Glenair®

Better Than QPL

SuperNine®

Advanced Performance MIL-DTL-38999 Series III Type Connectors

OCTOBER 2014

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 connector series. 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.

Glenair®

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SERIES 23

SuperNine®

MIL-DTL-38999 Series III Type

Advanced Performance Connectors

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 IP-68 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-throughs, 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.

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**

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

SuperNine®

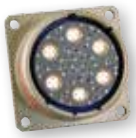
MIL-DTL-38999 Series III Type

Advanced Performance Connectors

SuperNine® Environmental I/O, Cable and PCB Connectors

- Plug connectors with available nickel teflon plating and banding porch
- Complete range of IP68 crimp receptacles with high-durability contacts
- Five different designs of printed circuit board connector standoffs
- Standard 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 #12 and #8 keyed shielded contacts
- El Ochito®: One full 1G/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 $1x10^{-10}$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

SuperNine® Ruggedized RJ45 and USB 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 Cat6a Ethernet: Jacks, Plugs, PC tail and crimp
- High-temperature rated -40° to +125°C

SuperNine® EMI/EMP Filter Connectors

- Planar, multilayer ceramic capacative 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 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
- Insert arrangements from 2 to 37 ways

SuperNine®

MIL-DTL-38999 Series III Type

Advanced mechanical features

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

Heavy Duty Integrated Ground Spring Attachment

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

SuperNine®

MIL-DTL-38999 Series III Type

Advanced material performance

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**

IMPROVED MATERIAL SELECTION AND PERFORMANCE

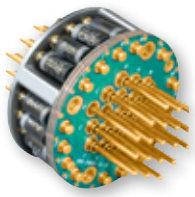
1000 Hour Nickel-Teflon Plating Option

High-Performance Space-Grade Epoxy Potting Compound

High-performance EMI ground spring attachment

Space-Grade Certified Materials

MIL-DTL-38999 TYPE SPECIAL CLASS DERIVATIVES



EMI/EMP Filters

RJ-45 and USB Solutions

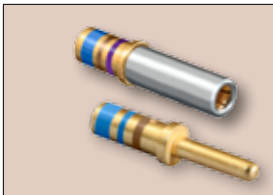
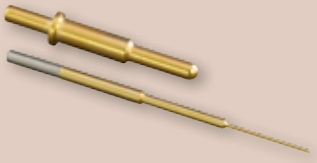
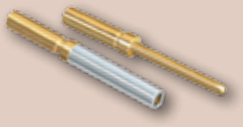
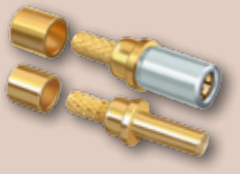
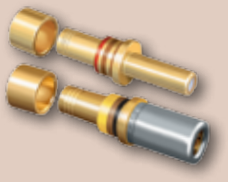
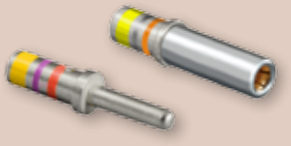
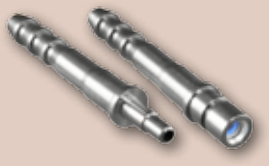
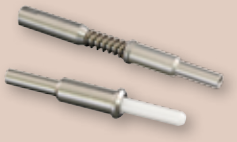
Fiber Optic

Hermetic

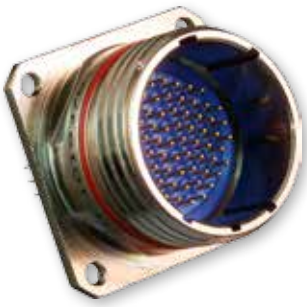
Mechanical Performance Feature	D38999 Sr. III	SuperNine®
Threaded Triple-Start Coupling Design	Yes	Yes
Nine Shell Sizes, Range 9 – 25	Yes	Yes
Scoop-Proof Shell Design	Yes	Yes
Full Mate Visual Indicator	Yes	Yes
Integrated Contact Retention System	Yes	Yes
Interfacial and Grommet Seals	Yes	Yes
Fully Shielded	Yes	Yes
Lightning Strike	Yes	Yes
Shell-to-Shell Bottoming	Yes	Yes
Threaded/Toothed Accessory Interface	Yes	Yes
Full Range of Assembly Tools	Yes	Yes

Connector Class	D38999 Sr. III	SuperNine®
Environmental	Yes	Yes
IP68 Mated Condition	No	Yes
Space-Grade	Yes	Yes
Hermetic	Yes	Yes
EMI Filter	No	Yes
High Durability	No	Yes
ESD	Yes	Yes
Bulkhead Feed-Thru	No	Yes
Sav-Con® Connector Saver	No	Yes

A

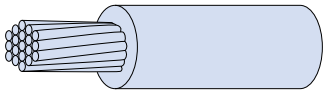
			
Extended Durability Crimp	Printed Circuit Board	#20 Signal	High Density #23 Signal
			
Solder Cup	#12 50 Ohm Matched Impedance Coaxial	#16 and #12 Coaxial	Concentric Twinax
			
#8 100 Ohm Quadrax	#8 100 Ohm El Ochito®	#8 100 Ohm Differential Twinax	#8 Power
			
#8 Opto-Electronic	Thermocouple	Pneumatic	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 miniumums, and most are in-stock and ready for immediate, same-day shipment.



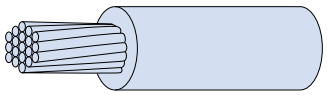
Glenair MIL-DTL-38999 type SuperNine® connectors are supplied with extended-durability pin and socket contacts

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



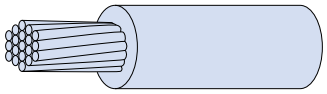
M22759/11 Silver Coated Copper Wire with Extruded PTFE Insulation

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



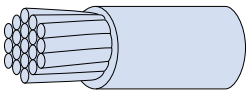
M22759/16 Tin Coated Copper Wire with Extruded ETFE Insulation

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



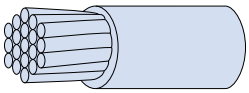
M22759/18 Tin Coated Copper Wire with Thin-Wall Extruded ETFE Insulation

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



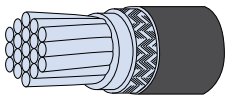
M22759/32 Tin Coated Copper Wire with Crosslinked, Modified ETFE Insulation

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



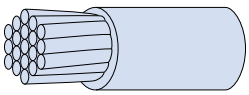
M22759/33 Silver Coated Copper Wire with Crosslinked, Modified ETFE Insulation

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



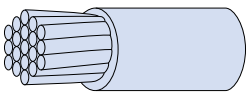
M22759/34 Tin Coated Copper Wire with Overall Braid and Extruded ETFE Insulation

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



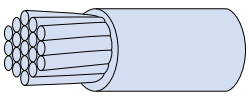
M22759/44 Silver Coated Copper Wire with Crosslinked, Extruded ETFE Insulation

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



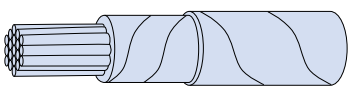
M22759/45 Nickel Coated Copper Wire with Crosslinked, Extruded ETFE Insulation

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

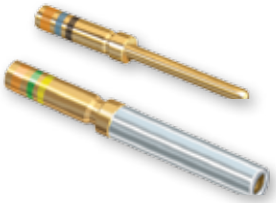
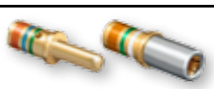


M22759/90 Nickel Coated High Strength Copper Wire with Double Layer Tape Wrap Insulation

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

MIL-STD-1560 contact arrangements

Reference information

Environmental and Hermetic Contact Arrangements						
Contact	Number of Contacts					Series III SuperNine
	#23	#22D	#20	#16	#12	
Size #23 High-Density (HD) 5 Amp Max. Current #22-#28 AWG 	19					11-19
	32					13-32
	55					15-55
	73					17-73
	88					19-88
	121					21-121
	151					23-151
	187					25-187
Size #22D 5 Amp Max. Current #22-#24 AWG 		6				9-35
		13				11-35
		22				13-35
		37				15-35
		55				17-35
		66				19-35
		67				19-45
		79				21-35
		100				23-35
		128				25-35
Size #20 7.5 Amp Max. Current #20-#24 AWG 			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
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
				37		25-37
Size #12 Contacts 23 Amp Max. Current #12-14 AWG 					6	17-6
					11	21-11
					19	25-19

MIL-STD-1560 contact arrangements - Pin Front View

Reference information

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 ◒

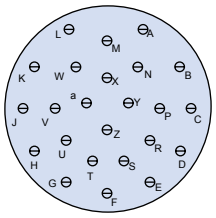
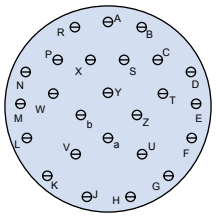
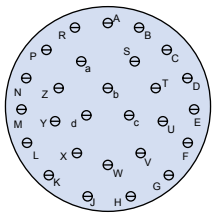
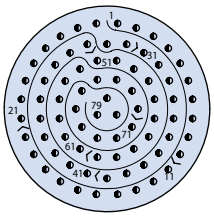
Insert Arrangement	19-35	19-45	21-11	21-16
No. of Contacts	66	67	11	16
Contact Size	#22D	#22D	#12	#16
Service Rating	M	M	I	II

MIL-STD-1560 contact arrangements - Pin Front View

Reference information

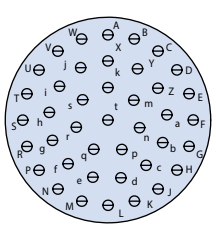
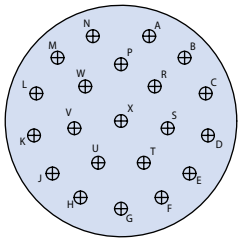
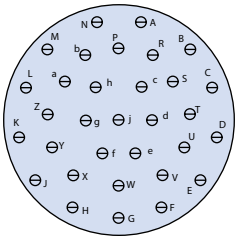
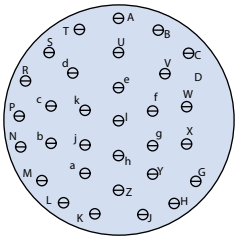
A

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

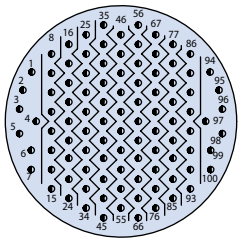
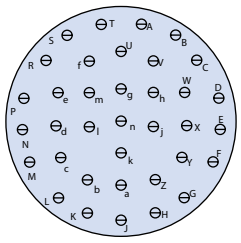
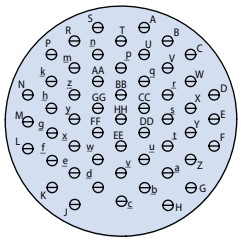
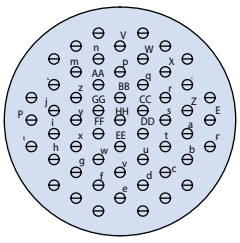
Insert Arrangement	21-24	21-25	21-27	21-35
No. of Contacts	24	25	27	79
Contact Size	#20	#20	#20	#22D
Service Rating	I	I	I	M

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

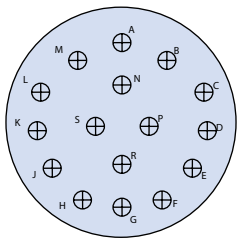
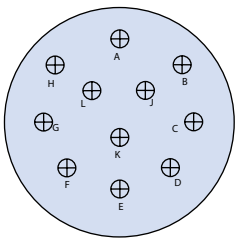
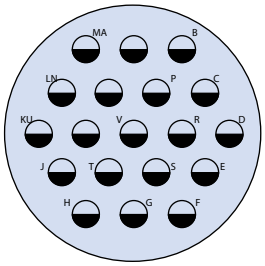
Insert Arrangement	21-41	23-21	23-32	23-34
No. of Contacts	41	21	32	34
Contact Size	#20	#16	#20	#20
Service Rating	I	II	I	I

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 ◒

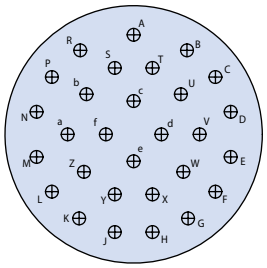




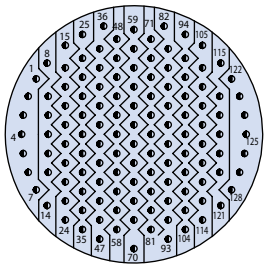
Insert Arrangement	23-97	23-99	25-19
No. of Contacts	16	11	19
Contact Size	#16	#16	#12
Service Rating	I	II	I

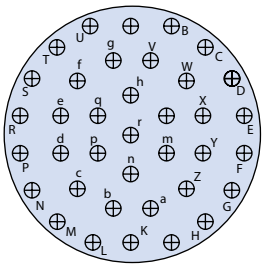
MIL-STD-1560 contact arrangements - Pin Front View

Reference information

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

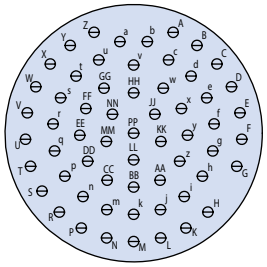






Insert Arrangement	25-29	25-35	25-37
No. of Contacts	29	128	37
Contact Size	#16	#22D	#16
Service Rating	I	M	II

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



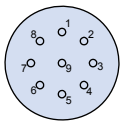
Insert Arrangement	25-61
No. of Contacts	61
Contact Size	#20
Service Rating	I

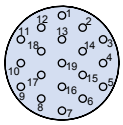
Voltage Rating	Suggested Operating Voltage		Test Voltage AC RMS 60Hz							
	(Sea Level)		Sea Level		50,000 Ft.		70,000 Ft.		100,000 Ft	
Service Rating	AC (RMS)	DC	unmated	mated	unmated	mated	unmated	mated	unmated	mated
M	400	550	1300	1300	550	800	350	800	200	800
N	300	450	1000	1000	400	600	260	600	200	600
I	600	850	1800	1800	600	1000	400	1000	200	1000
II	900	1250	2300	2300	800	1000	500	1000	200	1000

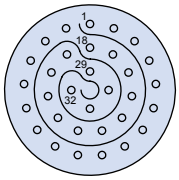
Note: The establishment of electrical safety factors is left entirely to the designer, as he is in the position to know exactly what peak voltages, switching currents, transients, etc. can be expected in a particular circuit

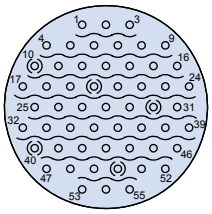
MIL-STD-1560* high density arrangements - Pin Front View

Reference information

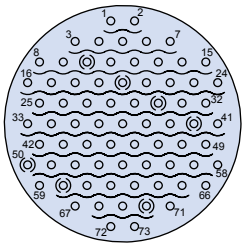


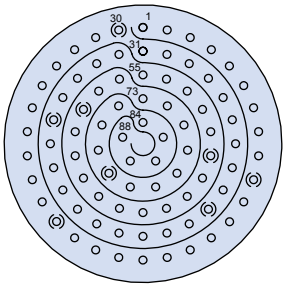


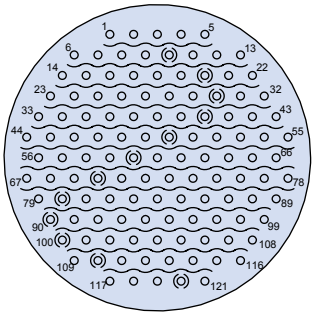




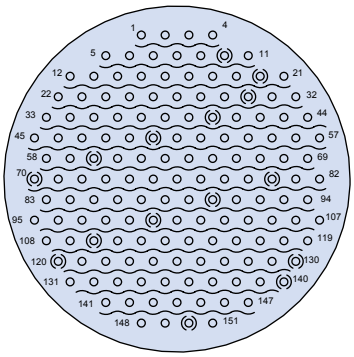
Insert Arrangement	09-09	11-19	13-32	15-55
No. of Contacts	9	19	19	55
Contact Size	#23	#23	#23	#23
Service Rating	N	N	N	N

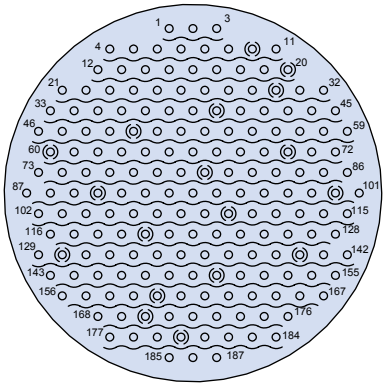






Insert Arrangement	17-73	19-88	21-121
No. of Contacts	73	88	121
Contact Size	#23	#23	#23
Service Rating	N	N	N





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

*Pending release of MIL-STD-1560C

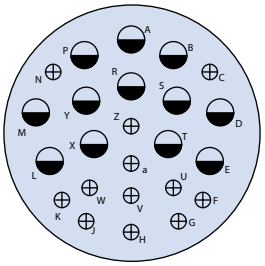
MIL-STD-1560 combo contact arrangements

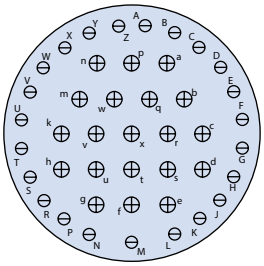
Reference information

Combo Contact Arrangements

Contact Size			Number of Contacts			Series III SuperNine
			#20	#16	#12	
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	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
				12	12	25-24
			23	20		25-43

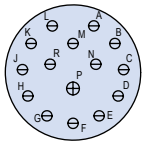
Contact Legend
#22D • #16 ⊕
#20 ⊖ #12 ◒

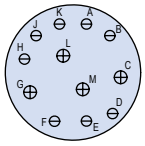


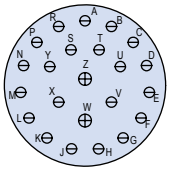


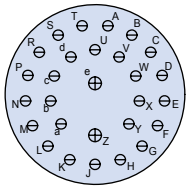
Insert Arrangement	25-24		25-43	
No. of Contacts and Size	12X #12	12X #16	20X #16	23X #20
Service Rating	I		I	

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



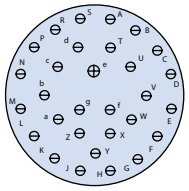


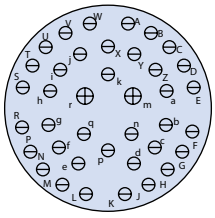


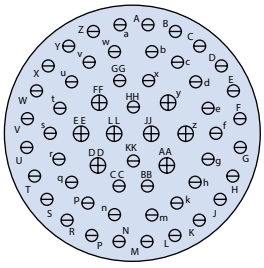


Insert Arrangement	15-15		15-97		17-99		19-28	
No. of Contacts and Size	1X #16	14X #20	4X #16	8X #20	2X #16	21X #20	2X #16	26X #20
Service Rating	I		I		I		I	

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



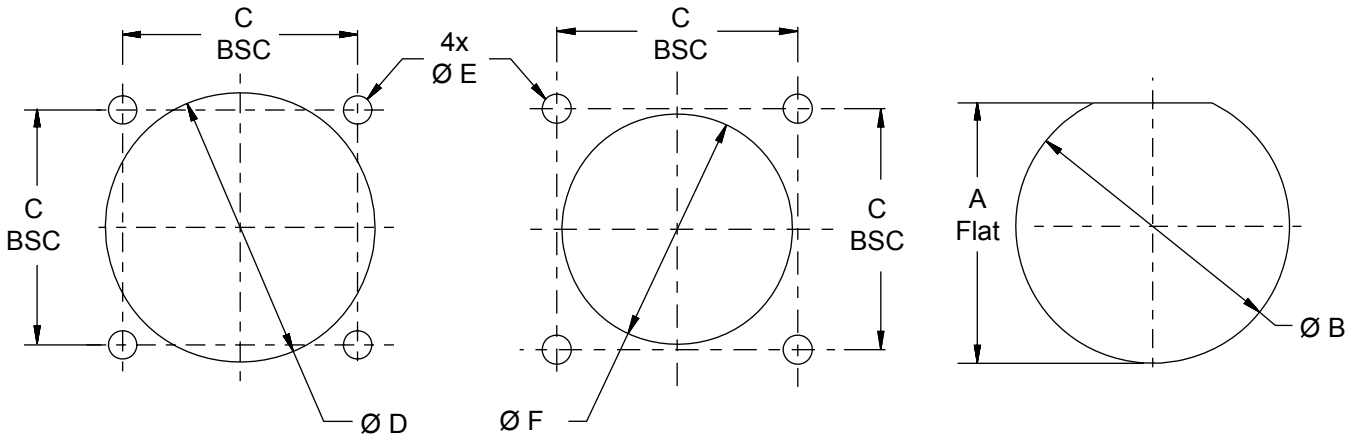




Insert Arrangement	19-30		21-39		25-4	
No. of Contacts and Size	1X #16	29X #20	2X #16	37X #20	8X #16	48X #20
Service Rating	I		I		I	

MIL-STD-38999 Recommended Cut-Out Panel
Reference information

Recommended Cut-Out Panel



Square Flange Back Panel Mount

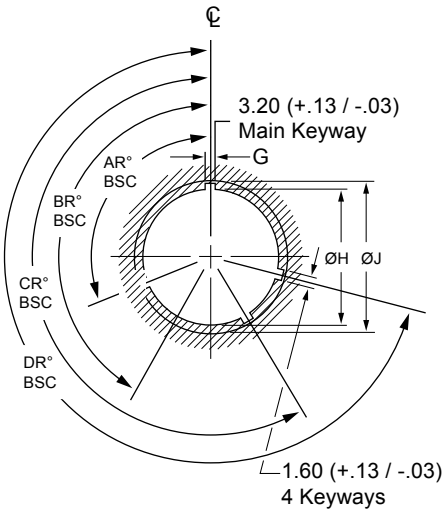
Square Flange Front Panel Mount

Jam Nut Mount

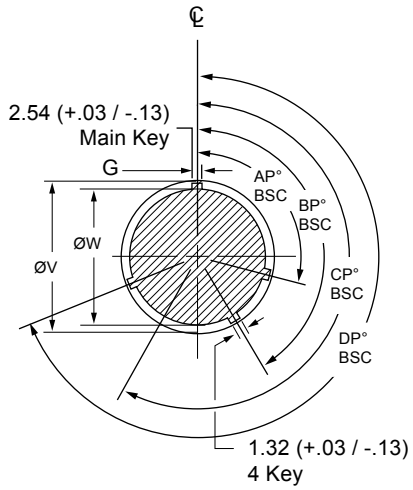
Panel Cut-Out Dimensions							
Shell Size Code	Shell Size	Jam Nut Mount		Square Flange Mount			
		A Flat	B Dia	C BSC	D Dia Min	E Dia Flange Holes	F Dia Min
A	9	.661/.654 (16.79/16.61)	.703/.693 (17.58/17.60)	.719 (18.26)	.656 (16.66)	.133/.123 (3.38/3.12)	.516 (13.12)
B	11	.771/.761 (19.58/19.33)	.835/.825 (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)		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)	.159/.149 (4.04/3.78)	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)	.155/.145 (3.94/3.68)	1.484 (37.69)

Alternate Key Polarization
Reference Information

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
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.

