For pin/pin and skt/skt symmetrical layouts only. Consult factory for available insert arrangements.
- Power to a given contact on one end will result in power to the contact directly opposite, regardless of identification marking.
- Metric dimensions (mm) are indicated in parentheses.
- Material/finish:  
Shell assembly—Al alloy/see Table II  
Contacts—Copper alloy/gold plate  
Insulators—High-grade rigid dielectric/ N.A.  
Seals—Silicone/ N.A

**947-139**  
**Sav-Con® Connector Saver**  
**In-Line Connector**  
 for Use with MIL-DTL-38999 Series III



**TABLE II: SHELL FINISHES**

| Plating Code | Material | Finish                                                   |
|--------------|----------|----------------------------------------------------------|
| M            | Aluminum | Electroless Nickel                                       |
| NF           | Aluminum | Cadmium Plate Olive Drab over Electroless Nickel         |
| NC           | Aluminum | Zinc-Cobalt                                              |
| ZN           | Aluminum | Olive Drab Zinc-Nickel                                   |
| MT           | Aluminum | Ni-PTFE 1000 Hour Grey™<br>(Nickel Fluorocarbon Polymer) |



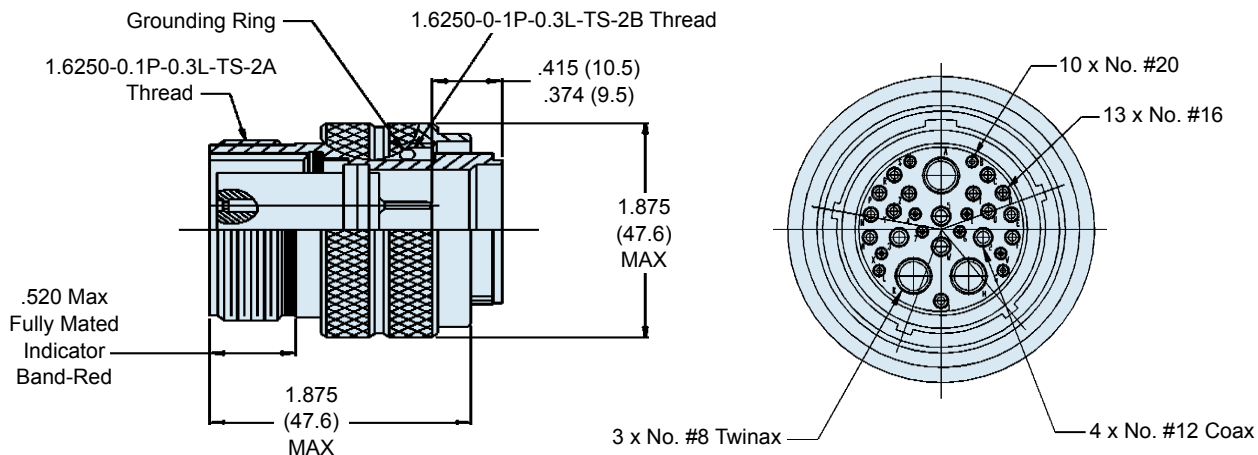
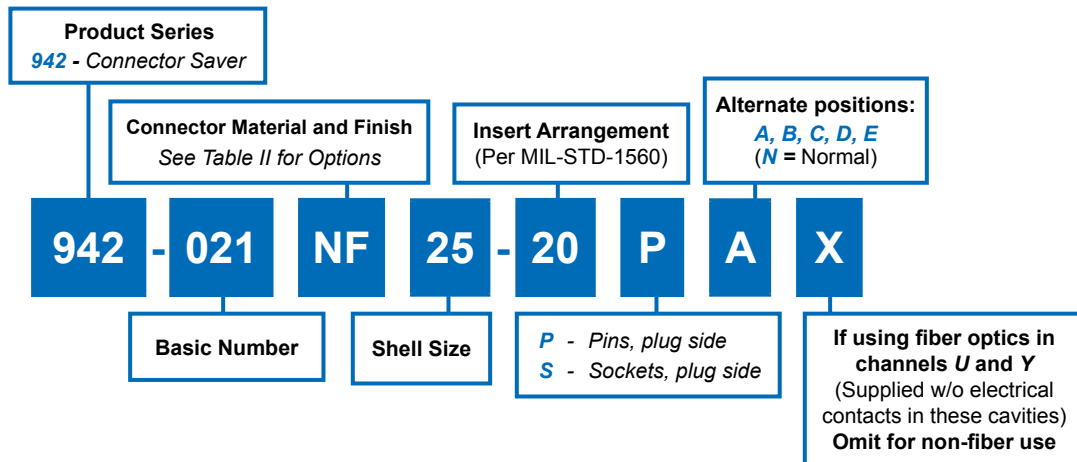
FACE VIEW  
RECEPTACLE

**SERIES III: ALTERNATE KEYWAY POSITIONS**

| Shell Size Code | Shell Size Ref | Alternate Keyway Code | AR° | BR° | CR° | DR° |
|-----------------|----------------|-----------------------|-----|-----|-----|-----|
| A               | 09             | N                     | 105 | 140 | 215 | 265 |
|                 |                | A                     | 102 | 132 | 248 | 320 |
|                 |                | B                     | 80  | 118 | 230 | 312 |
|                 |                | C                     | 35  | 140 | 205 | 275 |
|                 |                | D                     | 64  | 155 | 234 | 304 |
|                 |                | E                     | 91  | 131 | 197 | 240 |
| B<br>C<br>D     | 11<br>13<br>15 | N                     | 95  | 141 | 208 | 236 |
|                 |                | A                     | 113 | 156 | 182 | 292 |
|                 |                | B                     | 90  | 145 | 195 | 252 |
|                 |                | C                     | 53  | 156 | 220 | 255 |
|                 |                | D                     | 119 | 146 | 176 | 298 |
|                 |                | E                     | 51  | 141 | 184 | 242 |
| E<br>F          | 17<br>19       | N                     | 80  | 142 | 196 | 293 |
|                 |                | A                     | 135 | 170 | 200 | 310 |
|                 |                | B                     | 49  | 169 | 200 | 244 |
|                 |                | C                     | 66  | 140 | 200 | 257 |
|                 |                | D                     | 62  | 145 | 180 | 280 |
|                 |                | E                     | 79  | 153 | 197 | 272 |
| G<br>H<br>J     | 21<br>23<br>25 | N                     | 80  | 142 | 196 | 293 |
|                 |                | A                     | 135 | 170 | 200 | 310 |
|                 |                | B                     | 49  | 169 | 200 | 244 |
|                 |                | C                     | 66  | 140 | 200 | 257 |
|                 |                | D                     | 62  | 145 | 180 | 280 |
|                 |                | E                     | 79  | 153 | 197 | 272 |



**942-021**  
**Sav-Con® Connector Saver**  
**MIL-STD-1760**  
**For Use With MIL-DTL-38999 Series III**



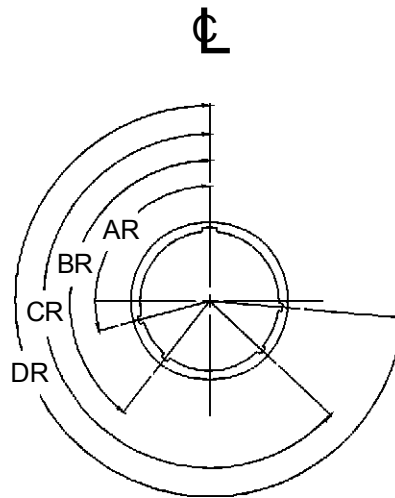
**25-20 INSERT ARRANGEMENT**

| SHELL SIZE CODE | SHELL SIZE | INSERT ARRANGEMENT DASH NO. | TOTAL NUMBER OF CONTACTS | CONTACT SIZE |    |           |            |
|-----------------|------------|-----------------------------|--------------------------|--------------|----|-----------|------------|
| J               | 25         | 25-20                       | 30                       | 20           | 16 | 12 (Coax) | 8 (Twinax) |
|                 |            |                             |                          | QUANTITY     |    |           |            |
|                 |            |                             |                          | 10           | 13 | 4         | 3          |

**APPLICATION NOTES**

- All set screws to have N.D. Ind. Stud grade threadlocker #140500 (jet fuel resistant).
- Metric dimensions (mm) are indicated in parentheses.
- Material/finish:  
Barrel/shell, coupling nut, lock ring – CRES Passivated

Contacts – Copper alloy/gold plate  
Interfacial & peripheral seals – silicone/N.A.  
Insulators – High grade rigid dielectric/ N.A.  
Shrink Tube – See Table I



FACE VIEW  
RECEPTACLE

| SERIES III: ALTERNATE KEYWAY POSITIONS |                |                       |     |     |     |     |
|----------------------------------------|----------------|-----------------------|-----|-----|-----|-----|
| Shell Size Code                        | Shell Size Ref | Alternate Keyway Code | AR° | BR° | CR° | DR° |
| J                                      | 25             | N                     | 80  | 142 | 196 | 293 |
|                                        |                | A                     | 135 | 170 | 200 | 310 |
|                                        |                | B                     | 49  | 169 | 200 | 244 |
|                                        |                | C                     | 66  | 140 | 200 | 257 |
|                                        |                | D                     | 62  | 145 | 180 | 280 |
|                                        |                | E                     | 79  | 153 | 197 | 272 |

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# Glenair Connector Accessories and Tools

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## Because the Art of Interconnect Cable Design Calls for More Technology Than Just a Connector

### Backshells: A Part of Every Well-Designed Cable Harness and Assembly

Glenair understands that the management of EMI, environmental damage and mechanical stress factors in high-reliability cable assemblies usually requires the incorporation of various connector backshells and accessories. We offer thousands of EMI management products, cable-sealing backshells, protective covers, strain-relief devices and other essential accessories. In this section of the book we've organized a small selection of some of the most practical devices used in Mil-Aero cabling. We've chosen the most popular and useful products for assemblies built around the D38999 family.

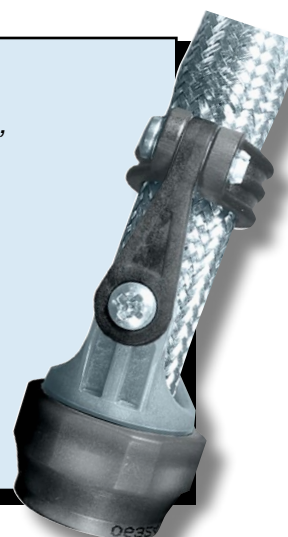
could include both a suitable EMI filtering device but also an appropriate selection of accessories such as shield termination backshells, EMI gaskets and conductive shielding.

For environmental protection, Glenair offers both standard shrink-boot products as well as more robust cable-sealing backshells and protective covers. For mechanical protection we offer a broad range of strain-relief backshells to prevent damage to the conductor-to-contact interface. Whatever your requirement, Glenair has both the connectors, and the accessories, to put

*Glenair is the world's largest supplier of EMI Shielding backshells, cable sealing backshells and strain-relief devices. Over 65,000 part numbers are in stock and ready for same-day shipment*

*This section includes just a small selection of the most practical connector accessories designed for use on D38999 connectors*

*Glenair offers both AS85049 QPL solutions as well as a broad selection of commercial designs for every electrical, mechanical and environmental requirement.*



For example, effective shielding of avionic devices equipped with D38999 signal connectors must anticipate both "radiated susceptibility" (the degree to which outside interference affects the reliable functioning of equipment) and "radiated emissions" (the extent to which the device itself creates electromagnetic waves which can affect its function). In both cases, managing the interference

together a finished cable design that meets all the requirements of your application.

NOTE: *Catalog contents are accurate to the best of our ability when we go to print. When errors or mistakes are brought to our attention, corrected content is posted immediately to our website: [www.glenair.com](http://www.glenair.com).*

# MIL-DTL-38999 Backshells and Accessories Selection Guide

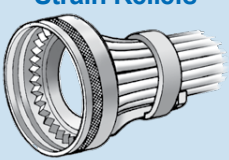
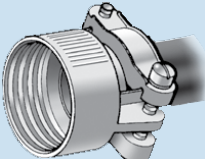
## Military Standard Circular Connector Accessories

| Military Connector Specifications | Shrink Boot Adapters | Non Environmental Strain Relief Backshells | EMI/RFI Non-Environmental Backshells | EMI/RFI Environmental Backshells                     | Banding Backshells                                   |
|-----------------------------------|----------------------|--------------------------------------------|--------------------------------------|------------------------------------------------------|------------------------------------------------------|
| MIL-C-38999 Series I              | M85049/62 Straight   | M85049/29 Straight                         | M85049/36 Straight<br>M85049/37 90°  | M85049/17 Straight<br>M85049/76 90°<br>M85049/77 45° | M85049/85 Straight<br>M85049/86 45°<br>M85049/87 90° |
| MIL-C-38999 Series II             | M85049/62 Straight   | M85049/29 Straight                         | M85049/36 Straight<br>M85049/37 90°  | M85049/17 Straight<br>M85049/76 90°<br>M85049/77 45° | M85049/85 Straight<br>M85049/86 45°<br>M85049/87 90° |
| MIL-C-38999 Series III            | M85049/69 Straight   | M85049/21 Straight                         | M85049/19 Straight                   | M85049/18 Straight<br>M85049/78 45°<br>M85049/79 90° | M85049/88 Straight<br>M85049/89 45°<br>M85049/90 90° |
| MIL-C-38999 Series IV             | M85049/69 Straight   | M85049/21 Straight                         | M85049/19 Straight                   | M85049/18 Straight<br>M85049/78 45°<br>M85049/79 90° | M85049/88 Straight<br>M85049/89 45°<br>M85049/90 90° |

# MIL-DTL-38999 Backshells and Accessories Selection Guide



## Military Standard Circular Connector Accessories

| Quick-Ty Strain Reliefs                                                                                                                   |                                                                                                                                                                                                                     | Strain Reliefs                                                                                     |                                           | Dummy Stowage Receptacles | Protective Plug Covers | Protective Receptacle Covers | Military Connector Specifications |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------|------------------------|------------------------------|-----------------------------------|
| Non-Self Locking                                                                                                                          | Self Locking                                                                                                                                                                                                        | Non-Self Locking                                                                                   | Self Locking                              |                           |                        |                              |                                   |
| <br>M85049/56 straight<br>M85049/57 45°<br>M85049/58 90° | <br><i>No Ground Lug</i><br>M85049/56S Straight<br>M85049/57S 45°<br><i>W/ Ground Lug</i><br>M85049/56G Straight<br>M85049/57G 45° | <br>M85049/45 Straight<br>M85049/46 90°<br>M85049/47 (MS27507) 90°<br>M85049/49 (MS27506) Straight | <br>M85049/47S 90°<br>M85049/49S Straight | M38999/9                  | MS27501                | MS27502                      | MIL-C-38999 Series I              |
| <br>M85049/56 straight<br>M85049/57 45°<br>M85049/58 90°                                                                                  | <br><i>No Ground Lug</i><br>M85049/56S Straight<br>M85049/57S 45°<br><i>W/ Ground Lug</i><br>M85049/56G Straight<br>M85049/57G 45°                                                                                  | <br>M85049/45 Straight<br>M85049/46 90°<br>M85049/47 (MS27507) 90°<br>M85049/49 (MS27506) Straight | <br>M85049/47S 90°<br>M85049/49S Straight | M38999/10                 | MS27510                | MS27511                      | MIL-C-38999 Series II             |
| <br>M85049/15 45°<br>M85049/16 90°                                                                                                        | N/A                                                                                                                                                                                                                 | <br>M85049/38 Straight<br>M85049/39 90°<br>M85049/91 Straight<br>M85049/92 90°                     | <br>M85049/38S Straight<br>M85049/39S 90° | M38999/22                 | D38999/32 Threaded     | D38999/33 Threaded           | MIL-C-38999 Series III            |
| <br>M85049/15 45°<br>M85049/16 90°                                                                                                        | <br>M85049/15 45°<br>M85049/16 90°                                                                                                                                                                                  | <br>M85049/38 Straight<br>M85049/39 90°<br>M85049/91 Straight<br>M85049/92 90°                     | <br>M85049/38S Straight<br>M85049/39S 90° | M38999/50                 | N/A                    | N/A                          | MIL-C-38999 Series IV             |

**Table I:  
Backshell Interface Dimensions**

| TABLE I: BACKSHELL INTERFACE DIMENSIONS |        |                    |              |              |              |              |
|-----------------------------------------|--------|--------------------|--------------|--------------|--------------|--------------|
| CONNECTOR DESIGNATOR                    |        | A THREAD REFERENCE | B DIA MAX    | C DIA MAX    | D DIA MAX    | E DIA MAX    |
| F                                       | H      |                    |              |              |              |              |
| 08 [9]                                  |        | 7/16 – 28 UNEF     | .590 (15.)   | .650 (16.5)  | .770 (19.6)  | .690 (17.5)  |
|                                         | 09 [A] | M12 x 1 – 6H       | .650 (16.5)  | .770 (19.6)  |              | .940 (24.8)  |
| 10 [11]                                 |        | 9/16 – 24 UNEF     | .720 (18.3)  | .770 (19.6)  | .890 (22.6)  | .820 (20.8)  |
|                                         | 11 [B] | M15 x 1 – 6H       | .770 (19.6)  | .820 (20.8)  |              | 1.060 (26.9) |
| 12 [13]                                 |        | 11/16 – 24 UNEF    | .840 (21.3)  | .890 (22.6)  | 1.020 (25.9) | .940 (23.8)  |
|                                         | 13 [C] | M18 x 1 – 6H       | .890 (22.6)  | .940 (23.9)  |              | 1.170 (29.7) |
| 14 [15]                                 |        | 13/16 – 20 UNEF    | .970 (24.6)  | 1.020 (29.2) | 1.150 (29.2) | 1.060 (26.9) |
|                                         | 15 [D] | M22 x 1 – 6H       | 1.030 (26.2) | 1.070 (26.2) |              | 1.290 (32.7) |
| 16 [17]                                 |        | 15/16 – 20 UNEF    | 1.090 (27.7) | 1.150 (29.2) | 1.260 (32.0) | 1.170 (29.7) |
|                                         | 17 [E] | M25 x 1 – 6H       | 1.150 (29.2) | 1.210 (30.7) |              | 1.420 (36.1) |
| 18 [19]                                 |        | 1 1/16 – 18 UNEF   | 1.220 (31.0) | 1.230 (31.2) | 1.400 (35.6) | 1.290 (32.7) |
|                                         | 19 [F] | M28 x 1 – 6H       | 1.280 (32.5) | 1.360 (34.5) |              | 1.540 (39.1) |
| 20 [21]                                 |        | 1 3/16 – 18 UNEF   | 1.340 (34.0) | 1.360 (34.5) | 1.530 (38.9) | 1.420 (36.0) |
|                                         | 21 [G] | M31 x 1 – 6H       | 1.410 (35.8) | 1.480 (37.6) |              | 1.670 (42.4) |
| 22 [23]                                 |        | 1 5/16 – 18 UNEF   | 1.470 (37.3) | 1.480 (37.6) | 1.600 (40.6) | 1.540 (39.1) |
|                                         | 23 [H] | M34 x 1 – 6H       | 1.530 (38.9) | 1.600 (40.6) |              | 2.010 (51.1) |
| 24 [25]                                 |        | 1 7/16 – 18 UNEF   | 1.590 (40.4) | 1.730 (43.9) | 1.940 (49.3) | 1.660 (42.2) |
|                                         | 25 [J] | M37 x 1 – 6H       | 1.660 (42.2) | 1.700 (43.2) |              | 2.120 (53.8) |

# Series 77

## Straight Shrink Boot

### Heat Shrink Molded Part

**Glenair**

Connector  
Accessories

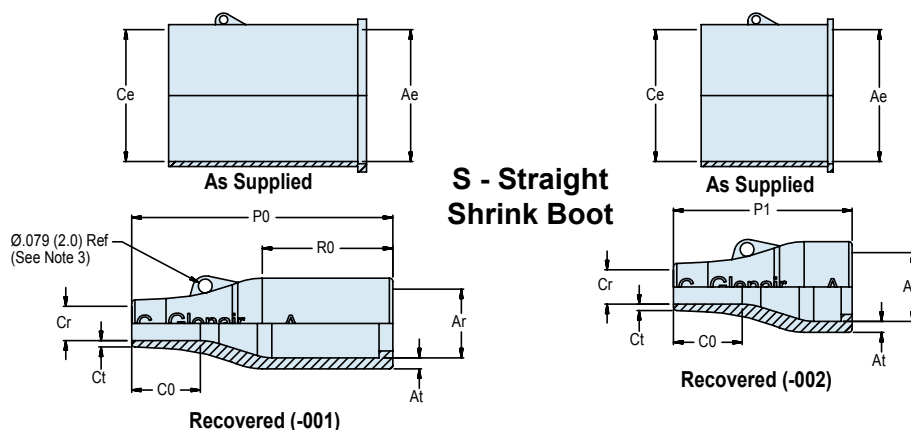
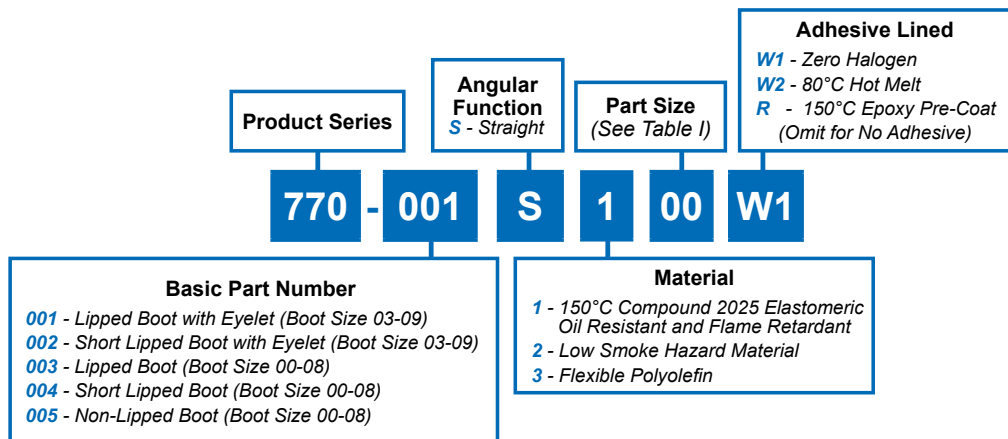
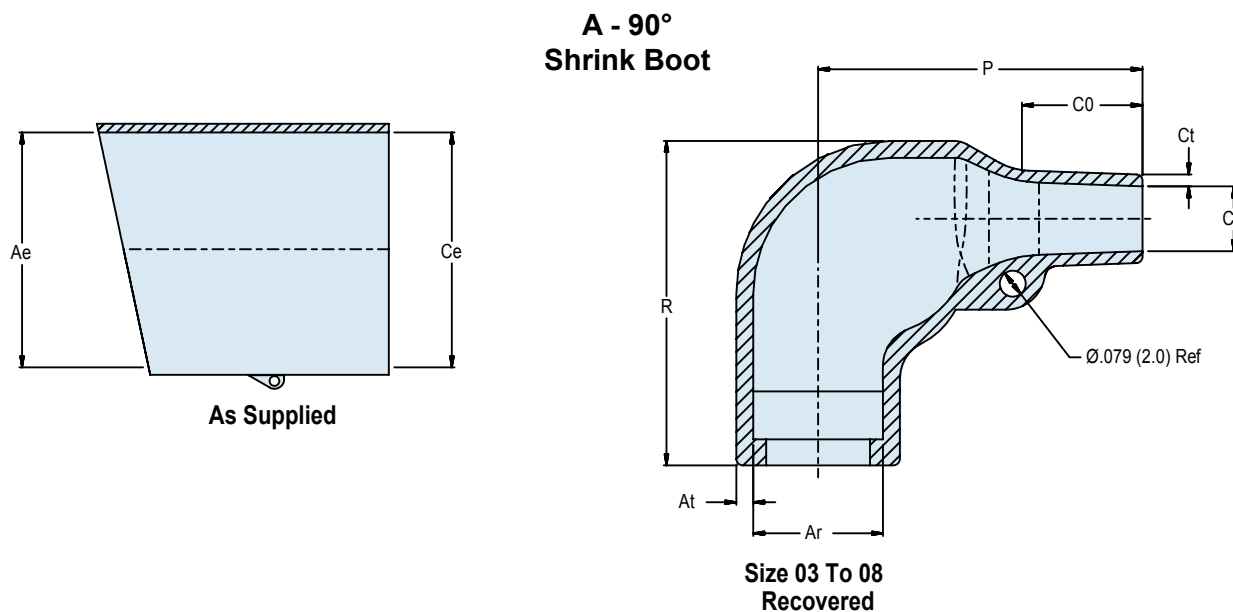
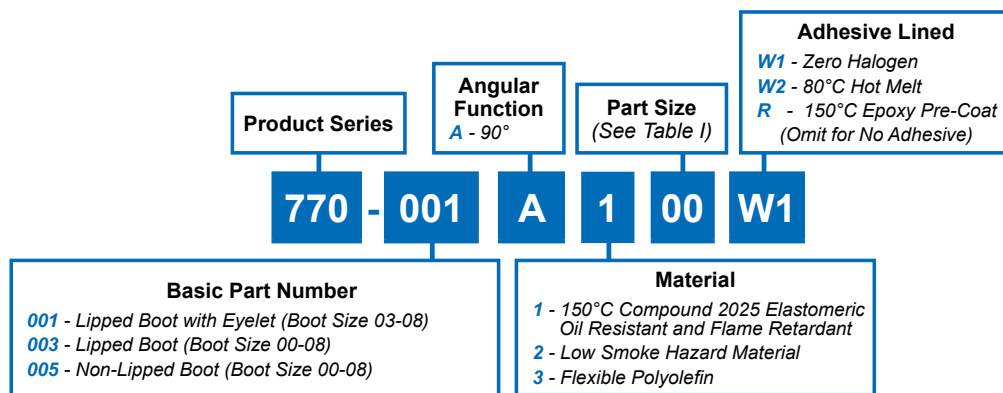


TABLE I: STRAIGHT BOOT DIMENSIONS, BOOT AND SHELL SIZE

| Boot Size | Shell Size | Ae Dia Min   | Ce Dia Min   | Ar Dia Max   | at ±30%    | Cr Dia Max  | ct ±20%    | C0 Ref       | P0 ±10%       | P1 ±10%       | R0 Ref       |
|-----------|------------|--------------|--------------|--------------|------------|-------------|------------|--------------|---------------|---------------|--------------|
| 00        | 5          | .354 (9.0)   | .354 (9.0)   | .217 (5.5)   | .039 (1.0) | .079 (2.0)  | .028 (0.7) | .295 (7.5)   | .984 (25.0)   | N/A           | .551 (14.0)  |
| 01        | 5, 6       | .472 (12.0)  | .472 (12.0)  | .276 (7.0)   | .043 (1.1) | .118 (3.0)  | .028 (0.7) | .295 (7.5)   | .984 (25.0)   | N/A           | .551 (14.0)  |
| 02        | 6, 7       | .669 (17.0)  | .669 (17.0)  | .276 (7.0)   | .051 (1.3) | .138 (3.5)  | .028 (0.7) | .395 (10.0)  | 1.181 (30.0)  | N/A           | .728 (18.5)  |
| 03        | 8, 10      | .945 (24.0)  | .945 (24.0)  | .413 (10.5)  | .063 (1.6) | .197 (5.5)  | .035 (0.9) | .395 (10.0)  | 1.496 (38.0)  | 1.024 (26.0)  | .748 (19.0)  |
| 04        | 11-16      | 1.181 (30.0) | 1.181 (30.0) | .551 (14.0)  | .071 (1.8) | .236 (6.0)  | .039 (1.0) | .630 (16.0)  | 2.165 (55.0)  | 1.693 (43.0)  | 1.181 (30.0) |
| 05        | 16-17      | 1.260 (32.0) | 1.260 (32.0) | .709 (18.0)  | .071 (1.8) | .276 (7.0)  | .047 (1.2) | .748 (19.0)  | 2.638 (67.0)  | 1.850 (47.0)  | 1.299 (33.0) |
| 06        | 17-21      | 1.417 (36.0) | 1.417 (36.0) | .886 (22.0)  | .079 (2.0) | .335 (8.5)  | .047 (1.2) | .787 (20.0)  | 3.150 (80.0)  | 2.362 (60.0)  | 1.575 (40.0) |
| 07        | 21-23      | 1.693 (43.0) | 1.693 (43.0) | 1.102 (28.0) | .087 (2.2) | .394 (10.0) | .051 (1.3) | 1.142 (29.0) | 3.898 (99.0)  | 3.150 (80.0)  | 2.165 (55.0) |
| 08        | 25         | 2.362 (60.0) | 2.362 (60.0) | 1.378 (35.0) | .130 (3.3) | .591 (15.0) | .063 (1.6) | 1.575 (40.0) | 5.118 (130.0) | 4.331 (110.0) | 1.969 (50.0) |

#### APPLICATION NOTES

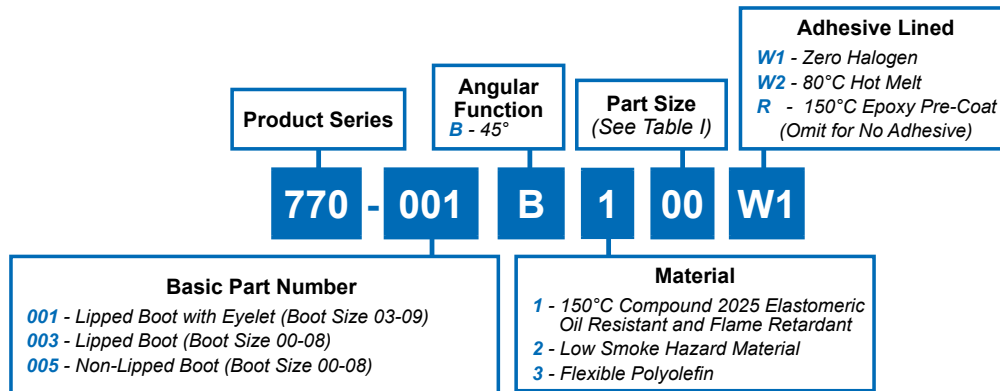
1. Material: Fluid resistant elastomer - Glenair Material Type 1.
2. When the minimum number of conductors are used, wire bundle/cable may require build-up to B<sup>2</sup> max.
3. Sizes 00 to 02 do not contain eyelet.



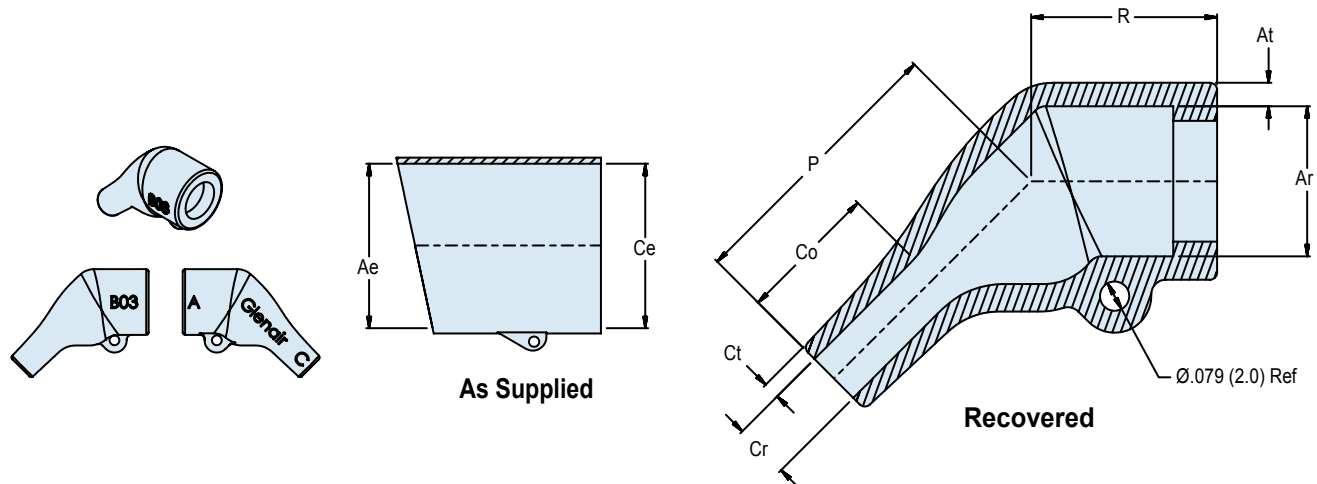
**TABLE I: 90° BOOT DIMENSIONS, BOOT AND SHELL SIZE**

| Boot Size | Shell Size | Ae Dia Min   | Ce Dia Min   | Ar Dia Max   | at ±30%    | Cr Dia Max  | ct ±20%    | C0 Ref       | P ±20%       | R Ref        |
|-----------|------------|--------------|--------------|--------------|------------|-------------|------------|--------------|--------------|--------------|
| 03        | 9          | .945 (24.0)  | .945 (24.0)  | .394 (10.0)  | .063 (1.6) | .197 (5.0)  | .035 (0.9) | .394 (10.0)  | .984 (25.0)  | .984 (25.0)  |
| 04        | 11-15      | 1.181 (30.0) | 1.181 (30.0) | .532 (13.5)  | .071 (1.8) | .217 (5.5)  | .039 (1.0) | .472 (12.0)  | 1.260 (32.0) | 1.063 (27.0) |
| 05        | 13-17      | 1.260 (32.0) | 1.260 (32.0) | .709 (18.0)  | .071 (1.8) | .276 (7.0)  | .047 (1.2) | .591 (15.0)  | 1.535 (39.0) | 1.260 (32.0) |
| 06        | 17-21      | 1.417 (36.0) | 1.417 (36.0) | .886 (22.0)  | .079 (2.0) | .335 (8.5)  | .047 (1.2) | .630 (16.0)  | 1.929 (49.0) | 1.496 (38.0) |
| 07        | 21-23      | 1.693 (43.0) | 1.693 (43.0) | 1.102 (28.0) | .087 (2.2) | .394 (10.0) | .059 (1.5) | .709 (18.0)  | 2.165 (55.0) | 1.850 (47.0) |
| 08        | 23-25      | 2.165 (55.0) | 2.165 (55.0) | 1.378 (35.0) | .130 (3.3) | .591 (15.0) | .079 (2.0) | 1.260 (32.0) | 3.150 (80.0) | 2.165 (55.0) |

**Series 77**  
**45° Shrink Boot**  
Heat Shrink Molded Part



**B - 45°**  
**Shrink Boot**



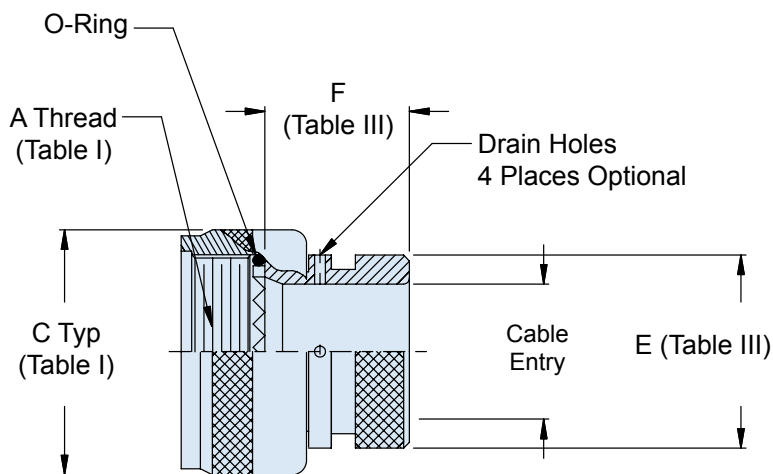
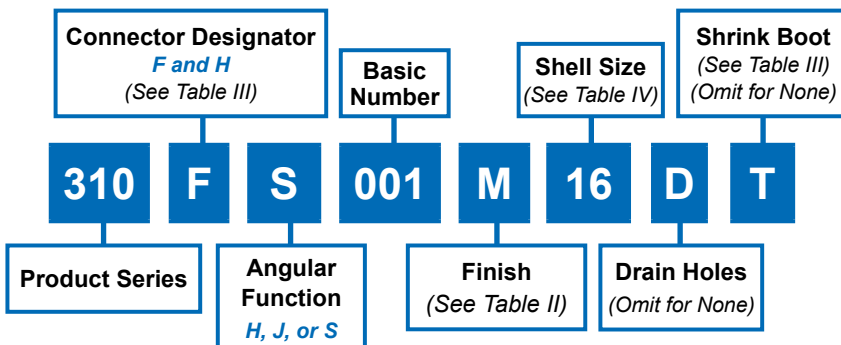
**TABLE I: 45° BOOT DIMENSIONS, BOOT AND SHELL SIZE**

| Boot Size | Shell Size | Ae Dia Min   | Ce Dia Min   | Ar Dia Max   | at ±30%    | Cr Dia Max  | ct ±20%    | C0 Ref      | P ±10%       | R Ref        |
|-----------|------------|--------------|--------------|--------------|------------|-------------|------------|-------------|--------------|--------------|
| 03        | 9          | .945 (24.0)  | .945 (24.0)  | .413 (10.50) | .063 (1.6) | .157 (4.0)  | .035 (0.9) | .315 (8.0)  | .748 (195.0) | .500 (12.7)  |
| 04        | 11-15      | 1.181 (30.0) | 1.181 (30.0) | .551 (14.0)  | .071 (1.8) | .236 (6.0)  | .039 (1.0) | .354 (9.0)  | 1.180 (30.0) | .748 (19.0)  |
| 05        | 13-17      | 1.260 (32.0) | 1.260 (32.0) | .709 (18.0)  | .079 (2.0) | .276 (7.0)  | .071 (1.8) | .591 (15.0) | 1.378 (35.0) | .984 (25.0)  |
| 06        | 17-21      | 1.417 (36.0) | 1.417 (36.0) | .886 (22.0)  | .079 (2.0) | .335 (8.5)  | .071 (1.8) | .709 (18.0) | 1.575 (40.0) | 1.260 (32.0) |
| 07        | 21-23      | 1.693 (43.0) | 1.693 (43.0) | 1.102 (28.0) | .087 (2.2) | .394 (10.0) | .079 (2.0) | .709 (18.0) | 1.772 (45.0) | 1.496 (38.0) |

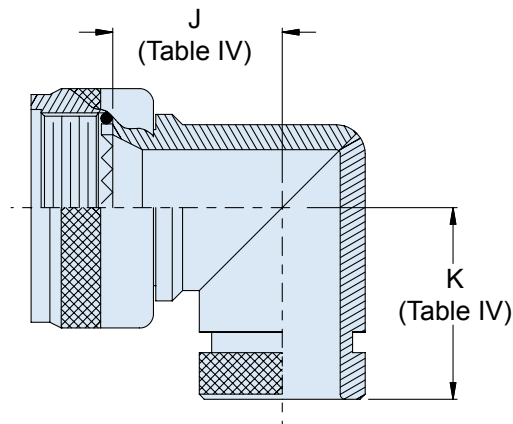
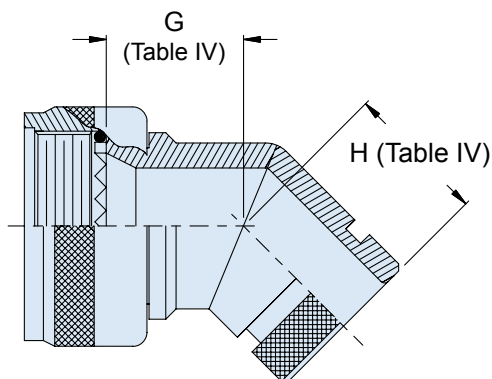
**Connector Designators:**

MIL-DTL-38999 Series I, II (F)  
MIL-DTL-38999 Series III and IV (H)

**F-H**  
**ROTATABLE**  
**COUPLING**



| TABLE II: FINISHES |                                                     |
|--------------------|-----------------------------------------------------|
| Symbol             | Finish                                              |
| B                  | Cadmium Plate, Olive Drab                           |
| C                  | Anodize, Black                                      |
| GB                 | Black Anodize, Hard Coat                            |
| M                  | Electroless Nickel                                  |
| N                  | Cad Plate, Olive Drab over Electroless Nickel       |
| NF                 | Cadmium Plate, Olive Drab over Electroless Nickel   |
| MT                 | Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer |
| Z1                 | Stainless Steel Passivate                           |
| ZL                 | CRES, Electroless Nickel                            |
| ZN                 | Zinc-Nickel                                         |



# 310-001

## O-Ring Sealed Shrink Boot Adapter

### Rotatable Coupling - Standard Profile



**TABLE III: CABLE ENTRY AND SHRINK BOOT**

| Connector Designator<br>F | Connector Designator<br>H | E<br>Max     | F<br>Max     | Cable Entry<br>Min | Shrink Boot* |
|---------------------------|---------------------------|--------------|--------------|--------------------|--------------|
| 08                        | 09                        | .533 (13.5)  | .940 (23.9)  | .250 (6.4)         | 770-003S102  |
| 10                        | 11                        | .605 (15.4)  | .940 (23.9)  | .355 (9.0)         | 770-001S103  |
| 12                        | 13                        | .774 (19.7)  | .940 (23.9)  | .491 (12.5)        | 770-001S103  |
| 14                        | 15                        | .838 (21.3)  | .940 (23.9)  | .565 (14.4)        | 770-001S103  |
| 16                        | 17                        | .963 (24.5)  | .940 (23.9)  | .690 (17.5)        | 770-001S104  |
| 18                        | 19                        | 1.042 (26.5) | .940 (23.9)  | .769 (19.5)        | 770-001S104  |
| 20                        | 21                        | 1.217 (30.9) | .940 (23.9)  | .894 (22.7)        | 770-001S106  |
| 22                        | 23                        | 1.355 (34.4) | .940 (23.9)  | 1.019 (25.9)       | 770-001S107  |
| 24                        | 25                        | 1.443 (36.7) | .940 (23.9)  | 1.134 (28.8)       | 770-001S107  |
| 28                        | 29                        | 1.709 (43.4) | .940 (23.9)  | 1.369 (34.8)       | 770-001S108  |
| 32                        | 33                        | 1.919 (48.7) | 1.005 (25.5) | 1.615 (41.0)       | 770-001S108  |

**TABLE IV: BACKSHELL DIMENSIONS**

| Connector Designator<br>F | Connector Designator<br>H | G<br>Max     | H<br>Max     | J<br>Max     | K<br>Max     |
|---------------------------|---------------------------|--------------|--------------|--------------|--------------|
| 08                        | 09                        | .639 (16.2)  | .810 (20.6)  | .750 (19.1)  | .920 (23.4)  |
| 10                        | 11                        | .664 (16.9)  | .840 (21.3)  | .810 (20.6)  | .980 (24.9)  |
| 12                        | 13                        | .688 (17.5)  | .860 (21.8)  | .870 (22.1)  | 1.040 (26.4) |
| 14                        | 15                        | .705 (17.9)  | .890 (22.6)  | .920 (23.4)  | 1.110 (28.2) |
| 16                        | 17                        | .732 (18.6)  | .910 (23.1)  | .980 (24.9)  | 1.170 (29.7) |
| 18                        | 19                        | .748 (19.0)  | .920 (23.4)  | 1.020 (25.9) | 1.190 (30.2) |
| 20                        | 21                        | .773 (19.6)  | .940 (23.9)  | 1.080 (27.4) | 1.250 (31.8) |
| 22                        | 23                        | .800 (20.3)  | .980 (24.9)  | 1.140 (29.0) | 1.330 (33.8) |
| 24                        | 25                        | .823 (20.9)  | 1.010 (25.7) | 1.200 (30.5) | 1.400 (35.6) |
| 28                        | 29                        | 1.041 (26.4) | 1.180 (30.0) | 1.480 (37.6) | 1.640 (41.7) |
| 32                        | 33                        | 1.092 (27.7) | 1.370 (34.8) | 1.610 (40.9) | 1.880 (47.8) |

#### APPLICATION NOTES

1. See shrink boot reference information (Page G-5).
2. O-Rings not supplied with drain hole option.
3. O-Rings not supplied with Connector Designators A and G.
4. Metric dimensions (mm) indicated in parentheses.



