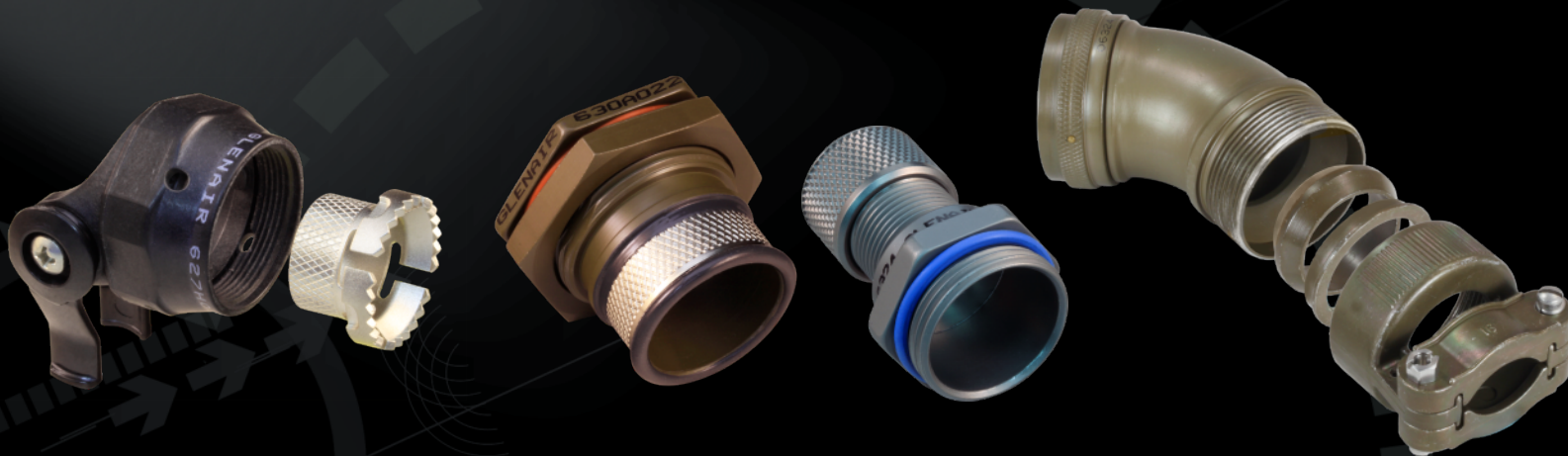


The widest range of
mission-critical interconnect
technologies in the world



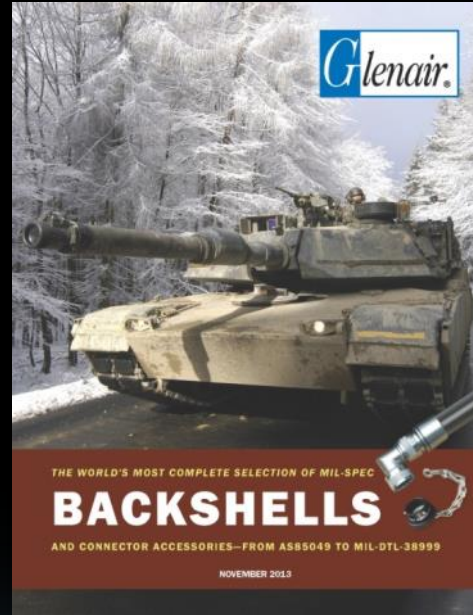
Connector Backshell Accessories

AS85049 mil-standard plus Glenair innovations

Glenair Connector Accessories

Full-Spectrum Product Lines: No Gaps

- Every Mil-Spec slash sheet
- Every material type
- Every plating option
- For every connector in use
- Domestic production only
- 120,000+ Same-Day inventory



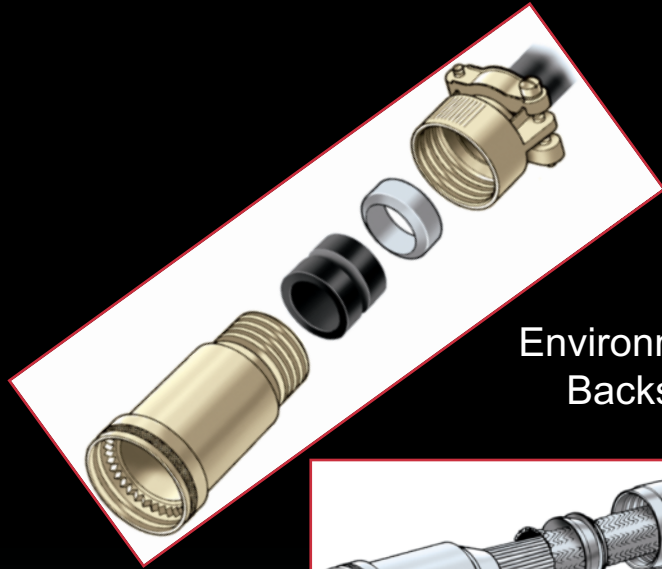
What Exactly Do Backshells Do?

Common Interconnect Problems and Backshell Solutions

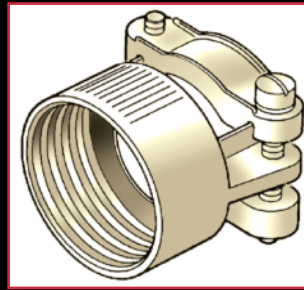
Problem	Solution
Environmental Damage	Cable Sealing Backshells
Electromagnetic Interference	EMI/RFI Shield (Screen) Termination Backshells
Mechanical Damage to Conductors	Strain-Relief Backshells
Mechanical Damage to Pins and Threads	Protective Covers and Boots
Connector-to-Cable Routing Issues	Multiple Angle and Profile Backshells

Glenair Backshells by Function

It isn't rocket science, but you can put one on a rocket!