ENVIRONMENTAL

SuperNine®

Advanced-performance environmental connectors for mission-critical applications—from ground vehicles to space vehicles

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**
- **Standard MIL-STD-1560 as well as high-density insert arrangements**
- **High-durability vibration and shock coupling**

Glenair®

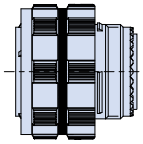
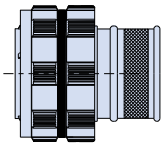
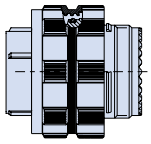
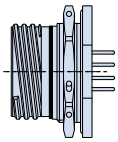
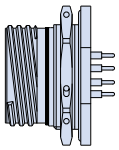
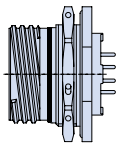
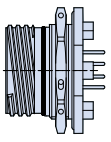
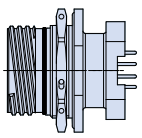
Glenair, Inc.
1211 Air Way
Glendale, CA
91201-2497
818-247-6000
sales@glenair.com
www.glenair.com

SuperNine® Environmental connectors

Advanced durability and performance

MIL-DTL-38999 Series III type

Product Selection Guide

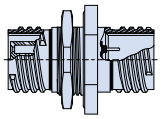
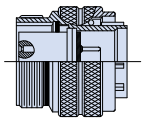
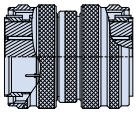
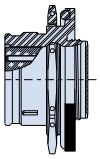
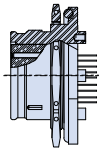
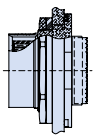
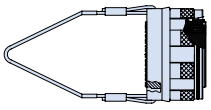
Crimp Contact Connectors	**Crimp Series with Accessory Threads**		**233-205 SuperNine® Crimp Series Plug and Receptacles** For versatility in selection and use of backshells and accessories (IP68 in mated condition with sealing backshell)	B-8
	Crimp Series with Integrated Band Porch		**233-206 SuperNine® Crimp Series Plug and Receptacles** For improved ease-of-assembly and reduced package size and weight (IP68 in mated condition with sealing boot)	B-10
	Submersible with Piston Seals		**233-215 SuperNine® Piston-Sealed Submersible** Transition-zone environmental series	B-12
PC Tail Receptacle Connectors	**PCB, Flush Flange**		**233-207 SuperNine® PCB Receptacle — Flush Flange** Lowest profile PCB receptacle	B-14
	PCB, Stepped Contacts		**233-208 SuperNine® PCB Receptacle — Stepped Contacts** Lowest profile with solder washout	B-15
	PCB, Short Standoff		**233-209 SuperNine® PCB Receptacle — Short Standoff** Low-profile with solder washout and improved visual inspection	B-16
	PCB, Threaded Standoff		**233-210 SuperNine® PCB Receptacle — Threaded Standoff** Standard profile with solder washout, visual inspection, and mechanical attachment of connector to board	B-17
	PCB, Dual Flange		**233-211 SuperNine® PCB Receptacle — Dual Flange** Extended profile with solder washout, visual inspection, mechanical attachment of connector to board and dual flange to decouple vibration from board	B-18

SuperNine® Environmental connectors

Advanced durability and performance

MIL-DTL-38999 Series III type

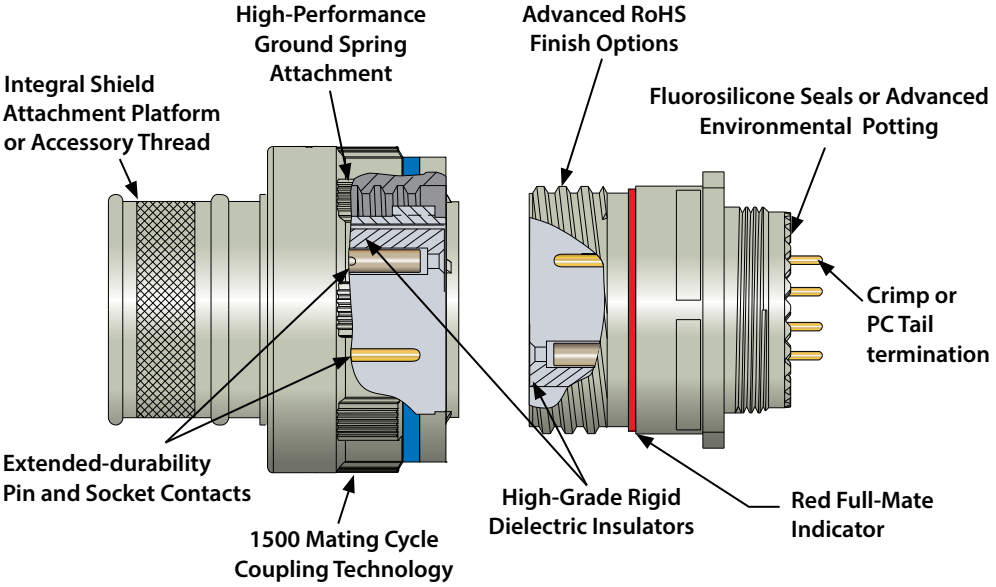
B

Feed-Thru Connectors & Connector Savers	**Bulkhead Feed-Thru**		**233-212 SuperNine® Environmental Bulkhead Feed-Thru** Square flange and jam nut versions with pin-socket, pin-pin, and socket-socket contacts	B-20
	High-Reliability Connector Saver		**233-213 SuperNine® Sav-Con® Connector Saver** For use with all MIL-DTL-38999 Series III compatible connectors	B-21
	Double-Ended Inline Connector Saver		**233-214 SuperNine® Sav-Con® Plug-Plug** For special inline plug-plug applications, MIL-DTL-38999 Series III	B-22
Space-Grade Circular Blind Mate Connectors	**Space-Grade Series**		**Guidelines and Mod Codes for Space-Grade Applications** MIL-DTL-38999 Class G and NASA screening levels and outgassing modification codes	B-23
	Assisted Separation Force Blind Mate Connectors, Crimp		**253-001 and -002 SuperNine® Blind Mate Assisted Separation Force Connectors** Plugs and receptacles with crimp removable contacts	B-26
	Assisted Separation Force Blind Mate Connectors, PC Tail		**253-005 and -006 SuperNine® Blind Mate Assisted Separation Force Connectors** Plugs and receptacles with PC tail contacts	B-28
	Self-Aligning Blind Mate Connectors		**253-009 and -010 SuperNine® Blind Mate Self-Aligning Connectors** Plugs and receptacles with crimp contacts	B-30
Lanyard	**Lanyard Release Plug**		**233-216 SuperNine® Lanyard Release Plug** Quick-disconnect lanyard release IAW MIL-DTL-38999 Series III	B-32

ENVIRONMENTAL SERIES

SuperNine®

The environmental class of the Glenair Series 23 SuperNine® includes IP68 (mated condition) MIL-DTL-38999, Series III crimp plug 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. 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)

Standard Material and Finishes

- Shell, Barrel and Coupling Nut – 300-series stainless steel, titanium, aluminum
- Front and Rear Insulators – Glass reinforced thermoset plastic
- PC Receptacle Potting – High-performance potting material
- Finish – See material and finish table
- Contacts – PC tails, socket and pin crimp contacts – Copper alloy, gold plated
- Contact Retention Clip – Beryllium copper, heat-treated, unplated
- Retaining Ring – Ryton
- Wave Spring – CRES

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 – 300 g's
- Accessory – banding porch or threaded
- Durability (Mating Cycles) – up to 1500
- Outgassing - See space information in this section

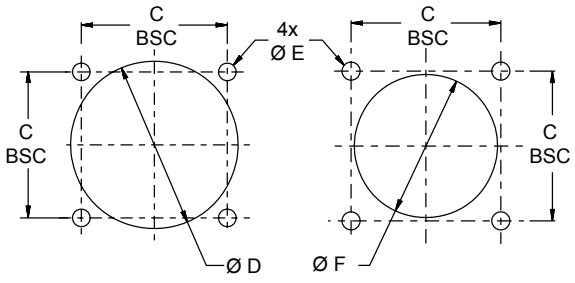
Non-Standard but Readily Available Connector Styles

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

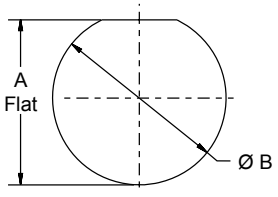
Material and Finish

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

PANEL CUT-OUT DIMENSIONS



Square Flange Rear Panel Mount | **Square Flange Front Panel Mount**



Jam Nut

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 (16.80/16.60)	.703/.693 (17.85/17.60)	.719 (18.26)	.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)	.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)	.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)		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 (38.60/38.35)	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)	.159/.149 (4.04/3.78)	1.375 (34.93)
J	25	1.710/1.700 (43.43/43.18)	1.770/1.760 (44.99/44.74)	1.500 (38.10)	1.672 (42.47)	.155/.145 (3.94/3.68)	1.484 (37.69)

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 IIII 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)
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 apprpriate value.
IP Rating	Receptacles with non-removeable 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, Glenair SuperNine

Test	Test Requirement	Requirement Met
Dielectric Withstanding Voltage	See table below	Meets MIL-DTL-38999, paragraph 3.15

	Suggested Operating Voltage		Test Voltage AC RMS 60Hz							
	(Sea Level)		Sea Level		50,000 Ft.		70,000 Ft.		100,000 Ft	
Service Rating	AC (RMS)	DC	unmated	mated	unmated	mated	unmated	mated	unmated	mated
M	400	550	1300	1300	550	800	350	800	200	800
N	300	450	1000	1000	400	600	260	600	200	600
I	600	850	1800	1800	600	1000	400	1000	200	1000
II	900	1250	2300	2300	800	1000	500	1000	200	1000

Note: The establishment of electrical safety factors is left entirely to the designer, as he is in the position to know exactly what peak voltages, switching currents, transients, etc. can be expected in a particular circuit

SuperNine® Environmental connectors

Performance specifications

MIL-DTL-38999 Series III type

Performance Specifications, IAW MIL-DTL-38999 Series III REV. L, Glenair SuperNine

<table>
<tr><th>Test</th><th>Test Requirement</th><th>Requirement Met</th></tr>
<tr><td>Insulation Resistance</td><td>Unmated connectors shall be tested as specified in test method EIA-364-21
5000 megohms min. at 25° C</td><td>meets MIL-DTL-38999, paragraph 3.14.1</td></tr>
<tr><td>Shielding Effectiveness</td><td>
<table>
<tr><th rowspan="2">Frequency (MHz)</th><th colspan="2">Leakage Attenuation Minimum (dB)</th><th rowspan="2">Frequency (MHz)</th><th colspan="2">Leakage Attenuation Minimum (dB)</th></tr>
<tr><th>Finishes L, F</th><th>Finishes T, W, Z</th><th>Finishes L, F</th><th>Finishes T, W, Z</th></tr>
<tr><td>100</td><td>90</td><td>90</td><td>1,500</td><td>76</td><td>69</td></tr>
<tr><td>200</td><td>88</td><td>88</td><td>2,000</td><td>70</td><td>65</td></tr>
<tr><td>300</td><td>88</td><td>88</td><td>3,000</td><td>69</td><td>61</td></tr>
<tr><td>400</td><td>87</td><td>87</td><td>4,000</td><td>68</td><td>58</td></tr>
<tr><td>800</td><td>85</td><td>85</td><td>6,000</td><td>66</td><td>55</td></tr>
<tr><td>1,000</td><td>85</td><td>85</td><td>10,000</td><td>65</td><td>50</td></tr>
</table>
</td><td>Meets MIL-DTL-38999, paragraph 3.34</td></tr>
<tr><td>Supported Wire Size</td><td>
<table>
<tr><th>Contact Size</th><th>Wire Gauge</th><th>Contact Size</th><th>Wire Gauge</th></tr>
<tr><td>23</td><td>#22 - #28</td><td>16</td><td>#16 - #20</td></tr>
<tr><td>22D</td><td>#22 - #28</td><td>12</td><td>#12 - #14</td></tr>
<tr><td>20</td><td>#20 - #24</td><td>8</td><td>#8 - #10</td></tr>
</table>
</td><td>meets MIL-DTL-38999, paragraph 3.4.3.1</td></tr>
<tr><td>Mating / Unmating Forces</td><td>Coupling torque for mating and unmating of the counterpart connectors and protective covers
<table>
<tr><th rowspan="2">Shell size</th><th colspan="2">Maximum engagement and 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>
<tr><td>9</td><td>8</td><td>0.9</td><td>2</td><td>0.2</td></tr>
<tr><td>11</td><td>12</td><td>1.4</td><td>2</td><td>0.2</td></tr>
<tr><td>13</td><td>16</td><td>1.8</td><td>2</td><td>0.2</td></tr>
<tr><td>15</td><td>20</td><td>2.3</td><td>3</td><td>0.3</td></tr>
<tr><td>17</td><td>24</td><td>2.7</td><td>3</td><td>0.3</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>23</td><td>36</td><td>4.1</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>
</table>
</td><td>Meets MIL-DTL-38999, paragraph 3.11</td></tr>
<tr><td>Physical Shock</td><td>No loosening of parts, cracking or other deleterious results hindering further part operation after 300 G's in each of 3 mutually perpendicular planes.</td><td>Meets MIL-DTL-38999, paragraph 3.28</td></tr>
<tr><td>Fluid Compatibility</td><td>Designed to function in all fluids encountered in any modern military or aerospace environment</td><td>Meets MIL-DTL-38999, paragraph 3.34</td></tr>
<tr><td>High Impact Shock</td><td>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.</td><td>meets MIL-DTL-38999, paragraph 3.28</td></tr>
<tr><td>Vibration</td><td>No electrical discontinuity and no disengagement of the mated connectors, backing off of the coupling mechanism, evidence of cracking, breaking, or loosening of parts.</td><td>Meets MIL-DTL-38999, paragraph 3.27</td></tr>
</table>

SuperNine® Environmental connectors

Performance specifications

MIL-DTL-38999 Series III type

<table>
<tr><th colspan="3">Performance Specifications, IAW MIL-DTL-38999 Series III REV. L, Glenair SuperNine</th></tr>
<tr><th>Test</th><th>Test Requirement</th><th>Requirement Met</th></tr>
<tr><td>Fungus</td><td>Materials used in the construction of these connectors shall be fungus inert per certification of method 508.4 of MIL-STD-810</td><td>meets MIL-DTL-38999, paragraph 3.3.3</td></tr>
<tr><td>Corrosion</td><td>When tested in accordance with EIA-364-26, meets appropriate electrical and mechanical requirements and shows no exposure of base metal.</td><td>Meets MIL-DTL-38999, paragraph 3.17</td></tr>
<tr><td>Durability</td><td>No electrical or mechanical defects after 1500 cycles of engagement and disengagement with appropriate finish, unless otherwise specified.</td><td>Exceeds MIL-DTL-38999, paragraph 3.12</td></tr>
<tr><td>Insert Retention</td><td>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</td><td>Meets MIL-DTL-38999, paragraph 3.16</td></tr>
<tr><td>Crimp Contact Retention</td><td>The axial displacement of the contact shall not exceed .012 inch (0.30 mm). No damage to contacts or inserts shall result.</td><td>Meets MIL-DTL-38999, paragraph 3.24</td></tr>
<tr><td>Current Rating</td><td>
<table>
<tr><th rowspan="2">Contact Size</th><th>Maximum Amps</th><th rowspan="2">Contact Size</th><th>Maximum Amps Crimp Contact</th></tr>
<tr><th>Environmental</th><th>Environmental</th></tr>
<tr><td>23</td><td>5</td><td>16</td><td>13</td></tr>
<tr><td>22D</td><td>5</td><td>12</td><td>23</td></tr>
<tr><td>20</td><td>7.5</td><td>8</td><td>46</td></tr>
</table>
</td><td>Meets AS39029, paragraph 1.31</td></tr>
<tr><td>Finish/Plating</td><td>
<table>
<tr><th>Finish/Plating</th><th>Operating Temperature Range</th><th>Corrosion Resistance</th><th>Shell to Shell Conductivity</th></tr>
<tr><td>Electroless Nickel (ME)</td><td>-65°C to +200°C</td><td>48 hrs</td><td>1.0 mv max.</td></tr>
<tr><td>PTFE/Nickel (MT)</td><td>-65°C to +175°C</td><td>500 hrs</td><td>2.5 mv max.</td></tr>
<tr><td>OD Cadnium (NF)</td><td>-65°C to +175°C</td><td>500 hrs</td><td>2.5 mv max.</td></tr>
<tr><td>Black Zink-Nickel (ZR)</td><td>-65°C to +175°C</td><td>500 hrs</td><td>2.5 mv max.</td></tr>
</table>
</td><td>Operating temperature range meets paragraph 3.8
Corrosion Resistance meets paragraph 3.17
Shell to shell conductivity meets paragraph 3.28</td></tr>
</table>

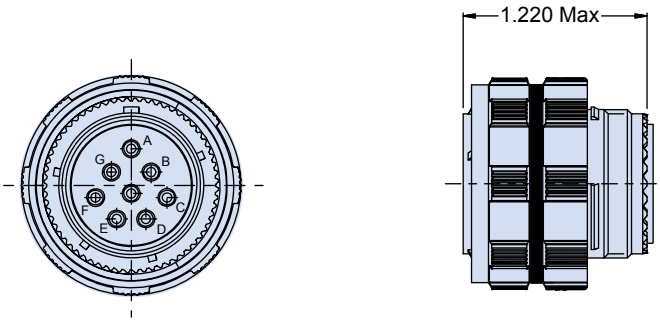
B

G6 - PLUG WITH ACCESSORY THREADS

How To Order 233-205						
Sample Part Number	**233-205**	**-G6**	**MT**	**17-08**	**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, square flange with slotted holes					
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE **ZR** = Black Zinc Nickel					
Shell Size-Insert Arrangement*	Per MIL-STD-1560 plus high density					
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** = Pin, 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

