Glenair®



Composite Thermoplastic Connectors and Accessories

Plus Composite Enclosures, Conduit Systems, Braided Shielding, Assembly Tools and More!

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

Four Reasons to Choose Composites for Your Next Interconnect Application



Glenair's composite interconnect components are manufactured from high-grade engineering thermoplastics for the toughest application environments. Specifically geared for high-performance air, sea, land and space applications, Glenair's line of composite connectors and backshells are ideally suited for systems which require electromagnetic compatibility, reliable environmental protection and long-term durability. Here's why:

Corrosion Resistance: One of the most appealing attributes of composites is their unlimited corrosion resistance as compared to conventional metal materials. Aluminum interconnect components, for example, are subject to galvanic coupling which causes the material to be "sacrificed" to its cadmium/nickel plating. Since high-temperature composite plastic is not sacrificial to plating, finished products last longer, require less maintenance and so directly reduce the overall cost of ownership of the interconnect system.

Vibration Dampening: Unlike metals, polymer plastics are less subject to harmonic resonance due to their lighter weight and inherent attenuating properties. Which means threaded components made from these materials are far less likely to vibrate loose when subjected to prolonged periods of vibration and shock. Again, reduced maintenance and reduced cost of ownership are the major benefits realized by systems built from vibration dampening composite thermoplastics.

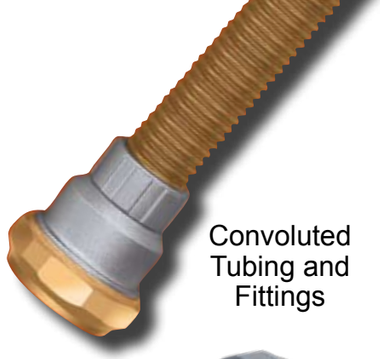
Weight Reduction: Composites offer increased strength at lighter weights . Weight savings for composites over aluminum are approximately 40% (depending on component design). Savings versus other materials are even more pronounced: up to 80% for stainless steel and brass. Composite materials directly reduce aircraft empty weights and increase fuel fractions—resulting in smaller, lower-cost aircraft that use less fuel to perform a given mission.

Durability: Glenair's line of composite thermoplastic interconnect components are cleverly designed to avoid many of the durability problems associated with conductive plated parts. Through the use of selective plating—which limits easy-to-scratch plated surfaces to the protected portions of the part—Glenair has effectively eliminated superficial damage to coupling nuts, saddle bars and box exteriors. The parts are free from visible wear-and-tear problems that forces premature replacement of backshells, connectors, box assemblies and other EMC interconnect components.

The World's Largest Selection of *Tooled* Composite Thermoplastic Connectors and Accessories



Strain Relief Backshells



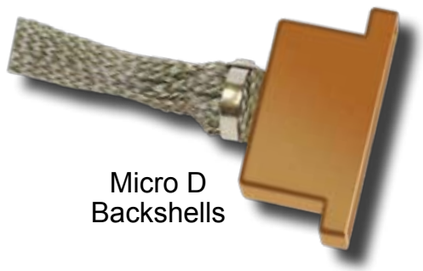
Convoluted Tubing and Fittings



Swing-Arm Strain Relief Clamps



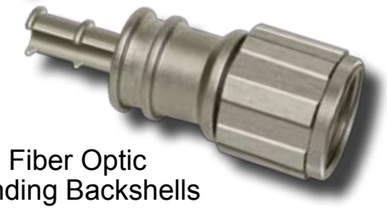
Protective Covers



Micro D Backshells



AmberStrand® Braided Shielding



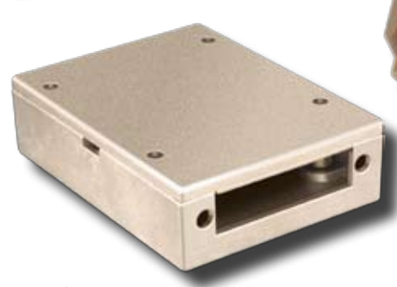
Fiber Optic Banding Backshells



Swing-Arm with Shield Sock



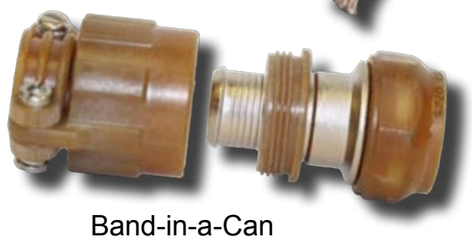
Overmolded Cable Adapters



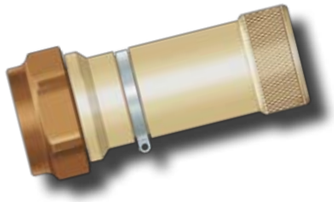
EMI/RFI Enclosures



Ultra Low-Profile Banding Backshell



Band-in-a-Can Backshells



Shorting Cap Backshells



Ultra-Light Banding Strain Relief



Non-Environmental Backshell



Feed-Thru Fittings



EMI Lamp Base Thread Backshells

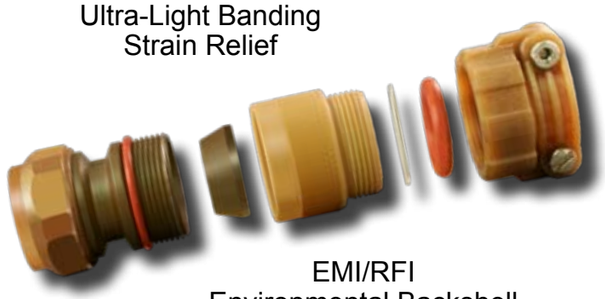


Dual Banding Backshells

E-Nuts



Knit-Braid EMI/RFI Backshells



EMI/RFI Environmental Backshell



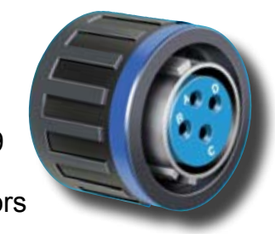
Low Profile Strain-Relief



Cone and Ring Style EMI/RFI Backshells



Multi-Port Junction Boxes



D38999 Type Connectors



Qwik-Ty Strain Relief



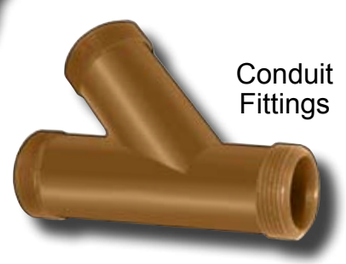
Environmental Backshells



Strain Relief Clamps



EMI/RFI Shield Socks



Conduit Fittings



Split Rings



Extender Backshells



Fiber Optic Backshells

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Composite Thermoplastic Connectors and Accessories

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Glenair Composite Thermoplastic Connector and Accessory
Product Selection Guide

310 - Shrink Boot/Overmold Adapter



Glenair composite shrink boot adapters are designed for use in open-wire bundle cable assemblies that require the splash-proof environmental protection and light-duty strain-relief provided by lipped-type shrink boots such as Glenair 770-001 heat moldable shrink boots. These simple adapters can also be used to accommodate overmolding compounds typically applied to fully-environmental, jacketed cables. The adapters are attached to standard circular connectors and can be plated to provide an EMC ground path. Our composite shrink-boot and overmold adapters are a perfect, light-weight choice for high-performance cable assemblies. The two styles are available for most circular connectors.

Description	Part Number	Page
Shrink Boot Adapter with Rotatable Coupling Nut ; Straight	310-045	A-2
Shrink Boot Adapter with Direct Coupling - Straight	310-017	A-4

311 - EMI/RFI Lamp Base Thread Backshell



A sleek, compact shield termination backshell assembly that utilizes a simple lamp-base thread device to capture conductive cable shielding; yielding both strain relief and EMI/RFI protection. Straight and 90° shell styles are available. This simple, light-weight backshell may optionally be equipped with a shrink-boot for a modicum of environmental protection.

Description	Part Number	Page
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Lamp Base EMI/RFI Shield Termination Backshell with Shrink Boot Porch - Straight, 45° and 90°	311-019	A-6
Lamp Base EMI/RFI Environmental Adapter with Shrink Boot Porch and Direct Coupling - Straight	311-063	A-8

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319 - EMI/RFI Shield Sock Assemblies



Glenair shield sock assemblies offer an alternative strain relief and shield termination solution for shielded, jacketed cable assemblies. Two basic styles are available; with fixed position or user-adjustable entry angles. Made from high-temperature composite thermoplastic, these rugged assemblies offer easy installation, long term durability, and outstanding weight and cost reduction. The products are equipped with reliable "click-style" self-locking rotatable coupling nuts. Available shielding includes standard metal braid as well as light-weight metal clad composite shielding. The shield sock's braid is terminated directly to the cables own braid with *BAND-IT*® bands and tools.

Description	Part Number	Page
Composite Thermoplastic Shield Sock Assembly Procedure		A-10
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EMI/RFI Backshell with Shield Sock and Self-Locking Rotatable Coupling - Straight Only	319-120	A-14
EMI/RFI Banding Backshell Shield Sock with Shrink Boot Porch and Self Locking Rotatable Coupling - Straight, 45° and Ultra Low Profile 90°. Uses Micro Band to Attach Shield	319-134	A-16
EMI/RFI Shield Sock Strain Relief with Shrink Boot Porch and Self Locking Rotatable Coupling - Straight, 45° and 90°	319-136	A-18
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"Wide Mouth" Swing Arm Strain Relief with Shield Sock and Self Locking Rotatable Coupling - Straight, 45° and 90°	319-138	A-24

320 - Extender Backshells

These simple composite backshells–when used with connectors with crimp and poke contact termination–provide extensions between the connector and strain relief, offering the convenience of additional space to accommodate service loops, re-terminations, diodes, resistors and other uses.

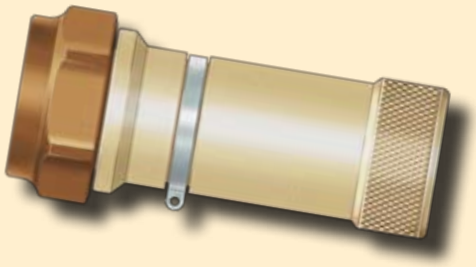


Description	Part Number	Page
Extender Backshell with Self-Locking Rotatable Coupling - Straight, 45° and 90°	327-060	A-26

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347 - Shorting Cap Backshells

Composite Shorting Cap Backshells provide a complete enclosure for the rear of panel-mounted receptacle connectors, and are also adaptable to the fabrication of shorting plugs, special purpose test connectors, or installation of discrete components. Shorting cap backshells also provide an ideal enclosure for fiber optic loop backs used in circuit testing.

Description	Part Number	Page
Shorting Cap Backshell with Lanyard Attachment and Self Locking Rotatable Coupling	347-129	A-28

360 - Non-Environmental Backshells with Strain Relief

Glenair provides straight and angled composite backshells with strain reliefs—including standard cable clamps and Glenair's patented Qwik-Clamp—for light and general duty applications where environmental protection of cable-to-connector terminations is not required.



Description	Part Number	Page
Series 360 Non-Environmental Backshell Assembly Instructions		A-30
Non-Environmental Backshell with Self Locking Rotatable Coupling and Strain Relief - Straight and 90°	360-014	A-32
Non-Environmental Backshell with Self Locking Rotatable Coupling and Qwik-Clamp - Straight, 45° and 90°	360-015	A-34

370 - Environmental Backshell with Strain Relief



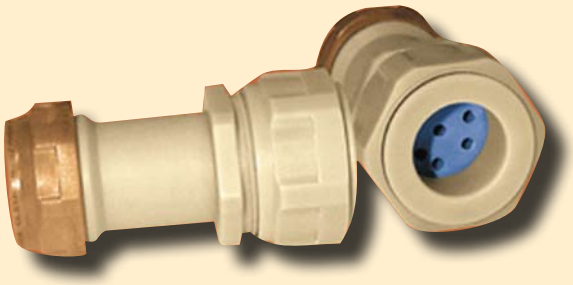
Glenair composite environmental backshells with strain-relief are perfectly suited for the broad range of interconnect cable applications that require reduced weight and serious corrosion protection. Glenair makes both straight and angled versions for all popular connector series and sizes. Two basic versions are available: a standard saddle-clamp version and our patented Qwik-Clamp.

Description	Part Number	Page
Series 370 Environmental Backshell Assembly Instructions		A-36
Cable Sealing and Environmental Backshell with Self Locking Rotatable Coupling and Strain Relief Clamp or Nut - Straight or 90°	370-016	A-38
Cable Sealing and Environmental Backshell with Self Locking Rotatable Coupling and Qwik-Clamp or Nut - Straight or 90°	370-017	A-40

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377 - Fiber Optic Backshells

Glenair composite fiber optic backshells provide protection and alignment of individual optical fiber media in open-bundle and jacketed cable assemblies. Straight, and 90° angled fittings are available for added convenience in fiber cable routing. The 90° angled versions utilize a smooth, sweeping profile to eliminate micro-bending of fiber media.



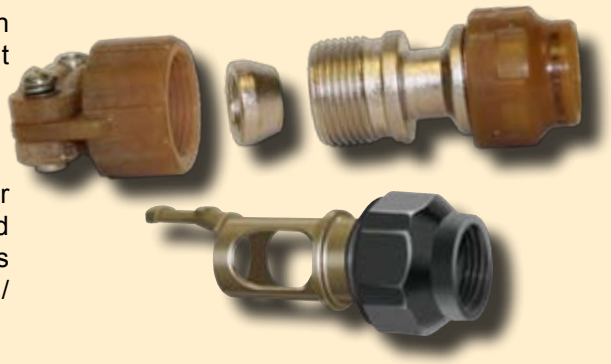
Description	Part Number	Page
Fiber Optic Strain Relief Backshell with Self Locking Rotatable Coupling and Fiber Alignment Grommet and Optional Banding adapter or Nut	377-040	A-42

380 - EMI/RFI Non-Environmental Backshells

Glenair's composite EMI/RFI Shield Termination Backshell family includes a range of reliable and convenient termination methods, including:

- Cone and Ring Style backshells, and
- Ultra lightweight "Knit Braid" designs

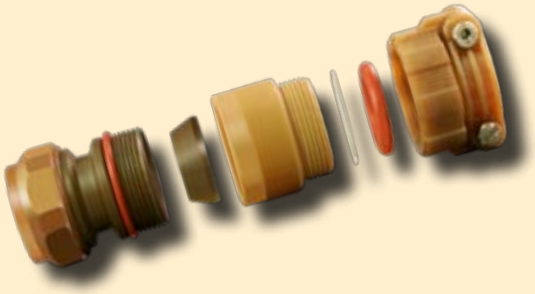
Each style offers a repairable termination method ideal for field service of damaged connector contacts in both jacketed and open-wire bundle cable assemblies. The 380 series is non-environmental. For cable sealing backshells with EMI/RFI shield termination see Series 390.



Description	Part Number	Page
Series 380 EMI/RFI Non-Env. Backshell Assembly Instructions (Type D)		A-44
Series 380 EMI/RFI Non-Env. Backshell Assembly Instructions (Type E)		A-56
Cone and Ring Style Shield Termination Backshell with Self Locking Coupling Nut and Strain Relief - Straight and 90°	380-099	A-46
Cone and Ring Style EMI/RFI Backshell with Self Locking Rotatable Coupling and Qwik-Clamp - Straight, 45° and 90°	380-100	A-48
Knit Braid Style EMI/RFI Shield Termination Backshell with Qwik-Ty and Rotatable Coupling	380-130	A-52
Knit Braid Style EMI/RFI Shield Termination Backshell with Clamp and Rotatable Coupling	380-131	A-53
Knit Braid Style EMI/RFI O-Ring Equipped Shield Termination Backshell with Shrink Boot Adapter and Rotatable Coupling	380-132	A-54
EMI/RFI Nickel Plated Copper Knit Braid Material	107-044	A-55
Multi Shield Cone and Ring Style EMI/RFI Shield Termination Backshell with Self Locking Rotatable Coupling and Strain Relief	387-083	A-58

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390 - EMI/RFI Environmental Backshells



Glenair's composite Series 390 backshells utilize standard cone and ring style shield termination to deliver 360° shield/screen grounding with low DC resistance across the termination area. Cable sealing O-rings provide full-immersion protection to 6 ft. The lightweight, corrosion proof backshell is ideally suited to general duty use in both military and commercial interconnect cable applications. Glenair 390 series backshells are fully tooled for all popular connector series and sizes.

Description	Part Number	Page
Series 390 EMI/RFI Environmental Backshell Assembly Instructions		A-60
Environmental Cone and Ring Style EMI/RFI Shield Termination Backshell with Self Locking Rotatable Coupling and Strain Relief - Straight, 45° and 90°	390-052	A-62

440 - EMI/RFI Banding Backshells



Banding is by far the most popular and reliable method of EMI shield termination used today in high-performance cable assemblies. Glenair supplies composite banding backshells in straight, 45° and 90° entry angles, with accommodation for either standard or lighter weight and duty micro *BAND-IT*® bands. Various configurations are available—all made from lightweight composite thermoplastic.

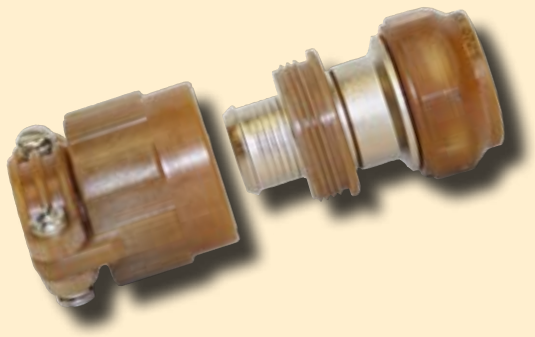
Description	Part Number	Page
Banding Backshell Assembly Instructions		A-66
Ultra Lightweight Banding Strain Relief with Rotatable Coupling	440-087	A-64
EMI/RFI Micro-Banding Backshell with Qwik-Ty Strain Relief, Shrink Boot Groove and Self Locking Rotatable Coupling - Straight, 45° and Ultra Low Profile 90°	440-143	A-68
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EMI/RFI Banding Backshell with Qwik-Ty Strain Relief and Shrink Boot Groove - Standard Profile Straight and 90°	447-327	A-76
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447 - EMI/RFI Band-in-a-Can

The Glenair Series 447 Band-in-a-Can backshell combines the convenience of banding with the versatility of a standard saddle bar strain-relief. The 447 series is available in both single and dual banding porch designs, as well as an optional Qwik-Clamp strain-relief version. The Band-in-a-Can is a perfect solution for standard shielded and jacketed cable assemblies. The selectively plated product offers 360° shield grounding without the wear-and-tear problems usually associated with plated interconnect products.



Description	Part Number	Page
EMI/RFI Band-in-a-Can Backshell with Strain Relief Clamp - Standard Profile Straight and 90°	447-328	A-78
EMI/RFI Environmental Band-in-a-Can Backshell with Strain Relief Clamp or Qwik-Clamp – Standard Profile Straight and 90°	447-329	A-80
EMI/RFI Non-Environmental Band-in-a-Can Backshell with Qwik-Clamp and Self-Locking Rotatable Coupling – Standard Profile Straight and 90°	447-330	A-82
EMI/RFI Low Profile Micro Band-in-a-Can Backshell with Strain Relief Clamp	447-657	A-86

450 - Qwik-Ty Strain Reliefs

Glenair's Qwik-Ty® strain reliefs offer a unique method of providing strain relief to open wire bundles equipped with circular connectors. The Qwik-Ty® comes in straight, 45° and 90° configurations, and features a low profile, reduced weight and simple installation. Assembly with plastic tie straps or lacing tape is quick and secure.



Description	Part Number	Page
Qwik-Ty Strain Relief with Self Locking Rotatable Coupling - Straight, 45° and Low Profile 90°	450-029	A-88
Qwik-Ty Strain Relief with Ground Lug and Self Locking Rotatable Coupling - Straight, 45° and Low Profile 90°	450-030	A-89
Ultra Lightweight Qwik-Ty Strain Relief with Free Rotating Coupling - Straight and Low Profile 90°	450-034	A-90

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550 - EMI/RFI Rectangular Backshells

Glenair's line of rectangular backshells is the largest in the industry. The short list of composite thermoplastic versions shown here provide EMI protection for rectangular connectors used in harsh or severe operating environments. Our D-Subminiature and Micro-D versions are both available in top, side and 45° entry configurations, in a full range of conductive and non-conductive finishes.



Description	Part Number	Page
EMI/RFI Banding Backshell for MIL-DTL-83513 Micro-D Connectors - Top, 45° and Side Entry	507-088	A-92
EMI/RFI Banding Backshell for MIL-DTL-24308 D-Subminiature Connectors - Top, Side and End Entry	557-186	A-94



610 - "E" Nuts

"E" Nuts are typically used on the back of connectors with no EMI/RFI, environmental or strain-relief requirement. But since many OEMs require that all connectors be equipped with a backshell, the "E" nut fills the threads on the back of the connector and compresses the sealing grommet—all without the added bulk or weight of a standard backshell. Composite "E" Nuts are available in both plated and unplated designs for all popular connector series and sizes.

Description	Part Number	Page
"E" Nut Backshell	610-014	A-96



620 - Strain Relief Clamps

Glenair offers a comprehensive selection of composite strain reliefs for circular connectors. Straight, 45° and 90° styles are available to fit most common connector types. Saddle clamps tighten around the cable assembly to ensure it remains in place– even in the face of potentially damaging tugs or twists.

Description	Part Number	Page
Composite Saddle Clamp Assembly Procedure		A-20
Strain Relief Clamp with Self-Locking Rotatable Coupling - Straight, 45° and 90°	620-042	A-97
Swing Arm Strain Relief with Self Locking Rotatable Coupling Nut	627-122	A-98
Swing-Arm Strain Relief with Keyed Banding Insert	627-142	A-100

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630 - Thru-Box, Panel and Bulkhead Fittings



Glenair manufactures a full-spectrum line of feed-through fittings for routing wire and cable into and out of switchgear and other types of junction boxes. The composite fittings in this section are ideal for thru-panel and bulkhead applications in harsh environmental settings.

Description	Part Number	Page
EMI/RFI Environmental Thru-Box, Panel and Bulkhead Banding Adapter - Front or Rear Mount	630-030	E-36
Universal Environmental Thru-Box, Panel and Bulkhead Universal Adapter	630-031	E-38
EMI/RFI Environmental Box Feedthru Cable / Conduit Adapter	637-094	E-40

770 - Shrink Boots

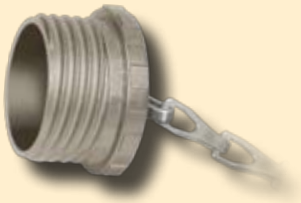
Glenair offers a standard range of adhesive and non-adhesive heat moldable shrink boots for use with our metal and composite backshells. Shrink boots provide strain relief and environmental protection in non-jacketed cable and/or conduit assemblies.



Description	Part Number	Page
Heat Moldable Shrink Boot - Straight and 90°	770-001	A-102

660 - Protective Covers and Stowage Receptacles

Protective covers are a critical component in interconnect systems where maintenance and test cycles can lead to damage of exposed connectors. Conductive and non-conductive plating options are available to match the conductivity and impedance requirements of the application and the connector.

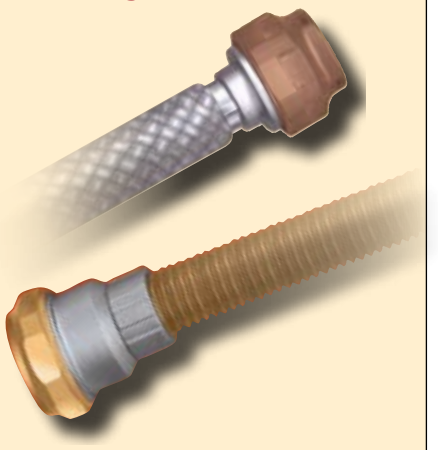


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MIL-DTL-38999 Series III Plug and Receptacle Covers	660-049 / 050	B-5
Glenair Series 190-015 / 016 Plug and Receptacle Covers	660-077 / 078	B-6
MIL-DTL-83723 Series III Plug and Receptacle Covers	660-051 / 052	B-7
MIL-DTL-38999 Series III Dummy Stowage Receptacle	650-025	B-8
MIL-DTL-38999 Series III Receptacle Cover with Anti-Decoupling Device	667-117	B-9
MIL-DTL-5015 Receptacle Cover with Anti-Decoupling Device	667-118	B-10
MIL-DTL-38999 Series III Receptacle Cover with Anti-Rotation Device	667-079	B-11

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740 - Convoluted Tubing Wire Protection Systems

Glenair's supplies a number of lightweight, flexible wire circuit protection solutions made from high-temperature polymer plastics. These polymer convoluted tubing products provide extremely rugged, lightweight enclosures for wiring systems deployed in harsh application environments. The crush-resistant materials offer exceptional flexibility and abrasion resistance, and can be combined with Glenair composite end-fittings, transition-fittings, EMI braiding and jacketing to meet almost any installation requirement. In addition to a complete range of DuPont™ Teflon® tubing types (PTFE, FEP, ETFE and so on), Glenair also offers a low-outgassing halogen-free polymer called PEEK that far out performs other plastic tubing formulas in its strength to weight ratio and has a V-O flammability rating down to 0.057 inches without the use of additives.



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Type G - External Jacket - Series 74 Convoluted Tubing	123-100	C-13
Fiber Optic Conduit Backshell Adapter with Self Locking Rotatable Coupling and Fiber Alignment Grommet	377-041	C-14
"T" Configuration Split Junction Fitting	710-318	C-16
"Y" Configuration Split Junction Fitting	710-319	C-17
Straight with 45° Branch Configuration Split Junction Fitting	710-320	C-18
Plus "+" Configuration Split Junction Fitting	710-321	C-19
Shrink Boot Conduit Fitting for Glenair Series 74 Helical Convoluted Tubing	712S269	C-20
Single EMI/RFI Shield Termination Conduit Fitting for Glenair Series 74 Helical Convoluted Tubing	712S270	C-21
Dual EMI/RFI Shield Termination Conduit Fitting for Glenair Series 74 Helical Convoluted Tubing	712S271	C-22
Straight, 45° and 90° Conduit Connector Adapter for Glenair Series 74 Helical Convoluted Tubing	712-419	C-24

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103 - EMI/RFI Braided Shielding and Banding Split-Rings

For many applications, the cable shield is the most important element in controlling EMI. Unfortunately, metal shielding—especially when applied in multiple layers—can be extremely heavy. The opportunity to provide conductive EMI shielding at a fraction of the weight of metal is the principal advantage of composite thermoplastic EMI/RFI shielding*. Glenair is the industry leader in the design and manufacture of these unique screening products, supplied both in 100% composite and hybrid metal/plastic configurations.

As is commonly used in conjunction with composite shield socks, the banding split ring is a useful accessory that protects wire conductors from damage in shield-to-shield terminations.



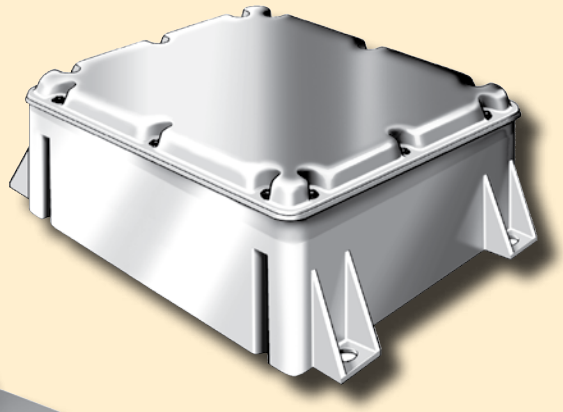
Description	Part Number	Page
Composite Light Weight Metal-Clad EMI/RFI Braided Shielding (100%)	103-026	D-2
75%/25% Blended Composite/Metal EMI/RFI Braided Shielding	103-027	D-3
PEEK Tubular Braid (Black) for Series 74 Convoluted Tubing	102-051	D-4
AS85049 Composite Banding Split-Ring	687-749	D-5

*Glenair's composite light weight metal-clad EMI/RFI braiding is made from AmberStrand®

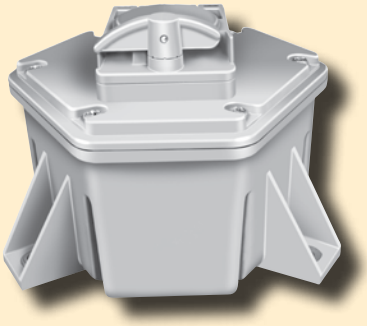
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140 - Composite EMI/RFI Junction Boxes

Glenair's lightweight/high-strength "CostSaver" Composite EMI/RFI Junction Boxes are ideally suited for use in harsh environments, where resistance to electromagnetic interference, corrosive fluids, high temperatures, shock and vibration are critical requirements. The boxes are designed to meet the shock and vibration requirements of MIL-S-901D and MIL-STD-167SHIPS. Box materials also meet stringent EMI/RFI/HIRF and indirect lightning strike performance specifications.









Description	Part Number	Page
Ultra-Miniature Junction Box	140-074	E-16
Mini Junction Box	140-100	E-18
Small Junction Box	140-101	E-20
Medium Junction Box	140-102	E-22
Large Junction Box	140-103	E-24
Small Low-Profile Box	140-104	E-26
Medium Low-Profile Junction Box	140-105	E-28
Small Three-Legged Junction Box	140-106	E-30
Jumbo Junction Box	140-107	E-32
8 Port Octagonal Junction Box	140-200	E-34
12 Port Rectangular Junction Box	140-203	E-35
Internal Mounting Plate for use with Rectangular Series Boxes	687-466	E-42
Round Internal Mounting Plate for use with 140-106 Box	687-305-22	E-43
Slotted Terminal Block Mounting Rail	687-467	E-44
Hole Cap Assembly	687-461	E-45

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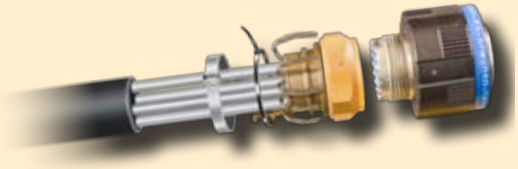
MIL-DTL-38999 Series III Type Environmental Connectors

Glenair's composite MIL-DTL-38999 Series III Type Environmental Connector Series is built to ensure robust, durable performance. Connector polarization keys and keyways are manufactured to extremely tight tolerances, facilitating reliable mating and minimizing mating cycle wear. Composite shell bodies offer reduced weight, excellent environmental performance and reliable resistance to vibration and shock. Resilient elastomer inserts and heat-treated berryllium copper contact retention clips provide trouble-free crimp contact insertion and removal. Insert arrangements are IAW MIL-STD-1560, or appropriate sub-sets depending on intended application. Consult factory for available insert arrangements.



Description	Part Number	Page
MIL-DTL-38999 Series III Type Wall Mount Receptacle	233-105-00, D0, T0	F-10
MIL-DTL-38999 Series III Type Jam Nut Receptacle	233-105-07	F-12
MIL-DTL-38999 Series III Type In-Line Receptacle	233-105-05	F-14
MIL-DTL-38999 Series III Type Plug	233-105-G6	F-16

Composite Connector Accessory Assembly Procedures



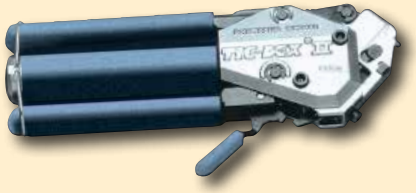
Glanair assembly procedures are provided for shield termination backshells and other complex assemblies. Below is a list of the assembly procedures in this book. Please consult factory for additional assistance.

Assembly Instructions	Page
Composite Thermoplastic Shield Sock Assembly Procedure	A-10
Series 360 Non-Environmental Backshell Assembly Instructions	A-30
Series 370 Environmental Backshell Assembly Instructions	A-36
Series 380 EMI/RFI Non-Env. Backshell Assembly Instructions (Type D)	A-44
Series 380 EMI/RFI Non-Env. Backshell Assembly Instructions (Type E)	A-56
Series 390 EMI/RFI Environmental Backshell Assembly Instructions	A-60
Banding Backshell Assembly Instructions	A-66
Composite Saddle Clamp Assembly Procedure	A-20
Composite Accessory-to-Connector Assembly Instructions	G-3
Band-It® Shield Termination Assembly Procedure	G-11

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Tools and Tool Accessories

Glenair addresses interconnect system assembly requirements with a variety of military standard and specialized connector-to-backshell assembly tools, braided shielding banding tools and accessories. Our tool line for composite components includes backshell-to-connector assembly wrenches specifically designed to fit composite coupling nut dimensions.







Description	Part Number	Page
Soft Jaw Pliers	TG69	G-5
Aluminum Hex-Coupling Wrench for Composite Backshells	600-091	G-6
Stainless Steel Hex-Coupling Wrench for Composite Backshells	600-157	G-7
Backshell Assembly Strap Wrench with 3/8" Square Drive	TG70	G-8
Hand-Held Digital Torque Wrench with Dual 3/8" Drives	600-161	G-9
Bench Stand for 600-161 Digital Torque Wrench	600-162	
Large Broad Blade Utility Shears	600-164	G-10
Hand Banding Tool for Standard Bands	600-058	G-12
Hand Banding Tool for Micro Bands	600-061	
Standard Clamping Band	600-052	G-13
Standard Extended-Length Clamping Band	600-090	
Micro Clamping Band	600-057	
Micro Extended-Length Clamping Band	600-083	
Cut-Off Blade for Standard Hand Banding Tool	600-056	G-14
Cutter Knife for Standard Hand Banding Tool	600-062	
Cut-Off Blade for Micro Banding Tool	600-060	
Cutter Knife for Micro Banding Tool	600-082	
Calibration Key for Standard and Micro Hand Banding Tools	600-055	G-15
Tension Gauge for Standard Hand Banding Tools	600-072-1	
Tension Gauge for Micro Hand Banding Tools	600-086-1	

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Glenair Composite Connector and Accessory Glass Fiber Additives



Glass-filled composite thermoplastic resins in pellet form, ready for use in injection molding applications.

Generally, when we speak of "composites," we refer to materials containing fibers, primarily glass, impregnated within a plastic resin or "matrix". This combination produces strong, lightweight, corrosion-resistant and dimensionally stable materials. Such materials also provide design flexibility and high dielectric strength.

Glass fiber and resin complement each other well. Just as a metallurgist might combine tin and copper to produce bronze—a material which is much stronger than either base metal by itself— combining glass fiber with a resin matrix results in a material that is more useful than either of its constituent components is on its own.

Certain plastics are extremely strong yet subject to cracking or other forms of stress-related damage. When the plastic matrix is augmented with glass fibers, a wide range of performance benchmarks can be achieved including improved wear-resistance, crush-resistance, and dimensional stability.

Glenair composite interconnect components are principally manufactured from 30% glass fiber polyetherimide (PEI), an amorphous thermoplastic with outstanding heat and chemical resistance and high strength. At room temperature the 30% glass filled PEI exhibits strength far beyond that of most engineering thermoplastics, with a tensile strength yield of over 15,000 psi. The PEI material meets the most stringent outgassing and flammability requirements.

Composite Thermoplastic Vs. Common Metal Materials

Material	Specific Gravity	Density (lbs. Inch^3)	Salt Spray
Composite	**1.27 - 1.51**	**.055**	**2000+ Hrs**
Aluminum	**2.55 - 2.80**	**.098**	**48-1000 Hrs**
Titanium	**4.51 - 4.62**	**.162**	**500-1000 Hrs**
Stainless Steel	**7.70 - 7.73**	**.284**	**500-1000 Hrs**
Brass	**8.40 - 8.70**	**.305**	**500-1000 Hrs**

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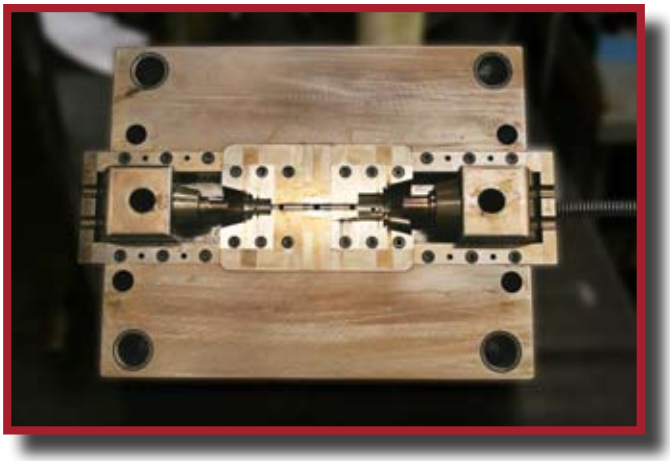
Glenair Composite Connector and Accessory Production Capabilities

Glenair is the recognized leader in composite thermoplastic research and development for the interconnect accessory industry. In fact, no one else has tooled even a small fraction of the composite thermoplastic accessories available today from Glenair. The product line includes circular and rectangular connectors and accessories, cable junction boxes, conduit, conduit fittings, protective covers, shielding, shielding support rings, and more. It is an ongoing goal at Glenair, largely achieved at this point, to be able to offer equivalent function composite thermoplastic interconnect components for the complete range of interconnect products we produce in metal.

Glenair composite components are produced in injection molded and, in certain cases, machined versions ideally suited for use in harsh environments where resistance to high temperatures, outgassing, corrosive fluids, fire, and shock and vibration is required. Glenair composites are ASTM E595 space rated, and are qualified to the shock, vibration, thread strength and bend moment requirements of MIL-DTL-38999 and SAE AS85049. The materials also meet stringent EMI/RFI/HIRF and indirect lightning strike performance specifications.

Glenair has the largest and most experienced staff of composite engineers and manufacturing experts in the interconnect accessory industry. Their combined expertise insures Glenair composite products mate correctly with both metal and composite connectors and meet the customer's most stringent performance requirements. All Glenair designs provide a dimensionally stable and cadmium-free alternative to plated aluminum and brass.





Glenair composite material options include Ultem® (PEI), Amodel® (PPA), Ryton® (PPS), Torlon® (PAI), PEEK, Siltem and LCP. Base materials can be augmented with conductive and non-conductive additives and reinforcing fibers to meet specific functional specifications. As mentioned, each composite material has its own specific structural properties. The following is a brief introduction to the most common materials used by Glenair:

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Glenair Composite Connector and Accessory Production Capabilities

Ultem® (PEI) is an amorphous thermoplastic available in extruded bars for machining and pellets for injection molding. It combines high performance with good processing characteristics and offers high heat resistance, high strength



modulus and broad chemical resistance. Ultem 2300 is a 30% glass filled thermoplastic which displays excellent property retention and resistance to environmental stress. It can be further reinforced with conductive fibers, or plated, for EMI resistance. Ultem performs in operating environments up to 378° F (192° C) long term and 410° F (210° C) short term. Ultem meets ASTME595 outgassing, 14 CFR Part 25 flammability, and zero halogen outgassing requirements.



Glenair stocks an abundant supply of the composite materials used in the fabrication of our parts.

Ryton® (PPS) is a high temperature, injection molded material. It has good mechanical properties and excellent chemical resistance at elevated temperatures. Different grades are available including glass filled and glass/mineral filled versions. Ryton R4-XT is a 40 percent glass filled version engineered for improved knit-weld line characteristics. As a semi-crystalline material, Ryton exhibits excellent resistance to prolonged exposure to high temperatures, up to 500° F (260° C). Ryton also provides outstanding resistance to a broad spectrum of aggressive chemicals and has very stable dielectric and insulating properties. Ryton meets ASTME595 outgassing requirements and UL94 flammability tests.

Glenair's G-FLEX polymer (polyetherimide-siloxane) is a high-temperature material used primarily to produce annular convoluted tubing. The material is offered in a broad range of operating temperatures, has exceptional flexibility and good crush resistance. In certain applications, G-FLEX is a suitable alternative to costlier halogen-free composite polymers such as PEEK (polyetheretherketone).PEEK is a semi-crystalline thermoplastic that operates at extremely high temperatures—500°F (260° C) long-term and 600°F (315° C) short term. An extrudable material, PEEK offers one of the lightest strength to weight ratios available in a composite.

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Cost Comparison and Temperature Resistance

For many people, “plastic” means “cheap and breakable.” But when engineers search for new ways to enhance weight savings, corrosion resistance, shock and vibration dampening and stealth they immediately turn to plastic—the only alternative material capable of meeting, and beating, the established performance levels of aluminum, brass, titanium and steel.

The name “plastic” refers to the ability to form or shape a material, or to the moldability a material adopts under forces such as pressure or heat. Engineers often use the term “polymer” when referring to plastic materials, because it more clearly describes how many (poly) chemical units (mers) form up in complex chains to create modern plastic resins. “Thermoplastics” are polymer materials that melt to a liquid when heated and form into a hard, dimensionally stable shape when cooled.

Thermoplastic polymers are created by subjecting various chemical and petroleum-based ingredients to heat and pressure in sealed vessels. Specific chemical additives control how the polymer is formed and contribute to its performance in such areas as surface hardness and flame resistance. The process of mixing base materials with chemical additives to create specific types of plastic resins is called “polymerization.” The resulting plastic materials can be classified in various ways—by chemical or physical structure, by strength or thermal performance and by optical or electrical properties. Thermal properties are extremely important when selecting plastic materials for use in high-performance applications. Composite glass transition temperature (the point at which the heated material softens) will dictate whether or not the plastic is suitable for use in high-heat applications such as adjacent to an engine or other heat source. But other properties, such as its specific gravity, hardness, refractive index, dielectric strength, conductivity, chemical resistance, UV and flame resistance are also critical in deciding which recipe of resins, fibers and additives will be selected for a particular project.



The glass transition temperature, or the point at which the heated resin will soften, varies from material to material. Extremely high-heat applications, such as engine sensors, are generally considered to be ill-suited for composites.

Temperature resistance can be measured in a variety of ways: melt temperature, heat deflection temperature, glass transition temperature, and continuous use temperature. The resins that offer the highest capabilities in each of these categories are often the most expensive, but typically offer the lowest lifetime cost because of enhanced durability and strength. Two of the top thermal performers, Polyetheretherketone (PEEK) and high-temperature ETFE, are high cost materials, but exceptional performers over the long run.

Additives can be used to increase flame retardency, to improve lubricity or, in the case of pigments, simply to change the color of the final product. Again, material costs can rise with the addition of chemical compounds that contribute to improved performance. In terms of cost, thermo-plastic resins can be arranged into three basic categories:

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- Low cost/commodity resins with large volume market costs of less than $1.50/lb
- Medium cost/engineering resins that fall between $1.50-$3.00/lb
- High cost/high temperature resistant resins that usually cost above $3.00/lb.

Re-Designing Interconnect Systems for Composite Thermoplastics

Interconnect products made of composite materials offer significant advantages over steel or aluminum. They're lighter. They don't rust. They don't loosen under vibration. They can hide from radar. Yet the ability to design composite components that take advantage of these properties while still meeting form, fit and function requirements is no simple task.

Connector accessories, no matter the material, must thread onto the back of connectors. Intermatability with other components, whether composite or metal, is critical. Composite component design is further complicated due to the unique strengths and weakness of the material. Abrupt changes in wall thicknesses, for example, can lead to stress problems in both manufacture and use. Sharp, un-radiused angles can create stress and cause cracking. The length, shape, orientation and distribution of reinforcing fibers is also a critical concern, as is the impact of other additives, such as colorizers and flame retardants, on the behavior of the material during manufacture and use.

Interconnect systems designers continue to specify composites, despite the complications of the design and manufacturing process. The weight savings, corrosion resistance and other significant advantages of composites represent real, out-of pocket savings in fuel consumption and lifetime system maintenance for a broad range of air, sea and space applications.

Special Applications of Engineering Plastics: Flexible Tubing

Most of the products in this catalog are made from glass-filled thermoplastic resins, such as PEI (polyetherimide). These Glenair interconnect components—connectors, junction boxes, backshells and so on—are produced in an injection molding process that results in products that are known for their toughness, damage-resistance, dimensional stability and strength. But other formulas of engineering plastics, such as ETFE (ethylene tetrafluorethylene), are also widely applied by Glenair to produce a very different class of products: flexible convoluted tubing.

Unlike glass-filled thermoplastics that produce rigid parts, ETFE, FEP, and other high-temperature plastics used by Glenair in tubing fabrication produce products that are known for their folding endurance, or the number of times the material can be bent or flexed before experiencing failure. Used in wire-protection applications where a rigid, jacketed cable would experience rapid failure, flexible plastic tubing delivers outstanding performance and durability.

Glenair specializes in the manufacture of ruggedized plastic tubing for shipboard, aircraft and ground applications, and offers the world's broadest range of environmental, mechanical and EMI hardened solutions. Our recently expanded convoluted tubing and conduit manufacturing facility in Glendale is a state-of-the-art plant with every step in the tubing extrusion and finishing process centralized under one roof.



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Glenair Composite Connector and Accessory Standard Materials and Finishes

The following standard materials are used for the majority of Glenair's composite products. However, components are not limited to those listed but are representative of the elements used in Glenair's composite products.

Component	Material	Specification
Bodies, clamps, Saddles, coupling nuts, protective covers, etc.	Composite	AIR 4567, AS85049 ASTM D 5205
Hardware: Such as screws, washers, rivets, wire rope, sash chain, band straps, etc.	Corrosion Resisting Steel	QQ-S-763 (300 Series)
Elastomeric seals: Such as o-rings, cable jacket seals, grommets, etc.	Silicone or Fluorosilicone	ZZ-R-765 or MIL-R-25988
Anti-friction and thrust washers	Teflon	TFE

Standard Finishes

FINISH DETAILS		
SYM	**MATERIAL**	**FINISH**
XO	Composite Thermoplastic	No Plating, Natural
XB		No Plating, Black
XZN		Conductive, Zinc Nickel, Black
XM		Conductive, Electroless Nickel
XMT		Conductive, Ni-PTFE *1000 Hour Grey™*
XW		Conductive, Cadmium O.D. Over Electroless Nickel

Locking Compound

Glenair recommends
ND VIBRA-TITE® Formula 3
Thread Locking Compound
for customers who choose to lock or seal fasteners used on composite products.

Available from ND Industries (www.ndindustries.com), this product is non-reactive to composite resins

FINISH CODE CROSS REFERENCE		
Glenair Finish	**MIL-DTL-38999**	**AS85049**
XM	**M**	**M**
XW	**J**	**J**
XMT	**T**	**X**

1000 Hour Grey™ Ni-PTFE Nickel Fluorocarbon Polymer



The MIL-DTL-38999 Rev L detail specification lists Nickel Fluorocarbon Polymer as a qualified Cadmium free plating alternative. This RoHS compliant plating formula is now available on composite interconnect products from Glenair and offers the following benefits in harsh-environment applications:

- 2000+ hour salt spray
- Cadmium free
- Outstanding mating lubricity
- Hexavalent Chromium free
- 500+ mating cycles
- Non-Magnetic

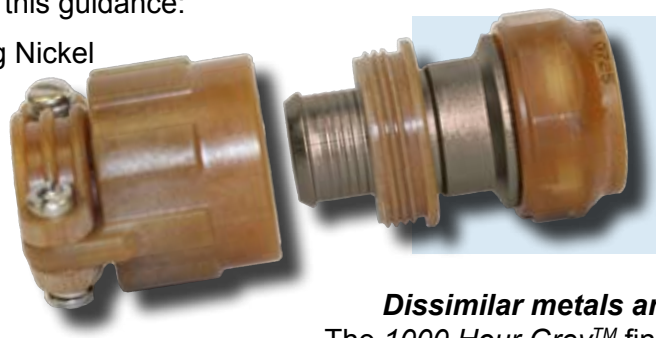
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RoHS Compliant Plating Option for Composite Thermoplastic Connectors and Accessories

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

Glenair would like to draw our customer's attention to one of the finish options from this specification that conforms to this guidance:

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



Glenair Nickel-PTFE 1,000 Hour Grey™ RoHS Compliant Plating is Now Available for All Composite Connector and Accessory Products.

This MIL-DTL-38999L "T" plating solution is cadmium and hexavalent chromium free, which allows it to be defined as RoHS compliant. NOTE: as of this printing the SAE AS85049 committee has not yet defined plating codes for this finish.

Glenair has developed its own Ni-PTFE surface finish that meets all the D38999 requirements but radically outperforms standard nickel fluorocarbon polymer flnishes in the most important areas including an amazing 2000 hours dynamic salt spray resistance when plated on composite parts.

This Glenair nickel fluorocarbon polymer plating has been assigned the **XMT** code in the plating tables in this composite catalog. Here are just some of the key performance attributes:

Temperature Resistance: Glenair's **XMT** Ni-PTFE ***1000 Hour Grey™*** finish is rated from -65°C to +175°C.

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

Dissimilar metals and compatible couples: The *1000 Hour Grey™* finish satisfies prohibitions against dissimilar metal coupling as specified in MIL-STD-889.

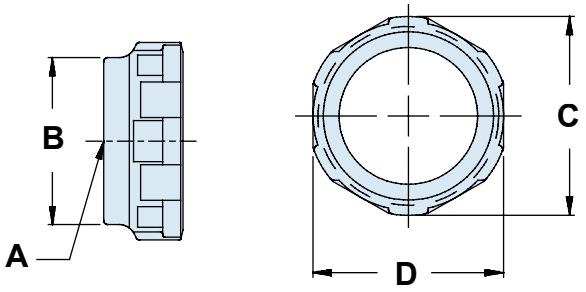
Shell-to-shell conductivity (millivolts): The **XMT** finish is rated at 2.5 millivolt drop potential.

Sulfur Dioxide Resistance: The **XMT** finish passes the requisite 336 hours resistance to Sulfur Dioxide.

Please note that **XMT** may also be applied to aluminum alloy and stainless steel, in which case the composite marker "X" is dropped and the plating code changes to **MT.**

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Table I
Front End Dimensional Details



NOTES:

1. *Connector shell size designations within ☐ are for reference only; do not use in part numbers.*
2. *Metric dimensions (mm) are in parentheses and are for reference only. (1 inch = 25.4 mm)*
3. *Consult factory for accessory interface data not listed.*
4. *Use Glenair 600-091 or 600-157 tool to tighten coupling nut. Rubber jaw pliers or strap wrench may damage the parts.*

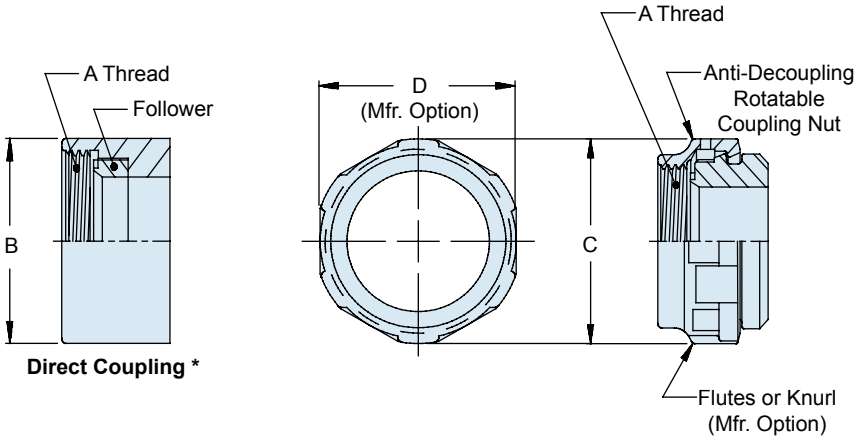
TABLE I

SHELL SIZE FOR CONNECTOR DESIGNATOR					A THREAD	B DIA	C DIA	D FLATS
A	F/L	G	H	U	REF	MAX	MAX	REF
-	08 [09]	-	-	-	7/16-28 UNEF	.59 (15.0)		
-	-	-	09 [A]	-	M12 x 1 - 6H	.65 (16.5)	.86 (21.8)	.75 (19.1)
08	-	-	-	-	1/2-20 UNF	.65 (16.5)		
-	-	-	-	08 [9] [A] [B]	1/2-28 UNEF	.65 (16.5)		
03	10 [11]	-	-	-	9/16-24 UNEF	.72 (18.3)	.98 (24.9)	.88 (22.2)
-	-	-	11 [B]	-	M15 x 1 - 6H	.77 (19.6)		
10	-	-	-	-	5/8-24 UNEF	.77 (19.6)		
-	-	-	-	10 [11] [C] [D]	5/8-28 UN	.77 (19.6)		
-	12 [13]	-	-	-	11/16-24 UNEF	.84 (21.3)	1.16 (29.4)	1.00 (25.4)
-	-	-	13 [C]	-	M18 x 1 - 6H	.89 (22.6)		
12 [7]	-	11 [A]	-	-	3/4-20 UNEF	.91 (23.1)		
-	-	-	-	12 [13] [F]	3/4-28 UNS	.91 (23.1)		
-	14 [15]	-	-	-	13/16-20 UNEF	.97 (24.6)	1.28 (32.5)	1.13 (28.6)
-	-	-	15 [D]	-	M22 x 1 - 6H	1.03 (26.2)		
14 [12]	-	13 [B]	-	-	7/8-20 UNEF	1.03 (26.2)		
-	-	-	-	14 [15] [G] [H]	7/8-28 UN	1.03 (26.2)		
-	16 [17]	-	-	-	15/16-20 UNEF	1.09 (27.7)	1.41 (35.7)	1.25 (31.8)
-	-	-	17 [E]	-	M25 x 1 - 6H	1.15 (29.2)		
16 [19]	-	15 [C]	-	-	1-20 UNEF	1.15 (29.2)		
-	-	-	-	16 [17] [J] [K]	1-28 UN	1.15 (29.2)		
18 [27]	18 [19]	-	-	-	1-1/16-18 UNEF	1.22 (31.0)	1.52 (38.5)	1.38 (35.1)
-	-	-	19 [F]	-	M28 x 1 - 6H	1.28 (32.5)		
-	-	17 [D]	-	-	1-1/8-18 UNEF	1.28 (32.5)		
-	-	-	-	18 [19] [M] [N]	1-1/8-28 UN	1.28 (32.5)		
20 [37]	20 [21]	-	-	-	1-3/16-18 UNEF	1.34 (34.0)	1.64 (41.7)	1.50 (38.1)
-	-	-	21 [G]	-	M31 x 1 - 6H	1.41 (35.8)		
-	-	19 [E]	-	-	1-1/4-18 UNEF	1.41 (35.8)		
-	-	-	-	20 [21] [P] [R]	1-1/4-28 UN	1.41 (35.8)		
22	22 [23]	-	-	-	1-5/16-18 UNEF	1.47 (37.3)	1.77 (44.9)	1.63 (41.3)
-	-	-	23 [H]	-	M34 x 1 - 6H	1.53 (38.9)		
-	-	-	-	22 [23] [S] [T]	1-3/8-28 UN	1.53 (38.9)		
24	24 [25]	23 [F]	-	-	1-7/16-18 UNEF	1.59 (40.4)	1.89 (48.0)	1.75 (44.5)
-	-	-	25 [J]	-	M37 x 1 - 6H	1.66 (42.2)		
61	-	-	-	-	1-1/2-18 UNEF	1.66 (42.2)		
-	-	-	-	24 [25] [U] [M]	1-1/2-28 UN	1.66 (42.2)	2.02 (51.2)	1.88 (47.6)
-	-	25 [G]	-		1-9/16-18 UNEF	1.66 (42.2)		
28	-	-	-	-	1-3/4-18 UNS	1.97 (50.0)	2.16 (54.8)	2.00 (50.8)

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Connector Designator A

SPECIFICATION	SERIES
MIL-DTL-5015	MS34XX
MIL-DTL-26482	2
MIL-C-81703	3
MIL-DTL-83723	1 & 3
40M39569	NB
DEF 5326-3	
LN 29504	
NFC 93422	HE 302
PAN 6432-1	
PAN 6432-2	
PATT 602	
EN2997	

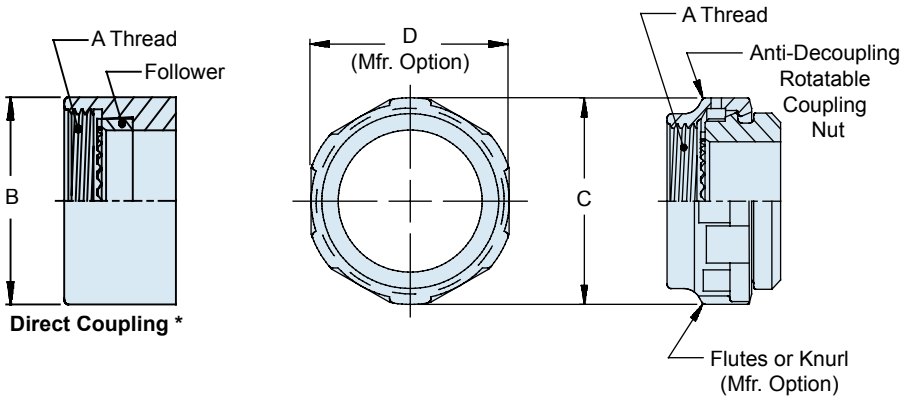


Note: Code A, rotatable coupling supplied without O-ring. Environmental seal performed by interface geometry.

* Consult factory for direct coupling part numbers.

Connector Designator F

SPECIFICATION	SERIES
MIL-DTL-38999	I & II
40M38277	NLS
NFC 93422	HE 309
NFC93422	HE 308
PAN 6433-1	
PATT 614	
PATT 616	

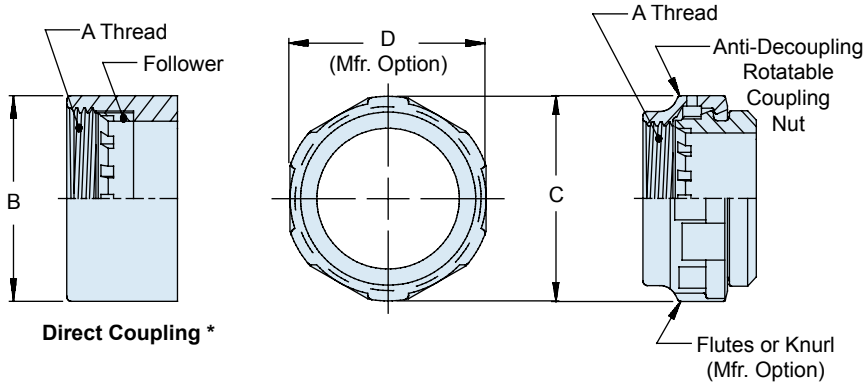


Note: Direct coupling supplied with O-ring for moisture sealing. Add modifier code 101A to end of part number for O-ring to be supplied on rotatable coupling.

* Consult factory for direct coupling part numbers.

Connector Designator G

SPECIFICATION
MIL-DTL-28840



Note: Code G, rotatable coupling is supplied without O-ring. Environmental seal performed by interface geometry.

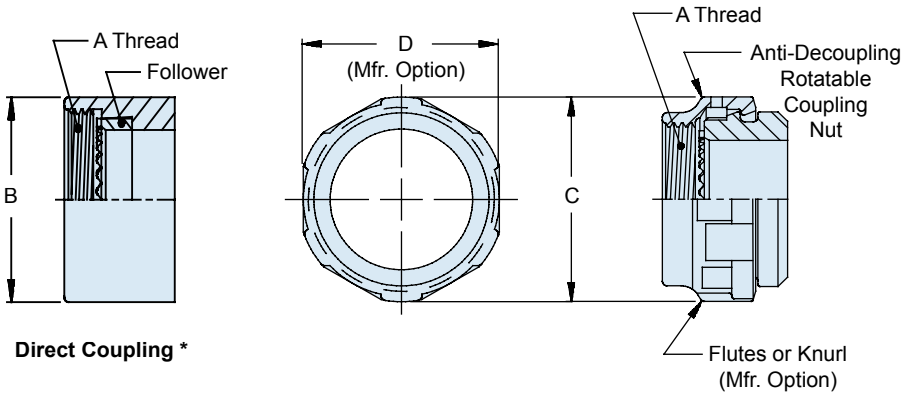
* Consult factory for direct coupling part numbers.

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Common Interface Standards

Connector Designator H

SPECIFICATION	SERIES
MIL-DTL-38999 EN3645	III & IV



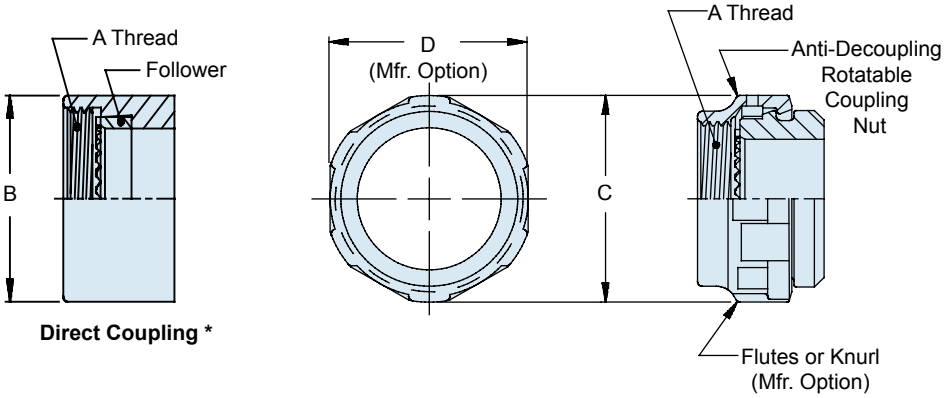
Direct Coupling *

Note: Direct coupling supplied with O-ring for moisture sealing. Add modifier code 101A to end of part number for O-ring to be supplied on rotatable coupling.

* Consult factory for direct coupling part numbers.

Connector Designator L

SPECIFICATION	SERIES
EN3372 JN1003 LN 29729 NFC93422 PAN 6433-2 PATT 615 VG 96912	HE306



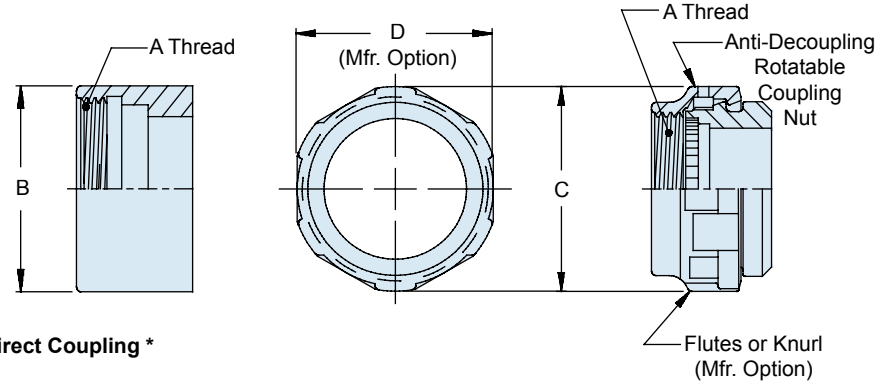
Direct Coupling *

Note: Direct coupling supplied with O-ring for moisture sealing. Add modifier code 101A to end of part number for O-ring to be supplied on rotatable coupling.

* Consult factory for direct coupling part numbers.

Connector Designator U

SPECIFICATION
MIL-C-29600



Direct Coupling *

Note: Direct coupling supplied with O-ring for moisture sealing. Add modifier code 101A to end of part number for O-ring to be supplied on rotatable coupling.

* Consult factory for direct coupling part numbers.

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Military Standard Connector Index

The following is a listing of circular connectors defined by US Military Specifications, cross-referenced to the applicable active or inactive part number series. The symbols in the Connector Designator column are an essential element in Glenair's backshell part number developments.

PART NO.	CONN. DESIG.	SPECIFICATION	SERIES	DESCRIPTION
MS3400	A	MIL-DTL-5015	MS3400	Receptacle, Wall Mtg
MS3401	A	MIL-DTL-5015	MS3400	Receptacle, Cable Connecting
MS3404	A	MIL-DTL-5015	MS3400	Receptacle, Jam Nut
MS3406	A	MIL-DTL-5015	MS3400	Plug
MS3408	A	MIL-DTL-5015	MS3400	Plug, 90°
MS3409	A	MIL-DTL-5015	MS3400	Plug, 45°
MS3412	A	MIL-DTL-5015	MS3400	Receptacle, Wall Mtg
MS3424	A	MIL-C-81703	3	Receptacle, Push Pull, Wall Mtg
MS3446	A	MIL-C-81703	3	Plug, Rack & Panel
MS3450	A	MIL-DTL-5015	MS3450	Receptacle, Wall Mtg (was M83723/19/20)
MS3451	A	MIL-DTL-5015	MS3450	Receptacle, Cable Connecting (was M83723/17/18)
MS3454	A	MIL-DTL-5015	MS3450	Receptacle, Jam Nut
MS3456	A	MIL-DTL-5015	MS3450	Plug, Straight (was M83723/23/24)
MS3459	A	MIL-DTL-5015	MS3450	Plug, Straight, Self Locking (was M83723/52/53)
MS3464	A	MIL-C-81703	3	Receptacle, Push Pull, Jam Nut
MS3467	A	MIL-C-81703	3	Plug, Push Pull
MS3468	A	MIL-C-81703	3	Plug, Push Pull, Lanyard
MS3470	A	MIL-DTL-26482	2	Receptacle, Narrow Flange Mtg (was M83723/1/2)
MS3471	A	MIL-DTL-26482	2	Receptacle, Cable Connecting (was M83723/7/8)
MS3472	A	MIL-DTL-26482	2	Receptacle, Wide Flange Mtg (was M83723/3/4)
MS3474	A	MIL-DTL-26482	2	Receptacle, Rear Mtg, Jam Nut (was M83723/5/6)
MS3475	A	MIL-DTL-26482	2	Plug, RFI Shielded (was M83723/42/43)
MS3476	A	MIL-DTL-26482	2	Plug, Straight (was M83723/13/14)
MS27466	F	MIL-DTL-38999	I	Receptacle, Wall Mtg
MS27467	F	MIL-DTL-38999	I	Plug, Straight
MS27468	F	MIL-DTL-38999	I	Receptacle, Jam Nut
MS27472	F	MIL-DTL-38999	II	Receptacle, Wall Mtg
MS27473	F	MIL-DTL-38999	II	Plug, Straight
MS27474	F	MIL-DTL-38999	II	Receptacle, Jam Nut
MS27475	F	MIL-DTL-38999	II	Receptacle, Wall Mtg
MS27479	F	MIL-DTL-38999	II	Inactive Use MS27472
MS27480	F	MIL-DTL-38999	II	Inactive Use MS27473
MS27481	F	MIL-DTL-38999	II	Inactive Use MS27474
MS27482	F	MIL-DTL-38999	II	Inactive Use MS27475
MS27484T	F	MIL-DTL-38999	II	Plug, Straight
MS27497	F	MIL-DTL-38999	II	Receptacle, Back Panel Wall Mtg
MS27498	F	MIL-DTL-38999	I	Plug, 90°
MS27500	F	MIL-DTL-38999	II	Inactive See MS27473
MS27515	F	MIL-DTL-38999	I	Inactive Use MS27656

* Consult factory

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Military Standard Connector Index

PART NO.	CONN. DESIG.	SPECIFICATION	SERIES	DESCRIPTION
MS27652	F	MIL-DTL-38999	I	Inactive Use MS27466
MS27653	F	MIL-DTL-38999	I	Inactive Use MS27467
MS27654	F	MIL-DTL-38999	I	Inactive Use MS27656
MS27656	F	MIL-DTL-38999	I	Receptacle, Back Panel, Wall Mtg
MS27661	F-752	MIL-DTL-38999	I	Plug, Lanyard Release
MS27665	F	MIL-DTL-38999	I	Plug, Rack & Panel Mtg
M28840/10	G	MIL-DTL-28840		Receptacle, Wall Mtg
M28840/11	G	MIL-DTL-28840		Receptacle, Cable Connecting
M28840/14	G	MIL-DTL-28840		Receptacle, Jam Nut
M28840/16	G	MIL-DTL-28840		Plug, Straight
D38999/20	H	MIL-DTL-38999	III	Receptacle, Wall Mtg
D38999/24	H	MIL-DTL-38999	III	Receptacle, Jam Nut
D38999/26	H	MIL-DTL-38999	III	Plug, Straight
D38999/29	H-701	MIL-DTL-38999	III	Plug, Lanyard Release
D38999/30	H-701	MIL-DTL-38999	III	Plug, Lanyard Release
D38999/40	H	MIL-DTL-38999	IV	Receptacle, Wall Mtg
D38999/42	H	MIL-DTL-38999	IV	Receptacle, Box Mtg
D38999/44	H-715	MIL-DTL-38999	IV	Receptacle, Jam Nut
D38999/46	H	MIL-DTL-38999	IV	Plug, Straight, EMI
D38999/47	H	MIL-DTL-38999	IV	Plug, Straight
M83723/1	A	MIL-DTL-83723	I	Superseded by MS3470
M83723/2	A	MIL-DTL-83723	I	Superseded by MS3470
M83723/3	A	MIL-DTL-83723	I	Superseded by MS3472
M83723/4	A	MIL-DTL-83723	I	Superseded by MS3472
M83723/5	A	MIL-DTL-83723	I	Superseded by MS3474
M83723/6	A	MIL-DTL-83723	I	Superseded by MS3474
M83723/7	A	MIL-DTL-83723	I	Superseded by MS3471
M83723/8	A	MIL-DTL-83723	I	Superseded by MS3471
M83723/13	A	MIL-DTL-83723	I	Superseded by MS3476
M83723/14	A	MIL-DTL-83723	I	Superseded by MS3476
M83723/36	A	MIL-DTL-83723	I	Inactive For New Design
M83723/37	A	MIL-DTL-83723	I	Inactive For New Design
M83723/38	A	MIL-DTL-83723	I	Inactive For New Design
M83723/39	A	MIL-DTL-83723	I	Inactive For New Design
M83723/40	A	MIL-DTL-83723	I	Inactive For New Design
M83723/41	A	MIL-DTL-83723	I	Inactive For New Design
M83723/42	A	MIL-DTL-83723	I	Superseded by MS3475
M83723/43	A	MIL-DTL-83723	I	Superseded by MS3475
M83723/48	A	MIL-DTL-83723	I	Inactive For New Design
M83723/49	A	MIL-DTL-83723	I	Inactive For New Design
M83723/66	A	MIL-DTL-83723	III	Plug, Push Pull (Pin Contacts)
M83723/67	A	MIL-DTL-83723	III	Plug, Push Pull (Socket Contacts)
M83723/68	A	MIL-DTL-83723	III	Plug, Push Pull Lanyard, (Pin Contacts)
M83723/69	A	MIL-DTL-83723	III	Plug, Push Pull, Lanyard, (Socket Contacts)
M83723/71	A	MIL-DTL-83723	III	Receptacle, Bayonet, Flange Mtg, (Socket Contact)
M83723/72	A	MIL-DTL-83723	III	Receptacle, Bayonet, Flange Mtg, (Pin Contact)
M83723/73	A	MIL-DTL-83723	III	Receptacle, Bayonet, Single Hole Mtg, (Socket Contact)

* Consult factory

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Military Standard Connector Index

PART NO.	CONN. DESIG.	SPECIFICATION	SERIES	DESCRIPTION
M83723/74	A	MIL-DTL-83723	III	Receptacle, Bayonet Single Mtg, (Pin Contact)
M83723/75	A	MIL-DTL-83723	III	Plug, Bayonet (Socket Contact)
M83723/76	A	MIL-DTL-83723	III	Plug, Bayonet (Pin Contact)
M83723/77	A	MIL-DTL-83723	III	Plug, Bayonet, RFI (Socket Contact)
M83723/78	A	MIL-DTL-83723	III	Plug, Bayonet, RFI (Pin Contact)
M83723/82	A	MIL-DTL-83723	III	Receptacle, Threaded, Flange Mtg, (Socket Contact)
M83723/83	A	MIL-DTL-83723	III	Receptacle, Threaded, Flange Mtg, (Pin Contact)
M83723/84	A	MIL-DTL-83723	III	Receptacle, Threaded Single Hole Mtg, (Socket Contact)
M83723/85	A	MIL-DTL-83723	III	Receptacle, Threaded Single Hole Mtg, (Pin Contact)
M83723/86	A	MIL-DTL-83723	III	Plug, Threaded, (Socket Contact)
M83723/87	A	MIL-DTL-83723	III	Plug, Threaded, (Pin Contact)
M83723/91	A	MIL-DTL-83723	III	Plug, Threaded, RFI (Socket Contact)
M83723/92	A	MIL-DTL-83723	III	Plug, Threaded, RFI (Pin Contact)
M83723/95	A	MIL-DTL-83723	III	Plug, Threaded, (Socket Contact), Self Locking
M83723/96	A	MIL-DTL-83723	III	Plug, Threaded, (Pin Contact), Self Locking
M83723/97	A	MIL-DTL-83723	III	Plug, Threaded, RFI (Socket Contact), Self Locking
M83723/98	A	MIL-DTL-83723	III	Plug, Threaded, RFI (Pin Contact), Self Locking
NATC00	H*	SSQ21635		Receptacle, Flange
NATC06	H*	SSQ21635		Plug
NATC07	H*	SSQ21635		Receptacle, Jam Nut
NBO	A	40M39569		Receptacle, Flange Mtg
NB4	A	40M39569		Receptacle, Flange Mtg
NB6	A	40M39569		Plug, Straight
NB6G	A	40M39569		Plug, Straight, EMI
NB7	A	40M39569		Receptacle, Jam Nut
NLSO	F	40M38277		Receptacle, Flange Mtg
NLS6	F	40M38277		Plug, Straight
NLS6G	F	40M38277		Plug, Straight, EMI
NLS7	F	40M38277		Receptacle, Jam Nut
NZGL00	H**	SSQ21635		Receptacle, Flange
NZGL06	H**	SSQ21635		Plug
NZGL07	H**	SSQ21635		Receptacle, Weld Mtg
NZGL66	H**	SSQ21635		Plug

* Consult factory

H* NATC Series size 09 through 25 mates to Glenair Connector Designator H, consult factory for sizes 33 & 37

H** NZGL Series requires special accessories manufactured by Glenair, consult factory

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Connector-Backshell Interface Index

These lists of specifications, associated connector manufacturer part numbers, and common rear accessory interface designators DO NOT imply qualification status of the manufacturers indicated for each specification series. The listings are only for the identification of common interface data under the applicable Connector Designator symbol, an essential element used in Glenair's accessory part number development. For connector manufacturer part number series not shown, please consult factory.

CONN. DESIG.	SPECIFICATION	CONNECTOR MANUFACTURER	MANUFACTURER SERIES
A	MIL-DTL-5015 MS3400 MS3450	Aero-Electric Connector Flight Connector Glenair J-Tech ITT Cannon	AE55 FF IT / ITS JT 3400 / JT3450 CV340 / CV345
	MIL-DTL-26482 Series II	Aero-Electric Connector Amphenol Deutsch ECD FCI Glenair ITT Cannon	AE77 PTS-DR / 91-483 / 118 AFD5 8526 IPT PV7
	MIL-C-81703 Series III	Deutsch ECD	DBA5 / D817
	MIL-DTL-83723 Series I	Amphenol ITT Cannon ITT Cannon UK Limited Deutsch ECD	PTS-DR / 01-483 / 118 PVA PV-S AFD
	MIL-DTL-83723 Series III	Amphenol Products Amphenol/Pyle National Deutsch ECD FCI ITT Cannon Labinal/Cinch	518 B DL6 / 837 83723 MF CN0930
	40M39569	Deutsch ECD ITT Cannon	DBA / 381 PV-G
	CECC 75201.001	FCI	
	DEF 5326-3 ESC 10	Amphenol-Tuchel Amphenol/Pyle National Compagnie Deutsch FCI Hi-Rel Connectors Inc. ITT Cannon UK Limited Sealtron Inc.	602GB
	ESC 11	Amphenol/Pyle National Compagnie Deutsch	
	LN 29504	Amphenol Limited Amphenol-Tuchel Compagnie Deutsch FCI ITT Cannon UK Ltd. ITT Cannon Electric GmbH	118 / 652 118 / 652 AFD / DFE / FDBA 8525.1 PVW PVW

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Connector-Backshell Interface Index

CONN. DESIG.	SPECIFICATION	CONNECTOR MANUFACTURER	MANUFACTURER SERIES
A	NFC93422 / HE302	FCI	8525
	PAN 6432-1	Amphenol Limited	602GB
		Amphenol-Tuchel	602GB
		ITT Cannon UK Ltd.	PVX
		ITT Cannon Electric GmbH	PVX
		Compagnie Deutsch	AFD
		Deutsch Ltd	RR
		FCI	8526
	PAN 6432-2	Compagnie Deutsch	DBAS
		Deutsch Ltd	DBAS
	PATT 602	Amphenol Limited	602GB
		Amphenol-Tuchel	602GB
		Deutsch Ltd.	RR
		FCI	8526
		ITT Cannon UK Ltd.	PVX
	VG 95328	Cie Deutsch	951-50
		Compagnie Deutsch	DVG / 951-50
		Glenair	IPT, IPT-SE
CONN. DESIG.	MIL-DTL-38999 Series I	Aero-Electric Connectors	AE46 / AE49
		Amphenol	LJT-R / 418-1
		FCI	8LT
F		Glenair	231
		ITT Cannon	KJL
	MIL-DTL-38999 Series II	AB Electronics	CT-R
		Aero-Electric Connectors	AE47 / AE48
		Amphenol	JT-R / 418-2
		FCI	8T
		Glenair	232
		ITT Cannon	KJ
	40M38277	Amphenol	JT-R / 10-475
		ITT Cannon	KJ
	NFC 93422 HE308	FCI	8LT
		ITT Cannon Electric France	KJL
	NFC 93422 HE309	FCI	8T
		ITT Cannon Electric France	KJ
	PAN 6433-1	Amphenol Limited	JT / JTP
		AB Electronics	CT
		FCI	8T
		ITT Cannon Electric France	KJ
		ITT Cannon UK Ltd.	KJ
		ITT Cannon Electric GmbH	KJ
		TEC	TT / TTPQ
	PATT 614	Amphenol Limited	418-2
		FCI	8T
		ITT Cannon UK Ltd.	KJ
		TEC	TT

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Connector-Backshell Interface Index

CONN. DESIG.	SPECIFICATION	CONNECTOR MANUFACTURER	MANUFACTURER SERIES
F	PATT 616	Amphenol Limited FCI ITT Cannon UK Ltd.	418-1 8LT KJL
G	MIL-DTL-28840	Glenair G & H Technology Hughes Connecting Devices ITT Cannon Sunbank	90 NC GTA KFS JSC
H	MIL-DTL-38999 Series III	Aero-Electric Connector Amphenol Amphenol/Pyle National Deutsch ECD Glenair ITT Cannon	AE22 TV-R / TVS / TVS-R T3 DTS 233 KJADIV4
	MIL-DTL-38999 Series IV	Deutsch ECD Flight Connector G & H Technology Glenair	PL BL CNO 234
	CECC 75201.002	FCI Amphenol	JVS TVRB
L	JN 1003	Amphenol Limited Deutsch Limited FCI TEC	SJT HDJ 8ST STT
	LN 29729	Amphenol Limited FCI ITT Cannon Electric GmbH	SJT 8ST CGK
	NFC 93422, HE 306	FCI	8ST
	PAN 6433-2	Amphenol Limited FCI TEC	SJT 8ST STT
	PATT 615	Amphenol Limited FCI TEC	SJT 8ST STT
	VG 96912	Amphenol Limited ITT Cannon Electric GmbH FCI TEC	SJT CGK 8ST STT
U	MIL-C-29600 Series A	Deutsch Limited	DG123 DG123A

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Connector Manufacturers Reference

This index of USA and international connector manufacturers provides a cross-reference of manufacturers' proprietary series designations to applicable specifications. This information does not imply qualification status but serves to indicate that the manufacturers' series is "in conformance with" the noted specifications or documents. The symbols in the Connector Designator column are an essential element in Glenair's accessory part number developments. For connector manufacturers' part number series not shown in these listings, please consult factory for applicable accessory part numbers.

MFG SERIES	CONN. DESIG.	SPECIFICATION REFERENCE	SERIES
Aero-Electric Connector Company			
AE22	H	MIL-DTL-38999	III
AE46	F	MIL-DTL-38999	I
AE47	F	MIL-DTL-38999	II
AE48	F	MIL-DTL-38999	II
AE49	F	MIL-DTL-38999	I
AE77	A	MIL-DTL-26482	II
AE83	A	MIL-DTL-83723	III
AB Electronics			
CT-R	F	MIL-DTL-38999	II
Amphenol Limited			
JT	F	PAN 6433-1	
SJT	L	JN 1003	
SJT	L	LN29729	
SJT	L	PAN 6433-2	
118	A	LN 29504	
418-1	F	PATT 616	
418-2	F	PATT 614	
418-5	L	NFC 93422	HE 306
418-5	L	PATT 615	
602GB	A	PAN 6432-1	
602GB	A	PATT 602	
652	A	LN 29504	
Amphenol Products			
JT	*	MIL-DTL-27599	
JT-R	F	MIL-DTL-38999	II
JT-R	F	40M38277	
LJT	*	MIL-DTL-27599	
LJT-R	F	MIL-DTL-38999	I
PTS-DR	A	MIL-DTL-26482	II
PTS-DR	A	MIL-DTL-83723	I
SJT	L	LN 29729	
TV	H	MIL-DTL-38999	III
TVRB	H	CECC 75201.002	III
TVS	H	MIL-DTL-38999	III
10-475	F	40M38277	
118	A	MIL-DTL-26482	II
118	A	MIL-DTL-83723	I
246	*	MIL-DTL-5015	
418-1	F	MIL-DTL-38999	I

MFG SERIES	CONN. DESIG.	SPECIFICATION REFERENCE	SERIES
Amphenol Products (Continued)			
418-2	F	MIL-DTL-38999	II
518	A	MIL-DTL-83723	III
91-483	A	MIL-DTL-26482	II
91-483	A	MIL-DTL-83723	I
Amphenol/Pyle National			
B	A	MIL-DTL-83723	III
T3	H	MIL-DTL-38999	III
	A	ESC 10, ESC 11	
Amphenol/Tuchel Electronics GmbH			
118	A	LN 29504	
162GB	*	VG 95328	
602GB	A	DEF 5326-3	
602GB	A	PAN 6432-1	
602GB	A	PATT 602	
62GB	*	DEF 5326-3	
652	A	LN 29504	
Cie Deutsch & Compagnie Deutsch GmbH			
AFD	A	LN 29504	
AFD	A	MIL-DTL-26482	I
AFD	A	PAN 6432-1	
DBAS	A	MIL-C-81703	III
DBAS	A	PAN 6432-2	
DFE	A	LN 29504	
DVG	A	VG 95328	
FDBA	A	LN 29504	
951	A	PRL 53125	
9.815	J	MIL-C-81511	III & IV
991	A	PAN 6432-4	
999.1	F	MIL-DTL-38999	I
	A	ESC 10	
	A	ESC 11	
Deutsch Engineered Connecting Devices			
AFD5	A	MIL-DTL-26482	II
AFD	A	MIL-DTL-83723	I
A815	J	MIL-C-81511	III
B815	J	MIL-C-81511	IV
BMS	E	MIL-DTL-26500	

* Consult factory for backshell part numbers.

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Connector Manufacturers Reference

MFG SERIES	CONN. DESIG.	SPECIFICATION REFERENCE	SERIES
Cie Deutsch & Compagnie Deutsch GmbH (Continued)			
DFE	A	LN 29504	
DVG	A	VG 95328	
FDBA	A	LN 29504	
951	A	PRL 53125	
9.815	J	MIL-C-81511	III & IV
991	A	PAN 6432-4	
999.1	F	MIL-DTL-38999	I
	A	ESC 10	
	A	ESC 11	
Deutsch Engineered Connecting Devices			
AFD5	A	MIL-DTL-26482	II
AFD	A	MIL-DTL-83723	I
A815	J	MIL-C-81511	III
B815	J	MIL-C-81511	IV
BMS	E	MIL-DTL-26500	
BTK	D	MIL-DTL-26482	I
DBA	A	40M39569	
DBA7	A	MIL-C-81703	III
DTS	H	MIL-DTL-38999	III
DIV4	H	MIL-DTL-38999	IV
DL6	A	MIL-DTL-83723	III
D817	A	MIL-C-81703	III
LPT	D	MIL-DTL-26482	I
381	A	40M39569	
450	D	MIL-DTL-26482	I
460	D	MIL-DTL-26482	I
837	A	MIL-DTL-83723	III
Deutsch Limited			
LL	J	MIL-C-81511	III-IV
DBAS	A	PAN 6432-2	
DTS	H	MIL-DTL-38999	III
HDJ	L	JN 1003	
RR	A	PAN 6432-1	
RR	A	PATT 602	
RR70	A	MIL-C-81703	III
SLPT	*	MIL-DTL-26482	I
DG123	U	MIL-C-29600	A
DG123A	U	MIL-C-29600	A

MFG SERIES	CONN. DESIG.	SPECIFICATION REFERENCE	SERIES
FCI/Burndy Corporation			
BT	D	MIL-DTL-26482	I
G	D	MIL-DTL-26482	I
L	D	MIL-DTL-26482	I
L-T	D	MIL-DTL-26482	I
M-T	D	MIL-DTL-26482	I
FCI			
JVS	H	CECC 75201.002	
8LT	F	MIL-DTL-38999	I
8LT	F	NFC 93422	HE 308
8ST	L	JN 1003	
8ST	L	LN 29729	
8ST	L	NFC 93422	HE 306
8ST	L	PAN 6433-2	
8ST	L	PATT 615	
8ST	L	VG 96912	
8T	F	MIL-DTL-38999	II
8T	F	NFC 93422	HE 309
83723	A	MIL-DTL-83723	III
85	D	MIL-DTL-26482	I
851	S	PATT 603	
851-50	*	PRL 53125	
851-50	*	VG 95328	
8525	A	NFC 93422	HE 302
8525.1	A	LN 29504	
8526	A	MIL-DTL-26482	II
8526	A	PAN 6432-1	
8526	A	PATT 602	
8533	A	EN 2992	
8533	A	ESC 10	
Flight Connector Corporation			
FC	*	MIL-DTL-5015	
FF	A	MIL-DTL-5015	MS3400
FH	*	MIL-DTL-5015	
FHA	K	MIL-DTL-83723	II
PL	H	MIL-DTL-38999	IV
G & H Technologies			
BL	H	MIL-DTL-38999	IV
NC	G	MIL-DTL-28840	

* Consult factory for backshell part numbers.

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Connector Manufacturers Reference

MFG SERIES	CONN. DESIG.	SPECIFICATION REFERENCE	SERIES
Glenair			
IPT	A	MIL-DTL-26482	
231, 232	F	MIL-DTL-38999	I, II
233, 234	H	MIL-DTL-38999	III, IV
90	G	MIL-DTL-28840	
IT, ITS	A	MIL-DTL-5015	
ITT Cannon			
CA3106B	*	VG95234	
CV340	A	MIL-DTL-5015	MS3400
CV345	A	MIL-DTL-5015	MS3450
KFS	G	MIL-DTL-28840	
KJ	F	MIL-DTL-38999	II
KJ	F	40M38277	
KJA	H	MIL-DTL-38999	III
KJL	F	MIL-DTL-38999	I
MF	A	MIL-DTL-83723	III
PV-G	A	40M39569	
PVA	A	MIL-DTL-83723	I
PV7	A	MIL-DTL-26482	II
	A	ESC 10	KE, SE
ITT Cannon Electric France SA			
KJ	F	MIL-DTL-38999	II
KJ	F	PAN 6433-1	
KJL	F	MIL-DTL-38999	I
251	*	MIL-DTL-26482	I
ITT Cannon UK Ltd.			
KJ	F	PATT 614	
PV-S	A	MIL-DTL-83723	I
PVW	A	LN29504	
PVX	A	PAN 6432-1	
PVX	A	PATT 602	
	A	ESC 10	KE, SE
ITT Cannon Electric GmbH			
CA3106B	*	VG 95234	
CGK	L	LN 29729	
KJ	F	PAN 6433-1	
KPSE	*	VG 95328	
KPT	*	VG 95328	
PVW	A	LN 29504	
PVX	A	PAN 6432-1	

MFG SERIES	CONN. DESIG.	SPECIFICATION REFERENCE	SERIES
J-Tech			
JT 3400	A	MIL-DTL-5015	MS3400
JT 3450	A	MIL-DTL-5015	MS3450
JTVG95234	A	VG95234	
JT 3400	A	MIL-DTL-5015	MS3400
JT 3450	A	MIL-DTL-5015	MS3450
JTVG95234	A	VG95234	
Labinal/Cinch			
CNO930	A	MIL-DTL-83723	III
RMS			
RO		MIL-DTL-26500	Aluminum
Schaltbau GmbH			
674	*	VG 95328	
675	*	VG 95328	
SICEM			
SCB	*	VG 95234	
Sunbank			
JSC		MIL-DTL-28840	
TEC			
TT	F	PAN 6433-1	
STT	L	LN 29729	
STT	L	PAN 6433-2	
STT	L	PATT 615	
STT	L	VG 96912	
VEAM Litton Precision Products International			
CIR	*	VG 95234	
VPT-SE	*	MIL-DTL-26482	I
VPT-SE	*	VG 95328	

* Consult factory for backshell part numbers.

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Connector Manufacturers Alpha-Numeric Index

The following alpha-numeric list is provided as a convenience in identifying the various connector manufacturers' proprietary connector series designations applicable to the US and international specifications and documents listed previously. The Glenair Connector Designator is also indicated for each listing. For complete manufacturer's identity, refer to the preceding Connector Manufacturers Index.

MFG SERIES	CONN. DESIG.	CONNECTOR MANUFACTURER
AE22	H	Aero-Electric Connector
AE46	F	Aero-Electric Connector
AE47	F	Aero-Electric Connector
AE48	F	Aero-Electric Connector
AE49	F	Aero-Electric Connector
AE55	A	Aero-Electric Connector
AE66	E	Aero-Electric Connector
AE77	A	Aero-Electric Connector
AFD	A	Compagnie Deutsch
AFD	A	Deutsch ECD
AFD5	A	Deutsch ECD
A815J	J	Deutsch ECD
B	A	Pyle-National
BG	D	Amphenol
BL	H	G & H Technology
BT	D	FCI
BTK	D	Deutsch ECD
B815	J	Deutsch ECD
CA3106B	*	Cannon Electric GmbH
CA-E/R	B	ITT Cannon
CA-RX	B	ITT Cannon
CGK	L	ITT Cannon Electric GmbH
CIR	*	VEAM
CNO	H	Labinal
CNO930	A	Labinal
CT-R	F	Plessey Connectors
CVA	K	ITT Cannon
CV340	A	ITT Cannon
CV345	A	ITT Cannon
CWLD	C	ITT Cannon Electric GmbH
DBA	A	Deutsch ECD
DBAS	A	Compagnie Deutsch
DBAS	A	Cie Deutsch
DBAS	A	Deutsch ECD
DFE	A	Cie Deutsch
DIV4	H	Deutsch ECD
DL6	A	Deutsch ECD
DTS	H	Cie Deutsch
DVG	A	Cie Deutsch
D817	A	Deutsch ECD
FC	*	Elecsys
FDBA	A	Compagnie Deutsch
FDBA	A	Deutsch
FF	A	Elecsys
FH	*	Elecsys
FHA	K	Elecsys
G	D	FCI
GTA	G	Hughes Connecting Devices
JT 3400	A	J-Tech
JT 3450	A	J-Tech
JT VG	*	J-Tech
JT	F	Amphenol
JT-R	F	Amphenol
JVS	H	FCI
TT	F	FKI
KFS	G	ITT Cannon
KJ	F	ITT Cannon UK Ltd.
KJ	F	ITT Cannon Electric France
KJ	F	ITT Cannon Electric GmbH
KJ	F	ITT Cannon
KJA	H	ITT Cannon
KJL	F	ITT Cannon Electric France
KJL	F	ITT Cannon
KPSE	S	ITT Cannon UK Ltd.
KPSE	D	ITT Cannon
KPT	*	ITT Cannon Electric GmbH
KPT	D	ITT Cannon
KPTM	*	ITT Cannon Electrc GmbH
L	D	FCI
L-T	D	FCI
LJT	F	Amphenol
LJT-R	F	Amphenol
LL	J	Deutsch
LPT	D	Deutsch ECD
M-T	D	FCI
MF	A	ITT Cannon
MF-S	D	Amphenol Products
MK 8	S	AB Electronics
MK 12	S	AB Electronics
MK 18	S	AB Electronics
NC	G	G & H Technology
PL	H	Elecsys

* Consult factory for backshell part numbers.

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Connector Manufacturers Alpha-Numeric Index

MFG SERIES	CONN. DESIG.	CONNECTOR MANUFACTURER
PTS-DR	A	Amphenol
PV-G	A	ITT Cannon
PV-S	A	ITT Cannon UK Ltd.
PVA	A	ITT Cannon
PVW	A	ITT Cannon UK Ltd.
PVW	A	ITT Cannon Electric GmbH
PVX	A	ITT Cannon UK Ltd.
PVX	A	ITT Cannon Electric GmbH
PV7	A	ITT Cannon
RDN	G	Elecsys
RR	A	Hellerman Deutsch
RR50	A	Cie Deutsch
RR70	A	Deutsch Ltd.
SCB	*	SICEM
SJT	L	Amphenol
STT	L	TEC
SLPT	*	Deutsch Ltd.
TV	H	Amphenol
TVS	H	Amphenol
T3	H	Pyle-National
VPT	D	VEAM
VPTE-SE	*	VEAM
10-214	B	Amphenol
10-475	F	Amphenol
118	A	Amphenol Limited
118	A	Amphenol
118	A	Amphenol-Tuchel
162GB	*	Amphenol-Tuchel
246	*	Amphenol
251	*	Cannon Electric France

MFG SERIES	CONN. DESIG.	CONNECTOR MANUFACTURER
381	A	Deutsch ECD
418-1	F	Amphenol Limited
418-1	F	Amphenol
418-2	F	Amphenol Limited
418-2	F	Amphenol
518	A	Amphenol
602GB	A	Amphenol Limited
602GB	A	Amphenol-Tuchel
62GB	*	Amphenol-Tuchel
652	A	Amphenol Limited
652	A	Amphenol-Tuchel
674	*	Schaltbau
675	*	Schaltbau
837	A	Deutsch ECD
83723	A	FCI
851-50	*	FCI
8525	A	FCI
8525.1	A	FCI
8526	A	FCI
857	A	FCI
8D	H	FCI
8LT	F	FCI
8ST	L	FCI
8T	F	FCI
9-815	J	Cie Deutsch
9-815	J	Compagnie Deutsch
91-483	A	Amphenol
951-50	A	Cie Deutsch
951-50	A	Compagnie Deutsch
991	A	Cie Deutsch
999.1	F	Cie Deutsch

* Consult factory for backshell part numbers.

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Shield Termination Styles for Glenair Composite EMI/RFI Backshells

RFI/EMI Backshell Shield Termination Styles

Conductive composite backshells are designed to terminate cable shielding and provide a low electrical resistant ground path. Various shield termination styles are available to match the electrical requirements of different application environments. All Glenair shield termination styles meet the shell conductivity requirements of AS85049. Standard self-locking as well as G-Load coupling styles are available for selected styles.

EMI/RFI Shield Termination Information					
Glenair Basic Part Number	Shield Termination Style	Shield Type			Page
		Overall	Individual	Combination	
311-019	Lamp Base Thread	X			A-6
311-034		X			A-5
319-134	Shield Sock Assemblies and Swing Arms	X	X	X	A-16
319-120		X	X	X	A-14
319-137		X	X	X	A-22
319-138		X	X	X	A-24
319-064		X	X	X	A-12
380-099	Cone and Ring and Knit Braid Style	X	X		A-46
380-100		X	X		A-48
380-130			X		A-52
380-131			X		A-53
380-132			X		A-54
387-083		X	X	X	A-58
390-052		X			A-62
440-087	Banding and Crimp-Ring Style	X			A-64
440-143		X	X		A-68
440-144		X	X		A-70
447-325		X	X		A-72
447-326		X	X		A-74
447-327		X	X		A-76
447-711			X		A-87
447-331		X	X	X	A-84
507-088		X	X		A-92
557-186		X	X		A-94
447-328	Band-In-a-Can	X	X		A-78
447-657		X	X		A-86
447-329		X	X		A-80
447-330		X	X		A-82

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Reduced Weight and Zero Corrosion for Harsh Environment Interconnect Applications

Hundreds of Military Standard and Commercial Connector Accessories Tooled, Stocked and Ready for Shipment.

Composite connector accessories offer a wide range of benefits to the interconnect engineer, including corrosion resistance, vibration dampening, weight reduction and the reduction of magnetic signatures—a critical requirement in stealth applications.

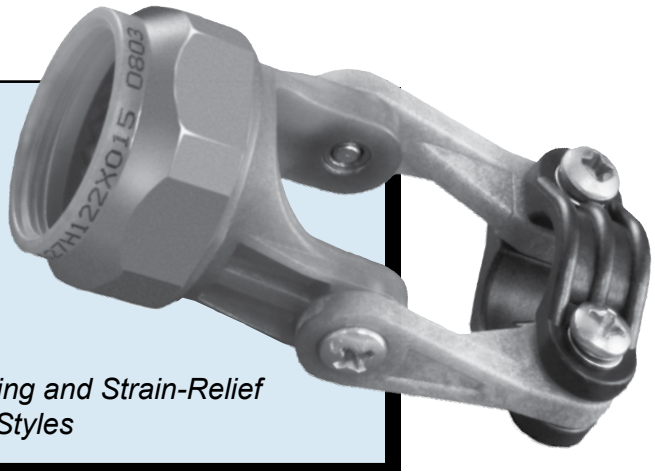
Glenair composite connector accessories are ideally suited for use in harsh environments where resistance to high temperatures, outgassing, corrosive fluids, fire, shock and vibration is required. Materials include Ultem® 2300 and other glass filled composite thermoplastics. Glenair composite accessories are ASTM E595 space rated, and are qualified to the shock, vibration, thread strength and bend moment requirements of MIL-DTL-38999 and AS85049. These materials also meet stringent EMI/RFI/HIRF and indirect lightning strike performance specifications.

Backshells Available to Fit Virtually All Military Standard and Commercial Connectors

Lightweight Components Withstand Shock, Temperature Cycling and Vibration

Conductive EMC Surface Finishes Including: Selectively Plated and RoHS Compliant Styles

EMI/RFI Shield Termination, Environmental Sealing and Strain-Relief Backshells for All Popular Connector Types and Styles



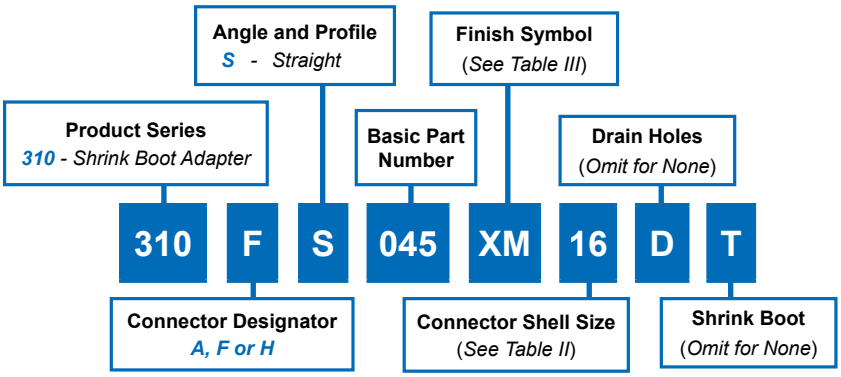
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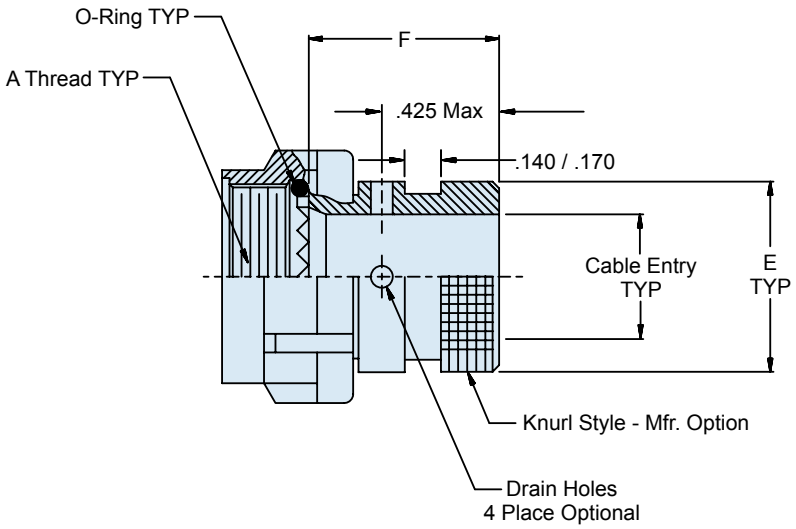
Catalog contents—including part numbers, materials and dimensions—are accurate to the best of our ability when we go to print. Even so, customers are advised to consult the factory for the latest specifications, particularly to confirm critical dimensions such as connector lengths, threads, and so on.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

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310-045
Composite Shrink Boot Adapter
with Self-Locking Rotatable Coupling Nut

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	





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TABLE II: SHELL SIZE				
Shell Size		E Max	F Max	Cable Entry Min.
A, F	H			
08	09	.533 (13.5)	.940 (23.9)	.250 (6.4)
10	11	.605 (15.4)	.940 (23.9)	.355 (9.0)
12	13	.774 (19.7)	.940 (23.9)	.491 (12.5)
14	15	.838 (21.3)	.940 (23.9)	.565 (14.4)
16	17	.963 (24.5)	.940 (23.9)	.690 (17.5)
18	19	1.042 (26.5)	.940 (23.9)	.769 (19.5)
20	21	1.217 (30.9)	.940 (23.9)	.894 (22.7)
22	23	1.355 (34.4)	.940 (23.9)	1.019 (25.9)
24	25	1.443 (36.7)	.940 (23.9)	1.134 (28.8)

TABLE III: FINISH	
Symbol	Finish Description
XB	No Plating - Black Color (Non-Coductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel
XD	No Plating, Desert Tan

NOTES

1. See Table I in Intro for front-end dimensional details.
2. (**Straight**) 770-001S**-0 shrink boot supplied with "T" option.
   For angled boot, contact Glenair engineering.
   See shrink boot product page for more details.
3. O-ring supplied with H and F codes only.
4. Coupling nut supplied unplated.

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310-017
Composite Shrink Boot Adapter
with Direct Coupling Nut

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482, Series II and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
DIRECT COUPLING	

Angle and Profile
S - Straight

Product Series
310 - Shrink Boot Adapter

Basic Part Number

Shell Size
(See Table II)

310	F	S	017	XM	15	T

Connector Designator
A, F & H

Finish Symbol
(See Table III)

Shrink Boot
(Omit for None)

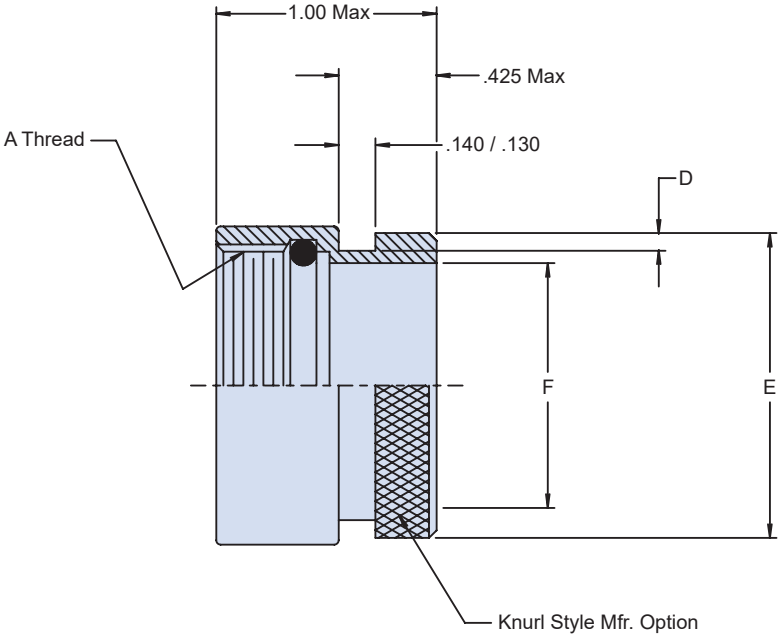


TABLE III: FINISH	
Symbol	**Finish Description**
XB	No Plating - Black Color (Non-Conductive Finish)
XO	Composite Material–No Plating, Color Black and Brown, Brass Interface Shroud and Adapter–Nickel Plated
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE II: SHELL SIZE			
Shell Size H	**D +.008 -.000**	**E +.000 -.045**	**F**
09	.044 (1.1)	.612 (15.5)	.346 (8.8)
11	.044 (1.1)	.764 (19.4)	.475 (12.1)
13	.044 (1.1)	.857 (21.8)	.589 (15.0)
15	.044 (1.1)	.980 (24.9)	.714 (18.1)
17	.044 (1.1)	1.100 (27.9)	.839 (21.3)
19	.069 (1.8)	1.215 (30.9)	.945 (24.0)
21	.069 (1.8)	1.345 (34.2)	1.070 (27.2)
23	.069 (1.8)	1.465 (37.2)	1.195 (30.4)
25	.069 (1.8)	1.590 (40.4)	1.320 (33.5)

NOTES

1. See Table I in Intro for front-end dimensional details.
2. (**Straight**) 770-001S**-0 shrink boot supplied with "T" option. For angled shrink boot, contact Glenair engineering. See shrink boot product page for more details.
3. O-Ring will not be supplied with Connector Designator A.

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311-034
Composite Lamp Base Thread
EMI/RFI Shield Termination Backshell with Self-Locking Rotatable Coupling Nut

Glenair®

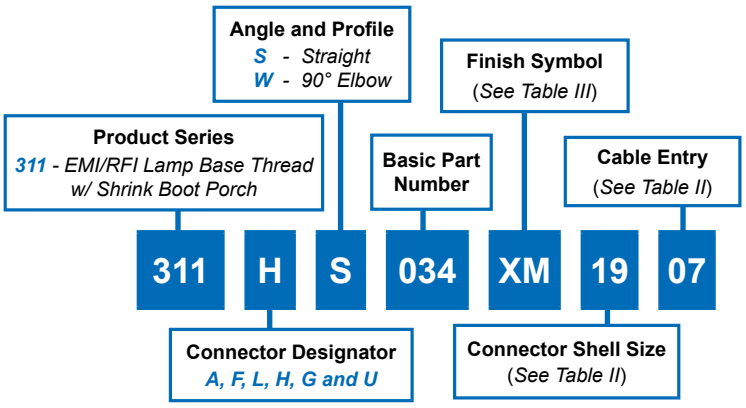
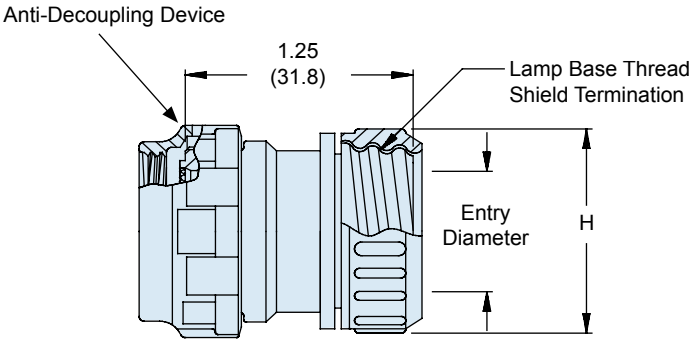
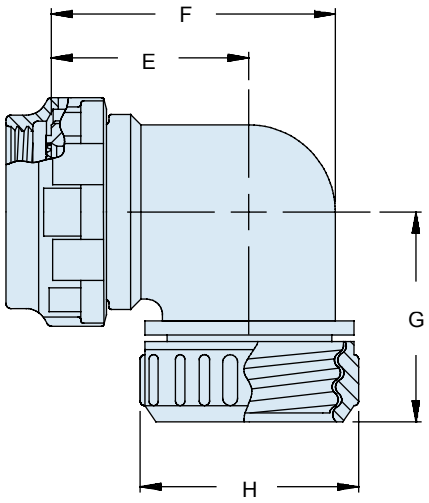


TABLE II: CABLE ENTRY

Dash No.	H ± .06	H (1.5)	Entry Dia. ±.03	Entry Dia. (0.8)
01	.45	(11.4)	.13	(3.3)
02	.52	(13.2)	.25	(6.4)
03	.64	(16.3)	.38	(9.7)
04	.77	(19.6)	.50	(12.7)
05	.92	(23.4)	.63	(16.0)
06	1.02	(25.9)	.75	(19.1)
07	1.14	(29.0)	.81	(20.6)
08	1.27	(32.3)	.94	(23.9)
09	1.43	(36.3)	1.06	(26.9)
10	1.52	(38.6)	1.19	(30.2)
11	1.64	(41.7)	1.38	(35.1)





NOTES

1. See Table I in Intro for front-end dimensional details.
2. Coupling nut supplied unplated.
3. Metric dimensions (mm) are for reference only.

TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator* A	F/L	H	G	U	E ± .06	E (1.5)	F ± .09	F (2.3)	G ± .09	G (2.3)	Max Entry Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.19	(30.2)	02
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.25	(31.8)	03
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.31	(33.3)	04
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.38	(35.1)	05
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.44	(36.6)	06
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.47	(37.3)	07
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.56	(39.6)	08
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.63	(41.4)	09
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.69	(42.9)	10
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	1.78	(45.2)	11

**Consult factory for additional entry sizes available.
See introduction for additional connector front-end details.

TABLE III

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/ Olive Drab over Electroless Nickel

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311-019
Composite Lamp Base Thread
EMI/RFI Shield Termination Backshell
with Shrink Boot Porch and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Angle and Profile
S - *Straight*
T - *45° Elbow*
W - *90° Elbow*

Finish Symbol
(*See Table III*)

Product Series
311 - *EMI/RFI Lamp Base Thread w/ Shrink Boot Porch*

Basic Part Number

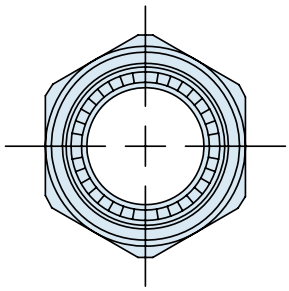
Cable Entry
(*See Table IV*)

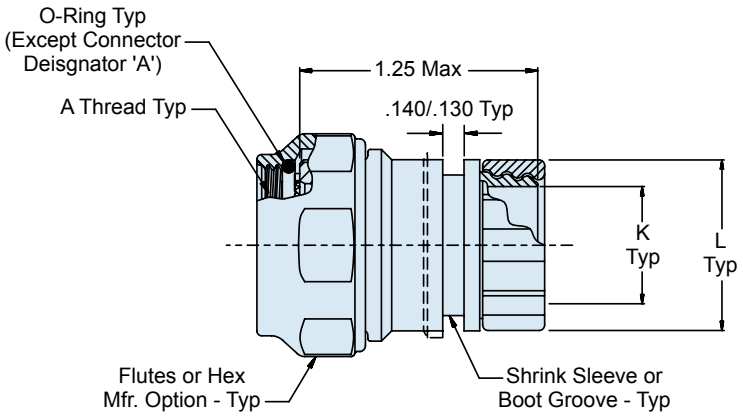
311	H	S	019	XM	15	03	T

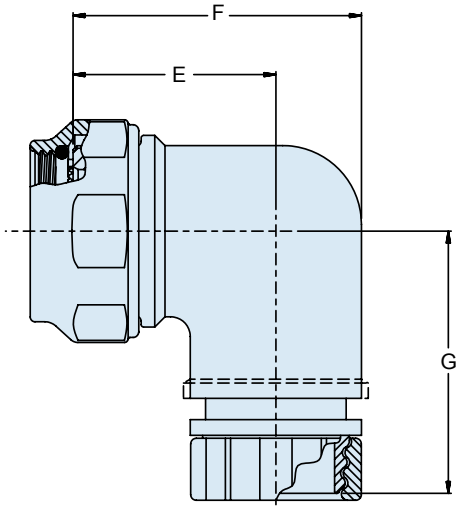
Connector Designator
A, F and H

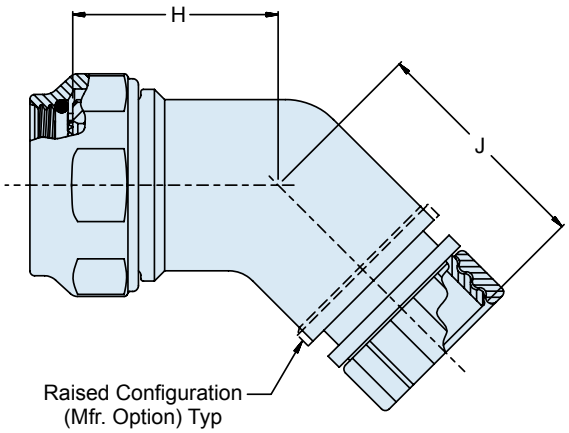
Connector Shell Size
(*See Table II*)

Shrink Boot
(*Omit for None*)









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311-019
Composite Lamp Base Thread
EMI/RFI Shield Termination Backshell
with Shrink Boot Porch and Self-Locking Rotatable Coupling

Glenair®

TABLE II: SHELL SIZE							
Shell Size		E ± .06	F ± .09	G ± .09	H ± .06	J ± .09	Max Dash Number (Table II)
A, F	H						
08	09	0.69 (17.5)	0.88 (22.4)	1.19 (30.2)	0.72 (18.3)	1.00 (25.4)	02
10	11	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	0.75 (19.1)	1.06 (26.9)	03
12	13	0.81 (20.6)	1.13 (28.7)	1.31 (33.3)	0.75 (19.1)	1.13 (28.7)	04
14	15	0.88 (22.4)	1.31 (33.3)	1.38 (35.1)	0.76 (19.3)	1.16 (29.5)	05
16	17	0.94 (23.9)	1.38 (35.1)	1.44 (36.6)	0.78 (19.8)	1.18 (30.0)	06
18	19	0.97 (24.6)	1.44 (36.6)	1.47 (37.3)	0.79 (20.1)	1.19 (30.2)	07
20	21	1.06 (26.9)	1.63 (41.4)	1.56 (39.6)	0.82 (20.8)	1.22 (31.0)	08
22	23	1.13 (28.7)	1.75 (44.5)	1.63 (41.4)	0.86 (21.8)	1.26 (32.0)	09
24	25	1.19 (30.2)	1.88 (47.8)	1.69 (42.9)	0.89 (22.6)	1.29 (32.8)	10

TABLE IV: ENTRY DIAMETER		
Dash Number	K Entry ± .03	L ± .06
01	.13 (3.3)	.45 (11.4)
02	.25 (6.4)	.52 (13.2)
03	.38 (9.7)	.64 (16.3)
04	.50 (12.7)	.77 (19.6)
05	.63 (16.0)	.92 (23.4)
06	.75 (19.1)	1.02 (25.9)
07	.81 (20.6)	1.14 (29.0)
08	.94 (23.9)	1.27 (32.3)
09	1.06 (26.9)	1.43 (36.3)
10	1.19 (30.2)	1.52 (38.6)
11	1.38 (35.1)	1.64 (41.7)

TABLE III: FINISH	
Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

NOTES

1. See Table I in Intro for front-end dimensional details.
2. 770-001S**-0 shrink boot supplied with T option. See shrink boot product page for more details.
3. O-Ring will not be supplied with Connector Designator A.
4. Coupling nut supplied unplated.

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311-063
Composite Lamp Base Thread
EMI/RFI Environmental Shield Termination Backshell with Shrink Boot Porch and Direct Coupling Nut

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
DIRECT COUPLING	

Angle and Profile
S - Straight

Finish Symbol
(See Table III)

Product Series
311 - EMI/RFI Lamp Base Thread w/ Shrink Boot Porch

Basic Part Number

Cable Entry
(See Table IV)

311	H	S	063	M	18	05	T

Connector Designator
A, F and H

Connector Shell Size
(See Table II)

Shrink Boot
(Omit for None)

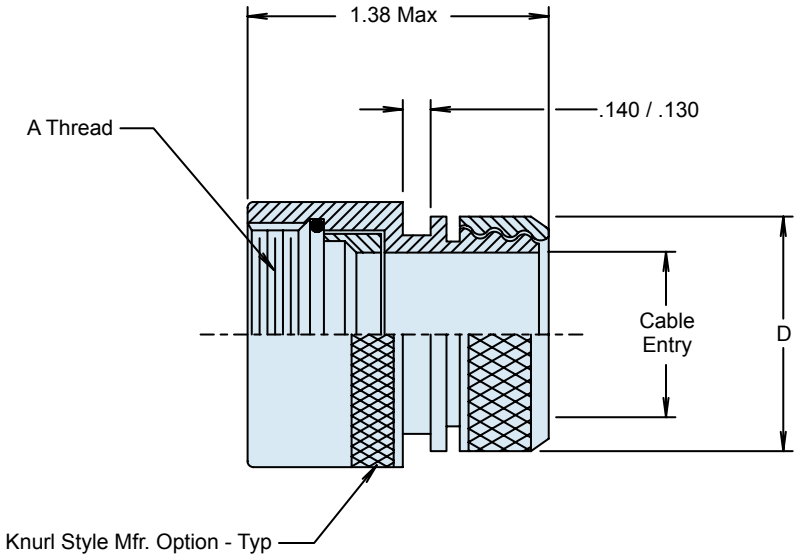


TABLE II: SHELL SIZE

Shell Size		Max Dash Number
A, F	H	
08	09	02
10	11	03
12	13	04
14	15	05
16	17	06
18	19	07
20	21	08
22	23	09
24	25	10

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TABLE III: FINISH	
Symbol	**Finish Description**
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE IV: CABLE ENTRY		
Dash Number	**D Max**	**Entry Max**
01	.448 (11.4)	.13 (3.3)
02	.515 (13.1)	.25 (6.4)
03	.640 (16.3)	.38 (9.7)
04	.765 (19.4)	.50 (12.7)
05	.930 (23.6)	.63 (16.0)
06	1.015 (25.8)	.75 (19.1)
07	1.140 (29.0)	.81 (20.6)
08	1.265 (32.1)	1.06 (26.9)
09	1.432 (36.4)	1.19 (30.2)
10	1.515 (38.5)	1.38 (35.1)

NOTES

1. See Table I in Intro for front-end dimensional details.
2. For angled shrink boots, contact Glenair engineering.
3. 770-001S**-0 shrink boot supplied with T option. See shrink boot product page for more details.
4. O-Ring will not be supplied with Connector Designator A.

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Composite Thermoplastic Shield Sock Assembly Procedure

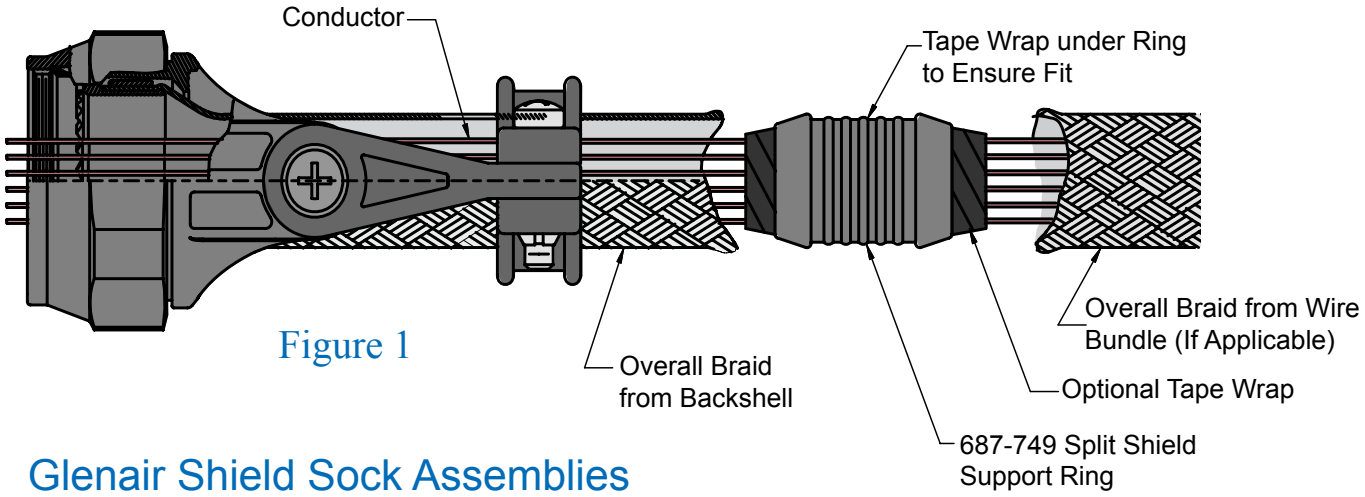


Figure 1

Glenair Shield Sock Assemblies Offer Fast and Trouble-Free Termination of EMI Shielding:

For Swing-Arm type shield sock backshells, choose Straight, 45° or 90° angle, and tighten screws to lock arms in place. For standard shield socks, ignore this step. For styles equipped with strain relief clamps, leave the saddle clamp hardware loose.

Next, insert the wire bundle into the backshell to determine if the braid transition angle from the backshell to wire bundle is less than 45º. If it is less than 45°, build up the wire bundle with tape and re-insert wire bundle into backshell to support the transition of overall braid from the backshell to the wire bundle.

Loosely assembly the adapter to the connector and push back the backshell braid. Insert the wire bundle into the adapter and bottom it against the connector. Holding the cable, mark or tag the location where the shield support ring (Glenair Part Number 687-749) will be located. This distance may vary depending on your technique and the flexibility of the wire bundle immediately to the rear of the saddles (Figure 1).

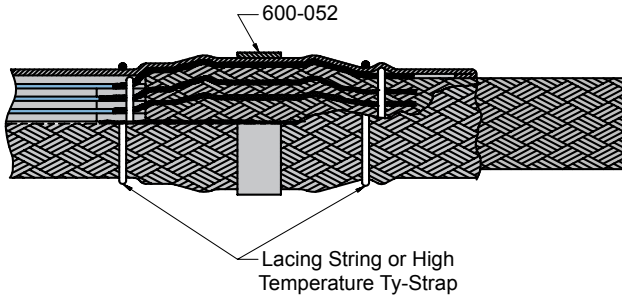


Figure 2

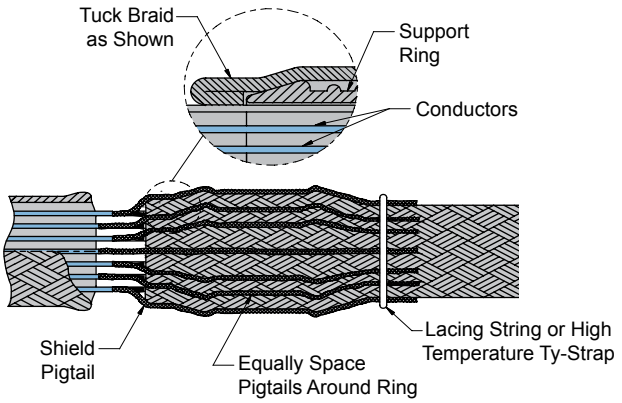


Figure 3

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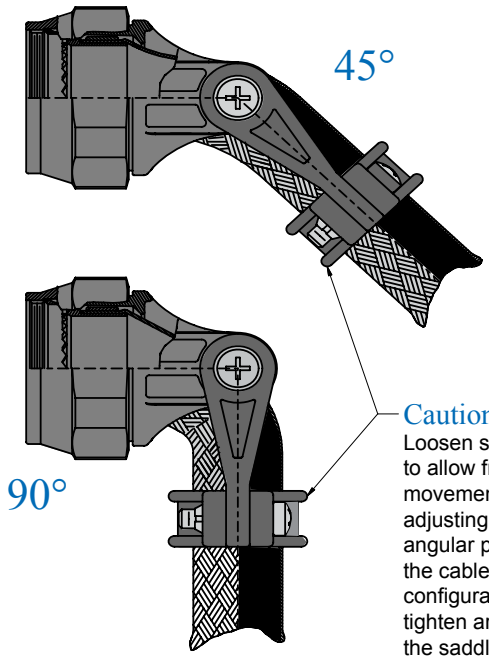
Composite Thermoplastic Shield Sock Assembly Procedure

At the marked location, near the shield support ring, wrap tape around wire bundle for snug fit of shield support ring (Figure 1). Tape wrap is optional.

You can then slide the overall braid from the wire bundle side over the shield support ring, trimming braid ends and tucking extra braid underneath itself for a clean appearance.

For pin connectors, slide the backshell forward, and hand tighten backshell to connector. Then, evenly space shield pigtails (Figure 3) or solder sleeve pigtails (Figure 4) around the shield support ring. Cut the pigtails so that they extend slightly beyond end of shield support ring.

Bring the shield sock from backshell and completely cover the pigtails and support ring. Trim and fold the braid as shown in Figure 2. Lace tie the shield adjacent to support ring ends.



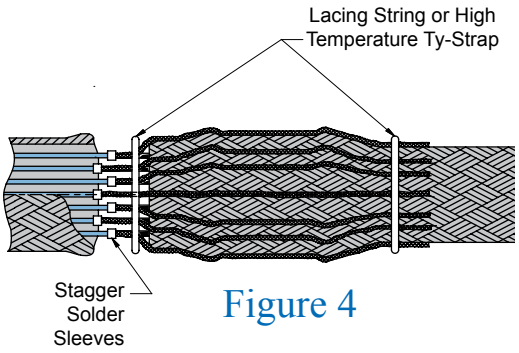


Figure 4

Install Glenair's *Band-it*® band (600-052) between the lace ties onto the center of the support ring as shown in Figure 2. The hand banding tool (600-058) or pneumatic banding tool (600-067) is used for this banding process.

Next, wrap the shield support ring assembly with high temperature tape. Place lacing cord, high temperature tape, or high temperature plastic Ty-Straps on the braid transition to the rear of the backshell to secure the overbraid on wire bundle. If you wish, you can cover the overbraid with 102-080 braid sock.

Tighten the adapter to the connector using established torque values with Glenair 600-091 or 600-157 composite hex coupling wrench and related tooling accessories. Where applicable, secure strain relief saddles onto the wire bundle using TG69 soft jaw pliers. Torque saddle screws to established values. Teflon tape wrap or AS85049/127 bushing strips may be used as needed to cushion the braid sock under the saddle clamps.

With these few steps, your Shield Sock installation is complete!

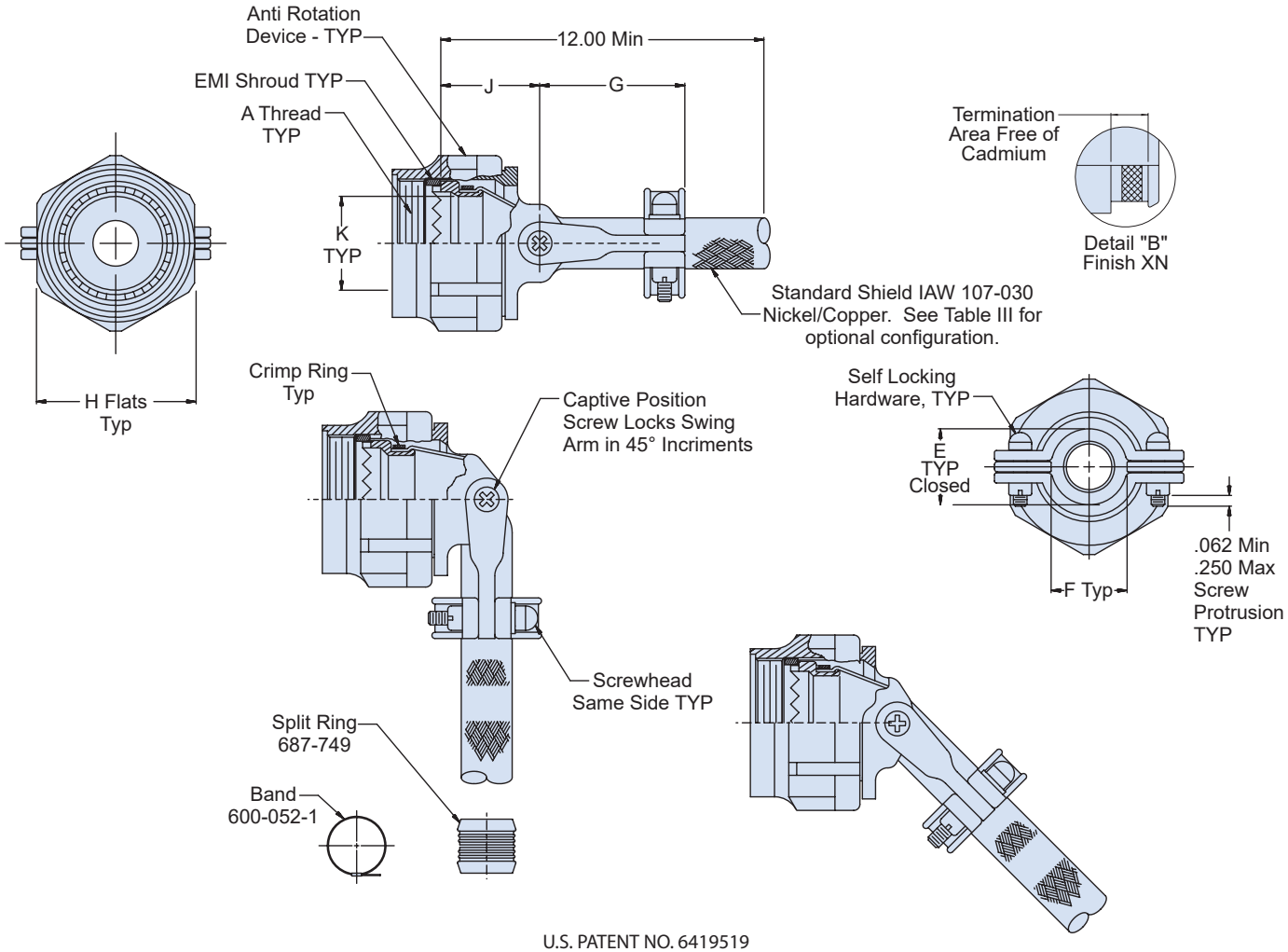
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319-064
Composite Swing-Arm Backshell
with Shield Sock and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, for Series II See Note 3
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	

Product Series	Basic Part Number	Finish Symbol	Connector Shell Size	Split Ring / Band Option			
319	H	064	XO	15	B	R	14

- **Product Series**: *319 - EMI/RFI Shield Sock Assemblies*
- **Basic Part Number**
- **Finish Symbol** (*See Table III*)
- **Connector Shell Size** (*See Table II*)
- **Split Ring / Band Option**: *Split Ring (687-749) and Band (600-052-1) supplied with R option* (*Omit for none*)
- **Connector Designator**: *A, F, and H*
- **Optional Braid Material**: *Omit for Standard* (*See Table IV*)
- **Custom Braid Length**: *Specify In Inches* (*Omit for Std. 12" Length*)



U.S. PATENT NO. 6419519

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319-064
Composite Swing-Arm Backshell
with Shield Sock and
Self-Locking Rotatable Coupling

Glenair®

TABLE II: SHELL SIZE

Shell Size		E	F Min.	G Max.	H		J ± .06	K Min. (H Code)	K Min. (A Code)	K Min. (F Code)
A, F	H				Max.	Min.				
08	09	.265 (6.7)	.22 (5.6)	1.06 (26.9)	.750 (19.05)	.736 (18.69)	.94 (23.9)	.264 (6.7)	.265 (6.7)	.269 ±.005 (6.8 ±.02)
10	11	.310 (7.9)	.27 (6.9)	1.09 (27.7)	.875 (22.2)	.860 (21.84)	.97 (24.6)	.390 (9.9)	.370 (9.4)	.402 ±.010 (10.2 ±.25)
12	13	.422 (10.7)	.35 (8.9)	1.18 (30.0)	1.000 (25.4)	.980 (24.89)	1.03 (26.2)	.504 (12.8)	.506 (12.9)	.516 ±.010 (13.1 ±.25)
14	15	.538 (12.9)	.47 (11.9)	1.24 (31.5)	1.125 (28.6)	1.100 (27.94)	1.09 (27.7)	.630 (16.0)	.580 (14.7)	.641 ±.010 (16.3 ±.25)
16	17	.591 (15.0)	.55 (14.0)	1.32 (33.5)	1.250 (31.8)	1.224 (31.09)	1.12 (28.4)	.756 (19.2)	.705 (17.9)	.766 ±.010 (19.5 ±.25)
18	19	.661 (16.8)	.62 (15.7)	1.39 (35.3)	1.375 (34.9)	1.348 (34.24)	1.15 (29.2)	.843 (21.4)	.784 (19.9)	.853 ±.019 (19.5 ±.48)
20	21	.744 (18.9)	.70 (17.8)	1.49 (37.8)	1.500 (38.1)	1.469 (37.31)	1.18 (30.0)	.969 (24.6)	.909 (23.1)	.988 ±.019 (25.1 ±.48)
22	23	.826 (21.0)	.78 (19.8)	1.55 (39.4)	1.625 (41.3)	1.581 (40.16)	1.25 (31.8)	1.091 (27.7)	1.034 (26.3)	1.113 ±.019 (28.3 ±.48)
24	25	.896 (22.8)	.85 (21.6)	1.61 (40.9)	1.725 (43.8)	1.690 (42.93)	1.28 (32.5)	1.217 (30.9)	1.149 (29.2)	1.238 ±.019 (31.5 ±.25)

TABLE III: FINISH

Symbol	Finish
XB	Composite Material–No Plating, Color Black, Brass Interface Shroud and Adapter–Nickel Plated
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XN	Composite Material–No Plating, Color Black and Brown, Brass Interface Shroud and Adapter–Selectively Cadmium Plated (See Detail B)
XO	Composite Material–No Plating, Color Black and Brown, Brass Interface Shroud and Adapter–Nickel Plated

TABLE IV: BRAID TYPE

Symbol	Braid Type
A	100% AmberStrand®
B	75%/25% AmberStrand® Blend
L	100% ArmorLite™
Standard	Nickel/Copper 34awg
T	Tin/Copper 34awg

NOTES

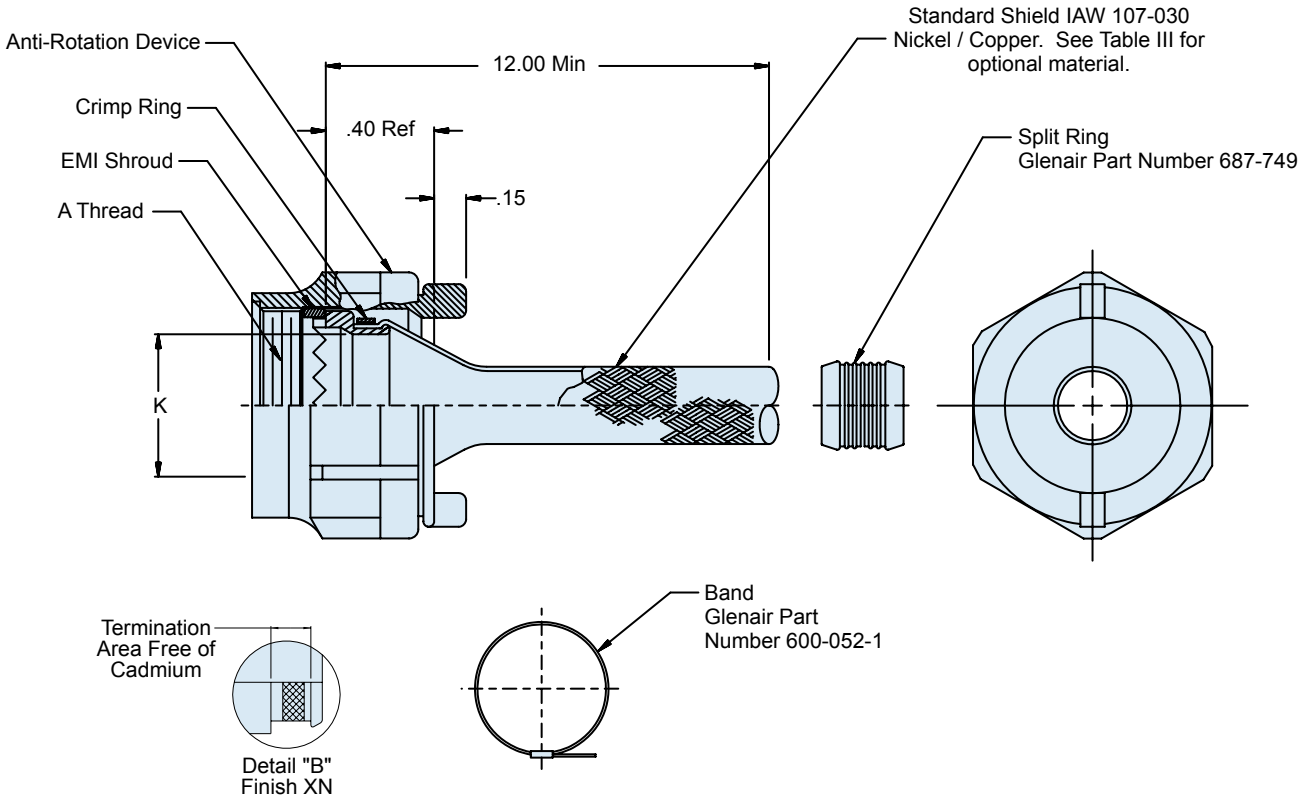
1. See Table I in Intro for front-end dimensional details.
2. See composite thermoplastic shield sock assembly procedure for detailed installation instructions.
3. Add mod code -475 to end of part number for use with Series II connectors. Backshell to be supplied less shroud.
4. Coupling nut supplied unplated.

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319-120
Composite EMI/RFI Backshell
with Shield Sock and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, for Series II see note 3
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
LOW PROFILE	

319	H	S	120	XB	15	B	R	14
Product Series: *319 - EMI/RFI Shield Sock Assemblies*	Connector Designator: *A, F, and H*	Angle and Profile: *S - Straight*	Basic Part Number	Finish Symbol: *(See Table III)*	Connector Shell Size: *(See Table II)*	Optional Braid Material: *Omit for Standard (See Table IV)*	Split Ring / Band Option: *Split Ring (687-749) and Band (600-052-1) supplied with R option (Omit for none)*	Custom Braid Length: *Specify In Inches (Omit for Std. 12" Length)*



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TABLE II: SHELL SIZE				
Shell Size		K Diameter		
A, F	H	A Code	F Code	H Code
08	09	.265 (6.7)	.275 (7.0)	.264 (6.7)
10	11	.370 (9.4)	.412 (10.5)	.390 (9.9)
12	13	.506 (12.9)	.526 (13.4)	.504 (12.8)
14	15	.580 (14.7)	.651 (16.5)	.630 (16.0)
16	17	.705 (17.9)	.776 (19.7)	.756 (19.2)
18	19	.784 (19.9)	.872 (22.1)	.843 (21.4)
20	21	.909 (23.1)	1.007 (25.6)	.969 (24.6)
22	23	1.034 (26.3)	1.132 (28.8)	1.091 (27.7)
24	25	1.149 (29.2)	1.257 (31.9)	1.217 (30.9)

TABLE III: FINISH	
Symbol	Finish
XB	Composite Material–No Plating, Color Black, Brass Interface Shroud and Adapter–Nickel Plated
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XN	Composite Material–No Plating, Color Black and Brown, Brass Interface Shroud and Adapter–Selectively Cadmium Plated (See Detail B)

TABLE IV: BRAID TYPE	
Symbol	Braid Type
A	100% AmberStrand®
B	75%/25% AmberStrand® Blend
L	100% ArmorLite™
Standard	Nickel/Copper 34awg
T	Tin/Copper 34awg

NOTES

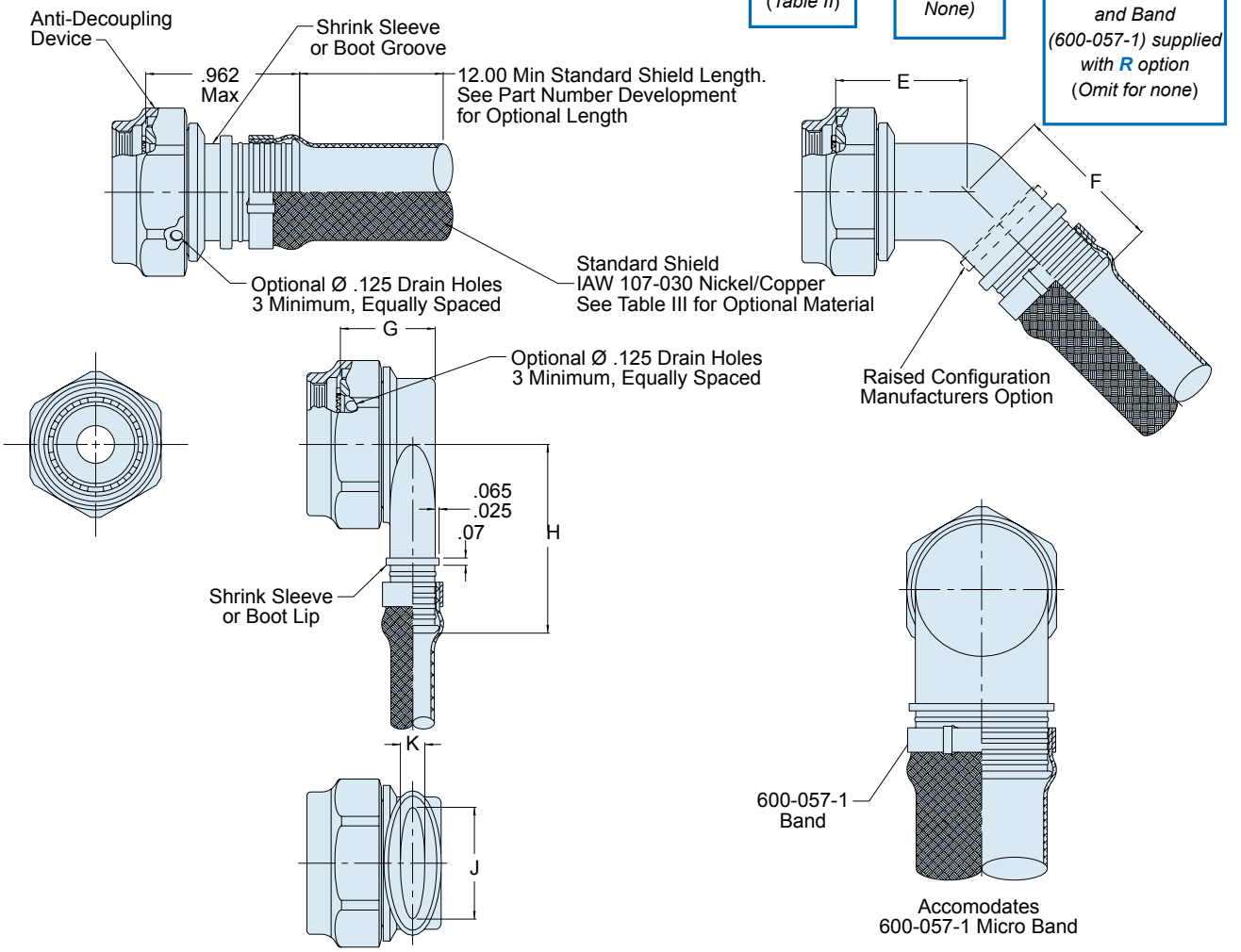
1. See Table I in Intro for front-end dimensional details.
2. See composite thermoplastic shield sock assembly procedure for detailed installation instructions.
3. Add mod code -475 to end of part number for use with Series II connectors. Backshell to be supplied less shroud.
4. Coupling nuts supplied unplated.

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319-134
Composite EMI/RFI Ultra Low-Profile Shield Sock with Shrink Boot Porch and Self Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series	Angle and Profile		Finish Symbol	Cable Entry	Braid Option	Shrink Boot		Custom Braid Length	
319 - EMI/RFI Shield Sock Assemblies	S - Straight	T - 45° Elbow	W - 90° Elbow	(Table III)	(Table V)	(Omit for Standard) (Table IV)	For S and B Angle Only (Omit for None)		Specify In Inches (Omit for Std. 12" Length)
319	F	S	134	XO	16	04	O	B	R	S	14
	Connector Designator F and H		Basic Part Number		Connector Dash Number (Table II)		Drain Hole Option (Omit for None)		Split Ring Band Option Split Ring (687-749) and Band (600-057-1) supplied with R option (Omit for none)		



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319-134
Composite EMI/RFI Ultra Low-Profile Shield Sock
with Shrink Boot Porch and Self Locking Rotatable Coupling

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TABLE II: SHELL SIZE (Continued Below)

Connector Designator F					Connector Designator H				
Dash No.	Shell Size	A Thread Class 2A	B Dia Max	L Max	Dash No.	Shell Size	A Thread ISO metric	B Dia Max	L Max
08	08	7/15-28 UNEF	.59 (15.0)	.274 (7.0)	09	09 (A)	M12 x 1.0 - 6H	.65 (16.5)	.264 (6.7)
10	10	9/16-24 UNEF	.72 (18.3)	.412 (10.5)	11	11 (B)	M15 x 1.0 - 6H	.77 (19.6)	.390 (9.9)
12	12	11/16-24 UNEF	.84 (21.3)	.526 (13.4)	13	13 (C)	M18 x 1.0 - 6H	.89 (22.6)	.504 (12.8)
15	15	13/16-20 UNEF	.97 (24.6)	.651 (16.5)	15	15 (D)	M22 x 1.0 - 6H	1.03 (26.2)	.630 (16.0)
16	16	15/16-20 UNEF	1.09 (27.7)	.776 (19.7)	17	17 (E)	M25 x 1.0 - 6H	1.15 (29.2)	.756 (19.2)
18	18	1 1/16-18 UNEF	1.22 (31.0)	.872 (22.1)	19	19 (F)	M28 x 1.0 - 6H	1.28 (32.5)	.843 (21.4)
20	20	1 3/16-18 UNEF	1.34 (34.0)	1.007 (25.6)	21	21 (G)	M31 x 1.0 - 6H	1.41 (35.8)	.969 (24.6)
22	22	1 5/16-18 UNEF	.47 (37.3)	1.132 (28.8)	23	23 (H)	M34 x 1.0 - 6H	1.53 (38.9)	1.091 (27.7)
24	24	1 7/16-18 UNEF	1.59 (40.4)	1.257 (31.9)	25	25 (J)	M37 x 1.0 - 6H	1.66 (42.2)	1.217 (30.9)

TABLE II: SHELL SIZE (Continued From Above)

Connector Designator F		Connector Designator H		C Max	D Flats Max	E ± .06 (1.5)	F ± .09 (2.3)	G Max	H ± .03 (0.8)	J	K	Available Entry Code See Table V and Note 4
Dash No.	Shell Size	Dash No.	Shell Size									
08	08	09	09 (A)	.86 (21.8)	.75 (19.1)	.72 (18.3)	.87 (22.1)	.63 (16.0)	1.042 (26.5)	.304 (7.7)	.160 (4.1)	04
10	10	11	11 (B)	.98 (24.9)	.88 (22.2)	.75 (19.1)	.93 (23.6)	.66 (16.8)	1.107 (28.1)	.432 (11.0)	.174 (4.4)	05
12	12	13	13 (C)	1.16 (29.4)	1.00 (25.4)	.75 (19.1)	1.00 (25.4)	.72 (18.3)	1.174 (29.8)	.546 (13.9)	.195 (5.0)	07
15	15	15	15 (D)	1.28 (32.5)	1.13 (28.6)	.76 (19.3)	1.03 (26.2)	.83 (21.1)	1.241 (31.5)	.670 (17.0)	.315 (8.0)	09
16	16	17	17 (E)	1.41 (35.7)	1.25 (31.8)	.78 (19.8)	1.05 (26.7)	.91 (23.1)	1.305 (33.1)	.796 (20.2)	.385 (9.8)	05, 11
18	18	19	19 (F)	1.52 (38.5)	1.38 (39.9)	.79 (20.1)	1.06 (26.9)	.93 (23.6)	1.371 (34.8)	.902 (22.9)	.445 (11.3)	07, 13
20	20	21	21 (G)	1.64 (41.7)	1.50 (38.1)	.82 (20.8)	1.09 (27.7)	1.04 (26.4)	1.438 (36.5)	1.027 (26.1)	.525 (13.3)	09, 15
22	22	23	23 (H)	1.77 (44.9)	1.63 (41.3)	.86 (21.8)	1.13 (28.7)	1.12 (28.4)	1.505 (38.2)	1.152 (29.3)	.595 (15.1)	11, 16
24	24	25	25 (J)	1.89 (48.0)	1.75 (44.5)	.89 (22.6)	1.16 (29.5)	1.18 (30.0)	1.572 (39.9)	1.276 (32.4)	.655 (16.6)	07, 13, 17

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium Olive Drab Over Electroless Nickel

TABLE IV: BRAID TYPE

Symbol	Braid Type
A	100% AmberStrand®
B	75%/25% AmberStrand® Blend
L	100% ArmorLite™
Standard	Nickel/Copper 34awg
T	Tin/Copper 34awg

TABLE V: CABLE ENTRY

Dash Number	D ± .03
04	.25 (6.4)
05	.31 (7.9)
07	.44 (11.2)
09	.56 (14.2)
11	.68 (17.3)
13	.81 (20.6)
15	.94 (23.9)
16	1.00 (25.4)
17	1.16 (29.5)

NOTES

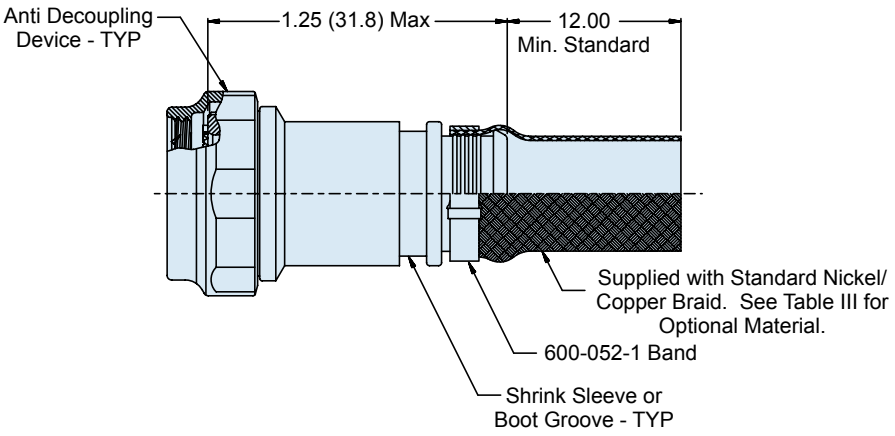
1. Assembly identified with manufacturer's name and part number, space permitting.
2. Glenair Series 600 Backshell Assembly Tools are recommended for assembly and installation.
3. 700-001S**-0 shrink boot supplied with S option. For S and T configurations only.
4. Entry codes are applicable for S and T configurations only.
5. Material/Finish:
   Clamp Body - High grade engineering thermoplastic/Table III.
   Coupling Nut - High grade engineering thermoplastic/Unplated.
   Anti-Rotation De vice - Corrosion resistant material.
   Shield - See part number development.

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319-136
Composite EMI/RFI Shield Sock
with Shrink Boot Porch and Self-Locking Rotatable Coupling

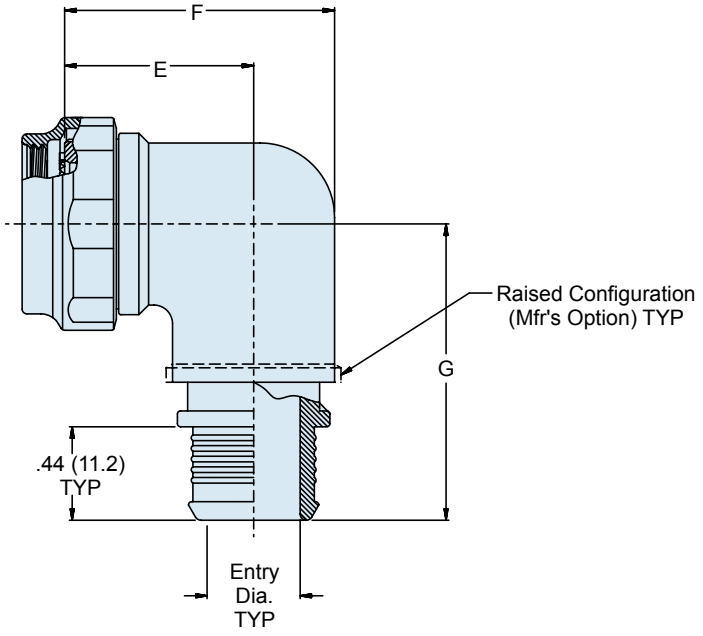
CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

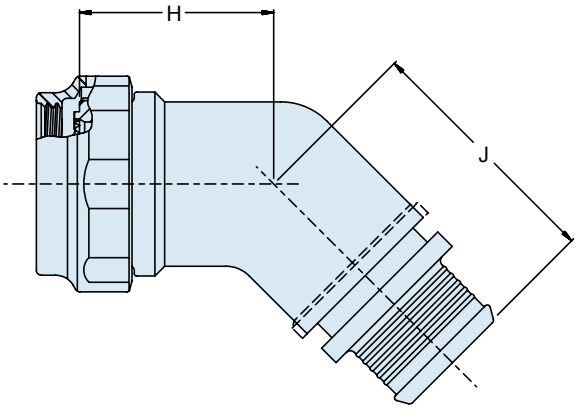
319	H	S	136	XW	19	12	B	R	T	14
Product Series *319 - EMI/RFI Shield Sock Assemblies*	**Connector Designator** *A, F, and H*	**Angle and Profile** *S - Straight* *T - 45° Elbow* *W - 90° Elbow*	**Basic Part Number**	**Finish Symbol** (*See Table III*)	**Connector Shell Size** (*See Table II*)	**Entry Diameter** (*See Table IV*)	**Optional Braid Material** *Omit for Standard* (*See Table V*)	**Split Ring / Band Option** *Split Ring (687-749) and Band (600-052-1) supplied with R option* (*Omit for none*)	**Shrink Boot Option** *Shrink boot and o-ring supplied with T option* (*Omit for none*)	**Custom Braid Length** *Specify In Inches* *(Omit for Std. 12" Length)*



NOTES

1. 770-001S**-0 shrink boot supplied with T option. See shrink boot product page for more details.
2. Coupling nut supplied unplated.
3. See Table I in Intro for front-end dimensional details.
4. O-Ring will not be supplied with Designator A.





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319-136
Composite EMI/RFI Shield Sock
with Shrink Boot Porch and Self-Locking Rotatable Coupling

Glenair®

TABLE II: SHELL SIZE

Shell Size		E ± .06 (1.5)	F ± .09 (2.3)	G ± .09 (2.3)	H ± .06 (1.5)	J ± .09 (2.3)	Max. Entry Dash Number (Table III)
A, F	H						
08	09	.69 (17.5)	.88 (22.4)	1.19 (30.2)	.72 (18.3)	1.00 (25.4)	04
10	11	.75 (19.1)	1.00 (25.4)	1.25 (31.8)	.75 (19.1)	1.06 (26.9)	06
12	13	.81 (20.6)	1.13 (28.7)	1.31 (33.3)	.75 (19.1)	1.13 (28.7)	08
14	15	.88 (22.4)	1.31 (33.3)	1.38 (35.1)	.76 (19.3)	1.16 (29.5)	10
16	17	.94 (23.9)	1.38 (35.1)	1.44 (36.6)	.78 (19.8)	1.18 (30.0)	12
18	19	.97 (24.6)	1.44 (36.6)	1.47 (37.3)	.79 (20.1)	1.19 (30.2)	13
20	21	1.06 (26.9)	1.63 (41.4)	1.56 (39.6)	.82 (20.8)	1.22 (31.0)	15
22	23	1.13 (28.7)	1.75 (44.5)	1.63 (41.4)	.86 (21.8)	1.26 (32.0)	17
24	25	1.19 (30.2)	1.88 (47.8)	1.69 (42.9)	.89 (22.6)	1.29 (32.8)	19
28	-	1.34 (34.0)	2.13 (54.1)	1.78 (45.2)	.92 (23.4)	1.32 (33.5)	22

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium Olive Drab Over Electroless Nickel

TABLE IV: BRAID TYPE

Symbol	Braid Type
A	100% AmberStrand®
B	75%/25% AmberStrand® Blend
L	100% ArmorLite™
Standard	Nickel/Copper 34awg
T	Tin/Copper 34awg

TABLE IV: ENTRY

Dash Number	Entry Diameter ± .03 (0.8)
03	.19 (4.8)
04	.25 (6.4)
05	.31 (7.9)
06	.38 (9.7)
07	.44 (11.2)
08	.50 (12.7)
09	.56 (14.2)
10	.63 (16.0)
11	.69 (17.5)
12	.75 (19.1)
13	.81 (20.6)
14	.88 (22.4)
15	.94 (23.9)
16	1.00 (25.4)
17	1.06 (26.9)
18	1.13 (28.7)
19	1.19 (30.2)
20	1.25 (31.8)
21	1.31 (33.3)
22	1.38 (35.1)

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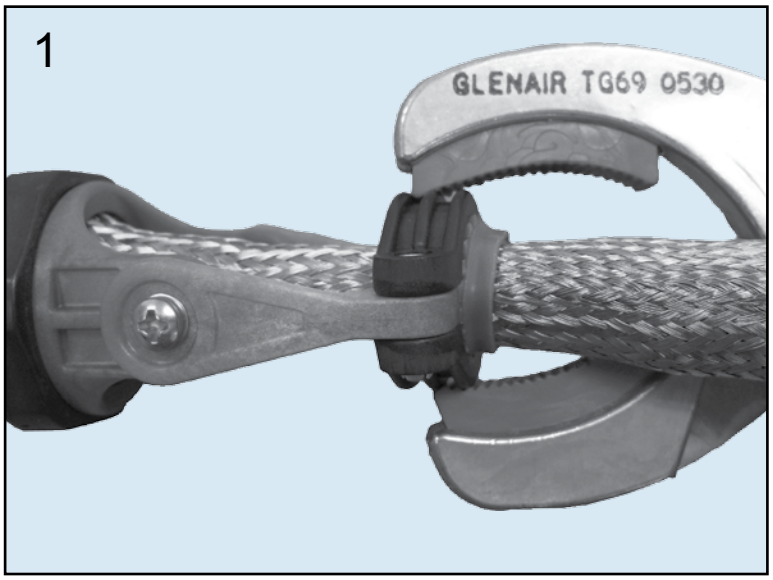
Composite Saddle Clamp Assembly Procedure

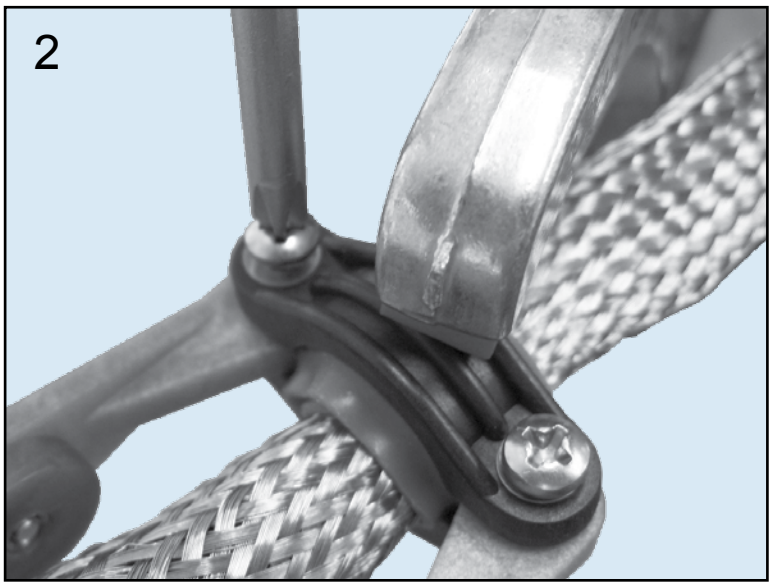
1. After terminating shields, tighten the backshell to the connector and build-up the outside diameter of the wire bundle with AS85049/127 bushing strip to achieve a moderately snug fit against the saddle-bars.

2. Position the saddle-bars on the built-up wire bundle. Then, using Glenair TG69 Soft Jaw pliers, hold the saddle-bars down firmly and evenly against the wire bundle. (See figure 1)

3. Continuing to hold down the saddle bars, tighten clamp screws. Alternate between insertion of both screws so that the saddle bars compress against the cable evenly. Stop when the saddle-bars bottom against the arms of the clamp assembly. (See figure 2)

4. Tighten screws to correct torque values





Saddle Clamp Torque Specifications	
Saddle Screw Size	Installation Torque (In/Lbs)
4	4
6	6
10	10

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The Right Backshell for the Job...



...and the Right Tool for the Job

Glenair recommends the use of the appropriate sized series 600-157 or series 600-091 composite hex coupling wrench to prevent damage to the composite backshell coupling nut. The wrench is used during assembly of the backshell to the rear end of the connector.

The use of incorrect types and styles of coupling nut wrenches, such as slip-jaw pliers, will result in damage to the composite coupling nut up to and including failure due to cracking. So don't do it. You picked the right backshell, now pick up the right tool.

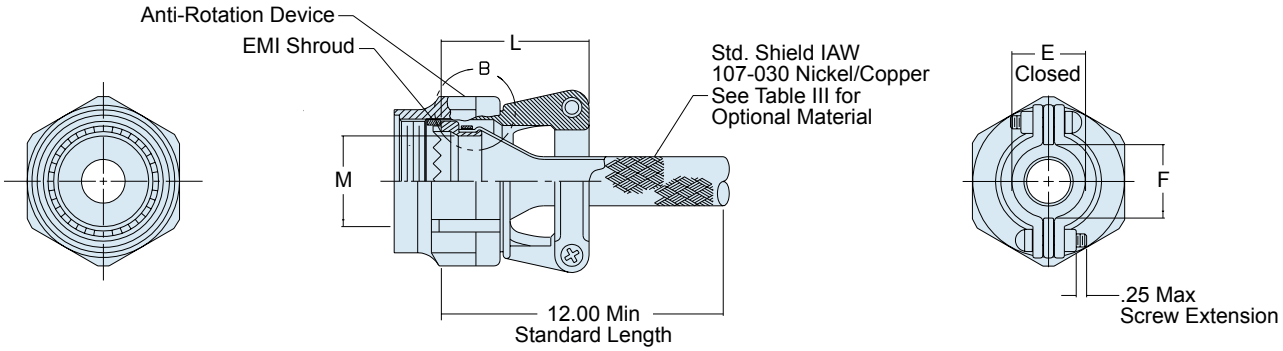
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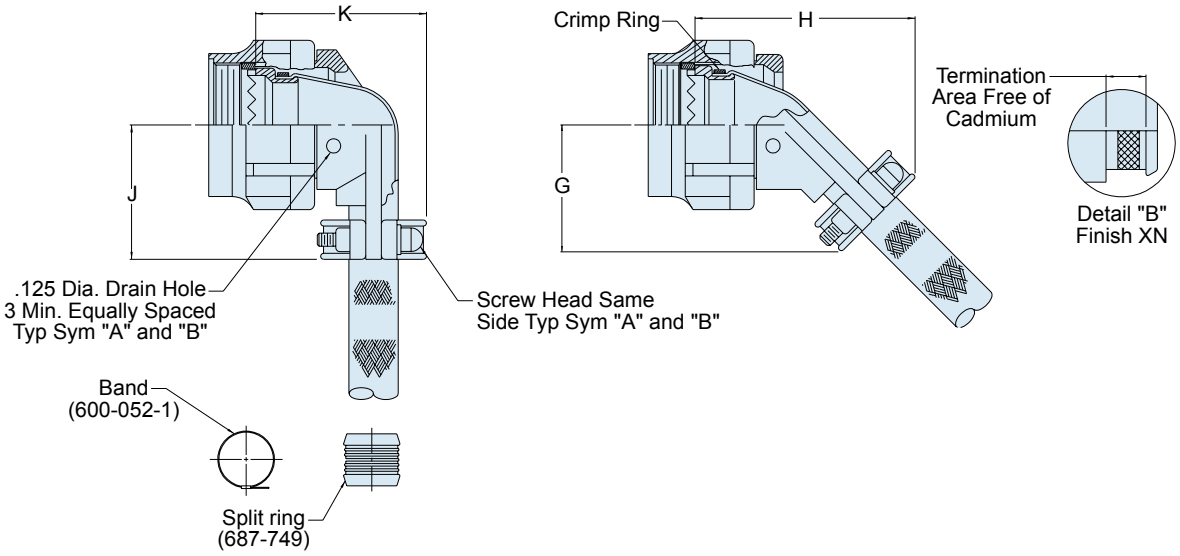
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319-137
Composite Shield Sock Strain Relief
with Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II *(see note 3)*
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
LOW PROFILE	

319	H	S	137	XO	15	B	R	14
Product Series *319 - EMI/RFI Shield Sock Assemblies*	**Connector Designator** *A, F, and H*	**Angle and Profile** *S - Straight* *A - 90°* *B - 45°*	**Basic Part Number**	**Finish Symbol** (*See Table III*)	**Connector Shell Size** (*See Table II*)	**Optional Braid Material** *B - See Table IV for Options* (*Omit for Std. Nickel/Copper*)	**Split Ring / Band Option** *Split Ring (687-749) and Band (600-052-1) supplied with R option* (*Omit for none*)	**Custom Braid Length** *Specify In Inches* (*Omit for Std. 12" Length*)





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319-137
Composite Shield Sock Strain Relief
with Self-Locking Rotatable Coupling

Glenair®

TABLE II: SHELL SIZE

Shell Size		E ± .031	F Min	G Max	H Max
A, F	H				
08	09	.265 (6.7)	.22 (5.6)	.901 (22.9)	1.388 (35.3)
10	11	.310 (7.9)	.27 (6.9)	.964 (24.5)	1.428 (36.3)
12	13	.390 (9.9)	.35 (8.9)	1.050 (26.7)	1.498 (38.0)
14	15	.506 (12.9)	.47 (11.9)	1.112 (28.2)	1.548 (39.3)
16	17	.591 (15.0)	.55 (14.0)	1.175 (29.8)	1.648 (41.9)
18	19	.661 (16.8)	.62 (15.7)	1.230 (31.2)	1.768 (44.9)
20	21	.744 (18.9)	.70 (17.8)	1.293 (32.8)	1.808 (45.9)
22	23	.826 (21.0)	.78 (19.8)	1.365 (34.7)	1.858 (47.2)
24	25	.896 (22.8)	.85 (21.6)	1.417 (36.0)	1.898 (48.2)

TABLE II: SHELL SIZE (CONTINUED)

Shell Size		J Max	K Max	L Max	K Diameter		
A, F	H				A Code	F Code	H Code
08	09	.91 (23.1)	1.128 (28.7)	.939 (23.9)	.265 (6.7)	.275 (7.0)	.264 (6.7)
10	11	.97 (24.6)	1.168 (29.7)	1.059 (26.9)	.370 (9.4)	.412 (10.5)	.390 (9.9)
12	13	1.06 (26.9)	1.248 (31.7)	1.199 (30.5)	.506 (12.9)	.526 (13.4)	.504 (12.8)
14	15	1.16 (29.5)	1.368 (34.7)	1.199 (30.5)	.580 (14.7)	.651 (16.5)	.630 (16.0)
16	17	1.34 (34.0)	1.448 (36.8)	1.329 (33.8)	.705 (17.9)	.776 (19.7)	.756 (19.2)
18	19	1.41 (35.8)	1.528 (38.8)	1.509 (38.3)	.784 (19.9)	.872 (22.1)	.843 (21.4)
20	21	1.53 (38.9)	1.648 (41.9)	1.609 (40.9)	.909 (23.1)	1.007 (25.6)	.969 (24.6)
22	23	1.66 (42.2)	1.688 (42.9)	1.759 (44.7)	1.034 (1.034)	1.132 (28.8)	1.091 (27.7)
24	25	1.78 (45.2)	1.758 (44.7)	1.859 (47.2)	1.149 (29.2)	1.257 (31.9)	1.217 (30.9)

TABLE III: FINISH

Symbol	Finish
XB	Composite Material–No Plating, Color Black, Brass Interface Shroud and Adapter–Nickel Plated
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XN	Composite Material–No Plating, Color Black and Brown, Brass Interface Shroud and Adapter–Selectively Cadmium Plated (See Detail B)

TABLE IV: BRAID TYPE

Symbol	Braid Type
A	100% AmberStrand®
B	75%/25% AmberStrand® Blend
L	100% ArmorLite™
Standard	Nickel/Copper 34awg
T	Tin/Copper 34awg

NOTES

1. See composite thermoplastic shield sock assembly procedure for detailed installation instructions.
2. See Table I in Intro for front-end dimensional details.
3. Add mod code -475 to end of part number for use with Series II connectors. Backshell to be supplied less shroud.
4. Coupling nut supplied unplated.

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319-138
"Wide Mouth" Composite Swing-Arm Strain Relief
with Shield Sock and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, for Series II See Note 3
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
LOW PROFILE	

Product Series
319 - EMI/RFI Shield Sock Assemblies

Finish Symbol
(*See Table III*)

Custom Braid Length
Specify In Inches
(Omit for Std. 12" Length)

Connector Designator
A, F, and H

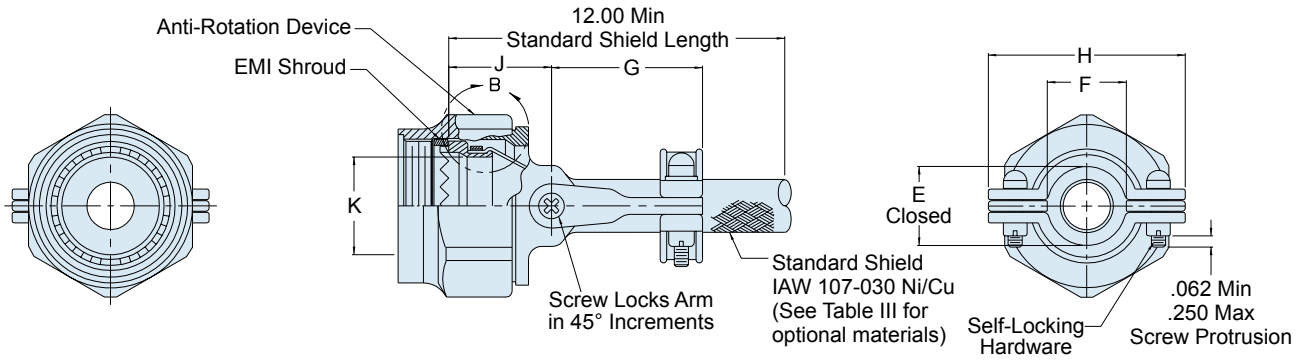
Optional Braid Material
B - See Table IV for Options
(Omit for Std. Nickel/Copper)

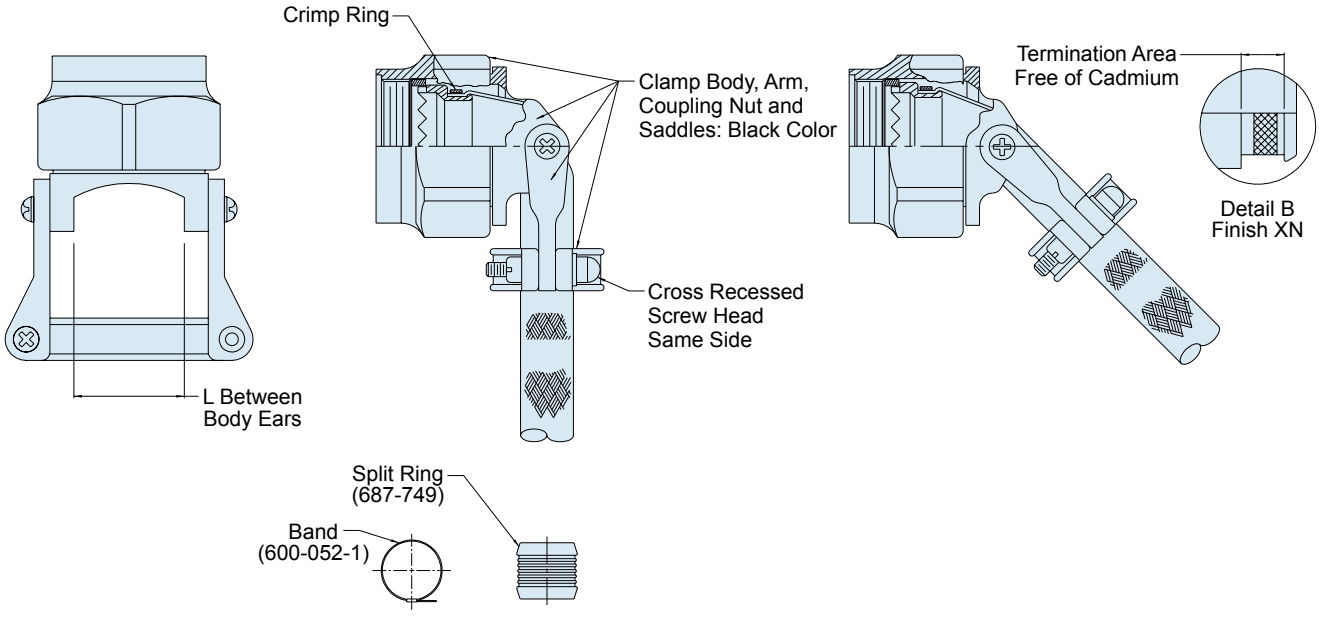
319	H	138	XB	15	B	R	8

Basic Part Number

Connector Shell Size
(*See Table II*)

Split Ring / Band Option
Split Ring (687-749) and Band (600-052-1) supplied with R option
(*Omit for none*)





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319-138
"Wide Mouth" Composite Swing-Arm Strain Relief
with Shield Sock and Self-Locking Rotatable Coupling

Glenair®

TABLE II: SHELL SIZE

Shell Size		E ± .031	F Min	G Max ± .06	H ± .060	J Max	L Max	K Diameter		
A, F	H							A Code	F Code	H Code
08	09	.350 (8.9)	.350 (8.9)	1.045 (26.5)	.936 (23.8)	.94 (23.9)	.393 (10.0)	.265 (6.7)	.275 (7.0)	.264 (6.7)
10	11	.436 (11.1)	.455 (11.6)	1.045 (26.5)	1.172 (29.8)	.97 (24.6)	.455 (11.6)	.370 (9.4)	.412 (10.5)	.390 (9.9)
12	13	.636 (16.2)	.640 (16.3)	1.170 (29.7)	1.406 (35.7)	1.03 (26.2)	.598 (15.2)	.506 (12.9)	.526 (13.4)	.504 (12.8)
14	15	.706 (17.9)	.710 (18.0)	1.170 (29.7)	1.500 (38.1)	1.09 (27.7)	.710 (18.0)	.580 (14.7)	.651 (16.5)	.630 (16.0)
16	17	.790 (20.1)	.835 (21.2)	1.295 (32.9)	1.562 (39.7)	1.12 (28.4)	.839 (21.3)	.705 (17.9)	.776 (19.7)	.756 (19.2)
18	19	.872 (22.1)	.922 (23.4)	1.295 (32.9)	1.687 (42.8)	1.15 (29.2)	.934 (23.7)	.784 (19.9)	.872 (22.1)	.843 (21.4)
20	21	.996 (25.3)	1.008 (25.6)	1.467 (39.5)	1.969 (50.0)	1.18 (30.0)	1.068 (27.1)	.909 (23.1)	1.007 (25.6)	.969 (24.6)
22	23	1.060 (26.9)	1.197 (30.4)	1.467 (39.5)	2.094 (53.2)	1.25 (31.8)	1.197 (30.4)	1.034 (1.034)	1.132 (28.8)	1.091 (27.7)
24	25	1.123 (28.5)	1.323 (33.6)	1.461 (37.1)	2.281 (57.9)	1.28 (32.5)	1.323 (33.6)	1.149 (29.2)	1.257 (31.9)	1.217 (30.9)

TABLE III: FINISH

Symbol	Finish
XB	Composite Material–No Plating, Color Black, Brass Interface Shroud and Adapter–Nickel Plated
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XN	Composite Material–No Plating, Color Black and Brown, Brass Interface Shroud and Adapter–Selectively Cadmium Plated (See Detail B)

TABLE IV: BRAID TYPE

Symbol	Braid Type
A	100% AmberStrand®
B	75%/25% AmberStrand® Blend
L	100% ArmorLite™
Standard	Nickel/Copper 34awg
T	Tin/Copper 34awg

NOTES

1. See Table I in Intro for front-end dimensional details.
2. See composite thermoplastic shield sock assembly procedure for detailed installation instructions.
3. Add mod code -475 to end of part number for use with Series II connectors. Backshell to be supplied less shroud.
4. Coupling nut supplied unplated.

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319-155
RFI/EMI Composite Adapter
with Shrink Boot, Split Ring, RFI/EMI Braided Shielding, Termination Porch and Stainless Steel Band

CONNECTOR DESIGNATOR:	
A	MIL-DTL-83723 Series III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	

Product Series
319 - EMI/RFI Shield Sock Assemblies

Connector Designator
A, F, and H

Basic Part Number

Finish Symbol
(*See Table II*)

Optional Braid Material
B - See Table III for Options (Omit for Std. Nickel/Copper)

Custom Braid Length
Specify In Inches (Omit for Std. 12" Length)

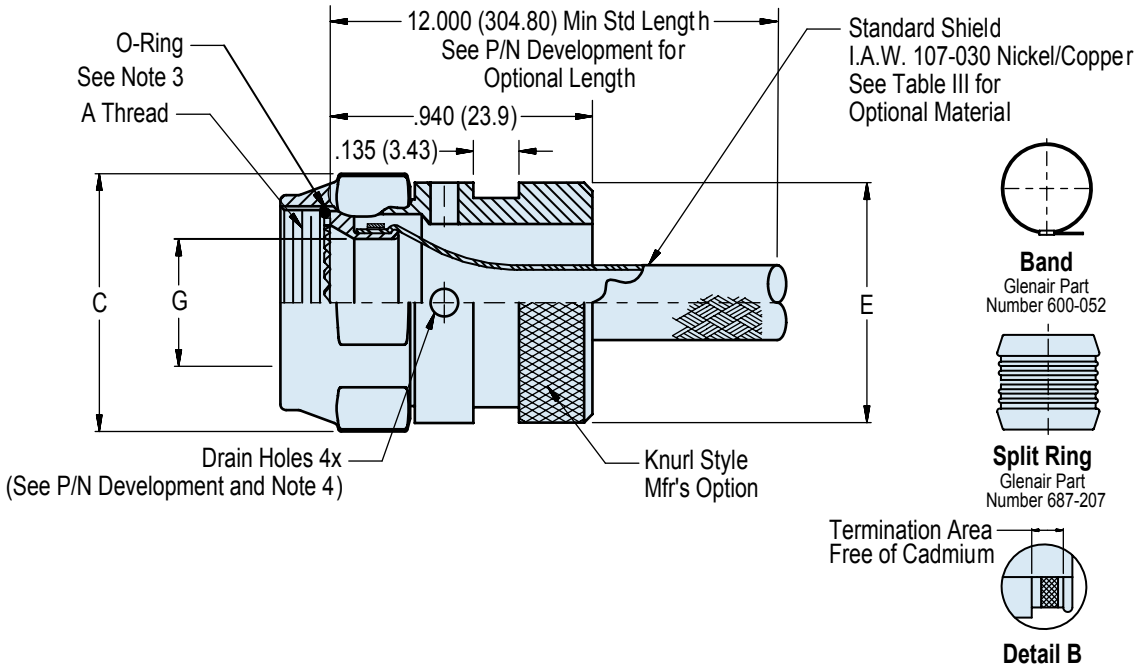
Drain Holes
(*Omit for None*)

319	F	S	138	XB	16	B	-	D	R	14

Angular Function
S = Straight

Connector Shell Size
(*See Table I*)

Split Ring / Band Option
Split Ring (687-207) and Band (600-052-1) supplied with R option
(*Omit for none*)



NOTES

1. Assembly identified with manufacturer's name and part number, space permitting.
2. Glenair 600 Series Backshell Assembly Tools are recommended for assembly and installation.
3. O-Ring supplied with connector designator F & H only. O-Ring is not supplied with connector designator A or with drain hole option.
4. Material/Finish:
   Coupling Nut, Adapter and Split Ring – High temperature engineering thermoplastic/See Table II.
   Follower – Brass/Electroless nickel.
   O-Ring – Flourosilicone/NA.
   Shrink Boot – See 770-001S** Shrink Boot product page for details.
   Termination Band – SST/Passivated.
   Crimp Ring – Copper/Tin plated.
   Braid – See Table III.

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319-155
RFI/EMI Composite Adapter
with Shrink Boot, Split Ring, RFI/EMI Braided Shielding, Termination Porch and Stainless Steel Band

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TABLE I: SHELL SIZE (Continued Below)

CONNECTOR DESIGNATOR A			CONNECTOR DESIGNATOR F			CONNECTOR DESIGNATOR H			B Dia Ref.
Dash No.	Shell Size Ref.	A Thread Class 2B	Dash No.	Shell Size Ref.	A Thread Class 2 B	Dash No.		A Thread ISO Metric	
08	08	1/2-20 UNF	08	08	7/16-28 UNEF	09	A	M12 X 1.0-6H	.812 (20.6)
10	10	5/8-24 UNEF	10	10	9/16-24 UNEF	11	B	M15 X 1.0-6H	.938 (23.8)
12	12	3/4-20 UNEF	12	12	11/16-24 UNEF	13	C	M18 X 1.0-6H	1.125 (28.6)
14	14	7/8-20 UNEF	14	14	13/16-20 UNEF	15	D	M22 X 1.0-6H	1.250 (31.8)
16	16	1-20 UNEF	16	16	15/16-20 UNEF	17	E	M25 X 1.0-6H	1.375 (34.9)
18	18	1 1/16-18 UNEF	18	18	1 1/16-18 UNEF	19	F	M28 X 1.0-6H	1.500 (38.1)
20	20	1 3/16-18 UNEF	20	20	1 3/16-18 UNEF	21	G	M31 X 1.0-6H	1.625 (41.3)
22	22	1 5/16-18 UNEF	22	22	1 5/16-18 UNEF	23	H	M34 X 1.0-6H	1.750 (44.5)
24	24	1 7/16-18 UNEF	24	24	1 7/16-18 UNEF	25	J	M34 X 1.0-6H	1.875 (47.6)

TABLE I: SHELL SIZE (Continued from Above)

C Flats			E Max	G Dia		Shrink Boot
Dash No.	Max	Min		Code H & F	Code A	
08	.750 (19.1)	.736 (18.7)	.533 (13.5)	.264 (6.7)	.265 (6.7)	770-003S102
10	.875 (22.2)	.860 (21.8)	.605 (15.4)	.390 (9.9)	.370 (9.4)	770-001S103
12	1.000 (25.4)	.980 (24.9)	.774 (19.7)	.504 (12.8)	.506 (12.9)	770-001S103
14	1.125 (28.6)	1.100 (27.9)	.838 (21.3)	.630 (16.0)	.580 (14.7)	770-001S103
16	1.250 (31.8)	1.224 (31.1)	.963 (24.5)	.756 (19.2)	.705 (17.9)	770-001S104
18	1.375 (34.9)	1.348 (34.2)	1.042 (26.5)	.843 (21.4)	.784 (19.9)	770-001S104
20	1.500 (38.1)	1.469 (37.3)	1.217 (30.9)	.969 (24.6)	.907 (23.0)	770-001S106
22	1.625 (41.3)	1.581 (40.2)	1.355 (34.4)	1.091 (27.7)	1.034 (26.3)	770-001S107
24	1.750 (44.5)	1.690 (42.9)	1.443 (36.7)	1.213 (30.8)	1.140 (28.9)	770-001S107

TABLE II: FINISH

Symbol	Finish
XB	No Plating, Black Material
XD	No Plating, Desert Tan

TABLE III: BRAID TYPE

Symbol	Braid Type
A	100% AmberStrand®
B	75%/25% AmberStrand® Blend
Standard	Nickel/Copper 34 AWG
T	Tin/Copper 34 AWG
L	100% ArmorLite™

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319-180
Composite Swing-Arm Strain Relief
with Shield Sock and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-83723, Series III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	

Product Series
319 - EMI/RFI Shield Sock Assemblies

Finish Symbol
(See Table III)

Custom Braid Length
Specify In Inches (Omit for Std. 12" Length)

Basic Part Number

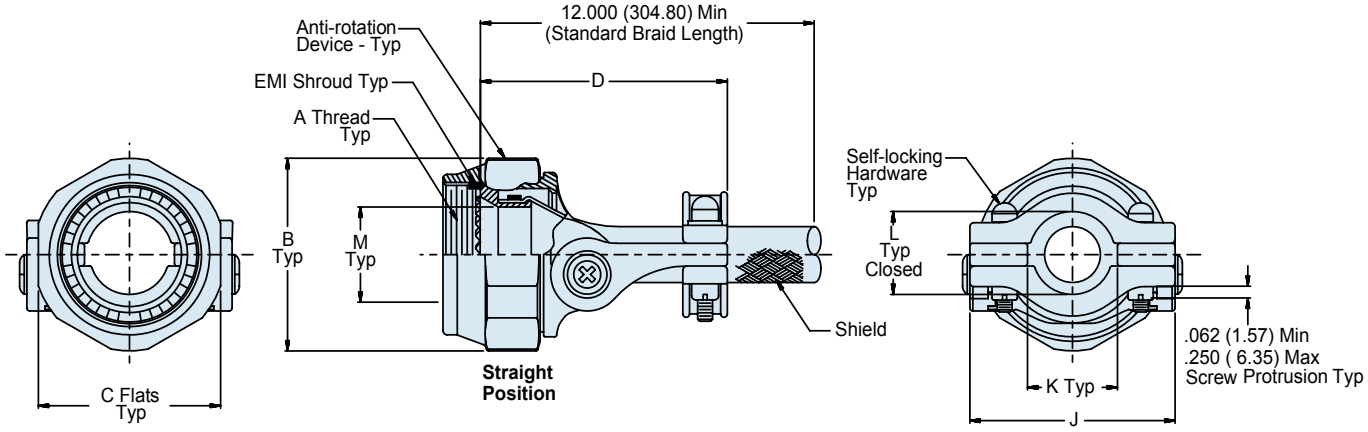
Optional Braid Material
B - See Table IV for Options (Omit for Std. Nickel/Copper)

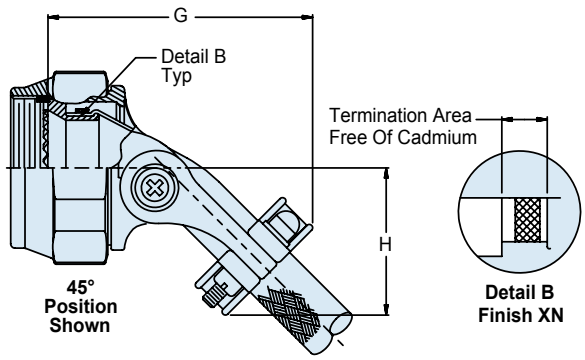
319	H	180	XB	15	B	R	14

Connector Designator
A = MIL-DTL-83723, Series III
F = MIL-DTL-38999, Series I & II
H = MIL-DTL-38999, Series III & IV

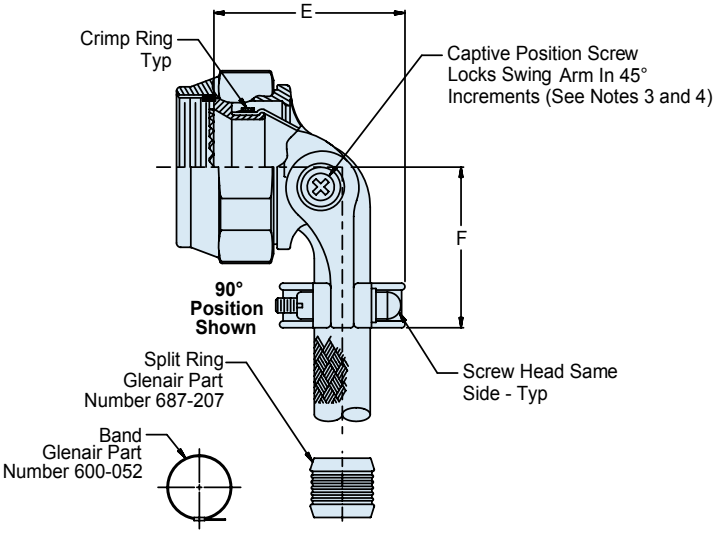
Dash Number
(See Table II)

Split Ring / Band Option
Split Ring (687-207) and Band (600-052) supplied with R option (Omit for none)





U.S. PATENT NO. 6419519



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319-180
Composite Swing-Arm Strain Relief
with Shield Sock and Self-Locking Rotatable Coupling

Glenair®

TABLE II: SHELL SIZE (Continued Below)

Connector Designator A			Connector Designator F*			Connector Designator H			B	C		D	E	F
Dash No.	Shell Size Ref	A Thread Class 2 B	Dash No.	Shell Size Ref	A Thread Class 2 B	Dash No.	Shell Size Ref	A Thread ISO Metric	Max Dia	Flats Max	Flats Min	Max	Max	Max
08	08	1/2-20 UNF	08	08	7/16-28 UNF	09	A	M12 X 1.0-6H	.812 (20.62)	.750 (19.05)	.736 (18.69)	1.500 (38.10)	.950 (24.13)	.840 (21.34)
10	10	5/8-24 UNEF	10	10	9/16-24 UNEF	11	B	M15 X 1.0-6H	.938 (23.83)	.875 (22.23)	.860 (21.84)	1.540 (39.12)	.990 (25.15)	.900 (22.86)
12	12	3/4-20 UNEF	12	12	11/16-24 UNEF	13	C	M18 X 1.0-6H	1.125 (28.58)	1.000 (25.40)	.980 (24.89)	1.620 (41.15)	1.140 (28.96)	1.000 (25.40)
14	14	7/8-20 UNEF	14	14	13/16-20 UNEF	15	D	M22 X 1.0-6H	1.250 (31.75)	1.125 (28.58)	1.100 (27.94)	1.630 (41.40)	1.240 (31.50)	1.070 (27.18)
16	16	1-20 UNEF	16	16	15/16-20 UNEF	17	E	M25 X 1.0-6H	1.375 (34.93)	1.250 (31.75)	1.224 (31.09)	1.730 (43.94)	1.360 (34.54)	1.130 (28.70)
18	18	1 1/16-18 UNEF	18	18	1 1/16-18 UNEF	19	F	M28 X 1.0-6H	1.500 (38.10)	1.375 (34.93)	1.348 (34.24)	1.730 (43.94)	1.460 (37.08)	1.200 (30.48)
20	20	1 3/16-18 UNEF	20	20	1 3/16-18 UNEF	21	G	M31 X 1.0-6H	1.625 (41.28)	1.500 (38.10)	1.469 (37.31)	1.880 (47.75)	1.550 (39.37)	1.260 (32.00)
22	22	1 5/16-18 UNEF	22	22	1 5/16-18 UNEF	23	H	M34 X 1.0-6H	1.750 (44.45)	1.625 (41.28)	1.581 (40.16)	1.910 (48.51)	1.630 (41.40)	1.330 (33.78)
24	24	1 7/16-18 UNEF	24	24	1 7/16-18 UNEF	25	J	M37 X 1.0-6H	1.875 (47.63)	1.750 (44.45)	1.690 (42.93)	1.940 (49.28)	1.700 (43.18)	1.400 (35.56)

*** See Note 6**

TABLE II: SHELL SIZE (Continued from Above)

G Max	H Max	J Max	K Min	L Max	M Min
1.430 (36.32)	.760 (19.30)	.980 (24.89)	.220 (5.59)	.265 (6.73)	.264 (6.71)
1.490 (37.85)	.820 (20.83)	1.050 (26.67)	.270 (6.86)	.310 (7.87)	.390 (9.91)
1.640 (41.66)	.920 (23.37)	1.200 (30.48)	.350 (8.89)	.390 (9.91)	.504 (12.80)
1.730 (43.94)	.980 (24.89)	1.300 (33.02)	.470 (11.94)	.506 (12.85)	.630 (16.00)
1.860 (47.24)	1.080 (27.43)	1.440 (36.58)	.550 (13.97)	.591 (15.01)	.756 (19.20)
1.930 (49.02)	1.120 (28.45)	1.560 (39.62)	.620 (15.75)	.661 (16.79)	.843 (21.41)
2.080 (30.68)	1.210 (30.73)	1.690 (42.93)	.700 (17.78)	.744 (18.90)	.969 (24.61)
2.150 (54.61)	1.270 (32.26)	1.770 (44.96)	.780 (19.81)	.826 (20.98)	1.091 (27.71)
2.230 (56.64)	1.330 (33.78)	1.890 (48.01)	.850 (21.59)	.896 (22.76)	1.217 (30.91)

TABLE III: FINISH

Symbol	Finish
XB	Composite Material–No Plating, Color Black, Brass Interface Shroud and Adapter–Nickel Plated
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XN	Composite Material–No Plating, Color Black and Brown, Brass Interface Shroud and Adapter–Selectively Cadmium Plated (See Detail B)

TABLE IV: BRAID TYPE

Symbol	Braid Type
A	100% AmberStrand®
B	75%/25% AmberStrand® Blend
L	100% ArmorLite™
Standard	Nickel/Copper 34awg
T	Tin/Copper 34awg

NOTES

1. See Table I in Intro for front-end dimensional details.
2. Glenair Series 600 Assembly Tools are recommended for assembly and installation.
3. Swing arm locks in 45° increments, shell size 09 through 25. Additional positioning increments are manufacturer's option.
4. Screw is captive to the arm when disengaged. When tightened, the screw will not protrude into the inside surfaces.
5. Material/Finish:
   Clamp body, coupling nut, saddles - High grade thermoplastic/See Table III.
   Clamp hardware - CRES/Passivate
   Shield - See Table IV.
   Interface ring and shroud - Table III.
   Crimp ring - Copper/Tin plated.
6. Add MOD Code -475 to end of part number for use with Series II connector. Backshell to be supplied less shroud.
7. Metric dimensions (mm) indicated in parentheses.

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319-181
"Wide Mouth" Composite Low-Profile
Swing-Arm Strain Relief with Shield Sock and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, for Series II See Note 8
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
LOW PROFILE	

Product Series
319 - EMI/RFI Shield Sock Assemblies

Finish Symbol
(*See Table III*)

Custom Braid Length
Specify In Inches
(Omit for Std. 12" Length)

Connector Designator
A, F, and H

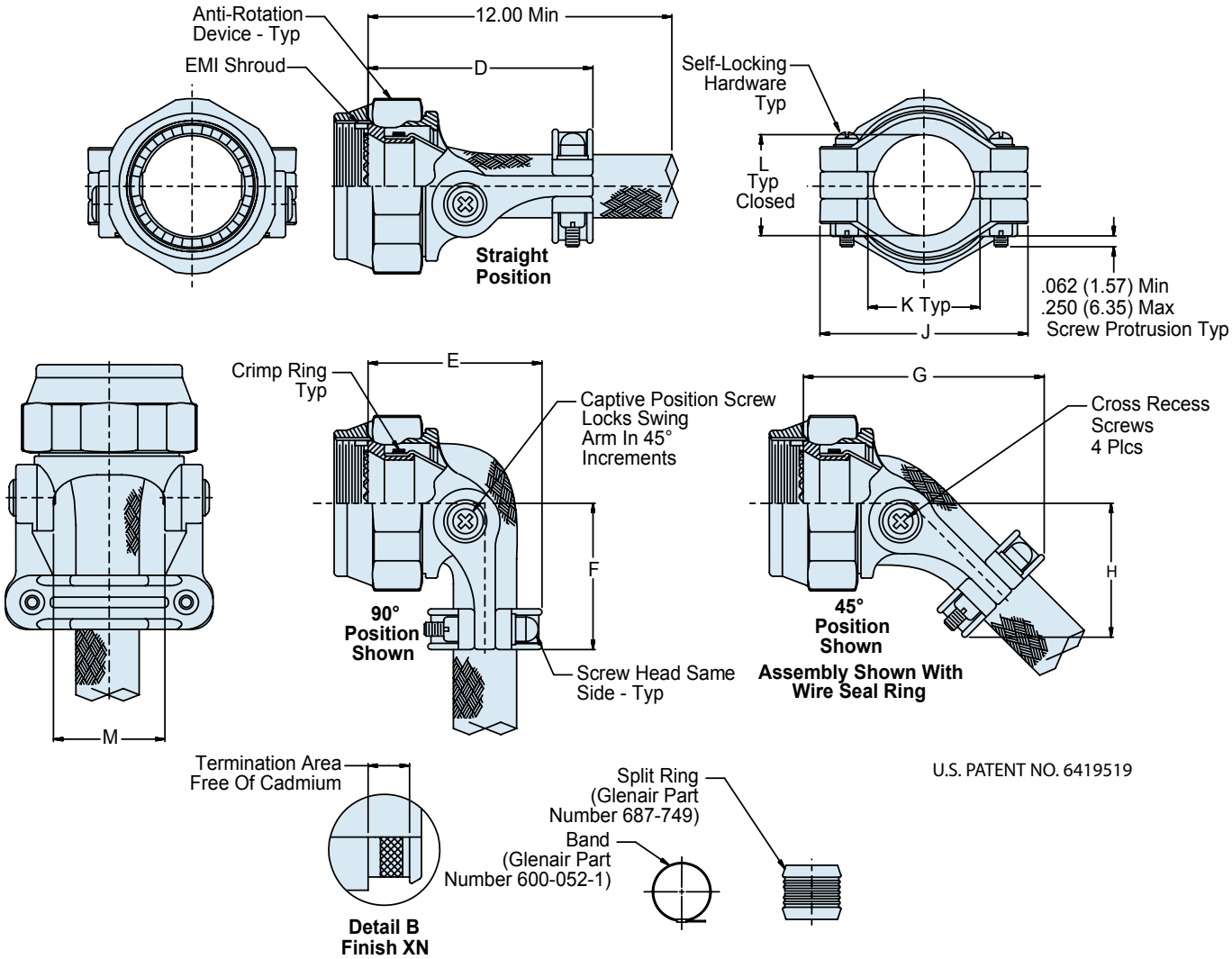
Optional Braid Material
B - See Table IV for Options
(Omit for Std. Nickel/Copper)

319	H	181	XB	15	B	R	14

Basic Part Number

Connector Shell Size
(*See Table II*)

Split Ring / Band Option
Split Ring (687-749) and Band (600-052-1) supplied with R option
(*Omit for none*)



U.S. PATENT NO. 6419519

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319-181
"Wide Mouth" Composite Low-Profile
Swing-Arm Strain Relief with Shield Sock and Self-Locking Rotatable Coupling

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TABLE II: SHELL SIZE (Continued Below)

Shell Size A, F	Shell Size H	D Max	E Max	F ± .03 (0.76)	G Max	H Max	J ± .03 (0.76)	K Min	L Ref	M Wire Bundle Dimension Between Ears Ref
08	09	1.510 (38.35)	.980 (24.89)	.800 (2.32)	1.460 (37.08)	.780 (19.81)	.936 (23.77)	.350 (8.89)	.310 (7.87)	.393 (9.98)
10	11	1.580 (40.13)	1.050 (26.67)	.900 (22.86)	1.570 (39.88)	.870 (22.10)	1.172 (29.77)	.455 (11.56)	.375 (9.53)	.455 (11.56)
12	13	1.640 (41.66)	1.290 (32.77)	.970 (24.64)	1.760 (44.70)	1.020 (25.91)	1.406 (35.71)	.640 (16.26)	.591 (15.01)	.598 (15.19)
14	15	1.650 (41.91)	1.370 (34.80)	1.030 (25.75)	1.820 (46.23)	1.060 (26.92)	1.500 (38.10)	.710 (18.03)	.661 (16.79)	.710 (18.03)
16	17	1.740 (44.20)	1.440 (36.58)	1.100 (27.50)	1.920 (48.77)	.839 (21.31)	1.562 (39.67)	.839 (21.31)	.713 (18.11)	.839 (21.31)
18	19	1.740 (44.20)	1.540 (39.12)	1.160 (29.46)	2.000 (50.80)	1.160 (29.46)	1.687 (42.85)	.922 (23.42)	.795 (20.19)	.934 (23.72)
20	21	1.890 (48.01)	1.690 (42.93)	1.230 (31.24)	2.180 (55.37)	1.290 (32.77)	1.912 (48.56)	1.068 (27.13)	.996 (25.30)	1.068 (27.13)
22	23	1.920 (48.77)	1.760 (44.70)	1.300 (33.02)	2.250 (57.15)	1.350 (34.29)	2.036 (51.71)	1.197 (30.40)	1.060 (26.92)	1.197 (30.40)
24	25	2.080 (52.83)	1.790 (45.47)	1.490 (37.85)	2.390 (60.71)	1.470 (37.34)	2.281 (57.94)	1.323 (33.60)	1.123 (28.52)	1.323 (33.60)

TABLE III: FINISH

Symbol	Finish
XB	Composite Material–No Plating, Color Black, Brass Interface Shroud and Adapter–Nickel Plated
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XN	Composite Material–No Plating, Color Black and Brown, Brass Interface Shroud and Adapter–Selectively Cadmium Plated (See Detail B)

TABLE IV: BRAID TYPE

Symbol	Braid Type
A	100% AmberStrand®
B	75%/25% AmberStrand® Blend
L	100% ArmorLite™
Standard	Nickel/Copper 34awg
T	Tin/Copper 34awg

NOTES

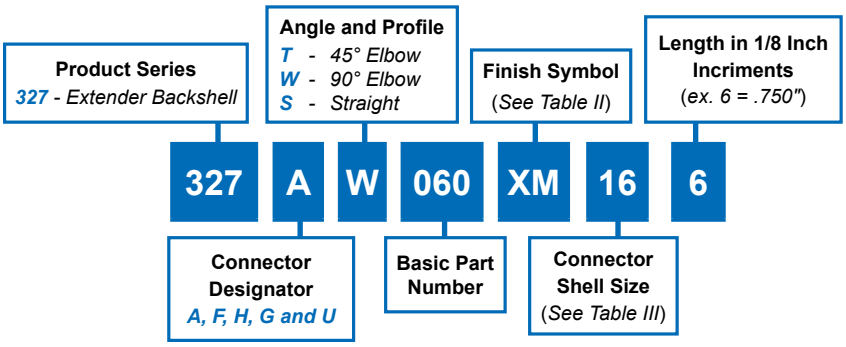
1. See Table I in Intro for front-end dimensional details.
2. Metric dimensions (mm) are in parethenses.
3. See composite thermoplastic shield sock assembly procedure for detailed installation instructions.
4. Coupling nut supplied unplated.
5. Glenair Series 600 Assembly Tools are recommended for installation.
6. Swing arm locks in 45° increments, shell size 09 through 25. Additional positioning increments are manufacturer's option.
7. Screw is captive to the body when disengaged. When tightened, the screw will not protrude into the surface.
8. Clamps accommodate MIL-DTL-38999, Series I, II, wIII and IV connectors, interface IAW AS85049, Figure 3. Add mod code -475 to end of part number for use with Series II connectors. Backshell to be supplied less shroud.
9. Material/Finish:
   Clamp body, coupling nut, saddles - High grade engineering thermoplastic/See Table III.
   Clamp hardware - CRES/Passivate
   Adapter (EMI/RFI) - Brass/Table III.
   Anti-rotation device - Cprrosion resistant material.
   Shield - Copper/Nickle plate.
   Interface ring and shroud - Table III.
   Crimp ring - Copper/Tin plated.

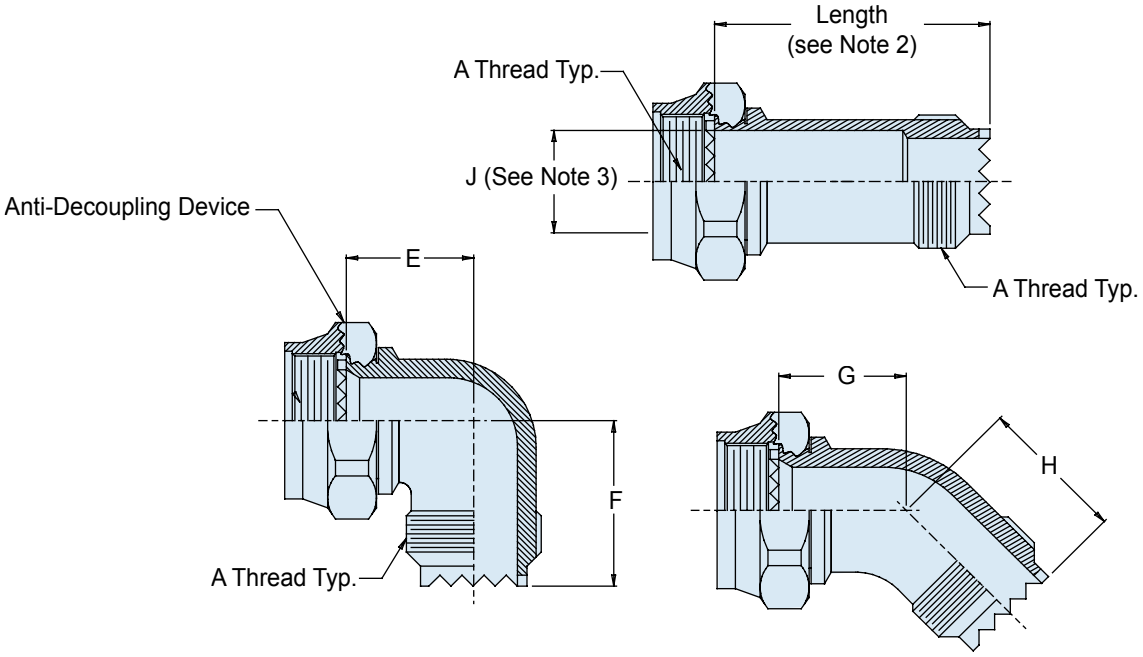
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327-060
Extender Backshell
with Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Note: See Table I in Intro for Front-End Dimensional Details





APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Available length, straight configuration only, 6 = .750 (19.1), 8 = 1.00 (25.4), consult factory for additional length. Omit length designator for angular functions.
3. J Diameter applicable to connector Code H, straight configuration only.
4. Coupling nut supplied unplated.
5. See Table I in Intro for front-end dimensional details.

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TABLE II: FINISH	
Symbol	**Finish Description**
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XB	No Plating - Black Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE III: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size For Connector Designator		E		F		G		H	
A, F	H	Max		Max		Max		Max	
08	09	.74	(18.8)	1.00	(25.4)	.78	(19.8)	.89	(22.6)
10	11	.80	(20.3)	1.06	(26.9)	.81	(20.6)	.92	(23.4)
12	13	.86	(21.8)	1.12	(28.4)	.81	(20.6)	.94	(23.9)
14	15	.93	(23.6)	1.19	(30.2)	.82	(20.8)	.97	(24.6)
16	17	.99	(25.1)	1.25	(31.8)	.84	(21.3)	.99	(25.1)
18	19	1.05	(26.7)	1.31	(33.3)	.85	(21.6)	1.00	(25.4)
20	21	1.12	(28.4)	1.38	(35.1)	.88	(22.4)	1.03	(26.2)
22	23	1.18	(30.0)	1.44	(36.6)	.92	(23.4)	1.07	(27.2)
24	25	1.24	(31.5)	1.50	(38.1)	.97	(24.6)	1.08	(27.4)

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347-129
Composite Shorting Cap Backshell
with Lanyard Attachment and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	

Note: See Table I in Intro for Front-End Dimensional Details

Product Series	Basic Part Number	Connector Shell Size		Attachment Symbol	Attachment Length in 1/2" Incriments	
347	H	129	XM	19	4	H	4	-111
Connector Designator A, F or H		Finish Symbol (See Table III)		Backshell Length in 1/2" Incriments ex. 4 = 2.0 Inches 1" Min.		Ring or Eylet Dash No. (See Table III, IV, V, VI, or VII)		

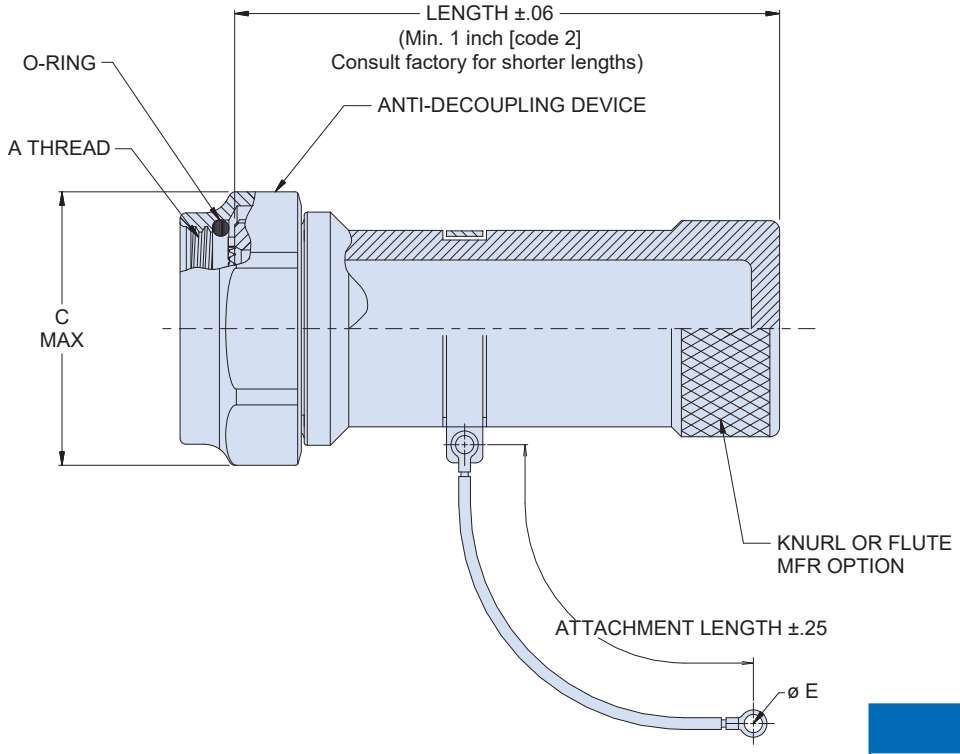


TABLE II: SHELL SIZE	
A, F	H
08	09
10	11
12	13
14	15
16	17
18	19
20	21
22	23
24	25

TABLE III: FINISH	
Symbol	Finish Description
XM	2000 Hour Corrosion-Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium Olive Drab Over Electroless Nickel

NOTES

1. Coupling nut supplied unplated.
2. See Table I in Intro for front-end dimensional details.

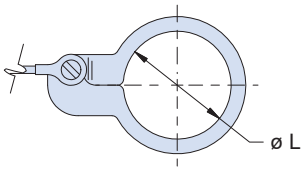
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347-129
Composite Shorting Cap Backshell
with Lanyard Attachment and Self-Locking Rotatable Coupling

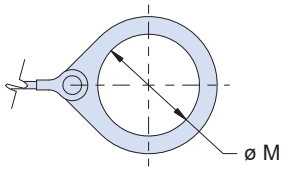
Glenair®

TABLE IV: ATTACHMENT STYLE	
Symbol	**Attachment**
C	No Attachment, Body Strap Only
D	Bead Chain, CRES/Passivate with Terminal
F	Wire Rope, Nylon Jacket with Terminal
G	Nylon Rope with Terminal
H	Wire Rope, Teflon Jacket with Terminal
N	Attachment Omitted
R	Wire Rope, PVC Jacket with Terminal
S	#8 Sash Chain, CRES/Passivate
U	Wire Rope, Polyurethane Jacket with Terminal

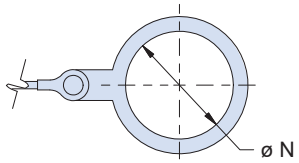
TABLE III	
Dash No.	**E Diameter**
01	.140 (3.6)
02	.182 (4.6)
03	.191 (4.9)
04	.197 (5.0)
05	.167 (4.2)
06	.125 (3.2)
07	.218 (5.5)
09	.156 (4.0)



SPLIT RING



SOLID RING



SOLID RING

TABLE V	
Dash No.	**L Dia ±.015 (0.4)**
50	.425 (10.8)
52	.485 (12.3)
54	.640 (16.3)
56	.750 (19.1)
58	.890 (22.6)
60	1.015 (25.8)
62	1.095 (27.8)
64	1.130 (28.7)
66	1.250 (31.8)
68	1.350 (34.3)
70	1.390 (35.3)
72	1.485 (37.7)
74	1.625 (41.3)
76	1.750 (44.5)
78	1.875 (47.6)
80	1.980 (50.3)
82	2.060 (52.3)
84	2.235 (56.8)
86	2.310 (58.7)
88	2.475 (62.9)
90	2.655 (67.4)
92	2.810 (71.4)
94	3.045 (77.3)

TABLE VI	
Dash No.	**M Dia ±.015 (0.4)**
08	.468 (11.9)
10	.593 (15.1)
12	.718 (18.2)
13	.765 (19.4)
14	.844 (21.4)
15	.890 (22.6)
16	.968 (24.6)
17	1.015 (25.8)
18	1.093 (27.8)
19	1.140 (29.0)
20	1.203 (30.6)
21	1.265 (32.1)
22	1.343 (34.1)
23	1.453 (36.9)
24	1.484 (37.7)
25	1.577 (40.1)
27	1.640 (41.7)
28	1.687 (42.8)
29	1.765 (44.8)
30	1.890 (48.0)
31	1.953 (49.6)
32	1.968 (50.0)
33	2.077 (52.8)
35	2.140 (54.4)
36	2.187 (55.5)
40	2.406 (61.1)
44	2.656 (67.5)
48	3.031 (77.0)

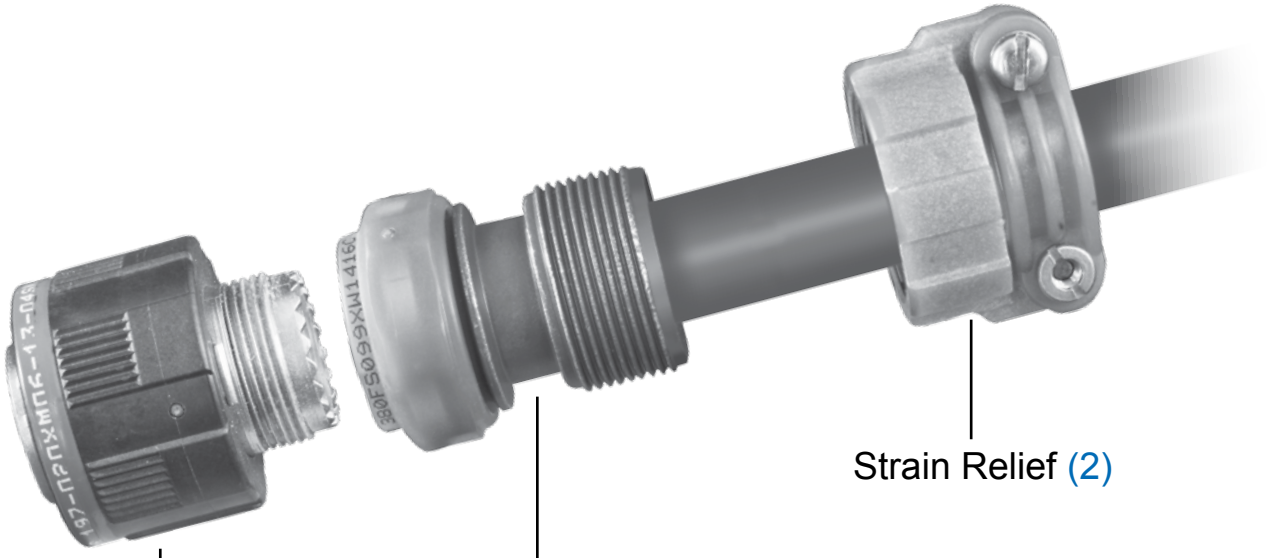
TABLE VII	
Dash No.	**N Dia ±.015 (0.4)**
100	.391 (9.9)
101	.516 (13.1)
102	.583 (14.8)
103	.641 (16.3)
104	.708 (18.0)
105	.766 (19.5)
205	.788 (20.0)
106	.896 (22.2)
206	.907 (23.0)
107	1.016 (25.8)
207	1.025 (26.0)
108	1.141 (29.0)
208	1.203 (30.6)
109	1.266 (32.2)
110	1.391 (35.3)
111	1.521 (38.6)
211	1.536 (39.0)
112	1.641 (41.7)
113	1.766 (44.9)
114	1.891 (48.0)
115	2.078 (52.8)
116	2.406 (61.1)
117	2.510 (63.8)

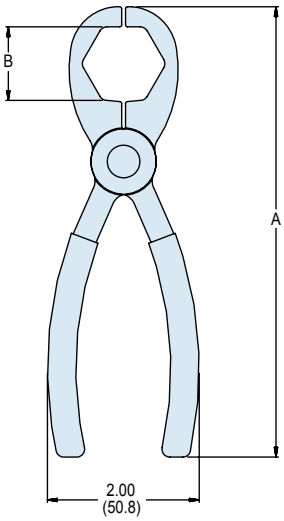
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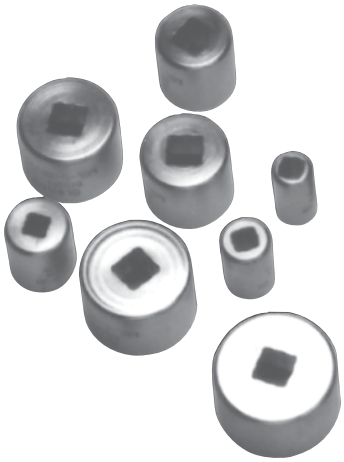
Printed in U.S.A.

Series 360 Non-Environmental Backshell Assembly Instructions





(3) 600-157
Stainless Steel Composite
Hex Coupling Wrench



(4) Plug and Receptacle
Holding Tools
for 1/4" and 3/8" Socket



(5) 600-161
Hand Held Digital
Torque Wrench

COMPOSITE COUPLING TORQUE VALUES

Shell Size Reference	Composite Torque (Inch-Pounds)
08/09	35
10/11	35
12/13	40
14/15	40
16/17	40
18/19	40
20/21	80
22/23	80
24/25	80
28	120
32	120
36	120

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Series 360 Non-Environmental Backshell Assembly Instructions

The following suggested procedure serves as a guide for proper assembly and installation of Glenair Series 360 Non-Environmental Composite Backshells. It is recommended that trial samples of appropriate cables or wire bundles be used to determine proper trim dimensions of the individual conductors and cable jackets, if applicable.