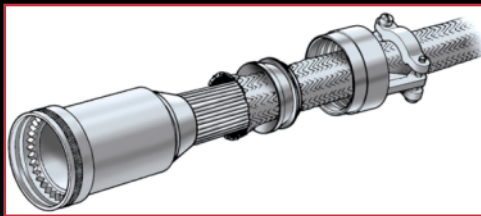
Environmental Backshell



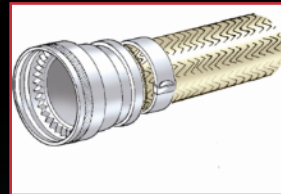
Strain Relief Clamp



Protective Cover



EMI/RFI Backshell

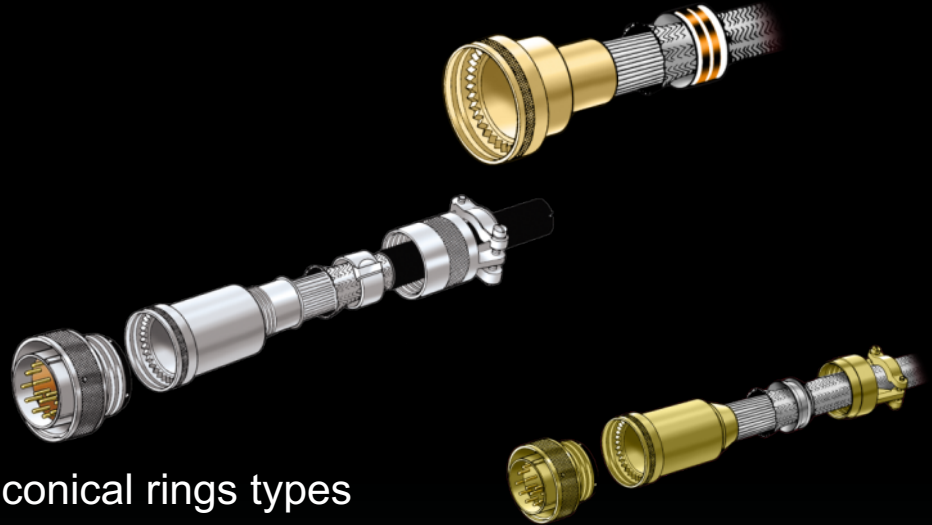


EMI Banding Backshell

Shield Termination Backshells

Selection based on ease of assembly, reliability and attenuation

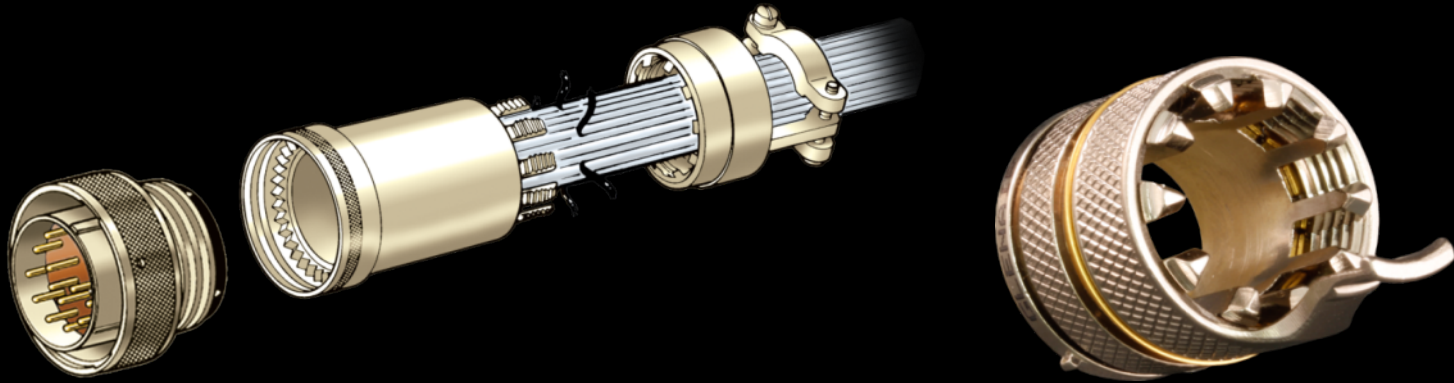
- Mil-Spec
 - Conical ring type
 - Crimp rings and bands
 - TAG rings
- Commercial designs:
 - Integrated shield socks
 - Magnaforming
 - Tinel lock-rings
 - Compression springs
 - Broader range of single and multiple conical rings types