# 319-064 Composite Self-Locking Rotatable Coupling Swing-Arm Strain Relief with Nickel/Copper EMI/RFI Shield Sock & Optional Split Ring

## CONNECTOR DESIGNATOR

MIL-DTL-38999 Series I, II (F)

(for Series II see note 6)

MIL-DTL-38999 Series III and IV (H)

**F-H**

**SELF-LOCKING**

**ROTATABLE  
COUPLING**

Product Series

**319**

**F**

Basic Number

**064**

**XO**

Shell Size

**16**

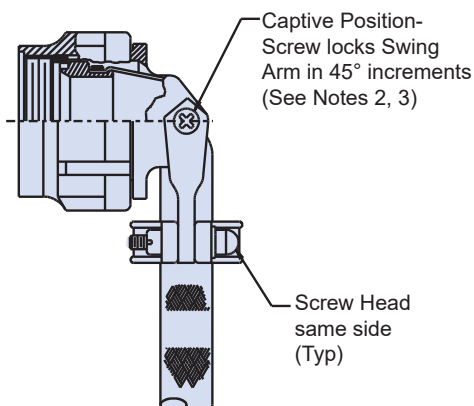
**R**

Connector Designator  
(F and H)

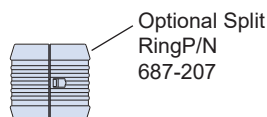
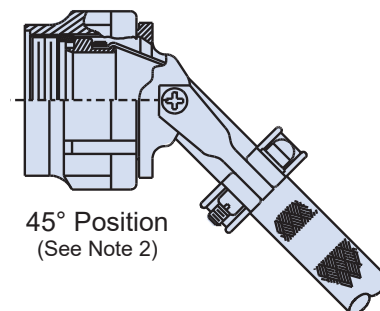
Finish

**R = Split Ring (687-207) &  
Band (600-052) supplied  
(Omit if not required)**

90° Position



45° Position  
(See Note 2)

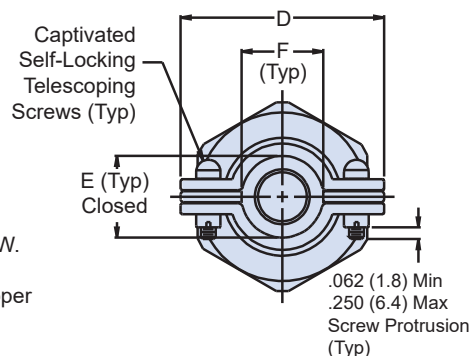
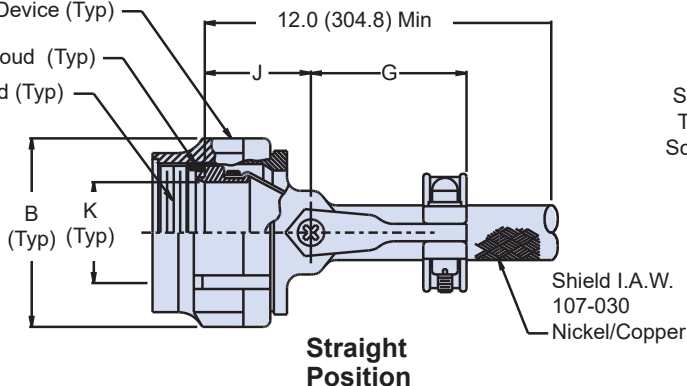
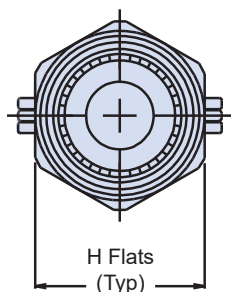


U.S. PATENT NO. 6419519

Anti-Rotation Device (Typ)

EMI Shroud (Typ)

A Thread (Typ)



**319-064**  
**Composite Self-Locking Rotatable Coupling**  
**Composite Swing-Arm Strain Relief with**  
**Nickel/Copper EMI/RFI Shield Sock & Optional Split Ring**



**TABLE II: FINISHES**

| Symbol     | Finish                                                                                                                                            | Symbol    | Finish                                                                                                                 |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------|
| <b>XB</b>  | Composite Material, No Plating, Color Black, Brass Interface Shroud and Adapter - Nickel Plated                                                   | <b>XN</b> | Composite Material, No Plating, Color Black and Brown, Brass Interface Shroud and Adapter - Selectively Cadmium Plated |
| <b>XMT</b> | Composite Material, No Plating, Color Black and Brown, Brass Interface Shroud and Adapter - Ni-PTFE 1000 Hour Grey™ (Nickel-Fluorocarbon Polymer) | <b>XO</b> | Composite Material, No Plating, Color Black and Brown, Brass Interface Shroud and Adapter - Nickel Plated              |

**TABLE III: CONNECTOR SHELL SIZE ORDER NUMBER**

| Shell Size for Connector Designator |    | B Dia Max    | D Max        | E ±.06 (1.5) | F Min       | G Max        | H Flats      |              | J ±.06 (1.5) | K Ref Designator F | K Ref Designator H      |
|-------------------------------------|----|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------------|-------------------------|
| F                                   | H  |              |              |              |             |              | Min          | Max          |              |                    |                         |
| 08                                  | 09 | .812 (20.6)  | .980 (24.9)  | .265 (6.7)   | .220 (5.9)  | 1.060 (26.9) | .750 (19.1)  | .736 (18.7)  | .94 (23.9)   | .265 (6.7)         | .269 ±.005 (6.8 ±.02)   |
| 10                                  | 11 | .938 (23.8)  | 1.050 (26.7) | .310 (7.9)   | .270 (6.9)  | 1.090 (27.7) | .875 (22.2)  | .860 (21.8)  | .97 (24.6)   | .370 (9.4)         | .402 ±.010 (10.2 ±.25)  |
| 12                                  | 13 | 1.125 (28.6) | 1.200 (30.5) | .390 (9.9)   | .350 (8.9)  | 1.180 (30.0) | 1.000 (25.4) | .980 (24.9)  | 1.03 (26.2)  | .506 (12.9)        | .516 ±.010 (13.1 ±.25)  |
| 14                                  | 15 | 1.250 (31.8) | 1.300 (33.0) | .506 (12.9)  | .470 (11.9) | 1.240 (31.5) | 1.125 (28.6) | 1.100 (27.9) | 1.09 (27.7)  | .580 (14.7)        | .641 ±.010 (16.3 ±.25)  |
| 16                                  | 17 | 1.375 (34.9) | 1.440 (36.6) | .591 (15.0)  | .550 (14.0) | 1.320 (33.5) | 1.250 (31.8) | 1.224 (31.1) | 1.12 (28.4)  | .705 (17.9)        | .766 ±.010 (19.5 ±.25)  |
| 18                                  | 19 | 1.500 (38.1) | 1.560 (39.6) | .661 (16.8)  | .620 (15.7) | 1.390 (35.3) | 1.375 (34.9) | 1.348 (37.3) | 1.15 (29.2)  | .784 (19.9)        | .853 ±.019 (19.5 ±.48)  |
| 20                                  | 21 | 1.625 (41.3) | 1.690 (42.9) | .744 (18.9)  | .700 (17.8) | 1.550 (39.4) | 1.500 (38.1) | 1.469 (38.1) | 1.18 (30.0)  | .909 (23.1)        | .988 ±.019 (25.1 ±.48)  |
| 22                                  | 23 | 1.750 (44.5) | 1.770 (45.0) | .826 (21.0)  | .780 (19.8) | 1.550 (39.4) | 1.625 (41.3) | 1.581 (40.2) | 1.25 (31.8)  | 1.034 (26.3)       | 1.113 ±.019 (28.3 ±.48) |
| 24                                  | 25 | 1.875 (47.6) | 1.890 (48.0) | .896 (22.8)  | .850 (21.6) | 1.610 (40.9) | 1.750 (44.5) | 1.690 (49.8) | 1.28 (32.5)  | 1.149 (29.2)       | 1.238 ±.019 (31.5 ±.25) |

Consult factory for additional entry sizes available.

**APPLICATION NOTES**

- Glenair series 600 Backshell assembly Tools are recommended for assembly and installation.
- Swing Arm locks in 45° increments—Sizes 08 thru 24, additional positioning increments are manufacturer's option.
- Captive Screw can remain engaged to the body when positioning the Arm. When tightened, the Screw shall not protrude into the inside surfaces.
- Fits Connector Designators: MIL-DTL-38999 Series I, II (F), MIL-DTL-38999 Series III and IV (H), MIL-DTL-5015 (A), and MIL-DTL-26482 (A).
- Metric dimensions (mm) are indicated in parentheses.
- For Mil-DTL-38999 Series II, add Mod Code -475. Backshell supplies less shroud.



# 319-065 Composite Self-Locking Rotatable Coupling Swing-Arm Strain Relief with Composite EMI/RFI Shield Sock & Optional Split Ring

## CONNECTOR DESIGNATOR

MIL-DTL-38999 Series I, II (F)  
MIL-DTL-38999 Series III and IV (H)

**F-H**

**SELF-LOCKING  
ROTATABLE  
COUPLING**

Product Series

**319**

Basic Number

**065**

Shell Size

**16**

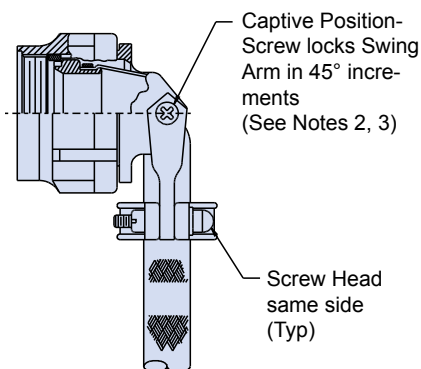
**R**

Connector Designator  
(F and H)

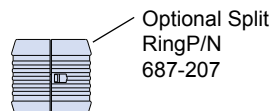
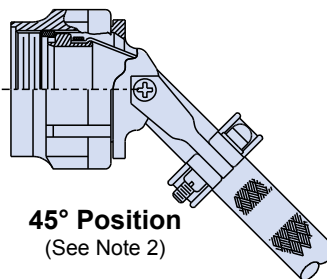
Finish

R = Split Ring (687-207) &  
Band (600-052) supplied  
(Omit if not required)

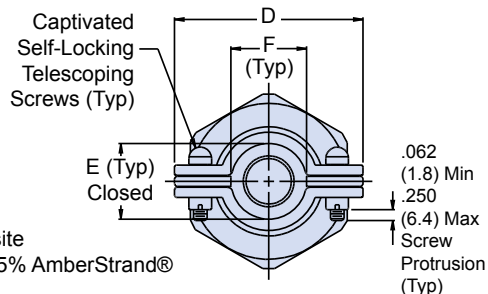
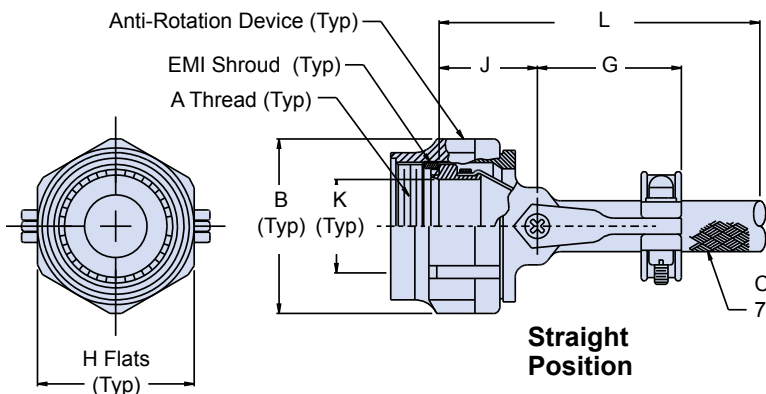
90° Position



45° Position  
(See Note 2)



U.S. PATENT NO. 6419519



**319-065**  
**Composite Self-Locking Rotatable Coupling**  
**Swing-Arm Strain Relief with**  
**Composite EMI/RFI Shield Sock & Optional Split Ring**



**TABLE II: FINISHES**

| Symbol     | Finish                                                                                                                                            |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>XB</b>  | Composite Material, No Plating, Color Black, Brass Interface Shroud and Adapter - Nickel Plated                                                   |
| <b>XMT</b> | Composite Material, No Plating, Color Black and Brown, Brass Interface Shroud and Adapter - Ni-PTFE 1000 Hour Grey™ (Nickel-Fluorocarbon Polymer) |
| <b>XN</b>  | Composite Material, No Plating, Color Black and Brown, Brass Interface Shroud and Adapter - Selectively Cadmium Plated                            |
| <b>XO</b>  | Composite Material, No Plating, Color Black and Brown, Brass Interface Shroud and Adapter - Nickel Plated                                         |

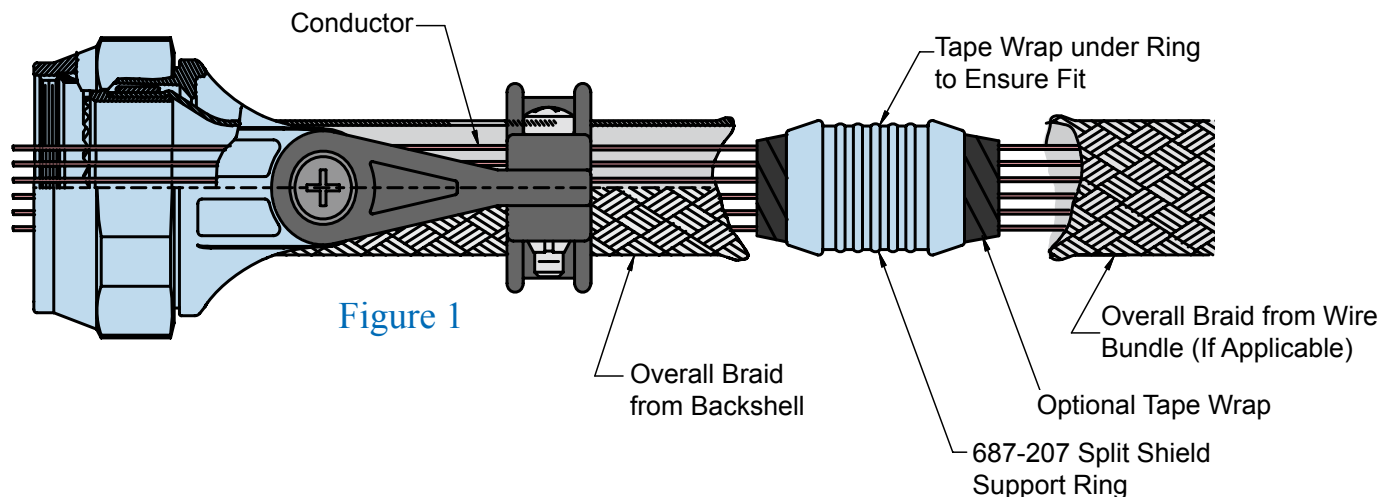
**TABLE III: CONNECTOR SHELL SIZE ORDER NUMBER**

| Shell Size for Connector Designator<br>F H |    | B Dia<br>Max | D<br>Max     | E<br>±.06 (1.5) | F<br>Min    | G<br>Max     | H<br>Flats<br>Max Min |              | J<br>±.06 (1.5) | K<br>Ref     | L<br>Min       |
|--------------------------------------------|----|--------------|--------------|-----------------|-------------|--------------|-----------------------|--------------|-----------------|--------------|----------------|
| 08                                         | 09 | .812 (20.6)  | .980 (24.9)  | .265 (6.7)      | .220 (5.9)  | 1.060 (26.9) | .750 (19.1)           | .736 (18.7)  | .940 (23.9)     | .265 (6.7)   | 7.000 (177.8)  |
| 10                                         | 11 | .938 (23.8)  | 1.050 (26.7) | .310 (7.9)      | .270 (6.9)  | 1.090 (27.7) | .875 (22.2)           | .860 (21.8)  | .970 (24.6)     | .370 (9.4)   | 7.000 (177.8)  |
| 12                                         | 13 | 1.125 (28.6) | 1.200 (30.5) | .390 (9.9)      | .350 (8.9)  | 1.180 (30.0) | 1.000 (25.4)          | .980 (24.9)  | 1.030 (26.2)    | .506 (12.9)  | 7.000 (177.8)  |
| 14                                         | 15 | 1.250 (31.8) | 1.300 (33.0) | .506 (12.9)     | .470 (11.9) | 1.240 (31.5) | 1.125 (28.6)          | 1.100 (27.9) | 1.090 (27.7)    | .580 (14.7)  | 9.000 (228.6)  |
| 16                                         | 17 | 1.375 (34.9) | 1.440 (36.6) | .591 (15.0)     | .550 (14.0) | 1.320 (33.5) | 1.250 (31.8)          | 1.224 (31.1) | 1.120 (28.4)    | .705 (17.9)  | 11.000 (279.4) |
| 18                                         | 19 | 1.500 (38.1) | 1.560 (39.6) | .661 (16.8)     | .620 (15.7) | 1.390 (35.3) | 1.375 (34.9)          | 1.469 (37.3) | 1.150 (29.2)    | .784 (19.9)  | 11.000 (279.4) |
| 20                                         | 21 | 1.625 (41.3) | 1.690 (42.9) | .744 (18.9)     | .700 (17.8) | 1.550 (39.4) | 1.500 (38.1)          | 1.500 (38.1) | 1.180 (30.0)    | .909 (23.1)  | 11.000 (279.4) |
| 22                                         | 23 | 1.750 (44.5) | 1.770 (45.0) | .826 (21.0)     | .780 (19.8) | 1.550 (39.4) | 1.625 (41.3)          | 1.581 (40.2) | 1.250 (31.8)    | 1.034 (26.3) | 11.000 (279.4) |
| 24                                         | 25 | 1.875 (47.6) | 1.890 (48.0) | .896 (22.8)     | .850 (21.6) | 1.610 (40.9) | 1.750 (44.5)          | 1.960 (49.8) | 1.280 (32.5)    | 1.149 (29.2) | 11.000 (279.4) |

Consult factory for additional entry sizes available.

**APPLICATION NOTES**

- Glenair series 600 Backshell assembly tools are recommended for assembly and installation.
- Swing Arm locks in 45° increments—Sizes 08 thru 24, additional positioning increments are manufacturer's option.
- Captive Screw remains engaged to the body when positioning the Arm. When tightened, the Screw shall not protrude into the inside surfaces.
- Fits Connector Designators: MIL-DTL-38999 Series I, II (F), MIL-DTL-38999 Series III and IV (H), MIL-DTL-5015 (A), and MIL-DTL-26482 (A)
- Metric Dimensions (mm) are indicated in parentheses.



### Glenair Swing-Arm Offers Extremely Fast and Trouble-Free Termination of EMI Shielding:

Choose Straight, 45° or 90° angle, and tighten screws to lock arms in place. Leave the saddle clamp hardware loose.

Next, insert the wire bundle into the backshell to determine if the braid transition angle from the backshell to wire bundle is less than 45°. If it is less than 45°, build up the wire bundle with tape and re-insert wire bundle into backshell to support the transition of overall braid from the backshell to the wire bundle.

Loosely assembly the adapter to the connector and push back the backshell braid. Insert the wire bundle into the adapter and bottom it against the connector. Holding the cable, mark or tag the location where the shield support ring (Glenair Part Number 687-207) will be located. This distance may vary depending on your technique and the flexibility of the wire bundle immediately to the rear of the saddles (Figure 1).

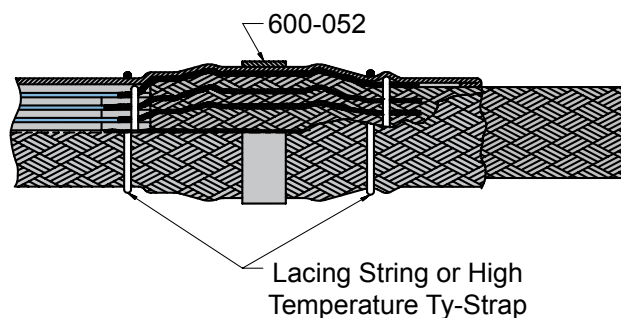


Figure 2

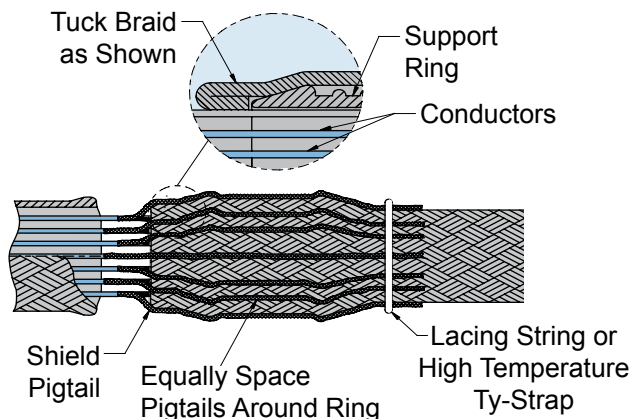


Figure 3

# Composite Thermoplastic User Adjustable Swing-Arm Assembly Technical Information

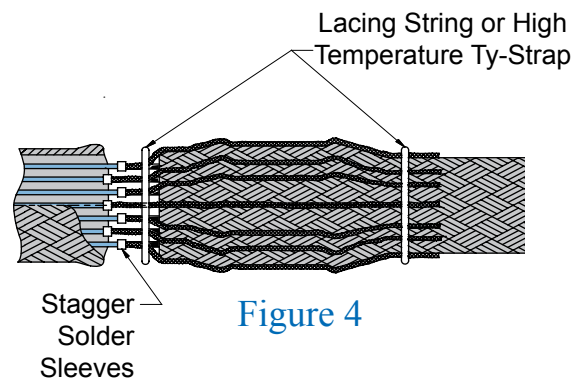
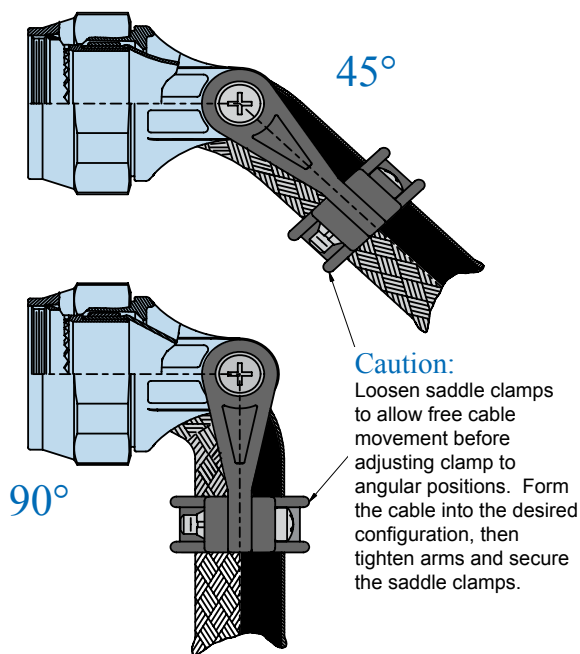


Figure 4

Install Glenair's *Band-it*® band (600-052) between the lace ties onto the center of the support ring as shown in Figure 2. The hand banding tool (600-058) or pneumatic banding tool (600-067) is used for this banding process.

Next, you can wrap the shield support ring assembly with high temperature tape. Place lacing cord, high temperature tape, or high temperature plastic Ty-Straps on the braid transition to the rear of the backshell to secure the overbraid on wire bundle. If you wish, you can cover the overbraid with 102-080 braid sock.

Tighten the adapter to the connector using Glenair 600-091 composite hex coupling torque wrench and related tooling accessories to established torque values. Secure the strain relief saddle onto the wire bundle using TG69 soft jaw pliers. Torque the saddle screws to established values. You can use Fluoropolymer tape wrap or M85049/127 bushing strip as needed to cushion the braid sock under the saddle clamps.

With these few steps, your Swing-Arm strain relief installation is complete!

At the marked location, near the shield support ring, wrap tape around wire bundle for snug fit of shield support ring (Figure 1). Tape wrap is optional.

You can then slide the overall braid from the wire bundle side over the shield support ring, trimming braid ends and tucking extra braid underneath itself for a clean appearance.

For pin connectors, slide the backshell forward, and hand tighten backshell to connector. Then, evenly space shield pigtails (Figure 3) or solder sleeve pigtails (Figure 4) around the shield support ring. Cut the pigtails so that the end of the pigtails slightly beyond end of shield support ring.

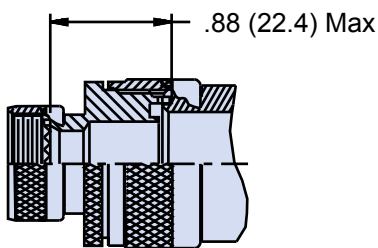
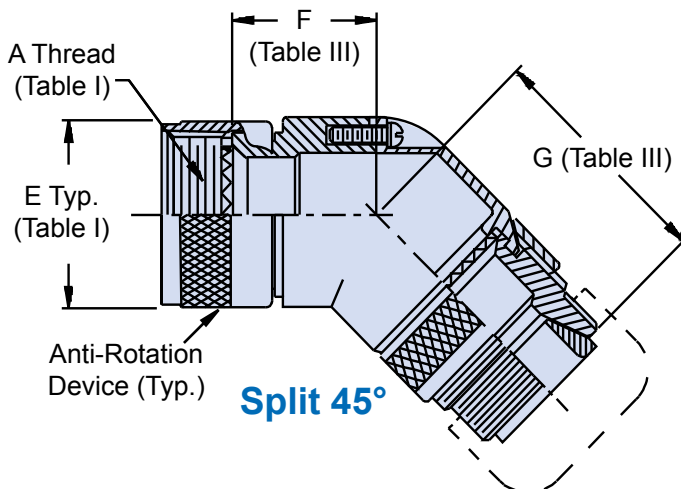
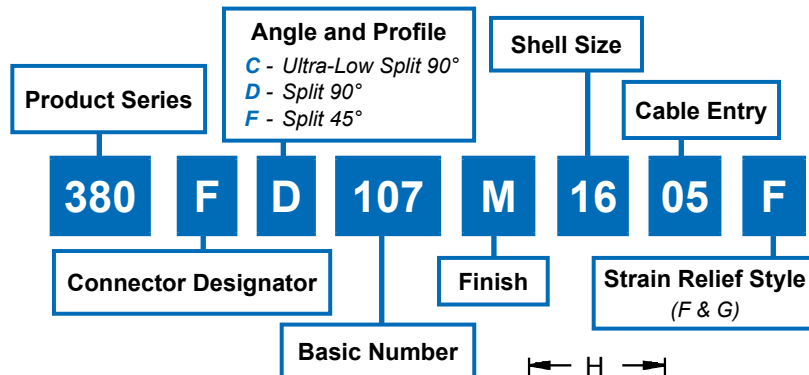
Bring the shield sock from backshell and completely cover the pigtails and support ring. Trim and fold the braid as shown in Figure 2. Lace tie the shield adjacent to support ring ends.

**Connector Designators:**

MIL-DTL-38999 Series I, II (F)  
MIL-DTL-38999 Series III and IV (H)

**F-H**

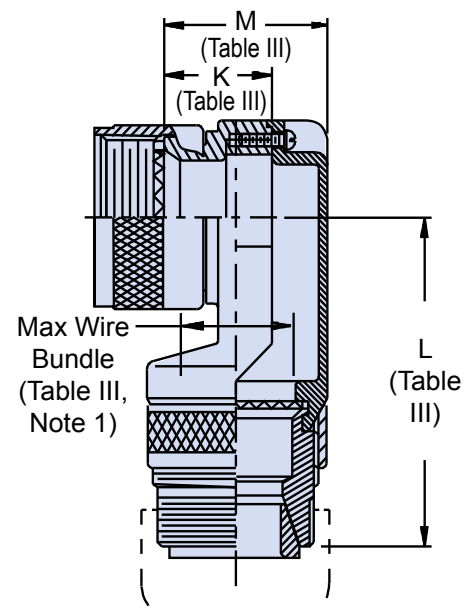
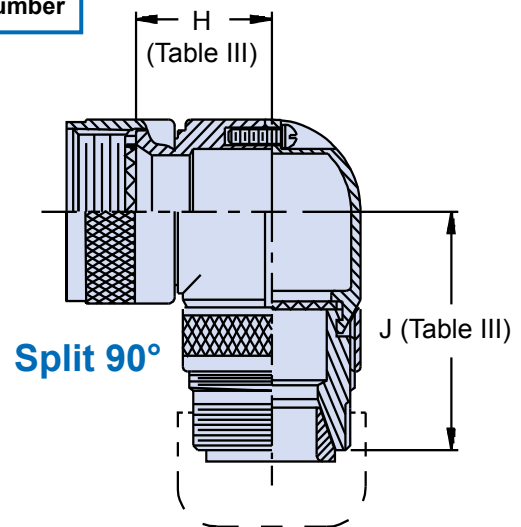
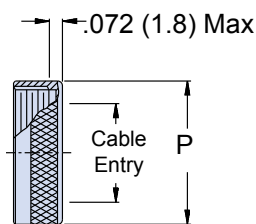
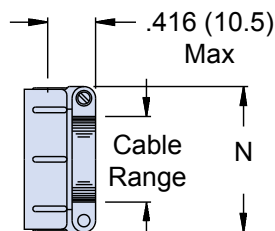
**SELF-LOCKING  
ROTATABLE  
COUPLING  
TYPE D INDIVIDUAL  
OR OVERALL  
SHIELD TERMINATION**



**STYLE 2**  
(See Note 1)

**STYLE F**  
Light Duty  
(Table IV)

**STYLE G**  
Light Duty  
(Table V)



**Ultra Low-Profile  
Split 90°**

**380-107**  
**EMI/RFI Non-Environmental Backshell**  
with Strain Relief  
**Type D - Self-Locking - Rotatable Coupling - Split Shell**



**TABLE III: ELBOW DIMENSIONS AND MAXIMUM WIRE BUNDLE**

| Shell Size | F Max        | G Max        | H Max        | J Max        | K Max       | L Max        | M Max        | Function C Max Wire Bundle |
|------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|----------------------------|
| 08/09      | .596 (15.1)  | 1.730 (43.9) | .836 (21.2)  | 1.670 (42.4) | .496 (12.6) | 1.920 (48.8) | .837 (21.3)  | .250 (6.4)                 |
| 10/11      | .656 (16.7)  | 1.785 (45.3) | .906 (23.0)  | 1.725 (43.8) | .426 (10.8) | 2.080 (52.8) | .887 (22.5)  | .375 (9.5)                 |
| 12/13      | .716 (18.2)  | 1.855 (47.1) | .966 (24.5)  | 1.795 (45.6) | .426 (10.8) | 2.080 (52.8) | .887 (22.5)  | .375 (9.5)                 |
| 14/15      | .776 (19.7)  | 1.887 (47.9) | 1.026 (26.1) | 1.827 (46.4) | .436 (11.1) | 2.150 (54.6) | .987 (25.1)  | .500 (12.7)                |
| 16/17      | .836 (21.2)  | 1.987 (50.5) | 1.086 (27.6) | 1.927 (48.9) | .576 (14.6) | 2.200 (55.9) | 1.137 (28.9) | .625 (15.9)                |
| 18/19      | .906 (23.0)  | 2.045 (51.9) | 1.156 (29.4) | 1.985 (50.4) | .796 (20.2) | 2.230 (56.6) | 1.337 (34.0) | .625 (15.9)                |
| 20/21      | .976 (24.8)  | 2.106 (53.5) | 1.216 (30.9) | 2.046 (52.0) | .796 (20.2) | 2.230 (56.6) | 1.337 (34.0) | .625 (15.9)                |
| 22/23      | 1.036 (26.3) | 2.167 (55.0) | 1.276 (32.4) | 2.107 (53.5) | .696 (17.7) | 2.380 (60.5) | 1.337 (34.0) | .750 (19.1)                |
| 24/25      | 1.096 (27.8) | 2.225 (56.5) | 1.336 (33.9) | 2.165 (55.0) | .696 (17.7) | 2.380 (60.5) | 1.337 (34.0) | .750 (19.1)                |

**TABLE II: FINISHES**

| Symbol    | Finish                                              |
|-----------|-----------------------------------------------------|
| <b>B</b>  | Cadmium Plate, Olive Drab                           |
| <b>C</b>  | Anodize, Black                                      |
| <b>GB</b> | Black Anodize, Hard Coat                            |
| <b>M</b>  | Electroless Nickel                                  |
| <b>N</b>  | Cad Plate, Olive Drab over Electroless Nickel       |
| <b>NF</b> | Cadmium Plate, Olive Drab over Electroless Nickel   |
| <b>MT</b> | Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer |
| <b>ZN</b> | Zinc-Nickel                                         |

**TABLE IV: CABLE RANGE**

| Dash No. | N Max        | Cable Range  |              |
|----------|--------------|--------------|--------------|
|          |              | Min          | Max          |
| 02       | .968 (24.6)  | .125 (3.2)   | .250 (6.4)   |
| 03       | 1.046 (26.6) | .250 (6.4)   | .375 (9.5)   |
| 04       | 1.156 (29.4) | .312 (7.9)   | .500 (12.7)  |
| 05       | 1.218 (30.9) | .437 (11.1)  | .625 (15.9)  |
| 06       | 1.343 (34.1) | .562 (14.3)  | .750 (19.1)  |
| 07       | 1.468 (37.3) | .687 (17.4)  | .875 (22.2)  |
| 08       | 1.593 (40.5) | .812 (20.6)  | 1.000 (25.4) |
| 10       | 1.843 (46.8) | 1.062 (27.0) | 1.250 (31.8) |

**TABLE V: CABLE RANGE**

| Dash No. | N Max        | Cable Entry Max |
|----------|--------------|-----------------|
| 02       | .656 (16.7)  | .125 (3.2)      |
| 03       | .781 (19.8)  | .250 (6.4)      |
| 04       | .906 (23.0)  | .375 (9.5)      |
| 05       | 1.031 (26.2) | .500 (12.7)     |
| 06       | 1.156 (29.4) | .625 (15.9)     |
| 07       | 1.281 (32.5) | .750 (19.1)     |
| 08       | 1.406 (35.7) | .875 (22.2)     |
| 09       | 1.531 (38.9) | 1.000 (25.4)    |
| 10       | 1.656 (42.1) | 1.125 (28.6)    |

### APPLICATION NOTES

1. When maximum cable entry is exceeded (not available in Function C), Style 2 will be supplied. Dimensions F, G, H and J will not apply. Please consult factory.
2. Cable range is defined as the accommodations range for the wire bundle or cable.
3. Dimensions shown are not intended for inspection criteria.
4. Angular function "C", low-profile split elbow, not available with "S" connector designator.
5. Metric dimensions (mm) are indicated in parentheses.