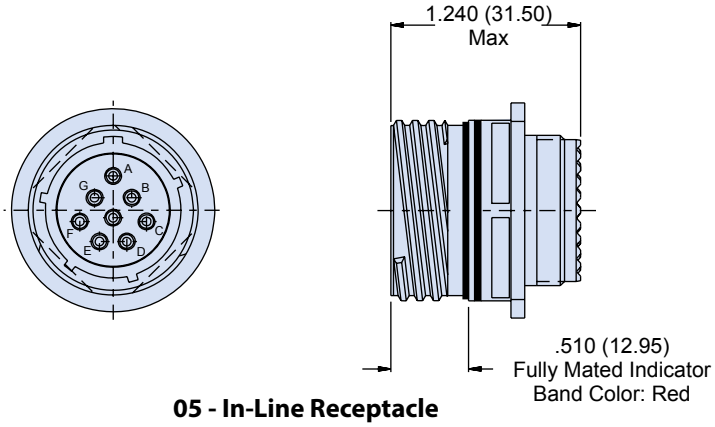


G6 - Plug with EMI Spring

NOTES

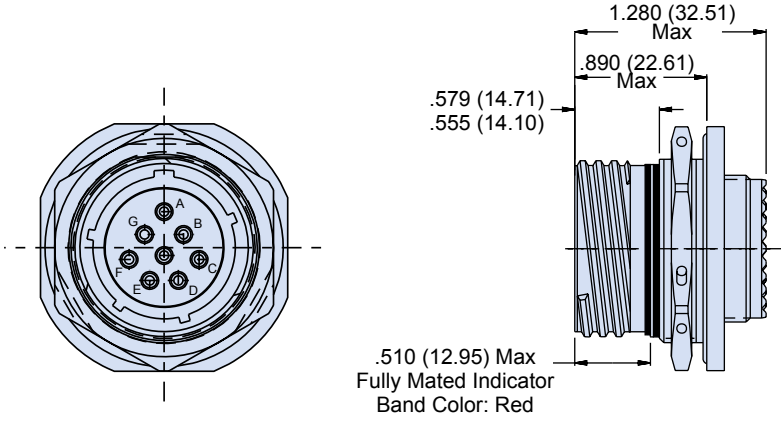
1. 233-205 is designed to meet or exceed the mechanical, electrical, environmental and dimensional requirements of D38999/20, /24 & /26. Except as shown and/or noted.
2. Insert arrangements IAW MIL-STD-1560, Glenair HD plus shielded contact specials
3. Blue color band indicates rear release retention system.
4. Connector is supplied with contacts (including spares), insertion/removal tool and sealing plugs.
5. Dimensions in inches (millimeters) are subject to change without notice
6. Consult factory for additional information

05 - IN-LINE RECEPTACLE WITH ACCESSORY THREADS



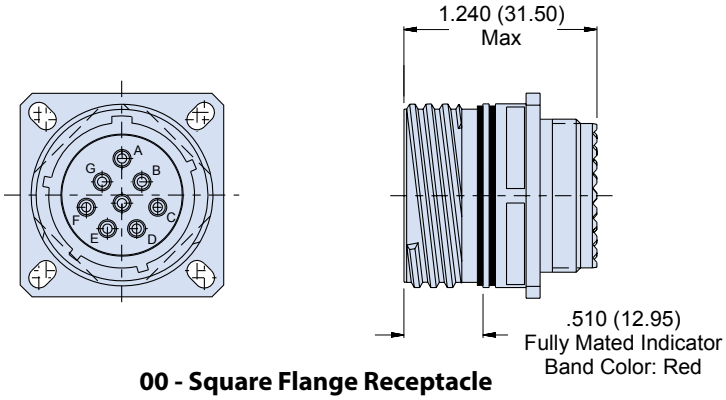
05 - In-Line Receptacle

07 - JAM NUT RECEPTACLE WITH ACCESSORY THREADS



07 - Jam Nut Receptacle

00 - SQUARE FLANGE RECEPTACLE WITH ACCESSORY THREADS



00 - Square Flange Receptacle with Slotted Holes

SuperNine® Environmental connectors

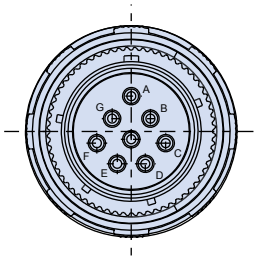
233-206 Crimp series with integrated banding porch

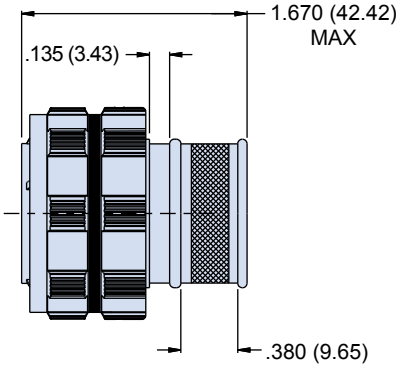
MIL-DTL-38999 Series III type

How To Order 233-206						
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, square flange with slotted holes					
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE **ZR** = Black Zinc Nickel					
Shell Size-Insert Arrangement*	Per MIL-STD-1560 plus high density					
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** = Pin, 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 BANDING PORCH



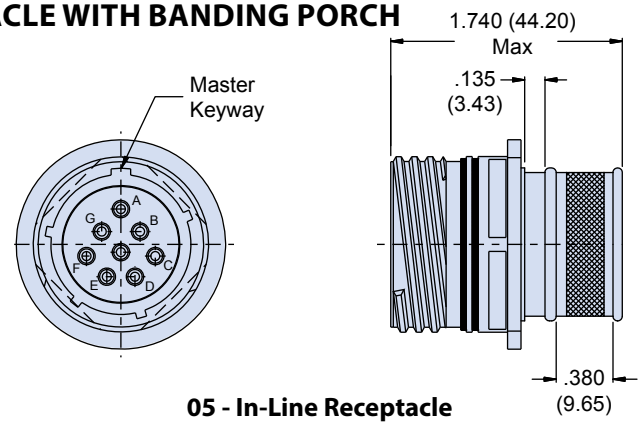


G6 - Plug with EMI Spring
Banding porch with boot groove

NOTES

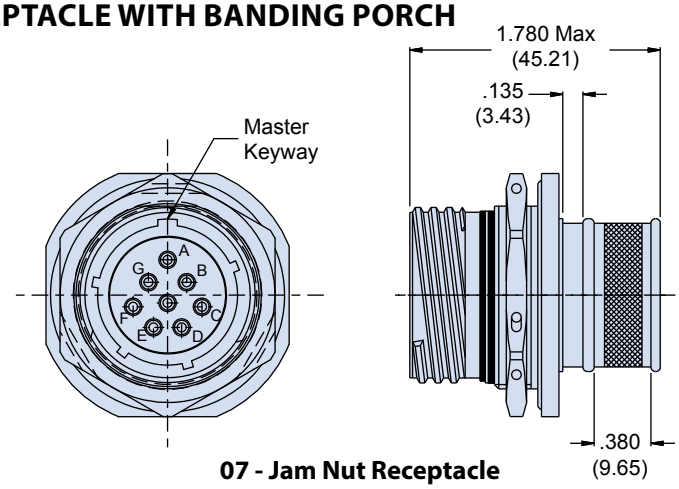
1. 233-206 is designed to meet or exceed the mechanical, electrical, environmental and dimensional requirements of D38999/20, /24 & /26. Except as shown and/or noted.
2. Insert arrangements IAW MIL-STD-1560, plus Glenair HD arrangements.
3. Blue color band indicates rear release retention system.
4. Connector is supplied with contacts (including spares), insertion/removal tool and sealing plugs.
5. Insertion/removal tool and sealing plugs supplied.
6. Consult factory for additional information

05 - IN-LINE RECEPTACLE WITH BANDING PORCH



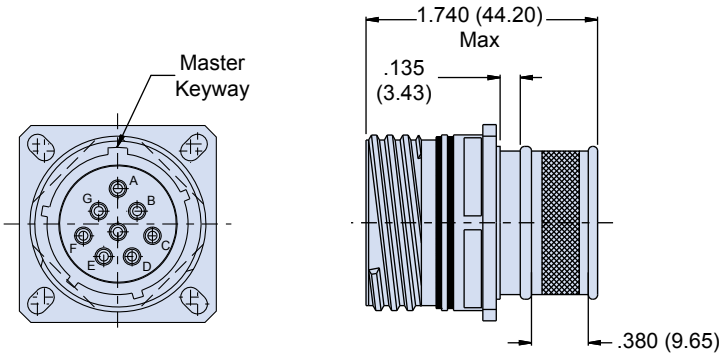
05 - In-Line Receptacle
Banding porch with boot groove

07 - JAM NUT RECEPTACLE WITH BANDING PORCH



07 - Jam Nut Receptacle
Banding porch with boot groove

00 - SQUARE FLANGE RECEPTACLE WITH BANDING PORCH



00 - Square Flange Receptacle with Slotted Holes
Banding porch with boot groove

SuperNine® Environmental connectors

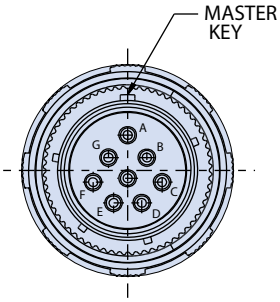
233-215 Piston sealed transition zone submersible

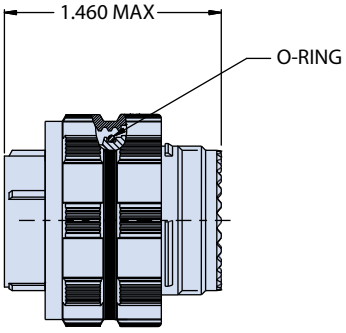
MIL-DTL-38999 Series III type

How To Order 233-215						
Sample Part Number	**233-215**	**-G6**	**NF**	**17-8**	**P**	**N**
Series / Basic Part No.	SuperNine® sealed transition zone sumbersible connector					
Connector Style*	**G6** = Plug, with EMI spring **05** = Receptacle, in-line **07** = Receptacle, jam nut **00** = Receptacle, square flange with slotted holes					
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE **ZR** = Black Zinc Nickel					
Shell Size-Insert Arrangement*	Per MIL-STD-1560 plus high density					
Contact Type	**A** = Less pin contacts **P** = Pin, high durability 1500 cycles **B** = Less socket contacts **S** = Socket, high durability 1500 cycles					
Alternate Polarization*	**A**, **B**, **C**, **D**, **E**, **N** = Normal (IAW MIL-DTL-38999 Series III)					

***Refer to Section A for complete details**

G6 - PISTON-SEAL PLUG WITH ACCESSORY THREADS



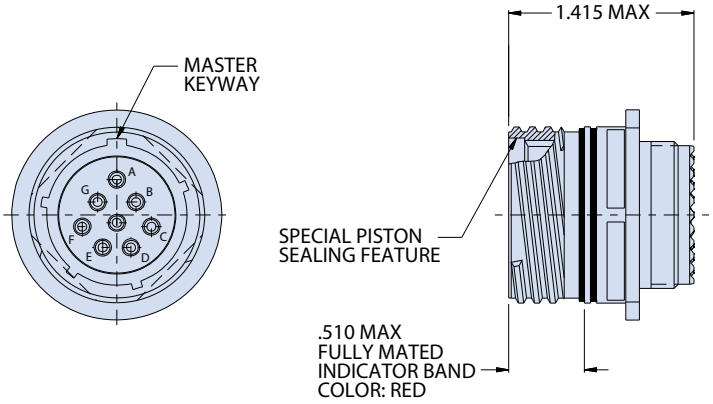


Plug requires a special protective cover to accommodate O-Ring seal.
See Part Number 239-200 in Section H - SuperNine Accessories section of this catalog.

NOTES

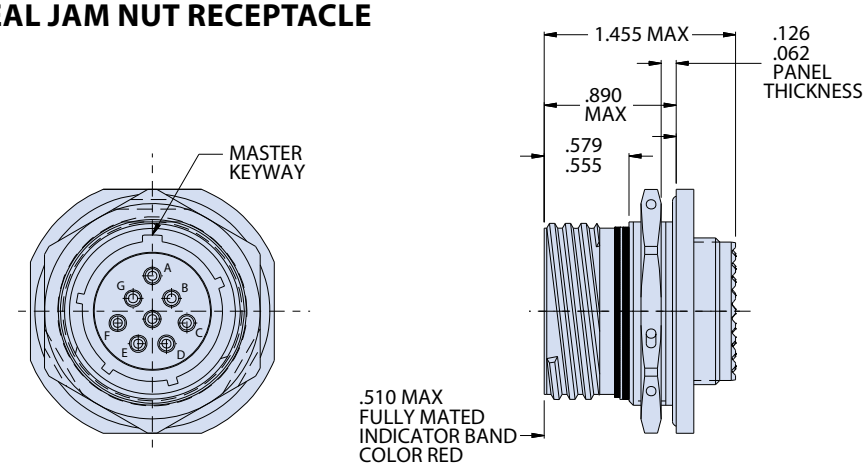
1. 233-215 is designed to meet or exceed the mechanical, electrical, environmental and dimensional requirements of D38999/20, /24 & /26. Except as shown and/or noted.
2. 233-215 connectors are designed to meet or exceed an ingress protection rating IP68 (10 meters) in a fully mated condition using the appropriate rear accessories.
3. Does not intermate with any other product or IAW any mil spec intermatability.
4. Insert arrangements IAW MIL-STD-1560, plus Glenair HD arrangements.
5. Blue color band indicates rear release retention system.
6. Connector is supplied with contacts (including spares), insertion/removal tool and sealing plugs.
7. Consult factory for additional information

05 - PISTON-SEAL IN-LINE RECEPTACLE



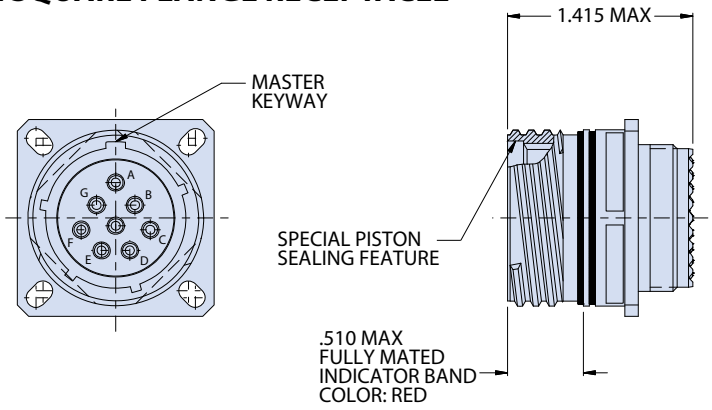
05 - In-Line Receptacle with Accessory Threads

07 - PISTON-SEAL JAM NUT RECEPTACLE



07 - Jam Nut Receptacle with Accessory Threads

00 - PISTON-SEAL SQUARE FLANGE RECEPTACLE



00 - Square Flange Receptacle with Slotted Holes

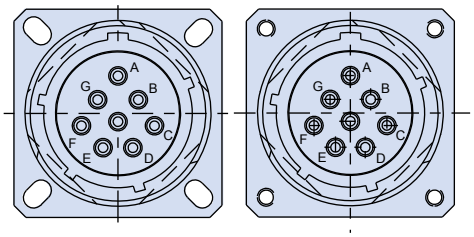
SuperNine® Environmental connectors

233-207 PCB receptacle with flush flange

MIL-DTL-38999 Series III type

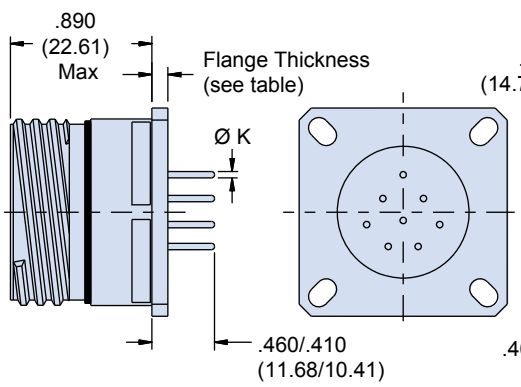
How To Order 233-207						
Sample Part Number	**233-207**	**-00**	**NF**	**17-8**	**P**	**N**
Series / Basic Part No.	SuperNine® PCB receptacle with flush flange					
Connector Style*	**00** = Square flange receptacle with slotted holes **HM** = Square flange receptacle with metric helicoils **HS** = Square flange receptacle with standard helicoils **07** = Jam nut mount receptacle					
Finish	**NF** = Cadmium Olive Drab **MT** = Nickel PTFE **ME** = Electroless Nickel **ZR** = Black Zinc Nickel					
Shell Size-Insert Arrangement*	Per MIL-STD-1560 plus high density					
Contact Type	**P** = Pin, 1500 cycles **S** = Socket, 1500 cycles					
Alternate Polarization*	**A**, **B**, **C**, **D**, **E**, **N** = Normal (IAW MIL-DTL-38999 Series III)					

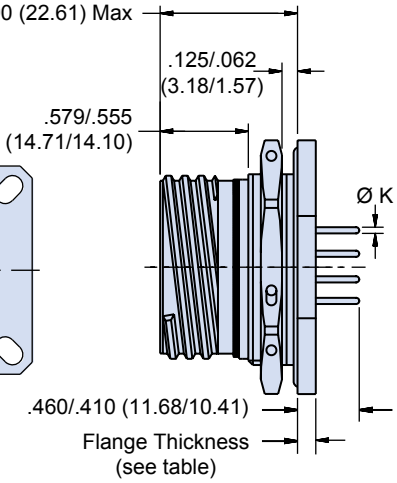
***Refer to Section A for complete details**



00 - Square Flange Receptacle with Slotted Holes

HM & HS - Square Flange Receptacle with Helicoil





07 - Jam Nut Mount Receptacle

Flange Thickness			
Jam Nut/Slotted Square Flange		Helicoil Square Flange Metric and Std.	
Shell Size	**Dimension**	**Shell Size**	**Dimension**
9-17	.122 (3.1) .083 (2.1)	9-21	.179 (4.55) .140 (3.56)
19-25	.153 (3.9) .114 (2.9)	23-25	.224 (5.69) .185 (4.70)

Contact 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

1. 233-207 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.
2. Insert arrangements IAW MIL-STD-1560 or HD.
3. Supplied with fixed PC tail contacts. Potting meets or exceeds IP67 in unmated condition.
4. Dimensions in Inches (millimeters) are subject to change without notice
5. Consult factory for additional information

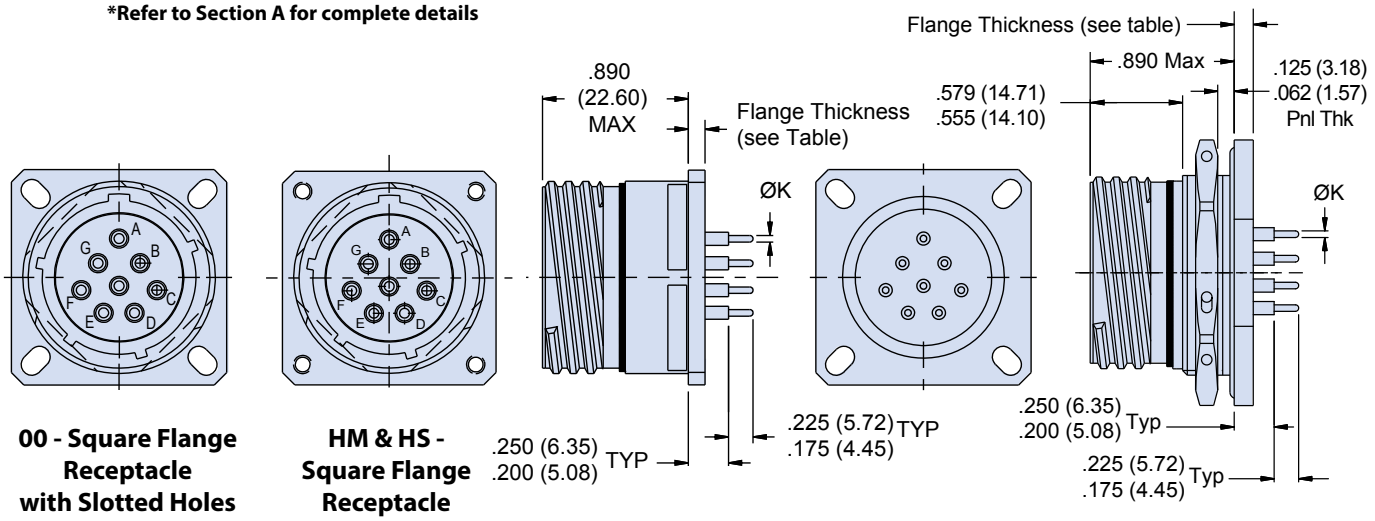
SuperNine® Environmental connectors

233-208 PCB receptacle with stepped contacts

MIL-DTL-38999 Series III type

How To Order 233-208						
Sample Part Number	**233-208**	**-00**	**NF**	**17-8**	**P**	**N**
Series / Basic Part No.	SuperNine® PCB receptacle with stepped contacts					
Connector Style*	**00** = Square Flange Receptacle with Slotted Holes **HM** = Square Flange Receptacle with Metric Helicoils **HS** = Square Flange Receptacle with Standard Helicoils **07** = Jam Nut Mount Receptacle					
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE **ZR** = Black Zinc Nickel					
Shell Size-Insert Arrangement*	Per MIL-STD-1560 plus high density					
Contact Type	**P** = Pin, 1500 cycles **S** = Socket, 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 - Square Flange Receptacle with Slotted Holes