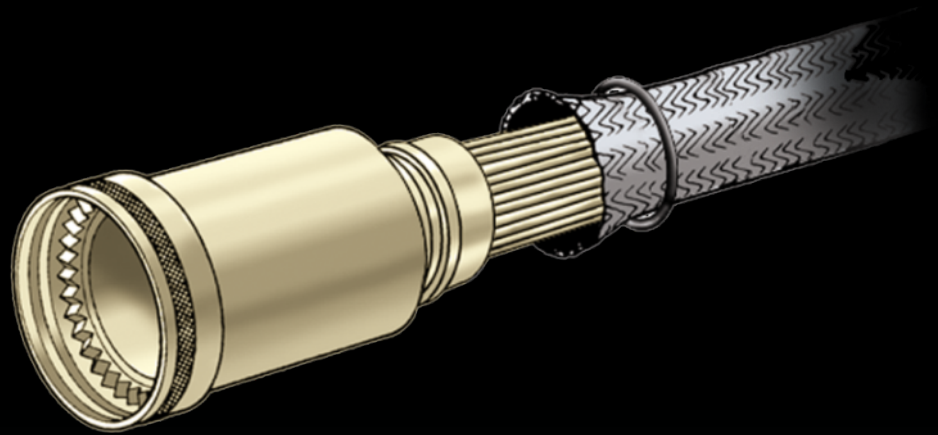
Lamp Base Thread Shield Termination



TAG Ring Shield Termination



440 Tinel Ring Backshells



440 Crimp Ring Backshells

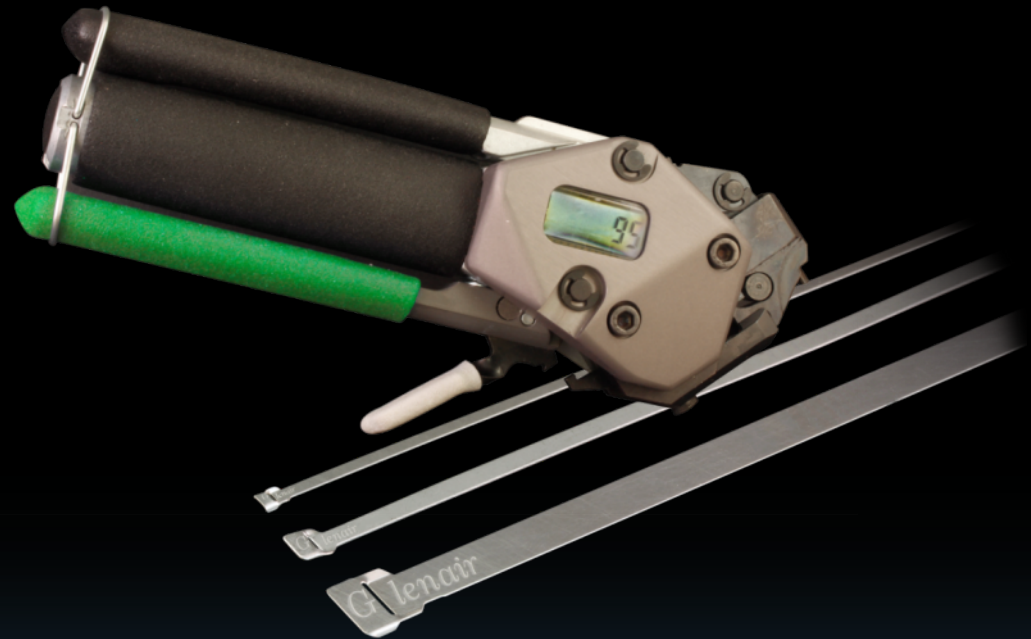


440 Banding Backshells



Band-Master™ ATS

Reliable EMI Shield Termination with Built-In Calibration Counter



447-328 Band-In-a-Can EMI/RFI Shield Termination

Note: selective plating maintains an effective ground path while reducing potential for surface damage



Composite Swing-Arm Strain-Relief

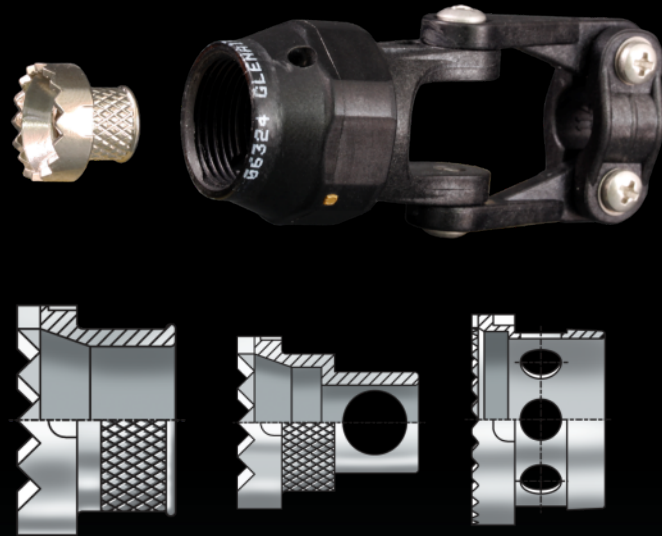
Light weight - corrosion free - three-in-one

- Straight, 45° and 90°
- Integrated EMI/RFI shield sock
- Self-locking coupling nut
- Optional composite braid (319-065)
- Electroless nickel shield termination and interface
- No-braid version (627-122)



The Do-Drop-In Series for Swing-Arm and Other Composite Accessories

- With and without drop-in modules
- 627-184 integrates shrink boot adapter with conical ring termination
- 319-095 integrates band termination
- Other new designs integrate knit braids and more



Weight Saving “Cone and Ring” Backshells



Series 360 Non-Environmental
Strain-Relief Backshell



Series 370 Environmental
Strain-Relief Backshell



Series 380 EMI/RFI Non-
Environmental Backshell



Series 390 EMI/RFI
Environmental Backshell

CastleGrip Backshells

490-001 Series

- Direct replacement for Isodyne ISO 150 Series
- Note performance advantages of banding
- New test data



