

HIGH-PERFORMANCE

FIBER OPTIC

INTERCONNECT SOLUTIONS

AUGUST 2012



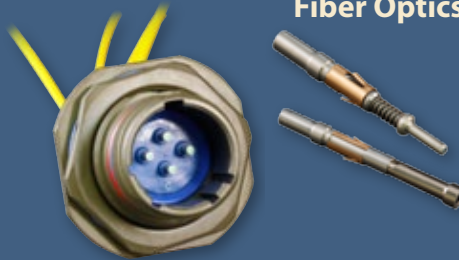


FIBER OPTIC INTERCONNECT SOLUTIONS

**MIL-DTL-38999
Type
Fiber Optic
Connection
System**



**Eye-Beam™ Expanded Beam
Fiber Optics**



**MIL-PRF-28876
Fiber Optic
Connection System**



**GFOCA M83526
Compliant
Fiber Optic Connection
System**



**Copper-to-Fiber
Media Converters/
Active Components**



**Glenair High Density (GHD)
Fiber Optic Connection System**



**Series 80
Mighty Mouse
Fiber Optic
Connection System**

**Glenair Front Release (GFR) Fiber Optic
Connection System**





Glenair Fiber Optic Systems Overview and Selection Guide

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Glenair High Density (GHD) Fiber Optic Connection System

C

Series 80 Mighty Mouse Fiber Optic Connection System

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M

Fiber optic interconnect technologies deliver high data rate and high bandwidth performance in land, sea, air, space and C4ISR applications. Precision-engineered fiber optic contacts, or termini, are the key to delivering low data loss and reliable, repeatable performance over long distances in mission-critical applications. But the advantages of a connection system that can transmit the equivalent of 24,000 telephone calls simultaneously through fibers thinner than a human hair—and over longer distances than would ever be possible with copper media—go beyond their mind-boggling data transmission rate:

A

FIVE REASONS TO UPGRADE TO

FIBER OPTICS

1 Reduced Size and Weight



- Compared to copper, optical fiber is relatively small in size and light in weight—a major advantage in interconnect systems servicing airborne avionics, and in-flight entertainment systems. As a practical matter, optical fiber is simply easier to install—especially in retrofit programs—because the smaller cable diameters can fit comfortably within the footprint or layout of existing electrical conduits and harnesses.
- This reduction in media size makes it possible to run multiple backup cables for critical electronic systems or devices. The ability to provide complete redundancy for all critical cabling is a major factor driving the use of fiber optics in mission-critical applications such as commercial and military aircraft—particularly for applications with long cable runs.

2 EMI Immunity

- Optical fiber is frequently applied in high-reliability applications due to its electromagnetic immunity. Since fiber optic media uses light to transmit signals, it is not subject to electromagnetic interference, radio frequency interference or voltage surges, and so provides greater transmission reliability—particularly in C4ISR applications and communication systems that depend on error-free performance.



3 Huge Bandwidth Over Long-Distances

- *Fiber can transmit a mind-boggling quantity of data with extremely good transmission quality over long distances: Up to 150 times the data carrying capacity of bulkier copper cable! And since most high-speed data protocols transmit digitally, optical media reduces translation errors and bottlenecks—particularly over longer cable run distances such as are found in Navy ships and ground-based shelter and vehicle applications.*



4 Spark/Arc Immunity



- *The total electrical isolation of fiber also makes it a safer, spark-free media for use in hazardous environments, such as aircraft fuel cells or other applications where volatile gasses might be present. As only light, not electricity, is being transmitted, there is no risk of a spark or short-circuit from a damaged cable. For this same reason there is no shock hazard or risk to users performing routine maintenance to interconnect cabling. As a result, fiber optic media is routinely specified for use in Class I, Division I (Ex) environments such as are found on Navy ships, commercial tankers and other enclosed environments where the risk of a spark/arc event is considered a severe safety hazard.*

5 Enhanced Security

- *Light pulses, unlike electrical signals, are almost impossible to intercept or monitor. Fiber optic media therefore enjoys total immunity from wiretapping. This characteristic is particularly valuable to the military services, banks and operators of secure networks. In addition to enhanced transmission security, fiber media itself is undetectable to metal or electromagnetic flux detection equipment.*



MIL-DTL-38999 type fiber optic interconnection systems are the recognized standard for all military and commercial aerospace applications that depend on high levels of connector reliability, environmental and mechanical performance and low dB insertion loss. Designed specifically for air and space, the Glenair MIL-DTL-38999 type fiber optic connection system has been successfully deployed in applications ranging from the F-35 Joint Strike Fighter and the venerable F-22 to dozens of other fixed wing and rotary aircraft applications.

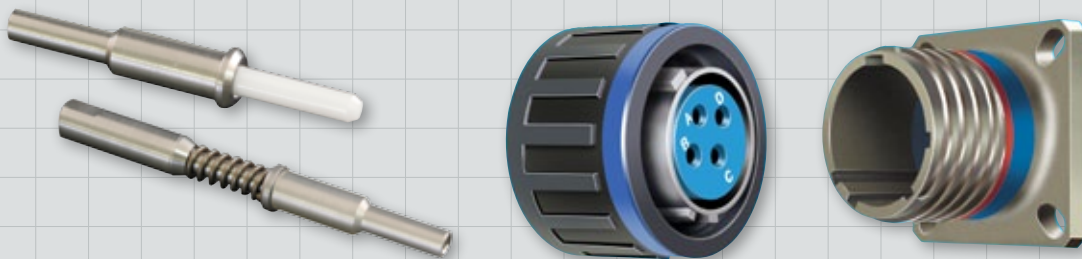
A

MIL-DTL-38999 TYPE

FIBER OPTIC CONNECTION SYSTEM

Commercial and Military Aerospace

- Qualified size 16 MIL-PRF-29504 pin-socket precision ceramic termini
- MIL-DTL-38999 type tight tolerance fiber optic connectors
- Aluminum, composite thermoplastic and stainless steel shells available
- Singlemode and multimode for all popular fiber sizes
- Ultra-low insertion loss values

**B**

Turn to Section B for the complete line of Glenair MIL-DTL-38999 type and MIL-PRF-29504 qualified connection system products, including tight-tolerance connectors, single- and multimode termini, backshells and adapters, turnkey cable assemblies, test probes, protective covers and more.

The Glenair High Density (GHD) system is the choice for military and commercial air and space applications that demand outstanding optical and environmental performance, but require reduced size and weight compared to standard MIL-DTL-38999 and other mil-spec designs. Glenair has achieved nearly double the density of M28876 and D38999 with an innovative front-release terminus design and M85045/16 cable accommodation. The GHD system offers many other advantages including keying for APC and far easier termination and maintenance.

GLENAIR HIGH DENSITY

FIBER OPTIC CONNECTION SYSTEM

HD Air and Space

- Size 18 front-release genderless termini accommodate 900 μ to 2.0 mm jacketed fiber
- Single keying for APC polish available
- Nearly double the density of D38999
- Precision ceramic alignment sleeves captivated in a removable assembly (ASR) for easy cleaning



C

Turn to Section C for Glenair High Density (GHD) keyed- and non-keyed front-release fiber optic termini, plus plug and receptacle connectors in jam nut mount, flange, and in-line configurations.

The perfect marriage of high-bandwidth fiber optics and ultra-miniature packaging has arrived. The Series 80 Mighty Mouse—the new mil-aero industry standard reduced size and weight connector—is now available with three different sizes of fiber optic termini, 16, 20HD, and #23. Single- and multi-mode versions are available. A shell size six, four channel Mighty Mouse 801 series plug for use with size 23 optical termini weighs in at just 5 grams.

A

SERIES 80 MIGHTY MOUSE

FIBER OPTIC CONNECTION SYSTEM

Lightweight Space, Air, and Ground

- Three pin-socket rear release termini sizes: #23, #20HD, and #16 for use in any Series 80 connector
- The smallest mil-aero caliber fiber optic connection system available
- Singlemode and multimode
- Precision ceramic ferrules
- 0.5 dB typical attenuation
- 1 to 130 channels



D

Turn to Section D for product details and ordering information for this innovative fiber optic solution. Only the Series 80 Mighty Mouse offers mil-aero environmental, optical and mechanical performance in this revolutionarily small package.

The Glenair Eye-Beam™ system utilizes innovative free floating expanded beam lenses, precision ceramic alignment sleeves and custom designed terminus bodies to ensure optimal optical performance in harsh environmental conditions. Supplied as point-to-point jumpers or factory terminated pigtails, Eye-Beam™ assemblies can be integrated into virtually any circular or rectangular connector package in high-performance tactical fiber optic or hybrid connection systems.

GLENAIR EYE-BEAM™

FIBER OPTIC CONNECTION SYSTEM

High-Performance Expanded Beam

- High-performance, low dB loss GRIN lens-equipped pin-socket termini
- Terminated jumpers easy to integrate into any circular or rectangular connector package
- Innovative expanded beam lens terminus expands signal 27X from a standard 9.3 micron fiber core
- Ultra-high precision ceramic sleeves and custom designed terminus bodies ensure axial alignment
- Suitable for use in hybrid electrical/optical interconnects



E

Turn to Section E for Eye-Beam™ point-to-point jumpers in numerous contact formats for use with most high-performance tactical fiber optic connections systems: MIL-DTL-38999, MIL-PRF-28876, GFOCA, and Series 80 Mighty Mouse.

Glenair Media Converters address the need to convert signals between electrical and optical domains in fiber optic systems with reduced weight, small form factor components. The technologies include a Gigabit Ethernet (1000BASE-T) copper twisted pair to optical fiber (1000BASE-SX or LX) ruggedized media converter, as well as a DVI signal (R, G, B, and clock) copper twisted pair to optical fiber solution, and size 8 optoelectronic insert transmitters and receivers. All Glenair media converters deliver turnkey copper to fiber media conversion in a reliable, easy-to-install format for airframe, military, and other high-performance applications.

A

MEDIA CONVERTERS

COPPER TO FIBER OPTIC

- Ruggedized Gigabit Ethernet and DVI media converters meet military standards for shock, vibration, and immersion
- -40° to +85° operating temperature range
- Gigabit Ethernet and DVI media converters feature MIL-STD-1560 layouts for electrical and fiber optic connectors
- Optoelectronic inserts (patent pending) are ARINC 801 compliant to 4.5 GB/sec.
- Turnkey, small form-factor harsh environment solution

Active Components



F

Turn to Section F for Gigabit Ethernet (1000BASE-T) copper to optical fiber (1000BASE-SX or LX), and DVI signal to optical fiber, and size 8 optoelectronic media converters.

The Glenair Front Release (GFR) fiber optic connection system features Glenair's uniquely designed front-release fiber optic termini. With integrated retention clips and o-ring seals that place retention and environmental sealing directly on the terminus, Glenair is able to rapidly fabricate unique fiber optic connector shell packages. The GFR system allows interconnect designers to integrate fiber into a wide range of connector packages—such as M24308 D-Subs—without costly tooling or engineering.

GLENAIR FRONT RELEASE

FIBER OPTIC CONNECTION SYSTEM

Fast Integration Into Unique Connector Designs

- Precision size 16 pin-socket front release termini with integrated retention clip and environmental o-ring seals
- Singlemode and multimode for all popular fiber sizes
- Typical insertion loss less than 0.5 dB
- Ready for use in both cylindrical and rectangular connectors
- Connector shells available in aluminum, stainless steel, and composite materials
- No upper limit on the number of fiber cavities



G

Turn to Section G for the complete Glenair Front Release connection system, including front-release termini, Micro-D, and D-Subminiature connectors.

The Glenair Next Generation MIL-PRF-64266 (NGCON) fiber optic connection system is a high-performance solution for air, sea, and space applications. Developed with the NGCON design consortium, the system combines proven technology from standard MIL-PRF-28876 and MIL-DTL-38999 Series III designs with new innovations including rear-release genderless contacts, high-density packaging, and removable alignment sleeve retainers (ASR).

A

NEXT GENERATION (NGCON)

MIL-PRF-64266 FIBER OPTIC CONNECTION SYSTEM

Sea and Air

- Rear-release precision genderless termini with integrated retention clip and environmental sealing
- Singlemode and multimode for all popular fiber sizes
- 2 channel to 36 channel insert arrangements available
- Aluminum alloy or stainless steel shells
- Conforms to MIL-PRF-64266 (NGCON)



H

Turn to Section H for the Glenair Next Generation MIL-PRF-64266 type fiber optic connection system: Genderless rear-release termini, and plug and receptacle connectors are available.

The GFOCA hermaphroditic field deployable connection system is genderless, ruggedized, corrosion-resistant and environmentally sealed. Utilizing low insertion loss butt-joint termini and a ruggedized coupling mechanism for reliable, repeatable mating, the GFOCA system is used by the Army for long-run battlefield communications, and is also well suited to dockside naval communications, down-hole drilling and other harsh environment applications. All products are designed to meet or exceed MIL-DTL-83526 connector and MIL-PRF29504/16 termini requirements.

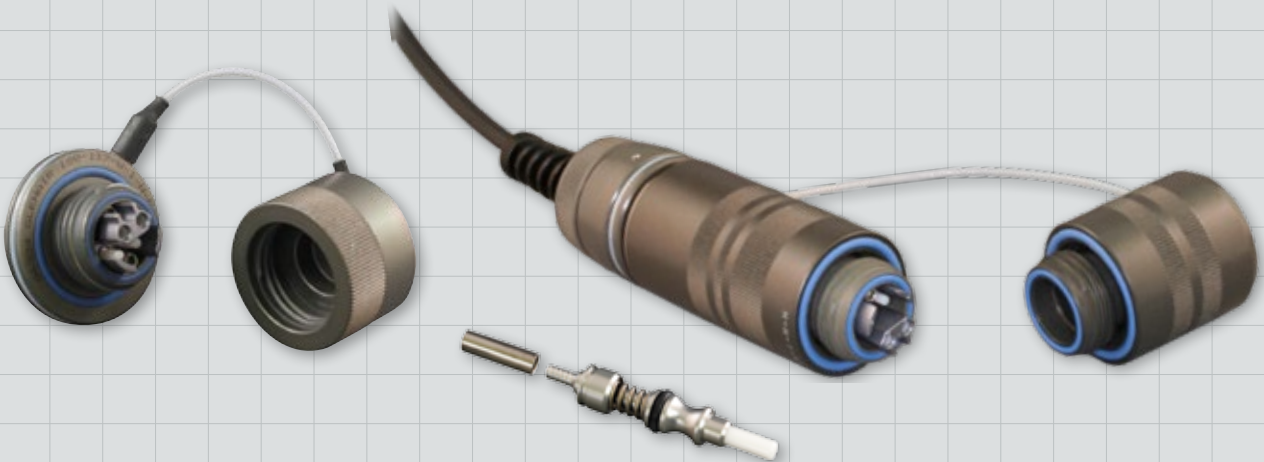
GFOCA HERMAPHRODITIC

MIL-DTL-83526 TYPE FIBER OPTIC CONNECTION SYSTEM

A

- *Low insertion loss genderless termini*
- *2.5 mm dia ceramic ferrules and alignment sleeves*
- *4 channel singlemode and multimode configurations*
- *Designed to meet the requirements of MIL-PRF-29504/16 and MIL-DTL-83526 military specifications*
- *Discrete components or complete cable-on-reel solutions available*

Ground Tactical



I

Turn to Section I for GFOCA Hermaphroditic 4-channel plug and receptacle connectors, cable-on-reel solutions, and M29504/16 type genderless singlemode and multimode termini.

MIL-PRF-28876 QPL fiber optic connection systems are designed for use in dockside and shipboard applications, such as are found on Navy ships, submarines and ship-to-shore communication systems. These environmentally sealed fiber optic components deliver long-term and reliable performance in even the harshest application environments. MIL-PRF-28876 QPL fiber optic components and cable assemblies have been successfully deployed on systems for U.S. Navy and Allied Naval forces.

A

MIL-PRF-28876 QPL

FIBER OPTIC CONNECTION SYSTEM

Dockside and Shipboard



- Size 16 pin-socket qualified M29504/14 and /15 front-release termini
- MIL-PRF-28876 qualified plug and receptacle connectors and dust covers
- Singlemode and multimode with low insertion loss performance
- All popular shell sizes and insert arrangements available
- Corrosion-resistant and environmentally sealed
- 500 cycles mating durability
- Withstands 500 hrs. min. salt spray
- 2.0 mm dia ceramic ferrules and alignment sleeves



J

Turn to Section J for the complete line of Glenair Qualified MIL-PRF-28876 connectors and protective dust covers, Size 16 single- and multimode M29504/14 and /15 termini, plus specialized backshells, adapters, and panel gaskets.

FIBER OPTIC CABLES/CONDUIT

Media and Media Protection

- *Simplex fiber optic cable—graded index, stepped index, and singlemode*
- *Lightweight and flexible polymer-core and metal-core fiber optic media routing and physical protection systems*



K

Turn to Section K for a full range of bulk extruded fiber optic cable, including graded index, stepped index and single mode cables.

TERMINATION/TEST TOOLKITS

Tools for cleaning and inspection

- *Termination, cleaning and inspection kits*
- *Glenair test probe inspection system*
- *BandMaster™ ATS shield termination system*



L

Turn to Section L for turnkey solutions to every high-performance fiber optic termination, inspection, test and trouble-shooting requirement. Glenair builds and/or supplies all the tools needed for maximum up-time and efficiency. We also offer comprehensive training.

M

F/O TECHNOLOGY OVERVIEW

Turn to Section M for a basic introduction to fiber optic terms and technology. We discuss basic fiber optic operation, cable construction, connector and termini design and more.

BUILD-TO-PRINT

FIBER OPTIC

CABLE HARNESS DESIGNER'S GUIDE

A

In addition to our wide range of catalog (ASAP) Fiber Optic Cable Assemblies, Glenair offers turnkey, build-to-print fiber optic harnesses and box assemblies. To get started, fill out this designer's guide, then contact your local Glenair Sales office or the Factory at 818-247-6000. Glenair offers the fastest turnaround because we make and stock all the component parts, and have one of the largest and most experienced assembly facilities in the business. Ask for a tour!

Originator: _____

Phone Number: _____

Title of Assembly _____

Project/Program _____

Application Specifications

Working Environment

- Shipboard
- Airframe
- Avionics
- Secure Communications
- Ground Support/Soldier System
- Armored Vehicle
- Rail/Mass Transit
- Space
- Missile Defense
- Telecommunications
- Industrial
- Downhole or Surface Use
- Other

Cable Installation

- Outdoor
- Indoor
- Internal-to-Equipment

Temperature Requirements

Operating: - °C= _____ + °C= _____

Storage: - °C= _____ + °C= _____

Optical Fiber Requirements

Singlemode

Number of fibers _____

Fiber Size

- 9/125 μm
- Other

Test wavelength

- 1310 nm
- 1550 nm

Acceptable optical dB insertion loss

- Less than .5 dB
- Less than 1.0 dB

Acceptable optical return loss (backreflection)

- Not applicable
- _____ dB

Multimode

Number of fibers _____

Fiber Size

- 50/125 μm
- 62.5/125 μm
- 100/140 μm
- Other

Test wavelength

- 850 nm
- 1300 nm

Acceptable optical dB insertion loss

- Less than .5 dB
- Less than 1.0 dB

Cable Harness Construction

Assembly Length Requirements

- Less than 10 Meters
- 10 to 150 Meters
- More than 150 Meters

Cable Type

- Buffered
- Simplex
- Distribution
- Breakout

Basic Harness/Assembly Description

- Open Wire Harness
- Repairable/Jacketed
- Overmolded (MIL-M-24041 Materials)
- Metal/Fabric Overbraided
- Conduit

Alternative Wire Protection Media

- High Flexibility Convuluted Tubing
- EMI/EMP Metal-Core Conduit
- Molded Shrink Boots
- Junction Boxes and Cable Bays

Strain relief

- Not Applicable
- Light Duty
- Medium Duty
- Heavy Duty
- Gorilla Proof

Level of Environmental Protection

- Not Applicable
- Moisture Resistance
- Full Water Immersion
- Chemical/Caustic Fluid Resistance
- Extreme Corrosion Resistance
- Intense Atomic Radiation

Special Considerations

- RoHS Compliant Materials
- Extreme Temperature Tolerance
- UL94-VO Flammability
- UV Resistance
- Field Repairability
- Crush/Abrasion Resistance
- Weight Reduction
- Size or Shape Restraints as Specified:

List the non-Glenair connectors used in this project, including connector interface designators, if known:

List jacket/sheath or other wire/fiber protection materials such as conduit, including material type and brand:

Fiber Optic Termination Assembly

Connector

- Jam Nut or Square Flange or Plug
- Pin Skt Genderless Contact Qty _____

MIL-DTL-38999 Series III Type _____

Glenair High Density (GHD) _____

Series 80 Mighty Mouse _____

Eye-Beam™ _____

Glenair Front Release (GFR) _____

MIL-PRF-64266 (NGCON) Type _____

GFOCA _____

MIL-PRF-28876 _____

Termini Part No. _____

Dust Cover: Yes No

Fiber Optic Breakout Assembly

A Connector

- Jam Nut or Square Flange or Plug
- Pin Skt Genderless Contact Qty _____

MIL-DTL-38999 Series III Type _____

GHD _____

Series 80 Mighty Mouse _____

Eye-Beam™ _____

Glenair Front Release (GFR) _____

MIL-PRF-64266 (NGCON) Type _____

GFOCA _____

MIL-PRF-28876 _____

Termini Part No. _____

Dust Cover: Yes No

B Connector

ST Connector _____

FC Connector _____

SC Connector _____

SMA Connector _____

LC Connector _____

Other _____

FIBER OPTIC

MIL-DTL-38999 TYPE

FIBER OPTIC CONNECTION SYSTEM



MIL-DTL-38999 type fiber optic interconnection systems are the recognized standard for all military and commercial aerospace applications that depend on high levels of connector reliability, environmental and mechanical performance and low dB insertion loss. Designed specifically for air and space, the Glenair MIL-DTL-38999 type fiber optic connection system has been successfully deployed in applications ranging from the F-35 Joint Strike Fighter and the venerable F-22 to dozens of other fixed wing and rotary aircraft applications.



MIL-DTL-38999 Series III Type Fiber Optic Connection System General Information

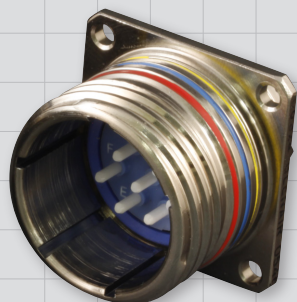
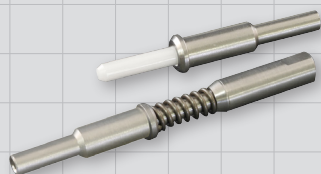


MIL-DTL-38999
Series III Type

MIL-DTL-38999 Series III type fiber optic termini, connectors, backshells and adapters, protective covers and cable sets

Glenair's complete line of MIL-DTL-38999 Series III Type fiber optic products includes qualified size 16 MIL-PRF-29504 precision ceramic termini, plus large core and jewel size 16 termini and size 20 termini. Tight-tolerance fiber optic connectors, backshells and accessories are available in metal and composite versions.

B



| Product No. | Description | Page No. |
|---|---|----------|
| MIL-PRF-29504 QPL Fiber Optic Termini | | |
| 181-001 | M29504/05 Socket Terminus, Size 16 | B-2 |
| 181-002 | M29504/04 Pin Terminus, Size 16 | B-3 |
| 187-019/187-029 | Dust Caps for Pin and Socket Termini, Size 16 | B-4 |
| 181-035 | Large Core Fiber Socket Terminus, Size 16 | B-5 |
| 181-036 | Large Core Fiber Pin Terminus, Size 16 | B-6 |
| 181-052 | Jewel Pin Terminus, Size 16 | B-7 |
| 181-053 | Jewel Socket Terminus, Size 16 | B-8 |
| 181-048 | Dummy Sealing Plug, Size 16 | B-9 |
| 181-065 | Size 20 Pin Terminus | B-10 |
| 181-066 | Size 20 Socket Terminus | B-11 |
| MIL-DTL-38999 Type Fiber Optic Connectors and Threaded Protective Covers | | |
| 180-091 | Contact arrangements and panel cut-outs | B-12 |
| 180-091 (05) | In-Line Receptacle Connector | B-14 |
| 180-091 (06) | Plug Connector | B-16 |
| 180-091 (08) | Jam Nut Mount Receptacle Connector | B-18 |
| 180-091 (H7) | Square Flange Wall Mount Receptacle Connector, Round holes (std.) | B-20 |
| 180-091 (S7) | Square Flange Wall Mount Receptacle Connector, Slotted holes | B-22 |
| 180-091 (T7) | Square Flange Wall Mount Receptacle Connector, Threaded holes | B-24 |
| 660-023/024, 660-049/050 | Threaded Protective Covers, Metal and Composite | B-26 |
| Backshells and Adapters | | |
| 189-016 | Environmental Backshell with Banding Strain Relief | B-30 |
| 189-037 | Environmental Backshell with Banding Strain Relief | B-32 |
| 377-014 | Composite Thermoplastic Backshell | B-34 |
| 377-040 | Composite Strain Relief Backshell | B-36 |
| 377-041 | Composite Helical Conduit Adapter | B-38 |
| 189-038 | Composite Backshell Adapter for Helical Conduit | B-40 |
| 712-416 | Composite Backshell Adapter for PEEK Helical Conduit | B-42 |
| 630-015 | Cable Bulkhead Adapter with Braid Sock and Shrink Sleeve | B-44 |
| ASAP Fiber Optic Cable Sets | | |
| FO1000 thru FO1005 | Overmolded Cables, Conduit Assemblies, Field-Repairable Backshell Assemblies, and Inside-the-Box Pigtail Assemblies | B-46 |
| Single Channel Connectors for Use with MIL-PRF-29504 Termini | | |
| 180-071 (-3) | Single Channel Square Flange Wall Mount Receptacle Connector | B-58 |
| 180-071 (-4) | Single Channel Jam Nut Mount Receptacle Connector | B-60 |
| 180-071 (-6) | Single Channel Plug Connector | B-62 |
| 189-047 | Plug and Receptacle Protective Cover for Series 180-071 Connectors | B-64 |
| 189-055 | Environmental Backshell for Series 180-071 Connectors | B-66 |
| 180-076 | Fiber Optic Splice, Size 16 | B-67 |
| 2 Channel Connectors for Use with MIL-PRF-29504 Termini | | |
| 180-052 | 2 Channel Receptacle Connector | B-68 |
| 180-053 | 2 Channel Plug Connector | B-69 |

Notes

Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only. Unless otherwise specified, the following other dimensional tolerances apply:
 .xx = ± .03 (0.8) • .xxx = ± .015 (0.4) • Angles = ± 5°



**M29504/05
181-001**
Size 16 MIL-DTL-38999 Series III Type Fiber Optic Socket Terminus



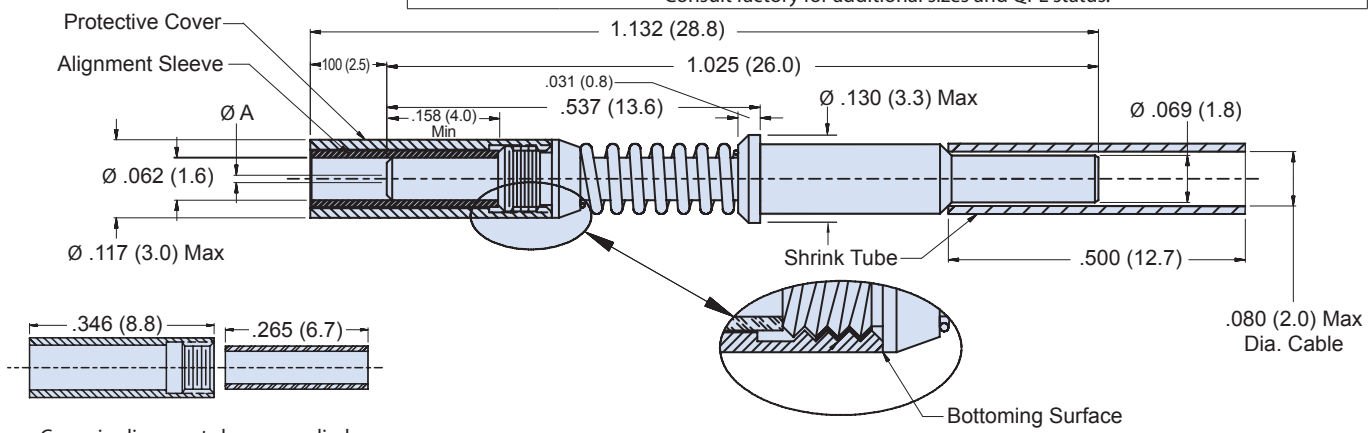
B

Ultra low dB loss QPL'd socket terminus for MIL-DTL-38999 Series III



| Part Number | Fiber Size Core/Cladding/Coating (Microns) | Ø A (Microns) | Ref. M29504/05-XXXX |
|--------------|---|---------------|---------------------|
| 181-001-125 | 9/125 (Singlemode) | 125.5 | M29504/05-4237 |
| 181-001-126S | 9/125 (Singlemode) | 126.0 | M29504/05-4238 |
| 181-001-126 | 50/125 & 62.5/125 | 126.0 | M29504/05-4239 |
| 181-001-127 | 50/125 & 62.5/125 | 127.0 | M29504/05-4046 |
| 181-001-142 | 100/140 | 142.0 | M29504/05-4049 |
| 181-001-144 | 100/140 | 144.0 | N/A |
| 181-001-145 | 100/140 | 145.0 | M29504/05-4050 |
| 181-001-156 | 62.5/125/155 (Polyimide) | 156.0 | M29504/05-4240 |
| 181-001-157 | 62.5/125/155 (Polyimide) | 157.0 | M29504/05-4241 |
| 181-001-173 | 100/140/172 (Polyimide) | 173.0 | M29504/05-4088 |
| 181-001-175 | 100/140/172 (Polyimide) | 175.0 | M29504/05-4242 |
| 181-001-231 | 200/230 | 231.0 | N/A |
| 181-001-236 | 200/230 | 236.0 | M29504/05-4243 |
| 181-001-286 | 200/280 | 286.0 | M29504/05-4244 |
| 181-001-448 | 400/440 | 448.0 | M29504/05-4245 |
| 181-001-533 | 486/500 | 533.0 | N/A |

Consult factory for additional sizes and QPL status.



Ceramic alignment sleeve supplied with terminus. Add **K** to the end of part number development to supply with optional stainless steel alignment sleeve e.g. 181-001-126K.

| Part Number | Description |
|-------------|----------------------------------|
| 181-001-S | Ceramic Alignment Sleeve |
| 181-001-K | Stainless Steel Alignment Sleeve |
| 181-001-C | Protective cover |

Material and Finish

Ferrule: Zirconia Ceramic
 Alignment Sleeve: Zirconia Ceramic or Stainless Steel/Passivate.
 Terminus Assembly: Stainless Steel/Passivate
 Spacer, Spring, and Cover: Stainless Steel/Passivate • Shrink Tube: Kynar

Notes

Alignment Sleeve & Protective Cover can also be ordered separately (Table II).
 See assembly procedure GAP-015 for complete termination instructions.
 Recommended Insertion/Extraction tool: P/N M81969/14-03 or equivalent

M29504/04

181-002

Size 16 MIL-DTL-38999 Series III Type Fiber Optic Pin Terminus

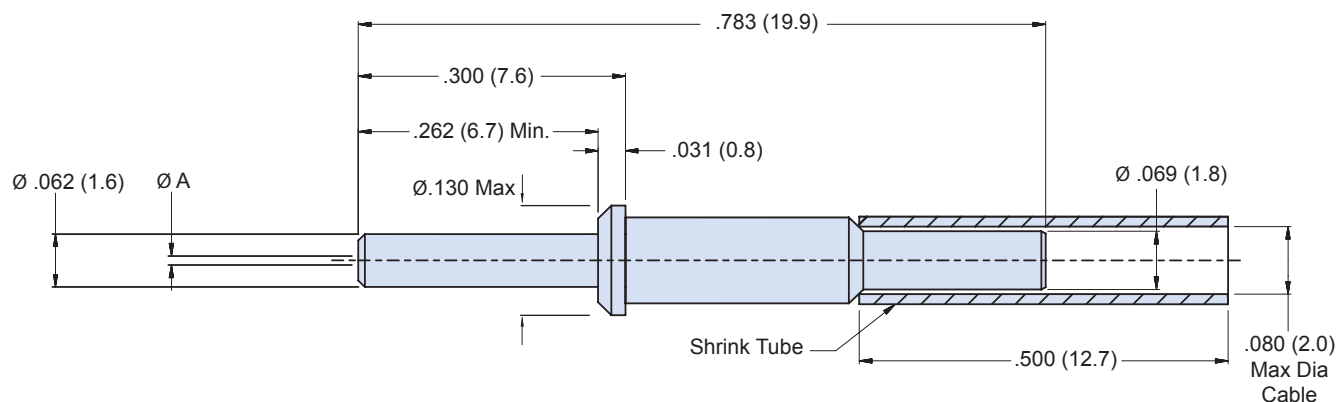
MIL-DTL-38999
Series III Type

Ultra low dB loss QPL'd pin terminus for MIL-DTL-38999 Series III



| Part Number | Fiber Size Core/Cladding/Coating | Ø A (Microns) | Ref. M29504/04-XXXX |
|------------------------------|----------------------------------|---------------|---------------------|
| 181-002-125 | 9/125 (Singlemode) | 125.5 | M29504/04-4208 |
| 181-002-126S | 9/125 (Singlemode) | 126.0 | M29504/04-4209 |
| 181-002-126 | 50/125 & 62.5/125 | 126.0 | M29504/04-4210 |
| 181-002-127 | 50/125 & 62.5/125 | 127.0 | M29504/04-4040 |
| 181-002-142 | 100/140 | 142.0 | M29504/04-4043 |
| 181-002-144 | 100/140 | 144.0 | N/A |
| 181-002-145 | 100/140 | 145.0 | M29504/04-4044 |
| 181-002-156 | 62.5/125/155 (Polyimide) | 156.0 | M29504/04-4211 |
| 181-002-157 | 62.5/125/155 (Polyimide) | 157.0 | M29504/04-4212 |
| 181-002-173 | 100/140/172 (Polyimide) | 173.0 | M29504/04-4087 |
| 181-002-175 | 100/140/172 (Polyimide) | 175.0 | M29504/04-4213 |
| 181-002-231 | 200/230 | 231.0 | N/A |
| 181-002-236 | 200/230 | 236.0 | M29504/04-4214 |
| 181-002-286 | 200/280 | 286.0 | M29504/04-4215 |
| 181-002-448 | 400/440 | 448.0 | M29504/04-4216 |
| 181-002-533 | 486/500 | 533.0 | N/A |

Consult factory for additional sizes and QPL status.



Material and Finish

Ferrule: Zirconia Ceramic
 Terminus Assembly: Stainless Steel/Passivate
 Shrink Tube: Kynar

Notes

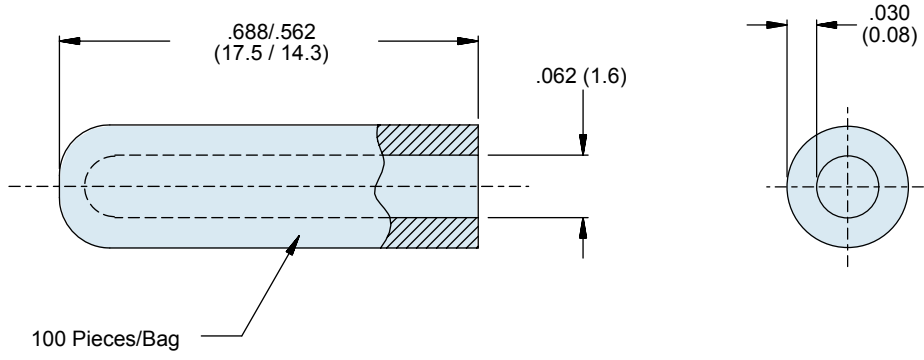
See Glenair assembly procedure GAP-015 for complete termination instructions.
 Recommended Insertion/Extraction tool: P/N M81969/14-03 or equivalent



Size 16 pin terminus vinyl dust caps

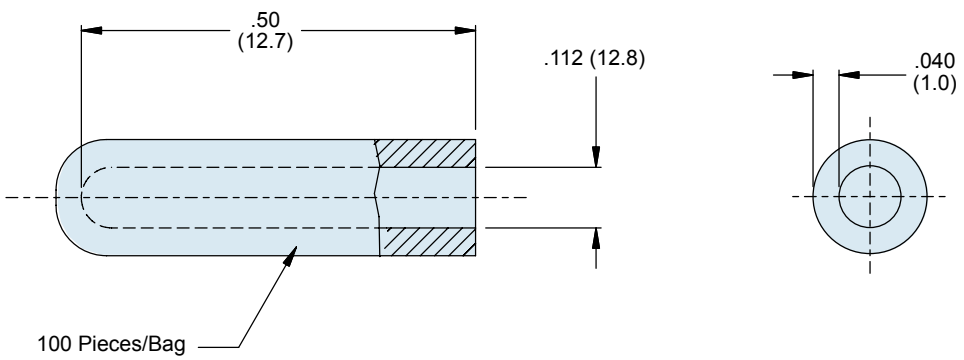
187-019 Vinyl Dust Cap for Size 16 Terminus with .0625 Ferrules

B



Size 16 socket terminus vinyl dust caps

187-029 Vinyl Dust Cap for Socket Terminus with Cover



Notes
Installs over metal protective cover/hood on terminus

181-035
Large Core Optical Fiber Socket Terminus
MIL-DTL-38999 Series III Type



MIL-DTL-38999
Series III Type

D38999
Series III

B

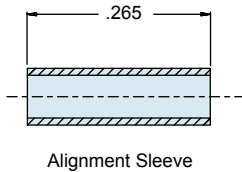
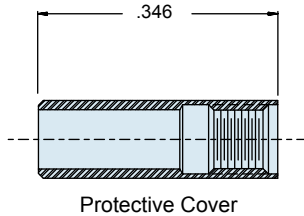
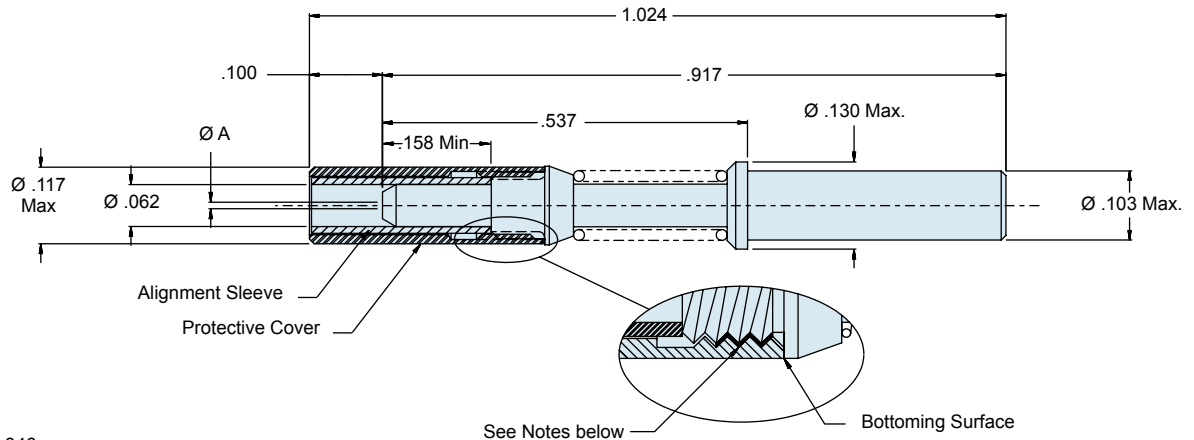
Large core fiber optic MIL-DTL-38999 type size 16 socket terminus



| Part Number | Fiber Size Core/Cladding (Microns) | ØA (Microns) |
|--------------|------------------------------------|--------------|
| 181-035-600 | 600 Micron | 610.0 |
| 181-035-1000 | 1000 Micron (Plastic) | 1117.0 |

Ceramic alignment sleeve supplied with terminus. Add **K** to the end of part number development to supply with optional stainless steel alignment sleeve e.g. 181-035-1000K.

| Accessories | |
|-------------|----------------------------------|
| Part Number | Terminus Accessory |
| 181-001-S | Ceramic Alignment Sleeve |
| 181-001-K | Stainless Steel Alignment Sleeve |
| 181-001-C | Protective Cover |



Material and Finish

Ferrule: Stainless Steel/Passivate
Alignment Sleeve: Zirconia Ceramic or Stainless Steel/Passivate
Terminus Assembly: Stainless Steel/Passivate
Spacer, Spring, and Cover: Stainless Steel/Passivate

Notes

Alignment sleeve and protective cover can also be ordered separately (see Accessories table)
Threaded Protective cover must be retained using Threadlocker "Loctite 222" prior to insertion and fully seated against terminus body as shown.
Contact Glenair for termination/assembly procedures.
Recommended Insertion/Extraction Tool: P/N M81969/14-03 or equivalent



181-036
Large Core Optical Fiber Pin Terminus
MIL-DTL-38999 Series III Type

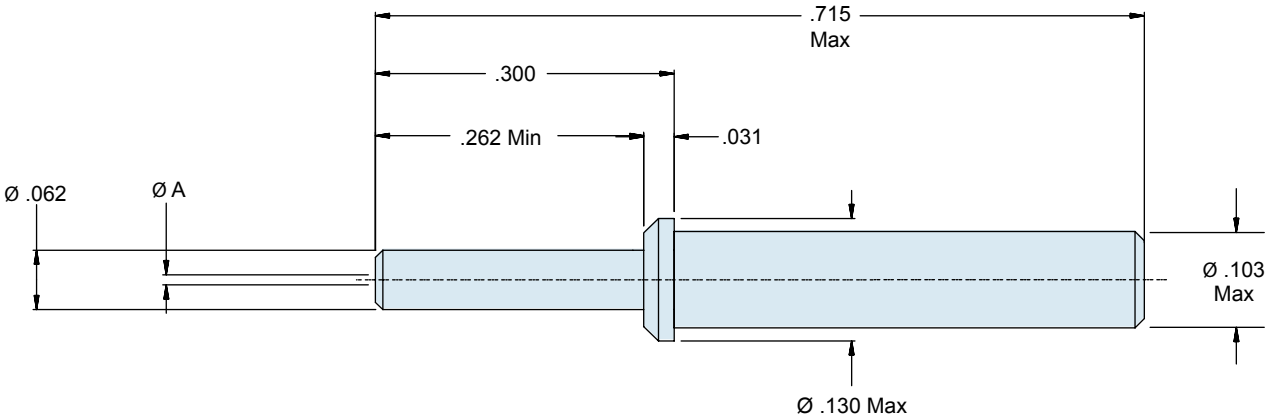
D38999
Series III

B

Large core fiber optic MIL-DTL-38999 type size 16 pin terminus



| Part Number | Fiber Size Core/Cladding | Ø A (Microns) |
|--------------|--------------------------|---------------|
| 181-036-600 | 600 Micron | 610.0 |
| 181-036-1000 | 1000 Micron (Plastic) | 1117.0 |



Material and Finish

Ferrule and Terminus Body: Stainless Steel/Passivate

Notes

Contact Glennair for termination/assembly procedures.
Recommended Insertion/Extraction Tool: P/N M81969/14-03 or equivalent

181-052
Size 16 Fiber Optic Jewel Pin Terminus
MIL-DTL-38999 Series III Type



MIL-DTL-38999
Series III Type



MIL-DTL-38999 type fiber optic jewel pin terminus

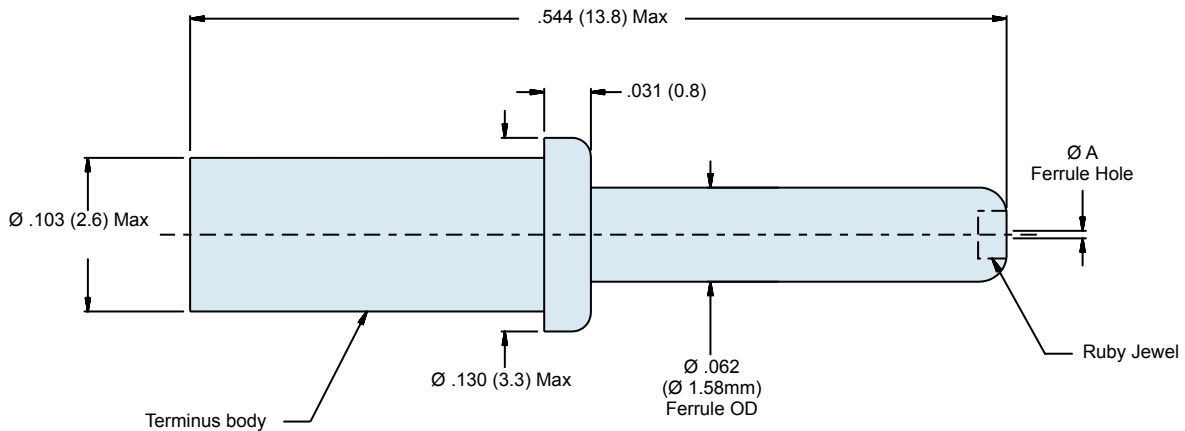
B



| Terminus Accessories | |
|----------------------|---|
| Part Number | Terminus Accessory |
| 189-070-6 | Reducing Sleeve, Ø1.90mm Max Cable Jacket |
| 181-052-E | Epoxy Preforms |

| Part Number | Ferrule Hole Ø A (Microns) | Typical Fiber Size Core/Cladding/Coating (Microns) |
|-------------|----------------------------|--|
| 181-052-125 | 125.0 | 9/125 (Singlemode) |
| 181-052-127 | 127.0 | 50/125, 62.5/125 |
| 181-052-142 | 142.0 | 100/140 |
| 181-052-157 | 157.0 | 62.5/125/155 |
| 181-052-175 | 175.0 | 100/140/172 |
| 181-052-236 | 236.0 | 200/230 |

Add **L** to the end of part number development to supply less epoxy preforms e.g. 181-052-127L. Omit to include preforms.



Material and Finish

Terminus Body: Stainless steel/passivate
Jewel, Ruby: Synthetic ruby or sapphire

Notes

Recommended insertion/extraction tool: M81969/14-03 or equivalent



181-053
Size 16 Fiber Optic Jewel Socket Terminus
MIL-DTL-38999 Series III Type

D38999
Series III

B

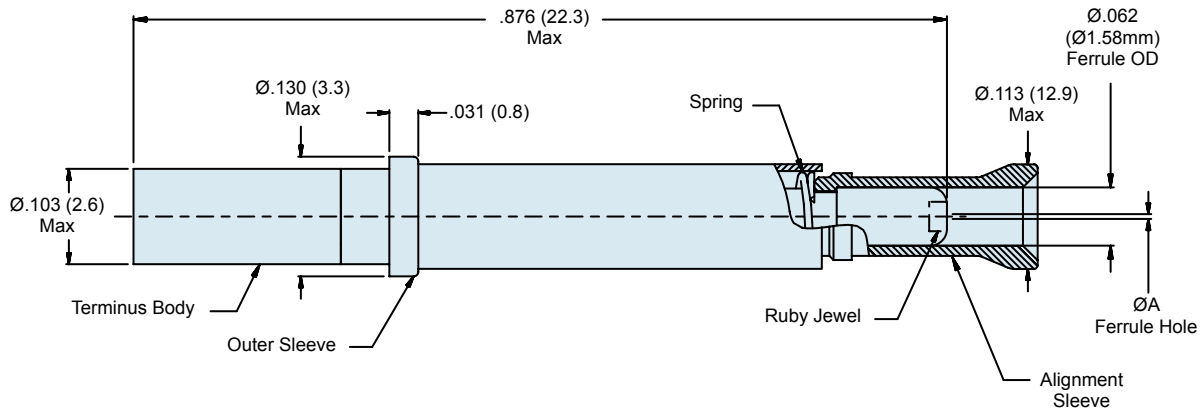
Fiber optic jewel socket terminus for MIL-DTL-38999 type connectors



| Part Number | Ferrule Hole Ø A (Microns) | Typical Fiber Size Core/Cladding/Coating (Microns) |
|-------------|-------------------------------|--|
| 181-053-125 | 125.0 | 9/125 (Singlemode) |
| 181-053-127 | 127.0 | 50/125, 62.5/125 |
| 181-053-142 | 142.0 | 100/140 |
| 181-053-157 | 157.0 | 62.5/125/155 |
| 181-053-175 | 175.0 | 100/140/172 |
| 181-053-236 | 236.0 | 200/230 |

Add L to the end of part number development to supply less epoxy preforms e.g. 181-053-127L. Omit to include preforms.

| Terminus Accessories | |
|----------------------|--|
| Part Number | Terminus Accessory |
| 189-070-6 | Reducing Sleeve Ø1.90mm Max Cable Jacket |
| 189-075 | Alignment Sleeve |
| 182-031 | Alignment Sleeve Installation Tool |
| 182-032 | Alignment Sleeve Extraction Tool |
| 181-053-E | Epoxy Preforms |



Material and Finish
 Terminus Body: Stainless Steel/Passivate
 Jewel/Ruby: Synthetic Ruby or Sapphire
 Alignment Sleeve: Stainless Steel/Passivate
 Outer Sleeve: Stainless Steel/Passivate
 Spring: Stainless Steel/Passivate.

Notes
 Alignment Sleeve, Outer Sleeve, and Spring packaged loose with assembly.
 Recommended insertion/extraction tool: M81969/14-03 or equivalent.

181-048
 Size 16 Dummy Terminus
 For use with MIL-DTL-38999 Series III Type Connectors



MIL-DTL-38999
 Series III Type

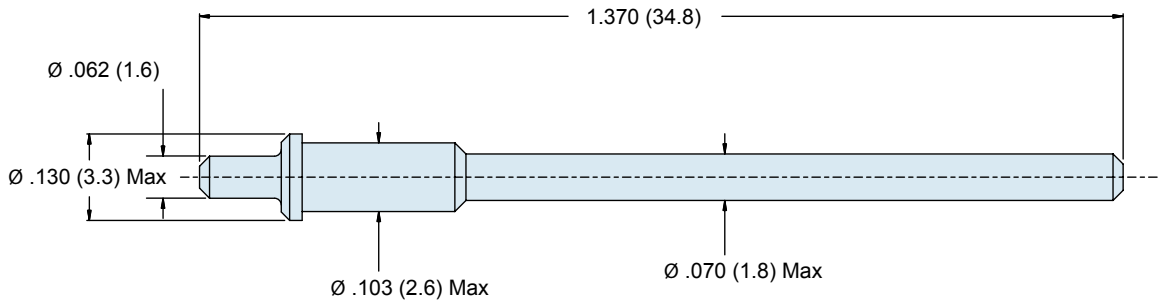


B

Dummy terminus for MIL-DTL-38999 connectors



| Part Number | Description |
|-------------|-------------------------|
| 181-048-16 | Dummy Terminus, size 16 |



Material and Finish/Notes

Terminus: High Grade Engineering Thermoplastic
 Recommended insertion/extraction tool: P/N: M81969/14-03 or equivalent



181-065
Size 20 Pin Terminus
MIL-DTL-38999 Series III Type

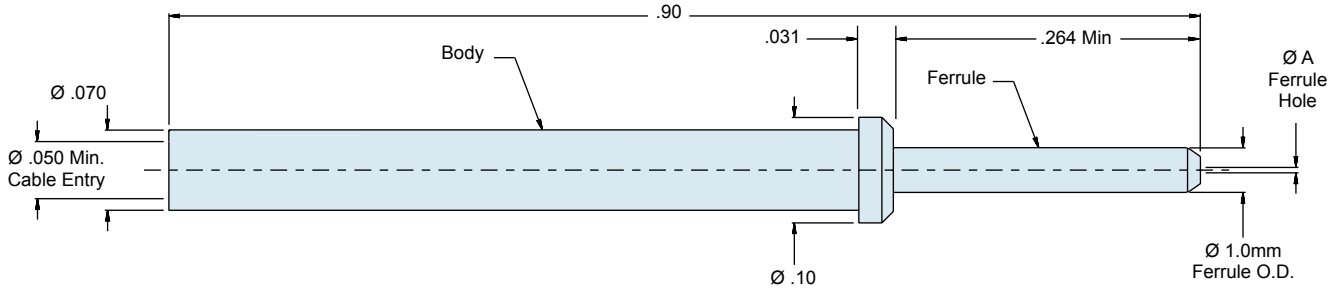


B

MIL-DTL-38999 Series III Type size 20 pin terminus



| Part Number | Fiber Size Core/Cladding (Microns) | ØA (Microns) | Typ. Fiber Type |
|---------------------|------------------------------------|--------------|-----------------|
| 181-065-1255 | 9/125 | 125.5 | Singlemode |
| 181-065-126 | 50/125 62.5/125 | 126.0 | Multimode |



Material and Finish

Ferrule: Zirconia Ceramic
Body: Copper-Nickel-Zinc Alloy

Notes

Consult factory for appropriate termination and assembly tools/procedures.

181-066
Size 20 Socket Terminus
MIL-DTL-38999 Series III Type



MIL-DTL-38999
Series III Type

D38999
Series III

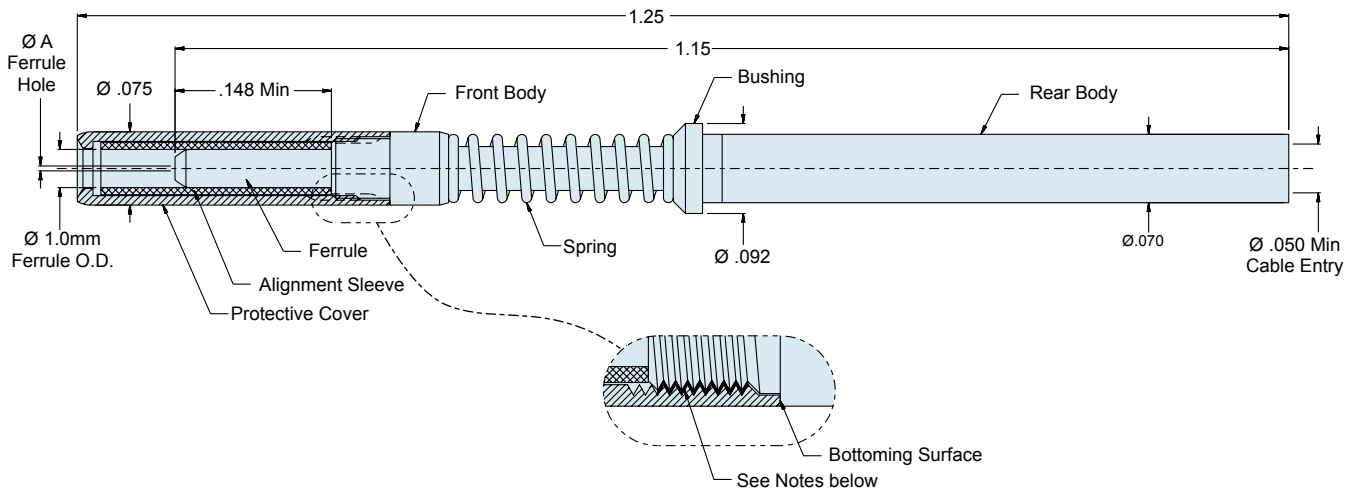
B

MIL-DTL-38999 type size 20 socket terminus



| Part Number | Fiber Size Core/Cladding | Ø A (Microns) | Typ. Fiber Type |
|--------------|--------------------------|---------------|-----------------|
| 181-066-1255 | 9/125 | 125.5 | Singlemode |
| 181-066-126 | 50/125 & 62.5/125 | 126.0 | Multimode |

| Terminus Accessories | |
|----------------------|--------------------------|
| Part Number | Terminus Accessory |
| 181-066-S | Ceramic Alignment Sleeve |
| 181-066-C | Protective Cover |



Material and Finish

- Ferrule: Zirconia Ceramic
- Alignment Sleeve: Zirconia Ceramic
- Body (Front and Rear): Copper-Nickel-Zinc Alloy
- Protective Cover: Copper-Nickel-Zinc Alloy
- Bushing: Copper-Nickel-Zinc Alloy
- Spring: Stainless Steel/Passivate

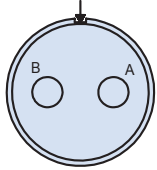
Notes

Protective cover must be retained using Threadlocker "Loctite 222" prior to insertion and fully seated against terminus body as shown.
Consult factory for appropriate termination and assembly tools/procedures

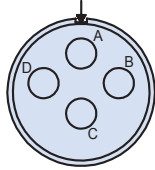


B

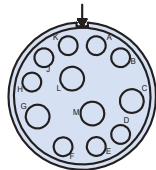
MIL-DTL-38999 type advanced fiber optic connectors



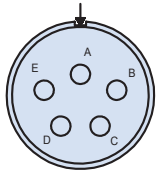
Shell Size 11
Arrangement 2



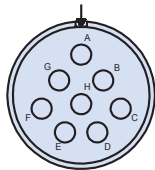
Shell Size 13
Arrangement 4



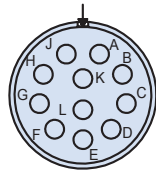
Shell Size 15
Arrangement 97



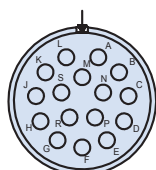
Shell Size 15
Arrangement 5



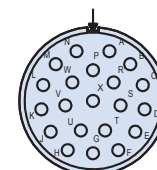
Shell Size 17
Arrangement 8



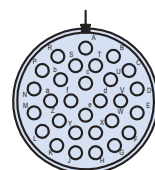
Shell Size 19
Arrangement 11



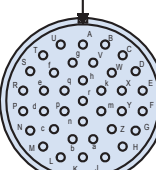
Shell Size 21
Arrangement 16



Shell Size 23
Arrangement 21



Shell Size 25
Arrangement 29



Shell Size 25
Arrangement 37

Mating face of pin insert shown

Contact Arrangements per MIL-STD-1560



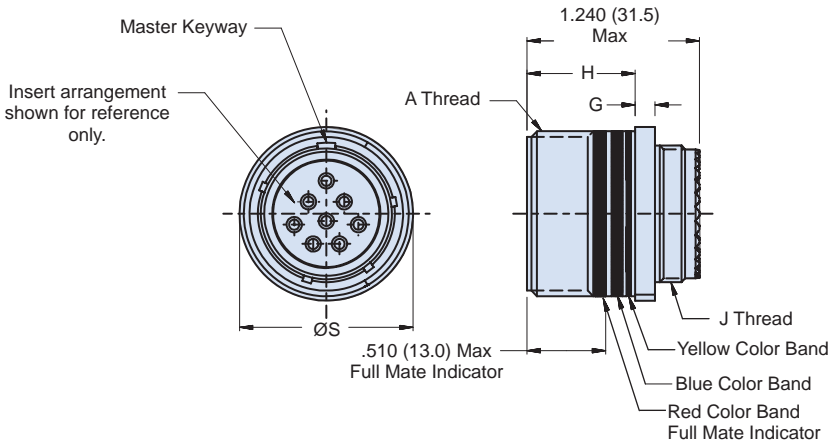
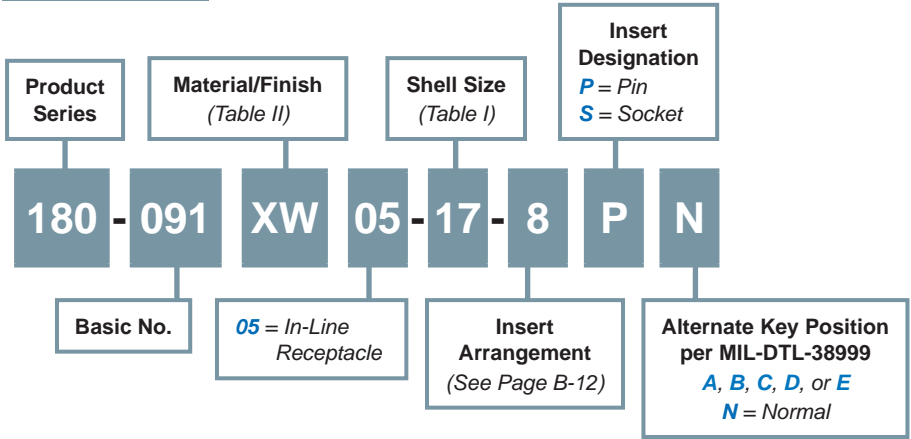
180-091 (05) In-Line Receptacle Advanced Fiber Optic Connector MIL-DTL-38999 Series III Type

D38999
Series III

B

MIL-DTL-38999 type advanced fiber optic receptacle connector

How To Order



05 - IN-LINE RECEPTACLE

Material and Finish

- Shell: See Table II
- Insulator: High Grade Rigid Dielectric
- Seals: Fluorosilicone
- Retention Clip: Copper Alloy

Notes

Insert arrangement in accordance with MIL-STD-1560, See Page B-12.
 Blue Color Band indicates rear release retention system.
 For appropriate Glenair Terminus part numbers, see Glenair Drawing 181-001 and 181-002.

180-091 (05) In-Line Receptacle
Advanced Fiber Optic Connector
MIL-DTL-38999 Series III Type



MIL-DTL-38999
Series III Type

B

| Table I | | | | | | |
|-----------------|------------|---------------------|----------------------------|----------------------------|--------------|---------------------|
| Shell Size Code | Shell Size | A Thread | G | H | Ø S | J Thread |
| B | 11 | .7500-1P-.3L-TS-2A | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | .840 (21.3) | M15 x 1.0-6g 0.100R |
| C | 13 | .8750-1P-.3L-TS-2A | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | .963 (24.5) | M18 x 1.0-6g 0.100R |
| D | 15 | 1.0000-1P-.3L-TS-2A | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | 1.090 (27.7) | M22 x 1.0-6g 0.100R |
| E | 17 | 1.1875-1P-.3L-TS-2A | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | 1.275 (32.4) | M25 x 1.0-6g 0.100R |
| F | 19 | 1.2500-1P-.3L-TS-2A | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | 1.337 (34.0) | M28 x 1.0-6g 0.100R |
| G | 21 | 1.3750-1P-.3L-TS-2A | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | 1.463 (37.2) | M31 x 1.0-6g 0.100R |
| H | 23 | 1.5000-1P-.3L-TS-2A | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | 1.587 (40.3) | M34 x 1.0-6g 0.100R |
| J | 25 | 1.6250-1P-.3L-TS-2A | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | 1.713 (43.5) | M37 x 1.0-6g 0.100R |

| Material and Finish | | |
|---------------------|-----------------|--------------------------|
| Code | Material | Finish Description |
| M | Aluminum Alloy | Electroless Nickel |
| MT | | Nickel - PTFE, Grey |
| NF | | Cadmium, Olive Drab |
| ZN | | Zinc-Nickel, Olive Drab |
| ZNU | | Zinc-Nickel, Black |
| XM | Composite | Electroless Nickel |
| XMT | | Nickel - PTFE, Grey |
| XW | | Cadmium, Olive Drab |
| XZN | | Zinc-Nickel, Black |
| MS | Stainless Steel | Electroless Nickel |
| ZL | | Electro-Deposited Nickel |
| ZI | | Passivate |
| AB | Marine Bronze | None (Clean Only) |

Refer to Appendix for material/finish details



180-091 (06) Plug
Advanced Fiber Optic Connector
MIL-DTL-38999 Series III Type

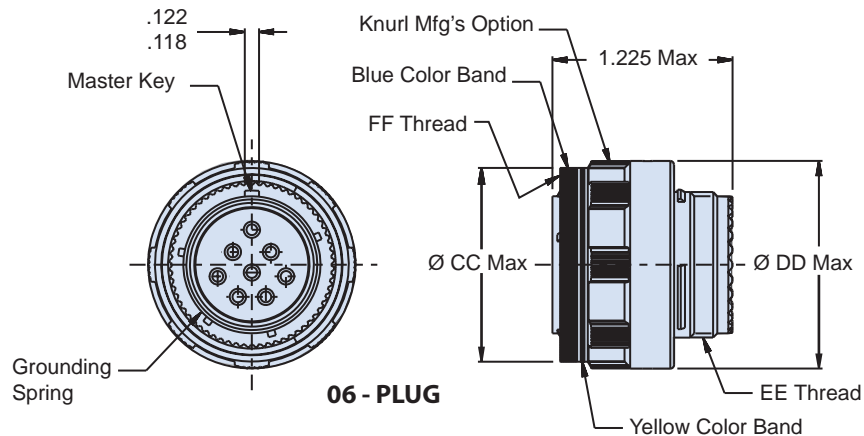
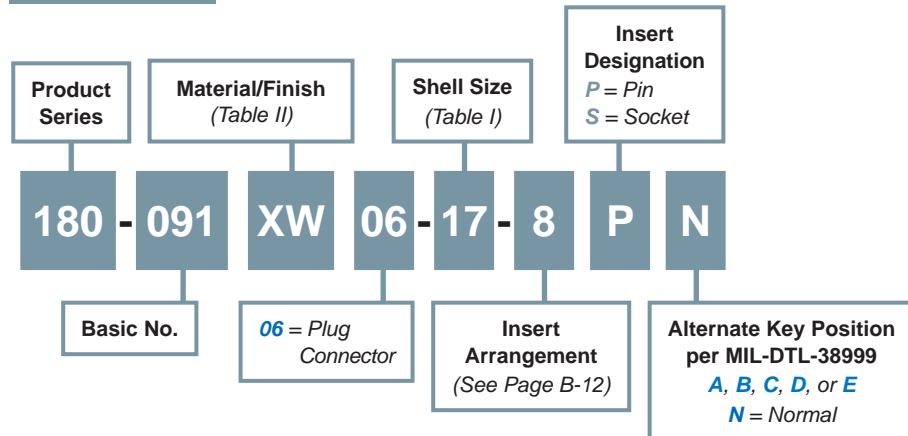
D38999
Series III

B

MIL-DTL-38999 type advanced fiber optic plug connector



How To Order



Material and Finish

Barrel, Coupling Nut: See Table II
Coupling Nut (for Composite): High Grade Engineering Thermoplastic/Unplated
Insulator: High Grade Rigid Dielectric
Seals: Fluorosilicone
Ground Spring: Copper Alloy/Nickel

Notes

Insert arrangement in accordance with MIL-STD-1560, See Page B-12.
Blue Color Band indicates rear release retention system.
For appropriate Glenair Terminus part numbers see Glenair Drawing 181-001 and 181-002.

180-091 (06) Plug
Advanced Fiber Optic Connector
MIL-DTL-38999 Series III Type



MIL-DTL-38999
Series III Type

B

| Table I | | | | | |
|-----------------|------------|----------------------|--------------|--------------|---------------------|
| Shell Size Code | Shell Size | FF Thread | Ø CC Max | Ø DD Max | EE Thread |
| B | 11 | .7500-.1P-.3L-TS-2B | .929 (23.6) | .984 (25.0) | M15 x 1.0-6g 0.100R |
| C | 13 | .8750-.1P-.3L-TS-2B | 1.110 (28.2) | 1.157 (29.4) | M18 x 1.0-6g 0.100R |
| D | 15 | 1.0000-.1P-.3L-TS-2B | 1.232 (31.3) | 1.280 (32.5) | M22 x 1.0-6g 0.100R |
| E | 17 | 1.1875-.1P-.3L-TS-2B | 1.358 (34.5) | 1.406 (35.7) | M25 x 1.0-6g 0.100R |
| F | 19 | 1.2500-.1P-.3L-TS-2B | 1.469 (37.3) | 1.516 (38.5) | M28 x 1.0-6g 0.100R |
| G | 21 | 1.3750-.1P-.3L-TS-2B | 1.594 (40.5) | 1.642 (41.7) | M31 x 1.0-6g 0.100R |
| H | 23 | 1.5000-.1P-.3L-TS-2B | 1.720 (43.7) | 1.768 (44.9) | M34 x 1.0-6g 0.100R |
| J | 25 | 1.6250-.1P-.3L-TS-2B | 1.843 (46.8) | 1.890 (48.0) | M37 x 1.0-6g 0.100R |

| Material and Finish | | |
|---------------------|-----------------|--------------------------|
| Code | Material | Finish Description |
| M | Aluminum Alloy | Electroless Nickel |
| MT | | Nickel - PTFE, Grey |
| NF | | Cadmium, Olive Drab |
| ZN | | Zinc-Nickel, Olive Drab |
| ZNU | | Zinc-Nickel, Black |
| XM | Composite | Electroless Nickel |
| XMT | | Nickel - PTFE, Grey |
| XW | | Cadmium, Olive Drab |
| XZN | | Zinc-Nickel, Black |
| MS | Stainless Steel | Electroless Nickel |
| ZL | | Electro-Deposited Nickel |
| Z1 | | Passivate |
| AB | Marine Bronze | None (Clean Only) |

Refer to Appendix for material/finish details



180-091 (08) Jam Nut Mount Receptacle Advanced Fiber Optic Connector MIL-DTL-38999 Series III Type

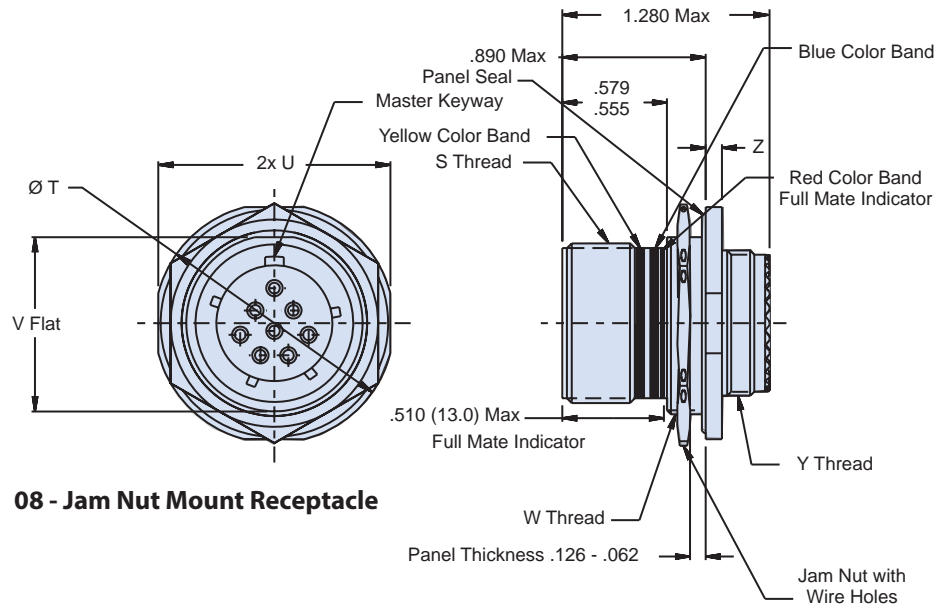
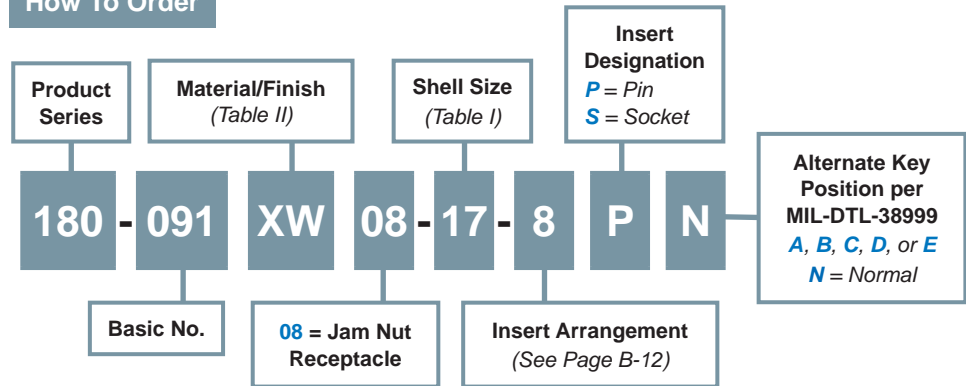
D38999
Series III

B

MIL-DTL-38999 type advanced fiber optic receptacle connector



How To Order



Material and Finish

Shell, Jam Nut: See Table II
 Jam Nut (for Composite): Al Alloy, plated same as shell
 Insulator: High Grade Rigid Dielectric
 Seals: Fluorosilicone

Notes

Insert arrangement in accordance with MIL-STD-1560, See Page B-12.
 Blue Color Band indicates rear release retention system.
 For appropriate Glenair Terminus part numbers, see Glenair Drawing 181-001 and 181-002.
 For recommended panel cutout, See Page B-13

**180-091 (08) Jam Nut Mount Receptacle
Advanced Fiber Optic Connector
MIL-DTL-38999 Series III Type**



MIL-DTL-38999
Series III Type

B

Table I

| Shell Size Code | Shell Size | S Thread | Ø T | U | V | W Thread | Y Thread | Z |
|-----------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------------|---------------------|--------------------------|
| A | 9 | .6250-.1P-.3L-TS-2A | 1.200 (30.5) 1.777 (45.1) | 1.079 (27.4) 1.047 (26.6) | .655 (16.6) .645 (16.4) | M17 x 1.0-6g 0.100R | M12 x 1.0-6g 0.100R | .121 (3.1) .083 (2.1) |
| B | 11 | .7500-.1P-.3L-TS-2A | 1.386 (25.4) 1.362 (34.6) | 1.268 (32.2) 1.236 (31.4) | .755 (19.2) .745 (18.9) | M20 x 1.0-6g 0.100R | M15 x 1.0-6g 0.100R | .121 (3.1) .083 (2.1) |
| C | 13 | .8750-.1P-.3L-TS-2A | 1.512 (38.4) 1.488 (37.8) | 1.390 (35.3) 1.358 (34.5) | .942 (23.9) .932 (23.7) | M25 x 1.0-6g 0.100R | M18 x 1.0-6g 0.100R | .121 (3.1) .083 (2.1) |
| D | 15 | 1.0000-.1P-.3L-TS-2A | 1.638 (41.6) 1.614 (41.0) | 1.516 (38.5) 1.484 (37.7) | 1.066 (27.1) 1.056 (26.8) | M28 x 1.0-6g 0.100R | M22 x 1.0-6g 0.100R | .121 (3.1) .083 (2.1) |
| E | 17 | 1.1875-.1P-.3L-TS-2A | 1.764 (44.8) 1.740 (44.2) | 1.642 (41.7) 1.610 (40.9) | 1.191 (30.3) 1.181 (30.0) | M32 x 1.0-6g 0.100R | M25 x 1.0-6g 0.100R | .121 (3.1) .083 (2.1) |
| F | 19 | 1.2500-.1P-.3L-TS-2A | 1.949 (49.5) 1.925 (48.9) | 1.827 (46.4) 1.795 (45.6) | 1.316 (33.4) 1.306 (33.2) | M35 x 1.0-6g 0.100R | M28 x 1.0-6g 0.100R | .154 (3.9) .114 (2.9) |
| G | 21 | 1.3750-.1P-.3L-TS-2A | 2.075 (52.7) 2.051 (52.1) | 1.953 (49.6) 1.921 (48.8) | 1.441 (36.6) 1.431 (36.3) | M38 x 1.0-6g 0.100R | M31 x 1.0-6g 0.100R | .154 (3.9) .114 (2.9) |
| H | 23 | 1.5000-.1P-.3L-TS-2A | 2.201 (55.9) 2.177 (55.3) | 2.079 (52.8) 2.047 (52.0) | 1.566 (39.8) 1.556 (39.5) | M41 x 1.0-6g 0.100R | M34 x 1.0-6g 0.100R | .154 (3.9) .114 (2.9) |
| J | 25 | 1.6250-.1P-.3L-TS-2A | 2.323 (59.0) 2.299 (58.4) | 2.205 (56.0) 2.173 (55.2) | 1.691 (43.0) 1.681 (42.7) | M44 x 1.0-6g 0.100R | M37 x 1.0-6g 0.100R | .154 (3.9) .114 (2.9) |

| Material and Finish | | |
|---------------------|-----------------|--------------------------|
| Code | Material | Finish Description |
| M | Aluminum Alloy | Electroless Nickel |
| MT | | Nickel - PTFE, Grey |
| NF | | Cadmium, Olive Drab |
| ZN | | Zinc-Nickel, Olive Drab |
| ZNU | | Zinc-Nickel, Black |
| XM | Composite | Electroless Nickel |
| XMT | | Nickel - PTFE, Grey |
| XW | | Cadmium, Olive Drab |
| XZN | | Zinc-Nickel, Black |
| MS | Stainless Steel | Electroless Nickel |
| ZL | | Electro-Deposited Nickel |
| Z1 | | Passivate |
| AB | Marine Bronze | None (Clean Only) |

Refer to Appendix for material/finish details



**180-091 (H7) Square Flange Wall Mount Receptacle
Advanced Fiber Optic Connector
MIL-DTL-38999 Series III Type with Round Holes (Standard)**

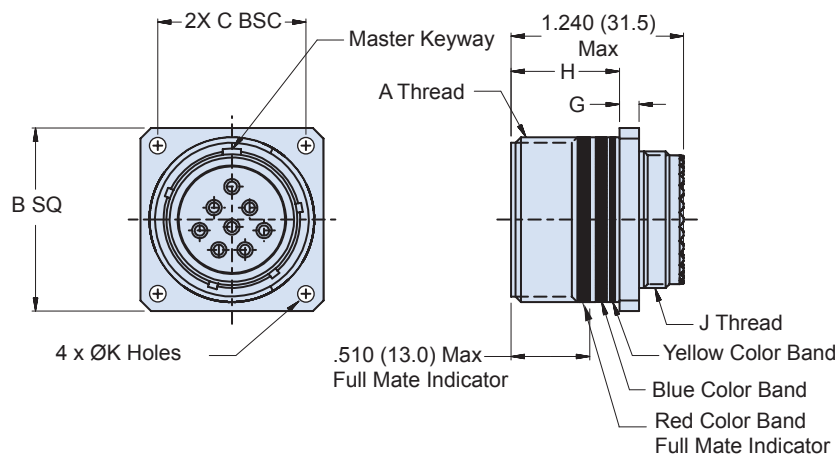
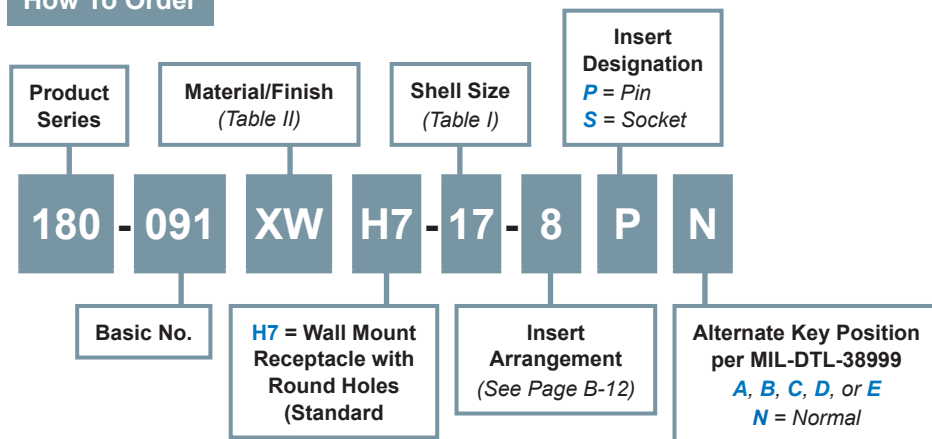
D38999
Series III

B

MIL-DTL-38999 type advanced fiber optic receptacle connector



How To Order



H7 - SQUARE FLANGE WALL MOUNT RECEPTACLE WITH ROUND HOLES (STANDARD)

Material and Finish

Shell: See Table II
Insulator: High Grade Rigid Dielectric
Seals: Fluorosilicone

Notes

Insert arrangement in accordance with MIL-STD-1560, See Page B-12.
Blue Color Band indicates rear release retention system.
For appropriate Glenair Terminus part numbers, see Glenair Drawing 181-001 and 181-002.
For recommended panel cutout, See Page B-13

**180-091 (H7) Square Flange Wall Mount Receptacle
Advanced Fiber Optic Connector
MIL-DTL-38999 Series III Type with Round Holes (Standard)**



MIL-DTL-38999
Series III Type

B

Table I

| Shell Size Code | Shell Size | A Thread | B SQ | C BSC | G | H | J Thread | Ø K Holes |
|-----------------|------------|----------------------|------------------------------|--------------|----------------------------|----------------------------|---------------------|--------------------------|
| B | 11 | .7500-.1P-.3L-TS-2A | 1.043 (26.5) 1.019 (25.9) | .812 (20.6) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M15 x 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| C | 13 | .8750-.1P-.3L-TS-2A | 1.138 (28.9) 1.114 (28.3) | .906 (23.0) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M18 x 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| D | 15 | 1.0000-.1P-.3L-TS-2A | 1.232 (31.3) 1.208 (30.7) | .969 (24.6) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M22 x 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| E | 17 | 1.1875-.1P-.3L-TS-2A | 1.323 (33.6) 1.299 (33.0) | 1.062 (27.0) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M25 x 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| F | 19 | 1.2500-.1P-.3L-TS-2A | 1.449 (36.8) 1.425 (36.2) | 1.156 (29.4) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M28 x 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| G | 21 | 1.3750-.1P-.3L-TS-2A | 1.575 (40.0) 1.551 (39.4) | 1.250 (31.8) | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | M31 x 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| H | 23 | 1.5000-.1P-.3L-TS-2A | 1.701 (43.2) 1.677 (42.6) | 1.375 (34.9) | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | M34 x 1.0-6g 0.100R | .162 (4.1) .146 (3.7) |
| J | 25 | 1.6250-.1P-.3L-TS-2A | 1.823 (46.3) 1.799 (45.7) | 1.500 (38.1) | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | M37 x 1.0-6g 0.100R | .162 (4.1) .146 (3.7) |

| Material and Finish | | |
|---------------------|---------------------|--------------------------|
| Code | Material | Finish Description |
| M | Aluminum Alloy | Electroless Nickel |
| MT | | Nickel - PTFE, Grey |
| NF | | Cadmium, Olive Drab |
| ZN | | Zinc-Nickel, Olive Drab |
| ZNU | | Zinc-Nickel, Black |
| XM | | Composite |
| XMT | Nickel - PTFE, Grey | |
| XW | Cadmium, Olive Drab | |
| XZN | Zinc-Nickel, Black | |
| MS | Stainless Steel | Electroless Nickel |
| ZL | | Electro-Deposited Nickel |
| Z1 | | Passivate |
| AB | Marine Bronze | None (Clean Only) |

Refer to Appendix for material/finish details

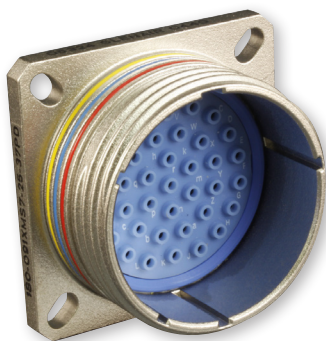


180-091 (S7) Square Flange Wall Mount Receptacle Advanced Fiber Optic Connector MIL-DTL-38999 Series III Type with Slotted Holes

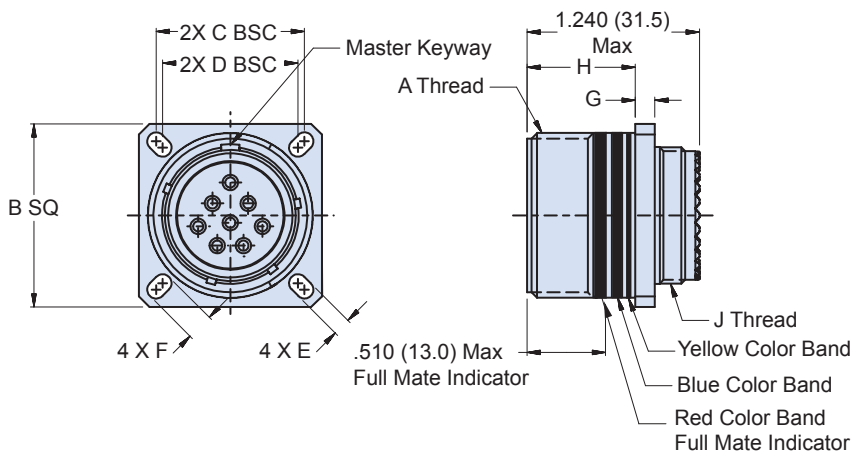
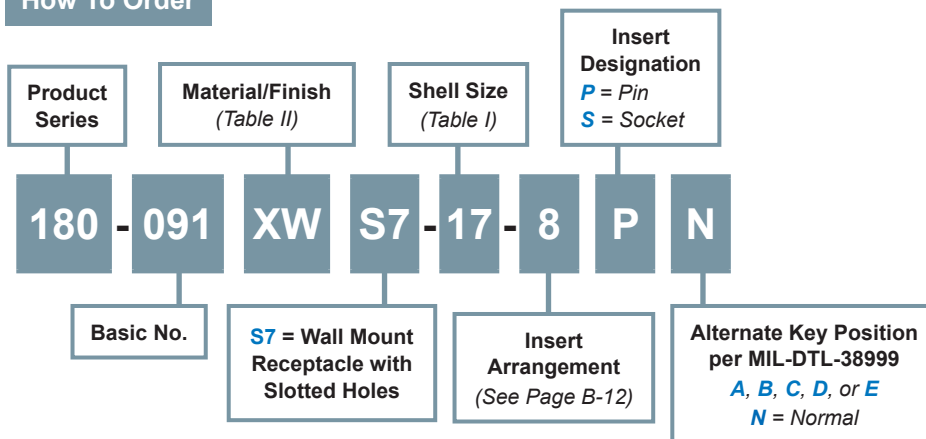
D38999
Series III

MIL-DTL-38999 type advanced fiber optic receptacle connector

B



How To Order



S7 - WALL MOUNT RECEPTACLE WITH SQUARE FLANGE AND SLOTTED HOLES

Notes

1. Insert arrangement in accordance with MIL-STD-1560, See Page B-12.
2. Blue Color Band indicates rear release retention system.
3. For appropriate Glenair Terminus part numbers, see Glenair Drawing 181-001 and 181-002.
4. For recommended panel cutout, See Page B-13

5. S7 wall mount receptacle can be front panel mounted using cut out dimensions R1 or R2 on page C-11. Dimension R2 is for use with S7 wall mount receptacle only.

Material and Finish

Shell: See Table II
Insulator: High Grade Rigid Dielectric
Seals: Fluorosilicone

**180-091 (S7) Square Flange Wall Mount Receptacle
Advanced Fiber Optic Connector
MIL-DTL-38999 Series III Type with Slotted Holes**



MIL-DTL-38999
Series III Type

B

Table I

| Shell Size Code | Shell Size | A Thread | B SQ | C BSC | D BSC | E | F | G | H | J Thread |
|-----------------|------------|----------------------|------------------------------|--------------|--------------|--------------------------|--------------------------|----------------------------|----------------------------|---------------------|
| A | 9 | .6250-.1P-.3L-TS-2A | .949 (24.1) .929 (23.6) | .719 (18.3) | .594 (15.1) | .136 (3.5) .120 (3.0) | .216 (5.5) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M12 x 1.0-6g 0.100R |
| B | 11 | .7500-.1P-.3L-TS-2A | 1.043 (26.5) 1.019 (25.9) | .812 (20.6) | .719 (18.3) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M15 x 1.0-6g 0.100R |
| C | 13 | .8750-.1P-.3L-TS-2A | 1.138 (28.9) 1.114 (28.3) | .906 (23.0) | .812 (20.6) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M18 x 1.0-6g 0.100R |
| D | 15 | 1.0000-.1P-.3L-TS-2A | 1.232 (31.3) 1.208 (30.7) | .969 (24.6) | .906 (23.0) | .136 (3.5) .120 (3.0) | .181 (4.6) .165 (4.2) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M22 x 1.0-6g 0.100R |
| E | 17 | 1.1875-.1P-.3L-TS-2A | 1.323 (33.6) 1.299 (33.0) | 1.062 (27.0) | .969 (24.6) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M25 x 1.0-6g 0.100R |
| F | 19 | 1.2500-.1P-.3L-TS-2A | 1.449 (36.8) 1.425 (36.2) | 1.156 (29.4) | 1.062 (27.0) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M28 x 1.0-6g 0.100R |
| G | 21 | 1.3750-.1P-.3L-TS-2A | 1.575 (40.0) 1.551 (39.4) | 1.250 (31.8) | 1.156 (29.4) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | M31 x 1.0-6g 0.100R |
| H | 23 | 1.5000-.1P-.3L-TS-2A | 1.701 (43.2) 1.677 (42.6) | 1.375 (34.9) | 1.250 (31.8) | .162 (4.1) .146 (3.7) | .250 (6.4) .234 (5.9) | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | M34 x 1.0-6g 0.100R |
| J | 25 | 1.6250-.1P-.3L-TS-2A | 1.823 (46.3) 1.799 (45.7) | 1.500 (38.1) | 1.375 (34.9) | .162 (4.1) .146 (3.7) | .250 (6.4) .234 (5.9) | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | M37 x 1.0-6g 0.100R |

| Material and Finish | | |
|---------------------|-----------------|--------------------------|
| Code | Material | Finish Description |
| M | Aluminum Alloy | Electroless Nickel |
| MT | | Nickel - PTFE, Grey |
| NF | | Cadmium, Olive Drab |
| ZN | | Zinc-Nickel, Olive Drab |
| ZNU | | Zinc-Nickel, Black |
| XM | Composite | Electroless Nickel |
| XMT | | Nickel - PTFE, Grey |
| XW | | Cadmium, Olive Drab |
| XZN | | Zinc-Nickel, Black |
| MS | Stainless Steel | Electroless Nickel |
| ZL | | Electro-Deposited Nickel |
| Z1 | | Passivate |
| AB | Marine Bronze | None (Clean Only) |

Refer to Appendix for material/finish details



**180-091 (T7) Square Flange Wall Mount Receptacle
Advanced Fiber Optic Connector
MIL-DTL-38999 Series III Type with Threaded Insert Holes**

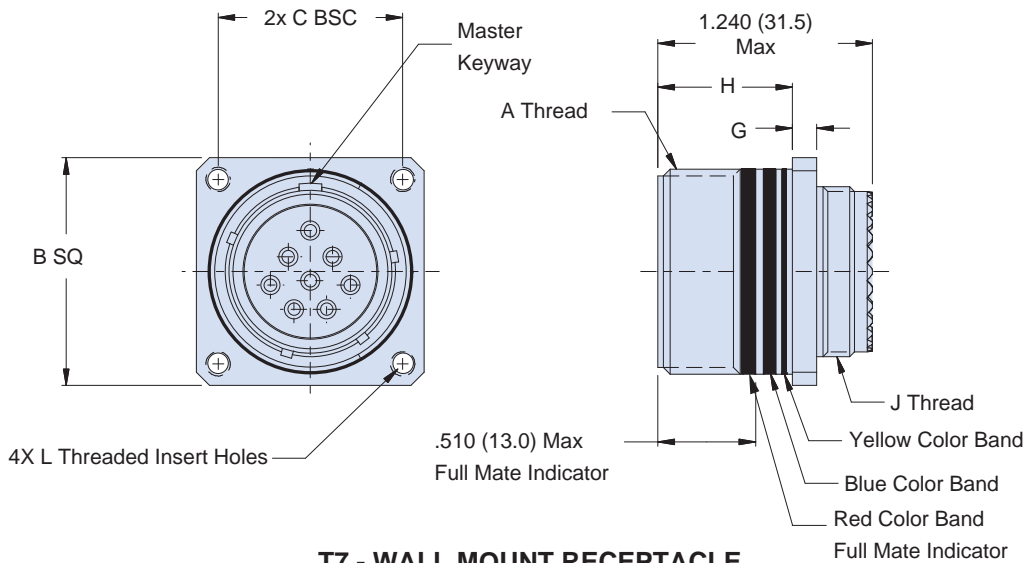


B

MIL-DTL-38999 type advanced fiber optic receptacle connector



| How To Order 180-091 | | | | | | |
|--------------------------------|---|-----------|-----------|--------------|----------|----------|
| Sample Part Number | 180-091 | XW | T7 | -17-8 | P | N |
| Series / Basic Part No. | D38999 Series III Type | | | | | |
| Material/Finish | See Material/Finish Table | | | | | |
| Connector Style | T7 = Wall Mount Receptacle with Threaded insert holes | | | | | |
| Shell Size/Insert Arr. | IAW MIL-DTL-38999 Series III, Per MIL-STD-1560 | | | | | |
| Insert Designation | P = Pin S = Socket | | | | | |
| Alternate Key Position | A, B, C, D, E, N = Normal; Per MIL-DTL-38999 | | | | | |



**T7 - WALL MOUNT RECEPTACLE
SQUARE FLANGE WITH THREADED INSERT HOLES**

MATERIAL AND FINISH

Shell: See Material and Finish Table
Insulator: High Grade Rigid Dielectric
Seals: Fluorosilicone

NOTES

Insert arrangement in accordance with MIL-STD-1560, See Page B-12
For recommended panel cutout, See Page B-13

**180-091 (T7) Square Flange Wall Mount Receptacle
Advanced Fiber Optic Connector
MIL-DTL-38999 Series III Type with Threaded Insert Holes**



MIL-DTL-38999
Series III Type

B

| Dimensions | | | | | | | | |
|-----------------|------------|----------------------|------------------------------|--------------|----------------------------|----------------------------|---------------------|-------------------------|
| Shell Size Code | Shell Size | A Thread | B SQ | C BSC | G | H | J Thread | L Threaded Insert Holes |
| B | 11 | .7500-.1P-.3L-TS-2A | 1.043 (26.5) 1.019 (25.9) | .812 (20.6) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M15 x 1.0-6g 0.100R | .112-40 UNC-2B |
| C | 13 | .8750-.1P-.3L-TS-2A | 1.138 (28.9) 1.114 (28.3) | .906 (23.0) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M18 x 1.0-6g 0.100R | .112-40 UNC-2B |
| D | 15 | 1.0000-.1P-.3L-TS-2A | 1.232 (31.3) 1.208 (30.7) | .969 (24.6) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M22 x 1.0-6g 0.100R | .112-40 UNC-2B |
| E | 17 | 1.1875-.1P-.3L-TS-2A | 1.323 (33.6) 1.299 (33.0) | 1.062 (27.0) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M25 x 1.0-6g 0.100R | .112-40 UNC-2B |
| F | 19 | 1.2500-.1P-.3L-TS-2A | 1.449 (36.8) 1.425 (36.2) | 1.156 (29.4) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M28 x 1.0-6g 0.100R | .112-40 UNC-2B |
| G | 21 | 1.3750-.1P-.3L-TS-2A | 1.575 (40.0) 1.551 (39.4) | 1.250 (31.8) | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | M31 x 1.0-6g 0.100R | .112-40 UNC-2B |
| H | 23 | 1.5000-.1P-.3L-TS-2A | 1.701 (43.2) 1.677 (42.6) | 1.375 (34.9) | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | M34 x 1.0-6g 0.100R | .138-32 UNC-2B |
| J | 25 | 1.6250-.1P-.3L-TS-2A | 1.823 (46.3) 1.799 (45.7) | 1.500 (38.1) | .171 (65.2) .083 (39.8) | .791 (20.0) .736 (18.7) | M37 x 1.0-6g 0.100R | .138-32 UNC-2B |

| Material and Finish | | |
|---------------------|-----------------|--------------------------|
| Code | Material | Finish Description |
| M | Aluminum Alloy | Electroless Nickel |
| MT | | Nickel - PTFE, Grey |
| NF | | Cadmium, Olive Drab |
| ZN | | Zinc-Nickel, Olive Drab |
| ZNU | | Zinc-Nickel, Black |
| XM | Composite | Electroless Nickel |
| XMT | | Nickel - PTFE, Grey |
| XW | | Cadmium, Olive Drab |
| XZN | | Zinc-Nickel, Black |
| MS | Stainless Steel | Electroless Nickel |
| ZL | | Electro-Deposited Nickel |
| Z1 | | Passivate |
| AB | Marine Bronze | None (Clean Only) |

Refer to Appendix for material/finish details

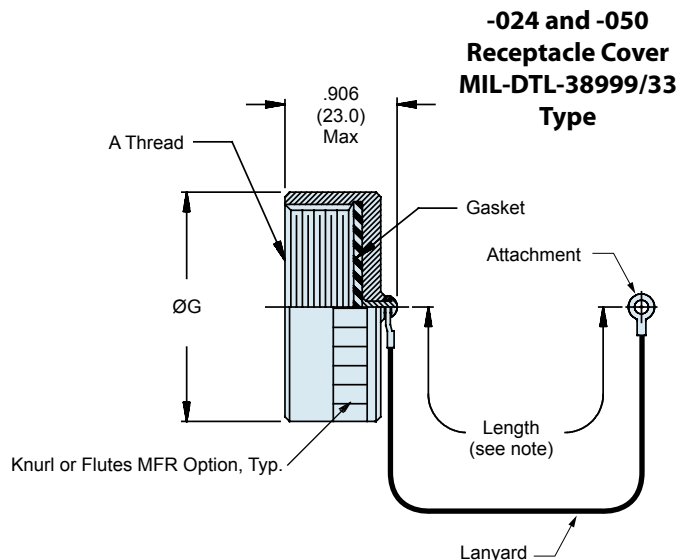
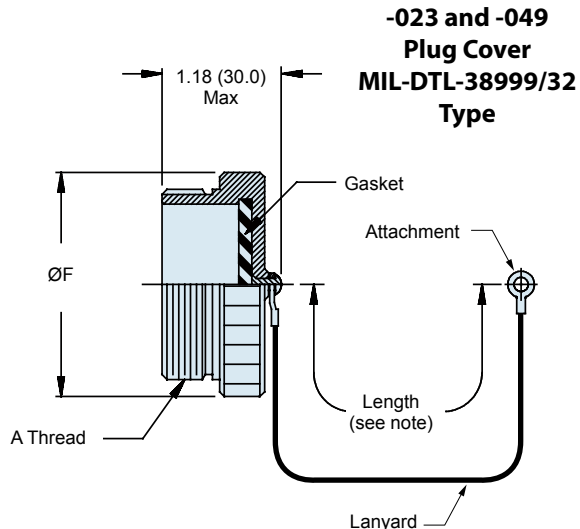
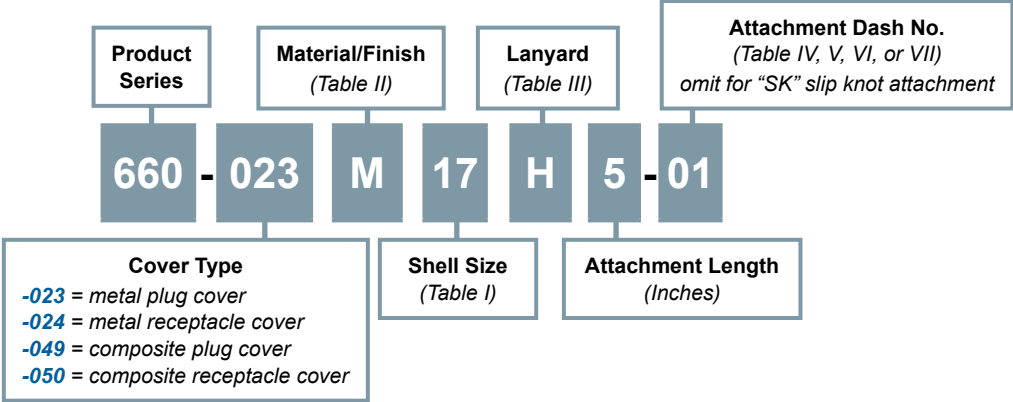


660-023 and -024 • 660-049 and -050
MIL-DTL-38999 Series III Type
Metal and Composite Protective Covers
Plug and Receptacle

MIL-DTL-38999 Series III Type metal and composite protective covers

B

How To Order



Material and Finish

Cover: See Table II • Gasket: Silicone • Hardware, Rivet: Stainless Steel/Passivate

Notes

Length tolerance for Sash Chain (S) is ± 1 link, for all other attachments ± .25.

660-023 and -024 • 660-049 and -050
MIL-DTL-38999 Series III Type
Metal and Composite Protective Covers
Plug and Receptacle



MIL-DTL-38999
Series III Type

B

Available Lanyard Types (shown with optional eyelet attachment, see table III for lanyard style)

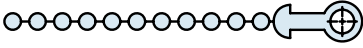
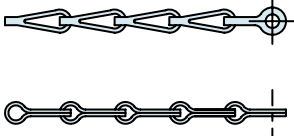

| | | |
|---|---|---|
|  |  |  |
| Bead Chain (Type D) | Sash Chain (Type S) | Rope (Types F, G, H, K, R, T, U) |

Table I

| Shell Size | A Thread | Ø F Max | Ø G Max |
|------------|-----------------------|--------------|--------------|
| 09 | .6250 - 0.1P-0.3L-TS | 0.906 (23.0) | .906 (23.0) |
| 11 | .7500 - 0.1P-0.3L-TS | 1.024 (26.0) | 1.102 (28.0) |
| 13 | .8750 - 0.1P-0.3L-TS | 1.220 (31.0) | 1.220 (31.0) |
| 15 | 1.0000 - 0.1P-0.3L-TS | 1.300 (33.0) | 1.260 (32.0) |
| 17 | 1.1875 - 0.1P-0.3L-TS | 1.457 (37.0) | 1.457 (37.0) |
| 19 | 1.2500 - 0.1P-0.3L-TS | 1.575 (40.0) | 1.535 (39.0) |
| 21 | 1.3750 - 0.1P-0.3L-TS | 1.732 (44.0) | 1.654 (42.0) |
| 23 | 1.5000 - 0.1P-0.3L-TS | 1.811 (46.0) | 1.772 (45.0) |
| 25 | 1.6250 - 0.1P-0.3L-TS | 1.969 (50.0) | 1.929 (49.0) |

Table II: Material/Finish

| Code | Material | Finish Description |
|------|-----------------|-------------------------|
| C | Aluminum Alloy | Anodize, Black |
| G | | Anodize, Hardcoat |
| M | | Electroless Nickel |
| MT | | Nickel-PTFE, Grey |
| NF | | Cadmium, Olive Drab |
| ZN | | Zinc-Nickel, Olive Drab |
| ZNU | | Zinc-Nickel, Black |
| Z1 | Stainless Steel | Passivate |
| ZL | | Electrodeposited Nickel |
| XM | Composite | Electroless Nickel |
| XW | | Cadmium, Olive Drab |
| XB | | No Plating, Black |

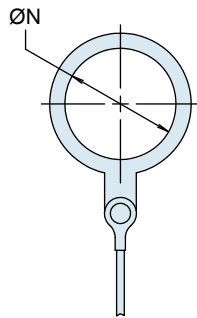
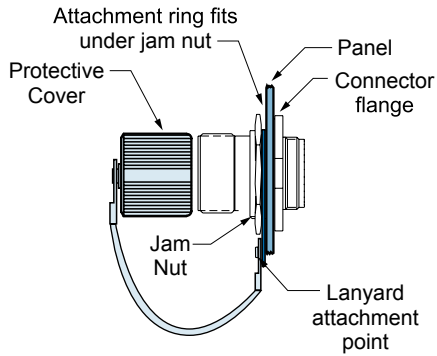
Refer to Appendix for material/finish details

Table III: Lanyard Codes

| Code | Description |
|------|---------------------------------|
| D | Bead Chain, CRES, Passivated |
| F | Wire Rope, Nylon Jacket |
| G | Nylon Rope, Black |
| H | Wire Rope, Teflon Jacket |
| K | Nylon Rope, Olive Drab |
| N | No Lanyard |
| R | Wire Rope, PVC Jacket |
| S | #8 Sash Chain, CRES, Passivated |
| SK | Nylon Rope (Black) w/Slip Knot |
| T | Wire Rope, No Jacket |
| U | Wire Rope, Polyurethane Jacket |

B

Attaching a Cover to a Jam Nut Receptacle With a Solid Ring (Style A)



Solid Ring - Style A

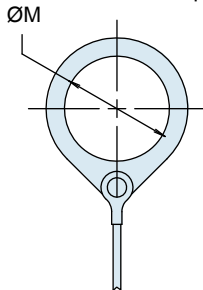
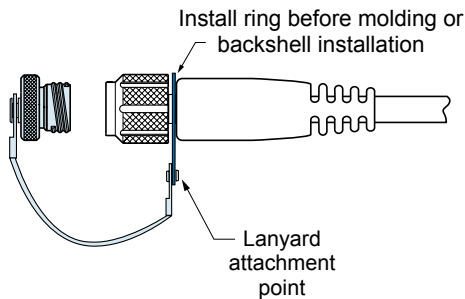
Table IV: Solid Ring Style A

| Dash No. | Ø N ± .015 | 180-091 Shell Size |
|----------|--------------|--------------------|
| 106 | .896 (22.8) | 11 |
| 107 | 1.016 (25.9) | 13 |
| 108 | 1.141 (29.0) | 15 |
| 109 | 1.266 (32.3) | 17 |
| 110 | 1.391 (35.3) | 19 |
| 111 | 1.521 (38.6) | 21 |
| 112 | 1.641 (41.7) | 23 |
| 113 | 1.766 (45.0) | 25 |

Notes

Solid ring style A dash numbers and shell sizes shown are for Glenair 180-091 fiber optic connectors only. Consult factory for additional sizes.

Attaching a Cover to a Cable Assembly With a Solid Ring (Style B)



Solid Ring - Style B

Table V: Solid Ring Style B

| Dash No. | Ø M ± .015 | 180-091 Shell Size |
|----------|--------------|--------------------|
| 10 | .593 (15.1) | 11 |
| 12 | .718 (18.2) | 13 |
| 15 | .890 (22.6) | 15 |
| 17 | 1.015 (25.9) | 17 |
| 19 | 1.140 (29.0) | 19 |
| 21 | 1.265 (32.3) | 21 |
| 22 | 1.343 (34.0) | 23 |
| 24 | 1.484 (37.6) | 25 |

Notes

Solid ring style B dash numbers and shell sizes shown are for Glenair 180-091 fiber optic connectors only. Consult factory for additional sizes.

