

Better Than QPL

SuperNine®

Advanced Performance MIL-DTL-38999 Series III Type Connectors

SECOND EDITION APRIL 2018

SERIES 23



SuperNine®

Better than QPL: the world's most comprehensive line of high-performance MIL-DTL-38999 Series III type connectors



The Series 23 SuperNine® advanced performance connector series rolls up many of the technology advances Glenair has pioneered in our environmental, hermetic, and filter connectors into a comprehensive high-performance MIL-DTL-38999 Series III solution. SuperNine® combines advanced plating, sealing and other high-performance features including:

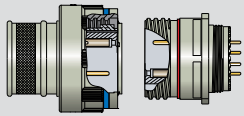
- 1500 mating cycle advanced durability contacts
- Integrated EMI shield banding porch
- High-durability anti-vibration coupling
- Tight-tolerance composite shell fiber optics
- Extensive line of PC tail configurations
- Crimp contact hermetics

SuperNine® is intermateable with all industry-standard D38999 solutions and accommodates Glenair's broad range of connector designator "H" backshells, protective covers, shrink boots and lightweight composite accessories.



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**MIL-DTL-38999 Series III Type
Advanced Performance Connectors**



Introducing SuperNine®

Glenair SuperNine™ MIL-DTL-38999 Series III type connector classes for environmental, hermetic, high-speed, high-pressure, space-grade and EMI/EMP applications

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SuperNine® Environmental I/O, Cable and PCB Connectors

Crimp and PC tail connectors with optional banding platforms—plus high-durability contacts, piston-seal environmental versions and blind-mate space-grade solutions

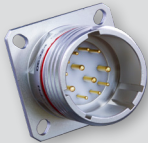
B



SuperNine® High-Speed Connectors

High-speed Ethernet, datalink, and video interconnect solutions incorporating Coax, Twinax, Quadrax and El Ochito® octaxial shielded contact technologies

C



SuperNine® Hermetic Connectors

Box, wall, and solder mount glass-seal hermetics for high-pressure/low-leak applications—plus special crimp contact and lightweight CODE RED hermetic solutions

D



SuperNine® Ruggedized RJ45 and USB Connectors

SuperSeal™ RJ45 and USB field connectors with superior sealing, grounding, and crimp contact termination

E



SuperNine® EMI/EMP Filter Connectors

EMI/EMP planar array capacitor filters and TVS diode-equipped interconnects intermateable with all standard MIL-DTL-38999 Series III plugs and receptacles

F



SuperNine® Fiber Optic Connectors

Fiber Optic interconnect solutions for long distance and high bandwidth applications, including Ethernet, video, and other forms of high-speed data

G



SuperNine® Backshells and Accessories

High-performance metal and composite thermoplastic connector backshells and accessories optimized for use with SuperNine® high-performance connectors

H



SuperNine® Contacts and Tools

MIL-DTL-39029 crimp, power and signal contacts, plus the industry's broadest range of shielded RF contacts including El Ochito®, Quadrax, Twinax and Coax designs

J



Appendix

PCB Footprints
Part Number List

K



BETTER THAN QPL

SuperNine®: The advanced-performance MIL-DTL-38999 Series III style connector

Better than QPL? SuperNine® is the interconnect industry's most complete and advanced D38999 Series III type connector family. From IP68 rated environmental-class connectors with improved durability and ease-of-use, to EMI/EMP filter connectors with innovative flange and PC tail termination configurations, SuperNine® offers military and commercial aerospace customers that have standardized on Series III technology the opportunity to improve interconnect system performance and resolve a wide range of persistent electrical, environmental, and mechanical performance problems—all with Catalog (COTS) connector solutions backed by Glenair's high-availability business model.

Better than QPL means significant innovation in every class of connector in the series. SuperNine® hermetics for example, offer many features not available in QPL hermetic solutions, such as crimp-removable socket contacts. Our fiber optic connector series is designed and built to tight-tolerances to ensure precise alignment of fiber optic termini, and superior optical performance.

SuperNine® offers improved durability, sealing, cost-of-ownership, ease of shield termination, a broader range of PC tail configurations, environmental and hermetic bulkhead feed-thrus, connector savers, off-the-shelf EMI/EMP filter connectors and more—all supported with Glenair's well-established reputation for service, support, and fast turnaround.

Glenair SuperNine® connectors in action: in this example, a pair of our advanced fiber optic interconnects cabled-up in a turnkey, environmentally sealed point-to-point jumper



THE SUPERNINE® TECHNOLOGY PROMISE

- **Across-the-board improvements in mating-cycle and contact durability**
- **Advanced ease-of-use features such as integrated band porches and PC-Tail standoffs**
- **Advanced-performance improvements in every connector class—from filters to fiber optics**

MIL-DTL-38999 Series III Type Advanced Performance Connectors

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SuperNine® Environmental I/O, Cable and PCB Connectors



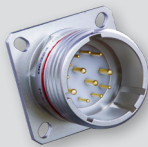
- Plug connectors with material class and banding porch options
- Complete range of IP68 PC tail receptacles with high-durability contacts
- Five different designs of printed circuit board connector standoffs
- All MIL-STD-1560 as well as high-density insert arrangements
- High-durability vibration and shock coupling

SuperNine® High-Speed Connectors



- Full range of hybrid insert arrangements incorporating size #22D signal contacts, plus size #16, #12 and #8 keyed shielded contacts
- El Ochito®: One full 10G Ethernet channel per standard size #8 cavity
- Supported applications: 10/100/1G/10G BASE-T Ethernet, analog/digital video, 1553 databus and general RF or differential data transmission
- Turnkey Quadrax and El Ochito® solutions—from contacts to connectors, wire and termination hardware

SuperNine® High-Pressure Hermetic Connectors



- Glass-to-metal seal hermetics with sealing up to 1×10^{-10} cc/sec
- DSCC qualified and derivative solutions with advanced mounting features
- Pressure resistance to 32,000+ psi
- Stainless steel, titanium, Kovar® and Inconel® shell material options
- Bulkhead feed-through and hull penetrator versions
- Lightweight CODE RED hermetics with 1×10^{-7} max sealing

SuperNine® Ruggedized RJ45 and USB Field Connectors



- Insert-to-shell grounding for superior EMC continuity and shielding
- Superior environmental sealing to IP67 compared to COTS solutions
- Advanced vibration and mechanical shock tolerance
- Full range of offerings for Cat 5e and 6A Ethernet: jacks, plugs, PC tail and crimp
- High-temperature rated -40° to $+125^{\circ}$ C

SuperNine® EMI/EMP Filter Connectors



- Planar, multilayer ceramic capacitive filters with and without TVS diodes
- C, L-C, C-L, and Pi filter electrical configurations
- Special high operating temperature solutions
- Industry's broadest range of capacitance: from 10 to 1,000,000 pF
- Fast and reliable in-house manufacturing of all filter elements and processes

SuperNine® Fiber Optic Connectors



- Ultra-lightweight composite thermoplastic connector solutions
- Qualified size #16 MIL-PRF-29504 pin-socket precision ceramic termini
- Ultra-tight tolerance shell and cavity dimensions for precise axial alignment
- Ultra-low insertion loss values for both singlemode and multimode
- Insert arrangements from 2 to 37 ways

MIL-DTL-38999 Series III Type

Advanced mechanical features

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The Series 23 SuperNine® advanced performance connector series rolls up many of the technology advances Glenair has pioneered in our environmental, hermetic, and filter connectors into a comprehensive high-performance connector series. SuperNine® is intermateable with all industry-standard D38999 solutions and accommodates Glenair’s broad range of connector designator “H” backshells, protective covers, shrink boots and lightweight composite accessories. SuperNine® combines innovative mechanical design and materials selection (see next page) resulting in the industry’s best performing aerospace-ready connector series.

IMPROVED DURABILITY AND MECHANICAL/ENVIRONMENTAL PERFORMANCE



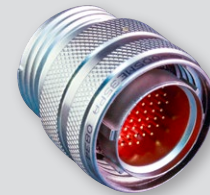
Tight Tolerance Ultra Low dB Loss Fiber Optics



1500 Mating Cycle Coupling Nut and Contact

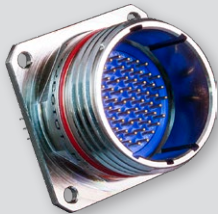


High Vibration Performance IAW Bell Helicopter and Boeing Specs



Available Sav-Con® Connector Saver Go-Between

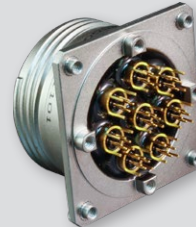
IMPROVED EASE-OF-USE



High-density contact arrangements



Integrated Shield Termination Band Porch

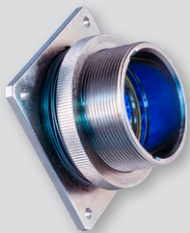


Diverse Range of PC Tail Stand-Offs



Available Bulk Head Feed-Thrus

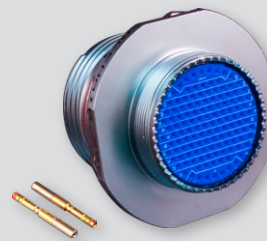
EXPANDED FUNCTIONALITY



Zero Extraction Force Designs



Metal Ground Plane Inserts



Hermetic with Crimp Contacts



Quick-Disconnect Lanyard-Release Assemblies

MIL-DTL-38999 Series III Type
Advanced material performance

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RoHS COMPLIANT FINISH OPTIONS

 Electroless Nickel Cost \$ \$ \$ \$ \$ Conductivity + + + + + Corrosion Resistance ⌚ ⌚ ⌚ ⌚ ⌚ -65 to +200°C Glenair Code ME 	 Black Zinc Nickel Cost \$ \$ \$ \$ \$ Conductivity + + + + + Corrosion Resistance ⌚ ⌚ ⌚ ⌚ ⌚ -65 to +175°C Glenair Code ZR 	 Nickel-PTFE Cost \$ \$ \$ \$ \$ Conductivity + + + + + Corrosion Resistance ⌚ ⌚ ⌚ ⌚ ⌚ -65 to +175°C Glenair Code MT, ZM 	 Stainless Steel Cost \$ \$ \$ \$ \$ Conductivity + + + + + Corrosion Resistance ⌚ ⌚ ⌚ ⌚ ⌚ -65 to +200°C Glenair Code Z1, ZL
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IMPROVED MATERIAL SELECTION AND PERFORMANCE

 500 Hour Nickel-Teflon (Ni-PTFE) Plating Option	 High-Performance Space-Grade Epoxy Potting Compound	 High-Performance EMI Ground Spring Attachment	 Space-Grade Certified Materials
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MIL-DTL-38999 TYPE SPECIAL CLASS DERIVATIVES

 EMI/EMP Filter and TVS	 RJ45 and USB Solutions	 Fiber Optic	 Hermetic
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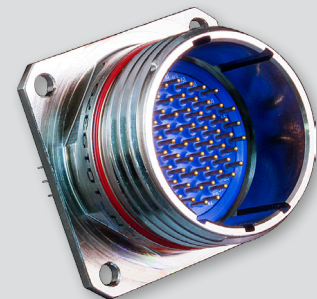
Connector Class	D38999 Sr. III	SuperNine®
Environmental	Yes	Yes
IP68 Mated Condition	No	Yes
Space-Grade	Yes	Yes
Hermetic	Yes	Yes
Lightweight Hermetic	No	Yes
EMI Filter	No	Yes
High Durability	No	Yes
ESD	No	Yes
Bulkhead Feed-Thru	No	Yes
Sav-con® Connector Saver	No	Yes

**Contact selection guide
MIL-DTL-38999 Series III Type**

A

Extended-Durability Crimp	Printed Circuit Board	#20 Signal	High Density #23 Signal
Solder Cup	#12 50 Ohm Matched Impedance Coaxial	#16 and #12 Coaxial	Concentric Twinax
#8 100 Ohm Quadrax	#8 100 Ohm El Ochoito®	#8 100 Ohm Differential Twinax	#8 Power
#8 Optoelectronic	Thermocouple	Pneumatic	Size #16 Fiber Optic

Glenair has developed an extensive range of innovative contacts for the SuperNine® connector series, including solutions for fiber optic and pneumatic applications. The development of our own range of high-performance contacts was a key step in gearing our many innovative connector solutions to meet any interconnection challenge. This page highlights a selection of these high-performance contacts, from special high-durability 1500 mating cycle crimp signal contacts to our own high-speed/high-frequency shielded Quadrax and differential Twinax contacts, miniaturized #16 fiber optic contacts and highly specialized gas and pneumatic contact solutions. All our contacts are supported with appropriate extraction and crimp tools—and Glenair can also supply appropriate wire and cable, particularly for short run prototype and production orders. As always, these Glenair technologies are available with no dollar or quantity minimums, and most are in-stock and ready for immediate, same-day shipment.



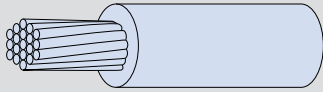
Glenair MIL-DTL-38999 type SuperNine® connectors are supplied with extended-durability pin and socket contacts

Wire and cable selection guide

MIL-DTL-38999 Series III Type

Consult factory for order information, or see Glenair's High Performance Wire and Cable Catalog.

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M22759/11 Silver Coated Copper Wire with Extruded PTFE Insulation

For high temperature applications such as aircraft engines and where increased abrasion resistance is required



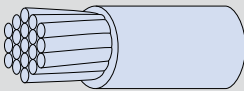
M22759/16 Tin Coated Copper Wire with Extruded ETFE Insulation

For high temperature applications such as aircraft engines and where increased abrasion resistance and solderability is required



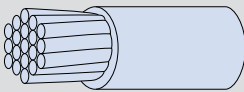
M22759/18 Tin Coated Copper Wire with Thin-Wall Extruded ETFE Insulation

For aerospace applications where light weight, abrasion resistance, mechanical durability and solderability are required



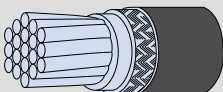
M22759/32 Tin Coated Copper Wire with Crosslinked, Modified ETFE Insulation

For high temperature, light weight aerospace applications where mechanical strength, abrasion resistance and solderability are required



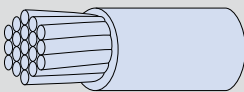
M22759/33 Silver Coated Copper Wire with Crosslinked, Modified ETFE Insulation

For high temperature, light weight aerospace applications where increased mechanical strength and abrasion resistance is required



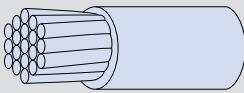
M22759/34 Tin Coated Copper Wire with Overall Braid and Extruded ETFE Insulation

For high temperature airframe and avionics applications where abrasion resistance, mechanical durability, and EMI/RFI shielding are required



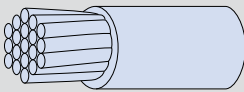
M22759/44 Silver Coated Copper Wire with Crosslinked, Extruded ETFE Insulation

For protected harness applications where high temperature resistance, mechanical durability and flexibility are required



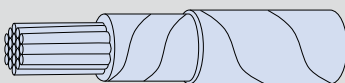
M22759/45 Nickel Coated Copper Wire with Crosslinked, Extruded ETFE Insulation

For protected harness applications where high temperature resistance, mechanical durability, corrosion resistance and flexibility are required



M22759/46 Nickel Coated High Strength Copper Wire with Crosslinked, Extruded ETFE Insulation

For high temperature applications where mechanical durability and, corrosion resistance are primary requirements

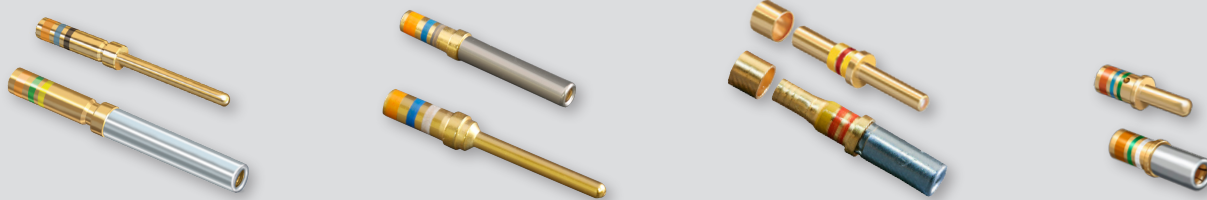


M22759/90 Nickel Coated High Strength Copper Wire with Double Layer Tape Wrap Insulation

For high temperature applications where mechanical durability, corrosion resistance and cable strength are primary requirements

MIL-STD-1560 standard contact arrangements
MIL-DTL-38999 Series III Type

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Size #22D Size #20 Size #16 Size #12

Environmental and Hermetic Contact Arrangements					
Contact	Number of Contacts				Insert Arrangement
	#22D	#20	#16	#12	
Size #22D 5 Amp Max. Current #22-#28 AWG	6				9-35
	13				11-35
	22				13-35
	37				15-35
	55				17-35
	66				19-35
	67				19-35
	79				21-35
	100				23-35
	128				25-35
Size #20 7.5 Amp Max. Current #20-#24 AWG		2			9-94
		3			9-98
		4			11-4
		5			11-5
		6			11-98
		7			11-99
		8			13-8
		10			13-98
		18			15-18
		19			15-19
		26			17-26
		32			19-32
		24			21-24
		25			21-25
		27			21-27
		41			21-41
		32			23-32
		34			23-34
		36			23-36
		53			23-53
	55			23-55	
	61			25-61	

Environmental and Hermetic Contact Arrangements					
Contact	Number of Contacts				Insert Arrangement
	#22D	#20	#16	#12	
Size #16 Contacts 13 Amp Max. Current #16-#20 AWG			2		11-2
			4		13-4
			5		15-5
			8		17-8
			11		19-11
			16		21-16
			21		23-21
			16		23-97
			11		23-99
			29		25-29
Size #12 Contacts 23 Amp Max. Current #12-14 AWG				37	25-37
				6	17-6
				11	21-11
			19	25-19	

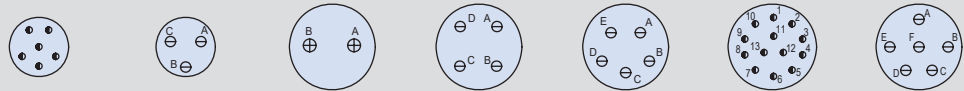
See Appendix for PCB Footprints

MIL-STD-1560 standard contact arrangements

MIL-DTL-38999 Series III Type

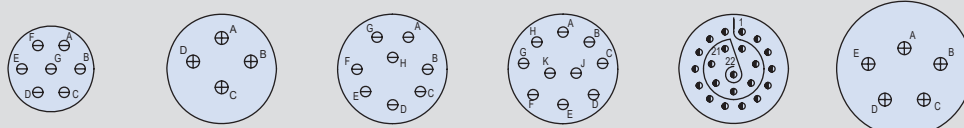
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Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ⊖



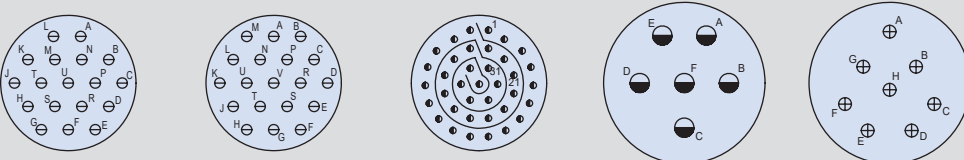
Insert Arrangement	9-35	9-98	11-2	11-4	11-5	11-35	11-98
No. of Contacts	6	3	2	4	5	13	6
Contact Size	#22D	#20	#16	#20	#20	#22D	#20
Service Rating	M	I	I	I	I	M	I

Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ⊖



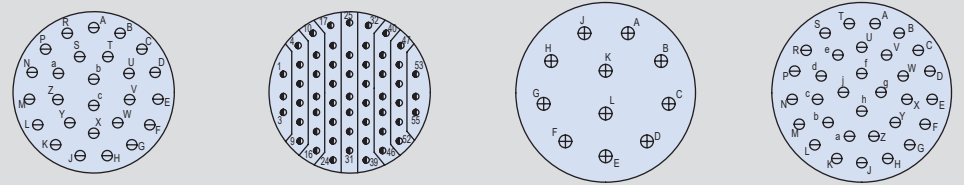
Insert Arrangement	11-99	13-4	13-8	13-98	13-35	15-5
No. of Contacts	7	4	8	10	22	5
Contact Size	#20	#16	#20	#20	#22D	#16
Service Rating	I	I	I	I	M	II

Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ⊖



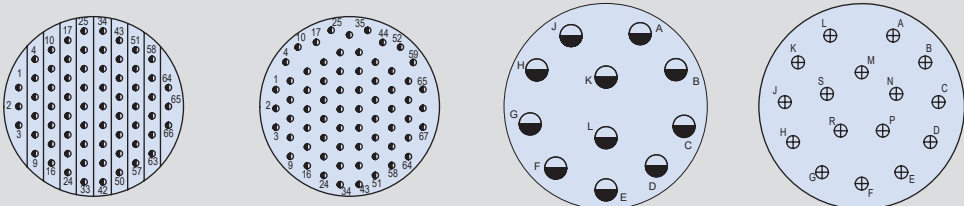
Insert Arrangement	15-18	15-19	15-35	17-6	17-8
No. of Contacts	18	19	37	6	8
Contact Size	#20	#20	#22D	#12	#16
Service Rating	I	I	M	I	II

Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ⊖



Insert Arrangement	17-26	17-35	19-11	19-32
No. of Contacts	26	55	11	32
Contact Size	#20	#22D	#16	#20
Service Rating	I	M	II	I

Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ⊖



Insert Arrangement	19-35	19-45	21-11	21-16
No. of Contacts	66	67	11	16
Contact Size	#22D	#22D	#12	#16
Service Rating	M	M	I	II

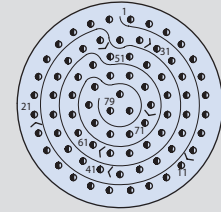
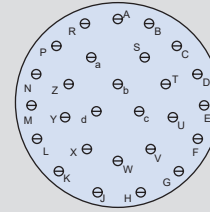
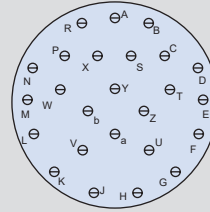
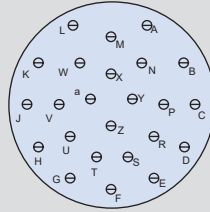
MIL-STD-1560 standard contact arrangements

MIL-DTL-38999 Series III Type - Pin front view shown

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Contact Legend

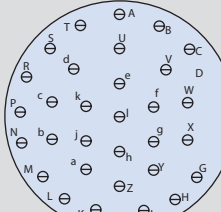
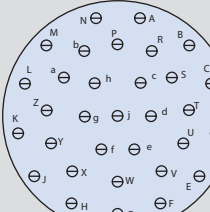
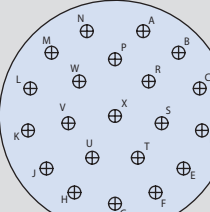
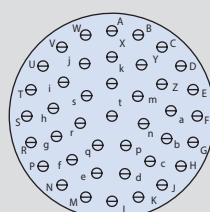
- #22D • #16 ⊕
- #20 ⊖ #12 ●



Insert Arrangement	21-24	21-25	21-27	21-35
No. of Contacts	24	25	27	79
Contact Size	#20	#20	#20	#22D
Service Rating	I	I	I	M

Contact Legend

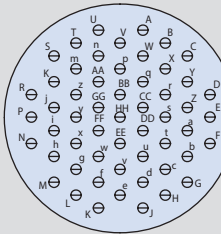
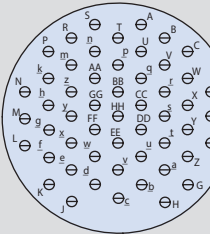
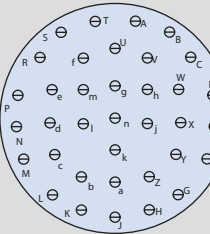
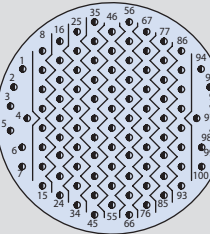
- #22D • #16 ⊕
- #20 ⊖ #12 ●



Insert Arrangement	21-41	23-21	23-32	23-34
No. of Contacts	41	21	32	34
Contact Size	#20	#16	#20	#20
Service Rating	I	II	I	I

Contact Legend

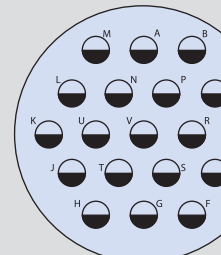
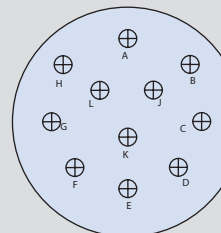
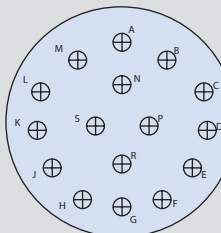
- #22D • #16 ⊕
- #20 ⊖ #12 ●



Insert Arrangement	23-35	23-36	23-53	23-55
No. of Contacts	100	36	53	55
Contact Size	#22D	#20	#20	#20
Service Rating	M	I	I	I

Contact Legend

- #22D • #16 ⊕
- #20 ⊖ #12 ●



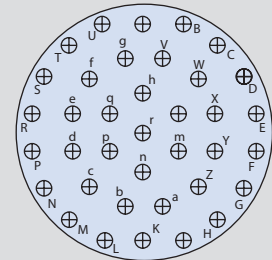
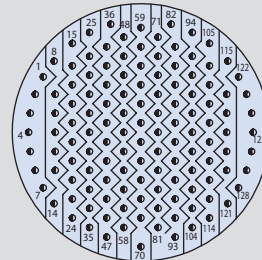
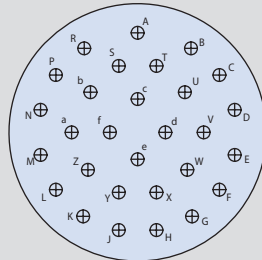
Insert Arrangement	23-97	23-99	25-19
No. of Contacts	16	11	19
Contact Size	#16	#16	#12
Service Rating	I	II	I

MIL-STD-1560 standard contact arrangements

MIL-DTL-38999 Series III Type - Pin front view shown

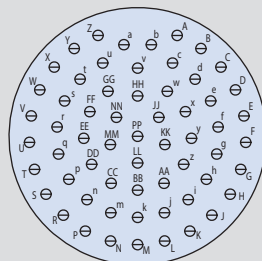
A

Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ◐



Insert Arrangement	25-29	25-35	25-37
No. of Contacts	29	128	37
Contact Size	#16	#22D	#16
Service Rating	I	M	II

Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ◐



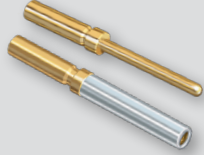
Insert Arrangement	25-61
No. of Contacts	61
Contact Size	#20
Service Rating	I

Service Rating	Test Voltage AC RMS 60Hz IAW MIL-DTL-38999							
	Sea Level		50,000 Ft.		70,000 Ft.		100,000 Ft	
	unmated	mated	unmated	mated	unmated	mated	unmated	mated
M	1300	1300	550	800	350	800	200	800
N	1000	1000	400	600	260	600	200	600
I	1800	1800	600	1000	400	1000	200	1000
II	2300	2300	800	1000	500	1000	200	1000

Note: The provision of electrical safety factors in each particular application, including peak voltages, switching currents, transients, etc. is the responsibility of the electrical engineer.

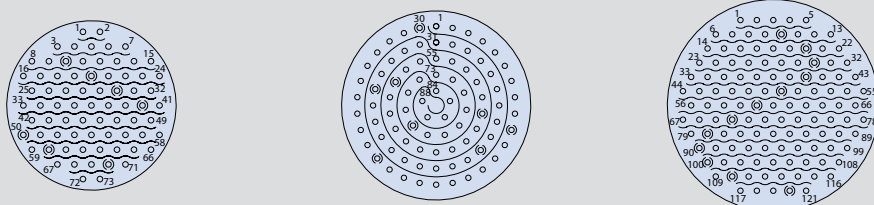
MIL-STD-1560 high density arrangements
MIL-DTL-38999 Series III Type - Pin front view shown

A

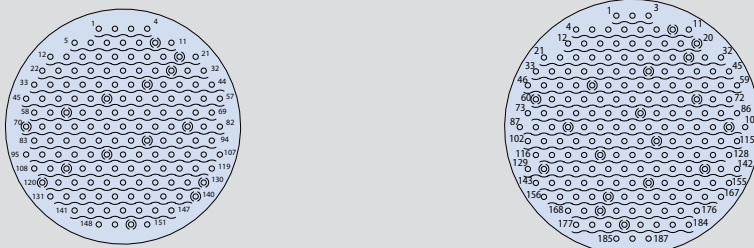
Environmental and Hermetic Contact Arrangements		
Contact	Number of Size 23 Contacts	Insert Arrangement
 Size #23 High-Density (HD) 5 Amp Max. Current #22-#26 AWG	9	9-23
	19	11-23
	32	13-23
	55	15-23
	73	17-23
	88	19-23
	121	21-23
	151	23-23
187	25-23	



Insert Arrangement	9-23	11-23	13-23	15-23
No. of Contacts	9	19	32	55
Contact Size	#23	#23	#23	#23
Service Rating	N	N	N	N



Insert Arrangement	17-23	19-23	21-23
No. of Contacts	73	88	121
Contact Size	#23	#23	#23
Service Rating	N	N	N



Insert Arrangement	23-23	25-23
No. of Contacts	151	187
Contact Size	#23	#23
Service Rating	N	N

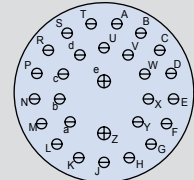
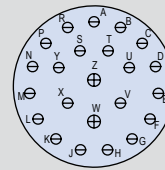
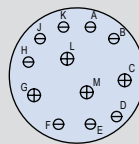
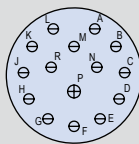
MIL-STD-1560 combo contact arrangements

MIL-DTL-38999 Series III Type - Pin front view shown

A

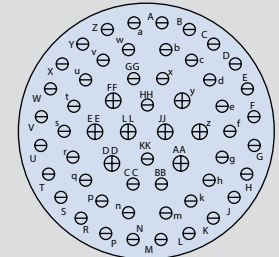
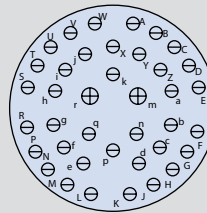
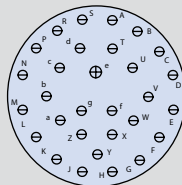
Combo Contact Arrangements					Number of Contacts				Insert
Contact Size				#20	#16	#12	10		
Size #20 Contacts 7.5 Amp Max. Current #20-#24 AWG 	Size #16 Contacts 13 Amp Max. Current #16-#20 AWG 	Size #12 Contacts 23 Amp Max. Current #12-#14 AWG 	Size #10 Contacts 23 Amp Max. Current #10 AWG 	14	1			15-15	
				8	4			15-97	
				21	2			17-99	
				26	2			19-28	
				29	1			19-30	
				37	2			21-39	
				48	8			25-4	
				2			9	25-11	
					12	12		25-24	
					23	20		25-43	

Contact Legend
 #22D • #20 ⊖ #16 ⊕
 #12 ⊖ #10 ⊙



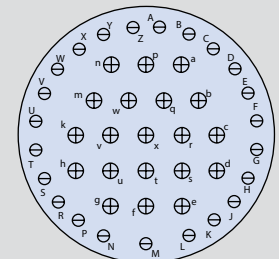
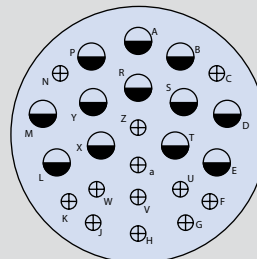
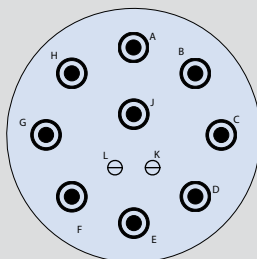
Insert Arrangement	15-15		15-97		17-99		19-28	
No. of Contacts and Size	1X #16	14X #20	4X #16	8X #20	2X #16	21X #20	2X #16	26X #20
Service Rating	I		I		I		I	

Contact Legend
 #22D • #20 ⊖ #16 ⊕
 #12 ⊖ #10 ⊙



Insert Arrangement	19-30		21-39		25-4	
No. of Contacts and Size	1X #16	29X #20	2X #16	37X #20	8X #16	48X #20
Service Rating	I		I		I	

Contact Legend
 #22D • #20 ⊖ #16 ⊕
 #12 ⊖ #10 ⊙

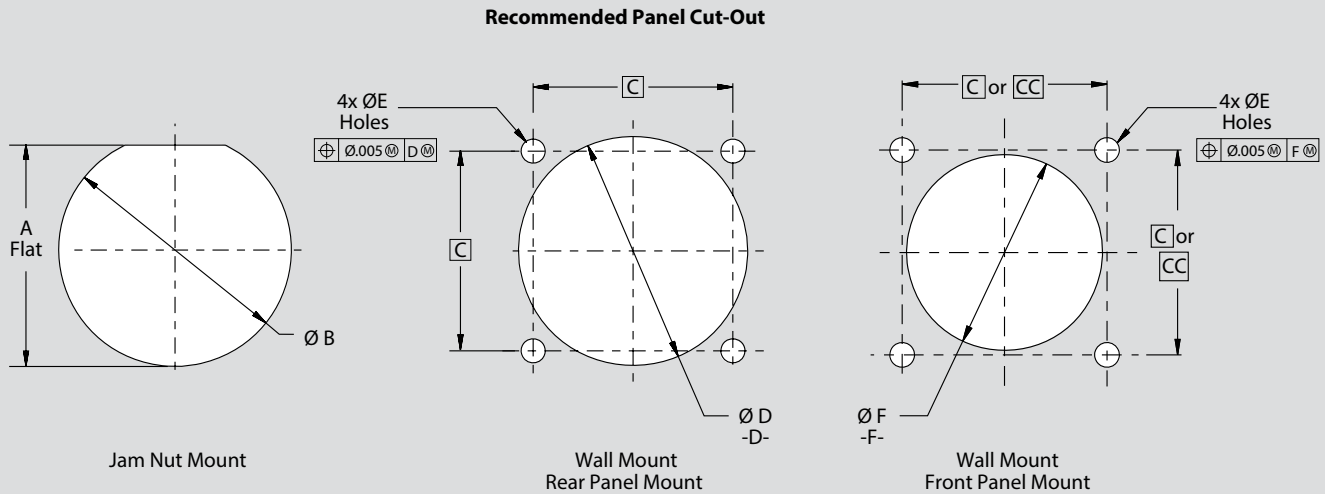


Insert Arrangement	25-11		25-24		25-43	
No. of Contacts and Size	9X #10	2x #20	12X #12	12X #16	20X #16	23X #20
Service Rating	N		I		I	

Recommended panel cut-out Dimensions

A

RECOMMENDED PANEL CUT-OUT

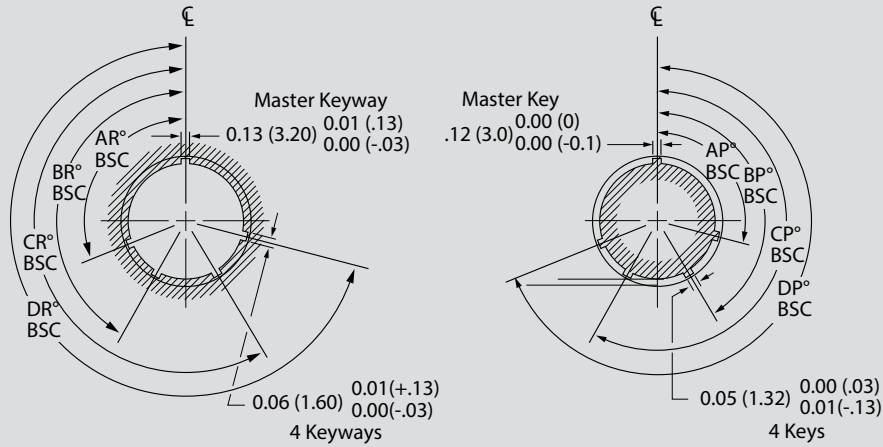


Panel Cut-Out Dimensions								
Shell Size Code	Shell Size	Jam Nut Mount		Wall Mount				
		A Flat	B Dia	C BSC	CC BSC	D Dia Min	E Dia Flange Holes	F Dia Min
A	9	.661 (16.79) .654 (16.61)	.703 (17.58) .693 (17.60)	.719 (18.26)	.594 (15.09)	.656 (16.66)	.133 (3.38) .123 (3.12)	.516 (13.12)
B	11	.771 (19.58) .761 (19.33)	.835 (21.21) .825 (20.96)	.812 (20.62)	.719 (18.26)	.796 (20.22)		.625 (15.88)
C	13	.955 (24.26) .945 (24.00)	1.020 (25.91) 1.010 (25.65)	.906 (23.01)	.812 (20.62)	.922 (23.42)		.750 (19.05)
D	15	1.085 (27.56) 1.075 (27.31)	1.145 (29.08) 1.135 (28.83)	.969 (24.61)	.906 (23.01)	1.047 (26.59)		.906 (23.01)
E	17	1.210 (30.73) 1.200 (30.48)	1.270 (32.26) 1.260 (32.00)	1.062 (26.97)	.969 (24.61)	1.219 (30.96)		1.016 (25.81)
F	19	1.335 (33.91) 1.325 (33.66)	1.395 (35.43) 1.385 (35.18)	1.156 (29.36)	1.062 (26.97)	1.297 (32.94)		1.141 (28.98)
G	21	1.460 (37.08) 1.450 (36.83)	1.520 (38.61) 1.510 (38.35)	1.250 (31.75)	1.156 (29.36)	1.422 (36.12)		1.266 (32.16)
H	23	1.585 (40.26) 1.575 (40.01)	1.645 (41.78) 1.635 (41.53)	1.375 (34.93)	1.250 (31.75)	1.547 (39.29)	.159 (4.04) .149 (3.78)	1.375 (34.93)
J	25	1.710 (43.43) 1.700 (43.18)	1.770 (44.96) 1.760 (44.70)	1.500 (38.10)	1.375 (34.92)	1.672 (42.47)	.155 (3.94) .145 (3.68)	1.484 (37.69)

Alternate key polarization Dimensions

ALTERNATE POLARIZATIONS IAW MIL-DTL-38999 SERIES III

A



**Alternate Keyway,
Receptacles**

**Alternate Key,
Plugs**

Series III Alternate Key and Keyway Polarization					
Shell Size	Key and Keyway Code	AR° or AP° BSC	BR° or BP° BSC	CR° or CP° BSC	DR° or DP° BSC
9	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
	E	91	131	197	240
11 13 15	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C	53	156	220	255
	D	119	146	176	298
	E	51	141	184	242
17 19 21 23 25	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272

Glenair's Universal Key is intermateable with all MIL-DTL-38999 Series III polarizations.

**SERIES 23
ENVIRONMENTAL
CONNECTORS**



SuperNine®

Advanced-performance environmental connectors for mission-critical applications — from ground vehicles to space vehicles and everything in-between.



The SuperNine environmental series offers the broadest range of performance enhancements ever seen in a commercial connector series built in accordance with MIL-DTL-38999 Series III, including high-durability anti-decoupling technology, plus 1500 mating cycle contacts and integrated shield termination technology. SuperNine also offers the industry's broadest selection of COTS PC tail-equipped connectors. IP68 in the mated-condition (10 meters, two hours) plus special space-grade blind-mate and zero extraction force solutions lead the industry for performance and reliability. Key features include:

- Plug connectors with high durability plating and banding porch
- Crimp and PC receptacles with high-durability contacts
- Five different designs of printed circuit board connector standoffs
- MIL-STD-1560 as well as high-density insert arrangements
- High-durability vibration and shock performance IAW Bell Helicopter and Boeing aircraft specifications

Rev. 05.31.18



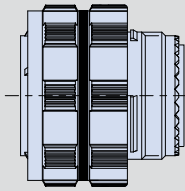
Glenair, Inc.
1211 Air Way
Glendale, CA 91201-2497
818-247-6000
sales@glenair.com
www.glenair.com

Product selection guide
MIL-DTL-38999 Series III type

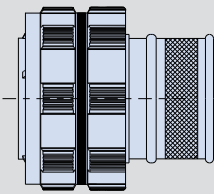
B

SuperNine®

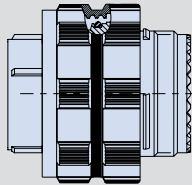
Features	B-3
Material/finish and Panel Cut-out Dimensions	B-4
Performance Summary and Specifications	B-5



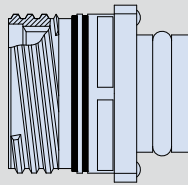
233-205 **Crimp Contact Plug and Receptacle Connectors** B-8
High-durability solutions with accessory threads.



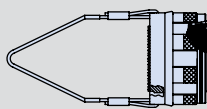
233-206 **Crimp Contact Plug and Receptacle Connectors** B-12
High-durability solutions with boot groove and banding porch.



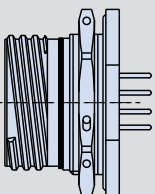
233-215 **Piston Sealed, Crimp Contact Plug and Receptacle Connectors** B-16
1000 PSI high pressure connectors with boot groove and banding porch or accessory thread options



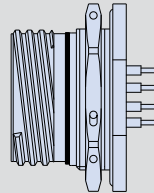
233PS215 **Panel Sealed Wall Mount Receptacle** B-20
1000 PSI high pressure for improved panel sealing (for use with 233-215 plug)



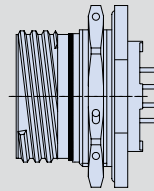
233-216 **Quick-Release Connectors** B-22
Quick-release lanyard plug with EMI spring.



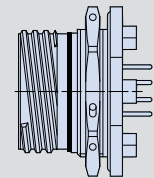
233-207 **Flush Flange PCB Receptacles**
Wall mount B-24
Jam-nut mount B-26



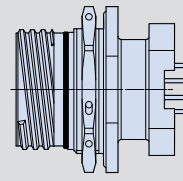
233-208 **Stepped-Contact PCB Receptacles**
Wall mount B-28
Jam-nut B-30



233-209 **Washout-Standoff PCB Receptacles**
Wall mount B-32
Jam-nut B-34



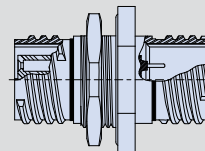
233-210 **Threaded-Standoff PCB Receptacles**
Wall mount B-36
Jam-nut B-38



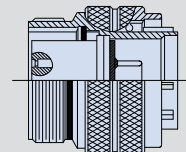
233-211 **Dual-Flange Threaded-Standoff PCB Receptacles**
Wall mount B-40
Jam-nut B-42



Sav-Con® **Connector Savers** B-44
Overview



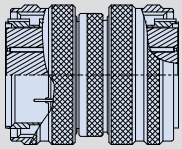
233-212 **Connector Saver, Feed-thru**
Wall mount, feed-thru B-46
Jam-nut mount, feed-thru B-48
Pin-socket, pin-pin, and socket-socket contact options.



233-213 **Connector Saver, In-line** B-50
Pin/pin and socket/socket contact options available.

Product Selection Guide
MIL-DTL-38999 Series III type

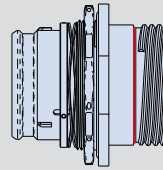
B



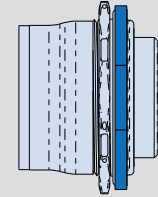
233-214 B-51
Connector Saver, In-line, plug-plug
Independent alternate polarizations. Pin/pin and socket/socket contact options available.

SuperNine® PWM

Features B-52
Performance Specifications B-53
Contacts B-56
Crimp Tools B-57
TurboFlex® Aerospace-Grade Power Cable B-58



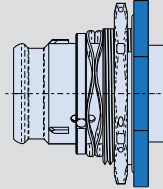
253-018 B-68
Blind-Mate Plug
Feed-thru B-68
Jam-nut mount, blind-mate plug to 38999 type mating thread or blind-mate plug to 38999 type mating plug



253-019 B-70
Blind-Mate Receptacle
Jam-nut mount B-70
Rack and panel receptacle with crimp removable contacts



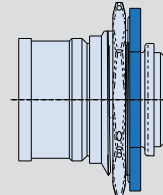
233-230-G6 B-54
High-Voltage Connectors
In-line Plug



253-031 B-72
Blind-Mate Plug
Jam-nut mount B-72
Receptacle with crimp removable contacts and kick-off spring



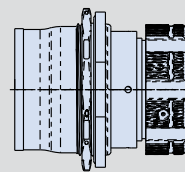
233-230-00 B-55
High-Voltage Connectors
Square Flange, Receptacle



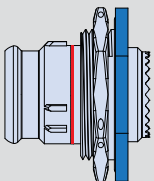
253-032 B-74
Blind-Mate Receptacle
Jam-nut mount B-74
Receptacle with crimp removable contacts and kick-off spring



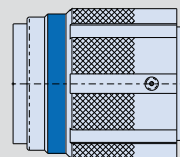
Space-Grade Blind-Mate Connectors
Outgassing and Screening Guidelines B-60
Blind-Mate Features B-62



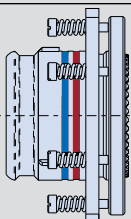
253-033 B-76
Blind-Mate, Feed-thru
Jam-nut mount B-76
Fixed mount receptacle to 38999 type plug mating interface with crimp contacts



253-014 Plug and -015 Receptacle, Blind-mate B-64
Jam-nut mount B-64
Float mount solution with crimp contacts



253-025 B-78
Blind-Mate, test mate Connector
In-line B-78
Test mate receptacle connector



253-016 and -017 Blind-Mate B-66
Plug and receptacle B-66
Fixed mount plug with spring assist (ZSF). Float mount, wall mount receptacle with adjustable separation force. Crimp contacts.

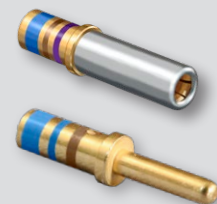
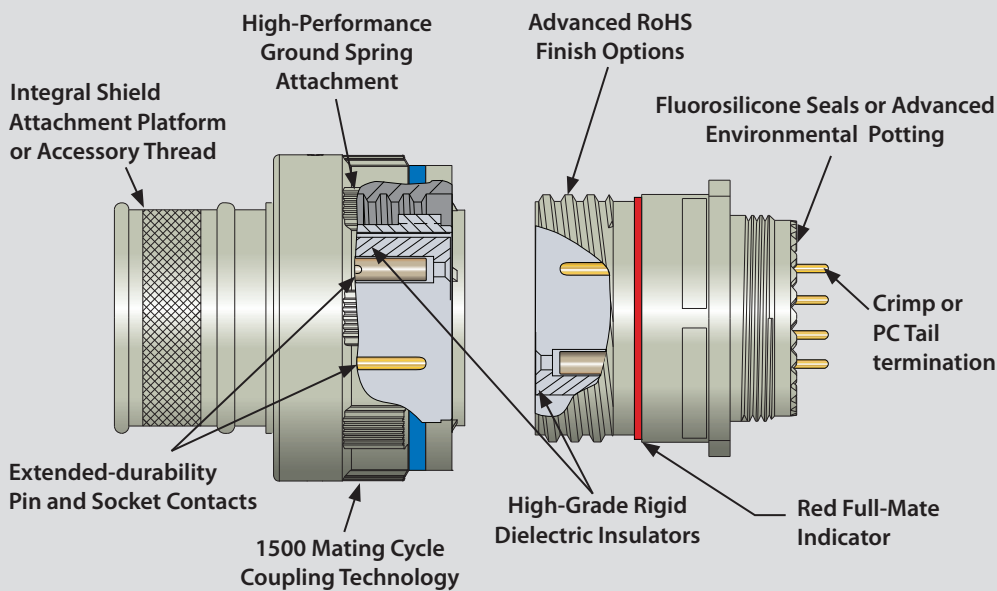


ENVIRONMENTAL SERIES

SuperNine®

The environmental class of the Glenair Series 23 SuperNine® includes IP68 (mated condition) MIL-DTL-38999, Series III crimp plugs and receptacles for cable and I/O applications, plus the interconnect industry's most advanced range of PCB termination receptacles, connector savers and bulkhead feed-thrus. High performance options include extended durability contacts, integrated banding capability, high-density insert arrangements, and more. Rugged ratcheted coupling technology delivers reliable vibration and shock performance IAW the most stringent industry specifications. Insert arrangements are in accordance with MIL-STD-1560 and include special high-density arrangements.

- Integrated band porch
- Extended-durability contacts, finish and coupling nut: 1500 cycles
- Standard plus high-density contact arrangements
- Integrated EMI/RFI ground spring
- Extensive line of PC tail configurations with superior sealing
- Advanced RoHS compliant finish solutions
- IP68 in mated condition (10 meters, two hours)
- Available transition zone piston seal versions



850-006 and 850-007 Extended-duty socket and pin crimp contacts

SuperNine® Environmental connectors

Material & finish and panel cut-out dimensions

MIL-DTL-38999 Series III type



SUMMARY OF MATERIALS AND SPECIFICATIONS (see performance spec for complete information)

Shell Type and Sizes

- Shell Type – D38999 Series III Type, sizes 9 through 25

Electrical Specifications:

- Operating Voltage Rating – 400 to 1000 Volts VAC
- Operating Current Rating – 5 to 46 Amps

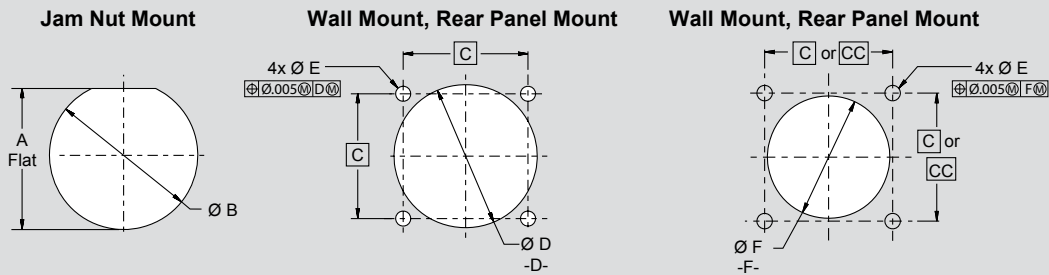
Environmental / Mechanical Performance

- Sealing – IP68 (crimp series, mated with backshell)
- Sealing – IP67 (fixed PC tail IP67 open face receptacle)
- Flammability Toxicity – FAR25 compliant low smoke, zero halogen
- Leak Rate: connectors with fixed PC tail contacts < 1 x 10⁻⁴ ccHe/sec in the unmated condition
- Operating Temperature Range – -65°C to +200°C (finish dependant)
- Mechanical Shock and Vibration – 43.9 g's @ 200°C, 3 axis, 300 Hz/300 g's
- Accessory – banding porch or thread
- Durability (Mating Cycles) – up to 1500
- Outgassing - See space information in this section

Material and Finish				
38999 Class Equiv.	Sym	Material	Finish Description	RoHS
F	ME	Aluminum	Electroless nickel	<input checked="" type="checkbox"/>
T	MT		Ni-PTFE 500 hour nickel fluorocarbon polymer	<input checked="" type="checkbox"/>
W	NF		Cadmium O.D. over electroless nickel	<input type="checkbox"/>
Z	ZR		Black zinc-nickel over electroless nickel	<input checked="" type="checkbox"/>
N/A	T0	Titanium	Natural, unplated	<input checked="" type="checkbox"/>
N/A	TP3		Electro-deposited nickel	<input checked="" type="checkbox"/>
K	Z1	Stainless Steel	Passivate	<input checked="" type="checkbox"/>
L	ZL		Electro-deposited nickel	<input checked="" type="checkbox"/>
N/A	AB	Marine Bronze	Unplated	<input checked="" type="checkbox"/>

Additional material/finish options available, consult factory

PANEL CUT-OUT DIMENSIONS



Recommended Panel Cut-Out Dimensions								
Shell Size Code	Shell Size	Jam Nut Mount		Wall Mount				
		A Flat	B Dia	C BSC	CC BSC	D Dia Min	E Dia Flange Holes	F Dia Min
A	9	.661/.654 (16.80/16.60)	.703/.693 (17.85/17.60)	.719 (18.26)	.594 (15.09)	.656 (16.66)	.133/.123 (3.38/3.12)	.516 (13.12)
B	11	.771/.761 (19.58/19.34)	.835/.825 (21.21/20.96)	.812 (20.62)	.719 (18.26)	.796 (20.22)		.625 (15.88)
C	13	.955/.945 (24.26/24.01)	1.020/1.010 (25.90/25.65)	.906 (23.01)	.812 (20.62)	.922 (23.42)		.750 (19.05)
D	15	1.085/1.075 (27.56/27.31)	1.145/1.135 (29.08/28.83)	.969 (24.61)	.906 (23.01)	1.047 (26.59)		.906 (23.01)
E	17	1.210/1.200 (30.73/30.48)	1.270/1.260 (32.26/32.00)	1.062 (26.97)	.969 (24.61)	1.219 (30.96)		1.016 (25.81)
F	19	1.335/1.325 (33.91/33.66)	1.395/1.385 (35.43/35.18)	1.156 (29.36)	1.062 (26.97)	1.297 (32.94)		1.141 (28.98)
G	21	1.460/1.450 (37.08/36.83)	1.520/1.510 (38.60/38.35)	1.250 (31.75)	1.156 (29.36)	1.422 (36.12)		1.266 (32.16)
H	23	1.585/1.575 (40.26/40.01)	1.645/1.635 (41.78/41.53)	1.375 (34.93)	1.250 (31.75)	1.547 (39.29)		.159/.149 (4.04/3.78)
J	25	1.710/1.700 (43.43/43.18)	1.770/1.760 (44.99/44.74)	1.500 (38.10)	1.375 (34.92)	1.672 (42.47)	.155/.145 (3.94/3.68)	1.484 (37.69)

SuperNine® Environmental connectors

Performance specification summary

MIL-DTL-38999 Series III type



B

GENERAL SUMMARY OF SUPERNINE® PERFORMANCE

SuperNine® is a high-performance connector family designed for cable-to-panel, I/O and inline, applications in military aerospace and other demanding situations. Environmental class versions—with high-density insert arrangements (up to 187 contacts)—are available with crimp removable contacts, PC tails, and solid contact feed-thrus and connector savers. Glenair SuperNine® is a broad product family of MIL-DTL-38999 Series III type connectors including Class G space-grade designs, lanyard-release connectors and specialty metal cable plugs and receptacles, as well as metal-insert (ground plane) configurations for shielded contact equipped products. This table describes the most basic attributes for environmental class products supplied by Glenair.

Series Description	Scoop-Proof, Triple Start, Self-Locking
Supported Contact Types and Gauges	8, 12, 16, 20, and 22D gauge contacts, standard density and 23 gauge high density arrangements; 1 to 187 contacts. Crimp, solder and PCB tails
Coupling/Mating Design	Triple-start threaded coupling design, rapid advance, self-locking and full-mate indicator, keyed
EMI Shielding	Shell to shell bottoming, grounding fingers, conductive finish and thick shell wall cross-sections provide effective EMI shielding to 65 dB minimum up to 10 GHz
Vibration and Shock	Excellent resistance to vibration and shock with no electrical discontinuity and no disengagement of the mated connectors per MIL-DTL-38999 (paragraph 3.27 & 3.28); Qualification to Bell 299-100-829 vibration and mating durability (Glenair Test Report GT-18-106)
Mating Speed	360 ° or one full turn to full mate
Materials	Aluminum, CRES and Titanium Shells, Fluorosilicone/Silicone Blend Seals, Beryllium Copper Alloy, Gold Plated Contacts
Durability	500 to 1500 mating cycles, see individual data sheets for appropriate value
IP Rating	Receptacles with non-removable PC tail contacts IP67; Removable contacts in mated condition, IP68
Outgassing	See space-grade guide in this section

Performance Specifications, IAW MIL-DTL-38999 Series III REV. L									
Test	Test Requirement								
Altitude	Service Rating M	Service Rating M		Service Rating N		Service Rating I		Service Rating II	
		Mated	Unmated	Mated	Unmated	Mated	Unmated	Mated	Unmated
Dielectric Withstanding Voltage	Sea level	1300	1300	1000	1000	1800	1800	2300	2300
	50,000 feet	800	550	600	400	1000	600	1000	800
	70,000 feet	800	350	600	260	1000	400	1000	500
	100,000 feet	800	200	600	200	1000	200	1000	200
Note: The establishment of electrical safety factors is left entirely to the designer, as they are in the position to know exactly what peak voltages, switching currents, transients, etc. can be expected in a particular circuit.									
Insulation Resistance	Unmated connectors shall be tested as specified in test method EIA-364-21 5000 megohms min. at 25° C								

Performance specifications
MIL-DTL-38999 Series III type

B

Performance Specifications, IAW MIL-DTL-38999 Series III REV. L						
Test	Test Requirement					
Shielding Effectiveness	Frequency (MHz)		Leakage Attenuation Minimum (dB)		Frequency (MHz)	
			Finishes L, F	Finishes T, W, Z		
	100		90	90	1,500	
	200		88	88	2,000	
	300		88	88	3,000	
	400		87	87	4,000	
	800		85	85	6,000	
	1,000		85	85	10,000	
Supported Wire Size	Contact Size		Wire Gauge		Contact Size	
	23		#22 - #28		16	
	22D		#22 - #28		12	
	20		#20 - #24		8	
Mating / Unmating Forces	Coupling torque for mating and unmating of the counterpart connectors and protective covers					
	Shell size	Maximum engagement and disengagement		Minimum disengagement		
		Pound inch	Newton meters	Pound inch	Newton meters	
	9	8	0.9	2	0.2	
	11	12	1.4	2	0.2	
	13	16	1.8	2	0.2	
	15	20	2.3	3	0.3	
	17	24	2.7	3	0.3	
	19	28	3.2	3	0.3	
	21	32	3.6	5	0.6	
23	36	4.1	5	0.6		
25	40	4.6	5	0.6		
Physical Shock	No loosening of parts, cracking or other deleterious results hindering further part operation after 300 G's in each of 3 mutually perpendicular planes.					
Fluid Compatibility	Designed to function in all fluids encountered in any modern military or aerospace environment.					
High Impact Shock	Mated connectors, wired with MIL-C-915/60 or /63 cable and equipped with straight environmentally sealed backshells, withstand high impact shock per MIL-S-901.					
Vibration	No electrical discontinuity and no disengagement of the mated connectors, backing off of the coupling mechanism, evidence of cracking, breaking, or loosening of parts. See Glenair Test Report GT-18-106 for vibration profiles IAW Bell 299-100-829.					
Fungus	Materials used in the construction of these connectors shall be fungus inert per certification of method 508.4 of MIL-STD-810.					
Corrosion	When tested in accordance with EIA-364-26, meets appropriate electrical and mechanical requirements and shows no exposure of base metal.					

SuperNine® Environmental connectors

Performance specifications

MIL-DTL-38999 Series III type



B

Performance Specifications, IAW MIL-DTL-38999 Series III REV. L				
Test	Test Requirement			
Durability	No electrical or mechanical defects after 1500 cycles of engagement and disengagement with appropriate finish, unless otherwise specified.			
Insert Retention	Unmated connectors shall retain their inserts in their proper location in the shell and there shall be no evidence of cracking, breaking, separation from the shell, or loosening of parts. 100 ±5 psi, 25 lb min force.			
Crimp Contact Retention	The axial displacement of the contact shall not exceed .012 inch (0.30 mm). No damage to contacts or inserts shall result.			
Current Rating	Contact Size	Maximum Amps Crimp Contact	Contact Size	Maximum Amps Crimp Contact
		Environmental		Environmental
	23	5	16	13
	22D	5	12	23
	20	7.5	8	46
Finish/Plating	Finish/Plating	Operating Temperature Range	Corrosion Resistance	Shell to Shell Conductivity
	Electroless Nickel (ME)	-65°C to +200°C	48 hrs	1.0 mv max.
	PTFE/Nickel (MT)	-65°C to +175°C	500 hrs	2.5 mv max.
	OD Cadmium (NF)	-65°C to +175°C	500 hrs	2.5 mv max.
	Black Zink-Nickel (ZR)	-65°C to +175°C	500 hrs	2.5 mv max.

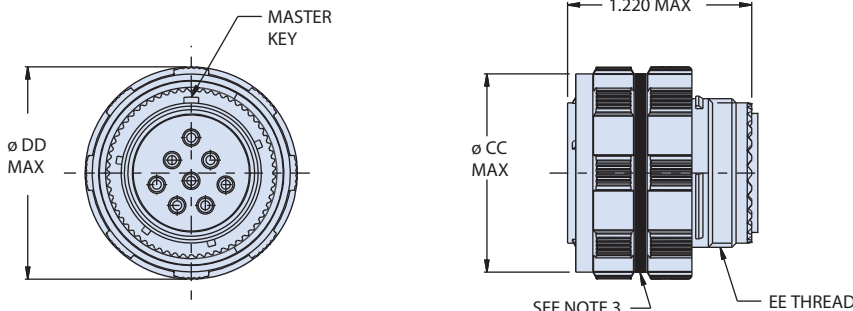
233-205 Connector with accessory threads, crimp MIL-DTL-38999 Series III type

B

Part Number Development									
Sample Part Number	233-205				-G6	MT	17-8	P	N
Series / Basic Part No.	SuperNine crimp contact wire harness connectors								
Connector Style*	G6 = Plug, with EMI Spring 05 = Receptacle, In-Line 07 = Receptacle, Jam Nut 00 = Receptacle, Wall Mount with Slotted Holes HS = Receptacle, Wall Mount with Standard Helicoil HM = Receptacle, Wall Mount with Metric Helicoil CS = Receptacle, Wall Mount with Standard Clinch-Nuts CM = Receptacle, Wall Mount with Metric Clinch-Nuts								
Finish	NF = Aluminum alloy/Cadmium Olive Drab ME = Aluminum alloy/Electroless Nickel			MT = Aluminum alloy/Nickel PTFE ZR = Aluminum alloy/Black Zinc Nickel					
Shell Size-Insert Arrangement*	Per MIL-STD-1560								
Contact Type	A = Less pin contacts P = Pin, high durability 1500 cycles H = Pin, paladium nickel			B = Less socket contacts S = Socket, high durability 1500 cycles J = Socket, paladium nickel					
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)								

*Refer to Section A for complete details

G6 - PLUG WITH ACCESSORY THREADS



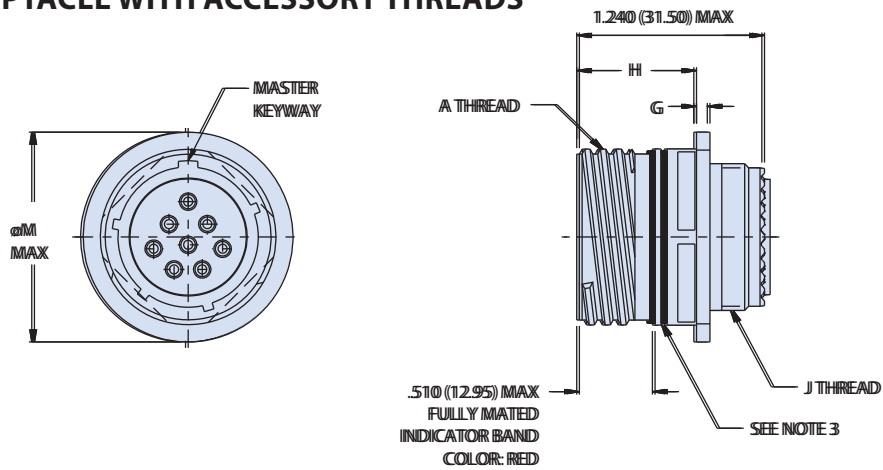
Plug Dimensions				
Shell Size Code	Shell Size	ØCC Max	ØDD ⁷ Max	EE Thread
A	09	.811 (20.60)	.858 (21.79)	M12 X 1.0-6g 0.100R
B	11	.929 (23.60)	.984 (24.99)	M15 X 1.0-6g 0.100R
C	13	1.110 (28.19)	1.157 (29.39)	M18 X 1.0-6g 0.100R
D	15	1.232 (31.29)	1.280 (32.51)	M22 X 1.0-6g 0.100R
E	17	1.358 (34.49)	1.406 (35.71)	M25 X 1.0-6g 0.100R
F	19	1.469 (37.31)	1.516 (38.51)	M28 X 1.0-6g 0.100R
G	21	1.594 (40.49)	1.642 (41.71)	M31 X 1.0-6g 0.100R
H	23	1.720 (43.69)	1.768 (44.91)	M34 X 1.0-6g 0.100R
J	25	1.843 (46.81)	1.890 (48.01)	M37 X 1.0-6g 0.100R

NOTES

- 233-205 is designed to meet or exceed the mechanical, electrical, environmental and dimensional requirements of D38999/20, /24 & /26. Except as shown and/or noted.
- Insert arrangements IAW MIL-STD-1560, plus Glenair HD shielded contact specials.
- Blue color band indicates rear release retention system.
- Connector is supplied with contacts (including spares), insertion/removal tool and sealing plugs.
- Dimensions in inches (millimeters) are subject to change without notice.
- Consult factory for additional information.
- Front panel mount only
- Material/finish:
 - Shell, barrel, coupling nut jam nut - see part number development
 - ratchet ring, detent spring: stainless steel/passivated
 - grounding spring: BeCu alloy/electroless nickel
 - insulator: high grade rigid dielectric/ n.a.
 - Seals, grommet: fluorosilicone blend/ N/A.
 - Contacts: copper alloy/see part number development

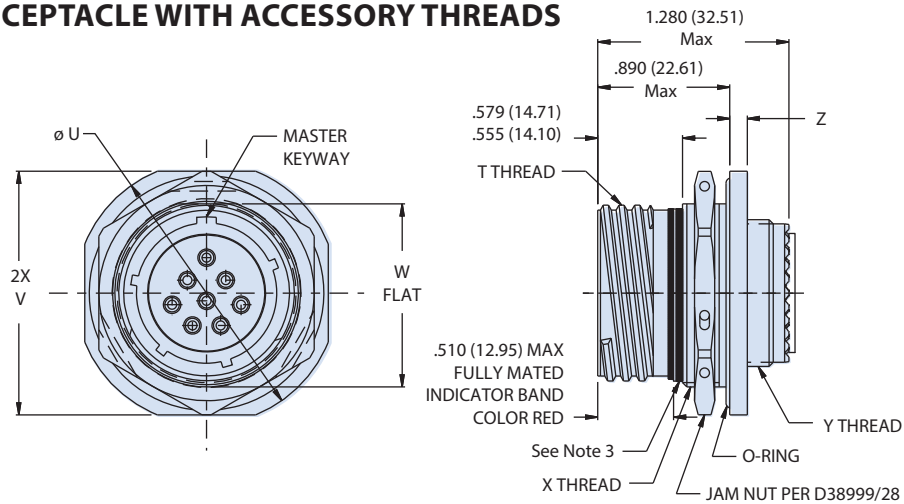
233-205 Connector with accessory threads, crimp MIL-DTL-38999 Series III type

05 - IN-LINE RECEPTACLE WITH ACCESSORY THREADS

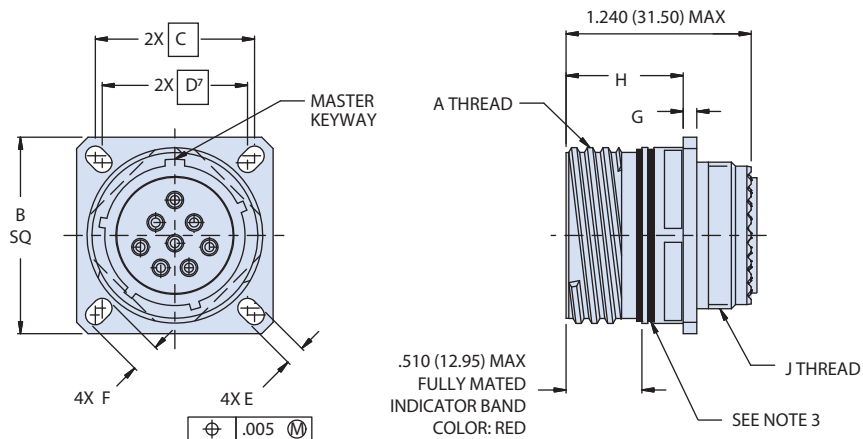


B

07 - JAM NUT RECEPTACLE WITH ACCESSORY THREADS



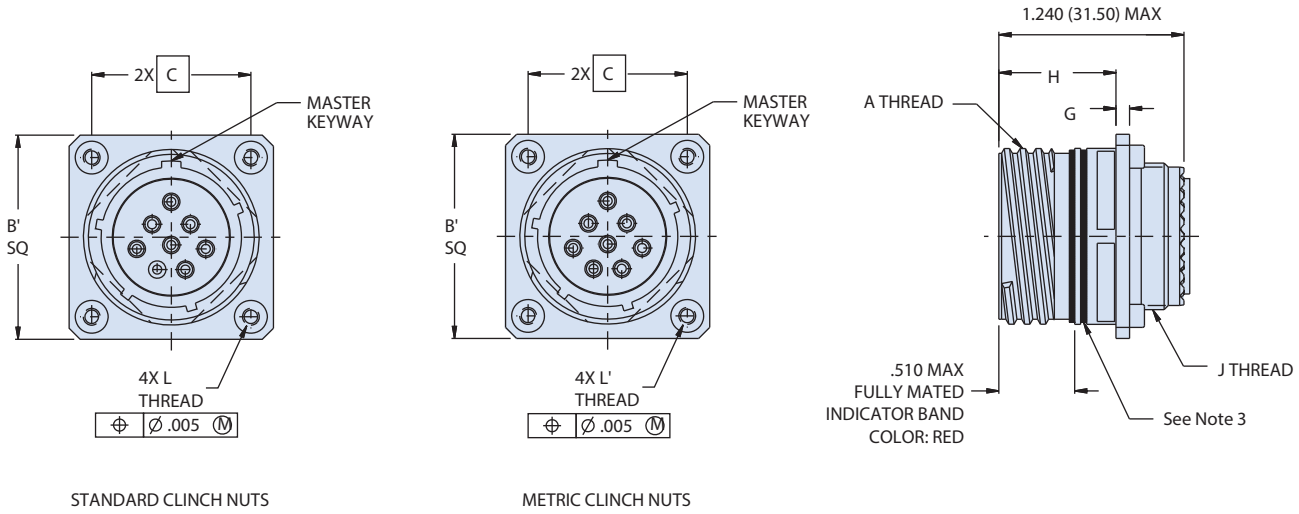
00 - WALL MOUNT RECEPTACLE WITH ACCESSORY THREADS AND SLOTTED HOLES



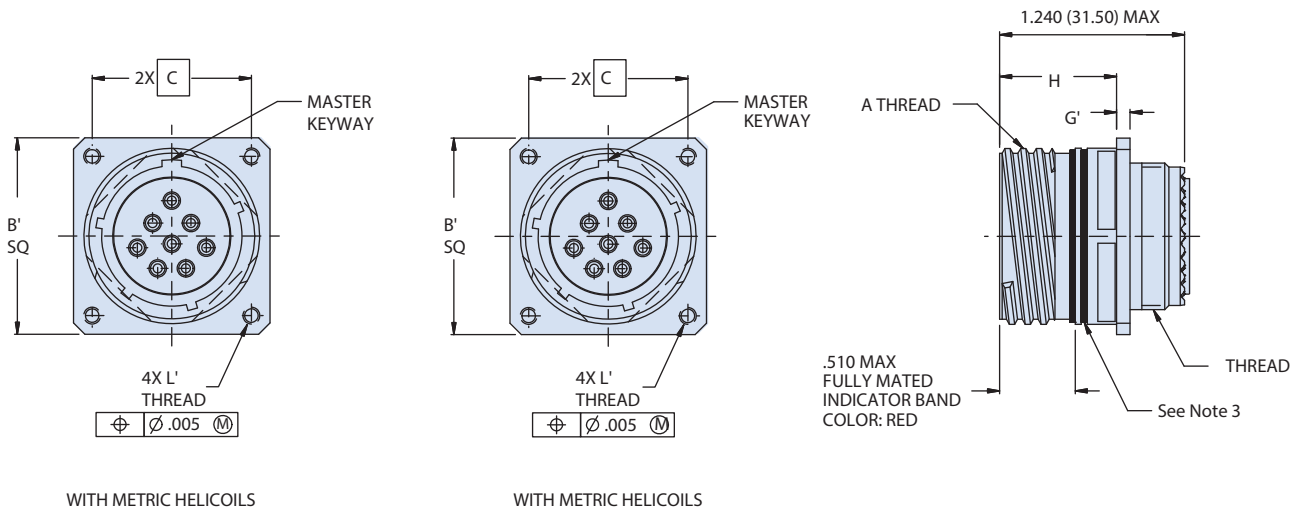
233-205 Connector with accessory threads, crimp MIL-DTL-38999 Series III type

CS AND CM - WALL MOUNT RECEPTACLE WITH METRIC OR STANDARD CLINCH NUTS

B



HS AND HM - WALL MOUNT RECEPTACLE WITH METRIC OR STANDARD HELICOILS



233-205 Connector with accessory threads, crimp MIL-DTL-38999 Series III type

B

Wall Mount and In-line Dimensions																	
Shell Size Code	Shell Size	A Thread -1P-.3L- TS-2A	B Sq	B'	C Bsc	D Bsc*	E	F	G	G'	H	J Thread	L Thread	L' Thread	ØM Max		
A	9	.6250	.949 (24.10) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)		.224 (5.69) .208 (5.28)				M12 X 1.0-6g 0.100R	.112-40 UNC	M3X 0.5	.858 (21.79)		
B	11	.7500	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)		.202 (5.13)				M15 X 1.0-6g 0.100R			.984 (24.99)		
C	13	.8750	1.138 (28.91) 1.114 (28.30)	1.281 (32.54) 1.241 (31.52)	.906 (23.01)	.812 (20.62)		.186 (4.72)	.098 (2.49)	.179 (4.55)	.820 (20.83)	M18 X 1.0-6g 0.100R			1.157 (29.39)		
D	15	1.0000	1.232 (31.29) 1.208 (30.68)	1.344 (34.14) 1.304 (33.12)	.969 (24.61)	.906 (23.01)	.136 (3.45) .120 (3.05)	.181 (4.60) .165 (4.19)	.083 (2.11)	.140 (3.56)	.771 (19.58)	M22 X 1.0-6g 0.100R			1.280 (32.51)		
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)		.202 (5.13)				M25 X 1.0-6g 0.100R			1.406 (35.71)		
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)		.186 (4.72)				M28 X 1.0-6g 0.100R			1.516 (38.51)		
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)			.126 (3.20)	.190 (4.83)	.790 (20.07)	M31 X 1.0-6g 0.100R			1.642 (41.71)		
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)	.162 (4.11)	.250 (6.35)	.083 (2.11)	.170 (4.32)	.741 (18.82)	M34 X 1.0-6g 0.100R			.138-32 UNC	M4X0.7	1.768 (44.91)
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)	.146 (3.71)	.234 (5.94)				M37 X 1.0-6g 0.100R					1.890 (48.01)

* Front panel mount only

Jam Nut Dimensions								
Shell Size Code	Shell Size	T Thread	Ø U	V	W Flat	X Thread	Y Thread	Z
A	09	.6250-1P-.3L-TS-2A	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17 X 1.0-6g 0.100R	M12 X 1.0-6g 0.100R	0.122 0.083
B	11	.7500-1P-.3L-TS-2A	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20 X 1.0-6g 0.100R	M15 X 1.0-6g 0.100R	
C	13	.8750-1P-.3L-TS-2A	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25 X 1.0-6g 0.100R	M18 X 1.0-6g 0.100R	
D	15	1.0000-1P-.3L-TS-2A	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g 0.100R	M22 X 1.0-6g 0.100R	
E	17	1.1875-1P-.3L-TS-2A	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g 0.100R	M25 X 1.0-6g 0.100R	
F	19	1.2500-1P-.3L-TS-2A	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g 0.100R	M28 X 1.0-6g 0.100R	0.153 0.114
G	21	1.3750-1P-.3L-TS-2A	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g 0.100R	M31 X 1.0-6g 0.100R	
H	23	1.5000-1P-.3L-TS-2A	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g 0.100R	M34 X 1.0-6g 0.100R	
J	25	1.6250-1P-.3L-TS-2A	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44 X 1.0-6g 0.100R	M37 X 1.0-6g 0.100R	

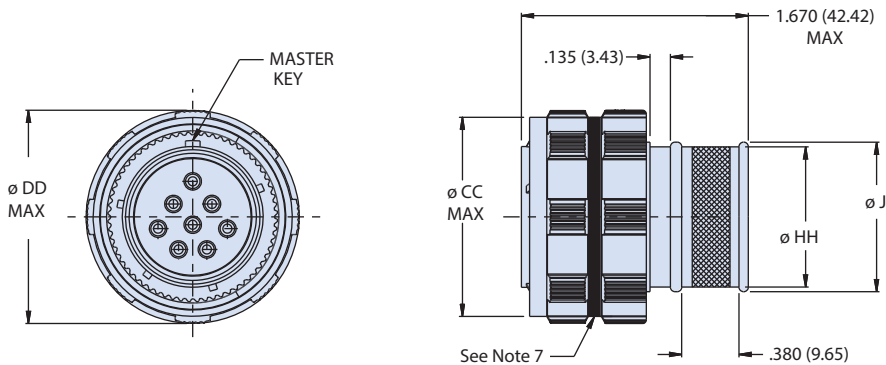
233-206 Connector with integrated banding porch, crimp MIL-DTL-38999 Series III type

B

Part Number Development									
Sample Part Number	233-206				-G6	MT	17-8	P	N
Series / Basic Part No.	SuperNine crimp contact wire harness connectors								
Connector Style*	G6 = Plug, with EMI spring 05 = Receptacle, In-Line 07 = Receptacle, Jam Nut 00 = Receptacle, Wall Mount with Slotted Holes CM = Receptacle, Wall Mount with Metric Clinch Nuts CS = Receptacle, Wall Mount with Standard Clinch Nuts HM = Receptacle, Wall Mount with Metric Helicoils HS = Receptacle, Wall Mount with Standard Helicoils								
Finish	NF = Aluminum alloy/Cadmium Olive Drab ME = Aluminum alloy/Electroless Nickel			MT = Aluminum alloy/Nickel PTFE ZR = Aluminum alloy/Black Zinc Nickel					
Shell Size-Insert Arrangement*	Per MIL-STD-1560								
Contact Type	P = Pin, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles A = Pin Insert, Less Pin Contacts			S = Socket, Gold, 1500 Cycles J = Socket, Pd/Ni, 1500 cycles B = Socket Insert, Less Socket Contacts					
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)								

*Refer to Section A for complete details

G6 - PLUG WITH BANDING PORCH AND BOOT GROOVE



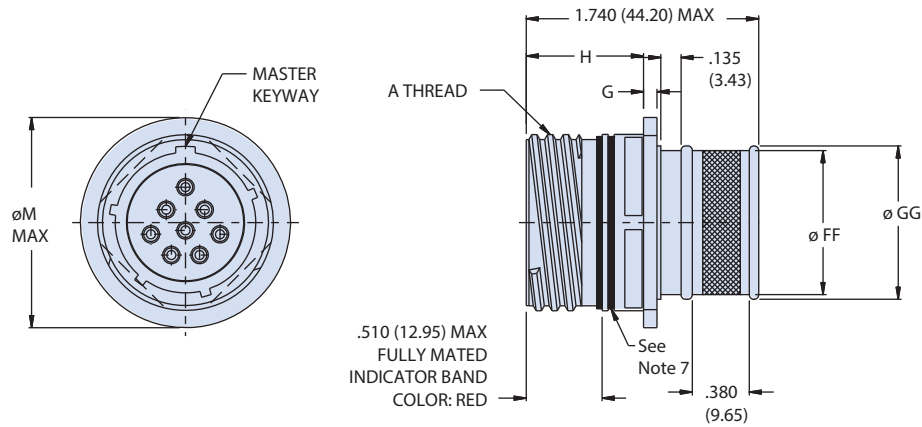
Plug Dimensions			
Shell Size Code	Shell Size	Ø CC Max	Ø DD Max
A	09	.811 (20.60)	.858 (21.79)
B	11	.929 (23.60)	.984 (24.99)
C	13	1.110 (28.19)	1.157 (29.39)
D	15	1.232 (31.29)	1.280 (32.51)
E	17	1.358 (34.49)	1.406 (35.71)
F	19	1.469 (37.31)	1.516 (38.51)
G	21	1.594 (40.49)	1.642 (41.71)
H	23	1.720 (43.69)	1.768 (44.91)
J	25	1.843 (46.81)	1.890 (48.01)

NOTES

- 233-206 is designed to meet or exceed the mechanical, electrical, environmental and dimensional requirements of D38999/20, /24 & /26. Except as shown and/or noted. Connectors mate with any QPL manufacturer's MIL-DTL-38999, Series III connectors having the same shell size, insert arrangement, and polarization
- 233-206 connectors are designed to withstand a minimum of 1500 mating durability cycles when mated to a SuperNine® mating connector and appropriate contacts. Contact finish should be the same for both mating connectors to optimize performance.
- Insert arrangements IAW MIL-STD-1560 arrangements. Contact manufacturer for additional arrangement options.
- Alternate polarization 'U' is a non-standard/non-mil-spec option, allows mating to any QPL manufacturers MIL-DTL-38999 connector, intended for use in testing facilities.
- Connector is supplied with contacts (including spares), insertion/removal tool and sealing plugs.
- Insertion/removal tool and sealing plugs supplied.
- Blue color band indicates rear release retention system.
- Front panel mount only
- Material/finish
 - Shell, barrel, coupling nut jam nut: see part number development table
 - Ratchet Ring, detent spring: stainless steel/passivated
 - Grounding spring: BeCu alloy/electroless nickel
 - Insulator: high grade rigid dielectric/N.A.
 - Seals, grommet: fluorosilicone blend/N.A.
 - Contacts: copper alloy/see part number development table

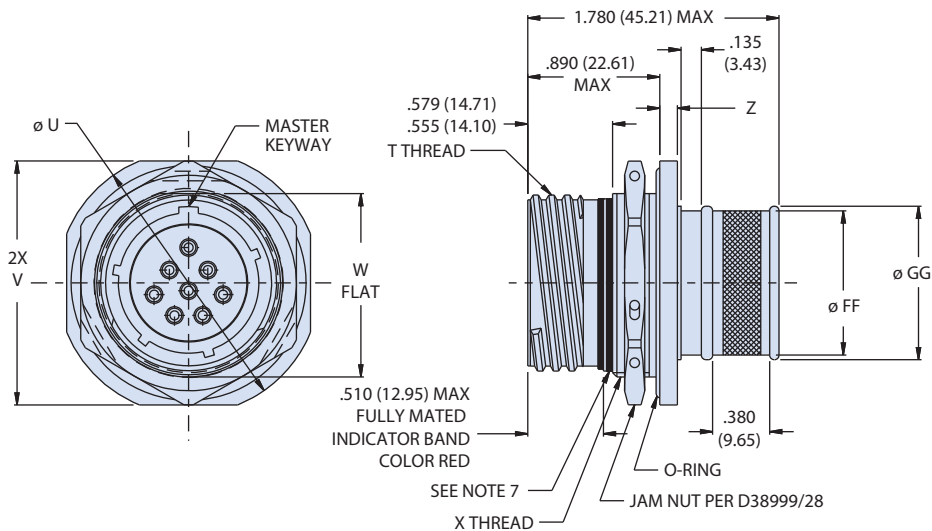
233-206 Connector with integrated banding porch, crimp MIL-DTL-38999 Series III type

05 - IN-LINE RECEPTACLE WITH BANDING PORCH AND BOOT GROOVE



B

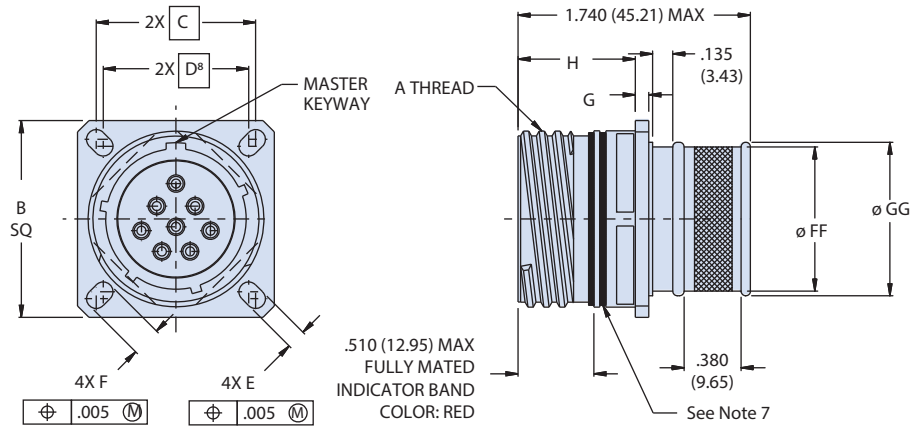
07 - JAM NUT RECEPTACLE WITH BANDING PORCH AND BOOT GROOVE



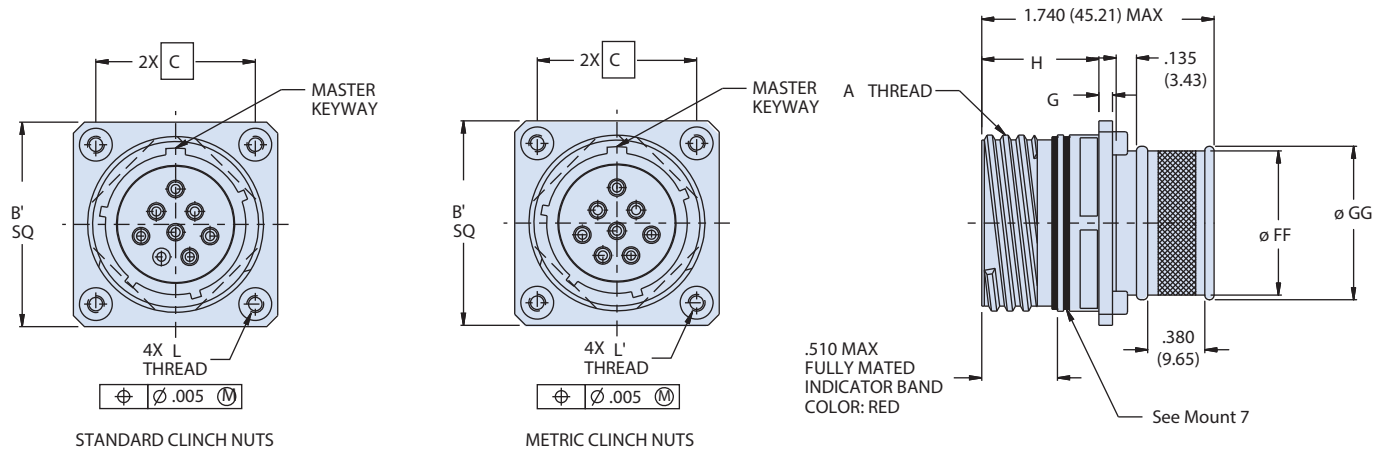
233-206 Connector with integrated banding porch, crimp MIL-DTL-38999 Series III type

B

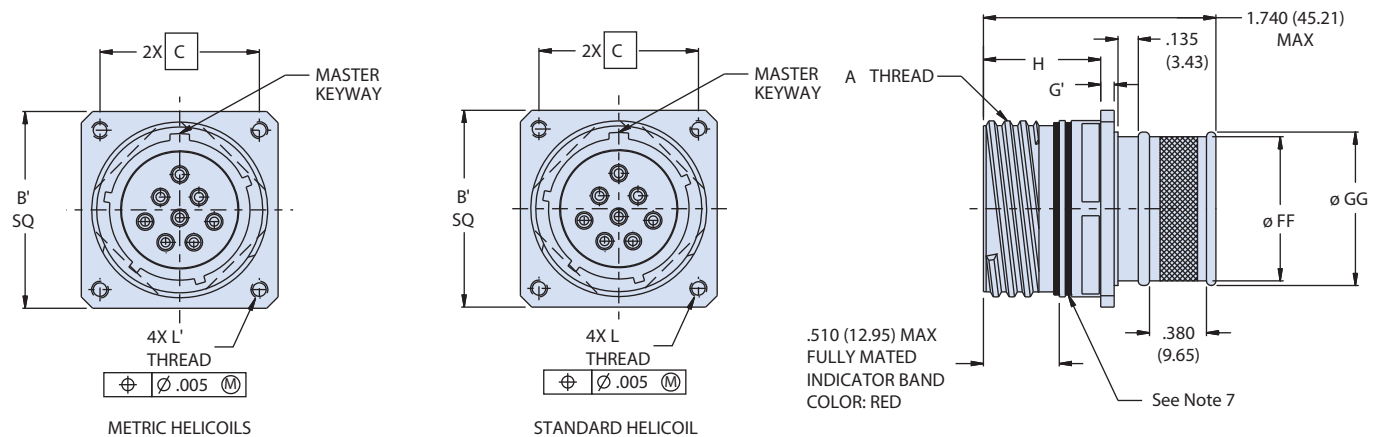
00 - SQUARE FLANGE RECEPTACLE WITH BANDING PORCH AND BOOT GROOVE



CS AND CM - WALL MOUNT RECEPTACLE WITH BANDING PORCH AND BOOT GROOVE



HS AND HM - WALL MOUNT RECEPTACLE WITH BANDING PORCH AND BOOT GROOVE



233-206 Connector with integrated banding porch, crimp MIL-DTL-38999 Series III type

B

Wall Mount and In-Line Dimensions																			
Shell Size Code	Shell Size	A Thread	B Sq	B' Sq	C Bsc	D Bsc ⁸	E	F	G	G'	H	L Thd	L' Thd	Ø M Max					
A	09	.6250-1P-3L-TS-2A	.949 (24.10) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)	.136 (3.45) (3.05)	.224 (5.69) .208 (5.28)	.098 (2.49)	.179 (4.55)	.820 (20.83)	.112-40 UNC-2B	M3X0.5	.875 (22.23)					
B	11	.7500-1P-3L-TS-2A	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)		.202 (5.13)						.994 (25.25)					
C	13	.8750-1P-3L-TS-2A	1.138 (28.91) 1.114 (28.30)	1.281 (32.54) 1.241 (31.52)	.906 (23.01)	.812 (20.62)		.186 (4.72)						1.167 (29.64)					
D	15	1.0000-1P-3L-TS-2A	1.232 (31.29) 1.208 (30.68)	1.344 (34.14) 1.304 (33.12)	.969 (24.61)	.906 (23.01)		.181 (4.60) .165 (4.19)						.083 (2.11)	.140 (3.56)	.771 (19.58)	1.290 (32.77)		
E	17	1.1875-1P-3L-TS-2A	1.323 (33.60) 1.299 (32.99)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)		.202 (5.13) .186 (4.72)						.126 (3.20)	.190 (4.83)	.790 (20.07)	.138-32 UNC-2B	M4X0.7	1.416 (35.97)
F	19	1.2500-1P-3L-TS-2A	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)													1.526 (38.76)
G	21	1.3750-1P-3L-TS-2A	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)		.162 (4.11)						.250 (6.35)	.083 (2.11)	.170 (4.32)	.741 (18.82)	.138-32 UNC-2B	M4X0.7
H	23	1.5000-1P-3L-TS-2A	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)	1.778 (45.16)												
J	25	1.6250-1P-3L-TS-2A	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)	1.900 (48.26)												

Jam Nut Dimensions							
Shell Size Code	Shell Size	T Thread	Ø U	V	W Flat	X Thread	Z
A	09	.6250-1P-3L-TS-2A	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	0.654 (16.61) 0.645 (16.38)	M17 X 1.0-6g 0.100R	0.122 (3.10) 0.083 (2.11)
B	11	.7500-1P-3L-TS-2A	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	0.755 (19.18) 0.745 (18.92)	M20 X 1.0-6g 0.100R	
C	13	.8750-1P-3L-TS-2A	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	0.942 (23.93) 0.932 (23.67)	M25 X 1.0-6g 0.100R	
D	15	1.0000-1P-3L-TS-2A	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g 0.100R	
E	17	1.1875-1P-3L-TS-2A	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g 0.100R*	
F	19	1.2500-1P-3L-TS-2A	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g 0.100R	
G	21	1.3750-1P-3L-TS-2A	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g 0.100R	
H	23	1.5000-1P-3L-TS-2A	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g 0.100R	0.114 (2.90)
J	25	1.6250-1P-3L-TS-2A	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44 X 1.0-6g 0.100R	

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

Integral Backshell Dimensions*					
Shell Size Code	Shell Size	Ø FF	Ø GG	Ø HH	Ø JJ
A	09	.475 (12.07)	.538 (13.67)	.420 (10.67)	.465 (11.81)
B	11	.600 (15.24)	.662 (16.81)	.550 (13.97)	.595 (15.11)
C	13	.700 (17.78)	.762 (19.35)	.670 (17.02)	.715 (18.16)
D	15	.835 (21.21)	.898 (22.81)	.815 (20.70)	.860 (21.84)
E	17	.960 (24.38)	1.022 (25.96)	.945 (24.00)	.990 (25.15)
F	19	1.062 (26.97)	1.125 (28.58)	1.050 (26.67)	1.100 (27.94)
G	21	1.188 (30.18)	1.250 (31.75)	1.170 (29.72)	1.220 (30.99)
H	23	1.275 (32.39)	1.338 (33.99)	1.290 (32.77)	1.340 (34.04)
J	25	1.475 (37.47)	1.538 (39.07)	1.400 (35.56)	1.450 (36.83)

See accessories section for bands and banding tools

233-215 1000 PSI Piston sealed connector, crimp MIL-DTL-38999 Series III type

B

Part Number Development	
Sample Part Number	233-215 - G6 NF 17-8 P T
Series / Basic Part No.	Series 23 SuperNine Standard MIL-DTL-38999 panel mount configuration
Rear Accessory Option	See rear accessory option table
Connector Style*	See Connector Style Table
Finish	NF = Al alloy/Cadmium Olive Drab ME = Al alloy/electroless Nickel AB = Marine Bronze/NA MT = Al alloy/Nickel PTFE ZR = Al alloy/Black Zinc Nickel Z1 = SST, passivate
Shell Size-Insert Arrangement*	Per MIL-STD-1560
Contact Type	P = Pin, gold 1500 cycles A = Less pin contacts H = Pin, Pd/Ni 1500 cycles S = Socket, gold 1500 cycles B = Less socket contacts J = Socket, Pd/Ni 1500 cycles
Alternate Polarization	V, W, X, Y, Z, T = Normal (IAW MIL-DTL-38999 Series III); see key or keyway position tables

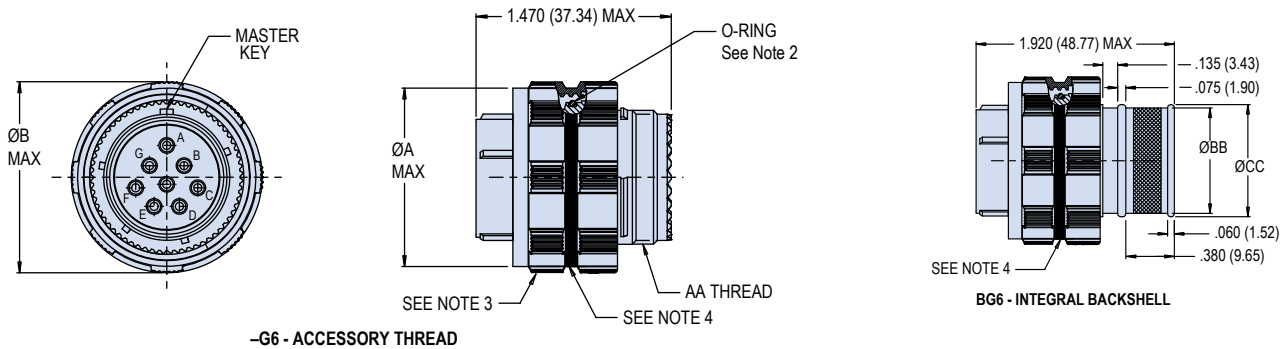
*Refer to Section A for complete details

Rear Accessory Option	
Sym	Description
-	Accessory thread and teeth
B	Integral backshell, boot adaptor

Panel Mount Options	
Sym	Description
-	Standard MIL-DTL-38999 panel mount configuration

Connector Style	
Sym	Description
G6	Plug with EMI spring (D38999/26 type)
05	Inline receptacle
07	Jam nut receptacle (D38999/24 type)
HM	Wall mount receptacle with metric helicoils
HS	Wall mount receptacle with standard helicoils

G6 AND BG6 PISTON SEAL PLUG, ACCESSORY THREAD OR INTEGRAL BACKSHELL



-G6 - ACCESSORY THREAD

BG6 - INTEGRAL BACKSHELL

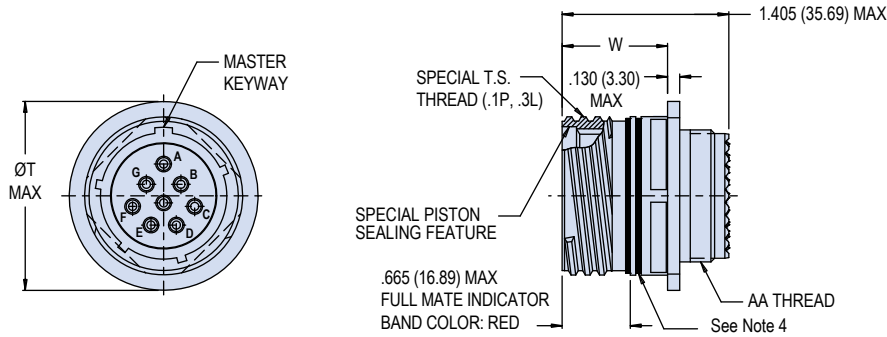
Plug requires a special protective cover to accommodate O-Ring seal. See Part Number 239-200 in accessories, section H of this catalog.

Plug Dimensions			
Shell Size	ØA	ØB	AA Thread
9	.815 (20.70)	.875 (22.23)	M12 X 1.0-6g 0.100R
11	.928 (23.57)	.988 (25.10)	M15 X 1.0-6g 0.100R
13	1.089 (27.66)	1.149 (29.18)	M18 X 1.0-6g 0.100R
15	1.214 (30.84)	1.274 (32.36)	M22 X 1.0-6g 0.100R
17	1.367 (34.72)	1.427 (36.25)	M25 X 1.0-6g 0.100R
19	1.464 (37.19)	1.524 (38.71)	M28 X 1.0-6g 0.100R
21	1.589 (40.36)	1.649 (41.88)	M31 X 1.0-6g 0.100R
23	1.714 (43.54)	1.774 (45.06)	M34 X 1.0-6g 0.100R
25	1.839 (46.71)	1.899 (48.23)	M37 X 1.0-6g 0.100R

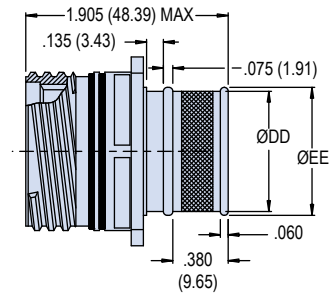
Integral Backshell Dimensions		
Shell Size	ØBB	ØCC
9	.420 (10.67)	.465 (11.81)
11	.550 (13.97)	.595 (15.11)
13	.670 (17.02)	.715 (18.16)
15	.815 (20.70)	.860 (21.84)
17	.945 (24.00)	.990 (25.15)
19	1.050 (26.67)	1.100 (27.94)
21	1.170 (29.72)	1.220 (30.99)
23	1.290 (32.77)	1.340 (34.04)
25	1.400 (35.56)	1.450 (36.83)

233-215 1000 PSI Piston sealed connector, crimp MIL-DTL-38999 Series III type

05 AND B05 PISTON SEAL IN-LINE RECEPTACLE, ACCESSORY THREAD OR INTEGRAL BACKSHELL



05 - ACCESSORY THREAD



B05 - INTEGRAL BACKSHELL

B

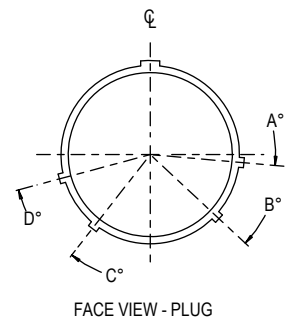
In-line with Integral Backshell Dimensions			
Shell Size	ØT MAX	W	AA THREAD
9	.858 (21.79)	.965 (24.51) .916 (23.27)	M12 X 1.0-6g 0.100R
11	.984 (24.99)		M15 X 1.0-6g 0.100R
13	1.157 (29.39)		M18 X 1.0-6g 0.100R
15	1.280 (32.51)		M22 X 1.0-6g 0.100R
17	1.406 (35.71)		M25 X 1.0-6g 0.100R
19	1.516 (38.51)		M28 X 1.0-6g 0.100R
21	1.642 (41.71)	.935 (23.75) .886 (22.50)	M31 X 1.0-6g 0.100R
23	1.768 (44.91)		M34 X 1.0-6g 0.100R
25	1.890 (48.01)		M37 X 1.0-6g 0.100R

In-line with Integral Backshell Dimensions		
Shell Size	ØDD	ØEE
	In	In
9	.475 (12.07)	.538 (13.67)
11	.600 (15.24)	.662 (16.81)
13	.700 (17.78)	.762 (19.35)
15	.835 (21.21)	.898 (22.81)
17	.960 (24.38)	1.022 (25.96)
19	1.062 (26.97)	1.125 (28.58)
21	1.188 (30.18)	1.250 (31.75)
23	1.275 (32.39)	1.338 (33.99)
25	1.475 (37.47)	1.538 (39.07)

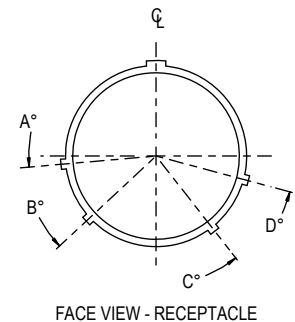
NOTES

- 233-215 is designed to meet the general requirements of D38999/20, /24 & /26 and MIL-STD-1560
 - Receptacles can be installed into standard panel cutouts.
 - Up to IP69K performance
 - Connector accessory threads accept standard backshells
 - Connector accepts standard AS39029 type contacts
 - Connectors cannot be mated to standard MIL-DTL-38999 connectors or protective covers
- 233-215 piston seal interface is rated to 1000 PSI water submersion (2300 FT/700m) when fully mated or protected with 239-200 cover. Cable sealing and panel sealing capability dependent on customer installation
- Use with 233PS215 wall mount receptacle with dual O-ring sealing and tapped hole mounting for improved sealing
- Blue band indicates rear release retention system
- Supplied with contacts (including spares) and insertion/removal tool.
- Material/finish
 - Shell, barrel, coupling nut, jam-nut: see P/N development
 - Ratchet Ring, Detent spring: Stainless steel/passivated
 - insulator: high grade rigid dielectric/N.A.
 - Seals, grommet: fluorosilicone blend/N.A.
 - Contacts: copper alloy / see part P/N development

Key Positions (Plug)				
Alternate Key Code	A°	B°	C°	D°
T	95	135	220	275
V	92	127	253	325
W	70	113	235	322
X	35	135	210	285
Y	54	150	239	314
Z	81	126	202	250



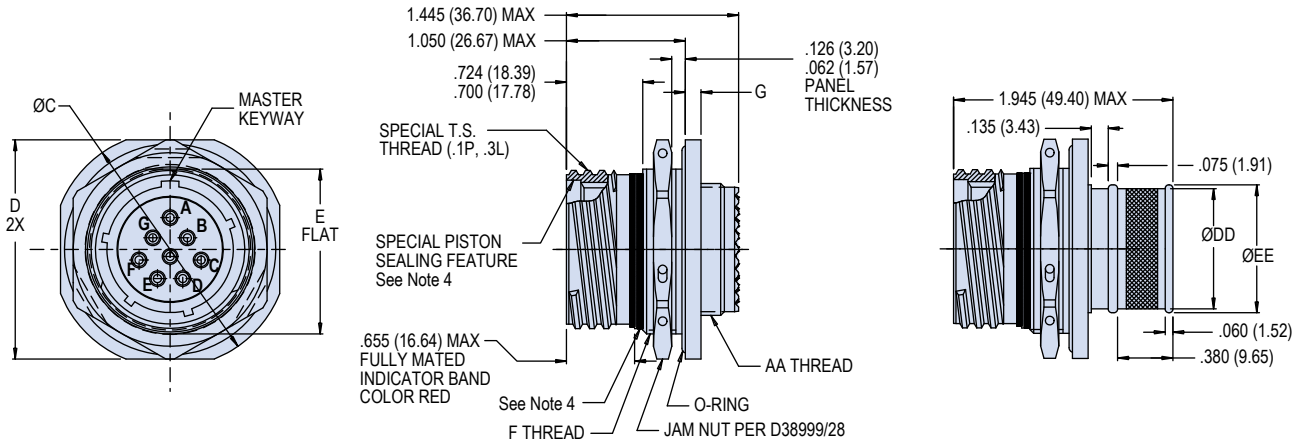
Keyway Positions (Receptacle)				
Alternate Key Code	A°	B°	C°	D°
T	95	135	220	275
V	92	127	253	325
W	70	113	235	322
X	35	135	210	285
Y	54	150	239	314
Z	81	126	202	250



**233-215 1000 PSI piston sealed connector, crimp
MIL-DTL-38999 Series III type**

B

**-07 AND B07 PISTON SEAL JAM NUT RECEPTACLE,
ACCESSORY THREAD OR INTEGRAL BACKSHELL**

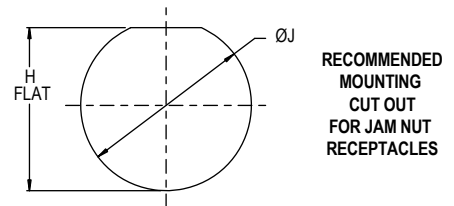


07 - ACCESSORY THREAD

B07 - INTEGRAL BACKSHELL

Jam Nut Dimensions						
Shell Size	ØC	D	E Flat	F Thread	AA Thread	G
9	1.200 (30.48)	1.078 (27.38)	.655 (16.64)	M17 X 1.0	M12 X 1.0	.122 (3.10) .083 (2.11)
	1.178 (29.92)	1.048 (26.62)	.645 (16.38)	-6g 0.100R	-6g 0.100R	
11	1.386 (35.20)	1.268 (32.21)	.755 (19.18)	M20 X 1.0	M15 X 1.0	.122 (3.10) .083 (2.11)
	1.362 (34.59)	1.236 (31.39)	.745 (18.92)	-6g 0.100R	-6g 0.100R	
13	1.512 (38.40)	1.390 (35.31)	.942 (23.93)	M25 X 1.0	M18 X 1.0	.122 (3.10) .083 (2.11)
	1.488 (37.80)	1.358 (34.49)	.932 (23.67)	-6g 0.100R	-6g 0.100R	
15	1.638 (41.61)	1.516 (38.51)	1.066 (27.08)	M28 X 1.0	M22 X 1.0	.122 (3.10) .083 (2.11)
	1.614 (41.00)	1.484 (37.69)	1.056 (26.82)	-6g 0.100R	-6g 0.100R	
17	1.764 (44.81)	1.642 (41.71)	1.191 (30.25)	M32 X 1.0	M25 X 1.0	.122 (3.10) .083 (2.11)
	1.740 (44.20)	1.610 (40.89)	1.181 (30.00)	-6g 0.100R	-6g 0.100R	
19	1.949 (49.50)	1.827 (46.41)	1.316 (33.43)	M35 X 1.0	M28 X 1.0	.153 (3.89) .114 (2.90)
	1.925 (48.90)	1.795 (45.59)	1.306 (33.17)	-6g 0.100R	-6g 0.100R	
21	2.075 (52.71)	1.953 (49.61)	1.441 (36.60)	M38 X 1.0	M31 X 1.0	.153 (3.89) .114 (2.90)
	2.051 (52.10)	1.921 (48.79)	1.431 (36.35)	-6g 0.100R	-6g 0.100R	
23	2.201 (55.91)	2.079 (52.81)	1.566 (39.78)	M41 X 1.0	M34 X 1.0	.153 (3.89) .114 (2.90)
	2.177 (55.30)	2.047 (51.99)	1.556 (39.52)	-6g 0.100R	-6g 0.100R	
25	2.323 (59.00)	2.205 (56.01)	1.691 (42.95)	M44 X 1.0	M37 X 1.0	.153 (3.89) .114 (2.90)
	2.299 (58.39)	2.173 (55.19)	1.681 (42.70)	-6g 0.100R	-6g 0.100R	

Integral Banding Porch Dimensions		
Shell Size	ØC	D
9	.475 (12.07)	.538 (13.67)
11	.600 (15.24)	.662 (16.81)
13	.700 (17.78)	.762 (19.35)
15	.835 (21.21)	.898 (22.81)
17	.960 (24.38)	1.022 (25.96)
19	1.062 (26.97)	1.125 (28.58)
21	1.188 (30.18)	1.250 (31.75)
23	1.275 (32.39)	1.338 (33.99)
25	1.475 (37.47)	1.538 (39.07)



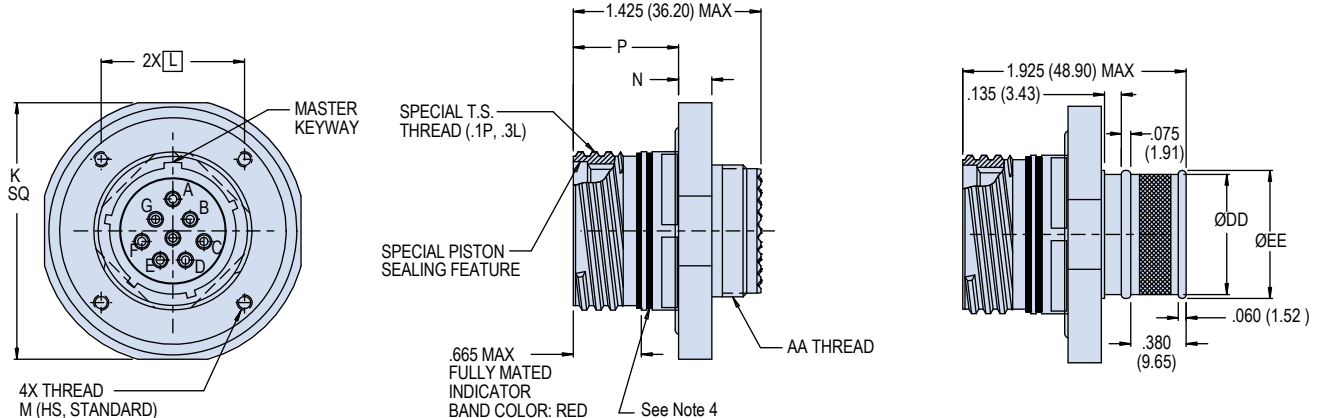
Panel Cut Out Dims.		
Shell Size	H Flat	ØJ
9	.703 (17.86)	.657 (16.69)
	.693 (17.60)	.648 (16.46)
11	.835 (21.21)	.771 (19.58)
	.825 (20.96)	.761 (19.33)
13	1.020 (25.91)	.955 (24.26)
	1.010 (25.65)	.945 (24.00)

Panel Cut Out Dims.		
Shell Size	H Flat	ØJ
15	1.145 (29.08)	1.085 (27.56)
	1.135 (28.83)	1.075 (27.30)
17	1.270 (32.26)	1.210 (30.73)
	1.260 (32.00)	1.200 (30.48)
19	1.395 (35.43)	1.335 (33.91)
	1.385 (35.18)	1.325 (33.65)

Panel Cut Out Dims.		
Shell Size	H Flat	ØJ
21	1.520 (38.61)	1.460 (37.08)
	1.510 (38.35)	1.450 (36.83)
23	1.645 (41.78)	1.585 (40.26)
	1.635 (41.53)	1.575 (40.00)
25	1.770 (44.96)	1.710 (43.43)
	1.760 (44.70)	1.700 (43.18)

233-215 1000 PSI piston sealed connector, crimp MIL-DTL-38999 Series III type

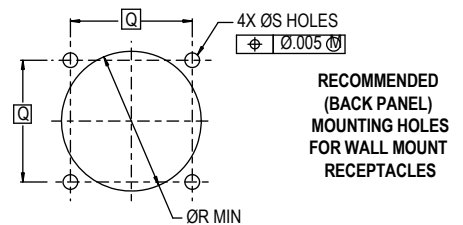
-HS, -HM, BHS AND BHM PISTON SEAL WALL MOUNT RECEPTACLE, ACCESSORY THREAD OR INTEGRAL BACKSHELL



ACCESSORY THREAD
HS - STANDARD HELICOILS
HM - METRIC HELICOILS

INTEGRAL BACKSHELL
BHS - STANDARD HELICOIL
BHM - METRIC HELICOIL

Wall Mount Dimensions											
Shell Size	K SQ	L BSC	M THD	M' THD	N	P	AA Thread				
9	1.516 (38.51)	.719 (18.26)	#4-40 UNC-2B	M3-0.5 .225 (5.72) ↓.220 (5.59)	.285 (7.24) .250 (6.35)	.968 (24.59) .913 (23.19)	M12 X 1.0 -6g 0.100R				
	1.484 (37.69)	.812 (20.62)					M15 X 1.0 -6g 0.100R				
11	1.642 (41.71)	.812 (20.62)					2.079 (52.81) 2.047 (51.99)	.969 (24.61)	.250 (6.35)	.913 (23.19)	M18 X 1.0 -6g 0.100R
	1.610 (40.89)	.906 (23.01)									M22 X 1.0 -6g 0.100R
13	1.827 (46.41)	.906 (23.01)				2.205 (56.01) 2.173 (55.19)	.969 (24.61)	.250 (6.35)	.913 (23.19)	M25 X 1.0 -6g 0.100R	
	1.795 (45.59)	1.062 (26.97)								M28 X 1.0 -6g 0.100R	
15	1.953 (49.61)	.969 (24.61)				2.334 (59.28) 2.302 (58.47)	.969 (24.61)	.250 (6.35)	.913 (23.19)	M31 X 1.0 -6g 0.100R	
	1.921 (48.79)	1.156 (29.36)								M34 X 1.0 -6g 0.100R	
17	2.079 (52.81)	1.062 (26.97)				2.522 (64.06) 2.490 (63.25)	.969 (24.61)	.350 (8.89) .315 (8.00)	.936 (23.77) .881 (22.38)	M37 X 1.0 -6g 0.100R	
	2.047 (51.99)	1.250 (31.75)								M37 X 1.0 -6g 0.100R	
19	2.205 (56.01)	1.156 (29.36)	2.709 (68.81) 2.677 (68.00)	.969 (24.61)	.350 (8.89) .315 (8.00)	.936 (23.77) .881 (22.38)	M37 X 1.0 -6g 0.100R				
	2.173 (55.19)	1.500 (38.10)					M37 X 1.0 -6g 0.100R				
21	2.334 (59.28)	1.250 (31.75)	2.709 (68.81) 2.677 (68.00)	.969 (24.61)	.350 (8.89) .315 (8.00)	.936 (23.77) .881 (22.38)	M37 X 1.0 -6g 0.100R				
	2.302 (58.47)	1.500 (38.10)					M37 X 1.0 -6g 0.100R				
23	2.522 (64.06)	1.375 (34.92)	2.709 (68.81) 2.677 (68.00)	.969 (24.61)	.350 (8.89) .315 (8.00)	.936 (23.77) .881 (22.38)	M37 X 1.0 -6g 0.100R				
	2.490 (63.25)	1.500 (38.10)					M37 X 1.0 -6g 0.100R				
25	2.709 (68.81)	1.500 (38.10)	2.709 (68.81) 2.677 (68.00)	.969 (24.61)	.350 (8.89) .315 (8.00)	.936 (23.77) .881 (22.38)	M37 X 1.0 -6g 0.100R				
	2.677 (68.00)	1.500 (38.10)					M37 X 1.0 -6g 0.100R				



Panel Cut Out Dims.			
Shell Size	Q BSC	ØR MIN	ØS HOLES
9	.719 (18.26)	.656 (16.66)	
11	.812 (20.62)	.796 (20.22)	.133 (3.38)
13	.906 (23.01)	.922 (23.42)	.123 (3.12)
15	.969 (24.61)	1.047 (26.59)	

Panel Cut Out Dims.			
Shell Size	Q BSC	ØR MIN	ØS HOLES
17	1.062 (26.97)	1.219 (30.96)	
19	1.156 (29.36)	1.297 (32.94)	.133 (3.38)
21	1.250 (31.75)	1.422 (36.12)	.123 (3.12)

Panel Cut Out Dims.			
Shell Size	Q BSC	ØR MIN	ØS HOLES
23	1.375 (34.92)	1.547 (39.29)	.159 (4.04) .149 (3.78)
25	1.500 (38.10)	1.672 (42.47)	.155 (3.94) .145 (3.68)

233PS215 1000 PSI receptacle with improved panel sealing MIL-DTL-38999 Series III type

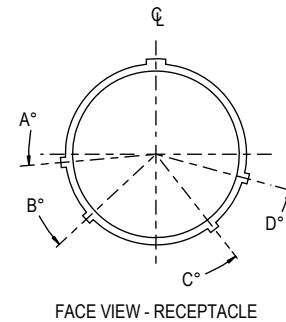
B

Part Number Development	
Sample Part Number	233PS215 - G6 NF 17-8 P T
Series / Basic Part No.	Improved panel sealing, Series 23 SuperNine with piston seal
Rear Accessory Option	See rear accessory option table
Connector Style*	D0 = Wall mount receptacle with round holes
Finish	NF = Al alloy/Cadmium Olive Drab ME = Al alloy/electroless Nickel AB = Marine Bronze/NA MT = Al alloy/Nickel PTFE ZR = Al alloy/Black Zinc Nickel Z1 = SST, passivate
Shell Size-Insert Arrangement*	Per MIL-STD-1560
Contact Type	P = Pin, gold 1500 cycles A = Less pin contacts H = Pin, Pd/Ni 1500 cycles S = Socket, gold 1500 cycles B = Less socket contacts J = Socket, Pd/Ni 1500 cycles
Alternate Polarization	V, W, X, Y, Z, T = Normal (IAW MIL-DTL-38999 Series III); see key or keyway position tables

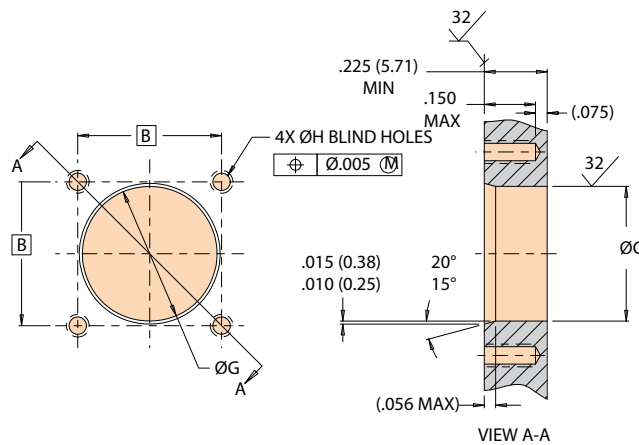
*Refer to Section A for complete details

Rear Accessory Option	
Sym	Description
-	Accessory thread and teeth
B	Integral backshell, boot adaptor
F	Flat back

Keyway Positions (Receptacle)				
Alternate Keyway Code	A°	B°	C°	D°
T	95	135	220	275
V	92	127	253	325
W	70	113	235	322
X	35	135	210	285
Y	54	150	239	314
Z	81	126	202	250



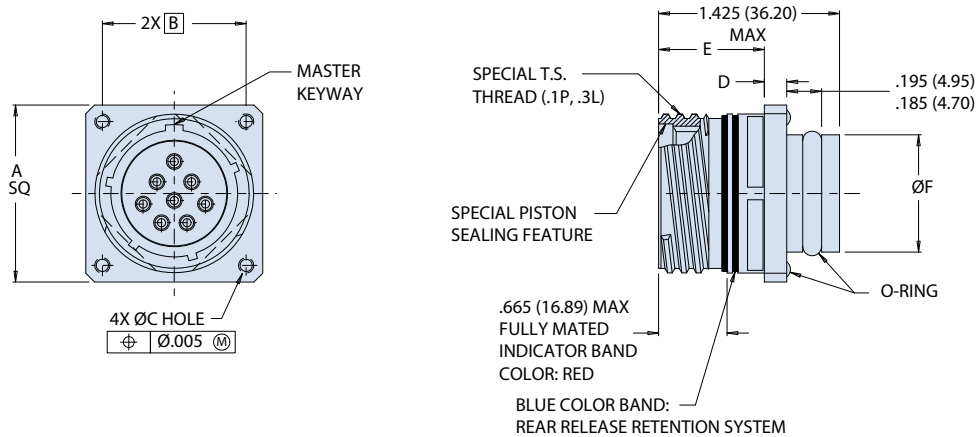
Mounting Holes			
Shell Size	B BSC	ØG	ØH Holes
09	.719 (18.26)	.564 (14.33) .562 (14.27)	#4-40 0.150 MAX
11	.812 (20.62)	.689 (17.50) .687 (17.45)	
13	.906 (23.01)	.814 (20.68) .812 (20.62)	
15	.969 (24.61)	.939 (23.85) .937 (23.80)	
17	1.062 (26.97)	1.064 (27.03) 1.062 (26.97)	
19	1.156 (29.36)	1.189 (30.20) 1.187 (30.15)	
21	1.250 (31.75)	1.252 (31.80) 1.250 (31.75)	
23	1.375 (34.92)	1.377 (34.98) 1.375 (34.92)	#6-32 0.150 MAX
25	1.500 (38.10)	1.502 (38.15) 1.500 (38.10)	



RECOMMENDED (FRONT PANEL) MOUNTING HOLES FOR WALL MOUNT RECEPTACLES (.225 MIN PANEL THICKNESS)

233PS215 1000 PSI receptacle with improved panel sealing MIL-DTL-38999 Series III type

PISTON SEALED WALL MOUNT RECEPTACLE WITH IMPROVED PANEL SEALING, AND CRIMP CONTACTS



F00 - WALL MOUNT RECEPTACLE, WITH ROUND HOLES, FLAT BACK

NOTES

- 233PS215 receptacle is designed to meet the general requirements of D38999/20 and MIL-STD-1560
 - Panel sealed wall mount receptacle requires special panel cutout.
 - Connector accessory threads accept standard backshells
 - Connector accepts standard AS39029 type contacts
 - Connectors cannot be mated to standard MIL-DTL-38999 plugs or protective covers
- 233PS215 piston seal interface is rated to 1000 PSI water submersion (2300 FT/700m) when fully mated or protected with 239-200 cover. Cable sealing and panel sealing capability dependent on customer installation
- Supplied with contacts (including spares) and insertion/removal tool.
- Material/finish
 - Shell: see part number development
 - Insulator: high grade rigid dielectric/ N.A.
 - seals grommet: fluorosilicone blend/N.A.
 - Contacts: copper alloy/see part number development

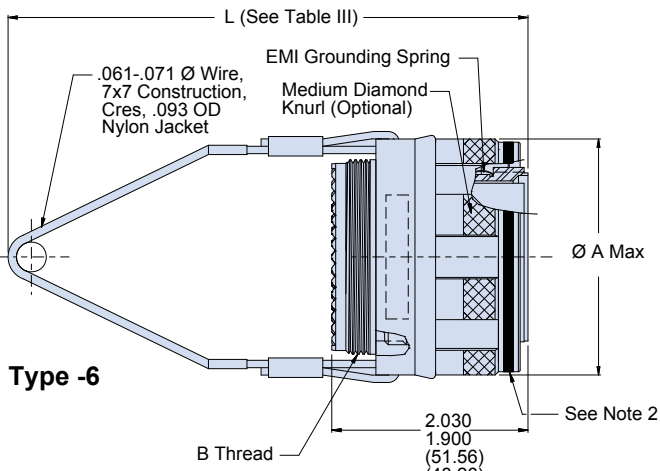
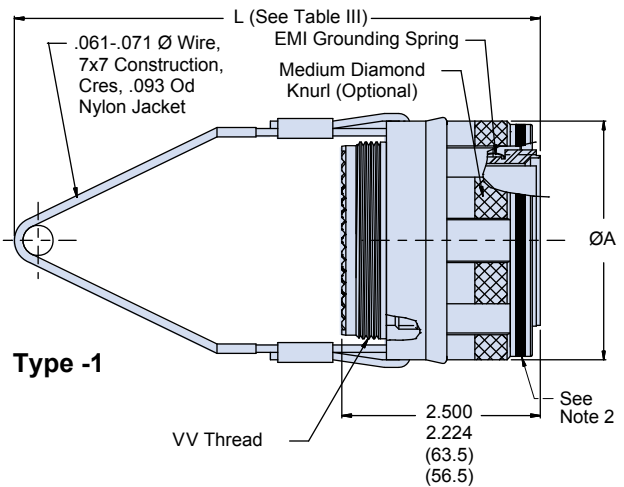
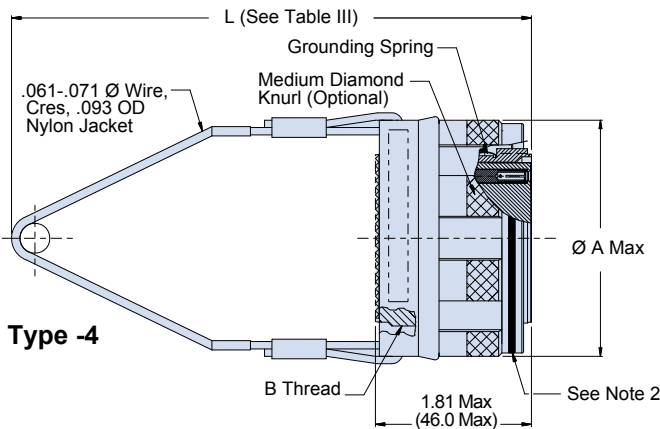
Dimensions									
Shell Size	A SQ	B BSC	ØC	D	E	ØF			
09	.949 (24.10)	.719 (18.26)	.136 (3.45) .120 (3.05)	.122 (3.10) .083 (2.11)	.968 (24.59) .913 (23.19)	.560 (14.22)			
	.925 (23.50)					.559 (14.20)			
11	1.043 (26.49)	.812 (20.62)							.685 (17.40)
	1.020 (25.91)					.684 (17.37)			
13	1.138 (28.91)	.906 (23.01)							.810 (20.57)
	1.114 (28.30)					.809 (20.55)			
15	1.232 (31.29)	.969 (24.61)							.935 (23.75)
	1.209 (30.71)					.934 (23.72)			
17	1.323 (33.60)	1.062 (26.97)							1.060 (26.92)
	1.299 (32.99)					1.059 (26.90)			
19	1.449 (36.80)	1.156 (29.36)				1.185 (30.10)			
	1.425 (36.20)		1.184 (30.07)						
21	1.575 (40.00)	1.250 (31.75)				1.248 (31.70)			
	1.551 (39.40)		1.247 (31.67)						
23	1.701 (43.21)	1.375 (34.92)	.162 (4.11) .146 (3.71)	.153 (3.89) .114 (2.90)	.936 (23.77) .881 (22.38)	1.373 (34.87)			
	1.677 (42.60)					1.372 (34.85)			
25	1.823 (46.30)	1.500 (38.10)				1.498 (38.05)			
	1.799 (45.69)		1.497 (38.02)						

233-216 Lanyard release plug
MIL-DTL-38999 Series III

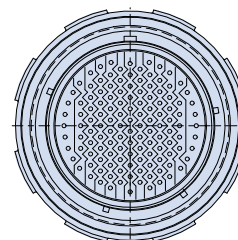
B

Part Number Development	
Sample Part Number	233-216 -G6 ME 25-35 S A E -4
Series / Basic Part No.	233-216 = Lanyard Release Plug
Connector Style*	G6 = Plug with EMI Spring
Finish	NF = Aluminum Alloy, Olive Drab-Cad over Nickel ZL = CRES, Electrodeposited Nickel Z1 = CRES, Passivated ME = Aluminum Alloy, Eletroless Nickel Consult factory for additional finish options
Shell Size-Insert Arrangement*	Per MIL-STD-1560
Contact Type	P = Pin S = Socket A = Pin Insert, Less Contact B = Socket Insert, Less Contact
Alternate Key Position*	A, B, C, D, E, N = Normal (Per MIL-DTL-38999 Series III)
Lanyard Length Code	See Lanyard Length Table
Connector Type	1 = Type 1 4 = Type 4 6 = Type 6

*Refer to Section A for complete details



Insert arrangement is for reference only



233-216 Lanyard release plug

MIL-DTL-38999 Series III

B

G6 - LANYARD RELEASE PLUG

Dimensions			
Shell Size	Shell Size Code	ØA ±.06	B Thread
9*	A	Consult Factory	M12 x1-6g-0.100R
11	B	1.180 (29.97)	M15 x1-6g-0.100R
13	C	1.310 (33.27)	M18 x1-6g-0.100R
15	D	1.437 (36.50)	M22 x1-6g-0.100R
17	E	1.560 (39.62)	M25 x1-6g-0.100R
19	F	1.690 (42.93)	M28 x1-6g-0.100R
21	G	1.760 (44.70)	M31 x1-6g-0.100R
23	H	1.900 (48.26)	M34 x1-6g-0.100R
25	J	2.000 (50.80)	M37 x1-6g-0.100R

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

*Size #9 is only available in type -4

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

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

NOTES

- This connector mates with D38999/20, and 24.
- Blue color band indicates rear release retention system.
- Connectors to be supplied with contacts, insertion/removal tools and sealing plugs.
- Commercial equivalent of D38999/31 type 1, 4, and 6. Test data available.
- Material/finish
 - Barrel, coupling nut, lanyard ring: see part number development, finish
 - Ratchet ring, detent spring: stainless steel/passivated
 - Ground spring: BeCu alloy/electroless nickel
 - Wave spring: CRES/passivated
 - Insulator: high-grade rigid dielectric/N.A.
 - Seals, grommet: fluorosilicone blend/N.A.
 - Contacts: copper alloy

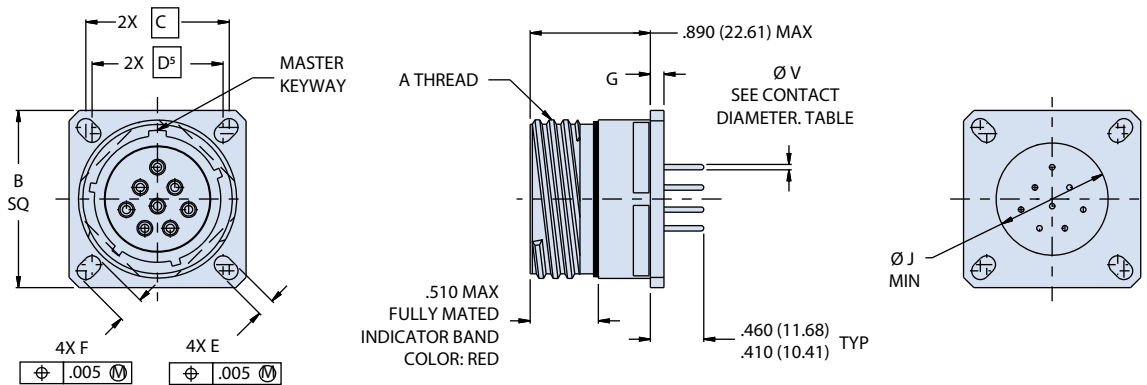
233-207 PCB wall mount receptacles
MIL-DTL-38999 Series III type

B

Part Number Development									
Sample Part Number	233-207				-00	NF	17-8	P	N
Series / Basic Part No.	SuperNine PCB receptacle with flush flange								
Connector Style*	00 = Wall mount receptacle with slotted holes HM = Wall mount receptacle with metric helicoils HS = Wall mount receptacle with standard helicoils			Additional shell styles available in metric and standard, consult factory					
Finish	NF = Al alloy/cadmium Olive Drab ME = Al ally/Electroless Nickel		MT = Al alloy/nickel PTFE ZR = Al alloy/Black Zinc Nickel		Consult factory for additional finish options				
Shell Size-Insert Arrangement*	Per MIL-STD-1560								
Contact Type	P = Pin, Gold, 1500 cycles S = Socket, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles J = Socket, Pd/Ni, 1500 cycles								
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)								

*Refer to Section A for complete details

00 - WALL MOUNT RECEPTACLE WITH SLOTTED HOLES



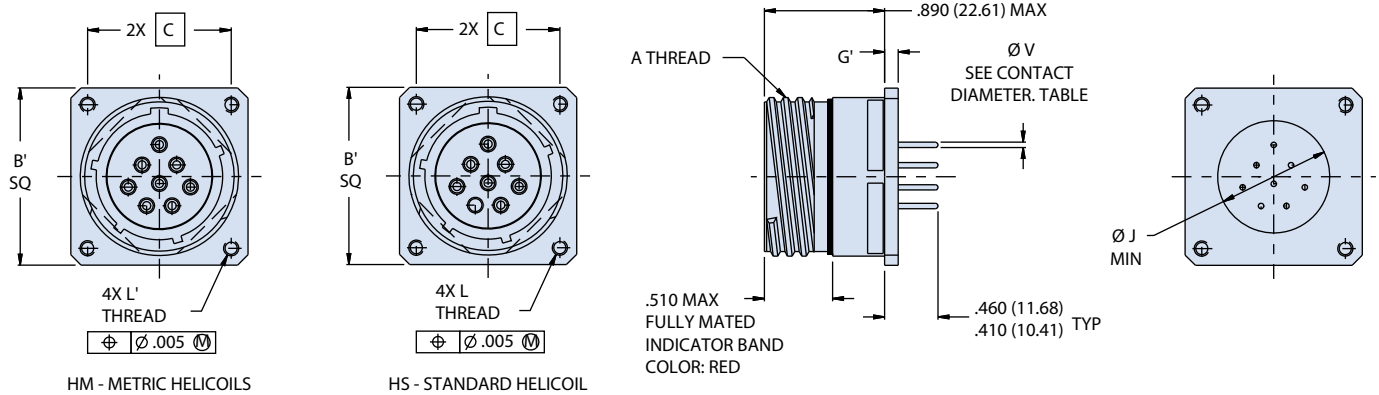
NOTES

- 233-207 receptacle connector is designed to meet or exceed the mechanical, electrical, environmental and dimensional requirements of D38999/20 and MIL-STD-1560 except as shown and/or noted. Receptacle mates with any QPL manufacturer's D38999/26 Series III plug having the same shell size, insert arrangement and polarization.
- Insert arrangements IAW MIL-STD-1560, contact manufacturer for additional arrangements.
- 233-207 receptacle connector is designed with fixed PC tail contacts. Potting meets or exceeds ingress protection rating IP67 and is environmentally sealed with leak rate of $< 1 \times 10^{-4}$ ccHe/sec in an unmated condition.
- 233-207 receptacle connector is designed to withstand a minimum of 1500 mating durability cycles when mated to a SuperNine® plug and appropriate contacts. Contact finish should be the same for both mating connectors to optimize performance.
- Front panel mount only
- Material/finish
 - Shell: see part number development, finish
 - Insulator: high-grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.
 - Contacts: copper alloy
 - Potting: epoxy/N.A.

PC Tail Diameter	
Contact Size	ØV
23	.020 (.51) .018 (.46)
22	.020 (.51) .018 (.46)
20	.030 (.76) .028 (.71)
16	.040 (1.02) .038 (.97)
12	.072 (1.83) .070 (1.78)

233-207 PCB wall mount receptacles MIL-DTL-38999 Series III type

HM AND HS - WALL MOUNT RECEPTACLE WITH METRIC OR STANDARD MOUNTING HOLES



B

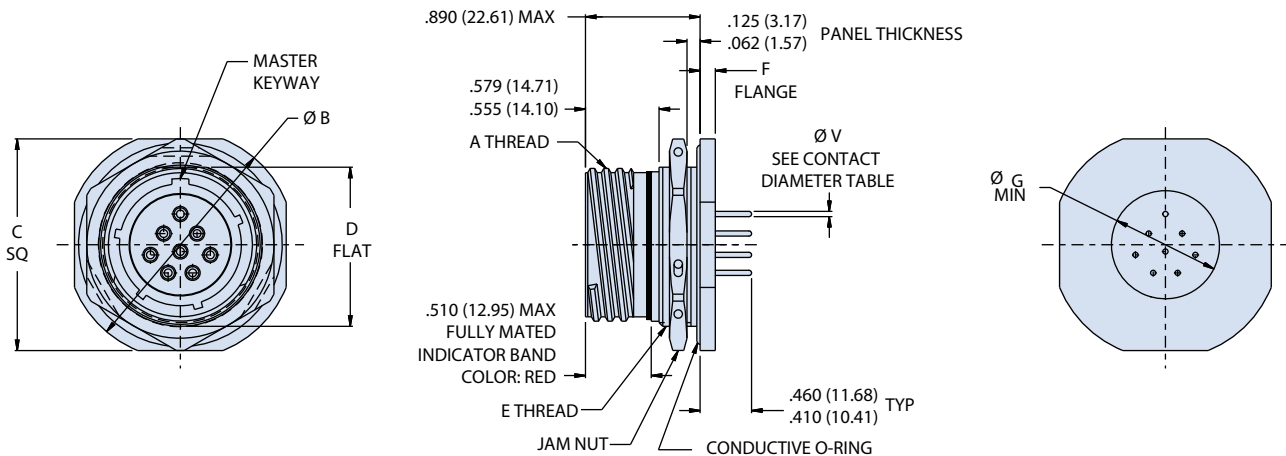
Wall Mount Dimensions													
Shell Size Code	Shell Size	A Thread -0.1P-0.3L-TS-2A	B Sq	B' Sq	C Bsc	D Bsc ⁵	E	F	G	G'	ØJ Min	L Thd	L' Thd
A	9	.6250	.948 (24.08) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)		.224 (5.69) .208 (5.28)				.340 (8.64)	
B	11	.7500	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)		.202 (5.13)				.468 (11.89)	
C	13	.8750	1.137 (28.88) 1.114 (28.30)	1.281 (32.54) 1.241 (31.52)	.906 (23.01)	.812 (20.62)		.186 (4.72)	.122 (3.10) .083 (2.11)			.572 (14.53)	
D	15	1.0000	1.232 (31.29) 1.208 (3.68)	1.344 (34.14) 1.304 (33.12)	.969 (24.61)	.906 (23.01)	.136 (3.45) .120 (3.05)	.181 (4.60) .165 (4.19)		.179 (4.55) .140 (3.56)		.705 (17.91)	.112-40 UNC
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)						.830 (21.08)	
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)		.202 (5.13) .186 (4.72)				.934 (23.72)	
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)			.153 (3.89) .114 (2.90)			1.055 (26.80)	
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)	.162 (4.11)	.250 (6.35)		.190 (4.83)		1.160 (29.46)	.138-32 UNC
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)	.146 (3.71)	.234 (5.94)		.170 (4.32)		1.307 (33.20)	M4X0.7

233-207-07 PCB jam-nut mount receptacle
MIL-DTL-38999 Series III type

B

Part Number Development	
Sample Part Number	233-207 -00 NF 17-8 P N
Series / Basic Part No.	SuperNine PCB receptacle with flush flange
Connector Style*	07 = Jam nut mount receptacle
Finish	NF = Al alloy/cadmium Olive Drab MT = Al alloy/nickel PTFE ME = Al alloy/electroless Nickel ZR = Al alloy/black Zinc Nickel Consult factory for additional finish options
Shell Size-Insert Arrangement*	Per MIL-STD-1560
Contact Type	P = Pin, Gold, 1500 cycles S = Socket, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles J = Socket, Pd/Ni, 1500 cycles
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)

Contact Diameter	
Contact Size	ØV
23	.020 (.51) .018 (.46)
22	.020 (.51) .018 (.46)
20	.030 (.76) .028 (.71)
16	.040 (1.02) .038 (.97)
12	.072 (1.83) .070 (1.78)



PC Tail Diameter	
Contact Size	ØM
23	.020 (.51) .018 (.46)
22	.020 (.51) .018 (.46)
20	.030 (.76) .028 (.71)
16	.040 (1.02) .038 (.97)
12	.072 (1.83) .070 (1.78)

**233-207-07 PCB jam-nut mount receptacle
MIL-DTL-38999 Series III type**

Jam Nut Dimensions										
Shell Size Code	Shell Size	A Thread -0.1P-0.3L-TS-2A	Ø B	C Sq	D Flat	E Thread ISO Metric	F	Ø G Min	Ø H	J Flat
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17 X 1.0-6g	.122 (3.10) .083 (2.11)	.340 (8.64)	.703 (17.86) .693 (17.60)	.661 (16.79) .654 (16.61)
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20 X 1.0-6g		.468 (11.89)	.835 (21.21) .825 (20.96)	.771 (19.58) .761 (19.33)
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25 X 1.0-6g		.572 (14.53)	1.020 (25.91) 1.010 (25.65)	.955 (24.26) .945 (24.00)
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g		.705 (17.91)	1.145 (29.08) 1.135 (28.83)	1.085 (27.56) 1.075 (27.30)
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g*		.830 (21.08)	1.270 (32.26) 1.260 (32.00)	1.210 (30.73) 1.200 (30.48)
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g	.153 (3.89) .114 (2.90)	.934 (23.72)	1.395 (35.43) 1.385 (35.18)	1.335 (33.91) 1.325 (33.65)
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g		1.055 (26.80)	1.520 (38.61) 1.510 (38.35)	1.460 (37.08) 1.450 (36.83)
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g		1.160 (29.46)	1.645 (41.78) 1.635 (41.53)	1.585 (40.26) 1.575 (40.00)
J	25	1.6250	2.323 (59.00)	2.205 (56.01)	1.691 (42.95)	M44 X 1.0-6g		1.307 (33.20)	1.770 (44.96)	1.710 (43.43)
			2.299 (58.39)	2.173 (55.19)	1.681 (42.70)			1.760 (44.70)	1.700 (43.18)	

Modified major diameter 31.95 - 31.80 (.257 - 1.252)

NOTES

- 233-207-07 receptacle connector is designed to withstand a minimum of 1500 mating durability cycles when mated to a SuperNine® plug and appropriate contacts. Contact finish should be the same for both mating connectors to optimize performance.
- 233-207-07 receptacle connector is designed with fixed PC tail contacts. Connector potting process meets or exceeds ingress protection rating IP67 and is environmentally sealed with a leak rate of < 1 X 10⁻⁴ ccHe/sec in unmated condition.
- 233-207-07 receptacle connector is designed to meet or exceed the mechanical, electrical, environmental requirements of D38999/24 and MIL-STD-1560 except as shown and/or noted. Receptacle mates with any QPL manufacturer's D38999/26 Series III plug having same shell size, insert arrangement and polarization.
- Insert arrangements IAW MIL-STD-1560, contact manufacturer for additional arrangement options.
- Material/finish
 - Shell, jam-nut: see part number development, finish
 - Insulator: high-grade rigid dielectric/N.A.
 - Seals, grommet: fluorosilicone blend/N.A.
 - Potting: epoxy/N.A.
 - Contacts: copper alloy
 - O-ring: silver plated aluminum in fluorosilicone (cho-seal 1298 or equivalent)



233-208 PCB wall mount receptacles with stepped contacts

MIL-DTL-38999 Series III type

B

Part Number Development									
Sample Part Number	233-208				-00	NF	17-8	P	N
Series / Basic Part No.	SuperNine PCB receptacle with stepped contacts								
Connector Style*	00 = Wall Mount Receptacle with Slotted Holes CM = Wall Mount Receptacle with Metric Clinch Nuts CS = Wall Mount Receptacle with Standard Clinch Nuts HM = Wall Mount Receptacle with Metric Helicoils HS = Wall Mount Receptacle with Standard Helicoils								
Finish	NF = Al alloy/Cadmium Olive Drab ME = Al alloy/Electroless Nickel			MT = Al alloy/Nickel PTFE ZR = Al alloy/Black Zinc Nickel		Consult factory for additional finish options			
Shell Size-Insert Arrangement*	Per MIL-STD-1560								
Contact Type	P = Pin, Gold, 1500 cycles S = Socket, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles J = Socket, Pd/Ni, 1500 cycles								
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)								

*Refer to Section A for complete details

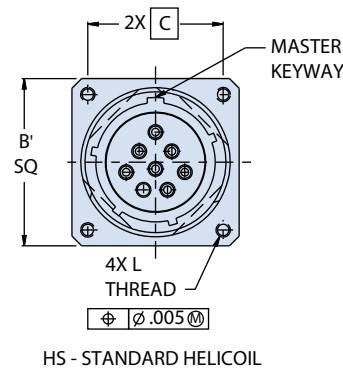
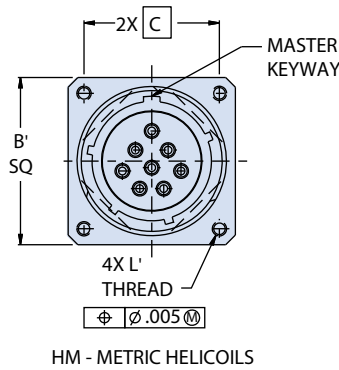
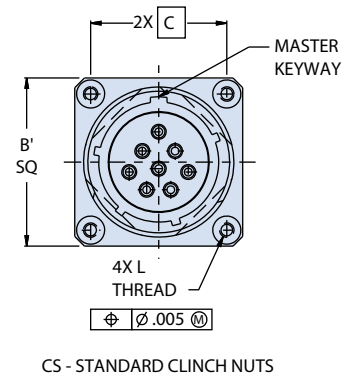
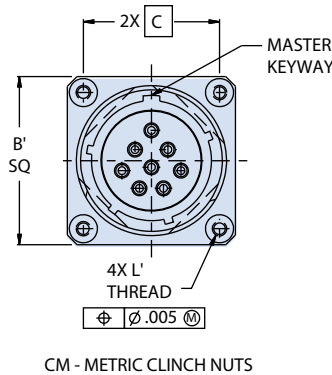
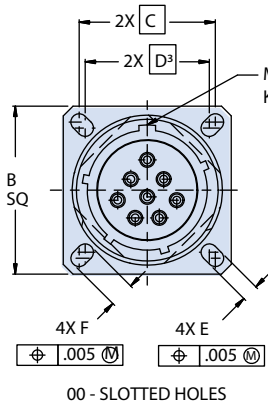
Wall Mount Receptacle Dimensions													
Shell Size Code	Shell Size	A Thread -0.1P-0.3L-TS-2A	B Sq	B'	C Bsc	D Bsc ³	E	F	G	G'	Ø J Min	L Thd	L' Thd
A	9	.6250	.948 (24.08) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)	.136 (3.45) .120 (3.05)	.224 (5.69) .208 (5.28)	.122 (3.10) .083 (2.11)	.179 (4.55) .140 (3.56)	.340 (8.64)	.112-40 UNC	M3X0.5
B	11	.7500	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)		.202 (5.13)			.468 (11.89)		
C	13	.8750	1.137 (28.88) 1.114 (28.30)	1.281 (32.54) 1.241 (31.52)	.906 (23.01)	.812 (20.62)		.186 (4.72)			.572 (14.53)		
D	15	1.0000	1.232 (31.29) 1.208 (30.68)	1.344 (34.14) 1.304 (33.12)	.969 (24.61)	.906 (23.01)		.181 (4.60) .165 (4.19)			.705 (17.91)		
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)		.202 (5.13) .186 (4.72)			.830 (21.08)		
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)					.934 (23.72)		
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)					1.055 (26.80)		
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)	.162 (4.11) .146 (3.71)	.250 (6.35) .234 (5.94)	.114 (2.90)	.190 (4.83) .170 (4.32)	1.160 (29.46) 1.307 (33.20)	.138-32 UNC	M4X0.7
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)							

NOTES

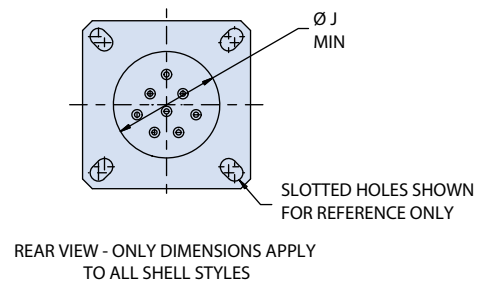
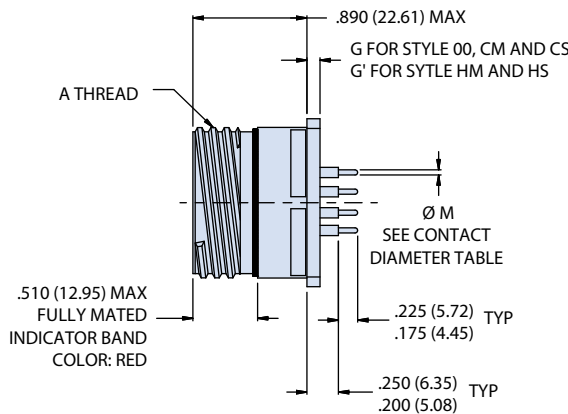
- 233-208 receptacle connector is designed to meet or exceed the mechanical, electrical, environmental and dimensional requirements of D38999/20 or /24 and MIL-STD-1560 except as shown and/or noted. Receptacle mates with any QPL manufacturer's D38999/26 Series III plug having the same shell size, insert arrangement and polarization.
- Insert arrangements IAW MIL-STD-1560, contact factory for additional arrangement options
- Front panel mount only
- 233-208 receptacle connector is designed with fixed PC tail contacts. Connector potting meets or exceeds protection rating IP67 and is environmentally sealed with a leak rate 1×10^{-4} ccHe/sec in an unmated condition.
- 233-208 receptacle connector is designed to withstand a minimum of 1500 mating durability cycles when mated to a SuperNine plug and appropriate contacts. Contact finish should be the same for both mating connectors to optimize performance.

233-208 PCB wall mount receptacles with stepped contacts MIL-DTL-38999 Series III type

00, CM, CS, HM AND HS - WALL MOUNT RECEPTACLES



PC Tail Diameter	
Contact Size	ØV
23	.020 (.51) .018 (.46)
22	.020 (.51) .018 (.46)
20	.030 (.76) .028 (.71)
16	.040 (1.02) .038 (.97)
12	.072 (1.83) .070 (1.78)



NOTES (CONTINUED)

- Material/finish
 - Shell: see P/N development, finish
 - Contacts: copper alloy, see P/N development, contacts
 - insulators: high grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.
 - Potting: epoxy/N.A.

233-208-07 PCB jam nut receptacle with stepped contacts MIL-DTL-38999 Series III type

B

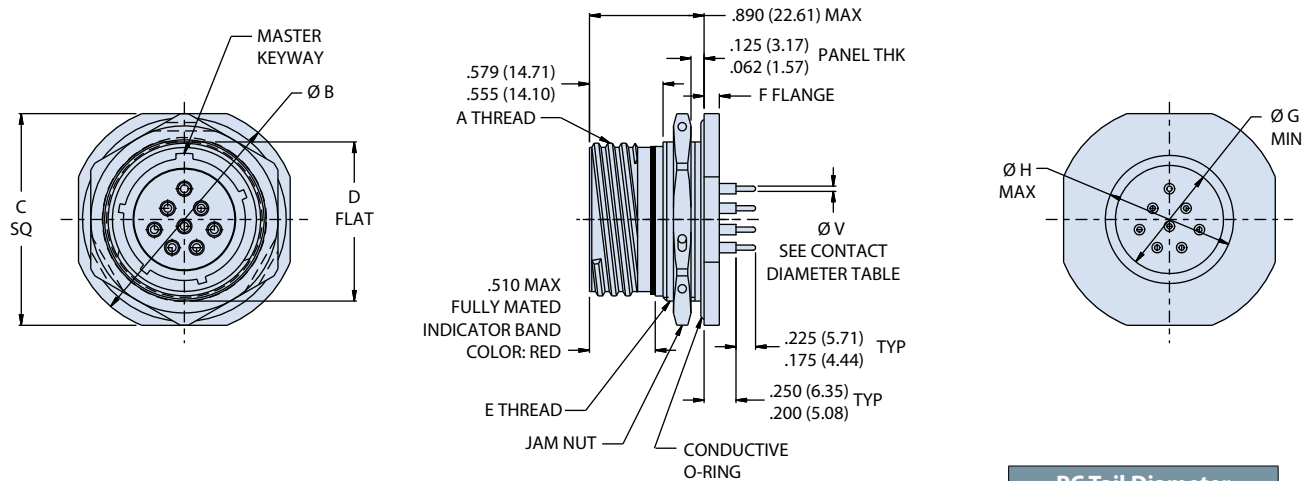
Part Number Development										
Sample Part Number	233-208					-00	NF	17-8	P	N
Series / Basic Part No.	SuperNine PCB receptacle with stepped contacts									
Connector Style*	07 = Jam Nut Mount Receptacle									
Finish	NF = Al alloy/cadmium Olive Drab ME = Al alloy/electroless Nickel		MT = Al alloy/nickel PTFE ZR = Al alloy/black Zinc Nickel		Consult factory for additional finish options					
Shell Size-Insert Arrangement*	Per MIL-STD-1560									
Contact Type	P = Pin, Gold, 1500 cycles S = Socket, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles J = Socket, Pd/Ni, 1500 cycles									
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)									

Jam Nut Receptacle Dimensions									
Shell Size Code	Shell Size	A Thread -0.1P-0.3L-TS-2A	Ø B	C Sq	D Flat	E Thd ISO Metric	F	Ø G Min	Ø H Max
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17 X 1.0-6g	.122 (3.10) .083 (2.11)	.340 (8.64)	.470 (11.94)
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20 X 1.0-6g		.468 (11.89)	.590 (14.99)
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25 X 1.0-6g		.572 (14.53)	.708 (17.98)
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g		.705 (17.91)	.865 (21.97)
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g*		.830 (21.08)	.985 (25.02)
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g	.153 (3.89) .114 (2.90)	.934 (23.72)	1.105 (28.07)
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g		1.055 (26.80)	1.220 (30.99)
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g		1.160 (29.46)	1.340 (34.04)
J	25	1.6250	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44 X 1.0-6g		1.307 (33.20)	1.455 (36.96)

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

233-208-07 PCB jam nut receptacle with stepped contacts MIL-DTL-38999 Series III type

07 - JAM NUT MOUNT RECEPTACLE



PC Tail Diameter	
Contact Size	ØV
23	.020 (.51) .018 (.46)
22	.020 (.51) .018 (.46)
20	.030 (.76) .028 (.71)
16	.040 (1.02) .038 (.97)
12	.072 (1.83) .070 (1.78)

NOTES

- 233-208-07 receptacle connector is designed to withstand a minimum of 1500 mating durability cycles when mated to a SuperNine® plug and appropriate contacts. Contact finish should be the same for both mating connectors to optimize performance.
- 233-208-07 receptacle connector is designed with fixed PC tail contacts. Connector Potting process meets or exceeds ingress protection rating IP67 and is environmentally sealed with a leak rate of $< 1 \times 10^{-4}$ ccHe/sec in unmated condition.
- 233-208-07 receptacle connector is designed to meet or exceed the mechanical, electrical, environmental requirements of D38999/24 and MIL-STD-1560 except as shown and/or noted. Receptacle mates with any QPL manufacturer's D38999/26, Series III plug having same shell size, insert arrangement and polarization.
- Insert arrangements IAW MIL-STD-1560, contact manufacturer for additional arrangement options.
- Material/finish
 - Shell, jam-nut: see part number development, finish
 - Contacts: copper alloy/see part number development, contact type
 - Insulators: high-grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.
 - Potting: epoxy/N.A.
 - O-ring: silver plated aluminum in fluorosilicone (cho-seal 1298 or equivalent)

233-209 PCB wall mount receptacles with short standoff MIL-DTL-38999 Series III type

B

Part Number Development									
Sample Part Number	233-209				-00	NF	17-8	P	N
Series / Basic Part No.	SuperNine PCB receptacle with short standoff								
Connector Style*	00 = Wall mount receptacle with slotted holes HM = Wall mount receptacle with metric helicoils HS = Wall mount receptacle with standard helicoils CM = Wall mount receptacle with metric clinch nuts CS = Wall mount receptacle with standard clinch nuts								
Finish	NF = Al alloy/cadmium olive drab ME = Al alloy/electroless nickel			MT = Al alloy/nickel PTFE ZR = Al alloy/black zinc nickel			Consult factory for additional finish options		
Shell Size-Insert Arrangement*	Per MIL-STD-1560								
Contact Type	P = Pin, Gold, 1500 cycles S = Socket, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles J = Socket, Pd/Ni, 1500 cycles								
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)								

*Refer to Section A for complete details

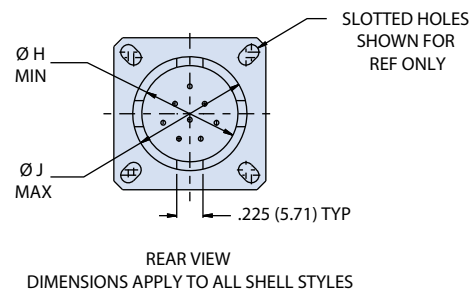
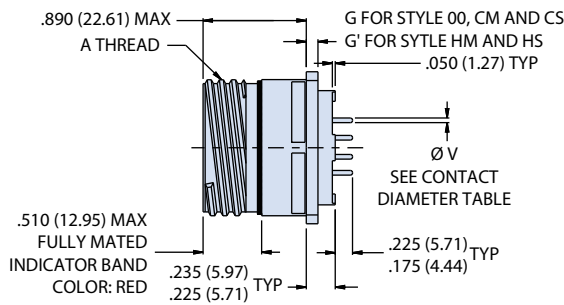
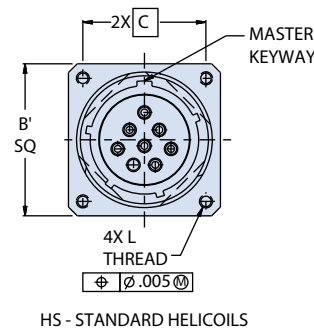
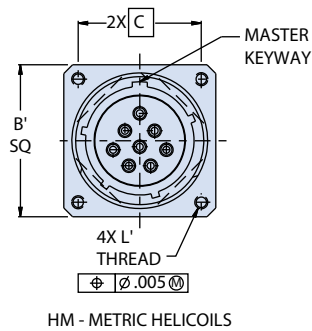
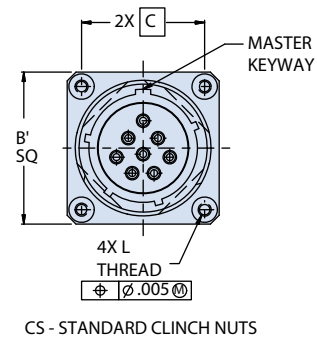
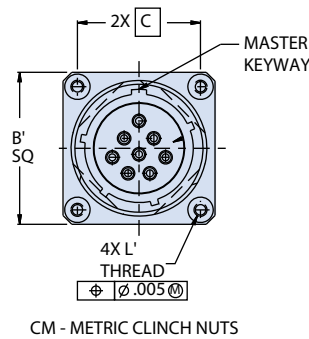
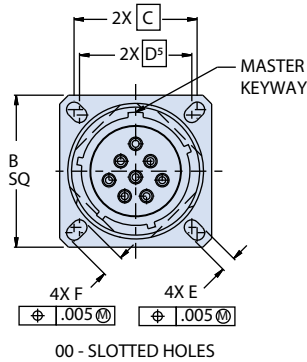
Dimensions														
Shell Size Code	Shell Size	A Thread -0.1P-0.3L-TS-2A	B Sq	B' Sq	C Bsc	D Bsc ⁵	E	F	G	G'	ØH Min	ØJ Max	L Thd	L' Thd
A	9	.6250	.948 (24.08) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)	.136 (3.45) (3.05)	.224 (5.69) .208 (5.28)	.122 (3.10) .083 (2.11)	.179 (4.55) (3.56)	.340 (8.64)	.470 (11.94)	.112-40 UNC	M3X0.5
B	11	.7500	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)		.202 (5.13) .186 (4.72)			.468 (11.89)	.590 (14.99)		
C	13	.8750	1.137 (28.88) 1.114 (28.30)	1.281 (32.54) 1.241 (31.52)	.906 (23.01)	.812 (20.62)		.181 (4.60) .165 (4.19)			.572 (14.53)	.708 (17.98)		
D	15	1.0000	1.232 (31.29) 1.208 (30.68)	1.344 (34.14) 1.304 (33.12)	.969 (24.61)	.906 (23.01)		.202 (5.13) .186 (4.72)			.705 (17.91)	.865 (21.97)		
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)		.153 (3.89)			.830 (21.08)	.985 (25.02)		
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)		.114 (2.90)			.934 (23.72)	1.105 (28.07)		
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)		.190 (4.83)			1.055 (26.80)	1.220 (30.99)		
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)	.162 (4.11)	.160 (29.46)	1.340 (34.04)	.138-32 UNC	M4X0.7			
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)	.146 (3.71)	.170 (4.32)	1.455 (36.96)					

PC Tail Diameter	
Contact Size	ØV
23	.020 (.51)
	.018 (.46)
22	.020 (.51)
	.018 (.46)
20	.030 (.76)
	.028 (.71)
16	.040 (1.02)
	.038 (.97)
12	.072 (1.83)
	.070 (1.78)

233-209 PCB wall mount receptacles with short standoff MIL-DTL-38999 Series III type

B

00, CM, CS, HM AND HS - WALL MOUNT RECEPTACLES



NOTES

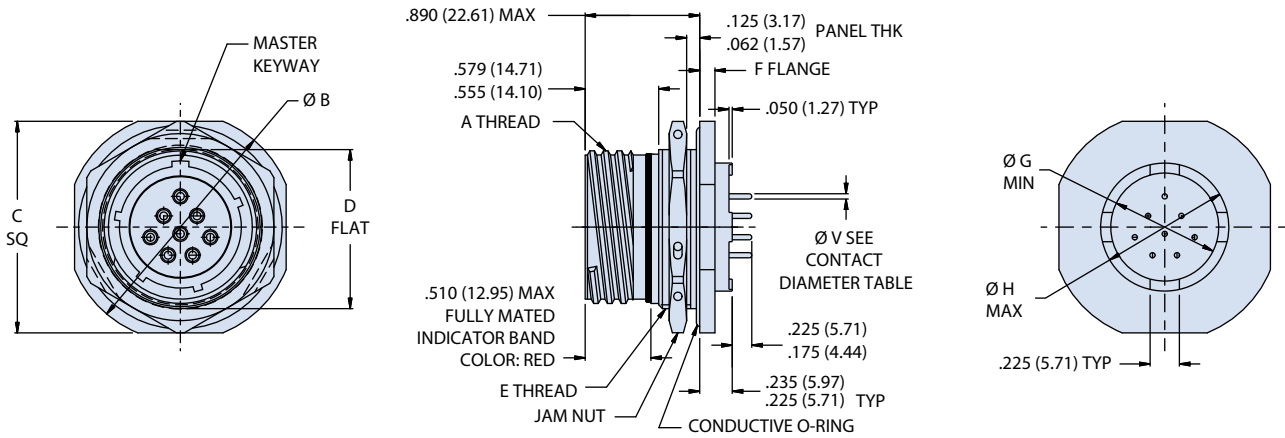
- 233-209 receptacle connector is designed to meet or exceed the mechanical, electrical, environmental and dimensional requirements of D38999/20 and MIL-STD-1560 except as shown and/or noted.
- 233-209 receptacle connector mates with any QPL manufacturer's D38999/26 series III plug having the same shell size, insert arrangement and polarization.
- Insert arrangements IAW MIL-STD-1560. Contact factory for additional arrangement options
- 233-209 receptacle connector is designed with fixed PC tail contacts. Potting meets or exceeds ingress protection rating
- IP67 and is environmentally sealed to a leak rate of $<1 \times 10^{-4}$ ccHe/Sec in an unmated condition.
- Front panel mount only
- Material/finish
 - Shell size: see part number development, finish
 - Contacts: copper alloy/see part number development, contact type
 - insulators: high grade rigid dielectric/N.A.
 - Seals: Fluorosilicone blend/N.A.
 - Potting: Epoxy/N.A.

233-209-07 PCB jam nut receptacle with short standoff MIL-DTL-38999 Series III type

B

Part Number Development						
Sample Part Number	233-209	-07	NF	17-8	P	N
Series / Basic Part No.	SuperNine PCB receptacle with short standoff					
Connector Style*	07 = Jam Nut Mount Receptacle					
Finish	NF = Al alloy/cadmium Olive Drab ME = Al alloy/electroless Nickel		MT = Al alloy/nickel PTFE ZR = Al alloy/black zinc Nickel			
Shell Size-Insert Arrangement*	Per MIL-STD-1560					
Contact Type	P = Pin, Gold, 1500 cycles S = Socket, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles J = Socket, Pd/Ni, 1500 cycles					
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)					

*Refer to Section A for complete details



PC Tail Diameter	
Contact Size	ØV
23	.020 (.51)
	.018 (.46)
22	.020 (.51)
	.018 (.46)
20	.030 (.76)
	.028 (.71)
16	.040 (1.02)
	.038 (.97)
12	.072 (1.83)
	.070 (1.78)

233-209-07 PCB jam nut receptacle with short standoff MIL-DTL-38999 Series III type

Dimensions									
Shell Size Code	Shell Size	A Thread	Ø B	C Sq	D Flat	E Thread ISO Metric	F	Ø G Min	Ø H Max
A	9	.6250 -0.1P-0.3L-TS-2A	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17 X 1.0-6g	.122 (3.10) .083 (2.11)	.340 (8.64)	.470 (11.94)
B	11	.7500 -0.1P-0.3L-TS-2A	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20 X 1.0-6g		.468 (11.89)	.590 (14.99)
C	13	.8750 -0.1P-0.3L-TS-2A	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25 X 1.0-6g		.572 (14.53)	.708 (17.98)
D	15	1.0000 -0.1P-0.3L-TS-2A	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g		.705 (17.91)	.865 (21.97)
E	17	1.1875 -0.1P-0.3L-TS-2A	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g*		.830 (21.08)	.985 (25.02)
F	19	1.2500 -0.1P-0.3L-TS-2A	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g	.153 (3.89) .114 (2.90)	.934 (23.72)	1.105 (28.07)
G	21	1.3750 -0.1P-0.3L-TS-2A	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g		1.055 (26.80)	1.220 (30.99)
H	23	1.5000 -0.1P-0.3L-TS-2A	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g		1.160 (29.46)	1.340 (34.04)
J	25	1.6250 -0.1P-0.3L-TS-2A	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44 X 1.0-6g		1.307 (33.20)	1.455 (36.96)

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

NOTES

- 233-209-07 receptacle connector is designed to withstand a minimum of 1500 mating durability cycles when mated to a SuperNine plug and appropriate contacts. Contact finish should be the same for both mating connectors to optimize performance.
- 233-209-07 receptacle connector is designed with fixed PC tail contacts. Connector potting process meets or exceeds ingress protection rating IP67 and is environmentally sealed with a leak rate of $< 1 \times 10^{-4}$ ccHe/sec in unmated condition.
- 233-209-07 receptacle connector is designed to meet or exceed the mechanical, electrical, environmental requirements of D38999/24 and MIL-STD-1560 except as shown and/or noted. Receptacle mates with any QPL manufacturer's D38999/26, Series III plug having same shell size, insert arrangement and polarization.
- Insert arrangements IAW MIL-STD-1560. Contact manufacturer for additional arrangement options.
- Material/finish
 - Shell, jam-nut: see part number development, finish
 - Contacts: copper alloy/see part number development, contact type
 - Insulators: high-grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.
 - Potting: epoxy/N.A.
 - O-ring: silver plated aluminum in fluorosilicone (cho-seal 1298 or equivalent)



233-210 PCB wall mount receptacles with threaded standoff MIL-DTL-38999 Series III type

B

Part Number Development									
Sample Part Number	233-210				-00	NF	17-8	P	N
Series / Basic Part No.	SuperNine PCB receptacle with threaded standoffs								
Connector Style*	00 = Wall Mount Receptacle with Slotted Holes, Standard Stand-off Thread 10 = Wall Mount Receptacle with Slotted Holes, Metric Stand-off Thread CM = Wall Mount Receptacle with Metric Clinch Nuts CS = Wall Mount Receptacle with Standard Clinch Nuts HM = Wall Mount Receptacle with Metric Helicoils HS = Wall Mount Receptacle with Standard Helicoils								
Finish	NF = Al alloy/cadmium olive drab ME = Al alloy/electroless nickel			MT = Al alloy/nickel PTFE ZR = Al alloy/black zinc nickel			Consult factory for additional finish options		
Shell Size-Insert Arrangement*	Per MIL-STD-1560								
Contact Type	P = Pin, Gold, 1500 cycles S = Socket, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles J = Socket, Pd/Ni, 1500 cycles								
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)								

*Refer to Section A for complete details

Dimensions																	
Shell Size code	Shell Size	A Thd -0.1P-0.3L- TS-2A	B Sq	B' Sq	C Bsc	D Bsc ³	E	F	G	G'	H Bsc	ØJ Min	L Thd	L' Thd			
A	9	.6250	.948 (24.08) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)	.136 (3.45) (3.05)	.224 (5.69) .208 (5.28)	.122 (3.10) .083 (2.11)	.179 (4.55) (3.56)	.594 (15.09)	.340 (8.64)	.112-40 UNC	M3X0.5			
B	11	.7500	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)		.202 (5.13) .186 (4.72)			.122 (3.10) .083 (2.11)	.179 (4.55) (3.56)			.719 (18.26)	.468 (11.89)	
C	13	.8750	1.137 (28.88) 1.114 (28.30)	1.281 (32.54) 1.241 (31.52)	.906 (23.01)	.812 (20.62)		.181 (4.60) .165 (4.19)			.122 (3.10) (2.11)	.179 (4.55) (3.56)			.812 (20.62)	.572 (14.53)	
D	15	1.0000	1.232 (31.29) 1.208 (30.68)	1.344 (34.14) 1.304 (33.12)	.969 (24.61)	.906 (23.01)		.120 (3.05)			.181 (4.60) .165 (4.19)	.122 (3.10) (2.11)			.179 (4.55) (3.56)	.906 (23.01)	.705 (17.91)
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)										1.030 (26.16)	.830 (21.08)
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)					.202 (5.13) .186 (4.72)					1.150 (29.21)	.934 (23.72)
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)						.153 (3.89)				1.221 (31.01)	1.055 (26.80)
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)	.162 (4.11)	.250 (6.35) .234 (5.94)	.114 (2.90)	.190 (4.83)	1.360 (34.54)	1.160 (29.46)	.138-32 UNC	M4X0.7			
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)	.146 (3.71)			.170 (4.32)	1.475 (37.47)	1.307 (33.20)					

* Front panel mount only

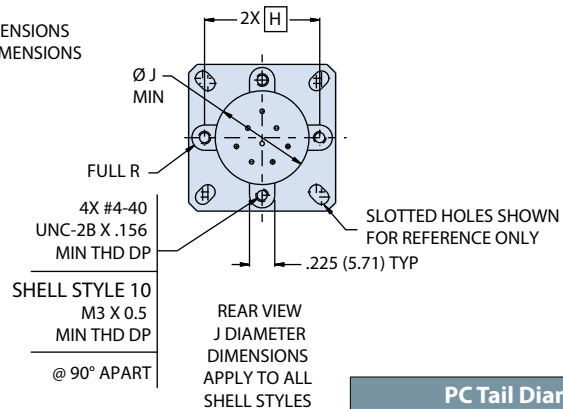
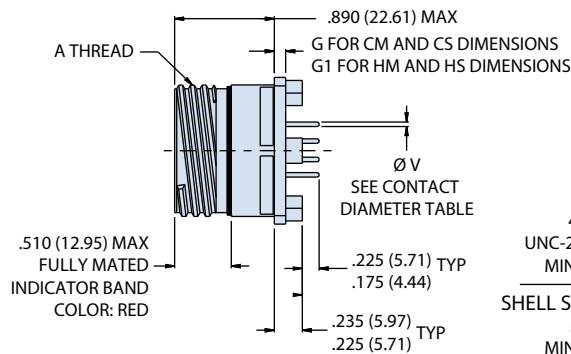
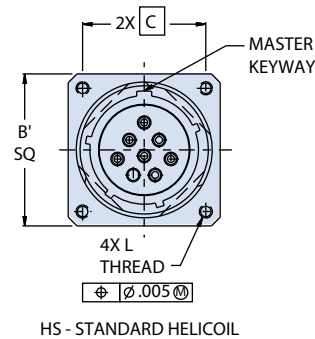
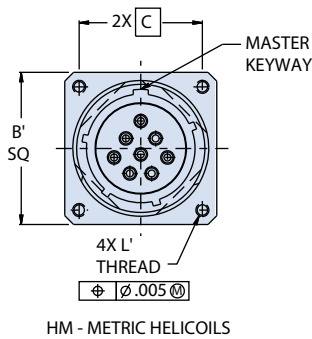
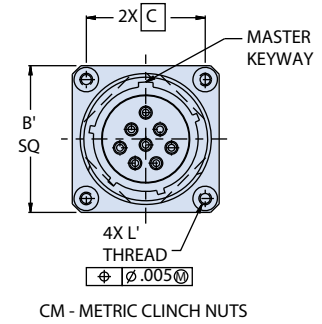
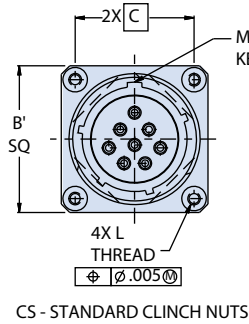
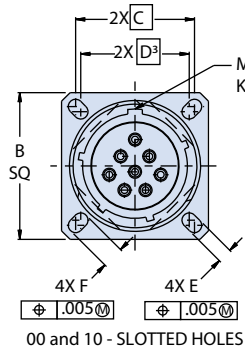
NOTES

- 233-210 receptacle connector is designed to meet or exceed the mechanical, dimensional, electrical, environmental requirements of D38999/20 and MIL-STD-1560 except as shown and/or noted. Receptacle mates with 233-205/206 or any QPL manufacturer's D38999/26 Series III plug having the same shell size, insert arrangement and polarization.
- Insert arrangements IAW MIL-STD-1560. Contact manufacturer for additional arrangement options
- Front panel mount only
- 233-210 receptacle connector is designed with fixed PC tail contacts. Connector potting process meets or exceeds ingress protection rating IP67 and is environmentally sealed with a leak rate of < 1 X 10⁻⁴ ccHe/sec in an unmated condition.
- 233-210 receptacle connector is designed to withstand a minimum of 1500 mating durability cycles when mated to a SuperNine® plug and appropriate contacts. Contact finish should be the same for both mating connectors to optimize performance.