StarShield



The zero-length shield termination backshell

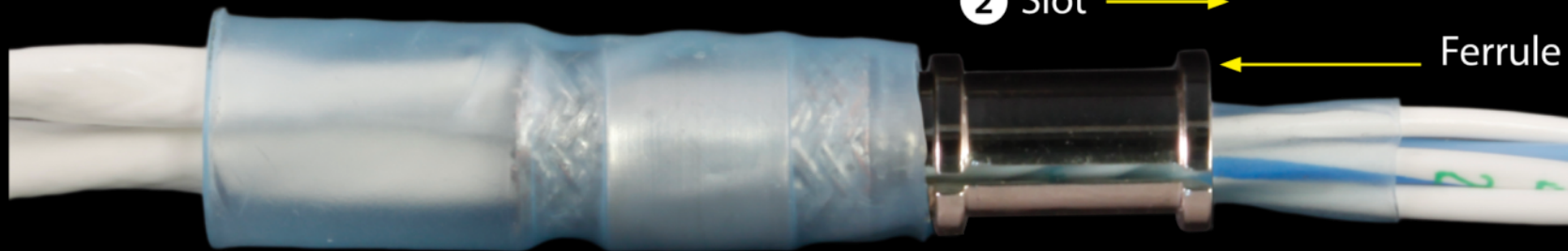


StarShield



Close-up of HST module

.67"-.79" (17-20mm)



2 Slot

Ferrule

1 Heat Shrinkable Terminator (HST)



StarShield



Terminated StarShield ferrule and star assembly ready for incorporation into the StarShield backshell



Dust Caps, Protective Covers and Dummy Stowage Receptacles

Front end protection of de-mated connectors

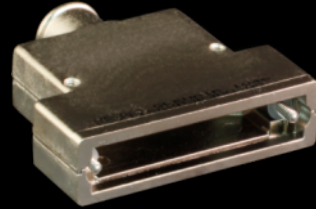
- MS slash sheets tied to each individual mating connector
- Material choice should match connector material and finish
- Select optional ring attachments (for cables and panels), and lanyard material and length.
- Mil Spec part numbers include: MS25042, MS25043, MS17350, MS17349, MS90564, MS90563, MS3180, MS3181, MS27501, MS27502, MS27510, MS27511, D38999/32, /33; M28840/15, /13; M83723/59-1, /59-2, /60-1, /60-2



Rectangular Backshells

Micro-Ds to ARINC634s, We've Got it Covered

- MIL-C-24308
- MIL-C-81659
- MIL-C-83733
- ARINC Series 600
- MIL-DTL-83513
- Cannon Series 400
- MIL-C-83527/A
- QUIZ: Glenair Plating code for Cad Plate, Olive Drab over Electroless Nickel? And for Standard Electroless Nickel?



Composite “Snap-D” M24308 Backshell

This composite “Snap-D” has all the features you wish D-sub backshells had offered long ago:

- Split-shell, snap-together packaging, zero hardware (no screws!) connector retention
- Fully-encapsulated (skirted) design, integrated bail-latch
- Lightweight strain relief
- Band-Master ATS® shield termination—overall and individual
- Internal, ribbed compression zone for additional strain relief and improved EMC



Split EMI Backshell, Size 2 ARINC 600

527-478



Shrink Boots Basics

Outstanding Environmental and Mechanical Protection

- Excellent electrical, mechanical and environmental protection for connector-to-cable transitions.
- Rugged, flame-retardant materials.
- Resistant to high temperature and chemicals.
- RoHS Compliant
- Adhesive-lined versions.
- Straight, 45° or 90 ° boots.
- Wide range of sizes and shapes for circular connectors.
- No special tooling required for installation.



Why Use a Shrink Boot?

Got a Heat Gun? You are Good to Go!



- **Strain relief:** for wiring exiting a backshell or connector.
- **Sealing:** adhesive, cable-to-backshell (or connector) bond for both water as well as chemical exposure (NOT a mechanical/compression seal)
- **Organizing:** wiring to specific dimensions such as 90° angles or other shape.
- **Cable breakouts:** where one cable branches out to 2, 3, or 4 separate cables.
- **Resealing:** field repaired cable or conduit connector assemblies.

Use Glenair's Online Tool to Cross Competitor's Shrink Boots

Series 77 Cross-Reference Search

Enter a complete (or partial) Glenair, Tyco or Hellerman Part Number for your Series 77 "Full Nelson" Environmental Shrink Boot to quickly and easily find the cross-reference equivalent. (For example, enter 770-001A103 and click 'Search').

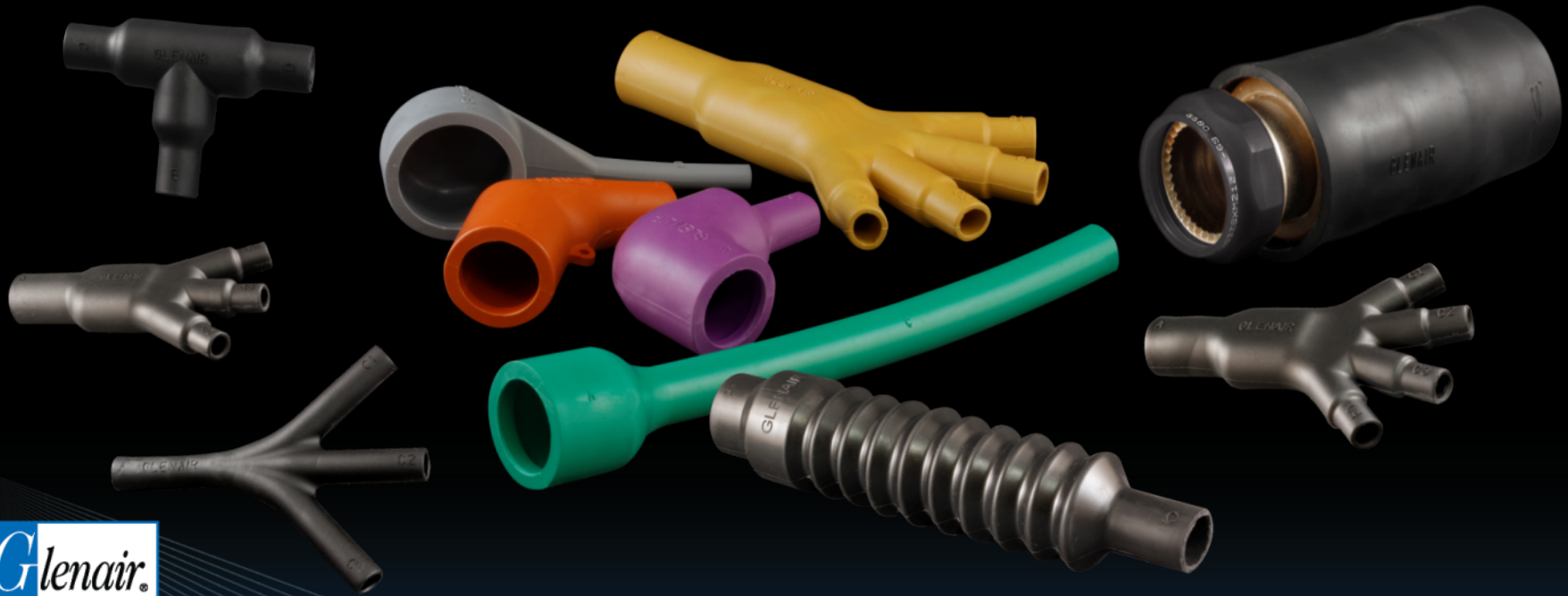
Your search found **2** cross reference part number(s):