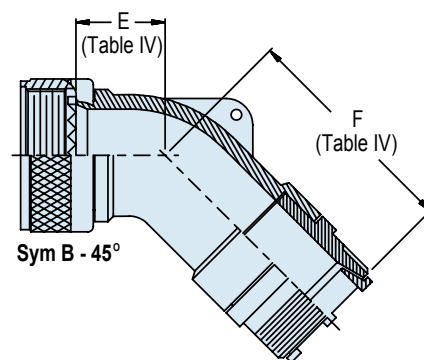
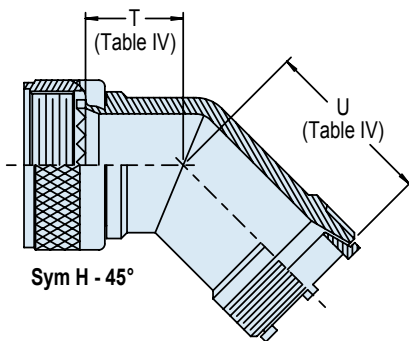
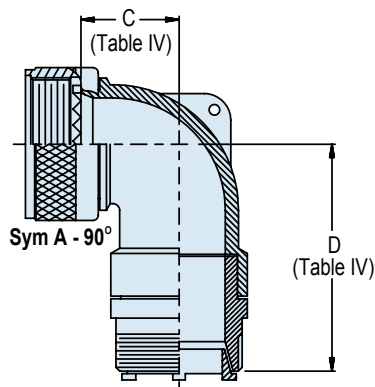
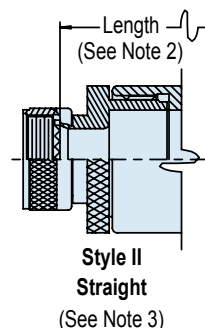
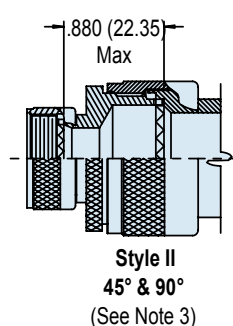
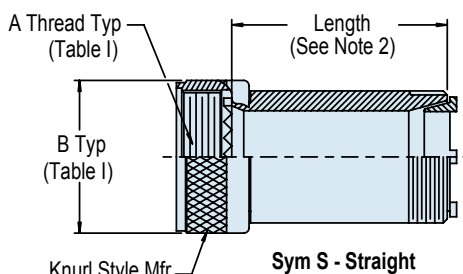
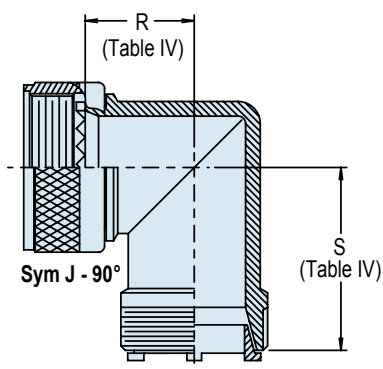
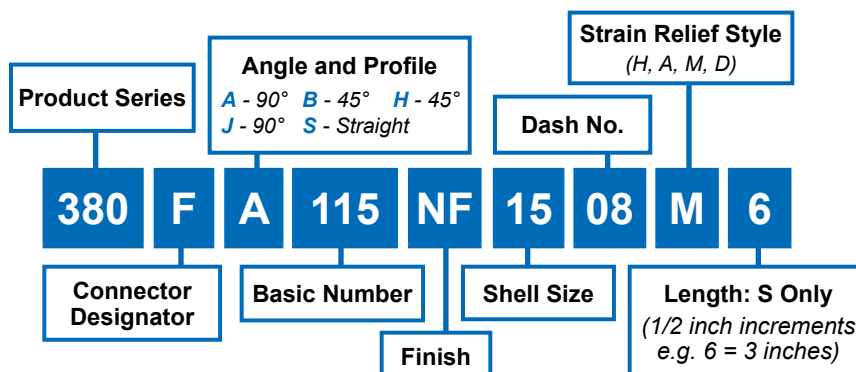
### CONNECTOR DESIGNATORS

MIL-DTL-38999 Series I, II (F)  
MIL-DTL-38999 Series III and IV (H)

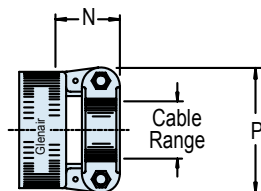
## F-H

### ROTATABLE COUPLING

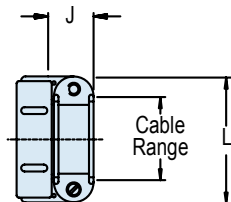
### TYPE B INDIVIDUAL AND/OR OVERALL SHIELD TERMINATION



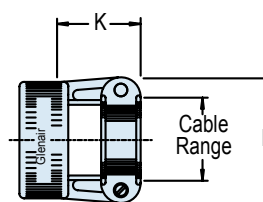
#### STYLE H Heavy Duty (Table X)



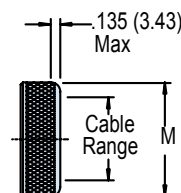
#### STYLE A Medium Duty (Table XI)



#### STYLE M Medium Duty (Table XI)



#### STYLE D Medium Duty (Table XI)



# 380-115

## EMI/RFI Non-Environmental Backshell with Strain Relief

### Type B - Rotatable Coupling - Low Profile



TABLE III: ELBOW DIMENSIONS

| Shell Size |         |    | C<br>Max     | D<br>Max     | E<br>Max     | F<br>Max     | R<br>Max      | S<br>Max      | T<br>Max      | U<br>Max      |
|------------|---------|----|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|
| A          | F, L, S | H  |              |              |              |              |               |               |               |               |
| 08         | 08      | 09 | .500 (12.7)  | 1.684 (42.8) | .457 (11.6)  | 1.674 (42.5) | .910 (23.11)  | 1.910 (48.77) | .780 (19.81)  | 1.780 (45.21) |
| 10         | 10      | 11 | .595 (15.1)  | 1.804 (45.8) | .520 (13.2)  | 1.734 (44.0) | .970 (24.64)  | 1.970 (50.04) | .810 (20.57)  | 1.810 (45.97) |
| 12         | 12      | 13 | .610 (15.5)  | 1.824 (46.3) | .582 (14.8)  | 1.794 (45.6) | 1.030 (26.16) | 2.030 (50.56) | .830 (21.08)  | 1.830 (46.48) |
| 14         | 14      | 15 | .700 (17.8)  | 1.894 (48.1) | .645 (16.4)  | 1.884 (47.9) | 1.090 (27.68) | 2.090 (53.09) | .850 (21.59)  | 1.850 (46.99) |
| 16         | 16      | 17 | .885 (22.5)  | 1.984 (50.4) | .738 (18.7)  | 1.994 (50.6) | 1.150 (29.21) | 2.150 (54.61) | .880 (22.35)  | 1.880 (47.75) |
| 18         | 18      | 19 | .975 (24.8)  | 2.154 (54.7) | .926 (23.5)  | 2.184 (55.5) | 1.200 (30.48) | 2.200 (55.88) | .900 (22.86)  | 1.900 (48.26) |
| 20         | 20      | 21 | .975 (24.8)  | 2.154 (54.7) | .926 (23.5)  | 2.184 (55.5) | 1.270 (32.26) | 2.270 (57.66) | .930 (23.62)  | 1.930 (49.02) |
| 22         | 22      | 23 | 1.125 (28.6) | 2.264 (57.5) | 1.020 (25.9) | 2.334 (59.3) | 1.330 (33.78) | 2.330 (59.18) | .950 (24.13)  | 1.950 (49.53) |
| 24         | 24      | 25 | 1.125 (28.6) | 2.264 (57.5) | 1.020 (25.9) | 2.334 (59.3) | 1.390 (35.31) | 2.390 (60.71) | .980 (24.13)  | 1.980 (50.29) |
| 28         |         |    | 1.225 (31.1) | 2.434 (61.8) | 1.145 (29.1) | 2.384 (60.6) | 1.460 (37.08) | 2.460 (62.48) | 1.150 (29.21) | 2.150 (54.61) |
| 32         |         |    | 1.575 (40.0) | 2.684 (68.2) | 1.207 (30.7) | 2.484 (63.1) | 1.590 (40.38) | 2.590 (65.79) | 1.210 (30.73) | 2.210 (56.13) |
| 36         |         |    | 1.775 (45.1) | 2.684 (68.2) | 1.238 (31.4) | 2.574 (65.4) | 1.690 (42.93) | 2.690 (68.33) | 1.240 (31.50) | 2.240 (56.90) |
| 40         |         |    | N/A          | N/A          | N/A          | N/A          | 1.900 (48.26) | 2.200 (55.88) | 1.250 (31.75) | 1.590 (40.38) |
| 44         |         |    | N/A          | N/A          | N/A          | N/A          | 2.030 (51.56) | 2.360 (59.94) | 1.300 (33.02) | 1.640 (41.65) |
| 48         |         |    | N/A          | N/A          | N/A          | N/A          | 2.180 (53.37) | 2.530 (64.26) | 1.370 (34.79) | 1.720 (43.68) |
| 61         |         |    | N/A          | N/A          | N/A          | N/A          | 1.290 (32.76) | 1.490 (37.85) | .880 (22.35)  | 1.100 (27.94) |

TABLE IV: CABLE CLAMP CABLE RANGE

| Dash<br>No. | N<br>Max     | P<br>Max     | Cable Range  |              |
|-------------|--------------|--------------|--------------|--------------|
|             |              |              | Min          | Max          |
| 04          | .780 (19.8)  | .957 (24.3)  | .125 (3.2)   | .312 (7.9)   |
| 06          | .780 (19.8)  | 1.145 (29.1) | .250 (6.4)   | .437 (11.1)  |
| 08          | .780 (19.8)  | 1.332 (33.8) | .312 (7.9)   | .562 (14.3)  |
| 10          | .780 (19.8)  | 1.332 (33.8) | .350 (8.9)   | .625 (15.9)  |
| 12          | .811 (20.6)  | 1.551 (39.4) | .500 (12.7)  | .750 (19.1)  |
| 16          | .905 (23.0)  | 1.770 (45.0) | .625 (15.9)  | .937 (23.8)  |
| 20          | 1.092 (27.7) | 2.113 (53.7) | .875 (22.2)  | 1.250 (31.8) |
| 24          | 1.124 (28.5) | 2.363 (60.0) | 1.000 (25.4) | 1.375 (34.9) |
| 28          | 1.399 (35.5) | 2.770 (70.4) | 1.250 (31.8) | 1.625 (41.3) |
| 32          | 1.399 (35.5) | 3.020 (76.7) | 1.437 (36.5) | 1.875 (47.6) |

TABLE IV (Continued): CABLE CLAMP CABLE RANGE

| Dash<br>No. | W<br>Max     | X<br>Max     | Y<br>Max     | Z<br>Max     | Cable Range  |              |
|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
|             |              |              |              |              | Min**        | Max          |
| 03*         | .437 (11.1)  | .760 (19.3)  | .843 (21.4)  | .630 (16.0)  | .156 (4.0)   | .250 (6.4)   |
| 04*         | .437 (11.1)  | .760 (19.3)  | .906 (23.0)  | .755 (19.2)  | .188 (4.8)   | .312 (7.9)   |
| 06          | .500 (12.7)  | .760 (19.3)  | 1.093 (27.8) | .942 (23.9)  | .281 (7.1)   | .438 (11.1)  |
| 08          | .563 (14.3)  | .760 (19.3)  | 1.187 (30.1) | 1.067 (27.1) | .344 (8.7)   | .562 (14.3)  |
| 10          | .563 (14.3)  | .760 (19.3)  | 1.281 (32.5) | 1.192 (30.3) | .375 (9.5)   | .625 (15.9)  |
| 12          | .563 (14.3)  | .760 (19.3)  | 1.500 (38.1) | 1.380 (35.1) | .438 (11.1)  | .750 (19.1)  |
| 16          | .656 (16.7)  | 1.073 (27.3) | 1.719 (43.7) | 1.535 (39.0) | .562 (14.3)  | .938 (23.8)  |
| 20          | .656 (16.7)  | 1.323 (33.6) | 2.062 (52.4) | 1.848 (46.9) | .750 (19.1)  | 1.250 (31.8) |
| 24          | .656 (16.7)  | 1.323 (33.6) | 2.312 (58.7) | 2.255 (57.3) | .781 (19.8)  | 1.375 (34.9) |
| 28          | 1.188 (30.2) | 1.572 (39.9) | 2.719 (69.1) | 2.505 (63.6) | .969 (24.6)  | 1.625 (41.3) |
| 32*         | 1.187 (30.1) | 1.572 (39.9) | 2.969 (75.4) | 2.755 (70.0) | 1.125 (28.6) | 1.875 (47.6) |
| 40*         | 1.125 (28.6) | 1.572 (39.9) | 3.531 (89.7) | 3.255 (82.7) | 1.469 (37.3) | 2.375 (60.3) |

\* Not available in Style M clamp.

\*\* Not Applicable Style D

TABLE II: FINISHES

| Sym  | Finish                                                 |
|------|--------------------------------------------------------|
| B    | Cadmium Plate, Olive Drab                              |
| C*   | Anodize, Black                                         |
| G*   | Hard Coat, Anodic                                      |
| J    | Gold Iridite over Cadmium Plate over Nickel            |
| LF   | Cadmium Plate, Bright over Electroless Nickel          |
| M    | Electroless Nickel                                     |
| N    | Cadmium Plate, Olive Drab over Nickel                  |
| NC   | Zinc Cobalt, Dark Olive Drab                           |
| NF   | Cad/O.D. over Electroless Nickel (1000 Hr. Salt Spray) |
| T    | Cadmium Plate, Bright Dip over Nickel                  |
| U**  | Cadmium Plate, Black                                   |
| UC   | Zinc Cobalt, Black                                     |
| Z1** | Passivate                                              |
| ZN   | Zinc Nickel, Olive Drab                                |

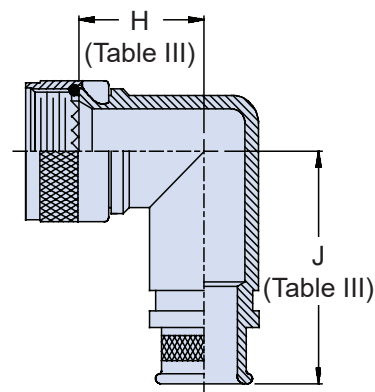
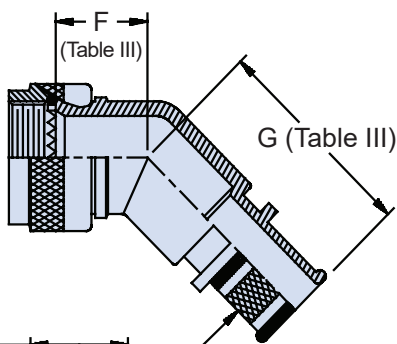
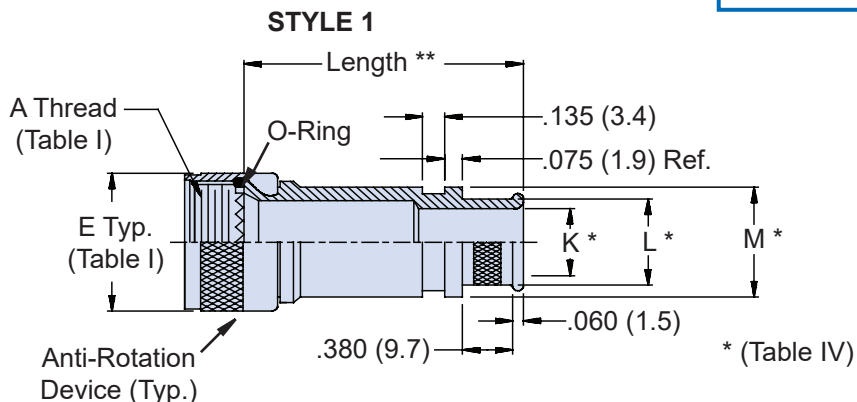
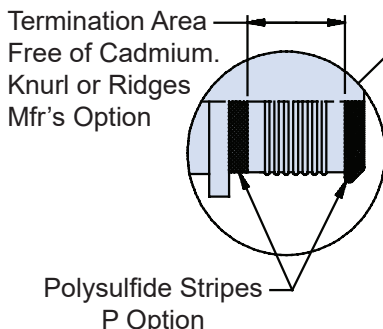
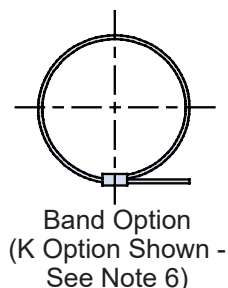
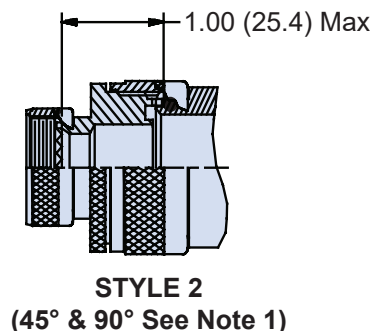
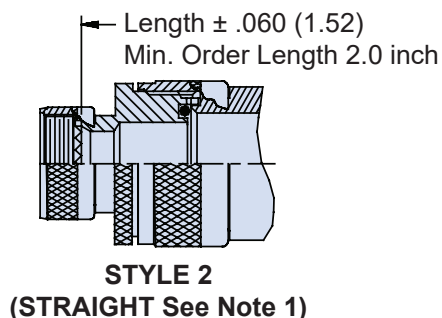
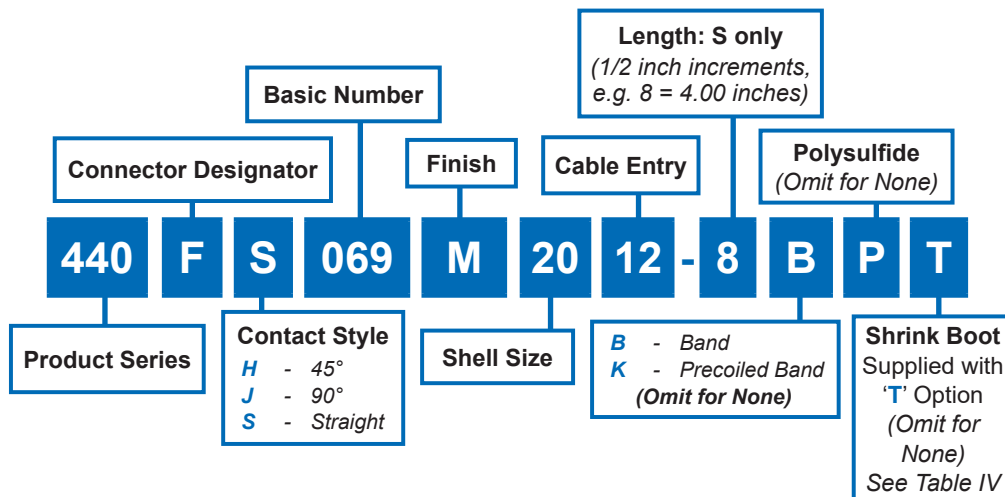
APPLICATION NOTES

1. Assembly identified with manufacturer's name and part number, space permitting.
2. Standard minimum length for Style I is 1.500 inches, Style II standard length is 2.000 inches. For shorter lengths consult factory. Applies to Symbol S only.
3. When cable range exceeds Max Entry shown in Table IV, Style II will be supplied. Note: C, D, E, F, R, S, T and U dimensions do not apply to Style II.
4. Metric dimensions are in parentheses.
5. For effective grounding, connector with conductive finish should be used.
6. Glenair Series 600 Backshell Assembly Tools are recommended for assembly and installation.
7. Material/Finish:  
Elbow, adapter, coupling nut, ferrules and clamp - Aluminum alloy or SST/Table II.  
Hardware - CRES/Passivate
8. Angular functions A and B are currently not available in shell sizes 40, 44 and 61. Consult factory for suitable alternatives.

### CONNECTOR DESIGNATORS

**F-H**

**SELF-LOCKING  
ROTATABLE  
COUPLING**



**STYLE 1**  
\*\* Length ± .060 (1.52)  
Min. Order Length 1.5 inch  
(See Note 4)

440-069

# EMI/RFI Banding and Shrink Boot Adapter Self-Locking Rotatable Coupling - Standard Profile



Connector  
Accessories

TABLE III: ELBOW DIMENSIONS

| Shell Size<br>Conn. Desig. |    | F            | G            | H            | J            |
|----------------------------|----|--------------|--------------|--------------|--------------|
| A-F-L                      | H  | Max          | Max          | Max          | Max          |
| 08                         | 09 | .806 (20.5)  | 1.038 (26.4) | .906 (23.0)  | 1.146 (29.1) |
| 10                         | 11 | .832 (21.1)  | 1.064 (27.0) | .966 (24.5)  | 1.210 (30.7) |
| 12                         | 13 | .856 (21.7)  | 1.088 (27.6) | 1.026 (26.1) | 1.268 (32.2) |
| 14                         | 15 | .882 (22.4)  | 1.114 (28.3) | 1.076 (27.3) | 1.330 (33.8) |
| 16                         | 17 | .908 (23.1)  | 1.150 (29.2) | 1.136 (28.9) | 1.392 (35.4) |
| 18                         | 19 | .927 (23.5)  | 1.190 (30.2) | 1.176 (29.9) | 1.438 (36.5) |
| 20                         | 21 | .953 (24.2)  | 1.250 (31.8) | 1.236 (31.4) | 1.500 (38.1) |
| 22                         | 23 | .979 (24.9)  | 1.320 (33.5) | 1.296 (32.9) | 1.562 (39.7) |
| 24                         | 25 | 1.004 (25.5) | 1.380 (35.1) | 1.356 (34.4) | 1.625 (41.3) |
| 28                         |    | 1.197 (30.4) | 1.500 (38.1) | 1.422 (36.1) | 1.654 (42.0) |
| 32                         |    | 1.280 (32.5) | 1.620 (41.1) | 1.545 (39.2) | 1.777 (45.1) |
| 36                         |    | 1.294 (32.9) | 1.750 (44.5) | 1.652 (42.0) | 1.844 (46.8) |
| 40                         |    | 1.320 (33.5) | 1.870 (47.5) | 1.960 (49.8) | 2.070 (52.6) |

1. When maximum cable entry is exceeded, Style 2 will be supplied. Dimensions F, G, H and J will not apply. Please consult factory.
2. Metric dimensions (mm) are indicated in parentheses.
3. Interface O-Ring not supplied with Connector Designator A.
4. Consult factory for shorter lengths on straight backshells.
5. See G-5 for Shrink Boot Reference Information.
6. Backshells supplied with 600-052-\* band, see Glenair Series 600 Tool Catalog for installation.

TABLE IV: CABLE ENTRY

| Dash No. | K            | L            | M            | Shrink Boot * |
|----------|--------------|--------------|--------------|---------------|
| 01       | .125 (3.2)   | .250 (6.4)   | .312 (7.9)   | 770-003S111   |
| 31       | .188 (4.8)   | .312 (7.9)   | .374 (9.5)   | 770-003S111   |
| 02       | .250 (6.4)   | .375 (9.5)   | .437 (11.1)  | 770-003S112   |
| 32       | .312 (7.9)   | .438 (11.1)  | .500 (12.7)  | 770-003S112   |
| 03       | .375 (9.5)   | .500 (12.7)  | .562 (14.3)  | 770-003S112   |
| 33       | .438 (11.1)  | .562 (14.3)  | .624 (15.8)  | 770-001S104   |
| 04       | .500 (12.7)  | .625 (15.9)  | .687 (17.4)  | 770-001S104   |
| 34       | .562 (14.3)  | .688 (17.5)  | .750 (19.1)  | 770-001S104   |
| 05       | .625 (15.9)  | .750 (19.1)  | .812 (20.6)  | 770-001S104   |
| 35       | .688 (17.5)  | .812 (20.6)  | .874 (22.2)  | 770-001S105   |
| 06       | .750 (19.1)  | .875 (22.2)  | .937 (23.8)  | 770-001S105   |
| 36       | .812 (20.6)  | .938 (23.8)  | 1.000 (25.4) | 770-001S105   |
| 07       | .875 (22.2)  | 1.000 (25.4) | 1.062 (27.0) | 770-001S105   |
| 37       | .938 (23.8)  | 1.062 (27.0) | 1.124 (28.5) | 770-001S106   |
| 08       | 1.000 (25.4) | 1.125 (28.6) | 1.187 (30.1) | 770-001S106   |
| 38       | 1.062 (27.0) | 1.188 (30.2) | 1.250 (31.8) | 770-001S107   |
| 09       | 1.125 (28.6) | 1.250 (31.8) | 1.312 (33.3) | 770-001S107   |
| 10       | 1.250 (31.8) | 1.375 (34.9) | 1.437 (36.5) | 770-001S107   |
| 11       | 1.375 (34.9) | 1.500 (38.1) | 1.562 (39.7) | 770-001S107   |
| 12       | 1.500 (38.1) | 1.625 (41.3) | 1.687 (42.8) | 770-001S108   |
| 13       | 1.625 (41.3) | 1.750 (44.5) | 1.812 (46.0) | 770-001S108   |
| 14       | 1.750 (44.5) | 1.875 (47.6) | 1.937 (49.2) | 770-001S109   |
| 15       | 1.875 (47.6) | 2.000 (50.8) | 2.062 (52.4) | 770-001S109   |
| 16       | 2.000 (50.8) | 2.125 (54.0) | 2.187 (55.5) |               |

\* Glenair Shrink Boot Supplied with "T" Option  
(see Part Number Development)

TABLE II: FINISHES

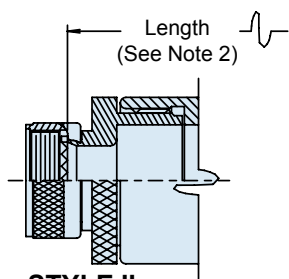
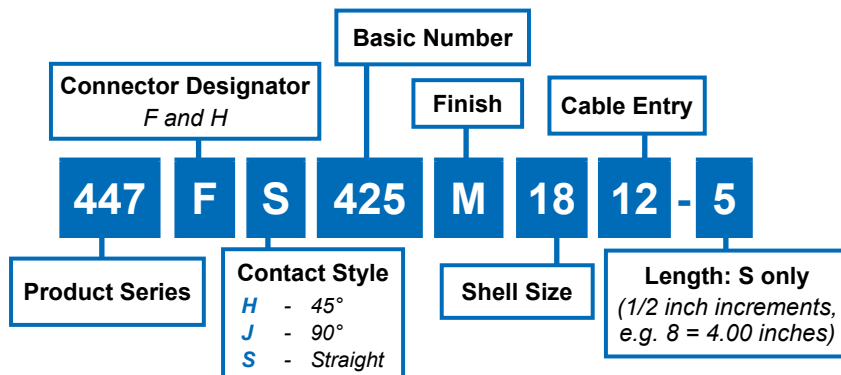
| Symbol | Finish                                              |
|--------|-----------------------------------------------------|
| B      | Cadmium Plate, Olive Drab                           |
| C      | Anodize, Black                                      |
| GB     | Black Anodize, Hard Coat                            |
| M      | Electroless Nickel                                  |
| N      | Cad Plate, Olive Drab over Electroless Nickel       |
| NF     | Cadmium Plate, Olive Drab over Electroless Nickel   |
| MT     | Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer |
| Z1     | Stainless Steel Passivate                           |
| ZL     | CRES, Electroless Nickel                            |
| ZN     | Zinc-Nickel                                         |

### Connector Designators:

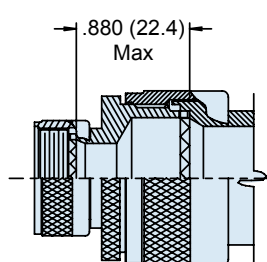
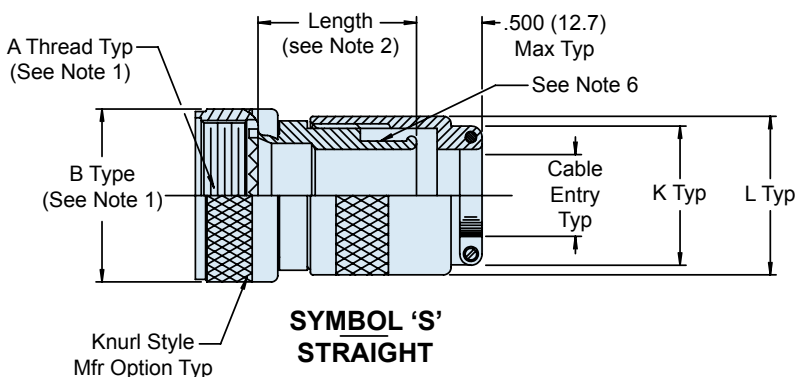
MIL-DTL-38999 Series I, II (F)  
MIL-DTL-38999 Series III and IV (H)

## F-H

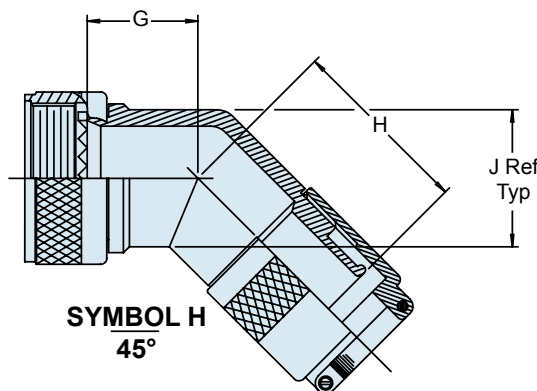
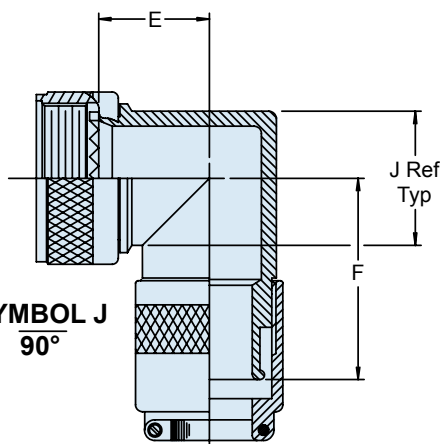
### ROTATABLE COUPLING



**STYLE II**  
(See Note 3)  
**STRAIGHT**



**SYMBOL J**  
**90°**



### APPLICATION NOTES

- Standard minimum length for Style I is 1 inch (25.4), Style II is 1.5 inches (38.1). Consult factory about shorter lengths (Note: Applies to Symbol S Straight only).
- When cable diameter exceeds "Max Dash No" in Table I, Style II will be supplied.
- For effective grounding, connector with conductive finish should be used.
- Glenair Series 600 Backshell Assembly tools are recommended for assembly and installation.
- For shield termination see Glenair Drawings 600-050 and 600-052.
- Material/Finish:  
Adapters, Elbows, Coupling Nuts, Ferrule, Clamp - Al Alloy/See Table I  
Hardware - Cres/Passivate
- Metric dimensions (mm) are indicated in parentheses.

# 447-425

## EMI/RFI Non-Environmental Band-in-a-Can Backshell With Cable Clamp Strain-Relief Rotatable Coupling - Standard Profile



| TABLE III: BACKSHELL DIMENSIONS (Continued Below) |    |               |               |               |               |               |               |               |
|---------------------------------------------------|----|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Shell Size                                        |    |               |               |               |               |               |               |               |
| A,F,L,S                                           | H  | E Max.        | F Max.        | G Max.        | H Max.        | M Max.        | N Max.        | P Max.        |
| 08                                                | 09 | .639 (16.23)  | 1.380 (35.05) | .750 (19.05)  | 1.500 (38.10) | .817 (20.75)  | 1.057 (26.85) | 1.125 (28.58) |
| 10                                                | 11 | .664 (16.87)  | 1.410 (35.81) | .810 (20.57)  | 1.550 (39.37) | .861 (21.87)  | 1.111 (28.22) | 1.250 (31.75) |
| 12                                                | 13 | .688 (17.48)  | 1.430 (36.32) | .870 (22.10)  | 1.610 (40.89) | .911 (23.14)  | 1.161 (29.49) | 1.375 (34.93) |
| 14                                                | 15 | .705 (17.91)  | 1.460 (37.08) | .920 (23.37)  | 1.680 (42.67) | .965 (24.51)  | 1.215 (30.86) | 1.500 (38.10) |
| 16                                                | 17 | .732 (18.59)  | 1.480 (37.59) | .980 (24.89)  | 1.740 (44.20) | 1.264 (32.11) | 1.625 (41.28) | 1.875 (47.63) |
| 18                                                | 19 | .748 (19.00)  | 1.490 (37.85) | 1.020 (25.91) | 1.760 (44.70) | 1.064 (27.03) | 1.314 (33.38) | 1.750 (44.45) |
| 20                                                | 21 | .773 (19.63)  | 1.510 (38.35) | 1.080 (27.43) | 1.820 (46.23) | 1.118 (28.40) | 1.368 (34.75) | 1.875 (47.63) |
| 22                                                | 23 | .800 (20.32)  | 1.550 (39.37) | 1.140 (28.96) | 1.900 (48.26) | 1.172 (29.77) | 1.422 (36.12) | 2.000 (50.80) |
| 24                                                | 25 | .823 (20.90)  | 1.580 (40.13) | 1.200 (30.48) | 1.970 (50.04) | 1.221 (31.01) | 1.471 (37.36) | 2.125 (53.98) |
| 28                                                |    | .930 (23.62)  | 1.610 (40.89) | 1.380 (35.05) | 2.000 (40.80) | 1.271 (32.28) | 1.522 (38.66) | 2.250 (57.15) |
| 32                                                |    | .980 (24.89)  | 1.610 (40.89) | 1.500 (38.10) | 2.000 (40.80) | 1.375 (34.93) | 1.626 (41.30) | 2.500 (63.50) |
| 36                                                |    | 1.040 (26.42) | 1.610 (40.89) | 1.620 (41.15) | 2.040 (51.82) | TBD           | TBD           | TBD           |
| 40                                                |    | 1.100 (27.94) | 1.610 (40.89) | 1.740 (44.20) | 2.150 (54.61) | TBD           | TBD           | TBD           |
| 44                                                |    | 1.150 (29.21) | 1.610 (40.89) | 1.870 (47.50) | 2.280 (57.91) | TBD           | TBD           | TBD           |
| 48                                                |    | 1.200 (30.48) | 1.640 (41.66) | 1.990 (50.55) | 2.400 (60.96) | TBD           | TBD           | TBD           |
| 61                                                |    | .880 (22.35)  | 1.580 (40.13) | 1.260 (32.00) | 1.970 (50.04) | 1.221 (31.01) | 1.417 (35.99) | 2.125 (53.98) |

| TABLE III: BACKSHELL DIMENSIONS (Continued From Above) |    |               |               |               |               |               |               |               |              |                  |
|--------------------------------------------------------|----|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|------------------|
| Shell Size                                             |    |               |               |               |               |               |               |               |              | Function C       |
| A,F,L,S                                                | H  | R Max.        | S Max.        | T Max.        | U Max.        | V Max.        | W Max.        | Y Max.        | Z Ref.       | Max. Wire Bundle |
| 08                                                     | 09 | 1.375 (34.93) | .520 (13.21)  | 1.840 (46.74) | .680 (17.27)  | 1.780 (45.21) | .681 (17.30)  | 2.120 (53.85) | .340 (8.64)  | .250 (6.35)      |
| 10                                                     | 11 | 1.500 (38.10) | .520 (13.21)  | 1.900 (48.26) | .750 (19.05)  | 1.840 (46.74) | .731 (18.57)  | 2.280 (57.91) | .270 (6.86)  | .375 (9.53)      |
| 12                                                     | 13 | 1.625 (41.28) | .560 (14.22)  | 1.970 (50.04) | .810 (20.57)  | 1.910 (48.51) | .731 (18.57)  | 2.280 (57.91) | .270 (6.86)  | .375 (9.53)      |
| 14                                                     | 15 | 1.750 (44.45) | .620 (15.75)  | 2.000 (50.80) | .870 (22.10)  | 1.940 (49.28) | .831 (21.11)  | 2.350 (59.69) | .280 (7.11)  | .500 (12.70)     |
| 16                                                     | 17 | .680 (17.27)  | 2.100 (53.34) | .930 (23.62)  | 2.040 (51.82) | 2.040 (51.82) | .981 (24.92)  | 2.400 (60.96) | .420 (10.67) | .625 (15.88)     |
| 18                                                     | 19 | 2.000 (40.80) | .750 (19.05)  | 2.160 (54.86) | 1.000 (25.40) | 2.100 (53.34) | 1.181 (30.00) | 2.430 (61.72) | .640 (16.26) | .625 (15.88)     |
| 20                                                     | 21 | 2.125 (53.98) | .820 (20.83)  | 2.220 (56.39) | 1.060 (26.92) | 2.160 (54.86) | 1.181 (30.00) | 2.430 (61.72) | .640 (16.26) | .625 (15.88)     |
| 22                                                     | 23 | 2.250 (57.15) | .880 (22.35)  | 2.280 (57.91) | 1.120 (28.45) | 2.220 (56.39) | 1.181 (30.00) | 2.580 (65.53) | .540 (13.72) | .750 (19.05)     |
| 24                                                     | 25 | 2.375 (60.33) | .940 (23.88)  | 2.340 (59.44) | 1.180 (29.97) | 2.280 (57.91) | 1.181 (30.00) | 2.580 (65.53) | .540 (13.72) | .750 (19.05)     |
| 28                                                     |    | 2.500 (63.50) | 1.090 (27.69) | 2.460 (62.48) | 1.340 (34.04) | 2.450 (62.23) | TBD           | TBD           | TBD          | TBD              |
| 32                                                     |    | 2.750 (69.85) | TBD           | TBD           | TBD           | TBD           | TBD           | TBD           | TBD          | TBD              |
| 36                                                     |    | TBD           | TBD           | TBD           | 1.590 (40.39) | 2.680 (68.07) | TBD           | TBD           | TBD          | TBD              |
| 40                                                     |    | TBD           | TBD           | TBD           | 1.720 (43.69) | 2.890 (73.41) | TBD           | TBD           | TBD          | TBD              |
| 44                                                     |    | TBD           | TBD           | TBD           | TBD           | TBD           | TBD           | TBD           | TBD          | TBD              |
| 48                                                     |    | TBD           | TBD           | TBD           | TBD           | TBD           | TBD           | TBD           | TBD          | TBD              |
| 61                                                     |    | 2.375 (60.33) | .940 (23.88)  | TBD           | 1.180 (29.97) | 2.290 (58.17) | 1.181 (30.00) | 2.580 (65.53) | .540 (13.72) | .750 (19.05)     |

| TABLE IV: CABLE ENTRY |              |              |              |              |
|-----------------------|--------------|--------------|--------------|--------------|
| Dash No.              | K Max.       | L Max.       | Cable Entry  |              |
|                       |              |              | Min.         | Max.         |
| 10                    | .220 (5.6)   | 1.000 (25.4) | .130 (3.3)   | .250 (6.4)   |
| 12                    | .310 (7.9)   | 1.250 (31.8) | .250 (6.4)   | .380 (9.7)   |
| 14                    | .440 (11.2)  | 1.340 (34.0) | .310 (7.9)   | .440 (11.2)  |
| 16                    | .560 (14.2)  | 1.470 (37.3) | .375 (9.5)   | .630 (16.0)  |
| 18                    | .630 (16.0)  | 1.560 (39.6) | .560 (14.2)  | .960 (17.5)  |
| 20                    | .750 (19.1)  | 1.620 (41.1) | .630 (16.0)  | .750 (19.1)  |
| 22                    | .880 (22.4)  | 1.750 (44.5) | .750 (19.1)  | .880 (22.4)  |
| 24                    | 1.000 (25.4) | 1.870 (47.5) | .880 (22.4)  | 1.000 (25.4) |
| 28                    | 1.060 (26.9) | 1.970 (50.0) | 1.000 (25.4) | 1.130 (28.7) |
| 32                    | 1.190 (30.2) | 2.090 (53.1) | 1.130 (28.7) | 1.250 (31.8) |

| TABLE II: FINISHES |                                                                     |
|--------------------|---------------------------------------------------------------------|
| Symbol             | Finish                                                              |
| B                  | Cadmium Plate, Olive Drab                                           |
| C                  | Anodize, Black                                                      |
| GB                 | Black Anodize, Hard Coat                                            |
| M                  | Electroless Nickel                                                  |
| N                  | Cad Plate, Olive Drab over Electroless Nickel                       |
| NF                 | Cadmium Plate, Olive Drab over Electroless Nickel                   |
| MT                 | Ni-PTFE 1000 Hour Grey <sup>TM</sup><br>Nickel Fluorocarbon Polymer |
| Z1                 | Stainless Steel Passivate                                           |
| ZL                 | CRES, Electroless Nickel                                            |
| ZN                 | Zinc-Nickel                                                         |