233-210 PCB wall mount receptacles with threaded standoff MIL-DTL-38999 Series III type

B

00, 10, CM, CS, HM AND HS - WALL MOUNT RECEPTACLES



NOTES (CONTINUED)

6. Material/finish
 - Shell, jam-nut: see part number development, finish
 - Contacts: copper alloy/see part number development, finish
 - Insulators: high grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.
 - Potting: epoxy/N.A.
 - O-ring: silver plated aluminum in fluorosilicone (cho-seal 1298 or equivalent)

PC Tail Diameter	
Contact Size	ØV
23	.020 (.51) .018 (.46)
22	.020 (.51) .018 (.46)
20	.030 (.76) .028 (.71)
16	.040 (1.02) .038 (.97)
12	.072 (1.83) .070 (1.78)

233-210-07 PCB jam-nut mount receptacle with thd standoff MIL-DTL-38999 Series III type

B

Part Number Development									
Sample Part Number	233-210				-07	NF	17-8	P	N
Series / Basic Part No.	SuperNine PCB receptacle with threaded standoffs								
Connector Style*	07 = Jam-Nut Mount Receptacle with Standard Stand-off Thread 17 = Jam-Nut Mount Receptacle with Metric Stand-off Thread								
Finish	NF = Al alloy/cadmium olive drab ME = Al alloy/electroless nickel		MT = Al alloy/nickel PTFE ZR = Al alloy/black zinc nickel		Consult factory for additional finish options				
Shell Size-Insert Arrangement*	Per MIL-STD-1560								
Contact Type	P = Pin, Gold, 1500 cycles S = Socket, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles J = Socket, Pd/Ni, 1500 cycles								
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)								

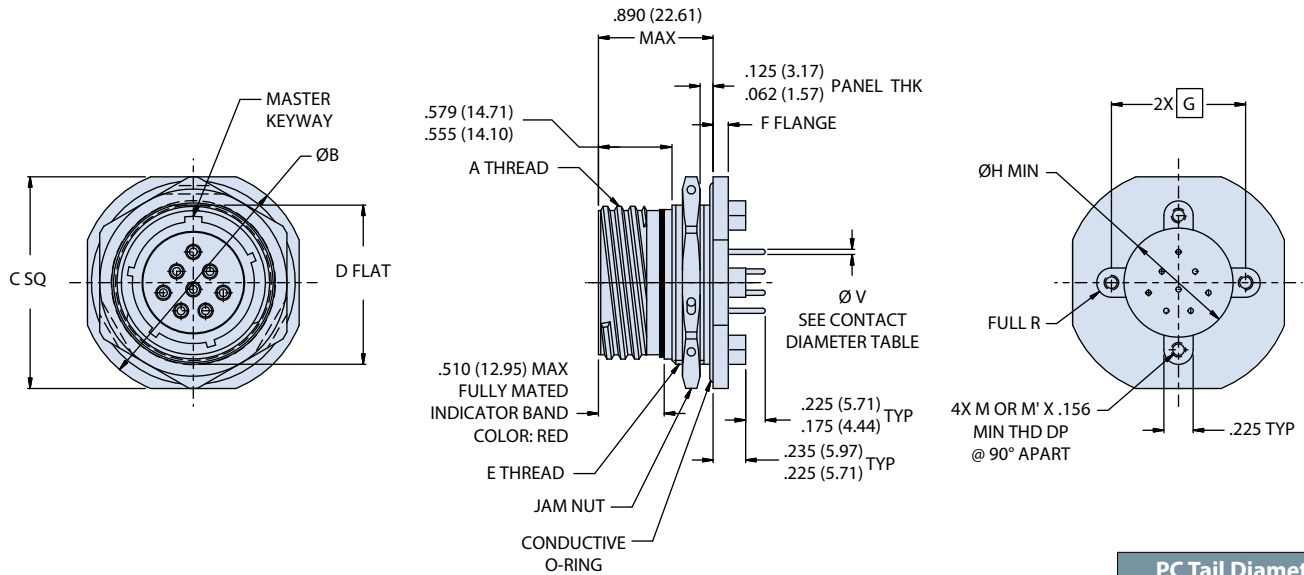
Dimensions											
Shell Size Code	Shell Size	A Thd -0.1P-0.3L- TS-2A	Ø B	C Sq	D Flat	E Thread ISO Metric	F	G Bsc	ØH Min	Threads	
										M	M'
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.236 (31.39)	.654 (16.61) .645 (16.38)	M17 X 1.0-6g	.122 (3.10) .083 (2.11)	.594 (15.09)	.340 (8.64)	.112-40 UNC	M3 x .05
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20 X 1.0-6g		.719 (18.26)	.468 (11.89)		
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25 X 1.0-6g		.812 (20.62)	.572 (14.53)		
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g	.906 (23.01)	.705 (17.91)			
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g*	1.030 (26.16)	.830 (21.08)			
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g	.153 (3.89) .114 (2.90)	1.150 (29.21)	.934 (23.72)		
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g		1.221 (31.01)	1.055 (26.80)		
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g		1.360 (34.54)	1.160 (29.46)		
J	25	1.6250	2.323 (59.00)	2.205 (56.01)	1.691 (42.95)	M44 X 1.0-6g		1.475 (37.47)	1.307 (33.20)		
			2.299 (58.39)	2.173 (55.19)	1.681 (42.70)						

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

233-210-07 PCB jam-nut mount receptacle with thd standoff MIL-DTL-38999 Series III type

B

07 - JAM-NUT MOUNT RECEPTACLE



PC Tail Diameter	
Contact Size	ØK
23	.020 (.51) .018 (.46)
22	.020 (.51) .018 (.46)
20	.030 (.76) .028 (.71)
16	.040 (1.02) .038 (.97)
12	.072 (1.83) .070 (1.78)

NOTES

- 233-210-07 receptacle connector is designed to withstand a minimum of 1500 mating durability cycles when mated to a "SuperNine" plug and appropriate contacts. Contact finish should be the same for both mating connectors to optimize performance.
- 233-210-07 is designed to meet or exceed the mechanical, dimensional, electrical, environmental requirements of D38999/24 and MIL-STD-1560 except as shown and/or noted.
- Receptacle mates with 233-205/206 or any QPL manufacturer's D38999/26 Series III plug having the same shell size, insert arrangement and polarization.
- Insert arrangements IAW MIL-STD-1560.
- Supplied with fixed PC tail contacts. Potting meets or exceeds IP67 in unmated condition.
- Dimensions in Inches (millimeters) are subject to change without notice.
- Consult factory for additional information.
- Material/finish
 - Shell, lockring, jam-nut: see part number development, finish
 - Contacts: copper alloy/see part number development, contact type
 - Insulators: high-grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.
 - Potting: epoxy/N.A.
 - O-ring: silver plated aluminum in fluorosilicone (cho-seal 1298 or equivalent)

233-211 PCB wall mount receptacle with dual flange

MIL-DTL-38999 Series III type

B

Part Number Development									
Sample Part Number	233-211				-00	NF	17-8	P	N
Series / Basic Part No.	SuperNine PCB receptacle with dual flange								
Connector Style*	00 = Wall Mount Receptacle with Slotted Holes and Standard Stand-Off Thread 10 = Wall Mount Receptacle with Slotted Holes and Metric Stand-Off Thread CM = Wall Mount Receptacle with Metric Clinch Nuts CS = Wall Mount Receptacle with Standard Clinch Nuts HM = Wall Mount Receptacle with Metric Helicoils HS = Wall Mount Receptacle with Standard Helicoils								
Finish	NF = Al alloy/cadmium olive drab		MT = Al alloy/nickel PTFE		Consult factory for additional finish options				
	ME = Al alloy/electroless nickel		ZR = Al alloy/black zinc nickel						
Shell Size-Insert Arrangement*	Per MIL-STD-1560								
Contact Type	P = Pin, Gold, 1500 cycles S = Socket, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles J = Socket, Pd/Ni, 1500 cycles								
Alternate Polarization*	A, B, C, D, E, N = Normal, U = Universal (IAW MIL-DTL-38999 Series III)								

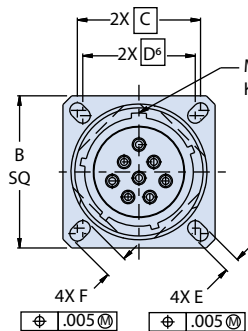
*Refer to Section A for complete details

Dimensions										
Shell Size Code	Shell Size	A Thd 0.1P-0.3L-TS-2A	B Sq	B'	C Bsc	D Bsc ⁶	E	G	G	G'
A	9	.6250	.948 (24.08) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)	.136 (3.45) .120 (3.05)	.224 (5.69) .208 (5.28)	.122 (3.10) .083 (2.11)	.179 (4.55) .140 (3.56)
B	11	.7500	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)		.202 (5.13) .186 (4.72)		
C	13	.8750	1.137 (28.88) 1.114 (28.30)	1.281 (32.54) 1.241 (31.52)	.906 (23.01)	.812 (20.62)		.181 (4.60) .165 (4.19)		
D	15	1.0000	1.232 (31.29) 1.208 (30.68)	1.344 (34.14) 1.304 (33.12)	.969 (24.61)	.906 (23.01)		.202 (5.13) .186 (4.72)	.153 (3.89) .114 (2.90)	
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)				
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)		.162 (4.11) .146 (3.71)	.250 (6.35) .234 (5.94)	
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)				
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)	.190 (4.83) .170 (4.32)			
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)				

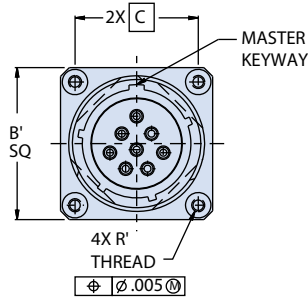
Dimensions (Continued)										
Shell Size Code	Shell Size	ØH ±.005	ØJ Bsc	Ø K ±.005	L Rad ±.020	M ±.020	N ±.010	ØP ±.005	R Thd	R' Thd
A	9	1.016 (25.81)	.752 (19.10)	.532 (13.51)	.225 (5.72)	.275 (6.99)	.225 (5.72)	.535 (13.59)	.112-40 UNC	M3X0.5
B	11	1.062 (26.97)	.850 (21.59)	.595 (15.11)	.250 (6.35)	.290 (7.37)	.250 (6.35)	.560 (14.22)		
C	13	1.250 (31.75)	.994 (25.25)	.720 (18.29)	.375 (9.52)	.370 (9.40)	.250 (6.35)	.700 (17.78)		
D	15	1.375 (34.92)	1.119 (28.42)	.843 (21.41)	.438 (11.13)	.440 (11.18)	.325 (8.25)	.857 (21.77)		
E	17	1.500 (38.10)	1.237 (31.42)	1.000 (25.40)	.562 (14.27)	.495 (12.57)	.375 (9.52)	.980 (24.89)		
F	19	1.625 (41.28)	1.379 (35.03)	1.125 (28.58)	.875 (22.23)	.540 (13.72)	.500 (12.70)	1.060 (26.92)		
G	21	1.750 (44.45)	1.489 (37.82)	1.240 (31.50)	1.170 (29.72)	.625 (15.88)	.562 (14.27)	1.210 (30.73)		
H	23	1.875 (47.63)	1.619 (41.12)	1.328 (33.73)	1.250 (31.75)	.660 (16.76)	.688 (17.48)	1.310 (33.27)	.138-32 UNC	M4X0.7
J	25	2.000 (50.80)	1.744 (44.30)	1.453 (36.91)	1.375 (34.92)	.740 (18.80)	.750 (19.05)	1.460 (37.08)		

233-211 PCB wall mount receptacle with dual flange MIL-DTL-38999 Series III type

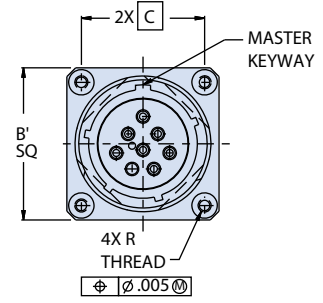
00,10, CM, CS, HM, HS - WALL MOUNT RECEPTACLE



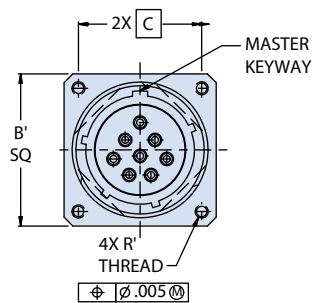
00 and 10 - SLOTTED HOLES



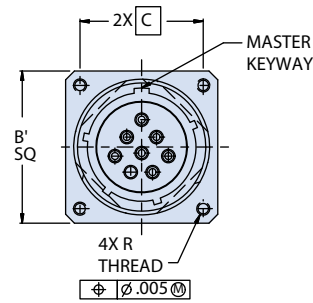
CM - METRIC CLINCH NUTS



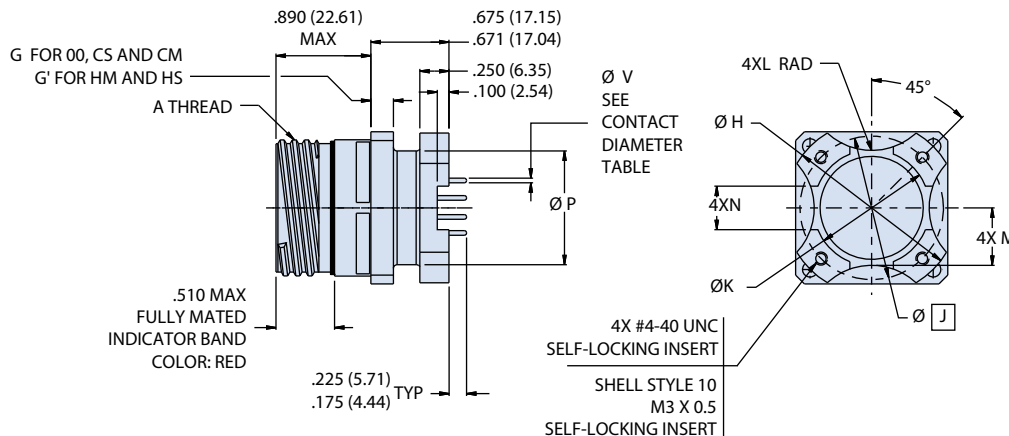
CS - STANDARD CLINCH NUTS



HM - METRIC HELICOILS



HS - STANDARD HELICOIL



PC Tail Diameter	
Contact Size	ØV
23	.020 (.51) .018 (.46)
22	.020 (.51) .018 (.46)
20	.030 (.76) .028 (.71)
16	.040 (1.02) .038 (.97)
12	.072 (1.83) .070 (1.78)

NOTES

- 233-211 is designed to meet or exceed the mechanical, electrical, environmental and dimensional requirements of D38999/20 or /24 and MIL-STD-1560 except as shown and/or noted.
- Receptacle mates with 233-205/206 or any QPL manufacturer's D38999/26 series III plug having the same shell size, insert arrangement and polarization.
- Insert arrangements IAW MIL-STD-1560.
- 233-211 receptacle connector is designed with fixed PC tail contacts. Potting meets or exceeds ingress protection rating IP67 and is environmentally sealed with a leak rate of $< 1 \times 10^{-4}$ ccHe/sec in an unmated condition.
- Alternate polarization 'U' is a non-standard/non-mil-spec option, allows mating to any QPL manufacturers MIL-DTL-38999 connector, intended for use in testing facilities.
- Front panel mount only

233-211-07 PCB jam nut receptacle with dual flange
MIL-DTL-38999 Series III type

B



Part Number Development						
Sample Part Number	233-211	-07	NF	17-8	P	N
Series / Basic Part No.	SuperNine PCB receptacle with dual flange					
Connector Style*	07 = Rear panel mount, jam-nut receptacle					
Finish	NF = Al alloy/cadmium olive drab ZR = Al alloy/black zinc nickel MT = Al alloy/nickel PTFE ME = Al alloy/electroless nickel Consult factory for additional finish options					
Shell Size-Insert Arrangement*	Per MIL-STD-1560					
Contact Type	P = Pin, Gold, 1500 cycles S = Socket, Gold, 1500 cycles H = Pin, Pd/Ni, 1500 cycles J = Socket, Pd/Ni, 1500 cycles					
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)					

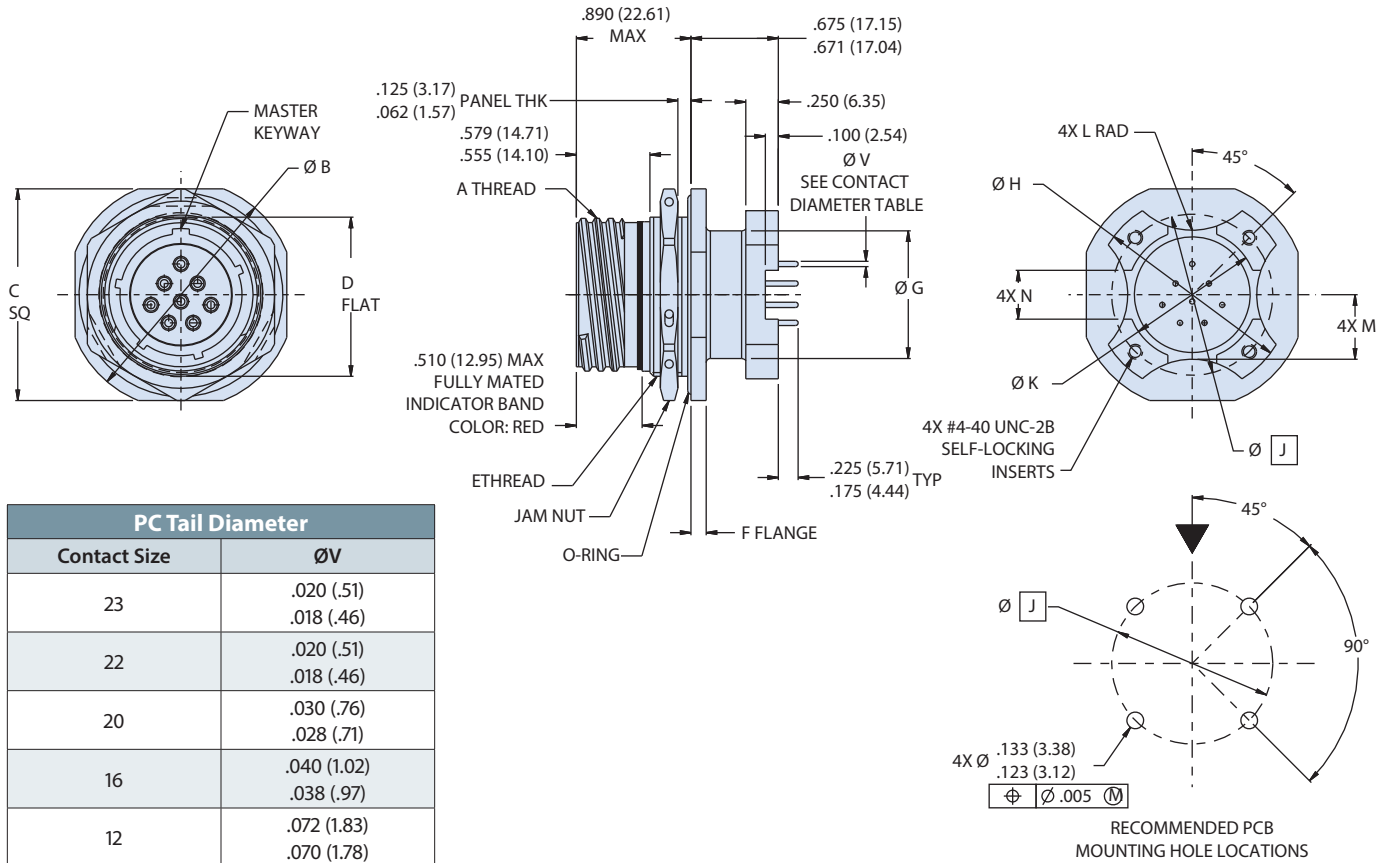
*Refer to Section A for complete details

Dimensions														
Shell Size Code	Shell Size	A Thread -0.1P-0.3L- TS-2A	Ø B	C Sq	D Flat	E Thd ISO metric 1.0-6g 0.100R	F	Ø G ±.005	Ø H ±.005	Ø J Bsc	Ø K ±.005	L Rad ±.020	M ±.020	N ±.010
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17	.122 (3.10) .083 (2.11)	.535 (13.59)	1.016 (25.81)	.752 (19.10)	.532 (13.51)	.225 (5.72)	.275 (6.99)	.225 (5.72)
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20		.560 (14.22)	1.062 (26.97)	.850 (21.59)	.595 (15.11)	.250 (6.35)	.290 (7.37)	.250 (6.35)
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25		.700 (17.78)	1.250 (31.75)	.994 (25.25)	.720 (18.29)	.375 (9.52)	.370 (9.40)	.250 (6.35)
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28		.857 (21.77)	1.375 (34.92)	1.119 (28.42)	.843 (21.41)	.438 (11.13)	.440 (11.18)	.325 (8.25)
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 *		.980 (24.89)	1.500 (38.10)	1.237 (31.42)	1.000 (25.40)	.562 (14.27)	.495 (12.57)	.375 (9.52)
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35	.153 (3.89) .114 (2.90)	1.060 (26.92)	1.625 (41.28)	1.379 (35.03)	1.125 (28.58)	.875 (22.23)	.540 (13.72)	.500 (12.70)
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38		1.210 (30.73)	1.750 (44.45)	1.489 (37.82)	1.240 (31.50)	1.170 (29.72)	.625 (15.88)	.562 (14.27)
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41		1.310 (33.27)	1.875 (47.63)	1.619 (41.12)	1.328 (33.73)	1.250 (31.75)	.660 (16.76)	.688 (17.48)
J	25	1.6250	2.323 (59.00)	2.205 (56.01)	1.691 (42.95)	M44		1.460 (37.08)	2.000 (50.80)	1.744 (44.30)	1.453 (36.91)	1.375 (34.92)	.740 (18.80)	.750 (19.05)
			2.299 (58.39)	2.173 (55.19)	1.681 (42.70)			1.460 (37.08)	2.000 (50.80)	1.744 (44.30)	1.453 (36.91)	1.375 (34.92)	.740 (18.80)	.750 (19.05)

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

233-211-07 PCB jam nut receptacle with dual flange MIL-DTL-38999 Series III type

07 - JAM-NUT MOUNT RECEPTACLE



PC Tail Diameter	
Contact Size	ØV
23	.020 (.51)
	.018 (.46)
22	.020 (.51)
	.018 (.46)
20	.030 (.76)
	.028 (.71)
16	.040 (1.02)
	.038 (.97)
12	.072 (1.83)
	.070 (1.78)

NOTES

- 233-211 is designed to meet or exceed the mechanical, electrical, environmental and dimensional requirements of D38999/24 and MIL-STD-1560 except as shown and/or noted. Receptacle mates with any QPL manufacturer's D38999/26 series III plug having the same shell size, insert arrangement and polarization.
- 233-211-07 receptacle connector is designed with fixed PC tail contacts. Connector potting process meets or exceeds ingress protection rating IP67 and is environmentally sealed with a leak rate of $< 1 \times 10^{-4}$ ccHe/sec in an unmated condition.
- 233-211-07 receptacle connector is designed to withstand a minimum of 1500 mating durability cycles when mated to a SuperNine® plug and appropriate contacts. Contact finish should be the same for both mating connectors to optimize performance
- Insert arrangements IAW MIL-STD-1560. Contact manufacturer for additional arrangement options.
- Material/finish
- Material/finish
 - Shell: see part number development, finish
 - Contacts: copper alloy/see part number development, contact type
 - Insulators: high-grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.
 - Potting: epoxy/N.A.

233-393 USB 2.0 Memory Stick, 11 - 35 Arrangement MIL-DTL-38999 Series III type

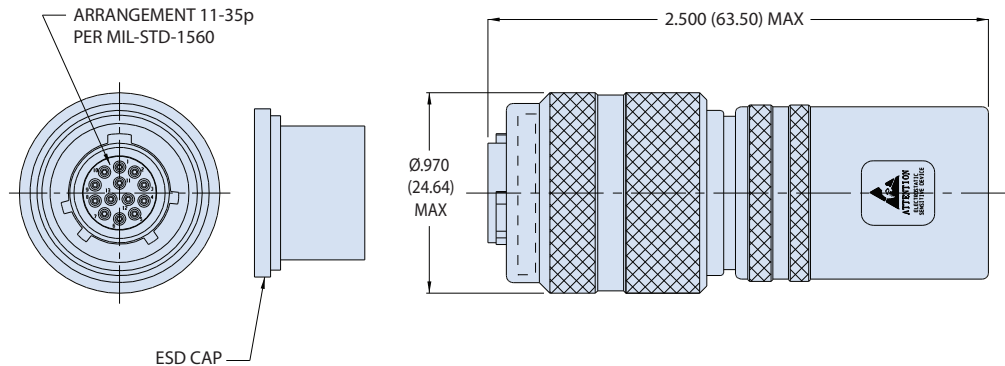


B

Part Number Development						
Sample Part Number	233-393	NF	128	11	P	N
Series / Basic Part No.	293-393 = SuperNine Memory Stick					
Finish	NF = Al alloy/cadmium olive drab ZR = Al alloy/black zinc nickel MT = Al alloy/nickel PTFE ME = Al alloy/electroless nickel Consult factory for additional finish options					
Storage Capacity Options (SLC)	64 = 64 GB 128 = 128 GB 256 = 256 GB					
Shell Size	11 = Shell Size 11					
Contact Type	P = Pin S = Socket					
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)					

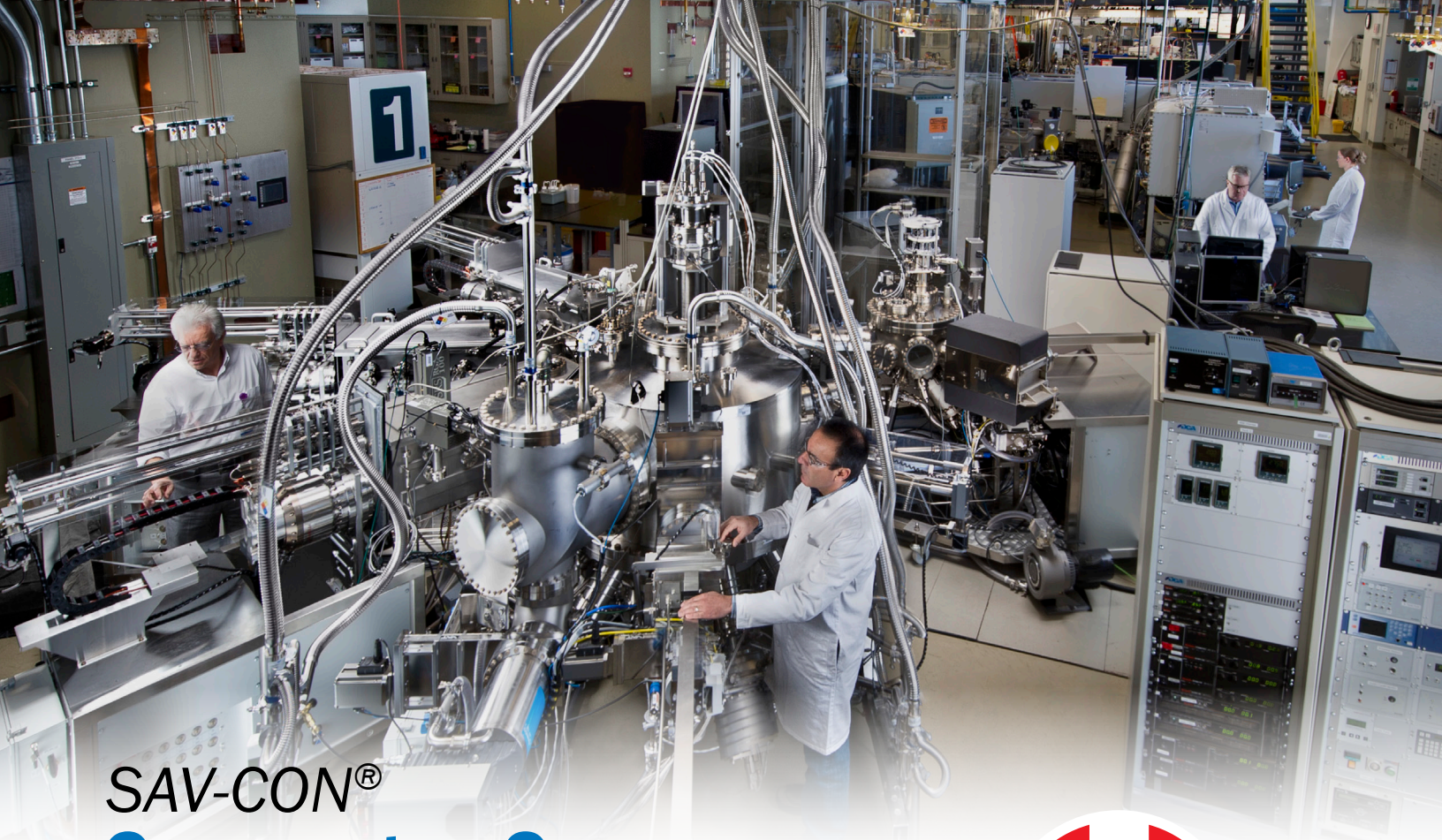
*Refer to Section A for complete details

11-35 Arrangement, Pin Assignment		
Pin	Name	Description
1	(D+)	Data +
2	(V Bus)	+5V
3	NC	(Dummy)
4	NX	(Dummy)
5	NC	(Dummy)
6	(GND)	Ground
7	NC	(Dummy)
8	NC	(Dummy)
9	NC	(Dummy)
10	(D-)	Data -
11	NC	(Dummy)
12	NC	(Dummy)
13	NC	(Dummy)



NOTES

- Parts to be shipped with ESD caps (CEC-010) installed
- USB memory specifications:
 - Storage capacity: 64 GB, 128 GB, 256 GB
 - Compatible with:
 - Windows 7, Vista, XP, 2000, ME, 98SE
 - Linux Kernel 2.4 and above
 - Mac OS 9.x and above
 - Interface: D38999, Series III
 - Data Transfer Rate: up to 480 Mb/sec.
 - Write protection and AES encryption at host level
 - MTBF: more than 2,000,000 hours (dependent on configuration and testing environment)
 - Data retention: 10 years
- Environmental parameters:
 - Operating temperature 0°C to 70°C (MLC commercial)
 - Storage temperatures: -50°C to +85°C
 - Humidity: 5% to 95% non-condensing
- Material and finish
 - Barrel, coupling nut, lockring: see how to order table
 - Insulators: high grade rigid dielectric/NA
 - EMI grounding spring: BeCu / electroless nickel plate



SAV-CON® Connector Savers

The smart solution for preventing contact damage and extending the service life of cable assemblies and box and panel-mount receptacles.



Glenair Sav-Con® Connector Savers are designed to protect connectors that are subject to repeated mating and unmating cycles. Sav-Con® Connector Savers prevent costly repair or replacement of expensive connectors and cables while preserving the quality and integrity of connector performance. Sav-Con® Connector Savers take the abuse of repeated connection cycles instead of "black box" or other equipment connectors. Equipment connectors that are mated and unmated frequently during manufacturing, check-out phases and environmental test programs can be protected by Glenair Sav-Con® Connector Savers at considerable savings in time and money

Features:

- Available for every standard 1560 insert arrangement
- Broad range of finish platings
- High-reliability performance
- 500 mating cycles
- Gender changers
- Independent pin and socket contact selection
- Independent keyed polarization
- Wall mount and jam-nut mount bulkhead feed-thrus



Gender changers provide a simple solution to mismatched connector interfaces and are available in feed-through or in-line configurations



High-reliability connector savers prevent mating cycle damage to receptacle connectors during qualification and test, significantly reducing wear and the possibility of damage prior to delivery



Sav-Con® connector savers



Circular, rectangular and special application
Military standard and commercial connectors

FULL RANGE OF CIRCULAR MILITARY STANDARD CONFIGURATIONS



MIL-DTL-38999 Series III Type
Plug/Receptacle Go-Between



MIL-DTL-38999 Series II



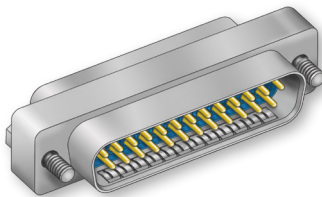
MIL-DTL-5015 Type



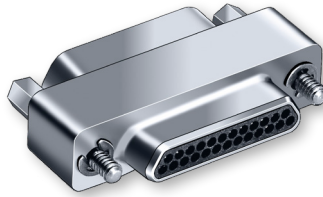
Series 80 Mighty Mouse

B

SAV-CON® RECTANGULAR D-SUBMINIATURE, MICRO, AND NANO MINIATURE CONNECTOR SERIES



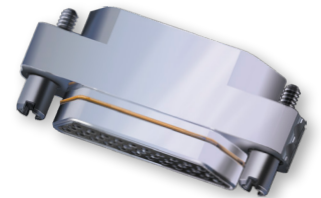
M24308
D-subminiature



Micro-D



Nano-Miniature™



HiPer-D®

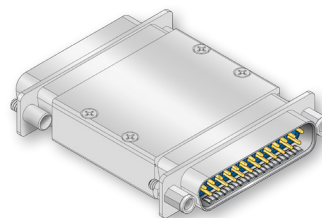
SAV-CON® SPECIAL APPLICATION CONNECTOR SERIES



MIL-DTL-38999 Series III Type
In-Line Gender Changer



MIL-DTL-38999 Series III
Type Filtered Adapter



HiPer-D® Gender
Changer



Micro-D Filter
Changer

Each Glenair Sav-Con® Connector Saver meets the military specification performance requirements of its mating connector. Glenair manufactures and supplies a Sav-Con® connector saver for most every military standard connector currently in use including:

- MIL-DTL-26482 Series I and II
- MIL-DTL-28840
- MIL-DTL-38999 Series I, II and III
- MIL-DTL-83723 LN 29729 (SJT)
- PATT 105 and PATT 602
- Series 801 and 805 Mighty Mouse
- M24308 D-Subminiature
- MIL-DTL-83513 Micro-D Subminiature
- MIL-DTL-5015
- Series 28 HiPer-D® M24308 intermateable
- Series 89 Nano Miniature™ M32139
- Series 79 Micro-Crimp®

Comprehensive materials, plating, and polarization options available

233-212 Wall mount bulkhead feed-thru MIL-DTL-38999 Series III type

B

Part Number Development													
Sample Part Number	233-212					-00	NF	17-8	P	N	S	N	-01
Series / Basic Part No.	SuperNine Environmental Bulkhead feedthru												
Connector Style	00 = Wall Mount Receptacle with Slotted Holes CM = Wall Mount Receptacle with Metric Clinch Nuts CS = Wall Mount Receptacle with Standard Clinch Nuts HM = Wall Mount Receptacle with Metric Helicoils HS = Wall Mount Receptacle with Standard Helicoils												
Finish*	NF = Cadmium Olive Drab			ME = Electroless Nickel									
	MT = Nickel PTFE			ZR = Black Zinc Nickel									
Shell Size-Insert Arrangement*	Per MIL-STD-1560												
Contact Type (Panel Side) See Note 1	P = Pin On Panel Side; 500 Cycles					S = Socket On Panel Side; 500 Cycles							
Alternate Polarization*	A, B, C, D, E, N = Normal, U = Universal												
Contact Type (Flange Side) See Note 1	P = Pin On Panel Side; 500 Cycles					S = Socket On Panel Side; 500 Cycles							
Alternate Polarization*	A, B, C, D, E, N = Normal, U = Universal												
Panel Accommodation	-01 = .062/.125			-02 = .062/.250			-03 = .062/.500						

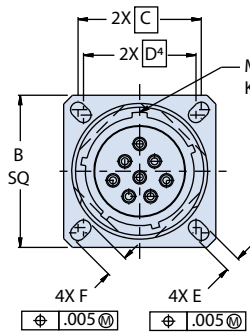
*Refer to Section A for complete details

Dimensions												
Shell Size Code	Shell Size	A Thread -0.1P-0.3L- TS-2A	B Sq	B' Sq	C Bsc	D Bsc ⁴	E	F	G	G'	H Thd	H' Thd
A	9	.6250	.949 (24.10) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)	.136 (3.45) .120 (3.05)	.224 (5.69) .208 (5.28)	.122 (3.10) .083 (2.11)	.179 (4.55) .140 (3.56)	.112-40	M3X0.5
B	11	.7500	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)		.202 (5.13) .186 (4.72)				
C	13	.8750	1.138 (28.91) 1.114 (28.30)	1.281 (32.54) 1.241 (31.52)	.906 (23.01)	.812 (20.62)		.181 (4.60) .165 (4.19)				
D	15	1.0000	1.232 (31.29) 1.208 (30.68)	1.344 (34.14) 1.304 (33.12)	.969 (24.61)	.906 (23.01)						
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)						
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)		.202 (5.13) .186 (4.72)				
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)						
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)	.162 (4.11) .146 (3.71)	.153 (3.89) .114 (2.90)	.190 (4.83) .170 (4.32)	.138-32	M4X0.7	
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)						

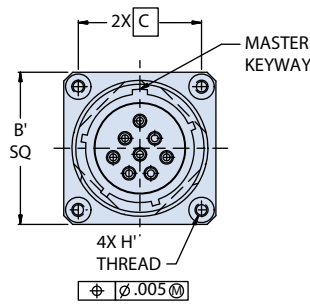
233-212 Wall mount bulkhead feed-thru MIL-DTL-38999 Series III type

B

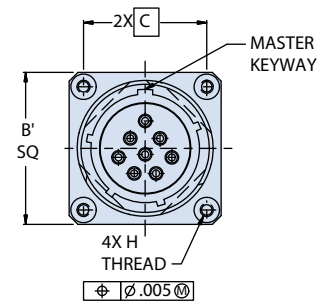
00, CM, CS, HM, HS - WALL MOUNT RECEPTACLES



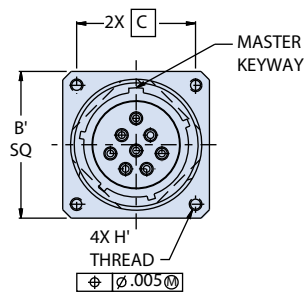
00 - SLOTTED HOLES



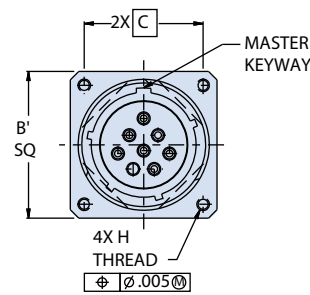
CM - METRIC CLINCH NUTS



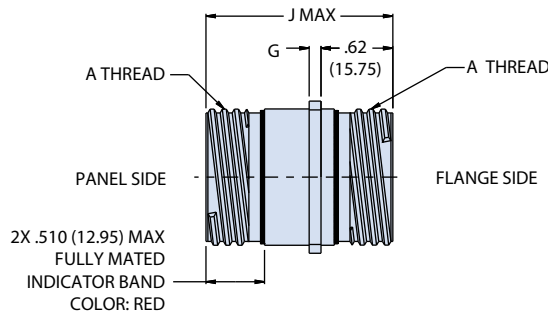
CS - STANDARD CLINCH NUTS



HM - METRIC HELICOILS



HS - STANDARD HELICOIL



Panel Accommodation		
Sym	Panel Thickness	J Max
01	.125 (3.18) .062 (1.57)	1.70 (43.18)
02	.250 (6.35) .062 (1.57)	1.83 (46.48)
03	.500 (12.70) .062 (1.57)	2.08 (52.83)

NOTES:

- 233-212 feed-thru connector is designed to meet or exceed the mechanical, dimensional, electrical, and environmental requirements of MIL-DTL-38999, D38999/20, and MIL-STD-1560 except as shown and/or noted. Feed-thru mates with any QPL manufacturer's MIL-DTL-38999, Series III plug connector, D38999/26, having the same shell size, insert arrangement, and polarization.
- For pin/pin and socket/socket, symmetrical layouts only, consult factory for available symmetrical insert arrangements.
- Power to a given contact on one end will result in power to a given contact directly opposite, regardless of identification letter.
- Front panel mount only
- Alternate polarization 'U' is a non-standard/non-mil-spec option, allows mating to any QPL manufacturers MIL-DTL-38999 connector, intended for use in testing facilities.
- Electrical safety limits must be established by user. Peak voltage, switching surge, transient, etcetera should be determined the safety application.
- Material/finish
 - Shell: see P/N development, finish
 - Contacts: copper alloy/gold plated
 - Insulators: high-grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.

233-212-07 Jam nut mount bulkhead feed-thru MIL-DTL-38999 Series III type

B

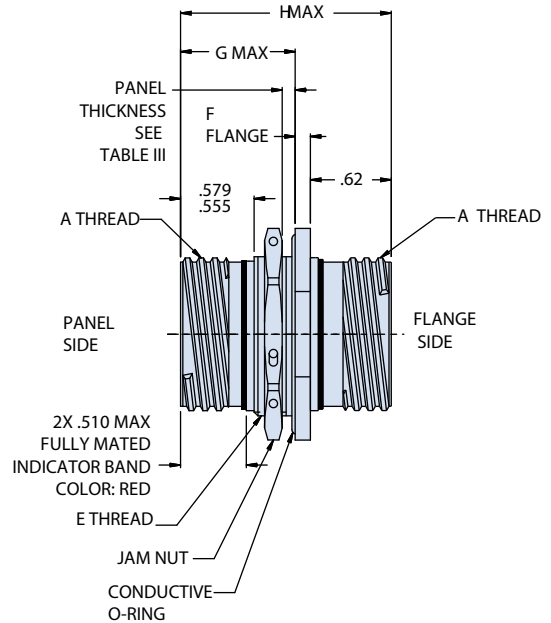
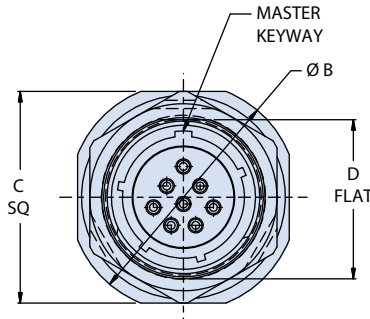
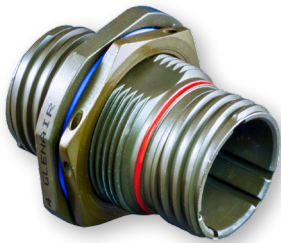
Part Number Development										
Sample Part Number	233-212				-07	NF	17-8	P	N	S
Series / Basic Part No.	SuperNine Environmental Bulkhead Feed-thru									
Connector Style	07 = Jam-nut Receptacle									
Finish*	NF = Cadmium Olive Drab		ME = Electroless Nickel							
	MT = Nickel PTFE		ZR = Black Zinc Nickel							
Shell Size-Insert Arrangement*	Per MIL-STD-1560									
Contact Type (Panel Side) See Note 1	P = Pin, gold, 500 Cycles				S = Socket, gold, 500 Cycles					
Alternate Polarization* (Panel Side)	A, B, C, D, E, N = Normal, U = Universal									
Contact Type (Flange Side) See Note 1	P = Pin, gold, 500 Cycles				S = Socket, gold, 500 Cycles					
Alternate Polarization* (Flange Side)	A, B, C, D, E, N = Normal, U = Universal									
Panel Accommodation	See Panel Accommodation Table									

*Refer to Section A for complete details

Dimensions							
Shell Size Code	Shell Size	A Thd	Ø B	C Sq	D Flat	E Thd ISO Metric	F
A	9	.6250 -0.1P-0.3L-TS-2A	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17 X 1.0-6g	.122 (3.10) .083 (2.11)
B	11	.7500 -0.1P-0.3L-TS-2A	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20 X 1.0-6g	
C	13	.8750 -0.1P-0.3L-TS-2A	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25 X 1.0-6g	
D	15	1.0000 -0.1P-0.3L-TS-2A	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g	
E	17	1.1875 -0.1P-0.3L-TS-2A	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g*	
F	19	1.2500 -0.1P-0.3L-TS-2A	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g	.153 (3.89) .114 (2.90)
G	21	1.3750 -0.1P-0.3L-TS-2A	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g	
H	23	1.5000 -0.1P-0.3L-TS-2A	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g	
J	25	1.6250 -0.1P-0.3L-TS-2A	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44 X 1.0-6g	

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

233-212-07 Jam nut mount bulkhead feed-thru MIL-DTL-38999 Series III type



B

Panel Accommodation			
Sym	Panel Thickness	G Max	H Max
01	.125 (3.18) .062 (1.57)	.890 (22.61)	1.70 (43.18)
02	.250 (6.35) .062 (1.57)	1.015 (25.78)	1.83 (46.48)
03	.500 (12.70) .062 (1.57)	1.265 (32.13)	2.08 (52.83)

NOTES:

- 233-212-07 feed-thru connector is designed to meet or exceed the mechanical, dimensional, electrical, and environmental requirements of MIL-DTL-38999, D38999/24, and MIL-STD-1560 except as shown and/or noted. Feed-thru mates with any QPL manufacturer's MIL-DTL-38999, series III plug connector, D38999/26, having the same shell size, insert arrangement, and polarization.
- For pin/pin and socket/socket, symmetrical layouts only, consult factory for available symmetrical insert arrangements.
- Power to a given contact on one end will result in power to a given contact directly opposite, regardless of identification letter. Alternate polarization 'U' is a non-standard/non-mil-spec option, allows mating to any QPL manufacturers MIL-DTL-38999 connector, intended for use in testing facilities.
- Electrical safety limits must be established by user. Peak voltage, switching surge, transient, etc. should be used to determine the safety application.
- Material/finish
 - Shell, jam-nut: see part number development table, finish
 - contacts: copper alloy/gold plated
 - insulators: high-grade rigid dielectric/N.A.
 - seals: fluorosilicone blend/N.A.
 - O-ring: silver plated aluminum in fluorosilicone (cho-seal 1298 or equivalent)

233-213 Sav-Con® in-line connector saver
MIL-DTL-38999 Series III type

ENVIRONMENTAL IN-LINE WITH PIN/PIN AND SOCKET/SOCKET OPTIONS PLUS INDEPENDENT ALTERNATE POLARIZATION

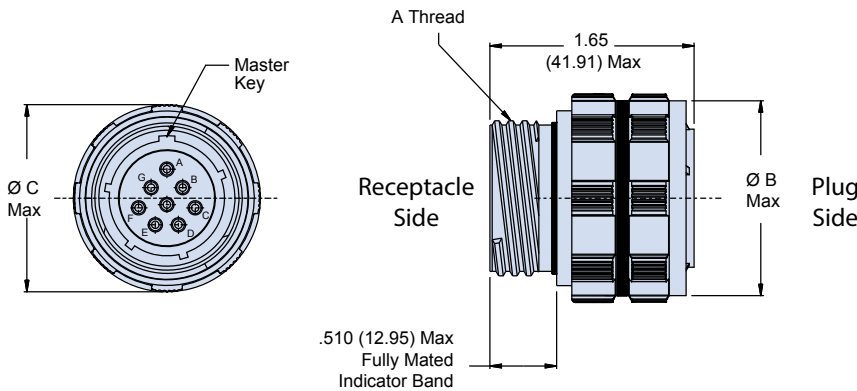
B

Part Number Development								
Sample Part Number	233-213		-NF	17-8	P	N	S	N
Series / Basic Part No.	Sav-Con Connector Saver, High Reliability class							
Finish	NF = Cadmium Olive Drab ME = Electroless Nickel MT = Nickel PTFE ZR = Black Zinc Nickel							
Shell Size - Insert Arrangement*	Per MIL-STD-1560							
Contact Style (Plug Side)	P = Pin, gold, 500 cycles S = Socket, gold, 500 cycles See Notes 3 and 4							
Alternate Polarization* (Plug Side)	A, B, C, D, E, N = Normal, U = Universal see note 6							
Contact Style (Receptacle Side)	P = Pin, gold, 500 cycles S = Socket, gold, 500 cycles See Notes 3 and 4							
Alternate Polarization* (Receptacle Side)	A, B, C, D, E, N = Normal, U = Universal; See Note 6							

*Refer to Section A for complete details

NOTES

- Glenair's 233-213 connector savers are designed to meet or exceed the mechanical dimensional, electrical, and environmental, requirements of MIL-DTL-38999, D38999/20, D38999/26, and MIL-STD-1560 except as shown and /or noted.
- Glenair connector savers mate with any QPL manufacturer's MIL-DTL-38999, series III plugs and receptacles that have the same shell size, insert arrangement, and polarization.
- For pin/pin and socket/socket, symmetrical insert layouts only.
- Power to a given contact on one end will result in power to a contact directly opposite, regardless of identification letter.
- Electrical safety limits must be established by user. Peak voltage, switching surge, transient, etc. should be used to determine the safety application.
- Alternate polarization 'U' (universal) is a non-standard/non-mill-spec option intended for test lab use only which allows for mating to any QPL manufacturer's MIL-DTL-38999, series III connector having the same shell size, insert arrangement, and mating contact size.
- Material/finish:
 - Barrel, coupling nut: see part number development, finish
 - detent spring: stainless steel/passivated
 - insulator: high grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.
 - Contacts: copper alloy/gold plated



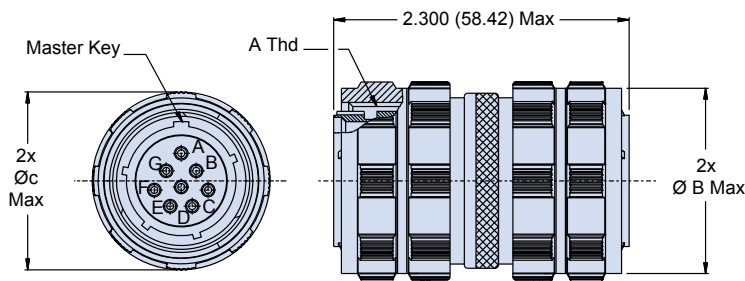
Dimensions				
Shell Size Code	Shell Size	A Thread	Ø B Max	Ø C Max
A	9	.6250 – 0.1P – 0.3L – TS-2A	.811 (20.60)	.858 (21.79)
B	11	.7500 – 0.1P – 0.3L – TS-2A	.929 (23.60)	.984 (24.99)
C	13	.8750 – 0.1P – 0.3L – TS-2A	1.110 (28.19)	1.157 (29.39)
D	15	1.0000 – 0.1P – 0.3L – TS-2A	1.232 (31.29)	1.280 (32.51)
E	17	1.1875 – 0.1P – 0.3L – TS-2A	1.358 (34.49)	1.406 (35.71)
F	19	1.2500 – 0.1P – 0.3L – TS-2A	1.469 (37.31)	1.516 (38.51)
G	21	1.3750 – 0.1P – 0.3L – TS-2A	1.594 (40.49)	1.642 (41.71)
H	23	1.5000 – 0.1P – 0.3L – TS-2A	1.720 (43.69)	1.768 (44.91)
J	25	1.6250 – 0.1P – 0.3L – TS-2A	1.843 (46.81)	1.890 (48.01)

233-214 in-line plug/plug connector saver MIL-DTL-38999 Series III type

B

Part Number Development										
Sample Part Number	233-214				-NF	17-8	P	N	S	N
Series / Basic Part No.	Sav-Con Connector Saver with polarization options									
Finish	NF = Cadmium Olive Drab MT = Nickel PTFE		ME = Electroless Nickel ZR = Black Zinc Nickel							
Shell Size - Insert Arrangement*	Per MIL-STD-1560									
Contact Style (Plug Side)	P = Pin, gold, 500 cycles See notes 2 and 3					S = Socket, gold, 500 cycles				
Alternate Polarization* (Plug Side)	A, B, C, D, E, N = Normal, U = Universal; See Note 5									
Contact Style (Plug Side)	P = Pin, gold, 500 cycles See notes 2 and 3					S = Socket, gold, 500 cycles				
Alternate Polarization* (Plug Side)	A, B, C, D, E, N = Normal, U = Universal; See Note 5									

*Refer to Section A for complete details



Dimensions				
Shell Size Code	Shell Size	A Thread .1P-.31-TS-2B	ØB Max	ØC Max
A	9	.6250	0.811 (20.6)	0.858 (21.8)
B	11	.7500	0.929 (23.6)	0.984 (25.0)
C	13	.8750	1.110 (28.2)	1.157 (29.4)
D	15	1.0000	1.232 (31.3)	1.280 (32.5)
E	17	1.1875	1.358 (34.5)	1.406 (35.7)
F	19	1.2500	1.469 (37.3)	1.516 (38.5)
G	21	1.3750	1.594 (40.5)	1.642 (41.7)
H	23	1.5000	1.720 (43.7)	1.768 (44.9)
J	25	1.6250	1.843 (46.8)	1.890 (48.0)

NOTES

- Glenair's 233-214 connector savers are designed to meet or exceed the mechanical dimensional, electrical, and environments requirements of MIL-DTL-38999, D38999/20 and /24 and MIL-STD-1560 except as shown and /or noted. Glenair connector savers mate with any QPL manufacturer's MIL-DTL-38999, series III plugs and receptacles have the same shell size, insert arrangement, and polarization.
- For pin/pin and socket/socket, symmetrical layout only.
- Power to a given contact on one end will result in power to a contact directly opposite, regardless of identification letter.
- Electrical safety limits must be established by user. Peak voltage, switching surge, transient, etc. should be used to determine the safety application.
- Alternate polarization 'U' (universal) is a non-standard/non-mill-spec option intended for test lab use only which allows for mating to any QPL manufacturer's MIL-DTL-38999, series III connector having the same shell size, insert arrangement, and mating contact size. Universal connectors are intended for use in testing facilities only and should be highly evaluated before consideration in another environment.
- Material/finish
 - Barrel, coupling nut: see part number development, finish
 - Detent spring: stainless steel/passivated
 - Insulator: high grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.
 - contacts: copper alloy/gold plated



SuperNine[®] PWM

Aerospace-grade connectors for PWM and other high-voltage, high-temperature applications

High-voltage power connectors optimized for pulse width modulation applications (PWM) require unique capabilities including the ability to withstand PWM inverter electrical stresses far different from standard 50/60 Hz AC conditions. Designed in collaboration with the Clean Sky Consortium, Glenair SuperNine[®] PWM power connectors have been optimized for PWM switch frequencies, 1000V working voltages, and temperature range tolerance from -65° to +200°C. In addition to its high-performance, heavy gold crimp power contacts, the SuperNine[®] PWM features stainless steel connector shells and temperature-tolerant PEEK (polyetheretherketone) dielectric inserts. Engineered contact-to-contact spacing and contact-to-shell grounding contributes to this connector's unique capability in MEA (More Electric Aircraft) and other power-intensive commercial and military applications.

SuperNine[®] PWM is the latest offering in Glenair's high-performance MIL-DTL-38999 Series III connector family. Glenair is a qualified (QPL) supplier of MIL-DTL-38999 Series III connectors (EN3645-001: 23 type). SuperNine[®] rolls up many of the technology advances Glenair has pioneered in our commercial environmental, hermetic, and filter D38999 connectors from our over 60 years in the interconnect industry.

SuperNine[®] is intermateable with all industry-standard D38999 solutions and accommodates Glenair's broad range of connector designator "H" backshells, protective covers, shrink boots and lightweight composite accessories.



- 1000 VAC RMS/VDC working voltage
- IAW EN3645-001: 23
- Certified for Clean Sky PWM inverters
- SuperNine[®] high-performance MIL-DTL-38999 type
- High-vibration / anti-decoupling performance
- Shell-to-shell grounding plus integral EMI grounding fingers
- High-temperature tolerant PEEK inserts
- Heavy gold-plated size #8 power crimp contacts
- Wide range of supported cables
- Available strain relief and shield termination backshells

SuperNine® Environmental connectors

Pulse width modulation performance specifications

MIL-DTL-38999 Series III type • IAW EN3645-01:23



B

TECHNICAL CHARACTERISTICS AND MATERIALS

- Shell size according to EN3645-001: 23
- Four size #8 crimp contacts
- Working voltage: 1000 Vac RMS/Vdc
- Voltage proof test: see table below
- Contact current rating (4 contacts loaded): 125A @20°C; 70A @ 135°C
- Max. contact resistance: 2 mΩ
- Min. insulating resistance: 5000 MΩ
- Working temperature (continuous): (-65 to +200) °C
- Max. working temperature for short time (60s): 260°C
- Max. ambient temperature: 135°C
- IP rating (mated): IP67 IAW EN 60529
- 500 mating cycles

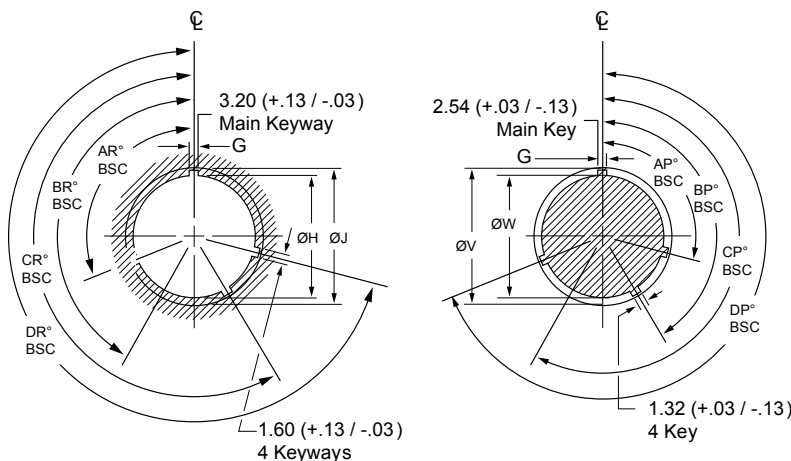
Materials	
Component	Material
Contacts	High Conductivity Copper Alloy Gold Over Nickel Plated
Insert	Plastic Peek Material
Interfacial Seal and Grommet	Silicone Elastomer
Metallic Parts	Passivated Stainless Steel

ELECTRICAL PERFORMANCE

Voltage Proof Test	Rating	
	Mated (Vac RMS)	Unmated (Vac RMS)
Pressure		
Sea Level	3000	3000
12.1 kPa (15000 meters)	1000	900
4.7 kPa (21000 meters)	1000	540
1.1 kPa (30000 meters)	1000	270

Voltage Proof with Partial Discharge Measurement	
Description	Requirement
Measurement of partial discharge (one minute at 1.5 kVac RMS)	< 10 pC
PDIV (Partial discharge ignition voltage)	> 1080 Vac RMS
PDEV (Partial discharge extinction voltage)	> 950 Vac RMS

ALTERNATE POLARIZATIONS IAW MIL-DTL-38999 SERIES III



Alternate Key and Keyway Receptacles

Alternate Key and Keyway Plugs

Series III Alternate Key and Keyway Polarization					
Shell Size	Key and Keyway Code	AR° or AP° BSC	BR° or BP° BSC	CR° or CP° BSC	DR° or DP° BSC
23	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272

SuperNine® Environmental connectors

233-230-G6 Pulse width modulation plug connectors

MIL-DTL-38999 Series III type • IAW EN3645-01:23

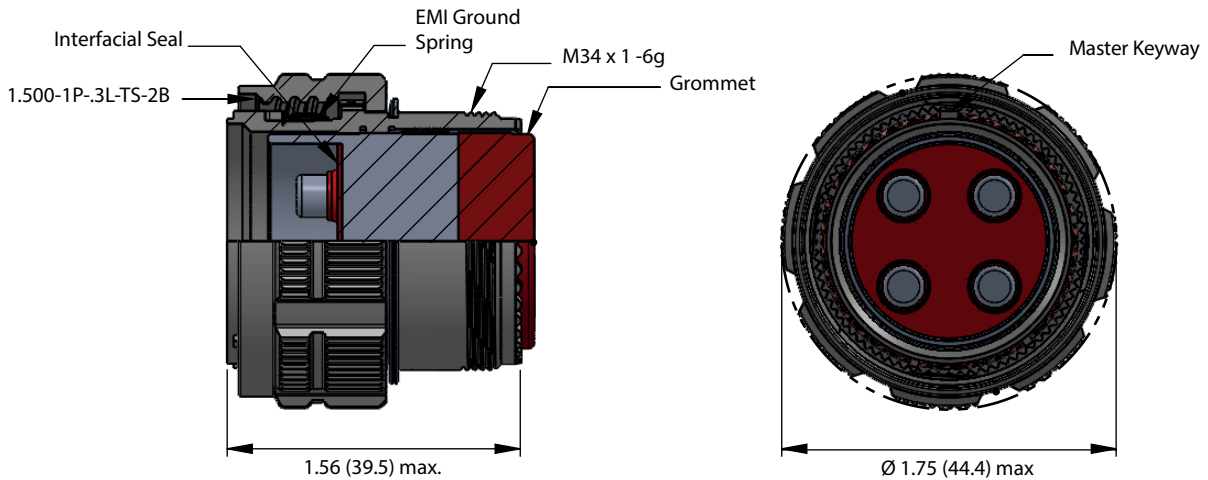


PLUG CONNECTOR

B



Part Number Development						
Sample Part Number	233-230	-G6	Z1	23R48	P	N
Product Series	SuperNine HV					
Connector Style	G6 = Plug, with EMI spring					
Finish	Z1 = CRES, passivated					
Insert Arrangement	23R48					
Contact Type	A = Less pin contacts		B = Less socket contacts			
	P = Pin		S = Socket			
Alternate Polarization	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III) See page 3					



Materials	
Item	Material
Interfacial Seal	Silicone Elastomer
Spring EMI Contact	Copper Alloy
Plug	Passivated Stainless Steel
Coupling Nut with Ratched Spring	Passivated Stainless Steel
Retaining Ring	Stainless Steel
Pin Insert	Thermoplastic
Contact Retaining Clip	Copper Alloy
Seal Grommet	Silicone Elastomer
Ring Retaining Insert	Thermoplastic
Pin Crimp Contact	Gold Plated Copper Alloy

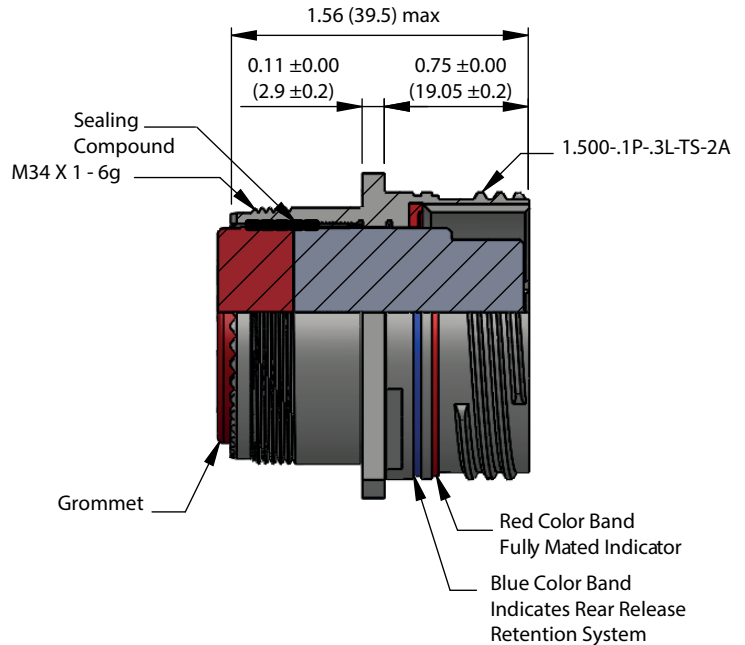
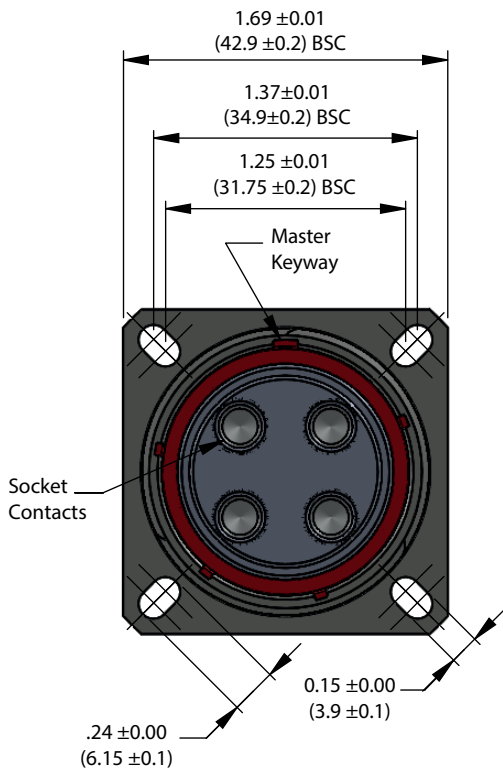
233-230-00 Pulse width modulation receptacle connector
MIL-DTL-38999 Series III type • IAW EN3645-01:23

RECEPTACLE CONNECTOR



Part Number Development						
Sample Part Number	233-230	-00	Z1	23R48	P	N
Product Series	SuperNine HV					
Connector Style	00 = Receptacle, square flange with slotted holes					
Finish	Z1 = CRES, passivated					
Insert Arrangement	23R48					
Contact Type	A = Less pin contacts P = Pin		B = Less socket contacts S = Socket			
Alternate Polarization	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III) See page 3					

B



Materials	
Item	Material
Peripheral Seal	Silicone Elastomer
Receptacle	Passivated Stainless Steel
Socket Insert	Thermoplastic
Contact Retaining Clip	Copper Alloy
Ring Retaining Insert	Thermoplastic
Seal Grommet	Silicone Elastomer
Socket Crimp Contact	Gold Plated Copper Alloy, Stainless Steel Hood

CONTACTS

Glenair has developed new high-performance contacts for high-voltage / high-temperature applications made from high electrical conductivity copper alloy with outstanding mechanical performance up to 260°C (excursions). Special heavy gold plating resists corrosion, improves mating cycle durability, and contributes to high-temperature application requirements. Contacts are terminated to wire using precision crimp tools, and are snapped into place by hand or with a handheld insertion tool. Damaged or miswired contacts may be removed from the connector using standard extraction tools.

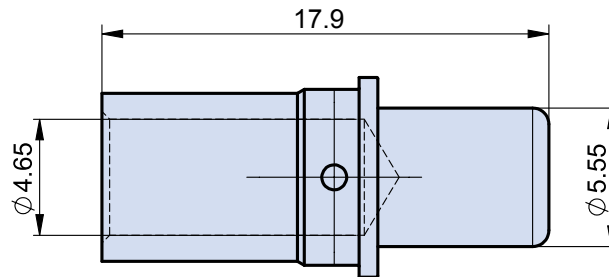
B

PIN CONTACT

High temperature pin contact, gold plated. Terminate to wire with standard crimp tools. IAW SAE AS39029.



Contact Type	Conductor Size	Part Number
Pin	#8	10-13033-102-8PG122

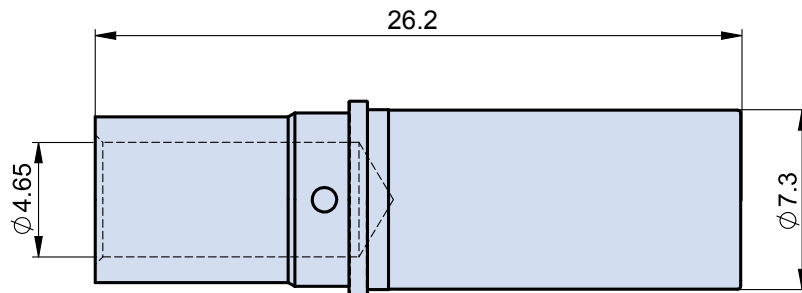


SOCKET CONTACT

High temperature socket contact, gold plated, passivated CRES hood. Terminate to wire with standard crimp tools. IAW SAE AS39029.

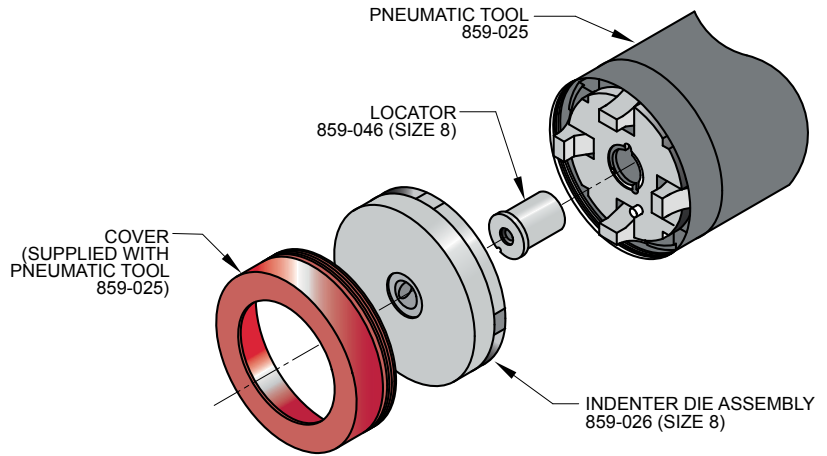


Contact Type	Conductor Size	Part Number
Socket	#8	10-13033-103-8SG122-H



PNEUMATIC CRIMP TOOL FOR SIZE #8 POWER CONTACTS EXPLODED VIEW

The Daniels WA23 pneumatic crimp tool size #8 sets the standard for heavy-duty crimping. This four-indent tool accommodates large power contacts ranging from size #8 through size 0000. Die plates and locators are purchased separately. Qualified to M22520/23, the WA23 tool is specified for use with SAE AS39029 closed barrel copper alloy contacts.



B

PNEUMATIC CRIMP TOOL

Bench-mount heavy-duty pneumatic indent crimp tool. Four-indent crimp termination. Use with closed barrel contact sizes 8 through 4/0. Attach to air supply with quick-disconnect fitting or install 1/4 NPT fitting into tapped port. 90-120 psi air supply. Requires die assembly and locator, sold separately. Hand actuate with push-button valve trigger on handle. Steel with black wrinkle enamel coating. 13 inches overall length, 9.2 inches tall, 17 pounds (7.7 Kg).

Description	Part Number	Military Part Number	Daniels Part Number
Pneumatic Crimper	859-025	M22520/23-01	WA23

DIE ASSEMBLY FOR SIZE #8 CONTACTS

Indenter Die Assembly. Precision four-indent die with hardened tool steel indenters, stainless steel housing, aluminum cap. Use with size #8 contacts. Go/No Go calibration dimensions are stamped on face of tool. Approximately 3.3 inches (84 mm.) diameter.

Description	Part Number	Military Part Number	Daniels Part Number
Die Assembly, Size #8	859-026	M22520/23-02	WA23-2

LOCATOR FOR SIZE #8 CONTACTS

Aluminum locator holds contact at correct depth for crimping.

Description	Part Number	Military Part Number	Daniels Part Number
Locator, #8, Special	859-046	(none)	WA23-395L

TurboFlex® aerospace-grade power cable

MIL-DTL-38999 Series III type • IAW EN3645-01:23

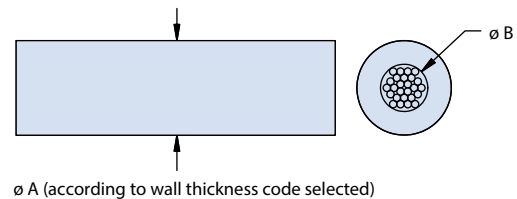


Ultra-flexible rope lay construction

TurboFlex® cable is constructed from highly flexible conductors and high-performance insulation for optimized flexibility, durability, and weight reduction. Amazingly durable and flexible—especially in cold weather—the 16 AWG to 450 MCM TurboFlex cable features high strand count rope lay inner conductors made with tin-, nickel- and silver-plated copper. TurboFlex is jacketed with Glenair's unique low-smoke, zero-halogen Duraelectric™ compound that provides outstanding flexibility and resistance to environmental and chemical exposure.

B

Part Number Development					
Sample Part Number	961	-001	-T	-G	-2
Basic No.	TurboFlex with Duraelectric Jacket				
Wall Thickness	001 = .125" 002 = .093" 003 = .062" 004 = .032"				
Conductor Material	T = Tin/Copper (-60 -150°C) S = Silver/Copper (-60 -200°C) N = Nickel/Copper (-60 -260°C)				
Wire Size (See Table I)	See Table I: -001 = G, H, I, J, K, L -002 = D, E, F, G, H, I, J, K, L -003 = A, B, C, D, E, F, G, H -004 = R, S, A, B, C, D, E, F, G				
Duraelectric Jacket Color	See Table II				



Voltage Ratings	
961-004	2000 VAC
961-003	3000 VAC
961-002	3500 VAC
961-001	4500 VAC

AWG Code	AWG	Strand / Count / AWG	Cir Mil (nom)	Ø B in. (mm)	DC Resistance @ 20°C (Ohms / 1000 ft.)			Ampacity (Amps) 40°C Ambient	
					Nickel Copper	Tin Copper	Silver Copper	Nickel Copper	Tin/Silver Copper
R	16	7 X 15 X 36	2625	.0 63 (1.60)	4.5510	4.5930	4.2780	40	36
S	14	7 X 24 X 36	4200	.080 (2.03)	2.8450	2.8710	2.6740	59	54
A	12	7 X 37/36	6475	.099 (2.51)	1.8450	1.8620	1.7340	78	68
B	10	7 X 59/36	10325	.126 (3.20)	1.1570	1.1680	1.0880	107	90
C	8	7 X 95/36	16625	.159 (4.04)	.7188	.7252	.6755	142	124
D	6	7 X 150/36	26250	.200 (5.08)	.4551	.4593	.4278	205	165
E	4	7 X 7 X 34/36	41650	.271 (6.88)	.2979	.3006	.2800	278	220
F	2	7 X 7 X 54/36	66150	.342 (8.69)	.1876	.1893	.1763	381	293
G	1/0	7 X 7 X 86/36	105350	.431 (10.95)	.1178	.1188	.1107	532	399
H	2/0	7 X 7 X 108/36	132300	.483 (12.27)	.0938	.0946	.0882	591	467
I	3/0	19 X 7 X 51/36	169575	.547 (13.89)	.0738	.0745	.0694	708	546
J	4/0	19 X 7 X 64/36	212800	.613 (15.57)	.0588	.0594	.0553	830	629
K	250 MCM	19 X 7 X 75/36	249375	.663 (16.84)	.0479	.0483	.0450	910	705
L	450 MCM	19 X 7 X 135/36	448875	.890 (22.61)	.0266	.0263	.0250	1320	1020

NOTES

- Bend radius is 3X the outer diameter
- Cable will be marked with "Glenair TurboFlex", wire gauge, part number, CAGE code.
- Jacket thickness tolerance is ±10% (±.005 for 961-004)Notes
- Duraelectric™ environmental performance
- Temperature rating: -60°C to 260°C
- Halogen free per IEC 60614-1
- Accelerated weathering and simulated solar radiation at ground level per IEC 60068-2-5; 56 Days exposure, suitable for greater than 50 years of service in direct sunlight
- Flame resistant per IEC 60614-1
- Flame resistant per UL 1685, section 12 (FT4/IEEE120), vertical-tray fire-propagation and smoke release test
- Flame resistant per far 25.853 (A) amendment 25-116, appendix F part I

SuperNine® Environmental connectors

TurboFlex® aerospace-grade power cable

MIL-DTL-38999 Series III type • IAW EN3645-01:23



B

961-001 TURBOFLEX, .125 WALL, 4500 VAC

961-001 Wire Weight and Outer Diameter			
AWG Code	Weight lbs/1000 ft. (nom.)	Ø A In. (mm)	Jacket wall thickness In. (mm)
G	494.50	.681 (17.30)	.125 (3.18)
H	600.00	.733 (18.62)	
I	749.50	.797 (20.24)	
J	916.00	.863 (21.92)	
K	1055.60	.913 (23.19)	
L	1806.20	1.140 (28.96)	

961-002 TURBOFLEX, .093 WALL, 3500 VAC

961-002 Wire Weight and Outer Diameter			
AWG Code	Weight lbs/1000 ft. (nom.)	Ø A In. (mm)	Jacket wall thickness In. (mm)
D	138.40	.386 (9.80)	.093 (2.36)
E	207.40	.457 (11.61)	
F	304.60	.528 (13.41)	
G	455.80	.617 (15.67)	
H	558.20	.649 (16.48)	
I	703.90	.733 (18.62)	
J	866.50	.799 (20.29)	
K	1003.10	.849 (21.56)	
L	1740.10	1.076 (27.33)	

961-003 TURBOFLEX, .062 WALL, 3000 VAC

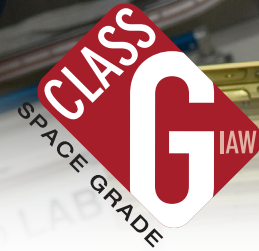
961-003 Wire Weight and Outer Diameter			
AWG Code	Weight lbs/1000 ft. (nom.)	Ø A In. (mm)	Jacket wall thickness In. (mm)
A	40.20	.223 (5.66)	.062 (1.57)
B	56.20	.250 (6.35)	
C	81.00	.283 (7.19)	
D	117.90	.324 (8.23)	
E	182.80	.395 (10.03)	
F	275.90	.466 (11.84)	
G	422.00	.555 (14.10)	
H	521.40	.607 (15.42)	

961-004 TURBOFLEX, .032 WALL, 2000 VAC

961-004 Wire Weight and Outer Diameter			
AWG Code	Weight lbs/1000 ft. (nom.)	Ø A In. (mm)	Jacket wall thickness In. (mm)
R	14.40	.127 (3.23)	.032 (.81)
S	20.70	.144 (3.66)	
A	29.40	.163 (4.14)	
B	43.90	.190 (4.83)	
C	66.90	.223 (5.66)	
D	101.40	.264 (6.71)	
E	162.40	.335 (8.51)	
F	251.60	.406 (10.31)	
G	392.70	.495 (12.57)	

- (A) (1) (i), 60 second vertical burn test
- 11. Limiting oxygen index of 45 per ISO 4589-2:1999
- 12. Low smoke per NES 711, smoke density of 11.75
- 13. Smoke density class F1 per NF F 16-101 IAW Din EN 60695-2-11:2011
- 14. Low smoke toxicity per NES 713, tested value of 1.9
- 15. Fungus rating of 0 per MIL-STD-810g method 508.5, Does not support fungal growth
- 16. ASTM D624, die B tear strength, 150 pounds per inch minimum on jacket material
- 17. Low outgassing per ASTM e595 after post curing, .06%, CVCM .006%, WVR .02%
- 18. Resistant to fluids per MIL-STD-810F, method 504
- 19. JP-8 per MIL-DTL-83133 (NATO type 34)
 MIL-H-5606 hydraulic fluid
 MIL-PRF-23699 lubricating oil
 MIL-C-85570 cleaner
 TT-I-735 Isopropyl alcohol
 AMS 1432 potassium acetate deicing/anti-icing fluid
 MIL-C-87252 coolant
 Amerex AFF fire extinguishing foam

Jacketing Options		
Weatherproof, halogen free, flame resistant, functional to 260°C		
0	Black	Fed-Std-595C #17038
1	Desert Tan	Fed-Std-595C #33446
2	Red	Fed-Std-595C #11120
3	Orange	Fed-Std-595C #12300
4	Yellow	Fed-Std-595C #13591
5	Green	Fed-Std-595C #14193
6	Blue	Fed-Std-595C #15125
7	Violet	Fed-Std-595C #17142
8	Gray	Fed-Std-595C #26270
9	White	Fed-Std-595C #17875
Consult factory for other specific Fed Std colors		
Abrasion Resistance		Good
Wear Resistance		Good
Flame Resistance		Excellent
Sunlight Resistance		Excellent
Flex Resistance		Excellent



ENVIRONMENTAL SERIES 23

Space-Grade Guidelines for SuperNine[®] Connectors

Outgassing

Space flight equipment requires low-outgassing components in order to prevent degradation to optics and other sensitive instruments. SuperNine[®] connectors contain nonmetallic materials such as rubber, plastic, adhesives and potting compounds which can give off gasses when subjected to a vacuum or high heat. Unless the connector is specially processed, the TML and CVCM can exceed allowable limits. The space industry has adopted a standardized test procedure, ASTM E595, to evaluate outgassing properties. The MIL-DTL-38999 specification Class G also details specific TVM and CVCM values in addition to finish specifications. In Glenair's 186T process, for example, connectors and connector materials are heated to 175° C at a vacuum of 5×10^{-6} Torr for 48 hours. Items under test are then weighed to calculate the Total Mass Loss (TML), which may not exceed 1.0% of the total initial mass. A collector plate is used to determine the Collected Volatile Condensable Material (CVCM), which may not exceed 0.1% of the total original specimen mass for Class G rated connectors. Glenair is able to offer outgas processing which assures all materials comply with their respective standards.

Note on Connector Material and Finish Options

Some types of metals are prohibited for space flight. "Pure Tin, Cadmium and Zinc shall not be used as a final finish on EEE parts." (NASA EEE-INST-002 Instructions for EEE Parts Selection, Screening, Qualification, and Derating). NASA recommends electroless nickel or gold finish on connector shells and gold finish for contacts.

- SuperNine[®] environmental series connectors may be subjected to outgas processing and/or NASA screening IAW MIL-DTL-38999 Class G
- Modification codes are a convenient way to specify outgassing / screening requirements per NASA specifications and/or D38999 Class G
- Cadmium and silver finish are prohibited in space
- Specify electroless nickel finish on connector shells and gold finish on contacts

**Class G and NASA space-grade guidelines
MIL-DTL-38999 Series III type**

NASA and Class G Screening

The MIL-DTL-38999 specification defines TML and CVCM values for Class G space flight. Glenair modification code 186T assures parts are outgassed to meet the Class G requirements for outgassing.

Additionally, NASA recommends that connectors for space flight be specially screened. NASA EEE-INST-002 instructions for EEE parts selection, screening, qualification, and derating contains three levels of screening for space-grade components. These outgassing and screening modification codes are listed at right. To add a modification code append code to end of part number: **253-016-00ME25-35PNMS-429C**.

- **“Mission critical” connectors for space flight should undergo rigorous 100% final inspection**
- **Modification codes are available to invoke special screening for both MIL-DTL-38999 and NASA applications**
- **Outgassing properties of materials used in Glenair SuperNine® connectors are detailed in the table below**

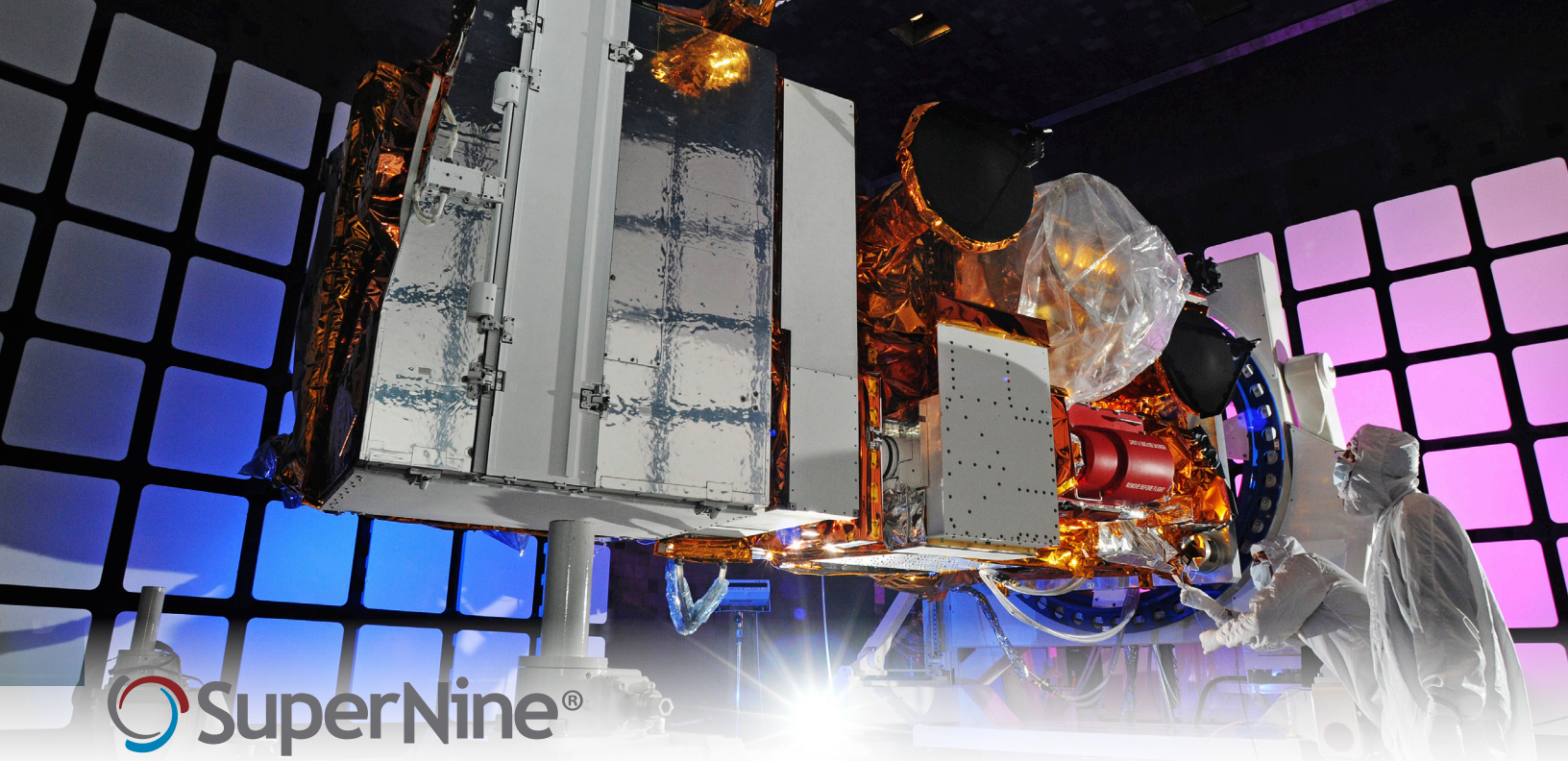
Screening Level and Available Outgassing Modification Codes				
Screening Level	Screening Only	48 Hour Oven Bake 175° C	Thermal Vacuum Outgassing (10 ⁻⁶ Torr)	
			24 Hour 125° C	48 Hour 175° C
NASA, Level 1 Highest Reliability	429B	429J	429C	
NASA, Level 2 High Reliability	429	429K	429A	
NASA, Level 3 Standard Reliability	Use Standard Part Number		429L	
38999, Class G or H (Group A and B inspection, no screening)				186T

Table II: NASA EEE-INST-02, Table 2A Screening Levels			
Inspection	Level 1	Level 2	Level 3
Visual	100%	100%	100%
Mechanical	2(0)	2(0)	
Dielectric Withstanding Voltage	2(0)	2(0)	
Insulation Resistance	2(0)	2(0)	
Contact Engagement & Separation Force	2(0)		
Hermeticity (Sealed Receptacles Only)	100%	100%	
Coupling Force	2(0)		

Required inspection quantity shown. Number in parenthesis indicates acceptance of failures allowed for all quantities inspected.

Outgassing Properties of Materials Used in MIL-DTL-38999 Type SuperNine® Connectors				
Component	Material	TML %	CVCM %	Test Reference
Front and Rear Insulator	Epiall 1908	0.84	0.0	NASA Test # GSC15435 (48 hours at 180°C)
Rear Grommet, Interfacial Seal, Peripheral Seal, and Special Auxiliary Seals	Blended fluorosilicone/silicone elastomer	0.04	0.0	Glenair test
Front-To-Rear Insulator Bonding Material	Eccobond 104 A/B	0.52	0.08	Emerson & Cuming Data Sheet
Insulator-to-Rubber Bonding Material	RTV, per MIL-A-46146	<1.0	<0.1	Glenair Test
White Epoxy Ink for Silk-screening	Markem 7224 White	0.49	0.03	NASA Test #GSC19899
Potting Compound	High-performance space-grade epoxy	<1.0	<0.1	Glenair Test

MIL-DTL-38999 Type SuperNine® Connector Materials Approved for Space Flight		
Component	Material	Notes
Shells, Coupling Nuts, Jam Nuts	Aluminum alloy	Approved for Space Flight
Rigid Insulators	Glass reinforced thermoset plastic, Epiall 1908	Approved for Space Flight
Contact Retention Clip	Beryllium copper, heat-treated, unplated	Approved for Space Flight
Grommet, Peripheral Seal, Interfacial Seal, Special Auxiliary Seals, O-ring	Blended fluorosilicone/silicone elastomer	Requires outgassing processing
Pin/Socket Contact	Gold plated beryllium copper alloy	Approved for Space Flight
Socket Contact Hood	Stainless steel	Approved for Space Flight
Potting Compounds and Adhesives	RTV and epoxies	Requires outgassing processing



Space-Grade Circular Blind-Mate Connectors



Application: Glenair Series 253 blind-mate connectors are designed to meet applicable environmental, electrical and mechanical performance characteristics of D38999 Series III. The technology is well suited for use in commercial rack-and-panel instrumentation applications, as well as a blind-mate solution for satellite deployment, scientific research and development payloads, interstage, UAV, and munitions release and more.

- Blind-mate, fixed and float-mount interconnects for non-ITAR commercial as well as military/defense applications
- Adjustable separation force (AKA assisted-release, zero extraction force) solutions
- Misalignment accommodation and special auxiliary sealing for trouble-free blind mating in environmental applications
- Available in most symmetrical MIL-STD-1560 insert arrangements with contact sizes from #23 to #8
- Selected materials offer low outgassing properties and high resistance to both corrosion and stress corrosion cracking
- NASA outgassing bake-out process available
- Designed to withstand the rigors of launch and flight—including shock, vibration, thermal vacuum, acceleration, and temperature extremes
- Standard accessory threads and teeth per MIL-DTL-38999 accommodate a wide range of backshell accessories
- Crimp-removable contacts standard. Consult factory for PC tails, dual-flange standoffs, custom blind-mate configurations, and hermetically sealed options

Current Rating	
Size Contact	Amps
23	5
22D	5
20	7.5
16	13
12	23

Altitude (Feet)	Unmated Test Voltages, AC RMS, 60 Hz			
	Service Rating M	Service Rating N	Service Rating I	Service Rating II
Sea Level	1300	1000	1800	2300
50,000	550	400	600	800
70,000	350	260	400	500
100,000	200	260	200	200

SuperNine® Space-grade, blind-mate float-mount and adjustable separation force connectors

MIL-DTL-38999 Series III type, environmental, crimp contact



B

CRITICAL MECHANICAL FEATURES OF BLIND-MATE AND ADJUSTABLE SEPARATION FORCE (ZEF) CONNECTORS



Roll-off nose: allows for the smooth disconnection of blind mate plugs and receptacles. Without this feature, connectors can catch or hang during mate and demate.



Float mounting: allows for a modicum of coplanar movement of the receptacle during rack-and-panel and other blind mate applications, preventing both contact and shell damage.



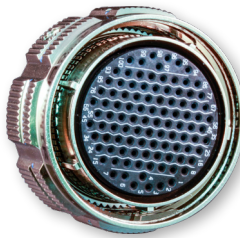
Misalignment accommodation: Additional radial, axial, and angular misalignment during mating is accounted for in the receptacle design with integral wave springs.



Sealing: Misalignment accommodation makes environmental sealing difficult in blind-mate connectors. The problem is solved with auxiliary external seals.



EMI shielding: Glenair incorporates ground springs in receptacle connectors as well as grounding fingers in special coupling nut-equipped plugs (253-018-G6 feed-thru shown) to optimize 360° shell-to-shell continuity.



Assisted separation force: Glenair supplies two styles of spring-loaded blind-mate connectors. **Adjustable kick-off styles** feature spring-loaded posts on the plug and an adjustment ring on the receptacle used to calibrate separation force. A second style uses wave springs on the shell body.



Available non-ITAR environmental blind-mate and adjustable separation force solutions		
Basic Part No.	Description	Mates With
253-014	Fixed jam-nut mount plug with roll-on/roll-off nose and Accessory threads	253-015
253-015	Floating jam-nut mount receptacle with misalignment accommodation and optional sealing	253-014
253-016	Fixed wall mount plug with spring assist (zero separation force)	253-017
253-017	Floating wall mount receptacle with adjustable separation force and misalignment accommodation	253-016
253-018-07	Blind-mate feed-thru, jam-nut mount plug with B-side D38999 type receptacle mating interface and assisted kick-off (spring force)	253-019
253-018-G6	Blind-mate in-line feed-thru with B-side D38999 type plug mating interface and assisted kick-off (spring force)	253-019
253-019	Floating jam-nut mount receptacle with misalignment accommodation and optional sealing	253-018
253-031	Blind-mate jam-nut mount plug with kick-off spring and accessory threads	253-032
253-032	Floating jam-nut mount receptacle with misalignment accommodation	253-031
253-033	Float mount feed-thru, jam nut mount receptacle to 38999 type Series III plug mating interface	253-019
253-025	Locking circuit and test mate connector	253-016

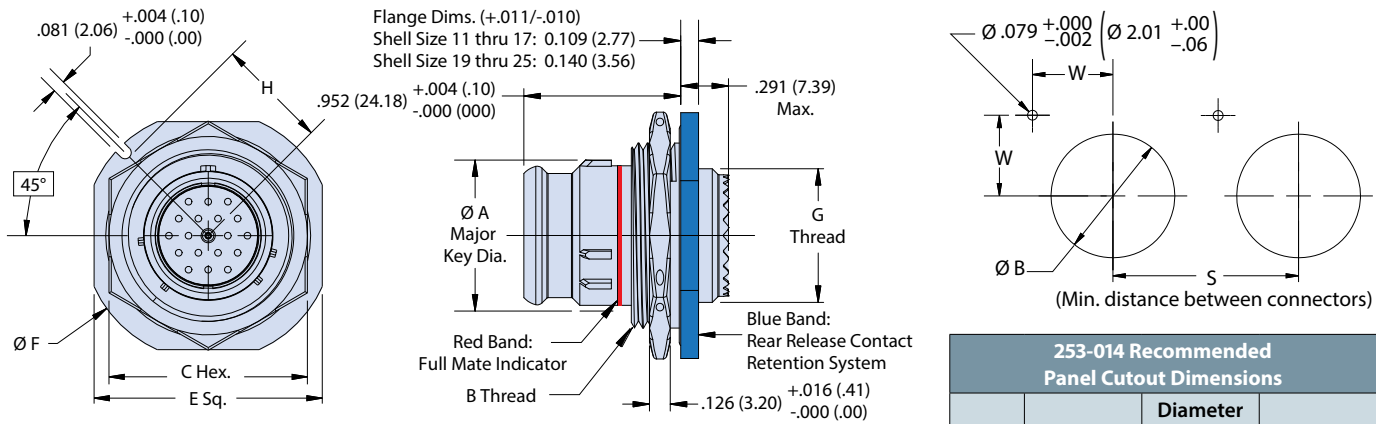
Blind-mate plug and receptacle pair, jam-nut mount with misalignment accommodation and optional sealing

B

Part Number Development										
Sample Part Number	253-014			-07	ME	25-35	P	N	NS	H
Series / Basic Part No.	253 = Blind-mate -014 = Plug (fixed mount) -015 = Receptacle (float mount)									
Connector Style	07 = Jam nut mount; contact factory for wall mount receptacles									
Material/Finish	ME = Aluminum, electroless nickel ZL = CRES, electrodeposited nickel MT = Aluminum, nickel PTFE Z1 = CRES, passivated									
Shell Size - Insert Arrangement*	Per MIL-STD-1560; symmetrical layouts only, consult factory for complete details									
Contact Type	P = Pin, crimp removable S = Socket, crimp removable A = Pin insert, less contacts B = Socket insert, less contacts									
Alternate Polarization	A, B, C, D, E, N = Normal (Polarization for intermateability with 253-014 is per MIL-DTL-38999 Series I)									
Non Sealing	NS = Non-Sealing (omit for external elastomer seal version, applies to 253-015 only)									
Jam-Nut Type	H = Hex S = Spanner with wire holes (applies to 015 only)									

*Refer to section A for complete details. Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-014 FIXED JAM-NUT MOUNT PLUG WITH ROLL-ON/ROLL-OFF NOSE AND ACCESSORY THREADS



253-014 Dimensions							
Shell Size	A Max Dia.	Thread B Class 2A	C Max	E (±.016)	F Max Dia.	G Thread Class 2A	H (+0/- .008)
11	.673 (17.09)	.8125-20 UNEF	1.016 (25.81)	1.250 (31.75)	1.386 (35.20)	.5625-24	.604 (15.34)
13	.798 (20.27)	1.0000-20 UNEF	1.181 (30.00)	1.375 (34.92)	1.511 (38.38)	.6875-24	.666 (16.92)
15	.923 (23.44)	1.1250-18 UNEF	1.300 (33.02)	1.500 (38.10)	1.636 (41.55)	.8125-20	.729 (18.52)
17	1.048 (26.62)	1.2500-18 UNEF	1.457 (37.01)	1.625 (41.28)	1.761 (44.73)	.9375-20	.791 (20.09)
19	1.173 (29.79)	1.3750-18 UNEF	1.575 (40.00)	1.812 (46.02)	1.949 (49.50)	1.0625-18	.893 (22.68)
21	1.298 (32.97)	1.5000-18 UNEF	1.693 (43.00)	1.938 (49.23)	2.073 (52.65)	1.1875-18	.955 (24.26)
23	1.423 (36.14)	1.6250-18 UNEF	1.880 (47.75)	2.062 (52.37)	2.200 (55.88)	1.3125-18	1.017 (25.83)
25	1.548 (39.32)	1.7500-18 UNS	2.016 (51.21)	2.187 (55.55)	2.323 (59.00)	1.4375-18	1.096 (27.84)

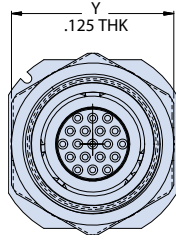
253-014 Recommended Panel Cutout Dimensions			
Shell Size	W	Diameter B ±.004	S
11	.460 (11.68)	0.821 (20.85)	1.282 (32.56)
13	.504 (12.80)	1.007 (25.58)	1.417 (35.99)
15	.549 (13.94)	1.134 (28.80)	1.559 (39.60)
17	.593 (15.06)	1.259 (31.98)	1.705 (43.31)
19	.665 (16.89)	1.384 (35.15)	1.850 (46.99)
21	.709 (18.01)	1.507 (38.28)	1.992 (50.60)
23	.753 (19.13)	1.634 (41.50)	2.134 (54.20)
25	.797 (20.24)	1.759 (44.68)	2.350 (59.69)

NOTES:

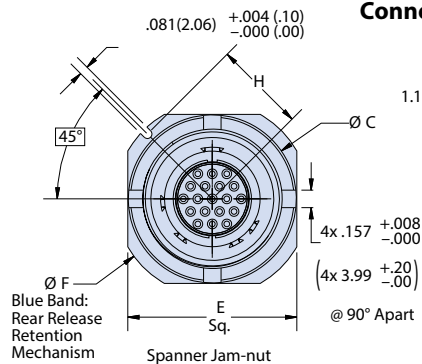
- Glenair 253-014 is designed to mate with 253-015 with same insert arrangement.
- Stainless steel locating pin to be shipped with connector
- Misalignment capabilities are possible with 253-014, when mated to 253-015.
- Contact manufacturer for outgassing options.
- Material/finish
- Shell, jam-nut: see P/N development, finish
- Insulator: high grade rigid dielectric/N.A.
- Seals: fluorosilicone blend/N.A.
- contacts: copper alloy/gold plated

Blind-mate plug and receptacle pair, jam-nut mount with misalignment accommodation and optional sealing

253-015 FLOATING JAM-NUT MOUNT RECEPTACLE WITH MISALIGNMENT ACCOMMODATION AND OPTIONAL SEALING



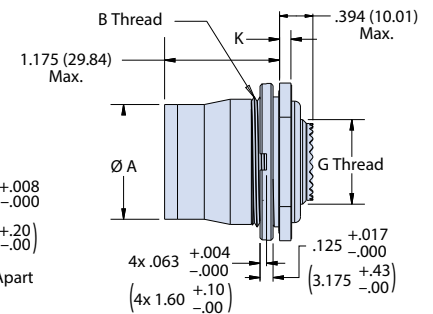
Hex Jam-nut



Blue Band: Rear Release Retention Mechanism

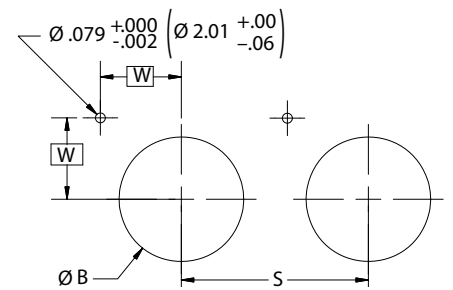
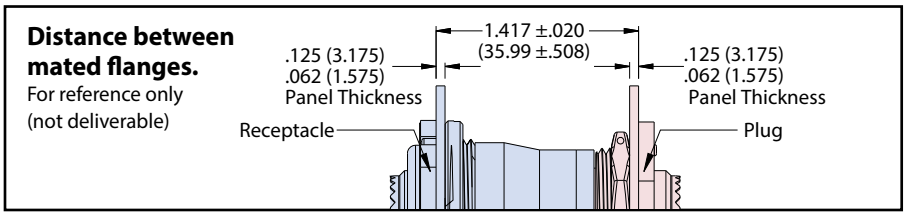
Spanner Jam-nut

Connector Shown Includes Sealing Option

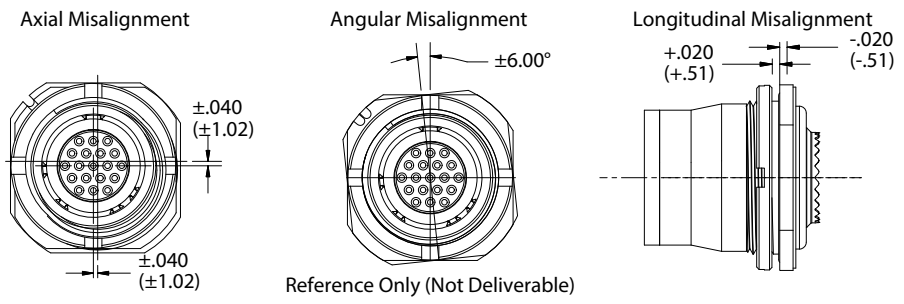


B

253-015 Dimensions									
Shell Size	A Max Dia.	Thread B Class 2A	C Max.	Y Hex	E ±.016(.41)	F Max Dia.	G Thd Class 2A	K +.011/.010 (+.28/.25)	H +0/--.008 (+0/--.20)
11	.853 (21.67)	1.0000-20 UNEF	1.264 (32.11)	1.181 (30.00)	1.266 (32.16)	1.500 (38.10)	.5625-24	.109 (2.77)	.666 (16.92)
13	.978 (24.84)	1.1250-18 UNEF	1.388 (35.26)	1.300 (33.02)	1.391 (35.33)	1.641 (41.68)	.6875-24	.109 (2.77)	.729 (18.52)
15	1.103 (28.02)	1.2500-18 UNEF	1.512 (38.40)	1.457 (37.01)	1.516 (38.51)	1.750 (44.45)	.8125-20	.109 (2.77)	.791 (20.09)
17	1.228 (31.19)	1.3750-18 UNEF	1.638 (41.61)	1.575 (40.00)	1.641 (41.68)	1.938 (49.23)	.9375-20	.109 (2.77)	.893 (22.68)
19	1.353 (34.37)	1.5000-18 UNEF	1.823 (46.30)	1.693 (43.00)	1.828 (46.43)	2.062 (52.37)	1.0625-18	.140 (3.56)	.955 (24.26)
21	1.478 (37.54)	1.6250-18 UNEF	1.953 (49.61)	1.880 (47.75)	1.954 (49.63)	2.188 (55.58)	1.1875-18	.140 (3.56)	1.017 (25.83)
23	1.603 (40.72)	1.7500-18 UNS	2.075 (52.71)	2.010 (51.05)	2.078 (52.78)	2.312 (58.72)	1.3125-18	.140 (3.56)	1.080 (27.43)
25	1.728 (43.89)	1.8750-16 UNS	2.122 (53.90)	2.125 (53.97)	2.128 (54.05)	2.327 (59.11)	1.4375-18	.140 (3.56)	1.086 (27.58)



253-015 Misalignment Capabilities



253-015 Recommended Panel Cutout Dimensions			
Shell Size	W	B Dia. ±.004 (.10)	S
11	.504 (12.80)	1.007 (25.58)	1.282 (32.56)
13	.549 (13.94)	1.134 (28.80)	1.417 (35.99)
15	.593 (15.06)	1.259 (31.98)	1.559 (39.60)
17	.665 (16.89)	1.384 (35.15)	1.705 (43.31)
19	.709 (18.01)	1.507 (38.28)	1.850 (46.99)
21	.753 (19.13)	1.634 (41.50)	1.992 (50.60)
23	.797 (20.24)	1.759 (44.68)	2.134 (54.20)
25	.842 (21.39)	1.884 (47.85)	2.262 (57.45)

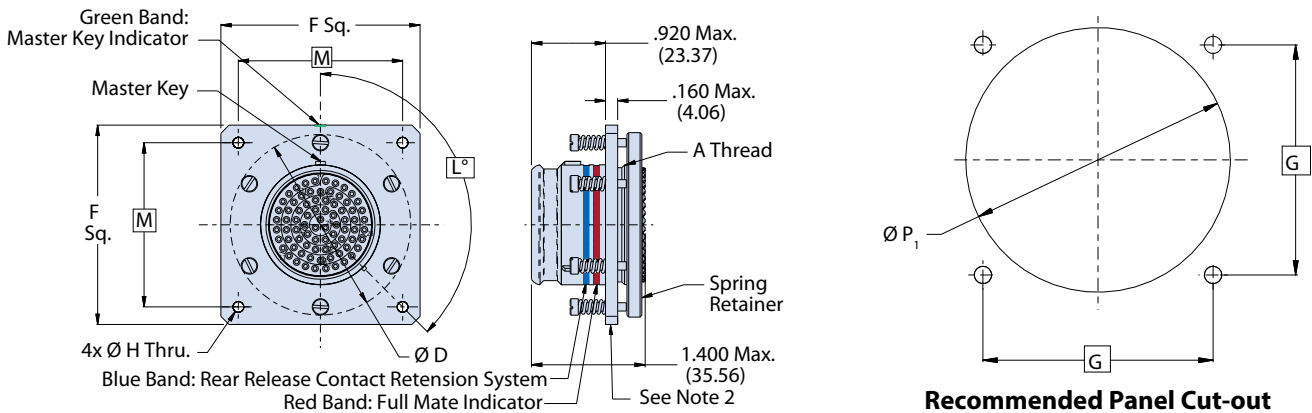
Blind-mate wall mount assisted separation force (ZEF) plug and receptacle pair with misalignment accommodation

B

Part Number Development										
Sample Part Number	253-016			00	ME	21-35	S	N	MS	A
Series / Basic Part No.	253 = Blind-mate connector with adjustable assisted separation force -016 = Plug (fixed mount) -017 = Receptacle (float mount)									
Connector Style	00 = Wall mount									
Material/Finish	ME = Aluminum, electroless nickel ZL = CRES, electrodeposited nickel MT = Aluminum, nickel PTFE Z1 = CRES, passivated									
Shell Size-Insert Arrangement	Per MIL-STD-1560									
Contact Type	P = Pin, crimp removable S = Socket, crimp removable									
Alternate Polarization	A = 40°, B = 65°, C = 80°, D = 210°, E = 250°, F = 280°, G = 310°, H = 330°, N = 135° (Normal) Per L°									
Contact Type	MS = Military specification									
Adjustment Ring Material	(253-017 receptacle only) A = Aluminum C = Corrosion-resistant steel									

*Refer to section A for complete details. Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-016 FIXED WALL MOUNT PLUG WITH SPRING ASSIST (ZERO SEPARATION FORCE)

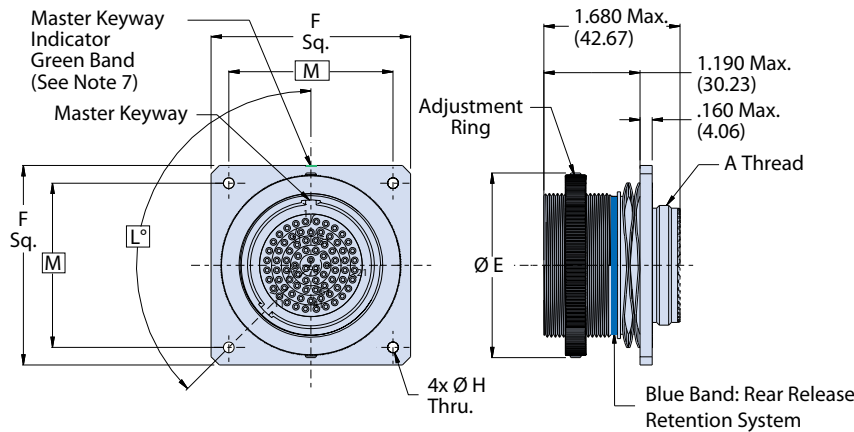


Recommended Panel Cut-out

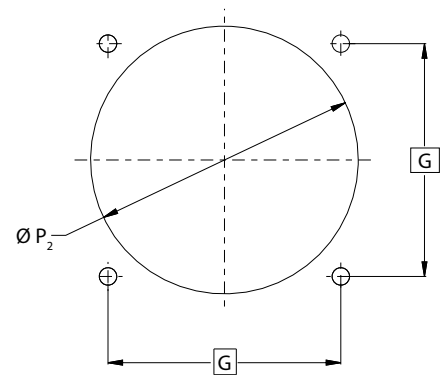
Dimensions for 253-016 and 253-017									
Shell Size	F Flange ±.010 (±.25)	M Square	Ø H ±.005 (±.13)	Ø D Max.	Ø E Max.	A Thread	Ø P ₁ ±.005 (±.13)	Ø P ₂ ±.005 (±.13)	G Square
9	1.430(36.32)	1.000(25.40)	.128(3.25)	1.250(31.75)	1.300 (33.02)	M12 X 1.0-6g-0.100R	1.300(33.02)	1.330 (33.78)	1.150 (29.21)
11	1.555(39.50)	1.200(30.48)	.128(3.25)	1.375(34.93)	1.425 (36.20)	M15 X 1.0-6g-0.100R	1.425(36.20)	1.455 (36.96)	1.200 (30.48)
13	1.680(42.67)	1.250(31.75)	.128(3.25)	1.500(38.10)	1.550 (39.37)	M18 X 1.0-6g-0.100R	1.550(39.37)	1.580 (40.13)	1.250 (31.75)
15	1.805(45.85)	1.375(34.93)	.128(3.25)	1.625(41.28)	1.675 (42.55)	M22 X 1.0-6g-0.100R	1.675(42.55)	1.705 (43.31)	1.375 (34.92)
17	1.930(49.02)	1.500(38.10)	.128(3.25)	1.750(44.45)	1.800 (45.72)	M25 X 1.0-6g-0.100R	1.800(45.72)	1.830 (46.48)	1.500 (38.10)
19	2.055(52.20)	1.625(41.28)	.128(3.25)	1.875(47.63)	1.925 (48.90)	M28 X 1.0-6g-0.100R	1.925(48.90)	1.955 (49.66)	1.625 (41.28)
21	2.180(55.37)	1.750(44.45)	.128(3.25)	2.000(50.80)	2.050 (52.07)	M31 X 1.0-6g-0.100R	2.050(52.07)	2.080 (52.83)	1.750 (44.45)
23	2.305(58.55)	1.875(47.63)	.154(3.91)	2.125(53.98)	2.175 (55.25)	M34 X 1.0-6g-0.100R	2.175(55.25)	2.205 (56.01)	1.875 (47.63)
25	2.430(61.72)	2.000(50.80)	.150(3.81)	2.250(57.15)	2.300 (58.42)	M37 X 1.0-6g-0.100R	2.300(58.42)	2.330 (59.18)	2.000 (50.80)

Blind-mate wall mount assisted separation force (ZEF) plug and receptacle pair with misalignment accommodation

253-017 FLOATING WALL MOUNT RECEPTACLE WITH ADJUSTABLE SEPARATION FORCE AND MISALIGNMENT ACCOMMODATION



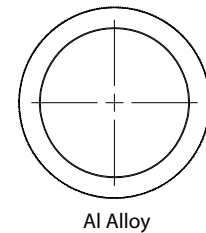
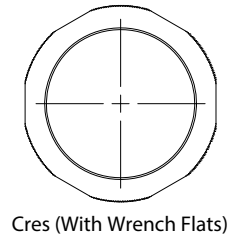
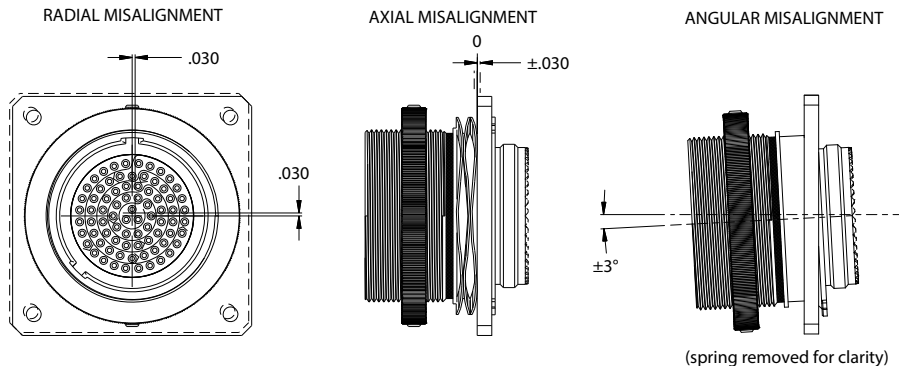
Recommended Panel Cut Out



253-017 Misalignment Capabilities

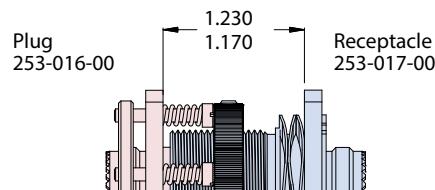
Adjustment Ring Geometry and Material Options

Contact manufacturer for other options



Distance between mated flanges.

For reference only (not deliverable)



NOTES:

- 253-017 mates with 253-016 fixed series.
- Distance between mated mounting flanges: 1.170/1.230. Consult manufacturer other distance between mounting flanges is required
- Separation force is adjustable ± 5 lbs when mated with 253-016 and 253-017 pairs have adjustable separation force of ±5 lbs
- See Space-Grade guidelines material, in this section, for outgassing/screening options available
- Spares: pin or socket contacts IAW AS39029 or per Glenair part number if controlled force contacts
- Contact factory for PC tail versions
- Material/finish
 - Shell (016 and 017), ring (017), retainer ring (016): see P/N development, finish
 - Wave spring(017), springs and spring retainer (016): CRES/passivated
 - Insulators: high grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend/N.A.

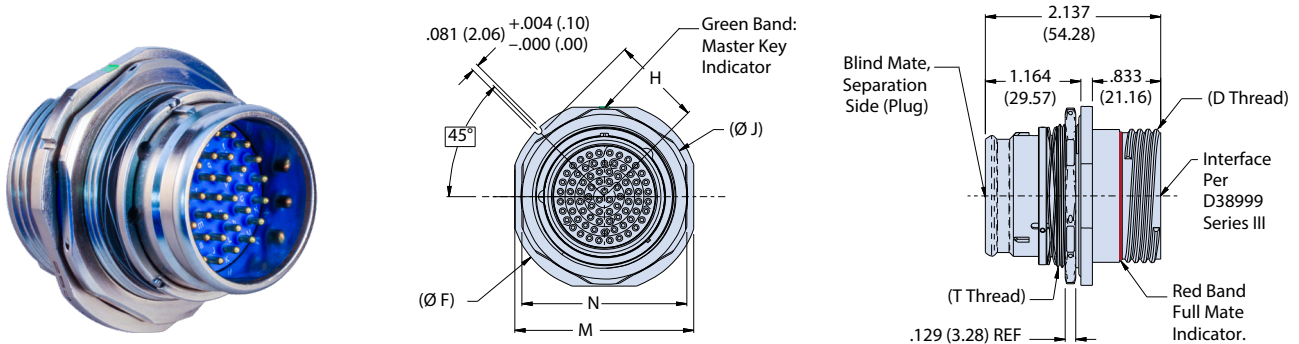
Blind-mate bulkhead feed-thrus with assisted kick-off and standard triple-start plug and receptacle mating interfaces

B

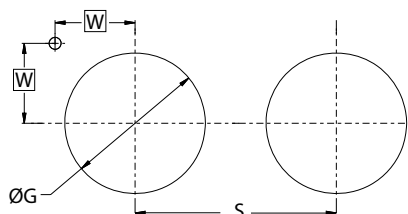
Part Number Development						
Sample Part Number	253-018	-07	ME	25-35	PP	N
Series / Basic Part No.	253-018 = Blind-mate feed-thru					
Connector Style	-07 = Jam-nut mount, feed-thru plug (fixed) with rear D38999 type receptacle interface -G6 = In-line plug with rear D38999 type plug interface and EMI spring					
Material/Finish	ME = Aluminum, electroless nickel ZL = CRES, electrodeposited nickel MT = Aluminum, nickel PTFE Z1 = CRES, passivated					
Shell Size-Insert Arrangement*	Per MIL-STD-1560					
Contact Type	PP = Pin on both sides BSDP = Blind-mate side socket - D38999 side pin SS = Socket on both sides BPDS = Blind-mate side pin - D38999 side socket					
Alternate Polarization*	A = 40°, B = 65°, C = 80°, D = 210°, E = 250°, F = 280°, G = 310°, H = 330°, N = 135° (Normal) Per L°. G6 only Refers to blind mate side. Plug/Receptacle side per MIL-DTL-38999					

*Refer to section A for complete details. Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-018-07 BLIND-MATE FEED-THRU, JAM-NUT MOUNT PLUG WITH B-SIDE D38999 TYPE RECEPTACLE MATING INTERFACE AND ASSISTED KICK-OFF (SPRING FORCE)



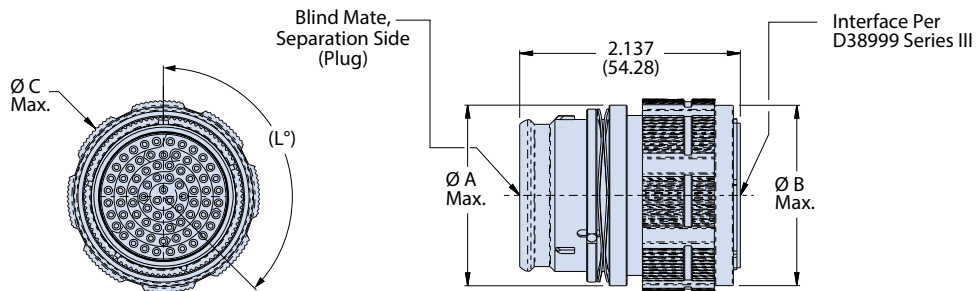
Dimensions							
Shell Size	F Flange	H (End of Slot) [+0/-0.008 (-.20)]	Ø J, Jam Nut	N, Jam Nut Flat	M, Flange Flats ±.010 (±.25)	T Thread Class 2A	D Thread 0.1P-0.3L-TS-2
13	1.515 (38.48)	.666 (16.92)	1.375 (34.93)	1.175 (29.85)	1.430 (36.32)	1.000-20 UNEF	0.875 (22.23)
15	1.636 (41.55)	.729 (18.52)	1.500 (38.10)	1.300 (33.02)	1.500 (38.10)	1.125-18 UNEF	1.000 (25.40)
21	2.065 (52.45)	.955 (24.26)	1.875 (47.63)	1.688 (42.88)	1.930 (49.02)	1.500-18 UNEF	1.375 (34.92)
23	2.200 (55.88)	1.017 (25.83)	2.063 (52.40)	1.875 (47.63)	2.060 (52.32)	1.625-18 UNEF	1.500 (38.10)
25	2.316 (58.83)	1.096 (27.84)	2.141 (54.38)	2.010 (51.05)	2.180 (55.37)	1.750-18 UNS	1.625 (41.28)



Panel Cut-Out			
Shell Size	Ø G, Thru Hole ±.004	W (Basic)	S
13	1.009 (25.63)	.504 (12.80)	1.460 (37.08)
15	1.134 (28.80)	.549 (13.94)	1.545 (39.24)
21	1.509 (38.33)	.709 (18.01)	1.995 (50.67)
23	1.634 (41.50)	.753 (19.13)	2.120 (53.85)
25	1.759 (44.68)	.809 (20.55)	2.315 (58.80)

**Blind-mate feed-thru plug, jam-nut mount or in-line
IAW MIL-DTL-38999 Series III**

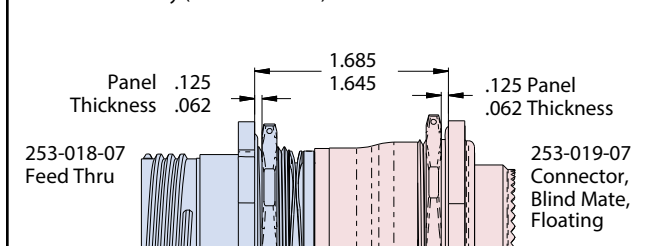
253-018-G6 BLIND-MATE IN-LINE PLUG WITH B-SIDE D38999 TYPE PLUG MATING INTERFACE AND ASSISTED KICK-OFF (SPRING FORCE)



Dimensions for 253-018-G6 Plug			
Shell Size	Ø A Max	Ø B Max.	Ø C Max
13	1.020 (25.91)	1.025 (26.03)	1.175 (29.85)
15	1.145 (29.08)	1.155 (29.34)	1.295 (32.89)
21	1.520 (38.61)	1.525 (38.73)	1.660 (42.16)
23	1.645 (41.78)	1.645 (41.78)	1.765 (44.83)
25	1.770 (44.96)	1.770 (44.96)	1.890 (48.01)

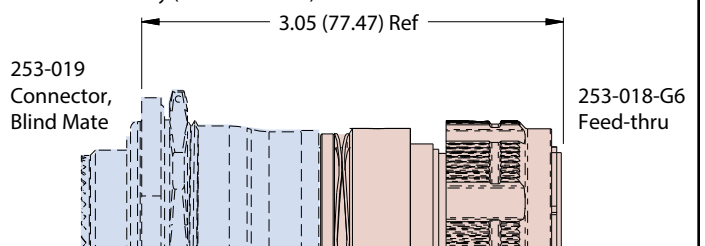
Distance between mated flanges.

For reference only (not deliverable)



Distance between mated connectors.

For reference only (not deliverable)



NOTES:

- Mates with 253-019 and D38999 series III connectors with same insert arrangement and polarization
- Distance between mated mounting flanges: 1.685/1.645. Consult manufacturer if other distance between mated mounting flanges is required
- Misalignment capabilities are possible with mated pair reference Glenair connector 253-019.
- See Space-Grade guidelines material, in this section, for outgassing/screening options available
- Stainless steel locating pin (Ø.079) shipped with each -07 jam-nut receptacle connector
- For feed-thru connector configurations that are either pin/pin or socket/socket, the position identification/ marking on the D38999 side of the connector will be as shown in MIL-STD-1560. The blind mate separation side will be the reverse identification marking
- Blind mate side mates with 253-019 with reverse silkscreen marking for contact type PP (pin on both sides) or SS (socket on both sides)
- Kick-off spring is not intended to offset all of the contact retention force for each insert arrangement
- Material/finish
 - Shell, jam-nut coupling nut: see part number development, finish
 - Spring: CRES/passivated
 - Insulators: high grade rigid dielectric/N.A.
 - O-ring: fluorosilicone blend
 - Contacts: copper alloy/gold plated

SuperNine® Space-grade Blind-mate floating jam-nut mount receptacle for use with 253-018 bulkhead feed-thru

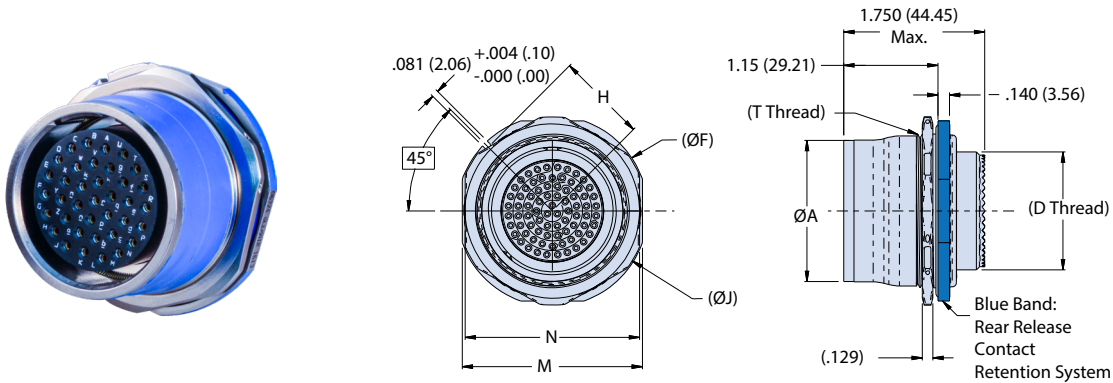


B

Part Number Development						
Sample Part Number	253-019	-07	ME	25-35	S	N
Series / Basic Part No.	253-019 = Blind-mate receptacle for use with 253-018 bulkhead feed-thru					
Connector Mounting	07 = Jam-nut mount (float mount), receptacle 007 = Jam-nut mount (float mount), receptacle; reverse silkscreen marking					
Material/Finish	ME = Aluminum, electroless nickel ZL = CRES, electrodeposited nickel MT = Aluminum, nickel PTFE Z1 = CRES, passivated					
Shell Size-Insert Arrangement*	Per MIL-STD-1560; symmetrical layouts only, consult factory for complete details					
Contact Type	S = Socket, crimp removable P = Pin, crimp removable					
Alternate Polarization*	A = 40°, B = 65°, C = 80°, D = 210°, E = 250°, F = 280°, G = 310°, H = 330°, N = 135° (Normal) Per L°. G6 only Refers to blind mate side. Plug/Receptacle side per MIL-DTL-38999					

*Refer to section A for complete details. Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-019 FLOATING JAM-NUT MOUNT RECEPTACLE WITH MISALIGNMENT ACCOMMODATION AND OPTIONAL SEALING: MATES WITH 253-018 BULKHEAD FEED-THRU



Dimensions for 253-019-07 Jam Nut Receptacle								
Shell Size	F Flange	H (End of Slot) 0.0/-0.008(0.0/-0.20)	Ø J Jam Nut	N, Jam Nut Flat ±.010 (±.25)	M, Flange Flats ±.010 (±.25)	T Thread Class 2A	D Thread Class 2A	Ø A ±.010 (±.25)
13	1.640 (41.66)	0.729 (18.52)	1.500 (38.10)	1.300 (33.02)	1.390 (35.31)	1.125-18 UNEF	.6875-24	.970 (24.64)
15	1.750 (44.45)	0.791 (20.09)	1.625 (41.28)	1.450 (36.83)	1.515 (38.48)	1.250-18 UNEF	.8125-20	1.105 (28.07)
21	2.180 (55.37)	1.017 (25.83)	2.063 (52.40)	1.875 (47.63)	1.955 (49.66)	1.625-18 UNEF	1.1875-18	1.475 (37.47)
23	2.315 (58.80)	1.076 (27.33)	2.141 (54.38)	2.010 (51.05)	2.080 (52.83)	1.750-18 UNS	1.3125-18	1.595 (40.51)
25	2.330 (59.18)	1.100 (27.94)	2.300 (58.42)	2.125 (53.98)	2.195 (55.75)	1.875-16 UN	1.4375-18	1.720 (43.69)

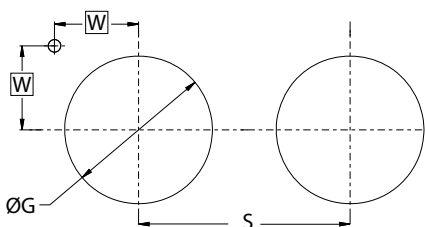
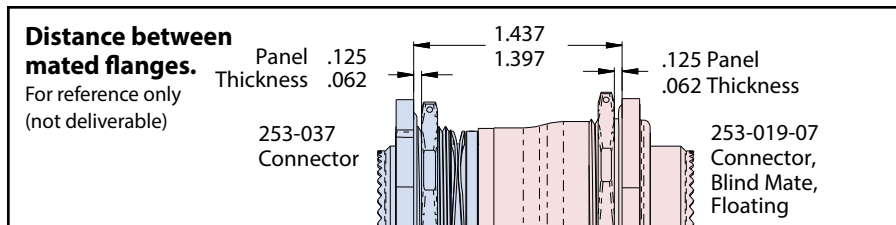
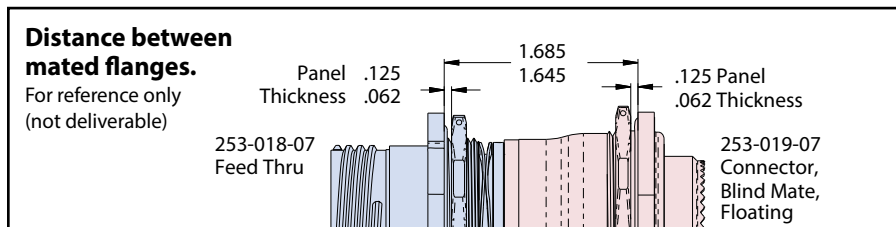
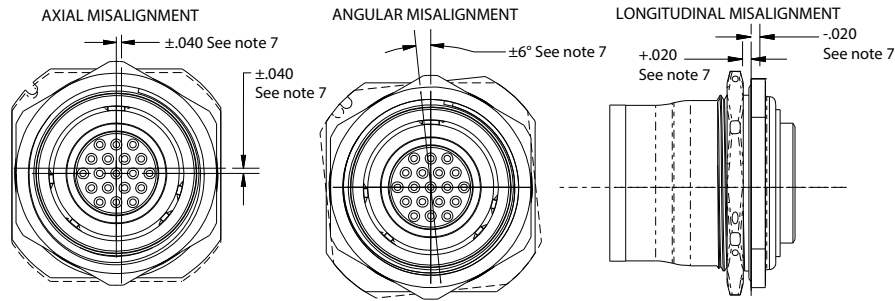


Table IV 253-019-07 Panel Cut-Out		
Shell Size	Ø G, Thru-Hole ±.004	W (Basic)
13	1.134 (28.80)	.549 (13.94)
15	1.259 (31.98)	.593 (15.06)
21	1.634 (41.50)	.753 (19.13)
23	1.759 (44.68)	.797 (20.24)
25	1.884 (47.85)	.810 (20.57)

SuperNine® Space-grade Blind-mate floating jam-nut mount receptacle for use with 253-018 bulkhead feed-thru



253-019 Misalignment Capabilities



NOTES:

1. Connector mates with Glenair 253-018 and 253-037 fixed series connectors having same insert arrangement and polarization.
2. Distance between mated mounting flanges as shown. Consult manufacturer if other distance between mated mounting flanges is required.
3. Misalignment capability as shown.
4. See Space-Grade guidelines material, in this section, for outgassing/screening options available
5. Stainless steel locating pin (Ø.079) shipped with each connector
6. Contact factory for PC tail versions.
7. Dimensions and features are intended for customer use only.
8. Connector style 007, jam nut mount with reverse silkscreen marking is used when mating to 253-018 feed-thru connector that is contact type PP (pin on both sides) or SS (socket on both sides).
9. Material/finish
 - Shell, jam-nut: see part number development, finish
 - Spring: CRES/passivated
 - Insulators: high grade rigid dielectric/N.A.
 - Seals: fluorosilicone blend, silicone
 - Contacts: copper alloy/gold plated



SuperNine® Space-grade Blind-mate plug, jam-nut mount with assisted kick-off (spring force)



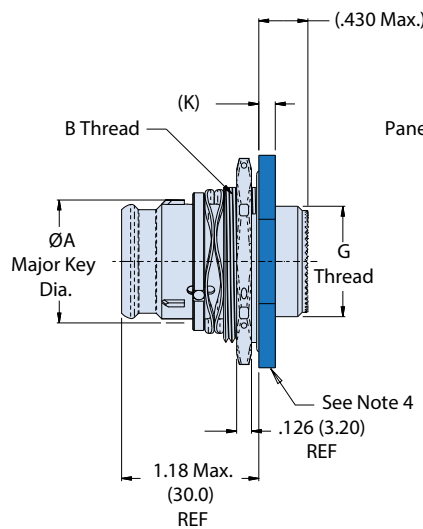
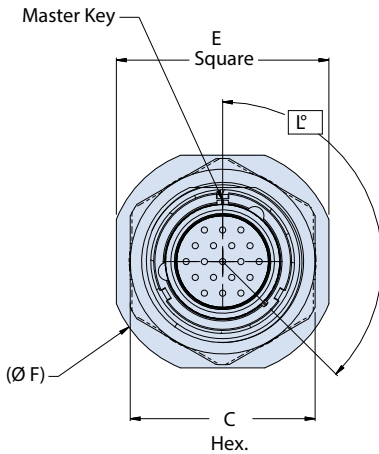
B

Part Number Development								
Sample Part Number	253-031			-07	ME	25-35	P	N
Series / Basic Part No.	253-031 Blind-mate plug with non-adjustable assisted separation							
Connector Mounting	-07 = Fixed jam-nut mount plug							
Material/Finish	ME = Aluminum, electroless nickel MT = Aluminum, nickel PTFE		ZL = CRES, electrodeposited nickel Z1 = CRES, passivated					
Shell Size-Insert Arrangement*	Per MIL-STD-1560							
Contact Type	P = Pin, crimp removable S = Socket, crimp removable		A = Pin insert less contacts B = Socket insert less contacts					
Alternate Polarization*	A = 40°, B = 65°, C = 80°, D = 210°, E = 250°, F = 280°, G = 310°, H = 330°, N = 135° (Normal) Per L° BSC. Refers to blind mate side.							

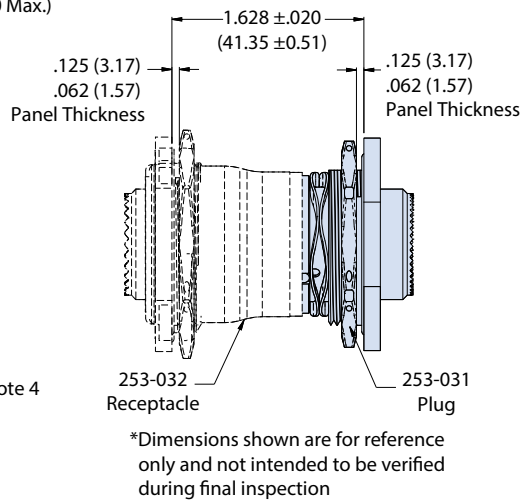
*Refer to section A for complete details. Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-031 BLIND-MATE JAM-NUT MOUNT PLUG WITH KICK-OFF SPRING AND ACCESSORY THREADS

07 - Receptacle, Jam Nut Mount



Mated Jam Mount Connectors



NOTES:

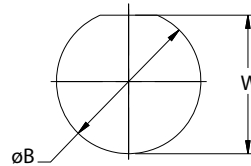
- Connector mates with Glenair 253-032 series connector, having the same insert arrangement and polarization.
- Insert arrangement is in accordance with MIL-STD-1560 arrangements only. Contact manufacturer for availability.
- See Space-Grade guidelines material, in this section, for outgassing/screening options available
- Blue color band indicates rear release contact retention mechanism.
- Kick-off spring is not intended to offset all of the contact retention force for each insert arrangement
- Material/ finish:
 - Shell, jam-nut: see part number development table, finish
 - Insulators: high grade rigid dielectric / N.A.
 - Contacts: copper alloy/gold plated
 - O-ring: fluorosilicone blend / N.A.

SuperNine® Space-grade Blind-mate plug, jam-nut mount with assisted kick-off (spring force)



B

Dimensions							
Shell Size	ØA Max	Thd B Class 2A	C Max	E ±.016(0.4)	ØF Max	G Thd Class 2A	K .011/-.010 (.28/.25)
11	.673 (17.09)	1.0000-20 UNEF	1.181 (30.00)	1.375 (34.92)	1.511 (38.38)	.5625-24	.109 (2.77)
13	.798 (20.27)	1.1250-18 UNEF	1.300 (33.02)	1.500 (38.10)	1.636 (41.55)	.6875-24	.109 (2.77)
15	.923 (23.44)	1.2500-18 UNEF	1.457 (37.01)	1.625 (41.28)	1.761 (44.73)	.8125-20	.109 (2.77)
17	1.048 (26.62)	1.3750-18 UNEF	1.575 (40.00)	1.812 (46.02)	1.949 (49.50)	.9375-20	.140 (3.56)
19	1.173 (29.79)	1.5000-18 UNEF	1.693 (43.00)	1.938 (49.23)	2.073 (52.65)	1.0625-18	.140 (3.56)
21	1.298 (32.97)	1.6250-18 UNEF	1.811 (46.00)	2.062 (52.37)	2.200 (55.88)	1.1875-18	.140 (3.56)
23	1.423 (36.14)	1.7500-18 UNS	2.016 (51.21)	2.187 (55.55)	2.323 (59.00)	1.3125-18	.140 (3.56)
25	1.548 (39.32)	1.8750-16 UNS	2.125 (53.97)	2.312 (58.72)	2.448 (62.18)	1.4375-18	.140 (3.56)



Recommended Panel Cutout		
Shell Size	Ø B .010/-.000 (0.25/.00)	W +.000/-.010 (.00/-.25)
11	1.010	0.955
13	1.135	1.085
15	1.260	1.210
17	1.385	1.335
19	1.510	1.460
21	1.635	1.585
23	1.760	1.710
25	1.885	1.835

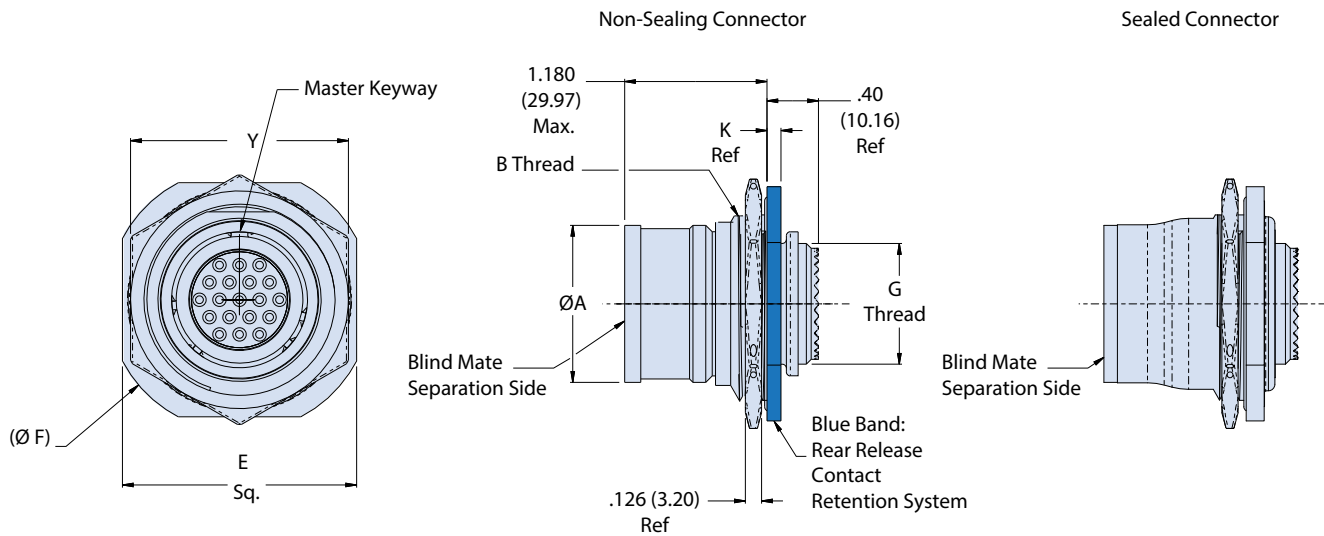
Blind-mate floating jam-nut mount receptacle with misalignment accommodation; for use with 253-031 plug

B

Part Number Development						
Sample Part Number	253-032	-07	ME	25-35	S	N NS
Series / Basic Part No.	253-032 = Blind-mate receptacle for use with 253-031 plug					
Connector Mounting	-07 = Floating jam nut mount receptacle					
Material/Finish	ME = Aluminum, electroless nickel ZL = CRES, electrodeposited nickel MT = Aluminum, nickel PTFE Z1 = CRES, passivated					
Shell Size-Insert Arrangement*	Per MIL-STD-1560; Symmetrical layouts only, consult factory for complete details.					
Contact Type	P = Pin, crimp removable A = Pin insert less contacts S = Socket, crimp removable B = Socket insert less contacts					
Alternate Polarization*	A = 40°, B = 65°, C = 80°, D = 210°, E = 250°, F = 280°, G = 310°, H = 330°, N = 135° (Normal) Per L° BSC. Refers to blind mate side.					
Non Sealing	NS = Non-Sealing (omit for external elastomer seal version)					

*Refer to section A for complete details. Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-032 FLOATING JAM-NUT MOUNT RECEPTACLE WITH MISALIGNMENT ACCOMMODATION; MATES WITH 253-031 ONLY

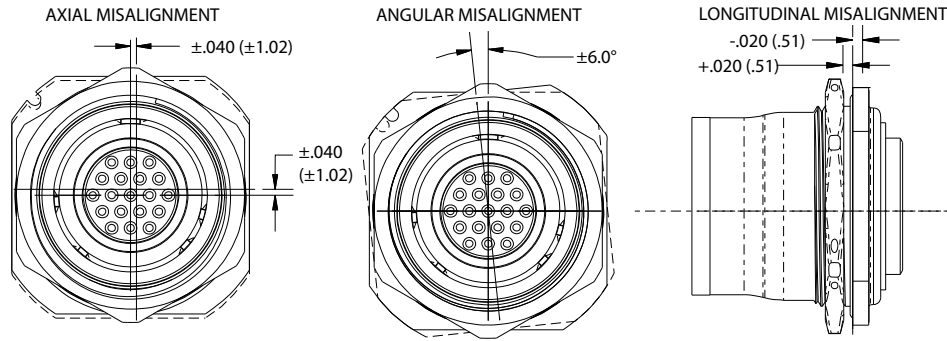


NOTES:

- Connector mates with Glenair 253-031 series connector, having the same insert arrangement and polarization.
- Insert arrangement is in accordance with MIL-STD-1560 arrangements only. Contact manufacturer for availability.
- Misalignment capabilities are possible when mated with Glenair connector 253-031
- See Space-Grade guidelines material, in this section, for outgassing/screening options available
- Material/ finish:
 - Shell, flange, jam-nut: see part number development, finish
 - Wave spring: CRES 17-7PH/passivate
 - Insulators: high grade rigid dielectric/N.A.
 - Contacts: copper alloy/gold plated
 - O-ring: fluorosilicone blend/N.A.

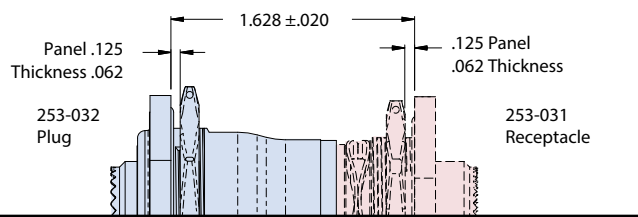
Blind-mate floating jam-nut mount receptacle with misalignment accommodation; for use with 253-031 plug

Misalignment Capabilities



Distance between mated flanges.

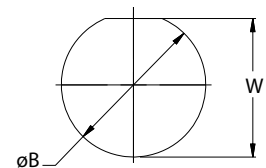
For reference only (not deliverable)



B

Dimensions							
Shell Size	ØA Max	B Thd, Class 2A	Y Hex	E ±.016 (0.41)	Ø F Max	Thd G, Class 2A	K .011/-.010 (0.28/ 0.25)
11	.853 (21.67)	1.1250-18 UNEF	1.300 (33.02)	1.391 (35.33)	1.641 (41.68)	.5625-24	.109 (2.77)
13	.978 (24.84)	1.2500-18 UNEF	1.457 (37.01)	1.516 (38.51)	1.750 (44.45)	.6875-24	.109 (2.77)
15	1.103 (28.02)	1.3750-18 UNEF	1.575 (40.00)	1.641 (41.68)	1.938 (49.23)	.8125-20	.109 (2.77)
17	1.228 (31.19)	1.5000-18 UNEF	1.693 (43.00)	1.828 (46.43)	2.062 (52.37)	.9375-20	.140 (3.56)
19	1.353 (34.37)	1.6250-18 UNEF	1.811 (46.00)	1.954 (49.63)	2.188 (55.58)	1.0625-18	.140 (3.56)
21	1.478 (37.54)	1.7500-18 UNS	2.010 (51.05)	2.078 (52.78)	2.312 (58.72)	1.1875-18	.140 (3.56)
23	1.603 (40.72)	1.8750-16 UNS	2.209 (56.11)	2.128 (54.05)	2.327 (59.11)	1.3125-18	.140 (3.56)
25	1.728 (43.89)	2.0000-16 UN	2.334 (59.28)	2.253 (57.23)	2.452 (62.28)	1.4375-18	.140 (3.56)

Recommended Panel Cutout		
Shell Size	Ø B .010/-.000 (0.25/0.00)	W +.000/-.010 (.00/-0.25)
11	1.135 (28.83)	1.085 (27.56)
13	1.260 (32.00)	1.210 (30.73)
15	1.385 (35.18)	1.335 (33.91)
17	1.510 (38.35)	1.460 (37.08)
19	1.635 (41.53)	1.585 (40.26)
21	1.760 (44.70)	1.710 (43.43)
23	1.885 (47.88)	1.835 (46.61)
25	2.010 (51.05)	1.960 (49.78)



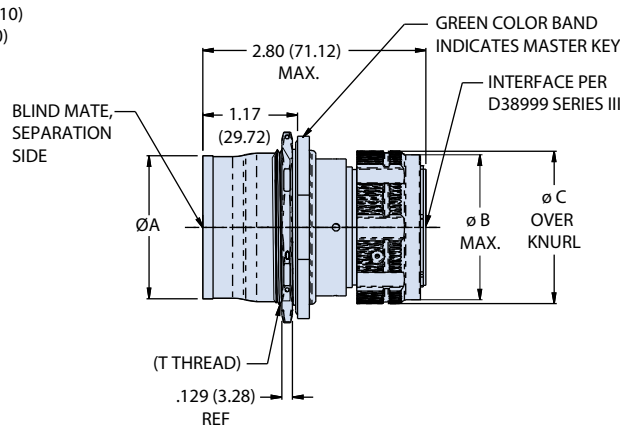
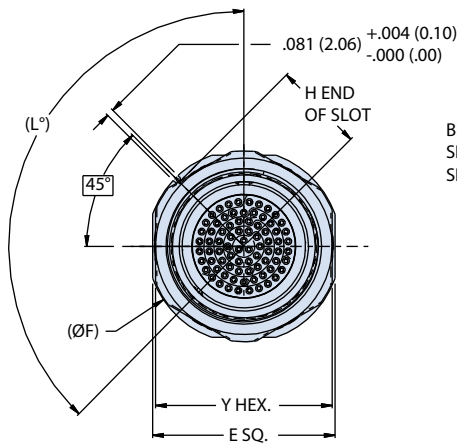
**Blind-mate feed-thru receptacle, with D38999 type plug
IAW MIL-DTL-38999 Series III**

B

Part Number Development								
Sample Part Number	253-033			-07	ME	25-35	PP	N
Series / Basic Part No.	253-033 = Floating jam-nut mount, feed-thru receptacle with rear D38999 Series III plug interface. Receptacle interface also available, contact factory							
Connector Style	-07 = Jam-nut mount, float mount							
Material/Finish	ME = Aluminum, electroless nickel MT = Aluminum, nickel PTFE		ZL = CRES, electrodeposited nickel Z1 = CRES, passivated					
Shell Size-Insert Arrangement*	Per MIL-STD-1560; symmetrical layouts only, consult factory for complete details							
Contact Type	PP = Pin on both sides SS = Socket on both sides		BSDP = Blind-mate side socket - D38999 side pin BPDS = Blind-mate side pin - D38999 side socket					
Alternate Polarization*	A = 40°, B = 65°, C = 80°, D = 210°, E = 250°, F = 280°, G = 310°, H = 330°, N = 135° (Normal) Per L°. Refers to blind mate side. Plug side per MIL-DTL-38999. See alternate polarizations table							

*Refer to section A for complete details. Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-033 FLOAT MOUNT FEED-THRU, JAM NUT MOUNT RECEPTACLE TO 38999 TYPE SERIES III PLUG MATING INTERFACE



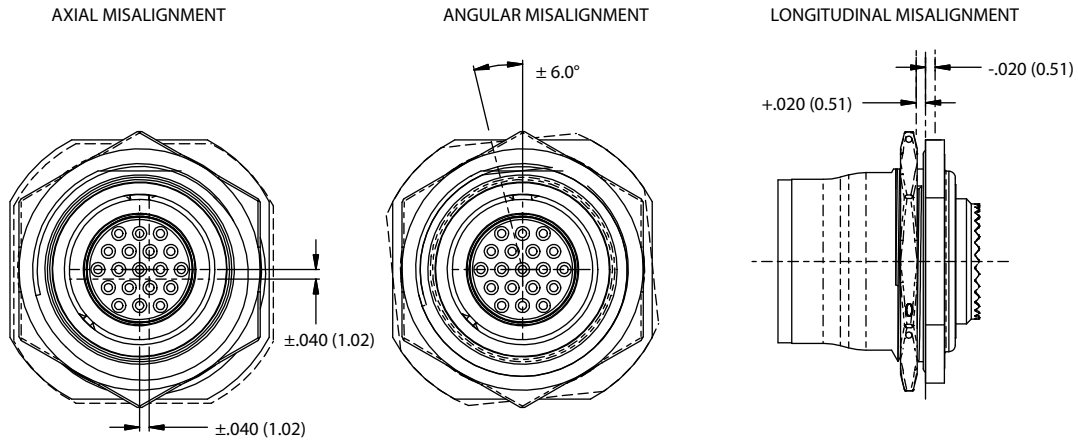
Alternate Polarizations	
ID	L°
N	135°
A	40°
B	65°
C	80°
D	210°
E	250°

Dimensions for 253-033								
Shell Size	Ø A Max	T Thread Class 2A	Y Hex Flats	E flange ±.016	ØF Flange	H End of Slot +0/- .008	ØB Max	ØC Max
13	.978	1.1250-18 UNEF	1.300 (33.02)	1.391 (35.33)	1.6441 (41.76)	.729 (18.52)	1.050 (26.67)	1.200 (30.48)
15	1.103	1.2500-18 UNEF	1.457 (37.01)	1.516 (38.51)	1.750 (44.45)	.791 (20.09)	1.180 (29.97)	1.320 (33.53)
23	1.603	1.7500-18 UNEF	2.010 (51.05)	2.078 (52.78)	2.312 (58.72)	1.072 (27.23)	1.670 (42.42)	1.790 (45.47)
25	1.728	1.8750-18 UNEF	2.125 (53.97)	2.200 (55.88)	2.327 (59.11)	1.096 (27.84)	1.800 (45.72)	1.920 (48.77)

NOTES:

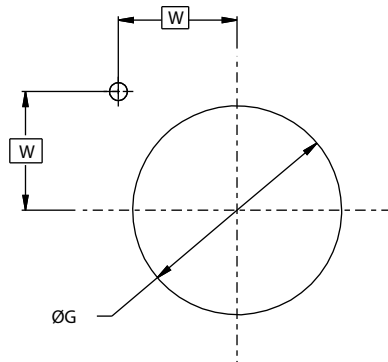
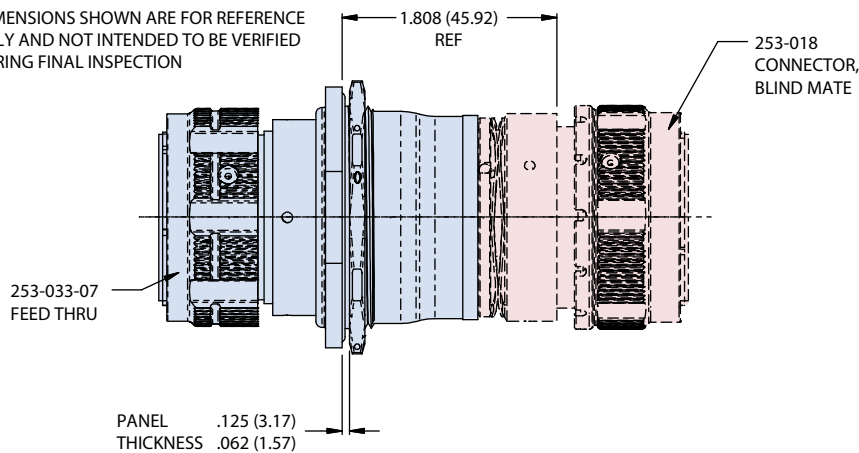
- Distance between mated mounting flanges: 1.808 Consult manufacturer other distance between mounting flanges is required
- See Space-Grade guidelines material, in this section, for outgassing/screening options available
- Stainless steel locating pin (Ø.079) shipped with each connector
- Misalignment capabilities are possible with mated pair reference Glenair connector 253-019

MISALIGNMENT CAPABILITIES (see note 5)



Distance Between Mated Flanges

*DIMENSIONS SHOWN ARE FOR REFERENCE ONLY AND NOT INTENDED TO BE VERIFIED DURING FINAL INSPECTION



Recommended Panel Cut-out		
Shell Size	ØG, Thru Hole ±0004 (0.10)	W Basic
13	1.134 (28.80)	.549 (13.94)
15	1.259 (31.98)	.593 (15.06)
23	1.759 (44.68)	.797 (20.24)
25	1.884 (47.85)	.809 (20.55)

B

SuperNine® Space-grade Locking circuit and test mate connector IAW MIL-DTL-38999 Series III

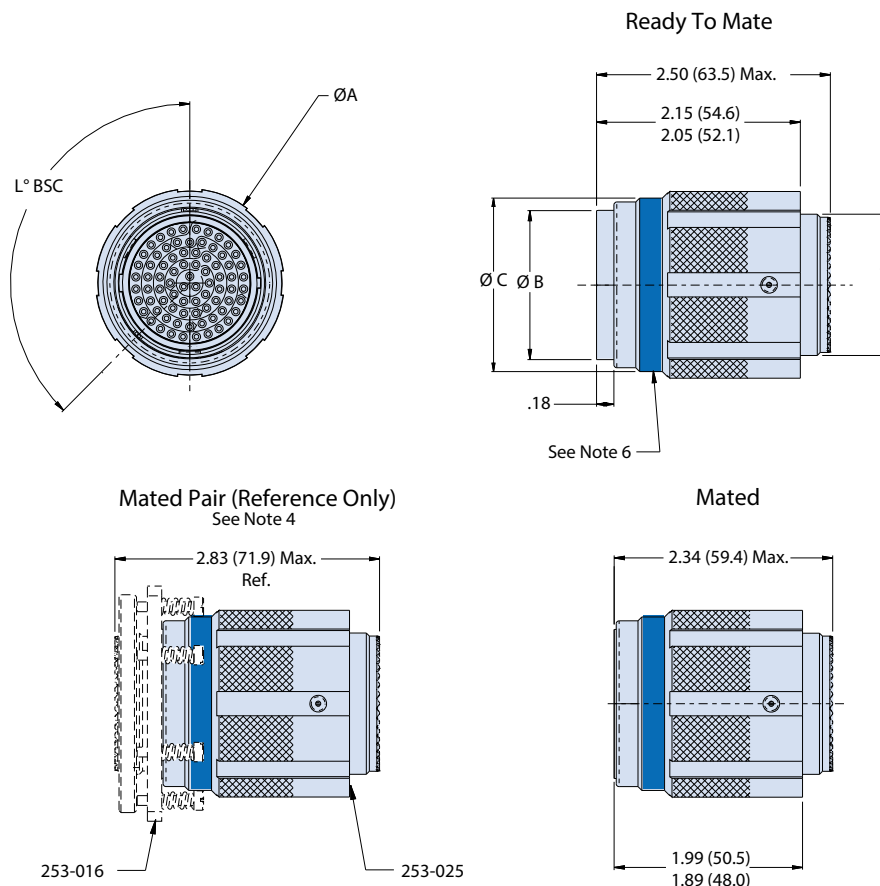


B

Part Number Development									
Sample Part Number	253-025				-G6	ME	23-43	P	N
Series / Basic Part No.	253-025 = Locking circuit and test mate connector								
Connector Mounting	-G6 = In-line								
Material/Finish	ME = Aluminum, electroless nickel MT = Aluminum, nickel PTFE		ZL = CRES, electrodeposited nickel Z1 = CRES, passivated						
Shell Size-Insert Arrangement*	Per MIL-STD-1560								
Contact Type	P = Pin, crimp removable S = Socket, crimp removable		A = Pin insert less contacts B = Socket insert less contacts						
Alternate Polarization*	A = 40°, B = 65°, C = 80°, D = 210°, E = 250°, F = 280°, G = 310°, H = 330°, N = 135° (Normal) Per L° Basic. Refers to blind mate side. Plug side per MIL-DTL-38999. See alternate polarizations table								

*Refer to section A for complete details. Refer to Space-Grade Guidelines material (IAW NASA EEE INST-002) for outgassing and screening modification codes, on pages 60 and 61. Modification codes may be added directly to the end of any valid part number

253-025 LOCKING CIRCUIT AND TEST MATE CONNECTOR, MATES WITH 253-016 PLUG



Dimensions				
Shell Size	Ø A Max	Ø B	Ø C	T Thd 1.0-6g -0.100R
17	1.55 (39.37)	1.10 (27.94)	1.29 (32.77)	M25
25	2.05 (52.07)	1.54 (39.12)	1.79 (45.47)	M37

NOTES:

- Material/ finish:
 - Shell, coupling ring, segments - see part number development, finish
 - Insulators - high grade rigid dielectric / N.A.
 - Contacts - copper alloy / gold plated
- Connector mates with Glenair 253-016 series connector, having the same insert arrangement and polarization.
- Insert arrangement is in accordance with MIL-STD-1560 arrangements only. Contact manufacturer for availability.
- Connector mated with Glenair 253-016 is shown for reference only.
- See Space-Grade guidelines material, in this section, for outgassing and screening options available
- Blue color band indicates rear release contact retention system



Commander Ed White on the first American spacewalk, 1965

SPACE PROVEN Interconnect Technologies

We like to begin every discussion of Glenair’s proven-performance space-grade products with the golden umbilical life support cable used by Commander Ed White in the first American space walk in 1965. This was a complex cable assembly with an exacting set of performance requirements. Even though this application is now over 50 years old, it still reflects Glenair’s design and fabrication expertise and that we have been a go-to supplier for the space industry for over 5 decades.

Today we continue to manufacture a broad range of high-performance cables and components for space—from our innovative line of non-pyrotechnic HDRMs to high-reliability assisted separation force connectors. Glenair’s proven space flight heritage includes interconnect and electromechanical technology on dozens of robotic spacecraft, including orbiters, landers, and rovers.

Many customers of discrete HDRM technology look to Glenair for the turnkey supply of interconnect wire and cabling.

Non-pyrotechnic separation nuts utilize EMI shielded harness assemblies to supply primary and redundant initiation energy to the split spool actuator, and to transmit telemetry data from release sensors. Glenair operates the largest and best equipped wire harness assembly shop in the mission-critical interconnect industry and has supplied countless turnkey space-grade cable assemblies of this type.



PROVEN PERFORMANCE IN SPACE

- The “Golden Umbilical” life-support cable
- JPL Mars probes (orbiters, landers, and the Curiosity rover)
- AIRS satellite
- Gravity Probe mission
- Titan II launch vehicles
- EADS Astrium
- ESA Ariane 5
- Countless others

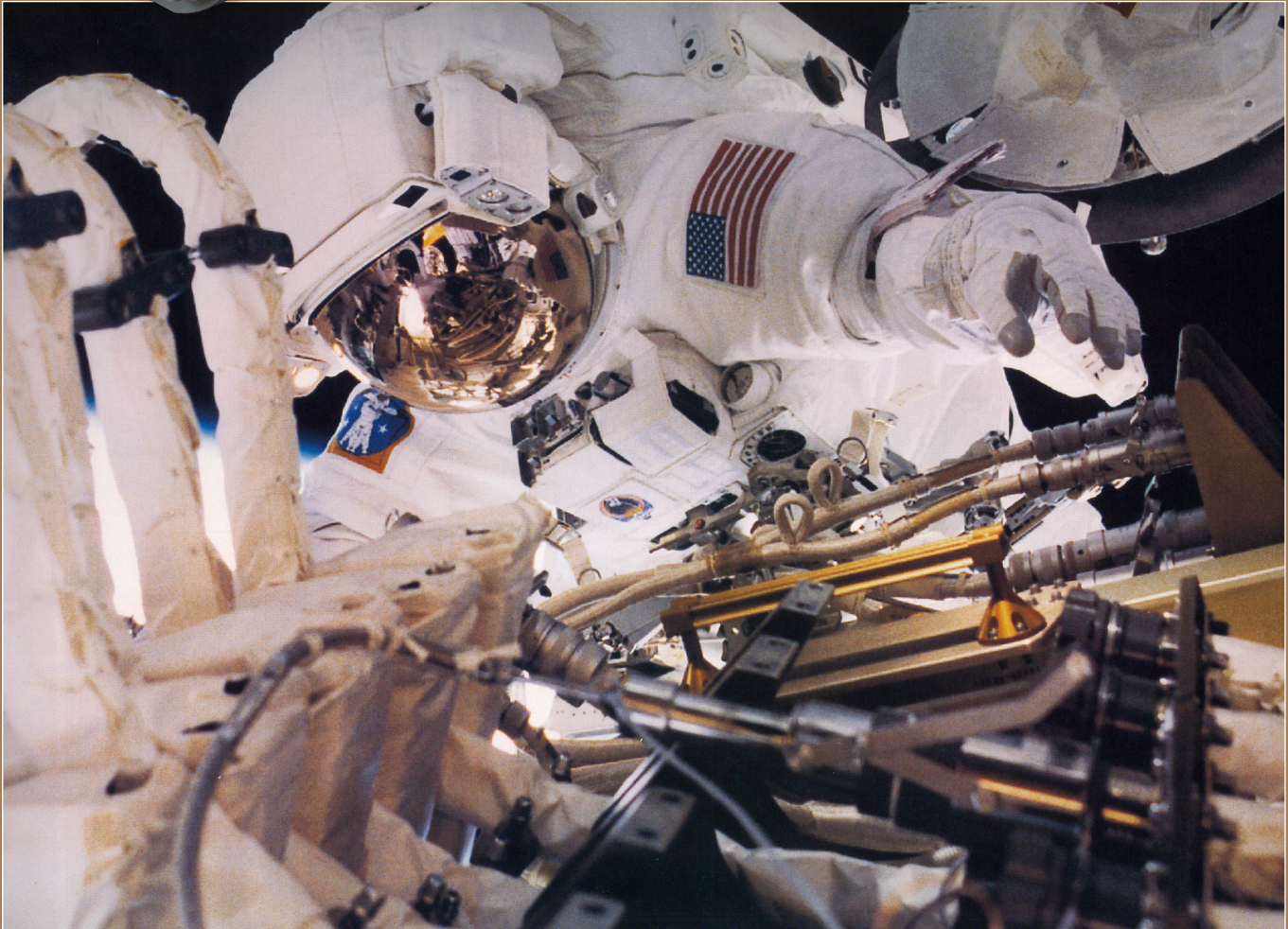


SERIES 23
HI-SPEED
CONNECTORS

 SuperNine®



Glenair SuperNine® offers the industry's widest range of shielded contact and connector solutions for high-bandwidth, high-speed applications.



Features

- Full range of hybrid insert arrangements incorporating size #22 signal contacts, plus size #12 and #8 keyed shielded contacts
- High-speed Ethernet: El Ochito®—one full 1G/10G Ethernet channel per standard size #8 cavity, plus SpeedMaster™ with easy-to-terminate, repairable size #22D contacts
- Supported applications: 10/100/1G/10G BASE-T Ethernet, analog/digital video, 1553 databus and general RF or differential data transmission
- Turnkey Quadrax, SpeedMaster™ and El Ochito® solutions—from contacts to connectors, wire and termination hardware



Glenair, Inc.
1211 Air Way
Glendale, CA 91201-2497
818-247-6000
sales@glenair.com
www.glenair.com

**Product selection guide
MIL-DTL-38999 Series III Type**

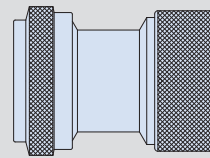
SuperNine® High-Speed Size #8 Contacts

High-Speed Technology Overview	C-2
Contacts and insert arrangements	C-4
Insert Arrangements	C-5
Performance Summary, Material/Finish and Panel Cutout Dimensions	C-7
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El Ochito® Octaxial Contacts

High-Speed, Keyed Crimp Contacts

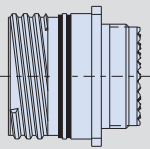
Technology Overview	C-8	Contact Dimensions	C-14
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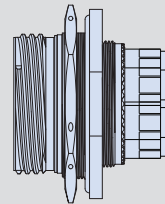
377HS121 C-49
Series 37 Aluminum Backshells: for SuperNine plug and receptacle connectors. Straight, 45°, and 90° configurations available.

SuperNine® with SpeedMaster™ Contacts

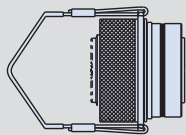
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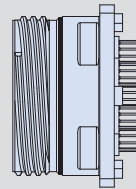
233-217 and 233-224 C-31
SuperNine® Plug and Receptacle Connectors with Accessory Threads or Integral Banding Porch and Removable High-Speed, Keyed Crimp Contacts.



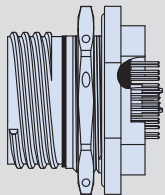
233-219 C-58
Plug and receptacle SuperNine Connector with SpeedMaster High-Speed Contact Modules and Size 22 Contacts



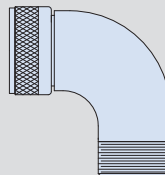
233-260 C-35
SuperNine® Quick-Disconnect Plug with Rear Crimp Removable Contacts.



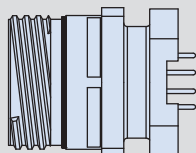
233-220 C-62
Wall mount dimensions SuperNine receptacle with PC tail SpeedMaster™ contacts



233-218 C-37
SuperNine® PC Tail Receptacle Connectors with Potted Non-Removable, PC Tail Contacts.



377-119 C-65
Series 37 Aluminum Backshells: for SpeedMaster™ SuperNine plug and receptacle connectors. Straight, 45°, and 90° configurations available.



233-225 C-41
SuperNine® PC Tail Dual Flange Receptacle Connectors with Potted PC Tail Contacts



MIL-DTL-38999 TYPE

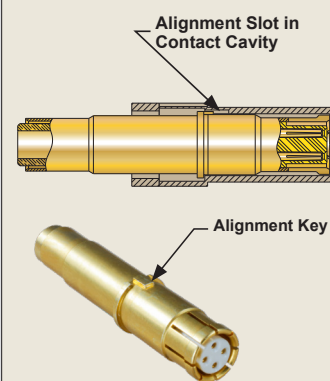
Mil-Aero Ethernet, Video, and High-Speed Data Solutions

SuperNine® plug and receptacle connectors with special inserts to accommodate high-speed, shielded contacts

- **Tooled and ready-to-ship high-speed hybrid insert arrangement connectors for size #8, #12, and #16 shielded contacts. Nineteen layouts for High-Speed Coax, Twinax, Quadrax and El Ochito® contact solutions**
- **Supported applications: 10/100/1G/10G BASE-T Ethernet, analog/digital video, 1553 databus and general RF or differential data transmission**
- **El Ochito® contact technology: El Ochito® for 10G Ethernet (El Ochito® white), USB 3.0 (El Ochito® blue), and Multi gigabit datalink (El Ochito® red) applications such as HDMI, SATA and Displayport**
- **SpeedMaster™ 10G Ethernet contact solution featuring industry standard size 22D contacts for fast easy termination and repairability**
- **Size 22D SpeedMaster™ solutions from one to seven contact insert arrangements**

About Keyed Contacts

Glenair SuperNine® high-speed connector size #8 contact cavities are equipped with internal alignment slots. differential twinax, quadrax and El Ochito® contacts have a corresponding alignment key to properly orient the contact within the contact cavity.



Size #8 Quadrax and El Ochito® contacts with alignment keys



Ethernet, video, and high-speed data applications
MIL-DTL-38999 Series III Type

Size #8 Quick Contact Reference Guide

Available Contacts (ordered separately)	Glenair P/N		Contact Size	Accommodates AWG Size	Cable Type	Application Notes
 Coax (per M39029/59 & /60)	Pin: 809-114 Socket: 809-116		16	#16 - #20	RG174, RG316, RG179	Analog Radio Frequency or Microwave Applications
	Pin: 809-118 Socket: 809-120		12	#12 - #14	RG174, RG316, RG179	
	Pin: 852-007 Socket: 852-006		8	#22 - #28	M17/95-RG180	
 Differential Twinax	Pin: 853-014-05 Socket: 853-013-05		8	#22 - #28	M17/176-00002	1553 Databus/ Differential Signal
 El Ochito® Octaxial	Pin: 858-003, Type I Socket: 858-004, Type I	White	8	#26 - #28	963-033-26	1G/10G BaseT Ethernet
	Pin: 858-005, Type II Socket: 858-006, Type II	White	8	#24 - #26	963-033-24	
	Pin: 858-028, Type I Socket: 858-029, Type I	Blue	8	#26 - #28	963-110	USB 3.0
	Pin: 858-030-01, Type I Socket: 858-031, Type I	Red	8	#26 - #28	Varies	SATA, HDMI, Display Port
 Quadrax	Pin: 854-001 Socket: 854-002		8	#22 - #28	963-019/020/021	10/BASE-T Ethernet
 Triax/Concentric Twinax	Pin: 853-003 Socket: 853-004		8	#22 - #28	M17/176-00002	1553 Databus
 Power	Pin: 850-014 Socket: 850-013		8	#8	Size 8 Wire	Up to 46 Amps

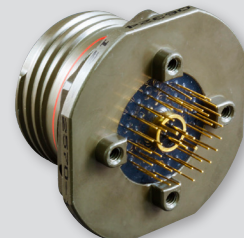
HIGH-SPEED INSERT ARRANGEMENTS IN CRIMP-CONTACT AND PC TAIL CONFIGURATIONS



233-217 G6 Plug featuring SuperNine® 500 mating-cycle ratcheted coupling technology



233-217 CM Square-Flange Crimp Receptacle with metric clinch nut mounting

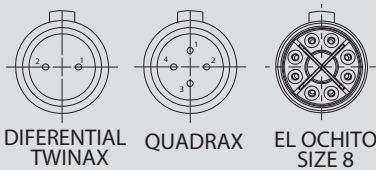


233-218 07 Jam-Nut Receptacle with PC tail termination and threaded standoffs

Contacts and insert arrangements MIL-DTL-38999 Series III Type

Crimp Contacts						
Size #22 - #12 Contacts						
Contact Size	#23	#22D	#20	#16	#12	#8
Wire Gauge	#22 - #28 AWG	#22 - #28 AWG	#20-#24 AWG	#16 - #20 AWG	#12 - #14 AWG	#8 AWG
Max Current	5 amps	5 amps	7.5 amps	13 amps	23 amps	46 amps
Pin	857-189	857-151-22	857-151-20	857-151-16	857-151-12	850-014
Socket	857-190	857-150-22	857-150-20	857-150-16	857-150-12	850-013
Size #8 Contacts						
Contact Size	#8 Coax	#12 Coax	#16 Coax	#8 Diff. Twinax	#8 Quadrax	#8 Triax/Conc. Twinax
Pin	852-007	809-118	809-114	853-014-05	854-001	853-003
Socket	852-006	809-120	809-116	853-013-05	854-002	853-004
Size #8 Contacts						
Contact Size	#8 El Ochito White, Type I		#8 El Ochito White, Type II		#8 El Ochito Red, Type I	#8 El Ochito Blue, Type I
Pin	858-003		858-005		858-028	858-030-01
Socket	858-004		858-006		858-029	858-031

FIGURE 2: CONTACT INNER PIN ORIENTATION



Size 8 High-Speed Insert Arrangements*		
Shell Size	#8	Shell Size - Insert Arr.
9	1	9G5
11	1	11-1
17	2	17-75
19	4	19-4
21	4	21-75
23	5	23-5
23	6	23-6
25	8	25-8

*Note that any size #8 High-Speed contact can be substituted for size #8 power contact. See page C-3 for typical High-Speed contact applications.

Crimp Quadrax Contacts and Cable Type

Contact Size	Type	Glenair P/N	Cable Type Dash No.	Wire Size
#8	Quadrax	854-001	-01 - Tensolite NF26Q100	26AWG
			-02 - Tensolite NF24Q100	24AWG
		854-002	-03 - Draka Fileca F 4704-6	26AWG
			-04 - Draka Fileca F 4704-4	24AWG

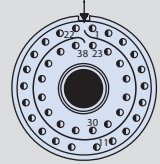
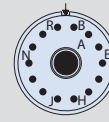
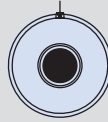
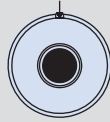
Combo High-Speed Insert Arrangements*

Shell Size	Number of Contacts						Shell Size - Insert Arr.
	#23	#22D	#20	#16	#12	#8	
13	14					1	13-14
17		38		2		1	17-2
17					2	2	17-22
17		8				2	17-60
19		10	1	4		2	19-17
19		14				4	19-18
25		97				2	25-7
25		36				6	25-17
25			10	13	4	3	25-20
25			16		5	4	25-26
25		22	3	11	2	3	25-41
25			40	4		2	25-46

Signal, power and high-speed data insert arrangements MIL-DTL-38999 Series III Type

Contact Legend

- #23 ● #22D ○
- #16 ⊕ #20 ⊖
- #12 ◐ #8 ◑



Insert Arrangement
No. of Contacts

9G5*
1x #8

11-1
1x #8

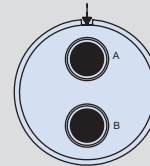
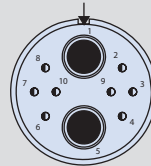
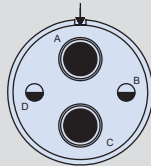
13-14
1x #8 | 14x #23

17-2
1x #8 | 38x #22D

*Only available with ground plane option

Contact Legend

- #23 ● #22D ○
- #16 ⊕ #20 ⊖
- #12 ◐ #8 ◑



Insert Arrangement
No. of Contacts

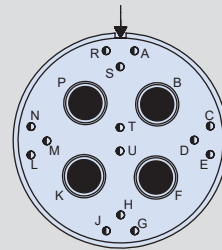
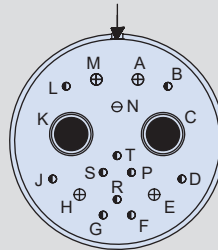
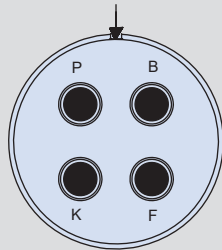
17-22
2x #8 | 2x #12

17-60
2x #8 | 8x #22

17-75
2x #8

Contact Legend

- #23 ● #22D ○
- #16 ⊕ #20 ⊖
- #12 ◐ #8 ◑



Insert Arrangement
No. of Contacts

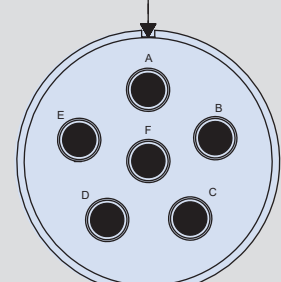
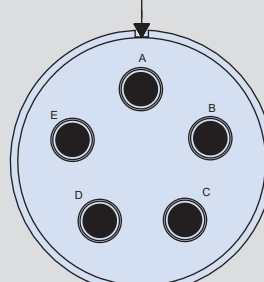
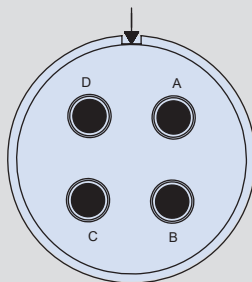
19-4
4x #8

19-17
2x #8 | 4x #16 | 1x #20 | 10x #22D

19-18
4x #8 | 14x #22D

Contact Legend

- #23 ● #22D ○
- #16 ⊕ #20 ⊖
- #12 ◐ #8 ◑



Insert Arrangement
No. of Contacts and Size

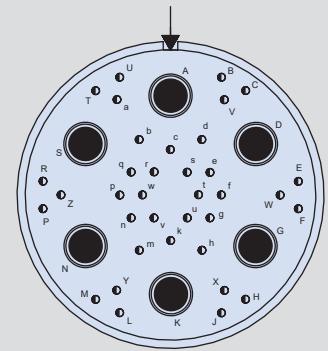
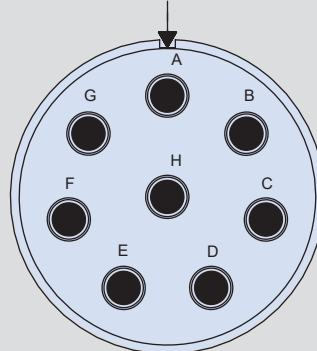
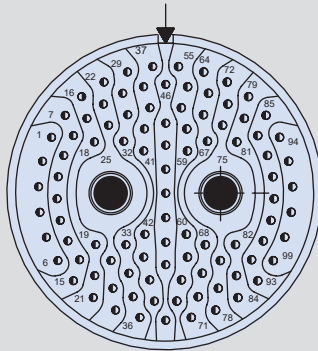
21-75
4x #8

23-5
5x #8

23-6
6x #8

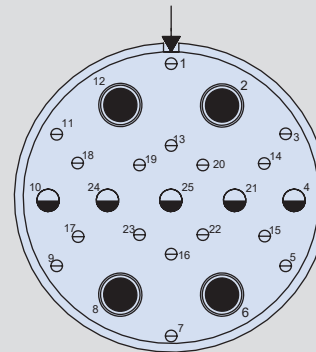
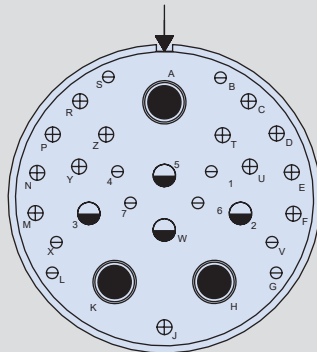
Signal, power and high-speed data insert arrangements MIL-DTL-38999 Series III Type

Contact Legend
 #23 ● #22D ○
 #16 ⊕ #20 ⊖
 #12 ◐ #8 ◑



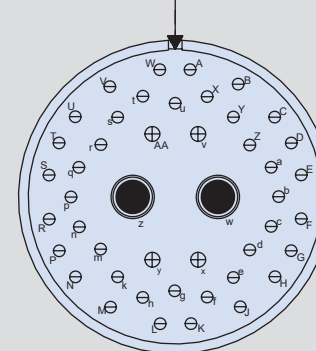
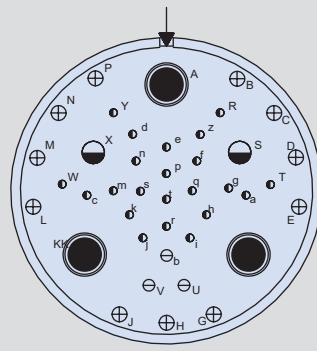
Insert Arrangement	25-7		25-8		25-17	
No. of Contacts and Size	2x #8	97x #22	8x #8	6x #8	36x #22	

Contact Legend
 #23 ● #22D ○
 #16 ⊕ #20 ⊖
 #12 ◐ #8 ◑



Insert Arrangement	25-20				25-26		
No. of Contacts and Size	3x #8	4x #12	13x #16	10x #20	4x #8	5x #12	16x #20

Contact Legend
 #23 ● #22D ○
 #16 ⊕ #20 ⊖
 #12 ◐ #8 ◑



Insert Arrangement	25-41					25-46		
No. of Contacts and Size	3x #8	2x #12	11x #16	3x #20	22x #22D	2x #8	4x #16	40x #20

Performance, material/finish and panel cutout dimensions MIL-DTL-38999 Series III Type

PERFORMANCE SUMMARY

Standard Material and Finishes

- Shell, barrel and coupling nut: aluminum alloy 6061 per ASTM-B211. Composite jam-nut mount connector is provided with aluminum alloy jam-nut.
- Grounding spring: BeCu alloy/electroless nickel finish
- Insulator: high-grade rigid dielectric. For common ground option, aluminum alloy.
- Seals, grommet, O-ring: fluorosilicone
- Contact: grommet follower ordered separately
- Stainless steel and other materials and finishes available

Shell Type and Sizes

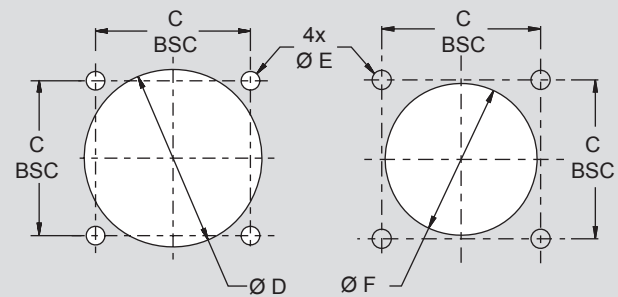
- Shell Type: D38999 Series III Type
- Shell sizes: 9, 11, 13, 17, 19, 21, 23, 25

Electrical Specifications:

- Voltage rating: 1000 volts
- Current rating: 1.5 Amps
- DWV: 1000 VAC

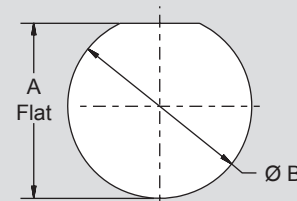
Environmental / Mechanical Performance

- Sealing: IP67 mated condition, when proper backshell is used
- Outgassing: UL94 V0 low smoke, zero halogen
- Operating Temperature Range: -65°C to +200°C
- Vibration: 43.9g's, 3 Axis, 50 - 2000 Hz
- Mechanical Shock: 300 g's
- Backshell Interface: MIL-DTL-38999
- Durability (Mating Cycles): 500



**Square Flange
Rear Panel Mount**

**Square Flange
Front Panel Mount**



Jam Nut

Available Non-Standard Mounting Options	
Sym	Description
00	Receptacle, wall mount with slotted holes
D0	Receptacle, wall mount with round holes
CM	Receptacle, wall mount with metric clinch nuts
CS	Receptacle, wall mount with standard clinch nuts
HM	Receptacle, wall mount with metric helicoil
HS	Receptacle, wall mount with standard helicoil
TM	Receptacle, wall mount with metric tapped holes
TS	Receptacle, wall mount with standard tapped holes

Materials and Finishes		
Sym	Material	Finish Description
ME	Aluminum	Electroless nickel
MT		Ni-PTFE 500 hour nickel fluorocarbon polymer
NF		Cadmium O.D. Over electroless nickel
ZR		Black zinc-nickel over electroless nickel
T0	Titanium	Natural, unplated
TP3		Electro-deposited nickel
Z1	Stainless Steel	Passivate
ZL		Electro-deposited nickel
AB	Marine Bronze	Unplated

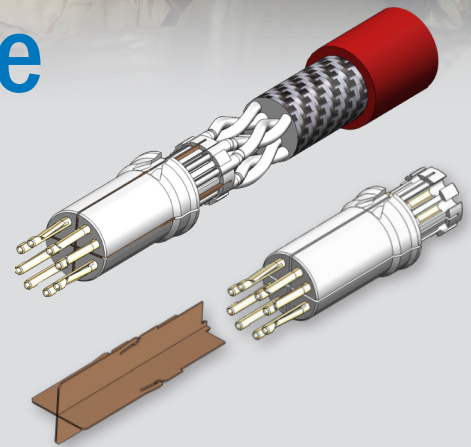
Recommended Panel Cut-Out Dimensions							
Shell Size Code	Shell Size	Jam-nut Mount		Square Flange Mount			
		A Flat	B Dia	C BSC	D Dia Min	E Dia Flange Holes	F Dia Min
A	9	.661/.654 (16.79/16.61)	.703/.693 (17.58/17.60)	.719 (18.26)	.656 (16.66)	.133/.123 (3.38/3.12)	.516 (13.12)
B	11	.771/.761 (19.58/19.33)	.835/.825 (21.21/20.96)	.812 (20.62)	.796 (20.22)		.625 (15.88)
C	13	.955/.945 (24.26/24.00)	1.020/1.010 (25.91/25.65)	.906 (23.01)	.922 (23.42)		.750 (19.05)
D	15	1.085/1.075 (27.56/27.31)	1.145/1.135 (29.08/28.83)	.969 (24.61)	1.047 (26.59)		.906 (23.01)
E	17	1.210/1.200 (30.73/30.48)	1.270/1.260 (32.26/32.00)	1.062 (26.97)	1.219 (30.96)	.159/.149 (4.04/3.78)	1.016 (25.81)
F	19	1.335/1.325 (33.91/33.66)	1.395/1.385 (35.43/35.18)	1.156 (29.36)	1.297 (32.94)		1.141 (28.98)
G	21	1.460/1.450 (37.08/36.83)	1.520/1.510 (38.61/38.35)	1.250 (31.75)	1.422 (36.12)		1.266 (32.16)
H	23	1.585/1.575 (40.26/40.01)	1.645/1.635 (41.78/41.53)	1.375 (34.93)	1.547 (39.29)	.155/.145 (3.94/3.68)	1.375 (34.93)
J	25	1.710/1.700 (43.43/43.18)	1.770/1.760 (44.96/44.70)	1.500 (38.10)	1.672 (42.47)		1.484 (37.69)



El Ochito®: The Ultimate High-Speed Contact

“The Little Eight”: Eight miniaturized contacts in a standard size #8 shielded module, with dramatic size and weight reduction compared to all other available solutions

- El Ochito® for 10G Ethernet (white), USB 3.0 (blue), and Multi gigabit datalink applications such as HDMI, SATA and Displayport (red).
- Fast and easy crimp termination of wires to contacts—PC Tails available
- 100% drop-in solution for installed Glenair High-Speed connectors—no redesign or reinstallation of interfaces
- Supplied as crimp contacts, wire pigtailed, or in PC tail configurations in the connector of your choice—up to 8 El Ochito® modules in a size #25 D38999
- Integral spline and short termination maximizes interconnect/cable performance and minimizes crosstalk
- El Ochito® delivers the highest density contact system available—twice the density of Quadrax, split Quadrax, or other shielded contact solutions
- Tested, qualified, and in-stock for immediate shipment



El Ochito® exploded view: High mating durability, lightweight contact system with 100 Ohm shielded performance. Note wire twist maintained to contact pair to minimize characteristic impedance mismatch. Also, Conductive isolation shield dramatically reduces crosstalk



El Ochito® is a drop-in solution for D38999 Series III, as well as, Series 80 Mighty Mouse, EN4165, EN3645, Series 792 and other ARINC standards and is ideally suited for Ethernet, high-definition video, high-speed data loading, and other high speed applications.

El Ochito® octaxial contact technology overview
MIL-DTL-38999 Series III type

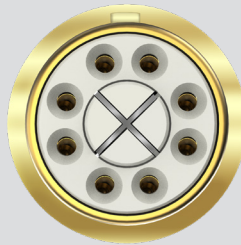
El Ochito®

The Octaxial Contact with Patented Data Pair Isolator Technology

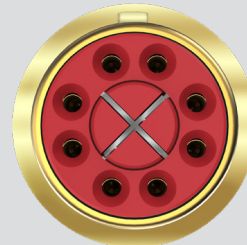


- 10GBASE-T, SuperSpeed USB, and multi-gigabit shielded pairs
- Data pair isolation technology
- Snap-in, rear release
- Environmentally protected
- Aerospace-grade performance

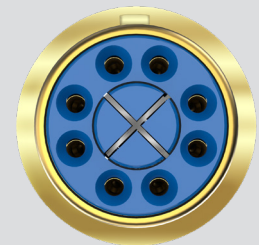
El Ochito® contacts are intended for harsh environment military and aerospace data networks. El Ochito® “White” octaxial contacts simplify the task of upgrading military and aerospace platforms to meet the high data rate demands of 1000BASE-T and 10GBASE-T. Metal spline isolates data pairs for improved signal integrity. “Ochito Red” contacts support multi-gigabit data protocols such as HDMI and DisplayPort. 90 ohm Ochito “Blue” contacts support SuperSpeed USB. El Ochito® contacts are compatible with Series 23 SuperNine® (MIL-DTL-38999 Series III) connectors with keyed size 8 contact cavities.



“Ochito White”
1000BASE-T
10GBASE-T

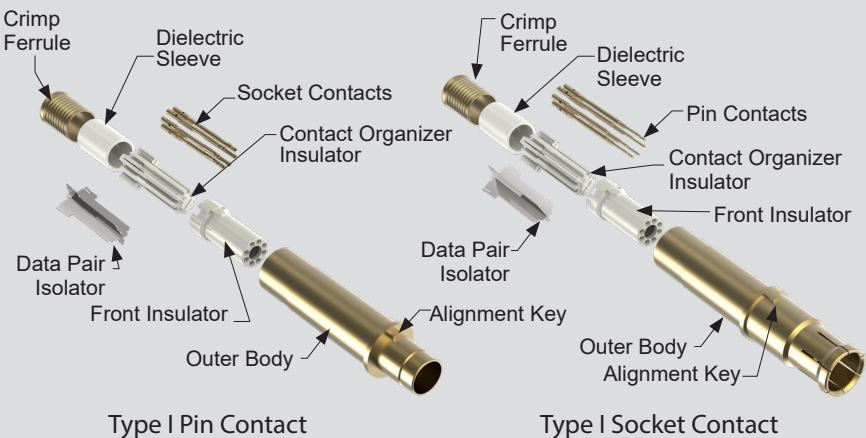


“Ochito Red”
Multi-Gigabit Datalinks
HDMI, SATA
Displayport

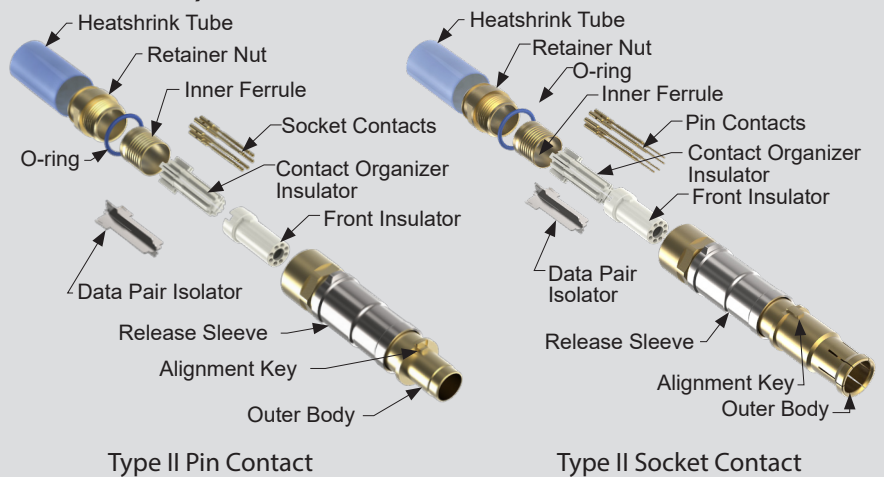


“Ochito Blue”
SuperSpeed USB

TYPE I EL OCHITO: 26 AWG, NON-SERVICEABLE, CRIMP SHIELD TERMINATION



TYPE II EL OCHITO: 24-26 AWG, SERVICEABLE, THREADED SHIELD TERMINATION, INTEGRAL RELEASE SLEEVE



El Ochito® ordering information
MIL-DTL-38999 Series III type

Ochito "White"



1000BASE-T
10GBASE-T

El Ochito® "White" octaxial contacts provide 10 Gigabit Ethernet in the same size as 100BASE-T Quadrax contact

- -65°C to +175°C
- 100 ohms
- 24 and 26 AWG
- Type 1 and Type 2

Ochito "Blue"



SuperSpeed USB

Low-dielectric material. Up to 5 Gbps. 90 ohms. El Ochito® "Blue" octaxial contacts provide an aerospace-grade solution for SuperSpeed USB.

- -65°C to +125°C
- 90 ohms
- Type 1 only

Ochito "Red"






HDMI, Displayport, SATA

Low-dielectric material. Up to 5 Gbps. 100 ohms. El Ochito® "Red" octaxial contacts provide an aerospace-grade solution for multi-gigabit data rates.

- -65°C to +125°C
- 100 ohms
- 26 AWG
- Type 1 only

El Ochito® Contacts

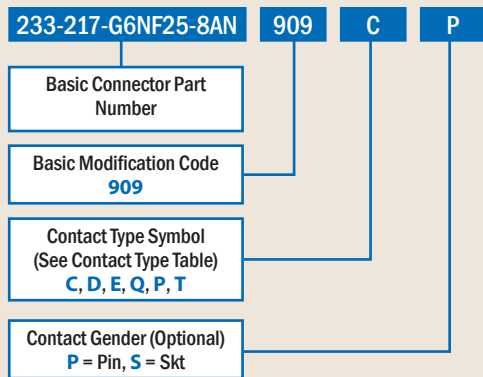
Data Protocol	Wire Size	Cable Type	Cable		Type 1 Ochito		Type 2 Ochito	
			Glenair Part No. <i>(Mfr. P/N)</i>	Cable Dia.	Pin Contact <i>Assembly Instr.</i>	Skt Contact <i>Assembly Instr.</i>	Pin Contact <i>Assembly Instr.</i>	Skt Contact <i>Assembly Instr.</i>
 1000BASE-T 10GBASE-T Ochito "White"	24	S/UTP	963-037-24 <i>(PIC E6A3824)</i>	.260 (6.60)	--	--	858-005-03 AI85097-03	858-006-03 AI85097-03
		S/FTP	963-033-24 <i>(Gore RCN9047-24)</i>	.260 (6.60)	--	--	858-005-04 AI85097-04	858-006-04 AI85097-04
	26	S/UTP	963-003-26 <i>(PIC E6A3826)</i>	.220 (5.56)	858-003-01F AI85048-01	858-004-01F AI85048-01	858-005-01 AI85097-01	858-006-01 AI85097-01
		S/FTP	963-033-26 <i>(Gore RCN9047-26)</i>	.220 (5.56)	858-003-02F AI85048-02	858-004-02F AI85048-02	858-005-02 AI85097-01	858-006-02 AI85097-01
 SuperSpeed USB Ochito "Blue"	26	USB 3.0	963-118	.217 (5.51)	858-028-01F AI85114-02	858-029-01F AI85114-02	--	--
		USB 3.0	963-110	.236 (5.99)	858-028-02F AI85090-01	858-029-02F AI85090-01	--	--
 HDMI, Displayport and SATA Ochito "Red"	26	Cat 6a S/FTP	963-033-26 <i>(Gore RCN9047-26)</i>	.220 (5.56)	858-030-02F AI85048-02	858-031-02F AI85048-02	--	--

El Ochito® technical data, modification codes and sealing boots MIL-DTL-38999 Series III type

Specifications		
Specifications	Construction	Connector Compatibility
<ul style="list-style-type: none"> Operating temperature: El Ochito® White: -65° to +175°C El Ochito® Blue: -65° to +125°C El Ochito® Red: -65° to +125°C Impedance: El Ochito® White: 100 ohms El Ochito® Blue: 90 ohms El Ochito® Red: 100 ohms Dielectric withstanding voltage: 500 Vrms Current Rating: 1.5 A Insulation resistance: 5000 megohms min. Durability: 500 mating cycles Vibration: MIL-DTL-38999 Series III Shock: MIL-DTL-38999 Series III 	<ul style="list-style-type: none"> Inner contacts, outer contact, ferrules, retaining nut: copper alloy, 50 microinches gold over nickel plating Insulators: El Ochito® White: PPS, natural color El Ochito® Blue: low-dielectric constant thermoplastic, blue El Ochito® Red: low-dielectric constant thermoplastic, red O-ring: fluorosilicone Heatshrink tubing: PVDF Contact release sleeve: stainless steel, passivated Sealing boot grommet: fluorosilicone Sealing boot body: rigid thermoplastic, PEI or equivalent Spline, El Ochito® White: copper alloy, nickel plating Spline, El Ochito® Red and Blue: Polyimide 	<ul style="list-style-type: none"> El Ochito® contacts have an alignment key and are not suitable for use in standard MIL-DTL-38999 connectors Series 80 Mighty Mouse with keyed size 8 cavities Series 792 Ultraminiature Rectangular ARINC 600 quadaxial inserts EPXB quadrax inserts Series 28 HiPer-D® connectors (280-082 and 280-083)

909 Modification Code

Modification code 909xx is used to supply D38999 Series III Type connectors (Glenair 233, 257, and 2570 families) featuring crimp removable type contacts with high-speed contact kits. Kits include spares, tools, and sealing plugs. See example below.