Glenair Part Number	Tyco Part Number	Hellerman Part Number
770-001A103R	222K121-25/225-0	1152-4-B7-W24
770-001A103R	222K121-25/225-0	1152-4-G-W24

[View / download the Series 77 Part Number Cross-Reference in pdf format \[1.2 MB pdf \]](#)

A Full-Spectrum Product Line

Transitions • Convoluted Boots • Piggyback Boots • FIRST with Colored Boots • FIRST with New Mil-Spec Boots M85049 /140 /141 /142



Advantages of Composites

Weight Reduction and Corrosion Protection

- Reduced Weight
- Unlimited Corrosion Protection
- Inherent shock and vibration dampening
- Reduced magnetic and acoustic signatures (stealth)
- Cadmium free
- Flame resistant, chemical resistant and high-temperature tolerant
- Dimensionally stable
- Accepts “selective” plating for EMI/RFI grounding



The World's Largest Selection of Tooled Composite Thermoplastic Interconnect Components



Micro D Backshells

Composite EMI Shielding

Strain Relief Backshells

Convolved Tubing and Fittings

Protective Covers

Swing Arm Strain Relief Clamps

Fiber Optic Banding Backshells

Swing Arm with Shield Sock

Qwik-Ty Strain-Relief

Ultra Low-Profile Banding Backshells

Band-in-a-Can Backshells

5015 Type Connectors

Ultra-Light Banding Strain Relief

Series 360 Strain

Split Rings

EMI Lamp-Base Thread Backshells

Feed-Thru Fittings

Dual Banding Backshells

Knit-Braid EMI/RFI Backshells

Series 390 EMI/RFI Environmental Backshell

Low Profile Strain-Relief

Cone and Ring Style EMI/RFI Backshells

D38999 Type Connectors

Extender Backshells

Overmolded Cable Adapters

Environmental Backshells

Series 620 Strain Relief Clamps

EMI/RFI Shield Socks



Building Connector Accessory Part Numbers From Scratch

“What backshell part number should I use for this connector?”

1. Understand the required function.
2. Use wall chart for slash sheet selection.
3. Use the catalog for full part number, or...
4. Use QwikCreate to:
 - ✓ Build the part number automatically.
 - ✓ Generate printable document with all relevant dimensional data
 - ✓ Link to catalog page for additional information



Finding the “Slash Sheet” or Product Series

Use your wall chart!

- Use the wall chart to select most common MS backshells and accessories for D38999 family connectors

Glenair Wall Chart of Mil-Spec Connector Accessories
Every Popular Design, Size and Finish In Stock and Ready for Immediate Same-Day Shipment

The wall chart is a comprehensive reference tool for Mil-Spec connector accessories. It is organized into several main sections, each corresponding to a different connector type or size. The sections include:


- MS (MIL-DTL-8838) Connectors:** This section covers various backshell and accessory options for the standard MS connector.
- MS-D (MIL-DTL-8838) Connectors:** This section covers accessories for the MS-D connector, which is a modified version of the MS connector.
- MS-DT (MIL-DTL-8838) Connectors:** This section covers accessories for the MS-DT connector, which is a modified version of the MS-D connector.
- MS-DT (MIL-DTL-8838) Connectors:** This section covers accessories for the MS-DT connector, which is a modified version of the MS-DT connector.

Each section contains a grid of part numbers, descriptions, and quantities. The chart also includes images of various accessories like backshells, caps, and seals. The chart is designed to be easy to use, with clear headings and a logical layout.



Building a Part Number From the Book

AS85049/62 and M38999/2
Straight Shrink Boot Adapter



CONNECTOR DESIGNATOR:

F	MIL-DTL-38999 Series I & II
	40M38277, PAN 6433-1
	PATT 614, PATT 616
	NFC93422 Series HE308 & HE309

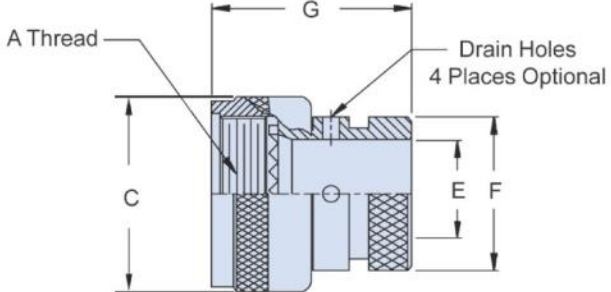
Basic Part Number: M85049/62

Shell Size: 10

Drain Hole Option (Omit for None): W D

Finish

- A = Black Anodize
- W = 1000 Hr. Cadmium Olive Drab
- X = Nickel Fluorocarbon Polymer
- Y = Pure Dense Electrodeposited Aluminum
- Z = Zinc Nickel, Black