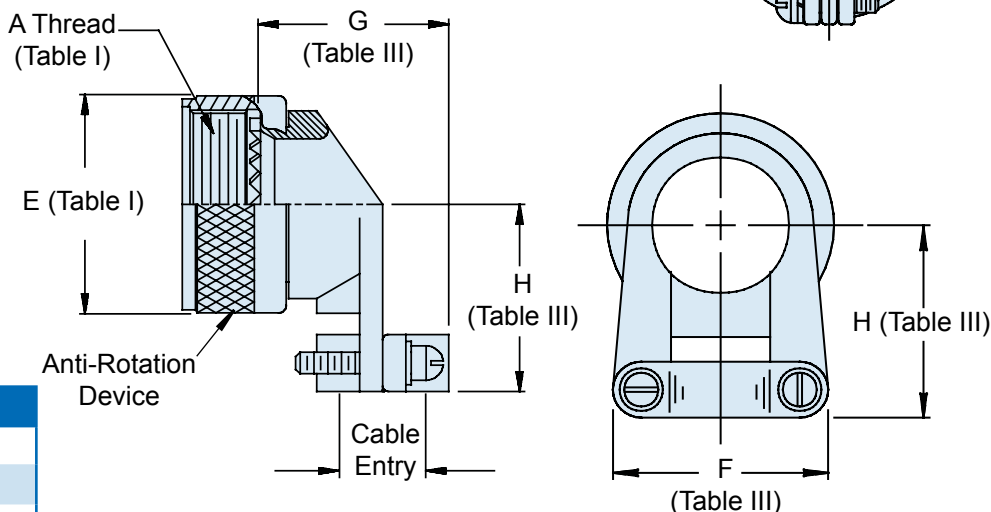
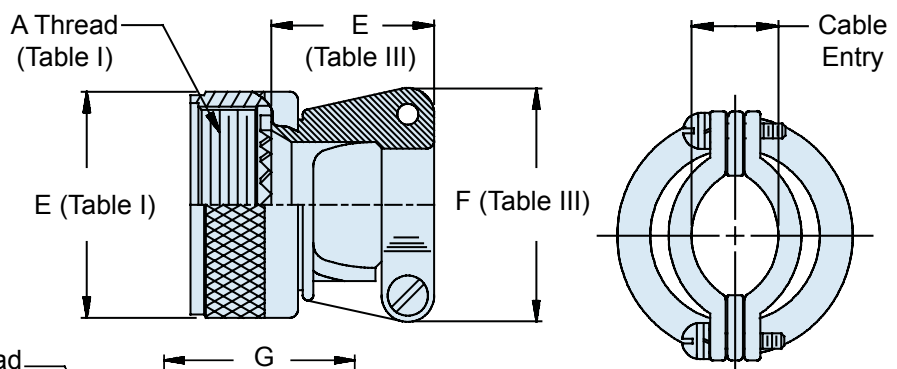
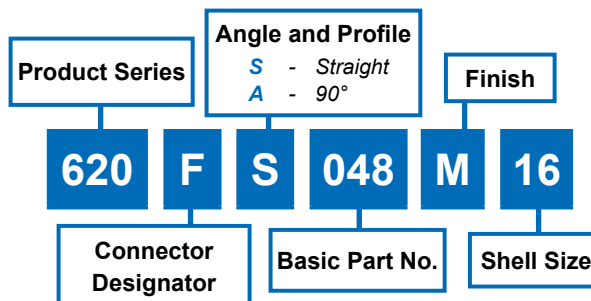
# 620-048 Strain Relief Self-Locking Rotatable Coupling - Straight and 90°

## CONNECTOR DESIGNATOR

MIL-DTL-38999 Series I, II (F)  
MIL-DTL-38999 Series III and IV (H)

**F-H**

## SELF-LOCKING ROTATABLE COUPLING



### APPLICATION NOTES

1. Cable range is defined as the accommodation range for the wire bundle or cable. Dimensions shown are not intended for inspection criteria.
2. Metric dimensions (mm) are indicated in parentheses.

**TABLE II: FINISHES**

| Symbol | Finish                                            |
|--------|---------------------------------------------------|
| B      | Cadmium Plate, Olive Drab                         |
| C      | Anodize, Black                                    |
| G      | Hard Coat, Anodic                                 |
| GB     | Black Anodize, Hard Coat                          |
| M      | Electroless Nickel                                |
| N      | Cad Plate, Olive Drab over Electroless Nickel     |
| NF     | Cadmium Plate, Olive Drab over Electroless Nickel |
| MT     | Nickel Fluorocarbon Polymer                       |
| Z1     | Stainless Steel Passivate                         |
| ZN     | Zinc-Nickel                                       |

**TABLE III: CABLE ENTRY**

| Shell Size | E Max        | F Max        | G Max        | H Max        | Cable Range |             |
|------------|--------------|--------------|--------------|--------------|-------------|-------------|
|            |              |              |              |              | Closed      | Open        |
| 08/09      | .830 (21.1)  | .780 (19.8)  | .704 (17.9)  | .808 (20.5)  | .098 (2.5)  | .234 (5.9)  |
| 10/11      | .850 (21.6)  | .832 (21.1)  | .786 (20.0)  | .867 (22.0)  | .153 (3.9)  | .234 (5.9)  |
| 12/13      | .900 (22.9)  | .988 (25.1)  | .979 (24.9)  | .929 (23.6)  | .190 (4.8)  | .328 (8.3)  |
| 14/15      | .900 (22.9)  | 1.046 (26.6) | 1.039 (26.4) | .992 (25.2)  | .260 (6.6)  | .457 (11.6) |
| 16/17      | .940 (23.9)  | 1.319 (33.5) | 1.188 (30.2) | 1.056 (26.8) | .283 (7.2)  | .614 (15.6) |
| 18/19      | 1.020 (25.9) | 1.451 (36.9) | 1.300 (33.0) | 1.233 (31.3) | .325 (8.3)  | .634 (16.1) |
| 20/21      | 1.070 (27.2) | 1.557 (39.5) | 1.425 (36.2) | 1.296 (32.9) | .343 (8.7)  | .698 (17.7) |
| 22/23      | 1.190 (30.2) | 1.653 (42.0) | 1.550 (39.4) | 1.358 (34.5) | .381 (9.7)  | .823 (20.9) |
| 24/25      | 1.220 (31.0) | 1.775 (45.1) | 1.675 (42.5) | 1.420 (36.1) | .418 (10.6) | .853 (21.7) |

**620-049**  
**Strain Relief**  
**Self-Locking Rotatable Coupling - 45°**

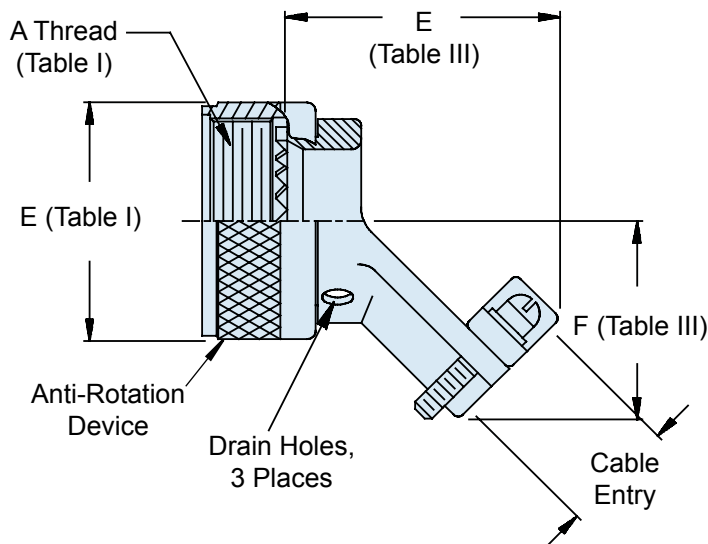
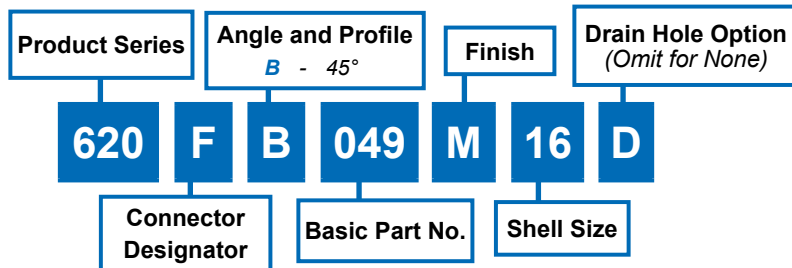


**CONNECTOR  
DESIGNATOR**

MIL-DTL-38999 Series I, II (F)  
MIL-DTL-38999 Series III and IV (H)

**F-H**

**SELF-LOCKING  
ROTATABLE  
COUPLING**



**TABLE II: FINISHES**

| Symbol    | Finish                                              |
|-----------|-----------------------------------------------------|
| <b>B</b>  | Cadmium Plate, Olive Drab                           |
| <b>C</b>  | Anodize, Black                                      |
| <b>GB</b> | Black Anodize, Hard Coat                            |
| <b>M</b>  | Electroless Nickel                                  |
| <b>N</b>  | Cad Plate, Olive Drab over Electroless Nickel       |
| <b>NF</b> | Cadmium Plate, Olive Drab over Electroless Nickel   |
| <b>MT</b> | Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer |
| <b>Z1</b> | Stainless Steel Passivate                           |
| <b>ZN</b> | Zinc-Nickel                                         |

**TABLE III: CABLE ENTRY**

| Shell Size   | E Max        | F Max        | Cable Range Closed | Cable Range Open |
|--------------|--------------|--------------|--------------------|------------------|
| <b>08/09</b> | 1.536 (39.0) | .730 (18.5)  | .125 (3.2)         | .204 (5.2)       |
| <b>10/11</b> | 1.566 (39.8) | .810 (20.6)  | .187 (4.7)         | .286 (7.3)       |
| <b>12/13</b> | 1.646 (41.8) | .870 (22.1)  | .291 (7.4)         | .416 (10.6)      |
| <b>14/15</b> | 1.686 (42.8) | .930 (23.6)  | .351 (8.9)         | .476 (12.1)      |
| <b>16/17</b> | 1.796 (45.6) | .990 (25.1)  | .501 (12.7)        | .626 (15.9)      |
| <b>18/19</b> | 1.906 (48.4) | 1.110 (28.2) | .518 (13.2)        | .706 (17.9)      |
| <b>20/21</b> | 1.956 (49.7) | 1.170 (29.7) | .581 (14.8)        | .831 (21.1)      |
| <b>22/23</b> | 1.996 (50.7) | 1.240 (31.5) | .644 (16.4)        | .956 (24.3)      |
| <b>24/25</b> | 2.046 (52.0) | 1.300 (33.0) | .706 (17.9)        | 1.081 (27.5)     |

**APPLICATION NOTES**

1. Cable range is defined as the accommodation range for the wire bundle or cable. Dimensions shown are not intended for inspection criteria.
2. Metric dimensions (mm) are indicated in parentheses.



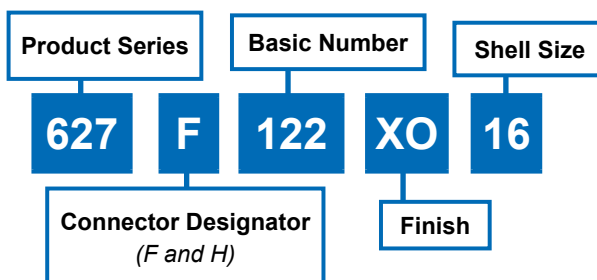
# 627-122 Composite Self-Locking Rotatable Coupling Swing-Arm Strain Relief for Connector Designators F & H

## CONNECTOR DESIGNATOR

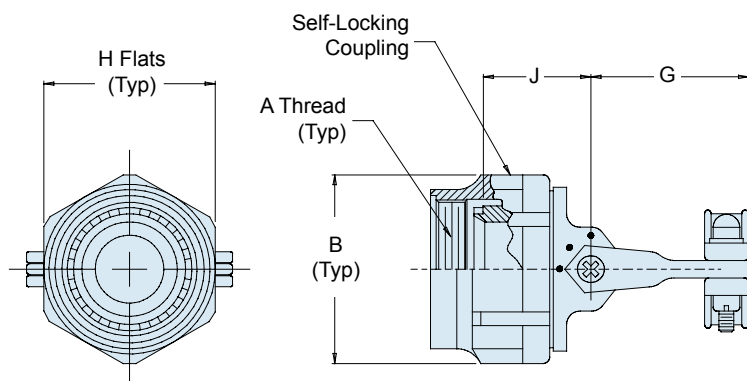
MIL-DTL-38999 Series I, II (F)  
MIL-DTL-38999 Series III and IV (H)

**F-H**

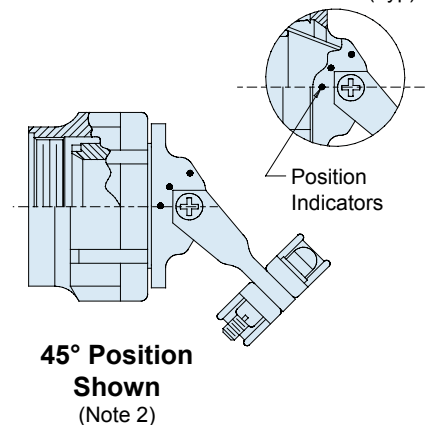
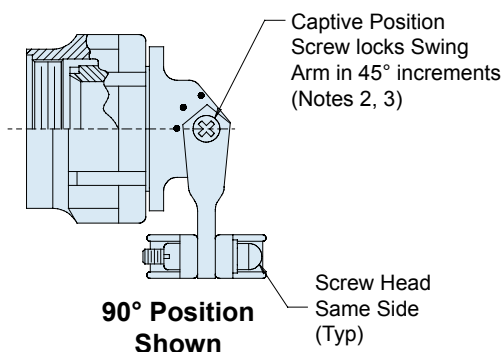
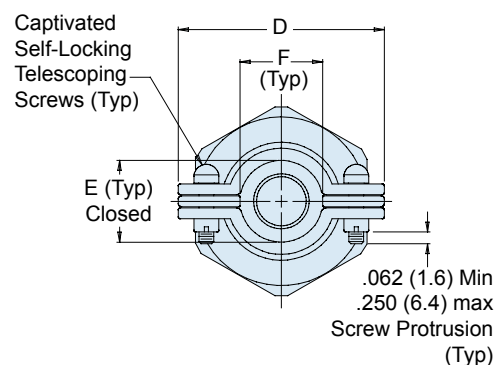
**SELF-LOCKING  
ROTATABLE  
COUPLING**



U.S. PATENT NO. 6419519



**Straight Position**



**627-122**  
**Composite Self-Locking Rotatable Coupling**  
**Swing-Arm Strain Relief**  
**for Connector Designators F & H**



**TABLE II: FINISHES**

| Symbol | Finish                                                                                                             |
|--------|--------------------------------------------------------------------------------------------------------------------|
| XO     | Composite Material, No Plating,<br>Color Black and Brown, Brass<br>Interface Shroud and Adapter -<br>Nickel Plated |

**TABLE III: CONNECTOR SHELL SIZE ORDER NUMBER**

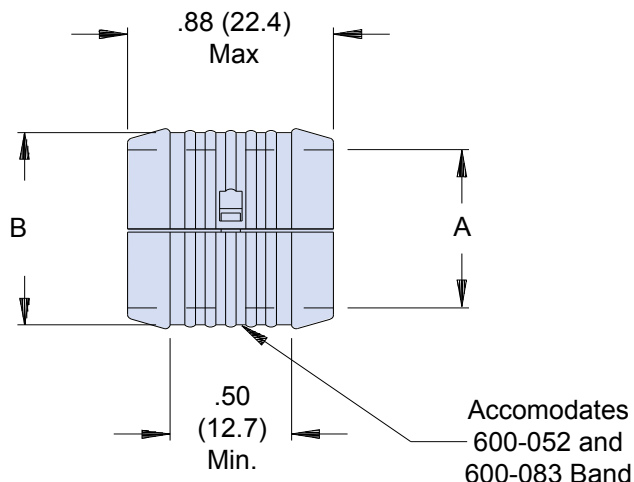
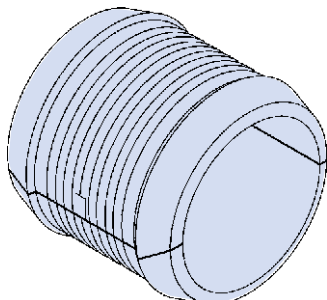
| Shell Size for<br>Connector<br>Designator<br>F H |    | B Dia<br>Max | D<br>Max     | E<br>±.06 (1.5) | F<br>Min    | G<br>Max     | H<br>Flats<br>Max Min |              | J<br>±.03 (0.8) |
|--------------------------------------------------|----|--------------|--------------|-----------------|-------------|--------------|-----------------------|--------------|-----------------|
| 08                                               | 09 | .812 (20.6)  | .980 (24.9)  | .265 (6.7)      | .220 (5.9)  | 1.060 (26.9) | .750 (19.1)           | .736 (18.7)  | .880 (22.4)     |
| 10                                               | 11 | .938 (23.8)  | 1.050 (26.7) | .310 (7.9)      | .270 (6.9)  | 1.090 (27.7) | .875 (22.2)           | .860 (21.8)  | .910 (23.1)     |
| 12                                               | 13 | 1.125 (28.6) | 1.200 (30.5) | .390 (9.9)      | .350 (8.9)  | 1.180 (30.0) | 1.000 (25.4)          | .980 (24.9)  | .950 (24.1)     |
| 14                                               | 15 | 1.250 (31.8) | 1.300 (33.0) | .506 (12.9)     | .470 (11.9) | 1.240 (31.5) | 1.125 (28.6)          | 1.100 (27.9) | 1.010 (25.7)    |
| 16                                               | 17 | 1.375 (34.9) | 1.440 (36.6) | .591 (15.0)     | .550 (14.0) | 1.320 (33.5) | 1.250 (31.8)          | 1.224 (31.1) | 1.050 (26.7)    |
| 18                                               | 19 | 1.500 (38.1) | 1.560 (39.6) | .661 (16.8)     | .620 (15.7) | 1.390 (35.3) | 1.375 (34.9)          | 1.469 (37.3) | 1.080 (30.0)    |
| 20                                               | 21 | 1.625 (41.3) | 1.690 (42.9) | .744 (18.9)     | .700 (17.8) | 1.550 (39.4) | 1.500 (38.1)          | 1.500 (38.1) | 1.120 (28.4)    |
| 22                                               | 23 | 1.750 (44.5) | 1.770 (45.0) | .826 (21.0)     | .780 (19.8) | 1.550 (39.4) | 1.625 (41.3)          | 1.581 (40.2) | 1.160 (29.5)    |
| 24                                               | 25 | 1.875 (47.6) | 1.890 (48.0) | .896 (22.8)     | .850 (21.6) | 1.610 (40.9) | 1.750 (44.5)          | 1.960 (49.8) | 1.200 (30.5)    |

Consult factory for additional entry sizes available.

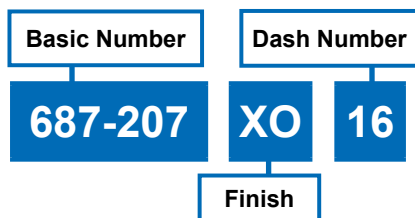
**APPLICATION NOTES**

- Glenair series 600 Backshell assembly Tools are recommended for assembly and installation.
- Swing Arm locks in 45° increments—Sizes 08 thru 24, additional positioning increments are manufacturer's option.
- Captive Screw can remain engaged to the body when positioning the Arm. When tightened, the screw shall not protrude into the inside surfaces.
- Metric dimensions (mm) are indicated in parentheses.

**For Use  
with Glenair  
Banding  
Backshells and  
Braid Socks**



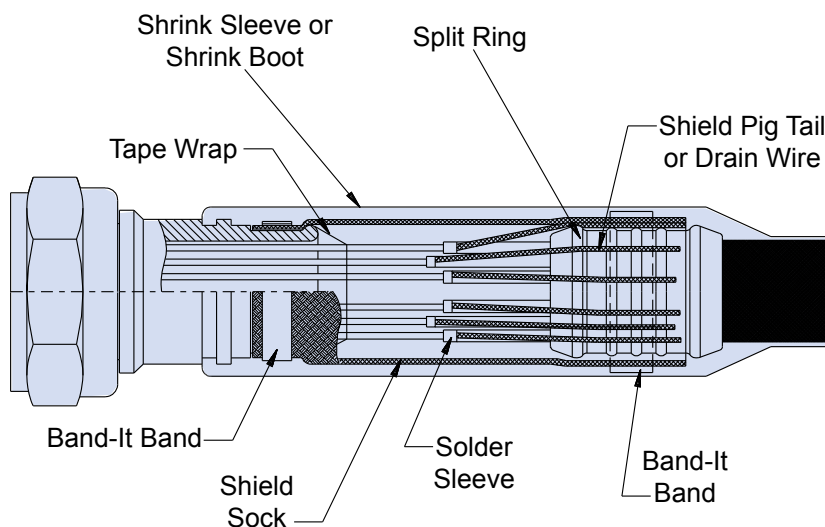
**EXAMPLE PART NUMBER:**



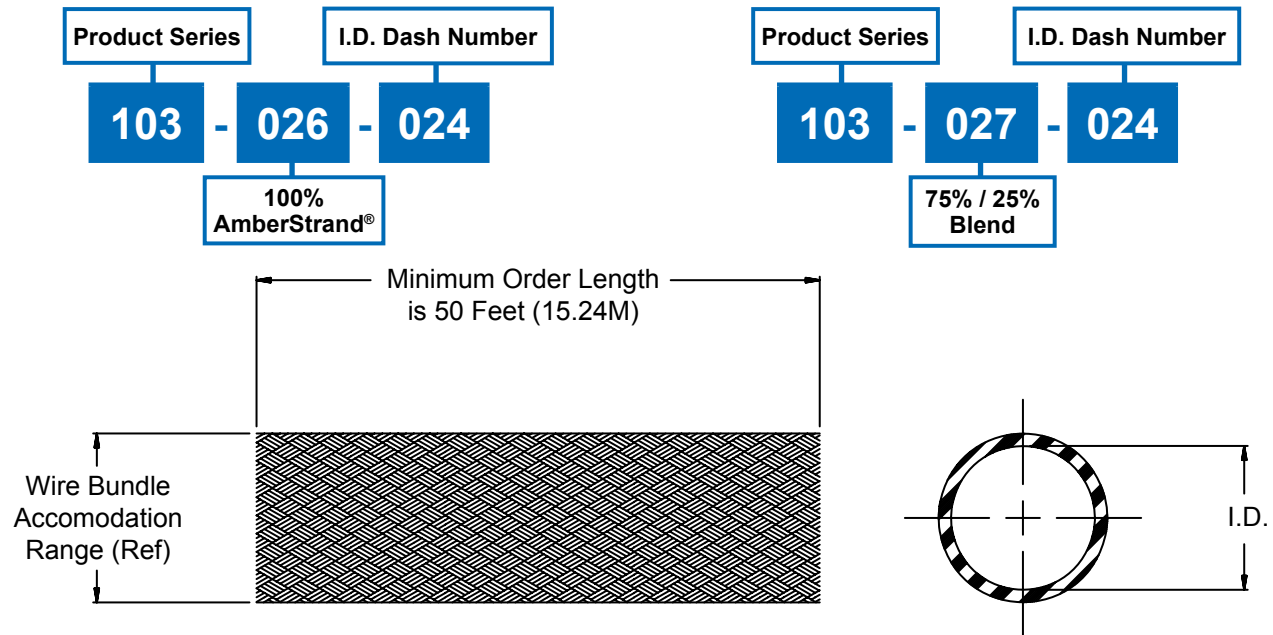
**TABLE I: DASH NUMBER**

| Dash No. | A Diameter |        | B Diameter |        |
|----------|------------|--------|------------|--------|
|          | ± .03      | (0.8)  | ± .03      | (0.8)  |
| 04       | .25        | (6.4)  | .36        | (9.1)  |
| 06       | .38        | (9.7)  | .49        | (12.4) |
| 08       | .50        | (12.7) | .61        | (15.5) |
| 10       | .63        | (16.0) | .74        | (18.8) |
| 12       | .75        | (19.1) | .86        | (21.8) |
| 14       | .88        | (22.4) | .99        | (25.1) |
| 16       | 1.00       | (25.4) | 1.10       | (27.9) |
| 18       | 1.13       | (28.7) | 1.24       | (31.5) |
| 20       | 1.25       | (31.8) | 1.36       | (34.5) |
| 22       | 1.38       | (35.1) | 1.49       | (37.8) |
| 24       | 1.50       | (38.1) | 1.61       | (40.9) |
| 26       | 1.63       | (41.4) | 1.74       | (44.2) |
| 28       | 1.75       | (44.5) | 1.86       | (47.2) |

**EXAMPLE APPLICATION**



**103-026 and -027**  
**100% AmberStrand® Composite Braid**  
**and 75% / 25% AmberStrand®/Nickel Copper Braid**  
**for EMI Shielding Applications**



Specify number of feet on purchase order.

| 103-026 (100% AmberStrand®) |              |                               |                            |
|-----------------------------|--------------|-------------------------------|----------------------------|
| Dash Number                 | Nominal I.D. | Wire Bundle Range             | Approximate Grams Per Foot |
| 004                         | .125 (3.2)   | .093 (2.4)<br>.140 (3.5)      | 1.0                        |
| 008                         | .250 (6.4)   | .125 (3.2)<br>.312 (7.9)      | 1.8                        |
| 012                         | .375 (9.5)   | .250 (6.4)<br>.437 (11.1)     | 2.3                        |
| 016                         | .500 (12.7)  | .250 (6.4)<br>.590 (15.0)     | 3.0                        |
| 020                         | .625 (15.9)  | .375 (9.5)<br>.700 (17.8)     | 4.4                        |
| 024                         | .750 (19.1)  | .500 (12.7)<br>.830 (21.1)    | 5.2                        |
| 032                         | 1.000 (25.4) | .780 (19.8)<br>1.100 (27.94)  | 8.0                        |
| 040                         | 1.250 (31.8) | .938 (23.8)<br>1.312 (33.3)   | 10.0                       |
| 048                         | 1.500 (38.1) | 1.187 (30.1)<br>1.590 (40.37) | 15.2                       |
| 064                         | 2.000 (50.8) | 1.312 (33.3)<br>2.090 (50.8)  | 22.0                       |

| 103-027 (75% AmberStrand® and 25% Nickel Copper) |              |                               |                            |
|--------------------------------------------------|--------------|-------------------------------|----------------------------|
| Dash Number                                      | Nominal I.D. | Wire Bundle Range             | Approximate Grams Per Foot |
| 004                                              | .125 (3.2)   | .093 (2.4)<br>.140 (3.5)      | 1.5                        |
| 008                                              | .250 (6.4)   | .125 (3.2)<br>.312 (7.9)      | 2.4                        |
| 012                                              | .375 (9.5)   | .250 (6.4)<br>.437 (11.1)     | 3.9                        |
| 016                                              | .500 (12.7)  | .250 (6.4)<br>.590 (15.0)     | 5.4                        |
| 020                                              | .625 (15.9)  | .375 (9.5)<br>.700 (17.8)     | 6.4                        |
| 024                                              | .750 (19.1)  | .500 (12.7)<br>.830 (21.1)    | 7.2                        |
| 032                                              | 1.000 (25.4) | .780 (19.8)<br>1.100 (27.94)  | 11.0                       |
| 040                                              | 1.250 (31.8) | .938 (23.8)<br>1.312 (33.3)   | 15.0                       |
| 048                                              | 1.500 (38.1) | 1.187 (30.1)<br>1.590 (40.37) | 25.2                       |
| 064                                              | 2.000 (50.8) | 1.312 (33.3)<br>2.090 (50.8)  | 32.0                       |

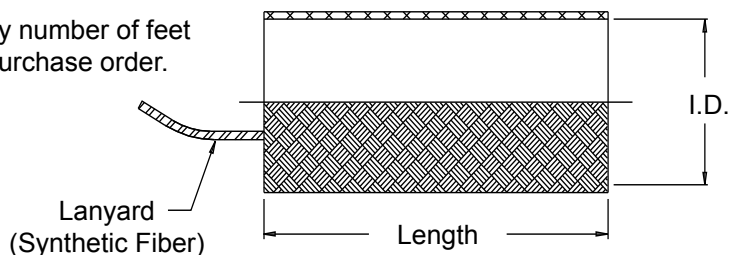
Metric dimensions (mm) are indicated in parentheses.



# 100-001 Tubular Metal Braid QQ-B-575B ASTM B33 Tin Coated Copper for EMI Shielding Applications

|                                               |                                   |
|-----------------------------------------------|-----------------------------------|
| <b>Product Series</b>                         | <b>Dash Number</b>                |
| <b>100-001</b>                                | <b>A 203 L</b>                    |
| A = 36 AWG (Table I)<br>B = 34 AWG (Table II) | <b>Lanyard</b><br>(Omit for None) |

Specify number of feet  
on purchase order.



**TABLE I: (36 AWG)**

| Dash No. | Fractional Equivalent | Nominal I.D. | No. of Carriers | No. of Ends | Current Rating Amps | Lbs./100 Ft. (Kg/30.5M) | Federal Specification No. |
|----------|-----------------------|--------------|-----------------|-------------|---------------------|-------------------------|---------------------------|
| 031      | 1/32                  | .031 (0.8)   | 24              | 24          | 7.0                 | .20 (.09)               | QQB575R36T031             |
| 062      | 1/16                  | .062 (1.6)   | 24              | 48          | 11.0                | .40 (.18)               | QQB575R36T062             |
| 078      | 5/64                  | .078 (2.0)   | 24              | 72          | 16.0                | .60 (.27)               | QQB575R36T078             |
| 109      | 7/64                  | .109 (2.8)   | 24              | 96          | 19.0                | .83 (.38)               | QQB575R36T109             |
| 125      | 1/8                   | .125 (3.2)   | 24              | 120         | 25.0                | 1.03 (.47)              | QQB575R36T125             |
| 156      | 5/32                  | .156 (4.0)   | 24              | 240         | 40.0                | 2.09 (.95)              | QQB575R36T156             |
| 171      | 11/64                 | .171 (4.3)   | 24              | 168         | 32.0                | 1.43 (.65)              | QQB575R36T171             |
| 188      | 3/16                  | .188 (4.8)   | 24              | 192         | 33.0                | 1.63 (.74)              | --                        |
| 203      | 13/64                 | .203 (5.2)   | 24              | 312         | 46.0                | 2.80 (1.27)             | QQB575R36T203             |
| 250      | 1/4                   | .250 (6.4)   | 24              | 384         | 53.0                | 3.45 (1.56)             | QQB575R36T250             |
| 375      | 3/8                   | .375 (9.5)   | 48              | 384         | 53.0                | 3.95 (1.79)             | QQB575R36T375             |
| 500      | 1/2                   | .500 (12.7)  | 48              | 528         | 62.0                | 4.77 (2.16)             | QQB575R36T500             |
| 562      | 9/16                  | .562 (14.3)  | 48              | 624         | 73.0                | 5.00 (2.27)             | --                        |
| 625      | 5/8                   | .625 (15.9)  | 48              | 720         | 85.0                | 5.94 (2.69)             | --                        |
| 781      | 25/32                 | .781 (19.8)  | 48              | 864         | 88.0                | 7.35 (3.33)             | QQB575R36T781             |
| 937      | 15/16                 | .937 (23.8)  | 64              | 640         | 65.0                | 5.83 (2.64)             | --                        |
| 1000     | 1                     | 1.000 (25.4) | 64              | 768         | 90.0                | 7.50 (3.40)             | --                        |
| 1250     | 1 1/4                 | 1.250 (31.8) | 72              | 792         |                     |                         |                           |
| 1375     | 1 3/8                 | 1.375 (34.9) | 72              | 864         |                     |                         |                           |
| 1500     | 1 1/2                 | 1.500 (38.1) | 72              | 936         |                     |                         |                           |
| 2000     | 2                     | 2.000 (50.8) | 96              | 1152        |                     |                         |                           |
| 2500     | 2 1/2                 | 2.500 (63.5) | 96              | 1248        |                     |                         |                           |

**TABLE II: (34 AWG)**

| Dash No. | Fractional Equivalent | Nominal I.D. | No. of Carriers | No. of Ends | Current Rating Amps | Lbs./100 Ft. (Kg/30.5M) | Federal Specification No. |
|----------|-----------------------|--------------|-----------------|-------------|---------------------|-------------------------|---------------------------|
| 062      | 1/16                  | .062 (1.6)   | 16              | 32          | 11.0                | .43 (.20)               | QQB575R34T062             |
| 109      | 7/64                  | .109 (2.8)   | 16              | 64          | 19.0                | .82 (.37)               | QQB575R34T109             |
| 125      | 1/8                   | .125 (3.2)   | 24              | 72          | 19.0                | .92 (.42)               | QQB575R34T125             |
| 171      | 11/64                 | .171 (4.3)   | 24              | 120         | 36.0                | 1.56 (.71)              | QQB575R34T171             |
| 203      | 13/64                 | .203 (5.2)   | 24              | 192         | 46.0                | 2.79 (1.27)             | QQB575R34T203             |
| 375      | 3/8                   | .375 (9.5)   | 48              | 240         | 53.0                | 3.27 (1.48)             | QQB575R34T375             |
| 437      | 7/16                  | .437 (11.1)  | 48              | 288         | 44.2                | 3.93 (1.78)             | --                        |
| 500      | 1/2                   | .500 (12.7)  | 48              | 336         | 62.0                | 4.77 (2.16)             | QQB575R34T500             |
| 781      | 25/32                 | .781 (19.8)  | 48              | 528         | 88.0                | 7.14 (3.24)             | QQB575R34T781             |

## APPLICATION NOTES

- Glenair series 600 Backshell assembly tools are recommended for assembly and installation.
- Swing Arm locks in 45° increments—Sizes 08 thru 24, additional positioning increments are manufacturer's option.
- Captive Screw remains engaged to the body when positioning the Arm. When tightened, the Screw shall not protrude into the inside surfaces.
- Fits Connector Designators: MIL-DTL-38999 Series I, II (F), MIL-DTL-38999 Series III and IV (H), MIL-DTL-5015 (A), and MIL-DTL-26482 (A)
- Metric Dimensions (mm) are indicated in parentheses.