NOTE: ***As with any electrical connector assembly procedure, be sure to use the proper tools. For convenient, reliable assembly of the connectors and backshells, it is suggested that Glenair's connector holding tools, strap wrenches and connector pliers be used.***

1. Temporarily assemble backshell (1) to connector.

2. If cable is jacketed, insert cable into backshell (1) and bottom against connector. Hold cable in position and mark cable jacket at rear end of backshell.

3. Remove backshell from connector and stage the backshell, together with the strain relief clamp (2), up the cable for installation after wires are terminated to the connector contacts.

4. Trim cable jacket at a point 1/2 inch toward connector from mark made in step two above.

5. Prepare and terminate cable conductors in accordance with established practices.

6. Thread backshell (1) onto the connector and tighten securely. Glenair recommends the use of the appropriate sized series 600-157 composite hex coupling wrench (3) to prevent damage to the composite backshell coupling nut. For added convenience in assembly, an appropriately sized series 600-005 connector holding tool (4) is recommended, as well as Glenair digital torque wrench (5).

7. Assemble strain relief (2) to backshell and tighten securely. Tighten strain relief saddles securely on cable or harness (see saddle clamp assembly procedure).

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360-014
Composite Non-Environmental Backshell
with Self-Locking Rotatable Coupling and Strain Relief

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

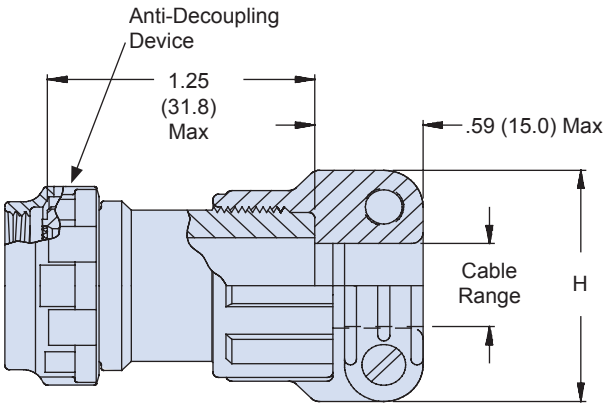
Product Series
360 - Non-Environmental Strain Relief

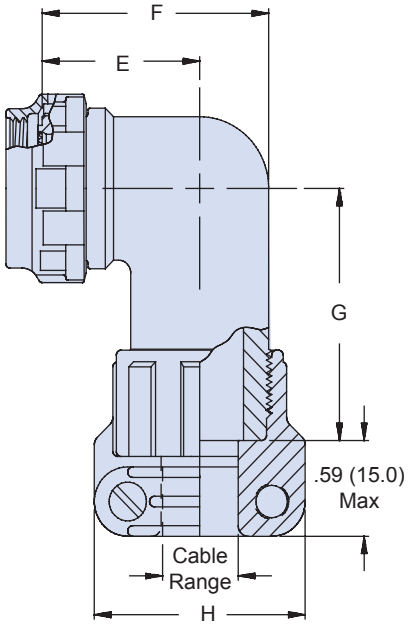
Angle and Profile
S - Straight
W - 90° Elbow

Finish Symbol
(See Table III)

Cable Entry
(Table IV)

360	H	S	014	XO	19	20
	Connector Designator *A, F, L, H, G and U*		Basic Part Number		Connector Shell Size *(See Table II)*	





NOTES

1. Coupling nut supplied unplated.
2. See Table I in Intro for front-end dimensional details.

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TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size For Connector Designator*					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.06	(27.0)	10
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.13	(28.7)	12
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.19	(30.2)	14
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.38	(35.1)	16
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.44	(36.6)	20
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.47	(37.3)	20
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.56	(39.6)	22
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.63	(41.4)	24
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.69	(42.9)	28
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	1.78	(45.2)	32

**Consult factory for additional entry sizes available.

TABLE III: FINISH

Symbol	Finish Description
XB	No Plating - Black Color
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

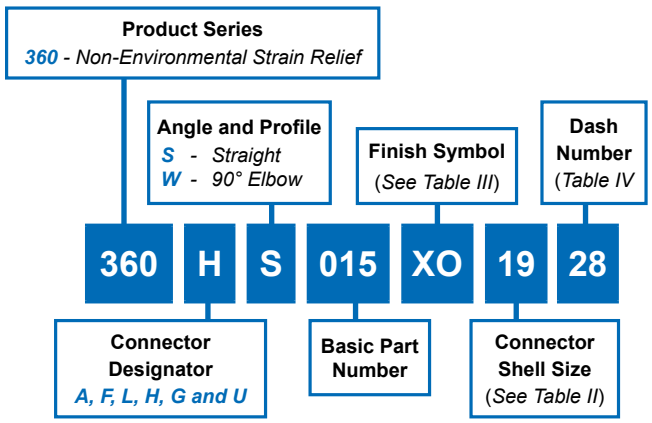
TABLE IV: CABLE ENTRY

	H		Cable Range			
Dash No.	±.06	(1.5)	Minimum		Maximum	
10	.94	(23.9)	.16	(4.0)	.25	(6.4)
12	1.17	(29.7)	.29	(5.1)	.38	(9.7)
14	1.28	(32.5)	.40	(10.1)	.44	(11.2)
16	1.41	(35.8)	.52	(12.7)	.63	(15.9)
18	1.50	(38.1)	.58	(14.7)	.69	(17.5)
20	1.56	(39.6)	.64	(16.3)	.75	(19.1)
22	1.69	(42.9)	.72	(18.3)	.88	(22.2)
24	1.81	(46.0)	.79	(20.0)	1.00	(25.4)
28	1.91	(48.5)	.89	(20.3)	1.13	(28.6)
32	2.02	(51.3)	.96	(24.4)	1.25	(31.8)

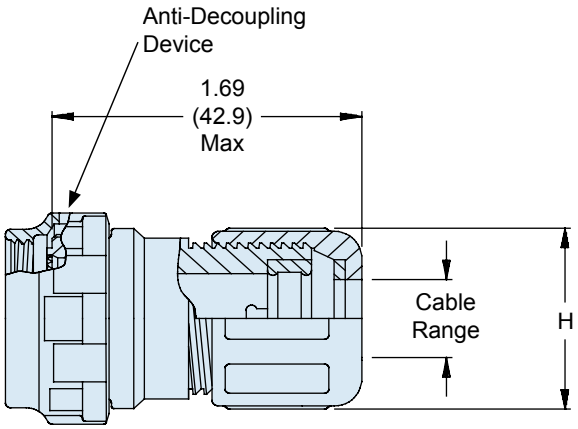
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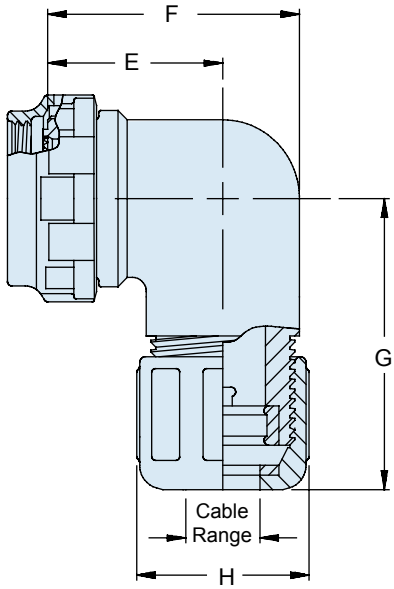
360-015
Composite Non-Environmental Backshell
with Self-Locking Rotatable Coupling and Qwik-Clamp Strain-Relief

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	



US PATENT 5211576





NOTES

1. Coupling nut supplied unplated.
2. See Table I in Intro for front-end dimensional details.
3. Metric dimensions (mm) are in parentheses and are for reference only

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TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size For Connector Designator		E		F		G		Max Entry
A, F/L, & H	G & U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No. *
08, 09	---	.69	(17.5)	.88	(22.4)	1.19	(30.2)	08
03, 10, 11	08	.75	(19.1)	1.00	(25.4)	1.25	(31.8)	12
12, 13	10, 11	.81	(20.6)	1.13	(28.7)	1.31	(33.3)	16
14, 15	12, 13	.88	(22.4)	1.31	(33.3)	1.38	(35.1)	20
16, 17	14, 15	.94	(23.9)	1.38	(35.1)	1.44	(36.6)	24
18, 19	16, 17	.97	(24.6)	1.44	(36.6)	1.47	(37.3)	28
20, 21	18, 19	1.06	(26.9)	1.63	(41.4)	1.56	(39.6)	32
22, 23	20	1.13	(28.7)	1.75	(44.5)	1.63	(41.4)	36
24, 25, 61	22, 23	1.19	(30.2)	1.88	(47.8)	1.69	(42.9)	40
28	24, 25	1.34	(34.0)	2.13	(54.1)	1.78	(45.2)	44

* Consult factory for additional entry sizes available.

TABLE III: FINISH

Symbol	Finish Description
XB	No Plating - Black Color
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE IV: CABLE ENTRY

	H (Max)		Saddle Kit *		Cable Range			
Dash No	±.06	(1.5)	Minimum		Minimum		Maximum	
08	.72	(18.3)	---	---	.10	(2.5)	.25	(6.4)
12	.91	(23.1)	.10	(2.5)	.20	(5.1)	.38	(9.7)
16	1.09	(27.7)	.10	(2.5)	.33	(8.4)	.50	(12.7)
20	1.22	(31.0)	.20	(5.1)	.45	(11.4)	.63	(15.9)
24	1.34	(34.0)	.33	(8.4)	.52	(13.2)	.75	(19.1)
28	1.53	(38.9)	.45	(11.4)	.64	(16.3)	.88	(22.2)
32	1.72	(43.7)	.52	(13.2)	.77	(19.6)	1.00	(25.4)
36	1.85	(47.0)	.64	(16.3)	.86	(21.8)	1.13	(28.6)
40	1.97	(50.0)	.77	(19.6)	.98	(24.9)	1.25	(31.8)
44	2.09	(53.1)	.86	(21.8)	1.13	(28.6)	1.38	(34.9)

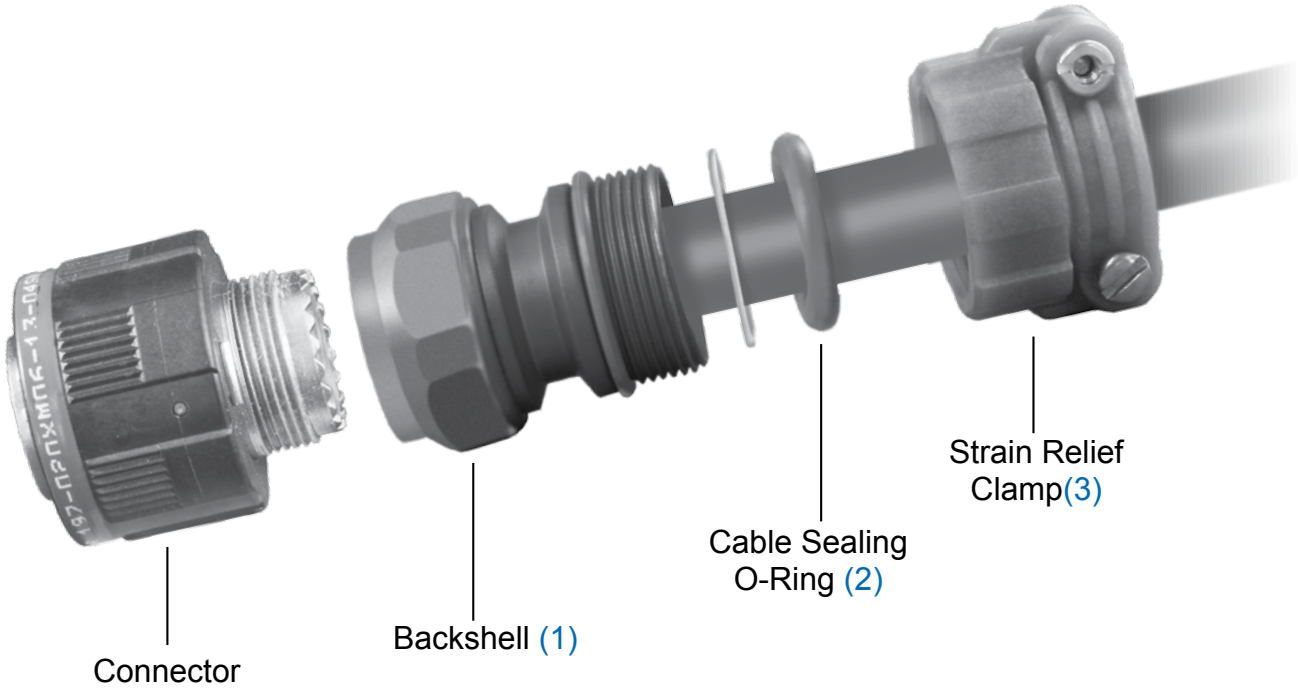
* Consult factory for availability of special saddle bar kit to reduce minimum clamp range.

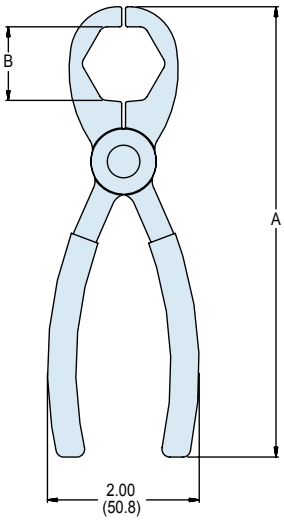
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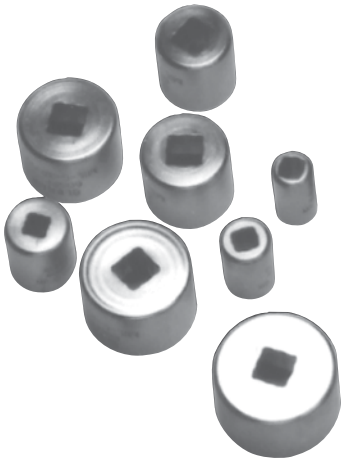
Series 370 Environmental Backshell Assembly Instructions

Series 370 Environmental Backshell Assembly Instructions





(4) 600-157
Stainless Steel Composite
Hex Coupling Wrench



(5) Plug and Receptacle
Holding Tools
for 1/4" and 3/8" Socket



(6) 600-161
Hand Held Digital
Torque Wrench

COMPOSITE COUPLING TORQUE VALUES

Shell Size Reference	Composite Torque (Inch-Pounds)
08/09	35
10/11	35
12/13	40
14/15	40
16/17	40
18/19	40
20/21	80
22/23	80
24/25	80
28	120
32	120
36	120

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Series 370 Environmental Backshell Assembly Instructions

The following suggested procedure serves as a guide for proper assembly and installation of straight Glenair Series 370 Cable Sealing Backshells for use with jacketed cables. It is recommended that trial samples of appropriate cables be used to determine proper trim dimensions of the cable jacket and individual conductors.

NOTE: ***As with any electrical connector assembly procedure, be sure to use the proper tools. For convenient reliable assembly of the connector and backshell, it is suggested that Glenair's connector holding tools, strap wrenches and connector pliers be used.***

1. Temporarily assemble backshell (1) to connector.

2. Remove the strain relief clamp (3) and cable sealing o-ring (2) from the backshell and stage them in the order shown up the cable for installation after wires are terminated to the connector contacts.

3. Insert cable into backshell (1) and bottom against connector. Hold cable in position and mark cable jacket at rear end of backshell.

4. Remove backshell from connector and place on cable with components from step two above.

5. Trim cable jacket at a point 3/4 inch toward connector from mark made in step two above.

6. Prepare and terminate wires in accordance with established practices.

7. Thread backshell (1) onto the connector and tighten securely. Glenair recommends the use of the appropriate sized series 600-157 composite hex coupling wrench (4) to prevent damage to the composite backshell coupling nut. For added convenience in assembly, an appropriately sized series 600-005 connector holding tool (5) is recommended, as well as Glenair digital torque wrench (6).

8. Slide washer (if supplied) and O-ring (2) on to backshell and tighten strain relief clamp (3) firmly in place

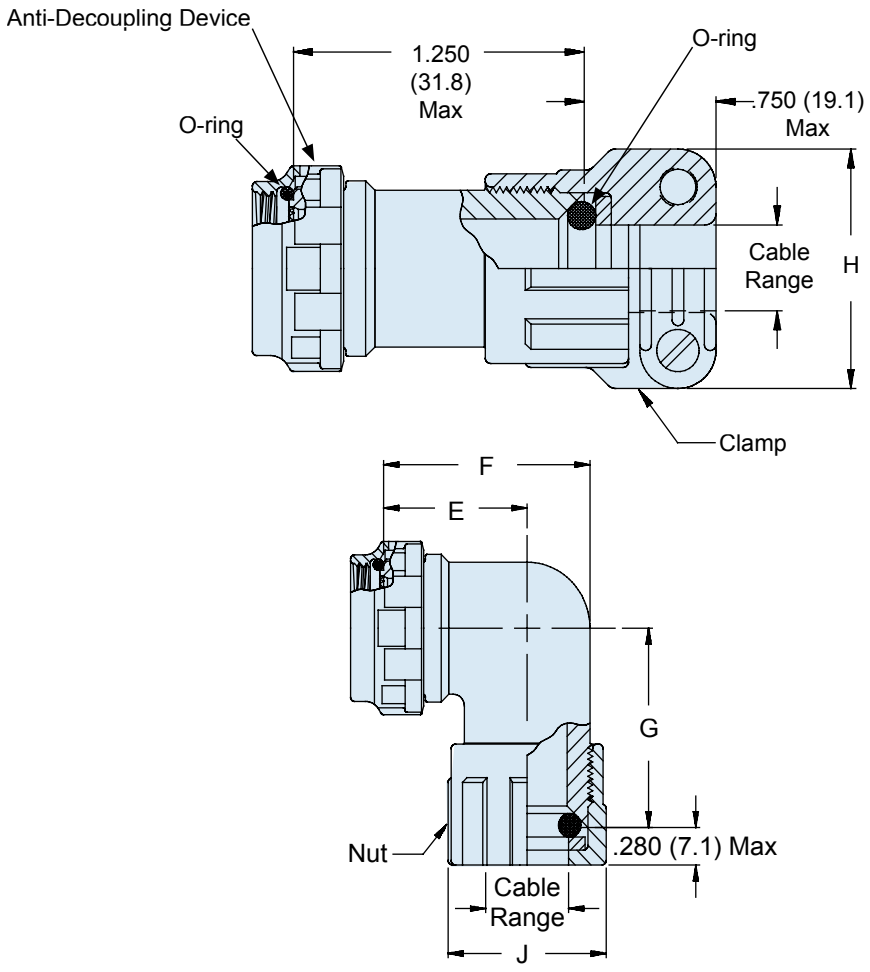
9. If provided, tighten saddle bar clamps until they bottom against saddle clamp ears (see saddle clamp assembly procedure).

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370-016
Composite Cable-Sealing Environmental Backshell
with Self-Locking Rotatable Coupling and Strain-Relief Clamp or Nut

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series	Angle and Profile	Coupling Nut Finish Symbol	Dash Number				
370 - Environmental Strain Relief	S - Straight W - 90° Split Clamp	(See Table III)	(Table IV)				
370	H	S	016	XO	19	20	C
Connector Designator A, F, L, H, G and U			Basic Part Number	Connector Shell Size (See Table II)		Strain Relief Style C - Clamp N - Nut	



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370-016
Composite Cable-Sealing Environmental Backshell
with Self-Locking Rotatable Coupling and Strain-Relief Clamp or Nut

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TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size For Connector Designator*					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.06	(26.9)	10
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.13	(28.7)	12
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.19	(30.2)	14
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.25	(31.8)	16
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.31	(33.3)	20
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.34	(34.0)	20
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.44	(36.6)	22
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.50	(38.1)	24
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.56	(39.6)	28
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	1.66	(42.2)	32

**Consult factory for additional entry sizes available.

TABLE IV: CABLE ENTRY

Dash No.	Clamp Saddle Closed		H		J		Cable Range *			
			±.06	(1.5)	±.06	(1.5)	Minimum		Maximum	
10	.20	(5.1)	.94	(23.9)	.80	(20.3)	.13	(3.3)	.25	(6.4)
12	.29	(5.1)	1.17	(29.7)	.93	(23.6)	.25	(6.4)	.38	(9.7)
14	.40	(10.2)	1.28	(32.5)	1.06	(26.9)	.31	(7.9)	.44	(11.2)
16	.48	(12.2)	1.41	(35.8)	1.22	(31.0)	.50	(12.7)	.63	(15.9)
18	.55	(14.0)	1.50	(38.1)	1.24	(31.5)	.56	(14.2)	.69	(17.5)
20	.64	(16.0)	1.56	(39.6)	1.37	(34.8)	.63	(16.0)	.75	(19.1)
22	.72	(18.3)	1.69	(42.9)	1.49	(37.8)	.75	(19.1)	.88	(22.2)
24	.79	(20.1)	1.81	(46.0)	1.62	(41.1)	.88	(22.4)	1.00	(25.4)
28	.89	(22.0)	1.91	(48.5)	1.68	(42.7)	1.00	(25.4)	1.13	(28.6)
32	.96	(24.0)	2.02	(51.3)	1.82	(46.2)	1.13	(28.6)	1.25	(31.8)

* Cable range equals diameter of cable outer jacket.

NOTES

1. Coupling nut supplied unplated.
2. See Table I in Intro for front-end dimensional details.

TABLE III: FINISH

Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

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370-017
Composite Cable-Sealing Environmental Backshell
with Self-Locking Rotatable Coupling and Qwik-Clamp

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series
370 - Environmental Strain Relief

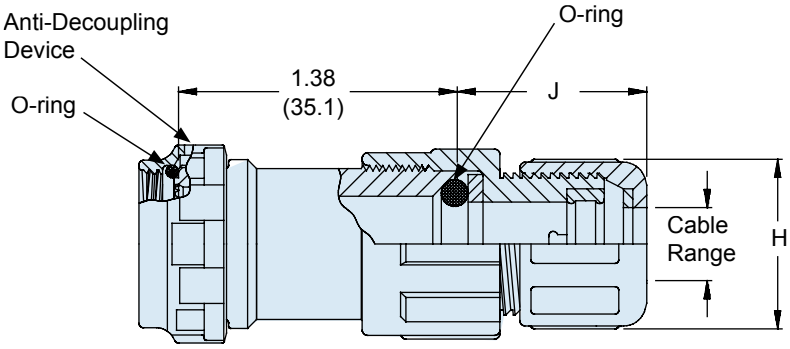
Angle and Profile
S - Straight
W - 90° Elbow

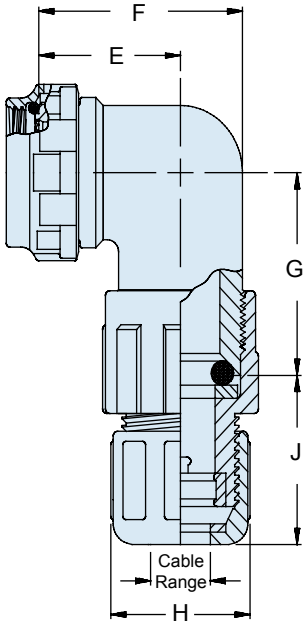
Finish Symbol
(*See Table III*)

Dash Number
(*Table IV*)

370	H	S	017	XO	19	28
Connector Designator *A, F, L, H, G and U*			Basic Part Number		Connector Shell Size (*See Table II*)	

US PATENT 5211576





NOTES

1. Coupling nut supplied unplated.
2. See Table I in Intro for front-end dimensional details.

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370-017
Composite Cable-Sealing Environmental Backshell
with Self-Locking Rotatable Coupling and Qwik-Clamp

Glenair®

TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size For Connector Designator*					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.06	(26.9)	08
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.13	(28.7)	12
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.19	(30.2)	16
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.25	(31.8)	20
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.31	(33.3)	24
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.34	(34.0)	28
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.44	(36.6)	32
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.50	(38.1)	36
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.56	(39.6)	40
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	1.66	(42.2)	44

**Consult factory for additional entry sizes available.

TABLE III: FINISH

Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE IV: CABLE ENTRY

Dash No.	H (Max)		J (Max)		Cable Range Minimum		Cable Range Maximum	
08	.72	(18.3)	.87	(22.1)	.13	(3.3)	.25	(6.4)
12	.91	(23.1)	1.01	(25.7)	.22	(5.6)	.38	(9.7)
16	1.09	(27.7)	1.11	(28.2)	.34	(8.6)	.50	(12.7)
20	1.22	(31.0)	1.11	(28.2)	.47	(11.9)	.63	(15.9)
24	1.34	(34.0)	1.11	(28.2)	.60	(15.0)	.75	(19.1)
28	1.53	(38.9)	1.26	(32.0)	.72	(18.3)	.88	(22.2)
32	1.72	(43.7)	1.41	(35.8)	.84	(21.3)	1.00	(25.4)
36	1.85	(47.0)	1.41	(35.8)	.97	(24.6)	1.13	(28.6)
40	1.97	(50.0)	1.41	(35.8)	1.09	(27.7)	1.25	(31.8)
44	2.09	(53.1)	1.53	(38.9)	1.22	(31.0)	1.38	(34.9)

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377-040
Composite Fiber-Optic Strain-Relief Backshell
with Cable Alignment Grommet and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
H	MIL-DTL-38999 Series III and IV
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

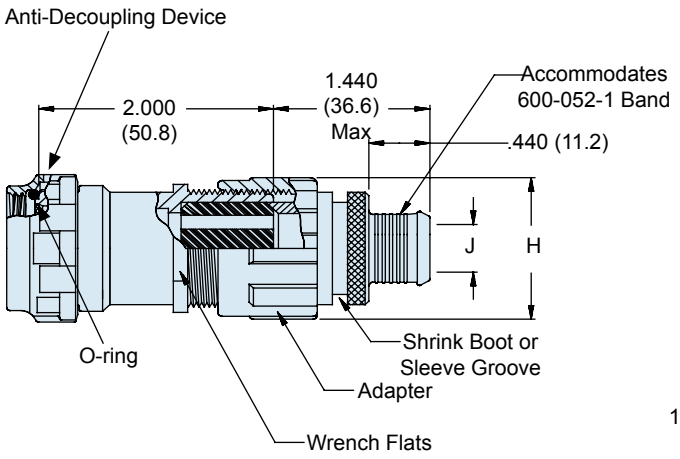
Product Series
377 - Fiber Optic Strain Relief

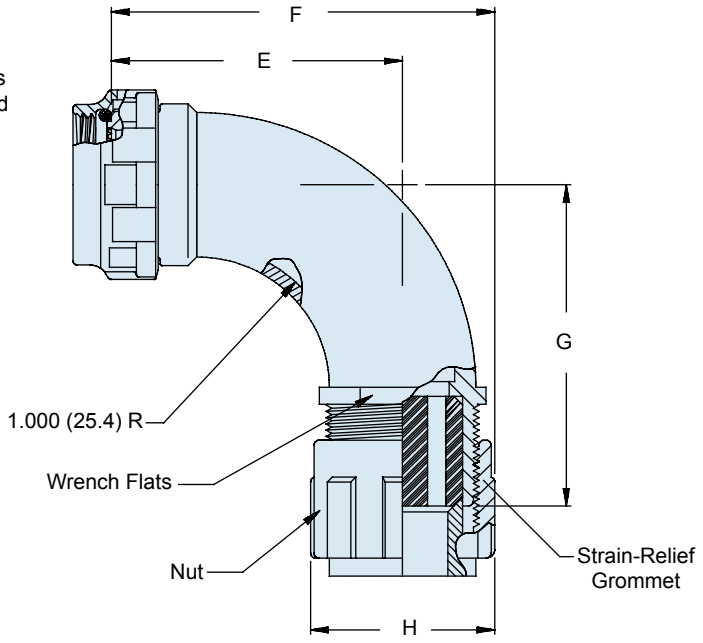
Angle and Profile
S - Straight
W - 90° Elbow

Finish Symbol
(See Table III)

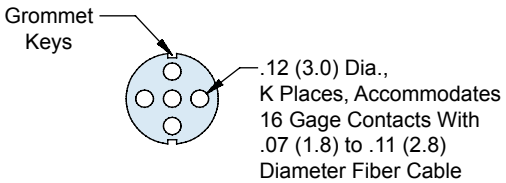
Strain Relief Style
A - Banding Adapter
N - Nut

377	H	S	040	XM	19	A	T
	Connector Designator *H and U*		**Basic Part Number**	**Connector Shell Size** *(See Table II)*		**Shrink Boot Option** *(Omit for none)*	





U.S. PATENT NO. 6358077



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377-040
Composite Fiber-Optic Strain-Relief Backshell
with Cable Alignment Grommet and Self-Locking Rotatable Coupling

TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size For Conn. Desig.		E		F		G		H		J		K (# of Holes)*	
H	U	± .06	(1.5)	± .09	(2.3)	± .06	(1.5)	(Max)		Ref.		Code H	Code U
11	---	1.70	(43.2)	2.39	(60.7)	1.90	(48.3)	1.41	(35.8)	.27	(6.9)	2	---
13	11	1.78	(45.2)	2.47	(62.7)	1.96	(49.8)	1.41	(35.8)	.33	(8.4)	4	2
15	13	1.82	(46.2)	2.51	(63.8)	2.02	(51.3)	1.41	(35.8)	.39	(9.9)	5	4
17	15	1.89	(48.0)	2.70	(68.6)	2.09	(53.1)	1.64	(41.7)	.51	(13.0)	8	5
19	17	1.93	(49.0)	2.74	(69.6)	2.13	(54.1)	1.64	(41.7)	.64	(16.3)	11	8
21	19	2.00	(50.8)	2.94	(74.7)	2.19	(55.6)	1.89	(48.0)	.77	(19.6)	16	11
23	21	2.08	(52.8)	3.02	(76.7)	2.25	(57.2)	1.89	(48.0)	.84	(21.3)	21	16
25	23	2.14	(54.4)	3.20	(81.3)	2.32	(58.9)	2.16	(54.9)	.84	(21.3)	29	21
---	25	2.22	(56.4)	3.28	(83.3)	2.39	(60.7)	2.16	(54.9)	.89	(22.6)	---	29

* Use Glenair 687-142 seal plug in vacant holes

TABLE III: FINISH

Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XO	No Plating - Brown Color (Non-Conductive Finish)

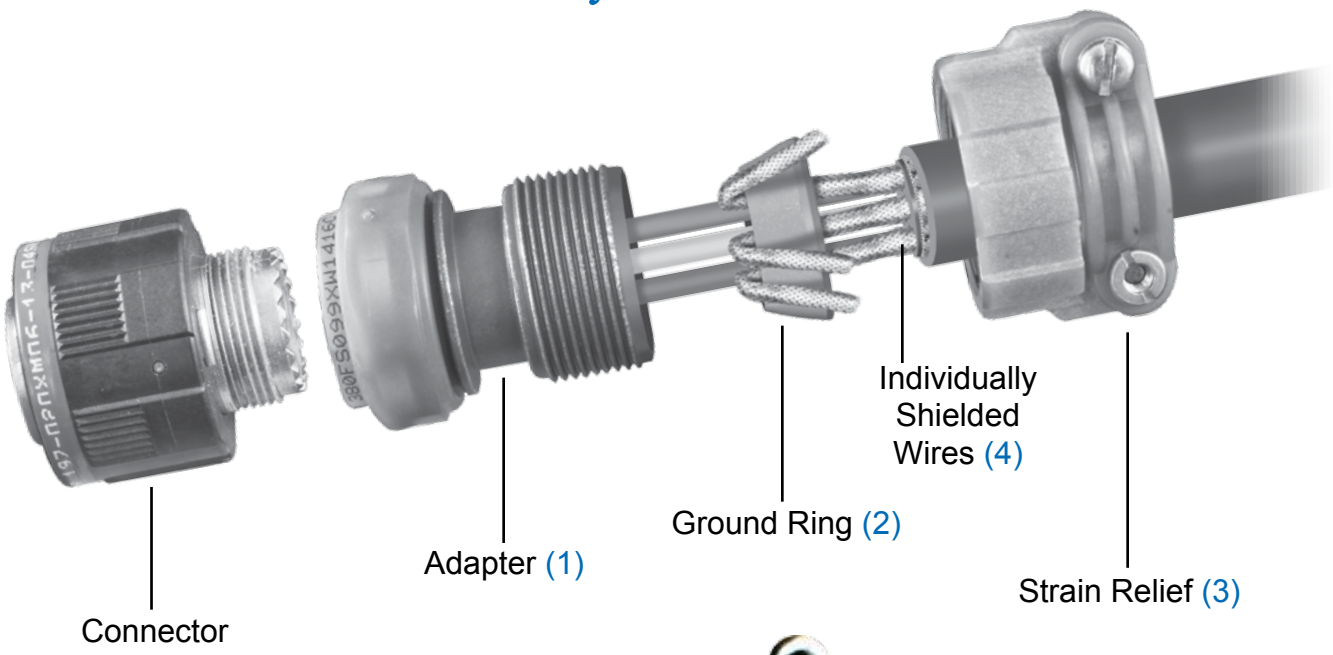
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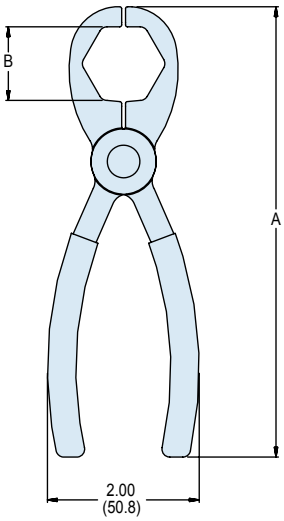
1. See Table I in Intro for front-end dimensional details.
2. Metric dimensions (mm) are in parentheses and are for reference only

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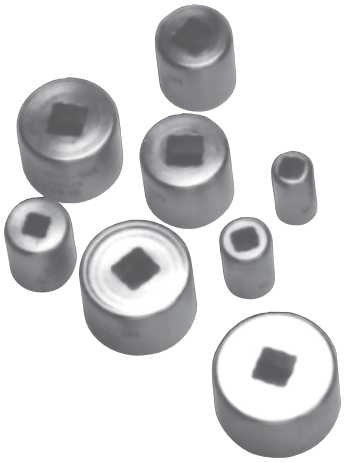
Series 380 EMI/RFI Non-Environmental Backshell Assembly Instructions

Series 380 EMI/RFI Non-Environmental (Type D) Assembly Instructions





(5) 600-157
Stainless Steel Composite Hex Coupling Wrench



(6) Plug and Receptacle Holding Tools for 1/4" and 3/8" Socket



(7) 600-161
Hand Held Digital Torque Wrench

COMPOSITE COUPLING TORQUE VALUES	
Shell Size Reference	**Composite Torque (Inch-Pounds)**
08/09	35
10/11	35
12/13	40
14/15	40
16/17	40
18/19	40
20/21	80
22/23	80
24/25	80
28	120
32	120
36	120

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Series 380 EMI/RFI Non-Environmental Backshell Assembly Instructions

The following suggested procedure serves as a guide for the proper assembly and installation of Glenair Series 380 EMI/RFI Non-Environmental Backshells (Type D individual wire shield termination). It is recommended that trial samples of appropriate cables or harnesses be used to determine proper trim dimensions of the outer shield and individual conductors.

NOTE: ***As with any electrical connector assembly procedure, be sure to use the proper tools. For convenient, reliable assembly of the connector and backshell, it is suggested that Glenair's connector holding tools, strap wrenches and connector pliers be used.***

1. Temporarily assemble backshell (1) to connector.
2. Remove strain relief clamp (3) from adapter (1) and stage it, along with the ground ring (2) in the sequence pictured, up the cable for installation after wires are terminated to the connector contacts.
3. Insert cable into adapter (1), and bottom against connector. Hold cable in position and mark outer shield at rear end of adapter (1).
4. Remove adapter (1) from connector and place on cable with items in step two above.
5. Trim cable jacket at a point 3/4 inch toward connector from mark made in step three above, exposing individual conductors.
6. Trim outer shield at mark made in step three above (this procedure is for termination of individually shielded conductors only).
7. Extract shield pigtail from individual conductors. Fold back and tape or tie pigtails flat against the wire bundle.
8. Prepare and terminate contacts to individual conductors in accordance with established practices. (Crimp or solder in place)
9. Slide adapter (1) forward to connector, and tighten securely using appropriate tools.
10. Move the tapered ground ring forward near the rear of the adapter. Untie individual pigtails, and flare back over ground ring as to evenly disperse pigtails around the circumference of the ring. Tie or tape pigtails back to bundle allowing for approx. 1/2 inch of slack.
11. Push ground ring forward and into the tapered counter-bore at the rear of the backshell adapter (1).
12. Thread strain relief clamp (3) onto the adapter (1) and tighten securely.
13. Tighten strain relief saddle bar clamps until they bottom against saddle ears (see saddle clamp assembly procedure). This will provide good shielding and bonding to the adapter shell. (This same procedure can also be utilized for overall shield).

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380-099
Composite Cone and Ring Style
EMI/RFI Shield Termination Backshell with Self-Locking Coupling Nut and Strain Relief

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series
380 - EMI/RFI Non Environmental Backshells with Strain Relief

Angle and Profile
S - Straight
W - 90° Elbow
T - 45° Elbow

Basic Part Number

Finish Symbol
(See Table III)

Cable Entry
(See Table IV)

Strain Relief Style
C - Clamp
N - Nut

380	H	S	099	XM	19	20	C

Connector Designator
A, F, L, H, G and U

Connector Shell Size
(See Table II)

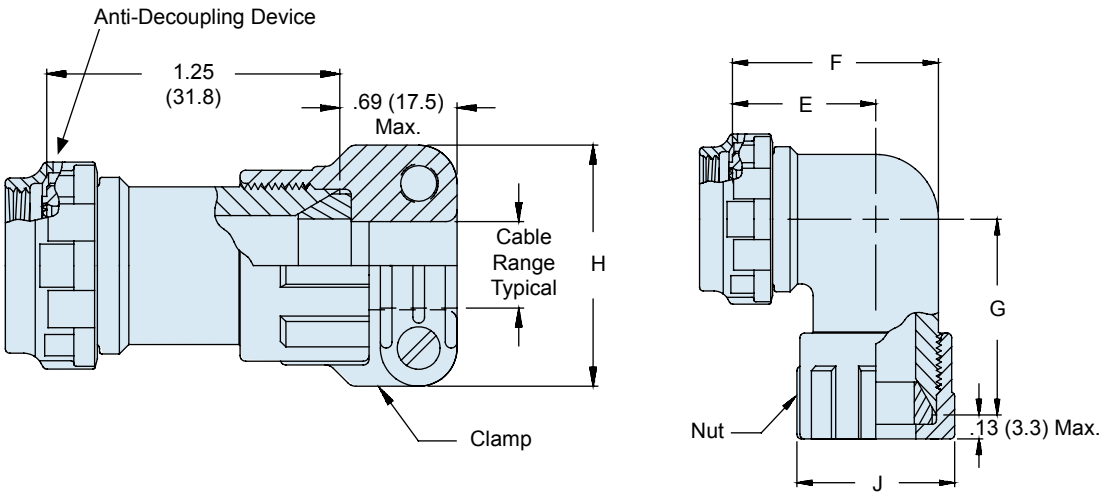


TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.19	(30.2)	10
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.25	(31.8)	12
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.31	(33.3)	14
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.38	(35.1)	16
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.44	(36.6)	20
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.47	(37.3)	20
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.56	(39.6)	22
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.63	(41.4)	24
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.69	(42.9)	28
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	1.78	(45.2)	32

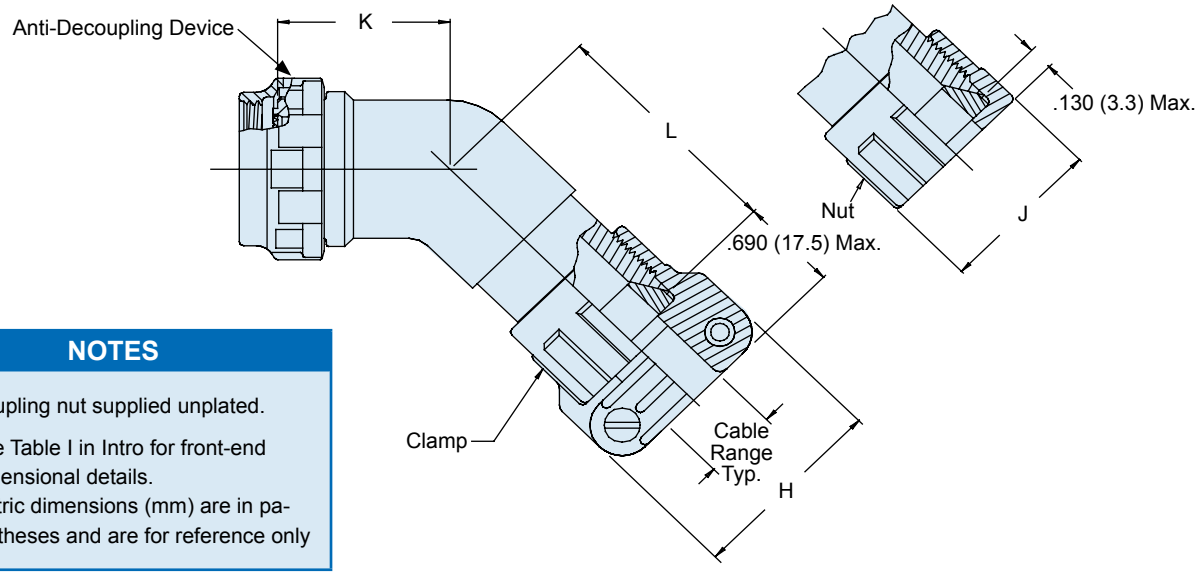
**Consult factory for additional entry sizes available.
See Introduction for additional connector front-end details.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/ Olive Drab over Electroless Nickel

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380-099
Composite Cone and Ring Style
EMI/RFI Shield Termination Backshell
with Self-Locking Coupling Nut and Strain Relief Clamp



NOTES

1. Coupling nut supplied unplated.
2. See Table I in Intro for front-end dimensional details.
3. Metric dimensions (mm) are in parentheses and are for reference only

TABLE II: CONNECTOR SHELL SIZE (CONT.)

Shell Size For Connector Designator		K		L		Max Entry
A & F/L	H	± .06	(1.5)	± .06	(1.5)	Dash No. *
08	09	.72	(18.3)	.88	(22.4)	10
10	11	.75	(19.1)	.94	(23.9)	12
12	13	.75	(19.1)	1.00	(25.4)	14
14	15	.76	(19.3)	1.03	(26.2)	16
16	17	.78	(19.8)	1.06	(26.9)	20
18	19	.79	(20.1)	1.07	(27.2)	20
20	21	.82	(20.8)	1.09	(27.7)	22
22	23	.86	(21.8)	1.14	(29.0)	24
24	25	.92	(23.4)	1.17	(29.7)	28

* Consult factory for additional entry sizes available.

TABLE IV: CABLE ENTRY

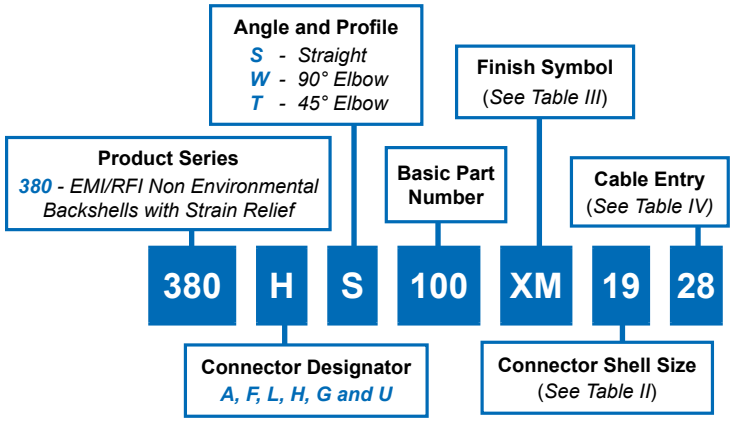
	H		J		Cable Range *			
Dash No.	±.06	(1.5)	±.06	(1.5)	Minimum		Maximum	
10	.94	(23.9)	.80	(20.3)	.20	(5.1)	.25	(6.4)
12	1.17	(29.7)	.93	(23.6)	.29	(5.1)	.38	(9.7)
14	1.28	(32.5)	1.06	(26.9)	.40	(10.1)	.44	(11.2)
16	1.41	(35.8)	1.22	(31.0)	.48	(12.2)	.63	(15.9)
18	1.50	(38.1)	1.24	(31.5)	.55	(14.0)	.69	(17.5)
20	1.56	(39.6)	1.37	(34.8)	.64	(16.3)	.75	(19.1)
22	1.69	(42.9)	1.49	(37.8)	.72	(18.3)	.88	(22.2)
24	1.81	(46.0)	1.62	(41.1)	.79	(20.0)	1.00	(25.4)
28	1.91	(48.5)	1.68	(42.7)	.89	(20.3)	1.13	(28.6)
32	2.02	(51.3)	1.82	(46.2)	.96	(24.4)	1.25	(31.8)

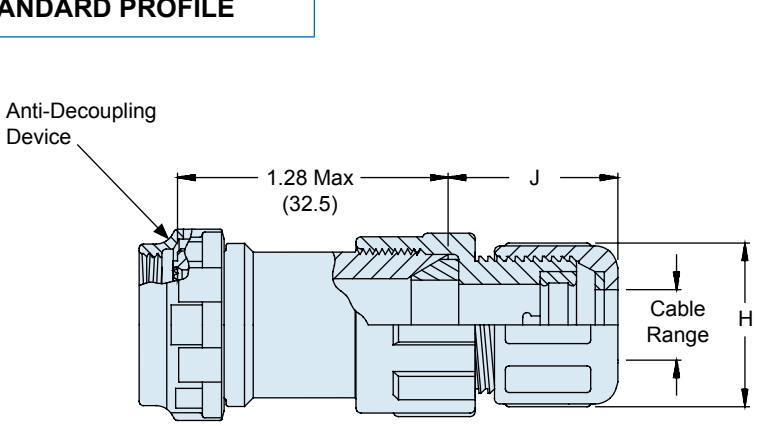
* Cable range equals diameter of cable outer jacket.

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380-100
Composite Cone and Ring Style
EMI/RFI Shield Termination Backshell
with Self-Locking Rotatable Coupling and Qwik Clamp

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	





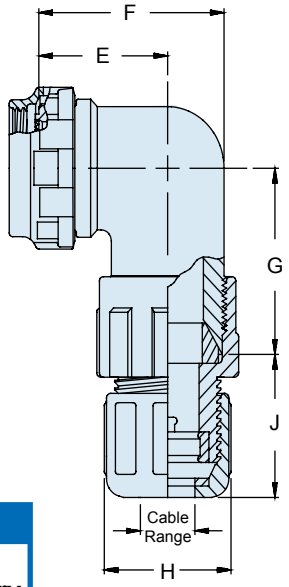


TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.06	(26.9)	08
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.13	(28.7)	12
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.19	(30.2)	16
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.25	(31.8)	20
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.31	(33.3)	24
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.34	(34.0)	28
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.44	(36.6)	32
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.50	(38.1)	36
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.56	(39.6)	40
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	1.66	(42.2)	44

**Consult factory for additional entry sizes available.
See introduction for additional connector front-end details.

US PATENT 5211576

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380-100
Composite Cone and Ring Style
EMI/RFI Shield Termination Backshell
with Self-Locking Rotatable Coupling and Qwik Clamp

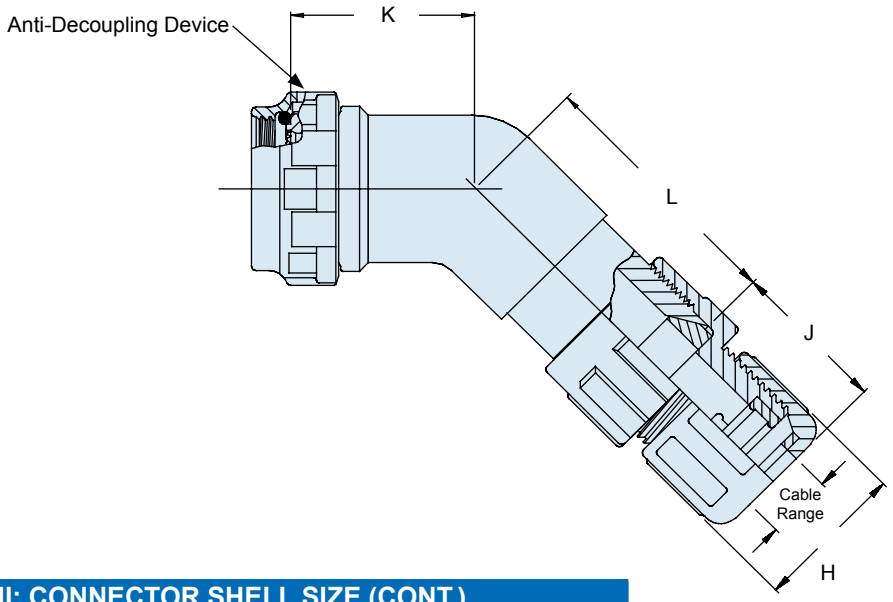


TABLE II: CONNECTOR SHELL SIZE (CONT.)

Shell Size For Connector Designator		K		L		Max Entry
A & F/L	H	± .06	(1.5)	± .06	(1.5)	Dash No. *
08	09	.72	(18.3)	.88	(22.4)	08
10	11	.75	(19.1)	.94	(23.9)	12
12	13	.75	(19.1)	1.00	(25.4)	16
14	15	.76	(19.3)	1.03	(26.2)	20
16	17	.78	(19.8)	1.06	(26.9)	24
18	19	.79	(20.1)	1.07	(27.2)	28
20	21	.82	(20.8)	1.09	(27.7)	32
22	23	.86	(21.8)	1.14	(29.0)	36
24	25	.92	(23.4)	1.17	(29.7)	40

* Consult factory for additional entry sizes available.

NOTES

1. Coupling nut supplied unplated.
2. See Table I in Intro for front-end dimensional details.
3. Metric dimensions (mm) are in parentheses and are for reference only

TABLE IV: CABLE ENTRY

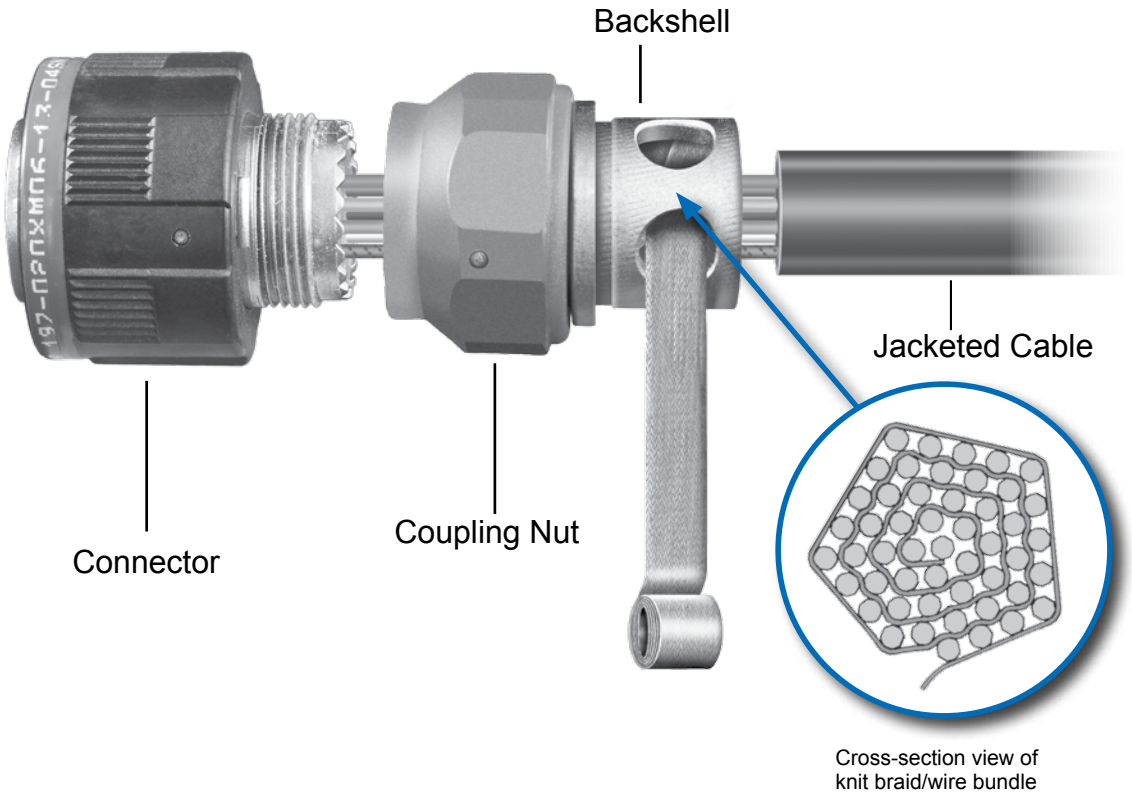
Entry Code	H (Max)		J (Max)		Cable Range Minimum		Cable Range Maximum	
08	.72	(18.3)	.87	(22.1)	.10	(2.5)	.25	(6.4)
12	.91	(23.1)	1.01	(25.7)	.20	(5.1)	.38	(9.7)
16	1.09	(27.7)	1.11	(28.2)	.33	(8.4)	.50	(12.7)
20	1.22	(31.0)	1.11	(28.2)	.45	(11.4)	.63	(15.9)
24	1.34	(34.0)	1.11	(28.2)	.52	(13.2)	.75	(19.1)
28	1.53	(38.9)	1.26	(32.0)	.64	(16.3)	.88	(22.2)
32	1.72	(43.7)	1.41	(35.8)	.77	(19.6)	1.00	(25.4)
36	1.85	(47.0)	1.41	(35.8)	.86	(21.8)	1.13	(28.6)
40	1.97	(50.0)	1.41	(35.8)	.98	(24.9)	1.25	(31.8)
44	2.09	(53.1)	1.53	(38.9)	1.13	(28.6)	1.38	(34.9)

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

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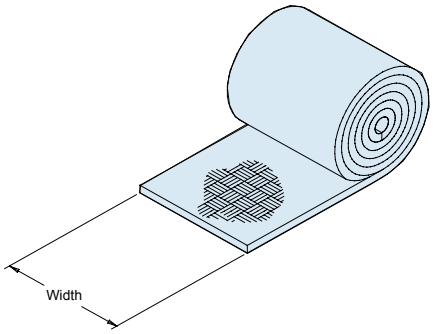
Knit Braid Backshell Assembly Instructions



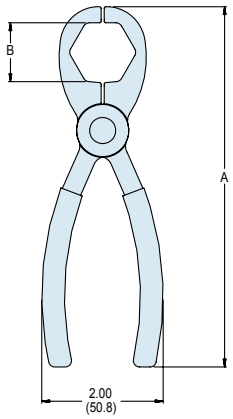
1. Temporarily assemble backshell to connector.
2. If cable is jacketed, insert cable into backshell and bottom against connector. Using the end of the backshell as a guide, mark the location of solder sleeves and/or pigtail breakouts on the cable.
3. Disassemble backshell from connector and stage it up the cable for installation after wire termination is complete.
4. Trim cable jacket at marked location from step 2 above and pull out pigtails and/or apply solder sleeves. Terminate contacts to wires in accordance with established practices.
5. Insert contacts into connector in accordance with established practices.
6. Pull braid forward and wrap the knit braid around individual wires in groups of two or three, ensuring that the knitmesh braid is in contact with all exposed braids (see cross-section illustration).
7. Pull the knit braid tightly around the wire bundle and pass through one of the holes in the backshell.
8. Screw the backshell partially onto the connector, ensuring that the interface teeth *do not* engage—allowing the backshell to rotate freely.

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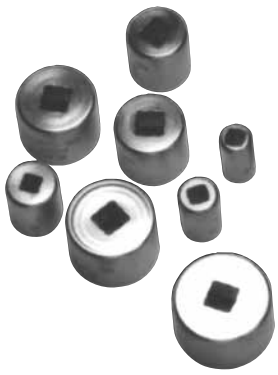
9. Rotate the backshell so that the knit braid is drawn into the backshell. Maintain firm pressure on the free knit braid during this step to provide tight coverage. Continue rotating until the knit braid is wound tightly into the backshell and further rotation becomes difficult.
10. Cut the braid flush with the backshell O.D. Rotate the backshell body 1/4 turn to ensure that the end of the braid is out of sight.
11. Tighten the backshell fully onto the connector using established procedures and torque values.



107-044
Nickel Plated Copper Knit Braid
(see product page for details)



600-157
Stainless Steel Composite
Hex Coupling Wrench



Plug and Receptacle
Holding Tools
for 1/4" and 3/8" Socket



600-161
Hand Held Digital
Torque Wrench

COMPOSITE COUPLING TORQUE VALUES	
Shell Size Reference	**Composite Torque (Inch-Pounds)**
08/09	35
10/11	35
12/13	40
14/15	40
16/17	40
18/19	40
20/21	80
22/23	80
24/25	80
28	120
32	120
36	120

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380-130
Composite Knit-Braid Style
EMI/RFI Shield Termination Backshell with Qwik-Ty® and Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
ROTATABLE COUPLING	

Product Series
380 - EMI/RFI Non Environmental Backshells with Strain Relief

Angle and Profile
S - Straight

Basic Part Number

Finish Symbol
(See Table III)

Cable Entry
(See Table IV)

380	H	S	130	XM	15	-01	SB

Connector Designator
A, F, L and H

Connector Shell Size
(See Table II)

Strain Relief Style
SB - Shrink Boot Groove
SBT - Shrink Boot Groove with boot supplied
(Omit for none)

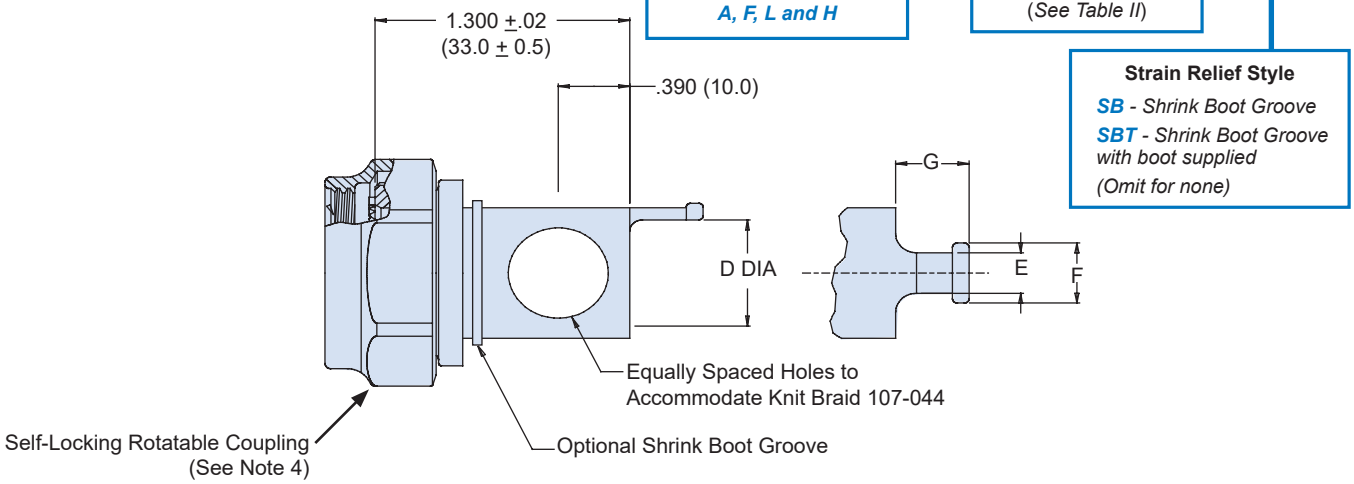


TABLE II: SHELL SIZE

Shell Size A	Max Entry Code**	Shell Size F/L	Shell Size H	Max Entry Code**
08	00	08	09	01
10	01	10	11	02
12	02	12	13	03
14	03	14	15	04
16	04	16	17	05
18	05	18	19	06
20	06	20	21	07
22	07	22	23	08
24	08	24	25	09

TABLE IV: CABLE ENTRY

Entry Code**	D ±.010 (0.25)	E ±.020 (0.50)	F ±.020 (0.50)	G ±.020 (0.50)	Number of Holes
00	.268 (6.8)	.187 (4.8)	.312 (7.9)	.512 (13.0)	2*
01	.354 (9.0)	.187 (4.8)	.312 (7.9)	.512 (13.0)	2**
02	.472 (12.0)	.187 (4.8)	.312 (7.9)	.512 (13.0)	2**
03	.591 (15.0)	.187 (4.8)	.312 (7.9)	.630 (16.0)	2*
04	.709 (18.0)	.219 (5.6)	.369 (9.4)	.630 (16.0)	2*
05	.837 (21.3)	.219 (5.6)	.369 (9.4)	.630 (16.0)	2*
06	.945 (24.0)	.219 (5.6)	.369 (9.4)	.630 (16.0)	2*
07	1.063 (27.0)	.250 (6.4)	.437 (11.1)	.630 (16.0)	4*
08	1.191 (30.3)	.250 (6.4)	.437 (11.1)	.630 (16.0)	4*
09	1.319 (33.5)	.250 (6.4)	.437 (11.1)	.630 (16.0)	4*

*Oval Holes, .256 (6.5) x .512 (13.0) **Oval Holes, .315 (8.0) x .512 (13.0) *Circular Holes, .512 (13.0) Diameter.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

APPLICATION NOTES

1. For effective grounding, connector with conductive finish should be used.
2. Coupling nut supplied unplated.
3. Metric dimensions (mm) are in parentheses and are for reference only.
4. Connector Code H supplied with black coupling nut.
5. Consult factory for additional entry sizes available.
6. For angled part requirements, use in conjunction with Glenair 327-060 Extenders.
7. See Table I in Intro for additional connector front-end dimensional details.

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380-131
Composite Knit-Braid Style
EMI/RFI Shield Termination Backshell with Strain-Relief Clamp and Rotatable Coupling

Glenair®

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
ROTATABLE COUPLING	

Product Series
380 - EMI/RFI Non Environmental Backshells with Strain Relief

Angle and Profile
S - Straight

Basic Part Number

Finish Symbol
(See Table III)

Strain Relief Style
SB - Shrink Boot Groove
SBT - Shrink Boot Groove with boot supplied
(Omit for none)

380	H	S	131	XM	15	01	SB

Connector Designator
A, F, L and H

Connector Shell Size
(See Table II)

Cable Entry
(See Table IV)

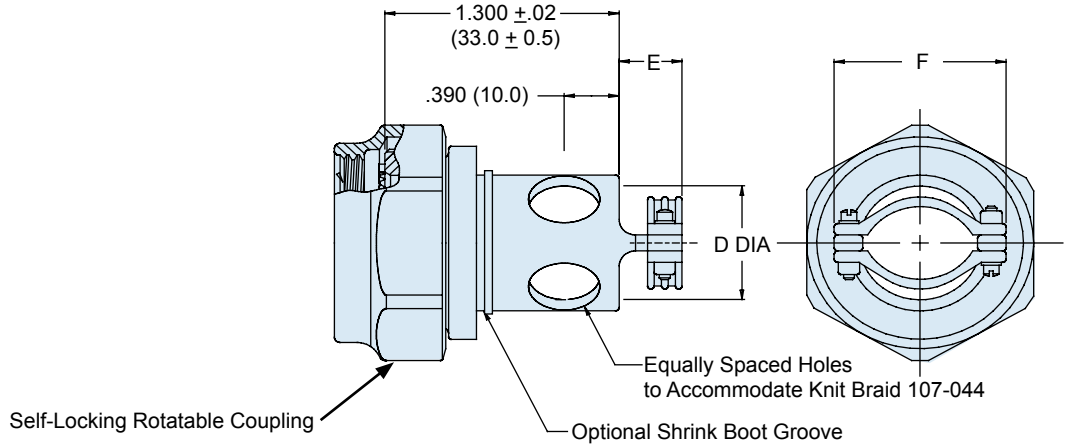


TABLE II: SHELL SIZE

Shell Size A	Max Entry Code**	Shell Size F/L	Shell Size H	Max Entry Code**
08	00	08	09	01
10	01	10	11	02
12	02	12	13	03
14	03	14	15	04
16	04	16	17	05
18	05	18	19	06
20	06	20	21	07
22	07	22	23	08
24	08	24	25	09

TABLE IV: CABLE ENTRY

Entry Code**	D ±.010 (0.25)	E ±.020 (0.50)	F ±.060 (1.5)	Number of Holes
00	.268 (6.8)	.512 (13.0)	.880 (22.4)	2•
01	.354 (9.0)	.512 (13.0)	.940 (23.9)	2••
02	.472 (12.0)	.512 (13.0)	1.170 (29.7)	2••
03	.591 (15.0)	.630 (16.0)	1.280 (32.5)	2*
04	.709 (18.0)	.630 (16.0)	1.410 (35.8)	2*
05	.837 (21.3)	.630 (16.0)	1.500 (38.1)	2*
06	.945 (24.0)	.630 (16.0)	1.560 (39.6)	2*
07	1.063 (27.0)	.630 (16.0)	1.690 (42.9)	4*
08	1.191 (30.3)	.630 (16.0)	1.820 (46.2)	4*
09	1.319 (33.5)	.630 (16.0)	1.910 (48.5)	4*

•Oval Holes, .256 (6.5) x .512 (13.0) ••Oval Holes, .315 (8.0) x .512 (13.0)
*Circular Holes, .512 (13.0) Diameter.

APPLICATION NOTES

1. Coupling nut and saddle bars supplied unplated.
2. Metric dimensions (mm) are in parentheses and are for reference only.
3. Consult factory for additional entry sizes available.
4. For angled part requirements, use in conjuncion with Glenair 327-060 Extenders.
5. See Table I in Intro for additional connector front-end dimensions.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion ResistantCadmium/Olive Drab over Electroless Nickel

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380-132
Composite Knit-Braid Style EMI/RFI
O-Ring Equipped Shield Termination Backshell with Shrink Boot Adapter and Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
ROTATABLE COUPLING	

Product Series
380 - EMI/RFI Non Environmental Backshells with Strain Relief

Angle and Profile
S - Straight

Basic Part Number

Finish Symbol
(See Table III)

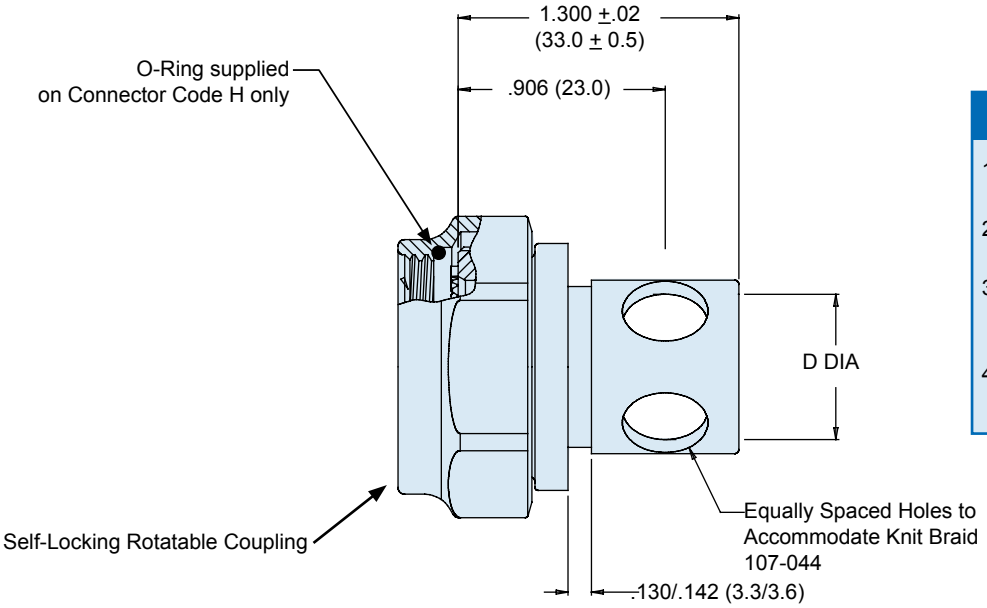
Strain Relief Style
SB - Shrink Boot Groove
SBT - Shrink Boot Groove with boot supplied
(Omit for none)

380	H	S	132	XM	15	01	SB

Connector Designator
A, F, L and H

Connector Shell Size
(See Table II)

Cable Entry
(See Table IV)



APPLICATION NOTES

1. Coupling nut and saddle bars supplied unplated.
2. Consult factory for additional entry sizes available.
3. For angled part requirements, use in conjuncion with Glenair 327-060 Extenders.
4. See Table I in Intro for additional front-end dimensional details.

TABLE II: SHELL SIZE

Shell Size A	Max Entry Code**	Shell Size F/L	Shell Size H	Max Entry Code**
08	00	08	09	01
10	01	10	11	02
12	02	12	13	03
14	03	14	15	04
16	04	16	17	05
18	05	18	19	06
20	06	20	21	07
22	07	22	23	08
24	08	24	25	09

TABLE IV: CABLE ENTRY

Entry Code**	D ±.010 (0.25)	Number of Holes
00	.268 (6.8)	2*
01	.354 (9.0)	2**
02	.472 (12.0)	2**
03	.591 (15.0)	2*
04	.709 (18.0)	2*
05	.837 (21.3)	2*
06	.945 (24.0)	2*
07	1.063 (27.0)	4*
08	1.191 (30.3)	4*
09	1.319 (33.5)	4*

*Oval Holes, .256 (6.5) x .512 (13.0)
**Oval Holes, .315 (8.0) x .512 (13.0)
*Circular Holes, .512 (13.0) Diameter.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

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107-044
EMI/RFI Nickel Plated Copper Knit Braid
for use with Knit Braid Adapters 380-130, 380-131 and 380-132

Product Series
107 - Composite Accessories

Material
B - Nickel Plated Copper
(See Table II)

107	044	B	12
	Basic Part Number		Width (See Table I)

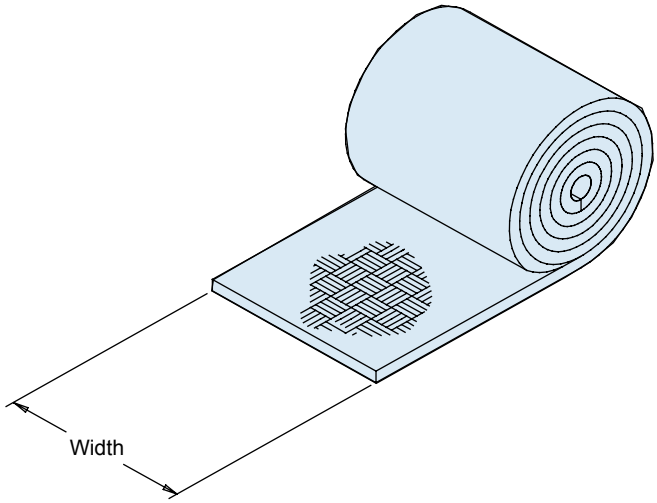


TABLE I: WIDTH

Width Code	Width	Strands Diameter	Approx. No. of Stitches per CM on Length	Approx. No. of Stitches per CM Across Length
12	.472 (12.0)	.006 (0.2)	.138 (3.5)	.173 (4.4)

TABLE II: MATERIAL

B *	Nickel Plated Copper

*** For other material options and sizes please consult factory**

APPLICATION NOTES

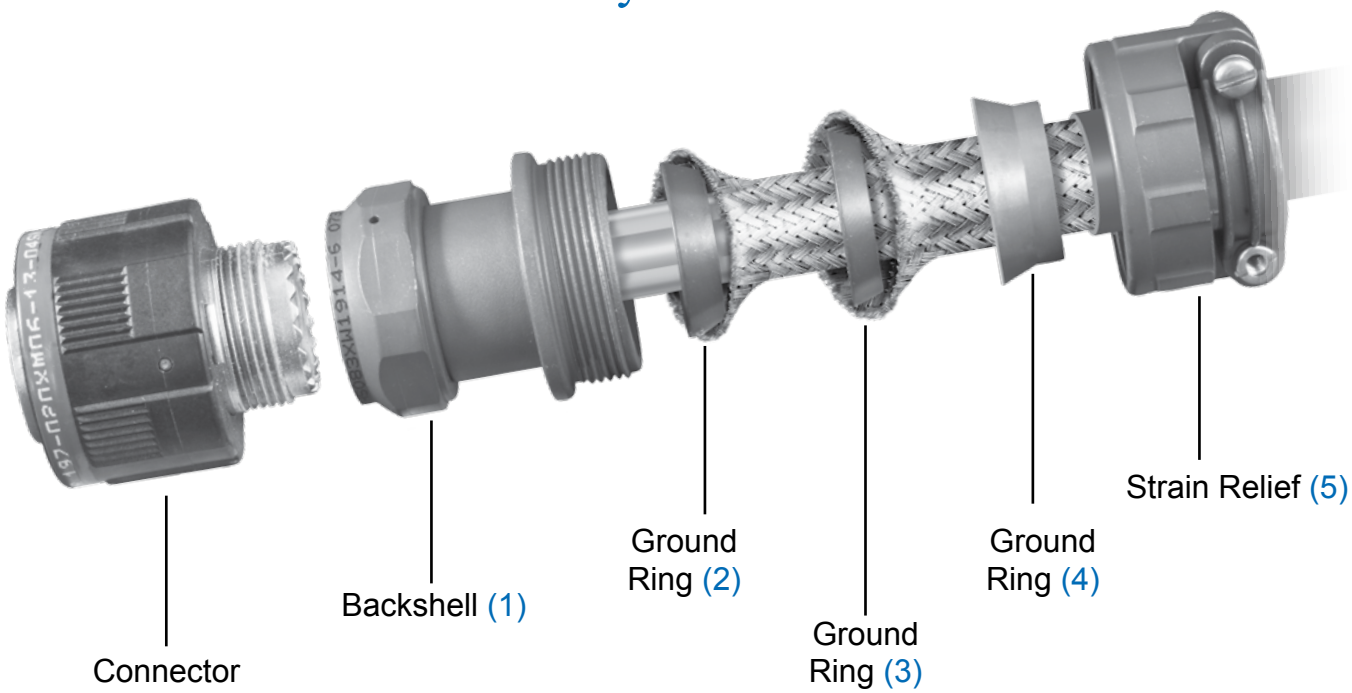
1. The woven braid is to be used with 360° RFI/EMI shield terminations.
2. Metric dimensions (mm) are in parentheses and are for reference only

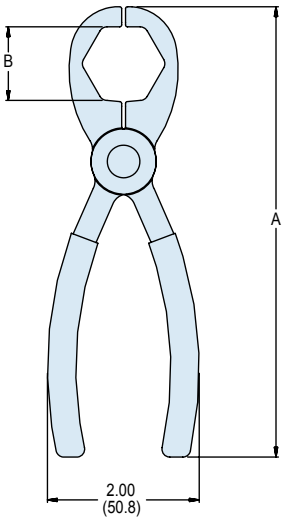
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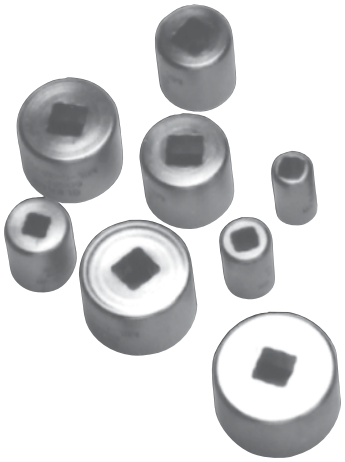
Series 380 (Type E) Multi-Shield EMI/RFI Non-Environmental Backshell Assembly Instructions

Series 380 EMI/RFI Non-Environmental (Type E) Assembly Instructions





(6) 600-157
Stainless Steel Composite
Hex Coupling Wrench



(7) Plug and Receptacle
Holding Tools
for 1/4" and 3/8" Socket



(8) 600-161
Hand Held Digital
Torque Wrench

COMPOSITE COUPLING TORQUE VALUES

Shell Size Reference	Composite Torque (Inch-Pounds)
08/09	35
10/11	35
12/13	40
14/15	40
16/17	40
18/19	40
20/21	80
22/23	80
24/25	80
28	120
32	120
36	120

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Series 380 (Type E) Multi-Shield EMI/RFI Non-Environmental
Backshell Assembly Instructions

The following suggested procedure serves as a guide for the proper assembly and installation of Glenair EMI/RFI Non-Environmental Backshells (Type E shield termination). It is recommended that trial samples of appropriate cables or harnesses be used to determine proper trim dimensions of the outer shield and individual conductors. This procedure is for the three ring style.

NOTE: ***As with any electrical connector assembly procedure, be sure to use the proper tools. For convenient, reliable assembly of the connector and backshell, it is suggested that Glenair's connector holding tools, strap wrenches and connector pliers be used.***

1. Temporarily assemble backshell (1) to connector.
2. Remove backshell from connector and stage it, along with the ground rings (2), (3), (4) and strain relief clamp (2), up the cable for installation after wires are terminated to the connector contacts.
3. Insert cable or harness into backshell (1) and bottom against connector. Hold cable in position and mark outer shield at rear end of backshell (1).
4. Remove backshell from connector and place on cable with items in step two above.
5. Trim outer shield at mark made in step three above.
6. Extract shield pigtail from individual conductor's. Tape or tie pigtails to the bundle.
7. Prepare and terminate contacts to individual conductors in accordance with established practices. (Crimp or solder in place.)
8. Slide backshell (1) forward to connector, and tighten securely.
9. Remove tape or untie pigtails from bundle. Slide ground ring (2) forward to flared-out pigtails. Fold pigtails back over ground ring (2) tie back to bundle leaving about 1/2" to 1" slack.
10. Bring ground ring (3) forward to overall braid, fold braid back over ring (3), push forward onto ring (2). Slide ground ring (4) onto overall braid and onto ring (3). . . push all three rings forward into the counter bore at the rear of backshell (1).
11. Thread backshell (1) onto the connector and tighten securely. Glenair recommends the use of the appropriate sized series 600-157 composite hex coupling wrench (6) to prevent damage to the composite backshell coupling nut. For added convenience in assembly, an appropriately sized series 600-005 connector holding tool (7) is recommended, as well as Glenair digital torque wrench (8). Tighten strain relief saddles securely on cable or harness (see saddle clamp assembly procedure). This will then provide a good ground or bonding joint for both the individual and over-all shields. (For the two ring style, ground ring (3) is omitted, and above steps I or J is utilized with either overall or individual braids).

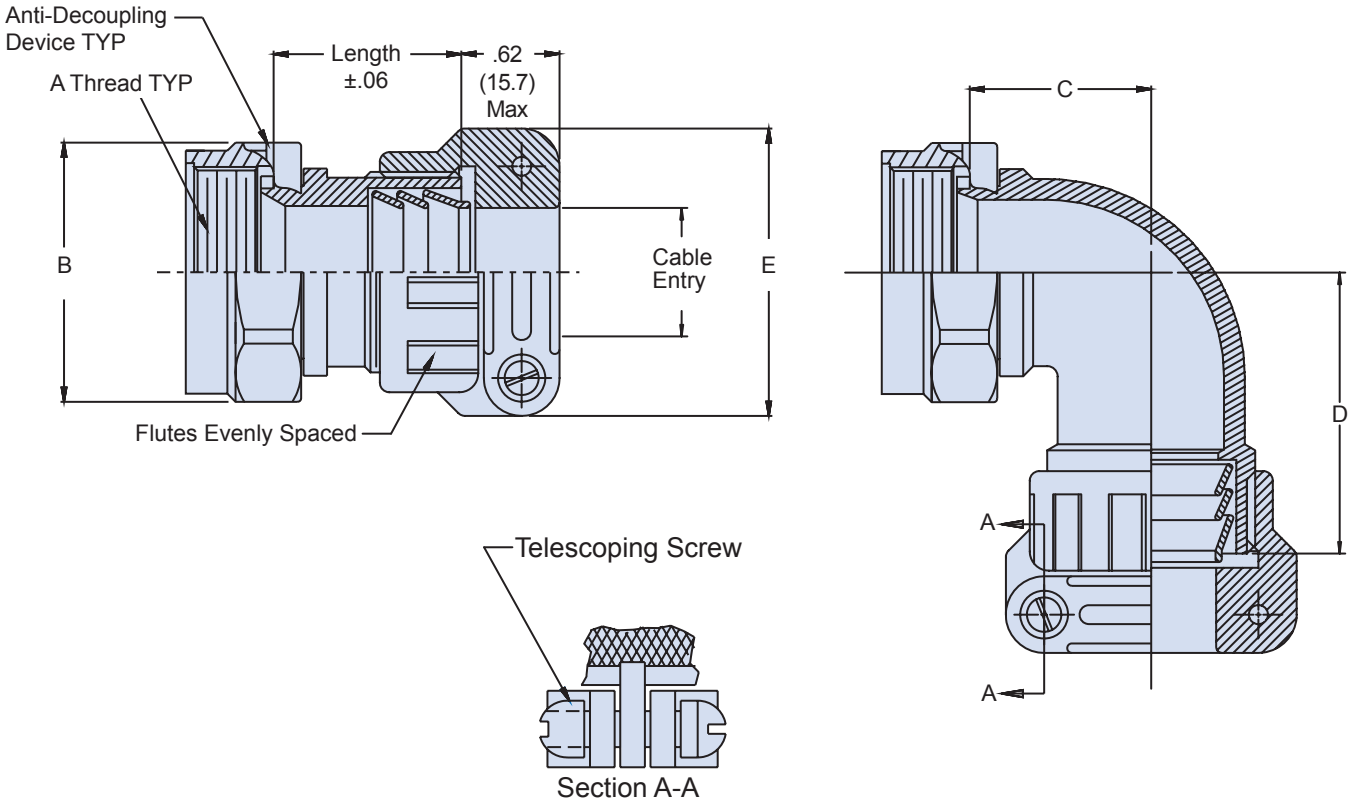
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387-083
Composite Multi-Shield Cone and Ring Style
EMI/RFI Shield Termination Backshell
with Self-Locking Rotatable Coupling and Strain Relief

CONNECTOR DESIGNATOR:	
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Note: See Table I in Intro for Front-End Dimensional Details

Product Series	Connector Designator	Angle and Profile	Basic Part Number	Finish Symbol	Connector Shell Size	Cable Entry	Length in 1/4 Inch Increments
387	H	S	083	XM	17	05	5
387 - EMI/RFI Backshells with Strain Relief	*H - MIL-DTL-38999 Series III and IV*	*S - Straight* *W - 90° Elbow*		*(See Table III)*	*(See Table II)*	*(See Table IV)*	*(e.g. 5 = 1.25 Inches)*



NOTES

1. See Table I in Intro for front-end dimensional details.
2. Coupling nut supplied plated.
3. Metric dimensions (mm) are in parenthesis and are for reference only.

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TABLE II: SHELL SIZE						
Shell Size	Shell Size Code	A Thread ISO Metric	B Max	C ±.078 (2.0)	D ±.078 (2.0)	Max Available Entry
09	A	M12x 1-6H	.94 (23.9)	.722 (18.3)	1.750 (44.4)	04
11	B	M15x 1-6H	1.06 (26.9)	.784 (19.9)	1.820 (46.2)	06
13	C	M18x 1-6H	1.17 (29.7)	.816 (20.7)	1.860 (47.2)	08
15	D	M22x 1-6H	1.29 (32.8)	.878 (22.3)	1.880 (47.8)	10
17	E	M25x 1-6H	1.42 (36.1)	.942 (23.9)	1.942 (49.3)	12
19	F	M28x 1-6H	1.54 (39.1)	1.003 (25.5)	2.000 (50.8)	14
21	G	M31x 1-6H	1.67 (42.4)	1.037 (26.3)	2.062 (52.4)	16
23	H	M34x 1-6H	2.01 (51.1)	1.116 (28.3)	2.194 (55.7)	17
25	J	M37x 1-6H	2.12 (53.8)	1.194 (30.3)	2.257 (57.3)	20

TABLE IV: CABLE ENTRY		
Dash Number	E Max	Cable Entry ±.039 (1.0)
04	1.125 (28.6)	.312 (7.9)
06	1.250 (31.8)	.437 (11.1)
08	1.312 (33.3)	.500 (12.7)
10	1.438 (36.5)	.625 (15.9)
12	1.625 (41.3)	.750 (19.1)
14	1.688 (42.9)	.874 (22.2)
16	1.750 (44.5)	.937 (23.8)
17	1.906 (48.5)	1.094 (27.8)
20	2.062 (52.4)	1.250 (31.8)

TABLE III: FINISH	
Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/ Olive Drab over Electroless Nickel

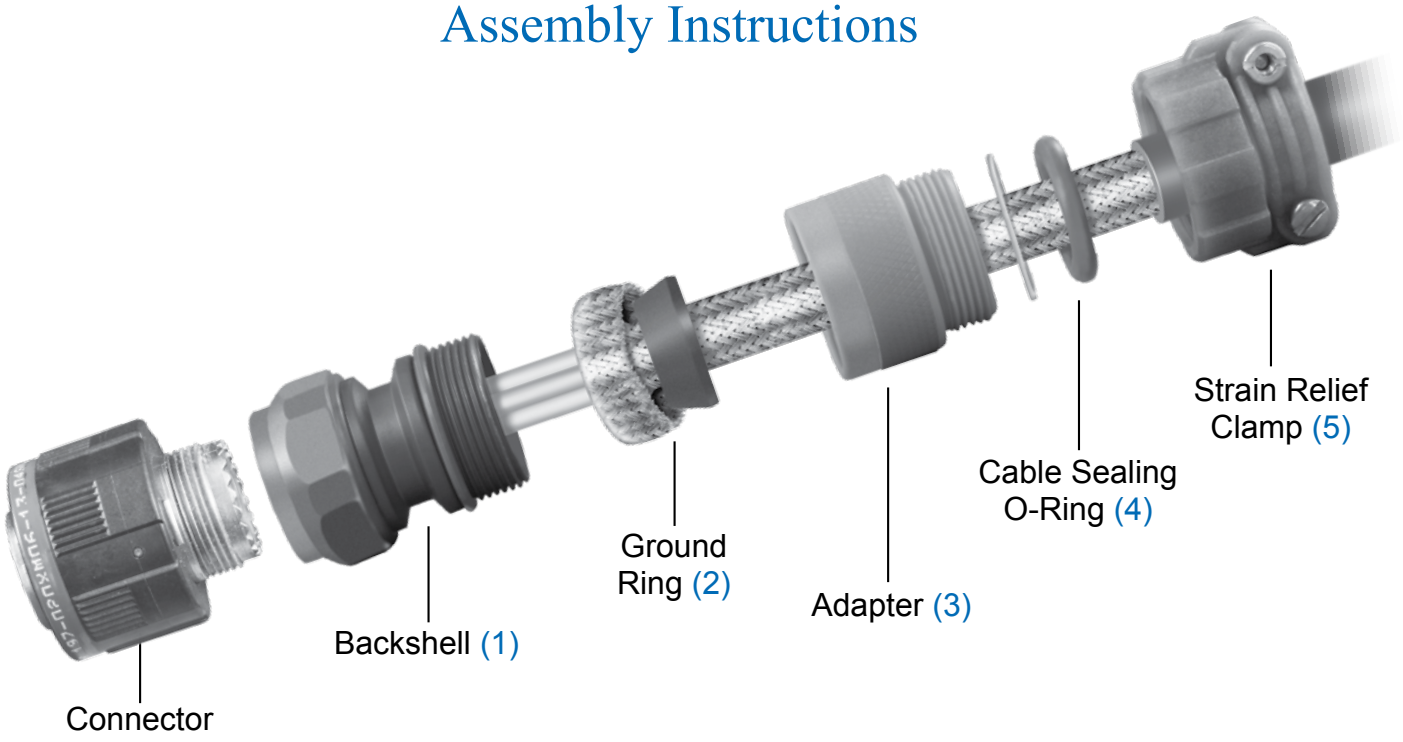
BACKSHELL WEIGHT					
Symbol "S" Straight Weight Table			Symbol "W" 90° Weight Table		
Shell Size	Dash Number	Max Weight (KG)	Shell Size	Dash Number	Max Weight (KG)
09	04	.0296	09	04	.0326
11	06	.0327	11	06	.0360
13	08	.0370	13	08	.0420
15	10	.0430	15	10	.0480
17	12	.0500	17	12	.0550
19	12	.0560	19	12	.0610
21	16	.0640	21	16	.0690
23	16	.0700	23	16	.0750
25	20	.0750	25	20	.0800

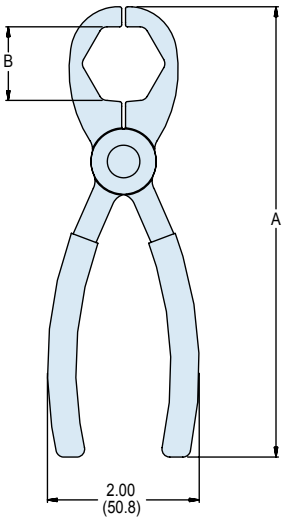
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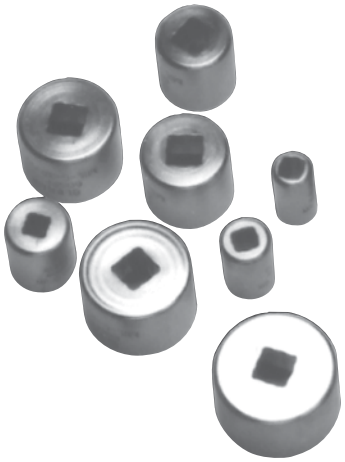
Series 390 (Single Shield) EMI/RFI Environmental Backshell
Assembly Instructions

Series 390 (Single Shield) EMI/RFI Environmental Assembly Instructions





(6) 600-157
Stainless Steel Composite Hex Coupling Wrench



(7) Plug and Receptacle Holding Tools for 1/4" and 3/8" Socket



(8) 600-161
Hand Held Digital Torque Wrench

COMPOSITE COUPLING TORQUE VALUES

Shell Size Reference	Composite Torque (Inch-Pounds)
08/09	35
10/11	35
12/13	40
14/15	40
16/17	40
18/19	40
20/21	80
22/23	80
24/25	80
28	120
32	120
36	120

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Series 390 (Single Shield) EMI/RFI Environmental Backshell
Assembly Instructions

The following suggested procedure serves as a guide for proper assembly and installation of straight Glenair Series 390 EMI/RFI Cable Sealing Backshells for use with jacketed cables and a single overall EMI shield. It is recommended that trial samples of appropriate cables be used to determine proper trim dimensions of the cable jacket, individual conductors and shielding.

NOTE: ***As with any electrical connector assembly procedure, be sure to use the proper tools. For convenient reliable assembly of the connector and backshell, it is suggested that Glenair's connector holding tools, strap wrenches and connector pliers be used.***

1. Temporarily assemble backshell (1) to connector.
2. Place the ground ring (2), adapter, o-ring seal (plus washer if provided) and strain relief clamp on the cable in the sequence shown. You are staging these components on the cable for installation after wires are terminated to the connector contacts.
3. Insert cable into backshell (1) and bottom against connector. Hold cable in position and mark cable jacket at rear end of backshell.
4. Remove backshell from connector and place on cable with components from step two above
5. Trim cable jacket at a point 3/4 inch toward connector from mark made in step two above, exposing cable shielding.
6. Prepare and terminate wires in accordance with established practices.
7. Assemble backshell (1) to connector and tighten securely using appropriate tools.
8. Flare EMI shield completely over grounding ring. Manipulate shield into the connical counter-bore in the adapter and capture in place with the ground ring.
9. Tighten adapter in place using TG70 strap wrench.
10. Slide O-ring and washer (if provided) against adapter (3).
11. Thread strain relief clamp (5) firmly in place.
12. Tighten saddle bar clamps until they bottom against saddle clamp ears (see saddle clamp assembly procedure).

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390-052
Composite Cone and Ring Style
EMI/RFI Environmental Shield Termination Backshell with Self-Locking Rotatable Coupling and Strain Relief

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Angle and Profile
S - *Straight*
W - *90° Elbow*
T - *45° Elbow*

Finish Symbol (*See Table III*)

Strain Relief Style
C - *Clamp*
N - *Nut*

Product Series
390 - *EMI/RFI Environmental Backshells with Strain Relief*

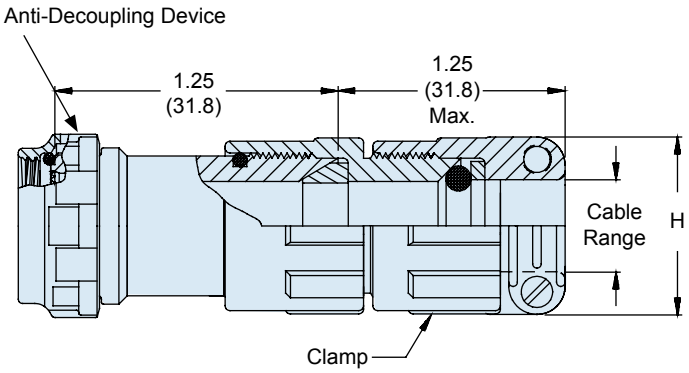
Basic Part Number

Cable Entry (*See Table IV*)

390	H	S	052	XM	19	20	C

Connector Designator
A, F, L, H, G and U

Connector Shell Size (*See Table II*)



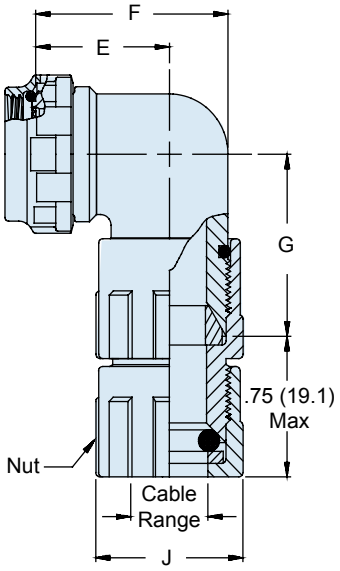


TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.06	(26.9)	10
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.13	(28.7)	12
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.19	(30.2)	14
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.25	(31.8)	16
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.31	(33.3)	20
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.34	(34.0)	20
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.44	(36.6)	22
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.50	(38.1)	24
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.56	(39.6)	28
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	1.66	(42.2)	32

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

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390-052
Composite Cone and Ring Style
EMI/RFI Environmental Shield Termination Backshell with Self-Locking Rotatable Coupling and Strain Relief

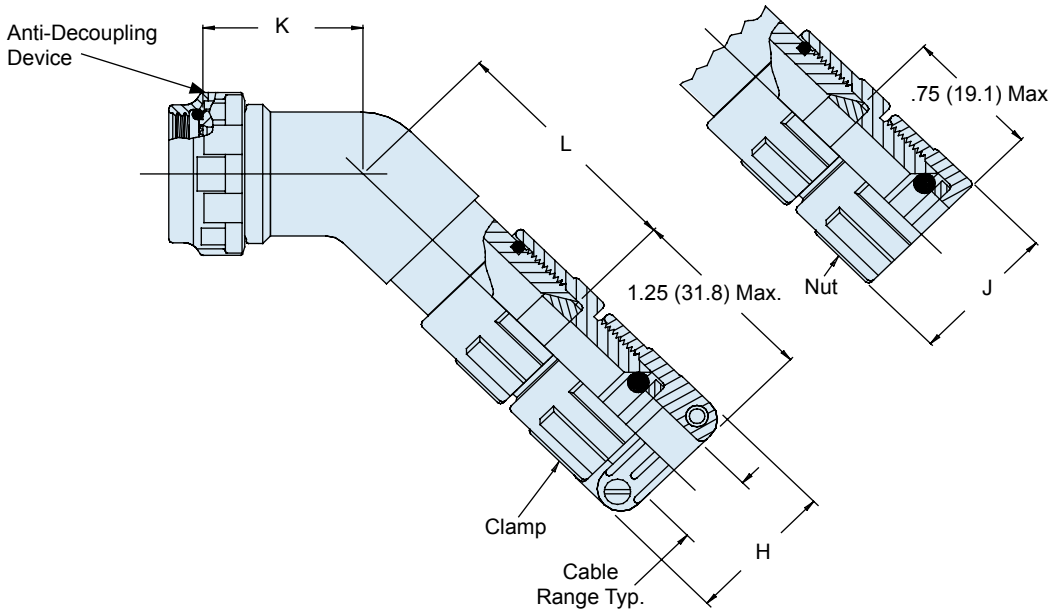


TABLE IV: CABLE ENTRY (CONT.)

Entry Code	H ±.06	H (1.5)	J ±.06	J (1.5)	Cable Range Minimum		Cable Range Maximum		Entry Code	Clamp Saddle Closed	
10	.94	(23.9)	.80	(20.3)	.13	(3.3)	.25	(6.4)	10	.20	(5.1)
12	1.17	(29.7)	.93	(23.6)	.25	(6.4)	.38	(9.7)	12	.29	(7.4)
14	1.28	(32.5)	1.06	(26.9)	.31	(7.9)	.44	(11.2)	14	.40	(10.2)
16	1.41	(35.8)	1.22	(31.0)	.50	(12.7)	.63	(15.9)	16	.48	(12.2)
18	1.50	(38.1)	1.24	(31.5)	.56	(14.2)	.69	(17.5)	18	.55	(14.0)
20	1.56	(39.6)	1.37	(34.8)	.63	(16.0)	.75	(19.1)	20	.64	(16.0)
22	1.69	(42.9)	1.49	(37.8)	.75	(19.1)	.88	(22.2)	22	.72	(18.3)
24	1.81	(46.0)	1.62	(41.1)	.88	(22.4)	1.00	(25.4)	24	.79	(20.1)
28	1.91	(48.5)	1.68	(42.7)	1.00	(25.4)	1.13	(28.6)	28	.89	(22.0)
32	2.02	(51.3)	1.82	(46.2)	1.13	(28.6)	1.25	(31.8)	32	.96	(24.0)

TABLE II: CONNECTOR SHELL SIZE (CONT.)

Shell Size For Connector Designator A & F/L	H	K ± .06	K (1.5)	L ± .06	L (1.5)	Max Entry Dash No. *
08	09	.72	(18.3)	.88	(22.4)	10
10	11	.75	(19.1)	.94	(23.9)	12
12	13	.75	(19.1)	1.00	(25.4)	14
14	15	.76	(19.3)	1.03	(26.2)	16
16	17	.78	(19.8)	1.06	(26.9)	20
18	19	.79	(20.1)	1.07	(27.2)	20
20	21	.82	(20.8)	1.09	(27.7)	22
22	23	.86	(21.8)	1.14	(29.0)	24
24	25	.92	(23.4)	1.17	(29.7)	28

NOTES

1. Coupling nut supplied unplated.
2. Metric dimensions (mm) are in parenthesis and are for reference only.
3. Consult factory for additional entry sizes available.
4. See Table I in Intro for front-end dimensional details.

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440-087
Ultra Lightweight Banding Strain Relief
with Rotatable Coupling

CONNECTOR DESIGNATOR:	
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
ROTATABLE COUPLING	
STANDARD PROFILE	

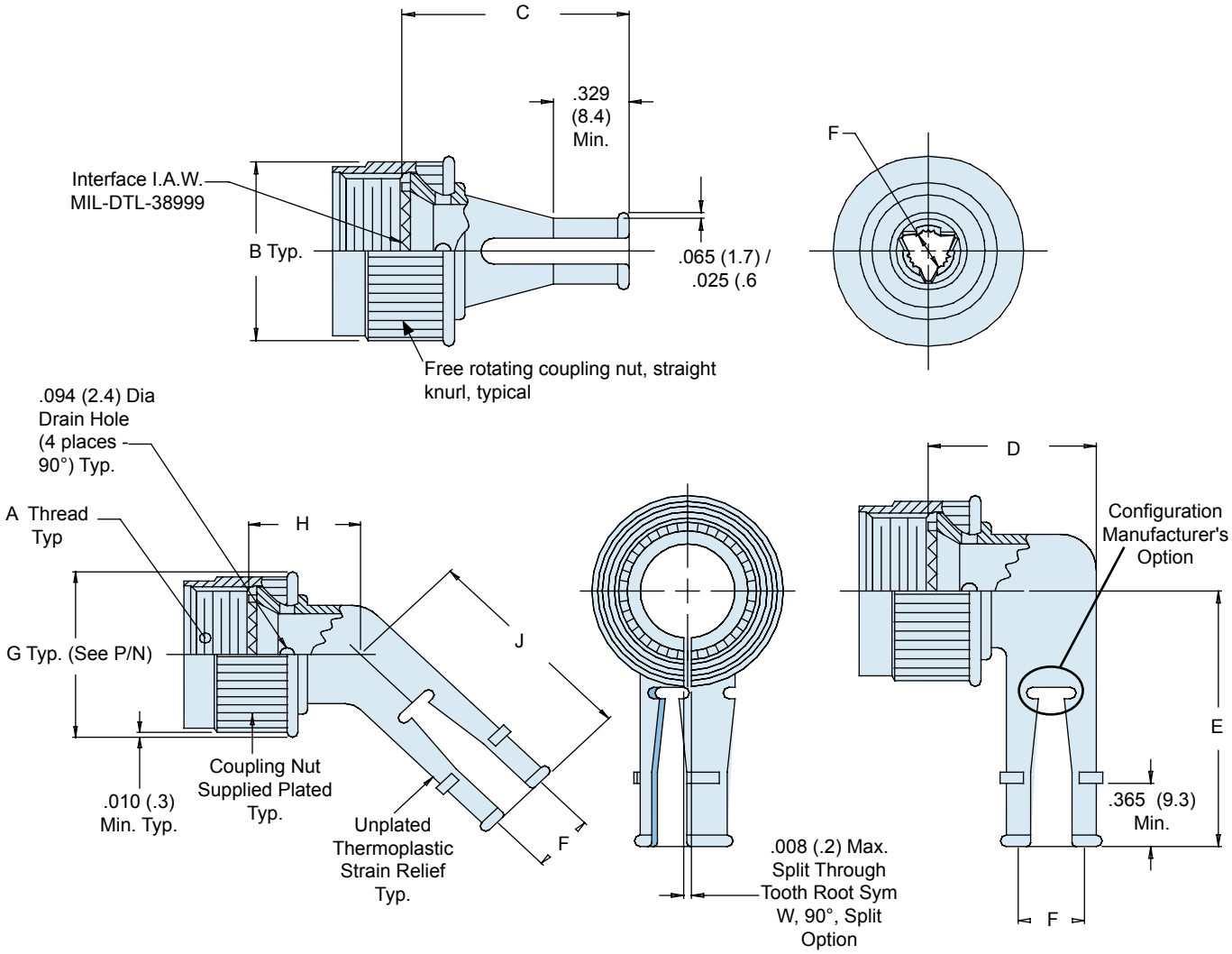
Product Series
440 - Banding Strain Relief

Angle and Profile
A - 90° Clamp
B - 45° Clamp
S - Straight
W - 90° Split Clamp

Coupling Nut Finish Symbol
(*See Table III*)
XM - 90° Elbow

Supplied with 600-083 Band
(*Omit if Not Required*)

440	F	S	087	XM	20	B	L
	Connector Designator *F and H*		**Basic Part Number**		**Connector Shell Size** (*See Table II*)		*Add* Letter **"L"** for Coupling Nut Less G Diameter *Omit* Letter **"L"** for Coupling Nut With G Diameter



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440-087
Ultra Lightweight Banding Strain Relief
with Rotatable Coupling

Glenair®

TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size For Connector Designator		B	C	D +.03 -.06 (.8) (1.5)	E
H	F	Max	Max		Max
09	08	.562 (14.3)	1.22 (31.0)	.66 (16.8)	1.02 (25.9)
11	10	.688 (17.5)	1.22 (31.0)	.69 (17.5)	1.07 (27.2)
13	12	.817 (20.8)	1.22 (31.0)	.75 (19.1)	1.13 (28.7)
15	14	.930 (23.6)	1.22 (31.0)	.86 (21.8)	1.33 (33.8)
17	16	1.062 (27.0)	1.22 (31.0)	.94 (23.9)	1.40 (35.6)
19	18	1.188 (30.2)	1.22 (31.0)	1.00 (25.4)	1.46 (37.1)
21	20	1.312 (33.3)	1.30 (33.0)	1.07 (27.2)	1.61 (40.9)
23	22	1.438 (36.5)	1.30 (33.0)	1.15 (29.2)	1.66 (42.2)
25	24	1.562 (39.7)	1.30 (33.0)	1.21 (30.7)	1.72 (43.7)

TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER (CONT.)

Shell Size For Connector Designator		F Cable Dia		G	H	J
H	F	Minimum	Maximum	Max	Max	Max
09	08	.094 (2.4)	.203 (5.2)	.65 (16.5)	.470 (11.9)	1.02 (25.9)
11	10	.141 (3.6)	.250 (6.4)	.76 (19.3)	.482 (12.2)	1.07 (27.2)
13	12	.172 (4.4)	.323 (8.2)	.89 (22.6)	.494 (12.5)	1.13 (28.7)
15	14	.203 (5.2)	.422 (10.7)	1.04 (26.4)	.530 (13.5)	1.33 (33.8)
17	16	.234 (5.9)	.500 (12.7)	1.16 (29.5)	.557 (14.1)	1.40 (35.6)
19	18	.265 (6.7)	.562 (14.3)	1.28 (32.5)	.576 (14.6)	1.46 (37.1)
21	20	.297 (7.5)	.625 (15.9)	1.40 (35.6)	.600 (15.2)	1.61 (40.9)
23	22	.328 (8.3)	.703 (17.9)	1.51 (38.4)	.627 (15.9)	1.66 (42.2)
25	24	.359 (9.1)	.765 (19.4)	1.63 (41.4)	.653 (16.6)	1.72 (43.7)

NOTES

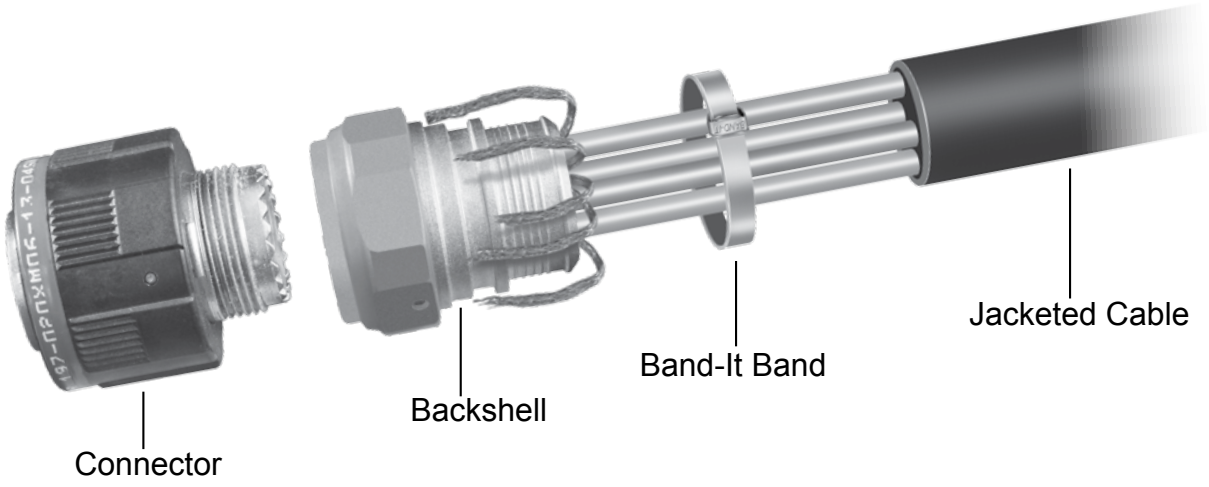
1. Metric dimensions (mm) are in parenthesis and are for reference only.
2. See Table I in Intro for front-end dimensional details.

TABLE III: FINISH

Symbol	Material / Finish Description
XM	Coupling Nut: Aluminum / Electroless Nickel Body: Thermoplastic / Black Color
XMT	Coupling Nut: Aluminum / *1000 Hour Grey™* Body: Thermoplastic / Black Color
XW	Coupling Nut: Aluminum / Cad O.D. over Electroless Nickel Body: Thermoplastic / Black Color

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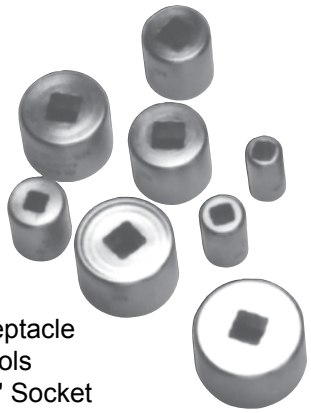
Banding Backshell Assembly Instructions
for 440-143, 440-144, 447-325 and 447-326



1. Temporarily assemble backshell to connector.
2. If cable is jacketed, insert cable into backshell and bottom against connector. Using the end of the backshell as a guide, mark the location of solder sleeves and/or pigtail breakouts on the cable.
3. Remove backshell from connector and stage it up the cable for installation after wire termination is complete.
4. Trim cable jacket at marked location from step 2 above and pull out pigtails and/or apply solder sleeves. Terminate contacts to wires in accordance with established practices.
5. Evenly distribute shields around backshell banding platform.
6. Secure shields to banding platform via Band-It band. See banding assembly procedure for details.

COMPOSITE COUPLING TORQUE VALUES	
Shell Size Reference	**Composite Torque (Inch-Pounds)**
08/09	35
10/11	35
12/13	40
14/15	40
16/17	40
18/19	40
20/21	80
22/23	80
24/25	80
28	120
32	120
36	120

7. Apply silicone tape to band area (if applicable).
8. Apply Glenair 770-001 heat moldable shrink boot to terminated banding area for added environmental protection and strain relief. See heat moldable product user instructions for details.