HM & HS - Square Flange Receptacle with Helicoil

07 - Jam Nut Mount Receptacle

Flange Thickness			
Jam Nut/Slotted Square Flange		Helicoil Square Flange - Metric and Std.	
Shell Size	**Dimension**	**Shell Size**	**Dimension**
9-17	.122 (3.1) .083 (2.1)	9-21	.179 (4.55) .140 (3.56)
19-25	.153 (3.9) .114 (2.9)	23-25	.224 (5.69) .185 (4.70)

Contact 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

1. 233-208 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.
2. Insert arrangements IAW MIL-STD-1560 and HD.
3. Supplied with fixed PC tail contacts. Potting meets or exceeds IP67 in unmated condition.
4. Dimensions in Inches (millimeters) are subject to change without notice
5. Consult factory for additional information

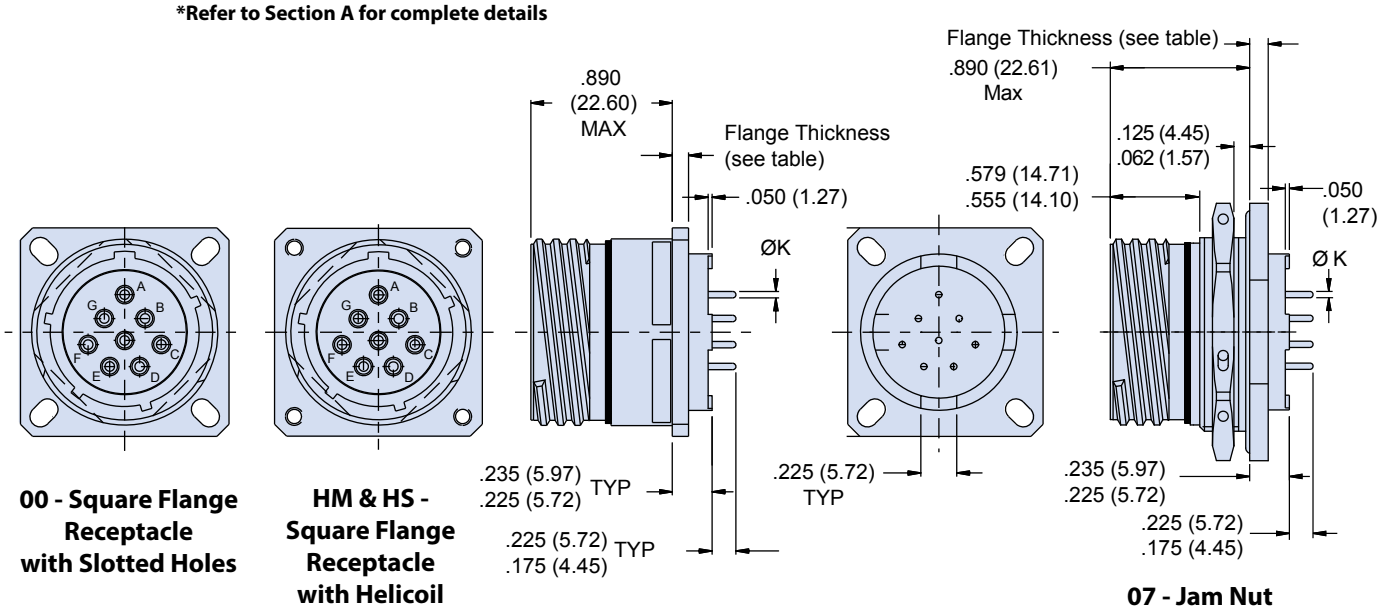
SuperNine® Environmental connectors

233-209 PCB receptacle with short standoff

MIL-DTL-38999 Series III type

How To Order 233-209						
Sample Part Number	**233-209**	**-00**	**NF**	**17-8**	**P**	**N**
Series / Basic Part No.	SuperNine® PCB receptacle with short standoff					
Connector Style*	**-00** = Square Flange Receptacle with Slotted Holes **HM** = Square Flange Receptacle with Metric Helicoils **HS** = Square Flange Receptacle with Standard Helicoils **07** = Jam Nut Mount Receptacle					
Finish	**NF** = Cadmium Olive Drab **MT** = Nickel PTFE **ME** = Electroless Nickel **ZR** = Black Zinc Nickel					
Shell Size-Insert Arrangement*	Per MIL-STD-1560 plus high density					
Contact Type	**P** = Pin, 1500 cycles **S** = Socket, 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 - Square Flange Receptacle with Slotted Holes

HM & HS - Square Flange Receptacle with Helicoil

07 - Jam Nut Mount Receptacle

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

Flange Thickness			
Jam Nut and Slotted Square Flange		**Helicoil Square Flange Metric & Std**	
Shell Size	**Dimension**	**Shell Size**	**Dimension**
9-17	.122 (3.1) .083 (2.1)	9-21	.179 (4.55) .140 (3.56)
19-25	.153 (3.9) .114 (2.9)	23-25	.224 (5.69) .185 (4.70)

NOTES

1. 233-209 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.
2. 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.
3. Insert arrangements IAW MIL-STD-1560.
4. Supplied with fixed PC tail contacts. Potting meets or exceeds IP67 in unmated condition.
5. Dimensions in Inches (millimeters) are subject to change without notice
6. Consult factory for additional information

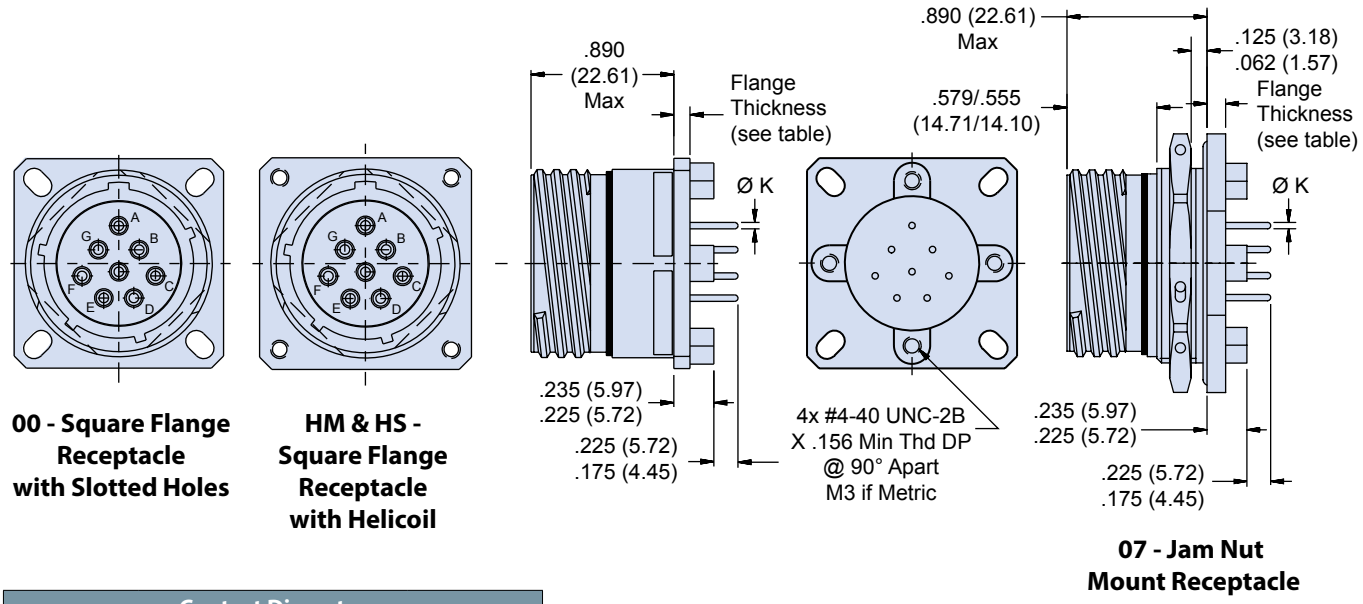
SuperNine® Environmental connectors

233-210 PCB receptacle with threaded standoff

MIL-DTL-38999 Series III type

How To Order 233-210						
Sample Part Number	**233-210**	**-00**	**NF**	**17-8**	**P**	**N**
Series / Basic Part No.	SuperNine® PCB receptacle with threaded standoffs					
Connector Style*	**00** = Square Flange Receptacle with Slotted Holes **HM** = Square Flange Receptacle with Metric Helicoils **HS** = Square Flange Receptacle with Standard Helicoils **07** = Jam Nut Mount Receptacle					
Finish	**NF** = Cadmium Olive Drab **MT** = Nickel PTFE **ME** = Electroless Nickel **ZR** = Black Zinc Nickel					
Shell Size-Insert Arrangement*	Per MIL-STD-1560 plus high density					
Contact Type	**P** = Pin, 1500 cycles **S** = Socket, 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 - Square Flange Receptacle with Slotted Holes

HM & HS - Square Flange Receptacle with Helicoil

07 - Jam Nut Mount Receptacle

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

Flange Thickness			
Jam Nut/Slotted Square Flange		**Helicoil Square Flange Metric and Std.**	
Shell Size	**Dimension**	**Shell Size**	**Dimension**
9-17	.122 (3.1) .083 (2.1)	9-21	.179 (4.55) .140 (3.56)
19-25	.153 (3.9) .114 (2.9)	23-25	.224 (5.69) .185 (4.70)

NOTES

1. 233-210 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.
2. 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.
3. Insert arrangements IAW MIL-STD-1560.
4. Supplied with fixed PC tail contacts. Potting meets or exceeds IP67 in unmated condition.
5. Dimensions in Inches (millimeters) are subject to change without notice
6. Consult factory for additional information

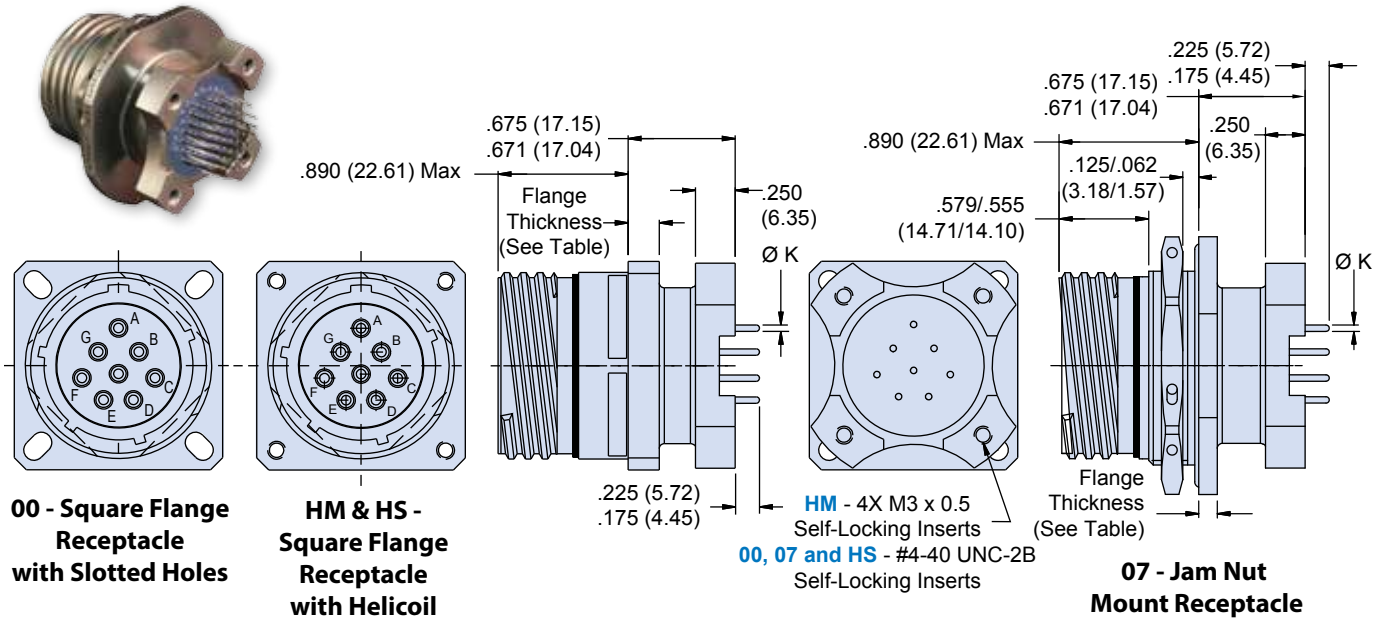
SuperNine® Environmental connectors

233-211 PCB receptacle with dual flange

MIL-DTL-38999 Series III type

How To Order 233-211						
Sample Part Number	**233-211**	**-00**	**NF**	**17-8**	**P**	**N**
Series / Basic Part No.	SuperNine® PCB receptacle with dual flange					
Connector Style*	**00** = Square Flange Receptacle with Slotted Holes **HM** = Square Flange Receptacle with Metric Helicoils **HS** = Square Flange Receptacle with Standard Helicoils **07** = Jam Nut Mount Receptacle					
Finish	**NF** = Cadmium Olive Drab **MT** = Nickel PTFE **ME** = Electroless Nickel **ZR** = Black Zinc Nickel					
Shell Size-Insert Arrangement*	Per MIL-STD-1560 plus high density					
Contact Type	**P** = Pin, 1500 cycles **S** = Socket, 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 - Square Flange Receptacle with Slotted Holes

HM & HS - Square Flange Receptacle with Helicoil

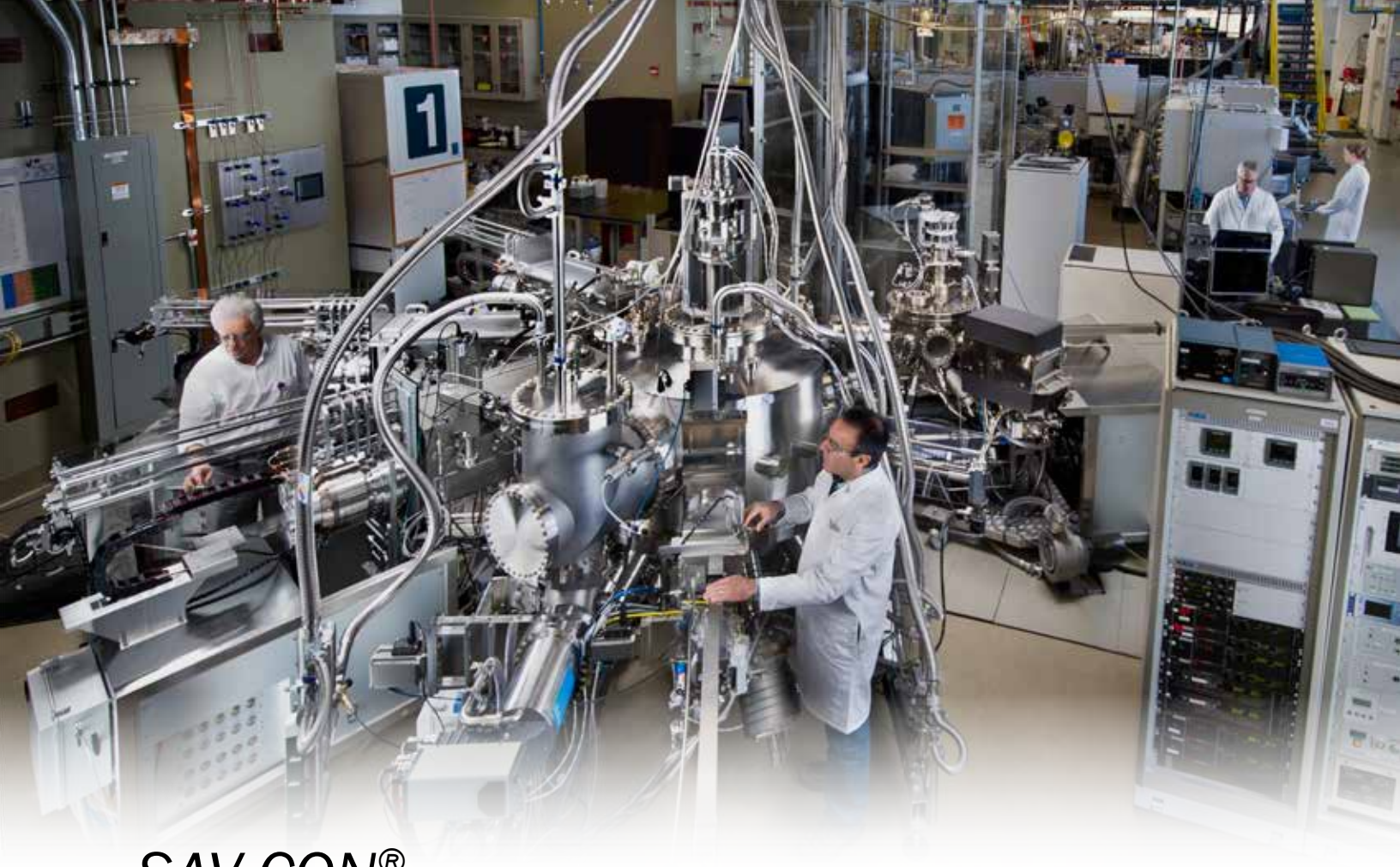
07 - Jam Nut Mount Receptacle

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

Flange Thickness			
Jam Nut and Slotted Square Flange		**Helicoil Square Flange Metric & Std**	
Shell Size	**Dimension**	**Shell Size**	**Dimension**
9-17	.122 (3.1) .083 (2.1)	9-21	.179 (4.55) .140 (3.56)
19-25	.153 (3.9) .114 (2.9)	23-25	.224 (5.69) .185 (4.70)

NOTES

1. 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.
2. 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.
3. Insert arrangements IAW MIL-STD-1560.
4. Supplied with fixed PC tail contacts. Potting meets or exceeds IP67 in unmated condition.



SAV-CON®

Connector Savers and Bulkhead Feed-Thrus

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

- **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**

High-reliability connector savers prevent mating cycle damage to receptacle connectors during qualification and test, ensuring that the equipment receptacle remains in its unused condition prior to delivery

SuperNine® MIL-DTL-38999 Series III type Sav-Con® Connector Savers protect mating threads and pins from damage during rugged operational use

SuperNine® MIL-DTL-38999 Series III type bulkhead feed-thrus in square-flange and jam nut shell styles

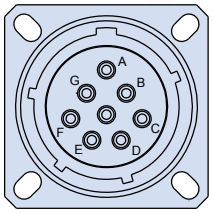
SuperNine® Environmental connectors

233-212 Jam nut and square flange bulkhead feedthru

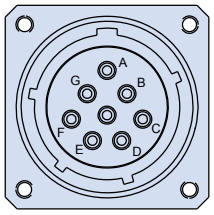
MIL-DTL-38999 Series III type

How To Order 233-212									
Sample Part Number	**233-212**	**-07**	**NF**	**17-8**	**P**	**N**	**S**	**N**	**-01**
Series / Basic Part No.	SuperNine® Environmental Bulkhead feedthru								
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **HM** = Square Flange Receptacle with Metric Helicoils **HS** = Square Flange Receptacle with Standard Helicoils **07** = Jam Nut Mount Receptacle								
Finish*	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE **ZR** = Black Zinc Nickel								
Shell Size-Insert Arrangement*	Per MIL-STD-1560 plus high density								
Contact Type (Panel Side) **See Note 1**	**P** = Pin On Panel Side; 500 Cycles **S** = Socket On Panel Side; 500 Cycles **PP** = Pins On Both Sides; 500 Cycles **SS** = Sockets On Both Sides; 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 **PP** = Pins On Both Sides; 500 Cycles **SS** = Sockets On Both Sides; 500 Cycles								
Alternate Polarization*	**A**, **B**, **C**, **D**, **E**, **N** = Normal, **U** = Universal								
Panel Accommodation	**-01** = .062/.125 **-02** = .062/.250 **-03** = .062/.500								

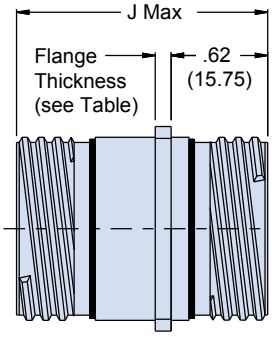
***Refer to Section A for complete details**

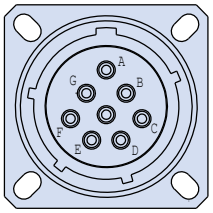


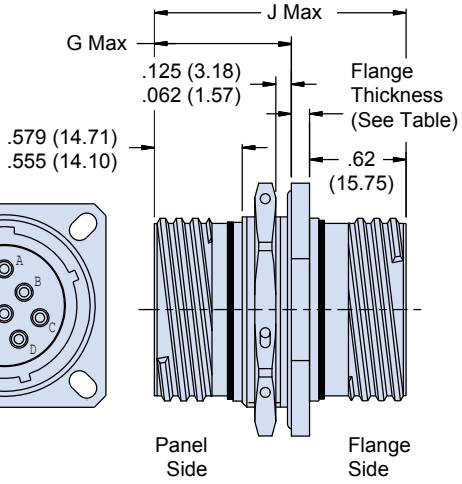
00 - Square Flange Receptacle with Slotted Holes



HM & HS - Square Flange Receptacle with Helicoil







07 - Jam Nut Mount Receptacle

Flange Thickness			
Janm Nut & Slotted Square Flange		HM and HS Helicoil Square Flange	
Shell Size	Dimension	Shell Size	Dimension
9-17	.122 (3.1) .083 (2.1)	9-21	.179 (4.55) .140 (3.56)
19-25	.153 (3.9) .114 (2.9)	23-25	.224 (5.69) .185 (4.70)

Panel Accomodation						
Code	Panel Thickness		G Max		J Max	
	In.	mm	In.	mm	In.	mm
01	.125 .062	3.18 1.57	.890	22.61	1.70	43.18
02	.250 .062	6.35 1.57	1.015	25.78	1.83	46.48
03	.500 .062	12.7 1.57	1.265	32.13	2.08	52.83

NOTES:

1. For pin/pin and socket/socket, symmetrical layouts only, consult factory for available symmetrical insert arrangements.
2. Power to a given contact on one end will result in power to a given contact directly opposite, regardless of identification letter.
3. Alternate polarization 'U' is a non-standard/non-mil-spec option which allows mating to any QPL manufacturers MIL-DTL-3899 connector and intended for use in testing facilities.