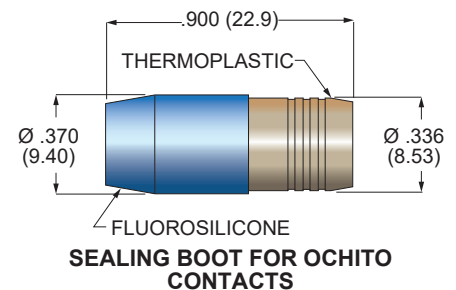


*For El Ochito see Contact Configuration Table on following page for appropriate code and dash number symbol. For high-speed protocols that have more than 8 wires such as HDMI and display port, contact factory. For 858-005 and 858-006 omit and order separately.

Contact Type		
Sym	Description	Glenair P/N
C	Coax, per M39029 /59 & /60	Pin: 809-114 Skt: 809-116
		Pin: 809-118 Skt: 809-120
		Pin: 852-007 Socket: 852-006
D	Differential Twinax	Pin: 853-014-05F Skt: 853-013-05F
E*	El Ochito® Octaxial	Pin: 858-003-02F Skt: 858-004-02F
		Pin: 858-028-02F Skt: 858-029-02F
		Pin: 858-030-01-02F Skt: 858-031-02F
Q	Quadrax	Pin: 854-001-02F Skt: 854-002-02F
T	Triax/ Concentric Twinax	Pin: 853-003 Skt: 853-004
P	Power	Pin: 850-014F Skt: 850-013F

Sealing Boot

An "F" suffix in the contact part number indicates the contact is supplied with a sealing boot. To order these contacts without sealing boots, delete the "F" suffix from the part number. Sealing boots are not supplied with 858-005, 858-006, 858-009, 858-010, 858-035, 858-037, 858-038 and 858-039 contacts.



687-754-8-8
FOR .220 (5.56) DIAMETER CABLES
687-754-8-9
FOR .236 (6.0) DIAMETER CABLES

EI Ochito Contact Configuration Table

MIL-DTL-38999 Series III type

EI Ochito Contact Configuration								
SYM	CAVITY 1	CAVITY 2	CAVITY 3	CAVITY 4	CAVITY 5	CAVITY 6	CAVITY 7	CAVITY 8
E	W	W	W	W	W	W	W	W
E2	B	W	W	W	W	W	W	W
E3	R	W	W	W	W	W	W	W
E4	B	B	W	W	W	W	W	W
E5	R	B	W	W	W	W	W	W
E6	R	R	W	W	W	W	W	W
E7	B	B	B	W	W	W	W	W
E8	R	B	B	W	W	W	W	W
E9	R	R	B	W	W	W	W	W
E10	R	R	R	W	W	W	W	W
E11	B	B	B	B	W	W	W	W
E12	R	B	B	B	W	W	W	W
E13	R	R	B	B	W	W	W	W
E14	R	R	R	B	W	W	W	W
E15	R	R	R	R	W	W	W	W
E16	B	B	B	B	B	W	W	W
E17	R	B	B	B	B	W	W	W
E18	R	R	B	B	B	W	W	W
E19	R	R	R	B	B	W	W	W
E20	R	R	R	R	B	W	W	W
E21	R	R	R	R	R	W	W	W
E22	B	B	B	B	B	B	W	W
E23	R	B	B	B	B	B	W	W
E24	R	R	B	B	B	B	W	W
E25	R	R	B	B	B	B	W	W
E26	R	R	R	B	B	B	W	W
E27	R	R	R	R	B	B	W	W
E28	R	R	R	R	R	R	W	W
E29	B	B	B	B	B	B	B	W
E30	R	B	B	B	B	B	B	W
E31	R	R	B	B	B	B	B	W
E32	R	R	R	B	B	B	B	W
E33	R	R	R	R	B	B	B	W
E34	R	R	R	R	R	B	B	W
E35	R	R	R	R	R	R	B	W
E36	R	R	R	R	R	R	R	W
E37	B	B	B	B	B	B	B	B
E38	R	B	B	B	B	B	B	B
E39	R	R	B	B	B	B	B	B
E40	R	R	R	B	B	B	B	B
E41	R	R	R	R	B	B	B	B
E42	R	R	R	R	R	B	B	B
E43	R	R	R	R	R	R	B	B
E44	R	R	R	R	R	R	R	B
E45	R	R	R	R	R	R	R	R

R= Red B = Blue W = White

El Ochito® assembly tools
MIL-DTL-38999 Series III type

Assembly Tools									
Contact PN	Inner Contact Crimp		Cable Shield Hex Crimp		Cable Shield Round Crimp			Key Alignment Tool	Rear Ferrule Insertion Tool
	Tool	Positioner	Tool	Hex Die	Tool	Positioner 1	Positioner 2		
858-003	809-015	859-101	809-129	859-007				600-236	600-242
858-004	809-015	859-101	809-129	859-007				600-235	600-242
858-005	809-015	859-101						600-236	
858-006	809-015	859-101						600-235	
858-028-01	809-015	859-101	809-129	859-007				600-236	600-242
858-028-02	809-015	859-101			809-134	859-184-2	859-184-3	600-236	600-242
858-029-01	809-015	859-101	809-129	859-007				600-235	600-242
858-029-02	809-015	859-101			809-134	859-184-1	859-184-2	600-235	600-242
858-030-02	809-015	859-101	809-129	859-007				600-236	600-242
858-031-02	809-015	859-101	809-129	859-007				600-235	600-242

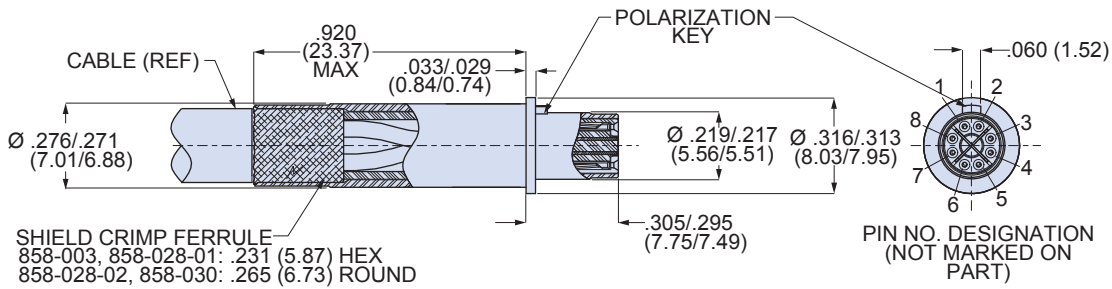
Inner Contact Crimp Tools		Cable Shield Crimp Tools				Removal Tool
809-015 (M22520/2-01)	859-101 (K1906)	809-129 (M22520/5-01)	859-007 (M22520/5-45)	859-134 (GS206)	859-184	859-049 (M81969/14-12)

Key Alignment Tools		Rear Ferrule Insertion Tool
600-235 600-243 Socket contact	600-236 600-244 Pin contact	600-242

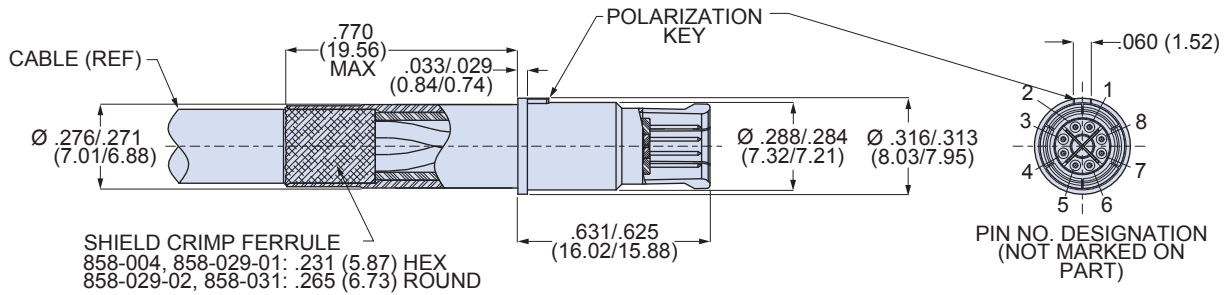
Contact factory for available alignment inspection tools for use with existing assemblies.

El Ochito® dimensions
MIL-DTL-38999 Series III type

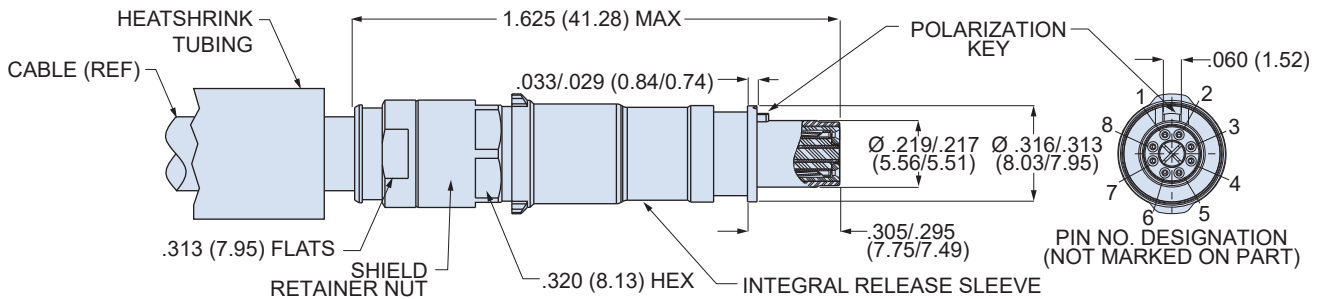
El Ochito® Type I Pin Contact 858-003, 858-028, and 858-030



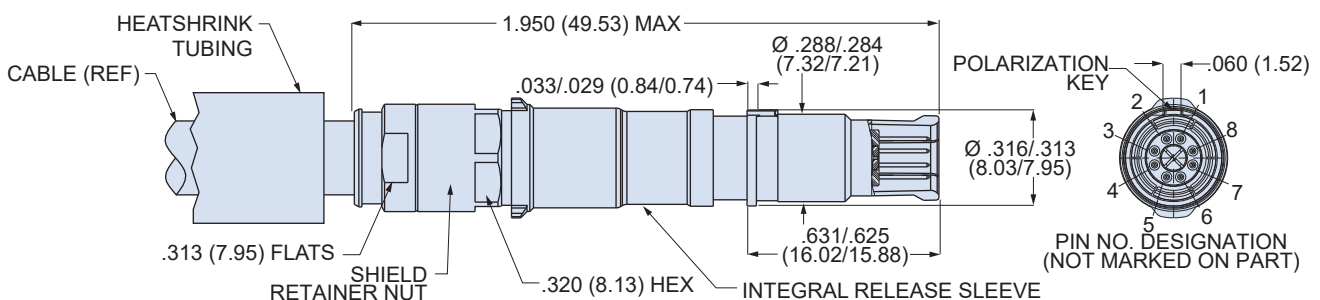
El Ochito® Type I Socket Contact 858-004, 858-029, and 858-031



El Ochito® Type II Pin Contact 858-005

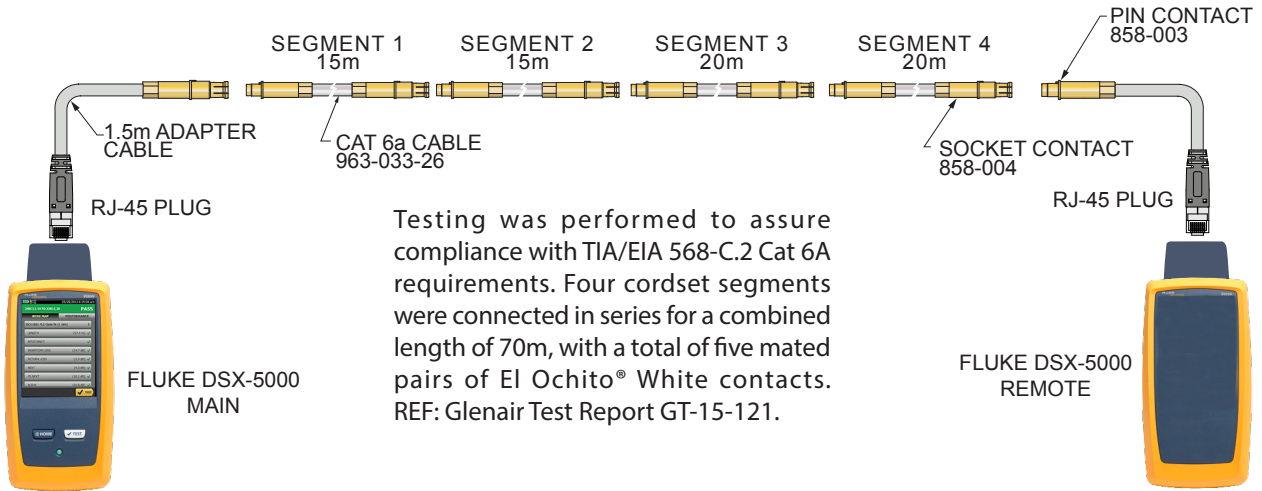


El Ochito® Type II Socket Contact 858-006

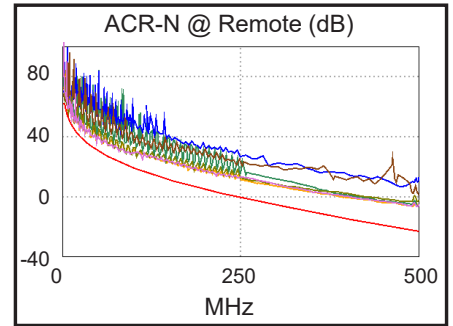
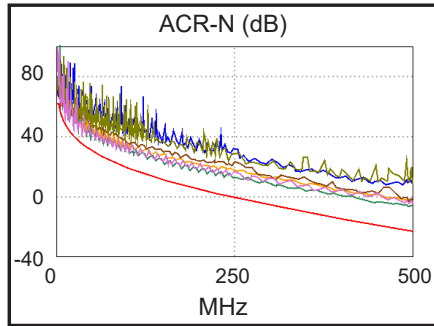
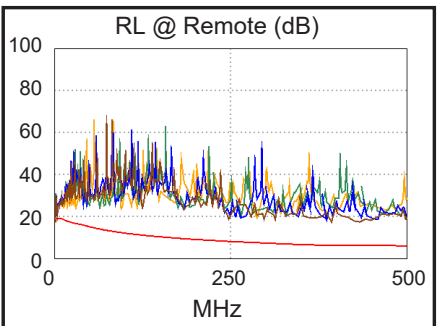
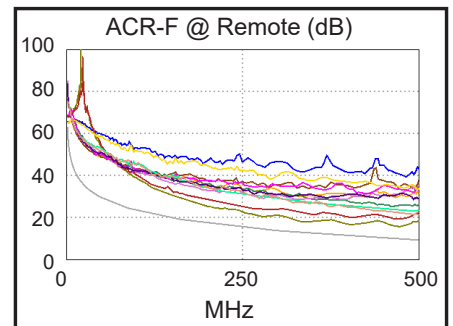
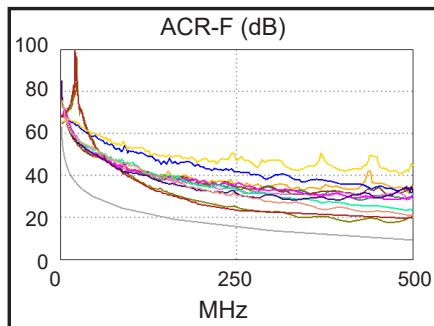
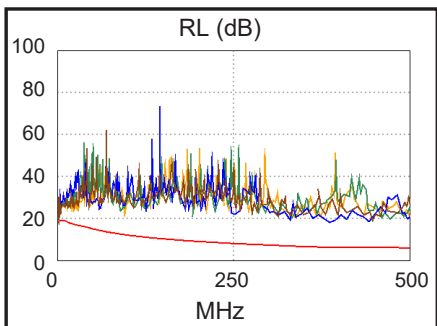
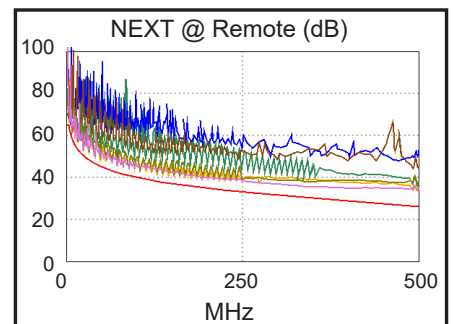
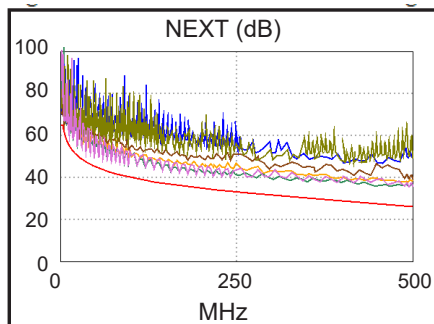
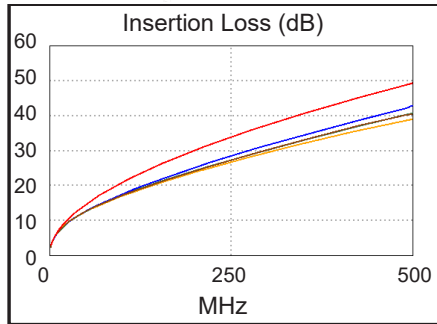


El Ochito® Signal Integrity Data
MIL-DTL-38999 Series III type

10GBase-T Category 6A Compliance Testing for El Ochito® White



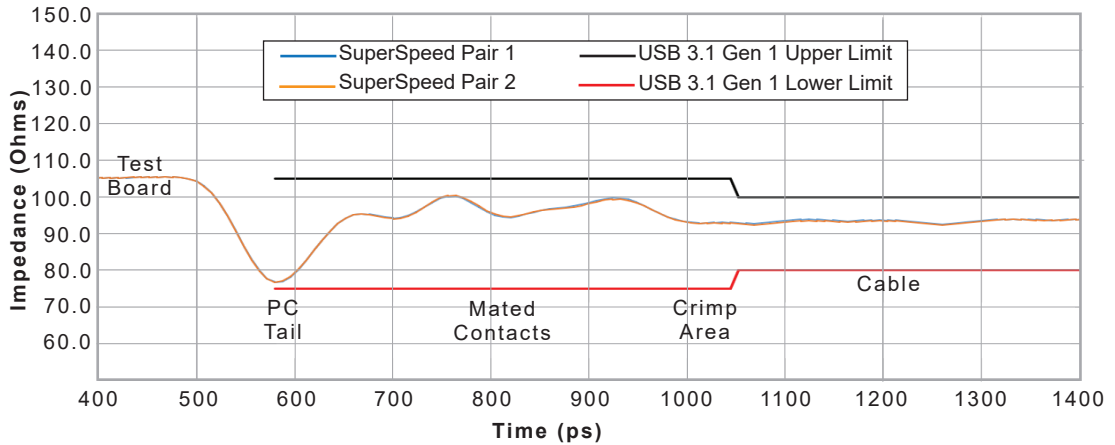
Testing was performed to assure compliance with TIA/EIA 568-C.2 Cat 6A requirements. Four cordset segments were connected in series for a combined length of 70m, with a total of five mated pairs of El Ochito® White contacts. REF: Glenair Test Report GT-15-121.



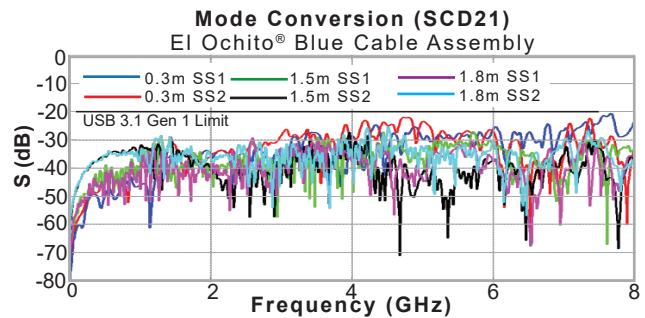
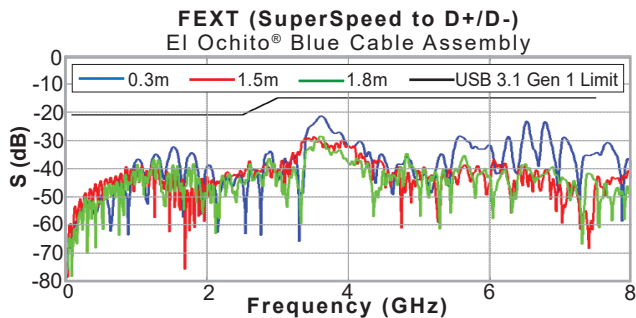
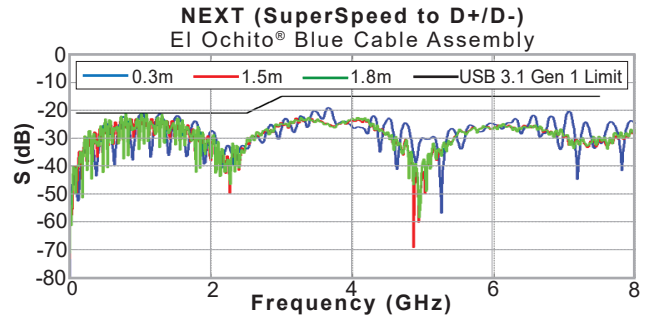
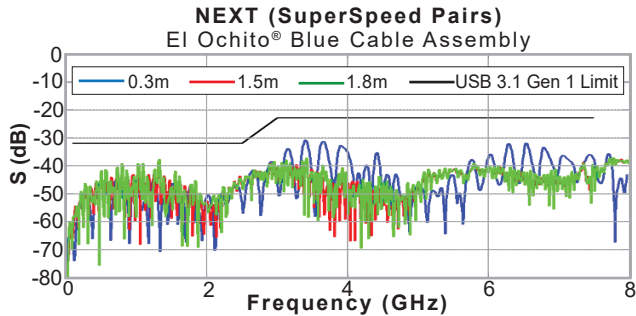
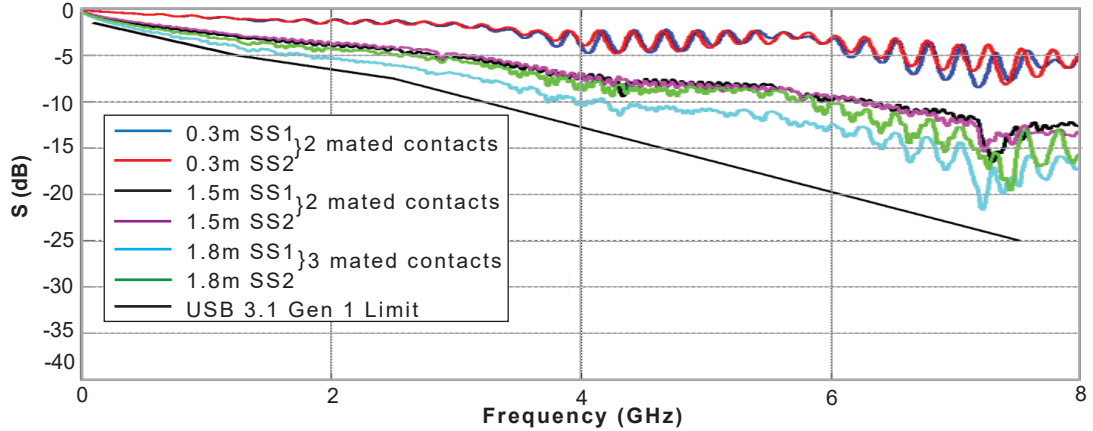
El Ochito® Signal Integrity Data
MIL-DTL-38999 Series III type

SuperSpeed USB Compliance Testing for El Ochito® Blue

TDR Profile
50ps RT 20%-80%
El Ochito® Blue
PC tail contact to
Cable Assembly



De-Embedded Insertion Loss
El Ochito® Blue
Cable Assembly



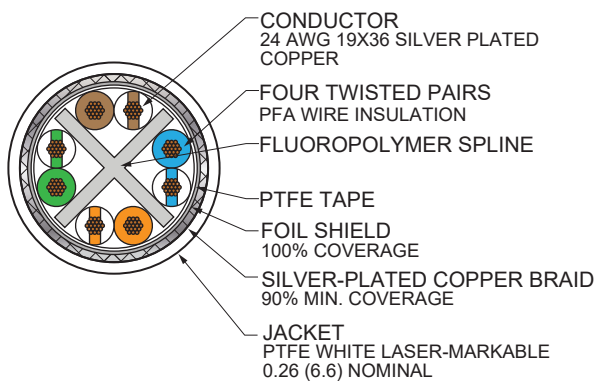
24 AWG Category 6A Ethernet Cables 963-037 and 963-033 MIL-DTL-38999 Series III type

24 AWG S/UTP Cat 6A Cable

Glenair Part Number	963-037-24
Manufacturer Part Number	E6A3824
Manufacturer	PIC

S/UTP 24 AWG cable is specially designed for airborne 10 Gigabit Ethernet applications. Twisted pairs are separated by a fluoropolymer spline for reduced crosstalk and attenuation. This 200°C rated cable is Skydrol resistant, RoHS compliant and meets FAA FAR Parts 23 and 25 Appendix F flammability requirements. Laser-markable white PTFE jacket withstands abrasion and chemicals. Meets ANSI/TIA-568-C.2 Category 6A performance up to 246 feet.

Construction Details



Color Code

Pair #1 Blue, White/Blue · Pair #2 Orange, White/Orange · Pair #3 Green, White/Green · Pair #4 Brown, White/Brown

Specifications

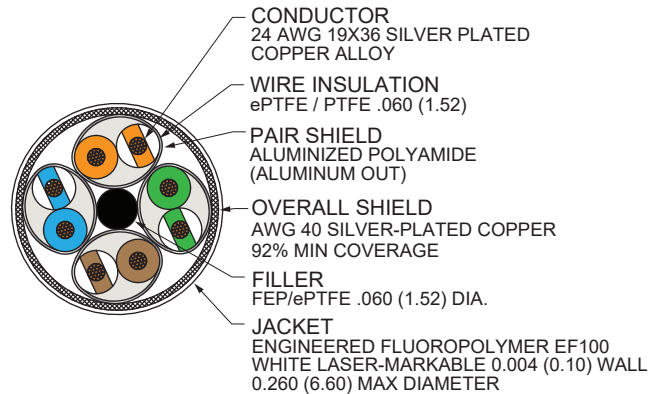
Impedance (ohms)	100 ±15	
Temperature Rating	-55° to +200°C	
Weight (lbs/100 ft.)	4.5	
Capacitance (pF/ft)	14.5	
Minimum Bend Radius (inches)	.78	
Velocity of Propagation %	70	
Dielectric Voltage Rating (kV rms)	1.5	
DC Resistance, Max (ohms/1000 ft.)	28.5	
Max Distance in Feet (m)	246 (75)	
Attenuation Nom / Max	Frequency	dB/100 ft.
	10 MHz	2.3 / 2.6
	100 MHz	7.0 / 8.4
	250 MHz	11.4 / 13.7
	500 MHz	16.5 / 20.0

24 AWG S/FTP Cat 6A Cable

Glenair Part Number	963-033-24
Manufacturer Part Number	RCN9034-24
Manufacturer	Gore

S/FTP 24 AWG cable has an individual foil shield around each data pair for reduced crosstalk and attenuation. This high data rate Ethernet cable features a unique cable jacket material and high-density construction that significantly reduces weight and diameter. Meets ANSI/TIA 568-C.2 Category 6A requirements up to 80 meters (262 feet). **Qualified to SAE AS6070.**

Construction Details



Color Code

Pair #1 Blue, White/Blue · Pair #2 Orange, White/Orange · Pair #3 Green, White/Green · Pair #4 Brown, White/Brown

Specifications

Impedance (ohms)	100 (+10 -5)	
Temperature Rating	-65° to +200°C	
Weight (lbs/100 ft.)	4.2	
Capacitance (pF/ft)	12.5	
Time Delay	1.24 ns/ft	
Maximum Attenuation at 80m Length	Frequency	dB
	10 MHz	5.9
	100 MHz	19.1
	250 MHz	31.1
	500 MHz	45.3
NEXT (minimum)	Frequency	dB
	1 MHz	74.3
	10 MHz	59.2
	100 MHz	52.3
	250 MHz	47.9
500 MHz	42.2	

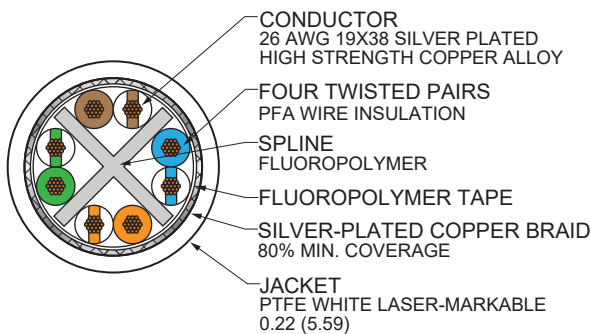
26 AWG Category 6A Ethernet Cables 963-003 and 963-033 MIL-DTL-38999 Series III type

26 AWG S/UTP Cat 6A Cable

Glenair Part Number	963-003-26
Manufacturer Part Number	E6A3826
Manufacturer	PIC

S/UTP 26 AWG cable is small, lightweight and flexible. Twisted pairs are separated by a fluoropolymer spline for reduced crosstalk and attenuation. This 200°C rated cable is Skydrol resistant, RoHS compliant and meets FAA FAR Parts 23 and 25 Appendix F flammability requirements. Rugged, laser-markable PTFE jacket withstands abrasion and chemicals. Meets ANSI/TIA-568-C.2 Category 6A performance up to 188 feet.

Construction Details



Color Code

Pair #1 Blue, White/Blue · Pair #2 Orange, White/Orange · Pair #3 Green, White/Green · Pair #4 Brown, White/Brown

Specifications

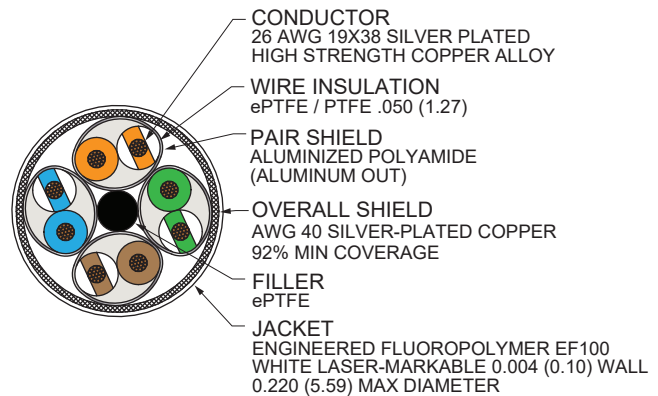
Impedance (ohms)	100 ±10	
Temperature Rating	-55° to +200°C	
Weight (lbs/100 ft.)	3.05	
Capacitance (pF/ft)	14.5	
Minimum Bend Radius (inches)	0.66	
Velocity of Propagation %	70	
Dielectric Voltage Rating (kV rms)	1.5	
DC Resistance, Max (ohms/1000 ft.)	44.8	
Max Distance in Feet (m)	188 (57)	
Attenuation Max	Frequency	dB/100 ft.
	10 MHz	3.7
	100 MHz	11.2
	250 MHz	17.4
	500 MHz	24.0

26 AWG S/FTP Cat 6A Cable

Glenair Part Number	963-033-26
Manufacturer Part Number	RCN9047-26
Manufacturer	Gore

S/FTP 26 AWG cable has an individual foil shield around each data pair for reduced crosstalk and attenuation. This high data rate Ethernet cable features a unique cable jacket material and high-density construction that significantly reduces weight and diameter. Meets ANSI/TIA 568-C.2 Category 6A requirements up to 65 meters (213 feet). **Qualified to SAE AS6070.**

Construction Details



Color Code

Pair #1 Blue, White/Blue · Pair #2 Orange, White/Orange · Pair #3 Green, White/Green · Pair #4 Brown, White/Brown

Specifications

Impedance (ohms)	100 (+10 -5)	
Temperature Rating	-65° to +200°C	
Weight (lbs/100 ft.)	3.2 (.32)	
Capacitance (pF/ft)	12.5	
Time Delay	1.24 ns/ft	
Maximum Attenuation at 65m Length	Frequency	dB
	10 MHz	5.9
	100 MHz	19.1
	250 MHz	31.1
	500 MHz	45.3
NEXT (minimum)	Frequency	dB
	1 MHz	74.3
	10 MHz	59.2
	100 MHz	52.3
	250 MHz	47.9
500 MHz	42.2	

SuperSpeed USB Cables 963-118 and 963-110

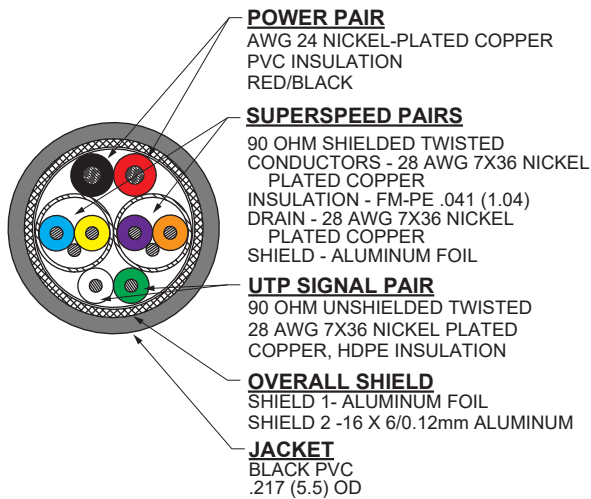
MIL-DTL-38999 Series III type

Commercial Grade SuperSpeed USB Cable

Glenair Part Number **963-118**

90 ohm commercial-grade cable features PVC jacket. SuperSpeed data pairs feature low dielectric constant foamed PE insulation. Each SuperSpeed pair has an aluminized polyester shield. Overall shield is aluminum foil and aluminum wire braid.

Construction Details



Color Code

SuperSpeed pairs VIO/ORN and BLU/YEL · Power wires RED, BLK · Low speed pair WHT/GRN.

Specifications

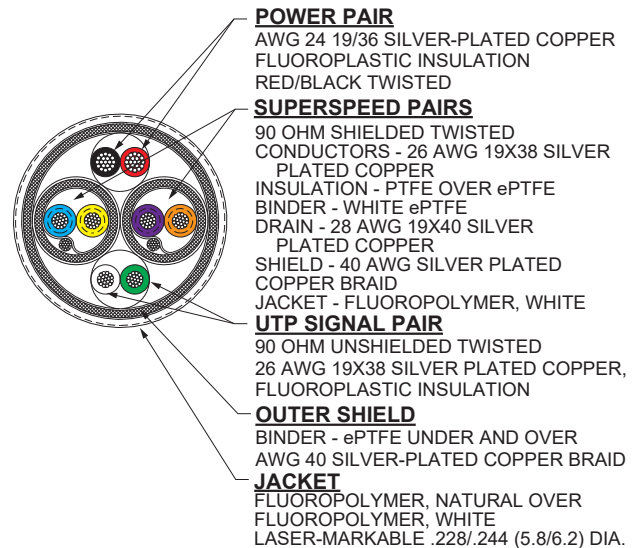
Impedance (ohms)		
High speed pairs	90 ± 7	
Low-speed pair	90 ±15%	
Temperature Rating	0° to +80°C	
Voltage Rating	30V	
Frequency (GHz)	IL (dB/m)	NEXT (dB)
0.1	1.5	32
1.25	5.0	N/A
2.5	7.5	32
3.0	N/A	23
7.5	25	23

Aerospace Grade SuperSpeed USB Cable

Glenair Part Number **963-110**

High performance, high temperature cable delivers dependable signal integrity over longer cable lengths. Fluoropolymer jacket can be laser-marked. Low-skew SuperSpeed data pairs have individual braid shields.

Construction Details



Color Code

SuperSpeed pairs VIO/ORN and BLU/YEL · Power wires RED, BLK · Low speed pair WHT/GRN.

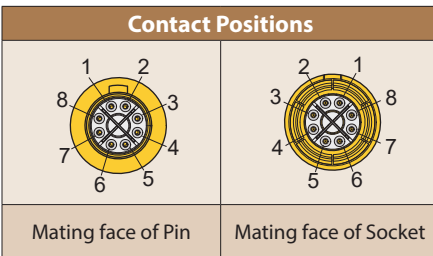
Specifications

Impedance (ohms)	90 ± 5	
Temperature Rating	-65° to +200°C	
Voltage Rating	< 50 Vac	
Dielectric Withstanding Voltage	100 Vac rms	
Weight	57 g/m nominal	
Attenuation (S0021)	Freq. (GHz)	dB/m max.
	.625	1.2
	1.25	1.7
	2.5	2.5
	5.0	3.9
	7.5	5.0

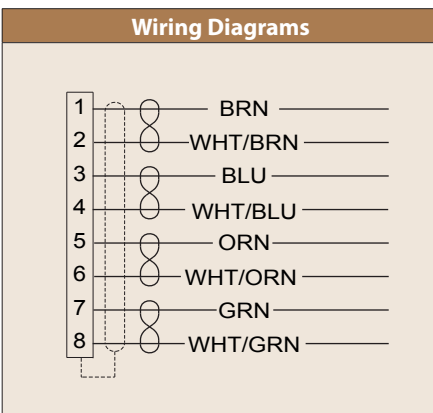
8571-0001 Pre-wired CAT 6A El Ochito® contacts, single-ended MIL-DTL-38999 Series III type



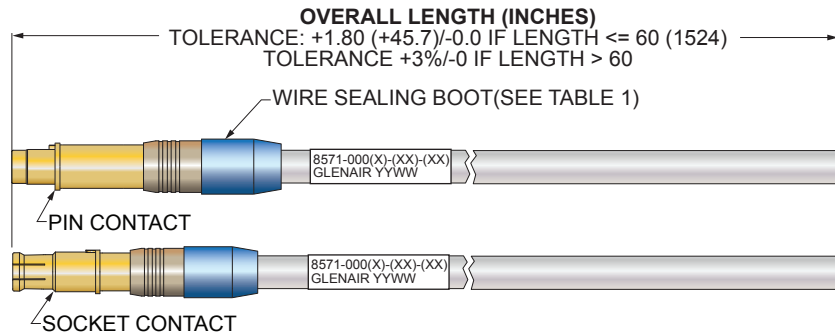
El Ochito "White" for 10GBASE-T Ethernet Pin contact mating face



Technical Data	
<ul style="list-style-type: none"> Refer to individual contact and cable data sheets for construction details 100% tested for shorts, continuity and IR 	
<ul style="list-style-type: none"> Operating temp.: -65 to +175°C Impedance: 100 ohms DWV: 500 Vrms Current Rating: 1.5 A IR: 200 megohms min. Durability: 500 mating cycles 	



Save assembly time and cost with pre-wired, 100% tested El Ochito® "White" assemblies. These single-ended cables have Ochito "White" contacts terminated to Category 6A aerospace-grade shielded cable. Supplied with cable sealing boot if applicable. Compatible with Glenair Series 23 connectors. Designed to meet the requirements of MIL-DTL-38999, SAE AS39029. *El Ochito contacts should be installed in keyed connectors before mating to prevent misalignment and contact damage.*



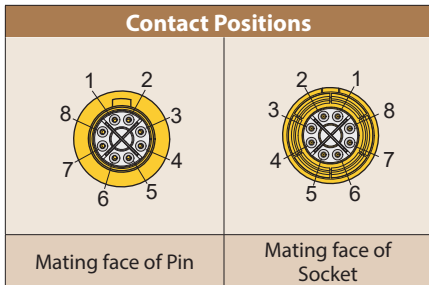
Part Number Development			
Sample Part Number	8571-0001	-10	-60
Series / Basic Part No.	8571-0001 = Pre-wired El Ochito® contact, single-ended CAT 6A		
Order Code	See Table 1		
Length	Length in inches (12 inch minimum)		

Table 1 Order Code					
Order Code	Contact Part Number	Pin/Skt	Sealing Boot	Cable Type	Cable Part Number
01	858-003-01F	Pin	Yes	S/UTP CAT6A #26 .220	963-003-26
02	858-004-01F	Skt	Yes	S/UTP CAT6A #26 .220	963-003-26
03	858-005-01	Pin	No	S/UTP CAT6A #26 .220	963-003-26
04	858-005-02	Pin	No	S/FTP CAT6A #26 .220	963-033-26
05	858-005-04	Pin	No	S/FTP CAT6A #24 .220	963-033-24
06	858-006-01	Skt	No	S/UTP CAT6A #26 .220	963-003-26
07	858-006-02	Skt	No	S/FTP CAT6A #26 .220	963-033-26
08	858-006-04	Skt	No	S/FTP CAT6A #24 .220	963-033-24
09	858-003-02F	Pin	Yes	S/FTP CAT6A #26 .220	963-033-26
10	858-004-02F	Skt	Yes	S/FTP CAT6A #26 .220	963-033-26

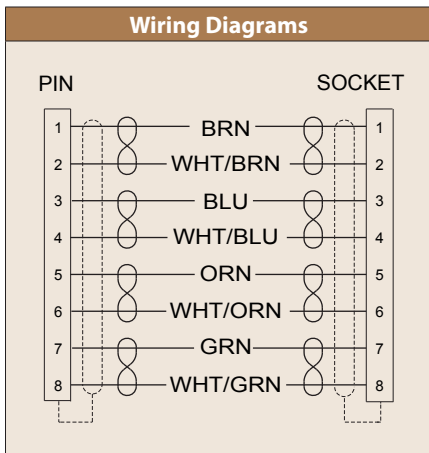
8571-0002 Pre-wired CAT 6A Ochito® contacts, pin-to-socket MIL-DTL-38999 Series III type



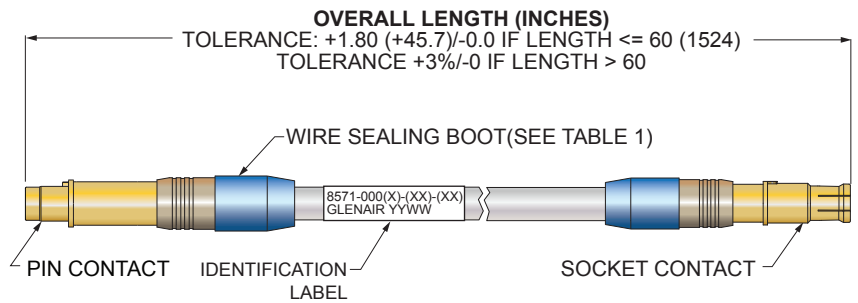
El Ochito "White" for 10GBASE-T Ethernet Pin contact mating face



Technical Data
<ul style="list-style-type: none"> Refer to individual contact and cable data sheets for construction details 100% tested for shorts, continuity and IR
<ul style="list-style-type: none"> Operating temp.: -65 to +175°C Impedance: 100 ohms DWV: 500 Vrms Current Rating: 1.5 A IR: 200 megohms min. Durability: 500 mating cycles



Lower installed cost. 100% tested. Save assembly time and cost with pre-wired El Ochito® "White" assemblies. These pin-to-socket cables have El Ochito "White" contacts terminated to Category 6A aerospace-grade shielded cable. Supplied with cable sealing boot if applicable. These pre-wired El Ochito contacts snap into connector body without requiring an insertion tool. Remove contacts with plastic tool 859-049. Compatible with Glenair Series 23 connectors. Designed to meet the requirements of MIL-DTL-38999, SAE AS39029. *El Ochito contacts should be installed in keyed connectors before mating to prevent misalignment and contact damage.*



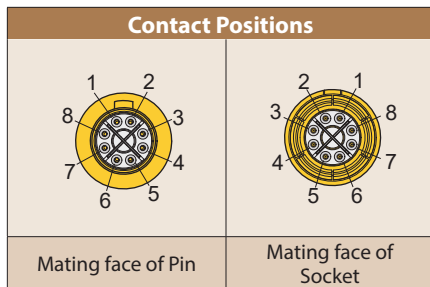
Part Number Development			
Sample Part Number	8571-0002	-01	-36
Series / Basic Part No.	8571-0002 = Pre-wired El Ochito® contacts, pin-to-socket		
Order Code	See Table 1		
Length	Length in inches (12 inch minimum)		

Table 1 Order Code						
Connector Type	Order Code	Pin Contact Part No.	Skt Contact Part No.	Sealing Boot	Cable Type	Cable Part Number
Series 23	01	858-003-01F	858-004-01F	Yes	S/UTP CAT6A #26 .220	963-003-26
	02	858-005-01	858-006-01	No	S/UTP CAT6A #26 .220	963-003-26
	03	858-005-02	858-006-02	No	S/FTP CAT6A #26 .220	963-033-26
	04	858-005-04	858-006-04	No	S/FTP CAT6A #24 .260	963-033-24
	05	858-003-02F	858-004-02F	Yes	S/FTP CAT6A #26 .220	963-033-26

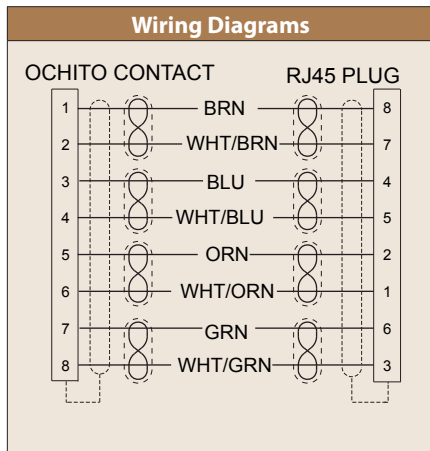
8571-0003 and -0004 cable assembly, El Ochito®-to-RJ45 MIL-DTL-38999 Series III type



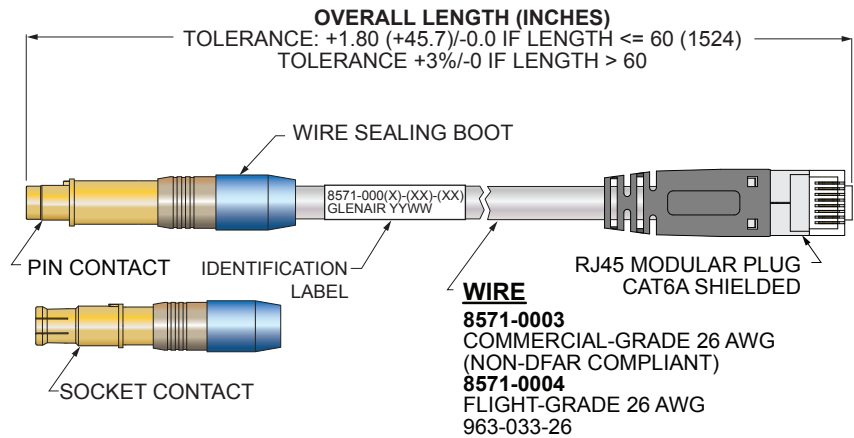
El Ochito "White" for 10GBASE-T Ethernet Pin contact mating face



Technical Data
<ul style="list-style-type: none"> Refer to individual contact and cable data sheets for construction details 100% tested for shorts, continuity and IR
<ul style="list-style-type: none"> Operating temp.: -40 to +70°C Wire Size: 26 AWG Impedance: 100 ohms DWV: 500 Vrms Current Rating: 1.5 A IR: 200 megohms min. Durability: 500 mating cycles



El Ochito-to-RJ45. Two cable options: commercial grade (8571-0003) or flight-grade (8571-0004) Cat6A. Save assembly time and cost with pre-wired El Ochito® "White" assemblies. Cost-effective commercial grade assemblies are perfect for LAN testers and de-bugging. High performance engineered fluoropolymer aerospace grade assemblies have foil shields on each wire pair. Compatible with Glenair Series 23 connectors. Operating temperature -40 to +70°C. *Ochito contacts should be installed in keyed connectors before mating to prevent misalignment and contact damage.*



El Ochito®-to-RJ45 Cable Assemblies, Commercial-grade Wire			
Sample Part Number	8571-0003	-01	-24
Series / Basic Part No.	8571-0003 = Cable Assy, El Ochito to RJ45 Plug, Commercial Grade Wire		
ElOchito Contact Part Number	01 = 858-003-01F Pin 02 = 858-004-01F Socket		
Length	Length in inches (12 inch minimum)		

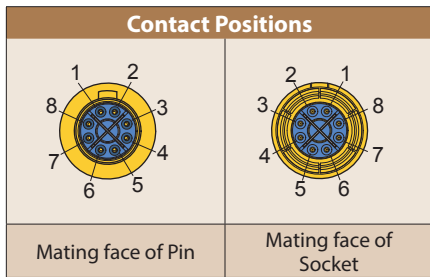
El Ochito®-to-RJ45 Cable Assemblies, Flight-grade Wire			
Sample Part Number	8571-0004	-01	-24
Series / Basic Part No.	8571-0004 = Cable Assy, El Ochito to RJ45 Plug, Aerospace Grade Wire		
El Ochito Contact Part Number	01 = 858-003-02F Pin 02 = 858-004-02F Socket		
Length	Length in inches (12 inch minimum)		

8572-0001 Pre-wired El Ochito® USB 3.0 contacts, single-ended MIL-DTL-38999 Series III type

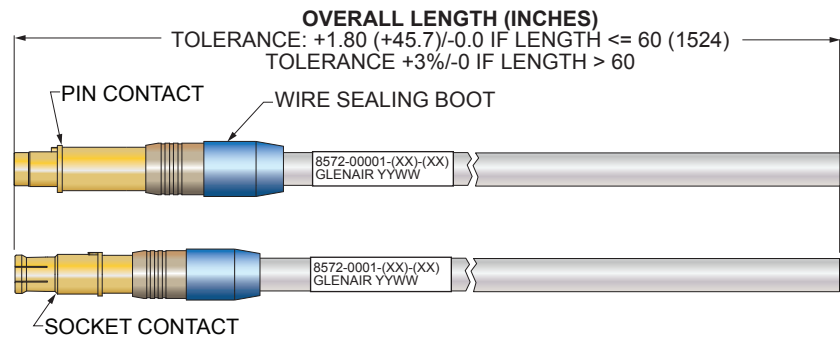
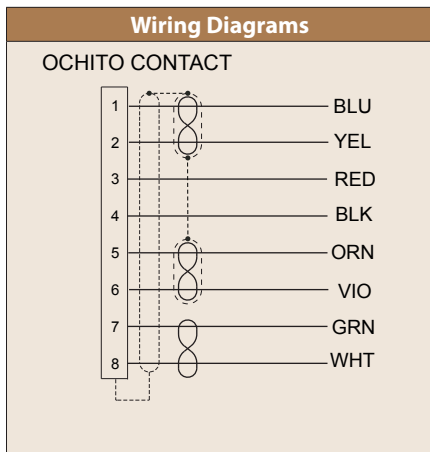


Ochito "Blue" for SuperSpeed USB
Pin contact mating face

Two cable options: commercial grade or flight-grade. 100% tested. Save assembly time and cost with pre-wired El Ochito® "Blue" SuperSpeed USB assemblies. These single-ended assemblies have Ochito "Blue" contacts terminated to USB 3 shielded cables. Supplied with cable sealing boot. Commercial-grade version has PVC jacket. Aerospace-grade version has high temperature fluoropolymer construction and braided shields on SuperSpeed pairs. Compatible with Glenair Series 23 connectors. **Ochito contacts should be installed in keyed connectors before mating to prevent misalignment and contact damage.**



Technical Data	
<ul style="list-style-type: none"> Refer to individual contact and cable data sheets for construction details 100% tested for shorts, continuity and IR 	
<ul style="list-style-type: none"> Operating temperature Aero: -65° to +125°C Commercial: 0 to 80°C Impedance: 90 ohms DWV: 500 Vrms Current Rating: 1.5 A IR: 200 megohms min. Durability: 500 mating cycles 	



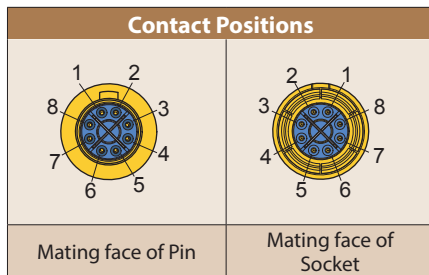
Part Number Development			
Sample Part Number	8572-0001	-01	-36
Series / Basic Part No.	8572-0001 = Pre-wired El Ochito® contact, with USB 3.0 cable		
Order Code	See Table 1		
Length	Length in inches (12 inch minimum)		

Table 1 Order Code						
Connector Type	Order Code	Pin Contact Part No.	Order Code	Skt. Contact Part No.	Cable Type	Cable Part Number
Series 23	01	858-028-01F	03	858-029-01F	Commercial-grade PVC Jacket 0° to +80°C	963-118
	02	858-028-02F	04	858-029-02F	Aerospace-grade Fluoropolymer Jacket -65° to +125°C	963-110

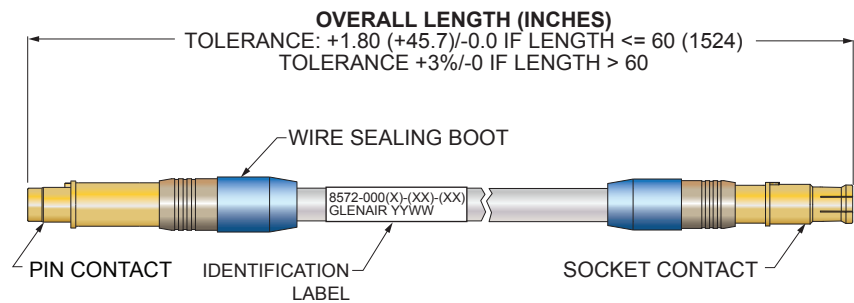
8572-0002 Cable assembly, El Ochito® -to-RJ45 modular plug MIL-DTL-38999 Series III type



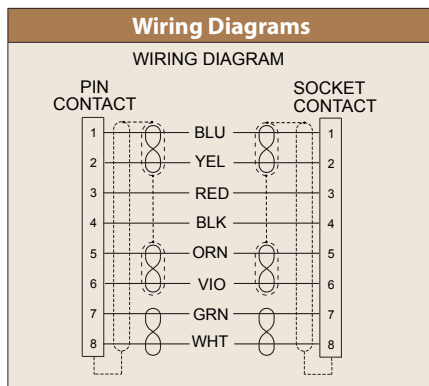
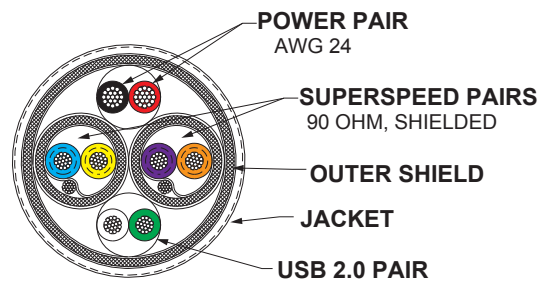
Ochito "Blue" for SuperSpeed USB
Pin contact mating face



Aerospace-grade or commercial-grade cable. 100% tested. Save assembly time and cost with pre-wired El Ochito® "Blue" SuperSpeed USB assemblies. These assemblies have a pin contact on one end and a socket contact on the other. Aerospace-grade high temperature cable has fluoropolymer construction. Commercial-grade version has PVC jacket. Compatible with Glenair Series 23 connectors. Supplied with cable sealing boot. *Ochito contacts should be installed in keyed connectors before mating to prevent misalignment and contact damage.*



Technical Data
<ul style="list-style-type: none"> Refer to individual contact and cable data sheets for construction details 100% tested for shorts, continuity and IR
<ul style="list-style-type: none"> Operating temperature Aero: -65° to +125°C Commercial: 0 to 80°C Wire Size: 26 AWG Impedance: 90 ohms DWV: 500 Vrms Current Rating: 1.5 A IR: 200 megohms min. Durability: 500 mating cycles



Part Number Development			
Sample Part Number	8572-0002	-01	-36
Series / Basic Part No.	8572-0002 = Pre-wired El Ochito® contact, with USB 3 cable		
Order Code	See Table 1		
Length	Length in inches (12 inch minimum)		

Table 1 Order Code				
Order Code	Pin Contact Part No	Skt Contact Part No	Cable Type	Cable Part No
01	858-028-01F	858-029-01F	Commercial-grade, PVC Jacket, -0°C to +80°C	963-118
02	858-028-02F	858-029-02F	Aerospace-grade, Fluoropolymer Jacket, -65°C to +125°C	963-110

8572-0003 El Ochito® cable assemblies with USB 3 connectors MIL-DTL-38999 Series III type

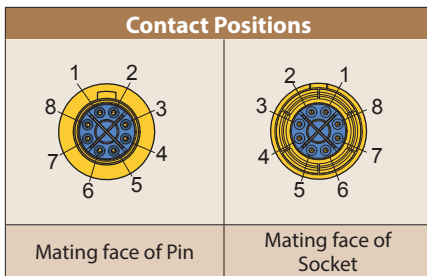
USB 3.0 Connectors. Commercial grade. 100% tested. Save assembly time and cost with pre-wired El Ochito® “Blue” SuperSpeed USB assemblies. These assemblies have El Ochito “Blue” contacts wired to USB 3.0 connectors. Supplied with cable sealing boot. Compatible with Glenair Series 23 connectors. *El Ochito contacts should be installed in keyed connectors before mating to prevent misalignment and contact damage.*

Part Number Development			
Sample Part Number	8572-0003	-01	-36
Series / Basic Part No.	8572-0003 = Pre-wired Ochito contacts, with USB 3 connectors		
Order Code	See Table 1		
Length	Length in inches (12 inch minimum)		

Table 1 Order Code				
Connector Type	Order Code	Contact Part No.	Pin/Skt	USB 3.0 Connector
Series 23	01	858-028-01F	Pin	A Plug
	02	858-029-01F	Socket	A Recep
	03	858-029-01F	Socket	B Plug
	04	858-029-01F	Socket	Micro-B Plug

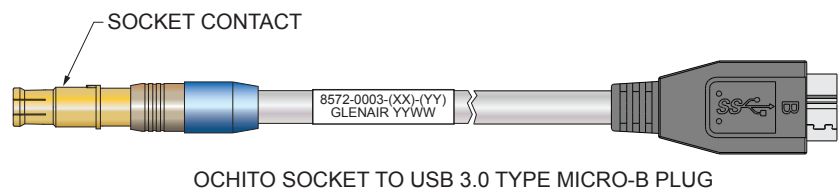
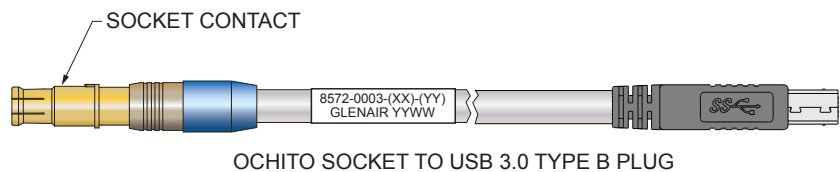
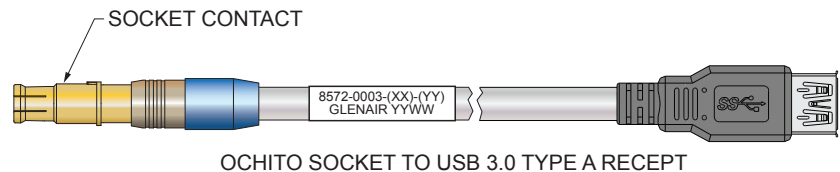
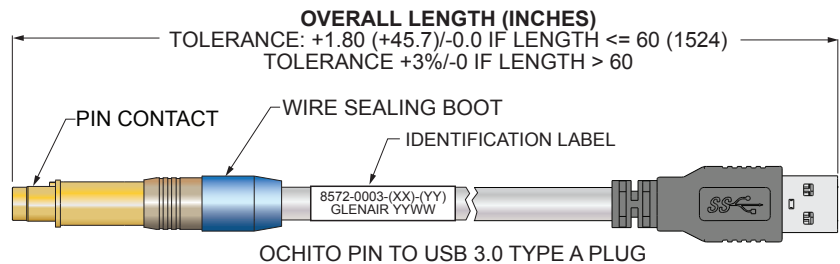


Ochito “Blue” for SuperSpeed USB
Pin contact mating face



Technical Data
<ul style="list-style-type: none"> ❑ Operating temp.: -0 to +80°C ❑ Impedance: 90 ohms ❑ DWV: 100 Vrms ❑ Current Rating: 1.5 A ❑ IR: 100 megohms min. ❑ Durability: 500 mating cycles

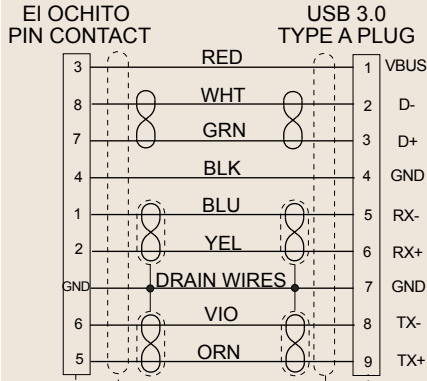
Construction
<ul style="list-style-type: none"> ❑ Refer to individual contact data sheets for additional details ❑ 100% tested for shorts, continuity and IR
<ul style="list-style-type: none"> ❑ Cable: commercial-grade, PVC jacket, non-DFAR compliant



8572-0003 El Ochito® cable assemblies with USB 3 connectors MIL-DTL-38999 Series III type

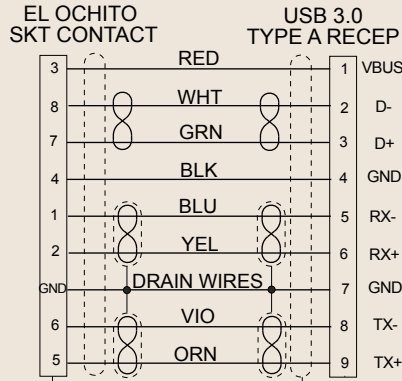
**Wiring Diagram
8572-0003-01**

El Ochito Pin to USB 3.0 A Plug



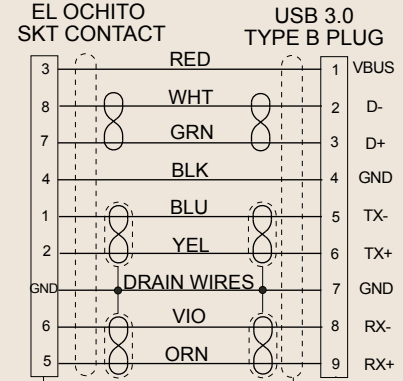
**Wiring Diagram
8572-0003-02**

El Ochito Socket to USB 3.0 A Recep



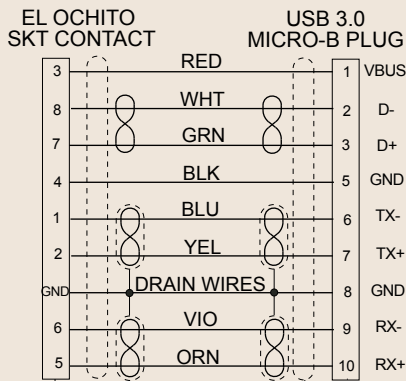
**Wiring Diagram
8572-0003-03**

El Ochito Socket to USB 3.0 B Plug



**Wiring Diagram
8572-0003-04**

El Ochito Skt to USB 3.0 Micro-B Plug

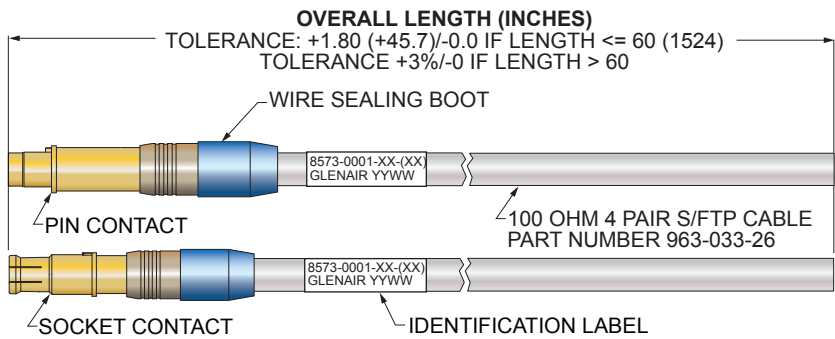
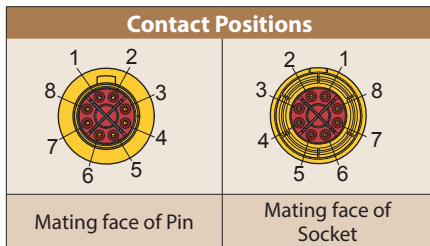


8573-0001 Pre-wired El Ochito® contacts, single-ended MIL-DTL-38999 Series III type



Ochito "Red" for Multi-Gigabit 100 Ohm Datalinks

Save assembly time and cost with pre-wired, 100% tested El Ochito® "Red" assemblies for multi-gigabit datalinks. These single-ended cables have Ochito "Red" contacts terminated to high performance flight-grade 100 ohm shielded twisted pair cable. Supplied with cable sealing boot. Compatible with Glenair Series 23 connectors. Designed to meet the requirements of MIL-DTL-38999 and SAE AS39029. *Ochito contacts should be installed in keyed connectors before mating to prevent misalignment and contact damage.*



Technical Data	
<ul style="list-style-type: none"> Refer to individual contact and cable data sheets for construction details 100% tested for shorts, continuity and IR 	
<ul style="list-style-type: none"> Operating temp.: -65 to +125°C Impedance: 100 ohms DWV: 500 Vrms Current Rating: 1.5 A IR: 200 megohms min. Durability: 500 mating cycles 	

Part Number Development			
Sample Part Number	8573-0001	-01	-36
Series / Basic Part No.	8573-0001 = Pre-wired El Ochito® contact, single-ended, Multi-Gigabit		
EL Ochito Contact Part No.	See Table 1		
Length	Length in inches (12 inch minimum)		

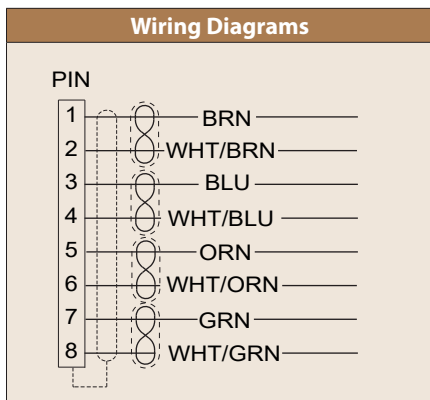


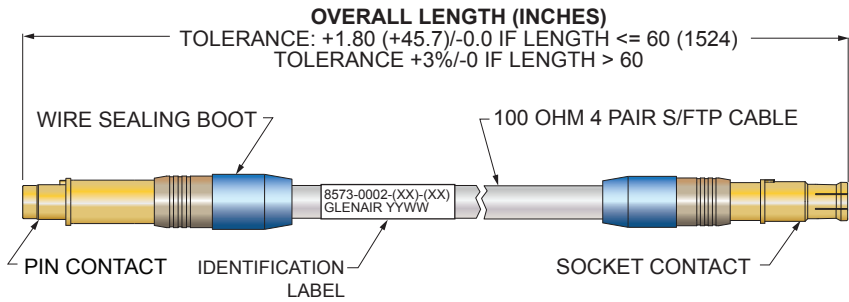
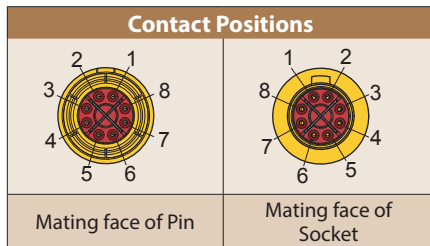
Table 1 Order Code				
Connector Type	Order Code	Contact Part No.	Pin/Skt	Cable
Series 23	01	858-030-02F	Pin	963-033-26
	02	858-031-02F	Socket	963-033-26

8573-0002 Pre-wired El Ochito® contacts, pin-socket MIL-DTL-38999 Series III type



El Ochito "Red" for Multi-Gigabit 100 Ohm Datalinks, pin contact mating face

Save assembly time and cost with pre-wired, 100% tested El Ochito® "Red" assemblies for multi-gigabit datalinks. These pin-to-socket cables have El Ochito "Red" contacts terminated to high performance flight-grade 100 ohm shielded twisted pair cable. Supplied with cable sealing boots. Compatible with Glenair Series 23 connectors. Designed to meet the requirements of MIL-DTL-38999 and SAE AS39029. *El Ochito contacts should be installed in keyed connectors before mating to prevent misalignment and contact damage.*



Technical Data

- Refer to individual contact and cable data sheets for construction details
- 100% tested for shorts, continuity and IR
- Operating temp.:** -65 to +125°C
- Impedance:** 100 ohms
- DWV:** 500 Vrms
- Current Rating:** 1.5 A
- IR:** 200 megohms min.
- Durability:** 500 mating cycles

Part Number Development

Sample Part Number	8573-0002	-01	-48
Series / Basic Part No.	8573-0002 = Pre-wired El Ochito® 'Red' pin-to-socket, assemblies with 963-033-26 cable		
El Ochito Contact P/N	See table 1		
Length	Length in inches (12 inch minimum)		

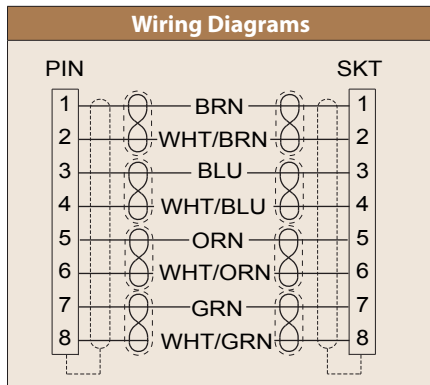


Table 1 Order Code

Connector Type	Order Code	Pin Contact Part No.	Skt Contact Part No.	Cable
Series 23	01	858-030-02F	858-031-02F	963-033-26

El Ochito® “White” Test Adapters and Cables for 10G Ethernet MIL-DTL-38999 Series III type



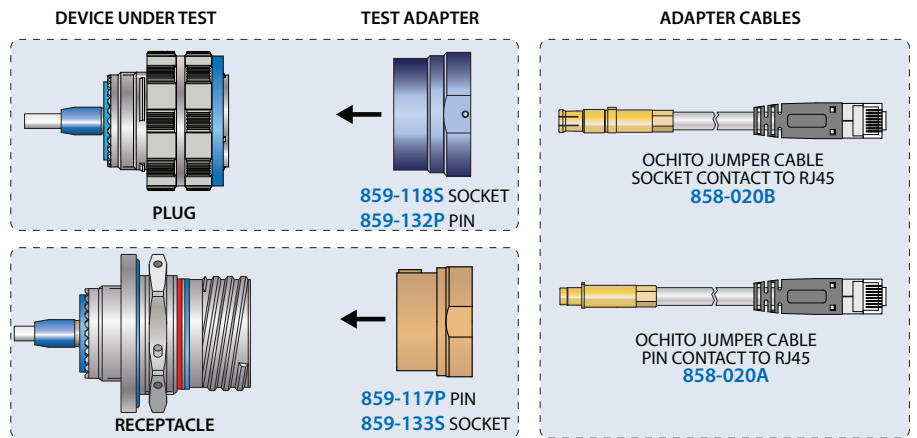
Plug Adapter



Receptacle Adapter

Prevent damage to expensive cables with El Ochito® test adapters and jumper cables. These test adapters properly align mating test contacts without the added expense and time-consuming labor of mating connectors. Jumper cables are ordered separately. Push test adapter into Device Under Test (DUT), then insert adapter cable into adapter. No tool is required to insert and remove adapter cable. Jumper cables have high performance shielded EIA/TIA 568-C.2 Cat6A RJ45 plug for interface with test instruments.

Construction	
❑	Receptacle adapter (859-117P and 857-133S): polyetherimide resin, natural color
❑	Plug adapter (859-118S and 859-132P): polyetherimide insert, blue anodized aluminum alloy housing
Connector Compatibility	
❑	Glenair 233-217 SuperNine™ connectors with size 8 El Ochito® contacts



Ordering Information for El Ochito® Test Adapters (Jumper Cables not Included)

RECEPTACLE ADAPTER MATES WITH PLUG CONNECTOR	Arr.	Device Under Test			
		Plug with Pin Contacts ⁽¹⁾	Plug with Socket Contacts ⁽¹⁾	Receptacle with Pin Contacts	Receptacle with Socket Contacts
 859-118S MATES WITH PLUG WITH PIN CONTACTS 859-132P MATES WITH PLUG WITH SOCKET CONTACTS	9G5	859-118S09G05N	859-132P09G05N	859-133S09G05	859-117P09G05
	11-01	859-118S11-01N	859-132P11-01N	859-133S11-01	859-117P11-01
	13-14	859-118S13-14N	859-132P13-14N	859-133S13-14	859-117P13-14
	17-02	859-118S17-02N	859-132P17-02N	859-133S17-02	859-117P17-02
	17-22	859-118S17-22N	859-132P17-22N	859-133S17-22	859-117P17-22
	17-60	859-118S17-60N	859-132P17-60N	859-133S17-60	859-117P17-60
	17-75	859-118S17-75N	859-132P17-75N	859-133S17-75	859-117P17-75
	19-04	859-118S19-04N	859-132P19-04N	859-133S19-04	859-117P19-04
	19-12	859-118S19-12N	859-132P19-12N	859-133S19-12	859-117P19-12
	19-17	859-118S19-17N	859-132P19-17N	859-133S19-17	859-117P19-17
	19-18	859-118S19-18N	859-132P19-18N	859-133S19-18	859-117P19-18
	21-75	859-118S21-75N	859-132P21-75N	859-133S21-75	859-117P21-75
	23-05	859-118S23-05N	859-132P23-05N	859-133S23-05	859-117P23-05
	23-06	859-118S23-06N	859-132P23-06N	859-133S23-06	859-117P23-06
	25-07	859-118S25-07N	859-132P25-07N	859-133S25-07	859-117P25-07
	25-08	859-118S25-08N	859-132P25-08N	859-133S25-08	859-117P25-08
	25-17	859-118S25-17N	859-132P25-17N	859-133S25-17	859-117P25-17
	25-20	859-118S25-20N	859-132P25-20N	859-133S25-20	859-117P25-20
25-26	859-118S25-26N	859-132P25-26N	859-133S25-26	859-117P25-26	
25-41	859-118S25-41N	859-132P25-41N	859-133S25-41	859-117P25-41	
25-46	859-118S25-46N	859-132P25-46N	859-133S25-46	859-117P25-46	

(1) For alternate polarizations, change suffix code from N to A, B, C, D or E.

El Ochito® “White” test adapters and cables for 10G Ethernet MIL-DTL-38999 Series III type

859-117P Pin Adapter

Shell Size	A Diameter	
	In.	mm.
09 (A)	.650	16.5
11 (B)	.780	19.8
13 (C)	.900	22.9
17 (E)	1.203	30.6
19 (F)	1.265	32.1
21 (G)	1.390	35.3
23 (H)	1.520	38.6
25 (J)	1.635	41.5

859-118S Socket Adapter

Shell Size	A Diameter	
	In.	mm.
09 (A)	.710	18.0
11 (B)	.850	21.6
13 (C)	1.000	25.4
17 (E)	1.271	32.3
19 (F)	1.333	33.9
21 (G)	1.460	37.1
23 (H)	1.585	40.3
25 (J)	1.711	43.5

859-132P Pin Adapter

Shell Size	A Diameter	
	In.	mm.
09 (A)	.710	18.0
11 (B)	.850	21.6
13 (C)	1.000	25.4
17 (E)	1.271	32.3
19 (F)	1.333	33.9
21 (G)	1.460	37.1
23 (H)	1.585	40.3
25 (J)	1.711	43.5

859-133S Socket Adapter

Shell Size	A Diameter	
	In.	mm.
09 (A)	.650	16.5
11 (B)	.780	19.8
13 (C)	.900	22.9
17 (E)	1.203	30.6
19 (F)	1.265	32.1
21 (G)	1.390	35.3
23 (H)	1.520	38.6
25 (J)	1.635	41.5

El Ochito® Test Jumpers with Pin Contacts

RJ45 MODULAR PLUG SHIELDED HIGH PERFORMANCE CAT6A 10 GIGABIT SPEED

OCHITO PIN CONTACT (858-018)

ETHERNET CABLE S/FTP CAT6A, 26 AWG (963-033-26)

El Ochito® Test Jumpers with Socket Contacts

RJ45 MODULAR PLUG SHIELDED HIGH PERFORMANCE CAT6A 10 GIGABIT SPEED

OCHITO SOCKET CONTACT (858-019)

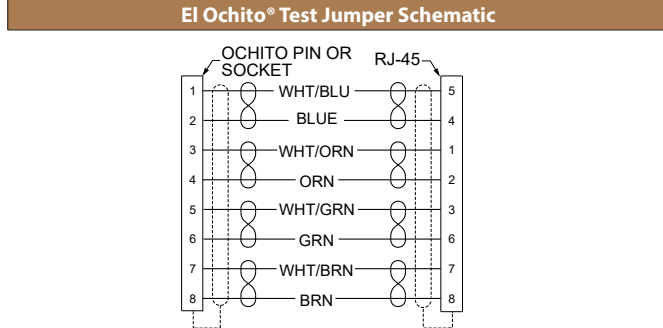
ETHERNET CABLE S/FTP CAT6A, 26 AWG (963-033-26)

Pin Jumper Ordering Information

OA Length Inches	OA Length meters	Part Number
18	0.45	858-020-A-02-18
36	0.91	858-020-A-02-36
72	1.82	858-020-A-02-72
120	3.05	858-020-A-02-120

Socket Jumper Ordering Information

OA length Inches	OA Length meters	Part Number
18	0.45	858-020-B-02-18
36	0.91	858-020-B-02-36
72	1.82	858-020-B-02-72
120	3.05	858-020-B-02-120



- ### Notes
- 858-020 jumper cables are intended only for use in Glenair El Ochito® test adapters. Do not attempt to install in MIL-DTL-38999 type connectors.
 - Other cable lengths are readily available. Change the suffix number to the desired length in inches.
 - 858-020 jumper cables are fully assembled and 100% electrically tested.
 - Length is minimum overall length including contact and plug.
 - No tool is required to install or remove contacts.
 - Jumper cables are wired per the guidelines of ARINC 664 Part 2 Appendix N.

233-217/233-224 With shielded, crimp removable contacts MIL-DTL-38999 Series III type, part number development

Part Number Development									
Sample Part Number	233-217	-G6	NF	25	-	08	A	N	909XX
Series / Basic Part No.	233-217 with Accessory Thread 233-224 Integral Banding Porch								
Connector Style	See Connector Style Table								
Material/Finish	NF = Cadmium Olive Drab ME = Electroless Nickel MT = Nickel PTFE ZR = Black Zinc Nickel								
Shell Size	9, 11, 13, 17, 19, 21, 23, 25								
Ground Option	G = Common Ground - = None								
Insert Arrangement	Per MIL-STD-1560; See Page C-5 and C-6								
Insert Designator	A = Pin insert, less contacts B = Socket insert, less contacts								
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)								
Optional Mod Code	909XX = Supplies connector with contacts; see page C-11 for Mod Code details.								

Connector Style*	
Sym	Description
G6	Plug, with EMI spring
05	Receptacle, in-line
07	Receptacle, jam-nut
00	Receptacle, wall mount with slotted holes
CM	Receptacle, wall mount with metric clinch nuts
CS	Receptacle, wall mount with standard clinch nuts
D0	Receptacle, wall mount with thru holes
HM	Receptacle, wall mount with metric helicoils
HS	Receptacle, wall mount with standard helicoils

*Refer to Section A for recommended panel cutout.

*Refer to Section A for complete details.

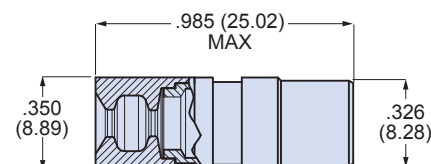
Shielded High-Speed Contact Styles			
Contact Type		Glenair P/N	Ohm
	Coax (Per M39029/59 and /60)	Pin: 852-007 Skt: 852-006	95
	Differential Twinax	Pin: 853-014-05F Skt: 853-013-05F See Note 9	100
	El Ochito	White Pin: 858-003-02F, Skt: 858-004-02F; See Note 9	100
		Blue Pin: 858-028-02F, Skt: 858-029-02F; See Note 9	90
		Red Pin: 858-030-02F, Skt: 858-031-02F; See Note 9	100
	Quadrax	Pin: 854-001-02F Skt: 854-002-02F See Note 9	100
	Triax/ Concentric Twinax	Pin: 853-003 Skt: 853-004	78

To order contacts separately see Section J

SEALING BOOT

Sealing boot provides wire seal. Slide boot onto wire before terminating contact. After contact is installed in connector, slide boot forward into connector grommet to seal the contact cavity. "F" suffix added on contact part number specifies contact supplied with sealing boot

Wire Dia. (in.)	Wire Dia. (mm.)	Part Number
.090 - .130	2.3 - 3.3	859-042-01
.130 - .170	3.3 - 4.3	859-042-02
.170 - .205	4.3 - 5.2	859-042-03

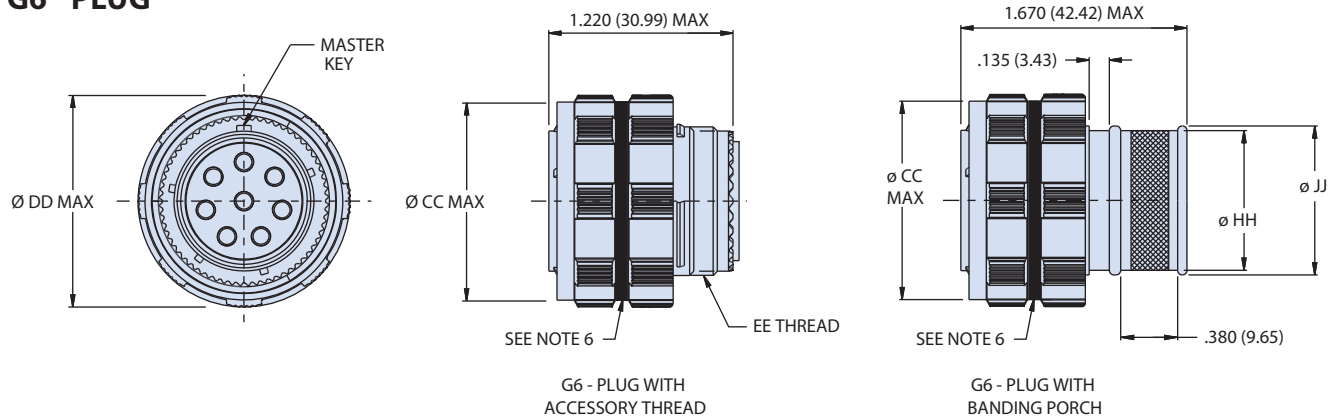


NOTES

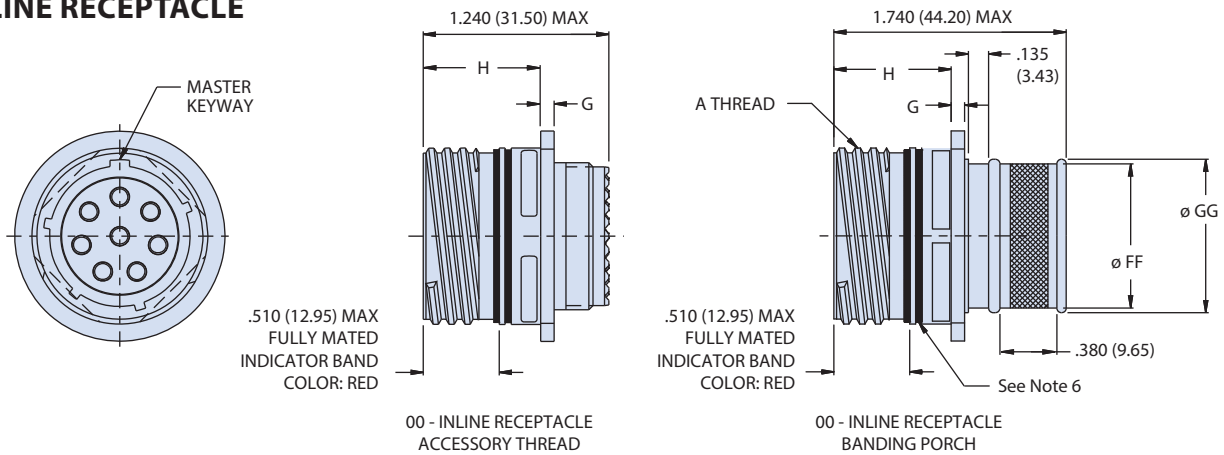
1. Insert arrangements IAW MIL-STD-1560. Contact Glenair for additional arrangement options.
2. All contacts, insertion/removal tool, and sealing plugs to be ordered separately. See section J for details.
3. Dimensions in inch (millimeter) are subject to change without notice.
4. See reference information in this section for recommended mounting holes for wall mount and jam-nut receptacles.
5. Consult factory for additional information.
6. Blue color band indicates rear release retention system.
7. All contacts, insertion/removal tool, and sealing plugs to be ordered separately.
8. For contacts with boot, add F suffix.
9. See page C-4, figure 2 for inner pin orientation.
10. Front panel mount only

233-217/233-224 With shielded, crimp removable contacts
MIL-DTL-38999 Series III type, plug/in-line/jam-nut

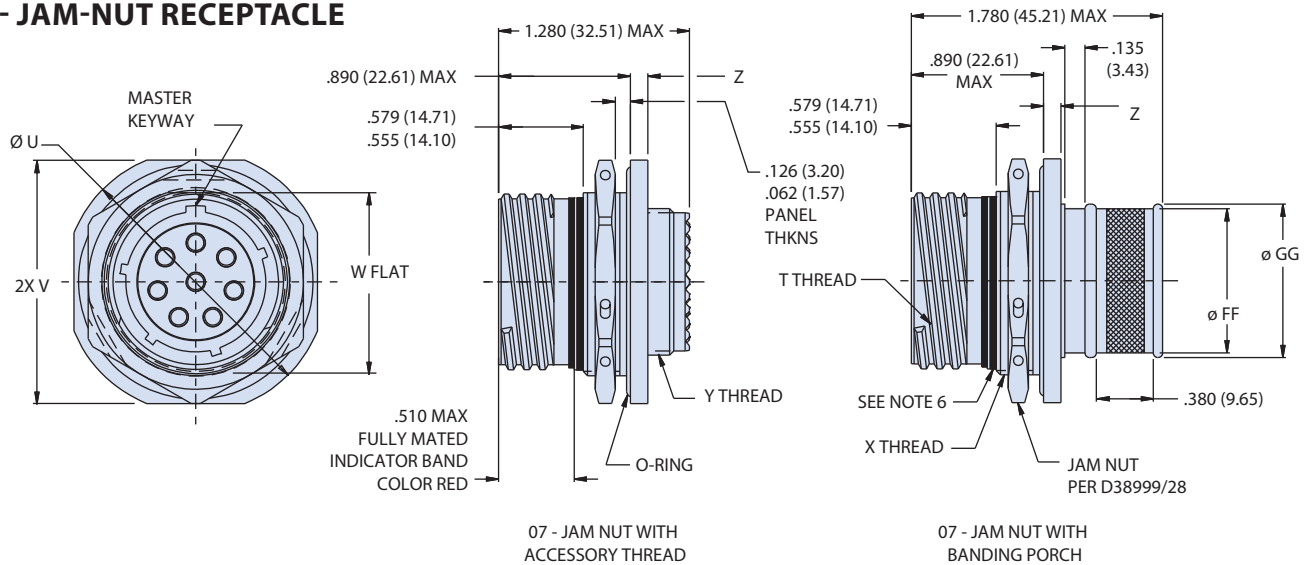
G6 - PLUG



05 - IN-LINE RECEPTACLE

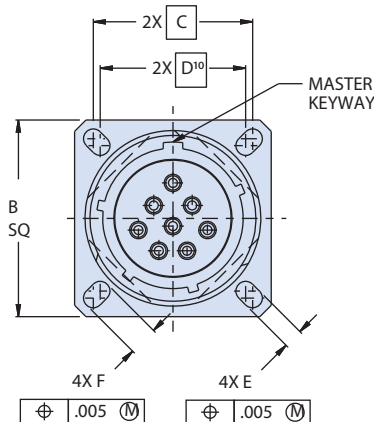


07 - JAM-NUT RECEPTACLE

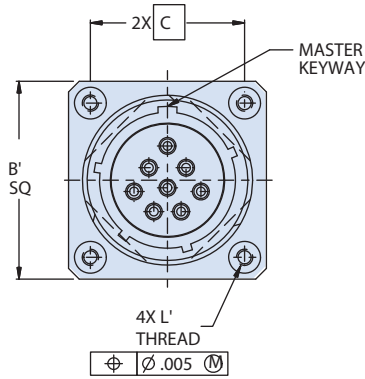


233-217/233-224 With shielded, crimp removable contacts
MIL-DTL-38999 Series III type, wall mount

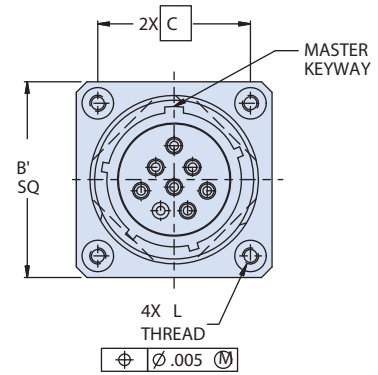
00, CM, CS, DO, HM AND HS WALL MOUNT RECEPTACLES WITH ACCESSORY THREAD OR INTEGRAL BANDING PORCH



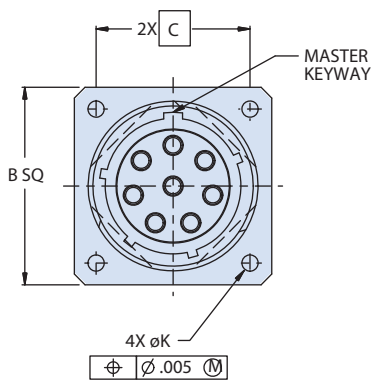
00 - WALL MOUNT RECEPTACLE WITH SLOTTED HOLES



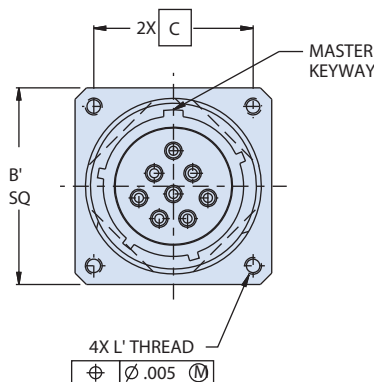
CM - WALL MOUNT RECEPTACLE WITH METRIC CLINCH NUTS



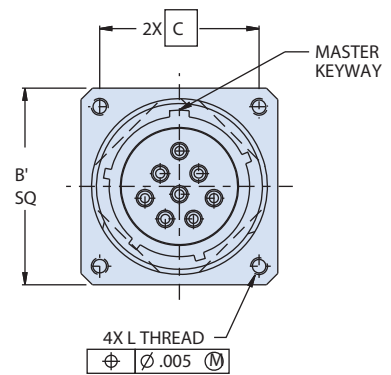
CS - WALL MOUNT RECEPTACLE WITH STANDARD CLINCH NUTS



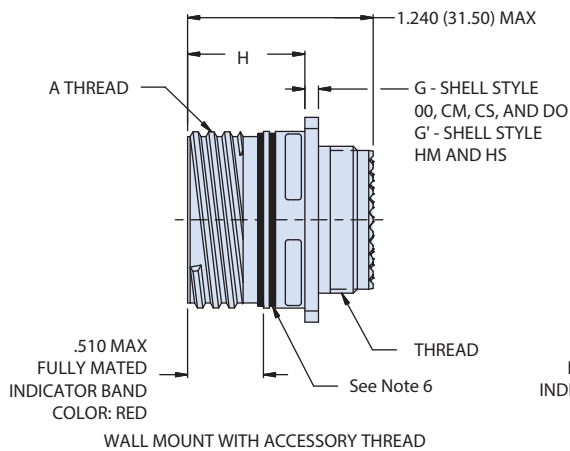
DO - WALL MOUNT RECEPTACLE WITH THRU HOLES



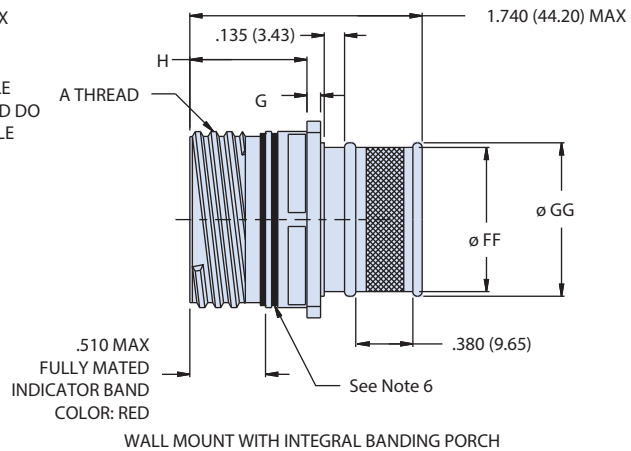
HM - WALL MOUNT RECEPTACLE WITH METRIC HELICOILS



HS - WALL MOUNT RECEPTACLE WITH STANDARD HELICOIL



WALL MOUNT WITH ACCESSORY THREAD



WALL MOUNT WITH INTEGRAL BANDING PORCH

233-217/233-224 With shielded, crimp removable contacts
MIL-DTL-38999 Series III type, dimensions

C

Plug Dimension				
Shell Size Code	Shell Size	Ø CC Max	Ø DD Max	EE Thd
A	9	.811 (20.60)	.858 (21.79)	M12 X 1.0-6g 0.100R
B	11	.929 (23.60)	.984 (24.99)	M15 X 1.0-6g 0.100R
C	13	1.008 (25.60)	1.157 (29.39)	M18 X 1.0-6g 0.100R
E	17	1.358 (34.49)	1.406 (35.71)	M25 X 1.0-6g 0.100R
F	19	1.469 (37.31)	1.516 (38.51)	M28 X 1.0-6g 0.100R
G	21	1.594 (40.49)	1.642 (41.71)	M31 X 1.0-6g 0.100R
H	23	1.720 (43.69)	1.768 (44.91)	M34 X 1.0-6g 0.100R
J	25	1.843 (46.81)	1.890 (48.01)	M37 X 1.0-6g 0.100R

Jam-nut Dimensions								
Shell Size Code	Shell Size	T Thd .1P-.3L-TS-2A	ØU	V	W Flat	X Thd (1.0-6g 0.100R)	Y Thd (1.0-6g 0.100R)	Z
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17 X	M12 X	
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	0.755 (19.18) 0.745 (18.92)	M20 X	M15 X	.122 (3.10)
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25 X	M18 X	.083 (2.11)
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X	M25 X	
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X	M28 X	
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X	M31 X	.153 (3.89)
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X	M34 X	.114 (2.90)
J	25	1.6250	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44 X	M37 X	

Wall Mount Dimensions																
Shell Size Code	Shell Size	A Thd .1P-.3L-TS-2A	B Sq	B' Sq	C Bsc	D Bsc ⁷	E	F	G	G'	H	J Thd 1.0-6g 0.100R	ØK	L Thd	L' Thd	ØM
A	9	.6250	.949 (24.10) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)		.224 (5.69) .208 (5.28)				M12				.858 (21.79)
B	11	.7500	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)						M15				.984 (24.99)
C	13	.8750	1.138 (28.91) 1.114 (28.30)	1.226 (31.14) 1.186 (30.12)	.906 (23.01)	.812 (20.62)	.136 (3.45)		.098 (2.49) .083 (2.11)	.179 (4.55) .140 (3.56)	.820 (20.83) (19.58)	M18	.136 (3.45) .120 (3.05)	.112-40 UNC	M3X0.5	1.157 (29.39)
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)	.120 (3.05)	.202 (5.13) .186 (4.72)				M25				1.406 (35.71)
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)						M28				1.516 (38.51)
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)			.126 (3.20) .083 (2.11)			M31				1.642 (41.71)
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)	.162 (4.11) .146 (3.71)	.250 (6.35) .234 (5.94)		.190 (4.83) .170 (4.32)	.790 (20.07) (18.82)	M34	.162 (4.11) .146 (3.71)	.138-32 UNC	M4X0.7	1.768 (44.91)
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)						M37				1.890 (48.01)

Integral Banding Porch Dimensions					
Shell Size Code	Shell Size	Ø FF	Ø GG	Ø HH	Ø JJ
A	09	.475 (12.07)	.538 (13.67)	.420 (10.67)	.465 (11.81)
B	11	.600 (15.24)	.662 (16.81)	.550 (13.97)	.595 (15.11)
C	13	.700 (17.78)	.762 (19.35)	.670 (17.02)	.715 (18.16)
D	15	.835 (21.21)	.898 (22.81)	.815 (20.70)	.860 (21.84)
E	17	.960 (24.38)	1.022 (25.96)	.945 (24.00)	.990 (25.15)
F	19	1.062 (26.97)	1.125 (28.58)	1.050 (26.67)	1.100 (27.94)
G	21	1.188 (30.18)	1.250 (31.75)	1.170 (29.72)	1.220 (30.99)
H	23	1.275 (32.39)	1.338 (33.99)	1.290 (32.77)	1.340 (34.04)
J	25	1.475 (37.47)	1.538 (39.07)	1.400 (35.56)	1.450 (36.83)

233-260 QDC Plug with shielded crimp removable contacts

MIL-DTL-38999 Series III type, part number development

Part Number Development													
Sample Part Number	233-260				-G6	ME	25	-	G	17-60	A	P	N
Series / Basic Part No.	233-260 Quick Disconnect (QDC) Plug with Shielded High-Speed Contacts												
Connector Style	G6 = Plug												
Material/Finish	NF = Aluminum/Cad. Olive Drab ME = Aluminum/ Electroless Nickel		MT = Aluminum/Nickel PTFE Z1 = SST, Passivated										
Shell Size	9, 11, 17, 19, 21, 23, 25												
Contact Type	P = Power Q = Quadrax (100 ohm) T = Triax/Concentric Twinax (per /90 and /91) C = Coax (per M39029/59, /60, 76, /77, /102, /103) Specifications v on pages C-58 thru C-60		D = Differential Twinax E = El Ochito										
Ground Option	G = Common Ground		- = None										
Insert Arrangement	Per MIL-STD-1560, See page C-5 and C-6												
Lanyard Length Code	See lanyard length code table												
Contact Style	P = Pin, PC Tail S = Socket, PC Tail												
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)												

*Refer to Section A for complete details

Lanyard Length Code			
Code	L ±.326 (±.6)	Code	L ±.326 (±.6)
A	4.016 (102.01)	M	10.000 (254.00)
B	4.527 (114.99)	N	10.511 (266.98)
C	5.000 (127.00)	P	11.023 (279.98)
D	5.511 (139.98)	R	11.535 (292.99)
E	6.024 (153.01)	S	12.007 (304.98)
F	6.535 (165.99)	T	12.519 (317.98)
G	7.007 (177.98)	U	13.031 (330.99)
H	7.519 (190.98)	V	14.015 (355.98)
I	7.992 (203.00)	W	15.000 (381.00)
J	8.503 (215.98)	X	16.023 (406.98)
K	9.015 (228.98)	Y	17.007 (431.98)
L	9.527 (241.99)	Z	18.031 (457.99)

NOTES

- Ground plane option only available for insert arrangements where all contacts are shielded type.
- See page 4, figure 2 for inner pin orientation
- Connector 233-260 is commercial equivalent of D38999/29, /30 and /31 type 2
- All contacts, insertion/removal tool and sealing plug to be ordered separately.
- Blue color band indicates rear release retention system
- Dimension B is clearance to accommodate MIL-C-85049 accessories.
- For backshell extender consult factory.
- Connector is designed to mate with Glenair part number 233-217 and 233-224 with same size, same arrangement, and polarization.
- Coax contact mating interfaces in accordance with the following:
 - Size #16 per M39029/76 & /77
 - Size #12 per M39029/102 & /103
 - Size #8 per M39029/50 & /60
- All contacts are crimp and removable
- Material/Finish
 - Shell, coupling sleeve, lanyard ring inner sleeve, lockring: aluminum alloy or CRES/see part number development
 - Contacts: copper alloy / gold plated
 - Insulators: high grade rigid dielectric/ N.A.
 - Seals: fluorosilicone blend / N.A.

233-260 QDC with shielded crimp removable contacts

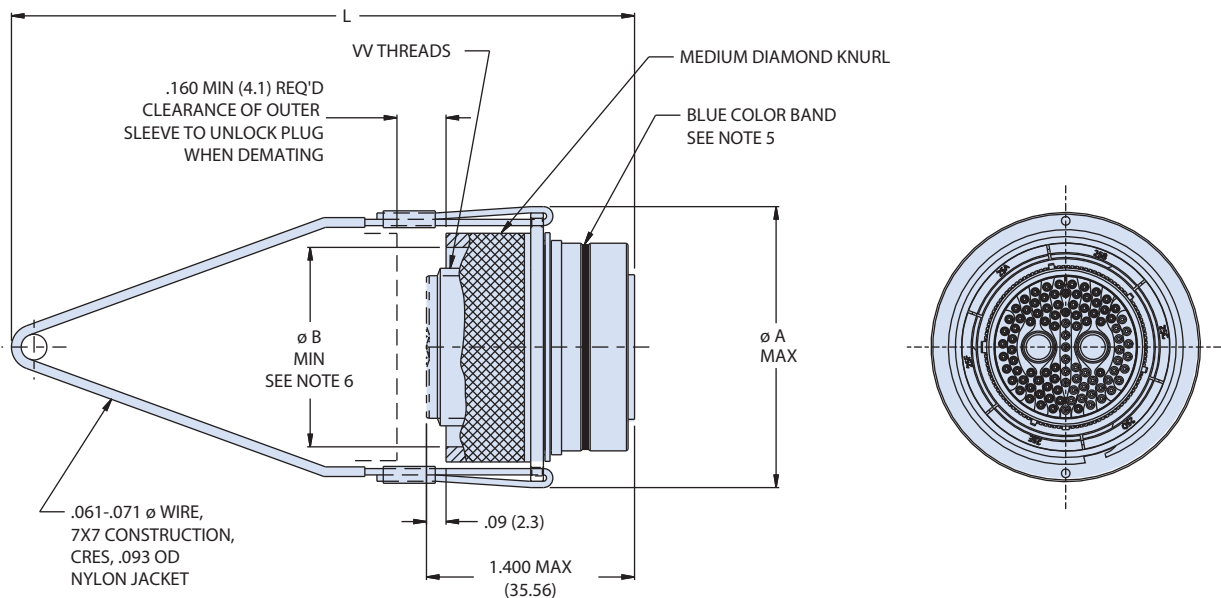
MIL-DTL-38999 Series III type, plug

Separation Forces Max		
Shell Size	Straight Pull Pound (Newton)	15 Degree Pull Pound (Newton)
09	44.96 (200)	55.08 (245)
11	44.96 (200)	55.08 (245)
17	89.92 (400)	100.04 (445)
19	89.92 (400)	100.04 (445)
21	89.92 (400)	100.04 (445)
23	89.92 (400)	100.04 (445)
25	89.92 (400)	100.04 (445)

Dimensions				
Shell Size	Shell Size Code	A Max	B Min	VV Thread
09	A	1.720 (43.69)	.977 (24.82)	M12 x1-6g- 0.100R
11	B	1.746 (44.35)	1.003 (25.48)	M15 x1-6g- 0.100R
17	C	2.204 (55.98)	1.425 (36.20)	M25 x1-6g- 0.100R
19	D	2.230 (56.64)	1.535 (38.99)	M28 x1-6g- 0.100R
21	E	2.472 (62.79)	1.661 (42.19)	M31 x1-6g- 0.100R
23	F	2.374 (60.30)	1.787 (45.39)	M34 x1-6g- 0.100R
25	G	2.494 (63.35)	1.909 (48.49)	M37 x1-6g- 0.100R

Shielded High-Speed Contact Styles			
Contact Type	Glenair P/N	Ohm	
 Coax (per M39029/59 & /60)	Pin: 852-007 Socket: 852-006	95	
 Differential Twinax	Pin: 853-014 Socket: 853-013 See Note 9	100	
 El Ochito	Pin: 858-003 Socket: 858-004 See Note 9	100	
 Quadrax	Pin: 854-001 Socket: 854-002 See Note 9	100	
 Triax/Concentric Twinax	Pin: 853-003 Socket: 853-004	78	

For complete contact ordering information see Section J



233-218 PC tail receptacle with shielded contacts

MIL-DTL-38999 Series III type, part number development

Part Number Development	
Sample Part Number	233-218 -00 M 17 E - 02 S N
Series / Basic Part No.	SuperNine® High-Speed PC tail wall mount receptacles with threaded strandoffs
Connector Style	07 = Receptacle, Jam-Nut 00 = Receptacle, Wall-Mount with Slotted Holes CM = Receptacle, Wall Mount with Metric Clinch Nuts CS = Receptacle, Wall Mount with Standard Clinch Nuts HM = Receptacle, Wall Mount with Metric Helicoils HS = Receptacle, Wall Mount with Standard Helicoils
Material/Finish	NF = Cadmium Olive Drab MT = Nickel PTFE ME = Electroless Nickel ZR = Black Zinc Nickel
Shell Size	9, 11, 13, 15, 17, 19, 21, 23, 25
Contact Type	C = Coax (per M39029/59 & /60) P = Power D = Differential Twinax Q = Quadrx (100 ohm) E = El Ochito? T = Triax/Concentric Twinax (per /90 and /91) Specifications and PCB footprints on pages C-46 thru C-48
Ground Option	G = Common Ground - = None
Insert Arrangement	Per MIL-STD-1560, see page C-5 and C-6
Contact Style	P = Pin, PC Tail S = Socket, PC Tail
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)

*Refer to Section A for alternate key polarization options and recommended panel cutout dimensions

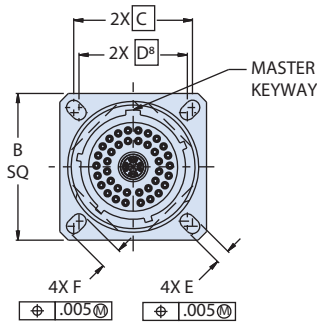
NOTES

- Coax contact mating interfaces shall be in accordance with the following:
 - size #16 per M39029/76 & /77
 - size #12 per M39029/102 & 103
 - size #8 per M39029/59 & 60
- Ground plane option only available for insert arrangements where all contacts are shielded type.
- See page C-4, figure 2 for reference orientation of the inner pins relative to connector main keyway.
- Insert arrangement is in accordance with MIL-STD-1560 and figure 1.
- Contact manufacturer for additional arrangement options
- Glenair 233-218 wall mount and jam-nut receptacle connectors should be mated to Glenair 233-217 or 233-224 plug with appropriate contacts to optimize performance.
- Glenair 233-218 receptacle connectors are designed to meet or exceed the applicable mechanical, dimensional, electrical, and environmental requirements of MIL-DTL-38999, D38999/20, D38999/24 and MIL-STD-1560 except as shown and/or noted. Receptacle mates with any QPL manufacturer's MIL-DTL-38999, Series III plug connector, D38999/26, having the same shell size, insert arrangement, polarization, and mating contact.
- El Ochito mating contact shall be in accordance with El Ochito contact configuration table on C-12.
- Front panel mount only.
- For optimal El Ochito performance, see Glenair application note AN0002.
- Material/finish:
 - Shell, locking, jam-nut: see part number development
 - Contacts: copper alloy / gold plated
 - Insulators: high grade rigid dielectric / N.A.
 - Seals: fluorosilicone blend / N.A.
 - Potting: epoxy / N.A.
 - O-ring: silver plated aluminum in fluorosilicone (cho-seal 1298 or equivalent)

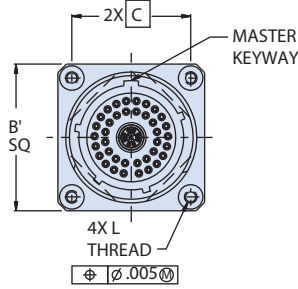
PC Tail Diameter	
Contact Size	PC Tail ØV
No. 22	.020 (0.51) .018 (0.46)
No. 20	.030 (0.76) .028 (0.71)
No. 16	.040 (1.02) .038 (0.97)
No. 12	.072 (1.78) .070 (1.78)
No. 8	.182 (4.62) .178 (4.52)

233-218 PC tail receptacle with shielded contacts
MIL-DTL-38999 Series III type, wall-mount

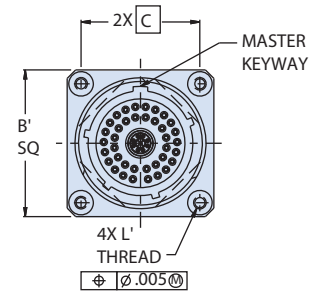
00, CM, CS, HM, HS - WALL MOUNT RECEPTACLES



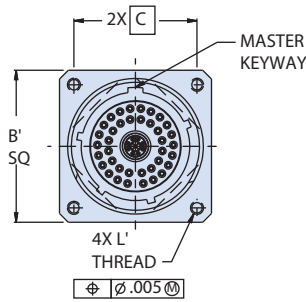
00 - WALL MOUNT RECEPTACLE WITH SLOTTED HOLES



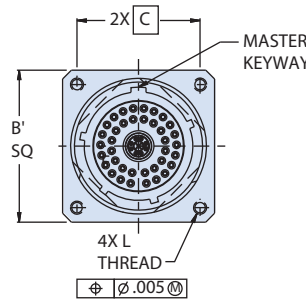
CS - WALL MOUNT RECEPTACLE WITH STANDARD CLINCH NUTS



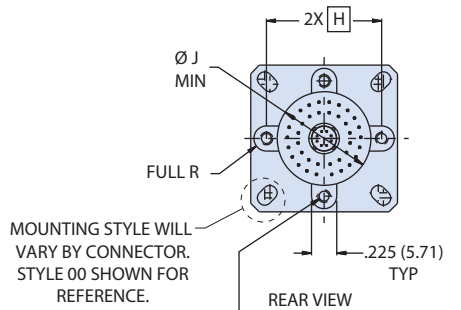
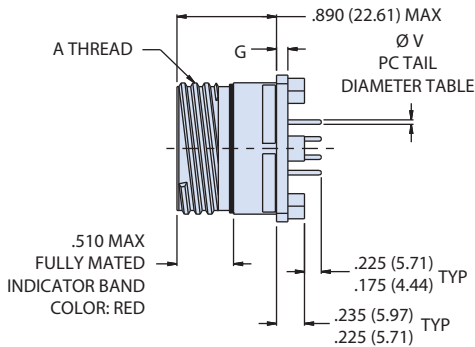
CM - WALL MOUNT RECEPTACLE WITH METRIC CLINCH NUTS



HM - WALL MOUNT RECEPTACLE WITH METRIC HELICOILS



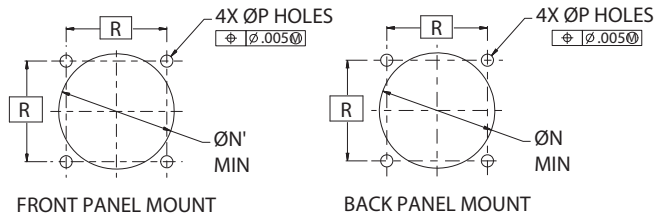
HS - WALL MOUNT RECEPTACLE WITH STANDARD HELICOIL



SHELL STYLE 00, CS & HS 4X #4-40 UNC-2B X .156 MIN THD DP @ 90° APART	SHELL STYLE CM & HM 4X M3 X 0.5 X .156 MIN THD DP @ 90° APART
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233-218 PC tail receptacle with shielded contacts
MIL-DTL-38999 Series III type, wall-mount

Dimensions														
Shell Size Code	Shell Size	A Thd -0.1P-0.3L- TS-2A	B Sq	B' Sq	C Bsc ⁸	D Bsc	E	F	G	G'	H Bsc	Ø J Min	L Thd	L' Thd
A	9	.6250	.949 (24.10) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)	.136 (3.45) .120 (3.05)	.224 (5.69) .208 (5.28)	.122 (3.10) .083 (2.11)	.179 (4.52) .140 (3.56)	.594 (15.09)	.340 (8.64)	.112-40 UNC	M3X0.5
B	11	.7500	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)		.202 (5.13) .186 (4.72)			.719 (18.26) .572 (14.53)	.468 (11.89)		
C	13	.8750	1.138 (28.91) 1.114 (28.30)	1.281 (32.54) 1.241 (31.52)	.906 (23.01)	.812 (20.62)		.181 (4.60) .165 (4.19)			.906 (23.01) .705 (17.91)	.572 (14.53)		
D	15	1.0000	1.232 (31.29) 1.208 (30.68)	1.344 (34.14) 1.304 (33.12)	.969 (24.61)	.906 (23.01)		.202 (5.13) .186 (4.72)			1.030 (26.16) 1.150 (29.21)	.830 (21.08) .934 (23.72)		
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)		.153 (3.89)			1.221 (31.01) 1.055 (26.80)	.830 (21.08) .934 (23.72)		
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)								
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)		.162 (4.11) .146 (3.71)			.114 (2.90) .190 (4.83) .170 (4.32)	1.360 (34.54) 1.160 (29.46) 1.475 (37.47)		
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)								
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)								

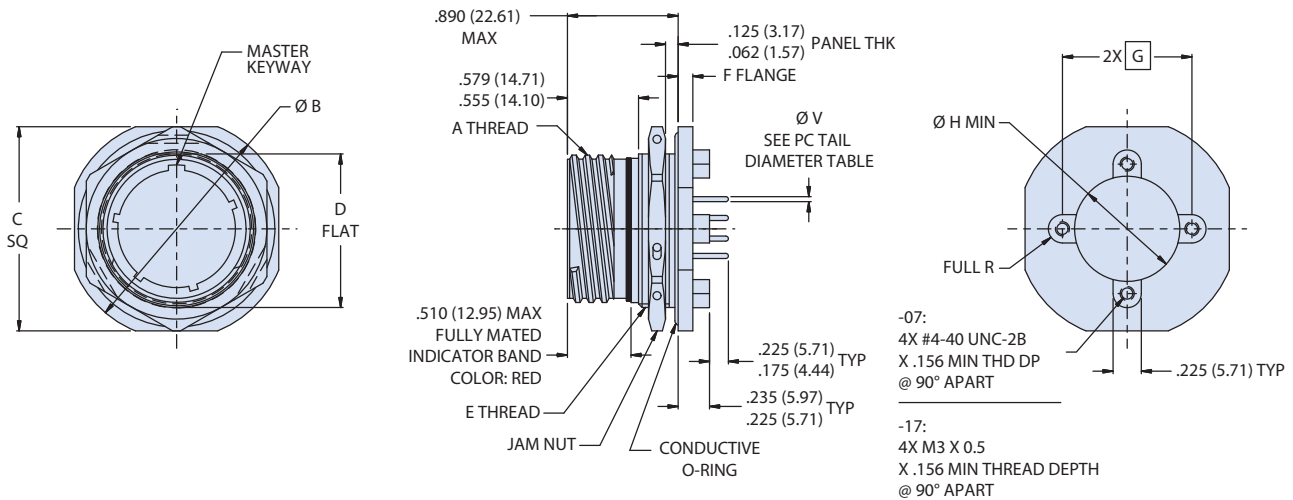


RECOMMENDED MOUNTING HOLES
FOR WALL MOUNT RECEPTACLES

Wall Mount Mounting Hole Dimensions					
Shell Size Code	Shell Size	ØN Min	ØN' Min ⁸	ØP Holes	R Bsc
A	9	.656 (16.66)	.516 (13.11)	.133 (3.38) .123 (3.12)	.719 (18.26)
B	11	.796 (20.22)	.625 (15.88)		.812 (20.62)
C	13	.922 (23.42)	.750 (19.05)		.906 (23.01)
D	15	1.047 (26.59)	.906 (23.01)		.969 (24.61)
E	17	1.219 (30.96)	1.016 (25.81)		1.062 (26.97)
F	19	1.297 (32.94)	1.141 (28.98)		1.156 (29.36)
G	21	1.422 (36.12)	1.266 (32.16)		1.250 (31.75)
H	23	1.547 (39.29)	1.375 (34.92)	.159 (4.04) .149 (3.78)	1.375 (34.92)
J	25	1.672 (42.47)	1.484 (37.69)	.155 (3.94) .145 (3.68)	1.500 (38.10)

233-218 PC tail receptacle with shielded contacts
MIL-DTL-38999 Series III type, jam-nut

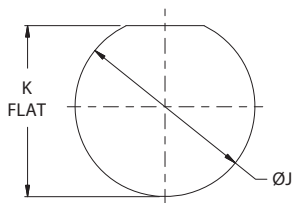
07 - JAM-NUT MOUNT RECEPTACLE



Dimensions

Shell Size Code	Shell Size	A Thd -0.1P-0.3L-TS-2A	ØB	C Sq	D Flat	E Thd ISO Metric	F	G Bsc	Ø H
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	0.654 (16.61) 0.645 (16.38)	M17 X 1.0-6g	0.122 (3.10) 0.083 (2.11)	0.594 (15.09)	0.340 (8.64)
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	0.755 (19.18) 0.745 (18.92)	M20 X 1.0-6g		0.719 (18.26)	0.468 (11.89)
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.484 (37.69)	0.942 (23.93) 0.932 (23.67)	M25 X 1.0-6g		0.812 (20.62)	0.572 (14.53)
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g		0.906 (23.01)	0.705 (17.91)
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g		1.030 (26.16)	0.830 (21.08)
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g	0.153 (3.89) 0.114 (2.90)	1.150 (29.21)	0.934 (23.72)
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g		1.221 (31.01)	1.055 (26.80)
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g		1.360 (34.54)	1.160 (29.46)
J	25	1.6250	2.323 (59.00)	2.205 (56.01)	1.691 (42.95)	M44 X 1.0-6g		1.475 (37.47)	1.307 (33.20)
			2.299 (58.39)	2.173 (55.19)	1.681 (42.70)			1.760 (44.70)	1.700 (43.18)

Jam-Nut Mount Mounting Hole Dimensions



RECOMMENDED PANEL CUT-OUT

Shell Size Code	Shell Size	ØJ	ØK Flat	Shell Size Code	Shell Size	ØJ	ØK Flat
A	9	.703 (17.86)	.661 (16.79)	E	17	1.270 (32.26)	1.210 (30.73)
		.693 (17.60)	.654 (16.61)			1.260 (32.00)	1.200 (30.48)
B	11	.835 (21.21)	.771 (19.58)	F	19	1.395 (35.43)	1.335 (33.91)
		.825 (20.96)	.761 (19.33)			1.385 (35.18)	1.325 (33.65)
C	13	1.020 (25.91)	.955 (24.26)	G	21	1.520 (38.61)	1.460 (37.08)
		1.010 (25.65)	.945 (24.00)			1.510 (38.35)	1.450 (36.83)
D	15	1.145 (29.08)	1.085 (27.56)	H	23	1.645 (41.78)	1.585 (40.26)
		1.135 (28.83)	1.075 (27.30)			1.635 (41.53)	1.575 (40.00)
J	25	1.770 (44.96)	1.710 (43.43)	J	25	1.770 (44.96)	1.710 (43.43)
		1.760 (44.70)	1.700 (43.18)			1.760 (44.70)	1.700 (43.18)

233-225 dual flange receptacle with PC tail contacts

MIL-DTL-38999 Series III type, part number development



Part Number Development										
Sample Part Number	233-225				-00	ME	17	E	-	02 S N
Series / Basic Part	SuperNine® High-Speed, dual flange wall-mount receptacle									
Connector Style*	07 = Receptacle, Jam-Nut 00 = Receptacle, Wall-Mount with Slotted Holes and Stand Off with Standard Threads 10 = Receptacle, Wall-Mount with Slotted Holes and Stand Off with Metric Threads CM = Receptacle, Wall-Mount with Metric Clinch Nuts CS = Receptacle, Wall Mount with Standard Clinch Nuts HM = Receptacle, Wall Mount with Metric Helicoils HS = Receptacle, Wall Mount with Standard Helicoils									
Material/Finish	NF = Cadmium Olive Drab ME = Electroless Nickel				MT = Nickel PTFE ZR = Black Zinc Nickel					
Shell Size	9, 11, 13, 17, 19, 21, 23, 25									
Contact Type	C = Coax (per M39029/59 & /60) P = Power D = Differential Twinax Q = Quadrax (100 ohm) E = El Ochito T = Triax/Concentric Twinax (per /90 and /91) Specifications and PCB footprints on pages C-69 thru C-61									
Ground Option	G = Common Ground				- = None					
Insert Arrangement	Per MIL-STD-1560, see page C-5 and C-6									
Contact Style	P = Pin, PC Tail S = Socket, PC Tail									
Alternate Polarization*	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III)									

*Refer to Section A for alternate key polarization options and recommended panel cutout dimensions

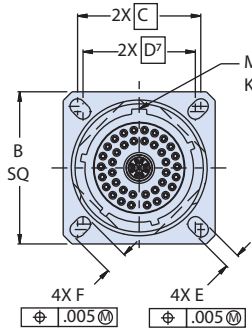
PC Tail Diameter	
Contact Size	PC Tail ØV
No. 22	.020 (0.51) .018 (0.46)
No. 20	.030 (0.76) .028 (0.71)
No. 16	.040 (1.02) .038 (0.97)
No. 12	.072 (1.78) .070 (1.78)
No. 8	.182 (4.62) .178 (4.52)

NOTES

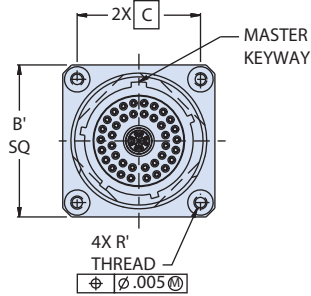
- Coax contact mating interfaces in accordance with the following:
 - Size #16 per M39029/76 & /77
 - Size #12 per M39029/102 & /103
 - Size #8 per M39029/50 & /60
- Ground plane option only available for insert arrangements where all contacts are shielded type.
- See page C-4, figure 2 for reference orientation of the inner pins relative to connector main keyway
- Glenair 233-225 wall mount (/20) and jam-nut (/24) receptacle connectors should be mated to Glenair's 233-217 plug with appropriate contacts to optimize performance.
- Glenair's 233-225 receptacle connector is designed to meet or exceed the mechanical, dimensional, electrical, and environmental requirements of MIL-DTL-38999, D38999/20, D38999/24 and MIL-STD-1560 except as shown and/or noted.
- All contacts are potted and non-removable.
- Front panel mount only
- Material/Finish
 - Shell: see part number development
 - Contacts: copper alloy / gold plated
 - Insulators: high grade rigid dielectric/ N.A.
 - For common ground option: aluminum alloy/manufactures option
 - Seals: fluorosilicone blend / N.A.
 - Potting: epoxy / N.A.

233-225 Wall-mount dual flange receptacle with PC tail contacts MIL-DTL-38999 Series III type, wall-mount

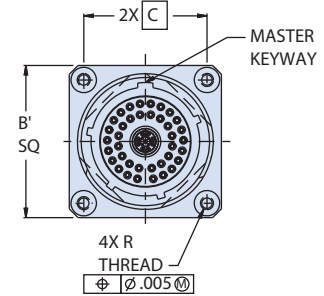
00, CM, CS, HM, HS - WALL MOUNT RECEPTACLES



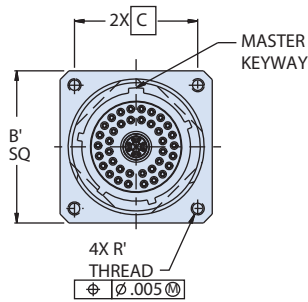
00 - WALL MOUNT RECEPTACLE WITH SLOTTED HOLES



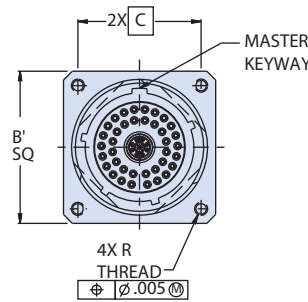
CM - WALL MOUNT RECEPTACLE WITH METRIC CLINCH NUTS



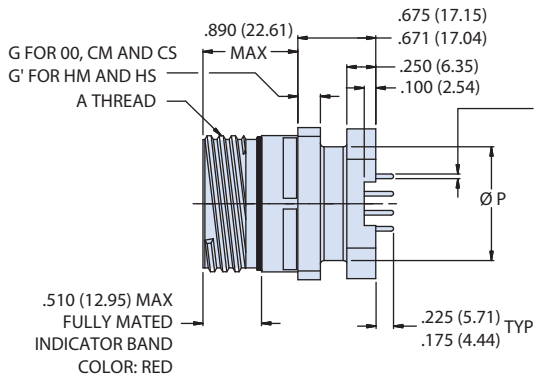
CS - WALL MOUNT RECEPTACLE WITH STANDARD CLINCH NUTS (SEE TABLE IV)



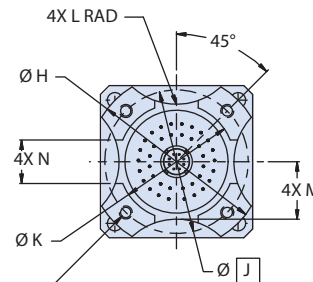
HM - WALL MOUNT RECEPTACLE WITH METRIC HELICOILS (SEE TABLE IV)



HS - WALL MOUNT RECEPTACLE WITH STANDARD HELICOIL (SEE TABLE IV)



ϕV
SEE PC TAIL
DIAMETER
TABLE



STYLE 00 4X R OR R' SELF-LOCKING INSERTS	STYLE CM AND HM 4X M3 X 0.5 SELF-LOCKING INSERTS	STYLE CS AND HS 4X #4-40 UNC-2B SELF-LOCKING INSERTS
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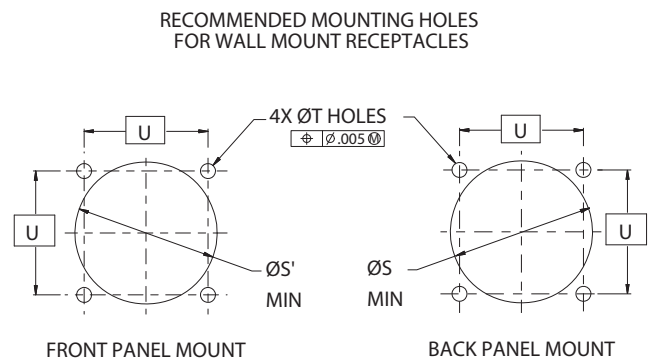
STYLE 00 SHOWN FOR REFERENCE ONLY

233-225 Wall-mount dual flange receptacle with PC tail contacts MIL-DTL-38999 Series III type, wall-mount

Dimensions										
Shell Size Code	Shell Size	A Thread	B Sq	B' Sq	C Bsc	D Bsc ⁸	E	F	G	G'
A	9	.6250 -0.1P-0.3L-TS-2A	.948 (24.08) .925 (23.50)	1.094 (27.79) 1.054 (26.77)	.719 (18.26)	.594 (15.09)	.136 (3.45) .120 (3.05)	.224 (5.69) .208 (5.28)	.122 (3.10) .083 (2.11)	.179 (4.55) .140 (3.56)
B	11	.7500 -0.1P-0.3L-TS-2A	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.719 (18.26)		.202 (5.13) .186 (4.72)		
C	13	.8750 -0.1P-0.3L-TS-2A	1.137 (28.88) 1.114 (28.30)	1.281 (32.54) 1.241 (31.52)	.906 (23.01)	.812 (20.62)		.181 (4.60) .165 (4.19)		
D	15	1.0000-0.1P-0.3L-TS-2A	1.232 (31.29) 1.208 (30.68)	1.344 (34.14) 1.304 (33.12)	.969 (24.61)	.906 (23.01)		.202 (5.13) .186 (4.72)		
E	17	1.1875 -0.1P-0.3L-TS-2A	1.299 (32.99) 1.323 (33.60)	1.437 (36.50) 1.397 (35.48)	1.062 (26.97)	.969 (24.61)		.153 (3.89) .114 (2.90)		
F	19	1.2500 -0.1P-0.3L-TS-2A	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)	1.062 (26.97)				
G	21	1.3750 -0.1P-0.3L-TS-2A	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	1.156 (29.36)		.162 (4.11) .146 (3.71)		
H	23	1.5000 -0.1P-0.3L-TS-2A	1.701 (43.21) 1.677 (42.60)	1.750 (44.45) 1.710 (43.43)	1.375 (34.92)	1.250 (31.75)				
J	25	1.6250 -0.1P-0.3L-TS-2A	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)	1.375 (34.92)				

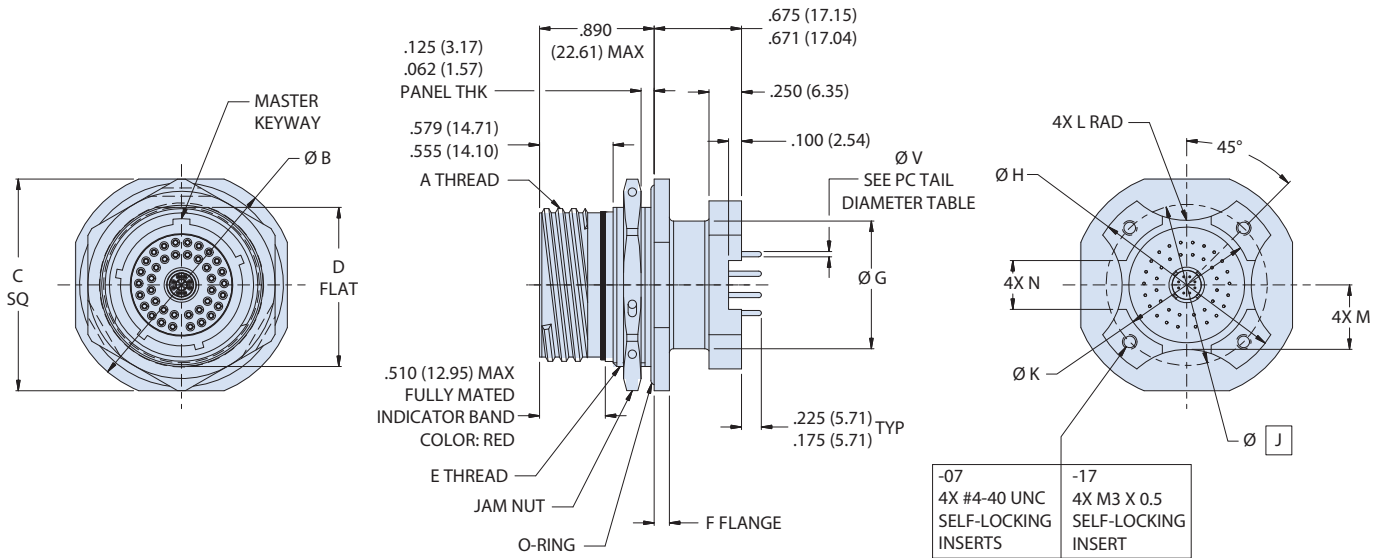
Dimensions (Continued)										
Shell Size Code	Shell Size	ØH ±.005 (0.13)	ØJ Bsc	ØK ±.005 (0.13)	L Rad ±.020 (0.51)	M ±.020 (0.51)	N ±.010 (0.25)	ØP ±.005 (0.13)	R Thd	R' Thd
A	9	1.016 (25.81)	.752 (19.10)	.532 (13.51)	.225 (5.72)	.275 (6.99)	.225 (5.72)	.535 (13.59)	.112-40 UNC	M3X0.5
B	11	1.062 (26.97)	.850 (21.59)	.595 (15.11)	.250 (6.35)	.290 (7.37)	.250 (6.35)	.560 (14.22)		
C	13	1.250 (31.75)	.994 (25.25)	.720 (18.29)	.375 (9.52)	.370 (9.40)	.250 (6.35)	.700 (17.78)		
D	15	1.375 (34.92)	1.119 (28.42)	.843 (21.41)	.438 (11.13)	.440 (11.18)	.325 (8.25)	.857 (21.77)		
E	17	1.500 (38.10)	1.237 (31.42)	1.000 (25.40)	.562 (14.27)	.495 (12.57)	.375 (9.52)	.980 (24.89)		
F	19	1.625 (41.28)	1.379 (35.03)	1.125 (28.58)	.875 (22.23)	.540 (13.72)	.500 (12.70)	1.060 (26.92)		
G	21	1.750 (44.45)	1.489 (37.82)	1.240 (31.50)	1.170 (29.72)	.625 (15.88)	.562 (14.27)	1.210 (30.73)		
H	23	1.875 (47.63)	1.619 (41.12)	1.328 (33.73)	1.250 (31.75)	.660 (16.76)	.688 (17.48)	1.310 (33.27)	.138-32 UNC	M4X0.7
J	25	2.000 (50.80)	1.744 (44.30)	1.453 (36.91)	1.375 (34.92)	.740 (18.80)	.750 (19.05)	1.460 (37.08)		

Wall Mount, Mounting Hole Dimensions					
Shell Size Code	Shell Size	ØS Min	ØS' Min ⁸	ØT Holes	U Bsc
A	9	.656 (16.66)	.516 (13.11)	.133 (3.38) .123 (3.12)	.719 (18.26)
B	11	.796 (20.22)	.625 (15.88)		.812 (20.62)
C	13	.922 (23.42)	.750 (19.05)		.906 (23.01)
D	15	1.047 (26.59)	.906 (23.01)		.969 (24.61)
E	17	1.219 (30.96)	1.016 (25.81)		1.062 (26.97)
F	19	1.297 (32.94)	1.141 (28.98)		1.156 (29.36)
G	21	1.422 (36.12)	1.266 (32.16)		1.250 (31.75)
H	23	1.547 (39.29)	1.375 (34.92)	.159 (4.04) .149 (3.78)	1.375 (34.92)
J	25	1.672 (42.47)	1.484 (37.69)	.155 (3.94) .145 (3.68)	1.500 (38.10)

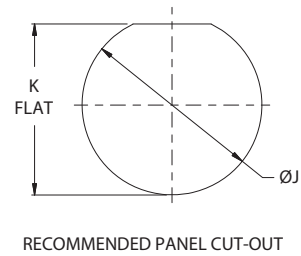


233-225 Jam-nut, dual flange receptacle with PC tail contacts MIL-DTL-38999 Series III type, jam-nut

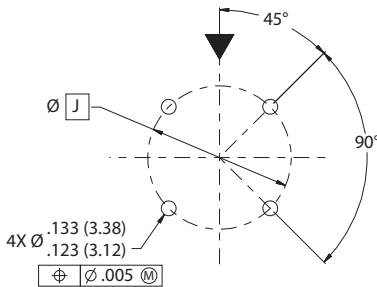
07 - JAM-NUT MOUNT RECEPTACLE



Jam-Nut Mount, Mounting Hole Dimensions							
Shell Size Code	Shell Size	ØJ	ØK Flat	Shell Size Code	Shell Size	ØJ	ØK Flat
A	9	.703 (17.86) .693 (17.60)	.661 (16.79) .654 (16.61)	E	17	1.270 (32.26) 1.260 (32.00)	1.210 (30.73) 1.200 (30.48)
B	11	.835 (21.21) .825 (20.96)	.771 (19.58) .761 (19.33)	F	19	1.395 (35.43) 1.385 (35.18)	1.335 (33.91) 1.325 (33.65)
C	13	1.020 (25.91) 1.010 (25.65)	.955 (24.26) .945 (24.00)	G	21	1.520 (38.61) 1.510 (38.35)	1.460 (37.08) 1.450 (36.83)
D	15	1.145 (29.08) 1.135 (28.83)	1.085 (27.56) 1.075 (27.30)	H	23	1.645 (41.78) 1.635 (41.53)	1.585 (40.26) 1.575 (40.00)
				J	25	1.770 (44.96) 1.760 (44.70)	1.710 (43.43) 1.700 (43.18)



RECOMMENDED PCB FOOTPRINT FOR WALL MOUNT AND JAM-NUT RECEPTACLES



RECOMMENDED PCB MOUNTING HOLE LOCATIONS

233-225 Jam-nut, dual flange receptacle with PC tail contacts
MIL-DTL-38999 Series III type, jam-nut

Dimensions							
Shell Size Code	Shell Size	A Thread -0.1P-0.3L-TS-2A	ØB	C Sq	D Flat	E Thread ISO Metric	F
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	0.654 (16.61) 0.645 (16.38)	M17 X 1.0-6g 0.100R	.122 .083
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	0.755 (19.18) 0.745 (18.92)	M20 X 1.0-6g 0.100R	
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	0.942 (23.93) 0.932 (23.67)	M25 X 1.0-6g 0.100R	
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g 0.100R	
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g 0.100R*	.153 .114
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g 0.100R	
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g 0.100R	
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g 0.100R	
J	25	1.6250	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44 X 1.0-6g 0.100R	

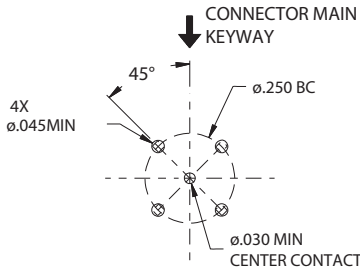
* Modified major diameter 31.95 31.80 (1.257 - 1.252)

Dimensions								
Shell Size Code	Shell Size	Ø G ±.005 (0.00)	Ø H ±.005 (0.00)	Ø J Bsc	Ø K ±.005 (0.00)	L Rad ±.020 (0.00)	M ±.020 (0.00)	N ±.010 (0.00)
A	9	.535 (13.59)	1.016 (25.81)	.752 (19.10)	.532 (13.51)	.225 (5.72)	.275 (6.99)	.225 (5.72)
B	11	.560 (14.22)	1.062 (26.97)	.850 (21.59)	.595 (15.11)	.250 (6.35)	.290 (7.37)	.250 (6.35)
C	13	.700 (17.78)	1.250 (31.75)	.994 (25.25)	.720 (18.29)	.375 (9.52)	.370 (9.40)	.250 (6.35)
D	15	.857 (21.77)	1.375 (34.92)	1.119 (28.42)	.843 (21.41)	.438 (11.13)	.440 (11.18)	.325 (8.25)
E	17	.980 (24.89)	1.500 (38.10)	1.237 (31.42)	1.000 (25.40)	.562 (14.27)	.495 (12.57)	.375 (9.52)
F	19	1.060 (26.92)	1.625 (41.28)	1.379 (35.03)	1.125 (28.58)	.875 (22.23)	.540 (13.72)	.500 (12.70)
G	21	1.210 (30.73)	1.750 (44.45)	1.489 (37.82)	1.240 (31.50)	1.170 (29.72)	.625 (15.88)	.562 (14.27)
H	23	1.310 (33.27)	1.875 (47.63)	1.619 (41.12)	1.328 (33.73)	1.250 (31.75)	.660 (16.76)	.688 (17.48)
J	25	1.460 (37.08)	2.000 (50.80)	1.744 (44.30)	1.453 (36.91)	1.375 (34.92)	.740 (18.80)	.750 (19.05)

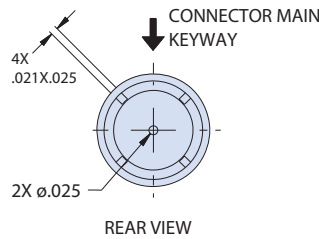
Shielded PC tail contacts - PCB footprints

MIL-DTL-38999 Series III type

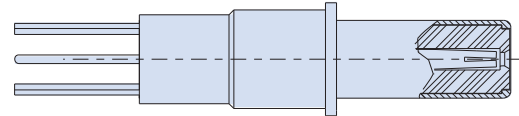
SIZE 8 COAX CONTACT



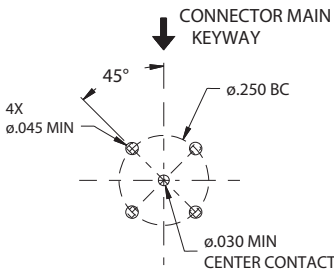
RECOMMENDED CO-AX PCB LAYOUT



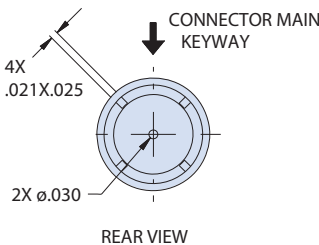
REAR VIEW



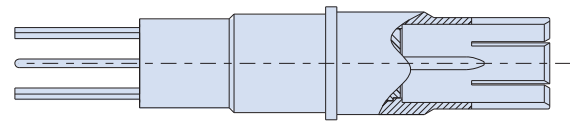
SIZE #8 CO-AX PIN, PC TAIL DETAIL
INTERFACE PER M39029/60



RECOMMENDED CO-AX PCB LAYOUT

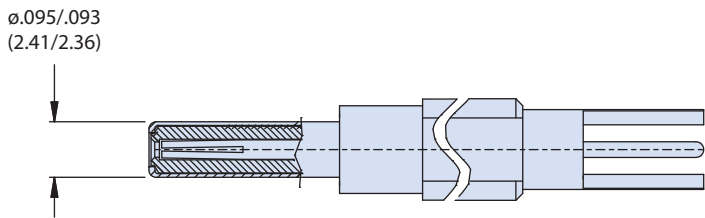


REAR VIEW



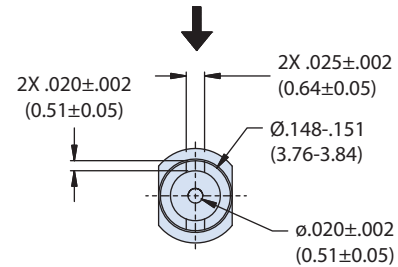
SIZE #8 CO-AX SOCKET, PC TAIL DETAIL
INTERFACE PER M39029/59
(CONTACT FACTORY FOR OTHER INTERFACE)

SIZE 12 COAX CONTACT

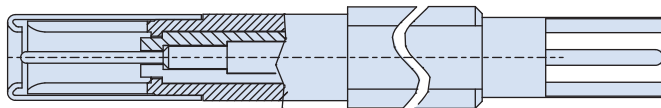


SIZE #12 COAX CONTACT PIN, PC TAIL DETAIL
INTERFACE PER M39029/102

CONNECTOR MAIN KEYWAY

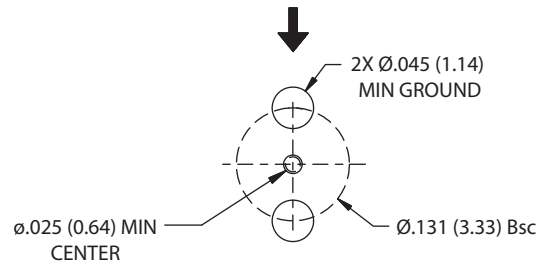


CONTACT REAR VIEW
AND INTERFACE REQUIREMENTS



SIZE #12 COAX CONTACT SOCKET, PC TAIL DETAIL
INTERFACE PER M39029/103

CONNECTOR MAIN KEYWAY

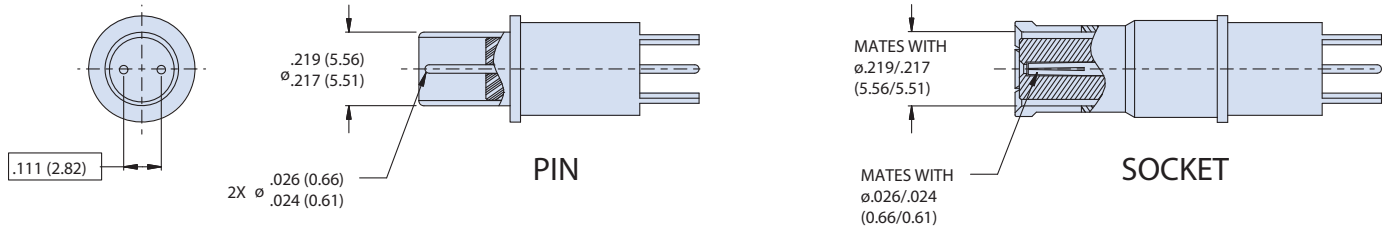


RECOMMENDED PCB FOOTPRINT

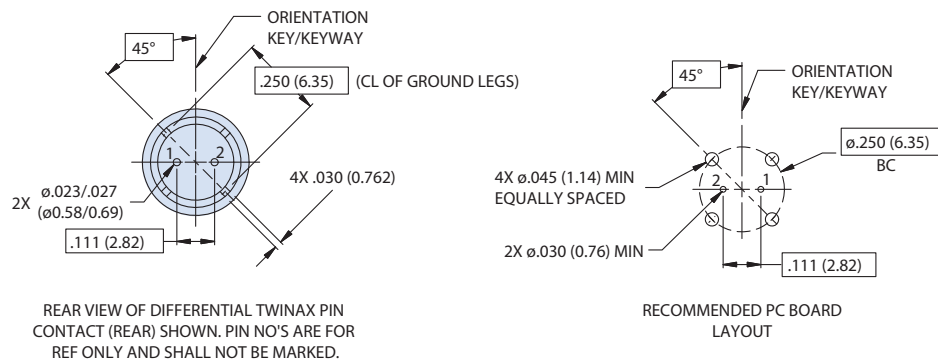
Shielded PC tail contacts - PCB footprints

MIL-DTL-38999 Series III type

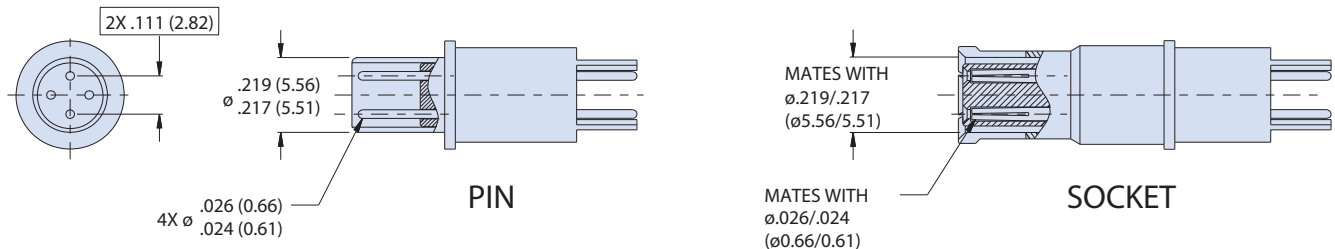
DIFFERENTIAL TWINAX



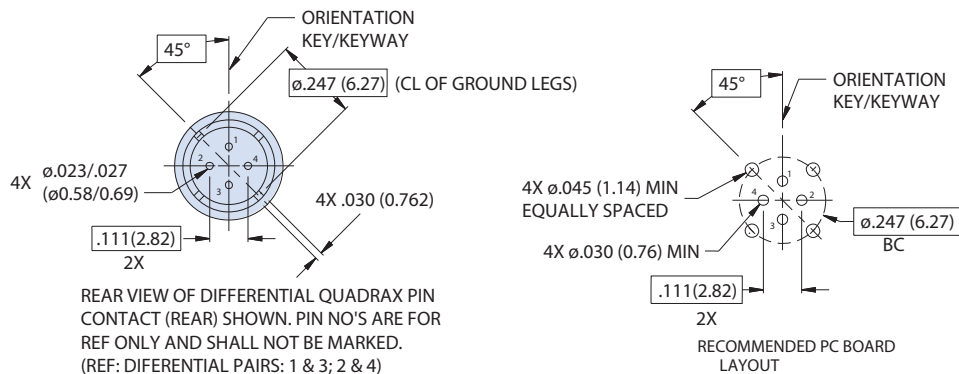
TWINAX CONTACT DETAILS



QUADRAX



QUADRAX CONTACT DETAILS

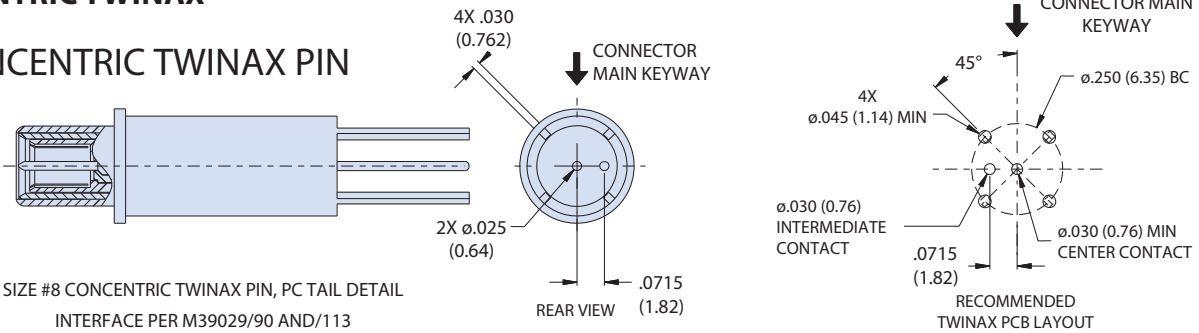


Shielded PC tail contacts - dimensions and footprints

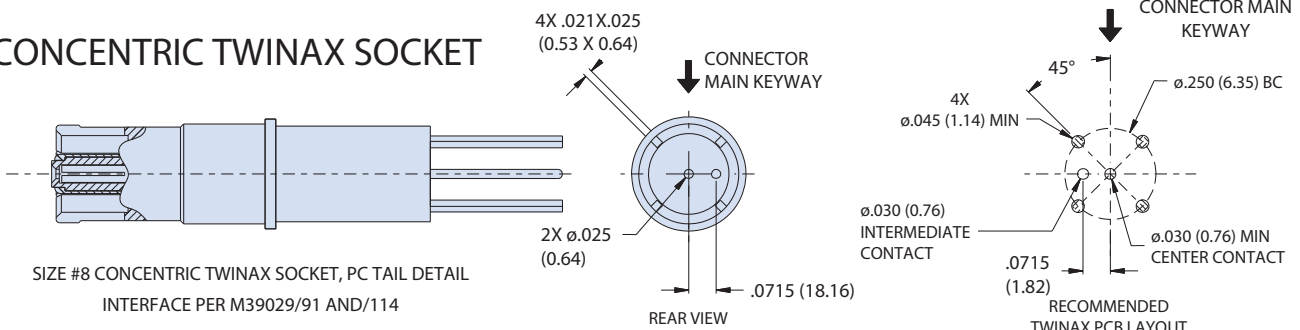
MIL-DTL-38999 Series III type

CONCENTRIC TWINAX

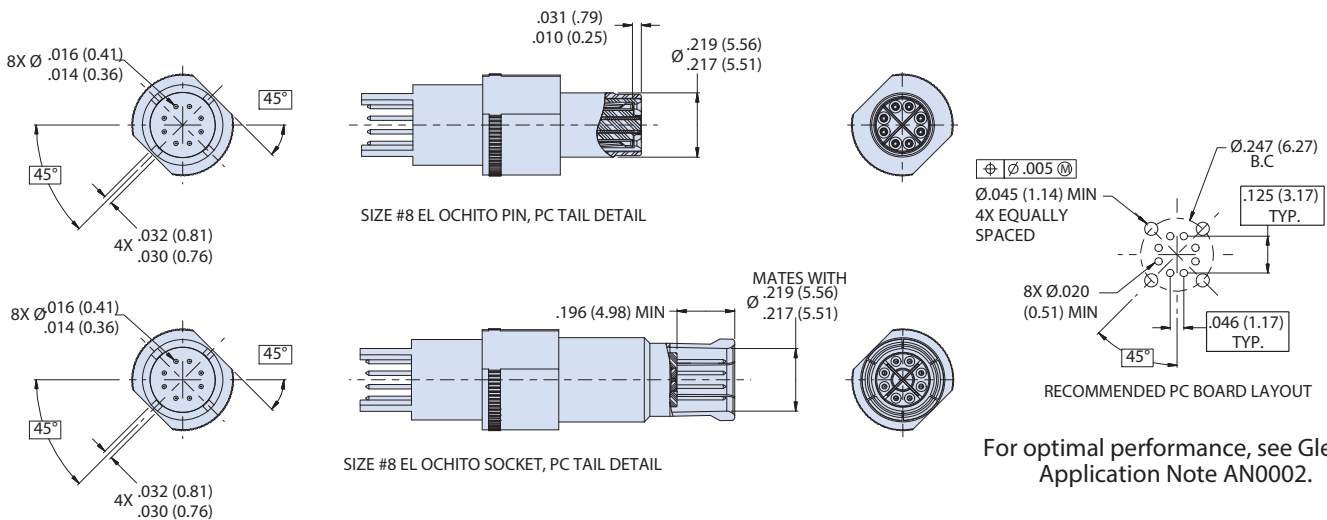
CONCENTRIC TWINAX PIN



CONCENTRIC TWINAX SOCKET

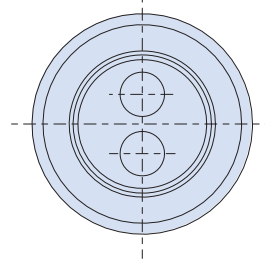
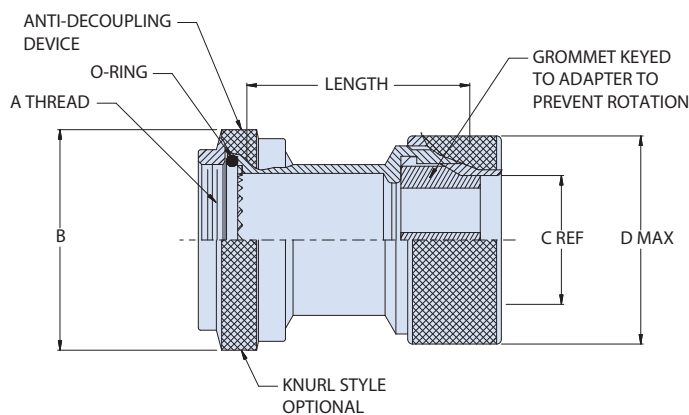


EL OCHITO®



377HS121 Aluminum backshell for size #8 contacts MIL-DTL-38999 Series III, part number development

Part Number Development							
Sample Part Number	377	H	S	121	NF	17-75	4
Series	377 = Series 37 Aluminum Alloy Backshells						
Connector Designator*	H = MIL-DTL-38999 Series III & IV						
Angular Function	S = Straight						
Basic No.	121						
Material/Finish	See Finish Table						
Shell Size-Insert Arrangement	11, 19, 21, 25						
Length	In 1/2 Inch Increments; e.g. 4 = 2 inches; omit for standard 1.50 inches						



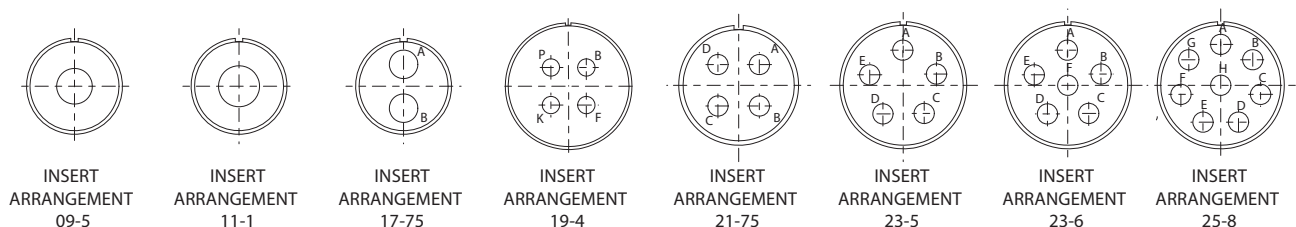
NOTES

- Glenair 600 series backshell assembly tools are recommended for assembly and installation
- Material:
 - Adapter, ferrule, coupling nut: see finish table
 - Grommet, O-ring: fluorosilicone/N.A.
 - Anti-rotation device: corrosion resistant material/N.A.

Dimensions				
SHELL SIZE	A THREAD ISO METRIC	B DIA	C REF	D MAX
09	M12 X 1.0 - 6H	0.89 (22.61)	0.562 (14.27)	1.03 (26.16)
11	M15 X 1.0 - 6H	1.01 (25.65)	0.562 (14.27)	1.03 (26.16)
17	M25 X 1.0 - 6H	1.42 (36.07)	0.812 (20.62)	1.34 (34.04)
19	M28 X 1.0 - 6H	1.50 (38.10)	0.812 (20.62)	1.34 (34.04)
21	M31 X 1.0 - 6H	1.67 (42.42)	1.062 (26.97)	1.90 (48.26)
23	M34 X 1.0 - 6H	1.78 (45.21)	1.062 (26.97)	1.90 (48.26)
25	M37 X 1.0 - 6H	1.91 (48.51)	1.312 (33.32)	2.20 (55.88)

Finish Table		
Sym	Finish Description	
M	Aluminum alloy	Electroless nickel
MT		Nickel - PTFE
NF		Cad/O.D. over electroless nickel (100 hour salt spray)
ZR		Zinc-nickel, black (1000 hour salt spray)

INSERT ARRANGEMENTS





10G ETHERNET PER CHANNEL SpeedMaster™ Connection System

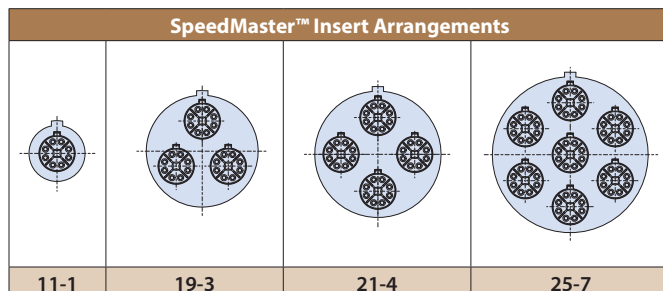
High-speed contact modules and inserts for use in MIL-DTL-38999 Series III connectors

SpeedMaster™ 10G is a dedicated contact module and interconnect insert package designed for use in MIL-DTL-38999 Series III type SuperNine™ connectors. SpeedMaster™ meets the unique installation, performance requirements, and use preferences of the aerospace industry. Optimized for high-speed Cat 6A Ethernet, the SpeedMaster™ 10G system offers industry-leading NEXT, return loss and insertion loss performance due to its highly-engineered isolation and separation architecture. Easy to assemble, terminate, install, and repair, the SpeedMaster™ 10G utilizes size #22D contacts, tools, and cable, and meets the broad range of aerospace industry requirements for vibration, temperature cycling, durability, and safe, reliable performance. Applications include defense, military and commercial aircraft electronics, in-flight entertainment, medical equipment, rail electronics systems, and industrial automation/robotics.

- Utilizes aerospace industry standard #22D contacts, tools and widely available Ethernet flight cable
- Fast, easy termination
- Significant weight reduction compared to Quadrax solutions (reduces cable requirement by ½)
- High-density, repairable solution—ideally suited for today's high-performance mil-aero network environments



SuperNine® Plug and Receptacle with SpeedMaster™ high-speed insert and contact modules



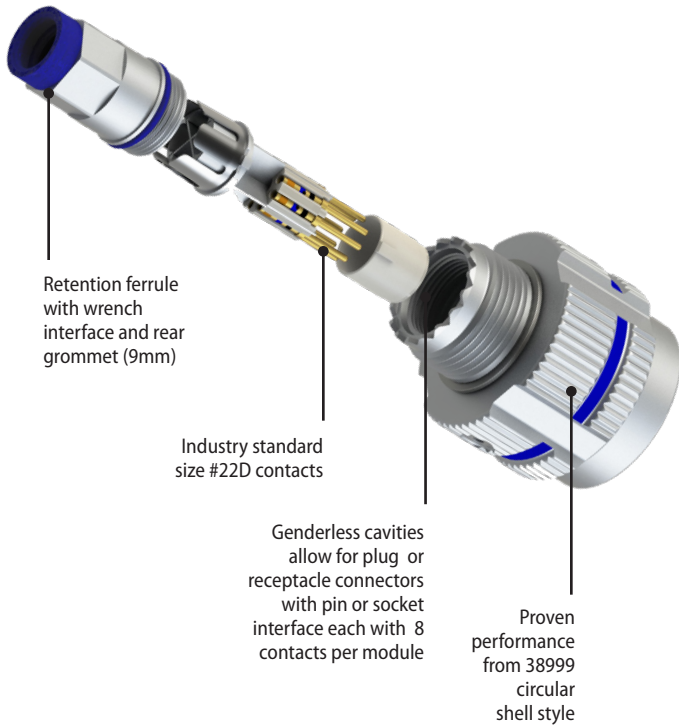
Available SpeedMaster™ insert arrangements for use in MIL-DTL-38999 Series III type SuperNine® connectors

SERIES 23

SuperNine® High-speed connectors



SpeedMaster™ repairable connection system
for use in MIL-DTL-38999 Series III type connectors

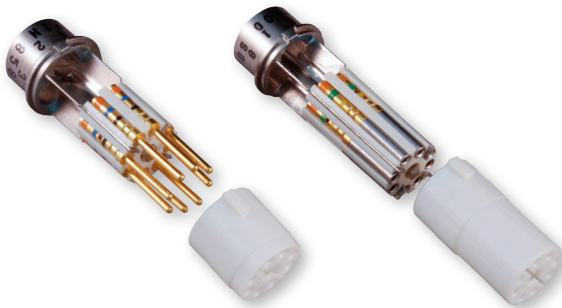


The SpeedMaster™ Difference

SpeedMaster™ is a high-speed shielded contact and insert solution for SuperNine 38999 type connectors. SpeedMaster™ shielded contact modules incorporate 4 pairs of size #22D pins or sockets for full 10G Ethernet performance per module. Each module is individually shielded within the special shell insert, and retained in place with a threaded ferrule. Module cavities in the special SpeedMaster™ insert are genderless allowing both pin and socket interfaces for plugs or receptacles. Contact modules are easily removable and repairable, helping to reduce network downtime and improve network function and performance. Meet the demand for the next generation Cat 6A networks with SpeedMaster™, the next generation contact / connector system from Glenair.



SPEEDMASTER™ 10G NEXT-GENERATION CONNECTION SYSTEM

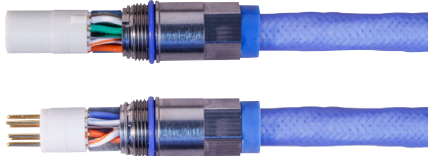


SpeedMaster™ 10G modular inserts are available for Series 23 SuperNine – 38999, Series 80 Mighty Mouse – Locking Push / Pull and Series 28 HiPer-D – M24308 intermateable and Connectors



The SpeedMaster™ 10G is optimized for high-speed / Ethernet performance and incorporates standard M39029 #22D contacts isolated for superior NEXT, return loss and insertion loss performance

8575-0001 SpeedMaster™ Cat 6A contacts, pre-wired for use in MIL-DTL-38999 Series III type connectors



Pre-wired SpeedMaster assemblies are 100% tested and ready for use. For use with Series 23 SuperNine connectors with keyed size #8 cavities, these assemblies are available with three termination options: single-ended SpeedMaster contacts on one end, SpeedMaster contacts on both ends, or SpeedMaster contact on one end and RJ45 plug on the other end.

Technical Data Specifications

- Operating temperature: -65°C to +200°C (SpeedMaster) or -40°C to +85°C (RJ45); cable dependent
- Meets EIA/TIA 568C.2-10 and IEC 60603-7-51 Cat 6A 500 MHz
- Characteristic Impedance: 100 ohms
- Insulation resistance: 200 megohms min.
- Durability: 500 mating cycles

SpeedMaster Construction

- Isolator body:** copper alloy/electroless nickel
- Contacts:** copper alloy, gold plated
- Retention ferrule and shield ferrule:** copper alloy/electroless nickel
- Insulator:** rigid plastic/N.A.
- O-rings/grommets:** fluorosilicone blend/N.A.

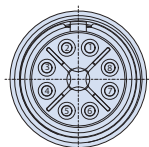
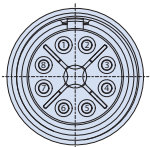
RJ45 Construction

- Body:** UL 94-V0 polycarbonate
- Grommet:** UL 94-V0 polycarbonate
- Contacts:** copper alloy, 50 microinches selective gold plating
- Shield:** nickel-plated copper alloy

Connector Compatibility

- Glenair 824-009 and -010 Mighty Mouse
- Glenair 280-098 thru -103 HiPer-D
- Glenair 233-219 SuperNine

Contact Positions



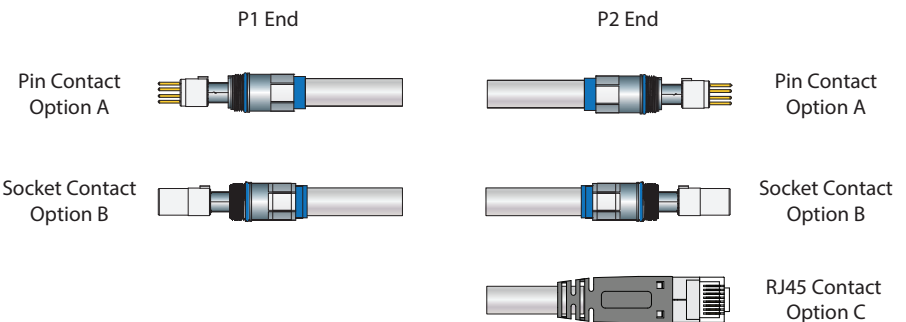
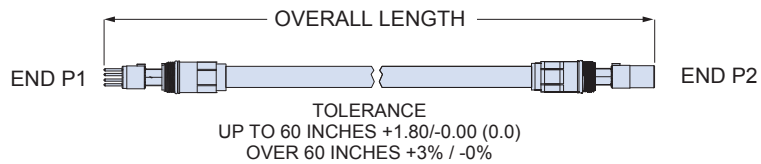
Mating Face of Pin Contacts

Mating Face of Socket Contacts

Notes

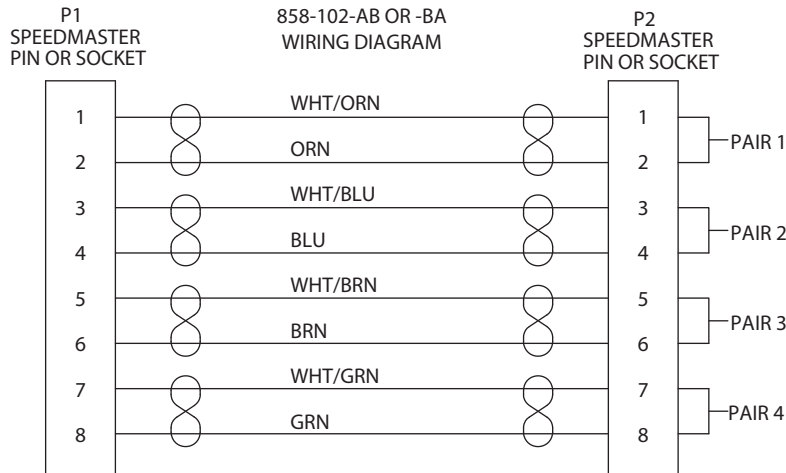
- 100% tested for continuity, DWV and IR.
- Not available in pin to pin or socket to socket configurations..

Part Number Development					
Sample Part Number	8575-0001	-A	C	-1	-12
Product	8575-0001				
End A Contact Type	-A = 858-101-X SpeedMaster pin -B = 858-100-X SpeedMaster socket				
End B Contact/Connector	A = SpeedMaster pin B = SpeedMaster socket C = RJ45 plug N = No connector				
Cable Option	-1 = 963-003-24 -5 = 963-033-24 -2 = 963-003-26 -6 = 963-033-26 -4 = 963-037				
Length	Overall length in inches				

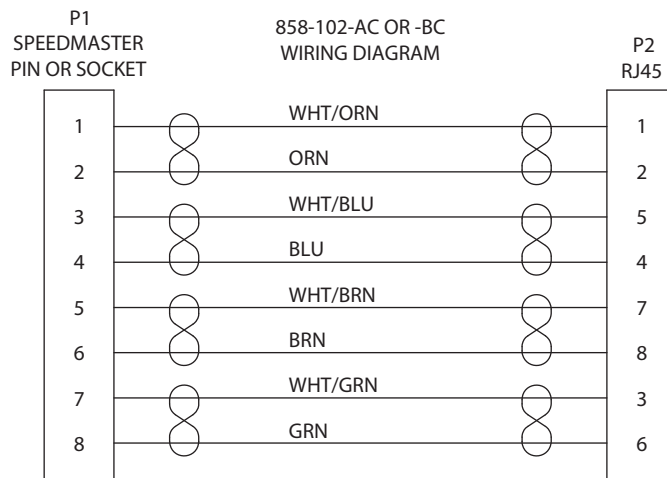


8575-0001 SpeedMaster™ Cat 6A contacts, pre-wired for use in MIL-DTL-38999 Series III type connectors

8575-0001 SPEEDMASTER™ WIRING DIAGRAMS



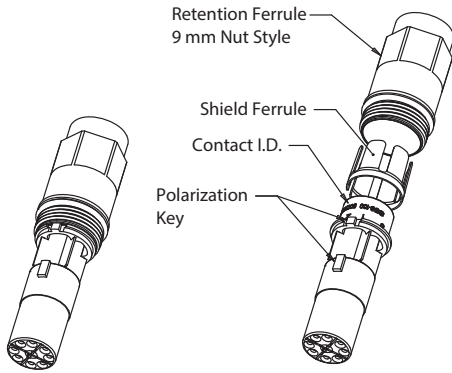
SPEEDMASTER TO SPEEDMASTER IS 1 TO 1.
MUST BE PIN TO SOCKET OR SOCKET TO PIN
OMIT P2 FOR 858-102-AN OR -BN



SPEEDMASTER PIN OR SOCKET TO RJ45 PLUG

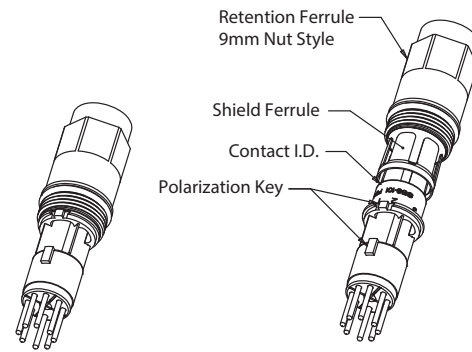
858-100 and 858-101 Cat 6A contacts for use in MIL-DTL-38999 Series III type connectors

858-100 SPEEDMASTER™ SOCKET MODULE



858	-100	-1
Product Code	Basic No	See Cable Size Table

858-101 SPEEDMASTER™ PIN MODULE



858	-101	-1
Product Code	Basic No	See Cable Size Table

Cable Size	
Cable Size	Cable Ø
1	.280 (7.11)
2	.270 (6.86)
3	.260 (6.60)
4	.250 (6.35)
5	.240 (6.10)
6	.230 (5.84)
7	.220 (5.59)

Speedmaster™ Module Inner Contact Pinout			
		Pin Out	
		Location	Color
<p>SOCKET MODULE FACE 858-100</p>	<p>PIN MODULE FACE 858-101</p>	1	Orgn/Wht
		2	Orange
		3	Blu/Wht
		4	Blue
		5	Brwn/Wht
		6	Brown
		7	Grn/White
		8	Green

NOTES

- IMPORTANT: SpeedMaster high-speed modules can only be installed in Glenair SpeedMaster series connectors.**
- High-speed module is designed to accommodate cable with wire insulation up to Ø.055 inches and cable jackets up to Ø.280 inches. See cables table for suggest list.
- For cables in-between sizes, select smaller size.
- See AI85082 for assembly instructions
- Tools Needed:
 - M39029/57-354 socket contacts:
 - Basic tool M22520/2-01 (Glenair P/N 809-015)
 - Positioner M22520/2-06 (Glenair P/N 859-019)
 - M39029/58-360 pin contacts:
 - Basic tool M22520/2-01 (Glenair P/N 809-015)
 - Positioner M22520/2-09 (Glenair P/N 859-018)
- SpeedMaster insert arrangements are exclusive to SpeedMaster and are unrelated to other insert patterns of the same size and arrangement
- Material/Finish
 - Isolator body - copper alloy / electroless nickel.
 - Contacts - copper alloy / gold plated
 - Retention ferrule - copper alloy / electroless nickel.
 - Inner shield ferrule: copper alloy / electroless nickel.
 - Insulators - rigid dielectric / N.A.
 - O-rings/grommets - fluorosilicone blend / N.A

Cables					
Cable P/N	Cable Category	Cable Construction	Wire Gage	Cable Ø	Assembly Instructions
963-003-24	CAT 6A	SF/UTP	24	.280 (7.11)	AI85082
963-003-26	CAT 6A	SF/UTP	26	.220 (5.59)	
963-037	CAT 6A	SF/UTP	24	.260 (6.60)	
963-033-24	CAT 6A	S/FTP	24	.260 (6.60)	
933-033-26	CAT 6A	S/FTP	26	.220 (5.59)	

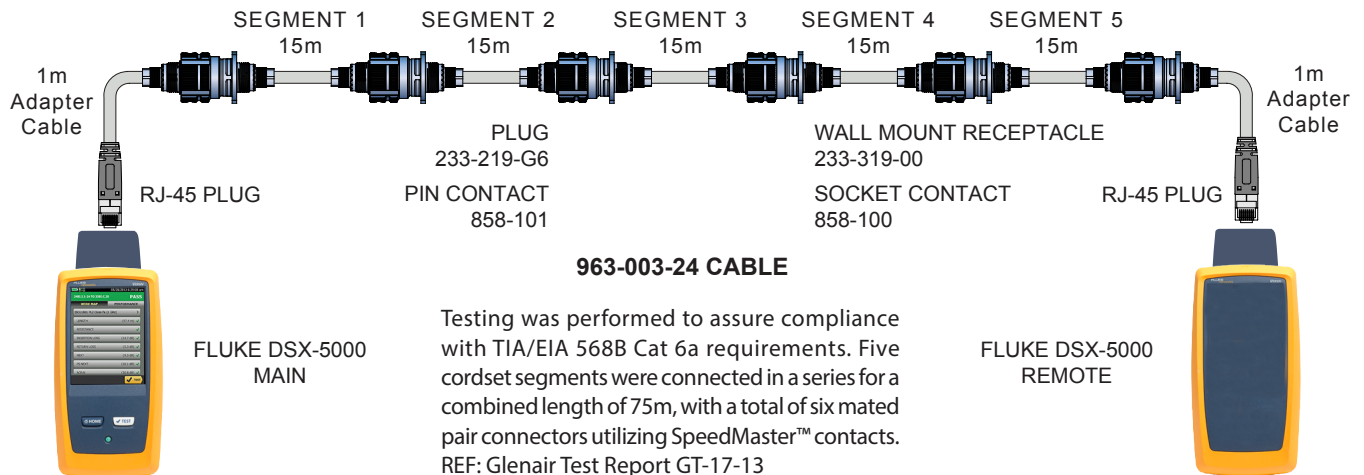
*Consult factory for use with other cable

SERIES 23

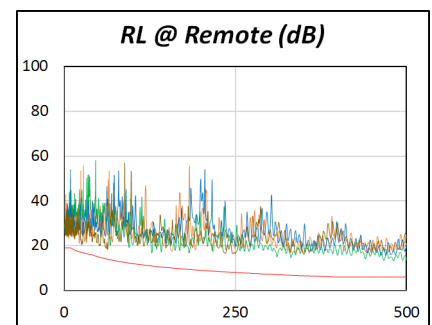
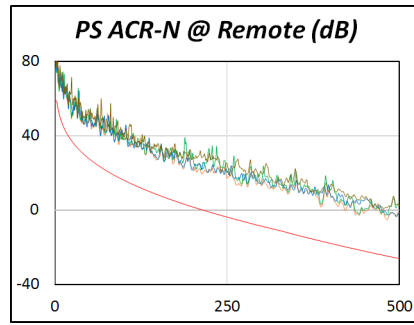
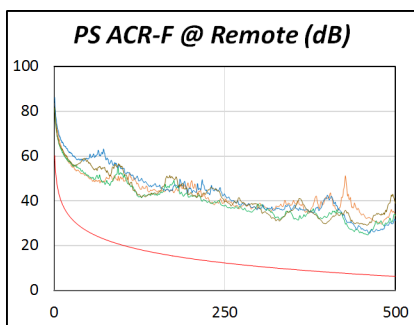
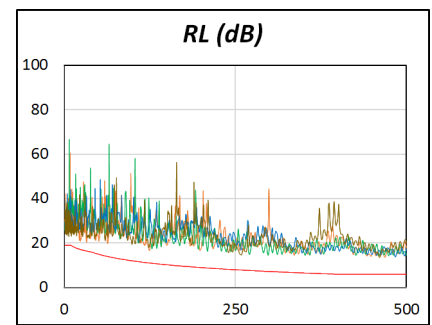
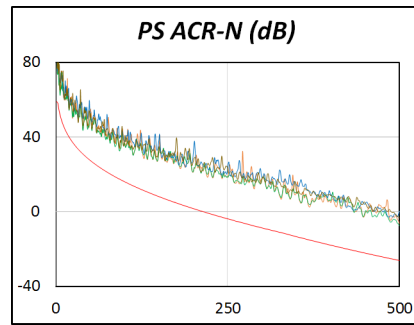
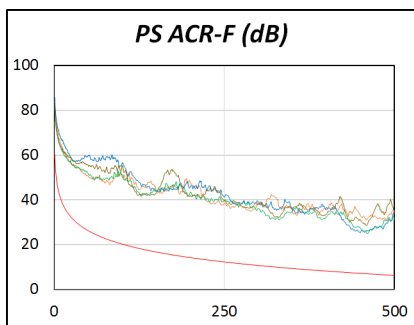
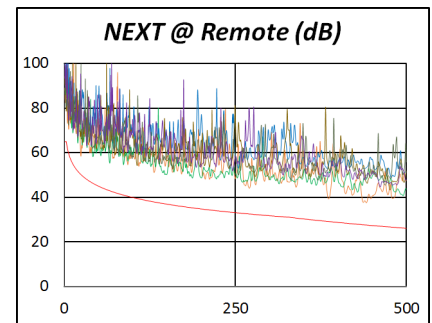
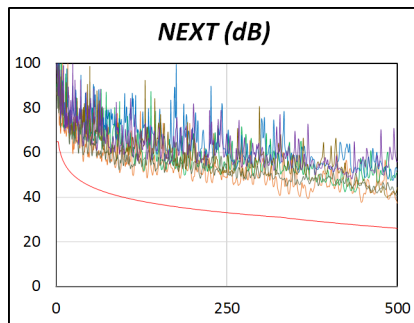
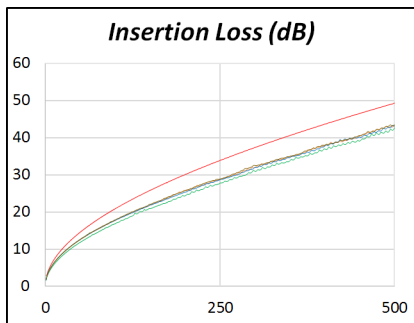
SuperNine® High-speed connectors



10GBASE-T Cat 6A Compliance Testing Contacts



Testing was performed to assure compliance with TIA/EIA 568B Cat 6a requirements. Five cordset segments were connected in a series for a combined length of 75m, with a total of six mated pair connectors utilizing SpeedMaster™ contacts. REF: Glenair Test Report GT-17-13





Performance Specification, IAW MIL-DTL-32546, MIL-DTL-38999 Series III Rev. M, TIA-568-C.2, and Glenair SpeedMaster™

Test	Test Requirement	Requirement Met																													
High-speed Performance*	Individual contact modules meet the performance requirements of TIA-568-C.2: • Return Loss • Insertion Loss • NEXT • PS NEXT • ACR-F • PS ACR-F • ACR-N	Meets TIA-568-C.2, section 6.2																													
Temperature Cycling†	Mated connectors shall be tested as specified in EIA-364-32, Method A, Condition VI -65°C to +200°C																														
Mating/Unmating Forces	<table border="1"> <thead> <tr> <th rowspan="2">Shell Size</th> <th colspan="2">Maximum Engagement & Disengagement</th> <th colspan="2">Minimum Disengagement</th> </tr> <tr> <th>Pound inch</th> <th>Newton meters</th> <th>Pound inch</th> <th>Newton meters</th> </tr> </thead> <tbody> <tr> <td>11*</td> <td>12</td> <td>1.4</td> <td>2</td> <td>0.2</td> </tr> <tr> <td>19‡</td> <td>28</td> <td>3.2</td> <td>3</td> <td>0.3</td> </tr> <tr> <td>21‡</td> <td>32</td> <td>3.6</td> <td>5</td> <td>0.6</td> </tr> <tr> <td>25*</td> <td>40</td> <td>4.6</td> <td>5</td> <td>0.6</td> </tr> </tbody> </table>	Shell Size	Maximum Engagement & Disengagement		Minimum Disengagement		Pound inch	Newton meters	Pound inch	Newton meters	11*	12	1.4	2	0.2	19‡	28	3.2	3	0.3	21‡	32	3.6	5	0.6	25*	40	4.6	5	0.6	Meets MIL-DTL-38999, paragraph 3.11
Shell Size	Maximum Engagement & Disengagement		Minimum Disengagement																												
	Pound inch	Newton meters	Pound inch	Newton meters																											
11*	12	1.4	2	0.2																											
19‡	28	3.2	3	0.3																											
21‡	32	3.6	5	0.6																											
25*	40	4.6	5	0.6																											
Durability*	No electrical or mechanical defects after 500 cycles of engagement and disengagement	Meets MIL-DTL-32546, paragraph 3.11																													
Altitude Immersion	Mated connectors shall be tested as specified in EIA-364-03 75,000 ft equivalent																														
Insulation Resistance at Ambient Temperature*	Unmated connectors shall be tested as specified in EIA-364-21 5000 megaohms min. at 25°C	Meets MIL-DTL-32546, paragraph 3.13.1																													
Insulation Resistance at Elevated Temperature*	Unmated connectors shall be tested as specified in EIA-364-21 1000 megaohms min. at 200°C																														
Salt Spray‡	<table border="1"> <thead> <tr> <th>Finish</th> <th>Corrosion Resistance</th> </tr> </thead> <tbody> <tr> <td>Electroless Nickel (ME)</td> <td>48 hrs</td> </tr> <tr> <td>PTFE/Nickel (MT)</td> <td>500 hrs</td> </tr> <tr> <td>OD Cadmium (NF)</td> <td>500 hrs</td> </tr> <tr> <td>Black Zinc-Nickel (ZR)</td> <td>500 hrs</td> </tr> </tbody> </table>	Finish	Corrosion Resistance	Electroless Nickel (ME)	48 hrs	PTFE/Nickel (MT)	500 hrs	OD Cadmium (NF)	500 hrs	Black Zinc-Nickel (ZR)	500 hrs	MIL-DTL-32546, paragraph 3.16 Finish ME: Meets Finishes MT, NF, & ZR: Exceeds																			
Finish	Corrosion Resistance																														
Electroless Nickel (ME)	48 hrs																														
PTFE/Nickel (MT)	500 hrs																														
OD Cadmium (NF)	500 hrs																														
Black Zinc-Nickel (ZR)	500 hrs																														
Vibration, Sine	No discontinuity greater than 1 microsecond, no cracking, breaking, or loosening of parts, plug shall not become disengaged from the receptacle. Connectors shall meet electrical requirements after test. 60 G's																														
Vibration, Random at Ambient Temperature*	No discontinuity greater than 1 microsecond, no cracking, breaking, or loosening of parts, plug shall not become disengaged from the receptacle. Connectors shall meet electrical requirements after test. 49 G's rms	Meets MIL-DTL-32546, paragraph 3.21																													
Standard Shock*	No loosening of parts, cracking, or other deleterious results hindering further part operation after 300 G's in each of 3 mutually perpendicular planes	Meets MIL-DTL-32546, paragraph 3.22																													
High Impact Shock	Mated connectors equipped with straight environmentally sealed backshells shall withstand high impact shock per MIL-S-901, lightweight, Grade A																														
Shell-to-Shell Conductivity‡	<table border="1"> <thead> <tr> <th>Finish</th> <th>Maximum Millivolt Drop</th> </tr> </thead> <tbody> <tr> <td>Electroless Nickel (ME)</td> <td>1.0 mv</td> </tr> <tr> <td>PTFE/Nickel (MT)</td> <td>2.5 mv</td> </tr> <tr> <td>OD Cadmium (NF)</td> <td>2.5 mv</td> </tr> <tr> <td>Black Zinc-Nickel (ZR)</td> <td>2.5 mv</td> </tr> </tbody> </table>	Finish	Maximum Millivolt Drop	Electroless Nickel (ME)	1.0 mv	PTFE/Nickel (MT)	2.5 mv	OD Cadmium (NF)	2.5 mv	Black Zinc-Nickel (ZR)	2.5 mv	Exceeds MIL-DTL-32546, paragraph 3.23																			
Finish	Maximum Millivolt Drop																														
Electroless Nickel (ME)	1.0 mv																														
PTFE/Nickel (MT)	2.5 mv																														
OD Cadmium (NF)	2.5 mv																														
Black Zinc-Nickel (ZR)	2.5 mv																														



Performance Specification, IAW MIL-DTL-32546, MIL-DTL-38999 Series III Rev. M, TIA-568-C.2, and Glenair SpeedMaster™

Humidity*

Testing shall be performed as specified in EIA-364-21, Method IV

Meets MIL-DTL-32546, paragraph 3.25

	Frequency (MHz)	Leakage Attenuation Min (dB)		Frequency (MHz)	Leakage Attenuation Min (dB)		
		Finish ME	Finishes MT, NF, ZR		Finish ME	Finishes MT, NF, ZR	
Shielding Effectiveness‡	100	90	90	1,500	76	69	Meets MIL-DTL-32546, paragraph 3.27
	200	88	88	2,000	70	65	
	300	88	88	3,000	69	61	
	400	87	87	4,000	68	58	
	800	85	85	6,000	66	55	
	1,000	85	85	10,000	65	50	

Fluid Immersion

No visible damage from immersion in various fuels and oils. Electrical performance requirements shall still be met.