A Thread


Drain Holes
4 Places Optional

C

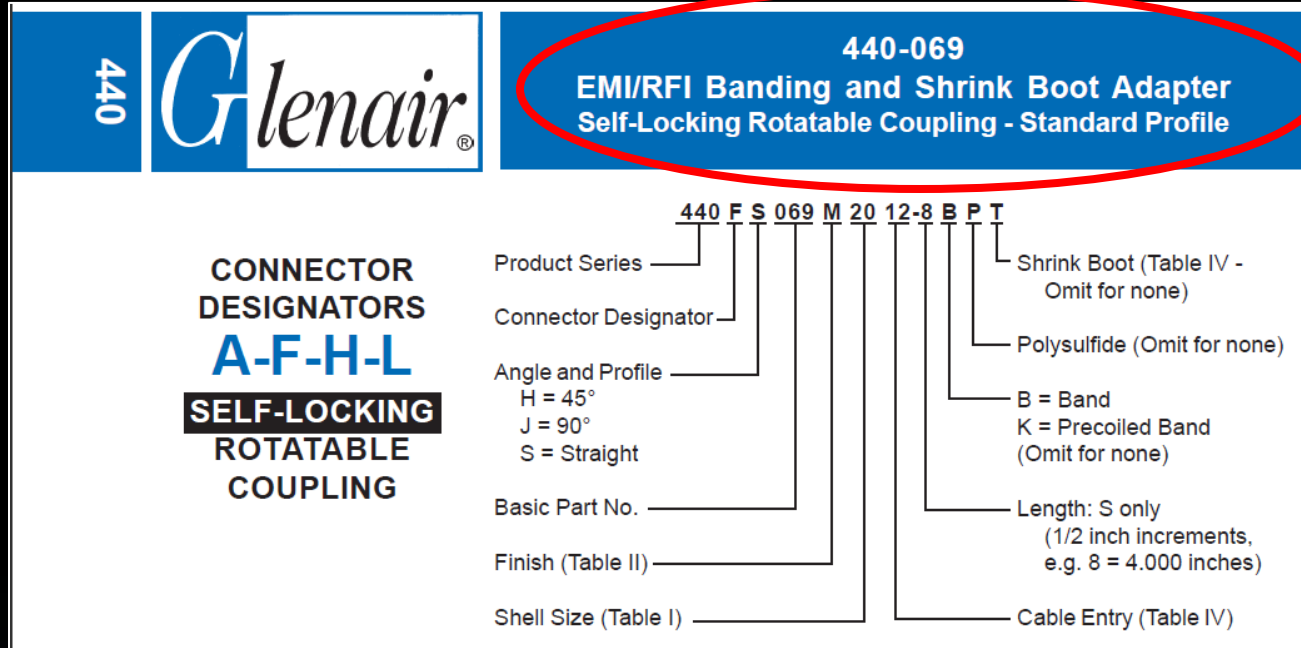
E

F

G



Step (1) Select “Basic Part Number” Based on Core Function PLUS Optional Features



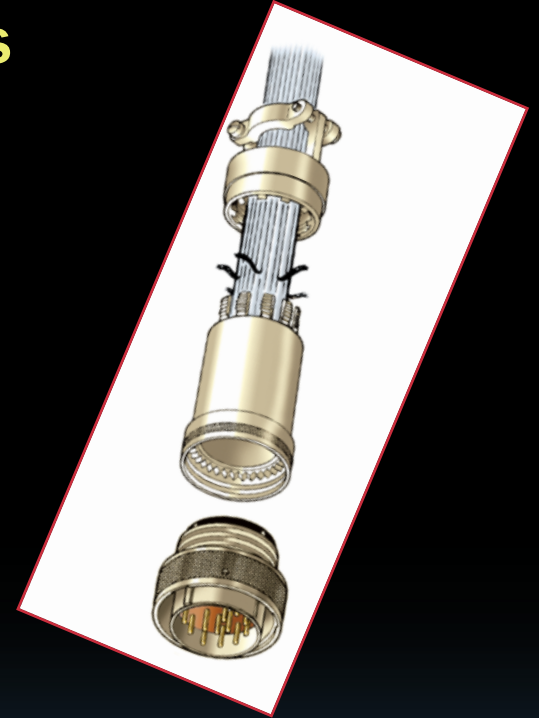
NOTE: Use the Series and Basic Part Number Combination (XXX-XXX) when searching on web

Overview of Glenair Commercial Accessory Part Number Systems

Glenair Legacy: Original “G” Part Numbers

New Product Code/Product Series System

- 310 – Shrink Boot Adapters
- 360 – Non-Environmental Strain-Reliefs
- 370 – Environmental Strain Reliefs
- 380 – Non-Environmental EMI/RFI Backshells
- 390 – Environmental EMI/RFI Backshells
- 440 – Banding and Crimp Ring Adapters
- 450 – Qwik-Ty Strain Reliefs
- 660 – Protective Covers
- 770 – Shrink Boots