660-023 and -024 • 660-049 and -050
 MIL-DTL-38999 Series III Type
 Metal and Composite Protective Covers
 Attachment Options



MIL-DTL-38999
 Series III Type

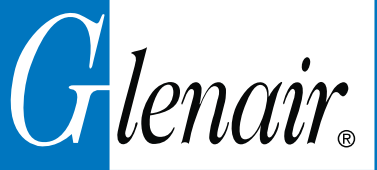
B

Attaching a Cover to a Cable Using a Split Ring or Slip Knot

| Dash No. | Ø L ± .015 | Dash No. | Ø L ± .015 |
|----------|--------------|----------|--------------|
| 50 | .425 (10.8) | 74 | 1.625 (41.4) |
| 52 | .485 (12.3) | 76 | 1.750 (44.5) |
| 54 | .640 (16.3) | 78 | 1.875 (47.8) |
| 56 | .750 (19.1) | 80 | 1.980 (50.3) |
| 58 | .890 (22.6) | 82 | 2.060 (52.3) |
| 60 | 1.015 (25.9) | 84 | 2.235 (56.9) |
| 62 | 1.095 (27.9) | 86 | 2.310 (58.7) |
| 64 | 1.130 (28.7) | 88 | 2.475 (63.0) |
| 66 | 1.250 (31.8) | 90 | 2.655 (67.6) |
| 68 | 1.350 (34.3) | 92 | 2.810 (71.4) |
| 70 | 1.375 (35.1) | 94 | 3.045 (77.5) |
| 72 | 1.485 (37.8) | | |

Attaching a Receptacle Cover to a Panel With a Screw

| Dash No. | Ø K ± .015 | 180-091 Shell Size |
|----------|-------------|--------------------|
| 01 | .140 (3.56) | |
| 02 | .182 (4.62) | |
| 03 | .191 (4.85) | |
| 04 | .197 (5.00) | |
| 05 | .167 (4.24) | |
| 06 | .125 (31.8) | 11 thru 21 |
| 07 | .218 (5.53) | |
| 09 | .156 (3.96) | 23 thru 25 |
| 00 | No Eyelet | |



189-016
Backshell with Banding Strain Relief
Environmental Resistant
for MIL-DTL-38999 Series III Fiber Optic Connectors

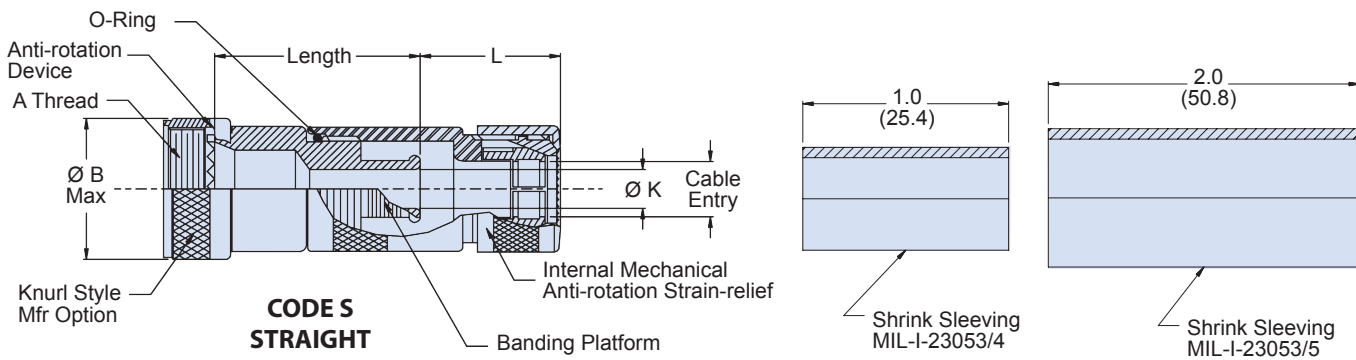
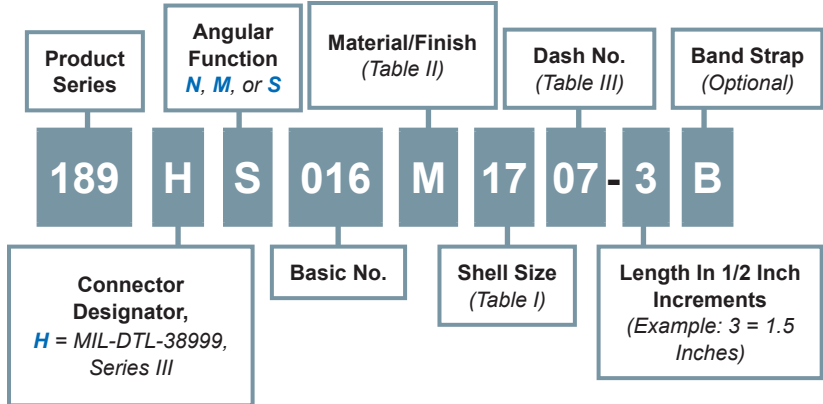


B

MIL-DTL-38999 Series III backshell with strain relief



How To Order



Material and Finish

Adapter, Coupling Nut: See Table II
Clamp Components: Ryton R4XT-Black, Ultem 1000-Natural
Anti-Rotation Device: Torlon 42031-Natural

Notes

Glenair 600 Series Backshell assembly tools are recommended for assembly and installation.
Standard minimum length: 1.5 inches, for shorter length consult factory.
For Shield termination see Glenair drawings 600-050 & 600-052.
Consult factory for larger cable size.
MIL-I-23053/4 & /5 Shrink Sleeving to be packaged loose in a plastic bag.
MIL-I-23053/4 Shrink Sleeving to be heat shrunk over rear of Adapter before MIL-I-23053/5 Shrink Sleeving.
For assembly instruction, see GAP-064

189-016
Backshell with Banding Strain Relief
Environmental Resistant
for MIL-DTL-38999 Series III Fiber Optic Connectors



MIL-DTL-38999
Series III Type

B

Table I

| Shell Size | A Thread | ØB Max | C Max | D Max | E Max | F Max | Max Dash No. |
|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 11 | M15 x 1 - 6H | 0.890 (22.6) | .861 (21.9) | 1.111 (28.2) | 1.563 (39.7) | 1.875 (47.6) | 05 |
| 13 | M18 x 1 - 6H | 1.020 (25.9) | .911 (23.1) | 1.161 (29.5) | 1.938 (49.2) | 2.250 (57.2) | 05 |
| 15 | M22 x 1 - 6H | 1.150 (29.2) | .965 (24.5) | 1.215 (30.9) | 1.938 (49.2) | 2.250 (57.2) | 07 |
| 17 | M25 x 1 - 6H | 1.230 (31.2) | 1.014 (25.8) | 1.264 (32.1) | 2.063 (52.4) | 2.375 (60.3) | 07 |
| 19 | M28 x 1 - 6H | 1.360 (34.5) | 1.064 (27.0) | 1.314 (33.4) | 2.063 (52.4) | 2.375 (60.3) | 09 |
| 21 | M31 x 1 - 6H | 1.480 (37.6) | 1.118 (28.4) | 1.368 (34.7) | 2.563 (65.1) | 2.875 (73.0) | 11 |
| 23 | M34 x 1 - 6H | 1.600 (40.6) | 1.172 (29.8) | 1.422 (36.1) | 2.313 (58.8) | 2.688 (68.3) | 11 |
| 25 | M37 x 1 - 6H | 1.730 (43.9) | 1.221 (31.0) | 1.471 (37.4) | 2.250 (57.2) | 2.563 (65.1) | 13 |

Table II: Material and Finish

| Code | Material | Finish Description |
|------|----------------|--|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium Plate, Olive Drab, Over Nickel |

Refer to Appendix for material/finish details

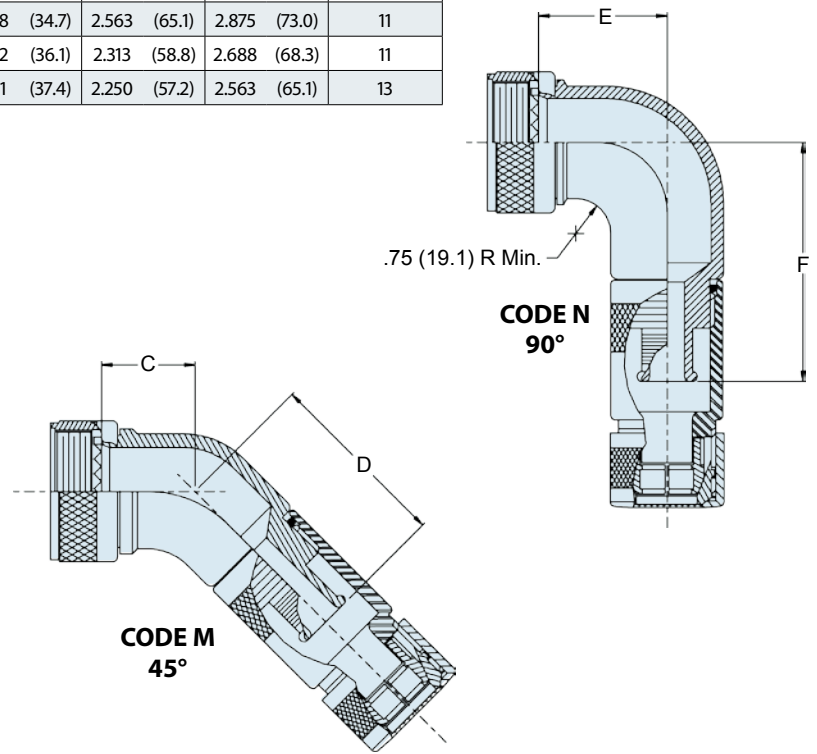


Table III

| Dash No. | Clamp Size | Cable Dia Max | Ø K ±005 | L Max | MIL-I-23053 Shrink Sleeve | MIL-I-23053 Shrink Sleeve | Cable Entry Dia | |
|----------|------------|---------------|--------------|--------------|---------------------------|---------------------------|-----------------|--------------|
| | | | | | | | Min | Max |
| 05 | 12 | .280 (7.11) | .312 (7.92) | 1.110 (28.2) | /4-203-0 | /5-107-0 | .233 (5.92) | .375 (9.53) |
| 07 | 16 | .395 (10.0) | .438 (11.1) | 1.210 (30.7) | /4-204-0 | /5-108-0 | .358 (9.10) | .500 (12.7) |
| 09 | 20 | .510 (13.0) | .562 (14.3) | 1.210 (30.7) | /4-204-0 | /5-109-0 | .482 (12.2) | .625 (15.9) |
| 11 | 24 | .621 (15.8) | .688 (17.5) | 1.210 (30.7) | /4-205-0 | /5-109-0 | .545 (13.8) | .750 (19.1) |
| 13 | 28 | .736 (18.7) | .812 (20.6) | 1.360 (34.5) | /4-205-0 | /5-110-0 | .670 (17.0) | .875 (22.2) |
| 15 | 32 | .851 (21.6) | .938 (23.8) | 1.510 (38.4) | /4-206-0 | /5-110-0 | .795 (20.2) | 1.000 (25.4) |
| 17 | 36 | .966 (24.5) | 1.062 (27.0) | 1.510 (38.4) | /4-206-0 | /5-111-0 | .889 (22.6) | 1.125 (28.6) |
| 19 | 40 | 1.091 (27.7) | 1.188 (30.2) | 1.510 (38.4) | /4-206-0 | /5-111-0 | 1.104 (28.0) | 1.250 (31.8) |



189-037

**Environmental Backshell with Banding Strain Relief
for MIL-DTL-38999 Series III Fiber Optic Connectors**

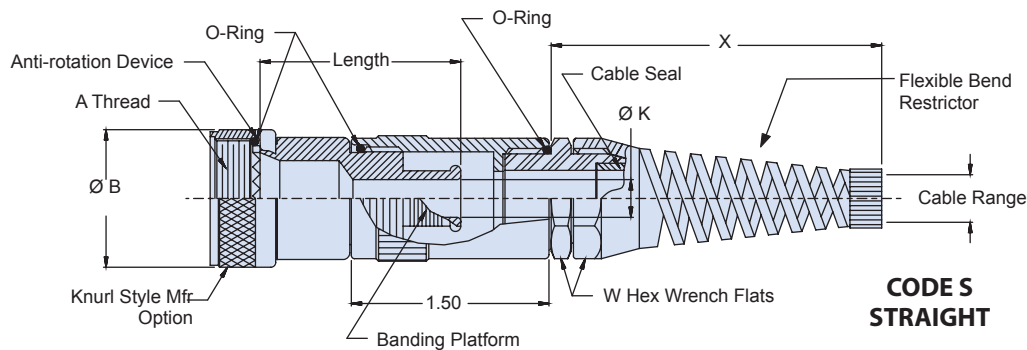
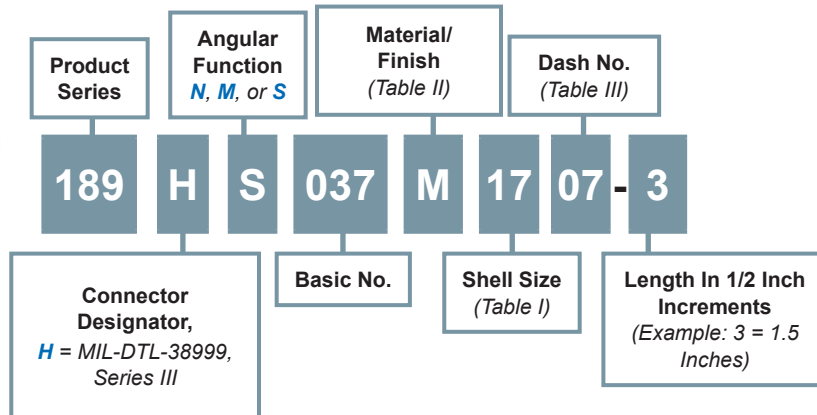
D38999
Series III

B

MIL-DTL-38999 Series III backshell with strain relief and flexible bend restrictor



How To Order



Material and Finish

Adapter, Coupling Nut: See Table II
 Strain Relief Components: Nylon 6/6 (Flame-resistant/zero Halogen)
 Anti-Rotation Device: Torlon 42031-Natural
 O-Rings: Fluorosilicone

Notes

Glenair 600 Series Backshell assembly tools are recommended for assembly and installation.
 Standard minimum length: 1.5 inches, for shorter length consult factory.
 MIL-I-23053/4 & /5 Shrink Sleeving to be packaged loose in a plastic bag.
 MIL-I-23053/4 Shrink Sleeving to be heat shrunk over rear of Adapter before MIL-I-23053/5 Shrink Sleeving.
 For assembly instruction see GAP-065

189-037

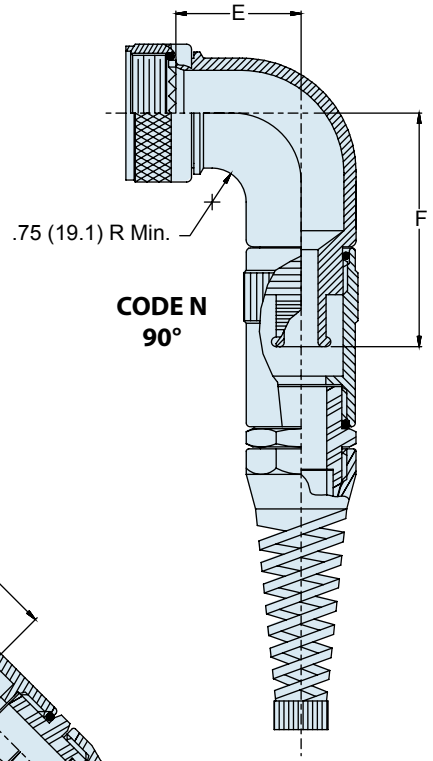
Environmental Backshell with Banding Strain Relief
for MIL-DTL-38999 Series III Fiber Optic Connectors



MIL-DTL-38999
Series III Type

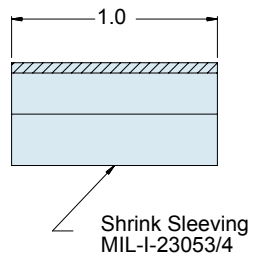
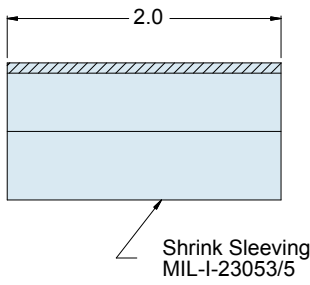
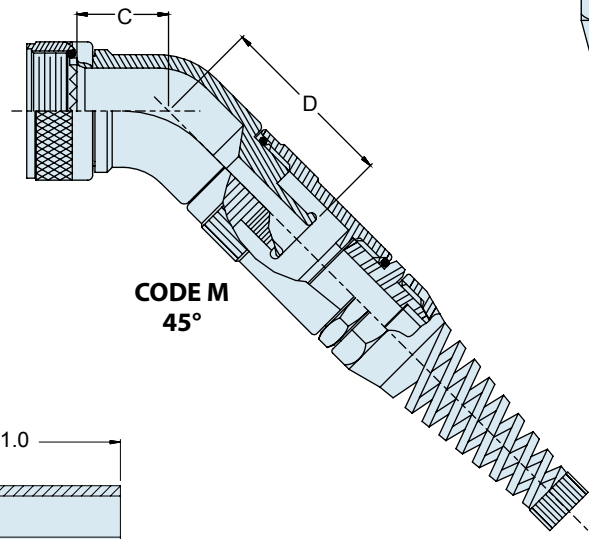
B

| Shell Size | A Thread Iso Metric | ØB Max | C Max | D Max | E Max | F Max |
|------------|---------------------|-------------|--------------|--------------|--------------|--------------|
| 11 | M15 X 1 - 6H | 1.06 (26.9) | .861 (21.9) | 1.111 (28.2) | 1.563 (39.7) | 1.875 (47.6) |
| 13 | M18 X 1 - 6H | 1.17 (29.7) | .911 (23.1) | 1.161 (29.5) | 1.938 (49.2) | 2.250 (57.2) |
| 15 | M22 X 1 - 6H | 1.29 (32.8) | .965 (24.5) | 1.215 (30.9) | 1.938 (49.2) | 2.250 (57.2) |
| 17 | M25 X 1 - 6H | 1.42 (36.1) | 1.014 (25.8) | 1.264 (32.1) | 2.063 (52.4) | 2.375 (60.3) |
| 19 | M28 X 1 - 6H | 1.54 (39.1) | 1.064 (27.0) | 1.314 (33.4) | 2.063 (52.4) | 2.375 (60.3) |
| 21 | M31X 1 - 6H | 1.67 (42.4) | 1.118 (28.4) | 1.368 (34.7) | 2.563 (65.1) | 2.875 (73.0) |
| 23 | M34 X 1 - 6H | 2.01 (51.1) | 1.172 (29.8) | 1.422 (36.1) | 2.313 (58.8) | 2.688 (68.3) |
| 25 | M37 X 1 - 6H | 2.12 (53.8) | 1.221 (31.0) | 1.471 (37.4) | 2.250 (57.2) | 2.563 (65.1) |



| Code | Material | Finish Description |
|------|----------------|--|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium Plate, Olive Drab, Over Nickel |

Refer to Appendix for material/finish details



| Dash No. | Cable Dia Range | Ø K ±005 | W Hex | X | MIL-I-23053 Shrink Sleeve | MIL-I-23053 Shrink Sleeve |
|----------|-----------------|-------------|-------------|--------------|---------------------------|---------------------------|
| 05 | .200/.285 | .312 (8.0) | .750 (19.1) | 2.32 (58.9) | /4-203-0 | /5-107-0 |
| 07 | .285/.390 | .438 (11.1) | .870 (22.1) | 2.80 (71.1) | /4-204-0 | /5-108-0 |
| 09 | .390/.550 | .562 (14.3) | 1.06 (26.9) | 3.66 (93.0) | /4-204-0 | /5-109-0 |
| 11 | .550/.670 | .688 (17.5) | 1.30 (33.0) | 4.37 (111.0) | /4-205-0 | /5-109-0 |

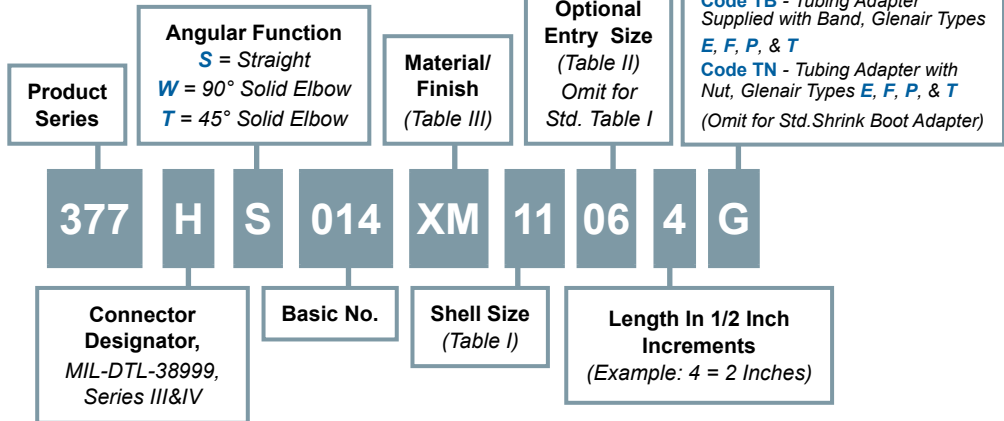
D38999
Series III

B

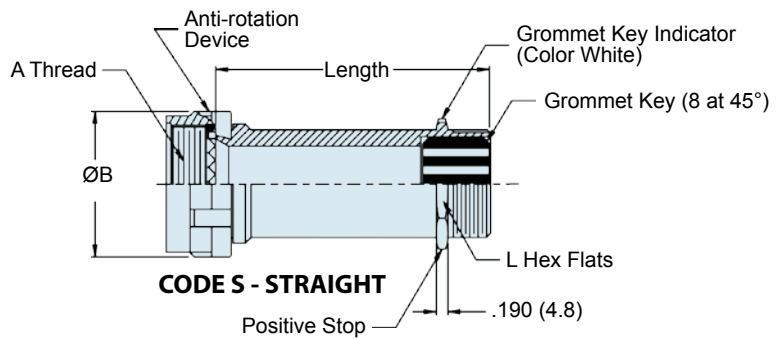
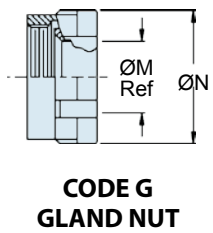
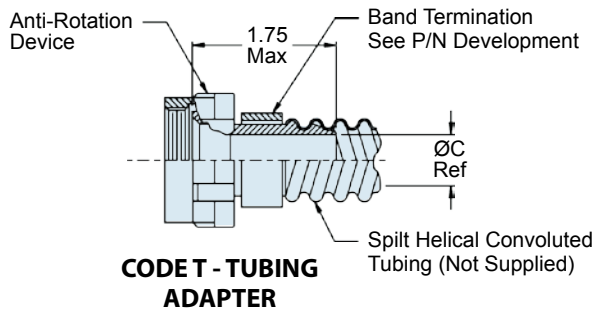
MIL-DTL-38999 series III & IV backshell



How To Order



Code G - Gland Nut;
Code T - Tubing Adapter, Glenair Types E, F, P, & T
Code K - Tubing Adapter with Nut, Glenair Peek
Code TB - Tubing Adapter Supplied with Band, Glenair Types E, F, P, & T
Code TN - Tubing Adapter with Nut, Glenair Types E, F, P, & T (Omit for Std. Shrink Boot Adapter)



Material and Finish

Adapters, Elbows, Coupling Nut, Nut: Hi-grade engineering thermoplastic/see table III
Grommet, O-Ring: Fluorosilicone
Anti-Rotation Device: Corrosion resistant material

Notes

Glenair 600 Series Backshell assembly tools are recommended for assembly and installation.
Standard minimum length: 1.5 inches, for shorter length consult factory.
For Sealing Plugs, see Glenair drawing 687-142.

377-014
Composite Backshell
 for Fiber Optic MIL-DTL-38999 Series III & IV Connectors



MIL-DTL-38999
 Series III Type

B

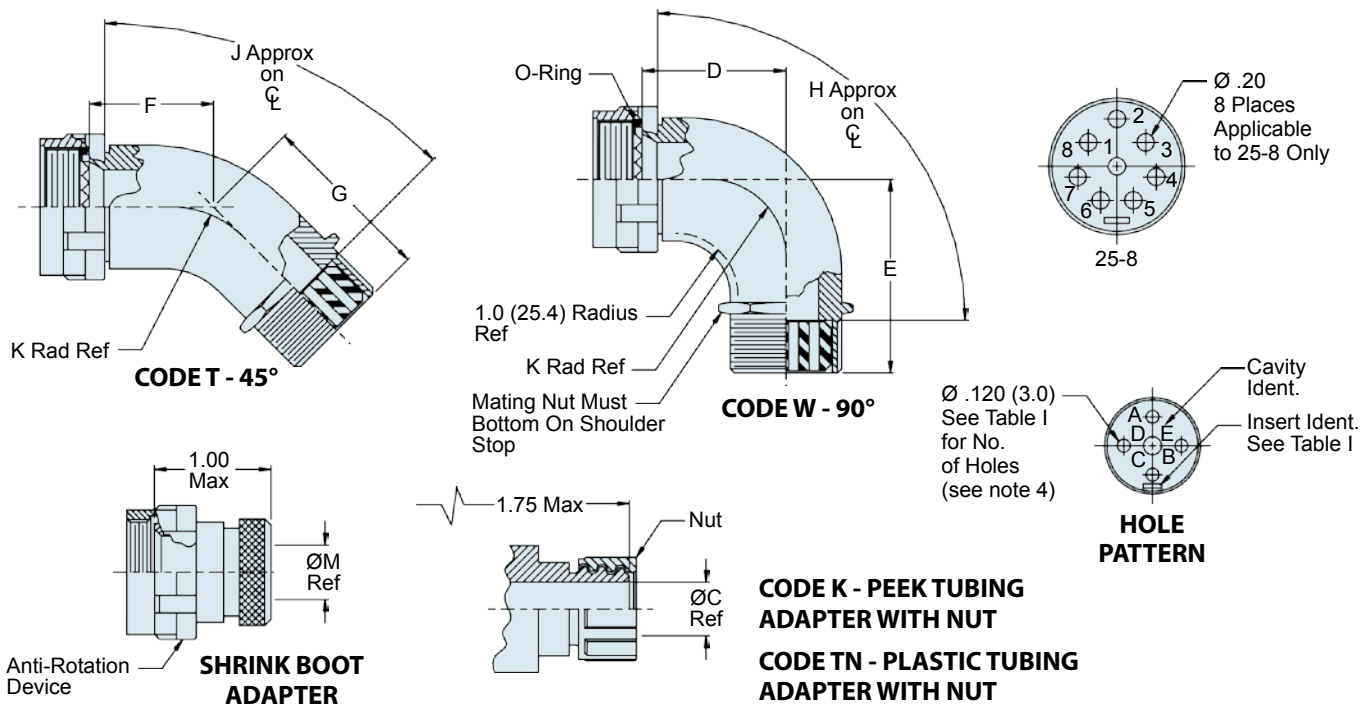


Table I

| Shell Size | A Thread | ϕ B Max | Std. Conduit Size Ref. | D Max | E Max | F Max | G Max | H Approx | J Approx | K Ref | L Hex | ϕ M Ref | ϕ N Max | Insert Arrangement | No. Of Holes |
|------------|--------------|--------------|------------------------|-------|-------|-------|-------|----------|----------|-------|-------|--------------|--------------|--------------------|--------------|
| 11 | M15 X 1 - 6H | 1.00 | 3/8 | 1.78 | 1.93 | 1.33 | 1.56 | 2.23 | 2.09 | 1.20 | .938 | .32 | 1.38 | 11-2 | 2 |
| 13 | M18 X 1 - 6H | 1.12 | 7/16 | 1.84 | 1.98 | 1.39 | 1.62 | 2.28 | 2.21 | 1.26 | .938 | .54 | 1.38 | 13-4 | 4 |
| 15 | M22 X 1 - 6H | 1.25 | 1/2 | 1.90 | 2.08 | 1.45 | 1.68 | 2.45 | 2.33 | 1.32 | .938 | .54 | 1.38 | 15-5 | 5 |
| 17 | M25 X 1 - 6H | 1.38 | 5/8 | 1.97 | 2.14 | 1.51 | 1.74 | 2.47 | 2.44 | 1.38 | 1.250 | .76 | 1.56 | 17-8 | 8 |
| 19 | M28 X 1 - 6H | 1.50 | 3/4 | 2.11 | 2.18 | 1.54 | 1.77 | 2.54 | 2.50 | 1.43 | 1.250 | .76 | 1.56 | 19-11 | 11 |
| 21 | M31 X 1 - 6H | 1.62 | 7/8 | 2.07 | 2.25 | 1.61 | 1.84 | 2.64 | 2.64 | 1.49 | 1.500 | 1.00 | 1.81 | 21-16 | 16 |
| 23 | M34 X 1 - 6H | 1.75 | 1 | 2.14 | 2.31 | 1.67 | 1.89 | 2.76 | 2.75 | 1.55 | 1.500 | 1.00 | 1.81 | 23-21 | 21 |
| 25 | M37 X 1 - 6H | 1.88 | 1 | 2.19 | 2.19 | 1.73 | 1.96 | 2.84 | 2.87 | 1.62 | 1.812 | 1.27 | 2.12 | 25-29 | 29 |
| 25-8 | M37 X 1 - 6H | 1.88 | 1 1/4 | 2.19 | 2.19 | 1.73 | 1.96 | 2.84 | 2.87 | 1.62 | 1.812 | 1.27 | 2.12 | 25-8 | 8 |
| 25-37 | M37 X 1 - 6H | 1.88 | 1 1/4 | 2.19 | 2.19 | 1.73 | 1.96 | 2.84 | 2.87 | 1.62 | 1.812 | 1.27 | 2.12 | 25-37 | 37 |

Table II

| Entry Size | ϕ C Ref Code T & TN | ϕ C Ref Code K | Optional Conduit Size Ref. |
|------------|--------------------------|---------------------|----------------------------|
| 03 | .188 | .188 | 9/32 |
| 04 | .236 | - | 5/32 |
| 05 | .250 | .265 | 3/8 |
| 06 | .338 | .330 | 7/16 |
| 07 | .398 | .390 | 1/2 |
| 08 | .523 | .515 | 5/8 |
| 10 | .648 | .640 | 3/4 |
| 11 | .648 | .640 | 3/4 |
| 13 | .778 | .765 | 7/8 |
| 15 | .875 | .869 | 1 |
| 17 | 1.078 | 1.125 | 1 1/4 |

Table III: Material and Finish

| Code | Material | Finish Description |
|------|-----------|--|
| - | | Dash (-) For No Plating, Amber Color |
| XB | | No Plating - Black Color |
| XM | Composite | Electroless Nickel |
| XW | | Cadmium Olive Drab Over Electroless Nickel |
| XMT | | Nickel-PTFE, Grey |

Refer to Appendix for material/finish details



377-040
Composite Strain-Relief Backshell
for Fiber Optic MIL-DTL-38999 Series III Connectors

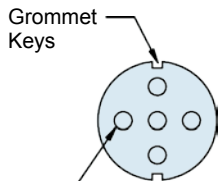
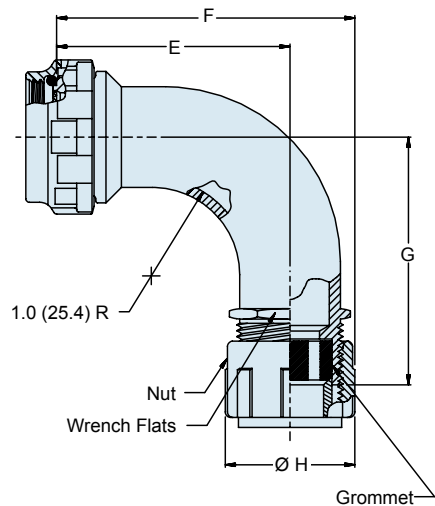
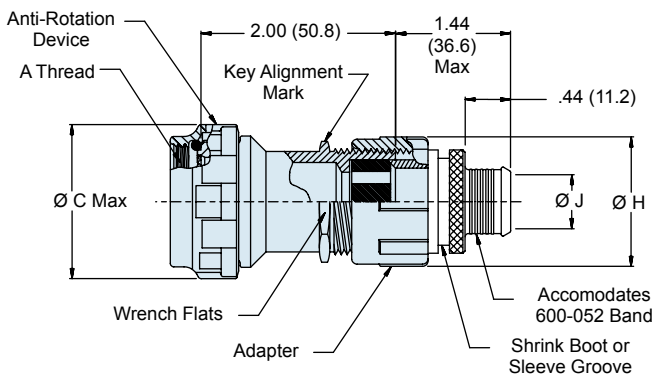
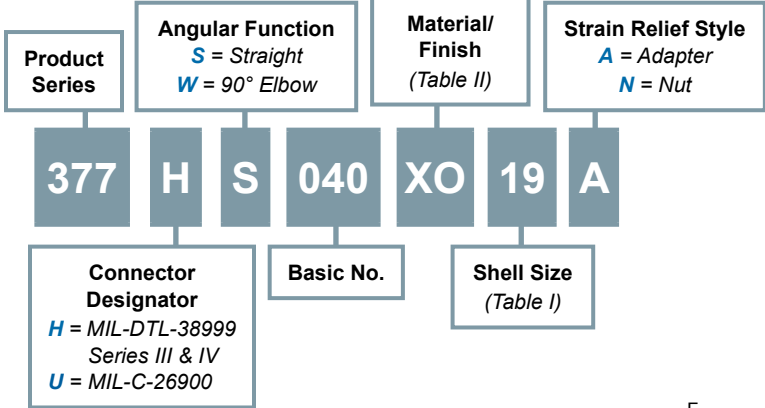
D38999
Series III

B

Composite MIL-DTL-38999 series III strain-relief backshell



How To Order



.12 (3.0) Diameter,
Accommodates 16 Gage
Contacts With .07 (1.8) to
.11 (2.8) Diameter Fiber
Cable (For Number of
Holes See K in Table 1)

Material and Finish

Adapters, Elbow: Hi-grade engineering thermoplastic/see table II
Coupling Nut & Gland Nut: Thermoplastic/unplated
Grommet, O-Ring: Silicone
Anti-Rotation Device: Corrosion resistant material

Notes

Glenair 600 Series Backshell assembly tools are recommended for assembly and installation.

377-040
Composite Strain-Relief Backshell
for Fiber Optic MIL-DTL-38999 Series III Connectors



MIL-DTL-38999
Series III Type

B

Table I

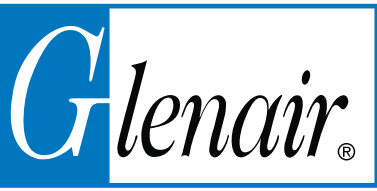
| Connector Designator H | | | | Connector Designator U | | | | E ±.06 (1.5) | F ±.09 (2.3) | G ±.06 (1.5) | Ø H Max | Ø J Ref |
|------------------------|--------------|-------------|------------------|------------------------|-------------|-------------|------------------|-----------------|-----------------|-----------------|-------------|------------|
| Shell Size | A Thread | Ø C | K (# of Holes) * | Shell Size | A Thread | Ø C | K (# Of Holes) * | | | | | |
| 11 | M15 X 1 - 6H | .98 (24.9) | 2 | - | - | - | - | 1.70 (43.2) | 2.39 (60.7) | 1.90 (48.3) | 1.41 (35.8) | .27 (6.9) |
| 13 | M18 X 1 - 6H | 1.16 (29.4) | 4 | 11 | 5/8-28 UN | 1.16 (29.4) | 2 | 1.78 (45.2) | 2.47 (62.7) | 1.96 (49.8) | 1.41 (35.8) | .33 (8.4) |
| 15 | M22 X 1 - 6H | 1.28 (32.5) | 5 | 13 | 3/4-28 UNS | 1.28 (32.5) | 4 | 1.82 (46.2) | 2.51 (63.8) | 2.02 (51.3) | 1.41 (35.8) | .39 (9.9) |
| 17 | M25 X 1 - 6H | 1.41 (35.7) | 8 | 15 | 7/8-28 UN | 1.41 (35.7) | 5 | 1.89 (48.0) | 2.70 (68.6) | 2.09 (53.1) | 1.64 (41.7) | .51 (13.0) |
| 19 | M28 X 1 - 6H | 1.52 (38.5) | 11 | 17 | 1-28 UN | 1.52 (38.5) | 8 | 1.93 (49.0) | 2.74 (69.6) | 2.13 (54.1) | 1.64 (41.7) | .64 (16.3) |
| 21 | M31 X 1 - 6H | 1.64 (41.7) | 16 | 19 | 1-1/8-28 UN | 1.64 (41.7) | 11 | 2.00 (50.8) | 2.94 (74.7) | 2.19 (55.6) | 1.89 (48.0) | .77 (19.6) |
| 23 | M34 X 1 - 6H | 1.77 (44.9) | 21 | 21 | 1-1/4-28 UN | 1.77 (44.9) | 16 | 2.08 (52.8) | 3.02 (76.7) | 2.25 (57.2) | 1.89 (48.0) | .84 (21.3) |
| 25 | M37 X 1 - 6H | 1.89 (48.0) | 29 | 23 | 1-3/8-28 UN | 1.89 (48.0) | 21 | 2.14 (54.4) | 3.20 (81.3) | 2.32 (58.9) | 2.16 (54.9) | .84 (21.3) |
| - | - | - | - | 25 | 1-1/2-28 UN | 2.02 (51.2) | 29 | 2.22 (56.4) | 3.28 (83.3) | 2.39 (60.7) | 2.16 (54.9) | .89 (22.6) |

*Use Glenair 687-142 seal plug in vacant holes

Table II: Material and Finish

| Code | Material | Finish Description |
|-----------|------------------|--|
| XB | Composite | No Plating - Black Color |
| XO | | No Plating - Amber Color |
| XM | | Electroless Nickel |
| XW | | Cadmium Olive Drab over Electroless Nickel |

Refer to Appendix for material/finish details

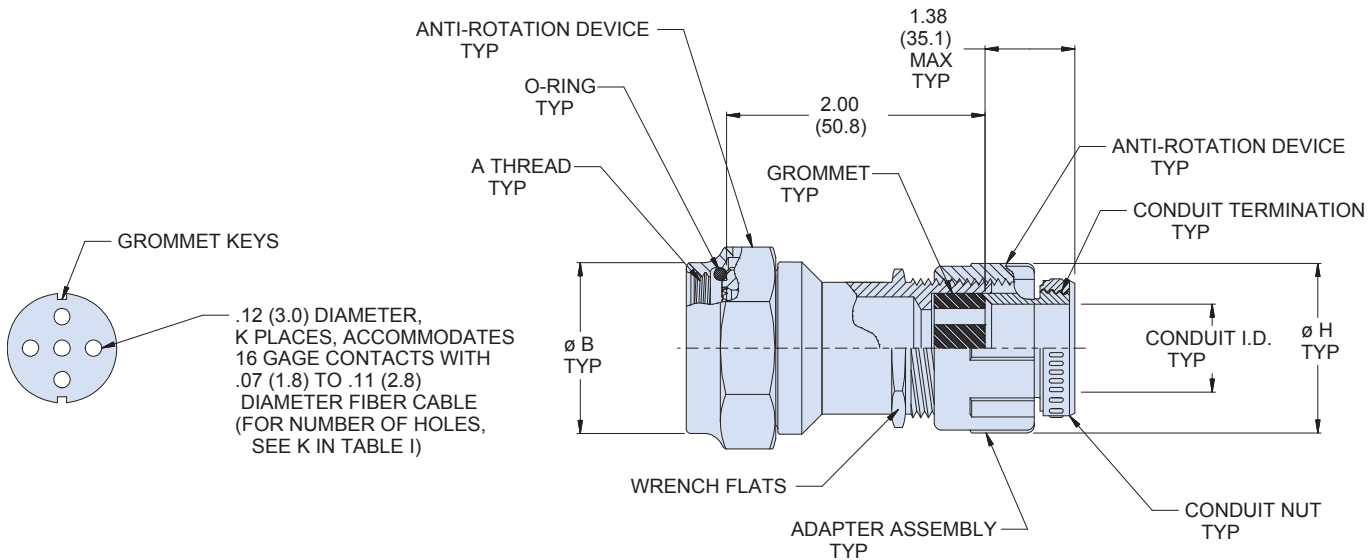
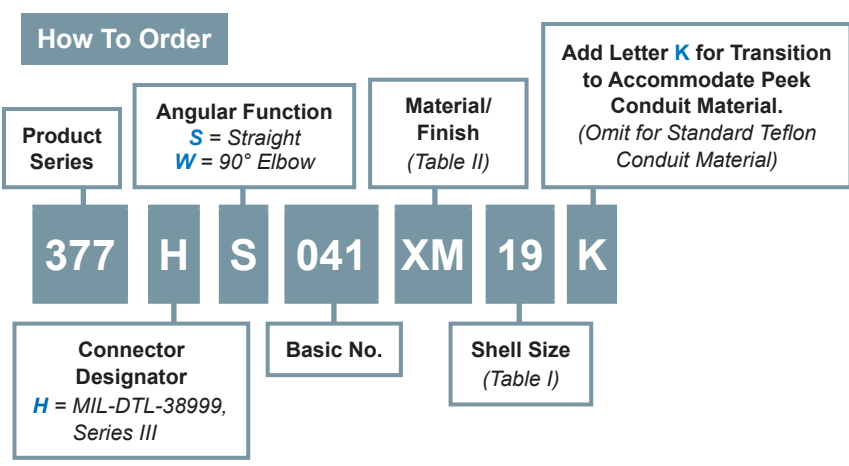


377-041
Composite FiberCon® Conduit Adapter
for Fiber Optic MIL-DTL-38999 Series III Connectors

D38999
Series III

B

MIL-DTL-38999 Series III conduit adapter



Material and Plating

Adapters, Elbow, Ferrules: Hi-grade engineering thermoplastic/see table II
Coupling Nut & Gland Nut: Hi-grade engineering thermoplastic/unplated
Grommet, O-Ring: Fluorosilicone
Anti-Rotation Device: Corrosion resistant material

Notes

Glenair 600 Series Backshell assembly tools are recommended for assembly and installation.
Conduit I.D. accommodates Glenair Series 74, Type A Convuluted Tubing, in accordance with MIL-T-81914.
For Sealing Plugs, see Glenair drawing 687-142.

377-041
Composite FiberCon® Conduit Adapter
for Fiber Optic MIL-DTL-38999 Series III Connectors



MIL-DTL-38999
 Series III Type

B

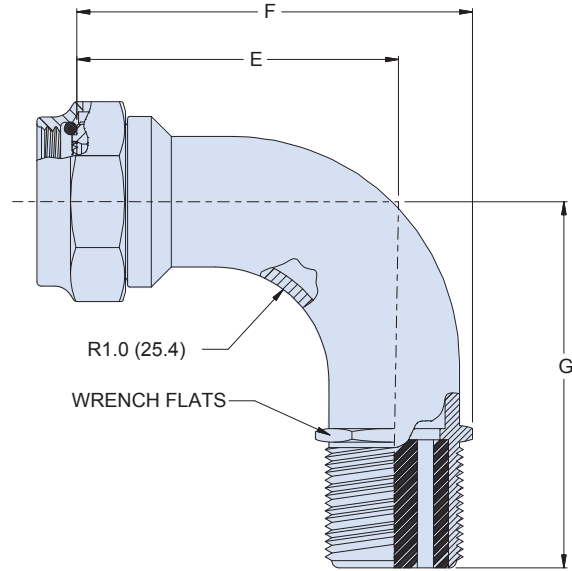


Table I

| Shell Size | A Thread | Ø B Max | E ±.06 (1.5) | F ±.09 (2.3) | G ±.06 (1.5) | Ø H Max | Ø J Ref | K (# Of Holes) |
|------------|--------------|-------------|-----------------|-----------------|-----------------|-------------|------------|-------------------|
| 11 | M15 X 1 - 6H | .770 (19.6) | 1.70 (43.2) | 2.39 (60.7) | 1.90 (48.3) | 1.41 (35.8) | .25 (6.4) | 2 |
| 13 | M18 X 1 - 6H | .890 (22.6) | 1.78 (45.2) | 2.47 (62.7) | 1.96 (49.8) | 1.41 (35.8) | .31 (7.9) | 4 |
| 15 | M22 X 1 - 6H | 1.03 (26.2) | 1.82 (46.2) | 2.51 (63.8) | 2.02 (51.3) | 1.41 (35.8) | .31 (7.9) | 5 |
| 17 | M25 X 1 - 6H | 1.15 (29.2) | 1.89 (48.0) | 2.70 (68.6) | 2.09 (53.1) | 1.64 (41.7) | .44 (11.2) | 8 |
| 19 | M28 X 1 - 6H | 1.28 (32.5) | 1.93 (49.0) | 2.74 (69.6) | 2.13 (54.1) | 1.64 (41.7) | .50 (12.7) | 11 |
| 21 | M31 X 1 - 6H | 1.41 (35.8) | 2.00 (50.8) | 2.94 (74.7) | 2.19 (55.6) | 1.89 (48.0) | .50 (12.7) | 16 |
| 23 | M34 X 1 - 6H | 1.53 (38.9) | 2.08 (52.8) | 3.02 (76.7) | 2.25 (57.2) | 1.89 (48.0) | .63 (16.0) | 21 |
| 25 | M37 X 1 - 6H | 1.66 (42.2) | 2.14 (54.4) | 3.20 (81.3) | 2.32 (58.9) | 2.16 (54.9) | .75 (19.1) | 29 |

Table II: Material and Finish

| Code | Material | Finish Description |
|-----------|------------------|--|
| XB | Composite | No Plating - Black Color |
| XO | | No Plating - Amber Color |
| XM | | Electroless Nickel |
| XW | | Cadmium Olive Drab over Electroless Nickel |

Refer to Appendix for material/finish details



189-038

Composite Connector Backshell Adapter
for Helical Convoluted Tubing to be used with
MIL-DTL-38999 Series III & IV Fiber Optic Connectors

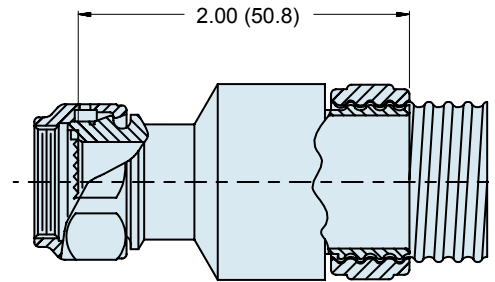
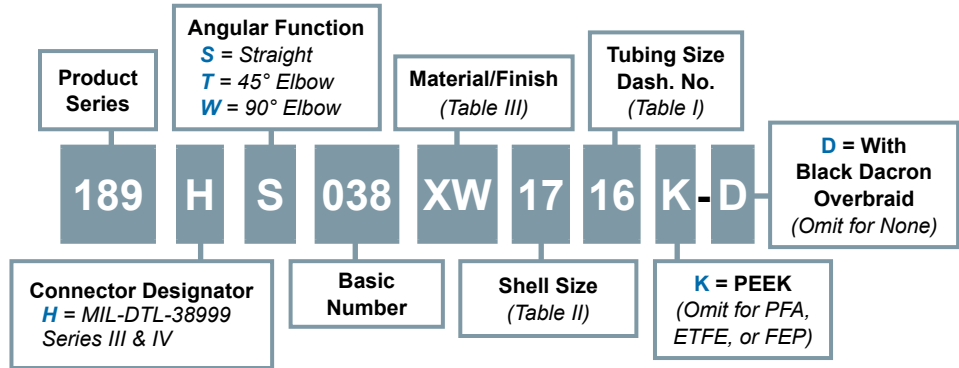
D38999
Series III

Composite MIL-DTL-38999 backshell adapter

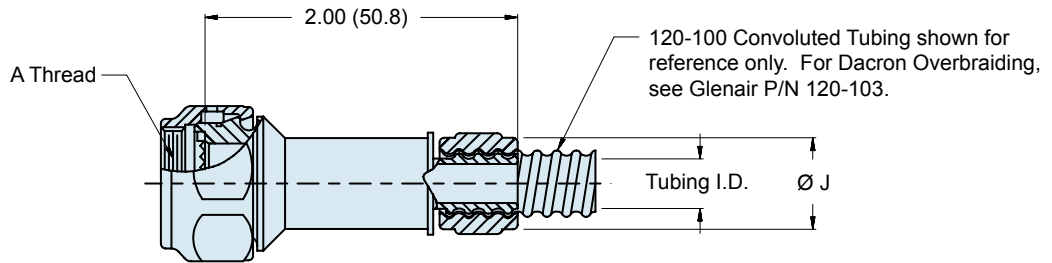
B



How To Order



ONE PIECE SET UP



S - STRAIGHT

Material and Finish

Adapter, Elbow: High Grade Engineering Thermoplastic/see Table III
Coupling and Compression Nuts: High Grade Engineering Thermoplastic
O-Ring: Fluorosilicone or Silicone
Anti-rotation Device: Corrosion resistant material

189-038

**Composite Connector Backshell Adapter
for Helical Convoluted Tubing to be used with
MIL-DTL-38999 Series III & IV Fiber Optic Connectors**



MIL-DTL-38999
Series III Type

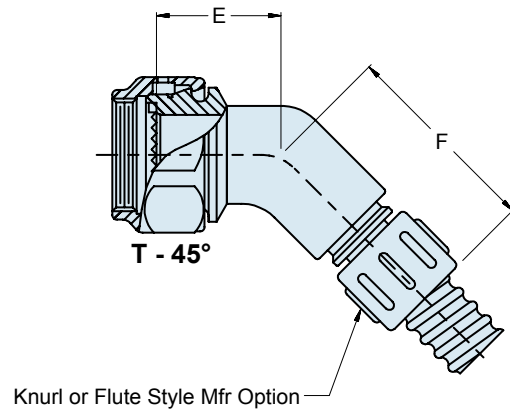
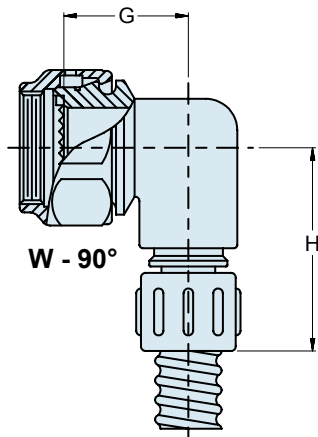
B

| Dash No. | Conduit I.D. | Ø J Max |
|----------|--------------|--------------|
| 06 | .188 (4.8) | .790 (20.1) |
| 09 | .281 (7.1) | .985 (25.0) |
| 10 | .312 (7.9) | .985 (25.0) |
| 12 | .375 (9.5) | 1.035 (26.3) |
| 14 | .437 (11.1) | 1.100 (27.9) |
| 16 | .500 (12.7) | 1.160 (29.5) |
| 20 | .625 (15.9) | 1.285 (32.6) |
| 24 | .750 (19.1) | 1.480 (37.6) |
| 28 | .875 (22.2) | 1.670 (42.4) |
| 32 | 1.000 (25.4) | 1.720 (43.7) |
| 40 | 1.250 (31.8) | 2.100 (53.3) |
| 48 | 1.500 (38.1) | 2.420 (61.5) |

| Shell Size | A Thread ISO Metric | E ±.060 (1.5) | F ±.090 (2.3) | G ±.060 (1.5) | H +.090 (2.3) | Max Entry Max Tubing Size |
|------------|---------------------|---------------|---------------|---------------|---------------|---------------------------|
| 11 | M15 x 1 - 6H | .750 (19.1) | .950 (24.1) | .750 (19.1) | 1.160 (29.5) | 12 |
| 13 | M18 x 1 - 6H | .750 (19.1) | 1.020 (25.9) | .810 (20.6) | 1.220 (31.0) | 16 |
| 15 | M22 x 1 - 6H | .760 (19.3) | 1.050 (26.7) | .880 (22.4) | 1.290 (32.8) | 20 |
| 17 | M25 x 1 - 6H | .780 (19.8) | 1.070 (27.2) | .940 (23.9) | 1.350 (34.3) | 24 |
| 19 | M28 x 1 - 6H | .790 (20.1) | 1.080 (27.4) | .970 (24.6) | 1.380 (35.1) | 28 |
| 21 | M31 x 1 - 6H | .820 (20.8) | 1.110 (28.2) | 1.060 (26.9) | 1.470 (37.3) | 32 |
| 23 | M34 x 1 - 6H | .860 (21.8) | 1.150 (29.2) | 1.130 (28.7) | 1.540 (39.1) | 32 |
| 25 | M37 x 1 - 6H | .890 (22.6) | 1.180 (30.0) | 1.190 (30.2) | 1.730 (43.9) | 40 |

| Code | Material | Finish Description |
|------|-----------|--|
| XM | Composite | Electroless Nickel |
| XW | | Cadmium Plate/Olive Drab over Electroless Nickel |
| XO | | No Plating—Amber Color |

Refer to Appendix for material/finish details





712-416 • PEEK Only
Composite Straight Backshell Adapter
for MIL-DTL-38999 Series III and IV Fiber Optic Connectors

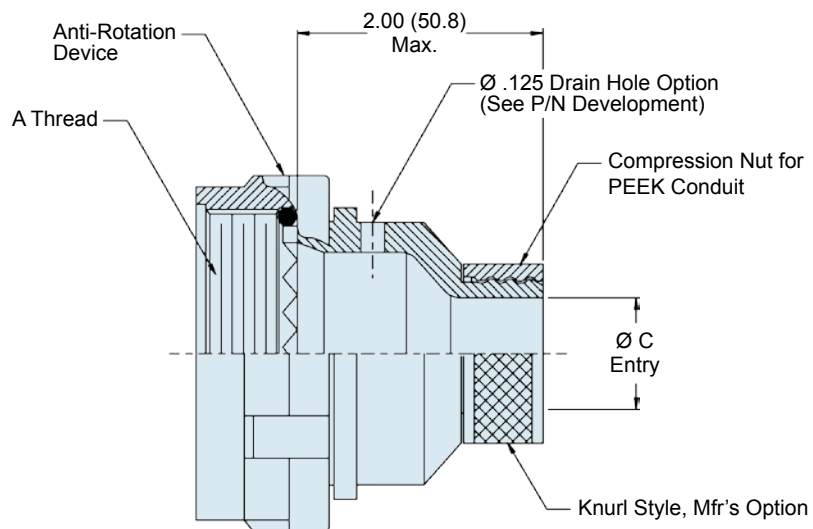
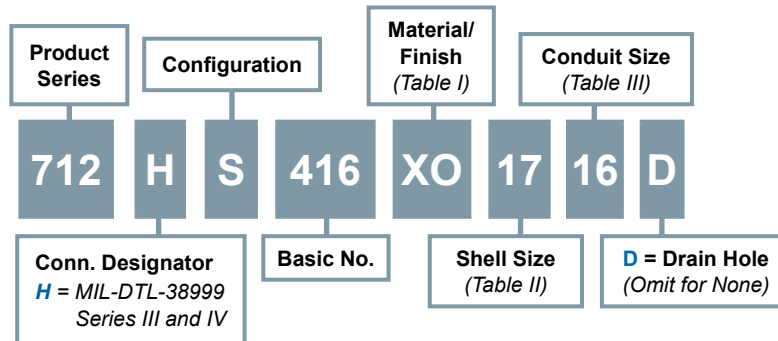
D38999
Series III

B

MIL-DTL-38999 Series III & IV backshell adapter



How To Order



Material and Finish

Adapter and Compression Nut: High-Grade Engineering Thermoplastic
Coupling Nut: High Grade Engineering Thermoplastic/Unplated
O-Ring: Fluorosilicone or Silicone
Anti-Rotation Device: Corrosion Resistant Material

Notes

Glenair 600 Series Backshell Assembly Tools are recommended for assembly and installation. Unless otherwise specified, the Backshell Body to be supplied finished per Table I - all other components to be supplied without plating.

712-416 • PEEK Only
Composite Straight Backshell Adapter
 for MIL-DTL-38999 Series III and IV Fiber Optic Connectors



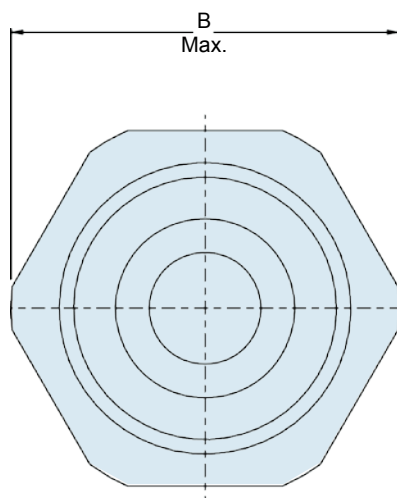
MIL-DTL-38999
 Series III Type

B

| Table III: Material and Finish | | |
|--------------------------------|-----------|--|
| Code | Material | Finish Description |
| XM | Composite | Electroless Nickel |
| XW | | Cadmium Plate/Olive Drab over Electroless Nickel |
| XO | | No Plating—Amber Color |

Refer to Appendix for material/finish details

| Table II | | |
|------------|--------------|-------------|
| Shell Size | A Thread | B Max |
| 11 | M15 x 1 - 6H | .980 (24.0) |
| 13 | M18 x 1 - 6H | 1.16 (28.4) |
| 15 | M22 x 1 - 6H | 1.28 (32.5) |
| 17 | M25 x 1 - 6H | 1.41 (35.8) |
| 19 | M28 x 1 - 6H | 1.52 (38.6) |
| 21 | M31 x 1 - 6H | 1.64 (41.7) |
| 23 | M34 x 1 - 6H | 1.77 (43.4) |
| 25 | M37 x 1 - 6H | 1.89 (48.0) |



| Table III: "Peek" Conduit Size | | |
|--------------------------------|-----------------|----------------|
| Dash No. | Fractional Size | Ø C Dim. Entry |
| 06 | 3/16 | .100 (2.5) |
| 09 | 9/32 | .171 (4.2) |
| 10 | 5/16 | .200 (5.8) |
| 12 | 3/8 | .265 (6.7) |
| 16 | 1/2 | .390 (9.6) |
| 20 | 5/8 | .515 (12.6) |
| 24 | 3/4 | .640 (15.7) |
| 28 | 7/8 | .765 (18.7) |
| 32 | 1 | .890 (21.8) |



630-015 Fiber Optic Cable Bulkhead Adapter with Kevlar Braid Sock and Shrink Sleeving

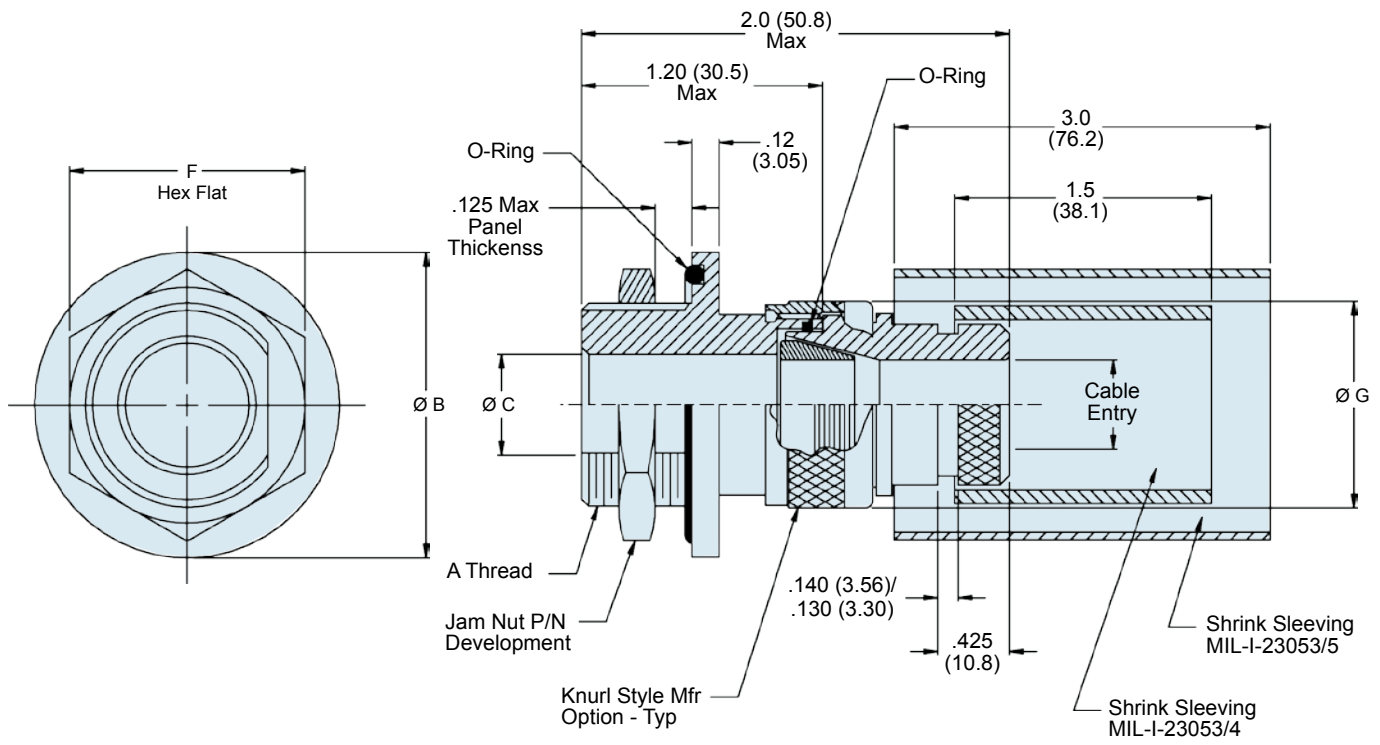
B

Cable bulkhead adapter



How To Order

| | | | | |
|-----------------------|-----------------------------------|---|-----------|----------|
| Product Series | Material/Finish (Table II) | Supplied with 447-822*** Shield Nut Instead of Jam Nut (Omit Letter T for Part with Jam Nut) | | |
| 630 | 015 | NF | 01 | T |
| Basic No. | | Dash No (Table I) | | |



Material and Finish
 Adapters, Jam Nut, Ferrule, Coupling Nut: Al Alloy/see Table II
 O-Rings: Silicone
 Shrink Sleeving: Polyolefin

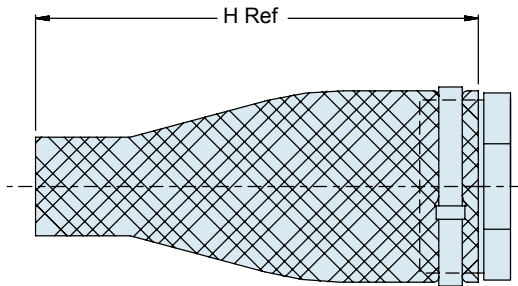
Notes
 Glenair 600 Series Backshell Assembly Tools are recommended for assembly and installation.
 MIL-I-23053/4 & /5 Shrink Sleeving to be packaged loose in a plastic bag.

630-015
Fiber Optic Cable Bulkhead Adapter
with Kevlar Braid Sock and Shrink Sleeve

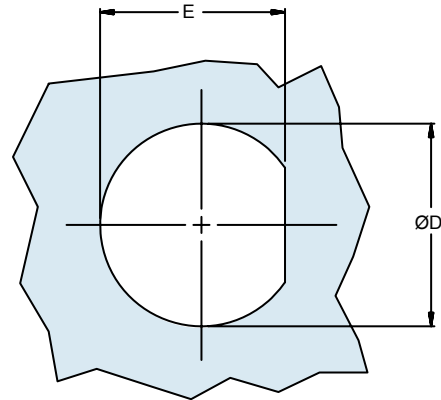


MIL-DTL-38999
Series III Type

B



447-822*** Assembly
Style T (See P/N Development)



Recommended Panel Cut-Out

Table I: Shell Size

| Shell Size | A Thread Class 2A | ØB Max | ØC +.010 -.000 | ØD +.010 -.000 | E +.010 -.000 | F | ØG Max | H Ref | Max. Cable Entry | MIL-I-23053 Shrink Sleeve | MIL-I-23053 Shrink Sleeve | Braid Sock 103-005-005 Ref |
|------------|-------------------|--------------|----------------------|----------------------|---------------------|--------------|--------------|-------|------------------|---------------------------|---------------------------|----------------------------|
| 01 | 3/4-20 UNEF | 1.140 (29.0) | .340 (8.64) | .755 (19.2) | .691 (17.6) | .938 (23.8) | 1.004 (25.5) | 6.0 | .335 | /4-204-0 | /5-109-0 | A10 |
| 02 | 3/4-20 UNEF | 1.140 (29.0) | .460 (11.7) | .755 (19.2) | .691 (17.6) | .938 (23.8) | 1.132 (28.8) | 6.0 | .455 | /4-204-0 | /5-109-0 | A10 |
| 03 | 7/8-20 UNEF | 1.280 (32.5) | .630 (16.0) | .880 (22.4) | .816 (20.7) | 1.062 (27.0) | 1.343 (34.1) | 6.0 | .625 | /4-205-0 | /5-110-0 | A10 |
| 04 | 1 1/16-18 UNEF | 1.490 (37.8) | .755 (19.2) | 1.067 (27.1) | 1.004 (25.5) | 1.250 (31.8) | 1.468 (37.3) | 6.0 | .750 | /4-206-0 | /5-110-0 | A14 |
| 05 | 1 3/16-18 UNEF | 1.640 (41.7) | .880 (22.4) | 1.192 (30.3) | 1.130 (28.7) | 1.375 (35.0) | 1.593 (40.5) | 6.0 | .875 | /4-206-0 | /5-111-0 | A16 |
| 06 | 1 5/16-18 UNEF | 1.930 (49.0) | 1.005 (25.7) | 1.317 (33.5) | 1.254 (31.9) | 1.625 (41.3) | 1.656 (42.1) | 6.0 | 1.000 | /4-305-0 | /5-111-0 | A18 |

Table II: Material and Finish

| Code | Material | Finish Description |
|------|-----------------|--|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cad/O.D. over Electroless Nickel (1000 Hr. Salt Spray) |
| XMT | Composite | Nickel PTFE, Grey |
| Z1 | Stainless Steel | Passivate |

Refer to Appendix for material/finish details



Glenair ASAP Fiber Optic Cable Sets Rugged Overmolded D38999 Series III to D38999 Series III

D38999
Series III

ASAP fiber optic cable sets

B



Product Features

- Harsh Environment Polyurethane Overmolding (Viton® and Neoprene Available)
- Singlemode or Multimode Fiber Media
- D38999 Series III Connectors in Aluminum, Composite or Stainless Steel
- Plug, Jam-Nut Receptacle, In-Line and Wall-Mount Receptacle Configurations
- Military Standard Dust Caps and Connector Accessories
- MIL-PRF-29504 Approved Termini
- Multichannel Capability: From 2 to 37 Channels
- Custom Lengths Available
- Robust, Flexible and Crush Resistant

The World's Only Short Lead-Time Source for Harsh Environment Overmolded F/O Cable Assemblies

Overmolded Cable Assemblies

Glenair's overmolded cable assemblies are specifically designed to protect fiber optic and hybrid fiber/copper cables from the effects of moisture, heat, caustic chemicals and mechanical stress conditions. Glenair has been manufacturing these unique overmolded designs in fiber since 1984, and has produced tens of thousands of cables with zero real-time failures. Overmolding (as opposed to shrink boots or other sealing materials) brings added strength and environmental protection to critical interconnect systems. The overmolding process effectively isolates the transmission media from contaminating elements and protects the media from abrasion damage.

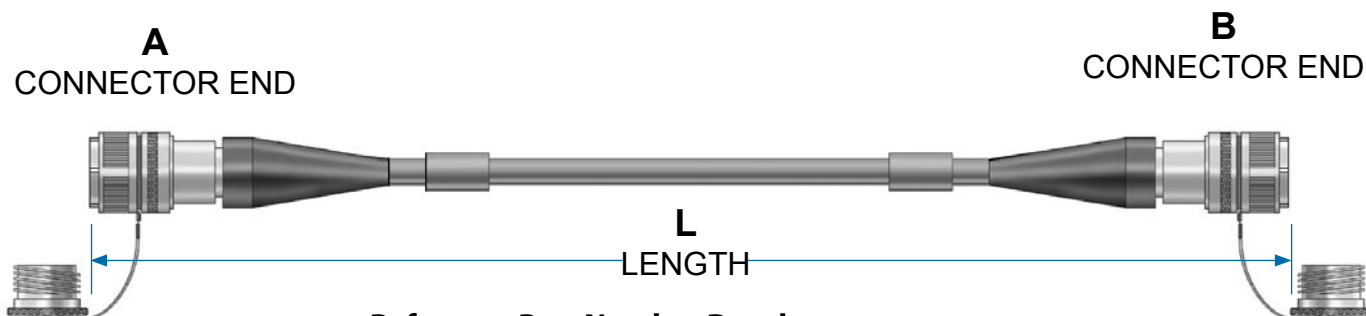
Glenair's ASAP Overmolded Fiber Optic Assemblies are available with our full line of composite thermoplastic and metal alloy connectors. Polyurethane is the applied standard overmolding. For other overmolding material types such as Viton® or Neoprene, please consult the factory. The turnkey assembly includes custom extruded cable, Glenair Backshell, MIL-DTL-38999 Style Connectors, MIL-PRF-29504 Termini, Mil-Spec Dust-Caps and customer specified marking and labeling. Please specify minor customizations on your purchase order.

Glenair ASAP Fiber Optic Cable Sets
Rugged Overmolded Polyurethane
D38999 Series III to D38999 Series III



MIL-DTL-38999
Series III Type

ASAP fiber optic cable sets



Reference Part Number Development:

FO1000 P 05 P 06 J 04 - 62 - 100 L

Basic Part Number

A Terminus Type

P = Pin Terminus
S = Socket Terminus

A Connector Type

05 = D38999 Style In-Line Receptacle
06 = D38999/26 Style Plug
08 = D38999/24 Style Jam-Nut Receptacle
H7 = D38999/20 Style Wall Mount Receptacle (Std.)
S7 = D38999/20 Style Wall Mount Receptacle (Slotted)
T7 = D38999/20 Style Wall Mount Receptacle (Tapped)

B Terminus Type

P = Pin Terminus
S = Socket Terminus

B Connector Type

05 = D38999 Style In-Line Receptacle
06 = D38999/26 Style Plug
08 = D38999/24 Style Jam-Nut Receptacle
H7 = D38999/20 Style Wall Mount Receptacle (Std.)
S7 = D38999/20 Style Wall Mount Receptacle (Slotted)
T7 = D38999/20 Style Wall Mount Receptacle (Tapped)

D38999 Series III Connector Class

F = Aluminum, Electroless Nickel Plating
J = Composite, Olive Drab Cadmium Plating
K = Stainless Steel, Passivated
M = Composite, Electroless Nickel Plating
W = Aluminum, Olive Drab Cadmium Plating

Protective Covers

L = Less Covers
Omit for with Covers

Length in Feet

Fiber Size

09 = 9.3/125 Singlemode
50 = 50/125 Multimode
62 = 62.5/125 Multimode
10 = 100/140 Multimode
20 = 200/230 Multimode

Number of Fibers*

02 = 2 Fibers (Shell Size 11)
04 = 4 Fibers (Shell Size 13)
05 = 5 Fibers (Shell Size 15)
08 = 8 Fibers (Shell Size 17)
11 = 11 Fibers (Shell Size 19)
16 = 16 Fibers (Shell Size 21)
21 = 21 Fibers (Shell Size 23)
29 = 29 Fibers (Shell Size 25)
37 = 37 Fiber (Shell Size 25)

Standard Cable Make-Up:
2mm Jacketed Fiber, Polyurethane Jacketing and Overmolding, Kevlar Reinforcement, Nominal Temperature Range -40° to +85°C.
Please Reference Special Marking, Labels Or Other Identification Specifications on Your Purchase Order

*See Page B-12 for Insert Arrangements.

Please Consult Factory for Alternative Overmolding Materials Such As Viton® or Neoprene.

Part Numbering is for Reference Purposes Only. A Unique Glenair Part Number Will Be Assigned to Your Cable Order.



Glenair ASAP Fiber Optic Cable Sets Plastic and Metal-Core Conduit Assembly D38999 Series III to D38999 Series III

**D38999
Series III**

ASAP fiber optic cable sets

B



Product Features

- FEP (High-Temperature Teflon), PEEK (Halogen Free, Lightweight) and Metal-Core (EMI and Crush Proof) Versions
- Nine Standard Material Packages
- Shielded and Un-Shielded Designs
- Single and Multimode Fiber Media
- D38999 Series III Connectors in Aluminum, Composite or Stainless Steel
- Plug, Jam-Nut Receptacle, In-Line and Wall-Mount Receptacle Configurations
- Military Standard Dust Caps
- MIL-PRF-29504 Qualified Termini
- Multichannel Capability: From 2 to 37 Channels

Flexible, Lightweight, Crush Resistant—Everything You've Always Wanted in a Fiber Optic Cable

Standard Conduit Packaging

The turnkey assembly includes fiber optic wiring, MIL-DTL-38999 Style Connectors, MIL-PRF-29504 Termini, Mil-Spec Dust-Caps, Conduit Adapter, customer specified marking and labeling and your choice of conduit materials and jacketing, including the following configurations:

TABLE I: CONDUIT MATERIALS PACKAGING

| Code | Conduit Materials Package Description |
|------|--|
| A | FEP (Teflon®) Convolute Tubing Only; Standard Wall Thickness, Standard Convolute |
| B | PEEK Convolute Tubing Only; Halogen Free, Light Weight |
| C | FEP Convolute Tubing with Black Dacron Outer Braided Covering |
| D | PEEK Convolute Tubing with Black Dacron Outer Braided Covering |
| E | FEP Convolute Tubing with Neoprene Jacket and Black Dacron Outer Braided Covering |
| F | PEEK Convolute Tubing with Neoprene Jacket and Black Dacron Outer Braided Covering |
| G | FEP Convolute Tubing with Tin Copper Shielding, Neoprene Jacket and Black Dacron Outer Braided Covering |
| H | PEEK Convolute Tubing with Tin Copper Shielding, Neoprene Jacket and Black Dacron Outer Braided Covering |
| J | Brass Metal-Core Conduit, Bronze Braid and Neoprene Jacket |

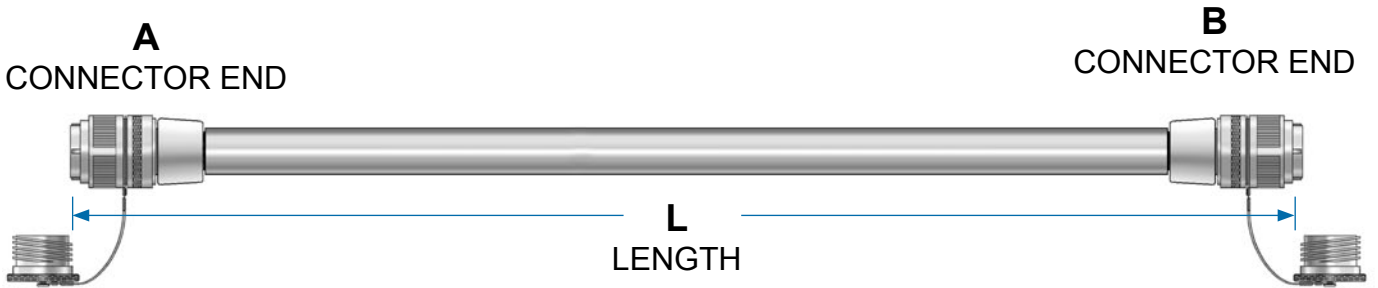
Consult Factory for Other Available Material Types

Glenair ASAP Fiber Optic Cable Sets
 Plastic and Metal-Core Conduit Assembly
 D38999 Series III to D38999 Series III



MIL-DTL-38999
 Series III Type

ASAP fiber optic cable sets



Reference Part Number Development:

FO1001 P 06 P 06 J 04 - 62 - 100 G L

Basic Part Number

A Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

- 05 = D38999 Style In-Line Receptacle
- 06 = D38999/26 Style Plug
- 08 = D38999/24 Style Jam-Nut Receptacle
- H7 = D38999/20 Style Wall Mount Receptacle (Std.)
- S7 = D38999/20 Style Wall Mount Receptacle (Slotted)
- T7 = D38999/20 Style Wall Mount Receptacle (Tapped)

B Terminus Type

- P = Pin Terminus
- S = Socket Terminus

B Connector Type

- 05 = D38999 Style In-Line Receptacle
- 06 = D38999/26 Style Plug
- 08 = D38999/24 Style Jam-Nut Receptacle
- H7 = D38999/20 Style Wall Mount Receptacle (Std.)
- S7 = D38999/20 Style Wall Mount Receptacle (Slotted)
- T7 = D38999/20 Style Wall Mount Receptacle (Tapped)

D38999 Series III Connector Class

- F = Aluminum, Electroless Nickel Plating
- J = Composite, Olive Drab Cadmium Plating
- K = Stainless Steel, Passivated
- M = Composite, Electroless Nickel Plating
- W = Aluminum, Olive Drab Cadmium Plating

Protective Covers

- L = Less Covers
- Omit for with Covers

Conduit Materials Package (Table I)

Length in Feet

Fiber Size

- 09 = 9.3/125 Singlemode
- 50 = 50/125 Multimode
- 62 = 62.5/125 Multimode
- 10 = 100/140 Multimode
- 20 = 200/230 Multimode

Number of Fibers*

- 02 = 2 Fibers (Shell Size 11)
- 04 = 4 Fibers (Shell Size 13)
- 05 = 5 Fibers (Shell Size 15)
- 08 = 8 Fibers (Shell Size 17)
- 11 = 11 Fibers (Shell Size 19)
- 16 = 16 Fibers (Shell Size 21)
- 21 = 21 Fibers (Shell Size 23)
- 29 = 29 Fibers (Shell Size 25)
- 37 = 37 Fiber (Shell Size 25)

See Table I for Standard Conduit Materials Packages. Please Reference Special Marking, Labels Or Other Identification Specifications on Your Purchase Order

*See Page B-10 for Insert Arrangements.

Part Numbering is for Reference Purposes Only. A Unique Glenair Part Number Will Be Assigned to Your Cable Order.



Glenair ASAP Fiber Optic Cable Sets Field Repairable Banding Backshell Assembly D38999 Series III to D38999 Series III

D38999
Series III

ASAP fiber optic cable sets

B



Product Features

- MIL-DTL-38999 Series III Connectors in Aluminum, Composite or Stainless Steel
- Glenair Banding Backshells with Flex-Nut Strain-Relief in Aluminum, Composite or Stainless Steel
- Plug, Jam-Nut Receptacle, In-Line and Wall-Mount Receptacle Configurations
- Single and Multimode Fiber Media
- Simple, Fast Kevlar Strength-Member Termination
- Military Standard Dust Caps
- MIL-PRF-29504 Qualified Termini
- Multichannel Capability: From 2 to 37 Channels
- Custom Lengths Available
- 100% Tested

The Ideal Solution for Combined Environmental Resistance, Field Repairability and Kevlar® Termination

Reinforced Cable/Backshell Assemblies

Reinforced, extruded cable is an ideal packaging option for rugged application environments, and Glenair can extrude fiber optic cable for most high-performance applications. But while the cable is the backbone of this packaging solution, Glenair's ruggedized backshell is the component which gives the assembly its real functionality. The backshell allows for the convenient termination of cable shielding and/or the Kevlar® strength member. Unlike other backshell designs, Glenair's assembly uses a simple, easy to use banding technology to terminate cable shielding and the Kevlar material used in fiber cable extrusions. The Glenair Band-Master™ ATS technology is fully tested and proven to meet pull strength requirements and is the quickest and most reliable way to terminate these materials. The Glenair backshell also provides additional strain-relief and environmental protection of the cable to connector transition with its unique Flex-Nut style fitting. And unlike overmolded solutions, the reinforced extruded cable/backshell package allows maintenance technicians to open the cable for field service.

Backshells are selected for functionality (strain-relief, shield termination, and so on) and for material compatibility with the chosen connector. The turnkey assembly includes custom extruded cable, Glenair Backshell, MIL-DTL-38999 Style Connectors, MIL-PRF-29504 Termini, Mil-Spec Dust-Caps and customer specified marking and labeling.

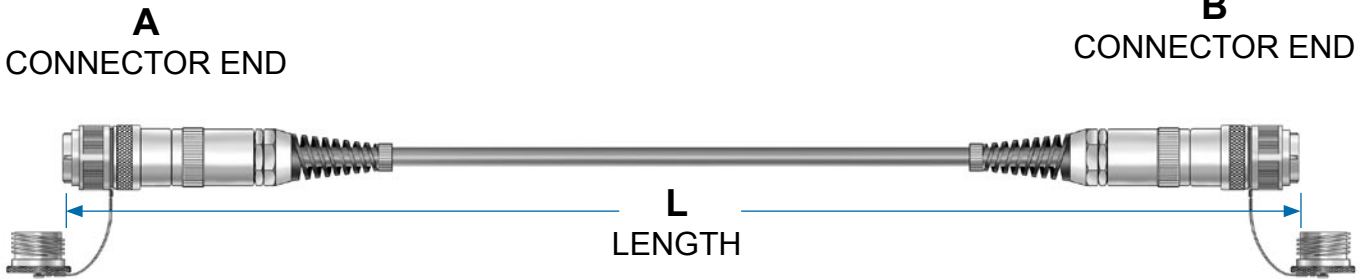
*See Section L For Band-Master™ ATS Tooling Information

Glenair ASAP Fiber Optic Cable Sets
 Field Repairable Banding Backshell Assembly
 D38999 Series III to D38999 Series III



MIL-DTL-38999
 Series III Type

ASAP fiber optic cable sets



Reference Part Number Development:

FO1002 P 06 P 06 J 04 - 62 - 100 L

Basic Part Number

A Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

- 05 = D38999 Style In-Line Receptacle
- 06 = D38999/26 Style Plug
- 08 = D38999/24 Style Jam-Nut Receptacle
- H7 = D38999/20 Style Wall Mount Receptacle (Std.)
- S7 = D38999/20 Style Wall Mount Receptacle (Slotted)
- T7 = D38999/20 Style Wall Mount Receptacle (Tapped)

B Terminus Type

- P = Pin Terminus
- S = Socket Terminus

B Connector Type

- 05 = D38999 Style In-Line Receptacle
- 06 = D38999/26 Style Plug
- 08 = D38999/24 Style Jam-Nut Receptacle
- H7 = D38999/20 Style Wall Mount Receptacle (Std.)
- S7 = D38999/20 Style Wall Mount Receptacle (Slotted)
- T7 = D38999/20 Style Wall Mount Receptacle (Tapped)

D38999 Series III Connector Class

- F = Aluminum, Electroless Nickel Plating
- J = Composite, Olive Drab Cadmium Plating
- K = Stainless Steel, Passivated
- M = Composite, Electroless Nickel Plating
- W = Aluminum, Olive Drab Cadmium Plating

Protective Covers

- L = Less Covers
- Omit for with Covers

Length in Feet

Fiber Size

- 09 = 9.3/125 Singlemode
- 50 = 50/125 Multimode
- 62 = 62.5/125 Multimode
- 10 = 100/140 Multimode
- 20 = 200/230 Multimode

Number of Fibers*

- 02 = 2 Fibers (Shell Size 11)
- 04 = 4 Fibers (Shell Size 13)
- 05 = 5 Fibers (Shell Size 15)
- 08 = 8 Fibers (Shell Size 17)
- 11 = 11 Fibers (Shell Size 19)
- 16 = 16 Fibers (Shell Size 21)
- 21 = 21 Fibers (Shell Size 23)
- 29 = 29 Fibers (Shell Size 25)
- 37 = 37 Fiber (Shell Size 25)

See Table I for Standard Conduit Materials Packages. Please Reference Special Marking, Labels Or Other Identification Specifications on Your Purchase Order

*See Page B-12 for Insert Arrangements.

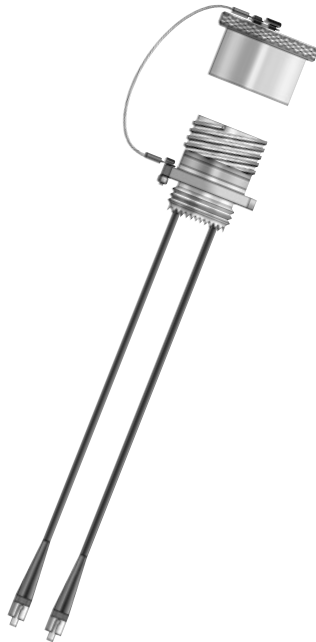
Part Numbering is for Reference Purposes Only. A Unique Glenair Part Number Will Be Assigned to Your Cable Order.



Glenair ASAP Fiber Optic Cable Sets Inside-the-Box Receptacle/Pigtail Assembly D38999 Series III to ST, FC, SC, LC & SMA

D38999
Series III

ASAP fiber optic cable sets



Product Features

- Jam-Nut and Wall Mount D38999 Series III Type Fiber Optic Receptacle Connectors in Aluminum, Composite or Stainless Steel
- ST, FC, SC, LC and SMA to D38999 Series III Configurations
- Single and Multimode Fiber Media
- Military Standard Dust Caps
- MIL-PRF-29504 Approved Termini
- Multichannel Capability: From 2 to 37 Channels
- Custom Lengths Available

Glenair Terminated and Optically Tested Receptacle/Pigtail Assemblies Are Ready When You Are

Inside-the-Box

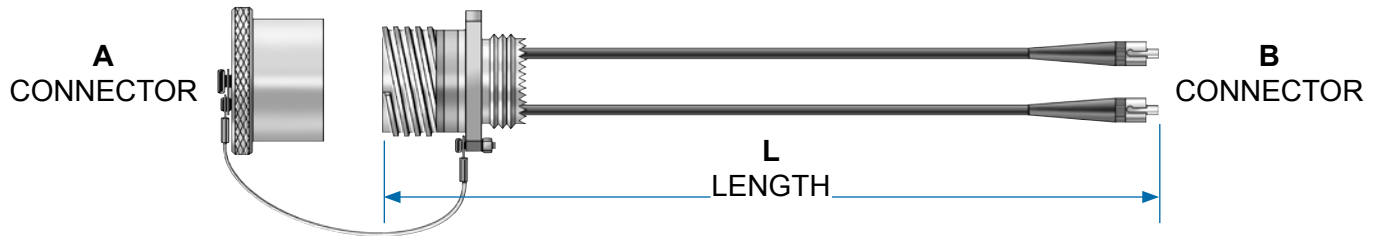
The packaging and layout of a fiber optic interconnect assembly can vary widely depending on the application environment. Fiber optics deployed in military avionics, for example, may take the form of a Mil-Spec receptacle and simplex pigtail connector assembly when fiber is used to interconnect the optical transmitter/receiver inside an equipment enclosure to the outside world. When fiber leads are used within equipment enclosures or other protected environments, the interconnect assembly generally looks something like the assembly featured here: A wall mount or jam nut mount receptacle connector ("A") with simplex fiber leads ("B"). The receptacle connector is used to penetrate the enclosure and mate to the external environmental plug connector. The simplex leads within the protected enclosure commonly route to the transceiver optical device, and are terminated to common commercial connectors such as ST, FC, SC, LC (or other) connectors at the "B" end. Glenair ASAP Receptacle/Pigtail Fiber Optic Assemblies are ideal for applications of this type, and are available with accelerated lead-times. The turnkey assembly includes fiber optic wiring, MIL-DTL-38999 Style Connector, MIL-PRF-29504 Termini, Mil-Spec Dust-Caps and customer specified marking and labeling.

Glenair ASAP Fiber Optic Cable Sets
Inside-the-Box Receptacle/Pigtail Assembly
D38999 Series III to ST, FC, SC, LC & SMA



MIL-DTL-38999
 Series III Type

ASAP fiber optic cable sets



Reference Part Number Development:

FO1003 P - 08 - 1 W 02 62 48 L

Basic part Number

Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

- 06 = D38999/26 Style Plug
- 08 = D38999/24 Style Jam-Nut Receptacle
- H7 = D38999/20 Style Wall Mount Receptacle (Std.)
- S7 = D38999/20 Style Wall Mount Receptacle (Slotted)
- T7 = D38999/20 Style Wall Mount Receptacle (Tapped)

B Connector Type

- 0 = ST M83522 Style
- 1 = ST Connector
- 2 = FC Connector
- 3 = SC Connector
- 4 = SC Duplex
- 5 = SMA Connector (906 Type)
- 6 = SMA Connector (905 Type)
- 7 = LC Connector
- 8 = LC Duplex
- 9 = Customer Specified

D38999 Series III Connector Class

- F = Aluminum, Electroless Nickel Plating
- J = Composite, Olive Drab Cadmium Plating
- K = Stainless Steel, Passivated
- M = Composite, Electroless Nickel Plating
- W = Aluminum, Olive Drab Cadmium Plating

Protective Covers

- L = Less Covers
- Omit for with Covers

Length in Inches

- 6 Inch Minimum

Fiber Size

- 09 = 9.3/125 Singlemode
- 50 = 50/125 Multimode
- 62 = 62.5/125 Multimode
- 10 = 100/140 Multimode
- 20 = 200/230 Multimode

Number of Fibers*

- 02 = 2 Fibers (Shell Size 11)
- 04 = 4 Fibers (Shell Size 13)
- 05 = 5 Fibers (Shell Size 15)
- 08 = 8 Fibers (Shell Size 17)
- 11 = 11 Fibers (Shell Size 19)
- 16 = 16 Fibers (Shell Size 21)
- 21 = 21 Fibers (Shell Size 23)
- 29 = 29 Fibers (Shell Size 25)
- 37 = 37 Fiber (Shell Size 25)

Please Reference Special Marking, Labels Or Other Identification Specifications on Your Purchase Order. Unless Indicated, "B" Connector Identification Will Follow "A" Connector Pin Designations.

*See Page B-12 for Insert Arrangements

Part Numbering is for Reference Purposes Only. A Unique Glenair Part Number Will Be Assigned to Your Cable Order.

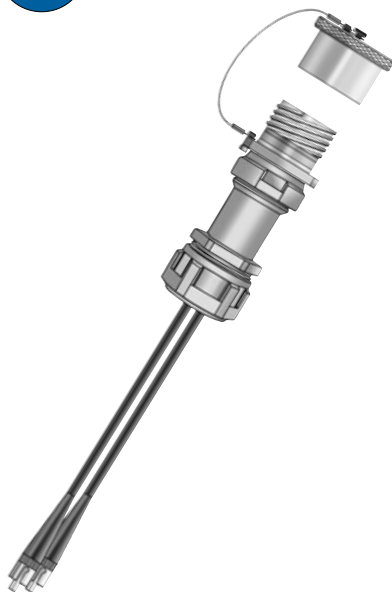


Glenair ASAP Fiber Optic Cable Sets Inside-the-Box Receptacle/Pigtail Assembly with FiberCon® Backshell D38999 Series III to ST, FC, SC, LC & SMA

D38999
Series III

ASAP fiber optic cable sets

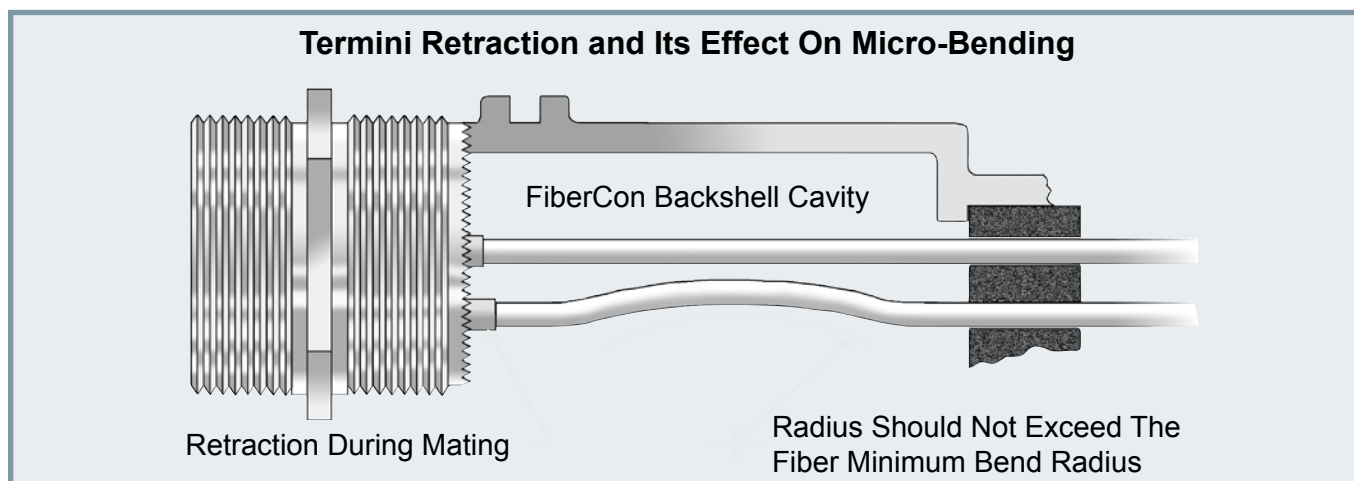
B



Product Features

- Jam-Nut and Wall Mount D38999 Series III Type Fiber Optic Receptacle Connectors in Aluminum, Composite or Stainless Steel
- ST, FC, SC, LC and SMA to D38999 Series III Configurations
- Grommet Sealing and Micro-Alignment Backshells in Aluminum, Composite and Stainless Steel
- Singlemode and Multimode Fiber Media
- Military Standard Dust Caps
- MIL-PRF-29504 Approved Termini
- Multichannel Capability: From 2 to 37 Channels
- Custom Lengths Available

**Because Sometimes Strain-Relief and Exact Fiber Alignment are a Requirement—
Even Inside the Box**



The Glenair FiberCon® Backshell Assembly

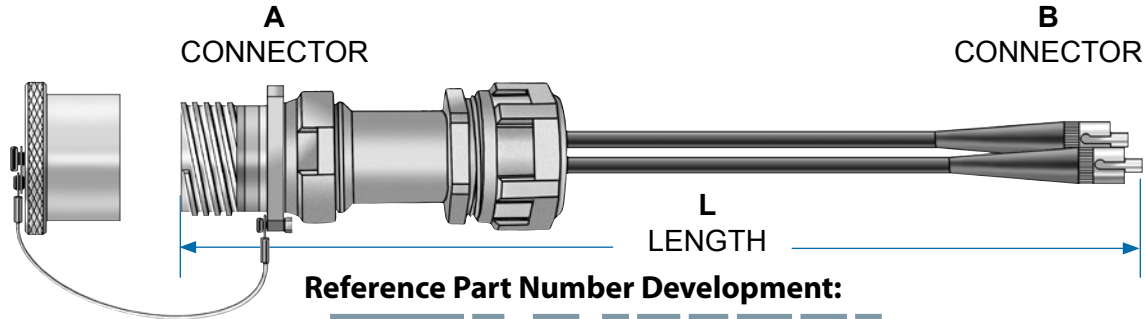
Glenair can supply receptacle/pigtail assemblies with a FiberCon® Backshell that protects fiber terminations and insures exact alignment of the fiber optic termini. The grommeted backshell design prevents micro-bending of the fibers while providing optimum strain relief to the overall cable. The unique design is available only from Glenair and is available as a component part of this ASAP cable assembly. The turnkey assembly includes fiber optic wiring, Glenair Backshell, MIL-DTL-38999 Style Connector, MIL-PRF-29504 Termini, Mil-Spec Dust-Caps and customer specified marking and labeling.

Glenair ASAP Fiber Optic Cable Sets
Inside-the-Box Receptacle/Pigtail Assembly
 with FiberCon® Backshell
 D38999 Series III to ST, FC, SC, LC & SMA



MIL-DTL-38999
 Series III Type

ASAP fiber optic cable sets



Reference Part Number Development:

FO1004 P - 08 - 1 W 02 62 48 L

Basic part Number

Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

- 06 = D38999/26 Style Plug
- 08 = D38999/24 Style Jam-Nut Receptacle
- H7 = D38999/20 Style Wall Mount Receptacle (Std.)
- S7 = D38999/20 Style Wall Mount Receptacle (Slotted)
- T7 = D38999/20 Style Wall Mount Receptacle (Tapped)

B Connector Type

- 0 = ST M83522 Style
- 1 = ST Connector
- 2 = FC Connector
- 3 = SC Connector
- 4 = SC Duplex
- 5 = SMA Connector (906 Type)
- 6 = SMA Connector (905 Type)
- 7 = LC Connector
- 8 = LC Duplex
- 9 = Customer Specified

D38999 Series III Connector Class

- F = Aluminum, Electroless Nickel Plating
- J = Composite, Olive Drab Cadmium Plating
- K = Stainless Steel, Passivated
- M = Composite, Electroless Nickel Plating
- W = Aluminum, Olive Drab Cadmium Plating

Protective Covers

- L = Less Covers
- Omit for with Covers

Length in Inches

- 6 Inch Minimum

Fiber Size

- 09 = 9.3/125 Singlemode
- 50 = 50/125 Multimode
- 62 = 62.5/125 Multimode
- 10 = 100/140 Multimode
- 20 = 200/230 Multimode

Number of Fibers*

- 02 = 2 Fibers (Shell Size 11)
- 04 = 4 Fibers (Shell Size 13)
- 05 = 5 Fibers (Shell Size 15)
- 08 = 8 Fibers (Shell Size 17)
- 11 = 11 Fibers (Shell Size 19)
- 16 = 16 Fibers (Shell Size 21)
- 21 = 21 Fibers (Shell Size 23)
- 29 = 29 Fibers (Shell Size 25)
- 37 = 37 Fiber (Shell Size 25)

Please Reference Special Marking, Labels Or Other Identification Specifications on Your Purchase Order. Unless Indicated, "B" Connector Identification Will Follow "A" Connector Pin Designations.

*See Page B-10 for Insert Arrangements

Part Numbering is for Reference Purposes Only. A Unique Glenair Part Number Will Be Assigned to Your Cable Order.



Glenair ASAP Fiber Optic Cable Sets Inside-the-Box Receptacle/Pigtail Assembly with Low-Profile Backshell and Conduit D38999 Series III to ST, FC, SC, LC & SMA

D38999
Series III

ASAP fiber optic cable sets

B



Product Features

- Jam-Nut and Wall Mount D38999 Series III Type Fiber Optic Receptacle Connectors in Aluminum, Composite or Stainless Steel
- ST, FC, SC, LC and SMA to D38999 Series III Configurations
- High-Temperature and Halogen Free Protective Convoluted Tubing Options
- Single and Multimode Fiber Media
- Military Standard Dust Caps
- MIL-PRF-29504 Approved Termini
- Multichannel Capability: From 2 to 37 Channels
- Custom Overall and Break-out Lengths Available

The Perfect Amount of Mechanical Protection for Fiber Media in Non-Environmental Applications

Protective Conduit

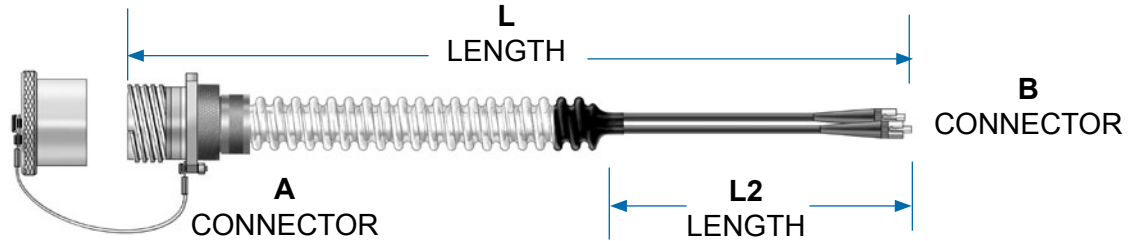
The use of a short length of conduit and a low-profile connector/conduit adapter is recommended in applications where a heat or abrasion source within the box may damage the fiber media. In most cases, analysis of the available space is critical to insure the additional interconnect hardware does not interfere with the electronics package inside the box. The packaging of a pigtail assembly with a protective length of conduit is appropriate for all types of equipment—such as radar units, cameras, shipboard consoles, antennas and so on—in which the routing of the fiber cable within the equipment enclosure may expose the media to damage. This Glenair ASAP Fiber Optic Pigtail Assembly is well suited whenever the prevention of damage to the fiber media inside the box is a design requirement. The turnkey assembly includes fiber optic wiring, Glenair Conduit Adapter, High-Temperature Convoluted Tubing and Shrink Boot, MIL-DTL-38999 Style Connector, MIL-PRF-29504 Termini, Mil-Spec Dust-Caps and customer specified marking and labeling.

Glenair ASAP Fiber Optic Cable Sets
Inside-the-Box Receptacle/Pigtail Assembly
 with Low-Profile Backshell and Conduit
 D38999 Series III to ST, FC, SC, LC & SMA



MIL-DTL-38999
 Series III Type

ASAP fiber optic cable sets



Reference Part Number Development:

FO1005 P - 08 - 1 W 02 62 6 12 L

Basic part Number

Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

- 06 = D38999/26 Style Plug
- 08 = D38999/24 Style Jam-Nut Receptacle
- H7 = D38999/20 Style Wall Mount Receptacle (Std.)
- S7 = D38999/20 Style Wall Mount Receptacle (Slotted)
- T7 = D38999/20 Style Wall Mount Receptacle (Tapped)

B Connector Type

- 0 = ST M83522 Style
- 1 = ST Connector
- 2 = FC Connector
- 3 = SC Connector
- 4 = SC Duplex
- 5 = SMA Connector (906 Type)
- 6 = SMA Connector (905 Type)
- 7 = LC Connector
- 8 = LC Duplex
- 9 = Customer Specified

D38999 Series III Connector Class

- F = Aluminum, Electroless Nickel Plating
- J = Composite, Olive Drab Cadmium Plating
- K = Stainless Steel, Passivated
- M = Composite, Electroless Nickel Plating
- W = Aluminum, Olive Drab Cadmium Plating

Protective Covers

- L = Less Covers
- Omit for with Covers

"L2" Length in Inches

"L" Length in Feet

- 6 Inch Minimum

Fiber Size

- 09 = 9.3/125 Singlemode
- 50 = 50/125 Multimode
- 62 = 62.5/125 Multimode
- 10 = 100/140 Multimode
- 20 = 200/230 Multimode

Number of Fibers*

- 02 = 2 Fibers (Shell Size 11)
- 04 = 4 Fibers (Shell Size 13)
- 05 = 5 Fibers (Shell Size 15)
- 08 = 8 Fibers (Shell Size 17)
- 11 = 11 Fibers (Shell Size 19)
- 16 = 16 Fibers (Shell Size 21)
- 21 = 21 Fibers (Shell Size 23)
- 29 = 29 Fibers (Shell Size 25)
- 37 = 37 Fiber (Shell Size 25)

Please Reference Special Marking, Labels Or Other Identification Specifications on Your Purchase Order. Unless Indicated, "B" Connector Identification Will Follow "A" Connector Pin Designations.

*See Page B-12 for Insert Arrangements

Part Numbering is for Reference Purposes Only. A Unique Glenair Part Number Will Be Assigned to Your Cable Order.



180-071 (-3) Wall Mount Receptacle Single Channel Fiber Optic Connector Environmental Resistant for Glenair 181-002 Rear Release Pin Termini

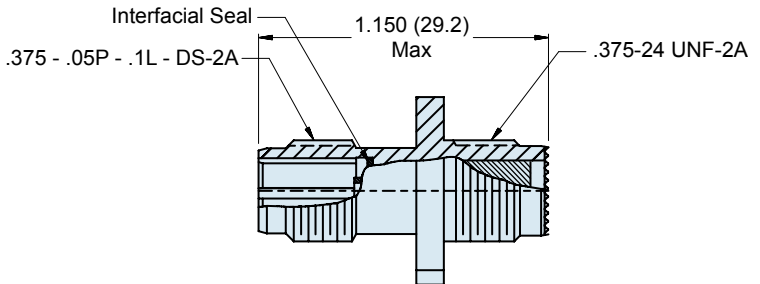
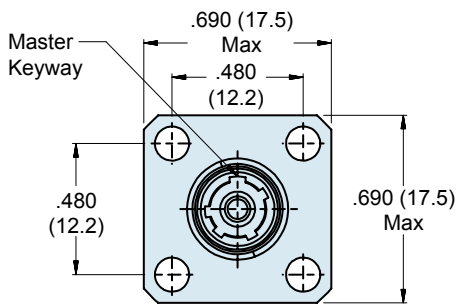
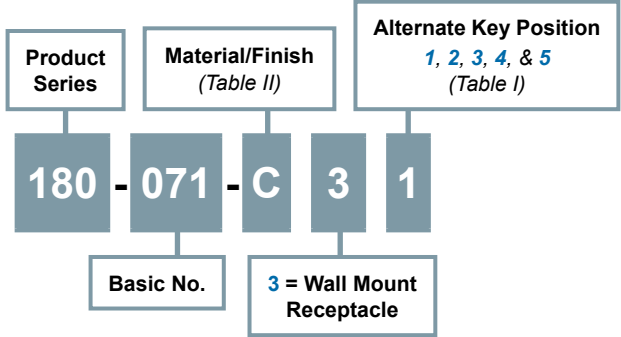
D38999
Series III

B

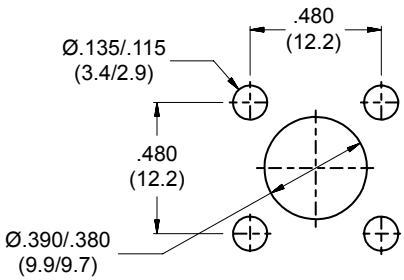
Single channel fiber optic square flange wall mount receptacle connector



How To Order



-3 Wall Mount Receptacle Assembly



**RECOMMENDED
PANEL CUT
WALL MOUNT
RECEPTACLE**

Material and Finish

Shell: See Table II.
Interfacial Seal, Rear Grommet: Fluorosilicone.
Retention Clip: Copper Alloy

Notes

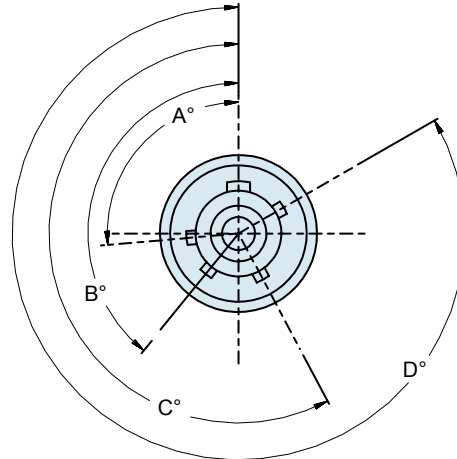
Operating Temperature Range: -55°C to +125°C.
See Glenair drawing 181-002 for fiber optic pin terminus.

**180-071 (-3) Wall Mount Receptacle
Single Channel Fiber Optic Connector
Environmental Resistant
for Glenair 181-002 Rear Release Pin Termini**



MIL-DTL-38999
Series III Type

B



As Viewed from Front of Connector

| Table I: Keyway Polarizations | | | | |
|-------------------------------|----|-----|-----|-----|
| Pos | A° | B° | C° | D° |
| 1 | 95 | 141 | 208 | 300 |
| 2 | 80 | 141 | 208 | 300 |
| 3 | 95 | 141 | 223 | 300 |
| 4 | 80 | 141 | 223 | 300 |
| 5 | 95 | 141 | 208 | 275 |

| Table II: Material and Finish | | |
|-------------------------------|-----------------|--|
| Code | Material | Finish |
| C | Aluminum Alloy | Anodize, Black |
| M | | Electroless Nickel |
| NF | | Cadmium, Olive Drab, over Electroless Nickel |
| ZN | | Zinc-Nickel, Olive Drab, over Electroless Nickel |
| Z1 | Stainless Steel | Passivate |

Refer to Appendix for material/finish details



**180-071 (-4) Jam Nut Mount Receptacle
Single Channel Fiber Optic Connector
Environment Resistant
for Glenair 181-002 Rear Release Pin Termini**

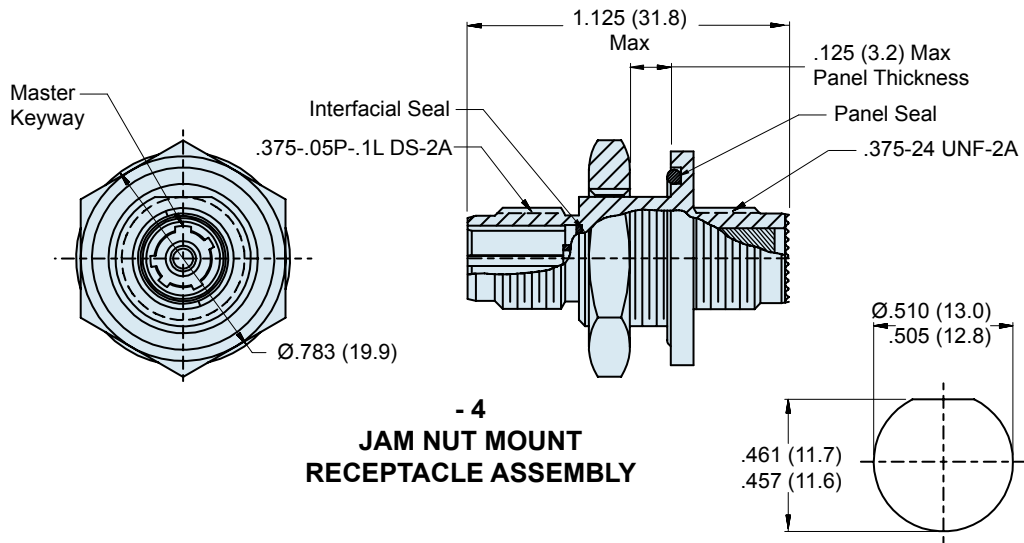
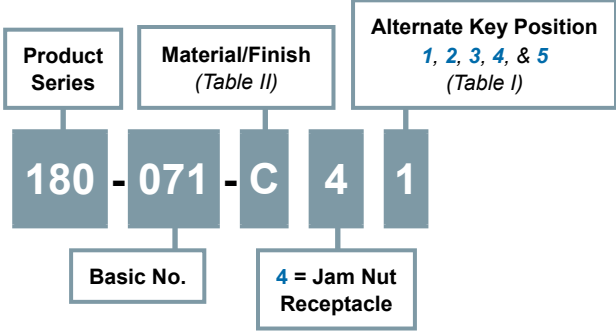
D38999
Series III

B

Single channel fiber optic jam nut mount receptacle connector



How To Order



Material and Finish

Shell, Jam Nut: See Table II.
Panel Seal, Interfacial Seal: Fluorosilicone
Retention Clip: Copper Alloy

Notes

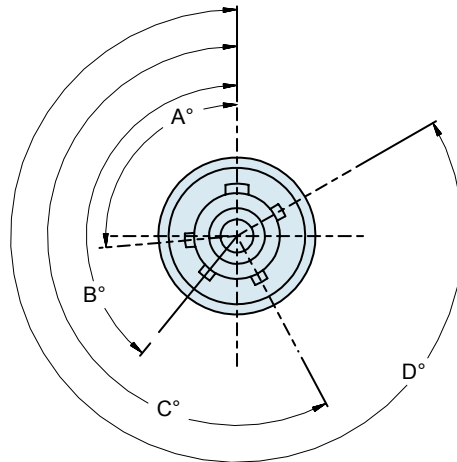
Operating Temperature Range: -55°C to +125°C
See Glenair drawing 181-002 for fiber optic pin terminus.

**180-071 (-4) Jam Nut Receptacle
Single Channel Fiber Optic Connector
Environment Resistant
for Glenair 181-002 Rear Release Pin Termini**



MIL-DTL-38999
Series III Type

B



As Viewed from Front of Connector

Table I: Keyway Polarizations

| Pos | A° | B° | C° | D° |
|-----|----|-----|-----|-----|
| 1 | 95 | 141 | 208 | 300 |
| 2 | 80 | 141 | 208 | 300 |
| 3 | 95 | 141 | 223 | 300 |
| 4 | 80 | 141 | 223 | 300 |
| 5 | 95 | 141 | 208 | 275 |

Table II: Material and Finish

| Code | Material | Finish |
|------|-----------------|--|
| C | Aluminum Alloy | Anodize, Black |
| M | | Electroless Nickel |
| NF | | Cadmium, Olive Drab, over Electroless Nickel |
| ZN | | Zinc-Nickel, Olive Drab, over Electroless Nickel |
| Z1 | Stainless Steel | Passivate |

Refer to Appendix for material/finish details



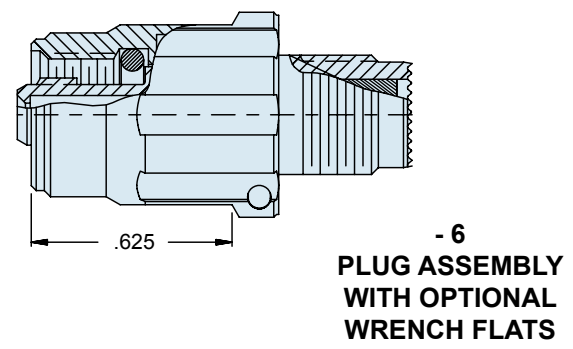
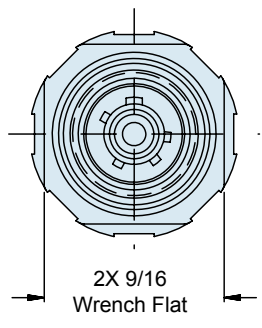
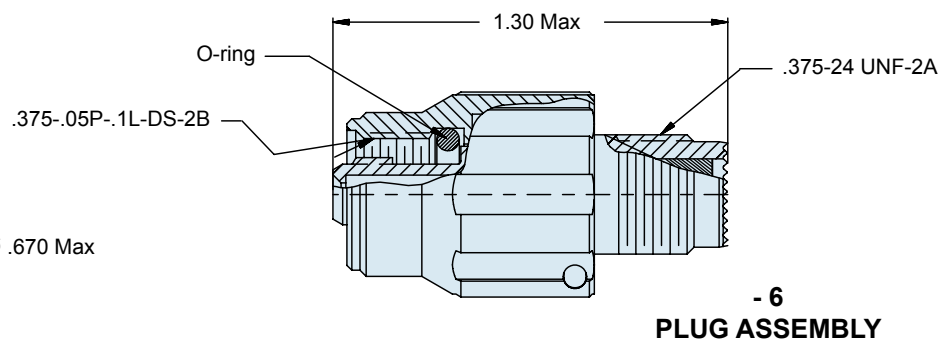
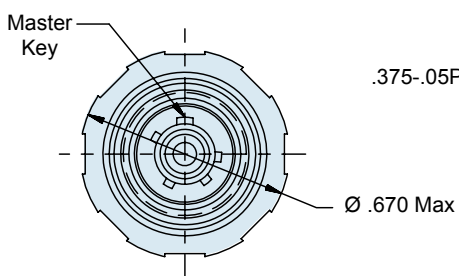
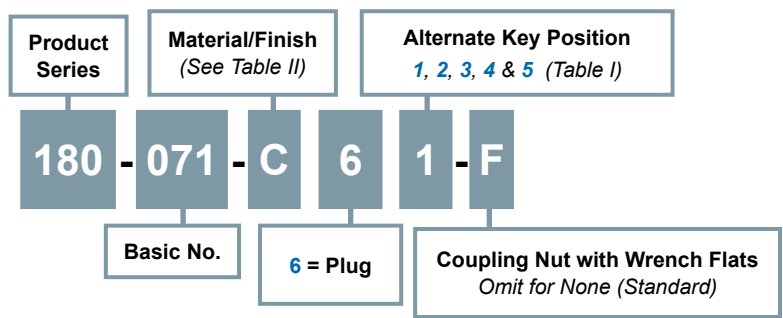
180-071 (-6) Plug
Single Channel Fiber Optic Connector
 Environmental Resistant
 for Glenair 181-001 Rear Release Socket Termini

Single channel fiber optic plug connector

B



How To Order



Material and Finish

Barrel, Coupling Nut: See Table II
 O-Ring, Rear Grommet: Fluorosilicone
 Retention Clip: Copper Alloy

Notes

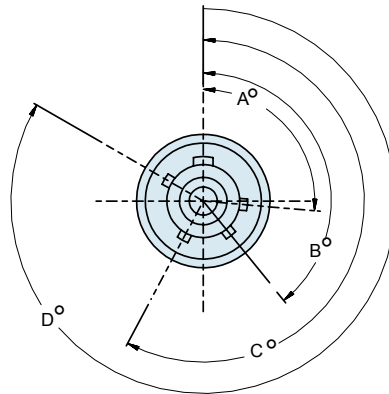
Operating temperature range -55°C to +125°C.
 See Glenair drawing 181-001 for fiber optic socket terminus.