* Indicates that test has been performed/data is available

† Thermal cycling has been done from -55°C to +200°C

‡ Qualification by similarity

38999 SPEEDMASTER SUMMARY

Standard Material and Finishes

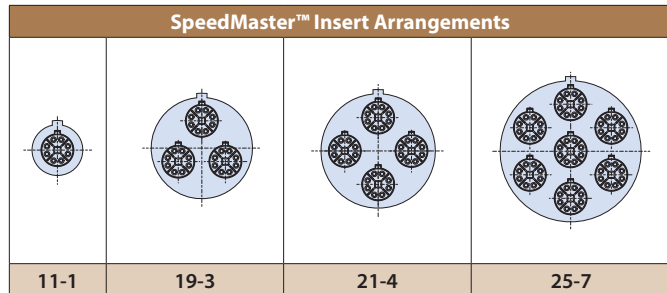
- Shell, Barrel, Coupling Nut, Jam-nut: Aluminum alloy per ASTM-B211.
- Grounding spring: BeCu alloy/electroless nickel finish
- Seals, O-Ring: Fluorosilicone Blend

Shell Type and Sizes

- Shell Type: D38999 Series III Type, sizes 11, 19, 21, 25

233-219 SpeedMaster™ connectors, how-to-order MIL-DTL-38999 Series III type, part number development

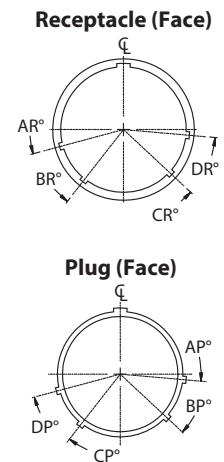
SpeedMaster™ Connector Part Number Development	
Sample Part Number	233-219 -G6 ME 25 -7 P N -1
Series / Basic Part No.	SuperNine Environmental High-Speed connector
SpeedMaster™ Connector Style*	G6 = Plug 38999/26 05 = Receptacle, in-line 07 = Receptacle, jam-nut 38999/24 00 = Receptacle, wall mount 38999/20 CM = Receptacle, wall mount, metric clinch nuts CS = Receptacle, wall mount, standard clinch nuts D0 = Receptacle, wall mount, thru holes HM = Receptacle, wall mount, metric helicoils HS = Receptacle, wall mount, standard helicoils T0 = Receptacle, wall mount, tapped holes
Material/Finish	NF = Cadmium Olive Drab ZR = Black Zinc Nickel MT = Nickel PTFE ME = Electroless Nickel
Shell Size	11, 19, 21, 25
Insert Arrangement	See Insert Arrangement Table
Module Type	P = Pin S = Socket A = Less contacts; see note 1
Alternate Polarization	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III); See alternate positions table.
Cable Size	See Cable Size Table for details; omit for pre-terminated contact modules



NOTES

1. Spare High-Speed modules (858-100, 858-101) may be ordered separately. Module wrench tool (607-011) supplied with each connector. Select the "less contacts (A)" option when ordering pre-terminated cable to SpeedMaster contacts listed on page C-52. Omit cable size from part number development when selecting the "less contact" option from the module type of the part number development.
2. See assembly instructions A185082 for high-speed module assembly. See assembly instructions A185086 for module installation.
3. Unless otherwise specified, all dimensions are per MIL-DTL-38999/20, /24 and /26
4. For cables in between sizes, select the smaller size
5. See page 8 for SpeedMaster module inner contact pinout
6. Glenair 233-219 connectors only accommodate Glenair SpeedMaster contacts.
7. SpeedMaster insert arrangements are exclusive to SpeedMaster and are unrelated to other insert patterns of the same size and arrangement

Alternate Positions						
Shell Size Code	Shell Size	Position Code	AR°	BR°	CR°	DR°
B	11	N	95	141	208	236
		A	113	156	182	292
		B	90	145	195	252
		C	53	156	220	255
		D	119	146	176	298
F G J	19 21 25	E	51	141	184	242
		N	80	142	196	293
		A	135	170	200	310
		B	49	169	200	244
		C	66	140	200	257
		D	62	145	180	280
		E	79	153	197	272

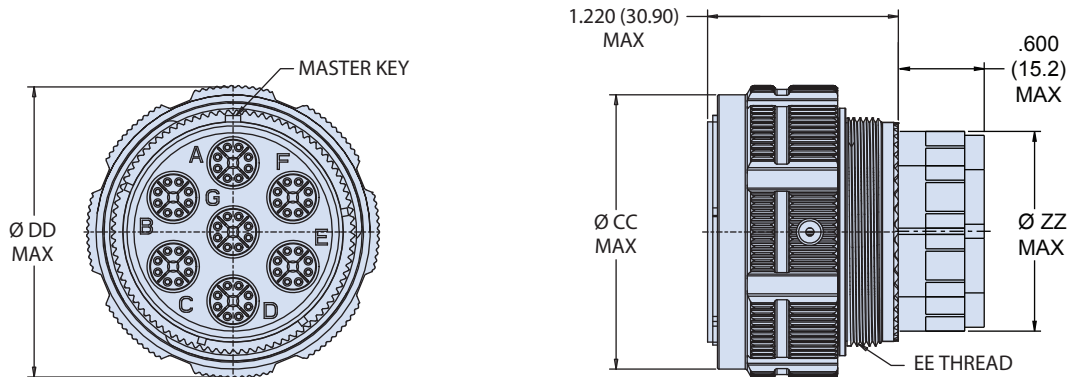


Cable Size			
Cable Size	Cable Ø	Cable Size	Cable Ø
1	.280 (7.11)	5	.240 (6.10)
2	.270 (6.86)	6	.230 (5.84)
3	.260 (6.60)	7	.220 (5.59)
4	.250 (6.35)		

SpeedMaster™ High-Speed Cable					
Cable P/N	Cabel Category	Cable Construction	Wire Gage	Cable Dia.	Assembly Instruction
963-003-24	Cat 6A	SF/UTP	24	.280	A185082
963-003-26	Cat 6A	SF/UTP	26	.220	
963-037	Cat 6A	SF/UTP	24	.260	
963-033-24	CAT 6A	S/FTP	24	.260	
933-033-26	CAT 6A	S/FTP	26	.220	

233-219-G6 and -05 SpeedMaster[™], dimensions
MIL-DTL-38999/26 Type Series III type, plug and in-line receptacle

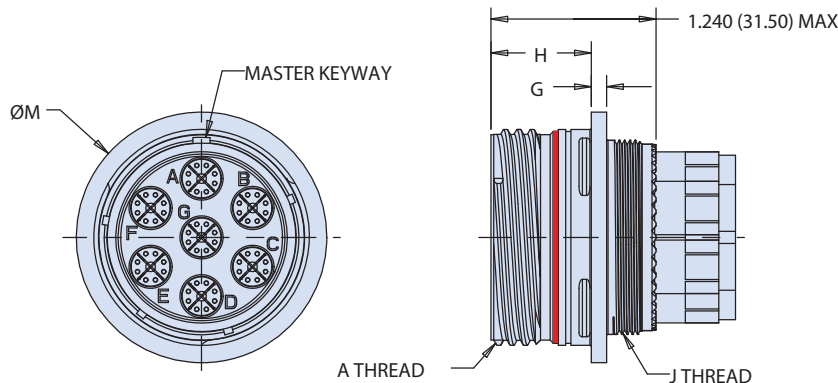
PLUG (G6), D38999/26 TYPE



G6 Plug Per MIL-DTL-38999/26

Shell Size Code	Shell Size	Ø CC Max	Ø DD Max	EE Thread	Ø ZZ Max
B	11	.929 (23.60)	.984 (24.99)	M15x1.0-6g 0.100R	.405 (10.29)
F	19	1.469 (37.31)	1.516 (38.51)	M28x1.0-6g 0.100R	.885 (22.48)
G	21	1.594 (40.49)	1.642 (41.71)	M31x1.0-6g 0.100R	.845 (21.46)
J	25	1.843 (46.81)	1.890 (48.01)	M37x1.0-6g 0.100R	1.285 (32.64)

IN-LINE (05) RECEPTACLE

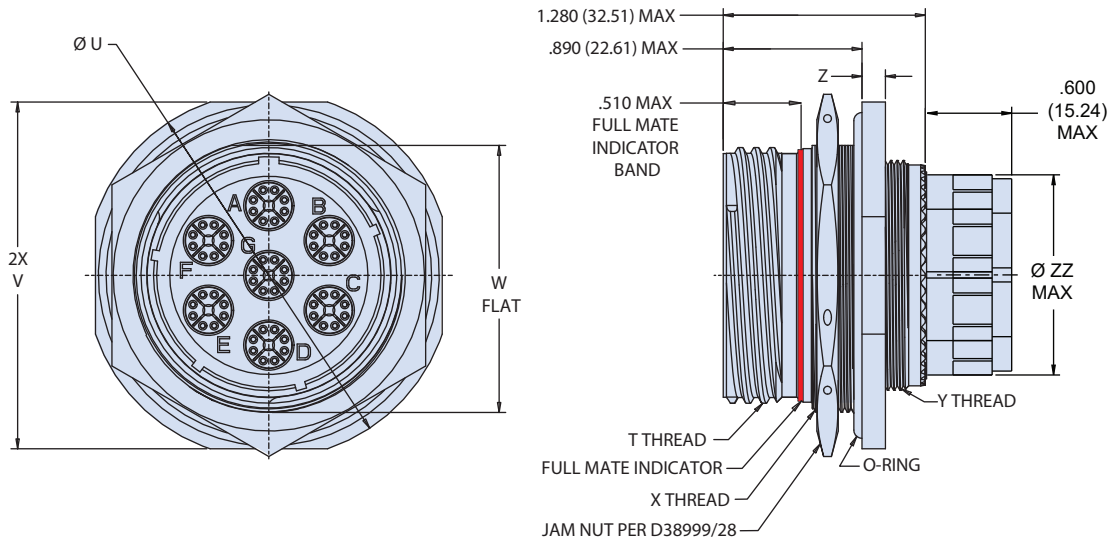


05 In-Line Receptacle

Shell Size Code	Shell Size	A Thread	G	H	J THREAD	ØM
B	11	.7500-.1P-.3L-TS-2A	.098 (2.49)	.820 (20.83)	M15x1.0-6g 0.100R	.984 (24.99)
F	19	1.2500-.1P-.3L-TS-2A	.083 (2.11)	.771 (19.58)	M28x1.0-6g 0.100R	1.516 (38.51)
G	21	1.3750-.1P-.3L-TS-2A	.126 (3.20)	.790 (20.07)	M31x1.0-6g 0.100R	1.642 (41.71)
J	25	1.6250-.1P-.3L-TS-2A	.083 (2.11)	.741 (18.82)	M37x1.0-6g 0.100R	1.890 (48.01)

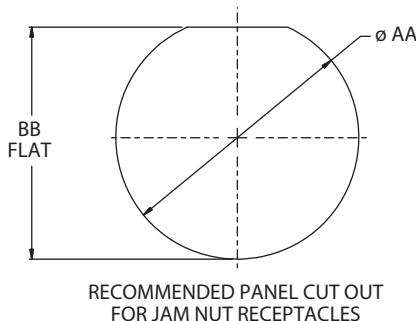
233-219-07 SpeedMaster™ receptacle - dimensions
MIL-DTL-38999 Series III type, jam-nut

JAM-NUT (07) MOUNT RECEPTACLE, D38999/24 TYPE



07 Jam-Nut Per MIL-DTL-38999/24

Shell Size Code	Shell Size	T Thread	U	V	W Flat	X Thread	Y Thread	Z	ZZ Max
B	11	.7500-.1P-.3L-TS-2A	1.385 (35.18) 1.363 (34.62)	1.267 (32.18) 1.237 (31.42)	0.756 (19.20) 0.746 (18.95)	M20x1.0-6g 0.100R	M15x1.0-6g 0.100R	.122 (3.10) .083 (2.11)	.405 (10.29)
F	19	1.2500-.1P-.3L-TS-2A	1.949 (49.50) 1.925 (48.89)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35x1.0-6g 0.100R	M28x1.0-6g 0.100R	.153 (3.89) .114 (2.90)	.885 (22.48)
G	21	1.3750-.1P-.3L-TS-2A	2.075 (52.70) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38x1.0-6g 0.100R	M31x1.0-6g 0.100R		.845 (21.46)
J	25	1.6250-.1P-.3L-TS-2A	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44x1.0-6g 0.100R	M37x1.0-6g 0.100R		1.285 (32.64)

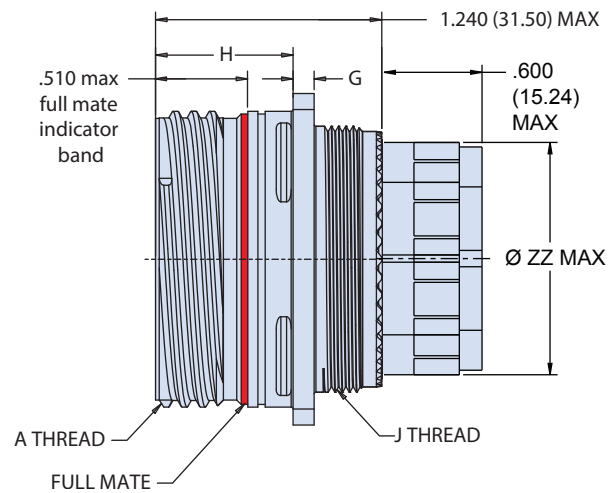
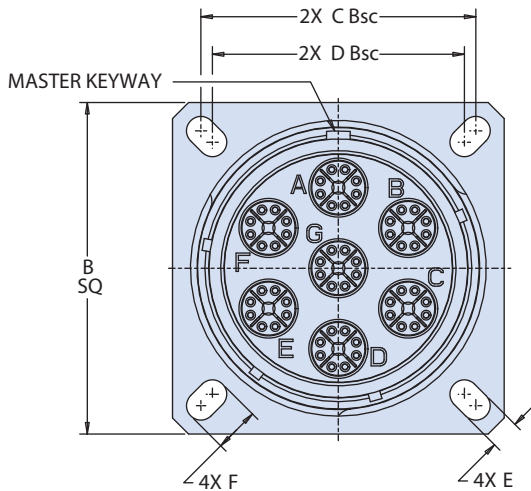


Mounting Holes Per MIL-DTL-38999

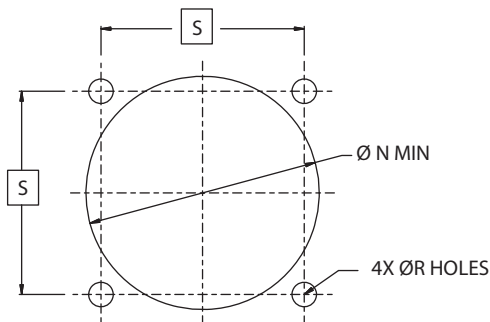
Shell Size Size	Shell Size	Ø AA	BB Flat
B	11	0.835 (21.21)	0.771 (19.58)
		0.825 (20.95)	0.761 (19.33)
F	19	1.395 (35.43)	1.335 (33.91)
		1.385 (35.18)	1.325 (33.65)
G	21	1.520 (38.61)	1.460 (37.08)
		1.510 (38.35)	1.450 (36.83)
J	25	1.770 (44.96)	1.710 (43.43)
		1.760 (44.70)	1.700 (43.18)

233-219-00 SpeedMaster™ receptacle - dimensions
MIL-DTL-38999/20 Series III type, wall mount

SLOTTED HOLE (00), D38999/20 TYPE



00 Wall Mount Per MIL-DTL-38999/20											
Shell Size Code	Shell Size	A Thread	B SQ	C BSC	D BSC	E	F	G	H	J THREAD	ZZ Max
B	11	.7500-.1P-.3L-TS-2A	1.043 (26.49) 1.019 (25.88)	.812 (20.62)	.719 (18.26)	.136 (3.45) .120 (3.05)	.198 (5.03) .190 (4.83)	.098 (2.49) .083 (2.11)	.820 (20.83) .771 (19.58)	M15x1.0-6g 0.100R	.405 (10.29)
F	19	1.2500-.1P-.3L-TS-2A	1.449 (36.80) 1.425 (36.20)	1.156 (29.36)	1.062 (26.97)		.202 (5.13)				
G	21	1.3750-.1P-.3L-TS-2A	1.575 (40.00) 1.551 (39.40)	1.250 (31.75)	1.156 (29.36)	.186 (4.72)	.250 (6.35) .234 (5.94)	.083 (2.11)	.741 (18.82)	M31x1.0-6g 0.100R	.845 (21.46)
J	25	1.6250-.1P-.3L-TS-2A	1.823 (46.30) 1.799 (45.69)	1.500 (38.10)	1.375 (34.92)	.142 (3.61)					



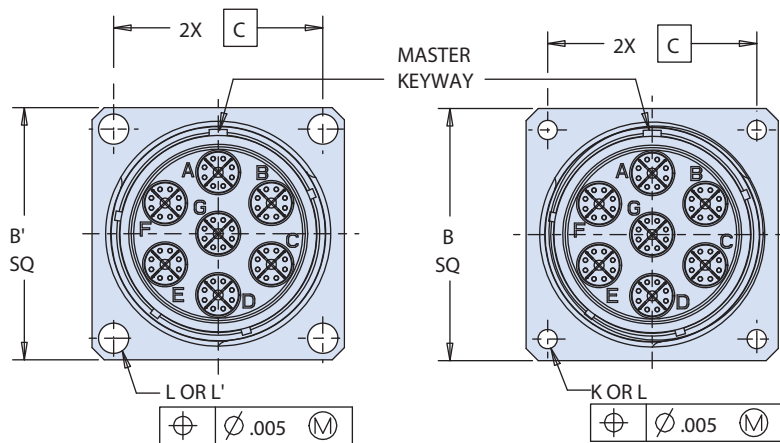
Mounting Holes Per MIL-DTL-38999				
Shell Size	Shell Size	Ø N Min	Ø R Holes	S BSC
B	11	.796 (20.22)	.133 (3.38) .123 (3.12)	.812 (20.62)
F	19	1.297 (32.94)		1.156 (29.36)
G	21	1.422 (36.12)	.155 (3.94) .145 (3.68)	1.250 (31.75)
J	25	1.672 (42.47)		1.500 (38.10)

RECOMMENDED MOUNTING HOLES FOR WALL MOUNT (00) RECEPTACLES PER MIL-DTL-38999.

233-219 SpeedMaster™ wall mount receptacle - dimensions

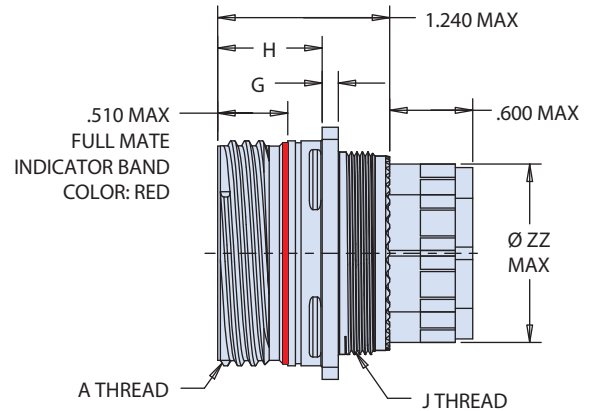
MIL-DTL-38999 Series III type, wall mount

CLINCH NUT STANDARD (CS) AND METRIC (CM), THRU HOLES (DO) AND TAPPED HOLES (TO)



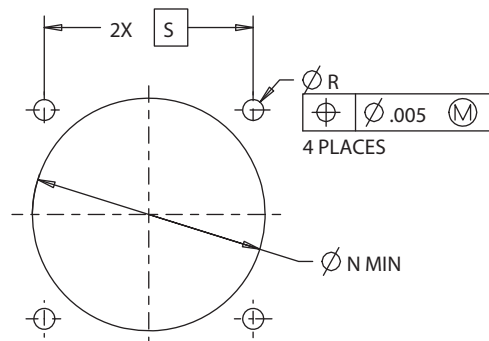
CM & CS STYLE

DO & TO STYLE



CM, CS, DO, & TO STYLE

CM, CS, DO and TO Wall Mount														
Shell Size Code	Shell Size	A Thread	B SQ	B' SQ	C BSC	G	H	J THREAD	ØK	L Standard	L' Metric	ZZ Max		
B	11	.7500-.1P-.3L-TS-2A	1.043 (26.49) 1.019 (25.88)	1.187 (30.15) 1.147 (29.13)	.812 (20.62)	.098 (2.49) .083 (2.11)	.820 (20.83) .771 (19.58)	M15x1.0-6g 0.100R	.136 (3.45) .120 (3.05)	.112-40 UNC-2B	M3 x 0.5	.405 (10.29)		
F	19	1.2500-.1P-.3L-TS-2A	1.449 (36.80) 1.425 (36.20)	1.531 (38.89) 1.491 (37.87)	1.156 (29.36)			M28x1.0-6g 0.100R						.885 (22.48)
G	21	1.3750-.1P-.3L-TS-2A	1.575 (40.00) 1.551 (39.40)	1.625 (41.28) 1.585 (40.26)	1.250 (31.75)	.126 (3.20) .083 (2.11)	.790 (20.07) .741 (18.82)	M31x1.0-6g 0.100R						
J	25	1.6250-.1P-.3L-TS-2A	1.823 (46.30) 1.799 (45.69)	1.875 (47.63) 1.835 (46.61)	1.500 (38.10)			M37x1.0-6g 0.100R	.162 (4.11) .146 (3.71)	.138-32 UNC-2B	M4 x 0.7	1.285 (32.64)		

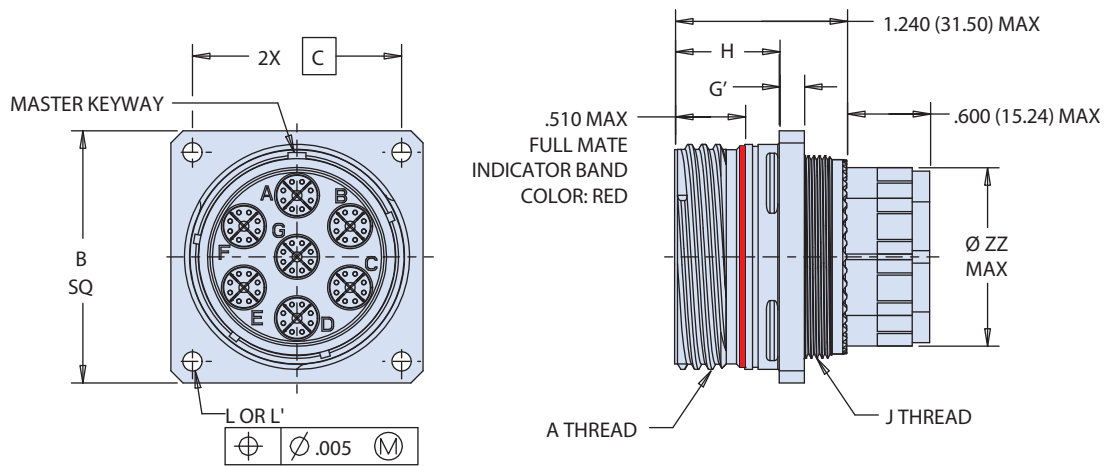


Mounting Holes				
Shell Size	Shell Size	Ø N Min	Ø R Holes	S BSC
B	11	.796 (20.22)	.133 (3.38) .123 (3.12)	.812 (20.62)
F	19	1.297 (32.94)		1.156 (29.36)
G	21	1.422 (36.12)		1.250 (31.75)
J	25	1.672 (42.47)	.155 (3.94)	1.500 (38.10)
			.145 (3.68)	

233-219 SpeedMaster™ wall mount receptacle - dimensions

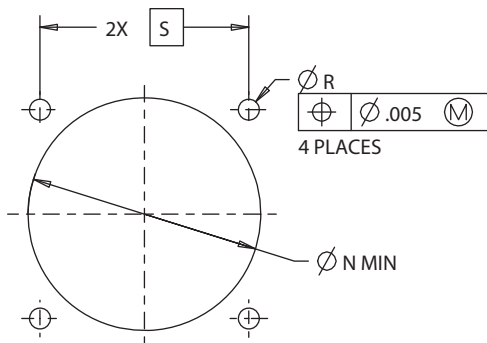
MIL-DTL-38999 Series III type, wall mount

HELICOILS STANDARD (HS) AND METRIC (HM)



HM & HS STYLE

HM and HS Wall Mount										
Shell Size Code	Shell Size	A Thread	B SQ	C BSC	G'	H	J THREAD	L Thread (Standard)	L' Thread (Metric)	ZZ Max
B	11	.7500-.1P-.3L-TS-2A	1.043 (26.49) 1.019 (25.88)	.812 (20.62)	.179 (4.55) .140 (3.56)	.820 (20.83)	M15x1.0-6g 0.100R	.112-40 UNC-2B	M3 x 0.5	.405 (10.29)
F	19	1.2500-.1P-.3L-TS-2A	1.449 (36.80) 1.425 (36.20)	1.156 (29.36)		.771 (19.58)	M28x1.0-6g 0.100R			.885 (22.48)
G	21	1.3750-.1P-.3L-TS-2A	1.575 (40.00) 1.551 (39.40)	1.250 (31.75)		.790 (20.07)	M31x1.0-6g 0.100R			.845 (21.46)
J	25	1.6250-.1P-.3L-TS-2A	1.823 (46.30) 1.799 (45.69)	1.500 (38.10)		.741 (18.82)	M37x1.0-6g 0.100R			.138-32 UNC-2B

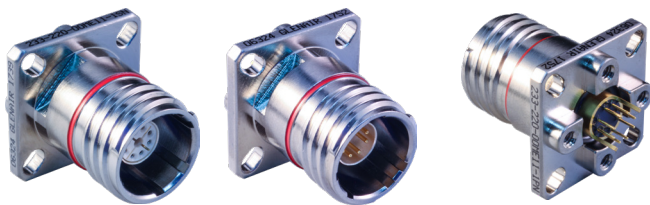


Mounting Holes				
Shell Size Size	Shell Size	Ø N Min	Ø R Holes	S BSC
B	11	.796 (20.22)	.133 (3.38) .123 (3.12)	.812 (20.62)
F	19	1.297 (32.94)		1.156 (29.36)
G	21	1.422 (36.12)	.155 (3.94) .145 (3.68)	1.250 (31.75)
J	25	1.672 (42.47)		1.500 (38.10)

233-220 PC tail receptacle with SpeedMaster™ contacts

MIL-DTL-38999 Series III type, part number development

Part Number Development	
Sample Part Number	233-220 -07 ME 25 -7 P N
Series / Basic Part No.	SuperNine Environmental High-Speed connector
Connector Style*	See connector type table
Material/Finish	NF = Cadmium Olive Drab ZR = Black Zinc Nickel MT = Nickel PTFE ME = Electroless Nickel
Shell Size	11, 19, 21, 25
Insert Arrangement	See Insert Arrangement Table
Module Type	P = Pin S = Socket
Alternate Polarization	A, B, C, D, E, N = Normal (IAW MIL-DTL-38999 Series III); See alternate positions table.



Socket Module

Pin Module

Connector Style	
Symbol	Description
00	Wall mount receptacle with slotted holes, standard standoff threads
10	Wall mount receptacle with slotted holes, metric standoff threads
CM	Wall mount receptacle with metric clinch nuts
CS	Wall mount receptacle with standard clinch nuts
HM	Wall mount receptacle with metric helicoils
HS	Wall mount receptacle with standard helicoils
07	Jam-nut receptacle

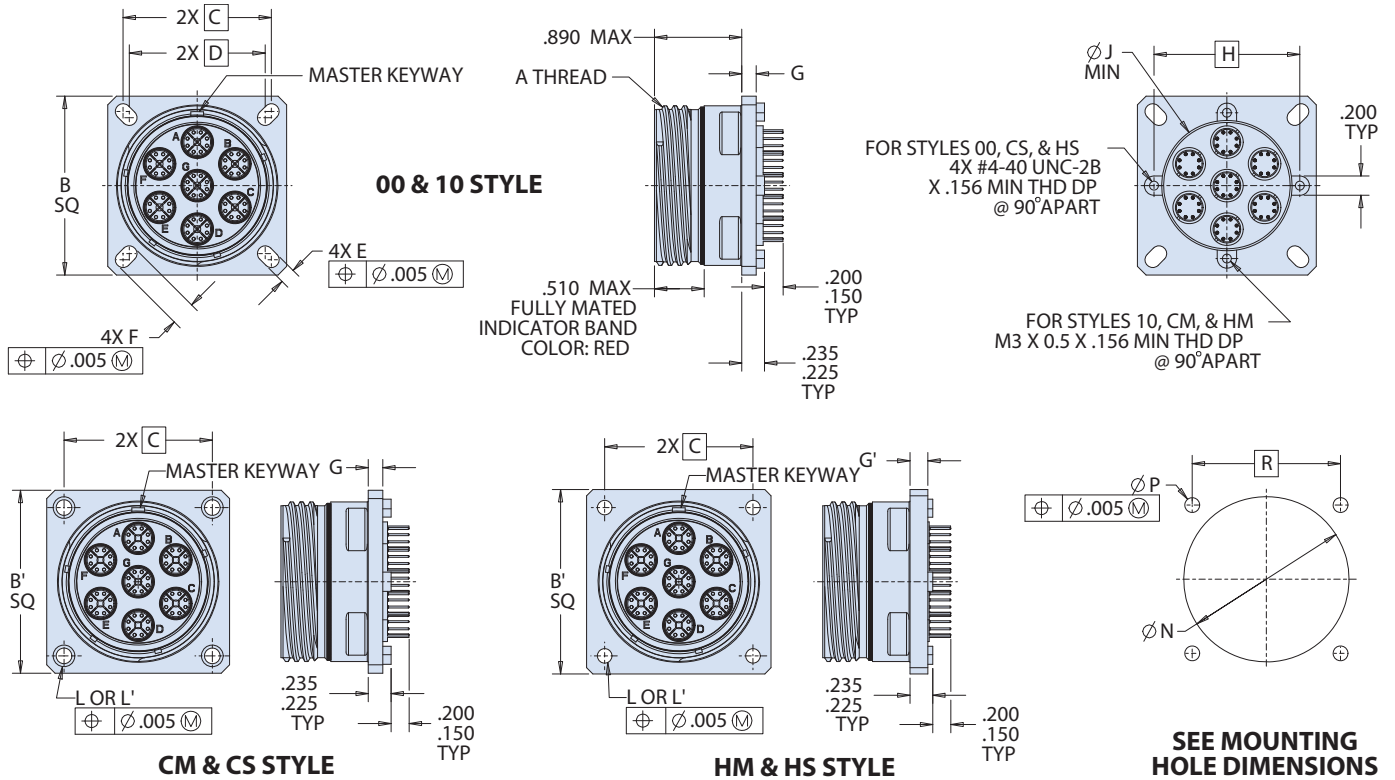
Alternate Positions						
Keyway Positions (Receptacle)						
Shell Size Code	Shell Size	Alternate Position Code	AR°	BR°	CR°	DR°
B	11	N	95	141	208	236
		A	113	156	182	292
		B	90	145	195	252
		C	53	156	220	255
		D	119	146	176	298
F G J	19 21 25	N	80	142	196	293
		A	135	170	200	310
		B	49	169	200	244
		C	66	140	200	257
		D	62	145	180	280
		E	79	153	197	272

Insert Arrangements			
11-1	19-3	21-4	25-7

NOTES

- Mates with Glenair 233-216-G6, D38999 SpeedMaster plug of same keying and insert arrangement. Mating connector must be 1.5 meter minimum cable length
- Material/finish
 - Shell, jam-nut: see part number development
 - Insert: Aluminum alloy/ silver
 - Seals, o-ring: Fluorosilicone blend/n.a.
 - Insulators: rigid dielectric/n.a.
 - Contacts: copper alloy/gold
 - Potting: epoxy/n.a.

233-220 PC tail receptacle with SpeedMaster™ contacts
MIL-DTL-38999 Series III type, wall mount

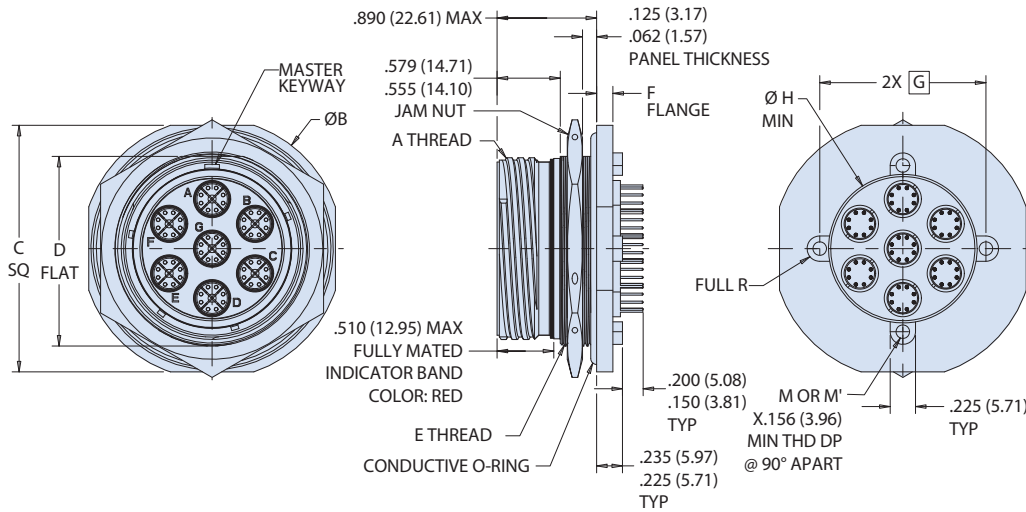


Dimensions													
Shell Size	A Thread	B Sq	B' Sq	C Bsc	D Bsc	E	F	G	G'	H	ØJ Min	Thread	
												L	L'
11	.7500	1.043 (26.49)	1.187 (30.15)	.812 (20.62)	.719 (18.26)								
	-0.1P-0.3L-TS-2A	1.019 (25.88)	1.147 (29.13)										
19	1.2500	1.449 (36.80)	1.531 (38.89)	1.156 (29.36)	1.062 (26.97)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)						
	-0.1P-0.3L-TS-2A	1.425 (36.20)	1.491 (37.87)										
21	1.3750	1.575 (40.00)	1.625 (41.28)	1.250 (31.75)	1.156 (29.36)			.153 (3.89) .114 (2.90)					
	-0.1P-0.3L-TS-2A	1.551 (39.40)	1.585 (40.26)										
25	1.6250	1.823 (46.30)	1.875 (47.63)	1.500 (38.10)	1.375 (34.92)	.162 (4.11) .146 (3.71)	.250 (6.35) .235 (5.97)						
	-0.1P-0.3L-TS-2A	1.799 (45.69)	1.835 (46.61)										

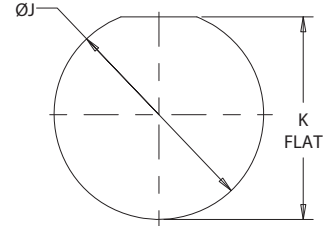
Mounting Hole Dimensions			
Shell Size	ØN Min	Ø P Holes	R Bsc
11	0.796 (20.22)	0.133 (3.38) 0.123 (3.12)	0.812 (20.62)
19	1.297 (32.94)		1.156 (29.36)
21	1.422 (36.12)		1.250 (31.75)
25	1.672 (42.47)	0.155 (3.94) 0.145 (3.68)	1.500 (38.10)

233-220 PC tail receptacle with SpeedMaster™ contacts
MIL-DTL-38999 Series III type, jam-nut

07- JAM-NUT MOUNT RECEPTACLE D38999/24 TYPE



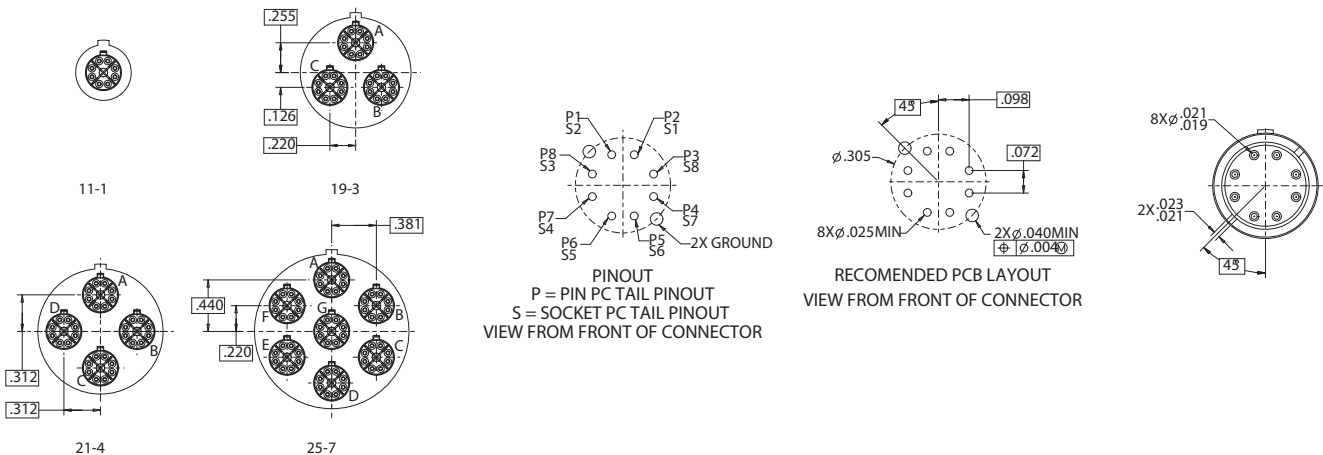
PANEL CUT-OUT



Dimensions		
Shell Size	ØJ ±0.010	K Flat
11	.830 (21.08)	.766 (19.46)
19	1.390 (35.31)	1.330 (33.78)
21	1.515 (38.48)	1.455 (36.96)
25	1.765 (44.83)	1.705 (43.31)

Dimensions										
Shell Size	A Thread -0.1P-0.3L-TS-2A	Ø B	C Sq	D Flat	E Thread ISO Metric	F	G	ØH Min	Threads	
									M	M'
11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.263 (32.08)	0.755 (19.18) 0.745 (18.92)	M20 X 1.0-6g	0.122 (3.10) 0.083 (2.11)	0.719 (18.26)	0.468 (11.89)	.112-40 UNC-2B	M3 X .05
21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g	0.153 (3.89) 0.114 (2.90)	1.221 (31.01)	1.055 (26.80)		

PCB FOOTPRINTS



SERIES 23

SuperNine[®] High-speed connectors



377-119 SpeedMaster[™] aluminum alloy backshell MIL-DTL-38999 Series III



Part Number Development													
Sample Part Number	377				N	S	119	MT	11	06	4	G	01
Series	377 = Series 37 Aluminum Alloy Backshells												
Connector Designator*	N = Glenair SpeedMaster [™] Connector												
Angular Function	S = Straight N = 90° Solid Elbow M = 45° Solid Elbow												
Basic No.	119												
Material/Finish	See Finish Table												
Shell Size	11, 19, 21, 25												
Optional Entry Size	See Optional Entry Size Table												
Length	In 1/2 Inch Increments; e.g. 4 = 2 inches (see note 2)												
Adapter Style	G = Gland Nut K = Tubing Adapter with Nut, Glenair PEEK B = Banding Adapter 601 Series Band Supplied with Backshell												
Cable Diameter	See Cable Diameter Table												

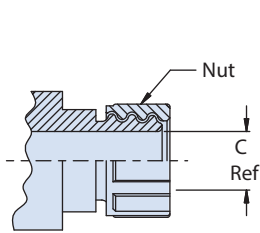
Dimensions											
Shell Size	A Thread ISO Metric	B Max	D Max	E Max	F Max	G Max	H Ref	J Flats	Conduit Size Ref	Insert Identification	No. of Holes
11	M15 X 1 - 6H	1.06 (26.92)	1.78 (45.21)	1.93 (49.02)	1.33 (33.78)	1.56 (39.62)	.54 (13.72)	.938 (23.83)	7/16	11-1	1
19	M28 X 1 - 6H	1.54 (39.12)	2.11 (53.59)	2.18 (55.37)	1.54 (39.12)	1.77 (44.96)	1.00 (25.40)	1.250 (31.75)	3/4	19-3	3
21	M31 X 1 - 6H	1.67 (42.42)	2.07 (52.58)	2.25 (57.15)	1.61 (40.89)	1.84 (46.74)	1.00 (25.40)	1.500 (38.10)	7/8	21-4	4
25	M37 X 1 - 6H	2.12 (53.85)	2.19 (55.63)	2.19 (55.63)	1.73 (43.94)	1.96 (49.78)	1.27 (32.26)	1.812 (46.02)	1	25-7	7

Optional Entry Size		
Entry Size	C Ref Sym K	Opt. Conduit Size Ref.
06	.330 (8.38)	7/16
07	.390 (9.91)	1/2
08	.515 (13.10)	5/8
10	.640 (16.26)	3/4
11	.640 (16.26)	3/4
13	.765 (19.43)	7/8
15	.890 (22.61)	1
17	1.125 (28.58)	1 1/4

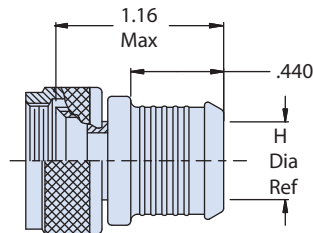
Cable Diameter	
Entry Size	P Approx
01	.280 (7.11)
02	.270 (6.86)
03	.260 (6.60)
04	.250 (6.35)
05	.240 (6.10)
06	.230 (5.84)
07	.220 (5.59)

Finish Table		
Sym	Finish Description	
M	Aluminum alloy	Electroless nickel
MT		Nickel - PTFE
NF		Cad/O.D. over electroless nickel (100 hour salt spray)

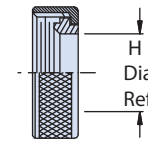
377-119 SpeedMaster™ aluminum alloy backshell
MIL-DTL-38999 Series III



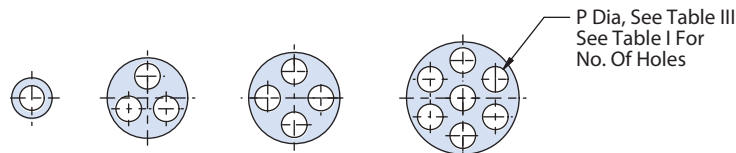
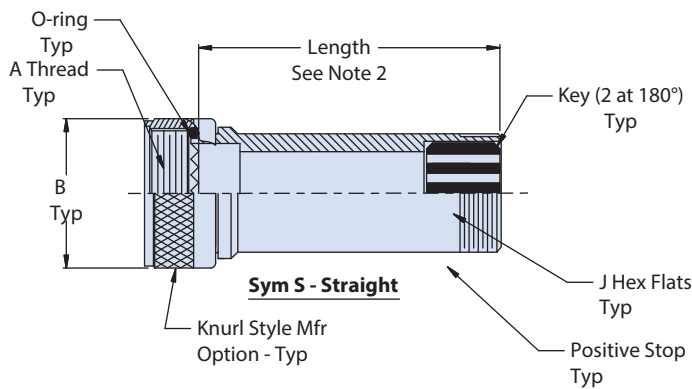
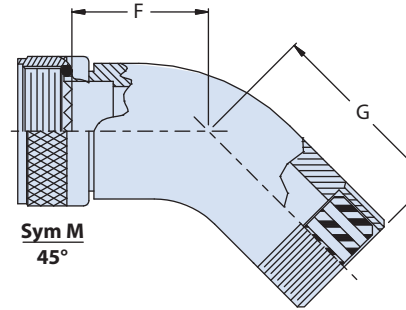
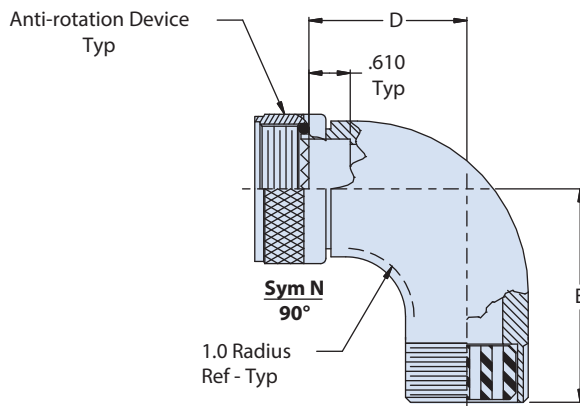
K - Peek Tubing Adapter with Nut



B - Banding Adapter



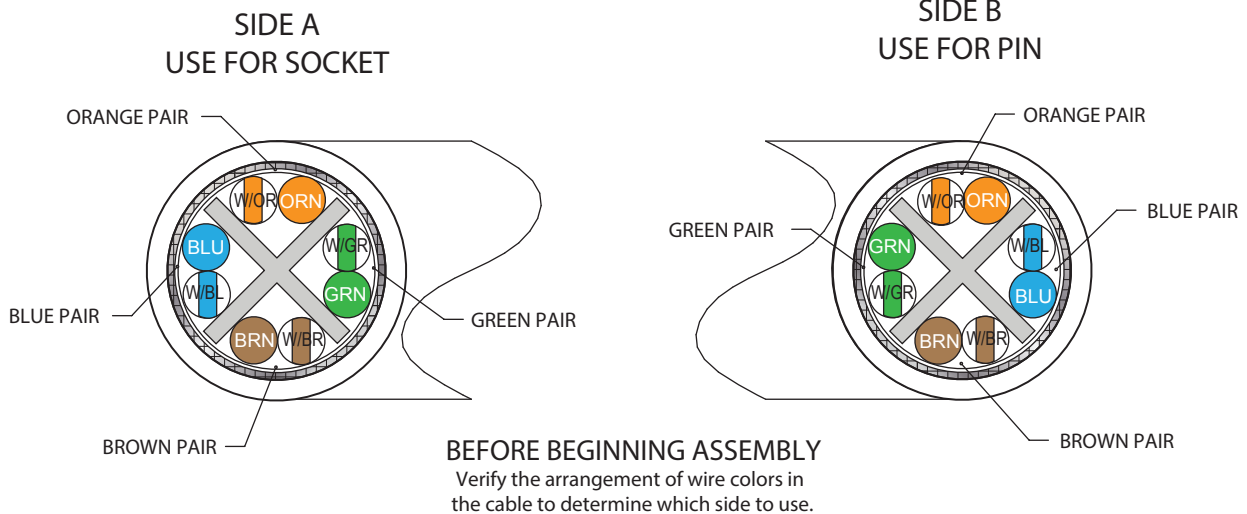
G - Gland Nut



NOTES

- Glenair 600 series backshell assembly tools are recommended for assembly and installation
- Standard min. order length 1.5 inch, consult factory for shorter lengths
- Material:
 - Adapters, elbows, ferrules, coupling nut, nut: aluminum alloy/see finish table
 - Grommet, O-ring: fluorosilicone/N.A.
 - Anti-rotation device: corrosion resistant material/N.A.

AI85082 SpeedMaster[™] Assembly Instructions



STEP 1

- A. Place O-ring onto thread ferrule so that it is seated behind the thread. (Figure 1)
- B. Slide retention ferrule with O-ring onto cable.

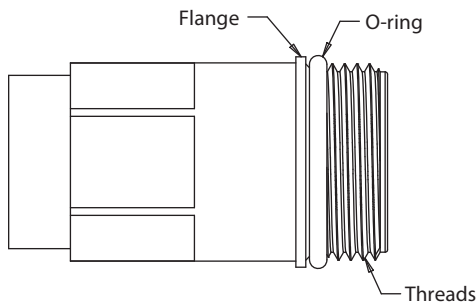


FIGURE 1

STEP 2

- A. Slide shield ferrule onto cable.
- B. Use proper tool to remove cable outer jacket to approximately .75 Inch.
- C. Comb braid out straight, and trim it to approximately .3 Inches. Fold braid back afterward.
- D. Trim outer tape, cable splice, and filler if any as close to the folded back braid shield as possible. (Figure 2)
- E. Use appropriate tool to strip the individual wires to .130 Inches max.

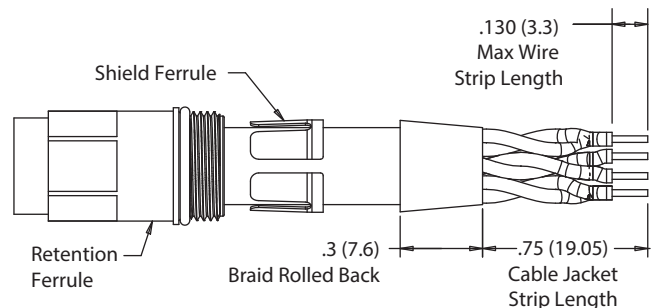


FIGURE 2

AI85082 SpeedMaster™ Assembly Instructions

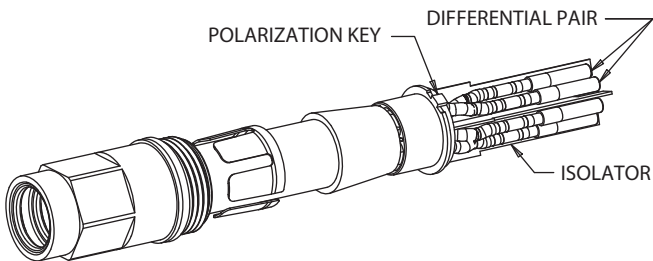
STEP 3

Maintain twist of pairs as best as possible. If needed – undo half a twist, do not over twist

- A. Crimp contacts onto each individual wire using Daniels crimp tool M22520/2-01 (Glenair P/N 809-015) and Daniels positioner K41 (Glenair P/N 80--019) for sockets, and positioner K42 (Glenair P/N 809-018) for pins.
- B. Insert each pair of wires into the appropriate quadrant on the isolator according to figure 3 for socket modules, and figure 4 for pin modules.

NOTES:

- C. Crossing of pairs is not recommended. (cables should only be terminated as pin to socket).
- D. Assembly instructions use socket module (858-100) for illustrations. Pin module (858-101) is assembled in the same fashion.



STEP 4

- A. Push the cable all the way into the isolator so the wire pairs can be spread out easily
- B. Move the wires/contacts out of the way and insert the inner insulator on the isolator. Slide the inner insulator all the way onto the isolator.
- C. Snap each pair into the appropriate position on the inner insulator. Refer to figure 2 for sockets and figure 3 for pins.

Notes:

Be sure to maintain twist of each pair as close to the insulator as possible to improve signal. Do not over twist

FIGURE 3
SOCKET MODULE PIN-OUT
FROM FRONT

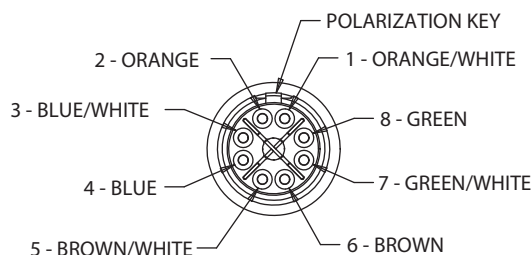


FIGURE 4
PIN MODULE PIN-OUT
FROM FRONT

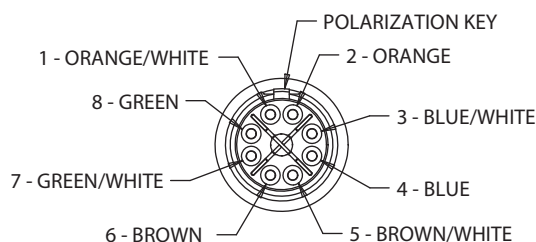
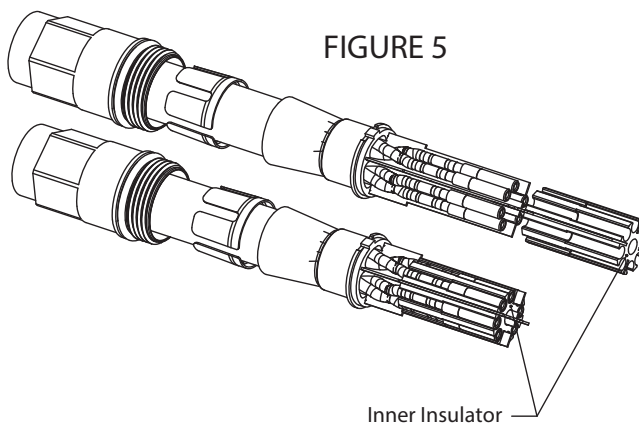


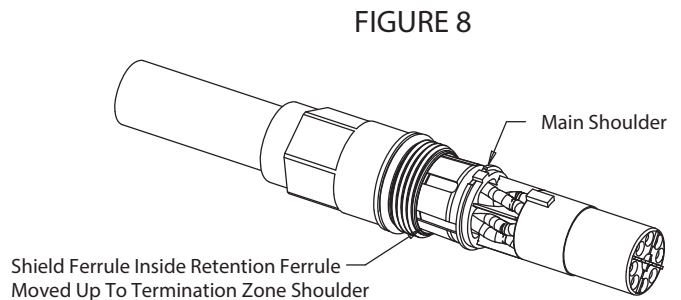
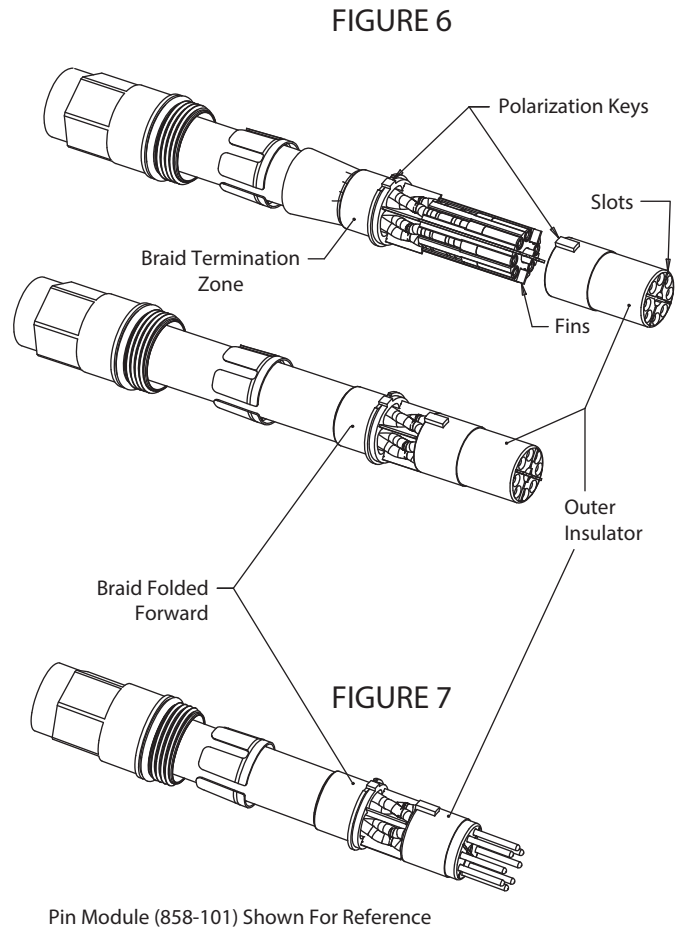
FIGURE 5



AI85082 SpeedMaster™ Assembly Instructions

STEP 5

- A. Slide outer insulator onto module assembly. Be sure to align the slots/fins and polarization keys. (Figure 6 and 7)
- B. Fold braid shield forward onto termination zone. (Figure 7)
- C. Slide thread ferrule over shield ferrule and move both to the main shoulder. (Figure 8)
- D. Trim excessive braid to behind main shoulder. (Figure 8)



AI85082 SpeedMaster™ Assembly Instructions

INSTALLATION

- A. Slide completed module into the insert cavity, making sure to align the module polarization keys with the cavity keyway. (Figure 1)
- B. Using the retention ferrule tool (Glenair P/N 607-011), and a 3/8" wrench, tighten the retention ferrule to a torque of 5 in-lb. (Figure 2)
- C. Install remaining modules in the same manner (figure 3)

Notes:

Figures 1-3 show installation into a 4 cavity female rear panel mount. For other shell types and arrangements contact factory.

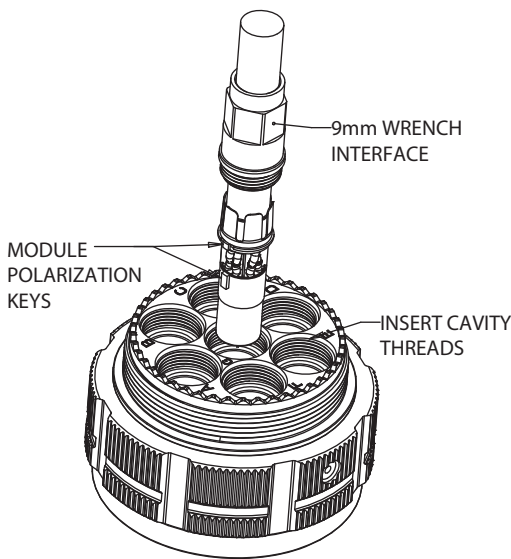


FIGURE 1

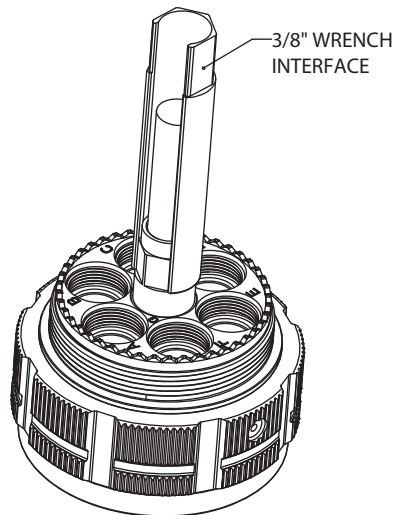


FIGURE 2

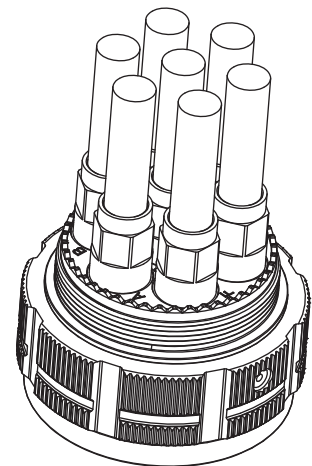
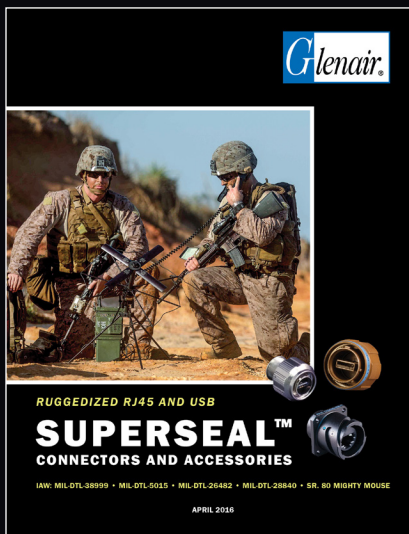


FIGURE 3

ADDITIONAL RUGGEDIZED

HIGH-SPEED DATALINK INTERCONNECTS

contacts · connectors · jumpers

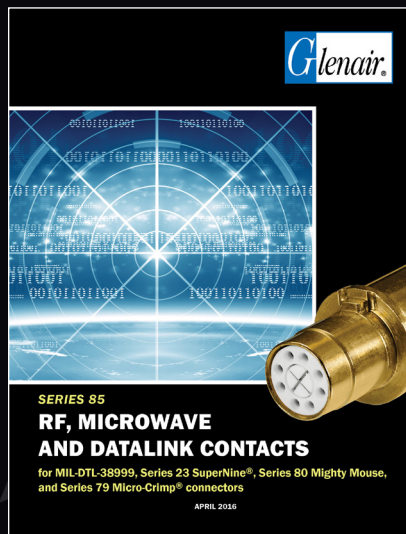


Glencair

RUGGEDIZED RJ45 AND USB
SUPERSEAL™
CONNECTORS AND ACCESSORIES

IAN: MIL-DTL-38999 • MIL-DTL-5015 • MIL-DTL-26482 • MIL-DTL-28840 • SR-80 MIGHTY MOUSE

APRIL 2016

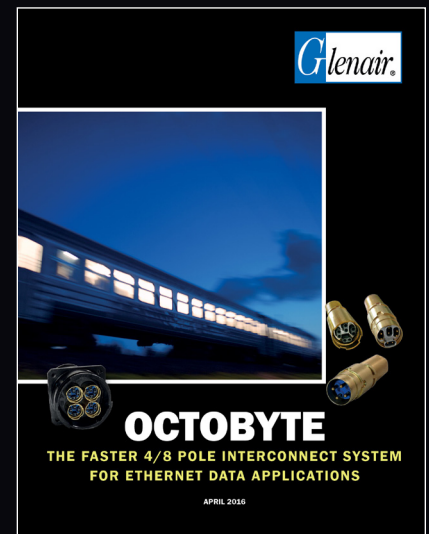


Glencair

SERIES 85
RF, MICROWAVE
AND DATALINK CONTACTS

for MIL-DTL-38999, Series 23 SuperLine®, Series 80 Mighty Mouse, and Series 79 Micro-Crimp® connectors

APRIL 2016



Glencair

OCTOBYTE
THE FASTER 4/8 POLE INTERCONNECT SYSTEM
FOR ETHERNET DATA APPLICATIONS

APRIL 2016

SUPERSEAL™ IP67 OPEN-FACE RUGGEDIZED FIELD RJ45 SOLUTIONS



MIL-DTL-38999 Sr. III type
SuperSeal™ RJ45



Series 80 Mighty Mouse
SuperSeal™ RJ45



Series IPT 26482 type
SuperSeal™ RJ45



Series ITS 5015 type
SuperSeal™ RJ45



MIL-DTL-28840 type
SuperSeal™ RJ45

SUPERSEAL™ IP67 OPEN-FACE RUGGEDIZED FIELD USB SOLUTIONS



MIL-DTL-38999 Sr. III type
SuperSeal™ USB



Series 80 Mighty Mouse
SuperSeal™ USB



Series IPT 26482 type
SuperSeal™ USB

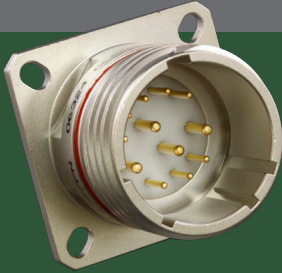


Series ITS 5015 type
SuperSeal™ USB



MIL-DTL-28840 type
SuperSeal™ USB

**SERIES 23
HERMETIC
CONNECTORS**



 **SuperNine[®]**

**DSCC qualified MIL-DTL-38999 Series III
glass-sealed hermetic connectors plus ultra-
lightweight aluminum hermetic solutions**



Features

- DSCC qualified MIL-DTL-38999 Series III glass-sealed hermetics in both pin and socket configurations
- Available sealing (helium leak rate) from $<1 \times 10^{-7}$ cc/sec to 1×10^{-10}
- No material breakdown or aging over time
- Matched and compression seal glass-to-metal technologies
- Pressure resistance to 32,000+ PSI
- Available CODE RED lightweight aluminum hermetics with low-resistance copper contacts

GLASS-SEALED
Hermetic
CONNECTORS



Glenair, Inc.
1211 Air Way
Glendale, CA 91201-2497
818-247-6000
sales@glenair.com
www.glenair.com

Product selection guide MIL-DTL-38999 Series III type

SuperNine Hermetic Connector Overview	D-2
Materials and Specifications Summary	D-4
Screening and Outgassing	D-5
Special Shielded Contact Arrangements (233-261 and 233-262 Only)	D-6
Performance Specifications	D-10

CODE RED

SuperNine Lightweight Hermetic Connectors with CODE RED Encapsulant, Overview	D-39
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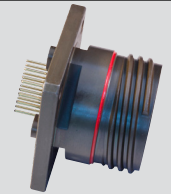
233-265 Hermetic Receptacle D-14

Jam-Nut Mount
Box Mount
Glass sealed solution with removable
socket contacts accessory threads



233-266 Solder Cup D-16

Jam-Nut Mount
Glass sealed solution with accessory thread
or banding porch



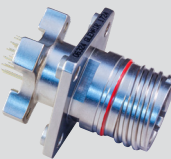
233-262 PC Tail, Receptacle D-18

Box Mount
Jam-Nut Mount, Single or Dual O-ring
Weld Mount
Shielded contacts, short threaded standoff



233-267 PC Tail, Receptacle D-22

Box Mount
Jam-Nut Mount, Single and Dual O-ring
Glass sealed solution with pin or socket
feed-thru contacts and threaded standoff



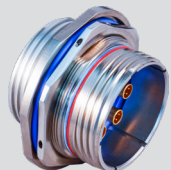
233-268 Dual Flange, PC Tail D-26

Box Mount
Jam-Nut Mount, Single and Dual O-ring
Glass sealed solution with pin or socket
feed-thru contacts and threaded standoff



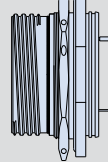
233-103 Bulkhead Feed-thru D-30

Box Mount
Jam-Nut Mount, Single and Dual O-ring
Weld Mount
Jam-Nut Mount, Gender Changer
Pin, socket, pin-pin or socket-socket



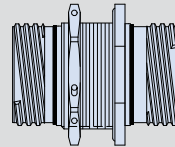
233-261 Bulkhead Feed-thru D-35

Box Mount
Jam-Nut Mount, Single and Dual O-ring
Weld Mount
Special shielded contacts



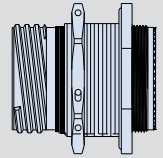
**233-250 Lightweight
Hermetic Receptacle** D-41

Jam-Nut Mount
PC tail or solder cup contacts



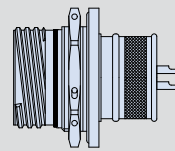
**233-251 Lightweight
Hermetic Bulkhead Feed-thru** D-42

Jam-Nut Mount



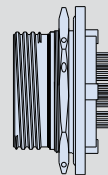
**233-252 Lightweight
Hermetic Receptacle** D-44

Jam-Nut Mount
Crimp removable contacts



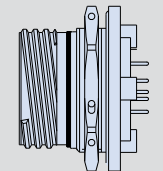
**233-253 Lightweight
Hermetic Receptacle** D-46

Jam-Nut Mount
Solder cup contacts with banding porch
and boot groove



**233-254 Lightweight
Hermetic Receptacle** D-48

Jam-Nut Mount
High-speed quadrax PC tail contacts with
standard or metric threaded standoff



**233-255 Lightweight
Hermetic Receptacle** D-50

Jam-Nut Mount
PC tail contacts with threaded standoff





SuperNine[®] Hermetic Connectors

38999 Series III type hermetic connectors with MIL-STD-1560 insert arrangements

SuperNine hermetic-class MIL-DTL-38999 type Series III connectors go beyond the standard mil-spec offerings with additional features and options. These include dual O-ring jam-nut designs, dual-flange PC tail receptacles, bulkhead feed-thrus, high-speed shielded RF contacts and removable socket contacts. Hermetically sealed connectors are ideally suited for harsh vacuum environments which must remain free of air or gas impurities or the ingress of foreign chemical substances to prevent corrosive condensation, dielectric breakdown, or the loss of insulation resistance between conductors. Typical applications include medical, geophysical, military aerospace, and industrial applications.

Glenair is unique in the interconnect industry in offering both conventional glass-sealed hermetic connector solutions as well as lightweight and low contact resistance designs. Shell styles for both types include box mount, jam-nut mount, and weld mount. MIL-DTL-38999 equivalent finishes for Y (CRES, passivated) and N (CRES, electrodeposited nickel) are available, as well as additional finish options. Contact arrangements available per MIL-STD-1560. All standard and alternate polarizations are fully supported.



Features:

- **10⁻⁷ ccHe per sec at 1 atmosphere differential**
- **Highest performance and quality**
- **Available for every standard 1560 insert arrangement**
- **High-reliability performance**
- **Gender changers**
- **Shielded RF Feed-thrus**
- **Independent keyed polarization**
- **Box mount, weld mount and jam-nut mount bulkhead feedthroughs**

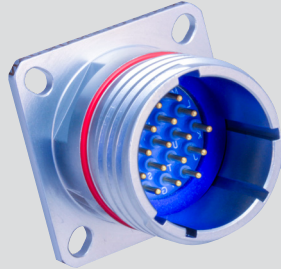
SERIES 23

SuperNine® Hermetic connectors

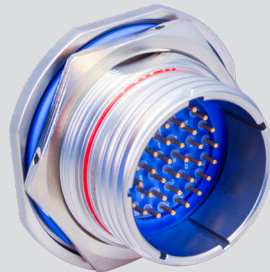


Innovative hermetic solutions MIL-DTL-38999 Series III Type

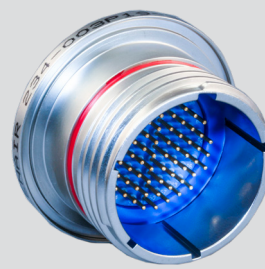
STANDARD SHELL STYLE CONFIGURATIONS



Box Mount



Jam-Nut Mount

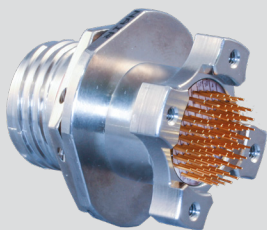


Weld Mount



Sav-Con Feed-thrus and Gender Changers

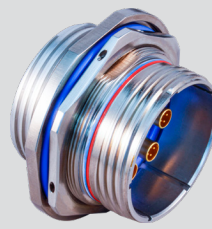
UNIQUE SUPERNINE® SOLUTIONS



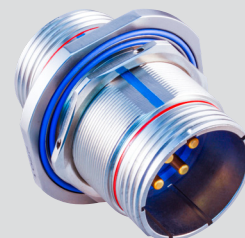
Dual Flange PC Tail



Banding Porch or Accessory Thread



Shielded RF Contact Feed-thrus



Dual O-ring Jam-Nut



CODE RED

Lightweight Hermetic Receptacle

ADDITIONAL CAPABILITIES



Crimp Removable Contacts



Custom Applications



Bulkhead Penetrators



Combo Insert Arrangements

Glenair SuperNine hermetic connectors are designed to meet or exceed military specification performance requirements. Glenair also manufactures and supplies hermetic connectors for most every military standard connector currently in use including:

- MIL-DTL-26482 Series I and II
- MIL-DTL-28840
- MIL-DTL-38999 Series I, II, III and IV
- MIL-DTL-5015
- MIL-DTL-83723 LN 29729 (SJT)
- Series 801 and 805 Mighty Mouse
- M24308 D-Subminiature
- Series 79 Micro-Crimp®
- MIL-DTL-83513 Micro-D Subminiature
- Series 28 HiPer-D® M24308 intermateable

Comprehensive materials, plating, and polarization options available

Materials and specifications summary
MIL-DTL-38999 Series III Type

SUMMARY OF MATERIALS AND SPECIFICATIONS FOR GLASS-TO-METAL HERMETICS



Standard Materials and Finishes

- Shell, barrel coupling jam nut, coupling nut – CRES/passivate or CRES/nickel plate
- Contact, pin - nickel-iron alloy/gold plate
- Contact, Socket - copper alloy/gold plate
- Insulator, pin - vitreous glass
- Insulator, socket - high-grade rigid dielectric
- Ground spring - copper alloy/gold plate
- O-rings and seals - fluorosilicone blend

Test Requirements

- DWV - per DWV Voltage Level table
- I.R. - 5 gigohms min @ 500 VDC
- Hermeticity - $<1 \times 10^{-7}$ ccHe/sec @ 1 ATM Differential

Shell Type and Sizes

- Shell Type – D38999 Series III Type, sizes 9 through 25

Hermetic Class Materials	
Shell, Barrel, Coupling and Jam Nut (Hermetic)	Stainless steel per AMS-QQ-S-763
Front and Rear Insulators	Glass-filled liquid crystal polymer (LCP) in accordance with MIL-M-24519, Type GLP-30F
Grommet, Peripheral Seal and Interfacial Seal	Blended elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988
Hermetic Insert	Vitreous glass
Pin Contact (Hermetic)	Nickel-iron alloy per ASTM F30 (Alloy 52), 50 microinches gold plated per ASTM B488 Type II Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches
Socket Contact (Hermetic)	Copper Alloy, Gold Plated IAW ASTM B488, Type II, Code C
Adhesives	Silicone and epoxy

Additional Hermetic Finishes				
Glenair	Mil-Spec	Material	Finish	Specification
Z1	Y	Stainless Steel	Passivate	AMS-QQ-P-35
ZL	N	Stainless Steel	Electrodeposited Nickel	SAE-AMS-QQ-N-290, Class 2
ZMT*	N/A	Stainless Steel	Nickel-PTFE	SAE AMS2454
ZW*	N/A	Stainless Steel	Cadmium, Olive Drab	SAE-AMS-QQ-P-416 Type II Class 2 over electroless nickel
TD*	N/A	Titanium	Titanium	ASTM B348/AMS4928

*Contact factory for specific performance restrictions

DWV Voltage Levels	
Service Rating	Voltage AC RMD 60 Hz
M	1300 VAC
I	1800 VAC
II	2300 VAC
N	1000VAC

Hermetic Leak Rate and Shell Material Mod Codes	
Designator	Required Leak Rate
-585A	1 x 10 ⁻¹⁰ cc's Helium per second
-585B	1 x 10 ⁻⁹ cc's Helium per second
-585C	1 x 10 ⁻⁸ cc's Helium per second
-185C	Changes receptacle shell/plug barrel to "Inconel 625" material (UNS N06625) per ASTM B446/SAE-AMS-5666
-185D	Changes receptacle shell/plug barrel to "Inconel X750" material (UNS N07725) per ASTM B637/SAE-AMS-5670

Class H and NASA space-grade application guidelines MIL-DTL-38999 Series III Type

NASA and Class H Screening and Outgassing Requirements

NASA requires that connectors for space flight be specially screened. NASA EEE-INST-002 standards for EEE parts are divided into 3 levels of screening for space-grade components; refer to Table II for details. For space applications, begin by selecting the desired NASA screening level and outgassing modification code from Table I. MIL-DTL-38999 specification defines TML and CVCM values for Class H space flight rated hermetic connectors. Glenair modification code 186T provides Class H outgassing equivalency for SuperNine commercial hermetic part numbers without screening.

To add a modification code append code to end of part number, for example: 233-265-H2Z117-26PN02-429C. Additional screening may be added and will appear as separate line item on customer's order.

- **“Mission critical” connectors for space flight should undergo rigorous 100% final inspection**
- **Modification codes are available to invoke special screening for both MIL-DTL-38999 and NASA applications**
- **Outgassing properties of materials used in Glenair Series 23 SuperNine® glass-seal hermetic connectors are detailed in the table below**

Screening Level	Screening Only	48 Hour Oven Bakeout +175° C	Thermal Vacuum Outgassing ²	
			24 Hour +125° C	48 Hour +175° C
NASA, Level 1 Highest Reliability	429B	429J	429C	
NASA, Level 2 High Reliability	429	429K	429A	
NASA, Level 3 Standard Reliability	Use Standard Part Number		429L	
D38999 Class H' No Screening				186T

1. Class H is **only** applicable to QPL part numbers. Mod code 186T provides equivalent outgassing processing of non-qualified parts. Additional screening available as a separate line item on the customer's purchase order. 2. Thermal vacuum of 10⁻⁶ Torr.

Inspection	Level 1	Level 2	Level 3
Visual	100%	100%	100%
Mechanical	2(0)	2(0)	
Dielectric Withstanding Voltage	2(0)	2(0)	
Insulation Resistance	2(0)	2(0)	
Contact Engagement & Separation Force	2(0)		
Hermeticity (Sealed Receptacles Only)	100%	100%	
Coupling Force	2(0)		

Required inspection quantity shown. Number in parenthesis indicates acceptance of failures allowed for all quantities inspected.

Component	Material	TML %	CVCM %	Test Reference
Front and Rear Insulator	Front: high-grade rigid dielectric Rear: Epiall®	0.84	0.0	NASA Test # GSC15435 (48 hours at 180°C)
Grommet, Peripheral Seal and Interfacial Seal	Blended fluorosilicone/silicone elastomer	0.04	0.0	Glenair test
Insulator-to-Rubber Bonding Material	RTV, per MIL-A-46146	<1.0	<0.1	Glenair Test
White Epoxy Ink for Silk-screening	Markem 7224 White	0.49	0.03	NASA Test #GSC19899

Component	Material	Notes
Shells, Coupling Nuts, Jam Nuts	Stainless Steel	Approved for Space Flight
Rigid Insulators	Glass reinforced thermoset plastic, Epiall 1908	Approved for Space Flight
Contact Retention Clip	Beryllium copper, heat-treated, unplated	Approved for Space Flight
Grommet, Peripheral Seal, Interfacial Seal, O-ring	Blended fluorosilicone/silicone elastomer	Requires outgassing processing
Pin/Socket Contact	Gold plated beryllium copper alloy	Approved for Space Flight
Socket Contact Hood	Stainless steel	Approved for Space Flight
Potting Compounds and Adhesives	RTV and epoxies	Requires outgassing processing
Hermetic Insert	Vitreous Glass	Approved for Space Flight



Special shielded contact arrangement table
MIL-DTL-38999 Series III Type

D

Arrangement No. (See Notes)	Size 22	Cont Type	Size 20	Cont Type	Size 16	Cont Type	Size 12	Cont Type	Size 8	Cont Type
11-2	---	---	---	---	2	Coax	---	---	---	---
13-4	---	---	---	---	4	Coax	---	---	---	---
15-15	---	---	14	S/P	1	Coax	---	---	---	---
15-21	17	S/P	3	S/P	---	---	1	Coax	---	---
15-97	---	---	8	S/P	4	Coax	---	---	---	---
17-2*	38	S/P	---	---	---	---	---	---	---	Twinax
17-3*	38	S/P	---	---	---	---	---	---	1	Twinax
17-6	---	---	---	---	---	---	6	Coax	---	---
17-8	---	---	---	---	8	Coax	---	---	---	---
17-11	---	---	8	S/P	---	---	3	Coax	---	---
17-99	---	---	21	S/P	2	Coax	---	N/A	---	---
19-11	---	---	---	---	11	Coax	---	---	---	---
19-19	14	S/P	---	---	---	---	---	---	4	Twinax
19-28	---	---	26	S/P	2	Coax	---	---	---	---
19-30	---	---	29	S/P	1	Coax	---	---	---	---
21-11	---	---	---	---	---	---	11	Coax	---	---
21-16	---	---	---	---	16	Coax	---	---	---	---
21-29	---	---	19	S/P	4	S/P	4	Coax	---	---
21-39	---	---	37	S/P	2	Coax	---	---	---	---
21-75**	---	---	---	---	---	---	---	---	4	Twinax
21-76**	---	---	---	---	---	---	---	---	4	Twinax
23-21	---	---	---	---	21	Coax	---	---	---	---
23-97	---	---	---	---	---	---	---	---	---	---
23-99	---	---	---	---	---	---	---	---	---	---
25-4	---	---	48	S/P	8	Coax	---	---	---	---
25-7\	97	S/P	---	---	---	---	---	---	2	Twinax
25-8+	---	---	---	---	---	---	---	---	8	Twinax
25-9\	97	S/P	---	---	---	---	---	---	2	Twinax
25-10+	---	---	---	---	---	---	---	---	8	Twinax
25-19	---	---	---	---	---	---	19	Coax	---	---
25-20^	---	---	10	S/P	13	S/P	4	Coax	3	Twinax
25-21^	---	---	10	S/P	13	S/P	4	Coax	3	Twinax
25-24	---	---	12	S/P	12	Coax	---	---	---	---
25-29	---	---	---	---	29	Coax	---	---	---	---
25-37	---	---	---	---	37	Coax	---	---	---	---
25-43	---	---	23	S/P	20	Coax	---	---	---	---
25-46@	---	---	40	S/P	4	S/P	---	---	2	Coax
25-47@	---	---	40	S/P	4	S/P	---	---	2	Coax
25-90#	---	---	40	S/P	4	S/P	---	---	2	Twinax
25-91#	---	---	40	S/P	4	S/P	---	---	2	Twinax

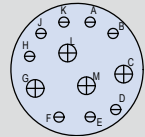
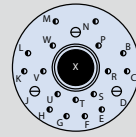
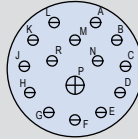
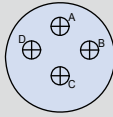
Notes

1. S/P = signal/power contacts (non-RF type).
2. Arrangements are per MIL-STD-1560, and contact types are per the standard, or specified option. #16 contacts are only available as coax. Consult factory for other contact options.
3. Arrangements marked with like symbols (I.E. 17-2* and 17-3*) are identical. Contact sealing boots are different for environmental connectors

Special shielded contact arrangements
MIL-DTL-38999 Series III Type

Contact Legend

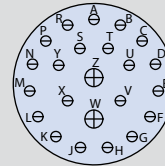
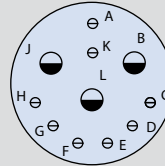
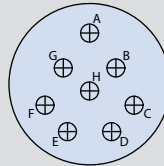
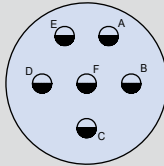
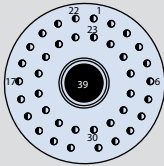
- #22D • #16 ⊕
- #20 ⊖ #12 ⊖
- #8 ●



Insert Arrangement	11-2	13-4	15-15	15-21	15-97
Contact Size	#16	#16	#16 #20	#12 #20 #22D	#16 #20
No. of Contacts	2	4	1 14	1 3 17	4 8
Service Rating	Coax	Coax	Coax I	Coax I	Coax I

Contact Legend

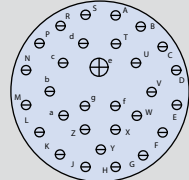
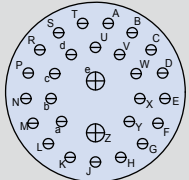
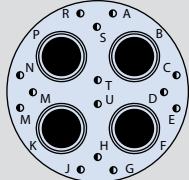
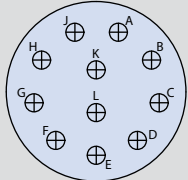
- #22D • #16 ⊕
- #20 ⊖ #12 ⊖
- #8 ●



Insert Arrangement	17-2 and 17-3	17-6	17-8	17-11	17-99
Contact Size	#22D #8	#12	#16	#12 #20	#16 #20
No. of Contacts	38 1	6	8	3 8	2 21
Service Rating	Twinax M	Coax	Coax	Coax N	Coax I

Contact Legend

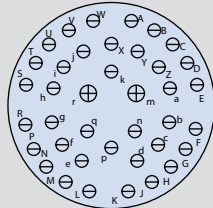
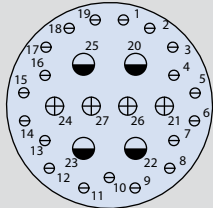
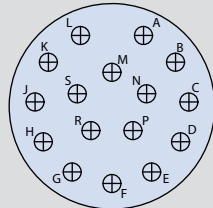
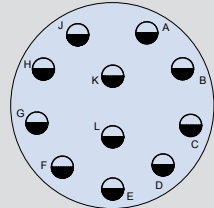
- #22D • #16 ⊕
- #20 ⊖ #12 ⊖
- #8 ●



Insert Arrangement	19-11	19-19	19-28	19-30
Contact Size	#16	#8 #22D	#16 #20	#16 #20
No. of Contacts	11	4 14	2 26	1 29
Service Rating	Coax	Twinax M	Coax I	Coax I

Contact Legend

- #22D • #16 ⊕
- #20 ⊖ #12 ⊖
- #8 ●

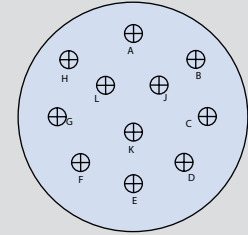
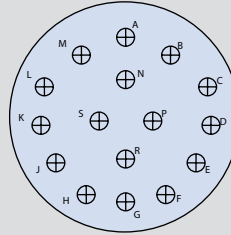
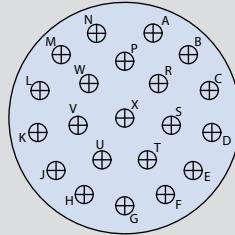
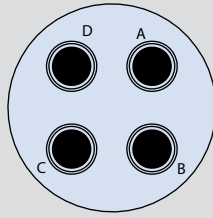


Insert Arrangement	21-11	21-16	21-29	21-39
Contact Size	#12	#16	#12 #16 #20	#16 #20
No. of Contacts	11	16	4 4 19	2 37
Service Rating	Coax	Coax	Coax I	Coax I



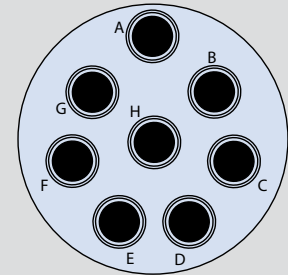
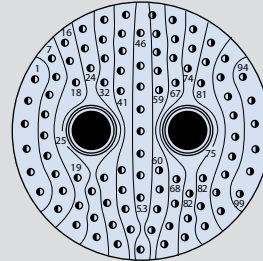
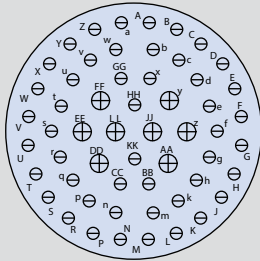
Special shielded contact arrangements MIL-STD-1560

Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ⊙
 #8 ●



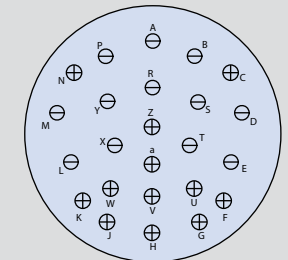
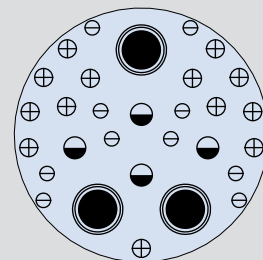
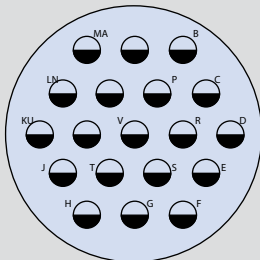
Insert Arrangement	21-75 and 21-76	23-21	23-97	23-99
Contact Size	#8	#16	#16	#16
No. of Contacts	4	21	16	11
Service Rating	Twinax	Coax	Coax	Coax

Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ⊙
 #8 ●



Insert Arrangement	25-4	25-7 and 25-9	25-8 and 25-10
Contact Size	#16 #20	#8 #22D	#8
No. of Contacts	8 48	2 97	8
Service Rating	Coax I	Twinax I	Twinax

Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ⊙
 #8 ●



Insert Arrangement	25-19	25-20 and 25-21	25-24
Contact Size	#12	#8 #12 #16 #20	#12 #16
No. of Contacts	19	3 4 13 10	12 12
Service Rating	Coax	Twinax Coax N	I Coax

D

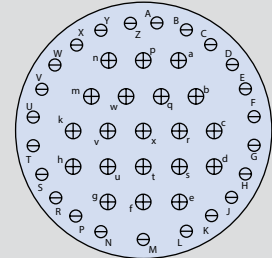
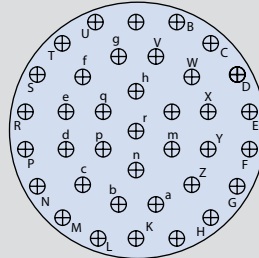
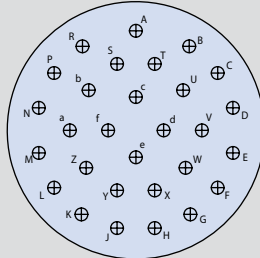
SuperNine® Hermetic connectors

Special shielded contact arrangements

MIL-STD-1560

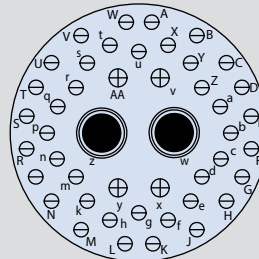
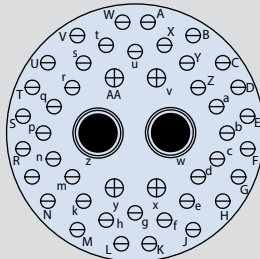


Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ⊙
 #8 ⊚



Insert Arrangement	25-29	25-37	25-43	
Contact Size	#16	#16	#16	#20
No. of Contacts	29	37	20	23
Service Rating	Coax	Coax	Coax	I

Contact Legend
 #22D • #16 ⊕
 #20 ⊖ #12 ⊙
 #8 ⊚



Insert Arrangement	25-46 and 25-47			25-90 and 25-91		
Contact Size	#8	#16	#20	#8	#16	#20
No. of Contacts	2	4	40	2	4	40
Service Rating	Coax	I		Twinax	I	





**Performance Specifications
MIL-DTL-38999 Series III Type**

Performance Specifications, IAW MIL-DTL-38999 Series III REV. M, Glenair SuperNine																																				
Test	Test Requirements																																			
Fungus	Materials used in the construction of these connectors shall be fungus inert per certification of method 508.4 of MIL-STD-810																																			
Contact Plating Thickness	Plating thickness of contacts used in hermetic connectors shall be in accordance with MIL-DTL-45204																																			
Supported Wire Size	<table border="1"> <thead> <tr> <th>Contact Size</th> <th>23-22</th> <th>22D</th> <th>20</th> <th>16</th> <th>12</th> <th>10</th> </tr> </thead> <tbody> <tr> <th>Wire Gauge</th> <td>26, 24, 22</td> <td>28, 26, 24, 22</td> <td>24, 22, 20</td> <td>20, 18, 16</td> <td>14, 12</td> <td>10</td> </tr> </tbody> </table>	Contact Size	23-22	22D	20	16	12	10	Wire Gauge	26, 24, 22	28, 26, 24, 22	24, 22, 20	20, 18, 16	14, 12	10																					
	Contact Size	23-22	22D	20	16	12	10																													
Wire Gauge	26, 24, 22	28, 26, 24, 22	24, 22, 20	20, 18, 16	14, 12	10																														
Thermal Shock	Unmated receptacles shall be subjected to 10 cycles of thermal shock																																			
Air Leakage	When tested as specified, there shall be no evidence of leakage in excess of .01 micron ft ³ /h (1E-7 cm ³ /s).																																			
Coupling and Uncoupling Torque	The coupling torque for mating and unmating of the counterpart connectors and protective covers shall meet the requirements of the table shown below.																																			
	<table border="1"> <thead> <tr> <th colspan="3">Coupling and Uncoupling Torque</th> </tr> <tr> <th rowspan="2">Shell Size</th> <th>Maximum Engagement and Disengagement</th> <th>Minimum Disengagement</th> </tr> <tr> <th>Pound inch</th> <th>Pound inch</th> </tr> </thead> <tbody> <tr> <td>9</td> <td>8</td> <td>2</td> </tr> <tr> <td>11</td> <td>12</td> <td>2</td> </tr> <tr> <td>13</td> <td>16</td> <td>2</td> </tr> <tr> <td>15</td> <td>20</td> <td>3</td> </tr> <tr> <td>17</td> <td>24</td> <td>3</td> </tr> <tr> <td>19</td> <td>28</td> <td>3</td> </tr> <tr> <td>21</td> <td>32</td> <td>5</td> </tr> <tr> <td>23</td> <td>36</td> <td>5</td> </tr> <tr> <td>25</td> <td>40</td> <td>5</td> </tr> </tbody> </table>	Coupling and Uncoupling Torque			Shell Size	Maximum Engagement and Disengagement	Minimum Disengagement	Pound inch	Pound inch	9	8	2	11	12	2	13	16	2	15	20	3	17	24	3	19	28	3	21	32	5	23	36	5	25	40	5
	Coupling and Uncoupling Torque																																			
	Shell Size	Maximum Engagement and Disengagement	Minimum Disengagement																																	
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	13	16	2																																	
	15	20	3																																	
	17	24	3																																	
19	28	3																																		
21	32	5																																		
23	36	5																																		
25	40	5																																		
Durability	No electrical or mechanical defects after 500 cycles of engagement and disengagement																																			
Insulation Resistance	At Ambient Temperature insulation resistance between any pair of contacts and between any contact and the shell shall be greater than 5,000 megohms. Insulation resistance after altitude immersion shall be 1,000 megohms minimum. Insulation resistance after humidity shall be 100 megohms minimum. IAW EIA-364-21.																																			
	At Elevated Temperature Unmated connectors shall be greater than 200 megohms when tested in accordance with test procedure EIA/ECA-364-21																																			

D

**Performance Specifications
MIL-DTL-38999 Series III Type**

Performance Specifications, IAW MIL-DTL-38999 Series III REV. M, Glenair SuperNine						
Test	Test Requirements					
Dielectric Withstanding Voltage	When tested as specified, the maximum leakage current shall be 2 milliamperes, and there shall be no evidence of electric breakdown or flashover. The magnitude of the test voltage shall be as specified below (see MIL-STD-1560 for service rating of insert arrangement)					
	Test Voltages, AC RMS, 60 Hz					
	Altitude	Service Rating M	Service Rating N	Service Rating I	Service Rating II	
	Sea level	1300	1000	1800	2300	
	50,000 feet	550	400	600	800	
	70,000 feet	350	260	400	500	
	100,000 feet	200	200	200	200	
Insert Retention	Unmated connectors shall retain their inserts in their proper location in the shell and there shall be no evidence of cracking, breaking, separation from the shell, or loosening of parts when subjected to 100 psi with a 25 psi minimum force.					
Salt Spray (Corrosion)	When tested in accordance with EIA-364-26, meets appropriate electrical and mechanical requirements and shows no exposure of base metal after 500 hours of salt spray					
Contact Resistance at 25° C	Contacts in the mated condition shall meet the contact resistance requirements of the table shown below. Appropriate compensation may be made for resistance in the measured value which is due to an additional length of wire included in the measurement.					
	Class	Contact Size	Wire Size	Test Amperes	Millivolt Drop Maximum	
					Initial	After Conditioning
	H, N and Y	12	12	17	85	100
		16	16	10	85	100
		20	20	5	60	75
22D		22	3	85	95	
23-22		22	3	85	95	
Contact Retention	The axial displacement of the contact shall not exceed .012 inch (0.30 mm). No damage to contacts or inserts shall result.					
Vibration	There shall be no electrical discontinuity and there shall be no disengagement of the mated connectors, backing off of the coupling mechanism, evidence of cracking, breaking, or loosening of parts.					
Shock	There shall be no electrical discontinuity and there shall be no disengagement of mated connectors, evidence of cracking, breaking, or loosening of parts Standard shock (all series). Connectors shall be tested in accordance with test procedure EIA-364-27 and any additional details noted. High-impact shock. Applicable to series I, III and IV only. Wired and mated connectors shall be tested in accordance with MIL-S-901, grade A and in accordance with any modifications or additions noted. The wire bundle shall be provided with a straight, environmental, backshell, category 2B in accordance with SAE-AS85049, the longest length available per shell size. Discontinuity monitoring shall be performed in accordance with EIA-364-46.					



**Performance specifications
MIL-DTL-38999 Series III Type**

Performance Specifications, IAW MIL-DTL-38999 Series III REV. M, Glenair SuperNine					
Test	Test Requirements				
EMI Ground Spring Forces	The forces necessary to engage and separate EMI plugs with receptacle shells shall be within the values specified in the table shown below:				
	Axial force for Series III				
		Maximum	Minimum	Maximum	Minimum
	Shell size	Pounds	Newtons	Pounds	Newton
	8/9	25	111	0.5	2
	10/11	25	111	0.5	2
	12/13	30	133	0.5	2
	14/15	30	133	0.5	2
	16/17	35	156	0.5	2
	18/19	35	156	0.5	2
	20/21	35	156	0.5	2
22/23	35	156	0.5	2	
24/25	35	156	0.5	2	
EMI Shielding	Effective over a range of 100 MHz to 10 GHz with a minimum 50dB effectiveness at 10GHz, in accordance with test method EIA-364-10				
	Frequency MHz	Leakage Attenuation (dB) Minimum Series III & IV (Class H & Y)			
	100	80			
	200	75			
	300	73			
	400	71			
	800	66			
	1,000	65			
	1,500	59			
	2,000	55			
	3,000	52			
	4,000	50			
6,000	48				
10,000	45				
Fluid Immersion	Designed to function in all fluids encountered in any modern military or aerospace environment. Tested in accordance with test procedure EIA-364-10. Connectors shall be tested for coupling torque and dielectric withstanding voltage at sea level within 3 hours of fluid immersion cycles.				
Contact Engagement and Separating Forces	Contact engagement and separating forces shall be within the limits, applicable to hermetically sealed connectors with sockets only. As specified in SAE-AS39029.				
Resistance to Probe Damage	Contacts shall withstand the bending moment and depth of test probe insertion without evidence of damage that would interfere with the mechanical or electrical performance.				

D



**Performance specifications
MIL-DTL-38999 Series III Type**

MIL-DTL-38999 Contact Materials and Specifications		
Component	Material	Notes
Pin Contact, Hermetic	Nickel-iron alloy per ASTM F30 (Alloy 52), 50 microinches gold plated per ASTM B488 Type II Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches	Ferromagnetic material.
Socket Contact	Beryllium copper alloy per ASTM B197, 50 microinches gold plated per ASTM B488 Type II Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches.	Approved for Space Flight
Socket Contact Hood	Stainless steel, passivated per AMS-QQ-P-35	Approved for Space Flight

COAX, TWINAX AND QUADRAX CONTACT PERFORMANCE

Contact Performance	
Size and Type	Frequency
16 Coax	up to - 500 Mhz
12 Coax	up to - 2 GHz
8 Coax	up to - 1 GHz
8 Twinax (Conc.)	up to - 20 MHz
8 Quadrax	up to - 1 GHz

Contact performance varies and is dependent on wire type and contact selection. Due to the wide selection of wire and contact combinations available, Glenair recommends contacting the factory regarding your specific application and setup.



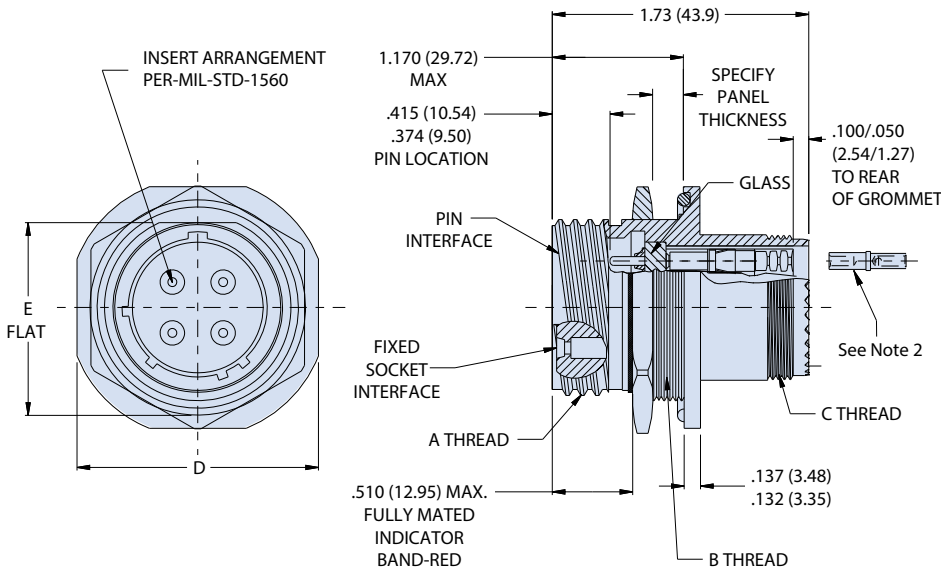
233-265 Receptacles with removable crimp contacts

MIL-DTL-38999 Series III

Part Number Development									
Sample Part Number	233-265			-H2	Z1	17-26	P	N	02
Series / Basic Part No.	Series 23 SuperNine Hermetic								
Connector Style	H2 = Box Mount H7 = Jam-Nut Mount								
Finish*	Z1 = CRES, Passivated ZL = CRES, Nickel Finish								
Shell Size/Insert Arrangement*	Per MIL-DTL-38999/MIL-STD-1560								
Contact Style	P = Pin S = Socket								
Polarization*	A, B, C, D, E, N = Normal								
Panel Thickness	01 = .200 inches max 02 = .375 inches max; for jam-nut (H7) version only, omit for box mount (H2) connector								

*Refer to Section A for complete details, consult factory for additional options
Modification codes may be added directly to the end of any valid part number

233-265-H7 JAM NUT RECEPTACLE



Material/finish:

- Shell and jam-nut (H7 only): 300 series CRES/per part number development
- Contacts, pin: alloy 52/gold plated
- Contacts, socket: copper alloy/gold plated
- Insulator: fused vitreous glass/N.A.
- Insulator: high grade rigid dielectric/N.A.
- Seals: fluorosilicone/N.A

NOTES

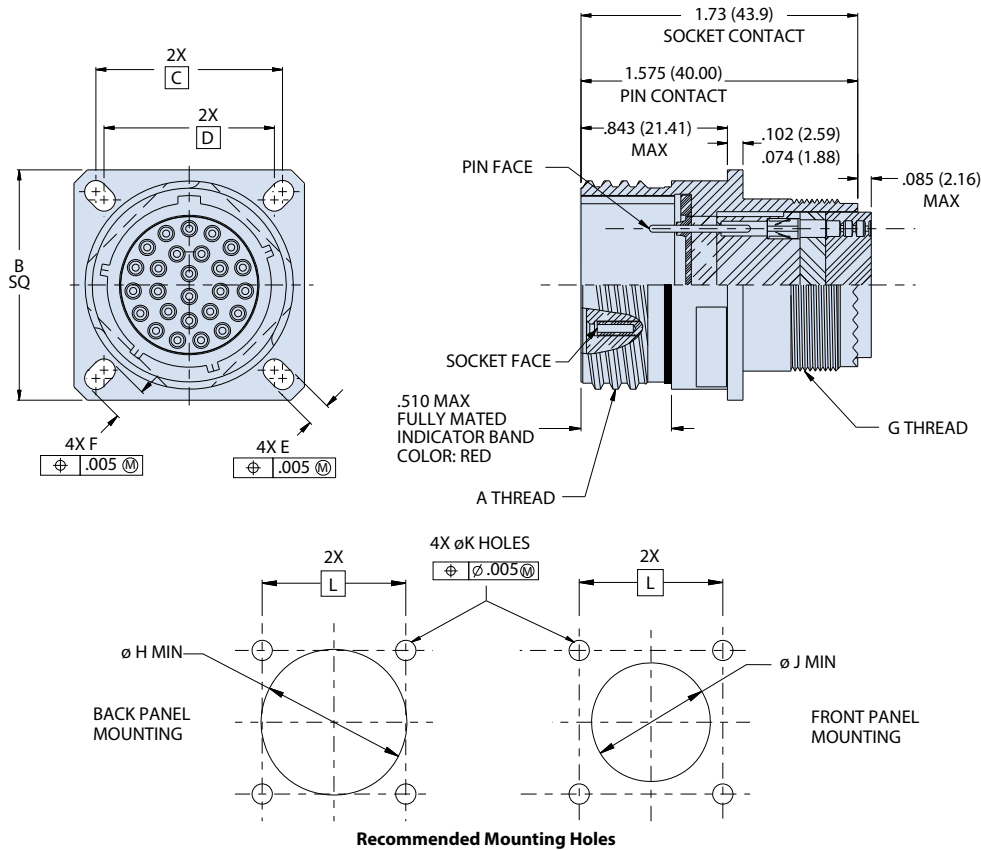
1. Hermeticity: 1×10^{-7} ccHe/sec @ 1 ATM, delta pressure
2. Crimp removable socket contacts to conform to M39029/57-359 (size 12) M39029/57-358 (size 16), M39029/57-357 (size 20) and M39029/57-354 (size 22D) contacts required to fully populate rear, plus spares as required by mil-spec, are shipped loose with the connector.

Dimensions								
SHELL SIZE	SHELL SIZE CODE	A - THREAD	B - THREAD	C THREAD	D ±0.016	E +.004 -0.006	PANEL THICKNESS 01 MAX	PANEL THICKNESS 02 MAX
9	A	.6250-1P3L-TS-2A	M17X1-6g 0.100R	M12X1-6g 0.100R	1.062 (26.97)	0.651 (16.54)	0.200 (5.08)	0.375 (9.52)
11	B	.7500-1P3L-TS-2A	M20X1-6g 0.100R	M15X1-6g 0.100R	1.252 (31.80)	0.751 (19.08)		
13	C	.8750-1P3L-TS-2A	M25X1-6g 0.100R	M18X1-6g 0.100R	1.374 (34.90)	0.938 (23.83)		
15	D	1.000-1P3L-TS-2A	M28X1-6g 0.100R	M22X1-6g 0.100R	1.500 (38.10)	1.062 (26.97)		
17	E	1.1875-1P3L-TS-2A	M32X1-6g 0.100R	M25X1-6g 0.100R	1.626 (41.30)	1.187 (30.15)		
19	F	1.250-1P3L-TS-2A	M35X1-6g 0.100R	M28X1-6g 0.100R	1.811 (46.00)	1.312 (33.32)		
21	G	1.375-1P3L-TS-2A	M38X1-6g 0.100R	M31X1-6g 0.100R	1.937 (49.20)	1.437 (36.50)		
23	H	1.500-1P3L-TS-2A	M41X1-6g 0.100R	M34X1-6g 0.100R	2.063 (52.40)	1.562 (39.67)		
25	J	1.625-1P3L-TS-2A	M44X1-6g 0.100R	M37X1-6g 0.100R	2.189 (55.60)	1.687 (42.85)		

233-265 Receptacles with removable crimp contacts

MIL-DTL-38999 Series III

233-265-H2 BOX MOUNT RECEPTACLE



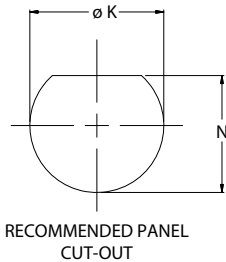
Recommended Mounting Holes

Dimensions												
SHELL SIZE CODE	SHELL SIZE	A THREAD	B SQ	C BSC	D BSC	E	F	G THREAD	ØH MIN	ØJ MIN	ØK HOLES	L BSC
A	9	.6250-1P-3L-TS-2A	.949 (24.10) .925 (23.50)	.719 (18.26)	.594 (15.09)	.136 (3.45) .120 (3.05)	.224 (5.69) .208 (5.28)	M12 X 1.0-6g .100R	.656 (16.66)	.516 (13.11)	.133 (3.38) .123 (3.12)	.719 (18.26)
B	11	.7500-1P-3L-TS-2A	1.043 (26.49) 1.019 (25.88)	.812 (20.62)	.719 (18.26)		.202 (5.13) .186 (4.72)	M15 X 1.0-6g .100R	.796 (20.22)	.625 (15.88)		.812 (20.62)
C	13	.8750-1P-3L-TS-2A	1.138 (28.91) 1.114 (28.30)	.906 (23.01)	.812 (20.62)		.181 (4.60) .165 (4.19)	M18 X 1.0-6g .100R	.922 (23.42)	.750 (19.05)		.906 (23.01)
D	15	1.0000-1P-3L-TS-2A	1.232 (31.29) 1.208 (30.68)	.969 (24.61)	.906 (23.01)		.202 (5.13) .186 (4.72)	M22 X 1.0-6g .100R	1.047 (26.59)	.906 (23.01)		.969 (24.61)
E	17	1.1875-1P-3L-TS-2A	1.323 (33.60) 1.299 (32.99)	1.062 (26.97)	.969 (24.61)		.202 (5.13) .186 (4.72)	M25 X 1.0-6g .100R	1.219 (30.96)	1.016 (25.81)		1.062 (26.97)
F	19	1.2500-1P-3L-TS-2A	1.449 (36.80) 1.425 (36.20)	1.156 (29.36)	1.062 (26.97)		.250 (6.35) .234 (5.94)	M28 X 1.0-6g .100R	1.297 (32.94)	1.141 (28.98)		1.156 (29.36)
G	21	1.3750-1P-3L-TS-2A	1.575 (40.00) 1.551 (39.40)	1.250 (31.75)	1.156 (29.36)		.162 (4.11)	M31 X 1.0-6g .100R	1.422 (36.12)	1.266 (32.16)		1.250 (31.75)
H	23	1.5000-1P-3L-TS-2A	1.701 (43.21) 1.677 (42.60)	1.375 (34.92)	1.250 (31.75)	.250 (6.35) .234 (5.94)	M34 X 1.0-6g .100R	1.547 (39.29)	1.375 (34.92)	.159 (4.04) .149 (3.78)	1.375 (34.92)	
J	25	1.6250-1P-3L-TS-2A	1.823 (46.30) 1.799 (45.69)	1.500 (38.10)	1.375 (34.92)	.146 (3.71)	M37 X 1.0-6g .100R	1.672 (42.47)	1.484 (37.69)	.155 (3.94) .145 (3.68)	1.500 (38.10)	

233-266 Receptacle with accessory thread or banding porch MIL-DTL-38999 Series III

Part Number Development					
Sample Part Number	233-266	-H7	Z1	9-35	P N
Series / Basic Part No.	Series 23 SuperNine Hermetic				
Connector Style	H7 = Jam-Nut Mount with Accessory Thread 07 = Jam-Nut Mount with Single Band, Banding Porch				
Finish*	Z1 = CRES, Passivated ZL = CRES, Nickel Finish				
Shell Size/Insert Arrangement*	Per MIL-DTL-38999/MIL-STD-1560				
Contact Style	P = Pin, Solder Cup X = Pin, Eyelet S = Socket, Solder Cup Z = Socket, Eyelet				
Polarization*	A, B, C, D, E, N = Normal				

***Refer to Section A for complete details, consult factory for additional options**
Modification codes may be added directly to the end of any valid part number



D

Jam-Nut Panel Cut-Out Dimensions			
SHELL SIZE CODE	SHELL SIZE	K DIA	N
A	9	.703 (17.86)	.661 (16.79)
		.693 (17.60)	.655 (16.64)
B	11	.835 (21.21)	.771 (19.58)
		.825 (20.96)	.761 (19.33)
C	13	1.020 (25.91)	.955 (24.26)
		1.010 (25.65)	.945 (24.00)
D	15	1.145 (29.08)	1.085 (27.56)
		1.135 (28.83)	1.075 (27.30)
E	17	1.270 (32.26)	1.210 (30.73)
		1.260 (32.00)	1.200 (30.48)
F	19	1.395 (35.43)	1.335 (33.91)
		1.385 (35.18)	1.325 (33.65)
G	21	1.520 (38.61)	1.460 (37.08)
		1.510 (38.35)	1.450 (36.83)
H	23	1.645 (41.78)	1.585 (40.26)
		1.635 (41.53)	1.575 (40.00)
J	25	1.770 (44.96)	1.710 (43.43)
		1.760 (44.70)	1.700 (43.18)

Band Platform Dimensions			
SHELL SIZE CODE	SHELL SIZE	øFF	øGG
A	9	.475 (12.07)	.538 (13.67)
B	11	.600 (15.24)	.662 (16.81)
C	13	.700 (17.78)	.762 (19.35)
D	15	.835 (21.21)	.898 (22.81)
E	17	.960 (24.38)	1.022 (25.96)
F	19	1.062 (26.97)	1.125 (28.58)
G	21	1.188 (30.18)	1.250 (31.75)
H	23	1.275 (32.39)	1.338 (33.99)
J	25	1.475 (37.47)	1.538 (39.07)

Material/finish:

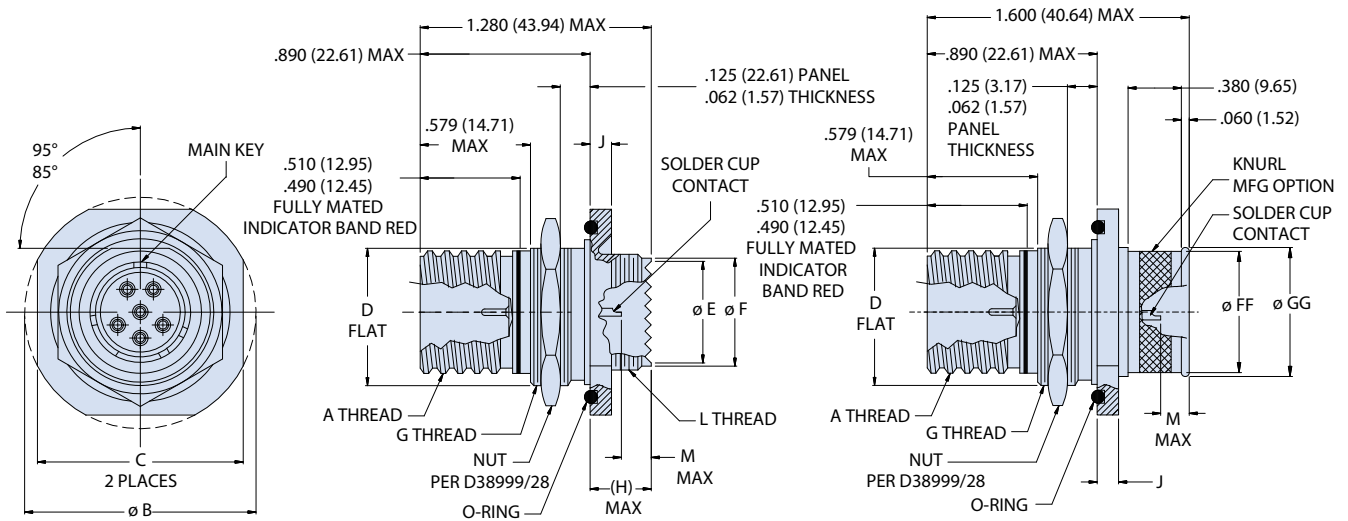
- Shell and jam-nut: 300 series CRES per part number development
- Contacts: nickel iron alloy 52/gold plated
- Insulator, hermetic: fused vitreous glass/N.A.
- Insulator, socket: high grade rigid dielectric/N.A.
- O-ring and Seals: fluorosilicone/N.A

NOTES

1. Hermeticity: 1×10^{-7} ccHe/sec @ 1 ATM, delta pressure
2. Glenair 233-266-H7 and 233-266-07 receptacle connector is designed to mate with any QPL manufacturer's MIL-DTL-38999 series III plug connector having the same insert arrangement, polarization, and opposite contact gender.

233-266 Receptacle with accessory thread or banding porch MIL-DTL-38999 Series III

233-266-H7 JAM-NUT RECEPTACLE



H7 - JAM NUT WITH ACCESSORY THREADS

07 - JAM NUT WITH SINGLE BAND

Dimensions											
SHELL SIZE CODE/ SHELL SIZE REF	A THREAD -0.1P-0.03L-TS	B DIA	C A/F	D FLAT	E DIA MAX	F DIA	ISO METRIC	H MAX	J	L THREAD ISO METRIC	M MAX
a/9	.6250	1.200 (30.48) 1.177 (29.90)	1.078 (27.38) 1.047 (26.59)	.654 (16.61) .645 (16.38)	.346 (8.79)	.416 (10.57) .410 (10.41)	M17 X 1-6g 0.100R	.390 (9.91)	.122 (3.10) .083 (2.11)	M12 X 1-6g 0.100R	.200 (5.08)
11/B	.7500	1.385 (35.18) 1.362 (34.59)	1.267 (32.18) 1.236 (31.39)	.754 (19.15) .745 (18.92)	.475 (12.07)	.534 (13.56) .528 (13.41)	M20 X 1-6g 0.100R	.390 (9.91)		M15 X 1-6g 0.100R	.200 (5.08)
13/C	.8750	1.511 (38.38) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.941 (23.90) .932 (23.67)	.589 (14.96)	.653 (16.59) .647 (16.43)	M25 X 1-6g 0.100R	.390 (9.91)		M18 X 1-6g 0.100R	.200 (5.08)
15/D	1.0000	1.637 (41.58) 1.614 (41.00)	1.515 (38.48) 1.484 (37.69)	1.065 (27.05) 1.056 (26.82)	.714 (18.14)	.810 (20.57) .804 (20.42)	M28 X 1-6g 0.100R	.390 (9.91)		M22 X 1-6g 0.100R	.200 (5.08)
17/E	1.1875	1.763 (44.78) 1.740 (44.20)	1.641 (41.68) 1.610 (40.89)	1.190 (30.23) 1.181 (30.00)	.839 (21.31)	.928 (23.57) .922 (23.42)	M32 X 1-6g 0.100R	.390 (9.91)		M25 X 1-6g 0.100R	.200 (5.08)
19/F	1.2500	1.949 (49.50) 1.925 (48.90)	1.826 (46.38) 1.795 (45.59)	1.315 (33.40) 1.306 (33.17)	.945 (24.00)	1.046 (26.57) 1.040 (26.42)	M35 X 1-6g 0.100R	.390 (9.91)		M28 X 1-6g 0.100R	.200 (5.08)
21/G	1.3750	2.075 (52.71) 2.051 (52.10)	1.952 (49.58) 1.921 (48.79)	1.440 (36.58) 1.431 (36.35)	1.070 (27.18)	1.164 (29.57) 1.158 (29.41)	M38 X 1-6g 0.100R	.390 (9.91)	.153 (3.89)	M31 X 1-6g 0.100R	.200 (5.08)
23H	1.5000	2.200 (55.88) 2.177 (55.30)	2.078 (52.78) 2.047 (51.99)	1.565 (39.75) 1.556 (39.52)	1.194 (30.33)	1.282 (32.56) 1.276 (32.41)	M41 X 1-6g 0.100R	.390 (9.91)	.114 (2.90)	M34 X 1-6g 0.100R	.200 (5.08)
25/J	1.6250	2.323 (59.00) 2.299 (58.39)	2.204 (55.98) 2.173 (55.19)	1.690 (42.93) 1.681 (42.70)	1.320 (33.53)	1.400 (35.56) 1.394 (35.41)	M44 X 1-6g 0.100R	.390 (9.91)		M37 X 1-6g 0.100R	.200 (5.08)

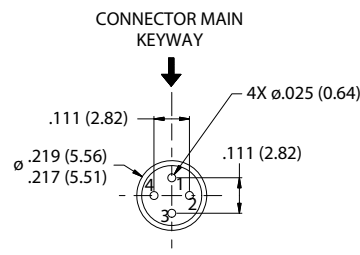
233-262 PC tail receptacles with shielded contacts MIL-DTL-38999 Series III

Part Number Development										
Sample Part Number	233-262			-H2	Z1	17	Q	-02	S	N
Series / Basic Part No.	Series 23 SuperNine Hermetic									
Connector Style	H2 = Box Mount H7 = Jam-Nut, Mount DH7 = Dual O-ring Jam-Nut Mount H8 = Weld Mount									
Finish*	Z1 = CRES, Passivated ZL = CRES, Nickel Finish									
Shell Size*	Per MIL-STD-1560. See also special RF contact shell size/contact arrangements beginning on page D-6.									
RF Contact	C = Coax (see note 4) Q = Quadrax T = Concentric Twinax, size #8 only (see note 3)									
Insert Arrangement*	Per MIL-STD-1560. See also special RF contact shell size/contact arrangements beginning on page 8.									
Contact Style	P = Pin, PC Tail S = Socket, PC Tail									
Polarization*	A, B, C, D, E, N = Normal									

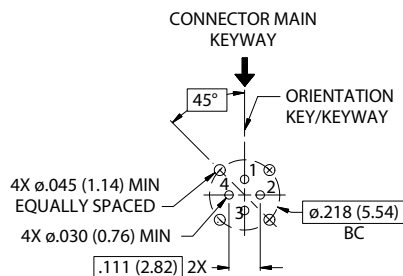
***Refer to Section A for complete details, consult factory for additional options**
Modification codes may be added directly to the end of any valid part number

233-262 HIGH-SPEED / RF SHIELDED CONTACT, PCB FOOTPRINTS

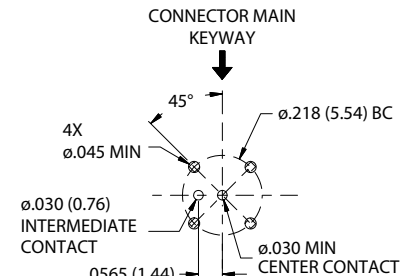
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**QUADRAX PIN INTERFACE
(CAVITY ID REFERENCE ONLY)
FOR 100 OHM NOMINAL IMPEDANCE**



**RECOMMENDED QUADRAX
PC BOARD LAYOUT
(PIN ID SHOWN)**



**RECOMMENDED
TWINAX PCB LAYOUT**

Contact Performance	
SIZE & TYPE	FREQ., MAX
16 Coax	500 MHz
8 Coax	1 GHz
8 Twinax (Conc.)	20 MHz
8 Quadrax	1 GHz

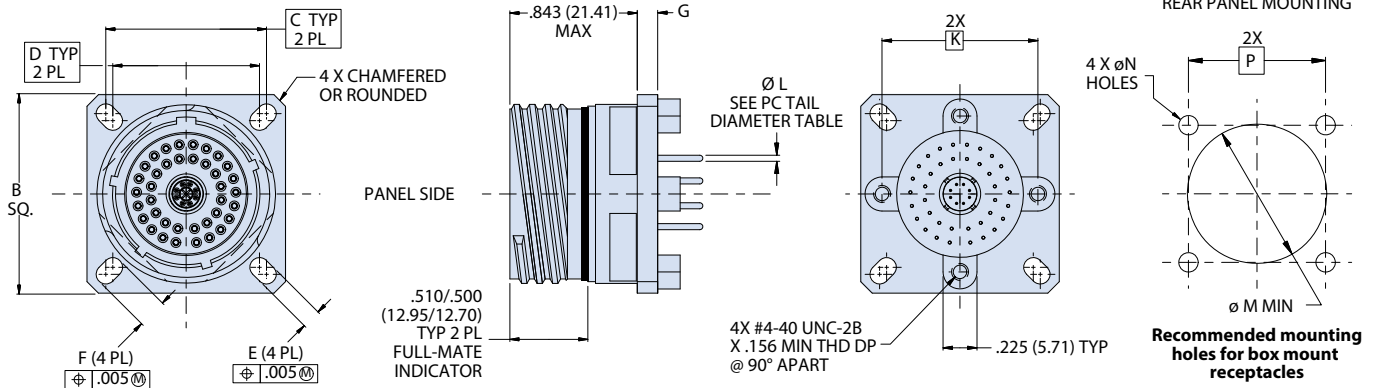
PC Tail Diameter	
CONTACT SIZE	PC TAIL ØL
No 22	.020 (0.51)/.018 (0.46)
No 20	.030 (0.76)/.028 (0.71)
No 16	.040 (1.02)/.038 (0.97)
No 12	.072 (1.83)/.070 (1.78)
No 8	.182 (4.62)/.178 (4.52)

Material/finish:

- Shell and jam-nut (H7 and DH7 only): 300 series CRES per part number development
- Contacts, pin: nickel-iron and nickel alloy/gold plate
- Contacts, socket: copper alloy/gold plate
- Hoods, sockets: CRES/passivate
- Insulator, hermetic: full glass/N.A.
- Insulator, socket: rigid dielectric/N.A.
- Seals: fluorosilicone blend elastomer/ N.A.

233-262 PC tail receptacles with shielded contacts MIL-DTL-38999 Series III

233-262-H2 BOX MOUNT RECEPTACLE



Box Mount Receptacle Dimensions

SHELL SIZE	A THREAD	B SQ	C BSC	D BSC	E	F	G	K BSC
9	.6250-1P-3L-TS-2A	.949 (24.10) .925 (23.50)	.719 (18.26)	.594 (15.09)	.136 (3.45) .120 (3.05)	.224 (5.69) .208 (5.28)	.122 (3.10) .083 (2.11)	.594 (15.09)
11	.7500-1P-3L-TS-2A	1.043 (26.49) 1.019 (25.88)	.812 (20.62)	.719 (18.26)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)		.719 (18.26)
13	.8750-1P-3L-TS-2A	1.138 (28.91) 1.114 (28.30)	.906 (23.01)	.812 (20.62)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)		.812 (20.62)
15	1.0000-1P-3L-TS-2A	1.232 (31.29) 1.208 (30.68)	.969 (24.61)	.906 (23.01)	.136 (3.45) .120 (3.05)	.181 (4.60) .165 (4.19)		.906 (23.01)
17	1.1875-1P-3L-TS-2A	1.323 (33.60) 1.299 (32.99)	1.062 (26.97)	.969 (24.61)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)	.153 (3.89) .114 (2.90)	1.030 (26.16)
19	1.2500-1P-3L-TS-2A	1.449 (36.80) 1.425 (36.20)	1.156 (29.36)	1.062 (26.97)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)		1.150 (29.21)
21	1.3750-1P-3L-TS-2A	1.575 (40.00) 1.551 (39.40)	1.250 (31.75)	1.156 (29.36)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)		1.221 (31.01)
23	1.5000-1P-3L-TS-2A	1.701 (43.21) 1.677 (42.60)	1.375 (34.92)	1.250 (31.75)	.162 (4.11) .146 (3.71)	.250 (6.35) .234 (5.94)		1.360 (34.54)
25	1.6250-1P-3L-TS-2A	1.823 (46.30) 1.799 (45.69)	1.500 (38.10)	1.375 (34.92)	.162 (4.11) .146 (3.71)	.250 (6.35) .234 (5.94)		1.475 (37.47)

Box Mount, Mounting Hole Dimensions

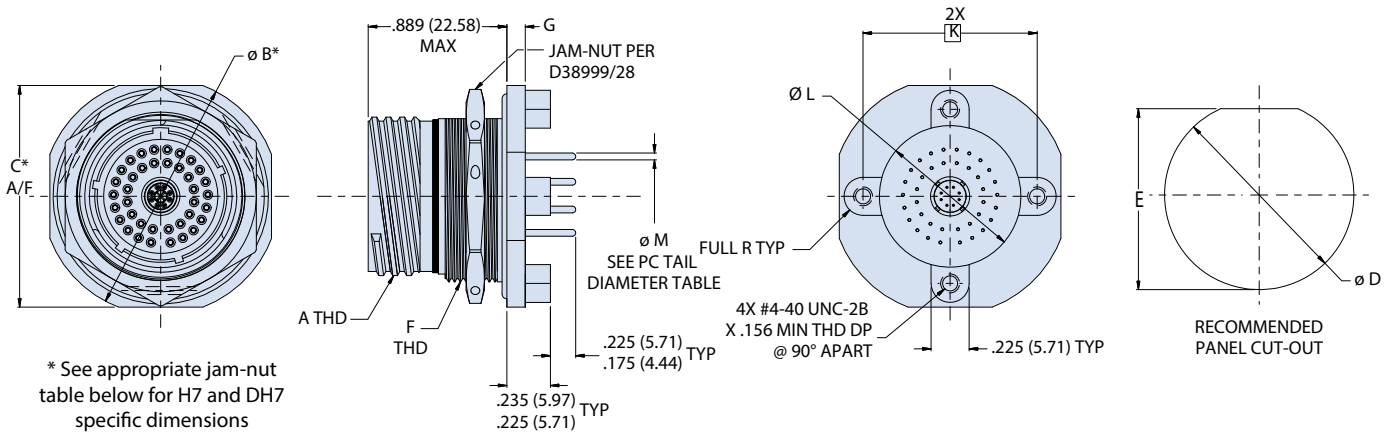
SHELL SIZE	ϕM MIN	ϕN HOLES	P BSC	SHELL SIZE	ϕM MIN	ϕN HOLES	P BSC	SHELL SIZE	ϕM MIN	ϕN HOLES	P BSC
9	.656 (16.66)	.133 (3.38)	.724 (18.39)	15	1.047 (26.59)	.133 (3.38)	.973 (24.71)	21	1.421 (36.09)	.133 (3.38)	1.255 (31.88)
		.123 (3.12)	.714 (18.14)			.123 (3.12)	.963 (24.46)			.123 (3.12)	1.245 (31.62)
11	.781 (19.84)	.133 (3.38)	.817 (20.75)	17	1.218 (30.94)	.133 (3.38)	1.067 (27.10)	23	1.546 (39.27)	.159 (4.04)	1.380 (35.05)
		.123 (3.12)	.807 (20.50)			.123 (3.12)	1.057 (26.85)			.149 (3.78)	1.370 (34.80)
13	.921 (23.39)	.133 (3.38)	.911 (23.14)	19	1.296 (32.92)	.133 (3.38)	1.161 (29.49)	25	1.672 (42.47)	.159 (4.04)	1.505 (38.23)
		.123 (3.12)	.901 (22.89)			.123 (3.12)	1.151 (29.24)			1.495 (37.97)	1.495 (37.97)

NOTES

- Hermeticity: $<1 \times 10^{-7}$ ccHe/sec @ 1 ATM, delta pressure
- Insert arrangements per MIL-STD-1560
- See page B-8 "Standard 1560 RF Contact Arrangements". Arrangements are per MIL-STD-1560, and contact types are per the standard, or specified option. Where there are #12 and #8 in the arrangement, the options are #8 only. Size #16 are only available as coax. Consult factory for other contact options
- Coax contact mating interfaces shall be in accordance with the following:
 - Size #16 per M39029/76 and /77
 - Size #12 per M39029/102 and /103
 - Size #8 per M39029/59 and /60

233-262 PC tail receptacles with shielded contacts
MIL-DTL-38999 Series III

233-262-H7 JAM-NUT MOUNT RECEPTACLE AND
233-262-DH7 JAM-NUT MOUNT DUAL O-RING RECEPTACLE



Jam-Nut Dimensions					
SHELL SIZE	A THREAD .1P-.3L-TS-2A	F THREAD METRIC 0.100R	G	Ø L	K BSC
9	.6250	M17 X 1.0-6g	.122 (3.10) .083 (2.11)	.340 (8.64)	.594 (15.09)
11	.7500	M20 X 1.0-6g		.468 (11.89)	.719 (18.26)
13	.8750	M25 X 1.0-6g		.572 (14.53)	.812 (20.62)
15	1.0000	M28 X 1.0-6g		.705 (17.91)	.906 (23.01)
17	1.1875	M32 X 1.0-6g		.830 (21.08)	1.030 (26.16)
19	1.2500	M35 X 1.0-6g		.934 (23.72)	1.150 (29.21)
21	1.3750	M38 X 1.0-6g	.153 (3.89) .114 (2.90)	1.055 (26.80)	1.221 (31.01)
23	1.5000	M41 X 1.0-6g		1.160 (29.46)	1.360 (34.54)
25	1.6250	M44 X 1.0-6g		1.307 (33.20)	1.475 (37.47)

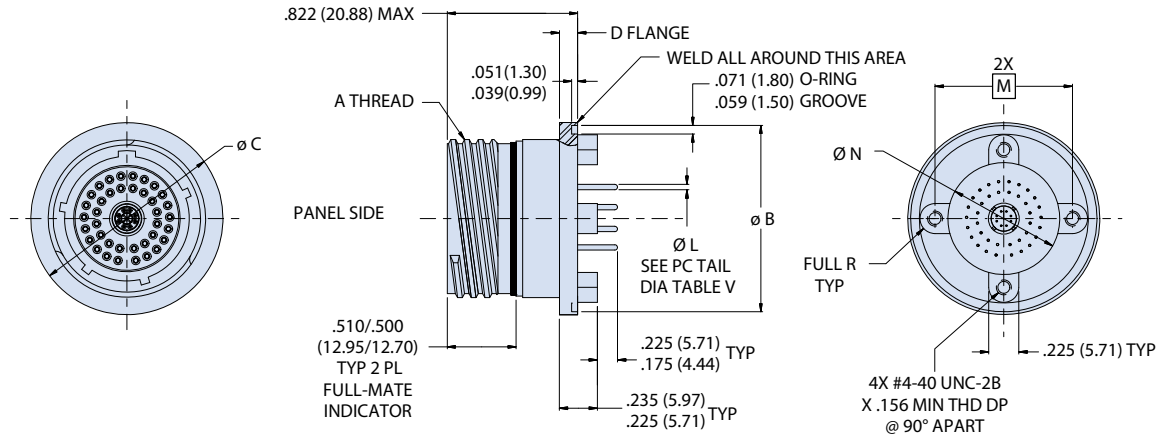
Jam-Nut (H7), Mounting Hole Dimensions		
SHELL SIZE	Ø B ±.012	C FLAT ±.016
9	1.189 (30.20)	1.063 (27.00)
11	1.375 (34.92)	1.252 (31.80)
13	1.500 (38.10)	1.374 (34.90)
15	1.626 (41.30)	1.500 (38.10)
17	1.752 (44.50)	1.626 (41.30)
19	1.937 (49.20)	1.811 (46.00)
21	2.063 (52.40)	1.937 (49.20)
23	2.189 (55.60)	2.063 (52.40)
25	2.311 (58.70)	2.189 (55.60)

Dual O-ring Jam-Nut (DH7), Mounting Hole Dimensions		
SHELL SIZE	Ø B	C FLAT
9	1.500 (38.10)	1.375 (34.92)
11	1.625 (41.28)	1.500 (38.10)
13	1.752 (44.50)	1.626 (41.30)
15	1.937 (49.20)	1.811 (46.00)
17	2.063 (52.40)	1.937 (49.20)
19	2.189 (55.60)	2.063 (52.40)
21	2.311 (58.70)	2.189 (55.60)
23	2.500 (63.50)	2.300 (58.42)
25	2.625 (66.68)	2.400 (60.96)

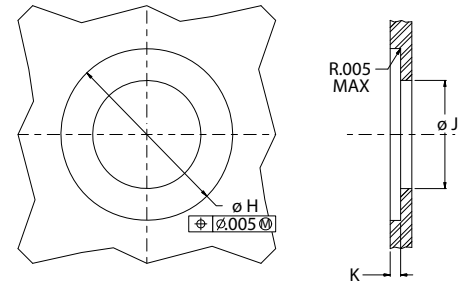
Jam-Nut, Mounting Hole Dimensions		
SHELL SIZE	Ø D	E DIM
9	.703 (17.86)	.661 (16.79)
	.693 (17.60)	.655 (16.64)
11	.835 (21.21)	.771 (19.58)
	.825 (20.96)	.761 (19.33)
13	1.020 (25.91)	.955 (24.26)
	1.010 (25.65)	.945 (24.00)
15	1.145 (29.08)	1.085 (27.56)
	1.135 (28.83)	1.075 (27.30)
17	1.270 (32.26)	1.210 (30.73)
	1.260 (32.00)	1.200 (30.48)
19	1.395 (35.43)	1.335 (33.91)
	1.385 (35.18)	1.325 (33.65)
21	1.520 (38.61)	1.460 (37.08)
	1.510 (38.35)	1.450 (36.83)
23	1.645 (41.78)	1.585 (40.26)
	1.635 (41.53)	1.575 (40.00)
25	1.770 (44.96)	1.710 (43.43)
	1.760 (44.70)	1.700 (43.18)

233-262 PC tail receptacles with shielded contacts MIL-DTL-38999 Series III

233-262-H8 WELD MOUNT RECEPTACLE, D38999/21 TYPE



Weld Mount Receptacle Dimensions							
SHELL SIZE CODE	SHELL SIZE	A THREAD	ø B	ø C	D	M BSC	ø N
A	9	.6250-.1P-.3L-TS-2A	.941 (23.90) .929 (23.60)	.984 (24.99) .972 (24.69)	.134 (3.40) .118 (3.00)	.594 (15.09)	.340 (8.64)
B	11	.7500-.1P-.3L-TS-2A	1.063 (27.00) 1.051 (26.70)	1.106 (28.09) 1.094 (27.79)	.134 (3.40) .118 (3.00)	.719 (18.26)	.468 (11.89)
C	13	.8750-.1P-.3L-TS-2A	1.189 (30.20) 1.177 (29.90)	1.232 (31.29) 1.220 (30.99)	.134 (3.40) .118 (3.00)	.812 (20.62)	.572 (14.53)
D	15	1.0000-.1P-.3L-TS-2A	1.315 (33.40) 1.303 (33.10)	1.358 (34.49) 1.346 (34.19)	.134 (3.40) .118 (3.00)	.906 (23.01)	.705 (17.91)
E	17	1.1875-.1P-.3L-TS-2A	1.402 (35.61) 1.390 (35.31)	1.445 (36.70) 1.433 (36.40)	.134 (3.40) .118 (3.00)	1.030 (26.16)	.830 (21.08)
F	19	1.2500-.1P-.3L-TS-2A	1.547 (39.29) 1.535 (38.99)	1.591 (40.41) 1.579 (40.11)	.134 (3.40) .118 (3.00)	1.150 (29.21)	.934 (23.72)
G	21	1.3750-.1P-.3L-TS-2A	1.689 (42.90) 1.677 (42.60)	1.732 (43.99) 1.720 (43.69)	.134 (3.40) .118 (3.00)	1.221 (31.01)	1.055 (26.80)
H	23	1.5000-.1P-.3L-TS-2A	1.854 (47.09) 1.842 (46.79)	1.898 (48.21) 1.886 (47.90)	.165 (4.19) .149 (3.78)	1.360 (34.54)	1.160 (29.46)
J	25	1.6250-.1P-.3L-TS-2A	1.941 (49.30) 1.929 (49.00)	1.984 (50.39) 1.972 (50.09)	.165 (4.19) .149 (3.78)	1.475 (37.47)	1.307 (33.20)



Weld Mount, Mounting Hole Dimensions			
SHELL SIZE	ø H	ø J ±.005	DEPTH K ±.005
9	.990 (25.15)/.985 (25.02)	.635 (16.13)	.126 (3.20)
11	1.112 (28.24)/1.107 (28.12)	.760 (19.30)	.126 (3.20)
13	1.238 (31.45)/1.233 (31.32)	.885 (22.48)	.126 (3.20)
15	1.364 (34.65)/1.359 (34.52)	1.010 (25.65)	.126 (3.20)
17	1.451 (36.86)/1.446 (36.73)	1.195 (30.35)	.126 (3.20)
19	1.597 (40.56)/1.592 (40.44)	1.260 (32.00)	.126 (3.20)
21	1.738 (44.15)/1.733 (44.02)	1.385 (35.18)	.126 (3.20)
23	1.894 (48.11)/1.899 (48.23)	1.510 (38.35)	.157 (3.99)
25	1.990 (50.55)/1.985 (50.42)	1.635 (41.53)	.157 (3.99)

233-267 PC tail receptacles with threaded stand-off MIL-DTL-38999 Series III

Part Number Development					
Sample Part Number	233-267	-H7	ZL	9-35	C N
Series / Basic Part No.	Series 23 SuperNine Hermetic				
Connector Style	H7 = Jam-Nut Mount DH7 = Dual O-ring, Jam-Nut Mount H2 = Box Mount				
Finish*	Z1 = CRES, Passivated ZL = CRES, Nickel Finish				
Shell Size/Insert Arrangement*	Per MIL-DTL-38999/MIL-STD-1560				
Contact Configuration	C = Pin, Feed-thru D = Socket, Feed-thru				
Polarization*	A, B, C, D, E, N = Normal				

***Refer to Section A for complete details, consult factory for additional options**
Modification codes may be added directly to the end of any valid part number

Material/finish:

- Shell and jam-nut (H7 and DH7): 300 series CRES/per part number development
- Contacts, pin: nickel iron alloy/gold plated
- Contacts, socket: copper alloy/gold plated
- Insulator, pins: vitreous glass/N.A.
- Insulator socket: high grade rigid dielectric/N.A.
- Seals: fluorosilicone blend/N.A.
- O-ring (jam-nut only): silver plated aluminum in fluorosilicone (cho-seal 1298 or equivalent)

Test Requirements

DWV Voltage Levels at Sea Level	
Service rating	Voltage AC RMS 60HZ
M	1300 VAC
I	1800 VAC
II	2300 VAC
N	1000 VAC

I.R. - 5 Gigohms min. @ 500 VDC

Hermeticity - <1 x 10⁻⁷ ccHe/sec @ 1 ATM, delta pressure

PC Tail Diameter	
Contact Size	PC Tail ØL
No 23	.020 (0.51) .018 (0.46)
No 22	.020 (0.51) .018 (0.46)
No 20	.030 (0.76) .028 (0.71)
No 16	.040 (1.02) .038 (0.97)
No 12	.072 (1.83) .070 (1.78)

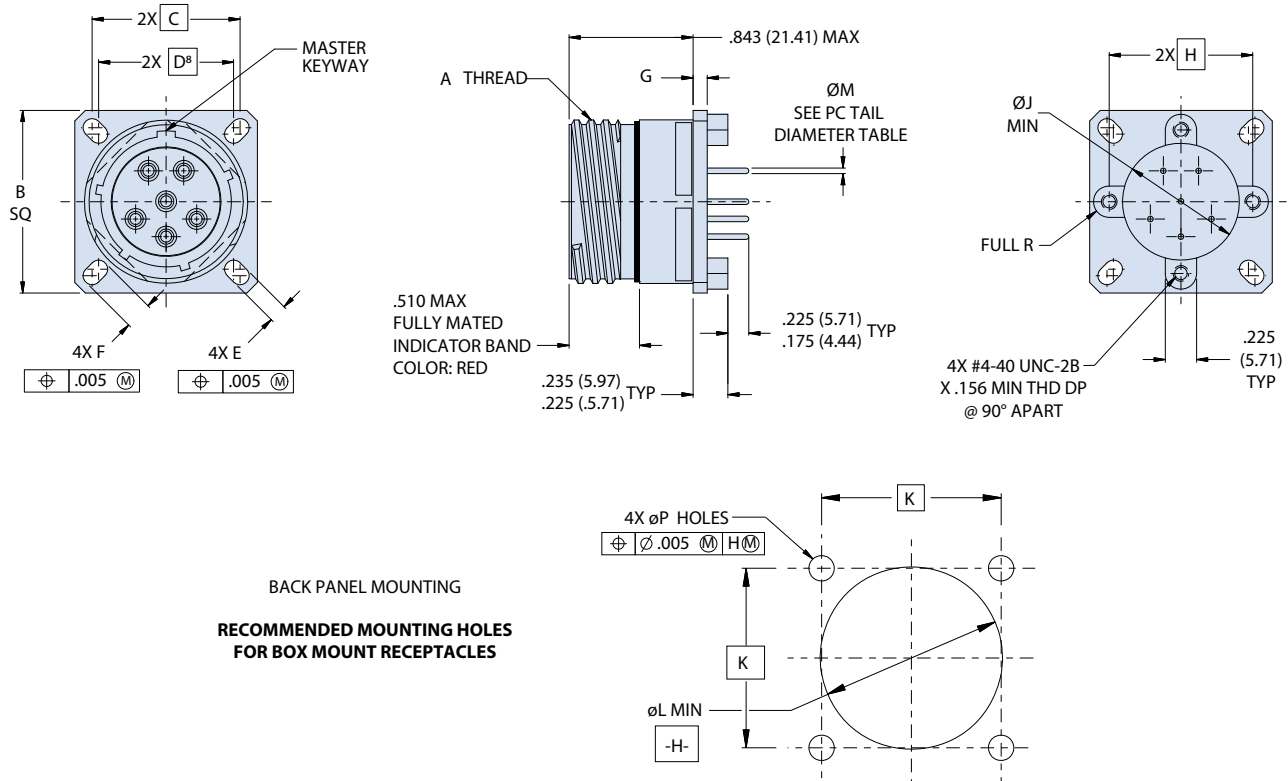
NOTES

1. Glenair 233-267-DH7, H7 and H2 receptacle connectors are designed to meet or exceed the mechanical and dimensional requirements of MIL-DTL-38999, D38999/23, D38999/21 and MIL-STD1560 except as shown and/or noted. Receptacle mates with any QPL manufacturer's MIL-DTL-38999, series III plug connector, D38999/26, having the same shell size, insert arrangement and polarization

Box Mount, Mounting Hole Dimensions				
SHELL SIZE CODE	SHELL SIZE	K BSC	Ø L MIN	Ø P HOLES
A	9	.719 (18.26)	.656 (16.66)	.133 (3.38) .123 (3.12)
B	11	.812 (20.62)	.781 (19.84)	
C	13	.906 (23.01)	.921 (23.39)	
D	15	.969 (24.61)	1.047 (26.59)	
E	17	1.062 (26.97)	1.218 (30.94)	
F	19	1.156 (29.36)	1.296 (32.92)	
G	21	1.250 (31.75)	1.421 (36.09)	
H	23	1.375 (34.92)	1.546 (39.27)	
J	25	1.500 (38.10)	1.672 (42.47)	.159 (4.04) .149 (3.78)

233-267 PC tail receptacles with threaded stand-off MIL-DTL-38999 Series III

233-267-H2 BOX MOUNT RECEPTACLE



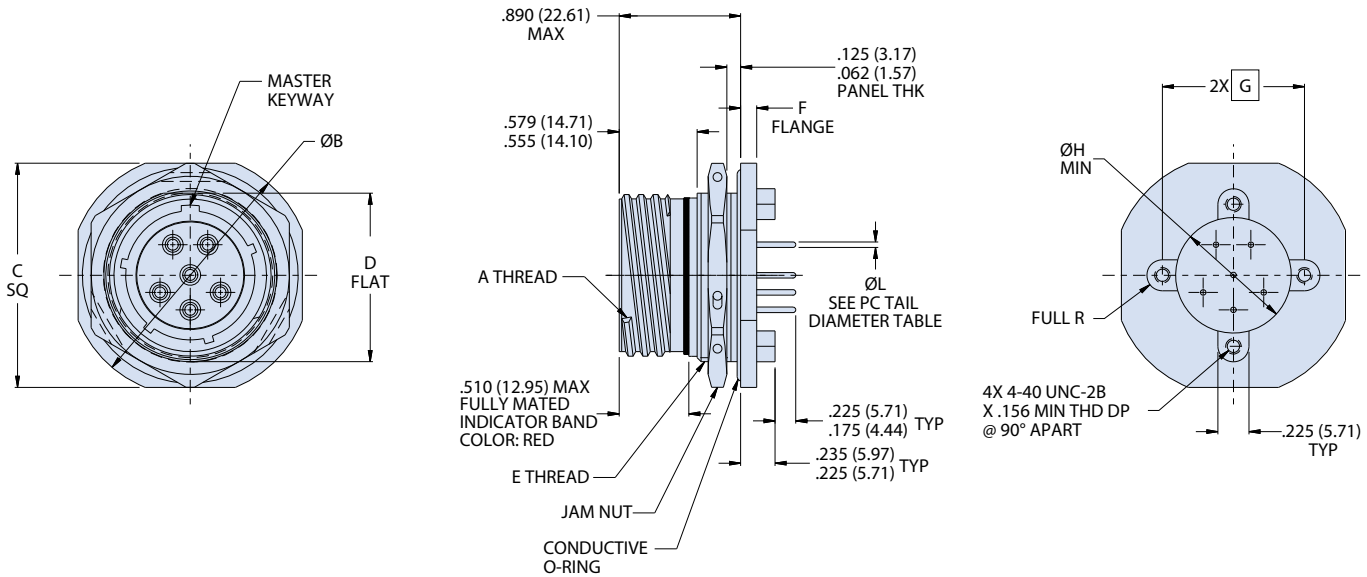
BACK PANEL MOUNTING
**RECOMMENDED MOUNTING HOLES
FOR BOX MOUNT RECEPTACLES**



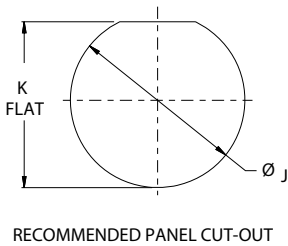
Dimensions											
SHELL SIZE CODE	SHELL SIZE	A THREAD 0.1P-0.3L-TS-2A	B SQ	C BSC	D BSC	E	F	G	H BSC	ØJ MIN	
A	9	.6250	.948 (24.08) .925 (23.50)	.719 (18.26)	.594 (15.09)	.136 (3.45) .120 (3.05)	.224 (5.69) .208 (5.28)	.102 (2.59) .075 (1.90)	.594 (15.09)	.340 (8.64)	
B	11	.7500	1.043 (26.49) 1.019 (25.88)	.812 (20.62)	.719 (18.26)		.202 (5.13) .186 (4.72)		.719 (18.26)	.468 (11.89)	
C	13	.8750	1.137 (28.88) 1.114 (28.30)	.906 (23.01)	.812 (20.62)		.181 (4.60) .165 (4.19)		.812 (20.62)	.572 (14.53)	
D	15	1.0000	1.232 (31.29) 1.208 (30.68)	.969 (24.61)	.906 (23.01)		.202 (5.13) .186 (4.72)		.906 (23.01)	.705 (17.91)	
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.062 (26.97)	.969 (24.61)		.202 (5.13) .186 (4.72)		1.030 (26.16)	.830 (21.08)	
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.156 (29.36)	1.062 (26.97)				1.150 (29.21)	.934 (23.72)	
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.250 (31.75)	1.156 (29.36)				1.221 (31.01)	1.055 (26.80)	
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.375 (34.92)	1.250 (31.75)		.162 (4.11) .146 (3.71)		.250 (6.35) .234 (5.94)	1.360 (34.54)	1.160 (29.46)
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.500 (38.10)	1.375 (34.92)					1.475 (37.47)	1.307 (33.20)

**233-267 PC tail receptacles with threaded stand-off
MIL-DTL-38999 Series III**

**233-267-H7 JAM-NUT RECEPTACLE AND
233-267-DH7 DUAL O-RING JAM-NUT RECEPTACLE**



D



Jam-Nut and Dual O-ring Jam-Nut Panel Cut-Out Dimensions			
SHELL SIZE CODE	SHELL SIZE	ØJ	K FLAT
A	9	.703 (17.86)	.661 (16.79)
		.693 (17.60)	.655 (16.64)
B	11	.835 (21.21)	.771 (19.58)
		.825 (20.96)	.761 (19.33)
C	13	1.020 (25.91)	.955 (24.26)
		1.010 (25.65)	.945 (24.00)
D	15	1.145 (29.08)	1.085 (27.56)
		1.135 (28.83)	1.075 (27.30)
E	17	1.270 (32.26)	1.210 (30.73)
		1.260 (32.00)	1.200 (30.48)
F	19	1.395 (35.43)	1.335 (33.91)
		1.385 (35.18)	1.325 (33.65)
G	21	1.520 (38.61)	1.460 (37.08)
		1.510 (38.35)	1.450 (36.83)
H	23	1.645 (41.78)	1.585 (40.26)
		1.635 (41.53)	1.575 (40.00)
J	25	1.770 (44.96)	1.710 (43.43)
		1.760 (44.70)	1.700 (43.18)

233-267 PC tail receptacles with threaded stand-off MIL-DTL-38999 Series III

233-267-H7 JAM-NUT RECEPTACLE

Dimensions									
SHELL SIZE CODE	SHELL SIZE	A THREAD .1P-.3L-TS-2A	ØB	C SQ	D FLAT	E THREAD ISO METRIC	F	G BSC	ØH MIN
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17 X 1.0-6g	.122 (3.10) .083 (2.11)	.594 (15.09)	.340 (8.64)
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20 X 1.0-6g		.719 (18.26)	.468 (11.89)
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25 X 1.0-6g		.812 (20.62)	.572 (14.53)
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g		.906 (23.01)	.705 (17.91)
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g		1.030 (26.16)	.830 (21.08)
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g	.153 (3.89) .114 (2.90)	1.150 (29.21)	.934 (23.72)
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g		1.221 (31.01)	1.055 (26.80)
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g		1.360 (34.54)	1.160 (29.46)
J	25	1.6250	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44 X 1.0-6g		1.475 (37.47)	1.307 (33.20)

233-267-DH7 DUAL O-RING JAM-NUT RECEPTACLE

Dimensions									
SHELL SIZE CODE	SHELL SIZE	A THREAD .1P-.3L-TS-2A	ØB	C SQ	D FLAT	E THREAD ISO METRIC	F	G BSC	ØH MIN
A	9	.6250 -	1.500 (38.10)	1.375 (34.92)	.654 (16.61) .645 (16.38)	M17 X 1.0-6g	.122 (3.10) .083 (2.11)	.594 (15.09)	.340 (8.64)
B	11	.7500	1.625 (41.28)	1.500 (38.10)	.755 (19.18) .745 (18.92)	M20 X 1.0-6g		.719 (18.26)	.468 (11.89)
C	13	.8750	1.752 (44.50)	1.626 (41.30)	.942 (23.93) .932 (23.67)	M25 X 1.0-6g		.812 (20.62)	.572 (14.53)
D	15	1.0000	1.937 (49.20)	1.811 (46.00)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g		.906 (23.01)	.705 (17.91)
E	17	1.1875	2.063 (52.40)	1.937 (49.20)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g		1.030 (26.16)	.830 (21.08)
F	19	1.2500	2.189 (55.60)	2.063 (52.40)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g	.153 (3.89) .114 (2.90)	1.150 (29.21)	.934 (23.72)
G	21	1.3750	2.311 (58.70)	2.189 (55.60)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g		1.221 (31.01)	1.055 (26.80)
H	23	1.5000	2.500 (63.50)	2.300 (58.42)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g		1.360 (34.54)	1.160 (29.46)
J	25	1.6250	2.625 (66.68)	2.400 (60.96)	1.691 (42.95) 1.681 (42.70)	M44 X 1.0-6g		1.475 (37.47)	1.307 (33.20)



233-268 Dual flange receptacles, high-speed PCB contacts MIL-DTL-38999 Series III

Part Number Development					
Sample Part Number	233-268	-H2	ZL	09-35	C N
Series / Basic Part No.	Series 23 SuperNine Hermetic				
Connector Style	H2 = Box Mount H7 = Jam-Nut Mount DH7 = Dual O-ring, Jam-Nut Mount				
Finish*	Z1 = CRES, Passivated ZL = CRES, Nickel Finish				
Shell Size/Insert Arrangement*	Per MIL-DTL-38999/MIL-STD-1560				
Contact Configuration	C = Pin, Feed-thru D = Socket, Feed-thru				
Polarization*	A, B, C, D, E, N = Normal				

*Refer to Section A for complete details, consult factory for additional options
Modification codes may be added directly to the end of any valid part number

Material/finish:

- Shell and jam-nut (H7 and DH7 only): 300 series CRES/per part number development
- Contacts, pin: nickel-iron alloy/gold plate
- Contacts, socket: copper alloy/gold plate
- Insulator, pins: vitreous glass/N.A.
- Insulator, sockets: high-grade rigid dielectric/N.A.
- Seals: fluorosilicone blend/N.A.
O-ring (jam-nut only): silver plated aluminum in fluorosilicone (cho-seal 1298 or equivalent)

Test Requirements

DWV Voltage Levels at Sea Level

Service rating	Voltage AC RMS 60HZ
M	1300 VAC
I	1800 VAC
II	2300 VAC
N	1000 VAC

I.R. - 5 Gigohms min. @ 500 VDC

Hermeticity - <1 x 10⁻⁷ ccHe/sec @ 1 ATM, delta pressure

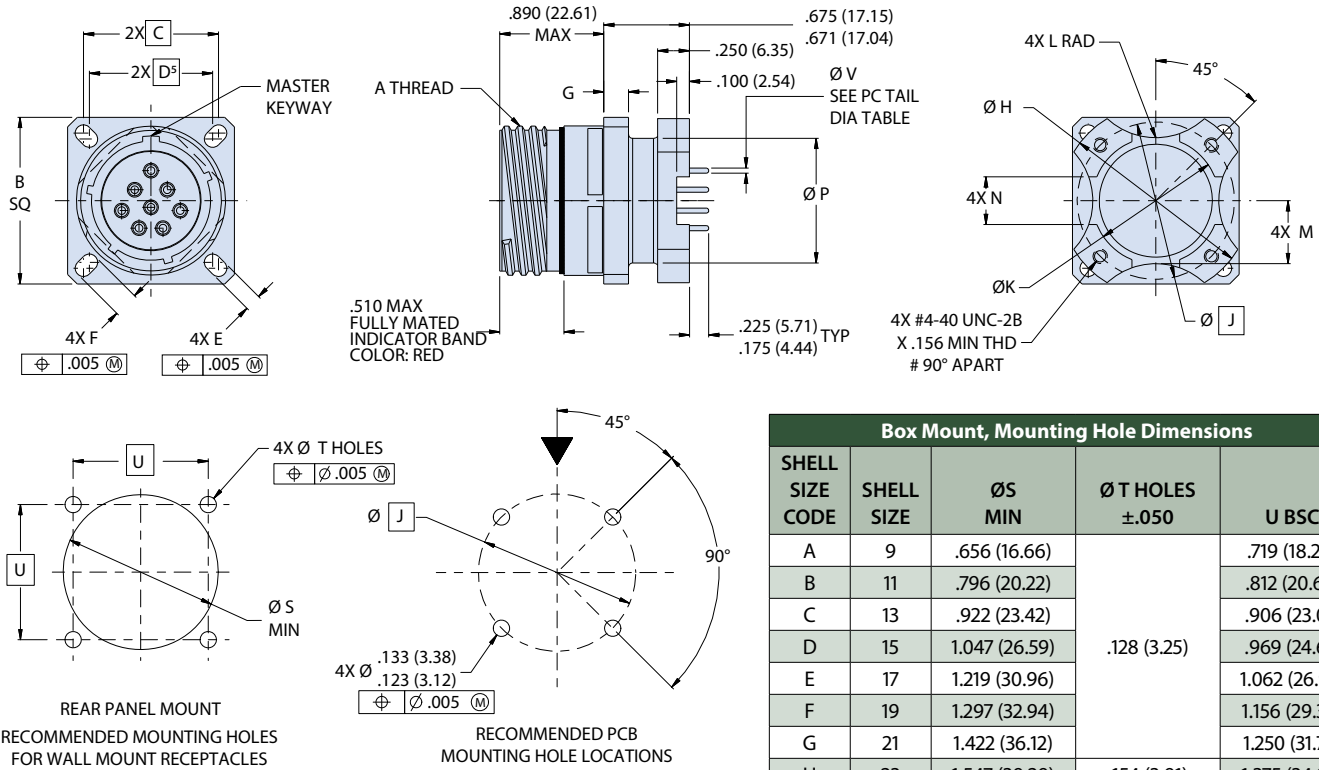
PC Tail Diameter	
Contact Size	PC Tail ØL
No 23	.020 (0.51) .018 (0.46)
No 22	.020 (0.51) .018 (0.46)
No 20	.030 (0.76) .028 (0.71)
No 16	.040 (1.02) .038 (0.97)
No 12	.072 (1.83) .070 (1.78)

NOTES

1. Insert arrangements per MIL-STD-1560. Contact manufacturer for additional arrangement options
2. Glenair 233-268-H7 and DH7 receptacle connectors are designed to meet or exceed the mechanical and dimensional requirements of MIL-DTL-38999, D38999/23, and MIL-STD-1560 except as shown and/or noted.
3. Glenair receptacle connector is designed to meet or exceed the mechanical and dimensional requirements of MIL-DTL-38999, D38999/21, and MIL-STD-1560 except as shown and/or noted.
4. Rear panel mount only
5. Mates with 233-217 or 233-224 plug

233-268 Dual flange receptacles, high-speed PCB contacts MIL-DTL-38999 Series III

233-268-H2 BOX MOUNT RECEPTACLE



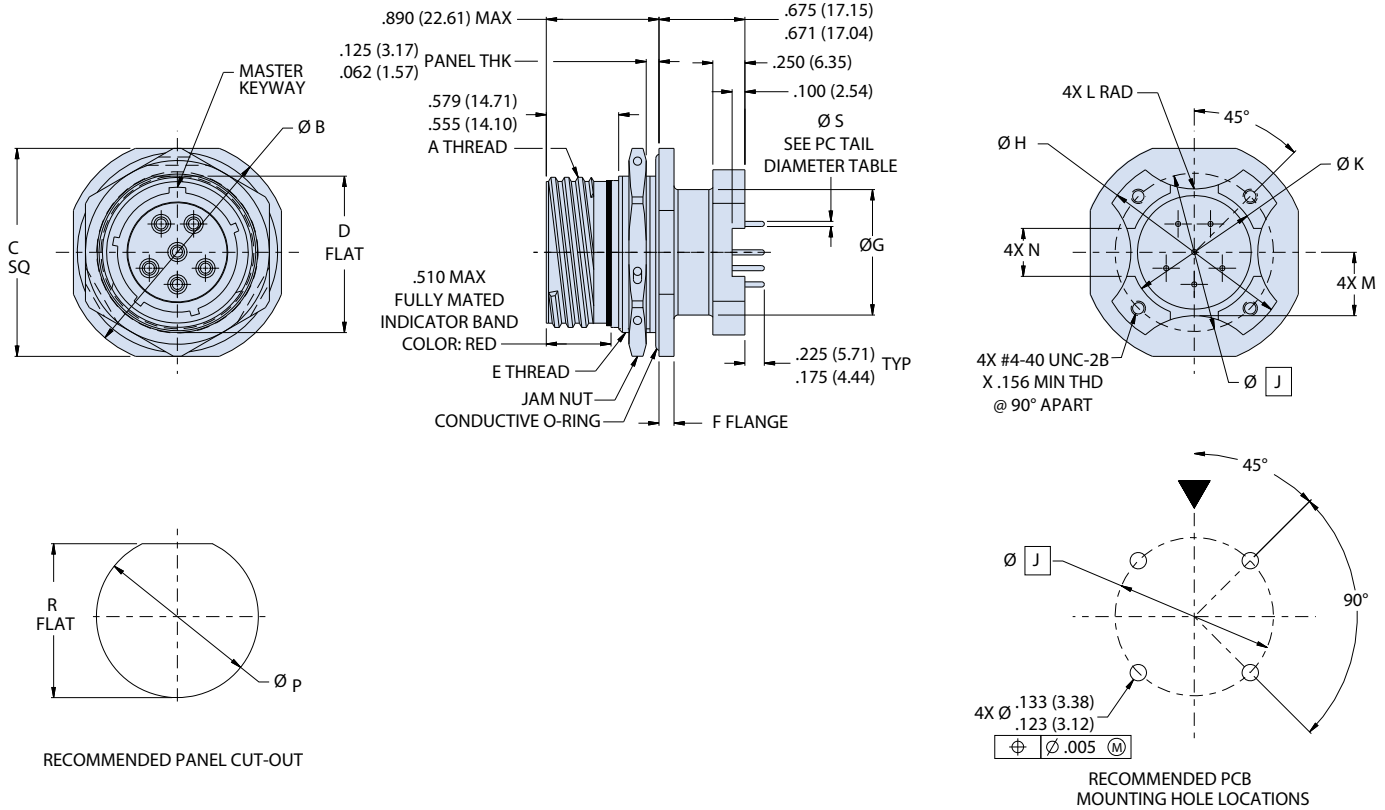
Box Mount, Mounting Hole Dimensions				
SHELL SIZE CODE	SHELL SIZE	ØS MIN	Ø T HOLES ±.050	U BSC
A	9	.656 (16.66)	.128 (3.25)	.719 (18.26)
B	11	.796 (20.22)		.812 (20.62)
C	13	.922 (23.42)		.906 (23.01)
D	15	1.047 (26.59)		.969 (24.61)
E	17	1.219 (30.96)		1.062 (26.97)
F	19	1.297 (32.94)		1.156 (29.36)
G	21	1.422 (36.12)		1.250 (31.75)
H	23	1.547 (39.29)		1.375 (34.92)
J	25	1.672 (42.47)		1.500 (38.10)



Box Mount Dimensions																
SHELL SIZE CODE	SHELL SIZE	A THREAD 0.1P-0.3L-TS-2A	B SQ	C BSC	D ^S BSC	E	F	G	ØH ±.005	ØJ BSC	ØK ±.005	L RAD ±.020	M ±.020	N ±.010	ØP ±.005	
A	9	.6250 -	.948 (24.08) .925 (23.50)	.719 (18.26)	.594 (15.09)	.136 (3.45) .120 (3.05)	.224 (5.69) .208 (5.28)	.102 (2.59) .075 (1.90)	1.016 (25.81)	.752 (19.10)	.532 (13.51)	.225 (5.72)	.275 (6.99)	.225 (5.72)	.535 (13.59)	
B	11	.7500	1.043 (26.49) 1.019 (25.88)	.812 (20.62)	.719 (18.26)		.202 (5.13) .186 (4.72)		1.062 (26.97)	.850 (21.59)	.595 (15.11)	.250 (6.35)	.290 (7.37)	.250 (6.35)	.560 (14.22)	
C	13	.8750	1.137 (28.88) 1.114 (28.30)	.906 (23.01)	.812 (20.62)		.181 (4.60) .165 (4.19)		1.250 (31.75)	.994 (25.25)	.720 (18.29)	.375 (9.52)	.370 (9.40)	.250 (6.35)	.700 (17.78)	
D	15	1.0000	1.232 (31.29) 1.208 (30.68)	.969 (24.61)	.906 (23.01)				1.375 (34.92)	1.119 (28.42)	.843 (21.41)	.438 (11.13)	.440 (11.18)	.325 (8.25)	.857 (21.77)	
E	17	1.1875	1.323 (33.60) 1.299 (32.99)	1.062 (26.97)	.969 (24.61)				.202 (5.13) .186 (4.72)	1.500 (38.10)	1.237 (31.42)	1.000 (25.40)	.562 (14.27)	.495 (12.57)	.375 (9.52)	.980 (24.89)
F	19	1.2500	1.449 (36.80) 1.425 (36.20)	1.156 (29.36)	1.062 (26.97)		1.625 (41.28)			1.379 (35.03)	1.125 (28.58)	.875 (22.23)	.540 (13.72)	.500 (12.70)	1.060 (26.92)	
G	21	1.3750	1.575 (40.00) 1.551 (39.40)	1.250 (31.75)	1.156 (29.36)		.162 (4.11) .234 (5.94)			1.750 (44.45)	1.489 (37.82)	1.240 (31.50)	1.170 (29.72)	.625 (15.88)	.562 (14.27)	1.210 (30.73)
H	23	1.5000	1.701 (43.21) 1.677 (42.60)	1.375 (34.92)	1.250 (31.75)					1.875 (47.63)	1.619 (41.12)	1.328 (33.73)	1.250 (31.75)	.660 (16.76)	.688 (17.48)	1.310 (33.27)
J	25	1.6250	1.823 (46.30) 1.799 (45.69)	1.500 (38.10)	1.375 (34.92)		.162 (4.11) .234 (5.94)		2.000 (50.80)	1.744 (44.30)	1.453 (36.91)	1.375 (34.92)	.740 (18.80)	.750 (19.05)	1.460 (37.08)	

**233-268 Dual flange receptacles, high-speed PCB contacts
MIL-DTL-38999 Series III**

233-268-H7 AND 233-268-DH7 JAM-NUT MOUNT RECEPTACLE



Mounting Hole Dimensions for H7 and DH7							
SHELL SIZE CODE	SHELL SIZE	ØP	R FLAT	SHELL SIZE CODE	SHELL SIZE	ØP	R FLAT
A	9	.703 (17.86)	.661 (16.79)	F	19	1.395 (35.43)	1.335 (33.91)
		.693 (17.60)	.655 (16.64)			1.385 (35.18)	1.325 (33.65)
B	11	.835 (21.21)	.771 (19.58)	G	21	1.520 (38.61)	1.460 (37.08)
		.825 (20.96)	.761 (19.33)			1.510 (38.35)	1.450 (36.83)
C	13	1.020 (25.91)	.955 (24.26)	H	23	1.645 (41.78)	1.585 (40.26)
		1.010 (25.65)	.945 (24.00)			1.635 (41.53)	1.575 (40.00)
D	15	1.145 (29.08)	1.085 (27.56)	J	25	1.770 (44.96)	1.710 (43.43)
		1.135 (28.83)	1.075 (27.30)			1.760 (44.70)	1.700 (43.18)
E	17	1.270 (32.26)	1.210 (30.73)				
		1.260 (32.00)	1.200 (30.48)				

233-268 Dual flange receptacles, high-speed PCB contacts MIL-DTL-38999 Series III

233-268-H7 JAM-NUT MOUNT RECEPTACLE

Dimensions															
SHELL SIZE CODE	SHELL SIZE	A THREAD 0.1P-0.3L-TS-2A	ØB	C SQ	D FLAT	E THREAD ISO METRIC 1.0-6g 0.100R	F	ØG ±.005	ØH ±.005	ØJ BSC	ØK ±.005	L RAD ±.020	M ±.020	N ±.010	
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	0.654 (16.61) 0.645 (16.38)	M17	.122 (3.10) .083 (2.11)	.535 (13.59)	1.016 (25.81)	.752 (19.10)	.532 (13.51)	.225 (5.72)	.275 (6.99)	.225 (5.72)	
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	0.755 (19.18) 0.745 (18.92)	M20		.560 (14.22)	1.062 (26.97)	.850 (21.59)	.595 (15.11)	.250 (6.35)	.290 (7.37)	.250 (6.35)	
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	0.942 (23.93) 0.932 (23.67)	M25		.700 (17.78)	1.250 (31.75)	.994 (25.25)	.720 (18.29)	.375 (9.52)	.370 (9.40)	.250 (6.35)	
D	15	1.0000-	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28		.857 (21.77)	1.375 (34.92)	1.119 (28.42)	.843 (21.41)	.438 (11.13)	.440 (11.18)	.325 (8.25)	
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32		.980 (24.89)	1.500 (38.10)	1.237 (31.42)	1.000 (25.40)	.562 (14.27)	.495 (12.57)	.375 (9.52)	
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35		1.060 (26.92)	1.625 (41.28)	1.379 (35.03)	1.125 (28.58)	.875 (22.23)	.540 (13.72)	.500 (12.70)	
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38		.153 (3.89)	1.210 (30.73)	1.750 (44.45)	1.489 (37.82)	1.240 (31.50)	1.170 (29.72)	.625 (15.88)	.562 (14.27)
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41		.114 (2.90)	1.310 (33.27)	1.875 (47.63)	1.619 (41.12)	1.328 (33.73)	1.250 (31.75)	.660 (16.76)	.688 (17.48)
J	25	1.6250	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44		1.460 (37.08)	2.000 (50.80)	1.744 (44.30)	1.453 (36.91)	1.375 (34.92)	.740 (18.80)	.750 (19.05)	

233-268-DH7 DUAL O-RING, JAM-NUT MOUNT RECEPTACLE

Dimensions															
SHELL SIZE CODE	SHELL SIZE	A THREAD 0.1P-0.3L-TS-2A	ØB	C SQ	D FLAT	E THREAD ISO METRIC 1.0-6g 0.100R	F	ØG ±.005	ØH ±.005	ØJ BSC	ØK ±.005	L RAD ±.020	M ±.020	N ±.010	
A	9	.6250	1.500 (38.10)	1.375 (34.92)	0.654 (16.61) 0.645 (16.38)	M17	.122 (3.10) .083 (2.11)	.535 (13.59)	1.016 (25.81)	.752 (19.10)	.532 (13.51)	.225 (5.72)	.275 (6.99)	.225 (5.72)	
B	11	.7500	1.625 (41.28)	1.500 (38.10)	0.755 (19.18) 0.745 (18.92)	M20		.560 (14.22)	1.062 (26.97)	.850 (21.59)	.595 (15.11)	.250 (6.35)	.290 (7.37)	.250 (6.35)	
C	13	.8750	1.752 (44.50)	1.626 (41.30)	0.942 (23.93) 0.932 (23.67)	M25		.700 (17.78)	1.250 (31.75)	.994 (25.25)	.720 (18.29)	.375 (9.52)	.370 (9.40)	.250 (6.35)	
D	15	1.0000-	1.937 (49.20)	1.811 (46.00)	1.066 (27.08) 1.056 (26.82)	M28		.857 (21.77)	1.375 (34.92)	1.119 (28.42)	.843 (21.41)	.438 (11.13)	.440 (11.18)	.325 (8.25)	
E	17	1.1875	2.063 (52.40)	1.937 (49.20)	1.191 (30.25) 1.181 (30.00)	M32		.980 (24.89)	1.500 (38.10)	1.237 (31.42)	1.000 (25.40)	.562 (14.27)	.495 (12.57)	.375 (9.52)	
F	19	1.2500	2.189 (55.60)	2.063 (52.40)	1.316 (33.43) 1.306 (33.17)	M35		1.060 (26.92)	1.625 (41.28)	1.379 (35.03)	1.125 (28.58)	.875 (22.23)	.540 (13.72)	.500 (12.70)	
G	21	1.3750	2.311 (58.70)	2.189 (55.60)	1.441 (36.60) 1.431 (36.35)	M38		.153 (3.89)	1.210 (30.73)	1.750 (44.45)	1.489 (37.82)	1.240 (31.50)	1.170 (29.72)	.625 (15.88)	.562 (14.27)
H	23	1.5000	2.500 (63.50)	2.300 (58.42)	1.566 (39.78) 1.556 (39.52)	M41		.114 (2.90)	1.310 (33.27)	1.875 (47.63)	1.619 (41.12)	1.328 (33.73)	1.250 (31.75)	.660 (16.76)	.688 (17.48)
J	25	1.6250	2.625 (66.68)	2.400 (60.96)	1.691 (42.95) 1.681 (42.70)	M44		1.460 (37.08)	2.000 (50.80)	1.744 (44.30)	1.453 (36.91)	1.375 (34.92)	.740 (18.80)	.750 (19.05)	



233-103 Bulkhead feed-thrus
MIL-DTL-38999 Series III

Part Number Development												
Sample Part Number	233-103						-H2	Z1	17-35	S	N	-02
Series / Basic Part No.	Series 23 SuperNine Hermetic Bulkhead Feed-thru											
Connector Style	H2 = Box Mount H7 = Jam-Nut Mount DH7 = Dual O-ring Jam-Nut Mount H8 = Weld Mount H9 = Jam Nut Mount, Gender Changer											
Finish*	Z1 = CRES, Passivated ZL = CRES, Nickel Finish											
Shell Size-Insert Arrangement*	Per MIL-DTL-38999/MIL-STD-1560											
Contact Type	P = Pin on panel side S = Socket on panel side PP = Pin-Pin (See note 1) SS = Socket-Socket (See note 1) PP and SS contacts not available for Jam-Nut Mount, Gender Changer (H9) connector style											
Polarization*	A, B, C, D, E, N = Normal											
Panel Thickness	01, 02, 03 ; See panel thickness table per connector style											

***Refer to Section A for complete details, consult factory for additional options**
Modification codes may be added directly to the end of any valid part number

Hermetic Leak Rate Mod Codes	
Designator	Required Leak Rate
-585A	1 x 10 ⁻¹⁰ cc Helium per second
-585B	1 x 10 ⁻⁹ cc Helium per second
-585C	1 x 10 ⁻⁸ cc Helium per second

NOTES

1. For PP or SS style, only symmetrical layouts may be selected. Power to a given contact on one end will result in power to contact directly opposite, regardless of identification letter.
2. Glenair 233-103 will mate with any QPL manufacturer's 38999 Series III plug of same shell size, polarization and opposite contact gender.
3. Hermeticity: less than 1 x 10⁻⁷ ccHe/sec at 1 atmosphere differential.
4. For weld mount (H8) connector style, "SS" style, -01 dimensions "E" and "F" increase by .150"
5. Electrical safety limits must be established by user. Peak voltage, switching surge, transient, etc should be used to determine safe application

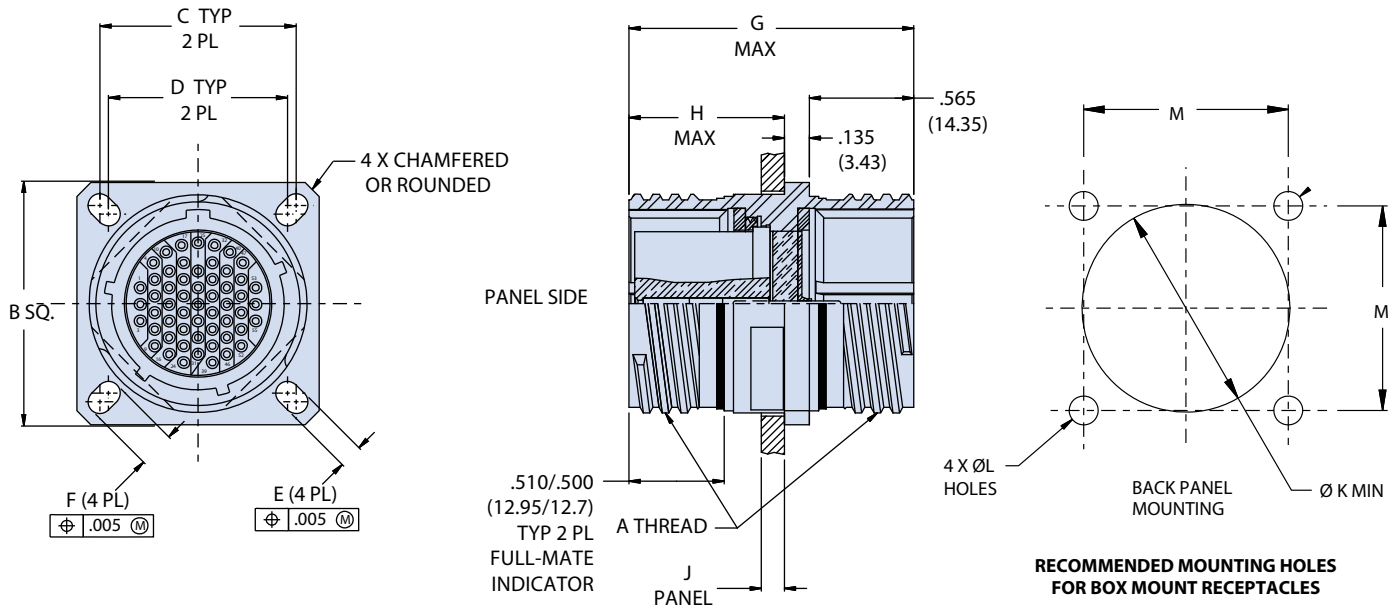
Material / Finish

- Shell and jam-nut (H7): CRES/passivate or CRES/nickel plate
- Contacts pin: nickel/iron alloy/gold plate
- Contacts sockets: copper alloy/gold plate insulator
- Insulator hermetic: vitreous glass/N.A
- Insulator socket: rigid dielectric/N.A
- Seals: fluorosilicone blend/N.A.