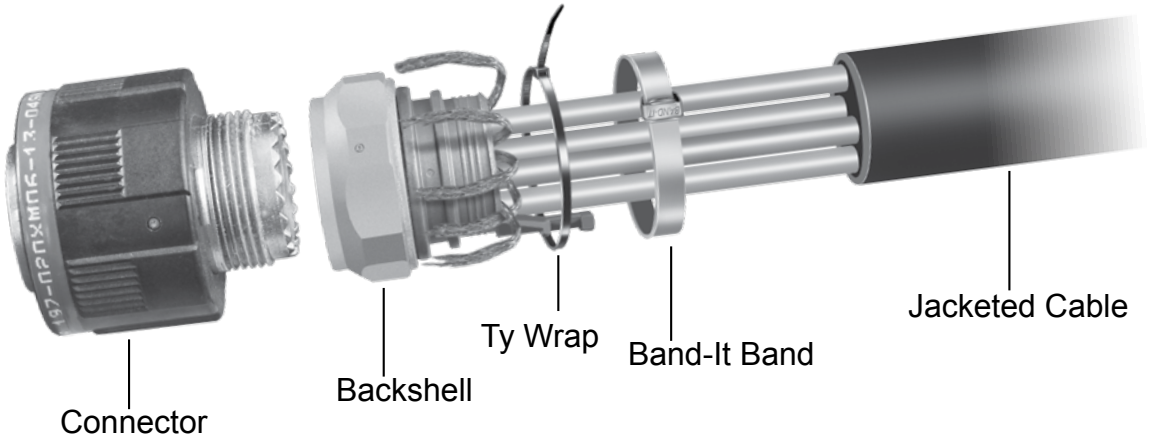
Plug and Receptacle Holding Tools for 1/4" and 3/8" Socket

600-161 Hand Held Digital Torque Wrench

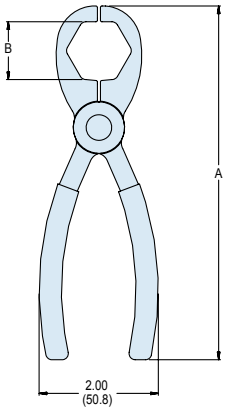


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Banding Backshell with Qwik-Ty Assembly Instructions
for 440-143 and 447-327



1. Temporarily assemble backshell to connector.
2. If cable is jacketed, insert cable into backshell and bottom against connector. Using the end of the backshell as a guide, mark the location of solder sleeves and/or pigtail breakouts on the cable.
3. Remove backshell from connector and stage it up the cable for installation after wire termination is complete.
4. Trim cable jacket at marked location from step 2 above and pull out pigtails and/or apply solder sleeves. Terminate contacts to wires in accordance with established practices.
5. Evenly distribute shields around backshell banding platform.
6. Secure shields to banding platform via Band-It band. See banding procedure for details.
7. Apply silicone tape to band area (if applicable).
8. Apply lacing cord or ty wrap around bundle—securing it to Qwik Ty arm.
9. Apply Glenair 770-001 heat moldable shrink boot to terminated banding area for added environmental protection and strain relief. See heat moldable product user instructions for details.



600-157
Stainless Steel Composite
Hex Coupling Wrench



600-052 and -057
Standard and Micro
Band-It® Bands

600-058
Band-It®
Hand Banding Tool



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440-143
Composite Ultra Low Profile EMI/RFI
Micro-Banding Backshell with Qwik-Ty, Shrink Boot Porch and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
ULTRA LOW PROFILE	

Angle and Profile
S - Straight
T - 45° Elbow
W - 90° Low Profile, Solid
A - 90° Low Profile, Std
E - 90° Low Profile, Split

Cable Entry
(*See Table II*)
Omit for E and W Option Only

Drain Hole Option
(*Omit "D" if not required*)

Shrink Boot Option
Shrink boot supplied with T option
O-Ring will not be supplied with Connector Designator A
(*Omit for none*)

Product Series
440 - EMI/RFI Non-Environmental Micro-Banding Backshells

Basic Part Number

Finish Symbol
(*See Table III*)

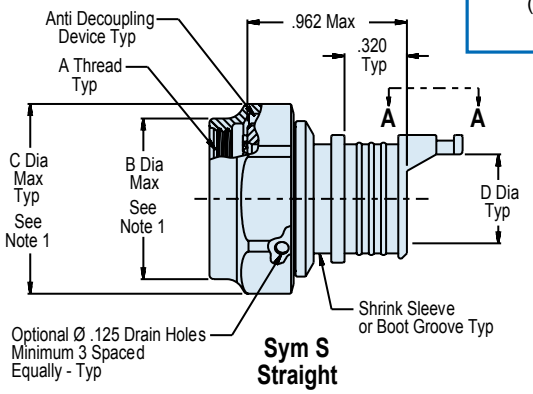
440	H	S	143	XM	15	09	D	B	T	S

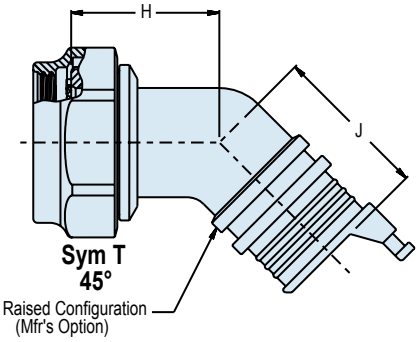
Connector Designator
A, F or H
(*See Table I*)
See Note 1

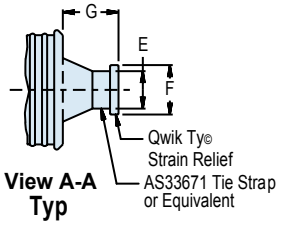
Connector Shell Size
(*See Table I*)
See Note 1

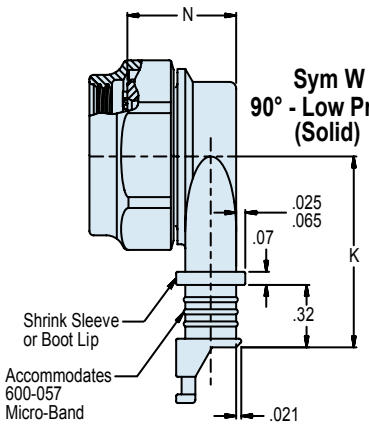
Band Option
Band supplied with B option
(*Omit for none*)

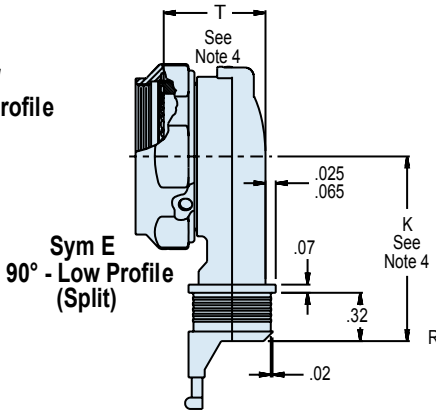
Shield Termination Slot
(*Omit for none*)

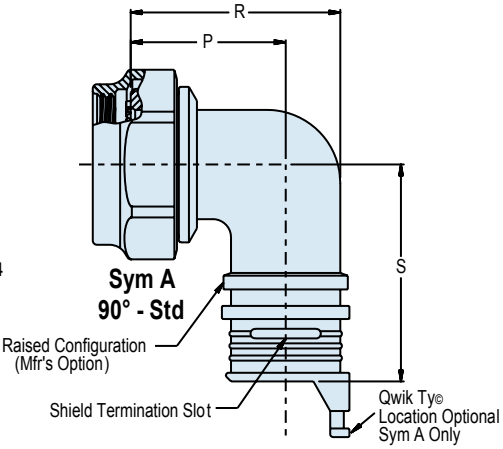


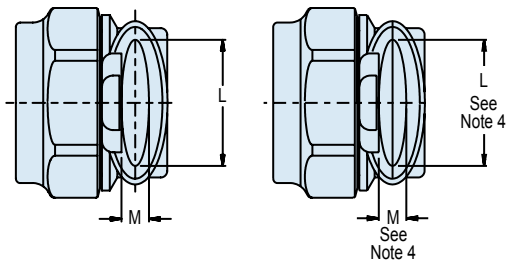












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440-143
Composite Ultra Low Profile EMI/RFI
Micro-Banding Backshell with Qwik-Ty, Shrink Boot Porch and Self-Locking Rotatable Coupling

Glenair®

TABLE I: SHELL SIZE

Shell Size		Entry Code Available for Straight, 45° and 90° Std Configuration	K ± .03	L	M	N Max	P ±.09	R ±.09	S Max	T Max
A & F	H									
08	09	04	1.042 (26.5)	.304 (7.7)	.160 (4.1)	.630 (16.0)	.690 (17.5)	.880 (22.4)	1.360 (34.5)	.810 (20.6)
10	11	05	1.107 (28.1)	.432 (11.0)	.174 (4.4)	.660 (16.8)	.750 (19.1)	1.000 (24.5)	1.420 (36.1)	.810 (20.6)
12	13	07	1.174 (29.8)	.546 (13.9)	.195 (5.0)	.720 (18.3)	.810 (20.6)	1.130 (28.7)	1.480 (37.6)	.820 (20.8)
14	15	09	1.241 (31.5)	.670 (17.0)	.315 (8.0)	.830 (21.1)	.880 (22.4)	1.310 (33.3)	1.550 (39.4)	.880 (22.4)
16	17	05 and 11	1.305 (33.1)	.796 (20.2)	.385 (9.8)	.910 (23.1)	.940 (23.9)	1.380 (35.1)	1.610 (40.9)	.930 (23.6)
18	19	07 and 13	1.371 (34.8)	.902 (22.9)	.445 (11.3)	.930 (23.6)	.970 (24.6)	1.440 (36.6)	1.640 (41.7)	.990 (25.1)
20	21	09 and 15	1.438 (36.5)	1.027 (26.1)	.525 (13.3)	1.040 (26.4)	1.060 (26.9)	1.630 (41.4)	1.730 (43.9)	1.060 (26.9)
22	23	11 and 16	1.505 (38.2)	1.152 (29.3)	.595 (15.1)	1.120 (28.4)	1.130 (28.7)	1.750 (44.5)	1.800 (45.7)	1.130 (28.7)
24	25	07, 13 and 17	1.572 (39.9)	1.276 (32.4)	.655 (16.6)	1.180 (30.0)	1.190 (30.2)	1.880 (47.8)	1.860 (47.2)	1.050 (26.7)
24*	25		1.850 (47.0)	1.460 (37.1)	.450 (11.4)	1.020 (26.0)				1.050 (26.7)

*See Note 4

TABLE II: CABLE ENTRY

Entry Code	D ± .030	E Ref	F Ref	G Ref	H ± .060	J ± .090
04	.250 (6.4)	.187 (4.7)	.312 (7.9)	.512 (13.0)	.720 (18.3)	.870 (22.1)
05	.310 (7.9)	.187 (4.7)	.312 (7.9)	.512 (13.0)	.750 (19.1)	.930 (23.6)
07	.440 (11.2)	.187 (4.7)	.312 (7.9)	.512 (13.0)	.750 (19.1)	1.00 (25.4)
09	.560 (14.2)	.219 (5.6)	.375 (9.5)	.630 (16.0)	.760 (19.3)	1.03 (26.2)
11	.680 (17.3)	.219 (5.6)	.375 (9.5)	.630 (16.0)	.780 (19.8)	1.05 (26.7)
13	.810 (20.6)	.219 (5.6)	.375 (9.5)	.630 (16.0)	.790 (20.1)	1.06 (26.9)
15	.940 (23.9)	.219 (5.6)	.375 (9.5)	.630 (16.0)	.820 (20.8)	1.09 (27.7)
16	1.000 (25.4)	.219 (5.6)	.375 (9.5)	.630 (16.0)	.860 (21.8)	1.13 (28.7)
17	1.160 (29.5)	.250 (6.4)	.437 (11.1)	.630 (16.0)	.890 (22.6)	1.16 (29.5)

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

NOTES

1. 770-001S**-0 shrink boot supplied with T option. See shrink boot product page for more details.
2. Coupling nut supplied unplated.
3. See Table I in Intro for front-end dimensional details.
4. For Sym "E" low profile split shell sizes 24 and 25 dimensions, use indicator row in Table I.

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440-144
Composite Ultra Low Profile EMI/RFI
Micro-Banding Backshell with Shrink Boot Porch and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
ULTRA LOW PROFILE	

Angle and Profile
S - Straight
T - 45° Elbow
W - 90° Low Profile, Solid
A - 90° Low Profile, Std
E - 90° Low Profile, Split

Cable Entry
(*See Table II*)
Omit for E and W Option Only

Drain Hole Option
(*Omit "D" if not required*)

Shrink Boot Option
Shrink boot supplied with T option
O-Ring will not be supplied with Connector Designator A
(*Omit for none*)

Product Series
440 - EMI/RFI Non-Environmental Micro-Banding Backshells

Basic Part Number

Finish Symbol
(*See Table III*)

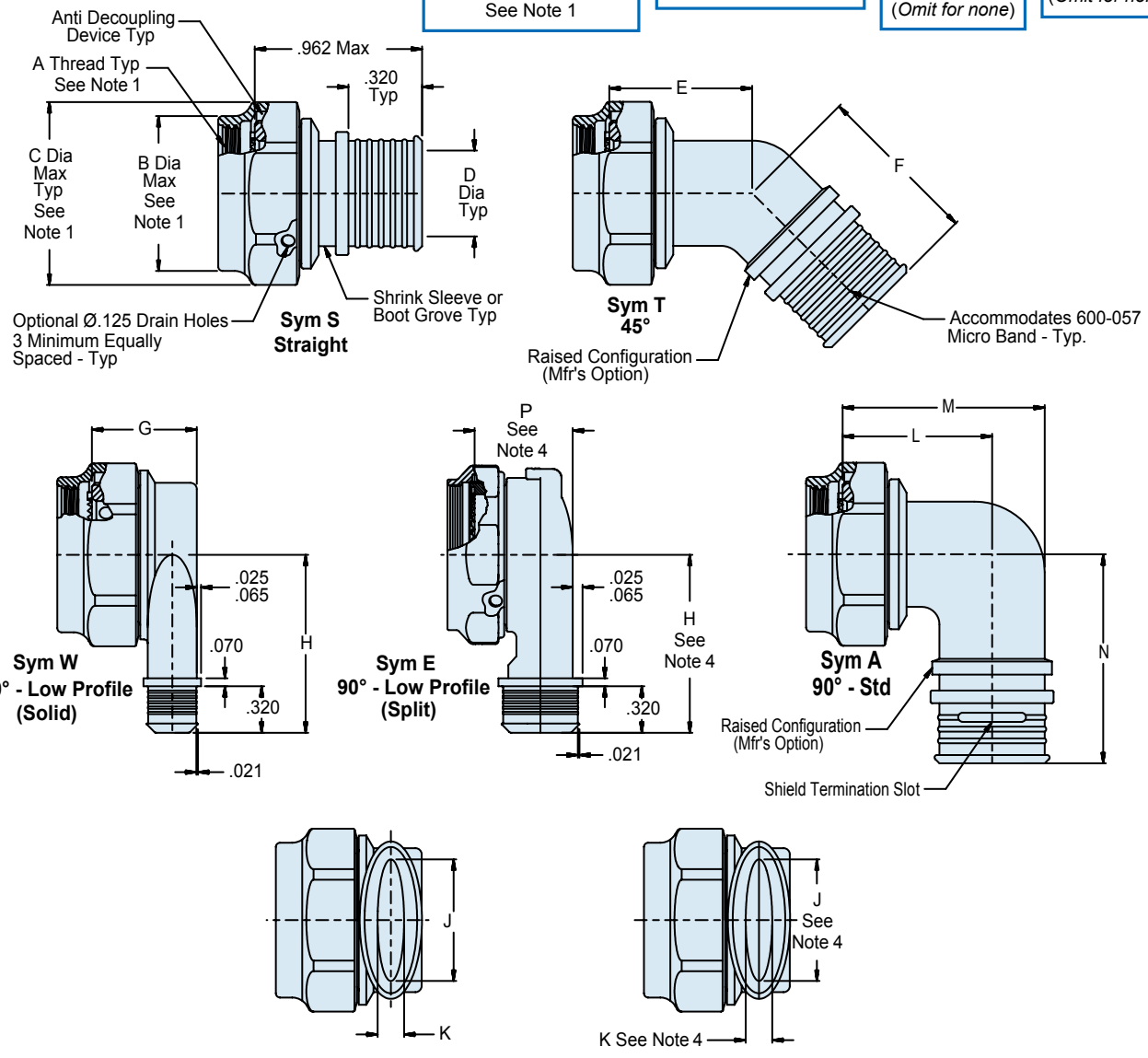
440	H	S	144	XM	15	09	D	B	T	S

Connector Designator
A, F or H
(*See Table I*)
See Note 1

Connector Shell Size
(*See Table I*)
See Note 1

Band Option
B - 600-057
K - 600-057-1
(*Omit for none*)

Shield Termination Slot
(*Omit for none*)



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440-144
Composite Ultra Low Profile EMI/RFI
Micro-Banding Backshell with Shrink Boot Porch and Self-Locking Rotatable Coupling

Glenair®

TABLE I: SHELL SIZE

Shell Size		Entry Code Available for Straight, 45° and 90° Std Configuration	G Max	H ± .03	J	K	L. ± 09	M ±.09	N Max	P Max
A & F	H									
08	09	04	.630 (16.0)	1.042 (26.5)	.304 (7.7)	.160 (4.1)	.690 (17.5)	.880 (22.4)	1.360 (34.5)	.810 (20.6)
10	11	05	.660 (16.8)	1.107 (28.1)	.432 (11.0)	.174 (4.4)	.750 (19.1)	1.000 (24.5)	1.420 (36.1)	.810 (20.6)
12	13	07	.720 (18.3)	1.174 (29.8)	.546 (13.9)	.195 (5.0)	.810 (20.6)	1.130 (28.7)	1.480 (37.6)	.820 (20.8)
14	15	09	.830 (21.1)	1.241 (31.5)	.670 (17.0)	.315 (8.0)	.880 (22.4)	1.310 (33.3)	1.550 (39.4)	.880 (22.4)
16	17	05 and 11	.910 (23.1)	1.305 (33.1)	.796 (20.2)	.385 (9.8)	.940 (23.9)	1.380 (35.1)	1.610 (40.9)	.930 (23.6)
18	19	07 and 13	.930 (23.6)	1.371 (34.8)	.902 (22.9)	.445 (11.3)	.970 (24.6)	1.440 (36.6)	1.640 (41.7)	.990 (25.1)
20	21	09 and 15	1.040 (26.4)	1.438 (36.5)	1.027 (26.1)	.525 (13.3)	1.060 (26.9)	1.630 (41.4)	1.730 (43.9)	1.060 (26.9)
22	23	11 and 16	1.120 (28.4)	1.505 (38.2)	1.152 (29.3)	.595 (15.1)	1.130 (28.7)	1.750 (44.5)	1.800 (45.7)	1.130 (28.7)
24	25	07, 13 and 17	1.180 (30.0)	1.572 (39.9)	1.276 (32.4)	.655 (16.6)	1.190 (30.2)	1.880 (47.8)	1.860 (47.2)	1.050 (26.7)
24*	25		1.020 (26.0)	1.850 (47.0)	1.460 (37.1)	.450 (11.4)				1.050 (26.7)

*See Note 2

TABLE II: CABLE ENTRY

Entry Code	D ± .030	E ± .060	F ± .090
04	.250 (6.4)	.720 (18.3)	.870 (22.1)
05	.310 (7.9)	.750 (19.1)	.930 (23.6)
07	.440 (11.2)	.750 (19.1)	1.000 (25.4)
09	.560 (14.2)	.760 (19.3)	1.030 (26.2)
11	.680 (17.3)	.780 (19.8)	1.050 (26.7)
13	.810 (20.6)	.790 (20.1)	1.060 (26.9)
15	.940 (23.9)	.820 (20.8)	1.090 (27.7)
16	1.000 (25.4)	.860 (21.8)	1.130 (28.7)
17	1.160 (29.5)	.890 (22.6)	1.160 (29.5)

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

NOTES

1. 770-001S**-0 shrink boot supplied with T option. See shrink boot product page for more details.
2. For Sym "E" low profile split shell sizes 24 and 25 dimensions, use indicator row in Table I.
3. Coupling nut supplied unplated.
4. See Table I in Intro for front-end dimensional details.

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447-325
Composite Standard Profile EMI/RFI
Banding Backshell with Shrink Boot Porch and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series
447 - EMI/RFI Non-Environmental Banding Backshells

Angle and Profile
S - Straight
W - 90° Elbow
T - 45° Elbow

Basic Part Number

Finish Symbol
(See Table III)

Drain Hole Option
(Omit "D" if not required)

Cable Entry
(See Table IV)

Shrink Boot Option
Shrink boot and o-ring supplied with T option (Omit for none)

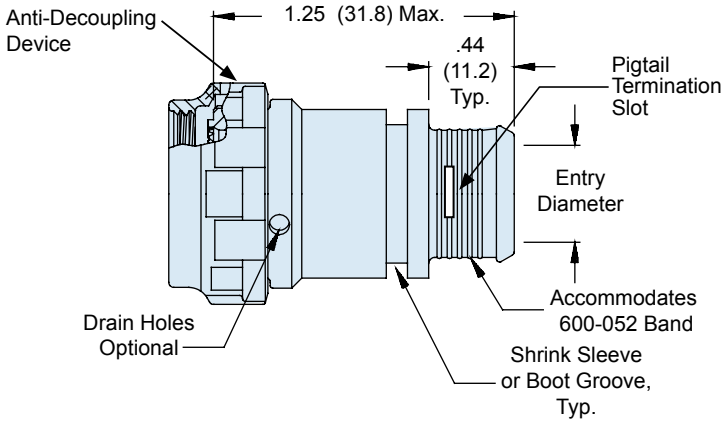
447	H	S	325	XM	19	12	D	K	T	S

Connector Designator
A, F, L, H, G and U

Connector Shell Size
(See Table II)

Band Option
B = 600-052
K = 600-052-1
Bands are Precoiled
(Omit for none)

Slot Option
S - Pigtail Termin. Slot (Omit for none)



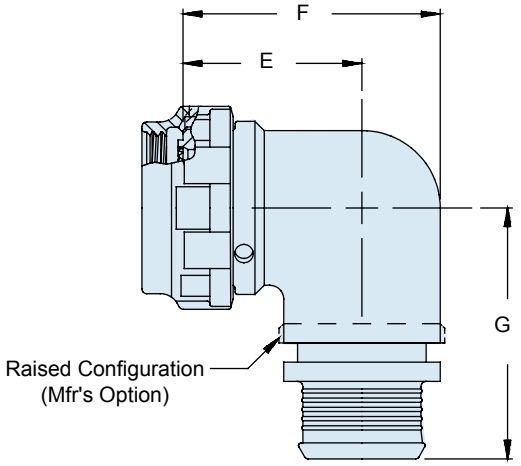


TABLE II: CONNECTOR SHELL SIZE (90°)

Shell Size For Connector Designator*					E		F		G		Max Entry Dash No.
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	(Table IV)**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.19	(30.2)	04
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.25	(31.8)	06
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.31	(33.3)	08
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.38	(35.1)	10
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.44	(36.6)	12
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.47	(37.3)	13
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.56	(39.6)	15
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.63	(41.4)	17
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.69	(42.9)	19
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	1.78	(45.2)	22

**Consult factory for additional entry sizes available.

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447-325
Composite Standard Profile EMI/RFI
Banding Backshell with Shrink Boot Porch and Self-Locking Rotatable Coupling

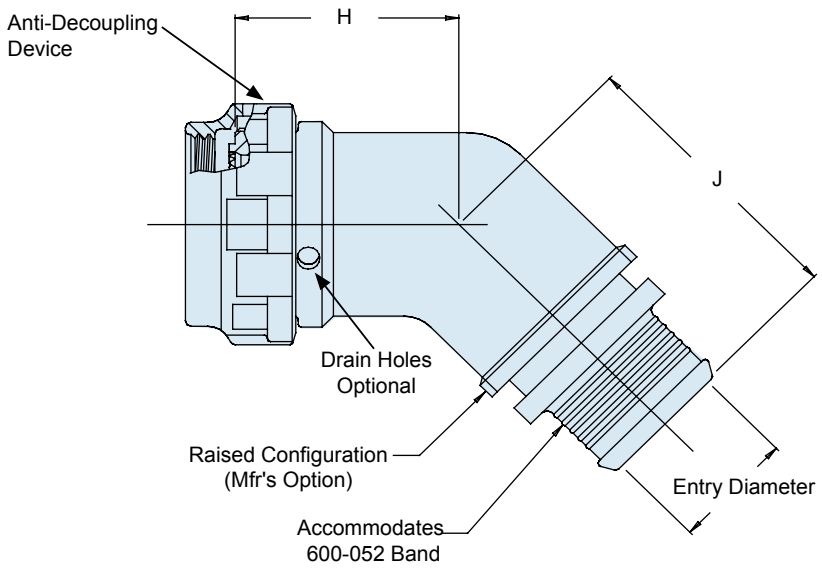


TABLE IV: CABLE ENTRY

Entry Code	Entry Dia. ±.03	(0.8)	Dash No.	Entry Dia. ±.03	(0.8)
03	.19	(4.8)	13	.81	(20.6)
04	.25	(6.4)	14	.88	(22.4)
05	.31	(7.9)	15	.94	(23.9)
06	.38	(9.7)	16	1.00	(25.4)
07	.44	(11.2)	17	1.06	(26.9)
08	.50	(12.7)	18	1.13	(28.7)
09	.56	(14.2)	19	1.19	(30.2)
10	.63	(16.0)	20	1.25	(31.8)
11	.69	(17.5)	22	1.38	(35.1)
12	.75	(19.1)			

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE II: CONNECTOR SHELL SIZE (45°)

Shell Size For Connector Designator*					H		J		Max Entry Dash No.
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	(Table IV)
08	08	09	–	–	.72	(18.3)	1.00	(25.4)	04
10	10	11	–	08	.75	(19.1)	1.06	(26.9)	06
12	12	13	11	10	.75	(19.1)	1.13	(28.7)	08
14	14	15	13	12	.76	(19.3)	1.16	(29.5)	10
16	16	17	15	14	.78	(19.8)	1.18	(30.0)	12
18	18	19	17	16	.79	(20.1)	1.19	(30.2)	13
20	20	21	19	18	.82	(20.8)	1.22	(31.0)	15
22	22	23	–	20	.86	(21.8)	1.26	(32.0)	17
24	24	25	23	22	.89	(22.6)	1.29	(32.8)	19
28	–	–	25	24	.92	(23.4)	1.32	(33.5)	22

NOTES

1. 770-001S**-0 shrink boot supplied with T option. See shrink boot product page for more details.
2. O-Ring will not be supplied with Connector Designator A.
3. Coupling nut supplied unplated.
4. Consult factory for O-Ring to be supplied with part less shrink boot.
5. Metric dimensions (mm) are in parenthesis and are for reference only.
6. See Table I in Intro for front-end dimensional details.

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447-326
Composite Standard Profile EMI/RFI
Micro-Banding Backshell
with Self-Locking Rotatable Coupling and Shrink Boot Porch

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series
447 - EMI/RFI Non-Environmental Banding Backshells

Angle and Profile
S - Straight
W - 90° Elbow
T - 45° Elbow

Basic Part Number

Finish Symbol
(See Table III)

Drain Hole Option
(Omit "D" if not required)

Shrink Boot Option
Shrink boot and o-ring supplied with T option (Omit for none)

447	H	S	326	XM	19	12	D	K	T	S

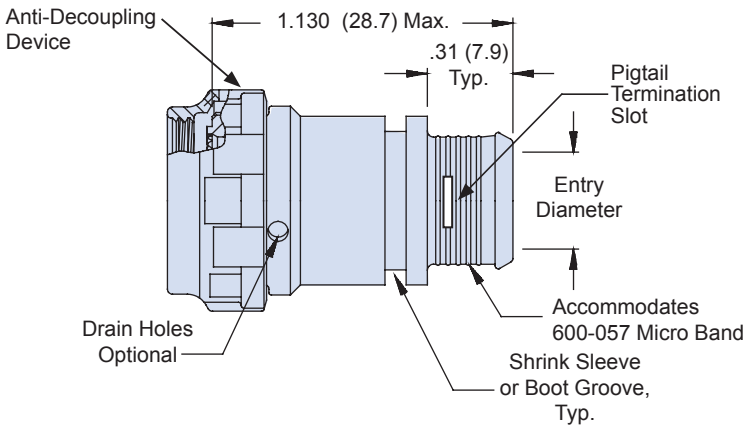
Connector Designator
A, F, L, H, G and U

Connector Shell Size
(See Table II)

Cable Entry
(See Table IV)

Band Option
B = 600-057
K = 600-057-1 Bands are Precoiled (Omit for none)

Slot Option
S - Pigtail Termin. Slot (Omit for none)



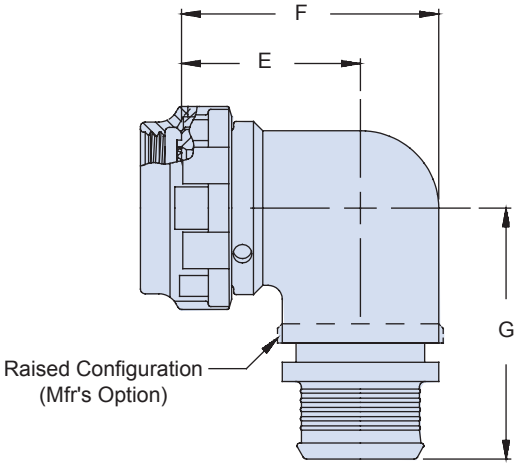


TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator*					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.06	(26.9)	04
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.13	(28.7)	06
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.19	(30.2)	08
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.25	(31.8)	10
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.31	(33.3)	12
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.38	(35.0)	13
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.48	(36.8)	15
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.54	(39.1)	17
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.60	(40.6)	19
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	1.70	(43.2)	22

**Consult factory for additional entry sizes available.
See introduction for additional connector front-end details.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/ Olive Drab over Electroless Nickel

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447-326
Composite Standard Profile EMI/RFI
Micro-Banding Backshell
with Self-Locking Rotatable Coupling and Shrink Boot Porch

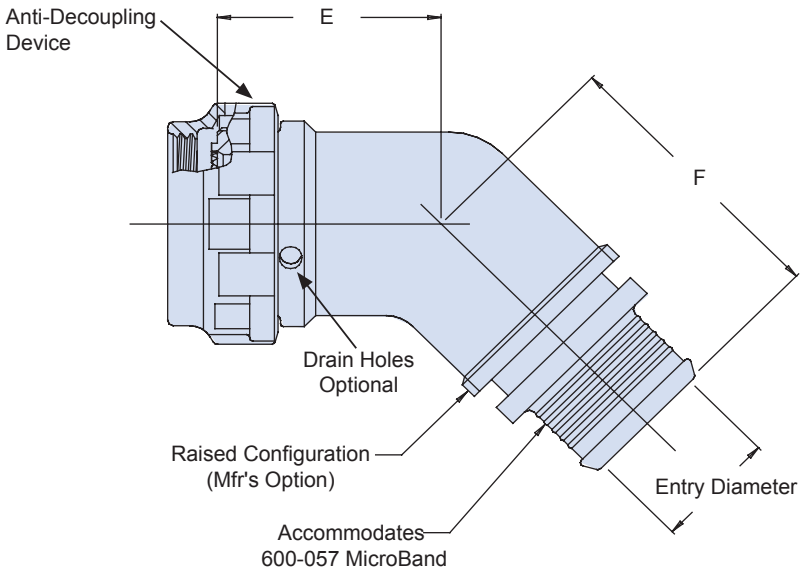


TABLE II: CONNECTOR SHELL SIZE (CONT.)

Shell Size For Connector Designator*					E		F		Max Entry Dash No. (Table 2)
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	
08	08	09	–	–	.72	(18.3)	.87	(22.1)	04
10	10	11	–	08	.75	(19.1)	.93	(23.6)	06
12	12	13	11	10	.75	(19.1)	1.00	(25.4)	08
14	14	15	13	12	.76	(19.3)	1.03	(26.2)	10
16	16	17	15	14	.78	(19.8)	1.05	(26.7)	12
18	18	19	17	16	.79	(20.1)	1.06	(26.9)	13
20	20	21	19	18	.82	(20.8)	1.09	(27.7)	15
22	22	23	–	20	.86	(21.8)	1.13	(28.7)	17
24	24	25	23	22	.89	(22.6)	1.16	(29.5)	19
28	–	–	25	24	.92	(23.4)	1.19	(30.2)	22

TABLE IV: CABLE ENTRY

Entry Code	Entry Dia. ±.03	(0.8)	Dash No.	Entry Dia. ±.03	(0.8)
02	.13	(3.3)	12	.75	(19.1)
03	.19	(4.8)	13	.81	(20.6)
04	.25	(6.4)	14	.88	(22.4)
05	.31	(7.9)	15	.94	(23.9)
06	.38	(9.7)	16	1.00	(25.4)
07	.44	(11.2)	17	1.06	(26.9)
08	.50	(12.7)	18	1.13	(28.7)
09	.56	(14.2)	19	1.19	(30.2)
10	.63	(16.0)	20	1.25	(31.8)
11	.69	(17.5)	22	1.38	(35.1)

NOTES

1. 770-001S**-0 shrink boot supplied with T option. See shrink boot product page for more details.
2. O-Ring will not be supplied with Connector Designator A.
3. Metric dimensions (mm) are in parenthesis and are for reference only.
4. Coupling nut supplied unplated.
5. See Table I in Intro for front-end dimensional details.

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A

447-327
Composite Standard Profile EMI/RFI
Banding Backshell with Qwik-Ty® Strain Relief and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series
447 - EMI/RFI Non-Environmental Banding Backshells

Angle and Profile
S - Straight
W - 90° Elbow

Basic Part Number

Finish Symbol
(See Table III)

Cable Entry
(See Table IV)

Drain Hole Option
(Omit "D" if not required)

Polysulfide Strips
Termination area free of cadmium, XW finish only (Omit for none)

Slot Option
S - Pigtail Termin. Slot (Omit for none)

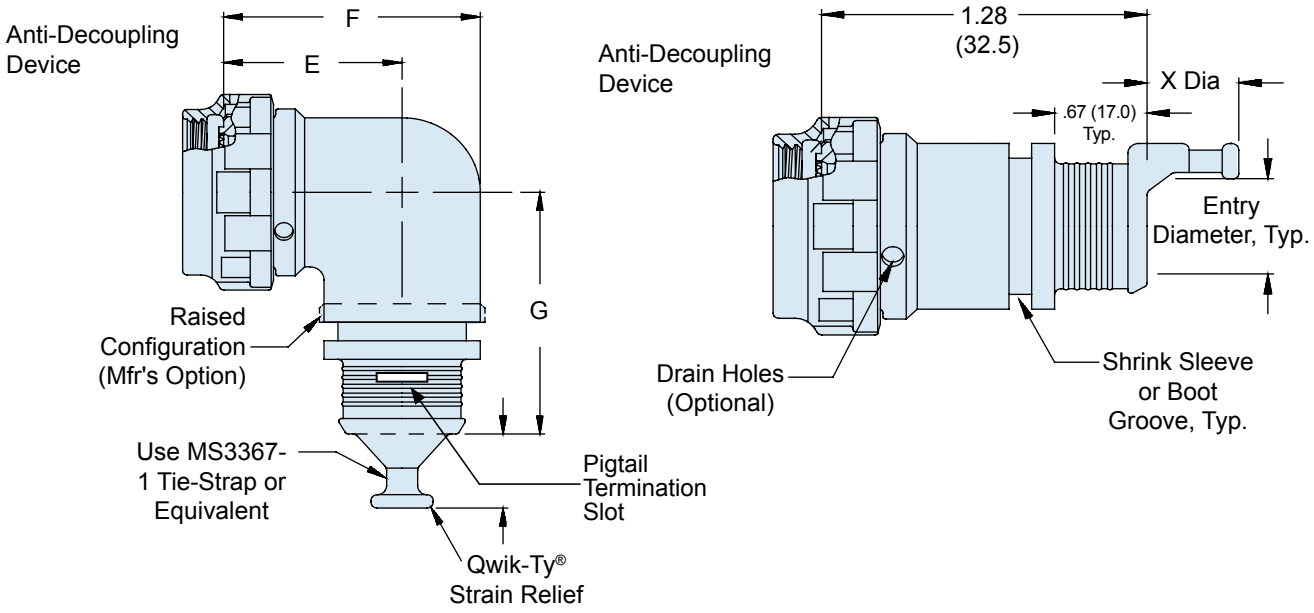
447	H	S	327	XW	19	13	D	K	P	T	S

Connector Designator
A, F, L, H, G and U

Connector Shell Size
(See Table II)

Band Option
600-052-1 standard coiled band supplied with K option (Omit for none)

Shrink Boot Option
Shrink boot and o-ring supplied with T option (Omit for none)



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447-327
Composite Standard Profile EMI/RFI
Banding Backshell with Qwik-Ty® Strain Relief and Self-Locking Rotatable Coupling

TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator*					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.36	(34.5)	04
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.42	(36.1)	05
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.48	(37.6)	07
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.55	(39.4)	09
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.61	(40.9)	11
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.64	(41.7)	13
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.73	(43.9)	15
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.80	(45.7)	17
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.86	(47.2)	20

**Consult factory for additional entry sizes available.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE IV: CABLE ENTRY

Entry Code	Entry Dia. ±.03 (0.8)		X Dia. ±.03 (0.8)	
04	.250	(6.4)	.510	(13.0)
05	.310	(7.9)	.510	(13.0)
07	.440	(11.2)	.510	(13.0)
09	.560	(14.2)	.630	(16.0)
11	.680	(17.3)	.630	(16.0)
13	.810	(20.6)	.630	(16.0)
15	.940	(23.9)	.630	(16.0)
16	1.000	(25.4)	.630	(16.0)
17	1.160	(29.5)	.630	(16.0)
20	1.250	(31.8)	.630	(16.0)

NOTES

1. 770-001S**-0 shrink boot supplied with T option. See shrink boot product page for more details.
2. O-Ring will not be supplies with Connector Designator A.
3. Consult factory for O-ring to be supplied with part less shrink boot.
4. Metric dimensions (mm) are in parenthesis and are for reference only.
5. Coupling nut supplied unplated.
6. See Table I in Intro for front-end dimensional details.

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447-328
Composite Standard Profile EMI/RFI
Band-in-a-Can Backshell with Strain-Relief Clamp and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Angle and Profile
S - Straight
W - 90° Elbow
T - 45° Elbow

Finish Symbol
(See Table III)

Slot Option
S - Pigtail Termin. Slot
(Omit for none)

Product Series
447 - EMI/RFI Non-Environmental Banding Backshells

Basic Part Number

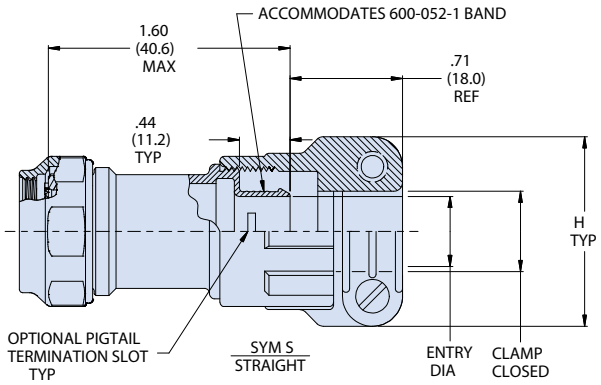
Cable Entry
(See Table IV)

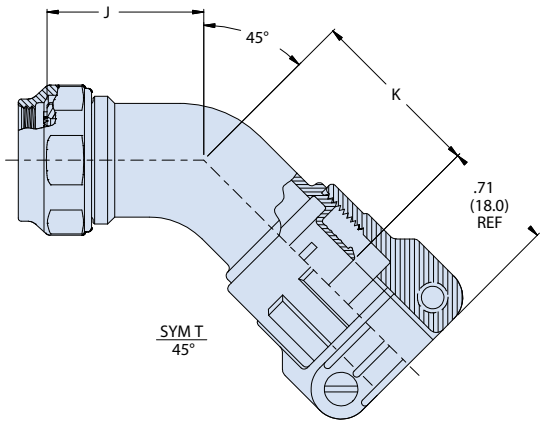
447	H	S	328	XM	19	20	K	S

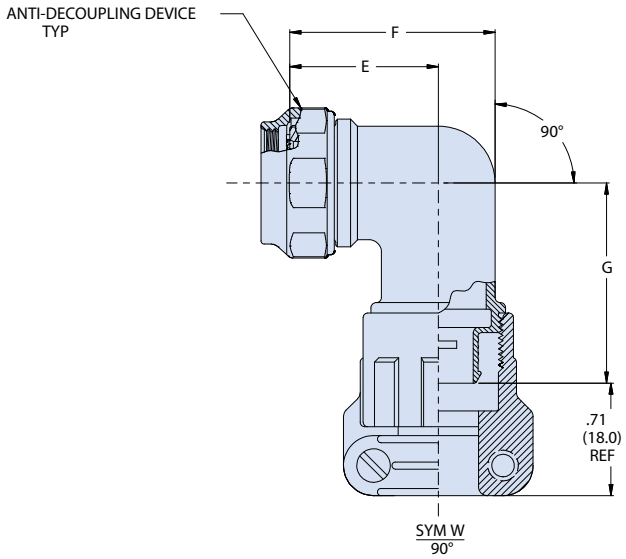
Connector Designator
A, F, L, H, G and U

Connector Shell Size
(See Table II)

Band Option
Band supplied with K option
(Omit for none)







NOTES

1. Metric dimensions (mm) are in parenthesis and are for reference only.
2. Coupling nut supplied unplated.
3. See Table I in Intro for front-end dimensional details.

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447-328
Composite Standard Profile EMI/RFI
Band-in-a-Can Backshell with Strain-Relief Clamp and Self-Locking Rotatable Coupling

Glenair®

TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator*					E		F		G		J		K		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	Max		± .06	(1.5)	± .09	(2.3)	Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.31	(33.3)	.72	(18.3)	1.15	(29.2)	10
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.42	(36.1)	.75	(19.1)	1.27	(32.3)	12
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.57	(39.9)	.75	(19.1)	1.33	(33.8)	14
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.57	(39.9)	.76	(19.3)	1.37	(34.8)	16
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.64	(41.7)	.78	(19.8)	1.39	(35.3)	20
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.73	(43.9)	.79	(20.1)	1.41	(35.8)	20
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.82	(46.2)	.82	(20.8)	1.43	(36.3)	22
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.82	(46.2)	.86	(21.8)	1.47	(37.3)	24
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.92	(48.8)	.89	(22.6)	1.50	(38.1)	32
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	2.00	(50.8)	.92	(23.4)	1.53	(38.9)	32

**Consult factory for additional entry sizes available.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE IV: CABLE ENTRY

Entry Code	H ±.06	H (1.5)	Entry Dia.* ±.03	Entry Dia.* (0.8)	Clamp Closed ±.03	Clamp Closed (0.8)
10	.94	(23.9)	.22	(5.6)	.26	(6.6)
12	1.17	(29.7)	.28	(7.1)	.34	(8.6)
14	1.28	(32.5)	.34	(8.6)	.46	(11.7)
16	1.41	(35.8)	.46	(11.7)	.55	(14.0)
18	1.50	(38.1)	.55	(14.0)	.62	(15.7)
20	1.56	(39.6)	.62	(15.7)	.70	(17.8)
22	1.69	(42.9)	.70	(17.8)	.78	(19.8)
24	1.81	(46.0)	.78	(19.8)	.85	(21.6)
28	1.91	(48.5)	.85	(21.6)	.95	(24.1)
32	2.02	(51.3)	.95	(24.1)	1.02	(25.9)

* Entry diameter equals maximum wire bundle diameter.

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447-329
Composite EMI/RFI Environmental
Band-in-a-Can Backshell with Strain-Relief Clamp and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series
447 - EMI/RFI Non-Environmental Banding Backshells

Angle and Profile
S - Straight
W - 90° Elbow

Basic Part Number

Finish Symbol
(*See Table III*)

Band Option
Band supplied with K option
(*Omit for none*)

Cable Entry
(*See Table IV*)

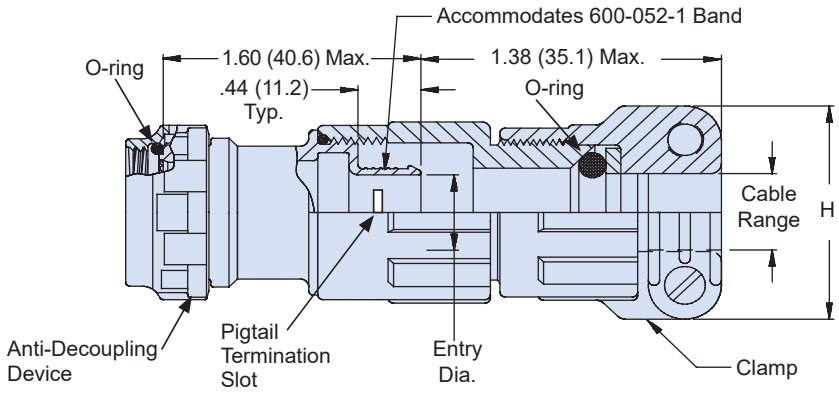
447	H	S	329	XM	19	20	C	K	S

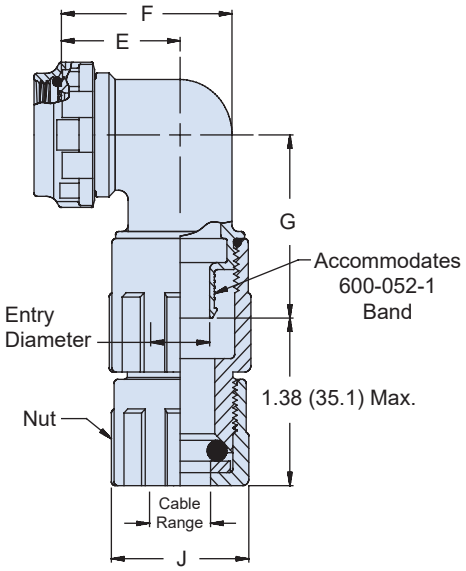
Connector Designator
A, F, L, H, G and U

Connector Shell Size
(*See Table II*)

Strain Relief Style
C - Clamp
N - Nut

Slot Option
S - Pigtail Termin. Slot
(*Omit for none*)





NOTES

1. Metric dimensions (mm) are in parenthesis and are for reference only.
2. Coupling nut supplied unplated.
3. See Table I in Intro for front-end dimensional details.

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TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator*					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	Max		Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.31	(33.3)	10
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.42	(36.1)	12
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.57	(39.9)	14
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.57	(39.9)	16
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.64	(41.7)	20
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.73	(43.9)	20
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.82	(46.2)	22
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.82	(46.2)	24
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.92	(48.8)	28
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	2.00	(50.8)	32

**Consult factory for additional entry sizes available.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE IV: CABLE ENTRY

Entry Code	H ±.06	(1.5)	J ±.06	(1.5)	Entry Dia.* ±.03	(0.8)	Cable Range ** Minimum		Maximum	
10	.94	(23.9)	.80	(20.3)	.22	(5.6)	.13	(3.3)	.25	(6.4)
12	1.17	(29.7)	.93	(23.6)	.28	(7.1)	.25	(6.4)	.38	(9.7)
14	1.28	(32.5)	1.06	(26.9)	.34	(8.6)	.31	(7.9)	.44	(11.2)
16	1.41	(35.8)	1.22	(31.0)	.46	(11.7)	.50	(12.7)	.63	(15.9)
18	1.50	(38.1)	1.24	(31.5)	.55	(14.0)	.56	(14.2)	.69	(17.5)
20	1.56	(39.6)	1.37	(34.8)	.62	(15.7)	.63	(16.0)	.75	(19.1)
22	1.69	(42.9)	1.49	(37.8)	.70	(17.8)	.75	(19.1)	.88	(22.2)
24	1.81	(46.0)	1.62	(41.1)	.78	(19.8)	.88	(22.4)	1.00	(25.4)
28	1.91	(48.5)	1.68	(42.7)	.85	(21.6)	1.00	(25.4)	1.13	(28.6)
32	2.02	(51.3)	1.82	(46.2)	.95	(24.1)	1.13	(28.6)	1.25	(31.8)

* Entry diameter equals maximum wire bundle diameter.
** Cable range equals diameter of cable outer jacket.

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447-330
Composite Non-Environmental EMI/RFI
Band-in-a-Can Backshell with Qwik-Clamp Strain-Relief and Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series
447 - EMI/RFI Non-Environmental Banding Backshells

Angle and Profile
S - Straight
W - 90° Elbow

Basic Part Number

Finish Symbol
(See Table III)

Cable Entry
(See Table IV)

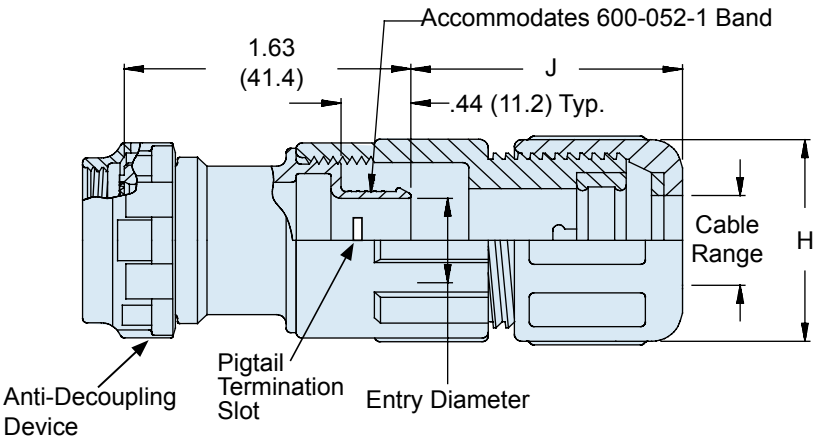
Slot Option
S - Pigtail Termin. Slot
(Omit for none)

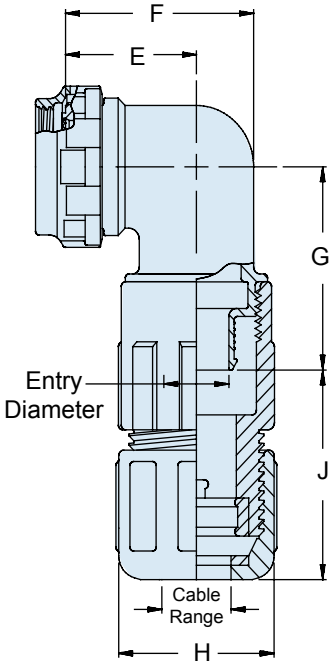
447	H	S	330	XM	19	28	K	S

Connector Designator
A, F, L, H, G and U

Connector Shell Size
(See Table II)

Band Option
Band supplied with K option
(Omit for none)





US PATENT 5211576

NOTES

1. Metric dimensions (mm) are in parenthesis and are for reference only.
2. Coupling nut supplied unplated.
3. See Table I in Intro for front-end dimensional details.

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TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator*					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.19	(30.2)	08
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.25	(31.8)	12
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.31	(33.3)	16
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.38	(35.1)	20
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.44	(36.6)	24
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.47	(37.3)	28
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.56	(39.6)	32
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.63	(41.4)	36
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.69	(42.9)	40
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	1.78	(45.2)	44

**Consult factory for additional entry sizes available.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE IV: CABLE ENTRY

Entry Code	H ±.06	(1.5)	J ±.06	(1.5)	Entry Dia. ±.03	(0.8)	Cable Range Minimum	(2.5)	Maximum	(6.4)
08	.72	(18.3)	.97	(24.6)	.25	(6.4)	.10	(2.5)	.25	(6.4)
12	.91	(23.1)	1.11	(28.2)	.38	(9.7)	.20	(5.1)	.38	(9.7)
16	1.09	(27.7)	1.21	(30.7)	.50	(12.7)	.33	(8.4)	.50	(12.7)
20	1.22	(31.0)	1.21	(30.7)	.63	(15.9)	.45	(11.4)	.63	(15.9)
24	1.34	(34.0)	1.21	(30.7)	.75	(19.1)	.52	(13.2)	.75	(19.1)
28	1.53	(38.9)	1.36	(34.5)	.88	(22.2)	.64	(16.3)	.88	(22.2)
32	1.72	(43.7)	1.51	(38.4)	1.00	(25.4)	.77	(19.6)	1.00	(25.4)
36	1.85	(47.0)	1.51	(38.4)	1.13	(28.6)	.86	(21.8)	1.13	(28.6)
40	1.97	(50.0)	1.51	(38.4)	1.25	(31.8)	.98	(24.9)	1.25	(31.8)
44	2.09	(53.1)	1.63	(41.4)	1.38	(35.1)	1.13	(28.6)	1.38	(35.1)

* Entry diameter equals maximum wire bundle diameter.
** Cable range equals cable outer diameter.

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447-331
Composite EMI/RFI Dual-Banding Backshell
with Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series
447 - EMI/RFI Non-Environmental Banding Backshells

Angle and Profile
S - Straight
W - 90° Elbow

Finish Symbol
(*See Table III*)

Drain Hole Option
(*Omit "D" if not required*)

Slot Option
S - Pigtail Termin. Slot
(*Omit for none*)

Basic Part Number

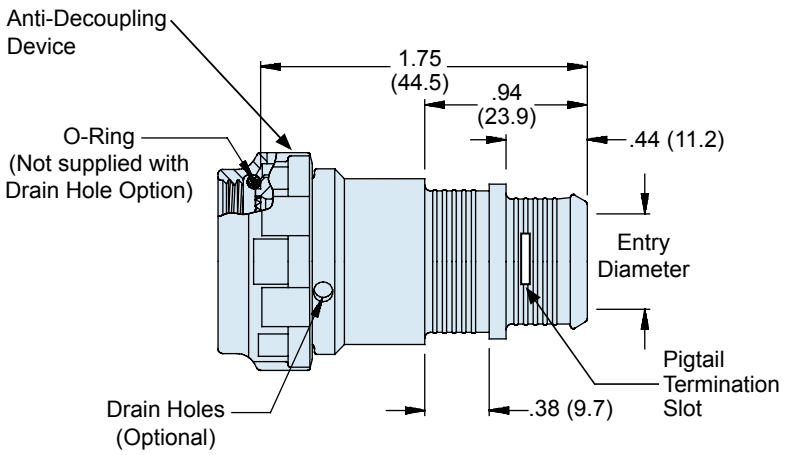
Cable Entry
(*See Table IV*)

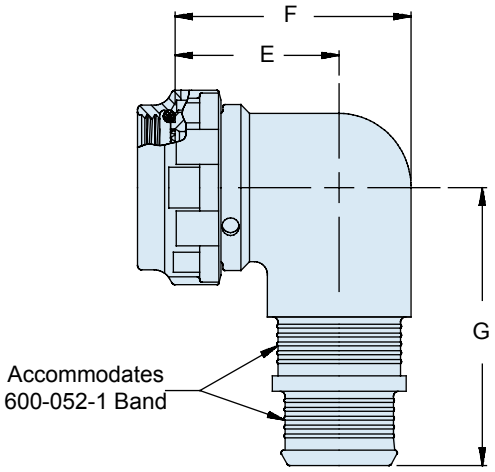
447	H	S	331	XM	19	12	D	K	S

Connector Designator
A, F, L, H, G and U

Connector Shell Size
(*See Table II*)

Band Option
2 bands supplied with K option
(*Omit for none*)





NOTES

1. Metric dimensions (mm) are in parenthesis and are for reference only.
2. Coupling nut supplied unplated.
3. See Table I in Intro for front-end dimensional details.

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TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator*					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.69	(42.9)	04
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.75	(44.5)	06
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.81	(46.0)	08
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.88	(47.8)	10
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.94	(49.3)	12
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.97	(50.0)	13
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	2.06	(52.3)	15
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	2.13	(54.1)	17
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	2.19	(55.6)	19
28	–	–	25	24	1.34	(34.0)	2.13	(54.1)	2.28	(57.9)	22

**Consult factory for additional entry sizes available.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE IV: CABLE ENTRY

Entry Code	Entry Dia. ±.03	(0.8)	Dash No.	Entry Dia. ±.03	(0.8)
03	.19	(4.8)	13	.81	(20.6)
04	.25	(6.4)	14	.88	(22.4)
05	.31	(7.9)	15	.94	(23.9)
06	.38	(9.7)	16	1.00	(25.4)
07	.44	(11.2)	17	1.06	(26.9)
08	.50	(12.7)	18	1.13	(28.7)
09	.56	(14.2)	19	1.19	(30.2)
10	.63	(16.0)	20	1.25	(31.8)
11	.69	(17.5)	22	1.38	(35.1)
12	.75	(19.1)			

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447-657
Composite Low-Profile Micro Band-in-a-Can Backshell with Strain-Relief Clamp and Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series
447 - EMI/RFI Non-Environmental Banding Backshells

Finish Symbol
(See Table III)

Connector Designator
A, F or H

Basic Part Number

Band Option
K - Pre-Coiled Band
(Omit for none)

Slot Option
S - Pigtail Termin. Slot
(Omit for none)

447	F	S	657	XM	18	04	K	S

Angle and Profile
S - Straight

Connector Shell Size
(See Table II)

Cable Entry
(See Table IV)

NOTES

1. Metric dimensions (mm) are in parenthesis and are for reference only.
2. See Table I in Intro for front-end dimensional details.

For angled part requirements, use in conjuncion with Glenair 327-060 Extenders

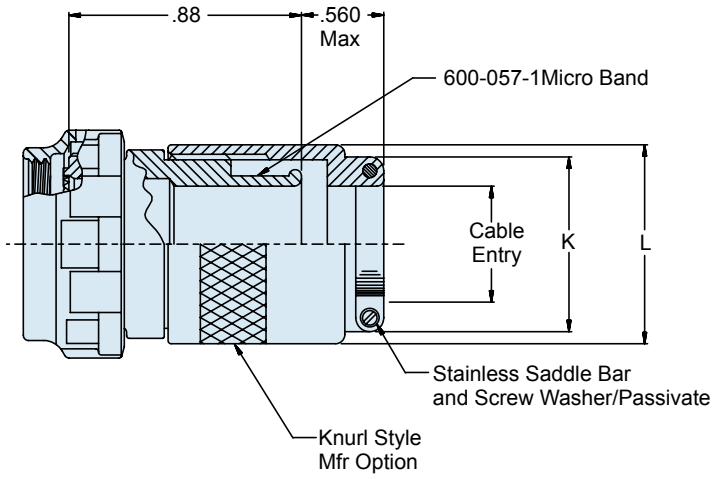


TABLE II SHELL SIZE

Shell Size			Max Dash Number (Table II)	
A	F	H	A	F, H
08	08	09	01	01
10	10	11	01	02
12	12	13	04	04
14	14	15	04	05
16	16	17	05	06
18	18	19	06	06
20	20	21	07	07
22	22	23	08	08
24	24	25	09	09
28	-	-	10	10
32	-	-	10	10
36	-	-	10	10
40	-	-	10	10

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE IV: CABLE ENTRY

Dash Number	K Max	L Max	Cable Entry	
			Min	Max
01	.843 (21.4)	.78 (19.8)	.125 (3.2)	.250 (6.4)
02	.968 (24.6)	.97 (24.6)	.156 (4.0)	.375 (9.5)
03	1.046 (26.6)	1.05 (26.7)	.250 (6.4)	.438 (11.1)
04	1.156 (29.4)	1.15 (29.2)	.280 (7.1)	.500 (12.7)
05	1.218 (30.9)	1.22 (31.0)	.375 (9.5)	.625 (15.9)
06	1.343 (34.1)	1.34 (34.0)	.500 (12.7)	.750 (19.1)
07	1.468 (37.3)	1.47 (37.3)	.625 (15.9)	.875 (22.2)
08	1.593 (40.5)	1.59 (40.4)	.750 (19.1)	1.000 (25.4)
09	1.718 (43.6)	1.72 (43.7)	.875 (22.2)	1.125 (28.6)
10	1.843 (46.8)	1.84 (46.7)	1.000 (25.4)	1.250 (31.8)

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447-711
Composite EMI/RFI Banding Backshell
with Strain Relief
and Self-Locking Rotatable Coupling

Glenair®

Product Series
447 - EMI/RFI Non-Environmental Banding Backshells

Connector Designator
A, F, L, H, G and U

Finish Symbol
(See Table III)

Basic Part Number

Drain Hole Option
(Omit "D" if not required)

Cable Entry
(See Table IV)

Band Option
Band supplied with K option (Omit for none)

Shrink Boot Option
Shrink boot and o-ring supplied with T option (Omit for none)

447	H	S	711	XW	19	13	D	S	K	P	T

Angle and Profile
S - Straight
W - 90° Elbow

Connector Shell Size
(See Table II)

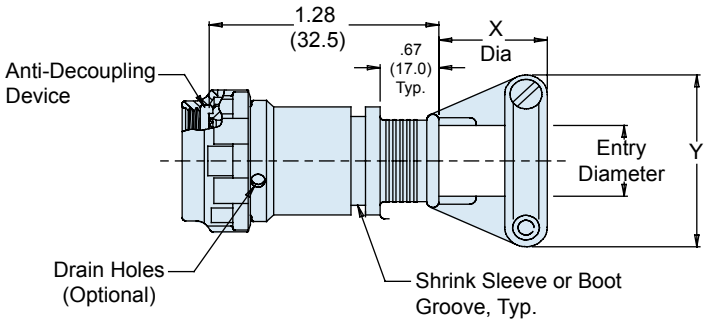
Shield Termination Slot
(Omit for none)

Polysulfide Strips
Termination area free of cadmium, XW finish only (Omit for none)

TABLE IV: CABLE ENTRY

Entry Code	Entry Dia. ±.03 (0.8)		X Dia. ±.03 (0.8)		Y Dia. ±.03 (0.8)	
04	.250	(6.4)	.51	(13.0)	.875	(22.2)
05	.310	(7.9)	.51	(13.0)	.936	(23.8)
07	.420	(10.7)	.51	(13.0)	1.172	(29.8)
09	.530	(13.5)	.63	(16.0)	1.281	(32.5)
10	.630	(16.0)	.63	(16.0)	1.406	(35.7)
12	.750	(19.1)	.63	(16.0)	1.500	(38.1)
13	.810	(20.6)	.63	(16.0)	1.562	(39.7)
15	.940	(23.9)	.63	(16.0)	1.687	(42.8)
16	1.00	(25.4)	.63	(16.0)	1.812	(46.0)
19	1.16	(29.5)	.63	(16.0)	1.912	(48.6)

NOTE: Coupling Nut Supplied Unplated



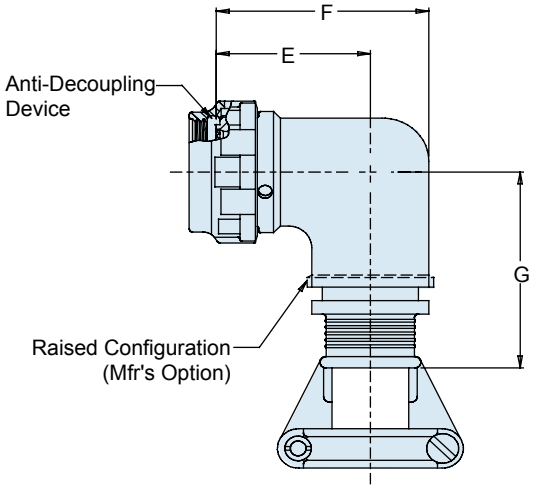


TABLE II: CONNECTOR SHELL SIZE

Shell Size For Connector Designator*					E		F		G		Max Entry
A	F/L	H	G	U	± .06	(1.5)	± .09	(2.3)	± .09	(2.3)	Dash No.**
08	08	09	–	–	.69	(17.5)	.88	(22.4)	1.36	(34.5)	04
10	10	11	–	08	.75	(19.1)	1.00	(25.4)	1.42	(36.1)	05
12	12	13	11	10	.81	(20.6)	1.13	(28.7)	1.48	(37.6)	07
14	14	15	13	12	.88	(22.4)	1.31	(33.3)	1.55	(39.4)	09
16	16	17	15	14	.94	(23.9)	1.38	(35.1)	1.61	(40.9)	11
18	18	19	17	16	.97	(24.6)	1.44	(36.6)	1.64	(41.7)	13
20	20	21	19	18	1.06	(26.9)	1.63	(41.4)	1.73	(43.9)	15
22	22	23	–	20	1.13	(28.7)	1.75	(44.5)	1.80	(45.7)	17
24	24	25	23	22	1.19	(30.2)	1.88	(47.8)	1.86	(47.2)	20

**Consult factory for additional entry sizes available.
Consult factory for O-Ring to be supplied with part less shrink boot.

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/ Olive Drab over Electroless Nickel

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CAGE Code 06324

Printed in U.S.A.

450-029
Composite Qwik-Ty® Strain-Relief
with Self-Locking Rotatable Coupling
Straight, 45° and 90°

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
LOW PROFILE	

Product Series
450 - Qwik-Ty Strain Relief

Angle and Profile
A - 90° Elbow
B - 45° Clamp
S - Straight

Finish Symbol
(See Table III)

450	H	S	029	XO	19
	Connector Designator *A, F, L, H, G and U*		Basic Part Number		Connector Shell Size *(See Table II)*

NOTES

1. Metric dimensions (mm) are in parenthesis and are for reference only.
2. See Table I in Intro for front-end dimensional details.

TABLE III: FINISH

Symbol	Finish Description
XB	No Plating - Black Material
XO	No Plating - Brown Material

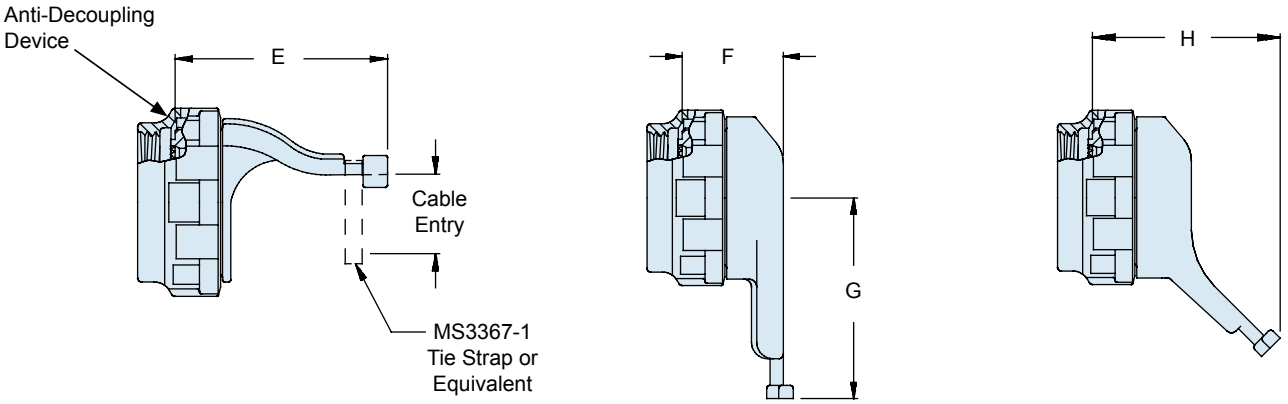


TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size For Connector Designator*					E Code A,F,H Max		E Code G,U Max		F Max		G Max		H Max		Cable Entry Max	
A	F/L	H	G	U												
08	08	09	–	–	1.14	(29.0)	–		.75	(19.0)	1.22	(31.0)	1.14	(29.0)	.25	(6.4)
10	10	11	–	08	1.14	(29.0)	1.30	(33.0)	.75	(19.0)	1.29	(32.8)	1.14	(29.0)	.38	(9.7)
12	12	13	11	10	1.20	(30.5)	1.36	(34.5)	.75	(19.0)	1.62	(41.1)	1.14	(29.0)	.50	(12.7)
14	14	15	13	12	1.38	(35.1)	1.54	(39.1)	.75	(19.0)	1.66	(42.2)	1.64	(41.7)	.63	(16.0)
16	16	17	15	14	1.38	(35.1)	1.54	(39.1)	.75	(19.0)	1.72	(43.7)	1.64	(41.7)	.75	(19.1)
18	18	19	17	16	1.44	(36.6)	1.69	(42.9)	.75	(19.0)	1.72	(43.7)	1.74	(44.2)	.81	(21.8)
20	20	21	19	18	1.57	(39.9)	1.73	(43.9)	.75	(19.0)	1.79	(45.5)	1.74	(44.2)	.94	(23.9)
22	22	23	–	20	1.69	(42.9)	1.91	(48.5)	.75	(19.0)	1.85	(47.0)	1.74	(44.2)	1.06	(26.9)
24	24	25	23	22	1.83	(46.5)	1.99	(50.5)	.75	(19.0)	1.91	(48.5)	1.95	(49.5)	1.19	(30.2)
28	–	–	25	24	1.99	(50.5)	2.15	(54.6)	.75	(19.0)	2.07	(52.6)	n/a		1.38	(35.1)

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450-030
Composite Qwik-Ty® Strain-Relief
with Self-Locking Rotatable Coupling and Ground Lug
Straight, 45° and 90°

Glenair®

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
LOW PROFILE	

Product Series
450 - Qwik-Ty Strain Relief

Angle and Profile
A - 90° Elbow
B - 45° Clamp
S - Straight

Finish Symbol
(See Table III)

450	H	S	030	XM	19
	Connector Designator *A, F, L, H, G and U*		Basic Part Number		Connector Shell Size *(See Table II)*

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel
XB	No Plating - Black Material
XO	No Plating - Brown Material

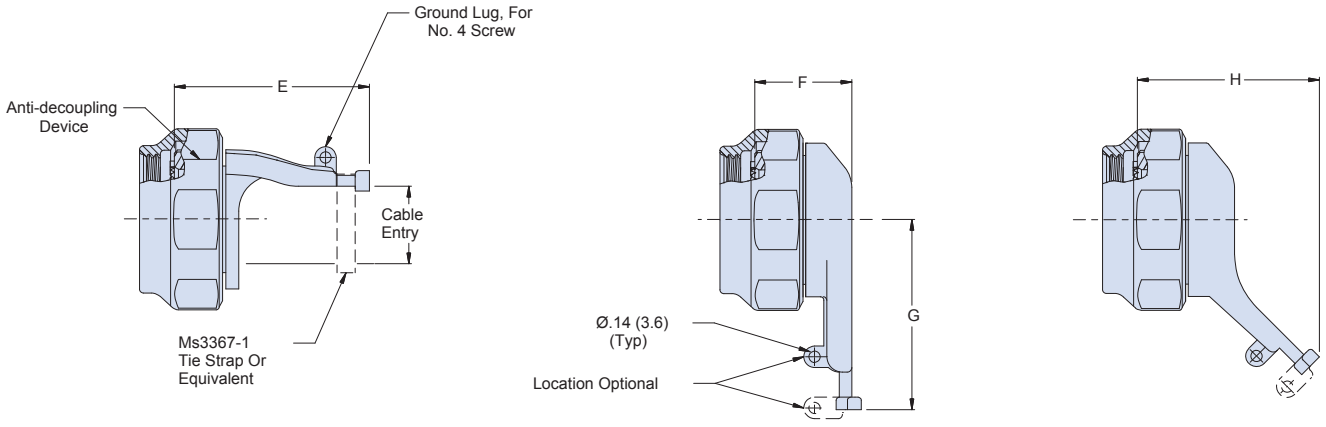


TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

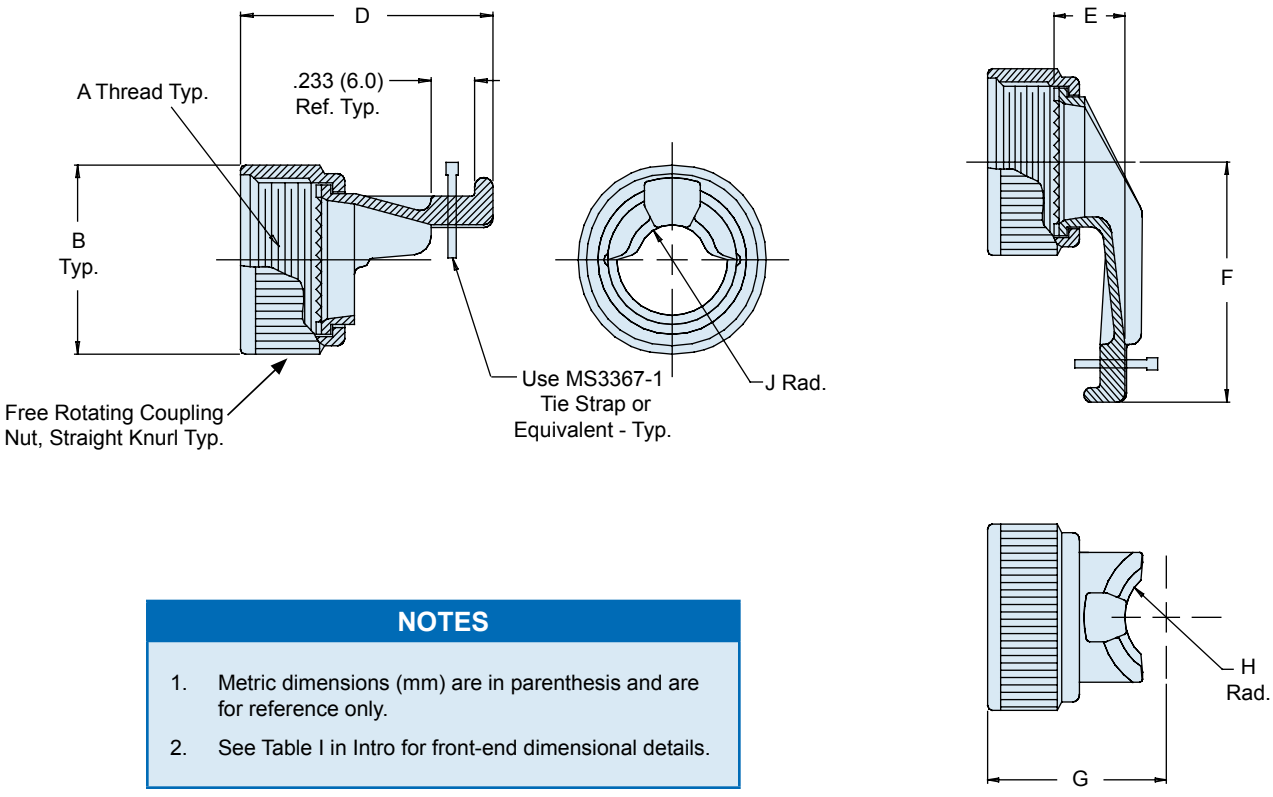
Shell Size For Connector Designator*					E Code A,F,H		E Code G,U		F		G		H		Cable Entry	
A	F/L	H	G	U	Max		Max		Max		Max		Max		Max	
08	08	09	–	–	1.14	(29.0)	–		.75	(19.0)	1.22	(31.0)	1.14	(29.0)	.25	(6.4)
10	10	11	–	08	1.14	(29.0)	1.30	(33.0)	.75	(19.0)	1.29	(32.8)	1.14	(29.0)	.38	(9.7)
12	12	13	11	10	1.20	(30.5)	1.36	(34.5)	.75	(19.0)	1.62	(41.1)	1.14	(29.0)	.50	(12.7)
14	14	15	13	12	1.38	(35.1)	1.54	(39.1)	.75	(19.0)	1.66	(42.2)	1.64	(41.7)	.63	(16.0)
16	16	17	15	14	1.38	(35.1)	1.54	(39.1)	.75	(19.0)	1.72	(43.7)	1.64	(41.7)	.75	(19.1)
18	18	19	17	16	1.44	(36.6)	1.69	(42.9)	.75	(19.0)	1.72	(43.7)	1.74	(44.2)	.81	(21.8)
20	20	21	19	18	1.57	(39.9)	1.73	(43.9)	.75	(19.0)	1.79	(45.5)	1.74	(44.2)	.94	(23.9)
22	22	23	–	20	1.69	(42.9)	1.91	(48.5)	.75	(19.0)	1.85	(47.0)	1.74	(44.2)	1.06	(26.9)
24	24	25	23	22	1.83	(46.5)	1.99	(50.5)	.75	(19.0)	1.91	(48.5)	1.95	(49.5)	1.19	(30.2)
28	–	–	25	24	1.99	(50.5)	2.15	(54.6)	.75	(19.0)	2.07	(52.6)	n/a		1.38	(35.1)

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450-034
Composite Qwik-Ty® Strain-Relief
with Free-Rotating Coupling
90° and 45°

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
H	MIL-DTL-38999 Series III and IV
ROTATABLE COUPLING	
LOW PROFILE	

Product Series	Angle and Profile		Finish Symbol		
450 - Qwik-Ty Strain Relief	*A - 90° Elbow*		(See Table III)		
450	H	S	034	XB	15
Connector Designator *A and H*		Basic Part Number		Connector Shell Size (See Table II)	



NOTES

1. Metric dimensions (mm) are in parenthesis and are for reference only.
2. See Table I in Intro for front-end dimensional details.

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TABLE II: CONNECTOR SHELL SIZE & CABLE ENTRY					
Shell Size*		B Dia	D	E	F
A	H	Max	Max	Max	Max
08	09	.640 (16.3)	1.107 (28.1)	.472 (12.0)	.886 (22.5)
10	11	.765 (19.4)	1.107 (28.1)	.472 (12.0)	.945 (24.0)
12	13	.890 (22.6)	1.166 (29.6)	.492 (12.5)	1.004 (25.5)
14	15	1.015 (25.8)	1.268 (32.2)	.492 (12.5)	1.319 (33.5)
16	17	1.140 (29.0)	1.270 (32.3)	.452 (11.5)	1.378 (35.0)
18	19	1.265 (32.1)	1.418 (36.0)	.492 (12.5)	1.476 (37.5)
20	21	1.390 (35.3)	1.548 (39.3)	.472 (12.0)	1.515 (38.5)
22	23	1.454 (36.9)	1.666 (42.3)	.472 (12.0)	1.575 (40.0)
24	25	1.594 (40.5)	1.796 (45.6)	.472 (12.0)	1.653 (42.0)

* Even Number Shell Size, Code A
Odd Number Shell Size, Code H

TABLE II: CONNECTOR SHELL SIZE & CABLE ENTRY (CONT.)					
Shell Size*	G Max	H Rad. Max	J Rad. Max	Weight In Grams	
				Straight	90°
08/09	.945 (24.0)	.197 (5.0)	.098 (2.5)	1.8	1.9
10/11	.945 (24.0)	.197 (5.0)	.138 (3.5)	2.3	2.6
12/13	.945 (24.0)	.197 (5.0)	.157 (4.0)	2.9	3.2
14/15	1.023 (26.0)	.275 (7.0)	.197 (5.0)	3.3	3.8
16/17	1.023 (26.0)	.295 (7.5)	.236 (6.0)	3.9	4.6
18/19	1.102 (28.0)	.335 (8.5)	.295 (7.5)	5.1	5.7
20/21	1.161 (29.5)	.394 (10.0)	.295 (7.5)	5.8	6.4
22/23	1.161 (29.5)	.394 (10.0)	.335 (8.5)	7.0	7.4
24/25	1.319 (33.5)	.551 (14.0)	.374 (9.5)	8.6	9.3

TABLE III: FINISH	
Symbol	Finish Description
XB	No Plating - Black Material (Non-Conductive Finish)
XO	No Plating - Brown Material (Non-Conductive Finish)

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507-088
Composite RFI/EMI Banding Backshell
for MIL-DTL-83513 Micro-D Connectors

Basic Part Number	Basic Part Number	Connector Shell Size (See Table II)		Cable Entry (See Table IV)		Qwik-Ty Option (Omit for Standard)	
507	T	088	XM	21	B	06	S	K

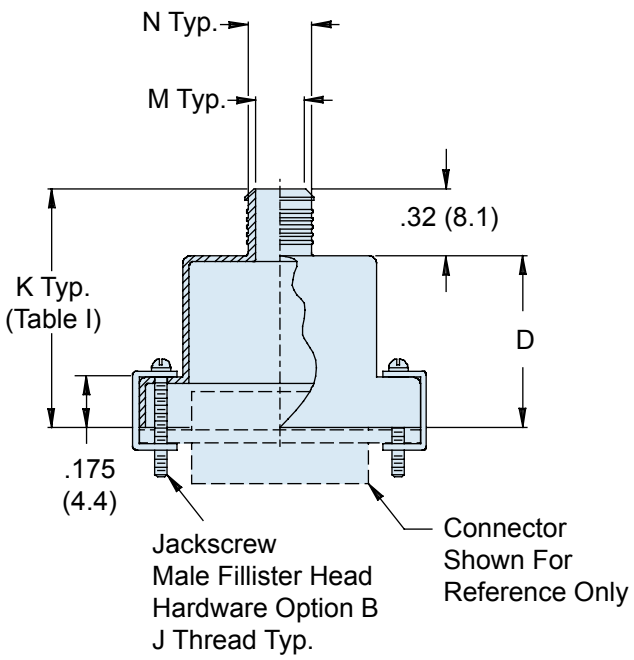
Cable Entry Style
T - Top
S - Side
E - End

Finish Symbol
(See Table III)

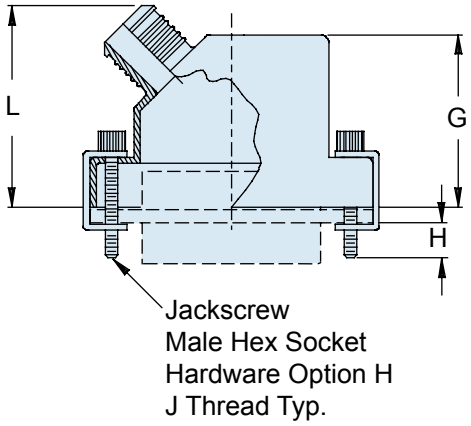
Hardware Options
B - (2) Male Fillister Head
E - (2) Extender Jackscrew
H - (2) Male Hex Socket
F - (2) Female Jackpost

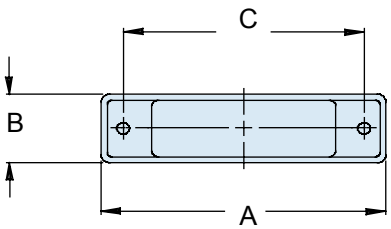
Band Option
K - Micro Band Supplied
(Omit for none)

STYLE T - TOP ENTRY

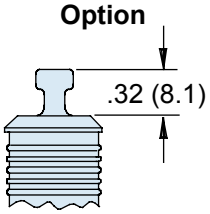


STYLE E - 45° ENTRY

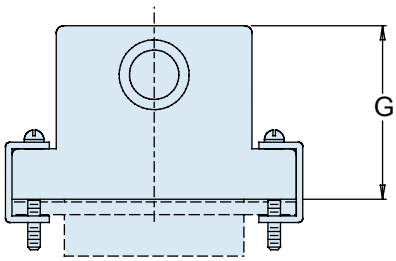




Qwik-Ty Option



STYLE S SIDE ENTRY



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507-088
Composite RFI/EMI Banding Backshell
for MIL-DTL-83513 Micro-D Connectors

Glenair®

TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

SHELL SIZE	A	B	C	D	G
09	.775 (19.7)	.36 (9.1)	.565 (14.4)	.43 (10.9)	.650 (16.5)
15	.925 (23.5)	.36 (9.1)	.715 (18.2)	.44 (11.2)	.700 (17.8)
21	1.075 (27.3)	.36 (9.1)	.865 (22.0)	.56 (14.2)	.735 (18.7)
25	1.175 (29.8)	.36 (9.1)	.965 (24.5)	.62 (15.7)	.800 (20.3)
31	1.325 (33.7)	.36 (9.1)	1.115 (28.3)	.68 (17.3)	.860 (21.8)
37	1.475 (37.5)	.36 (9.1)	1.265 (32.1)	.72 (18.3)	.925 (23.5)
51	1.425 (36.2)	.40 (10.2)	1.215 (30.9)	.75 (19.1)	.975 (24.8)
100	2.160 (54.9)	.45 (11.4)	1.800 (45.7)	.81 (20.6)	1.050 (26.7)

SHELL SIZE	H	J THREAD	K ±.03 (0.8)	L MAX
09	.154 (3.9)	2-56 UNC-2	.75 (19.1)	1.00 (25.4)
15	.154 (3.9)	2-56 UNC-2	.76 (19.3)	1.03 (26.2)
21	.154 (3.9)	2-56 UNC-2	.88 (22.4)	1.05 (26.7)
25	.154 (3.9)	2-56 UNC-2	.94 (23.9)	1.09 (27.7)
31	.154 (3.9)	2-56 UNC-2	1.00 (25.4)	1.13 (28.7)
37	.154 (3.9)	2-56 UNC-2	1.04 (26.4)	1.16 (29.5)
51	.154 (3.9)	2-56 UNC-2	1.07 (27.2)	1.25 (31.8)
100	.194 (4.9)	4-40 UNC-2	1.13 (28.7)	1.32 (33.5)

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE IV: CABLE ENTRY

Entry Code	Shell Size	M Entry Dia	N Dia
04	09 THRU 100	.125 (3.2)	.219 (5.6)
05	09 THRU 100	.156 (4.0)	.250 (6.4)
06	09 THRU 100	.188 (4.8)	.281 (7.1)
07	09 THRU 100	.219 (5.6)	.313 (8.0)
08	09 THRU 100	.250 (6.4)	.344 (8.7)
09	31 THRU 100	.281 (7.1)	.375 (9.5)
10	51 THRU 100	.312 (7.9)	.406 (10.3)
11	100 ONLY	.344 (8.7)	.438 (11.1)
12	100 ONLY	.375 (9.5)	.469 (11.9)

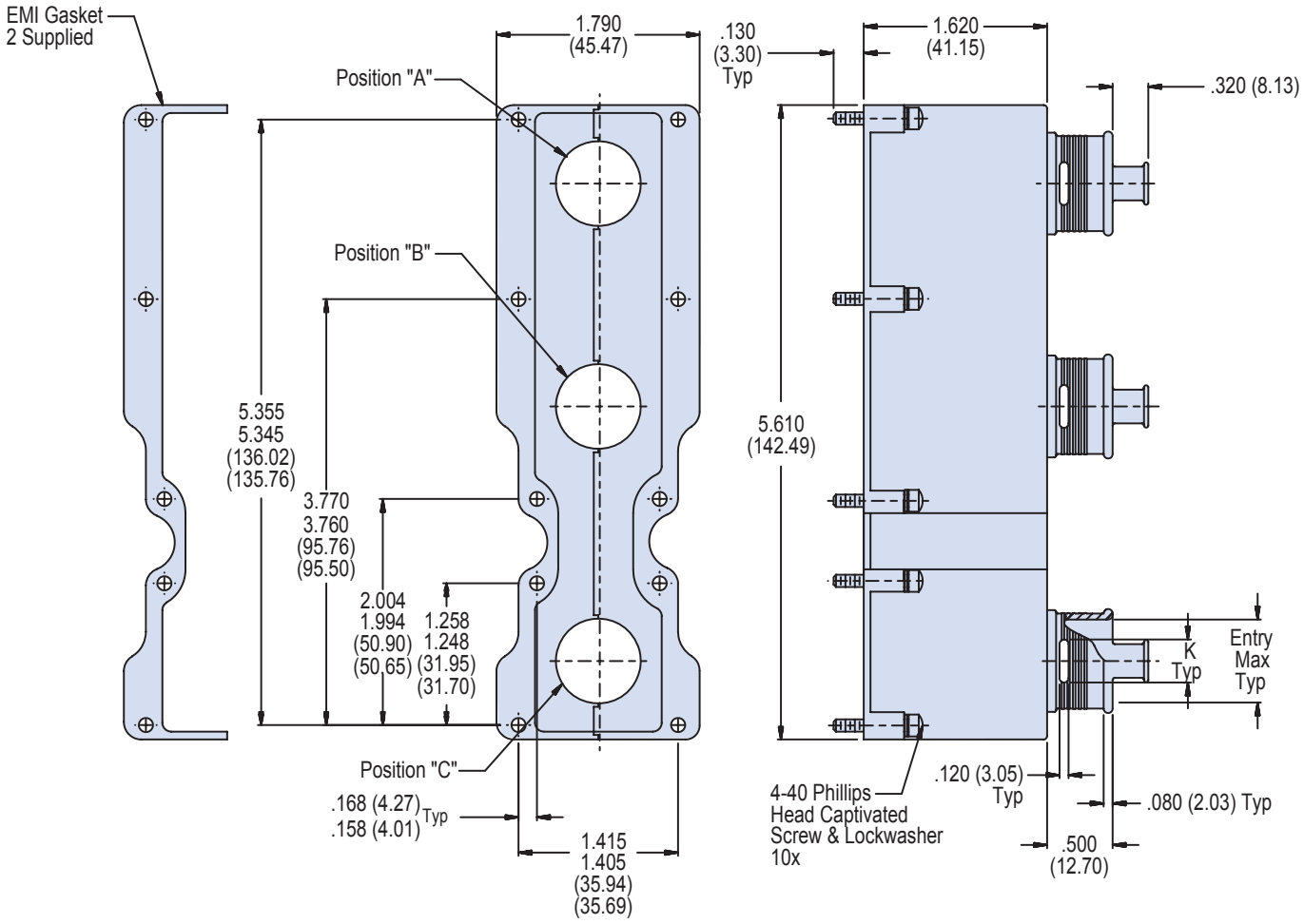
APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. These composite backshells meet the requirements of SAE AIR 4567 and AS85049.
3. See Table I in Intro for front-end dimensional details.

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527-559
RFI/EMI Composite Split Backshell Assembly
for Size 2 ARINC 600 Series Connector

Product Series	Finish Symbol	Dash No. Position A	Dash No. Position C	EMI Gasket									
527 - Split Backshell	*(See Table II)*	*(See Table I) Omit for None*	*(See Table I) Omit for None*	*Omit for None*									
527	-	559	XM	P5	A2	B3	C5	S	-	1	L
		Basic Part Number	Connector Designator *(See Page A-95)*			Dash No. Position B *(See Table I) Omit for None*		Slot *Omit for None*		*L = Less Qwik-Ty Arm*	



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527-559
RFI/EMI Composite Split Backshell Assembly
for Size 2 ARINC 600 Series Connector

ARINC 600 Series connector backshells are designed to replace the insert retainer plates. Due to non-standard modifications by the connector manufacturer, the backshell may require special design alterations to mate properly. The following should be used to determine if a backshell modification is required. Prior to ordering, consult a factory with connector part numbers not shown to ensure a proper fit:

CONNECTOR DESIGNATOR:	
P	All manufacturers' plug and receptacle shells except for those listed below (prior to ordering, consult factory with connector part numbers not listed below to ensure a proper fit):
P1	Cannon BKAD****322 Series Plug
P2	Cannon/Radiall Environmental Plug
P3	Cannon/Boeing BACC66 Plug
P5	Radiall/Boeing BACC66 Plug
P6	Cannon BKAC & BKAE****322 Series Environmental Plug

TABLE I: Dash Number and Dimensions

Dash No.	Entry Dia	K Dim
4	.500 (12.70)	.380 (9.65)
5	.630 (16.00)	.470 (11.94)
6	.750 (19.05)	.560 (14.22)
8	1.000 (25.40)	.690 (17.53)
9	1.120 (28.45)	.780 (19.81)

TABLE II: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XO	No Plating
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/ Olive Drab over Electroless Nickel

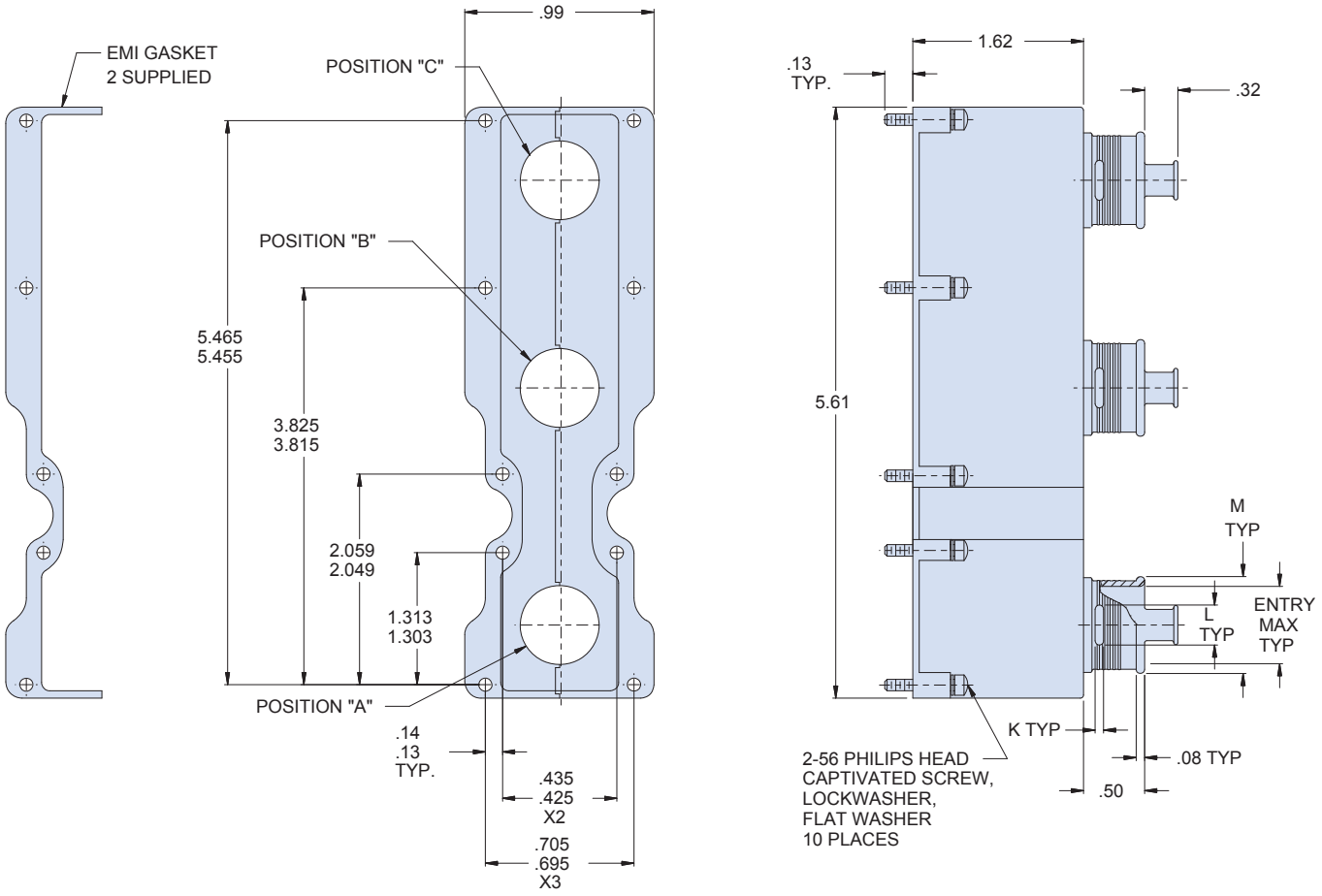
APPLICATION NOTES

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Material/Finish:
   Backshell - High grade engineering thermoplastic/See Table II.
   Gasket - Metex/N.A
   Hardware - CRES/Passivate.
3. Existing insert retainer in conjunction with supplied screws.
4. Metric dimensions (mm) are indicated in parentheses.

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527-560
RFI/EMI Composite Split Backshell Assembly
for Size 1 ARINC 600 Series Connector

Product Series	Finish Symbol	Dash No. Position B	Slot		L = Less Qwik-Ty Arm
527 - Split Backshell	(See Table II)	(See Table I) Omit for None	Omit for None		
527	**560**	**XM**	**A2**	**B3**	**C5**	**S**	**1**	**L**
	Basic Part Number		Dash No. Position A (See Table I) Omit for None	Dash No. Position C (See Table I) Omit for None		1 = EMI Gasket Omit for None (2 Gaskets Provided)	



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527-560
RFI/EMI Composite Split Backshell Assembly
for Size 1 ARINC 600 Series Connector

ARINC 600 Series connector backshells are designed to replace the insert retainer plates. Due to non-standard modifications by the connector manufacturer, the backshell may require special design alterations to mate properly. The following should be used to determine if a backshell modification is required. Prior to ordering, consult a factory with connector part numbers not shown to ensure a proper fit:

CONNECTOR DESIGNATOR:	
P	All manufacturers' plug and receptacle shells except for those listed below (prior to ordering, consult factory with connector part numbers not listed below to ensure a proper fit):
P1	Cannon BKAD****322 Series Plug
P2	Cannon/Radiall Environmental Plug
P3	Cannon/Boeing BACC66 Plug
P5	Radiall/Boeing BACC66 Plug
P6	Cannon BKAC & BKAE****322 Series Environmental Plug

TABLE I: Dash Number & Dimensions

Dash No.	Entry Dia	K Dim	L Dim	M Max
2	.250 (6.35)	.080 (2.03)	.220 (5.59)	.475 (12.07)
3	.380 (9.65)	.080 (2.03)	.280 (7.11)	.605 (15.37)
4	.500 (12.7)	.080 (2.03)	.330 (8.38)	.725 (18.42)
5	.630 (16.00)	.080 (2.03)	.420 (10.67)	.855 (21.72)
6	.750 (19.05)	.080 (2.03)	.500 (12.70)	.975 (24.77)
7	.870 (22.10)	.080 (2.03)	.560 (14.22)	1.095 (27.81)

TABLE II: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XB	No Plating, Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/ Olive Drab over Electroless Nickel

APPLICATION NOTES

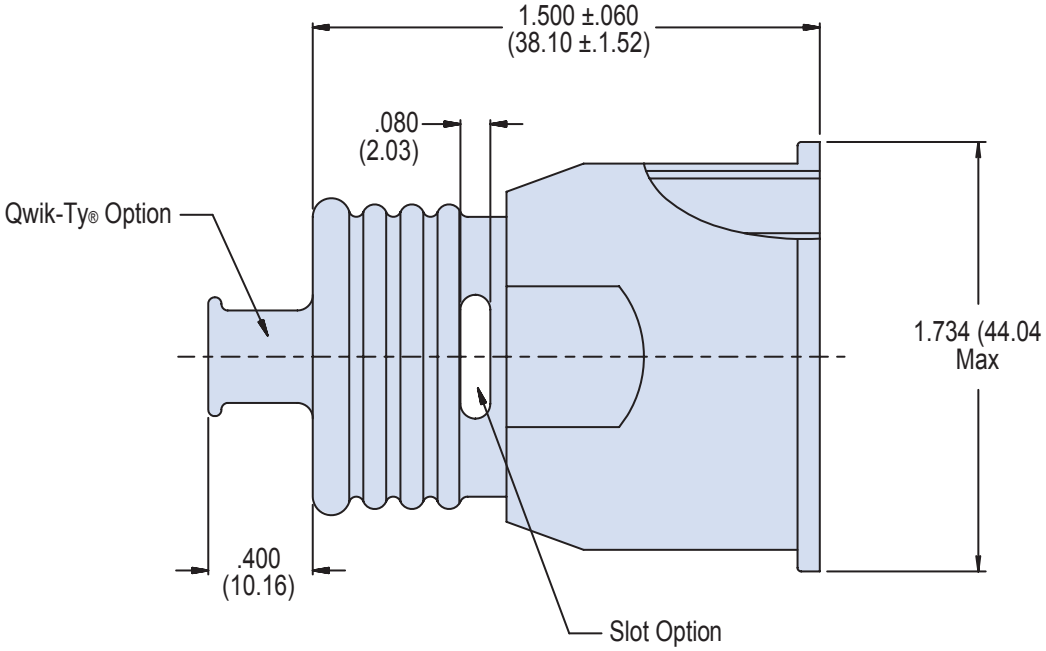
1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Material/Finish:
   Backshell - High grade engineering thermoplastic/See Table II.
   Gasket - Metex/N.A
   Hardware - CRES/Passivate.
3. Existing insert retainer in conjunction with supplied screws.
4. Metric dimensions (mm) are indicated in parentheses.

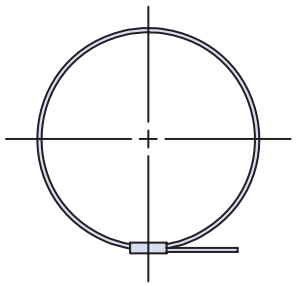
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527-561
RFI/EMI Composite Split Banding (DPXB) Backshell
for MIL-DTL-81659 Connector

CONNECTOR DESIGNATOR:	
?	MIL-DTL-81659

Product Series		Finish Symbol	Slot Option	Qwik-Ty Option	Pre-Coiled Band
527 - *Split Backshell*	561	XM *(See Table I)*	S *Omit for None*	T *Omit for None*	K *(600-052-1) Omit for None*
	Basic Part Number				





Sym K
Band

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527-561
RFI/EMI Composite Split Banding (DPXB) Backshell
for MIL-DTL-81659 Connector

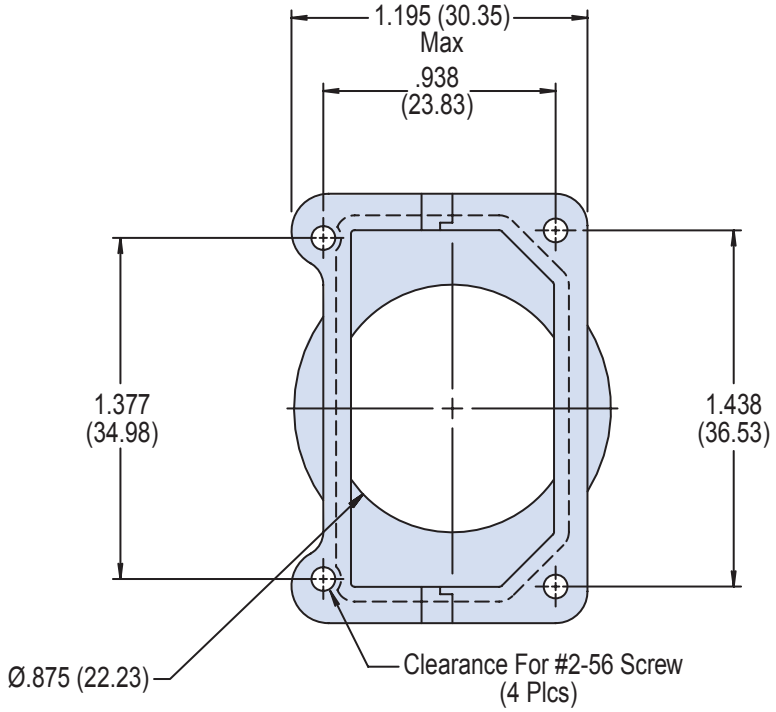


TABLE I: FINISH	
Symbol	**Finish Description**
XM	2000 Hour Corrosion Resistant Electroless Nickel
XO	No Plating
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/ Olive Drab over Electroless Nickel

APPLICATION NOTES

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Material/Finish:
   Backshell - High grade engineering thermoplastic/See Table I.
   Gasket - Metex/N.A
   Hardware - CRES/Passivate.
3. Existing insert retainer in conjunction with supplied screws.
4. Metric dimensions (mm) are indicated in parentheses.

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557-186
Composite RFI/EMI Banding Backshell
for MIL-DTL-24308 D-Subminiature Connectors

Basic Part Number	Basic Part Number	Connector Shell Size (See Table II)	Jackscrew Type	Cable Entry (See Table I)	Band Option Band Supplied (Omit for none)
557	T	186	XM	2	F0	B	1 - 02	S	K

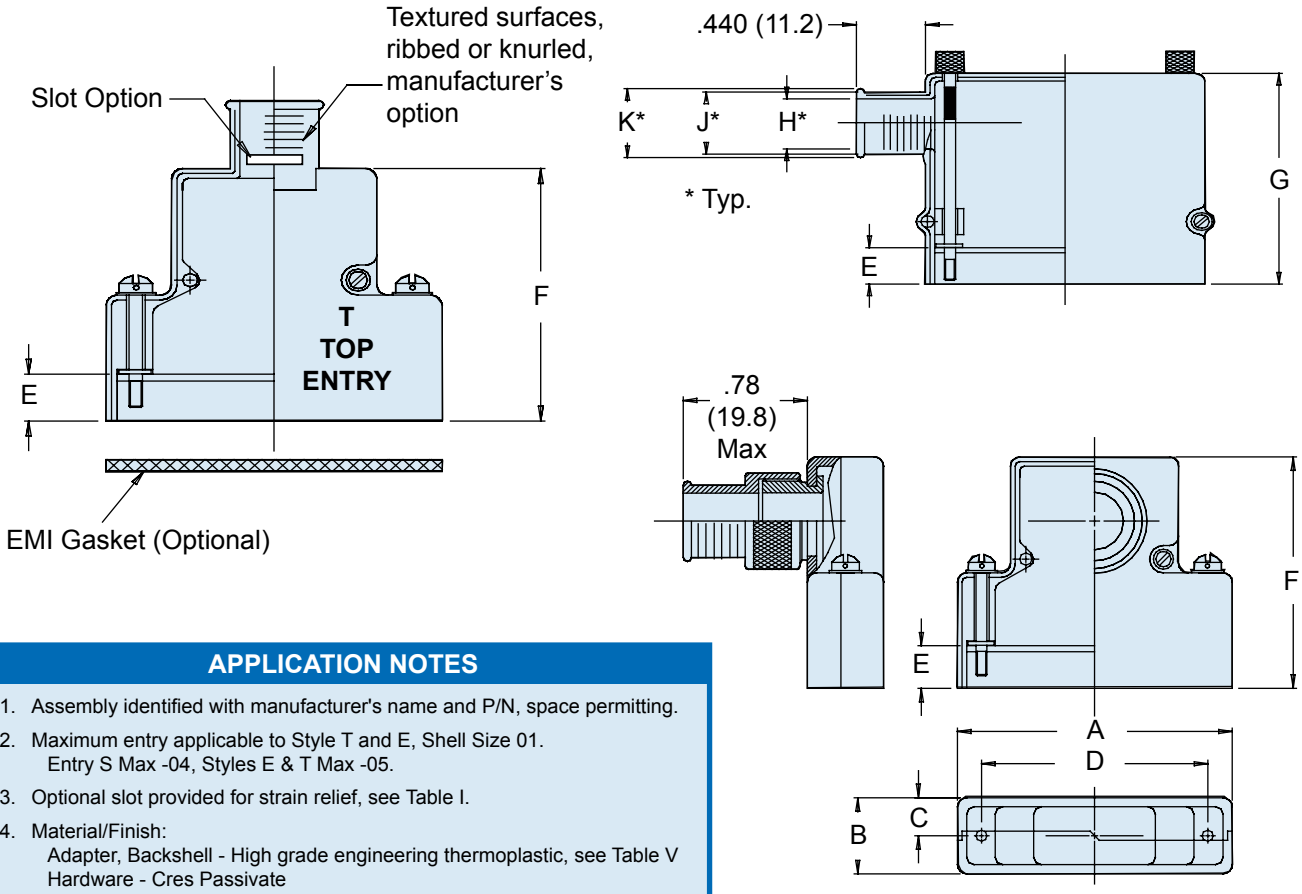
Cable Entry Style
T - Top
S - Side
E - End

Finish Symbol (*See Table III*)

Mounting Receptacle (*Table IV*)
CC - Cable-to-Cable Mounting
F0 - Front Mounting
R1-R7 - Rear Mounting

EMI Gasket Option
0 - Without EMI Gasket
1 - With EMI Gasket

Slot Option
Omit for Part with No Slot



APPLICATION NOTES

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Maximum entry applicable to Style T and E, Shell Size 01.
   Entry S Max -04, Styles E & T Max -05.
3. Optional slot provided for strain relief, see Table I.
4. Material/Finish:
   Adapter, Backshell - High grade engineering thermoplastic, see Table V
   Hardware - Cres Passivate
   Gasket - Metex/N.A.
   Washer - Nylon/N.A.
5. Metric dimensions (mm) in parentheses.