180-071 (-6) Plug
Single Channel Fiber Optic Connector
 Environmental Resistant
 for Glenair 181-001 Rear Release Socket Termini



MIL-DTL-38999
 Series III Type

B



As Viewed from Front of Plug Connector
See Table I

| Table I: Key Polarizations | | | | |
|----------------------------|----|-----|-----|-----|
| Pos | A° | B° | C° | D° |
| 1 | 95 | 141 | 208 | 300 |
| 2 | 80 | 141 | 208 | 300 |
| 3 | 95 | 141 | 223 | 300 |
| 4 | 80 | 141 | 223 | 300 |
| 5 | 95 | 141 | 208 | 275 |

| Table II: Material and Finish | | |
|-------------------------------|-----------------|--|
| Code | Material | Finish |
| C | Aluminum Alloy | Anodize, Black |
| M | | Electroless Nickel |
| NF | | Cadmium, Olive Drab, over Electroless Nickel |
| ZN | | Zinc-Nickel, Olive Drab, over Electroless Nickel |
| ZI | Stainless Steel | Passivate |

Refer to Appendix for material/finish details

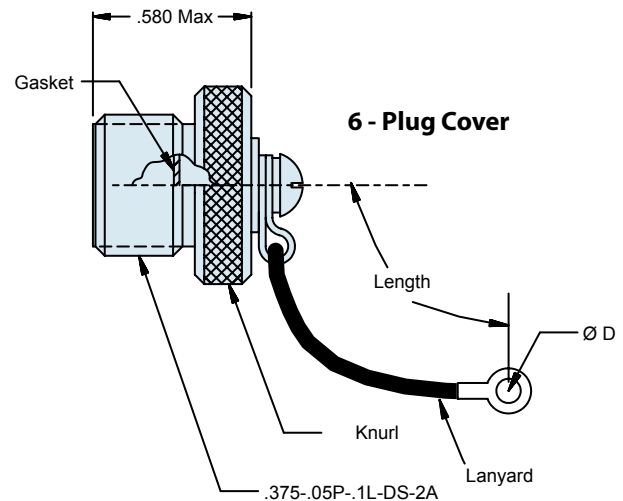
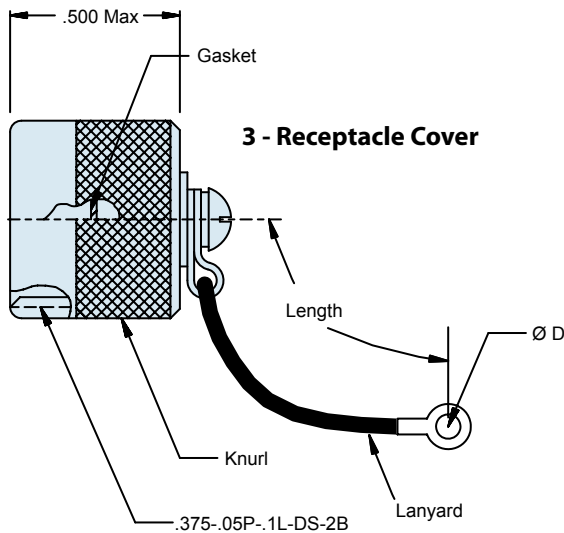
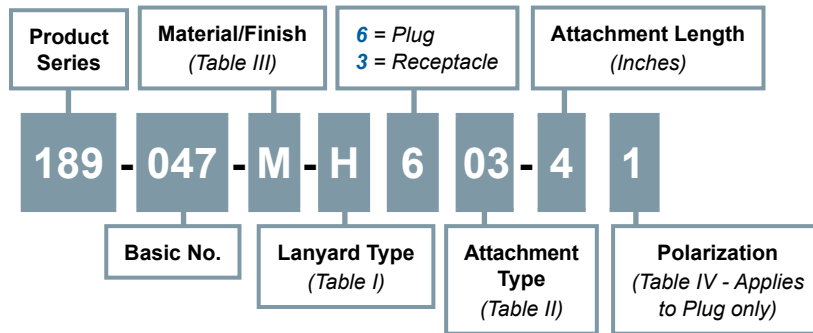


189-047
Plug and Receptacle Protective Covers
 for Single Channel 180-071 Series Fiber Optic Connectors

Plug and receptacle protective covers for single channel fiber optic connectors

B

How To Order



Material and Finish

Cover: See Table III
 Gasket: Fluorosilicone

189-047
Plug and Receptacle Protective Covers
 for Single Channel 180-071 Series Fiber Optic Connectors



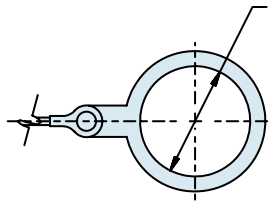
MIL-DTL-38999
Series III Type

B

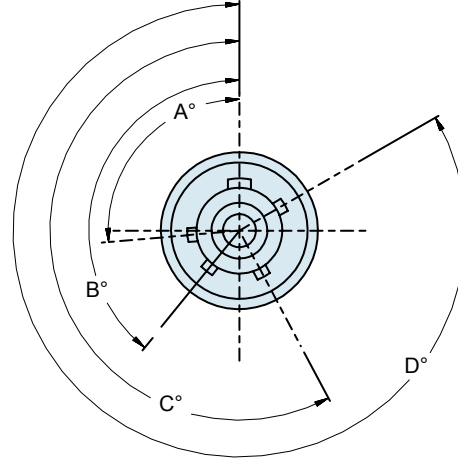
| Table I: Lanyard Codes | |
|------------------------|---------------------------------|
| Code | Description |
| D | Bead Chain, CRES, Passivated |
| F | Wire Rope, Nylon Jacket |
| G | Nylon Rope, Black |
| H | Wire Rope, Teflon Jacket |
| N | No Lanyard |
| R | Wire Rope, PVC Jacket |
| S | #8 Sash Chain, CRES, Passivated |
| T | Wire Rope, No Jacket |
| U | Wire Rope, Polyurethane Jacket |

| Table III: Material and Finish | | |
|--------------------------------|-----------------|--|
| Code | Material | Finish |
| C | Aluminum Alloy | Anodize, Black |
| M | | Electroless Nickel |
| NF | | Cadmium, Olive Drab, over Electroless Nickel |
| ZN | | Zinc-Nickel, Olive Drab, over Electroless Nickel |
| Z1 | Stainless Steel | Passivate |

Refer to Appendix for material/finish details



Solid Ring
 Dash No. 07 thru 12



| Table II: Attachment Type | | |
|---------------------------|--------------|------------|
| Dash No. | Ø D | |
| 01 | .125 (3.2) | Eyelet |
| 02 | .140 (3.6) | |
| 03 | .167 (4.2) | |
| 04 | .182 (4.6) | |
| 05 | .191 (4.9) | |
| 06 | .197 (5.0) | |
| 07 | .391 (9.9) | Solid Ring |
| 08 | .516 (13.1) | |
| 09 | .583 (14.8) | |
| 10 | .766 (19.5) | |
| 11 | .896 (22.2) | |
| 12 | 1.016 (25.8) | |

| Table IV: Keyway Polarizations (Plug Cover Only) | | | | |
|--|----|-----|-----|-----|
| Pos | A° | B° | C° | D° |
| 1 | 95 | 141 | 208 | 300 |
| 2 | 80 | 141 | 208 | 300 |
| 3 | 95 | 141 | 223 | 300 |
| 4 | 80 | 141 | 223 | 300 |
| 5 | 95 | 141 | 208 | 275 |

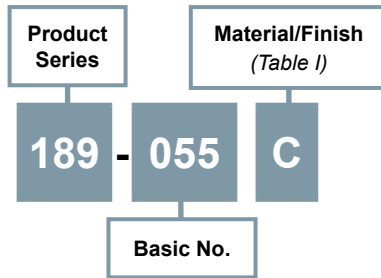


189-055
Single Channel Fiber Optic Connector Backshell
Environmental Resistant
for 180-071 Series Single Channel Fiber Optic Connectors

Single channel fiber optic connector backshell with direct coupling

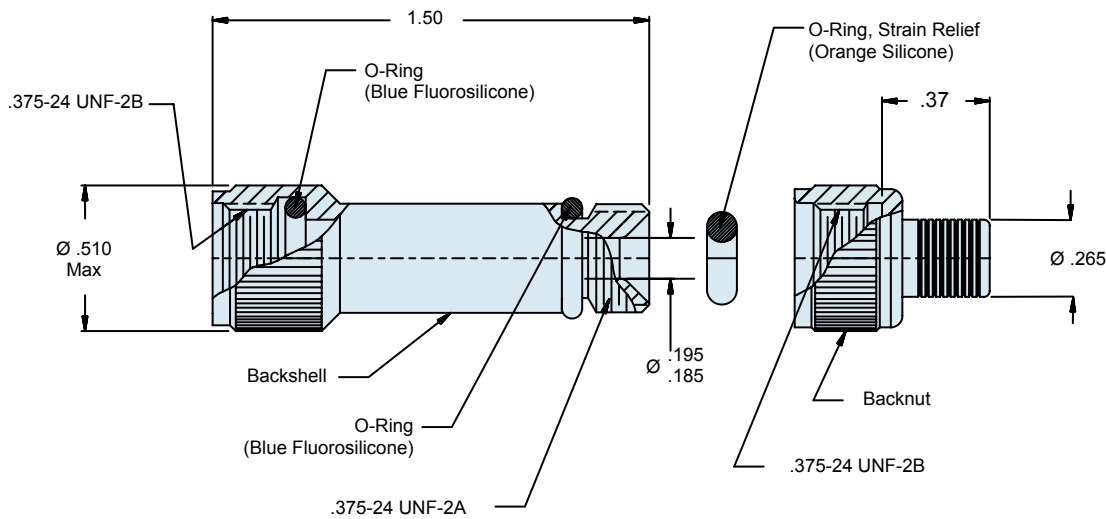
B

How To Order



| Table I: Material and Finish | | |
|------------------------------|-----------------|-------------------------|
| Code | Material | Finish Description |
| C | Aluminum Alloy | Anodize, Black |
| M | | Electroless Nickel |
| NF | | Cadmium, Olive Drab |
| ZN | | Zinc-Nickel, Olive Drab |
| Z1 | Stainless Steel | Passivate |

Refer to Appendix for material/finish details



Material and Finish

Backshell and Back Nut: See Table I
 O-Ring: Fluorosilicone
 Strain Relief O-Ring: Silicone

180-076 Fiber Optic Splice
 For use with Glenair 180-001 and 181-002 Rear Release Termini
 Type Connectors



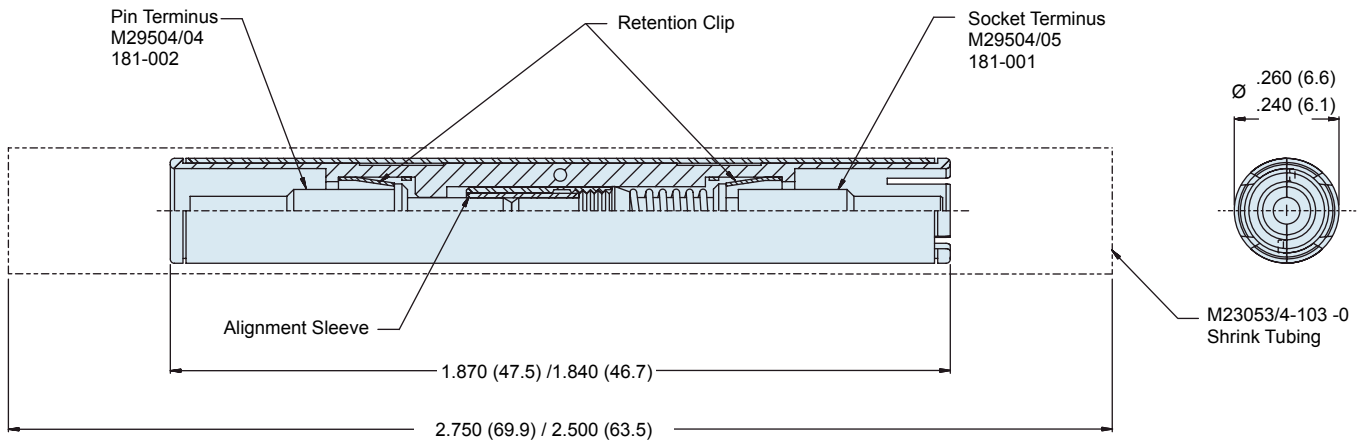
MIL-DTL-38999
 Series III Type

Fiber optic splice



| Part Number | Description |
|-------------|--------------------|
| 180-076 | Fiber Optic Splice |

B



Material and Finish

Insert: High-Grade Engineering Thermoplastic
 Retention Clip: Copper Alloy
 Splice Housing: Stainless Steel/Passivate
 Shrink Tubing: Polyolefin



180-052
2 Channel Fiber Optic Receptacle Connector
for M29504/05 Socket Terminus

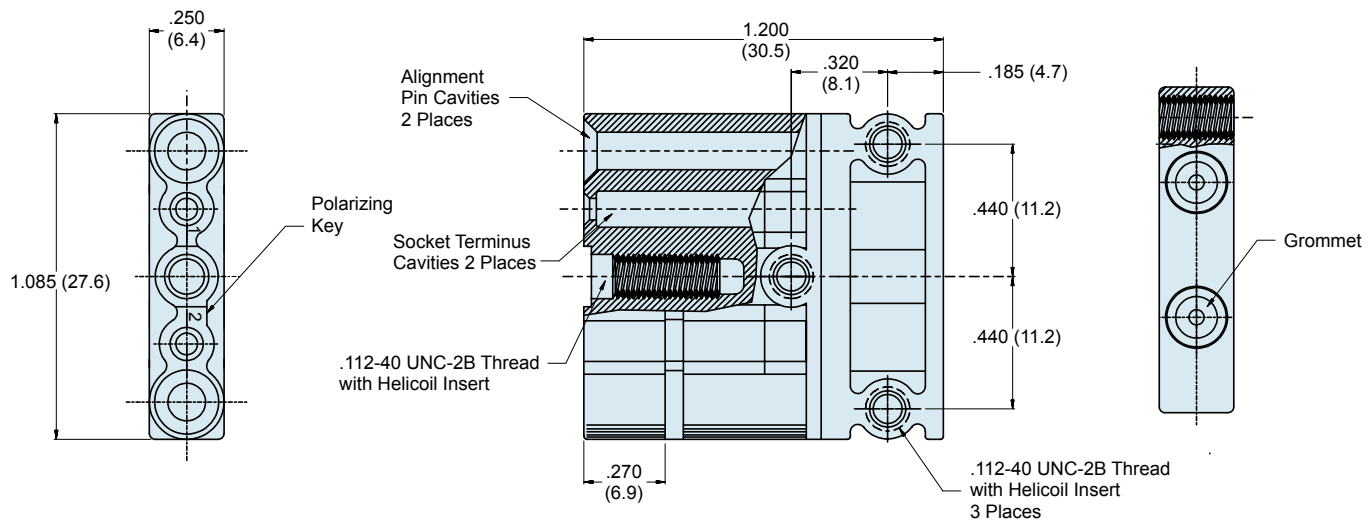
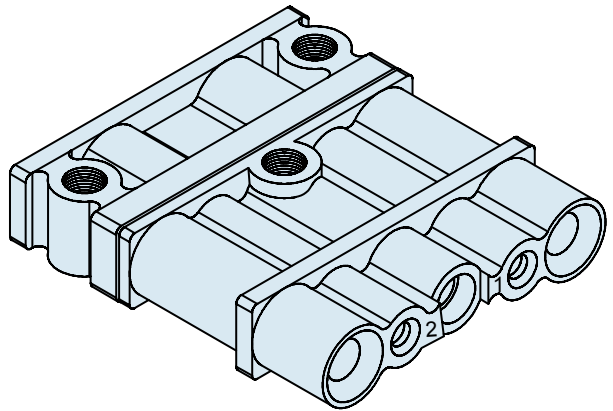
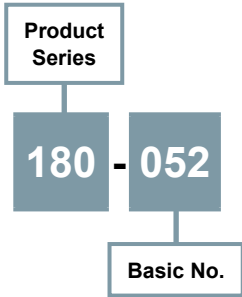
D38999
Series III

B

2 Channel fiber optic receptacle connector



How To Order



Material and Finish

Connector Housing: High Grade Engineering Thermoplastic
Grommet: Fluorosilicone
Helicoil Insert: Stainless Steel

Notes

Connector designed to accept Glenair Part Number 181-001 or MIL-PRF-29504/5 Style Fiber Optic Termini. Termini not supplied.
Recommended Insertion/Removal Tool: P/N M81969/14-03 or equivalent.

180-053
 2 Channel Fiber Optic Plug Connector
 for M29504/04 Pin Terminus



MIL-DTL-38999
 Series III Type

2 Channel fiber optic plug connector

B

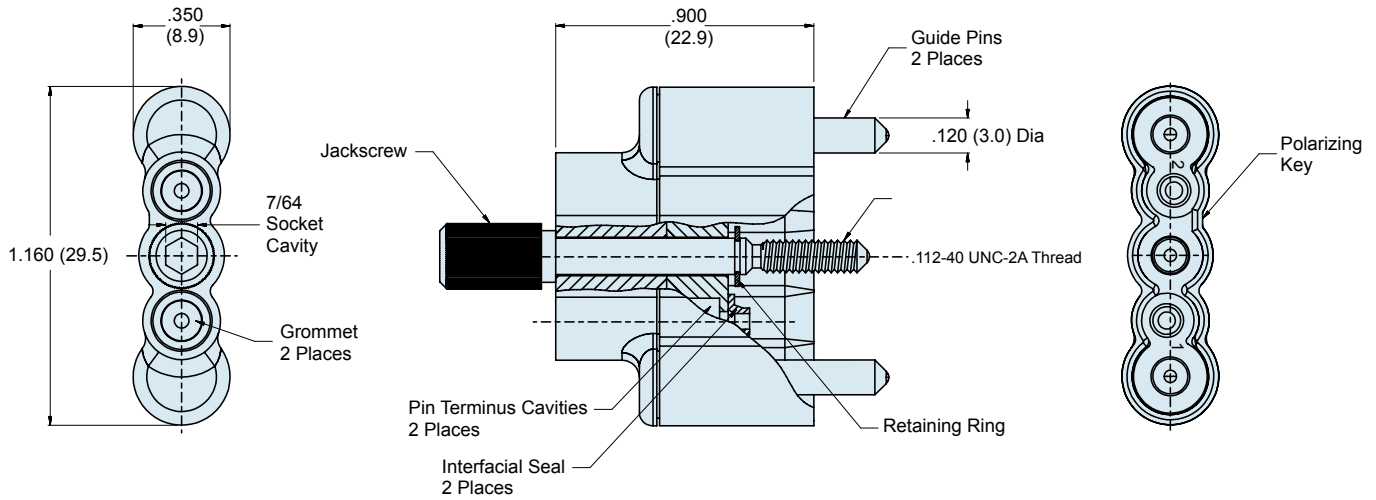
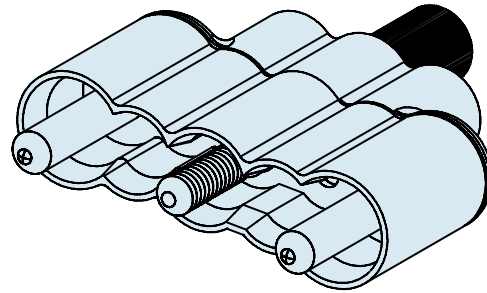


How To Order

Product Series

180 - 053

Basic No.



Material and Finish

Connector Housing: High Grade Engineering Thermoplastic
 Grommet, Interfacial Seal: Fluorosilicone
 Jackscrew, Guide Pin, Retaining Ring: Stainless Steel.

Notes

Connector designed to accept Glenair Part Number 181-002 or MIL-PRF-29504/4 Style Fiber Optic Termini (not supplied).
 Recommended Insertion/Removal Tool: P/N M81969/14-03 or equivalent.

FIBER OPTIC

GLENAIR HIGH DENSITY

FIBER OPTIC CONNECTION SYSTEM



The Glenair High Density Fiber Optic Connection System is designed for applications that require reduced size and weight as well as outstanding optical and environmental performance. The System offers insertion loss values less than .5dB (typical loss for Glenair termini is .3 dB). Dense cavity spacing is achieved with an innovative Front Release terminus design and accommodation for M85045/16 cable.



GHD • Glenair High Density Fiber Optic Connection System General Information



Glenair High Density (GHD) Fiber Optic Connection System: Same Optical and Environmental Performance as D38999, at Nearly Double the Density

The Glenair High Density Fiber Optic Connection System is designed for applications that require reduced size and weight as well as outstanding optical and environmental performance. The System accommodates a broad range of singlemode and multimode fiber media, and offers insertion loss values less than .5dB (typical loss for Glenair termini is .3 dB). Dense cavity spacing is achieved with an innovative Size 18 genderless Front Release terminus design that provides nearly double the density of standard M28876 and D38999 fiber optic connector series. The GHD system is also available with APC Angle Polish to reduce unwanted backreflection.



| Product No. | Description | Page No. |
|-------------------------------|---|----------|
| Fiber Optic Termini | | |
| 181-056 | Non-keyed Front Release Terminus , Size 18 Genderless Pin | C-2 |
| 181-047 | Keyed Front Release Terminus for APC Polish, Size 18 Genderless Pin | C-3 |
| 181-058 | Dummy Terminus, Front Release, Size 18 | C-4 |
| Fiber Optic Connectors | | |
| 180-122 (05) | In-Line Receptacle Connector | C-6 |
| 180-122 (H7) | Square Flange Receptacle Connector with Round Holes (standard) | C-8 |
| 180-122 (S7) | Square Flange Receptacle Connector with Slotted Holes | C-10 |
| 180-122 (08) | Jam Nut Mount Receptacle Connector | C-12 |
| 180-122 (06) | Plug Connector with Alignment Sleeve Retainer (ASR) | C-14 |
| 180-122ASR | Alignment Sleeve Retainer (ASR) | C-15 |

Catalog Notes

Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only.

Unless otherwise specified, the following other dimensional tolerances apply:

.xx = ± .03 (0.8) • .xxx = ± .015 (0.4) • Angles = ± 5°



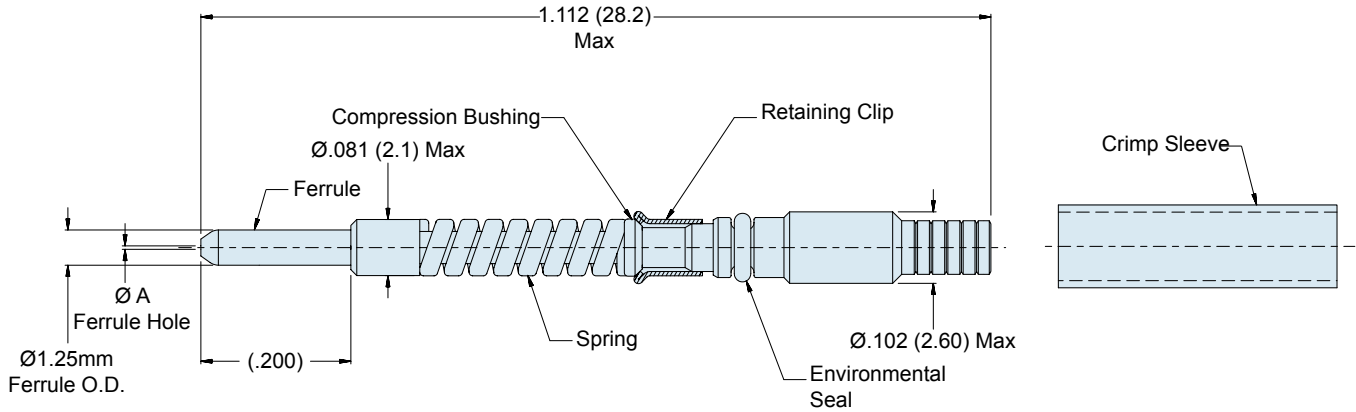
181-056 GHD • Glenair High Density Fiber Optic Genderless Terminus Size 18 Non-Keyed Terminus



GHD Size 18 non-keyed front release genderless terminus



The Glenair High Density Fiber Optic Connection System is designed for applications that require reduced size and weight as well as outstanding optical and environmental performance. The System offers insertion loss values less than .5dB (typical loss for Glenair termini is .3 dB). Dense cavity spacing is achieved with an innovative front release terminus design and accommodation for M85045/16 cable. The genderless Size 18 GHD terminus delivers nearly double the density of M28876 and D38999 with superior optical performance.



| Assembly Dash Number | Ø A Microns | Fiber Type |
|-------------------------------|-------------|------------|
| 181-056-1250C | 125.0 | SM |
| 181-056-1255C | 125.5 | SM |
| 181-056-1260C | 126.0 | SM & MM |
| 181-056-1270C | 127.0 | MM |
| 181-056-1420C | 142.0 | MM |
| 181-056-1450C | 145.0 | MM |
| 181-056-1560C | 156.0 | MM |
| 181-056-1570C | 157.0 | MM |
| 181-056-1730C | 173.0 | MM |
| 181-056-1750C | 175.0 | MM |
| 181-056-2360C | 236.0 | MM |
| 181-056-2860C | 286.0 | MM |
| 181-056-4480C | 448.0 | MM |

Consult factory for additional sizes
SM = Singlemode
MM = Multimode

| Part Number | Description |
|-------------------------|---------------------------------|
| 265-002 | Crimp Sleeve, Ø2.2mm Max Jacket |

Material and Finish

Ferrule: Zirconia Ceramic
 Terminus Assembly: Stainless Steel/Passivate
 Retaining Clip: Spring Alloy
 Spring: Stainless Steel/Passivate
 Seal: Fluorosilicone
 Crimp Sleeve: Brass Alloy/Nickel

Notes

Crimp Sleeve is supplied with Terminus Assembly, and may be ordered separately (see Table II).
 For terminus less crimp sleeve, omit **C** from end of part number (e.g. **181-056-1260**)
 See Glenair assembly procedure GAP-032 for termination and assembly tools/procedures.

181-047

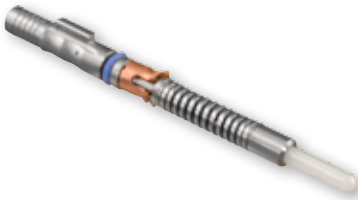
**GHD • Glenair High Density
Fiber Optic Genderless Terminus
Size 18 Keyed Terminus for APC Polish**



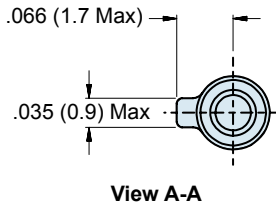
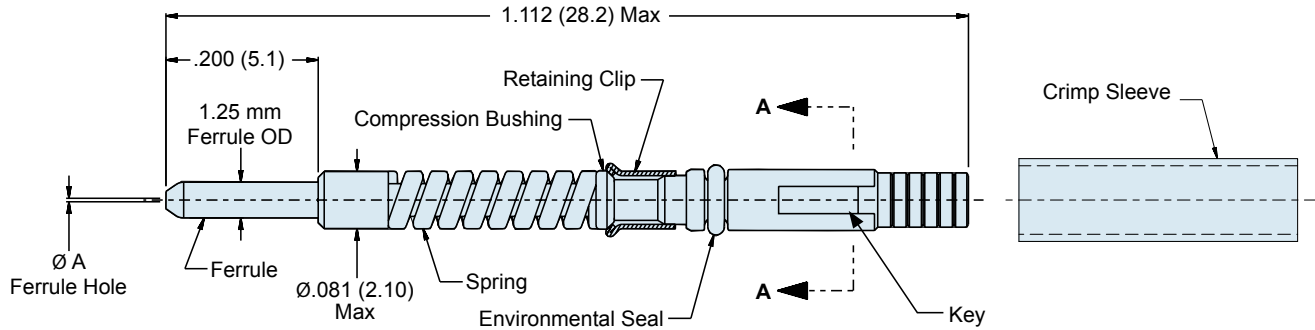
Glenair High Density
Fiber Optic System



GHD Size 18 keyed front release genderless terminus for APC polish



The Glenair High Density Fiber Optic Connection System is designed for applications that require reduced size and weight as well as outstanding optical and environmental performance. The System offers insertion loss values less than .5dB (typical loss for Glenair terminus is .3 dB). Dense cavity spacing is achieved with an innovative front release terminus design and accommodation for M85045/16 cable. The 181-047 version is equipped with a single keying feature for APC polish.



| Table I: Dash Number | | |
|----------------------|-------------|------------|
| Assembly Dash Number | Ø A Microns | Fiber Type |
| 181-047-1250C | 125.0 | SM |
| 181-047-1255C | 125.5 | SM |
| 181-047-1260C | 126.0 | SM & MM |
| 181-047-1270C | 127.0 | MM |
| 181-047-1420C | 142.0 | MM |
| 181-047-1450C | 145.0 | MM |
| 181-047-1560C | 156.0 | MM |
| 181-047-1570C | 157.0 | MM |
| 181-047-1730C | 173.0 | MM |
| 181-047-1750C | 175.0 | MM |
| 181-047-2360C | 236.0 | MM |
| 181-047-2860C | 286.0 | MM |
| 181-047-4480C | 448.0 | MM |

Consult factory for additional sizes
SM = Singlemode
MM = Multimode

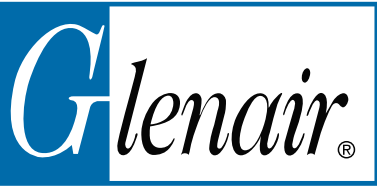
| Table II: Accessories | |
|-----------------------|---------------------------------|
| Part Number | Description |
| 265-002 | Crimp Sleeve, Ø2.2mm Max Jacket |

Material and Finish

- Ferrule: Zirconia Ceramic
- Terminus Assembly: Stainless Steel/ Passivate
- Retaining Clip: Spring Alloy
- Spring: Stainless Steel/ Passivate
- O-Ring: Fluorosilicone
- Crimp Sleeve: Brass Alloy/Nickel

Notes

Crimp Sleeve is supplied with Terminus Assembly, and may be ordered separately (see Table II). For terminus less crimp sleeve, omit **C** from end of part number (e.g. **181-047-1260**) See Glenair assembly procedure GAP-032 for termination and assembly tools/procedures..



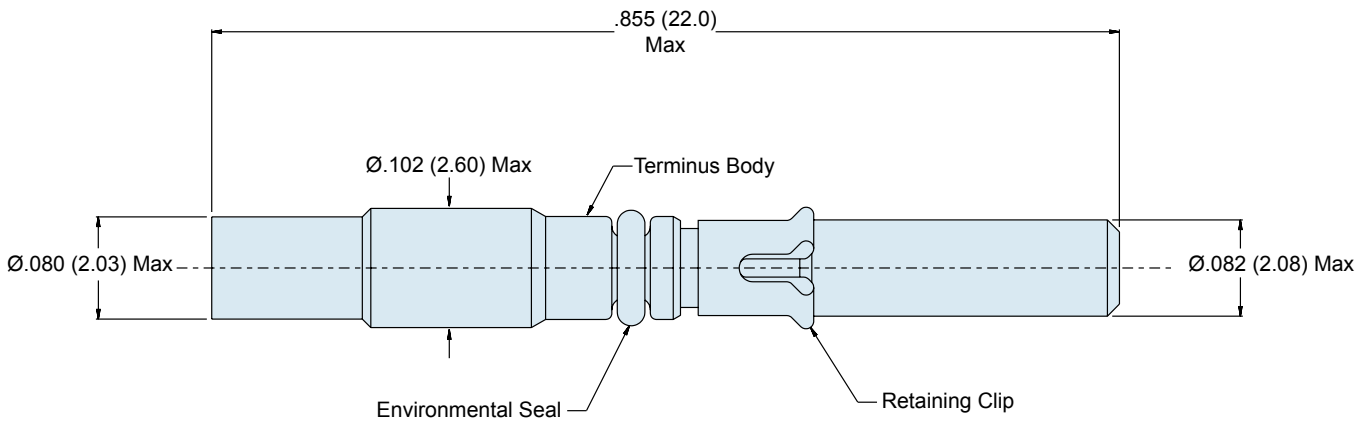
181-058
GHD • Glenair High Density
Size 18 Dummy Terminus



GHD Size 18 dummy terminus



| Part Number | Description |
|-------------|-------------------------|
| 181-058 | Dummy Terminus, size 18 |



Material and Finish

Terminus Body: Stainless Steel/Passivate

Retaining Clip: Spring Alloy

Environmental Seal: Fluorosilicone

See GAP-032 for assembly tools/procedures.

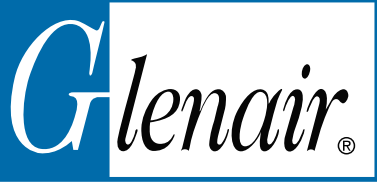
180-122
**GHD • Glenair High Density
 Fiber Optic Connection System**
 Materials and Finishes • Insert Arrangements



GHD materials and finishes, and insert arrangements

| Table I: Material and Finish | | |
|------------------------------|-----------------|---------------------------------------|
| Code | Material | Finish Description |
| M | Aluminum Alloy | Electroless Nickel |
| MT | | Nickel - PTFE, Grey |
| NF | | Cadmium, Olive Drab |
| ZNU | | Zinc-Nickel, Black Zinc-Nickel, Black |
| ZR | | Zinc-Nickel, Black (RoHS) |
| XM | Composite | Electroless Nickel |
| XMT | | Nickel - PTFE, Grey |
| XW | | Cadmium, Olive Drab |
| XZN | | Zinc-Nickel, Black |
| ZL | Stainless Steel | Electro-Deposited Nickel |
| ZI | | Passivate |

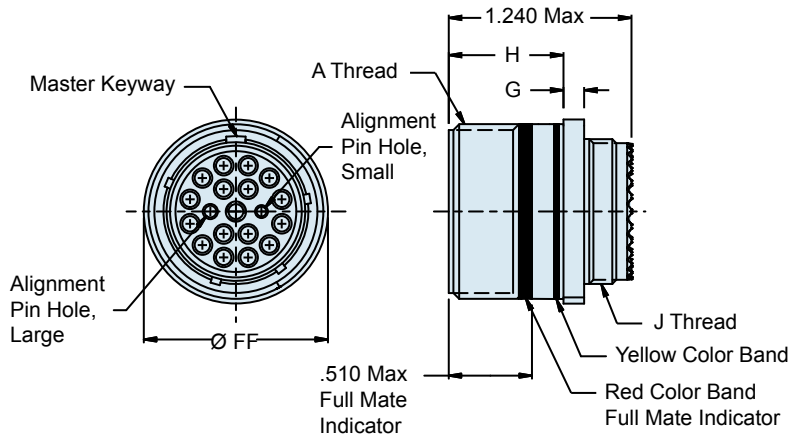
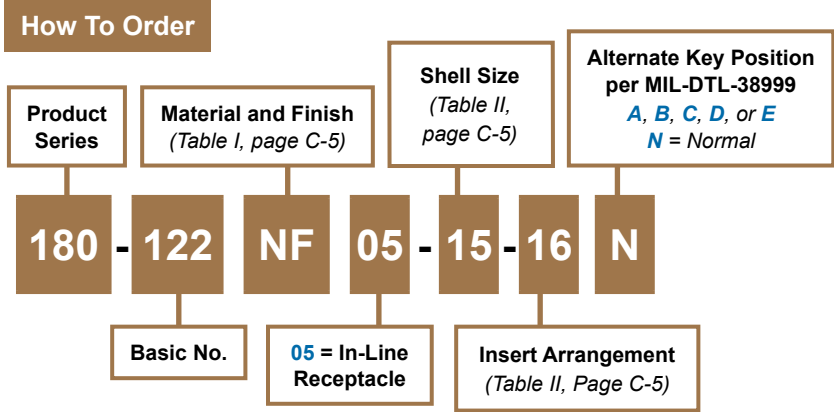
| Table II: Insert arrangements | | | |
|--|--|--|--|
| <p>Alignment Pin, Small Alignment Pin, Large</p> <p>Shell Size 11 Arrangement 4</p> | <p>Shell Size 13 Arrangement 6</p> | <p>Shell Size 15 Arrangement 16</p> | <p>Shell Size 17 Arrangement 22</p> |
| <p>Shell Size 19 Arrangement 30</p> | <p>Shell Size 21 Arrangement 40</p> | <p>Shell Size 23 Arrangement 52</p> | <p>Shell Size 25 Arrangement 70</p> |
| <p>Plug face marking with removable alignment sleeve retainer (ASR) shown. Receptacle face - opposite. ASR includes two guide pins and a threaded center jackscrew.</p> | | | |



180-122 (05)
GHD • Glenair High Density
Fiber Optic Connection System
D38999 Style In-Line Receptacle Connector



GHD In-line receptacle connector



05 - In-Line Receptacle

Material and Finish

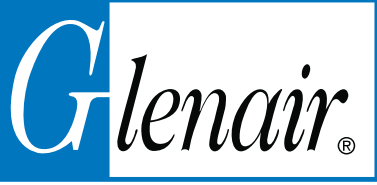
Shell: See Table I, Page C-5.
 Insert: High grade rigid dielectric, or Al Alloy/anodized - MFR's option

180-122 (05)
**GHD • Glenair High Density
 Fiber Optic Connection System**
D38999 Style In-Line Receptacle Connector



Table II: Shell Size

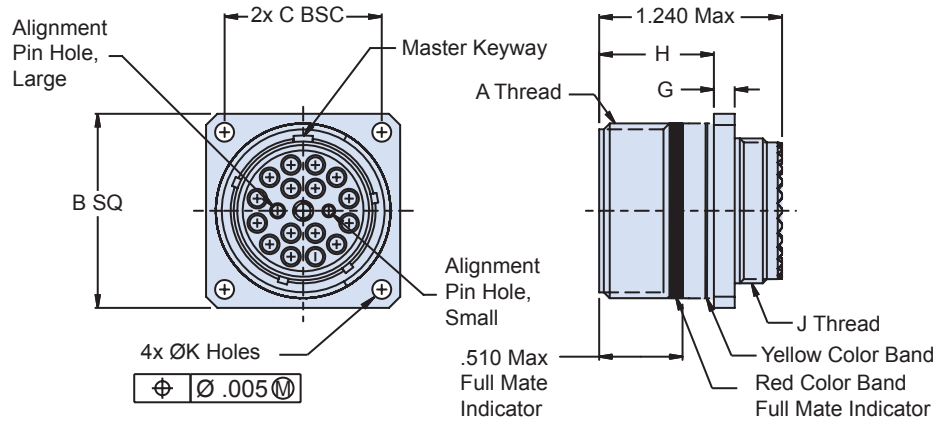
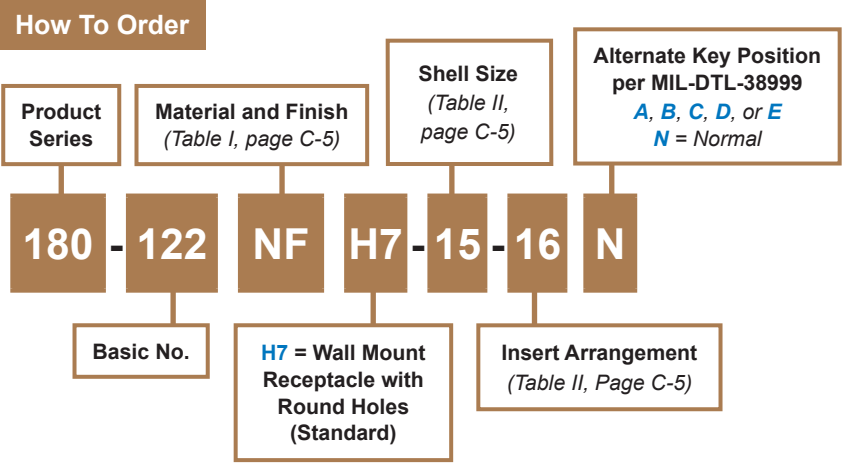
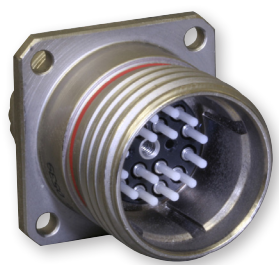
| Shell Size Code | Shell Size | A Thread | G | H | J Thread | Ø FF |
|-----------------|------------|----------------------|--------------------------|----------------------------|---------------------|--------------|
| B | 11 | .7500 -1P -3L-TS-2A | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M15 X 1.0-6g 0.100R | .840 (21.3) |
| C | 13 | .8750 -1P -3L-TS-2A | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M18 X 1.0-6g 0.100R | .963 (24.5) |
| D | 15 | 1.0000 -1P -3L-TS-2A | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M22 X 1.0-6g 0.100R | 1.090 (27.7) |
| E | 17 | 1.1875 -1P -3L-TS-2A | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M25 X 1.0-6g 0.100R | 1.275 (32.4) |
| F | 19 | 1.2500 -1P -3L-TS-2A | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M28 X 1.0-6g 0.100R | 1.337 (34.0) |
| G | 21 | 1.3750 -1P -3L-TS-2A | .171 (4.3) .083 (2.1) | .791 (20.1) .736 (18.7) | M31 X 1.0-6g 0.100R | 1.463 (37.2) |
| H | 23 | 1.5000 -1P -3L-TS-2A | .171 (4.3) .083 (2.1) | .791 (20.1) .736 (18.7) | M34 X 1.0-6g 0.100R | 1.587 (40.3) |
| J | 25 | 1.6250 -1P -3L-TS-2A | .171 (4.3) .083 (2.1) | .791 (20.1) .736 (18.7) | M37 X 1.0-6g 0.100R | 1.713 (43.5) |



180-122 (H7)
GHD • Glenair High Density
Fiber Optic Connection System
D38999 Style Square Flange Receptacle with Round Holes



GHD Square flange receptacle with standard (round) holes



H7 - Wall Mount Receptacle with Round Holes (Standard)

Material and Finish
 Shell: See Table I, Page C-5
 Insert: High grade rigid dielectric, or Al Alloy/Anodized - MFR's option

180-122 (H7)
GHD • Glenair High Density
Fiber Optic Connection System
D38999 Style Square Flange Receptacle with Round Holes



Table II: Shell Size

| Shell Size Code | Shell Size | A Thread | B SQ | C BSC | G | H | J Thread | Ø K Holes |
|-----------------|------------|----------------------|------------------------------|--------------|--------------------------|----------------------------|---------------------|--------------------------|
| B | 11 | .7500 -1P -3L-TS-2A | 1.043 (26.5) 1.019 (25.9) | .812 (20.6) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M15 X 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| C | 13 | .8750 -1P -3L-TS-2A | 1.138 (28.9) 1.114 (28.3) | .906 (23.0) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M18 X 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| D | 15 | 1.0000 -1P -3L-TS-2A | 1.232 (31.3) 1.208 (30.7) | .969 (24.6) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M22 X 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| E | 17 | 1.1875 -1P -3L-TS-2A | 1.323 (33.6) 1.299 (33.0) | 1.062 (27.0) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M25 X 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| F | 19 | 1.2500 -1P -3L-TS-2A | 1.449 (36.8) 1.425 (36.2) | 1.156 (29.4) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M28 X 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| G | 21 | 1.3750 -1P -3L-TS-2A | 1.575 (40.0) 1.551 (39.4) | 1.250 (31.8) | .171 (4.3) .083 (2.1) | .791 (20.1) .736 (18.7) | M31 X 1.0-6g 0.100R | .136 (3.5) .120 (3.0) |
| H | 23 | 1.5000 -1P -3L-TS-2A | 1.701 (43.2) 1.677 (42.6) | 1.375 (34.9) | .171 (4.3) .083 (2.1) | .791 (20.1) .736 (18.7) | M34 X 1.0-6g 0.100R | .162 (4.1) .146 (3.7) |
| J | 25 | 1.6250 -1P -3L-TS-2A | 1.823 (46.3) 1.799 (45.7) | 1.500 (38.1) | .171 (4.3) .083 (2.1) | .791 (20.1) .736 (18.7) | M37 X 1.0-6g 0.100R | .162 (4.1) .146 (3.7) |

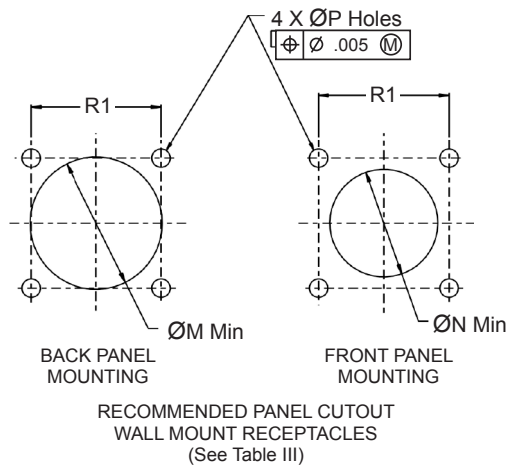


Table III: Mounting Holes For Wall Mount Receptacles

| Shell Size Code | Shell Size | Ø M Min | Ø N Min | Ø P Holes | R1 BSC |
|-----------------|------------|--------------|--------------|--------------------------|--------------|
| B | 11 | .796 (20.2) | .625 (15.9) | .133 (3.4) .123 (3.1) | .812 (20.6) |
| C | 13 | .922 (23.4) | .750 (19.1) | .133 (3.4) .123 (3.1) | .906 (23.0) |
| D | 15 | 1.047 (26.6) | .906 (23.0) | .133 (3.4) .123 (3.1) | .969 (24.6) |
| E | 17 | 1.219 (31.0) | 1.016 (25.8) | .133 (3.4) .123 (3.1) | 1.062 (27.0) |
| F | 19 | 1.297 (32.9) | 1.141 (29.0) | .133 (3.4) .123 (3.1) | 1.156 (29.4) |
| G | 21 | 1.422 (36.1) | 1.266 (32.2) | .133 (3.4) .123 (3.1) | 1.250 (31.8) |
| H | 23 | 1.547 (39.3) | 1.375 (34.9) | .159 (4.0) .149 (3.8) | 1.375 (34.9) |
| J | 25 | 1.672 (42.5) | 1.484 (37.7) | .155 (3.9) .145 (3.7) | 1.500 (38.1) |

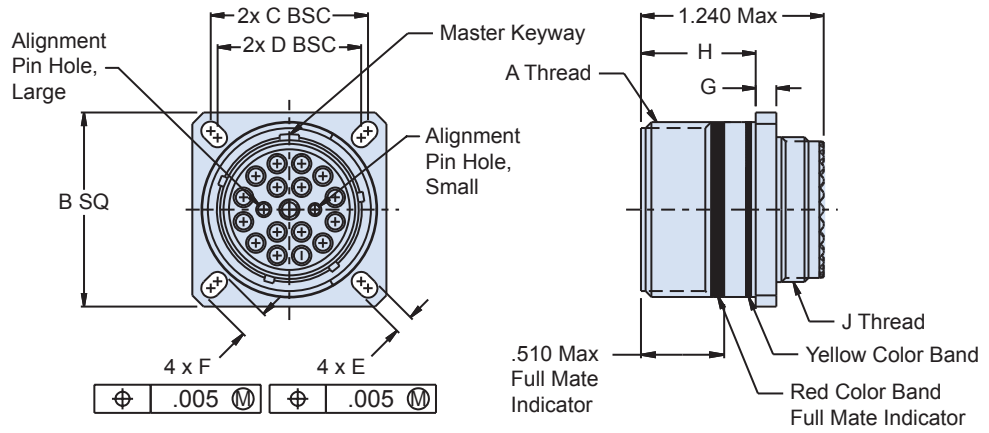
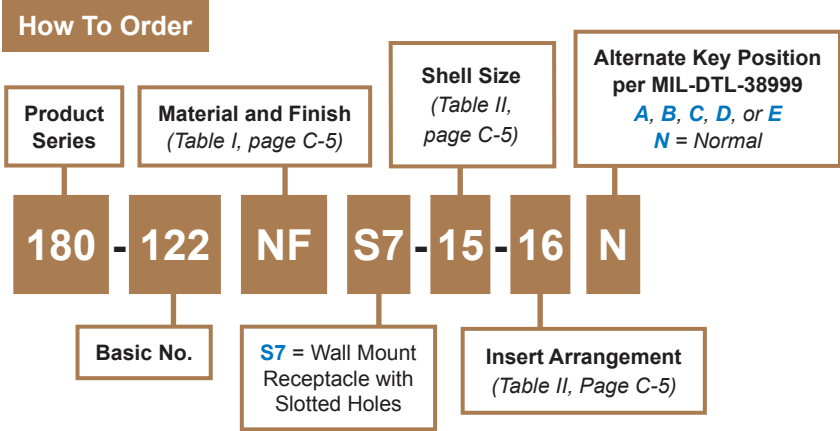


180-122 (S7)
GHD • Glenair High Density
Fiber Optic Connection System
D38999 Style Square Flange Receptacle with Slotted Holes



C

GHD Square flange receptacle with slotted holes



S7 - Wall Mount Receptacle with Slotted Holes

Material and Finish

Shell: See Table I, Page C-5
 Insert: High grade rigid dielectric, or AL Alloy/Anodize - MFR's option

Notes

S7 wall mount receptacle can be front panel mounted using cut out dimensions R1 or R2 on page C-11. Dimension R2 is for use with S7 wall mount receptacle only.

180-122 (S7)
GHD • Glenair High Density
Fiber Optic Connection System
D38999 Style Square Flange Receptacle with Slotted Holes



Table II: Shell Size

| Shell Size Code | Shell Size | A Thread | B SQ | C BSC | D BSC | E | F | G | H | J Thread |
|-----------------|------------|------------------------|------------------------------|--------------|--------------|--------------------------|--------------------------|--------------------------|----------------------------|---------------------|
| B | 11 | .7500 -1P - .3L-TS-2A | 1.043 (26.5) 1.019 (25.9) | .812 (20.6) | .719 (18.3) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M15 X 1.0-6g 0.100R |
| C | 13 | .8750 -1P - .3L-TS-2A | 1.138 (28.9) 1.114 (28.3) | .906 (23.0) | .812 (20.6) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M18 X 1.0-6g 0.100R |
| D | 15 | 1.0000 -1P - .3L-TS-2A | 1.232 (31.3) 1.208 (30.7) | .969 (24.6) | .906 (23.0) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M22 X 1.0-6g 0.100R |
| E | 17 | 1.1875 -1P - .3L-TS-2A | 1.323 (33.6) 1.299 (33.0) | 1.062 (27.0) | .969 (24.6) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M25 X 1.0-6g 0.100R |
| F | 19 | 1.2500 -1P - .3L-TS-2A | 1.449 (36.8) 1.425 (36.2) | 1.156 (29.4) | 1.062 (27.0) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .144 (3.7) .083 (2.1) | .823 (20.9) .768 (19.5) | M28 X 1.0-6g 0.100R |
| G | 21 | 1.3750 -1P - .3L-TS-2A | 1.575 (40.0) 1.551 (39.4) | 1.250 (31.8) | 1.156 (29.4) | .136 (3.5) .120 (3.0) | .202 (5.1) .186 (4.7) | .171 (4.3) .083 (2.1) | .791 (20.1) .736 (18.7) | M31 X 1.0-6g 0.100R |
| H | 23 | 1.5000 -1P - .3L-TS-2A | 1.701 (43.2) 1.677 (42.6) | 1.375 (34.9) | 1.250 (31.8) | .162 (4.1) .146 (3.7) | .250 (6.4) .234 (5.9) | .171 (4.3) .083 (2.1) | .791 (20.1) .736 (18.7) | M34 X 1.0-6g 0.100R |
| J | 25 | 1.6250 -1P - .3L-TS-2A | 1.823 (46.3) 1.799 (45.7) | 1.500 (38.1) | 1.375 (34.9) | .162 (4.1) .146 (3.7) | .250 (6.4) .234 (5.9) | .171 (4.3) .083 (2.1) | .791 (20.1) .736 (18.7) | M37 X 1.0-6g 0.100R |

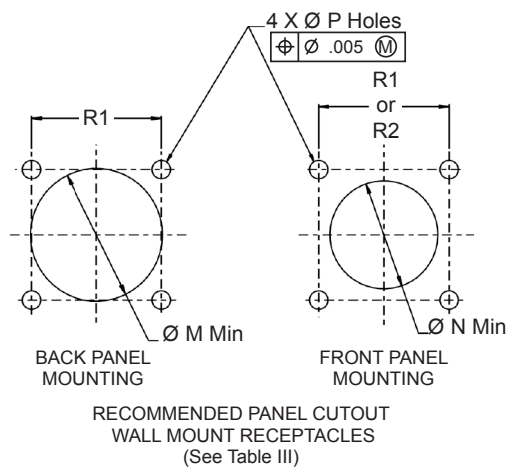
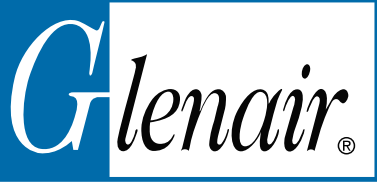


Table III: Mounting Holes For Wall Mount Receptacles

| Shell Size Code | Shell Size | Ø M Min | Ø N Min | Ø P Holes | R1 BSC | R2 BSC |
|-----------------|------------|--------------|--------------|--------------------------|--------------|--------------|
| B | 11 | .796 (20.2) | .625 (15.9) | .133 (3.4) .123 (3.1) | .812 (20.6) | .719 (18.3) |
| C | 13 | .922 (23.4) | .750 (19.1) | .133 (3.4) .123 (3.1) | .906 (23.0) | .812 (20.6) |
| D | 15 | 1.047 (26.6) | .906 (23.0) | .133 (3.4) .123 (3.1) | .969 (24.6) | .906 (23.0) |
| E | 17 | 1.219 (31.0) | 1.016 (25.8) | .133 (3.4) .123 (3.1) | 1.062 (27.0) | .969 (24.6) |
| F | 19 | 1.297 (32.9) | 1.141 (29.0) | .133 (3.4) .123 (3.1) | 1.156 (29.4) | 1.062 (27.0) |
| G | 21 | 1.422 (36.1) | 1.266 (32.2) | .133 (3.4) .123 (3.1) | 1.250 (31.8) | 1.156 (29.4) |
| H | 23 | 1.547 (39.3) | 1.375 (34.9) | .159 (4.0) .149 (3.8) | 1.375 (34.9) | 1.250 (31.8) |
| J | 25 | 1.672 (42.5) | 1.484 (37.7) | .155 (3.9) .145 (3.7) | 1.500 (38.1) | 1.375 (34.9) |



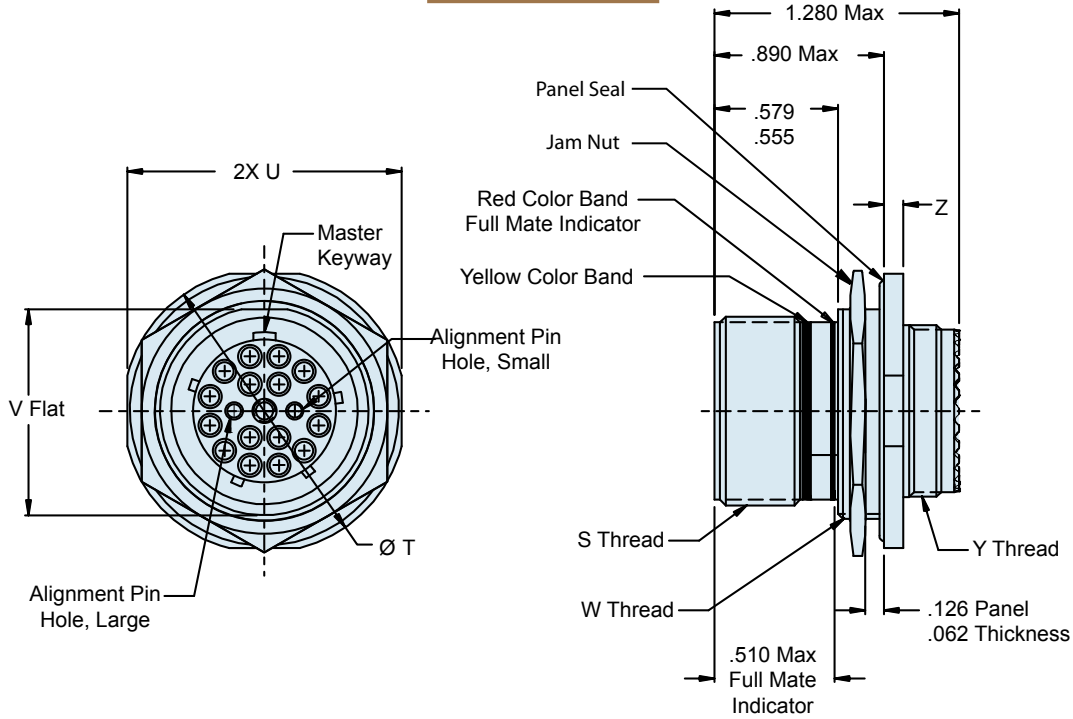
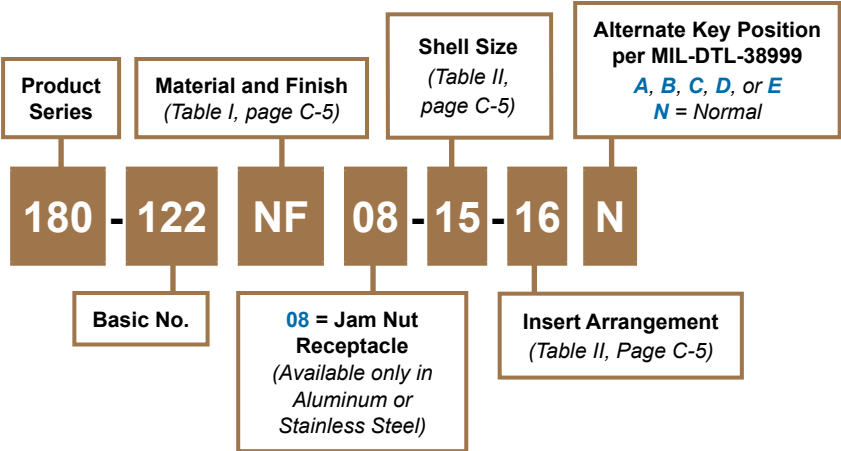
180-122 (08)
GHD • Glenair High Density
Fiber Optic Connection System
D38999 Style Jam Nut Mount Receptacle Connector



GHD Jam nut mount receptacle connector

C

How To Order



08 - JAM NUT MOUNT RECEPTACLE

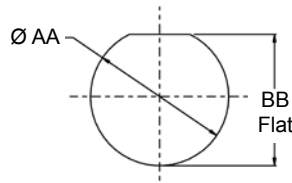
180-122 (08)
GHD • Glenair High Density
Fiber Optic Connection System
D38999 Style Jam Nut Mount Receptacle Connector



Table II: Shell Size

| Shell Size Code | Shell Size | S Thread | ØT | U | V | W Thread | Y Thread | Z | Ø AA Min | BB Flat |
|-----------------|------------|----------------------|------------------------------|------------------------------|------------------------------|-------------------------|------------------------|--------------------------|------------------------------|------------------------------|
| B | 11 | .7500-.1P-.3L-TS-2A | 1.386 (35.2) 1.362 (34.6) | 1.268 (32.2) 1.236 (31.4) | .755 (19.2) .745 (18.9) | M20 x 1.0-6g 0.100R | M15 x 1.0-6g 0.100R | .121 (3.1) .083 (2.1) | .835 (21.2) .825 (20.9) | .771 (19.6) .761 (19.3) |
| C | 13 | .8750-.1P-.3L-TS-2A | 1.512 (38.4) 1.488 (37.8) | 1.390 (35.3) 1.358 (34.5) | .942 (23.9) .932 (23.7) | M25 x 1.0-6g 0.100R | M18 x 1.0-6g 0.100R | .121 (3.1) .083 (2.1) | 1.020 (25.9) 1.010 (25.7) | .955 (24.3) .945 (24.0) |
| D | 15 | 1.0000-.1P-.3L-TS-2A | 1.638 (41.6) 1.614 (41.0) | 1.516 (38.5) 1.484 (37.7) | 1.066 (27.1) 1.056 (26.8) | M28 x 1.0-6g 0.100R | M22 x 1.0-6g 0.100R | .121 (3.1) .083 (2.1) | 1.145 (29.1) 1.135 (28.8) | 1.085 (27.6) 1.075 (27.3) |
| E | 17 | 1.1875-.1P-.3L-TS-2A | 1.764 (44.8) 1.740 (44.2) | 1.642 (41.7) 1.610 (40.9) | 1.191 (30.3) 1.181 (30.0) | M32 x 1.0-6g 0.100R* | M25 x 1.0-6g 0.100R | .121 (3.1) .083 (2.1) | 1.270 (32.3) 1.260 (32.0) | 1.210 (30.7) 1.200 (30.5) |
| F | 19 | 1.2500-.1P-.3L-TS-2A | 1.949 (49.5) 1.925 (48.9) | 1.827 (46.4) 1.795 (45.6) | 1.316 (33.4) 1.306 (33.2) | M35 x 1.0-6g 0.100R | M28 x 1.0-6g 0.100R | .154 (3.9) .114 (2.9) | 1.395 (35.4) 1.385 (35.2) | 1.335 (33.9) 1.325 (33.7) |
| G | 21 | 1.3750-.1P-.3L-TS-2A | 2.075 (52.7) 2.051 (52.1) | 1.953 (49.6) 1.921 (48.8) | 1.441 (36.6) 1.431 (36.3) | M38 x 1.0-6g 0.100R | M31 x 1.0-6g 0.100R | .154 (3.9) .114 (2.9) | 1.520 (38.6) 1.510 (38.4) | 1.460 (37.1) 1.450 (36.8) |
| H | 23 | 1.5000-.1P-.3L-TS-2A | 2.201 (55.9) 2.177 (55.3) | 2.079 (52.8) 2.047 (52.0) | 1.566 (39.8) 1.556 (39.5) | M41 x 1.0-6g 0.100R | M34 x 1.0-6g 0.100R | .154 (3.9) .114 (2.9) | 1.645 (41.8) 1.635 (41.5) | 1.585 (40.3) 1.575 (40.0) |
| J | 25 | 1.6250-.1P-.3L-TS-2A | 2.323 (59.0) 2.299 (58.4) | 2.205 (56.0) 2.173 (55.2) | 1.691 (43.0) 1.681 (42.7) | M44 x 1.0-6g 0.100R | M37 x 1.0-6g 0.100R | .154 (3.9) .114 (2.9) | 1.770 (45.0) 1.760 (44.7) | 1.710 (43.4) 1.700 (43.2) |

* Modified major diameter 31.80 - 31.95 (1.252 - 1.257).



RECOMMENDED PANEL CUT-OUT
 JAM NUT MOUNT RECEPTACLE
 (See Table II)

Material and Finish

Shell, Jam nut: See Table I, Page C-5.
 Insert: High grade rigid dielectric, or Al Alloy/Anodize - MFR's option
 Jam Nut (for composite): Al Alloy and plated same as connector shell.
 Panel Seal: Fluorosilicone

Notes

Jam Nut for composite Jam Nut Mount Receptacle is Aluminum and plated same as connector shell.



180-122 (06)
GHD • Glenair High Density
Fiber Optic Connection System
D38999 Style Plug Connector with Alignment Sleeve Retainer (ASR)



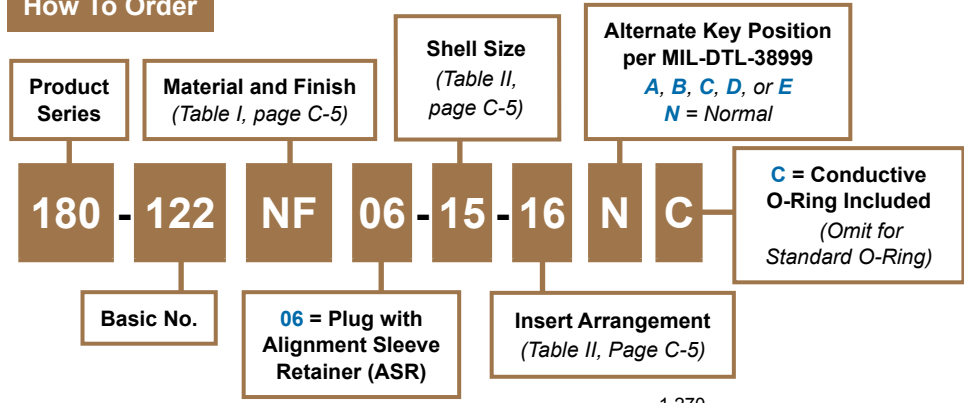
GHD Plug connector with removable alignment sleeve retainer (ASR)

C

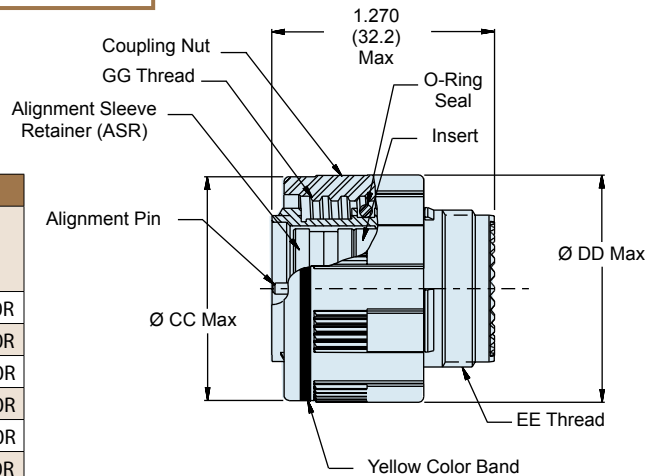


D38999 Style Plug Connector

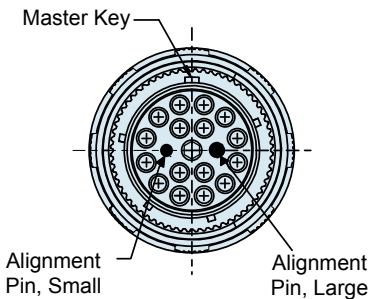
How To Order



| Shell Size Code | Shell Size | GG Thread | Ø CC Max | Ø DD Max | EE Thread |
|-----------------|------------|----------------------|--------------|--------------|---------------------|
| B | 11 | .7500-.1P-.3L-TS-2B | .929 (23.6) | .984 (25.0) | M15 X 1.0-6g 0.100R |
| C | 13 | .8750-.1P-.3L-TS-2B | 1.110 (28.2) | 1.157 (29.4) | M18 X 1.0-6g 0.100R |
| D | 15 | 1.0000-.1P-.3L-TS-2B | 1.232 (31.3) | 1.280 (32.5) | M22 X 1.0-6g 0.100R |
| E | 17 | 1.1875-.1P-.3L-TS-2B | 1.358 (34.5) | 1.406 (35.7) | M25 X 1.0-6g 0.100R |
| F | 19 | 1.2500-.1P-.3L-TS-2B | 1.469 (37.3) | 1.516 (38.5) | M28 X 1.0-6g 0.100R |
| G | 21 | 1.3750-.1P-.3L-TS-2B | 1.594 (40.5) | 1.642 (41.7) | M31 X 1.0-6g 0.100R |
| H | 23 | 1.5000-.1P-.3L-TS-2B | 1.720 (43.8) | 1.768 (44.9) | M34 X 1.0-6g 0.100R |
| J | 25 | 1.6250-.1P-.3L-TS-2B | 1.843 (46.8) | 1.890 (48.0) | M37 X 1.0-6g 0.100R |



06 - PLUG WITH ASR



Material and Finish

Barrel, Coupling Nut: See Table I, page C-5.
 Coupling Nut (for composite): High grade engineering thermoplastic/unplated.
 Insert: High grade rigid dielectric, or Al Alloy/Anodize - MFR's option.
 Alignment Sleeve Retainer: Al Alloy/anodize.
 Seal: Fluorosilicone.

Notes

Consult factory for optional RFI spring.
 Alignment Sleeve Retainer is supplied with plug connector, and maybe ordered separately.
 See Glenair drawing 180-122ASR.



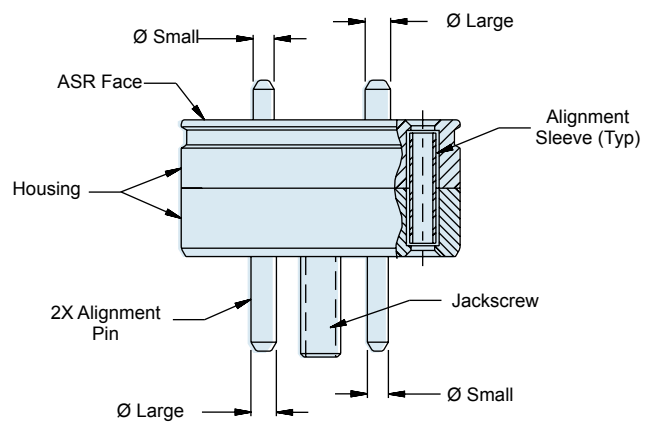
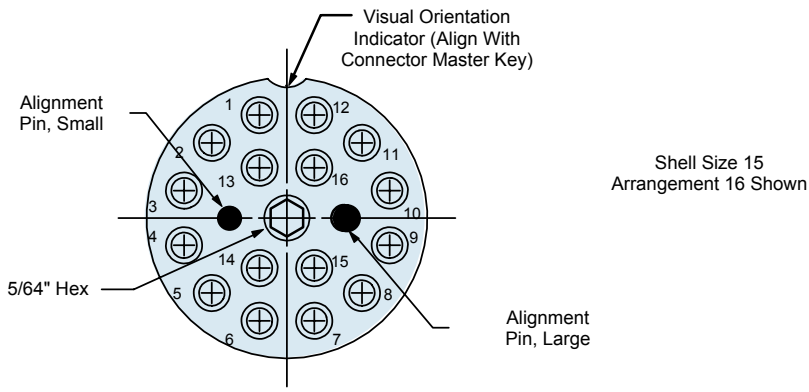
GHD alignment sleeve retainer (ASR)



Alignment Sleeve Retainer (ASR)

How To Order

| | | |
|-----------------------|--|--|
| Product Series | Material and Finish <i>(Table I, page C-5)</i> | Shell Size <i>(Table II, page C-5)</i> |
| 180 | 122 | ASR - 15 - 16 |
| Basic No. | Alignment Sleeve Retainer | Insert Arrangement <i>(Table II, Page C-5)</i> |



Material and Finish

Housing: Al Alloy/Anodize
 Alignment Pin and Jackscrew: Stainless Steel/Passivate
 Alignment Sleeve: Zirconia Ceramic

FIBER OPTIC

MIGHTY MOUSE

FIBER OPTIC CONNECTION SYSTEM



The Series 80 Connector was originally developed as a smaller and lighter alternative to D38999 connectors for aerospace applications such as Attack Helicopters and Unmanned Aerial Vehicles. Today, the Series 80 Mighty Mouse serves in thousands of safety-critical defense, medical, industrial and geo-physical applications. Now, Glenair offers Mighty Mouse Fiber Optic termini in size #16, #20HD, and #23 for use in any threaded-coupling Mighty Mouse connector.

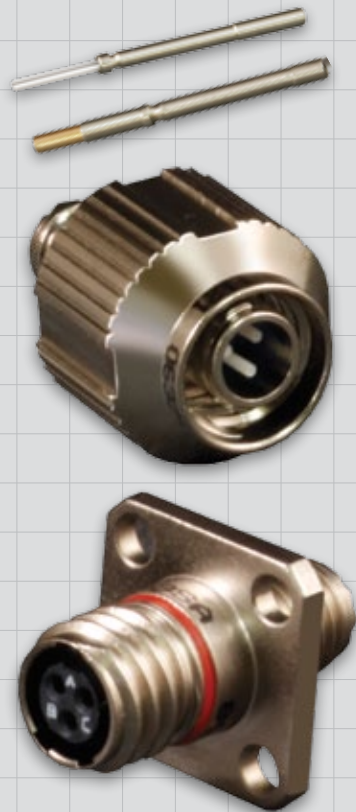


Series 80 Mighty Mouse Fiber Optic General Information



Series 80 Mighty Mouse fiber optic connectors and termini

The perfect marriage of high-bandwidth fiber optics and ultra-miniature packaging has arrived. The Series 80 Mighty Mouse—the new mil-aero industry standard reduced size and weight connector—is now available with three different sizes of fiber optic termini, #16, #20HD and #23. Available single- and multi-mode versions are designed for use with 125.5 and 126.0 micron fiber. A shell size 6, four channel Mighty Mouse 801 series plug tooled for use with size #23 optical termini weighs in at just 5 grams.



| Product No. | Description | Page No. |
|-------------------------------|---|----------|
| Fiber Optic Termini | | |
| 181-063 • 181-064 | Series 80 Mighty Mouse Size #23 Fiber Optic Termini | D-2 |
| 181-084 • 181-085 | Series 80 Mighty Mouse Size #20HD Fiber Optic Termini | D-4 |
| 181-057 • 181-075 | Series 80 Mighty Mouse Size #16 Fiber Optic Termini | D-6 |
| Fiber Optic Connectors | | |
| 801-007 • 801-008 | Series 801 Mighty Mouse Plug Connectors | D-8 |
| 801-009 • 801-010 | Series 801 Mighty Mouse Receptacle Connectors | D-10 |
| 809-190 • 809-191 | Series 801 Mighty Mouse Protective Covers | D-14 |
| 802-008 • 802-009 | Series 802 Mighty Mouse Plug Connectors | D-16 |
| 802-010 • 802-011 | Series 802 Mighty Mouse Receptacle Connectors | D-18 |
| 660-087 • 660-088 | Series 802 Mighty Mouse Protective Covers | D-22 |
| 805-001 • 805-002 | Series 805 Mighty Mouse Plug Connectors | D-24 |
| 805-003 • 805-004 | Series 805 Mighty Mouse Receptacle Connectors | D-26 |
| 667-261 • 667-262 | Series 805 Mighty Mouse Protective Covers | D-30 |
| Mighty Mouse Backshell | | |
| 189M*052 | Convuluted Tubing Backshell for Mighty Mouse Fiber Optic Connectors | D-33 |

Catalog Notes

For all parts in this catalog:

All parts will be identified with manufacturer's name and part number, space permitting.

Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only.

Unless otherwise specified, the following other dimensional tolerances apply:

.xx = ± .03 (0.8) • .xxx = ± .015 (0.4) • Angles = ± 5°



Series 80 Mighty Mouse Size #23 Fiber Optic Termini



Series 801 Plug with
181-063 pin termini



Series 801 Receptacle with
181-064 socket termini

- Single and Multi Mode
- Snap-in, Rear Release
- 0.5 dB Typical Attenuation
- 3 to 130 Channels

D

Reduce size and weight with Series 80 Mighty Mouse fiber optic connectors

New size #23 fiber optic termini can be used in any standard Mighty Mouse connector but perform best in our Series 801, 804 and 805 systems. Available for single mode or multi mode fiber, these termini have low insertion loss and are intended for high-reliability aerospace applications. Series 80 connectors offer substantial reductions in size and weight compared to our D38999 type fiber optic connectors. Complete how to order instructions are included on the following pages. When ordering termini (sold separately), please refer to the insert arrangement tables for count and size.

| Series 80 Insert Arrangements for use with #23 Fiber Optic Termini | | | | | | | |
|--|------------|------------|------------|--------------|--------------|--------------|---------------|
| | | | | | | | |
| 5-3 | 6-4 | 6-6 | 6-7 | 13-37 | 16-55 | 17-85 | 21-130 |
| See Series 80 Mighty Mouse catalog for connector ordering information. Order connectors less contacts and order fiber optic termini separately. Cavity numbers are mating face view of pin connectors. | | | | | | | |

The Series 801 plug is less than half the size of our D38999 Series III type connector.

Series 801
Shell size 6, 4 channel
5 Grams
(less contacts)



D38999 Series III
Shell size 13, 4 channel
21 Grams
(less contacts)

Series 80 Mighty Mouse Contacts and Tools

Size #23 Fiber Optic Termini 181-063 and 181-064



Size #23 fiber optic termini



181-063 Pin Terminus

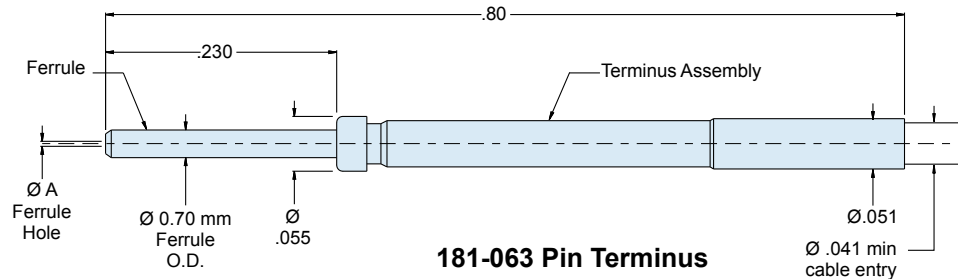


181-064 Socket Terminus

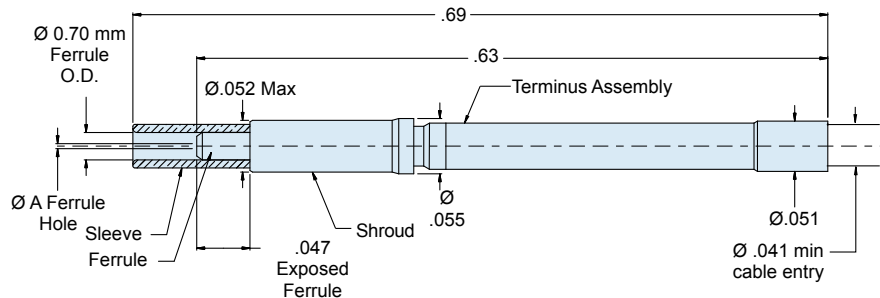
Size #23 fiber optic termini are compatible with all Series 80 Mighty Mouse threaded connectors with size #23 cavities. Typical insertion loss 0.5 dB. Fits 50/125 and 62.5/125 multi mode and 9/125 single mode fiber.

| Termini Type | Optical Fiber Type | Part Number | ØA Ferrule Hole* | Fiber Size Core/Cladding |
|--------------|--------------------|------------------------------|------------------|--------------------------|
| Pin | Single Mode | 181-063-1255 | 125.5 microns | 9/125 |
| | Multi Mode | 181-063-126 | 126.0 microns | 50/125, 62.5/125 |
| Socket | Single Mode | 181-064-1255 | 125.5 microns | 9/125 |
| | Multi Mode | 181-064-126 | 126.0 microns | 50/125, 62.5/125 |

*Consult factory for additional sizes



181-063 Pin Terminus



181-064 Socket Terminus

Materials and Finishes

- 181-063:**
 Ferrule: zirconia ceramic
 Terminus assembly: copper-nickel-zinc
- 181-064:**
 Ferrule, terminus assembly: copper-nickel-zinc
 Spring (not shown): stainless steel/passivate
 Sleeve: phosphor bronze

Insertion/extraction Tool

Standard size #23 plastic tool
 Glenair Part Number 809-088

Application Notes

- Alignment sleeve is supplied with terminus assembly and may be ordered separately (see Table II).
- For grommet sealing plug, see Glenair part number 809-155

Consult factory for termination and assembly procedures/tools.

| Table II: Accessories | |
|-----------------------|------------------|
| 181-064-K | Alignment Sleeve |

| Table I: Performance Specifications | |
|-------------------------------------|--|
| Optical Insertion Loss | 0.5 dB typical |
| Operating Temperature | -65°C to +150°C/Connector -65°C to +200°C/Termini* |
| Temperature (Thermal) Shock | TIA/EIA-455-71, Schedule C, 10 cycles -55°C to +85°C (Per MIL-DTL-83526C) |
| Mechanical Shock | TIA/EIA-455-11, Test Condition III at 9 Gs, 0.06 PSD and Test Condition VI, Test Letter C for 1.5 hours per axis (three axes) (Per MIL-DTL-83526C) |
| Mating Durability | TIA/EIA-455-21, 500 cycles (Per MIL-PRF-29504B) |

*Depending on cable and epoxy used.



Series 80 Mighty Mouse Size #20HD Fiber Optic Termini



Series 801 Receptacle with 181-084 pin termini



Series 801 Plug with 181-085 socket termini

- Single Mode and Multi Mode
- Snap-in, Rear Release
- Precision Ceramic Ferrules
- 0.5 dB Typical Attenuation
- 3 to 69 Channels

D

Reduce size and weight with Series 80 Mighty Mouse fiber optic connectors

New size #20HD fiber optic termini can be used in any standard Mighty Mouse connector but perform best in our Series 801, 804 and 805 systems. Available for single mode or multi mode fiber, these termini have low insertion loss and are intended for high-reliability aerospace applications. Series 80 connectors offer substantial reductions in size and weight compared to our D38999 type fiber optic connectors. Complete how to order instructions are included on the following pages. When ordering termini (sold separately), please refer to the insert arrangement tables for count and size.

| Series 80 Insert Arrangements for use with size #20HD Fiber Optic Termini | | | | | | | |
|---|----------------------|----------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | | | | | | |
| 6-23 3 ch. | 7-25 5 ch. | 8-28 8 ch. | 9-210 10 ch. | 13-220 20 ch. | 16-235 35 ch. | 17-241 41 ch. | 21-269 69 ch. |

See Series 80 Mighty Mouse catalog for connector ordering information. Order connectors less contacts and order fiber optic termini separately. Cavity numbers are mating face view of pin connectors.

The Series 801 plug (aluminum) is less than half the size of our D38999 Series III type connector.

Series 801
Shell size 8,
8 Channel
8 Grams
(less contacts)



D38999 Series III
Shell size 17,
8 Channel
40 Grams
(less contacts)

Series 80 Mighty Mouse Contacts and Tools

Size #20HD Fiber Optic Termini 181-084 and 181-085



Size #20HD fiber optic termini



181-084 Pin Terminus

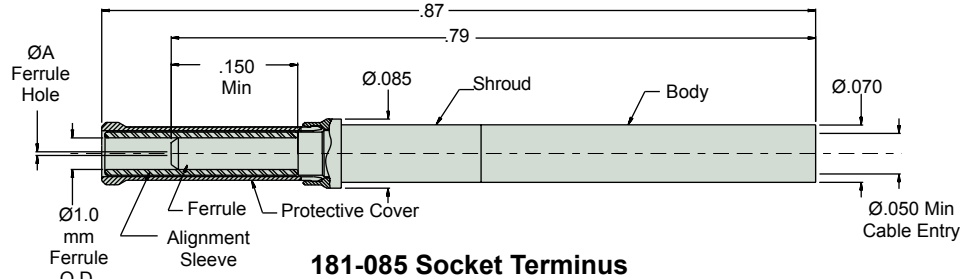
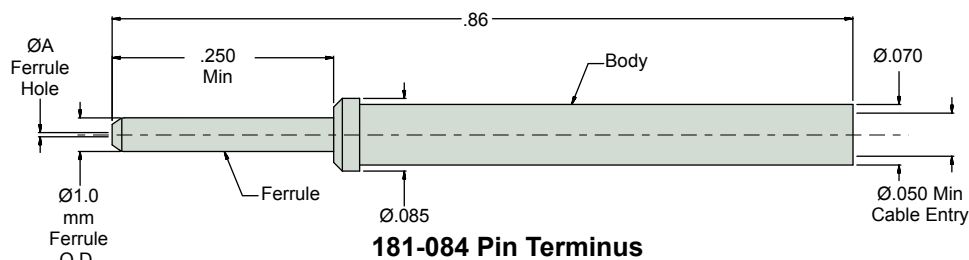


181-085 Socket Terminus

Size #20HD fiber optic termini are compatible with all Series 80 Mighty Mouse threaded coupling connectors with size #20HD cavities. These snap-in, rear-release termini feature precision ceramic ferrules and sleeves for accurate fiber alignment. Typical insertion loss 0.5 dB. Fits 50/125 and 62.5/125 multi mode and 9/125 single mode fiber.

| Termini Type | Optical Fiber Type | Part Number | ØA Ferrule Hole* | Fiber Size Core/Cladding |
|--------------|--------------------|------------------------------|------------------|--------------------------|
| Pin | Single Mode | 181-084-1255 | 125.5 microns | 9/125 |
| | Multi Mode | 181-084-126 | 126.0 microns | 50/125, 62.5/125 |
| Socket | Single Mode | 181-085-1255 | 125.5 microns | 9/125 |
| | Multi Mode | 181-085-126 | 126.0 microns | 50/125, 62.5/125 |

*Consult factory for additional sizes



Materials and Finishes

181-084 :

Ferrule: zirconia ceramic
Body: copper-nickel-zinc alloy

181-085:

Ferrule, alignment sleeve: zirconia ceramic
Body, shroud: copper-nickel-zinc alloy
Spring (not shown): stainless steel/passivate
Protective cover: spring alloy/nickel

Insertion/extraction Tool

Standard size #20HD plastic tool
Glenair Part Number [859-017](#)
Military Part Number M81969/39-01

Application Notes

- Alignment sleeve and protective cover are supplied with socket terminus assembly, and may be ordered separately (see accessories table).
- For grommet sealing plug, see Glenair part number 859-012

Consult factory for termination and assembly procedures/tools.

Table II: Accessories

| | |
|-----------|--------------------------|
| 181-085-S | Ceramic Alignment Sleeve |
| 181-085-C | Protective Cover |

Table I: Performance Specifications

| | |
|------------------------------------|--|
| Optical Insertion Loss | 0.5 dB typical |
| Operating Temperature | -65°C to +150°C/Connector -65°C to +200°C/Termini* |
| Temperature (Thermal) Shock | -55°C to +85°C, 10 cycles, per TIA/EIA-455-71, Test Schedule C. 0.5 dB max IL before test. 0.5 dB max CIT during and after test. |
| Temperature Cycling | -55°C to +85°C, 5 cycles, per TIA/EIA-455-3, Test Condition A. 0.5 dB max IL before test. 0.5 dB max CIT during and after test. |
| Mating Durability | 500 cycles, per TIA/EIA-455-21. 0.5 dB max IL before test. 0.5 dB max CIT during and after test. |
| Vibration - Random | 49.5 G RMS, 24-2000 Hz, 8 hours per Axis (longitudinal and perpendicular) at Ambient Temperature, per EIA-364-28, Test Condition V. 0.5 dB max IL before test. 0.5 dB max CIT after test. Discontinuity of 0.5 dB max for 50 microseconds. |
| Mechanical Shock (Half-sine Pulse) | 300 G Peak, 6 Shocks per Axis, per TIA-455-14, Test Condition D. 0.5 dB max IL before test. 0.5 dB max CIT after test. Discontinuity of 0.5 dB max for 50 microseconds. |

*Depending on cable and epoxy used.

Series 80 Mighty Mouse Size #16 Fiber Optic Termini



Series 801 Plug with 181-057 pin terminus



Series 801 receptacle with 181-075 socket terminus




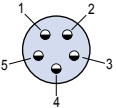
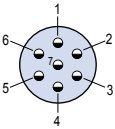
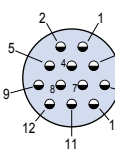
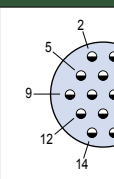
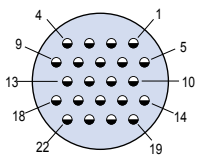
- Single Mode and Multi Mode
- Snap-in, Rear Release
- Precision Ceramic Ferrules
- 0.5 dB Typical Attenuation
- 1 to 22 Channels

D

Reduce size and weight with Series 80 Mighty Mouse fiber optic connectors

New size #16 fiber optic termini can be used in any standard Mighty Mouse connector but perform best in our Series 801, 804 and 805 systems. Available for single mode or multi mode fiber, these termini have low insertion loss and are intended for high-reliability aerospace applications. Series 80 connectors offer substantial reductions in size and weight compared to our D38999 type fiber optic connectors. Complete how to order instructions are included on the following pages. When ordering termini (sold separately), please refer to the insert arrangement tables for count and size.

Series 80 Insert Arrangements for use with #16 Fiber Optic termini

| | | | | | | | |
|---|---|---|---|---|---|--|---|
|  |  |  |  |  |  |  |  |
| 6-1 1 ch. | 8-2 2 ch. | 9-4 4 ch. | 10-5 5 ch. | 13-7 7 ch. | 16-12 12 ch. | 17-14 14 ch. | 21-22 22 ch. |

See Series 80 Mighty Mouse catalog for connector ordering information. Order connectors less contacts and order fiber optic termini separately. Cavity numbers are mating face view of pin connectors.

The Series 801 9-4 receptacle is less than half the size of our D38999 type connector.



Series 801
6 Grams
(less contacts)

D38999 Series III
27 Grams
(less contacts)

**Series 80 Mighty Mouse
Contacts and Tools
Size #16 Fiber Optic Termini 181-057 and 181-075**



Size #16 fiber optic termini

Size #16 fiber optic termini are compatible with all Series 80 Mighty Mouse threaded coupling connectors with size #16 cavities. These snap-in, rear-release termini feature precision ceramic ferrules and sleeves for accurate fiber alignment. Typical insertion loss 0.5 dB. Fits 50/125 and 62.5/125 multi mode and 9/125 single mode fiber.



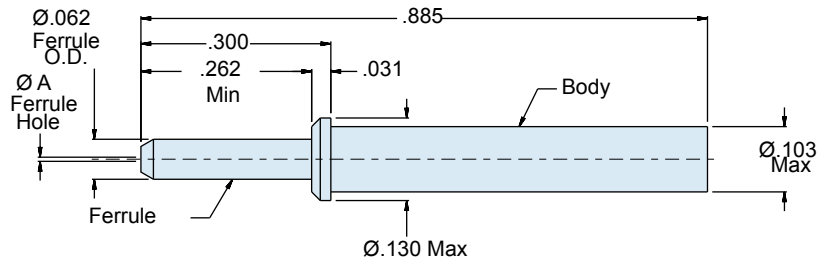
181-057 Pin Terminus



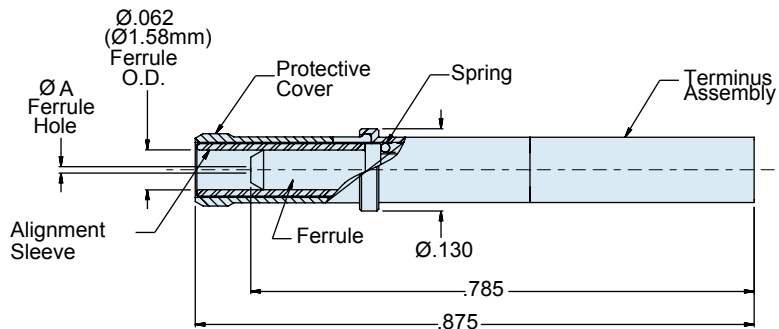
181-075 Socket Terminus

| Termini Type | Optical Fiber Type | Part Number | A Ferrule I.D. |
|--------------|--------------------|--------------------|----------------|
| Pin | Single Mode | 181-057-125 | 125.5 microns |
| | Multi Mode | 181-057-126 | 126.0 microns |
| Socket | Single Mode | 181-075-125 | 125.5 microns |
| | Multi Mode | 181-075-126 | 126.0 microns |

*Consult factory for additional sizes



181-057 Pin Terminus



181-075 Socket Terminus

Materials and Finishes

181-057 :

Ferrule: zirconia ceramic
Body: stainless steel, passivated

181-075:

Ferrule, alignment sleeve: zirconia ceramic
Terminus assembly: stainless steel/passivate
Spring: stainless steel/passivate
Protective cover: spring alloy/nickel

Insertion/extraction Tool

Standard size #16 plastic tool
Glennair Part Number **809-131**
Military Part Number M81969/14-03

Consult factory for termination and assembly procedures/tools.

| Table II: Accessories | |
|-----------------------|--------------------------|
| 181-001-S | Ceramic Alignment Sleeve |
| 181-075-C | Protective Cover |

| Table I: Performance Specifications | |
|-------------------------------------|--|
| Optical Insertion Loss | 0.5 dB typical |
| Operating Temperature | -65°C to +150°C/Connector -65°C to +200°C/Termini* |
| Mating Durability | TIA/EIA-455-21, 500 cycles (Per MIL-PRF-29504B) |
| *Depending on cable and epoxy used. | |



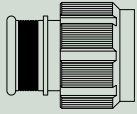
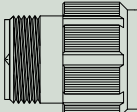
Series 801 Mighty Mouse Double-Start ACME Threads Plug Connector Ordering Information 801-007 and 801-008



Series 801 Plug Connector

Glenair's Series 801 Mighty Mouse connector features a double-start modified stub ACME mating thread for improved protection against cross-mating and thread damage. Connector shells are machined aluminum or stainless steel, and are designed to accommodate (depending on insert arrangement) Glenair size #16, #20HD, or #23 fiber optic termini (termini sold separately.) Metal clips inside the connector body lock the termini into place. Termini are removable. Fluorosilicone seals and rear grommet protect the connector from water ingress. Choose hex or knurled coupling nut. Terminate cable shield directly to connector body with BAND-IT strap, or choose rear accessory thread to attach optional backshell. Available in shell sizes 5 through 21 in 30 insert arrangements.

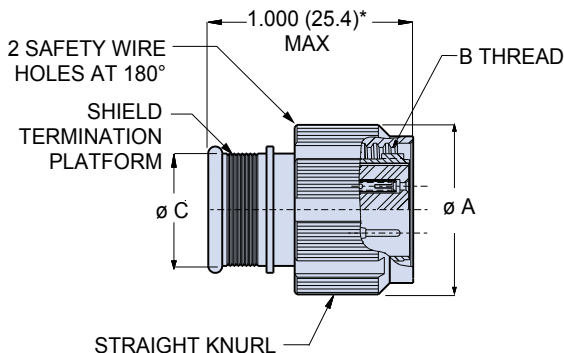
D

| How to Order | | | | | |
|--|---|---|--|---|---|
| Sample Part Number | | | | | |
| 801-007 | -16 | M | 7-10 | A | A |
| Series | Shell Style | Shell Material / Finish | Shell Size- Insert Arrangement | Contact Type | Shell Key Position |
|  <p>801-007 Banding Platform</p>  <p>801-008 Rear Accessory Thread</p> | <p style="color: blue;">-16</p> <p>Plug with Anti-Decoupling Spring</p> <p style="color: blue;">-26</p> <p>Self-Locking Plug with Ratchet Mechanism (the "Clicker")</p> | <p style="color: blue;">C</p> <p>Aluminum / Black Anodize (Non-Conductive) RoHS Compliant</p> <p style="color: blue;">M</p> <p>Aluminum / Electroless Nickel RoHS Compliant</p> <p style="color: blue;">NF</p> <p>Aluminum / Cadmium with Olive Drab Chromate</p> <p style="color: blue;">ZN</p> <p>Aluminum / Zinc-Nickel with Olive Drab Chromate</p> <p style="color: blue;">ZNU</p> <p>Aluminum / Zinc-Nickel with Black Chromate</p> <p style="color: blue;">MT</p> <p>Aluminum / Nickel-PTFE RoHS Compliant</p> <p style="color: blue;">Z1</p> <p>Stainless Steel / Passivated RoHS Compliant</p> | <p>SEE <b style="color: blue;">INSERT ARRANGEMENTS PAGES D-2, D-4, D-6</p> | <p><i>Connector supplied without termini. Please indicate pin or socket.</i></p> <p style="color: blue;">A</p> <p>Pin connector, less termini</p> <p style="color: blue;">B</p> <p>Socket connector, less termini</p> | <p style="color: blue;">A</p> <p>Normal</p> <p>Alternate Key Positions:</p> <p style="color: blue;">B C D E F</p> |

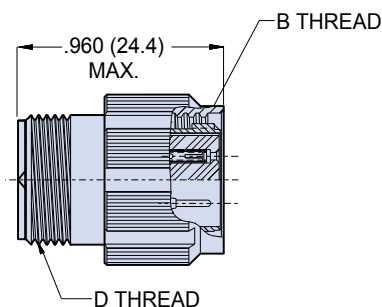
Series 801 Mighty Mouse Double-Start ACME Threads Plug Connector Dimensions 801-007 and 801-008



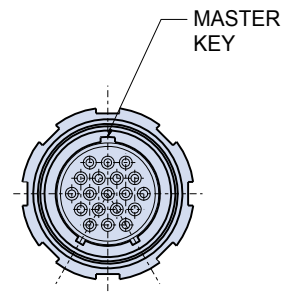
Mighty Mouse
Fiber Optic



Integral Band Platform
801-007



Accessory Thread
801-008



D

* For all size #8 arrangements, add .320" to overall length. For -26 add .127 (3.23)

| Dimensions | | | | | | | | |
|------------|----------|-------|----------|-------|------------------|-------|-------|---------------------|
| Shell Size | Style 16 | | Style 26 | | B Thread | Ø C | | D Thread UNEF-2A |
| | Ø A | | Ø A | | | In. | mm. | |
| | In. | mm. | In. | mm. | | | | |
| 5 | .540 | 13.72 | .640 | 16.26 | .3125-.05P-1L-2B | .245 | 6.22 | .250-32 |
| 6 | .600 | 15.24 | .700 | 17.78 | .375-.05P-1L-2B | .290 | 7.37 | .3125-32 |
| 7 | .680 | 17.27 | .780 | 19.81 | .4375-.05P-1L-2B | .390 | 9.91 | .4375-28 |
| 8 | .750 | 19.05 | .850 | 21.59 | .5000-.05P-1L-2B | .445 | 11.30 | .5000-28 |
| 9 | .810 | 20.57 | .910 | 23.11 | .5625-.05P-1L-2B | .500 | 12.70 | .5625-24 |
| 10 | .880 | 22.35 | .980 | 24.89 | .6250-.05P-1L-2B | .560 | 14.22 | .6250-24 |
| 13 | 1.050 | 26.67 | 1.150 | 29.21 | .8125-1P-2L-2B | .650 | 16.51 | .6875-24 |
| 16 | 1.240 | 31.50 | 1.340 | 34.04 | 1.000-1P-2L-2B | .805 | 20.45 | .9375-20 |
| 17 | 1.300 | 33.02 | 1.400 | 35.56 | 1.062-1P-2L-2B | .850 | 21.59 | .9375-20 |
| 21 | 1.550 | 39.37 | 1.650 | 41.91 | 1.3125-1p-2L-2B | 1.110 | 28.19 | 1.1875-18 |

| Plug Key Positions | | |
|--------------------|------|------|
| Position | A° | B° |
| A | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |
| E | 75° | 275° |
| F | 95° | 210° |



**Series 801 Mighty Mouse Double-Start ACME Threads
Crimp Receptacle Connector Ordering Information**
801-009 and 801-010



In-Line
Shell Style 01



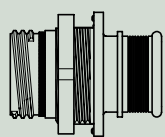
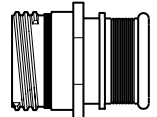
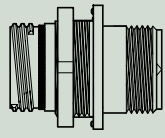
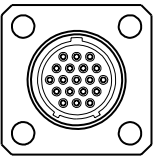
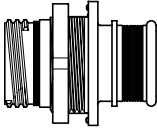
Rear Panel Jam Nut Mount
Shell Style 07



Square Flange Mount
Shell Style 02

D

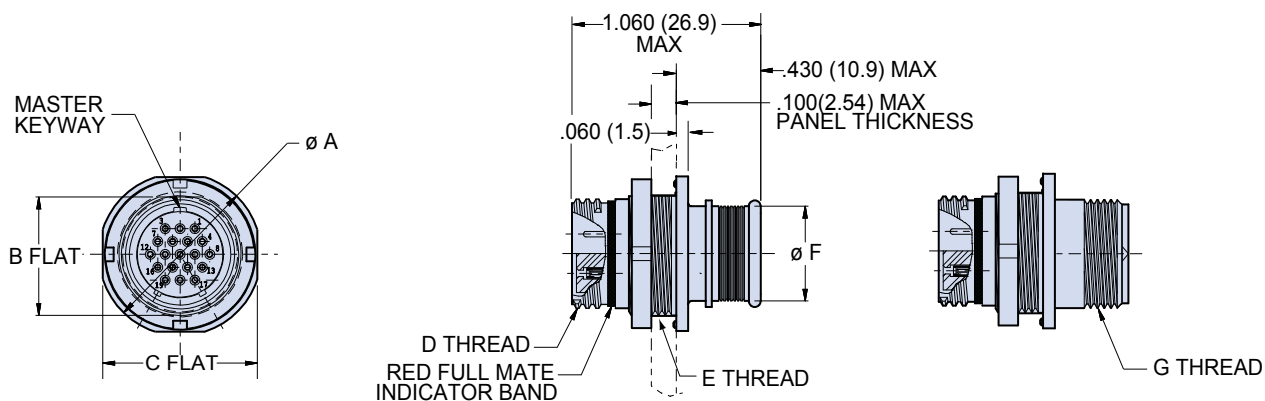
How to Order

| Sample Part Number | | | | | |
|---|--|--|--|--|--|
| 801-010 | -02 | Z1 | 16-55 | B | A |
| Series | Shell Style | Shell Material / Finish | Shell Size- Insert Arrangement | Contact Type | Shell Key Position |
|  801-009 Receptacle with Banding Platform |  -01 In-Line For Free-Hanging Cables | C Aluminum / Black Anodize (Non-Conductive) RoHS Compliant | SEE INSERT ARRANGEMENTS PAGES D-2, D-4, D-6 | Connector supplied without termini. Please indicate pin or socket. A Pin connector, less termini B Socket connector, less termini | A Normal Alternate Key Positions: B C D E F |
| | | M Aluminum / Electroless Nickel RoHS Compliant | | | |
| | | NF Aluminum / Cadmium with Olive Drab Chromate | | | |
|  801-010 Receptacle with Accessory Thread |  -02 Square Flange For Front or Rear Mounting | ZN Aluminum / Zinc-Nickel with Olive Drab Chromate | | | |
| | | ZNU Aluminum / Zinc-Nickel with Black Chromate | | | |
| |  -07 Jam Nut For Rear Panel Mounting | MT Aluminum / Nickel-PTFE RoHS Compliant Z1 Stainless Steel / Passivated RoHS Compliant | | | |

Series 801 Mighty Mouse Double-Start ACME Threads Jam Nut Receptacle Connector Dimensions 801-009-07 and 801-010-07



Mighty Mouse
Fiber Optic



Integral Band Platform
801-009-07

Accessory Thread
801-010-07

D

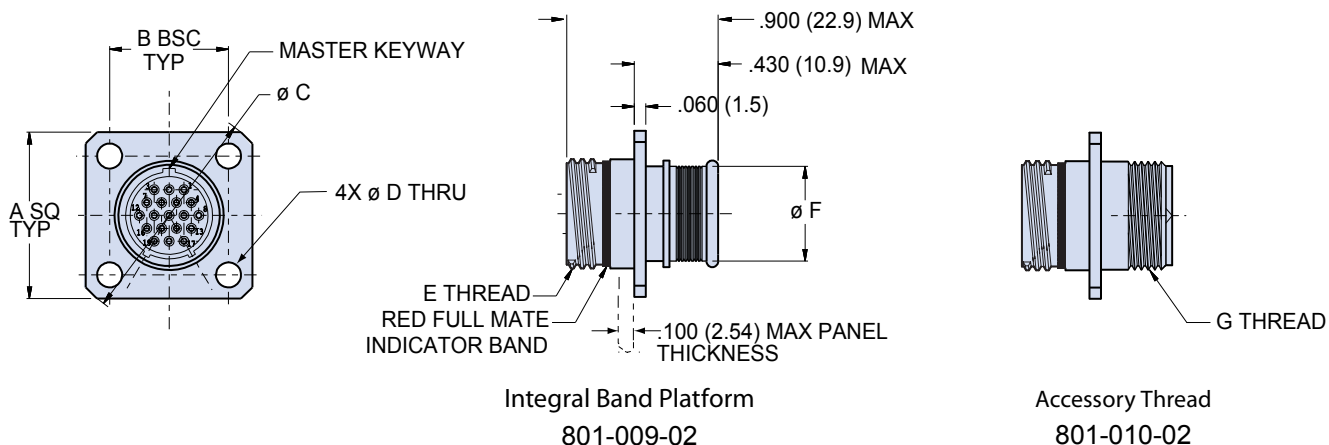
| Dimensions | | | | | | | | | | | |
|------------|-------|-------|--------|-------|--------|-------|-------------------|----------------|-------|-------|----------------|
| Shell Size | Ø A | | B Flat | | C Flat | | D Thread | E Thread UN-2A | Ø F | | G Thread UN-2A |
| | In. | mm. | In. | mm. | In. | mm. | | | In. | mm. | |
| 5 | .575 | 14.61 | .350 | 8.89 | .545 | 13.84 | .3125-.05P-.1L-2A | .375-28 | .245 | 6.22 | .250-32 |
| 6 | .635 | 16.13 | .410 | 10.41 | .595 | 15.11 | .375-.05P-.1L-2A | .4375-28 | .290 | 7.37 | .3125-32 |
| 7 | .755 | 19.18 | .536 | 13.61 | .723 | 18.36 | .4375-.05P-1L2A | .5625-32 | .390 | 9.91 | .4375-28 |
| 8 | .755 | 19.18 | .536 | 13.61 | .723 | 18.36 | .5000-.05P-.1L-2A | .5625-32 | .445 | 11.30 | .5000-28 |
| 9 | .830 | 21.08 | .596 | 15.14 | .790 | 20.07 | .5625-.05P-.1L-2A | .625-28 | .500 | 12.70 | .5625-24 |
| 10 | .890 | 22.61 | .658 | 16.71 | .855 | 21.72 | .6250-.05P-.1L-2A | .6875-28 | .560 | 14.22 | .6250-24 |
| 13 | 1.078 | 27.38 | .845 | 21.46 | 1.044 | 26.52 | .8125-1P-2L-2A | .875-28 | .650 | 16.51 | .6875-24 |
| 16 | 1.264 | 32.11 | 1.022 | 25.96 | 1.230 | 31.24 | 1.000-1P-2L-2A | 1.0625-20 | .805 | 20.45 | .9375-20 |
| 17 | 1.325 | 33.66 | 1.096 | 27.84 | 1.290 | 32.77 | 1.062-1P-2L-2A | 1.125-28 | .850 | 21.59 | .9375-20 |
| 21 | 1.625 | 41.28 | 1.345 | 34.16 | 1.577 | 40.06 | 1.3125-.1p-.2l-2a | 1.375-28 | 1.110 | 28.19 | 1.1875-18 |

| Key Positions | | |
|---------------|------|------|
| | A° | B° |
| A | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |
| e | 75° | 275° |
| f | 95° | 210° |

| Series 801 Jam Nut Panel Cutout | | | | |
|---------------------------------|---------------|---------------|---------------|---------------|
| Shell Size | A Flat | | Ø B | |
| | In. ± .002 | mm. ± 0.05 | In. ± .002 | mm. ± 0.05 |
| 5 | .356 | 9.04 | .385 | 9.78 |
| 6 | .416 | 10.57 | .447 | 11.35 |
| 7 | .542 | 13.77 | .572 | 14.53 |
| 8 | .542 | 13.77 | .572 | 14.53 |
| 9 | .602 | 15.29 | .635 | 16.13 |
| 10 | .666 | 16.92 | .697 | 17.70 |
| 13 | .851 | 21.62 | .885 | 22.48 |
| 16 | 1.028 | 26.11 | 1.075 | 27.31 |
| 17 | 1.102 | 27.99 | 1.135 | 28.83 |
| 21 | 1.354 | 34.39 | 1.385 | 35.18 |



Series 801 Mighty Mouse Double-Start ACME Threads Square Flange Receptacle Connector Dimensions 801-009-02 and 801-010-02

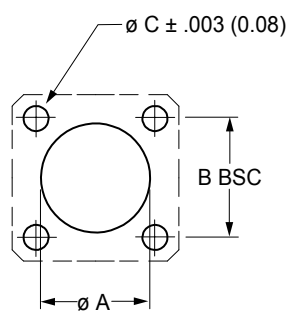


Integral Band Platform
801-009-02

Accessory Thread
801-010-02

| Dimensions | | | | | | | | | | | | |
|------------|-------|-------|-------|-------|-------|-------|--------|-------|-------------------|-------|-------|------------------|
| Shell Size | A | | B BSC | | Ø C | | Ø D | | E Thread | Ø F | | G Thread UNEF-2A |
| | In. | mm. | In. | mm. | In. | mm. | In. | mm. | | In. | mm. | |
| | | | | | | | +0.003 | +0.08 | | | | |
| 5 | .530 | 13.46 | .363 | 9.22 | .680 | 17.27 | .093 | 2.36 | .3125-.05P-.1L-2A | .245 | 6.22 | .250-32 |
| 6 | .590 | 14.99 | .423 | 10.74 | .750 | 19.05 | .093 | 2.36 | .375-.05P-.1L-2A | .290 | 7.37 | .3125-32 |
| 7 | .650 | 16.51 | .483 | 12.27 | .850 | 21.59 | .093 | 2.36 | .4375-.05P-.1L-2A | .390 | 9.91 | .4375-28 |
| 8 | .712 | 18.08 | .545 | 13.84 | .938 | 23.83 | .093 | 2.36 | .5000-.05P-.1L-2A | .445 | 11.30 | .5000-28 |
| 9 | .850 | 21.59 | .607 | 15.42 | 1.125 | 28.58 | .128 | 3.25 | .5625-.05P-.1L-2A | .500 | 12.70 | .5625-24 |
| 10 | .890 | 22.61 | .670 | 17.02 | 1.188 | 30.18 | .128 | 2.25 | .6250-.05P-.1L-2A | .560 | 14.22 | .6250-24 |
| 13 | 1.030 | 26.16 | .812 | 20.62 | 1.375 | 34.93 | .128 | 3.25 | .8125-.1P-.2L-2A | .650 | 16.51 | .6875-24 |
| 16 | 1.219 | 30.96 | .981 | 24.92 | 1.625 | 41.28 | .128 | 3.25 | 1.000-.1P-.2L-2A | .805 | 20.45 | .9375-20 |
| 17 | 1.280 | 32.51 | 1.060 | 26.92 | 1.700 | 43.18 | .128 | 3.25 | 1.062-.1P-.2L-2A | .850 | 21.59 | .9375-20 |
| 21 | 1.430 | 36.32 | 1.205 | 30.61 | 1.938 | 49.23 | .128 | 3.25 | 1.3125-.1p-.2L-2a | 1.110 | 28.19 | 1.1875-18 |

| Series 801 Panel Cutout | | | | | | |
|-------------------------|-------|-------|-------|-------|------|------|
| Shell Size | Ø A | | Ø B | | Ø C | |
| | In. | mm. | In. | mm. | In. | mm. |
| | 5 | .330 | 8.38 | .363 | 9.22 | .093 |
| 6 | .390 | 9.91 | .423 | 10.74 | .093 | 2.36 |
| 7 | .450 | 11.43 | .483 | 12.27 | .093 | 2.36 |
| 8 | .510 | 12.95 | .545 | 13.84 | .093 | 2.36 |
| 9 | .575 | 14.61 | .607 | 15.42 | .128 | 3.25 |
| 10 | .640 | 16.26 | .670 | 17.02 | .128 | 3.25 |
| 13 | .825 | 20.96 | .812 | 20.65 | .128 | 3.25 |
| 16 | 1.015 | 25.78 | .981 | 24.92 | .128 | 3.25 |
| 17 | 1.075 | 27.31 | 1.060 | 26.92 | .128 | 3.25 |
| 21 | 1.325 | 33.66 | 1.205 | 30.61 | .128 | 3.25 |

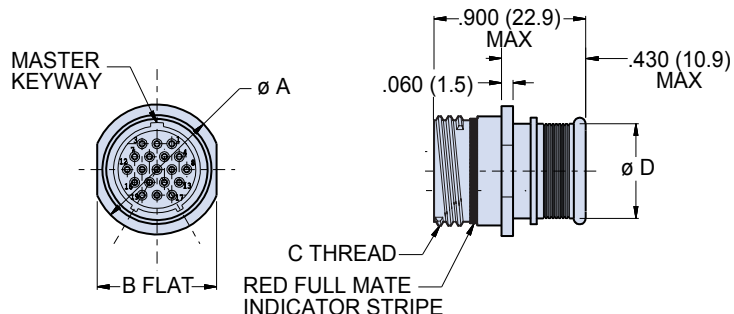


| Key Positions | | |
|---------------|------|------|
| | A° | B° |
| A | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |
| E | 75° | 275° |
| F | 95° | 210° |

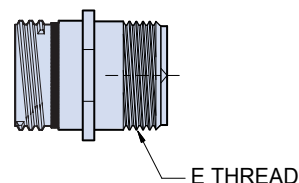
Series 801 Mighty Mouse Double-Start ACME Threads In-Line Receptacle Connector Dimensions 801-009-01 and 801-010-01



Mighty Mouse
Fiber Optic



Integral Band Platform
801-009-01



Accessory Thread
801-010-01

D

| Dimensions | | | | | | | | |
|------------|-------|-------|--------|-------|-------------------|-------|-------|------------------|
| Shell Size | Ø A | | B Flat | | C Thread | Ø D | | E Thread UNEF-2A |
| | In. | mm. | In. | mm. | | In. | mm. | |
| 5 | .355 | 9.02 | .325 | 8.13 | .3125-.05P-.1L-2A | .245 | 6.22 | .250-32 |
| 6 | .415 | 10.54 | .385 | 9.78 | .375-.05P-.1L-2A | .290 | 7.37 | .3125-32 |
| 7 | .480 | 12.19 | .445 | 11.30 | .4375-.05P-1L2A | .390 | 9.91 | .4375-28 |
| 8 | .540 | 13.72 | .510 | 12.95 | .5000-.05P-1L2A | .445 | 11.30 | .5000-28 |
| 9 | .605 | 15.37 | .575 | 14.61 | .5625-.05P-.1L-2A | .500 | 12.70 | .5625-24 |
| 10 | .665 | 16.89 | .635 | 16.13 | .6250-.05P-1L2A | .560 | 14.22 | .6250-24 |
| 13 | .855 | 21.72 | .825 | 20.96 | .8125-.1P-.2L-2a | .650 | 16.51 | .6875-24 |
| 16 | 1.040 | 26.42 | 1.010 | 25.65 | 1.000-.1P-.2L-2A | .805 | 20.44 | .9375-20 |
| 17 | 1.110 | 28.19 | 1.070 | 27.18 | 1.062-.1P-.2L-2A | .850 | 21.59 | .9375-20 |
| 21 | 1.405 | 35.69 | 1.385 | 35.18 | 1.3125-.1P-.2L-2A | 1.110 | 28.19 | 1.1875-18 |

| Key Positions | | |
|---------------|------|------|
| | A° | B° |
| A | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |
| E | 75° | 275° |
| F | 95° | 210° |



Series 801 Mighty Mouse Double-Start ACME Threads Rubber Protective Cover Ordering Information 809-190 and 809-191



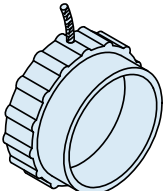
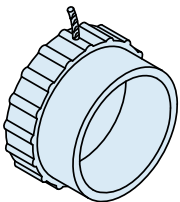

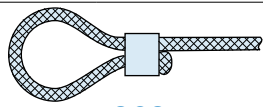


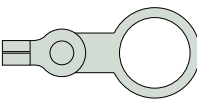
These *splashproof molded rubber covers* fit all Series 801 plugs and receptacles. Braided black nylon lanyard is available with metal rings, cable tie or slipknot for attachment to panel or to cable. -40° to +120° C operating temperature, fungus resistant per MIL-STD-810G Method 508.6.

| Materials | |
|--------------|---|
| Cover | Neoprene rubber blend, black |
| Lanyard | .062" (1.57) diameter nylon cord, black |
| Cable Tie | 6/6 nylon, black, SST locking tab |
| Ring | Stainless steel, black zinc-cobalt finish |
| Crimp Sleeve | Copper Alloy, black zinc-cobalt finish |

D

How to Order

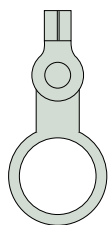
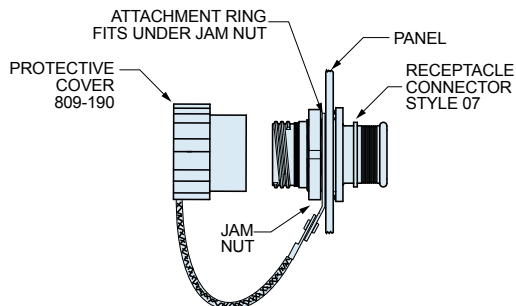
Sample Part Number

| 809-191 | - 05 | G | 6 | - SCS | C |
|--|--|--|------------------|--|---|
| Series | Shell Size | Lanyard Type | Lanyard Length | Attachment Code | Conductive Rubber |
|  <p>809-190 Protective Cover for use with Series 801 Receptacles</p>  <p>809-191 Protective Cover for use with Series 801 Plugs</p> | -05 -06 -07 -08 -09 -10 -13 -16 -17 | -G Nylon Rope (Omit for no lanyard) | Length in Inches |  -WS Nylon Cable Tie, 1.77 Inch (45mm) Maximum Wire Bundle Diameter | Omit for Standard Neoprene C Conductive Rubber |
| | | | |  -SCS Adjustable Slip Knot with Crimp Sleeve. The sleeve can be crimped with pliers for a permanent attachment. | |
| | | | |  -00 Lanyard With No Attachment (Fused End) | |
| | | | | Lug Terminals and Rings | |
| | | | |  Lug Terminal | -01 – .126 (3.20) I.D. -02 – .145 (3.68) I.D. -06 – .188 (4.78) I.D. -07 – .197 (5.00) I.D. |
| | | | |  Solid Ring | -08 – .385 (9.78) I.D. -09 – .445 (11.30) I.D. -10 – .516 (13.11) I.D. -11 – .570 (14.48) I.D. -12 – .583 (14.81) I.D. -13 – .635 (16.13) I.D. -14 – .695 (17.65) I.D. -15 – .776 (19.71) I.D. -16 – .885 (22.48) I.D. -17 – .896 (25.76) I.D. -18 – 1.015 (25.78) I.D. -19 – 1.070 (27.18) I.D. -20 – 1.135 (28.83) I.D. -21 – 1.141 (28.98) I.D. |

Series 801 Mighty Mouse Double-Start ACME Threads Rubber Protective Cover Ordering Information 809-190 and 809-191



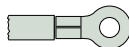
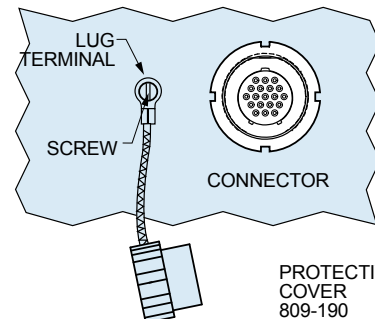
Attaching a 809-190 Receptacle Cover to a Rear Panel Mounted Jam Nut Receptacle



Solid Ring

| Dia. Code | Shell Size | Ring I.D. | | Ring O.D. | |
|-----------|------------|-----------|-------|-----------|--------|
| | | In. | mm. | In. | mm. |
| | | ± .010 | ±0.25 | ± .015 | ± 0.38 |
| 08 | 5 | .385 | 9.78 | .510 | 12.95 |
| 09 | 6 | .445 | 11.30 | .565 | 14.35 |
| 11 | 7, 8 | .570 | 14.48 | .685 | 17.40 |
| 13 | 9 | .635 | 16.13 | .760 | 19.30 |
| 14 | 10 | .695 | 17.65 | .820 | 20.82 |
| 16 | 13 | .885 | 22.48 | 1.010 | 25.65 |
| 19 | 16 | 1.070 | 27.17 | 1.195 | 30.35 |
| 20 | 17 | 1.135 | 28.83 | 1.250 | 31.75 |

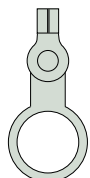
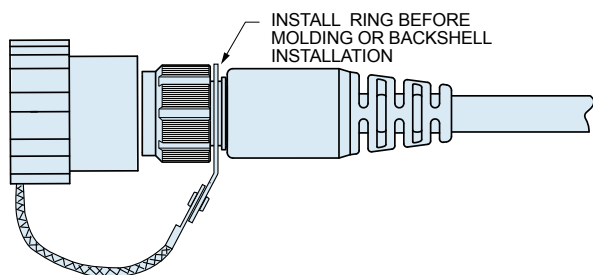
Attaching a Cover to a Panel With a Screw



Lug Terminal for Attaching Receptacle Covers to a Panel with a Screw

| Dia. Code | Screw Size | Ring I.D. | | Ring O.D. | |
|-----------|------------|-----------|-------|-----------|------|
| | | In. | mm. | In. | mm. |
| | | ±.005 | ±0.13 | Max. | Max. |
| 01 | #4, M3 | .126 | 3.20 | .31 | 7.9 |
| 02 | #6 | .145 | 3.68 | .31 | 7.9 |
| 06 | #8, M4 | .188 | 4.78 | .31 | 7.9 |
| 07 | #10 | .197 | 5.00 | .31 | 7.9 |

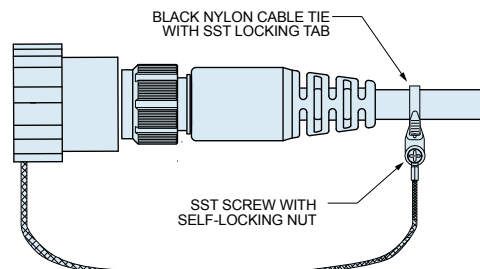
Attaching a Cover to a Cable Assembly With a Solid Ring



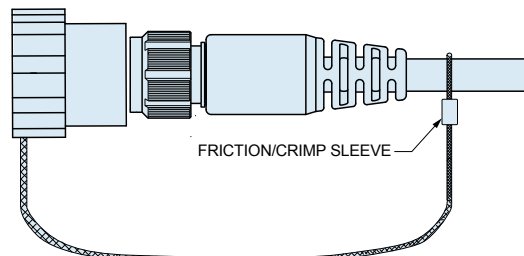
Large Ring

| Dia. Code | Shell Size | Ring I.D. | | Ring O.D. | |
|-----------|------------|-----------|-------|-----------|--------|
| | | In. | mm. | In. | mm. |
| | | ± .010 | ±0.25 | ± .015 | ± 0.38 |
| 08 | 5,6 | .385 | 9.78 | .510 | 12.95 |
| 09 | 7 | .445 | 11.30 | .565 | 14.35 |
| 11 | 8, 9 | .570 | 14.48 | .685 | 17.40 |
| 14 | 10, 13 | .695 | 17.65 | .820 | 20.82 |
| 19 | 16, 17 | 1.070 | 27.17 | 1.195 | 30.35 |

Attaching a Cover to a Cable Assembly With Type WS Cable Tie



Attaching a Cover to a Cable Assembly With Type SCS Slip Knot





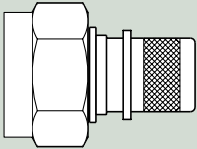
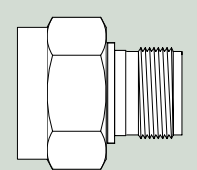
Series 802 "Aqua Mouse" Submersible Plug Connector Ordering Information 802-008 and 802-009



Series 802 Plug

Glenair's Series 802 Mighty Mouse connectors feature stainless steel or marine bronze shells with marine bronze coupling nuts to withstand corrosion in the most hostile environments, and are designed to accommodate (depending on insert arrangement) Glenair size #16, #20HD, or #23 fiber optic termini (termini sold separately.) Metal clips inside the connector body lock the termini into place. Termini are removable. Rated for 3500 PSI when mated, these connectors are suitable for the most demanding geophysical and underwater applications. Terminate cable shield directly to integral shield attachment platform with BAND-IT strap, or choose rear accessory thread to attach optional backshell. Available in shell sizes 1 through 21 in 30 insert arrangements.