D

233-103 Bulkhead feed-thrus
MIL-DTL-38999 Series III

233-103-H2 BOX MOUNT RECEPTACLE



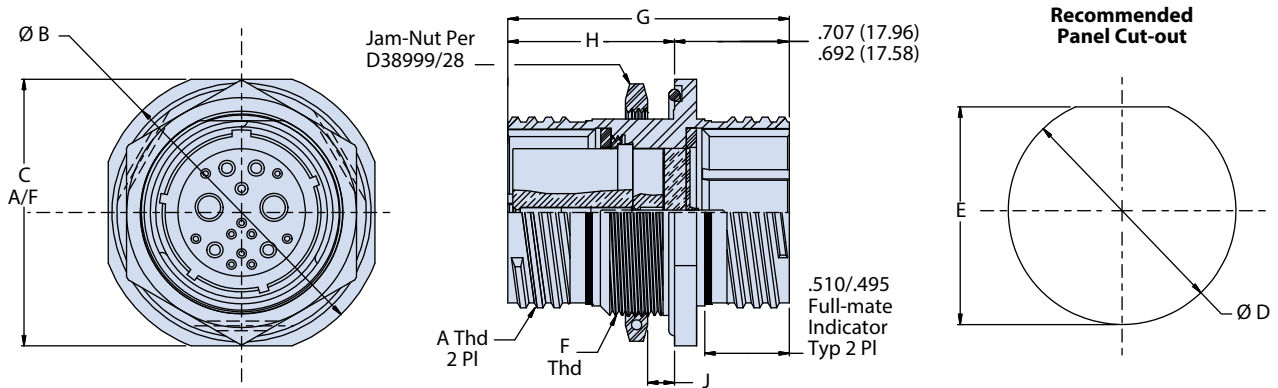
Dimensions						
SHELL SIZE	A THREAD	B SQ.	C BSC.	D BSC.	E	F
9	.6250	0.949 (24.10)	0.719	0.594	0.136 (3.45)	0.224 (5.69)
	.1 P-.3L-TS-2A	0.925 (23.50)	(18.26)	(15.09)	0.120 (3.05)	0.208 (5.28)
11	.7500	1.043 (26.49)	0.812	0.719	0.136 (3.45)	0.202 (5.13)
	.1 P-.3L-TS-2A	1.019 (25.88)	(20.62)	(18.26)	0.120 (3.05)	0.186 (4.72)
13	.8750	1.138 (28.91)	0.906	0.812	0.136 (3.45)	0.202 (5.13)
	.1 P-.3L-TS-2A	1.114 (28.30)	(23.01)	(20.62)	0.120 (3.05)	0.186 (4.72)
15	1.0000	1.232 (31.29)	0.969	0.906	0.136 (3.45)	0.181 (4.60)
	.1 P-.3L-TS-2A	1.208 (30.68)	(24.61)	(23.01)	0.120 (3.05)	0.165 (4.19)
17	1.1875	1.323 (33.60)	1.062	0.969	0.136 (3.45)	0.202 (5.13)
	.1 P-.3L-TS-2A	1.299 (32.99)	(26.97)	(24.61)	0.120 (3.05)	0.186 (4.72)
19	1.2500	1.449 (36.80)	1.156	1.062	0.136 (3.45)	0.202 (5.13)
	.1 P-.3L-TS-2A	1.425 (36.20)	(29.36)	(26.97)	0.120 (3.05)	0.186 (4.72)
21	1.3750	1.575 (40.00)	1.250	1.156	0.136 (3.45)	0.202 (5.13)
	.1 P-.3L-TS-2A	1.551 (39.40)	(31.75)	(29.36)	0.120 (3.05)	0.186 (4.72)
23	1.5000	1.701 (43.21)	1.375	1.25	0.162 (4.11)	0.250 (6.35)
	.1 P-.3L-TS-2A	1.677 (42.60)	(34.92)	(31.75)	0.146 (3.71)	0.234 (5.94)
25	1.6250	1.823 (46.30)	1.500	1.375	0.162 (4.11)	0.250 (6.35)
	.1 P-.3L-TS-2A	1.799 (45.69)	(38.10)	(34.92)	0.146 (3.71)	0.234 (5.94)

Recommended Mounting Holes			
SHELL SIZE	Ø K MIN	Ø L HOLES	M
9	0.656 (16.66)	0.133 (3.38)	0.724 (18.39)
		0.123 (3.12)	0.714 (18.14)
11	0.781 (19.84)	0.133 (3.38)	0.817 (20.75)
		0.123 (3.12)	0.807 (20.50)
13	0.921 (23.39)	0.133 (3.38)	0.911 (23.14)
		0.123 (3.12)	0.901 (22.89)
15	1.047 (26.59)	0.133 (3.38)	0.973 (24.71)
		0.123 (3.12)	0.963 (24.46)
17	1.218 (30.94)	0.133 (3.38)	1.067 (27.10)
		0.123 (3.12)	1.057 (26.85)
19	1.296 (32.92)	0.133 (3.38)	1.161 (29.49)
		0.123 (3.12)	1.151 (29.24)
21	1.421 (36.09)	0.133 (3.38)	1.255 (31.88)
		0.123 (3.12)	1.245 (31.62)
23	1.546 (39.27)	0.159 (4.04)	1.380 (35.05)
		0.149 (3.78)	1.370 (34.80)
25	1.672 (42.47)	0.159 (4.04)	1.505 (38.23)
		0.149 (3.78)	1.495 (37.97)

Box Mount (H2) Panel Thickness			
DASH NO.	G DIM, OAL MAX	H DIM, MAX	J DIM, PANEL
-01	1.600 (40.64)	.843 (21.41)	.125 (3.18) .062 (1.57)
-02	1.730 (43.94)	1.040 (26.42)	.250 (6.35) .062 (1.57)
-03	2.000 (50.80)	1.290 (32.77)	.500 (12.70) .062 (1.57)

233-103 Bulkhead feed-thrus
MIL-DTL-38999 Series III

233-103-H7 JAM-NUT MOUNT AND
233-103-DH7 DUAL O-RING JAM-NUT RECEPTACLE

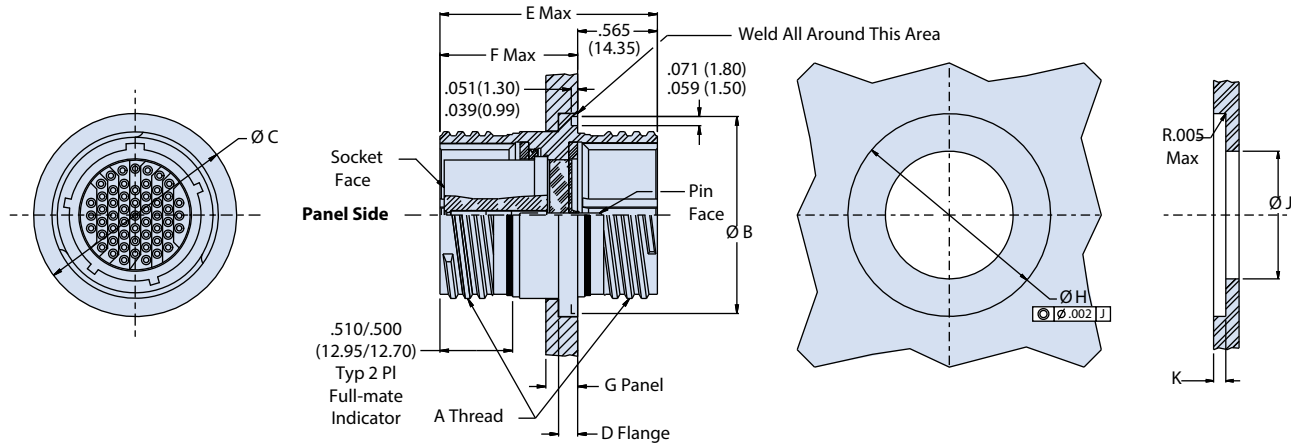


Dimensions								
SHELL SIZE	A THREAD 0.1 P-0.3L- TS-2	H7 Jam-Nut		DH7 Dual O-Ring Jam-Nut		D DIA	E DIM	F THREAD METRIC X 1.0-6G
		B DIA	C	B DIA	C			
9	.6250	1.189 (30.20)	1.063 (27.00)	1.500 (38.10)	1.375 (34.92)	.703 (17.86) .693 (17.60)	.661 (16.79) .655 (16.64)	M17
11	.7500	1.375 (34.92)	1.252 (31.80)	1.625 (41.28)	1.500 (38.10)	.835 (21.21) .825 (20.96)	.771 (19.58) .761 (19.33)	M20
13	.8750	1.500 (38.10)	1.374 (34.90)	1.752 (44.50)	1.626 (41.30)	1.020 (25.91) 1.010 (25.65)	.955 (24.26) .945 (24.00)	M25
15	1.0000	1.626 (41.30)	1.500 (38.10)	1.937 (49.20)	1.811 (46.00)	1.145 (29.08) 1.135 (28.83)	1.085 (27.56) 1.075 (27.30)	M28
17	1.1875	1.752 (44.50)	1.626 (41.30)	2.063 (52.40)	1.937 (49.20)	1.270 (32.26) 1.260 (32.00)	1.210 (30.73) 1.200 (30.48)	M32
19	1.2500	1.937 (49.20)	1.811 (46.00)	2.189 (55.60)	2.063 (52.40)	1.395 (35.43) 1.385 (35.18)	1.335 (33.91) 1.325 (33.65)	M35
21	1.3750	2.063 (52.40)	1.937 (49.20)	2.311 (58.70)	2.189 (55.60)	1.520 (38.61) 1.510 (38.35)	1.460 (37.08) 1.450 (36.83)	M38
23	1.5000	2.189 (55.60)	2.063 (52.40)	2.500 (63.50)	2.300 (58.42)	1.645 (41.78) 1.635 (41.53)	1.585 (40.26) 1.575 (40.00)	M41
25	1.6250	2.311 (58.70)	2.189 (55.60)	2.625 (66.68)	2.400 (60.96)	1.770 (44.96) 1.760 (44.70)	1.710 (43.43) 1.700 (43.18)	M44

Jam-Nut Mount (H7) Panel Thickness			
DASH NO.	G DIM, OAL MAX	H DIM, MAX	J DIM, PANEL
-01	1.670 (42.42)	.890 (22.61)	.125 (3.18) .062 (1.57)
-02	1.780 (45.21)	1.090 (27.69)	.250 (6.35) .062 (1.57)
-03	2.030 (51.56)	1.340 (34.04)	.500 (12.70) .062 (1.57)

233-103 Bulkhead feed-thrus
MIL-DTL-38999 Series III

233-103-H8 WELD MOUNT RECEPTACLE



Dimensions					
Shell Size Code	Shell Size	A Thread	Ø B	Ø C	D
A	9	.6250-1P-.3L-TS-2A	.941 (23.90) .929 (23.60)	.984 (24.99) .972 (24.69)	.134 (3.40) .118 (3.00)
B	11	.7500-1P-.3L-TS-2A	1.063 (27.00) 1.051 (26.70)	1.106 (28.09) 1.094 (27.79)	.134 (3.40) .118 (3.00)
C	13	.8750-1P-.3L-TS-2A	1.189 (30.20) 1.177 (29.90)	1.232 (31.29) 1.220 (30.99)	.134 (3.40) .118 (3.00)
D	15	1.0000-1P-.3L-TS-2A	1.315 (33.40) 1.303 (33.10)	1.358 (34.49) 1.346 (34.19)	.134 (3.40) .118 (3.00)
E	17	1.1875-1P-.3L-TS-2A	1.402 (35.61) 1.390 (35.31)	1.445 (36.70) 1.433 (36.40)	.134 (3.40) .118 (3.00)
F	19	1.2500-1P-.3L-TS-2A	1.547 (39.29) 1.535 (38.99)	1.591 (40.41) 1.579 (40.11)	.134 (3.40) .118 (3.00)
G	21	1.3750-1P-.3L-TS-2A	1.689 (42.90) 1.677 (42.60)	1.732 (43.99) 1.720 (43.69)	.134 (3.40) .118 (3.00)
H	23	1.5000-1P-.3L-TS-2A	1.854 (47.09) 1.842 (46.79)	1.898 (48.21) 1.886 (47.90)	.165 (4.19) .149 (3.78)
J	25	1.6250-1P-.3L-TS-2A	1.941 (49.30) 1.929 (49.00)	1.984 (50.39) 1.972 (50.09)	.165 (4.19) .149 (3.78)

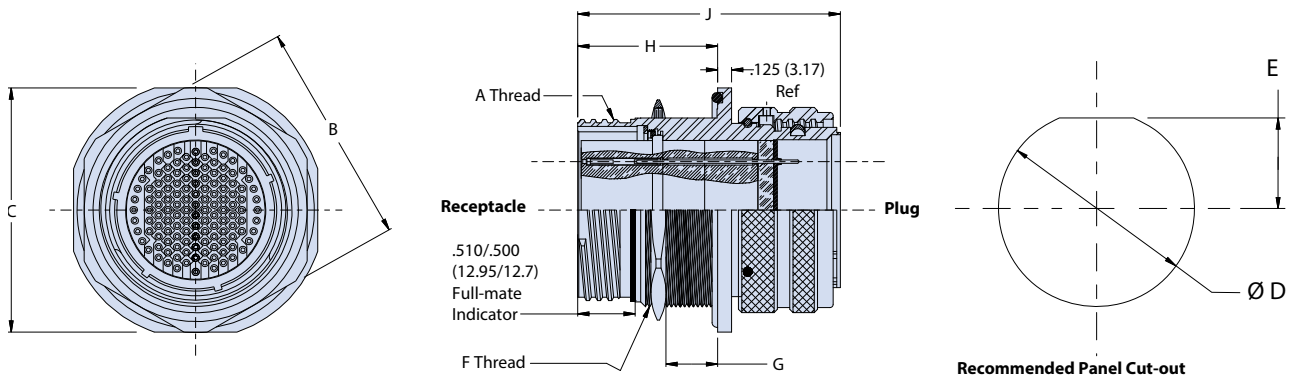
Recommended Panel Cutout			
Shell Size	Ø H	Ø J ±.005 (0.13)	Depth K ±.005 (0.13)
9	.990/.985 (25.15/ 25.02)	.635 (16.13)	.126 (3.20)
11	1.112/1.107 (28.24/ 28.12)	.760 (19.30)	.126 (3.20)
13	1.238/1.233 (31.45/ 31.32)	.885 (22.48)	.126 (3.20)
15	1.364/1.359 (34.65/34.52)	1.010 (25.65)	.126 (3.20)
17	1.451/1.446 (36.86/ 36.73)	1.195 (3.35)	.126 (3.20)
19	1.597/1.592 (40.56/ 40.44)	1.260 (32.00)	.126 (3.20)
21	1.738/1.733 (44.15/ 44.02)	1.385 (35.18)	.126 (3.20)
23	1.894/1.899 (48.11/ 48.23)	1.510 (38.35)	.157 (3.99)
25	1.990/1.985 (50.55/ 50.42)	1.635 (41.53)	.157 (3.99)

Weld Mount (H8) Panel Thickness			
Dash no	E Dim, OAL Max	F Dim, Max	G Dim, Panel
-01	1.630 (41.40)	1.060 (26.92)	.250 (6.35) .175 (4.44)
-02	1.750 (44.45)	1.180 (29.97)	4.25 (107.95) .175 (4.44)
-03	1.920 (48.77)	1.350 (34.29)	.600 (15.24) .175 (4.44)



233-103 Bulkhead feed-thrus
MIL-DTL-38999 Series III

233-103-H9 JAM-NUT MOUNT GENDER CHANGER



Dimensions						
SHELL SIZE	A THREAD	B MAX	C DIM MAX	D DIA	E DIA	F THREAD
9	.6250 0.1 P-0.3L-TS-2	.945(24.0)	1.09 (27.7)	0.703 (17.9) 0.693 (17.6)	0.661 (16.8) 0.653 (16.6)	M17X1-6G-0.100R
11	.7500 0.1 P-0.3L-TS-2	1.063(27.0)	1.28 (32.5)	0.835 (21.2) 0.825 (21.0)	0.771 (19.6) 0.761 (19.3)	M20X1-6G-0.100R
13	.8750 0.1 P-0.3L-TS-2	1.260(32.0)	1.40 (35.6)	1.020 (25.9) 1.010 (25.7)	0.955 (24.3) 0.945 (24.0)	M25X1-6G-0.100R
15	1.0000 0.1 P-0.3L-TS-2	1.417(36.0)	1.53 (38.9)	1.145 (29.1) 1.135 (28.8)	1.085 (27.6) 1.075 (27.3)	M28X1-6G-0.100R
17	1.1875 0.1 P-0.3L-TS-2	1.457(37.0)	1.66 (42.2)	1.270 (32.3) 1.260 (32.0)	1.210 (30.7) 1.200 (30.5)	M32X1-6G-0.100R
19	1.2500 0.1 P-0.3L-TS-2	1.614(41.0)	1.84 (46.7)	1.395 (35.4) 1.385 (35.2)	1.335 (33.9) 1.325 (33.7)	M35X1-6G-0.100R
21	1.3750 0.1 P-0.3L-TS-2	1.811(46.0)	1.97 (50.5)	1.520 (38.6) 1.510 (38.4)	1.460 (37.1) 1.450 (36.8)	M38X1-6G-0.100R
23	1.5000 0.1 P-0.3L-TS-2	1.968(50.0)	2.09 (53.1)	1.645 (41.8) 1.635 (41.5)	1.585 (40.3) 1.575 (40.0)	M41X1-6G-0.100R
25	1.6250 0.1 P-0.3L-TS-2	2.017(51.2)	2.21 (56.1)	1.770 (45.0) 1.760 (44.7)	1.710 (43.4) 1.700 (43.2)	M44X1-6G-0.100R

Panel Thickness			
DASH NO.	G	H MAX	J MAX
-01	.062 - .125 (1.6 - 3.2)	.890 (22.6)	2.000 (50.8)
-02	.062 - .250 (1.6 - 6.4)	1.150 (29.2)	2.225 (56.5)
-03	.062 - .500 (1.6 - 12.7)	1.400 (35.6)	2.450 (62.2)

Panel Thickness			
DASH NO.	G	H MAX	J MAX
-01	.062 - .125 (1.6 - 3.2)	.890 (22.6)	2.000 (50.8)
-02	.062 - .250 (1.6 - 6.4)	1.150 (29.2)	2.225 (56.5)
-03	.062 - .500 (1.6 - 12.7)	1.400 (35.6)	2.450 (62.2)

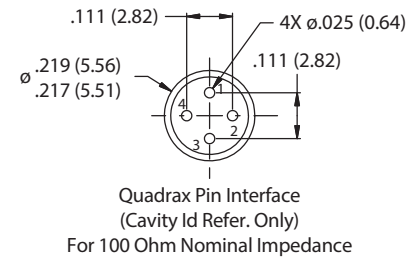
DWV Voltage Levels at Sea Level	
SERVICE RATING	VOLTAGE AC RMS 60HR
M	1300 VAC
I	1800 VAC
II	2300 VAC
N	1000 VAC

233-261 Bulkhead feed-thru with shielded contacts MIL-DTL-38999 Series III Type

Part Number Development	
Sample Part Number	233-261 -H2 Z1 17 Q -02 S N -01
Series / Basic Part No.	Series 23 SuperNine Bulkhead Feed-thru
Connector Style	H2 = Box Mount H7 = Jam-Nut Mount DH7 = Dual O-ring, Jam-Nut Mount H8 = Weld Mount
Finish*	Z1 = CRES, Passivated ZL = CRES, Nickel Finish
Shell Size	Per MIL-DTL-38999
Contact Type	C = Coax Q = Quadrax (Size 8 contacts only) T = Concentric Twinax P = Power Contacts See Special RF contact arrangements beginning on page D-6 for more details
Arrangement	Per MIL-STD-1560
Configuration	P = Pin on Jam Nut Side S = Socket on Jam Nut Side PP = Pin-Pin (See note 2) SS = Socket-Socket (See note 2)
Polarization*	A, B, C, D, E, N = Normal; see section A for key position details
Panel Thickness	-01 = .125/.062 -02 = .250/.062 -03 = .500/.062; See Panel Thickness Table

*Refer to Section A for complete details, consult factory for additional options
Modification codes may be added directly to the end of any valid part number

Shell Size / Insert Arrangement Availability ^{3,4}										
Arr. No.	Size 22	Cntct Type	Size 20	Cntct Type	Size 16	Cntct Type	Size 12	Cntct Type	Size 8	Cntct Type
15-21	17	S/P	3	S/P	---	N/A	1	N/A	---	N/A
17-2*	38	S/P	---	N/A	---	N/A	---	N/A	1	TWINAX
17-3*	38	S/P	---	N/A	---	N/A	---	N/A	1	TWINAX
17-6	---	N/A	---	S/P	---	N/A	6	COAX	---	N/A
17-11	---	N/A	8	N/A	---	N/A	3	COAX	---	N/A
19-19	14	S/P	---	N/A	---	N/A	---	N/A	---	TWINAX
21-11	---	N/A	---	N/A	---	N/A	11	N/A	---	N/A
21-29	---	N/A	19	S/P	4	S/P	4	COAX	4	N/A
21-75‡	---	N/A	---	N/A	---	N/A	---	COAX	4	TWINAX
21-76‡	---	N/A	---	N/A	---	N/A	---	N/A	2	TWINAX
25-7†	---	S/P	---	N/A	---	N/A	---	N/A	8	TWINAX
25-80	97	N/A	---	N/A	---	N/A	---	N/A	2	TWINAX
25-9†	---	S/P	---	N/A	---	N/A	---	N/A	8	TWINAX
25-100	97	N/A	---	N/A	---	N/A	---	N/A	---	TWINAX
25-19	---	N/A	---	N/A	---	N/A	19	COAX	3	N/A
25-20#	---	N/A	10	S/P	13	S/P	4	COAX	3	TWINAX
25-21#	---	N/A	10	S/P	13	S/P	4	COAX	2	TWINAX
25-46@	---	N/A	40	S/P	4	S/P	---	N/A	2	COAX
25-47@	---	N/A	40	S/P	4	S/P	---	N/A	2	COAX
25-90+	---	N/A	40	S/P	4	S/P	---	N/A	2	TWINAX
25-91+	---	N/A	40	S/P	4	S/P	---	N/A	2	TWINAX



Contact Performance	
Size and Type	Frequency
#12 Coax	2 GHz
#8 Coax	1 GHz
#8 Twinax (Conc.)	20 MHz
#8 Quadrax	1 GHz

Material/Finish

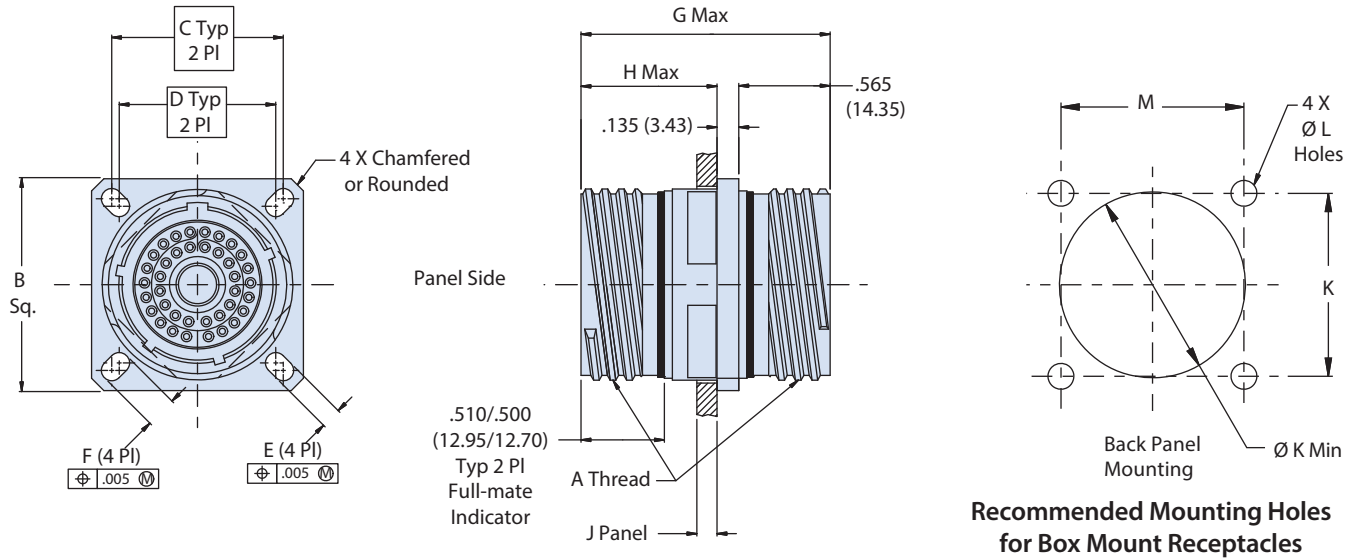
- Shell and jam-nut (H7 and DH7): 300 series CRES/per part number development
- Contact, pin: nickel-iron and nickel alloy/gold plate
- Contact, socket: copper alloy/gold plate
- Hoods, sockets: CRES/passivate
- Insulator, hermetic: full glass/N.A.
- Insulator, socket: rigid dielectric/N.A.
- Seals: fluorosilicone blend elastomer/N.A.

NOTES

1. Hermeticity: <1 x 10⁻⁷ ccHe/sec @ 1 atmosphere delta pressure
2. For PP or SS style, only symmetrical layouts may be selected. Power applied to contact on one side will result in power to the opposite contact, regardless of marking
3. Arrangements marked with like symbols (I.E. 17-2* and 17-3*) are identical. Environmental connectors use contact sealing boots.
4. When there are #12 and #8 in arrangement, the option is #8 only. Balance of contacts are power. Consult factory for other contact options.
5. For shell style H2, SS style, dimensions "G" and "H" will increase .100"
6. For shell style H8, SS style, 01 dimensions "E" and "F" increase by .150"

233-261 Bulkhead feed-thru with shielded contacts MIL-DTL-38999 Series III Type

233-261-H2 BOX MOUNT FEED-THRU CONNECTOR



**Recommended Mounting Holes
for Box Mount Receptacles**

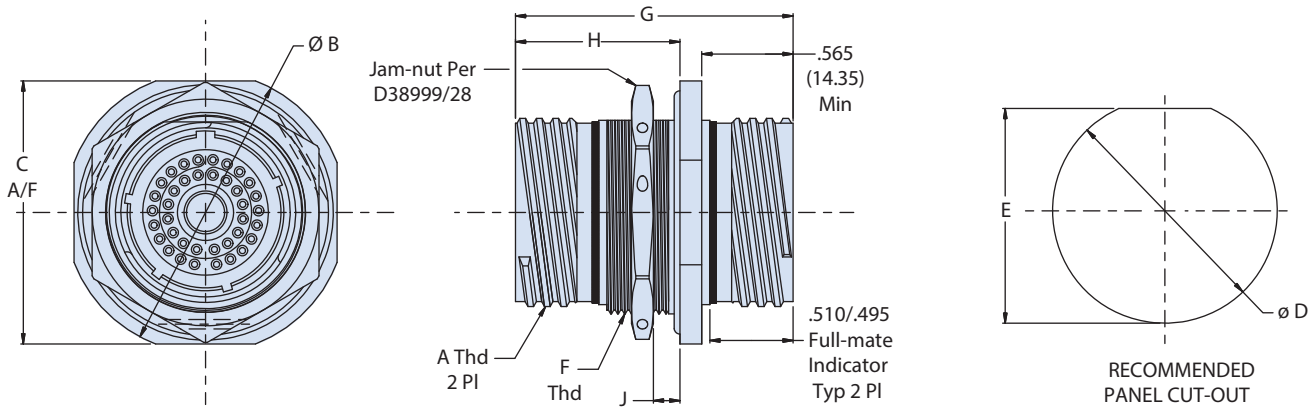
Dimensions						
Shell Size	A Thread	B SQ	C Bsc	D BSC	E	F
9	.6250 -1 P-0.3L-TS-2A	.949 (24.10) .925 (23.50)	.719 (18.26)	.594 (15.09)	.136 (3.45) .120 (3.05)	.224 (5.69) .208 (5.28)
11	.7500 -1 P-0.3L-TS-2A	1.043 (26.49) 1.019 (25.88)	.812 (20.62)	.719 (18.26)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)
13	.8750 -1 P-0.3L-TS-2A	1.138 (28.91) 1.114 (28.30)	.706 (17.93)	.812 (20.62)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)
15	1.0000 -1 P-0.3L-TS-2A	1.232 (31.29) 1.208 (30.68)	.969 (24.61)	.906 (23.01)	.136 (3.45) .120 (3.05)	.181 (4.60) .165 (4.19)
17	1.1875 -1 P-0.3L-TS-2A	1.323 (33.60) 1.299 (32.99)	1.062 (26.97)	.969 (24.61)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)
19	1.2500 -1 P-0.3L-TS-2A	1.449 (36.80) 1.425 (36.20)	1.156 (29.36)	1.062 (26.97)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)
21	1.3750 -1 P-0.3L-TS-2A	1.575 (40.00) 1.551 (39.40)	1.250 (31.75)	1.156 (29.36)	.136 (3.45) .120 (3.05)	.202 (5.13) .186 (4.72)
23	1.5000 -1 P-0.3L-TS-2A	1.701 (43.21) 1.677 (42.60)	1.375 (34.92)	1.250 (31.75)	.162 (4.11) .146 (3.71)	.250 (6.35) .234 (5.94)
25	1.6250 -1 P-0.3L-TS-2A	1.823 (46.30) 1.799 (45.69)	1.500 (38.10)	1.375 (34.92)	.162 (4.11) .146 (3.71)	.250 (6.35) .234 (5.94)

Box Mount Dimensions			
Shell Size	Ø K Min	Ø L Holes	M
9	.656 (16.66)	.133 (3.38) .123 (3.12)	.724 (18.39) .714 (18.14)
11	.781 (19.84)	.133 (3.38) .123 (3.12)	.817 (20.75) .807 (20.50)
13	.921 (23.39)	.133 (3.38) .123 (3.12)	.911 (23.14) .901 (22.89)
15	1.047 (26.59)	.133 (3.38) .123 (3.12)	.973 (24.71) .963 (24.46)
17	1.218 (30.94)	.133 (3.38) .123 (3.12)	1.067 (27.10) 1.57 (39.88)
19	1.296 (32.92)	.133 (3.38) .123 (3.12)	1.161 (29.49) 1.151 (29.24)
21	1.421 (36.09)	.133 (3.38) .123 (3.12)	1.255 (31.88) 1.245 (31.62)
23	1.546 (39.27)	.159 (4.04) .149 (3.78)	1.380 (35.05) 1.370 (34.80)
25	1.672 (42.47)	.159 (4.04) .149 (3.78)	1.505 (38.23) 1.495 (37.97)

Panel Thickness			
Shell Size	G Dim, OAL Max	H Dim, Max	J Dim, Panel
-01*	1.600 (40.64)	.843 (21.41)	.125 (3.17)/.062 (1.57)
-02	1.730 (43.94)	1.040 (26.42)	.250 (6.35)/.062 (1.57)
-03	2.000 (50.80)	1.290 (32.77)	.500 (12.70)/.062 (1.57)

233-261 Bulkhead feed-thru with shielded contacts MIL-DTL-38999 Series III Type

233-261-H7 JAM-NUT MOUNT FEED-THRU CONNECTOR AND 233-261-DH7 DUAL O-RING JAM-NUT MOUNT FEED-THRU CONNECTOR



Shell Size	Dimensions			
	A Thread	D BSC	E	F Thread
9	.6250 -1 P-0.3L-TS-2A	.703 (17.86) .693 (17.60)	.661 (16.79) .665 (16.89)	M17 x 1.0-6g
11	.7500 -1 P-0.3L-TS-2A	.835 (21.21) .825 (20.95)	.771 (19.58) .761 (19.33)	M20 x 1.0-6g
13	.8750 -1 P-0.3L-TS-2A	1.020 (25.91) 1.010 (25.65)	.955 (24.26) .945 (24.00)	M25 x 1.0-6g
15	1.0000 -1 P-0.3L-TS-2A	1.145 (29.08) 1.135 (28.83)	1.085 (27.56) 1.075 (27.30)	M28 x 1.0-6g
17	1.1875 -1 P-0.3L-TS-2A	1.270 (32.26) 1.260 (32.00)	1.210 (30.73) 1.200 (30.48)	M32 x 1.0-6g
19	1.2500 -1 P-0.3L-TS-2A	1.395 (35.43) 1.385 (35.18)	1.335 (33.91) 1.325 (33.65)	M35 x 1.0-6g
21	1.3750 -1 P-0.3L-TS-2A	1.520 (38.61) 1.510 (38.35)	1.460 (37.08) 1.450 (36.83)	M38 x 1.0-6g
23	1.5000 -1 P-0.3L-TS-2A	1.645 (41.78) 1.635 (41.53)	1.585 (40.26) 1.575 (40.00)	M41 x 1.0-6g
25	1.6250 -1 P-0.3L-TS-2A	1.770 (44.96) 1.760 (44.70)	1.710 (43.43) 1.700 (43.18)	M44 x 1.0-6g

Jam-Nut Mount (H7) Dimension		
Shell Size	B DIA	C MAX
9	1.189 (30.20)	1.063 (27.00)
11	1.375 (34.92)	1.252 (31.80)
13	1.500 (38.10)	1.375 (34.92)
15	1.626 (41.30)	1.500 (38.10)
17	1.752 (44.50)	1.626 (41.30)
19	1.937 (49.20)	1.811 (46.00)
21	2.063 (52.40)	1.937 (49.20)
23	2.189 (55.60)	2.063 (52.40)
25	2.311 (58.70)	2.189 (55.60)

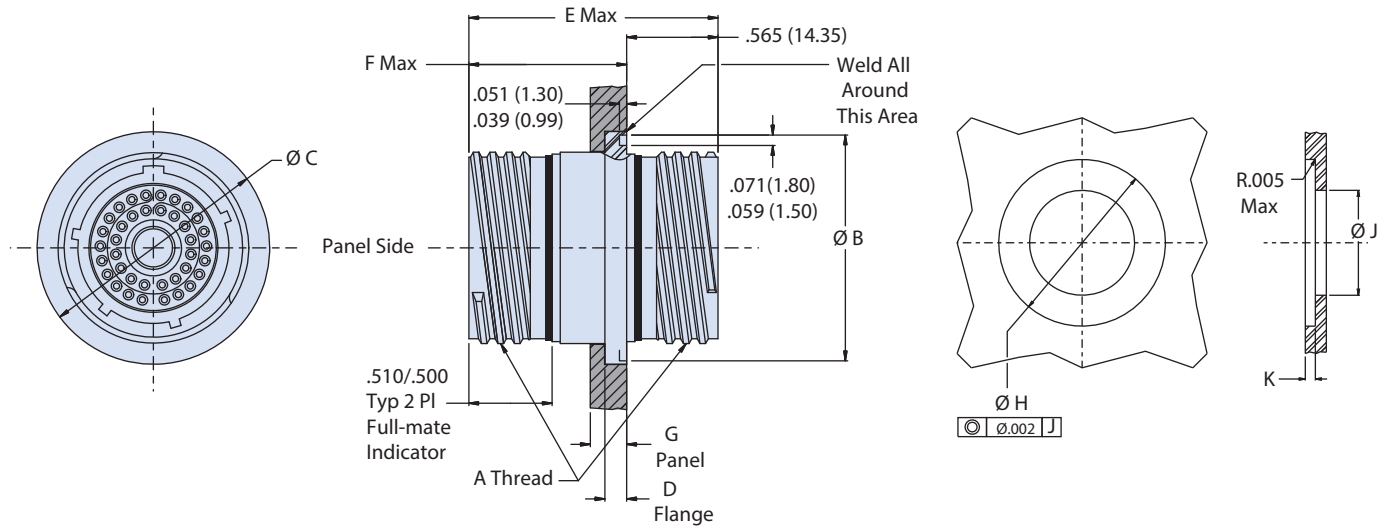
Dual O-ring, Jam-Nut (DH7) Mount Dimension		
Shell Size	B DIA	C MAX
9	1.500 (38.10)	1.375 (34.92)
11	1.625 (41.28)	1.500 (38.10)
13	1.752 (44.50)	1.626 (41.30)
15	1.937 (49.20)	1.811 (46.00)
17	2.063 (52.40)	1.937 (49.20)
19	2.189 (55.60)	2.063 (52.40)
21	2.311 (58.70)	2.189 (55.60)
23	2.500 (63.50)	2.300 (58.42)
25	2.625 (66.68)	2.400 (60.96)

Panel Thickness			
Shell Size	G Dim, OAL Max	H Dim, Max	J Dim, Panel
-01	1.670 (42.42)	.889 (22.58)	.125 (3.17) .062 (1.57)
-02	1.800 (45.72)	1.090 (27.69)	.250 (6.35) .062 (1.57)
-03	2.050 (52.07)	1.340 (34.04)	.500 (12.70) .062 (1.57)



233-261 Bulkhead feed-thru with shielded contacts
MIL-DTL-38999 Series III Type

233-261-H8 WELD MOUNT FEED-THRU CONNECTOR



D

Panel Thickness			
SHELL SIZE	E DIM, OAL MAX	F DIM, MAX	G DIM, PANEL
-01 ^s	1.520 (38.61)	.960 (24.38)	.125 (3.17)/.062 (1.57)
-02	1.670 (42.42)	1.110 (28.19)	.250 (6.35)/.062 (1.57)
-03	1.920 (48.77)	1.350 (34.29)	.500 (12.70)/.062 (1.57)

Recommended Panel Cutout			
Shell Size	Ø H	Ø J ±.005	DEPTH K ±.005
9	.990/.985 (25.15/ 25.02)	0.635 (16.13)	0.126 (3.20)
11	1.112/1.107 (28.24/28.12)	0.760 (19.30)	0.126 (3.20)
13	1.238/1.233 (28.12/ 31.32)	0.885 (22.48)	0.126 (3.20)
15	1.364/1.359 (34.65/34.52)	1.010 (25.65)	0.126 (3.20)
17	1.451/1.446 (36.86/ 36.73)	1.195 (30.35)	0.126 (3.20)
19	1.597/1.592 (40.56/ 40.44)	1.260 (32.00)	0.126 (3.20)
21	1.738/1.733 (44.15/ 44.02)	1.385 (35.18)	0.126 (3.20)
23	1.894/1.899 (48.11/48.23)	1.510 (38.35)	0.157 (3.99)
25	1.990/1.985 (50.55/ 50.42)	1.635 (41.53)	0.157 (3.99)

Dimensions				
Shell Size	A Thread	Ø B	Ø C	Ø D
9	.6250	.941 (23.90)	.984 (24.99)	.134 (3.40)
	-.1 P-0.3L-TS-2A	.929 (23.60)	.972 (24.69)	.118 (3.00)
11	.7500	1.063 (27.00)	1.106 (28.09)	.134 (3.40)
	-.1 P-0.3L-TS-2A	1.051 (26.70)	1.094 (27.79)	.118 (3.00)
13	.8750	1.189 (30.20)	1.232 (31.29)	.134 (3.40)
	-.1 P-0.3L-TS-2A	1.177 (29.90)	1.220 (30.99)	.118 (3.00)
15	1.0000	1.315 (33.40)	1.358 (34.49)	.134 (3.40)
	-.1 P-0.3L-TS-2A	1.303 (33.10)	1.346 (34.19)	.118 (3.00)
17	1.1875	1.402 (35.61)	1.445 (36.70)	.134 (3.40)
	-.1 P-0.3L-TS-2A	1.390 (35.31)	1.433 (36.40)	.118 (3.00)
19	1.2500	1.547 (39.29)	1.591 (40.41)	.134 (3.40)
	-.1 P-0.3L-TS-2A	1.535 (38.99)	1.579 (40.11)	.118 (3.00)
21	1.3750	1.689 (42.90)	1.732 (43.99)	.134 (3.40)
	-.1 P-0.3L-TS-2A	1.677 (42.60)	1.720 (43.69)	.118 (3.00)
23	1.5000	1.854 (47.09)	1.898 (48.21)	.165 (4.19)
	-.1 P-0.3L-TS-2A	1.842 (46.79)	1.886 (47.90)	.149 (3.78)
25	1.6250	1.941 (49.30)	1.984 (50.39)	.165 (4.19)
	-.1 P-0.3L-TS-2A	1.929 (49.00)	1.972 (50.09)	.149 (3.78)

1. Crimp removable socket contacts to conform to M39029/57-359 (size 12) M39029/57-358 (size 16), M39029/57-357 (size 20) and M39029/57-354 (size 22D) contacts required to fully populate rear, plus spares as required by mil-spec, are shipped loose with the connector.



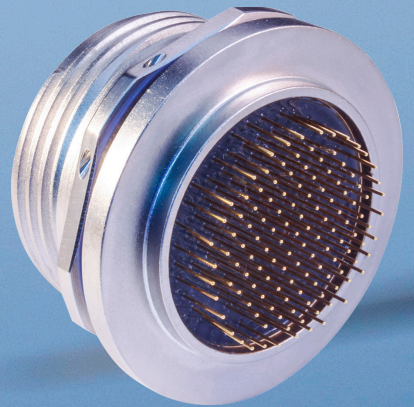
LIGHTWEIGHT, LOW RESISTANCE



“Mission-Critical” hermetic sealing with 1×10^{-7} leak-rate performance

Hermetically-sealed interconnects used in vacuum or high-altitude applications prevent moisture and other contaminants from damaging sensitive electronic equipment. Glass-to-metal hermetic sealing has been the gold standard in the aerospace and petrochemical industries for decades due to the strength and long-term durability of the materials used. But glass-to-metal seal hermetics come with a big price tag in both weight and electrical resistance.

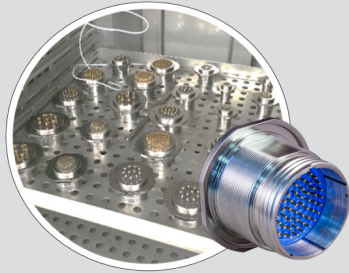
CODE RED is an innovative sealing encapsulant and application process—invented by Glenair—that provides durable hermetic sealing in a lightweight aluminum package. CODE RED allows for the use of conventional gold-plated copper alloy contacts, significantly improving electrical performance. CODE RED hermetic connectors are available now in Glenair SuperNine® (D38999 Series III type), Series 80 Mighty Mouse, and M24308 D-Sub. These connectors deliver reliable, life-of-system 1×10^{-7} max leak-rate hermetic sealing and special non-magnetic (zero residual magnetism) versions are also available, consult factory.



- Full hermetic sealing, with 1×10^{-7} in a lightweight aluminum shell and low electrical resistance, gold-plated copper contacts
- Meets NASA aerospace temperature and corrosion resistance standards.
- Meets ASTM-E595 outgassing requirements when ordered with modification code 683
- Operating temperature -65°C to $+200^{\circ}\text{C}$
- Available today in Mighty Mouse 806 Mil-Aero, M24308/9 D-Sub and D38999/23 glass-to-metal seal hermetics
- Significant weight savings—up to +50%
- Order-of-magnitude improvement in current carrying capacity and electrical resistance compared to Kovar/Inconel solutions

“Mission-Critical” hermetic sealing solution
MIL-DTL-38999 Series III Type

CODE RED LIGHTWEIGHT HERMETIC CONNECTOR TESTING AND VALIDATION



Connectors utilizing CODE RED hermetic encapsulant sealing went through a grueling qualification test and validation process to prove material durability and hermeticity. Validation testing including 100 cycles of thermal shock IAW EIA-364-32 Test Condition A -65°C to +200°C while maintaining hermeticity followed by 1000 hours of thermal aging at 200°C. Additional tests included:

- DWV, DWV at altitude
- IR, IR at temperature
- Highly Accelerated Life Testing (HALT)
- Insert and contact retention
- Mating durability
- Random vibration at temperature IAW MIL-DTL-38999
- Hermetic seal at 30 psi

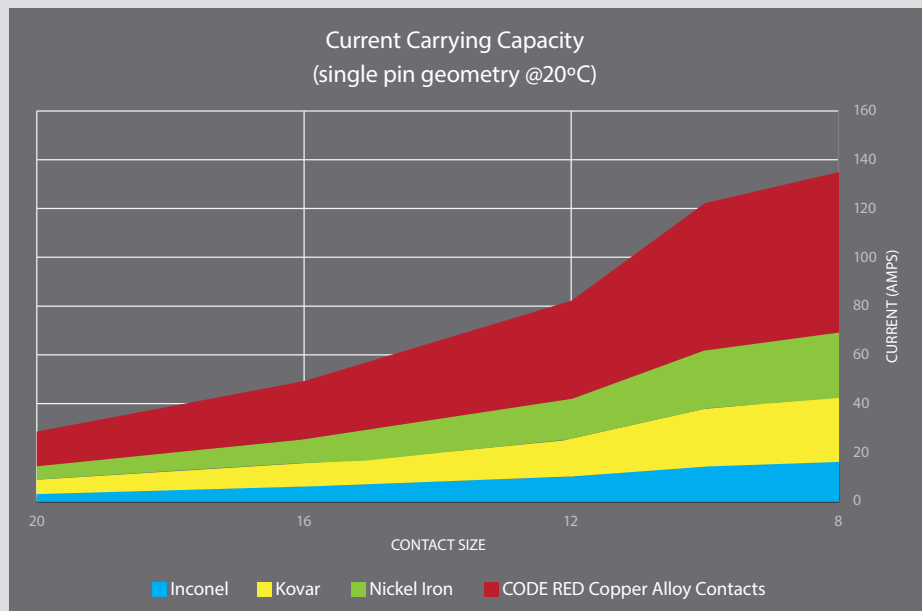
The entire qualification test cycle was repeated successfully a second time with new parts to validate complete reliability.

CODE RED USES PROVEN-PERFORMANCE CONNECTOR AND CONTACT MATERIALS

CODE RED Materials / Finish	
Sealing Adhesive	Proprietary Glenair compound
Contacts*	Gold-plated beryllium copper alloy per ASTM B 197 or equivalent
Insulator	Rigid plastic
Seals	Blended fluorosilicone/silicone elastomer
Receptacle Shell and Jam Nut*	Aluminum alloy 6061-T6 per ASTM B 221
Finish*	Electroless nickel per ASTM B 733

*zero residual magnetism materials also available

Graph illustrates Current Carrying Capacity of CODE RED copper alloy contacts compared to the Inconel, Kovar, and nickel iron contacts used in conventional glass-to-metal seal hermetics.



Percentage Weight Savings CODE RED vs. Glass-to-Metal MIL-DTL-38999 Sr. III	
Shell Size/Insert Arr.	Weight Reduction
9-35	52%
11-98	47%
13-35	47%
15-97	42%
19-32	40%
21-11	32%
23-21	28%
25-08	43%

APPLICATION NOTES: CODE RED is a viable drop-in solution for conventional glass-to-metal seal hermetic connectors with the following exceptions:

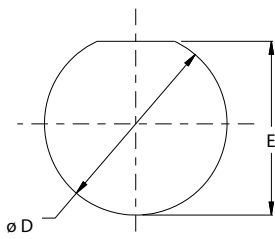
1. **Fuel Cells:** Although CODE RED exhibits outstanding resistance to caustic chemicals and fuels, its use in fuel tanks/fuel cell applications is not recommended.
2. **Cryogenics:** CODE RED has been tested and qualified to -65°C IAW MIL-DTL-38999
3. **Sustained High-Operating Temperatures:** CODE RED has been tested and qualified to a maximum +200°C IAW MIL-DTL-38999
4. **High Radiation:** Exposure to no more than 6 Megarads of radiation
5. **Deep Subsea:** CODE RED is ideally suited for aerospace and downhole applications that do not exceed 2 BAR (30 psi) atmospheric pressure differential.
6. **Life Support Systems:** Requires additional qualification testing not yet performed by Glenair.

233-250 Jam-nut receptacle, PC tails or solder cup MIL-DTL-38999 Series III Type

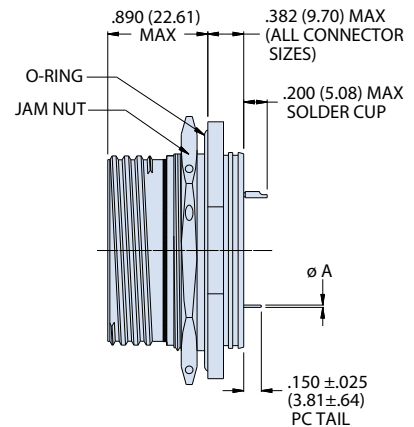
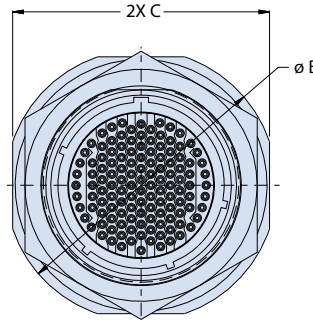
Part Number Development									
Sample Part Number	233-250				ME	17	-35	C	N
Series / Basic Part No.	Series 23 SuperNine jam-nut mount CODE RED hermetic receptacle								
Finish*	ME = Aluminum alloy 6061-T6, electroless nickel								
Shell Size*	Per MIL-DTL-38999 Series III								
Arrangement*	Per MIL-STD-1560								
Contact Style	C = Pin, PC tail P = Pin, solder cup			D = Socket, PC tail S = Socket, solder cup					
Polarization*	A, B, C, D, E, N = Normal; see section A for key position details								

***Refer to Section A for complete details, consult factory for additional options**
Modification codes may be added directly to the end of any valid part number

CODE RED



RECOMMENDED PANEL CUTOUT
PER MIL-DTL-38999, TYPE E



Panel Cut-Out Dimensions	
Contact Size	øA
22D	.020 (0.51)
	.018 (0.46)
20	.030 (0.76)
	.028 (0.71)
16	.040 (1.02)
	.038 (0.97)
12	.072 (1.83)
	.070 (1.78)

Dimensions				
Shell Size	ØB ±.010 (.25)	C +.004(.10) -.006(.15)	ØD +.010(.25) -.000(.00)	E +.000(.00) -.010(.25)
9	1.189 (30.20)	0.651 (16.54)	0.693 (17.60)	0.657 (16.69)*
11	1.374 (34.90)	0.751 (19.08)	0.825 (20.96)	0.771 (19.58)
13	1.500 (38.10)	0.938 (23.83)	1.010 (25.65)	0.955 (24.26)
15	1.626 (41.30)	1.062 (26.97)	1.135 (28.83)	1.085 (27.56)
17	1.752 (44.50)	1.187 (30.15)	1.260 (32.00)	1.210 (30.73)
19	1.937 (49.20)	1.312 (33.32)	1.385 (35.18)	1.335 (33.91)
21	2.063 (52.40)	1.437 (36.50)	1.510 (38.35)	1.460 (37.08)
23	2.189 (55.60)	1.562 (39.67)	1.635 (41.53)	1.585 (40.26)
25	2.311 (58.70)	1.687 (42.85)	1.760 (44.70)	1.710 (43.43)

*+.004 (.10)/-.002(.05)

NOTES

- Connectors meet all applicable dimensions, mechanical, electrical, environmental and sealing requirements of MIL-DTL-38999/23, PC tails.
- Connectors tested and meet applicable requirements of MIL-DTL-38999/23, class N & Y. See Glenair test report GT-16-223

- Performance
 - Operation temperature range: -65°C to +200°C
 - Leak Rate: 1 x 10⁻⁷ cc/s max helium, 1 ATM
 - IR: 5,000 megohms min at room temperature per MIL-DTL-38999
 - DWV: see service rating per applicable MIL-STD-1560 arrangements

Material/Finish

- Shell and jam-nuts: aluminum alloy 6061-T6/nickel plate per D38999 series III, Class F
- Insulators: high grade rigid dielectric/ N.A.
- O-ring and Seals: fluorosilicone/N.A.
- Contacts: copper alloy/gold plated
- sealing compound: silicone base polymer

**233-251 Jam-nut mount, bulkhead feed-thru
MIL-DTL-38999 Series III Type**

Part Number Development													
Sample Part Number	233-251-07					ME	17	-8	P	N	S	N	-02
Series / Basic Part No.	Series 23 SuperNine jam-nut CODE RED hermetic receptacle												
Material/Finish*	ME = Aluminum alloy 6061-T6, electroless nickel												
Shell Size*	Per MIL-DTL-38999 Series III												
Insert Arrangement*	Per MIL-STD-1560												
Contact Style (Panel Side)	P = Pin, gold, 500 cycles						S = Socket, gold, 500 cycles						
Polarization* (Panel Side)	A, B, C, D, E, N = Normal; see section A for key position details												
Contact Style (Flange Side)	P = Pin, gold, 500 cycles						S = Socket, gold, 500 cycles						
Polarization* (Flange Side)	A, B, C, D, E, N = Normal; see section A for key position details												
Panel Accommodation	02; See panel accommodation table for details												

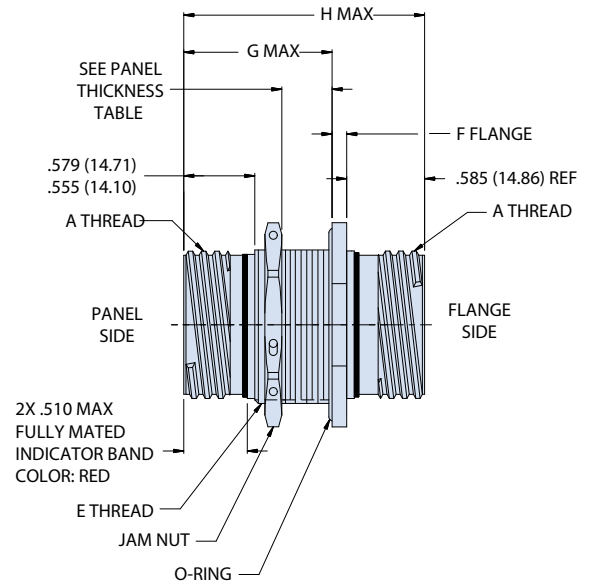
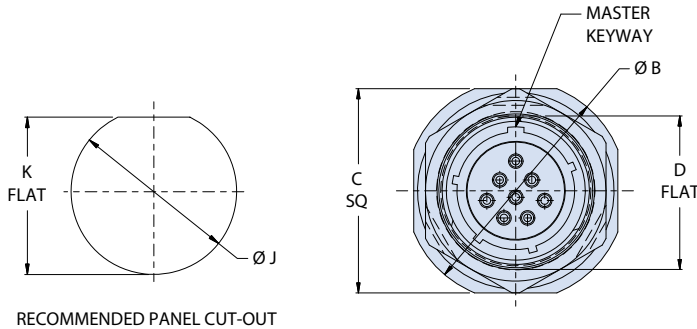
***Refer to Section A for complete details, consult factory for additional options**
Modification codes may be added directly to the end of any valid part number

Dimensions							
Shell Size Code	Shell Size	A Thread 0.1P-0.3L-TS-2A	ØB	C Sq	D Flat	E Thread ISO Metric	F
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17 X 1.0-6g	.122 (3.10) .083 (2.11)
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20 X 1.0-6g	
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25 X 1.0-6g	
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g	
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g	
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g	.153 (3.89) .114 (2.90)
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g	
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g	
J	25	1.6250	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44 X 1.0-6g	

Panel Accommodation			
Sym	Panel Thickness	G Max	H Max
02	.250 (6.35) .062 (1.57)	1.090 (27.69)	1.78 (45.21)

**233-251 Jam-nut mount, bulkhead feed-thru
MIL-DTL-38999 Series III Type**

CODE RED



D

Panel Cut-out Dimensions			
Shell Size Code	Shell Size	ØJ	K Flat
A	9	.703 (17.86)	.661 (16.79)
		.693 (17.60)	.654 (16.61)
B	11	.835 (21.21)	.771 (19.58)
		.825 (20.96)	.761 (19.33)
C	13	1.020 (25.91)	.955 (24.26)
		1.010 (25.65)	.945 (24.00)
D	15	1.145 (29.08)	1.085 (27.56)
		1.135 (28.83)	1.075 (27.30)
E	17	1.270 (32.26)	1.210 (30.73)
		1.260 (32.00)	1.200 (30.48)
F	19	1.395 (35.43)	1.335 (33.91)
		1.385 (35.18)	1.325 (33.65)
G	21	1.520 (38.61)	1.460 (37.08)
		1.510 (38.35)	1.450 (36.83)
H	23	1.645 (41.78)	1.585 (40.26)
		1.635 (41.53)	1.575 (40.00)
J	25	1.770 (44.96)	1.710 (43.43)
		1.760 (44.70)	1.700 (43.18)

NOTES

1. Connector is designed to meet all applicable mechanical dimensional, electrical, and environmental and sealing requirements of MIL-DTL-38999, D38999/23, and MIL-STD-1560 except as shown and/or noted. Insert arrangement in accordance with MIL-STD-1560. Contact manufacturer for available arrangement options
2. For pin/pin configuration, symmetrical layout only, Consult factory for available insert arrangements and for availability of socket/socket configuration
3. Power to a given contact on one end will result in power to a contact directly opposite, regardless of identification letter
4. Electrical safety limits must be established by user. Peak voltage switching surge, transient, etc should be used to determine the safety application
5. Sealing compound employed has been tested and meets applicable requirements of MIL-DTL-38999/23 class N and Y. See Glenair test report GT-16-223

6. Performance

- Operation temperature Range: -65°C to +200°C
- Leak Rate: 1 x 10⁻⁷ cc/s max helium, 1 ATM
- IR: 5,000 megohms min at room temperature per MIL-DTL-38999
- DWV: see service rating per applicable MIL-STD-1560 arrangements
- Dimensions shown comply with applicable MIL-DTL-38999/23

Material/Finish

- Shell and jam-nut: aluminum alloy 6061-T6/nickel plate per D38999 series III, Class F
- Insulators: high grade rigid dielectric/ N.A.
- O-ring and Seals: fluorosilicone/N.A.
- Contacts: copper alloy/gold plated
- sealing compound: silicone base polymer

233-252 Jam-nut mount, crimp removable contact MIL-DTL-38999 Series III Type

Part Number Development									
Sample Part Number	233-252-07				ME	17	-8	P	N
Series / Basic Part No.	Series 23 SuperNine CODE RED hermetic jam-nut mount receptacle								
Material/Finish*	ME = Aluminum alloy 6061-T6, electroless nickel								
Shell Size*	Per MIL-DTL-38999 Series III								
Insert Arrangement*	Per MIL-STD-1560								
Contact Style	P = Pin, gold, 500 cycles		S = Socket, gold, 500 cycles						
Polarization*	A, B, C, D, E, N = Normal; see section A for key position details								

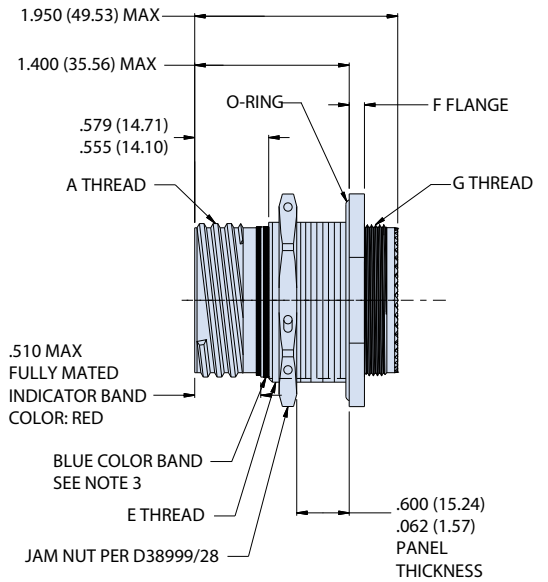
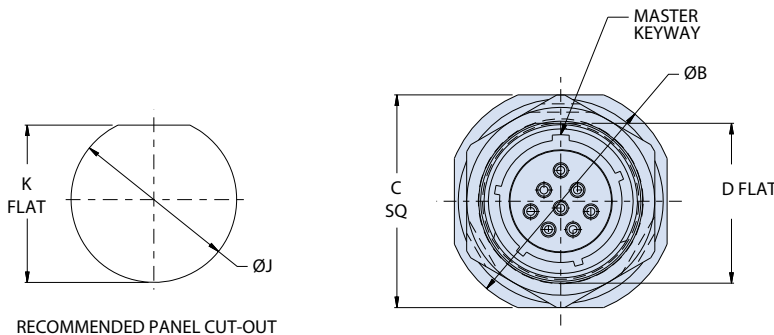
***Refer to Section A for complete details, consult factory for additional options**
Modification codes may be added directly to the end of any valid part number

Dimensions								
Shell Size Code	Shell Size	A Thread 0.1P-0.3L-TS-2A	ØB	C Sq	D Flat	E Thread ISO Metric 1.0-6g 0.100R	F	G Thread ISO Metric
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17	.122 (3.10) .083 (2.11)	M12 X 1.0-6g 0.100R
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20		M15 X 1.0-6g 0.100R
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25		M18 X 1.0-6g 0.100R
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28		M22 X 1.0-6g 0.100R
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32		M25 X 1.0-6g 0.100R
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35	.153 (3.89) .114 (2.90)	M28 X 1.0-6g 0.100R
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38		M31 X 1.0-6g 0.100R
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41		M34 X 1.0-6g 0.100R
J	25	1.6250	2.323 (59.00)	2.205 (56.01)	1.691 (42.95)	M44		M37 X 1.0-6g 0.100R
			2.299 (58.39)	2.173 (55.19)	1.681 (42.70)			

D

233-252 Jam-nut mount, crimp removable contact
MIL-DTL-38999 Series III Type

CODE RED



Supplied Socket Contacts	
Size	Contact P/N
22	AS39029/57-354
20	AS39029/57-357
16	AS39029/57-358

Panel Cut-out Dimensions			
Shell Size Code	Shell Size	ØJ	K Flat
A	9	.703 (17.86)	.661 (16.79)
		.693 (17.60)	.655 (16.64)
B	11	.835 (21.21)	.771 (19.58)
		.825 (20.96)	.761 (19.33)
C	13	1.020 (25.91)	.955 (24.26)
		1.010 (25.65)	.945 (24.00)
D	15	1.145 (29.08)	1.085 (27.56)
		1.135 (28.83)	1.075 (27.30)
E	17	1.270 (32.26)	1.210 (30.73)
		1.260 (32.00)	1.200 (30.48)
F	19	1.395 (35.43)	1.335 (33.91)
		1.385 (35.18)	1.325 (33.65)
G	21	1.520 (38.61)	1.460 (37.08)
		1.510 (38.35)	1.450 (36.83)
H	23	1.645 (41.78)	1.585 (40.26)
		1.635 (41.53)	1.575 (40.00)
J	25	1.770 (44.96)	1.710 (43.43)
		1.760 (44.70)	1.700 (43.18)

NOTES

1. Meets applicable mechanical, dimensional, electrical, environmental and sealing requirements of MIL-DTL-38999, D38999/23, and MIL-STD-1560 except as shown and/or noted.
2. Insert arrangement in accordance with MIL-STD-1560. Contact manufacturer for available arrangement options
3. Blue color band indicates rear release retention system
4. Connector supplied with loose socket contacts (including spares shown in table), insertion/removal tool and sealing plug
5. Sealing compound employed has been tested and meets applicable performance requirements of MIL-DTL-38999/23 See Glenair test report GT-16-223
6. Dimensions shown comply with applicable MIL-DTL-38999/23

7. Performance

- Operation temperature Range: -65°C to +200°C
- Leak Rate: 1 x 10⁻⁷ cc/s max helium, 1 ATM
- IR: 5,000 megohms min at room temperature per MIL-DTL-38999
- DWV: see service rating per applicable MIL-STD-1560 arrangements

Material/Finish

- Shell and jam-nuts: aluminum alloy 6061-T6/nickel plate per D38999 series III, Class F
- Insulators: high grade rigid dielectric/ N.A.
- O-ring and seals: fluorosilicone/N.A.
- Contacts: copper alloy/gold plated
- Sealing compound: silicone base polymer

233-253 Jam-nut mount with solder cup and banding porch MIL-DTL-38999 Series III Type

Part Number Development										
Sample Part Number	233-253			-M	07	ME	17	-8	P	N
Series / Basic Part No.	Series 23 SuperNine CODE RED hermetic connector									
Band Style	M = Micro Band N = Nano Band S = Standard Band; see band style table									
Connector Style	07 = Receptacle, jam nut (D38999/23)									
Material/Finish*	ME = Aluminum alloy 6061-T6, electroless nickel									
Shell Size*	Per MIL-DTL-38999 Series III									
Insert Arrangement*	Per MIL-STD-1560									
Contact Style	P = Pin, gold, 500 cycles					S = Socket, gold, 500 cycles				
Polarization*	A, B, C, D, E, N = Normal; see section A for key position details									

***Refer to Section A for complete details, consult factory for additional options**
Modification codes may be added directly to the end of any valid part number

D

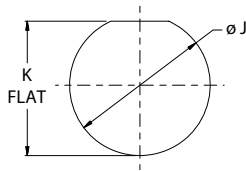
Dimensions							
Shell Size Code	Shell Size	A Thread .1P-.3L-TS-2A	Ø B	C Sq	D Flat	E Thread ISO Metric	F
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17 X 1.0-6g 0.100R	.122 (3.10) .083 (2.11)
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20 X 1.0-6g 0.100R	
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25 X 1.0-6g 0.100R	
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28 X 1.0-6g 0.100R	
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32 X 1.0-6g 0.100R	
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35 X 1.0-6g 0.100R	.153 (3.89) .114 (2.90)
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38 X 1.0-6g 0.100R	
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41 X 1.0-6g 0.100R	
J	25	1.6250	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44 X 1.0-6g 0.100R	

NOTES

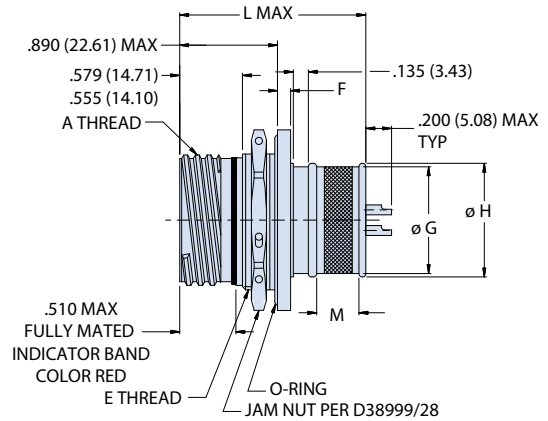
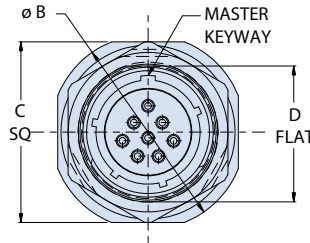
1. Meets the applicable mechanical, dimensional, electrical, environmental, and sealing requirements of MIL-DTL-38999 Series III, D38999/23, and MIL-STD-1560 except as shown and/or noted. Mates with any QPL manufacturers MIL-DTL-38999, Series III connectors having the same shell size, insert arrangement, opposite contact gender and polarization.
2. Insert arrangement in accordance with MIL-STD-1560. Contact manufacturer for available arrangement options
3. Dimensions shown comply with applicable MIL-DTL-38999/23
4. Connectors have been tested and meet applicable performance requirements of MIL-DTL-38999, series III, class N and Y. See Glenair test report GT-16-223
5. Performance
 - Operation temperature range: -65°C to +200°C
 - Leak rate: 1 x 10⁻⁷ cc/s max helium, 1 ATM
 - IR: 5,000 megohms min at room temperature per MIL-DTL-38999
 - DWV: see service rating per applicable MIL-STD-1560 arrangements

233-253 Jam-nut mount with solder cup and banding porch MIL-DTL-38999 Series III Type

CODE RED



RECOMMENDED PANEL CUT OUT



Panel Cut-Out Dimensions			
Shell Size Code	Shell Size	ϕJ	K Flat
A	9	.703 (17.86) .693 (17.60)	.661 (16.79) .655 (16.64)
B	11	.835 (21.21) .825 (20.96)	.771 (19.58) .761 (19.33)
C	13	1.020 (25.91) 1.010 (25.65)	.955 (24.26) .945 (24.00)
D	15	1.145 (29.08) 1.135 (28.83)	1.085 (27.56) 1.075 (27.30)
E	17	1.270 (32.26) 1.260 (32.00)	1.210 (30.73) 1.200 (30.48)
F	19	1.395 (35.43) 1.385 (35.18)	1.335 (33.91) 1.325 (33.65)
G	21	1.520 (38.61) 1.510 (38.35)	1.460 (37.08) 1.450 (36.83)
H	23	1.645 (41.78) 1.635 (41.53)	1.585 (40.26) 1.575 (40.00)
J	25	1.770 (44.96) 1.760 (44.70)	1.710 (43.43) 1.700 (43.18)

Integral Backshell Dimensions			
Shell Size Code	Shell Size	ϕG	ϕH
A	9	0.475	0.538
B	11	0.600	0.662
C	13	0.700	0.762
D	15	0.835	0.898
E	17	0.960	1.022
F	19	1.062	1.125
G	21	1.188	1.250
H	23	1.275	1.338
J	25	1.475	1.538

Band Style Table			
Sym	Description	L Max	M
M	Micro Band	1.450 (36.83)	.190 (4.83)
N	Nano Band	1.410 (35.81)	.145 (3.68)
X	Standard Band	1.780 (45.21)	.380 (9.65)

Material/Finish

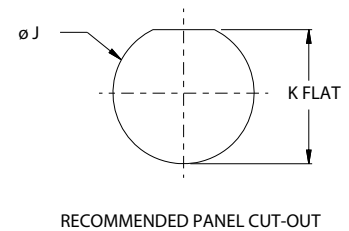
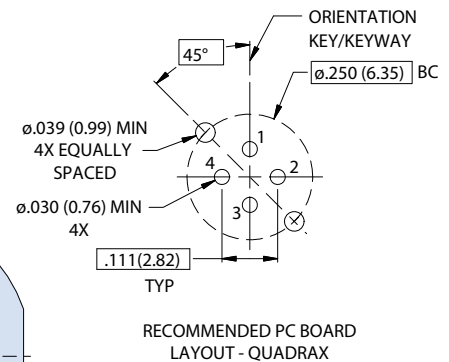
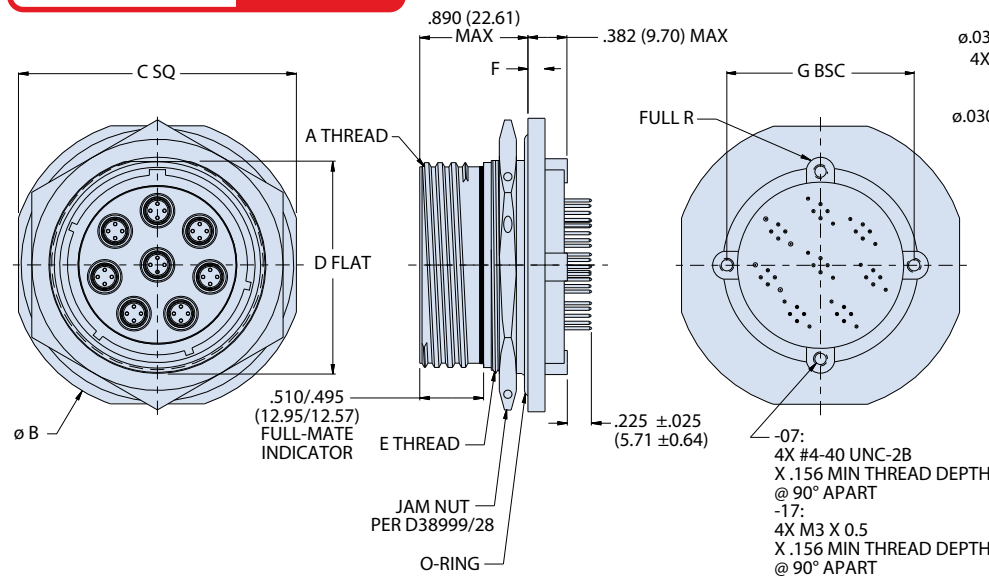
- Shell and jam-nut: aluminum alloy 6061-T6/nickel plate per D38999 series III, Class F
- Insulator: high grade rigid dielectric/N.A.
- O-ring and seals: fluorosilicone/N.A.
- Contacts: copper alloy/gold plated
- Sealing compound: silicone base polymer

233-254 Jam-nut mount with PC tail Quadrax contacts MIL-DTL-38999 Series III Type

Part Number Development						
Sample Part Number	233-254	-07	ME	25Q	-8	P N
Series / Basic Part No.	Series 23 SuperNine CODE RED hermetic connector					
Connector Style	07 = Receptacle, jam nut; standard standoff thread 17 = Receptacle, jam nut; metric standoff thread					
Material/Finish*	ME = Aluminum alloy 6061-T6, electroless nickel					
Shell Size (See Note 3)	Per MIL-DTL-38999 Series III					
Insert Arrangement*	See optional high-speed arrangements					
Contact Style	P = Pin, PC tail S = Socket, PC tail					
Polarization*	A, B, C, D, E, N = Normal; see section A for key position details					

*Refer to Section A for complete details, consult factory for additional options
Modification codes may be added directly to the end of any valid part number

CODE RED



NOTES

- Meets mechanical, dimensional, electrical, environmental and sealing requirements of MIL-DTL-38999, D38999/23, PC tails
- Connectors have been tested and meet applicable performance requirements of MIL-DTL-38999/23, series III, class N and Y. See Glenair test report GT-16-223
- Letter following shell size designates the contact type, Q = Quadrax, PC tail
- Contact manufacturer for available arrangement options
- Dimensions comply with applicable MIL-DTL-38999/23
- Performance
 - Operation temperature Range: -65°C to +200°C
 - Leak Rate: 1 x 10⁻⁷ cc/s max helium, 1 ATM
- Electrical parameters (Quadrax)
 - Differential impedance: 100 ohms nominal
 - DWV: 500 VRMS
 - I.R.: 5000 megohms min 200 VDC at room temperature

Material/Finish

- Shell and jam-nut: aluminum alloy 6061-T6/nickel plate per D38999 series III, Class F
- Insulator: high grade rigid dielectric/N.A.
- O-ring and seals: fluorosilicone/N.A.
- Contacts: copper alloy/gold plated
- Sealing compound: silicone base polymer

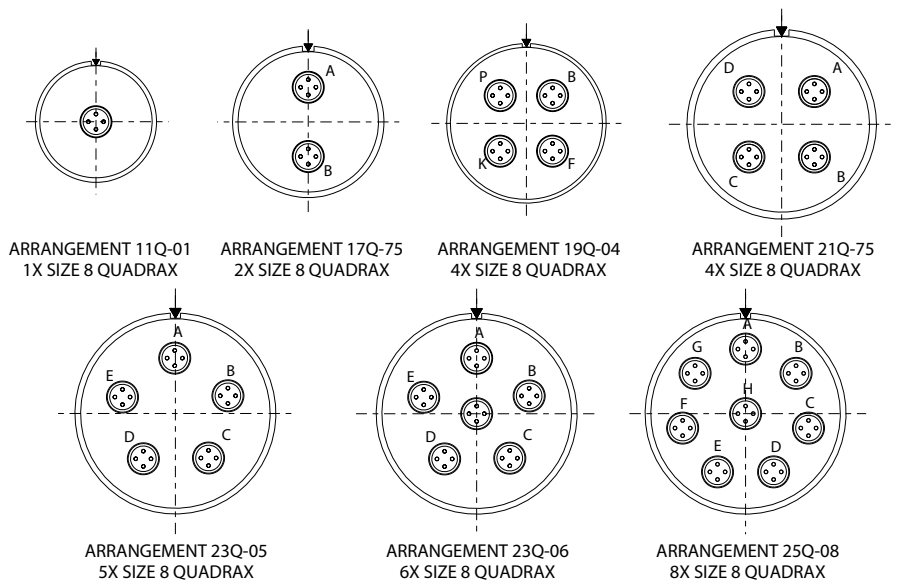
233-254 Jam-nut mount with PC tail Quadrax contacts MIL-DTL-38999 Series III Type

Dimensions								
Shell Size Code	Shell Size	A Thread .1P-.3L-TS-2A	Ø B	C Sq	D Flat	E Thread ISO Metric 1.0-6g 0.100R	F	G Bsc
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17	.122 (3.10) .083 (2.11)	0.594 (15.09)
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20		0.719 (18.26)
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25		0.812 (20.62)
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28		0.906 (23.01)
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32		1.030 (26.16)
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35	.153 (3.89) .114 (2.90)	1.150 (29.21)
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38		1.221 (31.01)
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41		1.360 (34.54)
J	25	1.6250	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44		1.475 (37.47)



Panel Cut-Out Dimensions			
Shell Size Code	Shell Size	Ø J	K Flat
A	9	.703 (17.86) .693 (17.60)	.661 (16.79) .655 (16.64)
B	11	.835 (21.21) .825 (20.96)	.771 (19.58) .761 (19.33)
C	13	1.020 (25.91) 1.010 (25.65)	.955 (24.26) .945 (24.00)
D	15	1.145 (29.08) 1.135 (28.83)	1.085 (27.56) 1.075 (27.30)
E	17	1.270 (32.26) 1.260 (32.00)	1.210 (30.73) 1.200 (30.48)
F	19	1.395 (35.43) 1.385 (35.18)	1.335 (33.91) 1.325 (33.65)
G	21	1.520 (38.61) 1.510 (38.35)	1.460 (37.08) 1.450 (36.83)
H	23	1.645 (41.78) 1.635 (41.53)	1.585 (40.26) 1.575 (40.00)
J	25	1.770 (44.96) 1.760 (44.70)	1.710 (43.43) 1.700 (43.18)

OPTIONAL HIGH-SPEED QUADRAX INSERT ARRANGEMENTS



233-255 Jam-nut mount, PC tail with threaded standoffs MIL-DTL-38999 Series III Type

Part Number Development												
Sample Part Number	233-255						-07	ME	17	-8	C	N
Series / Basic Part No.	Series 23 SuperNine CODE RED hermetic connector											
Connector Style	07 = Receptacle, jam nut with standard stand off thread 17 = Receptacle, jam-nut with metric stand off thread											
Material/Finish*	ME = Aluminum alloy 6061-T6, electroless nickel											
Shell Size*	Per MIL-DTL-38999 Series III											
Insert Arrangement*	Per MIL-STD-1560											
Contact Style	C = Pin, PC Tail D = Socket, PC Tail											
Polarization*	A, B, C, D, E, N = Normal; see section A for key position details											

***Refer to Section A for complete details, consult factory for additional options**
Modification codes may be added directly to the end of any valid part number

D

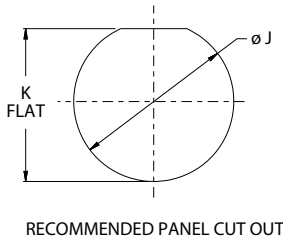
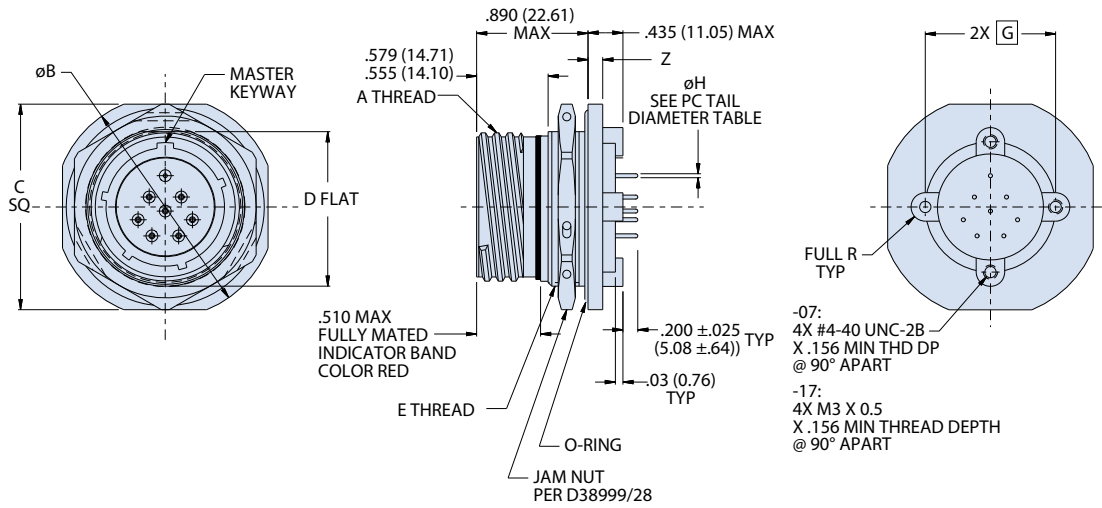
Dimensions								
Shell Size Code	Shell Size	A Thread .1P-.3L-TS-2A	Ø B	C Sq	D Flat	E Thread ISO Metric 1.0-6g 0.100R	F	G Bsc
A	9	.6250	1.200 (30.48) 1.178 (29.92)	1.078 (27.38) 1.048 (26.62)	.654 (16.61) .645 (16.38)	M17	.122 (3.10) .083 (2.11)	.594 (15.09)
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20		.719 (18.26)
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25		.812 (20.62)
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28		.906 (23.01)
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32		1.030 (26.16)
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35	.153 (3.89) .114 (2.90)	1.150 (29.21)
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38		1.221 (31.01)
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41		1.360 (34.54)
J	25	1.6250	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44		1.475 (37.47)

NOTES

- Meets applicable mechanical, dimensional, electrical, environmental and sealing requirements of MIL-DTL-38999, D38999/23, PC tails
- Insert arrangement in accordance with MIL-STD-1560. Contact manufacturer for available arrangement options
- Dimensions shown comply with applicable MIL-DTL-38999/23
- Connectors have been tested and meet applicable performance requirements of MIL-DTL-38999, series III, class N and Y. See Glenair test report GT-16-223
- Performance
 - Operation temperature Range: -65°C to +200°C
 - Leak Rate: 1 x 10⁻⁷ cc/s max helium, 1 ATM
 - IR: 5,000 megohms min at room temperature per MIL-DTL-38999
 - DWV: see service rating per applicable MIL-STD-1560 arrangements

233-255 Jam-nut mount, PC tail with threaded standoffs
MIL-DTL-38999 Series III Type

CODE RED



RECOMMENDED PANEL CUT OUT

Panel Mount Dimensions			
Shell Size Code	Shell Size	ϕJ	K Flat
A	9	.703 (17.86)	.661 (16.79)
		.693 (17.60)	.655 (16.64)
B	11	.835 (21.21)	.771 (19.58)
		.825 (20.96)	.761 (19.33)
C	13	1.020 (25.91)	.955 (24.26)
		1.010 (25.65)	.945 (24.00)
D	15	1.145 (29.08)	1.085 (27.56)
		1.135 (28.83)	1.075 (27.30)
E	17	1.270 (32.26)	1.210 (30.73)
		1.260 (32.00)	1.200 (30.48)
F	19	1.395 (35.43)	1.335 (33.91)
		1.385 (35.18)	1.325 (33.65)
G	21	1.520 (38.61)	1.460 (37.08)
		1.510 (38.35)	1.450 (36.83)
H	23	1.645 (41.78)	1.585 (40.26)
		1.635 (41.53)	1.575 (40.00)
J	25	1.770 (44.96)	1.710 (43.43)
		1.760 (44.70)	1.700 (43.18)

PC Tail Diameter Dimensions	
Contact Size	PC Tail ϕH
No 23	.020 (0.51)
	.018 (0.46)
No 22	.020 (0.51)
	.018 (0.46)
No 20	.030 (0.76)
	.028 (0.71)
No 16	.040 (1.02)
	.038 (0.97)
No 12	.072 (1.83)
	.070 (1.78)

Material/Finish

- Shell and jam-nut: aluminum alloy 6061-T6/nickel plate per D38999 series III, Class F
- Insulator: high grade rigid dielectric/N.A.
- O-ring and seals: fluorosilicone blend/N.A.
- Contacts: copper alloy/gold plated
- Sealing compound: silicone base polymer

SERIES 23
RJ45/USB/HDMI
CONNECTORS



 **SuperNine**®

Ruggedized SuperSeal™ RJ45/USB/HDMI field technology assures superior sealing, grounding, and ease-of-assembly wherever a commercial Ethernet or high-speed USB interface is required



Features

- Superior sealing—IP67 open face and IP68 when mated—for complete system protection against water, sand and dust
- Shielded/grounded coupler designs in both receptacle and plug connectors
- Crimp, solder-cup, PC tail, and Quadrax contact/wire termination options
- RJ45 plug and/or jack interface options available in Cat 5e or Cat 6a in D38999 type packaging
- USB 2.0, 3.0 and HDMI solutions in D38999 type
- Intermateable, one-to-one equivalent solutions for other industry-standard commercial data interface field-duty connectors

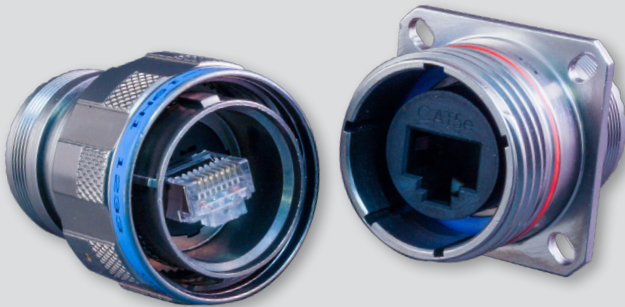


Glenair®

Glenair, Inc.
1211 Air Way
Glendale, CA 91201-2497
818-247-6000
sales@glenair.com
www.glenair.com

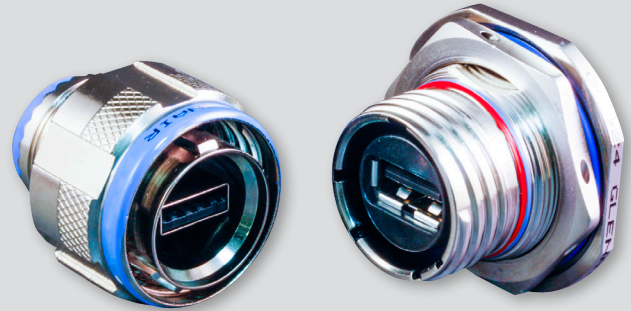
Advanced performance MIL-DTL-38999 connectors with commercial high-speed data protocol connector interfaces

RJ45 SUPERNINE MIL-DTL-38999 SERIES III TYPE CONNECTORS



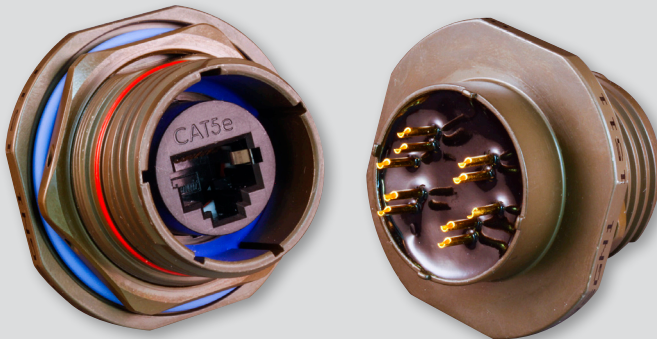
Page E-6

USB 2.0/3.0 SUPERNINE MIL-DTL-38999 SERIES III TYPE CONNECTORS



Page E-31

RJ45 TRANSIENT VOLTAGE SUPPRESSION SUPERNINE MIL-DTL-38999 SERIES III TYPE CONNECTORS



Page E-25

HDMI 2.0 CABLE ASSEMBLIES



Page E-49

E

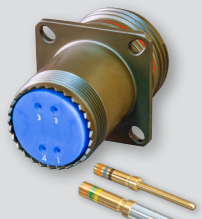
AVAILABLE INTERFACE AND TERMINATION OPTIONS



Solder Cup



PC tail



Crimp Removable



Filtered



Quadrax



Pin/Socket



SUPERSEAL™

Ruggedized RJ45, USB and HDMI connectors for applications as diverse as military ground vehicles to in-flight entertainment

High performance, proven reliability environmental connectors housing commercial data protocol interfaces — IP67 rated in unmated condition, for mission-critical field applications

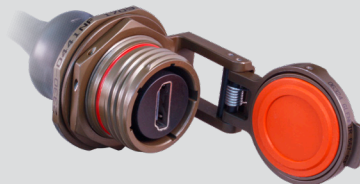
- Superior sealing—IP67 unmated—for complete system protection against water, sand and dust
- Highly durable SuperSeal™ insert design, provides enhanced operating temperature, increased life-cycle, and rugged vibration and shock performance
- Shielded/grounded coupler designs in both receptacle and plug connectors
- Crimp, solder-cup, PC tail, cable assemblies and Quadrax contact/wire termination options
- RJ45 plug and/or jack interface options available in Cat 5e/6A
- MIL-DTL-38999 type versions intermateable with other RJ45 field-duty connectors



MIL-DTL-38999 Series III with sealed RJ45



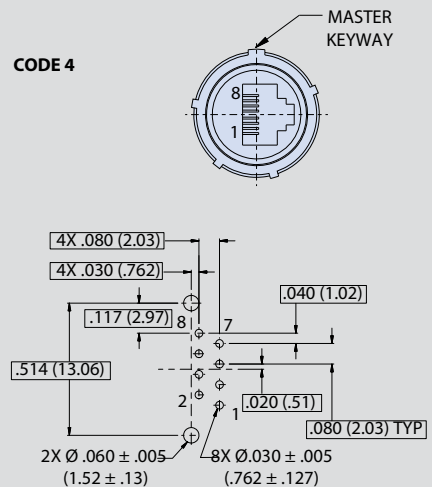
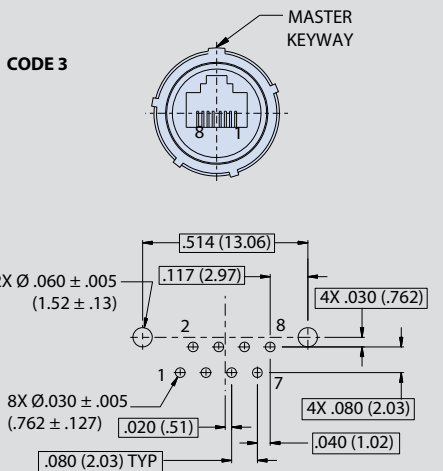
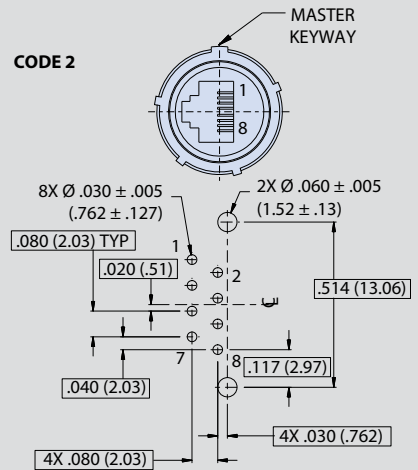
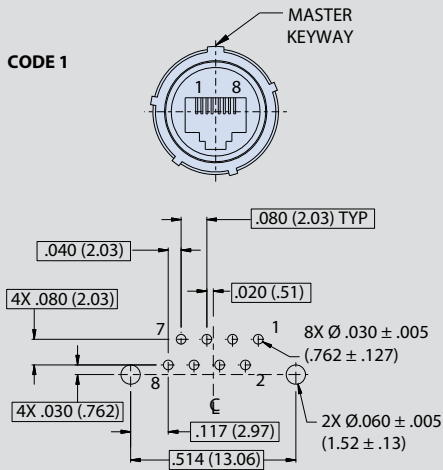
MIL-DTL-38999 Series III with sealed USB 2.0 and 3.0



MIL-DTL-38999 Series III with sealed HDMI 2

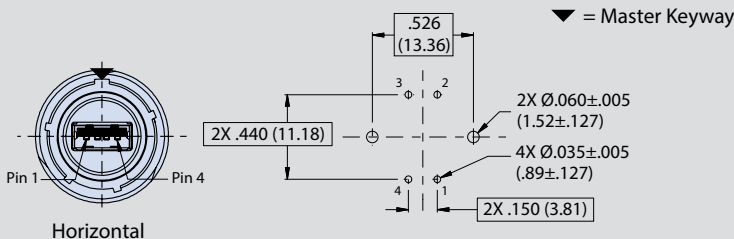
Advanced performance MIL-DTL-38999 connectors
MIL-DTL-38999, Series III Type Performance Specifications

RJ45 PCB FOOTPRINT AND ORIENTATIONS FOR MIL-DTL-38999 TYPE, SUPERNINE RECEPTACLES

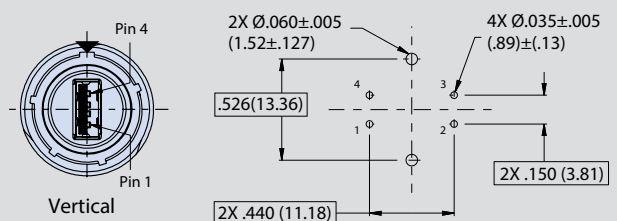


STANDARD USB 2.0 PCB FOOTPRINTS FOR MIL-DTL-38999 TYPE, SUPERNINE RECEPTACLES

Recommended (Solder Side)

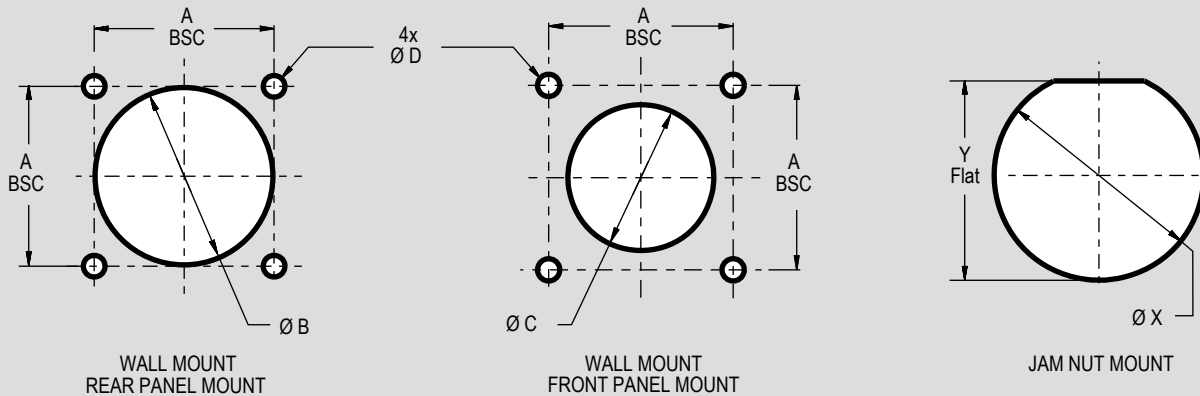


Recommended (Solder Side)



Advanced performance MIL-DTL-38999 connectors
MIL-DTL-38999, Series III Type Recommended Panel Cutouts

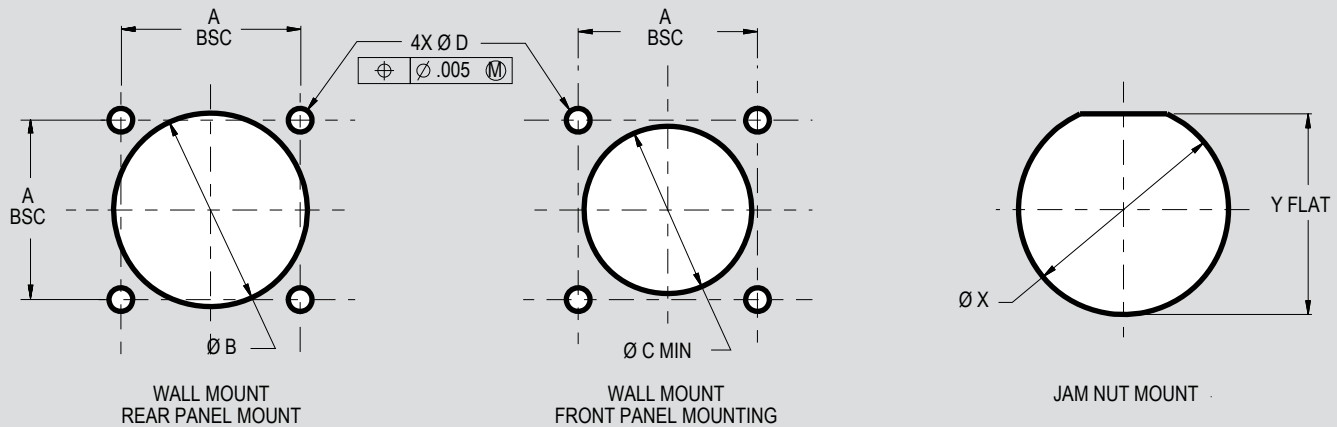
MIL-DTL-38999 TYPE, SUPERNINE RJ45 AND HDMI PANEL CUTOUTS FOR SHELL SIZE 17 AND 19



Panel Cut-Out Dimensions						
Shell Size	A Bsc	B Dia Min	C Dia Min	D Holes	X Dia	Y Flat
17	1.062 (26.97)	1.219 (30.96)	1.016 (25.81)	.133 (3.38)	1.270 (32.26) 1.260 (32.00)	1.210 (30.73) 1.208 (30.68)
19*	1.156 (29.36)	1.297 (32.94)	1.141 (28.98)	.123 (3.12)	1.395 (35.43) 1.385 (35.18)	1.335 (33.91) 1.325 (33.66)

*Not available for HDMI 2.0 connectors

MIL-DTL-38999 TYPE, SUPERNINE USB PANEL CUTOUTS FOR SHELL SIZE 15 AND 17



Panel Cut-Out Dimensions						
Shell Size	A Bsc	B Dia Min	C Dia Min	D Holes	X Dia	Y Flat
15	.969 (24.61)	1.047 (26.59)	.906 (23.01)	.133 (3.38)	1.145 (29.08) 1.135 (28.83)	1.085 (27.56) 1.075 (27.31)
17	1.062 (26.97)	1.219 (30.96)	FPM not offered	.123 (3.12)	1.270 (32.26) 1.260 (32.00)	1.210 (30.73) 1.200 (30.48)

Advanced performance MIL-DTL-38999 type connectors Modification Codes and Materials/Finishes

ASTM E595 Outgassing

MOD CODE 186S

- SuperSeal® connectors specially processed to meet ASTM E595 outgassing requirements.
- Modification code specifies special outgassing bakeout processing.
- Meets NASA Screening Level 1 requirements

Space flight equipment requires low-outgassing components in order to prevent degradation to optics and other sensitive instruments. The space industry has adopted a standardized test procedure, ASTM E595, to evaluate outgassing properties. In the ASTM test, material samples are heated to 125° C at a vacuum of 5×10^{-5} torr for 24 hours. The test sample is then weighed to calculate the Total Mass Loss (TML), which may not exceed 1.0% of the total initial mass. A collector plate is used to determine the Collected Volatile Condensable Material (CVCM), which may not exceed 0.1% of the total original specimen mass. SuperSeal™ connectors contain nonmetallic materials such as rubber, plastic, adhesives and potting compounds which can give off gases when subjected to a vacuum or high heat. Unless the connector is specially processed, the TML and CVCM can exceed allowable limits. Glenair is able to offer a bakeout process, 48 hour oven bakeout at 257° F, which assures all materials comply with ASTM E595

UL 94 V-0 Flammability Standard

MOD CODE 928

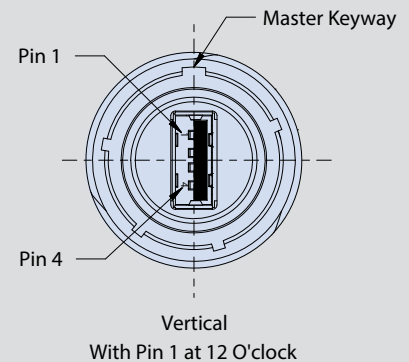
- SuperSeal® connectors specially processed to meet UL 94 V-0 flammability standard

UL 94, the Standard for Safety of Flammability of Plastic Materials for Parts in Devices and Appliances testing is a plastics flammability standard released by Underwriters Laboratories of the USA. The standard classifies plastics according to how they burn in various orientations and thicknesses. From lowest (least flame-retardant) to highest (most flame-retardant) V-0. Burning stops within 10 seconds on a vertical specimen; specimens may not drip flaming particles.

Flip Vertical USB Orientation by 180 degrees

MOD CODE 915

Flip standard, vertically oriented USB designs 180 degrees, allowing pin 1 to be located at the 12 O'clock position.



MIL-DTL-38999 Connector and Cable Assembly Material and Finish Codes

Code	Material	Finish	Finish Specification	Hrs. Salt Spray	Electrical Conductivity	Operating Temp. Range	RoHS Compliance
ME	Aluminum	Electroless Nickel	MIL-DTL-24308 Class K	96	Yes		Yes
MT	Aluminum	Nickel PTFE	SAE AMS2454	500	Yes	-65° to +175°C	Yes
NF	Aluminum	Cadmium, Olive Drab	SAE-AMS-QQ-P-416 Type II Class 2 over electroless nickel	500	Yes	-65 to +175°C	No
ZR	Aluminum	Zinc-Nickel, Black	ASTM B841 Grade 5 over electroless nickel	500	Yes	-65 to +175°C	Yes

SuperNine® RJ45 CAT 5e and 6A connectors

Advanced performance MIL-DTL-38999 connectors

Product Selection Guide



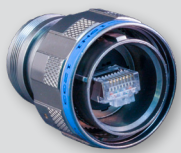
E



233-312 E-9
SuperSeal™ CAT 6A Plug with RJ45 Male Mating Interface and Accessory Threads



233-330 E-22
SuperSeal™ CAT 5e and 6A Feed-thru Receptacle with Jack-to-Jack RJ45.



233-300 E-10
SuperSeal D38999 Type plug with CAT 5e or 6A RJ45 Plug or D38999 Type Receptacle with CAT 5e or 6A RJ45 Jack. D38999 Type Shells with Accessory Threads



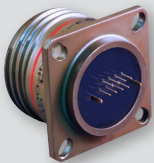
Cable Assemblies E-24
SuperSeal™ CAT 5e Cable Assemblies



233-301 E-12
SuperSeal™ CAT 5e Receptacle Adapter with RJ45 Mating Interface and Crimp Removable Contacts.



Transient Voltage Suppression (TVS) RJ45 Connectors E-25
Prevents Catastrophic EMP Failure in Military and Commercial Aircraft



233-302 E-14
SuperSeal™ CAT 5e Receptacle with RJ45 Mating Interface and PC Tail Termination.



244-001 E-27
SuperSeal™ CAT 5e Transient Voltage Suppression, Jam-Nut Receptacle with Standoffs and RJ45 Jack to PC Tail or Solder Cup Termination.



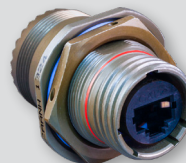
233-303 E-16
SuperSeal™ CAT 5e Receptacle with RJ45 Mating Interface and Solder Cup Termination.



244-002 E-28
SuperSeal™ CAT 5e Transient Voltage Suppression, Wall Mount Receptacle with Standoffs and RJ45 Jack, Mating Interface to PC Tail or Solder Cup.



233-304 E-18
SuperSeal™ CAT 5e MIL-STD-1560 Interface Receptacle Adapter with Accessory Threads and Rear RJ45 Jack.



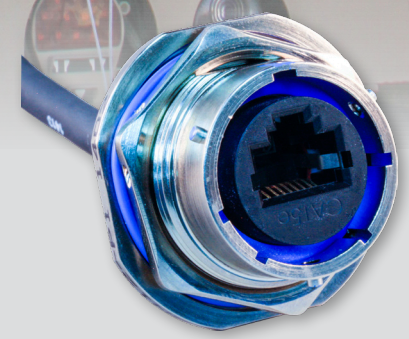
244-003 E-29
SuperSeal™ CAT 5e Transient Voltage Suppression Jam-Nut Receptacle with Accessory Threads and RJ45 Jack, Mating Interface to PC Tail or Solder Cup.



233-305 E-20
SuperSeal™ CAT 5e Quadrx Interface Receptacle Adapter with Accessory Threads and Rear RJ45 Jack.



244-004 E-30
SuperSeal™ CAT 5e Transient Voltage Suppression Wall Mount Receptacle with Accessory Threads and RJ45 Jack, Mating Interface to PC Tail or Solder Cup.

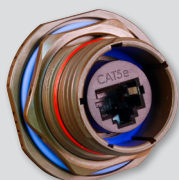


SERIES 23 SuperSeal™

Performance Hardened CAT 6A and CAT 5e

The SuperSeal family of ruggedized Cat 5e and 6A SuperNine connectors are IP68 rated in the mated condition for reliable environmental field use. SuperSeal connectors provide military grade protection and durability for operational use under harsh environmental conditions. SuperSeal connectors benefit from increased operating temperature range, longer life cycle and, significantly improved vibration and shock performance. CAT 5e and 6A RJ45 Ethernet is the standard data communication protocol for gathering, distribution and sharing of C4ISR information to and from command and field units within military, police fire and rescue organizations. SuperSeal provides key performance benefits including superior sealing, grounding, and wire termination for more flexible and reliable communications in rugged field applications.

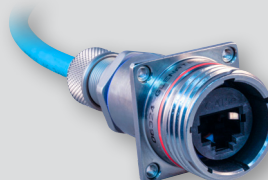
- CAT 5e and CAT 6A versions available
- IP67 unmated—for complete system protection against water, sand and dust
- Highly durable SuperSeal™ insert design, provides enhanced operating temperature, increased life-cycle, and rugged vibration and shock performance
- Crimp, solder-cup, PC tail and cable assemblies



Jam-nut
Mount



Wall
Mount



Cable
Assemblies



Advanced performance MIL-DTL-38999 connectors
MIL-DTL-38999 Series III Type Performance Specifications

RJ45 CAT 5e Performance Specifications

Property	Description
Material and Finish	
Shell/Coupling and Plating	Complete list of options available in the Material and Finish Options portion of this section
Contacts	PC tails, solder cup, and crimp contacts: copper alloy, gold plated
RJ45 Insulator	PPS
Grommet, Peripheral Seal, Interfacial Seal, O-ring	Blended fluorosilicone/silicone elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988
Shell Sizes	17 and 19
Shielding Sleeve	Material: Copper alloy Finish: Nickel
Electrical Specifications	
Data Rate	CAT 5e = 10 BASE-T, 100 BASE-TX, and 1000 BASE-T/1000 BASE-TX
Current Rating	Cat 5e, 1.5 Amps
D.W.V.	1000 VDC (700 VAC)
I.R.	500 Mega ohms @ 500 VDC
Frequency	100 MHz, Cat 5e
Wiring	Straight through, Cat 5e
Cabling Length	Up to 100 meters or 100 meters max.
Shield Continuity	Continuous through coupler or continuous coupler to shell
Environmental/Mechanical Performance	
Sealing	IP68 mated condition, IP67 unmated condition
Outgassing	Mod Code 186S meets outgassing requirements per ASTM E 595 and meets NASA level 3 screening for standard reliability Mod Code 928 meets outgassing requirements per UL 94 V-0
Operating Temperature	-40°C to +120°C
Vibration	20g, 3 Axis, 10 - 2000Hz
Mechanical Shock	300 g's
Backshell Interface	MIL-DTL-38999, Designator H
Mating System	Triple-start stub ACME
Mating Cycles	500

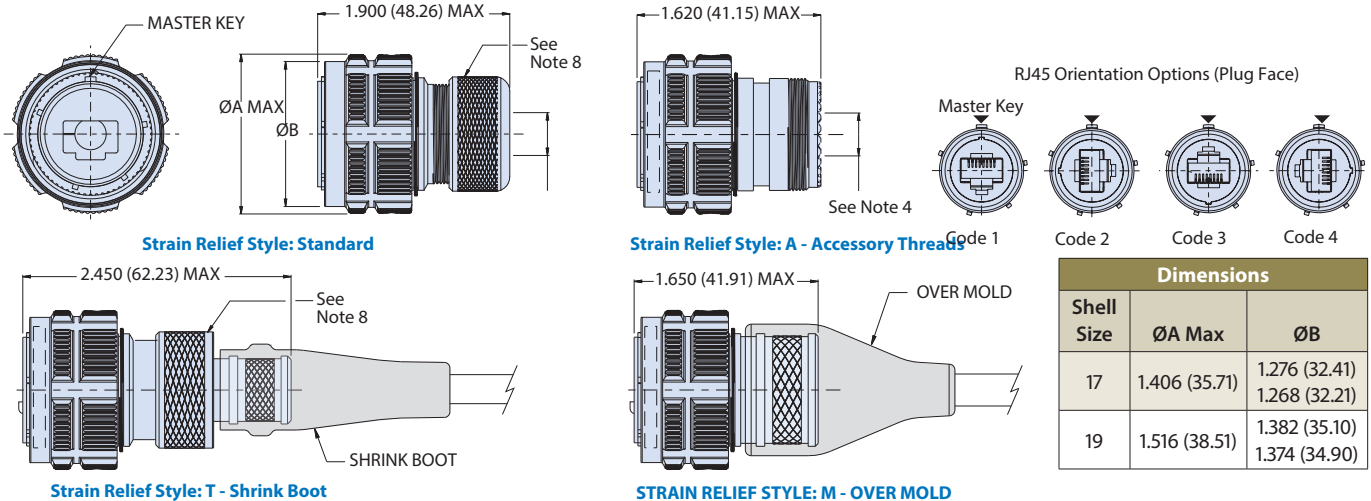
RJ45 CAT 6A Performance Specifications

Property	Description
Material and Finish	
Shell/Coupling and Plating	Complete list of options available in the Material and Finish Options portion of this section
Contacts	crimp contacts: copper alloy, gold plated
RJ45 Insulator	PPS
Grommet, Peripheral Seal, Interfacial Seal, O-ring	Blended fluorosilicone/silicone elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988
Shell Sizes	17 and 19
Shielding Sleeve	Material: Copper alloy Finish: Nickel
Electrical Specifications	
Data Rate	CAT 6A = 10G BASE-T
Current Rating	Cat 6A, 1.5 Amps
D.W.V.	1000 VDC (700 VAC)
I.R.	500 Mega ohms @ 500 VDC
Frequency	500 MHz, Cat 6A
Wiring	Straight through, Cat 6A
Cabling Length	Up to 100 meters.
Shield Continuity	Continuous through coupler or continuous coupler to shell
Environmental/Mechanical Performance	
Sealing	IP68 mated condition, IP67 unmated condition
Outgassing	Mod Code 186S meets outgassing requirements per ASTM E 595 and meets NASA level 3 screening for standard reliability Mod Code 928 meets outgassing requirements per UL 94 V-0
Operating Temperature	-40°C to +120°C
Vibration	20g, 3 Axis, 10 - 2000Hz
Mechanical Shock	300 g's
Backshell Interface	MIL-DTL-38999, Designator H
Mating System	Triple-start stub ACME
Mating Cycles	500

E

233-312 Plug with accessory threads
MIL-DTL-38999 Series III

Part Number Development	
Sample Part Number	233-312 NF G6 - 17 6A N 1
Series / Basic Part No.	233-312 = Cat 6A interface for D38999 type shell
Material/Finish	NF = Aluminum/cadmium olive drag Contact factory for additional options MT = Aluminum/nickel PTFE ME = Aluminum/electroless nickel ZR = Aluminum/zinc-nickel
Connector Style	G6 = Plug
Plug Options	(-) = CAT 6A (28 AWG) A = CAT 6A (22-24 AWG)
Shell Size	17 and 19
RJ45 Category	6A = Cat 6A
Alternate Polarization	A, B, C, D, E, N = Normal; Per MIL-DTL-38999
RJ45 Orientation	1, 2, 3, 4
Strain Relief Style	A = Accessory threads (accepts standard D38999 backshells) T = Shrink boot M = Over mold Omit for standard
Cable OD	W = Large cable OD up to .400 (10.16) Omit for cable OD .187/.312 (4.75/7.92)



NOTES

- | <p>1. Material/finish:</p> <ul style="list-style-type: none"> • Barrel, coupling nut: see part number development. Composite coupling nut no plating required. • Insulators: high grade rigid dielectric/ N.A. • Seals: silicone based elastomer • Hardware: stainless steel/passivated <p>2. RJ45 plug specifications:</p> <ul style="list-style-type: none"> • RJ45 plug cable maintains shield continuity • RoHS compliant | <p>Electrical</p> <ul style="list-style-type: none"> • Current rating: 1 amp • D.W.V.: 1000V DC/min • I.R.: 500 Mega ohms minimum @ 1000V DC • Operating temperature range: -20°C to +85°C <p>3. Meets IP68 in mated condition</p> <p>4. Design accommodates cable outside diameter 0.187 (4.750) to 0.400 (10.16)</p> <p>5. Design accommodates CAT 6A RJ45 modular plugs:
 (-) = CAT 6A, 28 AWG
 A = CAT 6A, 22-24 AWG</p> | <p>6. See assembly instructions AI233-312 for cable termination and connector assembly. Assembly instructions to be kitted with each shipment</p> <p>7. CAT 6A modular plugs packaged loose for each plug connector.</p> <p>8. Recommended torque value for different cable outside diameter.</p> <table border="1"> <thead> <tr> <th>Cable OD (in)</th> <th>.187/.225</th> <th>.225/.275</th> <th>.275/.312</th> <th>.312/.400</th> </tr> </thead> <tbody> <tr> <td>Torque (in/lbs)</td> <td>20.6</td> <td>18.3</td> <td>12.6</td> <td>10</td> </tr> </tbody> </table> | Cable OD (in) | .187/.225 | .225/.275 | .275/.312 | .312/.400 | Torque (in/lbs) | 20.6 | 18.3 | 12.6 | 10 |
|---|--|---|---------------|-----------|-----------|-----------|-----------|-----------------|------|------|------|----|
| Cable OD (in) | .187/.225 | .225/.275 | .275/.312 | .312/.400 | | | | | | | | |
| Torque (in/lbs) | 20.6 | 18.3 | 12.6 | 10 | | | | | | | | |

233-300 Coupler with accessory threads

MIL-DTL-38999 Series III Type



**Plug
Front View**



**Receptacle
Front View**



**Receptacle
Rear View**

Material and Finish ¹	
NF	Aluminum/Cadmium, Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

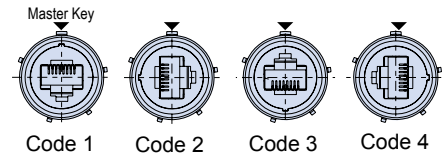
NOTES

- See Section A for alternate key/keyway positions and panel cutout dimensions
- G option is inline shielded and grounded to shell, available for receptacle only
- Front panel mount only
- Meets IP67 in unmated condition, IP68 mated
- For shrink boot see part number 770-028
- Receptacle has RJ45 jack. Plug has RJ45 plug to jack

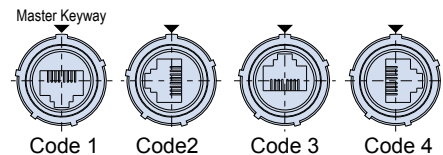
Part Number Development									
Sample Part Number	233-300	NF	00	G	17	5H	N	1	T
Basic Number	233-300								
Finish	See Material and Finish table								
Connector Style¹	See Connector Style table								
Insert-to-Shell Grounding	- = Inline shielded RJ45 insert G = Shielded and grounded to shell ²								
Shell Size	17 or 19								
RJ45 Category	5H = CAT 5e 6A = CAT 6A (CAT 6A receptacle only, for plug see 233-312)								
Alternate Key Position¹	Per MIL-DTL-38999 A, B, C, D, E, N = Normal								
RJ45 Orientation	1, 2, 3, or 4								
Shrink Boot	T = Part No. 770-028; see accessory section. (Omit for None)								

Connector Style ¹	
00	Wall mount receptacle with slotted holes
01	Wall mount receptacle with slotted holes and metal cable gland
05	Inline Receptacle
07	rear panel mount, jam nut receptacle
08	In-line receptacle with metal cable gland
D0	Wall mount receptacle with round holes
D1	Wall mount receptacle with round holes and metal gland
CM	Wall mount receptacle with metric clinch nuts
CG	Wall mount receptacle with metric clinch nuts and metal gland
CS	Wall Mount Receptacle with standard clinch nuts
G6	plug
G7	Plug with metal cable gland ⁵
G9	Plug with metal cable gland ⁵

RJ45 Orientation Options (Plug Face)



RJ45 Orientation Options (Receptacle Face)

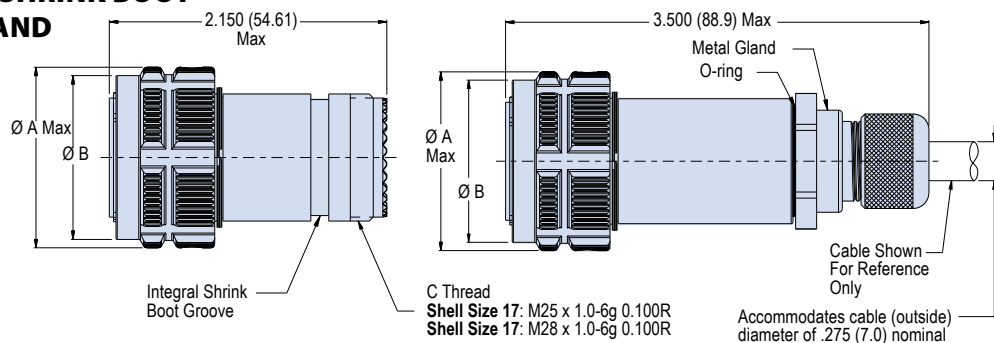


All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

G6 - PLUG WITH INTEGRAL SHRINK BOOT

G7 - PLUG WITH METAL GLAND

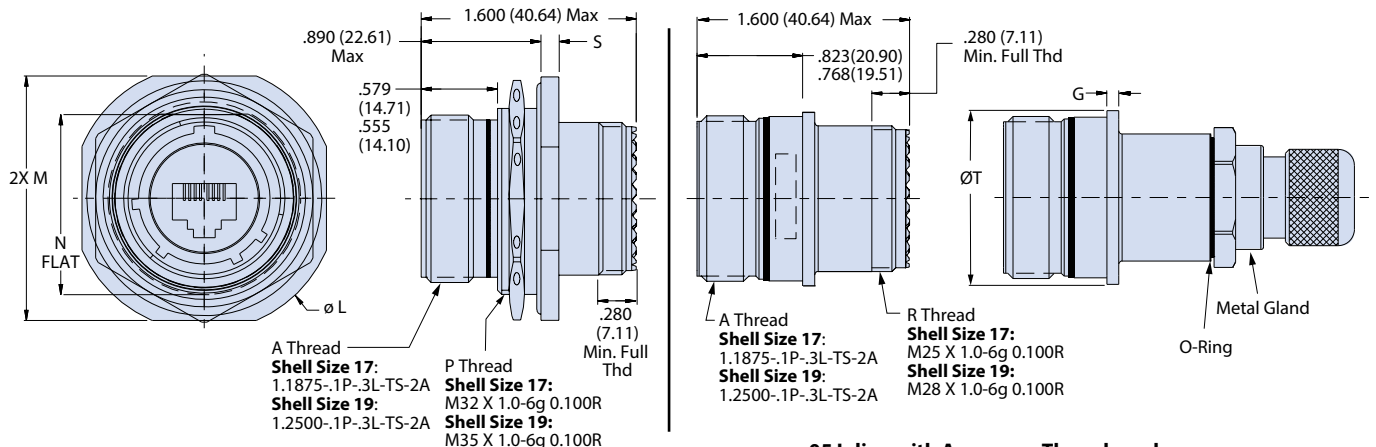
G6 and G7 - plug Dimensions				
Shell Size	A Dia Max		B Dia	
	in	mm	in	mm
17	1.406	35.71	1.276 1.268	32.41 32.21
19	1.516	38.51	1.382 1.374	35.10 34.90



233-300 Coupler with accessory threads

MIL-DTL-38999 Series III Type

07 - REAR PANEL MOUNT JAM NUT AND 05 OR 08 - INLINE RECEPTACLES

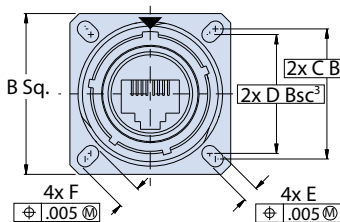


07 Jam Nut Receptacle (mating face and side view)

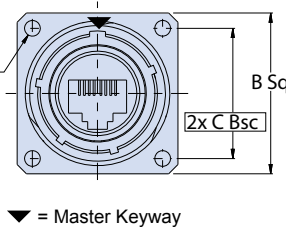
05 Inline with Accessory Threads and 08 Inline with Metal Gland (side view only)

00, 01, DO, D1, CM AND CG - WALL MOUNT RECEPTACLES WITH ACCESSORY THREADS OR METAL GLAND

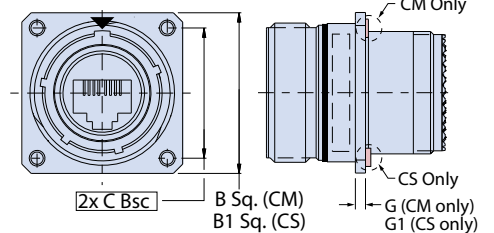
00, 01 - Wall Mount Receptacle with Slotted Holes (Mating Face)



D0, D1 - Wall Mount Receptacle with Round Holes (Mating Face)

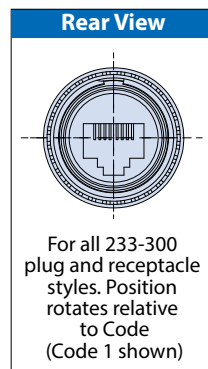
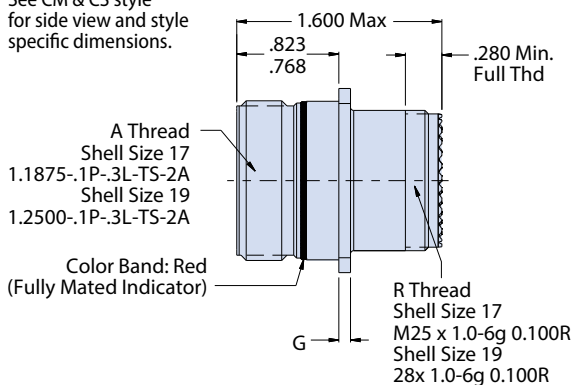


CM Metric and CS Standard - Wall Mount Receptacles (Mating Face and Side View)

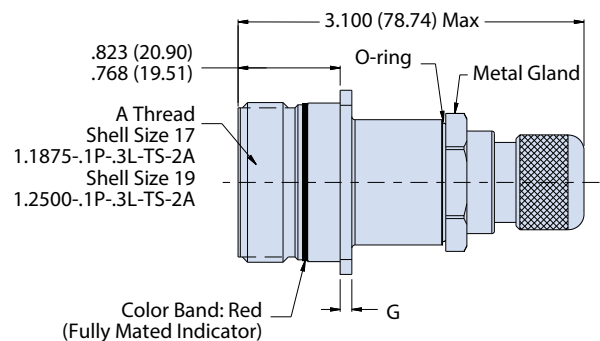


Note: See CM & CS style for side view and style specific dimensions.

00, D0, CM - Wall Mount Receptacle



01, D1, CG - Wall Mount Receptacle with Metal Gland



Jam Nut and Inline Receptacle Dimensions					
Shell Size	ØL	M	N	S	ØT Max
17	1.764 (44.81)	1.642 (41.71)	1.191 (30.25)	.122 (3.09)	1.275 (32.39)
	1.740 (44.20)	1.610 (40.89)	1.181 (30.00)	.083 (2.11)	
19	1.949 (49.50)	1.827 (46.41)	1.316 (33.43)	.153 (3.89)	1.337 (33.96)
	1.925 (48.90)	1.795 (45.59)	1.306 (33.17)	.114 (2.90)	

Wall Mount Receptacle Dimensions									
Shell Size	B Sq	B1 Sq	C Bsc	D Bsc²	E	F	G	G1	ØJ Holes
17	1.323 (33.60)	1.437 (34.50)	1.062 (26.97)	.969 (24.61)	.136 (3.45)	.202 (5.13)	.098 (2.49)	.122 (3.10)	.136 (3.45)
	1.299 (32.99)	1.397 (35.48)					.083 (.58)		
19	1.449 (36.80)	1.531 (38.89)	1.156 (29.36)	1.062 (26.97)	.120 (3.05)	.186 (4.72)	.083 (2.11)	.153 (3.89)	.120 (3.05)
	1.425 (36.20)	1.491 (37.87)					.144 (3.66)		

233-301 Receptacle with crimp removable contacts MIL-DTL-38999 Series III Type



Receptacle front View



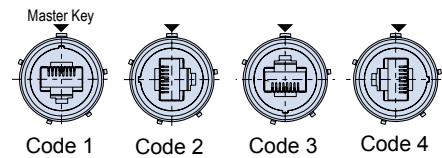
Receptacle rear View

Part Number Development									
Sample Part Number	233-301	NF	00	G	17	5H	N	1	T
Basic Number	233-301								
Finish	See Material and Finish table								
Connector Style	See Connector Style table								
Insert-to-Shell Grounding	- = Inline shielded RJ45 insert G = Shielded and grounded to shell ²								
Shell Size	17 or 19								
RJ45 Category	5H = CAT 5e For Cat 6A applications consult factory								
Alternate Key Position ¹	Per MIL-DTL-38999 A, B, C, D, E, N = Normal								
RJ45 Orientation	1, 2, 3, or 4								
Shrink Boot	T = Part No. 770-028 (Omit for None)								

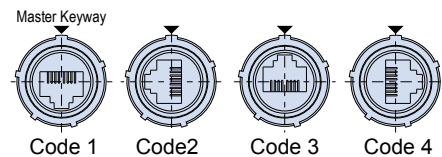
Connector Style ¹	
00	Wall mount receptacle with slotted holes
05	Inline Receptacle
07	rear panel mount, jam nut receptacle
D0	Wall mount receptacle with round holes
CM	Wall mount receptacle with metric clinch nuts
CS	Wall mount receptacle with metric clinch nuts
G6	plug

Material and Finish	
NF	Aluminum/Cadmium, Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

RJ45 Orientation Options (Plug Face)



RJ45 Orientation Options (Receptacle Face)



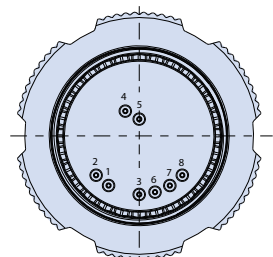
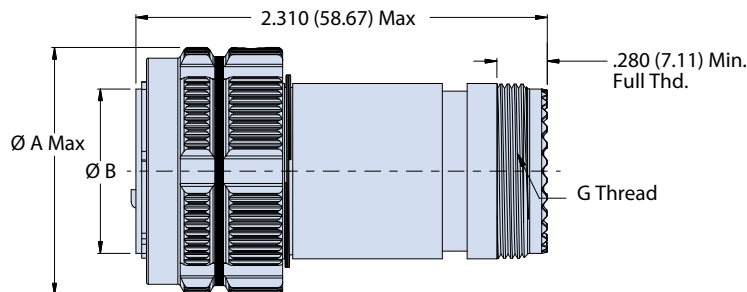
NOTES

1. See Section A for alternate key/keyway positions and panel cutout dimensions
2. G option is inline shielded and grounded to shell, available for receptacle only
3. Front panel mount only
4. Crimp removable size 22 pin contacts (M39029/58-360) supplied loose
5. Meets IP67 in unmated condition and IP68 mated condition
6. For shrink boot see part number 770-028
7. Receptacle connector has RJ45 jack

All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

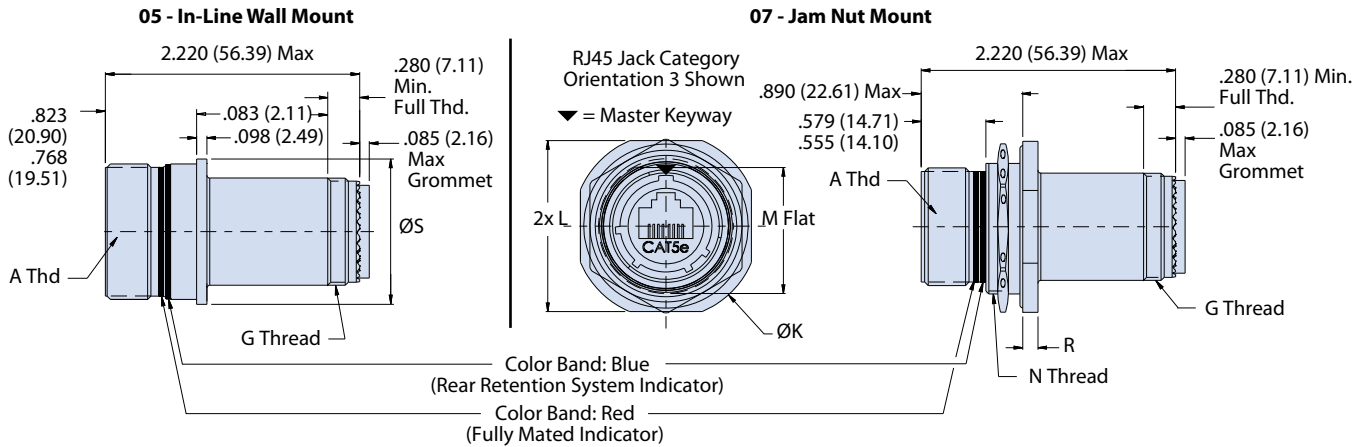
G6 PLUG WITH ACCESSORY THREADS

Plug Dimensions				
Shell Size	A Dia Max		B Dia	
	in	mm	in	mm
17	1.406	35.71	.928 .922	23.57 23.42
19	1.516	38.51	1.033 1.027	26.24 26.09



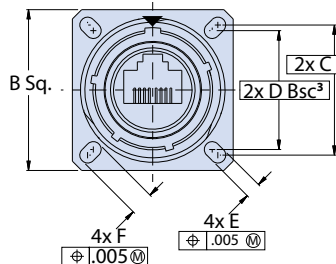
233-301 Receptacle with crimp removable contacts MIL-DTL-38999 Series III Type

05 - INLINE AND 07 - REAR PANEL MOUNT, JAM NUT RECEPTACLE WITH ACCESSORY THREADS

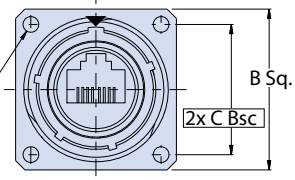


00, D0 AND CM - WALL MOUNT RECEPTACLES WITH ACCESSORY THREADS

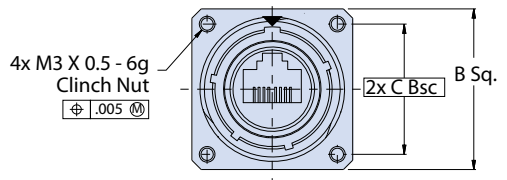
00 - Wall Mount Receptacle with Slotted Holes (Mating Face)



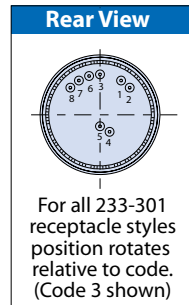
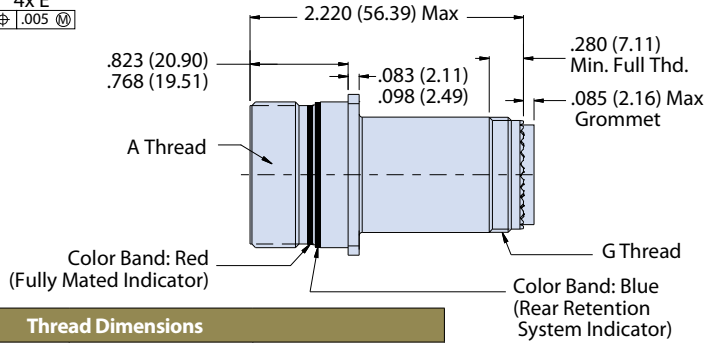
D0 - Wall Mount Receptacle with Round Holes (Mating Face)



CM - Wall Mount Receptacle with Metric Clinch Nuts (Mating Face)



00, D0 and CM - Wall Mount Receptacle



Thread Dimensions			
Shell Size	A Thread	G Thread	N Thread
17	1.1875-.1P-.3L-TS-2A	M25 x 1.0-6g 0.100R	M32 x 1.0-6g 0.100R
19	1.2500-.1P-.3L-TS-2A	M28x 1.0-6g 0.100R	M35 x 1.0-6g 0.100R

In-line and Jam Nut Receptacle Dimensions					
Shell Size	ØK	L	M	R	ØS
17	1.764 (44.81)	1.642 (41.71)	1.191 ()	.122 (3.09)	1.275
	1.740 (44.20)	1.610 (40.89)	1.181 ()	.083 (2.11)	(32.39)
19	1.949 (49.50)	1.827 (46.51)	1.316 ()	.153 (3.89)	1.337
	1.925 (48.90)	1.795 (45.59)	1.305 ()	.114 (2.90)	(33.96)

Wall Mount Receptacle Dimensions						
Shell Size	B Sq	C Bsc	D Bsc³	E	F	Ø H Holes
17	1.323 (33.60)	1.062 (26.97)	.969 (24.61)	.136 (3.45)	.202 (5.13)	.136 (3.45)
	1.299 (32.99)	1.062 (26.97)	.969 (24.61)	.120 (3.05)	.186 (4.72)	.120 (3.05)
19	1.449 (36.80)	1.156 (29.36)	1.062 (26.97)	.120 (3.05)	.186 (4.72)	.120 (3.05)
	1.425 (36.20)	1.156 (29.36)	1.062 (26.97)	.120 (3.05)	.186 (4.72)	.120 (3.05)

233-302 Receptacle with PC tails

MIL-DTL-38999 Series III Type

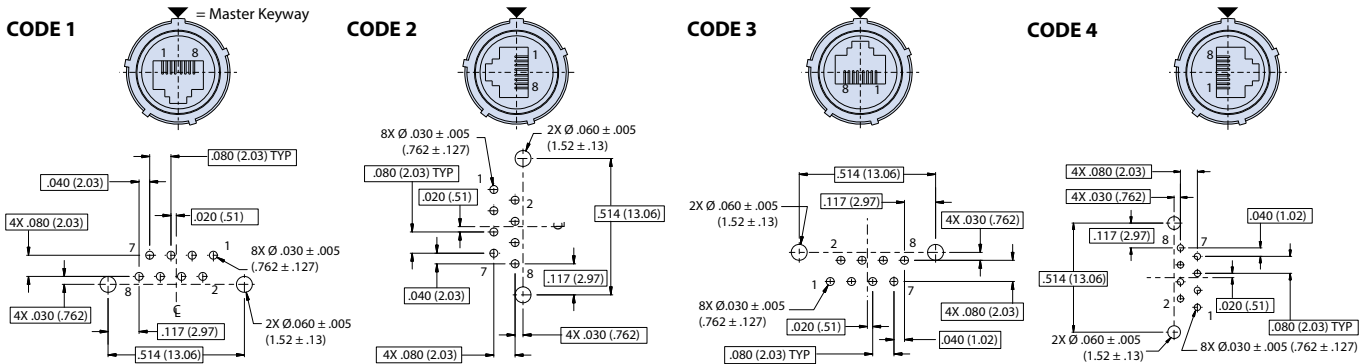


Receptacle front View

Receptacle rear View

Part Number Development	
Sample Part Number	233-302 NF 00 G 17 5H N 1
Basic Number	233-302
Finish	See Material and Finish table
Connector Style ¹	See Connector Style table
Insert-to-Shell Grounding	- = Inline shielded RJ45 insert G = Shielded and grounded to shell ²
Shell Size	17 or 19
RJ45 Category	5H = CAT 5e For Cat 6A applications consult factory
Alternate Key Position ¹	Per MIL-DTL-38999 A, B, C, D, E, N = Normal
RJ45 Orientation	1, 2, 3, or 4

RJ45 ORIENTATION OPTIONS AND PCB LAYOUT



Connector Style ¹	
00	Wall mount receptacle with slotted holes
07	rear panel mount, jam nut receptacle
D0	Wall mount receptacle with round holes
CM	Wall mount receptacle with metric clinch nuts

Material and Finish	
NF	Aluminum/Cadmium, Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

Jam Nut Dimensions								
Shell Size	Dia K		L		M Flat		P	
	in	mm	in	mm	in	mm	in	mm
17	1.764	44.81	1.642	41.71	1.191	30.25	.090	2.29
	1.740	44.20	1.610	40.89	1.181	30.00	.080	2.03
19	1.949	49.50	1.827	46.41	1.316	33.43	.150	3.81
	1.925	48.90	1.795	45.59	1.306	33.17	.140	3.56

Wall Mount Receptacle Dimensions														
Shell Size	B Sq		C BSC		D BSC ³		E		F		G1		Ø H Holes	
	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm
17	1.323	33.60	1.062	26.97	.969	24.61	.136	3.45	.202	5.13	.122	3.10	.083	2.11
	1.299	32.99					.120	3.05	.186	4.72	.153	3.89	.114	2.90
19	1.449	36.80	1.156	29.36	1.062	26.97								
	1.425	36.20												

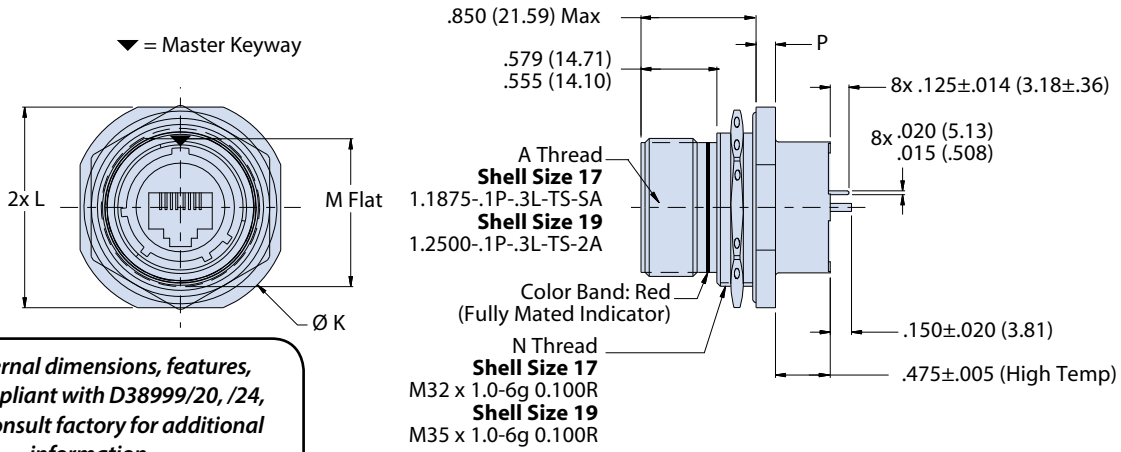
NOTES

- See Section A for alternate key/keyway positions and panel cutout dimensions
- G option is inline shielded and grounded to shell, available for receptacle only
- Front panel mount only
- Meets IP67 in unmated condition, IP68 mated
- Receptacle connector has RJ45 jack

233-302 Receptacle with PC tails

MIL-DTL-38999 Series III Type

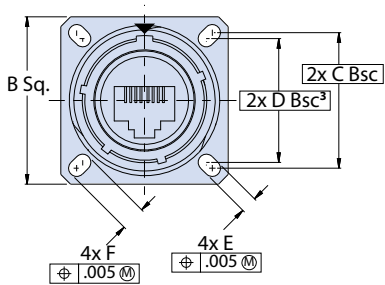
07 - REAR PANEL MOUNT, JAM NUT RECEPTACLE



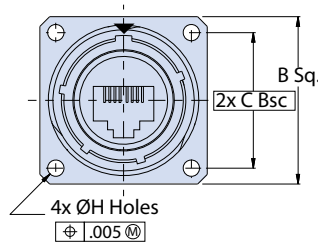
All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

00, D0 AND CM - WALL MOUNT RECEPTACLES

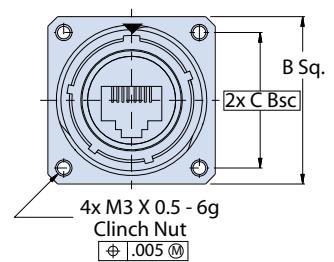
00 - Wall Mount Receptacle with Slotted Holes (Mating Face)



D0 - Wall Mount Receptacle With Round Holes (Mating Face)

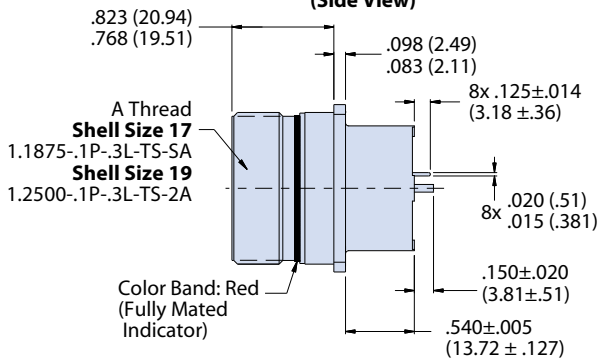


CM - Wall Mount Receptacle With Metric Clinch Nuts (Mating Face)

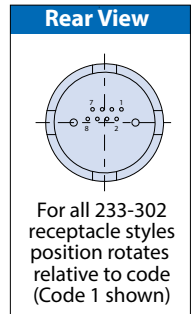
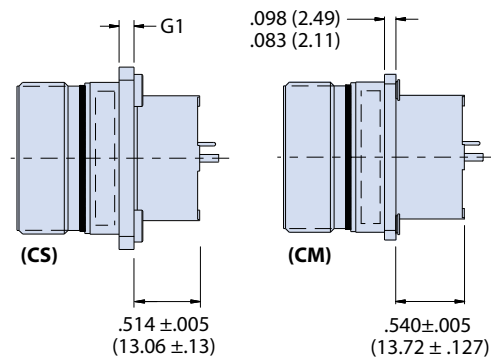


▼ = Master Keyway

00 and D0 - Wall Mount Receptacle (Side View)



CS and CM - Wall Mount Receptacle (Side View)



233-303 Receptacle with solder cups

MIL-DTL-38999 Series III Type



Part Number Development								
Sample Part Number	233-303	NF	00	G	17	5H	N	1
Basic Number	233-303							
Finish	See Material and Finish table							
Connector Style ¹	See Connector Style table							
Insert-to-Shell Grounding	- = Inline shielded RJ45 insert G = Shielded and grounded to shell ²							
Shell Size	17 or 19							
RJ45 Category	5H = CAT 5e For Cat 6A applications consult factory							
Alternate Key Position ¹	Per MIL-DTL-38999 A, B, C, D, E, N = Normal							
RJ45 Orientation	1, 2, 3, or 4							

RJ45 ORIENTATION OPTIONS



Jam Nut Dimensions								
Shell Size	Ø J		K		L Flat		M	
	in	mm	in	mm	in	mm	in	mm
17	1.764	44.81	1.642	41.71	1.191	30.25	.122	3.10
	1.740	44.20	1.610	40.89	1.181	30.00	.083	2.11
19	1.949	49.50	1.827	46.41	1.316	33.43	.153	3.89
	1.925	48.90	1.795	45.59	1.306	33.17	.114	2.90

Material and Finish	
NF	Aluminum/Cadmium Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

Connector Style	
00	Wall mount receptacle with slotted holes
07	rear panel mount, jam nut receptacle
D0	Wall mount receptacle with round holes
CM	Wall mount receptacle with metric clinch nuts

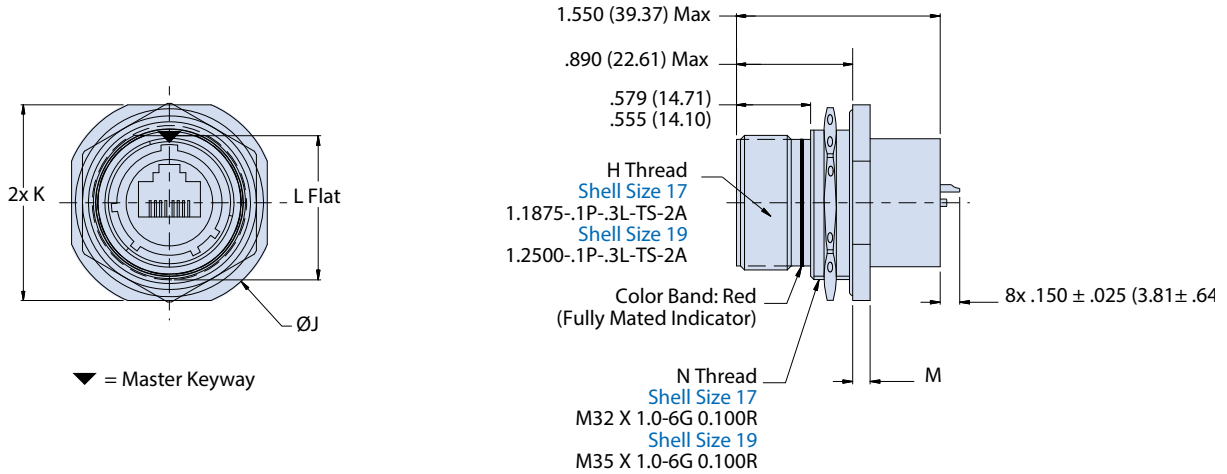
Wall Mount Receptacle Dimensions												
Shell Size	B Sq		C Bsc		D Bsc		E		F		Ø G Holes	
	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm
17	1.323	33.60	1.062	26.97	.969	24.61	.136	3.45	.202	5.13	0.136	3.45
	1.299	32.99										
19	1.449	36.80	1.156	29.36	1.062	26.97	.120	3.05	.186	4.72	0.120	3.05
	1.425	36.20										

All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

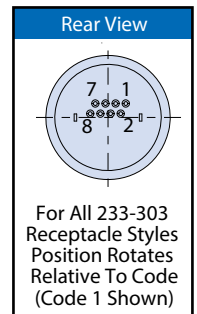
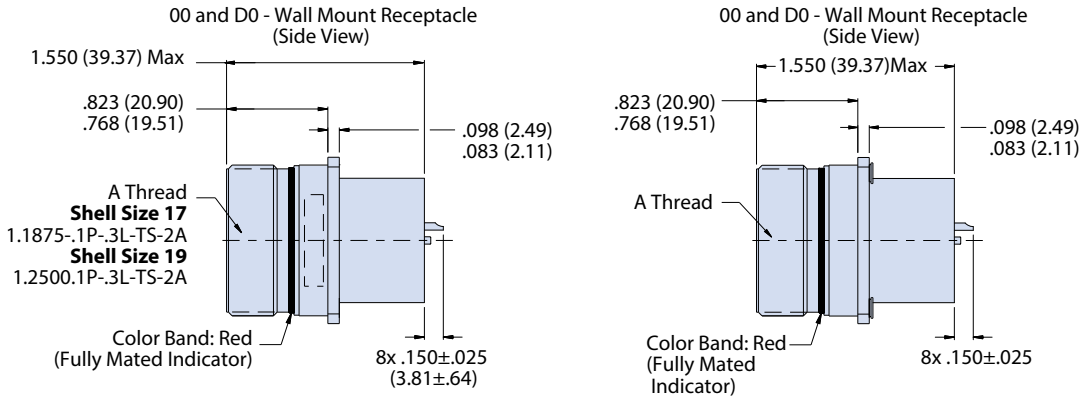
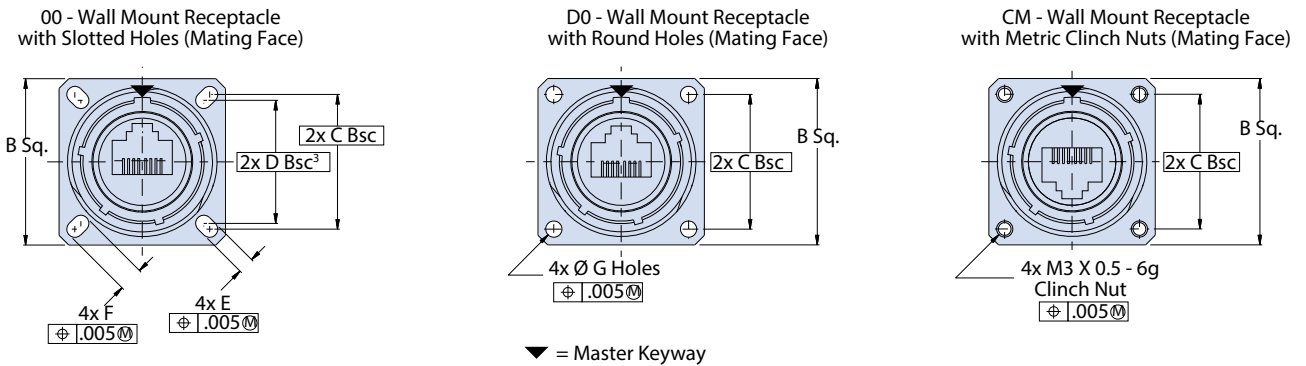
NOTES

- See Section A for alternate key/keyway positions and panel cutout dimensions
- G option is inline shielded and grounded to shell, available for receptacle only
- Front panel mount only
- Meets IP67 in unmated condition, IP68 mated
- Receptacle connector has RJ45 jack
- Materials and finishes
 - Shell, jam nut: Al alloy/optional
 - Seals: Silicone based elastomer
 - RJ45 coupler housing: UL94V-0 compliant ABS or PPS
 - Contacts: Copper alloy, gold plated
 - Hardware: Stainless steel/passivated

07 - REAR PANEL MOUNT, JAM NUT RECEPTACLE



00, D0 AND CM - WALL MOUNT RECEPTACLES



233-304 Plug and receptacle adapter with accessory thread MIL-DTL-38999 Series III Type

Part Number Development										
Sample Part Number	233-304	NF	00	17	G	35	P	5H	N	T
Basic Number	233-304									
Finish	See Material and Finish table									
Connector Style ¹	See Connector Style table									
Shell Size	17 ⁶ consult factory for other shell sizes									
Insert-to-Shell Grounding ²	- = Inline shielded RJ45 insert G = Shielded and grounded to shell									
Insert Arrangement	Per MIL-STD-1560; 17-26 or 17-35 ⁶									
Contact Style	P = Pin S = Socket									
RJ45 Category	5H = CAT 5e For Cat 6A applications consult factory									
Alternate Key Position ¹	Per MIL-DTL-38999 A, B, C, D, E, N = Normal									
Shrink Boot	T = Part No. 770-028 (Omit for None)									

NOTES

1. See Section A for alternate key/keyway positions and panel cutout dimensions
2. G option is inline shielded and grounded to shell, available for receptacle only
3. Connector style 00 with slotted hole is front panel mount only
4. Meets IP67 in unmated condition, IP68 mated
5. Both plug and receptacle connectors have rear RJ45 jack
6. Consult factory for alternate insert arrangements

Material and Finish	
NF	Aluminum/Cadmium Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

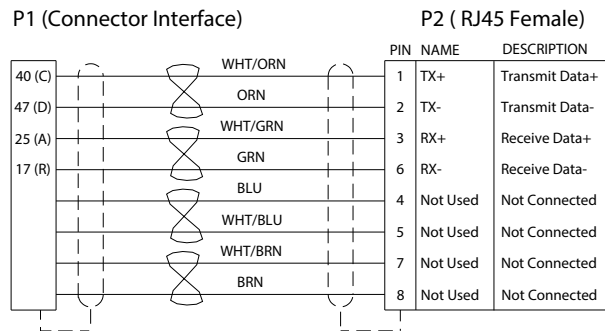
Connector Style ¹	
00	Wall mount receptacle with slotted holes ³
05	Inline Receptacle
07	rear panel mount, jam nut receptacle
D0	Wall mount receptacle with round holes
G6	plug
CM	Wall mount receptacle with metric clinch nuts

Thread Dimensions			
Shell Size	A Thread	G Thread	N Thread
17	1.1875-.1P-.3L-TS-2A	M25 x 1.0-6g 0.100R	M32 x 1.0-6g 0.100R
19	1.2500-.1P-.3L-TS-2A	M28x 1.0-6g 0.100R	M35 x 1.0-6g 0.100R

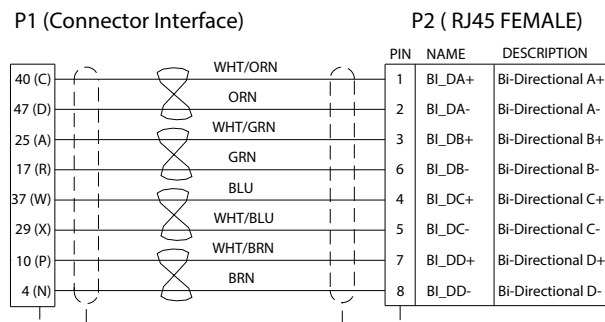
Wall Mount Receptacle Dimensions												
Shell Size	B Sq		C BSC		D BSC		E		F		Ø H Holes	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
17	1.323	33.60	1.062	26.97	.969	24.61	.136	3.45	.202	5.13	.136	3.45
	1.299	32.99										
19	1.449	36.80	1.156	29.36	1.062	26.97	.120	3.05	.186	4.72	.120	3.05
	1.425	36.20										

Jam Nut and Inline Dimensions										
Shell Size	Ø K		L		M Flat		R		S	
	in	mm	in	mm	in	mm	in	mm	in	mm
17	1.764	44.81	1.642	41.71	1.191	30.25	.122	3.10	1.406	35.71
	1.740	44.20								
19	1.949	49.50	1.827	46.41	1.316	33.43	.153	3.89	1.516	38.51
	1.925	48.90								

Wiring Diagram for Ethernet 10base-T & 100 Base-TX 17-35 or (17-26 in parenthesis) Arrangement



Wiring Diagram for Ethernet 1000base-T (Gigabit Ethernet) 17-35 or (17-26 in parenthesis) Arrangement

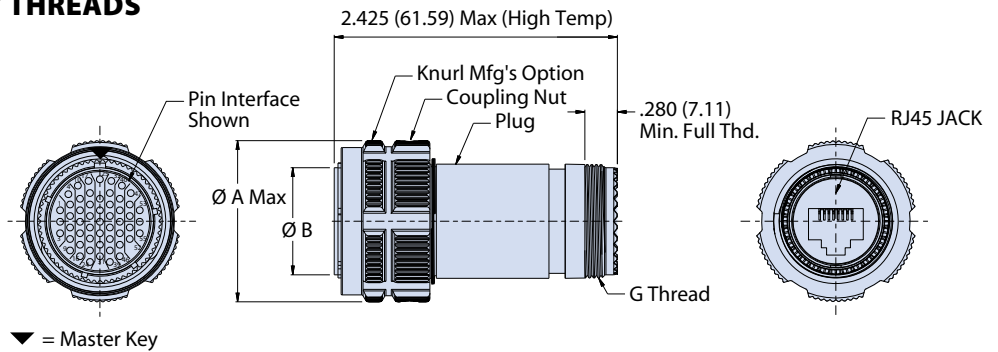


Color Codes Per EIA/TIA 568B

233-304 Plug and receptacle adapter with accessory thread MIL-DTL-38999 Series III Type

G6 - PLUG WITH ACCESSORY THREADS

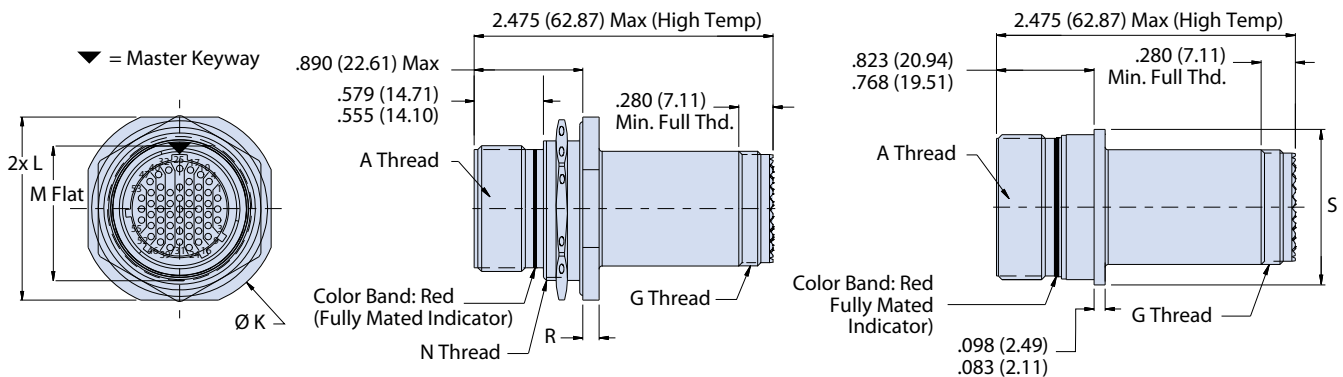
Plug Dimensions				
Shell Size	Ø A		Ø B	
	in	mm	in	mm
17	1.406	35.71	.928 .922	23.57 23.42
19	1.516	38.51	1.033 1.027	26.24 26.09



07 - REAR PANEL MOUNT, JAM NUT AND 05 - INLINE RECEPTACLE WITH ACCESSORY THREADS

Jam Nut Receptacle

Inline Receptacle (side view only)

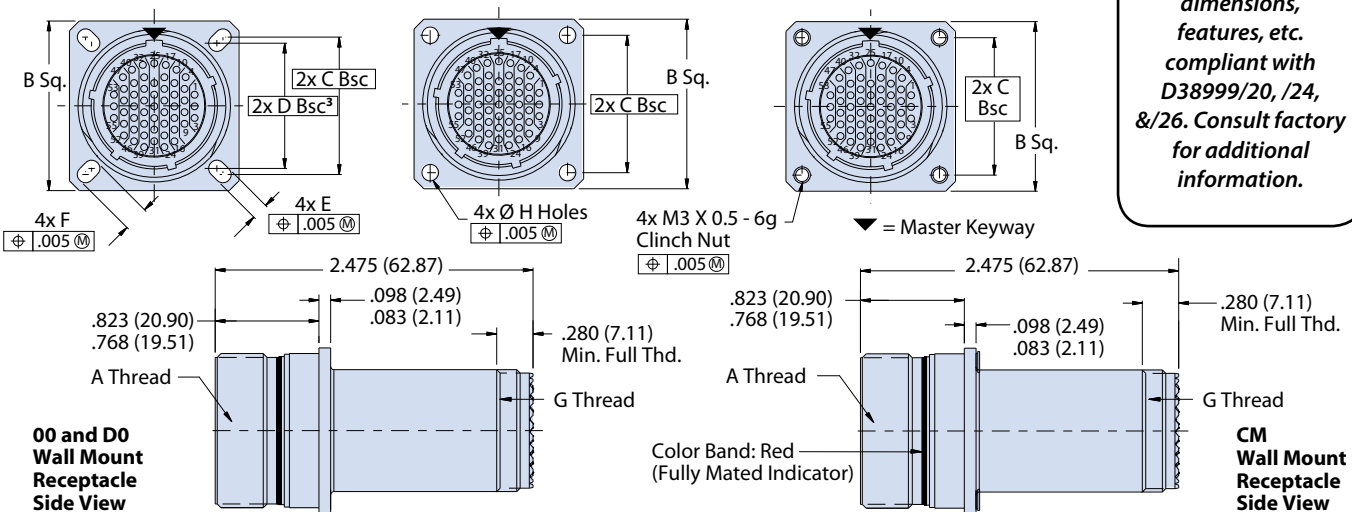


00, D0 AND CM - WALL MOUNT RECEPTACLES WITH ACCESSORY THREADS

00 - Wall Mount Receptacle with Slotted Holes (Mating Face)

D0 - Wall Mount Receptacle With Round Holes (Mating Face)

CM - Wall Mount Receptacle With Metric Clinch Nuts (Mating Face)



All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

233-305 Quadrax interface adapter with accessory threads MIL-DTL-38999 Series III Type

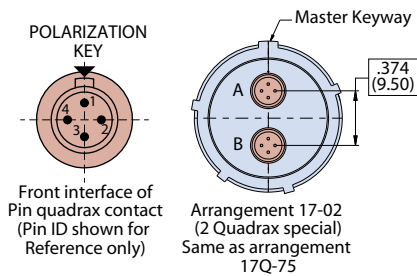


Receptacle front View

Receptacle rear View

Part Number Development									
Sample Part Number	233-305	NF	00	-	17	5H	P	N	T
Basic Number	233-305								
Finish	See Material and Finish table								
Connector Style	See Connector Style table								
Insert-to-Shell Grounding ²	- = Inline shielded RJ45 insert G = Shielded and grounded to shell								
Shell Size	17 or 19								
RJ45 Category	5H = CAT 5e For Cat 6A applications consult factory								
Contact Style	P = Pin S = Socket								
Alternate Key Position ¹	A, B, C, D, E, N = Normal; Per MIL-DTL-38999								
Shrink Boot	T = Part No. 770-028 (Omit for None)								

Partial View Of Connector Quadrax Interface



Front interface of Pin quadrax contact (Pin ID shown for Reference only)

Arrangement 17-02 (2 Quadrax special) Same as arrangement 17Q-75

Material and Finish	
NF	Aluminum/Cadmium, Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

Connector Style	
05	Inline Receptacle
07	rear panel mount, jam nut receptacle
00	Wall mount receptacle with slotted holes
D0	Wall mount receptacle with round holes
CM	Wall mount receptacle with metric clinch nuts
G6	plug

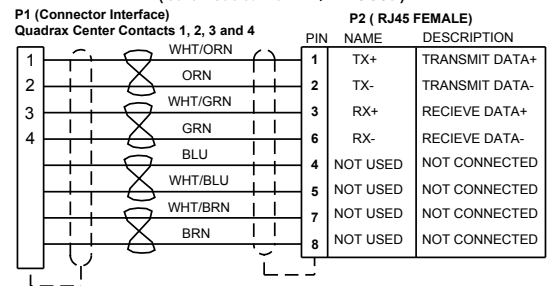
Jam Nut Dimensions					
Shell Size	Ø K	L	M Flat	R	Ø S
17	1.764 (44.81)	1.642 (41.71)	1.191 (30.25)	.122 (3.10)	1.275 (32.39)
	1.740 (44.20)	1.610 (40.89)	1.181 (30.00)	.083 (2.11)	
19	1.949 (49.50)	1.827 (46.41)	1.316 (33.43)	.153 (3.89)	1.337 (33.96)
	1.925 (48.90)	1.795 (45.59)	1.306 (33.17)	.114 (2.90)	

Wall Mount Receptacle Dimensions						
Shell Size	B Sq	C BSC	D BSC	E	F	Ø H Holes
17	1.323 (33.60)	1.062 (26.97)	.969 (24.61)	.136 (3.45)	.202 (5.13)	.136 (3.45)
	1.299 (32.99)					
19	1.449 (36.80)	1.156 (29.36)	1.062 (26.97)	.120 (3.05)	.186 (4.72)	.120 (3.05)
	1.425 (36.20)					

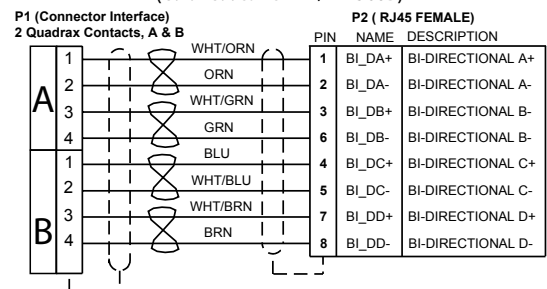
NOTES

1. See Section A for alternate key/keyway positions and panel cutout dimensions
2. G option is inline shielded and grounded to shell, available for receptacle only
3. Pin contact mates with P/N 854-002 Socket contact mates with P/N 854-001
4. Connector style 00 with slotted hole is front panel mount only
5. Meets IP67 in unmated condition, IP68 mated
6. Both plug and receptacle connectors have rear RJ45 jack

Wiring Diagram for Ethernet 10base-T & 100 Base-TX (Color Codes Per EIA/TIA 568B)



Wiring Diagram for Ethernet 1000base-T (Gigabit Ethernet) (Color Codes Per EIA/TIA 568B)

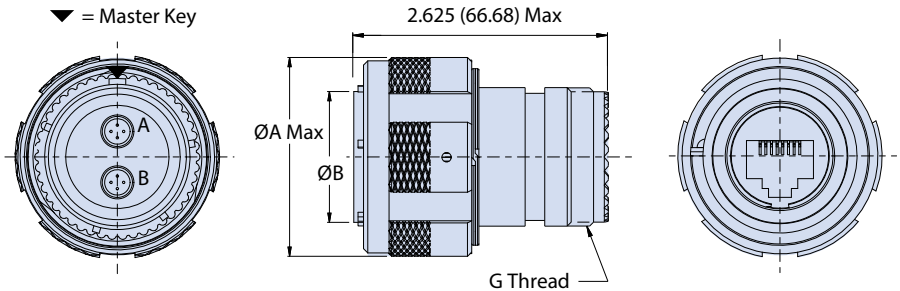


Thread Dimensions			
Shell Size	A Thread	G Thread	N Thread
17	1.1875-.1P-.3L-TS-2A	M25 x 1.0-6g 0.100R	M32 x 1.0-6g 0.100R
19	1.2500-.1P-.3L-TS-2A	M28x 1.0-6g 0.100R	M35 x 1.0-6g 0.100R

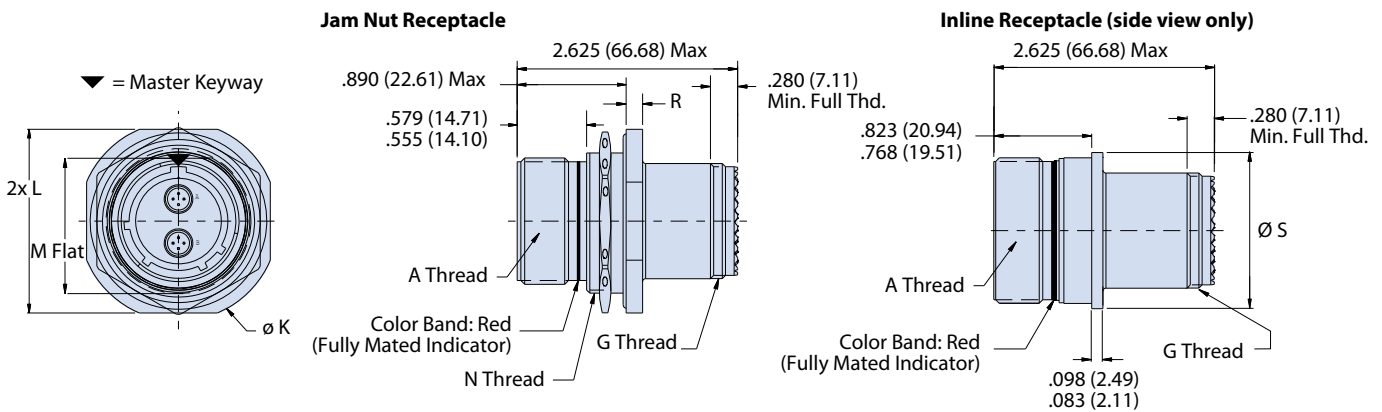
233-305 Quadrax interface adapter with accessory threads MIL-DTL-38999 Series III Type

G6 - PLUG WITH ACCESSORY THREADS

Plug Dimensions				
Shell Size	Ø A		Ø B	
	in	mm	in	mm
17	1.406	35.71	.928	23.57
			.922	23.42
19	1.516	38.51	1.033	26.24
			1.027	26.09

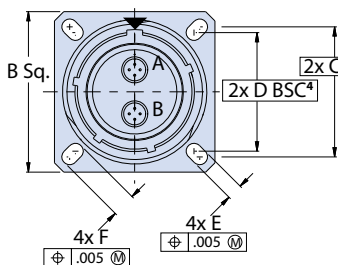


07 - REAR PANEL MOUNT, JAM NUT AND 05 - INLINE RECEPTACLE WITH ACCESSORY THREADS

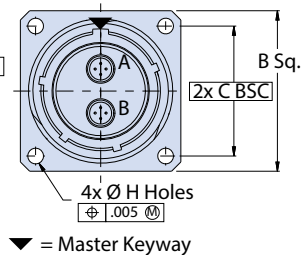


00, D0 AND CM - WALL MOUNT RECEPTACLES WITH ACCESSORY THREADS

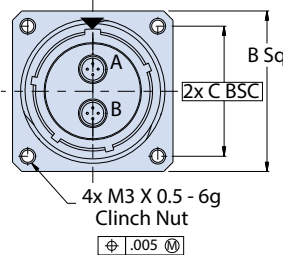
00 - Wall Mount Receptacle with Slotted Holes (Mating Face)



D0 - Wall Mount Receptacle With Round Holes (Mating Face)

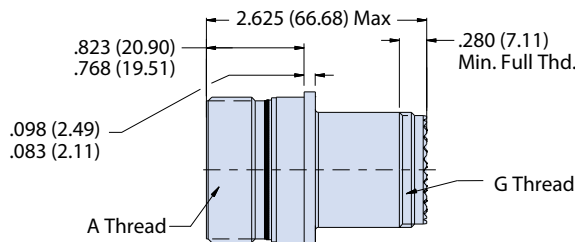


CM - Wall Mount Receptacle With Metric Clinch Nuts (Mating Face)

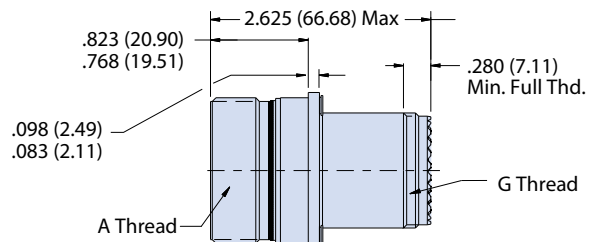


All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

00 and D0 - Wall Mount Receptacle

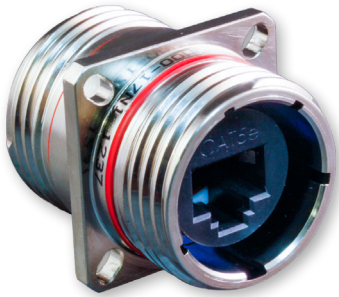


CM - Wall Mount Receptacle



233-330 Feedthru receptacle connector

MIL-DTL-38999 Series III Type



Receptacle front View

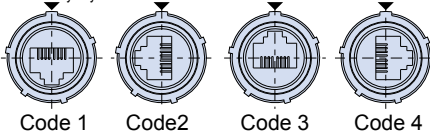
Part Number Development							
Sample Part Number	233-330	NF	00	-17	5H	N	1
Basic Number	233-330						
Finish	See Material and Finish table						
Connector Style ¹	See Connector Style table						
Shell Size	17 or 19						
RJ45 Category	5H = CAT 5e 6A = CAT 6A						
Alternate Key Position ¹	Per MIL-DTL-38999 A, B, C, D, E, N = Normal						
RJ45 Orientation	1, 2, 3, or 4						

Material and Finish	
NF	Aluminum/Cadmium Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

Connector Style ¹	
00	Wall mount receptacle with slotted hole ²
07	rear panel mount, jam nut receptacle
D0	Wall mount receptacle with round holes
CM	Wall mount receptacle with metric clinch nuts

RJ45 Orientation Options (Receptacle Face)

Master Keyway



Jam Nut Dimensions								
Shell Size	Ø K		L		M Flat		R	
	in	mm	in	mm	in	mm	in	mm
17	1.764	44.81	1.642	41.71	1.191	30.25	.122	3.10
	1.740	44.20	1.610	40.89	1.181	30.00	.083	2.11
19	1.949	49.50	1.827	46.41	1.316	33.43	.153	3.89
	1.925	48.90	1.795	45.59	1.306	33.17	.114	2.90

Wall Mount Receptacle Dimensions												
Shell Size	B Sq		C Bsc		D Bsc ²		E		F		Ø H Holes	
	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm
17	1.323	33.60	1.062	26.97	.969	24.61	.136	3.45	.202	5.13	0.136	3.45
	1.299	32.99										
19	1.449	36.80	1.156	29.36	1.062	26.97	.120	3.05	.186	4.72	0.120	3.05
	1.425	36.20										

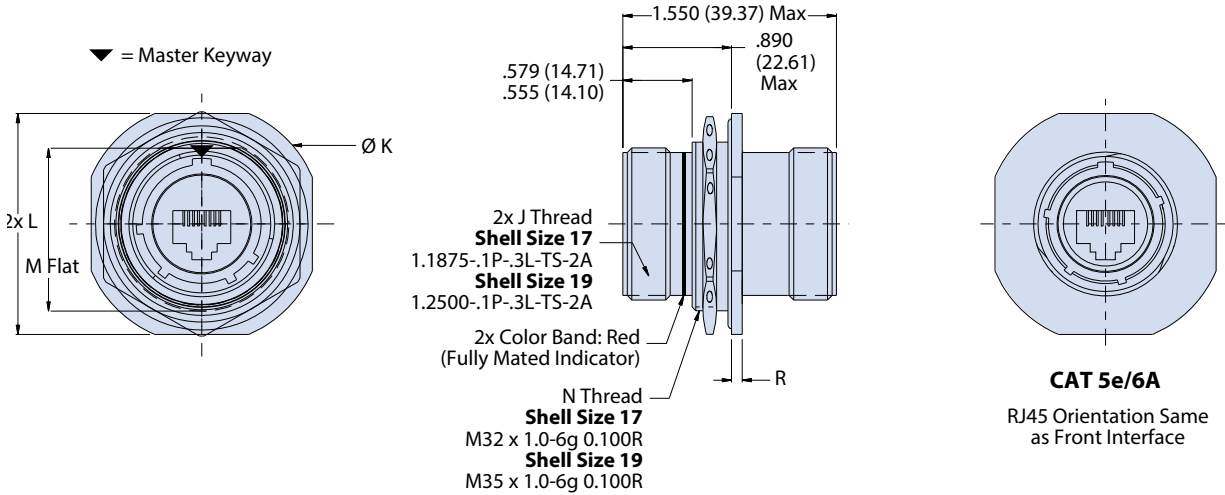
NOTES

1. See Section A for alternate key/keyway positions and panel cutout dimensions
2. front panel mount only
3. Meets IP67 in unmated condition, IP68 mated
4. Feed-thru receptacle is jack-to-jack configuration

All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

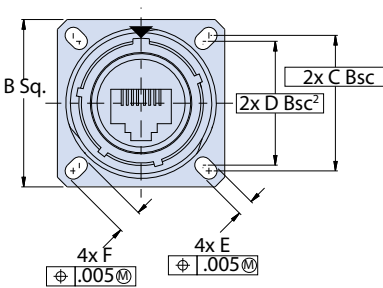
233-330 Feedthru receptacle connector MIL-DTL-38999 Series III Type

07 - REAR PANEL MOUNT, JAM NUT FEED-THRU RECEPTACLE

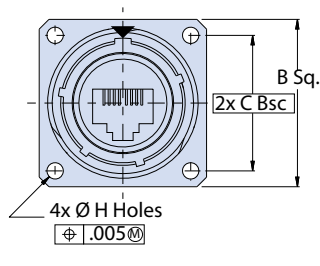


00, D0 AND CM - WALL MOUNT FEED-THRU RECEPTACLES

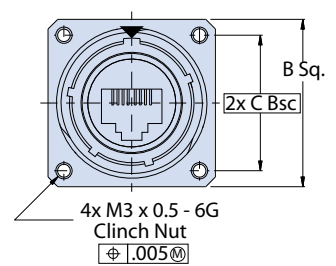
00 - Wall Mount Receptacle with Slotted Holes (Mating Face)



D0 - Wall Mount Receptacle With Round Holes (Mating Face)

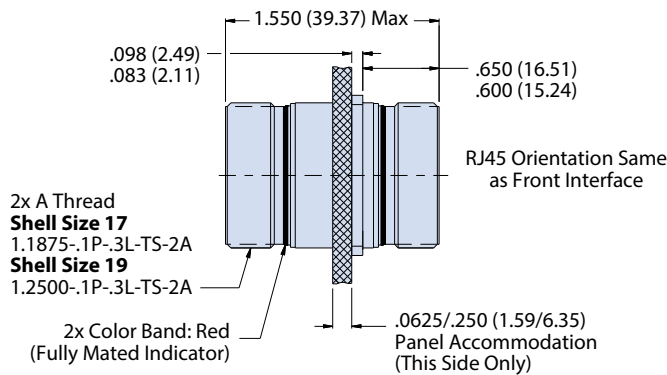


CM - Wall Mount Receptacle With Metric Clinch Nuts (Mating Face)

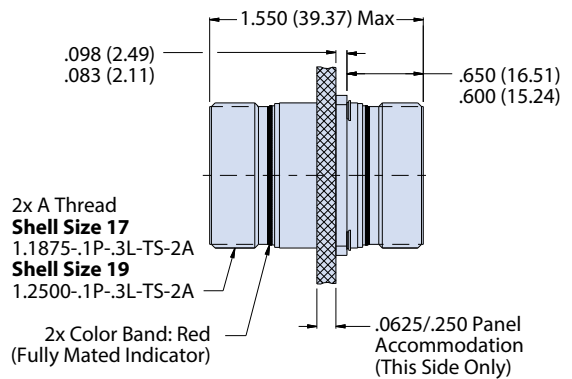


▼ = Master Keyway

00, D0, CM - Wall Mount Receptacle



CM - Wall Mount Receptacle





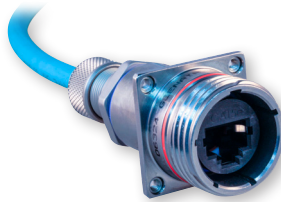
2330-0003 Glenair SuperNine RJ45 CAT 5e cable jumpers, SuperSeal to standard RJ45

SuperSeal RJ45 connectors are IP67 open face rated and IP68 in the mated condition for complete protection in harsh environments. SuperSeal connector styles include plug, wall mount and jam-nut receptacles. Wall mount receptacles are available with slotted holes, round holes and metric clinch nuts. All SuperSeal shells offer inline shielding and receptacle shells offer optional shell grounding. Any shell can be ordered with straight or right angle cable exit. RJ45 jack can be ordered in 1 of 4 available orientations to provide further security against mis-mating and accommodate existing RJ45 orientations. RJ45 connector end may be ordered as plug, jack or with flying leads in straight or right angle configurations. Maximum overall length is 100 feet. Consult factory for ordering information.

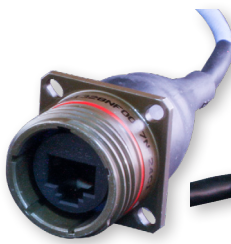
AVAILABLE INTERFACE OPTIONS



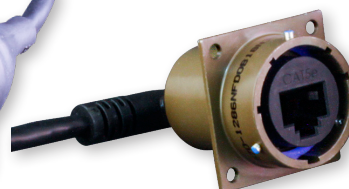
Plug



Wall mount receptacle with metric clinch nuts



Wall Mount Receptacle with round holes



Wall Mount Receptacle with round holes



Jam-nut mount Receptacle

E



CAT 5E PLUG OPTIONS



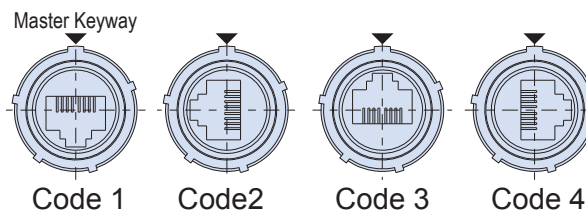
CAT 5e, Straight



CAT 5e, 45°



RJ45 ORIENTATION OPTIONS





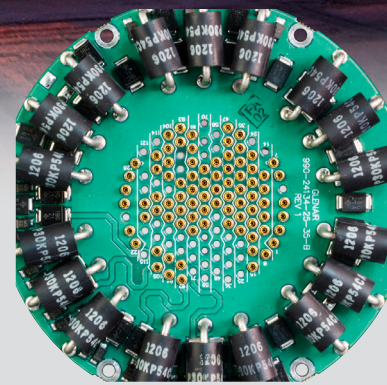
MIL-DTL-38999 TYPE
TVS FIELD-READY
RJ45 ETHERNET



SUPERSEAL™

Transient Voltage Suppression (TVS) RJ45 Connectors

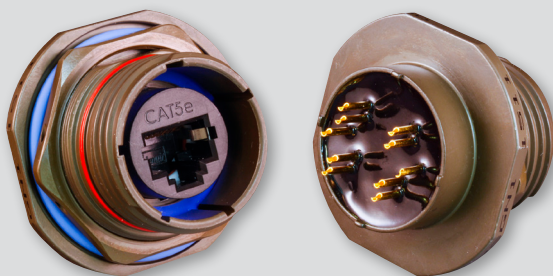
Transient Voltage Suppression (TVS) technologies are designed to shunt voltage transients directly to ground before such surges can damage sensitive electronic equipment. Individual TVS diodes as well as diode modules are incorporated directly into the TVS filter connector package to provide optimal protection for either individual contacts or groups of contacts without significant increases in connector size or weight. RTCA DO-160 and other electrical performance standards define acceptable benchmarks for withstanding electromagnetic pulse, lightning strike, or other induced voltage surges in high-reliability systems. For high-speed signals, care must be taken in selecting diodes to minimize capacitance loading effects which can lead to signal loss. Glenair SuperSeal™ TVS-equipped RJ45 connectors have been engineered to transmit high-speed signals while providing indirect lightning strike protection in accordance with the RTCA DO-160 standard.



E

Prevents Catastrophic EMP Failure in Military and Commercial Aircraft

- **Electromagnetic pulse (EMP) protection**
- **Lightning protection**
- **Saves weight and space**
- **Superior performance**
- **D38999 Series III type**
- **SuperSeal™ signature sealing and grounding**



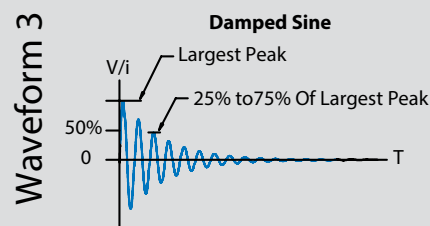
MIL-DTL-38999 type
Series III SuperNine
RJ45 receptacles
with transient
voltage suppression
technology

TVS diode performance specifications and power selection MIL-DTL-38999 Series III Type

MIL-DTL-38999 Series III, TVS Diode, RJ45 CAT 5e and 6A Performance Specifications

Material and Finish	
Shell/coupling Plating	Complete list of options available in the Material and Finish Options portion of this section
Contacts	PC tails or solder cup: copper alloy, gold plated
RJ45 coupler housing	UL94V-0 compliant ABS or PPS
Seals	Fluorosilicone
Shell Sizes	17 and 19
Environmental / Mechanical Performance	
Sealing	IP68 mated condition, IP67 unmated condition
Outgassing	Mod Code 186S* Mod Code 928**
Operating Temperature	-20°C to +85°C
Vibration	20g's, 3 Axis, 10 - 2000Hz
Mechanical Shock	300 g's
Backshell Interface	MIL-DTL-38999 Designator H
Mating Cycles	500
RJ45 Cat 6A & 5e Electrical Specifications	

* Meets outgassing requirements per ASTM E 595 and meets NASA screening requirements for level 1 highest reliability
** Meets outgassing requirements per UL 94 V-0

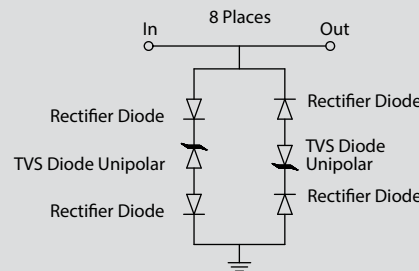


MIL-DTL-38999 Series III, TVS Diode, RJ45 CAT 5e and 6A Performance Specifications

Voltage Rating	1000 Volts, Cat 5e
Data Rate	10BASE-T, 100BASE-TX, 1000BASE-T/1000BASE-TX
Current Rating	1.5 Amps, Cat 5e
D.W.V.	1000 VDC (700 VAC)
Frequency	100 MHz, Cat 5e
Wiring	Straight through
Cabling Length	100 Meters Max
Shield Continuity	Continuous Through Coupler and Grounded to the Shell

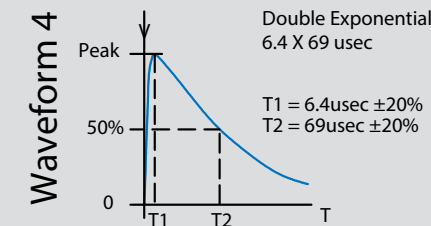
TVS Electrical Specifications
Each signal line has TVS diode protection per the electrical schematic in figure 1.

FIGURE 1



RTCA DO-160 Indirect Lightning Waveset A Waveforms

RTCA DO-160 Waveform	Level	Open Circuit Voltage/ Short Circuit Voltage V/A
Waveform 3	1	100/4
	2	250/10
Waveform 4	1	50/10
	2	125/25

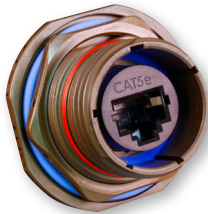


MIL-DTL-38999 Series III, TVS Diode, RJ45 CAT 5e and 6A Performance Specifications

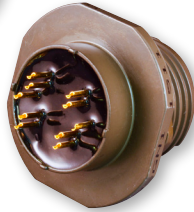
Peak pulse power (tp = 8/20us)	600w
Rated standoff voltage	2.8V
Minimum breakdown voltage	3.0V @ 1mA
Max clamping voltage (@ Ipp = 2A)	5.5V
Max clamping voltage (@ Ipp = 5A)	8.5V
Max clamping voltage (@ Ipp = 30A)	21.0V
Max leakage current	2.0uA max @ 2.8V
Typical junction capacitance	10pF @ 0v, 1Mhz
Polarity	bipolar
Compatible with IEC 61000-4-2 (ESD)	air - 15kv, contact - 8kv
Compatible with IEC 61000-4-4 (EFT)	40A - 5/50ns
Compatible with IEC 61000-4-5 (surge)	24A, 8/20us - level 2 (line-gnd) & level 3 (line-line)

Meets indirect lightning strike requirements per DO-160, section 222 pin injection waveform set A2.