# INDUSTRY-STANDARD METALLIC EMI/RFI Braided Shielding 100-003 nickel/copper braid



## 100-003 TUBULAR METAL BRAID ASTM B355 CLASS 7 OFHC DRAWN NICKEL PLATED COPPER



- Soft-drawn nickel-plated copper braid
- EMI frequency effective from 10KHz to 1 GHz
- 200°C temperature tolerant
- 125 lbs. pull strength (.500 dia. braid)
- 500 hours salt spray corrosion resistant



*Highly conductive nickel-plated copper braid is preferred for its superior handling of temperature cycles above 150°C. Nickel plating is highly resistant to oxidation and will maintain an attractive appearance over time.*

| How To Order       |                                                                                          |   |     |   |
|--------------------|------------------------------------------------------------------------------------------|---|-----|---|
| Sample Part Number | 100-003                                                                                  | A | 203 | L |
| Basic No.          | Nickel/Copper Braid                                                                      |   |     |   |
| Wire Gage Code     | A = 36 AWG<br>B = 34 AWG<br>C = 32 AWG (consult factory)<br>D = 30 AWG (consult factory) |   |     |   |
| Braid Diameter No. | See Tables I or II                                                                       |   |     |   |
| Lanyard Option     | L = with lanyard    Omit = no lanyard                                                    |   |     |   |

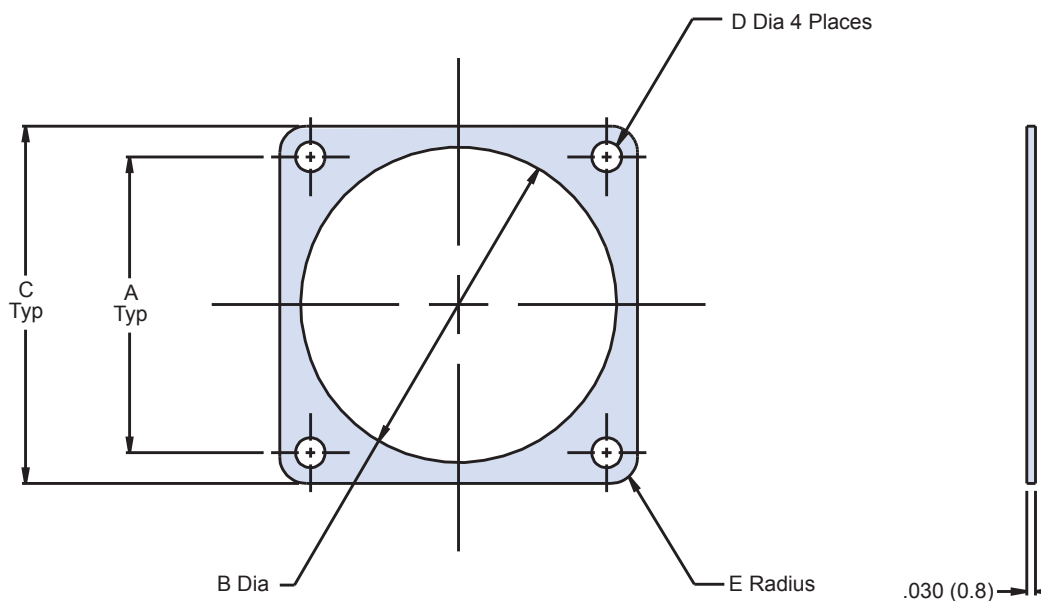
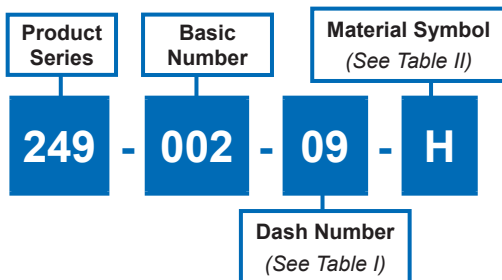
| Table I: 36 AWG |              |                    |                |                     |                  |
|-----------------|--------------|--------------------|----------------|---------------------|------------------|
| Dash No.        | Nominal I.D. | Carriers per Layer | Ends per Layer | Current Rating Amps | Lbs. per 100 ft. |
| 031             | .031 (0.8)   | 24                 | 24             | 7.0                 | .20              |
| 062             | .062 (1.6)   | 24                 | 48             | 11.0                | .40              |
| 078             | .078 (2.0)   | 24                 | 72             | 16.0                | .60              |
| 109             | .109 (2.8)   | 24                 | 96             | 19.0                | .83              |
| 125             | .125 (3.2)   | 24                 | 120            | 25.0                | 1.03             |
| 156             | .156 (4.0)   | 24                 | 240            | 40.0                | 2.09             |
| 171             | .171 (4.3)   | 24                 | 168            | 32.0                | 1.43             |
| 188             | .188 (4.8)   | 24                 | 192            | 33.0                | 1.63             |
| 203             | .203 (5.2)   | 24                 | 312            | 46.0                | 2.80             |
| 250             | .250 (6.4)   | 24                 | 384            | 53.0                | 3.45             |
| 312             | .312 (7.9)   | 48                 | 288            | 42.0                | 2.58             |
| 375             | .375 (9.5)   | 48                 | 384            | 53.0                | 3.95             |
| 437             | .437 (11.1)  | 48                 | 432            | 57.0                | 4.28             |
| 500             | .500 (12.7)  | 48                 | 528            | 62.0                | 4.77             |
| 562             | .562 (14.3)  | 48                 | 624            | 73.0                | 5.00             |
| 625             | .625 (15.9)  | 48                 | 720            | 85.0                | 5.94             |
| 750             | .750 (19.1)  | 48                 | 768            | 87.0                | 6.47             |
| 781             | .781 (19.8)  | 48                 | 864            | 88.0                | 7.35             |
| 937             | .937 (23.8)  | 64                 | 640            | 65.0                | 5.83             |
| 1000            | 1.000 (25.4) | 64                 | 768            | 90.0                | 7.50             |
| 1125            | 1.125 (28.6) | 72                 | 792            | 93.0                | 7.73             |
| 1250            | 1.250 (31.8) | 72                 | 792            | 93.0                | 7.73             |
| 1375            | 1.375 (34.9) | 72                 | 864            | 101.0               | 8.43             |
| 1500            | 1.500 (38.1) | 72                 | 936            | 110.0               | 9.14             |
| 1562            | 1.562 (39.7) | 72                 | 984            | 115.0               | 9.60             |
| 2000            | 2.000 (50.8) | 96                 | 1152           | 135.0               | 13.15            |
| 2500            | 2.500 (63.5) | 96                 | 1248           | 146.0               | 14.25            |

| Table II: 34 AWG |              |                    |                |                     |                  |
|------------------|--------------|--------------------|----------------|---------------------|------------------|
| Dash No.         | Nominal I.D. | Carriers per Layer | Ends per Layer | Current Rating Amps | Lbs. per 100 ft. |
| 062              | .062 (1.6)   | 16                 | 32             | 11.0                | .43              |
| 109              | .109 (2.8)   | 16                 | 64             | 19.0                | .82              |
| 125              | .125 (3.2)   | 24                 | 72             | 19.0                | .92              |
| 156              | .156 (4.0)   | 24                 | 144            | 38.0                | 1.94             |
| 171              | .171 (4.3)   | 24                 | 120            | 36.0                | 1.56             |
| 203              | .203 (5.2)   | 24                 | 192            | 46.0                | 2.79             |
| 250              | .250 (6.4)   | 24                 | 216            | 48.0                | 3.43             |
| 375              | .375 (9.5)   | 48                 | 240            | 53.0                | 3.27             |
| 437              | .437 (11.1)  | 48                 | 288            | 44.2                | 3.93             |
| 500              | .500 (12.7)  | 48                 | 336            | 62.0                | 4.77             |
| 781              | .781 (19.8)  | 48                 | 528            | 88.0                | 7.14             |
| 1000             | 1.000 (25.4) | 64                 | 576            | 95.0                | 7.33             |
| 1250             | 1.250 (31.8) | 72                 | 648            | 108.0               | 8.23             |
| 1500             | 1.500 (38.1) | 72                 | 720            | 119.0               | 9.14             |
| 1750             | 1.750 (44.4) | 72                 | 864            | 143.0               | 10.92            |
| 2000             | 2.000 (50.8) | 72                 | 1008           | 167.0               | 12.80            |

### NOTES

- Direct current ratings are given for information only. Values shown are for uninsulated braid in free air, at 30°C (86°F). Actual values will depend on permissible temperature rise, voltage drop and other conditions of service. Values should be de-rated if the braid is insulated or in close contact with other components.
- Material/Finish:  
Braid - Copper/Nickel plated IAW ASTM B355 Class 7 OFHC  
Lanyard - Synthetic fiber

**249-002**  
**Conductive Gasket**  
**to Fit MIL-DTL-38999 Series III**  
**Flange Mount Receptacle Connector**



**NOTES:**

1. Identified by bag and tag in suitable quantities.
2. Metric dimensions (mm) are indicated in parentheses.

**249-002**  
**Conductive Gasket**  
**to Fit MIL-DTL-38999 Series III**  
**Flange Mount Receptacle Connector**



**TABLE I**

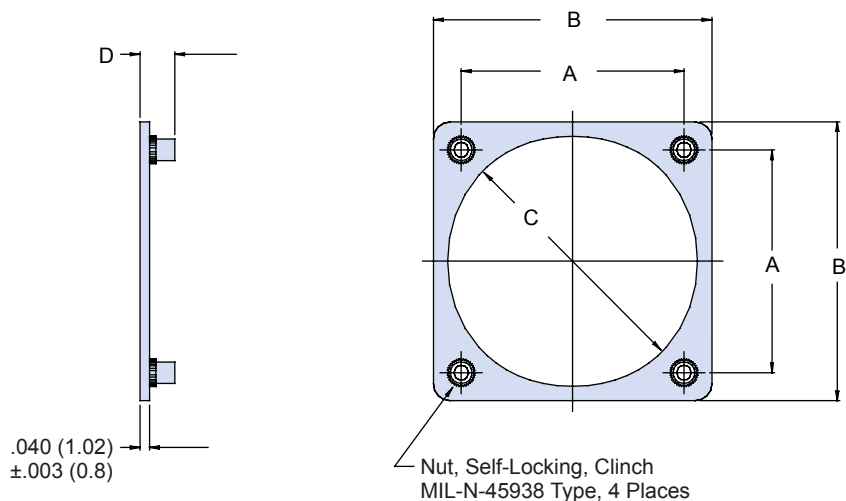
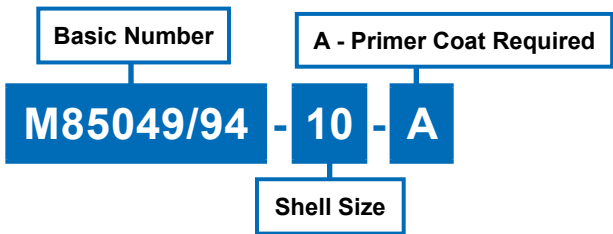
| <b>Dash Number</b> | <b>A<br/>± .005</b> | <b>Ø B<br/>± .007</b> | <b>C<br/>± .008</b> | <b>Ø D<br/>± .005</b> | <b>E Radius<br/>± .015</b> |
|--------------------|---------------------|-----------------------|---------------------|-----------------------|----------------------------|
| -09                | .719                | .687                  | .937                | .125                  | .105                       |
| -11                | .812                | .772                  | 1.031               | .125                  | .105                       |
| -13                | .906                | .937                  | 1.125               | .125                  | .105                       |
| -15                | .969                | 1.063                 | 1.250               | .125                  | .135                       |
| -17                | 1.062               | 1.187                 | 1.343               | .125                  | .135                       |
| -19                | 1.156               | 1.312                 | 1.467               | .125                  | .135                       |
| -21                | 1.250               | 1.437                 | 1.562               | .125                  | .135                       |
| -23                | 1.375               | 1.562                 | 1.703               | .152                  | .135                       |
| -25                | 1.500               | 1.600                 | 1.812               | .152                  | .135                       |

**TABLE II**

| <b>Designator</b> | <b>Material</b>                                                                                         |
|-------------------|---------------------------------------------------------------------------------------------------------|
| C                 | Flourosilicone Binder with Passivated Silver Plated Aluminum Particles (CHO-Seal in 1298 or Equivalent) |
| H                 | Silicone Binder with Silver Plated Copper Particles (CHO-Seal 1215 or Equivalent)                       |

# AS85049/94

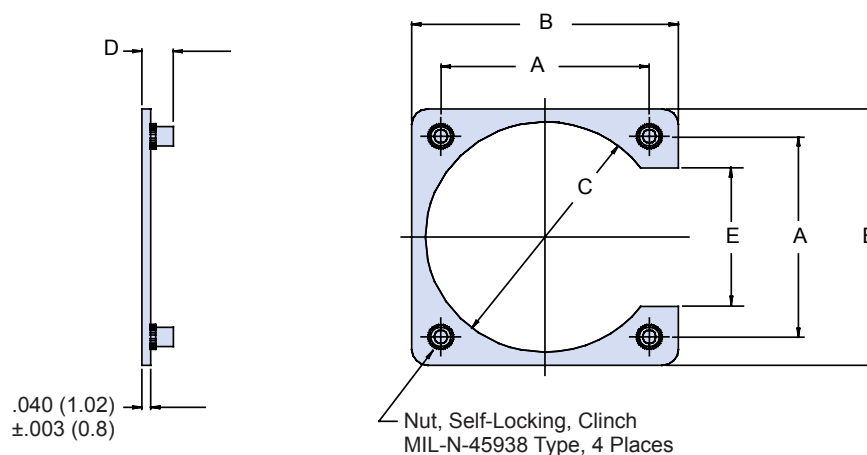
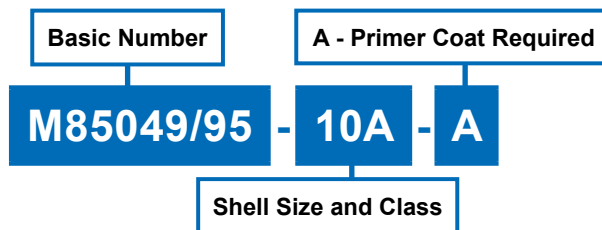
## Full Perimeter Nut Plate for Flange Mount Receptacle Connector



**TABLE I**

| Shell Size | Thread<br>UNJC-3B | A<br>± .015 (0.38) |        | B<br>Max. |        | C<br>± .015 (.4) |         | D    |        |
|------------|-------------------|--------------------|--------|-----------|--------|------------------|---------|------|--------|
| 8          | 4-40              | .594               | (15.1) | .900      | (22.9) | .570             | (14.5)  | .106 | (.166) |
| 10         | 4-40              | .719               | (18.3) | 1.034     | (26.3) | .720             | (18.3)  | .106 | (.166) |
| 12         | 4-40              | .812               | (20.6) | 1.119     | (28.4) | .835             | (21.21) | .106 | (.166) |
| 14         | 4-40              | .906               | (23.0) | 1.213     | (30.8) | .950             | (24.13) | .106 | (.166) |
| 16         | 4-40              | .969               | (24.6) | 1.295     | (32.9) | 1.085            | (27.56) | .106 | (.166) |
| 18         | 4-40              | 1.062              | (27.0) | 1.421     | (36.1) | 1.210            | (30.73) | .106 | (.166) |
| 20         | 4-40              | 1.156              | (29.4) | 1.550     | (39.4) | 1.335            | (33.91) | .106 | (.166) |
| 22         | 4-40              | 1.250              | (31.8) | 1.680     | (42.7) | 1.470            | (37.34) | .106 | (.166) |
| 24         | 6-32              | 1.375              | (34.9) | 1.800     | (45.7) | 1.585            | (40.26) | .123 | (.183) |
| 25         | 6-32              | 1.500              | (38.1) | 1.910     | (48.5) | 1.658            | (42.11) | .123 | (.183) |

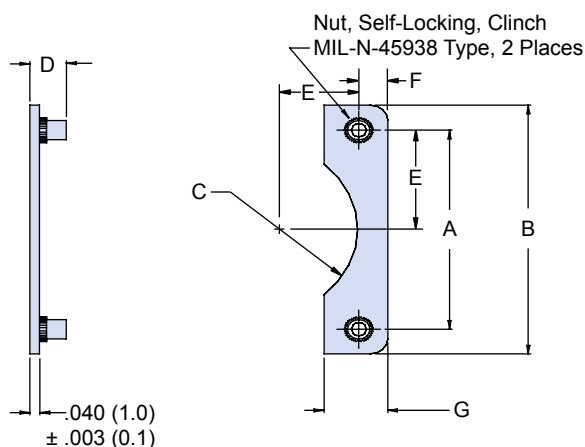
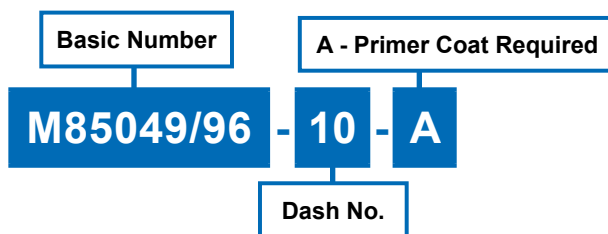
**AS85049/95**  
**3/4 Perimeter Nut Plate for**  
**Flange Mount Receptacle Connector**



**TABLE I**

| Shell Size | Thread<br>UNJC-3B | A<br>± .005 (0.13) |        | B Max |        | C<br>± .015 |        | D<br>± .030 (0.8) |       | E<br>+ .000 (.0)<br>- .030 (.8) |        |
|------------|-------------------|--------------------|--------|-------|--------|-------------|--------|-------------------|-------|---------------------------------|--------|
| 3A         | 4-40              | .625               | (15.9) | .940  | (23.9) | .641        | (16.3) | .136              | (3.5) | .325                            | (8.3)  |
| 7A         | 4-40              | .719               | (18.3) | 1.034 | (26.3) | .688        | (17.5) | .136              | (3.5) | .433                            | (11.0) |
| 8A         | 4-40              | .594               | (15.1) | .900  | (22.9) | .570        | (14.5) | .136              | (3.5) | .308                            | (7.8)  |
| 10A        | 4-40              | .719               | (18.3) | 1.034 | (26.3) | .720        | (18.3) | .136              | (3.5) | .433                            | (11.0) |
| 10B        | 6-32              | .812               | (20.6) | 1.202 | (30.5) | .749        | (19.0) | .136              | (3.5) | .433                            | (11.0) |
| 12A        | 4-40              | .812               | (20.6) | 1.119 | (28.4) | .855        | (21.7) | .136              | (3.5) | .530                            | (13.5) |
| 12B        | 6-32              | .938               | (23.8) | 1.327 | (33.7) | .938        | (23.8) | .153              | (3.9) | .526                            | (13.4) |
| 14A        | 4-40              | .906               | (23.0) | 1.213 | (30.8) | .984        | (25.0) | .136              | (3.5) | .624                            | (15.8) |
| 14B        | 6-32              | 1.031              | (26.2) | 1.421 | (30.1) | 1.031       | (26.2) | .153              | (3.9) | .620                            | (15.7) |
| 16A        | 4-40              | .969               | (24.6) | 1.295 | (32.9) | 1.094       | (27.8) | .136              | (3.5) | .687                            | (17.4) |
| 16B        | 6-32              | 1.125              | (28.6) | 1.515 | (38.5) | 1.125       | (28.6) | .153              | (3.9) | .683                            | (17.3) |
| 18A        | 4-40              | 1.062              | (27.0) | 1.421 | (36.1) | 1.220       | (31.0) | .136              | (3.5) | .780                            | (19.8) |
| 18B        | 6-32              | 1.203              | (30.6) | 1.593 | (40.5) | 1.234       | (31.3) | .153              | (3.9) | .776                            | (19.7) |
| 19A        | 4-40              | .906               | (23.0) | 1.207 | (30.7) | .953        | (24.2) | .136              | (3.5) | .620                            | (15.7) |
| 20A        | 4-40              | 1.156              | (29.4) | 1.550 | (39.4) | 1.345       | (34.2) | .136              | (3.5) | .874                            | (22.2) |
| 20B        | 6-32              | 1.297              | (32.9) | 1.703 | (43.3) | 1.359       | (34.5) | .153              | (3.9) | .865                            | (22.0) |
| 22A        | 4-40              | 1.250              | (31.8) | 1.680 | (42.7) | 1.478       | (37.5) | .136              | (3.5) | .968                            | (24.6) |
| 22B        | 6-32              | 1.375              | (34.9) | 1.753 | (44.5) | 1.483       | (37.7) | .153              | (3.9) | .907                            | (23.0) |
| 24A        | 4-40              | 1.500              | (38.1) | 1.906 | (48.4) | 1.560       | (39.6) | .153              | (3.9) | 1.000                           | (25.4) |
| 24B        | 6-32              | 1.375              | (34.9) | 1.800 | (45.7) | 1.595       | (40.5) | .153              | (3.9) | 1.031                           | (26.2) |
| 25A        | 6-32              | 1.500              | (38.1) | 1.906 | (48.4) | 1.658       | (42.1) | .153              | (3.9) | 1.125                           | (28.6) |
| 27A        | 4-40              | .969               | (24.6) | 1.270 | (32.3) | 1.094       | (27.8) | .136              | (3.5) | .683                            | (17.3) |
| 28A        | 6-32              | 1.562              | (39.7) | 2.015 | (51.2) | 1.820       | (46.2) | .153              | (3.9) | 1.125                           | (28.6) |
| 32A        | 6-32              | 1.750              | (44.5) | 2.327 | (59.1) | 2.062       | (52.4) | .153              | (3.9) | 1.188                           | (30.2) |
| 36A        | 6-32              | 1.938              | (49.2) | 2.515 | (63.9) | 2.312       | (58.7) | .153              | (3.9) | 1.375                           | (34.9) |
| 37A        | 4-40              | 1.187              | (30.1) | 1.515 | (38.5) | 1.281       | (32.5) | .136              | (3.5) | .874                            | (22.2) |
| 61A        | 4-40              | 1.437              | (36.5) | 1.827 | (46.4) | 1.594       | (40.5) | .136              | (3.5) | 1.602                           | (40.7) |

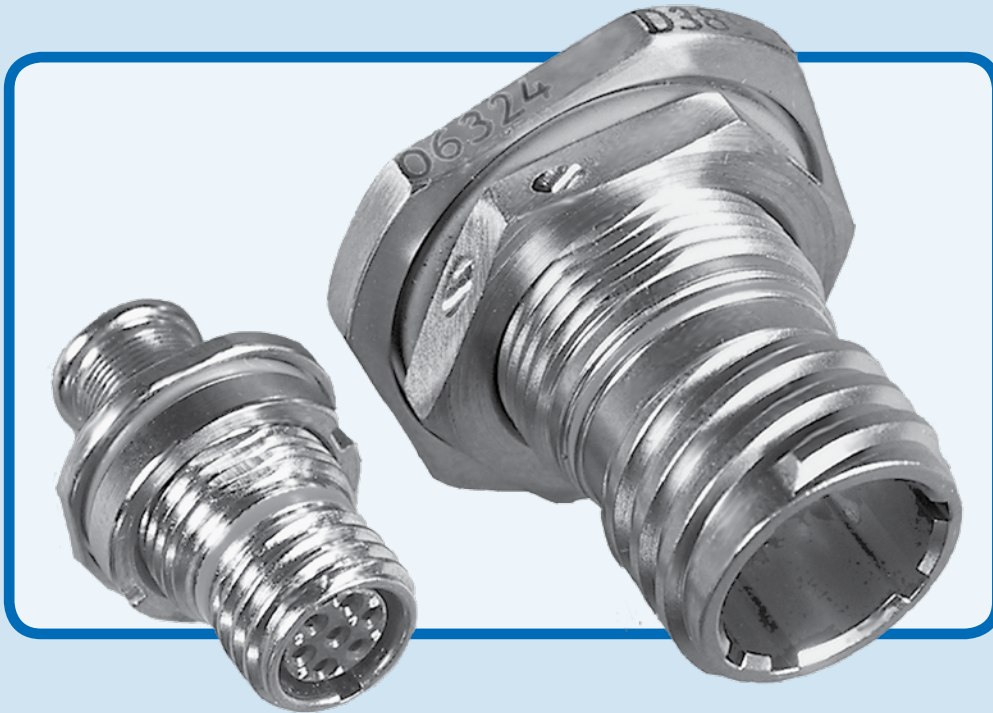
**AS85049/96**  
**1/4 Perimeter Nut Plate for**  
**Flange Mount Receptacle Connector**



**TABLE I**

| Dash No. | Thread UNJC-3B | A ± .003 (0.1) | B Max        | C (Min)      | D ± .030 (0.8) | E ± .005 (0.1) | F (Ref)     | G Max        |
|----------|----------------|----------------|--------------|--------------|----------------|----------------|-------------|--------------|
| 3        | 4-40           | .625 (15.9)    | .940 (23.9)  | .320 (8.1)   | .136 (3.5)     | .312 (7.92)    | .150 (3.81) | .310 (7.87)  |
| 7        | 4-40           | .719 (18.3)    | 1.034 (26.3) | .329 (8.4)   | .136 (3.5)     | .359 (9.12)    | .149 (3.78) | .308 (7.82)  |
| 8        | 4-40           | .594 (15.1)    | .906 (23.0)  | .262 (6.7)   | .136 (3.5)     | .297 (7.54)    | .148 (3.76) | .306 (7.77)  |
| 10       | 4-40           | .719 (18.3)    | 1.034 (26.3) | .344 (8.7)   | .136 (3.5)     | .359 (9.12)    | .149 (3.78) | .308 (7.82)  |
| 12       | 4-40           | .812 (20.6)    | 1.124 (28.6) | .410 (10.4)  | .136 (3.5)     | .406 (10.31)   | .148 (3.76) | .306 (7.77)  |
| 14       | 4-40           | .906 (23.0)    | 1.218 (30.9) | .492 (12.5)  | .136 (3.5)     | .453 (11.51)   | .148 (3.76) | .306 (7.77)  |
| 16       | 4-40           | .969 (24.6)    | 1.295 (32.9) | .532 (13.5)  | .136 (3.5)     | .484 (12.29)   | .149 (3.78) | .308 (7.82)  |
| 18       | 4-40           | 1.062 (27.0)   | 1.405 (35.7) | .610 (15.5)  | .136 (3.5)     | .531 (13.49)   | .164 (4.17) | .338 (8.59)  |
| 19       | 4-40           | .906 (23.0)    | 1.218 (30.9) | .461 (11.7)  | .136 (3.5)     | .453 (11.51)   | .148 (3.76) | .306 (7.77)  |
| 20       | 4-40           | 1.156 (29.4)   | 1.550 (39.4) | .657 (16.7)  | .136 (3.5)     | .578 (14.68)   | .177 (4.50) | .364 (9.25)  |
| 22       | 4-40           | 1.250 (31.8)   | 1.680 (42.7) | .724 (18.4)  | .136 (3.5)     | .625 (15.88)   | .195 (4.95) | .400 (10.16) |
| 24       | 6-32           | 1.375 (34.9)   | 1.800 (45.7) | .782 (19.9)  | .153 (3.9)     | .687 (17.45)   | .193 (4.90) | .396 (10.06) |
| 25       | 6-32           | 1.500 (38.1)   | 1.906 (48.4) | .814 (20.7)  | .153 (3.9)     | .750 (19.05)   | .179 (4.55) | .368 (9.35)  |
| 27       | 4-40           | .969 (24.6)    | 1.281 (32.5) | .547 (13.9)  | .136 (3.5)     | .484 (12.29)   | .149 (3.78) | .308 (7.82)  |
| 28       | 6-32           | 1.562 (39.7)   | 2.015 (51.2) | .895 (22.7)  | .153 (3.9)     | .781 (19.84)   | .219 (5.56) | .448 (11.38) |
| 32       | 6-32           | 1.750 (44.5)   | 2.327 (59.1) | 1.016 (25.8) | .153 (3.9)     | .875 (22.23)   | .281 (7.14) | .572 (14.53) |
| 36       | 6-32           | 1.938 (49.2)   | 2.515 (63.9) | 1.141 (29.0) | .153 (3.9)     | .969 (24.61)   | .281 (7.14) | .572 (14.53) |
| 37       | 4-40           | 1.187 (30.1)   | 1.515 (38.5) | .625 (15.9)  | .136 (3.5)     | .593 (15.06)   | .157 (3.99) | .324 (8.23)  |
| 61       | 4-40           | 1.437 (36.5)   | 1.827 (46.4) | .732 (18.6)  | .136 (3.5)     | .718 (18.24)   | .188 (4.78) | .386 (9.80)  |

# What's Less than Half the Size and Weight of a D38999 Connector?



## The Glenair Series 80 “Mighty Mouse”

Nothing tells the “Mighty Mouse” story better than the above picture. If your goal is to maintain the performance standards of the D38999 but to reduce the size and weight of the overall interconnect system, than the Series 80 “Mighty Mouse” is the answer. The “Mighty Mouse” offers up to 71% weight savings when compared to aluminum versions of the D38999 Series III.

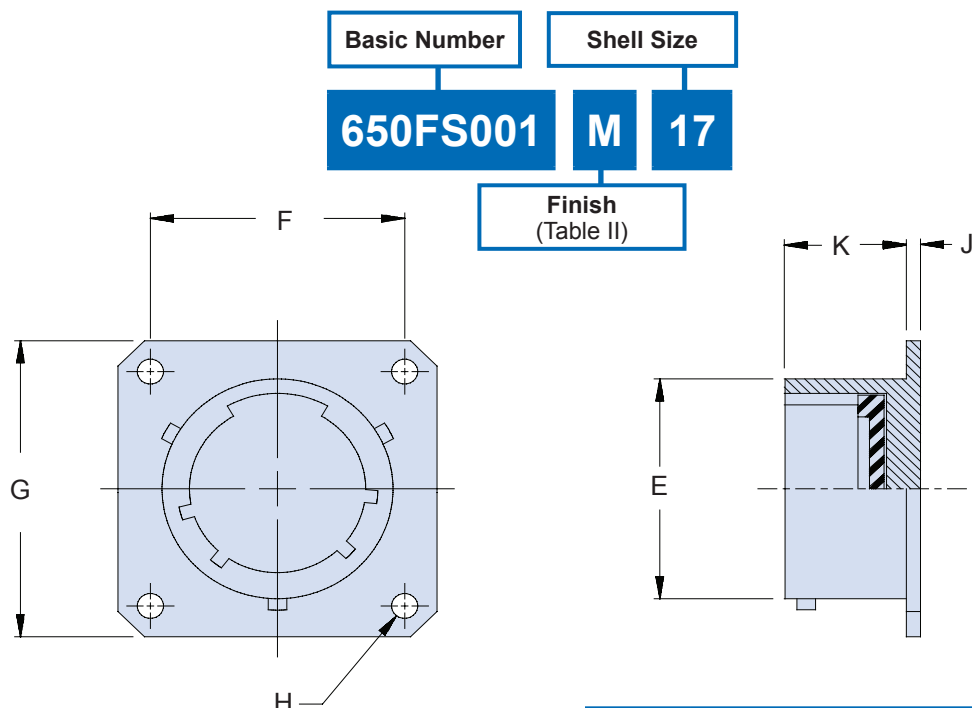
Compared to composite D38999's the savings top out at 64%. Size reduction is equally dramatic. And the Series 80 “Mighty Mouse” accommodates the same range of wire sizes as the D38999 and matches the product on critical performance requirements such as vibration and shock. Best of all, the product is in stock and ready for immediate shipment.



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Glendale, California 91201-2497  
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[www.glenair.com](http://www.glenair.com)



# APPLICATION NOTES

1. See applicable Military Specification for complete dimensions.
2. Metric dimensions (mm) are indicated in parentheses.

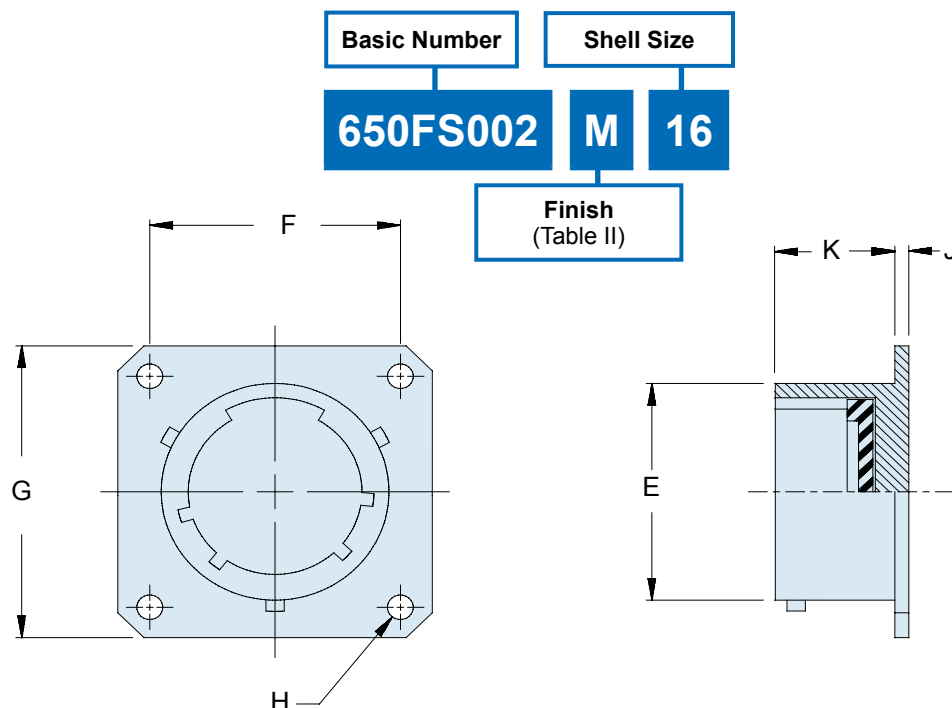
**TABLE II: FINISHES**

| Symbol | Finish                                              |
|--------|-----------------------------------------------------|
| B      | Cadmium Plate, Olive Drab                           |
| C      | Anodize, Black                                      |
| GB     | Black Anodize, Hard Coat                            |
| M      | Electroless Nickel                                  |
| N      | Cad Plate, Olive Drab over Electroless Nickel       |
| NF     | Cadmium Plate, Olive Drab over Electroless Nickel   |
| MT     | Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer |
| ZN     | Zinc-Nickel                                         |

**TABLE I: DIMENSIONS**

| Shell Size | E Max        | F Dim        | G ±.020 (0.5) | H Nom      | J +.015 (0.4) -0.000 | K ±.010 (0.3) |
|------------|--------------|--------------|---------------|------------|----------------------|---------------|
| 9          | .572 (14.5)  | .719 (18.3)  | .938 (23.8)   | .128 (3.3) | .085 (2.2)           | .727 (18.5)   |
| 11         | .701 (17.8)  | .812 (20.6)  | 1.031 (26.2)  | .128 (3.3) | .085 (2.2)           | .727 (18.5)   |
| 13         | .851 (21.6)  | .906 (23.0)  | 1.125 (28.6)  | .128 (3.3) | .085 (2.2)           | .727 (18.5)   |
| 15         | .976 (24.8)  | .969 (24.6)  | 1.219 (31.0)  | .128 (3.3) | .085 (2.2)           | .727 (18.5)   |
| 17         | 1.101 (28.0) | 1.062 (27.0) | 1.312 (33.3)  | .128 (3.3) | .085 (2.2)           | .727 (18.5)   |
| 19         | 1.208 (30.7) | 1.156 (29.4) | 1.438 (36.5)  | .128 (3.3) | .085 (2.2)           | .727 (18.5)   |
| 21         | 1.333 (33.9) | 1.250 (31.8) | 1.562 (39.7)  | .128 (3.3) | .115 (2.9)           | .697 (17.7)   |
| 23         | 1.458 (37.0) | 1.375 (34.9) | 1.688 (42.9)  | .147 (3.7) | .115 (2.9)           | .697 (17.7)   |
| 25         | 1.583 (40.2) | 1.500 (38.1) | 1.812 (46.0)  | .147 (3.7) | .115 (2.9)           | .697 (17.7)   |

# 650FS002 Dummy Stowage Receptacle for MIL-DTL-38999 Series II Connector



## APPLICATION NOTES

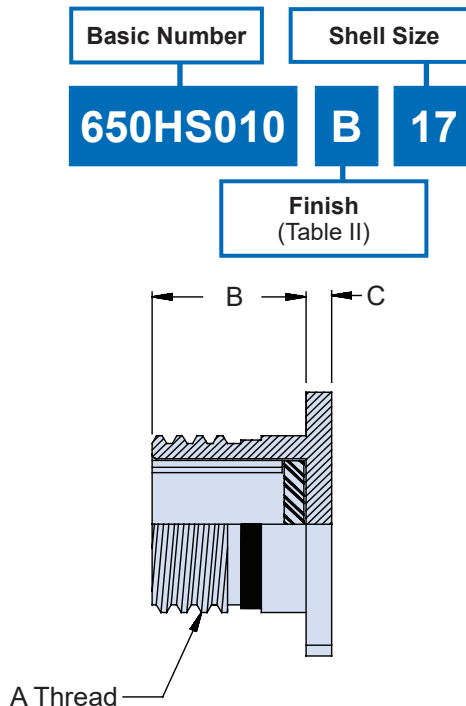
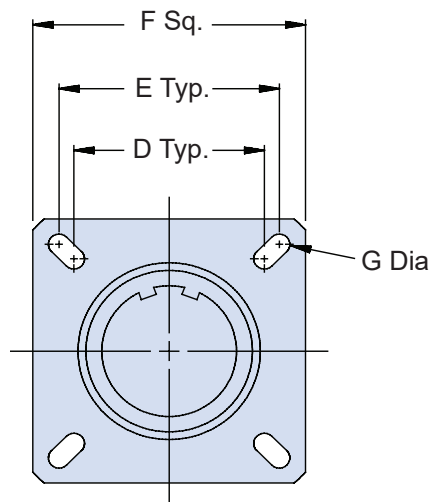
1. See applicable Military Specification for complete dimensions.
2. Metric dimensions (mm) are indicated in parentheses.