D

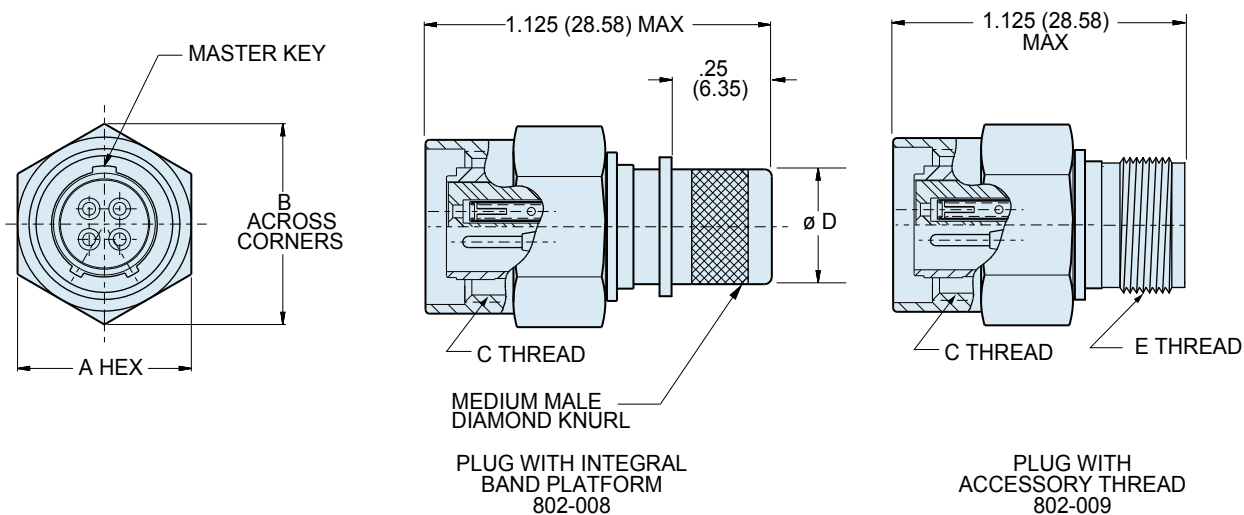
| How to Order Series 802 Plugs | | | | | |
|--|--------------------|---|--|--|--------------------|
| Sample Part Number | | | | | |
| 802-009 | -06 | Z1 | 9-19 | A | A |
| Series | Shell Style | Shell Material / Finish | Shell Size- Insert Arrangement | Contact Type | Shell Key Position |
|  802-008 Plug with Banding/ Molding Platform | -06 Plug | Z1 Stainless Steel Shell / Passivated, with Marine Bronze Coupling Nut | SEE INSERT ARRANGEMENTS PAGES D-2, D-4, D-6 | <i>Connector supplied without termini. Please indicate pin or socket.</i> A Pin connector, less termini | A Normal |
|  802-009 Plug with Accessory Thread | | ZM Stainless Steel Shell / Electroless Nickel Plated, with Marine Bronze Coupling Nut | | B Socket connector, less termini | B Pos. B |
| | | AB Marine Bronze Shell and Coupling Nut / Unplated | | | C Pos. C |
| | | | | | D Pos. D |

Series 802 "Aqua Mouse" Submersible Plug Connector Dimensions

802-008-06 and 802-009-06



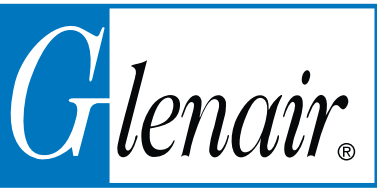
Mighty Mouse
Fiber Optic



D

| Dimensions | | | | | | | | |
|------------|-------|-------|--------|-------|---------------------|-------|-------|------------------------|
| Shell Size | A Hex | | B Max. | | C Mating Threads | Ø D | | E Threads Accessory |
| | In. | mm. | In. | mm. | | In. | mm. | |
| 5 | .500 | 12.70 | .560 | 14.22 | .438-28 UNEF | .232 | 5.90 | .2500-32 UNEF-2A |
| 6 | .625 | 15.88 | .720 | 18.29 | .562-20 UN | .312 | 7.92 | .3125-32 UNEF-2A |
| 7 | .688 | 17.48 | .780 | 19.81 | .625-20 UN | .375 | 9.53 | .4375-28 UNEF-2A |
| 8 | .750 | 19.05 | .860 | 21.84 | .687-20 UN | .438 | 11.13 | .5000-28 UNEF-2A |
| 9 | .812 | 20.62 | .930 | 23.62 | .750-20 UNEF | .500 | 12.70 | .5625-24 UNEF-2A |
| 10 | .875 | 22.23 | 1.000 | 25.40 | .812-20 UNEF | .562 | 14.27 | .6250-24 UNEF-2A |
| 12 | .938 | 23.83 | 1.060 | 26.92 | .875-20 UNEF | .656 | 16.66 | .6875-24 UNEF-2A |
| 14 | 1.125 | 28.58 | 1.250 | 31.75 | 1.062-20 UN | .812 | 20.62 | .8750-20 UNEF-2A |
| 15 | 1.188 | 30.18 | 1.320 | 33.53 | 1.125-20 UN | .885 | 22.40 | .9375-20 UNEF-2A |
| 21 | 1.562 | 39.67 | 1.700 | 43.18 | 1.437-20 UN | 1.188 | 30.18 | 1.2500-18 UNEF-2A |

| Series 802 Plug Key Positions | | |
|-------------------------------|--------------|------|
| Key Position | Key Rotation | |
| | A° | B° |
| Normal (A) | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |



Series 802 "Aqua Mouse" Submersible Receptacle Ordering Information 802-010 and 802-011



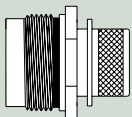
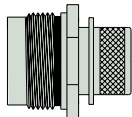
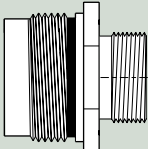
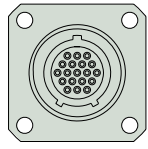
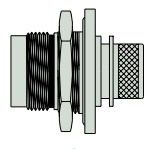
Jam Nut, Rear Mount



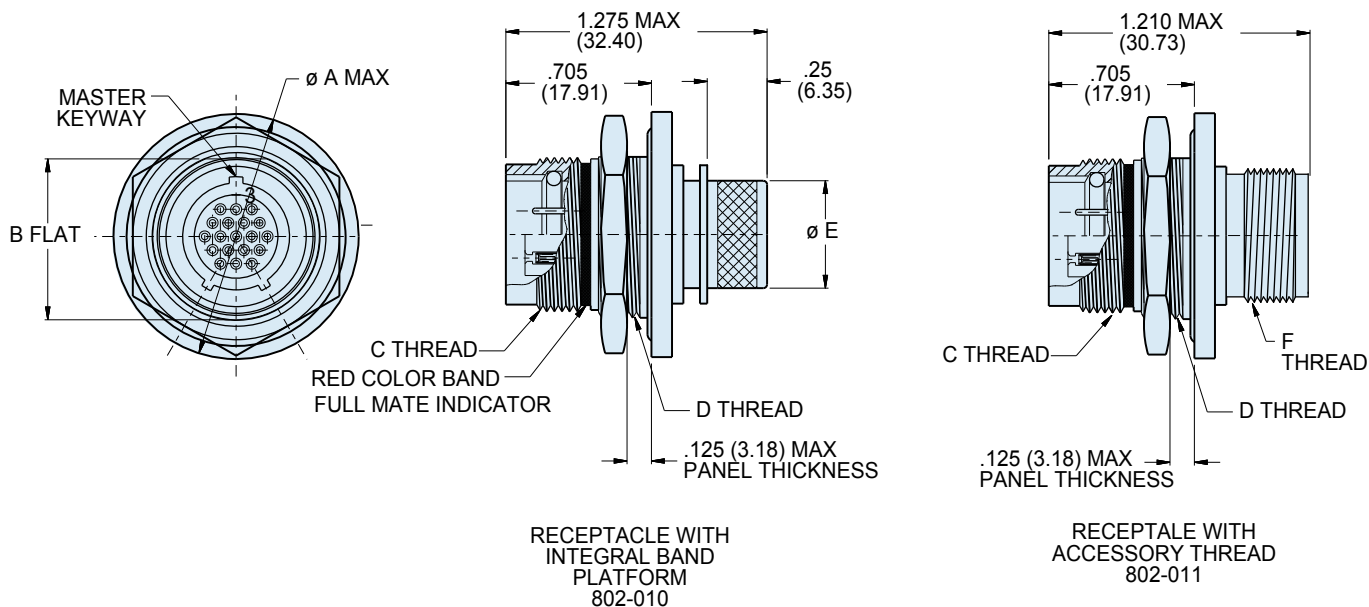
Square Flange

Three Shell Mounting Options: Jam nut with o-ring for rear panel mounting, square flange for front panel mounting, or in-line receptacles for free-hanging cables.
Two Shell Styles: Choose the integral band platform for direct attachment of a cable shield. Install a boot, or overmold a boot over the band platform. An accessory thread is available for attaching strain reliefs and backshells.

D

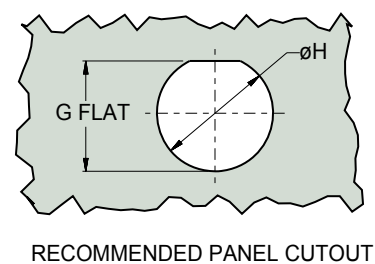
| How to Order Series 802 Crimp Receptacles | | | | | |
|---|--|--|--|--|--------------------|
| Sample Part Number | | | | | |
| 802-011 | -02 | Z1 | 10-26 | B | B |
| Series | Shell Style | Shell Material / Finish | Shell Size- Insert Arrangement | Contact Type | Shell Key Position |
|  802-010 Receptacle with Banding Platform |  -01 In-Line | Z1 Stainless Steel / Passivated | SEE INSERT ARRANGEMENTS PAGES D-2, D-4, D-6 | Connector supplied without termini. Please indicate pin or socket. A Pin connector, less termini B Socket connector, less termini | A Normal |
|  802-011 Receptacle with Accessory Thread |  -02 Square Flange | ZM Stainless Steel / Electroless Nickel Plated | | | B Pos. B |
| |  -07 Jam Nut for Rear Panel Mounting | AB Marine Bronze / Unplated | | | C Pos. C |

Series 802 "Aqua Mouse" Submersible Jam Nut Receptacle Connector Dimensions 802-010-07 and 802-011-07

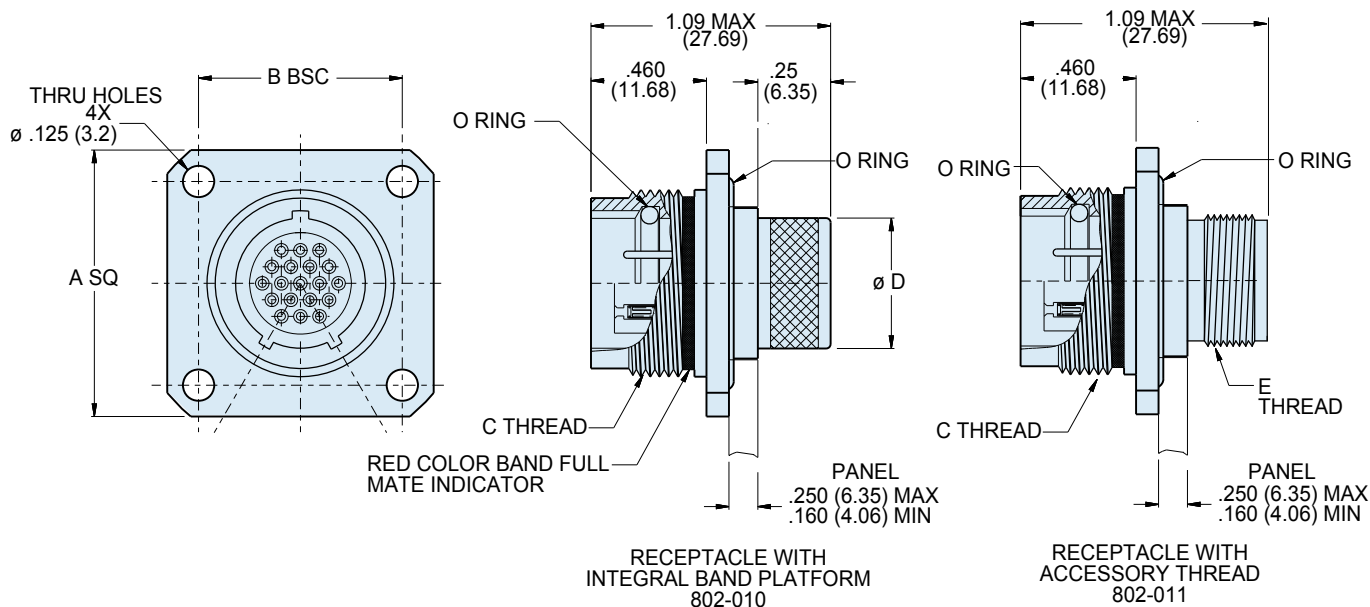


| Dimensions | | | | | | | | | | | | | |
|------------|--------|-------|--------------|--------------|------------------|-------------------|-------|-------|---------------------|--------------|--------------|-------|-------|
| Shell Size | A Max. | | B Flat | | C Mating Threads | D Jam Nut Threads | Ø E | | F Accessory Threads | G Flat | | Ø H | |
| | In. | mm. | In. ±.003 | mm. ±0.08 | | | In. | mm. | | In. ±.003 | mm. ±0.08 | In. | mm. |
| | | | | | | | | | | | | | |
| 5 | .885 | 22.48 | .466 | 11.84 | .438-28 UNEF | .500-32 UN-2A | .232 | 5.90 | .2500-32 UNEF-2A | .477 | 12.12 | .510 | 12.95 |
| 6 | 1.010 | 25.65 | .591 | 15.01 | .562-20 UN | .625-28 UN-2A | .312 | 7.92 | .3125-32 UNEF-2A | .602 | 15.29 | .635 | 16.13 |
| 7 | 1.072 | 27.23 | .653 | 16.59 | .625-20 UN | .687-28 UN-2A | .375 | 9.53 | .4375-28 UNEF-2A | .664 | 16.87 | .697 | 17.70 |
| 8 | 1.135 | 28.83 | .716 | 18.19 | .687-20 UN | .750-28 UN-2A | .438 | 11.13 | .5000-28 UNEF-2A | .727 | 18.47 | .760 | 19.30 |
| 9 | 1.195 | 30.35 | .778 | 19.76 | .750-20 UNEF | .812-28 UN-2A | .500 | 12.70 | .5625-24 UNEF-2A | .789 | 20.04 | .822 | 20.88 |
| 10 | 1.260 | 32.00 | .827 | 21.01 | .812-20 UNEF | .875-28 UN-2A | .562 | 14.27 | .6250-24 UNEF-2A | .838 | 21.29 | .885 | 22.48 |
| 12 | 1.322 | 33.58 | .890 | 22.61 | .875-20 UNEF | .938-28 UN-2A | .656 | 16.66 | .6875-24 UNEF-2A | .901 | 22.89 | .948 | 24.08 |
| 14 | 1.510 | 38.25 | 1.077 | 27.36 | 1.062-20 UN | 1.125-28 UN-2A | .812 | 20.62 | .8750-20 UNEF-2A | 1.088 | 27.64 | 1.135 | 28.83 |
| 15 | 1.572 | 39.93 | 1.140 | 28.96 | 1.125-20 UN | 1.188-28 UN-2A | .885 | 22.40 | .9375-20 UNEF-2A | 1.151 | 29.24 | 1.198 | 30.43 |
| 21 | 1.940 | 49.28 | 1.464 | 37.19 | 1.4375-20 UN | 1.500-28 UN-2A | 1.188 | 30.18 | 1.2500-20 UNEF-2A | 1.473 | 37.41 | 1.510 | 39.12 |

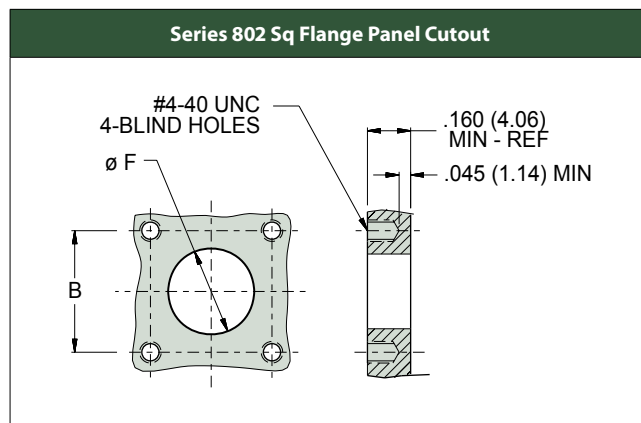
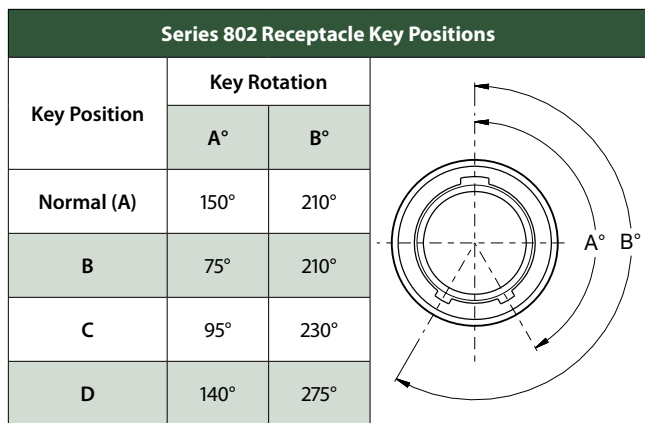
| Series 802 Receptacle Key Positions | | |
|-------------------------------------|--------------|------|
| Key Position | Key Rotation | |
| | A° | B° |
| Normal (A) | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |



Series 802 "Aqua Mouse" Submersible Square Flange Receptacle Connector Dimensions 802-010-02 and 802-011-02

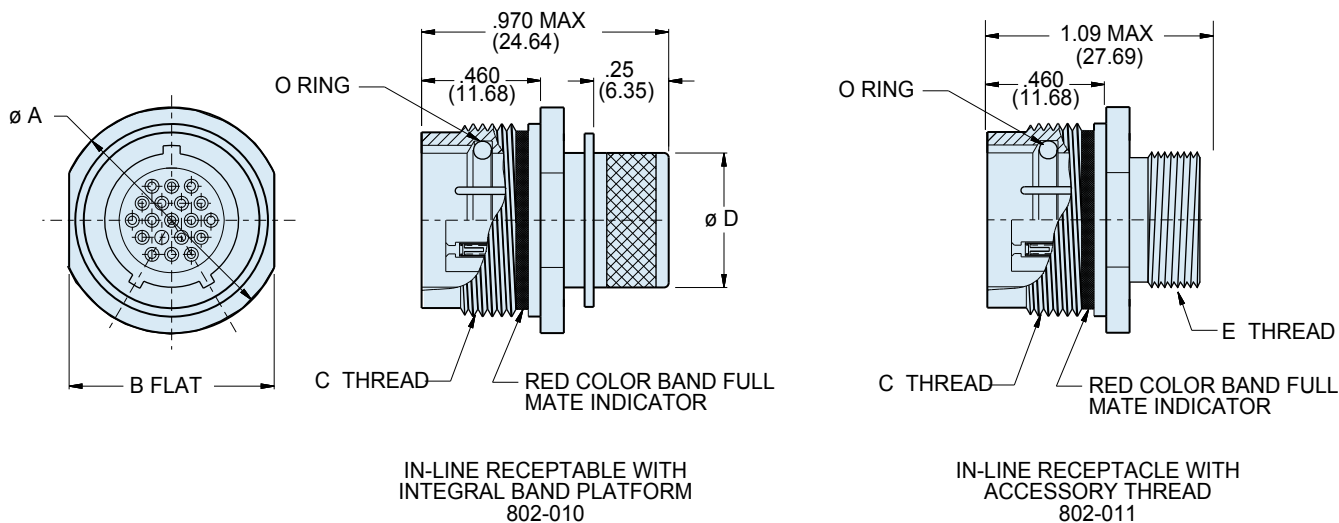


| Dimensions | | | | | | | | | | |
|------------|----------|-------|--------|-------|------------------|-------|-------|---------------------|-------|-------|
| Shell Size | A Square | | B Bsc. | | C Mating Threads | Ø D | | E Accessory Threads | Ø F | |
| | In. | mm. | In. | mm. | | In. | mm. | | In. | mm. |
| 5 | .885 | 22.48 | .500 | 12.70 | .438-28 UNEF | .232 | 5.90 | .2500-32 UNEF-2A | .327 | 8.31 |
| 6 | 1.010 | 25.65 | .625 | 15.88 | .562-20 UN | .312 | 7.92 | .3125-32 UNEF-2A | .390 | 9.91 |
| 7 | 1.072 | 27.23 | .688 | 17.48 | .625-20 UN | .375 | 9.53 | .4375-28 UNEF-2A | .515 | 13.08 |
| 8 | 1.135 | 28.83 | .750 | 19.05 | .687-20 UN | .438 | 11.13 | .5000-28 UNEF-2A | .577 | 14.66 |
| 9 | 1.195 | 30.35 | .812 | 20.62 | .750-20 UNEF | .500 | 12.70 | .5625-24 UNEF-2A | .640 | 16.26 |
| 10 | 1.260 | 32.00 | .875 | 22.23 | .812-20 UNEF | .562 | 14.27 | .6250-24 UNEF-2A | .702 | 17.83 |
| 12 | 1.322 | 33.58 | .938 | 23.83 | .875-20 UNEF | .656 | 16.66 | .6875-24 UNEF-2A | .765 | 19.43 |
| 14 | 1.510 | 38.25 | 1.125 | 28.58 | 1.062-20 UN | .812 | 20.62 | .8750-20 UNEF-2A | .953 | 24.21 |
| 15 | 1.573 | 39.95 | 1.188 | 30.18 | 1.125-20 UN | .885 | 22.40 | .9375-20 UNEF-2A | 1.015 | 25.78 |
| 21 | 1.750 | 44.45 | 1.375 | 34.93 | 1.4375-20 UN | 1.188 | 30.18 | 1.2500-20 UNEF-2A | 1.312 | 33.32 |



Series 802 "Aqua Mouse" Submersible In-Line Receptacle Connector Dimensions

802-010-01 and 802-011-01



| Dimensions | | | | | | | | |
|------------|-------|-------|---------|-------|------------------|-------|-------|---------------------|
| Shell Size | Ø A | | B Flats | | C Mating Threads | Ø D | | E Accessory Threads |
| | In. | mm. | In. | mm. | | In. | mm. | |
| 5 | .560 | 14.22 | .500 | 12.70 | .438-28 UNEF | .232 | 5.90 | .2500-32 UNEF-2A |
| 6 | .720 | 18.29 | .625 | 15.88 | .562-20 UN | .312 | 7.92 | .3125-32 UNEF-2A |
| 7 | .780 | 19.81 | .688 | 17.48 | .625-20 UN | .375 | 9.53 | .4375-28 UNEF-2A |
| 8 | .860 | 21.84 | .750 | 19.05 | .687-20 UN | .438 | 11.13 | .5000-28 UNEF-2A |
| 9 | .930 | 23.62 | .812 | 20.62 | .750-20 UNEF | .500 | 12.70 | .5625-24 UNEF-2A |
| 10 | 1.000 | 25.40 | .875 | 22.23 | .812-20 UNEF | .562 | 14.27 | .6250-24 UNEF-2A |
| 12 | 1.060 | 26.92 | .938 | 23.83 | .875-20 UNEF | .656 | 16.66 | .6875-24 UNEF-2A |
| 14 | 1.250 | 31.75 | 1.125 | 28.58 | 1.062-20 UN | .812 | 20.62 | .8750-20 UNEF-2A |
| 15 | 1.320 | 33.53 | 1.188 | 30.18 | 1.125-20 UN | .885 | 22.40 | .9375-20 UNEF-2A |
| 21 | 1.690 | 42.93 | 1.562 | 39.67 | 1.4375-20 UN | 1.188 | 30.18 | 1.2500-20 UNEF-2A |

| Series 802 Receptacle Key Positions | | |
|-------------------------------------|--------------|------|
| Key Position | Key Rotation | |
| | A° | B° |
| Normal (A) | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |



Series 802 "Aqua Mouse" Submersible Protective Cover Ordering Information

660-087 and 660-088



Receptacle Cover

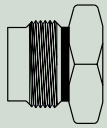
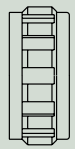

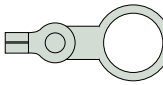
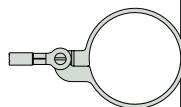
Protect Connectors From Damage – These covers prevent ingress of water and contamination. Stainless steel plug covers feature Viton® O-rings for 3500 PSI sealing. Receptacle covers have a Viton® gasket and are made from marine bronze to minimize galling.

Three Types of Attachment Rings – Choose small diameter eye fittings for panel attachment. Larger rings fit under the jam nut or over cable jackets. Split rings can be installed on fully assembled cables.

Polyurethane-Coated SST Wire Rope offers high strength, excellent abrasion resistance and good flexibility. Or, choose Teflon® jacket for high temperature exposure.

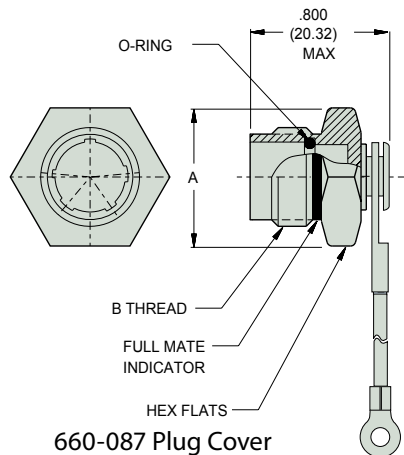
Braided Nylon Rope provides excellent flexibility and good abrasion resistance, and can be ordered with slip knot fittings for easy installation on any size cable.

D

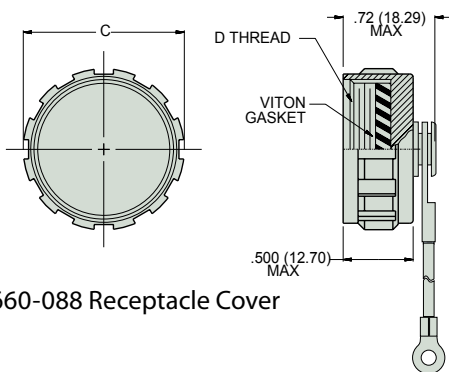
| How to Order Series 802 Protective Covers | | | | | | | | | |
|--|------------|------------------------|--|---|---|---|---|---|--|
| Sample Part Number | | | | | | | | | |
| 660-087 | - 9 | U | 04 | | - 6 | | | | |
| Series | Shell Size | Attachment Type | Attachment Code | | Attachment Length in Inches | | | | |
|  660-087 Protective Cover for use with Series 802 Plugs  660-088 Protective Cover for use with Series 802 Receptacles | -5 | G Nylon Rope | Omit for attachment Types N (No Attachment) and SK (Slip Knot) | | Omit for attachment Type N (No Attachment) Example "-6" equals six inch length Omit for plug connectors with standard "A" key position B C D | | | | |
| | -6 | H | SST Wire Rope, Teflon® Jacket |  Small Ring | | 01 – .126 (3.20) I.D. 02 – .145 (3.68) I.D. 04 – .188 (4.78) I.D. 06 – .197 (5.00) I.D. | | | |
| | -7 | N | | | | No Attachment | | | |
| | -8 | S | SST Sash Chain |  Large Ring | | 14 – .385 (9.78) I.D. 15 – .445 (11.30) I.D. 16 – .570 (14.48) I.D. 17 – .635 (16.13) I.D. 18 – .695 (17.65) I.D. 19 – .885 (22.48) I.D. 20 – 1.070 (27.17) I.D. 21 – 1.135 (28.83) I.D. 22 – 1.210 (30.73) I.D. 23 – 1.275 (32.39) I.D. 24 – 1.520 (38.61) I.D. | | | |
| | -9 | SK | | | | Nylon Rope With Slip Knot | | | |
| | -10 | T | | | | SST Wire Rope, No Jacket | | | |
| | -12 | U | | | | SST Wire Rope, Polyurethane Jacket "SST" = Stainless Steel |  Split Ring | 50 – .420 (10.67) I.D. 52 – .480 (12.19) I.D. 54 – .635 (16.13) I.D. 56 – .745 (18.92) I.D. 58 – .885 (22.48) I.D. 60 – 1.010 (25.65) I.D. 64 – 1.125 (28.58) I.D. 68 – 1.345 (34.16) I.D. 72 – 1.438 (36.53) I.D. | |
| | -14 | | | | | | | | |
| | -15 | | | | | | | | |
| | -21 | | | | | | | | |

Series 802 "Aqua Mouse" Submersible Protective Cover Dimensions

660-087 and 660-088



660-087 Plug Cover



660-088 Receptacle Cover

660-087 & -088 Dimensions

| Shell Size | A Hex | | B | C Max. | | D |
|------------|-------|-------|-----------------|--------|-------|-----------------|
| | In. | mm. | | In. | mm. | |
| 5 | .500 | 12.70 | .438-28 UNEF-2A | .590 | 14.99 | .438-28 UNEF-2B |
| 6 | .625 | 15.88 | .562-20 UN-2A | .720 | 18.29 | .562-20 UN-2B |
| 7 | .688 | 17.48 | .625-20 UN-2A | .780 | 19.81 | .625-20 UN-2B |
| 8 | .750 | 19.05 | .687-20 UN-2A | .840 | 21.34 | .687-20 UN-2B |
| 9 | .812 | 20.62 | .750-20 UNEF-2A | .900 | 22.86 | .750-20 UNEF-2B |
| 10 | .875 | 22.23 | .812-20 UNEF-2A | .970 | 24.89 | .812-20 UNEF-2B |
| 12 | .938 | 23.83 | .875-20 UNEF-2A | 1.030 | 26.16 | .875-20 UNEF-2B |
| 14 | 1.125 | 28.58 | 1.062-20 UN-2A | 1.220 | 30.99 | 1.062-20 UN-2B |
| 15 | 1.188 | 30.18 | 1.125-20 UN-2A | 1.280 | 32.51 | 1.125-20 UN-2B |
| 21 | 1.562 | 39.67 | 1.438-20 UN-2A | 1.610 | 40.89 | 1.438-20 UN-2B |

Materials and Finishes

| | |
|------------------|---------------------------------|
| Plug Cover | 316 stainless steel, passivated |
| Receptacle Cover | marine bronze, unplated |
| O-Ring | Viton rubber |
| Gasket | Viton rubber |
| Wire, Hardware | Stainless steel, passivated |

Attachment Options

| | | | | | | | | |
|---|---|-----------------------------|-----------------------------|-----------|-----------|-----------|-------|-------|
| <p>Small Ring for Attaching Receptacle Covers to a Panel with a Screw</p> | Dia. Code | Screw Size | Ring I.D. | | Ring O.D. | | | |
| | | | In. | mm. | In. | mm. | | |
| | | | | ±.005 | ±0.13 | Max. | Max. | |
| | 01 | #4, M3 | .126 | 3.20 | .31 | 7.9 | | |
| | 02 | #6 | .145 | 3.68 | .31 | 7.9 | | |
| 04 | #8, M4 | .188 | 4.78 | .31 | 7.9 | | | |
| 06 | #10 | .197 | 5.00 | .31 | 7.9 | | | |
| <p>Large Solid Ring for Attaching Receptacle Covers to a Jam Nut Receptacle</p> | Dia. Code | Style 07 Jam Nut Shell Size | Style 00 Jam Nut Shell Size | Ring I.D. | | Ring O.D. | | |
| | | In. | mm. | In. | mm. | | | |
| | | | | | ±.005 | ±0.13 | Max. | Max. |
| | 14 | | 5,6 | | .385 | 9.78 | .510 | 12.95 |
| | 16 | 5 | 7,8 | | .570 | 14.48 | .685 | 17.40 |
| | 17 | 6 | 9 | | .635 | 16.13 | .760 | 19.30 |
| | 18 | 7 | 10 | | .695 | 17.65 | .820 | 20.82 |
| | 19 | 8,9,10 | 12 | | .885 | 22.48 | 1.010 | 25.65 |
| | 20 | 12 | 14,15 | | 1.070 | 27.17 | 1.195 | 30.35 |
| | 21 | 14 | | | 1.135 | 28.83 | 1.270 | 32.26 |
| 22 | 15 | | | 1.210 | 30.73 | 1.312 | 33.32 | |
| 24 | 21 | 21 | | 1.520 | 38.61 | 1.522 | 41.20 | |
| <p>Large Split Ring for Attaching Covers to Cables</p> | Dia. Code | Max. Cable Dia. | | Min. ID | | Max. OD | | |
| | | In. | mm. | In. | mm. | In. | mm. | |
| | 50 | | .410 | | .420 | 10.67 | .510 | 12.95 |
| | 52 | | .470 | | .480 | 12.19 | .570 | 14.48 |
| | 54 | | .625 | | .635 | 16.13 | .726 | 18.44 |
| | 56 | | .735 | | .745 | 18.92 | .835 | 21.21 |
| | 58 | | .875 | | .885 | 22.48 | .976 | 24.79 |
| | 60 | | 1.000 | | 1.010 | 25.65 | 1.101 | 27.97 |
| | 64 | | 1.115 | | 1.125 | 28.58 | 1.215 | 30.86 |
| | 68 | | 1.335 | | 1.345 | 34.16 | 1.435 | 36.45 |
| 72 | | 1.416 | | 1.426 | 36.22 | 1.526 | 38.76 | |
| <p>Slip Knot (SK) for Attaching Covers to Cable</p> | -55° to +100°C., black, very flexible, very good abrasion resistance, good resistance to fuels, .120" (3mm) diameter. Length includes .5" (13mm) diameter loop. | | | | | | | |

Lanyard options

| | |
|--------------------------------------|--|
| <p>Nylon Rope</p> | -55° to +100°C., black, very flexible, very good abrasion resistance, good resistance to fuels, .120" (3mm) diameter |
| <p>Polyurethane Coated Wire Rope</p> | Black polyurethane over stainless steel rope, -55° to +125°C., very flexible, excellent abrasion resistance, excellent resistance to fuels, .080" (2mm) diameter |
| <p>Teflon Jacketed Wire Rope</p> | Translucent FEP jacket over stainless steel rope, -55° to +200°C., fair flexibility, good abrasion resistance, .100" diameter |
| <p>Sash Chain</p> | Stainless steel, #8 chain, .240" (6mm) |



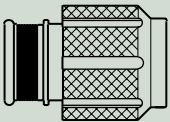
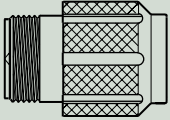
Series 805 Mighty Mouse Triple-Start Plug Connector Ordering Information

805-001 and 805-002



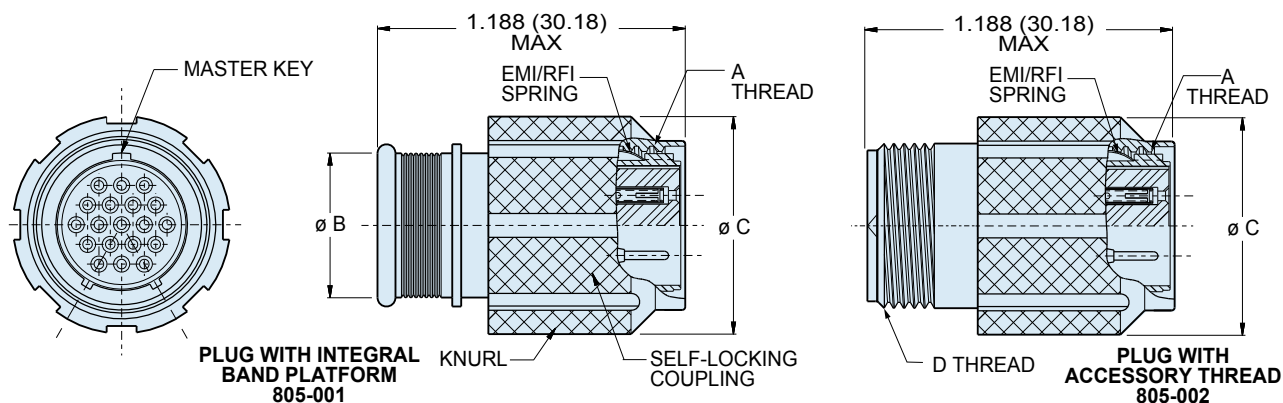
Glenair's Series 805 Mighty Mouse connectors feature a spring mechanism in the coupling nut that locks into radial teeth on the plug barrel. This feature allows the Series 805 to stay mated even when under high vibration, without the need for safety wire or torque tools. Connector shells are machined aluminum or stainless steel, and are designed to accommodate (depending on insert arrangement) Glenair size #16, #20HD, or #23 fiber optic termini (termini sold separately.) Metal clips inside the connector body lock the termini into place. Termini are removable. Fluorosilicone seals and rear grommet protect the connector from water ingress. Choose hex or knurled coupling nut. Terminate cable shield directly to connector body with BAND-IT strap, or choose rear accessory thread to attach optional backshell. Available in shell sizes 1 through 21 in 30 insert arrangements.

D

| How to Order | | | | | |
|---|--|--|--|--|---|
| Sample Part Number | | | | | |
| 805-002 | -16 | M | 8-4 | A | A |
| Series | Shell Style | Shell Material / Finish | Shell Size- Insert Arrangement | Contact Type | Shell Key Position |
|  805-001 Plug with Banding Platform | -16 Plug Connector with Ratcheting Anti-Decoupling Mechanism | C Aluminum / Black Anodize (Non-Conductive) RoHS Compliant M Aluminum / Electroless Nickel RoHS Compliant NF Aluminum / Cadmium with Olive Drab Chromate ZN Aluminum / Zinc-Nickel with Olive Drab Chromate ZNU Aluminum / Zinc-Nickel with Black Chromate MT Aluminum / Nickel-PTFE RoHS Compliant Z1 Stainless Steel / Passivated RoHS Compliant | SEE INSERT ARRANGEMENTS PAGES D-2, D-4, D-6 | Connector supplied without termini. Please indicate pin or socket. A Pin connector, less termini B Socket connector, less termini | A Position A (Normal) B Position B C Position C D Position D |
|  805-002 Plug with Accessory Thread | | | | | |

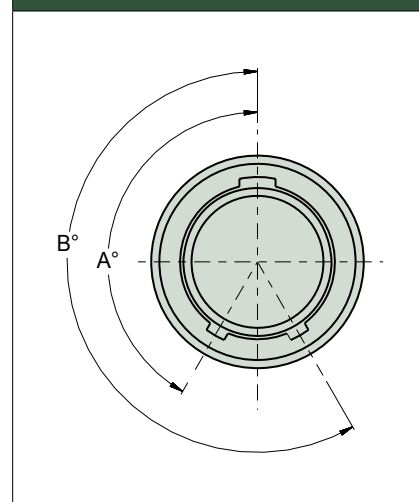
Series 805 Mighty Mouse Triple-Start Plug Connector Dimensions

805-001-16 and 805-002-16



| Dimensions | | | | | | |
|------------|----------------------|-------|-------|-------|-------|---------------------|
| Shell Size | A Threads | Ø B | | Ø C | | D Threads Accessory |
| | | In. | mm. | In. | mm. | |
| 8 | .5000-.1P-.3L-TS-2B | .317 | 8.05 | .691 | 17.55 | .3750-32 UNEF-2A |
| 9 | .5625-.1P-.3L-TS-2B | .397 | 10.08 | .787 | 19.99 | .4375-28 UNEF-2A |
| 10 | .6250-.1P-.3L-TS-2B | .473 | 12.01 | .826 | 20.98 | .5000-28 UNEF-2A |
| 11 | .6875-.1P-.3L-TS-2B | .519 | 13.18 | .916 | 23.27 | .5625-24 UNEF-2A |
| 12 | .7500-.1P-.3L-TS-2B | .585 | 14.86 | .982 | 24.94 | .6250-24 UNEF-2A |
| 15 | .9375-.1P-.3L-TS-2B | .687 | 17.45 | 1.097 | 27.86 | .7500-20 UNEF-2A |
| 18 | 1.1250-.1P-.3L-TS-2B | .884 | 22.45 | 1.290 | 32.77 | .9375-20 UNEF-2A |
| 19 | 1.1875-.1P-.3L-TS-2B | .884 | 22.45 | 1.310 | 33.27 | .9375-20 UNEF-2A |
| 23 | 1.4375-.1P-.3L-TS-2B | 1.135 | 28.83 | 1.562 | 39.67 | 1.1875-18 UNEF-2A |

Series 805 Key Positions



| Performance Specifications | |
|----------------------------|--|
| DWV | #23 500 VAC Sea Level, #20HD 750 VAC, #12 AND #16 1800 VAC |
| Insulation Resistance | 5000 Megohms Minimum |
| Operating Temperature | -55° C. to +150° C. |
| Immersion, Mated | MIL-STD-810 Method 512. One Meter for One Hour. |
| EMI | 65 dB Minimum from 1 GHz. to 10 GHz. |

| Key Position | Key Rotation | |
|--------------|--------------|------|
| | A | B |
| Normal (A) | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |

Materials and Finishes

| | |
|-----------------------|---|
| Connector Shell | Aluminum or Stainless Steel |
| Insulator | Liquid Crystal Polymer (LCP) |
| Seals | Fluorosilicone Rubber, Blue |
| Pin Contact | Copper Alloy, Gold over Nickel Plating |
| Socket Contact | Copper Alloy, Gold over Nickel Plating, with SST Hood |
| Contact Retainer Clip | Copper alloy, Unplated |



Series 805 Mighty Mouse Triple-Start Crimp Receptacle Ordering Information 805-003 and 805-004



Series 805 Triple-Start
Jam Nut Connector

Three Shell Mounting Options

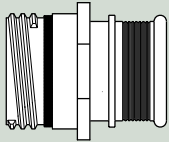
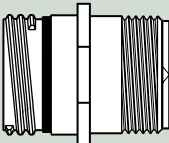
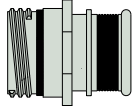
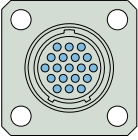
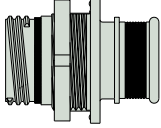
Jam nut with O-ring for rear panel mounting, square flange for front or rear panel mounting, or in-line receptacles for free-hanging cables.

Gold-Plated Crimp Contacts are held in place with beryllium copper retention clips. Contacts are removable.

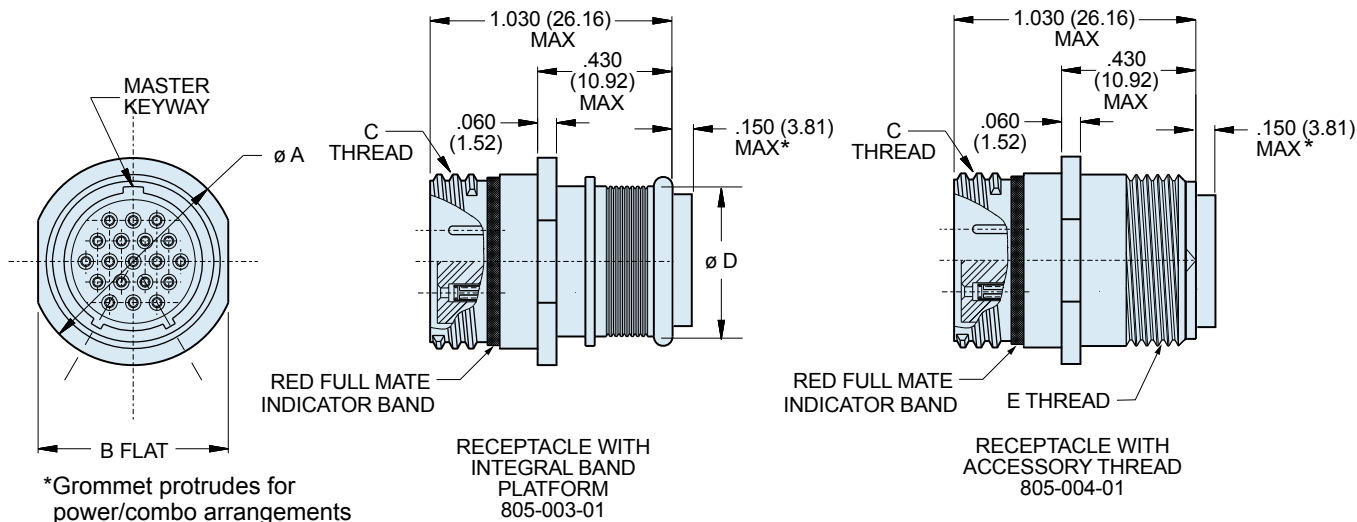
Two Shell Styles: Choose **integral band platform** for direct attachment of a cable shield. Install a boot, or overmold a boot

over the band platform. An **accessory thread** is available for attaching strain reliefs and backshells.

D

| How to Order | | | | | |
|---|---|---|--|---|---|
| Sample Part Number | | | | | |
| 805-004 | -02 | NF | 9-10 | B | A |
| Series | Shell Style | Shell Material / Finish | Shell Size- Insert Arrangement | Contact Type | Shell Key Position |
|  805-003 Receptacle with Banding Platform  805-004 Receptacle with Accessory Thread |  -01 In-Line  -02 Square Flange  -07 Jam Nut for Rear Panel Mounting | <p style="text-align: center;">C</p> Aluminum / Black Anodize (Non-Conductive) RoHS Compliant <p style="text-align: center;">M</p> Aluminum / Electroless Nickel RoHS Compliant <p style="text-align: center;">NF</p> Aluminum / Cadmium with Olive Drab Chromate <p style="text-align: center;">ZN</p> Aluminum / Zinc-Nickel with Olive Drab Chromate <p style="text-align: center;">ZNU</p> Aluminum / Zinc-Nickel with Black Chromate <p style="text-align: center;">MT</p> Aluminum / Nickel-PTFE RoHS Compliant <p style="text-align: center;">Z1</p> Stainless Steel / Passivated RoHS Compliant | SEE INSERT ARRANGEMENTS PAGES D-2, D-4, D-6 | <p style="text-align: center;">A</p> Connector supplied without termini. Please indicate pin or socket. <p style="text-align: center;">A</p> Pin connector, less termini <p style="text-align: center;">B</p> Socket connector, less termini | <p style="text-align: center;">A</p> Position A (Normal) <p style="text-align: center;">B</p> Position B <p style="text-align: center;">C</p> Position C <p style="text-align: center;">D</p> Position D |

Series 805 Mighty Mouse Triple-Start In-Line Receptacle Dimensions 805-003-01 and 805-004-01



| Dimensions | | | | | | | | |
|------------|-------|-------|-------|-------|----------------------|-------|-------|---------------------|
| Shell Size | Ø A | | B | | C Threads | Ø D | | E Threads Accessory |
| | In. | mm. | In. | mm. | | In. | mm. | |
| 8 | .540 | 13.72 | .510 | 12.95 | .5000-.1P-.3L-TS-2A | .316 | 8.05 | .3750-32 UNEF-2A |
| 9 | .605 | 15.37 | .575 | 14.61 | .5625-.1P-.3L-TS-2A | .397 | 10.08 | .4375-28 UNEF-2A |
| 10 | .668 | 16.96 | .638 | 16.21 | .6250-.1P-.3L-TS-2A | .472 | 12.01 | .5000-28 UNEF-2A |
| 11 | .730 | 18.54 | .700 | 17.78 | .6875-.1P-.3L-TS-2A | .519 | 13.18 | .5625-24 UNEF-2A |
| 12 | .793 | 20.14 | .763 | 19.38 | .7500-.1P-.3L-TS-2A | .585 | 14.86 | .6250-24 UNEF-2A |
| 15 | .980 | 24.89 | .950 | 24.13 | .9375-.1P-.3L-TS-2A | .687 | 17.45 | .7500-20 UNEF-2A |
| 18 | 1.165 | 29.59 | 1.135 | 28.83 | 1.1250-.1P-.3L-TS-2A | .884 | 22.45 | .9375-20 UNEF-2A |
| 19 | 1.235 | 31.37 | 1.205 | 30.61 | 1.1875-.1P-.3L-TS-2A | .884 | 22.45 | .9375-20 UNEF-2A |
| 23 | 1.485 | 37.72 | 1.455 | 36.96 | 1.4375-.1P-.3L-TS-2A | 1.134 | 28.80 | 1.1875-18 UNEF-2A |

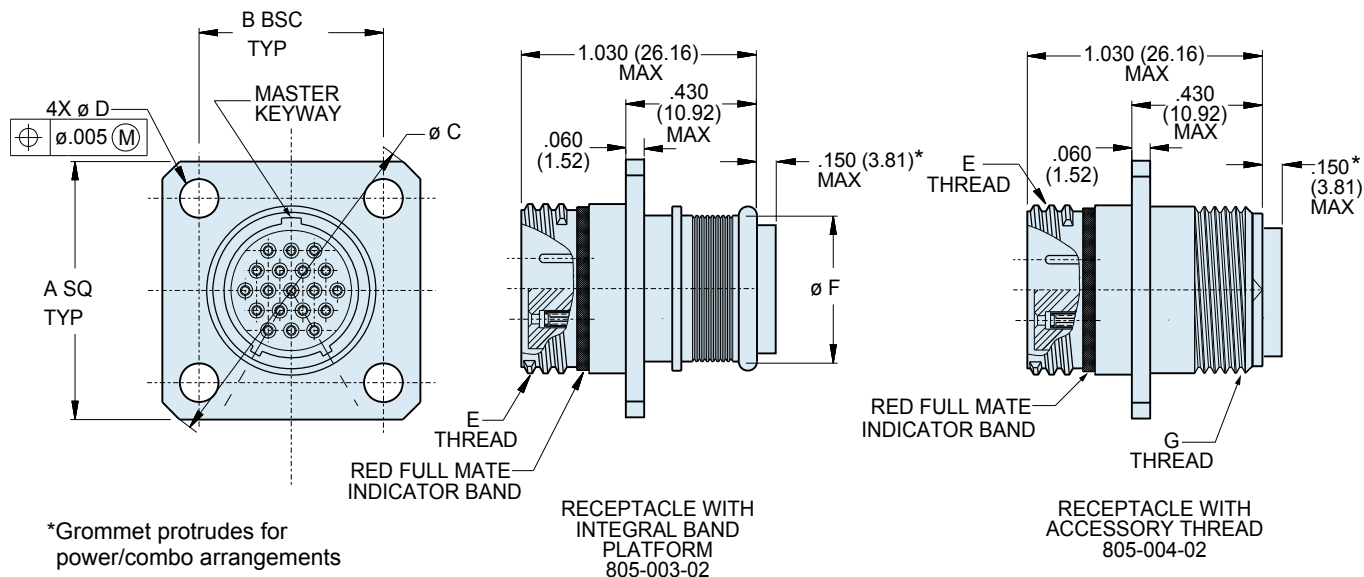
| Series 805 Key Positions | | |
|--------------------------|--------------|------|
| | | |
| Key Position | Key Rotation | |
| | A | B |
| Normal (A) | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |

| Performance Specifications | |
|----------------------------|--|
| DWV | #23 500 VAC Sea level, #20HD 750 VAC, #12 AND #16 1800 VAC |
| Insulation Resistance | 5000 Megohms Minimum |
| Operating Temperature | -55° C. to +150° C. |
| Immersion, Mated | MIL-STD-810 Method 512. One Meter for One Hour. |
| EMI | 65 dB Minimum from 1 GHz. to 10 GHz. |

| Materials and Finishes | |
|------------------------|---|
| Connector Shell | Aluminum or Stainless Steel |
| Insulator | Liquid Crystal Polymer (LCP) |
| Seals | Fluorosilicone Rubber, Blue |
| Pin Contact | Copper Alloy, Gold over Nickel Plating |
| Socket Contact | Copper Alloy, Gold over Nickel Plating, with SST Hood |
| Contact Retainer Clip | Copper alloy, Unplated |



Series 805 Mighty Mouse Triple-Start Square Flange Receptacle Dimensions 805-003-02 and 805-004-02



Dimensions

| Shell Size | A | | B | | ØC | | ØD | | E Threads | Ø F | | G Threads Accessory |
|------------|-------|-------|-------|-------|-------|-------|--------|-------|--------------------|-------|-------|------------------------|
| | In. | mm. | In. | mm. | In. | mm. | In. | mm. | | In. | mm. | |
| | | | | | | | ± .003 | ± .08 | | | | |
| 8 | .850 | 21.59 | .660 | 16.76 | 1.150 | 29.21 | .094 | 2.39 | .5000-1P-3L-TS-2A | .316 | 8.05 | .3750-32 UNEF-2A |
| 9 | .913 | 23.19 | .723 | 18.36 | 1.230 | 31.24 | .094 | 2.39 | .5625-1P-3L-TS-2A | .397 | 10.08 | .4375-28 UNEF-2A |
| 10 | .975 | 24.77 | .785 | 19.94 | 1.330 | 33.78 | .094 | 2.39 | .6250-1P-3L-TS-2A | .472 | 12.01 | .5000-28 UNEF-2A |
| 11 | 1.039 | 26.39 | .848 | 21.54 | 1.410 | 35.81 | .094 | 2.39 | .6875-1P-3L-TS-2A | .519 | 13.18 | .5625-24 UNEF-2A |
| 12 | 1.099 | 27.91 | .909 | 23.09 | 1.500 | 38.10 | .094 | 2.39 | .7500-1P-3L-TS-2A | .585 | 14.86 | .6250-24 UNEF-2A |
| 15 | 1.288 | 32.74 | 1.058 | 26.87 | 1.750 | 44.45 | .128 | 3.25 | .9375-1P-3L-TS-2A | .687 | 17.45 | .7500-20 UNEF-2A |
| 18 | 1.475 | 37.47 | 1.255 | 31.88 | 2.000 | 50.80 | .128 | 3.25 | 1.1250-1P-3L-TS-2A | .884 | 22.45 | .9375-20 UNEF-2A |
| 19 | 1.537 | 71.06 | 1.327 | 33.71 | 2.094 | 53.19 | .128 | 3.25 | 1.1875-1P-3L-TS-2A | .884 | 22.45 | .9375-20 UNEF-2A |
| 23 | 1.787 | 45.39 | 1.570 | 39.88 | 2.440 | 61.98 | .128 | 3.25 | 1.4375-1P-3L-TS-2A | 1.134 | 28.80 | 1.1875-18 UNEF-2A |

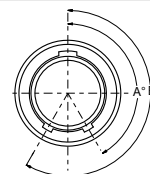
Performance Specifications

| | |
|-----------------------|--|
| DWV | #23 500 VAC Sea level, #20HD 750 VAC, #12 AND #16 1800 VAC |
| Insulation Resistance | 5000 Megohms Minimum |
| Operating Temperature | -55° C. to +150° C. |
| Immersion, Mated | MIL-STD-810 Method 512. One Meter for One Hour. |
| EMI | 65 dB Minimum from 1 GHz. to 10 GHz. |

Materials and Finishes

| | |
|-----------------------|--|
| Connector Shell | Aluminum or Stainless Steel |
| Insulator | Liquid Crystal Polymer (LCP) |
| Seals | Fluorosilicone Rubber, Blue |
| Contact | Copper Alloy, Gold over Nickel Plating |
| Contact Retainer Clip | Copper alloy, Unplated |

Series 805 Key Positions

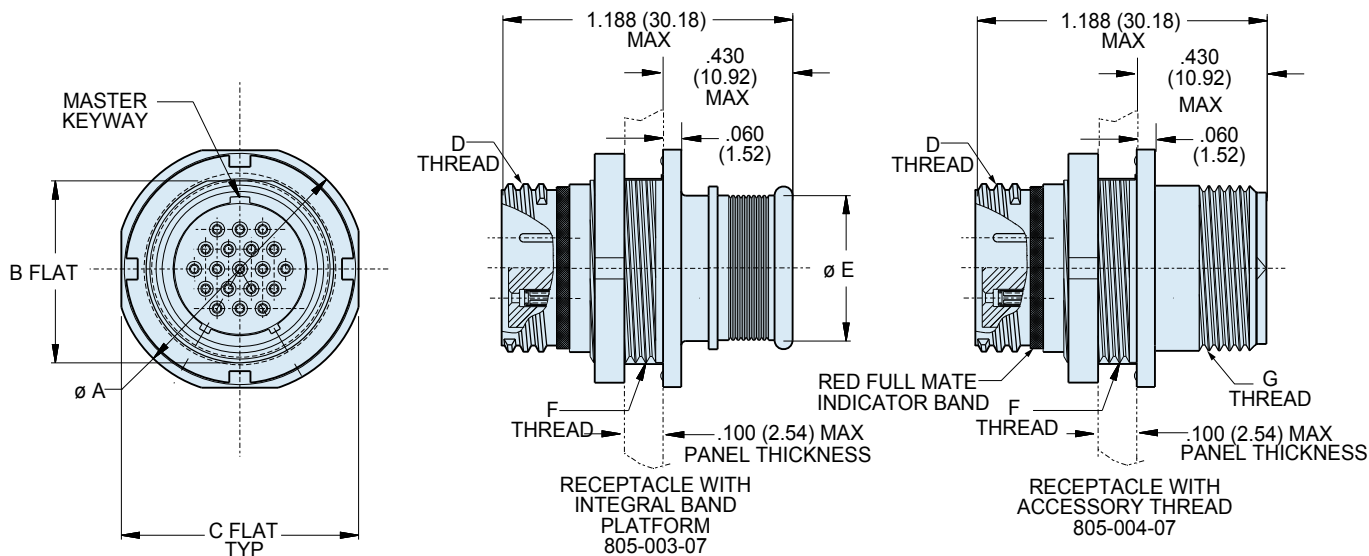


| Key Position | Key Rotation | |
|--------------|--------------|------|
| | A | B |
| Normal (A) | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |

Series 805 Mighty Mouse Triple-Start Jam Nut Receptacle Dimensions 805-003-07 and 805-004-07



Mighty Mouse
Fiber Optic



D

| Dimensions | | | | | | | | | | | |
|------------|-------|-------|-------|-------|-------|-------|---------------------|-------|-------|------------------|---------------------|
| Shell Size | Ø A | | B | | C | | D Threads | Ø E | | F Threads | G Threads Accessory |
| | In. | mm. | In. | mm. | In. | mm. | | In. | mm. | | |
| 8 | .760 | 19.30 | .535 | 13.59 | .730 | 18.54 | .5000-1P-.3L-TS-2A | .317 | 8.05 | .5625-28 UNEF-2A | .3750-32 UNEF-2A |
| 9 | .880 | 22.35 | .661 | 16.79 | .850 | 21.59 | .5625-1P-.3L-TS-2A | .397 | 10.08 | .6875-28 UN-2A | .4375-28 UNEF-2A |
| 10 | .880 | 22.35 | .661 | 16.79 | .850 | 21.59 | .6250-1P-.3L-TS-2A | .473 | 12.01 | .6875-28 UN-2A | .5000-28 UNEF-2A |
| 11 | .955 | 24.26 | .721 | 18.31 | .925 | 23.50 | .6875-1P-.3L-TS-2A | .519 | 13.18 | .7500-28 UN-2A | .5625-24 UNEF-2A |
| 12 | 1.060 | 26.92 | .784 | 19.91 | 1.035 | 26.29 | .7500-1P-.3L-TS-2A | .585 | 14.86 | .8125-28 UN-2A | .6250-24 UNEF-2A |
| 15 | 1.203 | 30.56 | .970 | 24.64 | 1.173 | 29.79 | .9375-1P-.3L-TS-2A | .687 | 17.45 | 1.0000-28 UN-2A | .7500-20 UNEF-2A |
| 18 | 1.389 | 35.28 | 1.147 | 29.13 | 1.359 | 34.52 | 1.1250-1P-.3L-TS-2A | .884 | 22.45 | 1.1875-28 UN-2A | .9375-20 UNEF-2A |
| 19 | 1.450 | 36.83 | 1.221 | 31.01 | 1.420 | 36.07 | 1.1875-1P-.3L-TS-2A | .884 | 22.45 | 1.2500-28 UN-2A | .9375-20 UNEF-2A |
| 23 | 1.705 | 43.31 | 1.470 | 37.34 | 1.675 | 42.55 | 1.4375-1P-.3L-TS-2A | 1.134 | 28.80 | 1.500-25 UN-2A | 1.1875-18 UNEF-2A |

| Panel Cutout For Jam Nut Receptacle | | | | | |
|-------------------------------------|---------------|---------------|---------------|---------------|--|
| Shell Size | A Flat | | Ø B | | |
| | In. ± .002 | mm. ± 0.05 | In. ± .005 | mm. ± 0.13 | |
| 8 | .543 | 13.79 | .572 | 14.53 | |
| 9 | .669 | 16.99 | .698 | 17.73 | |
| 10 | .669 | 16.99 | .698 | 17.73 | |
| 11 | .729 | 18.51 | .760 | 19.30 | |
| 12 | .792 | 20.17 | .822 | 20.88 | |
| 15 | .978 | 24.84 | 1.010 | 25.65 | |
| 18 | 1.155 | 29.34 | 1.198 | 30.43 | |
| 19 | 1.231 | 31.27 | 1.260 | 32.00 | |
| 23 | 1.480 | 37.59 | 1.510 | 38.35 | |

| Series 805 Key Positions | | |
|--------------------------|--------------|------|
| Key Position | Key Rotation | |
| | A | B |
| Normal (A) | 150° | 210° |
| B | 75° | 210° |
| C | 95° | 230° |
| D | 140° | 275° |



Series 805 Mighty Mouse Triple-Start Protective Cover Ordering Information

667-261 and 667-262



Plug Cover

Receptacle Cover

Protect Connectors From Damage
Machined aluminum or stainless steel protective covers have fluorosilicone gasket for a watertight fit.

Stainless Steel Fittings and Rings
Choose small diameter eye fittings for panel attachment. Larger rings fit under the jam nut or over cable jackets. Split rings can be installed on fully assembled cables.

Polyurethane-Coated SST Wire Rope offers high strength, excellent abrasion resistance and good flexibility. Or, choose Teflon® jacket

for high temperature exposure.

Braided Nylon Rope provides excellent flexibility and good abrasion resistance, and can be ordered with slip knot fittings for easy installation on any size cable.

D

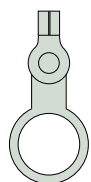
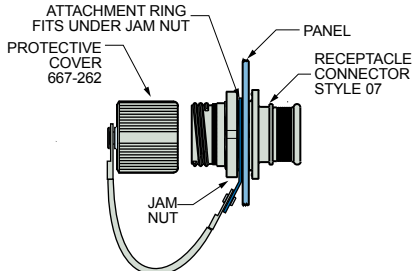
| How to Order | | | | | | | |
|---|---|---|--|--|----|--|--|
| Sample Part Number | | | | | | | |
| 667-262 | -M | -G | 9 | 04 | -6 | | |
| Series | Shell Material / Finish | Attachment Type | Shell Size | Attachment Code | | | |
| <p>667-261 Protective Cover for use with Series 805 Plugs</p> <p>667-262 Protective Cover for use with Series 805 Receptacles</p> | <p style="text-align: center;">-C Aluminum / Black Anodize (Non-Conductive) RoHS Compliant</p> <p style="text-align: center;">-M Aluminum / Electroless Nickel RoHS Compliant</p> <p style="text-align: center;">-NF Aluminum / Cadmium with Olive Drab Chromate</p> <p style="text-align: center;">-ZN Aluminum / Zinc-Nickel with Olive Drab Chromate</p> <p style="text-align: center;">-ZNU Aluminum / Zinc-Nickel with Black Chromate</p> <p style="text-align: center;">-MT Aluminum / Nickel-PTFE RoHS Compliant</p> <p style="text-align: center;">-Z1 Stainless Steel / Passivated RoHS Compliant</p> | <p style="text-align: center;">-G Nylon Rope</p> <p style="text-align: center;">-H SST Wire Rope, Teflon® Jacket</p> <p style="text-align: center;">-N No Attachment</p> <p style="text-align: center;">-S SST Sash Chain</p> <p style="text-align: center;">-SK Nylon Rope With Slip Knot</p> <p style="text-align: center;">-T SST Wire Rope, No Jacket</p> <p style="text-align: center;">-U SST Wire Rope, Polyurethane Jacket "SST" = Stainless Steel</p> | <p style="text-align: center;">8</p> <p style="text-align: center;">9</p> <p style="text-align: center;">10</p> <p style="text-align: center;">11</p> <p style="text-align: center;">12</p> <p style="text-align: center;">15</p> <p style="text-align: center;">18</p> <p style="text-align: center;">19</p> <p style="text-align: center;">23</p> | Omit for attachment Types N (No Attachment) and SK (Slip Knot) | | <p>Omit for attachment Type N (No Attachment)</p> <p>Example "-6" equals six inch length</p> | |
| | | | | <p>Small Ring</p> | | | <p>01 - .126 (3.20) I.D.</p> <p>02 - .145 (3.68) I.D.</p> <p>04 - .188 (4.78) I.D.</p> <p>06 - .197 (5.00) I.D.</p> |
| | | | | <p>Large Ring</p> | | | <p>14 - .385 (9.78) I.D.</p> <p>16 - .570 (14.48) I.D.</p> <p>17 - .635 (16.13) I.D.</p> <p>18 - .695 (17.65) I.D.</p> <p>24 - .766 (19.46) I.D.</p> <p>19 - .885 (22.48) I.D.</p> <p>20 - 1.070 (27.17) I.D.</p> <p>22 - 1.210 (30.73) I.D.</p> <p>23 - 1.275 (32.39) I.D.</p> <p>25 - 1.530 (38.86) I.D.</p> |
| | | | | <p>Split Ring</p> | | | <p>50 - .420 (10.67) I.D.</p> <p>52 - .480 (12.19) I.D.</p> <p>54 - .635 (16.13) I.D.</p> <p>56 - .745 (18.92) I.D.</p> <p>58 - .885 (22.48) I.D.</p> <p>60 - 1.010 (25.65) I.D.</p> <p>64 - 1.125 (28.58) I.D.</p> <p>68 - 1.345 (34.16) I.D.</p> |

Series 805 Mighty Mouse Triple-Start Protective Cover Dimensions

667-262



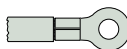
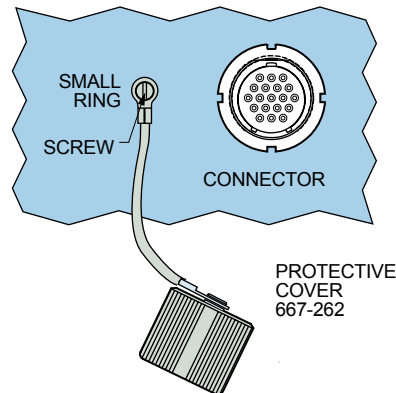
Attaching a 667-262 Receptacle Cover to a Rear Panel Mounted Jam Nut Receptacle



Solid Ring

| Dia. Code | Shell Size | Ring I.D. | | Ring O.D. | |
|-----------|------------|-----------|-------|-----------|--------|
| | | In. | mm. | In. | mm. |
| | | ± .010 | ±0.25 | ± .015 | ± 0.38 |
| 16 | 8 | .570 | 14.48 | .685 | 17.40 |
| 18 | 9, 10 | .695 | 17.65 | .820 | 20.82 |
| 24 | 11 | .766 | 19.46 | 1.140 | 28.96 |
| 19 | 12 | .885 | 22.48 | 1.010 | 25.65 |
| 20 | 15 | 1.070 | 27.17 | 1.195 | 30.35 |
| 22 | 18 | 1.210 | 30.73 | 1.312 | 33.32 |
| 23 | 19 | 1.275 | 32.39 | 1.375 | 34.93 |
| 25 | 23 | 1.530 | 38.86 | 1.781 | 45.24 |

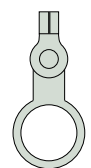
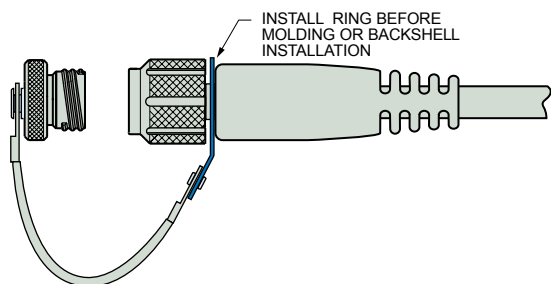
Attaching a 667-262 Receptacle Cover to a Panel With a Screw



Small Ring for Attaching Receptacle Covers to a Panel with a Screw

| Dia. Code | Screw Size | Ring I.D. | | Ring O.D. | |
|-----------|------------|-----------|-------|-----------|------|
| | | In. | mm. | In. | mm. |
| | | ±.005 | ±0.13 | Max. | Max. |
| 01 | #4, M3 | .126 | 3.20 | .31 | 7.9 |
| 02 | #6 | .145 | 3.68 | .31 | 7.9 |
| 04 | #8, M4 | .188 | 4.78 | .31 | 7.9 |
| 06 | #10 | .197 | 5.00 | .31 | 7.9 |

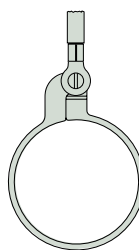
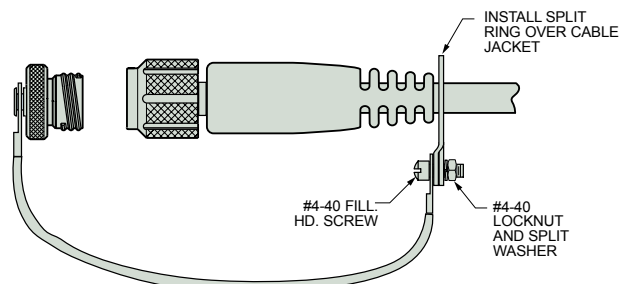
Attaching a Cover to a Cable Assembly With a Solid Ring



Solid Ring

| Dia. Code | Shell Size | Ring I.D. | | Ring O.D. | |
|-----------|------------|-----------|-------|-----------|--------|
| | | In. | mm. | In. | mm. |
| | | ± .010 | ±0.25 | ± .015 | ± 0.38 |
| 14 | 8 | .385 | 9.78 | .510 | 12.95 |
| 16 | 9, 10, 11 | .570 | 14.48 | .685 | 17.40 |
| 17 | 12 | .635 | 16.13 | .760 | 19.30 |
| 19 | 15 | .885 | 22.48 | 1.010 | 25.65 |
| 20 | 18, 19 | 1.070 | 27.17 | 1.195 | 30.35 |
| 22 | 23 | 1.210 | 30.73 | 1.312 | 33.32 |

Attaching a Cover to a Cable Using a Split Ring or Slip Knot

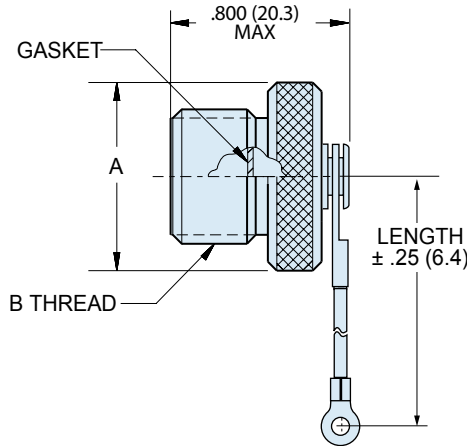


Large Split Ring for Attaching Covers to Cables

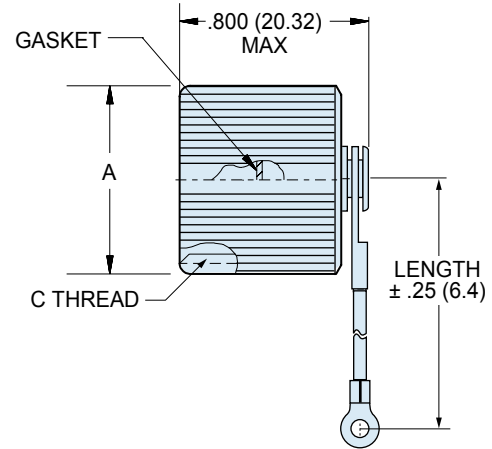
| Dia. Code | Max. Cable Dia. (in.) | Ring Diameter | | | |
|-----------|-----------------------|---------------|-------|---------|-------|
| | | Min. ID | | Max. OD | |
| | | In. | mm. | In. | mm. |
| 50 | .410 | .420 | 10.67 | .580 | 14.73 |
| 52 | .470 | .480 | 12.19 | .640 | 16.26 |
| 54 | .625 | .635 | 16.13 | .796 | 20.22 |
| 56 | .735 | .745 | 18.92 | .905 | 22.99 |
| 58 | .875 | .885 | 22.48 | 1.046 | 26.57 |
| 60 | 1.000 | 1.010 | 25.65 | 1.171 | 29.74 |
| 64 | 1.115 | 1.125 | 28.58 | 1.285 | 32.64 |
| 68 | 1.335 | 1.345 | 34.16 | 1.505 | 38.23 |



**Series 805 Mighty Mouse Triple-Start
Protective Cover Dimensions
667-261 and 667-262**



667-261 Plug Cover



667-262 Receptacle Cover

D

| Dimensions | | | | |
|------------|--------|-------|----------------------|----------------------|
| Shell Size | A Max. | | B | C |
| | In. | mm. | | |
| 8 | .653 | 16.59 | .5000-.1P-.3L-TS-2A | .5000-.1P-.3L-TS-2B |
| 9 | .715 | 18.16 | .5625-.1P-.3L-TS-2A | .5625-.1P-.3L-TS-2B |
| 10 | .778 | 19.76 | .6250-.1P-.3L-TS-2A | .6250-.1P-.3L-TS-2B |
| 11 | .841 | 21.36 | .6875-.1P-.3L-TS-2A | .6875-.1P-.3L-TS-2B |
| 12 | .903 | 22.94 | .7500-.1P-.3L-TS-2A | .7500-.1P-.3L-TS-2B |
| 15 | 1.091 | 27.71 | .9375-.1P-.3L-TS-2A | .9375-.1P-.3L-TS-2B |
| 18 | 1.278 | 32.46 | 1.1250-.1P-.3L-TS-2A | 1.1250-.1P-.3L-TS-2B |
| 19 | 1.340 | 34.04 | 1.1870-.1P-.3L-TS-2A | 1.1870-.1P-.3L-TS-2B |
| 23 | 1.600 | 40.64 | 1.4375-.1P-.3L-TS-2A | 1.4375-.1P-.3L-TS-2B |

| Materials and Finishes | |
|------------------------|-----------------------------------|
| Cover | Aluminum alloy or stainless steel |
| Gasket | Fluorosilicone rubber |
| Wire,Hardware | Stainless steel, passivated |

| Lanyard options | |
|---|--|
| Nylon Rope | -55° to +100°C., black, very flexible, very good abrasion resistance, good resistance to fuels, .120" (3mm) diameter |
| Polyurethane Coated Wire Rope | Black polyurethane over stainless steel rope, -55° to +125°C., very flexible, excellent abrasion resistance, excellent resistance to fuels, .080" (2mm) diameter |
| Teflon Jacketed Wire Rope | Translucent FEP jacket over stainless steel rope, -55° to +200°C., fair flexibility, good abrasion resistance, .100" diameter |
| Sash Chain | Stainless steel, #8 chain, .240" (6mm) |
| Sash Chain for attaching covers to cable | 55° to +100°C., black, very flexible, very good abrasion resistance, good resistance to fuels, .120" (3mm) diameter. Length includes .5" (13mm) diameter loop. |

189 M* 052
Convolution Tubing Backshell
 for Series 80 "Mighty Mouse" Fiber Optic Connectors



Series 80 Convolution Tubing Backshell

How to Order

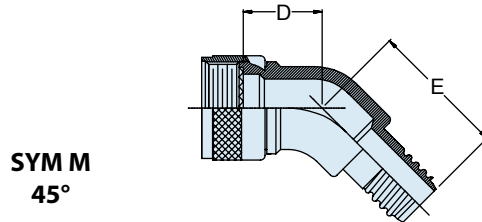
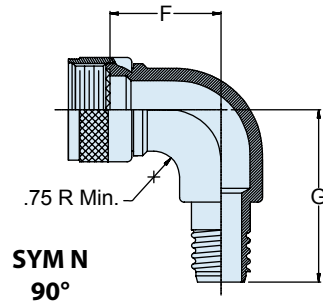
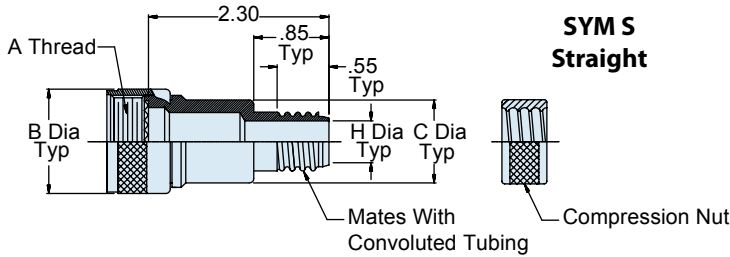
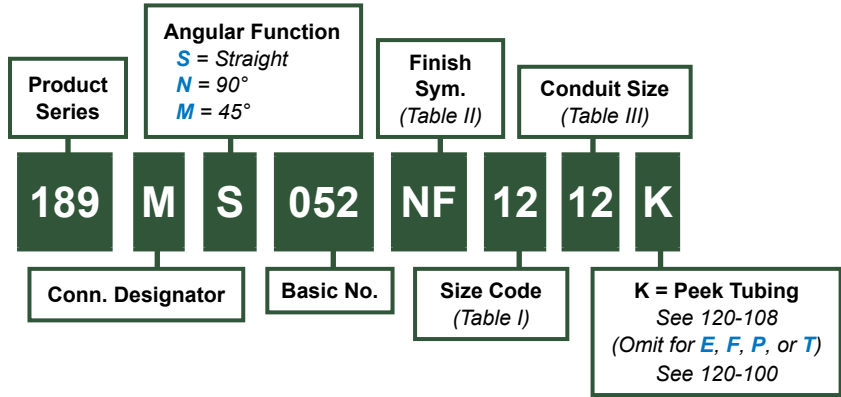


Table I: Shell Size

| Shell Size | A Thread Class 2B | B Max | C | D Max | E Max | F Max | G Max |
|------------|-------------------|-------------|-------------|--------------|--------------|--------------|--------------|
| 12 | .6875-24 UNEF | .91 (23.1) | .620 (15.7) | .910 (23.1) | 1.250 (31.8) | 1.985 (50.4) | 2.395 (60.8) |
| 14 | .9375-20 UNEF | 1.25 (31.8) | .875 (22.2) | 1.020 (25.9) | 1.370 (34.8) | 2.115 (53.7) | 2.465 (62.6) |

Table II: Finish

| SYM | Finish |
|-----|---|
| M | Electroless Nickel |
| NF | Cadmium/Olive Drab over Electroless Nickel (500 Hr. Salt Spray) |

Table III: PEEK Conduit Size

| Frac. Size | Dash No. | H Max |
|------------|----------|-------------|
| 3/8 | 12 | .320 (8.1) |
| 1/2 | 16 | .425 (10.8) |
| 5/8 | 20 | .550 (14.0) |
| 3/4 | 24 | .680 (17.3) |

Material and Finish

Adapter, Coupling Nut and Compression Nut: AL Alloy/see Table II
 O-Ring: Fluorosilicone
 Detent Spring: Torlon

FIBER OPTIC

GLENAIR EYE-BEAM

FIBER OPTIC CONNECTION SYSTEM



The Glenair Eye-Beam™ contact utilizes an innovative free floating expanded beam lens and ultra high precision ceramic alignment sleeves as well as custom designed terminus bodies to ensure perfect alignment of optical signals and optimal optical performance. Best of all, the Eye-Beam™ can be integrated into virtually any circular or rectangular connector package.

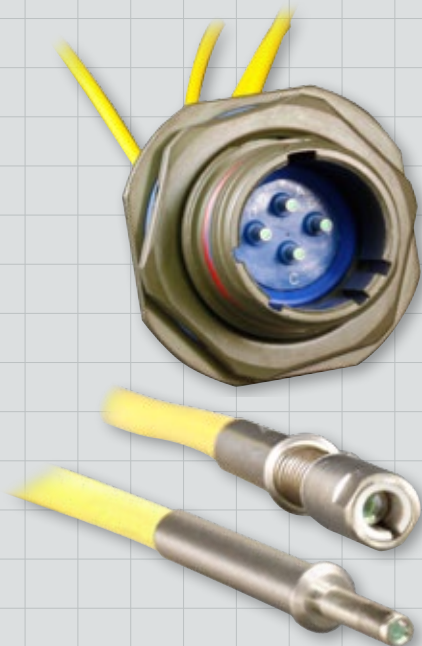


Glenair Eye-Beam™ Expanded Beam Fiber Optic Connection System General Information



The revolutionary new expanded beam fiber optic connection system from Glenair

Eye-Beam™ is supplied as a factory terminated point-to-point jumper. Jumpers are supplied in numerous contact formats for use with most high performance, tactical fiber optic connection systems: MIL-DTL-38999, MIL-PRF-28876, GFOCA, and Series 80 Mighty Mouse, and are suitable for use in hybrid electrical/optical interconnect applications.



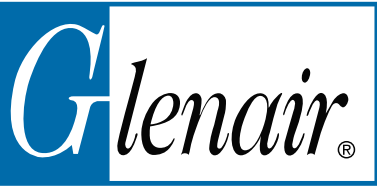
| Product No. | Description | Page No. |
|---|---|----------|
| Glenair Eye-Beam™ Expanded Beam Fiber Optic System | | |
| | Glenair Eye-Beam™ Fiber Optic System Overview | E-2 |
| FA1000 | Glenair Eye-Beam™ Fiber Optic Jumpers | E-3 |



Catalog Notes

Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only. Unless otherwise specified, the following other dimensional tolerances apply:

.xx = ± .03 (0.8) • .xxx = ± .015 (0.4) • Angles = ± 5°



Glenair Eye-Beam™ Expanded Beam Fiber Optic Connection System

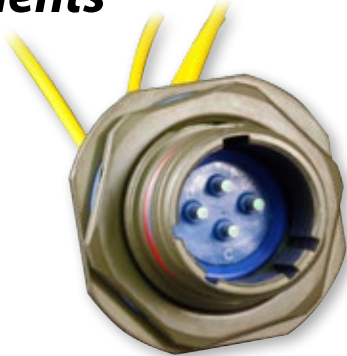


Eye-Beam™ Expanded Beam fiber optic terminus integrated into ruggedized reverse-bayonet power connectors

Innovative expanded beam terminus deliver optimal performance in harsh environments

- All the benefits of an expanded beam connection system built into a versatile F/O terminus
- Factory-terminated F/O Eye-Beam™ terminus easily integrated into any connector package
- Innovative expanded beam lens terminus expands signal 27X from a standard 9.3 micron fiber core
- Revolutionary design delivers low dB loss (1.5 dB multimode, 2.0 dB singlemode untuned) performance while reducing maintenance, inspection and test costs
- Ultra-high precision ceramic sleeves and custom designed terminus bodies ensure axial alignment

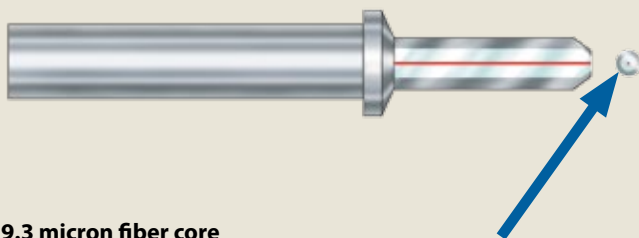
E



Eye-Beam™ Expanded Beam fiber optic terminus can be integrated into virtually any circular or rectangular connector package. Factory terminated lens pin terminus and lens socket terminus on cable jumpers allow for easy fusion splicing in the field.

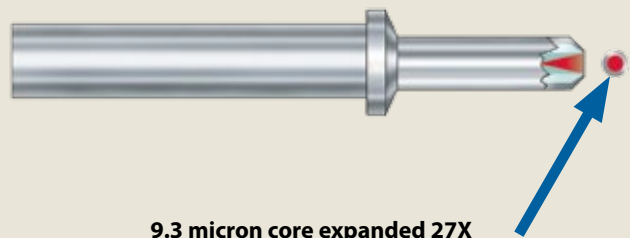
Comparison of standard butt-joint fiber optic terminus to Eye-Beam™ expanded beam fiber optic terminus

Butt-Joint Fiber Optic Terminus



9.3 micron fiber core
Fiber surfaces exposed and susceptible to damage
Must be cleaned prior to mating

Eye-Beam™ Expanded Beam Fiber Optic Terminus



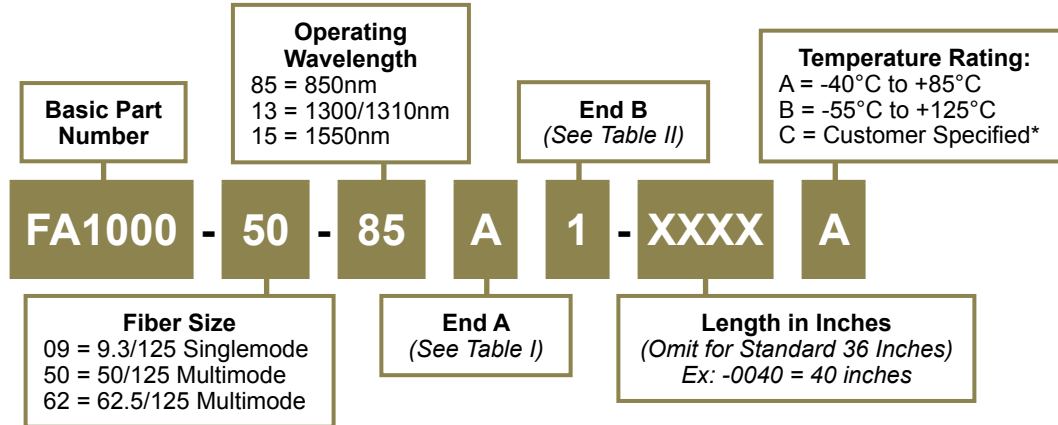
9.3 micron core expanded 27X
Fiber surfaces protected from contamination
Lens surface easy to clean

Glenair Eye-Beam™ Expanded Beam Fiber Optic Connection System



How To Order factory terminated Eye-Beam™ jumpers

1. Eye-Beam™ system part numbers begin with the FA1000 Basic Part Number
2. Select fiber size (Consult factory for additional options)
3. Select operating wavelength
4. Select jumper cable configuration. Jumpers are supplied standard with 36 inches of fiber cable. Specific lengths available in part number breakdown as shown below.

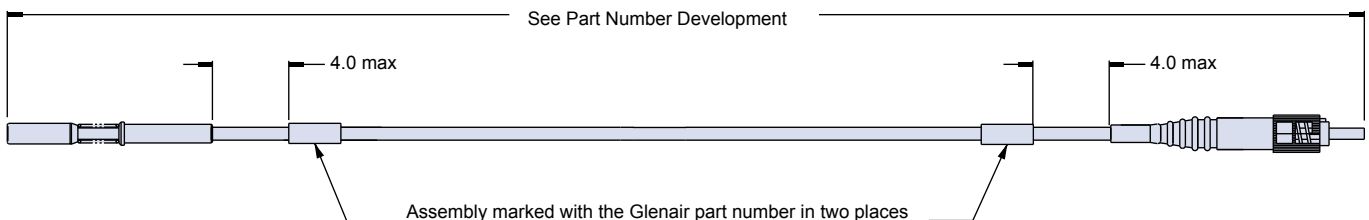


| Designator | Description | Connector Series |
|------------|--|--------------------------|
| A | M29504/04 Style Pin (181-070) | MIL-DTL-38999 Series III |
| | Mighty Mouse Size 16 Pin (181-070) | Series 80 Mighty Mouse |
| B | M29504/05 Style Socket, Springless (181-077) | MIL-DTL-38999 Series III |
| C | M29504/14 Style Pin (181-095) | MIL-PRF-28876 |
| D | M29504/15 Style Socket (181-096) | MIL-PRF-28876 |
| F | Mighty Mouse Size 16 Socket (181-083) | Series 80 Mighty Mouse |
| G | GFR Pin (181-082) | Glenair GFR System |
| H | GFR Socket (181-081) | Glenair GFR System |
| J | GFOCA Termini (181-067) | GFOCA (hermaphroditic) |

| | |
|---|--|
| A | M29504/04 Style Pin (181-070) |
| | Mighty Mouse Size 16 Pin (181-070) |
| B | M29504/05 Style Socket, Springless (181-077) |
| C | M29504/14 Style Pin (181-095) |
| D | M29504/15 Style Socket (181-096) |
| F | Mighty Mouse Size 16 Socket (181-083) |
| G | GFR Pin (181-082) |
| H | GFR Socket (181-081) |
| J | GFOCA Termini (181-067) |
| 1 | LC Connector |
| 2 | LC APC Connector |
| 3 | FC Connector |
| 4 | FC APC Connector |
| 5 | ST Connector |
| 6 | SC Connector |
| 7 | SMA 905 Connector |
| 8 | SMA 906 Connector |
| 9 | Customer Specified* |

| Length | Tolerance |
|--------------------------|-----------|
| 5 in, up to 2 ft | +1/-0 in |
| Over 2 ft, up to 10 ft | +3/-0 in |
| Over 10 ft, up to 50 ft | +6/-0 in |
| Over 50 ft, up to 100 ft | +1/-0 ft |
| Over 100 ft | +2/-0 ft |

Notes
 Optical performance: Insertion loss to be less than 2.0 dB when measured at 1310 nm or 1550 nm wavelength for singlemode, or when measured at 850 nm or 1300 nm for multimode.
 For customer-specific requirements, Glenair will assign a unique part number for the cable assembly



SERIES 050

MEDIA CONVERTERS

FOR AVIONICS, NAVAL, AND GROUND TACTICAL EQUIPMENT



The conversion of signals between electrical and optical domains is a necessary step in all fiber optic interconnection systems. Typically, large form-factor transceivers, housed in equipment consoles, are utilized to accomplish this function. But the need for reduced weight and small form factor active components, particularly in airframe and other high-performance applications, has led Glenair to develop a revolutionary new active component product series. The technologies offered in this catalog include a Gigabit Ethernet (1000BASE-T) copper twisted pair to optical fiber (1000BASE-SX or LX) ruggedized media converter, as well as a DVI signal (R, G, B, and clock) copper twisted pair to optical fiber solution. Both technologies deliver turnkey copper to fiber media conversion in a reliable, easy-to-install format. Glenair is also able to offer integration of active components into custom packaging and cable assemblies per customer and application requirements. Please contact the factory for more information on custom solutions.



Small form-factor copper to fiber media converters reduce weight and complexity in fiber optic interconnect systems

1000BASE-T to 1000BASE-SX/LX Media Converter

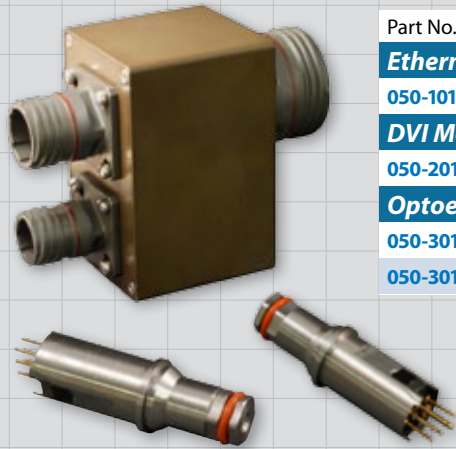
The Glenair Gigabit fiber optic/electric media converter converts 1000BASE-T data from twisted pair copper cable to 1000BASE-SX/LX serial data transmitted over a pair of optical fibers. The purpose of the device is to allow both longer distance and more reliable communication in ruggedized military and other 1000BASE-T networks. The device extends network link distances between switches, routers, and other Gigabit Ethernet peripherals. The 850nm VCSEL version enables link distances of up to 550 meters over multimode fiber. The 1310nm Fabry-Perot version enables link distances of up to 10 Kilometers over singlemode fiber. The turnkey conversion from copper to fiber optic cables also allows for an exponentially smaller diameter cable, as well as expanded bandwidth, reduced weight, improved network security and virtual immunity from EMI, RFI, and EMP.

DVI Copper to Fiber Media Converter

The Glenair Digital Visual Interface (DVI) Copper to Fiber Optic Media Converter lengthens DVI link distance in harsh environments. The purpose of the device is to allow both longer distance and more reliable communication on optical fibers in ruggedized military systems using DVI protocol between graphics cards and remote display clusters. The turnkey conversion from copper to fiber optic cables also allows for an exponentially smaller diameter cable, as well as expanded bandwidth, reduced weight, improved network security and virtual immunity from EMI, RFI, and EMP.

Optoelectronic Inserts

The Size 8 Cavity Optoelectronic Inserts transmit and receive differential CML electrical signals over Multimode fiber optic cable. Replacing copper cables with fiber optics enables longer distance communications, higher bandwidth, reduced weight, increased immunity to EMI, RFI, and EMP, and improved link security.



| Part No. | Description | Page No. |
|---------------------------------|--|----------|
| Ethernet Media Converter | | |
| 050-101 | 1000Base-T to 1000Base-SX/LX Media Converter | F-2 |
| DVI Media Converter | | |
| 050-201 | DVI Copper to Fiber Media Converter | F-6 |
| Optoelectronic Inserts | | |
| 050-301 | Size #8 Cavity Optoelectronic Insert Transmitter | F-10 |
| 050-301 | Size #8 Cavity Optoelectronic Insert Receiver | F-12 |

Catalog Notes For all parts in this catalog:
 All parts will be identified with manufacturer's name and part number, space permitting.
 Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only.
 Unless otherwise specified, the following other dimensional tolerances apply:
 .xx = ± .03 (0.8) • .xxx = ± .015 (0.4) • Angles = ± 5°

1000BASE-T to 1000BASE-SX/LX media converter



The Glenair Gigabit Ethernet Media Converter is mechanically hardened to resist weapon-grade shock and vibration benchmarks and is environmentally sealed to IP68 when connectors are in their mated condition. The device is equipped with a gigabit physical layer transceiver to convert electrical data to a standardized serial format and an optical transceiver for electrical to F/O conversion.

The copper port is equipped with automatic correction for MDI/MDI-X crossover, auto-negotiation, pause, digital baseline wander correction, digital adaptive equalizing, echo canceller, and crosstalk canceller. The fiber optic transceiver is equipped with a laser driver, and a 850nm VCSEL or 1310nm FP laser for the transmitter function. The laser driver features a temperature compensation circuit designed to maximize the transmitter's optical power over the full operating temperature range. The receiver section of the fiber optic transceiver is equipped with a photo detector, a transimpedance amplifier, and a limiting amplifier.

KEY FEATURES

- IEEE 802.3-2005 Gigabit Ethernet standard compliant
- -40°C to +85°C operating temperature range
- Ideal for military and other harsh environment applications.
- Meets MIL-STD-810 Mechanical Shock and Vibration
- Meets Mil-STD-1344 immersion resistance
- Up to 550 Meters for VCSEL 850nm version with Multimode fiber
- Up to 10 Kilometers for 1310nm laser version with Singlemode fiber
- Single power supply operation from 5V to 36V, with optional 3.3V version.
- MIL-STD-1560 standard layouts for both electrical and fiber optic connectors
- Available options for fiber receptacle compatible with: 1.25mm, 1.57mm, 2mm, and 2.5mm ferrules sizes. Expanded beam contacts also available.
- Alternate options for electrical and optical connectors available.



050-101
GigaBit Ethernet Copper to Fiber Media Converter
1000BASE-T to 1000BASE-SX/LX Media Converter



1000BASE-T to 1000BASE-SX/LX media converters—ratings and specifications

| Absolute Maximum Rating | | | | | |
|-------------------------|----------|------|-----|------|------|
| Parameter | Symbol | Min | Typ | Max | Unit |
| Storage Temperature | T_s | -55 | | +100 | °C |
| Operating Voltage | V_{cc} | -0.4 | | +40 | V |

| Operating Conditions | | | | | |
|-----------------------|----------|--------------|-----|------------|------|
| Parameter | Symbol | Min | Typ | Max | Unit |
| Operating Temperature | T_{op} | -40 | | +85 | °C |
| Supply Voltages | V_{cc} | 3.14 4.75 | 3.3 | 3.46 36 | V |

| Optical Transmitter | | | | | |
|---|-----------------|-------------|-------------|-------------|------|
| Parameter | Sym | Min | Typ | Max | Unit |
| Optical Output Power 850nm VCSEL 1310nm Fabry-Perot | P_{out} | -9 -5 | -6 -3 | -3 -1 | dBm |
| Optical Wavelength 850nm VCSEL 1310nm Fabry-Perot | λ_{out} | 830 1285 | 850 1310 | 860 1345 | nm |
| Spectral Width 850nm VCSEL 1310nm Fabry-Perot | $\Delta\lambda$ | | | 0.85 4 | nm |

| Optical Receiver | | | | | |
|---|----------------|-------------|-------------|-------------|------|
| Parameter | Sym | Min | Typ | Max | Unit |
| Receiver Input Sensitivity 850nm VCSEL 1310nm Fabry-Perot | P_{in} | -20 -22 | | | dBm |
| Optical Wavelength 850nm VCSEL 1310nm Fabry-Perot | λ_{in} | 830 1270 | 850 1310 | 860 1355 | nm |



| Copper Link Distances | | |
|------------------------------|----------------------|------------|
| Protocol | Cable Type | Distance |
| Gigabit Ethernet, 1000BASE-T | TIA/EIA-568-B Cat 5E | 100 Meters |

| Optical Link Distances | | |
|--|---------------------------------|-----------------------------|
| Protocol | Fiber Type | Distance |
| Gigabit Ethernet, 1000BASE-SX, 850nm VCSEL | 62.5/125µm, 200MHZ*Km | 275 Meters |
| Gigabit Ethernet, 1000BASE-LX, 1310nm FP | 50/125µm, 500MHZ*Km 9/125 µm | 550 Meters 10 Kilometers |

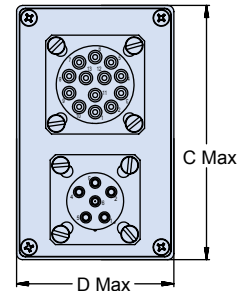
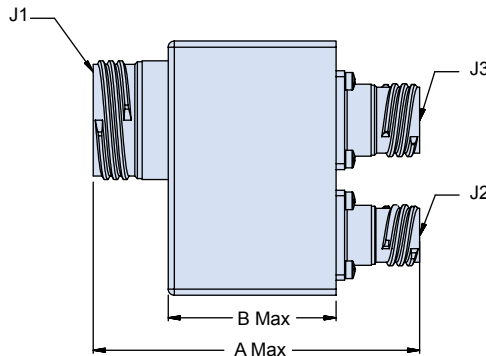
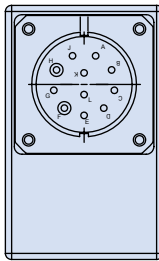
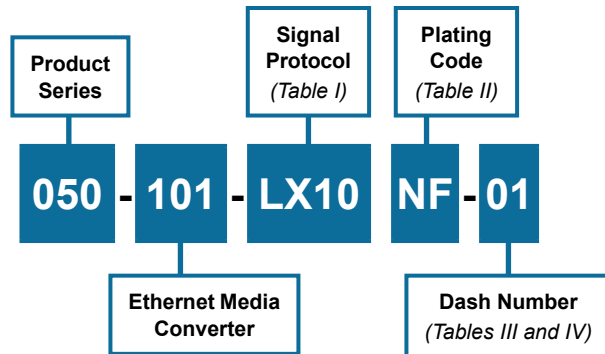
| Power Supply Current @ 85 C Max. Operating Condition | | | |
|--|----------|--------------------------------------|------|
| Parameter | Symbol | Max | Unit |
| Supply Voltage 3.3 V 5 V 12 V 24 V 28 V 36 V | I_{cc} | 700 630 230 110 95 85 | mA |

| Military Specification Compliance | | | |
|-----------------------------------|------------------|-------------|----------------|
| Feature | Standard | Condition | Notes |
| Mechanical Shock | MIL-STD-810 | 40g | 6-9ms |
| Mechanical Vibration | MIL-STD-810 | 30g RMS | 18ms |
| ESD | MIL-STD-883 | Class II | 2200v |
| Mating Durability | MIL-STD-38999/20 | 500 Cycles | <0.5 db change |
| Flame Resistance | MIL-STD-1344 | Method 1012 | 30 Seconds |
| Damp Heat | MIL-STD-1344 | 10 Cycles | 24 Hours |

1000BASE-T to 1000BASE-SX/LX media converters



How To Order



F

Table I: Signal Protocol

| Code | Name | Medium |
|-------|---------------|-------------------|
| -SXMM | 1000BASE-SX | Multi-Mode Fiber |
| -LX10 | 1000BASE-LX10 | Single-Mode Fiber |

Table IV: Dimensions

| Dash No. | A Max | B Max | C Max | D Max |
|----------|------------------|------------------|------------------|------------------|
| -01 | 3.430 (87.12) | 1.780 (45.21) | 2.680 (68.10) | 1.670 (42.42) |

Table II: Material And Finish

| SYM | Material | Finish Description |
|-----|----------|-------------------------|
| M* | Aluminum | Electroless Nickel |
| MT | | Nickel - PTFE |
| NF | | Cadmium, Olive Drab |
| ZN | | Zinc-Nickel, Olive Drab |
| ZNU | | Zinc-Nickel, Black |

Material and Finish

Connectors: See indicated data sheets (Table III)

Enclosures: See Table II

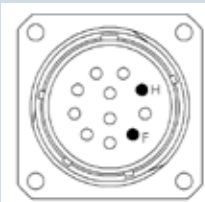

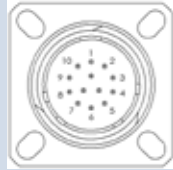
Printed Circuit Board: .062±.006 thick glass epoxy, natural color, laminate NEMA grade FR-4.1 ounce copper. This is a 6 layer board.

Assembly Notes

All connector cavities without defined contacts to be populated with appropriate sealing plug. MS27488 Type sealing plugs are recommended.

050-101
GigaBit Ethernet Copper to Fiber Media Converter
1000BASE-T to 1000BASE-SX/LX Media Converter
Connector Configurations



| Table III: Mating Connectors and Pin Outs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|-------------|------------------|-------------|---|---------|--|------|--|-------------|------------|-------------|-----|-------------|---|------|---|------|----|------|---|--|------------|-------------|------------------|----|---|------|---|------|---|------|---|------|---|------|---|------|---|------|----|------|
| Dash No. |  | J1: Optical Connector | Mating Connector | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Connector Part Number | 233-105-00NF19-11SN (D38999/20WF11SN Type) | 233-105-G6NF19-11PN (D38999/26WF11PN Type) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contact Part Numbers and Locations | 181-001-125 • (M29504/5-4237) | | 181-002-126 • (M29504/4-4208) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>Transmit</td> </tr> <tr> <td>F</td> <td>Receive</td> </tr> </tbody> </table> | | Pin Number | Description | H | Transmit | F | Receive | <table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>Transmit</td> </tr> <tr> <td>F</td> <td>Receive</td> </tr> </tbody> </table> | | Pin Number | Description | H | Transmit | F | Receive | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Pin Number | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | Transmit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F | Receive | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pin Number | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | Transmit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F | Receive | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | J2: Power Connector | Mating Connector | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Connector Part Number | 233-105-00NF09-35PN (D38999/20WA35PN Type) | 233-105-00NF09-35SN (D38999/20WA35SN Type) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contact Part Numbers and Locations | 850-002-22-360 • (M39029/58-360) | | 850-002-22-348 • (M39029/58-348) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1-4</td> <td>Case Ground</td> </tr> <tr> <td>5</td> <td>VEE</td> </tr> <tr> <td>6</td> <td>VCC</td> </tr> </tbody> </table> | | Pin Number | Description | 1-4 | Case Ground | 5 | VEE | 6 | VCC | <table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1-4</td> <td>Case Ground</td> </tr> <tr> <td>5</td> <td>VEE</td> </tr> <tr> <td>6</td> <td>VCC</td> </tr> </tbody> </table> | | Pin Number | Description | 1-4 | Case Ground | 5 | VEE | 6 | VCC | | | | | | | | | | | | | | | | | | | | | | | | |
| | Pin Number | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4 | Case Ground | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | VEE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | VCC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pin Number | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-4 | Case Ground | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | VEE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | VCC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | J3: Data Connector | Mating Connector | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Connector Part Number | 233-105-G6NF11-35PN (D38999/26WB35PN Type) | 233-105-G6NF11-35SN (D38999/26WB35SN Type) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contact Part Numbers and Locations | 850-002-22-360 • (M39029/58-360) | | 850-002-22-348 • (M39029/56-348) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1, 6, 11, 12, 13</td> <td>NC</td> </tr> <tr> <td>2</td> <td>MDA+</td> </tr> <tr> <td>3</td> <td>MDA-</td> </tr> <tr> <td>4</td> <td>MDB+</td> </tr> <tr> <td>5</td> <td>MDB-</td> </tr> <tr> <td>7</td> <td>MDC-</td> </tr> <tr> <td>8</td> <td>MDC+</td> </tr> <tr> <td>9</td> <td>MDD-</td> </tr> <tr> <td>10</td> <td>MDD+</td> </tr> </tbody> </table> | | Pin Number | Description | 1, 6, 11, 12, 13 | NC | 2 | MDA+ | 3 | MDA- | 4 | MDB+ | 5 | MDB- | 7 | MDC- | 8 | MDC+ | 9 | MDD- | 10 | MDD+ | <table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1, 6, 11, 12, 13</td> <td>NC</td> </tr> <tr> <td>2</td> <td>MDA+</td> </tr> <tr> <td>3</td> <td>MDA-</td> </tr> <tr> <td>4</td> <td>MDB+</td> </tr> <tr> <td>5</td> <td>MDB-</td> </tr> <tr> <td>7</td> <td>MDC-</td> </tr> <tr> <td>8</td> <td>MDC+</td> </tr> <tr> <td>9</td> <td>MDD-</td> </tr> <tr> <td>10</td> <td>MDD+</td> </tr> </tbody> </table> | | Pin Number | Description | 1, 6, 11, 12, 13 | NC | 2 | MDA+ | 3 | MDA- | 4 | MDB+ | 5 | MDB- | 7 | MDC- | 8 | MDC+ | 9 | MDD- | 10 | MDD+ |
| | Pin Number | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1, 6, 11, 12, 13 | NC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | MDA+ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | MDA- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | MDB+ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 5 | MDB- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | MDC- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | MDC+ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | MDD- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | MDD+ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pin Number | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1, 6, 11, 12, 13 | NC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | MDA+ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | MDA- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | MDB+ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | MDB- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | MDC- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | MDC+ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | MDD- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | MDD+ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

-01



Digital Visual Interface (DVI) copper to fiber media converter for High Definition Video



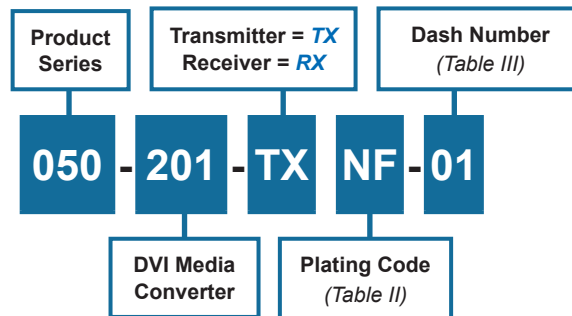
DVI Copper to Fiber Media Converter

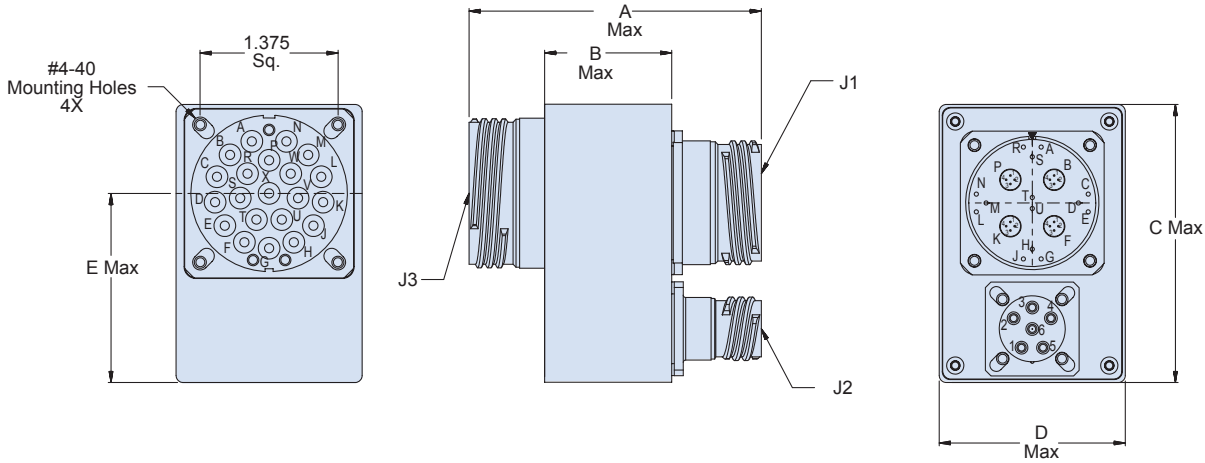
The Glenair Digital Visual Interface (DVI) Copper to Fiber Optic Media Converter lengthens DVI link distance in harsh environments. It allows both longer distance and more reliable communication on optical fibers in ruggedized military systems using DVI protocol between graphics cards and remote displays.