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557-186
Composite RFI/EMI Banding Backshell
for MIL-DTL-24308 D-Subminiature Connectors

Glenair®

TABLE V: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel
XB	No Plating–Black Base Material Non-Conductive

TABLE I: CABLE ENTRY

Dash No.	H Dia	J Dia	K Dia	X
01	.125 (3.2)	.250 (6.4)	.312 (7.9)	N/A
02	.250 (6.4)	.375 (9.5)	.438 (11.1)	.062 (1.6)
03	.312 (7.9)	.438 (11.1)	.500 (12.7)	.094 (2.4)
04	.375 (9.5)	.500 (12.7)	.562 (14.3)	.156 (4.0)
05	.438 (11.1)	.562 (14.3)	.625 (15.9)	.188 (4.8)
06	.500 (12.7)	.625 (15.9)	.688 (17.5)	.219 (5.6)
07	.562 (14.3)	.688 (17.5)	.750 (19.1)	.250 (6.4)
08	.625 (15.9)	.750 (19.1)	.812 (20.6)	.250 (6.4)
09	.750 (19.1)	.875 (22.2)	.937 (23.8)	.312 (7.9)
10	.875 (22.2)	1.000 (25.4)	1.062 (27.0)	.375 (9.5)
11	1.000 (25.4)	1.125 (28.6)	1.188 (30.2)	.375 (9.5)

TABLE II: FRONT MOUNTING DIMENSIONS

Shell Size	A	B Max	C	D ±.005 (.1)	E	F	G	Max Entry (See Note 2)
1	1.378 (35.0)	.624 (15.8)	.312 (7.9)	.984 (25.0)	.340 (8.6)	1.625 (41.3)	1.750 (44.5)	**04/05**
2	1.691 (43.0)	.624 (15.8)	.312 (7.9)	1.312 (33.3)	.340 (8.6)	1.625 (41.3)	1.750 (44.5)	**05**
3	2.250 (57.2)	.624 (15.8)	.312 (7.9)	1.852 (47.0)	.343 (8.7)	1.844 (46.8)	2.000 (50.8)	**05**
4	2.879 (73.1)	.624 (15.8)	.312 (7.9)	2.500 (63.5)	.343 (8.7)	1.844 (46.8)	2.000 (50.8)	**05**
5	2.785 (70.7)	.735 (18.7)	.375 (9.5)	2.406 (61.1)	.343 (8.7)	1.844 (46.8)	2.000 (50.8)	**07**

TABLE III: REAR MOUNTING DIMENSIONS

Dash No.	Panel Thickness	E	F		G	
			Sizes 1 & 2	Sizes 3 - 5	Sizes 1 & 2	Sizes 3 - 5
R1	.031 (.8)	.247 (6.3)	1.525 (38.7)	1.745 (44.3)	1.656 (42.1)	1.904 (48.4)
R2	.047 (1.2)	.231 (5.9)	1.509 (38.3)	1.728 (43.9)	1.640 (41.7)	1.888 (48.0)
R3	.062 (1.6)	.216 (5.5)	1.500 (38.1)	1.720 (43.7)	1.625 (41.3)	1.873 (47.6)
R4	.093 (2.4)	.185 (4.7)	1.470 (37.3)	1.690 (42.9)	1.594 (40.5)	1.842 (46.8)
R5	.104 (2.6)	.174 (4.4)	1.451 (36.9)	1.671 (42.4)	1.583 (40.2)	1.831 (46.5)
R6	.125 (3.2)	.153 (3.9)	1.430 (36.3)	1.650 (41.9)	1.563 (39.7)	1.811 (46.0)
R7	.156 (4.0)	.125 (3.2)	1.400 (35.6)	1.620 (41.1)	1.532 (38.9)	1.780 (45.2)

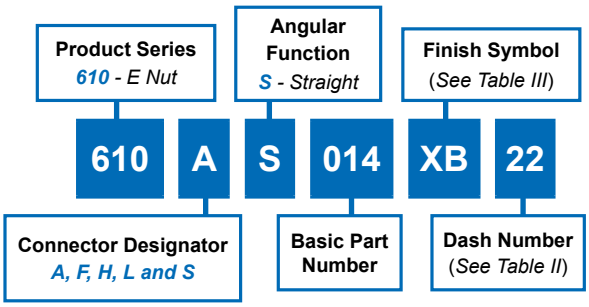
TABLE IV: CABLE-TO-CABLE MOUNTING DIMENSIONS

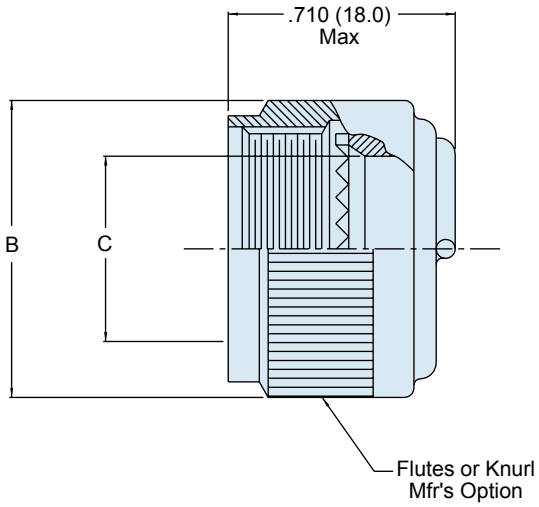
Shell Size	A	B Max	C	D ± .005 (0.1)	F	E +.030 (0.8)-.000	Max Entry (See Note 2)
1	1.363 (34.6)	.624 (15.8)	.322 (8.2)	.984 (25.0)	1.455 (37.0)	.170 (4.3)	05
2	1.691 (43.0)	.624 (15.8)	.322 (8.2)	1.312 (33.3)	1.455 (37.0)	.170 (4.3)	05
3	2.250 (57.2)	.624 (15.8)	.322 (8.2)	1.852 (47.0)	1.673 (42.5)	.172 (4.4)	05
4	2.879 (73.1)	.624 (15.8)	.322 (8.2)	2.500 (63.5)	1.673 (42.5)	.172 (4.4)	05
5	2.785 (70.7)	.735 (18.7)	.375 (9.5)	2.406 (61.1)	1.673 (42.5)	.172 (4.4)	07

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610-014
E-Nut Backshell
for Connector Designators A, F, L, S & H

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
S	PATT 105 / 603 / 608





NOTES

1. Metric dimensions (mm) are in parenthesis and are for reference only.
2. See Table I in Intro for front-end dimensional details.

TABLE II: DASH NUMBER

Shell Size		B Max	C Diameter Ref.
A, F, L, S	H		
03	--	.702 (17.3)	.270 (6.9)
08	09	.640 (16.3)	.270 (6.9)
10	11	.765 (19.4)	.375 (9.5)
12	13	.890 (22.6)	.511 (13.0)
14	15	1.015 (25.8)	.585 (14.9)
16	17	1.140 (29.0)	.710 (18.0)
18	19	1.265 (32.1)	.789 (20.0)
20	21	1.390 (35.3)	.914 (23.2)
22	23	1.454 (36.9)	1.039 (26.4)
24	25	1.594 (40.5)	1.154 (29.3)
61	--	1.640 (41.7)	1.194 (30.3)

TABLE III: FINISH

Symbol	Finish Description
XB	No Plating - Black Color
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

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620-042
Composite Strain-Relief Clamp
with Self-Locking Rotatable Coupling
Straight, 45° & 90°

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
L	MIL-DTL-38999 Series 1.5 (JN1003)
H	MIL-DTL-38999 Series III and IV
G	MIL-DTL-28840
U	DG123 and DG123A
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series
620 - Strain Relief Clamp

Angle and Profile
A - 90° Clamp
B - 45° Clamp
S - Straight

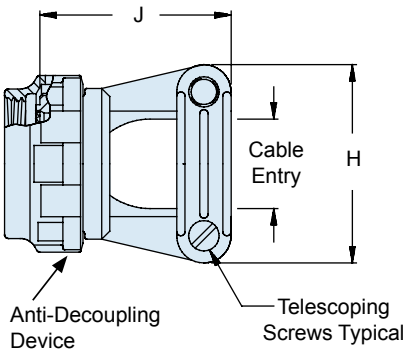
Finish Symbol
(See Table III)

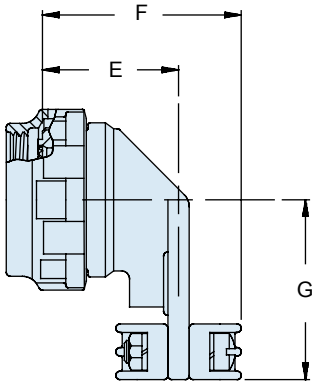
620	H	S	042	XO	19

Connector Designator
A, F, L, H, G and U

Basic Part Number

Connector Shell Size
(See Table II)





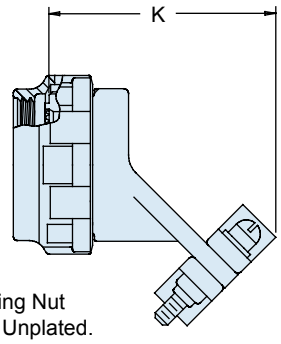


TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size For Connector Designator*					E	F	G	H	J	K	Cable Entry**
A	F/L	H	G	U	(Ref)	±.06 (1.5)	±.0 1.5)	±.06 (1.5)	±.06 (1.5)	Max	±.03 0.8
08	08	09	–	–	.63 (16.0)	.86 (21.8)	.88 (22.4)	.88 (22.4)	.80 (20.3)	1.32 (33.5)	.22 (5.6)
10	10	11	–	08	.65 (16.5)	.91 (23.1)	.94 (23.9)	.94 (23.9)	.88 (22.4)	1.35 (34.3)	.26 (6.6)
12	12	13	11	10	.71 (18.0)	1.02 (25.9)	1.03 (26.2)	1.17 (29.7)	1.00 (25.4)	1.43 (36.3)	.34 (8.6)
14	14	15	13	12	.76 (19.3)	1.13 (28.7)	1.13 (28.7)	1.28 (32.5)	1.00 (25.4)	1.48 (37.6)	.46 (11.7)
16	16	17	15	14	.80 (20.3)	1.26 (32.0)	1.31 (33.3)	1.41 (35.8)	1.13 (28.7)	1.58 (40.1)	.55 (14.0)
18	18	19	17	16	.83 (21.1)	1.31 (33.3)	1.38 (35.1)	1.50 (38.1)	1.19 (30.2)	1.70 (43.2)	.62 (15.7)
20	20	21	19	18	.90 (22.9)	1.37 (34.8)	1.50 (38.1)	1.56 (39.6)	1.25 (31.8)	1.74 (44.2)	.70 (17.8)
22	22	23	–	20	.94 (23.9)	1.45 (36.8)	1.63 (41.4)	1.69 (42.9)	1.38 (35.1)	1.79 (45.5)	.78 (19.8)
24	24	25	23	22	.97 (24.6)	1.52 (38.6)	1.75 (44.5)	1.82 (46.2)	1.50 (38.1)	1.83 (46.5)	.85 (21.6)
28	–	–	25	24	1.02 (25.9)	1.68 (42.7)	1.79 (45.5)	1.94 (49.3)	1.75 (44.5)	2.13 (54.1)	.95 (24.1)

TABLE III: FINISH

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XO	No Plating
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

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620-072
Composite Strain-Relief Clamp
with Self-Locking Rotatable Coupling
Straight, 45° & 90°

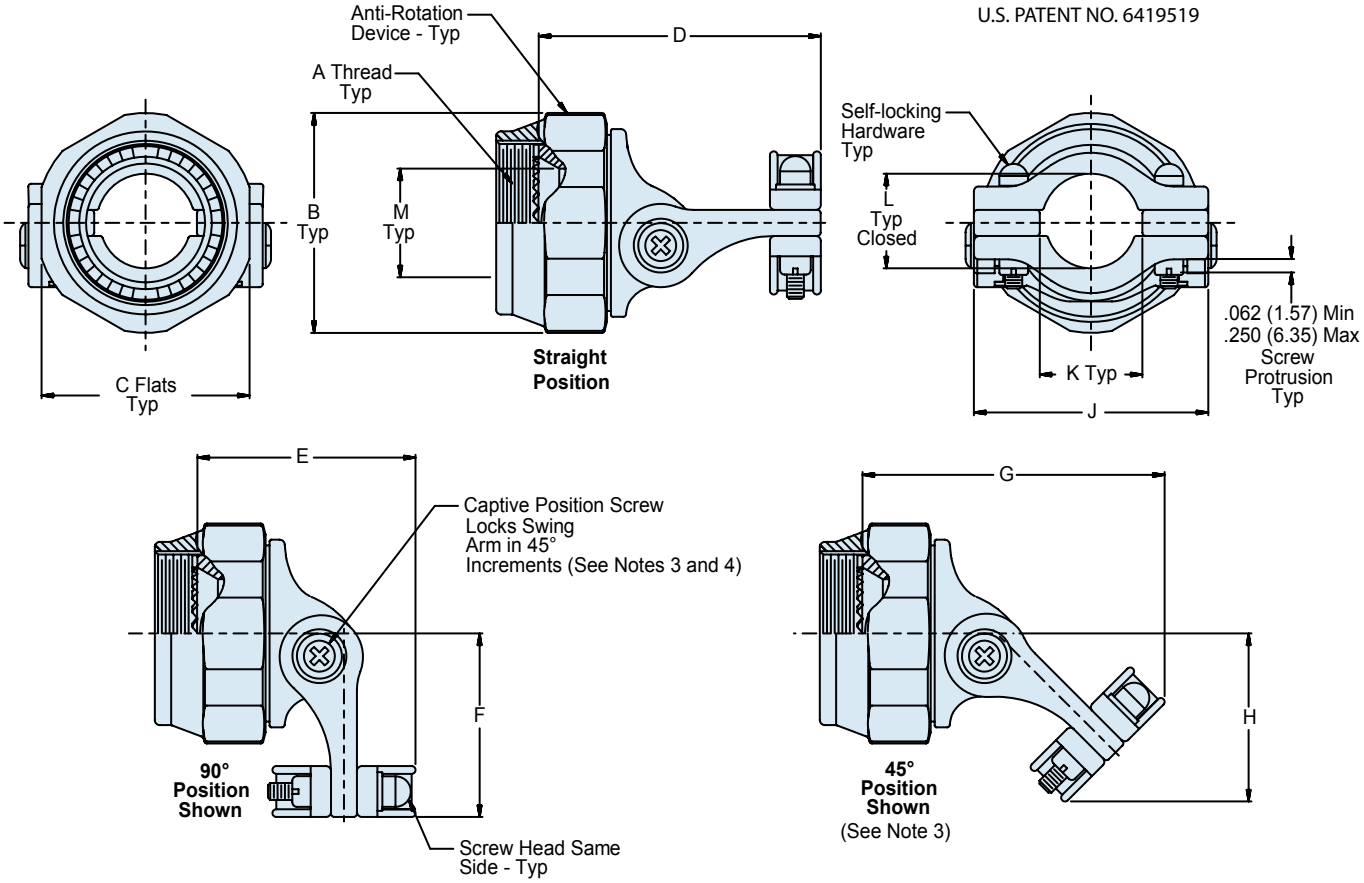
CONNECTOR DESIGNATOR:	
A	MIL-DTL-83723, Series III
F	MIL-DTL-38999 Series I and II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
STANDARD PROFILE	

Product Series	Basic Part Number	Dash Number
620 - Strain Relief Clamp		*(See Table I)*
620	H 072	XB 15

Connector Designator
A = MIL-DTL-83723 Series III
F = MIL-DTL-38999 Series I and II
H = MIL-DTL-38999 Series III and IV

Black Composite

U.S. PATENT NO. 6419519



APPLICATION NOTES

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Glenair 600 Series backshell assembly tools are recommended for assembly and installation.
3. Swing arm locks in 45° increments in sizes 09 through 25. Additional positioning increments is manufacturer's option.
4. Screw is captive to the arm when disengaged. When tightened, the screw shall not protrude into the inside surfaces.
5. Material/Finish:
   Clamp body, coupling nut, saddles - High grade engineering thermoplastic, black/No plating.
   Clamp hardware - CRES/Passivate.
   Anti-Rotation device - Corrosion resistant material.

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620-072
Composite Strain-Relief Clamp
with Self-Locking Rotatable Coupling
Straight, 45° & 90°

Glenair®

TABLE I: Dash Number, Shell Size Ref., Thread and Dimensions (Continued Below)											
Connector Designator A			Connector Designator F			Connector Designator H			B Max Dia	C Flats	
Dash No.	Shell Size Ref	A Thread Class 2B	Dash No.	Shell Size Ref	A Thread Class 2B	Dash No.	Shell Size Ref	A Thread ISO Metric		Max	Min
08	8	1/2-20 UNF	08	08	7/16-28 UNF	09	A	M12 x 1.0-6H	.812 (20.62)	.750 (19.05)	.736 (18.69)
10	10	5/8-24 UNEF	10	10	9/16-24 UNEF	11	B	M15 x 1.0-6H	.938 (23.83)	.875 (22.23)	.860 (21.84)
12	12	3.4-20 UNEF	12	12	11/16-24 UNEF	13	C	M18 x 1.0-6H	1.125 (28.58)	1.000 (25.40)	.980 (24.89)
14	14	7/8-20 UNEF	14	14	13/16-20 UNEF	15	D	M22 x 1.0-6H	1.250 (31.75)	1.125 (28.58)	1.000 (25.40)
16	16	1-20 UNEF	16	16	15/16-20 UNEF	17	E	M25 x 1.0-6H	1.375 (34.93)	1.250 (31.75)	1.224 (31.09)
18	18	1 1/16-18 UNEF	18	18	1 1/16-18 UNEF	19	F	M28 x 1.0-6H	1.500 (38.10)	1.375 (34.93)	1.348 (34.24)
20	20	1 3/16-18 UNEF	20	20	1 3/16-18 UNEF	21	G	M31 x 1.0-6H	1.625 (41.28)	1.500 (38.10)	1.469 (38.00)
22	22	1 5/16-18 UNEF	22	22	1 5/16-18 UNEF	23	H	M34 x 1.0-6H	1.750 (44.45)	1.625 (41.28)	1.581 (40.16)
24	24	1 7/16-18 UNEF	24	24	1 7/16-18 UNEF	25	I	M37 x 1.0-6H	1.875 (47.63)	1.750 (44.45)	1.690 (42.93)

TABLE I: Dash Number, Shell Size Ref., Thread and Dimensions (Continued From Above)								
D Max	E Max	F Max	G Max	H Max	J Max	K Min	L Max	M Min
1.400 (35.56)	.850 (21.59)	.840 (21.34)	1.330 (33.78)	.760 (19.30)	.980 (24.89)	.220 (5.59)	.265 (6.73)	.264 (6.71)
1.440 (36.58)	.890 (22.61)	.900 (22.86)	1.390 (35.31)	.820 (20.83)	1.050 (26.67)	.270 (6.86)	.310 (7.87)	.390 (9.91)
1.520 (38.61)	1.040 (26.42)	1.000 (25.40)	1.540 (39.12)	.920 (23.37)	1.200 (30.48)	.350 (8.89)	.390 (9.91)	.504 (12.80)
1.530 (38.86)	1.140 (28.96)	1.070 (27.18)	1.630 (41.40)	.980 (24.89)	1.300 (33.02)	.470 (11.94)	.506 (12.85)	.630 (16.00)
1.630 (41.40)	1.260 (32.00)	1.130 (28.70)	1.760 (44.70)	1.080 (27.43)	1.440 (36.58)	.550 (13.97)	.591 (15.01)	.756 (19.20)
1.630 (41.40)	1.360 (34.54)	1.200 (30.48)	1.830 (46.48)	1.120 (28.45)	1.560 (39.62)	.620 (15.75)	.661 (16.79)	.843 (21.41)
1.780 (45.21)	1.450 (36.83)	1.260 (32.00)	1.980 (50.29)	1.210 (30.73)	1.690 (42.93)	.700 (17.78)	.744 (18.90)	.969 (24.61)
1.810 (45.97)	1.530 (38.86)	1.330 (33.78)	2.050 (52.07)	1.270 (32.26)	1.770 (44.96)	.780 (19.81)	.826 (20.98)	1.091 (27.69)
1.840 (46.74)	1.600 (40.64)	1.400 (35.56)	2.130 (54.10)	1.330 (33.78)	1.890 (48.01)	.850 (21.59)	.896 (22.76)	1.217 (30.91)

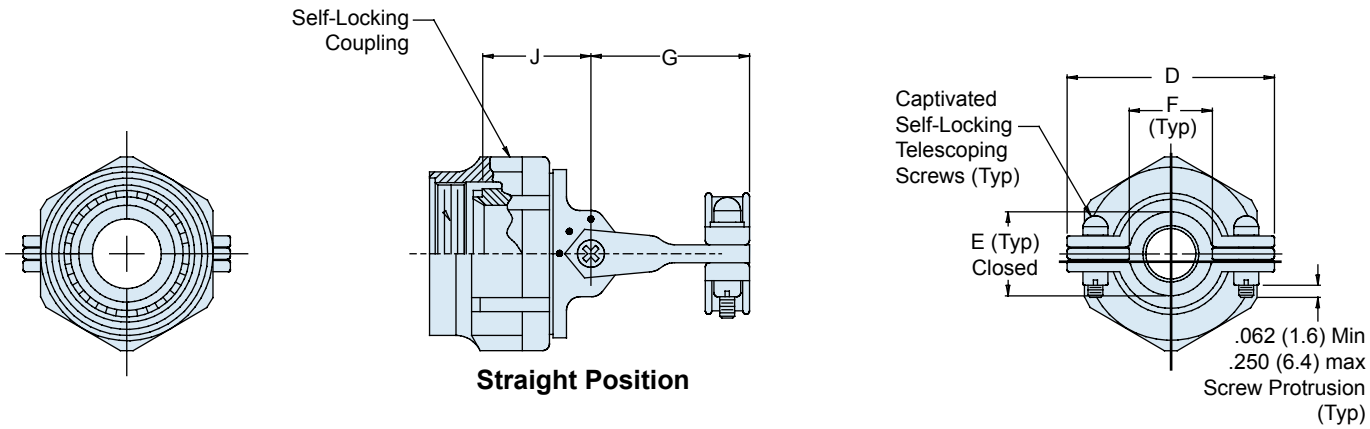
TABLE III: FINISH	
Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)

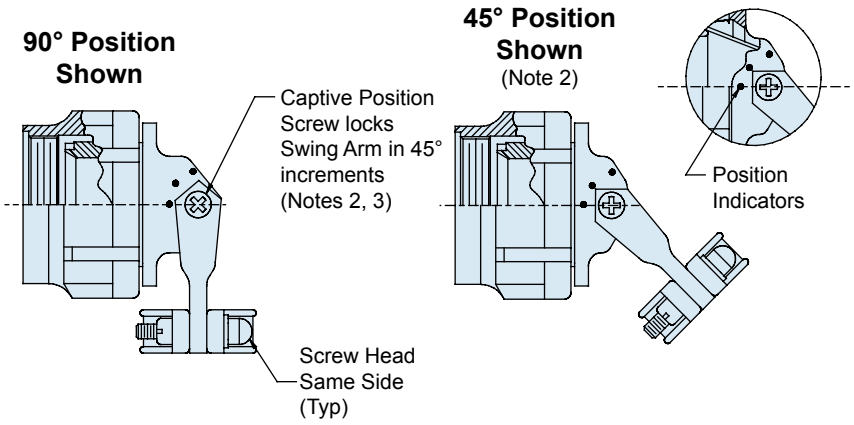
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627-122
Composite Swing-Arm Strain Relief
with Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
LOW PROFILE	

Product Series		Basic Part Number		Dash Number
627 - Swing-Arm Strain Relief				*(See Table II)*
627	A	122	XO	16
	Connector Designator *A, F and H*		Finish Symbol *(See Table III)*	





U.S. PATENT NO. 6419519

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TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size for Connector Designator*			E		F		G	H	J	
A	F	H	±.06 (1.5)		Min		Max	Max	±.03	0.8
08	08	09	.265	(6.7)	.220	(5.9)	1.060 (26.9)	.980 (24.9)	.880	(22.4)
10	10	11	.310	(7.9)	.270	(6.9)	1.090 (27.7)	1.050 (26.7)	.910	(23.1)
12	12	13	.390	(9.9)	.350	(8.9)	1.180 (30.0)	1.200 (30.5)	.950	(24.1)
14	14	15	.506	(12.9)	.470	(11.9)	1.240 (31.5)	1.300 (33.0)	1.010	(25.7)
16	16	17	.591	(15.0)	.550	(14.0)	1.320 (33.5)	1.440 (36.6)	1.050	(26.7)
18	18	19	.661	(16.8)	.620	(15.7)	1.390 (35.3)	1.560 (39.6)	1.080	(30.0)
20	20	21	.744	(18.9)	.700	(17.8)	1.550 (39.4)	1.690 (42.9)	1.120	(28.4)
22	22	23	.826	(21.0)	.780	(19.8)	1.550 (39.4)	1.770 (45.0)	1.160	(29.5)
24	24	25	.896	(22.8)	.850	(21.6)	1.610 (40.9)	1.890 (48.0)	1.200	(30.5)

TABLE III: FINISH

Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XO	No Plating - Brown Color (Non-Conductive Finish)

APPLICATION NOTES

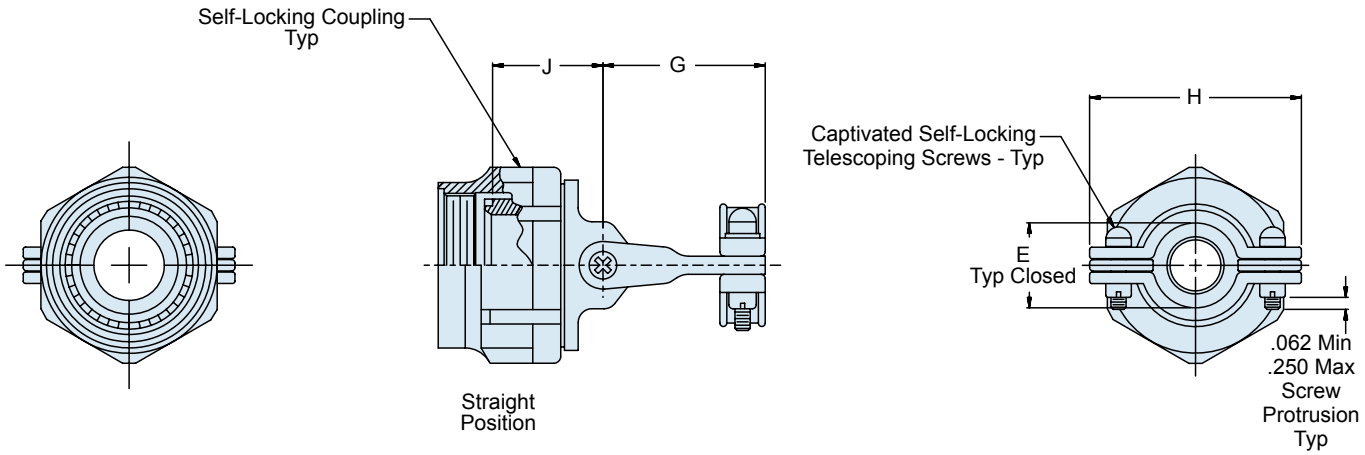
1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Glenair series 600 Backshell assembly Tools are recommended for assembly and installation.
3. Swing Arm locks in 45° increments– Sizes 08 thru 24, additional positioning increments are manufacturer's option.
4. Captive Screw can remain engaged to the body when positioning the Arm. When tightened, the Screw shall not protrude into the inside surfaces.
5. Coupling nut supplied unplated.
6. Consult factory for additional entry sizes available.
7. See Table I in Intro for front-end dimensional details.

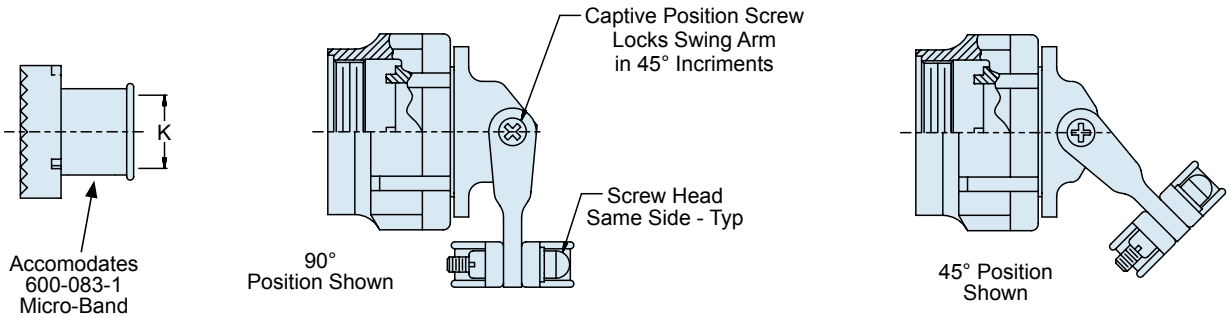
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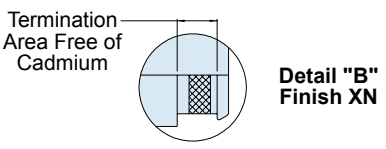
627-142
Composite Swing-Arm Strain Relief
with Keyed Banding Insert and Self-Locking Coupling

CONNECTOR DESIGNATOR:	
A	MIL-DTL-5015, -26482 Series II, and -83723 Series I and III
F	MIL-DTL-38999 Series I, II
H	MIL-DTL-38999 Series III and IV
SELF-LOCKING	
ROTATABLE COUPLING	
LOW PROFILE	

Product Series		Basic Part Number		Dash Number	
627 - Swing-Arm Strain Relief				(See Table II)	
627	A	142	XO	16	K
	Connector Designator A, F, H		Finish Symbol (See Table III)		Band Option K - Band (600-083) (Omit for None)







Detail "B" Finish XN

U.S. PATENT NO. 6419519

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TABLE II: DASH NUMBER

Shell Size		E ± .031	G Max	H Max	J ± .06	K Diameter
A, F	H					A, F and H Code
08	09	.265 (6.7)	1.06 (26.9)	.98 (24.9)	.94 (23.9)	.140 (3.6)
10	11	.312 (7.9)	1.09 (27.7)	1.05 (26.7)	.97 (24.6)	.270 (6.9)
12	13	.438 (11.1)	1.18 (30.0)	1.20 (30.5)	1.03 (26.2)	.390 (9.9)
14	15	.500 (12.7)	1.24 (31.5)	1.30 (33.0)	1.09 (27.7)	.512 (13.0)
16	17	.625 (15.9)	1.32 (33.5)	1.44 (36.6)	1.12 (28.4)	.637 (16.2)
18	19	.688 (17.5)	1.39 (35.3)	1.56 (39.6)	1.15 (29.2)	.757 (19.2)
20	21	.750 (19.1)	1.55 (39.4)	1.69 (42.9)	1.18 (30.0)	.881 (22.4)
22	23	.812 (20.6)	1.55 (39.4)	1.77 (45.0)	1.25 (31.8)	1.006 (25.6)
24	25	.938 (23.8)	1.61 (40.9)	1.89 (48.0)	1.28 (32.5)	1.131 (28.7)

TABLE III: FINISH

Symbol	Finish Description	Component
XB	No Plating, Black	Clamp Body, Coupling Nut, Saddles
	Electroless Nickel/Brass	Interface Ring
XMT	No Plating, Black	Clamp Body, Coupling Nut, Saddles
	Ni-PTFE, Nickel-Fluorocarbon Polymer	Interface Ring
XN	No Plating, Black	Clamp Body, Coupling Nut, Saddles
	Cadmium, Olive Drab/Brass (See Detail B)	Interface Ring

APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Glenair series 600 Backshell assembly Tools are recommended for assembly and installation.
3. Swing Arm locks in 45° increments–Sizes 10 thru 24, additional positioning increments are manufacturer's option.
4. Captive Screw can remain engaged to the body when positioning the Arm. When tightened, the Screw shall not protrude into the inside surfaces.
5. Coupling nut supplied unplated.
6. Consult factory for additional entry sizes available.
7. See Table I in Intro for front-end dimensional details.
8. K diameter may be smaller than required to accomodate fully populated connector. Consult engineering department for additional information.

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770-001
Straight and 90° Shrink Boot
Heat Shrink Molded Part

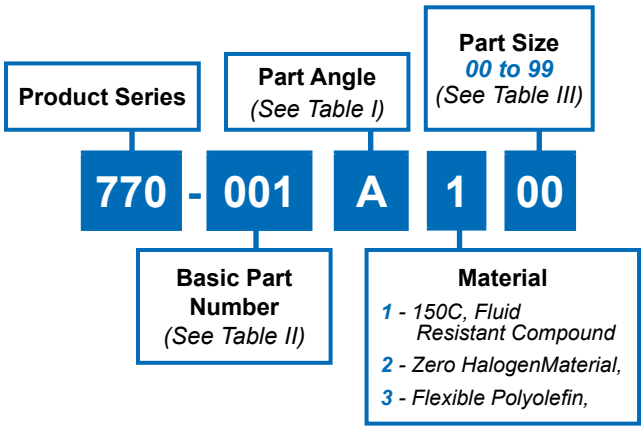


TABLE I: ANGULAR FUNCTION

Symbol	Angle
A	90°
S	Straight

TABLE II: BASIC PART NUMBER

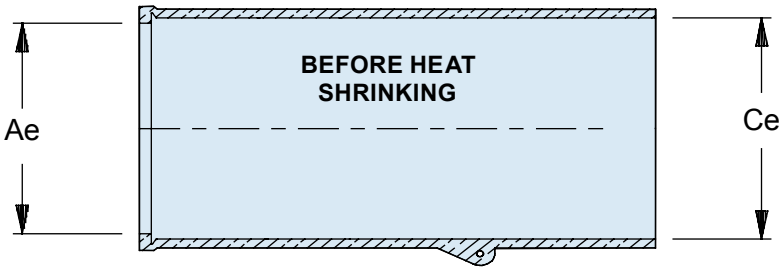
Basic No.	Description of part
001	Lipped Boot with Eyelet

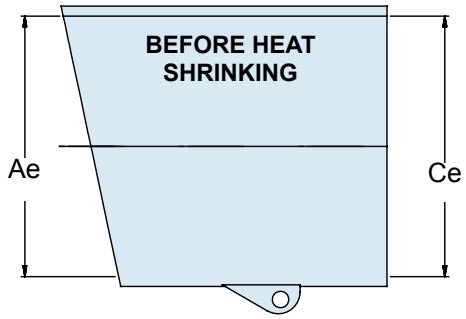
TABLE III: STRAIGHT, LIPPED BOOT WITH EYELET

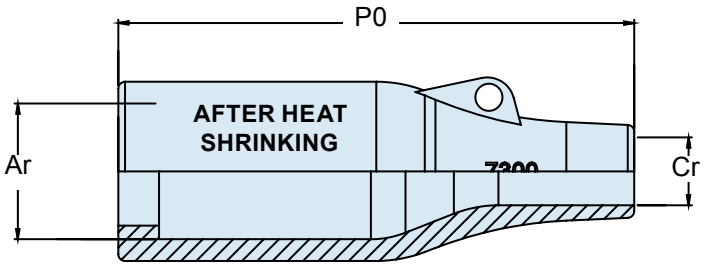
770-001 Size	Ae Min	Ar Max	Ce Min	Cr Max	P0 ± 10%
03	.94 (24)	.41 (10.5)	.94 (24)	.20 (5.0)	1.49 (38.0)
04	1.18 (30)	.55 (14)	1.18 (30)	.24 (6)	2.16 (55.0)
05	1.26 (32)	.71 (18)	1.26 (32)	.28 (7)	2.64 (67.0)
06	1.42 (36)	.87 (22)	1.42 (36)	.33 (8.5)	3.15 (80.0)
07	1.69 (43)	1.10 (28)	1.69 (43)	.39 (10)	3.90 (99.0)
08	2.36 (60)	1.37 (35)	2.36 (60)	.59 (15)	5.12 (130)

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770-001
Straight and 90° Shrink Boot
Heat Shrink Molded Part







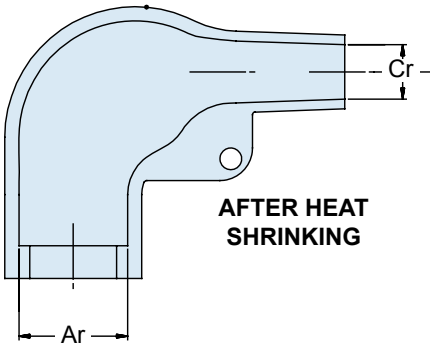


TABLE III: 90°, LIPPED BOOT WITH EYELET

770-001A Size	Ae Min Type 1 Mat	Ar Max Type 1 Mat	Ce Min Type 1 Mat	Cr Max Type 1 Mat
03	.94 (24)	.393 (10.0)	.94 (24)	.196 (5.0)
04	1.18 (30)	.53 (13.5)	1.18 (30)	.217 (5.5)
05	1.26 (32)	.71 (18)	1.26 (32)	.28 (7)
06	1.42 (36)	.89 (22.5)	1.42 (36)	.33 (8.5)
07	1.69 (43)	1.10 (28)	1.69 (43)	.39 (10)
08	2.36 (60)	1.37 (35)	2.36 (60)	.59 (15)

- Standard Material Fluid Resistant Cross-Linked Elastomer per VG95343 Part 6
- Low Toxicity Material Fluid Resistant Cross-Linked Elastomer per NAVSEA 5617649

APPLICATION NOTES

1. When the minimum number of conductors are used, wire bundle/cable may require build-up to Cr^2 max.
2. Sizes 00 to 02 do not contain eyelet.
3. Refer to GAP-070 for shrink boot installation guide on composite shells.

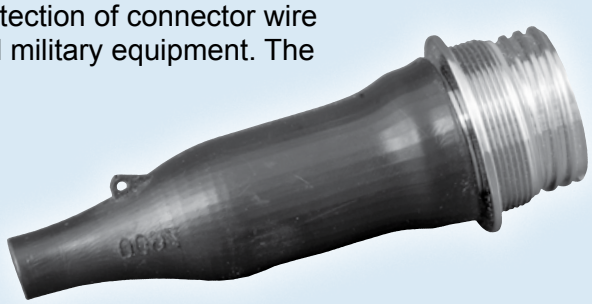
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Glenair Environmental Shrink-Boot Adapters and Series 770 Boots

Easy-to-use, semi-rigid heat-shrinkable boots offer excellent electrical, mechanical and environmental protection. Made from flame-retardant elastomeric material, these adhesive-lined boots are resistant to high temperature and chemicals. Shrink boot material is flame retardant, and the “2” option can be specified for compliance to NES smoke and toxicity requirements.

Heating the boot causes the boot to shrink while an adhesive lining bonds the boot to the connector and cable and fills small gaps for a complete seal. Choose straight cable exit or right angle exit.

Heat-shrinkable boots are ideal for environmental protection of connector wire terminations in most harsh environments including tactical military equipment. The products also supply a modicum of strain-relief.



Glenair offers a full range of sizes and shapes to accommodate mil-standard circular and rectangular connectors and backshells. Boots are also available for Series 80 Mighty Mouse connectors and accessories.

This catalog contains a wide selection of connector accessory backshells that accomodate shrink boots. These products may now be ordered with Glenair Series 770 Shrink Boots:

A Complete Range of Glenair Composite Shrink Boot Adapters	Part Number	Page
Shrink Boot Adapter with Rotatable Coupling Nut ; Straight, 45° and 90°	310-045	A-2
Shrink Boot Adapter with Direct Coupling - Straight	310-017	A-4
Lamp Base EMI/RFI Environmental Adapter with Shrink Boot Porch and Direct Coupling - Straight	311-063	A-8
EMI/RFI Banding Backshell Shield Sock with Shrink Boot Porch and Self Locking Rotatable Coupling - Straight, 45° and Ultra Low Profile 90°. Uses Micro Band to Attach Shield	319-134	A-16
TEMI/RFI Shield Sock Strain Relief with Shrink Boot Porch and Self Locking Rotatable Coupling - Straight, 45° and 90°	319-136	A-18
Knit Braid Style EMI/RFI O-Ring Equipped Shield Termination Backshell with Shrink Boot Adapter and Rotatable Coupling	380-132	A-54
EMI/RFI Micro-Banding Backshell with Shrink Boot Groove and Self Locking Rotatable Coupling - Straight, 45° and Ultra Low Profile 90°	440-144	A-70
EMI/RFI Banding Backshell with Shrink Boot Groove and Self Locking Rotatable Coupling - Standard Profile Straight, 45° and 90°	447-325	A-72
EMI/RFI Micro-Banding Backshell with Shrink Boot Groove and Self Locking Rotatable Coupling - Standard Profile Straight, 45° and 90°	447-326	A-74
EMI/RFI Banding Backshell with Qwik-Ty Strain Relief and Shrink Boot Groove - Standard Profile Straight and 90°	447-327	A-76
Shrink Boot Conduit Fitting for Glenair Series 74 Helical Convoluted Tubing	712S269	C-22

Protect your Connector Investment with Protective Covers and Dummy Stowage Receptacles

Glenair composite protective covers reduce weight while providing reliable protection of connectors and contacts

Glenair makes a full range of composite plug and receptacle covers for 5015, 28840, 38999 and 83723 series connectors. Protective covers are a critical component in interconnect systems where maintenance and test cycles can lead to damage of exposed connectors. Customers may select from split and solid ring designs equipped with rope, sash and bead style chains made from either nylon or stainless steel. Conductive and nonconductive plating options are available, to match the conductivity and impedance requirements of the application and the connector. All covers meet the intermateability requirements for the specified connector series. For connector series not shown in this catalog please consult the factory. For a listing of protective covers in stock, please see our *Same Day Inventory listing* on our website at www.glenair.com. Samples are always available upon request.

Electrically conductive RFI/EMI covers

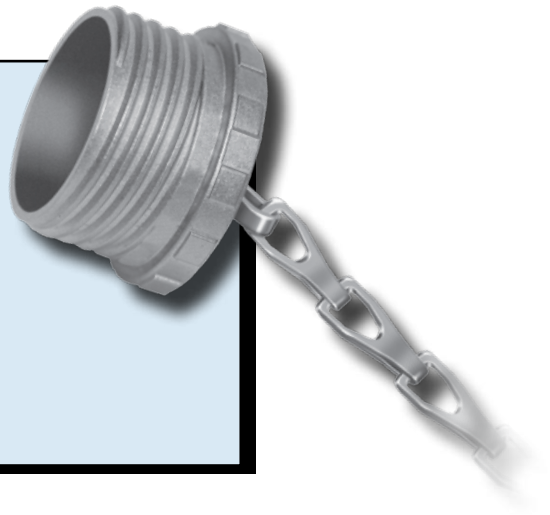
Non-conductive versions available

MIL-DTL-5015, MIL-DTL-38999, MIL-DTL-28840, and MIL-DTL-83723 designs

Lower weight than comparable metal components

100% corrosion free materials

Complete range of ring styles and attachment options



Errata

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

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Dimensional Tables
Protective Cover Attachments

TABLE III	
SYM	ATTACHMENT TYPE
D	Bead Chain, CRES, Passivate
F	Wire Rope, Nylon Jacket
G	Nylon Rope
H	Wire Rope, Fluoropolymer Jacket
N	No Attachment
R	Wire Rope, PVC Jacket
S	#8 Sash Chain, CRES, Passivate
T	Wire Rope, No Jacket
U	Wire Rope, Polyurethane Jacket with Terminal

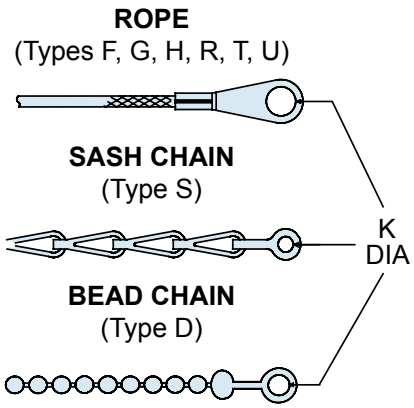


TABLE IV	
DASH NO	K DIA ±.010 (0.3)
01	.140 (3.6)
02	.182 (4.6)
03	.191 (4.9)
04	.197 (5.0)
05	.167 (4.2)
06	.125 (3.2)
07	.218 (5.5)
09	.156 (4.0)

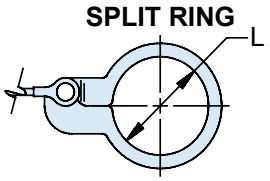


TABLE V	
DASH NO	L DIA ±.015 (0.4)
50	.425 (10.8)
52	.485 (12.3)
54	.640 (16.3)
56	.750 (19.1)
58	.890 (22.6)
60	1.015 (25.8)
62	1.095 (27.8)
64	1.130 (28.7)
66	1.250 (31.8)
68	1.350 (34.3)
70	1.390 (35.3)
72	1.485 (37.7)
74	1.625 (41.3)
76	1.750 (44.5)
78	1.875 (47.6)
80	1.980 (50.3)
82	2.060 (52.3)
84	2.235 (56.8)
86	2.310 (58.7)
88	2.475 (62.9)
90	2.655 (67.4)
92	2.810 (71.4)
94	3.045 (77.3)

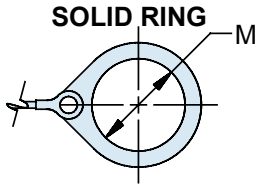


TABLE VI	
DASH NO	M DIA ±.015 (0.4)
08	.468 (11.9)
10	.593 (15.1)
12	.718 (18.2)
13	.765 (19.4)
14	.844 (21.4)
15	.890 (22.6)
16	.968 (24.6)
17	1.015 (25.8)
18	1.093 (27.8)
19	1.140 (29.0)
20	1.203 (30.6)
21	1.265 (32.1)
22	1.343 (34.1)
23	1.453 (36.9)
24	1.484 (37.7)
25	1.577 (40.1)
27	1.640 (41.7)
28	1.687 (42.8)
29	1.765 (44.8)
30	1.890 (48.0)
31	1.953 (49.6)
32	1.968 (50.0)
33	2.077 (52.8)
35	2.140 (54.4)
36	2.187 (55.5)
40	2.406 (61.1)
44	2.656 (67.5)
48	3.031 (77.0)

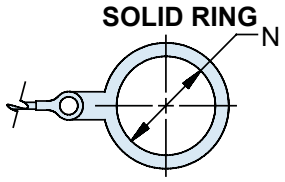


TABLE VII	
DASH NO	N DIA ±.015 (0.4)
100	.391 (9.9)
101	.516 (13.1)
102	.583 (14.8)
103	.641 (16.3)
104	.708 (18.0)
105	.766 (19.5)
205	.788 (20.0)
106	.896 (22.2)
206	.907 (23.0)
107	1.016 (25.8)
207	1.025 (26.0)
108	1.141 (29.0)
208	1.203 (30.6)
109	1.266 (32.2)
110	1.391 (35.3)
111	1.521 (38.6)
211	1.536 (39.0)
112	1.641 (41.7)
113	1.766 (44.9)
114	1.891 (48.0)
115	2.078 (52.8)
116	2.406 (61.1)
117	2.510 (63.8)

Metric dimensions (mm) are in parentheses and are for reference only.

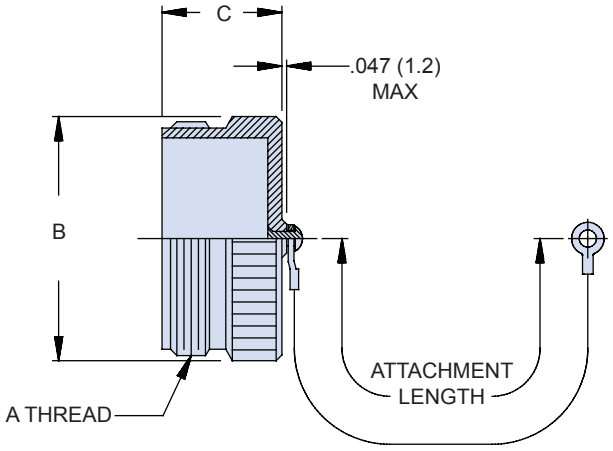
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Basic Part Number	Connector Shell Size	Attachment Length			
660-045 - Plug 660-046 - Receptacle	(See Table I)	(In Inches)			
660-045	XO	20	R	6 -	04
	Finish Symbol (See Table II)		Attachment Type See Table III on Page B-2		Ring Style Dash Number See Tables IV, V, VI and VII on Page B-2

TABLE II

Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

660-045
MIL-DTL-5015 PLUG COVER



660-046
MIL-DTL-5015 RECEPTACLE COVER

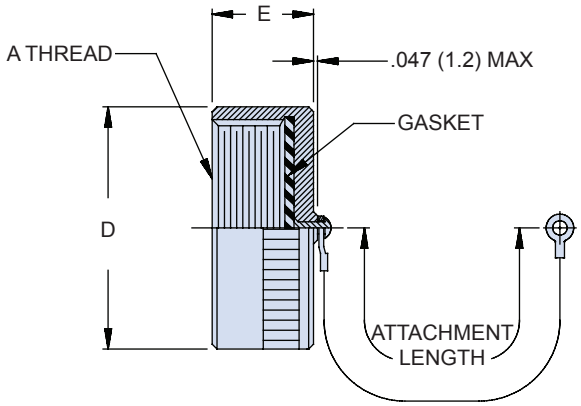


TABLE I: CONNECTOR SHELL SIZE ORDER NUMBER

SHELL SIZE	A THREAD	B MAX	C MAX	D MAX	E MAX
08	1/2 - 28 UNEF	.562 (14.3)	.656 (16.7)	.688 (17.5)	.465 (11.8)
10	5/8 - 24 UNEF	.687 (17.4)	.656 (16.7)	.815 (20.7)	.465 (11.8)
12	3/4 - 20 UNEF	.812 (20.6)	.844 (21.4)	1.000 (25.4)	.465 (11.8)
14	7/8 - 20 UNEF	.937 (23.8)	.844 (21.4)	1.125 (28.6)	.465 (11.8)
16	1 - 20 UNEF	1.062 (27.0)	.844 (21.4)	1.188 (30.2)	.465 (11.8)
18	1 1/8 - 18 UNEF	1.187 (30.1)	.844 (21.4)	1.344 (34.1)	.465 (11.8)
20	1 1/4 - 18 UNEF	1.312 (33.3)	.844 (21.4)	1.469 (37.3)	.465 (11.8)
22	1 3/8 - 18 UNEF	1.437 (36.5)	.844 (21.4)	1.594 (40.5)	.465 (11.8)
24	1 1/2 - 18 UNEF	1.562 (39.7)	.844 (21.4)	1.719 (43.7)	.465 (11.8)
28	1 3/4 - 18 UNS	1.812 (46.0)	.844 (21.4)	1.969 (50.0)	.531 (13.5)
32	2 - 18 UNS	2.062 (52.4)	.844 (21.4)	2.219 (56.4)	.531 (13.5)
36	2 1/4 - 16 UN	2.312 (58.7)	.844 (21.4)	2.469 (62.7)	.531 (13.5)
40	2 1/2 - 16 UN	2.562 (65.1)	.844 (21.4)	2.719 (69.1)	.531 (13.5)
44	2 3/4 - 16 UN	2.812 (71.4)	.844 (21.4)	2.969 (75.4)	.531 (13.5)
48	3 - 16 UN	3.062 (77.8)	.844 (21.4)	3.188 (81.0)	.531 (13.5)

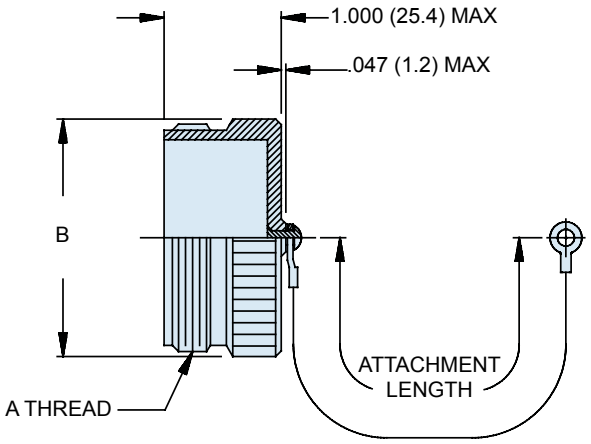
Metric dimensions (mm) are in parentheses and are for reference only.

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660-047 • 660-048
Composite MIL-DTL-28840
Protective Covers

Basic Part Number	Connector Shell Size	Attachment Length			
660-047 - Plug 660-048 - Receptacle	(See Table I)	(In Inches)			
660-047	XO	23	R	6	04
	Finish Symbol (See Table II)		Attachment Type See Table III on Page B-2		Ring Style Dash Number See Tables IV, V, VI and VII on Page B-2

660-047
MIL-DTL-28840 PLUG COVER



660-048
MIL-DTL-28840 RECEPTACLE COVER

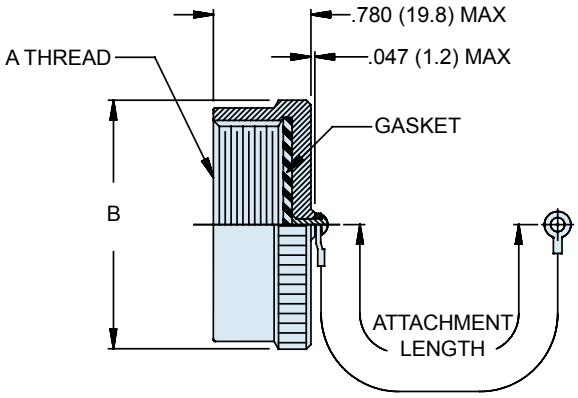


TABLE I: CONNECTOR SHELL SIZE ORDER NUMBER

DESIG-NATOR (REF)	SHELL SIZE	A THREAD	B MAX	
			In	mm
A	11	.750 -.1P-.2L-DS	1.028	(26.1)
B	13	.875 -.1P-.2L-DS	1.141	(29.0)
C	15	1.062 -.1P-.2L-DS	1.263	(32.1)
D	17	1.125 -.1P-.2L-DS	1.387	(35.2)
E	19	1.312 -.1P-.2L-DS	1.513	(38.4)
F	23	1.500 -.1P-.2L-DS	1.703	(43.5)
G	25	1.625 -.1P-.2L-DS	1.825	(46.4)
H	29	1.812 -.1P-.2L-DS	2.143	(54.4)
J	33	2.000 -.1P-.2L-DS	2.329	(59.2)

TABLE II

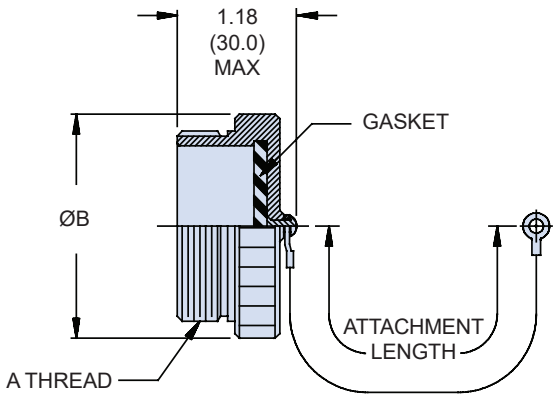
Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

Metric dimensions (mm) are in parentheses and are for reference only.

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Basic Part Number	Connector Shell Size	Attachment Length			
660-049 - Plug 660-050 - Receptacle	(See Table I)	(In Inches)			
660-049	XO	21	R	6	- 04
	Finish Symbol (See Table II)	Attachment Type See Table III on Page B-2		Ring Style Dash Number See Tables IV, V, VI and VII on Page B-2	

660-049
MIL-DTL-38999/32
PLUG COVER



660-050
MIL-DTL-38999/33
RECEPTACLE COVER

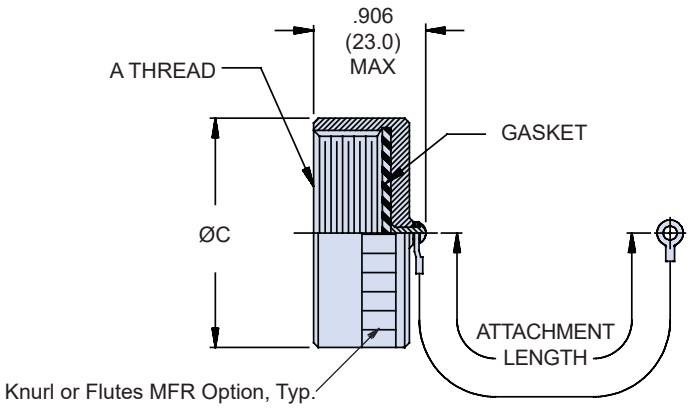


TABLE I: CONNECTOR SHELL SIZE ORDER NUMBER

SHELL SIZE	A THREAD		B DIA MAX		C DIA MAX	
09	.6250	-0.1P-0.3L-TS	.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: Finish

Code	Finish Description
XM	1000 Hr. Corrosion-Resistant Electroless Nickel
XW	1000 Hr. Corrosion-Resistant Cadmium Olive Drab over Electroless Nickel
XB	No Plating - Black Color
XV	No Plating - Purple Color

Metric dimensions (mm) are in parentheses and are for reference only.

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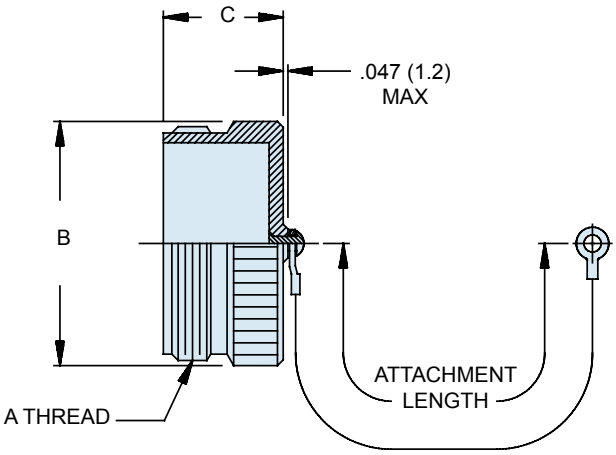
660-077 • 660-078
Glenair Composite 190 Series
Protective Covers

Basic Part Number	Connector Shell Size	Attachment Length			
660-077 - Plug 660-078 - Receptacle	(See Table I)	(In Inches)			
660-077	XO	20	R	6	04
	Finish Symbol (See Table II)	Attachment Type See Table III on Page B-2		Ring Style Dash Number See Tables IV, V, VI and VII on Page B-2	

TABLE II

Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

660-077
Glenair 190-015 PLUG COVER



660-078
Glenair 190-016 RECEPTACLE COVER

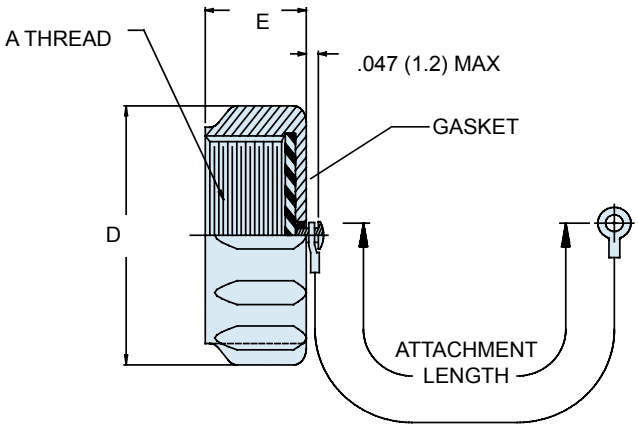


TABLE I: CONNECTOR SHELL SIZE ORDER NUMBER

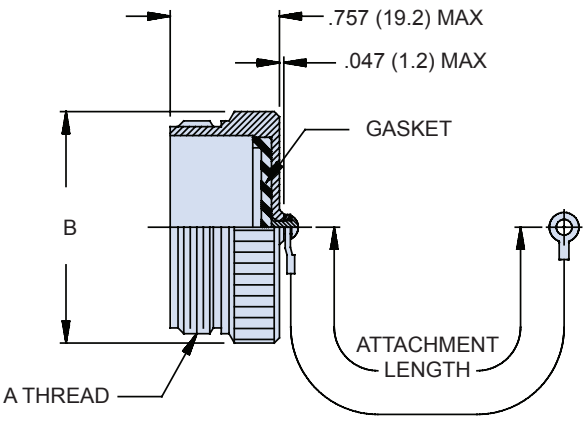
SHELL SIZE	A THREAD	B MAX	C MAX	D MAX	E MAX
10SL	.625 - .1P-1L	1.125 (28.6)	1.093 (27.8)	1.156 (29.4)	.750 (19.1)
14S	.875 - .1P-1L	1.312 (33.3)	1.093 (27.8)	1.343 (34.1)	.719 (18.3)
18	1.125 - .1P-1L	1.565 (39.8)	1.093 (27.8)	1.596 (40.5)	.975 (24.8)

Metric dimensions (mm) are in parentheses and are for reference only.

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Basic Part Number	Connector Shell Size	Attachment Length				
660-051 - Plug 660-052 - Receptacle	(See Table I)	(In Inches)				
660-051	XO	20	R	6	-	04
	Finish Symbol (See Table II)		Attachment Type See Table III on Page B-2			Ring Style Dash Number See Tables IV, V, VI and VII on Page B-2

660-051
MIL-DTL-83723 SERIES III
THREADED PLUG COVER



660-052
MIL-DTL-83723 SERIES III
THREADED RECEPTACLE COVER

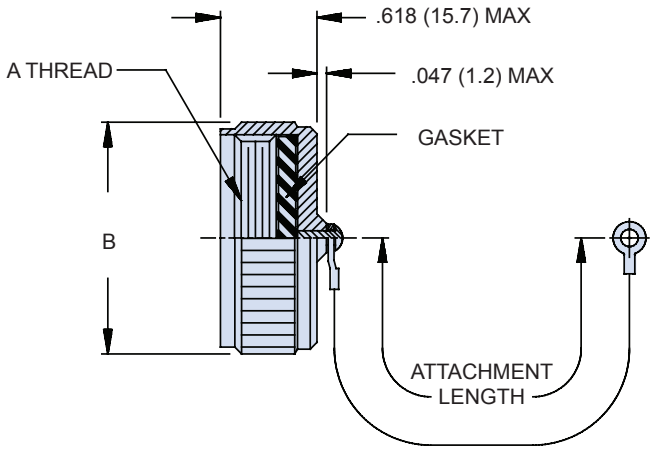


TABLE I: CONNECTOR SHELL SIZE NO.

SHELL SIZE	A THREAD CLASS 2A/2B	B DIA MAX
08	9/16 - 24 UNEF	.776 (19.7)
10	11/16 - 24 UNEF	.906 (23.0)
12	7/8 - 20 UNEF	1.078 (27.4)
14	15/16 - 20 UNEF	1.141 (29.0)
16	1 1/16 - 18 UNEF	1.266 (32.2)
18	1 3/16 - 18 UNEF	1.375 (34.9)
20	1 5/16 - 18 UNEF	1.510 (38.4)
22	1 7/16 - 18 UNEF	1.625 (41.3)
24	1 9/16 - 18 UNEF	1.760 (44.7)

TABLE II

Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

Metric dimensions (mm) are in parentheses and are for reference only.

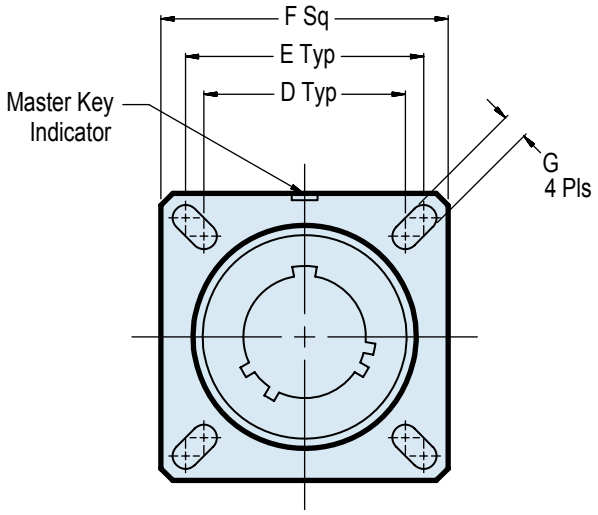
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650-025
Composite Dummy Stowage Receptacle
for MIL-DTL-38999 Series III Connectors

Product Series	Angle and Profile	Finish Symbol				
650 - Composite Dummy Stowage Receptacle	*S - Straight*	*(See Table II)*				
650	**H**	**S**	**025**	**XM**	**17**	**A**
Connector Designator *H - MIL-DTL-38999 Series III*		**Basic Part Number**		**Connector Shell Size** *(See Table I)*		**Alternate Position** *A, B, C, D, E N = Normal*

TABLE II

Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	1000 Hour Corrosion Resistant Electroless Nickel
XW	1000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel
XO	No Plating - Brown Color (Non-Conductive Finish)
XMT	Metalize in Electrodeposited Copper Flash Per MIL-C-14550, Nickel-PTFE IAW GPS52-XMT



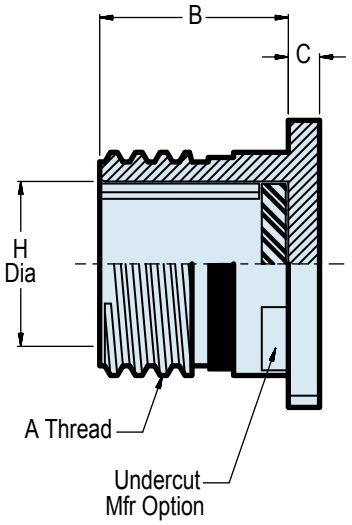


TABLE I: CONNECTOR SHELL SIZE

Shell Size	Shell Size Code	A Thread	B +.055 (1.4) -0.00	C	D	E	F ± .012 (0.3)	G Dim ± .008 (0.20)	H +.000 -.005 (.127)
09	A	.625-.1P-0.3LTS	.786 (19.5)	.144/.087 (3.65/2.2)	.594 (15.1)	.719 (18.3)	.937 (23.8)	.128 (3.3)	.192 (12.5)
11	B	.750-.1P-0.3LTS	.786 (19.5)	.144/.087 (3.65/2.2)	.719 (18.3)	.812 (20.6)	1.031 (26.2)	.128 (3.3)	.620 (15.7)
13	C	.875-.1P-0.3LTS	.786 (19.5)	.144/.087 (3.65/2.2)	.812 (20.6)	.906 (23.0)	1.126 (28.6)	.128 (3.3)	.769 (19.5)
15	D	1.000-.1P-0.3LTS	.786 (19.5)	.144/.087 (3.65/2.2)	.906 (23.0)	.969 (24.6)	1.220 (31.0)	.128 (3.3)	.894 (22.7)
17	E	1.187-.1P-0.3LTS	.786 (19.5)	.144/.087 (3.65/2.2)	.969 (24.6)	1.062 (27.0)	1.311 (33.3)	.128 (3.3)	1.019 (25.9)
19	F	1.250-.1P-0.3LTS	.786 (19.5)	.144/.087 (3.65/2.2)	1.062 (27.0)	1.156 (29.4)	1.437 (36.5)	.128 (3.3)	1.124 (28.5)
21	G	1.375-.1P-0.3LTS	.736 (18.7)	.171/.114 (4.35/.9)	1.156 (29.4)	1.250 (31.8)	1.563 (39.7)	.128 (3.3)	1.249 (31.7)
23	H	1.500-.1P-0.3LTS	.736 (18.7)	.171/.114 (4.35/.9)	1.250 (31.8)	1.375 (34.9)	1.689 (42.9)	.154 (3.9)	1.374 (34.9)
25	J	1.625-.1P-0.3LTS	.736 (18.7)	.171/.114 (4.35/.9)	1.375 (34.9)	1.500 (38.1)	1.811 (46.0)	.154 (3.9)	1.499 (38.1)

Metric dimensions (mm) are in parentheses and are for reference only.

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660-121
Composite Receptacle Cover
for MIL-DTL-38999 Series III Connectors with Anti-Decoupling Device

Part Number Development							
Sample Part Number	660-121	XB	19	R	6	-01	G
Product Series-Basic No.	Self locking receptacle cover						
Finish	**XW**, **XB**, **XM**, **XMT**; See material/finish table						
Shell Size	**09**, **11**, **13**, **15**, **17**, **19**, **21**, **23**, **25**; see dimensions table						
Attachment Type	**F**, **G**, **H**, **K**, **N**, **R**, **T**; See attachment code table						
Attachment Length	Inches; i.e. **01** = 1 inch						
Ring Style Dash No.	See ring style tables A, B, C or D						
Grounding	**G** = Ground Spring; Omit for none						

Material/Finish	
Sym	Material / Finish Description
XW	Cad/O.D. over electroless nickel (1000 hr)
XB	Black color-no plating
XM	Electroless nickel (1000 hr)
XMT	Ni-PTFE (1000 hr grey)

Dimensions		
Shell Size	A Thread 0.1P-0.3L-TS	Ø B Max
09	.6250	.858 (21.8)
11	.7500	.984 (25.0)
13	.8750	1.157 (29.4)
15	1.0000	1.279 (32.49)
17	1.1875	1.405 (35.69)
19	1.2500	1.515 (38.48)
21	1.3750	1.641 (41.68)
23	1.5000	1.767 (44.88)
25	1.6250	1.889 (47.98)

Attachment Codes	
Code	Description
F	Wire Rope, Nylon Jacket with terminal
G	Nylon Rope, Black, with looped end
H	Wire Rope, Fluoropolymer Jacket with terminal
K	Nylon Rope, Olive Drab
N	No attachment
R	Wire Rope, PVC Jacket with attachment
T	Wire Rope, No Jacket with attachment

NOTES

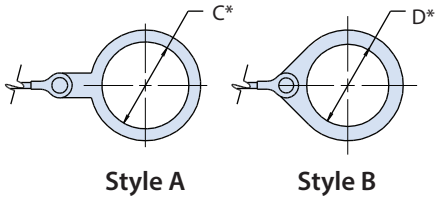
1. Max diameter over which mandrel will rotate freely

Ring Style A	
Dash No	C Dia
100	.391 (9.93)
101	.516 (13.11)
102	.583 (14.81)
103	.641 (16.28)
104	.708 (17.98)
105	.766 (19.46)
106	.896 (22.76)
107	1.016 (25.81)
108	1.141 (28.98)
109	1.266 (32.16)
110	1.391 (35.33)
111	1.521 (38.63)
112	1.641 (41.68)
113	1.766 (44.86)
114	1.891 (48.03)
115	2.078 (52.78)
116	2.406 (61.11)
117	2.510 (63.75)
206	.907 (23.04)
208	1.203 (30.56)

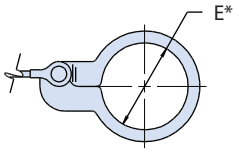
Ring Style B	
Dash No	D Dia
08	.468 (11.89)
10	.593 (15.06)
12	.718 (18.24)
14	.844 (21.44)
16	.968 (24.59)
18	1.093 (27.76)
20	1.187 (30.15)
22	1.343 (34.11)
24	1.484 (37.69)
28	1.687 (42.85)
32	1.968 (49.99)
36	2.187 (55.55)
40	2.406 (61.11)
44	2.656 (67.46)
48	3.031 (76.99)

Ring Style C	
Dash No	E Dia
50	.425 (10.80)
52	.485 (12.32)
54	.640 (16.26)
56	.750 (19.05)
58	.890 (22.61)
60	1.015 (25.78)
62	1.095 (27.81)
64	1.130 (28.70)
66	1.250 (31.75)
68	1.350 (34.29)
70	1.3475 (34.23)
72	1.485 (37.72)
74	1.625 (41.28)
76	1.750 (44.45)
78	1.875 (47.63)
80	1.980 (50.29)
82	2.060 (52.32)
84	2.235 (56.77)
86	2.310 (58.67)
88	2.475 (62.87)
90	2.655 (67.44)
92	2.810 (71.37)
94	3.045 (77.34)

Ring Style D	
Dash No	F Dia
01	.140 (3.56)
02	.182 (4.62)
03	.191 (4.85)
04	.197 (5.00)
05	.167 (4.24)
06	.125 (3.18)

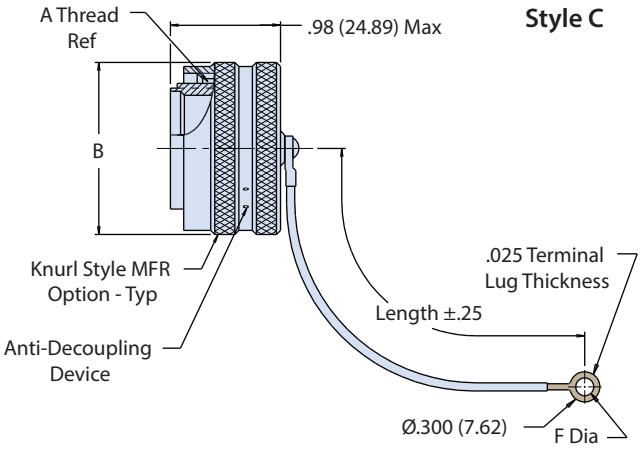


Style A Style B



* See Note 1

Style C



Style D

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Glenair®

667-118
Composite Receptacle Cover
for MIL-DTL-5015 Series Connectors with Anti-Decoupling Device

Basic Part Number	Attachment Type		Ring Style Dash Number	
667-118 - Protective Cover	*See Table II*		*See Tables IV, V, VI and VII on Page B-2*	
667-118	**16**	**R**	**6**	**01**
	Connector Shell Size (*See Table I*)		**Attachment Length** (*In Inches*)	

TABLE II	
Symbol	**Finish Description**
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

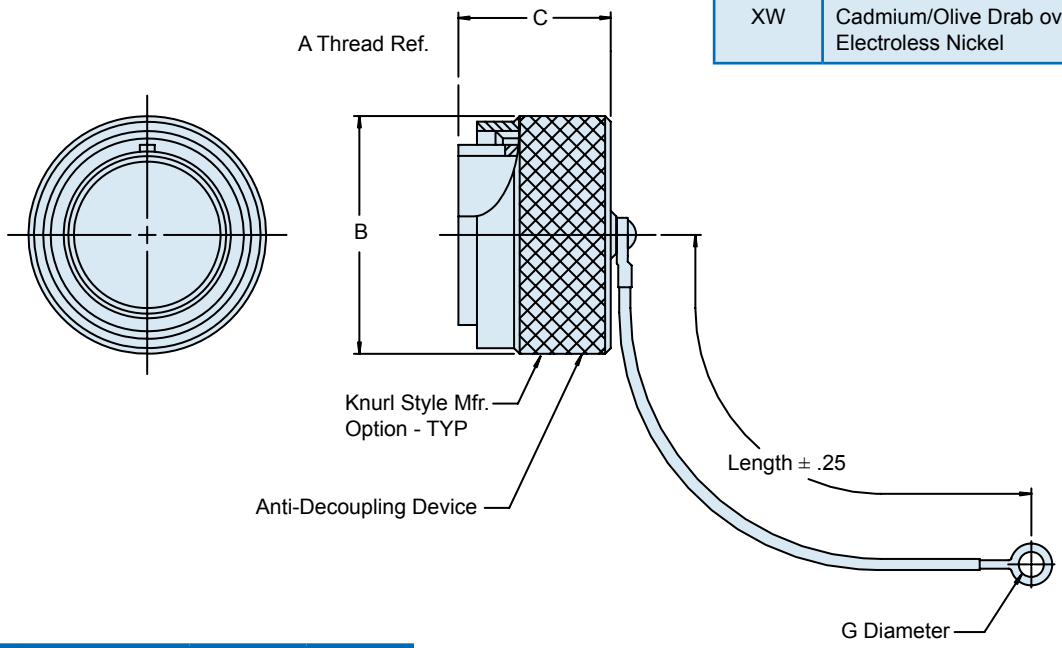


TABLE I: CONNECTOR SHELL SIZE			
Shell Size	**A Thread**	**B Max**	**C Max**
08	1/2-28	.844	1.13
10	5/8-24	.969	
12	3/4-20	1.062	
14	7/8-20	1.156	
16	1-20	1.250	
18	1 1/8-18	1.344	
20	1 1/4-18	1.469	
22	1 3/8-18	1.549	
24	1 1/2-18	1.719	
28	1 3/4-18	1.969	

TABLE II: ATTACHMENT	
Symbol	**Attachment**
F	Wire Rope, Nylon Jacket w/ Terminal
G	.094 Diameter Nylon Cord (black) w/ Loop Ends
H	Wire Rope, Teflon Jacket w/ Terminal
N	Attachment Omitted
R	Wire Rope, PVC Jacket w/ Terminal
T	Wire Rope, NO Jacket, w/ Terminal
K	Nylon Rope

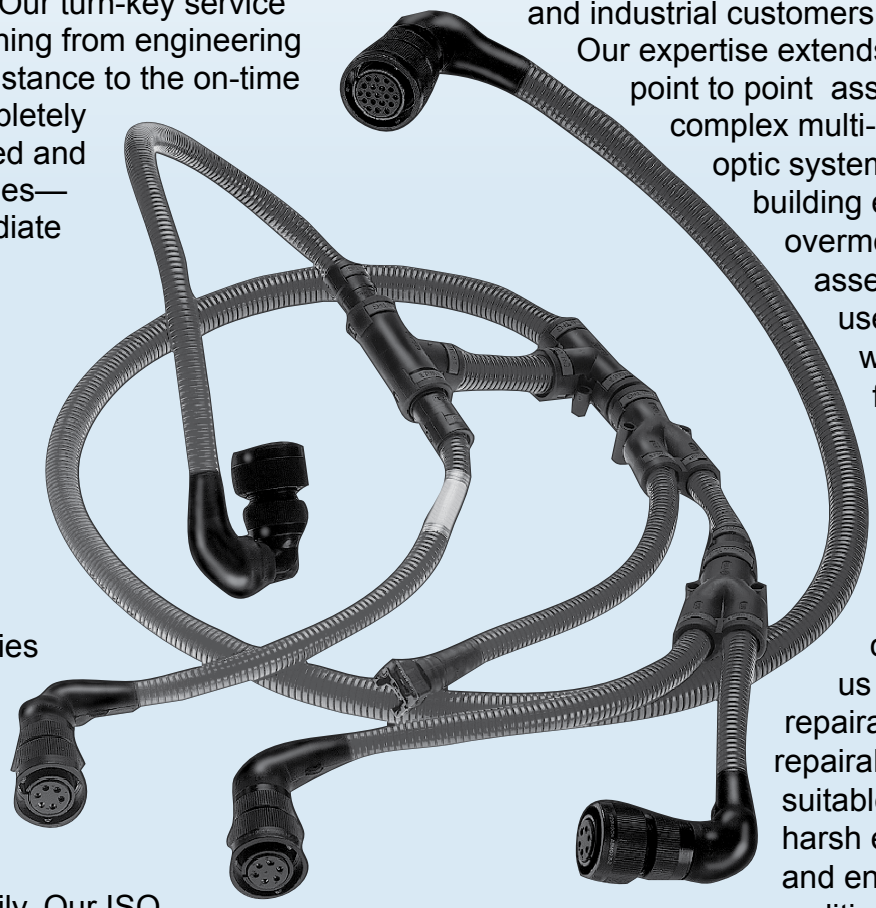
Metric dimensions (mm) are in parentheses and are for reference only.

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Custom Conduit Assemblies

Wired, Terminated and Tested–Ready for Use

Glenair's complete capability in wire protection systems extends to the design, manufacture and test of custom conduit assemblies—built to your exact specifications. Our turn-key service includes everything from engineering and design assistance to the on-time delivery of completely wired, terminated and tested assemblies—ready for immediate use.



Glenair's has established an enviable reputation for consistently high quality. Regardless of simplicity or complexity, or whether quantities are large or small, the same high standards of quality assurance are applied uniformily. Our ISO 9001:2000 and AS9100:2004 Rev B certified quality system and strict adherence to military and commercial testing standards ensures each conduit assembly is throughly inspected at each stage of the process. Each system undergoes a final inspection process which includes appearance, identification, dielectric, continuity, and insulation tests conducted on a 100% basis in preparation for final customer source inspection.

Glenair has built electrical, optical and hybrid assemblies for military, commercial and industrial customers since the 1950's. Our expertise extends from simple point to point assemblies to complex multi-branch and fiber optic systems. Today, we're building everything from overmolded fiber optic assemblies for marine use, to wheel-well assemblies for the world's leading aircraft manufacturers.

Our in-house braiding and sleeving capabilites allow us to build both repairable and non-repairable assemblies suitable for use in harsh electromagnetic and environmental conditions. We offer a complete range of jacketing, shielding and braided protective covering options including NBC (nuclear, biological, chemical) materials.

From one-of-a-kind conduit systems, to high volume mass production requirements, Glenair delivers with consistent quality, on-time delivery and reliable customer service.

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Convoluted Tubing Wire Protection Systems: Where Flexibility and Field Repairability Meet.

Advanced EMI Shielded Wire Protection Systems for Shipboard, Aerospace, Electric Vehicle and Heavy Equipment Applications

Glenair's Series 74 Helical Convoluted Tubing Systems provide outstanding wire circuit and cable protection for applications that require advanced durability and flexibility compared to standard jacketed cables. The series 74 system features a broad selection of transition fittings and adapters for easy routing and incorporation of industry-standard connectors. Our PEEK™ and Fluoropolymer polymers result in extremely rugged, lightweight enclosures for wiring systems deployed in harsh environment applications. Turnkey wired assemblies can be equipped with a broad range of fittings, jacketing and screening materials.

Convoluted Tubing Service Temperature Ranges of -95°F to +500°F Long Term,+600°F Short Term

Tensile Strength Ratings to 7,000 PSI

Resistance to Hydraulic Fluids, Fuels, Lubricating Oils, Solvents and Decontaminating Agents

Lightweight, Halogen-Free

Crush-Resistant

High-Temperature

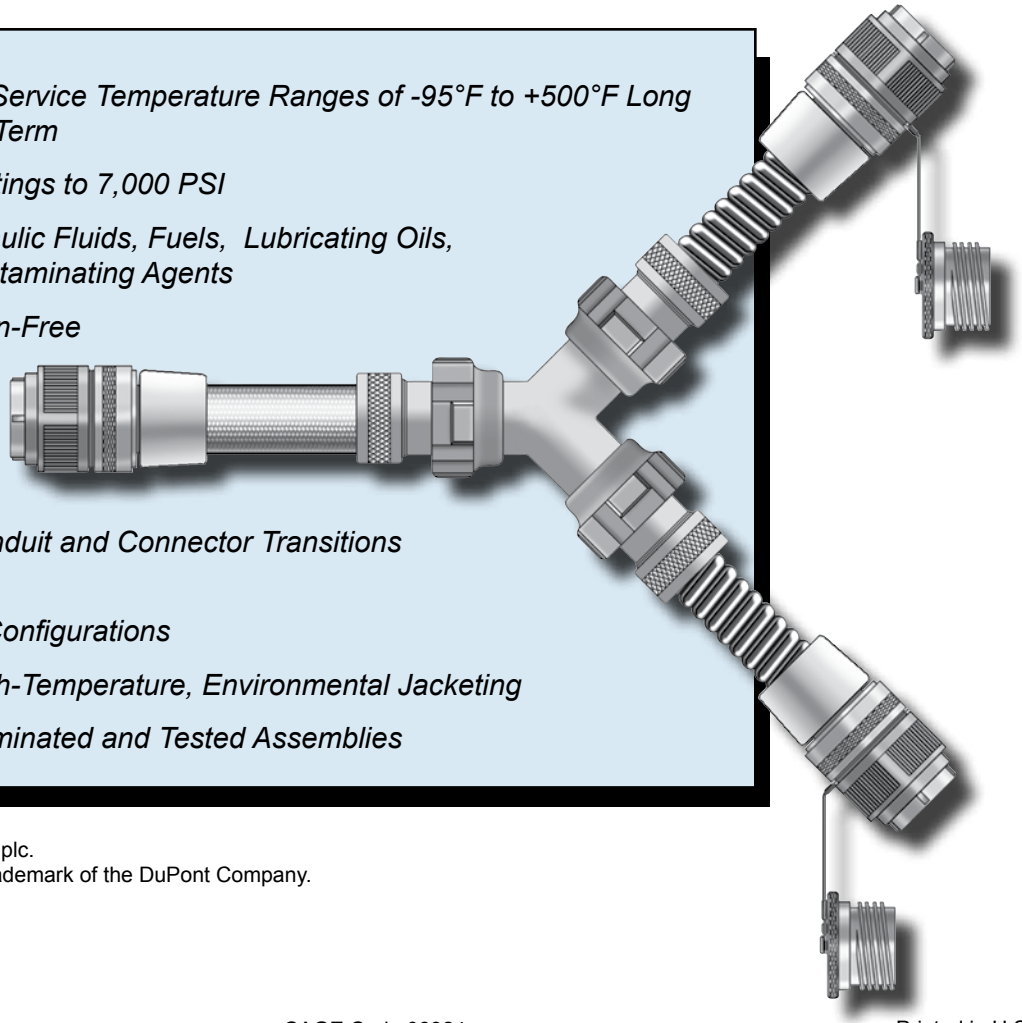
Maximum Flexibility

Broad Range of Conduit and Connector Transitions and Fittings

EMI/RFI Shielding Configurations

Broad Range of High-Temperature, Environmental Jacketing

Turnkey, Wired, Terminated and Tested Assemblies



PEEK™ is a trademark of Vitrex plc.
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Introduction to Conduit
Interconnect Technologies and Packaging
Selection Guide

This selection guide is designed to assist you with the selection of components and planning for installation of Glenair polymer plastic and composite convoluted tubing and fittings. Convoluted tubing wire protection assemblies are made up of lengths of bulk convoluted tubing, and various combinations of conduit fittings and adapters that allow the user to efficiently terminated the tubing and attach the assembly to connectors and other interconnect interfaces. There are three basic tasks in the selection process:

(1) Specify the size of bulk tubing which meets the volume requirements of the application.

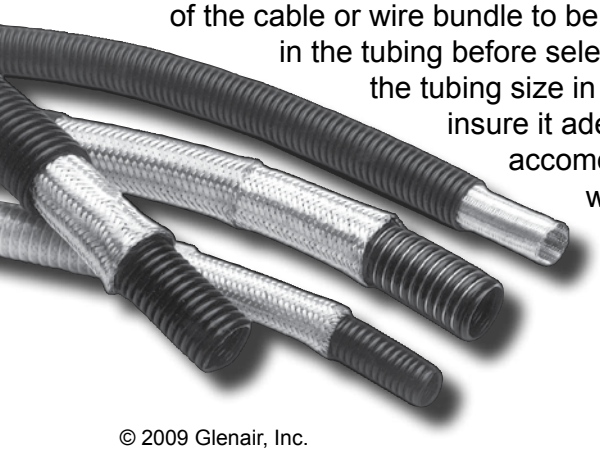
(2) Specify the style of bulk tubing which meets the environmental, electrical and mechanical requirements of the application.

(3) Select the transition fittings and connector adapters that satisfy the routing and interconnect requirements of the application.

Step 1: Select Tubing Size

Conduit size is identified by its inside diameter (ID) expressed in inches and fractions. Most of our tubing products range from 3/16 of an inch to 2 inches. The ID is referenced with a numerical size code which is used in the part number.

Convoluted tubing wire protection systems are normally filled to 80% of the inside diameter of the tube. You will need to verify the diameter of the cable or wire bundle to be housed in the tubing before selecting the tubing size in order to insure it adequately accomodates your wiring.



In some applications, such as when the tubing will ultimately be attached to a bulkhead feed-through or a stuffing tube, the diameter of the feed-through fitting needs to be taken into account when selecting the tubing size. Obviously, if the tubing needs to terminate to a one inch feed-through fitting, you should select one inch tubing. In fact, in a well-designed system, the diameter of the conduit, any necessary transition fittings, connector adapters, feed-throughs etc. should all be the same size.

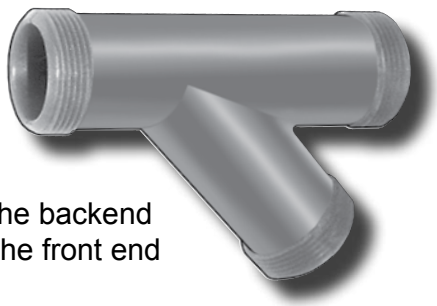
Step 2: Select Tubing Style

Glenair manufactures a wide range of high-temperature tolerant polymer plastic convoluted tubing products, such as PFA, FEP, PTFE, ETFE and PEEK. Each material has specific performance attributes that are summarized in the accompaning table. Selection is most often based on one or more attributes such as crush resistance, strength or cost.

The other decision point in tubing style selection has to do with the addition of outer layers of EMI shielding and/or environmental jacketing to the core material. Braided sheilding provides a conductive path for EMI and also adds pull strength to the final assembly. Various flavors of envirnmental jacketing, summarized in the accompanying table, protect the assembly from moisture and caustic chemicals.

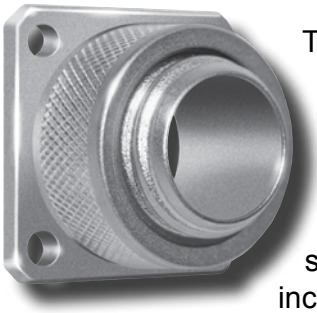
Step 3: Select Transition Fittings and Connector Adapters

Multi-branch convoluted tubing wire protection assemblies utilize various composite plastic transition fittings, in straight, "T," "Y," and "+" configurations, to facilitate routing. The tubing is terminated into the backend of the fitting while the front end



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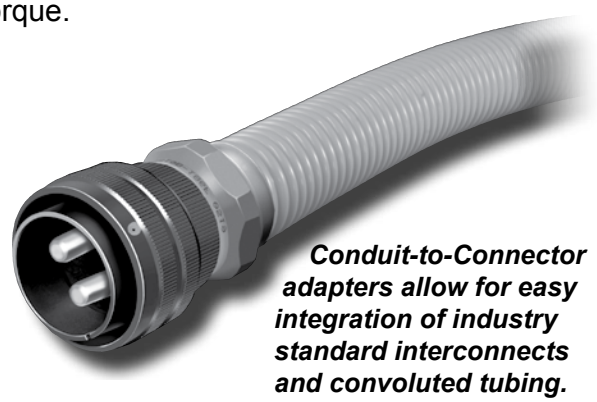
is equipped with an appropriate thread profile and coupler for the attachment of the necessary transition. The assemblies also utilize connector adapters, in straight 45° and 90° configurations, for the incorporation of circular and rectangular connectors.



Selection is easy. The size of the fitting or adapter is indicated with a "dash number" or numeric size code that, just like the tubing, corresponds to the shell size of the part in inches and fractions. The appropriate sized fitting for a one inch tube, for example, would be a number "32." Conveniently, this is the same number used for one inch bulk tubing. So selection is a simple matter of matching the size code in the fitting part number with the size code of the selected conduit. Your selection of a straight, 45°, 90°, "T," "Y," or "+" configuartion part will depend on the routing requirements of your system.

NOTE 1: Glenair recommends the use of our TG70 strap wrench, or appropriately sized 600-157 series holding tools for use fitting-to-fitting, or connector-to-adapter assembly.

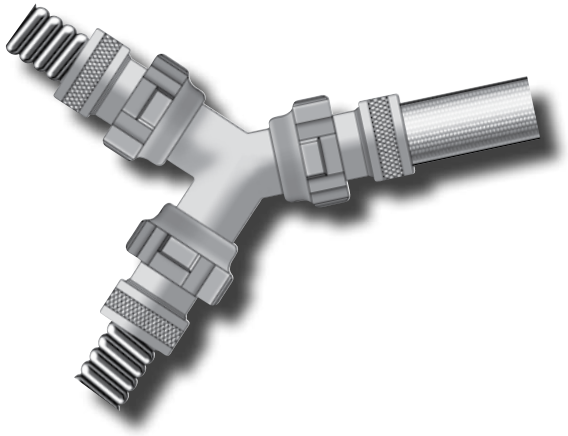
NOTE 2: Glenair also recommends the use of torque wrenches to ensure adapters and connectors are mated with the optimal amount of torque.



Conduit-to-Connector adapters allow for easy integration of industry standard interconnects and convoluted tubing.

A Note On Braided Shielding

Glenair is able to provide turnkey convoluted tubing wire protection systems—complete with braided shielding and jacketing. Braided shields are effective at minimizing low frequency interference at audio and RF ranges. Braided shields also provide additional structural integrity while maintaining good flexibility and flex life. In use, the reduction of EMI is dependent upon the signal amplitude and frequency in relation to the many combinations of mesh count, wire diameter and the braid material. Generally, the higher the percentage of braid coverage, the more effective the shield against high-frequency emissions. Available materials include tin-plated copper, nickel-plated copper and tin-plated iron/copper as well as metal-clad composite materials such as AmberStrand®. Depending on the ratio of metal braid to composite plastic, Glenair's composite braided shielding product can reduce the weight of EMI shielding up to 75%.



Glenair takes a systems approach to the design and manufacture of our composite and polymer plastic wire protection systems. The following pages present all the necessary component products to create 100% composite/plastic wire protection systems optimized for the most extreme environmental, mechanical, and electrical performance requirements. Please do not hesitate to contact our factory for free application engineering and assistance in the design of your next assembly.

C

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Series 72
High-Performance Polymer-Core Annular Convoluted Tubing
Material Properties and Colors

Tubing Material Choices

Y	Kynar®	Flexible, thermally stabilized, resistant to harsh chemicals and radiation. UV resistant, self-extinguishing, nontoxic and resistant to low-temperatures. 166° C temp. rating.
V	PVDF	Flexible and chemical/radiation resistant. Available in 4 colors plus standard black and natural. 150° C temperature rating.
S	G-FLEX Siltem	Lightweight, halogen-free, low toxicity, low smoke. 175° temperature rating. Ideal for harsh environment applications. Exceptional flexibility and crush resistance.

Material Properties - Kynar® and PVDF

Material Property	Service Temperature	Tensile Strength	Elongation	Specific Gravity
Kynar® and PVDF	-65°F/330°F (-54°C/166°C)*	5000 PSI (34,474 KP)	250%	1.8 Max

Material Property	Heat Aging	Dielectric Strength	Volume Resistivity	Water Absorption
Kynar® and PVDF	168 Hrs. @ 347°F (175°C)	10,000V	10^{16}	0.02%

Material Property	Solvent Resistance	Flammability	Fungus Resistance
Kynar® and PVDF	No swelling, stickiness or weight change	Non-burning	Does not support fungus growth

*Note: Kynar® and PVDF material properties are identical, with the exception that Kynar® has been irradiated for thermal stability, and thus has a higher temperature rating of 166°C compared to 150° for non-thermally-stabilized PVDF.

G-FLEX Siltem is Glenair's proprietary annular polymer-core convoluted tubing formulation, developed for harsh environment applications that require a lightweight, halogen-free material with exceptional flexibility and crush resistance

Material Properties - G-FLEX Siltem

Material Property	Flexural Modulus	Flexural Strength	Tensile Strength	Elongation
	168,000 PSI	5590 PSI	5700 PSI	60%
	Melt Flow Rate	**Dielectric Strength**	**Volume Resistivity**	**Water Absorption**
	38.0 G/10 min	422.9 V/mil	>1.E+16 Ohm-cm	0.58%

Color Options

	Standard Black	Standard for Kynar and PVDF annular convoluted tubing materials
N	Natural/Clear	Standard for G-FLEX Siltem. Available for for all Series 72 annular convoluted tubing materials
R	Red	Available for Kynar and PVDF annular convoluted tubing materials
Y	Yellow	Available for Kynar and PVDF annular convoluted tubing materials
BL	Blue	Available for Kynar and PVDF annular convoluted tubing materials
TN	Desert Tan	Available for Kynar and PVDF annular convoluted tubing materials
O	Orange	Available for Kynar and PVDF annular convoluted tubing materials

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Series 72
Annular Polymer-Core Convoluted Tubing
Material Properties and Colors

EMI/RFI Braided Shielding and Non-Metallic (Fabric) Overbraids

T	Tin/Copper	150°C temperature rating, 125 lbs. tensile strength, 96 hr. salt spray corrosion resistance
C	Stainless Steel	Highest tensile strength (225 lbs.), highest temperature—1093°C+
N	Nickel/Copper	200°C temperature rated, 150 lbs. tensile strength, 500 hrs. salt spray corrosion resistance
S	SnCuFe	Tin plated iron/copper
L	ArmorLite™	Microfilament metal-clad ultra lightweight stainless steel braid
D	Dacron	Yarn with excellent abrasion resistance, good chemical resistance, non-conductive
M	Nomex	-55°C to 260°C temperature range - will not melt, excellent chemical resistance, non-conductive
E	AmberStrand® 100%	Expandable, flexible, high-strength conductive metal-clad composite thermoplastic
F	AmberStrand® 75%/25%	75% Expandable, flexible, high-strength conductive metal-clad composite thermoplastic combined with 25% nickel-plated 36AWG copper wire for additional strength

Jacketing Options

N	Neoprene	Tough, durable polychloroprene for mechanical and environmental protection
H	Hypalon®	Light weight with broad temperature range
E	EPDM	Better resistance to Ketones
V	Viton	Heaviest material with best resistance to oil and gasoline
B	Duralectric, Black	Weatherproof, halogen free, flame resistant, functional to 260°C
G	Duralectric, Gray	Qualified to US Navy MIL-PRF-24758A, Fed Std 595B #26270 Haze Gray color
TN	Duralectric, Desert Tan	Duralectric in Fed Std #3446 Desert Tan color
O	Duralectric, Orange	OSHA Safety Orange to mark energized electrical cables

Jacketing Material Properties and Chemical Resistance

Material Property	EPDM (Ethylene Propylene Diene Monomer)	Hypalon (Chlorosulfonated Polyethylene)	Neoprene (Polychloroprene)	Viton (Fluoroelastomer)	Duralectric
Temperature Range	-60°F to +300°F (-51°C to +149°C)	-60°F to +300°F (-51°C to +149°C)	-60°F to +250°F (-51°C to +121°C)	-40°F to +392°F (-40°C to +200°C)	-94°F to +392°F (-70°C to +200°C)
Specific Gravity	1.26	1.18	1.25	1.80	1.22
Weight: Lbs./Cubic Inch	.045	.043	.045	.055	.045
Abrasion Resistance	Excellent	Excellent	Excellent	Good	Good
Wear Resistance	Good	Good	Good	Good	Good
Flame Resistance	Good	Good	Good	Good	Excellent
Sunlight Resistance	Excellent	Excellent	Good	Excellent	Excellent
Chemical Resistance					
Aliphatic Hydrocarbons	Good	Good	Good	Excellent	Excellent
Aromatic Hydrocarbons	Good	Fair	Fair	Excellent	Excellent
Ketones, Etc.	Good	Poor	Poor	Poor	Excellent
Oil & Gasoline	Good	Good	Fair	Excellent	Excellent

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How to use the tables on this page:

It is possible for a wire bundle to contain wires of all the same size diameter, or a variety of mixed diameters. The gauge provides only the diameter of the conductor, and this information alone is not sufficient to determine required tubing size. Referring to the appropriate wire specification is necessary to establish the overall diameter over the insulation and/or braids.

	STEP	ALL WIRES SAME DIAMETER	TWO DIFFERENT WIRE DIAMETERS
1.	A bundle containing 30 wires	30 wires @ .045 DIA	15 wires @ .045 DIA 15 wires @ .135 DIA
2.	Determine average wire diameter	30 x .045 = 1.35 1.35 / 30 = .045 Average Wire Diameter	15 x .045 = .68 15 x .135 = 2.03 2.71 2.71 / 30 = .090 Average Wire Diameter
3.	Using Table I, find factor for 30 wires (6.7), and multiply by average wire diameter	.045 x 6.7 = .3015 Wire Bundle Diameter	.090 x 6.7 = .603 Wire Bundle Diameter
4.	Tubing size is determined on Table II. 70% fill is recommended	Size 12 (.305 DIA = 70% Fill)	Size 24 (.607 DIA = 70% Fill)

TABLE I

Number of Wires	1	2	3	4	5	6	7	8	9	10	12	14	16	18	20	24	28	32
Factor	1	2	2.2	2.4	2.7	2.9	3	3.3	3.8	4	4.3	4.6	5	5.3	5.6	6	6.5	6.9
Number of Wires	36	40	45	50	55	60	65	70	75	80	90	100	125	150	175	200	250	300
Factor	7.4	7.7	8.1	8.5	8.9	9.3	9.7	10.1	10.5	10.9	11.6	12.2	13.7	15	16.1	17.2	19.3	21

TABLE II

TUBING SIZE	TUBING I.D.	50% FILL	60% FILL	70% FILL	80% FILL
6	0.187 (4.7)	0.128 (3.3)	0.14 (3.6)	0.151 (3.8)	0.162 (4.1)
9	0.281 (7.1)	0.193 (4.9)	0.211 (5.4)	0.229 (5.8)	0.244 (6.2)
10	0.312 (7.9)	0.217 (5.5)	0.237 (6.0)	0.256 (6.5)	0.274(7.0)
12	0.375 (9.5)	0.257 (6.5)	0.282 (7.2)	0.305 (7.7)	0.326 (8.3)
14	0.437 (11.1)	0.302 (7.7)	0.331 (8.4)	0.357 (9.1)	0.382 (9.7)
16	0.5 (12.7)	0.343 (8.7)	0.376 (9.6)	0.406 (10.3)	0.434 (11.0)
20	0.625 (15.9)	0.426 (10.8)	0.467 (11.9)	0.505 (12.8)	0.539 (13.7)
24	0.75 (19.1)	0.513 (13.0)	0.562 (14.3)	0.607 (15.4)	0.649 (16.5)
28	0.875 (22.2)	0.608 (15.4)	0.666 (16.9)	0.72 (18.3)	0.769 (19.5)
32	1 (25.4)	0.686 (17.4)	0.751 (19.1)	0.812 (20.6)	0.868 (22.0)
40	1.25 (31.8)	0.852 (21.6)	0.933 (23.7)	1.008 (25.6)	1.078 (27.4)

Note: Consult factory for Series 72 Type B tubing.

Metric dimensions (mm) are indicated in parentheses.

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Series 74
Helical Convoluted Tubing (AMS-T-81914)
Standard Tubing, Braiding and Jacketing Configurations
PEEK, PFA, FEP, PTFE and Tefzel® (ETFE) Formulas

About Glenair Series 74 Helical Convoluted Tubing Styles

Glenair offers our polymer plastic Series 74 Helical Convoluted Tubing unshielded or with a variety of braids to meet various electromagnetic shielding requirements. Type A is provided unshielded; Type B unshielded, with a protective outer braided black Dacron® covering; Types C through F define standard combinations of braided metal EMI shielding; Type G unshielded, with an outer elastomeric jacket. Other combinations can be provided upon request.

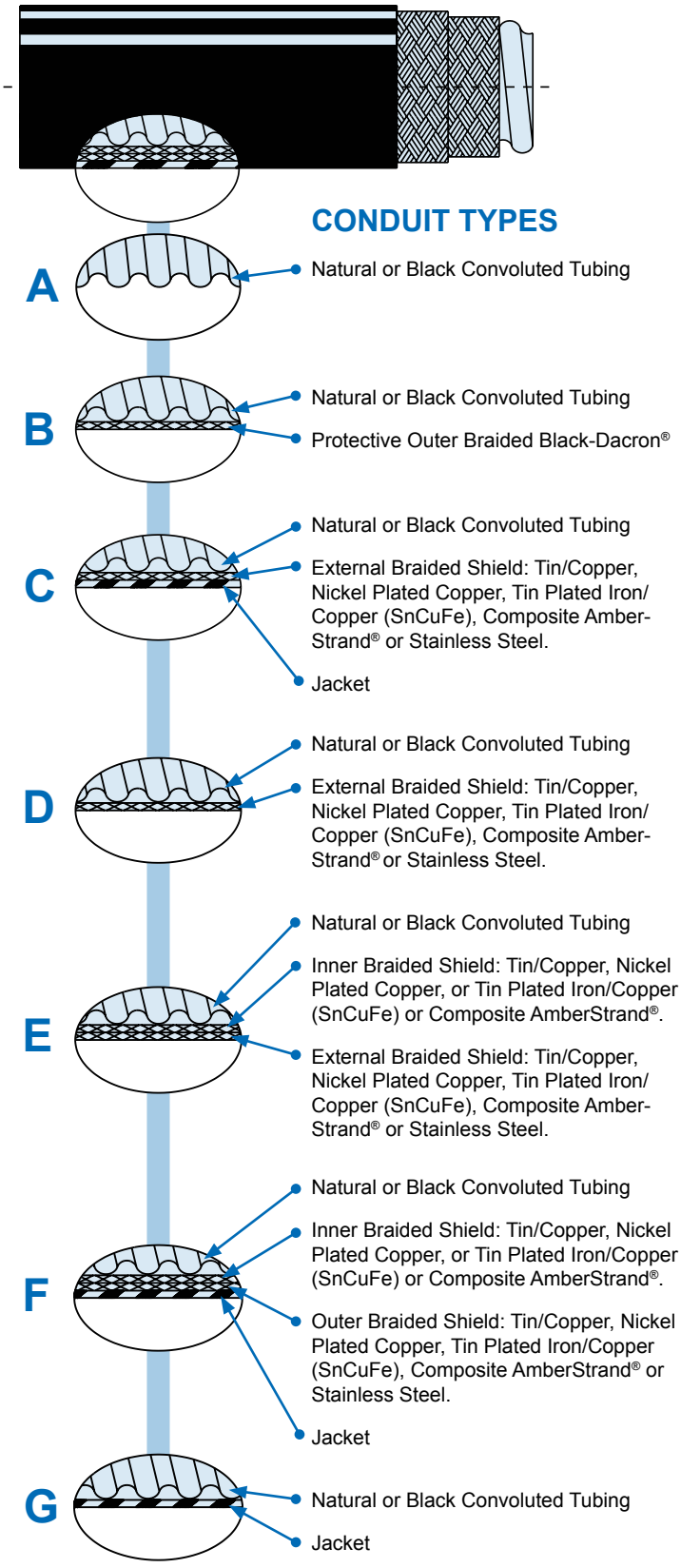
Glenair Series 74 Helical Convoluted Tubing is manufactured in conformance to SAE-AMS-T-81914, providing the user with standard and thin wall thickness, and a choice of standard or close convolutions. For low-smoke zero-halogen applications that require a high strength and superior crush resistance, Glenair can supply PEEK™ tubing (semicrystalline thermoplastic). The PEEK™ material will be manufactured to Glenair tubing standards.

All of the Glenair convoluted tubing can be supplied either unjacketed or with a variety of elastomeric materials. Other options include: Dual wall i.e., FEP inner liner and FEP outer liner which can be supplied with various combinations of braid shielding between the liners; Reinforcement support spring option for added crush resistance which can be supplied with the Type A through Type G configurations shown; Internal braid shielding; and special processes such as cross-linking (please consult factory).

BULK CONDUIT LENGTH TOLERANCES

INCHES	
LENGTH	TOLERANCE
12 - 144	+ 2.0
145 - 600	+ 4.0
601 - up	+ 6.0

CENTIMETERS	
LENGTH	TOLERANCE
31 - 366	+ 5.0
367 - 1524	+ 10.2
1525 - up	+ 15.2



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120-100
Series 74 Helical Convoluted Tubing (AMS-T-81914)
Type A: Convoluted Tubing Only

Outstanding mechanical wire protection and lubricity for non-environmental and non-EMI/RFI applications



How To Order

Product Series	Class:	Tubing Size	Material		
120 - Convoluted Tubing	*1 - Standard Wall* *2 - Thin Wall*	*(Table I)*	*K - PEEK* *E - ETFE* *F - FEP* *P - PFA* *T - PTFE*	*L - Lanyard* *Omit for none*	
120 -	**100** -	**1** -	**1** -	**16**	**B** **K** **L**

Basic No.	Convolution	Color		
	1 - Standard *2 - Close*	*B - Black* *C - Clear*	*O - Orange* *BL - Blue*	*Y - Yellow*

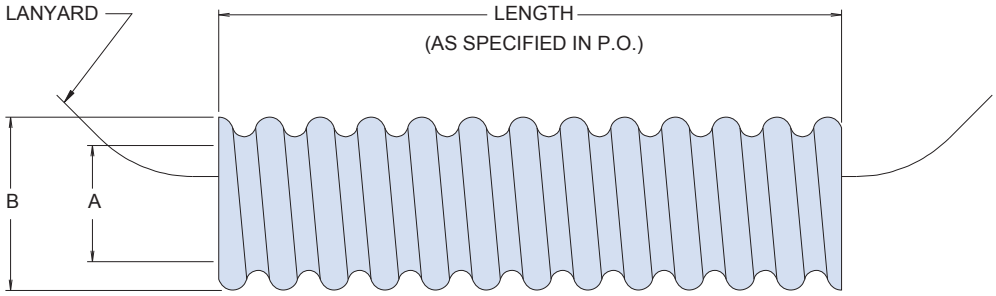
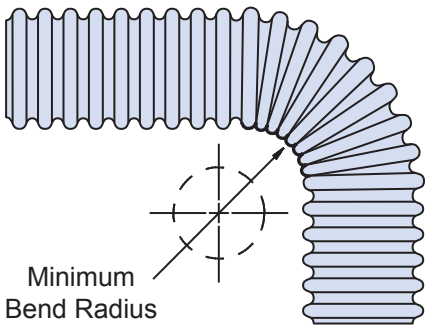


Table I: Tubing Size Order Number and Dimensions

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.