SuperNine® Environmental connectors

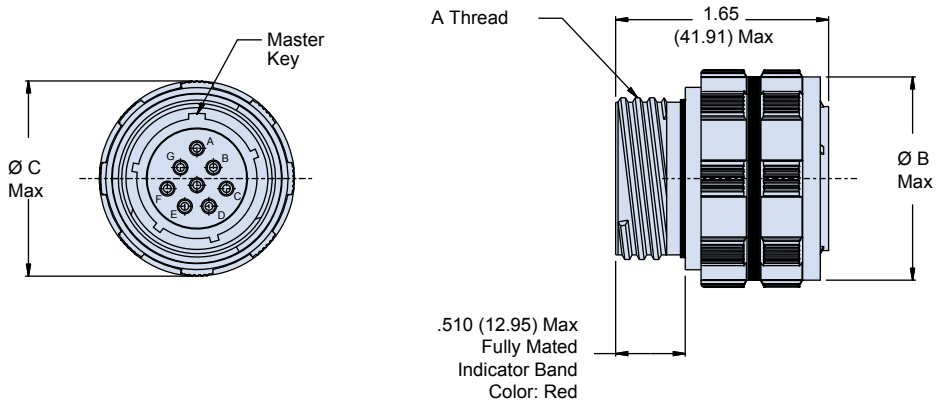
233-213 Sav-Con® in-line connector saver

MIL-DTL-38999 Series III type

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

How To Order 233-213							
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 plus HD						
Contact Style (Plug Side)	**P** = Pin, gold, 500 cyles **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 cyles **S** = Socket, gold, 500 cycles						
Alternate Polarization* (Receptacle Side)	**A**, **B**, **C**, **D**, **E**, **N** = Normal, **U** = Universal; See Note 6						

***Refer to Section A for complete details**



NOTES

1. Glenair's 233-213 connector savers are designed to meet or exceed the mechanical dimensional, electrical, and environmentsl, requirements of MIL-DTL-38999, D38999/20, D38999/26, and MIL-STD-1560 except as shown and /or noted.
2. 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.
3. For pin/pin and socket/socket, symmetrical insert layouts only.
4. Power to a given contact on one end will result in power to a contact directly opposite, regardless of identification letter.
5. Electrical safety limits must be established by user. Peak voltage, switching surge, transient, etc. should be used to determine the safety application.
6. Alternate polarization 'U' (universal) is a non-standard/non-mill-spec option intened 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.

Dimensions						
Shell Size Code	**Shell Size**	**A Thread**	**Ø B Max**		**Ø C Max**	
			In	mm	In	mm
A	**9**	.6250 – 0.1P – 0.3L – TS-2A	0.811	20.60	0.858	21.79
B	**11**	.7500 – 0.1P – 0.3L – TS-2A	0.929	23.60	0.984	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

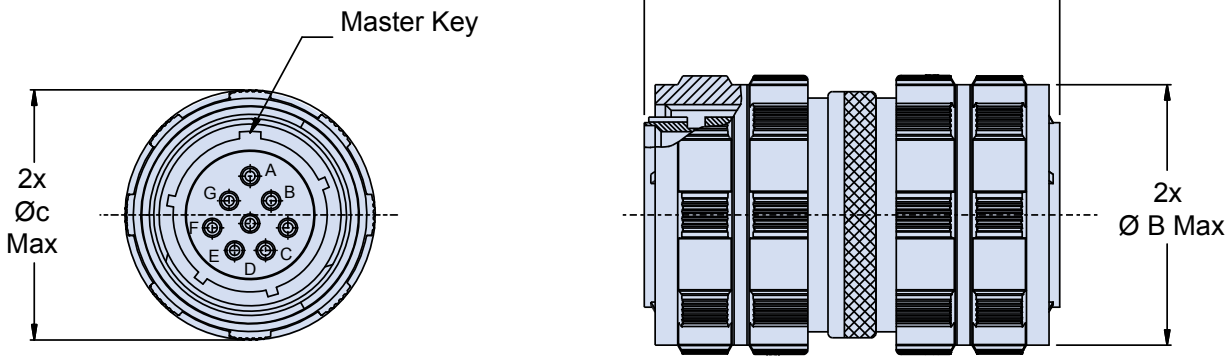
SuperNine® Environmental connectors

233-214 in-line plug/plug connector saver

MIL-DTL-38999 Series III type

How To Order 233-214							
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 **ME** = Electroless Nickel **MT** = Nickel PTFE **ZR** = Black Zinc Nickel						
Shell Size - Insert Arrangement*	Per MIL-STD-1560 plus HD						
Contact Style (Plug Side)	**P** = Pin, gold, 500 cyles **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 cyles **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**



NOTES

1. 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.
2. For pin/pin and socket/socket, symmetrical layout only.
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. 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.

Dimensions			
Shell Size Code	**Shell Size**	**ØB Max**	**ØC Max**
A	9	0.811 (20.6)	0.858 (21.8)
B	11	0.929 (23.6)	0.984 (25.0)
C	13	1.110 (28.2)	1.157 (29.4)
D	15	1.232 (31.3)	1.280 (32.5)
E	17	1.358 (34.5)	1.406 (35.7)
F	19	1.469 (37.3)	1.516 (38.5)
G	21	1.594 (40.5)	1.642 (41.7)
H	23	1.720 (43.7)	1.768 (44.9)
J	25	1.843 (46.8)	1.890 (48.0)

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 evaulate outgassing properties. The MIL-DTL-38999 specification Class G also details specific TVM and CVCM values. In Glenair's 429J process, for example, connectors and connector materials are heated to 175° C at a vacuum of 5 X 10^{-5} 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. Glenair is able to offer both NASA as well as D38999 Class G bakeout processes which assure all materials comply with their respective standards.

Note on Connector Material and Finish Options

Some types of metals are prohibited for space flight. "Cadmium, zinc, chemically coated cadmium or zinc, or silver shall not be used as a connector or contact finish" (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 are subjected to bakeout and thermal vacuum outgas processing IAW MIL-DTL-38999 Class G**
- **Modification codes are a convenient way to specify outgassing bakeout 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**

SuperNine® Environmental connectors

IAW Class G guidelines for space-grade applications

MIL-DTL-38999 Series III type

- **"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® connectors are detailed in the table below**

NASA and Class G Screening

The MIL-DTL-38999 specification defines TML and CVCM values for Class G space flight. 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. Please use the following modification codes:

NASA and Class G Screening Levels and Modification Codes			
Screening Level	Special Screening Only	Special Screening Plus Outgassing Processing	
		48 Hour Oven Bake 175° C	Thermal Vacuum Outgassing 24 hrs. 125° C
D38999 Class G	(Use standard part number)	Mod 186	Mod 186M
NASA Level 1 Highest Reliability	Mod 429B	Mod 429J	Mod 429C
NASA Level 2 High Reliability	Mod 429	Mod 429K	Mod 429A
NASA Level 3 Standard Reliability	(Use standard part number)	Mod 186	Mod 186M

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	Blended flourosilicone/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, 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

MIL-DTL-38999 TYPE

High-Performance Circular Blind-Mate Connectors

Application: Glenair Series 253 connectors are designed to meet applicable environmental, electrical and mechanical performance characteristics of D38999 Series III. The technology is well suited for satellite deployment, solar array deployment, interstage release, UAV release, payload and munitions release, as for use in commercial blind mate instrumentation panels.

- **Assisted separation force overcomes pin/socket engagement force**
- **Rack-and-panel versions feature self-aligning floating technology for repeatable mating and de-mating**
- **Available in most symmetric MIL-STD-1560 insert arrangements with contacts sizes from #23 to #12**
- **Selected materials offer low outgassing properties and high resistance to both corrosion and stress corrosion cracking**
- **Optional outgassing bake-out process available (see space-grade guidelines in this section)**
- **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**
- **Integrated EMI/RFI shield termination band platform versions also available**

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

Unmated Test Voltages, AC RMS, 60 Hz				
Altitude (Feet)	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 connectors

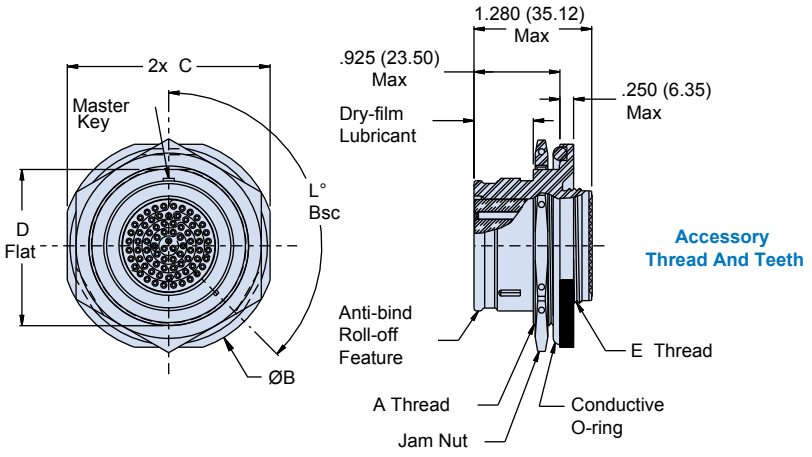
253-001 and 253-002 Circular blind mate connector

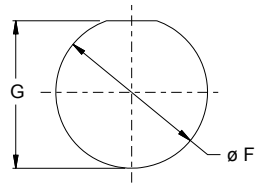
MIL-DTL-38999 Series III type IAW Class G

How To Order 253-001 and 253-002							
Sample Part Number	**253-001**	**B**	**07**	**ME**	**21–35**	**S**	**N**
Series / Basic Part No.	**253** High Performance Blind Mate, Extraction Force **–001** = plug **–002** = receptacle						
Rear Accessory Option	**–** = Accessory thread and teeth **B** = Integrated band porch and shrink boot adapter **S** = Single Integrated band porch						
Connector Style*	**07** = Jam nut mount						
Material/Finish	**ME** = Aluminum, electroless nickel **MA** = Aluminum, electroless nickel - matte finish (space grade) **MT** = Aluminum, nickel PTFE **ZL** = CRES, electrodeposited nickel **Z1** = CRES, passivated						
Shell Size-Insert Arrangement*	Per MIL-STD-1560 (symetrical arrangements only)						
Contact Type	**P** = Pin (253-002 receptacle only) **S** = Socket (253-001 plug only); 500 cycles						
Alternate Polarization*	**A, B, C, D, E, N** = Normal (Per L°)						

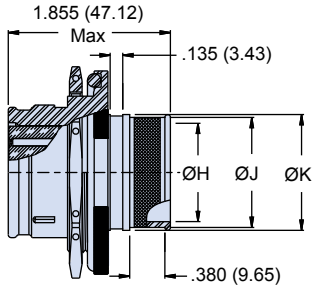
***Refer to Section A for complete details**
Refer to Space-grade Guidelines IAW NASA EEE INST-002 outgassing processing/bakeout for modification codes.
Modification codes may be added directly to the end of any valid part number

253-001 Plug

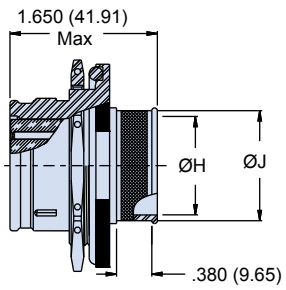




Recommended Panel Cut Out



B, Single Band And Boot Groove



S, Single Band

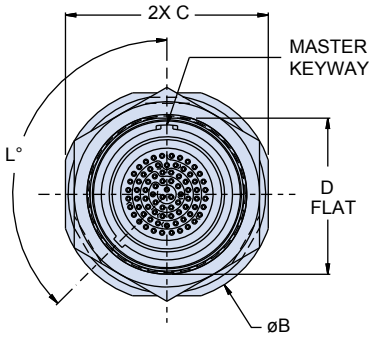
Alternate Polarization	
ID	L°
N	135°
A	65°
B	80°
C	210°
D	280°
E	310°

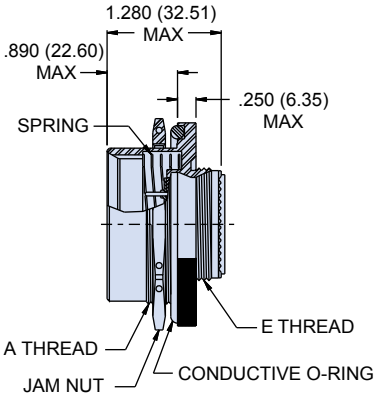
SuperNine® Space-grade connectors

253-001 and 253-002 Circular blind mate connector

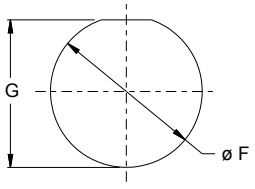
MIL-DTL-38999 Series III type IAW Class G

253-002 Receptacle

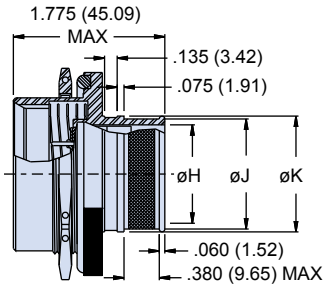




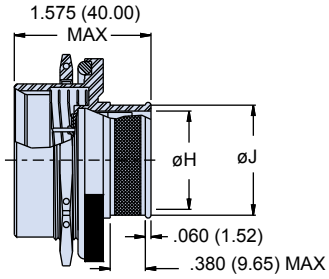
ACCESSORY THREAD AND TEETH



Recommended Panel Cut Out



B, SINGLE BAND AND BOOT GROOVE



S, SINGLE BAND

MECHANICAL SPECIFICATIONS:

- Operational Temperature Range: -65° C to +200° C
- Random Vibration: 43.92 Grms
- Shock: 300 G
- Durability: 100 Cycles
- Extraction Force: ≤25 lbs linear
- Blue color band: rear-release retention system

Dimensions												
Shell Size	A Thread	Ø B ± .012 (±.3)	C ± .012 (±.4)	D Flat +.004 +(.10) −.006 −(.15)	E Thread	ØF +.005 +(.13) −.000 −(.00)	ØG Flat +.000 +(.00) −.002 −(.06)	ØH ±.015 (±.4)	ØJ ±.015 (±.4)	ØK ±.015 (±.4)	O-Ring P/N	Jam Nut Ref P/N D38999/28
9	M25 X 1.0-6g-0.100R	1.500(38.1)	1.374(34.9)	.964(24.49)	M12 X 1.0-6g-0.100R	1.010(25.65)	.978(24.84)	0.350 (8.90)	.475(12.1)	.538(13.6)	2-024	-3
11	M28 X 1.0-6g-0.100R	1.626(41.3)	1.500(38.1)	1.086(27.58)	M15 X 1.0-6g-0.100R	1.135(28.83)	1.100(27.94)	.475(12.1)	.600(15.2)	.662(16.8)	2-026	-4
13	M32 X 1.0-6g-0.100R	1.752(44.5)	1.626(41.3)	1.198(30.43)	M18 X 1.0-6g-0.100R	1.260(32.01)	1.210(30.73)	.575(14.6)	.700(17.8)	.762(19.4)	2-028	-6
15	M35 X 1.0-6g-0.100R	1.937(49.2)	1.811(46.0)	1.312(33.32)	M22 X 1.0-6g-0.100R	1.385(35.18)	1.335(33.91)	.710(18.0)	.835(21.2)	.898(22.8)	2-128	-8
17	M38 X 1.0-6g-0.100R	2.063(52.4)	1.937(49.2)	1.437(36.50)	M25 X 1.0-6g-0.100R	1.510(38.35)	1.460(37.08)	.835(21.2)	.960(24.4)	1.022(26.0)	2-130	-9
19	M41 X 1.0-6g-0.100R	2.189(55.6)	2.063(52.4)	1.562(39.67)	M28 X 1.0-6g-0.100R	1.635(41.53)	1.585(40.26)	.938(23.8)	1.062(27.0)	1.125(28.6)	2-132	-10
21	M44 X 1.0-6g-0.100R	2.311(58.7)	2.189(55.6)	1.687(42.85)	M31 X 1.0-6g-0.100R	1.760(44.70)	1.710(43.43)	1.062(27.0)	1.188(30.2)	1.250(31.8)	2-134	-11
23	M47 X 1.0-6g-0.100R	2.426(61.6)	2.305(58.5)	1.824(46.33)	M34 X 1.0-6g-0.100R	1.885(47.88)	1.840(46.74)	1.150(29.2)	1.275(32.4)	1.338(34.0)	2-136	-12
25	M50 X 1.5-6g-0.100R	2.551(64.8)	2.430(61.7)	1.936(49.17)	M37 X 1.0-6g-0.100R	2.000(50.80)	1.952(49.58)	1.350(34.3)	1.475(37.5)	1.538(39.1)	2-138	NON STD

SuperNine® Space-grade connectors

253-005 or 253-006 Blind-mate connector with PC tails

MIL-DTL-38999 Series III type IAW Class G

How To Order 253-005 and 253-006						
Sample Part Number	**253-005**	**-07**	**ME**	**21-35**	**S**	**N**
Series / Basic Part No.	**253** High Performance Blind Mate, Extraction Force **-005** = plug **-006** = receptacle					
Connector Style*	**-07** = Jam nut mount					
Material/Finish	**ME** = Aluminum, electroless nickel **MT** = Aluminum, nickel PTFE **ZL** = CRES, electrodeposited nickel **MA** = Aluminum, electroless nickel, matte finish, space grade **Z1** = CRES, passivated **Z1S** = CRES, Passivated (Space Grade)					
Shell Size - Insert Arrangement*	Per MIL-STD-1560; Symmetrical Layouts Only					
PC Tail Gender/Length	**253-005 Socket Contact; 500 Cycles** **S1** = Socket, PC Tail (.125 - .175) **S2** = Socket, PC Tail (.200 - .250) **S3** = Socket, PC Tail (.250 - .300) **S4** = Socket, PC Tail (.300 - .350) **253-006 Pin Contact; 500 Cycles** **P1** = Pin, PC Tail (.125 - .175) **P2** = Pin, PC Tail (.200 - .250) **P3** = Pin, PC Tail (.250 - .300) **P4** = Pin, PC Tail (.300 - .350)					
Alternate Polarization*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for further details**

Refer to Space-grade Guidelines IAW NASA EEE INST-002 outgassing processing/bakeout for modification codes.
Modification codes may be added directly to the end of any valid part number