KEY FEATURES

- -40°C to +85°C operating temperature range
- Meets MIL-STD-810 Mechanical Shock and Vibration
- Meets MIL-STD-1344 immersion resistance
- Fiber link distance of up to 320meters with 50/125 um Multimode fiber (500 MHz km fiber)
- Fiber connector interface compatible with MIL-T-29504
- D38999 connector with quadrax electrical interface for RGB and Clock
- TMDS compatible electrical interface
- Operates from a single power supply 18V to 36V
- MIL-STD-1560 standard layouts for both electrical and fiber optic connectors
- Available options for fiber receptacle compatible with: 1.25mm, 1.57mm, 2mm, and 2.5mm ferrules sizes. Expanded beam contacts also available. Pin or socket contacts supported.
- Alternate options for electrical and optical connectors available.
- Custom packaging available.

How To Order

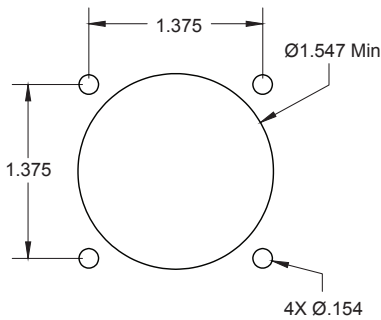




| Table II: Material And Finish | | |
|-------------------------------|----------|-------------------------|
| SYM | Material | Finish Description |
| M* | Aluminum | Electroless Nickel |
| MT | | Nickel - PTFE |
| NF | | Cadmium, Olive Drab |
| ZN | | Zinc-Nickel, Olive Drab |
| ZNU | | Zinc-Nickel, Black |

| Table III: Dimensions | | | | | |
|-----------------------|----------------|-----------------|-----------------|-----------------|------------------|
| Dash No. | A Max | B Max | C Max | D Max | E Max |
| -01 | 3.8 (96.52) | 2.00 (50.80) | 2.78 (70.61) | 2.00 (50.80) | 1.890 (48.01) |

Recommended Panel Cutout



Max Screw Length 3/8"
with .060 Thick Panel

Material and Finish

Connectors: See indicated data sheets (Table III)

Enclosures: See Table I

Printed Circuit Board: .062±.006 thick glass epoxy, natural color, laminate NEMA grade FR-4.1 ounce copper. This is a 6 layer board.

Interface connectors are designed to mate with any QPL manufacturer's MIL-DTL-38999 plug having the same insert arrangement and polarization; opposite contact gender. Mating connector information shown in Table II.

Assembly Notes

All connector cavities without defined contacts to be populated with appropriate sealing plug. MS27488 Type sealing plugs are recommended.

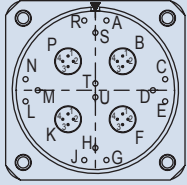
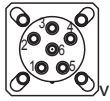
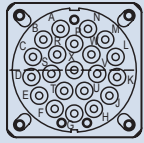
050-201 DVI Copper to Fiber Media Converter



Table IV: J1 Data Connector/Contacts

| PIN | Channel | Function | Input / Output | + / - | Mating Contact |
|-----|---------|------------|----------------|-------|----------------|
| B1 | 0 | TMDS-Blue | Input | - | 854-002-XX |
| B2 | 0 | TMDS-Blue | Input | + | |
| B3 | 0 | TMDS-Blue | Output | - | |
| B4 | 0 | TMDS-Blue | Output | + | |
| F1 | 1 | TMDS-Green | Input | - | 854-002-XX |
| F2 | 1 | TMDS-Green | Input | + | |
| F3 | 1 | TMDS-Green | Output | - | |
| F4 | 1 | TMDS-Green | Output | + | |
| K1 | 2 | TMDS-Red | Input | - | 854-002-XX |
| K2 | 2 | TMDS-Red | Input | + | |
| K3 | 2 | TMDS-Red | Output | - | |
| K4 | 2 | TMDS-Red | Output | + | |
| P1 | 3 | TMDS-Clock | Input | - | 854-002-XX |
| P2 | 3 | TMDS-Clock | Input | + | |
| P3 | 3 | TMDS-Clock | Output | - | |
| P4 | 3 | TMDS-Clock | Output | + | |

Table II: Mating Connectors and Pin Outs: Dash No. -01

| | J1: Data Connector | Mating Connector |
|---|---|---|
|  | | |
| Connector Part Number | 257-606*00-19Q-18PN (D38999/20WF18PN type) | 257-606*G6-19Q-18SN (D38999/20WF18SN type) |
|  | J2: Power Connector | Mating Connector |
| Connector Part Number | 233-105-00*09-35PN (D38999/20WA35PN type) | 233-105-G6*09-35SN (D38999/20WA35SN type) |
|  | J3: Optical Connector | Mating Connector |
| Connector Part Number | 180-091*H7-23-21SN (D38999/20WH21SN type) | 180-091*06-23-21PN (D38999/26WH21PN type) |

* - Depends on finish, see Table II

Table V: J2 Power Ports/Contacts

| PIN | Description | Contact Part No. | Mating Contact |
|-----|----------------------|-----------------------------------|-----------------------------------|
| 1 | Isolated Case Ground | 850-002-22-360 (M39029/58-360) | 850-002-22-348 (M39029/56-348) |
| 2 | Isolated Case Ground | 850-002-22-360 (M39029/58-360) | 850-002-22-348 (M39029/56-348) |
| 3 | Isolated Case Ground | 850-002-22-360 (M39029/58-360) | 850-002-22-348 (M39029/56-348) |
| 4 | Isolated Case Ground | 850-002-22-360 (M39029/58-360) | 850-002-22-348 (M39029/56-348) |
| 5 | VDC Return | 850-002-22-360 (M39029/58-360) | 850-002-22-348 (M39029/56-348) |
| 6 | 18V-36V DC | 850-002-22-360 (M39029/58-360) | 850-002-22-348 (M39029/56-348) |

Table VI: J3 Fiber Ports/Contacts

| PIN | DVI Data / Clock | Color / Clock | TX Output / RX Input | Contact Part No. | Mating Contact |
|-----|------------------|---------------|----------------------|-----------------------------|-----------------------------|
| J | 0 | Blue | Output-TX | 181-001-125 (M29504/5-4237) | 181-002-126 (M29504/4-4208) |
| L | 0 | Blue | Input-RX | 181-001-125 (M29504/5-4237) | 181-002-126 (M29504/4-4208) |
| N | 1 | Green | Output-TX | 181-001-125 (M29504/5-4237) | 181-002-126 (M29504/4-4208) |
| G | 1 | Green | Input-RX | 181-001-125 (M29504/5-4237) | 181-002-126 (M29504/4-4208) |
| X | 2 | Red | Output-TX | 181-001-125 (M29504/5-4237) | 181-002-126 (M29504/4-4208) |
| A | 2 | Red | Input-RX | 181-001-125 (M29504/5-4237) | 181-002-126 (M29504/4-4208) |
| E | 3 | Clock | Output-TX | 181-001-125 (M29504/5-4237) | 181-002-126 (M29504/4-4208) |
| C | 3 | Clock | Input-RX | 181-001-125 (M29504/5-4237) | 181-002-126 (M29504/4-4208) |



050-201 DVI Copper to Fiber Media Converter

DVI copper to fiber media converter—ratings and specifications

| Absolute Maximum Rating | | | | |
|-------------------------|--------|------|------|------|
| Parameter | Symbol | Min | Max | Unit |
| Storage Temperature | Ts | -55 | +100 | °C |
| Supply Voltage | Vcc | -0.5 | +40 | V |
| Data Input Voltage | VI | -0.5 | +3.3 | V |

| Operating Conditions | | | | | |
|-----------------------|--------|-----|-----|-----|------|
| Parameter | Symbol | Min | Typ | Max | Unit |
| Operating Temperature | TA | -40 | | +85 | °C |
| Supply Voltage | Vcc | +18 | +28 | +36 | V |
| Power Supply Noise | NP | | | 100 | mV |

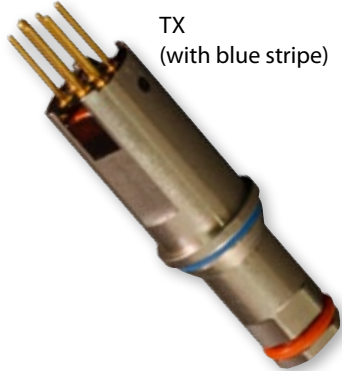
| Optical Transmitters—Operating Temperature (-40°C To +85°C), Supply Voltage Vcc = 18V To 36V | | | | | |
|--|--------|---------|---------|---------|------|
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
| Optical Output Power | PO | -6.0 | -4 | -1 | dBm |
| Optical Output Wavelength | λOUT | 830 | 850 | 860 | nm |
| Spectral Width(RMS) | Δλ | | | .85 | nm |
| Extinction Ratio | ER | 9.0 | | | dB |

| Optical Receivers—Operating Temperature (-40°C To +85°C), Supply Voltage Vcc = 18V To 36V | | | | | |
|---|--------|---------|---------|---------|------|
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
| Optical Input Power | PI | -19.0 | | 0 | dBm |
| Optical Input Wavelength | λIN | 830 | 850 | 860 | nm |

| Power Supply—Operating Temperature (-40°C To +85°C), Supply Voltage Vcc = 18V To 36V | | | |
|--|--------|---------|------|
| Parameter | Symbol | Maximum | Unit |
| Power Supply Current | ICC | 200 | mA |

| Military Specification Compliance | | | |
|-----------------------------------|-------------|-----------|-------|
| Feature | Standard | Condition | Notes |
| ESD | MIL-STD-883 | Class II | 2200V |
| Shock | MIL-STD-810 | 40g | 6-9ms |
| Vibration | MIL-STD-810 | 40g RMS | |

Size 8 cavity optoelectronic insert transmitter



Patent Pending

TX
(with blue stripe)

The Size 8 Cavity Optoelectronic (OE) Insert Transmitter consists of a laser driver and a 850nm VCSEL laser. The laser driver consists of a temperature compensation circuit designed to maintain the transmitter's optical power over the entire operating temperature range.

The transmitter converts differential CML electrical signals to fiber optics and transmits the light over Multimode fiber optic cable. The transmitter has a TX Disable pin to turn off transmitter output. The TX Fault pin is used to signal a fault condition.

The Size 8 Cavity Optoelectronic Insert Transmitter is environmentally hardened to resist mechanical shock and vibration and is sealed and water tight when connectors are mated.

The receptacle has a 1.25mm ceramic ferrule with 50/125um fiber interface able and 50/125um or 62.5/125um Multimode fibers. The transmitter's electrical interface is through 6 pin headers for soldering to a rigid or flexible printed circuit board.

Applications

Extend distances for Ethernet network switches, routers, Digital Video transmission, and sFPDP links .

Copper cables are replaced by fiber optic cables which enable longer distance communications, higher bandwidth, reduced weight, increased immunity to EMI, RFI, and EMP, and improve link security.

KEY FEATURES

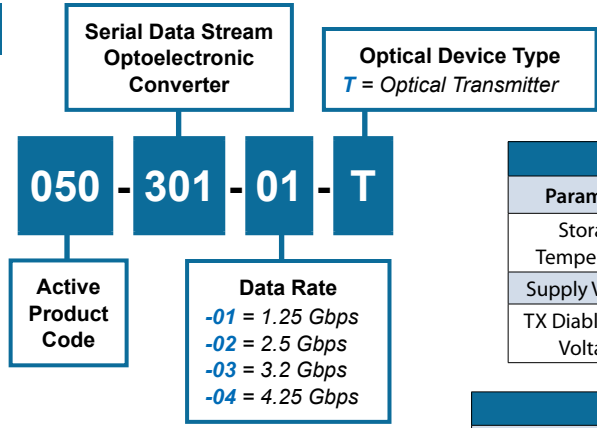
- Front-release Size #8 OE converter designed for ARINC 600
- ARINC 664, 801, 803, 804, and 818 standard Compliant
- Data rates from 125Mbps to 3.8 Gbps
- Supports Fast and Gigabit Ethernet, AFDX, 1x/2x Fibre Channel, DVI, HDMI, SFPDP, Serial Rapid I/O (sRIO).
- Designed for harsh environment applications.
- Operating temperature range of -40°C to +85°C
- 100 ohms differential CML inputs with TX Fault and TX Disable
- Works with Multimode 50/125uM or 62.5/125 uM fiber
- Single 3.3v power supply
- ARINC 801 1.25mm ceramic fiber ferrule



050-301 Optoelectronic Insert Transmitter, Size 8 Cavity Specifications



How To Order



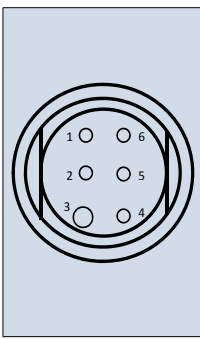
| Absolute Maximum Rating | | | | | |
|--------------------------|----------------------|---------|---------|-----------------|------|
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
| Storage Temperature | T _s | -55 | | +100 | °C |
| Supply Voltage | V _{cc} | -0.4 | | +4 | V |
| TX Disable Input Voltage | V _{Disable} | -0.4 | | V _{cc} | V |

| Operating Conditions | | | | | |
|----------------------------|------------------------|---------|---------|---------|-------------------|
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
| Operating Temperature | T _{op} | -40 | | +85 | °C |
| Supply Voltages | V _{cc} | 3.14 | 3.3 | 3.46 | V |
| Differential Input Voltage | V _{ID} | 250 | | 2200 | mV _{P-P} |
| Power Supply Noise | V _{CC} Ripple | | | 0.15 | V _{P-P} |

| Optical Transmitter | | | | | |
|----------------------|-------------------|---------|---------|---------|------|
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
| Optical Output Power | P _{out} | -6.5 | | -1 | dBm |
| Optical Wavelength | λ _{out} | 830 | 850 | 860 | nm |
| Spectral Width | Δλ _{rms} | | | 0.85 | nm |
| Extinction Ratio | ER | 6 | 12 | | dB |
| Total Jitter | TJ | | | 55 | ps |

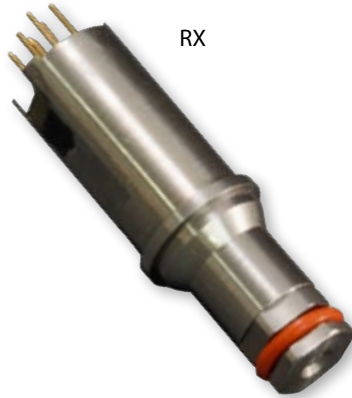
| Power Supply Current V _{cc} = 3.14 to 3.46V | | | | | |
|--|-----------------|---------|---------|---------|------|
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
| Supply Current | I _{cc} | | | 90 | mA |

| Example Optical Link Distances | | |
|--------------------------------|-----------------------|-------------|
| Protocol | Fiber Type | Distance |
| Gigabit Ethernet | 62.5/125μm, 200MHZ*Km | 27.5 Meters |
| | 50/125μm, 500MHZ*Km | 550 Meters |



| Electrical Pin Arrangement | | | |
|----------------------------|-----------------|---|---------------------------------|
| Pin Number | Symbol | Description | Logic |
| 1 | TX Disable | Transmit Disable (Input) Logic "1" Input → Disable Transmitter Output | CMOS Internal 4.7KΩ pulldown |
| 2 | V _{cc} | Power Supply | |
| 3 | GND | Signal Ground | |
| 4 | TX Fault | Transmitter Fault Indicator (Output) Logic "1:" Output → Transmitter Fault Condition | CMOS Open Drain |
| 5 | TX- | Transmitter Inverted Data (Input) | CML (Current Mode Logic) |
| 6 | TX+ | Transmitter Non-Inverter Data (Input) | CML (current Mode Logic) |

Size 8 cavity optoelectronic insert receiver



Patent Pending

The Size 8 Cavity Optoelectronic Insert Receiver consists of a 850nm PIN Photo Detector, a Transimpedance Amplifier with automatic gain control circuit, and a Limiting Amplifier.

The Receiver converts Optical signals to differential CML electrical signals. Differential output data signals are CML compatible. Receiver includes a CMOS compatible Loss of Signal Indicator (LOS) which is asserted high in case of invalid optical signal at the input of the receiver. Receiver differential CML outputs are squelched when LOS is asserted to prevent invalid data.

The Size 8 Cavity Optoelectronic insert Receiver is environmentally hardened to resist mechanical shock and vibration. It is sealed to be water tight when connectors are mated.

The receptacle has a 1.25mm ceramic fiber stub with 62.5/125um fiber interface able with 50/125um or 62.5/125 um Multimode fibers. The receiver's electrical interface is through 6 pin headers for soldering to a rigid or flexible printed circuit board.

Applications

Size 8 Cavity Optoelectronic Inserts allow long distance and reliable communication in harsh environments.

Extend distances for network switches, routers, Digital Video transmission, and SFPDP links .

Copper cables are replaced by fiber optic cables which enable longer distance communications, higher bandwidth, reduced weight, increased immunity to EMI, RFI, and EMP, and improve link security.

KEY FEATURES

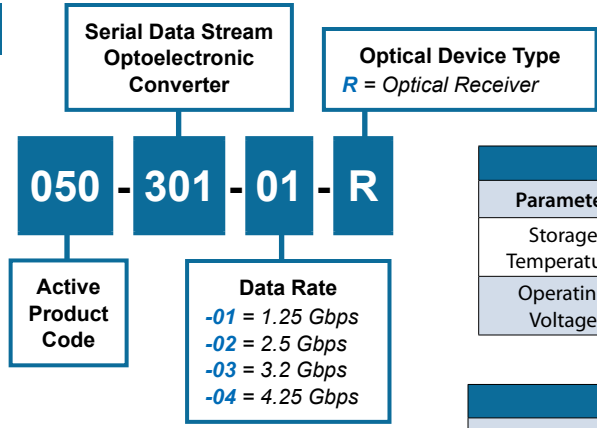
- Front-release Size #8 OE converter designed for ARINC 600
- ARINC 664, 801, 803, 804, and 818 standard Compliant
- Data rates from 125Mbps to 4.25Gbps
- Supports Fast and Gigabit Ethernet, AFDX, 1x/2x Fibre Channel, DVI, HDMI, SFPDP, Serial Rapid I/O (sRIO).
- Designed for harsh environment applications.
- Operating temperature range of -40°C to +85°C
- 100 ohms differential CML Outputs with Loss Of Signal indicator (LOS)
- Link distance of up to 550 Meters with Multimode 50/125uM fiber
- Single 3.3v power supply
- ARINC 801 1.25mm ceramic fiber ferrule



050-301 Optoelectronic Insert Receiver, Size 8 Cavity Specifications



How To Order

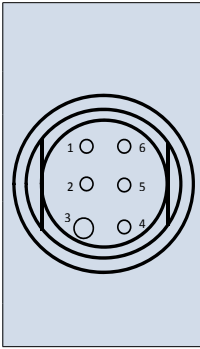


| Absolute Maximum Rating | | | | | |
|-------------------------|-----------------|---------|---------|---------|------|
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
| Storage Temperature | T _s | -55 | | +100 | °C |
| Operating Voltage | V _{cc} | -0.4 | | +4 | V |

| Operating Conditions | | | | | |
|-----------------------|------------------------|---------|---------|---------|------|
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
| Operating Temperature | T _{op} | -40 | | +85 | °C |
| Supply Voltages | V _{cc} | 3.14 | 3.3 | 3.46 | V |
| Power Supply Noise | V _{CC} Ripple | | | 0.15 | V |

| Optical Receiver | | | | | |
|---------------------------------|--------------------|---------|---------|---------|------|
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
| Optical Sensitivity | | | | | |
| -01 = 1.25 Gbps | | -17 | | | dBm |
| -02 = 2.5 Gbps | | -15 | | | dBm |
| -03 = 3.2 Gbps | | -15 | | | dBm |
| -04 = 4.25 Gbps | | -14 | | | dBm |
| Optical Overload | | | | 0 | dBm |
| Optical Wavelength | λ _{out} | 830 | | 860 | nm |
| Differential Output Swing (P-P) | V _{diff} | 600 | | 1200 | mV |
| LOS Assert Level | LOS _h | -22 | | | dBm |
| LOS Hysteresis | LOS _{HYS} | 1.5 | 2.3 | | dB |

| Power Supply Current V _{cc} = 3.14 to 3.46V | | | | | |
|--|-----------------|---------|---------|---------|------|
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
| Supply Current | I _{cc} | | | 70 | mA |



| Electrical Pin Arrangement | | | | |
|----------------------------|-----------------|---|--------------------------|--|
| Pin Number | Symbol | Description | Logic | |
| 1 | GND | Signal Ground | | |
| 2 | V _{cc} | Power Supply | | |
| 3 | GND | Signal Ground | | |
| 4 | LOS | Los of Signal (Output) Loss of Valid Optical Signal → Logic "1" Output | CMOS Open Drain | |
| 5 | RX- | Receiver Inverted Data (Input) | CML (Current Mode Logic) | |
| 6 | RX+ | Receiver Non-Inverter Data (Input) | CML (current Mode Logic) | |



FIBER OPTIC

GLENAIR FRONT RELEASE

FIBER OPTIC CONNECTION SYSTEM



The unique design of the Glenair 181-011 and 181-012 series fiber optic termini allows for rapid integration of optical media in a broad range of cylindrical and rectangular connector packages and systems. By placing the retention and environmental sealing components directly on the termini, Glenair is able to fabricate unique fiber optic connector shell packages without costly tooling and engineering.



Glenair Front Release (GFR) Fiber Optic Connection System General Information



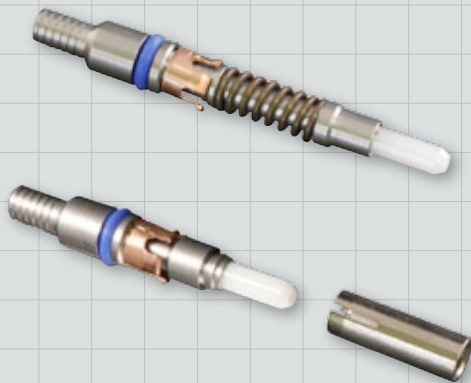
Glenair Front Release System

Rapid prototyping and production of fiber optic connectors in a wide range of custom packages

Glenair Front Release (GFR) fiber optic connection systems perform at insertion loss levels equivalent to other high-performance, tactical fiber optic systems such as MIL-DTL-38999 and MIL-PRF-28876. The GFR system has enabled Glenair to integrate optical media in Micro-D and D-Subminiature shells as well as in cylindrical bodies. Contact the factory for availability and application engineering assistance for both standard and custom fiber optic connection systems.



| Product No. | Description | Page No. |
|-----------------------------------|---|----------|
| GFR Fiber Optic Termini | | |
| 181-011 | Front Release Socket Terminus, size 16 | G-2 |
| 181-012 | Front Release Pin Terminus, size 16 | G-4 |
| GFR Fiber Optic Connectors | | |
| 180-063 | Micro-D GFR Receptacle Connector | G-6 |
| 180-064 | Micro-D GFR Plug Connector | G-8 |
| 180-065 | D-Subminiature GFR Receptacle Connector | G-10 |
| 180-066 | D-Subminiature GFR Plug Connector | G-12 |



Catalog Notes

Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only. Unless otherwise specified, the following other dimensional tolerances apply:
 .xx = ± .03 (0.8) • .xxx = ± .015 (0.4) • Angles = ± 5°

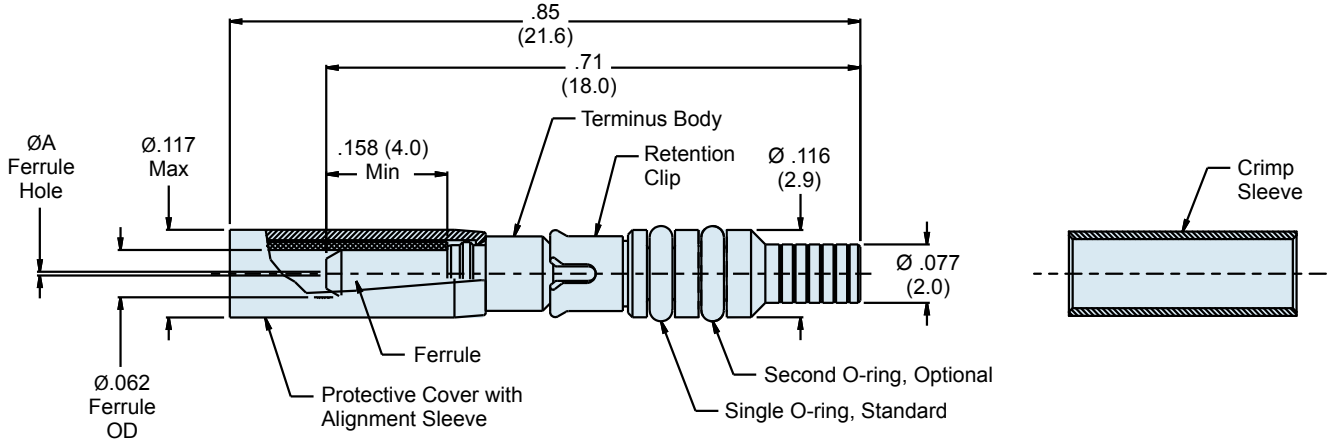
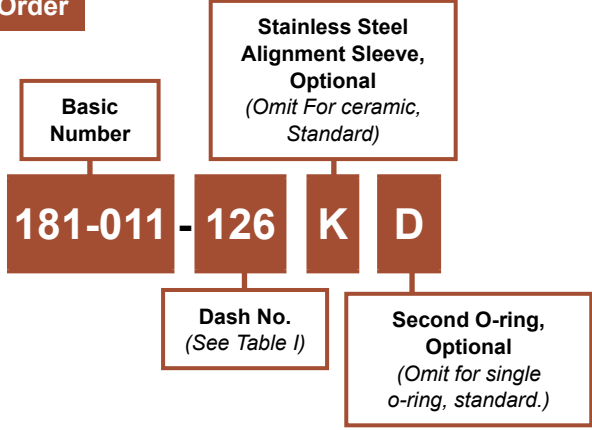


181-011 Glenair Front Release (GFR) Fiber Optic Socket Terminus, Size 16

Size 16 Glenair front release (GFR) fiber optic socket terminus



How To Order



Material and Finish
 Ferrule, Alignment Sleeve: Zirconia Ceramic
 Protective Cover: Spring Alloy/Nickel
 Terminus Body: Stainless Steel/Passivate
 Retention Clip: Spring Alloy
 O-Ring(s): Fluorosilicone
 Crimp Sleeve: Brass Alloy/Nickel

Notes
 Alignment sleeve assembly (protective cover and alignment sleeve) and crimp sleeve are supplied with assembly. Spares may be ordered separately (See Table II).
 See Glenair GAP-031 and GAP-031B for termination and assembly tools/procedures.
 See Glenair drawing 181-012 for mating pin terminus, and 181-051 for dummy terminus.

181-011
Glenair Front Release (GFR)
Fiber Optic Socket Terminus, Size 16



Table I: Assembly Dash Number

| Assembly Dash Number | Ø A (Micron) | Typ. Fiber Type | Fiber Size Core/Cladding/Coating (Microns) |
|----------------------|--------------|-----------------|--|
| 181-011-125 | 125.5 | Single Mode | 9/125 |
| 181-011-126S | 126.0 | Single Mode | 9/125 |
| 181-011-126 | 126.0 | Multi Mode | 50/125, 62.5/125 |
| 181-011-142 | 142.0 | Multi Mode | 100/140 |
| 181-011-156 | 156.0 | Multi Mode | 62.5/125/155 (Polyimide) |
| 181-011-173 | 173.0 | Multi Mode | 100/140/172 (Polyimide) |
| 181-011-175 | 175.0 | Multi Mode | 100/140/172 (Polyimide) |
| 181-011-231 | 231.0 | Multi Mode | 200/225 |
| 181-011-236 | 236.0 | Multi Mode | 200/230 |
| 181-011-286 | 286.0 | Multi Mode | 200/280 |
| 181-011-448 | 448.0 | Multi Mode | 400/440 |

Consult factory for additional sizes

Table II: Tools and Accessories

| Part Number | Description |
|------------------|--|
| 265-002 | Crimp Sleeve, Ø 2.2mm Max Jacket |
| 181-011-S | Protective Cover with Ceramic Sleeve |
| 181-011-K | Protective Cover with Stainless Steel Sleeve |
| 182-005S | Polishing Tool |
| 182-012 | Crimp Tool |
| 182-013 | Insertion Tool, Straight |
| 182-014 | Insertion Tool, 90 Degree |
| 182-015 | Removal Tool |
| 182-016 | Insertion/Removal Tool, Alignment Sleeve |





181-012 Glenair Front Release (GFR) Fiber Optic Pin Terminus, Size 16

Size 16 Glenair front release (GFR) fiber optic pin terminus

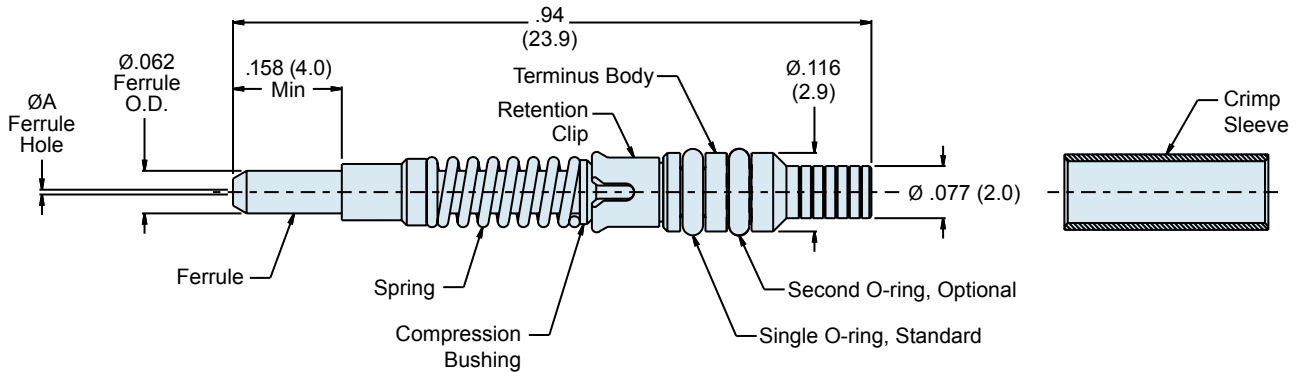
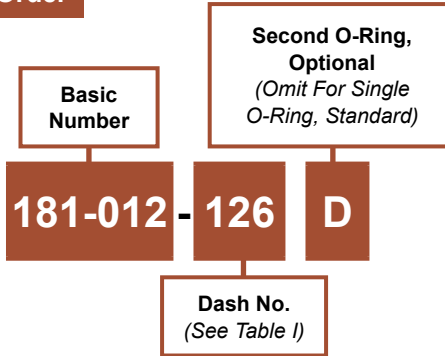


Single O-Ring Design (Standard)



Dual O-Ring Design

How To Order



Material and Finish

Ferrule: Zirconia Ceramic
 Body: Stainless Steel/Passivate
 Spring: Stainless Steel/Passivate
 Bushing: Stainless Steel/Passivate
 Retention Clip: Spring Alloy
 O-Ring(s): Fluorosilicone
 Crimp Sleeve: Brass Alloy/Nickel

Notes

Crimp sleeve supplied with assembly. Spares may be ordered separately (see Table II).
 See Glenair GAP-031 and GAP-031B for termination and assembly tools/procedures.
 See Glenair drawing 181-011 for mating socket terminus, and 181-051 for dummy terminus

181-012
Glenair Front Release (GFR)
Fiber Optic Pin Terminus, Size 16



Glenair Front
Release System

Table I: Assembly Dash Number

| Assembly Dash Number | Ø A (Micron) | Typ. Fiber Type | Fiber Size Core/Cladding/Coating (Microns) |
|----------------------|--------------|-----------------|--|
| 181-012-125 | 125.5 | Single Mode | 9/125 |
| 181-012-126S | 126.0 | Single Mode | 9/125 |
| 181-012-126 | 126.0 | Multi Mode | 50/125, 62.5/125 |
| 181-012-142 | 142.0 | Multi Mode | 100/140 |
| 181-012-156 | 156.0 | Multi Mode | 62.5/125/155 (Polyimide) |
| 181-012-173 | 173.0 | Multi Mode | 100/140/172 (Polyimide) |
| 181-012-175 | 175.0 | Multi Mode | 100/140/172 (Polyimide) |
| 181-012-231 | 231.0 | Multi Mode | 200/225 |
| 181-012-236 | 236.0 | Multi Mode | 200/230 |
| 181-012-286 | 286.0 | Multi Mode | 200/280 |
| 181-012-448 | 448.0 | Multi Mode | 400/440 |

Consult factory for additional sizes

Table II: Tools and Accessories

| Part Number | Description |
|-----------------|----------------------------------|
| 265-002 | Crimp Sleeve, Ø 2.2mm Max Jacket |
| 182-005P | Polishing Tool |
| 182-012 | Crimp Tool |
| 182-013 | Insertion Tool, Straight |
| 182-014 | Insertion Tool, 90 Degree |
| 182-015 | Removal Tool |



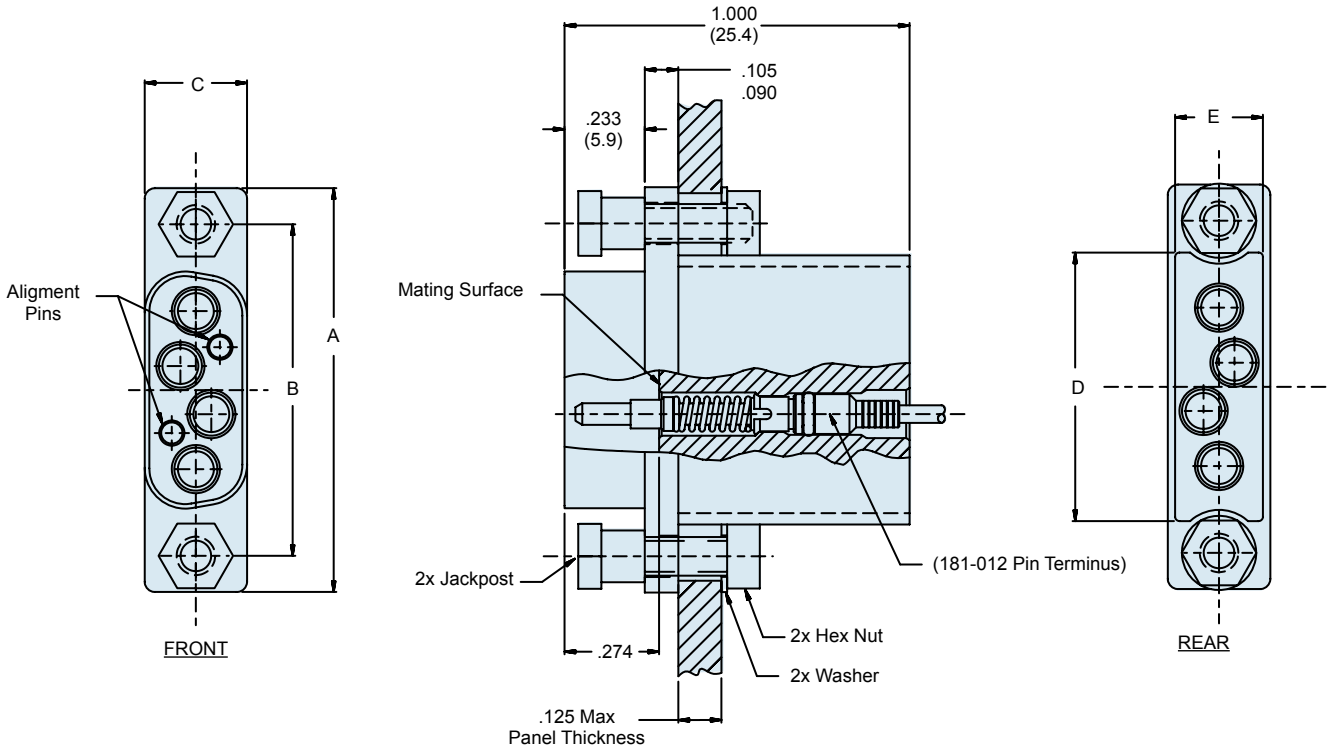
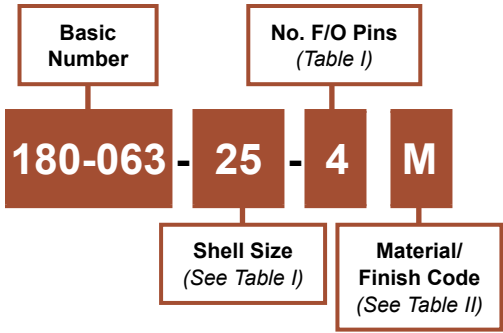


180-063 Micro-D Fiber Optic Receptacle Connector for Glenair Front Release Pin Terminus 181-012

Micro-D GFR fiber optic receptacle connector



How To Order



Material and Finish

Shell: See Table II
Misc. Hardware: Stainless Steel/Passivate

Notes

Fiber Optic Pin Terminus to be ordered separately (see Glenair drawing 181-012).
Backshell to be ordered separately (consult Glenair for available backshell).
See Glenair drawing 180-064 for mating plug connector.

180-063

**Micro-D Fiber Optic Receptacle Connector
for Glenair Front Release Pin Terminus 181-012**



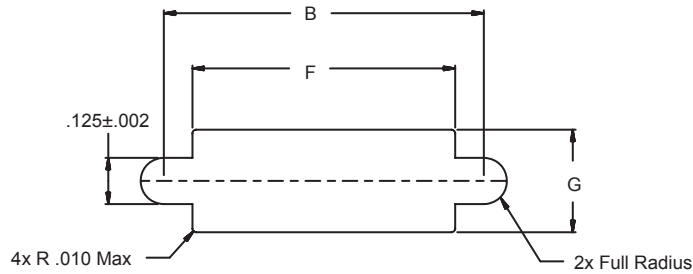
Glenair Front
Release System

Table I: Shell Size

| Shell Size | A ±.010 (0.25) | B ±.003 (0.08) | C ±.010 (0.25) | D ±.010 (0.25) | E ±.002 (0.05) | F ±.005 (0.13) | G ±.005 (0.13) | Max F.O. Pin |
|------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------|
| 9 | .775 (19.7) | .565 (14.4) | .298 (7.6) | .380 (9.7) | .255 (6.5) | .410 (10.4) | .270 (6.9) | 1 |
| 15 | .925 (23.5) | .715 (18.2) | .298 (7.6) | .530 (13.5) | .255 (6.5) | .560 (14.2) | .270 (6.9) | 2 |
| 21 | 1.075 (27.3) | .865 (22.0) | .298 (7.6) | .680 (17.3) | .255 (6.5) | .710 (18.0) | .270 (6.9) | 3 |
| 25 | 1.175 (29.8) | .965 (24.5) | .298 (7.6) | .780 (19.8) | .255 (6.5) | .810 (20.6) | .270 (6.9) | 4 |
| 31 | 1.325 (33.7) | 1.115 (28.3) | .298 (7.6) | .930 (23.6) | .255 (6.5) | .960 (24.4) | .270 (6.9) | 5 |
| 100 | 2.160 (54.9) | 1.800 (45.7) | .384 (9.8) | 1.425 (36.2) | .322 (8.2) | 1.455 (37.0) | .340 (8.6) | 8 |

Table II: Material/Finish

| Code | Material | Finish |
|------|-----------------|--|
| C | Aluminum Alloy | Anodize, Black |
| M | | Electroless Nickel |
| NF | | Cadmium, Olive Drab, Over Electroless Nickel |
| ZN | | Zinc-Nickel, Olive Drab, Over Electroless Nickel |
| Z1 | Stainless Steel | Passivate |



Recommended Panel Cutout



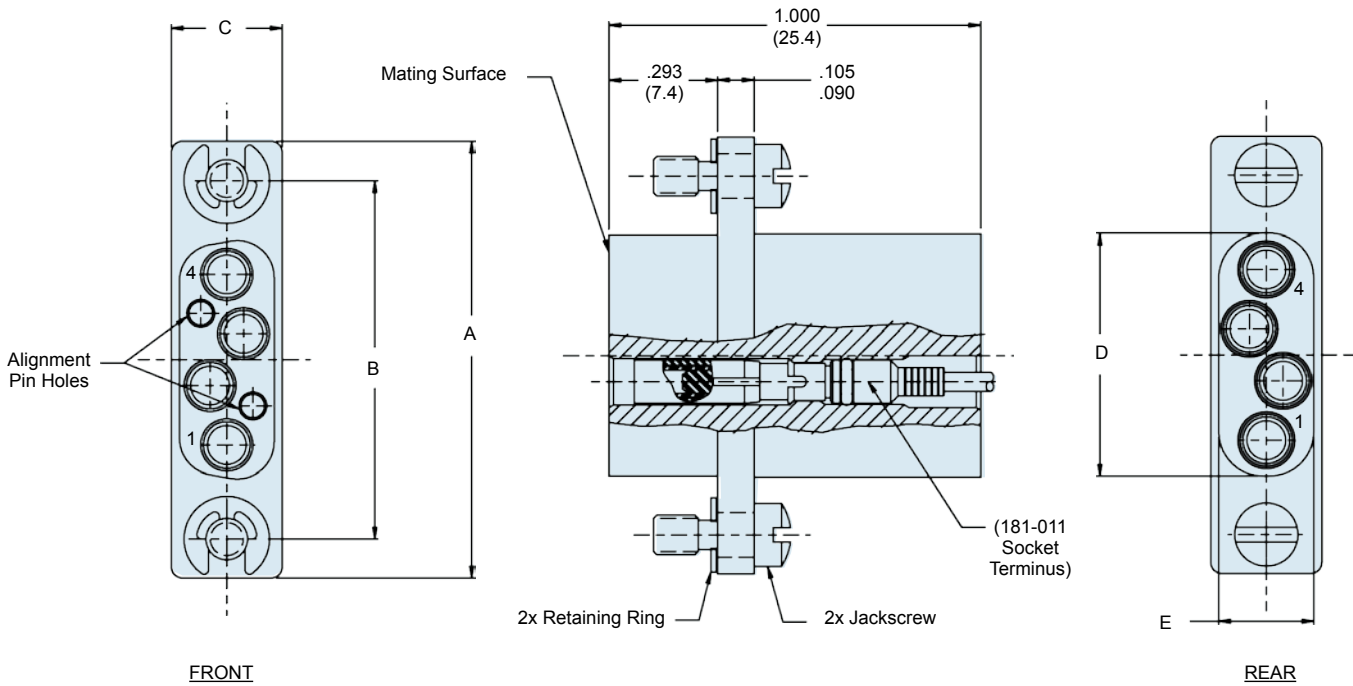
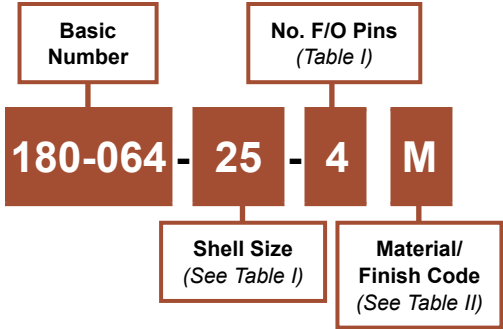


180-064 Micro-D Fiber Optic Plug Connector for Glenair Front Release Socket Terminus 181-011

Micro-D GFR fiber optic plug connector



How To Order



Material and Finish

Shell: See Table II
Misc. Hardware: Stainless Steel/Passivate

Notes

Fiber Optic Socket Terminus to be ordered separately (see Glenair drawing 181-011).
Backshell to be ordered separately (see Table I).
For Mating Receptacle Connector, see Glenair drawing 180-063.

180-064
Micro-D Fiber Optic Plug Connector
for Glenair Front Release Socket Terminus 181-011



Table I: Shell Size

| Shell Size | A ±.010 (0.25) | B ±.003 (0.08) | C ±.010 (0.25) | D ±.010 (0.25) | E ±.010 (0.25) | Max F.O. Pin | Recommended Backshell |
|------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------|-----------------------|
| 9 | .775 (19.7) | .565 (14.4) | .298 (7.6) | .380 (9.7) | .255 (6.5) | 1 | |
| 15 | .925 (23.5) | .715 (18.2) | .298 (7.6) | .530 (13.5) | .255 (6.5) | 2 | |
| 21 | 1.075 (27.3) | .865 (22.0) | .298 (7.6) | .680 (17.3) | .255 (6.5) | 3 | |
| 25 | 1.175 (29.8) | .965 (24.5) | .298 (7.6) | .654 (16.6) | .255 (6.5) | 4 | 189-066 |
| 31 | 1.325 (33.7) | 1.115 (28.3) | .298 (7.6) | .930 (23.6) | .255 (6.5) | 5 | |
| 100 | 2.160 (54.9) | 1.800 (45.7) | .384 (9.8) | 1.425 (36.2) | .322 (8.2) | 8 | 189-064 |

Table II: Material/Finish

| Code | Material | Finish |
|------|-----------------|--|
| C | Aluminum Alloy | Anodize, Black |
| M | | Electroless Nickel |
| NF | | Cadmium, Olive Drab, Over Electroless Nickel |
| ZN | | Zinc-Nickel, Olive Drab, Over Electroless Nickel |
| Z1 | Stainless Steel | Passivate |



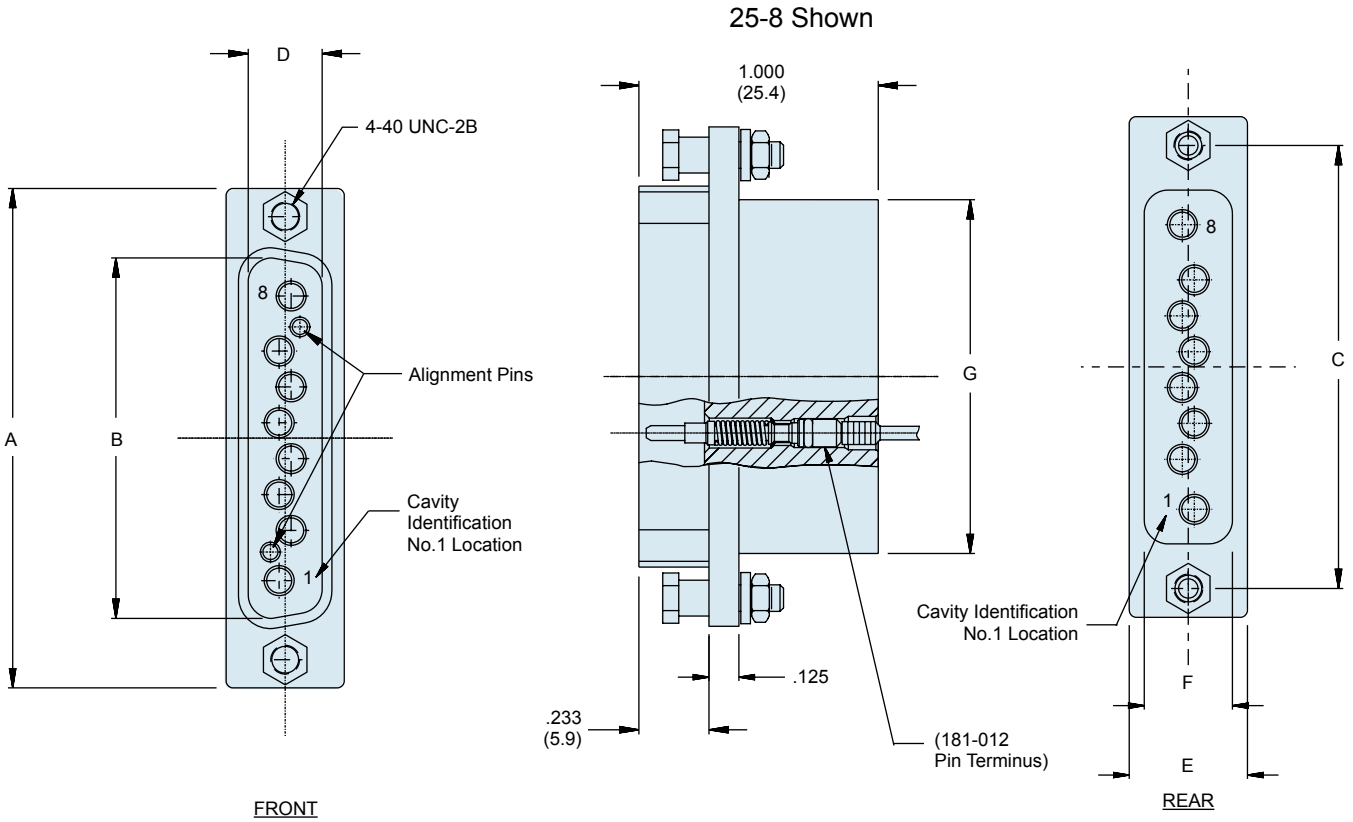
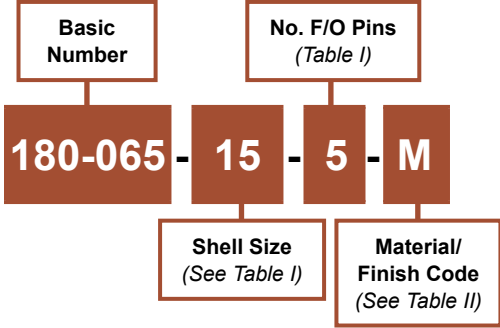


180-065 D-Subminiature Fiber Optic Receptacle for Glenair Front Release Pin Terminus 181-012

D-subminiature GFR fiber optic receptacle



How To Order



Material and Finish

Shell: See Table II
Misc. hardware: stainless steel/passivate

Notes

Fiber Optic Pin Terminus to be ordered separately (see Glenair drawing 181-012).
Backshell to be ordered separately (consult Glenair for available Backshell).
For mating plug connector, see Glenair drawing 180-066.

180-065

**D-Subminiature Fiber Optic Receptacle
for Glenair Front Release Pin Terminus 181-012**



Glenair Front
Release System

Table I: Shell Size

| Shell Size | A ±.010 (0.25) | B ±.010 (0.25) | C ±.005 (0.13) | D ±.010 (0.25) | E ±.010 (0.25) | F ±.010 (0.25) | G ±.010 (0.25) | Max F.O. Pin |
|------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------|
| 9 | 1.213 (30.8) | .666 (16.9) | .984 (25.0) | .330 (8.4) | .498 (12.6) | .369 (9.4) | .650 (16.5) | 4 |
| 15 | 1.545 (39.2) | .994 (25.2) | 1.312 (33.3) | .330 (8.4) | .498 (12.6) | .369 (9.4) | .932 (23.7) | 5 |
| 25 | 2.090 (53.1) | 1.535 (39.0) | 1.852 (47.0) | .330 (8.4) | .498 (12.6) | .369 (9.4) | 1.479 (37.6) | 8 |
| 50 | 2.640 (67.1) | 2.133 (54.2) | 2.406 (61.1) | .490 (12.4) | .610 (15.5) | .500 (12.7) | 2.000 (50.8) | 12 |

G

Table II: Material/Finish

| Code | Material | Finish |
|------|-----------------|--|
| C | Aluminum Alloy | Anodize, Black |
| M | | Electroless Nickel |
| NF | | Cadmium, Olive Drab, Over Electroless Nickel |
| ZN | | Zinc-Nickel, Olive Drab, Over Electroless Nickel |
| Z1 | Stainless Steel | Passivate |



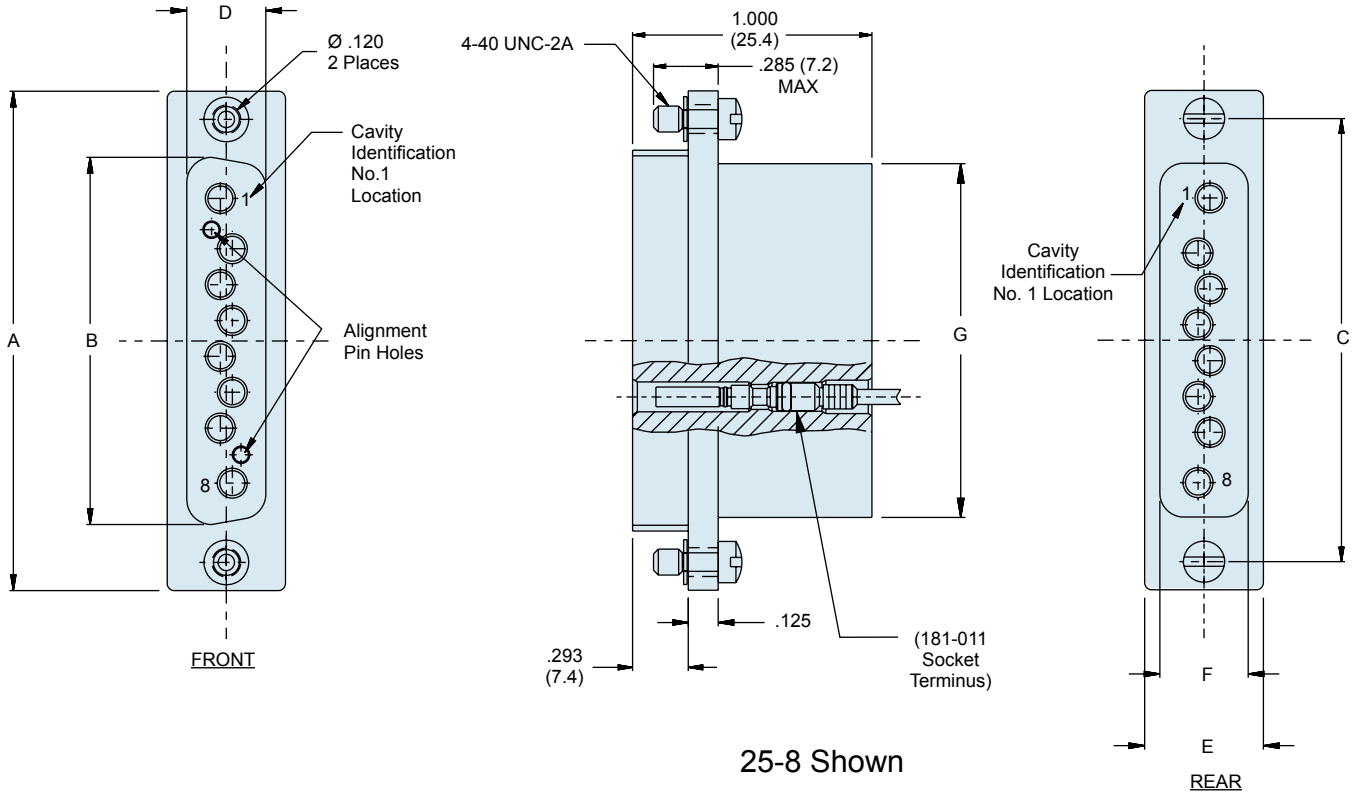
180-066

D-Subminiature Fiber Optic Plug Connector for Glenair Front Release Socket Terminus 181-011

D-subminiature GFR fiber optic plug connector

How To Order

| | | | | |
|----------------|-------------|------------------------------------|---|----------------------------------|
| Basic Number | | | | No. F/O Pins <i>(Table I)</i> |
| 180-066 | - 15 | - 5 | - M | |
| | | Shell Size <i>(See Table I)</i> | Material/ Finish Code <i>(See Table II)</i> | |



Material and Finish

Shell: See Table II
Misc. Hardware: Stainless steel/passivate

Notes

Fiber Optic Socket Terminus to be ordered separately (see Glenair drawing 181-011).
Backshell to be ordered separately (consult Glenair for available backshell & jackscrew hardware).
For mating receptacle connector, see Glenair drawing 181-065.

180-066

**D-Subminiature Fiber Optic Plug Connector
for Glenair Front Release Socket Terminus 181-011**



Glenair Front
Release System

Table I: Shell Size

| Shell Size | A ±.010 (0.25) | B ±.010 (0.25) | C ±.005 (0.13) | D ±.010 (0.25) | E ±.010 (0.25) | F ±.010 (0.25) | G ±.010 (0.25) | Max F.O. Pin |
|------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------|
| 9 | 1.213 (30.8) | .643 (16.3) | .984 (25.0) | .330 (8.4) | .498 (12.6) | .369 (9.4) | .650 (16.5) | 4 |
| 15 | 1.545 (39.2) | .968 (24.6) | 1.312 (33.3) | .330 (8.4) | .498 (12.6) | .369 (9.4) | .932 (23.7) | 5 |
| 25 | 2.090 (53.1) | 1.508 (38.3) | 1.852 (47.0) | .330 (8.4) | .498 (12.6) | .369 (9.4) | 1.479 (37.6) | 8 |
| 50 | 2.640 (67.1) | 2.062 (52.4) | 2.406 (61.1) | .490 (12.4) | .610 (15.5) | .500 (12.7) | 2.000 (50.8) | 12 |

G

Table II: Material/Finish

| Code | Material | Finish |
|------|-----------------|--|
| C | Aluminum Alloy | Anodize, Black |
| M | | Electroless Nickel |
| NF | | Cadmium, Olive Drab, Over Electroless Nickel |
| ZN | | Zinc-Nickel, Olive Drab, Over Electroless Nickel |
| ZI | Stainless Steel | Passivate |

FIBER OPTIC

NEXT GENERATION (NGCON)

FIBER OPTIC CONNECTION SYSTEM



The Glenair Next Generation MIL-PRF-64266 (NGCON) Connector System combines proven technology from standard MIL-PRF-28876 and MIL-DTL-38999 Series III designs with new innovations including rear-release genderless contacts, high-density packaging, and removable alignment sleeve retainers (ASR). Glenair is an active member of the NGCON design consortium which is developing high-performance fiber optic interconnect solutions for air, sea and space military applications.



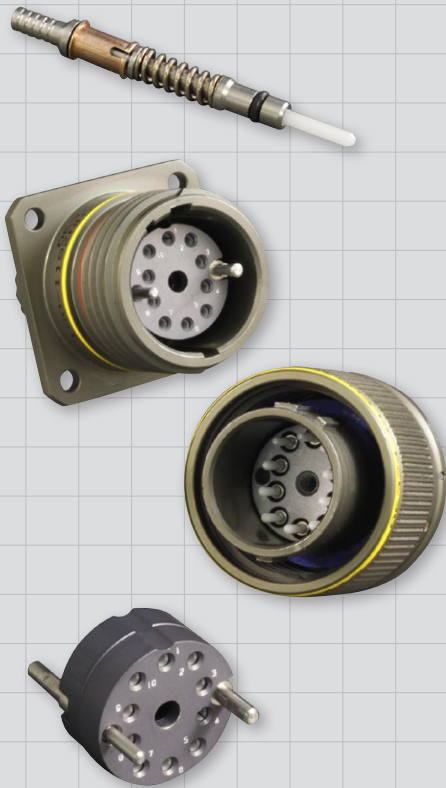
**Next Generation Fiber Optic Connection System
MIL-PRF-64266 (NGCON)
General Information**



MIL-PRF-64266
(NGCON)

Genderless contacts, precision optics, and high-density packaging: the next-generation in air and sea fiber optics is just around the corner

The Glenair Next Generation MIL-PRF-64266 (NGCON) fiber optic connection system is a high-performance solution for air, sea, and space applications. Developed by the NGCON design consortium, the system combines proven technology from standard MIL-PRF-28876 and MIL-DTL-38999 Series III designs with new innovations including rear-release genderless contacts, high-density packaging, and a removable alignment sleeve retainer (ASR).



| Product No. | Description | Page No. |
|-------------------------------------|-------------------------------------|----------|
| NGCON Fiber Optic Termini | | |
| 181-043 | Genderless Rear-Release Terminus | H-2 |
| NGCON Fiber Optic Connectors | | |
| 180-118 (06) | Plug Connector | H-4 |
| 180-118 (H7) | Square Flange Wall Mount Receptacle | H-5 |
| 180-118 (08) | Jam Nut Mount Receptacle | H-6 |
| 180-118ASR | Alignment Sleeve Retainer (ASR) | H-7 |

- **Conforms to MIL-PRF-64266 (NGCON) military standard.**
- **Multimode and singlemode capable**
- **Removable alignment sleeve retainer (ASR) for easy maintenance**
- **Plug, wall mount receptacle and jam nut mount receptacle configurations**
- **Rear release precision genderless termini, designed in accordance with MIL-PRF-29504/18, /19, and /20.**
- **1.25 mm diameter ceramic ferrules and alignment sleeves**
- **Environmental o-ring sealing on terminus**
- **Various connector material/finish options available.**
- **M28876 Double-start ACME mating threads, D38999 Series III style rear accessory threads.**
- **Receptacles compatible with M28876 panel cutouts**
- **Anti-decoupling (ratchet) mechanism on plug connector.**
- **Keyed connectors and termini available for singlemode APC.**



Catalog Notes

Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only. Unless otherwise specified, the following other dimensional tolerances apply:
.xx = ±.03 (0.8) • .xxx = ±.015 (0.4) • Angles = ± 5°



181-043
MIL-PRF-29504/18 Type Terminus
 for MIL-PRF-62466 (NGCON) Fiber Optic Connectors

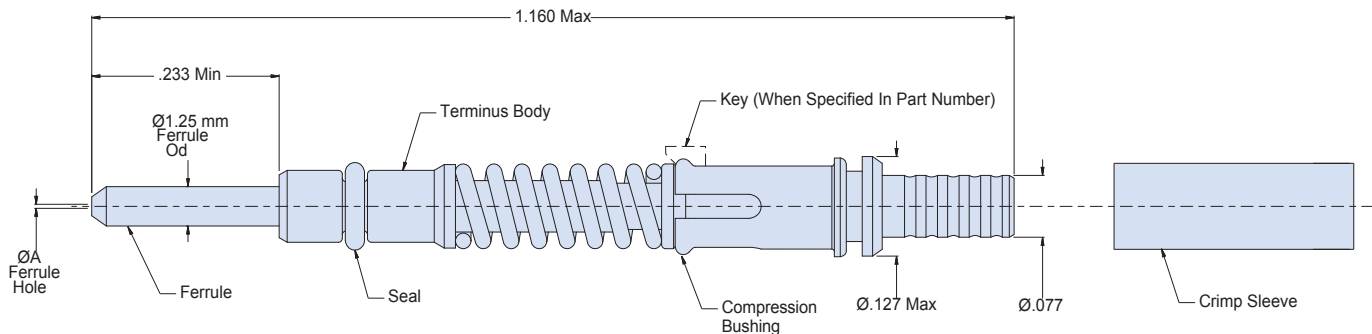


MIL-PRF-29504/18 and /20 type NGCON genderless rear-release termini with integrated retention clip and environmental seal



| Table I | | | | | | |
|-----------------------|-------------------|-------------|--------------------|---|-----------------------------|-------------------------|
| Part Number Non-Keyed | Part Number Keyed | ØA (Micron) | Typical Fiber Type | Typical Fiber Size Core/Cladding/Coating (Micron) | Ref. M29504/18-XX Non-Keyed | Ref. M29504/20-XX Keyed |
| 181-043-1250C | 181-043K-1250C | 125.0 | SM | 9/125 | M29504/18-01 | M29504/20-01 |
| 181-043-1255C | 181-043K-1255C | 125.5 | SM | 9/125 | M29504/18-02 | M29504/20-02 |
| 181-043-1265C | 181-043K-1265C | 126.0 | SM/MM | 9/125, 50/125, 62.5/125 | M29504/18-03 | M29504/20-03 |
| 181-043-126C | 181-043K-126C | 126.0 | MM | 50/125, 62.5/125 | M29504/18-26 | M29504/20-26 |
| 181-043-127C | 181-043K-127C | 127.0 | MM | 50/125, 62.5/125 | M29504/18-27 | M29504/20-27 |
| 181-043-142C | 181-043K-142C | 142.0 | MM | 100/140 | M29504/18-42 | M29504/20-42 |
| 181-043-145C | 181-043K-145C | 145.0 | MM | 100/140 | M29504/18-45 | M29504/20-45 |
| 181-043-156C | 181-043K-156C | 156.0 | MM | 62.5/125/155 | M29504/18-56 | M29504/20-56 |
| 181-043-157C | 181-043K-157C | 157.0 | MM | 62.5/125/155 | M29504/18-57 | M29504/20-57 |
| 181-043-173C | 181-043K-173C | 173.0 | MM | 100/140/172 | M29504/18-73 | M29504/20-73 |
| 181-043-175C | 181-043K-175C | 175.0 | MM | 100/140/172 | M29504/18-75 | M29504/20-75 |

Consult factory for additional sizes and QPL status.
 SM = Singlemode • MM = Multimode



| Table II: Accessories | |
|-----------------------|---------------------------------|
| Part No. | Description |
| 181-043-C | Crimp Sleeve, Ø2.4mm Max Jacket |
| 182-012 | Crimp tool |
| 182-013 | Insertion tool, straight |
| 182-014 | Insertion tool, 90° |
| 182-021 | Hand polishing tool |
| 182-025 | Removal tool |

Material and Finish

- Ferrule: Zirconia Ceramic
- Terminus Assembly: Stainless steel/passivate
- Retention Clip: Spring alloy
- Spring: Stainless steel/passivate
- Seal: Elastomeric rubber
- Crimp Sleeve: Stainless steel/passivate

Accessories

Consult factory for appropriate termination and assembly tools/procedures
 Crimp sleeve is supplied with terminus assembly, and may be ordered separately (see Table II).

Notes

For dummy terminus, see Glenair drawing 181-078

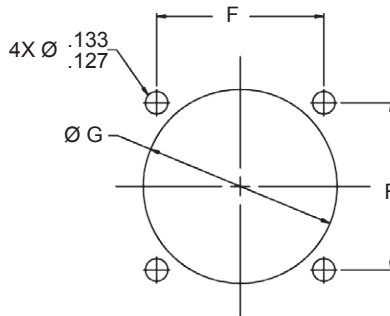


| Table I: Material and Finish | | |
|------------------------------|-----------------|-------------------------|
| Code | Material | Description |
| ME | Aluminum Alloy | Electroless Nickel |
| MT | | Nickel-PTFE, Grey |
| ZN | | Zinc-Nickel, Olive Drab |
| ZR | | Zinc-Nickel, Black |
| Z1 | Stainless Steel | Passivate |

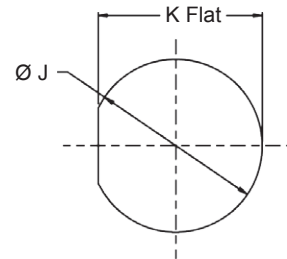
| Table II | | | | |
|------------|-----------------------|--------------------|---------------------|-------------------|
| Shell Size | Shell Size Code (Ref) | Insert Arrangement | AA Thread | BB Thread |
| 11 | B | 2 or 4 | M15 x 1.0-6g 0.100R | .7500-.1P-.2L-DS |
| 13 | C | 6 | M18 x 1.0-6g 0.100R | .8750-.1P-.2L-DS |
| 15 | D | 8 or 10 | M22 x 1.0-6g 0.100R | 1.0625-.1P-.2L-DS |
| 23 | H | 18 or 36 | M34 x 1.0-6g 0.100R | 1.5000-.1P-.2L-DS |

| Table III: Dimension | | | | | | | | | | |
|----------------------|-----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|-------------------|
| Shell Size | Shell Size Code (Ref) | Ø A Max | C ±.010 | E ±.015 | F | Ø G ±.005 | Ø J ±.005 | K ±.005 | L Hex | M Hex Corners Max |
| 11 | B | 1.028 (26.1) | 1.264 (32.1) | 1.023 (26.0) | .750 (19.1) | .812 (20.6) | .885 (22.5) | .848 (21.5) | 1.075 1.045 | 1.290 (32.8) |
| 13 | C | 1.141 (29.0) | 1.389 (35.3) | 1.138 (28.9) | .843 (21.4) | 0.937 (23.8) | 1.010 (25.7) | .973 (24.7) | 1.205 1.171 | 1.435 (36.4) |
| 15 | D | 1.263 (32.1) | 1.577 (40.1) | 1.258 (32.0) | .968 (24.6) | 1.124 (28.5) | 1.198 (30.4) | 1.160 (29.5) | 1.329 1.358 | 1.650 (41.9) |
| 23 | H | 1.705 (43.3) | 2.004 (50.9) | 1.718 (43.6) | 1.281 (32.5) | 1.562 (39.7) | 1.630 (41.4) | 1.593 (40.5) | 1.812 1.778 | 2.093 (53.2) |

| Table IV: Key Polarizations | | |
|-----------------------------|---------------|-------------------------|
| Polarization | Shell Size 11 | Shell Size 13, 15, & 23 |
| 1 | 55° | 30° |
| 2 | 80° | 55° |
| 3 | 105° | 80° |
| 4 | 130° | 105° |
| 5 | 230° | 130° |
| 6 | 255° | 155° |
| 7 | 280° | 205° |
| 8 | 305° | 230° |
| 9 | - | 255° |
| A | - | 280° |
| B | - | 305° |
| C | - | 330° |
| Universal | See notes | |



Recommended Panel Cut-Out for Wall Mount Receptacles



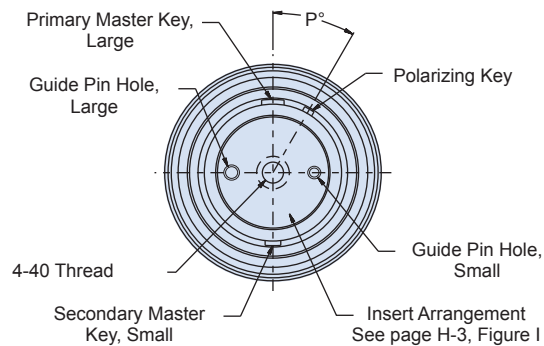
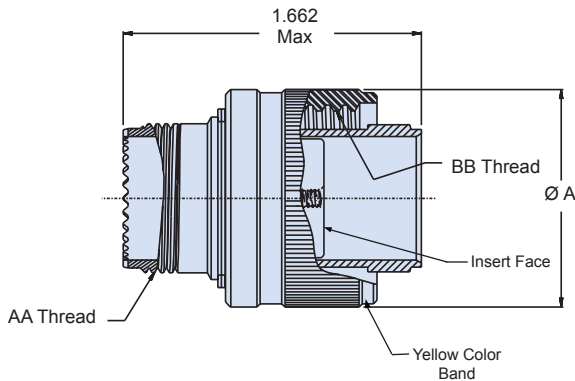
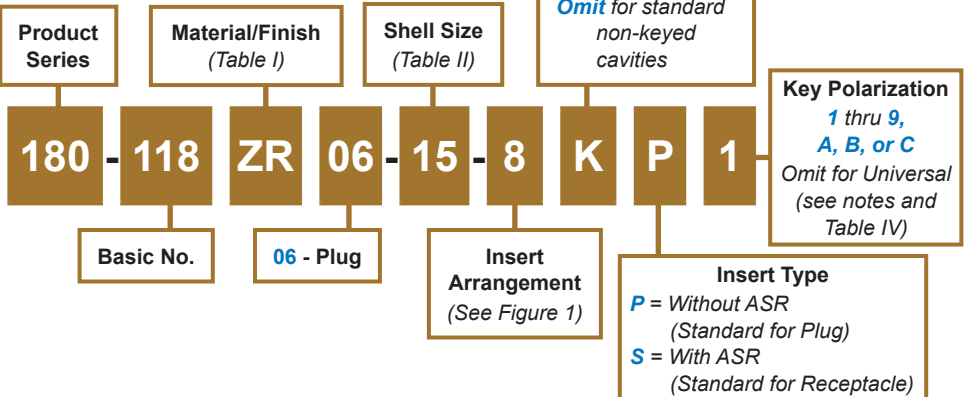
Recommended Panel Cut Out for Jam Nut Mount Receptacles as viewed from front of panel



| Figure I: Insert Arrangements | | | | | | |
|-------------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|
| | | | | | | |
| Shell Size 11 Arrangement 2 | Shell Size 11 Arrangement 4 | Shell Size 13 Arrangement 6 | Shell Size 15 Arrangement 8 | Shell Size 15 Arrangement 10 | Shell Size 23 Arrangement 18 | Shell Size 23 Arrangement 36 |

Plug front face shown. Receptacle front face - opposite

M64266
NGCON
MIL-PRF-64266/2 NGCON type fiber optic plug

How To Order

06 - Plug
Standard Plug Configuration Supplied Without ASR
(Insert Type=P)
Material and Finish

Plug Barrel, Coupling Nut: See Table I
 Insert: Al Alloy/Anodize, or High Grade Engineering Plastic - mfr's option
 Peripheral Seal (not shown): Fluorosilicone/Silicone Blend
 Misc. Hardware: Stainless Steel/Passivate

Notes

Plug connector universal key polarization only contains the primary and secondary master keys (no polarization key). Alignment Sleeve Retainer (ASR, not shown) is supplied standard with insert type "S" only. One ASR is required for each mated pair of connectors.
 ASR may be ordered separately. See Glenair drawing 180-118ASR. Connectors with keyed terminus cavities are intended for use with keyed termini for singlemode APC. Otherwise use standard non-keyed connector cavities and termini.

180-118 (H7)

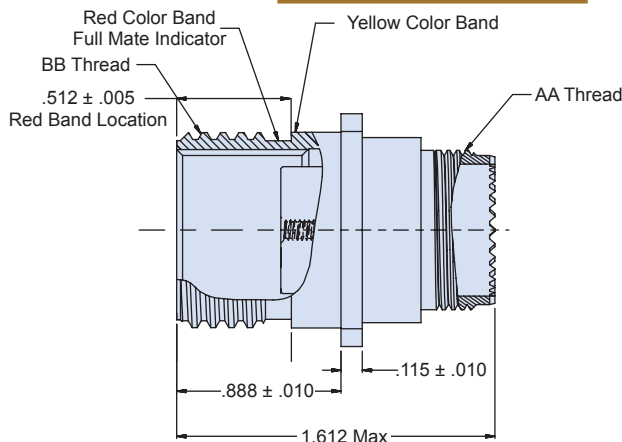
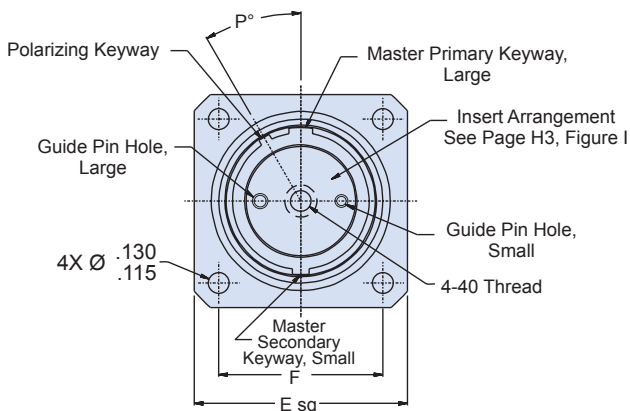
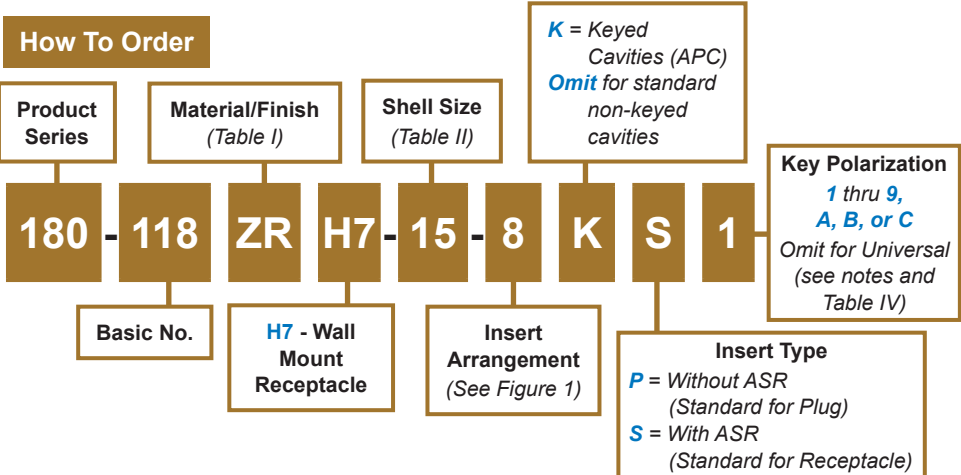
Next Generation MIL-PRF-64266/1 (NGCON) Type
Fiber Optic Square Flange Wall Mount Receptacle



MIL-PRF-64266
(NGCON)



MIL-PRF-64266/1 NGCON type fiber optic square flange wall mount receptacle



H7 - Wall Mount Receptacle
Standard receptacle configuration supplied with ASR, not shown (Insert type = S)

H

Material and Finish

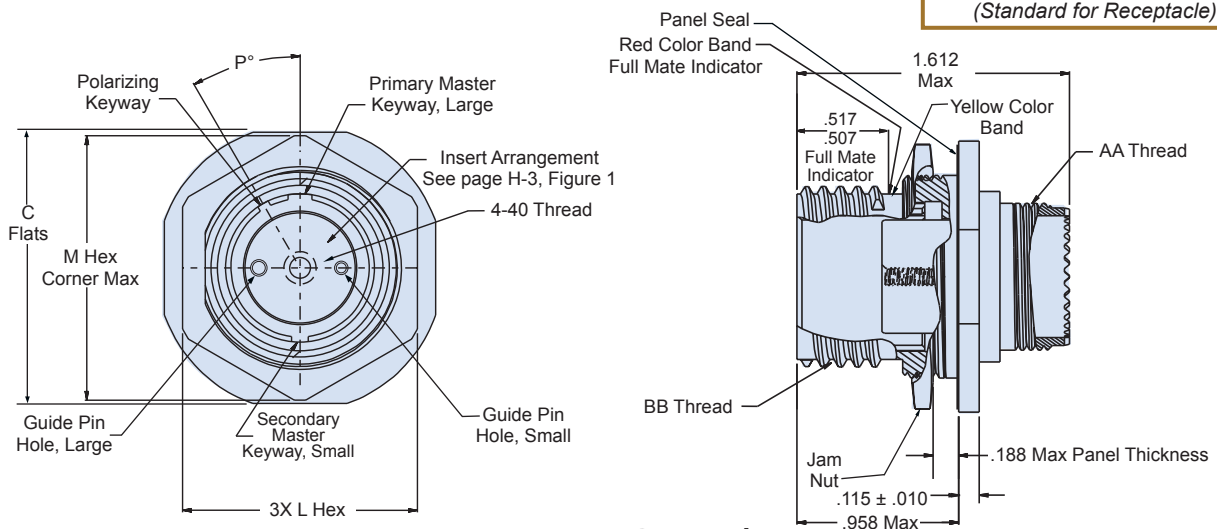
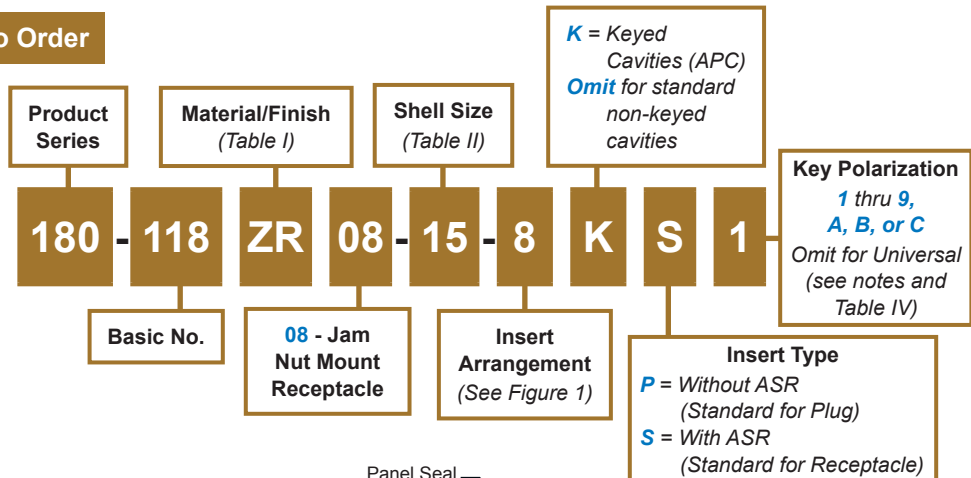
Shell: See Table I
Insert: Al Alloy/Anodize, or high grade engineering thermoplastic- mfr's option
Alignment sleeve retainer (ASR): Al Alloy/Anodize
Alignment sleeves: Zirconia ceramic
Misc. hardware: Stainless steel/Passivate

Notes

Receptacle connector universal keyway polarization contains all polarizations (1 thru 9, A, B, and C). Alignment Sleeve Retainer (ASR, not shown) is supplied with insert type "S" only. One ASR is required for each mated pair of connectors. ASR may be ordered separately. See Glenair drawing 180-118ASR. Connectors with keyed terminus cavities are intended for use with keyed termini for singlemode APC. Otherwise use standard non-keyed connector cavities and termini.

MIL-PRF-64266/3 NGCON type fiber optic, jam nut mount receptacle

How To Order



08 - Jam Nut Mount Receptacle

Standard receptacle configuration supplied with ASR, not shown
(Insert Type = S)

Material and Finish

Shell, Jam Nut: see Table I
Insert: Al Alloy/ Anodize, or High Grade Engineering Plastic- mfr's option
Alignment sleeve retainer (ASR): Al Alloy/Anodize
Alignment sleeves: zirconia ceramic
Panel seal: Fluorosilicone
Misc. Hardware: Stainless Steel/Passivate

Notes

Receptacle connector universal keyway polarization contains all polarizations (1 thru 9, A, B, and C). Alignment Sleeve Retainer (ASR, not shown) is supplied with insert type "S" only. One ASR is required for each mated pair of connectors. ASR may be ordered separately. See Glenair drawing 180-118ASR. Connectors with keyed terminus cavities are intended for use with keyed termini for singlemode APC. Otherwise use standard non-keyed connector cavities and termini.

180-118ASR

Next Generation MIL-PRF-64266/9 (NGCON) Type
Fiber Optic Alignment Sleeve Retainer (ASR)



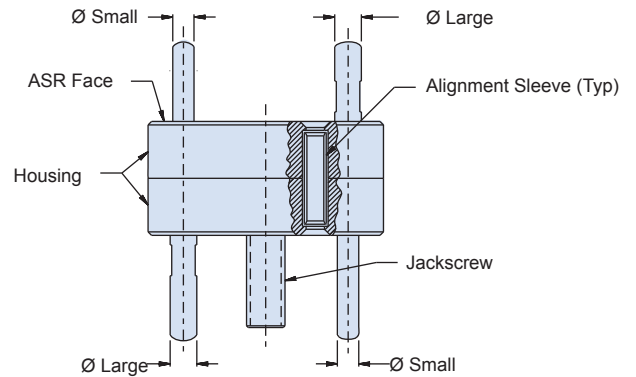
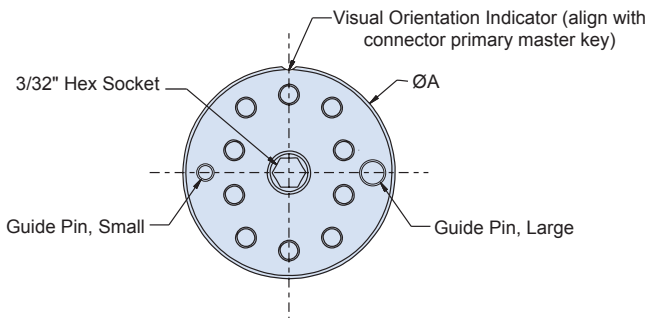
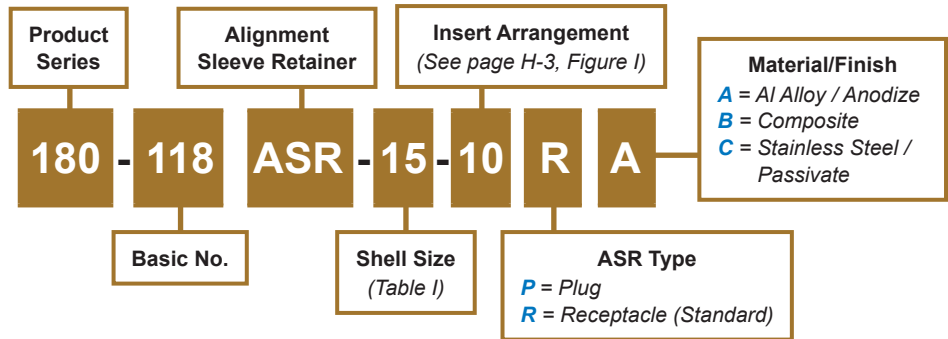
MIL-PRF-64266
(NGCON)



MIL-PRF-64266/9 (NGCON) type alignment sleeve retainer (ASR)



How To Order



Shell Size 15
Arrangement 10 Shown

Table I

| Shell Size | Shell Size Code (Ref) | Arrangement | ØA Max |
|------------|-----------------------|-------------|--------------|
| 11 | B | 2 or 4 | .412 (10.5) |
| 13 | C | 6 | .488 (12.4) |
| 15 | D | 8 or 10 | .666 (16.9) |
| 23 | H | 18 or 36 | 1.070 (27.2) |

Material and Finish

Housing: Al Alloy/Anodize
Alignment Sleeve: Zirconia Ceramic
Guide Pins, Jackscrew: Stainless/Passivate



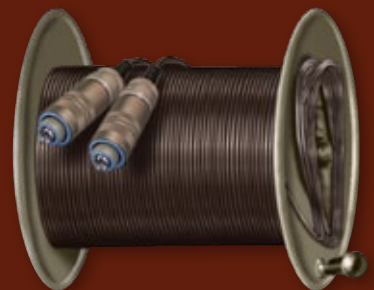
FIBER OPTIC

GLENAIR GFOCA

FIBER OPTIC CONNECTION SYSTEM



Most commonly used by the army for long-run battlefield communications, the GFOCA Connection System is also well suited to dockside naval communications, down-hole drilling and other harsh environment applications. The hermaphroditic system utilizes low insertion loss butt-joint termini and a ruggedized coupling mechanism for reliable, repeatable mating. The genderless mating system is rated to 1000-2000 cycles depending on fiber media selection.



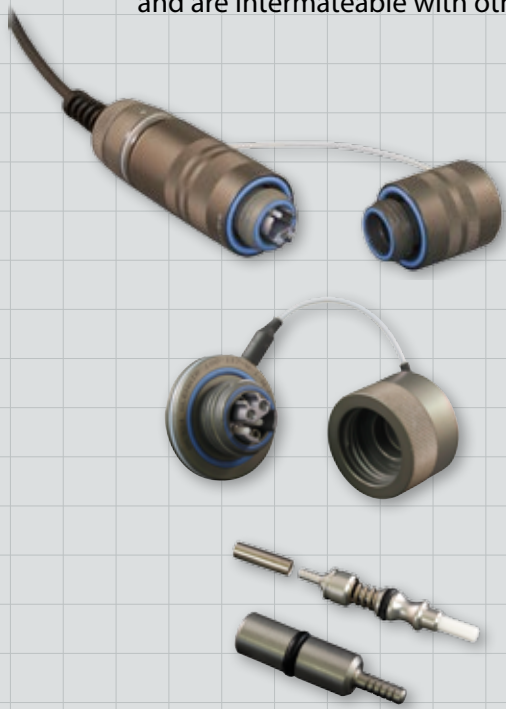
Glenair MIL-DTL-83526 Type (GFOCA) 4 Channel Fiber Optic Connection System General Information



GFOCA
Fiber Optic System

The Ultimate Harsh Environment, Field Deployable Fiber Optic Connection System

Most commonly used by the army for long-run battlefield photonic communications, the GFOCA Connection System is also well suited to dockside naval communications, down-hole drilling and other harsh environment applications. The hermaphroditic system uses low insertion loss butt-joint termini and a ruggedized coupling mechanism for reliable, repeatable mating. The genderless mating system is rated to 2000 cycles, depending on fiber media selection. Connectors utilize (GFOCA) MIL-PRF-29504/16 type (draft) termini and are intermateable with other manufacturers' fiber optic connector systems.



| Product No. | Description | Page No. |
|---|---|----------|
| MIL-PRF-29504/16 and /17 Type Fiber Optic Termini | | |
| 181-050 | Pin Terminus, M29504/16 Type | I-2 |
| 181-059 | Dummy Terminus, M29504/17 Type | I-3 |
| MIL-DTL-83526/16 and /17 Type Fiber Optic Connectors | | |
| 180-145 | MIL-DTL-83526/16 Type Plug Connector, Hermaphroditic, 4 Channel | I-4 |
| 180-146 | MIL-DTL-83526/17 Type Jam Nut Receptacle, 4 Channel | I-6 |
| 180-147 | Type Square Flange Receptacle, 4 Channel | I-8 |
| 180-148 | Type Jam Nut Receptacle, 4 Ch, Internal Mount | I-10 |
| 180-149 | Type Jam Nut Receptacle, 4 Channel, Internal Mount with Accessory Threads | I-12 |
| 180-150 | Type Jam Nut Receptacle, 4 Channel, Panel Mount with Accessory Threads | I-14 |
| 180-153 | Type Jam Nut Receptacle, 4 Channel, Internal Mount with Strain Relief | I-16 |
| 180-137 | Type Plug Connector, Hermaphroditic, 90°, 4 Channel | I-18 |

Catalog Notes

Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only.

Unless otherwise specified, the following other dimensional tolerances apply:

.xx = ± .03 (0.8) • .xxx = ± .015 (0.4) • Angles = ± 5°



181-050 M29504/16 Type Genderless GFOCA Fiber Optic Terminus

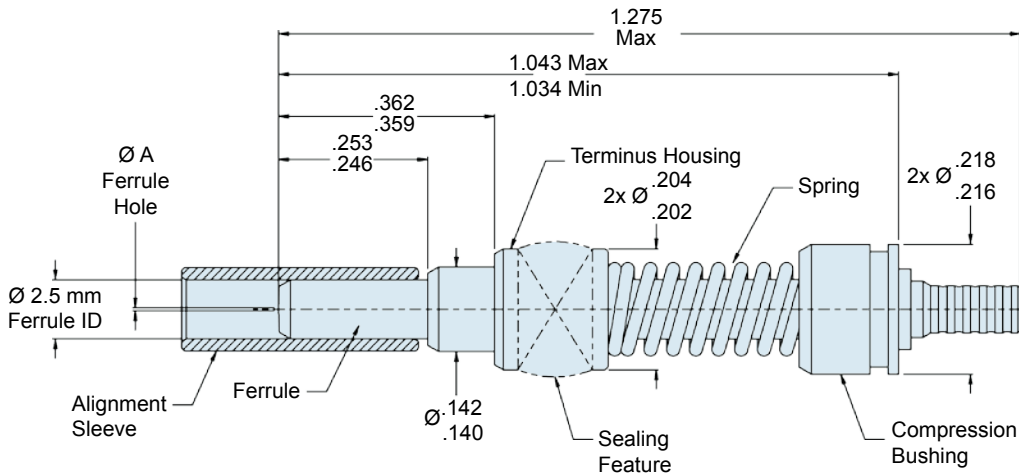


M29504/16 type genderless GFOCA fiber optic terminus



| Part Number Development | | |
|-------------------------|---------------|----------------------|
| Part Number | Ø A (Microns) | Fiber Type (Typical) |
| 181-050-1250C | 125.0 | SM |
| 181-050-1255C | 125.5 | SM |
| 181-050-1260C | 126.0 | SM and MM |
| 181-050-1270C | 127.0 | MM |
| 181-050-1420C | 142.0 | MM |
| 181-050-2300C | 230.0 | MM |

SM: Singlemode • MM: Multimode
Consult Factory for Additional Sizes



| Table II: Terminus Accessories | |
|--------------------------------|---------------------------------|
| Part Number | Description |
| 181-050-S | Alignment Sleeve Split, Ceramic |
| 265-008 | Crimp Sleeve |

Material and Finish

- Ferrule: Zirconia Ceramic
- Terminus Housing: Stainless Steel/Passivate
- Spring: Stainless Steel/Passivate
- Compression Bushing: Stainless Steel/Passivate
- Crimp Sleeve: Brass Alloy/Nickel (not shown)
- Seal(s): Elastomeric Rubber

Notes

Terminus is designed to meet the general requirements of MIL-PRF-29504/16 (Draft)
 Alignment Sleeve (not supplied with Terminus) may be ordered separately (See table II)
 Crimp sleeve is supplied with terminus assembly, and may be ordered separately (See table II). For terminus less crimp sleeve, omit C from dash number

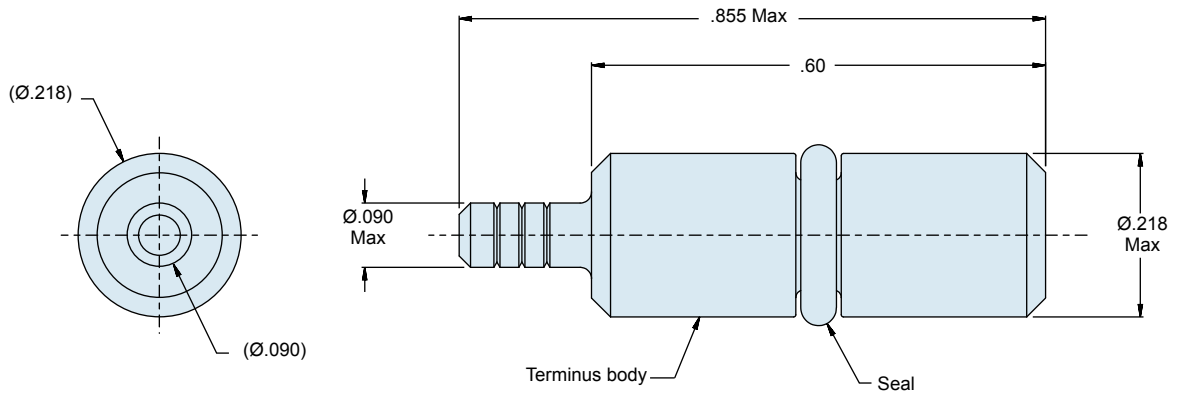
181-059
M29504/17 Type
GFOCA Fiber Optic Dummy Terminus



M29504/17 Type GFOCA fiber optic dummy terminus



| Part Number | |
|-------------|-------------------------------------|
| 181-059 | GFOCA M29504/17 Type Dummy Terminus |



Material and Finish

Terminus body: Stainless steel/passivate
 Seal: Elastomeric Rubber

Notes

Terminus is designed to meet the general requirements of MIL-PRF-29504/17 (Draft)

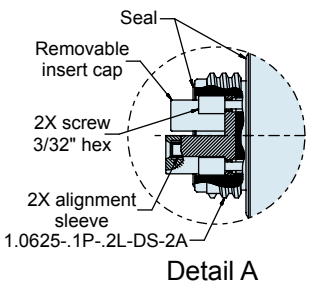
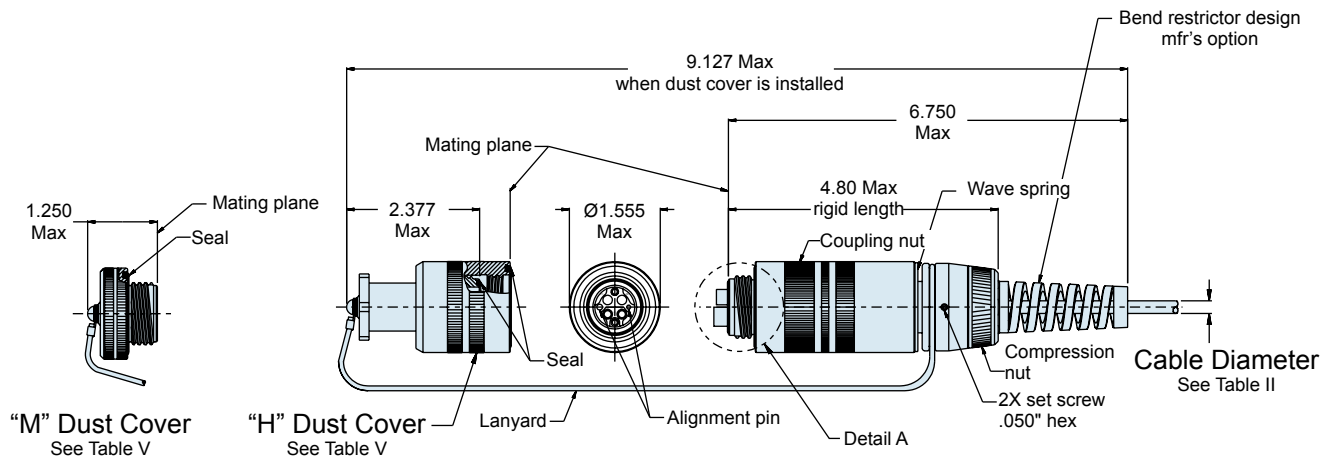
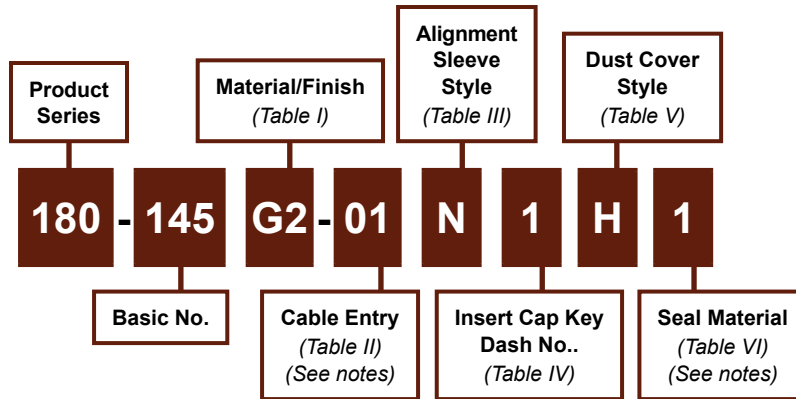


180-145 GFOCA Hermaphroditic Plug Connector MIL-DTL-83526/16 Type, 4 Channel



MIL-DTL-83526/16 type plug-to-plug hermaphroditic GFOCA connector, 4 channel

How To Order



Material and Finish

External hardware: See Table I
 Internal hardware: Al alloy/anodize
 Misc. hardware: Stainless steel/passivate
 Lanyard: Stainless steel/coated
 Strain relief wedge: Copper alloy/nickel
 Seals: See Table VI

Notes

Connector assembly is designed IAW the interface requirements of MIL-DTL-83526/16 (Draft). Standard configuration is shown in sample part number.

180-145
GFOCA Hermaphroditic Plug Connector
MIL-DTL-83526/16 Type, 4 Channel



| Table I: Material/Finish | | |
|--------------------------|----------------|-------------------------|
| Code | Material | Finish Description |
| G2 | Aluminum alloy | Hard anodize, gray |
| ZN | | Zinc-nickel, olive drab |
| ZR | | Zinc-nickel, black |

Refer to Appendix for material/finish details

| Table II: Cable Diameter | | |
|--------------------------|----------------|-----------|
| Dash No. | Cable Diameter | |
| | Inch | mm |
| 01 | .190-.315 | 4.83-8.00 |
| 02 | .316-.379 | 8.03-9.63 |

| Table III: Alignment Sleeve Style | |
|--|-------|
| Code | Style |
| N | None |
| Consult factory for additional options | |

| Table IV: Insert Cap Key Configurations | | | | |
|---|---|---|---|---|
| Dash No: | 1 | 2 | 3 | 4 |
| Config. | <p style="text-align: center;">Key 1</p> | <p style="text-align: center;">Key 2</p> | <p style="text-align: center;">Key 3</p> | <p style="text-align: center;">Key U (universal)</p> |

| Table V: Dust Cover Style | |
|---------------------------|----------------|
| Code | Style |
| M | Male |
| H | Hermaphroditic |
| N | None |

| Table VI: Seal Material | |
|-------------------------|---|
| Dash No. | Seal material(s) |
| 1 | Primary seals: Fluorosilicone & Nitrile Secondary seals: Fluorosilicone, Urethane, & Nitrile |
| 2 | EPDM |

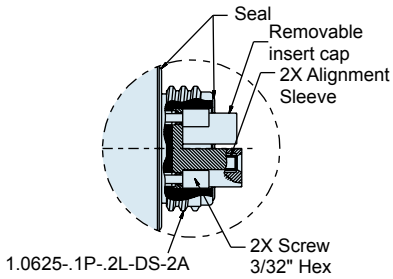
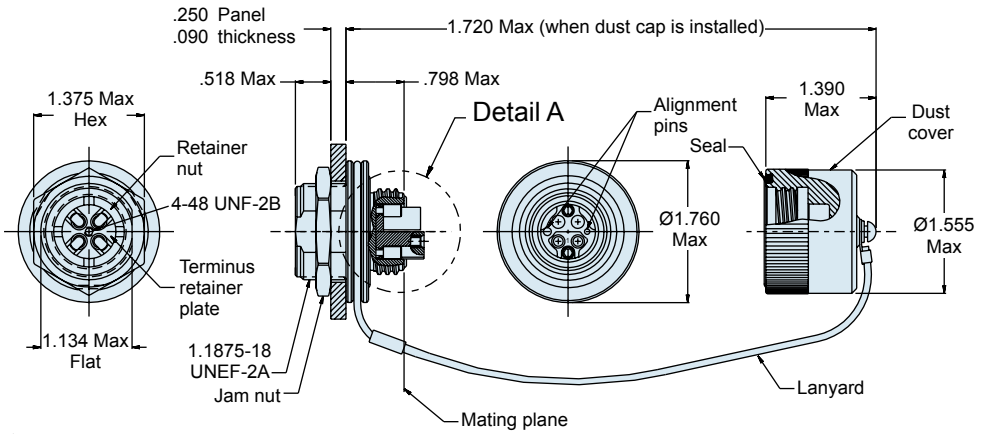
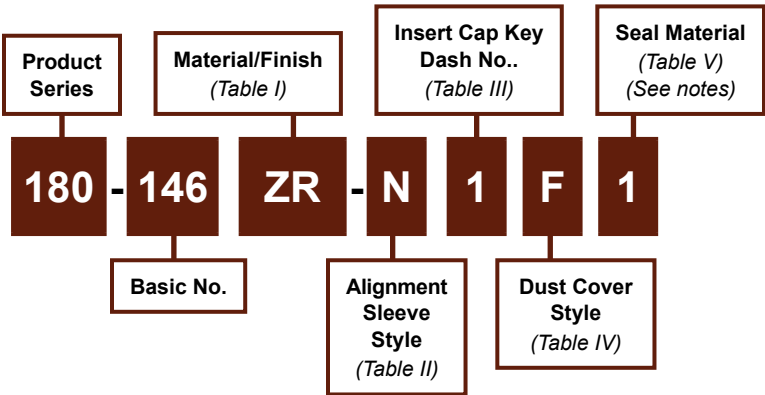


180-146
GFOCA Jam Nut Mount Receptacle
MIL-DTL-83526/17 Type, 4 Channel

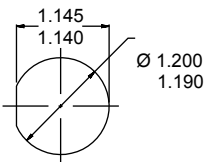


MIL-DTL-83526/17 type hermaphroditic GFOCA jam nut receptacle, 4 channel

How To Order



Detail A



Panel Cut-out
As viewed from front of panel

Material and Finish

External hardware: See Table I
 Internal hardware: Al alloy/anodize
 Misc. hardware: Stainless steel/passivate
 Lanyard: Stainless steel/coated
 Strain relief wedge: Copper alloy/nickel
 Seals: See Table V

Notes

Connector assembly is designed IAW the interface requirements of MIL-DTL-83526/17 (Draft). Standard configuration is shown in sample part number.

180-146
GFOCA Jam Nut Mount Receptacle
MIL-DTL-83526/17 Type, 4 Channel



| Table I: Material/Finish | | |
|--------------------------|----------------|-------------------------|
| Code | Material | Finish Description |
| G2 | Aluminum alloy | Hard anodize, gray |
| ZN | | Zinc-nickel, olive drab |
| ZR | | Zinc-nickel, black |

Refer to Appendix for material/finish details

| Table II: Alignment Sleeve Style | |
|--|-------|
| Code | Style |
| N | None |
| Consult factory for additional options | |

| Table III: Insert Cap Key Configurations | | | | |
|--|---|---|---|---|
| Dash No: | 1 | 2 | 3 | 4 |
| Config. | <p style="text-align: center;">Key 1</p> | <p style="text-align: center;">Key 2</p> | <p style="text-align: center;">Key 3</p> | <p style="text-align: center;">Key U (universal)</p> |

| Table IV: Dust Cover Style | |
|----------------------------|----------------|
| Code | Style |
| F | Female |
| H | Hermaphroditic |
| N | None |

| Table V: Seal Material | |
|------------------------|---|
| Dash No. | Seal material(s) |
| 1 | Fluorosilicone / Fluorosilicone panel seal |
| 2 | Fluorosilicone / Conductive fluorosilicone panel seal |
| 3 | EPDM / EPDM panel seal |
| 4 | EPDM / Conductive EPDM panel seal |

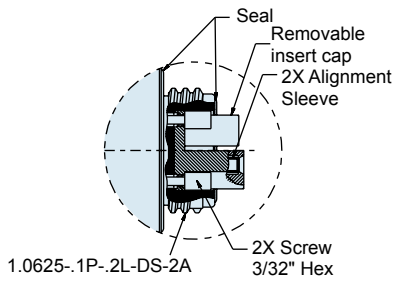
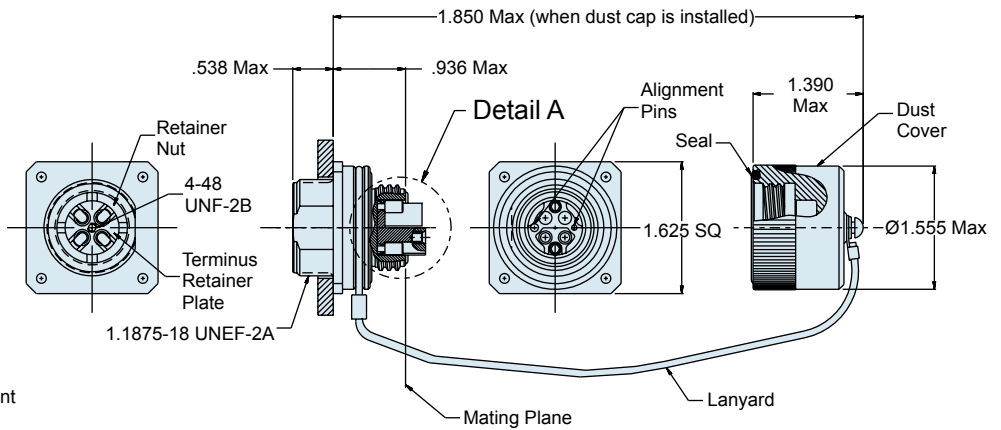
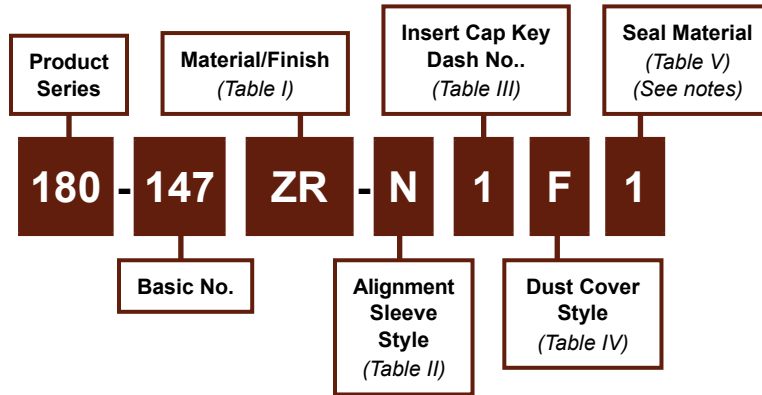


180-147
GFOCA Square Flange Mount Receptacle
MIL-DTL-83526 Type, 4 Channel

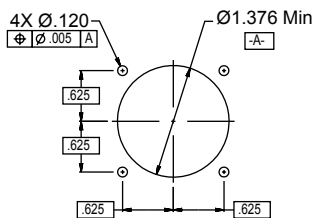


MIL-DTL-83526/18 type hermaphroditic GFOCA square flange receptacle, 4 channel

How To Order



Detail A



Panel Cut-Out

Material and Finish

External hardware: See Table I
 Internal hardware: Al alloy/anodize
 Insert Cap: Al alloy/anodize
 Misc. hardware: Stainless steel/passivate
 Lanyard: Stainless steel/coated
 Seals: See Table V

Notes

Connector assembly is designed IAW the interface requirements of MIL-PRF-83526/17 (Draft). Standard configuration is shown in sample part number.

180-147
GFOCA Square Flange Mount Receptacle
MIL-DTL-83526 Type, 4 Channel



| Table I: Material/Finish | | |
|--------------------------|----------------|-------------------------|
| Code | Material | Finish Description |
| G2 | Aluminum alloy | Hard anodize, gray |
| ZN | | Zinc-nickel, olive drab |
| ZR | | Zinc-nickel, black |

Refer to Appendix for material/finish details

| Table II: Alignment Sleeve Style | |
|--|-------|
| Code | Style |
| N | None |
| Consult factory for additional options | |

| Table III: Insert Cap Key Configurations | | | | |
|--|---|---|---|---|
| Dash No: | 1 | 2 | 3 | 4 |
| Config. | <p style="text-align: center;">Key 1</p> | <p style="text-align: center;">Key 2</p> | <p style="text-align: center;">Key 3</p> | <p style="text-align: center;">Key U (universal)</p> |

| Table IV: Dust Cover Style | |
|----------------------------|----------------|
| Code. | Style |
| F | Female |
| H | Hermaphroditic |
| N | None |

| Table V: Seal Material | |
|------------------------|---|
| Dash No. | Seal material(s) |
| 1 | Fluorosilicone / Fluorosilicone panel seal |
| 2 | Fluorosilicone / Conductive fluorosilicone panel seal |
| 3 | EPDM / EPDM panel seal |
| 4 | EPDM / Conductive EPDM panel seal |

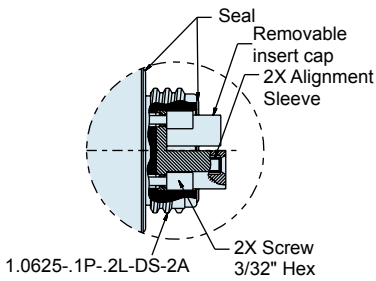
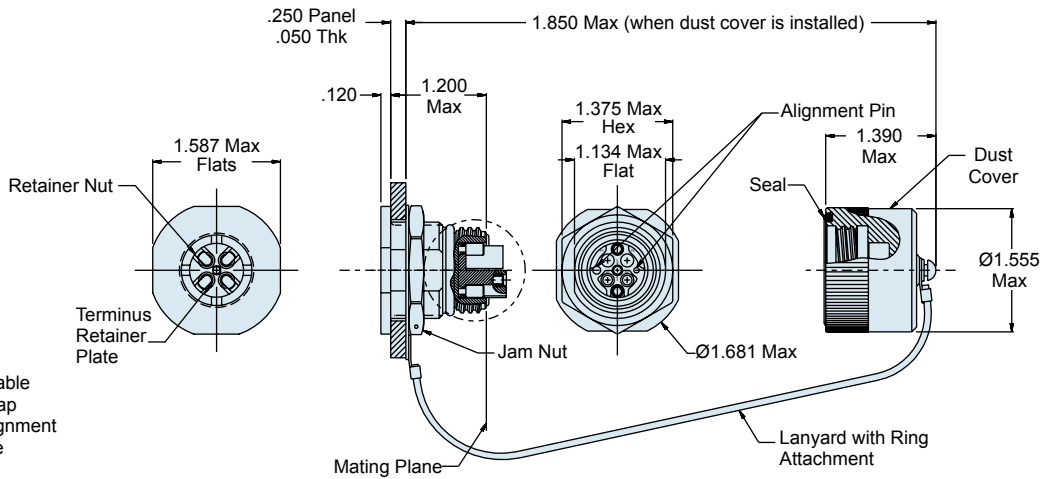
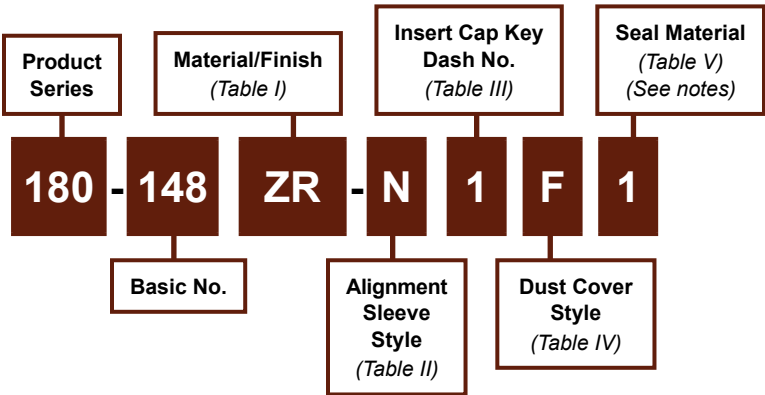


180-148
GFOCA Internal Mount Jam Nut Receptacle
MIL-DTL-83526 Type, 4 Channel

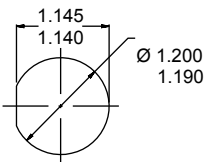


MIL-DTL-83526 type hermaphroditic GFOCA internal mount jam nut receptacle

How To Order



Detail A



Panel Cut-out
As viewed from front of panel

Material and Finish

External hardware: See Table I
 Insert Cap: Al alloy/anodize
 Misc. hardware: Stainless steel/passivate
 Lanyard: Stainless steel/coated
 Seals: See Table V

Notes

Connector assembly is designed IAW the interface requirements of MIL-PRF-83526/17 (Draft). Standard configuration is shown in sample part number.