Backshell-to-Connector Coupling



Direct Coupling

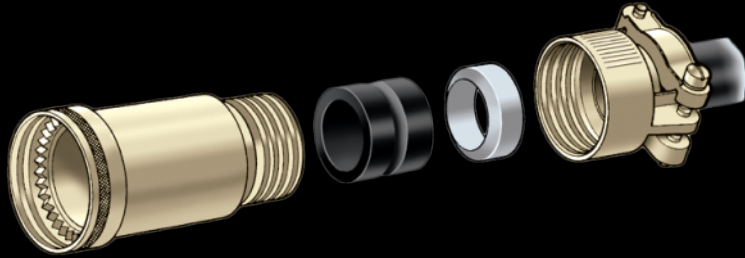


Rotatable Coupling



Self-Locking

Cable Sealing Backshell Designs



Submersible

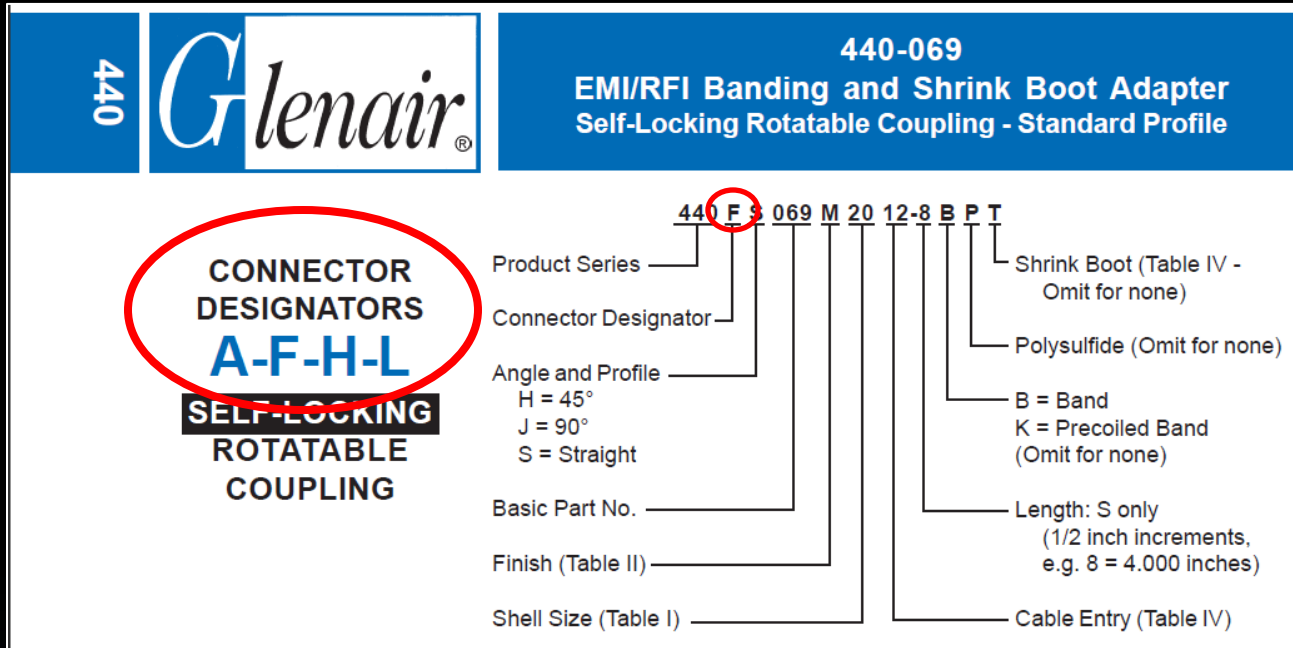


Water-Tight



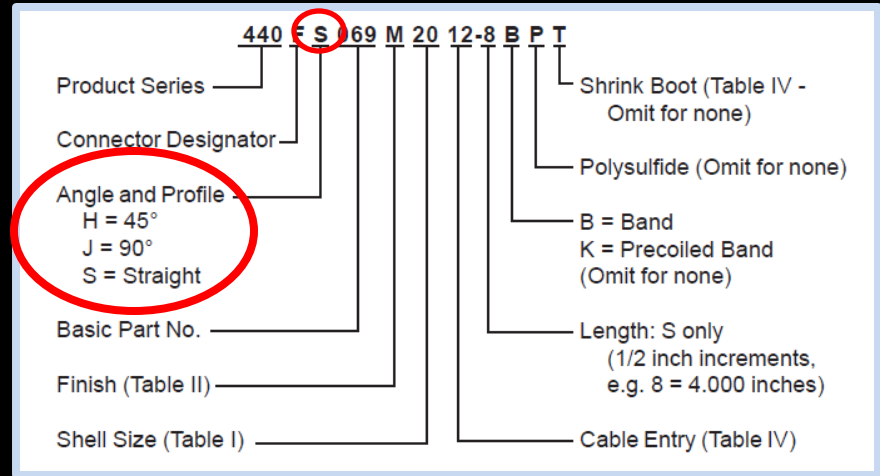
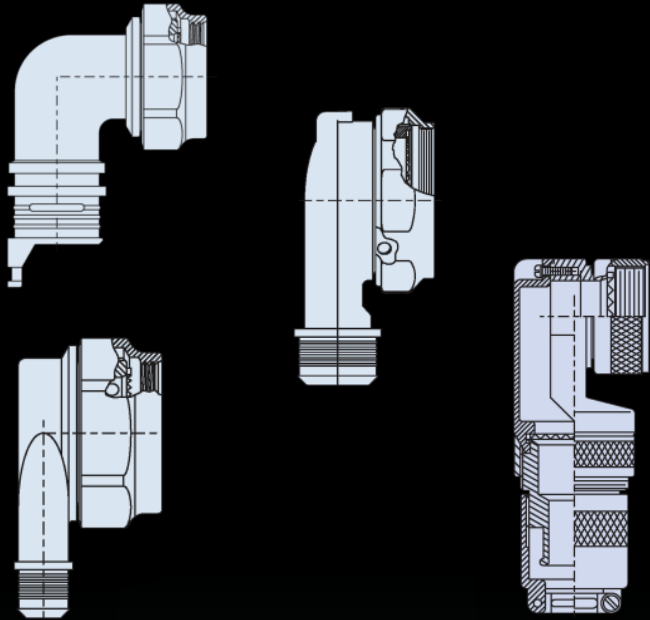
Splash-Proof