TABLE II: FINISHES

| Symbol | Finish                                              |
|--------|-----------------------------------------------------|
| B      | Cadmium Plate, Olive Drab                           |
| C      | Anodize, Black                                      |
| GB     | Black Anodize, Hard Coat                            |
| M      | Electroless Nickel                                  |
| N      | Cad Plate, Olive Drab over Electroless Nickel       |
| NF     | Cadmium Plate, Olive Drab over Electroless Nickel   |
| MT     | Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer |
| ZN     | Zinc-Nickel                                         |

TABLE I: DIMENSIONS

| Shell Size | E Max        | F Dim        | G Max        | H Nom      | J Max      | K ±.010 (0.3) |
|------------|--------------|--------------|--------------|------------|------------|---------------|
| 8          | .474 (12.0)  | .594 (15.1)  | .828 (21.0)  | .120 (3.0) | .069 (1.8) | .451 (11.5)   |
| 10         | .591 (15.0)  | .719 (18.3)  | .954 (24.2)  | .120 (3.0) | .069 (1.8) | .451 (11.5)   |
| 12         | .751 (19.1)  | .812 (20.6)  | 1.047 (26.6) | .120 (3.0) | .069 (1.8) | .451 (11.5)   |
| 14         | .876 (22.3)  | .906 (23.0)  | 1.141 (29.0) | .120 (3.0) | .069 (1.8) | .451 (11.5)   |
| 16         | 1.001 (25.4) | .969 (24.6)  | 1.234 (31.3) | .120 (3.0) | .069 (1.8) | .451 (11.5)   |
| 18         | 1.126 (28.6) | 1.062 (27.0) | 1.328 (33.7) | .120 (3.0) | .069 (1.8) | .451 (11.5)   |
| 20         | 1.251 (31.8) | 1.156 (29.4) | 1.453 (36.9) | .120 (3.0) | .069 (1.8) | .451 (11.5)   |
| 22         | 1.376 (35.0) | 1.250 (31.8) | 1.578 (40.1) | .120 (3.0) | .069 (1.8) | .451 (11.5)   |
| 24         | 1.501 (38.1) | 1.375 (34.9) | 1.703 (43.3) | .147 (3.7) | .069 (1.8) | .451 (11.5)   |



Basic Number

**650HS010**

Shell Size

**B**

**17**

Finish  
(Table II)

**TABLE I: DIMENSIONS**

| Shell Size | Shell Size Ref | A Thread       | B -0.0<br>+0.020 (0.5) | C<br>±.012 (0.3) | D             |
|------------|----------------|----------------|------------------------|------------------|---------------|
| A          | 9              | .625-.1P-3LTS  | .823 (20.9)            | .098 (2.5)       | .594 (15.09)  |
| B          | 11             | .750-.1P-3LTS  | .823 (20.9)            | .098 (2.5)       | .719 (18.26)  |
| C          | 13             | .875-.1P-3LTS  | .823 (20.9)            | .098 (2.5)       | .812 (20.62)  |
| D          | 15             | 1.000-.1P-3LTS | .823 (20.9)            | .098 (2.5)       | .906 (23.01)  |
| E          | 17             | 1.187-.1P-3LTS | .823 (20.9)            | .098 (2.5)       | .969 (24.61)  |
| F          | 19             | 1.250-.1P-3LTS | .823 (20.9)            | .098 (2.5)       | 1.062 (26.97) |
| G          | 21             | 1.375-.1P-3LTS | .791 (20.1)            | .126 (3.2)       | 1.156 (29.36) |
| H          | 23             | 1.500-.1P-3LTS | .791 (20.1)            | .126 (3.2)       | 1.250 (31.75) |
| J          | 25             | 1.625-.1P-3LTS | .791 (20.1)            | .126 (3.2)       | 1.375 (34.93) |

**TABLE II: DIMENSIONS**

| Shell Size | Shell Size Ref | E             | F<br>±.012 (0.3) | G Dia<br>±.008 (0.2) |
|------------|----------------|---------------|------------------|----------------------|
| A          | 9              | .719 (18.26)  | .937 (23.8)      | .128 (3.25)          |
| B          | 11             | .812 (20.62)  | 1.031 (26.2)     | .128 (3.25)          |
| C          | 13             | .906 (23.01)  | 1.126 (28.6)     | .128 (3.25)          |
| D          | 15             | .969 (24.61)  | 1.220 (31.0)     | .128 (3.25)          |
| E          | 17             | 1.062 (26.97) | 1.311 (33.3)     | .128 (3.25)          |
| F          | 19             | 1.156 (29.36) | 1.437 (36.5)     | .128 (3.25)          |
| G          | 21             | 1.250 (31.75) | 1.563 (39.7)     | .128 (3.25)          |
| H          | 23             | 1.375 (34.93) | 1.689 (42.9)     | .154 (3.91)          |
| J          | 25             | 1.500 (38.10) | 1.811 (46.0)     | .154 (3.91)          |

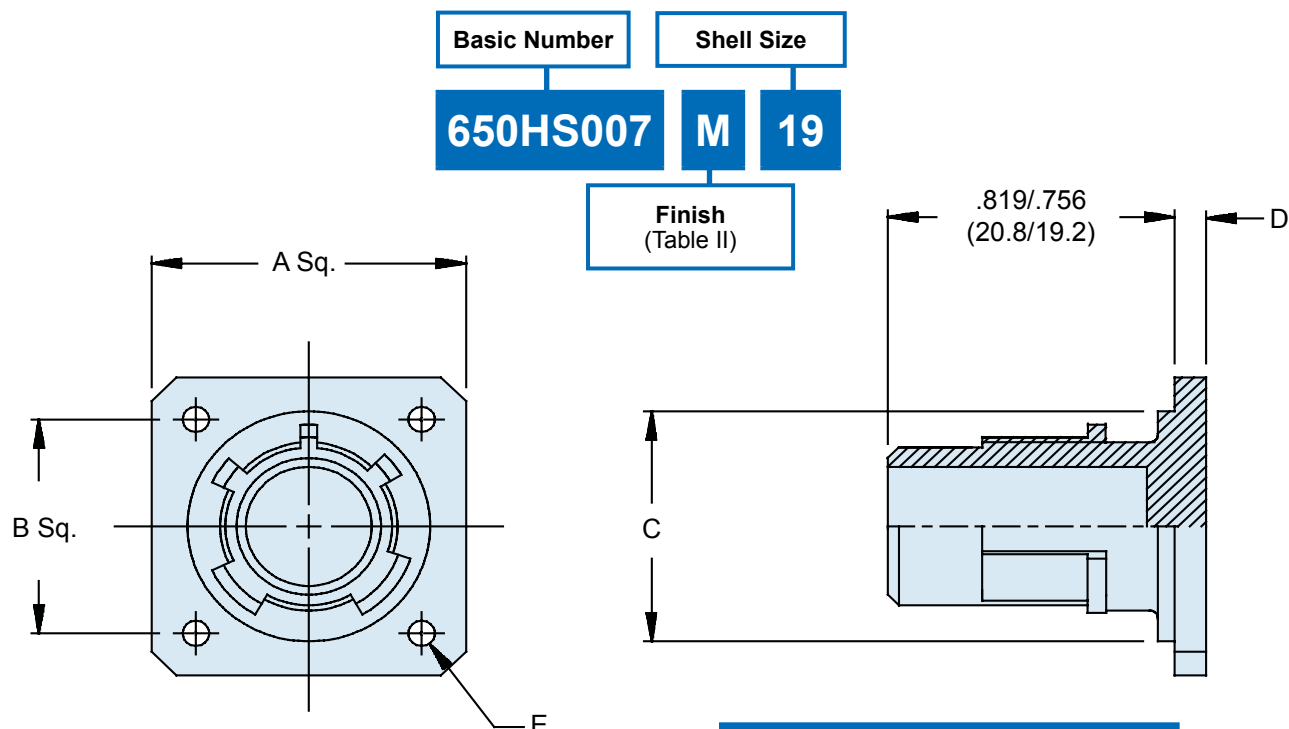
**TABLE II: FINISHES**

| Symbol    | Finish                                                                  |
|-----------|-------------------------------------------------------------------------|
| <b>B</b>  | Cadmium Plate, Olive Drab                                               |
| <b>C</b>  | Anodize, Black                                                          |
| <b>GB</b> | Black Anodize, Hard Coat                                                |
| <b>M</b>  | Electroless Nickel                                                      |
| <b>N</b>  | Cad Plate, Olive Drab over Electroless Nickel                           |
| <b>NF</b> | Cadmium Plate, Olive Drab over Electroless Nickel<br>1000 Hr Salt Spray |
| <b>MT</b> | Ni-PTFE 1000 Hour Grey™<br>Nickel Fluorocarbon Polymer                  |
| <b>ZN</b> | Zinc-Nickel                                                             |

**APPLICATION NOTES**

- See applicable Military Specification for complete dimensions.
- Metric dimensions (mm) are indicated in parentheses.

# 650HS007 Dummy Stowage Receptacle for MIL-DTL-38999 Series IV Connector



## APPLICATION NOTES

1. See applicable Military Specification for complete dimensions.
2. Metric dimensions (mm) are indicated in parentheses.

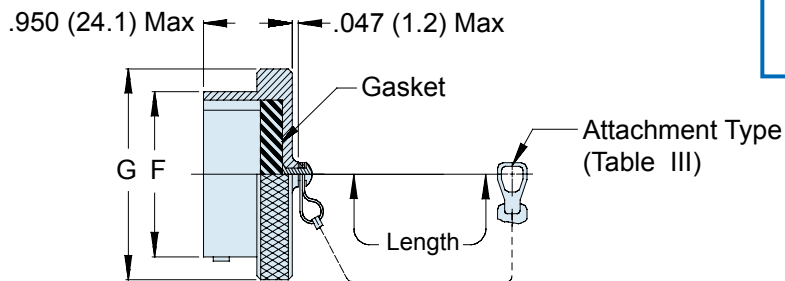
TABLE II: FINISHES

| Symbol | Finish                                              |
|--------|-----------------------------------------------------|
| B      | Cadmium Plate, Olive Drab                           |
| C      | Anodize, Black                                      |
| GB     | Black Anodize, Hard Coat                            |
| M      | Electroless Nickel                                  |
| N      | Cad Plate, Olive Drab over Electroless Nickel       |
| NF     | Cadmium Plate, Olive Drab over Electroless Nickel   |
| MT     | Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer |
| ZN     | Zinc-Nickel                                         |

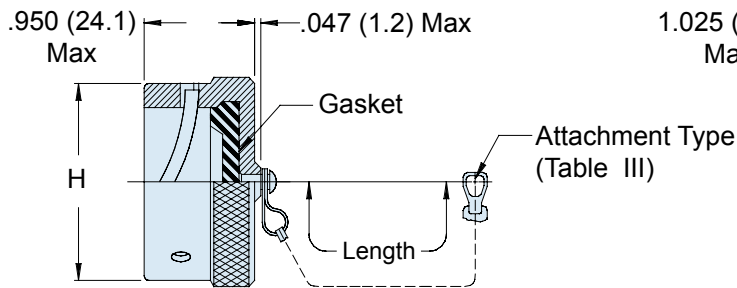
TABLE I: DIMENSIONS

| Shell Size | Shell Size Ref | A<br>±.043 (±1.10) | G<br>BSC      | C<br>+0 (0.00)<br>-.015 (-0.39) | J<br>Max    | E Dia<br>±.008 (± 0.2) |
|------------|----------------|--------------------|---------------|---------------------------------|-------------|------------------------|
| B          | 11             | 1.030 (26.15)      | .812 (20.62)  | .793 (20.15)                    | .093 (2.35) | .130 (3.3)             |
| C          | 13             | 1.124 (28.55)      | .906 (23.02)  | .919 (23.35)                    | .093 (2.35) | .130 (3.3)             |
| D          | 15             | 1.219 (30.95)      | .969 (24.62)  | 1.044 (26.52)                   | .093 (2.35) | .130 (3.3)             |
| E          | 17             | 1.313 (33.35)      | 1.062 (26.98) | 1.170 (29.72)                   | .093 (2.35) | .130 (3.3)             |
| F          | 19             | 1.439 (36.55)      | 1.156 (29.36) | 1.294 (32.87)                   | .093 (2.35) | .130 (3.3)             |
| G          | 21             | 1.561 (39.65)      | 1.250 (31.76) | 1.419 (36.05)                   | .124 (3.15) | .130 (3.3)             |
| H          | 23             | 1.687 (42.85)      | 1.375 (34.92) | 1.544 (39.22)                   | .124 (3.15) | .142 (3.6)             |
| J          | 25             | 1.813 (46.05)      | 1.500 (38.10) | 1.669 (42.40)                   | .124 (3.15) | .142 (3.6)             |

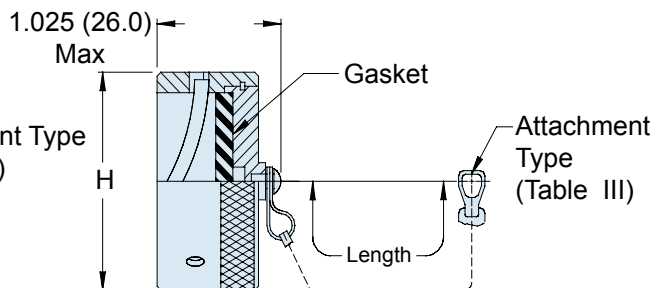
**MIL-C-38999  
Series I**



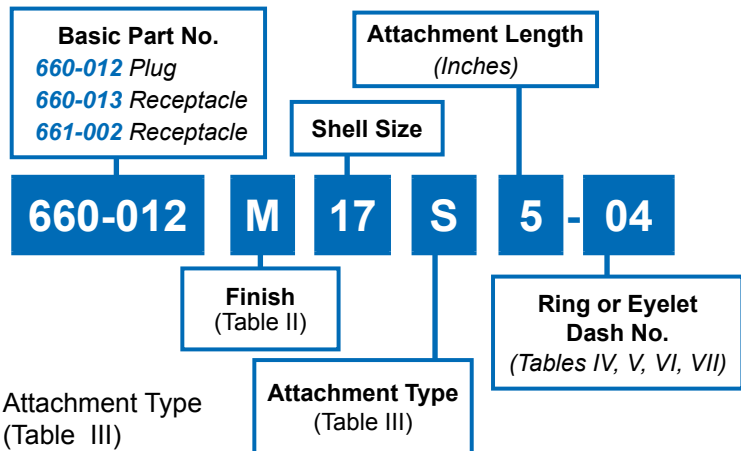
**660-012 Plug Cover**



**660-013 Receptacle Cover**



**661-002 EMI/RFI Receptacle Cover**



**TABLE I: SHELL SIZE DIMENSIONS**

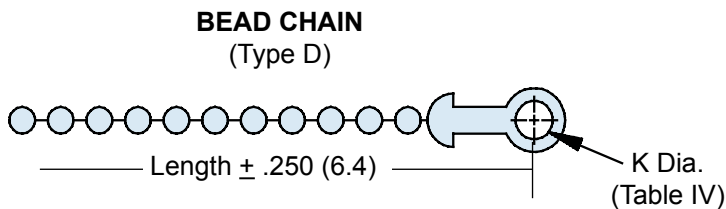
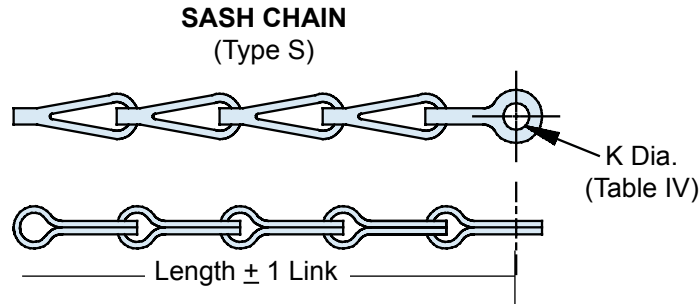
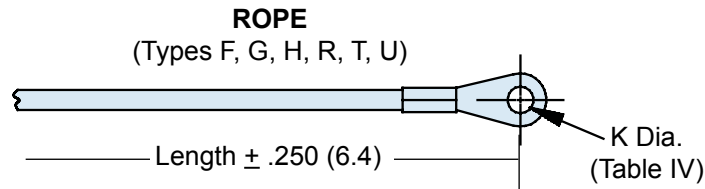
| Shell Size | F Dia        | G Dia Max    | H Max        |
|------------|--------------|--------------|--------------|
| 09         | .572 (14.5)  | .820 (20.8)  | .844 (21.4)  |
| 11         | .700 (17.8)  | .940 (23.9)  | .968 (24.6)  |
| 13         | .850 (21.6)  | 1.070 (27.2) | 1.125 (28.6) |
| 15         | .975 (24.8)  | 1.190 (30.2) | 1.250 (31.8) |
| 17         | 1.100 (27.9) | 1.320 (33.5) | 1.406 (35.7) |
| 19         | 1.207 (30.7) | 1.440 (36.6) | 1.500 (38.1) |
| 21         | 1.332 (33.8) | 1.570 (39.9) | 1.625 (41.3) |
| 23         | 1.457 (37.0) | 1.690 (42.9) | 1.750 (44.5) |
| 25         | 1.582 (40.2) | 1.820 (46.2) | 1.875 (47.6) |

Metric dimensions (mm) are indicated in parentheses.

**TABLE II: FINISHES**

| Symbol | Finish                                              |
|--------|-----------------------------------------------------|
| B      | Cadmium Plate, Olive Drab                           |
| C      | Anodize, Black                                      |
| GB     | Black Anodize, Hard Coat                            |
| M      | Electroless Nickel                                  |
| N      | Cad Plate, Olive Drab over Electroless Nickel       |
| NF     | Cadmium Plate, Olive Drab over Electroless Nickel   |
| MT     | Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer |
| Z1     | Stainless Steel Passivate                           |
| ZN     | Zinc-Nickel                                         |

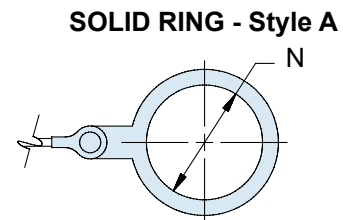
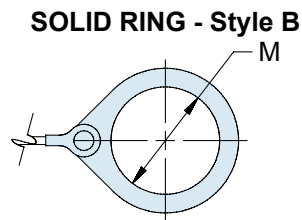
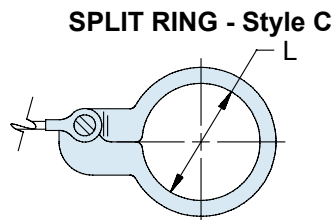
**660-012 (Plug) - 660-013 (Receptacle)  
661-002 (EMI Receptacle)  
Protective Covers  
MIL-C-38999 Series I**



| TABLE III: ATTACHMENTS |                                              |
|------------------------|----------------------------------------------|
| Sym                    | Attachment Type                              |
| D                      | Bead Chain, Cres, Passivate                  |
| F                      | Wire Rope, Nylon Jacket                      |
| G                      | Nylon Rope                                   |
| H                      | Wire Rope, Teflon Jacket                     |
| N                      | No Attachment                                |
| R                      | Wire Rope, PVC Jacket                        |
| S                      | #8 Sash Chain, Cres, Passivate               |
| T                      | Wire Rope, No Jacket                         |
| U                      | Wire Rope, Polyurethane Jacket with Terminal |

**TABLE IV: EYELET**

| Dash No. | K Dia<br>±.010 (0.3) |
|----------|----------------------|
| 01       | .140 (3.6)           |
| 02       | .182 (4.6)           |
| 03       | .191 (4.9)           |
| 04       | .197 (5.0)           |
| 05       | .167 (4.2)           |
| 06       | .125 (3.2)           |
| 07       | .218 (5.5)           |
| 09       | .156 (4.0)           |
| 00       | No Eyelet            |



**TABLE V: STYLE C RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 50       | .425 (10.8)          | 74       | 1.625 (41.3)         |
| 52       | .485 (12.3)          | 76       | 1.750 (44.5)         |
| 54       | .640 (16.3)          | 78       | 1.875 (47.6)         |
| 56       | .750 (19.1)          | 80       | 1.980 (50.3)         |
| 58       | .890 (22.6)          | 82       | 2.060 (52.3)         |
| 60       | 1.015 (25.8)         | 84       | 2.235 (56.8)         |
| 62       | 1.095 (27.8)         | 86       | 2.310 (58.7)         |
| 64       | 1.130 (28.7)         | 88       | 2.475 (62.9)         |
| 66       | 1.250 (31.8)         | 90       | 2.655 (67.4)         |
| 68       | 1.350 (34.3)         | 92       | 2.810 (71.4)         |
| 70       | 1.390 (35.3)         | 94       | 3.045 (77.3)         |
| 72       | 1.485 (37.7)         |          |                      |

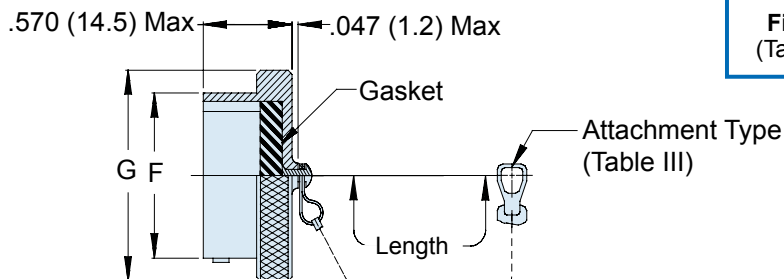
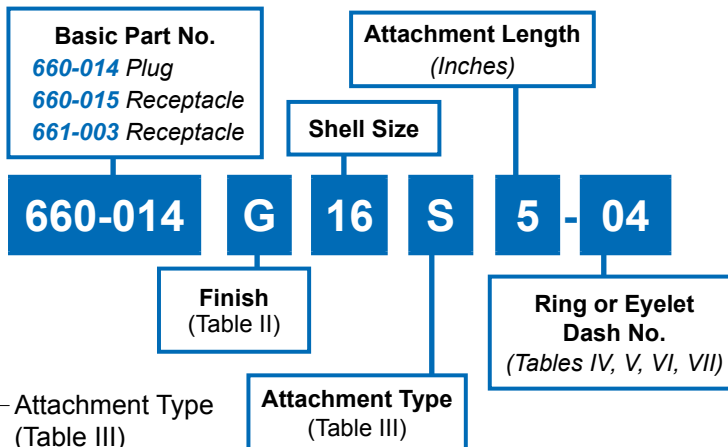
**TABLE VI: STYLE B RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 08       | .468 (11.9)          | 24       | 1.484 (37.7)         |
| 10       | .593 (15.1)          | 25       | 1.577 (40.1)         |
| 12       | .718 (18.2)          | 27       | 1.640 (41.7)         |
| 13       | .765 (19.4)          | 28       | 1.687 (42.8)         |
| 14       | .844 (21.4)          | 29       | 1.765 (44.8)         |
| 15       | .890 (22.6)          | 30       | 1.890 (48.0)         |
| 16       | .968 (24.6)          | 31       | 1.953 (49.6)         |
| 17       | 1.015 (25.8)         | 32       | 1.968 (50.0)         |
| 18       | 1.093 (27.8)         | 33       | 2.077 (52.8)         |
| 19       | 1.140 (29.0)         | 35       | 2.140 (54.4)         |
| 20       | 1.203 (30.6)         | 36       | 2.187 (55.5)         |
| 21       | 1.265 (32.1)         | 40       | 2.406 (61.1)         |
| 22       | 1.343 (34.1)         | 44       | 2.656 (67.5)         |
| 23       | 1.453 (36.9)         | 48       | 3.031 (77.0)         |
|          |                      | 118      | .310 (7.9)           |

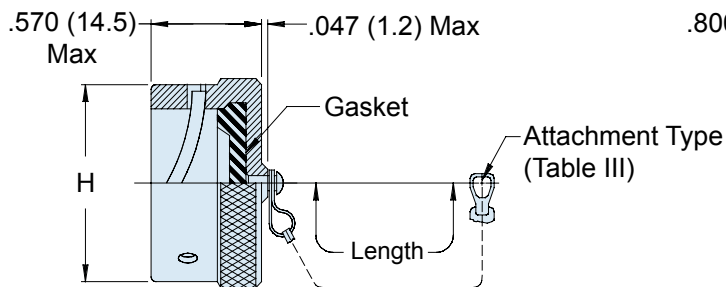
**TABLE VII: STYLE A RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 095      | .312 (7.9)           | 109      | 1.266 (32.2)         |
| 100      | .391 (9.9)           | 209      | 1.312 (33.3)         |
| 101      | 101.516 (13.1)       | 110      | 1.391 (35.3)         |
| 102      | 102.583 (14.8)       | 210      | 1.438 (36.5)         |
| 103      | 103.641 (16.3)       | 111      | 1.521 (38.6)         |
| 104      | 104.708 (18.0)       | 211      | 1.536 (39.0)         |
| 105      | 105.766 (19.5)       | 112      | 1.641 (41.7)         |
| 205      | 205.788 (20.0)       | 113      | 1.766 (44.9)         |
| 106      | 106.896 (22.2)       | 213      | 1.812 (46.0)         |
| 206      | 206.907 (23.0)       | 114      | 1.891 (48.0)         |
| 107      | 1071.016 (25.8)      | 214      | 1.938 (49.2)         |
| 207      | 2071.025 (26.0)      | 115      | 2.078 (52.8)         |
| 108      | 1081.141 (29.0)      | 116      | 2.406 (61.1)         |
| 308      | 3081.188 (30.2)      | 117      | 2.510 (63.8)         |
| 208      | 2081.203 (30.6)      |          |                      |

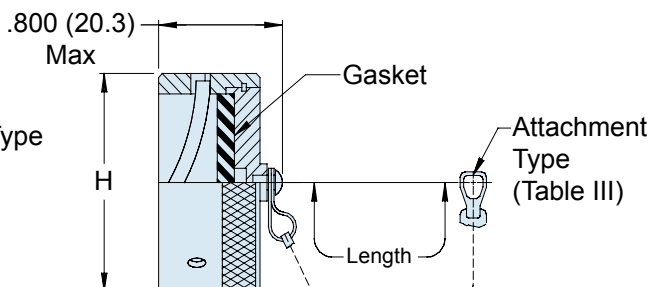
**MIL-C-38999  
Series II**



**660-014 Plug Cover**



**660-015 Receptacle Cover**



**661-003 EMI/RFI Receptacle Cover**

**SHELL SIZE DIMENSIONS**

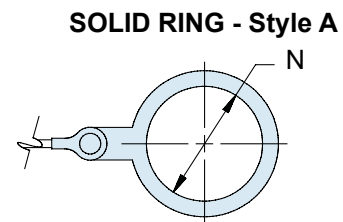
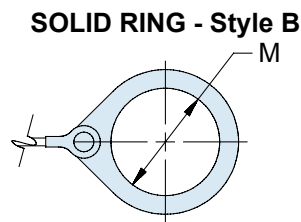
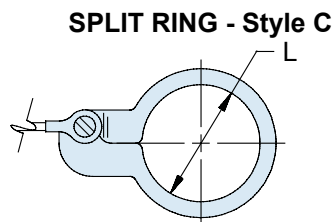
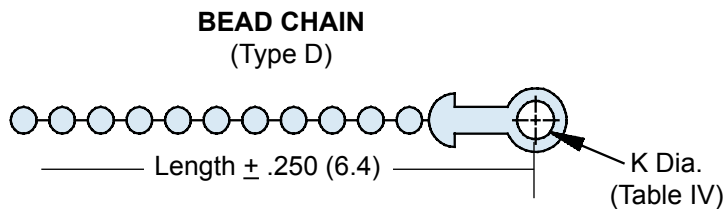
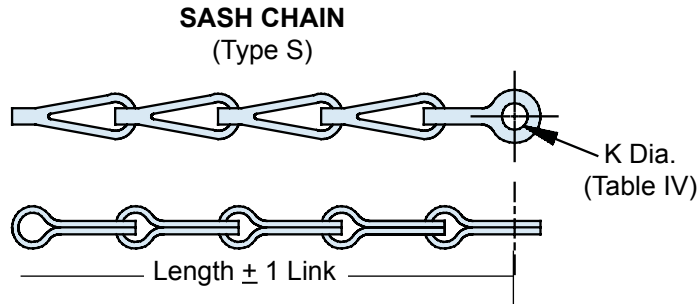
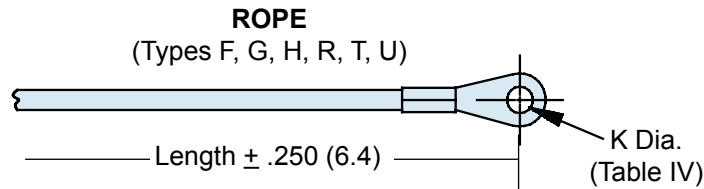
| Shell Size | F Dia        | G Dia Max    | H Max        |
|------------|--------------|--------------|--------------|
| 08         | .473 (12.0)  | .720 (18.3)  | .719 (18.3)  |
| 10         | .590 (15.0)  | .850 (21.6)  | .812 (20.6)  |
| 12         | .750 (19.1)  | 1.000 (25.4) | 1.000 (25.4) |
| 14         | .875 (22.2)  | 1.130 (28.7) | 1.125 (28.6) |
| 16         | 1.000 (25.4) | 1.250 (31.8) | 1.250 (31.8) |
| 18         | 1.125 (28.6) | 1.380 (35.1) | 1.375 (34.9) |
| 20         | 1.250 (31.8) | 1.500 (38.1) | 1.500 (38.1) |
| 22         | 1.375 (34.9) | 1.630 (41.4) | 1.625 (41.3) |
| 24         | 1.500 (38.1) | 1.750 (44.5) | 1.750 (44.5) |

Metric dimensions (mm) are indicated in parentheses.

**TABLE II: FINISHES**

| Symbol | Finish                                              |
|--------|-----------------------------------------------------|
| B      | Cadmium Plate, Olive Drab                           |
| C      | Anodize, Black                                      |
| GB     | Black Anodize, Hard Coat                            |
| M      | Electroless Nickel                                  |
| N      | Cad Plate, Olive Drab over Electroless Nickel       |
| NF     | Cadmium Plate, Olive Drab over Electroless Nickel   |
| MT     | Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer |
| Z1     | Stainless Steel Passivate                           |
| ZN     | Zinc-Nickel                                         |

**660-014 (Plug) - 660-015 (Receptacle)  
661-003 (EMI Receptacle)  
Protective Covers  
MIL-C-38999 Series II**



**TABLE III: ATTACHMENTS**

| Sym | Attachment Type                              |
|-----|----------------------------------------------|
| D   | Bead Chain, Cres, Passivate                  |
| F   | Wire Rope, Nylon Jacket                      |
| G   | Nylon Rope                                   |
| H   | Wire Rope, Fluoropolymer Jacket              |
| N   | No Attachment                                |
| R   | Wire Rope, PVC Jacket                        |
| S   | #8 Sash Chain, Cres, Passivate               |
| T   | Wire Rope, No Jacket                         |
| U   | Wire Rope, Polyurethane Jacket with Terminal |

**TABLE IV: EYELET**

| Dash No. | K Dia<br>±.010 (0.3) |
|----------|----------------------|
| 01       | .140 (3.6)           |
| 02       | .182 (4.6)           |
| 03       | .191 (4.9)           |
| 04       | .197 (5.0)           |
| 05       | .167 (4.2)           |
| 06       | .125 (3.2)           |
| 07       | .218 (5.5)           |
| 09       | .156 (4.0)           |
| 00       | No Eyelet            |

**TABLE V: STYLE C RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 50       | .425 (10.8)          | 74       | 1.625 (41.3)         |
| 52       | .485 (12.3)          | 76       | 1.750 (44.5)         |
| 54       | .640 (16.3)          | 78       | 1.875 (47.6)         |
| 56       | .750 (19.1)          | 80       | 1.980 (50.3)         |
| 58       | .890 (22.6)          | 82       | 2.060 (52.3)         |
| 60       | 1.015 (25.8)         | 84       | 2.235 (56.8)         |
| 62       | 1.095 (27.8)         | 86       | 2.310 (58.7)         |
| 64       | 1.130 (28.7)         | 88       | 2.475 (62.9)         |
| 66       | 1.250 (31.8)         | 90       | 2.655 (67.4)         |
| 68       | 1.350 (34.3)         | 92       | 2.810 (71.4)         |
| 70       | 1.390 (35.3)         | 94       | 3.045 (77.3)         |
| 72       | 1.485 (37.7)         |          |                      |

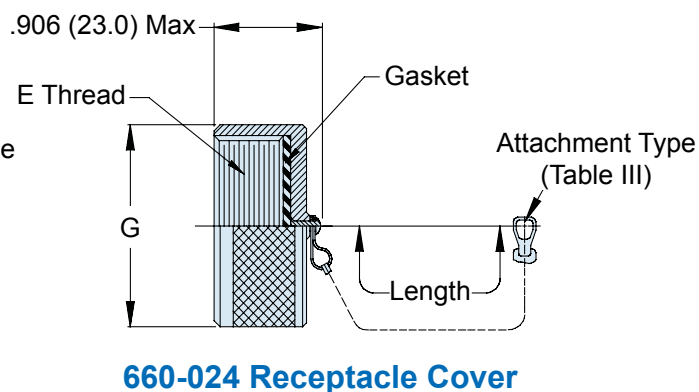
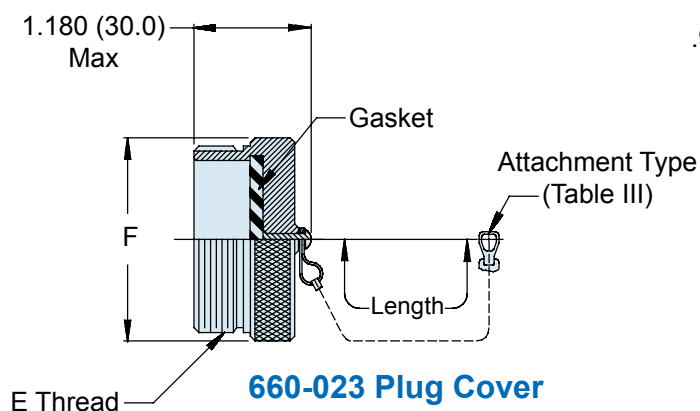
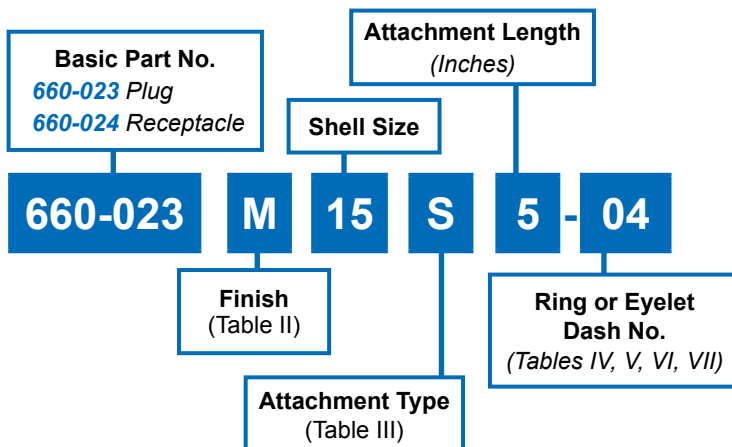
**TABLE VI: STYLE B RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 08       | .468 (11.9)          | 24       | 1.484 (37.7)         |
| 10       | .593 (15.1)          | 25       | 1.577 (40.1)         |
| 12       | .718 (18.2)          | 27       | 1.640 (41.7)         |
| 13       | .765 (19.4)          | 28       | 1.687 (42.8)         |
| 14       | .844 (21.4)          | 29       | 1.765 (44.8)         |
| 15       | .890 (22.6)          | 30       | 1.890 (48.0)         |
| 16       | .968 (24.6)          | 31       | 1.953 (49.6)         |
| 17       | 1.015 (25.8)         | 32       | 1.968 (50.0)         |
| 18       | 1.093 (27.8)         | 33       | 2.077 (52.8)         |
| 19       | 1.140 (29.0)         | 35       | 2.140 (54.4)         |
| 20       | 1.203 (30.6)         | 36       | 2.187 (55.5)         |
| 21       | 1.265 (32.1)         | 40       | 2.406 (61.1)         |
| 22       | 1.343 (34.1)         | 44       | 2.656 (67.5)         |
| 23       | 1.453 (36.9)         | 48       | 3.031 (77.0)         |
|          |                      | 118      | .310 (7.9)           |

**TABLE VII: STYLE A RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 095      | .312 (7.9)           | 109      | 1.266 (32.2)         |
| 100      | .391 (9.9)           | 209      | 1.312 (33.3)         |
| 101      | .516 (13.1)          | 110      | 1.391 (35.3)         |
| 102      | .583 (14.8)          | 210      | 1.438 (36.5)         |
| 103      | .641 (16.3)          | 111      | 1.521 (38.6)         |
| 104      | .708 (18.0)          | 211      | 1.536 (39.0)         |
| 105      | .766 (19.5)          | 112      | 1.641 (41.7)         |
| 205      | .788 (20.0)          | 113      | 1.766 (44.9)         |
| 106      | .896 (22.7)          | 213      | 1.812 (46.0)         |
| 206      | .907 (23.0)          | 114      | 1.891 (48.0)         |
| 107      | 1.016 (25.8)         | 214      | 1.938 (49.2)         |
| 207      | 1.025 (26.0)         | 115      | 2.078 (52.8)         |
| 108      | 1.141 (29.0)         | 116      | 2.406 (61.1)         |
| 308      | 1.188 (30.2)         | 117      | 2.510 (63.8)         |
| 208      | 1.203 (30.6)         |          |                      |

**MIL-C-38999  
Series III**



**SHELL SIZE DIMENSIONS**

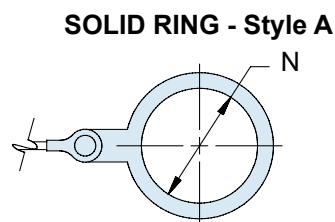
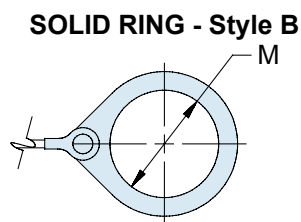
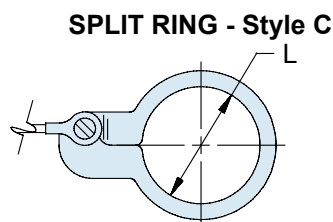
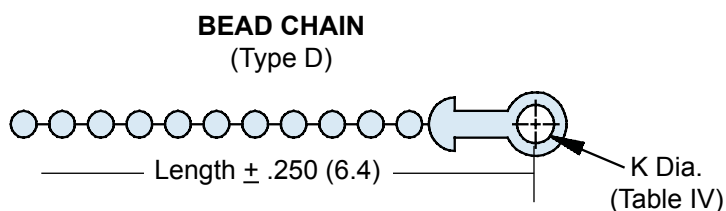
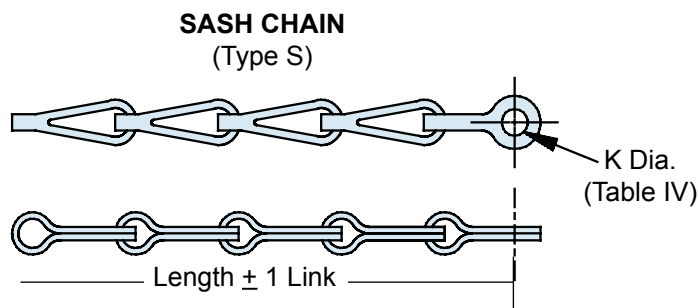
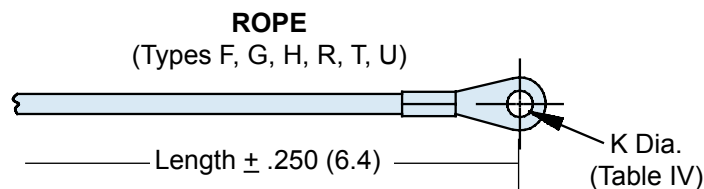
| Shell Size | Shell Size Code Ref. | E Thread            | F Max        | G Max        |
|------------|----------------------|---------------------|--------------|--------------|
| 09         | A                    | .6250-0.1P-0.3L-TS  | .906 (23.0)  | .906 (23.0)  |
| 11         | B                    | .7500-0.1P-0.3L-TS  | 1.024 (26.0) | 1.102 (28.0) |
| 13         | C                    | .8750-0.1P-0.3L-TS  | 1.220 (31.0) | 1.220 (31.0) |
| 15         | D                    | 1.0000-0.1P-0.3L-TS | 1.300 (33.0) | 1.260 (32.0) |
| 17         | E                    | 1.1875-0.1P-0.3L-TS | 1.457 (37.0) | 1.457 (37.0) |
| 19         | F                    | 1.2500-0.1P-0.3L-TS | 1.575 (40.0) | 1.535 (39.0) |
| 21         | G                    | 1.3750-0.1P-0.3L-TS | 1.732 (44.0) | 1.654 (42.0) |
| 23         | H                    | 1.5000-0.1P-0.3L-TS | 1.811 (46.0) | 1.772 (45.0) |
| 25         | J                    | 1.6250-0.1P-0.3L-TS | 1.969 (50.0) | 1.929 (49.0) |

Metric dimensions (mm) are indicated in parentheses.