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120-103
Series 74 Helical Convoluted Tubing (AMS-T-81914)
Type B: Convoluted Tubing with Black Dacron® Braid

Product Series
120 - Convoluted Tubing

Class
1 - Standard Wall
2 - Thin Wall[2]

Tubing Size
(See Table I)

Material
K - PEEK[4]
E - ETFE
F - FEP
P - PFA
T - PTFE[3]

120 - 103 - 1 - 1 - 16 - B - K

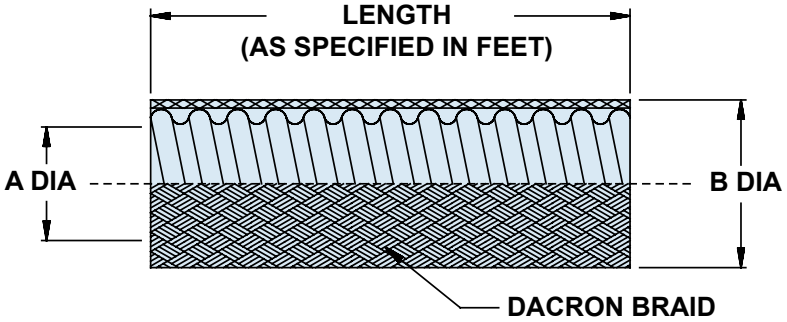
Basic Part Number

Convolution
1 - Standard
2 - Close

Color
B - Black
C - Natural

Series 74 TYPE B EXTERNAL BLACK DACRON® BRAID

C



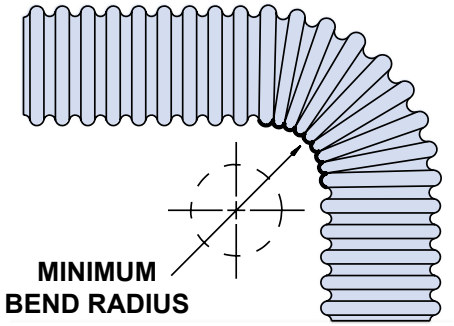


TABLE I: TUBING SIZE ORDER NUMBER AND DIMENSIONS

TUBING SIZE	FRACTIONAL SIZE REF	A INSIDE DIA MIN		B DIA MAX		MINIMUM BEND RADIUS	
06	3/16	.181	(4.6)	.390	(9.9)	.50	(12.7)
09	9/32	.273	(6.9)	.484	(12.3)	.75	(19.1)
10	5/16	.306	(7.8)	.520	(13.2)	.75	(19.1)
12	3/8	.359	(9.1)	.580	(14.7)	.88	(22.4)
14	7/16	.427	(10.8)	.641	(16.3)	1.00	(25.4)
16	1/2	.480	(12.2)	.720	(18.3)	1.25	(31.8)
20	5/8	.603	(15.3)	.840	(21.3)	1.50	(38.1)
24	3/4	.725	(18.4)	1.000	(25.4)	1.75	(44.5)
28	7/8	.860	(21.8)	1.143	(29.0)	1.88	(47.8)
32	1	.970	(24.6)	1.296	(32.9)	2.25	(57.2)
40	1 1/4	1.205	(30.6)	1.609	(40.9)	2.75	(69.9)
48	1 1/2	1.437	(36.5)	1.902	(48.3)	3.25	(82.6)
56	1 3/4	1.688	(42.9)	2.226	(56.5)	3.63	(92.2)
64	2	1.937	(49.2)	2.402	(61.0)	4.25	(108.0)

APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Consult factory for thin-wall, close convolution combination.
3. For PTFE maximum lengths - consult factory.
4. Consult factory for PEEK™ min/max dimensions.

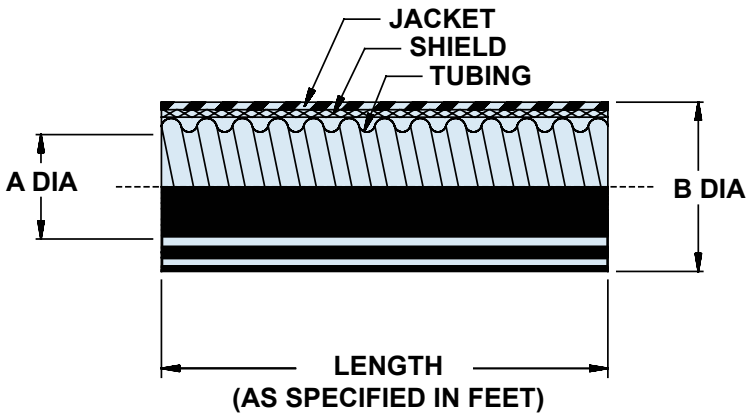
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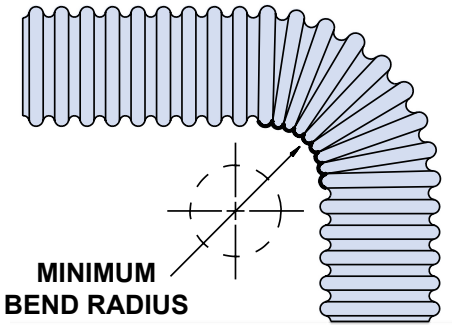
Series 74 TYPE C EXTERNAL SHIELD AND JACKET

Product Series	Class	Tubing Size	Material	Jacket
121 - Convoluted Tubing	1 - Standard Wall 2 - Thin Wall[2]	(See Table I)	K - PEEK[4] E - ETFE F - FEP P - PFA T - PTFE[3]	E - EPDM N - Neoprene H - Hypalon® V - Viton

121	-	100	-	1	-	1	-	16	B	K	T	H

Basic Part Number	Convolution	Color	Shield
	1 - Standard 2 - Close	B - Black C - Natural	A - Composite AmberStrand® C - Stainless Steel N - Nickel/Copper S - SnCuFe T - Tin/Copper





C

TABLE I: TUBING SIZE ORDER NUMBER AND DIMENSIONS

TUBING SIZE	FRACTIONAL SIZE REF	A INSIDE DIA MIN		B DIA MAX		MINIMUM BEND RADIUS	
06	3/16	.181	(4.6)	.490	(12.4)	.50	(12.7)
09	9/32	.273	(6.9)	.584	(14.8)	.75	(19.1)
10	5/16	.306	(7.8)	.620	(15.7)	.75	(19.1)
12	3/8	.359	(9.1)	.680	(17.3)	.88	(22.4)
14	7/16	.427	(10.8)	.741	(18.8)	1.00	(25.4)
16	1/2	.480	(12.2)	.820	(20.8)	1.25	(31.8)
20	5/8	.603	(15.3)	.940	(23.9)	1.50	(38.1)
24	3/4	.725	(18.4)	1.100	(27.9)	1.75	(44.5)
28	7/8	.860	(21.8)	1.243	(31.6)	1.88	(47.8)
32	1	.970	(24.6)	1.396	(35.5)	2.25	(57.2)
40	1 1/4	1.205	(30.6)	1.709	(43.4)	2.75	(69.9)
48	1 1/2	1.437	(36.5)	2.002	(50.9)	3.25	(82.6)
56	1 3/4	1.688	(42.9)	2.327	(59.1)	3.63	(92.2)
64	2	1.937	(49.2)	2.502	(63.6)	4.25	(108.0)

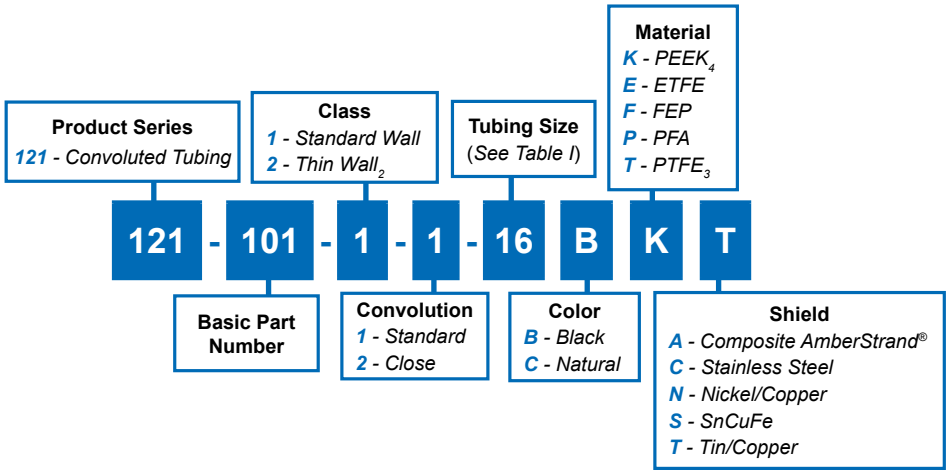
APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Consult factory for thin-wall, close convolution combination.
3. For PTFE maximum lengths - consult factory.
4. Consult factory for PEEK™ min/max dimensions.

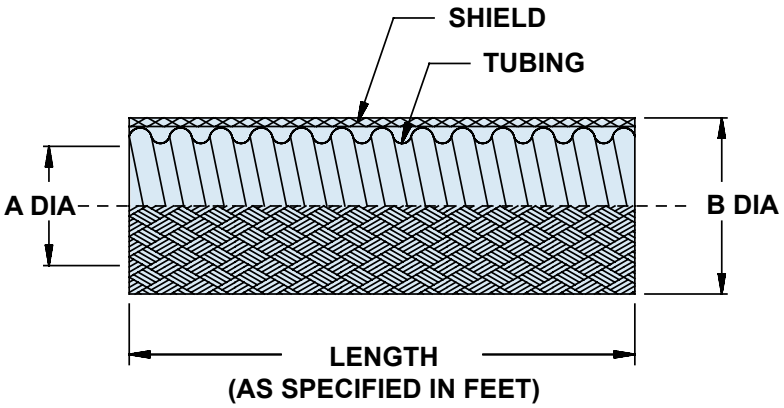
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121-101
Series 74 Helical Convoluted Tubing (AMS-T-81914)
Type D: Convoluted Tubing with Single External Shield

Series 74
TYPE
D
EXTERNAL SHIELD



C



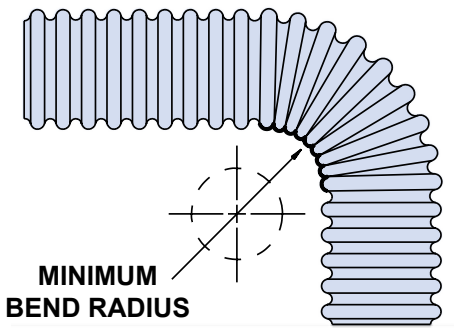


TABLE I: TUBING SIZE ORDER NUMBER AND DIMENSIONS

TUBING SIZE	FRACTIONAL SIZE REF	A INSIDE DIA MIN		B DIA MAX		MINIMUM BEND RADIUS	
06	3/16	.181	(4.6)	.370	(9.4)	.50	(12.7)
09	9/32	.273	(6.9)	.464	(11.8)	.75	(19.1)
10	5/16	.306	(7.8)	.500	(12.7)	.75	(19.1)
12	3/8	.359	(9.1)	.560	(14.2)	.88	(22.4)
14	7/16	.427	(10.8)	.621	(15.8)	1.00	(25.4)
16	1/2	.480	(12.2)	.700	(17.8)	1.25	(31.8)
20	5/8	.603	(15.3)	.820	(20.8)	1.50	(38.1)
24	3/4	.725	(18.4)	.980	(24.9)	1.75	(44.5)
28	7/8	.860	(21.8)	1.123	(28.5)	1.88	(47.8)
32	1	.970	(24.6)	1.276	(32.4)	2.25	(57.2)
40	1 1/4	1.205	(30.6)	1.589	(40.4)	2.75	(69.9)
48	1 1/2	1.437	(36.5)	1.882	(47.8)	3.25	(82.6)
56	1 3/4	1.688	(42.9)	2.132	(54.2)	3.63	(92.2)
64	2	1.937	(49.2)	2.382	(60.5)	4.25	(108.0)

APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Consult factory for thin-wall, close convolution combination.
3. For PTFE maximum lengths - consult factory.
4. Consult factory for PEEK™ min/max dimensions.

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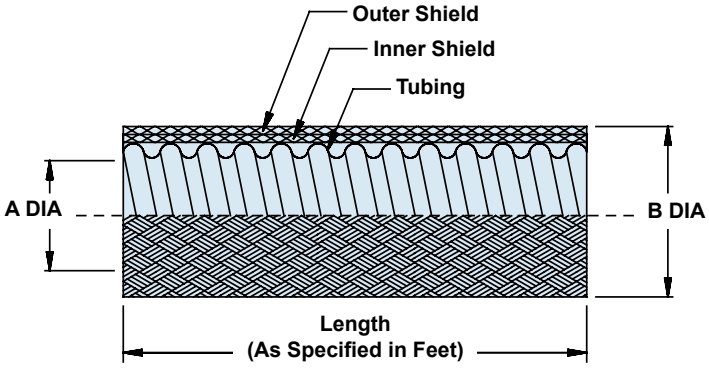
121-102
Series 74 Helical Convoluted Tubing (AMS-T-81914)
Type E: Convoluted Tubing with Two External Shields

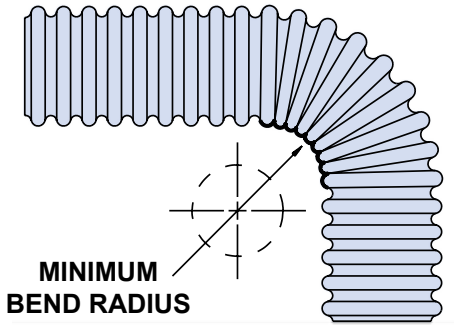
Series 74
TYPE
E
TWO EXTERNAL SHIELDS

Product Series	Class	Tubing Size	Material	Outer Shield
121 - Convoluted Tubing	1 - Standard Wall 2 - Thin Wall[2]	(See Table I)	K - PEEK[4] E - ETFE F - FEP P - PFA T - PTFE[3]	A - Composite AmberStrand® C - Stainless Steel N - Nickel/Copper S - SnCuFe T - Tin/Copper

121	-	102	-	1	-	1	-	16	B	K	T	H

Basic Part Number	Convolution	Color	Inner Shield
	1 - Standard 2 - Close	B - Black C - Natural	A - Composite AmberStrand® N - Nickel/Copper S - SnCuFe T - Tin/Copper





C

TABLE I: TUBING SIZE ORDER NUMBER AND DIMENSIONS

TUBING SIZE	FRACTIONAL SIZE REF	A INSIDE DIA MIN		B DIA MAX		MINIMUM BEND RADIUS *	
06	3/16	.181	(4.6)	.420	(10.7)	.50	(12.7)
09	9/32	.273	(6.9)	.514	(13.1)	.75	(19.1)
10	5/16	.306	(7.8)	.550	(14.0)	.75	(19.1)
12	3/8	.359	(9.1)	.610	(15.5)	.88	(22.4)
14	7/16	.427	(10.8)	.671	(17.0)	1.00	(25.4)
16	1/2	.480	(12.2)	.750	(19.1)	1.25	(31.8)
20	5/8	.603	(15.3)	.870	(22.1)	1.50	(38.1)
24	3/4	.725	(18.4)	1.030	(26.2)	1.75	(44.5)
28	7/8	.860	(21.8)	1.173	(29.8)	1.88	(47.8)
32	1	.970	(24.6)	1.326	(33.7)	2.25	(57.2)
40	1 1/4	1.205	(30.6)	1.639	(41.6)	2.75	(69.9)
48	1 1/2	1.437	(36.5)	1.932	(49.1)	3.25	(82.6)
56	1 3/4	1.688	(42.9)	2.182	(55.4)	3.63	(92.2)
64	2	1.937	(49.2)	2.432	(61.8)	4.25	(108.0)

*The minimum bend radius is based on Type A construction. For multiple-braided coverings, these minimum bend radii may be increased slightly.

APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Consult factory for thin-wall, close convolution combination.
3. For PTFE maximum lengths - consult factory.
4. Consult factory for PEEK™ min/max dimensions.

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121-103
Series 74 Helical Convoluted Tubing (AMS-T-81914)
Type F: Convoluted Tubing with Jacket and Two Shields

Product Series
121 - Convoluted Tubing

Class
1 - Standard Wall
2 - Thin Wall[2]

Tubing Size
(See Table I)

Material
K - PEEK[4]
E - ETFE
F - FEP
P - PFA
T - PTFE[3]

Outer Shield
A - Composite AmberStrand®
C - Stainless Steel
N - Nickel/Copper
S - SnCuFe
T - Tin/Copper

121	-	103	-	1	-	1	-	16	B	K	T	S	H

Basic Part Number

Convolution
1 - Standard
2 - Close

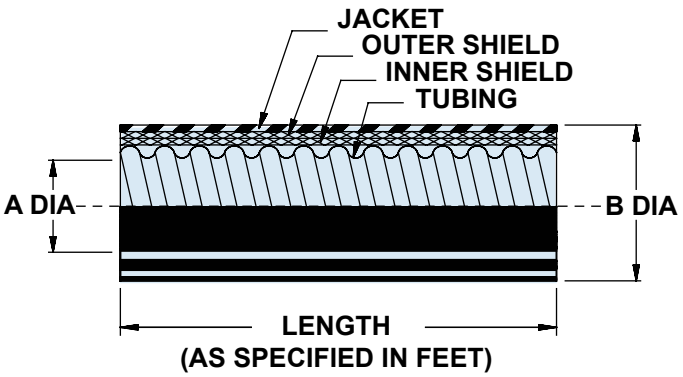
Color
B - Black
C - Natural

Inner Shield
A - Composite AmberStrand®
N - Nickel/Copper
S - SnCuFe
T - Tin/Copper

Jacket
E - EPDM
N - Neoprene
H - Hypalon®
V - Viton

Series 74 TYPE F
JACKET AND TWO EXTERNAL SHIELDS

C



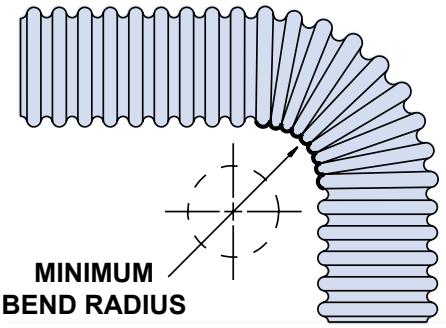


TABLE I: TUBING SIZE ORDER NUMBER AND DIMENSIONS

TUBING SIZE	FRACTIONAL SIZE REF	A INSIDE DIA MIN		B DIA MAX		MINIMUM BEND RADIUS *	
06	3/16	.181	(4.6)	.540	(13.7)	.50	(12.7)
09	9/32	.273	(6.9)	.634	(16.1)	.75	(19.1)
10	5/16	.306	(7.8)	.670	(17.0)	.75	(19.1)
12	3/8	.359	(9.1)	.730	(18.5)	.88	(22.4)
14	7/16	.427	(10.8)	.791	(20.1)	1.00	(25.4)
16	1/2	.480	(12.2)	.870	(22.1)	1.25	(31.8)
20	5/8	.603	(15.3)	.990	(25.1)	1.50	(38.1)
24	3/4	.725	(18.4)	1.150	(29.2)	1.75	(44.5)
28	7/8	.860	(21.8)	1.293	(32.8)	1.88	(47.8)
32	1	.970	(24.6)	1.446	(36.7)	2.25	(57.2)
40	1 1/4	1.205	(30.6)	1.759	(44.7)	2.75	(69.9)
48	1 1/2	1.437	(36.5)	2.052	(52.1)	3.25	(82.6)
56	1 3/4	1.688	(42.9)	2.302	(58.5)	3.63	(92.2)
64	2	1.937	(49.2)	2.552	(64.8)	4.25	(108.0)

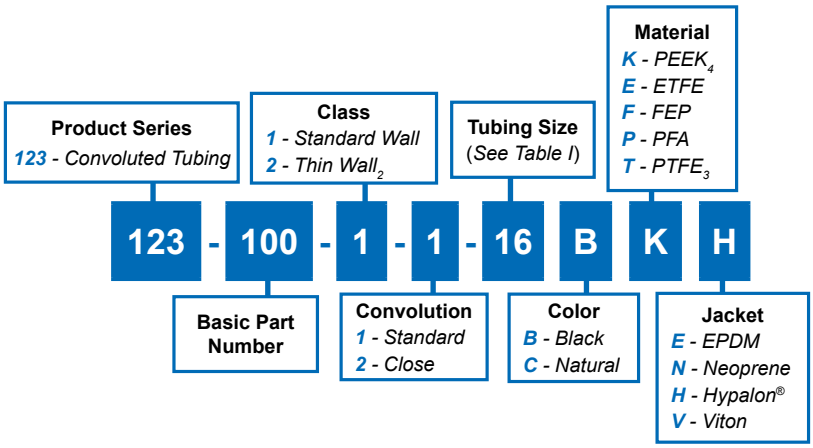
*The minimum bend radius is based on Type A construction. For multiple-braided coverings, these minimum bend radii may be increased slightly.

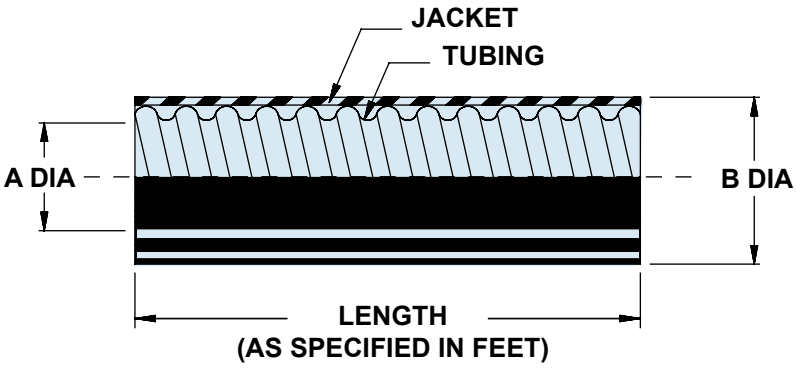
APPLICATION NOTES

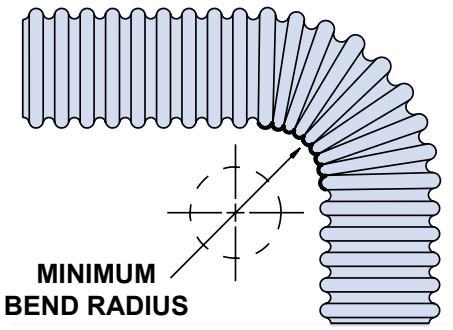
1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Consult factory for thin-wall, close convolution combination.
3. For PTFE maximum lengths consult factory.
4. Consult factory for PEEK™ min/max dimensions.

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Series 74 TYPE G EXTERNAL JACKET







C

TABLE I: TUBING SIZE ORDER NUMBER AND DIMENSIONS

TUBING SIZE	FRACTIONAL SIZE REF	A INSIDE DIA MIN		B DIA MAX		MINIMUM BEND RADIUS	
06	3/16	.181	(4.6)	.460	(11.7)	.50	(12.7)
09	9/32	.273	(6.9)	.554	(14.1)	.75	(19.1)
10	5/16	.306	(7.8)	.590	(15.0)	.75	(19.1)
12	3/8	.359	(9.1)	.650	(16.5)	.88	(22.4)
14	7/16	.427	(10.8)	.711	(18.1)	1.00	(25.4)
16	1/2	.480	(12.2)	.790	(20.1)	1.25	(31.8)
20	5/8	.603	(15.3)	.910	(23.1)	1.50	(38.1)
24	3/4	.725	(18.4)	1.070	(27.2)	1.75	(44.5)
28	7/8	.860	(21.8)	1.213	(30.8)	1.88	(47.8)
32	1	.970	(24.6)	1.366	(34.7)	2.25	(57.2)
40	1 1/4	1.205	(30.6)	1.679	(42.6)	2.75	(69.9)
48	1 1/2	1.437	(36.5)	1.972	(50.1)	3.25	(82.6)
56	1 3/4	1.688	(42.9)	2.222	(56.4)	3.63	(92.2)
64	2	1.937	(49.2)	2.472	(62.8)	4.25	(108.0)

APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Consult factory for thin-wall, close convolution combination.
3. For PTFE maximum lengths consult factory.
4. Consult factory for PEEK™ min/max dimensions.

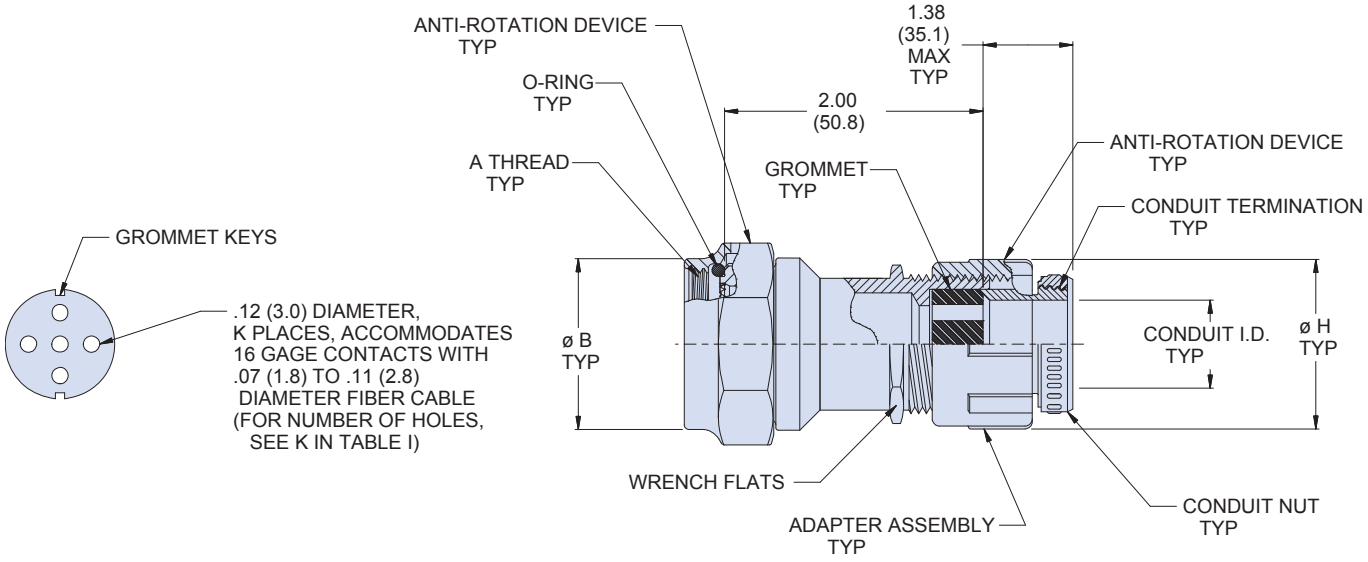
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377-041
Composite Fiber-Optic Conduit Backshell
Self-Locking Rotatable Coupling

CONNECTOR DESIGNATOR:
H - MIL-DTL-38999 Series III and IV U - DG123 and DG123A
SELF-LOCKING
ROTATABLE COUPLING
STANDARD PROFILE

377	H	S	041	XM	19	K	T
Product Series: *377 - Fiber Optic Strain Relief*	Connector Designator: *H and U*	Angle and Profile: *S - Straight*, *W - 90° Elbow*	Basic Part Number	Finish Symbol (*See Table I*)	Connector Shell Size (*See Table II*)	Add letter **K** for transition to accomodate PEEK conduit material. **Omit** for standard Fluoropolymer conduit material.	Shrink Boot Option (*Omit for none*)

C



Note: See Table II For Front-End Details and Shell Size References

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377-041
Composite Fiber-Optic Conduit Backshell
Self-Locking Rotatable Coupling

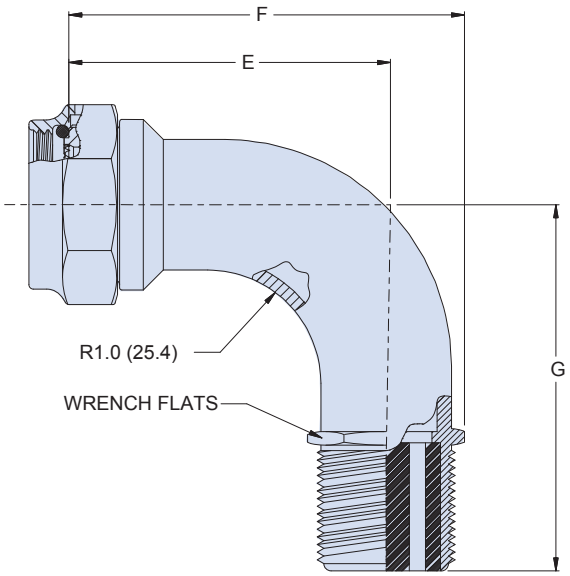


Table I

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	Components
XB	Composite	No Plating - Black Color	Elbow, Adapter, Coupling Nut and RFI Nut
XM		1000 Hr. Corrosion-Resistant Electroless Nickel	Adapter and RFI Nut
XW		1000 Hr. Corrosion-Resistant Cadmium Olive Drab over Electroless Nickel	Adapter and RFI Nut
XV		No Plating - Purple or Black Color (mfg. option)	Straight Body and Rear Adapter
		No Plating - Purple Color	Elbow Body, Coupling Nut, and Rear Nut

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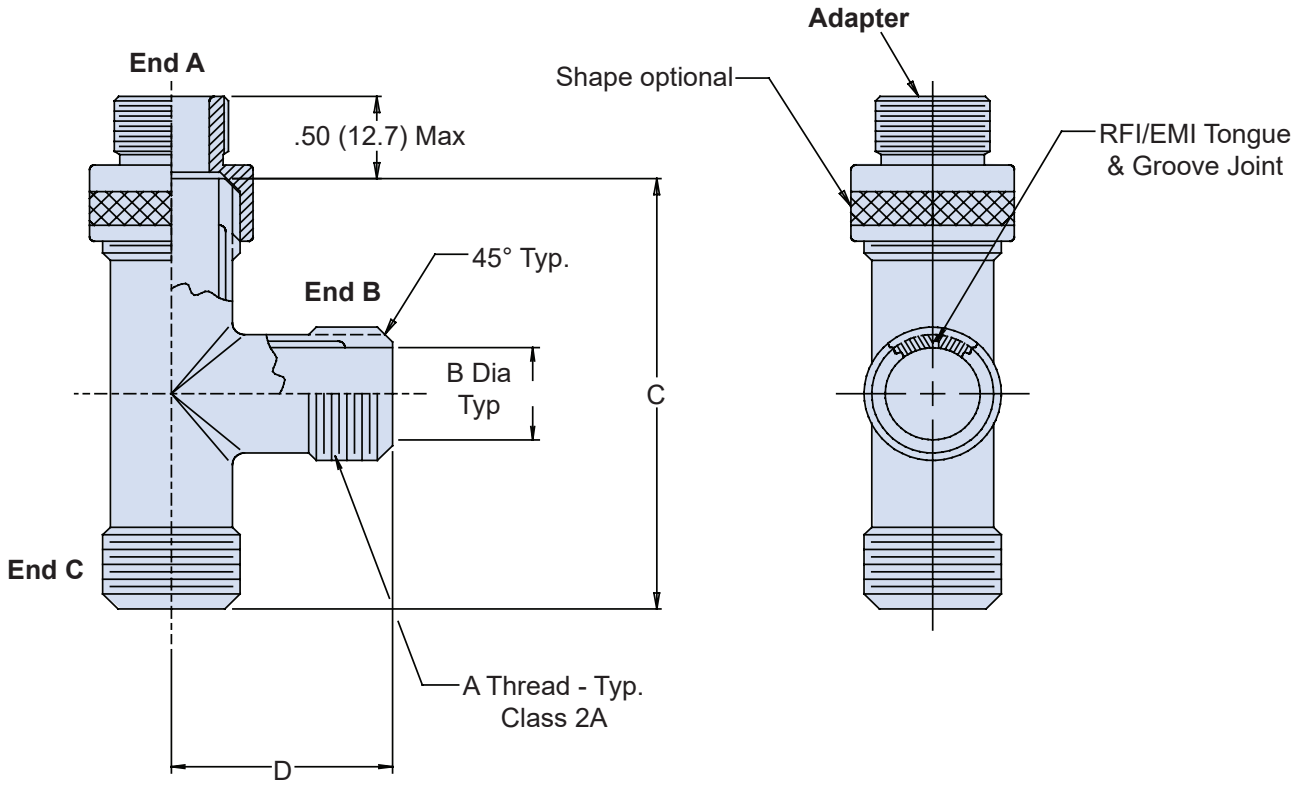
Glenair®

710-318
Composite Split Junction Fitting
"T" Configuration

Basic Part Number	End A Fitting (See Table I)	End C Fitting (See Table I)		
710-318	XM	03	04	05
	Finish Symbol (See Table II)	End B Fitting (See Table I)		

APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Transitions mate to 710S269, S270 and S271 adapters.
3. When all ends are identical, insert only one dash number. When multiple dash numbers are ordered, transition size will be determined by the largest. Adapter may be supplied on smaller entries. Letter to follow entry will be supplied with adapters.



C

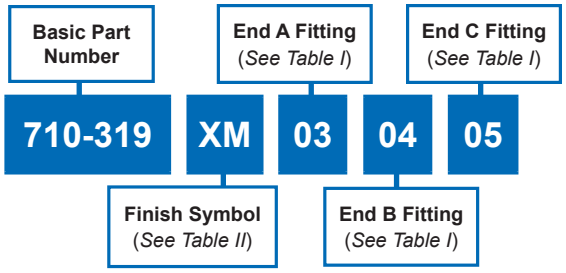
TABLE I: END ORDER NUMBER AND DIMENSIONS

End No.	A Thread Unified	B Dia		C Max		D Max		Weight in Pounds Max.
01	.750 - 20	.500	(12.7)	2.375	(60.3)	1.187	(30.1)	.082
02	1.000 - 20	.750	(19.1)	2.625	(66.7)	1.312	(33.3)	.114
03	1.312 - 18	1.000	(25.4)	2.875	(73.0)	1.437	(36.5)	.160
04	1.500 - 18	1.250	(31.8)	3.125	(79.4)	1.652	(42.0)	.191
05	2.000 - 18	1.625	(41.3)	3.500	(88.9)	1.750	(44.5)	.273
06	.500 - 20	.281	(7.1)	2.125	(54.0)	1.062	(27.0)	.031
07	.625 - 24	.375	(9.5)	2.250	(57.2)	1.125	(28.6)	.043

Table II: Finish	
Code	Finish Description
XM	1000 Hr. Corrosion-Resistant Electroless Nickel
XW	1000 Hr. Corrosion-Resistant Cadmium Olive Drab over Electroless Nickel
XB	No Plating - Black Color
XV	No Plating - Purple Color

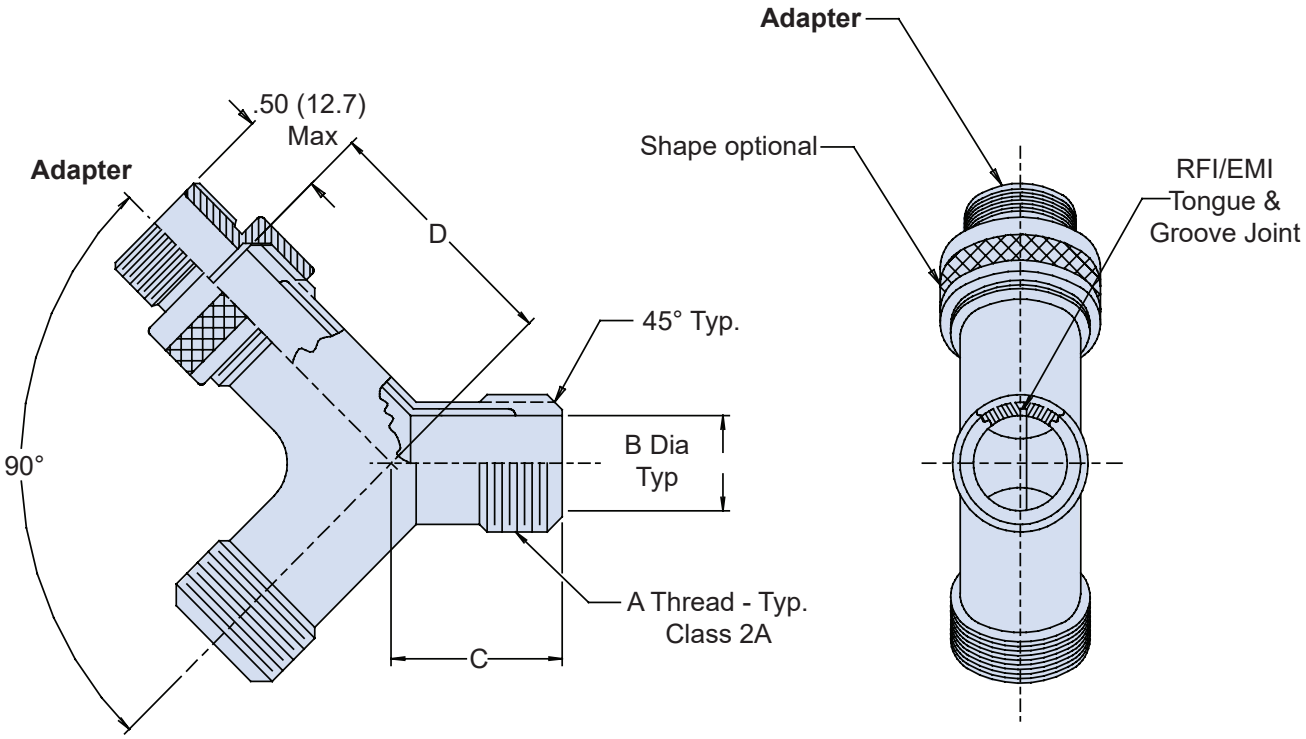
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710-319
Composite Split Junction Fitting
"Y" Configuration



APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Transitions mate to 710S269, S270 and S271 adapters.
3. When all ends are identical, insert only one dash number. When multiple dash numbers are ordered, transition size will be determined by the largest. Adapter may be supplied on smaller entries. Letter to follow entry will be supplied with adapters.



C

TABLE I: END ORDER NUMBER AND DIMENSIONS

End No.	A Thread Unified	B Dia		C Max		D Max	
01	.750 - 20	.500	(12.7)	1.312	(33.3)	1.312	(33.3)
02	1.000 - 20	.750	(19.1)	1.500	(38.1)	1.500	(38.1)
03	1.312 - 18	1.000	(25.4)	1.937	(49.2)	1.937	(49.2)
04	1.500 - 18	1.250	(31.8)	2.187	(55.5)	2.187	(55.5)
05	2.000 - 18	1.625	(41.3)	2.625	(66.7)	2.625	(66.7)

Table II: Finish

Code	Finish Description
XM	1000 Hr. Corrosion-Resistant Electroless Nickel
XW	1000 Hr. Corrosion-Resistant Cadmium Olive Drab over Electroless Nickel
XB	No Plating - Black Color
XV	No Plating - Purple Color

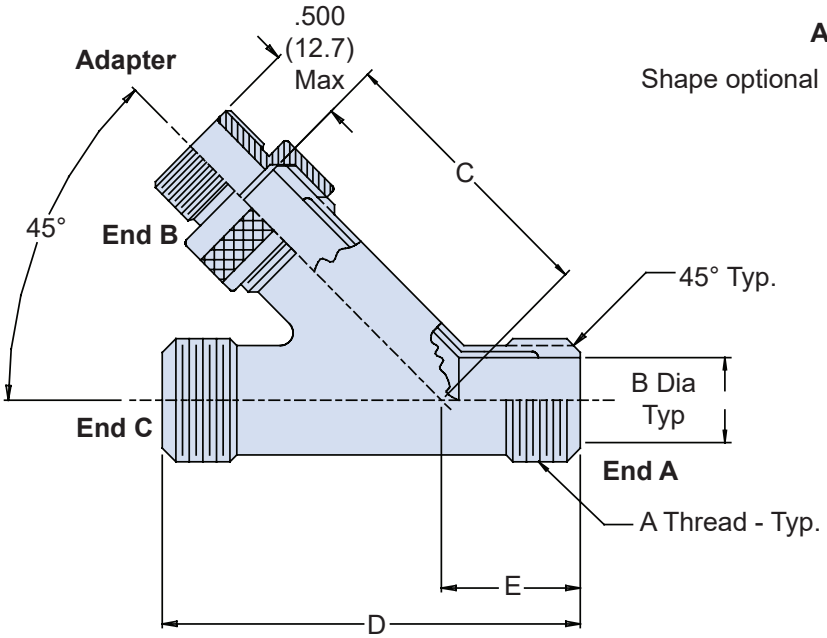
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710-320
Composite Split Junction Fitting
Straight with 45° Branch Configuration

Basic Part Number	End A Fitting (See Table I)	End C Fitting (See Table I)		
710-320	XM	03	04	05
	Finish Symbol (See Table II)	End B Fitting (See Table I)		

APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Transitions mate to 710S269, S270 and S271 adapters.
3. When all ends are identical, insert only one dash number. When multiple dash numbers are ordered, transition size will be determined by the largest. Adapter may be supplied on smaller entries. Letter to follow entry will be supplied with adapters.



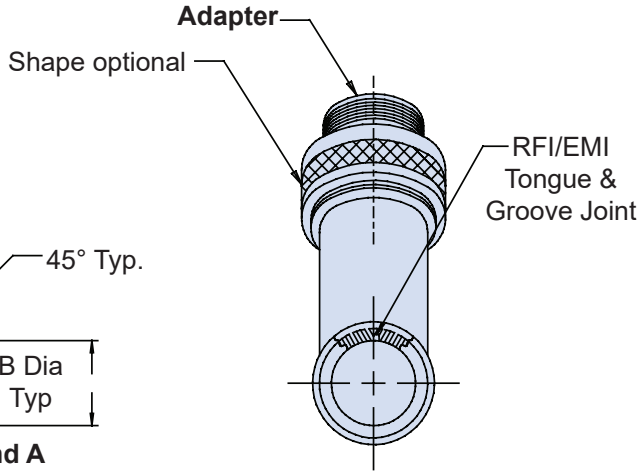


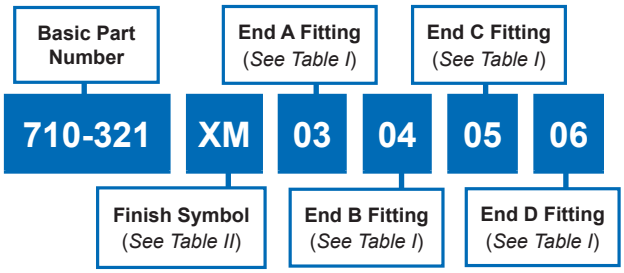
Table II: Finish	
Code	Finish Description
XM	1000 Hr. Corrosion-Resistant Electroless Nickel
XW	1000 Hr. Corrosion-Resistant Cadmium Olive Drab over Electroless Nickel
XB	No Plating - Black Color
XV	No Plating - Purple Color

TABLE I: END ORDER NUMBER AND DIMENSIONS

End No.	A Thread Unified	B Dia	C Max	D Max	E Max	Weight in Pounds Max.
01	.750 - 20	.500 (12.7)	2.250 (57.2)	3.000 (76.2)	1.125 (28.6)	.093
02	1.000 - 20	.750 (19.1)	2.500 (63.5)	3.375 (85.7)	1.188 (30.2)	.132
03	1.312 - 18	1.000 (25.4)	2.875 (73.0)	4.000 (101.6)	1.333 (33.9)	.192
04	1.500 - 18	1.250 (31.8)	3.125 (79.4)	4.375 (111.1)	1.458 (37.0)	.235
05	2.000 - 18	1.625 (41.3)	3.625 (92.1)	5.125 (130.2)	1.708 (43.4)	.347
06	.500 - 20	.281 (7.1)	1.750 (44.5)	2.625 (66.7)	1.000 (25.4)	.034
07	.625 - 24	.375 (9.5)	2.062 (52.4)	2.750 (69.9)	1.062 (27.0)	.047

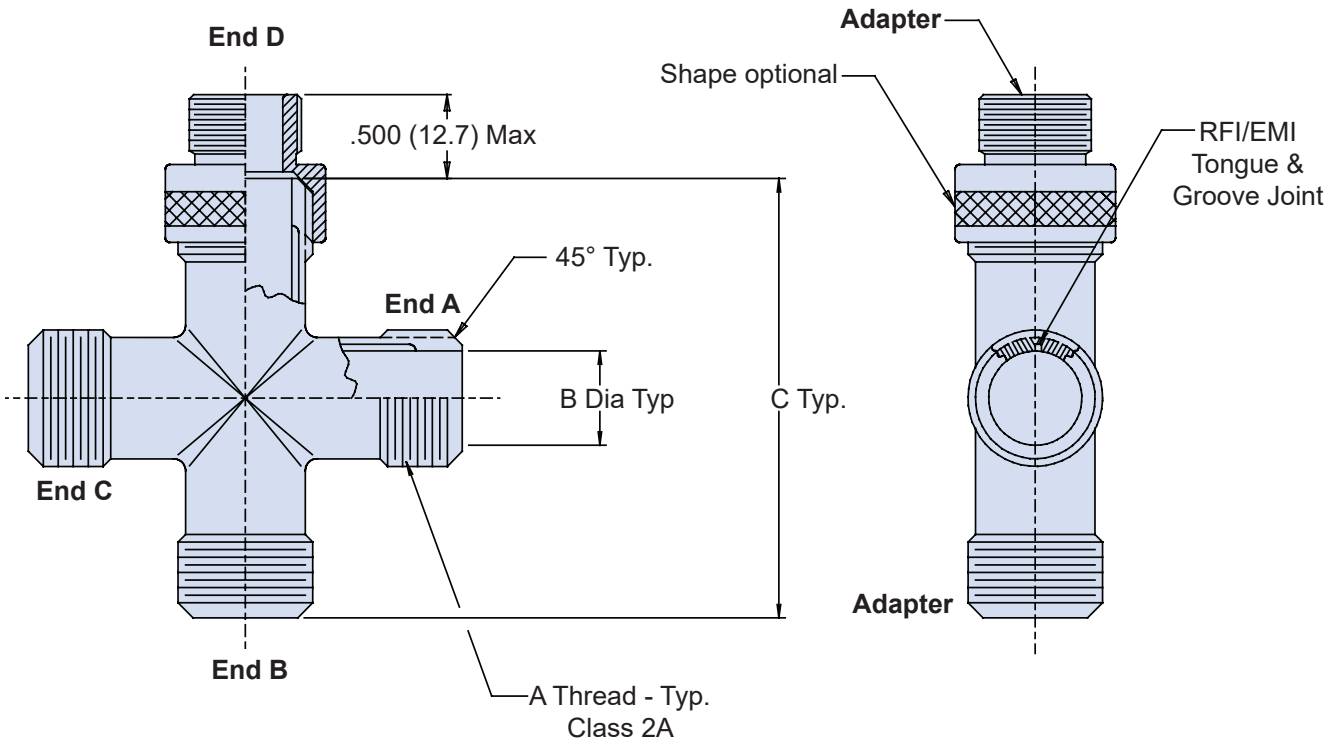
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710-321
Composite Split Junction Fitting
Plus ("+") Configuration



APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Transitions mate to 710S269, S270 and S271 adapters.
3. When all ends are identical, insert only one dash number. When multiple dash numbers are ordered, transition size will be determined by the largest. Adapter may be supplied on smaller entries. Letter to follow entry will be supplied with adapters.



C

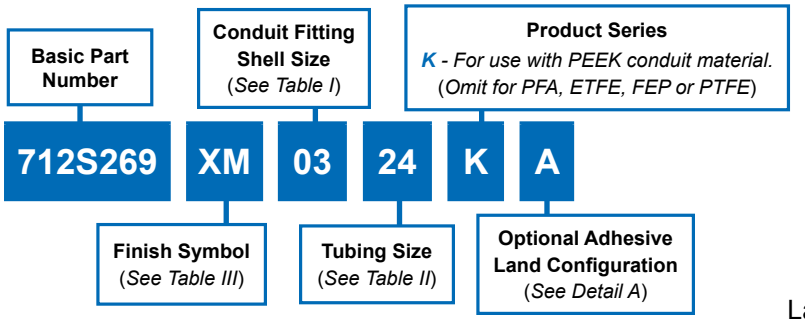
TABLE I: END ORDER NUMBER AND DIMENSIONS

End No.	A Thread Unified	B Dia		C Max		Weight in Pounds Max.
01	.750 - 20	.500	(12.7)	2.375	(60.3)	.109
02	1.000 - 20	.750	(19.1)	2.625	(66.7)	.152
03	1.312 - 18	1.000	(25.4)	2.875	(73.0)	.213
04	1.500 - 18	1.250	(31.8)	3.125	(79.4)	.254
05	2.000 - 18	1.625	(41.3)	3.500	(88.9)	.364
06	.500 - 20	.281	(7.1)	2.125	(54.0)	.041
07	.625 - 24	.375	(9.5)	2.250	(57.2)	.057

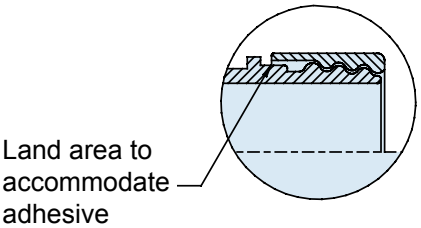
Table II: Finish	
Code	Finish Description
XM	1000 Hr. Corrosion-Resistant Electroless Nickel
XW	1000 Hr. Corrosion-Resistant Cadmium Olive Drab over Electroless Nickel
XB	No Plating - Black Color
XV	No Plating - Purple Color

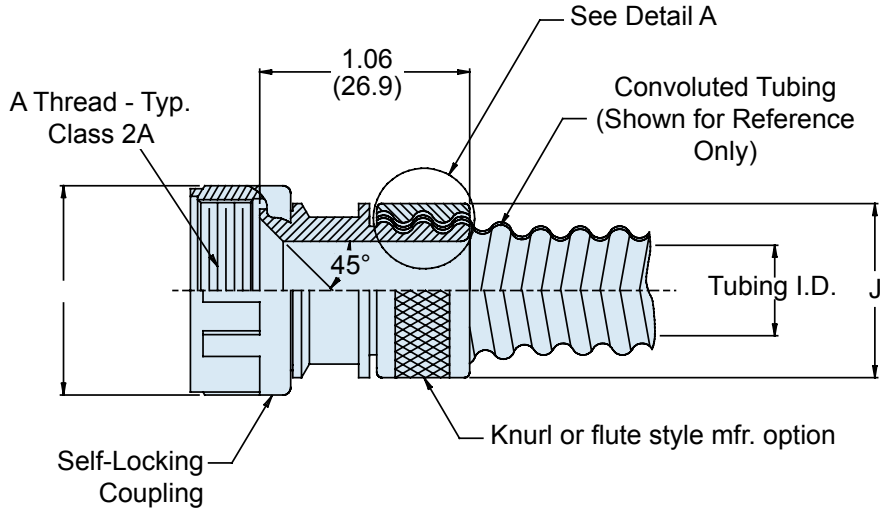
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712S269
Composite Shrink Boot Conduit Fitting
For Glenair Series 74 Helical Convoluted Tubing



DETAIL A
Optional Adhesive Land Configuration (See Part Number)





C

TABLE III	
Symbol	**Finish Description**
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE II: TUBING SIZE				
Tubing Size	**Conduit I.D.**		**J Dia 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)
56	1.750	(44.5)	2.660	(67.6)
64	2.000	(50.8)	2.910	(73.9)

TABLE I: CONDUIT FITTING SHELL SIZE			
Shell Size	**A Thread Unified**	**Max Conduit Size Table 2**	**Weight in Pounds Max.**
01	.750 - 20	16	.032
02	1.000 - 20	24	.043
03	1.312 - 18	32	.057
04	1.500 - 18	40	.070
05	2.000 - 18	64	.094
06	.500 - 20	09	.030
07	.625 - 24	12	.031

APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Convoluted tubing to be ordered seperately. See Type A.
3. Mates to 710-318, -319, -320 and -321 transitions
4. Coupling nut supplied unplated.
5. For permanent termination use 3M Scotch Weld after installing tubing. See detail A.

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712S270
Composite EMI/RFI Single Shield Termination
Conduit Fitting
For Glenair Series 74 Helical Convoluted Tubing

Basic Part Number	Conduit Fitting Shell Size (See Table I)	Product Series K - For use with PEEK conduit material. (Omit for PFA, ETFE, FEP or PTFE)		
712S270	XM	03	24	K
	Finish Symbol (See Table III)	Tubing Size (See Table II)		

TABLE III

Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

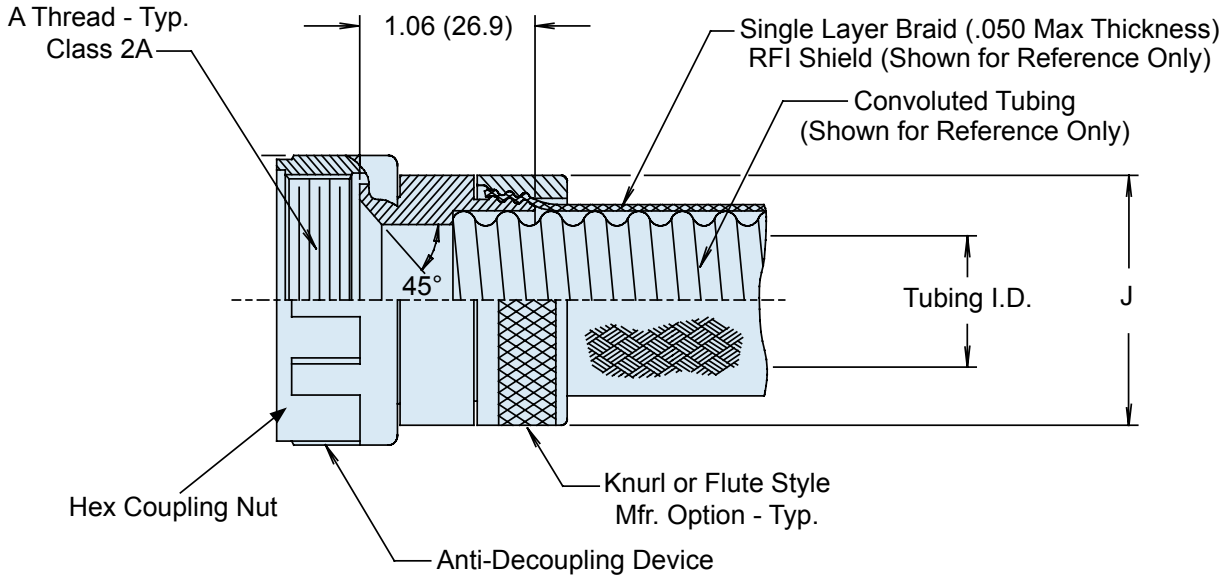


TABLE I: CONDUIT FITTING SHELL SIZE

Shell Size	A Thread Unified	Max Conduit Size Table 2	Weight in Pounds Max.
01	.750 - 20	16	.035
02	1.000 - 20	24	.047
03	1.312 - 18	32	.062
04	1.500 - 18	40	.077
05	2.000 - 18	64	.104
06	.500 - 20	09	.030
07	.625 - 24	12	.031

TABLE II: TUBING SIZE

Tubing Size	Conduit I.D.		J Dia 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)
56	1.750	(44.5)	2.660	(67.6)
64	2.000	(50.8)	2.910	(73.9)

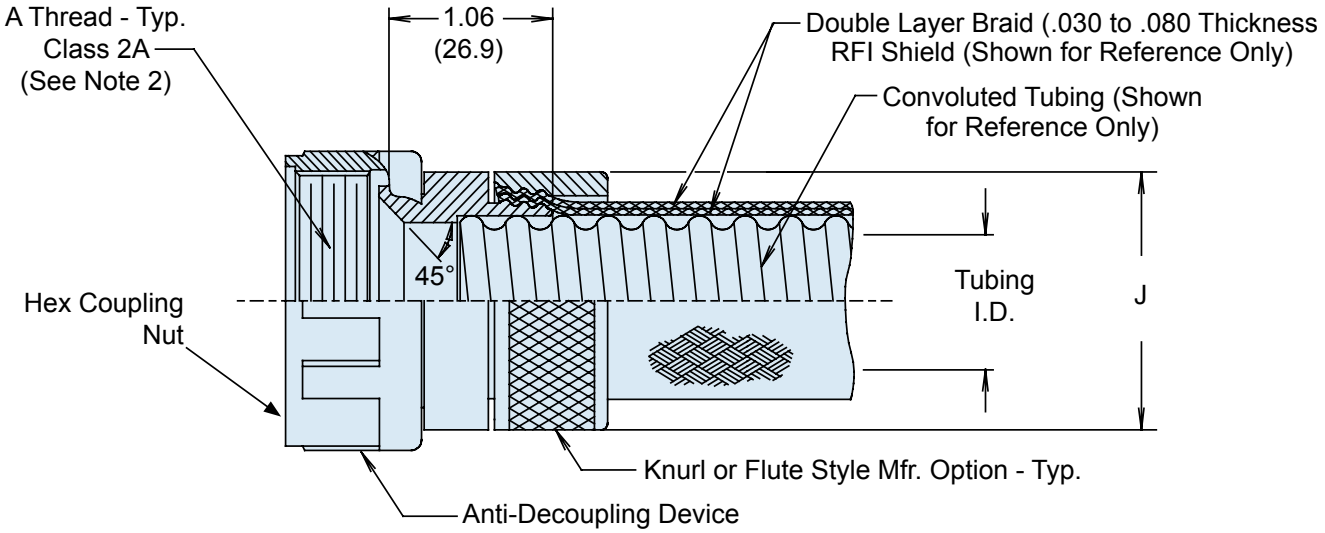
APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Convoluted tubing to be ordered seperately. See Type B, D and E.
3. Mates to 710-318, -319, -320 and -321 transitions
4. Coupling nut supplied unplated.

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712S271
Composite Dual EMI/RFI Shield Termination
Conduit Fitting
For Glenair Series 74 Helical Convoluted Tubing

Basic Part Number	Conduit Fitting Shell Size (See Table I)		Product Series K - For use with PEEK conduit material. (Omit for PFA, ETFE, FEP or PTFE)	
712S271	XM	03	24	K
	Finish Symbol (See Table III)		Tubing Size (See Table II)	



APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Convoluted tubing to be ordered seperately. See Type E tubing.
3. Mates to 710-318, -319, -320 and -321 transitions
4. Coupling nut supplied unplated.

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TABLE I: CONDUIT FITTING SHELL SIZE			
Shell Size	A Thread Unified	Max Conduit Size Table 2	Weight in Pounds Max.
01	.750 - 20	16	.035
02	1.000 - 20	24	.047
03	1.312 - 18	32	.062
04	1.500 - 18	40	.077
05	2.000 - 18	64	.104
06	.500 - 20	09	.030
07	.625 - 24	12	.031

TABLE II: TUBING SIZE				
Tubing Size	Conduit I.D.		J Dia 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)
56	1.750	(44.5)	2.660	(67.6)
64	2.000	(50.8)	2.910	(73.9)

TABLE III	
Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

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712-419
Composite Conduit-to-Connector Adapter
Straight, 45° and 90°
For Glenair Series 74 Helical Convoluted Tubing

Product Series	Angle and Profile		Finish Symbol	Tubing Size	To Accomodate EMI or Dacron Over Braid				
712 - Conduit Adapter	*S - Straight* *T - 45° Elbow* *W - 90° Elbow*		(See Table III)	(See Table II)	(Omit if not required)				
712	**F**	**T**	**419**	**XM**	**19**	**12**	**K**	**1**	**A**
Connector Designator *A, F, H and U*			**Basic Part Number**	**Connector Shell Size** (See Table I)		**Tubing Option** *K - PEEK* (Omit for PFA, ETFE, FEP or PTFE; see note 2)		**Optional Configuration** (See Detail A)	

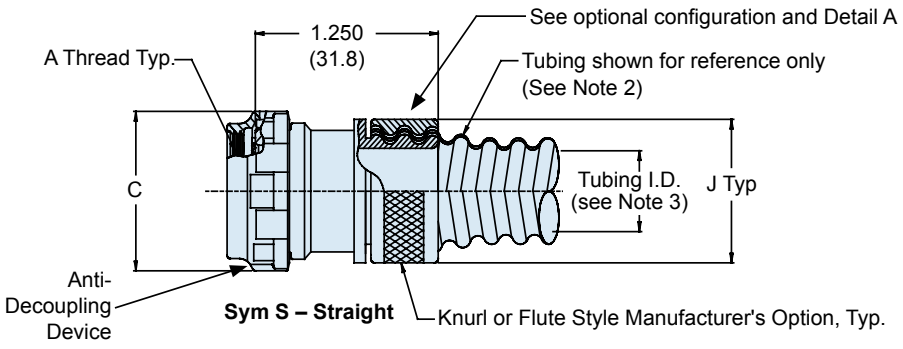
CONNECTOR DESIGNATOR:

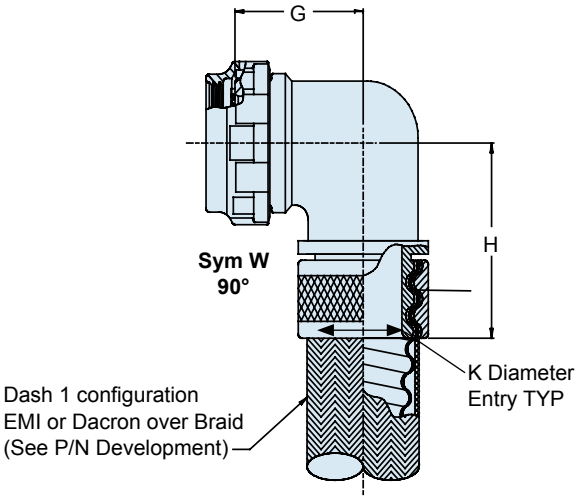
A - MIL-DTL-5015 / -26482 / -83723
F - MIL-DTL-38999 Series I, II
H - MIL-DTL-38999 Series III and IV
U - DG123 and DG123A

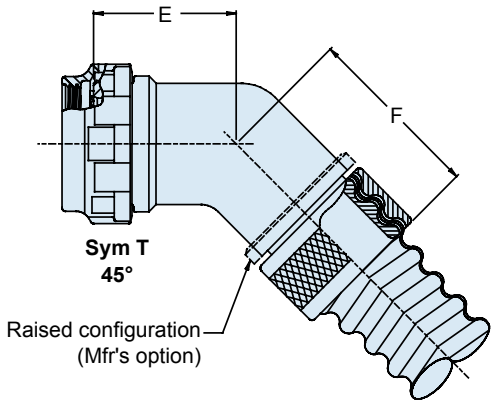
SELF-LOCKING

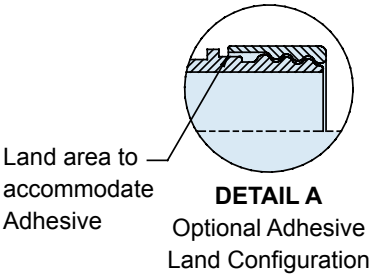
ROTATABLE COUPLING

LOW PROFILE









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712-419
Composite Conduit-to-Connector Adapter
Straight, 45° and 90°
For Glenair Series 74 Helical Convoluted Tubing

TABLE I: CONNECTOR SHELL SIZE ORDER NUMBER

Shell Size A,F & H	Shell Size G & U	E ±.06 (1.5)	F ±.09 (2.3)	G ±.06 (1.5)	H ±.09 (2.3)	Tubing Size Max.
08, 09	–	.72 (18.3)	.89 (22.6)	.69 (17.5)	1.11 (28.2)	09
03, 10, 11	08	.75 (19.1)	.95 (24.1)	.75 (19.1)	1.16 (29.5)	12
12, 13	10, 11	.75 (19.1)	1.02 (25.9)	.81 (20.6)	1.22 (31.0)	16
14, 15	12, 13	.76 (19.3)	1.05 (26.7)	.88 (22.4)	1.29 (32.8)	20
16, 17	14, 15	.78 (19.8)	1.07 (27.2)	.94 (23.9)	1.35 (34.3)	24
18, 19	16, 17	.79 (20.1)	1.08 (27.4)	.97 (24.6)	1.38 (35.1)	28
20, 21	18, 19	.82 (20.8)	1.11 (28.2)	1.06 (26.9)	1.47 (37.3)	32
22, 23	20	.86 (21.8)	1.15 (29.2)	1.13 (28.7)	1.54 (39.1)	32
24, 25, 61	22, 23	.89 (22.6)	1.18 (30.0)	1.19 (30.2)	1.73 (43.9)	40
28	24, 25	.92 (23.4)	1.21 (30.7)	1.34 (34.0)	1.82 (46.2)	40

TABLE II: TUBING SIZE

Tubing Size	Conduit I.D.	J Dia Max	K Dia. Entry ± .03 (.76)
06	.188 (4.8)	.54 (13.7)	.12 (3.0)
09	.281 (7.1)	.63 (16.0)	.22 (5.6)
10	.312 (7.9)	.69 (17.5)	.24 (6.1)
12	.375 (9.5)	.73 (18.5)	.29 (7.4)
14	.437 (11.1)	.80 (20.3)	.34 (8.6)
16	.500 (12.7)	.87 (22.1)	.40 (10.2)
20	.625 (15.9)	1.00 (25.4)	.52 (13.2)
24	.750 (19.1)	1.18 (30.0)	.65 (16.5)
28	.875 (22.2)	1.32 (33.5)	.78 (19.8)
32	1.000 (25.4)	1.47 (37.3)	.90 (22.9)
40	1.250 (31.8)	1.76 (44.7)	1.08 (27.4)
48	1.500 (38.1)	2.13 (54.1)	1.32 (33.5)

TABLE III

Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. Convoluted tubing size, tubing to be ordered separately (see Series 74 Catalog, Type A Tubing Section, Standard Pitch). Dash 1 configuration accommodates Type B or D Tubing. For PTFE maximum lengths - consult factory.
3. Different adapters are necessary to terminate PEEK tubing. Nominal I.D. reduced by approximately .060 (use Suffix P) in P/N development. For permanent termination use 3M Scotch Weld after installing tubing/shielding, see Detail A.

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Glenair Composite Braid Doesn't Make the Fire Scout Fly...



...But It Sure Helps

When Northrop Grumman faced the challenge of reducing total system weight of the MQ-8B Fire Scout without sacrificing performance, they turned to their suppliers for help. Glenair suggested replacing the braided metal shielding used in the revolutionary aircraft with our lighter weight composite product. We explained the potential weight savings could be as much as 35% compared to the current base cable harness design, equipped with tin/copper shielding. The integration of composite EMI/RFI braid would not only reduce weight, but also improve the system's corrosion resistance and durability—all at no added risk to sensitive electronic equipment.

As it turned out, the use of composite shielding reduced the main cable harness assembly by 12.5 Lbs.—not an insignificant amount when reduced fuel fractions and the ability to remain aloft for extended periods are key mission requirements.

Glenair®

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United States · United Kingdom · Germany · Nordic · France · Italy · Spain · Japan
www.glenair.com

Glenair Composite Metal-Clad Lightweight AmberStrand® EMI/RFI Braided Shielding

For many applications, the cable shield is the most important element in controlling EMI. Unfortunately, metal shielding—especially when applied in multiple layers—can be extremely heavy. The opportunity to provide robust EMI shielding at a fraction of the weight is the principal advantage of composite thermoplastic braid made from AmberStrand® material. Transfer impedance test reports demonstrate the effectiveness of the material as compared to conventional metal solutions. Mechanical properties are comparable to other non-metallic materials (see Table I).

Electrically Conductive

Superior High Frequency Shielding in High Temperature Applications

Pure AmberStrand® and Blended AmberStrand®/Nickel Copper Configurations

Comparable Performance to 36 AWG Tubular Copper Braid

Lightweight, Corrosion-Free

100 Feet of 5/8" AmberStrand Vs. Tinned Copper Shield Saves 5+ Pounds

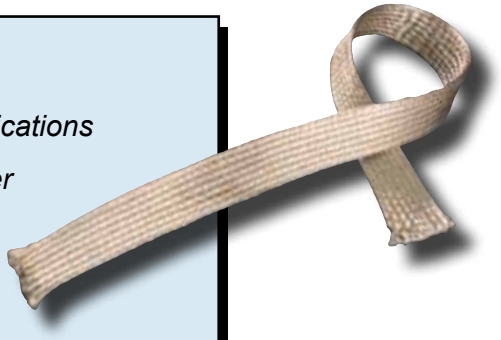


TABLE I: AMBERSTRAND® MECHANICAL PERFORMANCE COMPARED TO OTHER MATERIALS

Material Type	AmberStrand® (Thermoplastic)	PEEK (Monofil)	Teflon (Yarn)	Kevlar (Yarn)	Dacron (Yarn)	Halar (Monofil)	Teflon FEP (Monofil)	Nomex (Yarn)	Polyester Type FR (Monofil)	Ryton Type R-7 (Monofil)
Glenair P/N	103-026 103-027	102-051	102-061	102-071	102-073	102-023	102-060	103-013	102-001 102-002	102-080
Temperature Range	-65° C to +200°C	-65° C to +260°C	-55° C to +260°C	-55° C to +200°C	-73° C to +175°C	-62° C to +150°C	-65° C to +200°C	-55° C to +260°C	-55° C to +125°C	-55° C to +200°C
Tensile Strength (PSI) Yield	590,000	780,000	40,000	400,000	160,000	35,000	14,000	90,000	50,000	19,000
Elongation %	2.5%	38%	19%	3.6%	12%	15%	50%	252%	20%	35%
Chemical Resistance	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Good	Excellent
Abrasion Resistance	Good	Excellent	Good	Good	Excellent	Excellent	Good	Good	Good	Excellent
Specific Gravity	1.45	1.30	2.10	1.44	1.38	1.68	2.17	1.58	1.38	1.25
Flammability	Will Not Burn	Very Low	Will Not Burn	Will Not Melt	Flammable	Flammable	Very Low	Will Not Melt	Very Low	Very Low

* Weight savings based on comparison to 36 AWG A-A-59569 tubular copper braid

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103-026
100% AmberStrand® Composite Braid
for EMI Shielding Applications

Glenair®

Composite Shielding

TABLE I			
Dash Number	Nominal I.D. (Ref.)	Ref. Wire Bundle Range	Approximate Grams Per Foot
004	.125 (3.2)	.093 (2.4) .140 (3.5)	1.0
008	.250 (6.4)	.125 (3.2) .312 (7.9)	1.8
012	.375 (9.5)	.250 (6.4) .437 (11.1)	2.3
016	.500 (12.7)	.250 (6.4) .375 (15.0)	3.7
020	.625 (15.9)	.375 (9.5) .700 (17.8)	4.4
024	.750 (19.1)	.500 (12.7) .830 (21.1)	5.2
032	1.000 (25.4)	.780 (19.8) 1.100 (27.94)	8.0
040	1.250 (31.8)	.938 (23.8) 1.312 (33.3)	10.0
048	1.500 (38.1)	1.187 (30.1) 1.590 (40.37)	15.2
064	2.000 (50.8)	1.312 (33.3) 2.090 (53.08)	22.0

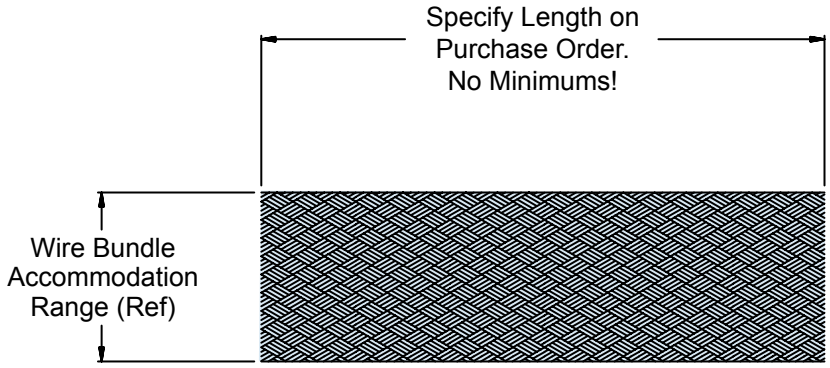
Product Series
103 - Braided Shielding

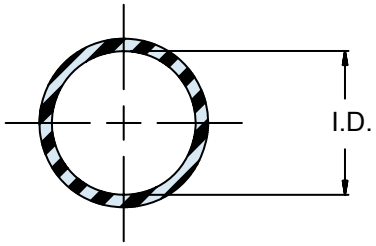
Dash Number

103 - 026 - 024

100% AmberStrand Metal-Clad Composite







APPLICATION NOTES

1. Marking - Label individual packages.
2. Material - Nickel Clad/Thermoplastic, silver color. Braid angle all sizes 40° - 50°
3. Braid is made from Nickel-plated AmberStrand® composite thermoplastic fibers. AmberStrand® is a registered trademark of Syscom Advanced Materials, Inc.
4. Metric dimensions (mm) are in parentheses and for reference only.

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103-027
75% / 25% AmberStrand® Composite / NiCu Braid
for EMI Shielding Applications

Glenair®

TABLE I			
Dash Number	Nominal I.D. (Ref.)	Ref. Wire Bundle Range	Approximate Grams Per Foot
004	.125 (3.2)	.093 (2.4) .140 (3.5)	1.5
008	.250 (6.4)	.125 (3.2) .312 (7.9)	2.4
012	.375 (9.5)	.250 (6.4) .437 (11.1)	3.9
016	.500 (12.7)	.250 (6.4) .375 (15.0)	6.0
020	.625 (15.9)	.375 (9.5) .700 (17.8)	6.4
024	.750 (19.1)	.500 (12.7) .830 (21.1)	7.2
032	1.000 (25.4)	.780 (19.8) 1.100 (27.94)	11.0
040	1.250 (31.8)	.938 (23.8) 1.312 (33.3)	15.0
048	1.500 (38.1)	1.187 (30.1) 1.590 (40.37)	25.2
064	2.000 (50.8)	1.312 (33.3) 2.090 (53.08)	32.0

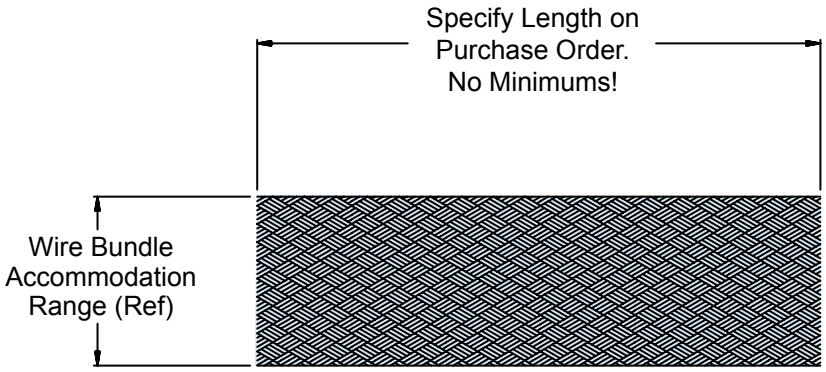
Product Series
103 - Braided Shielding

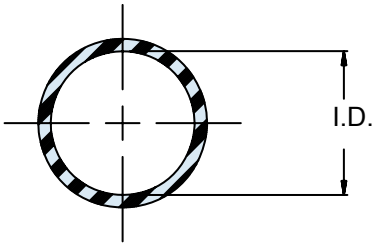
Dash Number

103 - 027 - 024

75%/25% Blended AmberStrand® Composite / NiCu Braid







D

APPLICATION NOTES

1. Marking - Label individual packages.
2. Material - Nickel Clad/Thermoplastic, silver color.
   Nickel plated Copper wire/ASTM B355 CL.7 OFHC, 36 awg
   Braid angle all sizes 40° - 50°
3. Consult factory for alternative blend ratios.
4. Braid is made from Nickel-plated AmberStrand® composite thermoplastic fibers. AmberStrand® is a registered trademark of Syscom Advanced Materials, Inc.
5. Metric dimensions (mm) are in parenthesis and for reference only.

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102-051
PEEK Tubular Braid (Black)
for Series 74 Convoluted Tubing

Product Series
102 - Braided Shielding

102 - 051 **008**

Tubular Braid Size
(*See Table I*)

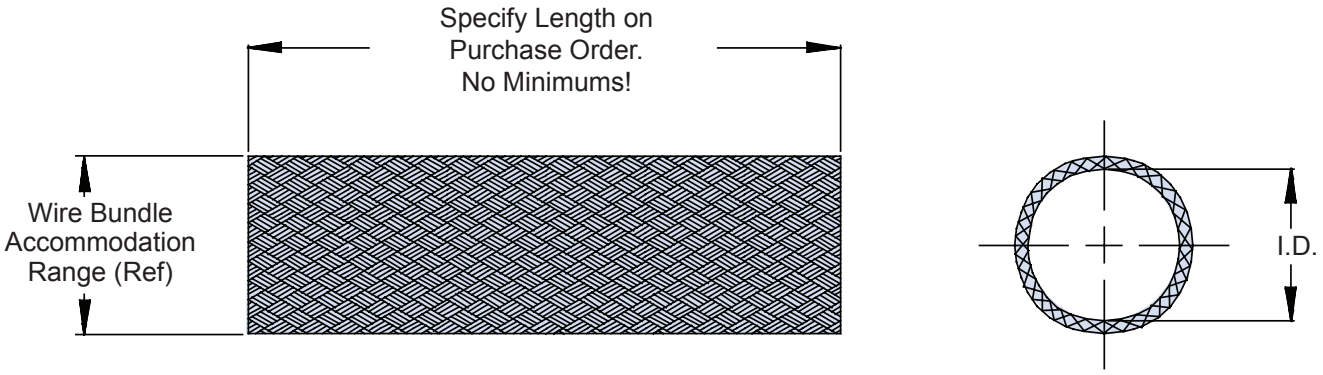


Table I

Part No.	Nominal I.D.	Wire Bundle Accommodation Range Ref.	
		Min.	Max.
102-051-004	.125 (3.2)	.125 (3.2)	.187 (4.7)
102-051-008	.250 (6.4)	.250 (6.4)	.360 (9.1)
102-051-012	.375 (9.5)	.312 (7.9)	.430 (10.9)
102-051-016	.500 (12.7)	.375 (9.5)	.600 (15.2)
102-051-024	.750 (19.1)	.500 (12.7)	.810 (20.6)
102-051-040	1.250 (31.8)	.750 (19.1)	1.312 (33.3)
102-051-064	2.000 (50.8)	.937 (23.8)	2.187 (55.5)
102-051-080	2.500 (63.5)	1.125 (28.6)	2.687 (68.2)

APPLICATION NOTES

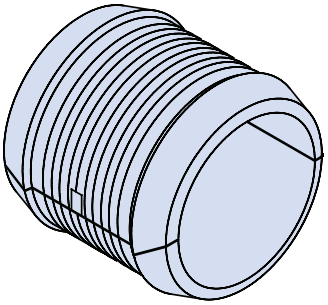
1. Metric dimensions (mm) are in parentheses and are for reference only.

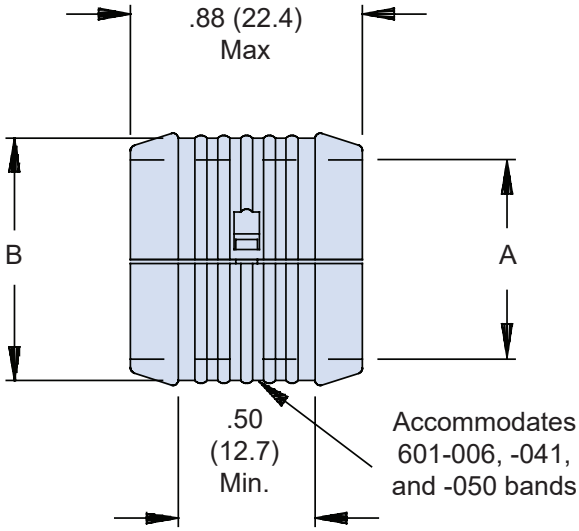
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687-749
Composite AS85049/93
Banding Split-Ring

For Use with Glenair Banding Backshells and Braid Socks

Consult Factory for Information on Other Split Ring Designs and Part Numbers





Basic Number	Cable Entry Diameter (See Table I)		
687-749	XB	16	K
	Finish Symbol *XB - No Plating, Black Material*		**Band Option** *K - Assembly includes pre-coiled band. Omit if not required.*

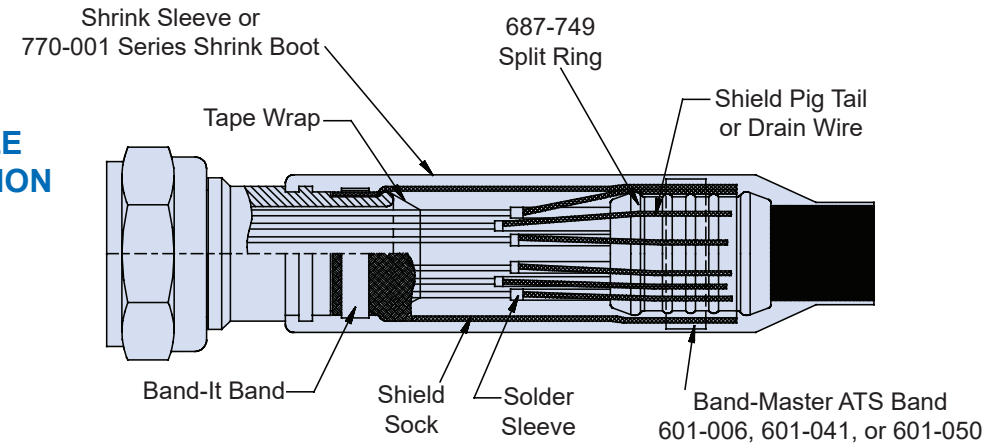
APPLICATION NOTES

1. 687-749 supersedes and replaces 687-207 split ring.
2. Metric dimensions (mm) are in parentheses and are for reference only.

TABLE I: DASH NUMBER

Dash No.	A Diameter ± .03	(0.8)	B Diameter ± .03	(0.8)	Compatible Glenair Band
04	.25	(6.4)	.36	(9.1)	601-006
06	.38	(9.7)	.49	(12.4)	601-006
08	.50	(12.7)	.61	(15.5)	601-006
10	.63	(16.0)	.74	(18.8)	601-006
12	.75	(19.1)	.86	(21.8)	601-006
14	.88	(22.4)	.99	(25.1)	601-041
16	1.00	(25.4)	1.10	(27.9)	601-041
18	1.13	(28.7)	1.24	(31.5)	601-041
20	1.25	(31.8)	1.36	(34.5)	601-041
22	1.38	(35.1)	1.49	(37.8)	601-041
24	1.50	(38.1)	1.61	(40.9)	601-041
26	1.63	(41.4)	1.74	(44.2)	601-041
28	1.75	(44.5)	1.86	(47.2)	601-050
30	1.88	(47.8)	2.00	(50.8)	601-050
32	2.00	(50.8)	2.13	(54.1)	601-050
36	2.25	(57.2)	2.38	(60.4)	601-050

EXAMPLE APPLICATION



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Glenair Announces:

140 Series EMI/RFI Composite Boxes

Now NAVSEA Approved for use on U.S. Naval Ships

NAVSEA Approved Composite Electrical Enclosures

Junction Boxes - Electrical Boxes - Sound-Powered Phones

NAVSEA Approval: Glenair advanced, corrosion-control composite electrical boxes are now NAVSEA approved for deployment around the fleet. All testing has been completed and NAVSEA is working with NAVSUP Mechanicsburg to introduce the individual boxes and replacement parts to the stock system. For NAVSEA contact information or for the latest procurement information on the NAVSEA 803-6983506 drawing please contact Glenair @ 818-247-6000.

Glenair salutes and extends its thanks to the many officers and sailors who participated in sea trails to evaluate and perfect the NAVSEA composite box conversion project, including the men and women of the:

- USS Geo. Washington (CVN-73)
- USS Theo. Roosevelt (CVN-71)
- USS Barry (DDG-52)
- USS Comstock (LSD-45)
- USS Vella Gulf (CG-72)
- USS Rushmore (LSD-47)
- USS Enterprise (CVN-65)
- USS D. D. Eisenhower (CVN-69)
- USS Curtis Wilbur (DDG54)
- USS John S. McCain (DDG56)
- USS Whidbey Island (LSD-41)
- USS Germantown (LSD-42)
- USS Fort McHenry (LSD-43)
- USS Harpers Ferry (LSD-49)
- USS Pearl Harbor (LSD-52)

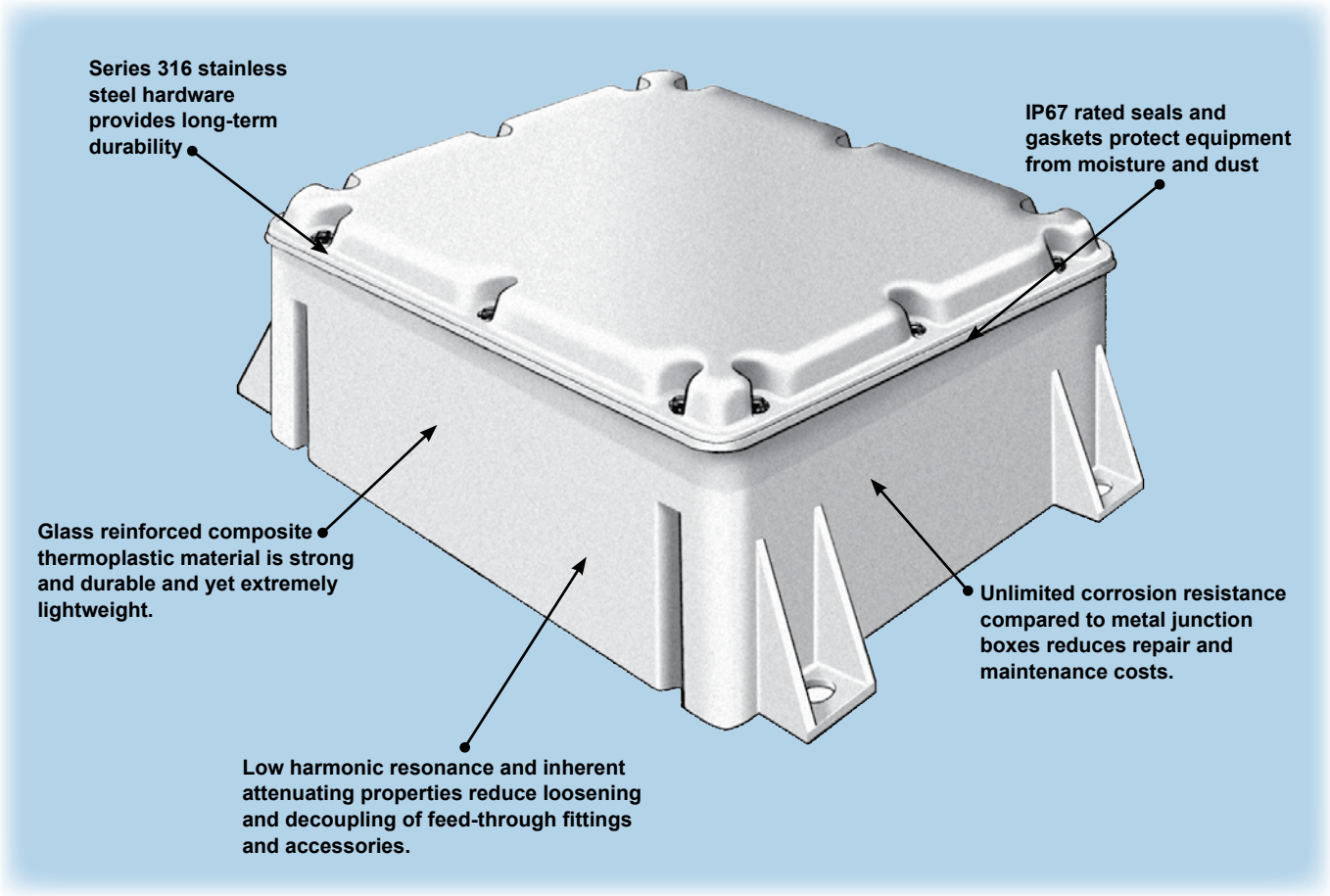
How to Order

Box/Part Type	National Stock Number (NSN)	Glenair Series Part Number	Navy Symbol Number Ref.
Junction Boxes			
Small Round	5975-01-556-7948	140-060XMS-05	-
Small Rectangular	5975-01-556-7957	140-060XMS-01	-
Medium Rectangular	5940-01-557-2672	140-060XMS-02	-
Large Rectangular	5940-01-557-2679	140-060XMS-03	-
Electrical Boxes			
Single Gang	5940-01-557-2645	147-023XMS-01	735.3
Single Gang	5940-01-557-2667	147-023XMS-02	1099.1
Single Gang	5940-01-557-2725	147-033XMS-0003	1098.1
Single Gang	5940-01-557-2719	147-032XMS-0005G	1101
Dual Gang	5975-01-556-9504	147-020XMS-02	-
Dual Gang	5940-01-557-2634	147-020XMS-05	-
Sound Powered Phone Box			
Single Gang	5975-01-556-9617	147-022XMS-01	2841
Dual Gang	5975-01-556-9572	147-021XMS-02	2842
Quad Gang	5940-01-557-2639	147-021XMS-03	2843
Terminal Boxes			
Small Round	5940-01-557-2579	140-060XMS-05T2	5201
Small Round	5940-01-557-2712	140-060XMS-05T4	400
Small Rectangular	5975-01-556-7967	140-060XMS-01T3	435.1
Small Rectangular	5975-01-556-9434	140-060XMS-01T4	528
Small Rectangular	5975-01-556-9443	140-060XMS-01T6	444
Large Rectangular	5975-01-556-9489	140-060XMS-03T1	432.1
Large Rectangular	5940-01-557-2564	140-060XMS-03T2	434
Large Rectangular	5940-01-557-2578	140-060XMS-03T5	529
Large Rectangular	5940-01-215-5963	140-060XMS-03T9	433.1
Large Square	—	140-060XMS-06T1	522.1
Large Square	—	140-060XMS-06T2	446
Large Square	—	140-060XMS-06T3	525
Replacement Parts and Fittings			
Composite Feedthrough Adapter*		637B094XB02102CB	-
Composite Sound-Power Receptacle Connector		227-059XO04W	-
Replacement Sound-Power Flop Lid Cover Assembly		630-038XO-02K	-
Replacement Electrical Flop Lid Cover Assembly		630-038XO-01K	-
Replacement Collar Mate Flop Lid Assembly		630-038XO-04K	-
Replacement Cover Screwkit		687-499-1	-
Turnkey Box/Panel Assemblies			
LSD41 Class Ship Stern Gate Control Panel Assembly		149-003	-
LSD49 Class Ship Stern Gate Control Panel Assembly		149-004	-
CVN Nimitz Class Elevator Control Communication System		147-038XMS-002	-
LSD41 and LSD49 LCAC Docking Light Panel		149-005	

Lots of Junction Boxes are Built for use in Harsh, EMI/RFI Applications. Ours are Built to Save You Money.

Glenair is the recognized leader in composite thermoplastic research and development for the interconnect accessory industry. Glenair's lightweight/ high-strength CostSaver Composite EMI/ RFI Junction Boxes are ideally suited for use in harsh environments where resistance to electromagnetic interference, corrosive fluids, high temperatures, shock and vibration is a critical requirement.

The boxes are designed to meet the shock and vibration requirements of MIL-S-901D and MIL-STD-167SHIPS. Box materials also meet stringent EMI/RFI/HIRF and indirect lightning strike performance specifications.



E

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Glenair CostSaver Composite EMI/RFI Junction Boxes
Design Guide - Step One

Step One: Specification of a Junction Box Assembly Begins with the Selection of the Right Size Box—Both in Terms of the Internal Volume and the External Package Size.

Glenair's CostSaver Composite Junction Boxes are ideally suited for use in harsh environments where weight savings and resistance to electromagnetic interference, corrosive fluids, high temperatures, shock and vibration are critical requirements.

Compared to aluminum, brass or steel boxes, Glenair's "CostSavers" provide equal or improved RFI/EMI protection, with considerable savings in corrosion-related maintenance.

Glenair boxes are outfitted with captive stainless steel cover screws for additional long-term corrosion resistance.

In retrofit applications, select the most efficient size to fit the existing electronics package. More than one box can sometimes be used efficiently if the electronics package can be split between two or more boxes. For new application designs, please consult the factory for advice on maximizing the use of internal package space.



Small Three-Legged Box (Series 140-106)

The latest box design from Glenair is ideally suited for reduced package-size junction box applications such as LED lighting, switches and other single component applications. Designed to accommodate a 3.5 inch internal mounting plate, the three-legged box is currently in use in a wide range of US Navy applications. Three sides of the hexagonal box, as well as the lid, can accommodate bulkhead fittings. Materials and performance ratings are identical to the other boxes in the Glenair composite box line.

Multi-Port Split Shell Box Series

Glenair now produces two configurations of multi-port split shell composite thermoplastic junction boxes, our 140-200 octagonal design box and our 140-203 twelve port rectangular box. Both designs are equipped with 316L stainless steel fasteners for corrosion resistance. The split-shell design affords easy access for maintenance or access to stored cable loops.

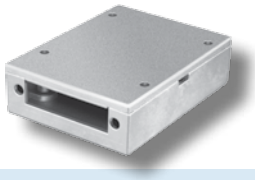


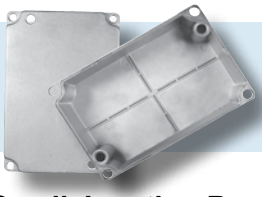
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Glenair CostSaver
Rectangular Composite EMI/RFI Junction Boxes
Design Guide - Step One

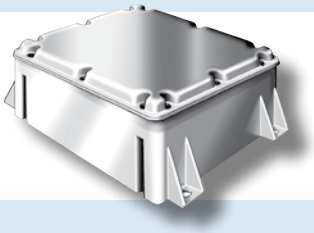
Ultra-Miniature Junction Box (Series 140-074)
Glenair's smallest and lightest box and is designed for non-environmental module-to-chassis applications using MTC connectors. Cover snaps in place without the use of fasteners.

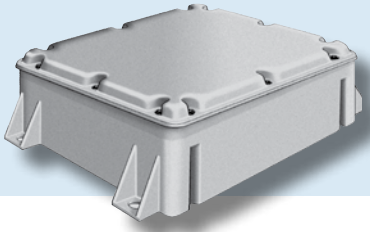




Mini Junction Box (Series 140-100)
Typically used in controlled (non-environmental) applications (such as instrument cases) or as a junction box for miniature connectors.

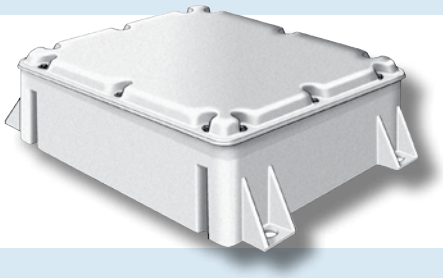
Small Junction Box (Series 140-101)
Designed for use in harsh environmental applications (shipboard weather deck, up-mast, etc.) which require EMI/RFI protection and resistance to vibration and shock.

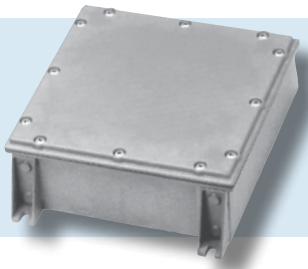




Medium Junction Box (Series 140-102)
Used in high-performance military and commercial applications as a terminal block enclosure, interconnect junction box or instrument case. Size is suitable for larger shell size connectors and fittings.

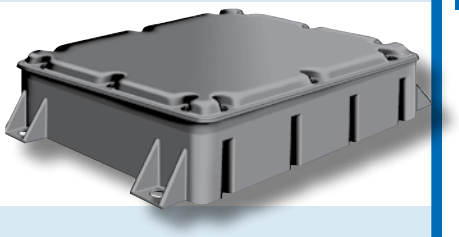
Large Junction Box (Series 140-103)
This large volume box is geared for cable storage and for use in large electrical and optical interconnect junctions. Top and side surface area accommodate large numbers of circular and rectangular connectors and fittings.

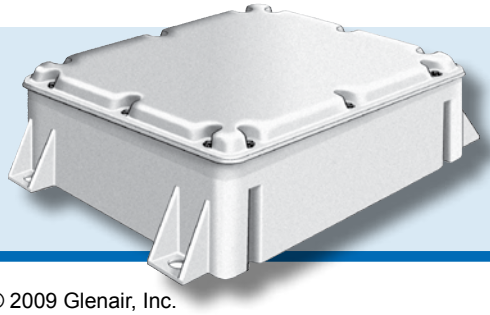




Small Low-Profile Junction Box (Series 140-104)
Ideal for use in limited size and space applications, this composite box is geared for fiber optics and other miniaturized interconnect components. The box has been used extensively in high-performance air and space retrofit applications

Medium Low-Profile Junction Box (Series 140-105)
This low-profile box is geared for tight spaces, such as under-seat cockpit and in-flight-entertainment systems. The box features three (optional) internal dividers for increased isolation of radiated EMI.





Jumbo Junction Box (Series 140-107)
This extra large box is geared for terminal junctions as well as integration of large pieces of electronic and electrical equipment.

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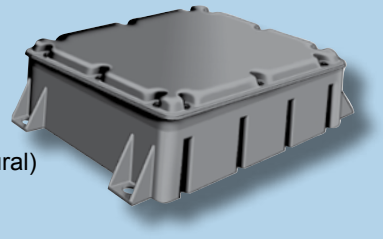
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Glenair CostSaver Composite EMI/RFI Junction Boxes
Design Guide - Step Two

Step Two: Select Box Color, Plating and Plating Coverage

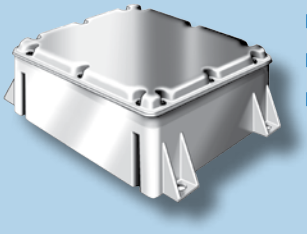
Color: Color pigments may be added directly to the polymer to create a limited range of standard color options. Currently Glenair offers the following box color selections:

- Black
- Blue
- Grey
- Brown (Natural)
- Purple



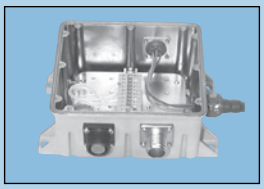
Certain industries and applications have standardized on particular colors and Glenair can provide custom colors as necessary. Colors may affect material performance. For exact matching of custom colors please provide the factory with a PMS color chip number or material sample.

Plating: Glenair offers three standard plating options for EMI/RFI applications:



- Electroless Nickel
- Ni-PTFE
- No Plating, Customer Choice of Base Color

Plating Coverage: Plating may be applied selectively to meet specific EMI/RFI shielding and grounding requirements (Unplated models are selected when the grounding of interconnect components for EMI protection is not required). Internal plating with selectively plated penetrations provides optimal EMI protection and surface durability (scratch resistance) External Plating provides complete electromagnetic compatibility without the cost of selective masking and plating.



Internal Plating Only



Selective Plating

PEI* Resin Withstands Long-Term Exposure to Heat, Moisture and Caustic Chemicals

Glenair CostSaver Composite Boxes are made from PEI, 30% glass fiber, (polyether-imide). PEI is an amorphous thermoplastic polyetherimide offering outstanding high heat resistance, high strength, modulus and broad chemical resistance. Its balance of properties and processability offers design engineers exceptional flexibility and freedom to innovate. PEI resins are inherently flame resistant with low smoke emission. It is radiation resistant, microwave transparent and is naturally flame retardant. Because of its unequaled properties, PEI is the ideal replacement for steel and other metals. PEI resins offer: inherent flame resistance, long-term heat resistance, dimensional stability, strength and modulus at elevated temperatures, hydrolytic and chemical stability, and environmental and corrosion resistance.

Environmental Properties

PEI resin is resistant to mineral acids, mineral salt solutions and dilute bases. Unlike other amorphous resins, PEI polyetherimide also demonstrates unusually good resistance to a wide range of caustic chemicals.

PEI resin is unaffected by most hydrocarbons, making it an excellent candidate for aircraft and shipboard applications exposed to gasoline, oils and other fuels.

PEI resin is inherently resistant to UV radiation without the addition of stabilizers. Exposure to 1000 hours of Xenon arc weatherometer irradiation (1.55 Watts/m2 irradiance at 340 nm, 63°C) produces a negligible change in the tensile strength of the resin.

PEI resin exhibits excellent hydrolytic stability of tensile strength after immersion in water. 10,000 hour immersion tests in water at 212°F (100°C) show that PEI resin's physical properties remain virtually unchanged, even with repeated cycling from steam pressure to drying in vacuum at room temperature.

*G.E. ULTEM® Resin

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Thermal Properties

An outstanding property of PEI resin is its ability to withstand long-term exposure to elevated temperatures. This high-heat performance, combined with excellent flammability ratings and UL recognition, qualifies PEI resin for demanding high temperature applications. UL rates PEI resin for continuous use at 170°C. The resin's high glass transition temperature, Tg, of 419°F (215°C), coupled with its high heat deflection temperature of 392°F (200°C) at 264 psi (1.82 N/mm2), contributes to its excellent retention of physical properties at elevated temperatures.

The coefficient of thermal expansion is an important design consideration in the production of large composite enclosures, fittings and mating connectors. The table below lists the coefficients of thermal expansion for PEI and the matching values for various metals:

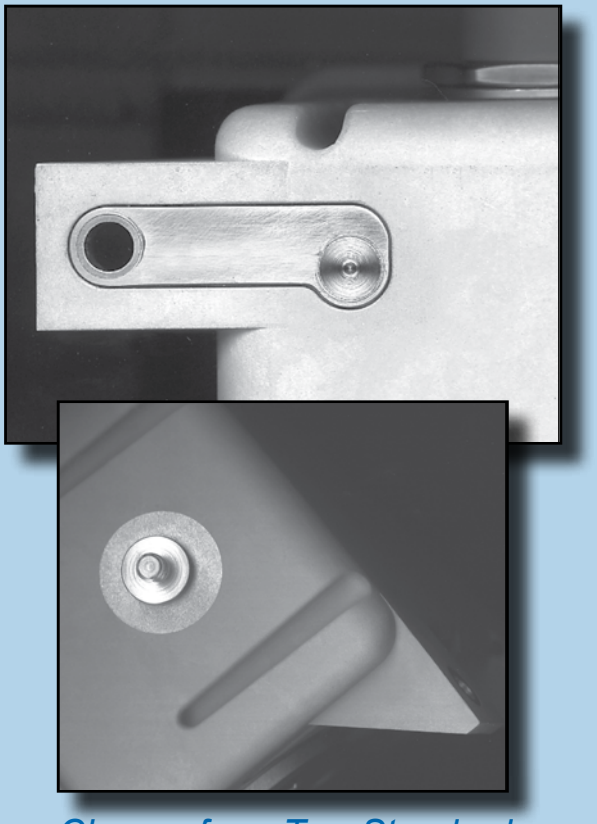
Coefficient of Linear Thermal Expansion

Material	10^{-5} in/in -°F	10^{-5} m/m -°C
PEI	1.1	2.0
Brass	0.4 - 1.0	1.6-1.8
Zinc	1.5	2.7
Aluminum	1.2	2.2
Steel	0.7-0.8	1.2-1.5

Strength

At room temperature PEI resin exhibits strength far beyond that of most engineering thermoplastics, with a tensile strength yield of over 15,000 psi (100 N/mm2) and a flexural strength at 5% deflection of 21,000 psi (145 N/mm2). Even more impressive is the strength at elevated temperatures. At 375°F (190°C), a temperature well beyond the useful rage of most other engineering thermoplastics, PEI retains approximately 6,000 psi (41 N/mm2) tensile strength. The inherent strength of PEI is increased by reinforcement with glass fibers, such as the 30% fiber mix used by Glenair.

Step Three: Select the (Optional) Grounding/Earthing Device



Choose from Two Standard Grounding Device Designs

MIL-STD-1310G (NAVY) requires that electrical equipment operated from an external power source be grounded to provide electrical safety and personnel shock protection. Glenair's integrated grounding foot (top photo) combines the earthing function into one of the box mounting feet; thus eliminating the need for an additional, external grounding strap and mounting point.

The simple grounding stud (bottom photo) is an inexpensive and yet effective way to provide overall grounding of the box. Typically, a wire grounding strap is fixed to the stud and taken to ground on an adjacent bulkhead. The threaded stud penetrates the box for easy attachment of an internal ground wire.

E

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Glenair Composite Boxes, Connectors and Accessories Test Plan

Plating Adhesion Glenair# 9-44-18/TN94-159

The item is tested in accordance with MIL-DTL-38999 and should not exhibit any blistering, peeling or other separation of the units plating when immersed in ice water at 0ºC within 15 seconds after 30 minutes exposure to 200ºC in a circulating oven.

Vibration NTS# 973-7369-2

When mounted in a suitable fixture on a vibration table and subjected to vibration in accordance with MIL-STD-167 type 1 for box units & Mil STD-1344, Method 2005 Condition III, for fittings and accessories. The tested items should not exhibit loosening of component parts or evidence of damage.

Shock NTS# 973-7369-2

When mounted on an Impact plate the Glenair Box is subjected to shock load (Hammer drop) in accordance with MIL-STD-901D, Lightweight, Grade C, there shall be no loosening of parts or evidence of damage. A 400 LB hammer weight attached to a 5 foot long swing arm is raised and released to strike the mounting plate, 9 blows (3 blows in 3 axes).

Shock MOD# BR8470 Grade C & F

Glenair box is mounted on a suitable fixture and subjected to an initial 70G load progressing to 130G load in accordance with MOD BR 8470 Grade C & F, there shall be no loosening of parts or evidence of damage.

Salt Spray Glenair# 9-44-18/TN94-159

The item shall meet Braid Retention, Device conductivity, functional requirements and exhibit no exposure of underplate or base material when subjected to 2000 hrs per MIL-STD-1344 Method 1001.

Dust NTS# 973-7369-1

The item must conform to required torque limits and functional requirements within 25% after being subjected to sand and dust test of MIL-STD-202 Method 110.

UV Light Resistance GE RDM88050255-6042

There shall be no degradation of the mechanical properties defined in this specification after testing in accordance with ASTM D2565

Glenair's 140-060 Series Junction Box for the US Navy is available in four sizes and is supplied either with or without terminal rails and blocks.
(See Page E-16)



Impact

There shall be no evidence of breaking or cracking of components or other damage, which could affect the product performance. The box will be tested in accordance with MIL-STD-1344 Method 2015 using 8 drops from a height of 2 meters with plate indexed at 36º intervals.

External Bending Moment Glenair# 9-44-18/TN94-159

No evidence of damage detrimental to normal operation when subjected to 3X magnification after being subjected to loads specified in MIL-STD-1344.

Temperature Cycling NTS# 575-9249

Item is subjected to a controlled temperature in accordance with MIL-Std-1344 Method 1003 @ –65ºC to 200ºC. After testing the product must not exhibit any cracking, peeling or separation of plating, or other functional damage.

Hydrolytic Stability NTS# 878-536

In accordance with ASTMD570-81, Tested Items shall be free of defects detrimental to mechanical performance, no increase in weight greater than 1% and no evidence of cracking, breaking or loosening of component parts when subjected to boiling water.

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Ice Resistance Glenair# 9-44-18/TN94-159

The item must conform to required torque limits and functional requirements within 25% after being immersed for a minimum of 3 cycles in tap water for 1 minute and placed in an ambient temperature of –65ºC for one hour (until surfaces are completely iced over).

Flammability

The item flame and after flow-extinguishing time shall not exceed limits defined in Table II of MIL-STD-1344 Method 1012, Smoke index, NES 711 issue 2, and NES 713 issue 3. Burning behavior by Oxygen index, ISO 4589.

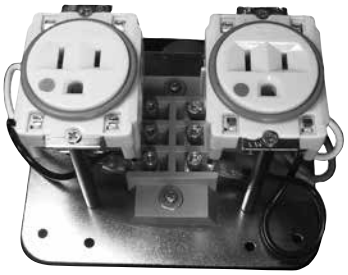
Water Tightness EA# 0C13513-039514

Water tightness and internal pressurization tested at 1 atmosphere (14.7 psi). Unit is subjected to a progressive internal pressure test in three feet of water at ambient temperature in increasing increments of 1psig for 2-minute intervals.

Outgassing JPL 081892

Unit is tested in accordance with ASTME 595; maximum allowable weight loss is 10%. After test and bake out the maximum allowable VCM (volatile condensable material) is 0.10%.

Electrical equipment ready for installation in Glenair's 147-020 Series Electrical Box for the U.S. Navy

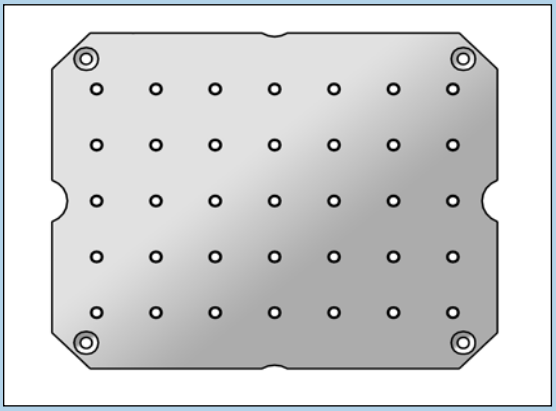


Electromagnetic Shielding TRW/ABQ-55C-1186-0

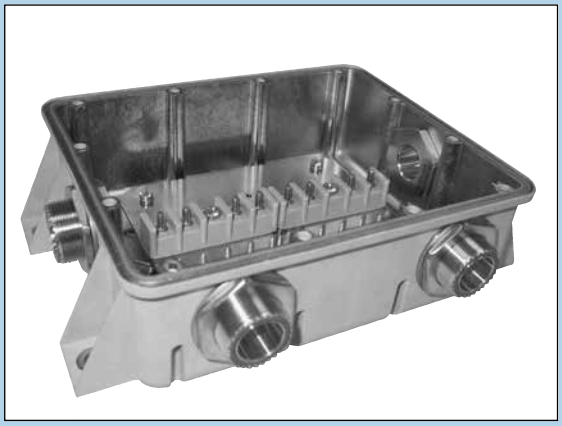
Shielding effectiveness / transfer impedance tests performed in accordance with Military industry standards and customer specific requirements. Transfer impedance measurements from 1 through 100 MHZ and radiated emissions were evaluated in the ranges from 20 through 1000 MHZ. The test specimen is subjected to an EMI field and measured to determine to specific levels of shielding properties are exhibited.

Step Four: Select Internal Terminal Rail Mounting Plate and Drilling

Glenair manufactures an internal terminal rail mounting plate for all box sizes except the Ultra-Miniature (140-074) and Mini (140-100). Terminal rail mounting plates are fabricated from aluminum alloy or stainless steel and are typically passivated or plated with electroless nickel. Custom platings are also available. The factory maintains dimensional specifications for all popular din rail and terminal block types and can drill plates per these specifications or to your drawing. Please consult factory for mounting options for nonstandard electronic components.