180-148
GFOCA Internal Mount Jam Nut Receptacle
MIL-DTL-83526 Type, 4 Channel



| Table I: Material/Finish | | |
|--------------------------|----------------|-------------------------|
| Code | Material | Finish Description |
| G2 | Aluminum alloy | Hard anodize, gray |
| ZN | | Zinc-nickel, olive drab |
| ZR | | Zinc-nickel, black |

Refer to Appendix for material/finish details

| Table II: Alignment Sleeve Style | |
|--|-------|
| Code | Style |
| N | None |
| Consult factory for additional options | |

| Table III: Insert Cap Key Configurations | | | | |
|--|---|---|---|---|
| Dash No: | 1 | 2 | 3 | 4 |
| Config. | <p style="text-align: center;">Key 1</p> | <p style="text-align: center;">Key 2</p> | <p style="text-align: center;">Key 3</p> | <p style="text-align: center;">Key U (universal)</p> |

| Table IV: Dust Cover Style | |
|----------------------------|----------------|
| Code | Style |
| F | Female |
| H | Hermaphroditic |
| N | None |

| Table V: Seal Material | |
|------------------------|---|
| Dash No. | Seal material(s) |
| 1 | Fluorosilicone / Fluorosilicone panel seal |
| 2 | Fluorosilicone / Conductive fluorosilicone panel seal |
| 3 | EPDM / EPDM panel seal |
| 4 | EPDM / Conductive EPDM panel seal |

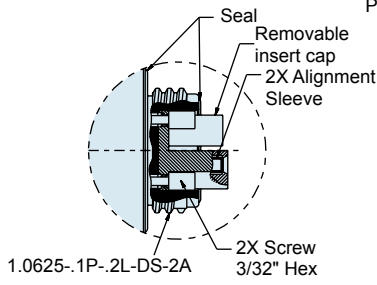
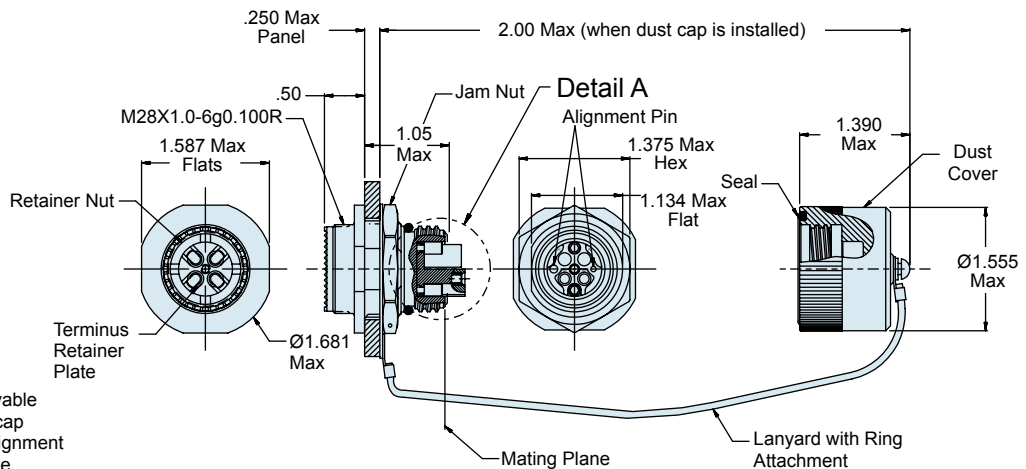
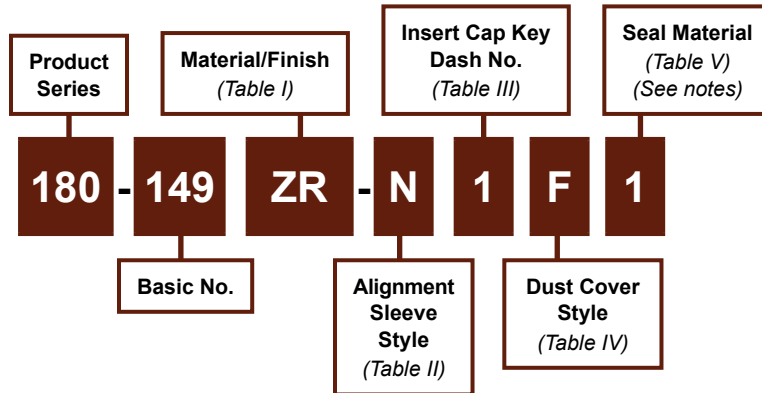


180-149
GFOCA Internal Mount Jam Nut Receptacle
with Accessory Threads
MIL-DTL-83526 Type Type, 4 Channel

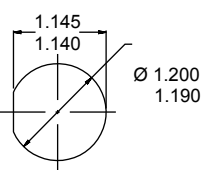


MIL-DTL-83526 type hermaphroditic GFOCA internal mount jam nut receptacle with accessory threads

How To Order



Detail A



Panel Cut-out
As viewed from front of panel

Material and Finish

External hardware: See Table I
 Internal hardware: Al alloy/anodize
 Misc. hardware: Stainless steel/passivate
 Lanyard: Stainless steel/coated
 Seals: See Table V

Notes

Connector assembly is designed IAW the interface requirements of MIL-PRF-83526/17 (Draft). Standard configuration is shown in sample part number. Accessory threads per shell size 19, D38999 Series III connector.

180-149
GFOCA Internal Mount Jam Nut Receptacle
with Accessory Threads
MIL-DTL-83526 Type, 4 Channel



| Table I: Material/Finish | | |
|--------------------------|----------------|-------------------------|
| Code | Material | Finish Description |
| G2 | Aluminum alloy | Hard anodize, gray |
| ZN | | Zinc-nickel, olive drab |
| ZR | | Zinc-nickel, black |

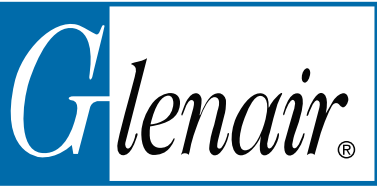
Refer to Appendix for material/finish details

| Table II: Alignment Sleeve Style | |
|--|-------|
| Code | Style |
| N | None |
| Consult factory for additional options | |

| Table III: Insert Cap Key Configurations | | | | |
|--|---|---|---|---|
| Dash No: | 1 | 2 | 3 | 4 |
| Config. | <p style="text-align: center;">Key 1</p> | <p style="text-align: center;">Key 2</p> | <p style="text-align: center;">Key 3</p> | <p style="text-align: center;">Key U (universal)</p> |

| Table IV: Dust Cover Style | |
|----------------------------|----------------|
| Code. | Style |
| F | Female |
| H | Hermaphroditic |
| N | None |

| Table V: Seal Material | |
|------------------------|---|
| Dash No. | Seal material(s) |
| 1 | Fluorosilicone / Fluorosilicone panel seal |
| 2 | Fluorosilicone / Conductive fluorosilicone panel seal |
| 3 | EPDM / EPDM panel seal |
| 4 | EPDM / Conductive EPDM panel seal |

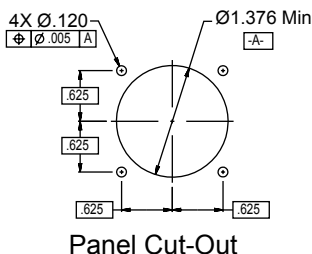
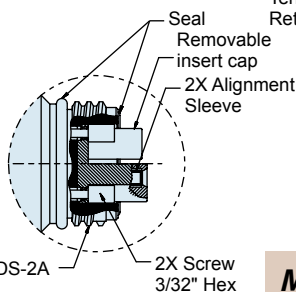
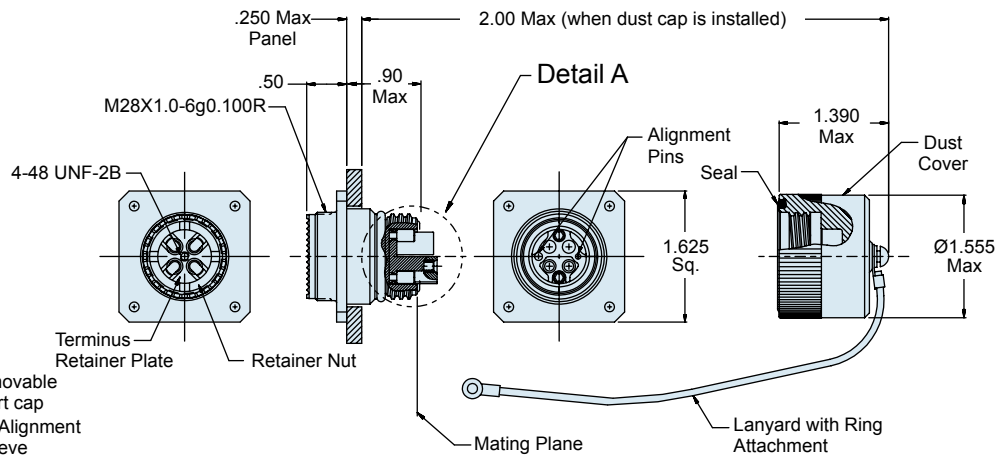
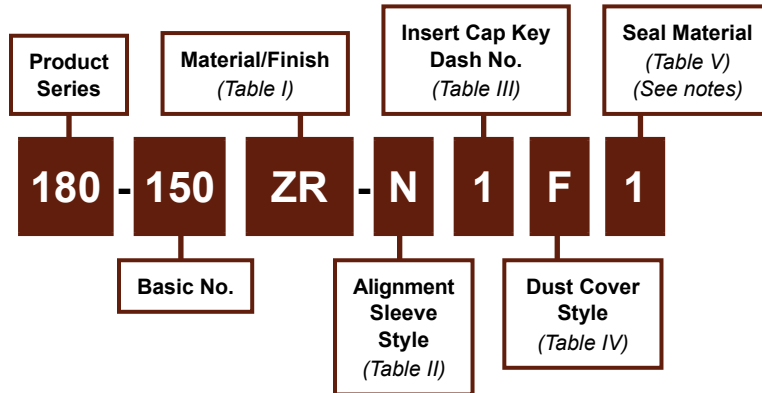


180-150
GFOCA Square Flange Mount Receptacle
with Accessory Threads
MIL-DTL-83526 Type, 4 Channel



MIL-DTL-83526 type hermaphroditic GFOCA square flange mount receptacle with accessory threads

How To Order



Material and Finish

External hardware: See Table I
 Internal hardware: Al alloy/anodize
 Misc. hardware: Stainless steel/passivate
 Lanyard: Stainless steel/coated
 Seals: See Table V

Notes

Connector assembly is designed IAW the interface requirements of MIL-PRF-83526/17 (Draft). Standard configuration is shown in sample part number. Accessory threads per shell size 19, D38999 Series III connector.

180-150
GFOCA Square Flange Mount Receptacle
with Accessory Threads
MIL-DTL-83526 Type, 4 Channel



| Table I: Material/Finish | | |
|--------------------------|----------------|-------------------------|
| Code | Material | Finish Description |
| G2 | Aluminum alloy | Hard anodize, gray |
| ZN | | Zinc-nickel, olive drab |
| ZR | | Zinc-nickel, black |

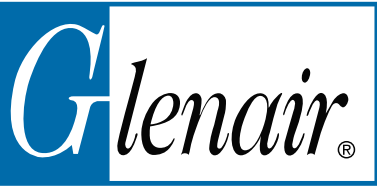
Refer to Appendix for material/finish details

| Table II: Alignment Sleeve Style | |
|--|-------|
| Code | Style |
| N | None |
| Consult factory for additional options | |

| Table III: Insert Cap Key Configurations | | | | |
|--|---|---|---|---|
| Dash No: | 1 | 2 | 3 | 4 |
| Config. | <p style="text-align: center;">Key 1</p> | <p style="text-align: center;">Key 2</p> | <p style="text-align: center;">Key 3</p> | <p style="text-align: center;">Key U (universal)</p> |

| Table IV: Dust Cover Style | |
|----------------------------|----------------|
| Code | Style |
| F | Female |
| H | Hermaphroditic |
| N | None |

| Table V: Seal Material | |
|------------------------|---|
| Dash No. | Seal material(s) |
| 1 | Fluorosilicone / Fluorosilicone panel seal |
| 2 | Fluorosilicone / Conductive fluorosilicone panel seal |
| 3 | EPDM / EPDM panel seal |
| 4 | EPDM / Conductive EPDM panel seal |

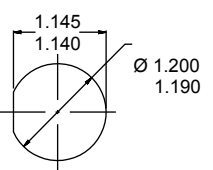
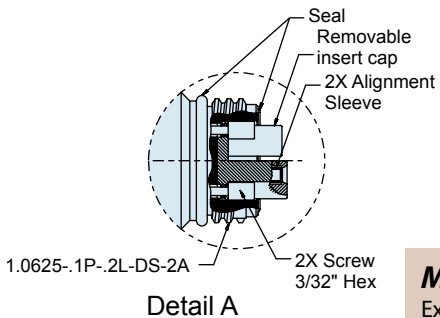
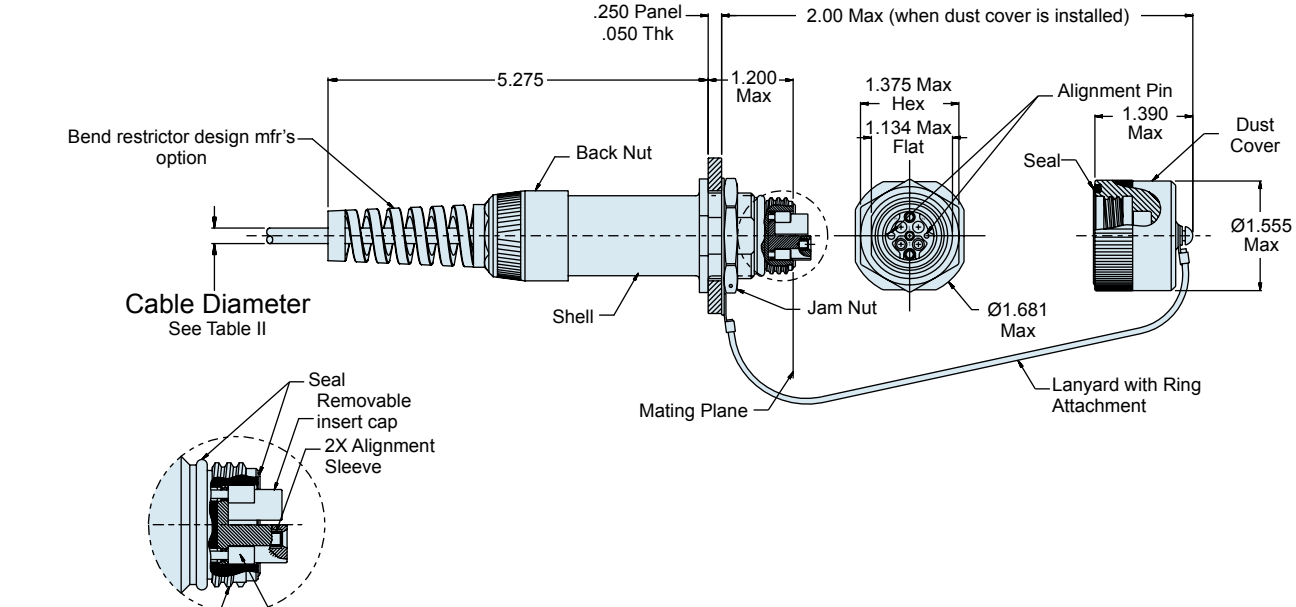
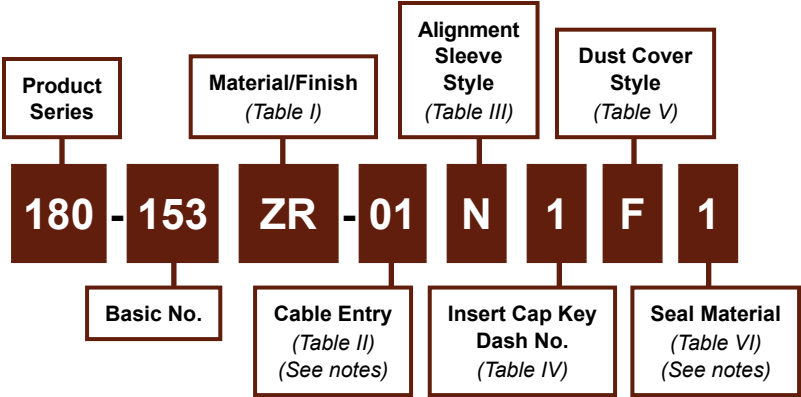


180-153
GFOCA Internal Mount Jam Nut
Receptacle with Strain Relief
MIL-DTL-83526 Type, 4 Channel



MIL-DTL-83526 type hermaphroditic GFOCA internal mount jam nut receptacle with strain relief

How To Order



Panel Cut-out
As viewed from front of panel

Material and Finish
 External hardware: See Table I
 Internal hardware: Al alloy/anodize
 Misc. hardware: Stainless steel/passivate
 Lanyard: Stainless steel/coated
 Strain relief wedge: Copper alloy/nickel
 Seals: See Table VI

Notes
 Connector assembly is designed IAW the interface requirements of MIL-PRF-83526/17 (Draft). Standard configuration is shown in sample part number.

180-153
GFOCA Internal Mount Jam Nut
Receptacle with Strain Relief
MIL-DTL-83526 Type, 4 Channel



GFOCA
Fiber Optic System

| Table I: Material/Finish | | |
|--------------------------|----------------|-------------------------|
| Code | Material | Finish Description |
| G2 | Aluminum alloy | Hard anodize, gray |
| ZN | | Zinc-nickel, olive drab |
| ZR | | Zinc-nickel, black |

Refer to Appendix for material/finish details

| Table II: Cable Diameter | | |
|--------------------------|----------------|-----------|
| Dash No. | Cable Diameter | |
| | Inch | mm |
| 01 | .190-.315 | 4.83-8.00 |
| 02 | .316-.379 | 8.03-9.63 |

| Table III: Alignment Sleeve Style | |
|--|-------|
| Code | Style |
| N | None |
| Consult factory for additional options | |

| Table IV: Insert Cap Key Configurations | | | | |
|---|---|---|---|---|
| Dash No: | 1 | 2 | 3 | 4 |
| Config. | <p style="text-align: center;">Key 1</p> | <p style="text-align: center;">Key 2</p> | <p style="text-align: center;">Key 3</p> | <p style="text-align: center;">Key U (universal)</p> |

| Table V: Dust Cover Style | |
|---------------------------|----------------|
| Code. | Style |
| F | Female |
| H | Hermaphroditic |
| N | None |

| Table VI: Seal Material | |
|-------------------------|---|
| Dash No. | Seal material(s) |
| 1 | Fluorosilicone / Fluorosilicone panel seal |
| 2 | Fluorosilicone / Conductive fluorosilicone panel seal |
| 3 | EPDM / EPDM panel seal |
| 4 | EPDM / Conductive EPDM panel seal |

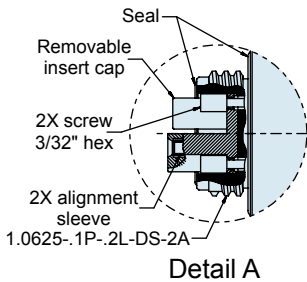
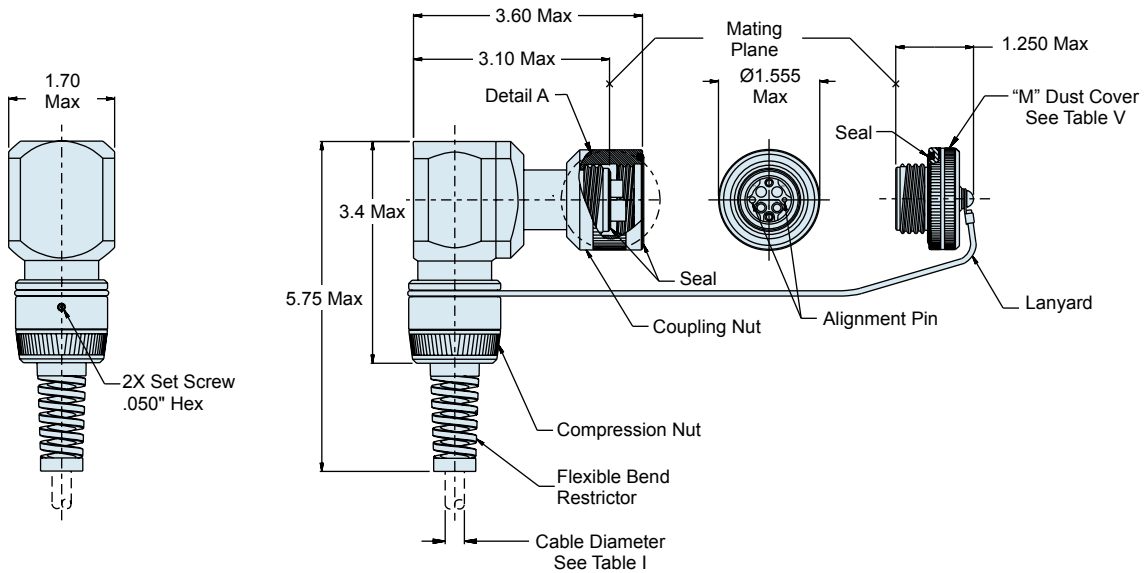
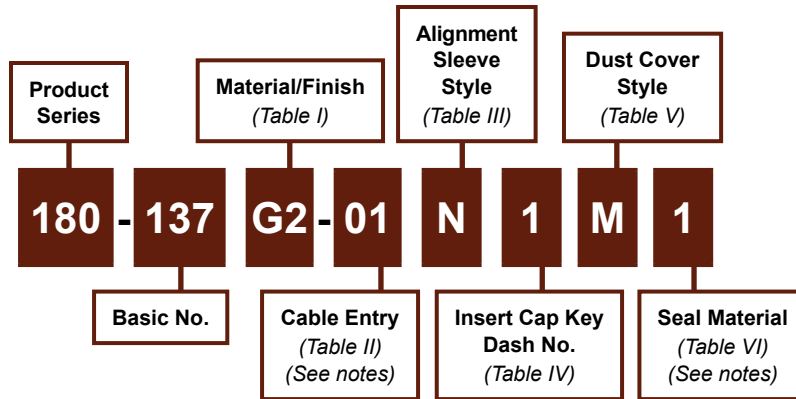


180-137
GFOCA 90° Hermaphroditic Plug Connector
MIL-DTL-83526 Type, 4 Channel



MIL-DTL-83526 type 90 degree hermaphroditic GFOCA plug connector, 4 channel

How To Order



Material and Finish

External hardware: See Table I
 Misc. hardware: Stainless steel/passivate
 Strain relief wedge: Copper alloy/nickel plated
 Seals: See Table VI

Notes

Connector assembly is designed IAW the interface requirements of MIL-PRF-83526/16 (Draft). Standard configuration is shown in sample part number.

180-137
GFOCA 90° Hermaphroditic Plug Connector
MIL-DTL-83526 Type, 4 Channel



| Table I: Material/Finish | | |
|--------------------------|----------------|-------------------------|
| Code | Material | Finish Description |
| G2 | Aluminum alloy | Hard anodize, gray |
| ZN | | Zinc-nickel, olive drab |
| ZR | | Zinc-nickel, black |

Refer to Appendix for material/finish details

| Dash No. | Cable Diameter | |
|----------|----------------|-----------|
| | Inch | mm |
| 01 | .190-.315 | 4.83-8.00 |
| 02 | .316-.379 | 8.03-9.63 |

| Code. | Style |
|-------|---------------|
| C | Captive Split |
| N | None |

| Table IV: Insert Cap Key Configurations | | | | |
|---|---|---|---|---|
| Dash No: | 1 | 2 | 3 | 4 |
| Config. | <p style="text-align: center;">Key 1</p> | <p style="text-align: center;">Key 2</p> | <p style="text-align: center;">Key 3</p> | <p style="text-align: center;">Key U (universal)</p> |

| Table V: Dust Cover Style | |
|---------------------------|-------|
| Code. | Style |
| M | Male |
| N | None |

| Table VI: Seal Material | |
|-------------------------|------------------|
| Dash No. | Seal material(s) |
| 1 | Fluorosilicone |
| 2 | EPDM |

FIBER OPTIC

MIL-PRF-28876

FIBER OPTIC CONNECTION SYSTEM



The use of fiber optics in shipboard and ship-to-shore data transmissions is growing rapidly, and the tight-tolerance MIL-PRF-28876 interconnect has become the universal standard for Navy shipboard applications. Glenair's qualified termini, connectors, backshells, and accessories deliver precise optical alignment, environmental protection and corrosion resistance.



Qualified MIL-PRF-28876 connectors for shipboard use

Glenair's qualified MIL-PRF-29504/14 and /15 termini and MIL-PRF-28876 connectors, plus backshells and dust cap accessories are ready for deployment in shipboard, surface and submarine applications, as well as mission-critical combat communication systems such as mobile tactical shelters. They are specifically geared for upgrade and retrofit applications where extending system life-cycles and reducing cost of ownership are principal requirements.



| Product No. | Description | Page No. |
|--|--|----------|
| Fiber Optic Termini | | |
| 181-039 | M29504/14 Fiber Optic Pin Terminus, Size 16 | J-3 |
| 181-040 | M29504/15 Fiber Optic Socket Terminus, Size 16 | J-4 |
| 181-051 | M29504/3 Fiber Optic Dummy Terminus, Size 16 | J-5 |
| Fiber Optic Connectors | | |
| 180-040 | M28876 Square Flange Wall Mount Receptacle Connector | J-10 |
| 180-040 | M28876 Jam Nut Mount Receptacle Connector | J-12 |
| 180-040 | M28876 In-Line Receptacle Connector | J-14 |
| 180-040 | M28876 Plug Connector | J-14 |
| Panel Gaskets, Backshells, Adapters and Dust Covers | | |
| M28840/24 | MIL-Spec Wall Mount Gasket | J-17 |
| 930-006 | Commercial Wall Mount Gasket | J-17 |
| 189-015 | Environmental Banding Backshell | J-18 |
| 189-001 | Fiber Optic Backshell with Split Clamp | J-20 |
| 189-007 | Fiber-Con Backshell | J-22 |
| 189-009 | Banding Backshell/Molding Adapter | J-24 |
| 189-014 | PEEK Convoluted Tubing Backshell | J-26 |
| 660-072/073 | Dust Covers | J-28 |

Catalog Notes

Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only.

Unless otherwise specified, the following other dimensional tolerances apply:

.xx = ± .03 (0.8) • .xxx = ± .015 (0.4) • Angles = ± 5°



MIL-PRF-28876 QPL Connector Performance Specifications

| Test Description | Performance Requirements/Specifications |
|--|--|
| Optical Insertion Loss, Multimode | -0.3 dB Typical (62.5/125) |
| Optical Insertion Loss, Singlemode | -0.3 dB Typical (9/125) |
| Optical Back Reflection, Singlemode | Better than -40 dB - PC Polish Better than -50 dB - Enhanced PC Polish |
| Operating Temperature | -28°C to +65°C using MIL-Spec Qualified Epoxy and Cable, or -55°C to +125°C using alternative Epoxy and Cable (consult factory) |
| Temperature (Thermal) Shock | -40°C to +70°C, 5 Cycles, per TIA/EIA-455-71, Test Schedule C |
| Temperature Cycling | -28°C to +65°C, 5 Cycles, per TIA/EIA-455-3 |
| Temperature/Humidity Cycling | -10°C to +65°C, 10 Cycles, 240 hours, 98% RH, per TIA/EIA-455-5, Test Method B |
| Temperature Life Aging | +110°C, 240 hours, Dry Air, per TIA/EIA-455-4 |
| Mating Durability | 500 cycles, per TIA/EIA-455-21 |
| Vibration - Sinusoidal | 10 g Peak, 5-500 Hz, 12 Cycles (3 hours) per Axis at Ambient Temperature, per TIA/EIA-455-11, Test Condition II |
| Vibration - Random | 10.2 g RMS, 50-2000 Hz, 30 minutes per Axis at Ambient Temperature, per TIA/EIA-455-11, Test Condition VII-C |
| Mechanical Shock (High Impact) | Per MIL-S-901, Lightweight, Grade A, Class I (Hammer Shock) |
| Impact | 8 Drops from 8 feet, per TIA/EIA-455-2, Test Method B |
| Crush Resistance | 281 lbs, 7 Loading Cycles, per TIA/EIA-455-26 |
| External Bending Moment | 300 inch-lbs min for 1 minute |
| Cable Pull Out Force - Termini | 22 lbs min for 1 minute, per TIA/EIA-455-6 |
| Cable Pull Out Force - Connector | 162 lbs min for 10 minutes, per TIA/EIA-455-6 |
| Cable Seal Flexing | 180° Flex, 200 Cycles, per TIA/EIA-455-1 |
| Cable Twist | 360°±180° Twist, 50 Cycles, 11 lbs min Tension, per TIA/EIA-455-36 |
| Ozone Exposure | 150 ppm for 2 hours at +70°C, per TIA/EIA-455-189 |
| Fungus Resistance | 28 days at +30°C, 95% RH, per TIA/EIA-455-56 |
| Fluid Immersion | Turbine Fuel, Isopropyl Alcohol, Hydraulic Fluid, Lubricating Oil, Coolant, Tap Water, and Seawater, 24 hour immersion duration, per TIA/EIA-455-12 |
| Water Pressure | Equivalent depth of 32 feet for 48 hours at +10°C to +35°C |
| Freezing Water | 1 hour, per TIA/EIA-455-98, Test Method A, Procedure 1 |
| Corrosion Resistance (Salt Spray) | 500 hours at +35°C, per TIA/EIA-455-16, Test Condition I |
| Sand and Dust | 12 hours, per TIA/EIA-455-35 |
| Flammability | 0.75 inch flame for 10 seconds mated, 1.50 inch flame for 60 seconds unmated, per EIA/ECA-364-81 |
| * Performance Specifications/Requirements based on the use of MIL-PRF-24792 Epoxy and MIL-PRF-85045 Simplex and Breakout Shipboard Optical Fiber. | |

M29504/14

181-039

Size 16 Fiber Optic Pin Terminus
For MIL-PRF-28876 Connectors



MIL-PRF-28876
Connectors

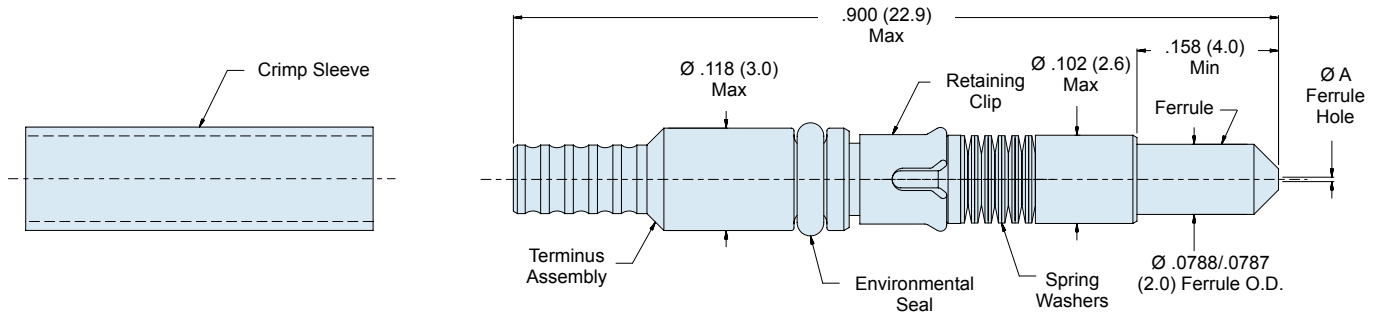


Size 16 M29504/14 fiber optic pin terminus for MIL-PRF-28876 connectors



| Table I: Part Number | | | | |
|------------------------|--------------|-------------|------------------------------------|------------------------|
| Mil-Spec Part Number | ØA (Microns) | Fiber Type | Fiber Size Core/Cladding (Microns) | Commercial Part Number |
| M29504/14-4140C | 125.0 | Single Mode | 9/125 | 181-039-1250C |
| Not listed in Mil-Spec | 125.5 | Single Mode | 9/125 | 181-039-1255C |
| M29504/14-4141C | 126.0 | Single Mode | 9/125 | 181-039-1260C |
| M29504/14-4131C | 126.0 | Multi Mode | 50/125, 62.5/125 | 181-039-1260C |
| M29504/14-4132C | 127.0 | Multi Mode | 50/125, 62.5/125 | 181-039-1270C |
| M29504/14-4135C | 142.0 | Multi Mode | 100/140 | 181-039-1420C |

Consult factory for additional sizes and QPL status.



| Table II: Tools and Accessories | |
|---------------------------------|--|
| Part Number | Description |
| 265-008 | Crimp Sleeve Ø2.4mm Max Jacket (Mil-Spec Type) |
| 182-012 | Crimp Tool |
| 182-013 | Insertion Tool, Straight |
| 182-014 | Insertion Tool, 90° |
| 182-015 | Removal Tool |
| 182-035 | Hand Polishing Tool |

Material and Finish

Ferrule: Zirconia Ceramic
Terminus Assembly: Stainless Steel/ Passivate
Retaining Clip, Spring Washers: Spring Alloy
Seal: Fluorosilicone
Crimp Sleeve: Brass Alloy/Nickel

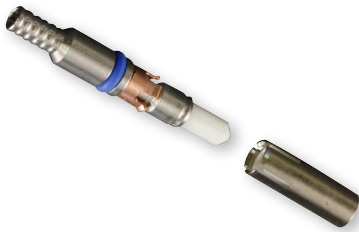
Notes

- Crimp sleeve is supplied with terminus assembly and may be ordered separately (see Table II). For terminus less crimp sleeve, omit **C** from end of part number.
- See Glenair GAP-036 for termination procedure and assembly tools.
- Dummy terminus part number: 181-051 or M29504/3-4038.





Size 16 M29504/15 fiber optic socket terminus for MIL-PRF-28876 connectors



| Mil-Spec Part Number | ØA (Microns) | Fiber Type | Fiber Size Core/Cladding (Microns) | Commercial Part Number |
|------------------------|--------------|-------------|------------------------------------|-------------------------------|
| M29504/15-4180C | 125.0 | Single Mode | 9/125 | 181-040-1250C |
| Not listed in Mil-Spec | 125.5 | Single Mode | 9/125 | 181-040-1255C |
| M29504/15-4181C | 126.0 | Single Mode | 9/125 | 181-040-1260C |
| M29504/15-4171C | 126.0 | Multi Mode | 50/125, 62.5/125 | 181-040-1260C |
| M29504/15-4172C | 127.0 | Multi Mode | 50/125, 62.5/125 | 181-040-1270C |
| M29504/15-4175C | 142.0 | Multi Mode | 100/140 | 181-040-1420C |

Consult factory for additional sizes and QPL status.

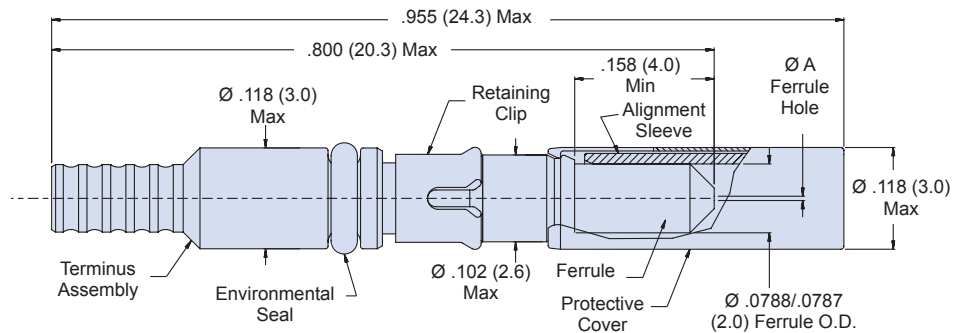
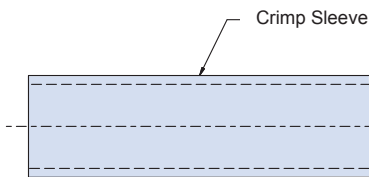


Table II: Tools and Accessories

| Part Number | Description |
|-------------------------|--|
| 265-008 | Crimp Sleeve Ø 2.4mm Max Jacket (Mil-Spec Type) |
| 265-010 | Alignment Sleeve Assembly |
| 182-012 | Crimp Tool |
| 182-013 | Insertion Tool, Straight |
| 182-014 | Insertion Tool, 90° |
| 182-015 | Removal Tool |
| 182-016 | Alignment Sleeve Assembly Insertion/Removal Tool |
| 182-035 | Hand Polishing Tool |

Material and Finish

Alignment Sleeve, Ferrule: Zirconia Ceramic
 Protective cover: Spring Alloy / Nickel
 Terminus Assembly: Stainless Steel / Passivate
 Retaining Clip: Spring Alloy
 Seal: Fluorosilicone
 Crimp Sleeve: Brass Alloy / Nickel

Notes

- Crimp sleeve is supplied with terminus assembly and may be ordered separately (see Table II). For terminus less crimp sleeve omit **C** from end of part number.
- Alignment sleeve assembly is supplied with terminus assembly (packaged loose) and may be ordered separately (see Table II). For terminus less alignment sleeve assembly, add **N** to end of part number (e.g. 181-040-1260CN).
- See Glenair GAP-036 for termination procedure and assembly tools.
- Dummy Terminus: Part Number 181-051 or M29504/3-4038.

M29504/3
181-051
Size 16 Dummy Terminus
for MIL-PRF-28876 Connectors

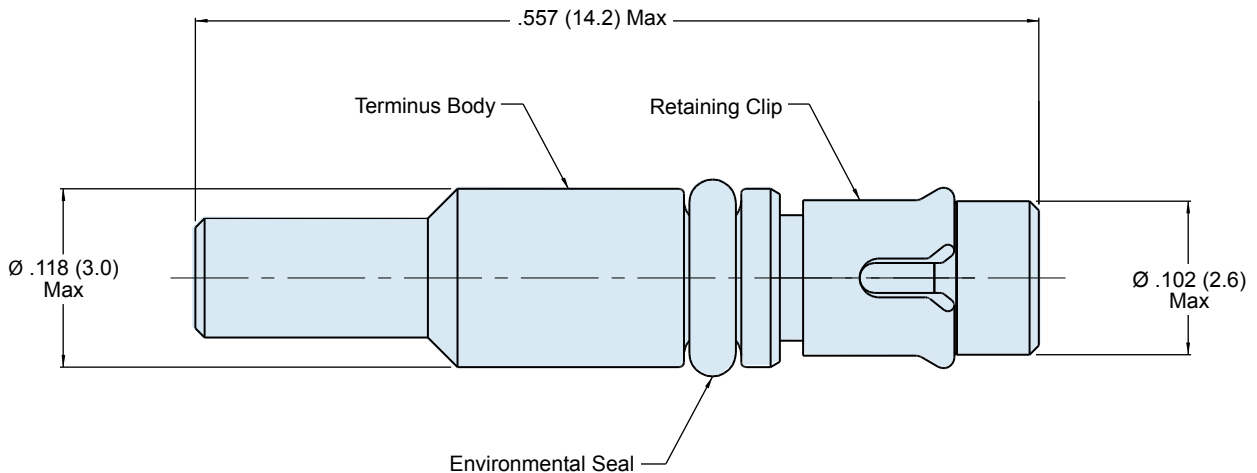


Size 16 M29504/3 fiber optic dummy terminus for MIL-PRF-28876 connectors



| Table I: Part Number | |
|----------------------|------------------------|
| Mil-Spec Part Number | Commercial Part Number |
| M29504/3-4038 | 181-051 |

| Table II: Tools and Accessories | |
|---------------------------------|--------------------------|
| Part Number | Description |
| 182-013 | Insertion Tool, Straight |
| 182-014 | Insertion Tool, 90° |
| 182-015 | Removal Tool |



Material and Finish

Terminus Body: Stainless Steel/Passivate
Retaining Clip: Spring Alloy
Seal: Fluorosilicone

Notes

See Glenair GAP-036 for assembly tools and procedures.

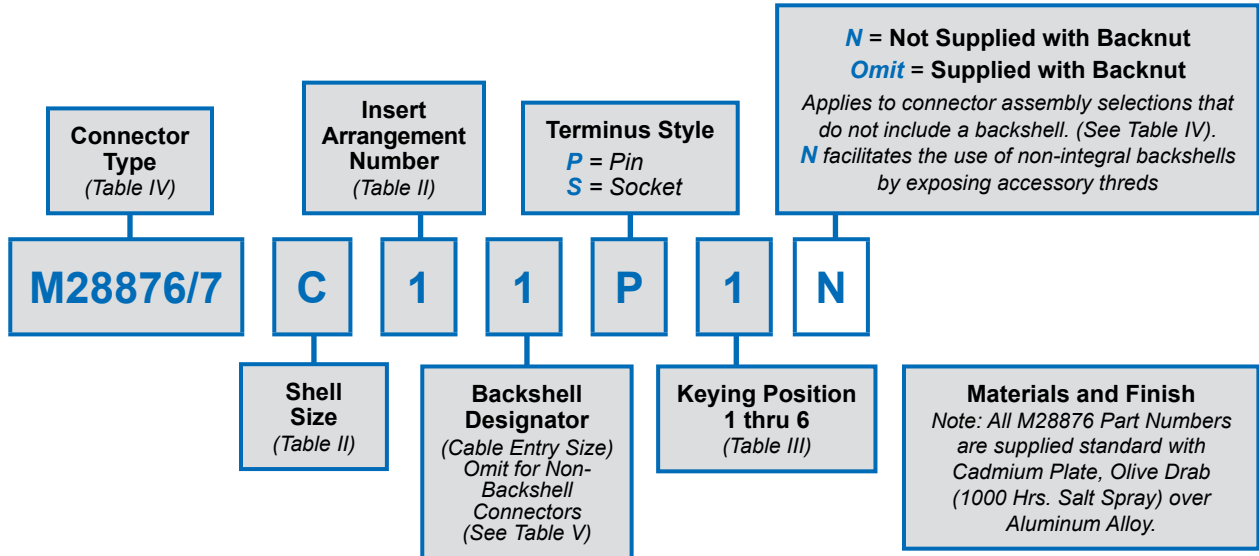




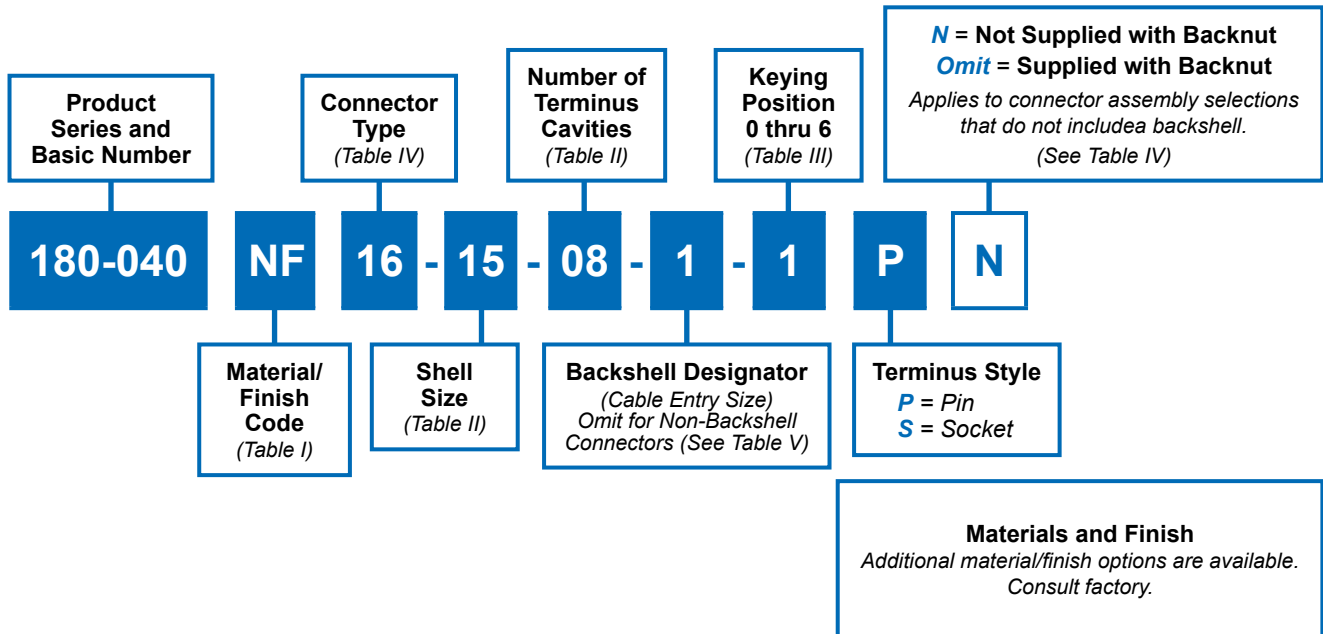
MIL-PRF-28876 QPL Fiber Optic Connectors
180-040
How to Order



Military QPL M28876/1 through /14 fiber optic connectors



Glenair commercial equivalent MIL-PRF-28876 type fiber optic connectors



MIL-PRF-28876 QPL Fiber Optic Connectors

180-040

How to Order



| Code | Material | Finish Description |
|------------|----------------|---------------------|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium, Olive Drab |
| MT* | | Nickel-PTFE, Grey |
| ZR | | Zinc-Nickel, Black |

Refer to Appendix for material/finish details

| Mil-Spec | | Commercial | |
|------------|--------------------|------------|--------------------|
| Shell Size | Insert Arrangement | Shell Size | Number of Cavities |
| A | 1 | 11 | 02 |
| B | 1 | 13 | 04 |
| C | 2 | 15 | 06 |
| | 1 | | 08 |
| F | 2 | 23 | 18 |
| | 1 | | 31 |

Consult factory for QPL status

| Backshell Designator | Max Allowable Cable Diameter by Shell Size | | | |
|----------------------|--|-------------|-------------|--------------|
| | A (11) | B (13) | C (15) | F (23) |
| 1 | .250 (6.4) | .285 (7.2) | .500 (12.7) | .866 (22.0) |
| 2 | .346 (8.8) | .346 (8.8) | .250 (6.4) | 1.000 (25.4) |
| 3 | | .453 (11.5) | .375 (9.5) | .600 (15.2) |

| Connector Type | Backshell Type | MIL-Spec | Commercial |
|-----------------------|----------------|-----------|------------|
| Wall Mount Receptacle | None | M28876/1 | 03 |
| | Straight | M28876/2 | 13 |
| | 45° | M28876/3 | 23 |
| | 90° | M28876/4 | 33 |
| In-Line Receptacle | Straight | M28876/5 | 15 |
| Plug | None | M28876/6 | 06 |
| | Straight | M28876/7 | 16 |
| | 45° | M28876/8 | 26 |
| | 90° | M28876/9 | 36 |
| Jam Nut Receptacle | None | M28876/11 | 04 |
| | Straight | M28876/12 | 14 |
| | 45° | M28876/13 | 24 |
| | 90° | M28876/14 | 34 |

Material and Finish

- A. M28876 part numbers supplied standard with Cad plate/olive drab over aluminum alloy. See Table I for commercial plating options.
- B. Hardware: Aluminum alloy/chem film, stainless steel/passivate
- C. Insert: Aluminum alloy/anodize
- D. Seals: Fluorosilicone

Notes

- Termini (Not Supplied with Connector):
- M29504/14 - Pin terminus, MIL-Spec
- M29504/15 - Socket Terminus, MIL-Spec
- M29504/3 - Dummy Terminus, MIL-Spec
- 181-039 - Pin Terminus, MIL-Spec Style
- 181-040 - Socket terminus, MIL-Spec Style
- 181-051 - Dummy Terminus MIL-Spec Style
- Backnut retained using thread-locking compound.
- Consult factory for appropriate termination and assembly tools/procedures.
- Operating Temperature Range: -55° to +125°C.

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





Key Positions for MIL-PRF-28876 (180-040) fiber optic connectors

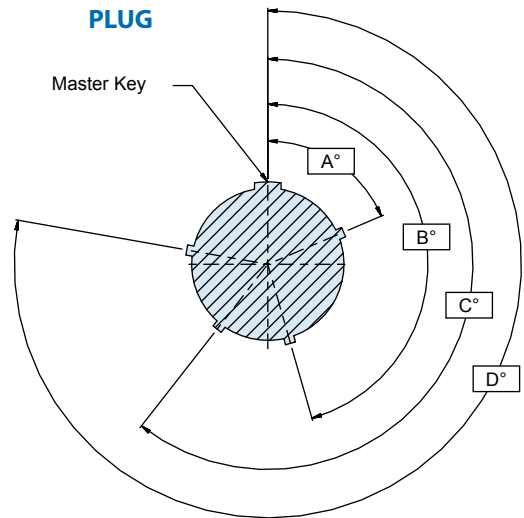
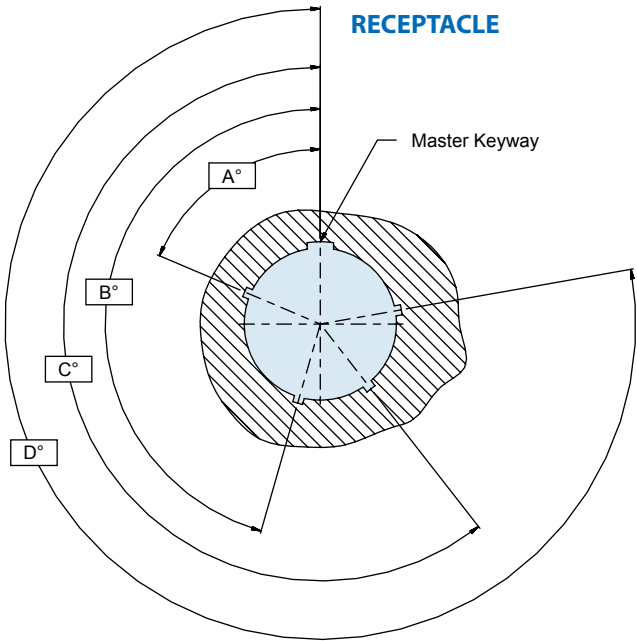


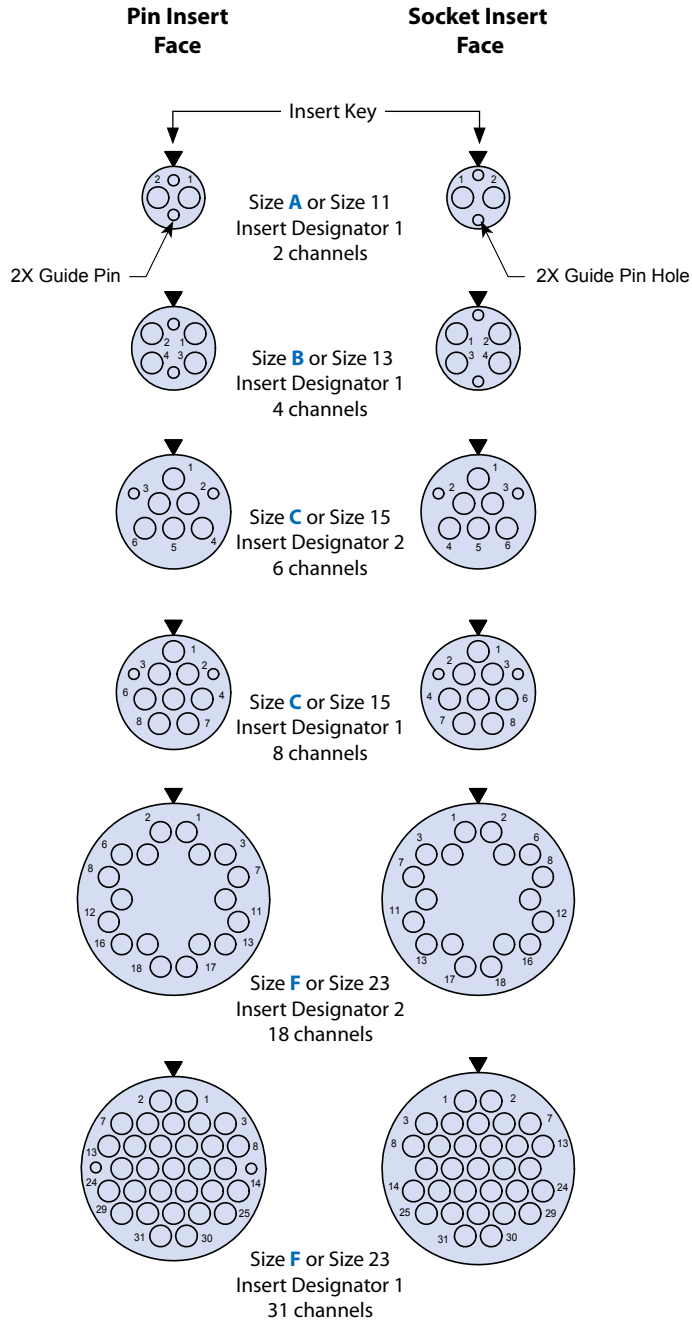
Table III: Keying Position

| Shell Size | Key Position | A° | B° | C° | D° |
|-----------------|--------------|-----|-----|-----|-----|
| 11 and 13 | 0* | - | - | - | - |
| | 1 | 95 | 141 | 208 | 236 |
| | 2 | 113 | 156 | 182 | 292 |
| | 3 | 90 | 145 | 195 | 252 |
| | 4 | 53 | 156 | 220 | 255 |
| | 5 | 119 | 146 | 176 | 298 |
| | 6 | 51 | 141 | 184 | 242 |
| 15 and 23 | 0* | - | - | - | - |
| | 1 | 80 | 142 | 196 | 293 |
| | 2 | 135 | 170 | 200 | 310 |
| | 3 | 49 | 169 | 200 | 244 |
| | 4 | 66 | 140 | 200 | 257 |
| | 5 | 62 | 145 | 180 | 280 |
| | 6 | 79 | 153 | 197 | 272 |

*0 indicates universal keying arrangement and is available on commercial equivalent plug connector only.



Insert arrangements for MIL-PRF-28876 (180-040) fiber optic connectors





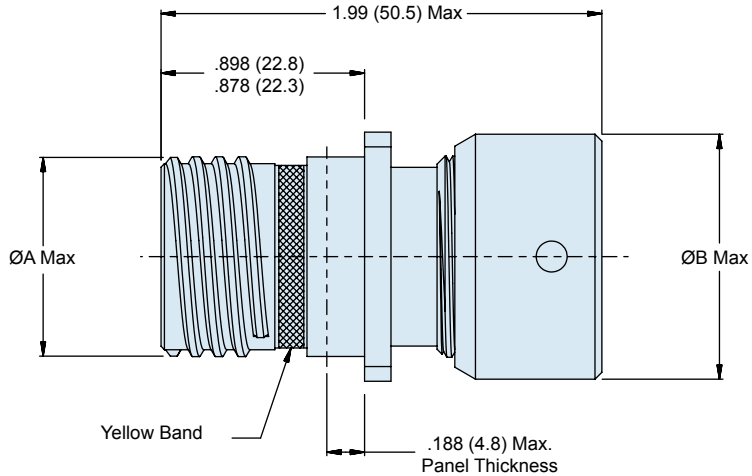
M28876 (/1, /2, /3, /4)
180-040 (-03, -13, -23, -33)
MIL-PRF-28876 Wall Mount Receptacle Connector
for use with MIL-PRF-29504/14 and /15 Termini



MIL-PRF-28876 QPL wall mount receptacle connector

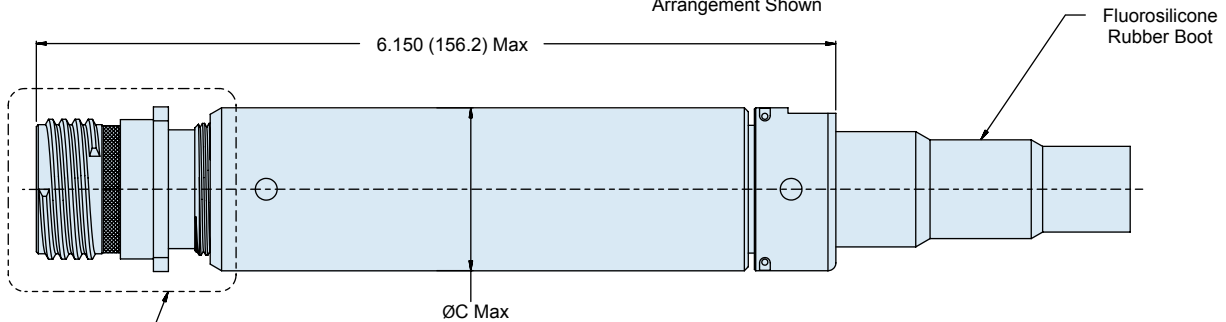
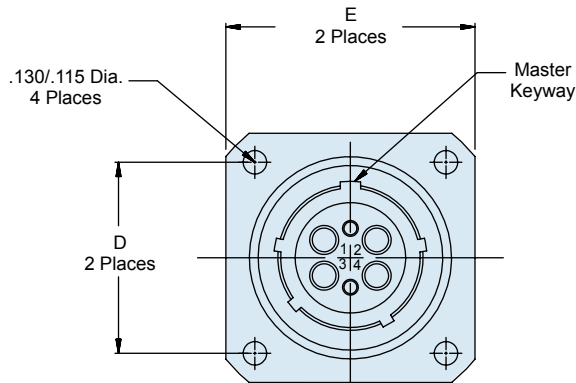


Receptacle without backshell



Receptacle with straight backshell

**M28876/1 • 180-040(-03)
WALL MOUNT RECEPTACLE WITHOUT**



All Dimensions
Per M28876/1

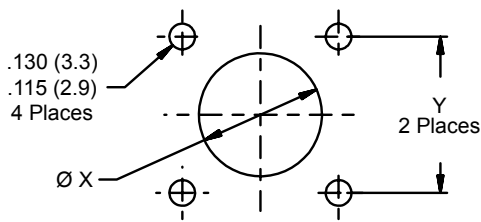
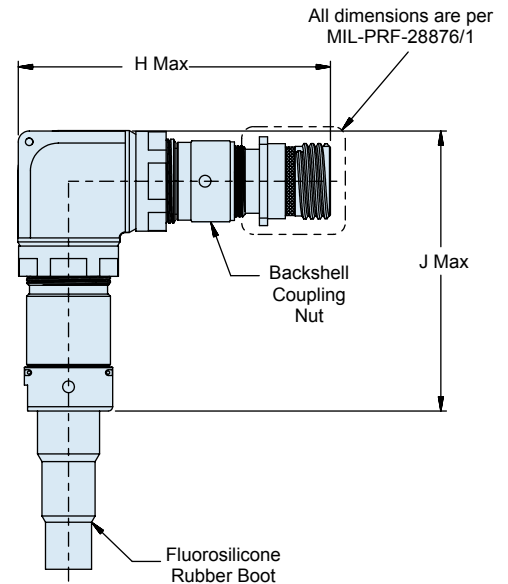
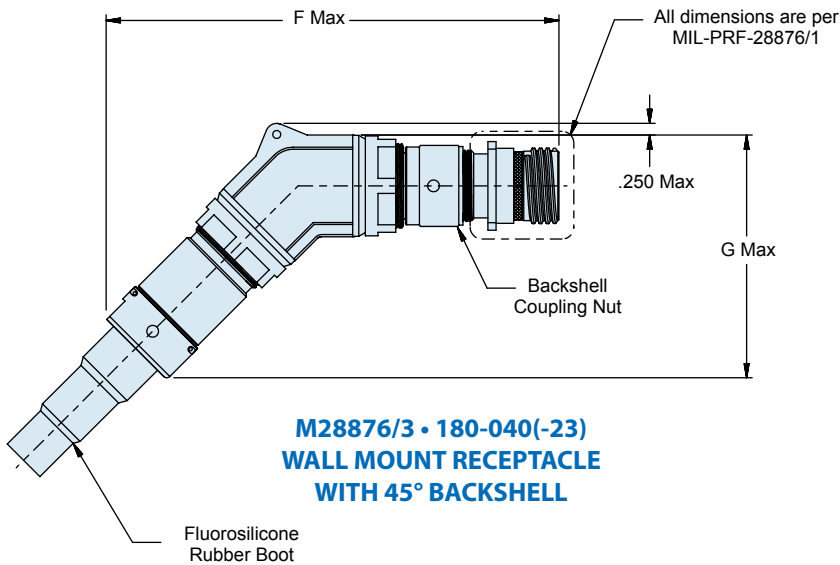
**M28876/2 • 180-040(-13)
WALL MOUNT RECEPTACLE WITH
STRAIGHT BACKSHELL**

J

M28876 (/1, /2, /3, /4)
 180-040 (-03, -13, -23, -33)
 MIL-PRF-28876 Wall Mount Receptacle Connector
 for use with MIL-PRF-29504/14 and /15 Termini



| Shell Size | ØA Max | ØB Max | ØC Max | D | E ±.020 | F Max. | G Max. | H Max. | J Max. |
|------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|
| 11 | 0.750 (19.1) | 0.960 (24.4) | 0.960 (24.4) | 0.750 (19.1) | 1.022 (26.0) | 6.150 (156.2) | 3.540 (89.9) | 4.250 (108.0) | 4.250 (108.0) |
| 13 | 0.875 (22.2) | 1.085 (27.6) | 1.085 (27.6) | 0.843 (21.4) | 1.137 (28.9) | 6.220 (158.0) | 3.580 (90.9) | 4.250 (108.0) | 4.250 (108.0) |
| 15 | 1.062 (27.0) | 1.255 (31.9) | 1.257 (31.9) | 0.968 (24.6) | 1.257 (31.9) | 6.500 (165.1) | 3.850 (97.8) | 4.500 (114.3) | 4.500 (114.3) |
| 23 | 1.500 (38.1) | 1.695 (43.1) | 1.763 (44.8) | 1.281 (32.5) | 1.718 (43.6) | 7.500 (190.5) | 5.000 (127.0) | 5.000 (127.0) | 5.000 (127.0) |



Recommended Panel Cutout
(Wall Mounting)

| Shell Size | Ø X ± .005 (0.13) | Y ± .005 (0.13) |
|------------|-------------------|-----------------|
| 11 | .812 (20.6) | .750 (19.1) |
| 13 | .937 (23.8) | .843 (21.4) |
| 15 | 1.124 (28.6) | .968 (24.6) |
| 23 | 1.562 (39.7) | 1.281 (32.5) |



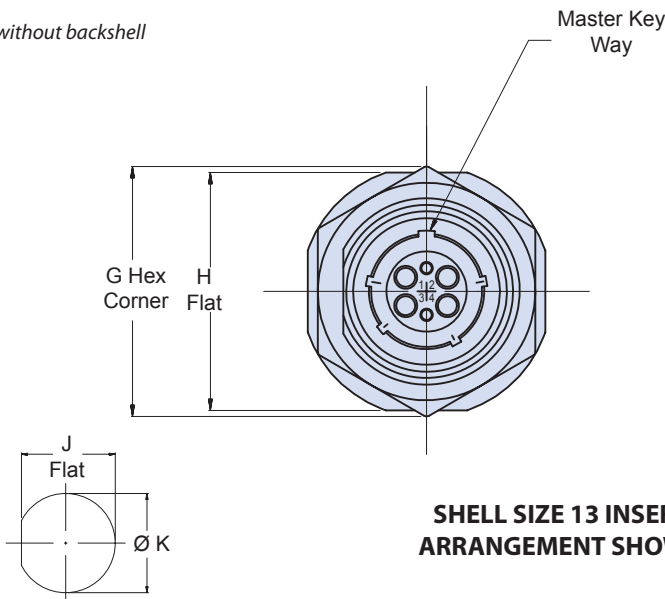
M28876

MIL-PRF-28876 QPL jam nut receptacle connector

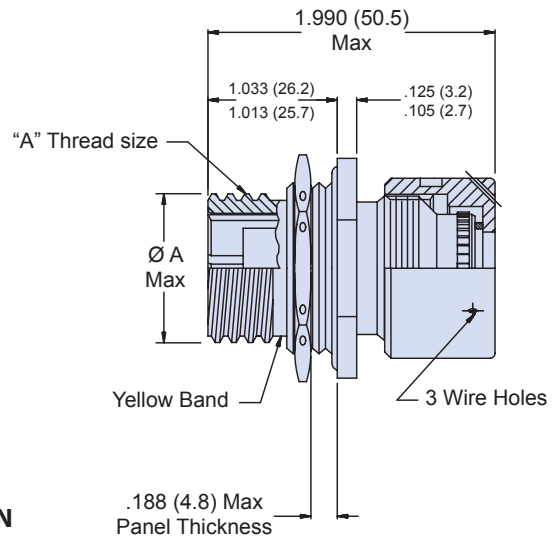


| Table I | | | | | | | |
|------------|--------------|-------------------|-------------------|---------------------|--------------|--------------|--------------|
| Shell Size | G Max | H ± .010 (0.3) | J ± .005 (0.1) | Ø K ± .005 (0.1) | Ø C Max | Ø L Max | Ø A Max |
| 11 | 1.290 (32.8) | 1.264 (32.1) | .848 (21.5) | .885 (22.5) | .960 (24.4) | .960 (24.4) | .750 (19.1) |
| 13 | 1.435 (35.9) | 1.389 (35.3) | .973 (24.7) | 1.010 (25.7) | 1.085 (27.6) | 1.085 (27.6) | .875 (22.2) |
| 15 | 1.650 (41.9) | 1.577 (40.1) | 1.160 (29.5) | 1.198 (30.4) | 1.255 (31.9) | 1.255 (31.9) | 1.062 (27.0) |
| 23 | 2.093 (53.2) | 2.004 (50.9) | 1.593 (40.5) | 1.635 (41.5) | 1.695 (43.1) | 1.763 (44.8) | 1.500 (38.1) |

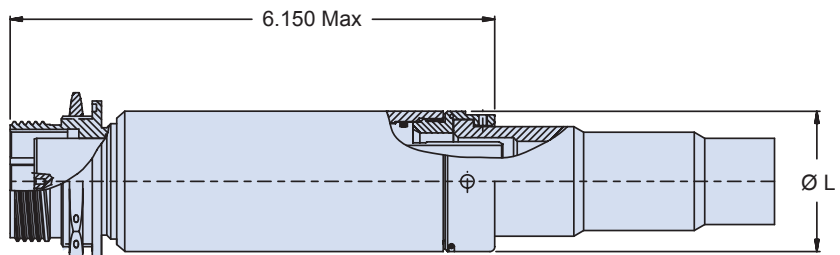
Receptacle without backshell



Recommended Panel Cutout
(Jam Nut Mounting)
As Viewed from Face of Panel



**04 - JAM NUT MOUNT RECEPTACLE
WITHOUT BACKSHELL
M28876/11 • 180-040 (-04)**

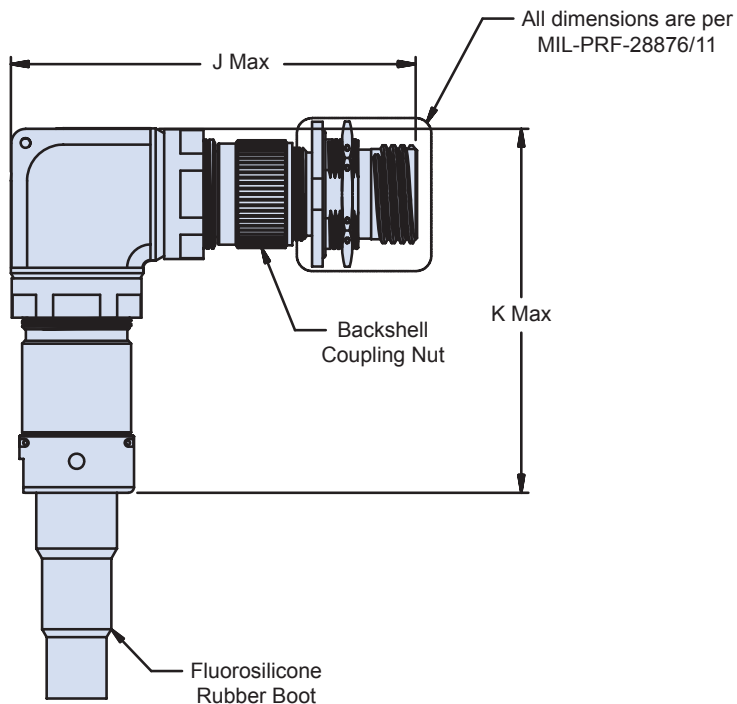


**M28876/12 • 180-040 (-14) JAM NUT MOUNT RECEPTACLE
WITH STRAIGHT BACKSHELL**

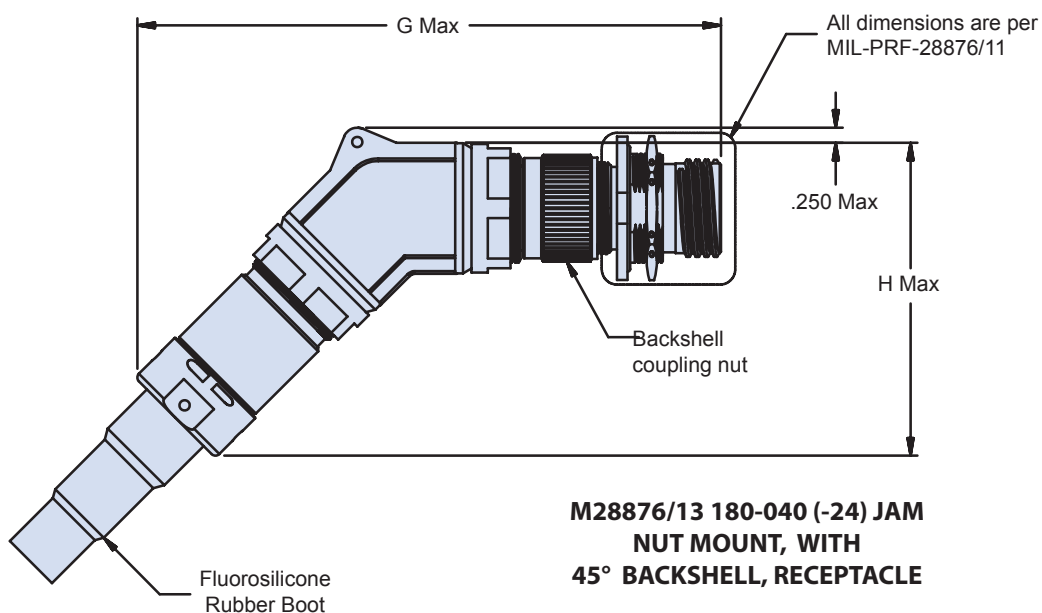
180-040 (-04, -14, -24, -34)
MIL-PRF-28876 Jam Nut Mount Receptacle Connector
 for use with MIL-PRF-29504/14 and /15 Termini



MIL-PRF-28876
 Connectors



M28876/14 180-040 (-34) JAM NUT MOUNT, WITH 90° BACKSHELL, RECEPTACLE



M28876/13 180-040 (-24) JAM NUT MOUNT, WITH 45° BACKSHELL, RECEPTACLE

J



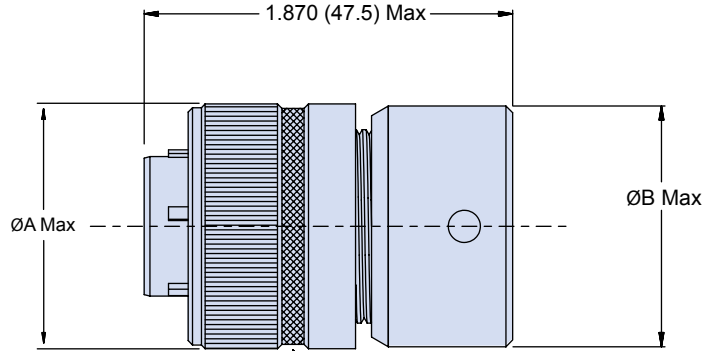
M28876 (/6, /7, /8, /9)
180-040 (-06, -16, -26, -36)
MIL-PRF-28876 Plug Connector
for use with MIL-PRF-29504/14 and /15 Termini



MIL-PRF-28876 QPL plug connector



Plug without backshell

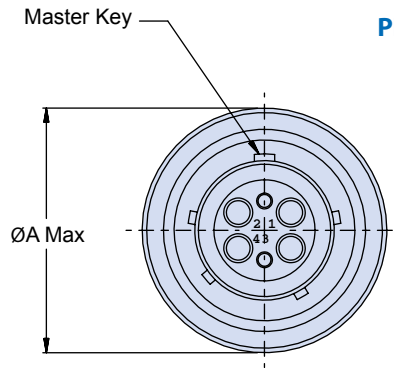


Yellow Band

**M28876/6 • 180-040 (-06)
PLUG WITHOUT BACKSHELL**

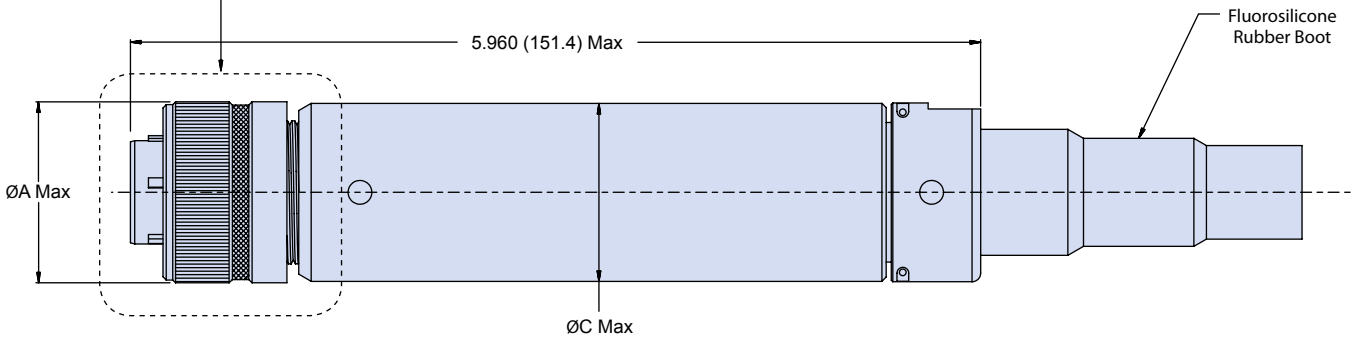


Plug with straight backshell



Shell Size 13 Insert
Arrangement Shown

All dimensions are
per M28876/6



Fluorosilicone
Rubber Boot

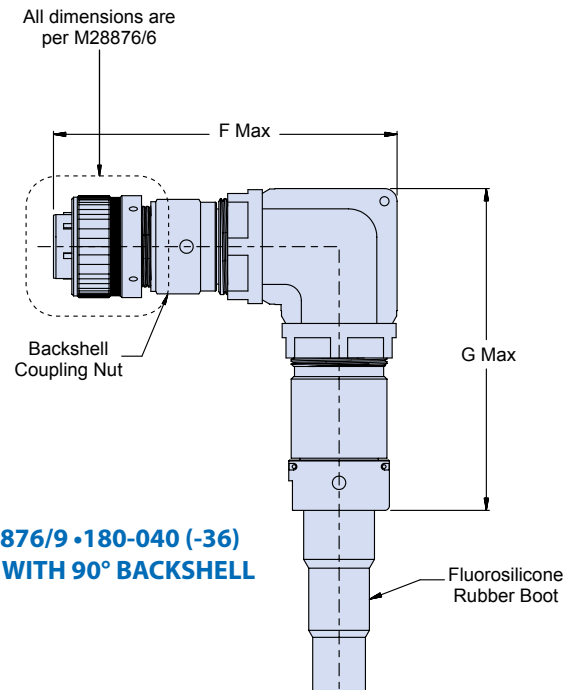
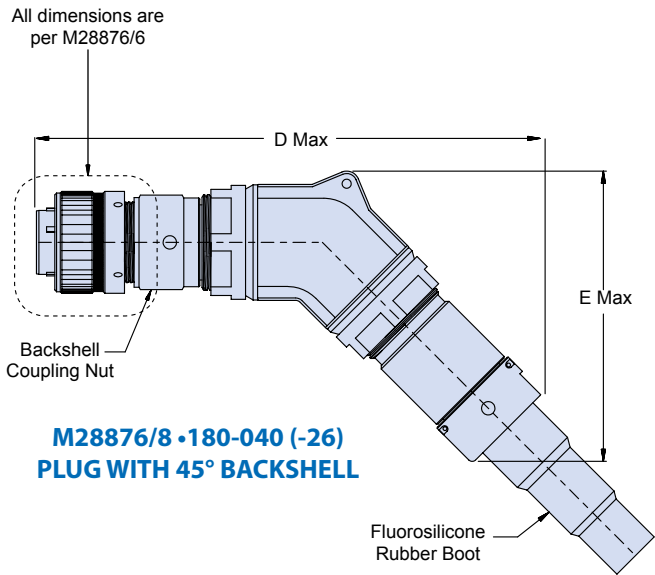
M28876/7 • 180-040 (-16) PLUG WITH STRAIGHT BACKSHELL

J

M28876 (16, 17, 18, 19)
 180-040 (-06, -16, -26, -36)
 MIL-PRF-28876 Plug Connector
 for use with MIL-PRF-29504/14 and /15 Termini



| Table I | | | | | | | |
|------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|
| Shell Size | ØA Max | ØB Max | ØC Max | D Max | E Max | F Max | G Max. |
| 11 | 1.028 (26.1) | 0.960 (24.4) | 0.960 (24.4) | 6.090 (154.7) | 3.540 (89.9) | 4.190 (106.4) | 4.250 (108.0) |
| 13 | 1.141 (29.0) | 1.085 (27.6) | 1.085 (27.6) | 6.160 (156.5) | 3.580 (90.9) | 4.190 (106.4) | 4.250 (108.0) |
| 15 | 1.263 (32.1) | 1.255 (31.9) | 1.255 (31.9) | 6.440 (163.6) | 3.850 (97.8) | 4.440 (112.8) | 4.500 (114.3) |
| 23 | 1.705 (43.3) | 1.695 (43.1) | 1.763 (44.8) | 7.350 (186.7) | 5.000 (127.0) | 4.850 (123.2) | 5.000 (127.0) |



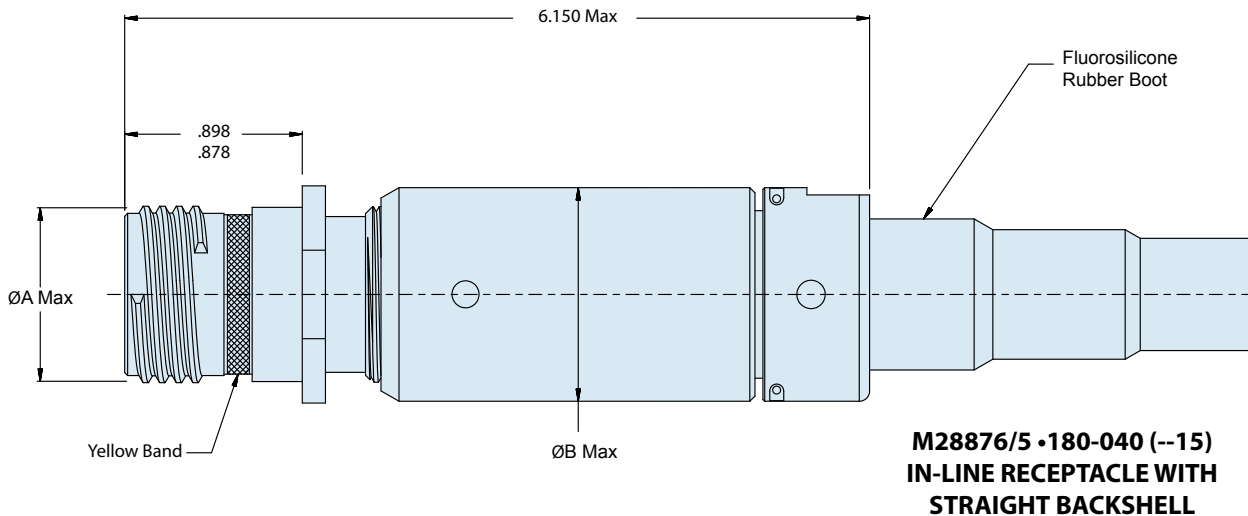
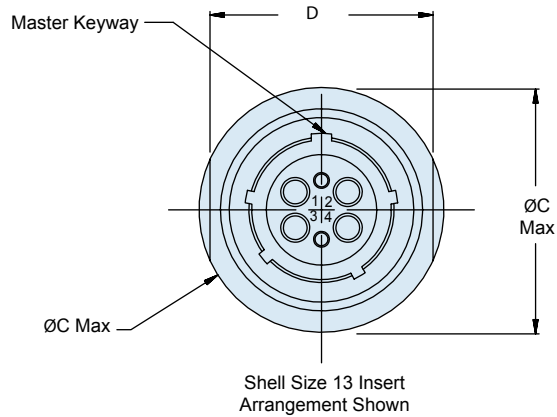


M28876/5
In-Line Receptacle
for use with MIL-PRF-29504/14 and /15 Termini



MIL-PRF-28876 QPL in-line receptacle connector

| Table I | | | | |
|------------|--------------|--------------|--------------|--------------|
| Shell Size | ØA Max | ØB Max | ØC Max | D |
| 11 | 0.750 (19.1) | 0.960 (24.4) | 0.963 (24.5) | 0.768 (19.5) |
| 13 | 0.875 (22.2) | 1.085 (27.6) | 1.088 (27.6) | 0.893 (22.7) |
| 15 | 1.062 (27.0) | 1.255 (31.9) | 1.275 (32.4) | 1.080 (27.4) |
| 23 | 1.500 (38.1) | 1.763 (44.8) | 1.719 (43.7) | 1.518 (38.6) |



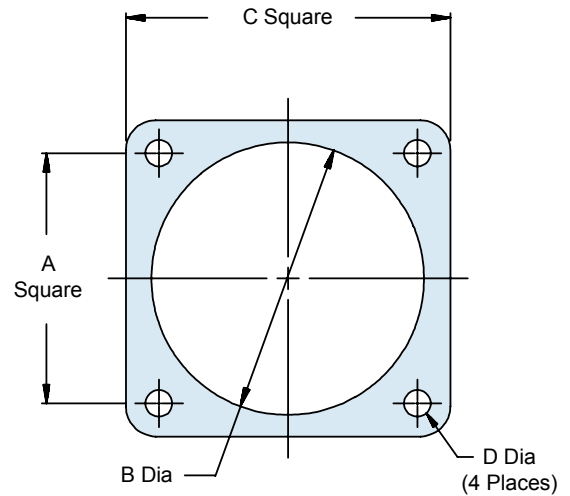
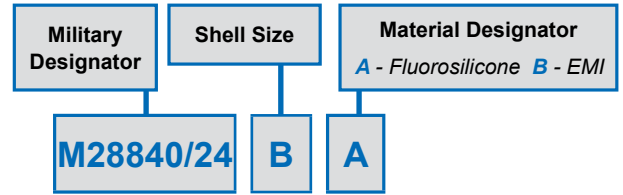
M28840 /24 and 930-006
Square Flange Wall Mount Receptacle Panel Gaskets
 for use with MIL-PRF-28876 (/1, /2, /3, /4)
 and 180-040 (-03, -13, -23, -33) Commercial Connectors



MIL-PRF-28876
Connectors

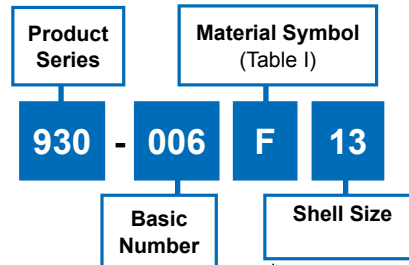
MIL-PRF square flange wall mount receptacle panel gasket

| Shell Size | A | B Dia. | C | D Dia. |
|------------|---------------|---------------|---------------|----------------------------|
| A (11) | .760 (19.30) | .766 (19.46) | 1.039 (26.39) | .130 (3.30) .110 (2.79) |
| | .740 (18.80) | .750 (19.05) | 1.023 (25.98) | |
| B (13) | .853 (21.67) | .891 (22.63) | 1.154 (29.31) | |
| | .833 (21.16) | .875 (22.22) | 1.138 (28.90) | |
| C (15) | .978 (24.84) | 1.078 (27.38) | 1.274 (32.36) | |
| | .958 (24.33) | 1.062 (26.97) | 1.258 (31.95) | |
| F (23) | 1.291 (32.79) | 1.516 (38.51) | 1.734 (44.04) | |
| | 1.271 (32.28) | 1.500 (38.10) | 1.718 (43.64) | |

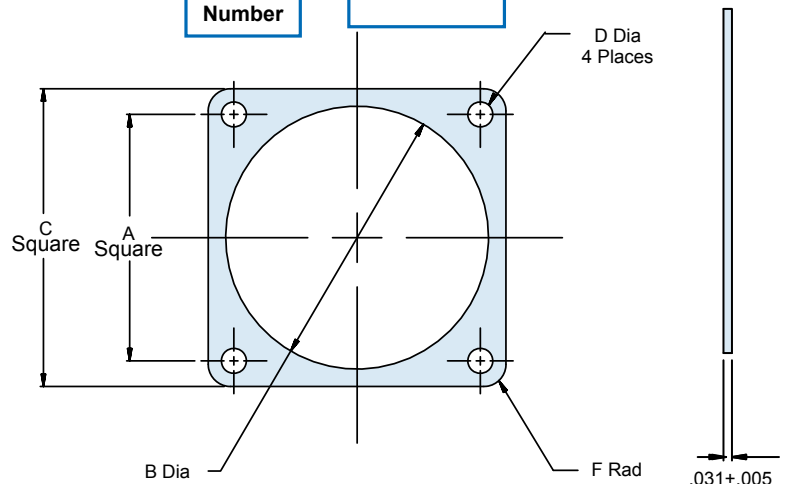


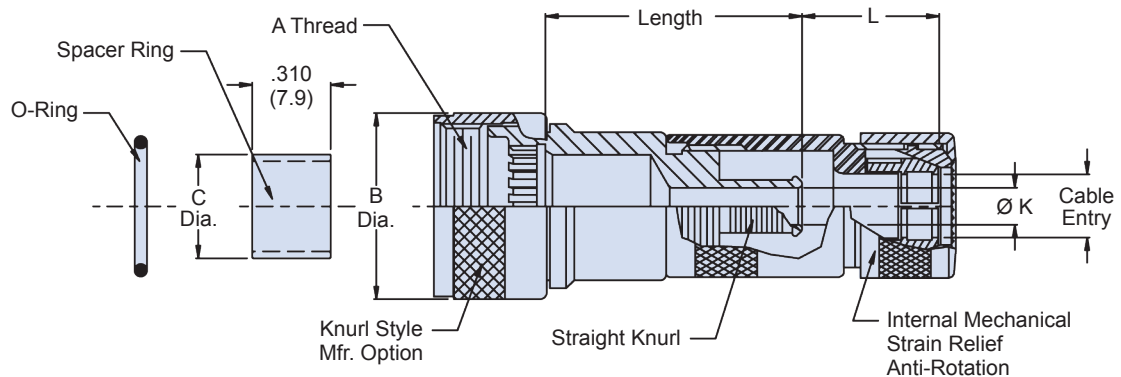
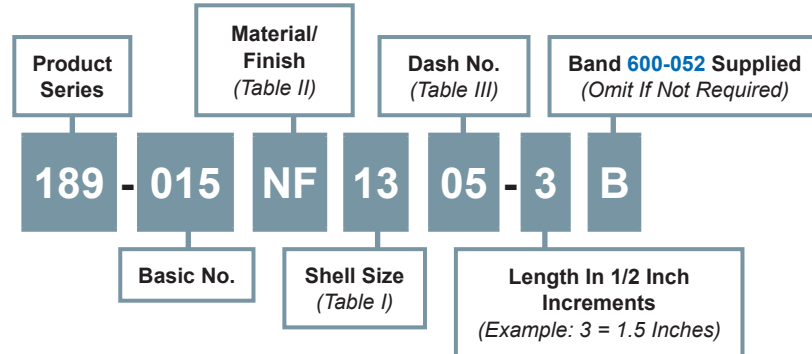
Commercial equivalent square flange wall mount receptacle panel gasket

| Symbol | Material Description |
|--------|---|
| F | Fluorosilicone |
| M | Silver Plated Glass Filled Silicone (EMI) |
| N | Neoprene |



| Shell Size | A ± .010 | Ø B +.016 - .000 | C +.016 - .000 | Ø D ± .010 | F Radius ± .010 |
|------------|----------|------------------|----------------|------------|-----------------|
| 11 | .750 | .750 | 1.023 | .120 | .141 |
| 13 | .843 | .875 | 1.138 | | |
| 15 | .968 | 1.062 | 1.258 | | |
| 23 | 1.281 | 1.500 | 1.718 | | .188 |



MIL-PRF-28876 and 189-015 banding backshell
How To Order

Material and Plating

Adapter, Coupling Nut, Spacer Ring see Table II
 Clamp Components: Ryton R 4XT-Black, Ultem 1000-Natural
 Anti-Rotation Device: Torlon 42031-Natural
 O-Ring: Fluorosilicone

Notes

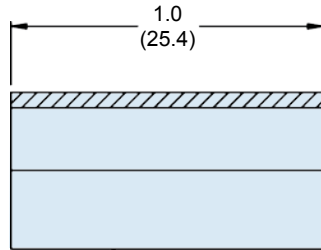
Glenair 600 Series Backshell assembly tools are recommended for assembly and installation. Standard minimum length: 1.5 inches, for shorter length consult factory.
 Spacer Ring and O-Ring are packaged loose and must be installed with Connector at time of assembly. The spacer is utilized to retain the terminus Insert.
 For Shield termination see Glenair drawing 600-050 & 600-052.
 Consult factory for larger cable size.
 MIL-I-32053/4 & /5 Shrink sleeve to be packaged loose in a plastic bag.
 MIL-I-32053/4 Shrink Sleeving to be heat shrink over rear of Adapter before
 MIL-I-32053/5 Shrink Sleeving.
 For assembly instructions, see GAP-064

189-015

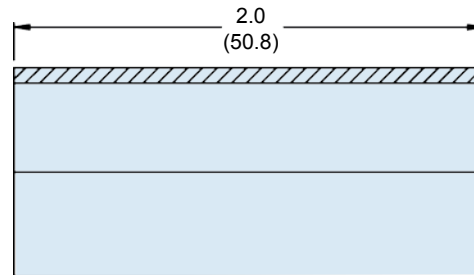
Environmental Banding Backshell
for Multichannel M85045 Shipboard Fiber Optic Cable
for Use with MIL-PRF-28876 or Glenair 180-040 Connectors



MIL-PRF-28876
Connectors



Shrink Sleeving
MIL-I-23053/4



Shrink Sleeving
MIL-I-23053/5

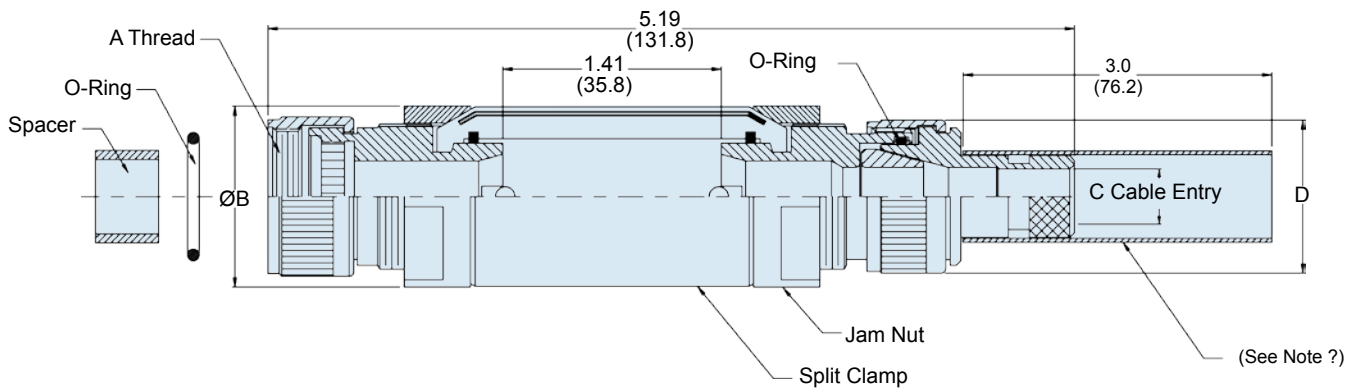
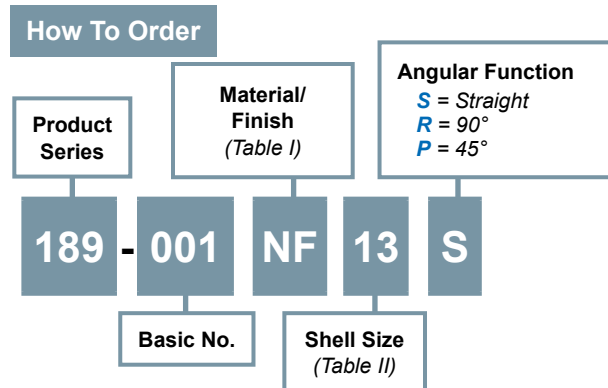
| Shell Size | Designator (Ref) | A Thread Class 2B | B Max | C Max | Max Dash Number |
|------------|------------------|-------------------|--------------|--------------|-----------------|
| 11 | A | 3/4 -20 UNEF | 1.028 (26.1) | .410 (10.4) | 05 |
| 13 | B | 7/8 -20 UNEF | 1.141 (29.0) | .532 (13.5) | 05 |
| 15 | C | 1 -20 UNEF | 1.263 (32.1) | .710 (18.0) | 07 |
| 23 | F | 1-7/16 -18 UNEF | 1.703 (43.3) | 1.116 (28.3) | 13 |

| Code | Material | Finish Description |
|------|----------------|--|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium/Olive Drab Over Electroless Nickel (500 hour salt spray) |

Refer to Appendix for material/finish details

| Dash No. | Clamp Size | Cable Dia Max | K Dia ±.005 (0.1) | L Max | MIL-I-23053 Shrink Sleeve | MIL-I-23053 Shrink Sleeve | Cable Entry Dia | |
|----------|------------|---------------|-------------------|-------------|---------------------------|---------------------------|-----------------|-------------|
| | | | | | | | Minimum | Maximum |
| 05 | 12 | .280 (7.1) | .312 (7.9) | 1.11 (28.2) | /4-203-0 | /5-107-0 | .233 (5.2) | .375 (9.5) |
| 07 | 16 | .395 (10.0) | .438 (11.1) | 1.21 (30.7) | /4-204-0 | /5-108-0 | .358 (8.3) | .500 (12.7) |
| 09 | 20 | .510 (13.0) | .562 (14.3) | 1.21 (30.7) | /4-204-0 | /5-109-0 | .482 (11.5) | .625 (15.9) |
| 11 | 24 | .621 (15.8) | .688 (17.5) | 1.21 (30.7) | /4-205-0 | /5-106-0 | .545 (13.1) | .750 (19.1) |
| 13 | 28 | .736 (18.7) | .812 (20.6) | 1.36 (34.5) | /4-205-0 | /5-110-0 | .670 (16.3) | .875 (22.2) |



MIL-PRF-28876 fiber optic backshell

Material and Plating

Adapter, Jam Nut, Ferrule, Coupling Nut, Split Elbows & Spacer: see Table I

O-Rings: Fluorosilicone

Shrink Sleeving: Polyolefin

Spacer: see Table I

Notes

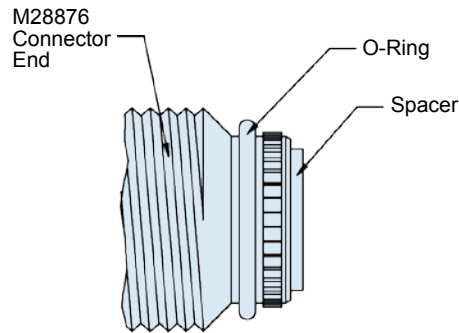
Glenair 600 Series Backshell assembly tools are recommended for assembly and installation;

Assembly procedure see GAP014.

MIL-I-23053/4 Shrink Sleeving, O-Ring and Spacer to be packaged loose in a plastic bag.

Assemble O-Ring and Spacer onto Connector as shown.

189-001
Fiber Optic Backshell With Split Clamp
 MIL-PRF-28876 Environmental

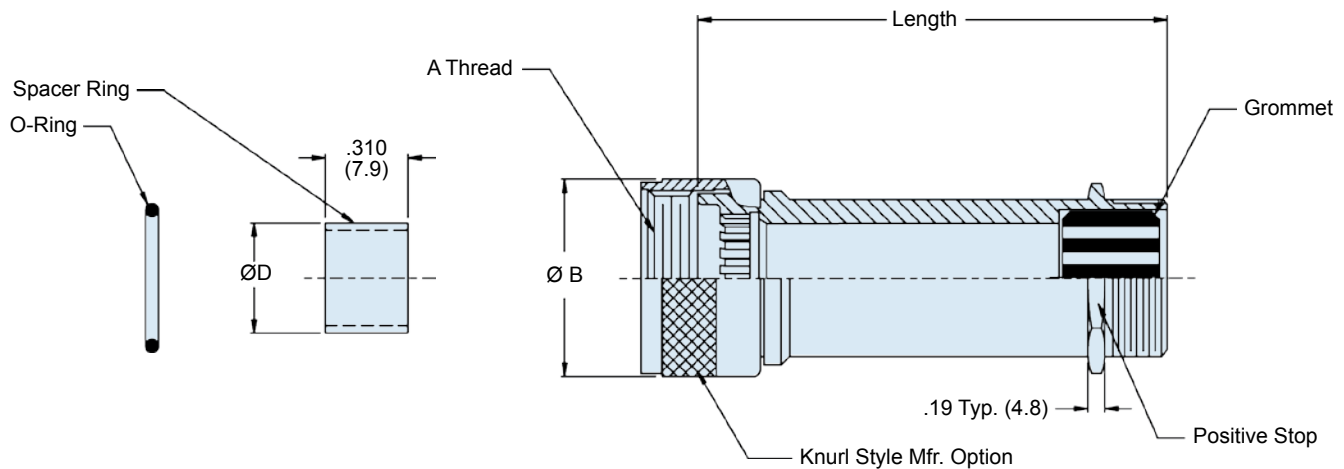
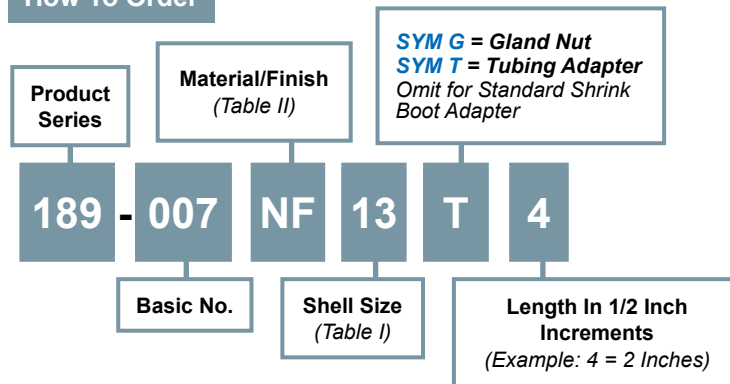


| Table I: Material and Finish | | |
|------------------------------|----------------|--|
| Code | Material | Finish Description |
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium/Olive Drab Over Electroless Nickel (500 hour salt spray) |

Refer to Appendix for material/finish details

| Table II | | | | |
|------------|---------------|-------------|-------------|-------------|
| Shell Size | A Thread | B Max | C Max | D Max |
| 11 | .750-20 UNEF | 1.17 (29.7) | .340 (8.6) | 1.00 (25.4) |
| 13 | .875-20 UNEF | 1.17 (29.7) | .340 (8.6) | 1.00 (25.4) |
| 15 | 1.00 -20 UNEF | 1.42 (36.0) | .460 (11.7) | 1.13 (28.7) |



MIL-PRF-28876 fiber-con backshell
How To Order

Material and Finish

Adapters, Coupling Nuts, Ferrule, Compression Nut, Spacer Ring: see table II

Grommet: Fluorosilicone

O-Ring: Fluorosilicone

Notes

Glenair 600 Series Backshell assembly tools are recommended for assembly and installation. Spacer Ring and O-Ring are packaged loose and must be installed with Connector at time of assembly. The Spacer is utilized to retain the Terminus Insert.

Standard minimum order is 1.5 inch. Consult factory for shorter length.

189-007
Fiber-Con Backshell
 for MIL-PRF-28876 Connectors



MIL-PRF-28876
 Connectors

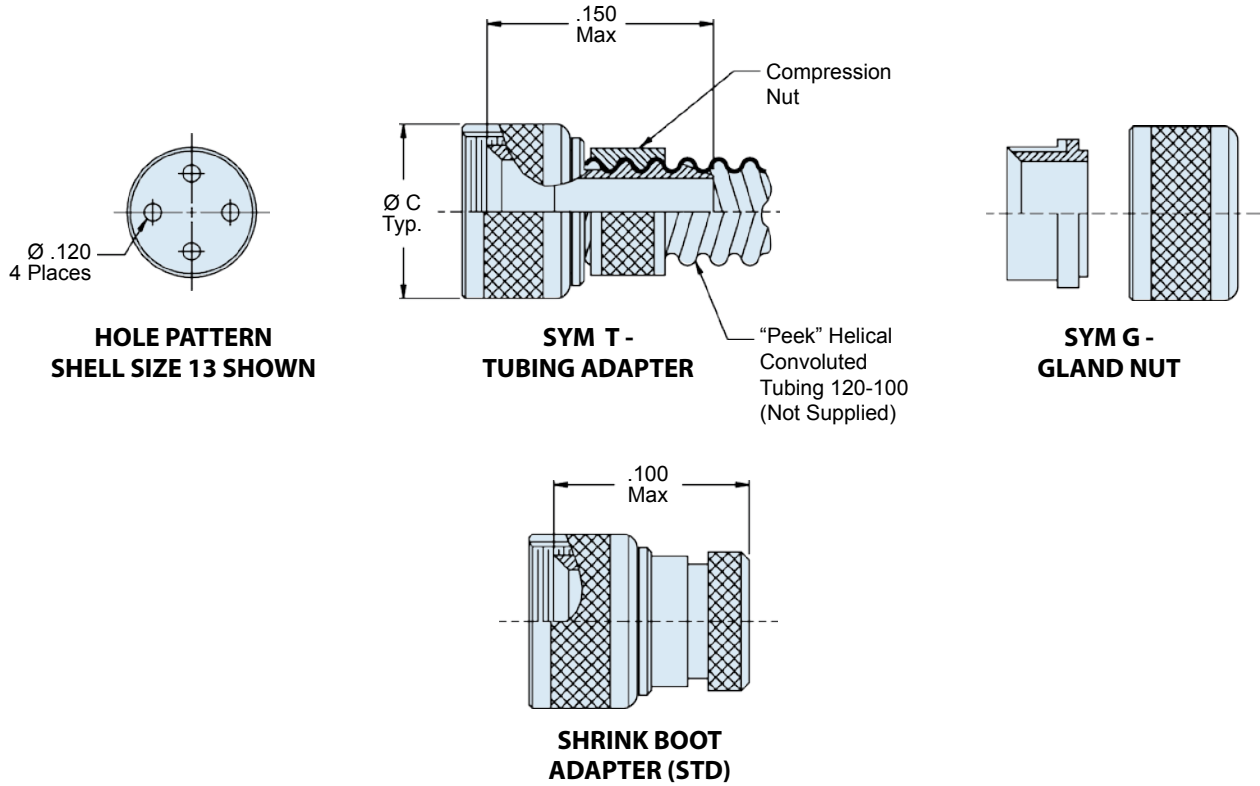


Table I

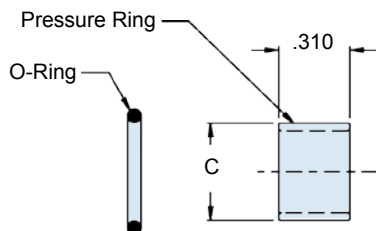
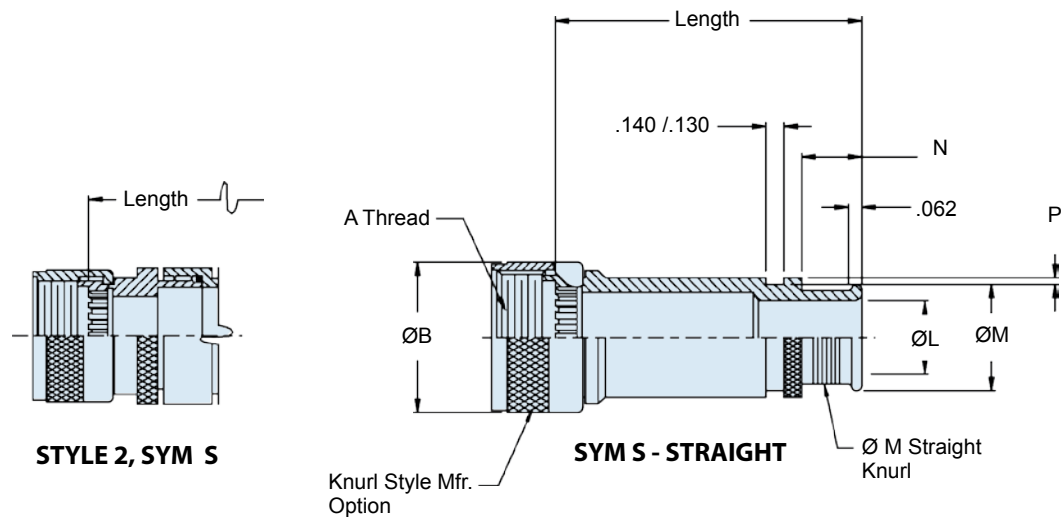
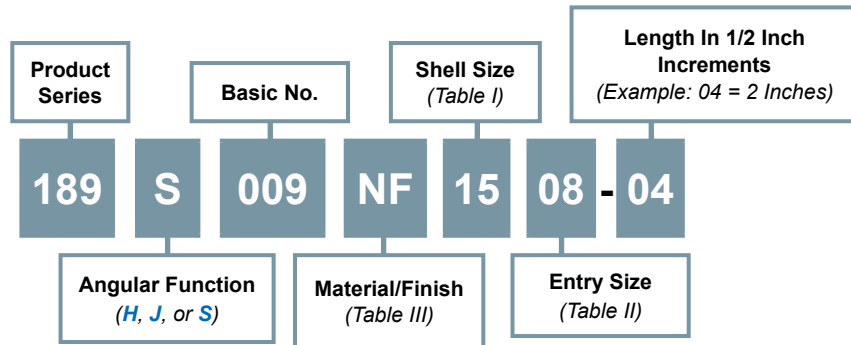
| Shell Size | Designator (Ref) | A Thread Class 2B | B Max | C Max | D Max | Conduit Size | No. Of Holes |
|------------|------------------|-------------------|-------------|-------------|-------------|--------------|--------------|
| 11 | A | 3/4-20 UNEF | 1.03 (26.2) | - | .41 (10.4) | 12 | 2 |
| 13 | B | 7/8-20 UNEF | 1.14 (29.0) | 1.12 (28.4) | .53 (13.5) | 16 | 4 |
| 15 | C | 1-20 UNEF | 1.26 (32.0) | 1.34 (34.0) | .71 (19.0) | 24 | 8 |
| 23 | F | 17/16-18 UNEF | 1.70 (43.2) | 1.66 (42.2) | 1.12 (28.4) | 28 | 31 |

Table II: Material and Finish

| Code | | Finish Description |
|------|----------------|--|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium/Olive Drab Over Electroless Nickel (500 hour salt spray) |

Refer to Appendix for material/finish details



MIL-PRF-28876 banding backshell/molding adapter
How To Order

Material and Finish

Adapters, Elbows, Coupling Nut, Pressure Ring: see Table II
 Clamp Components: Ryton R 4XT-Black, Ultem 1000-Natural
 O-Ring: Fluorosilicone

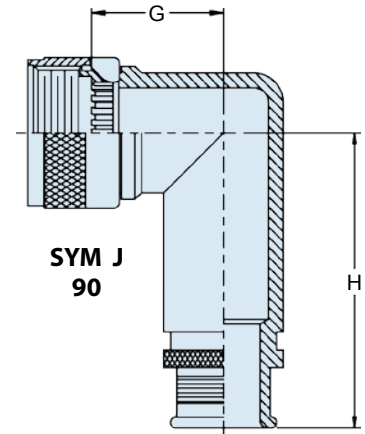
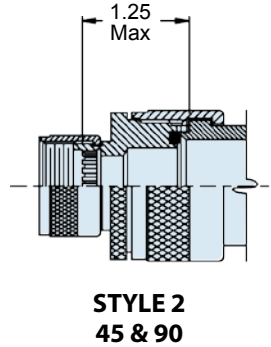
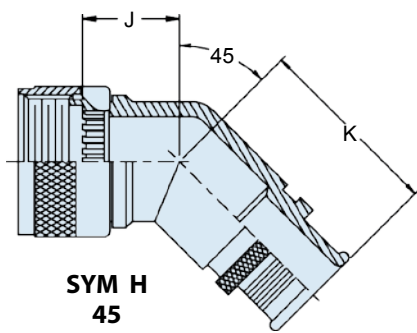
Notes

Assembly to be identified with manufacturer's name and P/N, space permitting.
 Standard minimum length for style 1: 1.5 inches, for Style 2: 2 inches.
 Note: Length applies to SYM S, Straight only.
 When cable diameter exceeds inside diameter of Connector Shell, Style 2 will be supplied.
 Glenair 600 Series Backshell assembly tools are recommended for assembly and installation.
 O-Ring and Pressure Ring to be packaged loose and must be installed with Connector at time of assembly.

189-009
Banding Backshell / Molding Adapter
 For MIL-PRF-28876 Connectors



MIL-PRF-28876
 Connectors



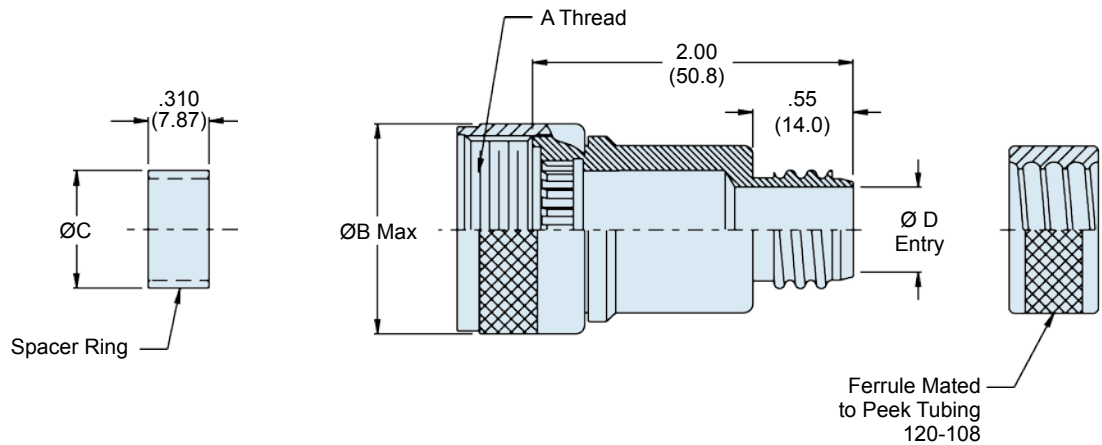
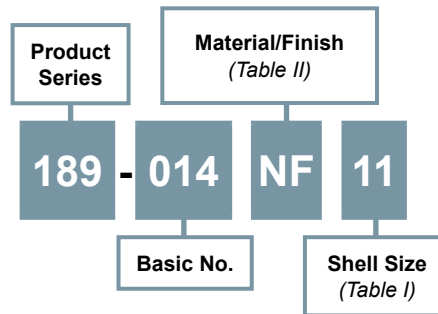
| Table I | | | | | | | | | |
|------------|--------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------|
| Shell Size | Conn. Desig. | A Thread UNEF | ØB Max | ØC Max | G Max | H Max | J Max | K Max | Max Entry |
| 11 | A | .750-20 | .960 (26.2) | .410 (10.4) | 1.28 (32.5) | 1.33 (33.8) | 1.14 (29.0) | 1.19 (30.2) | 07 |
| 13 | B | .875-20 | 1.09 (29.0) | .532 (13.5) | 1.35 (34.3) | 1.40 (35.6) | 1.17 (29.7) | 1.22 (30.1) | 08 |
| 15 | C | 1.000-20 | 1.26 (32.0) | .710 (18.0) | 1.43 (36.3) | 1.47 (37.3) | 1.20 (30.4) | 1.25 (31.8) | 10 |
| 23 | F | 1.437-18 | 1.70 (43.2) | 1.12 (28.4) | 1.64 (41.7) | 1.68 (46.7) | 1.29 (32.8) | 1.33 (33.8) | 13 |

| Table II | | | | |
|----------|------|--------|--------|------|
| Dash No. | P | L Dia. | M Dia. | N |
| 04 | .044 | .205 | .325 | .525 |
| 05 | .044 | .235 | .355 | .525 |
| 06 | .044 | .255 | .375 | .525 |
| 07 | .044 | .205 | .450 | .525 |
| 08 | .044 | .330 | .580 | .600 |
| 09 | .044 | .450 | .660 | .600 |
| 10 | .044 | .670 | .790 | .600 |
| 11 | .044 | .840 | .960 | .600 |
| 12 | .069 | 1.080 | 1.080 | .600 |
| 13 | .069 | 1.200 | 1.200 | .600 |

| Table III: Material and Finish | | |
|--------------------------------|----------------|--|
| Code | Material | Finish Description |
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium/Olive Drab Over Electroless Nickel (500 hour salt spray) |

Refer to Appendix for material/finish details



MIL-PRF-28876 backshell
How To Order

Material and Finish

Adapter, Coupling Nut, Ferrule, and Spacer Ring: See Table II

Notes

Spacer Ring is packaged loose and must be installed with Connector at time of assembly to retain Terminus Insert.