**TABLE II: FINISHES**

| Symbol    | Finish                                              |
|-----------|-----------------------------------------------------|
| <b>B</b>  | Cadmium Plate, Olive Drab                           |
| <b>C</b>  | Anodize, Black                                      |
| <b>GB</b> | Black Anodize, Hard Coat                            |
| <b>M</b>  | Electroless Nickel                                  |
| <b>N</b>  | Cad Plate, Olive Drab over Electroless Nickel       |
| <b>NF</b> | Cadmium Plate, Olive Drab over Electroless Nickel   |
| <b>MT</b> | Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer |
| <b>Z1</b> | Stainless Steel Passivate                           |
| <b>ZN</b> | Zinc-Nickel                                         |

**660-023 (Plug) - 660-024 (Receptacle)**  
**Protective Covers**  
**MIL-C-38999 Series III Threaded**



**TABLE III: ATTACHMENTS**

| Sym | Attachment Type                              |
|-----|----------------------------------------------|
| D   | Bead Chain, Cres, Passivate                  |
| F   | Wire Rope, Nylon Jacket                      |
| G   | Nylon Rope                                   |
| H   | Wire Rope, Fluoropolymer Jacket              |
| N   | No Attachment                                |
| R   | Wire Rope, PVC Jacket                        |
| S   | #8 Sash Chain, Cres, Passivate               |
| T   | Wire Rope, No Jacket                         |
| U   | Wire Rope, Polyurethane Jacket with Terminal |

**TABLE IV: EYELET**

| Dash No. | K Dia<br>±.010 (0.3) |
|----------|----------------------|
| 01       | .140 (3.6)           |
| 02       | .182 (4.6)           |
| 03       | .191 (4.9)           |
| 04       | .197 (5.0)           |
| 05       | .167 (4.2)           |
| 06       | .125 (3.2)           |
| 07       | .218 (5.5)           |
| 09       | .156 (4.0)           |
| 00       | No Eyelet            |

**TABLE V: STYLE C RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 50       | .425 (10.8)          | 74       | 1.625 (41.3)         |
| 52       | .485 (12.3)          | 76       | 1.750 (44.5)         |
| 54       | .640 (16.3)          | 78       | 1.875 (47.6)         |
| 56       | .750 (19.1)          | 80       | 1.980 (50.3)         |
| 58       | .890 (22.6)          | 82       | 2.060 (52.3)         |
| 60       | 1.015 (25.8)         | 84       | 2.235 (56.8)         |
| 62       | 1.095 (27.8)         | 86       | 2.310 (58.7)         |
| 64       | 1.130 (28.7)         | 88       | 2.475 (62.9)         |
| 66       | 1.250 (31.8)         | 90       | 2.655 (67.4)         |
| 68       | 1.350 (34.3)         | 92       | 2.810 (71.4)         |
| 70       | 1.390 (35.3)         | 94       | 3.045 (77.3)         |
| 72       | 1.485 (37.7)         |          |                      |

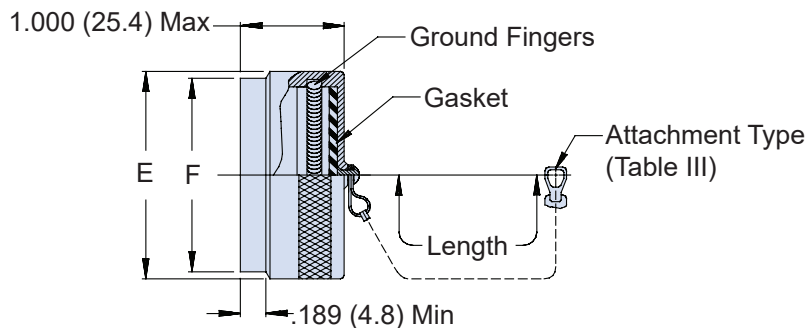
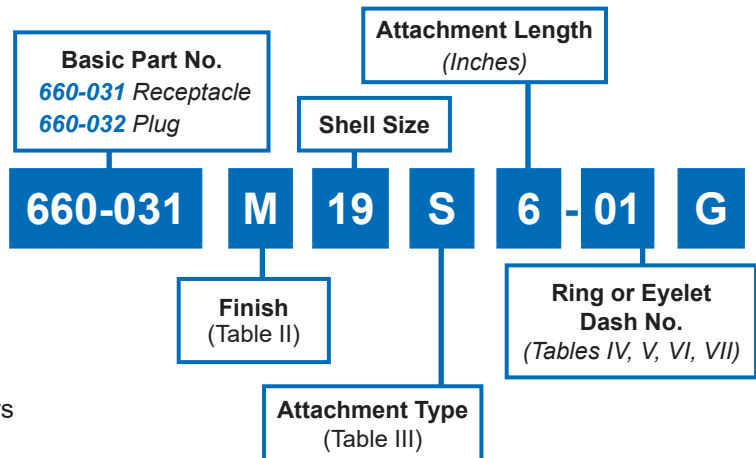
**TABLE VI: STYLE B RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 08       | .468 (11.9)          | 24       | 1.484 (37.7)         |
| 10       | .593 (15.1)          | 25       | 1.577 (40.1)         |
| 12       | .718 (18.2)          | 27       | 1.640 (41.7)         |
| 13       | .765 (19.4)          | 28       | 1.687 (42.8)         |
| 14       | .844 (21.4)          | 29       | 1.765 (44.8)         |
| 15       | .890 (22.6)          | 30       | 1.890 (48.0)         |
| 16       | .968 (24.6)          | 31       | 1.953 (49.6)         |
| 17       | 1.015 (25.8)         | 32       | 1.968 (50.0)         |
| 18       | 1.093 (27.8)         | 33       | 2.077 (52.8)         |
| 19       | 1.140 (29.0)         | 35       | 2.140 (54.4)         |
| 20       | 1.203 (30.6)         | 36       | 2.187 (55.5)         |
| 21       | 1.265 (32.1)         | 40       | 2.406 (61.1)         |
| 22       | 1.343 (34.1)         | 44       | 2.656 (67.5)         |
| 23       | 1.453 (36.9)         | 48       | 3.031 (77.0)         |
|          |                      | 118      | .310 (7.9)           |

**TABLE VII: STYLE A RING DIA.**

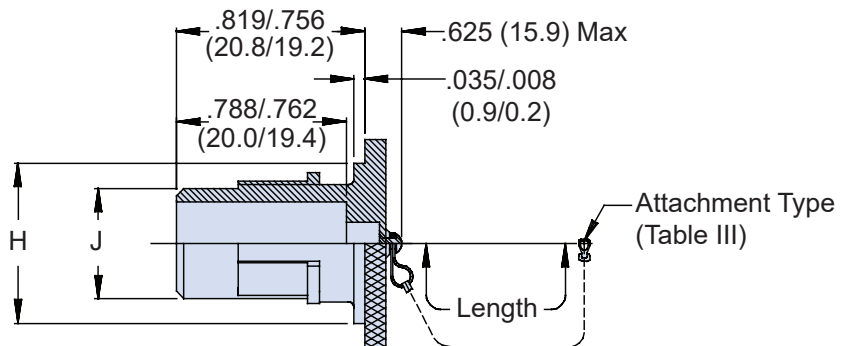
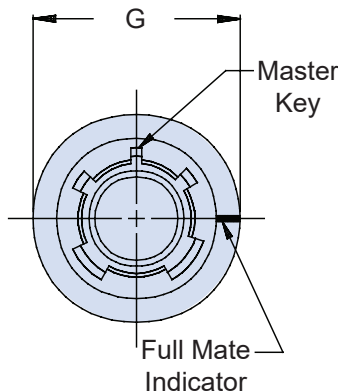
| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 095      | .312 (7.9)           | 109      | 1.266 (32.2)         |
| 100      | .391 (9.9)           | 209      | 1.312 (33.3)         |
| 101      | .516 (13.1)          | 110      | 1.391 (35.3)         |
| 102      | .583 (14.8)          | 210      | 1.438 (36.5)         |
| 103      | .641 (16.3)          | 111      | 1.521 (38.6)         |
| 104      | .708 (18.0)          | 211      | 1.536 (39.0)         |
| 105      | .766 (19.5)          | 112      | 1.641 (41.7)         |
| 205      | .788 (20.0)          | 113      | 1.766 (44.9)         |
| 106      | .896 (22.2)          | 213      | 1.812 (46.0)         |
| 206      | .907 (23.0)          | 114      | 1.891 (48.0)         |
| 107      | 1.016 (25.8)         | 214      | 1.938 (49.2)         |
| 207      | 1.025 (26.0)         | 115      | 2.078 (52.8)         |
| 108      | 1.141 (29.0)         | 116      | 2.406 (61.1)         |
| 308      | 1.188 (30.2)         | 117      | 2.510 (63.8)         |
| 208      | 1.203 (30.6)         |          |                      |

**MIL-C-38999  
Series IV**



**660-031 Receptacle Cover**

| TABLE II: FINISHES |                                                   |
|--------------------|---------------------------------------------------|
| Symbol             | Finish                                            |
| MT                 | Ni-PTFE                                           |
| M                  | Electroless Nickel                                |
| NF                 | Cadmium Plate, Olive Drab over Electroless Nickel |



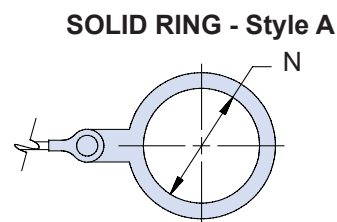
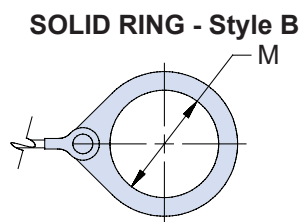
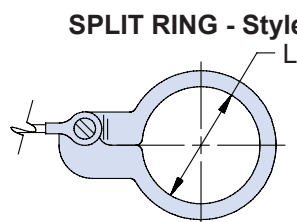
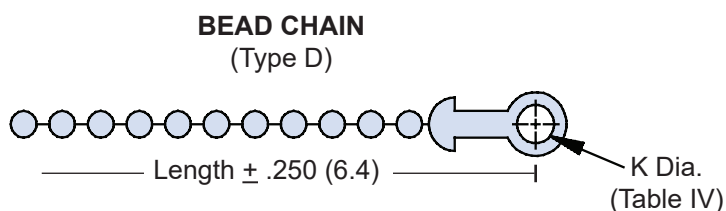
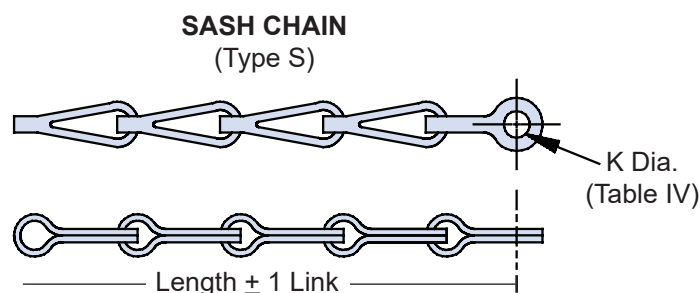
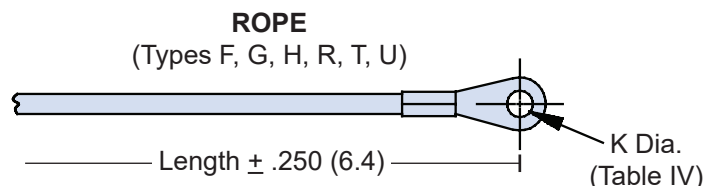
**660-032 Plug Cover**

**SHELL SIZE DIMENSIONS**

| Shell Size | Shell Size Code Ref. | E Dia Max    | F Dia Max    | G Dia Max    | H Dia +0.0 (+0.0) -0.015 (-0.4) | J Dia +0.0 (+0.0) -0.015 (-0.4) |
|------------|----------------------|--------------|--------------|--------------|---------------------------------|---------------------------------|
| 11         | B                    | .875 (22.2)  | .775 (19.7)  | 1.180 (30.0) | .793 (20.1)                     | .509 (12.9)                     |
| 13         | C                    | 1.000 (25.4) | .901 (22.9)  | 1.320 (33.5) | .919 (23.3)                     | .634 (16.1)                     |
| 15         | D                    | 1.125 (28.6) | 1.039 (26.4) | 1.440 (36.6) | 1.044 (26.5)                    | .759 (19.3)                     |
| 17         | E                    | 1.250 (31.8) | 1.150 (29.2) | 1.560 (39.6) | 1.170 (29.7)                    | .885 (22.5)                     |
| 19         | F                    | 1.375 (34.9) | 1.276 (32.4) | 1.680 (42.7) | 1.294 (32.9)                    | 1.009 (25.6)                    |
| 21         | G                    | 1.500 (38.1) | 1.402 (35.6) | 1.820 (46.2) | 1.419 (36.0)                    | 1.134 (28.8)                    |
| 23         | H                    | 1.625 (41.3) | 1.528 (38.8) | 1.940 (49.3) | 1.544 (39.2)                    | 1.259 (32.0)                    |
| 25         | J                    | 1.750 (44.5) | 1.650 (41.9) | 2.060 (52.3) | 1.669 (42.4)                    | 1.384 (35.2)                    |

Metric dimensions (mm) are indicated in parentheses.

**660-031 (Receptacle) - 660-032 (Plug)**  
**Protective Covers**  
**MIL-C-38999 Series IV**



**TABLE III: ATTACHMENTS**

| Sym | Attachment Type                              |
|-----|----------------------------------------------|
| D   | Bead Chain, Cres, Passivate                  |
| F   | Wire Rope, Nylon Jacket                      |
| G   | Nylon Rope                                   |
| H   | Wire Rope, Fluoropolymer Jacket              |
| N   | No Attachment                                |
| R   | Wire Rope, PVC Jacket                        |
| S   | #8 Sash Chain, Cres, Passivate               |
| T   | Wire Rope, No Jacket                         |
| U   | Wire Rope, Polyurethane Jacket with Terminal |

**TABLE IV: EYELET**

| Dash No. | K Dia<br>±.010 (0.3) |
|----------|----------------------|
| 01       | .140 (3.6)           |
| 02       | .182 (4.6)           |
| 03       | .191 (4.9)           |
| 04       | .197 (5.0)           |
| 05       | .167 (4.2)           |
| 06       | .125 (3.2)           |
| 07       | .218 (5.5)           |
| 09       | .156 (4.0)           |
| 00       | No Eyelet            |

**TABLE V: STYLE C RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 50       | .425 (10.8)          | 74       | 1.625 (41.3)         |
| 52       | .485 (12.3)          | 76       | 1.750 (44.5)         |
| 54       | .640 (16.3)          | 78       | 1.875 (47.6)         |
| 56       | .750 (19.1)          | 80       | 1.980 (50.3)         |
| 58       | .890 (22.6)          | 82       | 2.060 (52.3)         |
| 60       | 1.015 (25.8)         | 84       | 2.235 (56.8)         |
| 62       | 1.095 (27.8)         | 86       | 2.310 (58.7)         |
| 64       | 1.130 (28.7)         | 88       | 2.475 (62.9)         |
| 66       | 1.250 (31.8)         | 90       | 2.655 (67.4)         |
| 68       | 1.350 (34.3)         | 92       | 2.810 (71.4)         |
| 70       | 1.390 (35.3)         | 94       | 3.045 (77.3)         |
| 72       | 1.485 (37.7)         |          |                      |

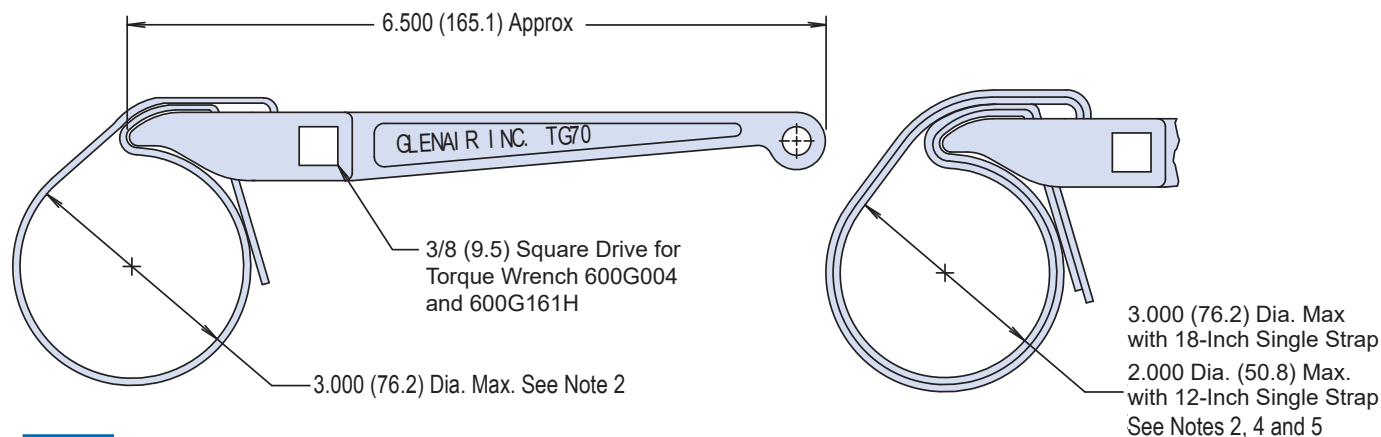
**TABLE VI: STYLE B RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 08       | .468 (11.9)          | 24       | 1.484 (37.7)         |
| 10       | .593 (15.1)          | 25       | 1.577 (40.1)         |
| 12       | .718 (18.2)          | 27       | 1.640 (41.7)         |
| 13       | .765 (19.4)          | 28       | 1.687 (42.8)         |
| 14       | .844 (21.4)          | 29       | 1.765 (44.8)         |
| 15       | .890 (22.6)          | 30       | 1.890 (48.0)         |
| 16       | .968 (24.6)          | 31       | 1.953 (49.6)         |
| 17       | 1.015 (25.8)         | 32       | 1.968 (50.0)         |
| 18       | 1.093 (27.8)         | 33       | 2.077 (52.8)         |
| 19       | 1.140 (29.0)         | 35       | 2.140 (54.4)         |
| 20       | 1.203 (30.6)         | 36       | 2.187 (55.5)         |
| 21       | 1.265 (32.1)         | 40       | 2.406 (61.1)         |
| 22       | 1.343 (34.1)         | 44       | 2.656 (67.5)         |
| 23       | 1.453 (36.9)         | 48       | 3.031 (77.0)         |
|          |                      | 118      | .310 (7.9)           |

**TABLE VII: STYLE A RING DIA.**

| Dash No. | N Dia<br>±.015 (0.4) | Dash No. | N Dia<br>±.015 (0.4) |
|----------|----------------------|----------|----------------------|
| 095      | .312 (7.9)           | 109      | 1.266 (32.2)         |
| 100      | .391 (9.9)           | 209      | 1.312 (33.3)         |
| 101      | .516 (13.1)          | 110      | 1.438 (36.5)         |
| 102      | .583 (14.8)          | 210      | 1.438 (36.5)         |
| 103      | .641 (16.3)          | 111      | 1.521 (38.6)         |
| 104      | .708 (18.0)          | 211      | 1.536 (39.0)         |
| 105      | .766 (19.5)          | 112      | 1.641 (41.7)         |
| 205      | .788 (20.0)          | 113      | 1.766 (44.9)         |
| 106      | .896 (22.2)          | 213      | 1.812 (46.0)         |
| 206      | .907 (23.0)          | 114      | 1.891 (48.0)         |
| 107      | 1.016 (25.8)         | 214      | 1.938 (49.2)         |
| 207      | 1.025 (26.0)         | 115      | 2.078 (52.8)         |
| 108      | 1.141 (29.0)         | 116      | 2.406 (61.1)         |
| 308      | 1.188 (30.2)         | 117      | 2.510 (63.8)         |
| 208      | 1.203 (30.6)         |          |                      |

## TG70 Strap Wrench

Basic  
Part  
NumberTorque Wrench  
(Omit for None)

TG70 - 1 - 18

**Strap Length in Inches (See Notes 2 and 4)**

Lengths Available: 12, 18, 24 and 36-Inch Only  
Standard length is 12 Inches.  
Omit Dash Number for Standard

### APPLICATION NOTES

- These wrenches are made of the following materials:  
Wrench Handle - Aluminum Alloy/Nickel Plate.  
Wedge - Stainless Steel/Passivated.  
Strap - Impregnated Fabric. Straps are 1/2 inch (12.7) in width.
- Replacement straps are available. Specify part number G70515-xx for 12, 18, 24 or 36-inch strap. 24 and 36 inch for double wrap.
- Metric dimensions (mm) are indicated in parentheses.
- Double wrap as shown for heavy duty range.
- Not recommended for composite coupling nuts (use 600-091 or 600-157).

### INSTALLATION TORQUE VALUES FOR CIRCULAR ELECTRICAL CONNECTOR ACCESSORIES

| Shell Sizes        | Column 1<br>Light and Medium Duty | Column 2<br>Heavy Duty |
|--------------------|-----------------------------------|------------------------|
|                    | In-Lbs, Min/Max                   | In-Lbs, Min/Max        |
| 8, 9, A            | 30/40                             | 51/61                  |
| 3, 10, 10SL, 11, B | 30/40                             | 71/81                  |
| 7, 12, 12S, 13, C  | 35/45                             | 103/113                |
| 14, 14S, 15, D     | 35/45                             | 111/121                |
| 16, 16S, 17, E     | 35/45                             | 111/121                |
| 18, 19, 27, F      | 35/45                             | 111/121                |
| 20, 21, 37, G      | 75/85                             | 131/141                |
| 22, 23, H          | 75/85                             | 131/141                |
| 24, 25, 61, J      | 75/85                             | 131/141                |
| 28, 29             | 115/125                           | 143/153                |
| 32, 33             | 115/125                           | 143/153                |
| 36                 | 115/125                           | 142/153                |

### VARIANCE CHART NOTES

- Torque values per SAE AIR6151, all values are provided in Inch/Pounds.
- For additional guidance or values/conditions not listed, refer to the complete SAE AIR6151.
- Heavy duty installation torque values (Column 2) may be difficult to obtain using the standard single wrap strap as supplied in the TG70. To achieve column 2 torque across all shell sizes a double wrap strap (using longer straps) is required as well as very careful placement of the tool and strap around the coupling to achieve maximum grip. Clean and oil-free surfaces are imperative.
- Glenair 600-006/079/103/107 circular pliers are also suitable for higher torque ranges.
- Glenair recommends that torque values be measured directly read through the connector shell using suitable holding tool from our 600-005 socket sets and ply holder with the use of 600-005 connectors holding tools.
- Due to the offset of the 3/8" square drive from the centerline of the applied torque (centerline of the connector/backshell) offset torque values must be calculated by using any of the common offset value formulas or web apps that are readily available.

600-058 and 600-061  
The **BAND-IT®** Clamping System  
Hand Banding Tools



## Fast, Cost-Effective Shielding Termination

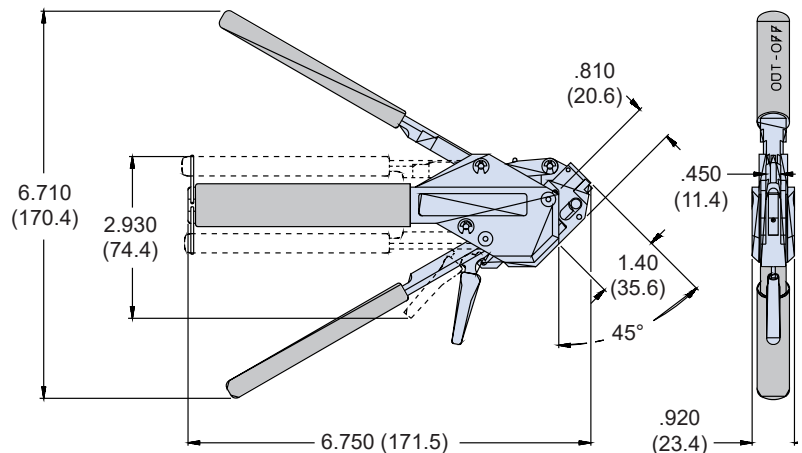
The **BAND-IT®** clamping system provides quick, easy, cost-effective and highly reliable termination of braided metallic shielding or fabric braid. Two sizes of banding tools and bands (bands are also available in standard and extended lengths) allow complete flexibility in terminating EMI shielding and protective mechanical braiding to fiber optic and electrical harnesses. Glenair's complete line of **BAND-IT®** products are in stock and ready for immediate shipment.



### Hand Banding Tool 600-058

**The 600-058 Hand Banding Tool** weighs 1.18 lbs., and is designed for standard clamping bands 600-052 and 600-090 (see page 36) in a tension range from 100 to 180 lbs. Calibrate at 150 lbs.  $\pm$  5 lbs. for most shield terminations. Tool and band should never be lubricated.

Reference: **BAND-IT®** part number A40199.

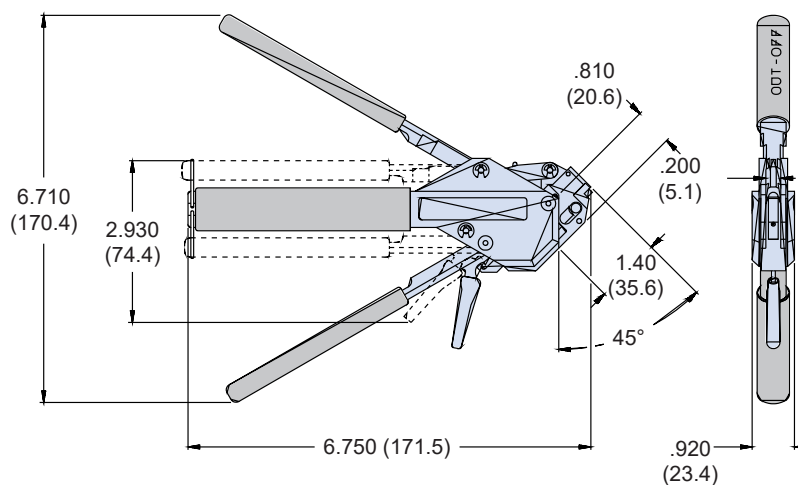


### Hand Micro Banding Tool

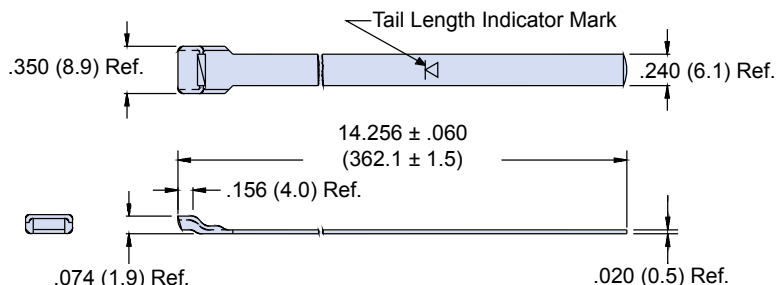
#### 600-061

**The 600-061 Hand Micro Banding Tool** weighs 1.18 lbs., and is designed for micro clamping bands 600-057 and 600-083 (see page 36) in a tension range from 50 to 85 lbs. Calibrate at 80lbs  $\pm$  5 lbs. for most shield terminations. Tool and band should never be lubricated.

Reference: **BAND-IT®** part number A30199.



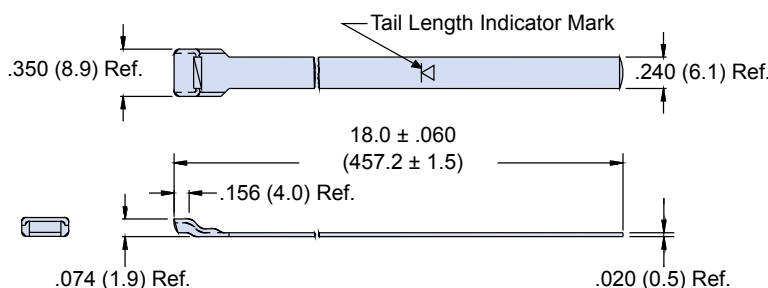
## Standard Band 600-052 and Precoiled Standard Band 600-052-1



**The 600-052 Standard Band** is precision constructed of 300 Series SST/Passivate and designed for use with the 600-058 Hand Banding Tool or the 600-067 Pneumatic Banding Tool. Double-wrapped bands will accommodate diameters up to approximately 1.8 inches (45.7). Bands may be ordered flat (600-052) or precoiled (600-052-1). Bands come bagged and tagged in quantities from 1 to 100.

Reference: BAND-IT® Part Number A10086

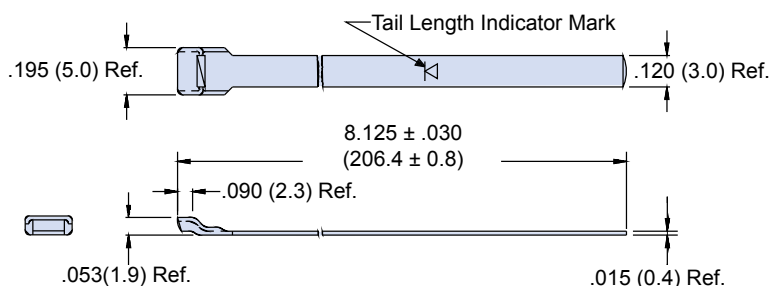
## Extended-Length Standard Band 600-090 and Precoiled Extended-Length Standard Band 600-090-1



**The 600-090 Extended Length Standard Band** is precision constructed of 300 Series SST/Passivate, and designed for use with the 600-058 Hand Banding Tool or the 600-067 Pneumatic Banding Tool. Double-wrapped bands will accommodate diameters up to approximately 2.5 inches (63.5). Bands may be ordered flat (600-090), or precoiled (600-090-1). Bands come bagged and tagged in quantities from 1 to 100.

Reference: BAND-IT® Part Number A11086

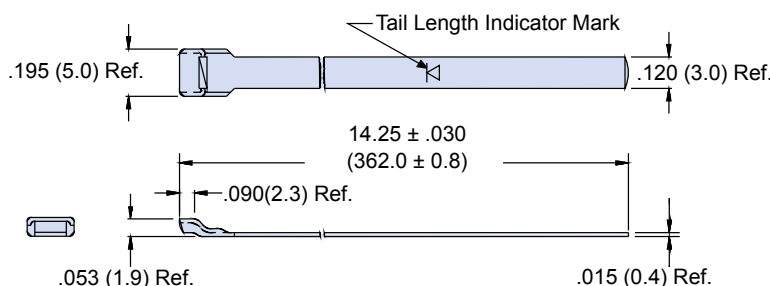
## Micro-Band 600-057 Precoiled Micro-Band 600-057-1



**The 600-057 Micro Band** is precision constructed of 300 Series SST/Passivate, and designed for use with the 600-061 Hand Banding Tool or the 600-068 Pneumatic Banding Tool. Double-wrapped bands will accommodate diameters up to approximately .88 inches (22.4). Bands may be ordered flat (600-057), or precoiled (600-057-1). Bands come bagged and tagged in quantities from 1 to 100.

Reference: BAND-IT® Part Number A31186

## Extended Length Micro-Band 600-083 Precoiled Micro-Band 600-083-1



**The 600-083 Extended Length Micro-Band** is precision constructed of 300 Series SST/Passivate, and designed for use with the 600-061 Hand Banding Tool or the 600-068 Pneumatic Banding Tool. Double-wrapped bands will accommodate diameters up to approximately 1.88 inches (47.8). Bands may be ordered flat (600-083), or precoiled (600-083-1). Bands come bagged and tagged in quantities from 1 to 100.

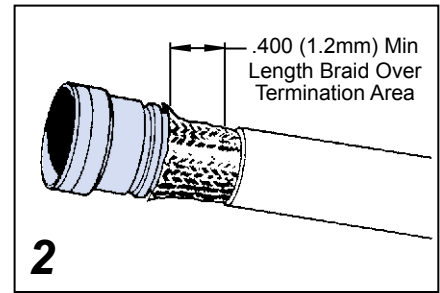
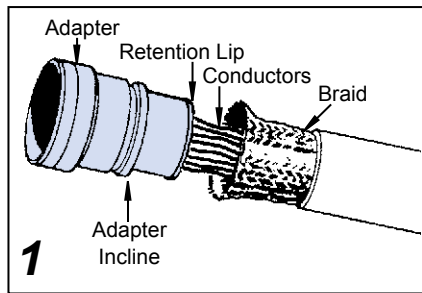
Reference: BAND-IT® Part Number A31089.

Metric dimensions (mm) are indicated in parentheses. Consult factory for diameters above 2.5 inches (63.5).

# The **BAND-IT**® Clamping System EMI Shield Termination Instructions



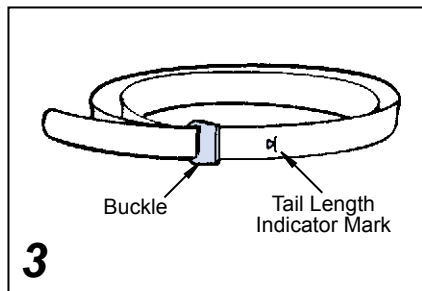
1. Prepare cable braid for termination process (Figure 1).
2. Push braid forward over adapter retention lip to the adapter incline point (or .4" [10.2mm] minimum braid length). Milk braid as required to remove slack and ensure a snug fit around the shield termination area (Figure 2).



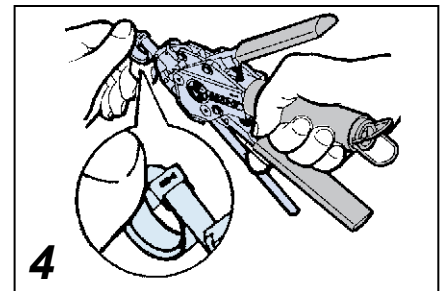
3. Prepare the band in the following manner:

**IMPORTANT:** Due to Connector/Adapter circumference, it may be necessary to prepare the band around the cable or retention area.

- A. Roll band through the buckle slot twice (bands must be double-coiled).



- B. Pull on band until mark (▷) is within approximately .250 inch (6.4mm) of buckle slot (Figure 3). The band may be tightened further if desired.

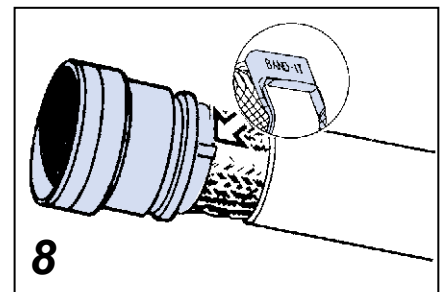
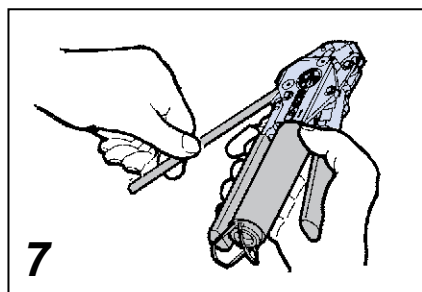
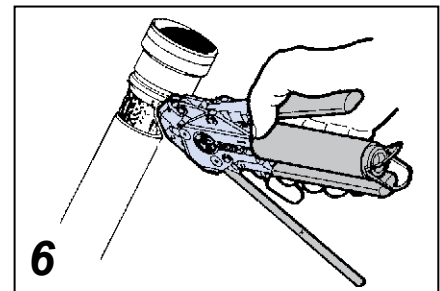
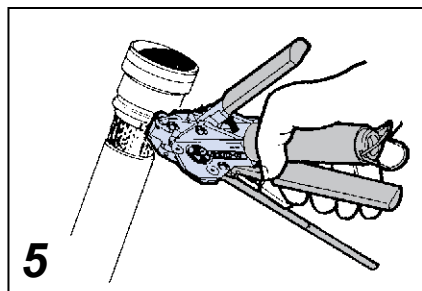


**NOTE:** Prepared band should have (▷) mark visible as shown in Figure 3.

## Shield Termination Clamping Process (Figures 4 thru 8)

**NOTE:** To free tool handles, move holding clips to center of tool.

4. Squeeze gripper release lever and insert band into the front end opening of the tool (NOTE: Circular portion of looped band must always face downward).
5. Aligning the band and tool with the shield termination area, squeeze black pull-up handle repeatedly using short strokes until it locks against tool body. (This indicates the band is compressed to the tool precalibrated tension).



**NOTE:** If alignment of band and shield is unsatisfactory, tension on band can be relaxed by pushing on slotted release lever on top of tool. Make adjustments as necessary and again, squeeze black pull-up handle.

6. Complete the clamping process by squeezing the gray cut-off handle.
7. Remove excess band from tool and dispose.
8. Inspect shield termination.

**ANALOG HAND-HELD TORQUE WRENCH**

**600G004 Hand-Held Torque Wrench with Analog Readout**

Torque wrench features a 3/8" drive head and rotatable analog readout. Features a lighted and audible electric signal and is adjustable to desired torque level from 0 to 150 inch pounds. Requires 9 volt battery (included).

**ANALOG HAND-HELD, HIGH TORQUE WRENCH**

**600-076 Hand-Held High Torque Wrench with Analog Readout**

Torque wrench features a dual sided 3/8" drive head for hand or bench mount use. Features a lighted electric signal and is adjustable to desired torque level from 20 to 360 inch pounds. Requires two Panasonic SR44W or equivalent batteries

**ANALOG TORQUE WRENCH AND BENCH STAND**

**600G007 Bench-Mount Torque Wrench with Analog Readout**

Torque wrench features a 3/8" drive head and rotatable analog readout. Features a lighted and audible electric signal and is adjustable to desired torque level from 0 to 150 inch pounds. Requires 9 volt battery (included).

**ANALOG HIGH TORQUE WRENCH AND BENCH STAND**

**600-077 Bench-Mount Torque Wrench with Analog Readout**

Torque wrench features a 3/8" drive head and analog readout. Lighted electric signal indicator and is adjustable to desired torque level from 20 to 360 inch pounds. Requires two Panasonic SR44W or equivalent batteries

# 600G161 Digital Torque Wrench, 600-162B and 600-162BV Bench Stand Tools for Connector/Backshell Assembly Torque Wrenches



## DIGITAL TORQUE WRENCH AND BENCH STAND

### Torque Wrench 600G161



### Digital Readout For Improved Accuracy

The Glenair dual drive digital torque wrench (600G161-D) features a dual sided drive head for hand or bench mount use. Features rotatable digital readout display. Available torque units include: Ft-lb, In-lb and Nm. Peak and hold mode allow for data collection capability via supplied software and USB adapter. Provides quality departments the ability to track and record individual torque values.

600G161-D data charger kit. Upgrades 600G161 for data collection and battery recharging.