The Standard Plate Selection for Each Box Comes with Threaded Inserts for Most Popular Terminal Rails or Blocks



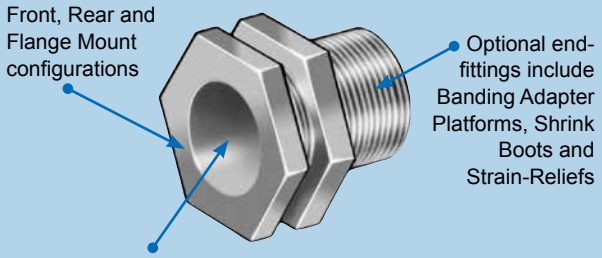
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Glenair CostSaver Composite EMI/RFI Junction Boxes
Design Guide - Step Five

Step Five: Select Box Input-Output Components: *Feed-Through Fittings*



Designed for use with all types of shielded and unshielded cable and conduit, from less than 1/4" to 1 3/4" in diameter

Glenair manufactures a full spectrum line of feed-through fittings for routing wire, cable and conduit into and out of switch gear and other types of junction boxes. The fittings are also ideal for thru-panel and bulkhead applications.

From environmental sealers and EMI/RFI shield terminators to strain reliefs and shrink boot adapters—Glenair has the right box feed-through for every application requirement.

Stainless versions are available in every configuration, but as a design consideration, composite feedthroughs should be considered for all applications where weight savings and extended corrosion protection is desired. Our composite thermoplastic designs (component series 637-094) offer significant weight savings over stainless steel and, again, unlimited corrosion protection. Many of our most popular part numbers are in stock, in quantity and ready for immediate delivery.

It is particularly important not to specify aluminum alloy fittings for harsh environment box applications. Compared to aluminum alloy, Glenair composite fittings provide equal or improved RFI/EMI protection, and are made from the same high-grade ULTEM® engineering thermoplastic as our boxes. Composite feedthroughs are designed to meet RTCA/DO-160C environmental conditions and physical strength requirements. Please consult the factory for assistance in selecting the best materials and platings for your application.

Braid Retention Glenair# 9-44-18/TN94-159

Fitting terminations shall be capable of providing 2.5 milliohms maximum resistance between braid and fitting interface when braid is subjected to a tensile load of 5 Kg applied gradually.

EMI Shielding MOD# ME1A24S136F

Shielding effectiveness Shipboard in accordance with M.O.D. Def Standard 59-41 DRE01. The Glenair box is subjected to an EMI field and measured to the level of shielding effectiveness per the Def standard 59-41 DRE01.

Indirect Lightning (Lightning Strike) LT# LT-95-1153, LT-00-1752

Testing in accordance with MIL-STD-1344. Item is subjected to Waveform 1 & 5B using a high current generator. The item must remain functional without degradation of unit's electrical performance. Waveform 1 and 5B are applied starting at 3ka increasing to 20ka checking continuity measurements at set intervals. Waveform 1 will additionally be subjected to an oscillatory wave starting at 30ka and increasing in 10ka steps until failure in continuity measured.



Glenair 147-021 and 147-022 Series Sound Powered Telephone Boxes for the US Navy are available in three box sizes with custom single, dual or quad jack receptacles

Humidity NTS# 575-9249

The test specimen is subjected to the humidity test specified in MIL-STD-1344 Method 1002 Test Condition Type II. The tested item shall exhibit no weight increase, swelling or other evidence of moisture absorption into the base material.

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Fungus Resistance TBM84-3

Materials used shall be certified as fungus inert in accordance with requirements of MIL-STD-810C, Items must have no evidence of Fungus growth, deterioration or corrosion as a result of testing.

Shock NTS# 373-2685, Supplement 1

When mounted on an uneven surface with one mounting location lower to create torsion loading, box is subjected to shock per MIL-S-901D Class 1, Grade A, Type C (lightweight).

Glenair 147-015 Series Indicator Light Box is available in four sizes and supplied with US Navy specified indicator lights and switches



Magnetic Permeability Glenair# 9-44-18/TN94-159

Items shall be tested in accordance with MIL-STD-1344.

Ozone NTS# 678-3143

There shall be no evidence of cracking or other damage when item is tested in accordance with MIL-STD-1344 Method 1007.

Fluid Immersion NTS# 678-3143

Item shall meet the functional requirements in accordance with MIL-STD-1344 Method 1016 (one sample per fluid).

Halogen Free GE 050198

Testing for halogen releases when ignited in accordance with ASTME XX,

Radiation Test GE RDM88050255-6042

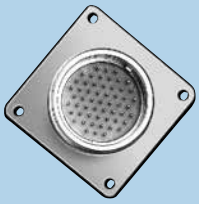
Gamma Ray, Electron Beam, X-Ray, Ultra Violet, Visible, Infrared, Microwave and Radio Frequency testing preformed.

Fitting to Box Conductivity NTS# 575-9249

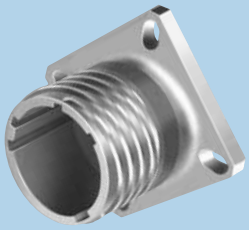
Max. Voltage drop of 3 millivolts before conditioning and 6 millivolts after conditioning when tested to MIL-STD-1344 Method 3007.

Step Six: Select Box Input-Output Components: *Environmental Connectors*

Glenair offers a wide range of circular and rectangular connectors, including MIL-DTL-28840, MIL-PRF-83513 and MIL-DTL-38999 Hermetics. Environmental connectors of this type, and the ones highlighted below, are ideally suited for use as input-output devices in box applications.



Glenair's Series 22 Geo-Marine® Connectors offer high-density insert arrangements for a variety of oceanographic, geophysical and other severe environmental applications. The mated stainless steel plug and receptacle have a hydro-static pressure sealing capability of up to 5000 psi (345 bar) and are available in either glass-seal hermetic or rigid dielectric environmental insulators.



Glenair's Composite MIL-DTL-38999 Series III Style Fiber Optic Connector is built to insure precise optical alignment. Composite materials make this one of the lightest weight, high-reliability connectors on the market. Connector polarization keys and keyways are molded to tighter tolerances than required by the MIL-DTL-38999 specification to reduce radial misalignment and insertion loss.



Glenair developed the **Series 800 "Mighty Mouse"** to fill the need for a miniaturized circular connector with performance comparable to other high-reliability aerospace connectors. The connector is intended for applications such as missile systems, satellites, man-portable battlefield gear, and light armored vehicles. It is ideally suited for use with Glenair's smaller junction boxes.

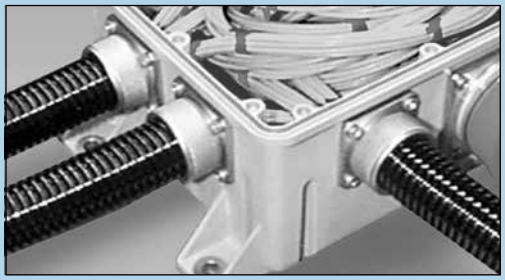
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Glenair CostSaver Composite EMI/RFI Junction Boxes
Design Guide - Step Seven

Step Seven: Select Wire and Cable Construction—From Convoluted Tubing to Armored and Overmolded Cable Designs



The Widest Range of Protective Materials in the Industry are Available From Glenair

Depending on your selection of input-output devices—from simple wire feed-through fittings to environmental connectors—Glenair can outfit the junction box assembly with an appropriate cable or conduit design. Tested and qualified products, including a broad range of environmental jacketing and shrink-boot materials are available for standard cable-to-connector designs. Glenair can also supply overmolded cables for harsh environments made from polymer compounds such as Viton®, Neoprene and Polyurethane.

Given the need to complete final installation of the box interconnect system on-site, many customers specify plastic and metal-core convoluted tubing as their preferred media protection material. Flexible, high-temperature convoluted tubing is an ideal material choice for interconnect systems designed around the Glenair junction box. The material provides a durable, highly-flexible enclosure for all types of wires. And Glenair is able to supply the all the end-fittings and transitions necessary to meet any installation configuration. Available materials include ETFE, FEP, PFA, PTFE and halogen-free, light weight PEEK. Glenair conduit, systems and fittings are approved to the US Navy's MIL-PRF-24758 standard. Our new FIRST Conduit Fitting System features a unique swivel design for easy installation.

Relevant Industry Standards:

IEC IP Ingress Ratings

The IP Rating indicates the measure of an enclosure's protection against dirt and water. Glenair CostSaver Composite EMI/RFI Boxes are rated to IP 67, where 6 = Total Protection Against Solid Objects, and 7 = Protection against the effects of temporary immersion in water. Glenair's Mini 147-100 Box is rated to IP64 which indicates total protection against dust, and from water sprayed from all directions.

SP-R-0022A and ASTM-E-595 Vacuum Stability

Both specifications govern the "outgassing" of non-metallic materials for use in spacecraft. Tests measure Total Mass Loss which may not exceed 1.0% of the total specimen mass. Tests for this standard also measure Collected Volatile Condensable Materials from Outgassing in a Vacuum Environment; which means they measure odor and toxicity emitted from the material. All Glenair CostSaver Composite EMI/RFI Boxes are tested and approved to these standards.

IEC 79-7 MOD (ISA-S12.16.01) Hazardous Area Explosion Protection

Electrical enclosures are certified for use in hazardous areas such as oil-rigs and tankers by standards organizations such as CENELEC. Tests measure the ability of an electrical apparatus to prevent the emission of sparks, arcs or hot surface temperatures from igniting a fire in a hazardous area. Glenair Composite EMI/RFI Boxes meet E EX e IIB T3 (increased safety) in Class I, Zones 1 and 2 hazardous locations.

UL 94: Flammability of Plastic Materials

This requirement covers flammability of plastic materials used in devices and appliances. The flammability properties of materials are measured in response to heat and flame under controlled laboratory conditions. All Glenair CostSaver Composite EMI/RFI boxes are tested and approved to this standard.

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Bombardier Toxicity and Federal Railroad Adminiatration Flame Spread, Smoke Density and Toxicity

This requirement covers material flammability and toxicty IAW with both aircraft and rail transportation requirements. Testing was completed on actual molded box samples, in the medium gray color, made from Ultem 2300-GY4001. Testing consisted of flammability IAW ASTM E 162, rate of smoke generation IAW ASTM E 662 and Bombardier SMP 800-C toxic gas generation. The Glenair composite box samples passed all tests. For additional information please request test report No. 08-002-923(B) for Bombardier toxicity, and test report No. 08-002-923(A) for surface flammability and rate of smoke generation.

Corrosion resistance and weight reduction are just part of the story for these Glenair junction box application examples

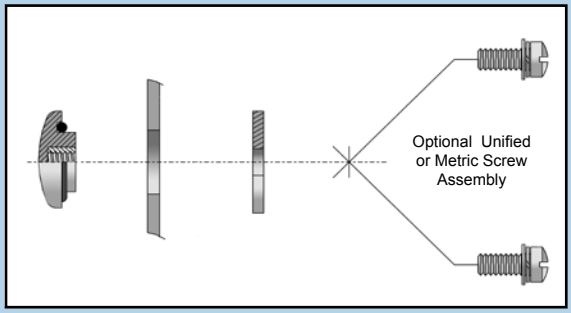
Future Soldier:

Weight reduction was the principal goal in selecting the Glenair composite box for the JEDI Warrior Program. The boxes house Lithium battery packs used to power video image and battlefield data collection systems carried by the soldier. The interconnect system and its power supply must be able to withstand the rigors of exposure to mud, dust and abusive handling. The complete solution from Glenair also included our Series 800 "Mighty Mouse" Connector and overmolded cable sets.

Ministry of Defense:

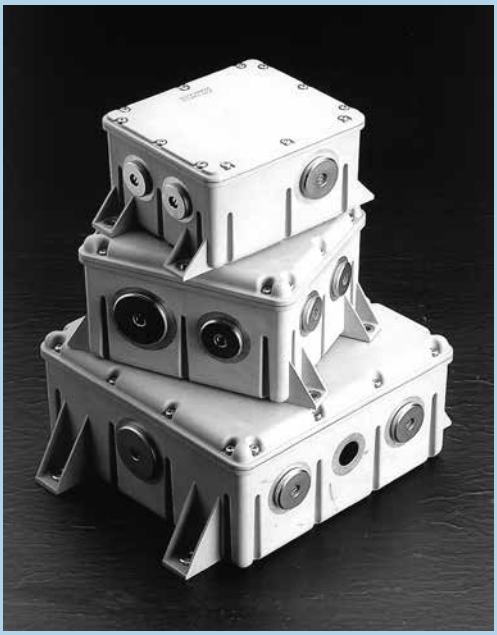
Glenair composite boxes for the UK Ministry of Defense were subjected to a rigorous testing program, including high-duration shock, EMI and salt-spray corrosion resistance. The MOD has chosen the Glenair boxes as standard replacements for existing aluminium junction boxes which became too expensive to maintain due to high-impact breakage and corrosion. The Glenair boxes now serve in submarines, missile-frigates and other shipboard applications.

Step Eight: Select Additional Penetrations for Hole-Cap Assemblies



Junction boxes may be equipped with additional penetrations for future expansion needs, or for applications where one box design will be used in several different configurations. Glenair supplies a hole-cap assembly to seal unused penetrations against the environment. The hole-cap assemblies are rated to IP67 for particle and moisture protection.

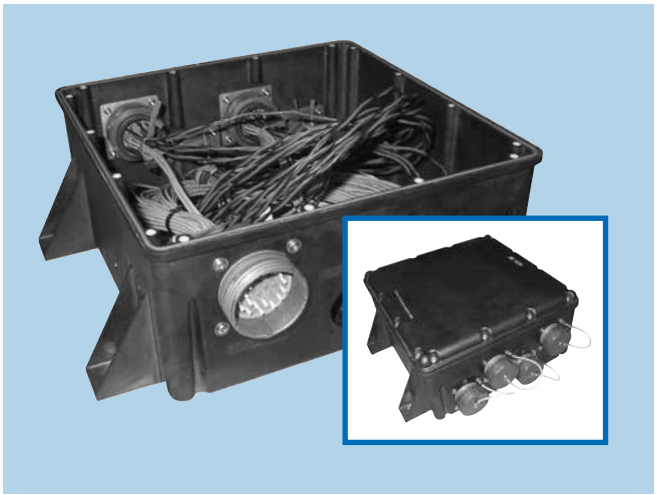
Glenair can produce virtually any design of custom cap or lid required. Please consult the factory.



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Glenair CostSaver
Composite EMI/RFI Junction Boxes
Design Guide - Step Nine



Missile-Control:

The ability to withstand extremes in shock and vibration, as well as long term corrosion protection and electromagnetic compatibility were baseline requirements for this missile control junction box. The complete system includes fiber optic connectors, termini and cabling. Interconnect systems of this type must be able to sit idle for many years, and then perform flawlessly in the blink of an eye.

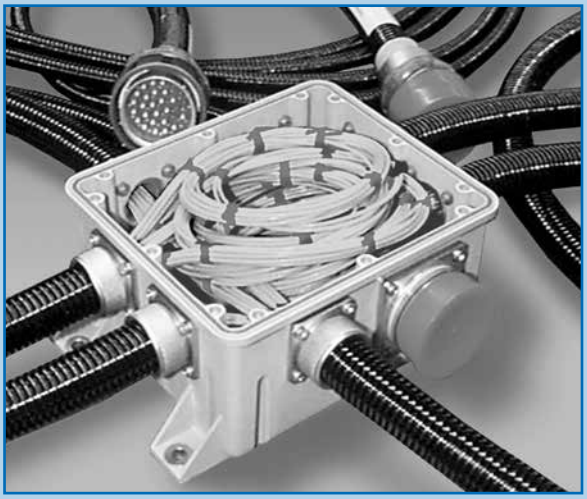
Fiber-Optic Storage:

In this application, Glenair was able to provide a complete, turnkey interconnect assembly which included both the lightweight composite box, as well as the conduit and the fiber optic interconnects. 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.

Glenair Standard US Navy Composite Boxes

Stock Code	Description
CDNWC 655-03-001 (NAVSEA umbrella stock code for the Glenair Electrical Junction Box Series).	Junction Box, with or without terminal blocks, four sizes
	Electrical Box, 115V, 15 Amp, two sizes, single and dual receptacle
	Sound Powered Telephone Box with Glenair composite jack receptacle, three sizes, single, dual and quad

Every Picture Tells a Story



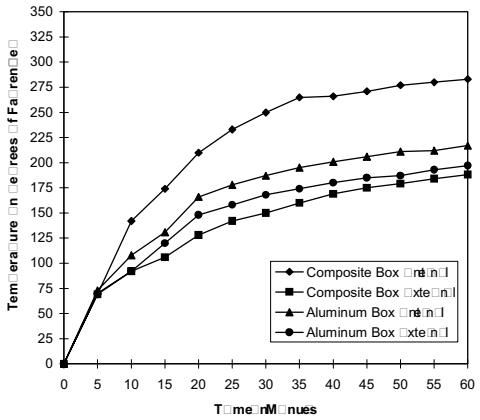
This One Speaks Volumes

Glenair is in the business of solving even the most complex interconnect design problems. We know that your problem isn't solved when the connector and cable are selected. The real work starts with the packaging of the key components for actual use. Glenair is ready with junction box solutions that incorporate our complete line of interconnect products—all available in corrosion-free composite thermoplastic. At Glenair, we're ready with both the individual interconnect technologies, as well as the most innovative and effective packaging solutions available today. Now *that's* a story worth telling.

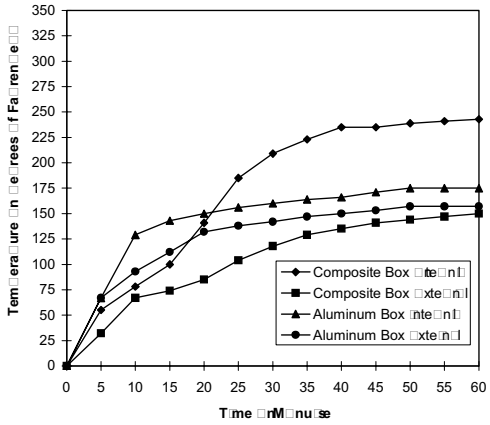
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www.glenair.com
E-Mail: sales@glenair.com

Thermal Conductivity at 60,000 Feet Elevation

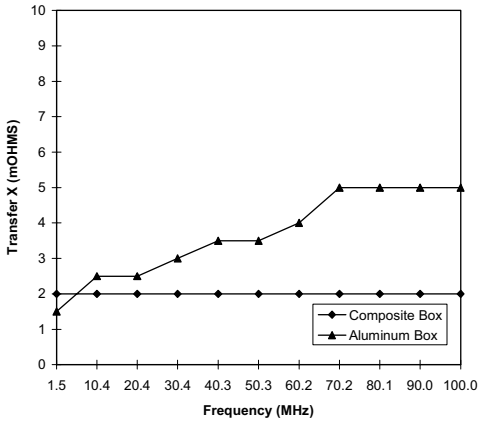


Thermal Conductivity at Sea Level

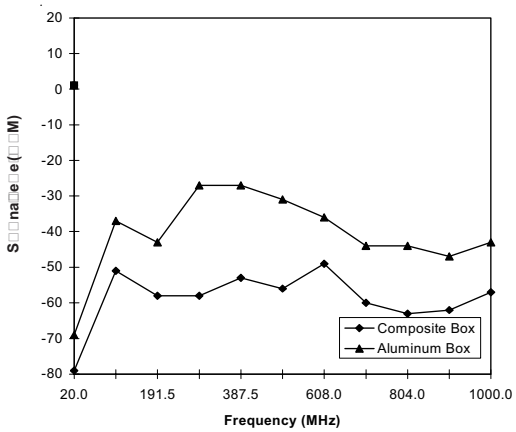


Consult factory for thermally conductive material option 10-20 w/mk

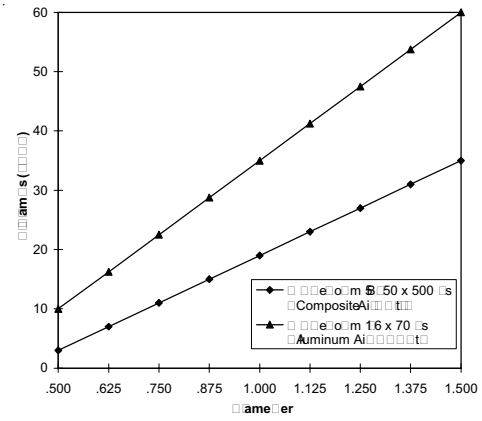
Transfer Impedance



Radiated Emissions



Indirect Lightning Strike Threshold
SAE - AE4L-87-3, Wave Forms 1 & 5B



The values shown for indirect lightning strike represent the approximate threshold of conductive composite tubular attachment components having diameters equal to those listed. For example, connector shell size is calculated in .0625 increments; shell size 10 = 10 x .0625 or .625 diameter. Cable entry diameter is another consideration. Use the smallest part diameter when evaluating thresholds. Consult factory for additional information.

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Glenair CostSaver
Composite EMI/RFI Junction Boxes
Box Specification Worksheet

Box Specification Worksheet

Glenair brings a unique strength to junction box systems: the ability to build a turnkey assembly—wired, terminated, tested and complete with all the necessary fittings and accessories. We are the only nonmetallic enclosure manufacturer in the world which can supply an integrated interconnect system of this type. And we are pleased to provide this service at small quantity and prototype levels. This worksheet summarizes the major decision points in the design and development of an interconnect box assembly.

Originator Contact Information

Name:_____

Location:_____

Phone:_____

Fax:_____

E-Mail:_____

Select Box Series Size and Type

- ☐ Ultra-Miniature Box (140-074)
- ☐ Mini Junction Box (140-100)
- ☐ Small Junction Box (140-101)
- ☐ Medium Junction Box (140-102)
- ☐ Large Junction Box (140-103)
- ☐ Jumbo Junction Box (140-107)
- ☐ Small Low-Profile Box (140-104)
- ☐ Med Low-Profile Box (140-105)
- ☐ Small Three-Legged Box (140-106)
- ☐ Octagonal Box (140-200)
- ☐ Twelve Port Box (140-203)

Select Box Color

- ☐ Black
- ☐ Grey
- ☐ Brown
- ☐ Purple
- ☐ Other _____

Select Plating Type

- ☐ Electroless Nickel/Metallic Finish
- ☐ Zinc Nickel/Matte black Finish
- ☐ Ni-PTFE *1000 Hour Gray™*
- ☐ No Plating

Select Plating Coverage

- ☐ Internal Plating with Selectively Plated Entry Holes
- ☐ External Plating Only
- ☐ No Plating (non-conductive)

Select Grounding Device

- ☐ Integrated Grounding Foot
- ☐ Side-Mounted Grounding Stud
- ☐ None

Select Internal Mounting Plate

- ☐ Yes
- ☐ No

Specify Internal Terminal Rail Mounting Plate Drilling

- ☐ Not Applicable
- ☐ Standard Drilling Per Catalog
- ☐ Per Customer Drawing

Wire/Cable Construction

- ☐ Standard Armored/Shielded Cable
- ☐ Glenair Overmolded Cable
- ☐ Plastic Convoluted Tubing
- ☐ Metal-Core Conduit
- ☐ Not Applicable

Supply Additional Penetrations with Hole Cap Assemblies?

- ☐ Yes
- ☐ No
- ☐ Not Applicable

Glenair to Provide Turnkey Assembly of Box Components?

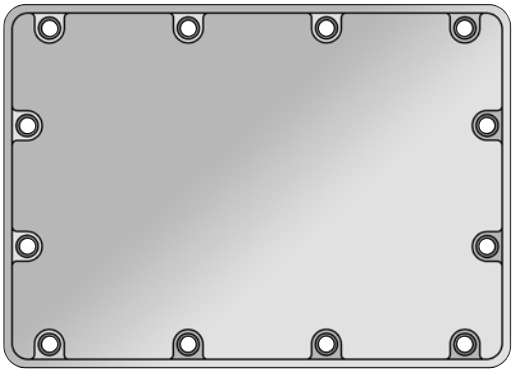
- ☐ Yes. (Bill of Materials and/or Drawing Required)
- ☐ No
- ☐ Not Applicable

Select/Indicate Connector and Fitting Locations:

Indicate the locations of your selected connectors and fittings. You may simply describe the devices in the space provided ("Two jam-nut 15 pin D38999 Series III Connectors go on Side "A") or you may sketch the fittings and connectors in place with appropriate labels. There are no limits to the size and number of penetrations other than the physical boundaries of the box surfaces. Use the dimensional information published with each connector or feed-through series, or call our factory for assistance.

NOTE: Box Series Numbers are for reference only. Call the factory for part number assignment for custom box configurations.

Rectangular Box Top Template

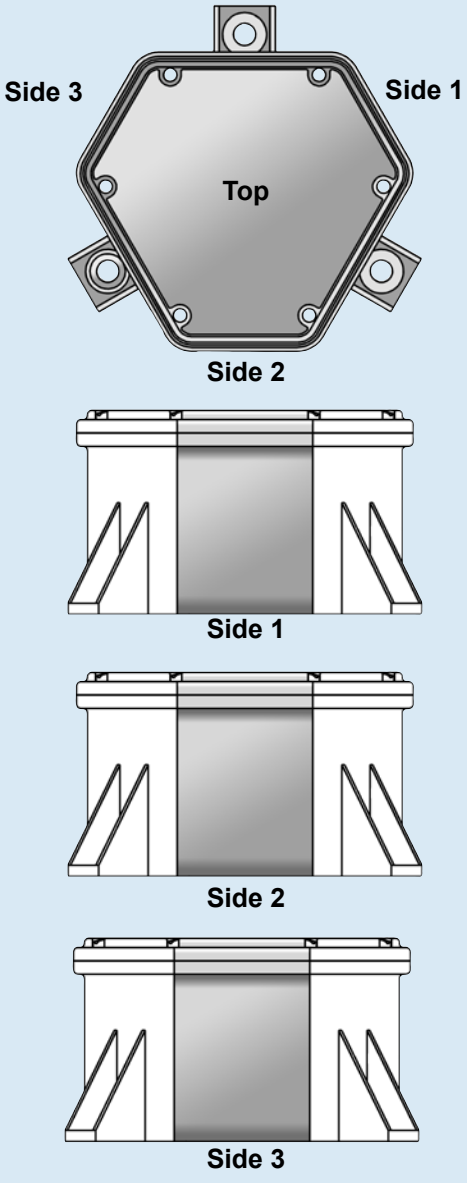


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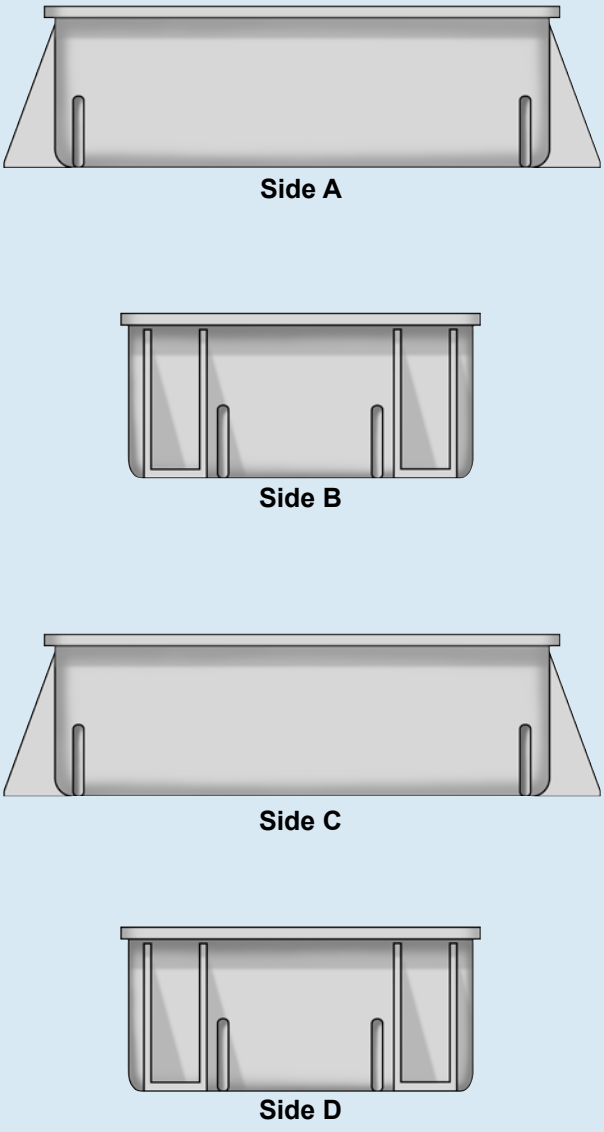
Input-Output Device Position Template

This template may be used to indicate initial positioning of connectors, feed-throughs and fittings such as ground lugs. Indicate the location of all special markings or labels including correct wording/numbering.

Three-Legged Junction Boxes



Rectangular Junction Boxes



The structural ribs located on the rectangular box sides are provided to increase the overall strength of the box. The ribs may be removed to accommodate additional fittings if necessary. For additional assistance in locating connectors and fittings please consult the factory. For custom fittings, such as specially designed doors or lid covers, please consult the factory. Application engineering for customer specified box assemblies is provided free upon request.

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140-060XMS-03
(NSN: 5975-01-557-2679)
Grounded Composite Junction Box
15 Ft. Submersion

Basic Part Number	Finish (See Table I)	Basic Box Number	
140-060	XMS	- 03	T1

Optional Configuration
See Table III for Required MIL-T-55164 Terminal Block
Omit if Not Required

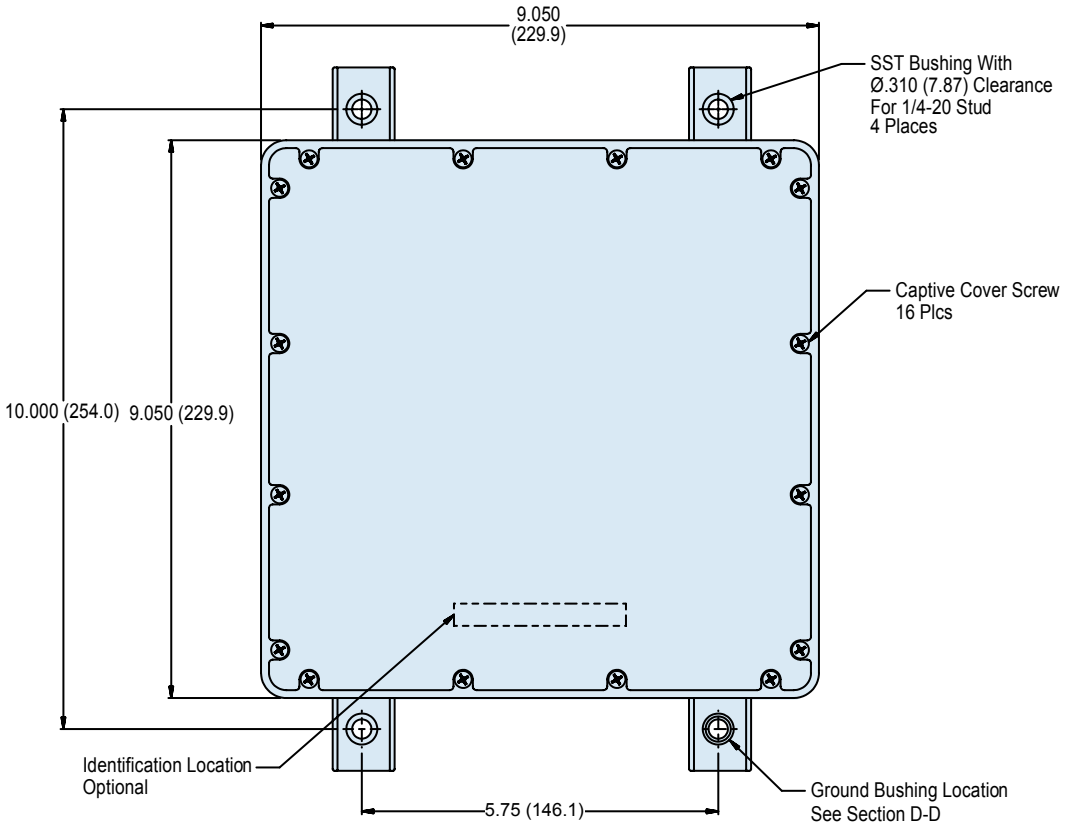


FIGURE 1 TOP VIEW

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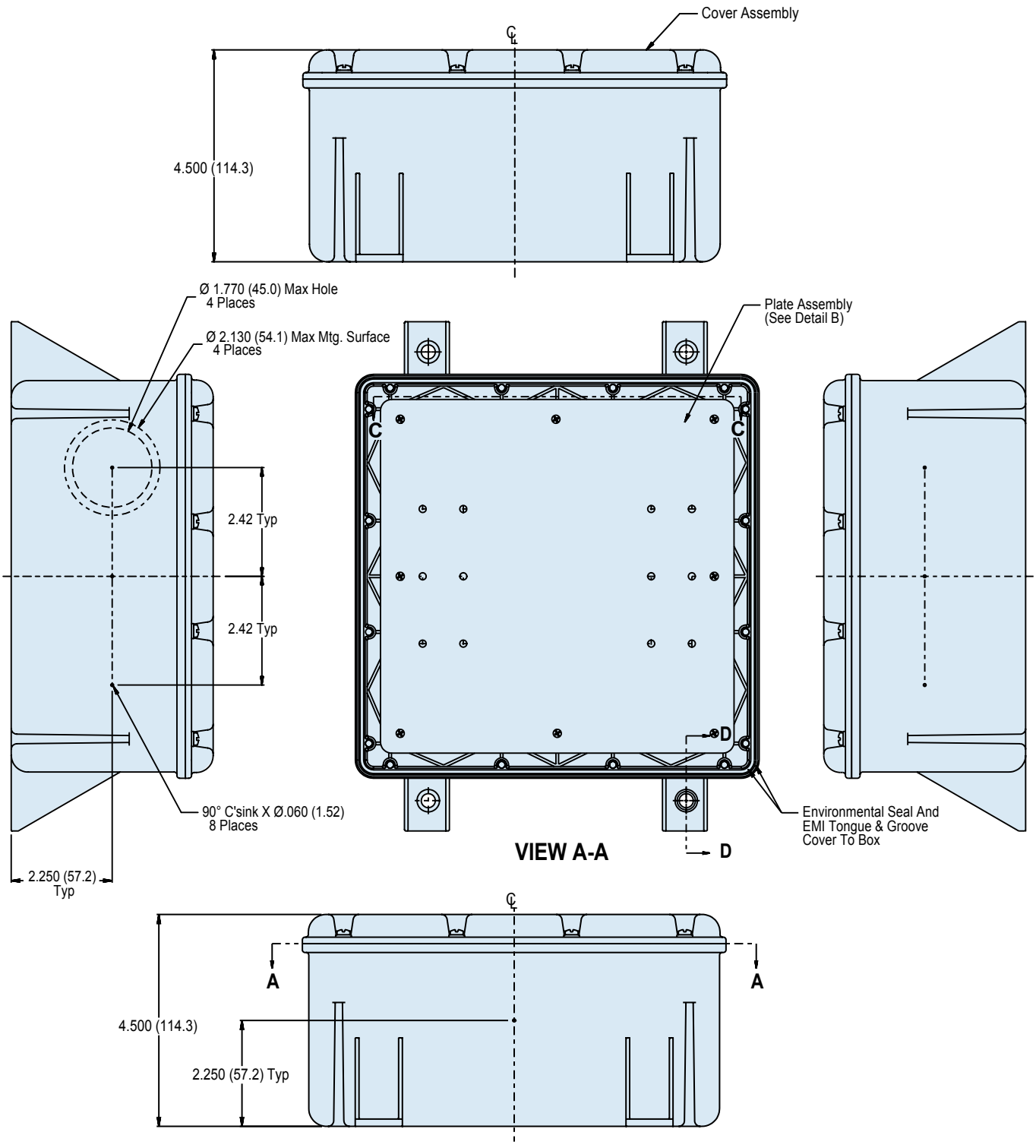


FIGURE 2

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Series 140-074
Ultra-Miniature Junction Box
Product Facts and Dimensional Details



Product Series
140 - Composite Boxes

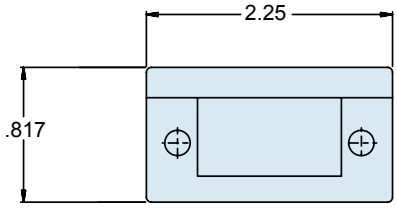
Finish Symbol
(See Table I)

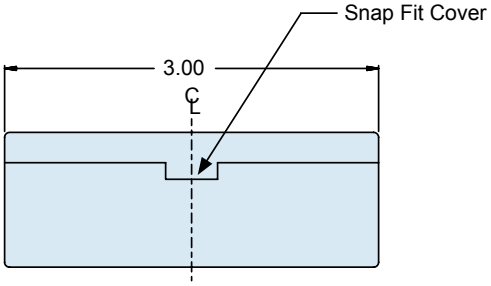
140	074	XM	-	0000

Basic Part Number

Dash Number

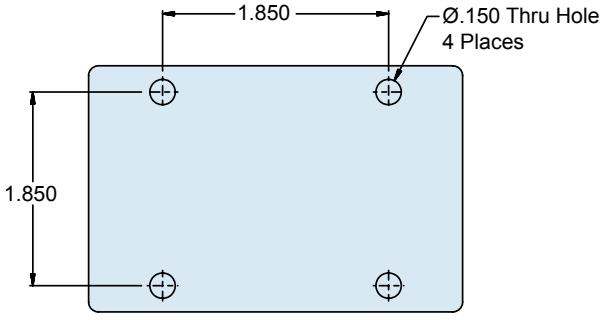
Ultra-Miniature Series 140-074 CostSaver Composite Junction Box





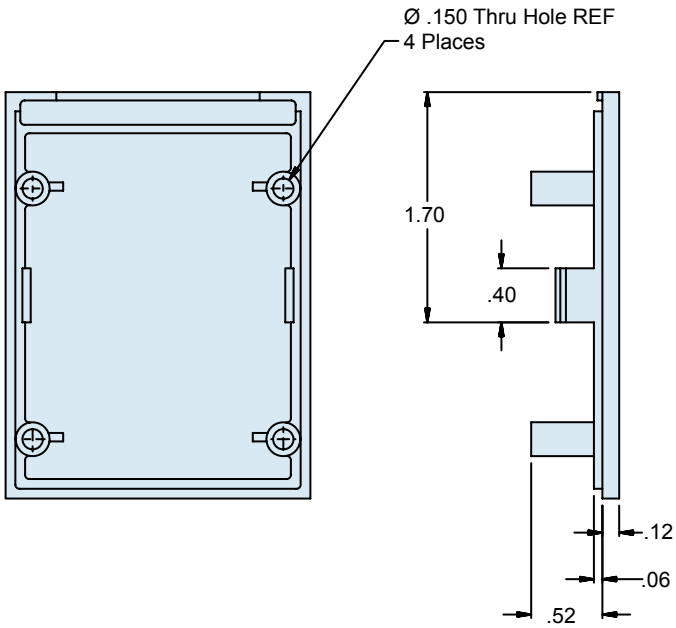
E

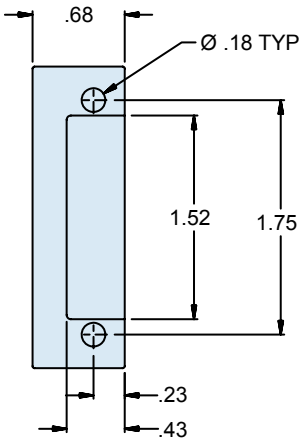
TABLE I	
Symbol	**Finish Description**
XM	Electroless Nickel
XO	No Plating (Non-Conductive Finish)
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XMC	Electroless Nickel per Lockheed Martin Specification FPS-3084

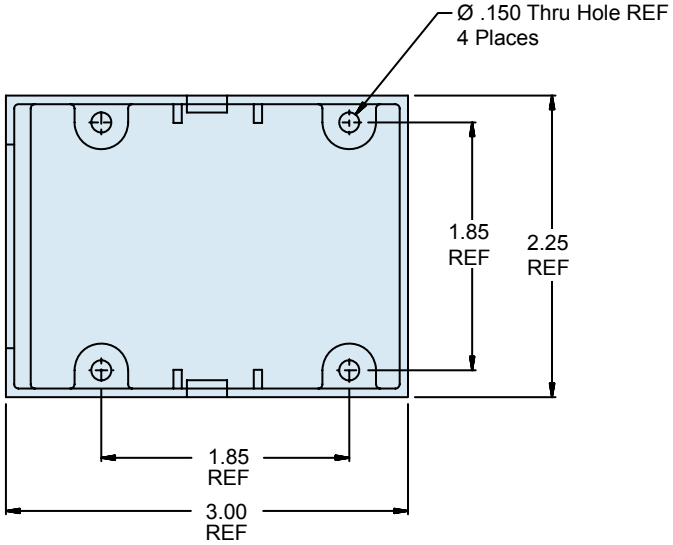


NOTES
1. Use dash number 0000 for basic box with no additional options beyond your specified finish.
2. Box accomodates 1" MTC connector.
3. Metric dimensions (mm) are indicated in parentheses and are for reference only.

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Series 140-100
Mini Junction Box



Mini
Series 140-100
CostSaver Composite
Junction Box

Product Series	Basic Part Number			Dash Number
140 - Composite Boxes				
140	G	100	XMS	- 0000
	Material Color Symbol (*See Table II*)		Finish Symbol (*See Table I*)	

TABLE II: MATERIAL COLOR & FINISH OPTIONS

Sym	Material & Color	Finish Options
B	Thermoplastic / Black	XO and XMS
G	Thermoplastic / Grey	XO and XMS
–	Thermoplastic / NA	XM, XW and XZN

TABLE I: FINISHES

Symbol	Finish Description
XO	No Plating (Non-Conductive Finish)
XMS	Internal Surfaces - Electroless Nickel External Surfaces - See Table II
XM	All Surfaces – Electroless Nickel
XW	All Surfaces – Cadmium Olive Drab over Electroless Nickel
XZN	All Surfaces – Zinc Nickel/Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*

E

TABLE III: KEY DIMENSIONS

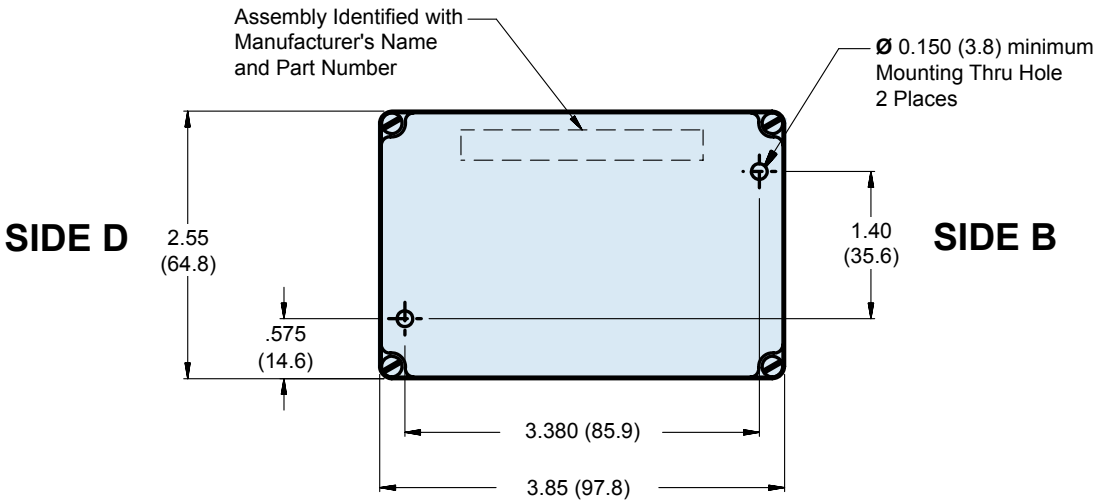
Box Series Number	External	Internal
140-100 Mini	2.55 (64.8) x 3.85 (97.8) x 1.38 (35.1)	2.08 (52.8) x 3.38 (85.9) x 1.06 (26.9)

NOTES

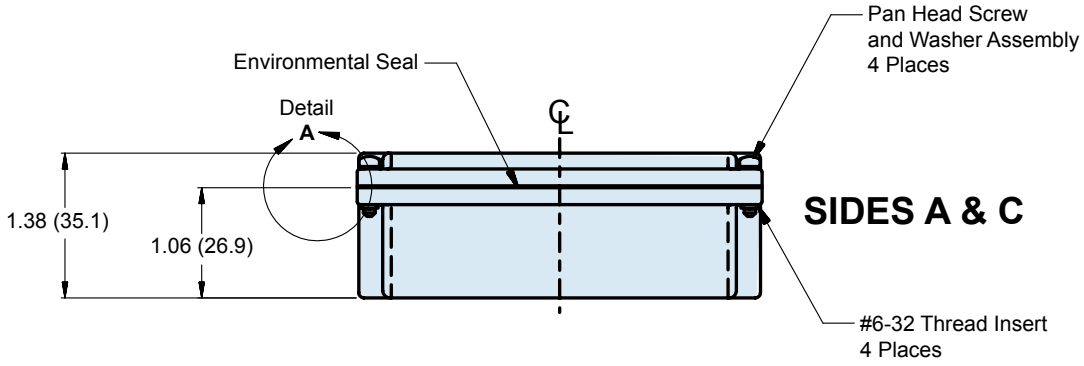
1. Use Dash Number 0000 for Basic Box with No Additional Options Beyond Your Specified Finish. 0000 Basic Box Includes #6-32 UNC Fasteners.
2. Box Series Numbers are for reference only. Please complete the worksheet on E-14 and call the factory for part number assignment for your specific box configuration.
3. Metric dimensions (mm) are in parenthesis and for reference only

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SIDE A



SIDE C





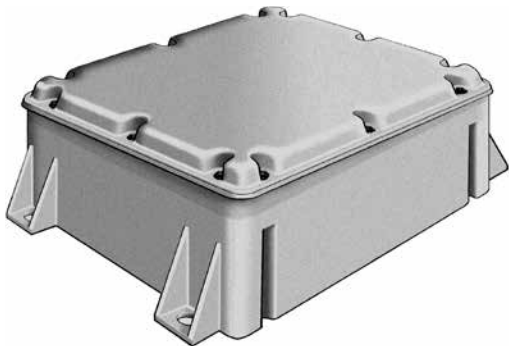
SIDES B & D

E

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Glenair®

Series 140-101
Small Junction Box



Small
Series 140-101
CostSaver Composite
Junction Box

Product Series	Basic Part Number		Dash Number	
140 - Composite Boxes				
140	G	101	XMS	- 0000
	Material Color Symbol (*See Table II*)		Finish Symbol (*See Table I*)	

TABLE I: FINISHES

Symbol	Finish Description
XO	No Plating (Non-Conductive Finish)
XMS	Internal Surfaces - Electroless Nickel External Surfaces - See Table II
XM	All Surfaces – Electroless Nickel
XW	All Surfaces – Cadmium Olive Drab over Electroless Nickel
XZN	All Surfaces – Zinc Nickel/Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*

TABLE II: MATERIAL COLOR & FINISH OPTIONS

Sym	Material & Color	Finish Options
B	Thermoplastic / Black	XO and XMS
G	Thermoplastic / Grey	XO and XMS
–	Thermoplastic / NA	XM, XW and XZN

E

TABLE III: KEY DIMENSIONS

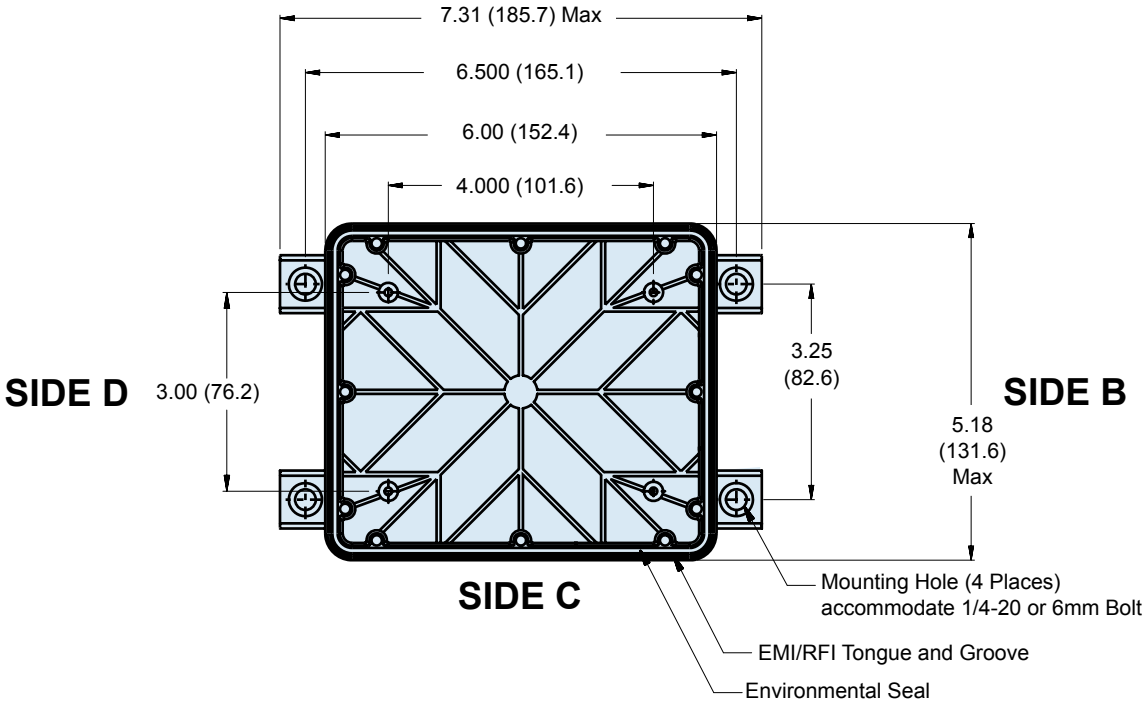
Box Series Number	External Dimensions	Internal Dimensions (with Aluminum Mounting Plate Installed, if applicable)
Small 140-101	5.18 (132) x 6.00 (152) x 3.35 (85)	3.94 (100) x 4.72 (120) x 2.63 (67)

NOTES

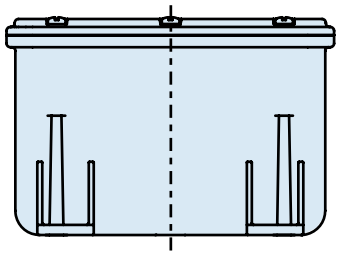
1. Use Dash Number 0000 for Basic Box with No Additional Options Beyond Your Specified Finish. 0000 Basic Box Includes #6-32 UNC Fasteners.
2. Box Series Numbers are for reference only. Please complete the worksheet on E-14 and call the factory for part number assignment for your specific box configuration.
3. Metric dimensions (mm) are in parenthesis and for reference only

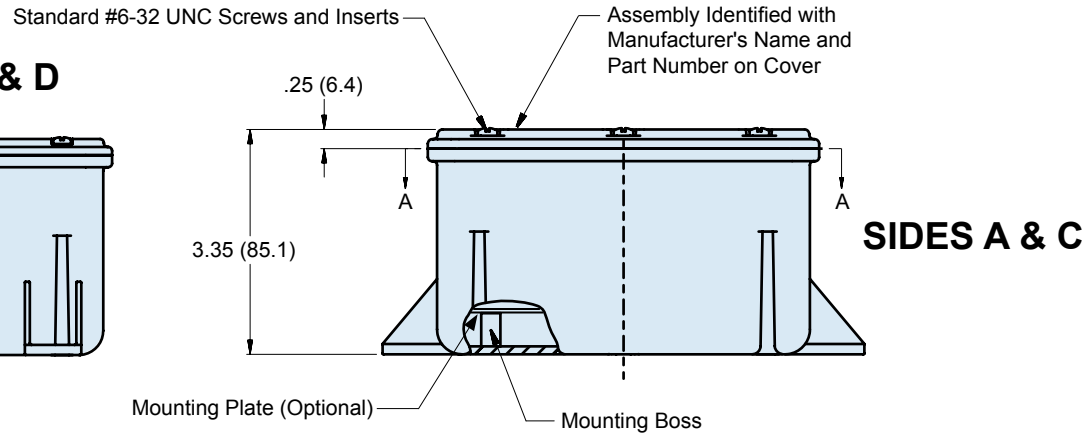
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SIDE A



SIDES B & D

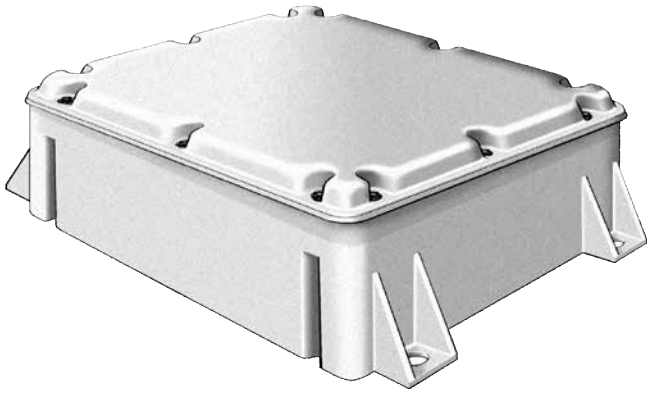




E

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Series 140-102
Medium Junction Box



Medium
Series 140-102
CostSaver Composite
Junction Box

Product Series	Basic Part Number			Dash Number
140 - Composite Boxes				
140	G	102	XMS	- 0000
	Material Color Symbol (*See Table II*)		Finish Symbol (*See Table I*)	

TABLE II: MATERIAL COLOR & FINISH OPTIONS

Sym	Material & Color	Finish Options
B	Thermoplastic / Black	XO and XMS
G	Thermoplastic / Grey	XO and XMS
–	Thermoplastic / NA	XM, XW and XZN

TABLE I: FINISHES

Symbol	Finish Description
XO	No Plating (Non-Conductive Finish)
XMS	Internal Surfaces - Electroless Nickel External Surfaces - See Table II
XM	All Surfaces – Electroless Nickel
XW	All Surfaces – Cadmium Olive Drab over Electroless Nickel
XZN	All Surfaces – Zinc Nickel/Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*

TABLE III: KEY DIMENSIONS

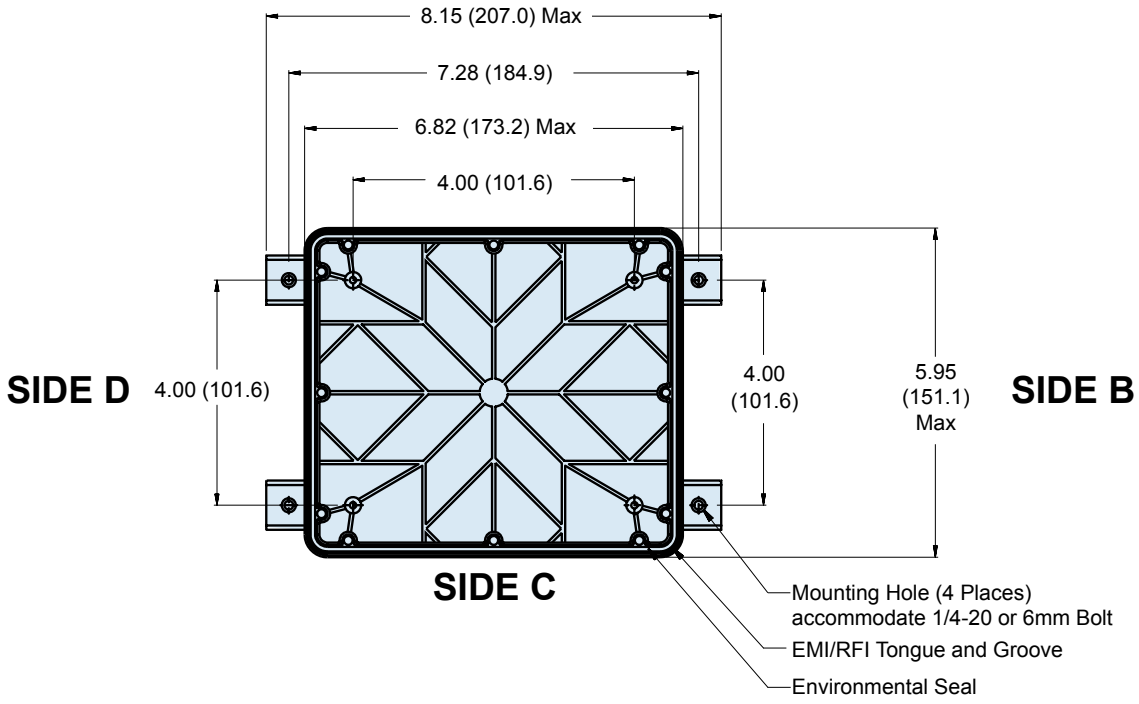
Box Series Number	External Dimensions	Internal Dimensions (with Aluminum Mounting Plate Installed, if applicable)
Medium 140-102	5.95 (151) x 6.82 (173) x 4.26 (108)	4.73 (120) x 5.91 (150) x 3.54 (90)

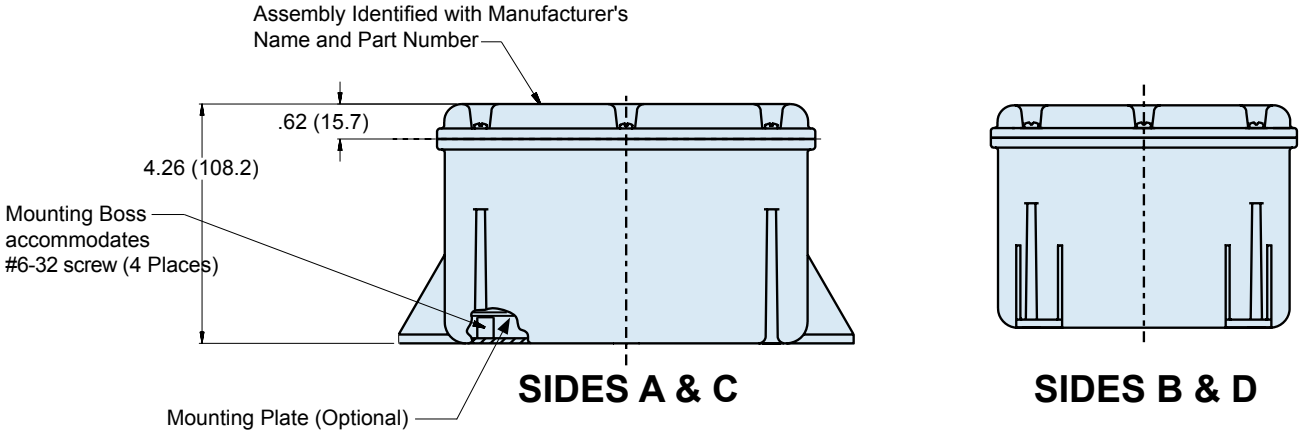
NOTES

1. Use Dash Number 0000 for Basic Box with No Additional Options Beyond Your Specified Finish. 0000 Basic Box Includes #6-32 UNC Fasteners.
2. Box Series Numbers are for reference only. Please complete the worksheet on E-14 and call the factory for part number assignment for your specific box configuration.
3. Metric dimensions (mm) are in parenthesis and for reference only

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SIDE A





E

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Glenair®

Series 140-103
Large Junction Box



Product Series	Basic Part Number		Dash Number	
140 - Composite Boxes				
140	G	103	XMS	- 0000
	Material Color Symbol (*See Table II*)		Finish Symbol (*See Table I*)	

Large
Series 140-103
CostSaver Composite
Junction Box

TABLE II: MATERIAL COLOR & FINISH OPTIONS

Sym	Material & Color	Finish Options
B	Thermoplastic / Black	XO and XMS
G	Thermoplastic / Grey	XO and XMS
–	Thermoplastic / NA	XM, XW and XZN

TABLE I: FINISHES

Symbol	Finish Description
XO	No Plating (Non-Conductive Finish)
XMS	Internal Surfaces - Electroless Nickel External Surfaces - See Table II
XM	All Surfaces – Electroless Nickel
XW	All Surfaces – Cadmium Olive Drab over Electroless Nickel
XZN	All Surfaces – Zinc Nickel/Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*

E

TABLE III: KEY DIMENSIONS

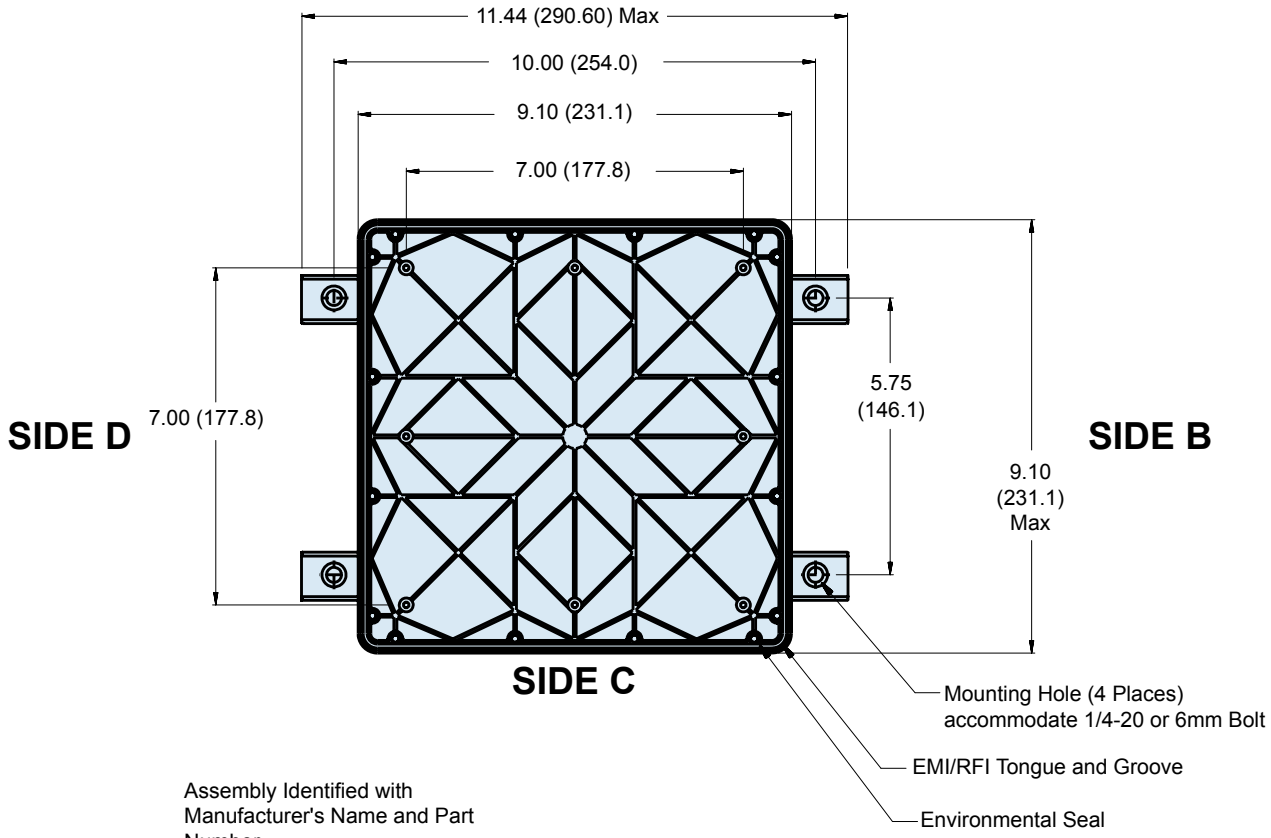
Box Series Number	External Dimensions	Internal Dimensions (with Aluminum Mounting Plate Installed, if applicable)
Large 140-103	9.10 (231) x 9.10 (231) x 4.50 (114)	7.87 (200) x 7.87 (200) x 3.78 (96)

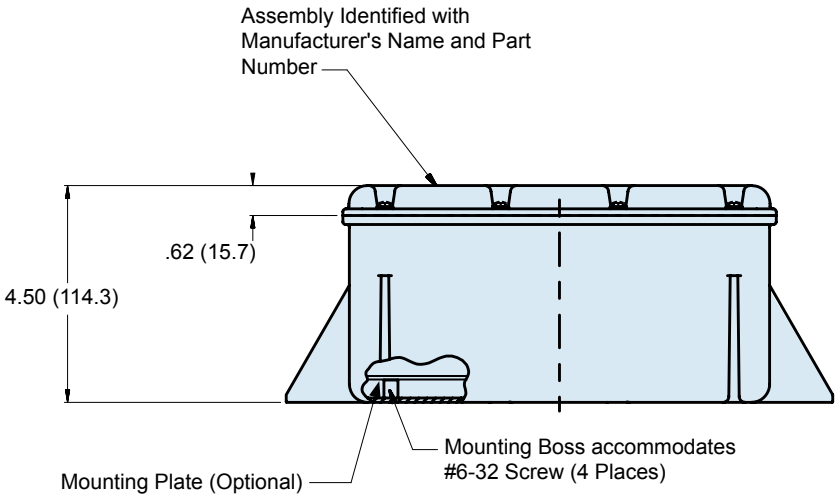
NOTES

1. Use Dash Number 0000 for Basic Box with No Additional Options Beyond Your Specified Finish. 0000 Basic Box Includes #6-32 UNC Fasteners.
2. Box Series Numbers are for reference only. Please complete the worksheet on E-14 and call the factory for part number assignment for your specific box configuration.
3. Metric dimensions (mm) are in parenthesis and for reference only

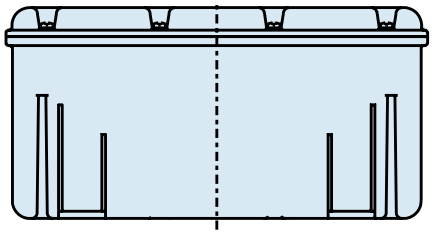
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SIDE A





SIDES A & C



SIDES B & D

E

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Series 140-104
Small Low-Profile Box



Small Low-Profile
Series 140-104
CostSaver Composite
Junction Box

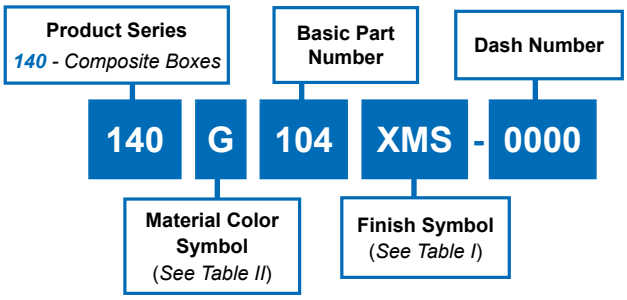


TABLE II: MATERIAL COLOR & FINISH OPTIONS

Sym	Material & Color	Finish Options
B	Thermoplastic / Black	XO and XMS
G	Thermoplastic / Grey	XO and XMS
–	Thermoplastic / NA	XM, XW and XZN

TABLE I: FINISHES

Symbol	Finish Description
XO	No Plating (Non-Conductive Finish)
XMS	Internal Surfaces - Electroless Nickel External Surfaces - See Table II
XM	All Surfaces – Electroless Nickel
XW	All Surfaces – Cadmium Olive Drab over Electroless Nickel
XZN	All Surfaces – Zinc Nickel/Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*

E

TABLE III: KEY DIMENSIONS

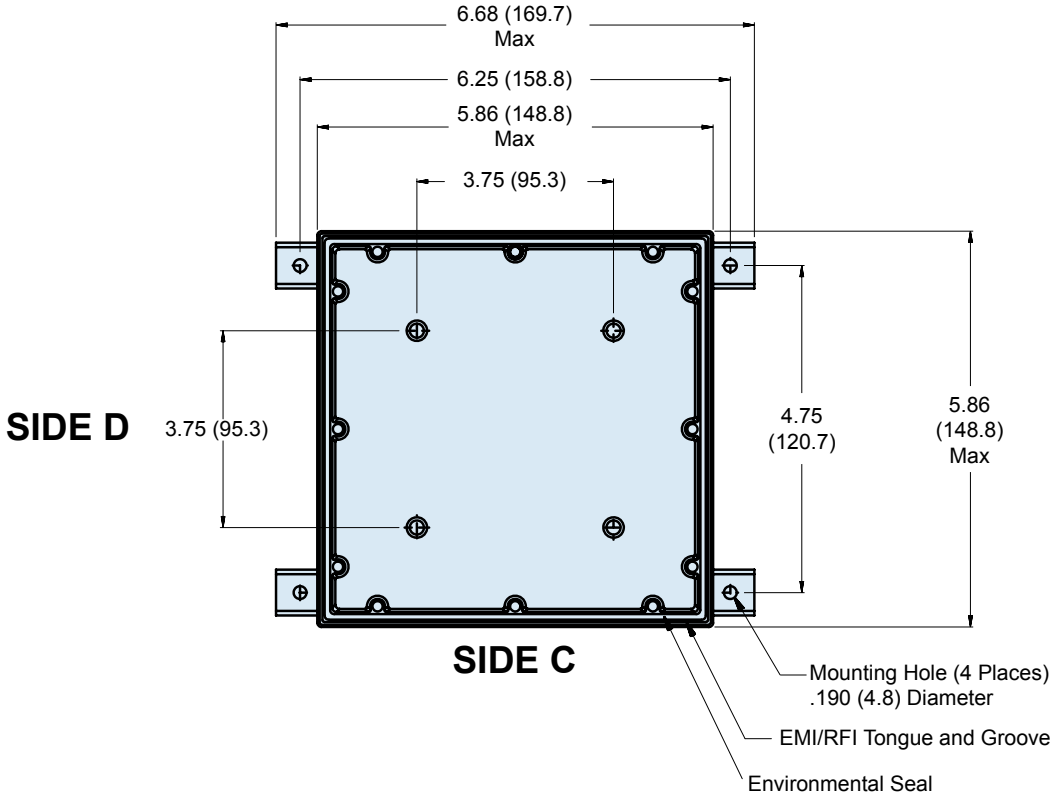
Box Series Number	External Dimensions	Internal Dimensions (with Aluminum Mounting Plate Installed, if applicable)
Low-Profile 140-104	5.86 (149) x 5.86 (149) x 2.13 (54)	4.90 (124) x 4.90 (124) x 1.53 (39)

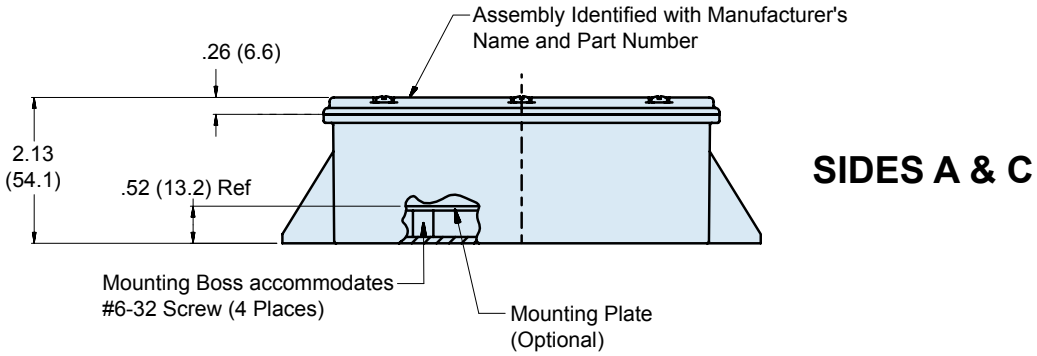
NOTES

1. Use Dash Number 0000 for Basic Box with No Additional Options Beyond Your Specified Finish. 0000 Basic Box Includes #6-32 UNC Fasteners.
2. Box Series Numbers are for reference only. Please complete the worksheet on E-14 and call the factory for part number assignment for your specific box configuration.
3. Metric dimensions (mm) are in parenthesis and for reference only

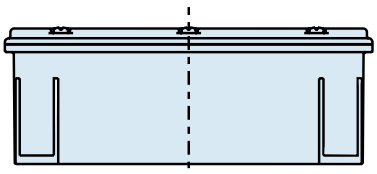
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SIDE A





SIDES A & C



SIDES B & D

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Series 140-105
Medium Low-Profile Junction Box



Medium Low-Profile
Series 140-105
CostSaver Composite
Junction Box

Product Series	Basic Part Number		Dash Number
140 - Composite Boxes			
140	G	105	XMS - 0000
	Material Color Symbol (*See Table II*)		Finish Symbol (*See Table I*)

TABLE I: FINISHES

Symbol	Finish Description
XO	No Plating (Non-Conductive Finish)
XMS	Internal Surfaces - Electroless Nickel External Surfaces - See Table II
XM	All Surfaces – Electroless Nickel
XW	All Surfaces – Cadmium Olive Drab over Electroless Nickel
XZN	All Surfaces – Zinc Nickel/Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*

TABLE II: MATERIAL COLOR & FINISH OPTIONS

Sym	Material & Color	Finish Options
B	Thermoplastic / Black	XO and XMS
G	Thermoplastic / Grey	XO and XMS
–	Thermoplastic / NA	XM, XW and XZN

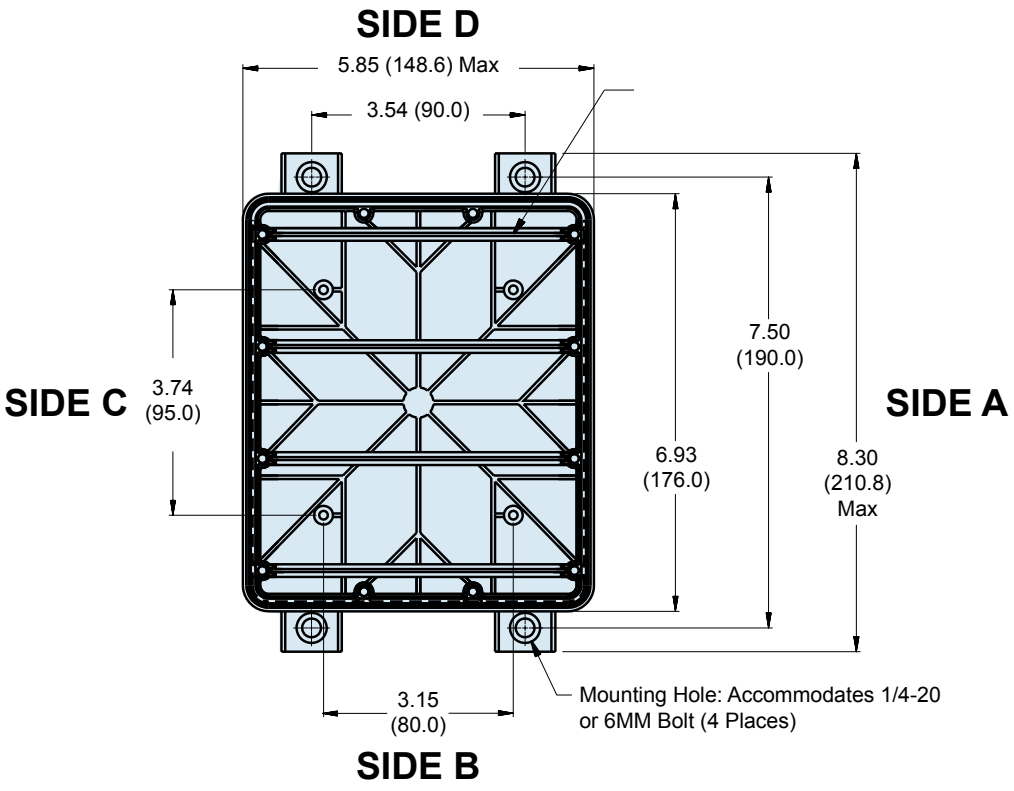
TABLE III: KEY DIMENSIONS

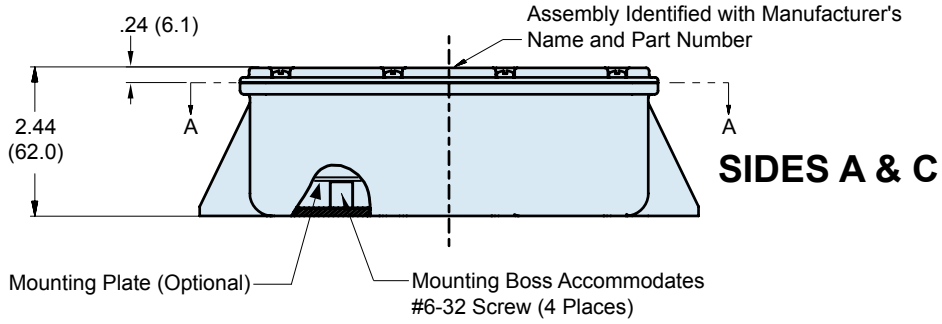
Box Series Number	External Dimensions	Internal Dimensions (with Aluminum Mounting Plate Installed, if applicable)
Medium Low-Profile 140-105	6.93 (176) x 5.85 (149) x 2.44 (62.0)	4.92 (125. x 6.02 (153) x 1.90 (48)

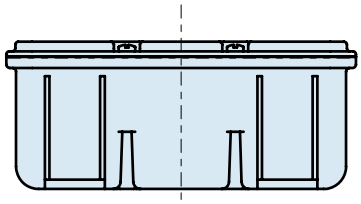
NOTES

1. Use Dash Number 0000 for Basic Box with No Additional Options Beyond Your Specified Finish. 0000 Basic Box Includes #6-32 UNC Fasteners.
2. Box Series Numbers are for reference only. Please complete the worksheet on E-14 and call the factory for part number assignment for your specific box configuration.
3. Metric dimensions (mm) are in parenthesis and for reference only

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SIDES B & D

E

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Series 140-106
Small Three-Legged Junction Box



Product Series	Basic Part Number		Dash Number	
140 - Composite Boxes				
140	G	106	XMS	- 0000
	Material Color Symbol (*See Table II*)		Finish Symbol (*See Table I*)	

Three-Legged
Series 140-106
CostSaver Composite
Junction Box

TABLE II: MATERIAL COLOR & FINISH OPTIONS

Sym	Material & Color	Finish Options
B	Thermoplastic / Black	XO and XMS
G	Thermoplastic / Grey	XO and XMS
–	Thermoplastic / NA	XM, XW and XZN

TABLE I: FINISHES

Symbol	Finish Description
XO	No Plating (Non-Conductive Finish)
XMS	Internal Surfaces - Electroless Nickel External Surfaces - See Table II
XM	All Surfaces – Electroless Nickel
XW	All Surfaces – Cadmium Olive Drab over Electroless Nickel
XZN	All Surfaces – Zinc Nickel/Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*

E

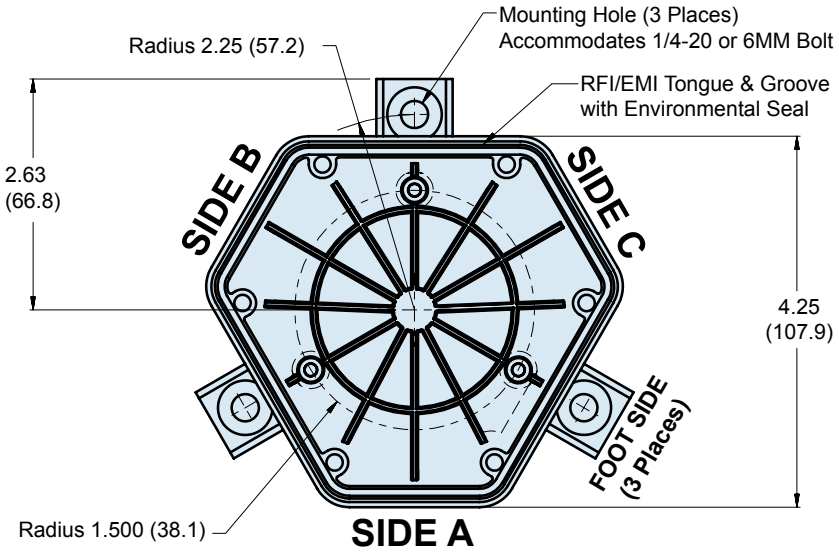
TABLE III: KEY DIMENSIONS

Box Series Number	External Dimensions	Internal Dimensions (with Aluminum Mounting Plate Installed, if applicable)
Three-Legged 140-106	2.88 (73.2) X 4.82 (122.4) X 4.28 (108.7)	2.50 (63.5) X 3.75 (95.3) X 3.75 (95.3)

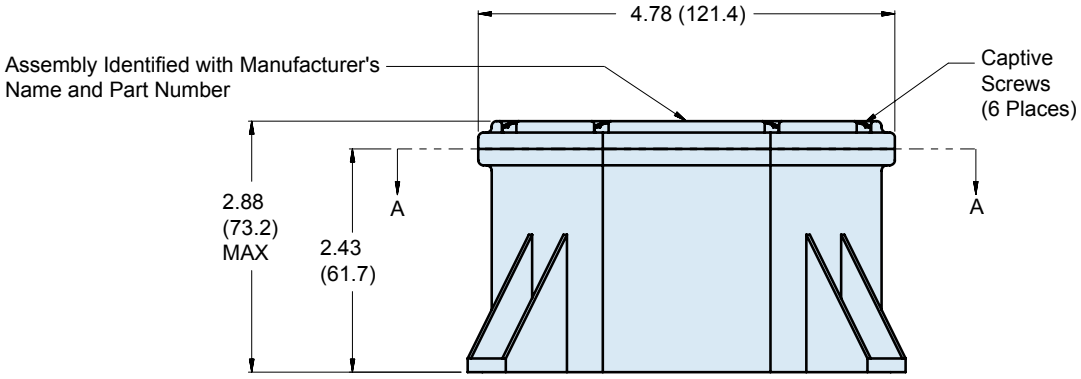
NOTES

1. Use Dash Number 0000 for Basic Box with No Additional Options Beyond Your Specified Finish. 0000 Basic Box Includes #6-32 UNC Fasteners.
2. Box Series Numbers are for reference only. Please complete the worksheet on E-14 and call the factory for part number assignment for your specific box configuration.
3. Metric dimensions (mm) are in parenthesis and for reference only

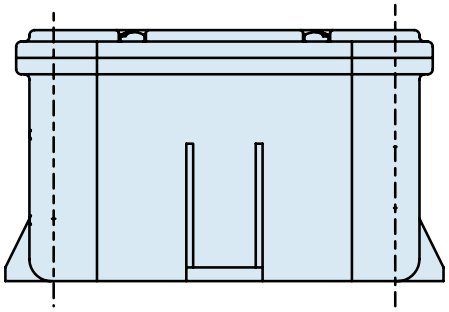
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SIDE A



SIDES A, B, & C



FOOT SIDES (3)

E

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Series 140-107
Jumbo Junction Box



Product Series
140 - Composite Boxes

Basic Part Number

Dash Number

140 **G** **107** **XMS** - **0000**

Material Symbol
(*See Table II*)

Finish Symbol
(*See Table I*)

Jumbo
Series 140-107
CostSaver Composite
Junction Box

TABLE II: MATERIAL COLOR & FINISH OPTIONS

Sym	Material & Color	Finish Options
B	Thermoplastic / Black	XO and XMS
G	Thermoplastic / Grey	XO and XMS
–	Thermoplastic / NA	XM, XW and XZN

TABLE I: FINISHES

Symbol	Finish Description
XO	No Plating (Non-Conductive Finish)
XMS	Internal Surfaces - Electroless Nickel External Surfaces - See Table II
XM	All Surfaces – Electroless Nickel
XW	All Surfaces – Cadmium Olive Drab over Electroless Nickel
XZN	All Surfaces – Zinc Nickel/Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*

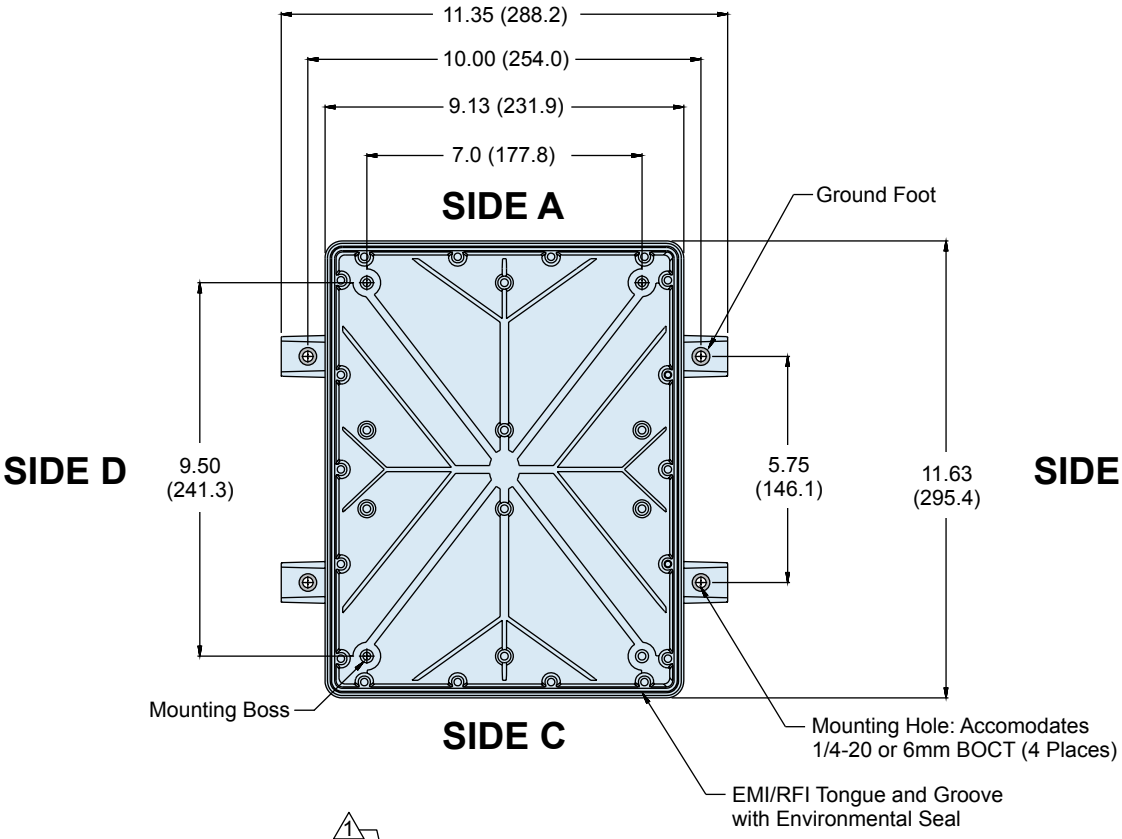
TABLE III: KEY DIMENSIONS

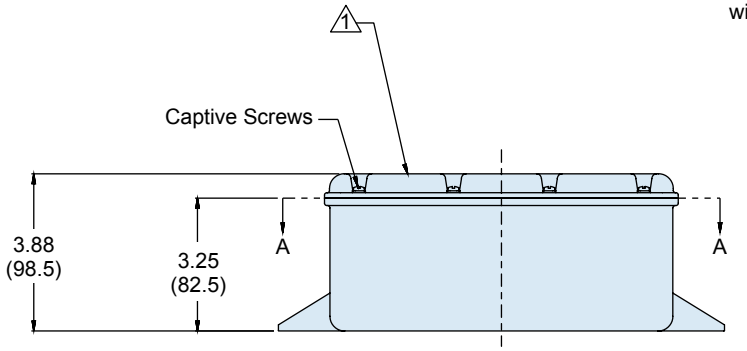
Box Series Number	External Dimensions	Internal Dimensions (with Aluminum Mounting Plate Installed, if applicable)
Jumbo 140-107	9.13 (232) x 11.63 (295) x 3.88 (98.5)	8.0 (203) x 10.50 (267) x 3.0 (76)

NOTES

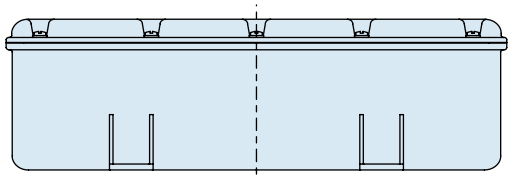
1. Use Dash Number 0000 for Basic Box with No Additional Options Beyond Your Specified Finish. 0000 Basic Box Includes #6-32 UNC Fasteners.
2. Box Series Numbers are for reference only. Please complete the worksheet on E-14 and call the factory for part number assignment for your specific box configuration.
3. Metric dimensions (mm) are in parenthesis and for reference only

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SIDES A and C



SIDES B and D

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Series 140-200
Octagonal Junction Box

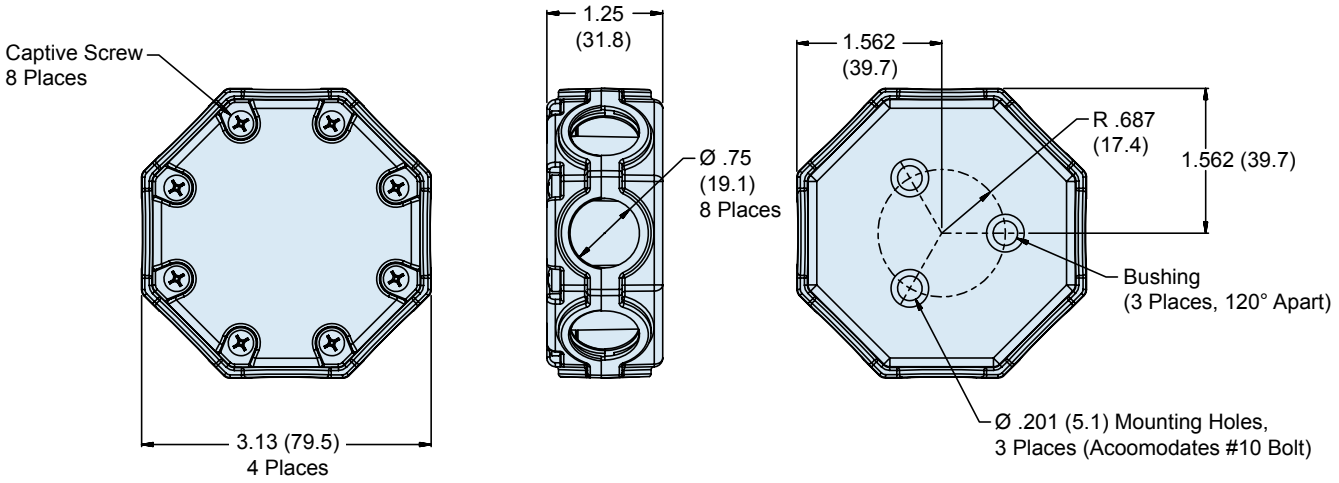
Product Series	Basic Part Number	Number of Caps		
140 - Composite Boxes		*(Omit for None)*		
140	**B**	**200**	**XO**	**4**
Material Symbol *(See Table I)*		**Finish Symbol** *(See Table II)*		

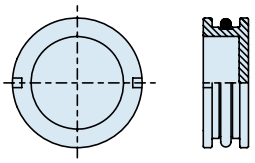
TABLE I: MATERIAL COLOR & FINISH OPTIONS

Sym	Material & Color	Finish Options
B	Thermoplastic / Black	XO and XMS
G	Thermoplastic / Grey	XO and XMS
–	Thermoplastic / NA	XM, XW and XZN

TABLE II: FINISHES

Symbol	Finish Description
XO	No Plating (Non-Conductive Finish)
XMS	Internal Surfaces - Electroless Nickel External Surfaces - See Table II
XM	All Surfaces – Electroless Nickel
XW	All Surfaces – Cadmium Olive Drab over Electroless Nickel
XZN	All Surfaces – Zinc Nickel/Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*





Cap

Quantity Per
Part Number Development

NOTES

1. Box series numbers are for reference only. Please complete the worksheet on E-14 and call the factory for part number assignment for your specific box configuration.
2. Metric dimensions (mm) are in parentheses and are for reference only.

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Series 140-203
12 Port Rectangular Junction Box

Product Series	Basic Part Number	Number of Caps
140 - Composite Boxes		*(Omit for None)*
140	B	203	XO	4
	Material Symbol *(See Table I)*		Finish Symbol *(See Table II)*	

TABLE II: FINISHES

Symbol	Finish Description
XO	No Plating (Non-Conductive Finish)
XMS	Internal Surfaces - Electroless Nickel External Surfaces - See Table I
XM	All Surfaces – Electroless Nickel
XW	All Surfaces – Cadmium Olive Drab over Electroless Nickel
XZN	All Surfaces – Zinc Nickel/Black
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*

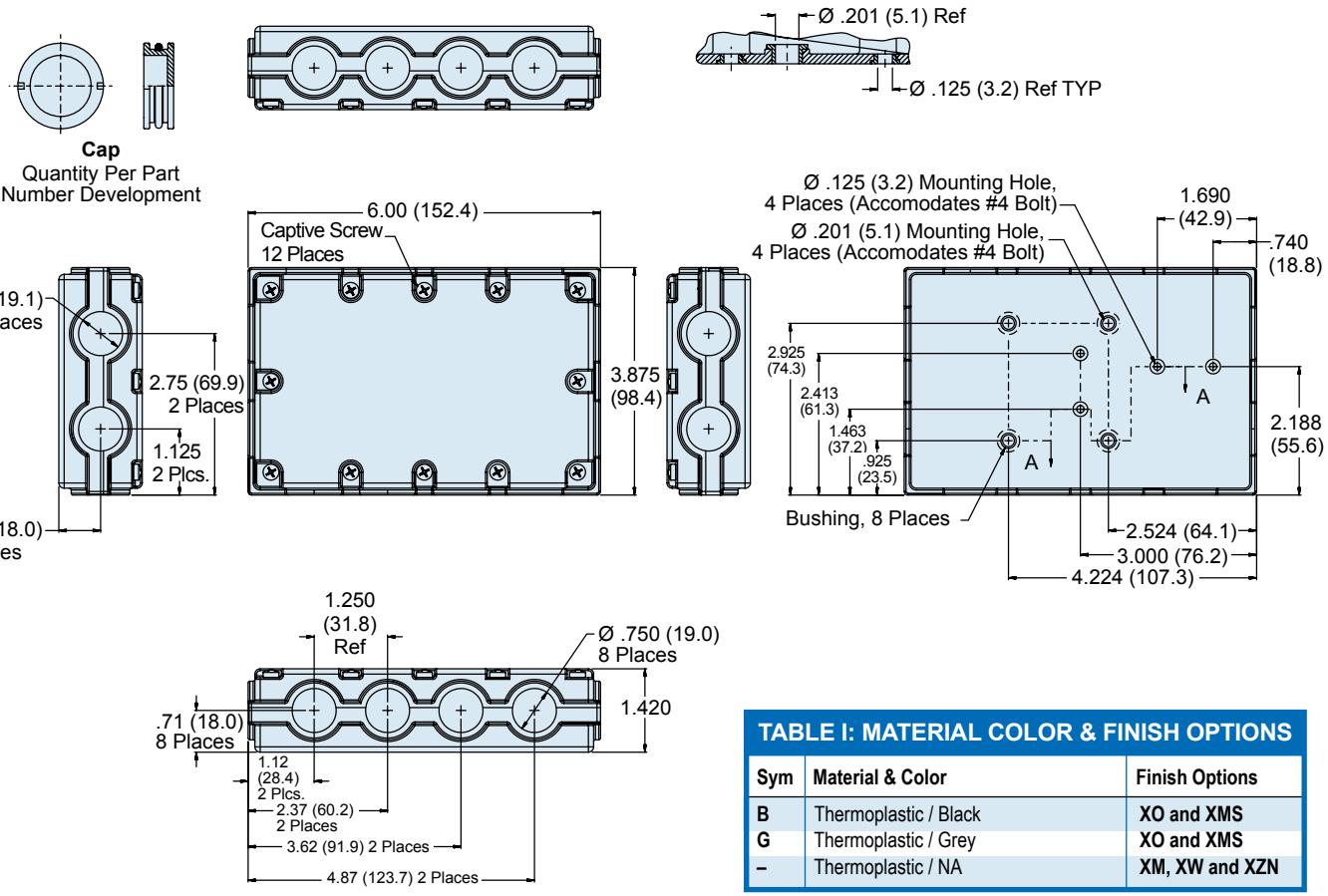


TABLE I: MATERIAL COLOR & FINISH OPTIONS

Sym	Material & Color	Finish Options
B	Thermoplastic / Black	XO and XMS
G	Thermoplastic / Grey	XO and XMS
–	Thermoplastic / NA	XM, XW and XZN

NOTES

1. Box series numbers are for reference only. Please complete the worksheet on E-14 and call the factory for part number assignment for your specific box configuration.
2. Metric dimensions (mm) are in parentheses and for reference only.

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630-030
Composite Thru-Box, Panel and Bulkhead
RFI/EMI/Environmental Banding Adapter

Product Series	Basic Part Number	Entry Code	Polysulfide
630 - Bulkhead Feed-Thru		(See Table I)	(Omit for None)

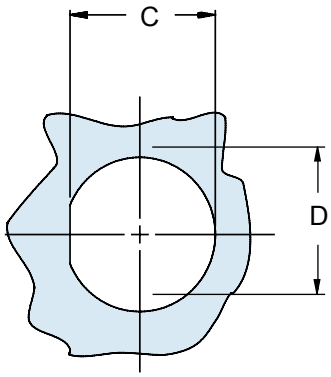
630	A	030	XM	16	B	P	T

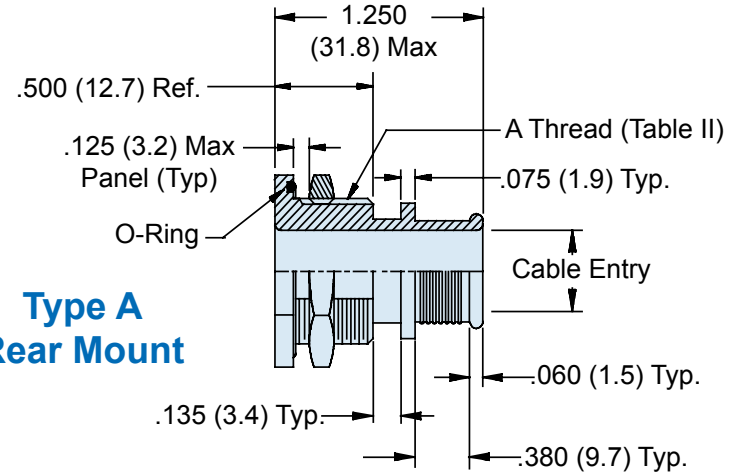
Fitting Type
A - Rear Mount
B - Front Mount
C - Flange Mount

Finish Symbol
(See Table II)

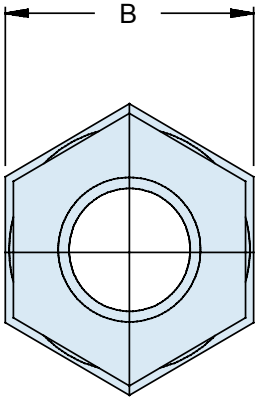
Band Option
B - Band
K - Pre-Coiled Band
(Omit for None)

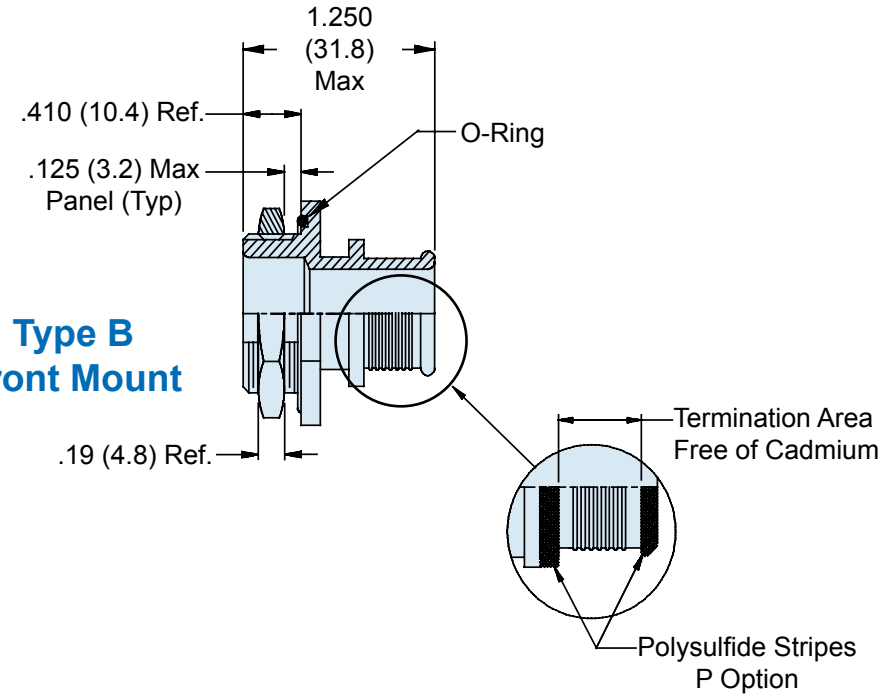
Shrink Boot
770-001 Shrink Boot Supplied with T Option





Type A
Rear Mount

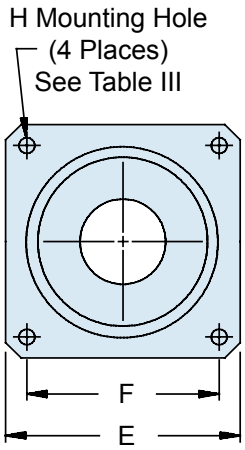


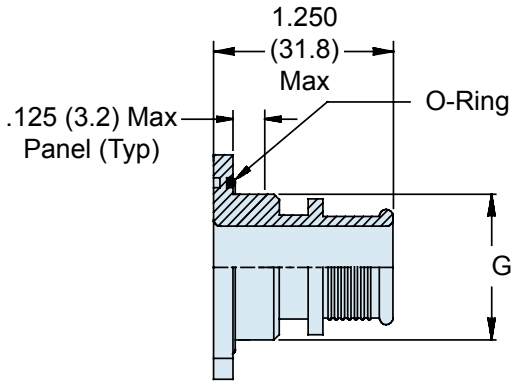


Type B
Front Mount

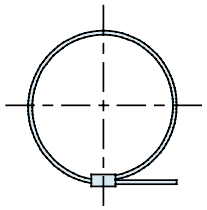
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630-030
Composite Thru-Box, Panel and Bulkhead
RFI/EMI/Environmental Banding Adapter





Type C
Flange Mount



Band Option
(K Option
Shown)

TABLE I: CABLE ENTRY

Entry Code	Cable Entry Dia	A Thread Unified	B Dim	C Flat ± .010 (± .3)	D Dia ± .010 (± .3)	E Sq ± .031 (± .8)	F Dim.	G Dia + .005 (+ .1) - .015 (- .4)
03	.188 (4.8)	1/2 -28	.688 (17.5)	.480 (12.2)	.515 (13.1)	.875 (22.2)	.594 (15.1)	.500 (12.7)
04	.250 (6.4)	1/2 -28	.688 (17.5)	.480 (12.2)	.515 (13.1)	.875 (22.2)	.594 (15.1)	.500 (12.7)
05	.313 (8.0)	5/8 -24	.813 (20.7)	.605 (15.4)	.640 (16.3)	1.000 (25.4)	.719 (18.3)	.625 (15.9)
06	.375 (9.5)	5/8 -24	.813 (20.7)	.605 (15.4)	.640 (16.3)	1.000 (25.4)	.719 (18.3)	.625 (15.9)
07	.438 (11.1)	3/4 -20	.938 (23.8)	.730 (18.5)	.765 (19.4)	1.094 (27.8)	.812 (20.6)	.750 (19.1)
08	.500 (12.7)	3/4 -20	.938 (23.8)	.730 (18.5)	.765 (19.4)	1.094 (27.8)	.812 (20.6)	.750 (19.1)
09	.563 (14.3)	7/8 -20	1.063 (27.0)	.855 (21.7)	.890 (22.6)	1.188 (30.2)	.906 (23.0)	.875 (22.2)
10	.625 (15.9)	7/8 -20	1.063 (27.0)	.855 (21.7)	.890 (22.6)	1.188 (30.2)	.906 (23.0)	.875 (22.2)
11	.688 (17.5)	1 -20	1.188 (30.2)	.980 (24.9)	1.015 (25.8)	1.281 (32.5)	.969 (24.6)	1.000 (25.4)
12	.750 (19.1)	1 -20	1.188 (30.2)	.980 (24.9)	1.015 (25.8)	1.281 (32.5)	.969 (24.6)	1.000 (25.4)
13	.813 (20.7)	1 1/8 -18	1.313 (33.4)	1.105 (28.1)	1.140 (29.0)	1.375 (34.9)	1.062 (27.0)	1.125 (28.6)
14	.875 (22.2)	1 1/4 -18	1.438 (36.5)	1.230 (31.2)	1.265 (32.1)	1.500 (38.1)	1.156 (29.4)	1.250 (31.8)
15	.938 (23.8)	1 1/4 -18	1.438 (36.5)	1.230 (31.2)	1.265 (32.1)	1.500 (38.1)	1.156 (29.4)	1.250 (31.8)
16	1.000 (25.4)	1 3/8 -18	1.563 (39.7)	1.355 (34.4)	1.390 (35.3)	1.625 (41.3)	1.250 (31.8)	1.375 (34.9)
17	1.063 (27.0)	1 3/8 -18	1.563 (39.7)	1.355 (34.4)	1.390 (35.3)	1.625 (41.3)	1.250 (31.8)	1.375 (34.9)
18	1.125 (28.6)	1 1/2 -18	1.688 (42.9)	1.480 (37.6)	1.515 (38.5)	1.750 (44.5)	1.375 (34.9)	1.500 (38.1)
19	1.188 (30.2)	1 1/2 -18	1.688 (42.9)	1.480 (37.6)	1.515 (38.5)	1.750 (44.5)	1.375 (34.9)	1.500 (38.1)
20	1.250 (31.8)	1 5/8 -18	1.813 (46.1)	1.605 (40.8)	1.640 (41.7)	1.812 (46.0)	1.500 (38.1)	1.625 (41.3)
22	1.375 (34.9)	1 3/4 -18	1.938 (49.2)	1.730 (43.9)	1.765 (44.8)	2.000 (50.8)	1.562 (39.7)	1.750 (44.5)
24	1.500 (38.1)	2 -18	2.188 (55.6)	1.980 (50.3)	2.015 (51.2)	2.250 (57.2)	1.750 (44.5)	2.000 (50.8)
26	1.625 (41.3)	2 -18	2.188 (55.6)	1.980 (50.3)	2.015 (51.2)	2.250 (57.2)	1.750 (44.5)	2.000 (50.8)
28	1.750 (44.5)	2 1/4 -16	2.438 (61.9)	2.230 (56.6)	2.265 (57.5)	2.500 (63.5)	1.938 (49.2)	2.250 (57.2)

TABLE II

Symbol	Finish Description
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE III: MOUNTING

Dash Nos.	H Dia + .015 (+ .4) - .000 (- .0)
03-17	.125 (3.2)
18-20	.156 (4.0)
22-28	.188 (4.8)

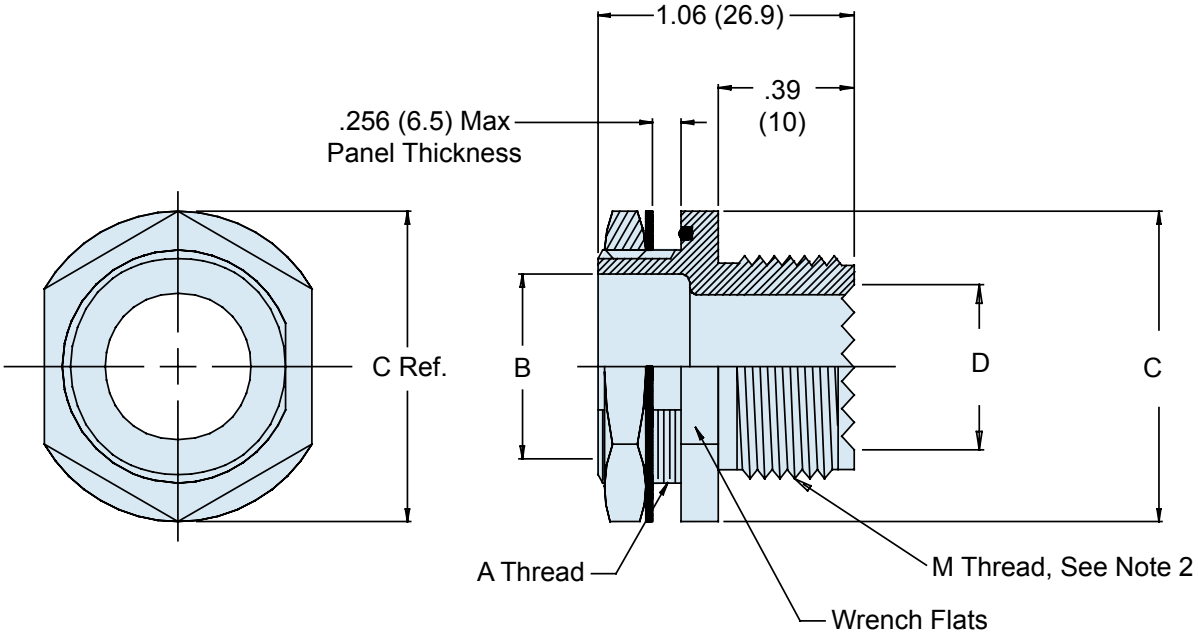
APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only
2. Consult factory for shrink boot to be supplied with part.