244-001 Jam-nut receptacle, PC tail or solder cup
MIL-DTL-38999 Series III Type



Receptacle Front View



Receptacle Rear View

Part Number Development							
Sample Part Number	244-001	NF	19	P	G	N	1
Basic Number	244-001 with stand-offs						
Finish	See Material and Finish Table						
Shell Size	17 or 19						
Termination	P = PC tail S = Solder cup						
Insert-to-Shell Grounding	G = Shielded and grounded to shell						
Alternate Key Position¹	Per MIL-DTL-38999 A, B, C, D, E, N = Normal ²						
RJ45 Orientation	1, 2, 3, or 4						

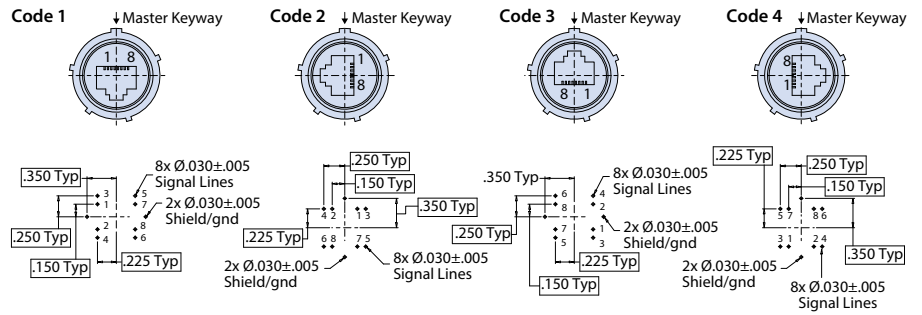
Material and Finish	
NF	Aluminum/Cadmium Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

NOTES

1. See Section A for alternate key/keyway positions and panel cutout dimensions
2. See page E-26 for diode values

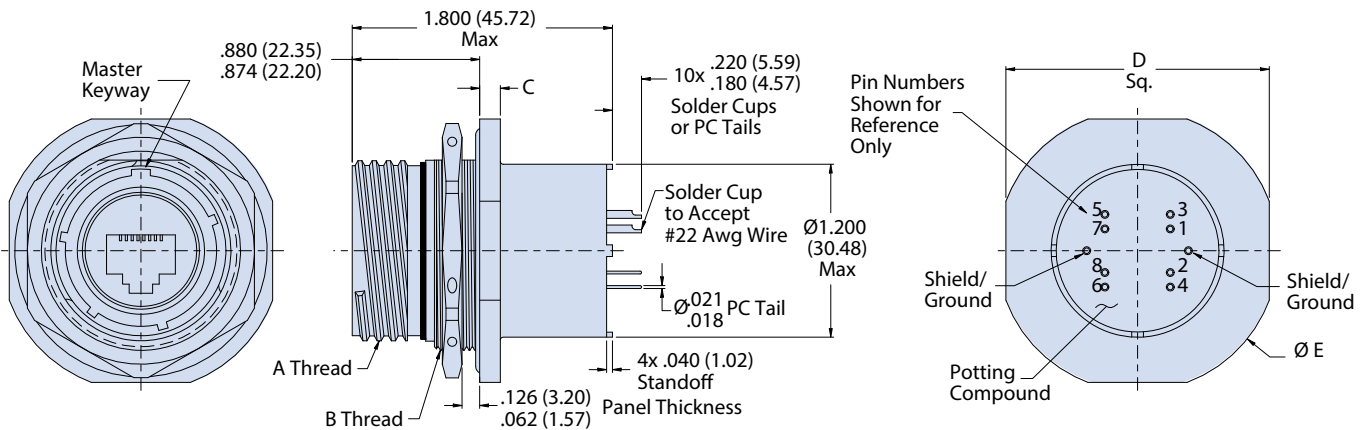
All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

RJ45 ORIENTATION CODE AND PCB LAYOUT (PCB LAYOUT FOR PCTAIL VERSION)

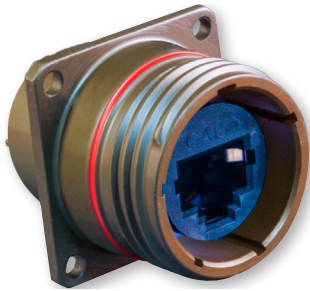


Component Mounting Side

Jam Nut Dimensions												
Shell Size	A Thread	B Thread	C		D Sq.		Ø E		Ø F		G Flat	
			in	mm	in	mm	in	mm	in	mm	in	mm
17	1.1875-.1P-.3L-TS-2A	M32 x 1.0-6g 0.100R	.122 .083	3.10 2.11	1.642 1.610	41.71 40.89	1.764 1.740	44.81 44.20	1.270 1.260	32.56 32.00	1.210 1.200	30.73 30.48
19	1.2500-.1P-.3L-TS-2A	M35 x 1.0-6g 0.100R	.154 .114	3.91 2.90	1.827 1.795	46.41 45.59	1.949 1.925	49.50 48.90	1.395 1.385	35.43 35.18	1.335 1.325	33.91 33.66



244-002 Wall mount receptacle with PC tails or solder cups
MIL-DTL-38999 Series III Type



Part Number Development						
Sample Part Number	244-002	NF	19	P	G	N 1
Basic Number	244-002 with stand-offs					
Finish	See Material and Finish Table					
Shell Size	17 or 19					
Termination	P = PC tail S = Solder cup					
Insert-to-Shell Grounding	G = Shielded and grounded to shell					
Alternate Key Position¹	Per MIL-DTL-38999 A, B, C, D, E, N = Normal					
RJ45 Orientation	1, 2, 3, or 4					

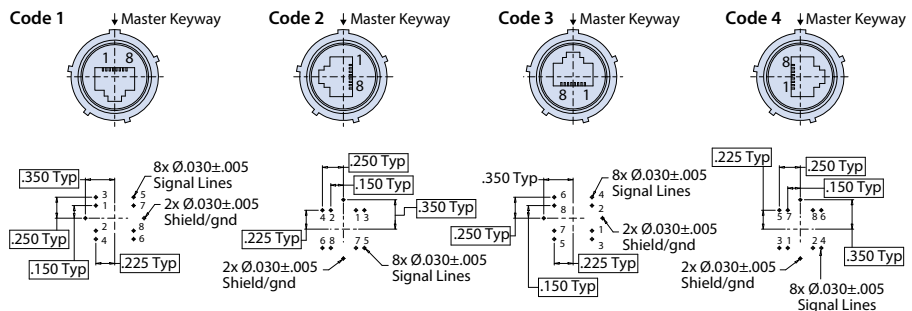
Material and Finish ¹	
NF	Aluminum/Cadmium Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

NOTES

1. See Section A for alternate key/keyway positions and panel cutout dimensions
2. See page E-26 for diode values

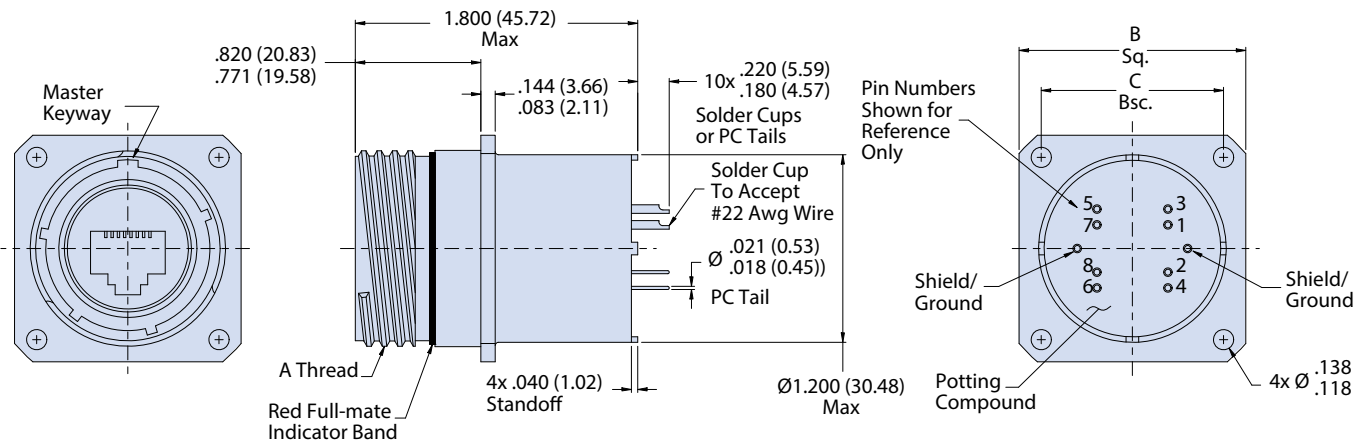
All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

RJ45 ORIENTATION CODE AND PCB LAYOUT (PCB LAYOUT FOR PC TAIL VERSION)



Component Mounting Side

Shell Size	A Thread	Jam Nut Dimensions							
		B Sq.		C Bsc		Ø D Min.		E Bsc	
		in	mm	in	mm	in	mm	in	mm
17	1.1875-.1P-.3L-TS-2A	1.323 1.299	33.60 32.99	1.062	26.97	1.219	30.96	1.062	26.97
19	1.2500-.1P-.3L-TS-2A	1.449 1.425	36.80 36.195	1.156	29.36	1.297	32.94	1.156	29.36



**244-003 Wall mount receptacle with PC tails or solder cups
MIL-DTL-38999 Series III Type**



Part Number Development							
Sample Part Number	244-003	NF	19	P	G	N	1
Basic Number	244-003 with accessory thread						
Finish	See Material and Finish Table						
Shell Size	17 or 19						
Termination	P = PC tail S = Solder cup						
Insert-to-Shell Grounding	G = Shielded and grounded to shell						
Alternate Key Position*	Per MIL-DTL-38999 A, B, C, D, E, N = Normal						
RJ45 Orientation	1, 2, 3, or 4						

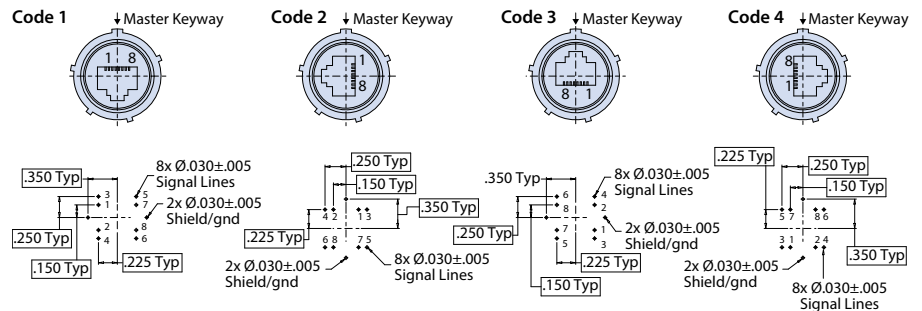
Material and Finish	
NF	Aluminum/Cadmium Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

NOTES

- See Section A for alternate key/keyway positions and panel cutout dimensions
- See page E-26 for diode values

All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

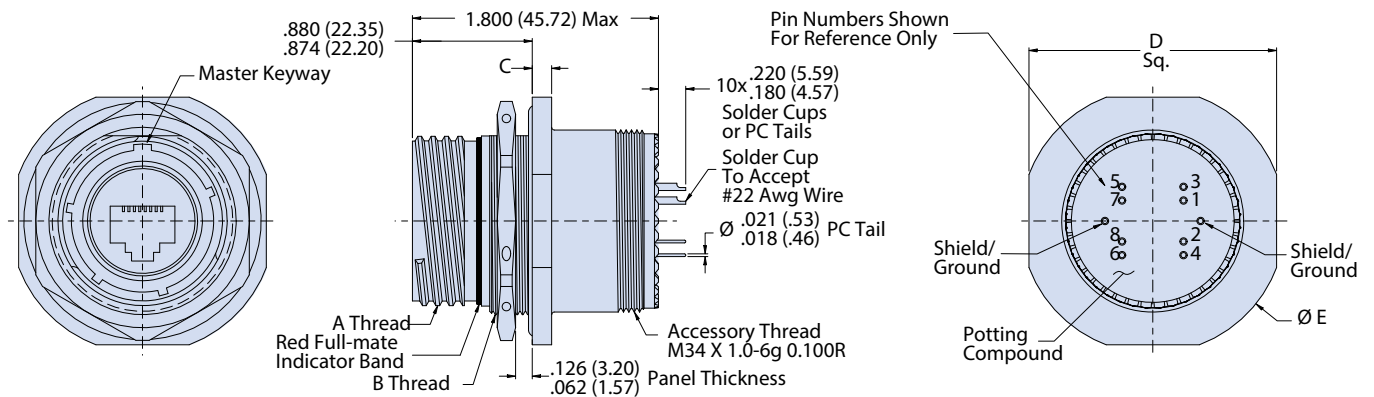
RJ45 ORIENTATION CODE AND PCB LAYOUT (PCB LAYOUT FOR PCTAIL VERSION)



Component Mounting Side

Jam Nut Dimensions												
Shell Size	A Thread	B Thread	C		D Sq.		Ø E		Ø F		G Flat	
			in	mm	in	mm	in	mm				
17	1.1875-.1P-.3L-TS-2A	M32 x 1.0-6g 0.100R	.122 .083	3.10 2.11	1.642 1.610	41.71 40.89	1.764 1.740	44.81 44.17	1.270 1.260	32.26 32.00	1.210 1.200	30.73 30.48
19	1.2500-.1P-.3L-TS-2A	M35 x 1.0-6g 0.100R	.154 .114	3.91 2.90	1.827 1.795	46.41 45.59	1.949 1.925	49.50 48.90	1.395 1.385	35.43 35.18	1.35 1.325	33.91 33.66

JAM-NUT RECEPTACLE WITH ACCESSORY THREADS



SuperNine® RJ45 CAT 5e TVS connectors



244-004 Wall mount receptacle with PC tails or solder cups MIL-DTL-38999 Series III Type



Part Number Development						
Sample Part Number	244-004	NF	19	P	G	N 1
Basic Number	244-004 with accessory thread					
Finish	See Material and Finish Table					
Shell Size	17 or 19					
Termination	P = PC tail S = Solder cup					
Insert-to-Shell Grounding	G = Shielded and grounded to shell					
Alternate Key Position	Per MIL-DTL-38999 A, B, C, D, E, N = Normal					
RJ45 Orientation	1, 2, 3, or 4					

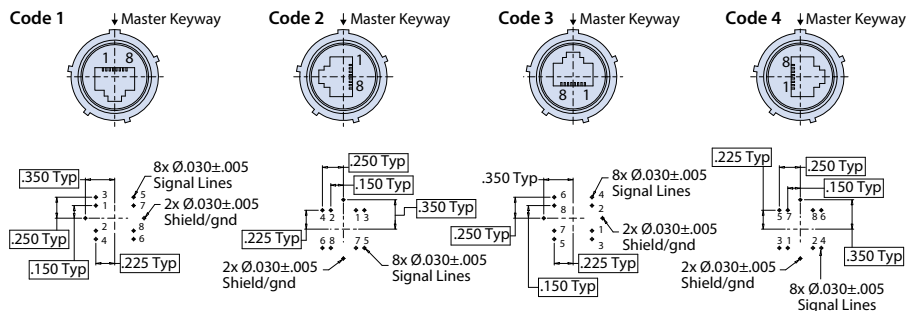
Material and Finish	
NF	Aluminum/Cadmium Olive Drab
ME	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

NOTES

- See Section A for alternate key/keyway positions and panel cutout dimensions
- See page E-26 for diode values

All external dimensions, features, etc. compliant with D38999/20, /24, & /26. Consult factory for additional information.

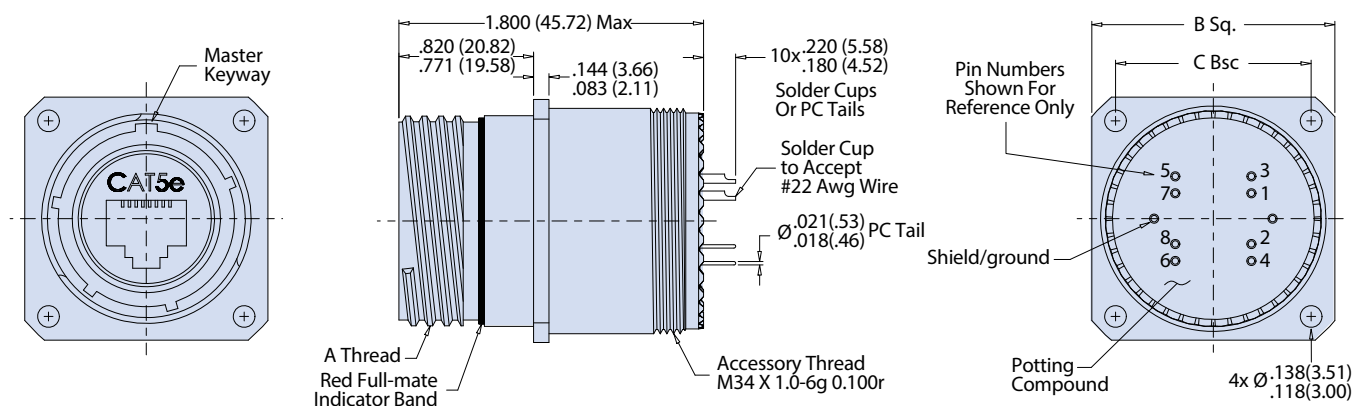
RJ45 ORIENTATION CODE AND PCB LAYOUT (PCB LAYOUT FOR PC TAIL VERSION)



Component Mounting Side

Jam Nut Dimensions									
Shell Size	A Thread	B Sq.		C Bsc		Ø D Min		E Bsc	
		in	mm	in	mm	in	mm	in	mm
17	1.1875-.1P-.3L-TS-2A	1.323 1.299	33.60 32.99	1.062	26.97	1.219	30.96	1.062	26.97
19	1.2500-.1P-.3L-TS-2A	1.449 1.425	36.80 36.195	1.156	29.36	1.297	32.94	1.156	29.36

REAR PANEL MOUNT RECEPTACLE WITH ACCESSORY THREADS



SuperNine® USB 2.0/3.0 type A connectors

Advanced performance SuperSeal™ connectors

Product Selection Guide



	<p>233-340 E-34</p> <p>SuperSeal™ Coupler with Accessory Threads and USB 2.0 Male-to-Female (Plug) or Female-to-Female Receptacle</p>		<p>233-345 E-44</p> <p>SuperSeal Connectors with Accessory Threads and USB 2.0 Male (Plug) or Female (Receptacle) Interface to Crimp Removable Contacts</p>
	<p>233-341 E-36</p> <p>SuperSeal Receptacle with crimp removable contacts. USB 2.0 Female Interface to PC Tail Termination</p>		<p>233-370 E-46</p> <p>SuperSeal Feed-thru Receptacle with USB 2.0 Female-to-Female Interface</p>
	<p>233-342 E-38</p> <p>SuperSeal Receptacle with USB 2.0 Female Interface to PC Tail Termination</p>		<p>233-390 E-48</p> <p>SuperSeal USB 2.0 Memory Stick</p>
	<p>233-343 E-40</p> <p>SuperSeal Receptacle with USB 2.0 Female Interface to Solder Cup Termination</p>		<p>233-92 E-49</p> <p>SuperSeal USB 3.0 Memory Stick</p>
	<p>233-344 E-42</p> <p>SuperSeal Receptacle Adapter with Accessory Threads and Pin or Socket Contacts to USB 2.0 Female Interface</p>		<p>Cable Assemblies E-50</p> <p>SuperSeal USB 3.0 Cable Assemblies</p>

E



SERIES 23

SuperSeal™

USB 2.0 and 3.0 Ruggedized solutions



SuperSeal is the SuperNine family of ruggedized connectors with for USB 2.0 and high-speed USB 3.0 commercial interfaces. Both versions are IP68 (mated) and IP67 (unmated) rated. This interface datalink solution provides outstanding performance for field applications such as dismounted soldier and other C4ISR missions. SuperSeal USB provides military grade connector performance including metal-to-metal grounding, polarization keying, and non-corrosive conductive material and finish options. The USB protocol allows simple plug-and-play connectivity and *hot-swappable* addition of external peripherals such as digitally-aided close air support technologies without restarting systems.

- **USB 2.0 and 3.0 versions available**
- **Superior sealing—IP67 unmated—for complete system protection against water, sand and dust**
- **Highly durable SuperSeal™ insert design, provides enhanced operating temperature, increased life-cycle, and rugged vibration and shock performance**
- **Crimp, solder-cup, PC tail and cable assemblies**

Advanced performance MIL-DTL-38999 connectors
Performance Specifications

USB 2.0 Performance Specifications	
Property	Description

Material and Finish

Shell/Coupling and Plating	Aluminum, cad/o.d., electroless nickel, nickel PTFE, black zinc nickel
Contacts	PC tails, solder cup, and crimp contacts: copper alloy, gold plated
USB Insulator	LCP
Grommet, Peripheral Seal, Interfacial Seal, O-ring	Blended fluorosilicone/silicone elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988
Shell Sizes	15 Consult factory for other shell size options

Electrical Specifications

Data Rate	480 MBps
Power Usage	500 milliamps (mA)
Current Rating	1.5 Amps,
D.W.V.	500 VAC
I.R.	1000 MegOhms
Cabling Length	5.0 Meters Max
Shielding	Continuous through coupler or continuous coupler to shell

Environmental/Mechanical Performance

Sealing	IP68 mated condition, IP67 unmated condition
Outgassing	Mod Code 186S meets outgassing requirements per ASTM E 595 and meets NASA level 3 screening for standard reliability Mod Code 928 meets outgassing requirements per UL 94 V-0
Operating Temperature	-40°C to +120°C
Vibration	20g's, 3 Axis, 10 - 2000Hz
Mechanical Shock	300 g's
Backshell Interface	MIL-DTL-38999 Designator H
Mating System	Triple-start stub ACME
Mating Cycles	500

USB 3.0 Performance Specifications	
Property	Description

Material and Finish

Shell/Coupling and Plating	Aluminum, cad/o.d., electroless nickel, nickel PTFE, black zinc nickel
Contacts	PC tails, solder cup, and crimp contacts: copper alloy, gold plated
USB Insulator	LCP
Grommet, Peripheral Seal, Interfacial Seal, O-ring	Blended fluorosilicone/silicone elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988
Shell Sizes	15 Consult factory for other shell size options

Electrical Specifications

Data Rate	5.0 GBps
Power Usage	500 milliamps (mA)
Current Rating	1.5 Amps,
D.W.V.	500 VAC
I.R.	1000 MegOhms
Cabling Length	3.0 Meters Max
Shielding	Continuous through coupler or continuous coupler to shell

Environmental/Mechanical Performance

Sealing	IP68 mated condition, IP67 unmated condition
Outgassing	Mod Code 186S meets outgassing requirements per ASTM E 595 and meets NASA level 3 screening for standard reliability Mod Code 928 meets outgassing requirements per UL 94 V-0
Operating Temperature	-40°C to +120°C
Vibration	20g's, 3 Axis, 10 - 2000Hz
Mechanical Shock	300 g's
Backshell Interface	MIL-DTL-38999 Designator H
Mating System	Triple-start stub ACME
Mating Cycles	500



SuperNine® USB 2.0 type A connectors

233-340 Couplers with accessory threads

MIL-DTL-38999 Series III Type



Plug
Front View



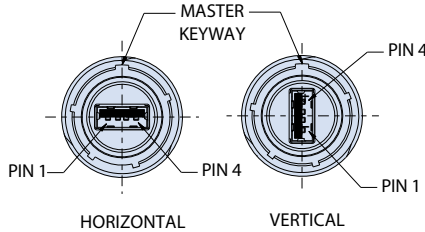
Square Flange
Receptacle
Front View



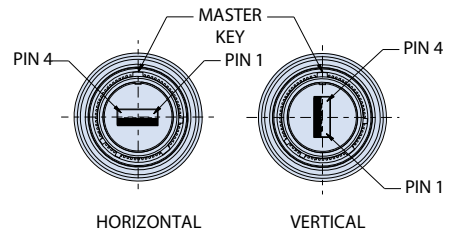
Jam Nut Receptacle
Front View

Part Number Development										
Sample Part Number	233-340	NF	00	-15	2	A	A	N	H	T
Basic Number	233-340									
Finish	See Material and Finish table									
Connector Style ¹	See Connector Style table									
Shell Size	15									
USB Performance	2 = USB 2.0									
USB Front Interface	A = Type A									
USB Back Interface	A = Type A									
Alternate Key Position ¹	A, B, C, D, E, N = Normal per MIL-DTL-38999									
USB Orientation	H = Horizontal V = Vertical									
Shrink Boot	T = Part No. 770-028 (Omit for None)									

USB Receptacle Orientation Options



USB Plug Orientation Options



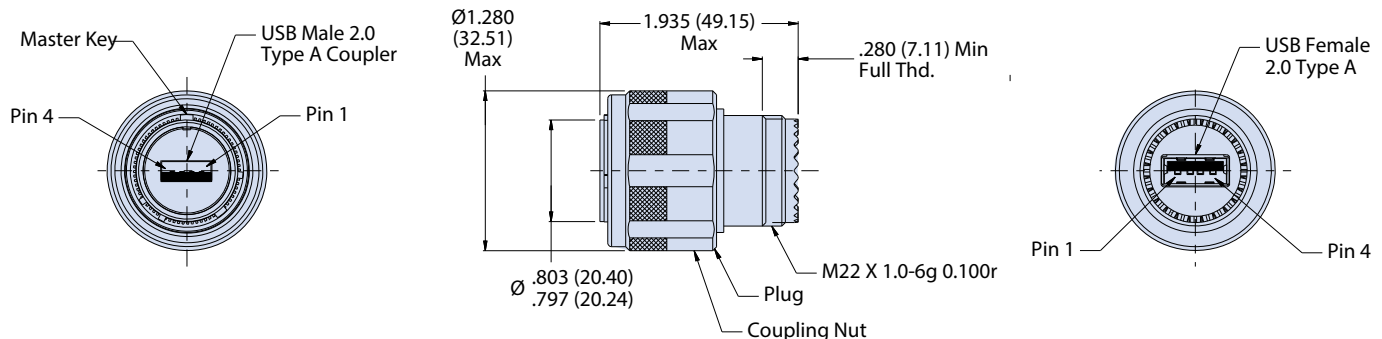
Material and Finish	
NF	Aluminum/Cadmium, Olive Drab
M	Aluminum/Electroless Nickel
MT	Alumimun/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

Connector Style	
G6	Plug
07	Rear panel mount, jam nut receptacle
00	Wall mount receptacle with slotted holes
D0	Wall mount receptacle with round holes
CM	Wall mount receptacle with metric clinch nuts

USB 2.0 Wiring				
Pin	Name	Cable Color (USB)	Description	Recommended Wire Sizes (AWG)
1	(V Bus)	Red	+5 V	22
2	(D-)	White	Data -	28
3	(D+)	Green	Data +	28
4	(GND)	Black	Ground	22

All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

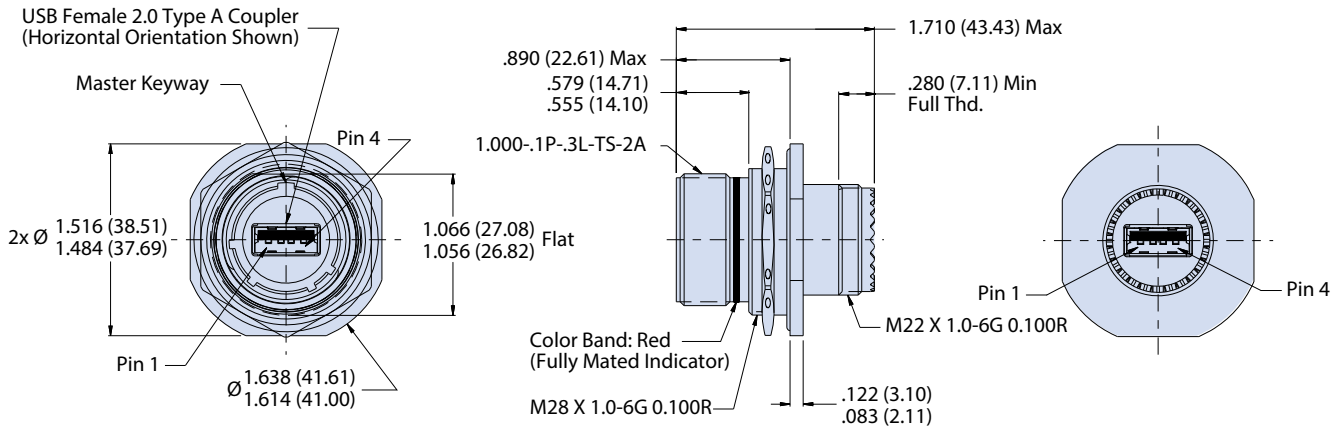
G6 - PLUG WITH ACCESSORY THREADS



233-340 Couplers with accessory threads

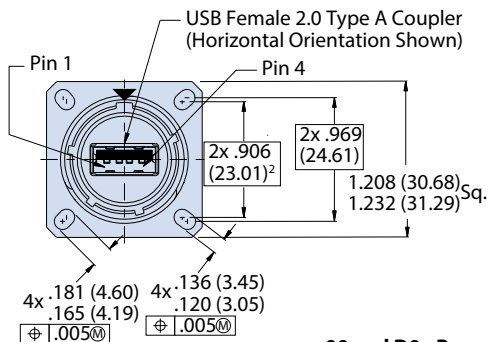
MIL-DTL-38999 Series III Type

07 - REAR PANEL MOUNT, JAM NUT RECEPTACLE WITH ACCESSORY THREADS

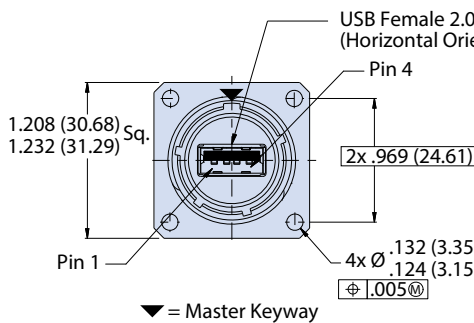


00, D0 AND CM - WALL MOUNT RECEPTACLES WITH ACCESSORY THREADS

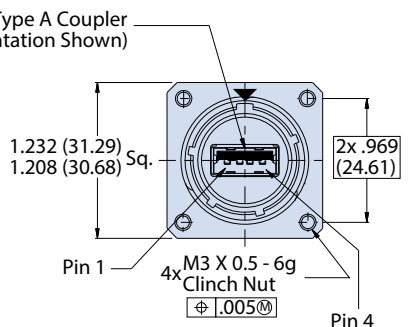
00 - Slotted Hole Receptacle Face View



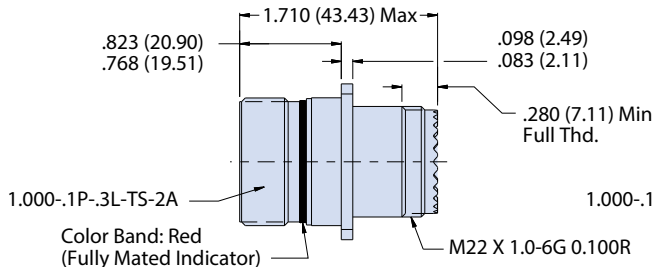
D0 - Round Hole Receptacle Face View



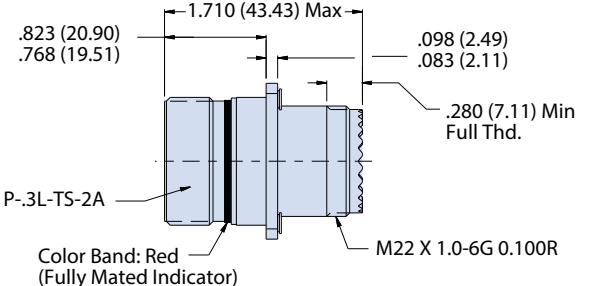
CM - Clinch Hole Receptacle Face View



00 and D0 - Receptacle Side View



CM - Receptacle Side View



NOTES

- See Section A for alternate key/keyway positions and panel cutout dimensions
- Meets IP67 in unmated condition, IP68 mated
- Receptacle has USB female receptacle, plug has USB male plus
- Material and Finish
 - Shell, jam nut: al alloy
 - Insulators: high grade rigid dielectric/n.a.
 - Contacts: copper alloy, gold plated
 - Seals: silicone based elastomer
- USB (shell/contacts): copper alloy
- Dielectric: hi-temp thermoplastic PA9T UL94V-0
- Hardware: stainless steel /passivated

SuperNine® USB 2.0 type A connectors

233-341 Couplers with size 22 crimp contacts

MIL-DTL-38999 Series III Type



**Plug
Front View**



**Jam Nut
Receptacle
Front View**



**Square Flange
Receptacle
Rear View**

		How to Order								
Sample Part Number		233-341	NF	00	-15	2	A	N	H	T
Basic Number	233-341									
Finish¹	See Material and Finishes table ¹									
Connector Style¹	See connector style table									
Shell Size	15									
RJ45 Category	2 = USB 2.0									
USB Interface Type	A = Type A									
Alternate Key Position¹	A, B, C, D, E, N = Normal; per MIL-DTL-38999									
USB Orientation	H = Horizontal V = Vertical									
Shrink Boot	T = Shrink Boot (Omit for None)									

**233-341 Superseded
by 233-345**

Materials and Finishes ¹	
NF	Cadmium olive drab
M	Electroless nickel
MT	Nickel PTFE

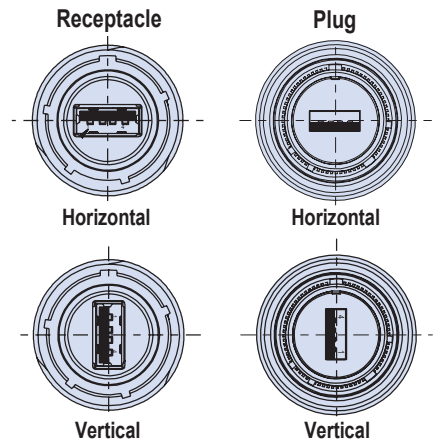
NOTES

1. See Section A for alternate key positions, panel cutout dimensions and complete material and finish options
2. Front panel mount only
3. All external dimensions, features, etc. Compliant with D38999/20, /24 & /26. Consult factory for additional information

Connector Style ¹	
00	Square flange receptacle with slotted holes
07	Jam nut receptacle
D0	Wall mount receptacle with slotted holes
CM	Wall mount receptacle with metric clinch nuts
G6	Plug

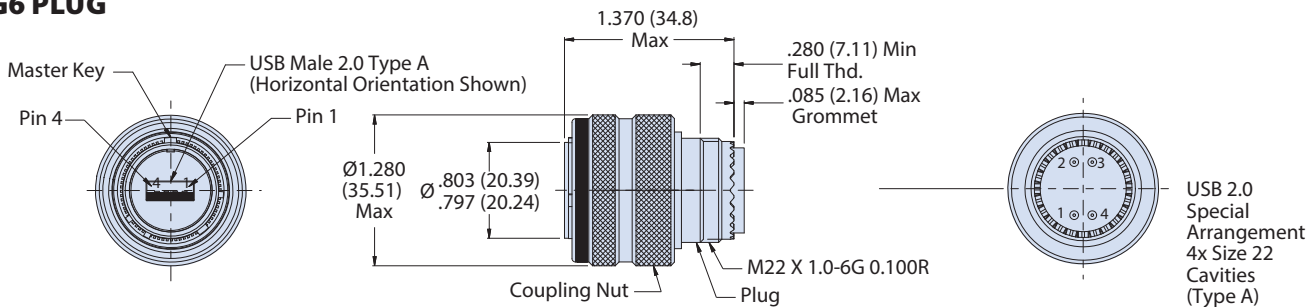
USB 2.0 Wiring				
Pin	Name	Cable Color (USB)	Description	Recommended Wire Sizes (AWG)
1	(V Bus)	Red	+5 V	22
2	(D-)	White	Data -	28
3	(D+)	Green	Data +	28
4	(GND)	Black	Ground	22

**USB Orientation Options
(Partial Views Shown)**



All external dimensions, features, etc. compliant with D38999/20, /24, & /26. Consult factory for additional information.

G6 PLUG



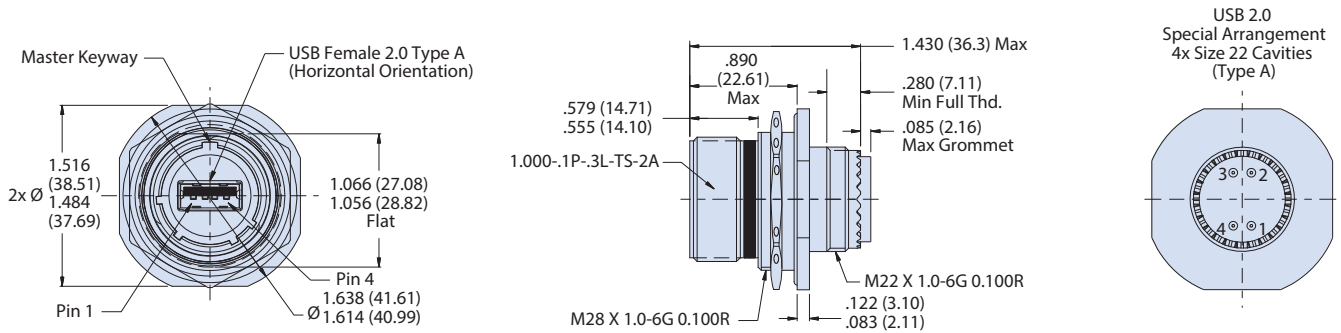
SuperNine® USB 2.0 type A connectors

233-341 Couplers with size 22 crimp contacts

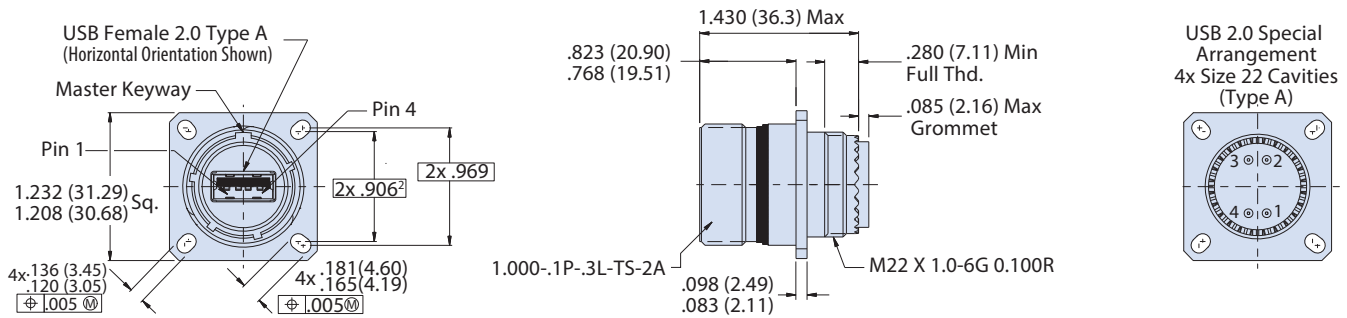
MIL-DTL-38999 Series III Type



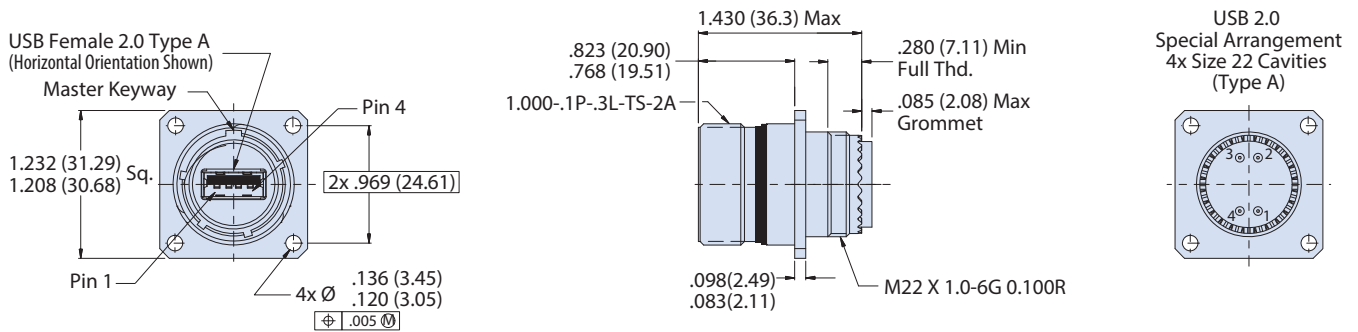
07 - REAR PANEL MOUNT, JAM NUT RECEPTACLE WITH ACCESSORY THREADS



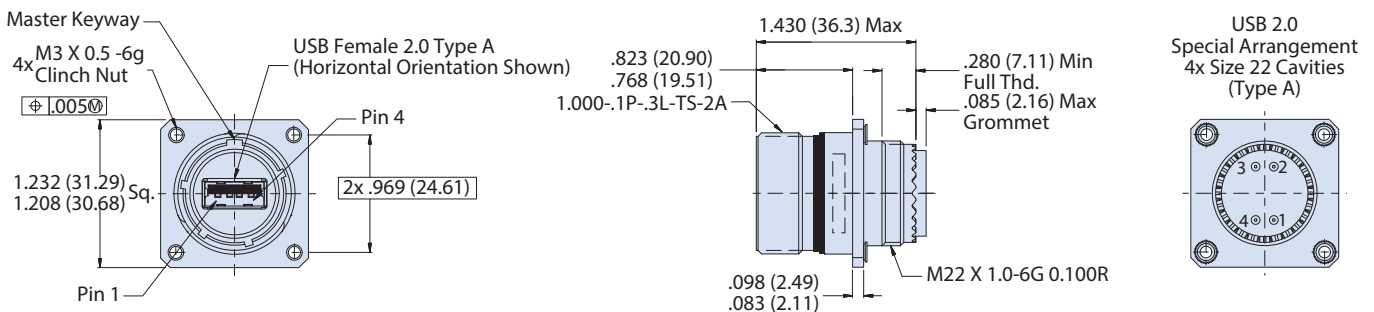
00 WALL MOUNT RECEPTACLE WITH ACCESSORY THREADS



DO - WALL MOUNT RECEPTACLES WITH ACCESSORY THREADS



CM - WALL MOUNT RECEPTACLES WITH ACCESSORY THREADS



SuperNine® USB 2.0 type A connectors



233-342 Receptacle with PC tails

MIL-DTL-38999 Series III Type



Jam Nut Receptacle Rear View



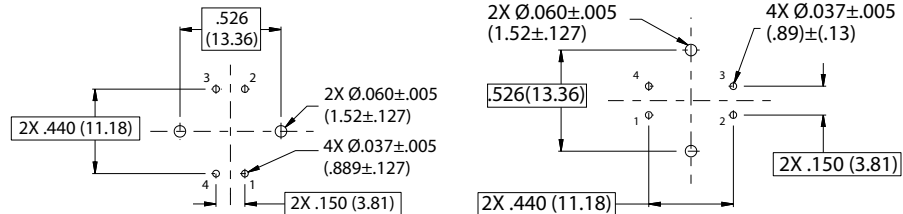
Jam Nut Receptacle Front View

Part Number Development								
Sample Part Number	233-342	NF	00	-15	2	A	N	H
Basic Number	233-342							
Finish	See Material and Finish table							
Connector Style ¹	See Connector Style table							
Shell Size	15							
USB Performance	2 = USB 2.0							
USB Interface Type	A = Type A							
Alternate Key Position ¹	A, B, C, D, E, N = Normal; per MIL-DTL-38999							
USB Orientation	H = Horizontal V = Vertical							

USB Receptacle Orientation Options (Partial Views Shown)



Recommended (Solder Side)



Material and Finish	
NF	Aluminum/Cadmium, Olive Drab
M	Aluminum/Electroless Nickel
MT	Aluminum/Nickel PTFE
ZR	Aluminum/Black Zinc-Nickel

Connector Style	
07	Rear panel mount, jam nut receptacle
00	Wall mount receptacle with slotted holes
DO	Wall mount receptacle with round holes
CM	Wall mount receptacle with metric clinch nuts

NOTES

- See Section A for alternate key/keyway positions and panel cutout dimensions
- Rear panel mount only
- Meets IP67 in unmated condition, IP68 mated
- Receptacle has USB female receptacle
- Material/Finishes:
 - Insulators: high grade rigid dielectric/ n.a.
 - Contacts: copper alloy, gold plated
 - Seals: silicone based elastomer
 - USB (shell/contacts): copper alloy
 - Dielectric: hi-temp thermoplastic PA9T UL94V-0
 - Hardware: stainless steel/passivated

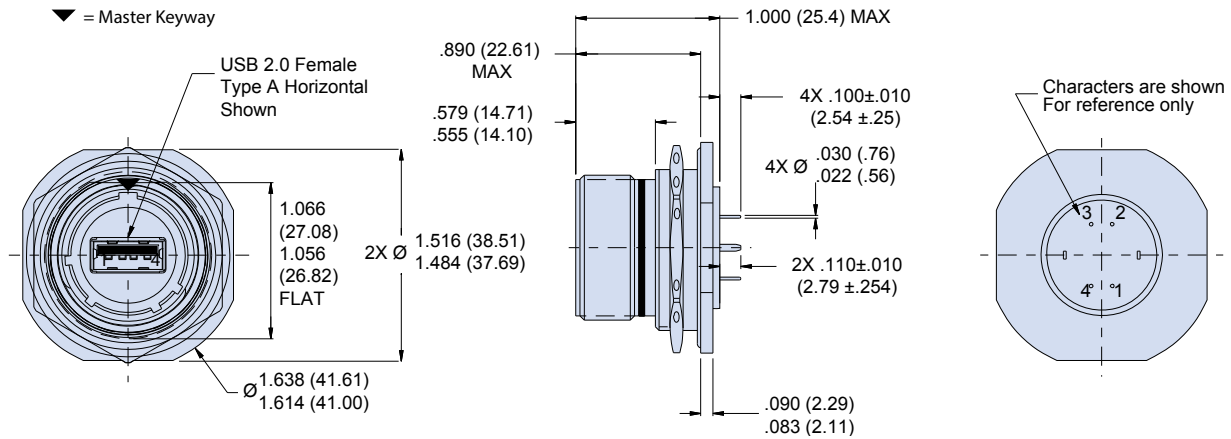
USB 2.0 Wiring				
Pin	Name	Cable Color (USB)	Description	Recommended Wire Sizes (AWG)
1	(V Bus)	Red	+5 V	22
2	(D-)	White	Data -	28
3	(D+)	Green	Data +	28
4	(GND)	Black	Ground	22

All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

233-342 Receptacle with PC tails

MIL-DTL-38999 Series III Type

07 - REAR PANEL MOUNT, JAM NUT RECEPTACLE

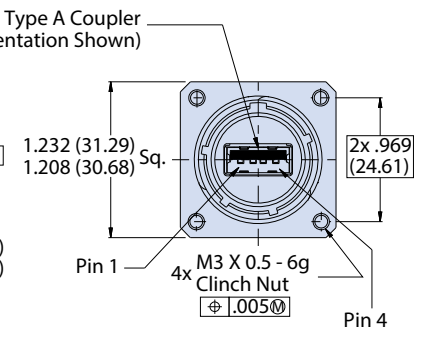
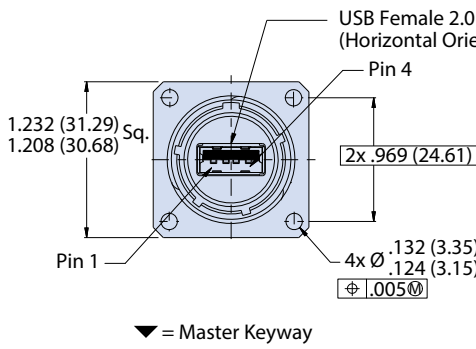
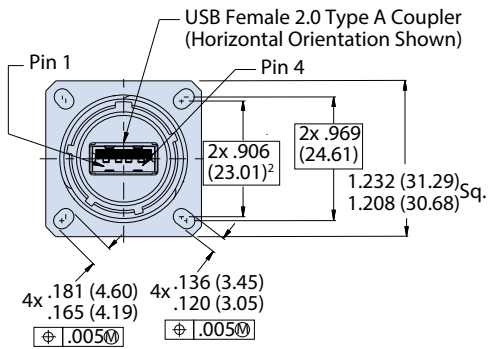


00, D0 AND CM - WALL MOUNT RECEPTACLES

00 - Slotted Hole Receptacle Face View

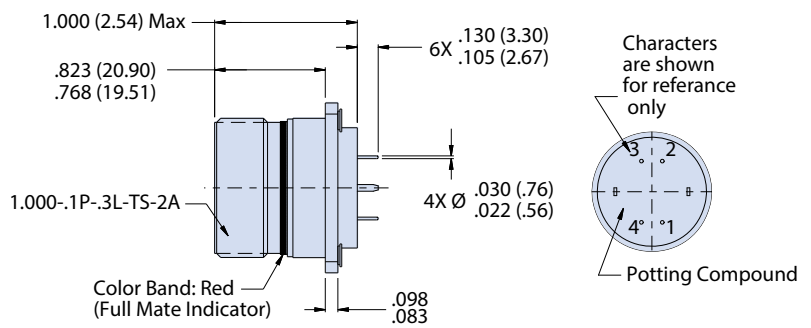
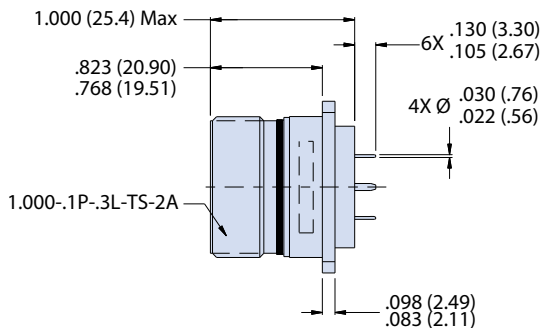
D0 - Round Hole Receptacle Face View

CM - Clinch Hole Receptacle Face View



00 and D0 - Receptacle (Side View)

CM - Receptacle (Side View)



SuperNine® USB 2.0 type A connectors

233-343 Receptacle with solder cup termination

MIL-DTL-38999 Series III Type



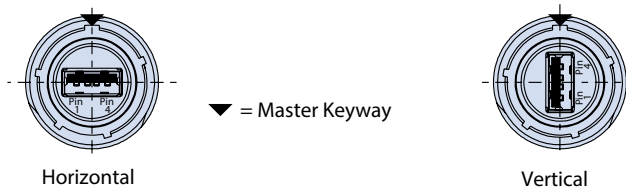
**Jam Nut Receptacle
Front View**



**Jam Nut Receptacle
Rear View**

Part Number Development								
Sample Part Number	233-343	NF	00	-15	2	A	N	H
Basic Number	233-343							
Finish	See Material and Finish table							
Connector Style¹	See Connector Style table							
Shell Size	15							
USB Performance	2 = USB 2.0							
USB Interface Type	A = Type A							
Alternate Key Position¹	A, B, C, D, E, N = Normal; per MIL-DTL-38999							
USB Orientation	H = Horizontal V = Vertical							

USB Receptacle Orientation Options (Partial Views Shown)



Material and Finish	
NF	Aluminum/cadmium, olive drab
M	Aluminum/electroless nickel
MT	Alumimun/nickel PTFE
ZR	Aluminum/black zinc-nickel

Connector Style	
07	Rear panel mount, jam nut receptacle
00	Wall mount receptacle with slotted holes
D0	Wall mount receptacle with round holes
CM	Wall mount receptacle with metric clinch nuts

USB 2.0 Wiring				
Pin	Name	Cable Color (USB)	Description	Recommended Wire Sizes (AWG)
1	(V Bus)	Red	+5 V	22
2	(D-)	White	Data -	28
3	(D+)	Green	Data +	28
4	(GND)	Black	Ground	22

All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

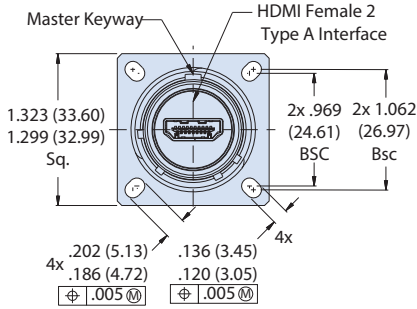
NOTES

1. See Section A for alternate key/keyway positions and panel cutout dimensions
2. Front panel mount only
3. All external dimensions, features, etc. Compliant with D38999/20, /24 & /26. Consult factory for additional information
4. Meets IP67 in unmated condition, IP68 mated
5. Receptacle has USB female receptacle
6. Materials and finishes
 - Shell, jam nut: aluminum ally
 - insulators: high grade 4 rigid dielectric/n.a.
 - contacts: copper alloy, god plated
 - seals: silicone based elastomer
 - USB (shell/contacts: copper alloy
 - dielectric: hi-temp thermoplastic PA9T UL94V-0
 - Hardware: stainless steel/passivated

2330-0455 Cable assembly with HDMI 2 MIL-DTL-38999 Series III

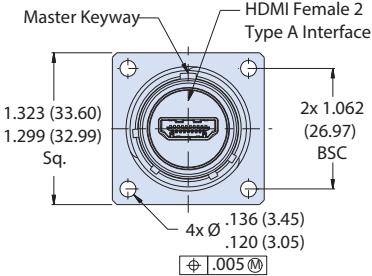
Part Number Development						
Sample Part Number	2330-0455	M	07	-17	N	H -X
Series / Basic Part No.	2330-0455					
P1 Material/Finish	NF = Aluminum/cadmium olive drab ME = Aluminum/electroless nickel MT = Aluminum/nickel PTFE ZR = Aluminum/zinc-nickel					
P1 Connector Style	00 = Wall mount receptacle with slotted holes D0 = Wall mount receptacle with round holes 07 = Jam-nut receptacle G6 = Plug					
Shell Size	17					
Alternate Polarization	A, B, C, D, E, N = Normal; Per MIL-DTL-38999					
HDMI Orientation	H = Horizontal V = Vertical					
Overall Length	Provided in 1 foot increments; 01 - 1.0 ft					

00 - Wall Mount Receptacle With Slotted Holes



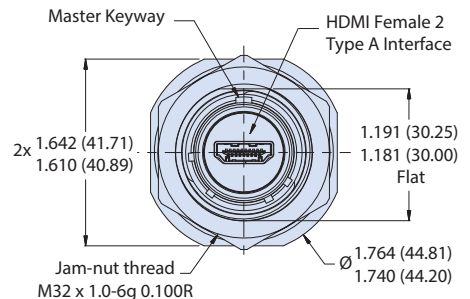
(Horizontal Orientation Shown)

D0 - Wall Mount Receptacle With Round Holes

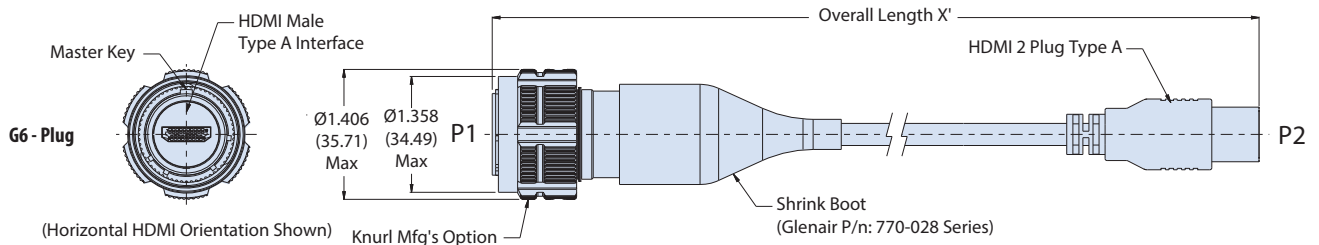
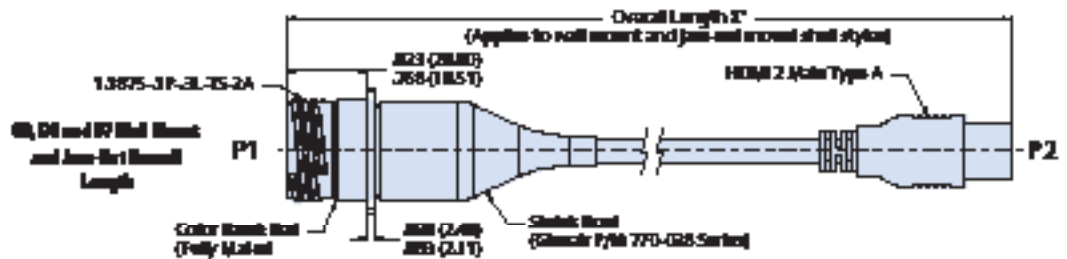


(Horizontal Orientation Shown)

07 - Jam Nut Receptacle

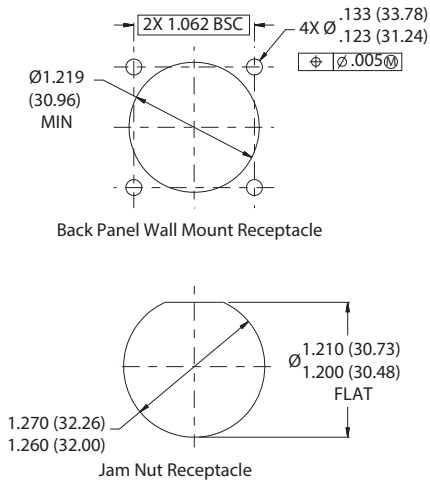


(Horizontal Orientation Shown)



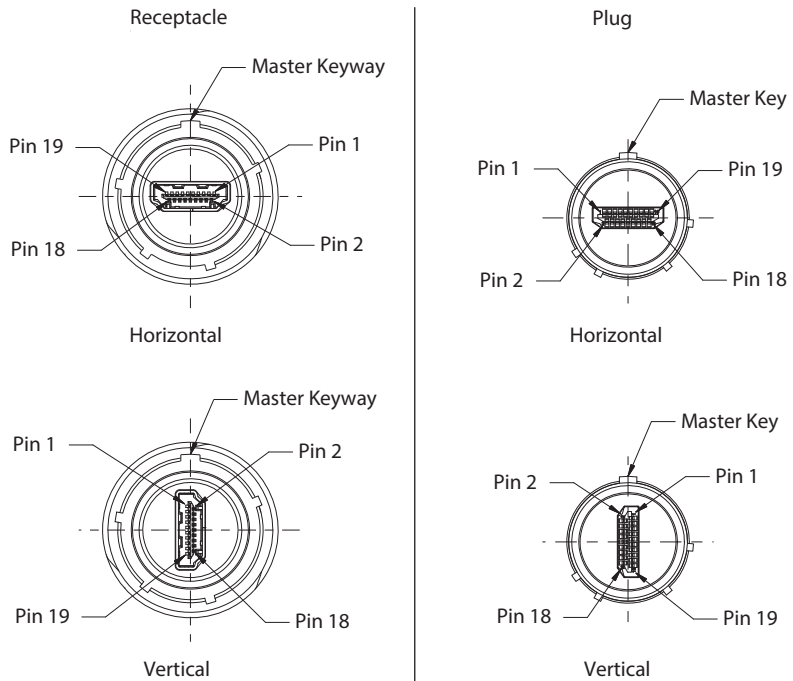
(Horizontal HDMI Orientation Shown)

Recommended Mounting Holes & Cut Outs



HDMI 2, Connector Pin Assignments			
Pin	Signal	Pin	Signal
1	TMDS DATA2+	11	TMDS CLOCK SHIELD
2	TMDS DATA2 SHIELD	12	TMDS CLOCK-
3	TMDS DATA2-	13	CEC
4	TMDS DATA1+	14	UTILITY
5	TMDS DATA1 SHIELD	15	SCL
6	TMDS DATA1-	16	SDA
7	TMDS DATA0+	17	DDC/CEC GROUND
8	TMDS DATA0 SHIELD	18	+5V POWER
9	TMDS DATA0-	19	HOT PLUG DETECT
10	TMDS CLOCK+		

**HDMI 2 ORIENTATION OPTIONS
(PARTIAL FRONT VIEWS SHOWN)**



NOTES

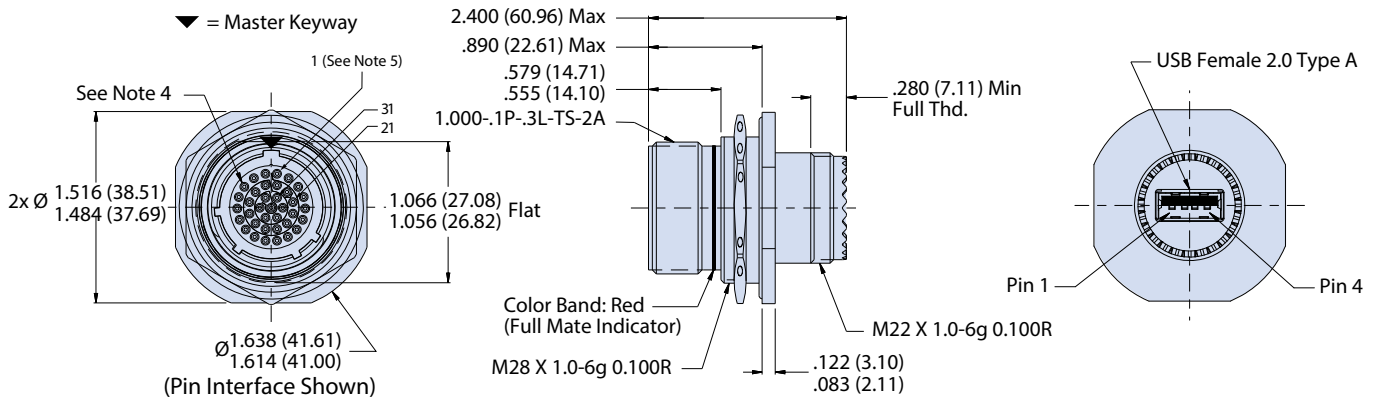
- Material/finish
 - Shell, jam-nut, barrel: see part number development
 - Insulators: high grade rigid dielectric/N.A.
 - Contacts: copper alloy, gold plated
 - Seals: silicone based elastomer
 - HDMI (shell/contacts): copper alloy
 - Dielectric: thermoplastic PA9T UL94V-0
 - Hardware: stainless steel/passivated
- HDMI specifications:
 - Performance:
 - HDMI 2
 - Electrical:
 - Current rating: 0.5 amps min
 - DWV: 300 Vac
 - I.R.: 100 Meg Ohms min.
 - Operating temperature range: -20°C to +85°C
- Connector interface (P1) per MIL-DTL-38999, Series III, Shell size 17
- Connector front interface with HDMI Type A male is designed to mate with HDMI receptacle patch cord or Glenair HDMI receptacle connector 2330-0441

Connector front interface with HDMI Type A female is designed to mate with HDMI male patch cord

E

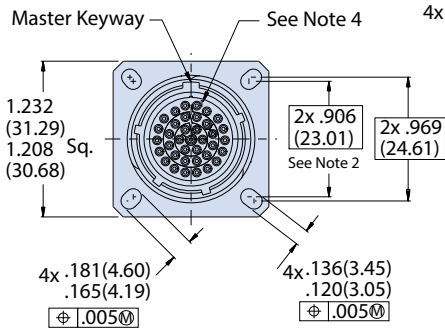
233-344 Receptacle adapter with MIL-STD 1560 interface MIL-DTL-38999 Series III Type

07 - REAR PANEL MOUNT, JAM NUT RECEPTACLE WITH ACCESSORY THREADS

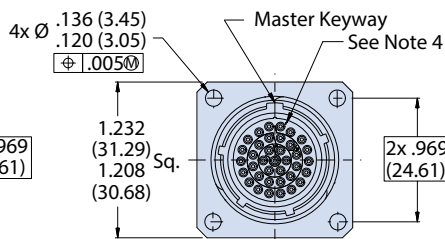


00, DO AND CM - WALL MOUNT RECEPTACLES WITH ACCESSORY THREADS

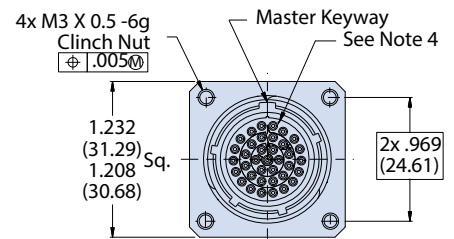
00 - Slotted Hole Receptacle (Mating Face) (Pin Interface Shown)



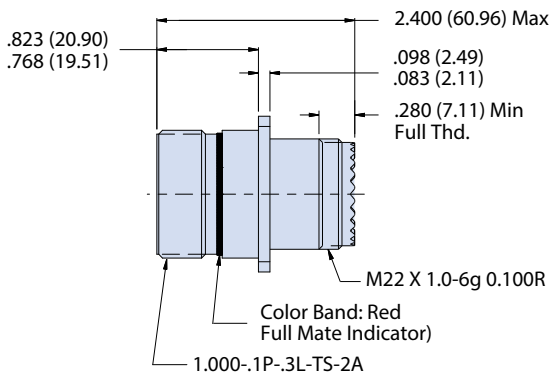
DO - Round Hole Receptacle (Mating Face) (Pin Interface Shown)



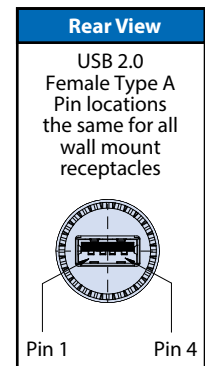
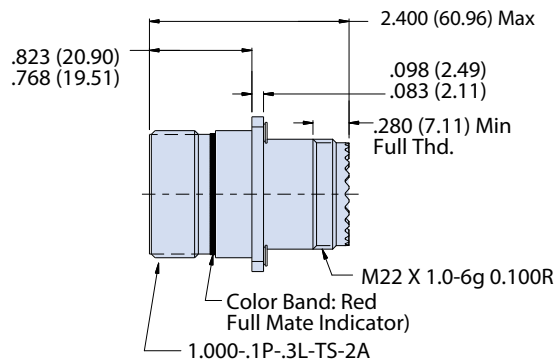
CM - Clinch Hole Receptacle (Mating Face) (Pin Interface Shown)



00 and DO - Receptacle (Side View)



CM - Receptacle (Side View)



E

SuperNine® USB 2.0 type A connectors



233-345 Receptacle with crimp removable contacts MIL-DTL-38999 Series III Type



Receptacle Front View

Receptacle Rear View

Part Number Development	
Sample Part Number	233-345 NF 00 -15 2 A N H T
Basic Number	233-345
Finish	See Material and Finish table
Connector Style ¹	See Connector Style table
Shell Size	15
USB Performance	2 = USB 2.0
USB Interface Type	A = Type A
Alternate Polarization ¹	A, B, C, D, E, N = Normal; per MIL-DTL-38999
USB Orientation	H = Horizontal V = Vertical
Shrink Boot	T = Shrink Boot; Omit for none

Material and Finish	
NF	Aluminum/cadmium, olive drab
M	Aluminum/electroless nickel
MT	Aluminum/nickel PTFE
ZR	Aluminum/black zinc-nickel

Connector Style	
G6	Plug
07	Rear panel mount, jam nut receptacle
00	Wall mount receptacle with slotted holes
D0	Wall mount receptacle with round holes
CM	Wall mount receptacle with metric clinch nuts

USB 2.0 Wiring				
Pin	Name	Cable Color (USB)	Description	Recommended Wire Sizes (AWG)
1	(V Bus)	Red	+5 V	22
2	(D-)	White	Data -	28
3	(D+)	Green	Data +	28
4	(GND)	Black	Ground	22

USB Receptacle Orientation Options (Partial Views Shown)

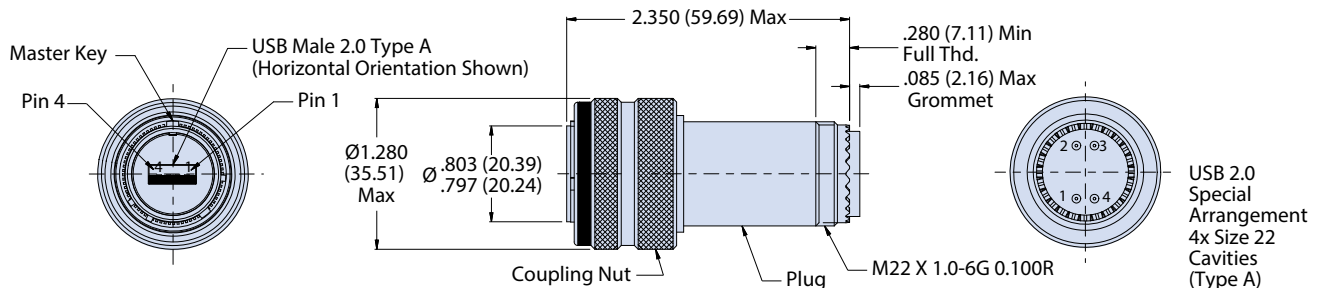


NOTES

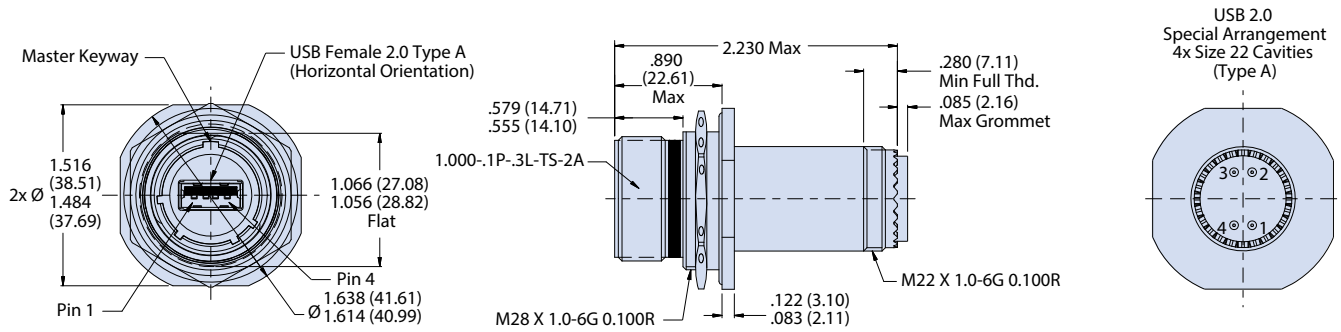
1. See Section A for alternate key/keyway positions and panel cutout dimensions
2. Front panel mount only
3. Crimp removable size 22 socket contacts (M39029/56-348) supplied loose
4. Meets IP67 in unmated condition, IP68 mated
5. Receptacle has USB female receptacle mating interface

All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

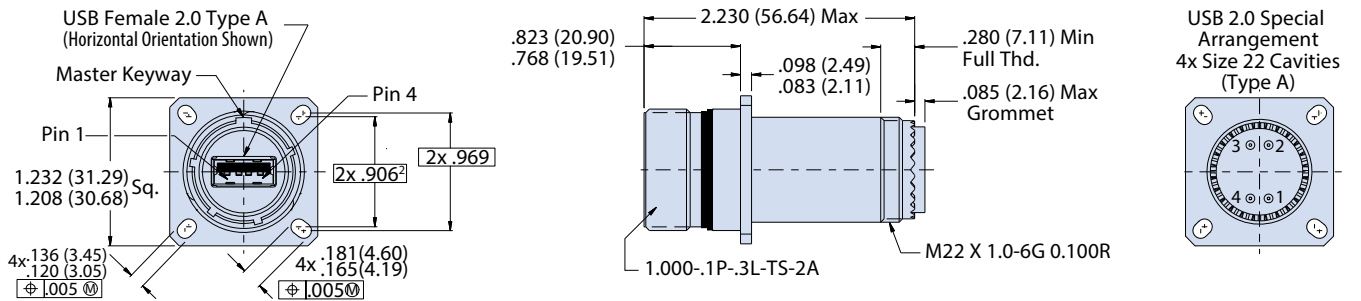
G6 PLUG WITH ACCESSORY THREADS



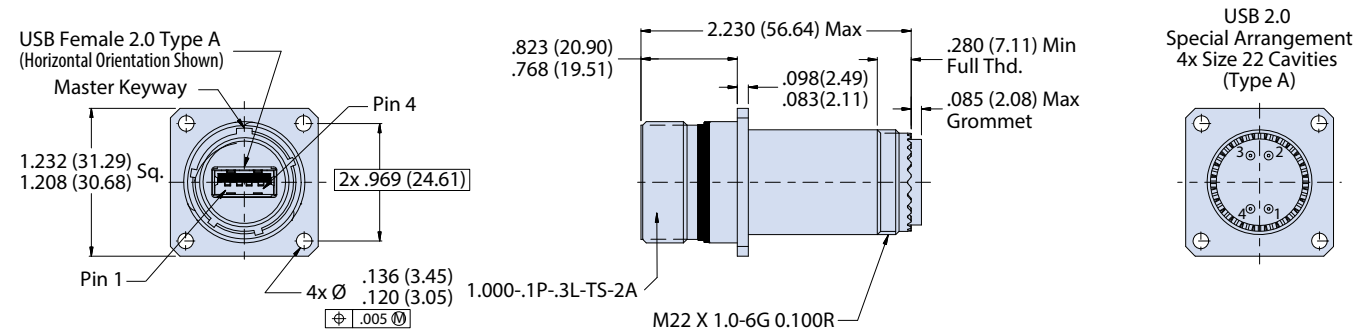
07 - REAR PANEL MOUNT, JAM NUT RECEPTACLE WITH ACCESSORY THREADS



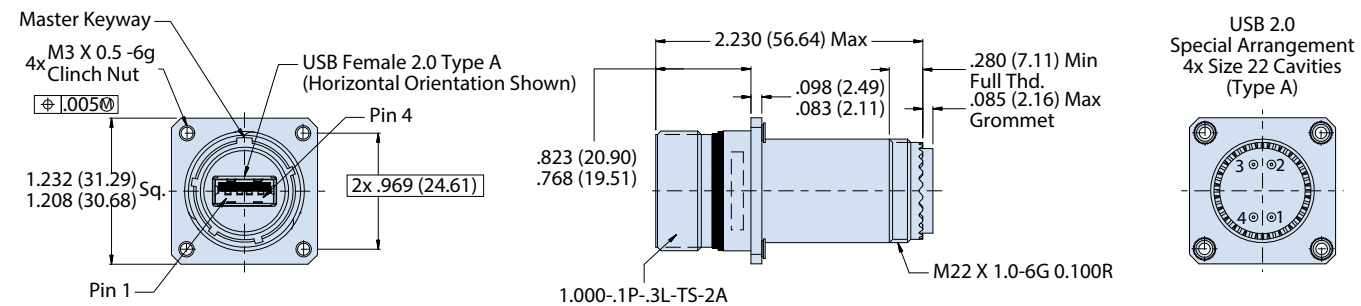
00 WALL MOUNT RECEPTACLE WITH ACCESSORY THREADS



DO - WALL MOUNT RECEPTACLES WITH ACCESSORY THREADS



CM - WALL MOUNT RECEPTACLES WITH ACCESSORY THREADS



SuperNine® USB 2.0 type A connectors



233-370 Feed-thru receptacle MIL-DTL-38999 Series III Type



**Feed-Thru
Front View**

Part Number Development									
Sample Part Number	233-370	NF	00	-17	2	A	A	N	H
Basic Number	233-370								
Finish	See Material and Finish table								
Connector Style¹	See Connector Style table								
Shell Size	15 or 17								
USB Performance	2 = USB 2.0								
USB Front Interface	A = Type A								
USB Rear Interface	A = Type A								
Alternate Polarization¹	A, B, C, D, E, N = Normal								
USB Orientation	H = Horizontal V = Vertical								

USB Receptacle Orientation Options (Partial Views Shown)



E

Material and Finish	
NF	Aluminum/cadmium, olive drab
M	Aluminum/electroless nickel
MT	Aluminum/nickel PTFE
ZR	Aluminum/black zinc-nickel

Connector Style	
07	Rear panel mount, jam nut receptacle
00	Wall mount receptacle with slotted holes ²
DO	Wall mount receptacle with round holes
CM	Wall mount receptacle with metric clinch nuts

USB 2.0 Wiring				
Pin	Name	Cable Color (USB)	Description	Recommended Wire Sizes (AWG)
1	(V Bus)	Red	+5 V	22
2	(D-)	White	Data -	28
3	(D+)	Green	Data +	28
4	(GND)	Black	Ground	22

NOTES

- See Section A for alternate key/keyway positions and panel cutout dimensions
- Front panel mount only
- Meets IP67 in unmated condition, IP68 mated
- Feedthru has front and rear USB female mating interface

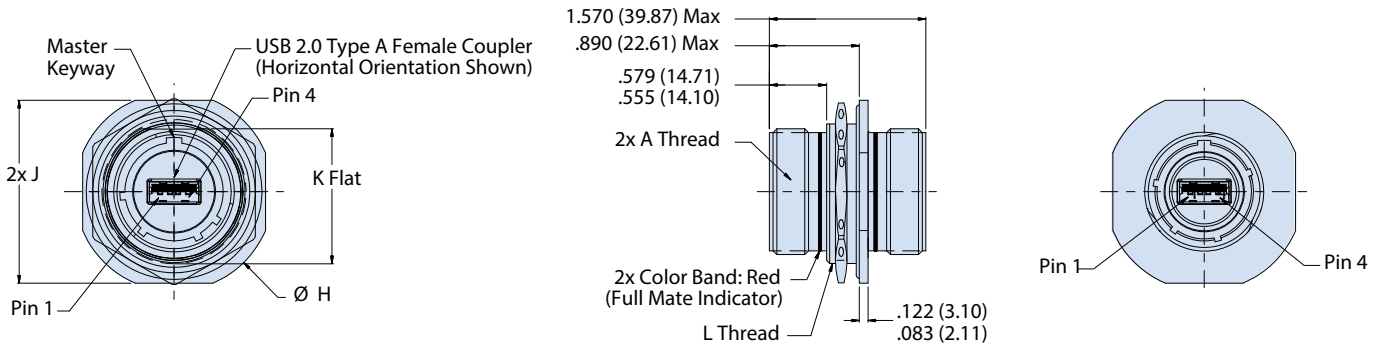
Jam Nut Mount							
Shell Size	Ø H		J		K Flat		L Thread
	in	mm	in	mm	in	mm	
15	1.638	41.61	1.516	38.51	1.066	27.08	M28 X 1.0-6G 0.100R
	1.614	41.00	1.484	37.69	1.056	26.82	
17	1.764	44.81	1.642	41.71	1.191	30.25	M32 X 1.0-6G 0.100R ⁴
	1.740	44.20	1.610	40.89	1.181	30.00	

Wall Mount														
Shell Size	A Thread		B Sq		C Bsc		D Bsc ²		E		F		Ø G Holes	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
15	1.0000-1P-.3L-TS-2A	1.232	31.29	.969	24.61	.906	23.01	.136	3.45	0.181	4.60	0.136	3.45	
		1.208	30.68							0.165	4.19			
17	1.1875-1P-.3L-TS-2A	1.323	33.60	1.062	26.97	.969	24.61	0.120	3.05	0.202	5.13	0.120	3.05	
		1.299	32.99							0.186	4.72			

233-370 Feed-thru receptacle

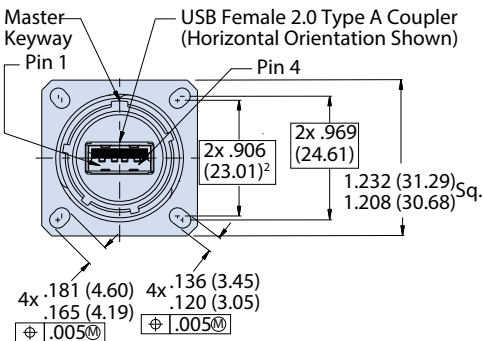
MIL-DTL-38999 Series III Type

07 - REAR PANEL MOUNT, JAM NUT RECEPTACLE

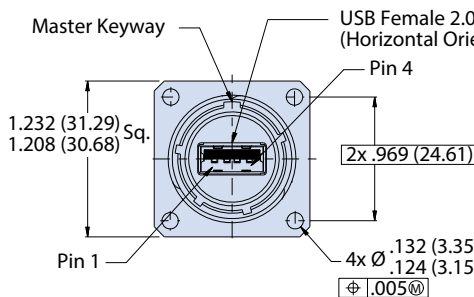


00, D0 AND CM - WALL MOUNT RECEPTACLES

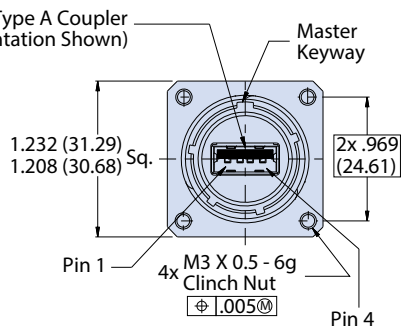
00 - Slotted Hole Receptacle Face View



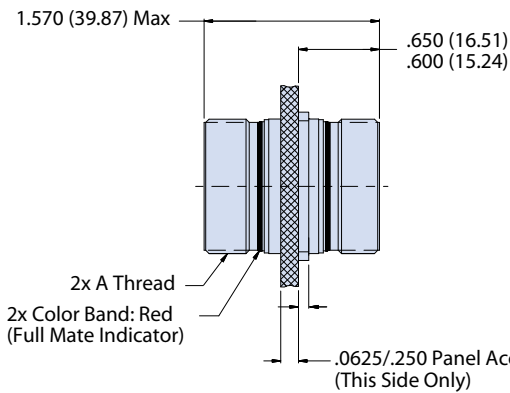
D0 - Round Hole Receptacle Face View



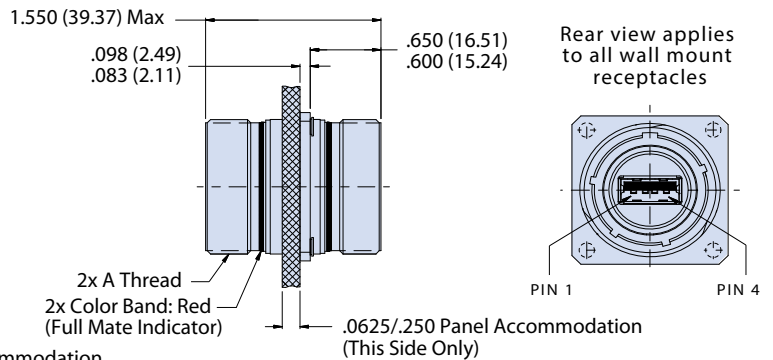
CM - Clinch Hole Receptacle Face View



00 and D0 - Receptacle Side View



CM - Receptacle Side View

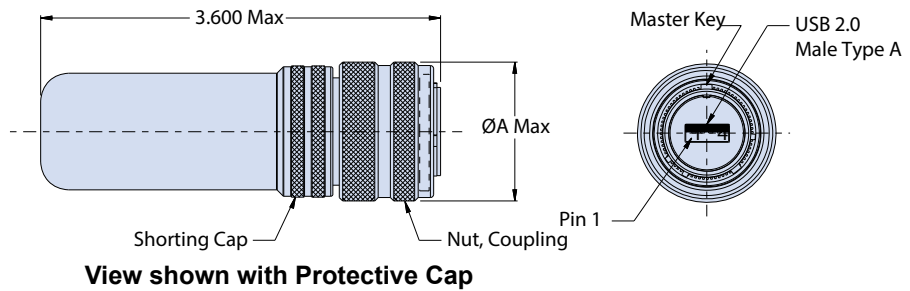


E

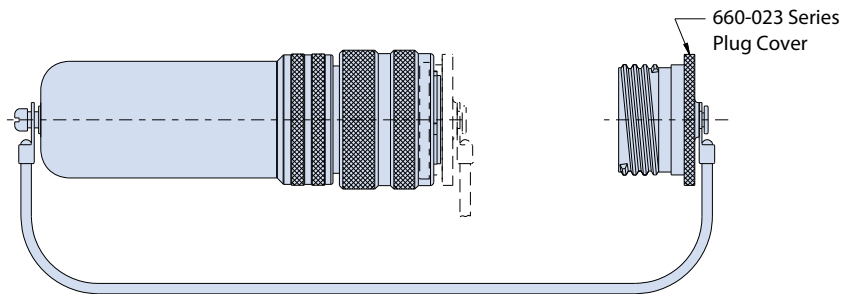
All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

233-390 Memory stick
MIL-DTL-38999 Series III Type

Part Number Development	
Sample Part Number	233-390 NF 32 -15 N H P
Series / Basic Part No.	233-390
Finish	NF = Aluminum/cadmium olive drab ME = Aluminum/electroless nickel MT = Aluminum/nickel PTFE ZR = Aluminum/zinc-nickel
Storage Capacity Options	128 = 128Gb 64 = 64Gb 32 = 32 Gb, 16 = 16 Gb, 8 = 8Gb
Shell Size	15, 17, 19, 21, 23, 25
Alternate Key Position	A, B, C, D, E, N = Normal; Per MIL-DTL-38999
USB Orientation	H = Horizontal V = Vertical
Protective Cover Option	P = Series 660-023 cover (omit for none)



Dimensions	
Shell Size	ØA Max
15	1.280 (32.5)
17	1.406 (35.7)
19	1.516 (38.5)
21	1.642 (41.7)
23	1.768 (44.9)
25	1.890 (48.0)



NOTES

- System requirements: Windows 2000, XP, Vista, Windows 7.
- Compatibility: plug and play; USB 2.0 Compliance.
- Interface: USB 2.0, Type A male.
- Data transfer rates: USB 2.0: Up to 25 Mb/sec read, 10Mb/sec write.
- Password protection and AES encryption.
- Mates with 233-340,-341,-342,-343 & -345
- Environmental parameters:
Operating temperatures: -40°C to 85°C (see part number development)
- Storage temperatures: -40°C to 85°C
- Humidity range operating: 10% to 95%
- Memory stick uses USB male plug
- Material/Finish
 - Barrel, coupling nut:
 - Insulators: high grade rigid dielectric/ N.A.
 - Seal: fluorosilicone/N.A.
 - EMI grounding spring: BeCu /electroless nickel plate.
 - Hardware: stainless steel/passivated

SuperNine® USB 3.0 type A connectors

233-392 USB 3.0 memory stick

MIL-DTL-38999 Series III Type



Part Number Development	
Sample Part Number	233-392 NF 32 15 -N H P
Series / Basic Part No.	233-392
Material/Finish	NF = Aluminum/cadmium olive drab ME = Aluminum/electroless nickel MT = Aluminum/nickel PTFE ZR = Aluminum/zinc-nickel
Storage Capacity Options	32 = 32 GB, 64 = 64 GB, 128 = 128 GB
Shell Size	15
Alternate Polarization	A, B, C, D, E, N = Normal; Per MIL-DTL-38999
USB Orientation	H = Horizontal V = Vertical
Protective Cover Option	P = Series 660-023 cover; Omit for none

NOTES

- Contact factory for details of protective cover options.
- This connector is designed to mate with Glenair part numbers 233-340,-341,-342,-343 &-345.
- USB flash memory specifications:
 - Storage capacity - 32 GB, 64 GB, 128 GB (consult factory for other capacity options)
 - System requirements - windows 2000, xp, vista, windows 7.
 - Compatibility - plug and play; USB 3.0 compliance; backward compatible with USB 2.0.
 - Interface - USB 3.0, Type a male.
 - Data transfer rates - see table II
 - Password protection and AES encryption.
 - Environmental parameters:
 - » Operating temperatures - -40°C to 85°C
 - » Storage temperatures - -40°C to 85°C
 - » Humidity range operating - 10% to 95%.
- Material/finishes:
 - Barrel, coupling nut - see part number development
 - Insulators-high grade rigid dielectric/N.A.
 - Seal: fluorosilicone/N.A.
 - EMI grounding spring-BeCu/ electroless nickel plate.
 - Hardware: stainless steel/ passivated
- Assembly shall be identified with Glenair's name, part number and date code, space permitting.
- Interpret drawing per ASME Y14.5 - 2009.

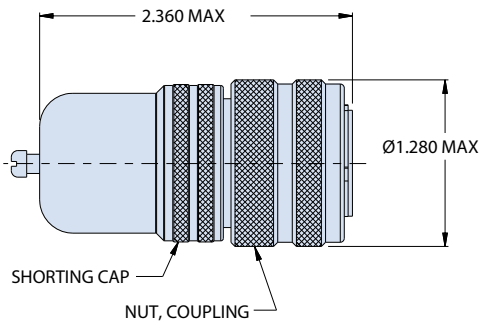
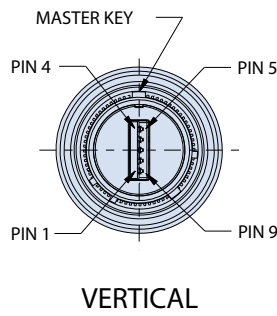
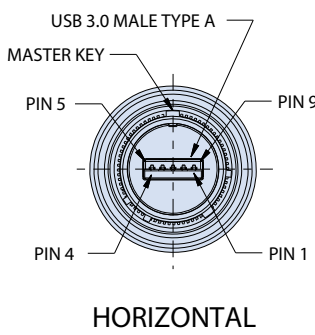


Table II		
Read / Write Performance		
Capacity	Read (Mb/S)	Write (Mb/S)
32 Gb	190	45
64 Gb	190	95
128 Gb	195	95





SERIES 23

SuperSea™

HDMI 2.0 Ruggedized Cable Assemblies

HDMI has become the defacto connector interface for the transmission of compressed and uncompressed high-resolution video and is widely supported across multiple manufacturer displays as the replacement for analog video transmission. The HDMI 2.0 standard provides greater audio and video signal capacity and is excellent for delivery of video and audio data where clear, high-quality reproduction is necessary. Although well-suited for commercial applications these interfaces are not designed for exposure to the harsh operating conditions encountered in military field use and harsh-environment aerospace applications. SuperSea, the SuperNine product series for HDMI 2.0 resolves these shortcomings by introducing a ruggedized solution with increased operating temperature range, improved shock and vibration and IP68 mated and IP67 unmated performance.

- **HDMI 2.0 version**
- **Highly durable SuperSea insert design, provides enhanced operating temperature, increased life-cycle, and rugged vibration and shock performance**
- **Pre-terminated cable assemblies available for wall mount or jam-nut mount to HDMI interface**



SuperNine® USB 2.0 type A connectors



2330-0015 USB 2.0 Cable Assembly

MIL-DTL-38999 Series III Type



2330-0015 Glenair SuperSeal™ USB 2.0 cable jumpers, with SuperNine® connectors to standard USB Type A plug

SuperSeal USB connectors are IP67 open face rated and IP68 in the mated condition for complete protection in harsh environments. SuperSeal connector styles include plug, wall mount and jam-nut receptacles. Wall mount receptacles are available with slotted holes and straight cable exit. USB 2.0 can be ordered in horizontal or vertical orientation to provide further security against mis-mating and conform to existing USB orientations. Please consult factory for custom configurations.

All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

Material and Finish

NF	Aluminum/cadmium, olive drab
ME	Aluminum/electroless nickel
ZR	Zinc nickel, black (tri-valent chromium) RoHS compliant

Connector Style

G6	Plug
07	Rear panel mount, jam nut receptacle
00	Wall mount receptacle with slotted holes ²

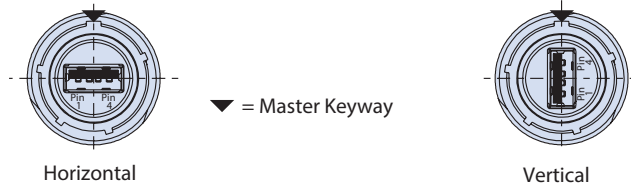
NOTES

1. See Section A for panel cutout dimensions
2. Meets IP67 in unmated condition, IP68 mated
3. Standard configurations provided with potted back end
4. SuperSeal plug houses USB plug. Superseal receptacle houses USB receptacle

Part Number Development

Sample Part Number	2330-0015	NF	07	S	-15	2	A	N	H	A	S	-03
Basic Number	2330-0015											
P1 Finish	See Material and Finish table											
P1 Connector Style¹	See Connector Style table											
P1 Cable Exit	S = Straight											
P1 Shell Size	15											
USB Performance	2 = USB 2.0											
USB Interface	A = Type A											
Polarization	N = Normal											
USB Orientation	H = Horizontal V = Vertical											
P2 Connector Style	A - Type A USB plug											
P2 Cable Exit	S = Straight											
Standard Lengths	01, 02, 03, 06, 10, 15 and 25 feet in length											

USB Receptacle Orientation Options (Partial Views Shown)

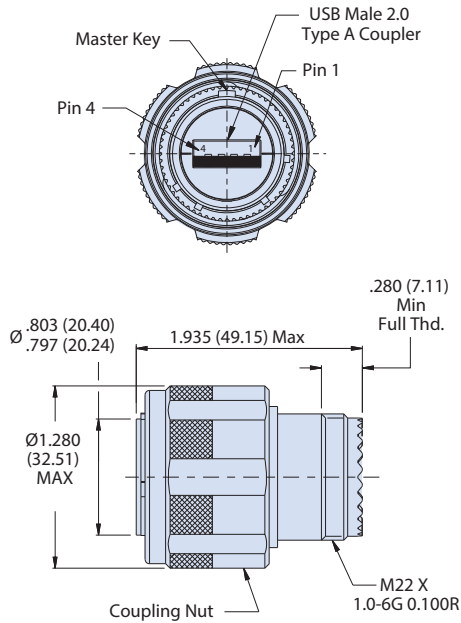


2330-0015 USB 2.0 Cable Assembly

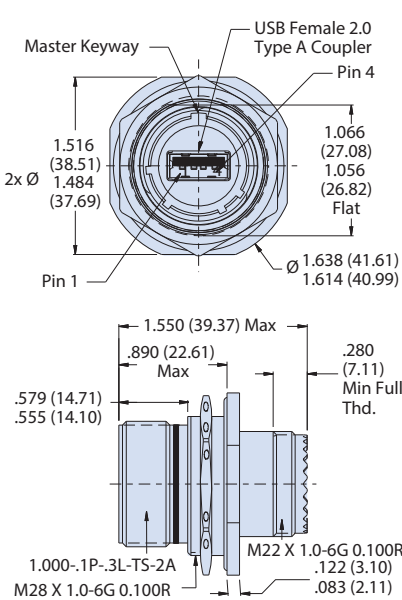
MIL-DTL-38999 Series III Type

AVAILABLE P1 CONNECTOR DIMENSIONS, SHELL SIZE 15

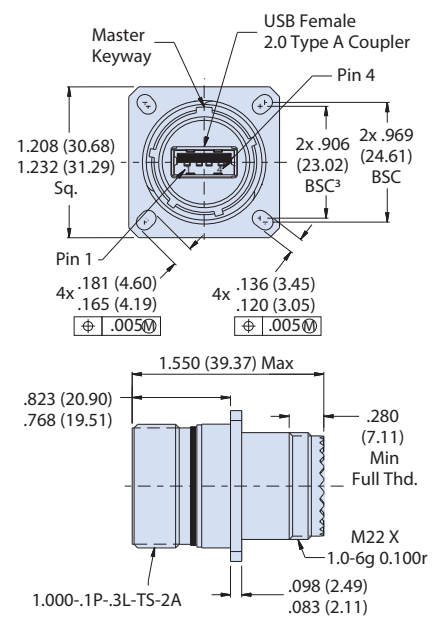
G6 Plug



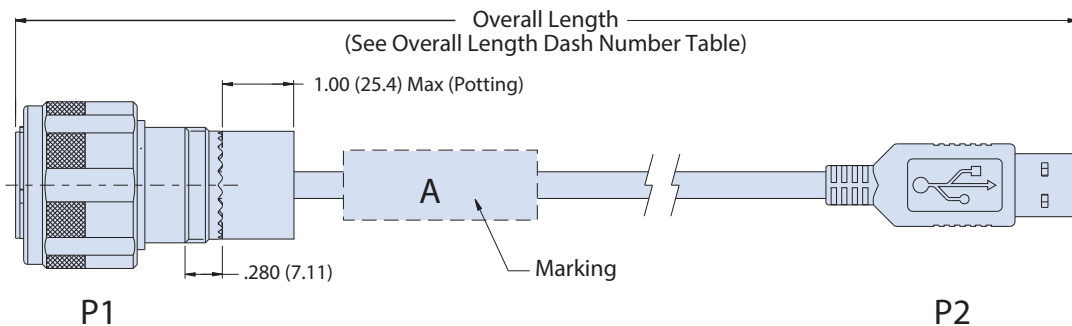
07 Receptacle, Jam-Nut Mount



00 Receptacle, Wall Mount with Slotted Holes



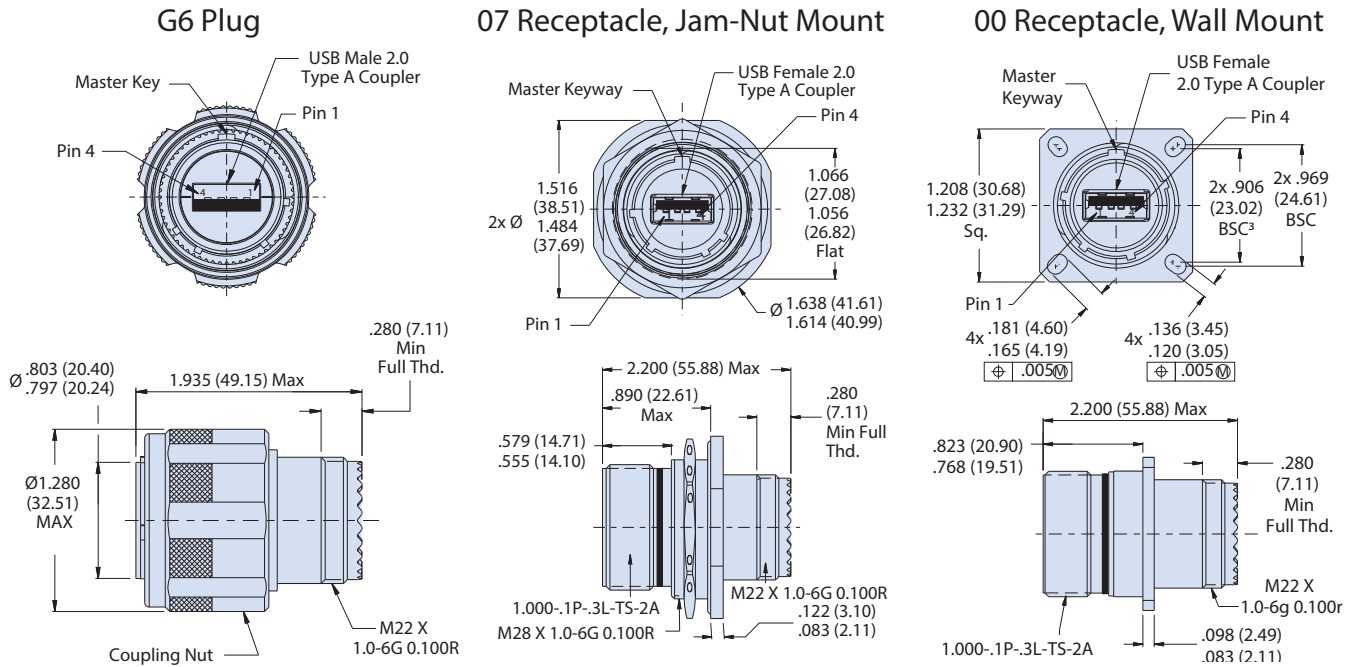
CABLE ASSEMBLY SHOWN WITH PLUG CONNECTOR STYLE



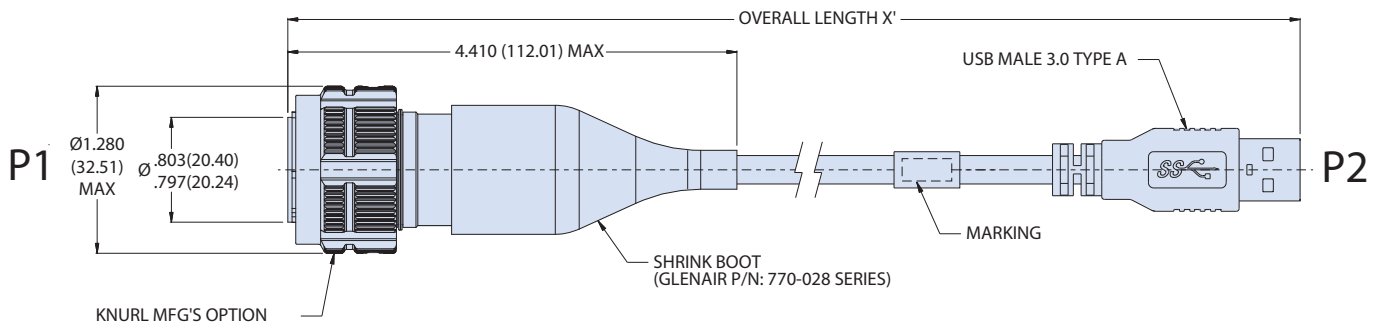
2330-0445 USB 3.0 Cable Assembly

MIL-DTL-38999 Series III Type

AVAILABLE P 1 CONNECTOR DIMENSIONS, SHELL SIZE 15



CABLE ASSEMBLY SHOWN WITH PLUG CONNECTOR STYLE



SuperNine® USB 3.0 type A connectors



2330-0450 USB 3.0 Cable Assembly

MIL-DTL-38999 Series III Type



2330-0450 Glenair SuperSeal™ USB 3.0 plug cable jumper, with active repeater.

SuperSeal USB cable assemblies with IP67 open face rated connectors offer complete protection from environmental debris and water ingress common under harsh environmental conditions. USB 3.0 can be ordered in horizontal or vertical orientation to provide further security against mis-mating and conforms to existing USB orientations. Additional length options and custom configurations available. Please consult factory.

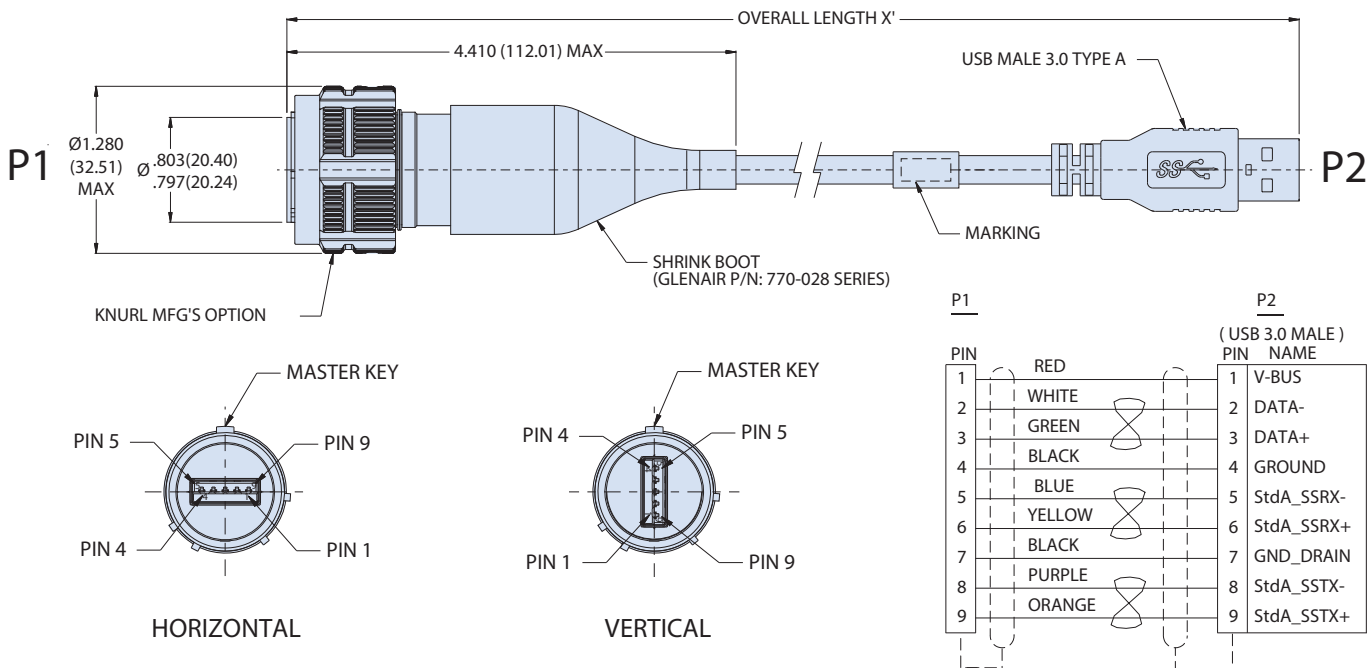
All external dimensions, features, etc. compliant with D38999/20, /24, &/26. Consult factory for additional information.

Material and Finish	
NF	Aluminum/cadmium, olive drab
ME	Aluminum/electroless nickel
ZR	Zinc nickel, black (tri-valent chromium) RoHS compliant

Part Number Development								
Sample Part Number	2330-0450	NF	G6	-15	3	A	N	H -03
Basic Number	2330-0450							
P1 Finish	See Material and Finish table							
P1 Connector Style¹	G6 = Plug							
P1 Shell Size	15							
USB Performance	3 = USB 3.0							
USB Interface	A = Type A							
Polarization	A, B, C, D, E, N = Normal							
USB Orientation	H = Horizontal V = Vertical							
Overall Length	01 thru 10 ; length in feet.							

NOTES

1. Meets IP67 in unmated condition, IP68 mated
2. SuperSeal plug houses USB plug.



Advanced performance MIL-DTL-38999 connectors

HDMI Performance Specifications and Orientation Options

HDMI 2.0 Performance Specifications	
Property	MIL-DTL-38999 Series III Type

Material and Finish

Shell/Coupling and Plating	Complete list of options available in the Material and Finish Options portion of this section
Contacts	Copper alloy/gold plate
HDMI Insulator	LCP
Grommet, Peripheral Seal, Interfacial Seal, O-ring	Blended fluorosilicone/silicone elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988
Shell Size	17 Consult factory for other shell size options

Electrical Specifications

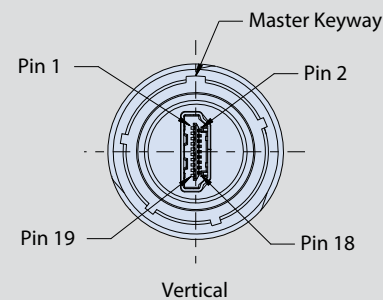
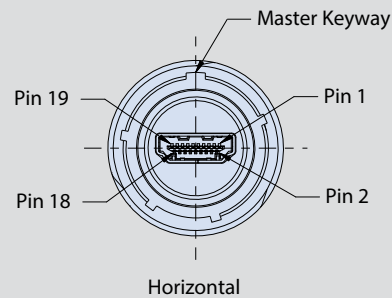
Data Rate	Up to 18 Gbps
Power Usage	+5.0 volts
Current Rating	0.3 Amps min.
D.W.V.	300 VAC
I.R.	100 Mega Ohms min
Cabling Length	10 Meters Max (recommended)
Shielding	Continuous through coupler or continuous coupler to shell

Environmental/Mechanical Performance

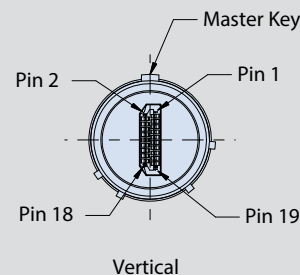
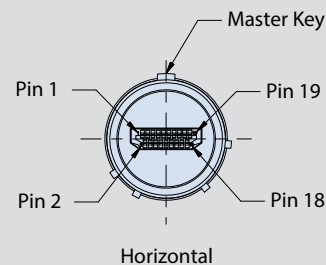
Sealing	IP67 unmated IP68 mated
Outgassing	Mod Code 186S meets outgassing requirements per ASTM E 595 and meets NASA level 3 screening for standard reliability Mod Code 928 meets outgassing requirements per UL 94 V-0
Operating Temperature	-20°C to +85°C
Backshell Interface	MIL-DTL-38999 Designator H
Mating System	Triple-start stub ACME
Mating Cycles	500

HDMI 2.0 CONNECTOR ORIENTATION OPTIONS

Receptacle



Plug

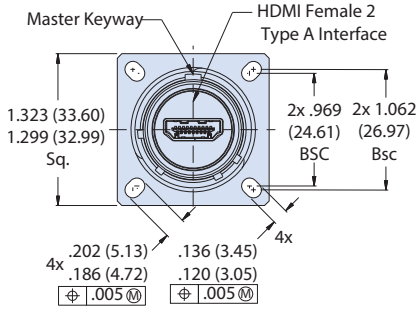


E

2330-0455 Cable assembly with HDMI 2 MIL-DTL-38999 Series III

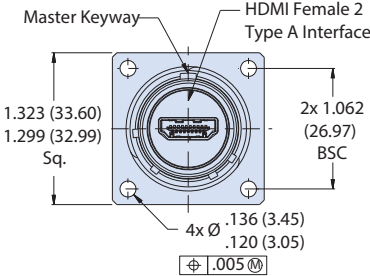
Part Number Development						
Sample Part Number	2330-0455	M	07	-17	N	H -X
Series / Basic Part No.	2330-0455					
P1 Material/Finish	NF = Aluminum/cadmium olive drab ME = Aluminum/electroless nickel MT = Aluminum/nickel PTFE ZR = Aluminum/zinc-nickel					
P1 Connector Style	00 = Wall mount receptacle with slotted holes D0 = Wall mount receptacle with round holes 07 = Jam-nut receptacle G6 = Plug					
Shell Size	17					
Alternate Polarization	A, B, C, D, E, N = Normal; Per MIL-DTL-38999					
HDMI Orientation	H = Horizontal V = Vertical					
Overall Length	Provided in 1 foot increments; 01 - 1.0 ft					

00 - Wall Mount Receptacle With Slotted Holes



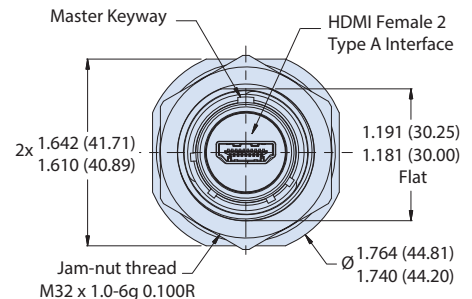
(Horizontal Orientation Shown)

D0 - Wall Mount Receptacle With Round Holes

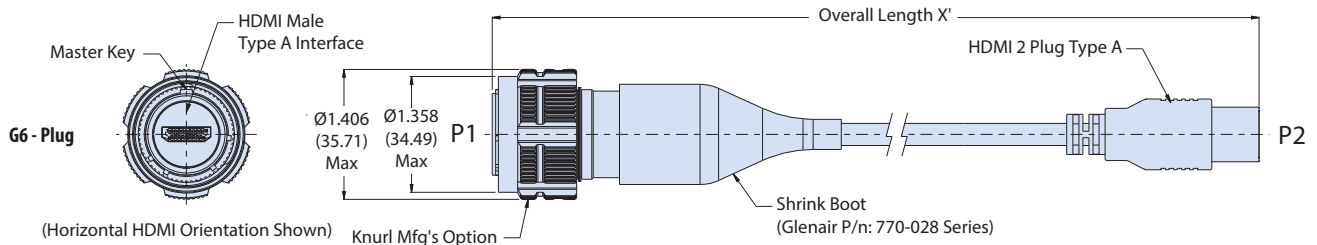
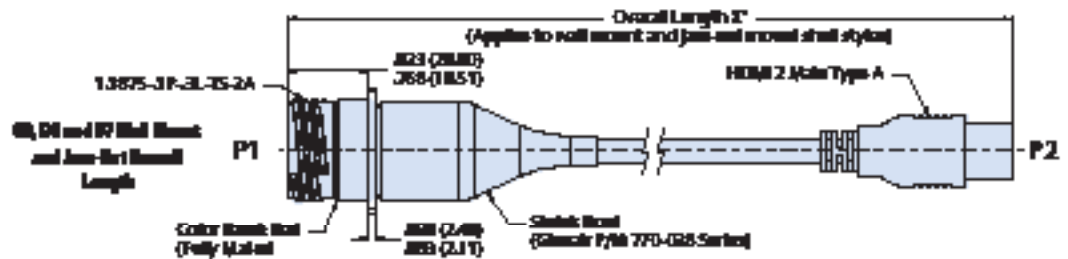


(Horizontal Orientation Shown)

07 - Jam Nut Receptacle



(Horizontal Orientation Shown)



(Horizontal HDMI Orientation Shown)

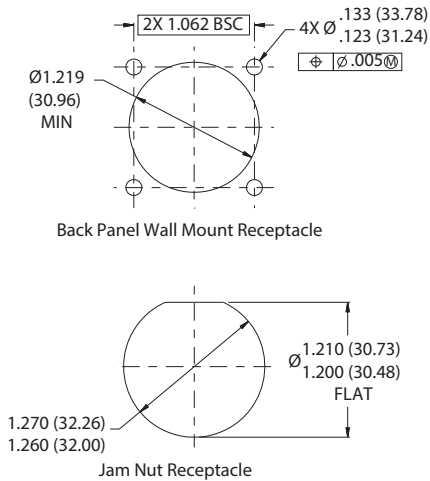
SuperNine® Datalink connectors

2330-0455 Cable assembly with HDMI 2

MIL-DTL-38999 Series III



Recommended Mounting Holes & Cut Outs



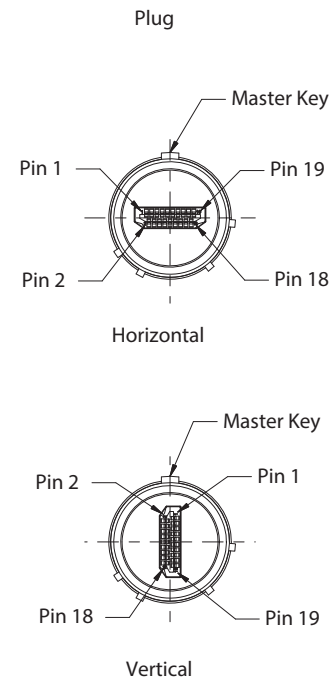
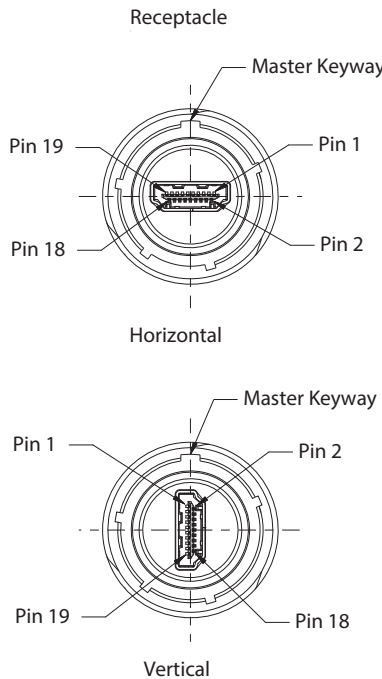
HDMI 2, Connector Pin Assignments			
Pin	Signal	Pin	Signal
1	TMDS DATA2+	11	TMDS CLOCK SHIELD
2	TMDS DATA2 SHIELD	12	TMDS CLOCK-
3	TMDS DATA2-	13	CEC
4	TMDS DATA1+	14	UTILITY
5	TMDS DATA1 SHIELD	15	SCL
6	TMDS DATA1-	16	SDA
7	TMDS DATA0+	17	DDC/CEC GROUND
8	TMDS DATA0 SHIELD	18	+5V POWER
9	TMDS DATA0-	19	HOT PLUG DETECT
10	TMDS CLOCK+		

HDMI 2 ORIENTATION OPTIONS (PARTIAL FRONT VIEWS SHOWN)

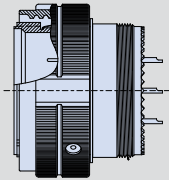
NOTES

- Material/finish
 - Shell, jam-nut, barrel: see part number development
 - Insulators: high grade rigid dielectric/N.A.
 - Contacts: copper alloy, gold plated
 - Seals: silicone based elastomer
 - HDMI (shell/contacts): copper alloy
 - Dielectric: thermoplastic PA9T UL94V-0
 - Hardware: stainless steel/passivated
- HDMI specifications:
 - Performance:*
 - HDMI 2
 - Electrical:*
 - Current rating: 0.5 amps min
 - DWV: 300 Vac
 - I.R.: 100 Meg Ohms min.
 - Operating temperature range: -20°C to +85°C
- Connector interface (P1) per MIL-DTL-38999, Series III, Shell size 17
- Connector front interface with HDMI Type A male is designed to mate with HDMI receptacle patch cord or Glenair HDMI receptacle connector 2330-0441

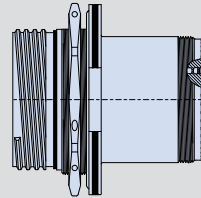
Connector front interface with HDMI Type A female is designed to mate with HDMI male patch cord



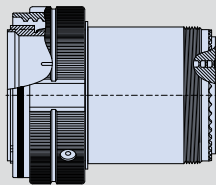
Product selection guide
MIL-DTL-38999 Series III Type



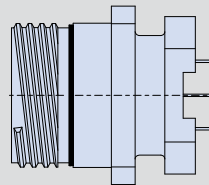
240-383P F-8
EMI/RFI Filter Plug



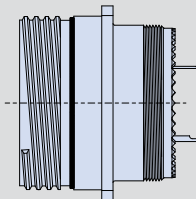
240-383S F-18
EMI/RFI Filter Jam Nut Receptacle with Crimp Removable Contacts



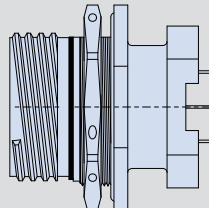
240-383Q F-10
EMI/RFI Filter Plug with Crimp Removable Contacts



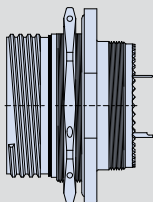
240-383D F-20
EMI/RFI Filter Dual Flange Wall Mount Receptacle with PC Tails and threaded standoff



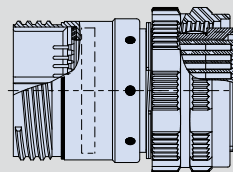
240-383W F-12
EMI/RFI Filter Wall Mount Receptacle with solder cup or PC tail termination



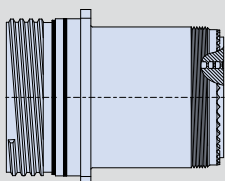
240-383E F-22
EMI/RFI Filter Dual Flange Jam Nut Receptacle with PC Tails and threaded standoff



240-383J F-14
EMI/RFI Filter Jam Nut Receptacle with solder cup or PC tail termination



240-383B F-24
EMI/RFI Filter Adapter



240-383R F-16
EMI/RFI Filter Wall Mount Receptacle with Crimp Removable Contacts



Summary of materials and panel cut-outs

MIL-DTL-38999 Series III Type

SUMMARY OF MATERIALS AND SPECIFICATIONS (see performance spec for complete information)

Notes

- Insert arrangement in accordance with MIL-STD-1560. Arrangement shown for reference only.
- EMI circular filter receptacle connectors designed to meet requirements of MIL-STD-2120 and MIL-DTL-38999, Series III.
- All contacts to have identical filter value. Other filter arrangements available, contact factory.
- Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.

Electrical Ratings:

- DWV- 500 VDC
- Standard operating voltage 200 VDC (Filter class X, Y and Z are 250 VDC)

Insulation Resistance:

- 5000 MegOhms Min. at 200 VDC.

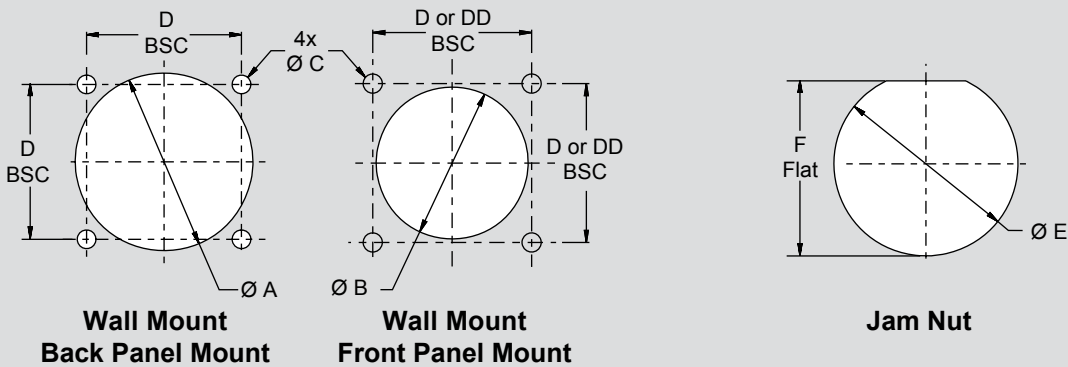
Operating Temperature:

- -55°C to +125°C

Materials/Finishes:

- Shells, barrel, coupling nut, jam nut: see connector class
- Insulators: high grade rigid dielectric/ N.A.
- Seals: fluorosilicone
- Contacts: copper alloy 50µ" gold over 50µ" Nickel

PANEL CUT-OUT DIMENSIONS

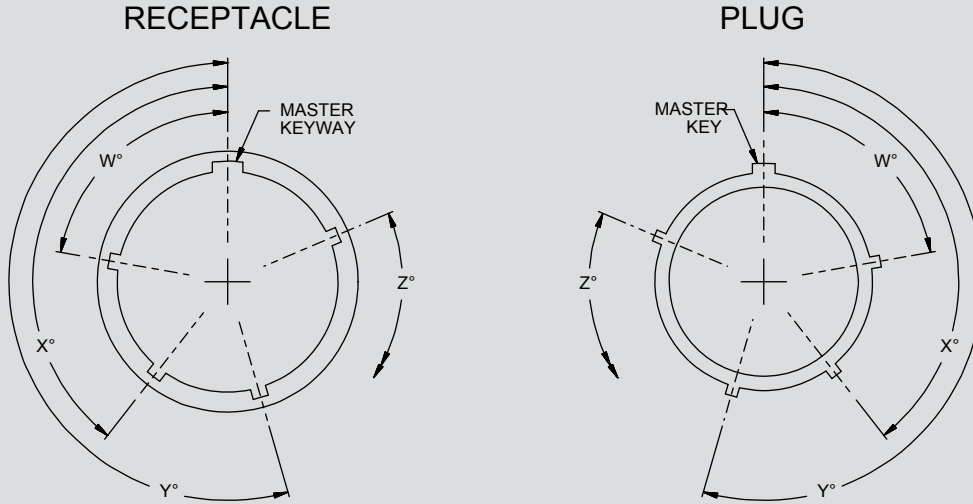


F

Square Flange Panel Cut-Outs MIL-DTL-38999 Series III					
Shell Size	$\varnothing A$ Min Back Panel	$\varnothing B$ Min Front Panel	$\varnothing C$ Holes	D BSC	DD BSC
9	.656 (16.7)	.516 (13.1)	.133 (3.4) .123 (3.1)	.719 (18.3)	.594 (15.09)
11	.796 (20.2)	.625 (15.9)		.812 (20.6)	.719 (18.3)
13	.922 (23.4)	.750 (19.1)		.906 (23.0)	.812 (20.6)
15	1.047 (26.6)	.906 (23.0)		.969 (24.6)	.906 (23.0)
17	1.219 (31.0)	1.016 (25.8)		1.062 (27.0)	.969 (24.6)
19	1.297 (32.9)	1.141 (29.0)		1.156 (29.4)	1.062 (27.0)
21	1.422 (36.1)	1.266 (32.2)		1.250 (31.8)	1.156 (29.4)
23	1.547 (39.3)	1.375 (34.9)	.159 (4.0) .149 (3.8)	1.375 (34.9)	1.250 (31.8)
25	1.672 (42.5)	1.484 (37.7)	.155 (3.9) .145 (3.7)	1.500 (38.1)	1.375 (34.9)

Jam Nut Panel Cut-Out MIL-DTL-38999 Series III		
Shell Size	$\varnothing E$	F Flat
9	.710 (18.0)	.670 (17.0)
	.700 (17.8)	.660 (16.8)
11	.835 (21.2)	.771 (19.6)
	.825 (21.0)	.761 (19.3)
13	1.020 (25.9)	.955 (24.3)
	1.010 (25.7)	.945 (24.0)
15	1.145 (29.1)	1.085 (27.6)
	1.135 (28.8)	1.075 (27.3)
17	1.270 (32.3)	1.210 (30.7)
	1.260 (32.0)	1.200 (30.5)
19	1.395 (35.4)	1.335 (33.9)
	1.385 (35.2)	1.325 (33.7)
21	1.520 (38.6)	1.460 (37.1)
	1.510 (38.4)	1.450 (36.8)
23	1.645 (41.8)	1.585 (40.3)
	1.635 (41.5)	1.575 (40.0)
25	1.770 (45.0)	1.710 (43.4)
	1.760 (44.7)	1.700 (43.2)

**Alternate keying positions
MIL-DTL-38999 Series III Type**



NOTE: ALL MINOR KEYS AND KEYWAYS ARE ROTATED TO PROVIDE POLARIZATION WHILE MASTER KEY AND KEYWAY REMAIN FIXED.

MIL-DTL-38999 Series III Keying Positions					
Shell Size	Keying Position	W° BSC	X° BSC	Y° BSC	Z° BSC
9	N	105°	140°	215°	265°
	A	102°	132°	248°	320°
	B	80°	118°	230°	312°
	C	35°	140°	205°	275°
	D	64°	155°	234°	304°
11 13 15	N	95°	141°	208°	236°
	A	113°	156°	182°	292°
	B	90°	145°	195°	252°
	C	53°	156°	220°	255°
	D	119°	146°	176°	298°
17 19 21 23 25	N	80°	142°	196°	293°
	A	135°	170°	200°	310°
	B	49°	169°	200°	244°
	C	66°	140°	200°	257°
	D	62°	145°	180°	280°
	E	79°	153°	197°	272°



Compliance Matrix
MIL-DTL-38999 Series III Type

MIL-DTL-38999, Table XII, Group 2	Paragraph MIL-DTL-38999		3 Samples	
TEST OR INSPECTION	REQUIREMENT	TEST METHOD	TEST REQUIRED?	TEST REPORT
Visual and Mechanical Inspection	3.1, 3.3, 3.4, 3.5, 3.52 and 3.53	4.5.1	YES	STANDARD TEST
Gauge Location	3.22	4.5.18	NO	NOT REQUIRED. UUT HAS NON-REMOVABLE CONTACTS
Gauge Retention	3.23	4.5.19	NO	NOT REQUIRED. UUT HAS NON-REMOVABLE CONTACTS
Maintenance Aging	3.6	4.5.2	NO	NOT REQUIRED. UUT HAS NON-REMOVABLE CONTACTS
Contact Retention	3.24	4.5.20.1	NO	NOT REQUIRED. UUT HAS NON-REMOVABLE CONTACTS
Altitude-low temperature	3.25	4.5.21	YES	OC22756-0616284 Altitude Low Temperature (247-245)
Insulation resistance at ambient temperature	N/A	N/A	YES	OC22756-0616284 Altitude Low Temperature (247-245)
Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC22756-0616284 Altitude Low Temperature (247-245)
Capacitance between contacts	N/A	N/A	YES	Capacitance Between Contacts - Before Vibration (247-245)
				Capacitance Between Contact - After Vibration (247-245)
Capacitance matching	N/A	N/A	YES	Capacitance Matching - Before Vibration (247-245)
				Capacitance Matching - After Vibration (247-245)
Insertion loss at minimum temperature	N/A	N/A	YES	Insertion Loss At Min Temperature (247-245)
Insertion loss at maximum temperature	N/A	N/A	YES	Insertion Loss At Max Temperature (247-245)
Insertion loss for feed thru contacts	N/A	N/A	YES	Insertion Loss At Room Temperature (247-245)
Cross talk isolation	N/A	N/A	YES	Crosstalk Isolation (247-245)
Temperature Shock (380 Cycles)	#N/A	#N/A	YES	380 Cycles Thermal Shock (247-245)
Air Leakage	N/A	N/A	YES	OC22817-0716312 Air Leakage (247-245)
Functional Test - Ground contact resistance to connector shell	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE GROUND CONTACTS.
Functional Test - Contact capacitance to ground	N/A	N/A	YES	380 CYCLES THERMAL SHOCK (247-245)
Functional Test - Dielectric withstanding voltage at sea level	N/A	N/A	YES	380 CYCLES THERMAL SHOCK (247-245)
Functional Test - Insulation resistance	N/A	N/A	YES	380 CYCLES THERMAL SHOCK (247-245)
Coupling Torque	3.11	4.5.7	YES	OC21361-0915309 Coupling Torque (247-245)
Insulation Resistance at elevated temperature	N/A	N/A	YES	Insulation Resistance at Temp (247-245)
Dielectric withstanding voltage at altitude	N/A	N/A	YES	OC21363-0915311 DWV at Altitude (247-245)
Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC21363-0915311 DWV at Altitude (247-245)
Durability	3.12	4.5.8	YES	OC21364-0915312 Durability (247-245)
Accessory thread strength	3.26	4.5.22	NO	NOT REQUIRED. UUT DOES NOT HAVE ACCESSORY THREADS.
Vibration	3.27	4.5.23	YES	OC22773-0616282B Sine Vibration (247-245)
				OC21365-0915313 Random Vibration at Temp (247-245)
Shock	3.28	4.5.24.1	YES	OC21362-0915310 Shock (247-245)
Functional Test - Ground contact resistance to connector shell	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE GROUND CONTACTS.
Functional Test - Contact capacitance to ground	N/A	N/A	YES	OC21362-0915310 Shock (247-245)
Functional Test - Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC21362-0915310 Shock (247-245)
Functional Test - Insulation resistance	N/A	N/A	YES	OC21362-0915310 Shock (247-245)
Shell-to-shell conductivity	3.29	4.5.25	YES	OC22635-0316173 Shell-to-Shell Conductivity (247-245)
High temperature exposure	3.38.2	4.5.34.2	YES	High Temperature Exposure (247-245)
Humidity	3.30	4.5.26	YES	OC21366-0915314 Humidity (247-245)
Insulation resistance at ambient temperature	N/A	N/A	YES	OC21366-0915314 Humidity (247-245)
Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC21366-0915314 Humidity (247-245)
Functional Test - Ground contact resistance to connector shell	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE GROUND CONTACTS.
Functional Test - Contact capacitance to ground	N/A	N/A	YES	OC21366-0915314 Humidity (247-245)
Functional Test - Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC21366-0915314 Humidity (247-245)

F

Compliance Matrix

MIL-DTL-38999 Series III Type

Functional Test - Insulation resistance	N/A	N/A	YES	OC21366-0915314 Humidity (247-245)
Contact retention	3.24	4.5.20.1	NO	NOT REQUIRED. UUT HAS NON-REMOVABLE CONTACTS
Post test examination	3.52 and 3.53	4.5.49	YES	STANDARD TEST

MIL-DTL-38999, Table XII, Group 5	Paragraph MIL-DTL-38999		3 Samples	
TEST OR INSPECTION	REQUIREMENT	TEST METHOD	TEST REQUIRED?	TEST REPORT
Visual and Mechanical Inspection	3.1, 3.3, 3.4, 3.5, 3.52 and 3.53	4.5.1	YES	OC22772-0616281A Fluid Immersion (247-245)
Ozone exposure	3.33	4.5.29	NO	NOT REQUIRED. UUT WILL NOT BE EXPOSED TO OZONE.
Insulation resistance at ambient temperature	N/A	N/A	YES	OC22772-0616281A Fluid Immersion (247-245)
Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC22772-0616281A Fluid Immersion (247-245)
Fluid immersion	3.34	4.5.30	YES	OC22772-0616281A Fluid Immersion (247-245)
Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC22772-0616281A Fluid Immersion (247-245)
Coupling torque	3.11	4.5.7	YES	OC22772-0616281A Fluid Immersion (247-245)
Functional Test - Ground contact resistance to connector shell	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE GROUND CONTACTS.
Functional Test - Contact capacitance to ground	N/A	N/A	YES	OC22772-0616281A Fluid Immersion (247-245)
Functional Test - Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC22772-0616281A Fluid Immersion (247-245)
Functional Test - Insulation resistance	N/A	N/A	YES	OC22772-0616281A Fluid Immersion (247-245)
Post test examination	3.52 and 3.53	4.5.49	YES	OC22772-0616281A Fluid Immersion (247-245)

MIL-DTL-38999, Table XII, Group 9	Paragraph MIL-DTL-38999		3 Samples	
TEST OR INSPECTION	REQUIREMENT	TEST METHOD	TEST REQUIRED?	TEST REPORT
Visual and Mechanical Inspection	3.1, 3.3, 3.4, 3.5, 3.52 and 3.53	4.5.1	YES	OC22865-0716347A Salt Spray (247-245)
Shock (high impact)	3.28	4.5.24.2	NO	OC21209-0915355 Hi-Impact Shock (247-463)
Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC22865-0716347A Salt Spray (247-245)
Electrolytic erosion	3.39	4.5.35	YES	OC22865-0716347A Salt Spray (247-245)
Shell-to-shell conductivity	3.29	4.5.25	YES	OC22865-0716347A Salt Spray (247-245)
Temperature cycling	N/A	N/A	NO	NOT REQUIRED.
Salt spray (corrosion)	3.17	4.5.13.2	YES	OC22865-0716347A Salt Spray (247-245)
Functional Test - Ground contact resistance to connector shell	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE GROUND CONTACTS.
Functional Test - Contact capacitance to ground	N/A	N/A	YES	OC22865-0716347A Salt Spray (247-245)
Functional Test - Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC22865-0716347A Salt Spray (247-245)
Functional Test - Insulation resistance	N/A	N/A	YES	OC22865-0716347A Salt Spray (247-245)
Coupling torque	3.11	4.5.7	YES	OC22865-0716347A Salt Spray (247-245)
Shell-to-shell conductivity	3.29	4.5.25	YES	OC22865-0716347A Salt Spray (247-245)
Coupling pin strength	3.21	4.5.17	NO	NOT REQUIRED. UUT IS A SERIES III TYPE CONNECTOR.
Post test examination	3.52 and 3.53	4.5.49	YES	OC22865-0716347A Salt Spray (247-245)

MIL-DTL-38999, Table XII, Group 10	Paragraph MIL-DTL-38999		2 Samples	
TEST OR INSPECTION	REQUIREMENT	TEST METHOD	TEST REQUIRED?	TEST REPORT
Visual and Mechanical Inspection	3.1, 3.3, 3.4, 3.5, 3.52 and 3.53	4.5.1	NO	NOT REQUIRED. UUT IS NOT A FIREWALL CLASS CONNECTOR.
Firewall	3.40	4.5.36	NO	NOT REQUIRED. UUT IS NOT A FIREWALL CLASS CONNECTOR.
Post test examination	3.52 and 3.53	4.5.49	NO	NOT REQUIRED. UUT IS NOT A FIREWALL CLASS CONNECTOR.



Compliance Matrix
MIL-DTL-38999 Series III Type

MIL-DTL-38999, Table XII, Group 11	Paragraph MIL-DTL-38999		3 Samples	
TEST OR INSPECTION	REQUIREMENT	TEST METHOD	TEST REQUIRED?	TEST REPORT
Visual and Mechanical Inspection	3.1, 3.3, 3.4, 3.5, 3.52 and 3.53	4.5.1	YES	OC22641-0516246 Ice & Dust (247-245)
Ice resistance	3.44	4.5.40	YES	OC22641-0516246 Ice & Dust (247-245)
Dust (fine sand)	3.45	4.5.41	YES	OC22641-0516246 Ice & Dust (247-245)
Impact (classes J and M)	3.49	4.5.45	NO	NOT REQUIRED. UUT IS NOT A CLASS J OR M CONNECTOR.
Functional Test - Ground contact resistance to connector shell	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE GROUND CONTACTS.
Functional Test - Contact capacitance to ground	N/A	N/A	YES	OC22641-0516246 Ice & Dust (247-245)
Functional Test - Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC22641-0516246 Ice & Dust (247-245)
Functional Test - Insulation resistance	N/A	N/A	YES	OC22641-0516246 Ice & Dust (247-245)
Post test examination	3.52 and 3.53	4.5.49	YES	OC22641-0516246 Ice & Dust (247-245)

MIL-DTL-38999, Table XII, Group 13	Paragraph MIL-DTL-38999		2 Samples	
TEST OR INSPECTION	REQUIREMENT	TEST METHOD	TEST REQUIRED?	TEST REPORT
Visual and Mechanical Inspection	3.1, 3.3, 3.4, 3.5, 3.52 and 3.53	4.5.1	NO	NOT REQUIRED. UUT IS NOT A CLASS J OR M CONNECTOR.
Hydrolytic stability (classes J and M)	3.47	4.5.43	NO	NOT REQUIRED. UUT IS NOT A CLASS J OR M CONNECTOR.
Post test examination	3.52 and 3.53	4.5.49	NO	NOT REQUIRED. UUT IS NOT A CLASS J OR M CONNECTOR.

F

MIL-DTL-38999, Table XII, Group 14	Paragraph MIL-DTL-38999		2 Samples	
TEST OR INSPECTION	REQUIREMENT	TEST METHOD	TEST REQUIRED?	TEST REPORT
Visual and Mechanical Inspection	3.1, 3.3, 3.4, 3.5, 3.52 and 3.53	4.5.1	NO	NOT REQUIRED. UUT DOES NOT HAVE ACCESSORY THREADS.
Coupling torque	3.11	4.5.7	NO	NOT REQUIRED. UUT DOES NOT HAVE ACCESSORY THREADS.
Backshell shield braid-to-shell conductivity	3.29.1	4.5.25.1	NO	NOT REQUIRED. UUT DOES NOT HAVE ACCESSORY THREADS.
Resistance to indirect lightning strike	3.51	4.5.47	NO	NOT REQUIRED. UUT DOES NOT HAVE ACCESSORY THREADS.
Backshell shield braid-to-shell conductivity	3.29.1	4.5.25.1	NO	NOT REQUIRED. UUT DOES NOT HAVE ACCESSORY THREADS.
Coupling torque	3.11	4.5.7	NO	NOT REQUIRED. UUT DOES NOT HAVE ACCESSORY THREADS.
Insulation resistance at ambient temperature	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE ACCESSORY THREADS.
Dielectric withstanding voltage at sea level	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE ACCESSORY THREADS.
Post test examination	3.52 and 3.53	4.5.49	NO	NOT REQUIRED. UUT DOES NOT HAVE ACCESSORY THREADS.

Lightning Transient Test Group	Paragraph MIL-DTL-38999		2 Samples	
TEST OR INSPECTION	REQUIREMENT	TEST METHOD	TEST REQUIRED?	TEST REPORT
Lightning transient test	N/A	N/A	YES	TR056503 Lightning (247-245)
Functional Test - Ground contact resistance to connector shell	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE GROUND CONTACTS.
Functional Test - Contact capacitance to ground	N/A	N/A	YES	TR056503 Lightning (247-245)
Functional Test - Dielectric withstanding voltage at sea level	N/A	N/A	YES	TR056503 Lightning (247-245)
Functional Test - Insulation resistance	N/A	N/A	YES	TR056503 Lightning (247-245)

Compliance Matrix

MIL-DTL-38999 Series III Type

Rapid Decompression And Explosion Proofness Test Group	Paragraph MIL-DTL-38999		2 Samples	
TEST OR INSPECTION	REQUIREMENT	TEST METHOD	TEST REQUIRED?	TEST REPORT
Rapid decompression	N/A	N/A	YES	OC22757-0616266 Rapid Decompression (247-245)
Explosion Proofness	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE ACTIVE COMPONENTS.
Functional Test - Ground contact resistance to connector shell	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE GROUND CONTACTS.
Functional Test - Contact capacitance to ground	N/A	N/A	YES	OC22757-0616266 Rapid Decompression (247-245)
Functional Test - Dielectric withstanding voltage at sea level	N/A	N/A	YES	OC22757-0616266 Rapid Decompression (247-245)
Functional Test - Insulation resistance	N/A	N/A	YES	OC22757-0616266 Rapid Decompression (247-245)
Filter Life Test Group	Paragraph MIL-DTL-38999		2 Samples	
TEST OR INSPECTION	REQUIREMENT	TEST METHOD	TEST REQUIRED?	TEST REPORT
Filter life	N/A	N/A	YES	1000 Hour Life Test (247-075)
Functional Test - Ground contact resistance to connector shell	N/A	N/A	NO	NOT REQUIRED. UUT DOES NOT HAVE GROUND CONTACTS.
Functional Test - Contact capacitance to ground	N/A	N/A	YES	1000 Hour Life Test (247-075)
Functional Test - Dielectric withstanding voltage at sea level	N/A	N/A	YES	1000 Hour Life Test (247-075)
Functional Test - Insulation resistance	N/A	N/A	YES	1000 Hour Life Test (247-075)



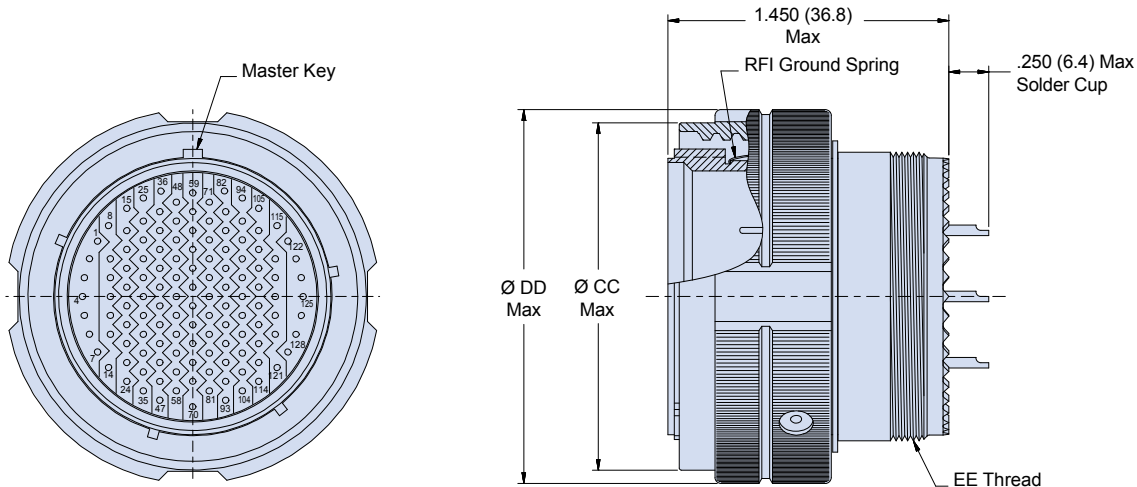
240-383P Plug connector with solder cup contacts
MIL-DTL-38999 Series III Type

SUPERNINE EMI/RFI FILTER PLUG

Part Number Development	
Sample Part Number	240-383 P ME 15-35 P S P A N N
Filter Connector	MIL-DTL-38999 Series III Type
Shell Style	P = Plug
Connector Class	See Connector Class Table
Insert Arrangement*	IAW MIL-STD-1560.
Contact Gender	P = Pin S = Socket
Termination	S = Solder Cup
Filter Type	P = Pi Circuit C = C Circuit (See Note 1)
Capacitance	See Capacitor Array Code Table
Flange Mounting Style	N = Not Applicable
Alternate Key Position*	A, B, C, D, E, N = Normal

*Refer to Section A for complete details

F



NOTES

1. Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.

240-383P Plug connector with solder cup contacts
MIL-DTL-38999 Series III Type

Connector Class			
Sym	Class	Material	Finish Description
ME	Environmental	Aluminum	Electroless Nickel
MT	Environmental	Aluminum	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF	Environmental	Aluminum	Cadmium O.D. Over Electroless Nickel
ZL	Environmental	Stainless Steel	Electro-Deposited Nickel
XM	Environmental	Composite	Electroless Nickel
XMT	Environmental	Composite	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
XW	Environmental	Composite	Cadmium O.D. Over Electroless Nickel
ZN	Environmental	Aluminum	Zinc-Nickel, Olive Drab
ZR	Environmental	Aluminum	Zinc Nickel, Black - RoHS

Dimensions			
Shell Size	Ø CC Max	ØDD Max	EE Thread
9	.811 (20.6)	.858 (21.8)	M12 X 1.0-6g 0.100R
11	.929 (23.6)	.984 (25.0)	M15 X 1.0-6g 0.100R
13	1.110 (28.2)	1.157 (29.4)	M18 X 1.0-6g 0.100R
15	1.232 (31.3)	1.280 (32.5)	M22 X 1.0-6g 0.100R
17	1.358 (34.5)	1.406 (35.7)	M25 X 1.0-6g 0.100R
19	1.469 (37.3)	1.516 (38.5)	M28 X 1.0-6g 0.100R
21	1.594 (40.5)	1.642 (41.7)	M31 X 1.0-6g 0.100R
23	1.720 (43.7)	1.768 (44.9)	M34 X 1.0-6g 0.100R
25	1.843 (46.8)	1.890 (48.0)	M37 X 1.0-6g 0.100R

Capacitor Array Code Capacitance Range		
Class	Pi - Circuit (pF)	C - Circuit (pF)
X*	160,000 - 240,000	80,000 - 120,000
Y*	80,000 - 120,000	40,000 - 60,000
Z*	60,000 - 90,000	30,000 - 45,000
A	38,000 - 56,000	19,000 - 28,000
B	32,000 - 45,000	16,000 - 22,500
C	18,000 - 33,000	9,000 - 16,500
D	8,000 - 12,000	4,000 - 6,000
E	3,300 - 5,000	1,650 - 2,500
F	800 - 1,300	400 - 650
G	400 - 600	200 - 300
J	70-120	35-60

* Filter Classes X, Y and Z are 250 VDC.
 All others are 500 VDC



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

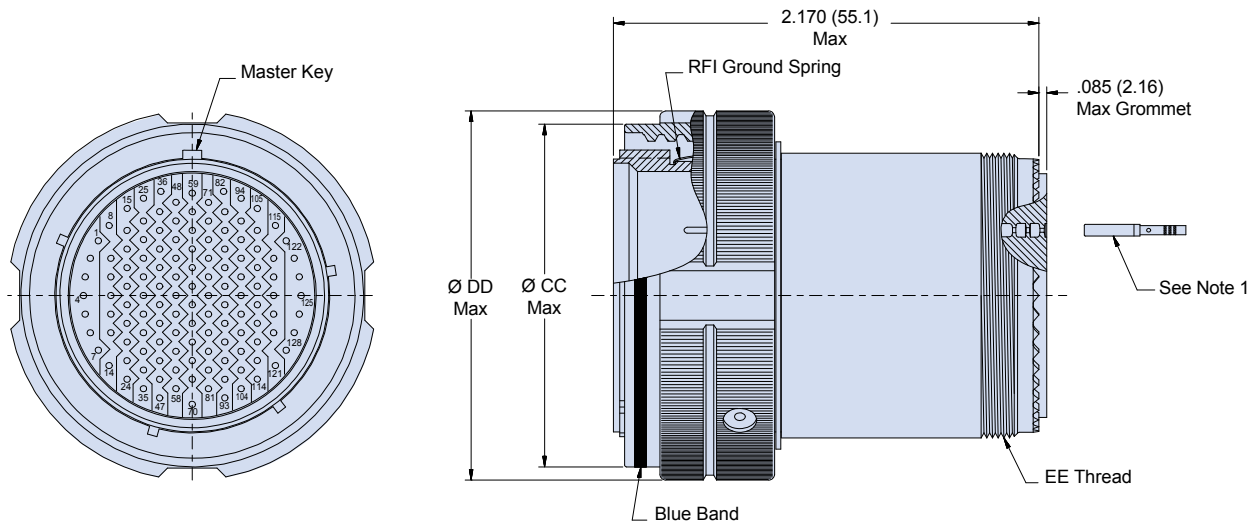
**240-383Q Plug connector with crimp removable contacts
MIL-DTL-38999 Series III Type**

SUPERNINE EMI/RFI FILTER PLUG WITH CRIMP REMOVABLE CONTACTS

Part Number Development		Q	ME	15-35	P	C	P	A	N	N
Sample Part Number	240-383									
Filter Connector	MIL-DTL-38999 Series III Type									
Shell Style	Q = Plug with Crimp Contacts									
Connector Class	See Connector Class Table									
Insert Arrangement*	IAW MIL-STD-1560.									
Contact Gender	P = Pin S = Socket									
Termination	C = Crimp									
Filter Type	P = Pi Circuit C = C Circuit (See Note 2)									
Capacitance	See Capacitor Array Code Table									
Flange Mounting Style	N = Not Applicable									
Alternate Key Position*	A, B, C, D, E, N = Normal									

*Refer to Section A for complete details

F



NOTES

1. Crimp removable contacts to conform to MIL-C-39029/57-358, Size 16, MIL-C-39029/57-357 Size 20, and MIL-C-39029/57-354 Size 22D (Supplied loose).
2. Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.

240-383Q Plug connector with crimp removable contacts MIL-DTL-38999 Series III Type

Connector Class			
Sym	Class	Material	Finish Description
ME	Environmental	Aluminum	Electroless Nickel
MT	Environmental	Aluminum	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF	Environmental	Aluminum	Cadmium O.D. Over Electroless Nickel
ZL	Environmental	Stainless Steel	Electro-Deposited Nickel
XM	Environmental	Composite	Electroless Nickel
XMT	Environmental	Composite	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
XW	Environmental	Composite	Cadmium O.D. Over Electroless Nickel
ZN	Environmental	Aluminum	Zinc-Nickel, Olive Drab
ZR	Environmental	Aluminum	Zinc Nickel, Black - RoHS

Dimensions			
Shell Size	Ø CC Max	Ø DD Max	EE Thread
9	.811 (20.6)	.858 (21.8)	M12 X 1.0-6g 0.100R
11	.929 (23.6)	.984 (25.0)	M15 X 1.0-6g 0.100R
13	1.110 (28.2)	1.157 (29.4)	M18 X 1.0-6g 0.100R
15	1.232 (31.3)	1.280 (32.5)	M22 X 1.0-6g 0.100R
17	1.358 (34.5)	1.406 (35.7)	M25 X 1.0-6g 0.100R
19	1.469 (37.3)	1.516 (38.5)	M28 X 1.0-6g 0.100R
21	1.594 (40.5)	1.642 (41.7)	M31 X 1.0-6g 0.100R
23	1.720 (43.7)	1.768 (44.9)	M34 X 1.0-6g 0.100R
25	1.843 (46.8)	1.890 (48.0)	M37 X 1.0-6g 0.100R

Capacitor Array Code Capacitance Range		
Class	Pi - Circuit (pF)	C - Circuit (pF)
X*	160,000 - 240,000	80,000 - 120,000
Y*	80,000 - 120,000	40,000 - 60,000
Z*	60,000 - 90,000	30,000 - 45,000
A	38,000 - 56,000	19,000 - 28,000
B	32,000 - 45,000	16,000 - 22,500
C	18,000 - 33,000	9,000 - 16,500
D	8,000 - 12,000	4,000 - 6,000
E	3,300 - 5,000	1,650 - 2,500
F	800 - 1,300	400 - 650
G	400 - 600	200 - 300
J	70-120	35-60

* Filter Classes X, Y and Z are 250 VDC.
All others are 500 VDC

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

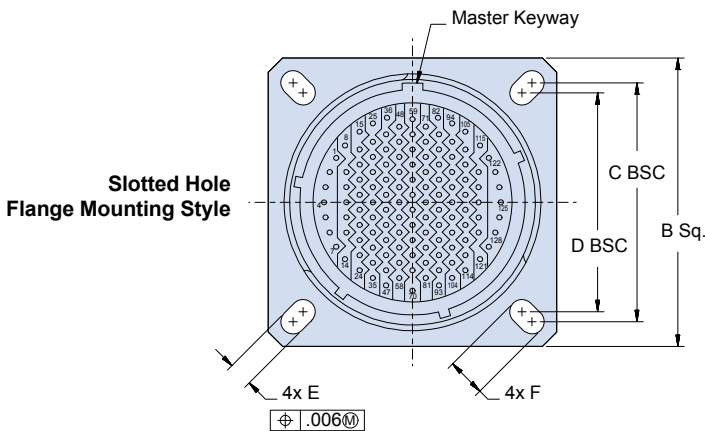
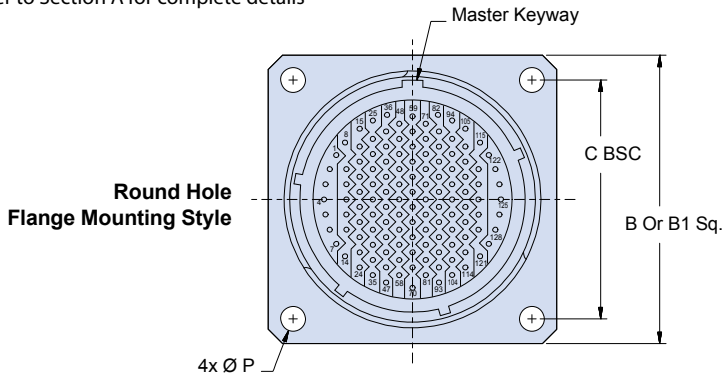


SUPERNINE EMI/RFI FILTER WALL MOUNT RECEPTACLE WITH SOLDER CUP OR PC TAIL TERMINATION

Part Number Development		W	ME	15-35	P	S	P	A	C	N
Sample Part Number	240-383									
Filter Connector	MIL-DTL-38999 Series III Type									
Shell Style	W = Wall Mount									
Connector Class	See Connector Class Table									
Insert Arrangement*	IAW MIL-STD-1560									
Contact Gender	P = Pin S = Socket									
Termination	S = Solder Cup P = PC Tail									
Filter Type	P = Pi Circuit C = C Circuit (See Note 1)									
Capacitance	See Capacitor Array Code Table									
Flange Mounting Style	H = Round Holes C = Clinch Nuts (4-40 UNC) M = Metric Clinch Nuts (M3) S = Slotted Holes									
Alternate Key Position*	A, B, C, D, E, N = Normal									

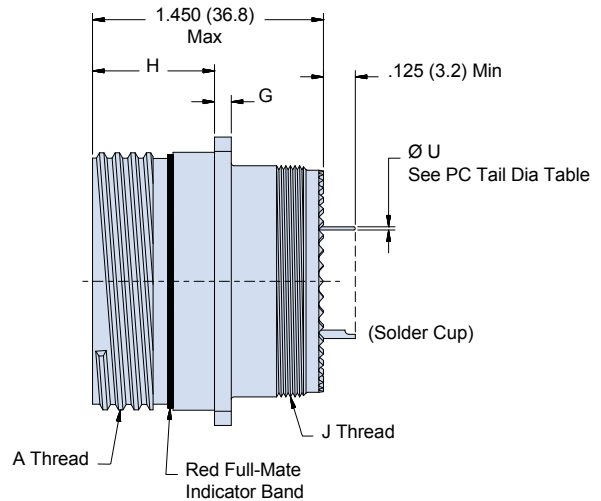
*Refer to Section A for complete details

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NOTES

1. Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.
2. Consult factory for alternate PC Tail lengths
3. Helicoil and threaded inserts/specials available upon request.



240-383W Wall mount receptacle connector MIL-DTL-38999 Series III Type

Connector Class			
Sym	Class	Material	Finish Description
ME	Environmental	Aluminum	Electroless Nickel
MT	Environmental	Aluminum	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF	Environmental	Aluminum	Cadmium O.D. Over Electroless Nickel
ZL	Environmental	Stainless Steel	Electro-Deposited Nickel
XM†	Environmental	Composite	Electroless Nickel
XMT†	Environmental	Composite	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
XW†	Environmental	Composite	Cadmium O.D. Over Electroless Nickel
ZN	Environmental	Aluminum	Zinc-Nickel, Olive Drab
ZR	Environmental	Aluminum	Zinc Nickel, Black - RoHS
H2*	Hermetic	Stainless Steel	Electro-Deposited Nickel

*Some dimensions do not apply. See drawing 240-383WH2

† Clinch nuts and metric clinch nuts not available for composites.

Dimensions											
Shell Size	A Thread	Thru Hole Flange		Clinch Nut Flange	Slotted Hole Flange				G	H	J Thread
		B Sq.	Ø P ±.010 (.25)	B1 Sq. ±.020 (.51)	C Bsc	D Bsc	E	F			
9	.6250-1P-3L-TS-2A	.949 (24.1) .925 (23.5)	.128 (3.3)	1.019 (25.9)	.719 (18.3)	.594 (15.1)	.136 (3.5) .120 (3.0)	.224 (5.7) .208 (5.3)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M12 X 1.0-6g 0.100R
11	.7500-1P-3L-TS-2A	1.043 (26.5) 1.019 (25.9)	.128 (3.3)	1.112 (28.2)	.812 (20.6)	.719 (18.3)	.136 (3.5) .120 (3.0)	.202 (5.1) .186 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M15 X 1.0-6g 0.100R
13	.8750-1P-3L-TS-2A	1.138 (28.9) 1.114 (28.3)	.128 (3.3)	1.206 (30.6)	.906 (23.0)	.812 (20.6)	.136 (3.5) .120 (3.0)	.202 (5.1) .186 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M18 X 1.0-6g 0.100R
15	1.0000-1P-3L-TS-2A	1.232 (31.3) 1.208 (30.7)	.128 (3.3)	1.269 (32.2)	.969 (24.6)	.906 (23.0)	.136 (3.5) .120 (3.0)	.181 (4.6) .165 (4.2)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M22 X 1.0-6g 0.100R
17	1.1875-1P-3L-TS-2A	1.323 (33.6) 1.299 (33.0)	.128 (3.3)	1.362 (34.6)	1.062 (27.0)	.969 (24.6)	.136 (3.5) .120 (3.0)	.202 (5.1) .186 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M25 X 1.0-6g 0.100R
19	1.2500-1P-3L-TS-2A	1.449 (36.8) 1.425 (36.2)	.128 (3.3)	1.456 (37.0)	1.156 (29.4)	1.062 (27.0)	.136 (3.5) .120 (3.0)	.202 (5.1) .186 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M28 X 1.0-6g 0.100R
21	1.3750-1P-3L-TS-2A	1.575 (40.0) 1.551 (39.4)	.128 (3.3)	1.562 (39.7)	1.250 (31.8)	1.156 (29.4)	.136 (3.5) .120 (3.0)	.202 (5.1) .186 (4.7)	.171 (4.3) .083 (2.1)	.790 (20.1) .741 (18.8)	M31 X 1.0-6g 0.100R
23	1.5000-1P-3L-TS-2A	1.701 (43.2) 1.677 (42.6)	.156 (4.0)	1.719 (43.7)	1.375 (34.9)	1.250 (31.8)	.162 (4.1) .146 (3.7)	.250 (6.4) .234 (5.9)	.171 (4.3) .083 (2.1)	.790 (20.1) .741 (18.8)	M34 X 1.0-6g 0.100R
25	1.6250-1P-3L-TS-2A	1.823 (46.3) 1.799 (45.7)	.156 (4.0)	1.844 (46.8)	1.500 (38.1)	1.375 (34.9)	.162 (4.1) .146 (3.7)	.250 (6.4) .234 (5.9)	.171 (4.3) .083 (2.1)	.790 (20.1) .741 (18.8)	M37 X 1.0-6g 0.100R



Capacitor Array Code Capacitance Range		
Class	Pi - Circuit (pF)	C - Circuit (pF)
X*	160,000 - 240,000	80,000 - 120,000
Y*	80,000 - 120,000	40,000 - 60,000
Z*	60,000 - 90,000	30,000 - 45,000
A	38,000 - 56,000	19,000 - 28,000
B	32,000 - 45,000	16,000 - 22,500
C	18,000 - 33,000	9,000 - 16,500
D	8,000 - 12,000	4,000 - 6,000
E	3,300 - 5,000	1,650 - 2,500
F	800 - 1,300	400 - 650
G	400 - 600	200 - 300
J	70-120	35-60

* Filter Classes X, Y and Z are 250 VDC. All others are 500 VDC

PC Tail Dia	
Contact Size	Ø U
22D	.021 (0.53)
	.018 (0.46)
20	.031 (0.79)
	.029 (0.74)
16	.042 (1.07)
	.038 (0.97)
12	.096 (2.44)
	.092 (2.34)

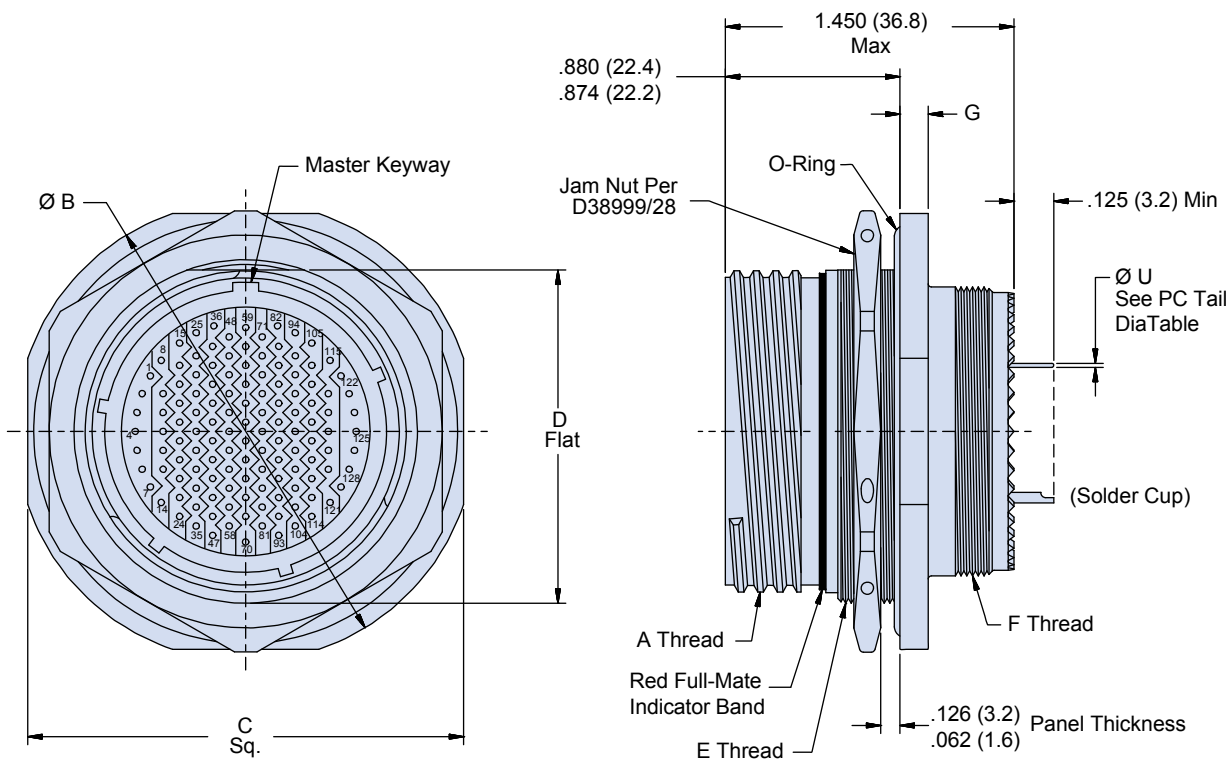
240-383J Jam nut receptacle connector
MIL-DTL-38999 Series III Type

SUPERNINE EMI/RFI FILTER JAM NUT RECEPTACLE WITH SOLDER CUP OR PC TAIL TERMINATION

Part Number Development										
Sample Part Number	240-383	J	ME	15-35	P	S	P	A	N	N
Filter Connector	MIL-DTL-38999 Series III Type									
Shell Style	J = Jam Nut									
Connector Class	See Connector Class Table									
Insert Arrangement*	IAW MIL-STD-1560.									
Contact Gender	P = Pin S = Socket									
Termination	S = Solder Cup P = PC Tail									
Filter Type	P = Pi Circuit C = C Circuit (See Note 1)									
Capacitance	See Capacitor Array Code Table									
Flange Mounting Style	N = Not Applicable									
Alternate Key Position*	A, B, C, D, E, N = Normal									

*Refer to Section A for complete details

F



NOTES

- Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.

SuperNine® EMI/RFI filter connectors

240-383J Jam nut receptacle connector

MIL-DTL-38999 Series III Type



Connector Class			
Sym	Class	Material	Finish Description
ME	Environmental	Aluminum	Electroless Nickel
MT	Environmental	Aluminum	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF	Environmental	Aluminum	Cadmium O.D. Over Electroless Nickel
ZL	Environmental	Stainless Steel	Electro-Deposited Nickel
XM	Environmental	Composite	Electroless Nickel
XMT	Environmental	Composite	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
XW	Environmental	Composite	Cadmium O.D. Over Electroless Nickel
ZN	Environmental	Aluminum	Zinc-Nickel, Olive Drab
ZR	Environmental	Aluminum	Zinc Nickel, Black - RoHS
H2*	Hermetic	Stainless Steel	Electro-Deposited Nickel

*Some dimensions do not apply. See drawing 240-383JH2

Dimensions							
Shell Size	A Thread	Ø B	C Sq.	D Flat	E Thread	F Thread	G
9	.6250- .1P- .3L-TS-2A	1.201 (30.5) 1.177 (29.9)	1.079 (27.4) 1.047 (26.6)	.655 (16.6) .645 (16.4)	M17 X 1.0-6g 0.100R	M12 X 1.0-6g 0.100R	.122 (3.1) .083 (2.1)
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	.122 (3.1) .083 (2.1)
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	.122 (3.1) .083 (2.1)
15	1.000- .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	.122 (3.1) .083 (2.1)
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	.122 (3.1) .083 (2.1)
19	1.2500- .1P- .3L-TS-2A	1.949 (49.5) 1.925 (48.9)	1.827 (46.4) 1.795 (45.6)	1.316 (33.4) 1.306 (33.2)	M35 X 1.0-6g 0.100R	M28 X 1.0-6g 0.100R	.154 (3.9) .114 (2.9)
21	1.3750- .1P- .3L-TS-2A	2.075 (52.7) 2.051 (52.1)	1.953 (49.6) 1.921 (48.8)	1.441 (36.6) 1.431 (36.3)	M38 X 1.0-6g 0.100R	M31 X 1.0-6g 0.100R	.154 (3.9) .114 (2.9)
23	1.5000- .1P- .3L-TS-2A	2.201 (55.9) 2.177 (55.3)	2.079 (52.8) 2.047 (52.0)	1.566 (39.8) 1.556 (39.5)	M41 X 1.0-6g 0.100R	M34 X 1.0-6g 0.100R	.154 (3.9) .114 (2.9)
25	1.6250- .1P- .3L-TS-2A	2.323 (59.0) 2.299 (58.4)	2.205 (56.0) 2.173 (55.2)	1.691 (43.0) 1.681 (42.7)	M44 X 1.0-6g 0.100R	M37 X 1.0-6g 0.100R	.154 (3.9) .114 (2.9)



Capacitor Array Code Capacitance Range		
Class	Pi - Circuit (pF)	C - Circuit (pF)
X*	160,000 - 240,000	80,000 - 120,000
Y*	80,000 - 120,000	40,000 - 60,000
Z*	60,000 - 90,000	30,000 - 45,000
A	38,000 - 56,000	19,000 - 28,000
B	32,000 - 45,000	16,000 - 22,500
C	18,000 - 33,000	9,000 - 16,500
D	8,000 - 12,000	4,000 - 6,000
E	3,300 - 5,000	1,650 - 2,500
F	800 - 1,300	400 - 650
G	400 - 600	200 - 300
J	70-120	35-60

* Filter Classes X, Y and Z are 250 VDC. All others are 500 VDC

PC Tail Dia	
Contact Size	Ø U
22D	.021 (0.53)
	.018 (0.46)
20	.031 (0.79)
	.029 (0.74)
16	.042 (1.07)
	.038 (0.97)
12	.096 (2.44)
	.092 (2.34)

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

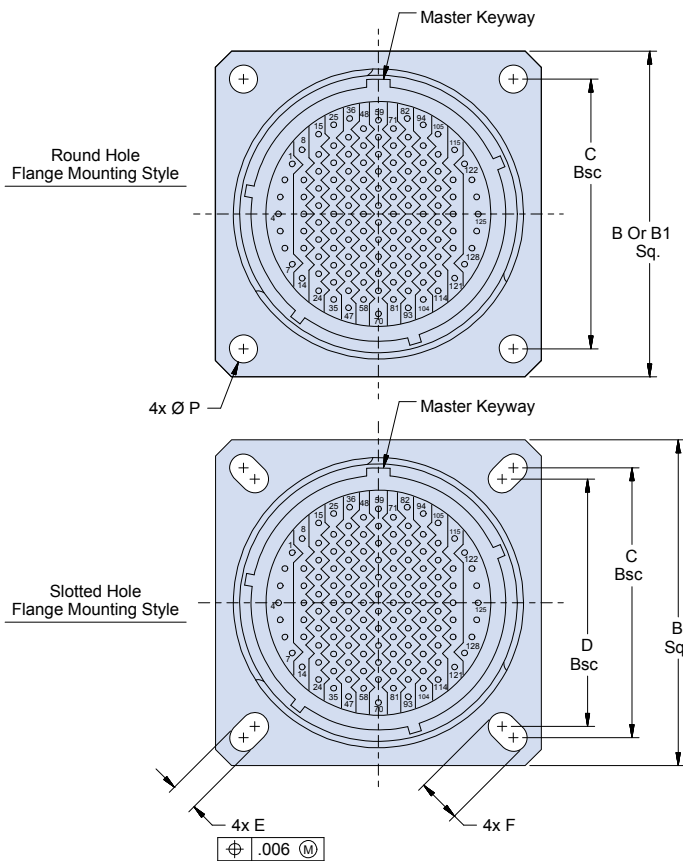
**240-383R Wall mount receptacle with crimp contacts
MIL-DTL-38999 Series III Type**

SUPERNINE EMI/RFI FILTER WALL MOUNT RECEPTACLE WITH CRIMP REMOVABLE CONTACTS

Part Number Development										
Sample Part Number	240-383	R	ME	15-35	P	C	P	A	C	N
Filter Connector	MIL-DTL-38999 Series III Type									
Shell Style	R = Wall Mount with Crimp Contacts									
Connector Class	See Connector Class Table									
Insert Arrangement*	IAW MIL-STD-1560.									
Contact Gender	P = Pin S = Socket									
Termination	C = Crimp									
Filter Type	P = Pi Circuit C = C Circuit (See Note 2)									
Capacitance	See Capacitor Array Code Table									
Flange Mounting Style	H = Round Holes C = Clinch Nuts (4-40 UNC) [†] M = Metric Clinch Nuts (M3) [†] S = Slotted Holes									
Alternate Key Position*	A, B, C, D, E, N = Normal									

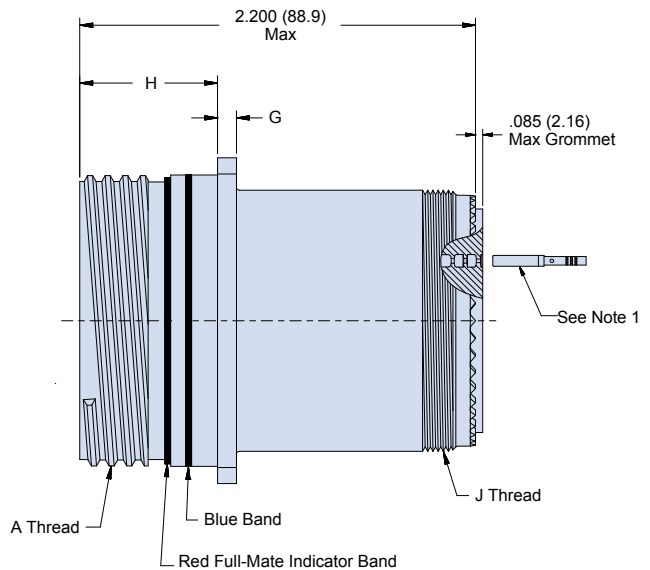
*Refer to Section A for complete details

F



NOTES

1. Crimp removable contacts to conform to MIL-C-39029/57-358, Size 16, MIL-C-39029/57-357 Size 20, and MIL-C-39029/57-354 Size 22D (Supplied loose).
2. Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.
3. Helicoil and threaded inserts/specials available upon request.



240-383R Wall mount receptacle with crimp contacts MIL-DTL-38999 Series III Type

Connector Class			
Sym	Class	Material	Finish Description
ME	Environmental	Aluminum	Electroless Nickel
MT	Environmental	Aluminum	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF	Environmental	Aluminum	Cadmium O.D. Over Electroless Nickel
ZL	Environmental	Stainless Steel	Electro-Deposited Nickel
XM†	Environmental	Composite	Electroless Nickel
XMT†	Environmental	Composite	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
XW†	Environmental	Composite	Cadmium O.D. Over Electroless Nickel
ZN	Environmental	Aluminum	Zinc-Nickel, Olive Drab
ZR	Environmental	Aluminum	Zinc Nickel, Black - RoHS
H2*	Hermetic	Stainless Steel	Electro-Deposited Nickel

*Some dimensions do not apply. See drawing 240-383RH2
† Clinch nuts and metric clinch nuts not available for composites.

Dimensions											
Shell Size	A Thread	Thru Hole Flange		Clinch Nut Flange	Slotted Hole Flange				G	H	J Thread
		B Sq.	Ø P ±.010 (.25)	B1 Sq. ±.020 (.51)	C Bsc	D Bsc	E	F			
9	.6250-.1P-.3L-TS-2A	.949 (24.1) .925 (23.5)	.128 (3.3)	1.019 (25.9)	.719 (18.3)	.594 (15.1)	.136 (3.5) .120 (3.0)	.224 (5.7) .208 (5.3)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M12 X 1.0-6g 0.100R
11	.7500-.1P-.3L-TS-2A	1.043 (26.5) 1.019 (25.9)	.128 (3.3)	1.112 (28.2)	.812 (20.6)	.719 (18.3)	.136 (3.5) .120 (3.0)	.202 (5.1) .186 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M15 X 1.0-6g 0.100R
13	.8750-.1P-.3L-TS-2A	1.138 (28.9) 1.114 (28.3)	.128 (3.3)	1.206 (30.6)	.906 (23.0)	.812 (20.6)	.136 (3.5) .120 (3.0)	.202 (5.1) .186 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M18 X 1.0-6g 0.100R
15	1.0000-.1P-.3L-TS-2A	1.232 (31.3) 1.208 (30.7)	.128 (3.3)	1.269 (32.2)	.969 (24.6)	.906 (23.0)	.136 (3.5) .120 (3.0)	.181 (4.6) .165 (4.2)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M22 X 1.0-6g 0.100R
17	1.1875-.1P-.3L-TS-2A	1.323 (33.6) 1.299 (33.0)	.128 (3.3)	1.362 (34.6)	1.062 (27.0)	.969 (24.6)	.136 (3.5) .120 (3.0)	.202 (5.1) .186 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M25 X 1.0-6g 0.100R
19	1.2500-.1P-.3L-TS-2A	1.449 (36.8) 1.425 (36.2)	.128 (3.3)	1.456 (37.0)	1.156 (29.4)	1.062 (27.0)	.136 (3.5) .120 (3.0)	.202 (5.1) .186 (4.7)	.144 (3.7) .083 (2.1)	.820 (20.8) .771 (19.6)	M28 X 1.0-6g 0.100R
21	1.3750-.1P-.3L-TS-2A	1.575 (40.0) 1.551 (39.4)	.128 (3.3)	1.562 (39.7)	1.250 (31.8)	1.156 (29.4)	.136 (3.5) .120 (3.0)	.202 (5.1) .186 (4.7)	.171 (4.3) .083 (2.1)	.790 (20.1) .741 (18.8)	M31 X 1.0-6g 0.100R
23	1.5000-.1P-.3L-TS-2A	1.701 (43.2) 1.677 (42.6)	.156 (4.0)	1.719 (43.7)	1.375 (34.9)	1.250 (31.8)	.162 (4.1) .146 (3.7)	.250 (6.4) .234 (5.9)	.171 (4.3) .083 (2.1)	.790 (20.1) .741 (18.8)	M34 X 1.0-6g 0.100R
25	1.6250-.1P-.3L-TS-2A	1.823 (46.3) 1.799 (45.7)	.156 (4.0)	1.844 (46.8)	1.500 (38.1)	1.375 (34.9)	.162 (4.1) .146 (3.7)	.250 (6.4) .234 (5.9)	.171 (4.3) .083 (2.1)	.790 (20.1) .741 (18.8)	M37 X 1.0-6g 0.100R



Capacitor Array Code Capacitance Range		
Class	Pi - Circuit (pF)	C - Circuit (pF)
X*	160,000 - 240,000	80,000 - 120,000
Y*	80,000 - 120,000	40,000 - 60,000
Z*	60,000 - 90,000	30,000 - 45,000
A	38,000 - 56,000	19,000 - 28,000
B	32,000 - 45,000	16,000 - 22,500
C	18,000 - 33,000	9,000 - 16,500
D	8,000 - 12,000	4,000 - 6,000
E	3,300 - 5,000	1,650 - 2,500
F	800 - 1,300	400 - 650
G	400 - 600	200 - 300
J	70-120	35-60

* Filter Classes X, Y and Z are 250 VDC. All others are 500 VDC

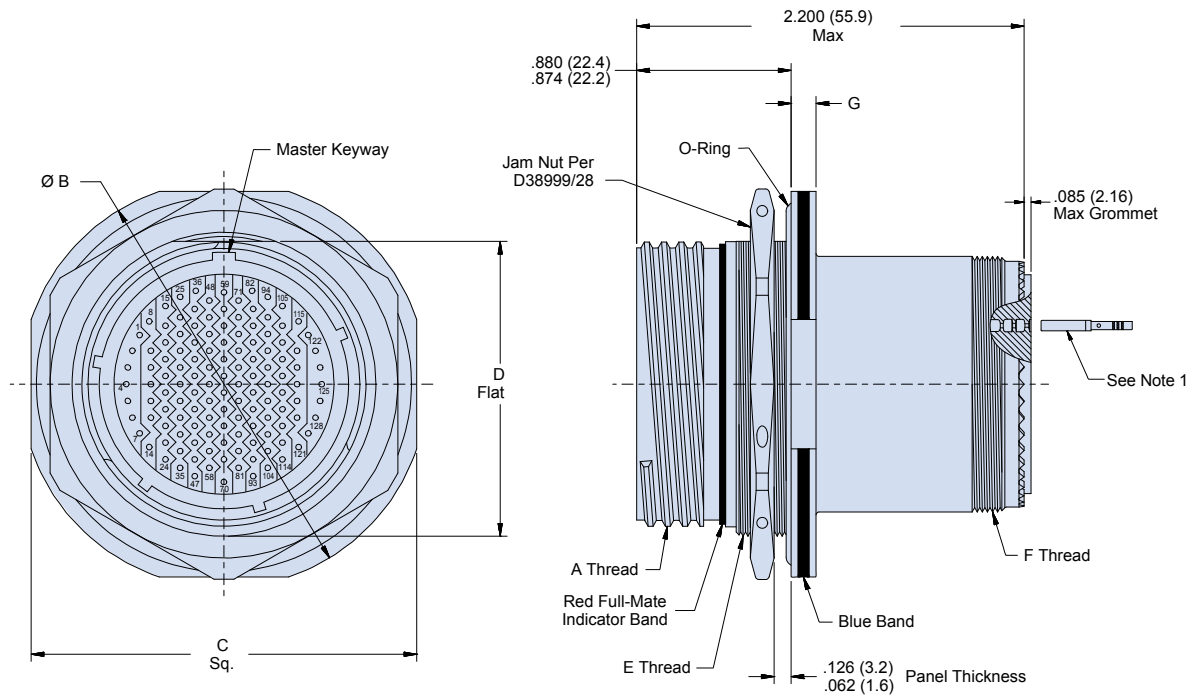
Consult Factory for Additional Filter Types, TVS Diodes, and other Custom Configurations.

240-383S Jam nut receptacle connector with crimp contacts MIL-DTL-38999 Series III Type

SUPERNINE EMI/RFI FILTER JAM NUT RECEPTACLE WITH CRIMP REMOVABLE CONTACTS

Part Number Development		S	ME	15-35	P	C	P	A	N	N
Sample Part Number	240-383									
Filter Connector	MIL-DTL-38999 Series III Type									
Shell Style	S = Jam Nut with Crimp Contacts									
Connector Class	See Connector Class Table									
Insert Arrangement*	IAW MIL-STD-1560.									
Contact Gender	P = Pin S = Socket									
Termination	C = Crimp									
Filter Type	P = Pi Circuit C = C Circuit (See Note 2)									
Capacitance	See Capacitor Array Code Table									
Flange Mounting Style	N = Not Applicable									
Alternate Key Position*	A, B, C, D, E, N = Normal									

*Refer to Section A for complete details



NOTES

1. Crimp removable contacts to conform to MIL-C-39029/57-358, Size 16, MIL-C-39029/57-357 Size 20, and MIL-C-39029/57-354 Size 22D (Supplied loose).
2. Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.

240-383S Jam nut receptacle connector with crimp contacts MIL-DTL-38999 Series III Type

Connector Class			
Sym	Class	Material	Finish Description
ME	Environmental	Aluminum	Electroless Nickel
MT	Environmental	Aluminum	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF	Environmental	Aluminum	Cadmium O.D. Over Electroless Nickel
ZL	Environmental	Stainless Steel	Electro-Deposited Nickel
XM	Environmental	Composite	Electroless Nickel
XMT	Environmental	Composite	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
XW	Environmental	Composite	Cadmium O.D. Over Electroless Nickel
ZN	Environmental	Aluminum	Zinc-Nickel, Olive Drab
ZR	Environmental	Aluminum	Zinc Nickel, Black - RoHS
H2*	Hermetic	Stainless Steel	Electro-Deposited Nickel

*Some dimensions do not apply. See drawing 240-383SH2

Dimensions							
Shell Size	A Thread	Ø B	C	D	E Thread	F Thread	G
9	.6250- .1P- .3L-TS-2A	1.201 (30.5) 1.177 (29.9)	1.079 (27.4) 1.047 (26.6)	.655 (16.6) .645 (16.4)	M17 X 1.0-6g 0.100R	M12 X 1.0-6g 0.100R	.122 (3.1) .083 (2.1)
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	.122 (3.1) .083 (2.1)
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	.122 (3.1) .083 (2.1)
15	1.000- .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 (26.9)	M28 X 1.0-6g 0.100R	M22 X 1.0-6g 0.100R	.122 (3.1) .083 (2.1)
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	.122 (3.1) .083 (2.1)
19	1.2500- .1P- .3L-TS-2A	1.949 (49.5) 1.925 (48.9)	1.827 (46.4) 1.795 (45.6)	1.316 (33.4) 1.306 (33.2)	M35 X 1.0-6g 0.100R	M28 X 1.0-6g 0.100R	.154 (3.9) .114 (2.9)
21	1.3750- .1P- .3L-TS-2A	2.075 (52.7) 2.051 (52.1)	1.953 (49.6) 1.921 (48.8)	1.441 (36.6) 1.431 (36.3)	M38 X 1.0-6g 0.100R	M31 X 1.0-6g 0.100R	.154 (3.9) .114 (2.9)
23	1.5000- .1P- .3L-TS-2A	2.201 (55.9) 2.177 (55.3)	2.079 (52.8) 2.047 (52.0)	1.566 (39.8) 1.556 (39.5)	M41 X 1.0-6g 0.100R	M34 X 1.0-6g 0.100R	.154 (3.9) .114 (2.9)
25	1.6250- .1P- .3L-TS-2A	2.323 (59.0) 2.299 (58.4)	2.205 (56.0) 2.173 (55.2)	1.691 (43.0) 1.681 (42.7)	M44 X 1.0-6g 0.100R	M37 X 1.0-6g 0.100R	.154 (3.9) .114 (2.9)



Capacitor Array Code Capacitance Range		
Class	Pi - Circuit (pF)	C - Circuit (pF)
X*	160,000 - 240,000	80,000 - 120,000
Y*	80,000 - 120,000	40,000 - 60,000
Z*	60,000 - 90,000	30,000 - 45,000
A	38,000 - 56,000	19,000 - 28,000
B	32,000 - 45,000	16,000 - 22,500
C	18,000 - 33,000	9,000 - 16,500
D	8,000 - 12,000	4,000 - 6,000
E	3,300 - 5,000	1,650 - 2,500
F	800 - 1,300	400 - 650
G	400 - 600	200 - 300
J	70-120	35-60

* Filter Classes X, Y and Z are 250 VDC. All others are 500 VDC

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

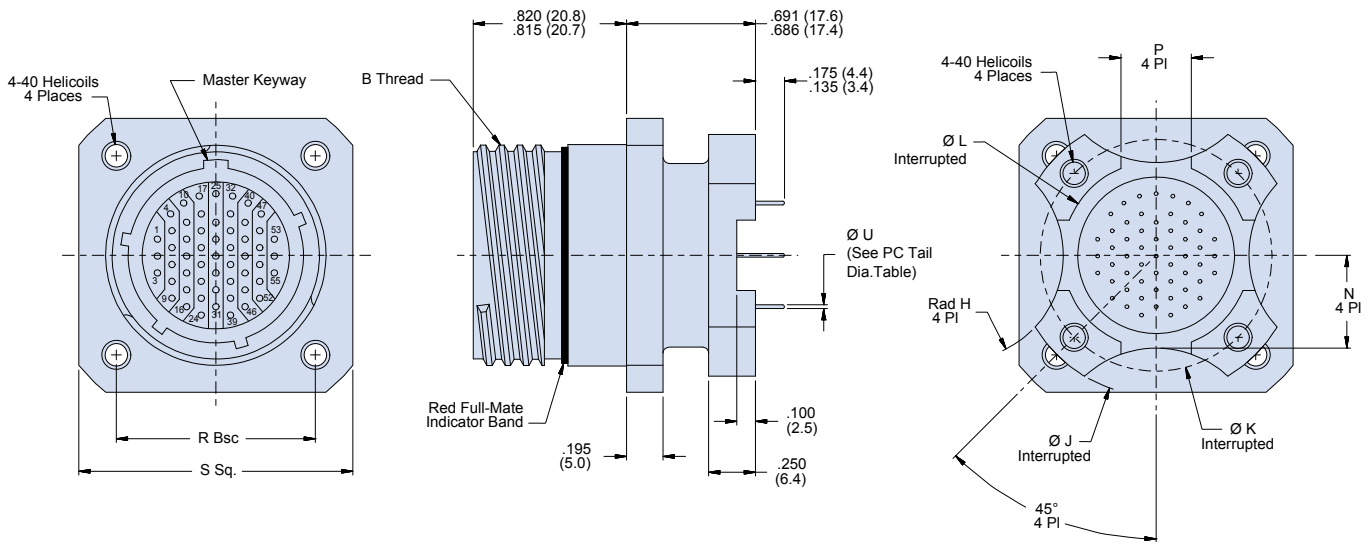
240-383D Dual flange wall mount receptacle connector MIL-DTL-38999 Series III Type

SUPERNINE EMI/RFI FILTER WALL MOUNT RECEPTACLE WITH PC TAILS

Part Number Development										
Sample Part Number	240-383	D	ME	15-35	P	P	P	A	N	N
Filter Connector	MIL-DTL-38999 Series III Type									
Shell Style	D = Dual Flange Wall Mount									
Connector Class	See Connector Class Table									
Insert Arrangement*	IAW MIL-STD-1560.									
Contact Gender	P = Pin S = Socket									
Termination	P = PC Tail									
Filter Type	P = Pi Circuit C = C Circuit (See Note 1)									
Capacitance	See Capacitor Array Code Table									
Flange Mounting Style	N = Not Applicable									
Alternate Key Position*	A, B, C, D, E, N = Normal									

*Refer to Section A for complete details

F



NOTES

1. Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.

240-383D Dual flange wall mount receptacle connector MIL-DTL-38999 Series III Type

Connector Class			
Sym	Class	Material	Finish Description
ME	Environmental	Aluminum	Electroless Nickel
MT	Environmental	Aluminum	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF	Environmental	Aluminum	Cadmium O.D. Over Electroless Nickel
ZL	Environmental	Stainless Steel	Electro-Deposited Nickel
XM	Environmental	Composite	Electroless Nickel
XMT	Environmental	Composite	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
XW	Environmental	Composite	Cadmium O.D. Over Electroless Nickel
ZN	Environmental	Aluminum	Zinc-Nickel, Olive Drab
ZR	Environmental	Aluminum	Zinc Nickel, Black - RoHS
H2*	Hermetic	Stainless Steel	Electro-Deposited Nickel

*Some dimensions do not apply. See drawing 240-383DH2

Dimensions									
Shell Size	B Thread	P ±.010 (.25)	R Bsc	S ±.012 (.30)	Ø J ±.005 (.13)	Ø K Bsc	Ø L ±.005 (.13)	Rad H ±.020 (.51)	N ±.020 (.51)
9	.6250-.1P-.3L-TS-2A	.225 (5.7)	.719 (18.3)	.937 (23.8)	1.016 (25.8)	.752 (19.1)	.532 (13.5)	.225 (5.7)	.275 (7.0)
11	.7500-.1P-.3L-TS-2A	.250 (6.4)	.812 (20.6)	1.181 (30.0)	1.062 (27.0)	.850 (21.6)	.595 (15.1)	.250 (6.4)	.290 (7.4)
13	.8750-.1P-.3L-TS-2A	.250 (6.4)	.906 (23.0)	1.277 (32.4)	1.250 (31.8)	.994 (25.2)	.720 (18.3)	.375 (9.5)	.370 (9.4)
15	1.0000-.1P-.3L-TS-2A	.325 (8.2)	.969 (24.6)	1.371 (34.8)	1.375 (34.9)	1.119 (28.4)	.843 (21.4)	.438 (11.1)	.440 (11.2)
17	1.1875-.1P-.3L-TS-2A	.375 (9.5)	1.062 (27.0)	1.462 (37.1)	1.500 (38.1)	1.237 (31.4)	1.000 (25.4)	.562 (14.3)	.495 (12.6)
19	1.2500-.1P-.3L-TS-2A	.500 (12.7)	1.156 (29.4)	1.588 (40.3)	1.625 (41.3)	1.379 (35.0)	1.125 (28.6)	.875 (22.2)	.540 (13.7)
21	1.3750-.1P-.3L-TS-2A	.562 (14.3)	1.250 (31.8)	1.714 (43.5)	1.750 (44.5)	1.489 (37.8)	1.240 (31.5)	1.170 (29.7)	.625 (15.9)
23	1.5000-.1P-.3L-TS-2A	.688 (17.5)	1.375 (34.9)	1.840 (46.7)	1.875 (47.6)	1.619 (41.1)	1.328 (33.7)	1.250 (31.8)	.660 (16.8)
25	1.6250-.1P-.3L-TS-2A	.750 (19.1)	1.500 (38.1)	1.962 (49.8)	2.000 (50.8)	1.744 (44.3)	1.453 (36.9)	1.375 (34.9)	.740 (18.8)



Capacitor Array Code Capacitance Range		
Class	Pi - Circuit (pF)	C - Circuit (pF)
X*	160,000 - 240,000	80,000 - 120,000
Y*	80,000 - 120,000	40,000 - 60,000
Z*	60,000 - 90,000	30,000 - 45,000
A	38,000 - 56,000	19,000 - 28,000
B	32,000 - 45,000	16,000 - 22,500
C	18,000 - 33,000	9,000 - 16,500
D	8,000 - 12,000	4,000 - 6,000
E	3,300 - 5,000	1,650 - 2,500
F	800 - 1,300	400 - 650
G	400 - 600	200 - 300
J	70-120	35-60

* Filter Classes X, Y and Z are 250 VDC.
All others are 500 VDC

PC Tail Dia	
Contact Size	Ø U
22D	.021 (0.53)
	.018 (0.46)
20	.031 (0.79)
	.029 (0.74)
16	.042 (1.07)
	.038 (0.97)
12	.096 (2.44)
	.092 (2.34)

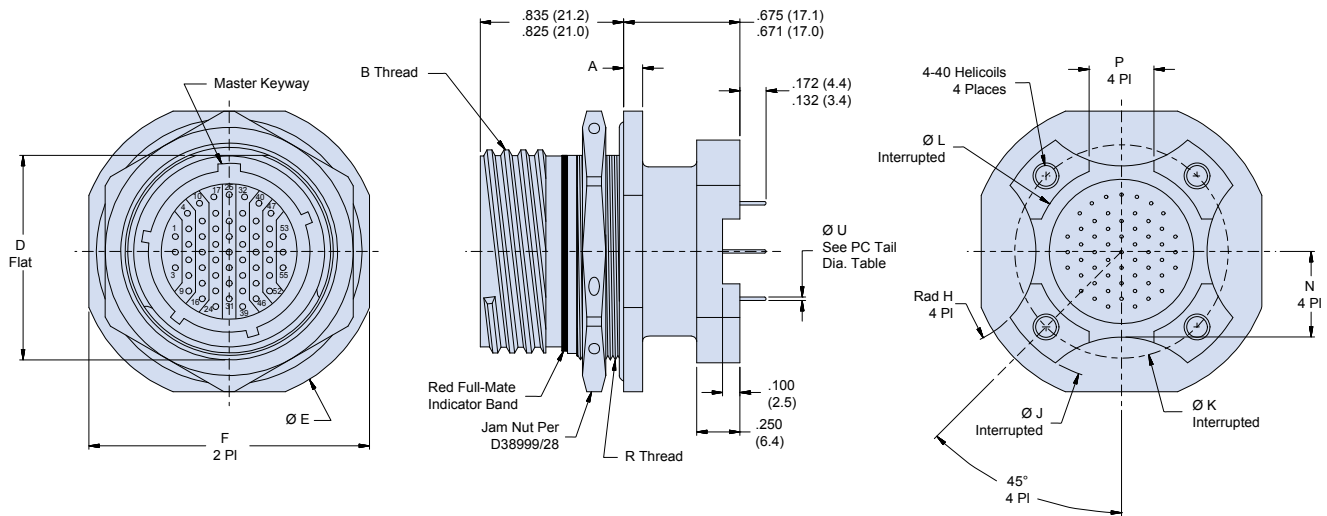
**240-383E Dual flange jam nut receptacle connector
MIL-DTL-38999 Series III Type**

SUPERNINE EMI/RFI FILTER JAM NUT RECEPTACLE WITH PC TAILS

Part Number Development		E	ME	15-35	P	P	P	A	N	N
Sample Part Number	240-383									
Filter Connector	MIL-DTL-38999 Series III Type									
Shell Style	E = Dual Flange Jam Nut									
Connector Class	See Connector Class Table									
Insert Arrangement*	IAW MIL-STD-1560.									
Contact Gender	P = Pin S = Socket									
Termination	P = PC Tail									
Filter Type	P = Pi Circuit C = C Circuit (See Note 1)									
Capacitance	See Capacitor Array Code Table									
Flange Mounting Style	N = Not Applicable									
Alternate Key Position*	A, B, C, D, E, N = Normal									

*Refer to Section A for complete details

F



NOTES

- Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.