1. Use in conjunction with Glenair connector and backshell tools
2. Torque range: 25-250 in/lbs; digital graduations 1/10 in/lb;
3. Accuracy:  $\pm 1\%$  of indicated value
4. replacement battery: AAA x 4

5. USB cable, datatracking software, AC adapter, and 3/8" to 1/4" drive adapter included. Standard AAA alkaline batteries included with 600G161. Rechargeable NiMH AAA batteries and data/charger kit included with 600G161-D

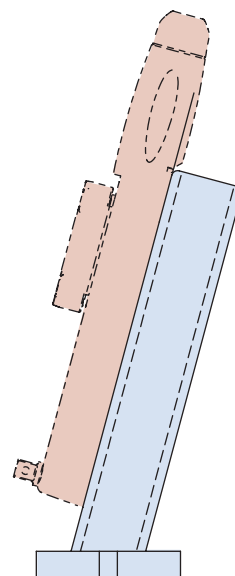
### 600-162B DIGITAL TORQUE WRENCH BENCH STAND

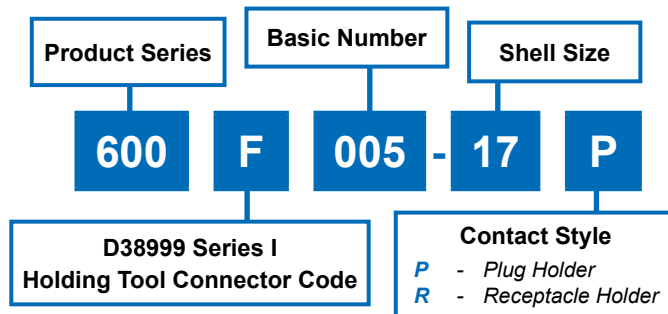
1. Use in conjunction with Glenair 600G161 or 600G161-D digital torque wrench, sold separately
2. Material: steel, powder coat
3. Weight: 3 lbs
4. Supplied with mounting hardware
5. Tools required: T15 Torx® bit, 3/32" hex key



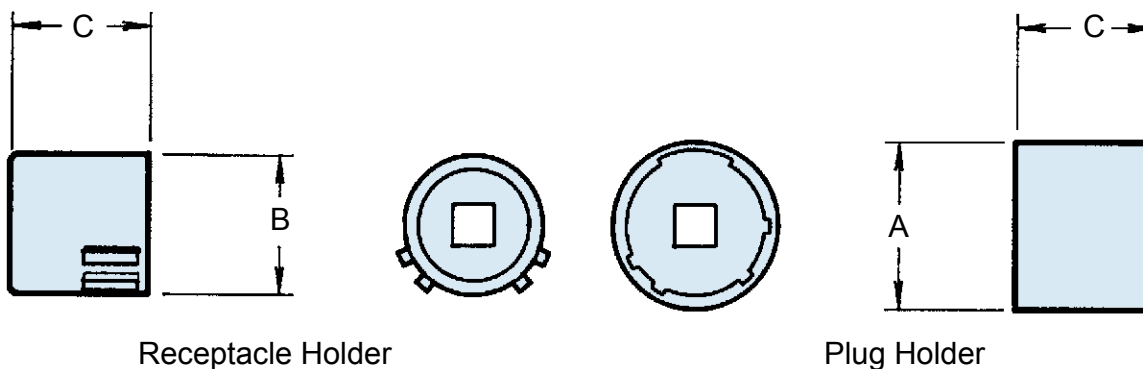
### 600-162BV DIGITAL TORQUE WRENCH VERTICAL BENCH STAND

1. Use in conjunction with Glenair 600G161 or 600G161-D digital torque wrench, sold separately
2. Material: steel, powder coat
3. Weight: 3 lbs
4. Supplied with mounting hardware
5. Tools required: T15 Torx® bit, 3/32" hex key





**NO POLARIZATION REQUIRED**

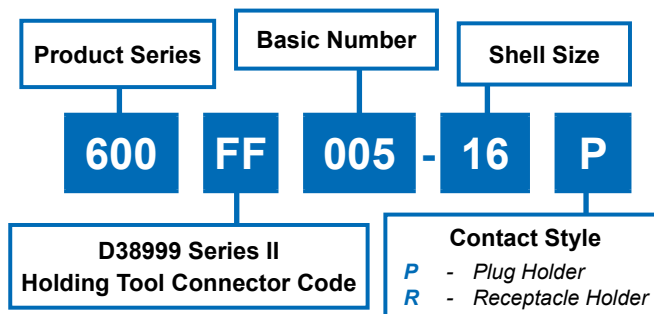


| Shell Size | Max. Recommended Torque (Inch Pounds) | A Dia. Max.  | B Dia. Max.  | C Dim. Max.  |
|------------|---------------------------------------|--------------|--------------|--------------|
| 09         | 40                                    | .577 (14.7)  | .438 (11.1)  | 1.031 (26.2) |
| 11         | 40                                    | .709 (18.0)  | .566 (14.4)  | 1.031 (26.2) |
| 13         | 40                                    | .829 (21.1)  | .678 (17.2)  | 1.031 (26.2) |
| 15         | 40                                    | .954 (24.2)  | .803 (20.4)  | 1.031 (26.2) |
| 17         | 40                                    | 1.107 (28.1) | .928 (23.6)  | 1.031 (26.2) |
| 19         | 40                                    | 1.190 (30.2) | 1.033 (26.2) | 1.031 (26.2) |
| 21         | 80                                    | 1.315 (33.4) | 1.158 (29.4) | 1.031 (26.2) |
| 23         | 80                                    | 1.440 (36.6) | 1.283 (32.6) | 1.031 (26.2) |
| 25         | 80                                    | 1.565 (39.8) | 1.408 (35.8) | 1.031 (26.2) |

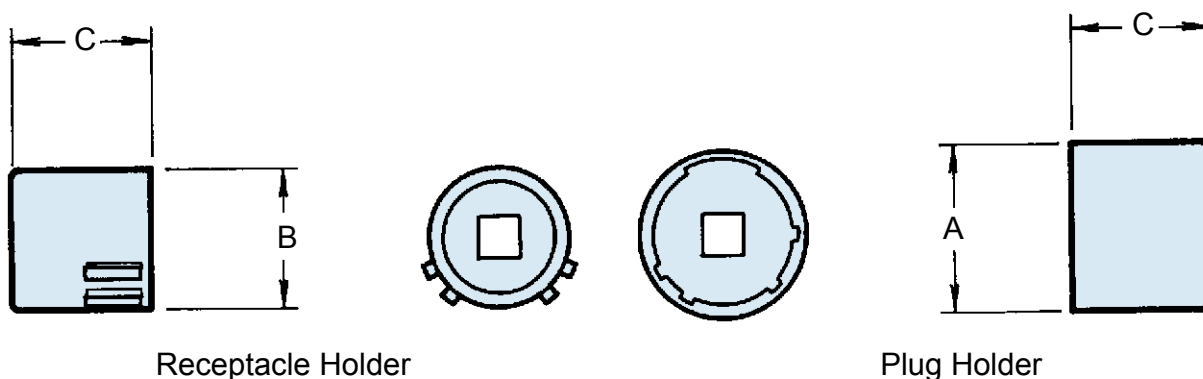
## NOTES

1. Metric dimensions (mm) are indicated in parentheses.
2. Material: Case hardened carbon steel with electroless nickel finish.
3. Receptacle and plug holder drives: 1/4" - Shell sizes 09, 11 and 13; 3/8" - Shell sizes 15 and up.

**600FF005**  
**Connector Holding Tool**  
**MIL-DTL-38999 Series II**  
**Plug and Receptacle**



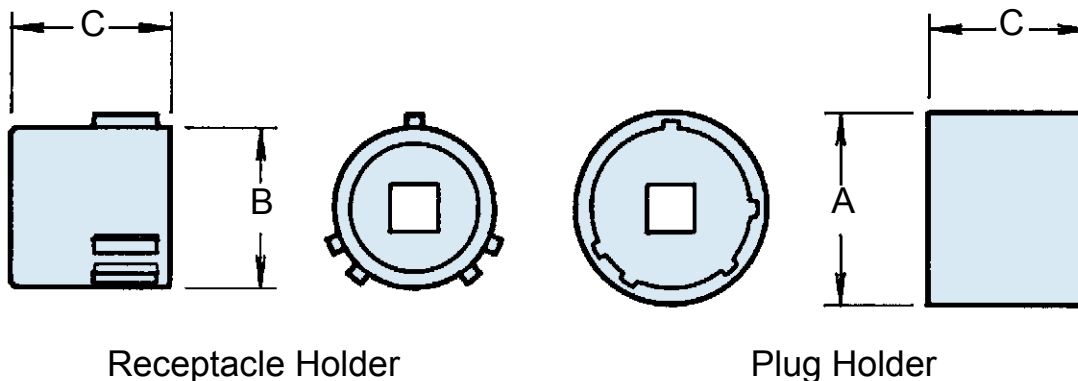
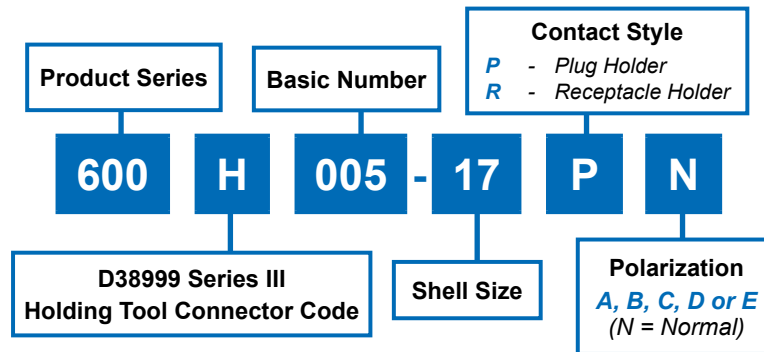
**NO POLARIZATION REQUIRED**



| Shell Size | Max. Recommended Torque (Inch Pounds) | A Dia. Max.  | B Dia. Max.  | C Dim. Max. |
|------------|---------------------------------------|--------------|--------------|-------------|
| 08         | 40                                    | .478 (12.1)  | .358 (9.1)   | .910 (23.1) |
| 10         | 40                                    | .599 (15.2)  | .486 (12.3)  | .910 (23.1) |
| 12         | 40                                    | .758 (19.3)  | .603 (15.3)  | .910 (23.1) |
| 14         | 40                                    | .882 (22.4)  | .728 (18.5)  | .910 (23.1) |
| 16         | 40                                    | 1.007 (25.6) | .853 (21.7)  | .910 (23.1) |
| 18         | 40                                    | 1.133 (28.8) | .958 (24.3)  | .910 (23.1) |
| 20         | 80                                    | 1.257 (31.9) | 1.083 (27.5) | .910 (23.1) |
| 22         | 80                                    | 1.382 (35.1) | 1.208 (30.7) | .910 (23.1) |
| 24         | 80                                    | 1.507 (38.3) | 1.333 (33.9) | .910 (23.1) |

**NOTES**

1. Also mates with 40M38277.
2. Metric dimensions (mm) are indicated in parentheses.
3. Material: Case hardened carbon steel with electroless nickel finish.
4. Receptacle and plug holder drives: 1/4" - Shell sizes 08, 10 and 12; 3/8" - Shell sizes 14 and up.

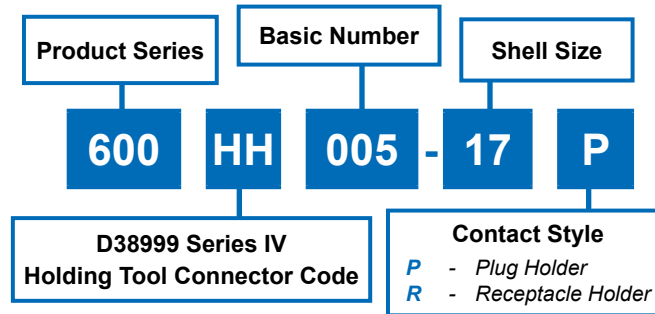


| Shell Size |           | Recommended Torque<br>(+/- 5 Inch-Pounds) |           | A Dia.<br>Max. | B Dia.<br>Max. | C Dim.<br>Max. |
|------------|-----------|-------------------------------------------|-----------|----------------|----------------|----------------|
| Com'l      | Mil. Ref. | Metal                                     | Composite |                |                |                |
| 09         | A         | 60                                        | 35        | .577 (14.7)    | .438 (11.1)    | 1.031 (26.2)   |
| 11         | B         | 80                                        | 35        | .709 (18.0)    | .566 (14.4)    | 1.031 (26.2)   |
| 13         | C         | 110                                       | 40        | .829 (21.1)    | .678 (17.2)    | 1.031 (26.2)   |
| 15         | D         | 120                                       | 40        | .954 (24.2)    | .803 (20.4)    | 1.031 (26.2)   |
| 17         | E         | 120                                       | 40        | 1.107 (28.1)   | .928 (23.6)    | 1.031 (26.2)   |
| 19         | F         | 120                                       | 40        | 1.190 (30.2)   | 1.033 (26.2)   | 1.031 (26.2)   |
| 21         | G         | 140                                       | 80        | 1.315 (33.4)   | 1.158 (29.4)   | 1.031 (26.2)   |
| 23         | H         | 140                                       | 80        | 1.440 (36.6)   | 1.283 (32.6)   | 1.031 (26.2)   |
| 25         | J         | 140                                       | 80        | 1.565 (39.8)   | 1.408 (35.8)   | 1.031 (26.2)   |

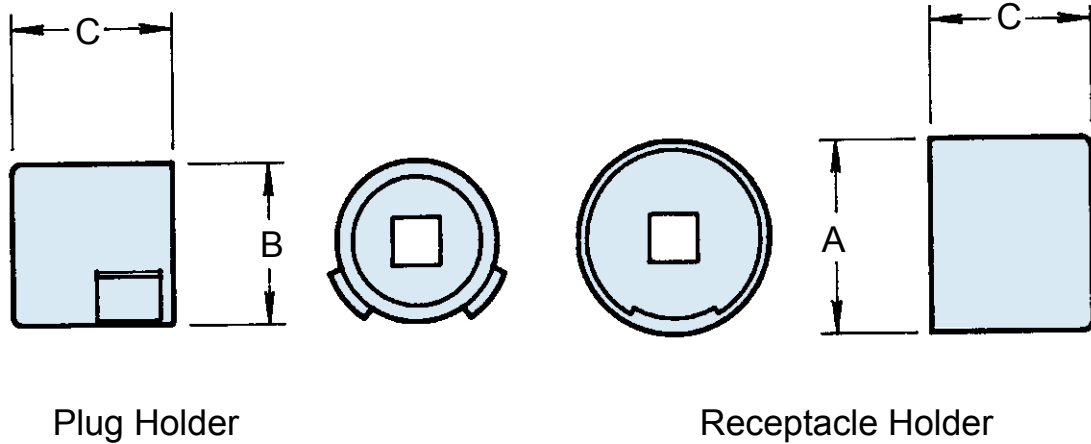
## NOTES

1. Metric dimensions (mm) are indicated in parentheses.
2. Material: Case hardened carbon steel with electroless nickel finish.
3. Receptacle and plug holder drives: 1/4" - Shell sizes 09, 11 and 13; 3/8" - Shell sizes 15 and up.
4. Composite values apply when using Glenair 600-091 and 600-007 tools.

**600HH005**  
**Connector Holding Tool**  
**MIL-DTL-38999 Series IV**  
**Plug and Receptacle**



**NO POLARIZATION REQUIRED**



| Shell Size |           | Max. Recommended<br>Torque (Inch Pounds) | A Dia.<br>Max. |        | B Dia.<br>Max. |        | C Dim.<br>Max. |        |
|------------|-----------|------------------------------------------|----------------|--------|----------------|--------|----------------|--------|
| Com'l      | Mil. Ref. |                                          |                |        |                |        |                |        |
| 11         | B         | 80                                       | .83            | (21.1) | .515           | (13.1) | 1.28           | (32.5) |
| 13         | C         | 110                                      | .95            | (24.1) | .650           | (16.5) | 1.28           | (32.5) |
| 15         | D         | 120                                      | 1.07           | (27.2) | .775           | (19.7) | 1.28           | (32.5) |
| 17         | E         | 120                                      | 1.20           | (30.5) | .901           | (22.9) | 1.28           | (32.5) |
| 19         | F         | 120                                      | 1.28           | (32.5) | 1.015          | (25.8) | 1.28           | (32.5) |
| 21         | G         | 140                                      | 1.40           | (35.6) | 1.140          | (29.0) | 1.28           | (32.5) |
| 23         | H         | 140                                      | 1.53           | (38.9) | 1.265          | (32.1) | 1.28           | (32.5) |
| 25         | J         | 140                                      | 1.66           | (42.2) | 1.392          | (35.4) | 1.28           | (32.5) |

**NOTES**

1. Metric dimensions (mm) are indicated in parentheses.
2. Material: Case hardened carbon steel with electroless nickel finish.
3. Receptacle and plug holder drives: 1/4" - Shell sizes 11 and 13; 3/8" - Shell sizes 15 and up.

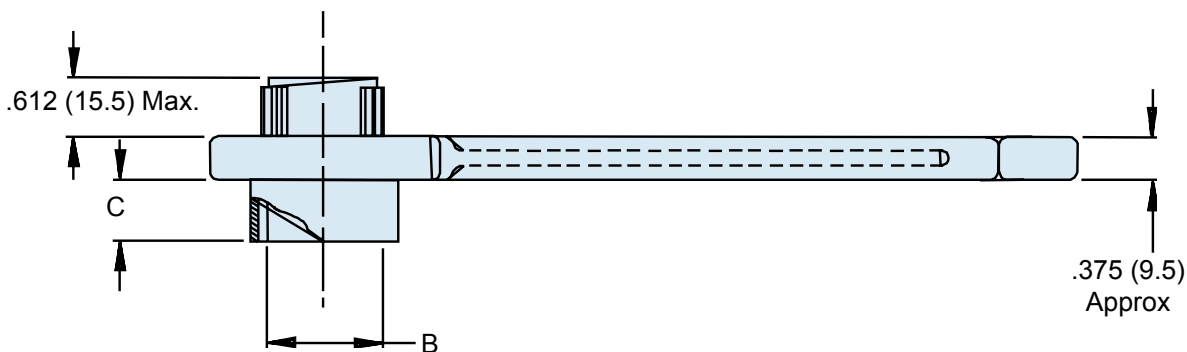
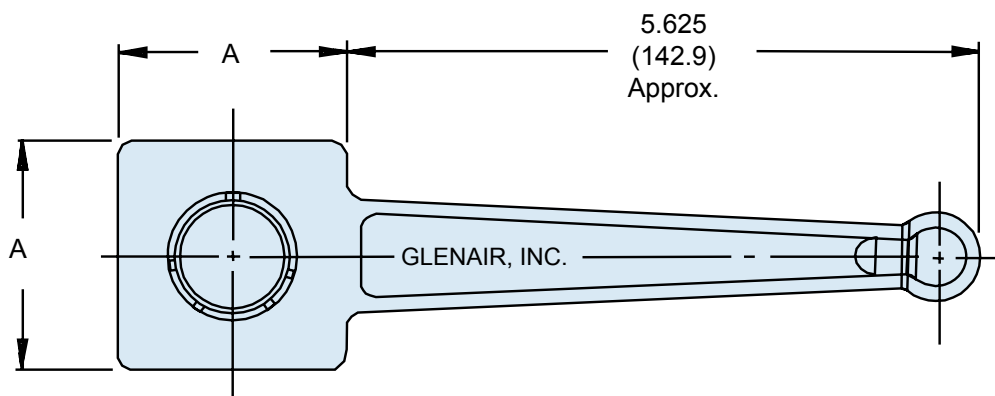
Basic Part No.

**TG60 - 15**

Shell Size

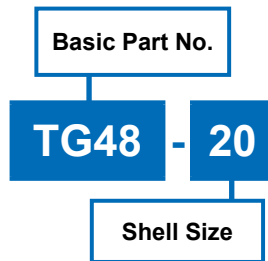
**NOTES**

1. Metric dimensions (mm) are indicated in parentheses.
2. Material: Aluminum alloy with electroless nickel finish.



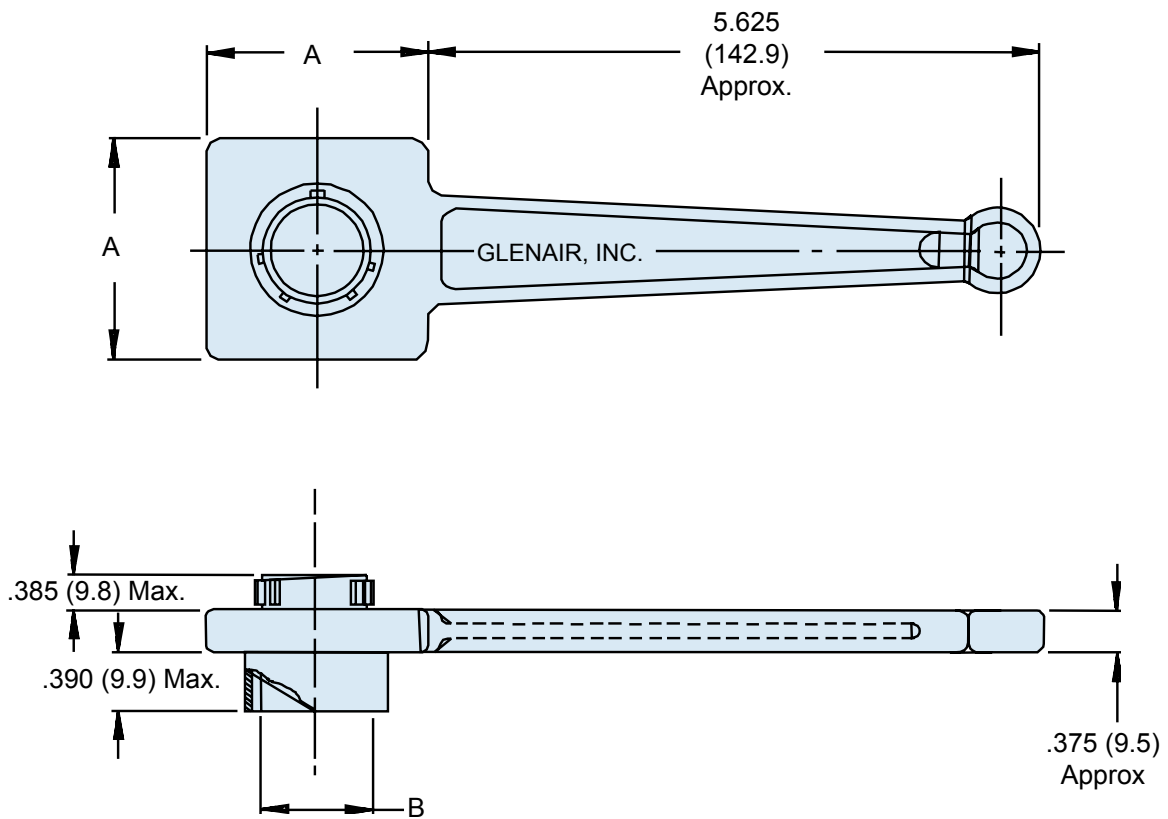
| Shell Size | A Dim. Ref.  | B Dia. Ref.  | C Max       |
|------------|--------------|--------------|-------------|
| 9          | 1.250 (31.8) | .442 (11.2)  | .647 (16.4) |
| 11         | 1.250 (31.8) | .570 (14.5)  | .647 (16.4) |
| 13         | 1.250 (31.8) | .687 (17.4)  | .647 (16.4) |
| 15         | 2.000 (50.8) | .812 (20.6)  | .647 (16.4) |
| 17         | 2.000 (50.8) | .937 (23.8)  | .647 (16.4) |
| 19         | 2.000 (50.8) | 1.042 (26.5) | .647 (16.4) |
| 21         | 2.000 (50.8) | 1.167 (29.6) | .617 (15.7) |
| 23         | 2.000 (50.8) | 1.292 (32.8) | .617 (15.7) |
| 25         | 2.000 (50.8) | 1.417 (36.0) | .617 (15.7) |

**TG48**  
**Universal Connector Holding Wrench**  
 MIL-DTL-38999 Series II

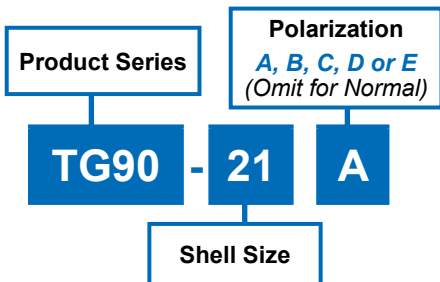


**NOTES**

1. Metric dimensions (mm) are indicated in parentheses.
2. Material: Aluminum alloy with electroless nickel finish.

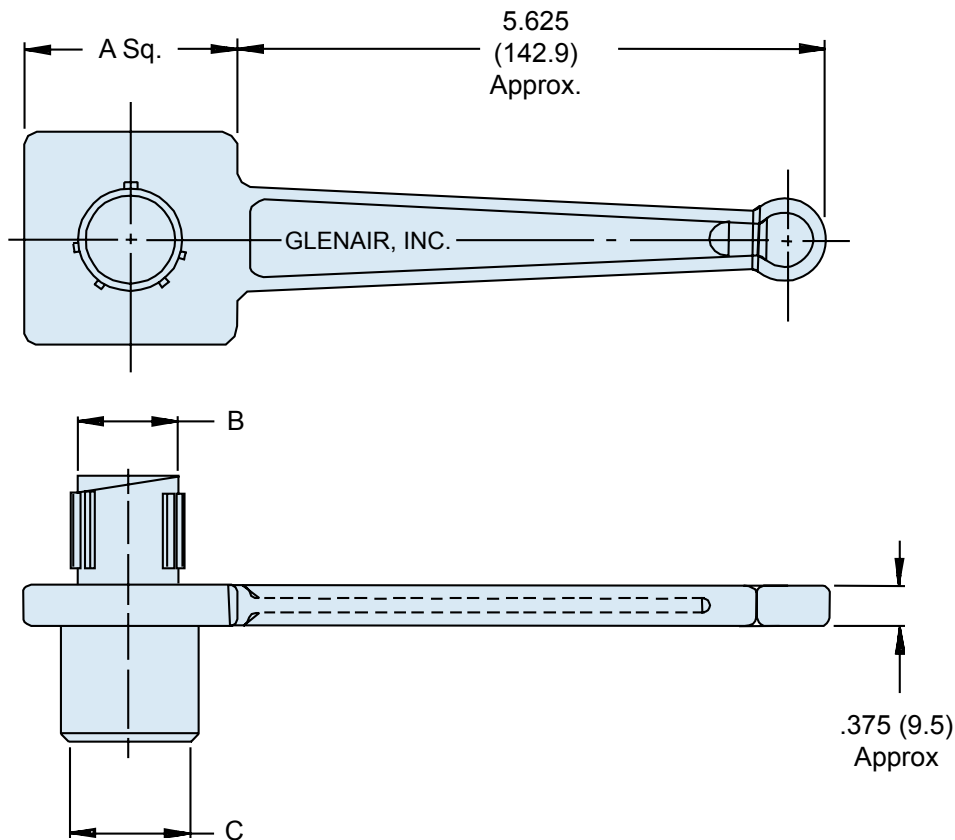


| Shell Size | A Dim.<br>± .062 (1.6) | B Dia.<br>Ref. |
|------------|------------------------|----------------|
| 8          | 1.250 (31.8)           | .362 (9.2)     |
| 10         | 1.250 (31.8)           | .490 (12.4)    |
| 12         | 1.250 (31.8)           | .607 (15.4)    |
| 14         | 1.250 (31.8)           | .732 (18.6)    |
| 16         | 2.000 (50.8)           | .857 (21.8)    |
| 18         | 2.000 (50.8)           | .962 (24.4)    |
| 20         | 2.000 (50.8)           | 1.087 (27.6)   |
| 22         | 2.000 (50.8)           | 1.212 (30.8)   |
| 24         | 2.000 (50.8)           | 1.337 (34.0)   |



**NOTES**

1. Metric dimensions (mm) are indicated in parentheses.
2. Material: Aluminum alloy with electroless nickel finish.



| Shell Size | A Dim.<br>± .062 (1.6) | B Dia.<br>Ref. | C Dia.<br>Ref. |
|------------|------------------------|----------------|----------------|
| 09         | 1.250 (31.8)           | .438 (11.1)    | .441 (11.2)    |
| 11         | 1.250 (31.8)           | .566 (14.4)    | .569 (14.5)    |
| 13         | 1.250 (31.8)           | .678 (17.2)    | .682 (17.3)    |
| 15         | 2.000 (50.8)           | .802 (20.4)    | .811 (20.6)    |
| 17         | 2.000 (50.8)           | .928 (23.6)    | .931 (23.6)    |
| 19         | 2.000 (50.8)           | 1.032 (26.2)   | 1.037 (26.3)   |
| 21         | 2.000 (50.8)           | 1.155 (29.3)   | 1.162 (29.5)   |
| 23         | 2.750 (69.9)           | 1.283 (32.6)   | 1.288 (32.7)   |
| 25         | 2.750 (69.9)           | 1.407 (35.7)   | 1.411 (35.8)   |

# 600-091 Composite-Hex-Coupling Wrench



Connector  
Accessories

## ALUMINUM TOOL FOR USE WITH GLENAIR COMPOSITE BACKSHELLS

600

-

091

-

16

**Product Series**

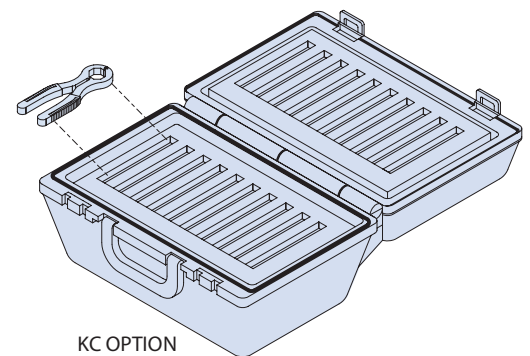
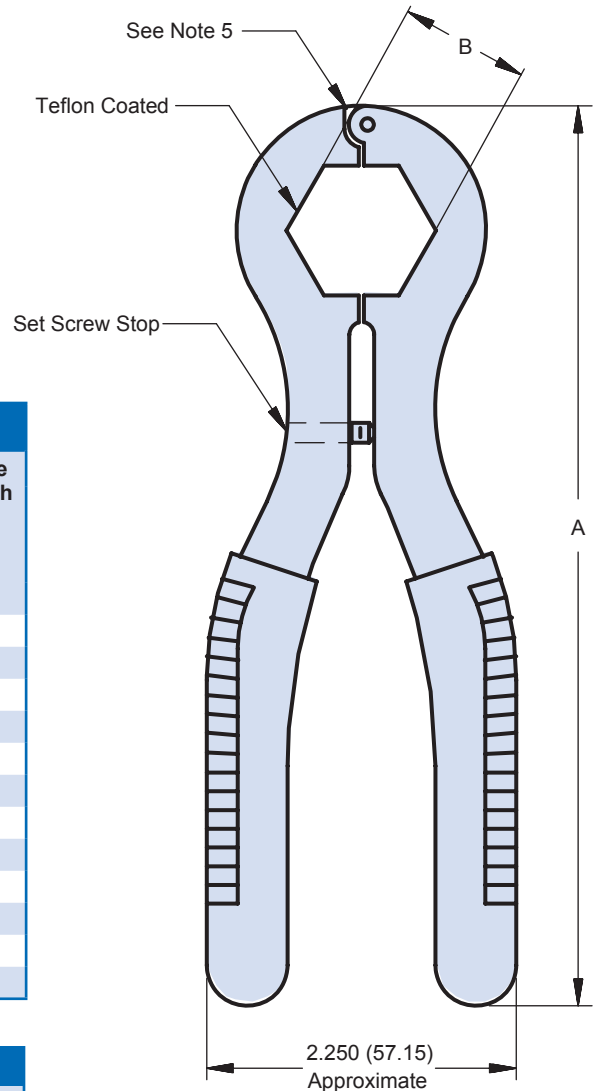
**Basic Number**

**Dash Number for Individual Wrench or:**  
*K* - Kit of dash numbers 08 thru 28  
*KC* - "K" kit with case  
*KL* - Kit of dash number 32 thru 44  
*KLC* - "KL" kit with case  
*KIT* - Kit of dash numbers 08 thru 44 with case

| TABLE I: DASH NUMBER |               |                        |                          |        |                                             |
|----------------------|---------------|------------------------|--------------------------|--------|---------------------------------------------|
| Dash Number          | A Ref         | B Hex <sup>2</sup> Ref | Connector for Shell Size |        | Composite Torque Inch Pounds In-Lbs Min/Max |
|                      |               |                        | Codes A & F              | Code H |                                             |
| 08                   | 7.56 (19.2)   | .750 (19.1)            | 08                       | 09     | 20/25                                       |
| 10                   | 7.56 (19.2)   | .875 (22.2)            | 10                       | 11     | 20/30                                       |
| 12                   | 7.56 (19.2)   | 1.000 (25.4)           | 12                       | 13     | 25/35                                       |
| 14                   | 7.56 (19.2)   | 1.125 (28.6)           | 14                       | 15     | 25/35                                       |
| 16                   | 7.56 (19.2)   | 1.250 (31.8)           | 16                       | 17     | 30/40                                       |
| 18                   | 7.56 (19.2)   | 1.375 (34.9)           | 18                       | 19     | 30/40                                       |
| 20                   | 8.50 (215.9)  | 1.500 (38.1)           | 20                       | 21     | 35/45                                       |
| 22                   | 8.50 (215.9)  | 1.625 (41.3)           | 22                       | 23     | 35/45                                       |
| 24                   | 8.50 (215.9)  | 1.750 (44.5)           | 24                       | 25     | 35/45                                       |
| 28                   | 9.50 (241.3)  | 2.000 (50.8)           | 28                       |        | 115/125                                     |
| 32                   | 10.00 (254.0) | 2.250 (57.2)           | 32                       |        | 115/125                                     |
| 36                   | 10.00 (254.0) | 2.500 (63.5)           | 36                       |        | 112/125                                     |
| 44                   | 10.00 (254.0) | 3.000 (76.2)           | 44                       |        | N/A                                         |

### APPLICATION NOTES

- Use in conjunction with Glenair 600-161 torque wrench and 600-162B or 600-162BV bench mounts (see page 14).
- Adjust set screw per tool setting procedure GAP134 (available on Glenair.com). Once adjusted must fit Glenair hex composite coupling nuts
- Customer is responsible for maintaining adjustment to compensate for wear.
- Replace tool if excessive wear is observed
- Gap is permissible during tool use for coupling nut assembly
- If set screw becomes loose causing loss of adjustment reapply suitable thread locking compound
- Wrenches are made of aluminum alloy with vinyl grips.
- Using other manufacturer's hex wrench pliers or soft jaw coated pliers will result in premature fracturing or damage to the composite product



Approximate Case Dimensions: 13.5 x 15.5 x 3.875

### STAINLESS STEEL TOOL FOR USE WITH GLENAIR COMPOSITE BACKSHELLS

**600**  
Product Series

**- 157 -**  
Basic Number

**K**  
Dash Number

**Dash Number for Individual Wrench or:**

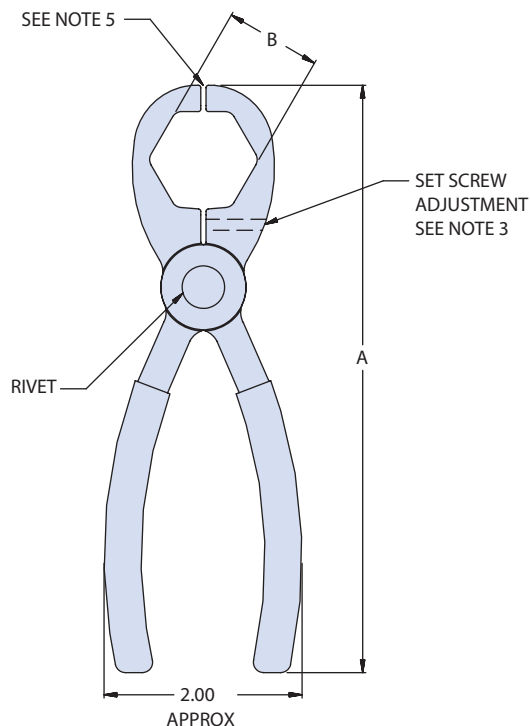
**K** - Kit of dash numbers 08 thru 28, no case

**KC** - "K" kit with case

**KL** - Kit of dash numbers 32 thru 44, no case

**KLC** = "KL" kit with case

**KIT** = Kit of dash numbers 08 thru 44 with case

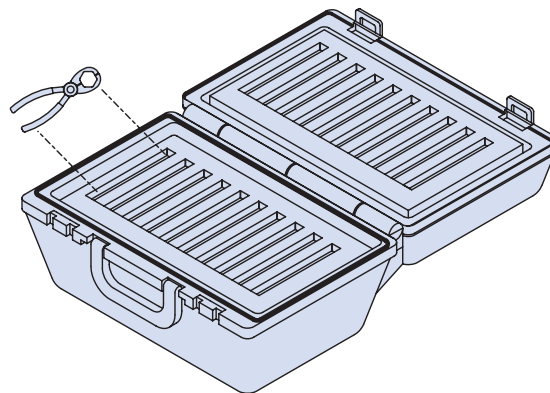


**TABLE I: DASH NUMBER**

| Dash No. | A Ref        | B Hex <sup>2</sup> Ref | Connector for Shell Size Codes |        | Composite Torque Inch Pounds In-Lbs Min/Max |
|----------|--------------|------------------------|--------------------------------|--------|---------------------------------------------|
|          |              |                        | A & F                          | Code H |                                             |
| 08       | 6.70 (170.2) | .750 (19.1)            | 08                             | 09     | 20/25                                       |
| 10       | 6.75 (171.5) | .875 (22.2)            | 10                             | 11     | 20/30                                       |
| 12       | 6.81 (173.0) | 1.000 (25.4)           | 12                             | 13     | 25/35                                       |
| 14       | 6.88 (174.8) | 1.125 (28.6)           | 14                             | 15     | 25/35                                       |
| 16       | 6.95 (176.5) | 1.250 (31.8)           | 16                             | 17     | 30/40                                       |
| 18       | 7.05 (179.1) | 1.375 (34.9)           | 18                             | 19     | 30/40                                       |
| 20       | 7.15 (181.6) | 1.500 (38.1)           | 20                             | 21     | 35/45                                       |
| 22       | 7.38 (187.5) | 1.625 (41.3)           | 22                             | 23     | 35/45                                       |
| 24       | 7.44 (189.0) | 1.750 (44.5)           | 24                             | 25     | 35/45                                       |

### APPLICATION NOTES

- Use in conjunction with Glenair 600-161 torque wrench and 600-162B or 600-162BV bench mounts (see page 14).
- Adjust set screw per tool setting procedure GAP134 (available on Glenair.com). Once adjusted must fit Glenair hex composite coupling nuts
- Dash Number 08, 10, 12 only. Customer is responsible for maintaining adjustment to compensate for wear.
- Replace tool if excessive wear is observed
- Gap is permissible during tool use for coupling nut assembly
- If set screw becomes loose causing loss of adjustment reapply suitable thread locking compound
- Wrenches are made of passivated SST with vinyl grips.
- Using other manufacturer's hex wrench pliers or soft jaw coated pliers will result in premature fracturing or damage to the composite product

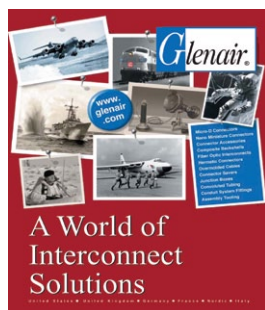


KC Option  
Approximate Case Dimensions: 13.5 x 15.5 x 3.875

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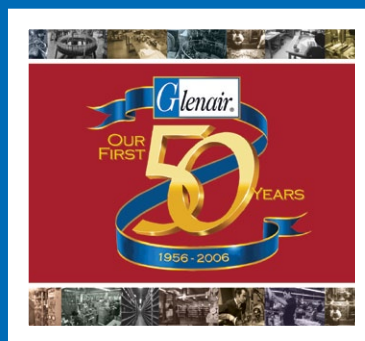


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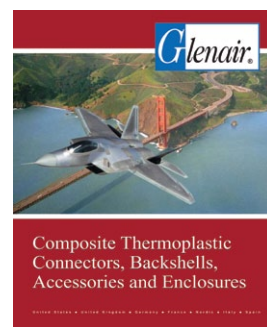
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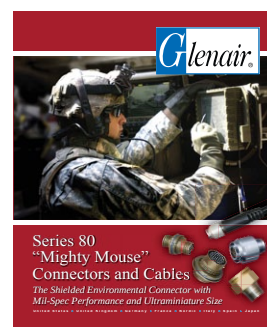
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