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630-031
Composite Thru-Box, Panel and Bulkhead
Universal Environmental Adapter

Product Series	Basic Part Number		Bulkhead Thread Size		
630 - Bulkhead Feed-Thru			*(See Table II)*		
630	**S**	**031**	**XM**	**04**	**17**
Angle and Profile		**Finish Symbol**		**Connector Shell Size**	
S - Straight		*(See Table I)*		*(See Table III)*	



E

APPLICATION NOTES

1. Metric dimensions (mm) are in parentheses and are for reference only.
2. MIL-DTL-38999 Series 3 & 4 Accessory Interface, Glenair Code H.

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TABLE I	
Symbol	**Finish Description**
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

TABLE II: BULKHEAD THREAD SIZE						
Dash No.	**A Thread ISO Metric**	**B Dia. Min.**		**C Max.**		**Max Entry Table 3**
01	M 16 x 1.5-6g	.394	(10.0)	1.070	(27.2)	11
02	M 20 x 1.5-6g	.551	(14.0)	1.200	(30.5)	13
03	M 27 x 2.0-6g	.866	(22.0)	1.510	(38.4)	21
04	M 36 x 2.0-6g	1.181	(30.0)	2.010	(51.1)	25

TABLE III: CONNECTOR SHELL SIZE			
Shell Size	**M Thread ISO Metric**	**D Min**	
09	M 12 x 1.0-6g	.250	(6.4)
11	M 15 x 1.0-6g	.375	(9.5)
13	M 18 x 1.0-6g	.500	(12.7)
15	M 22 x 1.0-6g	.625	(15.9)
17	M 25 x 1.0-6g	.750	(19.1)
19	M 28 x 1.0-6g	.812	(20.6)
21	M 31 x 1.0-6g	.938	(23.8)
23	M 34 x 1.0-6g	1.062	(27.0)
25	M 37 x 1.0-6g	1.188	(30.2)

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Glenair®

637-094
Composite Box Conduit or Cable
Feed-Through Adapter Series

Product Series
637 - Bulkhead Feed-Thru

Basic Part Number

Bulkhead Thread Size
(See Table I)

Fitting Style
1 - EMI/RFI
2 - Environmental
3 - EMI/RFI and Environmental
4 - Environmental (see note II)
5 - Conduit (PEEK)
6 - Conduit and Environmental (ETFE, FEP and PFA)
7 - Conduit and Environmental (PEEK)

637	B	094	XM	04	06	2	C	B

Fitting Type
B - Front Mount

Finish Symbol
(See Table III)

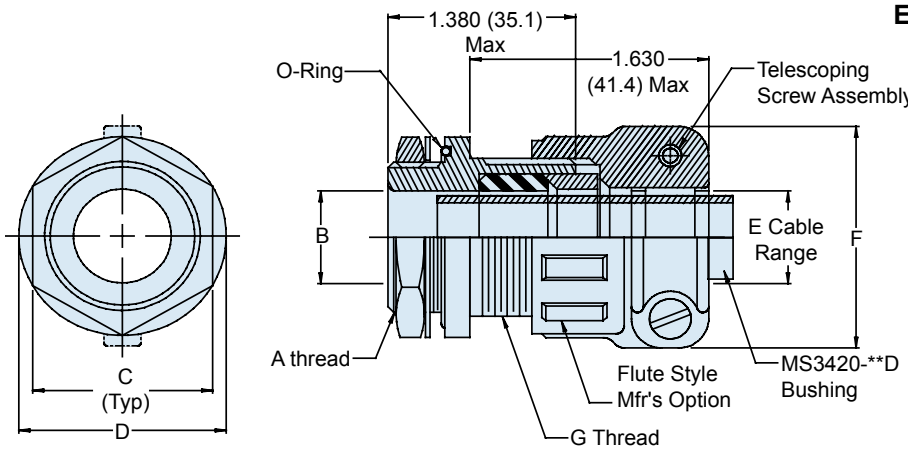
Dash Number
(See Table II)

Strain Relief Style
C - Clamp
*N - Nut**

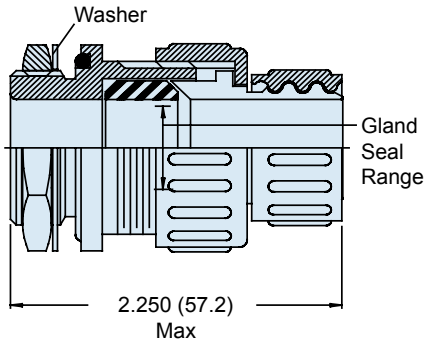
Bushing
*B - Supplied with MS3420-**D*
(Omit for None)

**(for styles A, B and C only)*

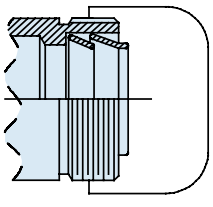
Type B Environmental Style 2



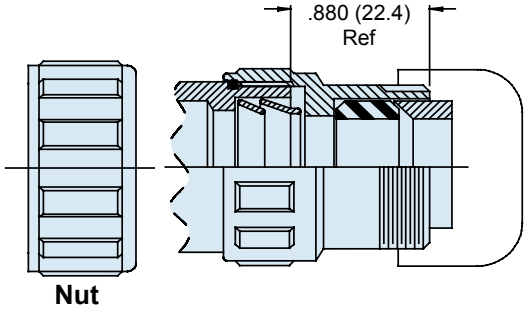
Type B Environmental Conduit Adapter Style 6 or 7



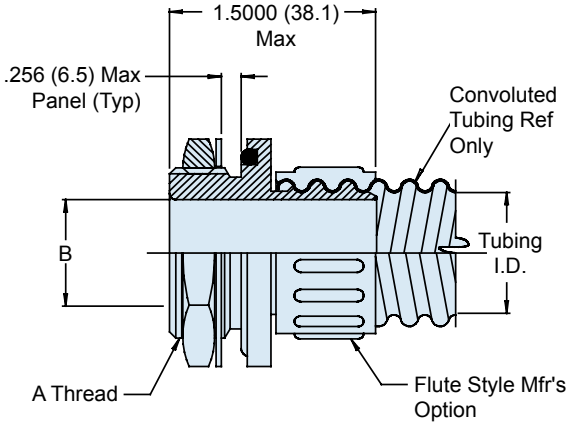
Style 1 RFI/EMI



Type B RFI/EMI & Environmental Style 3



Type B Conduit Adapter Style 5



E

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TABLE I: BULKHEAD THREAD SIZE					
Dash No.	A Thread ISO Metric	B Ref Diameter	C	D Max Diameter	Max Entry Table II
01	M16 x 1.5-6g	.55 (14.0)	.875 (22.2)	1.06 (27.2)	06
02	M20 x 1.5-6g	.61 (15.5)	1.062 (27.0)	1.19 (30.5)	10
03	M27 x 2.0-6g	.86 (21.8)	1.375 (34.9)	1.50 (38.4)	16
04	M36 x 2.0-6g	1.21 (30.7)	1.750 (44.5)	2.00 (51.1)	20
05	1 -20 UNEF-2A	.78 (19.8)	1.250 (31.8)	1.38 (35.3)	12

TABLE II: CONNECTOR SHELL SIZE ORDER NUMBER						
Dash No.	E		F	G Thread		Ref. Conduit Size
	Min	Max	Max	Unified Class 2A	MS3420-**D	Styles 5, 6 & 7
04	.188 (4.8)	.312 (7.9)	1.150 (29.2)	11/16-24	-04	14
06	.291 (7.1)	.438 (11.1)	1.270 (32.3)	13/16-20	-06	16
10	.375 (9.5)	.610 (15.5)	1.460 (37.1)	1 1/16-18	-06 & -10	24
12	.438 (11.1)	.750 (19.1)	1.620 (41.1)	1 1/4-18	-08 & -12	28
16	.625 (15.9)	.860 (21.8)	1.770 (44.9)	1 1/2-18	-12 & -16	32
20	.875 (22.2)	1.210 (30.7)	2.060 (52.3)	1 13/16-16	-16 & -20	40

TABLE II	
Symbol	Finish Description
XB	No Plating - Black Color (Non-Conductive Finish)
XM	2000 Hour Corrosion Resistant Electroless Nickel
XMT	2000 Hour Corrosion Resistant Ni-PTFE, Nickel-Fluorocarbon Polymer. *1000 Hour Grey™*
XO	No Plating - Brown Color (Non-Conductive Finish)
XW	2000 Hour Corrosion Resistant Cadmium/Olive Drab over Electroless Nickel

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Glenair®

687-466
Terminal Rail and Block Mounting Plate
To Fit Rectangular Boxes

TABLE I: MATERIALS AND FINISHES

Finish	Material	Finish Description
M	Aluminum Alloy	Electroless Nickel
Z1	Stainless Steel	Passivate

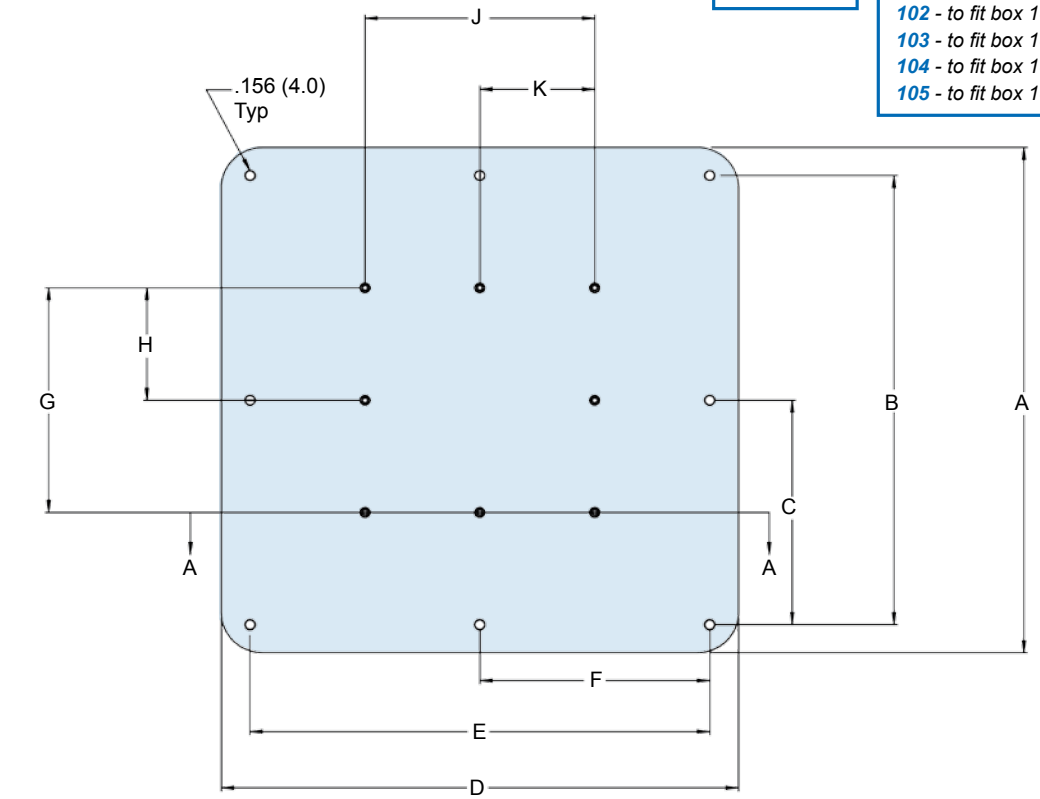
Product Series
687 - Box Mounting Plate

Material and Finish
(See Table I)

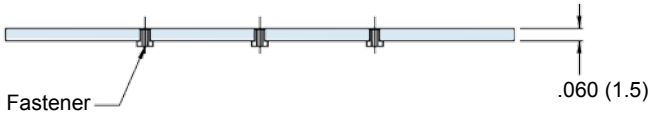
687 - 466 Z1 103

Basic Part Number

Dash Number
101 - to fit box 140-101
102 - to fit box 140-102
103 - to fit box 140-103
104 - to fit box 140-104
105 - to fit box 140-105



Section A - A



Self-Locking Fastener
8 Places, 6-32 UNC-2B Thread

TABLE II: KEY DIMENSIONS

Dash No.	A Dim	B Dim	C Dim	D Dim	E Dim	F Dim	G Dim	H Dim	J Dim	K Dim
101	3.890 (98.8)	3.000 (76.2)	N/A	4.680 (118.9)	4.000 (101.6)	N/A	1.800 (45.7)	.900 (22.9)	2.500 (63.5)	1.250 (31.8)
102	4.650 (118.1)	4.000 (101.6)	N/A	5.500 (139.7)	5.000 (127.0)	N/A	3.160 (80.3)	1.580 (40.1)	3.160 (80.3)	1.580 (40.1)
103	7.870 (199.9)	7.000 (177.8)	3.500 (88.9)	7.870 (199.9)	7.000 (177.8)	3.500 (88.9)	3.980 (101.1)	1.990 (50.5)	3.980 (101.1)	1.990 (50.5)
104	4.650 (118.1)	3.750 (95.3)	N/A	4.650 (118.1)	3.750 (95.3)	N/A	2.330 (59.2)	1.160 (29.5)	2.330 (59.2)	1.160 (29.5)
105	4.500 (114.3)	3.150 (80.0)	N/A	5.750 (146.1)	3.740 (95.0)	N/A	3.160 (80.3)	1.580 (40.1)	3.160 (80.3)	1.580 (40.1)
107	7.688 (195.3)	7.000 (177.8)	3.500 (88.9)	10.188 (258.8)	9.500 (241.3)	3.750 (95.3) / 5.75(146.1)	—	—	—	—

Metric Dimensions (mm) are in parentheses and are for reference only

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687-305-22
Round Internal Mounting Plate
To Fit Three-Legged Boxes

TABLE I: MATERIALS AND FINISH

Finish	Material	Finish Description
M	Aluminum Alloy	Electroless Nickel
Z1	Stainless Steel	Passivate

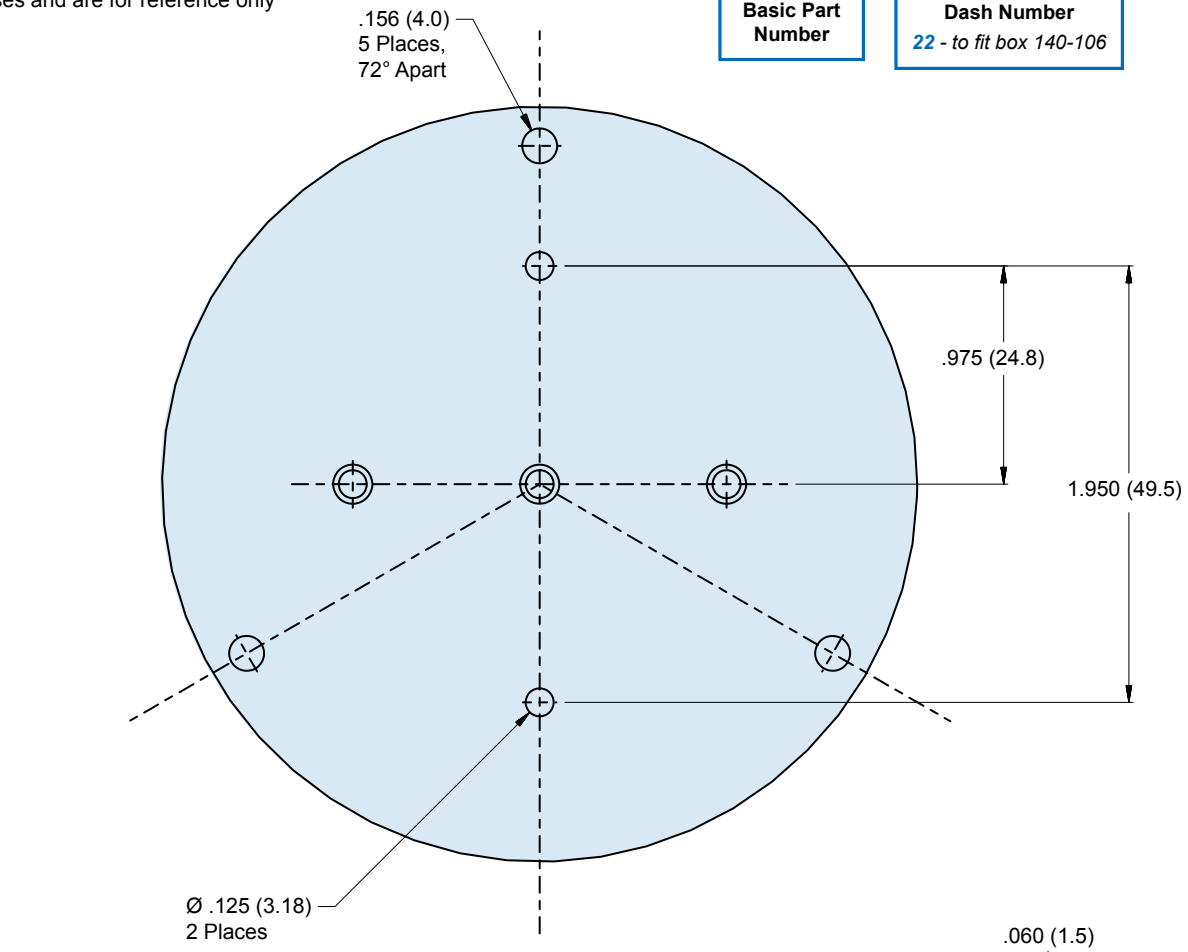
Product Series	Material and Finish	Terminal Block Option
687 - Box Mounting Plate	*(See Table I)*	*T - Plate supplied with MIL-T-55164/15 terminal block and NAS720C6-12 screw assembly (Omit if not required)*

687	-	305	Z1	22	T

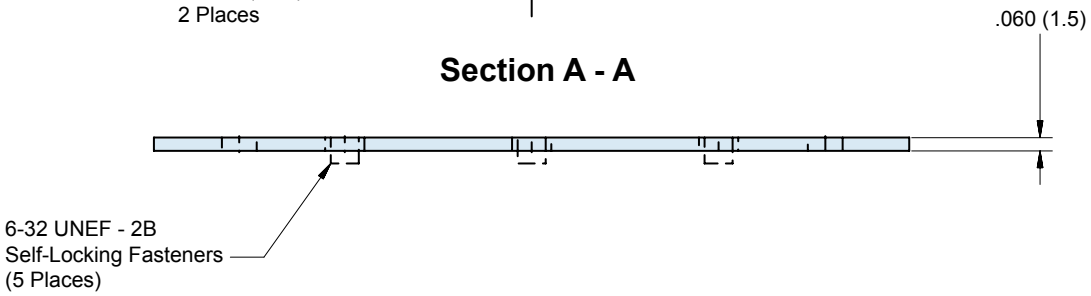
Basic Part Number

Dash Number
22 - to fit box 140-106

Metric Dimensions (mm) are in parentheses and are for reference only



Section A - A



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687-467
Slotted Terminal Block Mounting Rail

Dash Number
101 - to fit box 140-101
102 - to fit box 140-102
103 - to fit box 140-103
104 - to fit box 140-104
105 - to fit box 140-105
107 - to fit box 140-107

Product Series
687 - Box Mounting Plate

687 - 467E 101

Basic Part Number

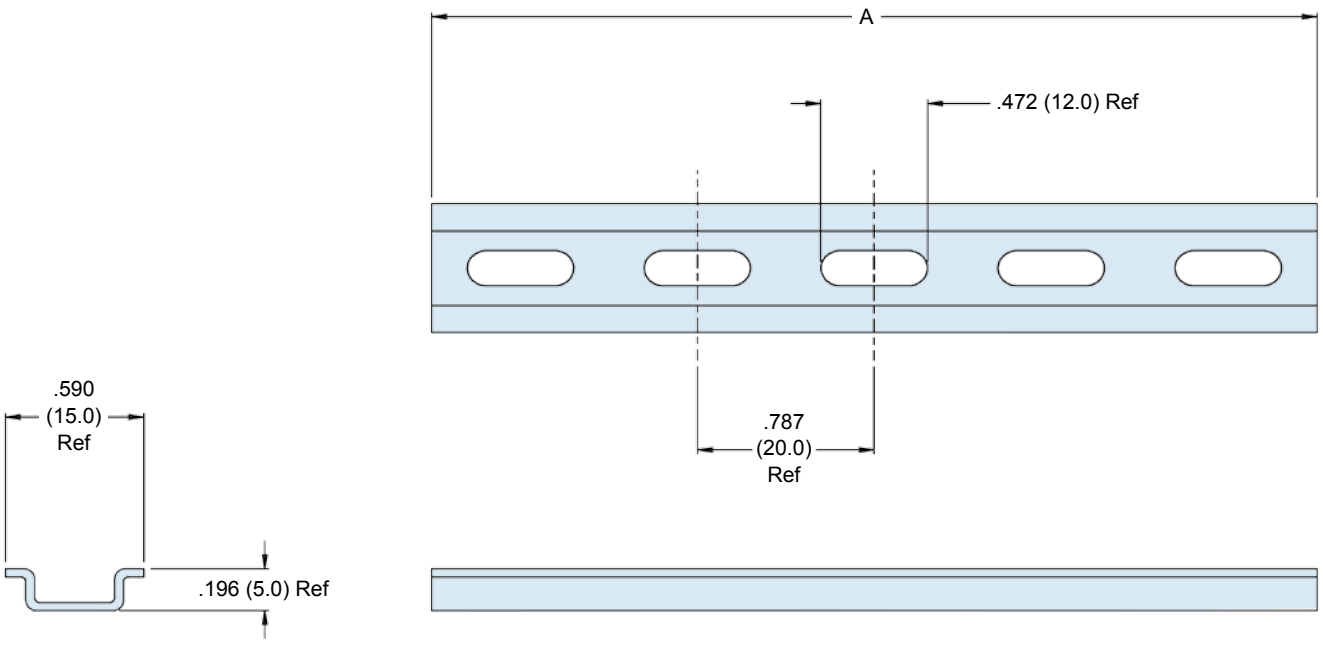


TABLE I: MATERIAL AND FINISH

Finish	Material	Finish Description
E	Aluminum Alloy	Iridite

TABLE II: DIMENSIONS

Dash No.	A ± .040 (1.000)	Use with Box	Use with Mounting Plate
101	3.750 (95.5)	140-101	687-466-101
102	4.620 (117.3)	140-102	687-466-102
103	6.249 (158.5)	140-103	687-466-103
104	4.650 (118.2)	140-104	687-466-104
105	4.500 (114.3)	140-105	687-466-105
106	2.500 (63.5)	140-106	687-305-22
107	TBD	140-107	687-466-107

Metric Dimensions (mm) are in parentheses and are for reference only

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687-461
Hole Cap Assembly

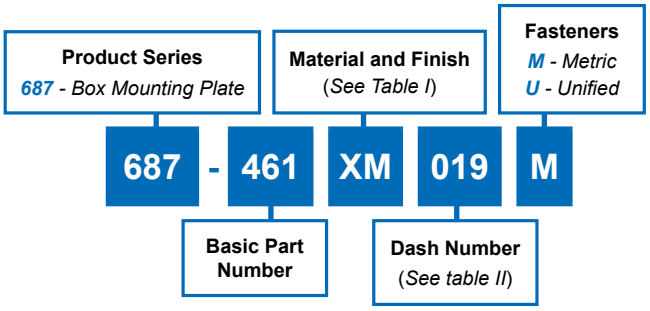
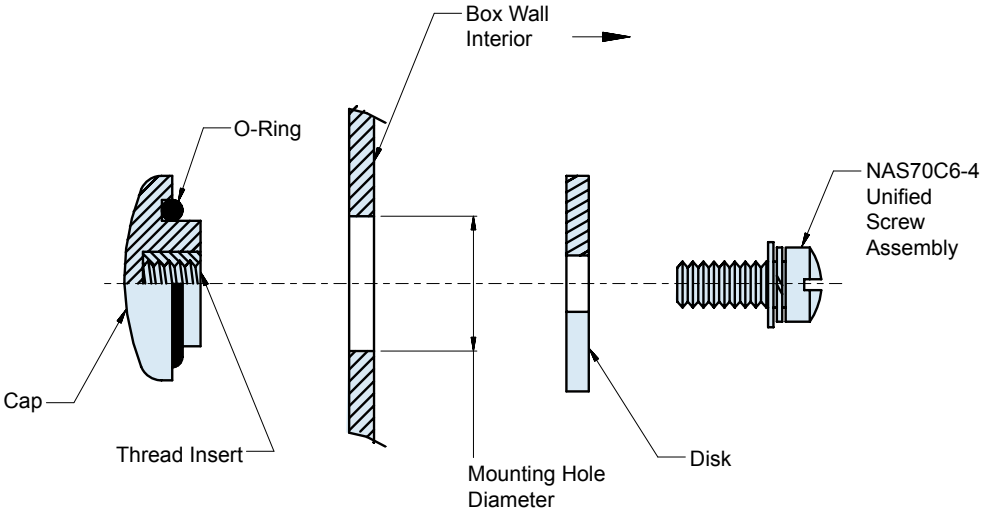
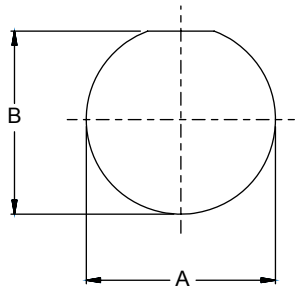


TABLE I				
Dash Number	A Mounting Hole Dia.	D Dim.	Thread Size, Box Components, Ref.	
016	.646	N/A	M16	5/8
017	.725	N/A	M18	
018	.765	N/A		3/4
019	.802	N/A	M20	
020	.890	N/A		7/8
021	.945	N/A		15/16
022	1.015	N/A		1.0
023	1.077	N/A	M27	
027	1.328	N/A		15/16
028	1.203	N/A	M30	13/16
029	1.438	N/A	M36	
030	.640	.595	See Detail A	
031	1.000	.968	See Detail A	
032	.755	.691	See Detail A	





Detail A
D-Cut Configuration

TABLE II: DASH NUMBER	
Dash No.	Mounting Hole Dia.
016	.646 (16.4)
017	.725 (18.4)
018	.765 (19.4)
019	.802 (20.4)
020	.890 (22.6)
022	1.015 (25.8)
023	1.077 (27.4)
027	1.328 (33.7)
029	1.438 (36.5)

TABLE III: MATERIALS AND FINISHES		
Symbol	Material	Finish Description
XO	PEI 30% Glass Filled Composite Thermoplastic	No Plating – Color Light Grey (Non-Conductive Finish)
XB		No Plating – Color Black (Non-Conductive Finish)
XM		Conductive – Electroless Nickel
XZN		Conductive – Zinc Nickel, Black

Metric Dimensions (mm) are in parentheses and are for reference only

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A New Way to Make Ends Meet



Glenair G-Load Coupling

For most applications, our standard self-locking coupling nuts with their familiar clicking action are a sure bet. But for situations where a helping hand is required to ensure the backshell coupling nut is tightened securely against connector interlocking teeth, Glenair is proud to offer our patented G-Load Coupler.

G-Load Coupling uses concentrically formed spring arms to push the backshell against the connector—aligning and seating the teeth and eliminating part loosening problems. The secret is in the G-Load patented low-torque performance: The G-Load Coupler actually becomes tighter as the coupling reaches its final, full-thread engagement. And the G-Load Coupler remains tight even at low torque levels—eliminating vibration-related decoupling problems. Best of all, the G-Load Coupler can be installed again and again to full torque without degrading performance. Naturally, the entire mechanism is made from composite materials to eliminate maintenance and reduce weight.

So, for that little extra peace of mind that comes from couplers that won't rattle loose, call the factory and enquire about the new G-Load Coupler from Glenair.

Glenair®

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Telephone: 818-247-6000 · Facsimile: 818-500-9912 · E-mail: sales@glenair.com

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Glenair Environmental Class MIL-DTL-38999 Type Connectors in Composite Thermoplastic are Built for a Broad Range of Harsh-Environment Applications

Product Applications

Glenair is recognized as trusted supplier of harsh environment electrical connectors built to the MIL-DTL-38999 standard. This section of the catalog presents a selection of the environmental class MIL-DTL-38999 Series III type solutions produced by Glenair in composite thermoplastic.



Available Insert Arrangements

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

TABLE I: MATERIALS

Shell, Barrel, and Coupling Nut	30% glass filled Ultem® Composite Thermoplastic
Front and Rear Insulators	Glass-filled LCP in accordance with MIL-M-24519, Type GLP-30F
Contact Retention Clip	Beryllium copper, heat-treated, unplated
Grommet, Peripheral Seal and Interfacial Seal	Blended elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988
Pin / Socket Contacts (Environmental)	Copper Alloy / Gold Plate - per M39029 / AS39029
Adhesives	Silicone and epoxy
Potting Compound: PCB and Solder Cup	High-strength epoxy, Hysol EE4215.

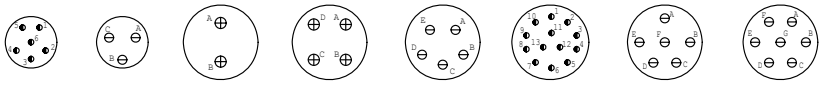
TABLE II: POPULAR ENVIRONMENTAL CLASS CONNECTOR FINISHES

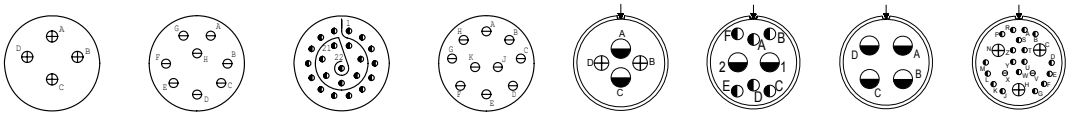
Plating Code	Material	Finish	Specification
XM	Composite	Electroless Nickel	AMS-C-26074
XMT	Composite	Ni-PTFE ***1000 Hour Grey™*** (Nickel Fluorocarbon Polymer)	MIL-DTL-38999L (2000 Hour Salt Spray)
XW	Composite	Cadmium Olive Drab over Electroless Nickel	AMS-QQ-P-416, over AMS-C-26074 (1000 Hour Salt Spray)

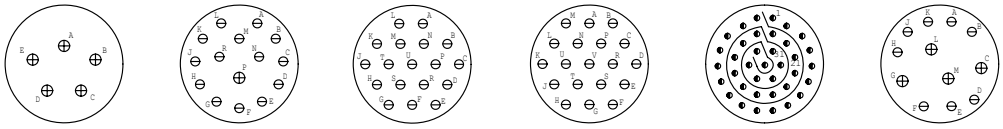
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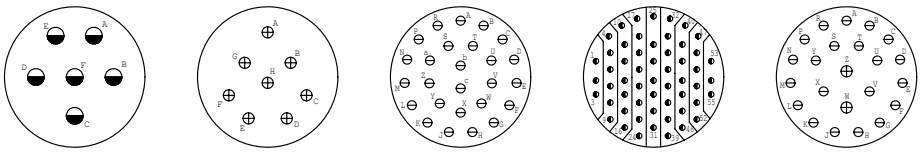
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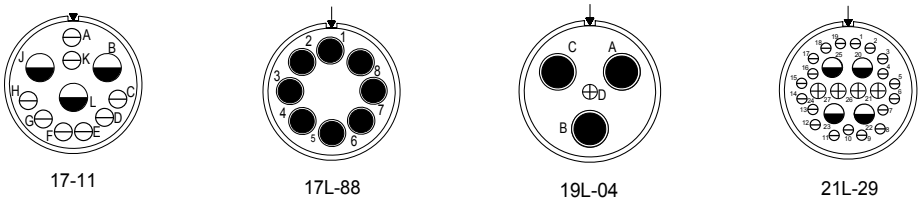
MIL-DTL-38999 Series III Type Environmental Class Connectors
Insert Arrangements (IAW MIL-STD-1560 and JSFD08)

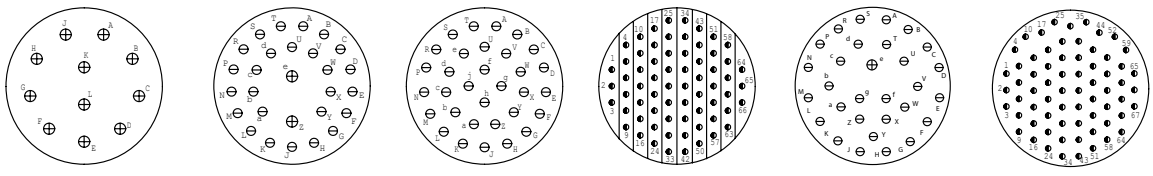

9-35 9-98 11-2 11-4 11-5 11-35 11-98 11-99

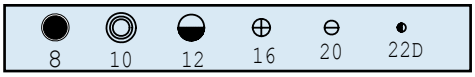

13-4 13-8 13-35 13-98 13L-13 13L-26 15L-04 15L-23


15-5 15-15 15-18 15-19 15-35 15-97


17-6 17-8 17-26 17-35 17-99


17-11 17L-88 19L-04 21L-29

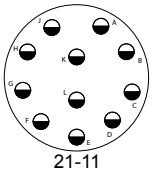

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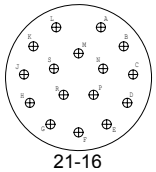


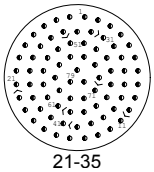
Consult factory for available insert arrangements.

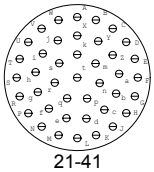
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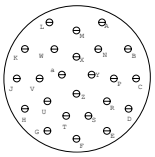
MIL-DTL-38999 Series III Type
Environmental Class Connectors
Insert Arrangements (IAW MIL-STD-1560 and JSFD08)

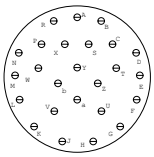

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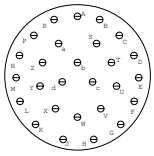

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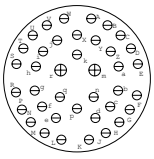

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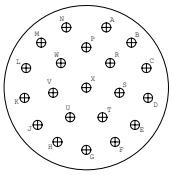

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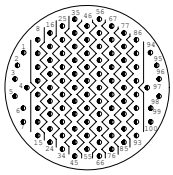

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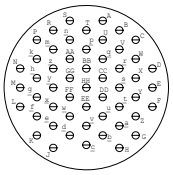

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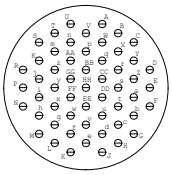

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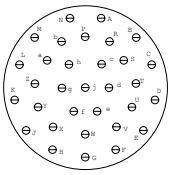

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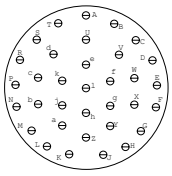

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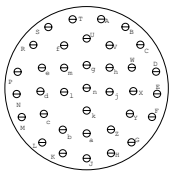

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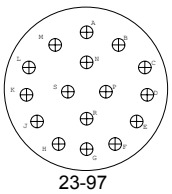

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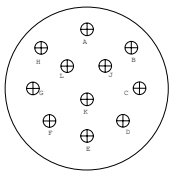

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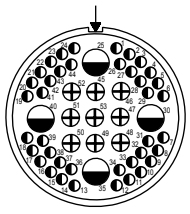

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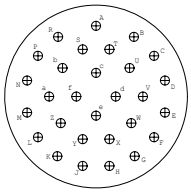

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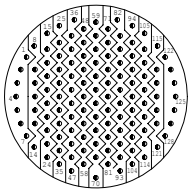

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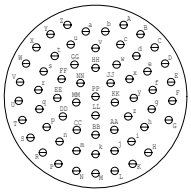

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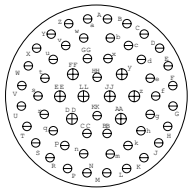

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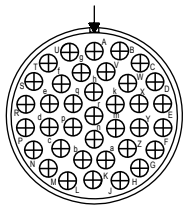

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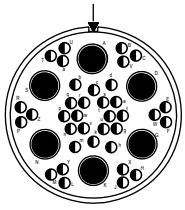

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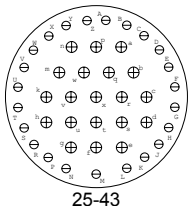

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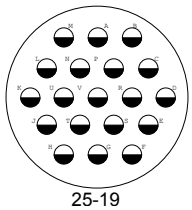

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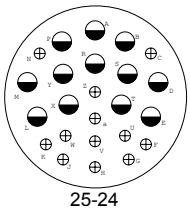

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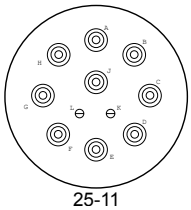

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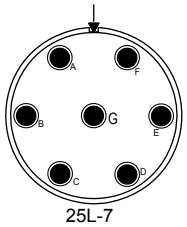

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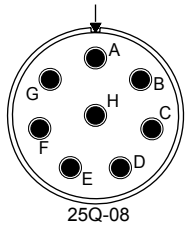

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25-19

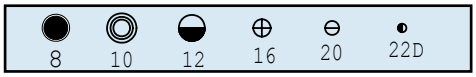

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25-11


25L-7



25Q-08



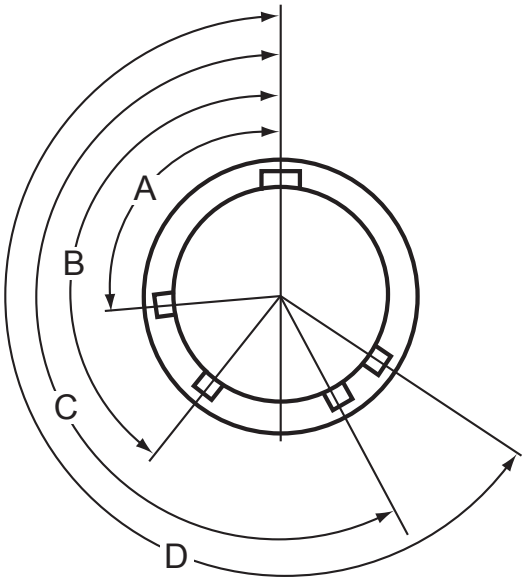
Consult factory for available insert arrangements.

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Alternate Keyway Clocking Positions

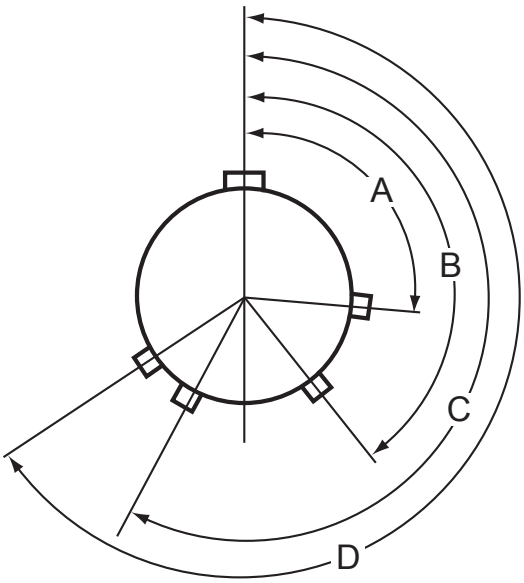
Shell Polarization Table: Receptacle Face						
Shell Size Code	Shell Size	Keyway	A°	B°	C°	D°
A	09	N A B C D E	105 102 80 35 64 91	140 132 118 140 155 131	215 248 230 205 234 197	265 320 312 275 304 240
B C D	11 13 15	N A B C D E	95 113 90 53 119 51	141 156 145 156 146 141	208 182 195 220 176 184	236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

Receptacle View



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

Plug View



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

Glenair®

Environmental Connectors

Basic Part Number
233-105 - D38999 Series III Type Power Connector

Finish Material
(See Table II)

Shell Size
9 = A
11 = B
13 = C
15 = D
17 = E
19 = F
21 = G
23 = H
25 = J

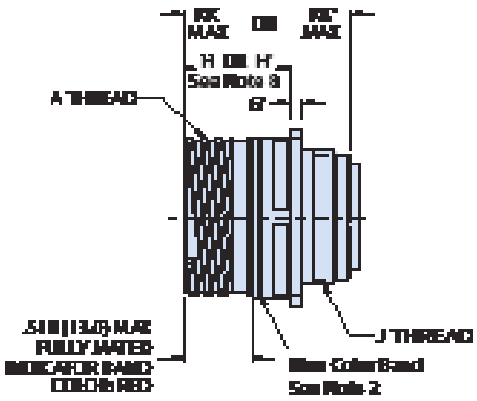
Insert Arrangement
(See Pages D-2, 3 & 4)

Alternate Key Position
A, B, C, D, or E
(N for Normal)

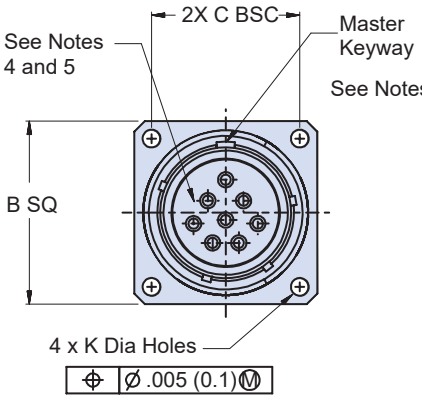
233-105	-	00	XM	11	-	21	S	N

Shell Style
00 - Receptacle, Wall Mount w/ Slotted Holes
D0 - Receptacle, Wall Mount w/ Round Holes
T0 - Receptacle, Wall Mount w/ Tapped Holes

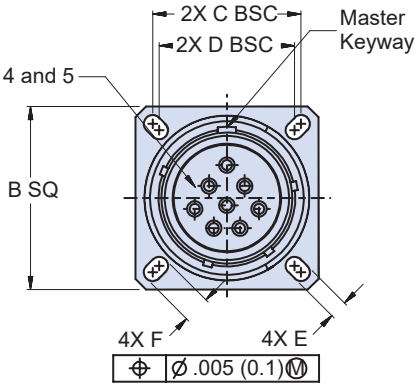
Contact Type
S = Socket
P = Pin
(See Pages D-8 and D-9)



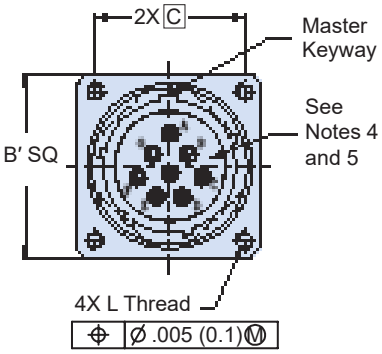
D0 - ROUND HOLES



00 - SLOTTED HOLES



T0 - TAPPED HOLES



Consult factory for available insert arrangements.

D

APPLICATION NOTES

1. Material/ Finishes:
   Shells, Jam Nut - See Table II
   (Composite Jam Nut & Composite Coupling Nut No Plating Required).
   Insulators- High Grade Rigid Dielectric/ N.A
   Seals- Fluorosilicone/ N.A.
2. Blue Color Band indicates rear release retention system.
3. Assembly to be identified with Glenair's name, part number and date code space permitting.
4. Insert arrangement in accordance with MIL-STD-1560.
5. Insert arrangement shown is for reference only.
6. Metric dimensions (mm) are in parentheses.
7. Composite connectors use dimensions G', H', and KK'.
8. For shell style T0 only dimensions H and G' apply.

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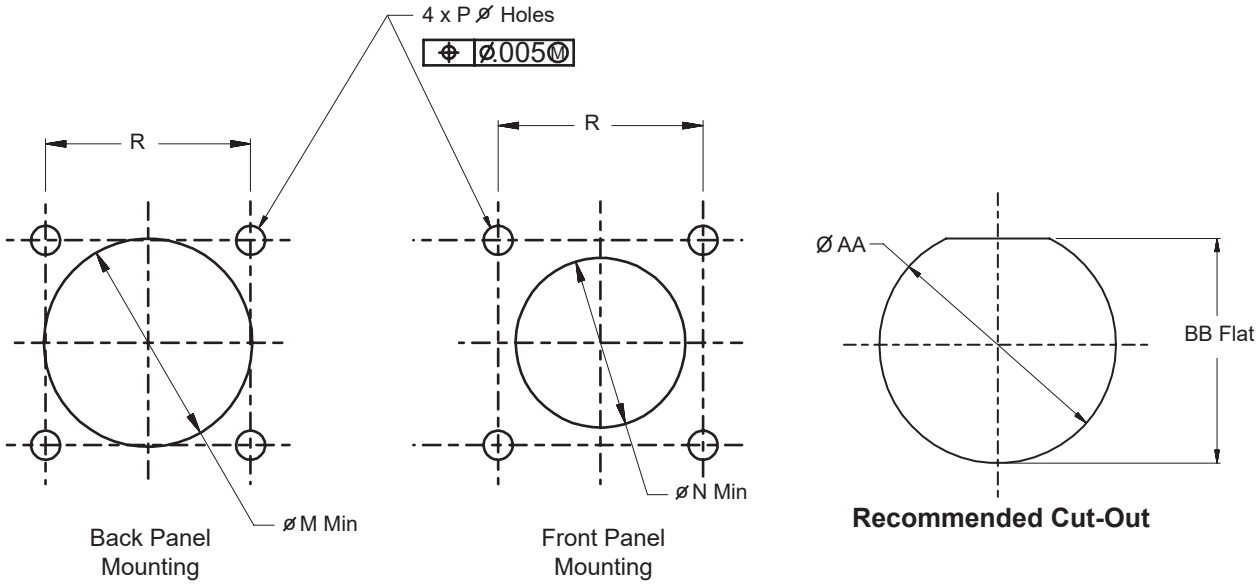
233-105-00
MIL-DTL-38999 Series III Type
Wall Mount Environmental Receptacle Connector

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

D

TABLE III: SHELL SIZE												
Shell Size Code	Shell Size	A Thread	B SQ	B' SQ	C BSC	D BSC	E	F	G	H	J Thread	K Holes Dia
A	9	.6250-.1P-.3L-TS-2A	.949 (24.1) .925 (23.5)	1.039 (26.39) .999 (25.37)	.719 (18.3)	.594 (15.1)	.136 (3.5) .120 (0.1)	.224 (5.7) .208 (5.3)	.144 (3.7) .083 (2.1)	.820 (20.8) .768 (19.5)	M12 X 1.0-6g 0.100R	.136 (3.5) .120 (3.0)
B	11	.7500-.1P-.3L-TS-2A	1.043 (26.5) 1.019 (25.9)	1.132 (28.75) 1.092 (27.74)	.812 (20.6)	.719 (18.3)	.136 (3.5) .120 (0.1)	.202 (5.1) .188 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .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)	1.226 (31.14) 1.186 (30.12)	.906 (23.0)	.812 (20.6)	.136 (3.5) .120 (0.1)	.202 (5.1) .188 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .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)	1.289 (32.74) 1.249 (31.72)	.969 (24.6)	.906 (23.0)	.136 (3.5) .120 (0.1)	.202 (5.1) .208 (5.3)	.144 (3.7) .083 (2.1)	.820 (20.8) .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)	1.382 (35.10) 1.342 (34.09)	1.062 (27.0)	.969 (24.6)	.136 (3.5) .120 (0.1)	.202 (5.1) .188 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .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)	1.476 (37.49) 1.436 (36.47)	1.156 (29.4)	1.062 (27.0)	.136 (3.5) .120 (0.1)	.202 (5.1) .188 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .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)	1.582 (40.18) 1.542 (39.17)	1.250 (31.8)	1.156 (29.4)	.136 (3.5) .120 (0.1)	.202 (5.1) .188 (4.7)	.171 (65.2) .083 (39.8)	.790 (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)	1.739 (44.17) 1.699 (43.15)	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)	.790 (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)	1.884 (47.85) 1.824 (46.33)	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)	.790 (20.1) .736 (18.7)	M37 x 1.0-6g 0.100R	.162 (4.1) .146 (3.7)

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Recommended Mounting Holes for Wall Mount Receptacle

D

TABLE IV: SHELL SIZE

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

Metric dimensions (mm) are indicated in parentheses

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

Basic Part Number
233-105 - D38999 Series III Type Power Connector

Finish Material
(See Table II)

Shell Size
9 = A
11 = B
13 = C
15 = D
17 = E
19 = F
21 = G
23 = H
25 = J

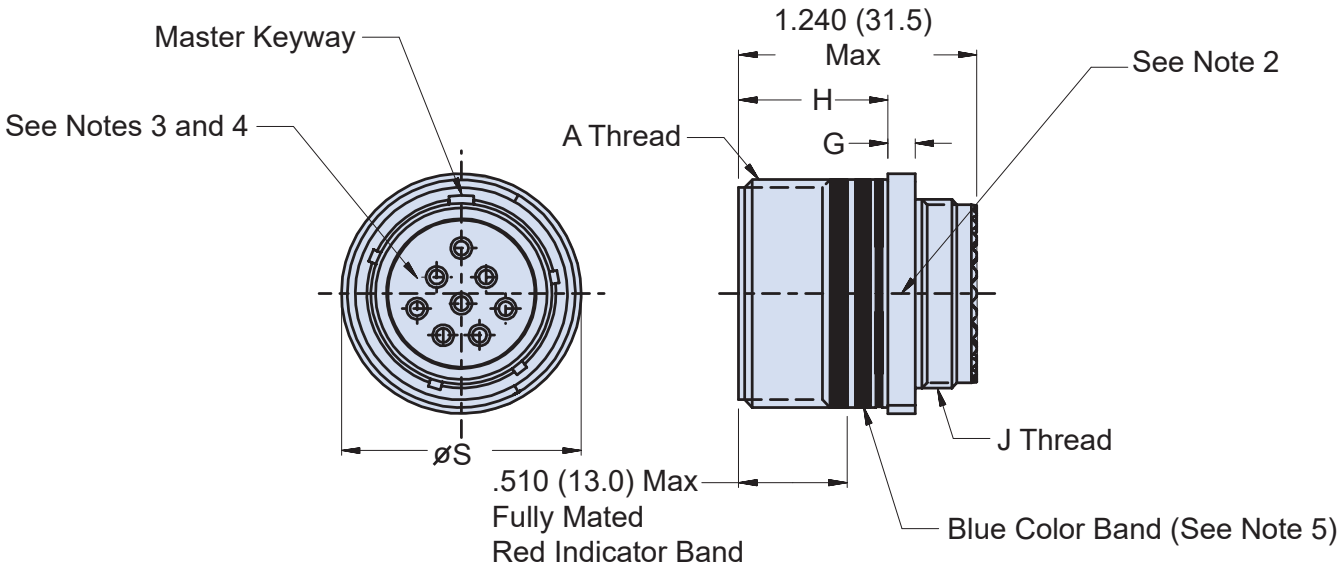
Insert Arrangement
(See Pages D-2, 3 & 4)

Alternate Key Position
A, B, C, D, or E
(N for Normal)

233-105	-	05	ME	21	-	11	S	N

Shell Style
05 - In Line Receptacle

Contact Type
S = Socket
P = Pin
(See Pages D-8 and D-9)



Consult factory for available insert arrangements.

APPLICATION NOTES

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

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

TABLE III: SHELL SIZE						
Shell Size Code	Shell Size	A Thread	G	H	S Max Dia	J Thread
A	09	.6250-.1P-.3L-TS-2A	.144 (3.7) .083 (2.1)	.823 (20.9) .768 (19.5)	.858 (21.8)	M12 x 1.0-6g 0.100R
B	11	.7500-.1P-.3L-TS-2A	.144 (3.7) .083 (2.1)	.823 (20.9) .768 (19.5)	.984 (25.0)	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)	1.157 (29.4)	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)	1.280 (32.5)	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)	1.406 (35.7)	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)	1.516 (38.5)	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)	1.642 (41.7)	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)	1.768 (44.9)	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)	1.890 (48.0)	M37 x 1.0-6g 0.100R

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

Basic Part Number
233-105 - D38999 Series III Type Power Connector

Finish Material
(See Table II)

Shell Size
9 = A
11 = B
13 = C
15 = D
17 = E
19 = F
21 = G
23 = H
25 = J

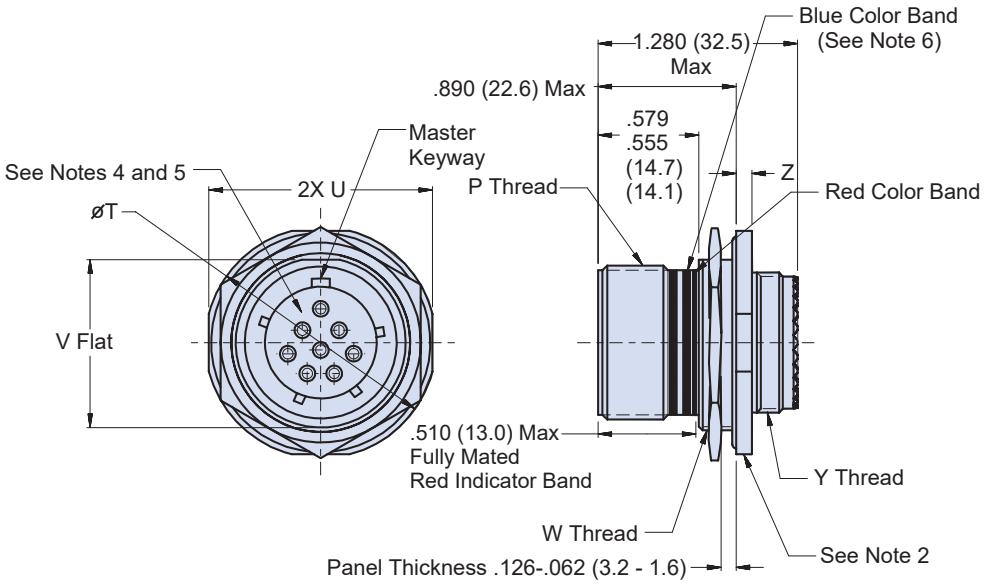
Insert Arrangement
(See Pages D-2, 3 & 4)

Alternate Key Position
A, B, C, D, or E
(N for Normal)

233-105	-	07	Z1	11	-	21	S	N

Shell Style
07 - Receptacle, Jam Nut

Contact Type
S = Socket
P = Pin
(See Pages D-8 and D-9)



Consult factory for available insert arrangements.

APPLICATION NOTES

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

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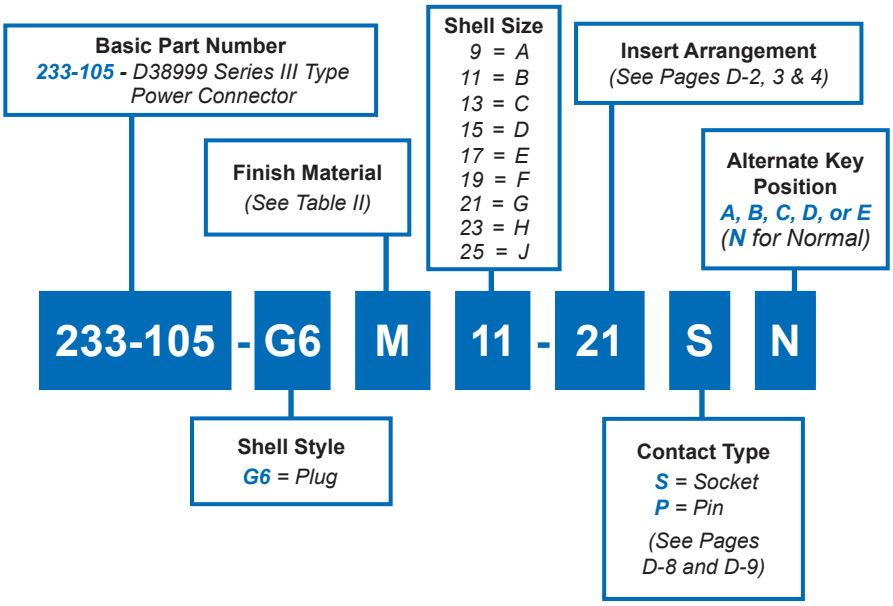
TABLE II: FINISH			
SYM	MATERIAL	FINISH	MIL SYM
ME	Aluminum	Electroless Nickel	F
MA		Electroless Nickel	G
MT		Ni-PTFE (Nickel Fluorocarbon Polymer)	T
TZ		Tin-Zinc (SnZn) Over Electroless Nickel Over Suitable Underplate	V
NF		Cadmium Plate Olive Drab over Electroless Nickel	W
ZR		Zinc Nickel, Black Over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

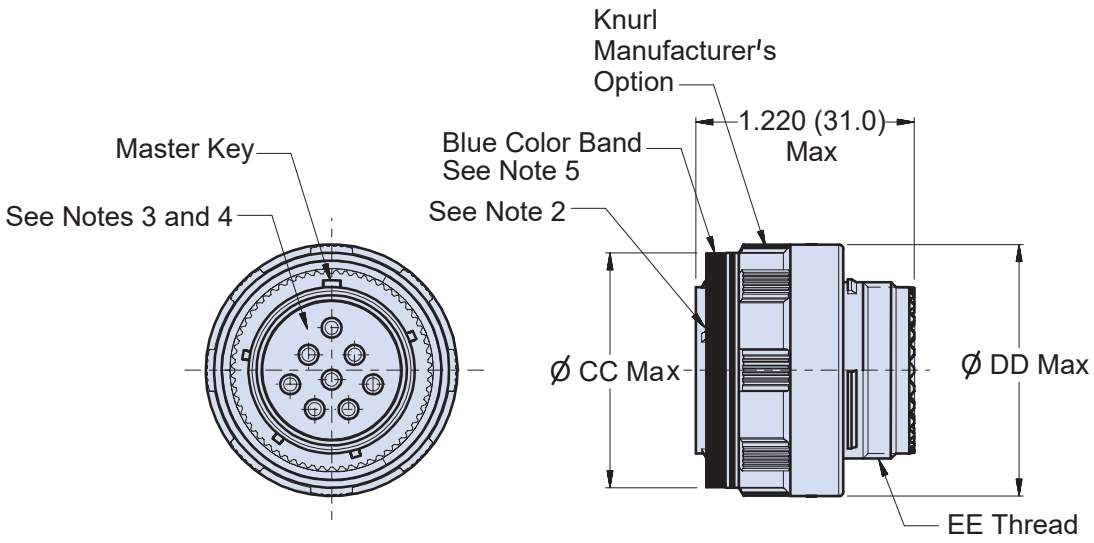
TABLE III: SHELL SIZE								
Shell Size Code	Shell Size	P Thread	T Dia	U	V	W Thread	Y Thread	Z
A	09	.6250-.1P-.3L-TS-2A	1.200 (30.5) 1.178 (29.9)	1.078 (27.4) 1.048 (26.6)	.654 (16.6) .645 (16.4)	M17 x 1.0-6g 0.100R	M12 x 1.0-6g 0.100R	.122 (3.1) .083 (2.1)
B	11	.7500-.1P-.3L-TS-2A	1.386 (35.2) 1.362 (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	
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	
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	
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	
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	.153 (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	
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	
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	

*See Note 3

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





Consult factory for available insert arrangements.

APPLICATION NOTES

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

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

D

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

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High Voltage Electrical Power Distribution



From 0 to 60 in 3.9 Seconds

High voltage electrical power distribution is a critical component of the 100% electric Tesla Roadster.

The reliable distribution of electrical energy from the car's lithium-ion energy storage system to the vehicle's motor, electronic control module, HVAC system, transmission and regenerative braking unit depends on a high-performance wiring system made up of high-temperature shielded conduit and ruggedized reverse-bayonet power connectors—all made by Glenair.

Glenair is on the forefront of innovative efforts to advance the reliability and performance of electric vehicles. Glenair power connectors, cables and conduit are deployed in high-voltage power management and distribution applications for systems as demanding as military vehicles —and as fast as the Tesla Roadster.

Glenair®

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One Stop Shopping for All Your Backshell, Connector and Cable Assembly Requirements

Shield termination banding tools and connector-to-backshell assembly tools are just part of the story

Glenair addresses interconnect system assembly requirements with a variety of military standard and specialized connector-to-backshell assembly tools, braided shielding banding tools and accessories. Our tool line for composite components includes connector wrenches, as well as universal connector holding tools for production use as well as field maintenance.

Glenair's connector and backshell holding tools and wrenches ensure fast and reliable assembly of interconnect components to correct torque levels—a critical issue with all types of coupling systems. Special designs fit the unique knurling on composite connectors and backshells.

Glenair's Band-It® Termination System for braided metal and composite shielding includes both hand-held and bench-mounted units. The Band-It® Termination System provides fast and reliable shield terminations which pass the most stringent shock, vibration and thermal tests. The low-profile and smooth inside diameter of the one-piece austenitic stainless steel clamping band virtually eliminates RFI/EMI leakage paths.

Backshell Assembly Tools

Banding Shield Termination Tools

Ergonomic Designs

Battlefield Tested Tools and Kits

Teflon Coated Jaws Prevent Damage

Individual Tools and Turnkey Kits

All Tools Quality Made in USA



For more information on the complete range of tools supplied by Glenair, please see our *Interconnect Cable Assembly Tools* catalog, visit our website or consult the factory

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Glenair Assembly Tools Help Prevent Distortion and False Tightening Problems

Composite backshell tightening tools are available and provide virtually a full 360° gripping surface on backshell coupling nuts. These innovative tools minimize the possibility of coupling nut distortion and false tightening problems often caused by soft-jaw pliers or strap wrenches.

Reliable Installation of Glenair Backshells on Circular Connectors

When used with the appropriate connector holders and torque wrenches, Glenair Backshell Assembly Tools provide the user with consistent, repeatable backshell installations. Designed primarily for production assembly use, the tools can also be used equally well for successful field maintenance operations.

Glenair Backshell Assembly Tools may also be utilized effectively with backshell rotatable couplers produced by other manufacturers, providing the "B" reference diameters are consistent with those shown within this catalog.

Recommended Tightening Procedures

Recommended tightening procedures, tools and torque values offered by Glenair are intended as an aid to properly fasten the backshell to the connector interface threads.

Glenair offers a variety of tools to accomplish proper tightening; our 600-091 Hex Wrench is configured to make provide support to each specific coupling nut to be tightened, our TG70 strap wrench is intended for general use on cable clamps. Hand-held and bench-mount torque wrenches accomodate our 600-005 plug or receptacle connector holders (see *Backshell Assembly Tool* catalog).

When tightening backshell onto connectors, it is important to follow Glenair's recommended procedures for each tool being used.

When tightening backshells with rotatable coupling nuts, Glenair recommends the backshell to be hand tightened to engage the connectors interlocking teeth or spline features, making sure the teeth are fully engaged before fully torquing with our tools. We also suggest retorquing by removing the tool and reinstalling the tool approximately 90° away from the intial position and tightening to the connector manufacturer's recommended value.

Composite backshells should be tightened to 80% of the values shown for AS85049 light and medium duty torque. Secondary components such as: Glenair's cable clamps, gland sealing nuts, sleeves or adapters, not directly fastened to the connector should be tightened 40 to 60 inch pounds to insure proper performance.

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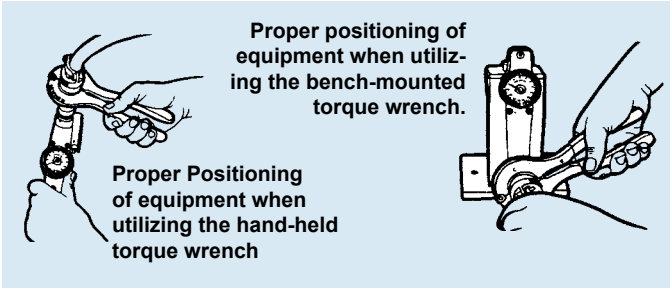
Four Easy Steps for Proper Backshell Assembly

1. Select plug or receptacle holder (most holder series provide "universal polarization", but a few connector series require specific polarization for each alternate keying arrangement).
2. Set desired torque on torque wrench.
3. Mount holder on square drive of torque wrench. Carefully mate with connector, and hand-tighten Glenair backshell coupling. To assure proper mating, anti-rotation teeth must be fully engaged.
4. Tighten rotatable coupler with assembly tool. Do not use excessive grip on handles. When coupler begins to tighten, relax grip and rotate assembly tool back 90°, then resume grip and continue to tighten; repeating this sequence until desired torque level is reached.

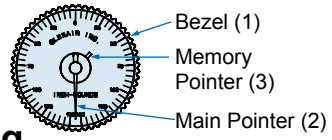
CAUTION: ***Do not apply torque in excess of signal setting. Excess torque will cause signal pointer to reset and give erroneous readings.***

Setting Torque Levels

To verify proper backshell installation values, electrical signals are built into bench-mounted (audio) and hand-held (light) torque wrenches. The procedure for setting torque levels is the same for both units.



Setting Desired Torque for Right-Hand Thread Tightening



To set torque, turn Bezel (1) clockwise until signal is on. Continue to turn Bezel until Main Pointer (2) is at desired torque level on scale. You may cover the audio signal during this procedure to minimize noise level when setting the bench-mounted unit.

The Memory Pointer (3) is set by the above procedure. With this accomplished, turn Bezel counter-clockwise until the Main Pointer is aligned with zero on the scale. Your torque wrench is not ready for operation.

Resetting the Memory Pointer

When you wish to change torque levels, rotate the Bezel counter-clockwise until the signal is on. Continue to rotate Bezel until Memory Pointer is aligned with zero on the scale. now repeat the above procedure for setting torque.

Setting Desired Torque for Left-Handed Thread Tightening

Simply reverse the above procedure for setting the desired torque for left-hand thread tightening.

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Stop Toolin' Around





Finding the right tool for the job just got a little bit easier

Nobody can grasp the ins-and-outs of interconnect tool design and manufacturing without a full understanding of cable harness assembly.

At Glenair, we not only manufacture the connectors, backshells, cables and enclosures which go into interconnect cable harnesses, we run a top-flight cable assembly service of our own. And we've drawn on this extensive experience to design and build a complete family of specialized backshell assembly tools for most Mil-Standard circular connectors, as well as connector wrenches, mini-strap wrenches, universal connector holding tools and braid termination tools for production use and field maintenance.

Glenair is also now offering a broad range of fiber optic termination tools, including complete kits for both our Mil-T-29504 and front-release COTS termini.

Glenair®

1211 Air Way
Glendale, California 91201-2497
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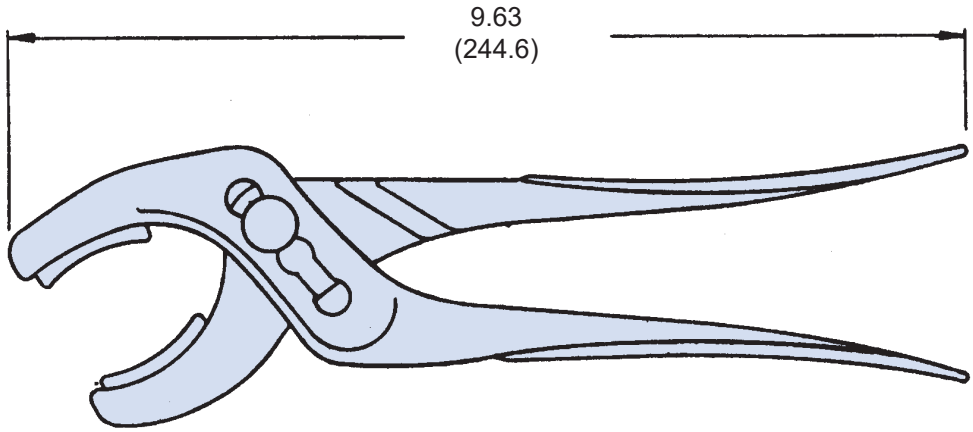
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www.glenair.com

TG69 Soft Jaw Pliers

TG69

Basic Number



NOTE: Not recommended for composite coupling nuts (use 600-091 or 600-157)

APPLICATION NOTES

1. Assembly identified per MIL-STD-130
2. Nylon replacement inserts: P/N G77015

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600-091
Composite Connector Accessory
Coupling Nut Wrench

ALUMINUM TOOL FOR USE WITH GLENAIR COMPOSITE BACKSHELLS

600 - 091 - 16

- **600** — Product Series
- **091** — Basic Number
- **16** — Dash Number for Individual Wrench or:
  - ***K*** *- Kit of dash numbers 08 thru 28*
  - ***KC*** *- "K" kit with case*
  - ***KL*** *- Kit of dash number 32 thru 44*
  - ***KLC*** *- "KL" kit with case*
  - ***KIT*** *- Kit of dash numbers 08 thru 44 with case*

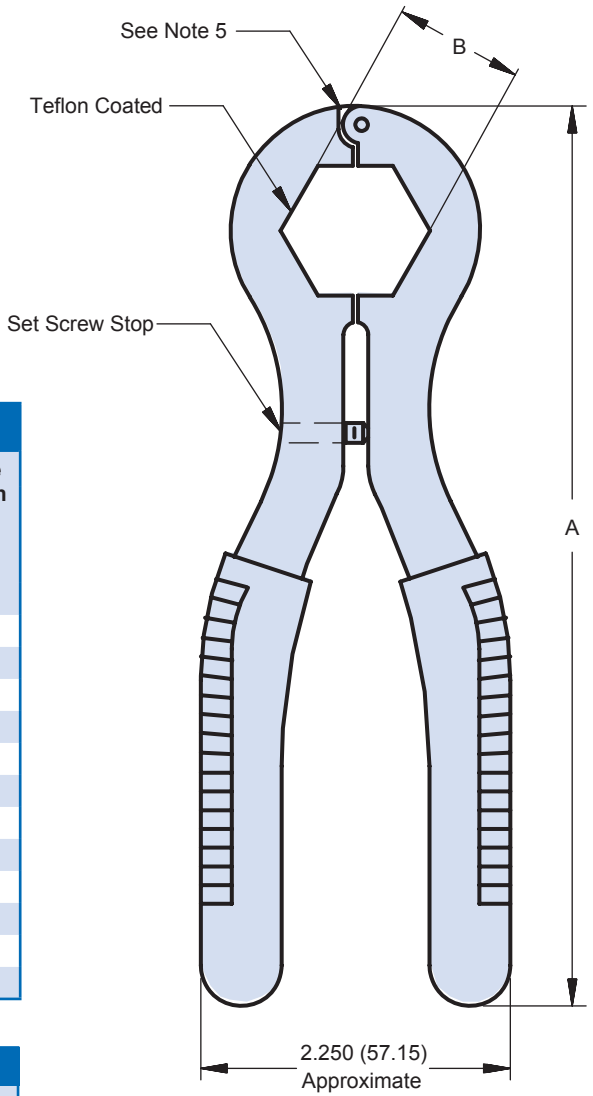
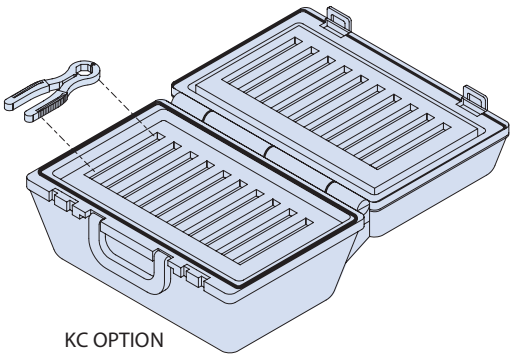


TABLE I: DASH NUMBER

Dash Number	A Ref	B Hex² Ref	Connector for Shell Size		Composite Torque Inch Pounds In-Lbs Min/Max
			Codes A & F	Code H	
08	7.56 (192.0)	.750 (19.1)	08	09	20/25
10	7.56 (192.0)	.875 (22.2)	10	11	20/30
12	7.56 (192.0)	1.000 (25.4)	12	13	25/35
14	7.56 (192.0)	1.125 (28.6)	14	15	25/35
16	7.56 (192.0)	1.250 (31.8)	16	17	30/40
18	7.56 (192.0)	1.375 (34.9)	18	19	30/40
20	8.50 (215.9)	1.500 (38.1)	20	21	35/45
22	8.50 (215.9)	1.625 (41.3)	22	23	35/45
24	8.50 (215.9)	1.750 (44.5)	24	25	35/45
28	9.50 (241.3)	2.000 (50.8)	28		115/125
32	10.00 (254.0)	2.250 (57.2)	32		115/125
36	10.00 (254.0)	2.500 (63.5)	36		112/125
44	10.00 (254.0)	3.000 (76.2)	44		N/A

APPLICATION NOTES

1. Use in conjunction with Glenair 600-161 torque wrench and 600-162B or 600-162BV bench mounts (see page 14).
2. Adjust set screw per tool setting procedure GAP134 (available on Glenair.com). Once adjusted must fit Glenair hex composite coupling nuts
3. Customer is responsible for maintaining adjustment to compensate for wear.
4. Replace tool if excessive wear is observed
5. Gap is permissible during tool use for coupling nut assembly
6. If set screw becomes loose causing loss of adjustment reapply suitable thread locking compound
7. Wrenches are made of aluminum alloy with vinyl grips.
8. Using other manufacturer's hex wrench pliers or soft jaw coated pliers will result in premature fracturing or damage to the composite product



Approximate Case Dimensions: 13.5 x 15.5 x 3.875

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600-157
Composite Connector Accessory
Coupling Nut Wrench

STAINLESS STEEL TOOL FOR USE WITH GLENAIR COMPOSITE BACKSHELLS

600 - **157** - **K**

- **600** — Product Series
- **157** — Basic Number
- **K** — Dash Number for Individual Wrench or:
  - ***K*** *- Kit of dash numbers 08 thru 28, no case*
  - ***KC*** *- "K" kit with case*
  - ***KL*** *- Kit of dash numbers 32 thru 44, no case*
  - ***KLC*** *= "KL" kit with case*
  - ***KIT*** *= Kit of dash numbers 08 thru 44 with case*

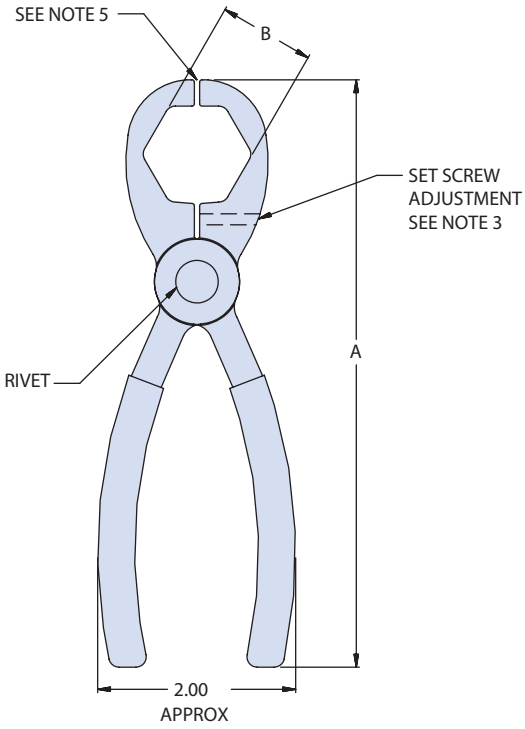
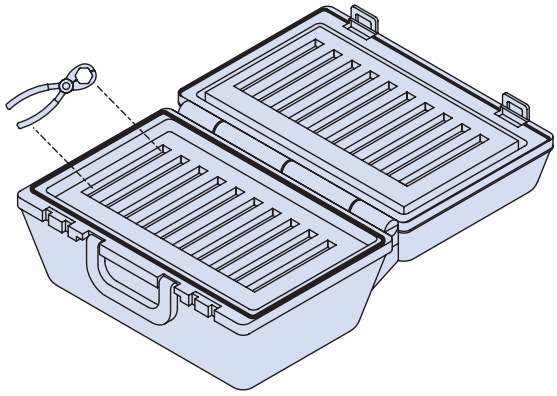


TABLE I: DASH NUMBER

Dash No.	A Ref	B Hex[2] Ref	Connector for Shell Size Codes		Composite Torque Inch Pounds In-Lbs Min/Max
			A & F	Code H	
08	6.70 (170.2)	.750 (19.1)	08	09	20/25
10	6.75 (171.5)	.875 (22.2)	10	11	20/30
12	6.81 (173.0)	1.000 (25.4)	12	13	25/35
14	6.88 (174.8)	1.125 (28.6)	14	15	25/35
16	6.95 (176.5)	1.250 (31.8)	16	17	30/40
18	7.05 (179.1)	1.375 (34.9)	18	19	30/40
20	7.15 (181.6)	1.500 (38.1)	20	21	35/45
22	7.38 (187.5)	1.625 (41.3)	22	23	35/45
24	7.44 (189.0)	1.750 (44.5)	24	25	35/45

APPLICATION NOTES

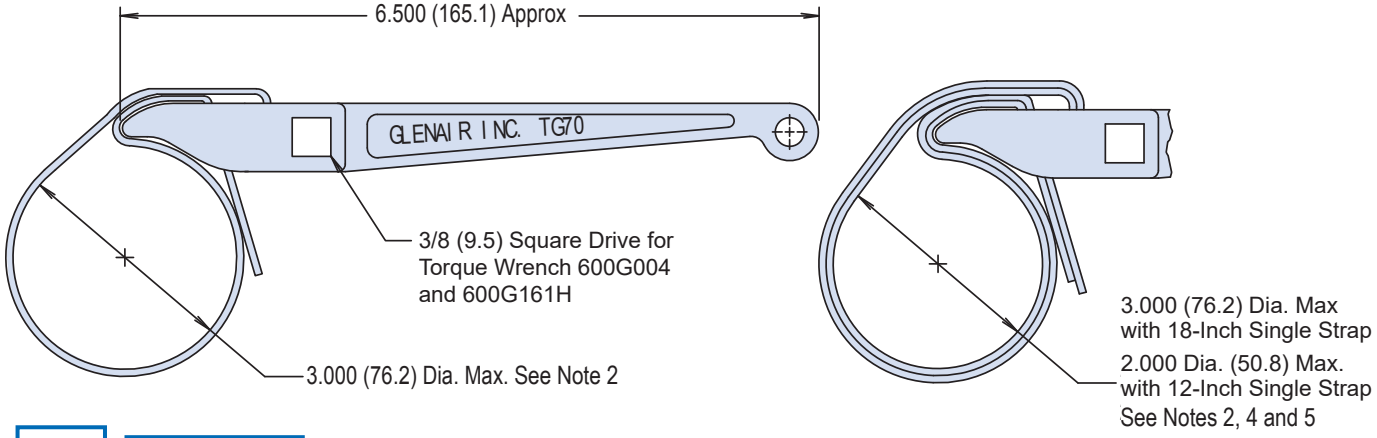
1. Use in conjunction with Glenair 600-161 torque wrench and 600-162B or 600-162BV bench mounts (see page 14).
2. Adjust set screw per tool setting procedure GAP134 (available on Glenair.com). Once adjusted must fit Glenair hex composite coupling nuts
3. Dash Number 08, 10, 12 only. Customer is responsible for maintaining adjustment to compensate for wear.
4. Replace tool if excessive wear is observed
5. Gap is permissible during tool use for coupling nut assembly
6. If set screw becomes loose causing loss of adjustment reapply suitable thread locking compound
7. Wrenches are made of passivated SST with vinyl grips.
8. Using other manufacturer's hex wrench pliers or soft jaw coated pliers will result in premature fracturing or damage to the composite product



KC Option
Approximate Case Dimensions: 13.5 x 15.5 x 3.875

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TG70
Strap Wrench



Basic Part Number	Torque Wrench (Omit for None)	Strap Length in Inches (See Notes2 and 4)
TG70	- 1	- 18

Lengths Available: 12, 18, 24 and 36-Inch Only
Standard length is 12 Inches,
Omit Dash Number for Standard

APPLICATION NOTES

1. These wrenches are made of the following materials:
   Wrench Handle - Aluminum Alloy/Nickel Plate.
   Wedge - Stainless Steel/Passivated.
   Strap - Impregnated Fabric. Straps are 1/2 inch (12.7) in width.
2. Replacement straps are available. Specify part number G70515-xx for 12, 18, 24 or 36-inch strap. 24 and 36 inch for double wrap.
3. Metric dimensions (mm) are indicated in parentheses.
4. Double wrap as shown for heavy duty range.
5. Not recommended for composite coupling nuts (use 600-091 or 600-157).

INSTALLATION TORQUE VALUES FOR CIRCULAR ELECTRICAL CONNECTOR ACCESSORIES

Shell Sizes	Column 1 Light and Medium Duty AS50151 (AS31001 Series) MIL-DTL-26482 Series I MIL-DTL-26500, MIL-DTL-27599 MIL-DTL-38999 Series I and II MIL-C-81511 Series I, II, III and IV AS81703 Series I	Column 2 Heavy Duty AS50151 (AS34001 Series) MIL-DTL-22992, MIL-DTL-28840 MIL-DTL-26482 Series II MIL-DTL-38999 Series III and IV MIL-DTL-83723 Series I, II and III, AS81703 Series III
	In-Lbs, Min/Max	In-Lbs, Min/Max
8, 9, A	30/40	51/61
3, 10, 10SL, 11, B	30/40	71/81
7, 12, 12S, 13, C	35/45	103/113
14, 14S, 15, D	35/45	111/121
16, 16S, 17, E	35/45	111/121
18, 19, 27, F	35/45	111/121
20, 21, 37, G	75/85	131/141
22, 23, H	75/85	131/141
24, 25, 61, J	75/85	131/141
28, 29	115/125	143/153
32, 33	115/125	143/153
36	115/125	142/153

VARIANCE CHART NOTES

1. Torque values per SAE AIR6151, all values are provided in Inch/Pounds.
2. For additional guidance or values/conditions not listed, refer to the complete SAE AIR6151.
3. Heavy duty installation torque values (Column 2) may be difficult to obtain using the standard single wrap strap as supplied in the TG70. To acheive column 2 torque accross all shell sizes a double wrap strap (using longer straps) is required as well as very careful placement of the tool and strap around the coupling to achive maxiumum grip. Clean and oil-free surfaces are imperative.
4. Glenair 600-006/079/103/107 circulr pliers are also suitable for higher torque ranges.
5. Glenair recomends that torque values be measured directly read through the connector shell using suitable holding tool from our 600-005 socketds and ply holder with the use of 600-005 connectors holding tools.
6. Due to the offset of the 3/8" square drive from the centerline of the applied torque (centerline of the connector/backshell) offset torque values must be calculated by using any of the common offset value formulas or web apps that are readily available.

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600G161 Digital Torque Wrench and 600-162B Bench Stand

DIGITAL TORQUE WRENCH AND BENCH STAND

Torque Wrench 600G161



OBSOLETE

Digital Readout For Improved Accuracy

The Glenair dual drive digital torque wrench (600G161-D) features a dual sided drive head for hand or bench mount use. Features rotatable digital readout display. Available torque units include: Ft-lb, In-lb and Nm. Peak and track modes allow for data collection capability supplied software and USB adapter. Provides quality department the ability to track and record individual torque values.

600G161-D data/charger kit. Upgrades 600G161 for data collection and battery recharging.

1. Use in conjunction with glenair connector and backshell tools
2. Torque range: 25-250 in/lbs; digital graduations 1/10 In/lb;
3. Accuracy: ±1% of indicated value
4. replacement battery: AAA x 4
5. USB cable, datatracking software, AC adapter, and 3/8" to 1/4" drive adapter included. Standard AAA alkaline batteries included with 600G161. Rechargeable NiMH AAA batteries and data/charger kit included with 600G161-D

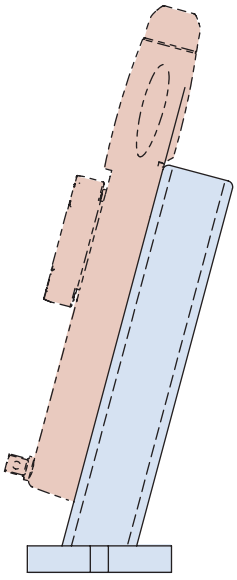
600-162B DIGITAL TORQUE WRENCH BENCH STAND

1. Use in conjunction with Glenair 600G161or 600G161-D digital torque wrench, sold separately
2. Material: steel, powder coat
3. Weight: 3 lbs
4. Supplied with mounting hardware
5. Tools required: T15 Torx® bit, 3/32" hex key



600-162BV DIGITAL TORQUE WRENCH VERTICAL BENCH STAND

1. Use in conjunction with Glenair 600G161or 600G161-D digital torque wrench, sold separately
2. Material: steel, powder coat
3. Weight: 3 lbs
4. Supplied with mounting hardware
5. Tools required: T15 Torx® bit, 3/32" hex key



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Glenair®

600-164
Large Broad Blade Utility Shear
for Cutting Metal-Clad Composite Braided Shielding
Also Cuts Rubber, Cable Jacketing, Cable, Plastics and Rope

600	-	164
Product Series		Basic Number



- Nickel Chrome Plating Resists Corrosion and Rusting
- Broad, Short Jaws Provide Powerful Cutting Action
- Extended Handle Provides Comfort and Cutting Leverage
- High Leverage Provides Powerful Cutting Action for Light Metals, Rubber and Heavy Fabrics
- Cuts Rubber, Cables, Light Metal, Wire Metal Screens and Braided EMI/EMP Shielding, Cordage, Plastics and Rope
- Weight: 0.55 Pounds
- Shear Cut Length: 2.000 (51.0)

Recommended EMI Braid Cutting Procedure



Note: When cutting braid, both metal and especiallly composite, open cutter blades to allow the full 2" cut. Place braid all the way back onto blades as shown.

APPLICATION NOTES

1. Metric dimensions (mm) are indicated in parentheses.
2. Always wear approved eye protection.
3. Never use on or near live electrical circuits.

G

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Shield Termination Assembly Process

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 insure a snug fit around the shield termination area (Figure 2).
3. Prepare the Band in the following manner:

   I**MPORTANT:** 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.

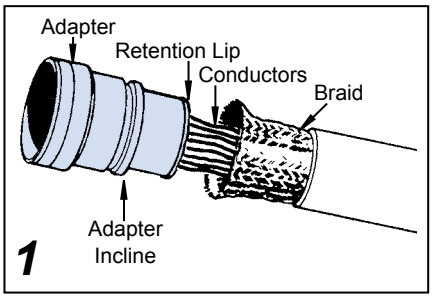
   NOTE: Prepared Band should have (▷|) Mark visible approximately where shown in Figure 3.

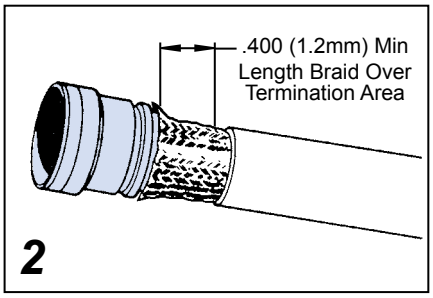
Shield Termination Clamping Process (Figures 4 thru 8)

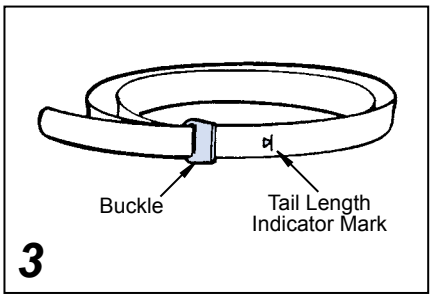
NOTE: To free Tool Handles, move Holding Clips to center of Tool.

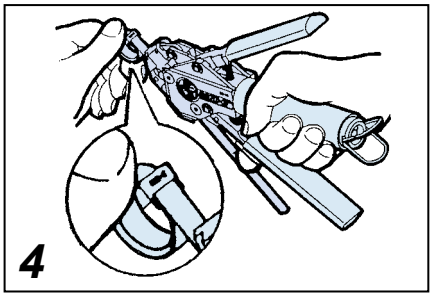
4. Squeeze Gripper Release Lever and insert Band into the front end opening of the Tool. (NOTE: Circular portion of looped band must always face downward.)
5. Aligning the Band and Tool with the Shield Termination Area, squeeze Black Pull-Up Handle repeatedly using short strokes until it locks against Tool Body. (This indicates the Band is compressed to the Tool Precalibrated Tension.)

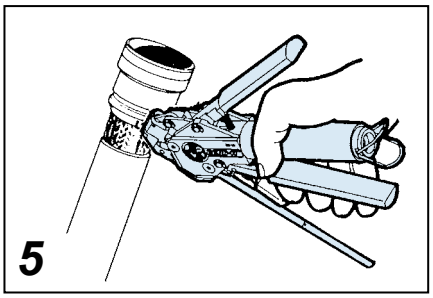
   NOTE: If alignment of band and shield is unsatisfactory, tension on band can be relaxed by pushing on slotted release lever on top of tool. Make adjustments as necessary and again squeeze black pull-up handle.
6. Complete the Clamping Process by squeezing the Gray Cut-Off Handle.
7. Remove excess band from tool and dispose.
8. Inspect Shield Termination.

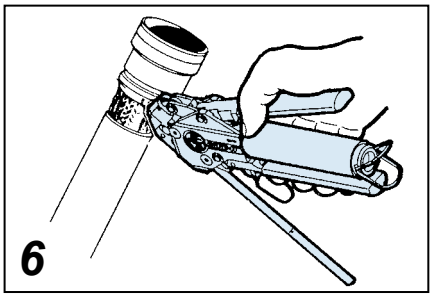


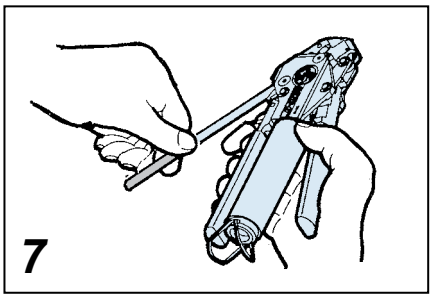


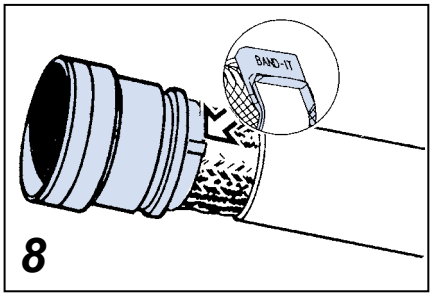












IMPORTANT: Always roll band through the buckle slot twice (see Step 3). Bands must be double-coiled to function correctly. The failure to roll the band through the buckle slot twice is the most common user error in band style terminations.

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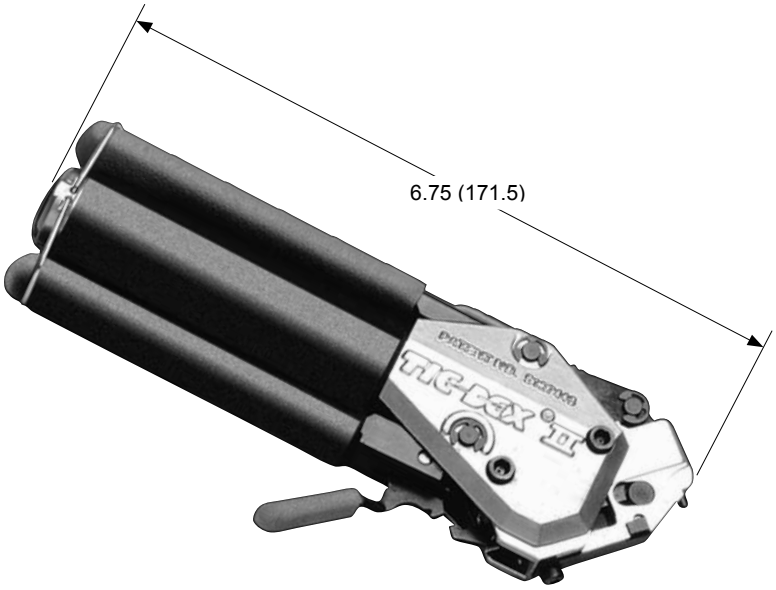
Glenair®

600-058 and 600-061 Hand Banding 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.

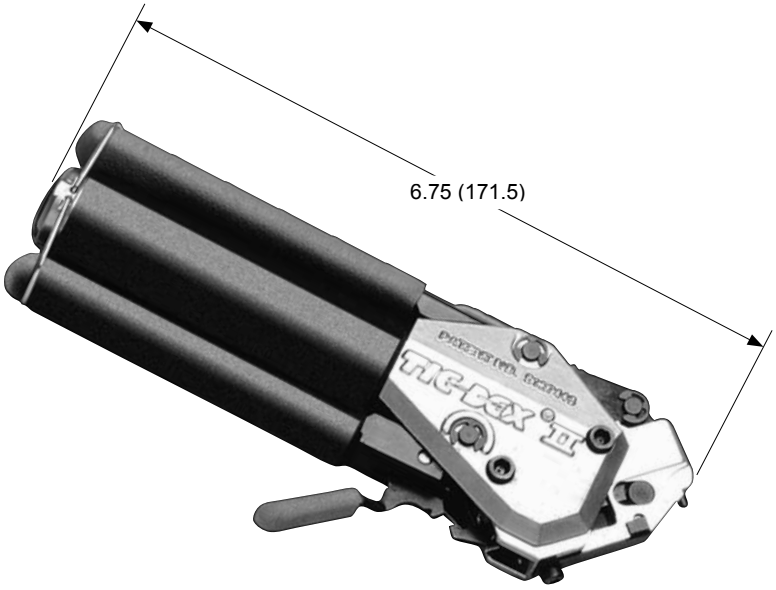
Reference: *BAND-IT*® part number A40199.



Hand Micro Banding Tool 600-061

The 600-061 Hand Micro Banding Tool weighs 1.18 lbs., and is designed for micro clamping bands 600-057 and 600-083 (see page 36) in a tension range from 50 to 85 lbs. Calibrate at 80lbs +2 lbs. -7 lbs. for most shield terminations. Tool and band should never be lubricated.

Reference: *BAND-IT*® part number A30199.

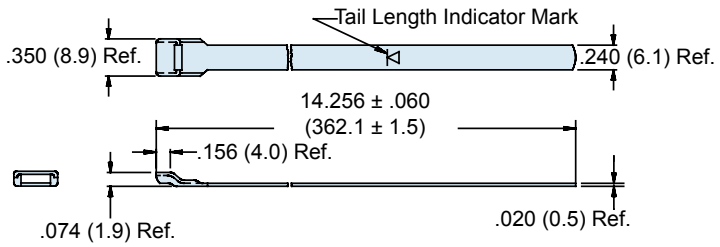


Metric Dimensions (mm) are indicated in parentheses.

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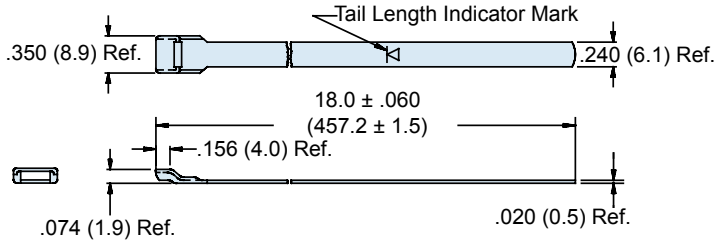
Standard Band 600-052 and Precoiled Standard Band 600-052-1



The 600-052 Standard Band is precision constructed of 300 Series SST/Passivate and designed for use with the 600-058 Hand Banding Tool or the 600-067 Pneumatic Banding Tool. Double-wrapped bands will accommodate diameters up to approximately 1.8 inches (45.7). Bands may be ordered flat (600-052) or precoiled (600-052-1). Bands come bagged and tagged in quantities from 1 to 100.

Reference: *BAND-IT*® part number A10086

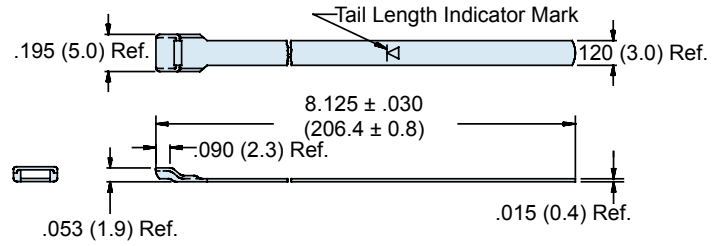
Extended-Length Standard Band 600-090 & Precoiled Extended-Length Standard Band 600-090-1



The 600-090 Extended Length Standard Band is precision constructed of 300 Series SST/Passivate, and designed for use with the 600-058 Hand Banding Tool or the 600-067 Pneumatic Banding Tool. Double-wrapped bands will accommodate diameters up to approximately 2.5 inches (63.5). Bands may be ordered flat (600-090), or precoiled (600-090-1). Bands come bagged and tagged in quantities from 1 to 100.

Reference: *BAND-IT*® part number A11086

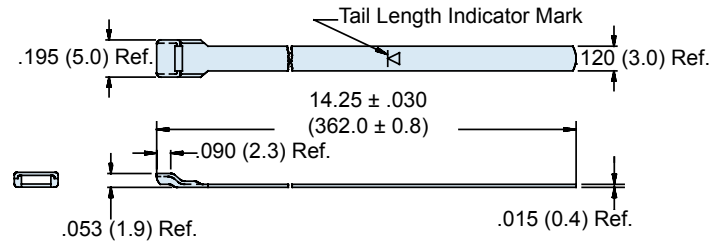
Micro-Band 600-057 Precoiled Micro-Band 600-057-1



The 600-057 Micro Band is precision constructed of 300 Series SST/Passivate, and designed for use with the 600-061 Hand Banding Tool or the 600-068 Pneumatic Banding Tool. Double-wrapped bands will accommodate diameters up to approximately .88 inches (22.4). Bands may be ordered flat (600-057), or precoiled (600-057-1). Bands come bagged and tagged in quantities from 1 to 100.

Reference: *BAND-IT*® part number A31186

Extended Length Micro-Band 600-083 Precoiled Micro-Band 600-083-1



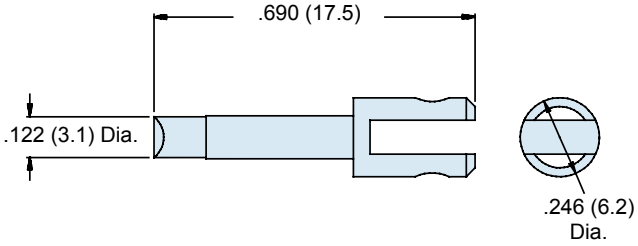
The 600-083 Extended Length Micro-Band is precision constructed of 300 Series SST/Passivate, and designed for use with the 600-061 Hand Banding Tool or the 600-068 Pneumatic Banding Tool. Double-wrapped bands will accommodate diameters up to approximately 1.88 inches (47.8). Bands may be ordered flat (600-083), or precoiled (600-083-1). Bands come bagged and tagged in quantities from 1 to 100.

Reference: *BAND-IT*® part number A31086.

Metric dimensions (mm) are indicated in parentheses. Consult factory for diameters above 2.5 inches (63.5).

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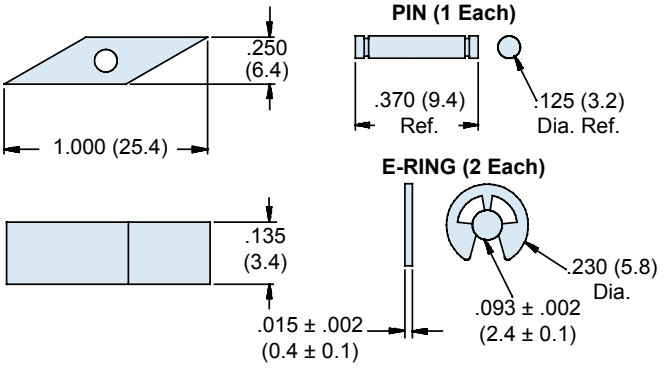
600-056, 600-062, 600-060 and 600-082 Banding Tool Replacement Part Kits



600-082 Cutter Knife

The 600-082 Cutter Knife replaces the cutter knife on the 600-061 Hand Banding Tool, and the 600-068 Pneumatic Banding Tool. Material is heat treated steel finished with black oxide and rust preventative.

Reference: *BAND-IT*® part number A48087

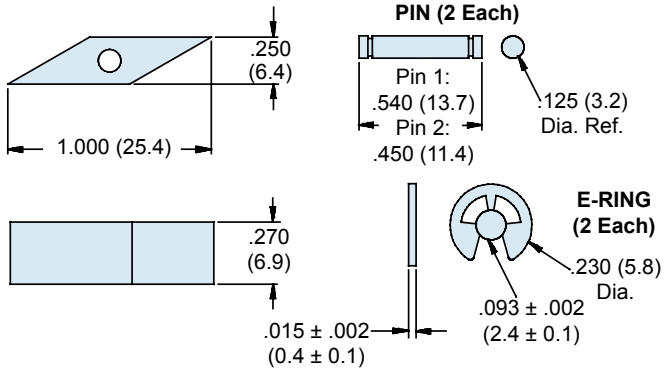


600-060-1 Micro Cut-Off Blade Kit

The 600-060-1 Micro Cut-Off Blade Kit for Serial Numbers up to 20999 consists of the blade, two E-rings and one pin, providing all parts needed to replace the cut-off blade on the 600-061 Hand Micro Banding Tool and the 600-068 Pneumatic Micro Banding Tool. Material is heat treated steel finished with black oxide and rust preventative.

Reference: *BAND-IT*® part number A43999.

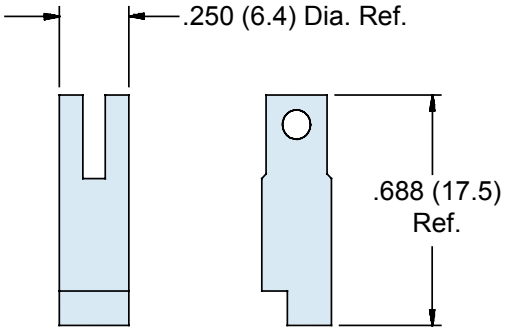
600-060-2 Ref. *BAND-IT*® P/N A47899 for Serial Numbers 21000 and above.



600-056 Cut-Off Blade Kit

The 600-056 Cut-Off Blade Kit consists of the blade, two E-rings and one pin, providing all parts needed to replace the cut-off blade on the 600-058 Hand Banding Tool and the 600-067 Pneumatic Banding Tool. Material is heat treated steel finished with black oxide and rust preventative.

Reference: *BAND-IT*® part number A40699.



600-062 Cutter Knife

The 600-062 Cutter Knife for Serial Numbers up to 16589 replaces the cutter knife on the 600-058 Hand Banding Tool and the 600-067 Pneumatic Banding Tool. Material is heat treated steel finished with black oxide and rust preventative.

Reference: *BAND-IT*® part number A40788.

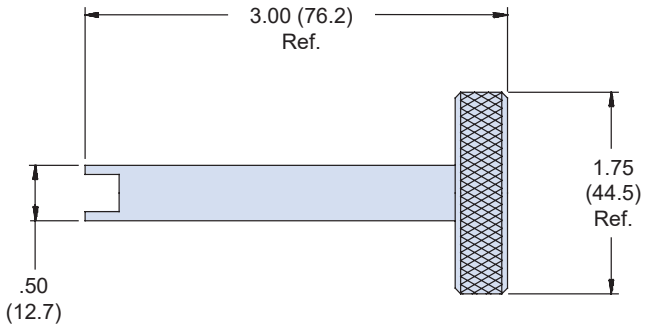
600-062-1 for Serial Numbers 16590 and above.
Reference: *BAND-IT*® part number A67787.

Metric Dimensions (mm) are indicated in parentheses.

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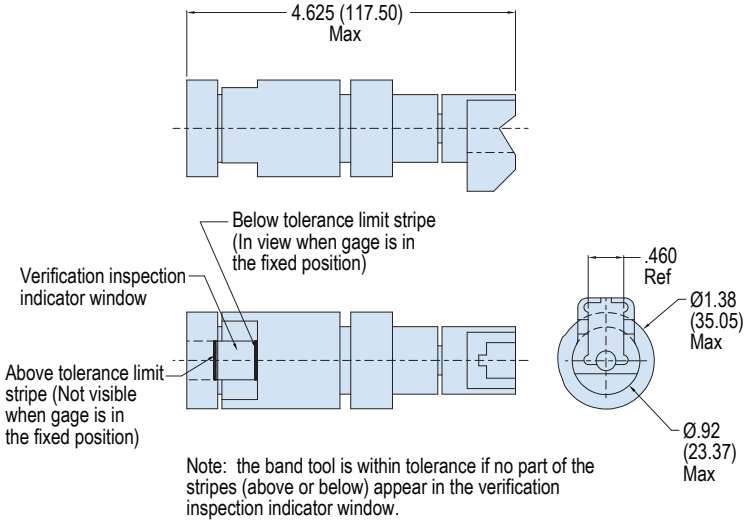
601-205 Calibration Key and 601-211 Standard and 601-212 Micro Banding Tool Tension Gauges



601-205 Calibration Key

(Replaces 600-055)

The 601-205 Calibration Key is designed for use with 600-058, 600-061, 601-211 and 601-212 manual banding tools. Material is black anodized aluminum alloy. One full turn clockwise will advance the tension range approximately 1.0 - 2.5 lbs, a counter-clockwise turn will decrease tension by the same amount.



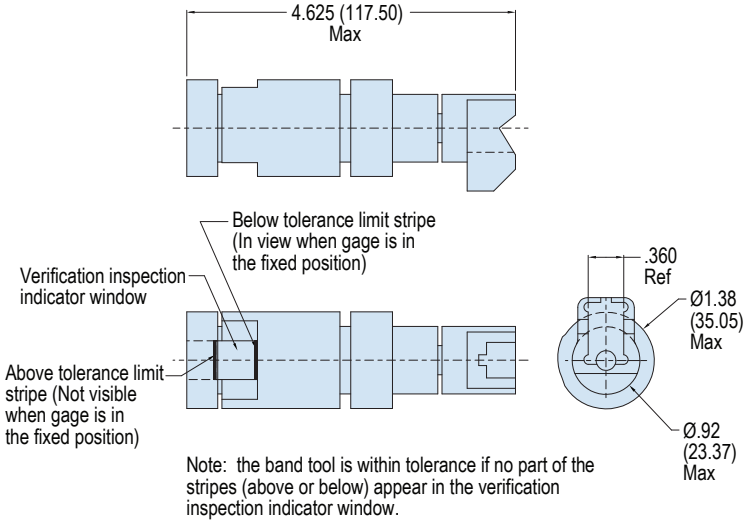
Note: the band tool is within tolerance if no part of the stripes (above or below) appear in the verification inspection indicator window.

601-211 Tension Gauge

(Replaces 600-072-1)

The 601-211 (M81306/1C) Tension Gauge is used to check and calibrate the manual tool to values noted on calibration sticker. Constructed of hardened steel.





Note: the band tool is within tolerance if no part of the stripes (above or below) appear in the verification inspection indicator window.

601-212 Tension Gauge

(Replaces 600-086-1)

The 601-212 (M81306/1D) Tension Gauge is used to check and calibrate the manual tool to values noted on calibration sticker. Constructed of hardened steel.



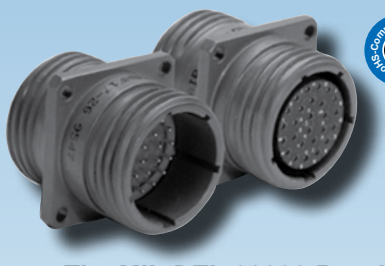
Metric Dimensions (mm) are indicated in parentheses.

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1000 Hour Grey™ delivers outstanding performance in a broad range of land, sea, air and space interconnect applications. The non-reflective, non-magnetic, gun-metal gray surface finish is an ideal choice for tactical military systems with extraordinary corrosion protection requirements.









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- Hexavalent Chromium Free
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- 500+ Mating Cycles
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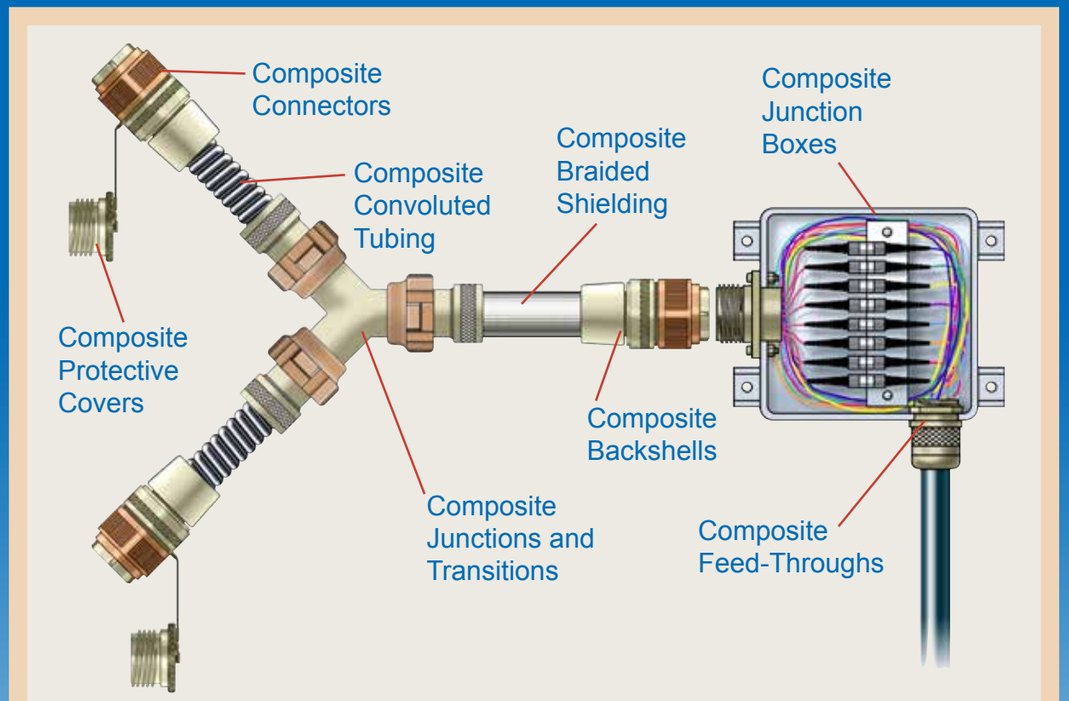
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