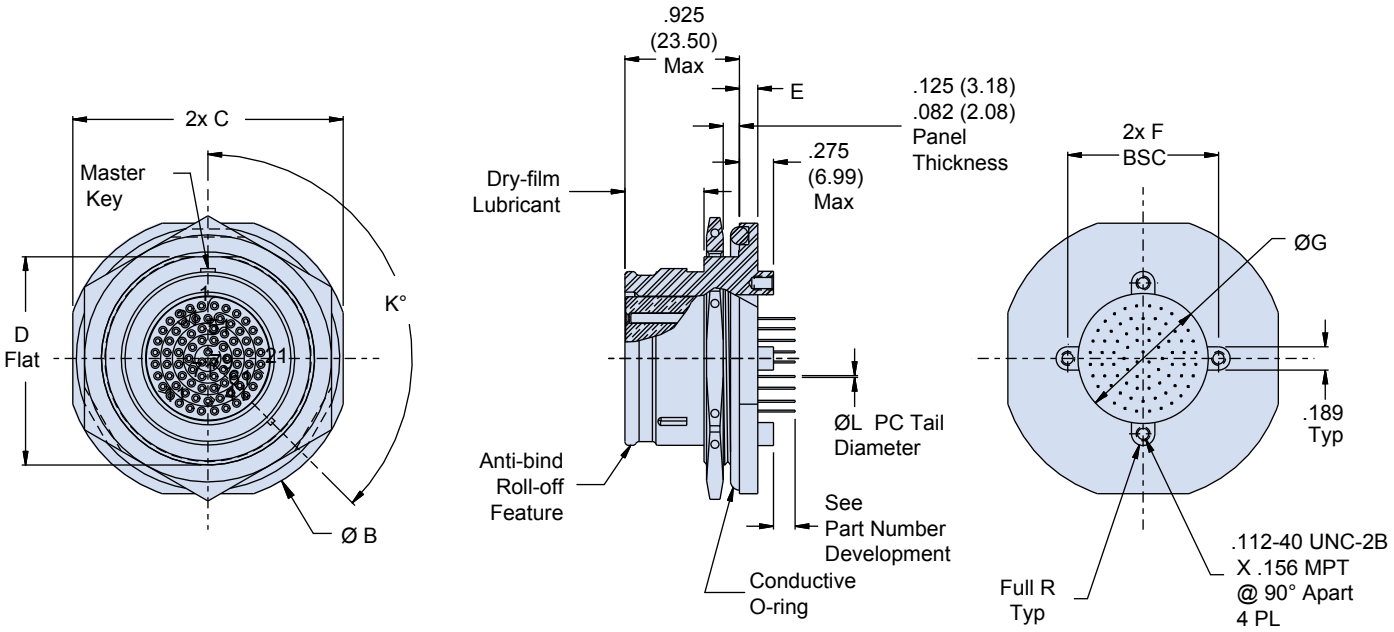
Dimensions								
Shell Size	Ø B ± .012 (±.3)	C ± .012 (±.4)	D Flat +.004 (+.10) –.006 (–.15)	E +.035 (+.9 -.006 (–.1)	F BSC	ØG Min	O-Ring P/N	Jam Nut Ref P/N D38999/28
9	1.500 (38.1)	1.374 (34.9)	.964 (24.49)	.087(2.2)	.594 (15.09)	0.340 (8.64)	2-024	-3
11	1.626 (41.3)	1.500 (38.1)	1.086 (27.58)		.719 (18.26)	.468 (11.89)	2-026	-4
13	1.752 (44.5)	1.626 (41.3)	1.198 (30.43)		.812 (20.62)	.572 (14.53)	2-028	-6
15	1.937 (49.2)	1.811 (46.0)	1.312 (33.32)	.118(3.0)	.906 (23.01)	.705 (17.91)	2-128	-8
17	2.063 (52.4)	1.937 (49.2)	1.437 (36.50)		1.030 (26.16)	.830 (21.08)	2-130	-9
19	2.189 (55.6)	2.063 (52.4)	1.562 (39.67)		1.150 (29.21)	.934 (23.72)	2-132	-10
21	2.311 (58.7)	2.189 (55.6)	1.687 (42.85)		1.221 (31.01)	1.055 (26.80)	2-134	-11
23	2.426 (61.6)	2.305 (58.5)	1.824 (46.33)		1.360 (34.54)	1.160 (29.46)	2-136	-12
25	2.551 (64.8)	2.430 (61.7)	1.936 (49.17)		1.475 (37.47)	1.307 (33.12)	2-138	Non Std

PC Tail Size and Diameter	
CONTACT SIZE	PC TAIL ø L
NO 23	0.015 0.011
NO 22	0.015 0.011
NO 20	0.028 0.024
NO 16	0.0635 0.0615
NO 12	0.095 0.093

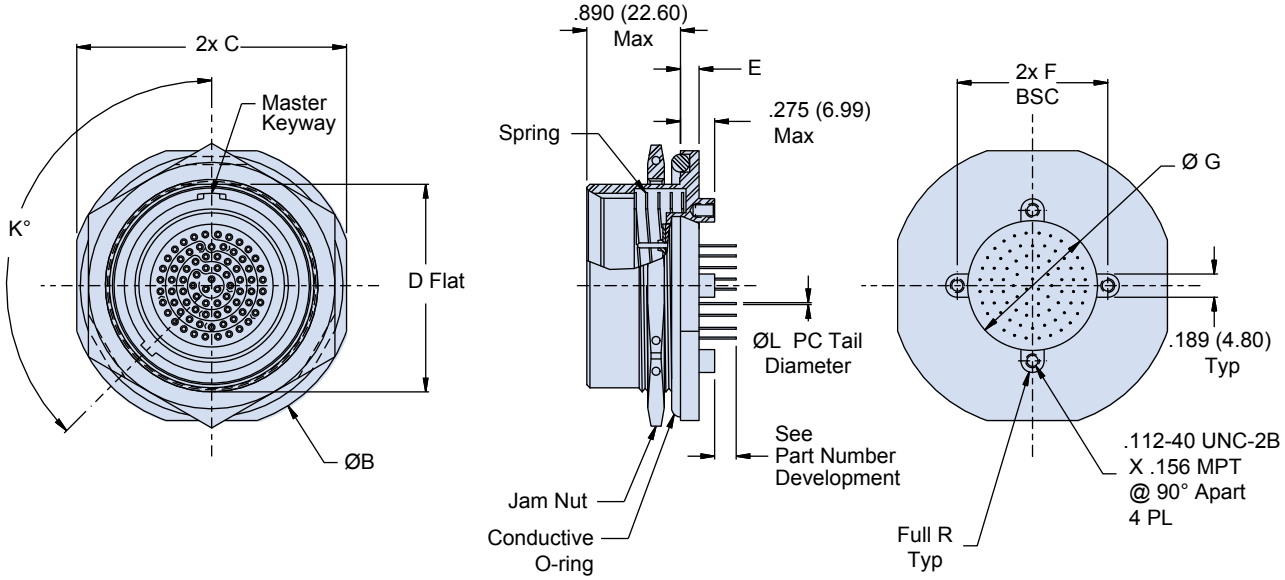
SuperNine® Space-grade connectors

253-005 or 253-006 Blind-mate connector with PC tails

MIL-DTL-38999 Series III type IAW Class G



Jam-Nut Mounted Plug
253-005



Jam-Nut Mounted Receptacle
253-006

SuperNine® Space-grade connectors

253-009 and 253-010 Crimp contact jam nut plug/receptacle

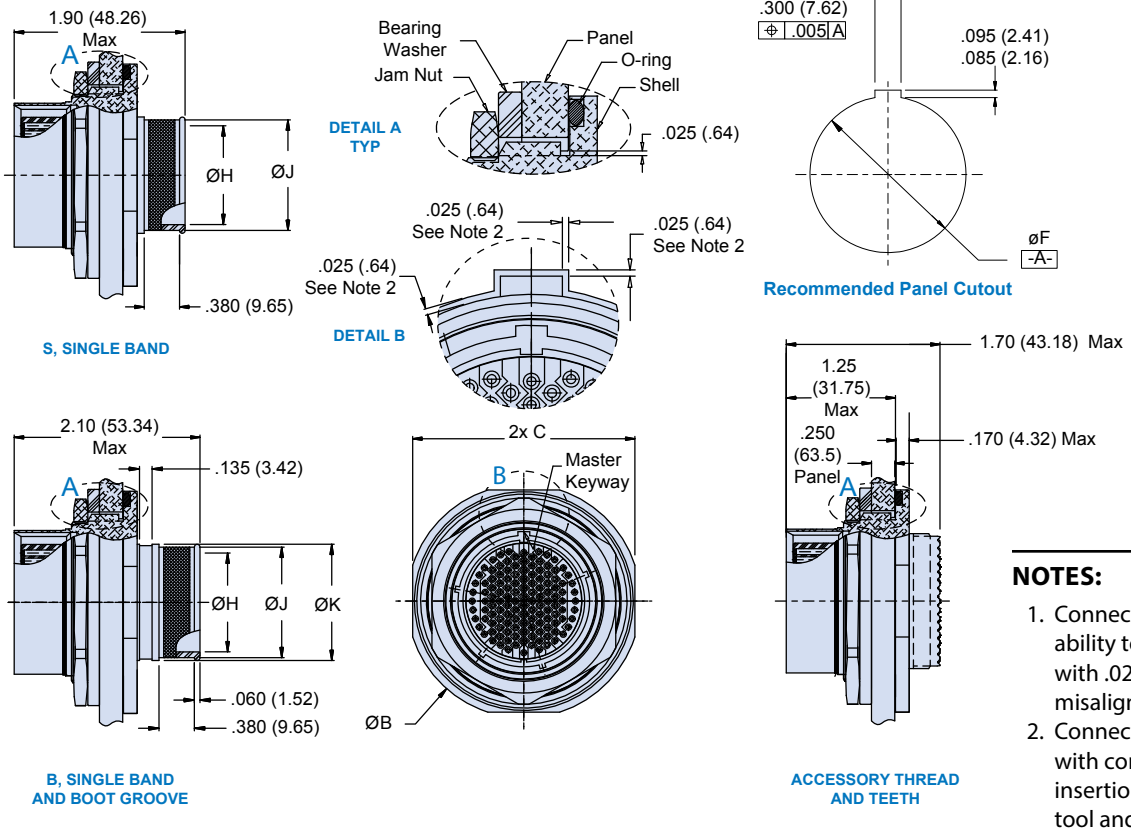
MIL-DTL-38999 Series III type IAW Class G

B

How To Order 253-009 and 253-010							
Sample Part Number	**253-009**	**–**	**07**	**ME**	**25-35**	**S**	**N**
Series / Basic Part No.	High Performance Blind Mate, Rack-and-Panel **-009** = receptacle **-010** = plug						
Rear Accessory Option	**–** = Accessory thread and teeth **B** = Integrated band porch and shrink boot adapter **S** = Single Integrated band porch						
Connector Style	**07** = Jam nut mount; Use Panel Cut-Out Dimensions Provided for -009 and -010						
Material/Finish	**ME** = Aluminum, electroless nickel **MA** = Aluminum, electroless nickel, matte finish, space grade **MT** = Aluminum, nickel PTFE **Z1** = CRES, passivated **ZL** = CRES, electrodeposited nickel						
Shell Size - Insert Arrangement*	IAW MIL-DTL-38999 Series III, Per MIL-STD-1560, Symmetrical Layouts Only						
Contact Type	**P** = Pin **S** = Socket **A** = Pin insert, less contacts **B** = Socket insert, less contacts						
Alternate Polarization*	**A, B, C, D, E, N** = Normal						

***Refer to Section A for further details**
Refer to Space-grade Guidelines IAW NASA EEE INST-002 outgassing processing/bakeout for modification codes.
Modification codes may be added directly to the end of any valid part number

253-009 Receptacle



NOTES:

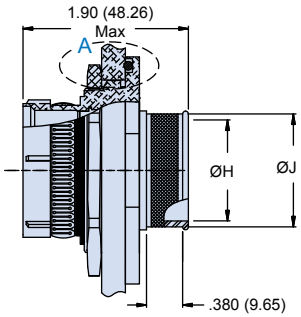
1. Connector has the ability to blind mate with .025 max radial misalignment.
2. Connector supplied with contacts, insertion/removal tool and sealing plugs

SuperNine® Space-grade connectors

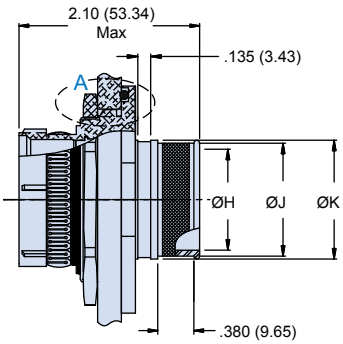
253-009 and 253-010 Crimp contact jam nut plug/receptacle

MIL-DTL-38999 Series III type IAW Class G

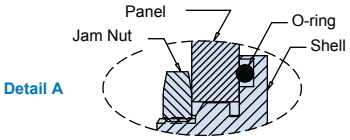
253-010 Plug



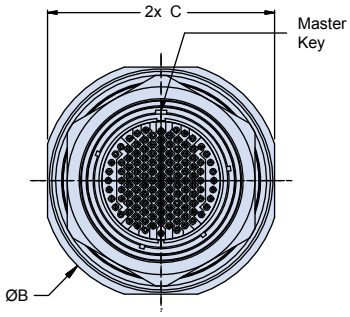
S, Single Band

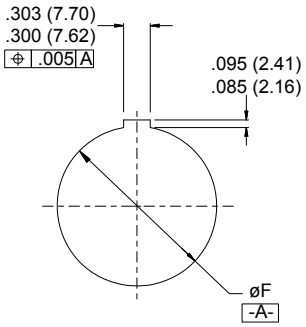


B, Single Band and Boot Groove

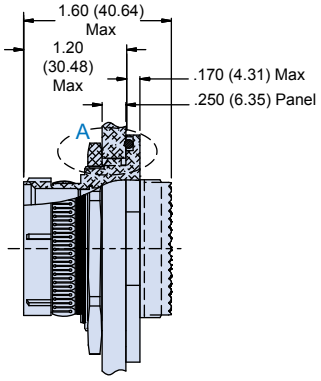


Detail A





Recommended Panel Cutout



Accessory Thread and Teeth

Dimensions												
Shell Size	ØB		C		ØG		ØH ±.015		ØJ		ØK	
	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm
9	1.377/1.399	34.98/35.53	1.247/1.277	31.67/1.28	0.690/0.693	17.46/17.53	0.350	8.89	0.475	12.07	0.538	13.67
11	1.561/1.585	39.65/ 40.26	1.435/1.467	36.45/1.47	0.816/0.819	20.64/20.72	0.475	12.07	0.600	15.24	0.662	16.81
13	1.687/1.711	42.85/ 43.46	1.557/1.589	39.55/1.59	1.005/1.008	25.43/25.50	0.575	14.61	0.700	17.78	0.762	19.35
15	1.813/1.837	46.05/46.66	1.683/1.715	42.75/1.72	1.127/1.130	28.51/28.59	0.710	18.03	0.835	21.21	0.898	22.81
17	1.939/1.963	49.25/49.86	1.809/1.841	45.95/1.84	1.260/1.263	31.88/31.95	0.835	21.21	0.960	24.38	1.022	25.96
19	2.124/2.148	53.95/54.56	1.994/2.026	50.65/2.03	1.378/1.381	34.86/34.94	0.938	23.83	1.062	26.97	1.125	28.58
21	2.250/2.274	57.15/57.76	2.120/2.152	53.85/2.15	1.497/1.500	37.87/37.95	1.062	26.97	1.188	30.18	1.250	31.75
23	2.376/2.400	60.35/60.96	2.246/2.278	57.05/2.28	1.627/1.630	44.53/41.24	1.150	29.21	1.275	32.39	1.338	33.99
25	2.498/2.522	63.45/64.06	2.372/2.404	60.25/2.40	1.753/1.756	41.33/44.43	1.350	34.29	1.475	37.47	1.538	39.07

SuperNine® Environmental connectors

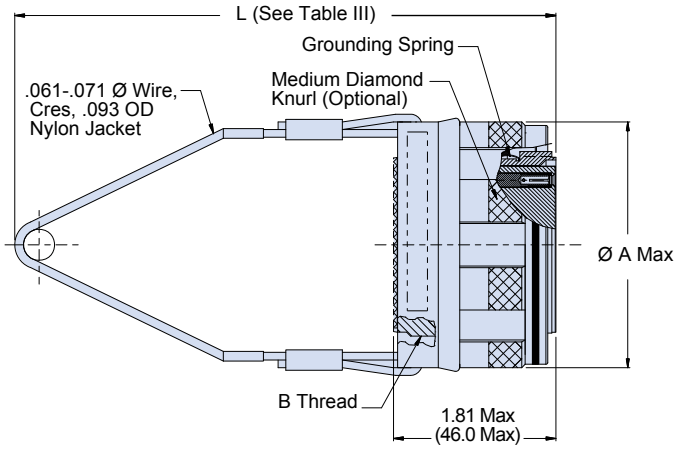
233-216 Lanyard release plug

MIL-DTL-38999 Series III

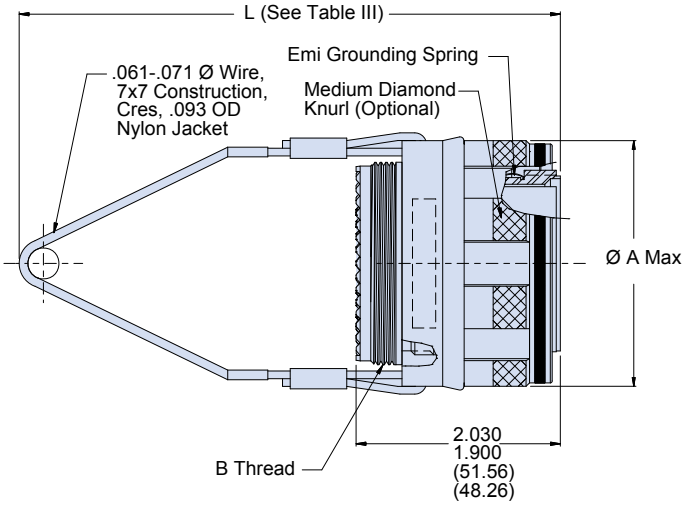
How To Order 233-216								
Sample Part Number	**233-216**	**-G6**	**ME**	**25-35**	**S**	**A**	**E**	**-4**
Series / Basic Part No.	**233-216** = Lanyard Release Plug							
Connector Style*	**G6** = Plug with EMI Spring							
Finish	**NF** = Al Alloy, Olive Drab-Cad over Nickel **ZL** = Cres, Electrodeposited Nickel **Z1** = Cres, Passivated **ME** = Al Alloy, Eletroless Nickel							
Shell Size-Insert Arrangement*	Per MIL-STD-1560 plus high density							
Contact Type	**P** = Pin **S** = Socket; 500 cycles							
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	**4** = Type 4 **6** = Type 6							

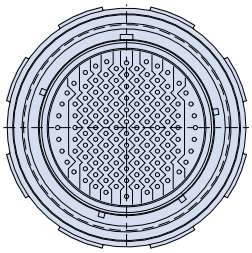
***Refer to Section A for complete details**

Type -4



Type -6





Insert arrangement is for reference only

233-216 Lanyard release plug

MIL-DTL-38999 Series III

Dimensions			
Shell Size	Shell Size Code	A Max	B Thread
9	A	1.00 (25.4)	M12 x1-6g-0.100R
11	B	1.110 (28.19)	M15 x1-6g-0.100R
13	C	1.972 (50.1)	M18 x1-6g-0.100R
15	D	2.078 (52.8)	M22 x1-6g-0.100R
17	E	2.204 (56.0)	M25 x1-6g-0.100R
19	F	2.330 (59.2)	M28 x1-6g-0.100R
21	G	2.472 (62.8)	M31 x1-6g-0.100R
23	H	2.594 (65.9)	M34 x1-6g-0.100R
25	J	2.704 (68.7)	M37 x1-6g-0.100R

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)

NOTES

1. This connector mates with D38999/20, and 24
2. Dimensions in parenthesis are metric and for refernce.
3. Blue color band indicates rear release retention system
4. Connectors to be supplied with contacts, insertion/removal tools and sealing plugs.