240-383E Dual flange jam nut receptacle connector MIL-DTL-38999 Series III Type

Connector Class			
Sym	Class	Material	Finish Description
ME	Environmental	Aluminum	Electroless Nickel
MT	Environmental	Aluminum	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF	Environmental	Aluminum	Cadmium O.D. Over Electroless Nickel
ZL	Environmental	Stainless Steel	Electro-Deposited Nickel
XM	Environmental	Composite	Electroless Nickel
XMT	Environmental	Composite	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
XW	Environmental	Composite	Cadmium O.D. Over Electroless Nickel
ZN	Environmental	Aluminum	Zinc-Nickel, Olive Drab
ZR	Environmental	Aluminum	Zinc Nickel, Black - RoHS
H2*	Hermetic	Stainless Steel	Electro-Deposited Nickel

*Some dimensions do not apply. See drawing 240-383EH2

Dimensions												
Shell Size	B Thread	D	Ø E	F	P	R Thread	Ø J	Ø K	Ø L	Rad H	N	A
		±.005 (.13)	±.012 (.30)	±.016 (.40)	±.010 (.25)		±.005 (.13)	Bsc	±.005 (.13)	±.020 (.51)	±.020 (.51)	
9	.6250-1P-3L-TS-2A	.650 (16.5)	1.189 (30.2)	1.063 (27.0)	.225 (5.7)	M17 X 1.0-6g 0.100R	1.016 (25.8)	.752 (19.1)	.532 (13.5)	.225 (5.7)	.275 (7.0)	.122 (3.1) .083 (2.1)
11	.7500-1P-3L-TS-2A	.750 (19.1)	1.374 (34.9)	1.252 (31.8)	.250 (6.4)	M20 X 1.0-6g 0.100R	1.062 (27.0)	.850 (21.6)	.595 (15.1)	.250 (6.4)	.290 (7.4)	.122 (3.1) .083 (2.1)
13	.8750-1P-3L-TS-2A	.937 (23.8)	1.500 (38.1)	1.374 (34.9)	.250 (6.4)	M25 X 1.0-6g 0.100R	1.250 (31.8)	.994 (25.2)	.720 (18.3)	.375 (9.5)	.370 (9.4)	.122 (3.1) .083 (2.1)
15	1.0000-1P-3L-TS-2A	1.061 (26.9)	1.626 (41.3)	1.500 (38.1)	.325 (8.2)	M28 X 1.0-6g 0.100R	1.375 (34.9)	1.119 (28.4)	.843 (21.4)	.438 (11.1)	.440 (11.2)	.122 (3.1) .083 (2.1)
17	1.1875-1P-3L-TS-2A	1.186 (30.1)	1.752 (44.5)	1.626 (41.3)	.375 (9.5)	M32 X 1.0-6g 0.100R	1.500 (38.1)	1.237 (31.4)	1.000 (25.4)	.562 (14.3)	.495 (12.6)	.122 (3.1) .083 (2.1)
19	1.2500-1P-3L-TS-2A	1.311 (33.3)	1.937 (49.2)	1.811 (46.0)	.500 (12.7)	M35 X 1.0-6g 0.100R	1.625 (41.3)	1.379 (35.0)	1.125 (28.6)	.875 (22.2)	.540 (13.7)	.154 (3.9) .114 (2.9)
21	1.3750-1P-3L-TS-2A	1.436 (36.5)	2.063 (52.4)	1.937 (49.2)	.562 (14.3)	M38 X 1.0-6g 0.100R	1.750 (44.5)	1.489 (37.8)	1.240 (31.5)	1.170 (29.7)	.625 (15.9)	.154 (3.9) .114 (2.9)
23	1.5000-1P-3L-TS-2A	1.561 (39.7)	2.189 (55.6)	2.063 (52.4)	.688 (17.5)	M41 X 1.0-6g 0.100R	1.875 (47.6)	1.619 (41.1)	1.328 (33.7)	1.250 (31.8)	.660 (16.8)	.154 (3.9) .114 (2.9)
25	1.6250-1P-3L-TS-2A	1.686 (42.8)	2.311 (58.7)	2.189 (55.6)	.750 (19.1)	M44 X 1.0-6g 0.100R	2.000 (50.8)	1.744 (44.3)	1.453 (36.9)	1.375 (34.9)	.740 (18.8)	.154 (3.9) .114 (2.9)



Capacitor Array Code Capacitance Range		
Class	Pi - Circuit (pF)	C - Circuit (pF)
X*	160,000 - 240,000	80,000 - 120,000
Y*	80,000 - 120,000	40,000 - 60,000
Z*	60,000 - 90,000	30,000 - 45,000
A	38,000 - 56,000	19,000 - 28,000
B	32,000 - 45,000	16,000 - 22,500
C	18,000 - 33,000	9,000 - 16,500
D	8,000 - 12,000	4,000 - 6,000
E	3,300 - 5,000	1,650 - 2,500
F	800 - 1,300	400 - 650
G	400 - 600	200 - 300
J	70-120	35-60

* Filter Classes X, Y and Z are 250 VDC. All others are 500 VDC

PC Tail Dia	
Contact Size	Ø U
22D	.021 (0.53) .018 (0.46)
20	.031 (0.79) .029 (0.74)
16	.042 (1.07) .038 (0.97)
12	.096 (2.44) .092 (2.34)

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

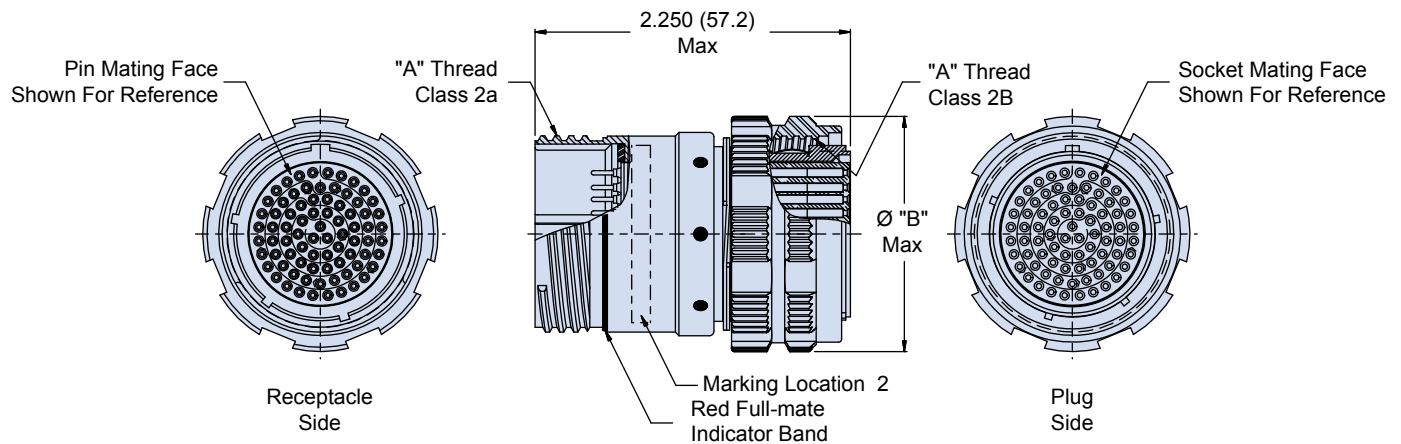
**240-383B Filter connector adapter
MIL-DTL-38999 Series III Type**

SUPERNINE EMI/RFI FILTER CONNECTOR ADAPTER

Part Number Development									
Sample Part Number	240-383	B	ME	15-35	PS	P	A	N	N
Filter Connector	MIL-DTL-38999 Series III Type								
Shell Style	B = Connector Adapter								
Connector Class	See Connector Class Table								
Insert Arrangement*	IAW MIL-STD-1560.								
Contact Gender	PS = Pins, Plug Side SP = Sockets, Plug Side								
Filter Type	P = Pi Circuit C = C Circuit (See Note 1)								
Capacitance	See Capacitor Array Code Table								
Flange Mounting Style	N = Not Applicable								
Alternate Key Position*	A, B, C, D, E, N = Normal, U = Universal								

*Refer to Section A for complete details

F



NOTES

1. Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.
2. Please consult the factory for Pin/Pin and/or Socket/Socket contact arrangements
3. Do not mate Universal key position with another Universal

240-383B Filter connector adapter
MIL-DTL-38999 Series III Type

Connector Class			
Sym	Class	Material	Finish Description
ME	Environmental	Aluminum	Electroless Nickel
MT	Environmental	Aluminum	Ni-PTFE 1000 Hour Grey™ Nickel Fluorocarbon Polymer
NF	Environmental	Aluminum	Cadmium O.D. Over Electroless Nickel
ZL	Environmental	Stainless Steel	Electro-Deposited Nickel
ZN	Environmental	Aluminum	Zinc-Nickel, Olive Drab
ZR	Environmental	Aluminum	Zinc Nickel, Black - RoHS

Dimensions		
Shell Size	A Thread Class 2	Ø B Max
9	.6250- .1P- .3L-TS	.858 (21.8)
11	.7500- .1P- .3L-TS	.984 (25.0)
13	.8750- .1P- .3L-TS	1.157 (29.4)
15	1.000- .1P- .3L-TS	1.280 (32.5)
17	1.1875- .1P- .3L-TS	1.406 (35.7)
19	1.2500- .1P- .3L-TS	1.516 (38.5)
21	1.3750- .1P- .3L-TS	1.642 (41.7)
23	1.5000- .1P- .3L-TS	1.768 (44.9)
25	1.6250- .1P- .3L-TS	1.890 (48.0)

Capacitor Array Code Capacitance Range		
Class	Pi - Circuit (pF)	C - Circuit (pF)
X*	160,000 - 240,000	80,000 - 120,000
Y*	80,000 - 120,000	40,000 - 60,000
Z*	60,000 - 90,000	30,000 - 45,000
A	38,000 - 56,000	19,000 - 28,000
B	32,000 - 45,000	16,000 - 22,500
C	18,000 - 33,000	9,000 - 16,500
D	8,000 - 12,000	4,000 - 6,000
E	3,300 - 5,000	1,650 - 2,500
F	800 - 1,300	400 - 650
G	400 - 600	200 - 300
J	70-120	35-60

* Filter Classes X, Y and Z are 250 VDC.
 All others are 500 VDC

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



**SERIES 23
FIBER OPTIC
CONNECTORS**



 **SuperNine®**

MIL-DTL-38999 Series III Type fiber optic connectors, termini and accessories



MIL-DTL-38999 type fiber optic interconnection systems are the recognized standard for all military and commercial aerospace applications that depend on high levels of connector reliability, environmental and mechanical performance and low dB insertion loss. Designed specifically for avionics applications, the Glenair tight-tolerance SuperNine® fiber optic connection system has been successfully deployed in applications ranging from the F-35 Joint Strike Fighter and the venerable F-22 to dozens of other fixed wing and rotary aircraft applications. Ultra-lightweight composite thermoplastic connectors deliver years of reliable service, free from the destructive effects of corrosion and less susceptible to vibration and shock when compared to conventional metal connectors.

- **Ultralightweight composite thermoplastic connector solution**
- **Qualified size 16 MIL-PRF-29504 pin-socket precision ceramic termini**
- **Ultra tight tolerance shell and cavity dimensions for precise axial alignment**
- **Ultra low insertion loss values for both singlemode and multimode**
- **From 2 to 37 Insert arrangements**

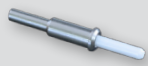


Glenair, Inc.
1211 Air Way
Glendale, CA 91201-2497
818-247-6000
sales@glenair.com
www.glenair.com

Product selection guide

MIL-DTL-38999 Series III Type

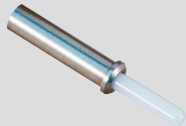
**SuperNine® MIL-DTL-38999 Series III Type
Fiber Optic Termini**



181-002 • M29504/04 Style 1 G-6
Pin terminus, size 16



181-001 • M29504/05 Style 1 G-7
Socket terminus, size 16



181-010 • M29504/04 Style 2 G-8
Socket terminus, size 16



181-009 • M29504/05 Style 2 G-9
Socket terminus, size 16



181-036 M29504/04 Style 2 G-10
Large core fiber pin terminus,
size 16



181-035 M29504/05 Style 2 G-11
Large core fiber socket terminus,
size 16



181-052 M29504/04 Style 2 G-12
Jewel pin terminus, size 16



181-053 M29504/05 Style 2 G-13
Jewel socket terminus, size 16



181-065 G-14
Pin terminus, size 20



181-066 G-15
Socket Terminus, Size 20

**SuperNine® MIL-DTL-38999 Series III Type
Pin and Socket Accessories**



181-048-16 G-16
Dummy sealing plug, size 16



187-019 G-16
Pin/socket terminus dust cap,
Size 16



187-029 G-17
Socket hood dust cap, size 16



187-266 G-17
Socket terminus dust cap, size 20



Product selection guide

MIL-DTL-38999 Series III Type

**SuperNine® MIL-DTL-38999 Series III Type
Fiber Optic Connectors**



SuperNine Fiber Optic D38999

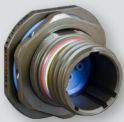
- Insert arrangements G-3
- Panel cutout dimensions G-4
- Alternate key polarizations G-5



180-091 (06) G-18
In-line plug connector



180-091 (05) G-19
In-line receptacle connector



180-091 (08) G-20
Jam-nut mount receptacle connector



180-091 (H7) G-21
Wall mount receptacle connector,
round holes (std)



180-091 (S7) G-22
Wall mount receptacle connector,
slotted holes



180-091 (T7) G-23
Wall mount receptacle connector,
threaded holes



660-023/024, 660-049/050 G-24
threaded protective covers, metal
and composite

**SuperNine® MIL-DTL-38999 Series III Type
Fiber Optic ASAP Cordsets**



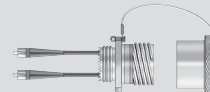
FO1000 G-28
Fiber optic cable sets – neoprene or
viton® rugged overmolded cables



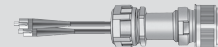
FO1001 G-30
Fiber optic cable sets – plastic or
metal core conduit



FO1002 G-32
Fiber optic cable sets – field
repairable banding backshell
assembly



FO1003 G-34
Fiber optic cable sets – inside-the-
box receptacle / pigtail assembly



FO1004 G-36
Fiber optic cable sets – inside the box
receptacle / pigtail assembly with
FiberCon® backshell

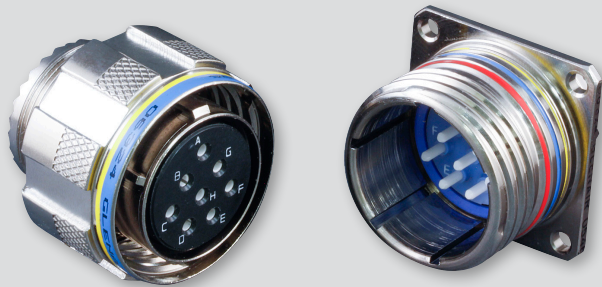


FO1005 G-38
Fiber optic cable sets – inside the
box receptacle / pigtail assembly and
backshell

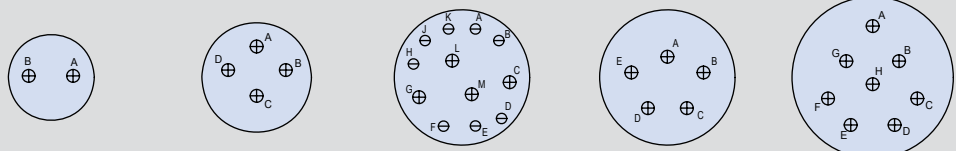
Reference information - insert arrangements

MIL-DTL-38999 Series III Type

MIL-DTL-38999 TYPE ADVANCED FIBER OPTIC CONNECTORS - INSERT ARRANGEMENTS

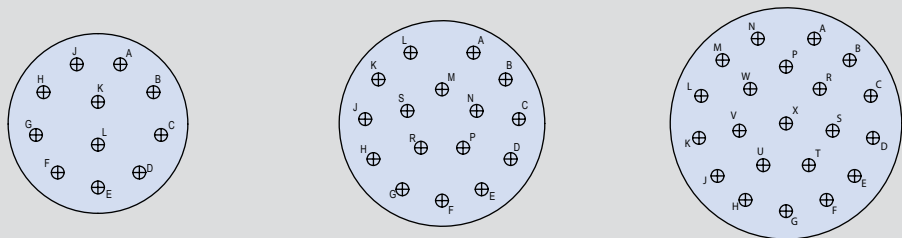


Contact Legend
#20 ⊖ #16 ⊕



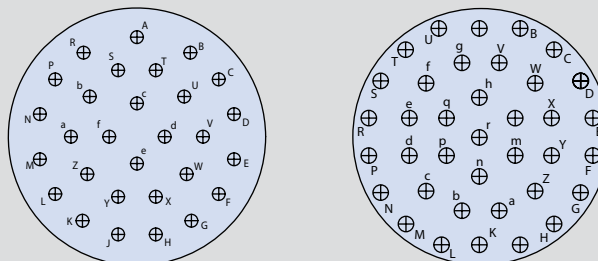
Insert Arrangement	11-2	13-4	15-97		15-5	17-8
No. of Contacts	2	4	4	8	5	8
Contact Size	#16	#16	#16	#20	#16	#16

Contact Legend
#20 ⊖ #16 ⊕



Insert Arrangement	19-11	21-16	23-21
No. of Contacts	11	16	21
Contact Size	#16	#16	#16

Contact Legend
#20 ⊖ #16 ⊕



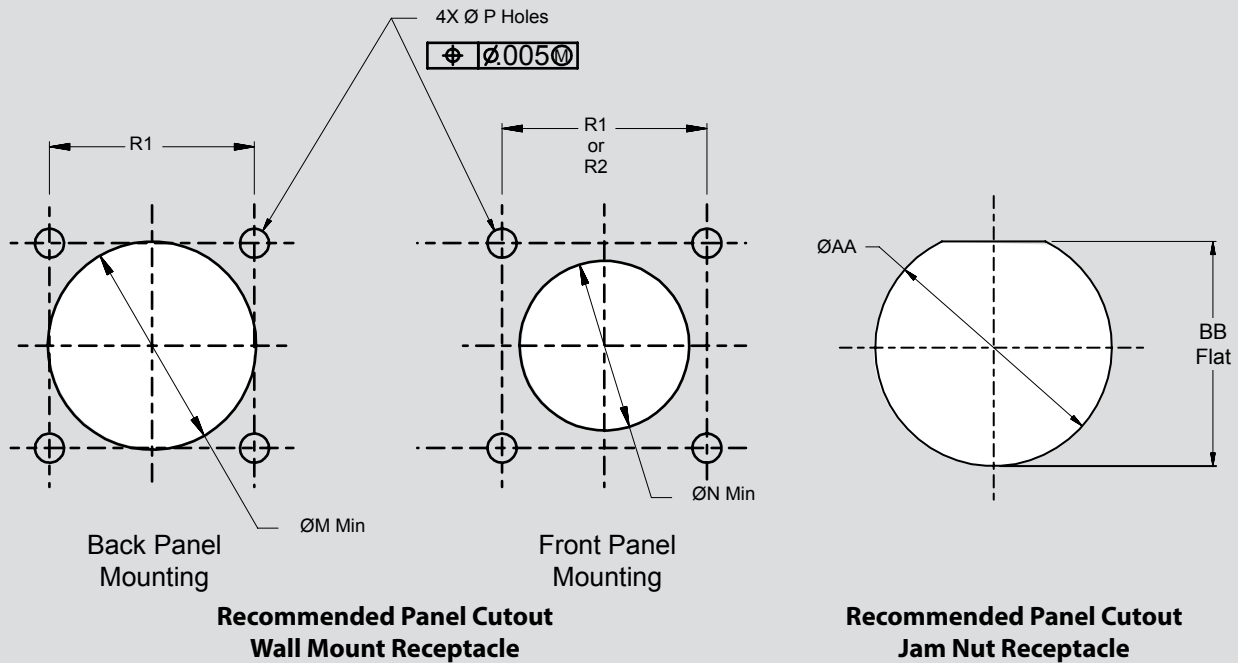
Insert Arrangement	25-29	25-37
No. of Contacts	29	37
Contact Size	#16	#16



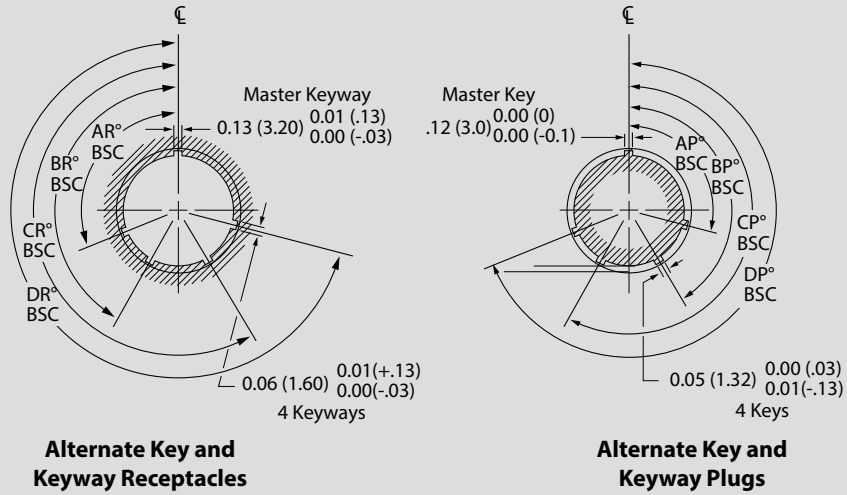
Reference information - panel cutout dimensions

MIL-DTL-38999 Series III Type

DIMENSIONS								
Shell Size Code	Shell Size	Ø AA	BB Flat	Ø M Min	Ø N Min	Ø P Holes	R1 BSC	R2 BSC
B	11	.835 (21.2)	.771 (19.6)	.796 (20.2)	.625 (15.9)	.133 (3.4)	.812 (20.6)	.719 (18.3)
		.825 (21.0)	.761 (19.3)			.123 (3.1)		
C	13	1.020 (25.9)	.955 (24.3)	.922 (23.4)	.750 (19.1)	.133 (3.4)	.906 (23.0)	.812 (20.6)
		1.010 (25.7)	.945 (24.0)			.123 (3.1)		
D	15	1.145 (29.1)	1.085 (27.6)	1.047 (26.6)	.906 (23.0)	.133 (3.4)	.969 (24.6)	.906 (23.0)
		1.135 (28.8)	1.075 (27.3)			.123 (3.1)		
E	17	1.270 (32.3)	1.210 (30.7)	1.219 (31.0)	1.016 (25.8)	.133 (3.4)	1.062 (27.0)	.969 (24.6)
		1.260 (32.0)	1.200 (30.5)			.123 (3.1)		
F	19	1.395 (35.4)	1.335 (33.9)	1.297 (32.9)	1.141 (29.0)	.133 (3.4)	1.156 (29.4)	1.062 (27.0)
		1.385 (35.2)	1.325 (33.7)			.123 (3.1)		
G	21	1.520 (38.6)	1.460 (37.1)	1.422 (36.1)	1.266 (32.2)	.133 (3.4)	1.250 (31.8)	1.156 (29.4)
		1.510 (38.4)	1.450 (36.8)			.123 (3.1)		
H	23	1.645 (41.8)	1.585 (40.3)	1.547 (39.3)	1.375 (34.9)	.159 (4.0)	1.375 (34.9)	1.250 (31.8)
		1.635 (41.5)	1.575 (40.0)			.149 (3.8)		
J	25	1.770 (45.0)	1.710 (43.4)	1.672 (42.5)	1.484 (37.7)	.155 (3.9)	1.500 (38.1)	1.375 (34.9)
		1.760 (44.7)	1.700 (43.2)			.145 (3.7)		



Reference information - alternate polarizations
MIL-DTL-38999 Series III Type



Alternate Key and Keyway Receptacles

Alternate Key and Keyway Plugs

ALTERNATE KEY AND KEYWAY POLARIZATION					
Shell Size	Key and Keyway Code	AR° or AP° BSC	BR° or BP° BSC	CR° or CP° BSC	DR° or DP° BSC
9	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
11 13 15	E	91	131	197	240
	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C	53	156	220	255
17 19 21 23 25	D	119	146	176	298
	E	51	141	184	242
	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
21 23 25	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272



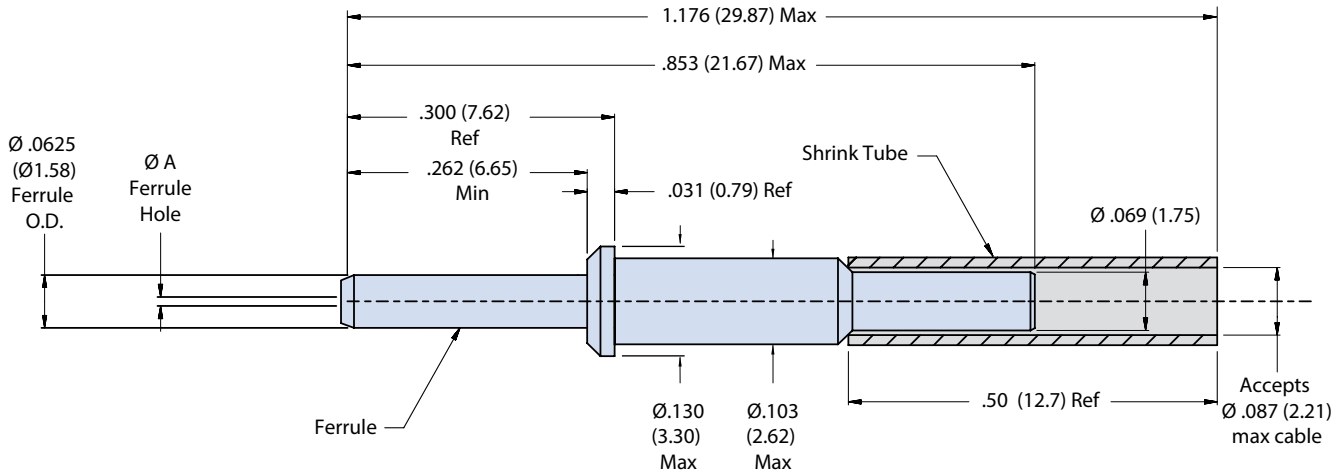
181-002 • M29504/04 fiber optic pin terminus, size 16
MIL-DTL-38999 Series III Type

M29504/04 TYPE, STYLE 1 PIN TERMINUS FOR MIL-DTL-38999 SERIES III



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

Consult factory for additional sizes and QPL status



NOTES

- See Glenair assembly procedure GAP-015 for termination instructions.
- Insertion/extraction tool: M81969/14-03
- For ferrule dust cap use P/N 187-019
- Hand polishing tool: 182-001P or 182-001PW
- Material/finish
 - Ferrule: zirconia ceramic
 - Terminus assembly: stainless steel/passivate
 - Shrink tube: kynar

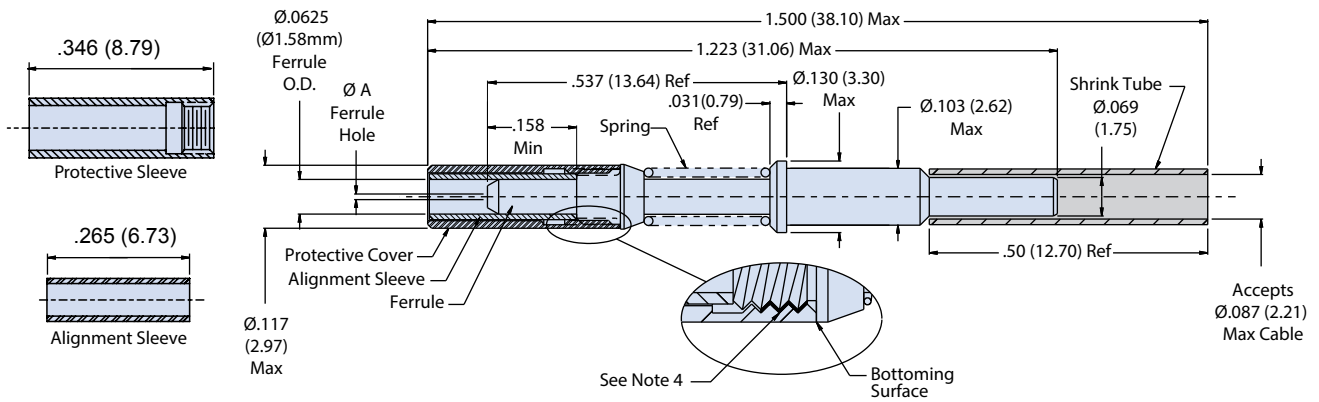
181-001 • M29504/05 fiber optic socket terminus, size 16
MIL-DTL-38999 Series III Type

M29504/05 TYPE, STYLE 1 SOCKET TERMINUS FOR MIL-DTL-38999 SERIES III



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

Consult factory for additional sizes and QPL status



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

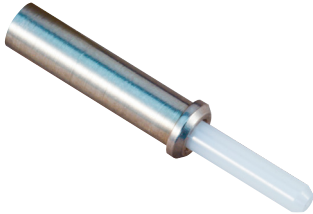
ACCESSORIES	
Part Number	Description
181-001-S	Alignment Sleeve, Split Ceramic (standard)
181-001-K	Alignment Sleeve, Split Stainless Steel
181-001-C	Protective cover

NOTES

- Alignment sleeve & protective cover are supplied with terminus and may be ordered separately (see accessories table).
- Insertion/extraction tool: P/N M81969/14-03 or equivalent
- For socket dust cap use part number 187-019 over ferrule and 187-029 over protective cover
- Threaded protective cover must be retained using threadlocker "loctite 222" prior to insertion into connector. See Glenair assembly procedure GAP-015 for termination instructions
- Hand polishing tool: 182-001S or 182-001SW
- Material/Finish
 - Ferrule: zirconia ceramic
 - Alignment sleeve: zirconia ceramic or stainless steel/passivate.
 - Terminus body, spring, cover: stainless steel/passivate
 - Shrink tube: kynar

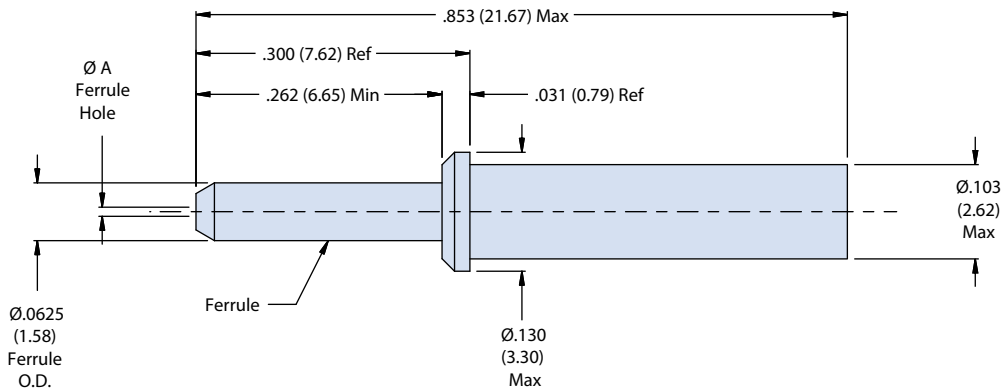
181-010 • M29504/04 fiber optic pin terminus, size 16
MIL-DTL-38999 Series III Type

M29504/04 TYPE, STYLE 2 PIN TERMINUS FOR MIL-DTL-38999 SERIES III



Part Number	Fiber Size Core/Cladding/Coating (Microns)	Ø A (Microns)	Ref. M29504/04-XXXX
181-010-125	9/125 (Singlemode)	125.5	M29504/04-4218
181-010-126S	9/125 (Singlemode)	126.0	M29504/04-4219
181-010-126	50/125 & 62.5/125	126.0	M29504/04-4220
181-010-127	50/125 & 62.5/125	127.0	M29504/04-4221
181-010-142	100/140	142.0	M29504/04-4224
181-010-145	100/140	145.0	M29504/04-4225
181-010-156	62.5/125/155 (Polyimide)	156.0	M29504/04-4222
181-010-157	62.5/125/155 (Polyimide)	157.0	M29504/04-4223
181-010-173	100/140/172 (Polyimide)	173.0	M29504/04-4226
181-010-175	100/140/172 (Polyimide)	175.0	M29504/04-4227
181-010-231	200/230	231.0	N/A
181-010-233	200/230	233.0	N/A
181-010-236	200/230	236.0	N/A
181-010-286	200/280	286.0	N/A
181-010-448	400/440	448.0	N/A

Consult factory for additional sizes and QPL status



NOTES

1. See Glenair assembly procedure GAP-019 for termination instructions.
2. Insertion/extraction tool: M81969/14-03
3. For ferrule dust cap use P/N 187-019
4. Hand polishing tool: 182-001P or 182-001PW
5. Material/Finish
 - Ferrule: zirconia ceramic
 - Terminus assembly: stainless steel/passivate

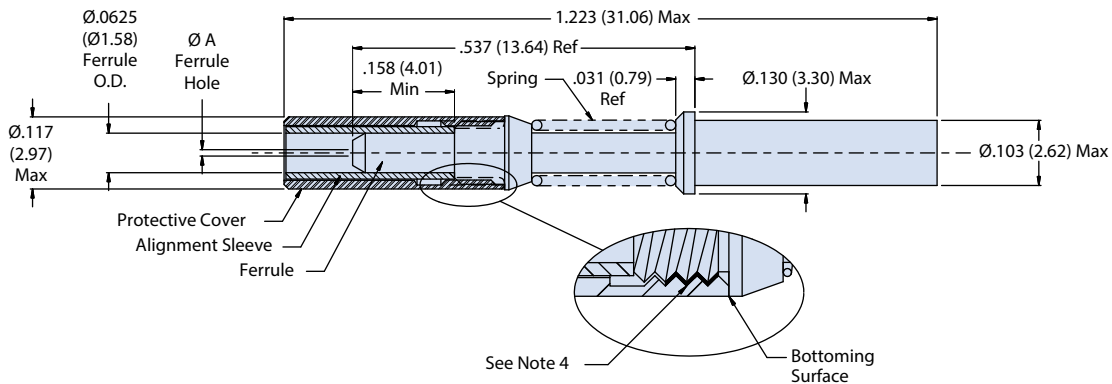
181-009 • M29504/05 fiber optic socket terminus, size 16 MIL-DTL-38999 Series III Type

M29504/05 TYPE, STYLE 2 PIN TERMINUS FOR MIL-DTL-38999 SERIES III



Part Number	Fiber Size Core/Cladding/Coating (Microns)	Ø A (Microns)	Ref. M29504/05-XXXX
181-009-125	9/125 (Singlemode)	125.5	M29504/05-4247
181-009-1265	9/125 (Singlemode)	126.0	M29504/05-4248
181-009-126	50/125 & 62.5/125	126.0	M29504/05-4249
181-009-127	50/125 & 62.5/125	127.0	M29504/05-4250
181-009-142	100/140	142.0	M29504/05-4253
181-009-145	100/140	145.0	M29504/05-4254
181-009-156	62.5/125/155 (Polyimide)	156.0	M29504/05-4251
181-009-157	62.5/125/155 (Polyimide)	157.0	M29504/05-4252
181-009-173	100/140/172 (Polyimide)	173.0	M29504/05-4255
181-009-175	100/140/172 (Polyimide)	175.0	M29504/05-4256
181-009-231	200/230	231.0	N/A
181-009-236	200/230	236.0	N/A
181-009-286	200/280	286.0	N/A
181-009-448	400/440	448.0	N/A

Consult factory for additional sizes and QPL status



Accessories	
Part Number	Description
181-001-S	Alignment Sleeve, Split Ceramic (standard)
181-001-K	Alignment Sleeve, Split Stainless Steel
181-001-C	Protective cover

NOTES

1. Insertion/extraction tool: M81969/14-03
2. Threaded protective cover must be retained using "Threadlocker Loctite 222" prior to insertion into connector. See Glenair assembly procedure GAP-019 for termination instructions
3. For socket dust cap use part number 187-019 over ferrule and 187-029 over protective cover
4. Alignment sleeve and protective cover are supplied with terminus and may be ordered separately (see accessories table)
5. Hand polishing tool: 182-001S or 182-001SW
6. Material/finish
 - Ferrule: zirconia ceramic
 - Alignment sleeve: zirconia ceramic or stainless steel/passivate
 - Terminus body, spring and cover: stainless steel/passivate

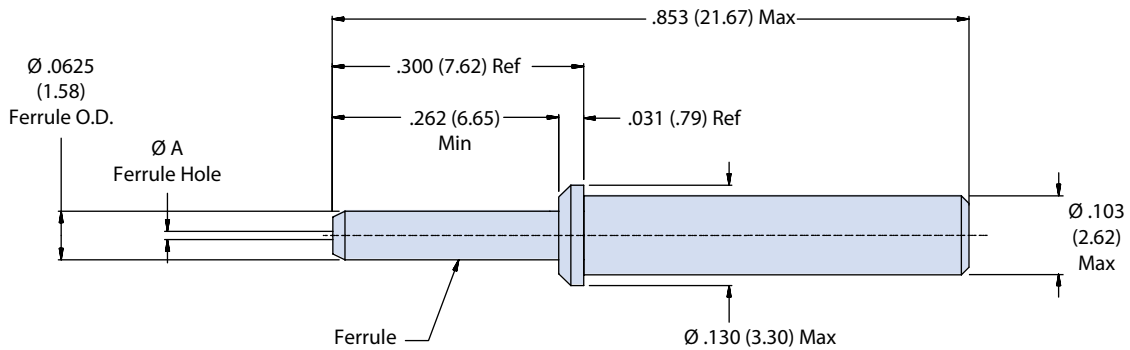


181-036 large core optical fiber pin terminus, size 16
MIL-DTL-38999 Series III Type

M29504/04 TYPE, STYLE 2 LARGE CORE METAL FERRULE PIN TERMINUS FOR MIL-DTL-38999 SERIES III



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



NOTES

1. Contact Glenair for termination/assembly procedures.
2. Insertion/Extraction Tool: P/N M81969/14-03.
3. For ferrule dust cap use P/N 187-019.
4. Material/Finish:
 - Ferrule and terminus body: stainless steel/passivate

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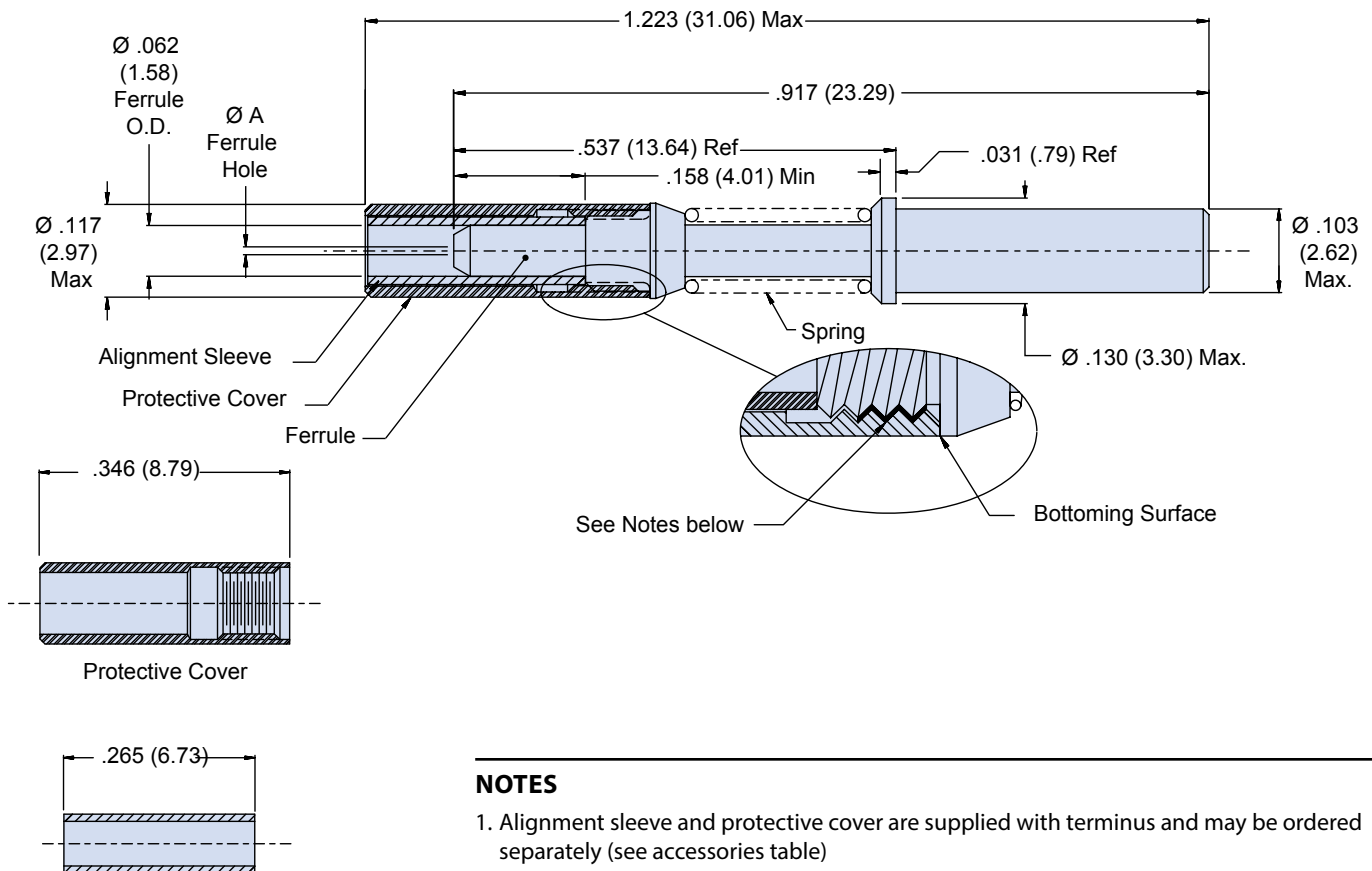
181-035 large core fiber optic socket terminus, size 16 MIL-DTL-38999 Series III Type

M29504/05 TYPE, STYLE 2 LARGE CORE METAL FERRULE SOCKET TERMINUS FOR MIL-DTL-38999 SERIES III



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

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



NOTES

- Alignment sleeve and protective cover are supplied with terminus and may be ordered separately (see accessories table)
- Threaded protective cover must be retained using "Threadlocker Loctite 222" prior to insertion and fully seated against terminus body as shown. Contact Glenair for termination/assembly procedures.
- Insertion/extraction Tool: P/N M81969/14-03
- For socket dust cap use part number 187-019 over ferrule and 187-029 over protective cover
- Material/finish:
 - Ferrule: stainless steel/passivate
 - Alignment sleeve: zirconia ceramic or stainless steel/passivate
 - Terminus assembly, spring and cover: stainless steel/passivate

Accessories	
Part Number	Description
181-001-S	Alignment Sleeve, Split Ceramic (standard)
181-001-K	Alignment Sleeve, Split Stainless Steel
181-001-C	Protective cover

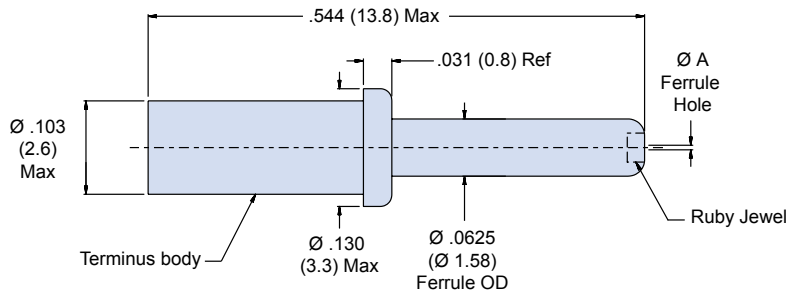
181-052 fiber optic jewel pin terminus, size 16
MIL-DTL-38999 Series III Type

M29504/4 TYPE, STYLE 2 FIBER OPTIC JEWEL PIN TERMINUS FOR MIL-DTL-38999 SERIES III



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

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



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NOTES

1. Insertion/extraction tool: M81969/14-03
2. For ferrule dust cap use P/N 187-019
3. Material/Finish:
 - Terminus body: stainless steel/passivate
 - Jewel, ruby: synthetic ruby or sapphire

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

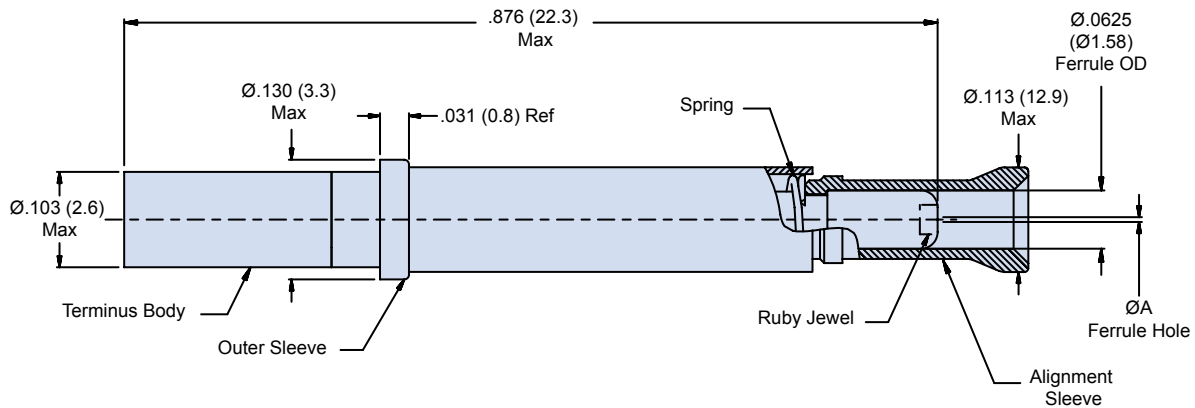
181-053 fiber optic jewel socket terminus, size 16 MIL-DTL-38999 Series III Type

M29504/05 TYPE FIBER OPTIC JEWEL SOCKET TERMINUS



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

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



NOTES

1. Alignment Sleeve, Outer Sleeve, and Spring packaged loose with assembly.
2. Insertion/extraction tool: M81969/14-03 or equivalent.
3. For socket dust cap use part number 187-019 over ferrule and 187-029 over alignment sleeve
4. Material/finish:
 - Terminus body: stainless steel/passivate
 - Jewel/ruby: synthetic ruby or sapphire
 - Alignment sleeve: stainless steel/passivate
 - Outer sleeve: stainless steel/passivate
 - Spring: stainless steel/passivate

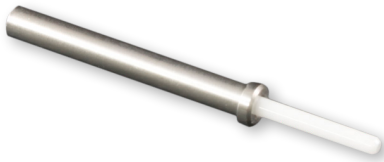
Terminus Accessories	
Part Number	Description
189-070-6	Reducing Sleeve Ø1.90mm Max Cable Jacket
189-075	Alignment Sleeve
182-031	Alignment Sleeve Installation Tool
182-032	Alignment Sleeve Extraction Tool
181-053-E	Epoxy Preforms



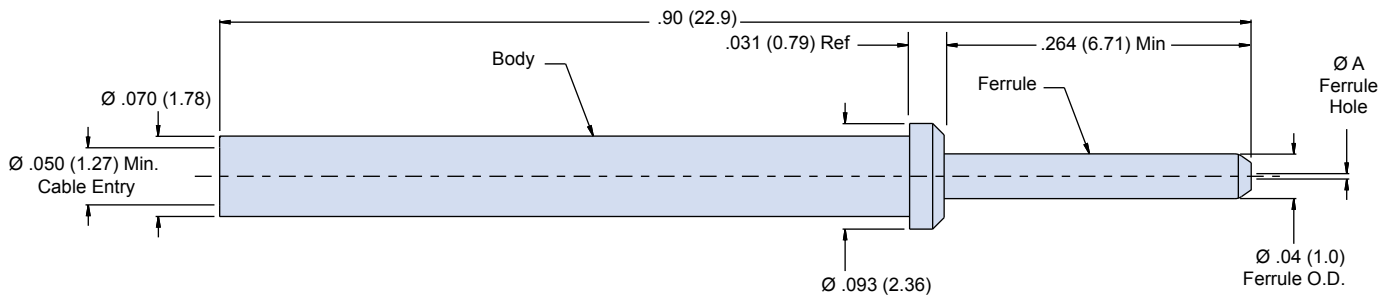
181-065 fiber optic pin terminus, size 20

MIL-DTL-38999 Series III Type

SIZE 20 PIN TERMINUS FOR MIL-DTL-38999 SERIES III



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



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NOTES

1. Consult factory for appropriate termination and assembly tools/procedures.
2. For dust cap use P/N 187-266
3. Material and Finish:
 - Ferrule: Zirconia Ceramic
 - Body: Copper-Nickel-Zinc Alloy

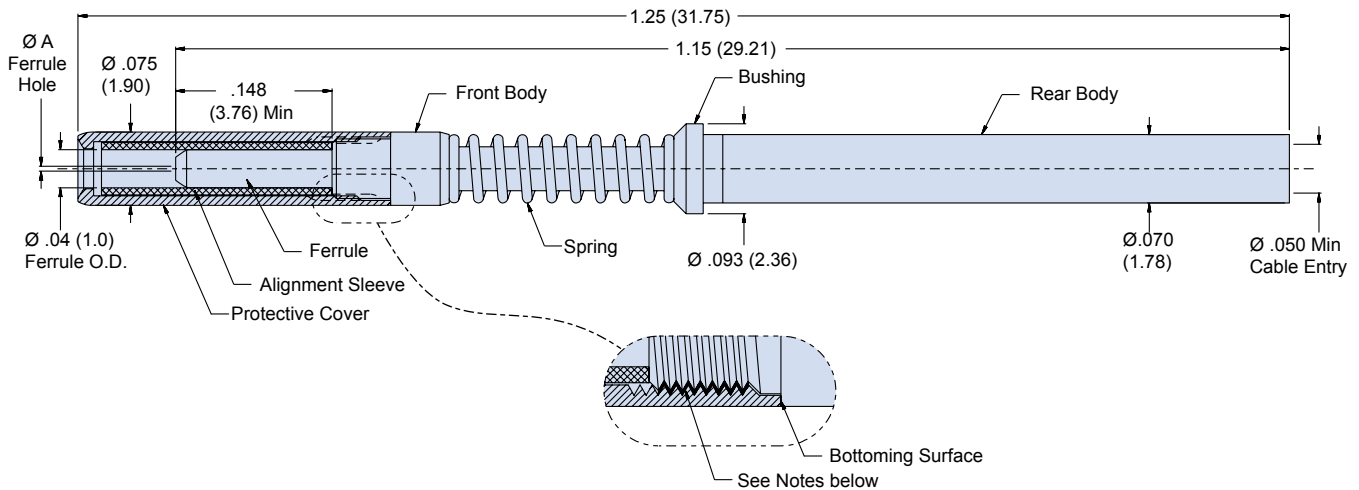
181-066 fiber optic socket terminus, size 20

MIL-DTL-38999 Series III Type

SIZE 20 SOCKET TERMINUS FOR MIL-DTL-38999 SERIES III



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



NOTES

1. Protective cover must be retained using "Threadlocker Loctite 222" prior to insertion and fully seated against terminus body as shown.
2. Consult factory for appropriate termination and assembly tools/procedures
3. For dust cap use P/N 187-266
4. Material/finish
 - Ferrule: zirconia ceramic
 - Alignment sleeve: zirconia ceramic
 - Body (front and rear): copper-nickel-zinc alloy
 - Protective cover: copper-nickel-zinc alloy
 - Bushing: copper-nickel-zinc alloy
 - Spring: stainless steel/passivate

Terminus Accessories

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

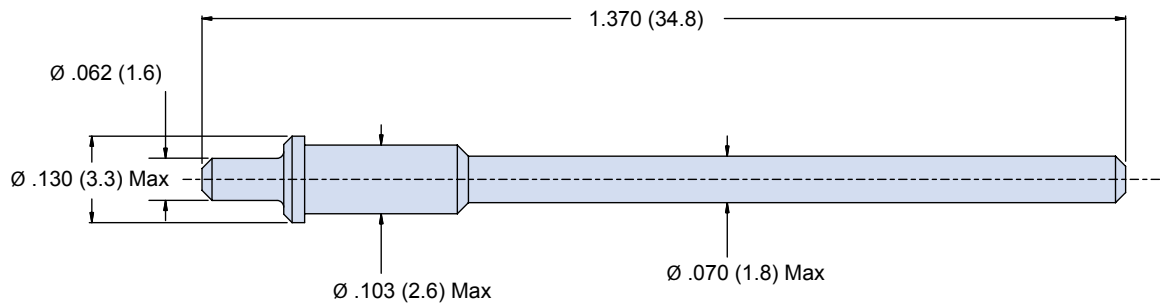


187-019/187-029 Size 16 termini pin and socket dust caps
MIL-DTL-38999 Series III Type

SIZE 16 DUMMY TERMINUS/SEALING PLUG FOR MIL-DTL-38999 CONNECTORS



181-048-16 Size 16 dummy terminus reduces weight and eliminates cost of using expensive contacts



NOTES

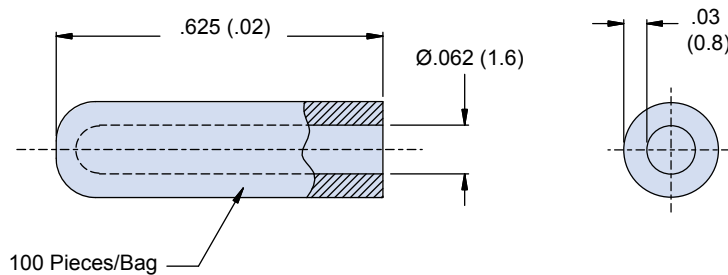
1. Materials/finish: terminus: high grade engineering thermoplastic
2. Insertion/extraction tool: P/N: M81969/14-03

SIZE 16 PIN AND SOCKET TERMINUS VINYL DUST CAPS

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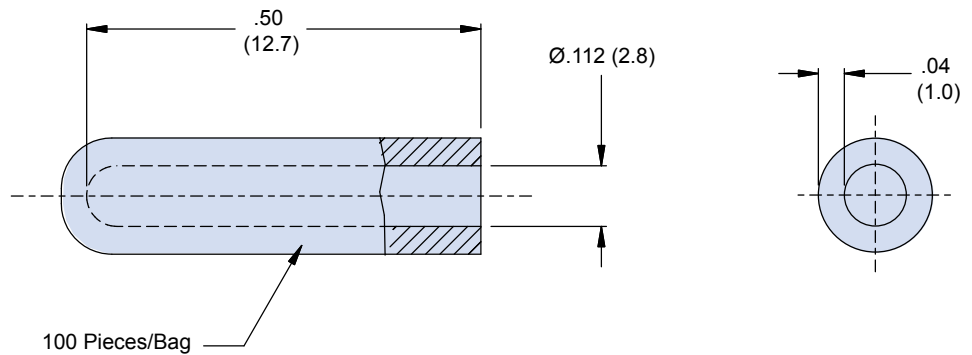
187-019 Vinyl dust cap for size 16 termini with \varnothing .0625 Ferrules
 Installs directly onto ferrule of 181-001, 181-002, 181-009, 181-010, 181-035, 181-036, 181-052 and 181-053 Termini



**187-266 #20 dust cap and 181-048 #16 dummy terminus
MIL-DTL-38999 Series III Type**

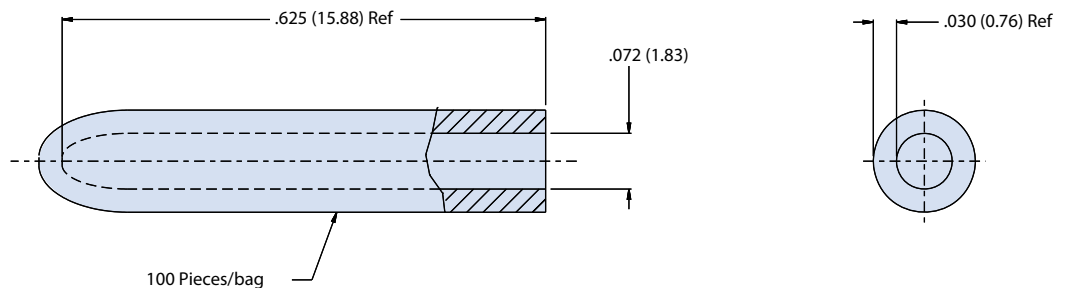
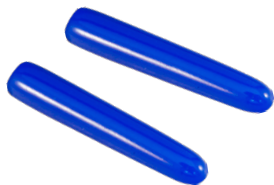
SIZE 16 SOCKET TERMINUS VINYL DUST CAPS

187-029 Vinyl dust cap for socket termini. Installs over of 181-001, 181-009, 181-035, and onto alignment sleeve of 181-053 termini



SIZE 20 PIN AND SOCKET TERMINUS VINYL DUST CAPS

187-266 Vinyl dust cap for size 20 termini fits over metal terminus body of 181-065 pin or 181-066 socket termini



180-091 (06) plug

MIL-DTL-38999 Series III Type • Multi-channel

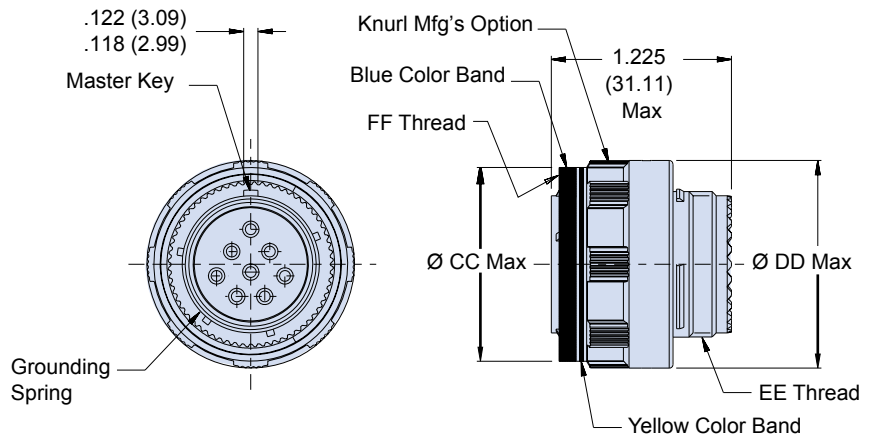


Part Number Development						
Sample Part Number	180-091	XW	06	-17-8	P	N
Series / Basic Part No.	D38999 Series III Type					
Material/Finish	See Material/Finish Table					
Connector Style	06 = Plug Connector					
Shell Size/Insert Arr.*	IAW MIL-DTL-38999 Series III, Per MIL-STD-1560					
Insert Designation	P = Pin S = Socket					
Alternate Key Position*	A, B, C, D, E, N = Normal; Per MIL-DTL-38999					

*See 'reference information' portion of this section for complete details

NOTES

1. Insert arrangement in accordance with MIL-STD-1560, see page G-12.
2. Blue color band indicates rear release retention system.
3. For Glenair terminus part numbers see Glenair drawing 181-001 and 181-002.
4. Material and finish:
 - Barrel, coupling nut: see material and finish table
 - Coupling nut (for composite): high grade engineering thermoplastic/unplated
 - Insulator: high grade rigid dielectric
 - Seals: fluorosilicone
 - Ground spring: copper alloy/nickel



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

Dimensions					
Shell Size Code	Shell Size	FF Thread	Ø CC Max	Ø DD Max	EE Thread
A	9	.6250-.1P-.3L-TS-2B	.811 (20.60)	.858 (21.79)	M12 x 1.0-6g 0.100R
B	11	.7500-.1P-.3L-TS-2B	.929 (23.6)	.984 (25.0)	M15 x 1.0-6g 0.100R
C	13	.8750-.1P-.3L-TS-2B	1.110 (28.2)	1.157 (29.4)	M18 x 1.0-6g 0.100R
D	15	1.0000-.1P-.3L-TS-2B	1.232 (31.3)	1.280 (32.5)	M22 x 1.0-6g 0.100R
E	17	1.1875-.1P-.3L-TS-2B	1.358 (34.5)	1.406 (35.7)	M25 x 1.0-6g 0.100R
F	19	1.2500-.1P-.3L-TS-2B	1.469 (37.3)	1.516 (38.5)	M28 x 1.0-6g 0.100R
G	21	1.3750-.1P-.3L-TS-2B	1.594 (40.5)	1.642 (41.7)	M31 x 1.0-6g 0.100R
H	23	1.5000-.1P-.3L-TS-2B	1.720 (43.7)	1.768 (44.9)	M34 x 1.0-6g 0.100R
J	25	1.6250-.1P-.3L-TS-2B	1.843 (46.8)	1.890 (48.0)	M37 x 1.0-6g 0.100R

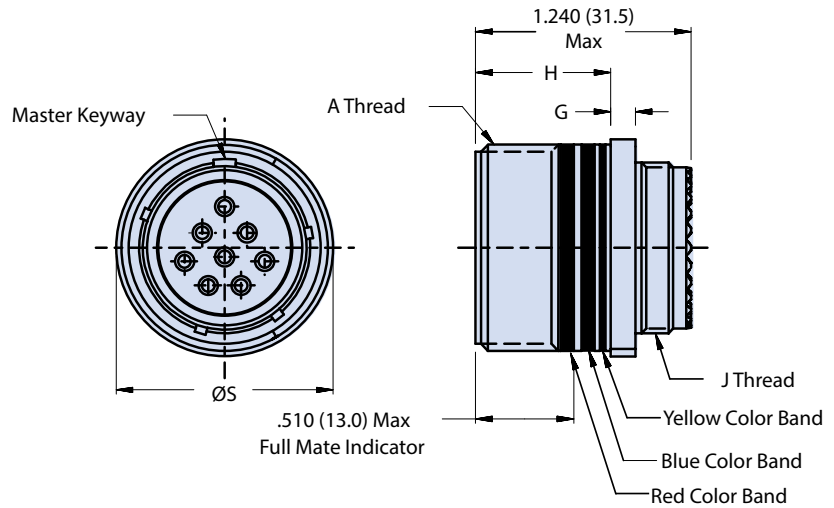


Part Number Development						
Sample Part Number	180-091	XW	05	-17-8	P	N
Series / Basic Part No.	D38999 Series III Type					
Finish	See Material/Finish Table					
Connector Style*	05 = In-Line Receptacle					
Shell Size/Insert Arr.*	IAW MIL-DTL-38999 Series III, Per MIL-STD-1560					
Insert Designation	P = Pin S = Socket					
Alternate Key Position*	A, B, C, D, E, N = Normal; Per MIL-DTL-38999					

*See 'reference information' portion of this section for complete details

NOTES

1. Insert arrangement in accordance with MIL-STD-1560, see page G-12.
2. Blue color band indicates rear release retention system.
3. For Glenair terminus part numbers, see Glenair Drawing 181-001 and 181-002.
4. Material/finish:
 - Shell: see material and finish table
 - Insulator: high grade rigid dielectric
 - Seals: fluorosilicone
 - Retention clip: copper alloy



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

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



180-091 (08) jam nut receptacle

MIL-DTL-38999 Series III Type • Multi-channel

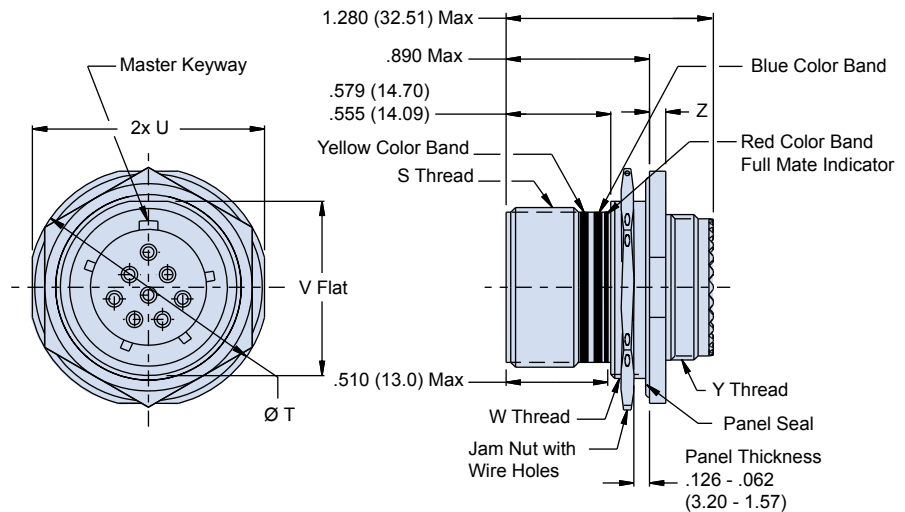


Part number development						
Sample Part Number	180-091	XW	08	-17-8	P	N
Series / Basic Part No.	D38999 Series III Type					
Material/Finish	See Material/Finish Table					
Connector Style	08 = Jam Nut Receptacle					
Shell Size/Insert Arr.*	IAW MIL-DTL-38999 Series III, Per MIL-STD-1560					
Insert Designation	P = Pin S = Socket					
Alternate Key Position*	A, B, C, D, E, N = Normal; Per MIL-DTL-38999					

*See 'reference information' portion of this section for complete details

NOTES

1. Insert arrangement in accordance with MIL-STD-1560, See Page G-12.
2. Blue Color Band indicates rear release retention system.
3. For Glenair Terminus part numbers, see Glenair Drawing 181-001 and 181-002.
4. For recommended panel cutout and alternate key positions, See Page G-13 and G-14.
5. S7 wall mount receptacle can be front panel mounted using cut out dimensions R1 or R2. Dimension R2 is for use with S7 wall mount receptacle only.
6. Material and Finish:
 - Shell, Jam Nut: See Material and Finish Table
 - Jam Nut (for Composite): Al Alloy, plated same as shell
 - Insulator: High Grade Rigid Dielectric
 - Seals: Fluorosilicone



Dimensions								
Shell Size Code	Shell Size Ref	S Thread .1P-.3L-TS-2A	Ø T	U	V	W Thread 1.0-6g 0.100R	Y Thread 1.0-6g 0.100R	Z
A	9	.6250-	1.200 (30.48) 1.777 (45.14)	1.079 (27.41) 1.047 (26.59)	.655 (16.64) .645 (16.38)	M17	M12	.121 (3.1) .083 (2.1)
B	11	.7500	1.386 (35.20) 1.362 (34.59)	1.268 (32.21) 1.236 (31.39)	.755 (19.18) .745 (18.92)	M20	M15	.121 (3.1) .083 (2.1)
C	13	.8750	1.512 (38.40) 1.488 (37.80)	1.390 (35.31) 1.358 (34.49)	.942 (23.93) .932 (23.67)	M25	M18	.121 (3.1) .083 (2.1)
D	15	1.0000	1.638 (41.61) 1.614 (41.00)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	M28	M22	.121 (3.1) .083 (2.1)
E	17	1.1875	1.764 (44.81) 1.740 (44.20)	1.642 (41.71) 1.610 (40.89)	1.191 (30.25) 1.181 (30.00)	M32	M25	.121 (3.1) .083 (2.1)
F	19	1.2500	1.949 (49.50) 1.925 (48.90)	1.827 (46.41) 1.795 (45.59)	1.316 (33.43) 1.306 (33.17)	M35	M28	.154 (3.9) .114 (2.9)
G	21	1.3750	2.075 (52.71) 2.051 (52.10)	1.953 (49.61) 1.921 (48.79)	1.441 (36.60) 1.431 (36.35)	M38	M31	.154 (3.9) .114 (2.9)
H	23	1.5000	2.201 (55.91) 2.177 (55.30)	2.079 (52.81) 2.047 (51.99)	1.566 (39.78) 1.556 (39.52)	M41	M34	.154 (3.9) .114 (2.9)
J	25	1.6250	2.323 (59.00) 2.299 (58.39)	2.205 (56.01) 2.173 (55.19)	1.691 (42.95) 1.681 (42.70)	M44	M37	.154 (3.9) .114 (2.9)

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

180-091 (H7) wall mount receptacle, round holes (standard) MIL-DTL-38999 Series III Type • Multi-channel

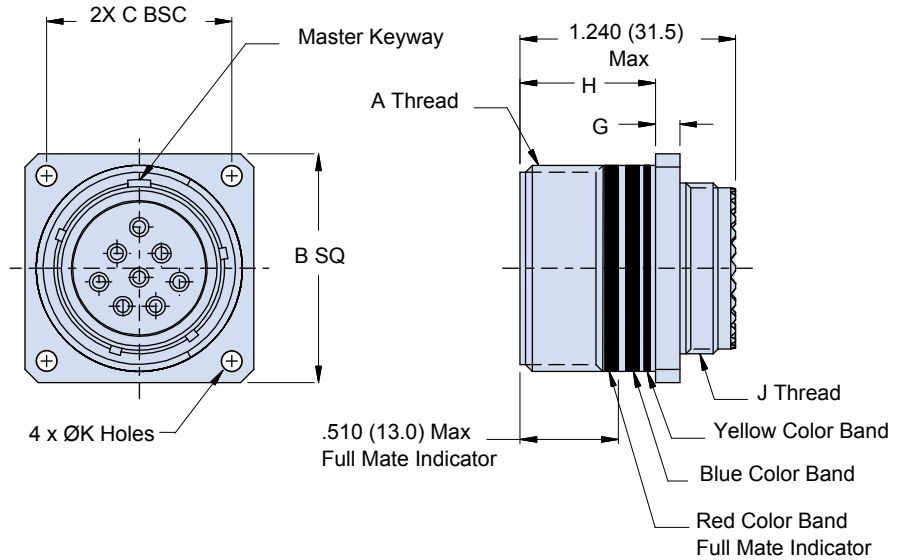


Part number development						
Sample Part Number	180-091	XW	H7	-17-8	P	N
Series / Basic Part No.	D38999 Series III Type					
Material/Finish	See Material/Finish Table					
Connector Style	H7 = Wall Mount Receptacle with Round Holes (Std)					
Shell Size/Insert Arr.*	IAW MIL-DTL-38999 Series III, Per MIL-STD-1560					
Insert Designation	P = Pin S = Socket					
Alternate Key Position*	A, B, C, D, E, N = Normal; Per MIL-DTL-38999					

*See 'reference information' portion of this section for complete details

NOTES

1. Insert arrangement in accordance with MIL-STD-1560, see page G-12.
2. Blue color band indicates rear release retention system.
3. For Glenair terminus part numbers, see Glenair drawing 181-001 and 181-002.
4. For recommended panel cutout, see page G-13
5. Material/finish:
 - Shell: see material and finish table
 - Insulator: high grade rigid dielectric
 - Seals: fluorosilicone

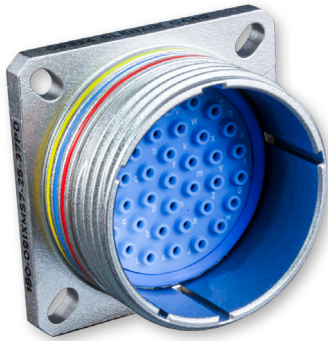


Material and Finish		
Code	Material	Finish Description
M	Aluminum Alloy	Electroless Nickel
MT		Nickel - PTFE, Grey
ZNU		Zinc-Nickel, Black
ZR		Zinc-Nickel, Black (RoHS)
XM	Composite	Electroless Nickel
XMT		Nickel - PTFE, Grey
XW		Cadmium, Olive Drab
XZN		Zinc-Nickel, Black
MS	Stainless Steel	Electroless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

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



180-091 (S7) wall mount receptacle, slotted holes
MIL-DTL-38999 Series III Type • Multi-channel

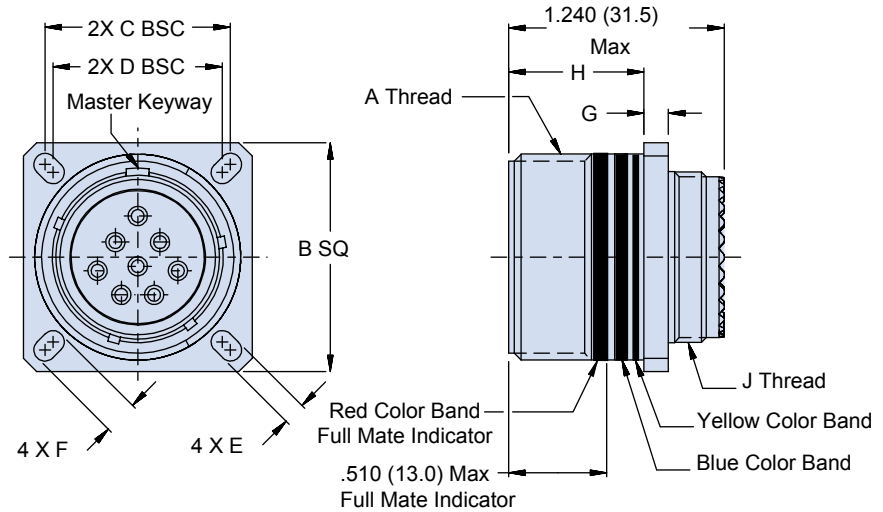


Part number development						
Sample Part Number	180-091	XW	S7	-17-8	P	N
Series / Basic Part No.	D38999 Series III Type					
Material/Finish	See Material/Finish Table					
Connector Style	S7 = Wall Mount Receptacle with Slotted Holes					
Shell Size/Insert Arr.*	IAW MIL-DTL-38999 Series III, Per MIL-STD-1560					
Insert Designation	P = Pin S = Socket					
Alternate Key Position*	A, B, C, D, E, N = Normal; Per MIL-DTL-38999					

*See 'reference information' portion of this section for complete details

NOTES

1. Insert arrangement in accordance with MIL-STD-1560, see page G-12.
2. Blue color band indicates rear release retention system.
3. For appropriate Glenair terminus part numbers, see Glenair drawing 181-001 and 181-002.
4. For recommended panel cutout, see page G-13
5. S7 wall mount receptacle can be front panel mounted using cut out dimension R1 or R2. Dimension R2 is for use with S7 wall mount receptacle only.
6. Material/Finish:
 - Shell: see material and finish table
 - Insulator: high grade rigid dielectric
 - Seals: fluorosilicone



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

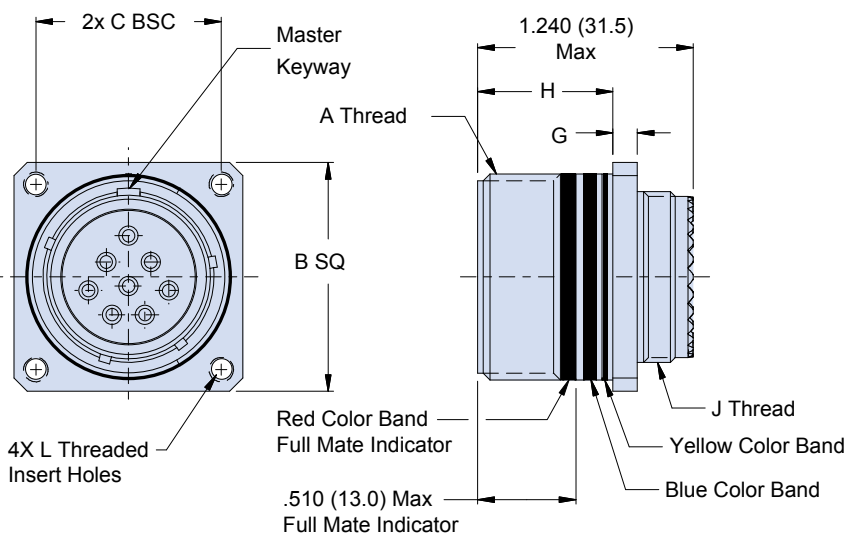
Material and Finish		
Code	Material	Finish Description
M	Aluminum Alloy	Electroless Nickel
MT		Nickel - PTFE, Grey
ZNU		Zinc-Nickel, Black
ZR		Zinc-Nickel, Black (RoHS)
XM	Composite	Electroless Nickel
XMT		Nickel - PTFE, Grey
XW		Cadmium, Olive Drab
XZN		Zinc-Nickel, Black
MS	Stainless Steel	Electroless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

180-091 (T7) wall mount receptacle, threaded insert holes MIL-DTL-38999 Series III Type • Multi-channel



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

*See 'reference information' portion of this section for complete details



NOTES

1. Insert arrangement in accordance with MIL-STD-1560, see page G-12
2. For recommended panel cutout, see page G-13
3. Material/Finish:
 - Shell: See Material and Finish Table
 - Insulator: High Grade Rigid Dielectric
 - Seals: Fluorosilicone

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

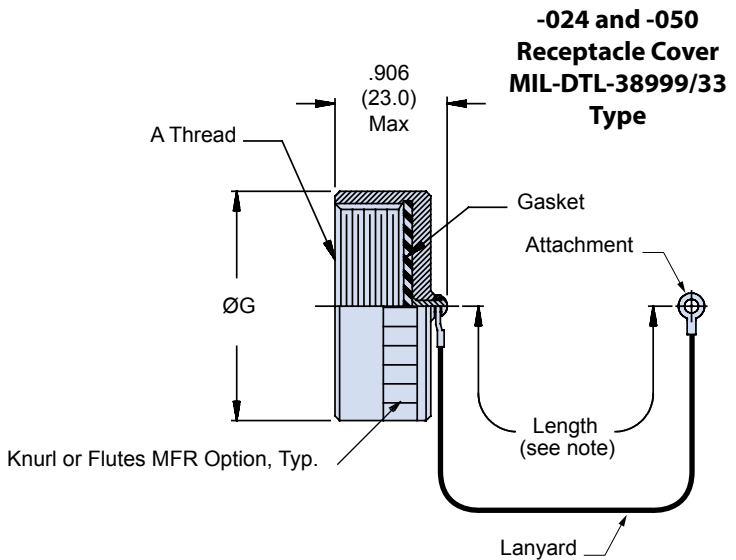
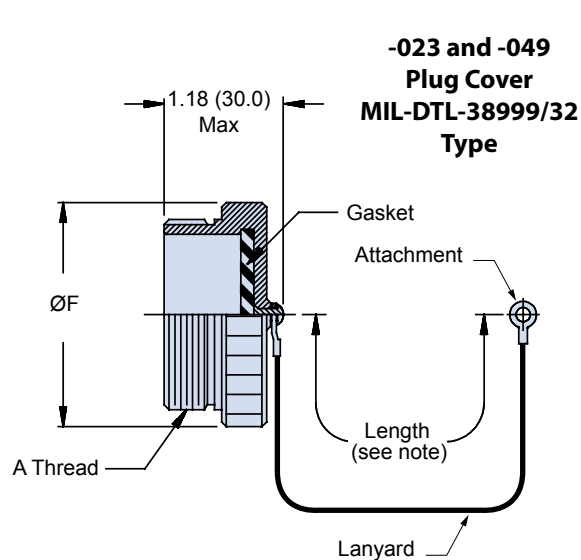
Dimensions									
Shell Size Code	Shell Size Ref	A Thread .1P-.3L-TS-2A	B SQ	C BSC	G	H	J Thread 1.0-6g 0.100R	L Threaded Insert Holes	
B	11	.7500	1.043 (26.5) 1.019 (25.9)	.812 (20.6)	.144 (3.7) .083 (2.1)	.823 (20.9) .768 (19.5)	M15	.112-40 UNC-2B	
C	13	.8750	1.138 (28.9) 1.114 (28.3)	.906 (23.0)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

MIL-DTL-38999 SERIES III TYPE METAL AND COMPOSITE PROTECTIVE COVERS



PART NUMBER DEVELOPMENT							
Sample Part Number	660	-023	M	17	H	5	-01
Product Series	Series 66						
Cover Type	-023 = Metal Plug Cover -024 = Metal Receptacle Cover -049 = Composite Plug Cover -050 = Composite Receptacle Cover						
Material/Finish	See Material/Finish Table						
Shell Size	See Dimensions Table						
Lanyard Type	D = Bead Chain, CRES, Passivated F = Wire Rope, Nylon Jacket G = Nylon Rope, Black H = Wire Rope, Teflon Jacket K = Nylon Rope, Olive Drab N = No Lanyard R = Wire Rope, PVC Jacket S = #8 Sash Chain, CRES, Passivated SK = Nylon Rope (Black) w/Slip Knot T = Wire Rope, No Jacket U = Wire Rope, Polyurethane Jacket						
Attachment Length	Length in Inches; I.E. 5 = 5 inches						
Attachment Dash No.	See Table I, II, III, or IV; omit for "SK" slip knot attachment						

G



NOTES

1. Length tolerance for sash chain (s) is ± 1 link, for all other attachments ± .25.
2. Material/Finish
 - Cover: see material/finish table
 - Gasket: silicone
 - Hardware, rivet: stainless steel/passivate

**660-023, -024/660-049, -050 metal and composite covers
MIL-DTL-38999 Series III Type**

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

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



AVAILABLE LANYARD TYPES (SHOWN WITH OPTIONAL EYELET ATTACHMENT, SEE LANYARD CODE TABLE FOR LANYARD STYLE)		
Bead Chain (Type D)	Sash Chain (Type S)	Rope (Types F, G, H, K, R, T, U)

Metal and composite covers - attachment options
MIL-DTL-38999 Series III Type

ATTACHING A COVER TO A JAM NUT RECEPTACLE WITH A SOLID RING (STYLE A)

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

Solid Ring - Style A

NOTES

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

ATTACHING A COVER TO A CABLE ASSEMBLY WITH A SOLID RING (STYLE B)

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

Solid Ring - Style B

NOTES

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

G

Metal and composite covers · attachment options
MIL-DTL-38999 Series III Type

ATTACHING A COVER TO A CABLE USING A SPLIT RING OR SLIP KNOT

**Split Ring
Style C**

**Slip Knot
(Type SK)**

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

ATTACHING A RECEPTACLE COVER TO A PANEL WITH A SCREW

Eyelet - Style D

TABLE IV: EYELET STYLE D		
Dash No.	Ø K ± .015	180-091 Shell Size
01	.140 (3.56)	
02	.182 (4.62)	
03	.191 (4.85)	
04	.197 (5.00)	
05	.167 (4.24)	
06	.125 (3.18)	11 thru 21
07	.218 (5.53)	
09	.156 (3.96)	23 thru 25
00	No Eyelet	



Fiber optic cable sets · rugged overmolded MIL-DTL-38999 Series III Type

D38999
Series III

ASAP FIBER OPTIC CABLE SETS WITH RUGGED OVERMOLDING



Product Features

- Harsh Environment Polyurethane Overmolding (Viton® and Neoprene Available)
- Singlemode or Multimode Fiber Media
- MIL-DTL-38999 Series III Connectors in Aluminum, Composite or Stainless Steel
- Plug, Jam-Nut Receptacle, In-Line and Wall-Mount Receptacle Configurations
- Military Standard Dust Caps and Connector Accessories
- MIL-PRF-29504 Approved Termini
- Multichannel Capability: From 2 to 37 Channels
- Custom Lengths Available
- Robust, Flexible and Crush Resistant

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

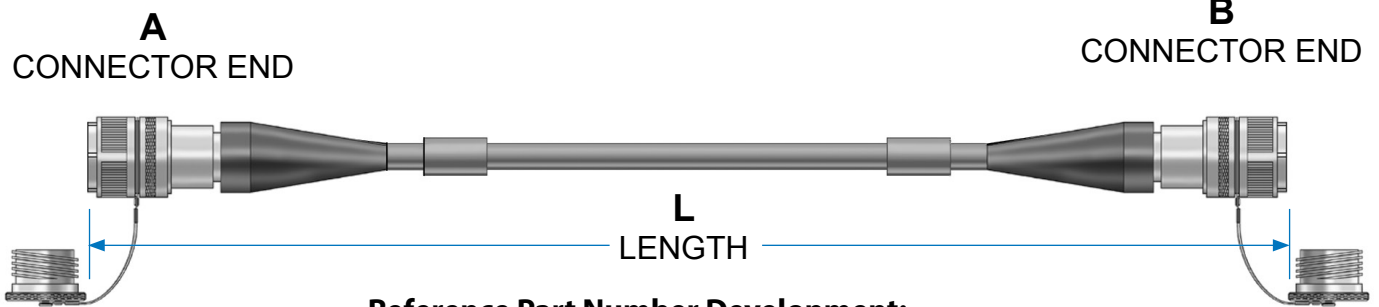
Overmolded Cable Assemblies

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

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

**Fiber optic cable sets - rugged overmolded
MIL-DTL-38999 Series III Type**

ASAP FIBER OPTIC CABLE SETS WITH RUGGED OVERMOLDING



Reference Part Number Development:

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

Basic Part Number

A Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

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

B Terminus Type

- P = Pin Terminus
- S = Socket Terminus

B Connector Type

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

D38999 Series III Connector Class

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

Protective Covers

- L = Less Covers
- Omit for with Covers

Length in Feet

Fiber Size

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

Number of Fibers*

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

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

*See Page G-3 for Insert Arrangements.

Please Consult Factory for Alternative Overmolding Materials Such As Viton® or Neoprene.
Part Numbering is for Reference Purposes Only. A Unique Glenair Part Number Will Be Assigned to Your Cable Order.



Plastic and metal-core conduit assembly

MIL-DTL-38999 Series III Type



ASAP FIBER OPTIC CABLE SETS



Product Features

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

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

Standard Conduit Packaging

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

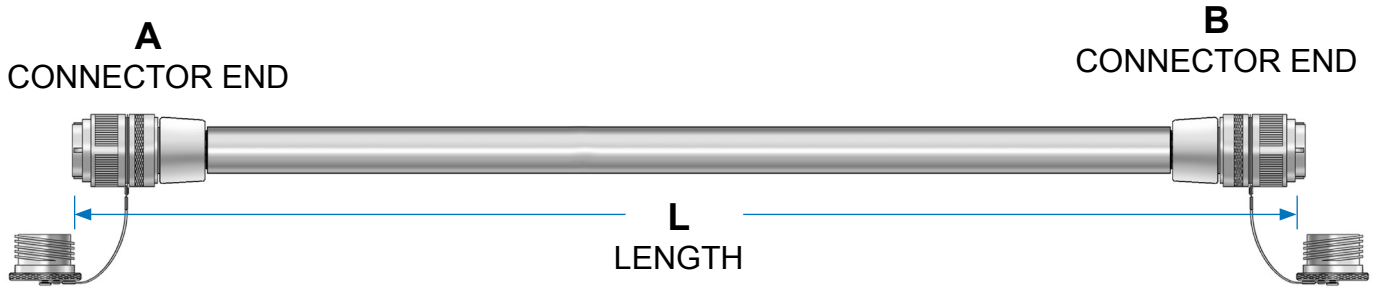
Table I: Conduit Materials Packaging

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

Consult Factory for Other Available Material Types

**Plastic and metal-core conduit assembly
MIL-DTL-38999 Series III Type**

ASAP FIBER OPTIC CABLE SETS



Reference Part Number Development:

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

Basic Part Number

A Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

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

B Terminus Type

- P = Pin Terminus
- S = Socket Terminus

B Connector Type

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

D38999 Series III Connector Class

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

Protective Covers

- L = Less Covers
- Omit for with Covers

Conduit Materials Package (Table I)

Length in Feet

Fiber Size

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

Number of Fibers*

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

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

*See Page B-3 for Insert Arrangements.

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



Field repairable banding backshell assembly

MIL-DTL-38999 Series III Type



ASAP FIBER OPTIC CABLE SETS WITH BANDING BACKSHELL



Product Features

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

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

Reinforced Cable/Backshell Assemblies

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

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

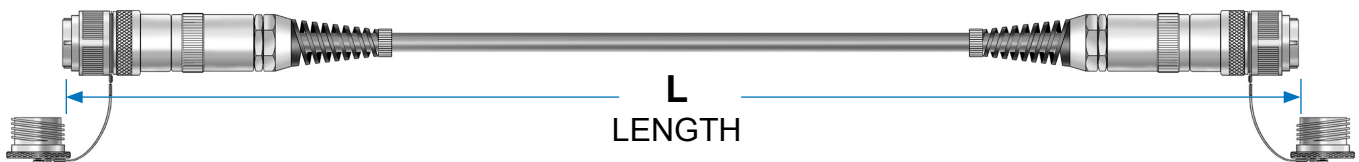
*See Section L For Band-Master™ ATS Tooling Information

Field repairable banding backshell assembly MIL-DTL-38999 Series III Type

ASAP FIBER OPTIC CABLE SETS WITH BANDING BACKSHELL

A
CONNECTOR END

B
CONNECTOR END



Reference Part Number Development:

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

Basic Part Number

A Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

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

B Terminus Type

- P = Pin Terminus
- S = Socket Terminus

B Connector Type

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

D38999 Series III Connector Class

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

Protective Covers

- L = Less Covers
- Omit for with Covers

Length in Feet

Fiber Size

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

Number of Fibers*

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

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

*See Page G-3 for Insert Arrangements.

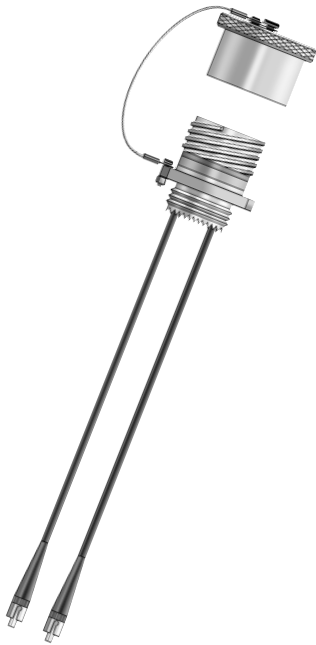
Part Numbering is for Reference Purposes Only. A Unique Glenair Part Number Will Be Assigned to Your Cable Order.



Inside-the-box receptacle/pigtail assembly MIL-DTL-38999 Series III Type



ASAP FIBER OPTIC CABLE SET WITH D38999 SERIES III TO ST, FC, SC, LC & SMA



Product Features

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

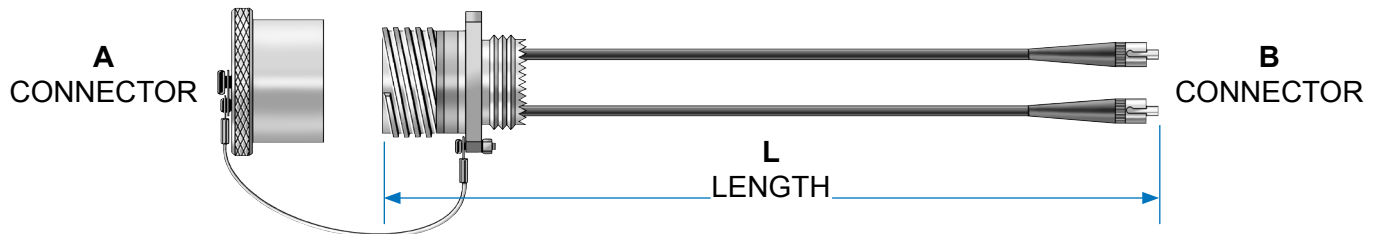
Glenair Terminated and Optically Tested Receptacle/Pigtail Assemblies Are Ready When You Are

Inside-the-Box

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

**Inside-the-box receptacle/pigtail assembly
MIL-DTL-38999 Series III Type**

ASAP FIBER OPTIC CABLE SET WITH D38999 SERIES III TO ST, FC, SC, LC & SMA



Reference Part Number Development:

FO1003 P - 08 - 1 W 02 62 48 L

Basic part Number

Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

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

B Connector Type

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

D38999 Series III Connector Class

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

Protective Covers

- L = Less Covers
- Omit for with Covers

Length in Inches

- 6 Inch Minimum

Fiber Size

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

Number of Fibers*

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

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

*See Page G-3 for Insert Arrangements

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

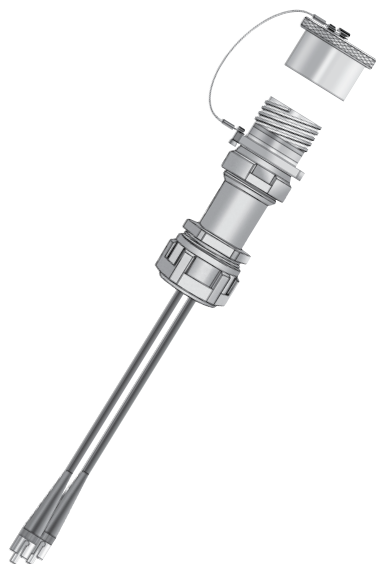


Inside-the-box receptacle/pigtail assembly

MIL-DTL-38999 Series III Type



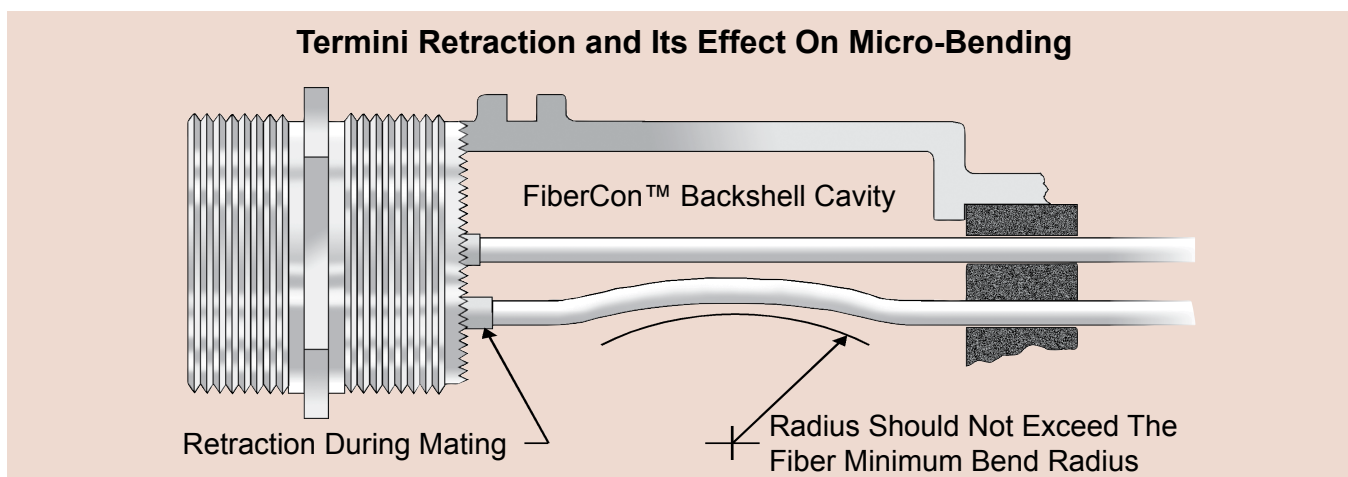
ASAP FIBER OPTIC CABLE SETS WITH D38999 SERIES III TO ST, FC, SC, LC & SMA AND FIBERCON® BACKSHELL



Product Features

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

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

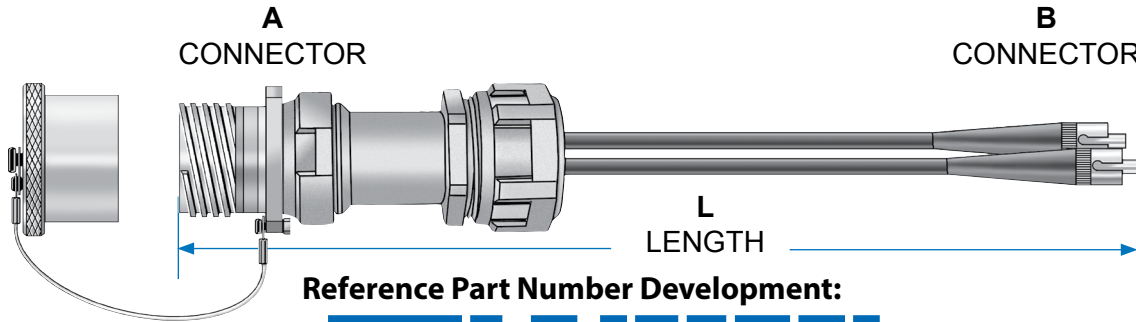


The Glenair FiberCon® Backshell Assembly

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

**Inside-the-box receptacle/pigtail assembly
MIL-DTL-38999 Series III Type**

ASAP FIBER OPTIC CABLE SETS WITH D38999 SERIES III TO ST, FC, SC, LC & SMA AND FIBERCON® BACKSHELL



Reference Part Number Development:

FO1004 P - 08 - 1 W 02 62 48 L

Basic part Number

Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

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

B Connector Type

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

D38999 Series III Connector Class

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

Protective Covers

- L = Less Covers
- Omit for with Covers

Length in Inches

- 6 Inch Minimum

Fiber Size

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

Number of Fibers*

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

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

*See Page G-3 for Insert Arrangements

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



Inside-the-box receptacle/pigtail assembly

MIL-DTL-38999 Series III Type

D38999
Series III**ASAP FIBER OPTIC CABLE SETS WITH LOW-PROFILE BACKSHELL AND CONDUIT
D38999 SERIES III TO ST, FC, SC, LC & SMA****Product Features**

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

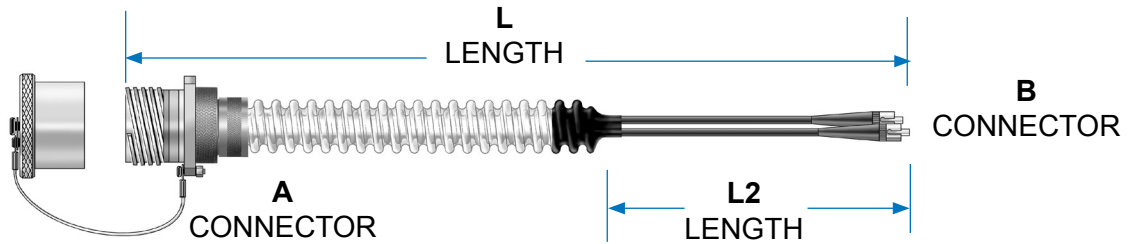
The Perfect Amount of Mechanical Protection for Fiber Media in Non-Environmental Applications

Protective Conduit

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

**Inside-the-box receptacle/pigtail assembly
MIL-DTL-38999 Series III Type**

**ASAP FIBER OPTIC CABLE SETS WITH LOW-PROFILE BACKSHELL AND CONDUIT D38999
SERIES III TO ST, FC, SC, LC & SMA**



Reference Part Number Development:

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

Basic part Number

Terminus Type

- P = Pin Terminus
- S = Socket Terminus

A Connector Type

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

B Connector Type

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

D38999 Series III Connector Class

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

Protective Covers

- L = Less Covers
- Omit for with Covers

"L2" Length in Inches

"L" Length in Feet

- 6 Inch Minimum

Fiber Size

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

Number of Fibers*

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

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

*See Page G-3 for Insert Arrangements

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



SERIES 23
BACKSHELLS AND
ACCESSORIES

 **SuperNine**®



High-performance composite thermoplastic and precision-machined metal connector backshells and accessories



Nowhere in the world does anyone supply such a complete range of high-performance backshells and connector accessories for mil-aero interconnect systems. Glenair is able to offer our SuperNine customers both military standard 85049 backshells and accessories, as well as unique special-purpose EMI/RFI and environmental backshells designed for higher performance requirements. This section of the SuperNine catalog presents just a few of our most innovative backshell designs, including our 3-in-1 Swing Arm™ strain relief, and several lightweight and corrosion-free composite thermoplastic solutions. Glenair's high availability business model ensures all popular part numbers from this section of the catalog are in-stock and ready for immediate, same-day shipment.



Glenair, Inc.
1211 Air Way
Glendale, CA 91201-2497
818-247-6000
sales@glenair.com
www.glenair.com

Product selection guide
MIL-DTL-38999 Series III type



Backshells and Accessories

- Overview H-2
- MS backshells and accessories H-4
- Interface standards H-6
- Swing-Arm assembly H-26



310-045 H-7
Composite shrink boot adapter standard profile with self-locking rotatable coupling nut



440-143 H-8
Composite EMI/RFI backshell with Qwik-Ty strain relief, banding platform, and shrink boot groove



440-144 H-10
Composite micro banding backshell with shrink boot groove, and self-locking coupling



470-017 H-12
StarShield™ EMI/RFI composite shield termination backshell



770-003 H-14
Series 77 heat shrink boots



620-072 H-16
Composite Swing-Arm™ strain-relief clamp with self-locking rotatable coupling



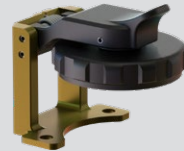
627-233 H-18
Composite Swing-Arm™ Flex strain-relief, with lace type strain relief or band, direct interface



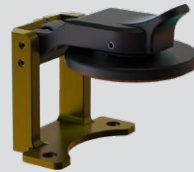
620-084 H-20
Composite EMI/RFI Swing-Arm™ strain-relief clamp with drop-in EMI/RFI banding porch



319-180 H-22
Composite EMI/RFI Swing-Arm™ strain relief with shield sock and self-locking rotatable coupling



667-448 H-26
ProSeal™ threaded closure seal, full environmental protective cover



667-449 H-28
Pressure seal, dust and immersion resistant protective cover



660-049 and 660-050 H-30
Composite protective covers



239-200 H-32
Plug cover for 233-215 piston sealed connector



660-121 H-33
Composite self-locking receptacle covers





SERIES 23

SuperNine®

Rugged metal and lightweight composite backshells and accessories for every application requirement

- Tens of thousands of popular part numbers in inventory ready for same-day shipment
- Fast turnaround on non-standard and made-to-order accessories, typically only two to three weeks
- RoHS compliant plating options

H



Space Grade Quick Clamp Backshells



Series 620 Strain Relief Clamps



Ultra Low-Profile EMI/RFI Backshells



StarShield "Zero Length" Individual Shield Termination Backshells



Self-Locking and Standard Protective Covers



High-Performance Banding Backshells



**Conductively-plated composite accessories:
Outstanding corrosion resistance, weight
reduction, and durability**

- High temperature, high strength engineering composite thermoplastics for maximum strength and durability
- Total immunity to galvanic corrosion
- Up to 70% weight reduction compared to standard metal connectors and accessories
- Hundreds of innovative, tooled designs
- All popular part numbers in stock and ready for immediate, same-day shipment
- Conductive platings including RoHS versions



Glenair composite interconnect components are 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 Swing-Arm™ EMI/RFI Shield Sock



Composite Piggyback Accessory with Partially Recovered Boot



Composite Swing-Arm™ Strain Relief



Composite Shrink Boot/Banding Adapter



Composite Plug and Receptacle Protective Covers



1000 HOUR GREY™ NI-PTFE NICKEL FLUOROCARBON POLYMER PLATING

The MIL-DTL-38999 Rev L detail specification lists Nickel Fluorocarbon Polymer as a qualified Cadmium free plating alternative. This highly conductive, 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



Military standard backshells and accessories selection guide MIL-DTL-38999

Military Connector Specification	 36 Non-Environ. Strain Relief Backshells	 38 EMI/RFI Non-Environ. Backshells	 39 EMI/RFI Environmental Backshells	 44 Crimp Ring Backshells	 44 Banding Backshells
MIL-DTL-38999 Series III	M85049/21 Str.	M85049/19 Str.	M85049/18 Str. M85049/78 45° M85049/79 90°	M85049/20 Str.	M85049/88 Str. M85049/88N Str. M85049/89 45° M85049/89N 45° M85049/90 90° M85049/90N 90°

Military Connector Specification	 45 Qwik-Ty Strain Reliefs		 62 Strain Reliefs		 68 Mounting Flanges and Gaskets
	Non-Self-Locking	Self-Locking	Non-Self-Locking	Self-Locking	
MIL-DTL-38999 Series III	M85049/15- 45° M85049/16- 90°	No Ground Lug M85049/15S 45° M85049/16S 90° With Ground Lug M85049/15G 45° M85049/15H 45° M85049/16G 90° M85049/16H 90°	M85049/38 Str. M85049/124 Str. M85049/39 90° M85049/126 90°	M85049/38S Str. M85049/91 Str. M85049/124S Str. M85049/39S 90° M85049/92 90° M85049/126S 90°	M85049/94 Full M85049/95 3/4 M85049/96 1/4 (M85528/1) Full (M85528/2) 3/4 (M85528/3) 1/4

Military Connector Specification	 65 Dummy Stowage Receptacles	 66 Protective Plug Covers	 66 Protective Receptacle Covers	 68 Jam Nuts
MIL-DTL-38999 Series III	D38999/22	D38999/32 Threaded	D38999/33 Threaded	D38999/28

H

Torque Values for Cable Clamp Screws	
Required value in In-Lbs for corrosion resistant/steel plated screws only	
Screw Size	In Aluminum or Corrosion Resistant Steel
2-56	1.5/2.5
4-40	3.5/4.5
6-32	5.0/7.0
8-32	7.0/9.0
10-32	9.0/11.0
.250-20	11.0/13.0

Cable Clamp with Grommet - Torque Values (See Note 3)			
Torque Requirements in In-Lbs		Torque Requirements in In-Lbs	
Clamp Size	Torque Min/Max Values	Clamp Size	Torque Min/Max Values
3	30/40	16	40/60
4	30/40	20	40/60
6	35/55	24	80/100
8	35/55	28	80/100
10	35/55	32	80/100
12	40/60	40	80/100

Military standard backshells and accessories selection guide MIL-DTL-38999

Composite Thermoplastic Backshells and Accessories						
Military Connector Specification				Dust Caps		
	Three-Finger Strain Relief	Banding Adapters	Cable Clamp Strain Relief			
MIL-DTL-38999 Series III	M85049/45 M85049/46	M85049/88 M85049/89 M85049/90	M85049/91 M85049/92	D38999/32 Series III Only	D38999/33 Series III Only	D38999/22

Military Connector Specification	31 Shrink Boot Adapters	319 Shield-Sock Backshells	
		Non-Self-Locking	Self-Locking
MIL-DTL-38999 Series III	M85049/69 Str.	M85049/115 Str. M85049/117 90°	M85049/103 Str.* M85049/104 45°* M85049/105 90°* M85049/115S Str. M85049/117S 90°

Military Connector Specification				
	60 Connector Wrenches	60 Connector Sockets	Non-Self-Locking	Self-Locking
MIL-DTL-38999 Series III	TG90*	600H005*	M85049/14-	M85049/14S

Installation Torque Values for Circular Connector Accessories		
Shell Sizes	MIL-DTL-38999 Series III	Composite Material Coupling Threads (See Note 1)
8, 9, A	51/61	35
3, 10, 10SL, 11, B	71/81	35
7, 12, 12S, 13, C	103/113	45
14, 14S, 15, D	111/121	45
16, 16S, 17, E	111/121	45
18, 19, 27, F	111/121	45
20, 21, 37, G	131/141	80
22, 23, H	131/141	80

Installation Torque Values for Circular Connector Accessories		
Shell Sizes	MIL-DTL-38999 Series III	Composite Material Coupling Threads (See Note 1)
24, 25, 61, J	131/141	80
28, 29	143/153	120
32, 33	143/153	120
36	142/153	120
40	159/169	N/A
44	159/169	N/A
48	159/169	N/A

- 1) Use Glenair 600-091 and 600-007 Torque Tools when tightening hexagonal composite accessory couplings.
- 2) For additional guidance or values/conditions not listed, refer to SAE AIR6151.
- 3) EMI/RFI shielding terminated with conical metal ferrule(s) should employ a minimum recommended torque of 35 in-lb.

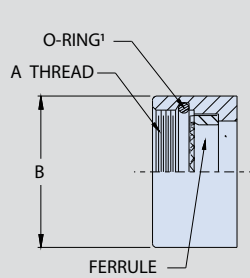


Connector-to-backshell composite accessory interface data MIL-DTL-38999

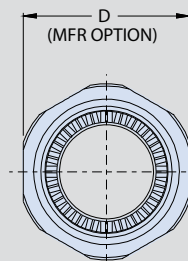
Circular Connector Front End Dimensional Details					
Shell Size Code	Shell Size Reference	A Thread Ref	B Dia Max	C Dia Max	D Flats Ref
9	A	M12 X 1 - 6H	.65 (16.5)	.86 (21.8)	.75 (19.1)
11	B	M15 x 1 - 6H	.77 (19.6)	.98 (24.9)	.88 (22.2)
13	C	M18 x 1 - 6H	.89 (22.6)	1.16 (29.4)	1.00 (25.4)
15	D	M22 x 1 - 6H	1.03 (26.2)	1.28 (32.5)	1.13 (28.6)
17	E	M25 x 1 - 6H	1.15 (29.2)	1.41 (35.7)	1.25 (31.8)
19	F	M28 x 1 - 6H	1.28 (32.5)	1.52 (38.5)	1.38 (35.1)
21	G	M31 x 1 - 6H	1.41 (35.8)	1.64 (41.7)	1.50 (38.1)
23	H	M34 x 1 - 6H	1.53 (38.9)	1.77 (44.9)	1.63 (41.3)
25	J	M37 x 1 - 6H	1.66 (42.2)	1.89 (48.0)	1.75 (44.5)

Connector Designator **H**

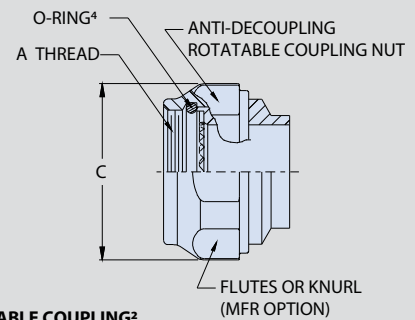
SPECIFICATION
MIL-DTL-38999
EN3645
SERIES
III & IV



DIRECT COUPLING³



ROTATABLE COUPLING²



NOTES

1. Direct coupling supplied with O-ring for moisture sealing.
2. To add O-ring to rotatable coupling append modifier code 101A to end of part number
3. Consult factory for direct coupling part numbers.
4. Connector shell size are for reference only; do not use in part numbers.
5. Consult factory for accessory interface data not listed.
6. Use Glenair 600-091 or 600-157 tool to tighten coupling nut. Rubber jaw pliers or strap wrench may damage the parts.

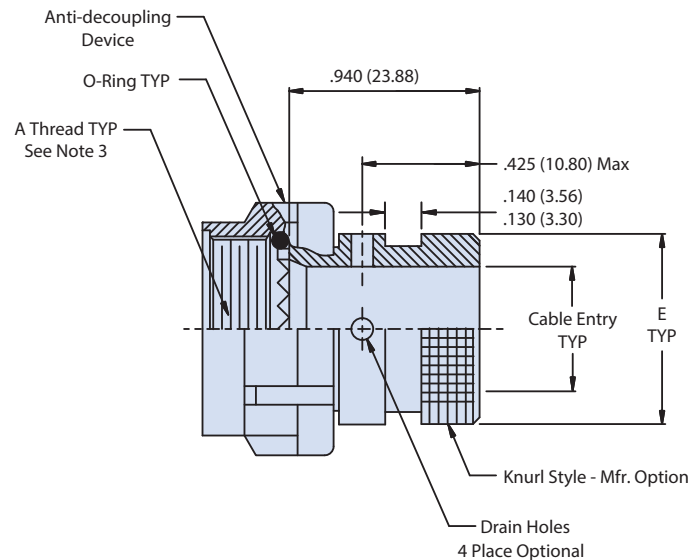
310-045 Composite shrink boot adapter MIL-DTL-38999

COMPOSITE SHRINK BOOT ADAPTER WITH SELF-LOCKING COUPLING NUT

Part Number Development	
Sample Part Number	310 H S 045 XM 15 D T
Product Series	Composite shrink boot adapter
Connector Designator	H = MIL-DTL-38999 Series III
Angular Function	S = Straight
Basic Number	045
Finish	XB = No plating, black XD = No Plating, Desert Tan XM = 2000 hr, Electroless Nickel XW = 2000 hr, Cadmium O/D over Electroless Nickel XMT = 2000 hr, Nickel-PTFE 1000 Hour Gray
Connector Shell Size	See dimensions table
Drain Holes	D = Drain holes, omit for none.
Shrink Boot Option	T = Shrink boot, omit for none.



Dimensions			
H Code Shell Size	E Max	Cable Entry Min.	Shrink Boot
09	.533 (13.5)	.250 (6.4)	770-003S102
11	.605 (15.4)	.355 (9.0)	770-003S103
13	.774 (19.7)	.491 (12.5)	770-003S103
15	.838 (21.3)	.565 (14.4)	770-003S103
17	.963 (24.5)	.690 (17.5)	770-003S104
19	1.042 (26.5)	.769 (19.5)	770-003S104
21	1.217 (30.9)	.894 (22.7)	770-003S106
23	1.355 (34.4)	1.019 (25.9)	770-003S107
25	1.443 (36.7)	1.134 (28.8)	770-003S107



NOTES

- See composite accessory interface data on page H-6
- Straight shrink boot supplied with "T" option. See dimensions table for part number
- O-ring standard for H code adapter
- Material/finish
 - Adapter: high temperature thermoplastic, natural/see part number development, finish
 - Coupling nut: high temperature thermoplastic, black/N.A.
 - O-ring: silicone/N.A.
 - Shrink boot: elastomeric/N.A.



440-143 Composite EMI/RFI Banding Adapter with Qwik-Ty MIL-DTL-38999

Part Number Development															
Sample Part Number	440					H	S	143	XM	15	09	D	B	T	S
Product Series	440 = Qwik-Ty EMI/RFI micro-banding backshells														
Connector Designator	H = MIL-DTL-38999 Series III														
Angular Function and Profile	A = 90° Standard Profile E = 90° Low Profile, Split W = 90° Low Profile, Solid					D = 90° Med Profile, Split S = Straight T = 45° Elbow									
Basic Number	143														
Finish	XB = No plating, black XM = 2000 hr, Electroless Nickel XD = No Plating, Desert Tan XMT = 2000 hr, Nickel-PTFE 1000 Hour Gray XW = 2000 hr, Cadmium O/D over Electroless Nickel														
Connector Shell Size ¹	See dimensions table														
Cable Entry Code ⁶	See cable entry code table; omit for symbol D, W and E low profile 90° configurations.														
Drain Hole Option	D = With drain hole, omit if not required														
Band Option	B = Supplied with band, omit for none.														
Shrink Boot Option	T = Shrink boot, omit for none.														
Shield Termination Slot ⁷	S = With slot, omit for none.														

Dimensions											
Shell Size	Entry Code*	K ± .03	L ⁶	M ⁶	N Max	P ±.09	R ±.09	S Max	T Max	W ⁶	X (Max) ⁶
09	04	1.042 (26.5)	.304 (7.7)	.160 (4.1)	.63 (16.0)	.69 (17.5)	.88 (22.4)	1.36 (34.5)	.81 (20.6)	.232 (5.89)	.91 (23.11)
11	05	1.107 (28.1)	.432 (11.0)	.174 (4.4)	.66 (16.8)	.75 (19.1)	1.00 (24.5)	1.42 (36.1)	.81 (20.6)	.303 (7.70)	.97 (24.64)
13	07	1.174 (29.8)	.546 (13.9)	.195 (5.0)	.72 (18.3)	.81 (20.6)	1.13 (28.7)	1.48 (37.6)	.82 (20.8)	.370 (9.40)	1.02 (25.91)
15	09	1.241 (31.5)	.670 (17.0)	.315 (8.0)	.83 (21.1)	.88 (22.4)	1.31 (33.3)	1.55 (39.4)	.88 (22.4)	.492 (12.50)	1.08 (27.43)
17	05 and 11	1.305 (33.1)	.796 (20.2)	.385 (9.8)	.91 (23.1)	.94 (23.9)	1.38 (35.1)	1.61 (40.9)	.93 (23.6)	.590 (14.99)	1.16 (29.46)
19	07 and 13	1.371 (34.8)	.902 (22.9)	.445 (11.3)	.93 (23.6)	.97 (24.6)	1.44 (36.6)	1.64 (41.7)	.99 (25.1)	.673 (17.09)	1.25 (31.75)
21	09 and 15	1.438 (36.5)	1.027 (26.1)	.525 (13.3)	1.04 (26.4)	1.06 (26.9)	1.63 (41.4)	1.73 (43.9)	1.06 (26.9)	.776 (19.71)	1.34 (34.04)
23	11 and 16	1.505 (38.2)	1.152 (29.3)	.595 (15.1)	1.12 (28.4)	1.13 (28.7)	1.75 (44.5)	1.80 (45.7)	1.13 (28.7)	.873 (22.17)	1.43 (36.32)
25	07, 13 and 17	1.572 (39.9)	1.276 (32.4)	.655 (16.6)	1.18 (30.0)	1.19 (30.2)	1.88 (47.8)	1.86 (47.2)	1.05 (26.7)	.909 (23.09)	1.54 (39.12)
25 ⁴	--	1.850 (47.0)	1.460 (37.1)	.450 (11.4)	--	--	--	--	1.05 (26.7)	--	--

*For straight, 45° and 90° standard configuration

Cable Entry Code ⁶						
Entry Code	D ± .030	E Ref	F Ref	G Ref	H ±.060	J ±.090
04	.25 (6.4)	.187 (4.7)	.312 (7.9)	.512 (13.0)	.72 (18.3)	.87 (22.1)
05	.31 (7.9)	.187 (4.7)	.312 (7.9)	.512 (13.0)	.75 (19.1)	.93 (23.6)
07	.44 (11.2)	.187 (4.7)	.312 (7.9)	.512 (13.0)	.75 (19.1)	1.00 (25.4)
09	.56 (14.2)	.219 (5.6)	.375 (9.5)	.630 (16.0)	.76 (19.3)	1.03 (26.2)
11	.68 (17.3)	.219 (5.6)	.375 (9.5)	.630 (16.0)	.78 (19.8)	1.05 (26.7)
13	.81 (20.6)	.219 (5.6)	.375 (9.5)	.630 (16.0)	.79 (20.1)	1.06 (26.9)
15	.94 (23.9)	.219 (5.6)	.375 (9.5)	.630 (16.0)	.82 (20.8)	1.09 (27.7)
16	1.00 (25.4)	.219 (5.6)	.375 (9.5)	.630 (16.0)	.86 (21.8)	1.13 (28.7)
17	1.16 (29.5)	.250 (6.4)	.437 (11.1)	.630 (16.0)	.89 (22.6)	1.16 (29.5)

SuperNine® Backshells and accessories

440-144 Composite EMI/RFI Banding Adapter

MIL-DTL-38999



Part Number Development														
Sample Part Number	440				H	S	144	XM	15	09	D	B	T	S
Product Series	440 = EMI/RFI non-environmental, composite self-locking, micro-band backshell													
Connector Designator	H = MIL-DTL-38999 Series III													
Angle and Profile	S = Straight T = 45° Elbow W = 90° Low Profile, Solid Profile A = 90° Standard E = 90° Low Profile, Split D = 90° Med Profile, Split													
Basic Number	144													
Finish	XM = Electroless Nickel XW = Cadmium O/D over Electroless Nickel XMT = Nickel-PTFE 1000 Hour Gray XMD = Electroless Nickel - Enhanced All finishes are 2000 hour corrosion resistant													
Connector Shell Size	See dimensions table													
Cable Entry Code	See cable entry table; omit for low profile 90° symbols D, E and W only.													
Drain Hole Option	D = With Drain Hole; omit if not required													
Band Option	B = Supplied with Band, omit for none.													
Shrink Boot Option	T = Shrink Boot, omit for none.													
Shield Termination Slot	S = with Slot, omit for none.													

Dimensions												
Shell Size	Entry Code*	G Max	H ± .03 (0.76)	J	K	L ±.09 (2.29)	M ±.09 (2.29)	N Max	P Max	W Dim	X Max	Sym W, E Shrink Boot Option
09	04	.63 (16.0)	1.042 (26.5)	.304 (7.7)	.160 (4.1)	.69 (17.5)	.88 (22.4)	1.36 (34.5)	.81 (20.6)	.232 (5.89)	.91 (23.11)	770-003S102
11	05	.66 (16.8)	1.107 (28.1)	.432 (11.0)	.174 (4.4)	.75 (19.1)	1.00 (24.5)	1.42 (36.1)	.81 (20.6)	.303 (7.70)	.97 (24.64)	770-003S103
13	07	.72 (18.3)	1.174 (29.8)	.546 (13.9)	.195 (5.0)	.81 (20.6)	1.13 (28.7)	1.48 (37.6)	.82 (20.8)	.370 (9.40)	1.02 (25.91)	770-003S103
15	09	.83 (21.1)	1.241 (31.5)	.670 (17.0)	.315 (8.0)	.88 (22.4)	1.31 (33.3)	1.55 (39.4)	.88 (22.4)	.492 (12.50)	1.08 (27.43)	770-003S103
17	05 & 11	.91 (23.1)	1.305 (33.1)	.796 (20.2)	.385 (9.8)	.94 (23.9)	1.38 (35.1)	1.61 (40.9)	.93 (23.6)	.590 (14.99)	1.16 (29.46)	770-003S104
19	07 & 13	.93 (23.6)	1.371 (34.8)	.902 (22.9)	.445 (11.3)	.97 (24.6)	1.44 (36.6)	1.64 (41.7)	.99 (25.1)	.673 (17.09)	1.25 (31.75)	770-003S105
21	09 & 15	1.04 (26.4)	1.438 (36.5)	1.027 (26.1)	.525 (13.3)	1.06 (26.9)	1.63 (41.4)	1.73 (43.9)	1.06 (26.9)	.776 (19.71)	1.34 (34.04)	770-003S105
23	11 & 16	1.12 (28.4)	1.505 (38.2)	1.152 (29.3)	.595 (15.1)	1.13 (28.7)	1.75 (44.5)	1.80 (45.7)	1.13 (28.7)	.873 (22.17)	1.43 (36.32)	770-003S106
25	07, 13 & 17	1.18 (30.0)	1.572 (39.9)	1.276 (32.4)	.655 (16.6)	1.19 (30.2)	1.88 (47.8)	1.86 (47.2)	1.05 (26.7)	.909 (23.09)	1.54 (39.12)	770-003S106
25	--	--	1.850 (47.0)	1.460 (37.1)	.450 (11.4)	--	--	--	1.05 (26.7)	.909 (23.09)	1.54 (39.12)	770-003S106

*Available for Straight, 45° and 90° Standard Configuration

Cable Entry				
Entry Code	D ± .030 (0.76)	H ± .060 (1.52)	J ± .090 (2.29)	Sym S, T, A Shrink Boot (Option T)
04	.25 (6.4)	.72 (18.3)	.87 (22.1)	770-003S102
05	.31 (7.9)	.75 (19.1)	.93 (23.6)	770-003S102
07	.44 (11.2)	.75 (19.1)	1.00 (25.4)	770-003S103
09	.56 (14.2)	.76 (19.3)	1.03 (26.2)	770-003S103
11	.68 (17.3)	.78 (19.8)	1.05 (26.7)	770-003S104
13	.81 (20.6)	.79 (20.1)	1.06 (26.9)	770-003S105
15	.94 (23.9)	.82 (20.8)	1.09 (27.7)	770-003S106
16	1.00 (25.4)	.86 (21.8)	1.13 (28.7)	770-003S106
17	1.16 (29.5)	.89 (22.6)	1.16 (29.5)	770-003S107

NOTES

1. See composite accessory interface data on page H-6
2. Assembly identified with manufacturer's name and P/N space permitting
3. for effective grounding, connector with conductive finish should be used
4. Glenair 600 series backshell assembly tools are recommended for assembly and installation
5. For Sym 'E' and 'D' low profile split (SS24/25) dimensions used indicated row in dimensions table
6. For interface O-ring seal, contact engineering

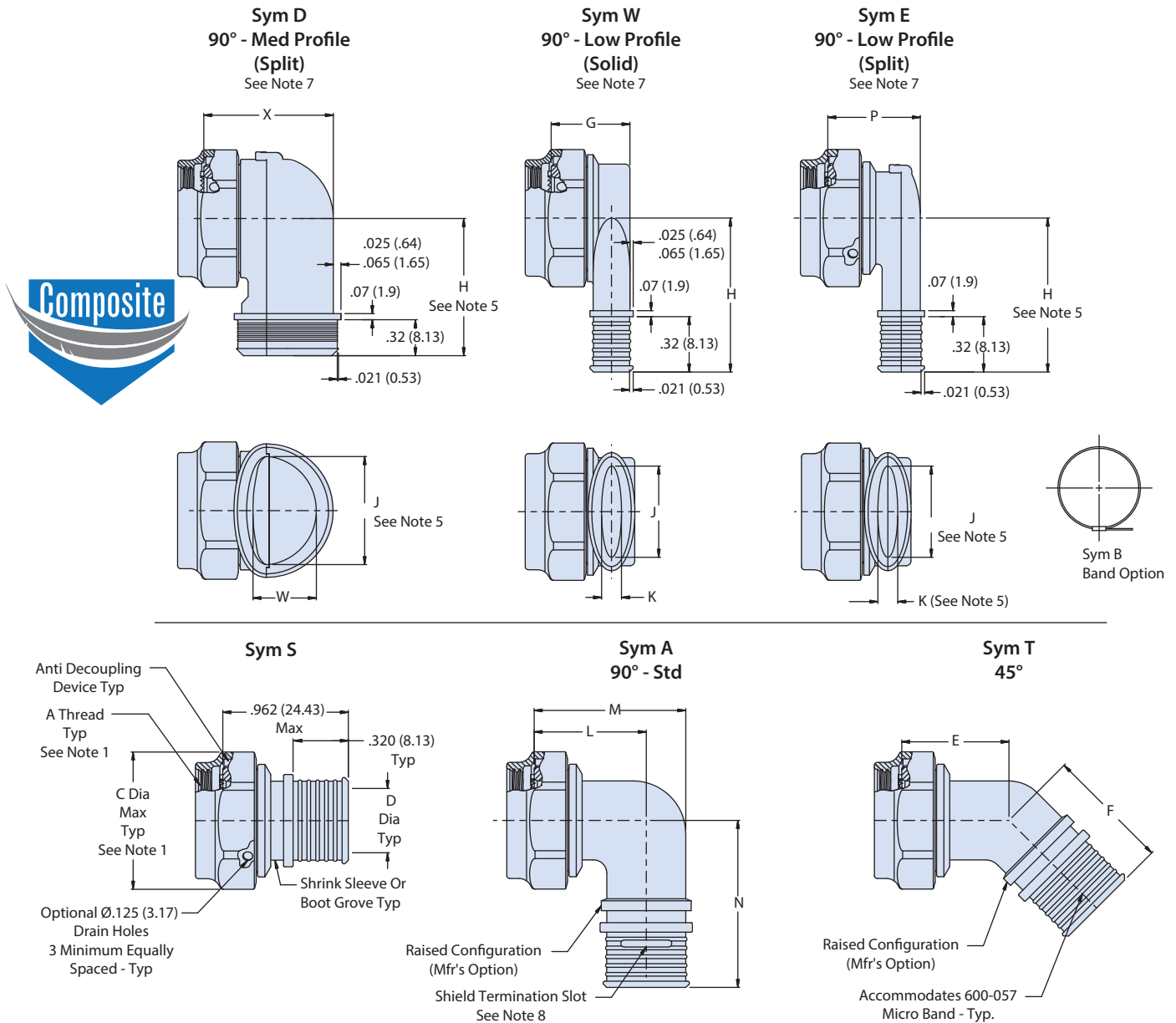
SuperNine® Backshells and accessories

440-144 Composite EMI/RFI Banding Adapter

MIL-DTL-38999



COMPOSITE BACKSHELL WITH SELF-LOCKING COUPLING NUT, SHRINK BOOT GROOVE AND MICRO-BAND BANDING PORCH



NOTES (CONT.)

- Entry code is not used for angular functions 'W', 'E', and 'D'.
Entry dimensions for these configurations are per shell size in dimensions table
- A minimum of two shield terminations slots will be supplied on backshell with exception to symbol, 'E', which are supplied with one slot
- Material/finish
 - Adapter: high grade engineering thermoplastic/see P/N development, finish
 - coupling nut and anti-decoupling device: high grade engineering thermoplastic/supplied unplated, black



470-017 Composite Starshield® EMI/RFI zero length shield termination adapter for MIL-DTL-38999

Part Number Development														
Sample Part Number	470					H	S	017	XM	17	6	G	DS	-T
Product Series	StarShield™ zero-termination-length backshell													
Connector Designator	H = MIL-DTL-38999 Series III													
Angle	S = Straight T = 45° W = 90°													
Basic Number	017 = StarShield composite backshell													
Finish	XMT = 2000 hr, nickel-PTFE, 1000 hour gray XW = 2000 hr, cadmium O/D over electroless nickel XB = No plating, black XM = 2000 hr, electroless nickel XD = No plating, desert tan Enhanced performance finishes XSM = Electroless nickel XSW = Enhanced cadmium, olive drab													
Order Number	See Dimensions Table													
Ferrule Quantity Code	See Dimensions Table													
Rear End Option	G = Gland Nut M = Micro Band Nut with Band N = Micro Band Nut without Band													
Drilled Star	DS = Drilled Star, omit if not required.													
Shrink Boot	T = Shrink Boot, omit for none; See Shrink Boot Table													



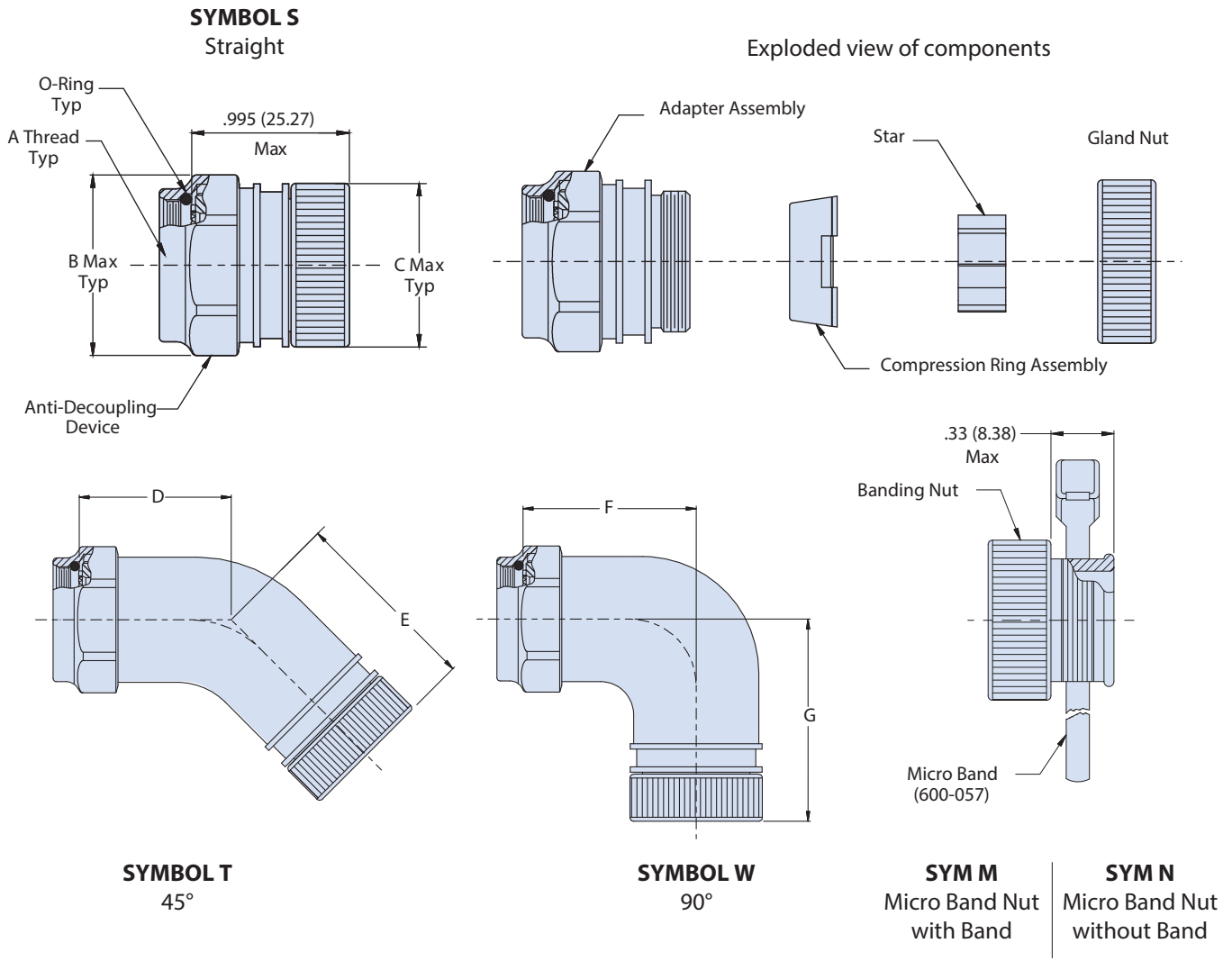
Shrink Boot	
Shell Size	Shrink Boot Ref. Part No.
09	770-001S1 04
11	770-001S1 06
13	770-001S1 06
15	770-001S1 07
17	770-001S1 07
19	770-001S1 08
21	770-001S1 08
23	770-001S1 08
25	770-001S1 09

H

Dimensions											
Order Number	Shell Size Code	Shell Size Reference	A Thread ISO Metric	B Dia Max	C Dia Max	D Max	E Max	F Max	G Max	Ferrule Quantity ⁴	
										Std.	Opt.
09	A	9	M12 X 1 - 6H	.83 (21.1)	.681 (17.30)	.49 (12.45)	1.00 (25.4)	.71 (18.03)	1.14 (28.96)	1	-
11	B	11	M15 X 1 - 6H	.96 (24.4)	.885 (22.48)	.51 (12.95)	1.02 (25.91)	.77 (19.56)	1.20 (30.48)	2	-
13	C	13	M18 X 1 - 6H	1.09 (27.7)	.917 (23.29)	.55 (13.97)	1.04 (26.42)	.83 (21.08)	1.26 (32.00)	3	-
15	D	15	M22 X 1 - 6H	1.22 (31.0)	1.055 (26.80)	.57 (14.48)	1.08 (27.43)	.89 (22.61)	1.32 (33.53)	5	-
17	E	17	M25 X 1 - 6H	1.35 (34.3)	1.173 (29.79)	.59 (14.99)	1.10 (27.94)	.95 (24.13)	1.38 (35.05)	6	7
19	F	19	M28 X 1 - 6H	1.48 (37.6)	1.291 (32.79)	.61 (15.49)	1.12 (28.45)	1.01 (25.65)	1.44 (36.58)	7	-
21	G	21	M31 X 1 - 6H	1.62 (41.1)	1.409 (37.79)	.65 (16.51)	1.14 (28.96)	1.08 (27.43)	1.52 (36.61)	9	11
23	H	23	M34 X 1 - 6H	1.76 (44.70)	1.527 (38.79)	.67 (17.02)	1.18 (29.97)	1.14 (28.96)	1.57 (39.88)	10	13
25	J	25	M37 X 1 - 6H	1.86 (47.24)	1.665 (42.29)	.71 (18.03)	1.22 (30.99)	1.20 (30.48)	1.63 (41.40)	12	17

470-017 Composite Starshield® EMI/RFI zero length shield termination adapter for MIL-DTL-38999

COMPOSITE STARSHIELD® BACKSHELL WITH SELF-LOCKING COUPLING NUT AND SHRINK BOOT GROOVE



NOTES

- Glenair 600 series backshell assembly tools are recommended for assembly and installation.
- Ferrule kit sold separately.
 - 687-764 ferrule and HST device kit
 - 687-809 ferrule and sealing device kit
 - 687-748 solder ferrule
 - 687-841-01 HST flex device
- Star not supplied with order number 09. Drilled star is available on order numbers 15-25 only. If optional ferrule qty per Table 1 is selected, one split and one solid star will be supplied
- Material/finish
 - Adapter, compression ring and star: high grade engineering thermoplastic/ see part number development, finish
 - Nuts: high grade engineering thermoplastic/color black
 - O-ring: silicone/N.A.
 - Compression ring retainer: stainless steel/passivate





HEAT SHRINK BOOTS

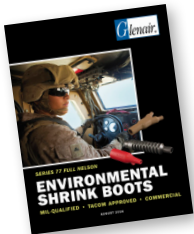


About User-Installed Adhesive

Heat-shrink boots are not watertight unless equipped with pre-coated or user-installed adhesives. When heat is applied to the boot, the adhesive melts and fixes the boot to the adapter and cable jacket to provide the necessary sealing as well as mechanical strain-relief. For maximum performance Glenair recommends Type U user-installed two-part epoxy adhesive which offers reduced boot installation time and easier installation. Pre-coated boots require additional care to install because the boot must be heated sufficiently to activate the epoxy, at the risk of overheating the overall assembly. A single 50 ml duo syringe can coat many boots. The duo syringe can be re-capped for re-use. Inexpensive mixing nozzles must be discarded after each use.

NOTE: Glenair high-performance two part epoxy meets VG95343 part 15.

See next page for ordering information on user-installed two part epoxy adhesive.



Series 77 "Full Nelson" Shrink Boot Catalog has additional boot styles, materials and adhesives, installation instructions and other heatshrink products. Contact Glenair or go to www.glenair.com.

Full Nelson heat shrink boots provide mechanical and environmental protection. Shape-memory polymer returns to as-molded shape when heat is applied. Use with 310-045 composite shrink boot adapter. Boot lip fits adapter groove for precise fit. Semi-rigid high performance elastomer resists high temperature and withstands exposure to petroleum-based fluids and fuels. Also available with non-halogenated flame-retardant polyolefin for use where limited fire hazard is required.

MATERIAL SELECTION GUIDE

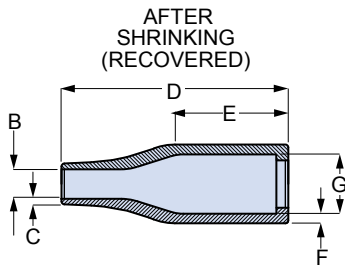
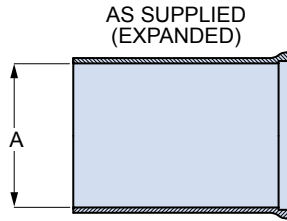
- 1 High Performance Elastomer** -75°C to +150°C. Semi-rigid high performance elastomer combines excellent resistance to fuels, oils and solvents with superior performance at extreme temperatures. Material meets the requirements of VG95343 Type 6, BSG 198-5-DE, EN62329-102 and SAE AS5258 Type H. These boots are recommended for demanding applications such as military vehicles and petrochemical exploration.
- 2 Zero Halogen Polyolefin** -40°C to +130°C. Low Smoke Zero Halogen (LSZH) polyolefin boots meet low smoke and toxicity requirements of shipboard, transit and aircraft systems. Oxygen index greater than 30%, smoke index less than 20, and toxicity index under 3 per 100 grams. Material meets requirements of NAVSEA 5617649, VG95343 Part 28 and 29, BSG 198-5-DF, EN62329-101 and SAE AS5258 Type G. Good resistance to oils, fuels and solvents.

PRE-COATED ADHESIVE SELECTION GUIDE

- W1 Low Smoke Zero halogen (LSZH) polyamide hot melt adhesive Coating.** Bonds well to a variety of substrates. Good creep resistance at elevated temperatures. Excellent bond strength at low temperature. Good resistance to fuels and oils. -55°C to +125°C. Compatible with Type 1 and Type 2 boot materials.
- R High Temperature Epoxy Adhesive Coating.** Glenair's highest performance pre-coated adhesive. The material requires careful installation using trained operators. -75°C to 150°C. Withstands prolonged high temperature immersion in fuels and oils. Excellent peel adhesion on a wide range of materials.

Part Number Development							
Series	Material	Boot Size				Adhesive Lining	
770-003S Heat Shrink Boot; Lipped, Straight	1 High Performance Semi-Rigid Elastomer, -75°C to +150°C 2 Low Smoke, Zero Halogen; Semi-Flexible Polyolefin; -30°C to +135°C					Omit for no adhesive lining. W1 Hot Melt Adhesive Low Smoke, Zero Halogen -55°C to +125°C R High Temperature Epoxy Adhesive -75°C to +150°C.	
		Adapter Diameter					
		Boot Size	Inches		mm.		
			Min.	Max.	Min.		Max.
		02	.350	.600	8.9		15.2
		03	.450	.850	11.4		21.6
		04	.600	1.000	15.2		25.4
		05	.750	1.200	19.1		30.5
06	.900	1.350	22.9	34.3			
07	1.250	1.650	31.8	41.9			
Sample Part Number							
770-003S	2	06				R	

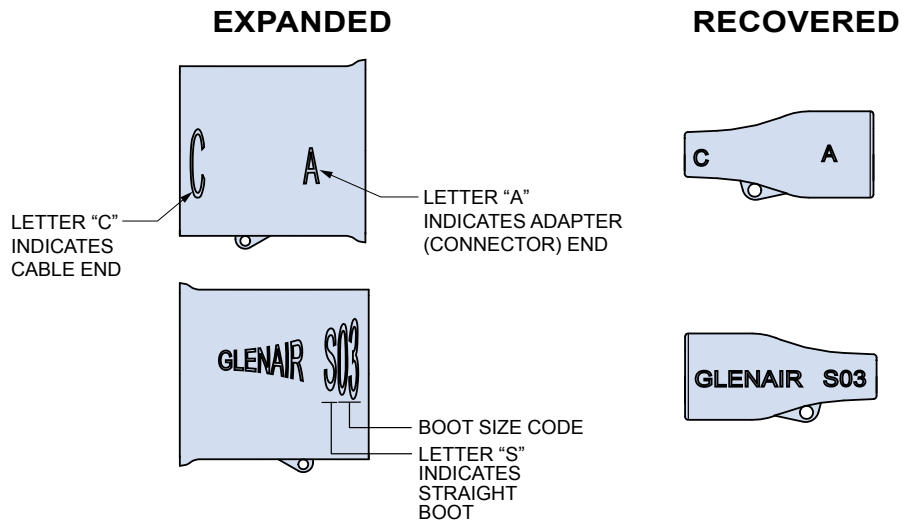
HEATSHRINK BOOT DIMENSIONS



Boot Size	A Min.		B Max.		C ± 20%		D ± 10%		E Ref.		F ± 30%		G Max.	
	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.
02	.669	17.0	.138	3.5	.028	0.7	1.181	30.0	.728	18.5	.051	1.3	.276	7.0
03	.945	24.0	.197	5.0	.035	0.9	1.496	38.0	.748	19.0	.063	1.6	.413	10.5
04	1.181	30.0	.236	6.0	.039	1.0	2.165	55.0	1.181	30.0	.071	1.8	.551	14.0
05	1.260	32.0	.276	7.0	.047	1.2	2.638	67.0	1.299	33.0	.071	1.8	.709	18.0
06	1.417	36.0	.335	8.5	.047	1.2	3.150	80.0	1.575	40.0	.079	2.0	.866	22.0
07	1.693	43.0	.394	10.0	.051	1.3	3.898	99.0	2.165	55.0	.087	2.2	1.102	28.0

BOOT IDENTIFICATION MARKING

Heatshrink boots are identified with molded-in lettering. This lettering shows the boot type, boot size and orientation. Position the boot so that the lipped "A" end is toward the adapter and the "C" end is toward the cable. Assembly instructions are in the *Series 77 "Full Nelson" Environmental Shrink Boots* catalog, available at www.glenair.com.



USER-INSTALLED BOOT ADHESIVE, DISPENSING GUN AND MIXING NOZZLE



Part Number
779-001

High performance flexible two part thermoset epoxy provides high strength flexible bond from -55° to 150°C. 50 ml duo syringe fits standard dispensing guns. Use with square green mixing nozzle sold separately. 12 hour cure time at 20°C, 1 hour at 85°C, 30 minutes at 150°C. Apply to inside of boot with wooden spatula. 18 month shelf life.



Part Number
779-002

Twin push-rod 1:1 ratio epoxy dispensing gun for use with duo syringe epoxy and mixing nozzle sold separately. Durable heavy-duty plastic. Gun type hand grip with ratcheting trigger to advance push-rods.



Part Number	Count Per Pack
779-003	12

1:1 ratio mixing nozzle attaches to duo syringe with 1/2 turn and locks into place. Nozzle provides consistent mixing of resin and hardener. Kit consists of (12) nozzles.



620-072 Non EMI/RFI direct Swing-Arm™ cable clamp strain relief backshell for MIL-DTL-38999



Part Number Development								
Sample Part Number	620				H	072	XB	15
Product Series	Strain relief clamp							
Connector Designator	H = MIL-DTL-38999 Series III							
Basic Number	072							
Finish	Z1 = SST/passivate Clamp body, coupling nut, saddles			XB = Composite/No plating, black Clamp body, coupling nut, saddles				
Dash Number	See Dimensions Table							

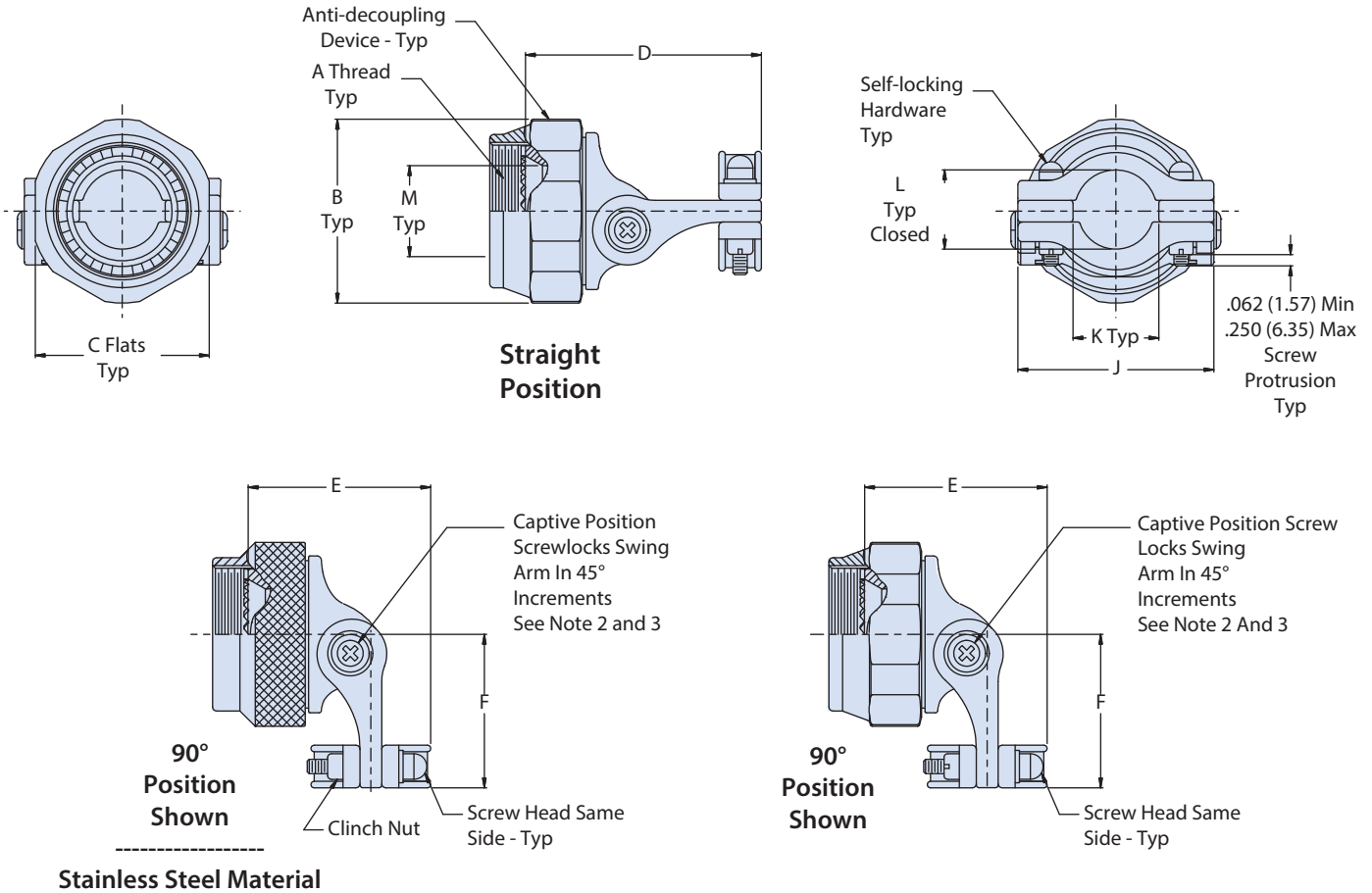
Dimensions								
Connector Designator H			C Flats					
Dash No.	Shell Size Ref	A Thread ISO Metric	B Max Dia	Max	Min	D Max	E Max	F Max
09	A	M12 x 1.0-6H	.812 (20.62)	.750 (19.05)	.736 (18.69)	1.40 (35.6)	.85 (21.6)	.84 (21.3)
11	B	M15 x 1.0-6H	.938 (23.83)	.875 (22.23)	.860 (21.84)	1.44 (36.6)	.89 (22.6)	.90 (22.9)
13	C	M18 x 1.0-6H	1.125 (28.58)	1.000 (25.40)	.980 (24.89)	1.52 (38.6)	1.04 (26.4)	1.00 (25.4)
15	D	M22 x 1.0-6H	1.250 (31.75)	1.125 (28.58)	1.100 (27.94)	1.53 (38.9)	1.14 (29.0)	1.07 (27.2)
17	E	M25 x 1.0-6H	1.375 (34.93)	1.250 (31.75)	1.224 (31.09)	1.63 (41.4)	1.26 (32.0)	1.13 (28.7)
19	F	M28 x 1.0-6H	1.500 (38.10)	1.375 (34.93)	1.348 (34.24)	1.63 (41.4)	1.36 (34.5)	1.20 (30.5)
21	G	M31 x 1.0-6H	1.625 (41.28)	1.500 (38.10)	1.469 (38.00)	1.78 (45.2)	1.45 (36.8)	1.26 (32.0)
23	H	M34 x 1.0-6H	1.750 (44.45)	1.625 (41.28)	1.581 (40.16)	1.81 (46.0)	1.53 (38.9)	1.33 (33.8)
25	J	M37 x 1.0-6H	1.875 (47.63)	1.750 (44.45)	1.690 (42.93)	1.84 (46.7)	1.60 (40.6)	1.40 (35.6)

Dimensions (Cont.)								
Connector Designator H			G Max	H Max	J Max	K Min	L Max	M Min
Dash No.	Shell Size Ref	A Thread ISO Metric	G Max	H Max	J Max	K Min	L Max	M Min
09	A	M12 x 1.0-6H	1.33 (33.8)	.76 (19.3)	.98 (24.9)	.22 (5.6)	.265 (6.73)	.264 (6.71)
11	B	M15 x 1.0-6H	1.39 (35.3)	.82 (20.8)	1.05 (26.7)	.27 (6.9)	.310 (7.87)	.390 (9.91)
13	C	M18 x 1.0-6H	1.54 (39.1)	.92 (23.4)	1.20 (30.5)	.35 (8.9)	.390 (9.91)	.504 (12.80)
15	D	M22 x 1.0-6H	1.63 (41.4)	.98 (24.9)	1.30 (33.0)	.47 (11.9)	.506 (12.85)	.630 (16.00)
17	E	M25 x 1.0-6H	1.76 (44.7)	1.08 (27.4)	1.44 (36.6)	.55 (14.0)	.591 (15.01)	.756 (19.20)
19	F	M28 x 1.0-6H	1.83 (46.5)	1.12 (28.4)	1.56 (39.6)	.62 (15.7)	.661 (16.79)	.843 (21.41)
21	G	M31 x 1.0-6H	1.98 (50.3)	1.21 (30.7)	1.69 (42.9)	.70 (17.8)	.744 (18.90)	.969 (24.61)
23	H	M34 x 1.0-6H	2.05 (52.1)	1.27 (32.3)	1.77 (45.0)	.78 (19.8)	.826 (20.98)	1.091 (27.69)
25	J	M37 x 1.0-6H	2.13 (54.1)	1.33 (33.8)	1.89 (48.0)	.85 (21.6)	.896 (22.76)	1.217 (30.91)

H

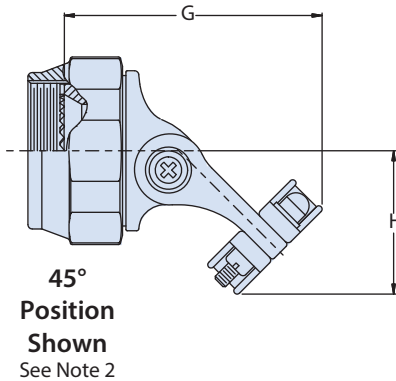
620-072 Non EMI/RFI direct Swing-Arm™ cable clamp strain relief backshell for MIL-DTL-38999

COMPOSITE OR SST SWING-ARM™ BACKSHELL WITH CABLE CLAMP STRAIN RELIEF, NON EMI/RFI



NOTES

1. Glenair 600 Series backshell assembly tools are recommended for assembly and installation.
2. Swing arm locks in 45° increments. Sizes 09 through 25 additional positioning increments are manufacturer's option.
3. Screw is captive to the arm when disengaged. When tightened, the screw shall not protrude into the inside surfaces.
4. Material/Finish:
 - Clamp body, coupling nut, saddles: see part number development, finish
 - Clamp hardware: CRES/passivate.
 - Anti-decoupling device: corrosion resistant material.



US Patent: 6419519



627-233 Non EMI/RFI direct Swing-Arm™ backshell
MIL-DTL-38999



Part Number Development					
Sample Part Number	627	H	233	XB	15
Product Series	Swing-Arm backshell				
Connector Designator	H = MIL-DTL-38999 Series III				
Basic Number	233				
Finish	XB = Composite no plating, black				
Dash Number	See dimensions table				

Dimensions											
Connector Designator H			B Max Dia	C Flats		D Max Dim	E Max Dim	F Max Dim	G Max Dim	H Max Dim	L Max Dim
Dash No	Shell Size Ref	A Thread ISO Metric		Max	Min						
09	A	M12 x 1.0-6H	.812 (2.62)	.750 (19.05)	.736 (18.69)	1.66 (42.16)	.72 (18.29)	1.09 (27.69)	1.43 (36.32)	.84 (21.34)	.264 (6.71)
11	B	M15 x 1.0-6H	.938 (23.83)	.875 (22.23)	.860 (21.84)	1.66 (42.16)	.72 (18.29)	1.12 (28.45)	1.43 (36.32)	.87 (22.10)	.390 (9.91)
13	C	M18 x 1.0-6H	1.125 (28.58)	1.000 (25.40)	.980 (24.89)	1.94 (49.28)	.90 (22.86)	1.41 (35.81)	1.74 (44.20)	1.07 (27.18)	.504 (12.80)
15	D	M22 x 1.0-6H	1.250 (31.75)	1.125 (28.58)	1.100 (27.94)	1.94 (49.28)	.90 (22.86)	1.47 (37.34)	1.74 (44.20)	1.13 (28.70)	.630 (16.00)
17	E	M25 x 1.0-6H	1.375 (34.92)	1.250 (31.75)	1.224 (31.09)	2.15 (54.61)	1.06 (26.92)	1.65 (41.91)	1.99 (5.55)	1.26 (32.00)	.756 (19.20)
19	F	M28 x 1.0-6H	1.500 (38.10)	1.375 (34.92)	1.348 (34.24)	2.15 (54.61)	1.06 (26.92)	1.71 (43.43)	1.99 (5.55)	1.32 (33.53)	.843 (21.41)
21	G	M31 x 1.0-6H	1.625 (41.28)	1.500 (38.10)	1.469 (37.31)	2.61 (66.29)	1.22 (3.99)	2.09 (53.09)	2.40 (6.96)	1.60 (4.64)	.969 (24.61)
23	H	M34 x 1.0-6H	1.750 (44.45)	1.625 (41.28)	1.581 (4.16)	2.61 (66.29)	1.22 (3.99)	2.13 (54.10)	2.40 (6.96)	1.64 (41.66)	1.091 (27.71)
25	J	M37 x 1.0-6H	1.875 (47.63)	1.750 (44.45)	1.690 (42.93)	2.82 (71.63)	1.31 (33.27)	2.38 (6.45)	2.62 (66.55)	1.81 (45.97)	1.217 (3.91)

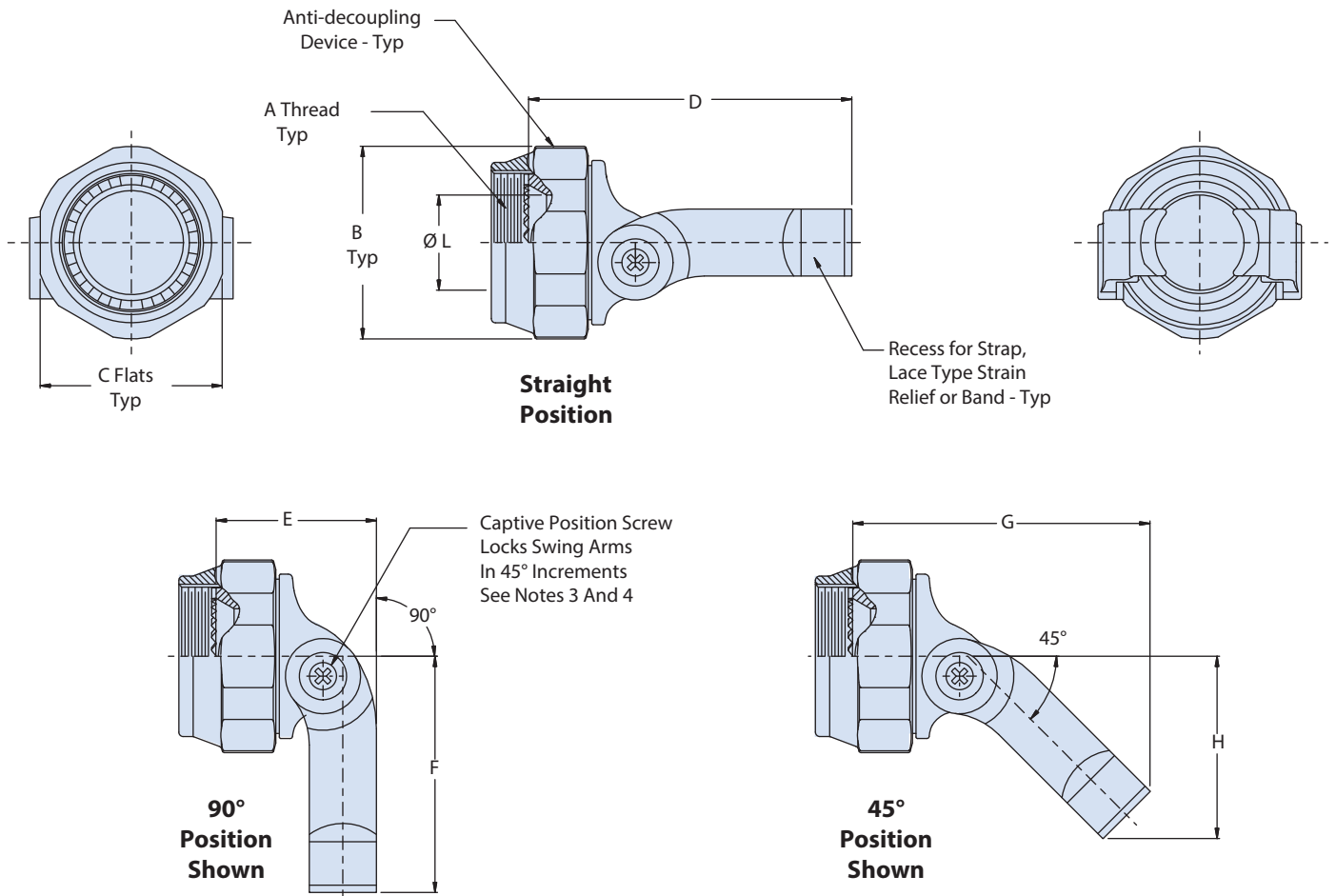
NOTES

H

1. Assembly identified with manufacturers name & p/n, space permitting.
2. Glenair 600 series backshell assembly tools are recommended for assembly and installation.
3. Swing arm locks in 45° increments
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, flex arms: high grade engineering thermoplastic, black/no plating
 - Arm hardware: CRES/passivate
 - Anti-rotation device: corrosion resistant material

**627-233 Non EMI/RFI direct Swing-Arm™ backshell
MIL-DTL-38999**

COMPOSITE SWING-ARM™ FLEX BACKSHELL WITH FLEX ARM STRAIN RELIEF



US Patent: 9627800



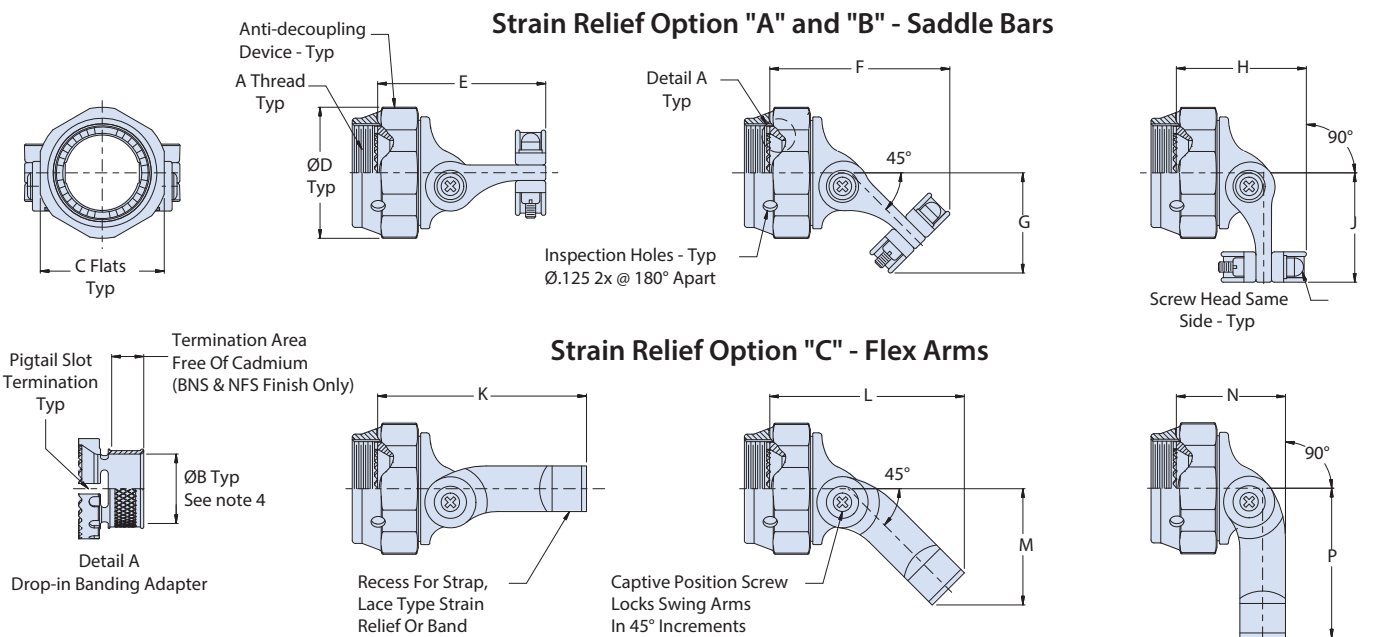
620-084 EMI/RFI Swing-Arm™ flex or cable clamp MIL-DTL-38999

Part Number Development						
Sample Part Number	620	H	084	BM	15	A
Product Series	Swing-Arm backshell with drop-in follower					
Connector Designator	H = MIL-DTL-38999 Series III					
Basic Number	084					
Finish	See Material/Finish Table					
Dash Number	See dimensions table					
Strain Relief	A = Standard B = Wide Mouth C = Flex Arms					

Connector Designator H Dimensions					
Dash No	A Thd ISO Metric, 1.0-6H	B DIA	C FLATS		D MAX
			Max	Min	
09	M12	.178 (4.52)	.750 (19.05)	.736 (18.69)	.812 (20.62)
11	M15	.305 (7.75)	.875 (22.23)	.860 (21.84)	.938 (23.83)
13	M18	.404 (10.26)	1.000 (25.40)	.980 (24.89)	1.125 (28.58)
15	M22	.565 (14.35)	1.125 (28.58)	1.100 (27.94)	1.250 (31.75)
17	M25	.658 (16.71)	1.250 (31.75)	1.224 (31.09)	1.375 (34.92)
19	M28	.777 (19.74)	1.375 (34.92)	1.348 (34.24)	1.500 (38.10)
21	M31	.877 (22.28)	1.500 (38.10)	1.469 (37.31)	1.625 (41.28)
23	M34	.999 (25.37)	1.625 (41.28)	1.581 (40.16)	1.750 (44.45)
25	M37	1.127 (28.63)	1.750 (44.45)	1.690 (42.93)	1.875 (47.63)

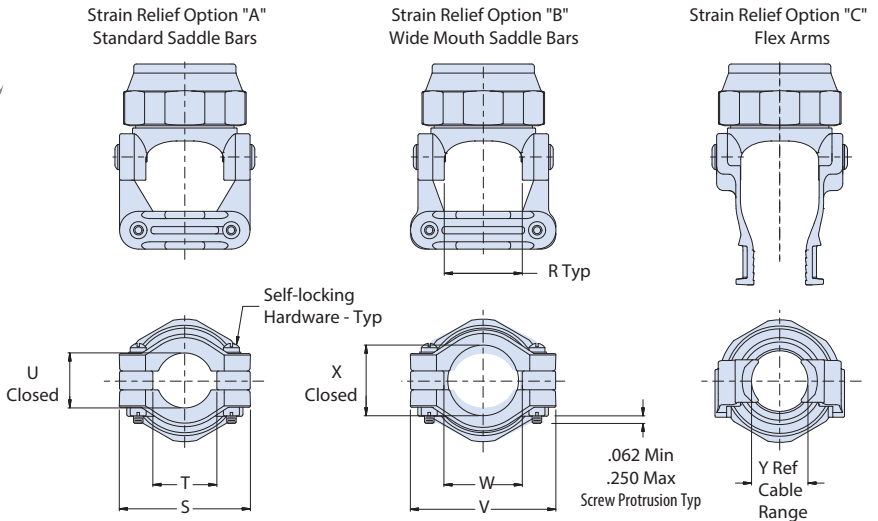
Dimensions										
Dash No	Strain Relief Options "A" and "B"					Strain Relief Option "C"				
	E Max	F Max	G Max	H Max	J Max	K Max	L Max	M Max	N Max	P Max
09	1.51 (38.4)	1.48 (37.6)	.79 (20.1)	1.00 (25.4)	.83 (21.1)	1.77 (45.0)	1.55 (39.4)	.84 (21.3)	.84 (21.3)	1.09 (27.7)
11	1.59 (40.4)	1.59 (40.4)	.89 (22.6)	1.08 (27.4)	.93 (23.6)	1.77 (45.0)	1.55 (39.4)	.87 (22.1)	.84 (21.3)	1.12 (28.4)
13	1.64 (41.7)	1.78 (45.2)	1.04 (26.4)	1.32 (33.5)	1.00 (25.4)	2.06 (52.3)	1.86 (47.2)	1.07 (27.2)	1.01 (25.7)	1.41 (35.8)
15	1.65 (41.9)	1.84 (46.7)	1.07 (27.2)	1.40 (35.6)	1.06 (26.9)	2.06 (52.3)	1.86 (47.2)	1.13 (28.7)	1.01 (25.7)	1.47 (37.3)
17	1.74 (44.2)	1.94 (49.3)	1.13 (28.7)	1.46 (37.1)	1.13 (28.7)	2.26 (57.4)	2.11 (53.6)	1.26 (32.0)	1.18 (30.0)	1.65 (41.9)
19	1.74 (44.2)	2.02 (51.3)	1.18 (30.0)	1.57 (39.9)	1.19 (30.2)	2.26 (57.4)	2.11 (53.6)	1.32 (33.5)	1.18 (30.0)	1.71 (43.4)
21	1.90 (48.3)	2.20 (55.9)	1.31 (33.3)	1.71 (43.4)	1.26 (32.0)	2.73 (69.3)	2.52 (64.0)	1.60 (40.6)	1.33 (33.8)	2.09 (53.1)
23	1.92 (48.8)	2.27 (57.7)	1.36 (34.5)	1.78 (45.2)	1.33 (33.8)	2.73 (69.3)	2.52 (64.0)	1.64 (41.7)	1.33 (33.8)	2.13 (54.1)
25	2.08 (52.8)	2.41 (61.2)	1.48 (37.6)	1.82 (46.2)	1.52 (38.6)	2.94 (74.7)	2.74 (69.6)	1.81 (46.0)	1.43 (36.3)	2.38 (60.5)

STRAIGHT, 45° AND 90° SWING-ARM WITH DROP-IN EMI/RFI SHIELD TERMINATION BANDING ADAPTER



620-084 EMI/RFI Swing-Arm™ flex or cable clamp MIL-DTL-38999

COMPOSITE SWING-ARM™ BACKSHELL WITH DROP-IN FOLLOWER FLEX ARM OR CABLE CLAMP STRAIN RELIEF TYPES



Dimensions									
Dash No	R Ref	Strain Relief Option							
		"A" - Standard			"B" - Wide Mouth			"C" - Flex Arms	
		S Max	T Min	U Ref	V Max	W Min	X Ref	Y Ref Recommended Cable Range	
09	.393 (9.98)	.97 (24.6)	.22 (5.6)	.264 (6.71)	.98 (24.9)	.33 (8.4)	.356 (9.04)	.264 (6.71)	.098 (2.49)
11	.455 (11.56)	1.03 (26.2)	.29 (7.4)	.310 (7.87)	1.20 (30.5)	.45 (11.4)	.422 (10.72)	.324 (8.23)	.121 (3.07)
13	.598 (15.19)	1.21 (30.7)	.34 (8.6)	.422 (10.72)	1.45 (36.8)	.62 (15.7)	.637 (16.18)	.420 (10.67)	.157 (3.99)
15	.710 (18.03)	1.32 (33.5)	.45 (11.4)	.538 (13.67)	1.54 (39.1)	.68 (17.3)	.707 (17.96)	.564 (14.33)	.210 (5.33)
17	.839 (21.31)	1.45 (36.8)	.55 (14.0)	.590 (14.99)	1.60 (40.6)	.80 (20.3)	.759 (19.28)	.660 (16.76)	.246 (6.25)
19	.934 (23.72)	1.54 (39.1)	.65 (16.5)	.660 (16.76)	1.73 (43.9)	.90 (22.9)	.841 (21.36)	.744 (18.90)	.277 (7.04)
21	1.068 (27.13)	1.67 (42.4)	.74 (18.8)	.744 (18.90)	1.95 (49.5)	1.05 (26.7)	.996 (25.30)	.840 (21.34)	.313 (7.95)
23	1.197 (30.40)	1.79 (45.5)	.87 (22.1)	.826 (20.98)	2.08 (52.8)	1.18 (30.0)	1.060 (26.92)	.936 (23.77)	.349 (8.86)
25	1.323 (33.60)	1.92 (48.8)	.99 (25.1)	.896 (22.76)	2.32 (58.9)	1.30 (33.0)	1.124 (28.55)	1.020 (25.91)	.380 (9.65)

Material/Finish Table				
Sym	Material	Drop-In Adapter Finish/Material	Salt Spray	RoHS
BM	Brass	Electroless nickel	1000 Hour	☑
BN		Cadmium/olive drab over electroless nickel	2000 Hour	
BNS		Cadmium/olive drab over electroless nickel (see detail A)	1000 Hour	
BMT		Nickel/PTFE	1000 Hour	☑
M	Aluminum Alloy	Electroless nickel	48 Hour	☑
NF		Cadmium - olive drab over electroless nickel	1000 Hour	
NFS		Cadmium/olive drab over electroless nickel (see detail A)	1000 Hour	
MT		Nickel - PTFE	1000 Hour	☑

NOTES

- Glenair 600 series backshell assembly tools are recommended for assembly and installation.
- Swing arm locks in 45° increment
- Screw is captive to the arm when disengaged. When tightened the screw shall not protrude into the inside surfaces.
- "B" diameter may be less than optimum required for fully populated connectors. Consult Glenair engineering.
- Material/finish:
 - Clamp body, coupling nut, arm, saddles: high grade engineering thermoplastic, black/no plating
 - Drop-in banding adapter: see material/finish table
 - Arm/clamp hardware, band: cres/passivate
 - Anti-decoupling device: corrosion resistant material



319-180 EMI/RFI Composite SwingArm™ and strain relief MIL-DTL-38999



Part Number Development								
Sample Part Number	319	H	180	XB	15	B	R	14
Product Series	EMI/RFI shield sock assembly							
Connector Designator	H = MIL-DTL-38999 Series III							
Basic Number	180							
Finish	XB = No plating, black XD = No plating, desert tan XMT = Nickel-PTFE 1000 Hour Gray XN = Selective plating, nickel and cadmium O/D; see detail B							
Dash Number	See dimensions Table							
Optional Braid Material	A = 100% AmberStrand® B = 75%/25% AmberStrand® blend L = 100% ArmorLite™ T = Tin/copper 34 AWG Omit for standard nickel/copper 34 AWG							
Split Ring/Band Option	R = Supplied with split ring (687-207) and band (600-052). Omit for none.							
Custom Braid Length	Specify in inches. Omit for standard 12" length.							

Dimensions														
Connector Designator H			B Max Dia	C Flats		D Max	E Max	F Max	G Max	H Max	J Max	K Min	L Max	Ø M Min
Dash No.	Shell Size Ref	A Thread ISO Metric		Max	Min									
09	A	M12 X 1.0-6H	.812 (20.62)	.750 (19.05)	.736 (18.69)	1.50 (38.1)	.95 (24.1)	.84 (21.3)	1.43 (36.3)	.76 (19.3)	.98 (24.9)	.220 (5.59)	.265 (6.73)	.264 (6.71)
11	B	M15 X 1.0-6H	.938 (23.83)	.875 (22.23)	.860 (21.84)	1.54 (39.1)	.99 (25.1)	.90 (22.9)	1.49 (37.8)	.82 (20.8)	1.05 (26.7)	.270 (6.86)	.310 (7.87)	.390 (9.91)
13	C	M18 X 1.0-6H	1.125 (28.58)	1.000 (25.40)	.980 (24.89)	1.62 (41.1)	1.14 (29.0)	1.00 (25.4)	1.64 (41.7)	.92 (23.4)	1.20 (30.5)	.350 (8.89)	.390 (9.91)	.504 (12.80)
15	D	M22 X 1.0-6H	1.250 (31.75)	1.125 (28.58)	1.100 (27.94)	1.63 (41.4)	1.24 (31.5)	1.07 (27.2)	1.73 (43.9)	.98 (24.9)	1.30 (33.0)	.47 (11.9)	.506 (12.85)	.630 (16.00)
17	E	M25 X 1.0-6H	1.375 (34.93)	1.250 (31.75)	1.224 (31.09)	1.73 (43.9)	1.36 (34.5)	1.13 (28.7)	1.86 (47.2)	1.08 (27.4)	1.44 (36.6)	.55 (14.0)	.591 (15.01)	.756 (19.20)
19	F	M28 X 1.0-6H	1.500 (38.10)	1.375 (34.93)	1.348 (34.24)	1.73 (43.9)	1.46 (37.1)	1.20 (30.5)	1.93 (49.0)	1.12 (28.4)	1.56 (39.6)	.62 (15.7)	.661 (16.79)	.843 (21.41)
21	G	M31 X 1.0-6H	1.625 (41.28)	1.500 (38.10)	1.469 (37.31)	1.88 (47.8)	1.55 (39.4)	1.26 (32.0)	2.08 (52.8)	1.21 (30.7)	1.69 (42.9)	.70 (17.8)	.744 (18.90)	.969 (24.61)
23	H	M34 X 1.0-6H	1.750 (44.45)	1.625 (41.28)	1.581 (40.16)	1.91 (48.5)	1.63 (41.4)	1.33 (33.8)	2.15 (54.6)	1.27 (32.3)	1.77 (45.0)	.78 (19.8)	.826 (20.98)	1.091 (27.71)
25	J	M37 X 1.0-6H	1.875 (47.63)	1.750 (44.45)	1.690 (42.93)	1.94 (49.3)	1.70 (43.2)	1.40 (35.6)	2.23 (56.6)	1.33 (33.8)	1.89 (48.0)	.85 (21.6)	.896 (22.76)	1.217 (30.91)

H

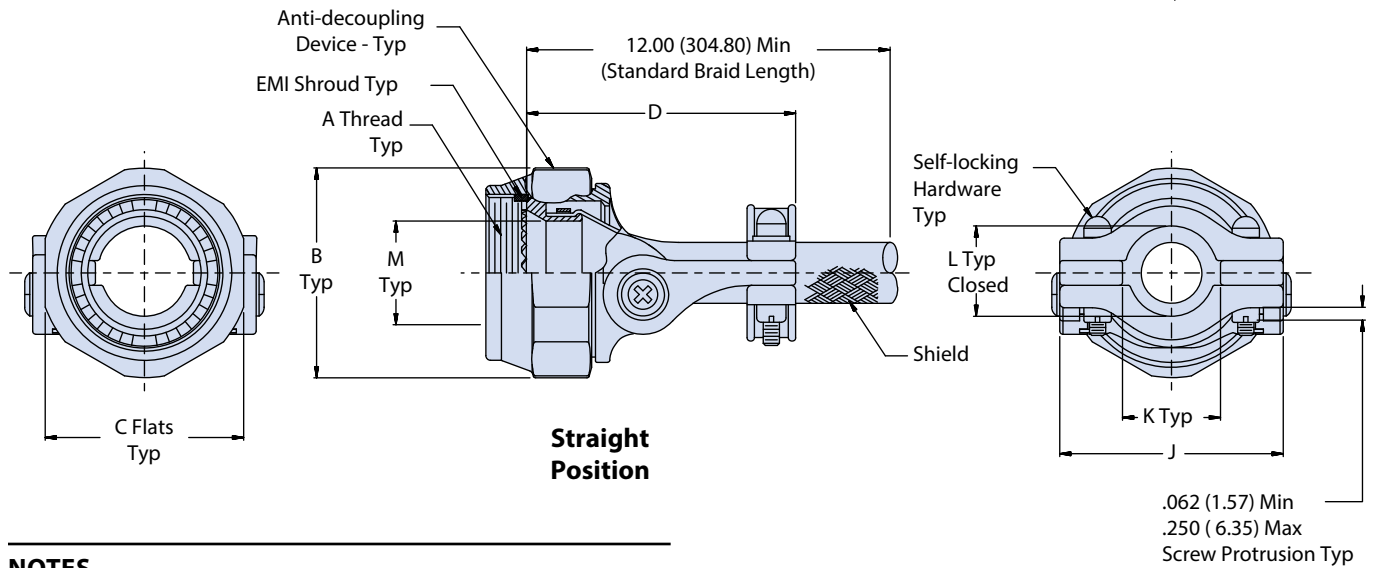
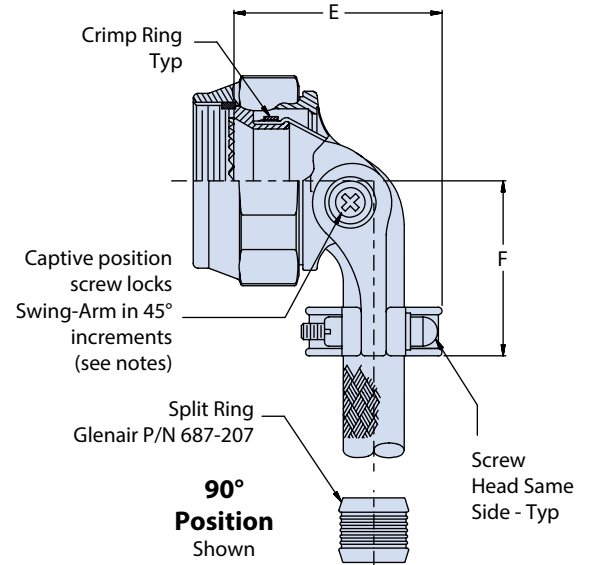
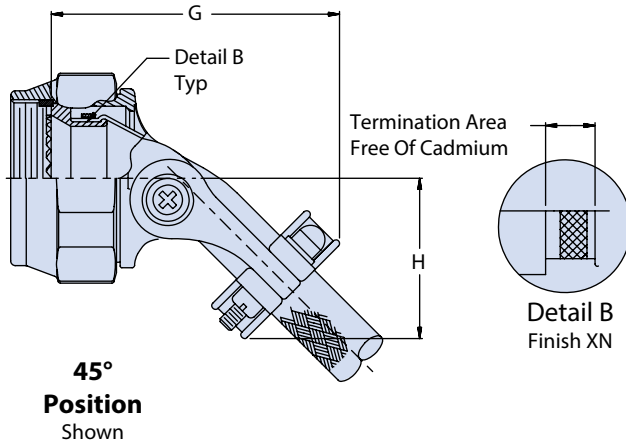
SuperNine® Backshells and accessories

319-180 Composite Swing-Arm™ strain relief

MIL-DTL-38999

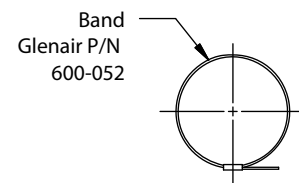


COMPOSITE BACKSHELL WITH SHIELD SOCK AND CABLE CLAMP STRAIN RELIEF



NOTES

- Glenair Series 600 assembly tools are recommended for assembly and installation.
- Swing arm locks in 45° increments, shell size 09 through 25. Additional positioning increments are manufacturer's option.
- Screw is captive to the arm when disengaged. When tightened, the screw will not protrude into the inside surfaces.
- Material/Finish:
 - Clamp body, coupling nut, saddles: high grade thermoplastic, no plating. See part number development, finish.
 - Clamp hardware: CRES/Passivate.
 - Crimp ring: copper/tin plated.