(2) Select “Connector Designator” Based on the Connector Series the Part is For



HINT: Just Memorize the Common Designators

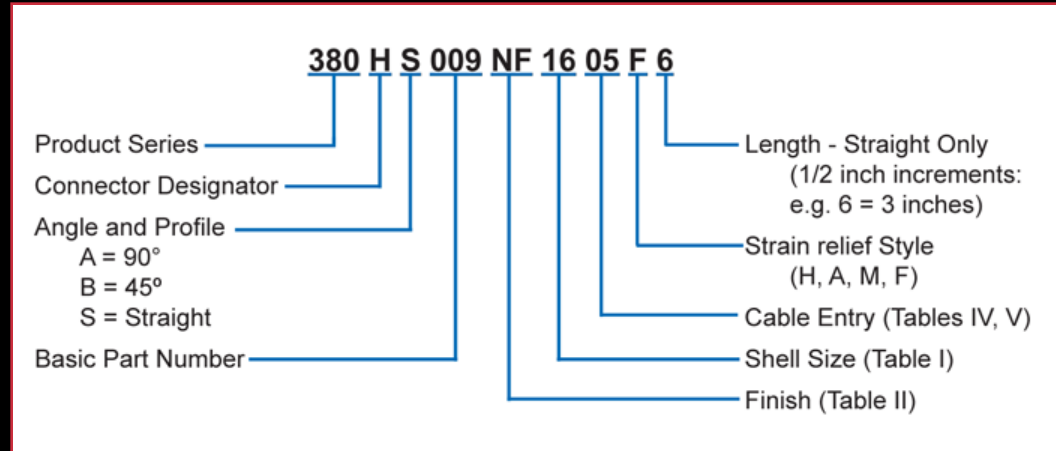
(3) Select the “Angle and Profile” Based on Cable Routing Requirements



(4) Select Material and Finish

Typically aluminum; all composite parts use an “X”

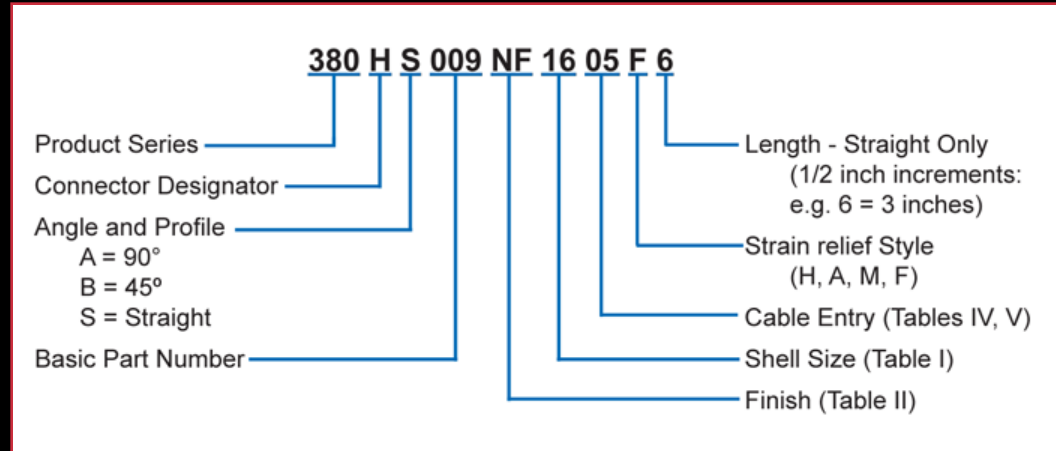
- Most common platings are M (nickel), NF (cad/olive drab) and MT (nickel-teflon)



(5) Choose Dimensional Attributes

Nearly limitless combinations

- Product Series
- Connector Designator
- Angle and Profile
- Basic Part Number
- Finish Symbol
- Shell Size
- Cable Diameter
- Strain Relief Style/duty
- Length of Part
- Other: Drain holes, attachment lengths, special modifications



Calculating Wire Bundle Diameter

Steps	Calculations
(1a) Determine average wire diameter when all wires are the same diameter; or	Given 30 Wires @ .045 DIA Avg. Wire DIA = .045
(1b) Determine average wire diameter when wires are different diameters.	Given 15 Wires @ .045 and 15 Wires @ .135 $15 \times .045 = .68$ $15 \times .135 = \underline{2.03} + \frac{2.71}{30} = .090$ Avg. Wire DIA $\text{_____} = 2.71$
(2) Multiply average wire diameter by factor from Table I below	(1a) $.045 \times 6.7 = .3015$ Core Wire Bundle DIA (1b) $.090 \times 6.7 = .603$ Core Wire Bundle DIA
(3) Add thickness of any shielding or jacketing to core wire bundle diameter (for example, add .025 for braided sleeving)	(1a) $.3015 + .025 = .3265$ Wire Bundle Outside DIA (1b) $.603 + .025 = .628$ Wire Bundle Outside DIA

TABLE I																		
No. of Wires	1	2	3	4	5	6	7	8	9	10	12	14	16	18	20	24	28	32
Factor	1.0	2.0	2.2	2.4	2.7	2.9	3.0	3.3	3.8	4.0	4.3	4.6	5.0	5.3	5.6	6.0	6.5	6.9
No. 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	15.0	16.1	17.2	19.3	21.0