HIGH-SPEED

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**
- **El Ochito®: One full 1G/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**

Glenair®

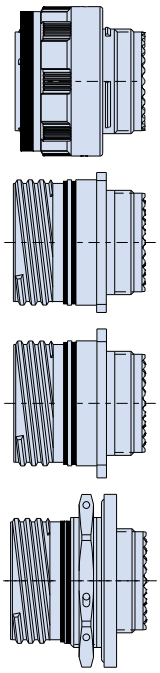
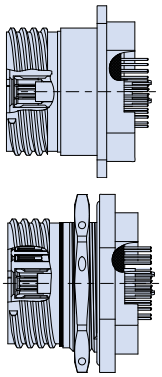
Glenair, Inc.
1211 Air Way
Glendale, CA
91201-2497
818-247-6000
sales@Glenair.com
www.Glenair.com

SuperNine® High speed connectors

Ethernet, video, and high-speed data applications

MIL-DTL-38999 Series III Type

Product Selection Guide

Crimp		**233-217 SuperNine® High-Speed Cable Plugs and Receptacles** With keyed size#8 inserts	C-10
PC Tail		**233-218 SuperNine® High-Speed PC Tail Receptacles** With keyed size#8 inserts	C-12

MIL-DTL-38999 TYPE

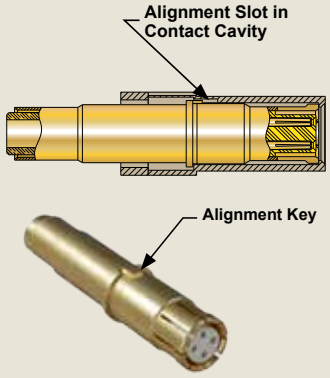
Mil-Aero Ethernet, Video, and High-Speed Data Solutions

Leverage the proven environmental, mechanical, and EMC performance of D38999 for all your high-speed data requirements

- **High availability: full range of in-stock technology—from contacts to cables to high-performance connector shells**
- **Available El Ochito® contact technology: one full 1G/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**

About Keyed Contacts

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



233-217 G6 Plug featuring SuperNine® 1500 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

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

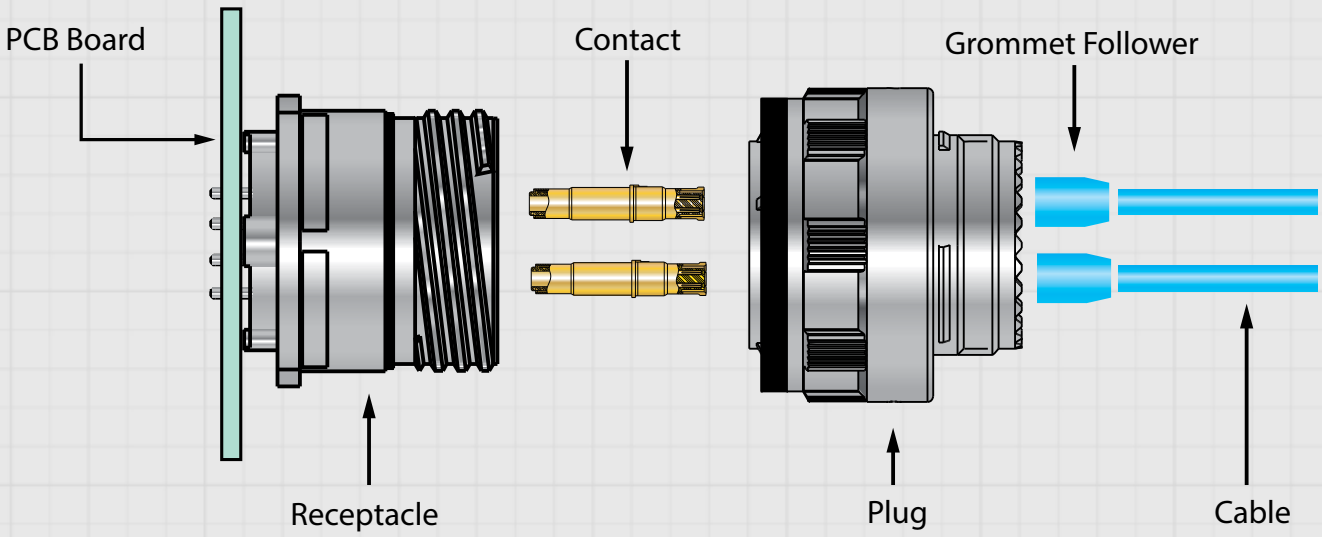
SuperNine® High speed connectors

Ethernet, Video, Power and High-Speed Data Applications

MIL-DTL-38999 Series III Type

Size 8 Contact Quick Reference Guide						
Available Contacts (ordered separately)		**Glenair P/N**	**Contact Size**	**Accomodates AWG Size**	**Wire Size**	**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 Socket: 853-013	8	#22 - #28	M17/176-00002	1553 Databus/ Differential Signal
	El Ochito®	Pin: 858-003 Socket: 858-004	8	#22 - #28	963-003-26	1G/10G Base-T Ethernet
	Quadrax	Pin: 854-001 Socket: 854-002	8	#22 - #28	963-019/020/021	10/100Base-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	N/A

SuperNine® Plug and Receptacle



El Ochito®: The Ultimate Ethernet Contact

"The Little Eight": Eight miniaturized contacts in a standard size #8 shielded module—10G Ethernet ready, with dramatic size and weight reduction compared to all other available solutions

- **One full Ethernet channel per standard size #8 cavity**
- **Fast and easy crimp termination of wires to contacts—PC Tails available**
- **100% drop-in solution to installed connectors—no redesign or reinstallation of interfaces**
- **Supplied as crimp contacts, wire pigtails, or in PC tail configurations in the connector of your choice—up to 8 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 Series 80 Mighty Mouse, as well as D38999 Series III, EN4165, EN3645, and other ARINC standards and is ideally suited for Ethernet, high-definition video, high-speed data loading, and other 1Gb/sec and 10Gb/sec applications.

SuperNine® High speed connectors

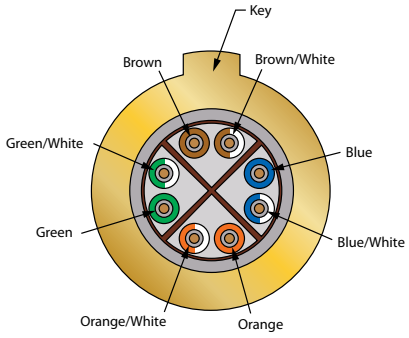
El Ochito®: The Ultimate Ethernet Contact

MIL-DTL-38999 Series III Type

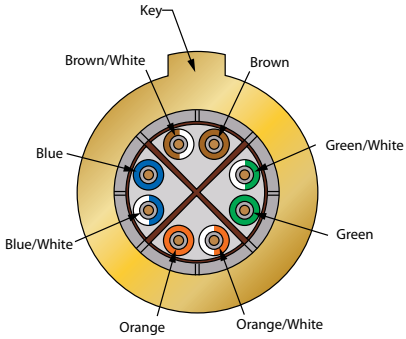
How-To-Order El Ochito™ Contacts	
	
858-003 Size 8 Ochito 26-AWG crimp or solder Pin	**858-004** Size 8 Ochito 26-AWG crimp or solder Socket

El Ochito® utilizes Stinger™ contact technology. These small, durable, low mating force contacts provide El Ochito® with optimized performance.

Pin Interface

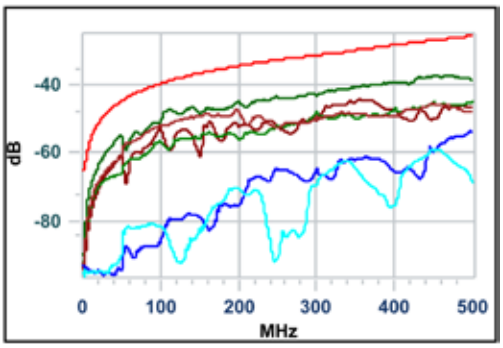


Socket Interface

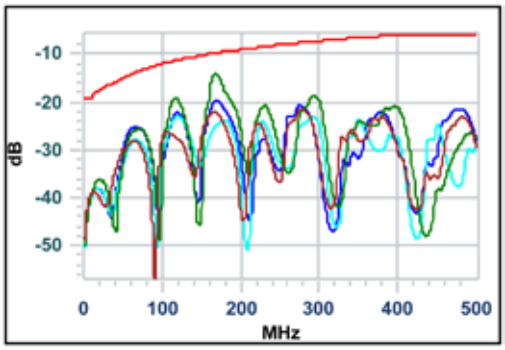


Recommended wire-to-contact assignments

Contact Performance Specifications	
Temperature Range	-55°C to +175°C
Environmental Sealing	IAW connector specification
Corrosion Resistance	48 hours salt spray
Fire, Smoke and Toxicity	IAW FAR 25
EMI Shielding	360° shielding for each pair
Nominal Current	1 Amp
Contact Resistance	Max 60 milliohms
Wire	IAW TIA/EIA Cat 6A and ISO EA
Mating Cycles	> 500
DWV	500 VAC RMS sea level



Near End Crosstalk · Cat 6a · 500 MHz



Return Loss · Cat 6a · 500 MHz

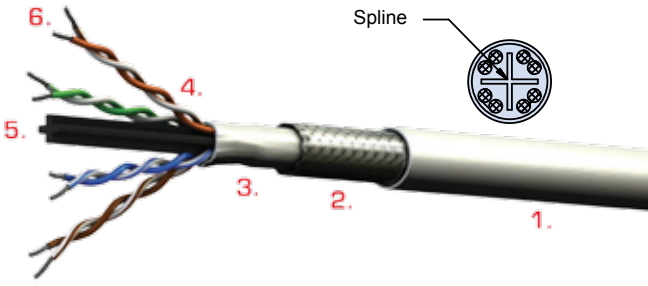
GLENAIR SUPPLIED CABLE FOR EL OCHITO® APPLICATIONS 963-003-26

CABLE PHYSICAL DATA

- Conductors: 26AWG stranded SPC
- Shield coverage: 80% (braid)
- Temperature: -55°C to +200°C
- Outer diameter: 0.220 (5.588mm)
- Minimum bend radius: 1.13 (78.702mm)
- Weight (lbs/100 ft): 3.05 (4.54 kg/100m)

CABLE CONSTRUCTION

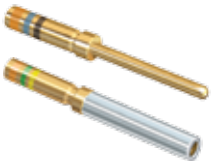
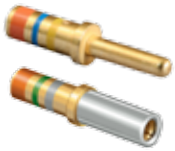
1. White PTFE laser-printable jacket
2. Silver-plated copper shield
3. Fluoropolymer tape
4. PFA insulation
5. Fluoropolymer spline
6. Silver-plated copper conductors



SuperNine® High speed connectors

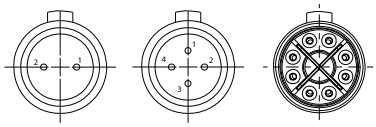
Special size #8 contact arrangements

Reference Information

Contact Size					
Size #22 - #12 Contacts					
Contact Size	#22D	#20	#16	#12	#8
Wire Gauge	#22 - #24	#20-#24	#16 - #20	#12 - #14	#8
Max Current*	5	7.5	13	23	46
Size #8 Contacts					
Contact Size	#8 Coax	#8 Diff. Twinax	#8 Quadrax	#8 Triax/Conc. Twinax	#8 El Ochito®
Recommended Wire	M17/95-RG18 2/ 3/	M17/176-00002 2/ 3/	963-019/020/021	M17/176-00002	963-002-026

* Per AS39029C test current amperes

FIGURE 2



Contact Inner Pin Orientation

Crimp Quadrax Pin and Socket Contacts				
Contact Size	Type	Glenair Part Number	Cable Type Dash No.	Wire Size
#8	Quadrax	854-001	-01 - Tensolite NF26Q100 -02 - Tensolite NF24Q100	26AWG 24AWG
		854-002	-03 - Draka Fileca F 4704-6 -04 - Draka Fileca F 4704-4	26AWG 24AWG

High Speed Contact Arrangement						
Shell Size	Number of Contacts					Shell Size - Insert Arr.
	#22	#20	#16	#12	#8	
09					1	09G05
11				2	1	11-01
17					2	17-22
17C					2	17C-75
19					4	19-04
21					4	21-75
23					5	23-05
23					6	23-06
25					8	25-08

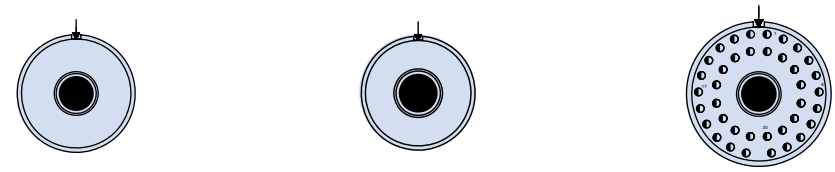
High Speed Combo Contact Arrangement						
Shell Size	Number of Contacts					Shell Size - Insert Arr.
	#22	#20	#16	#12	#8	
17		26	2			17-02
17		29	1			17-22
17		37	2			17-60
19		23	20			19-17
19	14				4	19-18
25	9				8	25-07
25	36				6	25-17
25		10	13	4		25-20
25		20	12			25-26
25	2	3	11	16	3	25-41
25	22	3	11	2	3	25-46

Special size #8 contact arrangements
Reference Information

See **Figure 2** for reference orientation of the size 8 contact inner pins relative to connector main key/keyway

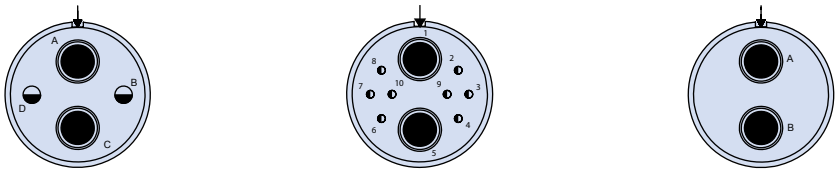
Contact Legend
#22D #16
#20 #12
#8

Insert Arrangement	9G5*	11-1*	17-2	
No. of Contacts	1x #8	1x #8	1x #8	38x #22



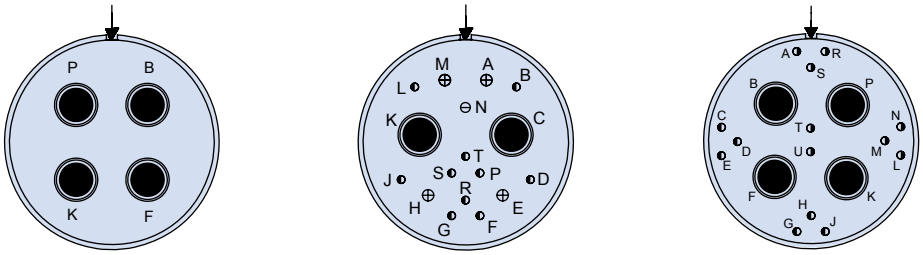
Contact Legend
#22D #16
#20 #12
#8

Insert Arrangement	17-22		17-60		17-75*
No. of Contacts	2x #8	2x #12	2x #8	8x #22	2x #8



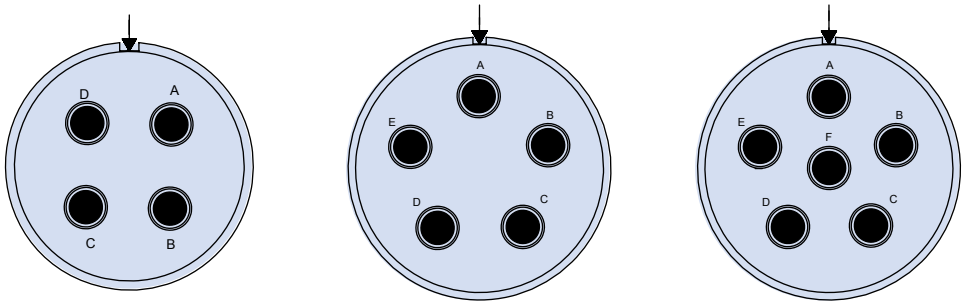
Contact Legend
#22D #16
#20 #12
#8

Insert Arrangement	19-4	19-17			19-18	
No. of Contacts	4x #8	2x #8	4x #16	1x #20	10x #22D	4x #8	14x #22D



Contact Legend
#22D #16
#20 #12
#8

Insert Arrangement	21-75*	23-5*	23-6*
No. of Contacts and Size	4x #8	5x #8	6x #8



*Ground plane option only available for insert arrangements where all contacts are shielded

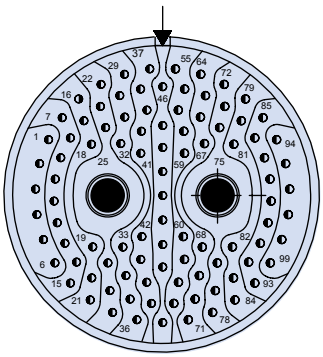
SuperNine® High speed connectors

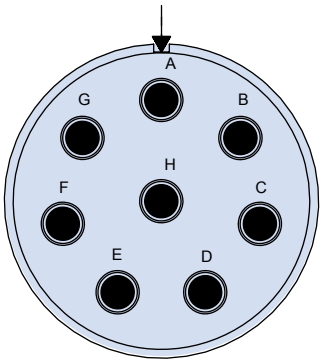
Special size #8 contact arrangements

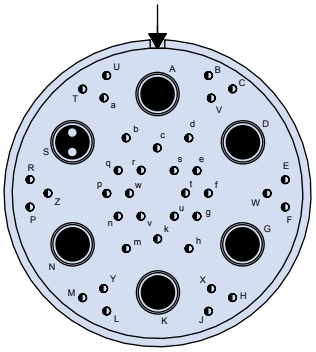
Reference Information

See **Figure 2** for reference orientation of the size 8 contact inner pins relative to connector main key/keyway

Contact Legend
#22D #16
#20 #12
#8

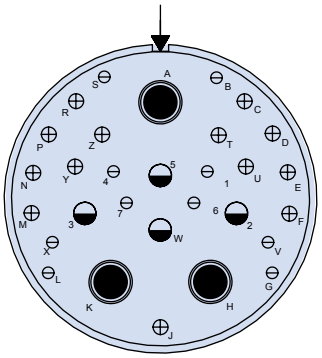


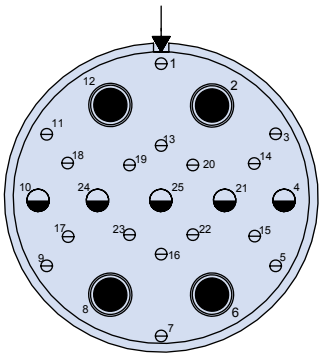




Insert Arrangement	25-7		25-8*	25-17	
No. of Contacts and Size	2x #8	97x #22	8x #8	6x #8	36x #22

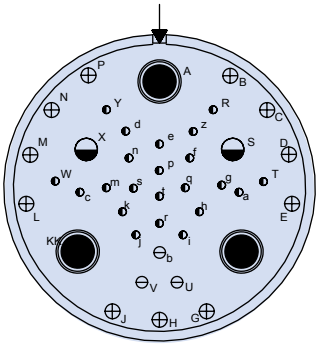
Contact Legend
#22D #16
#20 #12
#8

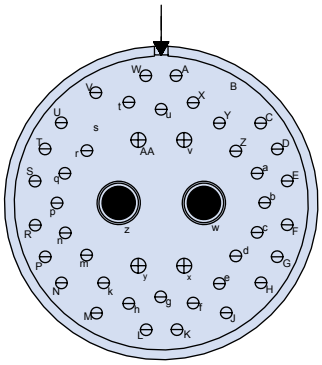




Insert Arrangement	25-20				25-26		
No. of Contacts and Size	3x #8	4x #12	13x #16	10x #20	4x #8	5x #12	16x #20

Contact Legend
#22D #16
#20 #12
#8





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

*Ground plane option only available for insert arrangements where all contacts are shielded

SUMMARY OF MATERIALS AND SPECIFICATIONS

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 dielectrric. For common ground option - Al alloy.
- Seals, Grommet, O-Ring - Fluorosilicone
- Contact - Grommet follower ordered separately
- Stainless steel and other materials and finishes available

Shell Type and Sizes

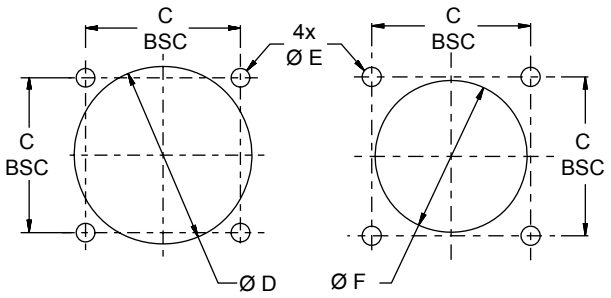
- Shell Type – D38999 Series III Type, sizes 9 , 11, 17, 19, 21, 23, 25

Electrical Specifications:

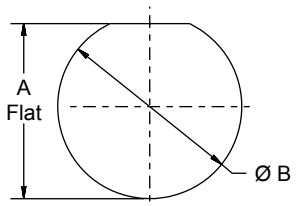
- Voltage Rating – 1000 Volts • Current Rating –1.5 Amps • D.W.V. – 1000 VAC • Frequency – 100 MHz
- Wiring – Straight through
- Shield Continuity – Continuous through coupler and grounded to shell

Environmental / Mechanical Performance

- Sealing – IP67 mated condition
- Outgassing – UL94 V0 low smoke, zero halogen
- Operating Temperature Range – -65°C to +175°C
- Vibration – 20g's, 3 Axis, 10 - 500 Hz
- Mechanical Shock – 300 g's
- Backshell Interface – MIL-DTL-38999 connector designator H
- Durability (Mating Cycles) – 500



Square Flange Rear Panel Mount **Square Flange Front Panel Mount**



Jam Nut

Non-Standard but Readily Available 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*
***composite connectors not available with 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)		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)	.159/.149 (4.04/3.78)	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)	.155/.145 (3.94/3.68)	1.484 (37.69)

SuperNine® High speed connectors

233-217 Plug and receptacle with keyed size#8 inserts

MIL-DTL-38999 Series III type

How To Order 233-217								
Sample Part Number	**233-217**	**–G6**	**NF**	**25**	**–**	**08**	**A**	**N**
Series / Basic Part No.	SuperNine® Environmental High-Speed connector							
Connector Style*	**G6** = Plug, with EMI spring **05** = Receptacle, in-line **07** = Receptacle, jam nut **00** = Receptacle, wall mount with slotted holes							
Material/Finish	**NF** = Cadmium Olive Drab **MT** = Nickel PTFE **ME** = Electroless Nickel **ZR** = Black Zinc Nickel							
Shell Size	**9** , **11**, **17**, **19**, **21**, **23**, **25**							
Ground Option	**G** = Common Ground **–** = None							
Insert Arrangement	Per MIL-STD-1560; See Page C-7							
Insert Designator	**A** = Pin insert, less contacts **B** = Socket insert, less contacts See Table							
Alternate Polarization*	**A**, **B**, **C**, **D**, **E**, **N** = Normal (IAW MIL-DTL-38999 Series III)							

***Refer to Section A for complete details**

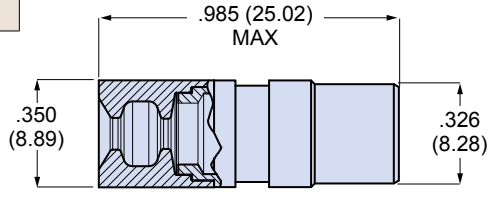
Contact Type		Glenair P/N	Cable*	Ω
	Coax (per M39029/59 & /60)	Pin: 852-007-08-367 Socket: 852-006-08-366	M17/095-RG180	95
	Differential Twinax	Pin: 853-014-01 Socket: 853-013-01	Gore RCN8945	100
	El Ochito	Pin: 858-003-01 Socket: 858-004-001	963-003-26 (PIC E6A3826)	100
	Quadrax	Pin: 854-001-01 Socket: 854-002-01	Tensolite NF26Q100	100
	Triax/Concentric Twinax	Pin: 853-003-08-625 Socket: 853-004-08-628	M17/176-0002	78

* Consult factory for other cable options

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 P/N 859-042-03.