For 45° or 90° Backshell option, see Glenair drawing 189-021.

189-014
Backshell for PEEK Convolute Tubing
to be used with MIL-PRF-28876 Fiber Optic Connectors



| Table I: Shell Size Dash Number | | | | | | | |
|---------------------------------|------------------|-------------------|-------------|-------------|-------------|---------------------|----------|
| Shell Size | Designator (Ref) | A Thread Class 2B | ØB Max | ØC Max | Ø D Entry | "Peek" Conduit Size | |
| | | | | | | Frac. Size | Dash No. |
| 11 | A | 3/4-20 UNEF | .960 (24.4) | .410 (10.4) | .390 (9.91) | 1/2 | 16 |
| 13 | B | 7/8-20 UNEF | 1.09 (27.7) | .532 (13.5) | .390 (9.91) | 1/2 | 16 |
| 15 | C | 1-20 UNEF | 1.26 (32.0) | .710 (18.0) | .390 (9.91) | 1/2 | 16 |
| 23 | F | 1 7/16-18 UNEF | 1.70 (43.2) | 1.12 (28.4) | .890 (22.6) | 1 | 32 |

| Table II: Material and Finish | | |
|-------------------------------|-----------------|--|
| Code | Material | Finish Description |
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium/Olive Drab over Electroless Nickel (500 Hour Salt Spray) |
| Z1 | Stainless Steel | Passivate |

Refer to Appendix for material/finish details

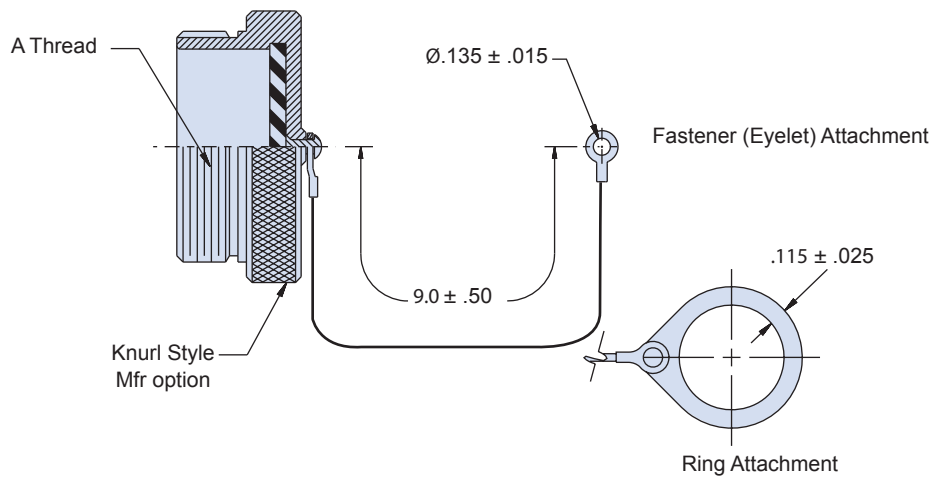




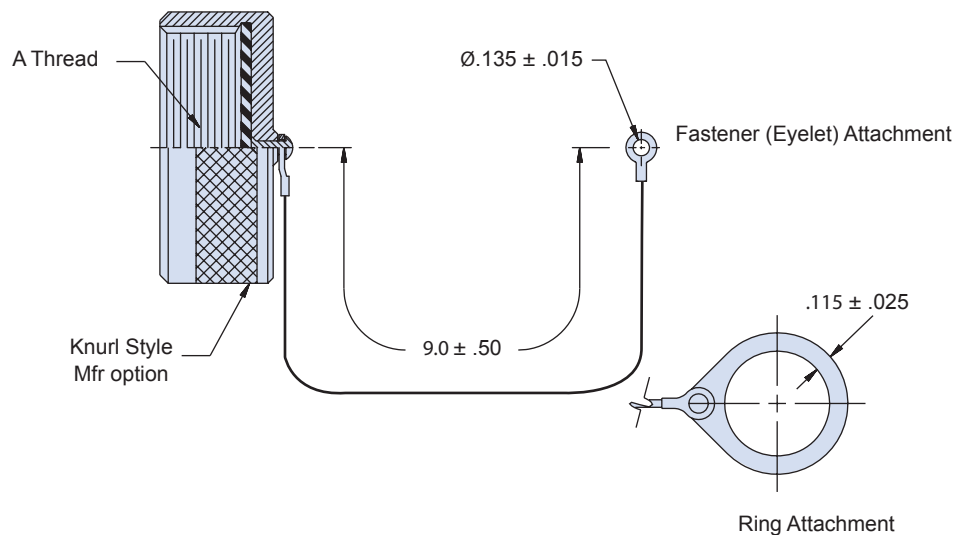
Plug and receptacle dust covers

| Table I: Cover Type | | |
|---------------------|-----------------------|---------------------------------|
| Connector | MIL-Spec Basic P/N | Glenair Commercial Basic P/N |
| Plug | M28876/10 | 660-072 |
| Receptacle | M28876/15 | 660-073 |

M28876/10 • 660-072
Plug Cover



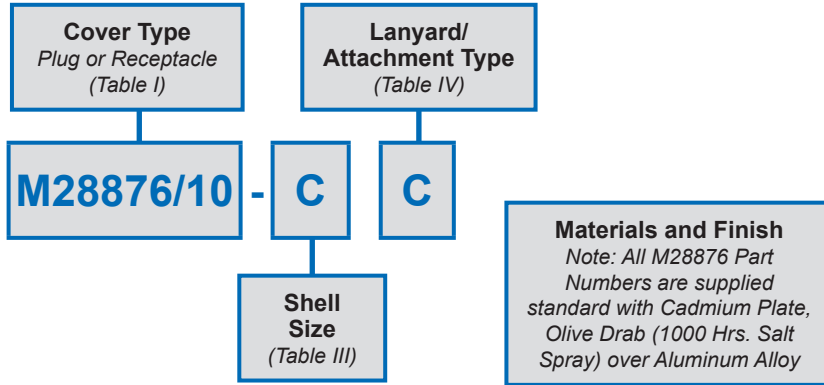
M28876/15 • 660-073
Receptacle Cover



M28876/10 and M28876/15
660-072 and 660-073
MIL-PRF-28876 Dust Covers



How to order: Military QPL



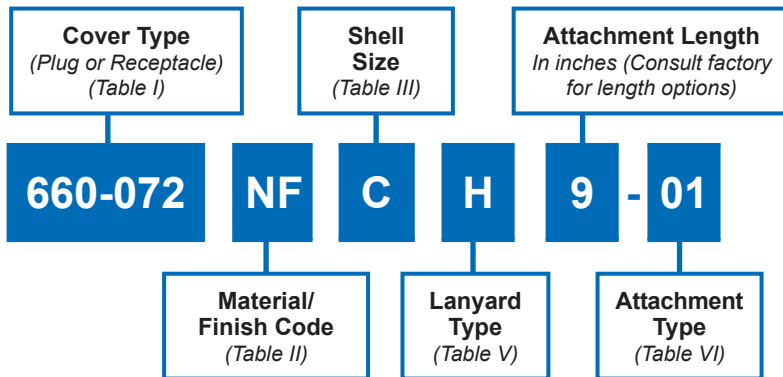
| Code | Material | Finish Description |
|--|----------------|---------------------|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium, Olive Drab |
| MT | | Nickel-PTFE, Grey |
| ZR | | Zinc-Nickel, Black |
| Consult Factory for Additional Options | | |

Refer to Appendix for material/finish details

*MT plating available only with Glenair commercial equivalent part numbers

| Symbol | A Thread |
|--------|----------------------|
| A | .750-0.1P-0.2L-D.S. |
| B | .875-0.1P-0.2L-D.S. |
| C | 1.062-0.1P-0.2L-D.S. |
| F | 1.500-0.1P-0.2L-D.S. |

How To Order: Glenair Commercial



| Symbol | Description |
|--------|--|
| A | Chain (Sash) with Fastener (Eyelet) Attachment |
| B | Chain (Sash) with Ring Attachment |
| C | Wire Rope with Fastener (Eyelet) Attachment |
| D | Wire Rope with Ring Attachment |
| E | Without Chain (Sash) or Wire Rope |

| Shell Size | Attachment Type | Connector Type | Code |
|------------|-------------------|----------------|------|
| A | Ring | Plug | 13 |
| | | Recp | 15 |
| B | Ring | Plug | 15 |
| | | Recp | 17 |
| C | Ring | Plug | 17 |
| | | Recp | 20 |
| F | Ring | Plug | 23 |
| | | Recp | 27 |
| All | Fastener (Eyelet) | All | 01 |

| Symbol | Type |
|--|--------------------------|
| H | Wire Rope, Coated |
| S | Chain (Sash), Passivated |
| N | No Lanyard |
| Consult Factory for Additional Options | |

FIBER OPTIC

CABLES AND CONDUIT

FOR FIBER OPTIC CONNECTION SYSTEMS



Fiber Optic Cable Construction

Glenair's in-house fiber optic cable extrusion line provides the capability to extrude a variety of short-run specialty cables from simplex to hybrid constructions. Options include a selection of strength filaments such as Aramid yarn and extruded outer jacket materials. Our in-house extrusion line is geared to short-run, prototype projects and other applications which do not meet the large cable manufacturer's minimum length requirements

The Widest Range of Conduit Materials and Fittings in the Industry

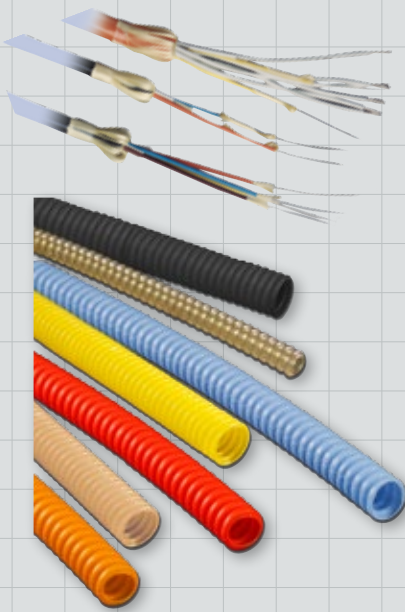
Flexible, high-temperature convoluted tubing is an ideal material choice for the protection of fiber media. The material provides a durable, highly-flexible enclosure for fiber optic systems, with end-fittings and transitions to meet any installation configuration.



A Complete Range of Fiber Optic Cable and Cable Protection Products

Well designed fiber optic connection systems begin with high-reliability single and multimode cable. Glenair is able to fabricate and supply a targeted range of fiber media—all available without expensive minimum length requirements. The goal of of fiber media shop is to provide a fast-turn supply of specialty F/O media for use in our own cable assemblies, customer prototype projects and other short-run, limited bulk length applications.

Nobody can beat Glenair when it comes to providing fiber optic media with rugged and yet flexible media protection. We are absolute experts in this field and can suggest and supply everything from jacketed cable resistant to fuel exposure to crush-proof polymer-core conduit solutions. And because we make and stock all the component parts ourselves, we can offer lightning-fast turnaround on even highly specialized requirements.

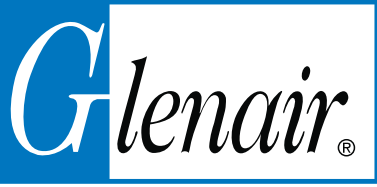


| Product No. | Description | Page No. |
|--|---|----------|
| Bulk Extruded Fiber Optic Cable | | |
| ABC 3586 | Bulk Simplex Fiber Optic Cable, 9.3/125 Singlemode Stepped Index | K-2 |
| ABC 3580 | Bulk Simplex Fiber Optic Cable, 50/125 Graded Index | K-3 |
| ABC 3569 | Bulk Simplex Fiber Optic Cable, 62.5/125 Graded Index | K-4 |
| ABC 3821 | Bulk Simplex Fiber Optic Cable, 62.5/125 Graded Index (ETFE Jacket) | K-5 |
| ABC 3571 | Bulk Simplex Fiber Optic Cable, 100/140 Graded Index | K-6 |
| MIL-T-81914 Convoluted Tubing | | |
| 120-100 | Series 74 Helical Convoluted Tubing | K-7 |
| 120-103 | Series 74 Helical Convoluted Tubing with Braid | K-8 |
| 120-108/120-132 | Standard and Ultra Small Diameter PEEK Helical Convoluted Tubing | K-9 |

Catalog Notes For all parts in this catalog:

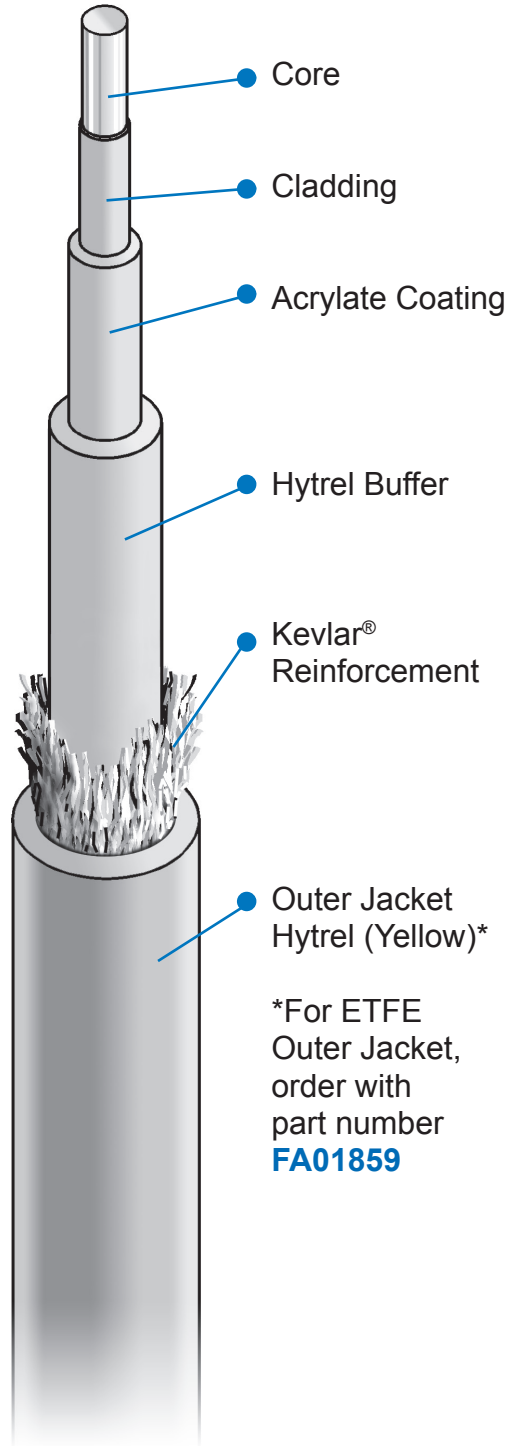
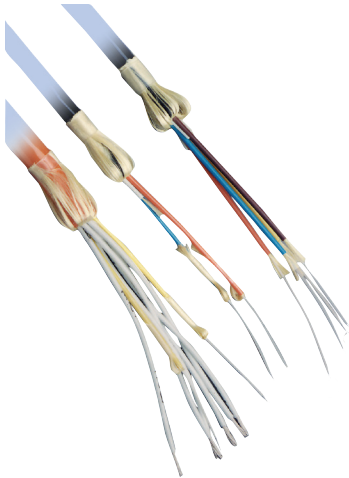
All parts, packages, and spools will be identified with manufacturer's name and part number, space permitting. Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only. Unless otherwise specified, the following other dimensional tolerances apply:

.xx = ± .03 (0.8) • .xxx = ± .015 (0.4) • Angles = ± 5°



ABC 3586
Bulk Simplex Fiber Optic Cable
9.3/125 Singlemode Stepped Index

9.3/125 Singlemode graded index fiber optic cable



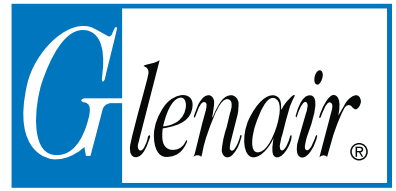
| Cable Specifications | |
|--------------------------|--------------------------------------|
| Core/Mode Field Diameter | 9.3 $\mu\text{m} \pm 3 \mu\text{m}$ |
| Cladding Diameter | 125 $\mu\text{m} \pm 2 \mu\text{m}$ |
| Primary Buffer | 500 $\mu\text{m} \pm 25 \mu\text{m}$ |
| Secondary Buffer | 900 $\mu\text{m} \pm 50 \mu\text{m}$ |
| Jacket | .083 \pm .007 Inch Diameter |
| Attenuation: | |
| @ 1310 nm | 3.0 dB/km |
| @ 1550 nm | 2.0 dB/km |
| Numerical Aperture | .110 + .020 |
| Index Profile | Stepped |
| Proof Test | >100 KPSI |
| Operating Temperature | -40° C to +85° C |

Consult Factory for price in feet or meters and for
Standard Length Tolerance

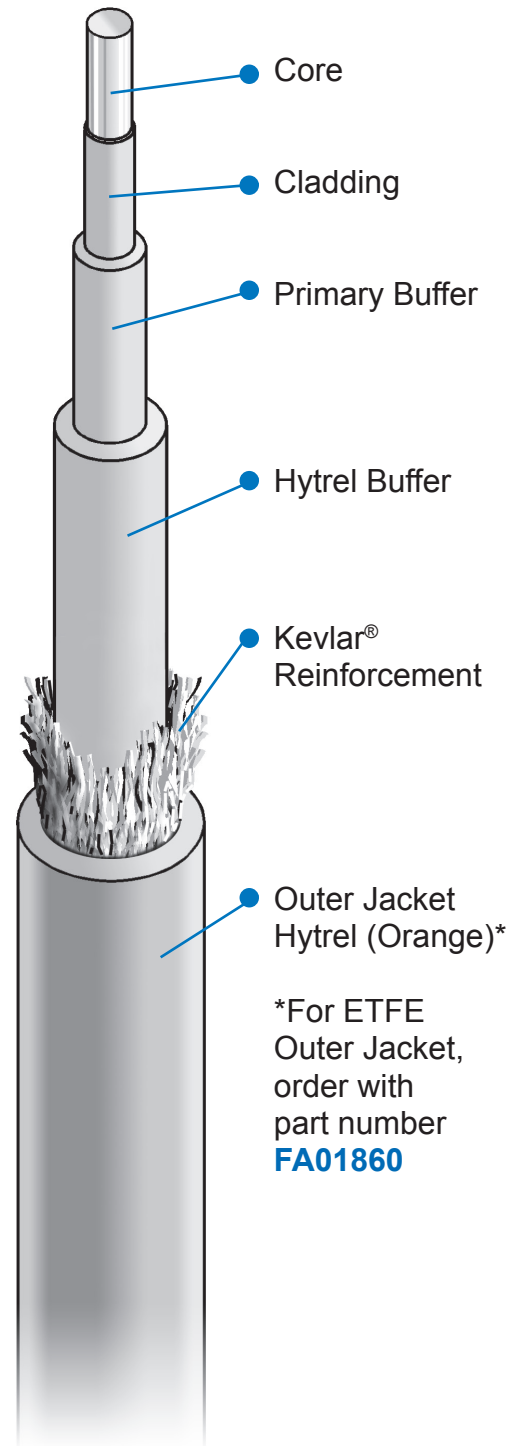
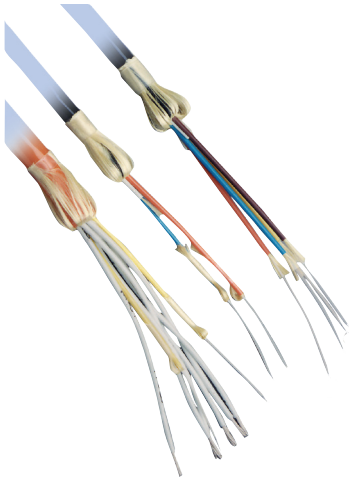
Kevlar® is a registered trademark of DuPont Company.

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ABC 3580
Bulk Simplex Fiber Optic Cable
50/125 Graded Index



50/125 Multimode graded index fiber optic cable

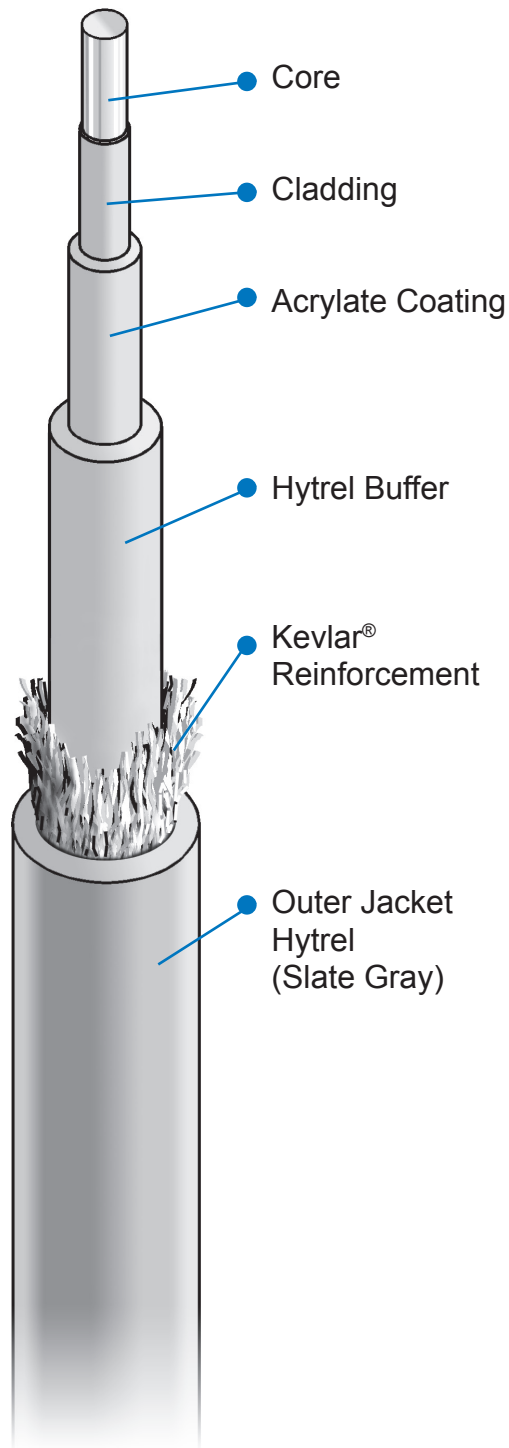
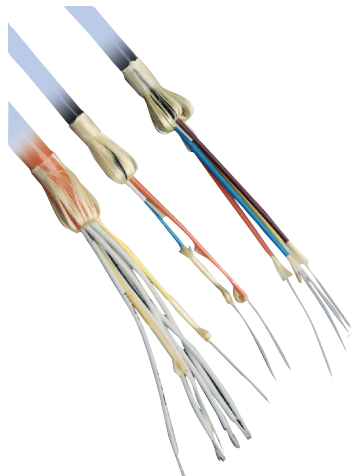


| Cable Specifications | |
|--------------------------|--------------------------------------|
| Core/Mode Field Diameter | 50 $\mu\text{m} \pm 3 \mu\text{m}$ |
| Cladding Diameter | 125 $\mu\text{m} \pm 3 \mu\text{m}$ |
| Primary Buffer | 500 $\mu\text{m} \pm 25 \mu\text{m}$ |
| Secondary Buffer | 900 $\mu\text{m} \pm 50 \mu\text{m}$ |
| Jacket | .083 \pm .007 Inch Diameter |
| Attenuation: | |
| @ 850 nm | 4.0 dB/km |
| @ 1300 nm | 2.5 dB/km |
| Bandwidth: | |
| @ 850 nm | 400 Mhz/km Minimum |
| @ 1300 nm | 400 Mhz/km Minimum |
| Numerical Aperture | .200 Nominal |
| Index Profile | Graded |
| Proof Test | 100 KPSI |
| Operating Temperature | -40° C to +85° C |

Consult Factory for price in feet or meters and for Standard Length Tolerance

Glenair also carries 62.5 and 50 μm Multimode fiber that meet FAR25 flammability requirements. Consult factory for more information.

Kevlar® is a registered trademark of DuPont Company.

62.5/125 Multimode graded index fiber optic cable


| Cable Specifications | |
|--------------------------|--------------------------------------|
| Core/Mode Field Diameter | 62.5 $\mu\text{m} \pm 3 \mu\text{m}$ |
| Cladding Diameter | 125 $\mu\text{m} \pm 3 \mu\text{m}$ |
| Primary Buffer | 500 $\mu\text{m} \pm 25 \mu\text{m}$ |
| Secondary Buffer | 900 $\mu\text{m} \pm 50 \mu\text{m}$ |
| Jacket | .083 \pm .007 Inch Diameter |
| Attenuation: | |
| @ 850 nm | 4.0 dB/km |
| @ 1300 nm | 2.0 dB/km |
| Bandwidth: | |
| @ 850 nm | 160 Mhz/km Minimum |
| @ 1300 nm | 500 Mhz/km Minimum |
| Numerical Aperture | 0.275 Nominal |
| Index Profile | Graded |
| Proof Test | >100 KPSI |
| Operating Temperature | -40° C to +85° C |

**Consult Factory for price in feet or meters and for
Standard Length Tolerance**

Glenair also carries 62.5 and 50 μm Multimode fiber that meet FAR25 flammability requirements. Consult factory for more information.

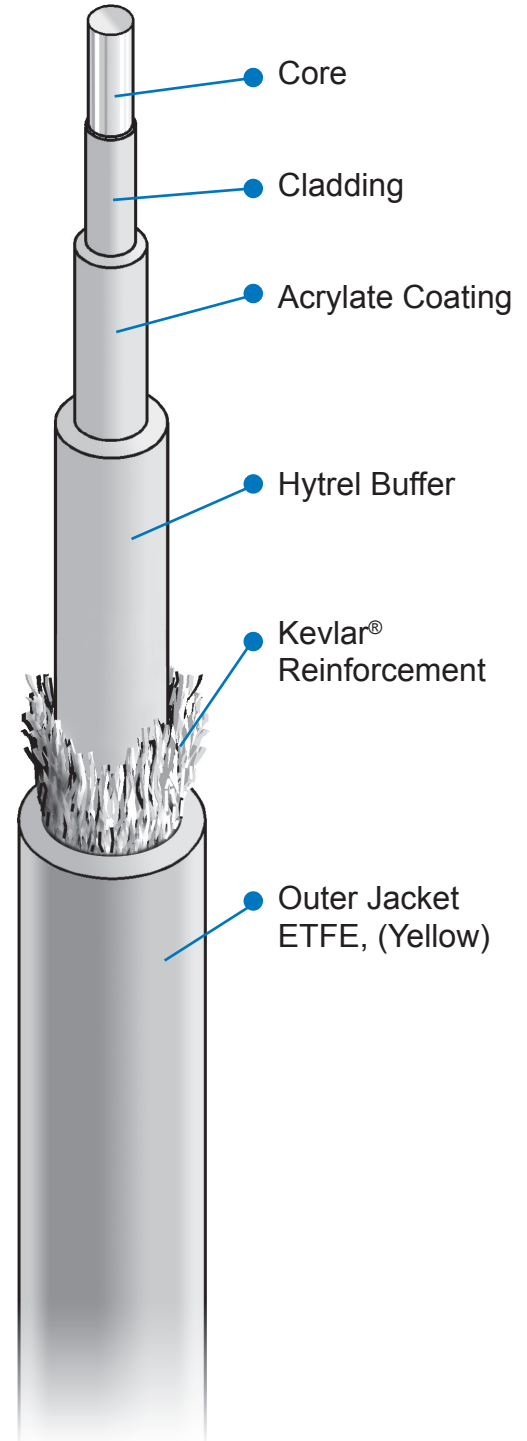
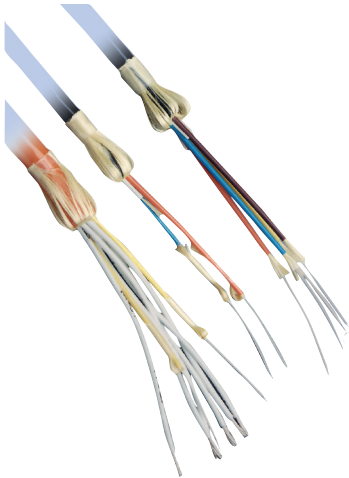
Kevlar® is a registered trademark of DuPont Company.

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ABC 3821
Bulk Simplex Fiber Optic Cable
62.5/125 Graded Index (ETFE Jacket)



62.5/125 Multimode graded index fiber optic cable

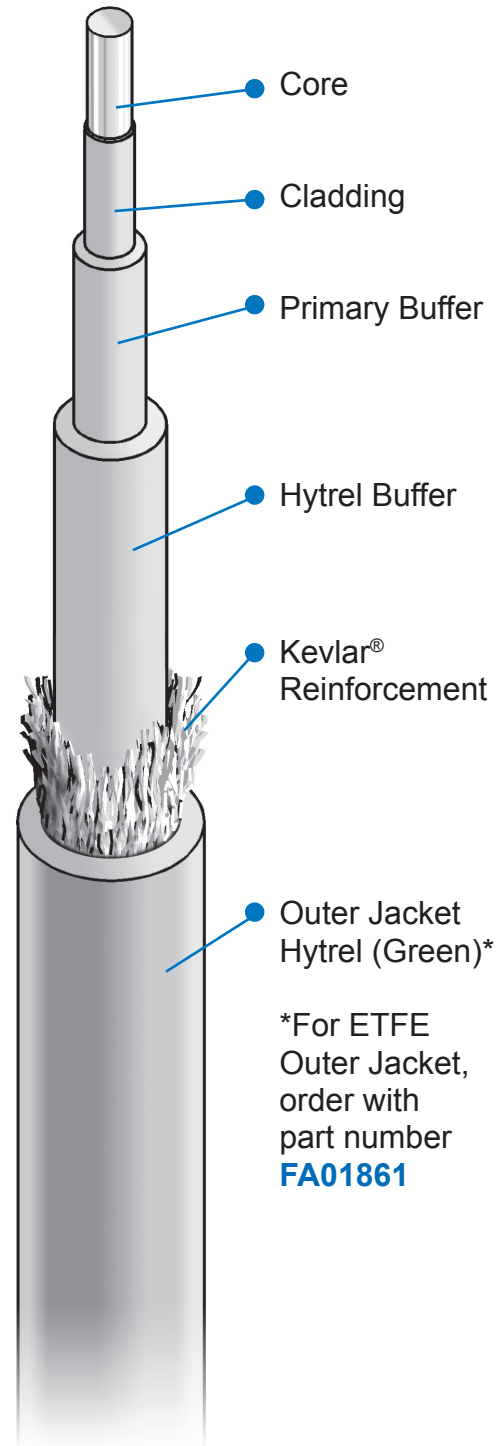
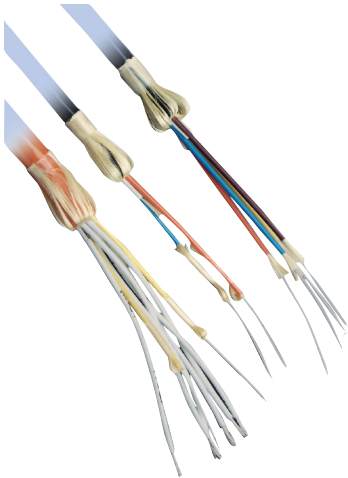


| Cable Specifications | |
|--------------------------|--------------------------------------|
| Core/Mode Field Diameter | 62.5 $\mu\text{m} \pm 3 \mu\text{m}$ |
| Cladding Diameter | 125 $\mu\text{m} \pm 3 \mu\text{m}$ |
| Primary Buffer | 500 $\mu\text{m} \pm 25 \mu\text{m}$ |
| Secondary Buffer | 900 $\mu\text{m} \pm 50 \mu\text{m}$ |
| Jacket | .083 \pm .007 Inch Diameter |
| Attenuation: | |
| @ 850 nm | 4.0 dB/km |
| @ 1300 nm | 2.0 dB/km |
| Bandwidth: | |
| @ 850 nm | 160 Mhz/km Minimum |
| @ 1300 nm | 500 Mhz/km Minimum |
| Numerical Aperture | 0.275 Nominal |
| Index Profile | Graded |
| Proof Test | >100 KPSI |
| Operating Temperature | -40° C to +85° C |

Consult Factory for price in feet or meters and for Standard Length Tolerance

Glenair also carries 62.5 and 50 μm Multimode fiber that meet FAR25 flammability requirements. Consult factory for more information.

Kevlar® is a registered trademark of DuPont Company.

100/140 Multimode graded index fiber optic cable


| Cable Specifications | |
|--------------------------|--------------------------------------|
| Core/Mode Field Diameter | 100 $\mu\text{m} \pm 4 \mu\text{m}$ |
| Cladding Diameter | 140 $\mu\text{m} \pm 3 \mu\text{m}$ |
| Primary Buffer | 500 $\mu\text{m} \pm 25 \mu\text{m}$ |
| Secondary Buffer | 900 $\mu\text{m} \pm 50 \mu\text{m}$ |
| Jacket | .083 \pm .007 Inch Diameter |
| Attenuation: | |
| @ 850 nm | 6.0 dB/km |
| @ 1300 nm | 4.0 dB/km |
| Bandwidth: | |
| @ 850 nm | 100 Mhz/km Minimum |
| @ 1300 nm | 100 Mhz/km Minimum |
| Numerical Aperture | .290 + .015 |
| Index Profile | Graded |
| Proof Test | >100 KPSI |
| Operating Temperature | -40° C to +85° C |

Consult Factory for price in feet or meters and for
Standard Length Tolerance

Kevlar® is a registered trademark of DuPont Company.

120-100
Helical Polymer-Core Convulated Tubing
In Accordance With SAE AMS-81914



Outstanding mechanical wire protection and lubricity for non-environmental and non-EMI/RFI applications

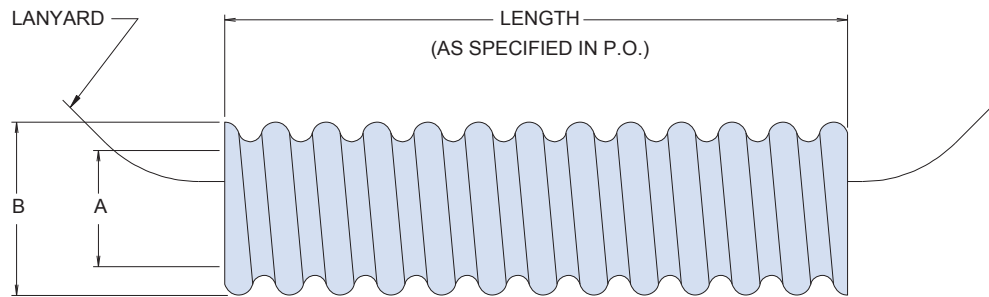
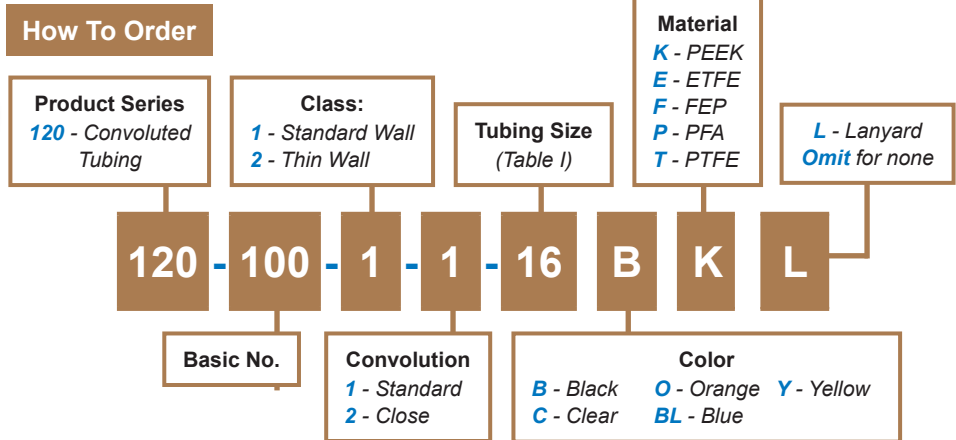
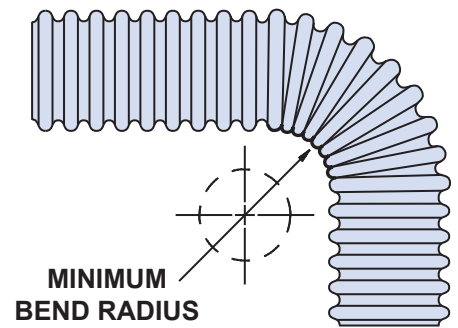


Table I: Tubing Size Order Number and Dimensions

| Tubing Size | Fractional Size Ref | A Inside Dia Min | B Dia Max | Min Bend Radius |
|-------------|---------------------|------------------|--------------|-----------------|
| 06 | 3/16 | .181 (4.6) | .320 (8.1) | .50 (12.7) |
| 09 | 9/32 | .273 (6.9) | .414 (10.5) | .75 (19.1) |
| 10 | 5/16 | .306 (7.8) | .450 (11.4) | .75 (19.1) |
| 12 | 3/8 | .359 (9.1) | .510 (13.0) | .88 (22.4) |
| 14 | 7/16 | .427 (10.8) | .571 (14.5) | 1.00 (25.4) |
| 16 | 1/2 | .480 (12.2) | .650 (16.5) | 1.25 (31.8) |
| 20 | 5/8 | .603 (15.3) | .770 (19.6) | 1.50 (38.1) |
| 24 | 3/4 | .725 (18.4) | .930 (23.6) | 1.75 (44.5) |
| 28 | 7/8 | .860 (21.8) | 1.073 (27.3) | 1.88 (47.8) |
| 32 | 1 | .970 (24.6) | 1.226 (31.1) | 2.25 (57.2) |
| 40 | 1 1/4 | 1.205 (30.6) | 1.539 (39.1) | 2.75 (69.9) |
| 48 | 1 1/2 | 1.437 (36.5) | 1.832 (46.5) | 3.25 (82.6) |
| 56 | 1 3/4 | 1.688 (42.9) | 2.156 (54.8) | 3.63 (92.2) |
| 64 | 2 | 1.937 (49.2) | 2.332 (59.2) | 4.25 (108.0) |



Packaging

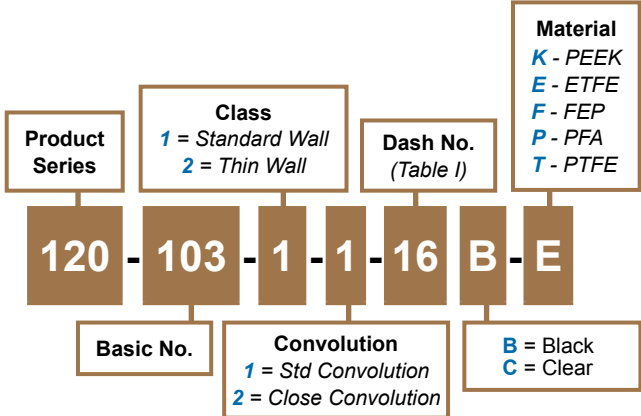
- Long-length orders of 120-100 conduit are subject to carrier weight and box size restrictions. For example, UPS air shipments are currently limited to 50 lbs. per box. Unless otherwise specified, Glenair standard practice is to ship optimal lengths of product based on weight, size, and individual carrier specifications.
- Consult factory for thin-wall, close convolution combination and for PEEK™ and PTFE min/max dimensions.



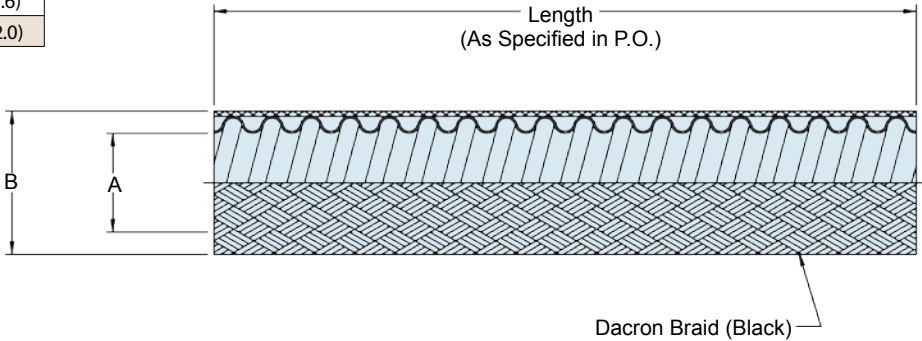
120-103
Series 74 Helical Convoluted Tubing (MIL-T-81914)
 Natural or Black PFA, FEP, PTFE, Tefzel® (ETFE) or PEEK
 Type B - With External Black Dacron® Braid

MIL-T-89194 helical convoluted tubing with external black Dacron® braid

How To Order



| Dash No. | Frac. Size | Ø A Inside | | Ø B Max |
|----------|------------|------------|-------|--------------|
| | | Min | Max | |
| 06 | 3/16 | .181 | .188 | .430 (10.9) |
| 09 | 9/32 | .273 | .281 | .474 (12.0) |
| 10 | 5/16 | .306 | .312 | .510 (10.2) |
| 12 | 3/8 | .359 | .375 | .571 (14.5) |
| 14 | 7/16 | .427 | .437 | .631 (16.0) |
| 16 | 1/2 | .480 | .500 | .710 (18.0) |
| 20 | 5/8 | .603 | .625 | .830 (21.1) |
| 24 | 3/4 | .725 | .750 | .990 (25.1) |
| 28 | 7/8 | .860 | .875 | 1.133 (28.7) |
| 32 | 1 | .970 | 1.000 | 1.286 (32.8) |
| 40 | 1 1/4 | 1.205 | 1.250 | 1.599 (40.6) |
| 48 | 1 1/2 | 1.437 | 1.500 | 1.892 (48.0) |
| 56 | 1 3/4 | 1.688 | 1.750 | 2.192 (55.6) |
| 64 | 2 | 1.937 | 2.000 | 2.442 (62.0) |



K

Material and Finish

Convoluted Tubing: See Table II
 Dacron Braid: Black, per Federal Specification BT 285D

Notes

Packages and spools identified with manufacturer's name and part number.
 Unless otherwise specified, Conduit will be shipped per standard package minimum length supplied will be 10 feet (3M).
 Consult factory for PTFE sizes not shown.

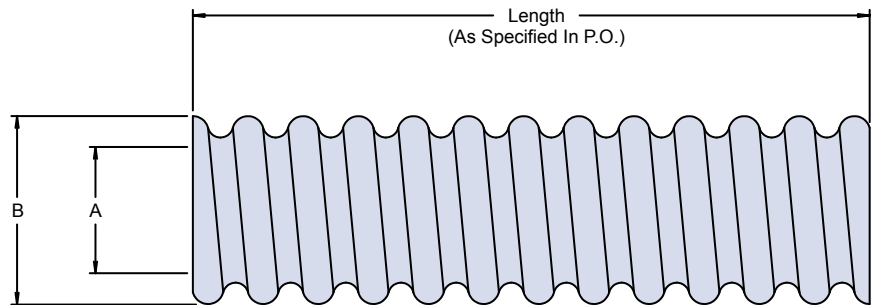
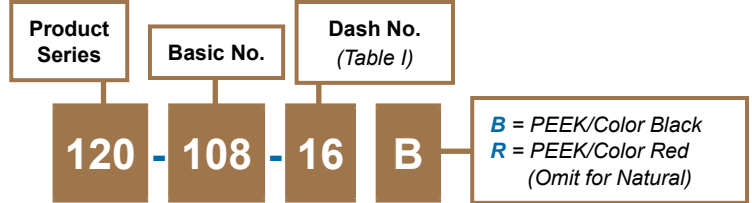
120-108 • 120-132
 Standard and Ultra Small Diameter
 PEEK Helical Convolted Tubing
 IAW DMS 2024 Type II for Fiber Optic Applications



Standard diameter low-smoke, zero-halogen tubing with outstanding crush resistance



How To Order



| Tubing Size | Fractional Size Ref | A Inside Dia | | B Dia Max |
|-------------|---------------------|--------------|-------------|-------------|
| | | Min | Nom | |
| 06 | 3/16 | .181 (4.6) | .187 (4.7) | .307 (7.8) |
| 09 | 9/32 | .273 (6.9) | .281 (7.1) | .405 (1.3) |
| 10 | 5/16 | .300 (7.6) | .312 (7.9) | .440 (11.2) |
| 12 | 3/8 | .364 (9.2) | .375 (9.5) | .500 (12.7) |
| 16 | 1/2 | .485 (12.3) | .500 (12.7) | .630 (16.0) |
| 20 | 5/8 | .608 (15.4) | .625 (15.9) | .750 (19.1) |
| 24 | 3/4 | .730 (18.5) | .750 (19.1) | .890 (22.6) |

| Tubing Size | Fractional Size Ref | A Inside Dia | | B Dia Max |
|-------------|---------------------|--------------|--------------|--------------|
| | | Min | Nom | |
| 28 | 7/8 | .855 (21.7) | .875 (22.2) | 1.060 (26.9) |
| 32 | 1 | .980 (24.9) | 1.000 (25.4) | 1.195 (3.4) |
| 40 | 1 1/4 | 1.220 (31.0) | 1.250 (31.8) | 1.500 (38.1) |
| 48 | 1 1/2 | 1.480 (37.6) | 1.500 (38.1) | 1.780 (45.2) |
| 56* | 1 3/4 | 1.735 (44.1) | 1.750 (44.5) | 2.020 (51.3) |
| 64* | 2 | 1.980 (5.3) | 2.000 (5.8) | 2.280 (57.9) |

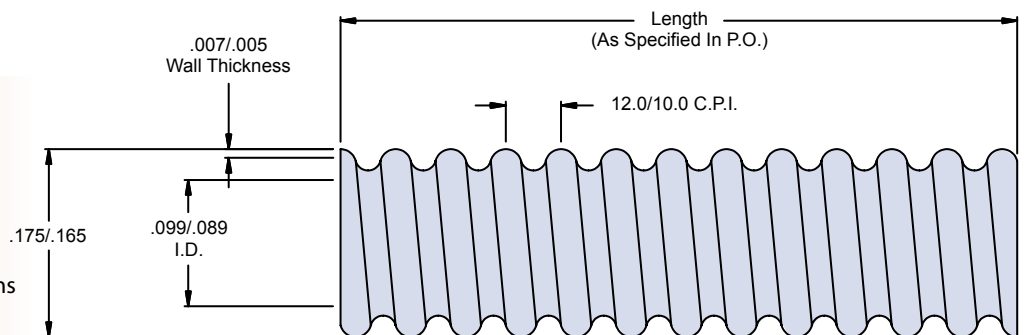
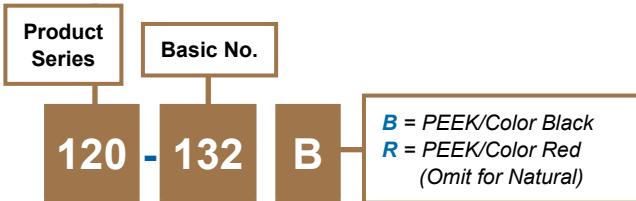
Packaging / Notes

- Unless otherwise specified, Conduit will be shipped per standard package. Length to be as follows: 3/16 to 3/4 I.D.; 80 ft. min. 1 to 2 I.D.; 40 ft. min.
- * Consult factory for availability

Special purpose, ultra-small diameter, low-smoke, zero-halogen tubing with outstanding crush resistance for fiber optic applications (one size only)



How To Order



Packaging / Notes

- Unless otherwise specified, Conduit will be shipped per standard package. Minimum length supplied will be 10 feet (3 m), with a maximum length of four lengths per package.



**The best fiber optic tooling in the industry—from bench tools to field kits.
One-stop-shopping for fiber optic termination, inspection and trouble-shooting tools.**



| Product No. | Description | Page No. |
|---|--|-------------|
| Fiber Optic Preparation and Termination Equipment | | |
| 187-017 • 187-018 | MIL-PRF-29504 /4 and /5 and GFR Termination Kits | L-4 |
| | Glenair Fiber Optic Termination, Testing, Cleaning and Inspection Kits | L-4 |
| | Polishing Pucks | L-5 |
| | Terminus and Alignment Sleeve Insertion and Extraction Tools | L-8 – L-9 |
| | Terminus Insertion and Extraction Tools and Crimping Tool | L-10 – L-11 |
| Fiber Optic Inspection and Test Equipment | | |
| GTK1000 | Front Release Testing Kit | L-12 |
| ABC 54705 | Fiber Optic Test Probe | L-14 |
| 182-002 | Polishing Tool for test probes | L-14 |
| 180-049/180-050/ 180-053 | M29504 Feedthrough Probe Connectors | L-15 |
| 180-044 | Plug and Receptacle Test Adapters, MIL-DTL-38999 Series III | L-16 |
| 180-072 | Plug and Receptacle Test Adapters, MIL-DTL-38999 Series I | L-20 |
| 180-073 | Plug and Receptacle Test Adapters, MIL-DTL-38999 Series III | L-24 |
| 180-102 (06) | Fiber Optic Probe Adapter, Plug | L-28 |
| 180-102 (07) | Fiber Optic Probe Adapter, Receptacle | L-29 |
| FO1006 | Patch Cord - Simplex | L-30 |
| FO1007 | Patch Cord - Duplex | L-31 |
| Fiber Optic Cleaning and Troubleshooting Equipment | | |
| GBS1000/GBS1001 | Portable Video Bore Scope Inspection System | L-34 |
| GCLT | Dry Action Cleaning Tools | L-36 |
| 187-021/187-024/ 187-045 | Fiber Optic Cleaning Swabs | L-37 |
| General-Purpose Tools | | |
| 600-058/600-061 | Band-Master™ ATS Termination System Banding Tools | L-38 |
| 600-052/600-057 600-083/600-090 | Band-Master™ ATS Termination System Bands | L-39 |

We are experts at building made-to-order termination, test and cleaning kits. This chapter presents just our core capabilities. Consult our website or call the factory for made-to-order toolkits, training and process documentation.

Catalog Notes

Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only. Unless otherwise specified, the following other dimensional tolerances apply:
.xx = ±.03 (0.8) • .xxx = ±.015 (0.4) • Angles = ± 5°

Fiber optic cable preparation and termination instructions

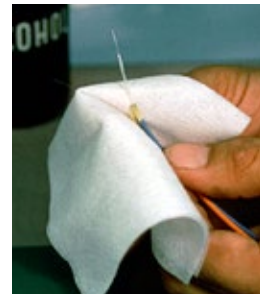
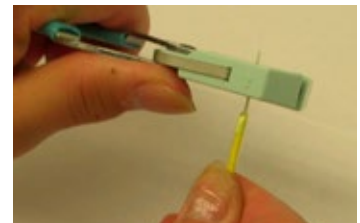
The Right Fiber Optic Tool for the Job

Fiber optic connectors are designed to be connected and disconnected many times without affecting the optical performance of the fiber circuit. Optimal performance can be achieved by following the correct process for termination of the fiber circuit—a task which requires the use of a wide range of specialized tooling. Glenair's extensive experience in building fiber optic interconnect cables has enabled us to select the right tools for each step in the termination and assembly process. Our Fiber Optic Termination and Test Probe Kits allow field technicians the convenience of completing final termination of precision termini on location for easy and efficient cable routing and installation. Each kit contains pin and socket polishing tools, jacket strippers, shears, scribes—literally all the tools and supplies required for ongoing termination and test of fiber optic systems. Polishing tools are also sold separately for factory use or as replacement parts in field termination kits.



Typical Fiber Preparation

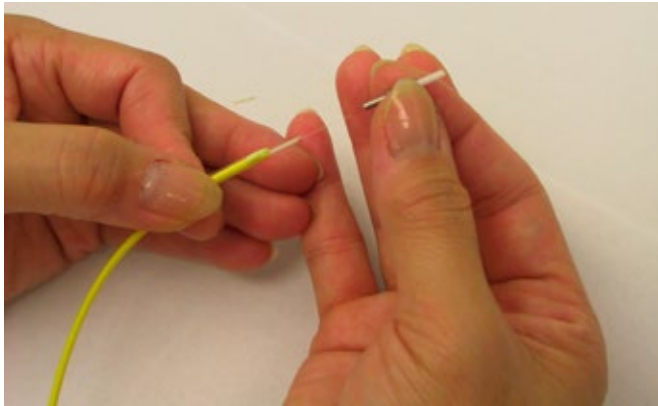
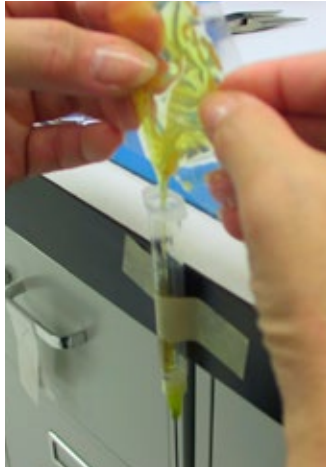
1. Measure and mark cable to desired length
2. Place jacket stripper on mark and squeeze gently until cutter closes
3. Using the tool, gently pull the cut section of jacketing off the cable
4. Mark Kevlar at specified length
5. Cut away excess Kevlar at measured mark with scissors
6. Slide clear heat shrink sleeve over buffer, using it to fold Kevlar back over cable jacket
7. After measuring, place buffer stripper on buffer jacket and squeeze gently until cutter closes
8. Strip buffer in several incremental steps to avoid damaging fiber
9. Clean fiber thoroughly using a lint-free, alcohol-soaked tissue



Glenair Fiber Optic Toolkits contains all of the tools you will need for fiber optic termination, plus a laminated card with termination instructions.

Typical Fiber Optic Cable Termination

1. Remove the separating clip and mix the epoxy thoroughly.
2. Remove syringe plunger and install needle tip
3. Cut open bi-pack and squeeze epoxy into applicator
4. Install plunger into filled applicator and remove air from needle
5. Slowly inject epoxy thru applicator until epoxy appears at the ceramic tip
6. Using a twisting motion, gently insert fiber into the terminus until it bottoms



7. Gently slide clear sleeve over the Kevlar, evenly distributing the Kevlar over the rear body
8. Using a heat gun, shrink the sleeve over Kevlar, securing the cable to the contact assembly
9. Clean any excess epoxy from the rear body with alcohol soaked swab
10. Add a small bead of epoxy to the ferrule transition
11. Heat cure epoxy to appropriate cure temperature and clean with alcohol
12. Cleave excess fiber from termini end



Glenair: The Fiber Optic Experts

With our depth of experience engineering fiber optic interconnect solutions, Glenair has developed all of the tools you will need for accurate fiber optic cable preparation and termination.

Visit our website at www.glenair.com or our youtube channel at www.youtube.com/user/GlenairInc for complete, easy-to-follow instruction videos for every facet of fiber optic preparation, termination, cleaning and testing.

We are experts at building made-to-order termination, test and cleaning kits. This chapter presents just our core capabilities. Consult our website or call the factory for made-to-order toolkits, training and process documentation.



Glenair Fiber Optic Kits for Termination, Inspection, Cleaning and Testing

187-017 for 181-001 & 181-002 (MIL-PRF-29504/4 and /5) Termini
187-018 for GFR 181-011 & 181-012 Termini

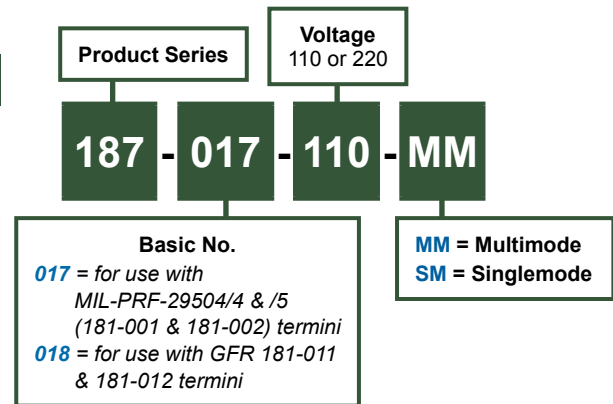
Fiber optic termination kit for field termination and repair of optical interconnects



- Turn-Key Termination of MIL-PRF-29504/4 and /5 Fiber Termini or Glenair Front Release (GFR) 181-011 & 181-012 Termini
- Singlemode or Multimode
- 110 Volt or 220 Volt
- Complete Kit With All Tools, Instruments and Consumables
 - Power Meter
 - LED Source
 - 200X Microscope
 - Polishing Media
 - Curing Oven
 - Hand Tools
 - Epoxies, Wipes and Swabs

Our termination kit allows field technicians the convenience of on-site optical fiber termination. Each kit contains jacket strippers, polishing tools, hand tools, light source, power meter and microscope as well as a full complement of consumables including epoxy, polishing media, swabs and adhesives.

How To Order



Glenair: Your source for fiber optic kits

Glenair offers a full range of kits for fiber optic interconnect systems. Kits include components for all aspects of fiber optic system management including:

- Termination
- Inspection
- Cleaning
- Testing

Kits can be configured to your specifications with components designed for your specific fiber optic interconnect system. Contact the factory for details.



Fiber Optic Polishing Pucks



Fiber optic polishing pucks



Polishing Puck showing grooves for wet polish

| Part Number | Compatible Termini | | | |
|--|--------------------|--|---|---|
| M29504 type (MIL-DTL-38999 Series III type) termini | | | | |
| 182-001P* | 181-002 | M29504/04 Pin | *add W to part number for Wet Polish, Supplied with Grooves. Omit for Dry Polish, Less Grooves | |
| | 181-036 | Large Core Size 16 Pin Terminus | | |
| 182-001S* | 181-001 | M29504/05 Socket | | |
| | 181-035 | Large Core Size 16 Socket Terminus | | |
| 182-039P* | 181-065 | Size 20 Pin Terminus | | |
| 182-039S* | 181-066 | Size 20 Socket Terminus | | |
| 182-030 | 181-052 | Jewel Pin Terminus, Size 16 | | Supplied with Grooves for Wet Polish |
| | 181-053 | Jewel Socket Terminus, Size 16 | | |
| GHD termini | | | | |
| 182-018* | 181-047 | GHD Size 18 keyed genderless terminus | | *add W to part number for Wet Polish, Supplied with Grooves. Omit for Dry Polish, Less Grooves |
| | 181-056 | GHD Size 18 non-keyed genderless terminus | | |
| Mighty Mouse termini | | | | |
| 182-001P* | 181-057 | Mighty Mouse Size 16 Pin Terminus | *add W to part number for Wet Polish, Supplied with Grooves. Omit for Dry Polish, Less Grooves | |
| 182-045* | 181-075 | Mighty Mouse Size 16 Socket Terminus | | |
| 182-056P* | 181-084 | Mighty Mouse Size 20HD Pin Terminus | | |
| 182-056S* | 181-085 | Mighty Mouse Size 20HD Socket Terminus | | |
| 182-050P* | 181-063 | Mighty Mouse Size 23 Pin Terminus | | |
| 182-050S* | 181-064 | Mighty Mouse Size 23 Socket Terminus | | |
| GFR termini | | | | |
| 182-005P* | 181-012 | GFR Size 16 Pin | *add W to part number for Wet Polish, Supplied with Grooves. Omit for Dry Polish, Less Grooves | |
| 182-005S* | 181-011 | GFR Size 16 Socket | | |
| NGCON termini | | | | |
| 182-021* | 181-043 | NGCON Genderless Rear-Release Terminus | *add W to part number for Wet Polish, Supplied with Grooves. Omit for Dry Polish, Less Grooves | |
| GFOCA termini | | | | |
| 182-007* | 181-050 | M29504/16 type genderless GFOCA fiber optic terminus | *add W to part number for Wet Polish, Supplied with Grooves. Omit for Dry Polish, Less Grooves | |
| M29504 type (MIL-PRF-28876) termini | | | | |
| 182-035* | 181-039 | M29504/14 Pin | *add W to part number for Wet Polish, Supplied with Grooves. Omit for Dry Polish, Less Grooves | |
| | 181-040 | M29504/15 Socket | | |

Fiber optic inspection and testing instructions



Patented optical test and measurement system

Traditional optical test harnesses are expensive and easily contaminated in normal use. Glenair's test probe, in conjunction with our precise-mating test adapter, offers a complete solution to optical test and measurement. The probe design offers precision alignment with the use of ceramic ferrules and alignment sleeves. The test probe system is designed to simulate the terminus endface mating pressure inherent to the specific connection system. The built-in insertion and removal tool on the test probe allows for quick probing from one channel to the next with repeatable performance. The probe also consists of a rubber strain-relief boot to protect the optical fiber from potential bend stress.

Specified by advanced military aircraft programs

The Glenair fiber optic test probe system has become a standard tool for the field testing of fiber optic media in front-line fighter jets and other advanced aircraft. With the upgrading of so many avionic systems to fiber optics, the need for fast and efficient troubleshooting equipment has become paramount. The traditionally heavy and expensive

test harnesses of the past are now being replaced with Glenair's lightweight and easy-to-use fiber optic test probes and adapters.

Troubleshooting a shell size 25 MIL-DTL-38999 Series III Connector previously required an expensive test harness with 29 fiber optic terminations. Today, this test assembly has been replaced by Glenair with a single probe jumper and a re-usable connector adapter. The system is now being used in advanced military aircraft programs as well as in naval weapons systems, sonar, video, audio, and a wide range of other military and commercial applications.



1. Attach test probe jumpers to light source and power meter



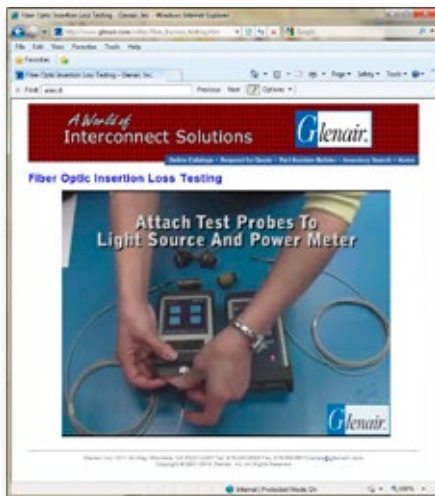
4. Connect the jumper (link) to be tested to the zeroed assembly.



2. Insert probes into connector adapters
3. Mate connector adapters together and 'zero' power meter



5. With the link in place, a new power reading may be taken



Glenair fiber optic inspection and testing video instruction

For more information on Glenair's patented Fiber Optic Test Probe and Connector Adapter System and complete video instruction, please visit our website at www.glenair.com or our youtube channel at www.youtube.com/user/GlenairInc.

We are experts at building made-to-order termination, test and cleaning kits. This chapter presents just our core capabilities. Consult our website or call the factory for made-to-order toolkits, training and process documentation.





Insertion/extraction tool for size 16 M29504 04/05 rear-release fiber optic termini and size 16 Mighty Mouse termini

| Part Number | Compatible Termini | |
|----------------|--------------------|----------------------------------|
| 809-131 | 181-001 | M29504/04 Socket |
| | 181-002 | M29504/04 Pin |
| | 181-035 | Large Core #16 Socket Terminus |
| | 181-036 | Large Core #16 Pin Terminus |
| | 181-057 | Mighty Mouse #16 Pin Terminus |
| | 181-075 | Mighty Mouse #16 Socket Terminus |

Insertion/extraction tool for size 20 rear-release fiber optic termini

| Part Number | Compatible Termini | |
|----------------|--------------------|-------------------------|
| 809-207 | 181-065 | Size 20 Pin Terminus |
| | 181-066 | Size 20 Socket Terminus |

Alignment sleeve insertion tool for D38999 type fiber optic jewel socket terminus

| Part Number | Compatible Termini | |
|----------------|--------------------|---|
| 182-031 | 181-053 | D38999 type fiber optic jewel socket terminus |

Alignment sleeve extraction tool for D38999 type fiber optic jewel socket terminus

| Part Number | Compatible Termini | |
|----------------|--------------------|---|
| 182-032 | 181-053 | D38999 type fiber optic jewel socket terminus |

Extraction tool for size 18 GHD front-release fiber optic termini

| Part Number | Compatible Termini | |
|-------------------|--------------------|---|
| 182-011-18 | 181-047 | GHD Size 18 keyed front release genderless terminus |
| | 181-056 | GHD Size 18 non-keyed front release genderless terminus |

Insertion tool for buffered GHD keyed fiber optic termini

| Part Number | Compatible Termini | |
|----------------|--------------------|---|
| 182-019 | 181-047 | GHD Size 18 keyed front release genderless terminus |

Insertion/extraction tool for size 20HD mighty mouse rear-release fiber optic termini

| Part Number | Compatible Termini | |
|----------------|--------------------|------------------------------------|
| 859-017 | 181-084 | Mighty Mouse #20HD Pin Terminus |
| | 181-085 | Mighty Mouse #20HD Socket Terminus |

Insertion/extraction tool for size 23 mighty mouse rear-release fiber optic termini

| Part Number | Compatible Termini | |
|----------------|--------------------|----------------------------------|
| 809-088 | 181-063 | Mighty Mouse #23 Pin Terminus |
| | 181-064 | Mighty Mouse #23 Socket Terminus |



Straight insertion tool for fiber optic termini

| Part Number | Compatible Termini | |
|----------------|--------------------|--|
| 182-013 | 181-039 | M29504/14 Pin |
| | 181-040 | M29504/15 Socket |
| | 181-051 | M29504/03 Dummy |
| | 181-011 | Glenair Front Release (GFR) #16 Socket |
| | 181-012 | Glenair Front Release (GFR) #16 Pin |
| | 181-056 | Genderless GHD, Non-Keyed |
| | 181-047 | Genderless GHD, Keyed |
| | 181-043 | NGCON Genderless Rear-Release Terminus |

Right angle (90°) insertion tool for fiber optic termini

| Part Number | Compatible Termini | |
|----------------|--------------------|--|
| 182-014 | 181-039 | M29504/14 Pin |
| | 181-040 | M29504/15 Socket |
| | 181-051 | M29504/03 Dummy |
| | 181-011 | Glenair Front Release (GFR) #16 Socket |
| | 181-012 | Glenair Front Release (GFR) #16 Pin |
| | 181-056 | Genderless GHD, Non-Keyed |
| | 181-047 | Genderless GHD, Keyed |
| | 181-043 | NGCON Genderless Rear-Release Terminus |

The 182-014 90° tool can be used when there is limited space behind the connector to use the straight tool

Extraction tool for front-release fiber optic termini

| Part Number | Compatible Termini | |
|----------------|--------------------|--|
| 182-015 | 181-039 | M29504/14 Pin |
| | 181-040 | M29504/15 Socket |
| | 181-051 | M29504/03 Dummy |
| | 181-011 | Glenair Front Release (GFR) #16 Socket |
| | 181-012 | Glenair Front Release (GFR) #16 Pin |

Alignment sleeve insertion/extraction tool for fiber optic termini

| Part Number | Compatible Termini | |
|-------------|--------------------|--|
| 182-016 | 181-040 | M29504/15 Socket |
| | 181-011 | Glenair Front Release (GFR) #16 Socket |

Insertion/extraction tool for GFOCA fiber optic termini

| Part Number | Compatible Termini | |
|-------------|--------------------|--|
| 182-010 | 181-050 | M29504/16 type genderless GFOCA fiber optic terminus |

Fiber optic terminus crimping tool for M29504 14/15, GFR, GHD, GFOCA and NGCON

| Part Number | Compatible Termini | |
|-------------|--------------------|--|
| 182-012 | 181-039 | M29504/14 Pin |
| | 181-040 | M29504/15 Socket |
| | 181-011 | Glenair Front Release (GFR) #16 Socket |
| | 181-012 | Glenair Front Release (GFR) #16 Pin |
| | 181-056 | Genderless GHD, Non-Keyed |
| | 181-047 | Genderless GHD, Keyed |
| | 181-043 | NGCON Genderless Rear-Release Terminus |
| | 181-050 | M29504/16 type genderless GFOCA fiber optic terminus |

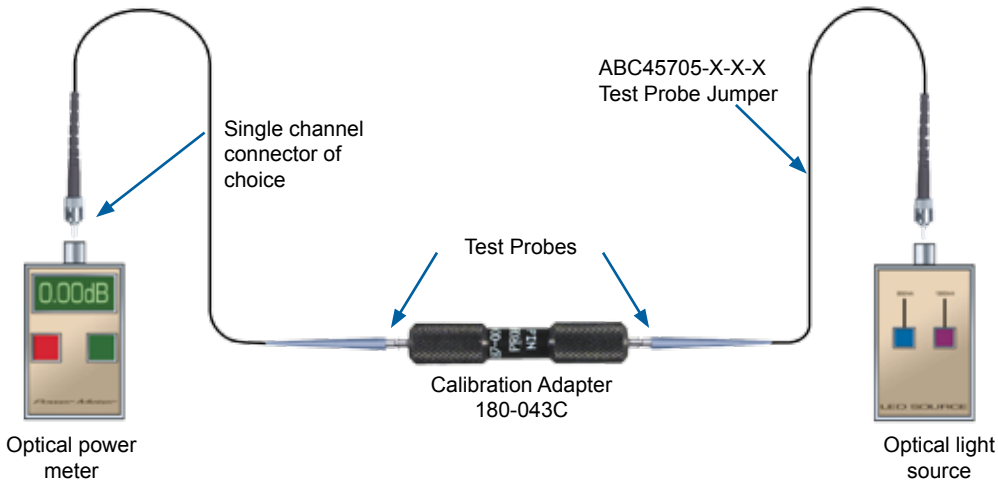
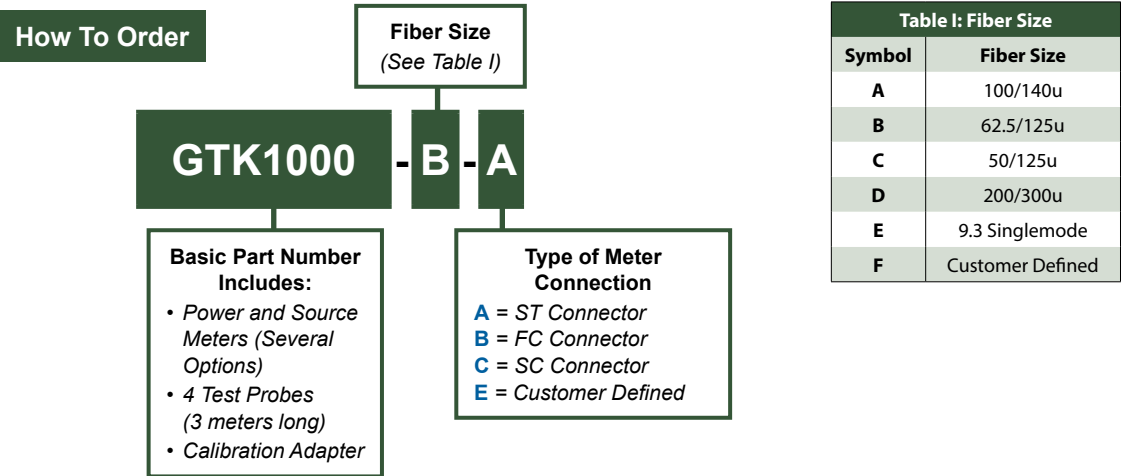


GTK1000 Glenair Fiber Optic Testing Kit for MIL-DTL-38999 Series III Fiber Optic Connection Systems

Fiber optic testing kit for fiber optic connection systems

Traditional optical test harnesses are expensive and easily contaminated in normal use. The Glenair fiber optic testing kit utilizes a special probe device in conjunction with our precise-mating test adapter, to provide a complete solution to optical test and measurement. The GTK-1000 comes with a power meter, source meter, test probes and a test probe calibration adapter. For accurate results, the test probe calibration adapter will “zero out” your meters.

The Glenair patented test probe design provides less than 1.0 dB insertion loss, and is used with test probe adapters and a calibration feedthrough to perform efficient measurements of fiber optic cable performance. The kit accommodates all standard fiber sizes and multiple fiber optic connection systems



Note:

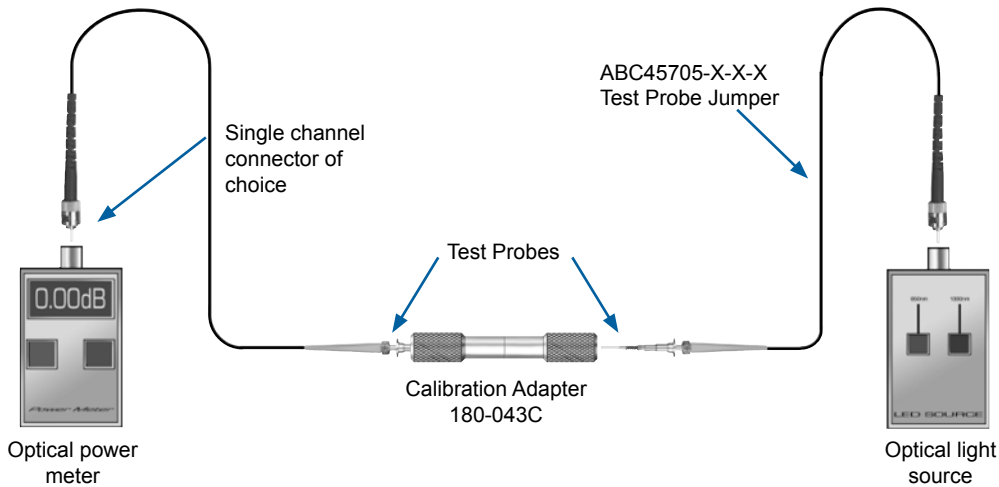
Replacement calibration adapters and test probe jumpers sold separately.
 Test probe connector adapters sold separately
 The fiber optic test probe kit supports MIL-DTL-38999 Series I and III fiber optic connection systems. For test kits for other Glenair high performance fiber optic connection systems, please consult factory.

Effective use of Glenair fiber optic test equipment

Step 1: “Zeroing-out” optical power meter and light source

The first step in using the optical test probes is to install each end of the probe cable assembly to the optical power meter and light source. Next, insert each probe into the calibration adapter.

The test probe loss can now be recorded as a reference measurement or may be “zeroed-out.”

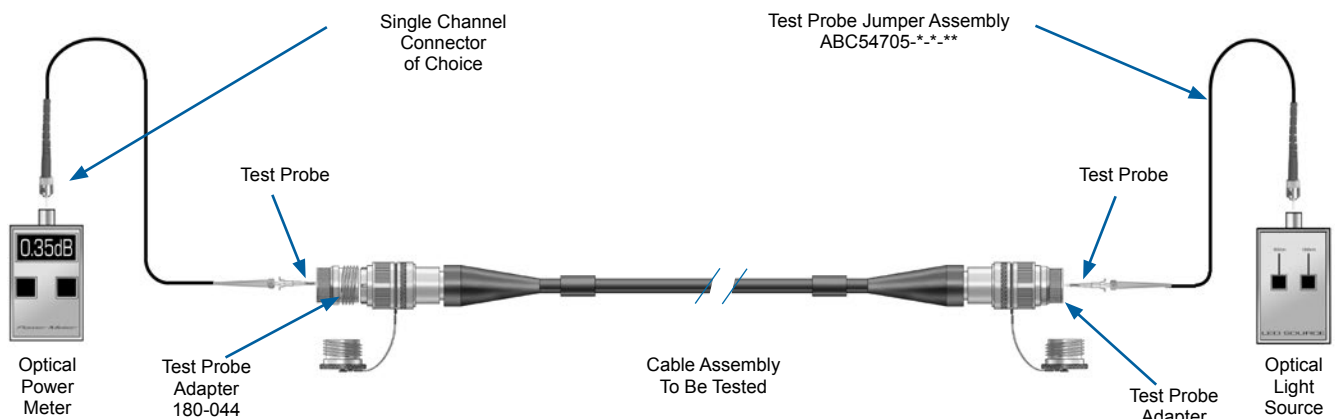


Step 2: Performing optical measurement

Now you are ready to perform optical measurements on the fiber optic cable harness. First, select the proper Glenair D38999 Series III Probe Adapter.

Now, mate or couple the adapters to each end of the cable harness. Next, insert each probe in the appropriate channel to be tested by pushing on the knurled area on the test probes. Read and record the optical performance.

To measure the next channel, remove the test probe by pushing on the large diameter of the test probe. The probe can now be removed and inserted into the next channel. Re-establishing or verification of reference can be performed at any time by following Step 1.





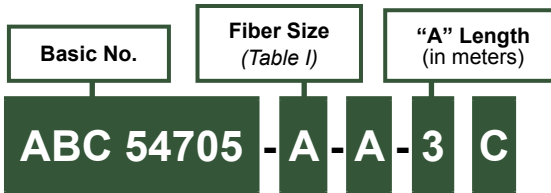
ABC 54705 Replacement Fiber Optic Test Probe Jumper Simplex

Fiber optic test probe for fast and easy optical analysis of installed fiber optic systems

How To Order

| Table I: Fiber Size | |
|---------------------|---------------------------|
| Symbol | Size |
| A | 100/140 μm |
| B | 62.5/125 μm |
| C | 50/125 μm |
| D | 200/230 μm |
| E | Singlemode 9.3/125 |
| F | Customer Defined |
| G | SM 5.8/125 M/F DIA. .21na |
| H | SM 7.5/125 M/F DIA. .17na |

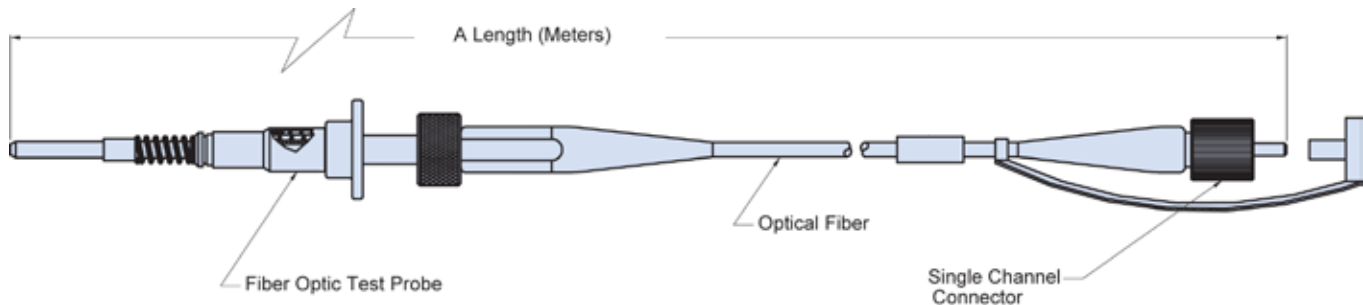
Optical insertion loss ≤ 1.0 dB @
850 or 1300 nm wavelength.
Glenair Fiber Optic Test Probe U.S.
Patent Number 5,960,137.



- Connector Type:**
- A = ST Connector
 - B = FC Connector
 - C = SC Connector
 - D = FC/APC Connector
 - E = Customer Defined
 - F = LC Connector
 - G = SC/APC Connector
 - H = M29504/04 Pin
 - J = M29504/05 Socket

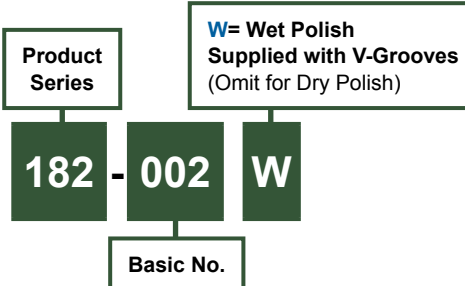
F = Flat Polish
C = Concave Polish
(Probe end only. Omit for
standard "PC" physical
contact polish)

| Standard Tolerance | |
|--------------------------|-----------|
| Length | Tolerance |
| 5 in, up to 2 ft | +1/-0 in |
| Over 2 ft, up to 10 ft | +3/-0 in |
| Over 10 ft, up to 50 ft | +6/-0 in |
| Over 50 ft, up to 100 ft | +1/-0 ft |
| Over 100 ft | +2/-0 ft |



Fiber optic polishing tool for fiber optic test probes

How To Order

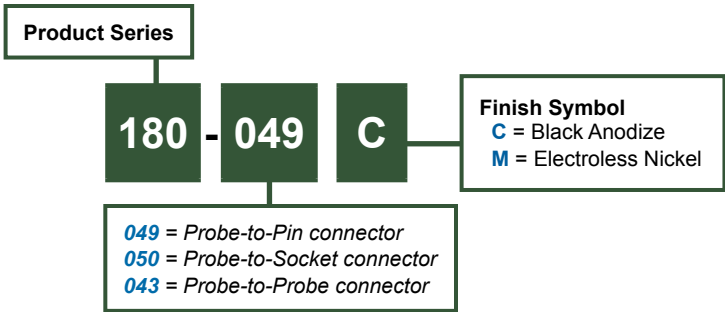


180-049 • 180-050 • 180-043
 Replacement Calibration Adapters
 for M29504/04 or /05 Termini

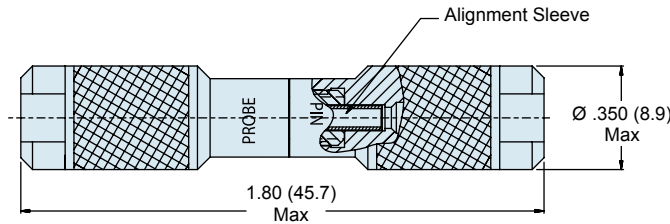


Feedthrough probe connectors for MIL-DTL-38999 (MIL-PRF-29504/4 and /5 termini) fiber optic connection system

U.S. PATENT 5,960,137

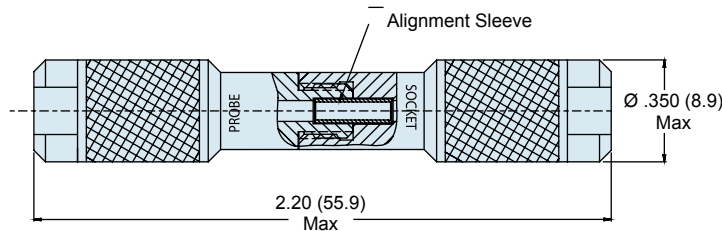


-049 Probe-to-Pin Connector



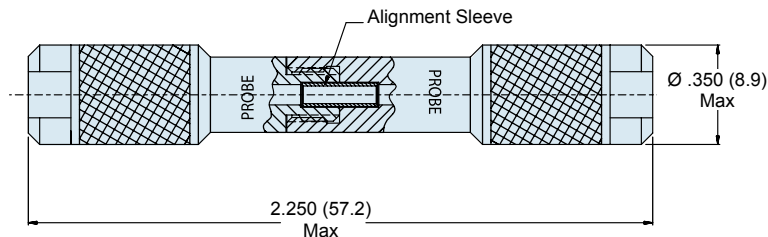
Pin Side Accepts
181-002 and M29504/04
Termini

-050 Probe-to-Socket Connector



Socket Side Accepts
181-001 and M29504/05
Termini

-043 Probe-to-Probe Connector



Material and Finish

Housing: Aluminum Alloy/see Part Number Development
 Alignment Sleeve: Zirconia Ceramic
 Retaining Clips: Copper Alloy

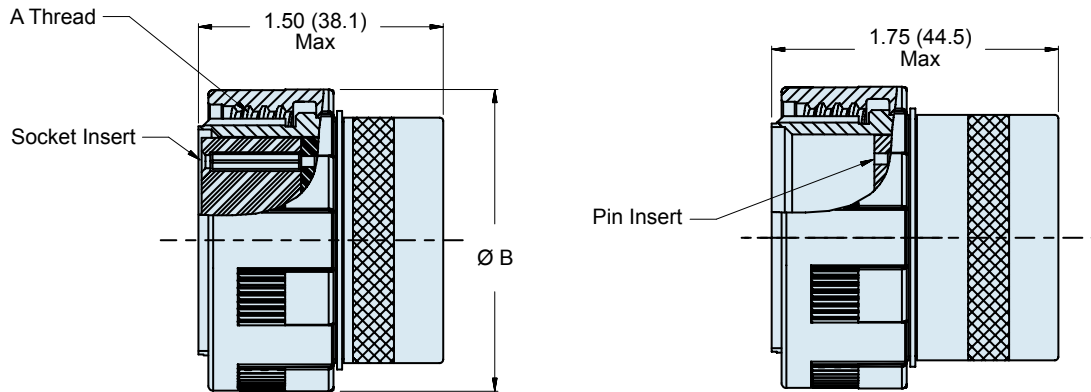
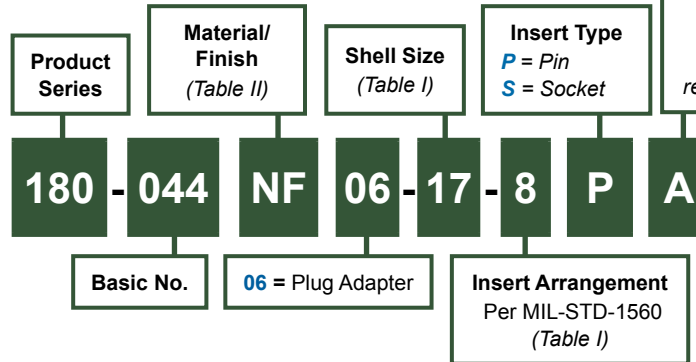


180-044 (06)

Fiber Optic Test Adapter, Plug
MIL-DTL-38999 Series III

MIL-DTL-38999 test adapter (plug)

How To Order



06 Plug Adapter
U.S. PATENT NO. 5,960,137

Material and Finish

- Barrel: See Table II
- Insert, Coupling Nut: Hi-Grade Engineering Thermoplastic
- Alignment Sleeve: Zirconia Ceramic
- Retaining Ring: Stainless Steel
- Retaining Clips: Copper Alloy
- Lock Cap, Lock Nut: Al Alloy/Anodize

Notes

- For fiber optic test probe (standard) jumper, see Glenair drawing ABC54705
- For fiber optic test probe (low profile, probe-to-probe) jumper, see Glenair drawing FO01757. Suggested for 25-37 insert arrangement.

180-044 (06)
Fiber Optic Test Adapter, Plug
MIL-DTL-38999 Series III



Test Probes
and Kits

Table I: Shell Size and Insert Arrangements

| Shell Size | Shell Size Code (Ref) | Shell Size & Insert Arrangement | A Thread 0.1P-0.3L-TS-2 | Ø B Max |
|------------|-----------------------|---------------------------------|-------------------------|--------------|
| 11 | B | 11-2 | .750 (19.1) | .984 (25.0) |
| 13 | C | 13-4 | .875 (22.2) | 1.157 (29.4) |
| 15 | D | 15-5 | 1.000 (25.4) | 1.279 (32.5) |
| 15 | D | 15-97 | 1.000 (25.4) | 1.279 (32.5) |
| 17 | E | 17-8 | 1.187 (30.1) | 1.406 (35.7) |
| 19 | F | 19-11 | 1.250 (31.8) | 1.516 (38.5) |
| 21 | G | 21-16 | 1.375 (34.9) | 1.642 (41.7) |
| 23 | H | 23-21 | 1.500 (38.1) | 1.768 (44.9) |
| 23 | H | 23-54 | 1.500 (38.1) | 1.768 (44.9) |
| 23 | H | 23-99 | 1.500 (38.1) | 1.768 (44.9) |
| 25 | J | 25-20 | 1.625 (41.3) | 1.889 (48.0) |
| 25 | J | 25-29 | 1.625 (41.3) | 1.889 (48.0) |
| 25 | J | 25-37 | 1.625 (41.3) | 1.889 (48.0) |
| 25 | J | 25-43 | 1.625 (41.3) | 1.889 (48.0) |

Table II: Material and Finish

| Code | Material | Finish |
|------|----------------|--------------------|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium/Olive Drab |

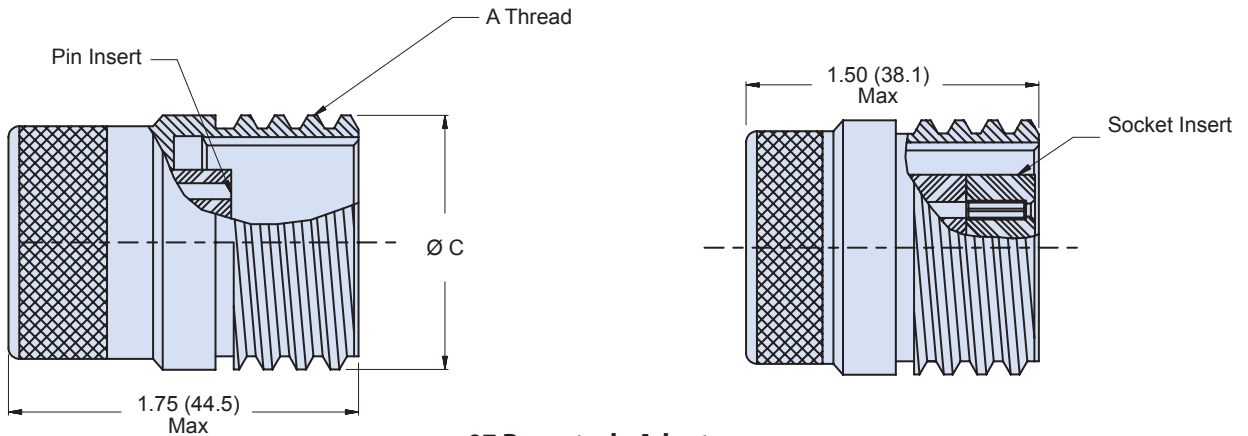
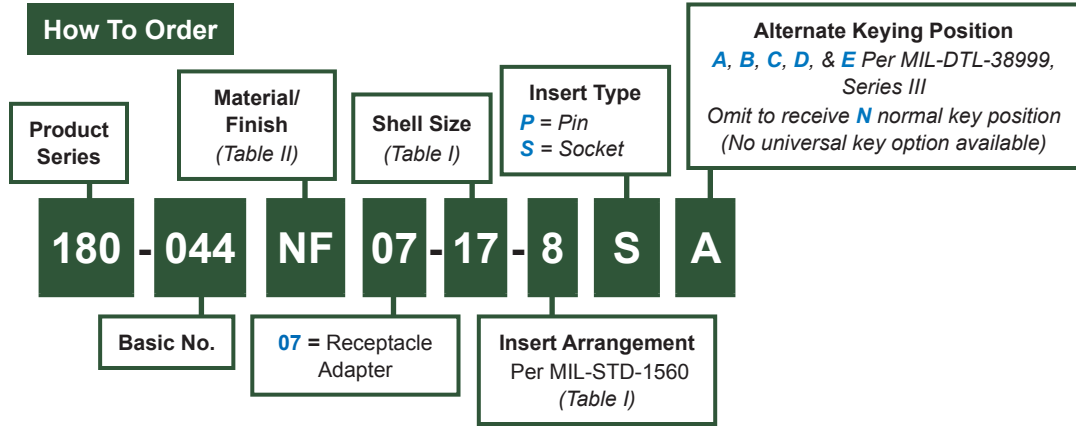




180-044 (07)

Fiber Optic Test Adapter, Receptacle
MIL-DTL-38999 Series III

MIL-DTL-38999 test adapter (receptacle)



07 Receptacle Adapter
U.S. PATENT NO. 5,960,137

Material and Finish

Shell: See Table II
 Insert: Hi-Grade Engineering Thermoplastic
 Alignment Sleeve: Zirconia Ceramic
 Retaining Clips: Copper Alloy
 Lock Cap, Lock Nut: Al Alloy/Anodize

Notes

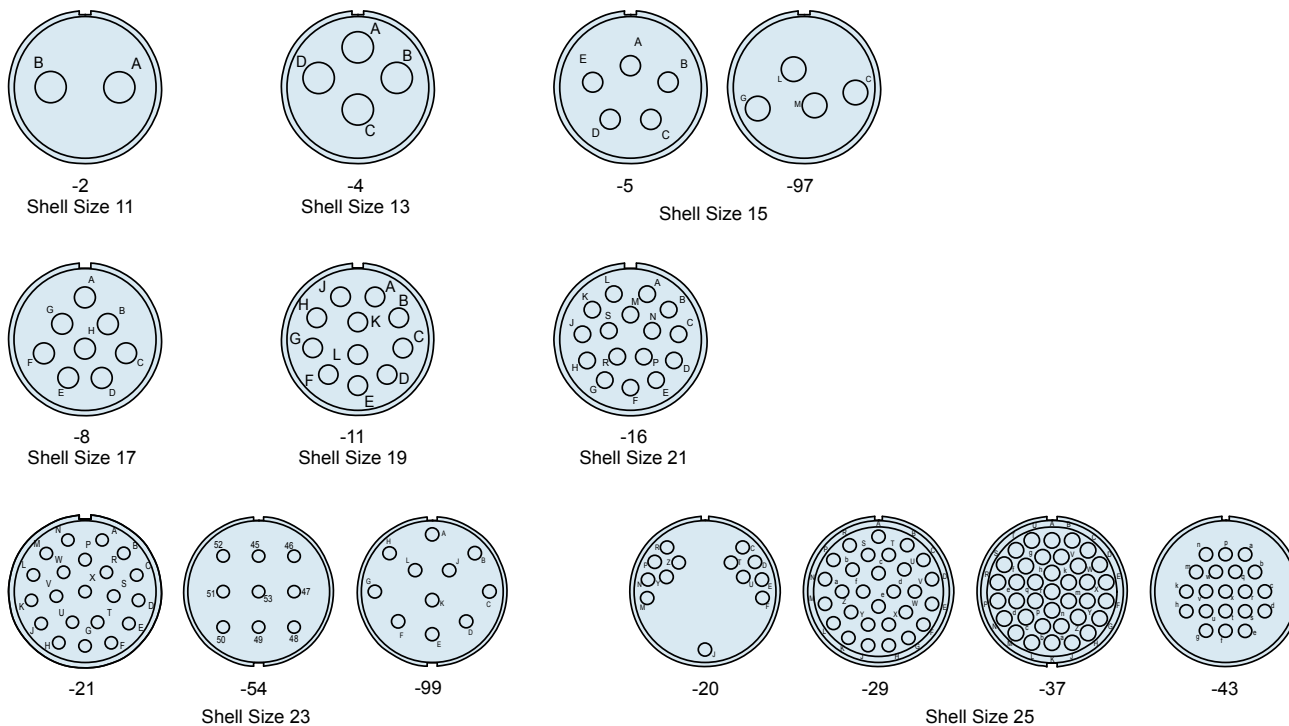
For fiber optic test probe (standard) jumper, see Glenair drawing ABC54705
 For fiber optic test probe (low profile, probe-to-probe) jumper, see Glenair drawing FO03187.
 Suggested for 25-37 insert arrangement.

180-044 (07)
Fiber Optic Test Adapter, Receptacle
MIL-DTL-38999 Series III



Test Probes
and Kits

Insert Arrangements: Socket Rear Insert Shown

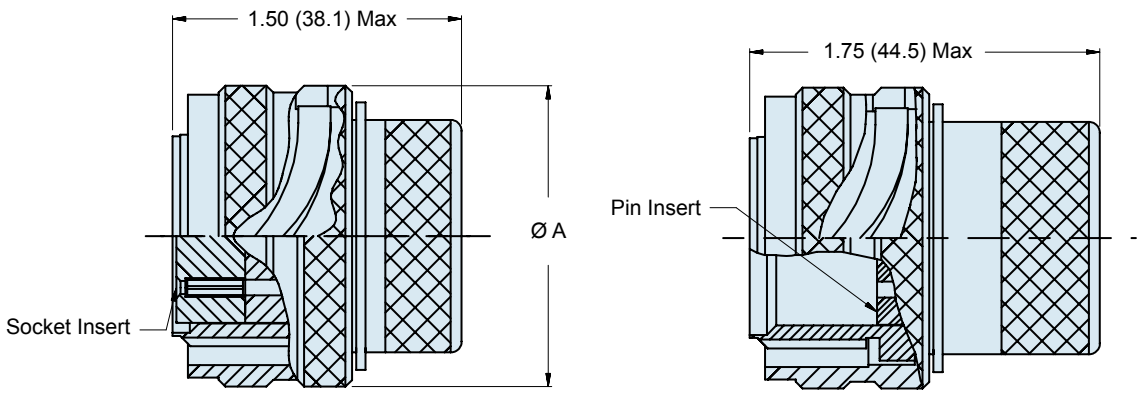
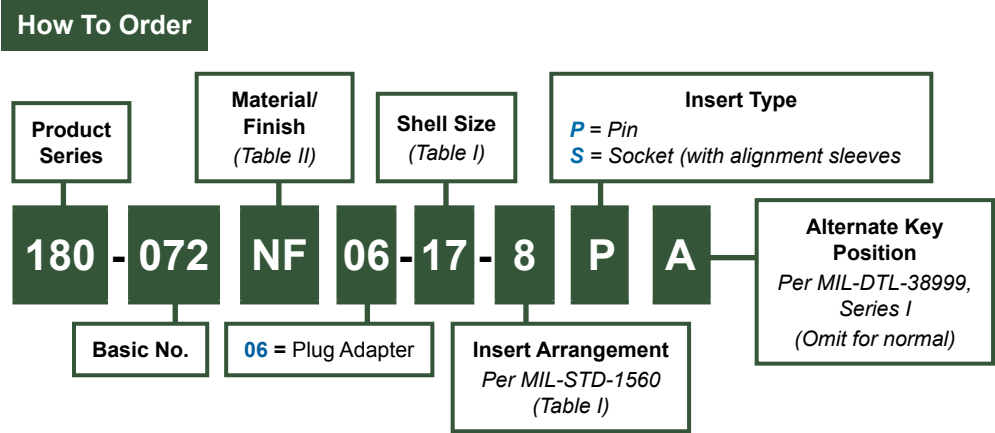


| Shell Size | Shell Size Code (Ref) | Shell Size & Insert Arrangement | A Thread 0.1P-0.3L-TS-2 | Ø C Max |
|------------|-----------------------|---------------------------------|-------------------------|--------------|
| 11 | B | 11-2 | .750 (19.1) | .750 (19.1) |
| 13 | C | 13-4 | .875 (22.2) | .875 (22.2) |
| 15 | D | 15-5 | 1.000 (25.4) | 1.000 (25.4) |
| 15 | D | 15-97 | 1.000 (25.4) | 1.000 (25.4) |
| 17 | E | 17-8 | 1.187 (30.1) | 1.188 (30.2) |
| 19 | F | 19-11 | 1.250 (31.8) | 1.250 (31.8) |
| 21 | G | 21-16 | 1.375 (34.9) | 1.375 (34.9) |
| 23 | H | 23-21 | 1.500 (38.1) | 1.500 (38.1) |
| 23 | H | 23-54 | 1.500 (38.1) | 1.500 (38.1) |
| 23 | H | 23-99 | 1.500 (38.1) | 1.500 (38.1) |
| 25 | J | 25-20 | 1.625 (41.3) | 1.625 (41.3) |
| 25 | J | 25-29 | 1.625 (41.3) | 1.625 (41.3) |
| 25 | J | 25-37 | 1.625 (41.3) | 1.625 (41.3) |
| 25 | J | 25-43 | 1.625 (41.3) | 1.625 (41.3) |

| Code | Material | Finish |
|------|----------------|--------------------|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium/Olive Drab |



MIL-DTL-38999 test adapter (plug)



06 Plug Adapter
U.S. PATENT NO. 5,960,137

Material and Finish

- Barrel: See Table II
- Insert, Coupling Nut: Hi-Grade Engineering Thermoplastic
- Alignment Sleeve: Zirconia Ceramic
- Misc. Hardware: Stainless Steel
- Retaining Clips: Copper Alloy
- Lock Cap, Lock Nut: Al Alloy/Anodize

Notes

For fiber optic test probe jumper, see Glenair drawing ABC54705

180-072 (06)
Fiber Optic Test Adapter, Receptacle
MIL-DTL-38999 Series I



Test Probes
and Kits

Table I: Shell Size and Insert Arrangements

| Shell Size & Insert Arrangement | Shell Size Code Ref. | Ø A Max |
|---------------------------------|----------------------|--------------|
| 11-2 | B | .964 (24.5) |
| 13-4 | C | 1.141 (29.0) |
| 15-5 | D | 1.266 (32.2) |
| 15-97 | D | 1.266 (32.2) |
| 17-8 | E | 1.391 (35.3) |
| 19-11 | F | 1.500 (38.8) |
| 21-16 | G | 1.625 (41.3) |
| 23-21 | H | 1.750 (44.5) |
| 23-99 | H | 1.750 (44.5) |
| 25-20 | J | 1.875 (47.6) |
| 25-29 | J | 1.875 (47.6) |
| 25-37A | J | 1.875 (47.6) |
| 25-37B | J | 1.875 (47.6) |

Table II: Material and Finish

| Code | Material | Finish |
|------|----------------|--------------------|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium/Olive Drab |



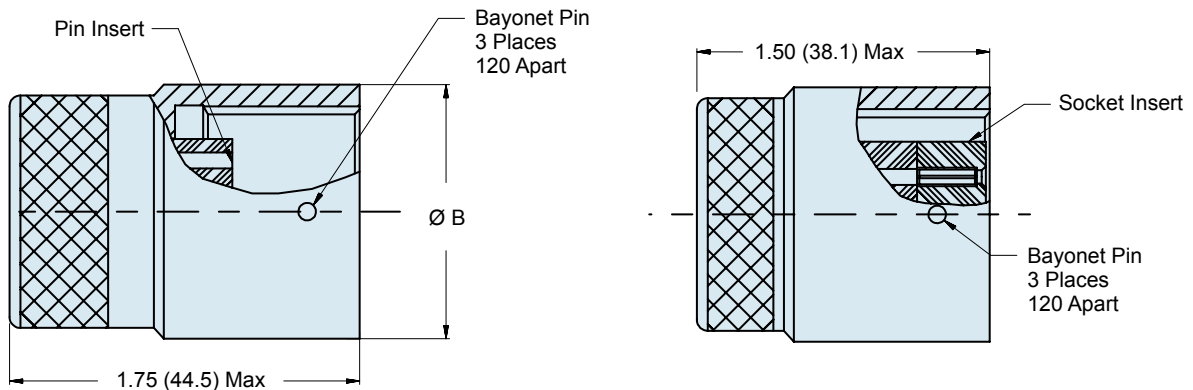
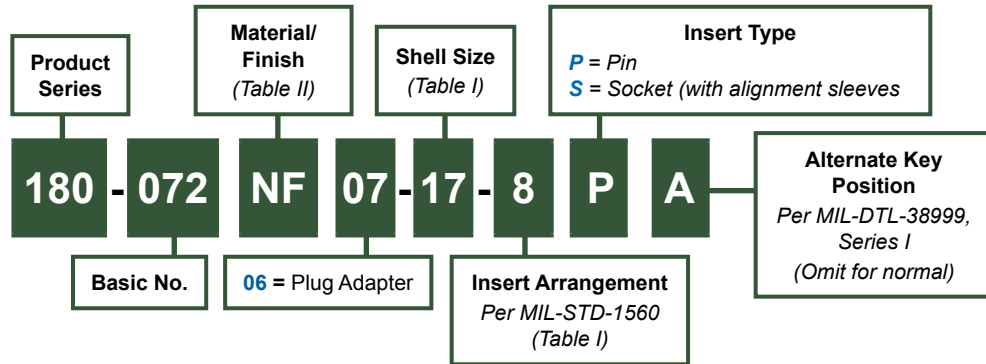


180-072 (07)

Fiber Optic Test Adapter, Receptacle
MIL-DTL-38999 Series I

MIL-DTL-38999 test adapter (receptacle)

How To Order



07 Receptacle Adapter
U.S. PATENT NO. 5,960,137

Material and Finish

- Shell: See Table II
- Insert: Hi-Grade Engineering Thermoplastic
- Alignment Sleeve: Zirconia Ceramic
- Retaining Clips: Copper Alloy
- Lock Cap, Lock Nut: Al Alloy/Anodize

Notes

For fiber optic test probe jumper, see Glenair drawing ABC54705

180-072 (07)
Fiber Optic Test Adapter, Receptacle
MIL-DTL-38999 Series I



Test Probes
and Kits

| Table I: Shell Size and Insert Arrangements | | |
|---|----------------------|--------------|
| Shell Size & Insert Arrangement | Shell Size Code Ref. | Ø B Max |
| 11-2 | B | .750 (19.1) |
| 13-4 | C | .875 (22.2) |
| 15-5 | D | 1.000 (25.4) |
| 15-97 | D | 1.000 (25.4) |
| 17-8 | E | 1.187 (30.1) |
| 19-11 | F | 1.250 (31.8) |
| 21-16 | G | 1.375 (34.9) |
| 23-21 | H | 1.500 (38.1) |
| 23-99 | H | 1.500 (38.1) |
| 25-20 | J | 1.625 (41.3) |
| 25-29 | J | 1.625 (41.3) |
| 25-37A | J | 1.625 (41.3) |
| 25-37B | J | 1.625 (41.3) |

| Table II: Material and Finish | | |
|-------------------------------|----------------|--------------------|
| Code | Material | Finish |
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium/Olive Drab |

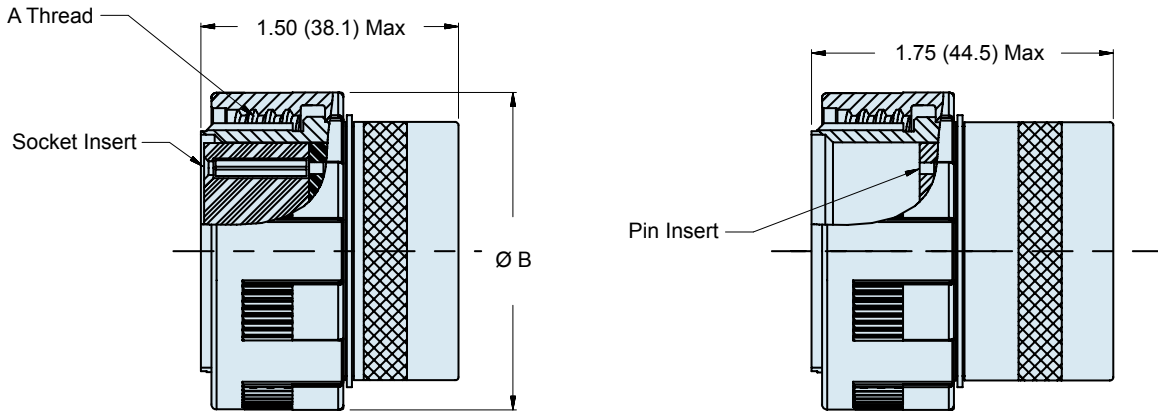
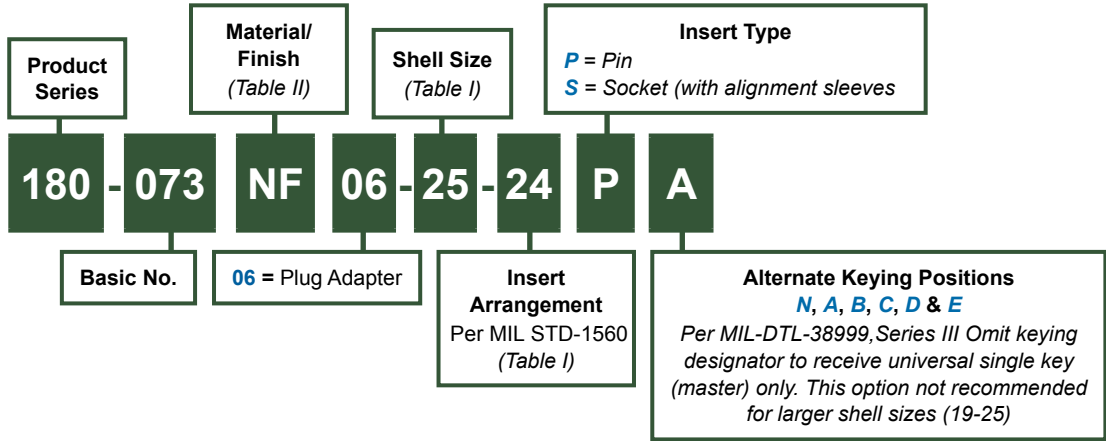




180-073 (06)
Fiber Optic Test Adapter, Plug
 With Special Insert Arrangement MIL-DTL-38999 Series III

MIL-DTL-38999 test adapter (plug)

How To Order



06 Plug Adapter
 U.S. PATENT NO. 5,960,137

Material and Finish

- Barrel: See Table II
- Insert, Coupling Nut: Hi-Grade Engineering Thermoplastic
- Alignment Sleeve: Zirconia Ceramic
- Misc. Hardware: Stainless Steel
- Retaining Clips: Copper Alloy
- Lock Nut: Al Alloy/Anodize

Notes

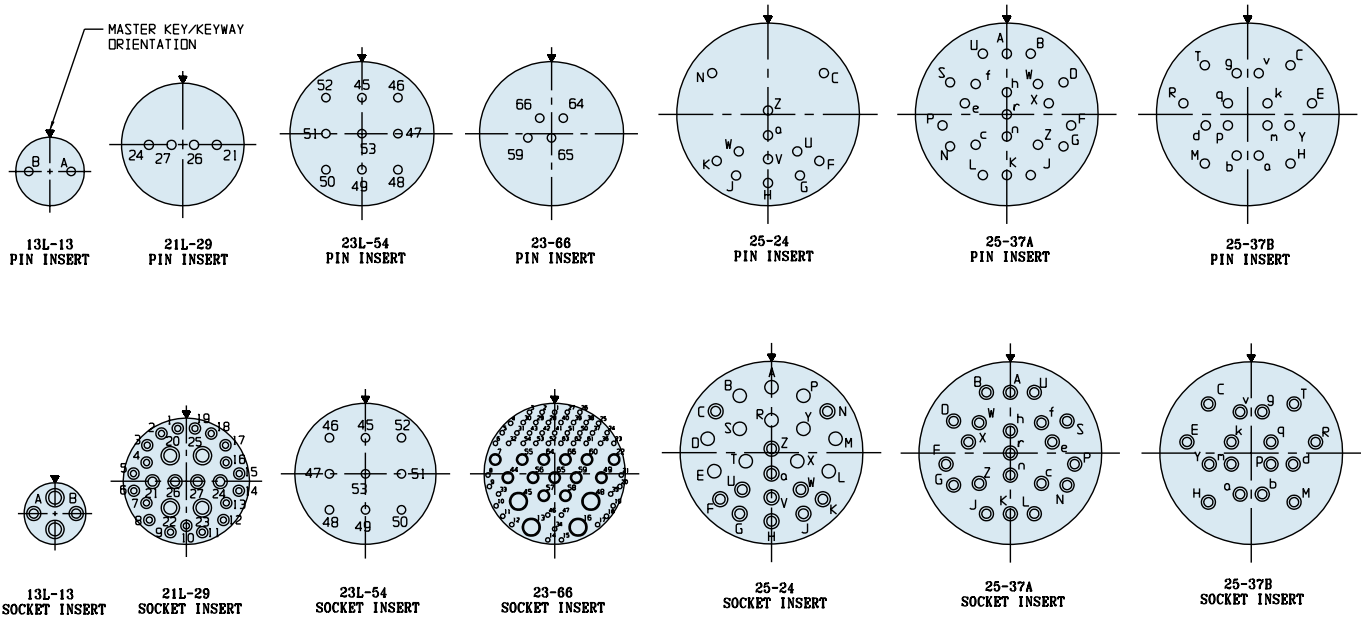
- For fiber optic test probe jumper, see Glenair drawing ABC54705
- For fiber optic test probe (low profile, probe-to-probe) jumper see Glenair drawing FO01757
- 25-37 insert cavity spacing too close to probe using one adapter. 2 adapters (25-37A and 25-37B) are required
- Shell size 23 for insert 23-66 only is made of 300 series stainless steel
- Cavity markings applied to rear insert face only

180-073 (06)
Fiber Optic Test Adapter, Plug
 With Special Insert Arrangement MIL-DTL-38999 Series III



Test Probes
and Kits

FRONT FACE OF PIN AND SOCKET INSERTS SHOWN, REAR SURFACE OPPOSITE



| Table I: Shell Size and Insert Arrangements | | | | |
|---|-----------------------|-----------------------------|-------------------------|--------------|
| Shell Size | Shell Size Code (Ref) | Insert Arrangement Dash No. | A Thread 0.1P-0.3L-TS-2 | Ø B Max |
| 13 | C | 13L-13 | .875 (22.2) | 1.157 (29.4) |
| 21 | G | 21L-29 | 1.375 (34.9) | 1.642 (41.7) |
| 23 | H | 23L-54 | 1.500 (38.1) | 1.768 (44.9) |
| 23 | H | 23-66 | 1.500 (38.1) | 1.768(44.9) |
| 25 | J | 25-24 | 1.625 (41.3) | 1.890 (48.0) |
| 25 | J | 25-37A | 1.625 (41.3) | 1.890 (48.0) |
| 25 | J | 25-37B | 1.625 (41.3) | 1.890 (48.0) |

| Table II: Finish | | |
|------------------|-----------------|---------------------|
| Code | Material | Finish |
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium, Olive Drab |
| Z1 | Stainless Steel | Passivate |

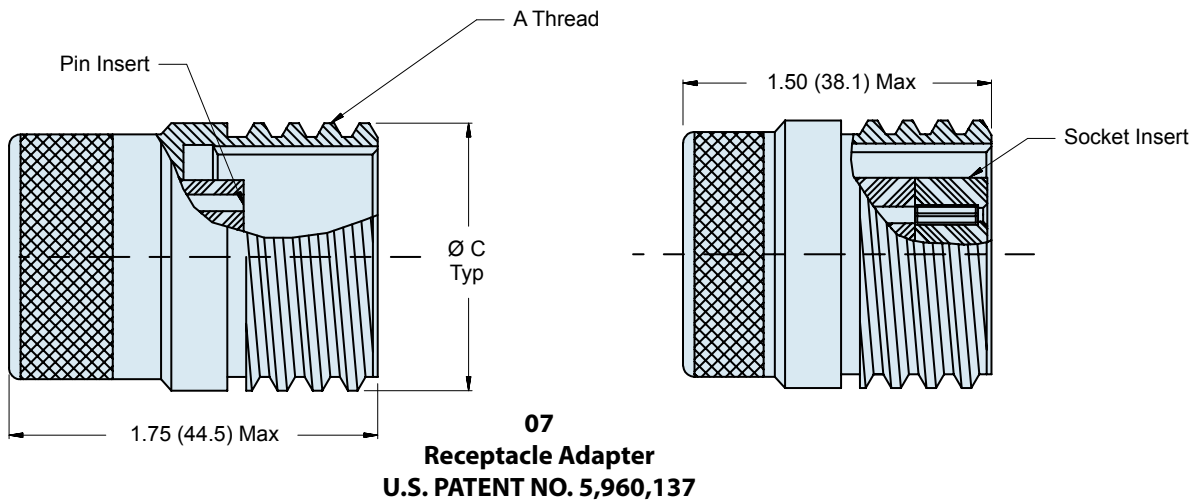
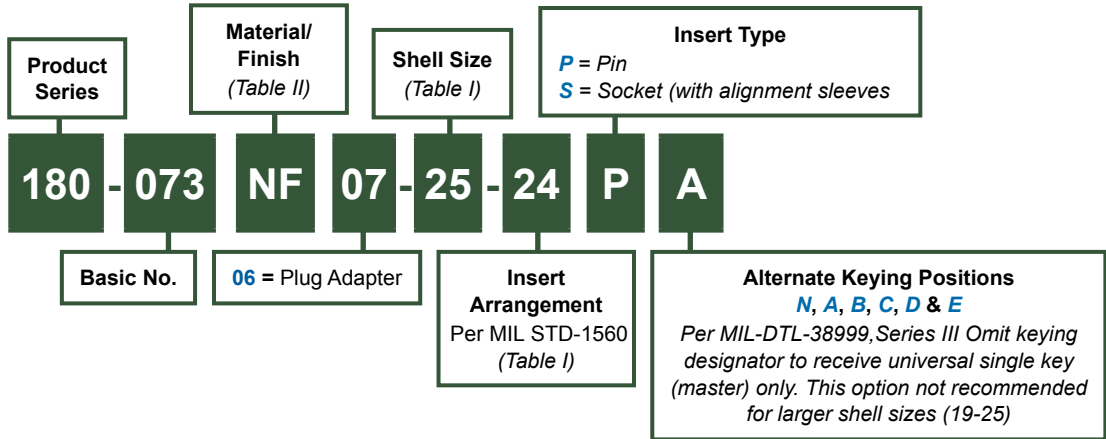




180-073 (07)
Fiber Optic Test Adapter, Receptacle
With Special Insert Arrangement MIL-DTL-38999 Series III

MIL-DTL-38999 test adapter (receptacle)

How To Order



Material and Finish

- Shell: See Table II
- Insert: Hi-Grade Engineering Thermoplastic
- Alignment Sleeve: Zirconia Ceramic
- Retaining Clips: Copper Alloy
- Lock Nut: Al Alloy/Anodize

Notes

- For fiber optic test probe jumper, see Glenair drawing ABC54705
- For fiber optic test probe (low profile, probe-to-probe) jumper see Glenair drawing FO03187
- 25-37 insert cavity spacing too close to probe using one adapter. 2 adapters (25-37A and 25-37B) are required
- Shell size 23 for insert 23-66 only is made of 300 series stainless steel
- Cavity markings applied to rear insert face only

180-073 (07)

Fiber Optic Test Adapter, Receptacle
With Special Insert Arrangement MIL-DTL-38999 Series III



Test Probes
and Kits

FRONT FACE OF PIN AND SOCKET INSULATORS SHOWN, REAR SURFACE OPPOSITE

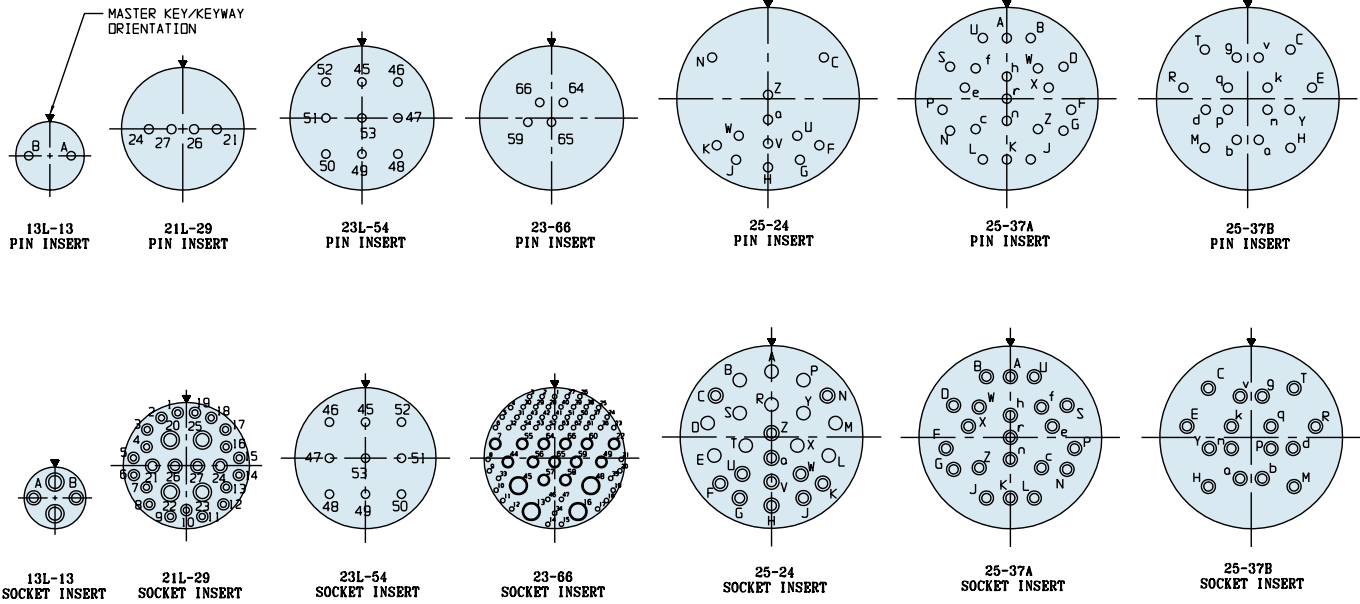


Table I: Shell Size and Insert Arrangements

| Shell Size | Shell Size Code (Ref) | Insert Arrangement Dash No. | A Thread 0.1P-0.3L-TS-2 | Ø C Max |
|------------|-----------------------|-----------------------------|-------------------------|--------------|
| 13 | C | 13L-13 | .875 (22.2) | .875 (22.2) |
| 21 | G | 21L-29 | 1.375 (34.9) | 1.375 (34.9) |
| 23 | H | 23L-54 | 1.500 (38.1) | 1.500 (38.1) |
| 23 | H | 23-66 | 1.500 (38.1) | 1.500 (38.1) |
| 25 | J | 25-24 | 1.625 (41.3) | 1.625 (41.3) |
| 25 | J | 25-37A | 1.625 (41.3) | 1.625 (41.3) |
| 25 | J | 25-37B | 1.625 (41.3) | 1.625 (41.3) |

Table II: Finish

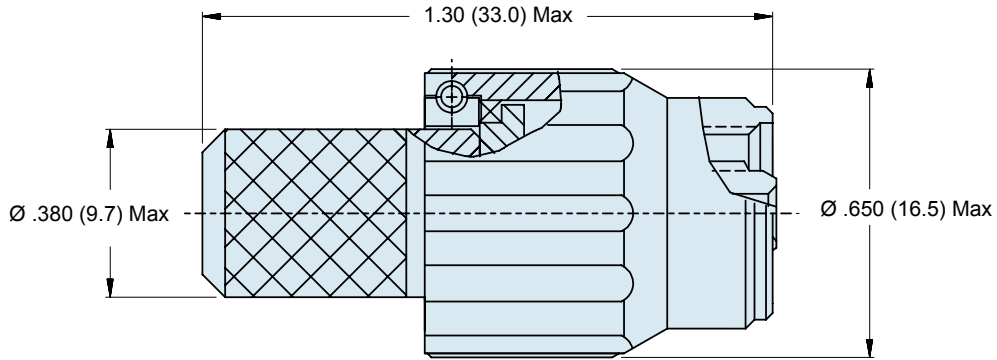
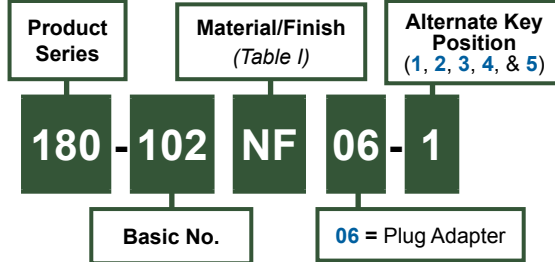
| Code | Material | Finish |
|------|-----------------|---------------------|
| M | Aluminum Alloy | Electroless Nickel |
| NF | | Cadmium, Olive Drab |
| Z1 | Stainless Steel | Passivate |



180-102 (06) Fiber Optic Probe Adapter, Plug

Fiber optic plug probe adapter for use with 180-071 connectors

How To Order



06 Plug Adapter
U.S. PATENT NO. 5,960,137

Table I: Finish

| Code | Material | Finish |
|------|----------|---------------------|
| C | Aluminum | Anodize, Black |
| M | Alloy | Electroless Nickel |
| NF | Aluminum | Cadmium, Olive Drab |

Material and Finish

Barrel, Coupling Nut, Rear body: See Table I
Retaining Clips: Copper Alloy
Misc. Hardware: Stainless Steel/Passivate
O-Ring: Fluorosilicone

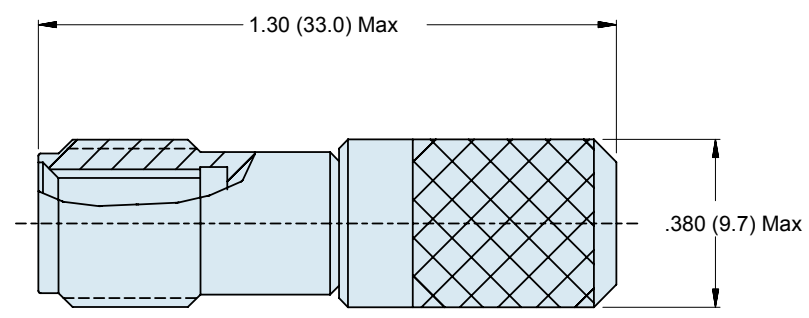
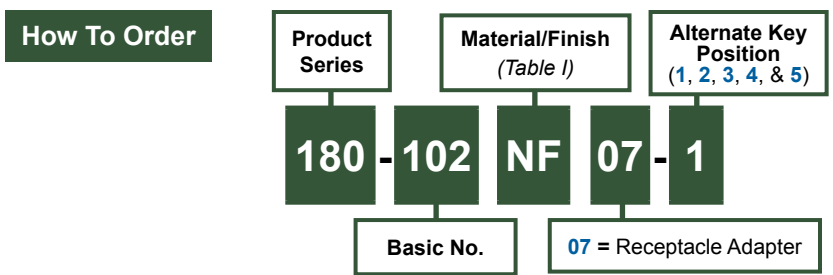
Notes

For fiber optic test probe jumper, see Glenair drawing ABC54705

180-102 (07) Fiber Optic Probe Adapter, Receptacle



Fiber optic receptacle probe adapter for use with 180-071 connectors



07 Receptacle Adapter
U.S. PATENT NO. 5,960,137

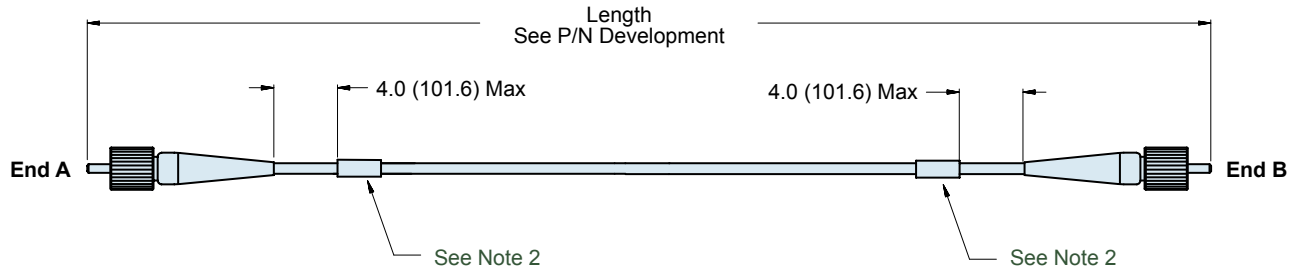
| Table I: Finish | | |
|-----------------|----------|---------------------|
| Code | Material | Finish |
| C | Aluminum | Anodize, Black |
| M | Alloy | Electroless Nickel |
| NF | Aluminum | Cadmium, Olive Drab |

Material and Finish
 Shell, Rear body: See Table I
 Retaining Clips: Copper Alloy
 Misc. Hardware: Stainless Steel
 Seal: Fluorosilicone

Notes
 For fiber optic test probe jumper, see Glenair drawing ABC54705



FO1006 Fiber Optic Patch Cord Simplex



FO1006 - 1 - 1 - XXXX - 09 A

Basic Number

Connector/Terminus Type

- 0 – ST Connector, M83522/16 Style
- 1 – ST Connector
- 2 – FC Connector
- 3 – SC Connector
- 4 – Glenair Socket Terminus M29504/05 Style (181-001)
- 5 – Glenair Pin Terminus M29504/04 Style (181-002)
- 6 – SMA Connector (906)
- 7 – LC Connector
- 8 – SMA Connector (905)
- 9 – Customer Specified
- 10 – Glenair GHD Terminus (181-047)
- 11 – Glenair GFR Pin Terminus (181-012)
- 12 – Glenair GFR Socket Terminus (181-011)
- 13 – Glenair GHD Terminus, PC Only (181-056)
- 14 – Glenair Pin Terminus, M29504/14 Style (181-039)
- 15 – Glenair Socket Terminus, M29504/15 Style (181-040)

Temperature Rating

- A – -40°C to +85°C
- B – -55°C to +125°C
- C – Customer Specified (See Note 3)

Fiber Size

- 05 – 5.8/125 Singlemode
- 07 – 7.5/125 Singlemode
- 09 – 9.3/125 Singlemode
- 50 – 50/125 Multimode
- 62 – 62.5/125 Multimode
- 10 – 100/140 Multimode
- 20 – 200/230 Multimode
- 1K – 1000um Multimode
- CS – Customer Specified Singlemode
- CM – Customer Specified Multimode

Length (Inches)

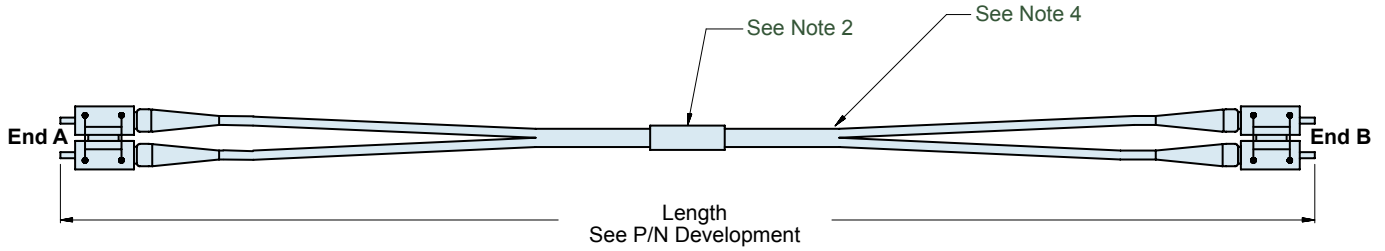
| Standard Tolerance | |
|--------------------|-----------|
| Length | Tolerance |
| 5 in to 2 ft. | +1 in -0 |
| 2 to 10 ft. | +3 in -0 |
| 10 to 50 ft. | +6 in -0 |
| 50 to 100 ft. | +1 ft -0 |
| 100 ft. and up | +2 ft -0 |

Application Notes

1. Optical performance: insertion loss to be less than 1.5 dB when measured at 850 nm wavelength for Multimode and 1310 nm wavelength for Singlemode.
2. Assy is marked with the Glenair PN in two places.
3. Temperature Rating:
 - "A" Temperature rating use TRA-BOND F113 Epoxy.
 - "B" Temperature rating use EPO-TEK 353ND Epoxy.