Composite Swing-Arm™ strain relief assembly procedure

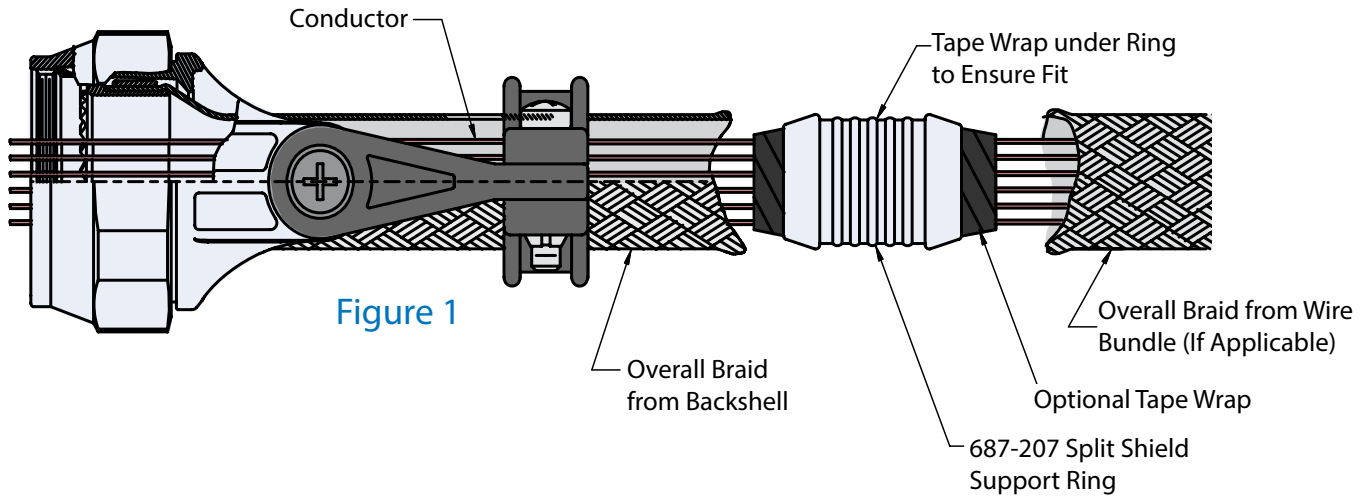


Figure 1

GLENAIR ASSEMBLY PROCEDURE (GAP-029) FOR SWING-ARM, OFFERS EXTREMELY FAST AND TROUBLE-FREE TERMINATION OF EMI SHIELDING:

Choose Straight, 45° or 90° angle, and tighten screws to lock arms in place. Leave the saddle clamp hardware loose.

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

Loosely assembly the adapter to the connector and push back the backshell braid. Insert the wire bundle into the adapter and bottom it against the connector. Holding the cable, mark or tag the location where the shield support ring (Glenair Part Number 687-207) will be located. This distance may vary depending on your technique and the flexibility of the wire bundle immediately to the rear of the saddles (Figure 1).

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

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

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

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

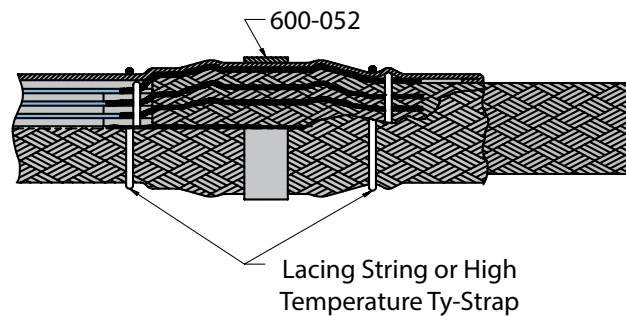


Figure 2

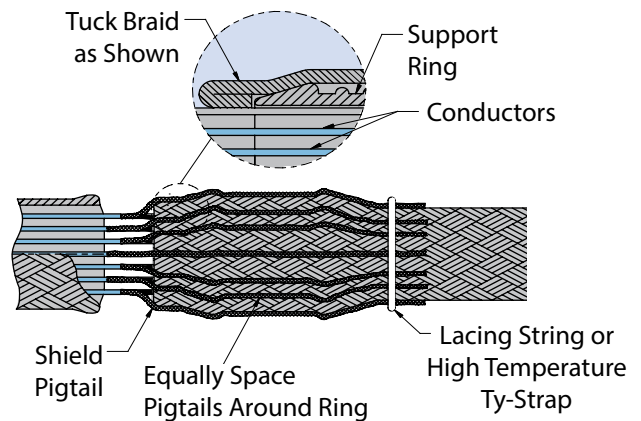


Figure 3

H

Composite Swing-Arm™ strain relief assembly procedure

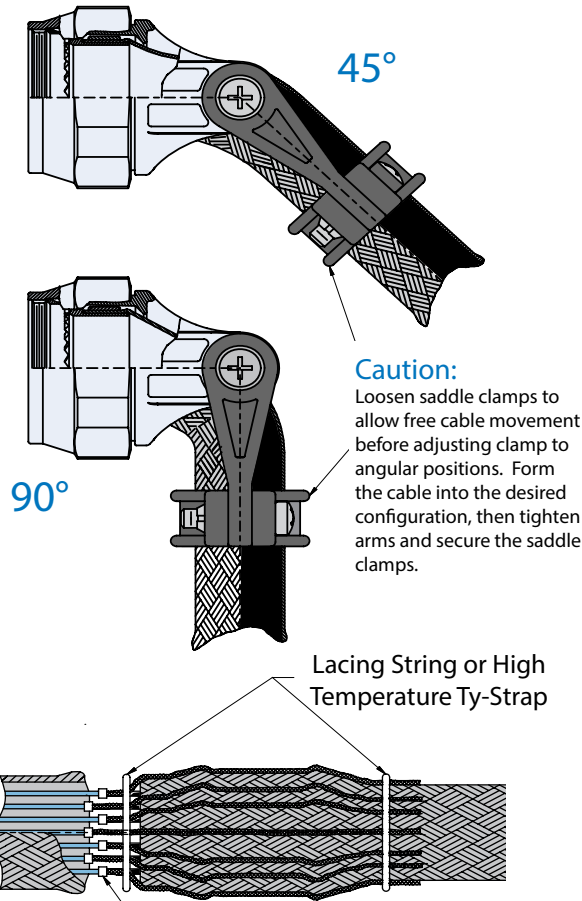


Figure 4

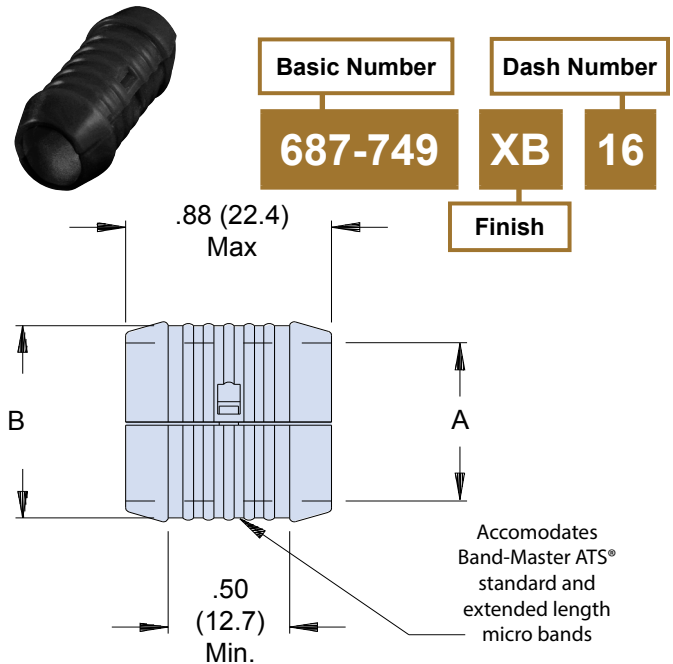
Install Glenair's Band-Master ATS® band between the lace ties onto the center of the support ring as shown in Figure 2. The Band-Master ATS® hand banding tool (601-100) or pneumatic banding tool (601-104) is used for this banding process.

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

Tighten the adapter to the connector using Glenair 600-091 composite hex coupling torque wrench and related tooling accessories to established torque values. Secure the strain relief saddle onto the wire bundle using TG69 soft jaw pliers. Torque the saddle screws to established values. You can use Fluoropolymer tape wrap or M85049/127 bushing strip as needed to cushion the braid sock under the saddle clamps.

With these few steps, your Swing-Arm strain relief installation is complete!

687-749 BANDING SPLIT-RING



Dash No.	Dash Number	
	A Ø ±.03 (0.8)	B Ø ±.03 (0.8)
04	.25 (6.4)	.36 (9.1)
06	.38 (9.7)	.49 (12.4)
08	.50 (12.7)	.61 (15.5)
10	.63 (16.0)	.74 (18.8)
12	.75 (19.1)	.86 (21.8)
14	.88 (22.4)	.99 (25.1)
16	1.00 (25.4)	1.10 (27.9)
18	1.13 (28.7)	1.24 (31.5)
20	1.25 (31.8)	1.36 (34.5)
22	1.38 (35.1)	1.49 (37.8)
24	1.50 (38.1)	1.61 (40.9)
26	1.63 (41.4)	1.74 (44.2)
28	1.75 (44.5)	1.86 (47.2)

Band-Master ATS®

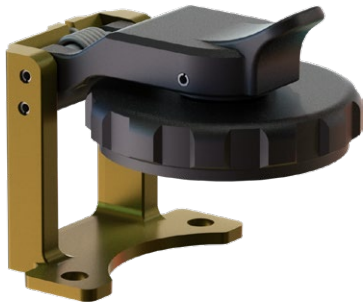


For Band-Master ATS® banding tools, bands, and accessories, see page J-11 of this catalog, or visit glenair.com



for MIL-DTL-38999 Series III / SuperNine® connectors
Threaded closure seal, full environmental

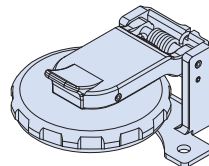
667-448 PROSEAL PROTECTIVE COVER FOR D38999 SERIES III CONNECTORS



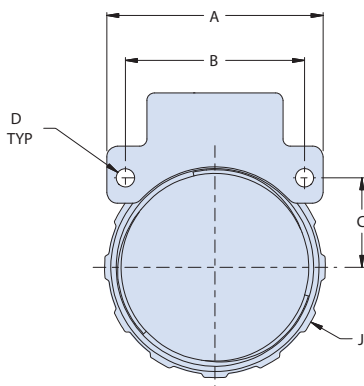
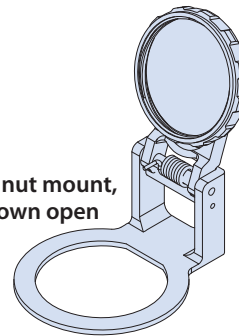
How to Order 667-448					
Sample Part Number	667-448	NF	17	T1	J
Series	ProSeal protective cover for D38999 Series III connectors				
Material / Finish	See Table II				
Shell Size	See Table I				
Panel Thickness	See Table III				
Type of Mounting	J = Jam Nut Mount Receptacle W = Wall Mount Receptacle				

- Threaded closure
- Full environmental protection
- Self-aligning
- Positive spring-action in closed position. Locks open at approximately 105° from receptacle face.

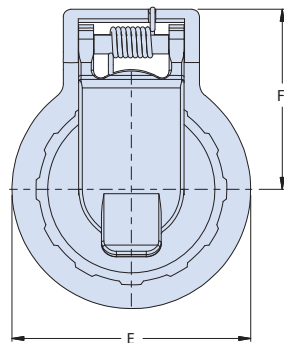
Wall mount, shown closed



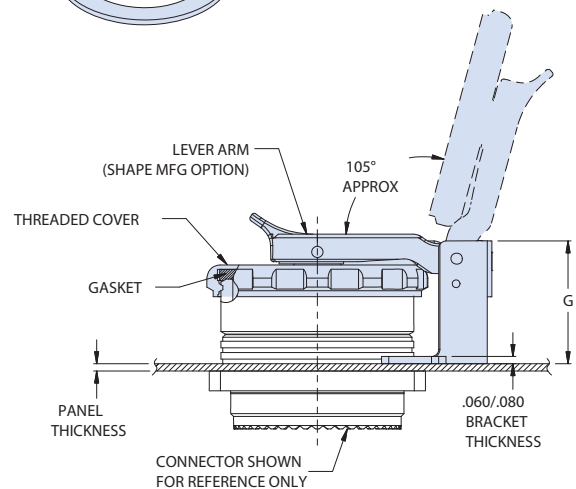
Jam nut mount, shown open



WALL MOUNT



JAM NUT



MATERIAL / FINISH

Cover, Lever Arm, Gimbal - Thermoplastic / Black
Bracket - see Table II
Spring / Pin / Rivet - 300 Series SST / Passivate
Sleeve - Delrin
Gasket - Silicone (optional)



for MIL-DTL-38999 Series III / SuperNine® connectors
Threaded closure seal, full environmental

Table I: Dimensions														
Shell Size	A Dim max		B Dim		C Dim		D ±.008 (.20)		E ±.031 (.79)		F Dim max		J Dia max	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
09	0.937	23.80	0.719	18.26	0.360	9.14	0.128	3.25	1.031	26.19	.913	23.19	.872	22.15
11	1.031	26.19	0.812	20.62	0.406	10.31	0.128	3.25	1.125	28.58	.961	24.41	.988	25.10
13	1.126	28.60	0.906	23.01	0.453	11.51	0.128	3.25	1.375	34.93	1.083	27.51	1.129	28.68
15	1.220	30.99	0.969	24.61	0.485	12.32	0.128	3.25	1.560	39.62	1.178	29.92	1.280	32.51
17	1.311	33.30	1.062	26.97	0.531	13.49	0.128	3.25	1.625	41.28	1.211	30.76	1.441	36.60
19	1.437	36.50	1.156	29.36	0.578	14.68	0.128	3.25	1.750	44.45	1.273	32.33	1.499	38.07
21	1.563	39.70	1.250	31.75	0.625	15.88	0.128	3.25	2.000	50.80	1.538	39.07	1.630	41.40
23	1.689	42.90	1.375	34.93	0.688	17.48	0.154	3.91	2.150	54.61	1.614	41.00	1.755	44.58
25	1.841	46.76	1.500	38.10	0.750	19.05	0.154	3.91	2.218	56.34	1.647	41.83	1.880	47.75

Table II: Material and Finish		
Sym	Material	Finish
MT	Aluminum	Nickel-PTFE
ZR		Zinc-Nickel, Black (Tri-Valent CR)
M		Electroless Nickel
NF		Cad Plate / Olive Drab over Electroless Nickel
C		Anodize / Black
UC		Zinc Cobalt / Black

Table III: Panel Thickness							
Dash No.	Panel Thickness* ±.030 (.76)		Shell Size	G ± .06			
	in	mm		Jam Nut Mount		Wall Mount	
				in	mm	in	mm
T0	.000	.00	09-19	N/A	N/A	1.039	26.39
			21-25	N/A	N/A	1.094	27.79
T1	.062	1.57	09-19	1.041	26.44	0.977	24.82
			21-25	1.126	28.60	1.032	26.21
T2	.125	3.18	09-19	0.979	24.87	0.915	23.24
			21-25	1.064	27.03	0.970	24.64

*Jam nut mount is not available with panel thickness T0



SPRING ACTION

ProSeal™ environmental connector covers



for MIL-DTL-38999 Series III / SuperNine® connectors
Pressure seal, dust and immersion resistant

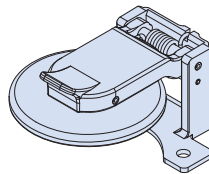
667-449 PROSEAL PROTECTIVE COVER FOR D38999 SERIES III CONNECTORS



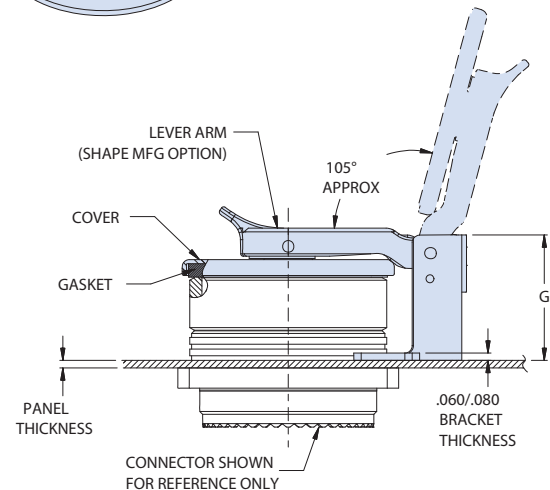
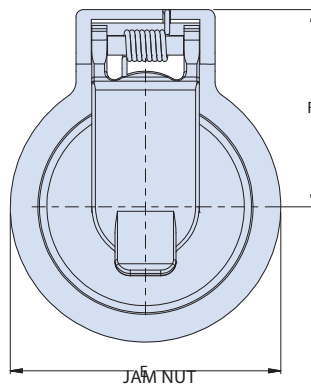
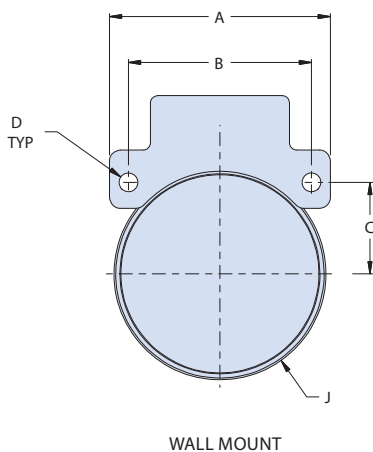
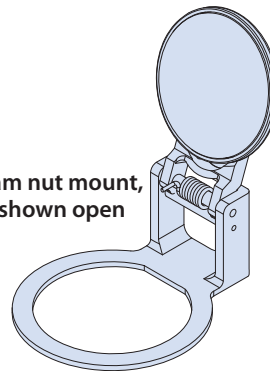
How to Order 667-449					
Sample Part Number	667-449	NF	17	T1	J
Series	ProSeal protective cover for D38999 Series III connectors				
Material / Finish	See Table II				
Shell Size	See Table I				
Panel Thickness	See Table III				
Type of Mounting	J = Jam Nut Mount Receptacle W = Wall Mount Receptacle				

- Pressure seal, dust and immersion resistant
- Self-aligning
- Positive spring-action in closed position. Locks open at approximately 105° from receptacle face.

Wall mount, shown closed



Jam nut mount, shown open



MATERIAL / FINISH

Cover, Lever Arm, Gimbal - Thermoplastic / Black
Bracket - see Table II
Spring / Pin / Rivet - 300 Series SST / Passivate
Sleeve - Delrin
Gasket - Silicone (optional)



for MIL-DTL-38999 Series III / SuperNine® connectors
 Pressure seal, dust and immersion resistant

Table I: Dimensions														
Shell Size	A Dim max		B Dim		C Dim		D ±.008 (.20)		E ±.031 (.79)		F Dim max		J Dia max	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
09	0.937	23.80	0.719	18.26	0.360	9.14	0.128	3.25	1.031	26.19	.913	23.19	.735	18.67
11	1.031	26.19	0.812	20.62	0.406	10.31	0.128	3.25	1.125	28.58	.961	24.41	.860	21.84
13	1.126	28.60	0.906	23.01	0.453	11.51	0.128	3.25	1.375	34.93	1.083	27.51	.985	25.02
15	1.220	30.99	0.969	24.61	0.485	12.32	0.128	3.25	1.560	39.62	1.178	29.92	1.120	28.45
17	1.311	33.30	1.062	26.97	0.531	13.49	0.128	3.25	1.625	41.28	1.211	30.76	1.280	32.51
19	1.437	36.50	1.156	29.36	0.578	14.68	0.128	3.25	1.750	44.45	1.273	32.33	1.343	34.11
21	1.563	39.70	1.250	31.75	0.625	15.88	0.128	3.25	2.000	50.80	1.538	39.07	1.466	37.24
23	1.689	42.90	1.375	34.93	0.688	17.48	0.154	3.91	2.150	54.61	1.614	41.00	1.593	40.46
25	1.841	46.76	1.500	38.10	0.750	19.05	0.154	3.91	2.218	56.34	1.647	41.83	1.718	43.64

Table II: Material and Finish		
Sym	Material	Finish
MT	Aluminum	Nickel-PTFE
ZR		Zinc-Nickel, Black (Tri-Valent CR)
M		Electroless Nickel
NF		Cad Plate / Olive Drab over Electroless Nickel
C		Anodize / Black
UC		Zinc Cobalt / Black

Table III: Panel Thickness							
Dash No.	Panel Thickness* ±.030 (.76)		Shell Size	G ± .06			
	in	mm		Jam Nut Mount		Wall Mount	
				in	mm	in	mm
T0	.000	.00	09-19	N/A	N/A	1.039	26.39
			21-25	N/A	N/A	1.094	27.79
T1	.062	1.57	09-19	1.041	26.44	0.977	24.82
			21-25	1.126	28.60	1.032	26.21
T2	.125	3.18	09-19	0.979	24.87	0.915	23.24
			21-25	1.064	27.03	0.970	24.64

*Jam nut mount is not available with panel thickness T0



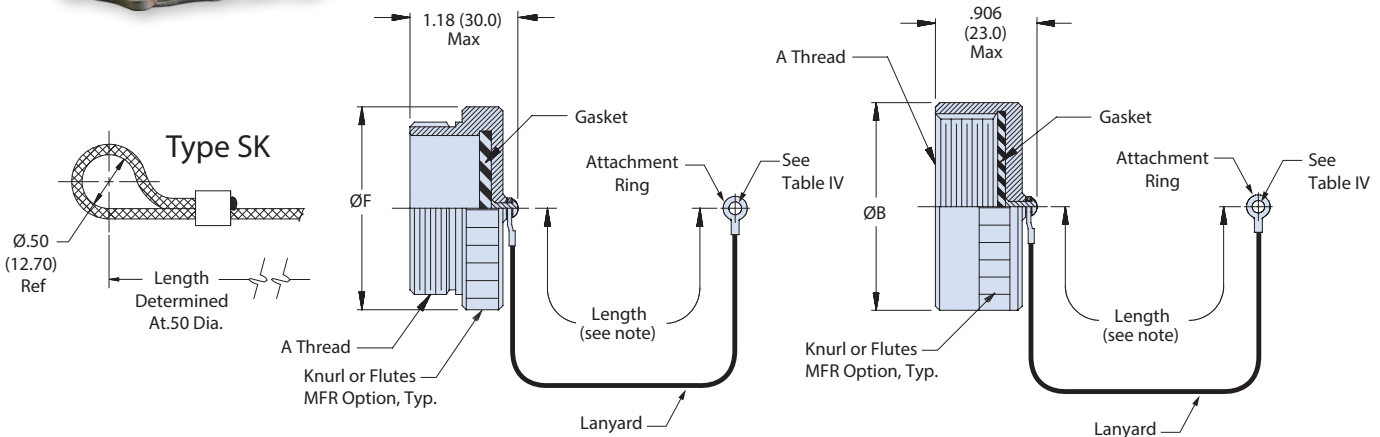
SuperNine® Backshells and accessories

660-049 and -050 Composite protective covers

MIL-DTL-38999



Part Number Development									
Sample Part Number	660-049				XM	21	R	6	-04
Product Series-Basic No.	660-049 = Plug cover		660-050 = Receptacle cover						
Finish	XB = No plating, black XO = No Plating, non-conductive, brown XW = Cadmium O/D over electroless nickel (1000 hour salt spray)		XV = No Plating, purple XMT = Nickel-PTFE 1000 Hour Gray		XM = Electroless nickel				
Connector Shell Size	See Dimensions Table								
Lanyard Type	See Lanyard Code Table								
Attachment Length	In inches; i.e. 1=1 inch								
Ring Style Dash No.	See Tables I, II, III								



-049 Plug Cover
MIL-DTL-38999/32 Type

-050 Receptacle Cover
MIL-DTL-38999/33 Type

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

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

NOTES

1. Max diameter over which mandrel will rotate freely
2. Material/finish
 - Cover: thermoplastic polyetherimides; see part number development, finish
 - Gasket: fluoro silicone/N.A.
 - Hardware, rivet: CRES/passivate
 - Rope lanyard: see lanyard code table

H

SuperNine® Backshells and accessories

660-049 and -050 Composite protective covers

MIL-DTL-38999



Available Lanyard Types		
Bead Chain (Type D)	Sash Chain (Type S)	Wire or Nylon Rope (Types F, G, H, K, R, T, U)

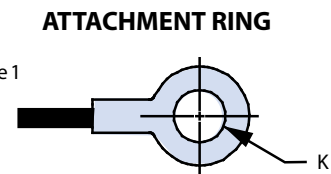
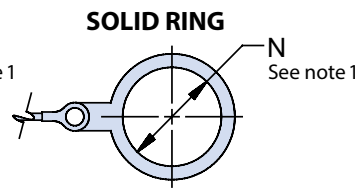
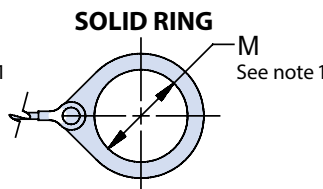
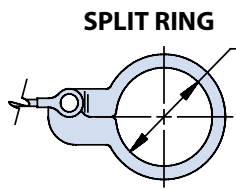


Table I	
Dash No	L Dia ±.015 (0.4)
50	.425 (10.8)
52	.485 (12.3)
54	.640 (16.3)
56	.750 (19.1)
58	.890 (22.6)
60	1.015 (25.8)
62	1.095 (27.8)
64	1.130 (28.7)
66	1.250 (31.8)
68	1.350 (34.3)
70	1.375 (34.92)
72	1.485 (37.7)
74	1.625 (41.3)
76	1.750 (44.5)
78	1.875 (47.6)
80	1.980 (50.3)
82	2.060 (52.3)
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 II	
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	1.187 (30.15)
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 III	
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)
308	1.188 (30.18)
208	1.203 (30.6)
109	1.266 (32.2)
209	1.312 (33.32)
110	1.391 (35.3)
210	1.438 (36.53)
111	1.521 (38.63)
211	1.536 (39.01)
112	1.641 (41.68)
113	1.766 (44.86)
213	1.812 (46.02)
114	1.891 (48.03)
214	1.938 (49.23)
115	2.078 (52.78)
116	2.406 (61.11)
117	2.510 (63.75)

Table IV	
Dash No	K Dia ±.010 (0.25)
01	.140 (3.56)
02	.182 (4.62)
03	.191 (4.85)
04	.197 (5.00)
05	.167 (4.24)
06	.125 (3.18)
07	.218 (5.54)
09	.156 (3.96)



239-200 Plug cover for 233-215 piston-sealed plug MIL-DTL-38999

Part Number Development									
Sample Part Number	239-200				NF	17	H	5	-17
Product Series-Basic No.	Plug cover for SuperNine piston-seal connector								
Finish	ME, MT, NF, ZR, TD, TP3, Z1, ZL, AB; See Material/Finish Table								
Connector Shell Size	09, 11, 13, 15, 17, 19, 21, 23, 25; See Dimensions Table								
Attachment Type	D, F, G, H, K, N, R, S, T, U; See Lanyard Codes Table								
Attachment Length	Inches; i.e. 17 = 17 inches. Sash chain is ±1 link, all other attachments ±0.25								
Ring Style Dash No.	See Table I								

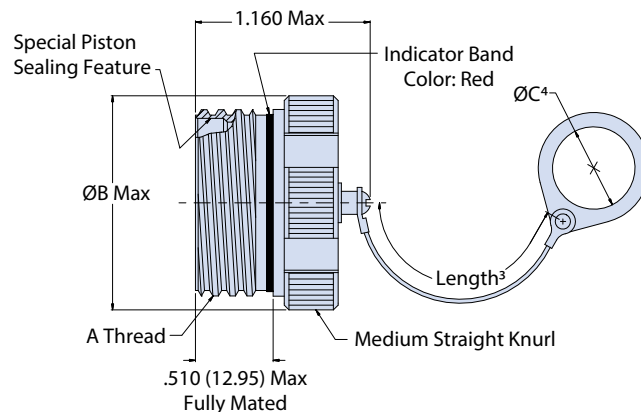
Material/Finish		
Sym	Material / Finish Description	RoHS
ME	Aluminum/Electroless nickel	☑
MT	Aluminum/Ni-PTFE 500 hour nickel fluorocarbon polymer	☑
NF	Aluminum/Cadmium O.D. over electroless nickel	☒
ZR	Aluminum/Black zinc-nickel (tri-valent CR)	☑
TD	Titanium/Natural, unplated	☑
TP3	Titanium Electro-deposited nickel	☑
Z1	SST/Passivate	☑
ZL	SST/electrodeposited nickel	☑
AB	Marine Bronze/Unplated	☑

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	1.280 (32.5)
17	1.1875	1.406 (35.7)
19	1.2500	1.516 (38.5)
21	1.3750	1.642 (41.7)
23	1.5000	1.768 (44.9)
25	1.6250	1.890 (48.0)

Attachment Codes	
Code	Description
D	Bead chain, cres, passivated
F	Wire rope, nylon jacket with terminal
G	Nylon rope, black with looped ends
H	Wire rope, fluoropolymer jacket with terminal
K	Nylon rope (olive drab)
N	No attachment
R	Wire rope, PVC jacket with terminal
S	#8 Sash chain, CRES, passivated
T	Wire rope, no jacket with terminal
U	Wire rope, polyurethane with jacket

Table I	
Dash No	ØC 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)

Available Lanyard Types (shown with eyelet attachment)
Bead Chain (Type D)
Sash Chain (Type S)
Rope (Types F, G, H, K, R, T, U)



NOTES

1. Material/Finish: Hardware, Rivet - CRES/Passivate
2. 239-200 plug cover is designed to meet or exceed the appropriate mechanical, dimensional, and environmental requirements of MIL-DTL-38999 Series III except as shown or noted. Plug cover is for use with 233-215 piston-sealed connector series.
3. Length tolerance for sash chain (S) is ± one link, for all other attachments ±.25
4. Diameter C is maximum mandrel dia. which attachment will rotate freely over

660-121 Composite self locking receptacle cover MIL-DTL-38999

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

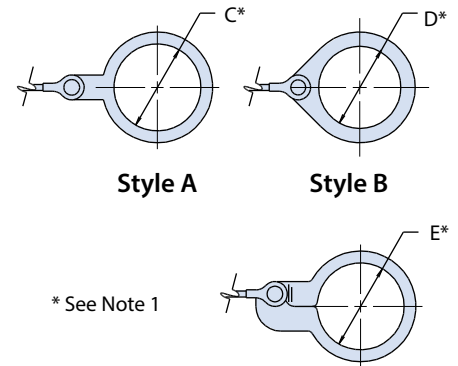
1. Max diameter over which mandrel will rotate freely

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)

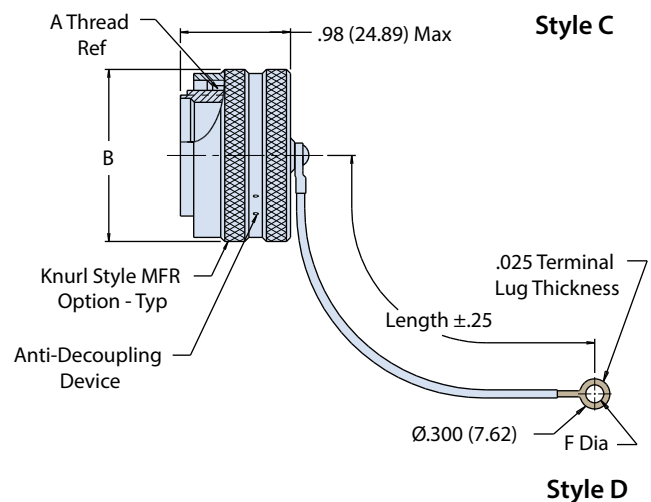
Ring Style B	
Dash No	D Dia
08	.468 (11.89)
10	.593 (15.06)
12	.718 (18.24)
14	.844 (21.44)
16	.968 (24.59)
18	1.093 (27.76)
20	1.187 (30.15)
22	1.343 (34.11)
24	1.484 (37.69)
28	1.687 (42.85)
32	1.968 (49.99)
36	2.187 (55.55)
40	2.406 (61.11)
44	2.656 (67.46)
48	3.031 (76.99)

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)



* See Note 1



SERIES 23
CONTACTS AND
TOOLS

SuperNine®



Complete range of high-performance contacts and assembly tools for every application requirement



Glenair is a QPL supplier of high-performance MIL-DTL-39029 contacts, as well as a manufacturer and supplier of the industry's broadest range of shielded contacts, power contacts, and special-purpose contact technology such as optoelectronic, thermocouple and gas/pneumatic solutions. Glenair's complete range of contacts is available for immediate, same-day shipment, and is supported with appropriate crimp tools, insertion and removal tools and assembly tools to complete the project at hand.



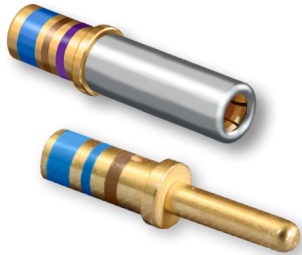
Glenair, Inc.
1211 Air Way
Glendale, CA 91201-2497
818-247-6000
sales@glenair.com
www.glenair.com

Product selection guide
MIL-DTL-38999 Series III type

	Extended duty Crimp Contacts	J-2		Size #12 Pneumatic Contacts	J-6
	#8 High Power Contacts	J-2		Dummy Contact Sealing Plugs (DCSP)	J-8
	Size #8 Coaxial Contacts	J-2		Miniature Adjustable Crimp Tools & Positioners	J-12
	Size #12 Coaxial Contacts	J-3		Contact Insertion and Extraction Tools	J-14
	Size #16 Coaxial Contacts	J-3		Contact Retention Tester for Size #23 Contacts	J-14
	Size #8 Concentric Twinax Contacts	J-4		Band-Master ATS® Banding Tool	J-15
	Size #8 Quadrax Contacts	J-4		600H005 Connector holding tool	J-16
	Size #23 Contacts for High-density contact arrangements	J-5		TG90 Connector wrench	J-17
	Thermocouple Contacts	J-5		600-157 Composite hex-coupling wrench	J-18
	Size 8 cavity optoelectronic contact	J-6		TG70 Connector strap wrench with 3/8" square drive	J-19



EXTENDED DUTY CRIMP CONTACTS



How-To-Order Extended Duty Crimp Contacts					
Mating End Size	Wire Accommodation	Pin Contacts Military Part No.	Pin Contacts Glenair Part No.	Socket Contacts Military Part No.	Socket Contacts Glenair Part No.
22	22-28 AWG	M39029/107-620	850-007-22-620	M39029/106-614	850-006-22-614
20	20-24 AWG	M39029/107-621	850-007-20-621	M39029/106-615	850-006-20-615
16	16-20 AWG	M39029/107-622	850-007-16-622	M39029/106-616	850-006-16-616
12	12-14 AWG	M39029/107-623	850-007-12-623	M39029/106-617	850-006-12-617
10	10 AWG	M39029/107-624	850-007-10-624	M39029/106-618	850-006-10-618

MATERIAL AND FINISH

- Copper alloy, plated with 5 microns gold over 45 microns palladium alloy.
- Rated to 1500 cycles of durability.

#8 HIGH POWER CONTACTS



How-To-Order #8 High Power Contacts			
Type	Mating End Size	Wire Accommodation	Glenair Part Number
Socket	8	8 AWG	850-013
Pin	8	8 AWG	850-014

MATERIAL AND FINISH

Contact Body: Copper alloy, plated with 50 microinches gold per ASTM B488 Type II code C over 50–100 microinches nickel IAW SAE AMS-QQ-N-290, class II
 Hood: CRES, passivated

SIZE #8 COAXIAL CONTACTS



These #8 contacts accept 95 ohm coaxial cable. Inner contact is rated at 1 amp, the outer contact 12 amps. DWV rating is 1,300 Vac rms sea level, 250 Vac at 50,000 feet. Contacts are packaged individually and shipped unassembled with instruction sheet. One contact consists of outer contact, fluorocarbon dielectric, inner contact and shield crimp sleeve. Inner and outer contacts are gold-plated copper alloy. Approved to SAE AS39029. 5000 megohm insulation resistance.

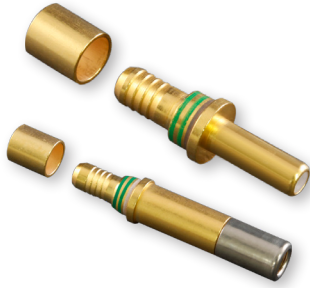
How-To-Order Size #8 Coaxial Contacts						
Type	Cable Accommodation	Part Number	Military Part Number	Color Band		
				1st	2nd	3rd
Pin	M17/095-RG180	852-007-08-367	M39029/60-367	Orange	Blue	Violet
Socket	M17/095-RG180	852-006-08-366	M39029/59-366	Orange	Blue	Blue

MATERIAL AND FINISH

- Contact Body: Copper Alloy/Gold Plated
- Center Contact: Copper Alloy/Gold Plated
- Ferrule: Copper Alloy/Gold Plated
- Insulator: Teflon

M39029 and Glenair signature solutions MIL-DTL-38999 Series III type

SIZE #12 COAXIAL CONTACTS



These contacts offer improved frequency response compared to standard coaxial contacts. VSWR is 1.32:1 at 3GHz . Nominal impedance is 50 ohms. Insertion loss at 3GHz is 0.20 dB maximum. Inner contact is rated at 1 amp, the outer contact 12 amps. DWV voltage rating is 1000 Vac rms sea level, 250 Vac at 50,000 feet. Contacts are packaged individually and shipped unassembled with instruction sheet. Inner and outer contacts are gold-plated copper alloy. 5000 megohm insulation resistance.

How-To-Order Size #12 Coaxial Contacts						
Type	Cable Accommodation	Part Number	Military Part Number	Color Band		
				1st	2nd	3rd
Pin	M17/113-RG316	852-004-12-558	M39029/102-558	Green	Green	Gray
	M17/094-RG179					
Socket	M17/113-RG316	852-005-12-559	M39029/103-559	Green	Green	White
	M17/094-RG179					

MATERIAL AND FINISH

- Contact Body: Copper Alloy/Gold Plated
- Hood: Stainless Steel/Passivated
- Center Contact: Copper Alloy/Gold Plated
- Crimp Sleeve: Copper Alloy/Gold Plated
- Insulator: Teflon

SIZE #16 COAXIAL CONTACTS



These #16 contacts accept 50 ohm and 75 ohm coaxial cable. Inner contact is rated at 1 amp, the outer contact 12 amps. DWV rating is 800 Vac rms sea level, 250 Vac at 50,000 feet. Contacts are packaged individually and are unassembled with instruction sheet. One contact consists of outer contact , fluorocarbon dielectric, inner contact and shield crimp sleeve. Inner and outer contacts are gold-plated copper alloy. Approved to SAE AS39029. VSWR rating 1.5:1 maximum up to 700 MHz. 5000 megohm insulation resistance.

How-To-Order Size #8 Coaxial Contacts						
Type	Cable Accommodation	Part Number	Military Part Number	Color Band		
				1st	2nd	3rd
Pin	M17/119-RG174, M17/113-RG316, M17/094-RG179, Times AA3248, Teledyne 11299, Haveg 8100207, Thermax 75-738-BCCWXE, Tensolite 3088/L707YX-1	852-008-16-424	M39029/76-424	Yellow	Red	Yellow
	M19/093-RG178	852-008-16-425	M39029/76-425	Yellow	Red	Green
	Haveg 61-02051, Revere WH95623	852-008-16-426	M39029/76-426	Yellow	Red	Blue
	Haveg 30-00761, Haveg 30-02024, Haveg 30-02033, Tensolite 24713/A955KK1, Tensolite 26723/A955KK1	852-008-16-427	M39029/76-427	Yellow	Red	Violet
Socket	M17/119-RG174, M17/113-RG316, M17/094-RG179, Times AA3248, Teledyne 11299, Haveg 8100207, Thermax 75-738-BCCWXE, Tensolite 30888/L707YX-1	852-009-16-428	M39029/77-428	Yellow	Red	Gray
	M17/093-RG178	852-009-16-429	M39029/77-429	Yellow	Red	White
	Haveg 61-02051, Revere WH95623	852-009-16-430	M39029/77-430	Yellow	Orange	Black
	Haveg 30-00761, Haveg 30-02024, Haveg 30-02033, Tensolite 24713/A955KK1, Tensolite 26723/A955KK1	852-009-16-431	M39029/77-431	Yellow	Orange	Brown

MATERIAL AND FINISH

- Contact Body: Copper Alloy/Gold Plated
- Center Contact: Copper Alloy/Gold Plated
- Crimp Sleeve: Copper Alloy/Gold Plated
- Insulator: Teflon

M39029 and Glenair signature solutions MIL-DTL-38999 Series III type

SIZE #8 CONCENTRIC TWINAX CONTACTS



These #8 concentric twinax contacts accept MIL-STD-1553 data bus twinax cable. Center and intermediate contacts are rated at 1 amp, the outer contact 12 amps. DWV rating is 500 Vac rms sea level, 125 Vac at 70,000 feet. Operating frequency is 0-20 MHz. Contacts are packaged individually and shipped unassembled with instruction sheet. One contact consists of outer contact, fluorocarbon dielectric, inner contact, intermediate contact and shield crimp bushing. All contacts are gold-plated copper alloy. Approved to SAE AS39029. 5000 megohm insulation resistance.

How-To-Order Size #8 Concentric Twinax Contacts

Type	Cable Accommodation	Part Number	Military Part Number	Color Band		
				1st	2nd	3rd
Pin	M17/176-00002	853-003-08-625	M39029/113-625	Blue	Red	Green
Socket	M17/176-00002	853-004-08-628	M39029/114-628	Blue	Red	Violet

MATERIAL AND FINISH

- Contact Body: Copper Alloy/Gold Plated
- Inner and Intermediate Contacts: Copper Alloy/Gold Plated
- Crimp Sleeve: Copper Alloy/Gold Plated
- Insulator: PEEK and PTFE (Teflon)

SIZE #8 QUADRAX CONTACTS



These #8 quadrax contacts accept 100 ohm quadrax cable. Center contacts are rated at 1 amp, the outer contact 12 amps. DWV rating is 500 Vac rms sea level, 125 Vac at 70,000 feet. Contacts are packaged individually and shipped unassembled with instruction sheet. One contact consists of outer contact, fluorocarbon dielectric, inner contacts and shield crimp bushing. All contacts are gold-plated copper alloy. 5000 megohm insulation resistance at 200Vdc. Mates with: 854-002. Ideally suited for up to 1000 Base-T gigabit Ethernet.

How-To-Order Size #8 Concentric Twinax Contacts

Type	Glenair Part Number	Military Part Number	Cable Accommodation	Grommet Follower	Cable O.D.	"A" Hex	Wire Size
Pin	854-001-01	N/A	Tensolite NF26Q100	687-754-8-1	.137	.218	26 AWG
	854-001-02	N/A	Tensolite NF24Q100	687-754-8-2	.163	.218	24 AWG
	854-001-03	N/A	Draka Fileca F-4704-6	687-754-8-3	.153	.218	26 AWG
	854-001-04	N/A	Draka Fileca F-4704-4	687-754-8-4	.175	.218	24 AWG
	854-001-05	N/A	Tensolite NF22Q100	687-754-8-5	.190	.231	22 AWG
Socket	854-002-01	N/A	Tensolite NF26Q100	687-754-8-1	.137	.218	26 AWG
	854-002-02	N/A	Tensolite NF24Q100	687-754-8-2	.163	.218	24 AWG
	854-002-03	N/A	Draka Fileca F-4704-6	687-754-8-3	.153	.218	26 AWG
	854-002-04	N/A	Draka Fileca F-4704-4	687-754-7-4	.175	.218	24 AWG
	854-002-05	N/A	Tensolite NF22Q100	687-754-8-5	.190	.231	22 AWG

MATERIAL AND FINISH

- Contact Body: Copper Alloy/Gold Plated
- Inner Contact: Copper Alloy/Gold Plated
- Crimp Bushing: Brass or equivalent/Gold Plated
- Insulator: Teflon, Ultem Series 1000 or equivalent
- Grommet/Follower: Fluorosilicone/Ultem 1000 or equivalent

**M39029 and Glenair signature solutions
MIL-DTL-38999 Series III type**

SIZE #23 CONTACTS FOR HIGH-DENSITY CONTACT ARRANGEMENTS



How-To-Order Size #23 Contacts for High-Density Arrangements						
Contact Type	Wire Size	Material	Part Number	Color Band		
				1st	2nd	3rd
Pin	#22 – #28	BeCu	M39029/18-177	Brown	Violet	Violet
Socket	#22 – #28	BeCu	M39029/17-172	Brown	Violet	Red

THERMOCOUPLE CONTACTS



How-To-Order Thermocouple Contacts				
Type	Mating End Size	Wire Accomodation	Military Part Number	Glenair Part Number
Pin	22	22-28 AWG	M39029/87-470	850-023-22-470
	22	22-28 AWG	M39029/87-471	850-023-22-471
	22	22-28 AWG	M39029/87-472	850-023-22-472
	22	22-28 AWG	M39029/87-473	850-023-22-473
	20	20-24 AWG	M39029/87-474	850-023-20-474
	20	20-24 AWG	M39029/87-475	850-023-20-475
	20	20-24 AWG	M39029/87-476	850-023-20-476
	20	20-24 AWG	M39029/87-477	850-023-20-477
	16	16-20 AWG	M39029/87-478	850-023-16-478
	16	16-20 AWG	M39029/87-479	850-023-16-479
	16	16-20 AWG	M39029/87-480	850-023-16-480
	16	16-20 AWG	M39029/87-481	850-023-16-481
Socket	22	22-28 AWG	M39029/88-482	850-024-22-482
	22	22-28 AWG	M39029/88-483	850-024-22-483
	22	22-28 AWG	M39029/88-484	850-024-22-484
	22	22-28 AWG	M39029/88-485	850-024-22-485
	20	20-24 AWG	M39029/88-486	850-024-20-486
	20	20-24 AWG	M39029/88-487	850-024-20-487
	20	20-24 AWG	M39029/88-488	850-024-20-488
	20	20-24 AWG	M39029/88-489	850-024-20-489
	16	16-20 AWG	M39029/88-490	850-024-16-490
	16	16-20 AWG	M39029/88-491	850-024-16-491
	16	16-20 AWG	M39029/88-492	850-024-16-492
	16	16-20 AWG	M39029/88-493	850-024-16-493

MATERIAL AND FINISH

Copper alloy per ASTM B196 or B197, 50 microinches gold plated per ASTM B488 Type II Code C Class 1.25 over nickel plate per QQ-N-290 Class 2, 50-100 microinches.

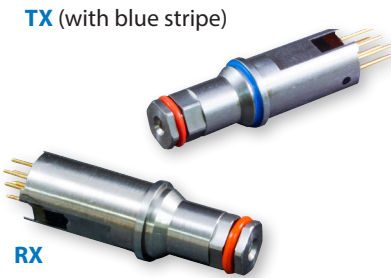
Thermocouple contacts: alumel or chromel alloy, unplated, per ANSI 96.1

Socket contact hood: stainless steel, passivated per AMS-QQ-P-35.



M39029 and Glenair signature solutions MIL-DTL-38999 Series III type

SIZE #8 CAVITY OPTOELECTRONIC CONTACT



Patent Pending

Size 8 Cavity Optoelectronic contacts transmit and receive differential CML electrical signals over Multimode fiber optic cable. Transmitters consist of a laser driver with a temperature compensation circuit to maintain optical power over the entire operating temperature range, and a 850nm VCSEL laser. Receivers consist of an 850nm PIN Photo Detector, a Transimpedance Amplifier with automatic gain control circuit, and a Limiting Amplifier. Differential output data signals are CML compatible. The transmitter has a Tx Disable pin to turn off transmitter output and a Tx Fault pin to signal a fault condition. Receiver includes a CMOS compatible Loss of Signal Indicator to prevent invalid data.

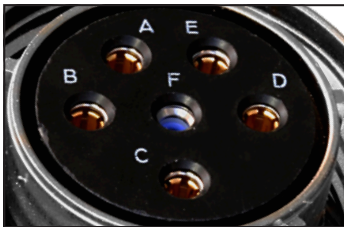
How-To-Order #8 Optoelectronic Contacts		
Type	Signal Type	Glenair Part Number
Transmitter	1.25 Gbps	050-301-01-T
	2.50 Gbps	050-301-02-T
	3.20 Gbps	050-301-03-T
	4.25 Gbps	050-301-04-T
Receiver	1.25 Gbps	050-301-01-R
	2.50 Gbps	050-301-02-R
	3.20 Gbps	050-301-03-R
	4.25 Gbps	050-301-04-R

MATERIAL/FINISH

Shell: 300CRES/Passivate or NM6
 Seal: Silicone elastomer
 Fiber ferrule & sleeve: Zirconia ceramic
 PC tail contacts: Copper alloy/gold plated

PCB flex: FR4 & Polyimide
 Solder type: RoHS compliant Sn95/Sb5 (232°C melting temp) & RoHS compliant Sn96.5/Ag3.0/Cu0.5 (217° melting)

SIZE #12 PNEUMATIC CONTACTS



Cavity F contains a Pitot tube Socket contact

Stainless steel pneumatic contacts fit MIL-DTL-38999 connectors. Contacts snap into size #12 cavities. Attach to 3/32 inch (2.38) diameter tubing. Socket contact has fluorosilicone O-ring and PTFE backup washers. Originally designed for pitot tube connections, these pneumatic contacts are rated for 100 psi maximum air pressure. No installation tool is required. Remove contacts with plastic extraction tool 809-132 (M81969/14-04).



Contact Type	For Use In	Part Number
Pin	D38999 Type, All Series	830-003¹

1. 830-003 supersedes 857-011



Contact Type	For Use In	Part Number
Socket	D38999 Type Series I, III, IV	830-005

J

Crimp contact termination instructions MIL-DTL-38999 Series III type

HOW TO TERMINATE, INSTALL AND REMOVE CRIMP CONTACTS

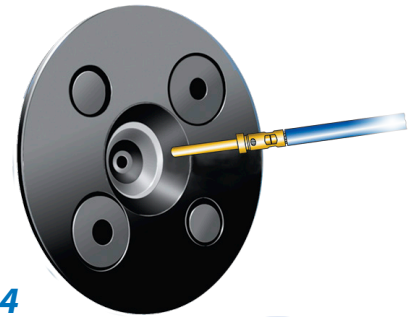
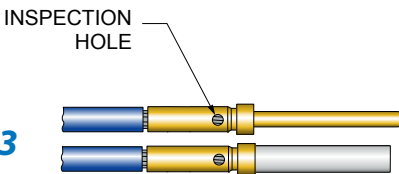
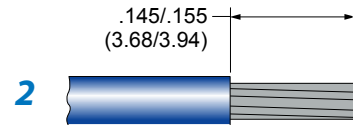
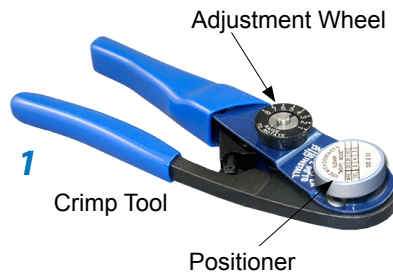
1 Set Up Crimp Tool. Install proper positioner into crimp tool. The label on the positioner shows the proper tool setting for each wire size. Turn the adjustment wheel to the correct setting.

2 Strip Wire. Remove wire insulation, taking care to avoid nicking or cutting wire strands. Strip wire to length shown.

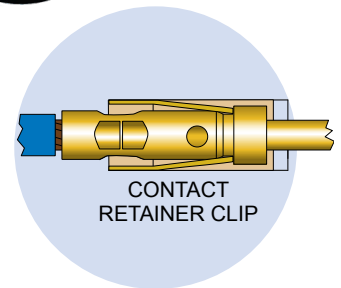
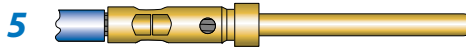
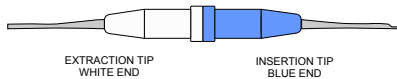
3 Insert wire into contact. The wire should be visible in the inspection hole.

4 Insert contact into crimp tool as shown. Make sure that the contact is fully inserted into the tool. Squeeze handle completely. The ratchet mechanism will not allow a partial crimp. Release handle and remove contact.

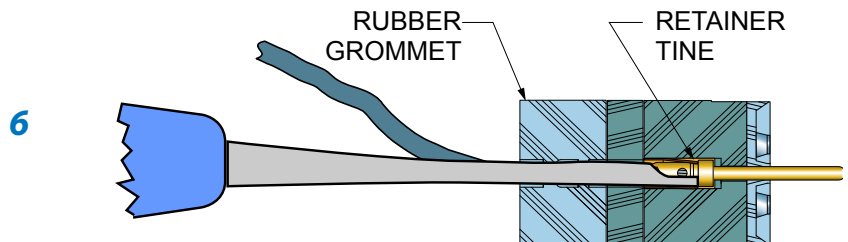
5 Inspect crimped contact. Wire should be fully inserted and the crimp should be uniform in appearance.



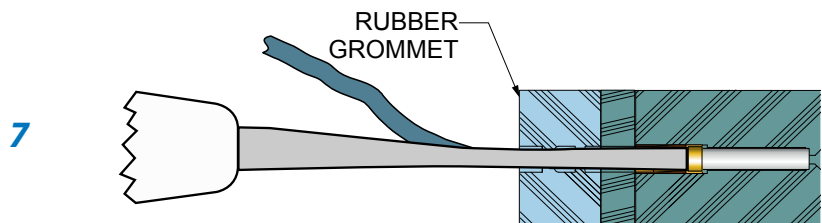
Insertion/Extraction Tool

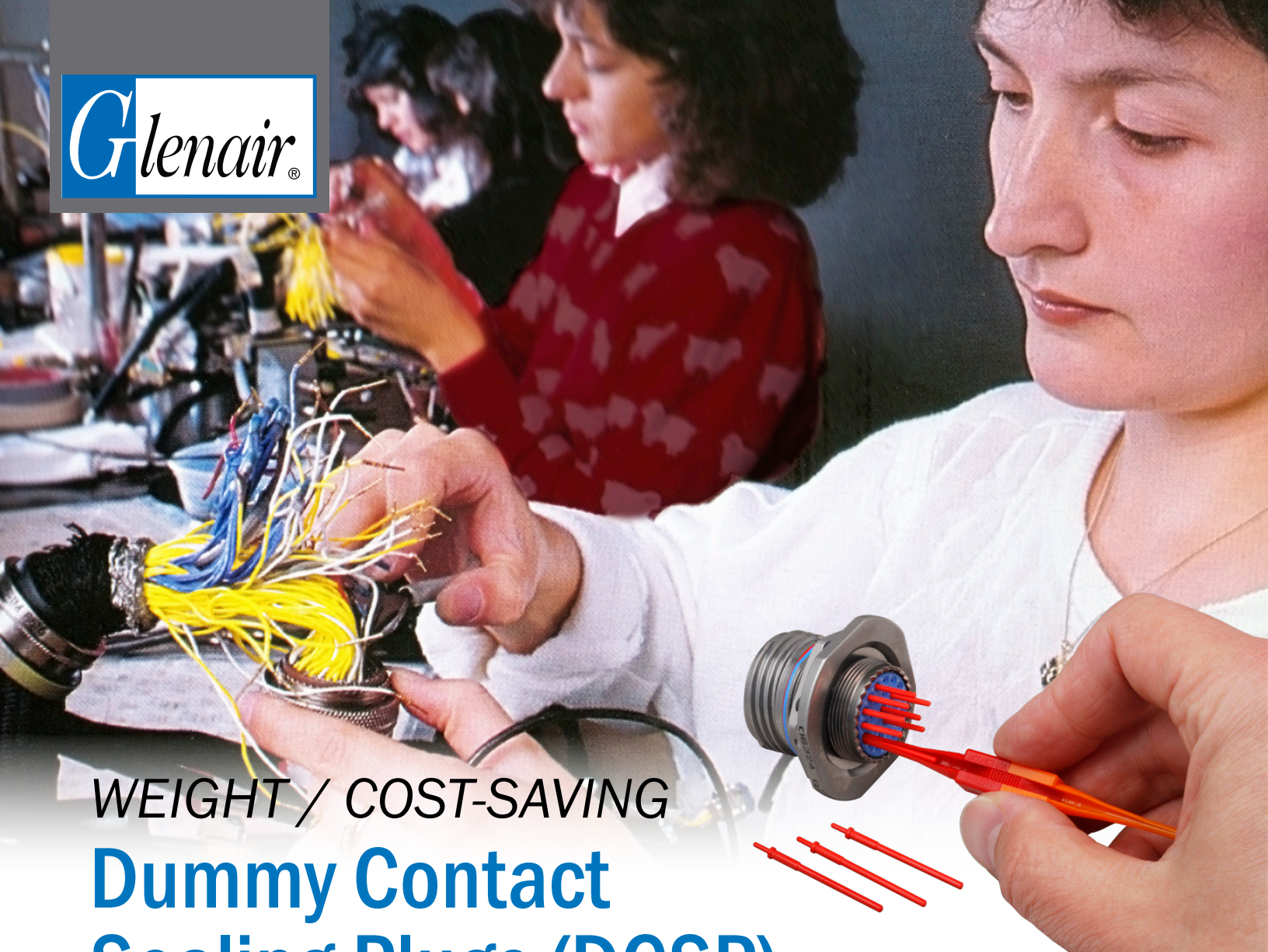


6 Install contact into connector. Push the contact through the rear grommet until the contact locks into place. This can usually be done by hand without the need for a tool. If the wire gage is #26 or smaller, a tool is helpful. There are two techniques for installing contacts with a tool. One method is to push the contact in by hand, then use the tool to finish the insertion. The other method is to position the insertion tip against the contact shoulder, then insert the contact. Use insertion/extraction tool 809-088 to install contacts. Slide the wire into the groove on the blue end of the tool. Slide the tool tip up the contact until it touches the contact shoulder. **USE CARE TO AVOID DAMAGING THE CONNECTOR.**



7 Contact Extraction. Use tool M81969/14-01. The white end is used for contact extraction. First, push the wire into the groove of the metal tip. Slide the tip of the tool into the connector. Push the tool into the connector cavity until the tip bottoms in the connector. Avoid wiggling or rocking the tip. This may damage the cavity. A straight push is best. Pinch the wire between your finger and the white plastic grip and slide the tool and contact out of the connector. **Wire insulation diameter greater than 0.045 inches (1.14mm) is too large to work properly with the extraction tool. Connector damage is possible.**





WEIGHT / COST-SAVING

Dummy Contact Sealing Plugs (DCSP)

For reliable sealing of unused contact cavities—without the use of electrical contacts

The use of color-coded M27488 type plastic sealing plugs in unused contact cavities is a requirement in all environmental interconnect applications (IAW NA01-1A-505-1, WP 007 00 or 020 00). Conventional sealing plugs, combined with the connector grommet seal, provide reliable dust and moisture ingress protection. But common contact sealing plugs still require that a properly-sized electrical contact be first inserted into the cavity, followed by the plastic plug. Glenair innovative Dummy Contact Sealing Plugs (DCSP) eliminate the need to use expensive electrical contacts as part of the sealing regimen. Fast and easy-to-install, these longer form-factor Dummy Contact Sealing Plugs (DCSP) are a one-piece solution to contact cavity sealing that results in significant weight reduction, material cost reduction, and assembly labor. Available in Size #23 to Size #8, for connector series D38999, Glenair Dummy Contact Sealing Plugs reduce weight as much as 90% compared to conventional contact/sealing plug configurations.



- Powerful tool in Electrical Wire Interconnect System weight reduction
- Eliminates use of expensive electrical contacts for sealing-only applications
- Leverages connector contact clip for secure retention of the sealing plug—no possibility of FOD
- Easy-to-install single piece design
- Visible quality control / confirmation of cavity fill from back of connector
- EWIS compliant test report available, ref. GT 15-106

SuperNine® Weight/cost-saving Dummy Contact Sealing Plugs (DCSP) MIL-DTL-38999 Series III type



Dummy Contact Sealing Plug (DCSP) Weight Savings: Size #20 Contact Arrangements

MIL-DTL-38999 Insert Arrangement					Spare Socket Cavity Components				Spare Pin Cavity Components				Mated Pair
Shell Size	Arrangement	Available Cavities	Filled Cavities	Percent Fill	Socket Contact	Sealing Plug	Dummy Contact	Weight Savings	Pin Contact	Sealing Plug	Dummy Contact	Weight Savings	Weight Savings
					M39029/56-351	MS27488-20-2	680-116-20	(grams)	M39029/58-363	MS27488-20-2	680-116-20	(grams)	(grams)
9	98	3	2	67	0.50	0.08	0.06	0.52	0.14	0.08	0.06	0.15	0.67
11	98	6	4	67	1.00	0.16	0.12	1.04	0.27	0.16	0.12	0.31	1.34
13	98	10	8	80	1.00	0.16	0.12	1.04	0.27	0.16	0.12	0.31	1.34
15	19	19	14	74	2.50	0.39	0.30	2.59	0.68	0.39	0.30	0.77	3.36
17	26	26	20	77	3.00	0.47	0.36	3.11	0.82	0.47	0.36	0.92	4.03
19	32	32	24	75	4.00	0.62	0.48	4.14	1.09	0.62	0.48	1.23	5.38
21	41	41	32	78	4.50	0.70	0.54	4.66	1.22	0.70	0.54	1.39	6.05
23	55	55	44	80	5.50	0.86	0.66	5.70	1.50	0.86	0.66	1.69	7.39
25	61	61	48	79	6.50	1.01	0.78	6.73	1.77	1.01	0.78	2.00	8.74

Weight Savings per 1,000 Dummy Contact Sealing Plugs (DCSP)

Number of Spare Contact Cavities Sealed	Spare Socket Cavity Components				Spare Pin Cavity Components				Mated Pair
	Socket Contact	Sealing Plug	Dummy Contact	Weight Savings	Pin Contact	Sealing Plug	Dummy Contact	Weight Savings	Weight Savings
	M39029/56-351	MS27488-20-2	680-116-20	(grams) (lbs)	M39029/58-363	MS27488-20-2	680-116-20	(grams) (lbs)	(grams) (lbs)
1000	500.0	78.0	60.0	518.0 1.14	136.0	78.0	60.0	154.0 0.34	672.0 1.48

Dummy Contact Sealing Plug (DCSP) Weight Savings: Size #22 Contact Arrangements

MIL-DTL-38999 Insert Arrangement					Spare Socket Cavity Components				Spare Pin Cavity Components				Mated Pair
Shell Size	Arrangement	Available Cavities	Filled Cavities	Percent Fill	Socket Contact	Sealing Plug	Dummy Contact	Weight Savings	Pin Contact	Sealing Plug	Dummy Contact	Weight Savings	Weight Savings
					M39029/56-348	MS27488-22-2	680-116-22	(grams)	M39029/58-360	MS27488-22-2	680-116-22	(grams)	(grams)
9	35	6	4	67	0.50	0.06	0.07	0.49	0.14	0.06	0.07	0.13	0.62
11	35	13	10	77	0.75	0.09	0.11	0.73	0.22	0.09	0.11	0.20	0.93
13	35	22	16	73	1.49	0.18	0.22	1.46	0.43	0.18	0.22	0.40	1.85
15	35	37	28	76	2.24	0.27	0.32	2.19	0.65	0.27	0.32	0.59	2.78
17	35	55	44	80	2.74	0.33	0.40	2.67	0.79	0.33	0.40	0.73	3.40
19	35	66	52	79	3.49	0.42	0.50	3.40	1.01	0.42	0.50	0.92	4.33
21	35	79	62	78	4.23	0.51	0.61	4.13	1.22	0.51	0.61	1.12	5.25
23	35	100	80	80	4.98	0.60	0.72	4.86	1.44	0.60	0.72	1.32	6.18
25	35	128	102	80	6.47	0.78	0.94	6.32	1.87	0.78	0.94	1.72	8.03

Weight Savings per 1,000 Dummy Contact Sealing Plugs (DCSP)

Number of Spare Contact Cavities Sealed	Spare Socket Cavity Components				Spare Pin Cavity Components				Mated Pair
	Socket Contact	Sealing Plug	Dummy Contact	Weight Savings	Pin Contact	Sealing Plug	Dummy Contact	Weight Savings	Weight Savings
	M39029/56-348	MS27488-22-2	687-116-22	(grams) (lbs)	M39029/58-360	MS27488-22-2	680-116-22	(grams) (lbs)	(grams) (lbs)
1000	249.0	30.0	36.0	243.0 0.54	72.0	30.0	36.0	66.0 0.15	309.0 0.68

Reference Weights

Component	Weight (g)	Component	Weight (g)
MS27488-22-2	0.030	MS27488-16-3	0.140
M39029/58-360	0.072	M39029/58-364	0.333
M39029/56-348	0.249	M39029/56-352	0.769
Glenair DCSP 660-116-22	0.036	Glenair DCSP 660-116-16	0.140
MS27488-20-2	0.078	MS27488-12-3	0.260
M39029/58-363	0.136	M39029/58-365	0.681
M39029/56-351	0.500	M39029/56-353	1.600
Glenair DCSP 660-116-20	0.060	Glenair DCSP 687-116-12	0.280
		Glenair DCSP 687-821-8	1.800

SuperNine® Weight/cost-saving Dummy Contact Sealing Plugs (DCSP) MIL-DTL-38999 Series III type



680-116 DUMMY CONTACT SEALING PLUG FOR D38999

Part Number Development			
Sample Part Number	680-116	-8	B
Series	680-116 = Dummy contact sealing plug		
Dash No.	See Table I		
Boot Option	B = Boot supplied with assembly (dash -8 only) Omit for none		

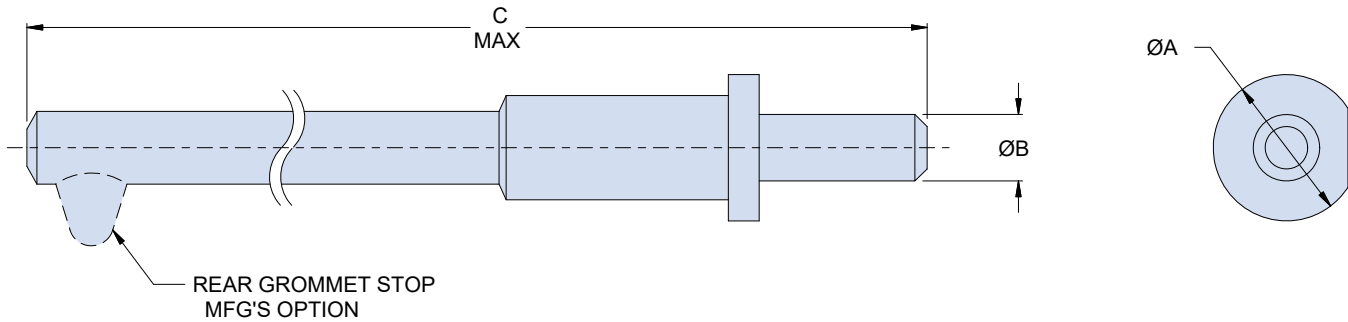


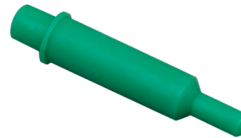
Table I									
Contact Cavity Size/Dash Number	Color Code	ØA		ØB		C Max		Extraction Tool	Standard Pkg. Size
		in.	mm	in.	mm	in.	mm		
-8	Green	.315	8.00	.218	5.54	1.51	38.4	M81969/14-06	100
-12	Orange	.181	4.60	.094	2.39	1.18	30.0	M81969/14-04	100
-16	Violet	.128	3.25	.062	1.57	1.18	30.0	M81969/14-03	500
-20	Red	.093	2.36	.040	1.02	1.18	30.0	M81969/14-10	1000
-22	Black	.061	1.55	.030	.76	1.18	30.0	M81969/14-01	1000
-23	White	.054	1.37	.027	.69	1.18	30.0	M81969/1-05	1000

1. Molded plastic material, 200° minimum temperature limit
2. Designed to seal the unused contact cavities of the MIL-DTL-38999 Ser. I, II, III, IV
3. Size 8 dummy contact requires a boot (ref P/N 859-165-02) to seal the cavity of the grommet, supplied by selecting option "B" in the part number

SuperNine® Weight/cost-saving Dummy Contact Sealing Plugs (DCSP) MIL-DTL-38999 Series III type

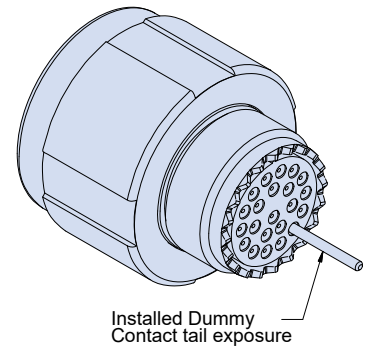
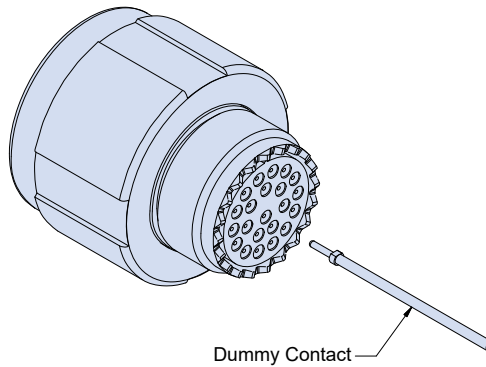


Connector Series / Size / Color Code / Part Number Selection							
Connector Series	Crimp Removable Contact Cavity Size						
	23	22	20	16	12	8	8 w/ Boot
D38999 Series I, III, IV	680-116-23	680-116-22	680-116-20	680-116-16	680-116-12	680-116-8	680A116-8B



INSTALLATION OF DUMMY CONTACTS

1. Insert Dummy Contacts into unused contact cavities.
 - A. Dummy Contacts may be installed using contact insertion tool, needle nose pliers or by hand (space permitting).
 - B. Isopropyl alcohol may be used to facilitate insertion of Dummy Contacts.
2. Push Dummy Contact into cavity until flange locks into contact retention clip.
3. Attempt to pull Dummy Contact from connector body to ensure full retention.



Important note: Size #22 and #23 Dummy Contacts In 38999 socket cavities

4. Dummy Contact shall only be inserted into cavity far enough to engage retention clip.
5. Pull Contact back for maximum tail exposure.

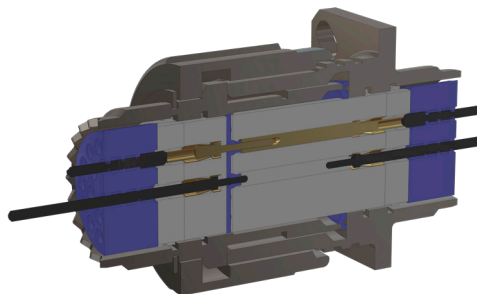
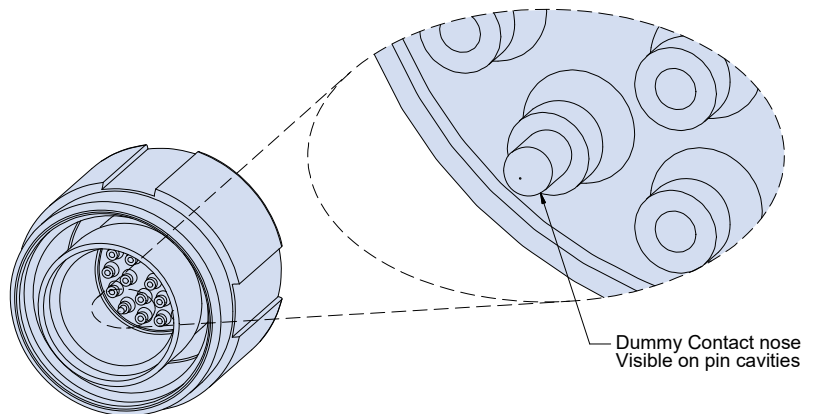


Illustration shows conventional sealing plug / contact configuration (top) and long form-factor Dummy Contact Sealing Plugs (bottom).



MINIATURE ADJUSTABLE CRIMP TOOLS



A

These crimp tools perform precision eight indent crimps for gas tight wire terminations and excellent tensile strength. Adjustment wheel has 8 settings. Ratchet mechanism prevents improper crimps. Use with bayonet type positioners. Check calibration with M22520/3 gages. Length is 6.75 inches, weight is approx. 10 oz.



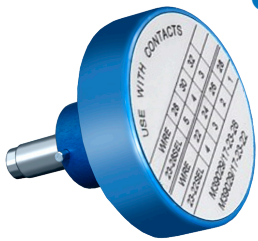
B

A Standard M22520/2-01 crimper. Use with standard #23, #22D and #20HD contacts, and with M39029/76 and /78 coaxial center contacts. Requires positioner, ordered separately.

B Special MH992 crimper used with 50 ohm matched impedance coaxial inner contacts. Requires positioner, ordered separately.

Figure	Part Number	Military Part Number	Daniels Part Number
A	809-015	M22520/2-01	AFM8
B	809-128	(none)	MH992

POSITIONERS FOR USE WITH MINIATURE ADJUSTABLE CRIMP TOOLS



C

These bayonet-type positioners hold contacts at correct height for crimping with M22520/2 type miniature step adjustable tools, above. Face plate shows correct tool settings.

Figure	Part Number	Military Part Number	Daniels Part Number	For Use With
C		M22520/2-16	K339	Size #23 M39029/17-172 contacts with #22-#28 AWG
		M22520/2-13	K338	Size #23 M39029/18-177 contacts with #22-#28 AWG
	809-057	(none)	(none)	Small bore #23 for #26-#30 AWG wire
	809-125	M22520/2-35	K532-1	M39029/76 and /78 coax inner contact
	809-124	(none)	K1360	Matched impedance #12 coax inner contact
	809-135	M22520/2-34	K323	M39029/27 and /28 coax inner contact
	859-006	(none)	K1721	Matched impedance #12 coax inner contact. (Use with 809-128 crimper tool)
	809-206	(none)	(none)	#20HD contacts
		M22520/2-10	K43	#20 contact, series I, II, III and IV
		M22520/2-09	K42	#22D contact, series I, II, III and IV Pin
		M22520/2-07	K40	#22D contact, series I, III and IV Socket
		M22520/2-06	K41	#22D contact, series II Socket
		M22520/2-35	K532-1	#16 contact, series I, II, III and IV
	M22520/2-37	K709	Quadrax Inner Contact	

Crimp tools and positioners for power and coaxial contacts MIL-DTL-38999 Series III type

CRIMP TOOL AND POSITIONER FOR #12, #16 AND #20 POWER CONTACTS, CRIMP ADAPTERS



D Crimp tool for use with size #20, #16 and #12 power pins. 9.75 inches OAL, 1.25 pounds. Use with M39029/57 and /58 contacts and 809-093 adapters.

E Positioner for use with size #20, #12 and #16 Power contacts.

F Positioner for use with 809-093 Mighty Mouse and Micro Crimp wire adapters.

Figure	Part Number	Military Part Number	Daniels Part Number
D	809-136	M22520/1-01	AF8
E	809-137	M22520/1-04	TH163
F	809-138	(none)	TH653

CRIMP TOOL AND POSITIONER FOR #16 COAXIAL OUTER CONTACT



For crimping size #16 shield sleeves. These mil spec approved tools feature a ratchet mechanism to prevent damage from over crimping. Check calibration with M22520/3 gage.

G Crimp tool for use with size #16 coaxial contacts. Blue handles. 9.75 inches OAL, 1.25 pounds.

H Positioner for use with size #16 coaxial contacts. Use with 809-127 (M22520/4-01) crimp tool.

Figure	Part Number	Military Part Number	Daniels Part Number
G	809-127	M22520/4-01	GS100-1
H	809-126	M22520/4-02	GP295

CRIMP TOOL AND POSITIONER FOR #12 COAXIAL OUTER CONTACT



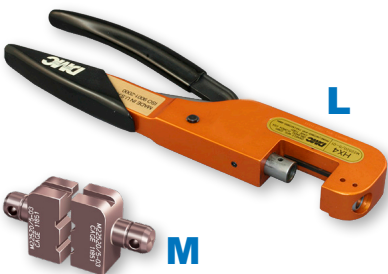
For crimping size #12 shield sleeves. These mil spec approved tools feature a ratchet mechanism to prevent damage from over crimping. Check calibration with M22520/3 gage.

J Crimp tool for use with size #12 coaxial contacts. Black handles. 9.75 inches OAL, 1.25 pounds.

K Positioner for use with size #12 coaxial contacts. Use with 809-133 (M22520/31-01) crimp tool.

Figure	Part Number	Military Part Number	Daniels Part Number
J	809-133	M22520/31-01	GS200-1
K	809-134	M22520/31-02	G2P330

PARALLEL ACTION CRIMP TOOL AND HEX DIE SET FOR 50 OHM MATCHED IMPEDANCE #12 COAX



L Parallel action tool for use with hex crimp dies. 11 inches OAL, 2.0 pounds. Anodized aluminum frame, steel mechanism, plastic handles. Includes tool for die set extraction. Accepts all M22520/5 die sets.

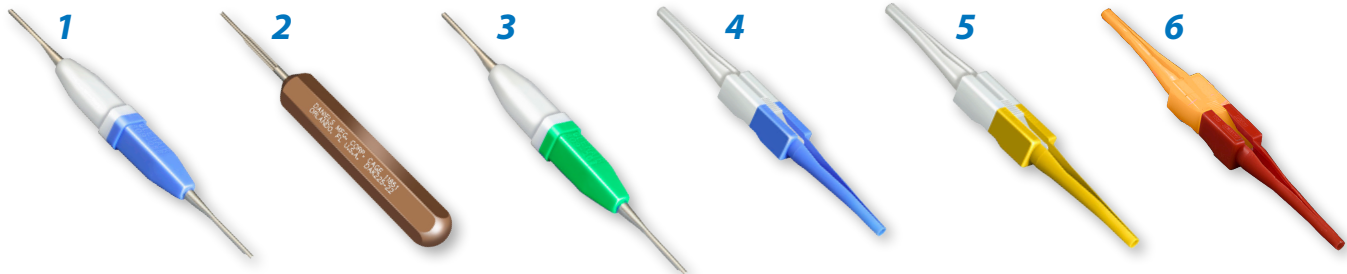
M Die set for terminating coaxial shield to outer contact. Use with size #12 matched impedance M39029/102 and 103 type coaxial contacts. Set consists of upper and lower halves. Made of hardened steel with black oxide finish. Die set has two closures.

Figure	Part Number	Military Part Number	Daniels Part Number
L	809-129	M22520/5-01	HX4
M	809-130	M22520/5-03	Y196



Insertion and extraction tools and retention tester MIL-DTL-38999 Series III type

CONTACT INSERTION AND EXTRACTION TOOLS



1 Insertion/Extraction Tool for #23 Contacts. This tool features molded plastic grips and sturdy stainless steel tips. Blue/White molded handle.

2 Insertion Tool for #23 Contacts. This tool features anodized aluminum handle and stainless steel insertion tip.

3 Insertion/Extraction Tool for #20HD Contacts. This tool features molded plastic grips and sturdy stainless steel tips. Green/White molded handle. *Add **D** to part number (**809-203D**) for all-Delrin tool, Green/Blue handle.

4 Insertion/Extraction Tool for #16 Contacts. Use with size #16 coaxial or power contacts. Economical molded plastic. White extraction tip, blue insertion tip.

5 Insertion/Extraction Tool for #12 Contacts. Use with size #12 coaxial or power contacts. Molded plastic. White extraction tip, yellow insertion tip.

6 Insertion/Extraction Tool for #20 Contacts. Molded plastic. Orange extraction tip, red insertion tip.

Figure	Size	Type	Part Number	Military Part Number	Daniels Part Number
1	#23	Insertion/Extraction	809-088	(None)	(None)
2	#23	Insertion Only	809-013	(None)	DAK225-22
3	#20HD	Insertion/Extraction	809-203*	(None)	(None)
4	#16	Insertion/Extraction	809-131	M81969/14-03	(None)
5	#12	Insertion/Extraction	809-132	M81969/14-04	(None)
6	#20	Insertion/Extraction	809-207	M81969/14-10	(None)
	#22	Insertion/Extraction	(None)	M81969/14-01	(None)

CONTACT RETENTION TESTER FOR SIZE #23 CONTACTS



Check for properly seated contacts with this spring-loaded tester. Apply the tool tip to the mating end of a contact. Push on the handle until the spring compresses to the recommended force. A visual indicator shows full compression. The contact is properly retained if it is not displaced.

The adjustable handle should be set to 3.2 pounds (14.2 N). The pin tip is used with #23 pin contacts. The socket tip is used with #23 socket contacts.

Order the complete kit, or order the tips and handle separately.

Figure	Description	Part Number	Daniels Part Number
1	Handle	809-107-1	HT250-2
2	Pin Tip	809-107-2	68-023-01
	Socket Tip (not shown)	809-107-3	67-023-01
	Complete Kit	809-107-4	(None)

SuperNine® Tools

Band-Master ATS® Banding Tool



For Standard Bands 601-005, -040, and -049

The **601-100 Standard Band-Master ATS® Tool** weighs 1.18 lbs., and is designed for standard flat .24" width clamping bands (601-005, 601-040 and 601-049) 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.

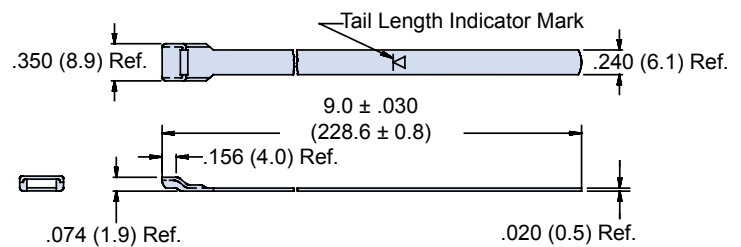
Bands	Band-Master ATS® Band Selection							
	Length		Part Number				Fits Diameter	
	in.	mm.	Flat	Pre-Coiled	100 Count Flat	100 Count Precoiled	in.	mm.
Short Standard Band	9.0	228.6	601-005	601-006	601-007	601-008	1.0	25.4
Medium Standard Band	14.0	355.6	601-040	601-041	601-042	601-043	1.8	47.8
Long Standard Band	18.0	457.2	601-049	601-050	601-051	601-052	2.5	63.5

Cable Pull Strength					
Name	Material Type	Band Width	Material Thickness	Tool Setting	Cable Pull Strength
Standard	300 SS	0.24"	.020"	150 lbs	160 lbs
Micro	300 SS	0.12"	.015"	80 lbs	80 lbs
Nano	300 SS	0.075"	.010"	35 lbs	100 lbs*

Short Flat 601-005

Short Precoiled 601-006

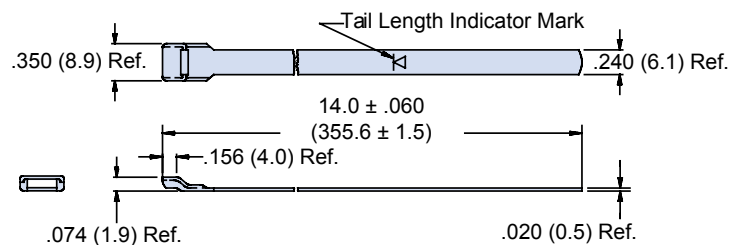
Standard Bands are precision constructed of 300 Series SST/Passivate IAW AMS 2700. Short Standard Bands are 9.00 inches (228.6) in length and designed for use with the Band-Master ATS® 601-100 hand banding tool or the 601-104 pneumatic banding tool. Bands should always be double wrapped and will accommodate diameters up to approximately 1.0 inches (25.4). Quantity packaging is also available: 100 flat (601-007) and 100 pre-coiled (601-008).



Medium Flat 601-040

Medium Precoiled 601-041

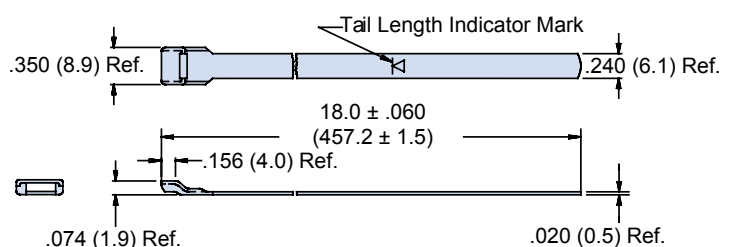
Standard Bands are precision constructed of 300 Series SST/Passivate IAW AMS 2700. Medium Standard Bands are 14.0 inches (355.6) in length and designed for use with the Band-Master ATS® 601-100 hand banding tool or the 601-104 pneumatic banding tool. Bands should always be double wrapped and will accommodate diameters up to approximately 1.8 inches (45.7). Quantity packaging is also available: 100 flat (601-042) and 100 pre-coiled (601-043).



Long Flat 601-049

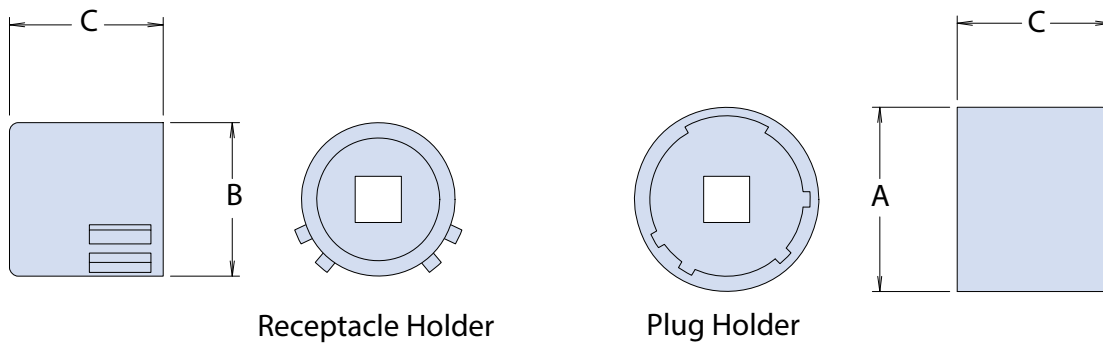
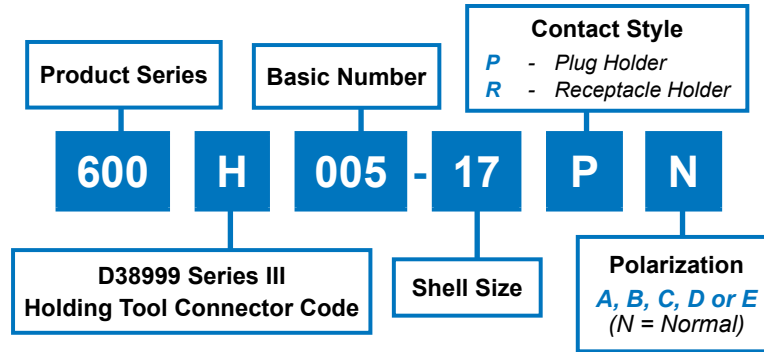
Long Precoiled 601-050

Standard Bands are precision constructed of 300 Series SST/Passivate IAW AMS 2700. Long Standard Bands are 18.0 inches (457.2) in length and designed for use with the Band-Master ATS® 601-100 hand banding tool or the 601-104 pneumatic banding tool. Bands should always be double wrapped and will accommodate diameters up to approximately 2.5 inches (63.5). Quantity packaging is also available: 100 flat (601-051) and 100 pre-coiled (601-052).



SuperNine® Tools

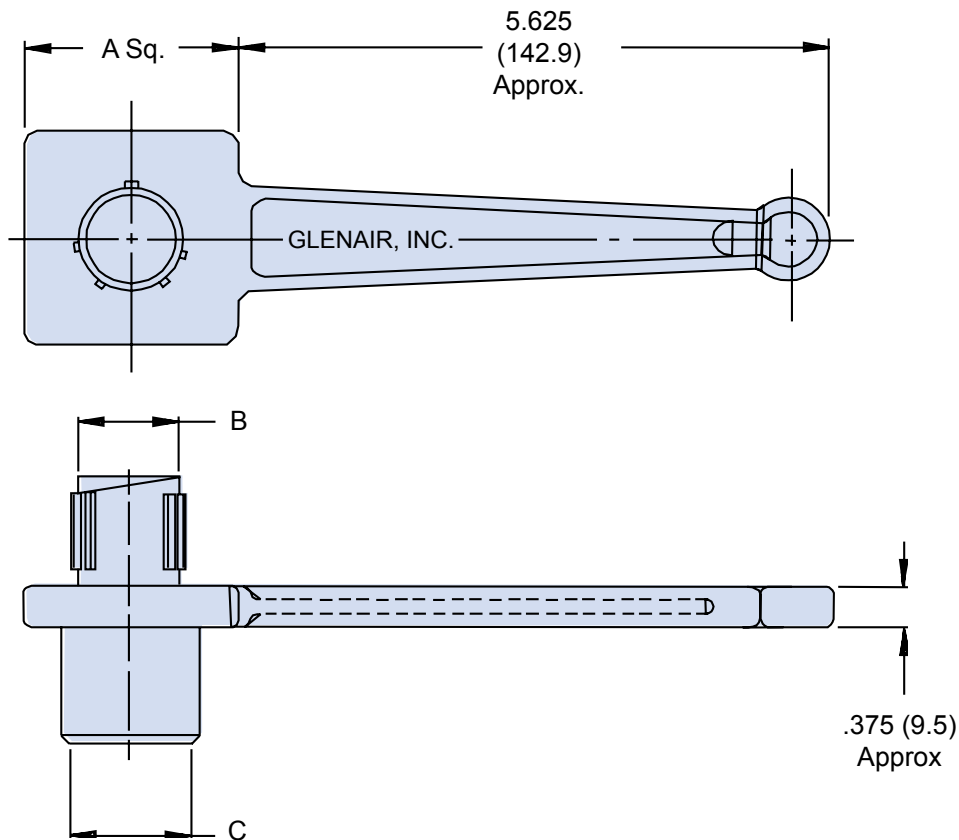
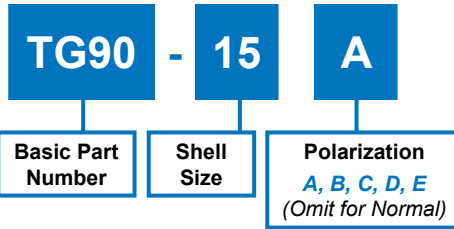
600H005 Connector holding tool, plug and receptacle MIL-DTL-38999 Series III type



Dimensions					
Shell Size	A Dia Max	B Dia Max	C Dim Max	Recommended Torque (±5 inch-pounds)	
				Metal	Composite
09	.577 (14.7)	.438 (11.1)	1.031 (26.2)	60	35
11	.709 (18.0)	.566 (14.4)		80	35
13	.829 (21.1)	.678 (17.2)		110	40
15	.954 (24.2)	.803 (20.4)		120	40
17	1.107 (28.1)	.928 (23.6)		120	40
19	1.190 (30.2)	1.033 (26.2)		120	40
21	1.315 (33.4)	1.158 (29.4)		140	80
23	1.440 (36.6)	1.283 (32.6)		140	80
25	1.565 (39.8)	1.408 (35.8)		140	80
25L	1.565 (39.8)	1.408 (35.8)		140	80

NOTES

1. Metric dimensions (mm) are indicated in parentheses.
2. Material: Case hardened carbon steel with electroless nickel finish.
3. Receptacle and plug holder drives: 1/4" - Shell sizes 09, 11 and 13; 3/8" - Shell sizes 15 and up.
4. Composite values apply when using Glenair 600-091 and 600-007 tools.



NOTES

1. Metric dimensions (mm) are indicated in parentheses.
2. Material: Aluminum alloy with electroless nickel finish.

Dimensions			
Shell Size	A Dim ± .062 (1.6)	B Dia Ref	C Dia Ref
09	1.250 (31.8)	.438 (11.1)	.441 (11.2)
11	1.250 (31.8)	.566 (14.4)	.569 (14.5)
13	1.250 (31.8)	.678 (17.2)	.682 (17.3)
15	2.000 (50.8)	.802 (20.4)	.811 (20.6)
17	2.000 (50.8)	.928 (23.6)	.931 (23.6)
19	2.000 (50.8)	1.032 (26.2)	1.037 (26.3)
21	2.000 (50.8)	1.155 (29.3)	1.162 (29.5)
23	2.750 (69.9)	1.283 (32.6)	1.288 (32.7)
25	2.750 (69.9)	1.407 (35.7)	1.411 (35.8)



600-157 Composite hex-coupling wrench MIL-DTL-38999 Series III type

STAINLESS STEEL TOOL FOR USE WITH GLENAIR COMPOSITE BACKSHELLS

600

-

157

-

K

Product Series	Basic Number	<p style="text-align: center;">Dash Number for Individual Wrench or:</p> <p><i>K</i> - Kit of dash numbers 08 thru 28, no case</p> <p><i>KC</i> - "K" kit with case</p> <p><i>KL</i> - Kit of dash numbers 32 thru 44, no case</p> <p><i>KLC</i> = "KL" kit with case</p> <p><i>KIT</i> = Kit of dash numbers 08 thru 44 with case</p>
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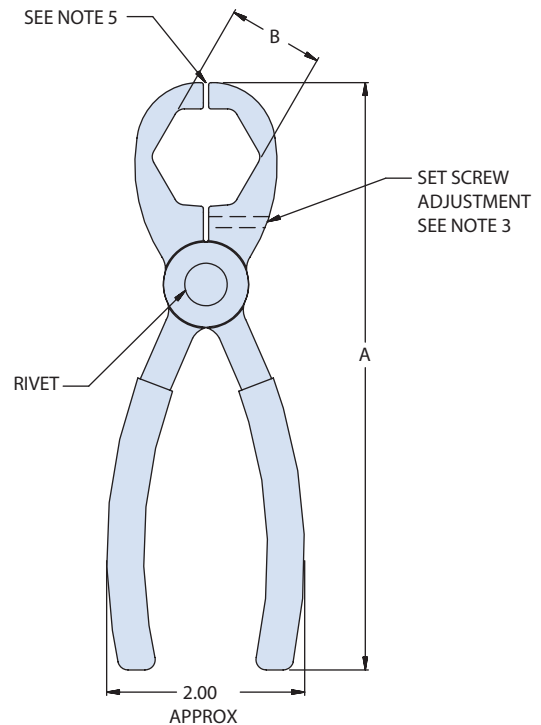
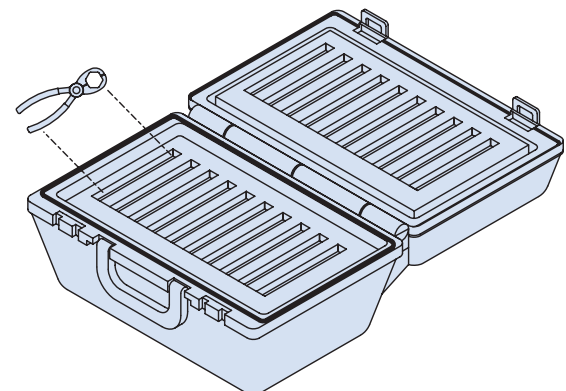


TABLE I: DASH NUMBER

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

NOTES

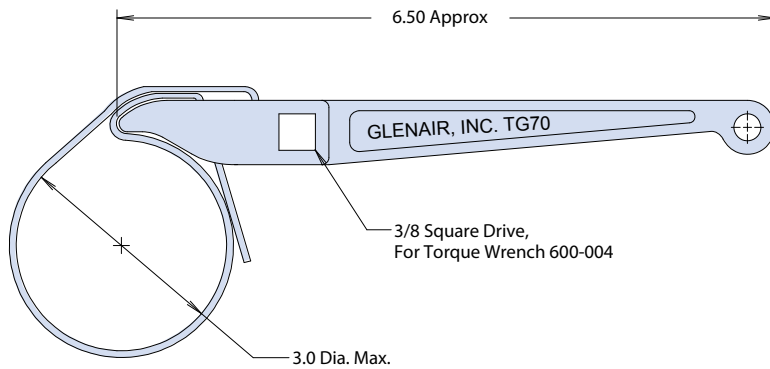
1. Use in conjunction with Glenair 600-161 torque wrench and 600-162B or 600-162BV bench mounts (see page 14).
2. Adjust set screw per tool setting procedure GAP134 (available on Glenair.com). Once adjusted must fit Glenair hex composite coupling nuts
3. Dash Number 08, 10, 12 only. Customer is responsible 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



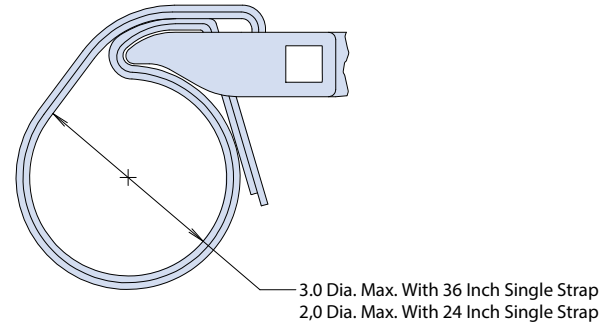
KC Option
Approximate Case Dimensions: 13.5 x 15.5 x 3.875

J

TG70 Connector strap wrench with 3/8" square drive MIL-DTL-38999 Series III type



LIGHT/MED DUTY



**HEAVY DUTY
(DOUBLE WRAPPED)**

Basic Part Number	Torque Wrench (Omit for None)
TG70 - 1 - 18	
Strap Length in Inches (See Notes 2 and 4) Lengths Available: 12, 18, 24 and 36-Inch Only Standard length is 12 Inches, Omit Dash Number for Standard	

NOTES

- These wrenches are made of the following materials:
Wrench Handle - Aluminum Alloy/Nickel Plate.
Wedge - Stainless Steel/Passivated.
Strap - Impregnated Fabric. Straps are 1/2 inch (12.7) in width.
- Replacement straps are available. Specify part number G70515-xx for 12, 18, 24 or 36-inch strap. 24 and 36 inch for double wrap.
- Metric dimensions (mm) are indicated in parentheses.
- Double wrap as shown for heavy duty range.
- Not recommended for composite coupling nuts (use 600-091 or 600-157).

Variance Chart TG-70 Strap Wrench Used with Glenair Torque Wrenches				
Shell Size	Recommended Installation Torque			
	Light/Medium Duty (±5 inch-pounds)		Heavy Duty (±5 inch-pounds)	
	TG70 Torque	Part Torque	TG70 Torque	Part Torque
09	28	35	45	60
11	28	35	70	80
13	30	40	75	110 [80]
15	30	40	75	120 [80]
17	30	40	75	120 [80]
19	30	40	75	120 [80]
21	75	80	95	140 [100]
23	75	80	120*	140
25	75	80	120*	140

*TG70 not recommended for values of 120 inch lbs. or greater

VARIANCE CHART NOTES

- Recommended installation torque is approximately 80% of MIL-C-85049 accessory thread strength values.
- Heavy duty installation torque values may be difficult to attain with the TG70 Strap Wrench; the values shown in brackets [] are the maximum attainable with the TG70 Strap Wrench using a single wrap.
- Glenair recommends using 600 series torque tools whenever possible. When torque loading exceeds 75 inch pounds, or to attain the heavy duty torque values shown, a double wrap strap provides suitable friction to achieve torque values.
- Glenair recommends that heavy duty torque values be directly read through the connector shell body with the use of 600-005 connectors holding tools.

Also
Available
from Glenair

SERIES 96

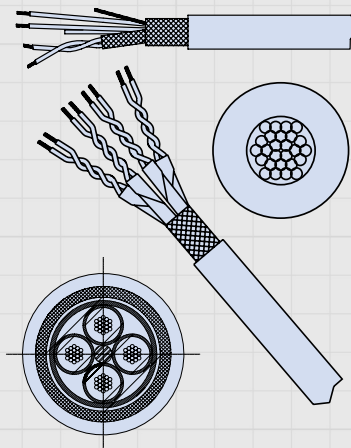
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Sophisticated wire and cable solutions—from optical fiber to high-flexibility power transmission cable

Glenair is unique in the interconnect industry in that we design and manufacture every key component part used in today's most high-performance interconnect harnesses and assemblies. From discrete contacts to connectors, backshells, EMI/RFI shielding, jacketing—and now wire and cable—Glenair manufactures and supplies the full range of requirements.

Introducing Glenair high performance wire and cable: Our line of high-performance wire and cable includes Mil-Spec and commercial variants of commonly specified M22759 type multi-conductor shielded cabling, as well as a full range of Quadrax, Coaxial, fiber optic, and protocol-specific (Ethernet, USB, Firewire and eSATA) cables. We also offer several unique and high-performance cable solutions of our own design for harsh-environment power and signal applications. Best of all, Glenair high-performance wire and cable is offered in short runs with no length or dollar minimums. Fast turnaround—up to and including stock—is our model. Call the factory or visit our website for price and delivery information.

Engineered wire and cable solutions



9-94 2 #20		I.D. No.		Location	
			X	Y	
		A	.065	.000	
		B	-.065	.000	
9-98 3 #20		I.D. No.		Location	
			X	Y	
		A	.065	.038	
		B	.000	-.075	
		C	-.065	.038	
9-35 6 #22D		I.D. No.		Location	
			X	Y	
		1	.045	.078	
		2	.078	-.045	
		3	.000	-.090	
		4	-.078	-.045	
		5	-.045	.078	
		6	.000	.000	
11-2 2 #16		I.D. No.		Location	
			X	Y	
		A	.095	.000	
		B	-.095	.000	
11-4 4 #20		I.D. No.		Location	
			X	Y	
		A	.065	.065	
		B	.065	-.065	
		C	-.065	-.065	
		D	-.065	.065	
11-05 5 #20		I.D. No.		Location	
			X	Y	
		A	.065	.056	
		B	.113	-.065	
		C	.000	-.130	
		D	-.113	-.065	
		E	-.065	.056	
11-35 13 #22D		I.D. No.		Location	
			X	Y	
		1	.000	.146	
		2	.085	.118	
		3	.138	.045	
		4	.138	-.045	
		5	.085	-.118	
		6	.000	-.146	
		7	-.085	-.118	
		8	-.138	-.045	
		9	-.138	.045	
		10	-.085	.118	
		11	.000	.056	
		12	.049	-.035	
		13	-.049	-.035	

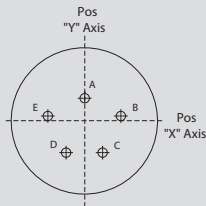
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Standard PCB footprints



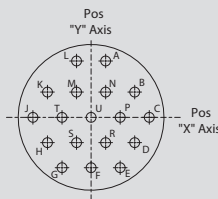
11-98 6 #20		I.D. No.		Location					
		A	X	Y					
		B	.000	.130					
		C	.130	.000					
		D	.065	-.113					
		E	-.065	-.113					
		F	-.130	.000					
		.000	.000						
11-99 7 #20		I.D. No.		Location		I.D. No.		Location	
		A	X	Y	E	X	Y		
		B	.065	.113	F	-.130	.000		
		C	.130	.000	G	-.065	.113		
		D	.065	-.113		.000	.000		
			-.065	-.113					
13-4 4 #16		I.D. No.		Location					
		A	X	Y					
		B	.000	.150					
		C	.146	.035					
		D	.000	-.083					
		-.146	.035						
13-8 8 #20		I.D. No.		Location		I.D. No.		Location	
		A	X	Y	E	X	Y		
		B	.065	.157	F	-.120	-.120		
		C	.170	.000	G	-.170	.000		
		D	.120	-.120	H	-.065	.157		
			.000	-.170		.000	.044		
13-35 22 #22D		I.D. No.		Location		I.D. No.		Location	
		1	X	Y	12	X	Y		
		2	.045	.197	13	-.182	.088		
		3	.126	.158	14	-.126	.158		
		4	.182	.088	15	-.045	.197		
		5	.203	.000	16	.045	.107		
		6	.182	-.088	17	.117	.026		
		7	.126	-.158	18	.093	-.075		
		8	.045	-.197	19	.000	-.120		
		9	-.045	-.197	20	-.093	-.075		
		10	-.126	-.158	21	-.117	.026		
		11	-.182	-.088	22	-.045	.107		
			-.203	.000		.000	-.030		
13-98 10 #20		I.D. No.		Location		I.D. No.		Location	
		A	X	Y	F	X	Y		
		B	.000	.195	G	-.164	-.105		
		C	.125	.150	H	-.193	.030		
		D	.193	.030	J	-.125	.150		
		E	.164	-.105	K	.065	-.015		
			.000	-.135		-.065	-.015		

15-5
5 #16



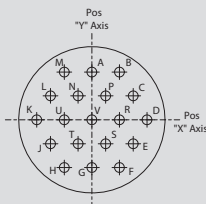
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	X	Y
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B	-.174	.024
C	.094	-.148
D	-.094	-.148
E	-.174	.024

15-18
18 #20



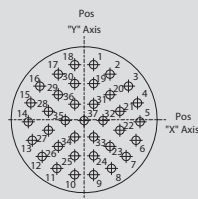
I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.065	.252	K	-.195	.113
B	.195	.113	L	-.065	.252
C	.260	.000	M	-.065	.113
D	.195	-.113	N	.065	.113
E	.130	-.225	P	.130	.000
F	.000	-.225	R	.065	-.113
G	-.130	-.225	S	-.065	-.113
H	-.195	-.113	T	-.130	.000
J	-.260	.000	U	.000	.000

15-19
19 #20



I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.000	.225	L	-.195	.113
B	.130	.225	M	-.130	.225
C	.195	.113	N	-.065	.113
D	.260	.000	P	.065	.113
E	.195	-.113	R	.130	.000
F	.130	-.225	S	.065	-.113
G	.000	-.225	T	-.065	-.113
H	-.130	-.225	U	-.130	.000
J	-.195	-.113	Y	.000	.000
K	-.260	.000			

15-35
37 #22D



I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
1	.045	.262	20	.123	.119
2	.123	.217	21	.170	.040
3	.211	.160	22	.170	-.050
4	.254	.080	23	.123	-.127
5	.266	-.010	24	.045	-.172
6	.247	-.098	25	-.045	-.172
7	.200	-.175	26	-.123	-.127
8	.130	-.232	27	-.170	-.050
9	.045	-.262	28	-.170	.040
10	-.045	-.262	29	-.123	.119
11	-.130	-.232	30	-.045	.172
12	-.200	-.175	31	.045	.074
13	-.247	-.098	32	.090	-.004
14	-.266	-.010	33	.045	-.082
15	-.254	.080	34	-.045	-.082
16	-.211	.160	35	-.090	-.004
17	-.123	.217	36	-.045	.074
18	-.045	.262	37	.000	-.004
19	.045	.172			

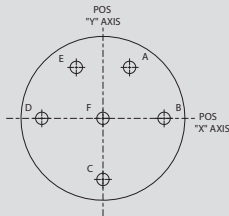
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17-06

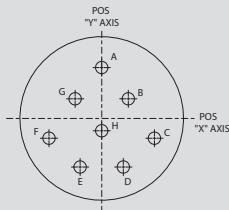
6 #12



I.D. No.	Location	
	X	Y
A	.121	.209
B	.241	.000
C	.000	-.241
D	-.241	.000
E	-.121	.209

17-08

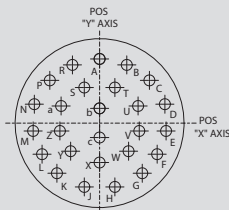
8 #16



I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.000	.236	E	-.094	-.216
B	.128	.086	F	-.230	-.078
C	.230	-.078	G	-.128	.086
D	.094	-.216	H	.000	-.052

17-26

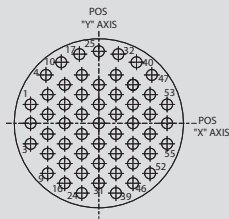
26 #20



I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.000	.321	P	-.239	.214
B	.131	.293	R	-.131	.293
C	.239	.214	S	-.070	.177
D	.305	.099	T	.070	.177
E	.319	-.034	U	.175	.094
F	.278	-.161	V	.178	-.036
G	.189	-.260	W	.119	-.151
H	.067	-.314	X	.000	-.203
J	-.067	-.314	Y	-.119	-.151
K	-.189	-.260	Z	-.178	-.036
L	-.278	-.161	a	-.175	.094
M	-.319	-.034	b	.000	.065
N	-.305	.099	c	.000	-.065

17-35

55 #22D



I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	-.312	.086	20	-.078	.041	39	.078	-.319
2	-.312	-.004	21	-.078	-.049	40	.172	.279
3	-.312	-.094	22	-.078	-.139	41	.156	.176
4	-.242	.221	23	-.078	-.229	42	.156	.086
5	-.234	.131	24	-.078	-.319	43	.156	-.004
6	-.234	.041	25	.000	.329	44	.156	-.094
7	-.234	-.049	26	.000	.176	45	.156	-.184
8	-.234	-.139	27	.000	.086	46	.156	-.274
9	-.234	-.229	28	.000	-.004	47	.242	.221
10	-.172	.279	29	.000	-.094	48	.234	.131
11	-.156	.176	30	.000	-.184	49	.234	.041
12	-.156	.086	31	.000	-.274	50	.234	-.049
13	-.156	-.004	32	.089	.316	51	.234	-.139
14	-.156	-.094	33	.078	.221	52	.234	-.229
15	-.156	-.184	34	.078	.131	53	.312	.086
16	-.156	-.274	35	.078	.041	54	.312	-.004
17	-.089	.316	36	.078	-.049	55	.312	-.094
18	-.078	.221	37	.078	-.139			
19	-.078	.131	38	.078	-.229			

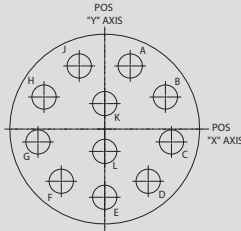
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Standard PCB footprints



19-11

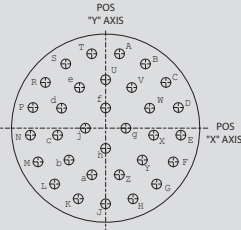
11 #16



I.D. No.	Location	
	X	Y
A	.121	.209
B	.241	.000
C	.000	-.241
D	-.241	.000
E	-.121	.209

19-32

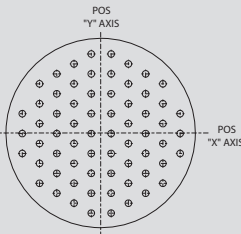
32 #20



I.D. No.	-Location		I.D. No.	Location	
	X	Y		X	Y
A	.066	.353	T	-.066	.353
B	.189	.305	U	0	.230
C	.286	.217	V	.124	.193
D	.345	.098	W	.209	.095
E	.357	-.033	X	.228	-.033
F	.321	-.160	Y	.174	-.151
G	.242	-.265	Z	.065	-.221
H	.130	-.335	a	-.065	-.221
J	0	-.359	b	-.174	-.151
K	-.130	-.335	c	.228	-.033
L	-.242	-.265	d	-.209	.095
M	-.321	-.160	e	-.124	.193
N	-.357	-.033	f	0	.096
P	-.345	.098	g	.096	0
R	-.286	.217	h	0	-.096
S	-.189	.305	j	-.096	0

19-35

66 #22D

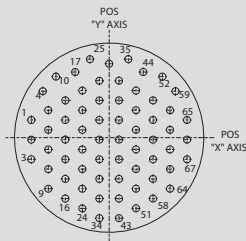


I.D. No.	-Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	-.357	.090	23	-.123	-.225	45	.123	.135
2	-.357	.000	24	-.123	-.315	46	.123	.045
3	-.357	-.090	25	-.045	.360	47	.123	-.045
4	-.279	.225	26	-.045	.270	48	.123	-.135
5	-.279	.135	27	-.045	.180	45	.123	-.225
6	-.279	.045	28	-.045	.090	50	.123	-.315
7	-.279	-.045	29	-.045	.000	51	.201	.270
8	-.279	-.135	30	-.045	-.090	52	.201	.180
9	-.279	-.225	31	-.045	-.180	53	.201	.090
10	-.201	.270	32	-.045	-.270	54	.201	.000
11	-.201	.180	33	-.045	-.360	55	.201	-.090
12	-.201	.090	34	.045	.360	56	.201	-.180
13	-.201	.000	35	.045	.270	57	.201	-.270
14	-.201	-.090	36	.045	.180	58	.279	.225
15	-.201	-.180	37	.045	.090	59	.279	.135
16	-.201	-.270	38	.045	.000	60	.279	.045
17	-.123	.315	39	.045	-.090	61	.279	-.045
18	-.123	.225	40	.045	-.180	62	.279	-.135
19	-.123	.135	41	.045	-.270	63	.279	-.225
20	-.123	.045	42	.045	-.360	64	.357	.090
21	-.123	-.045	43	.123	.315	65	.357	.000
22	-.123	-.135	44	.123	.225	66	.357	-.090



19-45

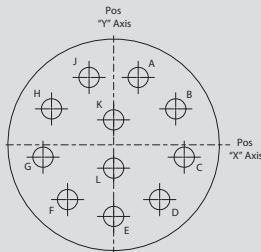
67 #22D



I.D. No.	-Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	-.357	.081	24	-.123	-.324	47	.123	.036
2	-.357	-.009	25	-.088	.360	48	.123	-.054
3	-.357	-.099	26	.000	.339	45	.123	-.144
4	-.304	.213	27	-.045	.261	50	.123	-.234
5	-.279	.126	28	-.045	.171	51	.123	-.324
6	-.279	.036	29	-.045	.081	52	.244	.280
7	-.279	-.054	30	-.045	-.009	53	.201	.171
8	-.279	-.144	31	-.045	-.099	54	.201	.081
9	-.279	-.234	32	-.045	-.189	55	.201	-.009
10	-.244	.280	33	-.045	-.279	56	.201	-.099
11	-.201	.171	34	-.045	-.369	57	.201	-.189
12	-.201	.081	35	.088	.360	58	.201	-.279
13	-.201	-.009	36	.045	.261	59	.304	.213
14	-.201	-.099	37	.045	.171	60	.279	.126
15	-.201	-.189	38	.045	.081	61	.279	.036
16	-.201	-.279	39	.045	-.009	62	.279	-.054
17	-.156	.301	40	.045	-.099	63	.279	-.144
18	-.123	.216	41	.045	-.189	64	.279	-.234
19	-.123	.126	42	.045	-.279	65	.357	.081
20	-.123	.036	43	.045	-.369	66	.357	-.009
21	-.123	-.054	44	.156	.301	67	.357	-.099
22	-.123	-.144	45	.123	.216			
23	-.123	-.234	46	.123	.126			

21-11

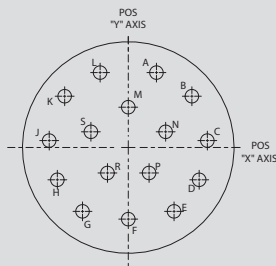
11 #12



I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.121	.332	G	-.348	-.061
B	.306	.177	H	-.306	.177
C	.348	-.061	J	-.121	.332
D	.227	-.270	K	.000	.123
E	.000	-.353	L	.000	-.115
F	-.227	-.270			

21-16

16 #16



I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.118	.322	J	-.341	.036
B	.271	.211	K	-.271	.211
C	.341	.036	L	-.118	.322
D	.308	-.150	M	.000	.175
E	.182	-.290	N	.154	.062
F	.000	-.343	P	.094	-.122
G	-.182	-.290	R	-.094	-.122
H	-.308	-.150	S	-.154	.062

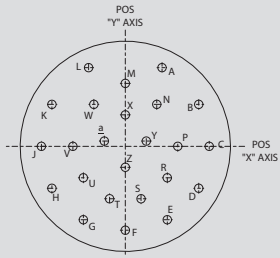
SuperNine®

Standard PCB footprints



21-24

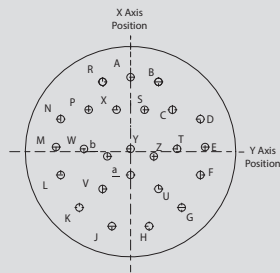
24 #20



I.D. No	-Location		I.D. No.	Location	
	X	Y		X	Y
A	.175	.375	P	.250	.000
B	.350	.200	R	.200	-.150
C	.400	.000	S	.075	-.250
D	.350	.200	T	-.075	-.250
E	.200	.350	U	-.200	-.150
F	.000	.400	V	-.250	.000
G	.200	-.350	W	-.150	-.200
H	-.350	-.200	X	.000	.150
J	-.400	.000	Y	.100	.025
K	-.350	.200	Z	.000	-.100
L	-.175	.375	a	-.100	.025
M	.000	.300			
N	.150	.200			

21-25

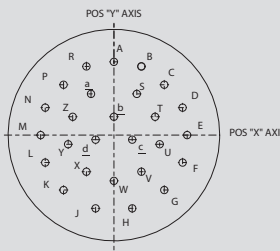
25 #20



I.D. No	-Location		I.D. No.	Location	
	X	Y		X	Y
A	.000	.400	P	-.225	.225
B	.150	.375	R	-.150	.375
C	.225	.225	S	.075	-.225
D	.375	.175	T	.250	.075
E	.400	.025	U	.150	-.200
F	.375	-.125	V	-.150	-.200
G	.275	-.300	W	-.250	.075
H	.100	-.400	X	-.075	.225
J	-.100	-.400	Y	.000	.075
K	-.275	-.300	Z	.125	-.025
L	-.375	-.125	a	.000	-.125
M	-.400	.025	b	-.125	-.025
N	-.375	.175			

21-27

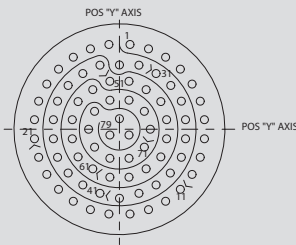
27 #20



I.D. No	-Location		I.D. No.	Location	
	X	Y		X	Y
A	.000	.400	R	-.150	.375
B	.150	.375	S	.125	.225
C	.275	.275	T	.225	.100
D	.375	.150	U	.250	-.050
E	.400	.025	V	-.150	-.200
F	.375	-.150	W	-.000	-.250
G	.275	-.300	X	-.150	-.200
H	.100	-.400	Y	-.250	-.050
J	-.100	-.400	Z	-.225	-.100
K	-.275	-.300	a	-.125	.225
L	-.375	-.150	b	.000	.100
M	-.400	.000	c	.100	-.025
N	-.375	.150	d	-.100	-.025
P	-.150	.275			

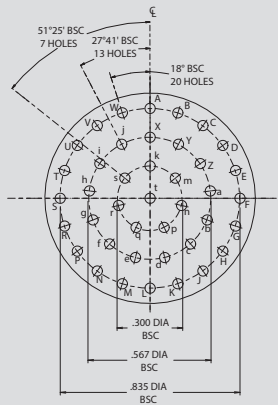


21-35
79 #22D

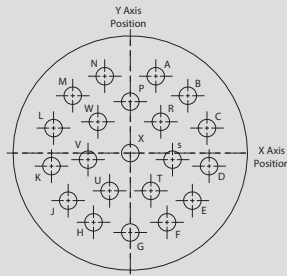


I.D. No.	-Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	.053	.426	28	-.053	.426	55	.237	.048
2	.146	.404	29	.000	.323	56	.237	-.048
3	.232	.362	30	.098	.322	57	.208	-.139
4	.306	.302	31	.184	.280	58	.134	-.199
5	.365	.227	32	.258	.220	59	.048	-.241
6	.406	.141	33	.311	.141	60	-.048	-.241
7	.427	.048	34	.332	.048	61	-.134	-.199
8	.427	-.048	35	.332	-.048	62	-.208	-.139
9	.406	-.141	36	.311	-.141	63	-.237	-.048
10	.365	-.227	37	.258	-.220	64	-.237	.048
11	.306	-.302	38	.184	-.280	65	-.208	.139
12	.232	-.362	39	.098	-.322	66	-.134	.199
13	.146	-.404	40	.000	-.347	67	-.048	.146
14	.053	-.426	41	-.098	-.322	68	.048	.146
15	-.053	-.426	42	-.184	-.280	69	.125	.090
16	-.146	-.404	43	-.258	-.220	70	.155	.000
17	-.232	-.362	44	-.311	-.141	71	.125	-.090
18	-.306	-.302	45	-.332	-.048	72	.048	-.146
19	-.365	-.227	46	-.332	.048	73	-.048	-.146
20	-.406	-.141	47	-.311	.141	74	-.125	-.090
21	-.427	-.048	48	-.258	.220	75	-.155	.000
22	-.427	.048	49	-.184	.280	76	-.125	.090
23	-.406	.141	50	-.098	.322	77	.000	.053
24	-.365	.227	51	-.048	.241	78	.048	-.029
25	-.306	.302	52	.048	.241	79	-.048	-.029
26	-.232	.362	53	.134	.199			
27	-.146	.404	54	.208	.139			

21-41
41 #20

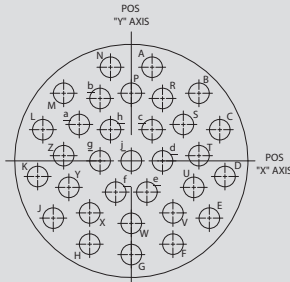


23-21
21 #16



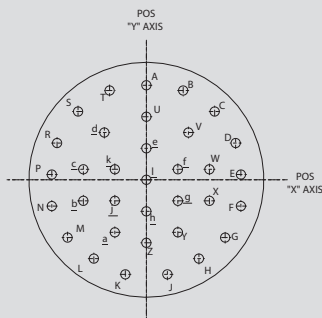
I.D. No	Location		I.D. No.	Location	
	X	Y		X	Y
A	.128	.385	M	-.289	.285
B	.289	.285	N	-.128	.385
C	.386	.123	P	.000	.245
D	.400	-.065	R	.160	.146
E	.328	-.239	S	.214	-.035
F	.183	-.362	T	.094	-.194
G	.000	-.406	U	-.094	-.194
H	-.183	-.362	V	-.214	-.035
J	-.328	-.239	W	-.160	.146
K	-.400	-.065	X	.000	.000
L	-.386	.123			

23-32
32 #20



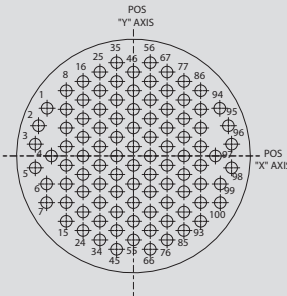
I.D. No	Location		I.D. No.	Location	
	X	Y		X	Y
A	.100 (2.54)	.450 (11.43)	T	.325 (8.26)	.025 (0.64)
B	.325 (8.26)	.325 (8.26)	U	.300 (7.62)	-.125 (3.18)
C	.425 (10.80)	.150 (3.81)	V	.200 (5.08)	-.250 (6.35)
D	.450 (11.43)	-.075 (1.91)	W	.000 (0.00)	-.300 (7.62)
E	.375 (9.53)	-.275 (6.99)	X	-.200 (5.08)	-.250 (6.35)
F	.200 (5.08)	-.400 (10.16)	Y	-.300 (7.62)	-.125 (3.18)
G	.000 (0.00)	-.450 (11.43)	Z	-.325 (8.26)	.025 (0.64)
H	-.200 (5.08)	-.400 (10.16)	a	-.250 (6.35)	.175 (4.45)
J	-.375 (9.53)	-.275 (6.99)	b	-.150 (3.81)	.300 (7.62)
K	-.450 (11.43)	-.075 (1.91)	c	.100 (2.54)	.150 (3.81)
L	-.425 (10.80)	.150 (3.81)	d	.150 (3.81)	.000 (0.00)
M	-.325 (8.26)	.325 (8.26)	e	.075 (1.91)	-.150 (3.81)
N	-.100 (2.54)	.450 (11.43)	f	-.075 (1.91)	-.150 (3.81)
P	.000 (0.00)	.325 (8.26)	g	-.150 (3.81)	.000 (0.00)
R	.150 (3.81)	.300 (7.62)	h	-.100 (2.54)	.150 (3.81)
S	.250 (6.35)	.175 (4.45)	J	.000 (0.00)	.000 (0.00)

23-34
34 #20



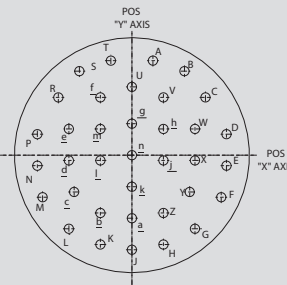
I.D. No	Location		I.D. No.	Location	
	X	Y		X	Y
A	.000	.450	U	.000	.300
B	.175	.425	V	.200	.225
C	.325	.325	W	.300	.050
D	.425	.175	X	.300	-.100
E	.450	.025	Y	.150	-.250
F	.450	-.125	Z	.000	-.300
G	.375	-.275	a	-.150	-.25
H	.250	-.375	b	-.300	-.100
J	.100	-.450	c	-.300	.050
K	-.100	-.450	d	-.200	.225
L	-.250	-.375	e	.000	.150
M	-.375	-.275	f	.150	.050
N	-.450	-.125	g	.150	-.100
P	-.450	.025	h	.000	-.150
R	-.425	.175	j	-.150	-.100
S	-.325	.325	k	-.150	.050
T	-.175	.425	l	.000	.000

23-35
100 #22D



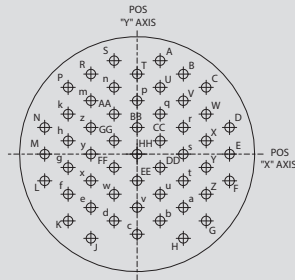
I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	-.428	.241	34	-.166	-.427	67	.166	.428
2	-.467	.154	35	-.083	.475	68	.166	.333
3	-.488	.061	36	-.083	.380	69	.166	.238
4	-.415	.000	37	-.083	.285	70	.166	.143
5	-.488	-.061	38	-.083	.190	71	.166	.048
6	-.428	-.142	39	-.083	.095	72	.166	-.047
7	-.428	-.237	40	-.083	.000	73	.166	-.142
8	-.332	.333	41	-.083	-.095	74	.166	-.237
9	-.332	.238	42	-.083	-.190	75	.166	-.332
10	-.332	.143	43	-.083	-.285	76	.166	-.427
11	-.332	.048	44	-.083	-.380	77	.249	.380
12	-.332	-.047	45	-.083	-.475	78	.249	.285
13	-.332	-.142	46	.000	.428	79	.249	.190
14	-.332	-.237	47	.000	.333	80	.249	.095
15	-.332	-.332	48	.000	.238	81	.249	.000
16	-.249	.380	49	.000	.143	82	.249	-.095
17	-.249	.285	50	.000	.048	83	.249	-.190
18	-.249	.190	51	.000	-.047	84	.249	-.285
19	-.249	.095	52	.000	-.142	85	.249	-.380
20	-.249	.000	53	.000	-.237	86	.332	.333
21	-.249	-.095	54	.000	-.332	87	.332	.238
22	-.249	-.190	55	.000	-.427	88	.332	.143
23	-.249	-.285	56	.083	.475	89	.332	.048
24	-.249	-.380	57	.083	.380	90	.332	-.047
25	-.166	.428	58	.083	.285	91	.332	-.142
26	-.166	.333	59	.083	.190	92	.332	-.237
27	-.166	.238	60	.083	.095	93	.332	-.332
28	-.166	.143	61	.083	.000	94	.428	.241
29	-.166	.048	62	.083	-.095	95	.467	.154
30	-.166	-.047	63	.083	-.190	96	.488	.061
31	-.166	-.142	64	.083	-.285	97	.415	.000
32	-.166	-.237	65	.083	-.380	98	.488	-.061
33	-.166	-.332	66	.083	-.475	99	.428	-.142
						100	.428	-.237

23-36
36 #20



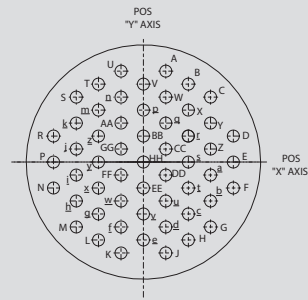
I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.100	.450	V	.150	.275
B	.250	.400	W	.300	.125
C	.350	.275	X	.300	-.025
D	.450	.100	Y	.275	-.175
E	.450	-.050	Z	.150	-.275
F	.425	-.200	a	.000	-.300
G	.300	-.350	b	-.150	-.275
H	.150	-.425	c	-.275	-.175
J	.000	-.450	d	-.300	-.025
K	-.150	-.425	e	-.300	.125
L	-.300	-.350	f	-.150	.275
M	-.425	-.200	g	.000	.150
N	-.450	-.050	h	.150	.125
P	-.450	.100	j	.150	-.025
R	-.350	.275	k	.000	-.150
S	-.250	.400	l	-.150	-.025
T	-.100	.450	m	-.150	.125
U	.000	.325	n	.000	.000

23-53
53 #20



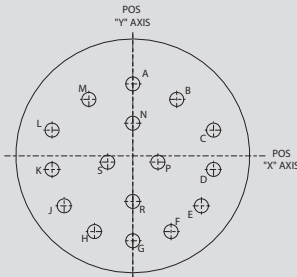
I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
A	.112	.455	V	.225	.260	r	.225	.130
B	.225	.390	W	.336	.195	s	.225	.000
C	.336	.325	X	.336	.065	t	.225	-.130
D	.450	.130	Y	.336	-.065	u	.112	-.195
E	.450	.000	Z	.336	-.195	v	.000	-.260
F	.450	-.130	a	.225	-.260	w	-.112	-.195
G	.336	-.325	b	.112	-.325	x	-.225	-.130
H	.225	-.410	c	.000	-.390	y	-.225	.000
J	-.225	-.410	d	-.112	-.325	z	-.225	.130
K	-.336	-.325	e	-.225	-.260	AA	-.112	.195
L	-.450	-.130	f	-.336	-.195	BB	.000	.130
M	-.450	.000	g	-.336	-.065	CC	.112	.065
N	-.450	.130	h	-.336	.065	DD	.112	-.065
P	-.336	.325	k	-.336	.195	EE	.000	-.130
R	-.225	.390	m	-.225	.260	FF	-.112	-.065
S	-.112	.455	n	-.112	.325	GG	-.112	.065
T	.000	.390	p	.000	.260	HH	.000	.000
U	.112	.325	q	.112	.195			

23-55
55 #20



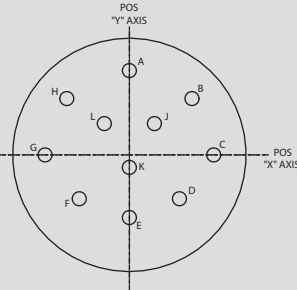
I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.112	.455	f	-.225	-.325
B	.225	.390	g	-.336	-.260
C	.336	.325	h	-.336	-.195
D	.450	.130	i	-.336	-.065
E	.450	.000	j	-.336	.065
F	.450	-.130	k	-.336	.195
G	.336	-.325	m	-.225	.260
H	.225	-.390	n	-.112	.325
J	.112	-.455	p	.000	.260
K	-.112	-.455	q	.112	.195
L	-.225	-.390	r	.225	.130
M	-.336	-.325	s	.225	.000
N	-.450	-.130	t	.225	-.130
P	-.450	.000	u	.112	-.195
R	-.450	.130	v	.000	-.260
S	-.336	.325	w	-.112	-.195
T	-.225	.390	x	-.225	-.130
U	-.112	.455	y	-.225	.000
V	.000	.390	z	-.225	.130
W	.112	.325	AA	-.112	.195
X	.225	.260	BB	.000	.130
Y	.336	.195	CC	.112	.065
Z	.336	.065	DD	.112	-.065
a	.336	-.065	EE	.000	-.130
b	.336	-.195	FF	-.112	-.065
c	.225	-.260	GG	-.112	.065
d	.112	-.325	HH	.000	.000
e	-.000	-.390			

23-97
16 #16



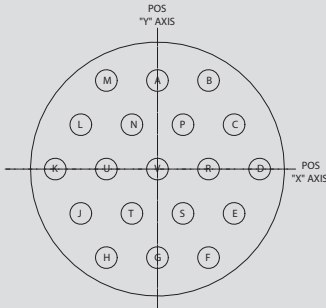
I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.000	.344	J	-.328	-.239
B	.210	.270	K	-.400	-.065
C	.386	.123	L	-.386	.123
D	.400	-.065	M	-.210	.270
E	.328	-.239	N	.000	.156
F	.183	-.362	P	.120	-.030
G	.000	-.406	R	.000	-.218
H	-.183	-.362	S	-.120	-.030

23-99
11 #16



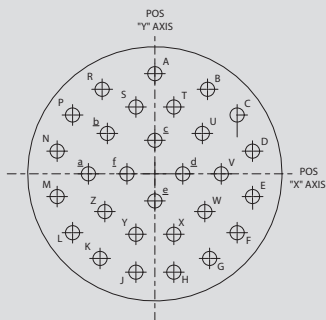
I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.000	.404	G	-.404	.000
B	.300	.270	H	-.300	.270
C	.404	.000	J	.120	.150
D	.240	-.210	K	.000	-.060
E	.000	-.300	L	-.120	.150
F	-.240	-.210			

25-19
19 #12



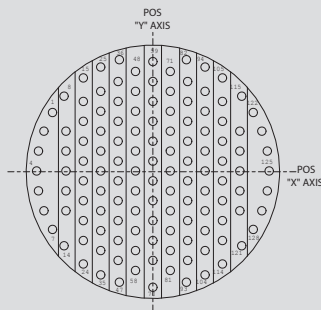
I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	0	.409	L	-.354	.205
B	.236	.409	M	-.236	.409
C	.354	.205	N	-.118	.205
D	.472	0	P	.118	.205
E	.354	-.205	R	.236	0
F	.236	-.409	S	.118	-.205
G	0	-.409	T	-.118	-.205
H	-.236	-.409	U	-.236	0
J	-.354	-.205	V	0	0
K	-.472	0			

25-29
29 #16



I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.000	.481	S	-.091	.321
B	.258	.406	T	.091	.321
C	.395	.277	U	.228	.194
D	.469	.109	V	.319	.000
E	.469	-.109	W	.240	-.181
F	.395	-.277	X	.091	-.290
G	.263	-.406	Y	-.091	-.290
H	.091	-.472	Z	-.240	-.181
J	-.091	-.472	a	-.319	.000
K	-.263	-.406	b	-.228	.194
L	-.395	-.277	c	.000	.161
M	-.469	-.109	d	.134	.000
N	-.469	.109	e	.000	-.130
P	-.395	.277	f	-.134	.000
R	-.258	.406			

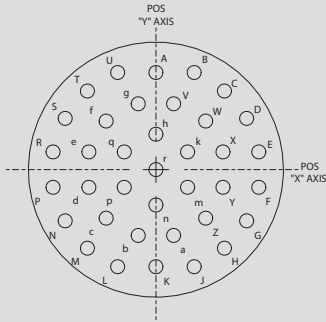
25-35
128 #22D



I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	-.479	.279	44	-.166	-.237	87	.166	.047
2	-.520	.190	45	-.166	-.332	88	.166	-.047
3	-.546	.095	46	-.166	-.427	89	.166	-.142
4	-.555	.000	47	-.166	-.522	90	.166	-.237
5	-.546	-.095	48	-.083	.475	91	.166	-.332
6	-.520	-.190	49	-.083	.380	92	.166	-.427
7	-.479	-.279	50	-.083	.285	93	.166	-.522
8	-.424	.357	51	-.083	.190	94	.249	.496
9	-.415	.190	52	-.083	.095	95	.249	.380
10	-.415	.095	53	-.083	.000	96	.249	.285
11	-.415	.000	54	-.083	-.095	97	.249	.190
12	-.415	-.095	55	-.083	-.190	98	.249	-.095
13	-.415	-.190	56	-.083	-.285	99	.249	.000
14	-.424	-.357	57	-.083	-.380	100	.249	-.095
15	-.332	.444	58	-.083	-.475	101	.249	-.190
16	-.332	.332	59	.000	.522	102	.249	-.285
17	-.332	.237	60	.000	.427	103	.249	-.380
18	-.332	.142	61	.000	.332	104	.249	-.475
19	-.332	.047	62	.000	.237	105	.332	.444
20	-.332	-.047	63	.000	.142	106	.332	.332
21	-.332	-.142	64	.000	.047	107	.332	.237
22	-.332	-.237	65	.000	-.047	108	.332	.142
23	-.332	-.332	66	.000	-.142	109	.332	.047
24	-.332	-.427	67	.000	-.237	110	.332	-.047
25	-.249	.496	68	.000	-.332	111	.332	-.142
26	-.249	.380	69	.000	-.427	112	.332	-.237
27	-.249	.285	70	.000	-.522	113	.332	-.332
28	-.249	.190	71	.083	.475	114	.332	-.427
29	-.249	.095	72	.083	.380	115	.424	.357
30	-.249	.000	73	.083	.285	116	.415	.190
31	-.249	-.095	74	.083	.190	117	.415	.095
32	-.249	-.190	75	.083	.095	118	.415	.000
33	-.249	-.285	76	.083	.000	119	.415	-.095
34	-.249	-.380	77	.083	-.095	120	.415	-.190
35	-.249	-.475	78	.083	-.190	121	.424	-.357
36	-.160	.531	79	.083	-.285	122	.479	.279
37	-.166	.427	80	.083	-.380	123	.520	.190
38	-.166	.332	81	.083	-.475	124	.546	.095
39	-.166	.237	82	.160	.531	125	.555	.000
40	-.166	.142	83	.166	.427	126	.546	-.095
41	-.166	.047	84	.166	.332	127	.520	-.190
42	-.166	-.047	85	.166	.237	128	.479	-.279
43	-.166	-.142	86	.166	.142			

25-37

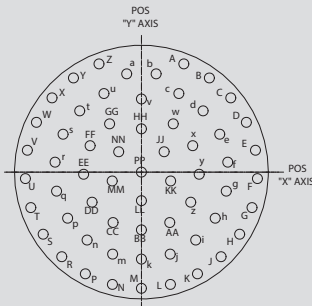
37 #16



I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
A	.000	.472	P	-.500	-.086	d	-.326	-.086
B	.186	.472	R	-.500	.086	e	-.326	.086
C	.333	.382	S	-.441	.249	f	-.242	.236
D	.441	.249	T	-.333	.382	g	-.086	.320
E	.500	.086	U	-.186	.472	h	.000	.172
F	.500	-.086	V	.086	.320	k	.154	.086
G	.441	-.249	W	.242	.236	m	.154	-.086
H	.333	-.382	X	.326	.086	n	.000	-.172
J	.186	-.472	Y	.326	-.086	p	-.154	-.086
K	.000	-.472	Z	.242	-.236	q	-.154	.086
L	-.186	-.472	a	.086	-.320	r	.000	.000
M	-.333	-.382	b	-.086	-.320			
N	-.441	-.249	c	-.242	-.236			

25-61

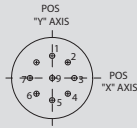
61 #20



I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
A	.196	.500	i	.251	-.314
B	.314	.435	j	.133	-.379
C	.413	.343	k	.000	-.402
D	.485	.230	m	-.133	-.379
E	.527	.101	n	-.251	-.314
F	.536	-.030	p	-.341	-.213
G	.511	-.164	q	-.392	-.088
H	.454	-.287	r	-.399	.046
J	.368	-.391	s	-.362	.175
K	.259	-.470	t	-.285	.283
L	.134	-.519	u	-.173	.363
M	.000	-.537	v	.000	.338
N	-.134	-.519	w	.147	.223
P	-.259	-.470	x	.237	.122
R	-.368	-.391	y	.267	-.010
S	-.454	-.287	z	.228	-.139
T	-.511	-.164	AA	.131	-.233
U	-.536	-.030	BB	.000	-.267
V	-.527	.101	CC	-.131	-.233
W	-.485	.230	DD	-.228	-.139
X	-.413	.343	EE	-.267	-.010
Y	-.314	.435	FF	-.237	.122
Z	-.196	.500	GG	-.147	.223
a	-.068	.454	HH	.000	.200
b	.068	.454	JJ	.105	.094
c	.173	.363	KK	.135	-.041
d	.285	.283	LL	.000	-.132
e	.362	.175	MM	-.135	-.041
f	.399	.046	NN	-.105	.094
g	.392	-.088	PP	.000	.000
h	.341	-.213			

9-23

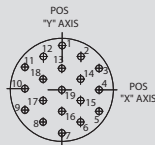
9 #23



I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
1	.000	.105	6	-.074	-.074
2	.074	.074	7	-.105	.000
3	.105	.000	8	-.074	.074
4	.074	-.074	9	.000	.000
5	.000	-.105			

11-23

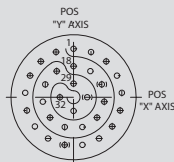
19 #23



I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
1	.000 (0.00)	.161 (4.08)	11	-.139 (3.53)	.080 (2.04)
2	.070 (1.77)	.120 (3.06)	12	-.070 (1.77)	.120 (3.06)
3	.139 (3.53)	.080 (2.04)	13	.000 (0.00)	.080 (2.04)
4	.139 (3.53)	.000 (0.00)	14	.070 (1.77)	.040 (1.02)
5	.139 (3.53)	-.080 (2.04)	15	.070 (1.77)	-.040 (1.02)
6	.070 (1.77)	-.120 (3.06)	16	.000 (0.00)	-.080 (2.04)
7	.000 (0.00)	-.161 (4.08)	17	-.070 (1.77)	-.040 (1.02)
8	-.070 (1.77)	-.120 (3.06)	18	-.070 (1.77)	.040 (1.02)
9	-.139 (3.53)	-.080 (2.04)	19	.000 (0.00)	.000 (0.00)
10	-.139 (3.53)	.000 (0.00)			

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32 #23



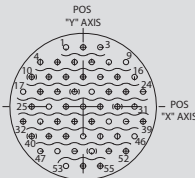
I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y
1	.000	.224	17	-.081	.209
2	.081	.209	18	.000	.143
3	.151	.165	19	.078	.121
4	.200	.100	20	.130	.059
5	.223	.021	21	.142	-.021
6	.215	-0.061	22	.108	-.094
7	.178	-0.135	23	.041	-.137
8	.118	-0.190	24	-.041	-.137
9	.041	-0.220	25	-.108	.094
10	-0.041	-0.220	26	-.142	-.021
11	-0.118	-0.190	27	-.130	.059
12	-0.178	-0.135	28	-.078	.121
13	-0.215	-0.061	29	.000	.063
14	-0.223	.021	30	.063	.000
15	-0.200	.100	31	.000	-.063
16	-0.151	.165	32	-.063	.000

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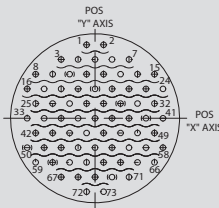


15-23
55 #23



I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	-0.080	.278	20	-0.040	.070	39	.281	-0.070
2	.000	.278	21	.040	.070	40	-0.241	-0.139
3	.080	.278	22	.121	.070	41	-0.161	-0.139
4	-0.201	.209	23	.201	.070	42	-0.080	-0.139
5	-0.121	.209	24	.281	.070	43	.000	-0.139
6	-0.040	.209	25	-0.241	.000	44	.080	-0.139
7	.040	.209	26	-0.161	.000	45	.161	-0.139
8	.121	.209	27	-0.080	.000	46	.241	-0.139
9	.201	.209	28	.000	.000	47	-0.201	-0.209
10	-0.241	.139	29	.080	.000	48	-0.121	-0.209
11	-0.161	.139	30	.161	.000	49	-0.040	-0.209
12	-0.080	.139	31	.241	.000	50	.040	-0.209
13	.000	.139	32	-0.281	-0.070	51	.121	-0.209
14	.080	.139	33	-0.201	-0.070	52	.201	-0.209
15	.161	.139	34	-0.121	-0.070	53	-0.080	-0.278
16	.241	.139	35	-0.040	-0.070	54	.000	-0.278
17	-0.281	.070	36	.040	-0.070	55	.080	-0.278
18	-0.201	.070	37	.121	-0.070			
19	-0.121	.070	38	.201	-0.070			

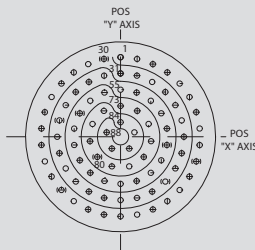
17-23
73 #23



I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	-0.040	.348	26	-0.201	.070	51	-0.241	-0.139
2	.040	.348	27	-0.121	.070	52	-0.161	-0.139
3	-0.161	.278	28	-0.040	.070	53	-0.080	-0.139
4	-0.080	.278	29	.040	.070	54	.000	-0.139
5	.000	.278	30	.121	.070	55	.080	-0.139
6	.080	.278	31	.201	.070	56	.161	-0.139
7	.161	.278	32	.281	.070	57	.241	-0.139
8	-0.281	.209	33	-0.321	.000	58	.321	-0.139
9	-0.201	.209	34	-0.241	.000	59	-0.281	-0.209
10	-0.121	.209	35	-0.161	.000	60	-0.201	-0.209
11	-0.040	.209	36	-0.080	.000	61	-0.121	-0.209
12	.040	.209	37	.000	.000	62	-0.040	-0.209
13	.121	.209	38	.080	.000	63	.040	-0.209
14	.201	.209	39	.161	.000	64	.121	-0.209
15	.281	.209	40	.241	.000	65	.201	-0.209
16	-0.321	.139	41	.321	.000	66	.281	-0.209
17	-0.241	.139	42	-0.281	-0.070	67	-0.161	-0.278
18	-0.161	.139	43	-0.201	-0.070	68	-0.080	-0.278
19	-0.080	.139	44	-0.121	-0.070	69	.000	-0.278
20	.000	.139	45	-0.040	-0.070	70	.080	-0.278
21	.080	.139	46	.040	-0.070	71	.161	-0.278
22	.161	.139	47	.121	-0.070	72	-0.040	-0.348
23	.241	.139	48	.201	-0.070	73	.040	-0.348
24	.321	.139	49	.281	-0.070			
25	-0.281	.070	50	-0.321	-0.139			

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I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	.000	.393	31	.000	.313	61	.201	-0.116
2	.082	.385	32	.081	.302	62	.150	-0.178
3	.160	.359	33	.156	.271	63	.080	-0.219
4	.231	.318	34	.221	.221	64	.000	-0.233
5	.292	.263	35	.271	.156	65	-0.080	-0.219
6	.341	.197	36	.302	.081	66	-0.150	-0.178
7	.374	.122	37	.313	.000	67	-0.201	-0.116
8	.391	.041	38	.302	-0.081	68	-0.229	-0.041
9	.391	-0.041	39	.271	-0.156	69	-0.229	.041
10	.374	-0.122	40	.221	-0.221	70	-0.201	.116
11	.341	-0.197	41	.156	-0.271	71	-0.150	.178
12	.292	-0.263	42	.081	-0.302	72	-0.080	.219
13	.231	-0.318	43	.000	-0.313	73	.000	.152
14	.160	-0.359	44	-0.081	-0.302	74	.082	.128
15	.082	-0.385	45	-0.156	-0.271	75	.139	.063
16	.000	-0.393	46	-0.221	-0.221	76	.151	-0.022
17	-0.082	-0.385	47	-0.271	-0.156	77	.115	-0.100
18	-0.160	-0.359	48	-0.302	-0.081	78	.043	-0.146
19	-0.231	-0.318	49	-0.313	.000	79	-0.043	-0.146
20	-0.292	-0.263	50	-0.302	.081	80	-0.115	-0.100
21	-0.341	-0.197	51	-0.271	.156	81	-0.151	-0.022
22	-0.374	-0.122	52	-0.221	.221	82	-0.139	.063
23	-0.391	-0.041	53	-0.156	.271	83	-0.082	.128
24	-0.391	.041	54	-0.081	.302	84	.000	.072
25	-0.374	.122	55	.000	.233	85	.069	.022
26	-0.341	.197	56	.080	.219	86	.043	-0.058
27	-0.292	.263	57	.150	.178	87	-0.043	-0.058
28	-0.231	.318	58	.201	.116	88	-0.069	.022
29	-0.160	.359	59	.229	.041			
30	-0.082	.385	60	.229	-0.041			

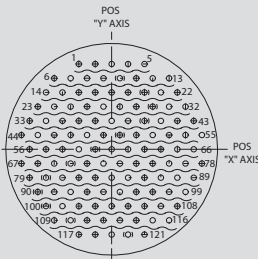
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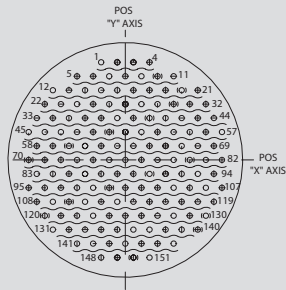
121 #23



I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	-0.161	.417	41	.241	.139	81	-0.241	-0.139
2	-0.080	.417	42	.321	.139	82	-0.161	-0.139
3	.000	.417	43	.402	.139	83	-0.080	-0.139
4	.080	.417	44	-0.442	.070	84	.000	-0.139
5	.161	.417	45	-0.361	.070	85	.080	-0.139
6	-0.281	.348	46	-0.281	.070	86	.161	-0.139
7	-0.201	.348	47	-0.201	.070	87	.241	-0.139
8	-0.121	.348	48	-0.121	.070	88	.321	-0.139
9	-0.040	.348	49	-0.040	.070	89	.402	-0.139
10	.040	.348	50	.040	.070	90	-0.361	-0.209
11	.121	.348	51	.121	.070	91	-0.281	-0.209
12	.201	.348	52	.201	.070	92	-0.201	-0.209
13	.281	.348	53	.281	.070	93	-0.121	-0.209
14	-0.321	.278	54	.361	.070	94	-0.040	-0.209
15	-0.241	.278	55	.442	.070	95	.040	-0.209
16	-0.161	.278	56	-0.402	.000	96	.121	-0.209
17	-0.080	.278	57	-0.321	.000	97	.201	-0.209
18	.000	.278	58	-0.241	.000	98	.281	-0.209
19	.080	.278	59	-0.161	.000	99	.361	-0.209
20	.161	.278	60	-0.080	.000	100	-0.321	-0.278
21	.241	.278	61	.000	.000	101	-0.241	-0.278
22	.321	.278	62	.080	.000	102	-0.161	-0.278
23	-0.361	.209	63	.161	.000	103	-0.080	-0.278
24	-0.281	.209	64	.241	.000	104	.000	-0.278
25	-0.201	.209	65	.321	.000	105	.080	-0.278
26	-0.121	.209	66	.402	.000	106	.161	-0.278
27	-0.040	.209	67	-0.442	-0.070	107	.241	-0.278
28	.040	.209	68	-0.361	-0.070	108	.321	-0.278
29	.121	.209	69	-0.281	-0.070	109	-0.281	-0.348
30	.201	.209	70	-0.201	-0.070	110	-0.201	-0.348
31	.281	.209	71	-0.121	-0.070	111	-0.121	-0.348
32	.361	.209	72	-0.040	-0.070	112	-0.040	-0.348
33	-0.402	.139	73	.040	-0.070	113	.040	-0.348
34	-0.321	.139	74	.121	-0.070	114	.121	-0.348
35	-0.241	.139	75	.201	-0.070	115	.201	-0.348
36	-0.161	.139	76	.281	-0.070	116	.281	-0.348
37	-0.080	.139	77	.361	-0.070	117	-0.161	-0.417
38	.000	.139	78	.442	-0.070	118	-0.080	-0.417
39	.080	.139	79	-0.402	-0.139	119	.000	-0.417
40	.161	.139	80	-0.321	-0.139	120	.080	-0.417
						121	.161	-0.417

23-23

151 #23



I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y
1	-0.121	.487	52	.080	.139	103	.161	-0.139
2	-0.040	.487	53	.161	.139	104	.241	-0.139
3	.040	.487	54	.241	.139	105	.321	-0.139
4	.121	.487	55	.321	.139	106	.402	-0.139
5	-0.241	.417	56	.402	.139	107	.482	-0.139
6	-0.161	.417	57	.482	.139	108	-0.442	-0.209
7	-0.080	.417	58	-0.442	.070	109	-0.361	-0.209
8	.000	.417	59	-0.361	.070	110	-0.281	-0.209
9	.080	.417	60	-0.281	.070	111	-0.201	-0.209
10	.161	.417	61	-0.201	.070	112	-0.121	-0.209
11	.241	.417	62	-0.121	.070	113	-0.040	-0.209
12	-0.361	.348	63	-0.040	.070	114	.040	-0.209
13	-0.281	.348	64	.040	.070	115	.121	-0.209
14	-0.201	.348	65	.121	.070	116	.201	-0.209
15	-0.121	.348	66	.201	.070	117	.281	-0.209
16	-0.040	.348	67	.281	.070	118	.361	-0.209
17	.040	.348	68	.361	.070	119	.442	-0.209
18	.121	.348	69	.442	.070	120	-0.402	-0.278
19	.201	.348	70	-0.482	.000	121	-0.321	-0.278
20	.281	.348	71	-0.402	.000	122	-0.241	-0.278
21	.361	.348	72	-0.321	.000	123	-0.161	-0.278
22	-0.402	.278	73	-0.241	.000	124	-0.080	-0.278
23	-0.321	.278	74	-0.161	.000	125	.000	-0.278
24	-0.241	.278	75	-0.080	.000	126	.080	-0.278
25	-0.161	.278	76	.000	.000	127	.161	-0.278
26	-0.080	.278	77	.080	.000	128	.241	-0.278
27	.000	.278	78	.161	.000	129	.321	-0.278
28	.080	.278	79	.241	.000	130	.402	-0.278
29	.161	.278	80	.321	.000	131	-0.361	-0.348
30	.241	.278	81	.402	.000	132	-0.281	-0.348
31	.321	.278	82	.482	.000	133	-0.201	-0.348
32	.402	.278	83	-0.442	-0.070	134	-0.121	-0.348
33	-0.442	.209	84	-0.361	-0.070	135	-0.040	-0.348
34	-0.361	.209	85	-0.281	-0.070	136	.040	-0.348
35	-0.281	.209	86	-0.201	-0.070	137	.121	-0.348
36	-0.201	.209	87	-0.121	-0.070	138	.201	-0.348
37	-0.121	.209	88	-0.040	-0.070	139	.281	-0.348
38	-0.040	.209	89	.040	-0.070	140	.361	-0.348
39	.040	.209	90	.121	-0.070	141	-0.241	-0.417
40	.121	.209	91	.201	-0.070	142	-0.161	-0.417
41	.201	.209	92	.281	-0.070	143	-0.080	-0.417
42	.281	.209	93	.361	-0.070	144	.000	-0.417
43	.361	.209	94	.442	-0.070	145	.080	-0.417
44	.442	.209	95	-0.482	-0.139	146	.161	-0.417
45	-0.482	.139	96	-0.402	-0.139	147	.241	-0.417
46	-0.402	.139	97	-0.321	-0.139	148	-0.121	-0.487
47	-0.321	.139	98	-0.241	-0.139	149	-0.040	-0.487
48	-0.241	.139	99	-0.161	-0.139	150	.040	-0.487
49	-0.161	.139	100	-0.080	-0.139	151	.121	-0.487
50	-0.080	.139	101	.000	-0.139			
51	.000	.139	102	.080	-0.139			

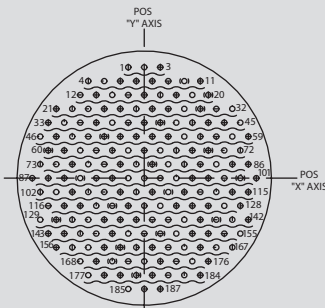
SuperNine®

High-density PCB footprints



25-23

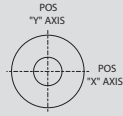
187 #23



I.D. No.	Location		I.D. No.	Location		I.D. No.	Location		I.D. No.	Location	
	X	Y		X	Y		X	Y		X	Y
1	-0.080	.556	25	-0.121	.348	49	-0.281	.209	73	-0.522	.070
2	.000	.556	26	-0.040	.348	50	-0.201	.209	74	-0.442	.070
3	.080	.556	27	.040	.348	51	-0.121	.209	75	-0.361	.070
4	-0.281	.487	28	.121	.348	52	-0.040	.209	76	-0.281	.070
5	-0.201	.487	29	.201	.348	53	.040	.209	77	-0.201	.070
6	-0.121	.487	30	.281	.348	54	.121	.209	78	-0.121	.070
7	-0.040	.487	31	.361	.348	55	.201	.209	79	-0.040	.070
8	.040	.487	32	.442	.348	56	.281	.209	80	.040	.070
9	.121	.487	33	-0.482	.278	57	.361	.209	81	.121	.070
10	.201	.487	34	-0.402	.278	58	.442	.209	82	.201	.070
11	.281	.487	35	-0.321	.278	59	.522	.209	83	.281	.070
12	-0.321	.417	36	-0.241	.278	60	-0.482	.139	84	.361	.070
13	-0.241	.417	37	-0.161	.278	61	-0.402	.139	85	.442	.070
14	-0.161	.417	38	-0.080	.278	62	-0.321	.139	86	.522	.070
15	-0.080	.417	39	.000	.278	63	-0.241	.139	87	-0.562	.000
16	.000	.417	40	.080	.278	64	-0.161	.139	88	-0.482	.000
17	.080	.417	41	.161	.278	65	-0.080	.139	89	-0.402	.000
18	.161	.417	42	.241	.278	66	.000	.139	90	-0.321	.000
19	.241	.417	43	.321	.278	67	.080	.139	91	-0.241	.000
20	.321	.417	44	.402	.278	68	.161	.139	92	-0.161	.000
21	-0.442	.348	45	.482	.278	69	.241	.139	93	-0.080	.000
22	-0.361	.348	46	-0.522	.209	70	.321	.139	94	.000	.000
23	-0.281	.348	47	-0.442	.209	71	.402	.139	95	.080	.000
24	-0.201	.348	48	-0.361	.209	72	.482	.139	96	.161	.000
97	.241	.000	121	-0.080	-0.139	145	-0.321	-0.278	169	-0.241	-0.417
98	.321	.000	122	.000	-0.139	146	-0.241	-0.278	170	-0.161	-0.417
99	.402	.000	123	.080	-0.139	147	-0.161	-0.278	171	-0.080	-0.417
100	.482	.000	124	.161	-0.139	148	-0.080	-0.278	172	.000	-0.417
101	.562	.000	125	.241	-0.139	149	.000	-0.278	173	.080	-0.417
102	-0.522	-0.070	126	.321	-0.139	150	.080	-0.278	174	.161	-0.417
103	-0.442	-0.070	127	.402	-0.139	151	.161	-0.278	175	.241	-0.417
104	-0.361	-0.070	128	.482	-0.139	152	.241	-0.278	176	.321	-0.417
105	-0.281	-0.070	129	-0.522	-0.209	153	.321	-0.278	177	-0.281	-0.487
106	-0.201	-0.070	130	-0.442	-0.209	154	.402	-0.278	178	-0.201	-0.487
107	-0.121	-0.070	131	-0.361	-0.209	155	.482	-0.278	179	-0.121	-0.487
108	-0.040	-0.070	132	-0.281	-0.209	156	-0.442	-0.348	180	-0.040	-0.487
109	.040	-0.070	133	-0.201	-0.209	157	-0.361	-0.348	181	.040	-0.487
110	.121	-0.070	134	-0.121	-0.209	158	-0.281	-0.348	182	.121	-0.487
111	.201	-0.070	135	-0.040	-0.209	159	-0.201	-0.348	183	.201	-0.487
112	.281	-0.070	136	.040	-0.209	160	-0.121	-0.348	184	.281	-0.487
113	.361	-0.070	137	.121	-0.209	161	-0.040	-0.348	185	-0.080	-0.556
114	.442	-0.070	138	.201	-0.209	162	.040	-0.348	186	.000	-0.556
115	.522	-0.070	139	.281	-0.209	163	.121	-0.348	187	.080	-0.556
116	-0.482	-0.139	140	.361	-0.209	164	.201	-0.348			
117	-0.402	-0.139	141	.442	-0.209	165	.281	-0.348			
118	-0.321	-0.139	142	.522	-0.209	166	.361	-0.348			
119	-0.241	-0.139	143	-0.482	-0.278	167	.442	-0.348			
120	-0.161	-0.139	144	-0.402	-0.278	168	-0.321	-0.417			

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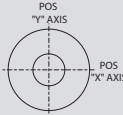
1 #8



I.D. No.	Location		Gauge
	X	Y	
A	.000	.000	8 GA

11-1

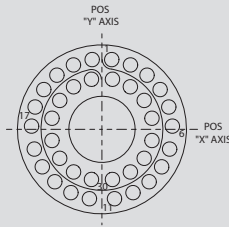
1 #8



I.D. No.	Location		Gauge
	X	Y	
A	.000	.000	8 GA

17-2

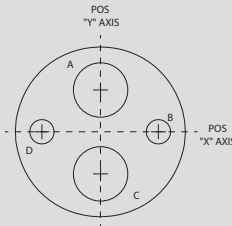
1 #8
38 #22



I.D. No.	Location		Gauge	I.D. No.	Location		Gauge
	X	Y			X	Y	
1	.046	.325	22D GA	21	-.133	.299	22D GA
2	.133	.299	22D GA	22	-.046	.325	22D GA
3	.211	.251	22D GA	23	.046	.231	22D GA
4	.272	.183	22D GA	24	.129	.197	22D GA
5	.312	.101	22D GA	25	.194	.133	22D GA
6	.328	.011	22D GA	26	.230	.050	22D GA
7	.318	-.079	22D GA	27	.232	-.040	22D GA
8	.284	-.164	22D GA	28	.200	-.125	22D GA
9	.228	-.236	22D GA	29	.137	-.191	22D GA
10	.154	-.289	22D GA	30	.055	-.229	22D GA
11	.068	-.321	22D GA	31	-.055	-.229	22D GA
12	-.068	-.321	22D GA	32	-.137	-.191	22D GA
13	.154	-.289	22D GA	33	-.200	-.125	22D GA
14	-.228	-.236	22D GA	34	-.232	-.040	22D GA
15	-.284	-.164	22D GA	35	-.230	.050	22D GA
16	-.318	-.079	22D GA	36	-.194	.133	22D GA
17	-.328	.011	22D GA	37	-.232	.197	22D GA
18	-.312	.101	22D GA	38	-.046	.231	22D GA
19	-.272	.183	22D GA	39	.000	.000	8 GA
20	-.211	.251	22D GA				

17-22

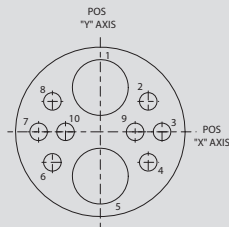
2 #8
2 #12



I.D. No.	Location		Gauge
	X	Y	
A	0	.180	8 GA
B	.249	0	12 GA
C	0	-.180	8 GA
D	.249	0	12 GA

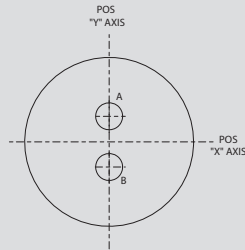
17-60

2 #8
8 #22



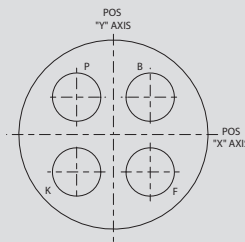
I.D. No.	Location		Gauge
	X	Y	
1	.000	.180	8 GA
2	.240	.145	22D GA
3	.297	.000	22D GA
4	.240	-.145	22D GA
5	.000	-.180	8 GA
6	-.240	-.145	22D GA
7	-.297	.000	22D GA
8	-.240	.145	22D GA
9	.177	.000	22D GA
10	-.177	.000	22D GA

17-75
2 #8



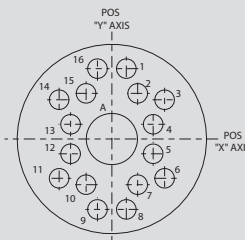
I.D. No.	Location		Gauge
	X	Y	
A	.000	.187	8 GA
B	.000	-.187	8 GA

19-4
4 #8



I.D. No.	Location		Gauge
	X	Y	
B	.180	.180	8 GA
F	.180	-.180	8 GA
K	-.180	-.180	8 GA
P	-.180	.180	8 GA

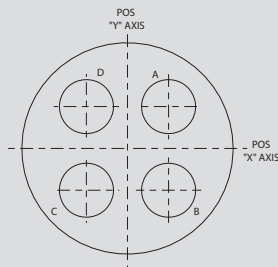
19-17
1 #8
16 #20



I.D. No.	Location		Gauge	I.D. No.	Location		Gauge
	X	Y			X	Y	
1	.046	.325	22D GA	21	-.133	.299	22D GA
2	.133	.299	22D GA	22	-.046	.325	22D GA
3	.211	.251	22D GA	23	.046	.231	22D GA
4	.272	.183	22D GA	24	.129	.197	22D GA
5	.312	.101	22D GA	25	.194	.133	22D GA
6	.328	.011	22D GA	26	.230	.050	22D GA
7	.318	-.079	22D GA	27	.232	-.040	22D GA
8	.284	-.164	22D GA	28	.200	-.125	22D GA
9	.228	-.236	22D GA	29	.137	-.191	22D GA
10	.154	-.289	22D GA	30	.055	-.229	22D GA
11	.068	-.321	22D GA	31	-.055	-.229	22D GA
12	-.068	-.321	22D GA	32	-.137	-.191	22D GA
13	.154	-.289	22D GA	33	-.200	-.125	22D GA
14	-.228	-.236	22D GA	34	-.232	-.040	22D GA
15	-.284	-.164	22D GA	35	-.230	.050	22D GA
16	-.318	-.079	22D GA	36	-.194	.133	22D GA
17	-.328	.011	22D GA	37	-.129	.197	22D GA
18	-.312	.101	22D GA	38	-.046	.231	22D GA
19	-.272	.183	22D GA	39	.000	.000	8 GA
20	-.211	.251	22D GA				

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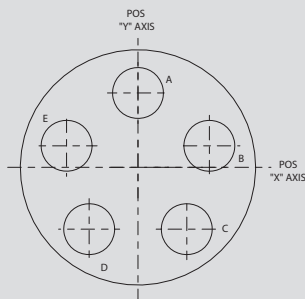
4 #8



I.D. No.	Location		Gauge
	X	Y	
B	.180	.180	8 GA
F	.180	-.180	8 GA
K	-.180	-.180	8 GA
P	-.180	.180	8 GA

23-5

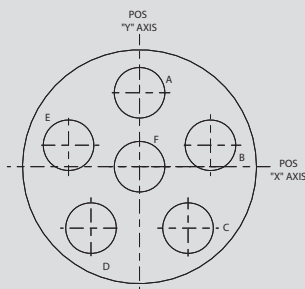
5 #8



I.D. No.	Location		Gauge
	X	Y	
A	.000	.364	8 GA
B	.347	.113	8 GA
C	.214	-.295	8 GA
D	-.214	-.295	8 GA
E	-.347	.113	8 GA

23-6

6 #8

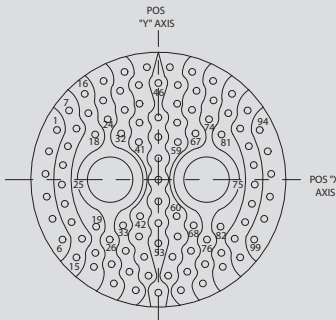


I.D. No.	Location		Gauge
	X	Y	
A	.000	.364	8 GA
B	.347	.113	8 GA
C	.214	-.295	8 GA
D	-.214	-.295	8 GA
E	-.347	.113	8 GA
F	.000	.000	8 GA

K

I.D. No.	Location		Gauge	I.D. No.	Location		Gauge
	X	Y			X	Y	
1	-.494	.242	22D GA	51	.000	-.106	22D GA
2	-.533	.138	22D GA	52	.000	-.212	22D GA
3	-.550	.028	22D GA	53	.000	-.310	22D GA
4	-.544	-.083	22D GA	54	.000	-.551	22D GA
5	-.516	-.191	22D GA	55	.056	.548	22D GA
6	-.467	-.292	22D GA	56	.095	.461	22D GA
7	-.435	.337	22D GA	57	.068	.370	22D GA
8	-.399	.249	22D GA	58	.092	.278	22D GA
9	-.441	.163	22D GA	59	.095	.183	22D GA
10	-.465	.071	22D GA	60	.089	-.178	22D GA
11	-.470	-.024	22D GA	61	.094	-.277	22D GA
12	-.456	-.118	22D GA	62	.069	-.376	22D GA
13	-.423	-.207	22D GA	63	.048	-.468	22D GA
14	-.372	-.288	22D GA	64	.165	.525	22D GA
15	-.399	-.379	22D GA	65	.186	.433	22D GA
16	-.359	.418	22D GA	66	.164	.340	22D GA
17	-.341	.324	22D GA	67	.181	.225	22D GA
18	-.308	.222	22D GA	68	.172	-.223	22D GA
19	-.303	-.223	22D GA	69	.159	-.347	22D GA
20	-.307	-.357	22D GA	70	.141	-.449	22D GA
21	-.314	-.452	22D GA	71	.111	-.539	22D GA
22	-.267	.481	22D GA	72	.267	.481	22D GA
23	-.269	.386	22D GA	73	.269	.386	22D GA
24	-.247	.294	22D GA	74	.247	.294	22D GA
25	-.238	.000	8 GA	75	.238	.000	8 GA
26	-.237	-.292	22D GA	76	.237	-.292	22D GA
27	-.228	-.412	22D GA	77	.228	-.412	22D GA
28	-.217	-.506	22D GA	78	.217	-.506	22D GA
29	-.165	.525	22D GA	79	.359	.418	22D GA
30	-.186	.433	22D GA	80	.341	.324	22D GA
31	-.164	.340	22D GA	81	.308	.222	22D GA
32	-.181	.225	22D GA	82	.303	-.223	22D GA
33	-.172	-.223	22D GA	83	.307	-.357	22D GA
34	-.159	-.347	22D GA	84	.314	-.452	22D GA
35	-.141	-.449	22D GA	85	.435	.337	22D GA
36	-.111	-.539	22D GA	86	.399	.249	22D GA
37	-.056	.548	22D GA	87	.441	.163	22D GA
38	-.095	.461	22D GA	88	.465	.071	22D GA
39	-.068	.370	22D GA	89	.470	-.024	22D GA
40	-.092	.278	22D GA	90	.456	-.118	22D GA
41	-.095	.183	22D GA	91	.423	-.207	22D GA
42	-.089	-.178	22D GA	92	.372	-.288	22D GA
43	-.094	-.277	22D GA	93	.399	-.379	22D GA
44	-.069	-.376	22D GA	94	.494	.242	22D GA
45	-.048	-.468	22D GA	95	.533	.138	22D GA
46	.000	.471	22D GA	96	.550	.028	22D GA
47	.000	.303	22D GA	97	.544	-.083	22D GA
48	.000	.208	22D GA	98	.516	-.191	22D GA
49	.000	.104	22D GA	99	.467	-.292	22D GA
50	.000	.000	22D GA				

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2 #8
97 #22D



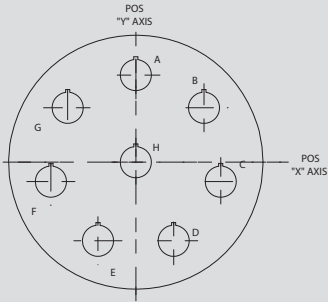
SuperNine®

High-speed PCB footprints



25-8

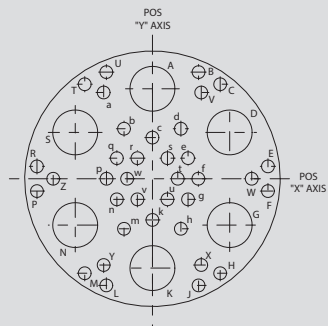
7 #8



I.D. No.	Location		Gauge
	X	Y	
A	.000 (.00)	.426 (1.82)	8 GA
B	.333 (8.46)	.266 (6.76)	8 GA
C	.415 (1.54)	-.095 (2.41)	8 GA
D	.185 (4.70)	-.384 (9.75)	8 GA
E	-.185 (4.70)	-.384 (9.75)	8 GA
F	-.415 (1.54)	-.095 (2.41)	8 GA
G	-.333 (8.46)	.266 (6.76)	8 GA
H	.000 (.00)	.000 (.00)	8 GA

25-17

6 #8
36 #22D



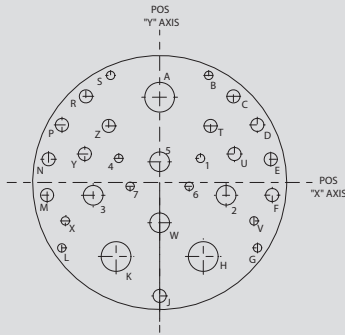
I.D. No.	Location		Gauge	I.D. No.	Location		Gauge
	X	Y			X	Y	
A	.000	.437	8 GA	a	-.237	.419	22 GA
B	.224	.518	22 GA	b	-.138	.243	
C	.329	.459	8 GA	c	.000	.200	
D	.375	.225	22 GA	d	.138	.243	
E	.561	.060	8 GA	e	.173	.100	
F	.561	-.060	22 GA	f	.223	.000	
G	.375	-.225	8 GA	g	.173	-.100	
H	.329	-.459	22 GA	h	.138	-.243	
J	.224	-.518	8 GA	k	.000	-.200	
K	.000	-.437	22 GA	m	-.138	-.243	
L	-.224	-.518	8 GA	n	-.173	-.100	
M	-.329	-.459	22 GA	p	-.223	.000	
N	-.375	-.225	8 GA	q	-.173	.100	
P	-.561	-.060	22 GA	r	-.073	.100	
R	-.561	.060	8 GA	s	.073	.100	
S	-.375	.225	22 GA	t	.123	.000	
T	-.329	.459	8 GA	u	.073	-.100	
U	-.224	.518	22 GA	v	-.073	-.100	
V	.237	.419	8 GA	w	-.123	.000	
W	.482	.000	22 GA				
X	.237	-.419					
Y	-.237	-.419					
Z	-.482	.000					

SuperNine®

High-speed PCB footprints

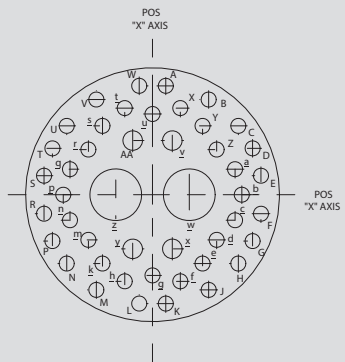


25-20
3 #8
4 #12
3 #16
10 #20



I.D. No.	Location		Gauge	I.D. No.	Location		Gauge
	X	Y			X	Y	
A	.000	.407	8 GA	S	.234	.511	20 GA
B	.234	.511	20 GA	T	.243	.270	16 GA
C	.352	.411	16 GA	U	.357	.136	16 GA
D	.466	.275	16 GA	V	.450	-.183	20 GA
E	.530	.111	16 GA	W	.000	-.131	12 GA
F	.537	-.060	16 GA	X	.450	-.183	20 GA
G	.467	-.312	20 GA	Y	.357	.136	16 GA
H	.208	-.353	8 GA	Z	.243	.270	16 GA
J	.000	-.541	16 GA	1	.195	.115	20 GA
K	-.208	-.353	8 GA	2	.317	-.061	12 GA
L	-.467	-.312	20 GA	3	-.317	-.061	12 GA
M	-.537	-.060	16 GA	4	-.195	.115	20 GA
N	.530	.111	16 GA	5	.000	.099	12 GA
P	.466	.275	16 GA	6	.141	-.018	20 GA
R	.352	.411	16 GA	7	-.141	-.018	20 GA

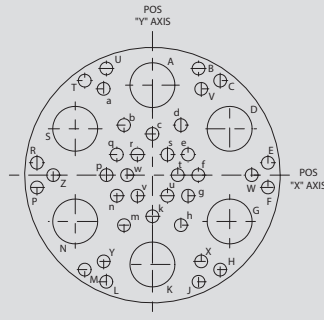
25-90
&
25-46
2 #8
4 #16
40 #20



I.D. No.	Location		Gauge	I.D. No.	Location		Gauge
	X	Y			X	Y	
A	.065	.533	20 GA	a	.404	.125	20 GA
B	.275	.466	20 GA	b	.437	.000	20 GA
C	.420	.337	20 GA	c	.404	-.125	20 GA
D	.490	.227	20 GA	d	.314	-.221	20 GA
E	.531	.093	20 GA	e	.245	-.337	20 GA
F	.531	-.093	20 GA	f	.136	-.424	20 GA
G	.490	-.227	20 GA	g	.000	-.395	20 GA
H	.420	-.337	20 GA	h	-.136	-.424	20 GA
J	.275	-.466	20 GA	k	-.245	-.337	20 GA
K	.065	-.533	20 GA	m	-.314	-.221	20 GA
L	-.065	-.533	20 GA	n	-.404	-.125	20 GA
M	-.275	-.466	20 GA	p	-.437	.000	20 GA
N	-.420	-.337	20 GA	q	-.404	.125	20 GA
P	-.490	-.227	20 GA	r	-.314	.221	20 GA
R	-.531	-.093	20 GA	s	-.245	.337	20 GA
S	-.531	.093	20 GA	t	-.136	.424	20 GA
T	-.490	.227	20 GA	u	.000	.395	20 GA
U	-.420	.337	20 GA	v	.097	.265	16 GA
V	-.275	.466	20 GA	w	.180	.000	8 GA
W	-.065	.533	20 GA	x	.097	-.265	16 GA
X	.136	.424	20 GA	y	-.097	-.265	16 GA
Y	.245	.337	20 GA	z	-.180	.000	8 GA
Z	.314	.221	20 GA	AA	-.097	.265	16 GA

25-17

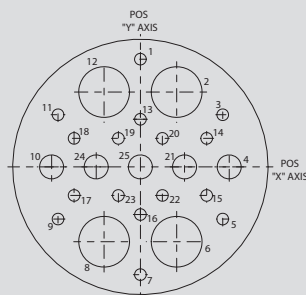
6 #8
36 #22D



I.D. No.	Location		Gauge	I.D. No.	Location		Gauge	
	X	Y			X	Y		
A	.000	.437	8 GA	a	-.237	.419	22 GA	
B	.224	.518	22 GA	b	-.138	.243		
C	.329	.459	8 GA	c	.000	.200		
D	.375	.225	8 GA	d	.138	.243		
E	.561	.060	22 GA	e	.173	.100		
F	.561	-.060	22 GA	f	.223	.000		
G	.375	-.225	8 GA	g	.173	-.100		
H	.329	-.459	22 GA	h	.138	-.243		
J	.224	-.518	22 GA	k	.000	-.200		
K	.000	-.437	8 GA	m	-.138	-.243		
L	-.224	-.518	22 GA	n	-.173	-.100		
M	-.329	-.459	22 GA	p	-.223	.000		
N	-.375	-.225	8 GA	q	-.173	.100		
P	-.561	-.060	22 GA	r	-.073	.100		
R	-.561	.060	22 GA	s	.073	.100		
S	-.375	.225	8 GA	t	.123	.000		
T	-.329	.459	22 GA	u	.073	-.100		
U	-.224	.518		v	-.073	-.100		
V	.237	.419		w	-.123	.000		
W	.482	.000						
X	.237	-.419						
Y	-.237	-.419						
Z	-.482	.000						

25-26

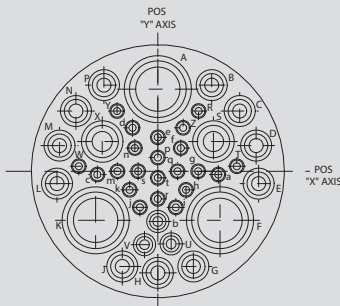
4 #8
5 #12
16 #20



I.D. No.	Location		Gauge
	X	Y	
1	.000	.548	20 GA
2	.205	.382	8 GA
3	.460	.265	20 GA
4	.495	.000	12 GA
5	.460	-.265	20 GA
6	.205	-.382	8 GA
7	.000	-.548	20 GA
8	-.205	-.382	8 GA
9	-.460	-.265	20 GA
10	-.495	.000	12 GA
11	-.460	.265	20 GA
12	-.205	.382	8 GA
13	.000	.218	20 GA
14	.375	.147	20 GA
15	.375	-.147	20 GA
16	.000	-.218	20 GA
17	.375	-.147	20 GA
18	.375	.147	20 GA
19	.127	.140	20 GA
20	.127	.140	20 GA
21	.255	.000	12 GA
22	.127	-.140	20 GA
23	.127	-.140	20 GA
24	.255	.000	12 GA
25	.000	.000	12 GA



25-41
 3 #8
 2 #12
 11 #16
 3 #20
 22 #22D



I.D. No.	Location		Gauge	I.D. No.	Location		Gauge
	X	Y			X	Y	
A	.000	.425	8	a	.313	-.017	22D
B	.279	.446	16	b	.000	-.260	20
C	.424	.312	16	c	-.313	-.017	22D
D	.509	.133	16	d	-.131	.225	22D
E	.522	-.064	16	e	.000	.176	22D
F	.322	-.254	8	f	.119	.120	22D
G	.184	-.493	16	g	.209	.000	22D
H	.000	-.526	16	h	.146	-.096	22D
J	-.184	-.493	16	i	.093	-.187	22D
K	-.322	-.254	8	j	-.093	-.187	22D
L	-.522	-.064	16	k	-.146	-.096	22D
M	-.509	.133	16	m	-.209	.000	22D
N	-.424	.312	16	n	-.119	.120	22D
P	-.279	.446	16	p	.000	.071	22D
R	.211	.312	22D	q	.102	.000	22D
S	.288	.154	12	r	.000	-.143	22D
T	.409	.026	22D	s	-.102	.000	22D
U	.069	-.380	20	t	.000	-.034	22D
V	-.069	-.380	20				
W	-.409	.026	22D				
X	-.288	.154	12				
Y	-.211	.312	22D				
Z	.131	.225	22D				

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050-301-03-TJ-6	233-213B-50	233-345E-42
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601-005 J-15	809-126 J-13	850-023-20-476 J-5
601-006 J-15	809-127 J-13	850-023-20-477 J-5
601-007 J-15	809-128 J-12	850-023-22-470 J-5
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601-043 J-15	809-132 J-14	850-024-16-491 J-5
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809-088 J-14	850-014 J-2	853-003-08-625 J-4
809-107-1 J-14	850-023-16-478 J-5	853-004-08-628 J-4

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854-001-03J-4	859-118 C-22	M22520/2-16J-12
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859-046 B-57	M22520/2-07J-12	M39029/17-172.....J-5
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Also
Available
from Glenair

SERIES 234-105

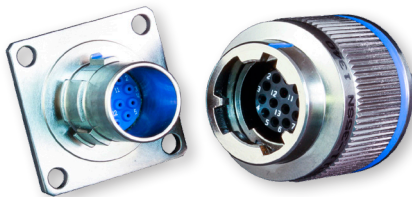
MIL-DTL-38999 Series IV*

*Mil-Spec qualification pending

Time-tested, industry standard breech-lock connector

From vertical launch fire-control, tracking, and multi-target missile systems to rugged industrial applications such as mining/gas-pressure blasting, the Glenair MIL-DTL-38999 Series IV type connector is the ultimate solution for positive and reliable breech-locking connector performance. Built IAW MIL-DTL-38999 Series IV, Glenair series 234-105 plug and receptacle connectors are available in shell sizes 11–25, with all MIL-STD 1560 insert arrangements as well as high-density and hybrid shielded contact arrangements. The heart of the 234-105 connector is its revolutionary coupling nut/locking technology which provides familiar breech-lock mating augmented with both primary and secondary locking mechanisms. Environmentally sealed, EMI grounded, and outfitted with pin-to-pin mating protection to prevent circuit shorts and mechanical damage, the Glenair 234-105 delivers unsurpassed reliability and anti-demating performance.

- IAW MIL-DTL-38999 Series IV
- Optimized for SWAMP area applications
- Quick-disconnect 90° breech coupling mechanism
- Visual, audible and tactile full-mate indicators
- Integrated EMI grounding fingers
- -65°C to 200°C operating temperature range



Series IV solutions are available in environmental, filter, and hermetic class configurations in shell sizes from 11–25 supporting the full range of MIL-STD-1560 insert arrangements



Glenair's complete Series IV solution includes protective covers and dummy stowage receptacles—available in all sizes, materials, and plating configurations.

Have an
unusual
requirement?



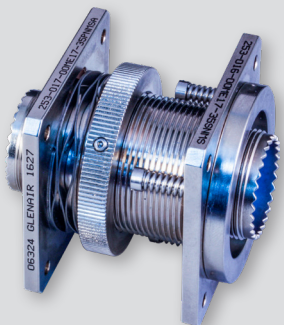
MILITARY/AEROSPACE

Environmental Connector Specials

Problem-solving mil-aero cylindrical connectors from the most accommodating engineering and manufacturing team in the interconnect industry—we say yes to specials!

ENGINEERED SOLUTIONS AND EXOTIC DERIVATIVES

- High-density, push-pull, lanyard release, high temperature, ground plane, compliant pin, zero extraction force, thru-bulkhead, space-grade, gender changers, modified flange, or any other modification needed to solve a complex interconnect challenge
- Liberal policies on NRE costs, minimum order quantities and delivery schedules



Space-grade zero extraction force connector for satellite payload deployment



High-density contact arrangement with size #23 contacts

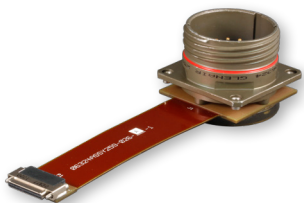


Unique coupling nut castellations and coverings



Special-purpose connector go-betweens and buffers

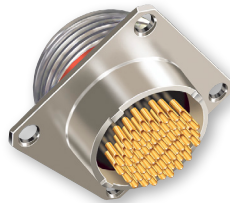
INNOVATIVE TERMINATION TECHNOLOGIES



Flex and Rigid Flex



Compliant (Press-Fit)



Insertable Solder Cups



Variable-Length PC Tails



Ground Plane Inserts

INNOVATIVE SHELL PACKAGE MODIFICATIONS



Mounting Flange Modifications



Bulkhead Penetrators



Integrated/Housed Electronics



Integrated Band/Boot Porch

NON-STANDARD CONTACT LAYOUTS



Hybrid Power Contact Arrangement



Sealed Coax Insert Arrangement



Hybrid Shielded Contact / Signal Contact Insert Arrangement

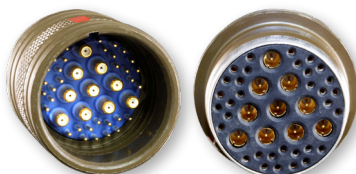


Optoelectronic (Transmitter/Receiver) Contact Arrangement

INNOVATIVE MATING TECHNOLOGIES



Center Jackpost and Guide Pin Integration



QDC Quick-Disconnect Push-Pull Mating



Quick-Disconnect Lanyard-Release Assemblies



MISSION-CRITICAL INTERCONNECT SOLUTIONS

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