- "C" Temperature rating as per customer specification.
- 4. Metric dimensions (mm) are indicated in parentheses.
- 5. For angle polish, add "A" to end of Connector/Terminus Type Number (otherwise omit). Type numbers, 4, 5, 6, 8, 11, 12, 13, 14, and 15 do not allow angle polish.
- 6. For military qualified product, add "M" to end of Connector/Terminus Type number (otherwise omit). Type number 4, 5, 14, and 15 only.

FO1007 Fiber Optic Patch Cord Duplex



FO1007 - 1 - 1 - XXXX - 09 A X

Basic Number

Connector/Terminus Type

- 0 = ST Connector, M83522/16 Style
- 1 = SC Connector
- 2 = LC Connector
- 3 = MT-RJ Male Connector
- 4 = MT-RJ Female Connector
- 5 = Glenair Pin Terminus M295040/4 Style (181-002)
- 6 = Glenair Socket Terminus M29504/05 Style (181-001)
- 7 = ST Connector
- 8 = FC Connector
- 9 = Customer Specified
- 10 = GHD Terminus, PC (181-047)
- 11 = Glenair GFR Pin Terminus (181-012)
- 12 = Glenair GFR Socket Terminus (181-011)
- 13 = Left Blank for Future Use
- 14 = Glenair Pin Terminus, M29504/14 Style (181-039)
- 15 = Glenair Socket Terminus, M29504/15 Style (181-040)

X = Cross Wired TX to RX and RX to TX (MTRJ Only; See Note 5)
Omit for Normal

Temperature Rating

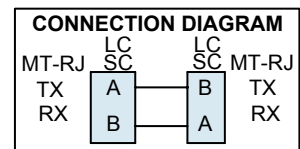
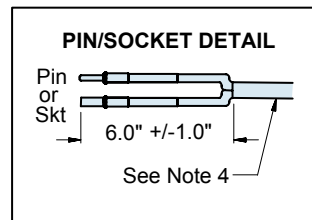
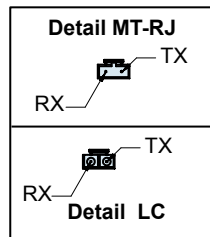
- A = -40°C to +85°C
- B = -55°C to +125°C
- C = Customer Specified (See Note 3)

Fiber Size

- 05 = 5.8/125 Singlemode
- 07 = 7.5/125 Singlemode
- 09 = 9.3/125 Singlemode
- 50 = 50/125 Multimode
- 62 = 62.5/125 Multimode
- 10 = 100/140 Multimode
- 20 = 200/230 Multimode
- 1K = 1000um Multimode
- CS = Customer Specified Singlemode
- CM = Customer Specified Multimode

Length (Inches)

| Standard Tolerance | |
|--------------------|-----------|
| Length | Tolerance |
| 5 in to 2 ft. | +1 in -0 |
| 2 to 10 ft. | +3 in -0 |
| 10 to 50 ft. | +6 in -0 |
| 50 to 100 ft. | +1 ft -0 |
| 100 ft. and up | +2 ft -0 |



Application Notes

1. Optical performance: insertion loss to be less than 1.5 dB when measured at 850 nm wavelength for Multimode and 1310 nm wavelength for Singlemode.
2. Assembly is marked with the Glenair P/N, located approx. in the center.
3. "A" Temperature rating use TRA-BOND F113 Epoxy. "B" Temperature rating use EPO-TEK 353ND Epoxy. "C" Temperature rating as per customer specification.
4. When using simplex cable apply heat shrink as needed to combine both fibers leaving approx. 6.0" on each end open.
5. MTRJ'S are connected per connections diagram unless cross wired is specified in P/N description.
6. Metric dimensions (mm) are indicated in parentheses.
7. For angle polish, add "A" to end of Connector/Terminus Type Number (otherwise omit). Type numbers, 4, 5, 11, 12, 14, and 15 do not allow angle polish.
8. For military qualified product, add "M" to end of Connector/Terminus Type number (otherwise omit). Type number 4, 5, 14, and 15 only.

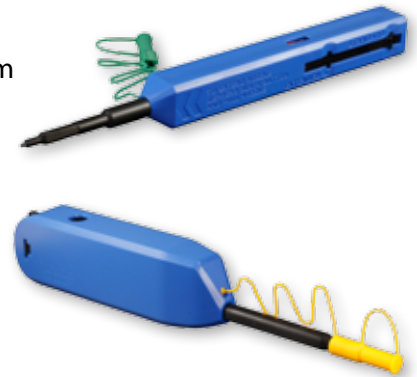


Cleaning and troubleshooting instructions for critical fiber optic systems



Dirty termini can seriously degrade the performance of any fiber optic system. Glenair stocks a full range of cleaning tools and supplies, plus a portable video bore scope inspection kit that contains a miniature inspection camera, hand-held video monitor, termini adapters and cleaning swabs. Designed for use with Glenair test probe adapters, the special adapter tip accurately aligns the inspection camera for optimum viewing. This video inspection system is intended for initial inspection and cleaning of D38999 multi-channel fiber assemblies prior to inserting Glenair test probes for optical measurement.

Glenair Dry Action Cleaning Tools are easy-to-handle fiber optic terminus cleaning devices, highly effective at removing oil and dust contamination from pin and socket termini—either inside or outside connector shells. Traditional wet-swab cleaning methods add drying time and can even introduce new contaminants to the polished terminus endface. The Dry Action Cleaning Tool's novel dry cleaning strand gently sweeps and lifts away dust and residue from the terminus end-face without the problems associated with wet swab methods. The tool features a convenient single-unit configuration and an extendable tip for easy access to installed fiber optic termini—saving time and avoiding potential additional contamination.



Glenair Terminus Cleaning

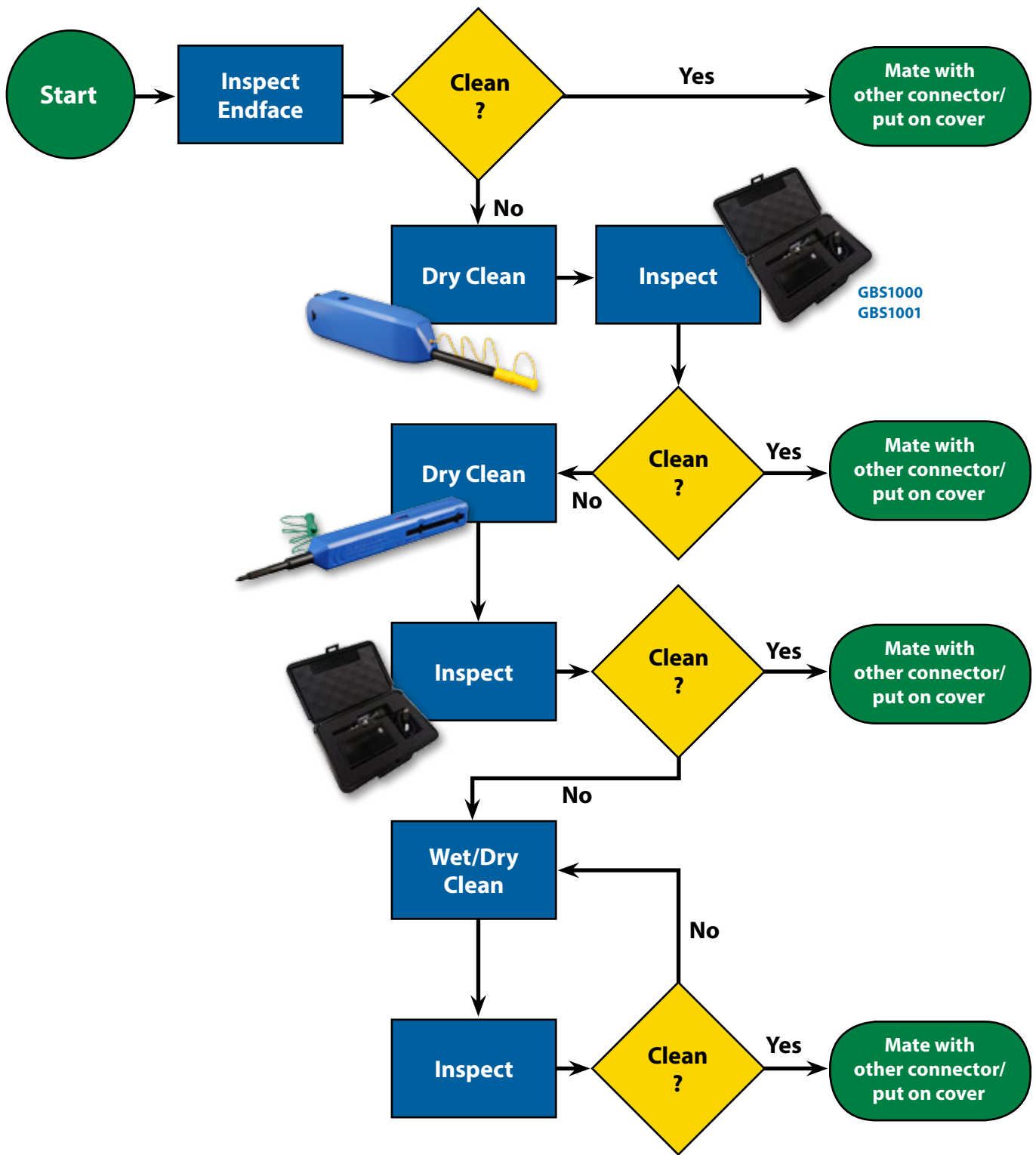
Visit our website at www.glenair.com or our youtube channel at www.youtube.com/user/GlenairInc to see complete, easy to follow step-by-step video instructions to help you clean your fiber optic termini.

We are experts at building made-to-order termination, test and cleaning kits. This chapter presents just our core capabilities. Consult our website or call the factory for made-to-order toolkits, training and process documentation.

Fiber Optic Cleaning and Troubleshooting Process Flow



Test Probes
and Kits





GBS1000 and GBS1001 Portable Fiber Optic Video Bore Scope Inspection System

Fiber optic video bore scope inspection system for MIL-DTL-38999 and other small form-factor connectors such as SC, LC, ST and FC



- **Field/Bench Use System Includes Video Display Unit, Inspection Camera and Standard 2.5 mm & 1.25 mm Patchcord Inspection Tips**
- **Tips available Use with all Common F/O Connector Types: SC, LC, ST, and FC plus MIL-DTL-38999 and Small Form Factor Connectors**
- **200X and 400X Magnification**
- **Built-in NiMH Rechargeable Battery with Automatic Shut-off Function**
- **Rugged Watertight Case**

Glenair Video Inspection System Provides The Ultimate Solution to Field Maintenance of Fiber Optic Systems

Dirty or contaminated fiber optic termini can seriously degrade the performance of a fiber optic system. But inspecting individual contacts in complex connector devices such as bulkhead feed-throughs and multi-channel Mil-Spec connectors can be a difficult and time-consuming task. The Glenair video inspection system supplies everything you need to quickly and conveniently inspect and clean butt-jointed fiber optic contacts. Optional add-ons enable turnkey integration with computer desktops, digital cameras and powerful optical test software.

How To Order

GBS1000 - U

Basic Part Number Includes:

- Handheld Inspection Monitor
- Inspection Probe (200x & 400x)
- 4 tips
- Portable Ruggedized Carrying Case
- Glenair Swabs

Optional Quick Capture

USB Module for Computer Inspection and Video Capture.

Comes with 4 tips:

- GIT-018 SC bulkhead
- GIT-011 LC bulkhead
- GIT-003 Universal 1.25mm patch cord
- GIT-002 Universal 2.5mm patch cord



GBS1000 and GBS1001 Portable Fiber Optic Video Bore Scope Inspection System



Glenair's handheld Bore Scope is a small, lightweight video microscope used to examine fiber optic end-faces. The GBS1000 displays a clear and concise live image with the ability to view fibers at either 200x or 400x magnifications. The Quick Capture GBS1000-U USB Module can be added to the GBS1000. This valuable item allows the user to inspect and capture fiber end-faces on your PC. Works great with Fiber Chek software to inspect, test and capture images. To order separately, use part number GMP-002. The dual magnification mode inherent in all Fiber Chek 2 platforms provides a large, easily centered image during handheld focusing. This greatly simplifies your ability to achieve a quality image. A high-magnification image is acquired, analyzed, and graded. Fiber Chek 2 software can analyze several zones of the fiber end-face.

| GBS1000 Specifications | |
|------------------------|------------------------------|
| Dimensions | 1.8" W x 1.7" H x 5.5" L |
| Weight | 4.08 oz / 115.6 gms |
| Video Output | NTSC or PAL |
| Light Source | Blue LED 1000,000+ hour life |
| Lighting Technique | Coaxial |
| Attenuation Filter | 2 mm thick Schott KG1 |
| Camera type | .33" CCD |

| GBS1001 Specifications | |
|------------------------|---|
| Weight | .11 Kg / .25 lb |
| Resolution | Better than 1.5 Microns |
| Cable | Integrated USB 2.0 coil cable 2.5' relaxed, 10.5' fully extended |
| Certification | CE |
| Warranty | 1 year |

GBS1001 Inspection Probe with USB Adapter and Fiber Chek 2 Software



How To Order

GBS1001

Basic Part Number Includes:

- Inspection probe with USB adapter
- 2 tips
- Fiber Chek 2 Software

Comes with 2 tips
(installed on the probe):
GIT-003 Universal 1.25mm patch cord
GIT-002 Universal 2.5mm patch cord

The GBS1001 is the only inspection probe today with a high resolution, all digital sensor and USB2 video stream which delivers high-resolution uncompressed images directly to your personal computer.

Fiber Chek Software Fiber Optic Analysis Program

Fiber Chek is an integrated hardware/software package engineered with the single purpose of critically and consistently grading fiber end-faces. Works hand in hand with the Quick Capture Analog Probe for visual inspection, taking pictures and testing fibers.

- Automatic debris and defect detection, including fine scratches
- Measures epoxy ring for out-of-tolerance conditions
- Inspection results, including image data, can be printed or archived
- Utilizes industry standards or user defined threshold settings





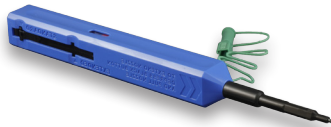
Fiber Optic Cleaning and Troubleshooting Dry Action Cleaning Tools

Dry Action Cleaning Tools

Dry action cleaning tools provide an easy way to thoroughly clean termini in all Glenair fiber optic connection systems. The dry cleaning strand gently sweeps away dust and residue without the need for solvents. Dry action cleaning tools are easy to use, durable, and crush- and impact-resistant.

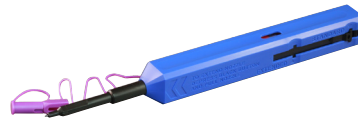
- A simple push motion engages tool
- Audible click when tool is fully engaged
- Durable—over 525 engagements per tool
- Crush resistant to over 250N
- Impact resistant to survive drops over 1.5M

Dry action cleaning tool for MIL-DTL-38999 system



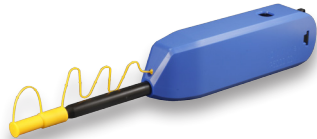
GCLT - H160

Dry action cleaning tool for GHD, NGCON, and ARINC 801 systems



GCLT - H125

Dry action cleaning tool for GFOCA system



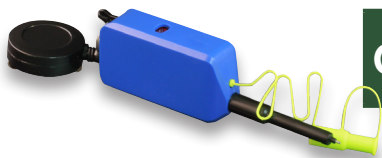
GCLT - HC250

Dry action cleaning tool for 2.0 mm MIL-PRF-28876 system



GCLT - H200

Dry action cleaning tool for D38999 #20 and Mighty Mouse #20HD systems



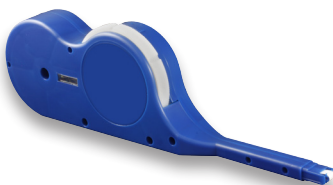
GCLT - H100

Dry action cleaning tool for SC, ST, and FC connectors



GCLT - C250

Dry action cleaning tool for MTP, MPO, MT (female and male) connectors



GCLT - MPO

Dry action cleaning tool for LC and MU connectors



GCLT - C125

Dry action cleaning tool for MT male connectors

GCLT - MTC - RE

RE = Refill Cartridge

Fiber Optic Cleaning and Troubleshooting Dry Action Cleaning Tools and Cleaning Swabs



Test Probes
and Kits



Dry Action Cleaning Tools for test adapters

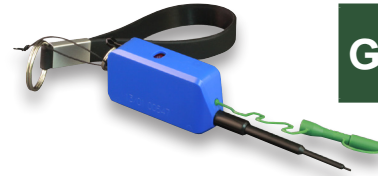
These dry action cleaning tools are configured for use with clean-through Glenair test adapters for GHD, NGCON, ARINC 801 and D38999 fiber optic connection systems.

Dry action cleaning tool for GHD, NGCON, and ARINC 801 test adapters



GCLT - HA125

Dry action cleaning tool for MIL-DTL-38999 test adapters

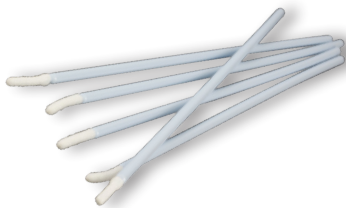


GCLT - HA160

Cleaning Swabs

Precision swabs for cleaning 1.25mm, 2.00mm, 2.5mm and Glenair 181-001 termini. Designed to work with cleaning solution to remove contaminants.

Fiber optic cleaning swab for part 181-001 socket terminus - 50 swabs/bag



187 - 024

Fiber optic cleaning swabs 1.25 mm cleotop - bag of 5 swabs



187 - 021

Fiber optic cleaning swab 2.00 mm and 2.50 mm cleotop - 5 swabs/bag



187 - 045

L



600-058 and 600-061
The Band-Master™ ATS Clamping System
Hand Banding Tools

Fast, Cost-Effective Shielding Termination

The Band-Master™ ATS 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-Master™ ATS products are in stock and ready for immediate shipment.

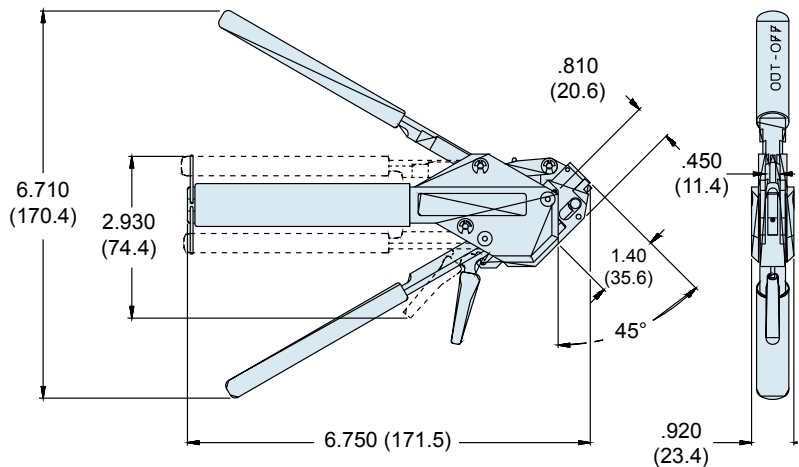


Manual Hand Tools

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. ± 5 lbs. for most shield terminations. Tool and band should never be lubricated.

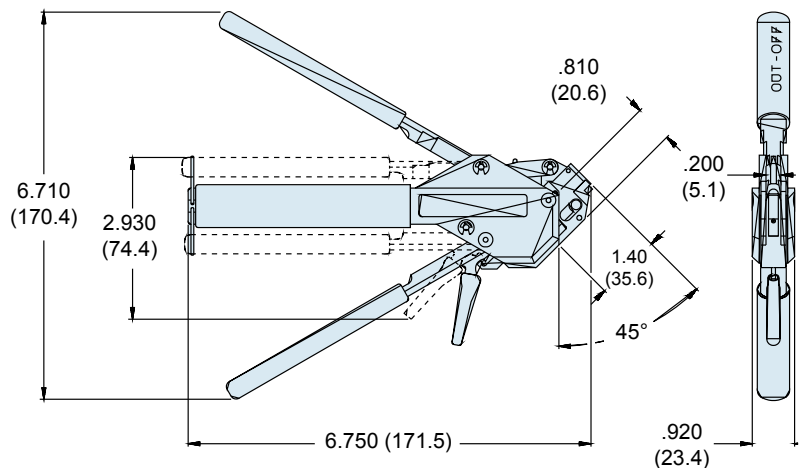
Reference: Band-Master™ ATS part number A40199.



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 75lbs +2 lbs. -7 lbs. for most shield terminations. Tool and band should never be lubricated.

Reference: Band-Master™ ATS part number A30199.

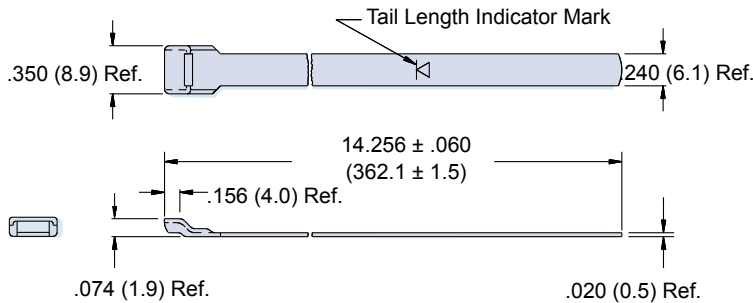


Metric Dimensions (mm) are indicated in parentheses.

600-052, 600-057, 600-090, and 600-083
The Band-Master™ ATS Clamping System
Clamping Bands



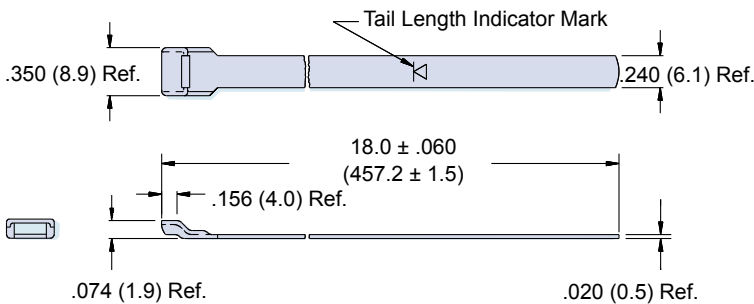
Standard Band 600-052 and Precoiled Standard Band 600-052-1



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-Master™ AT^s Part Number A10086

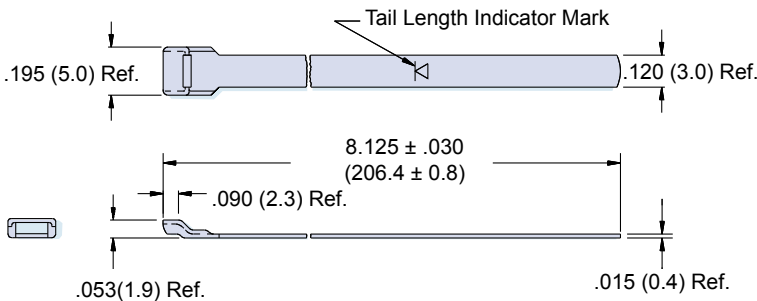
Extended-Length Standard Band 600-090 and Precoiled Extended-Length Standard Band 600-090-1



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-Master™ AT^s Part Number A11086

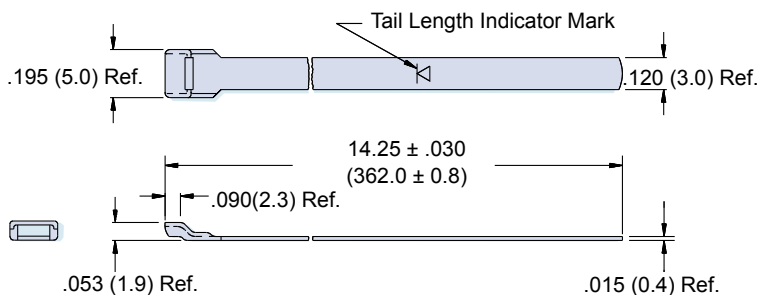
Micro-Band 600-057 Precoiled Micro-Band 600-057-1



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-Master™ AT^s Part Number A31186

Extended Length Micro-Band 600-083 Precoiled Micro-Band 600-083-1



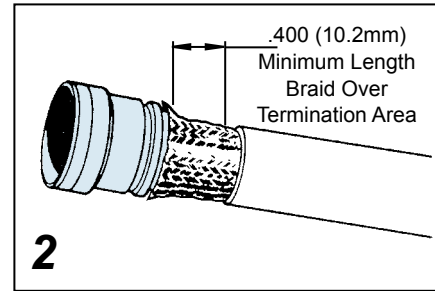
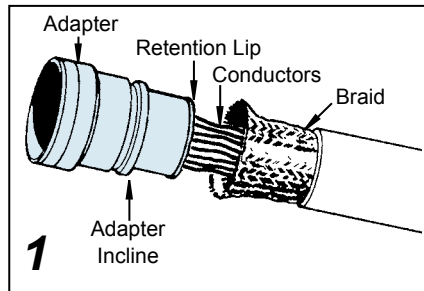
The 600-083 Extended Length Micro-Band is precision constructed of 300 Series SST/Passivate, and designed for use with the 600-061 Hand Banding Tool or the 600-068 Pneumatic Banding Tool. Double-wrapped bands will accommodate diameters up to approximately 1.88 inches (47.8). Bands may be ordered flat (600-083), or precoiled (600-083-1). Bands come bagged and tagged in quantities from 1 to 100.

Reference: Band-Master™ AT^s Part Number A31089.

Metric dimensions (mm) are indicated in parentheses. Consult factory for diameters above 2.5 inches (63.5).

The Band-Master™ ATS 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.)

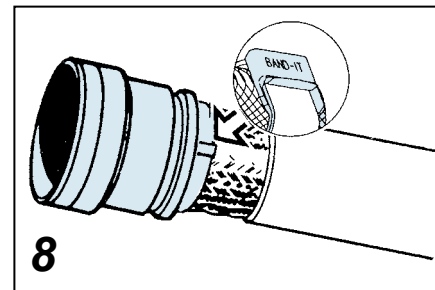
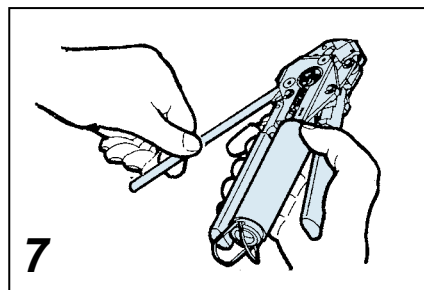
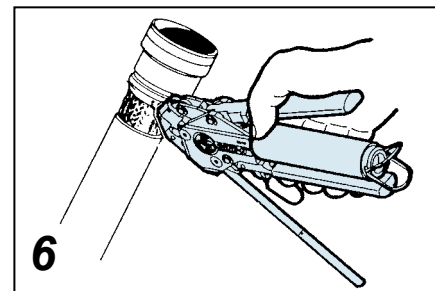
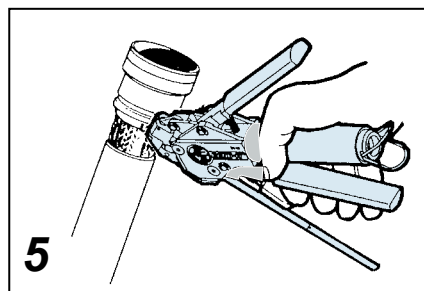
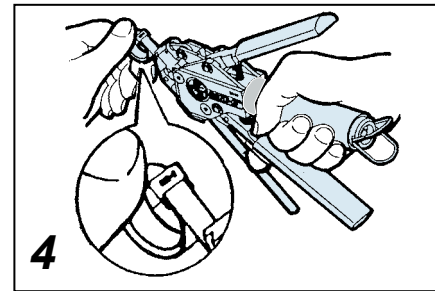
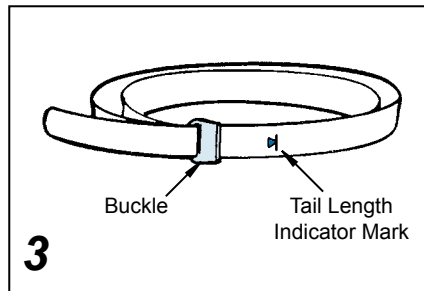
B. Pull on Band until Mark (▷) is within approximately .250 inch (6.4mm) of Buckle Slot (Figure 3). The Band may be tightened further if desired.

NOTE: Prepared Band should have (▷) Mark visible approximately where 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.

Glenair Fiber Optic Custom Tooling Request



Please submit the following form, and a Glenair fiber optic specialist will contact you shortly to discuss in greater detail (required fields are indicated with an *).

Name* _____
first last

Company Name _____

Company Address _____

E-mail* _____ **Phone** _____

What market segment are you in?

- Mil-aero
- Aerospace
- Armored vehicle
- Naval and marine
- Rail industry

Which termination process is applicable to you?

- Terminating copper cables in a lab
- Terminating copper cables on-site
- Terminating fiber optic cables in a lab
- Terminating fiber optic cables on-site
- No termination activities

What kind of fiber do you plan to use?

- Single mode
- Multi mode
- Both

What kind of termini will be terminated?

- MIL-PRF-29504/4 and /5
- MIL-PRF-29504/14 and /15
- Commercial ST
- Commercial LC
- Commercial SC
- Other

If other, please describe: _____





Glenair Fiber Optic Custom Tooling Request

Which process do you want to perform?

- Repair, termination, cleaning, inspection, and testing
- Cleaning, inspection, and testing
- Cleaning and inspection
- Insertion and return loss
- Insertion loss test
- Return loss test

Does the kit need to have battery power? Yes No

Do you want to perform end face inspection?

- Yes. Via video bore scope and storage of data
- Yes. Via visual front face inspection with no storage of data
- Yes. Via an interferometer for symmetry measurements
- No end face inspection needed

Does a laptop need to be included in the testing kit? Yes No

What is the preferred case configuration?

- Hard-side case
- Back pack
- Other

If other, please describe: _____

What is the skill level of the operator?

- Highly trained
- Infrequent operator
- No formal training

Do you need a formal training?

- Yes, I would like to be trained in fiber optic termination
- No, I do not require additional training

Please mark the subjects Glenair need to take into account (Check all that apply)

- Repair, termination, cleaning, inspection, and testing
- Cleaning, inspection, and testing
- Training held on customer's premises
- Training held in U.S.A. (Glendale, CA)
- Training held in Europe (Bologna, Italy)
- Training held in UK (Mansfield)
- Other

If other, please describe: _____

Fiber Optic Operation

Today, the use of fiber optic systems to carry digitized video, voice and data is universal. In business and industry, fiber optics have become the standard for terrestrial transmission of telecommunication information. In military and defense, the need to deliver ever larger amounts of information at faster speeds is the impetus behind a wide range of retrofit and new fiber optic programs. Although still in its infancy, fly-by-light flight control systems may someday replace fly-by-wire systems with cabling which is lighter, smaller and safer. Fiber optics, combined with satellite and other broadcast media, represents the “new world order” for both commercial telecommunications as well as specialized applications in avionics, robotics, weapon systems, sensors, and transportation.

Functionally, fiber optic systems are similar to the copper wire systems they are rapidly replacing. The principle difference is that fiber optics uses light pulses (photons) to transmit data down fiber lines, instead of electronic pulses to transmit data down copper lines. Other differences are best understood by taking a look at the flow of data from point to point in a fiber optic system.

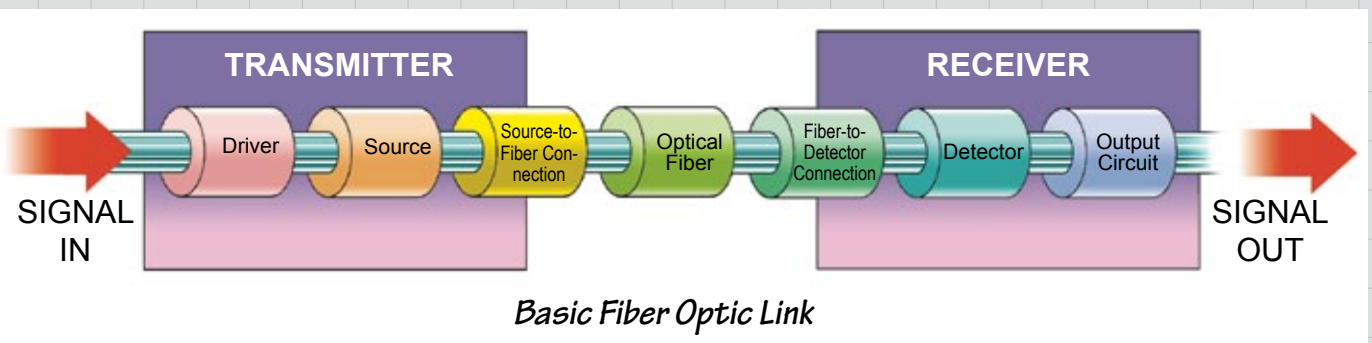
The “encoding” side of an optical communication system is called the transmitter. This is the place of origin for all data entering the fiber optic system. The transmitter essentially converts coded electrical signals into equivalently coded light pulses. A light-emitting diode (LED) or an injection-laser diode (ILD) is typically the source of the actual light pulses. Using a lens, the light pulses are funneled into the fiber optic connector (or terminus), and transmitted down the line.

Light pulses move easily down the fiber optic line because of the principle of “total internal reflection,” which basically holds that whenever the angle of incidence exceeds a certain value, light will not emit through the reflective surface of the material, but will bounce back in. In the case of optical communications systems, this principle makes it possible to transmit light pulses down a twisting and turning fiber without losing the light out the sides of the strand.

At the opposite end of the line, the light pulses are channelled into the “decoding” element in the system, known as the optical receiver or detector. Again, the actual fiber to detector connection is accomplished with a specialized fiber optic connector/terminus. The purpose of an optical receiver is to detect the received light incident on it and to convert it to an electrical signal containing the information impressed on the light at the transmitting end. The information is then ready for input into electronic based devices, such as computers, navigation control systems, video monitors and so on.

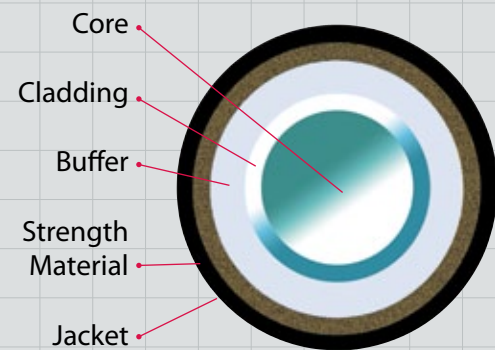
Cable Construction

There are typically five elements that make up the construction of a fiber optic cable: the optic core, optic cladding, buffer, strength member and outer jacket. The optic core is the light-carrying element at the center of the optical fiber. It is commonly made from a combination of highly purified silica and germania. Surrounding the core is the optic cladding made of pure silica. The combination of these materials makes the principle of total internal



Basic Fiber Optic Link

Fiber Optic Cable Cross Section



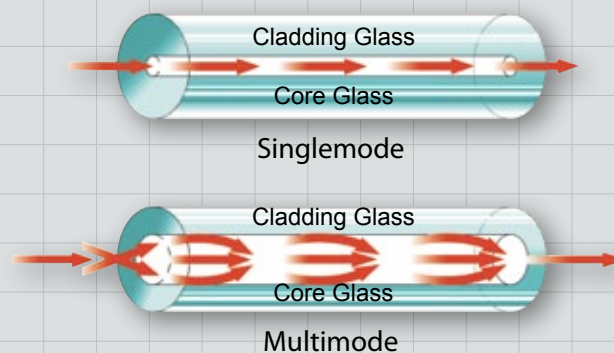
reflection possible, as the difference in materials used in the core and the cladding creates an extremely reflective surface at the point where they interface. Light pulses entering the fiber core reflect off the core/cladding interface and thus remain within the core as they move down the line.

Surrounding the cladding is a buffer material which acts as a shock absorber to protect the core and cladding from damage. A strength member, typically Aramid, surrounds the buffer adding critical tensile strength to the cable to prevent damage from pull forces during installation. The outer jacket protects against abrasion and environmental damage. The type of jacket used also defines the cable's duty and flammability rating.

Rays of light passing through a fiber do not travel randomly. Rather, they are channeled into modes—the thousands of possible paths a light ray may take as it travels down the fiber. A fiber can support as few as one mode and as many as tens of thousands. The number of modes in a fiber is significant because it helps determine the fiber's bandwidth. Multimode fiber has a much larger core than singlemode fiber, allowing hundreds of rays of light to propagate through the fiber simultaneously. Singlemode fiber has a much smaller core, allowing only one mode of light to propagate through the core. Paradoxically, the higher the number of modes, the lower the bandwidth of the cable. The reason is dispersion.

“Modal” dispersion is caused by the different path lengths followed by light rays as they bounce down the fiber (some rays follow a more direct route down the middle of the fiber, and so arrive at their destination well before those rays which waste their time bouncing back and forth against the sides). “Material” dispersion occurs when different wavelengths of light travel at different speeds. By reducing the number of possible modes, you reduce modal dispersion. By limiting the number of wavelengths of light, you reduce material dispersion.

Core Diameters and Their Effect on Modal Dispersion



Singlemode fibers are manufactured with the smallest core size (approximately 8 - 10 um in diameter) and so they eliminate modal dispersion by forcing the light pulses to follow a single, direct path. The bandwidth of a singlemode fiber so far surpasses the capabilities of multimode fiber that its information-carrying capacity is essentially infinite. Singlemode fiber is thus the preferred medium for long distance and high bandwidth applications.

Multimode fiber is generally chosen for applications where bandwidth requirements fall below 600 MHz. Multimode fiber is also ideally suited for short distance applications such as interconnect assemblies used within a single premise or contained space. Because of its larger size, multimode fiber is easier to polish and clean than singlemode, a critical concern in interconnect applications which expose the polished ends of the fibers to debris during connector mating and unmating.

Military Standards

The layout and configuration of a fiber optic system can vary widely based on the application environment. Commercial telecommunications systems, for example, typically feature extremely long backbone cables, spliced fiber interstices, and inexpensive ST type connectors at the many termination points in the system. The connectors used in such applications are typically commodity solutions geared to the low to moderate performance and reliability requirements of that industry. At the other end of the spectrum, fiber optics deployed in military avionics take the form of highly engineered interconnect harnesses and/or multi branch conduit systems. The connectors used in such applications accommodate multiple fiber optic cables and typically utilize precision contacts, or termini, as the primary mechanism for aligning and connecting the optical fibers.

In many such aerospace applications, fiber optics are being employed as replacements or upgrades to existing copper conductor cable harnesses servicing existing black-box flight deck equipment, weapon systems, surveillance cameras, sensors, and so on. In all applications of this caliber, the new fiber optic system must adhere to the same rigorous qualification standards and performance requirements that applied to the legacy electrical systems.

For this reason, the design, configuration and packaging of fiber optic interconnects has closely mirrored existing military standards, such as those covering interconnect mateability, accessory interface dimensions, material finishes, and so on. The design of fiber optic termini, special purpose backshells and other accessories is similarly controlled by existing packaging requirements and interconnect industry dimensional standards.

High-Reliability Connectors

Such connectors also have a bottoming surface design for reliable shell-to-shell bottoming. This

Glenair's High-reliability fiber optic connectors, such as our D38999 style products, are built to ensure precise optical alignment of optical fibers. Connector polarization keys, keyways and optical cavities are manufactured to tighter tolerances than required by general commercial specifications to reduce radial misalignment and insertion loss.

ensures the linear dimensional relationship of the contact termini are the same after each connector mating because the connector effectively seats at a predetermined location each and every time. This location, or datum surface, provides a reference location back to the terminus retention clip. The pin and socket location is dimensioned from this stable bottom to achieve a repeatable and reliable connection. Conductive surface plating ensures EMI/RFI penetration into the electronics equipment area is effectively cut off. Precision molded shells and insulators provide closely controlled dimensions with little variability from one part to the next.

Fiber Optic Interconnect Termini

Fiber optic connectors are designed to be connected and disconnected many times without affecting the optical performance of the fiber circuit. Connectors can be thought of as transition devices which make it possible to divide fiber optic networks into interconnected subsystems and to facilitate the attachment of individual branches of the system to a transmitter, receiver or another fiber. The MIL-DTL-38999 connector is currently the most commonly specified multi-pin cylindrical interconnect in both fiber and copper conductor aerospace applications. When used to connect multiple strands of fiber simultaneously, the D38999 connector functions as a container or shell for the precision termini which perform the actual marriage of the fiber strands.

Over the past two decades there have been dramatic tolerance improvements in terminus design to ensure precise, repeatable, axial and angular alignment between pin and socket termini within the connector shell. Ferrule design, critical to the performance of

Fiber Optic Terminology:

Attenuation

Loss or decrease in power from one point to another in a fiber optic cable.

Bandwidth

The information carrying capacity of an optical fiber, expressed in MHz/km. The measure is dependent upon wavelength and type of light source.

Attenuation Limited Operation

The condition in a fiber optic link when operation is limited by the power of the received signal (rather than by bandwidth or by distortion). Attenuation is usually measured in decibels per kilometer (db/km) at a specific wavelength. The lower the number, the better the fiber.

Bandwidth Limited Operation

The condition prevailing when the system bandwidth, rather than the amplitude of the signal, limits performance. The condition is reached when modal dispersion distorts the shape of the waveform beyond specified limits.

Bend Radius

Radius a fiber or fiber optic cable can bend before breaking or suffering increased attenuation.

Decibel (dB)

Unit for measuring the relative strength of a signal. The same unit is utilized to measure insertion loss.

the termini, has traditionally relied on a machined stainless steel ferrule incorporating a precision micro-drilled hole. Glenair's fiber optic termini for D38999 Series III connectors are qualified to MIL-PRF-29504/4 and /5 requirements. Unique precision ceramic ferrules, with concentricity and diametric tolerances controlled within a micron (.00004 of an inch), meet the needs of high bandwidth and low allowable insertion loss applications. Glenair's ferrules are approximately 10 times more accurate than alternative designs, and have reduced insertion loss values from 1.5dB to less than .5dB.

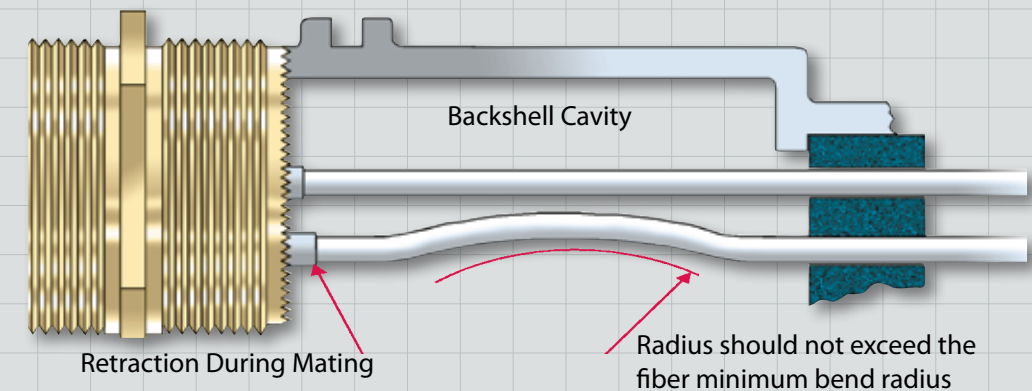
Glenair custom single and multichannel fiber optic connectors utilize the latest composite thermoplastic materials technology and are designed for use with Glenair's family of fiber optic connector accessories.

Fiber Optic Backshells

Fiber optic strands are robust and reliable. But they may not be manhandled (clamped, bent, or crushed) with the same vigor one might employ when working with a fat copper conductor. For this reason, fiber optic connector and cable accessories are designed to reduce bending and to eliminate compression forces. Needless to say, conventional connector backshells such as cable clamps and strain reliefs which apply compression forces directly to the cable, are not appropriate for use in fiber optic assemblies. Likewise, accessory elbows, conduit transitions, and other fittings which subject fiber optic cables to abrupt changes in direction beyond the acceptable bend radius of the fiber are equally risky. In both cases, the dangers are either outright breakage of the fiber optic core or attenuation of the optical signal.

Glenair's composite thermoplastic fiber optic accessories—including elbows, transitions and end-bells—are designed with smooth 45° or 90° bends to insure the non-abrupt routing of the cable. Composite Qwik-Clamps and heat shrinkable boots provide strain relief without applying severe compression to the cable. Glenair's cable overmolding capability enables the integration of unique straight or angular shapes directly into the

Termini Retraction and Its Effect On Micro-Bending



cable to insure the best possible fiber position and alignment.

Glenair's FiberCon® Backshells are specifically designed to meet the unique requirements of the media. For both single fiber leads as well as multichannel applications, FiberCon® provide full support and vibration dampening while allowing the fiber to "float" as required to eliminate micro-bending. Fiber optic terminations differ from electrical in one critical way: during connector mating the fiber optic spring-loaded socket or pin retracts from .040 to .080 inches. It is critical that the backshell design accommodates this movement within the shell cavity to prevent data loss due to micro bending which leads to localized light refraction. The unique rubber support grommet utilized in Glenair's design employs the same layout pattern as the connector shell—providing both necessary axial alignment, as well as strain relief and float.

Fiber Optic Costs and Benefits

When evaluating the costs and benefits of moving to fiber, it is important to adopt both a short and long term view. In the short term, it is arguably less expensive to simply continue using copper cabling to meet an incremental expansion of data communication needs. This avoids the expense of adding the transmitters, converters, repeaters, connectors, termini, receivers and so on needed for integrating optical fiber into an existing electronic system.

(Continued from Page M-4)

Fiber Optic Terminology:

Ferrule

A small alignment tube attached to the end of the fiber and used in connector termini. Generally made of stainless steel, ceramics, or zirconia, the ferrule is used to confine and align the stripped end of the fiber.

Fresnel Reflection Loss

Reflection losses incurred at the input and output points of optical fibers due to the difference in refractive index between core glass and immersion media.

Insertion Loss

Attenuation caused by the insertion of an optical component; in other words, a connector terminus or coupler in an optical transmission system.

Light

In the laser and optical communication fields, the portion of the electromagnetic spectrum that can be handled by the basic optical techniques used for the visible spectrum.

(Continued from Page M-5)

Fiber Optic Terminology: Misalignment Loss

The loss of power resulting from axial misalignment, lateral displacement, and end separation.

Optical Time Domain Reflectometer (OTDR)

Testing system for fiber strands in which an optical pulse is transmitted through the fiber and the resulting backscatter and reflections are used to estimate attenuation and identify defects and the sources of localized losses.

Source

The means used to convert an electrical information carrying signal to a corresponding optical signal for transmission by fiber. The source is usually a Light Emitting Diode (LED) or Laser.

Transceiver

An electronic device which has both transmit and receive capabilities.

Transducer

A device for converting energy from one form to another, such as optical energy to electrical energy.

Transmission Loss

Total loss encountered in transmission through a system.

Transmitter

An electronic package which converts an electrical signal to an optical signal.

Taking the long view, investing in the conversion to fiber optics often makes good sense, especially given the performance benefits—EMI immunity, security, weight reduction, bandwidth, etc.—as well as cost-of-ownership factors such as reduced cable maintenance costs and ease of installation. The ability to more easily accommodate future bandwidth requirements as well as the ability to incorporate redundant fibers for improved safety and reliability further reduces the long-term cost-of ownership. Glenair has worked closely with engineers on a broad range of programs—from the F-22 to the RAH-66 Helicopter—to analyze system requirements and to design high-reliability fiber optic solutions that meet both short and long term cost requirements, and the life-cycle projections for the application.

Fiber Optic Connector and Cable Packaging

The packaging and layout of a fiber optic interconnect assembly can vary widely depending on the application environment. Fiber optics deployed in military avionics, for example, may take the form of a simplex pigtail connector assembly when fiber is used to interconnect the optical transmitter/receiver inside an equipment enclosure to the outside world via a panel mounted receptacle connector or feed through adapter (see picture, opposite page). Rugged, environmental applications, such as a weapon interconnect cable intersecting a fuel tank may require more ruggedized cable construction. Long-run, point-to-point fiber optic cabling in battlefield or secure bunker applications are typically cabled in spools with hermaphroditic connectors.

Specialized interconnect technologies, including unique backshells, conduit transitions, fiber alignment grommets and so on are regularly employed by Glenair to ensure the fiber optic media is protected from environmental and physical damage, and meets the installation and repairability requirements of the application. The following guide to fiber optic interconnect packaging provides an overview of the most common layouts used in high-reliability applications:

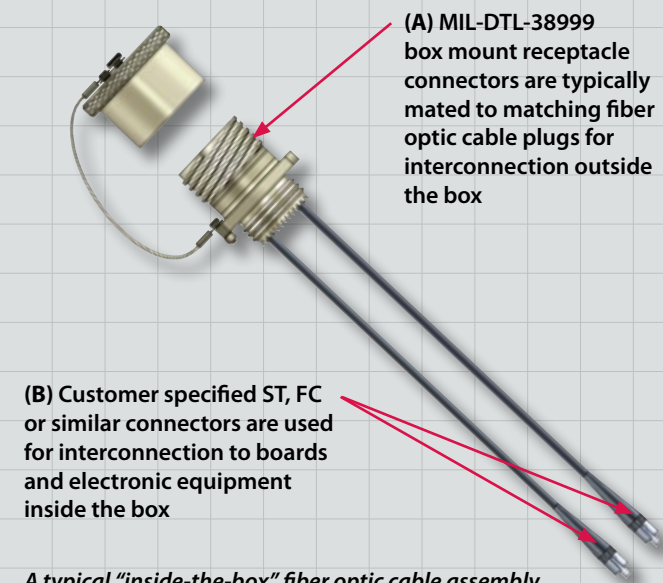
Packaging Solutions for Inside the Box

When fiber leads are used within equipment enclosures or other protected environments, the interconnect assembly generally looks something like the figure below: a wall mount or jam nut mount receptacle connector ("A") with simplex fiber leads. This receptacle connector is used to penetrate the enclosure and mate to the external environmental plug connector.

The simplex leads within the protected enclosure commonly route to the transceiver optical device, and are terminated to common commercial connectors such as ST, FC, SC, LC (or other) connectors at the "B" end.

Glenair can also supply pigtail assemblies of this type with a FiberCon® backshell and/or a protective length of conduit. This design approach ensures strict alignment of the fiber strands to the connector, optimum strain relief to the individual fibers as well as crush protection.

The use of a short length of conduit and a small end-bell fitting is recommended in applications where a heat or abrasion source within the box may



(A) MIL-DTL-38999 box mount receptacle connectors are typically mated to matching fiber optic cable plugs for interconnection outside the box

(B) Customer specified ST, FC or similar connectors are used for interconnection to boards and electronic equipment inside the box

A typical "inside-the-box" fiber optic cable assembly. Cables of this type are now available as a standard short-lead catalog product from Glenair.

damage the fiber media. In most cases, analysis of the available space is critical to ensure such interconnect hardware does not interfere with the electronics package inside the box. This basic packaging is appropriate for any equipment—such as a radar, camera, shipboard console, antenna and so on—with an internal fiber wire servicing an optical transmitter/receiver.

Glenair can supply the complete interconnect assembly, including the connector, termini, fiber, optional backshell fittings and conduit. Glenair's ASAP Fiber Optic Cable Sets are specifically designed for applications of this type.

Packaging Solutions for External Point to Point Applications

While inside-the-box applications may be conveniently terminated in the field during the installation of the electronic equipment, other fiber optic interconnect cables lend themselves to factory termination and assembly. This is due to the rugged nature of the environments in which they are used. When fiber optic cables need to withstand rough handling, caustic and corrosive fluids or other sources of physical or environmental stress, the interconnect package needs to be extremely tough, and the cables are generally factory-terminated with the appropriate protective materials. Factory assembly is also called for when there are no restrictions or impediments to providing a pre-built harness or assembly, such as unpredictable distances between bulkheads or other site-specific routing problems. Factory-terminated fiber optic cables are typically multichannel, with sometimes as many as 30 fiber optic channels. Examples include ship-to-shore phone/data cables, fuel cell cable harnesses, intra-car railway cables, and other harsh environmental applications.

The range of performance requirements for rugged, external cables includes strain-relief, environmental sealing, high tensile pull, crush resistance and chemical resistance. Electromagnetic shielding can also be a requirement in hybrid copper/fiber cables. Packaging generally takes three forms:

(1) Overmolded cable harnesses, (2) Metal-core or

polymer-core conduit assemblies, and (3) Armored cable equipped with environmental and/or shield terminating backshells.

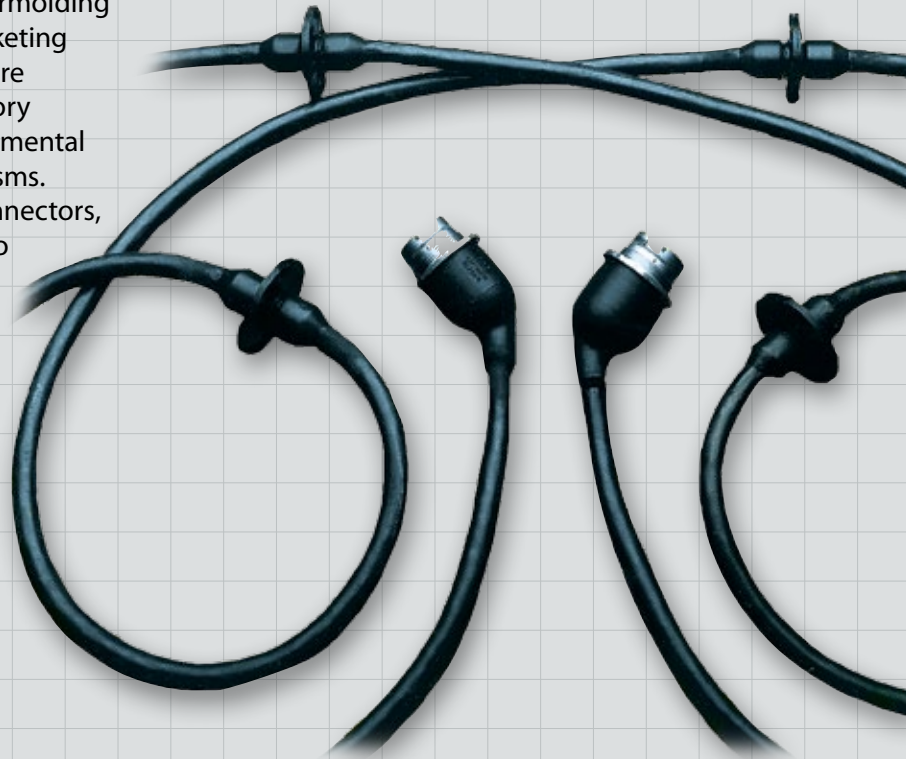
Overmolded Harnesses

Overmolded designs are specified when field repairability is not an anticipated requirement and harsh environmental and mechanical stress conditions warrant extra protection of the fiber media and terminations. Overmolding technology employs specialized tooling to construct ruggedized, sealed transitions between the cable and the connector and any transition hardware. Overmolding is ideally suited for complex multi-leg harnesses because the many transitions are otherwise difficult to seal with conventional shrink-boots. Overmolding typically uses environmentally resistant jacketing such as Polyurethane. Overmolded cables are extremely rugged and can protect the factory terminations from a broad range of environmental and mechanical stress generation mechanisms. Glenair can integrate its own fiber optic connectors, backshell accessories, termini and cable into such cables—providing a complete, turnkey system. Glenair also offers point-to-point overmolded cable sets with plug-to-plug, plug-to-receptacle and receptacle-to-receptacle connectors as a standard catalog offering. And because termini retraction is a critical requirement of MIL-DTL-38999 type connectors, Glenair's unique fiber-optic backshells which facilitate termini retraction and eliminate micro-bending are a critical component in every overmolded cable.

Conduit Assemblies

Conduit is a perfect material for the protection of fiber optic media and for the construction of factory-terminated assemblies. As a wire protection material, conduit has a number of unique advantages over other packaging, such as armored cable and even overmolding. First and foremost, conduit systems offer greater flexibility than other

ruggedized designs. This is critical in applications such as intra-car railway data transmission lines where the ability of the harness to flex and bend with the repetitive motion of the rail car is a critical requirement. Conduit is also known for its excellent pull strength, high crush resistance, and relative light weight. Perhaps most important, conduit fittings and transitions can more easily be opened for repair or to expand the number of fiber lines. Additionally, conduit assemblies make use of a wide range of existing fittings and transitions, including lightweight composite versions, to meet virtually any configuration and lay-up requirement.



Glenair high-temperature overmolded cable assemblies are ideally suited for fiber optic and hybrid fiber/copper applications in exposed, harsh environments. Overmolding of fiber is a unique Glenair strength, and has been utilized as a packaging solution in such diverse applications as fighter jet fuel-cell cables and roof-top telecommunication cabling.



Conduit provides an ideal packaging media for fiber optic cables. The material is highly flexible and can be terminated at the factory with a wide range of shielding, jacketing and other specialized materials. Conduit may be opened for maintenance and repair or to expand the number of lines.

Glenair offers complete in-house capabilities for the construction of fiber optic conduit assemblies. In addition to helically molded polymer materials, we also offer a metal-core conduit product which provides unmatched crush-resistance and EMI protection (for hybrid copper/fiber applications). Both styles of tubing may be outfitted at the factory with braided shielding and external jacketing, or supplied as discrete components for customer assembly. Glenair manufactures all the necessary branched transitions and fittings for every connector and/or feed through configuration.

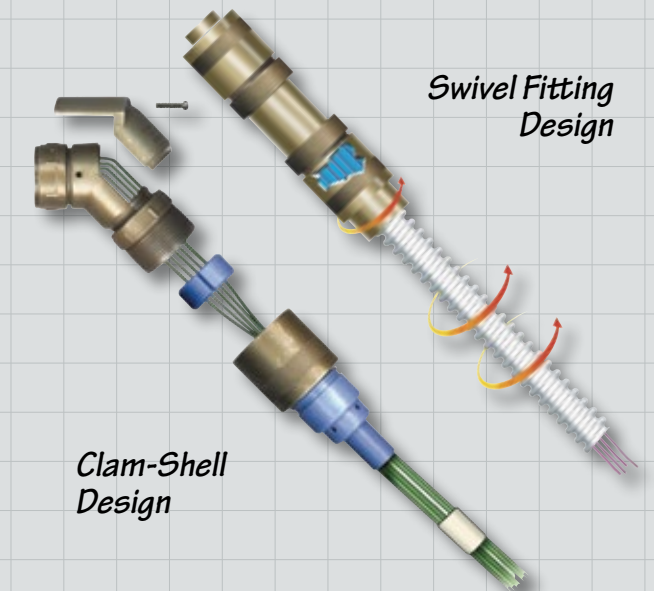
Reinforced Cable/Backshell Assemblies

Reinforced extruded cable provides a third packaging option for rugged application environments. Multichannel fiber optic cable is available in a broad range of designs. Depending on customer requirements for fiber type, strength members, jacketing material and other component-level options.

Glenair can extrude short-run fiber optic cable for

most high-performance applications. The cable becomes the backbone of this packaging solution. A ruggedized, environmental backshell is an equally key component in the armored cable assembly. Such backshells allow for the termination of overall shielding, the provision of additional strain-relief and/or environmental protection of the cable to connector transition.

But the most important design consideration behind the use of such specialized backshells is the ability to provide some level of repairability to the assembly. Unlike overmolded solutions, the reinforced extruded cable/backshell package allows maintenance technicians to open the cable for field service. Backshells are selected for functionality (strain-relief, shield termination, and so on) and for compatibility with the chosen connector. Glenair is able to provide turnkey assemblies of this type as well as all the discrete components—from the extruded cable to the backshells, connectors, termini, dust-caps and other fiber optic interconnect accessories.



The fiber optic backshell pictured above on the left features a unique "clam shell" opening, as well as a tensioning device to prevent overtightening of the backshell clamp. The assembly pictured on the right features a unique swivel fitting to prevent cable torque from affecting fiber alignment. Both are suited for use with standard extruded cable or conduit.

Packaging Solutions for Field Termination

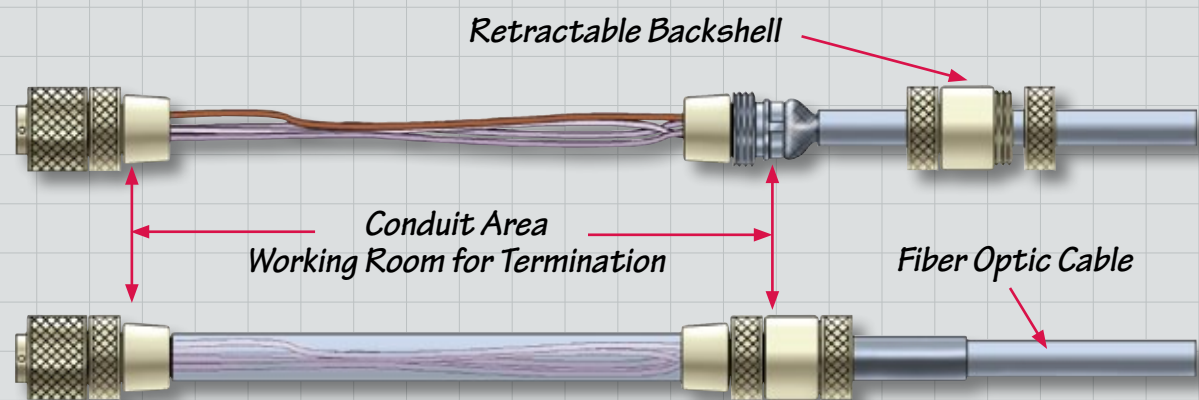
The third major packaging category for fiber optic interconnect applications covers those situations in which a pre-assembled cable or harness cannot be used due to the difficulty of cable installation and routing. A classic example is found in shipboard installation, where the fiber optic cable often has to travel a great distance between the various equipment components in the system. A below-deck control room, for example, may rely on sensors or communications equipment located on the mast of the ship. Between these two elements lies a complicated maze of deck-plating, impenetrable bulkheads and kick-pipes.

Obviously, it would be impossible to install a factory-terminated assembly into this maze of holes and walls. So, long (trunk) cable runs are completed from point "A" to point "B" and the termination of the fiber optic connector is completed on site at each end of the cable. The challenge is to provide technicians with the ability to strip back an adequate length of the cable to complete the individual fiber line terminations as well as some subsequent way to protect the stripped-back cable from environmental damage.

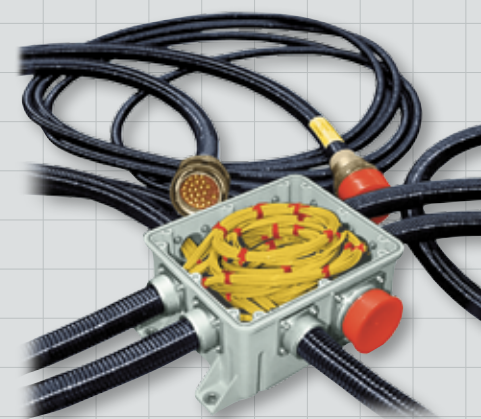
One solution to the problem is to mount a junction box at each end of the system and bring the trunk cable into the box for subsequent termination of the contacts and protection of the media. Such junction boxes also aid in the routing and storage

of the fiber leads. The boxes may be positioned in a centralized location to provide service to multiple pieces of electronic equipment. Additionally, long lengths of stripped cable can be sealed away in the box for subsequent repair and maintenance. Typical box configurations feature either convoluted tubing and environmental feed-through fittings, or in-line and box-mounted fiber optic connectors. Glenair is uniquely positioned to provide integrated fiber optic cable junction boxes of this type. Our line of CostSaver Composite Junction Boxes are specifically designed for use in harsh EMI and environmental applications where field termination of fiber media is a difficult and cumbersome operation.

Glenair's background in providing fiber optic interconnect solutions for the navy has led to the development of some completely unique solutions for the field termination of fiber. Glenair offers a unique backshell and conduit assembly that perfectly suits this requirement. As the illustration below depicts, the Glenair retractable backshell and conduit assembly provides all the working room necessary for easy field termination of fiber.



FIBER OPTIC APPLICATION EXAMPLES



Interconnect Junction and Media Storage

In this application, Glenair was able to provide a complete, turnkey interconnect assembly which included both the light-weight composite junction box, as well as the conduit, fittings, fiber optic connectors and termini. Termination and test of the fiber media and installation of all fittings was completed at the factory to ensure quality and to facilitate fast installation in the field. The box doubles as an environmentally controlled storage area for additional lengths of fiber-optic cable. In the event a termination is damaged, both the conduit and box may be opened to access the termini and the wire-loops for easy repair.

Fly-by-Light

Front-line aircraft are now integrating fiber optic media into their avionic and flight control systems. Glenair's CostSaver Composite Boxes are being used as interconnect junction boxes in fiber optic systems, and as instrument cases in high-speed fiber optic data systems. The innovative products, including composite MIL-DTL-38999 type Series III Connectors, MIL-PRF-29504 qualified termini, Glenair extruded fiber optic cable, as well as feed-through fittings and adapters are all chosen for their ability to reduce the size and weight of the interconnect package while improving the safety, reliability and performance of the flight control system.



Reduced Form Factor Copper to Fiber Media Conversion

The broad utilization of fiber optics in airframe applications, such as for in-flight entertainment and other complex electrical/optical interconnect systems, currently demands transmitter and receiver solutions that are reduced in size and weight. Designed for use in protocol-specific application environments such as IEEE 802.3-2005 GB Ethernet, these small form-factor copper-to-fiber media converters reduce weight and complexity while still meeting shock, vibration, and fiber-link distance requirements of traditional F/O transmitter/receiver equipment. In addition to 100BASE-T and DVI compliant converters, many IFE applications are able to utilize optoelectronic contacts in transmitter and receiver roles directly incorporated into ARINC 801 and other standard airframe connector packages. These ultra-lightweight transmitter/receivers are designed for the rigors of in-cabin use and multiple electrical to fiber optic junctions. The technology supports GB Ethernet, AFDX, Fibre Channel, DVI, HDMI and more.





The Glenair Eye-Beam™ Fiber Optic Revolution

Fiber optic systems carrying digitized video, voice and data continue to multiply. High-speed fiber optic interconnect technologies enable specialized applications in avionics, robotics, weapon systems, sensors, space and other high performance environments. Precision-engineered fiber optic contacts, or termini, are the key to delivering low data loss and reliable, repeatable performance in fiber optic connection systems.

The advantages of a connection system that can transmit the equivalent of 24,000 telephone calls simultaneously through fibers thinner than a human hair go beyond this mind-boggling data transmission rate. Fiber optic systems save size and weight, are immune to EMI interference, are electrically isolated for spark-free performance, and transmit signals that are nearly impossible to intercept for enhanced security.

The challenge for many fiber optic applications is environmental. With data transmitting through a fiber core only 9.3 microns in diameter, a single speck of dust on a conventional butt-joint contact terminus could completely disrupt transmission. This might not be a problem in a controlled, sealed environment—but a military communication shelter rapidly deployed in a windy desert, or a metropolitan commuter train speeding down a gritty, snow-covered track present less than ideal environments for fiber optic operation.

The revolutionary Glenair Eye Beam™ Expanded Beam Fiber Optic Terminus addresses these environmental challenges and delivers enhanced performance to fiber optic interconnect systems. Join us as we explore the use of the Eye-Beam™ fiber optic termini in exciting and emerging fields.

Butt-Joint Fiber Optic Terminus



9.3 micron fiber core
Fiber surfaces exposed and susceptible to damage
Must be cleaned prior to mating

Eye-Beam™ Expanded Beam Fiber Optic Terminus



9.3 micron core expanded 27X
Fiber surfaces protected from contamination
Easy clean lens surface

The Eye-Beam™ Lens Terminus Advantage

The Glenair Eye-Beam™ fiber optic terminus is a graded index lens-equipped, expanded-beam optical transmission system. It delivers outstanding performance in challenging environments and eliminates maintenance cycles. The low insertion loss Eye-Beam™ offers comparable performance to standard butt joint termini in a package that's built to withstand rugged use and frequent mating/demating in field conditions.

The Glenair Eye-Beam™ contact utilizes an innovative free-floating expanded beam lens and ultra-high precision ceramic alignment sleeves as well as custom designed nickel alloy terminus bodies to ensure perfect axial alignment and optimal optical performance. Best of all, the Eye-Beam™ can be integrated into virtually any circular or rectangular connector package.

Tactical Field Deployment

Mobile Tactical Shelters are an integral part of Army and Marine battlefield communication systems. These mobile, rapidly deployable shelters provide a vital communication capability. Voice over IP (VoIP) technology allows voice, video and data to be consolidated into one fiber cable system, greatly simplifying deployment. The fiber optic interconnect system for these shelters must be reliable in extreme environments, and able to stand up to rapid mating and de-mating in the field.

Rapid "Daisy-Chaining" of Tactical Fiber Cables

Tactical military applications rely on rapid, trouble-free deployment of interconnect cabling. Glenair GFOCA hermaphroditic expanded beam

The Glenair Eye-Beam™ Fiber Optic Revolution



Main Photo: Command and control specialists work inside a Mobile Air Reporting Communications shelter at Camp Marmal, Afghanistan. The MARC is an air-deployable mobile tactical shelter that provides CRW Airmen with the ability to communicate with aircraft as well as schedule and track cargo movements worldwide. Inset Photos: Mobile tactical shelter specialists installing rooftop antennae, working inside a shelter, and checking communications equipment.

connectors and cables are the perfect solution for frequent mating and unmating of fiber optic cabling in harsh application environments. The sealed Eye-Beam™ expanded beam interface prevents contamination of the optical path, while the hermaphroditic coupling provides operational flexibility and cost savings. Glenair offers both discrete connectors as well custom cable assemblies and field-ready spooled cable sets.

Extreme Harsh Environments

Rail system interconnect design presents many challenges. Reducing weight is a critical issue in high-speed and Maglev rail systems. Shielding electromagnetic interference is also important, especially in sensitive electronic systems such as engine monitoring and diagnostic sensors. Basic mechanical protection of interconnect cables, conductors and contacts is a standard requirement especially when frequent mating and unmating is required, or when cables

are routed through exposed intercar or undercar locations. To ensure rapid and accurate car linking and cabin reconfigurations, interconnects must be easy to couple and keyed to avoid mis-mating. Vibration, shock and connector decoupling problems are also common in rail applications, and require focused attention when selecting shell materials and mating technologies. As passenger and crew safety is paramount, interconnection systems must not compound flammability, smoke or toxicity risks.



Eye-Beam™ fiber optics in a ruggedized, reverse-bayonet connector package meet the environmental challenges of rail systems



The Glenair Eye-Beam™ Fiber Optic Revolution

But make no mistake: the overriding challenge is environmental. Rail and transportation systems represent one of the most challenging environments for the long-term survivability and reliability of interconnect cables and assemblies. From high-speed rail transportation systems to heavy railway freight lines, the standard daily fare of the rail industry is one harsh environmental challenge after another.

Glenair Eye-Beam™ fiber optics in a ruggedized, reverse-bayonet connector package meet the environmental challenges of rail systems, standing up to shock, vibration, moisture, and temperature fluctuation while delivering the reliable high-speed data transmission advantages of fiber optics.

Fiber Optics for High Definition Broadcasting

Fiber optic systems are implemented in remote television broadcast systems for sporting events or on-location news reporting. In the television industry this is known as electronic field production, or EFP. Multi-camera video editing, advanced graphics and sound equipment must be reliable and portable, built into a truck or van—a “control room on wheels”—where space is at a premium.

On board the SIVision High-Definition mobile broadcasting unit—a “control room on wheels” for audio and video electronic field production.



A single fiber optic connection can simultaneously transport bidirectional digital and analog video, as well as two-way camera control, audio, data, sync, tally/call, prompter, and intercom signals between a high-definition camera and the mobile studio truck. A fiber optic system transmits signals digitally and optically, so broadcasters and producers are assured of the highest quality audio and video, free from interference or grounding problems.

Broadcast fiber optic interconnect systems must be quickly deployable for on-location news broadcasting, and able to stand up to the rigorous conditions presented on the sidelines of a football game or a weather report from the site of a tropical storm. Glenair Eye-Beam™ termini provide the space-saving and lightweight, yet rugged and durable connection that this exciting industry demands.

Eye-Beam™ Solutions and Future Applications

At Glenair, we are serious about the business of engineering the right solution for every application. We continue to design and enhance fiber optic solutions for standard military and commercial connectors, and develop new fiber optic technologies for exciting new applications like robotics and future soldier systems.

MIL-DTL-38999 Connectors

The MIL-DTL-38999 connector is currently the most commonly specified multi-pin cylindrical interconnect in fiber optic aerospace applications. When used to connect multiple strands of fiber simultaneously, the D38999 connector functions as a container or shell for the precision termini which perform the actual marriage of the fiber strands.

Glenair's unique alignment techniques maximize optical performance and provide reliable, repeatable interconnection of optical fibers. Ferrule design—critical to performance—has traditionally relied upon a machined stainless steel terminus incorporating a precision micro drilled hole. Glenair's unique precision ceramic ferrules,

The Glenair Eye-Beam™ Fiber Optic Revolution



with concentricity and diametric tolerances controlled within one micron (.00004 of an inch), meet the needs of high bandwidth and low allowable insertion loss applications. In fact, Glenair's ferrules are approximately 10 times more accurate than alternative designs, and have reduced insertion loss values from 1.5dB to less than .5dB (typical loss for Glenair termini is .3 dB).

Glenair has engineered Eye-Beam™ D38999 connectors for use in applications such as high definition video camera equipment, high speed routers for long haul transmission, and military and commercial avionics applications.

Eye-Beam™ Fiber Optics in Robotics

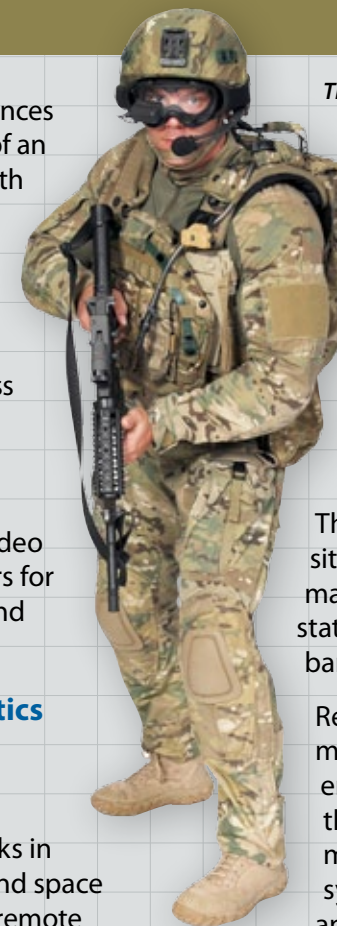
Robots are relied on in manufacturing and industry to do jobs in dangerous or dirty environments. They are also employed in increasingly complex tasks in bomb detection and disposal, earth and space exploration, laboratory research, and remote surgical systems. Glenair COTS (Commercial Off-The-Shelf) Eye-Beam™ fiber optic termini can provide reliable high-speed data transmission in the challenging environments that these robotic applications present.

GFOCA Hermaphroditic Fiber Optic Connection System

Hermaphroditic coupling eliminates the need for adapters and male and female mating halves. Hermaphroditic housings also allow for rapid deployment without the use of male and female mating halves or other adapters, creating low loss Singlemode, Multimode and Hybrid “daisy- chained” links in a variety of insert arrangements

The rugged and reliable Glenair GFOCA Connection System with Eye-Beam™ termini is used by the Army for long-run battlefield ground system communications, and is also well suited to dockside naval communications, down-hole drilling and other harsh environment applications.

The Future Force Warrior System depends on a highly reliable, low-data loss connection system that is lightweight and able to stand up to rigorous use in challenging environmental conditions.



Eye-Beam™ and the Future Force Warrior

Future Force Warrior is a United States military project developing a lightweight, fully integrated combat system, implementing nanotechnology, powered exoskeletons, and magnetorheological fluid-based body armor for the “Army After Next.” The system provides the soldier with enhanced situational awareness, communication data, maps, tactical intelligence and physiological status monitoring through an integrated high-bandwidth wireless communication system

Reliable data transmission and ruggedized mating/de-mating in the most extreme environmental situations are crucial to the Future Force interconnect system. A miniaturized, GFOCA hermaphroditic cable system with Eye-Beam™ termini for lightweight and reliable data connection is the perfect solution to these challenges.

Retrofitting of existing cable assemblies

Glenair can retrofit your existing cable assemblies with Eye-Beam™ fiber optic termini in your connectors. There is no need to undergo expensive and time-consuming replacement of entire cable systems to take advantage of Eye-Beam™ high reliability and performance.

The Eye-Beam™ Revolution

Glenair continues to make substantial investments in equipment, tooling, research and the industry's best engineering talent to develop new fiber optic technologies. Glenair Eye-Beam™ fiber optic termini solve environmental challenges for today's demanding fiber optic systems, and we will continue to develop the right solutions for tomorrow's applications—especially in the area of expanded beam fiber optic technologies.



Glenair Connector Material and Finish Options

This chart presents a selection of the broad range of base materials and plating options available for Glenair connectors. Innovation and qualification of material and finish types is a major Glenair strength.

| Code | Material | Finish | Finish Specification | Hrs. Salt Spray | Electrical Conductivity | Operating Temp. Range | RoHS | Notes |
|------|-----------------|----------------------------|---|-----------------|-------------------------|-----------------------|------|--|
| AB | Marine Bronze | Unplated | AMS 4640 alloy, unplated | 1000 | Conductive | -65 to +200°C | ✓ | Marine and geo-physical applications |
| AL | Aluminum | AlumiPlate, Clear Chromate | MIL-DTL-83488, Class 2, Type II over electroless nickel | 500 | Conductive | -65 to +175°C | ✓ | Approved for MIL-DTL-38999L and MIL-DTL-83513G. |
| C | Aluminum | Anodize, Black | AMS-A-8625 Type II Class 2 | 336 | Non-Conductive | -65 to +175°C | ✓ | Glenair's standard black anodize finish. |
| E | Aluminum | Chem Film | MIL-DTL-5541 Type 1 Class 3 | 168 | Conductive | -65 to +175°C | | Glenair's standard chem film finish. |
| G | Aluminum | Anodize, Hardcoat | AMS-A-8625, Type III, Class 1, .001" thick | 336 | Non-Conductive | -65 to +200°C | ✓ | Glenair's preferred hardcoat finish. |
| JF | Aluminum | Cadmium, Gold | SAE-AMS-QQ-P-416 Type II, Class 2 over electroless nickel | 48 | Conductive | -65 to +175°C | | Glenair's preferred gold cadmium finish. |
| LF | Aluminum | Cadmium, Clear | SAE-AMS-QQ-P-416 Type II Class 2 over electroless nickel | 48 | Conductive | -65 to +175°C | | Glenair's preferred clear cadmium finish. |
| M | Aluminum | Electroless Nickel | AMS-C-26074 Class 4 Grade B; ASTM-B-733, SC 2, Type IV | 48 | Conductive | -65 to +200°C | ✓ | Glenair's standard electroless nickel finish. |
| MA | Aluminum | Electroless Nickel | AMS-C-26074 Class 4 Grade A | 96 | Conductive | -65 to +200°C | ✓ | Standard matte electroless nickel for space applications. |
| ME | Aluminum | Electroless Nickel | AMS-C-26074 Class 4 Grade A | 96 | Conductive | -65 to +200°C | ✓ | Electroless nickel with enhanced corrosion resistance. |
| MT | Aluminum | Nickel-PTFE | GMF-002 Type II Class 1 | 500 | Conductive | -65 to +175°C | ✓ | Approved for MIL-DTL-38999L and MIL-DTL-83513G. |
| NC | Aluminum | Zinc-Cobalt, Olive Drab | ASTM B 840 Grade 6 Type D over electroless nickel | 350 | Conductive | -65 to +175°C | | Glenair's standard olive drab zinc-cobalt finish. |
| NF | Aluminum | Cadmium, Olive Drab | SAE-AMS-QQ-P-416 Type II Class 2 over electroless nickel | 500 | Conductive | -65 to +175°C | | Glenair's standard olive drab cadmium finish. |
| TP2 | Titanium | Electrodeposited Nickel | SAE-AMS-QQ-N-290 Class 1 Grade F | 96 | Conductive | -65 to +200°C | ✓ | Glenair's preferred finish for titanium connectors. |
| UC | Aluminum | Zinc-Cobalt, Black | ASTM B 840 Grade 6 Type D over electroless nickel | 240 | Conductive | -65 to +175°C | | Glenair's standard black zinc-cobalt finish. |
| UCR | Aluminum | Zinc-Cobalt, Black | ASTM B 840 Grade 6 Type D over electroless nickel | 240 | Conductive | -65 to +175°C | ✓ | RoHS version of UC. |
| UF | Aluminum | Cadmium, Black | SAE-AMS-QQ-P-416 Type II Class 2 over electroless nickel | 500 | Conductive | -65 to +175°C | | Glenair's preferred black cadmium finish. |
| XAL | Composite | AlumiPlate | MIL-DTL-86448, Class 2, Type II over electroless nickel | 2000 | Conductive | -65 to +175°C | ✓ | Approved for MIL-DTL-38999L. |
| XB | Composite | Unplated Black | | 2000 | Non-Conductive | -65 to +175°C | ✓ | Glenair's standard unplated composite. |
| XO | Composite | Unplated Amber | | 2000 | Non-Conductive | -65 to +175°C | ✓ | Unplated composite, Amber color |
| XM | Composite | Electroless Nickel | AMS-C-26074 Class 4, Grade B | 2000 | Conductive | -65 to +200°C | ✓ | Glenair's standard electroless nickel finish over composite. |
| XMT | Composite | Nickel-PTFE | GMF-002 Type II Class 2 | 2000 | Conductive | -65 to +200°C | ✓ | Approved for MIL-DTL-38999L. |
| XW | Composite | Cadmium, Olive Drab | SAE-AMS-QQ-P-416 Type II Class 3 over electroless nickel | 2000 | Conductive | -65 to +175°C | | Glenair's standard olive drab cadmium finish over composite. |
| XZN | Composite | Zinc-Nickel, Black | ASTM B841 Grade 5 over electroless nickel | 2000 | Conductive | -65 to +175°C | | Glenair's standard black zinc-nickel finish over composite. |
| Z1 | Stainless Steel | Passivate | SAE AMS 2700 | 500 | Conductive | -65 to +200°C | ✓ | Glenair's standard passivated stainless steel. |
| Z16 | Aluminum | Electroless Nickel | AMS-C-26074 Class 4 Grade B | 48 | Conductive | -65 to +200°C | ✓ | Standard matte electroless nickel for space applications |
| Z2 | Aluminum | Gold | MIL-DTL-45204 Class 1 over electroless nickel | 48 | Conductive | -65 to +200°C | ✓ | Glenair's standard gold plating for space programs. |
| ZC | Stainless Steel | Zinc-Cobalt, Black | ASTM-B840, Grade 6 | | Conductive | -65 to +175°C | | Glenair's standard zinc-cobalt over stainless steel. |
| ZCR | Stainless Steel | Zinc-Cobalt, Black | ASTM-B840, Grade 6 | | Conductive | -65 to +175°C | ✓ | RoHS version of ZC. |
| ZL | Stainless Steel | Electrodeposited Nickel | SAE-AMS-QQ-N-290 Class 2 Grade F | 500 | Conductive | -65 to +200°C | ✓ | Glenair's preferred nickel-plated stainless steel. |
| ZM | Stainless Steel | Electroless Nickel | AMS-C-26074 Class 1 Grade A | | Conductive | -65 to +200°C | ✓ | Used on hermetic connectors. Use ZM for other applications. |
| ZMT | Stainless Steel | Nickel-PTFE | GMF-002 Type II Class 3 | 1000 | Conductive | -65 to +175°C | ✓ | Glenair's new 1000 Hour Grey over stainless steel. |
| ZN | Aluminum | Zinc-Nickel, Olive Drab | ASTM B841 Grade 5 over electroless nickel | 500 | Conductive | -65 to +175°C | | Glenair's standard olive drab zinc-nickel finish. |
| ZNU | Aluminum | Zinc-Nickel, Black | ASTM B841 Grade 5 over electroless nickel | 500 | Conductive | -65 to +175°C | | Use ZR for new design |
| ZU | Stainless Steel | Cadmium, Black | SAE-AMS-QQ-P-416 Type II Class 2 | 500 | Conductive | -65 to +175°C | | Glenair's standard black cadmium over stainless steel. |
| ZW | Stainless Steel | Cadmium, Olive Drab | SAE-AMS-QQ-P-416 Type II Class 2 over electroless nickel | 500 | Conductive | -65 to +175°C | | Glenair's standard olive drab cadmium over stainless steel. |
| ZR | Aluminum | Zinc-Nickel, Black | ASTM B841 Grade 5 over electroless nickel | 500 | Conductive | -65 to +175°C | ✓ | Glenair's RoHS compliant black zinc-nickel |

Material and finishes and their specifications are provided for reference only. For detailed material and plating information, particularly relating to testing and performance, please consult factory.



Glenair Connector Plating Code and Mil-Spec Connector Finish Code Cross-Reference

| MIL-DTL-38999 Series I and II Finish Code | Material, Finish | Recommended Glenair Material/Finish Code |
|---|---|---|
| A | Aluminum, Cadmium Plated, Clear Chromate | LF |
| B | Aluminum, Cadmium Plated, Olive Drab | NF |
| C | Aluminum, Anodize, Hardcoat | G |
| E | Stainless Steel, Passivated | Z1 |
| F | Aluminum, Electroless Nickel Plated | M |
| N | Stainless Steel, Electrodeposited Nickel (Hermetic) | ZL |
| P | Aluminum, Pure Dense Aluminum (AlumiPlate SM) | AL |
| R | Aluminum, Electroless Nickel | ME |
| T | Aluminum, Nickel-PTFE | MT |
| U | Aluminum, Cadmium Plated, Clear Chromate | LF |
| X | Aluminum, Cadmium Plated, Olive Drab | NF |
| Z | Aluminum, Black Zinc-Nickel | ZR |

| MIL-DTL-38999 Series III and IV Class Code | Material, Finish | Recommended Glenair Material/Finish Code |
|---|---|---|
| C | Aluminum, Anodize, Hardcoat | G |
| F | Aluminum, Electroless Nickel | M |
| G | Aluminum, Electroless Nickel (Space Grade) | MA |
| H | Stainless Steel, Passivated (Space Grade) | Z1 |
| J | Composite, Cadmium Plated, Olive Drab | XW |
| K | Stainless Steel, Passivated | Z1 |
| L | Stainless Steel, Electrodeposited Nickel | ZL |
| M | Composite, Electroless Nickel Plated | XM |
| N | Stainless Steel, Electrodeposited Nickel (Hermetic) | ZL |
| P | Aluminum, Pure Dense Aluminum (AlumiPlate SM) | AL |
| R | Aluminum, Electroless Nickel | ME |
| S | Stainless Steel, Electrodeposited Nickel | ZL |
| T | Aluminum, Nickel-PTFE | MT |
| W | Aluminum, Cadmium Plated, Olive Drab | NF |
| X | Aluminum, Cadmium Plated, Olive Drab | NF |
| Y | Stainless Steel, Passivated | Z1 |
| Z | Aluminum, Black Zinc-Nickel | ZR |

Glenair Connector Plating Code and Mil-Spec Connector Finish Code Cross-Reference



| MIL-DTL-28840 Finish Code | Material, Finish | Recommended Glenair Material/Finish Code |
|------------------------------|--|---|
| A | Aluminum, Cadmium Olive Drab over Nickel | NF |
| B | Stainless Steel, Cadmium-Black over Nickel | ZU |
| L | Aluminum, Nickel PTFE | MT |
| S | Aluminum, Zinc Nickel, Non-Reflective | ZR |

| SAE AS5015 Class Code | Material, Finish | Recommended Glenair Material/Finish Code |
|--|--------------------------------------|---|
| A, B, C, D, E, DJ, F, P, R, W | Aluminum, Cadmium Plated, Olive Drab | NF |
| H, K | Stainless Steel, Electroless Nickel | ZM |
| L, U | Aluminum, Electroless Nickel | M |

| MIL-DTL-26482 | Material, Finish | Recommended Glenair Material/Finish Code |
|-------------------------|--------------------------------------|---|
| Series I | Aluminum, Cadmium Plated, Olive Drab | NF |
| Series 2 Class L | Electroless Nickel | M |
| Series 2 Class W | Aluminum, Cadmium Plated, Olive Drab | NF |

| AS85049 Finish Code | Material, Finish | Recommended Glenair Material/Finish Code |
|---------------------|--|---|
| A | Aluminum, Black Anodize | C |
| B | Stainless Steel, Cadmium Plated, Black | ZU |
| G | Aluminum, Electroless Nickel Plated (Space) | M |
| J | Composite, Cadmium Plated, Olive Drab | XW |
| L | Composite, Cadmium Plated, Olive Drab ⁽¹⁾ | XX |
| M | Composite, Electroless Nickel Plated | XM |
| N | Aluminum, Electroless Nickel Plated | M |
| P | Aluminum, Cadmium Plated, Olive Drab ⁽¹⁾ | NFP |
| W | Aluminum, Cadmium Plated, Olive Drab | NF |
| T | Composite, Unplated | XO |

(1) Selective plated with polysulfide barrier



Quick Picks: A Guide to Glenair's Most Popular Materials and Finishes



Electroless Nickel

| | | | | | |
|----------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |

-65 to +200°C
Glenair Code **M**

RoHS Compliant Aluminum plated with electroless nickel offers excellent conductivity, wear resistance, and adequate corrosion resistance. Typically specified on electrical connectors and accessories used in avionics boxes, exoatmospheric equipment, and missiles, electroless nickel is a good choice when exposure to marine or corrosive atmospheres is not a primary concern. The plating process is purely chemical, and once started, is autocatalytic (it runs by itself).



Black Zinc Nickel

| | | | | | |
|----------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |

-65 to +175°C
Glenair Code **ZR**

RoHS Compliant RoHS-compliant black zinc-nickel is approved for MIL-DTL-38999, AS85049 and other major military specifications as a replacement for cadmium and hexavalent chromium platings. The non-reflective finish and good conductivity make the Glenair ZR finish a leading choice for cadmium-free tactical systems. Corrosion resistance is comparable to cadmium, and the ZR finish is backward-compatible with Cd-plated connectors and accessories.



Zinc-Cobalt

| | | | | | |
|----------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |

-65 to +175°C
Glenair Code **UC, UCR, ZC, ZCR**

RoHS Compliant Zinc-cobalt with black trivalent chromate topcoat fills the need for a RoHS compliant conductive black finish for soldier systems, unmanned vehicles, robots and other tactical gear. This new addition to the Glenair lineup is likely to replace black zinc-nickel for new Future Combat System applications. Black zinc-cobalt plating is a standard finish on Glenair's ITS 5015 reverse bayonet power connectors.

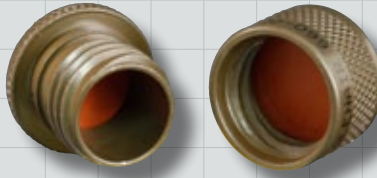


Zinc-Nickel

| | | | | | |
|----------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |

-65 to +175°C
Glenair Code **ZN, ZNU**

RoHS Not Compliant Recently added to MIL-DTL-38999 and MIL-DTL-83513, zinc-nickel plated aluminum has become a cost-effective alternative to cadmium. Available with olive drab or black chromate conversion coatings, zinc-nickel plated aluminum is commonly found on soldier systems and military airframe applications.



Cadmium

| | | | | | |
|----------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |

-65 to +175°C
Glenair Code **NF, LF, JF**

RoHS Not Compliant Cadmium plated aluminum has been the unchallenged workhorse of the defense/aerospace industry. Offering up to 1000 hours of salt spray protection when deposited over electroless nickel, cadmium is highly conductive, and provides good lubricity and resistance to galling. As plated, cadmium has a silvery appearance. A subsequent chromic acid passivation bath creates a chromate topcoat over the cadmium, enhancing corrosion protection. Olive drab chromate is widely used, followed by gold chromate and clear chromate.



Stainless Steel

| | | | | | |
|----------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |

-65 to +200°C
Glenair Code **Z1, ZL, ZW**

RoHS Compliant Stainless steel offers unbeatable strength and protection from environmental stress if durability and corrosion resistance are more important than cost and weight. Typically found on aircraft engines, landing gear, geophysical equipment, armored vehicles and marine applications, passivated stainless steel is widely specified in throughout the interconnect industry. Also offered with nickel and cadmium plating for improved conductivity, stainless steel is an obvious alternative to cadmium if cost and weight are not an issue.

M

Quick Picks: A Guide to Glenair's Most Popular Materials and Finishes



Black Anodize

| | | | | | |
|-----------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |
| -65 to +175°C | | | | | |
| Glenair Code C | | | | | |

RoHS Compliant Black anodized aluminum is a popular finish for electrical connectors and accessories. Typically employed when conductivity is not required, black anodized aluminum offers a modicum of corrosion protection and is relatively inexpensive. Anodizing is an electrolytic process that creates aluminum oxide films by oxidizing the base metal. The resulting coating is much harder and denser than natural oxidation. The parts are immersed in a sulfuric acid solution at room temperature. After anodizing, the parts are dyed black.



Plated Composite

| | | | | | |
|---------------------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |
| -65 to +200°C | | | | | |
| Glenair Code XM, XW, XMT | | | | | |

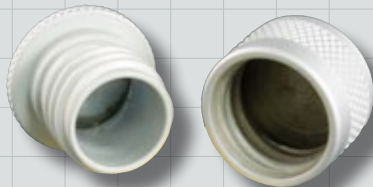
RoHS Compliant Plated composite connectors and accessories provide unsurpassed corrosion protection and excellent conductivity. Glass-reinforced thermoplastic is metallized and plated with electroless nickel (olive drab cadmium is another popular finish). Plated composite connectors and accessories have become the first choice for aerospace programs seeking to eliminate cadmium and reduce weight.



Unplated Composite

| | | | | | |
|----------------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |
| -65 to +175°C | | | | | |
| Glenair Code XB, XO | | | | | |

RoHS Compliant If conductivity and EMI shielding are not required, unplated composites provide the best solution to corrosion protection. Glenair's composite connector accessories are ideally suited for use in harsh environments where even stainless steel parts can be attacked by corrosive fluids. Available in black (code XB) and brown (code XO).



AlumiPlateSM

| | | | | | |
|-----------------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |
| -65 to +175°C | | | | | |
| Glenair Code AL, XAL | | | | | |

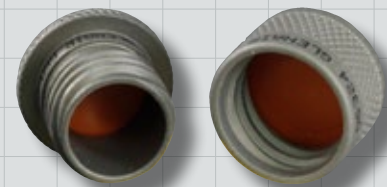
RoHS Compliant AlumiPlate provides excellent conductivity and corrosion resistance. 99.99% pure aluminum is electrolytically deposited onto aluminum or composite in a specialized water-free process, followed by a trivalent chromate conversion coating. AlumiPlate has been approved by Boeing and Lockheed as a replacement for cadmium. AlumiPlate has been added to MIL-DTL-38999 and MIL-DTL-83513. Threaded parts require dry lube to prevent galling. AlumiPlate is a service mark of AlumiPlate Incorporated, Minneapolis, Minnesota.



Nickel-PTFE

| | | | | | |
|----------------------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |
| -65 to +175°C | | | | | |
| Glenair Code MT, XMT, ZMT | | | | | |

RoHS Compliant Now approved for MIL-DTL-38999 and MIL-DTL-83513, Glenair's 1000 Hour Grey™ meets the need for a cadmium replacement with excellent conductivity, wear resistance and corrosion protection. This extremely durable finish is gun-metal gray. A proprietary preliminary undercoat is followed with a composite coating of electroless nickel phosphorus and polytetra-fluoroethylene (PTFE). An organic topcoat provides sealing and added resistance to SO2 salt fog. Ni-PTFE is approved for the Joint Strike Fighter and offers extremely good lubricity.



Hardcoat Anodize

| | | | | | |
|-----------------------|----|----|----|----|----|
| Cost | \$ | \$ | \$ | \$ | \$ |
| Conductivity | + | + | + | + | + |
| Corrosion Resistance | ⌚ | ⌚ | ⌚ | ⌚ | ⌚ |
| -65 to +200°C | | | | | |
| Glenair Code G | | | | | |

RoHS Compliant Hardcoat anodized aluminum offers greater wear resistance and better corrosion resistance compared to conventional anodizing. Typically employed when conductivity is not required, hardcoat aluminum offers good corrosion protection for marine and tactical applications. The resulting finish is a matte greenish-gray color. Hardcoat anodizing is an electrolytic process that creates aluminum oxide films by oxidizing the base metal in a sulfuric acid solution. The parts are immersed in a sulfuric acid solution at cold temperature. After anodizing, the parts can be dyed black (code GB).



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Glenair reserves the right to edit or change the contents of this catalog without notice. Updated versions of catalog pages may be found at www.glenair.com. Dimensions and performance specifications are for reference only. For exact product information, please consult Glenair engineering.



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- Техническая поддержка проекта;
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Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.