Wire Diameter		Part Number
In	mm	
.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



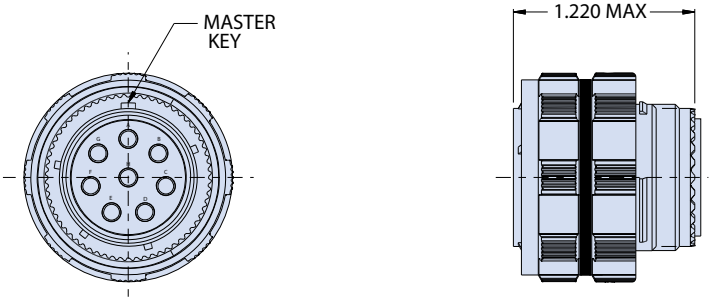
NOTES

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.
3. Dimensions in in. (mm) 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 t be ordered separately.

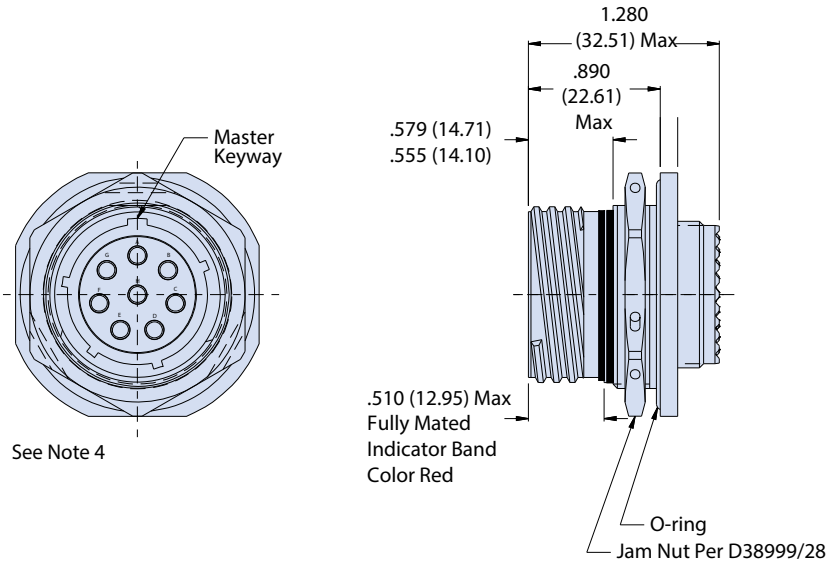
233-217 Plug and receptacle with keyed size#8 inserts

MIL-DTL-38999 Series III type

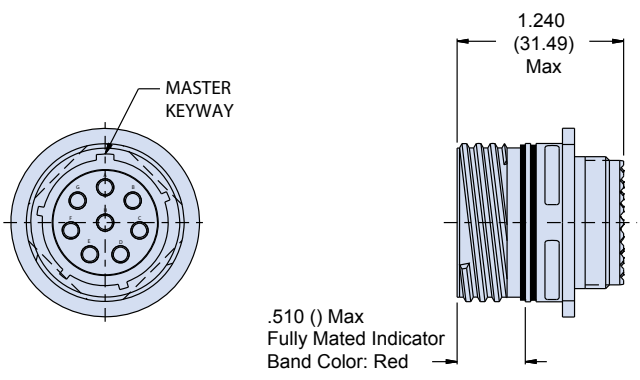
G6 - PLUG



07 - JAM NUT RECEPTACLE

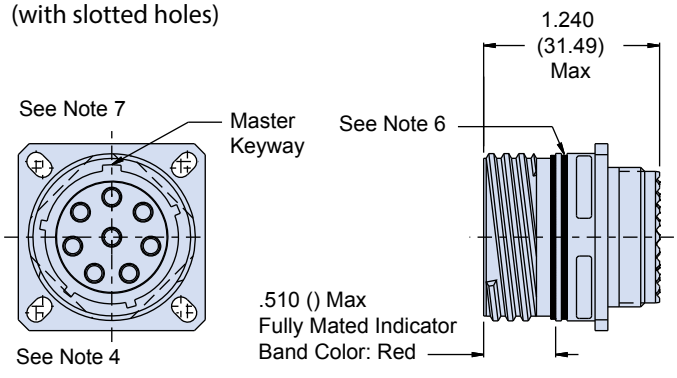


05 - IN-LINE RECEPTACLE



00 - WALL MOUNT RECEPTACLE

(with slotted holes)



SuperNine® High speed connectors

233-218 PC tail receptacle with threaded standoffs

MIL-DTL-38999 Series III type

How To Order 233-218									
Sample Part Number	**233-218**	**–00**	**M**	**17**	**E**	**–**	**02**	**S**	**N**
Series / Basic Part No.	SuperNine® High-Speed PC tail receptacle connector								
Connector Style*	**–00** = Wall-mount receptacle with slotted holes **–07** = Jam Nut Receptacle **–CM** = Receptacle, wall mount with metric clinch nuts **–CS** = Receptacle, wall mount with standard clinch nuts **–HM** = Receptacle, wall mount with metric clinch nuts **–HS** = Receptacle, wall mount with standard clinch nuts								
Material/Finish	**NF** = Cadmium Olive Drab **MT** = Nickel PTFE **ME** = Electroless Nickel **ZR** = Black Zinc Nickel								
Shell Size	**9**, **11**, **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-14 thru C-17								
Ground Option	**G** = Common Ground (See Note 1) **–** = None								
Insert Arrangement	Per MIL-STD-1560, See page C-7								
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**

Table II		
Contact Size	PC Tail ØM	
	In	mm
No. 22	.020/.018	.51/.45
No. 20	.030/.028	.76/.71
No. 16	.040/.038	1.02/.97
No. 12	.072/.070	1.83/1.78

NOTES

1. Ground plane option only available for insert arrangements where all contacts are shielded type.
2. See figure 2 for reference orientation of the inner pins relative to connector main keyway.
3. Glenair's 233-218 receptacle connector should be mated to Glenair's 233-217 plug with approdriate contacts to optimize performance.
4. See reference information in this section for recommended mounting holes for wall mount and jam nut receptacles.
5. Glenair's 233-218 receptacle 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. 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.
6. All contacts are potted and non-removable

MATERIAL/FINISH:

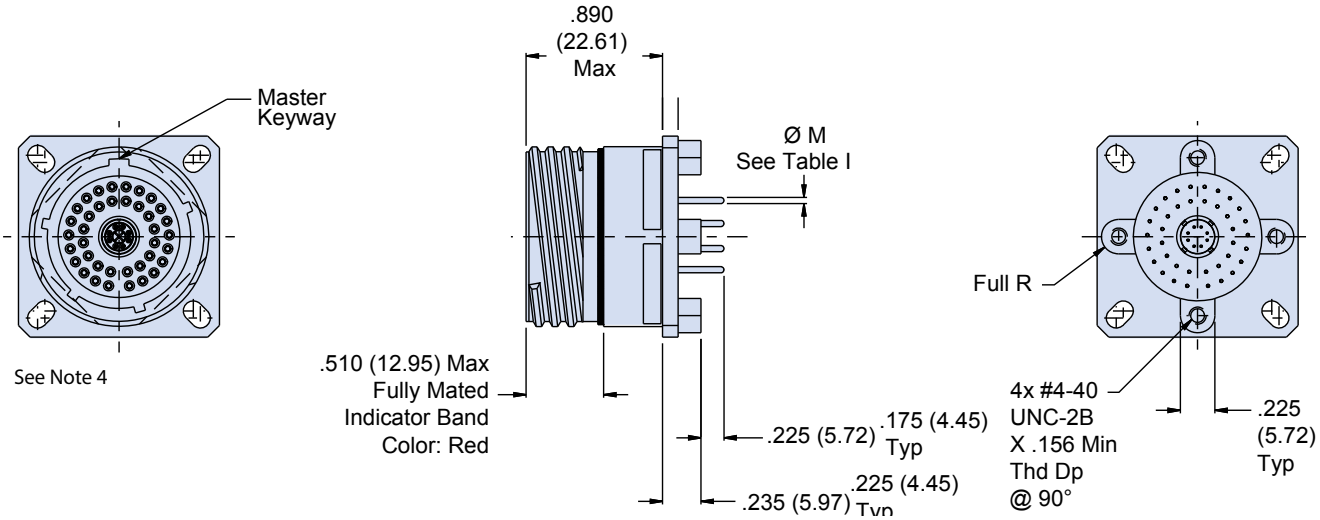
- Shell - see Table V
- Contacts - copper alloy / gold plated
- Insulators - high grade rigid dielectric / N.A.
- For common ground option - al alloy/ mfg option
- Seals - fluorosilicone blend / N.A.
- Potting - epoxy / N.A.

SuperNine® High speed connectors

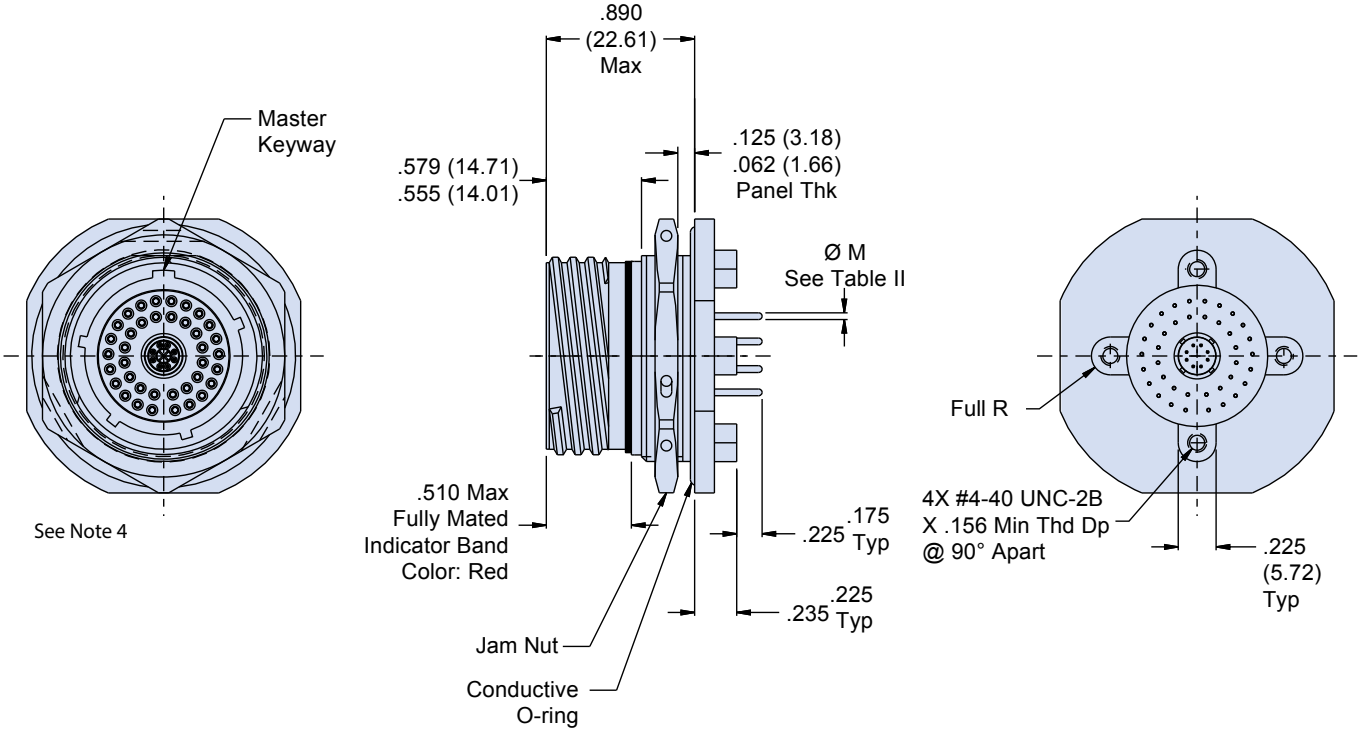
233-218 PC tail receptacle with threaded standoffs

MIL-DTL-38999 Series III type

00 - WALL MOUNT RECEPTACLE

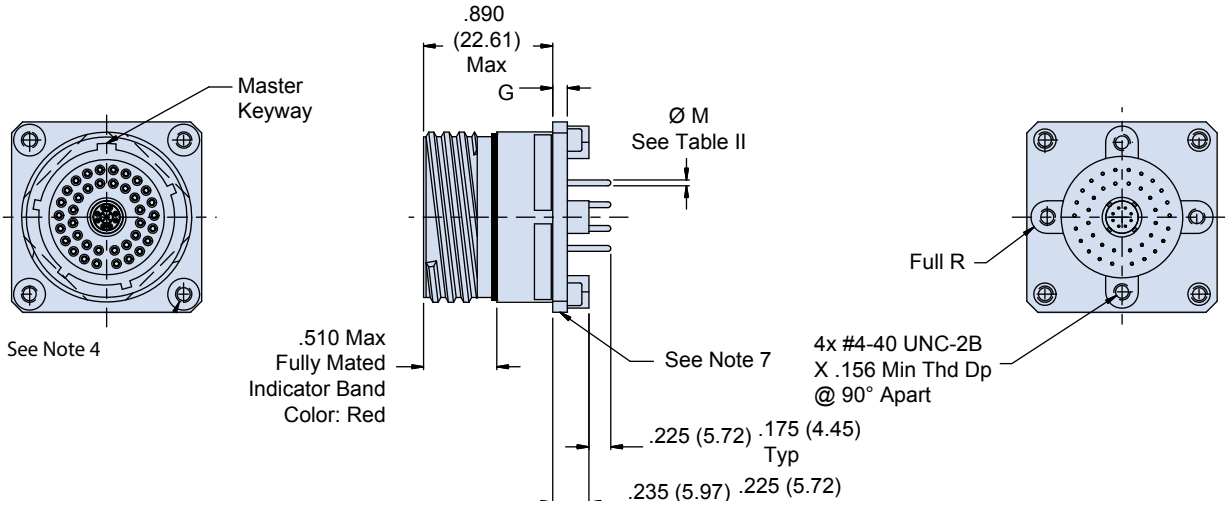


07 - JAM NUT RECEPTACLE

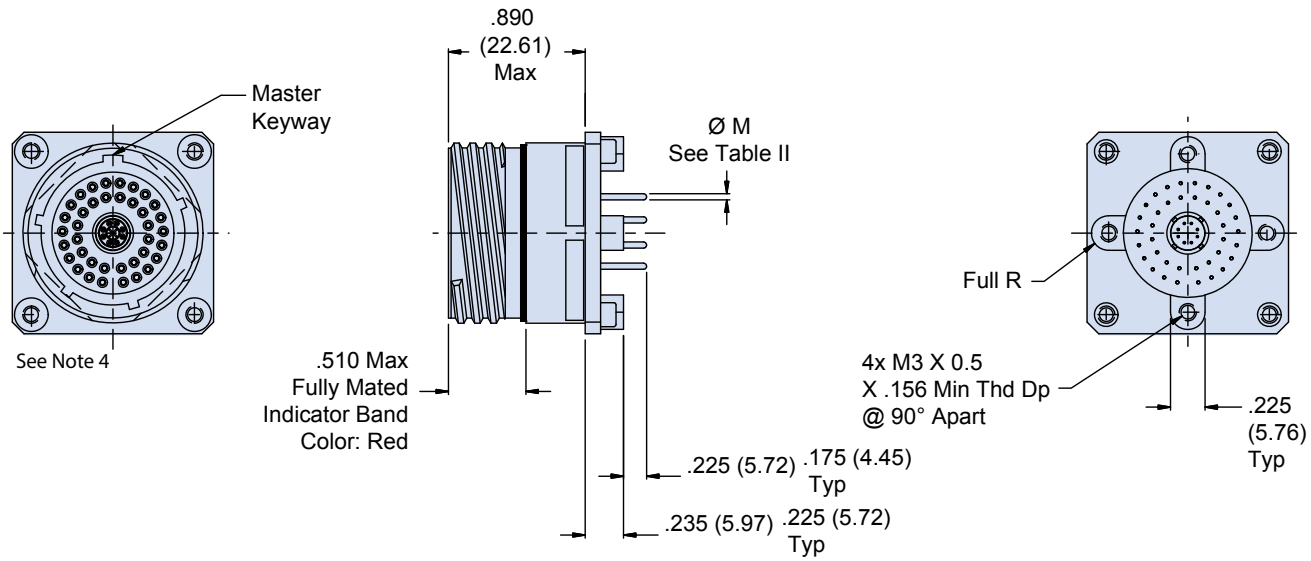


C

CS - WALL MOUNT RECEPTACLE WITH STANDARD CLINCH NUTS



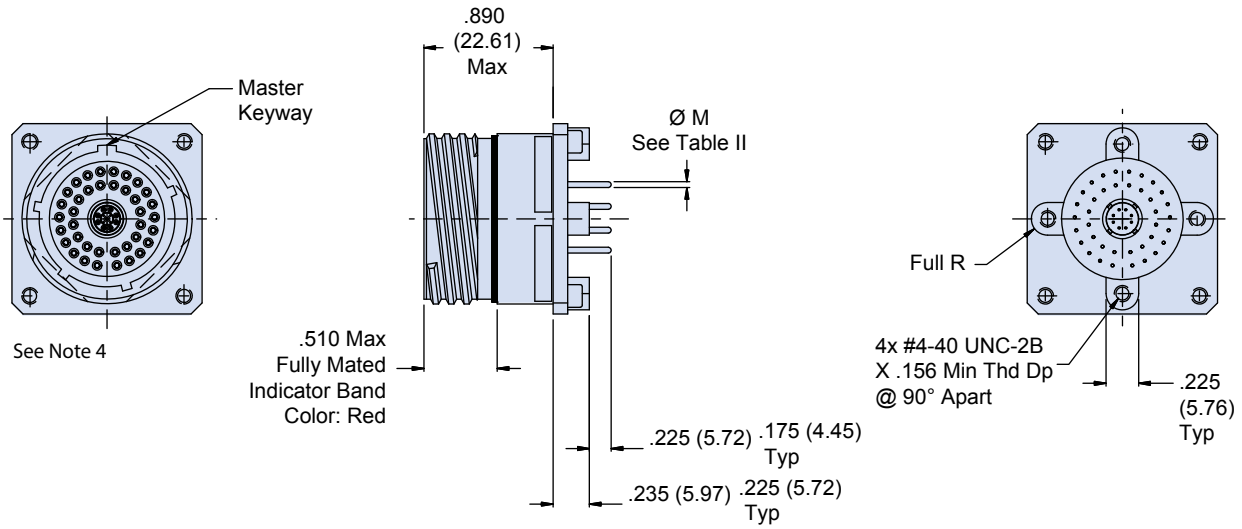
CM - WALL MOUNT RECEPTACLE WITH METRIC CLINCH NUTS



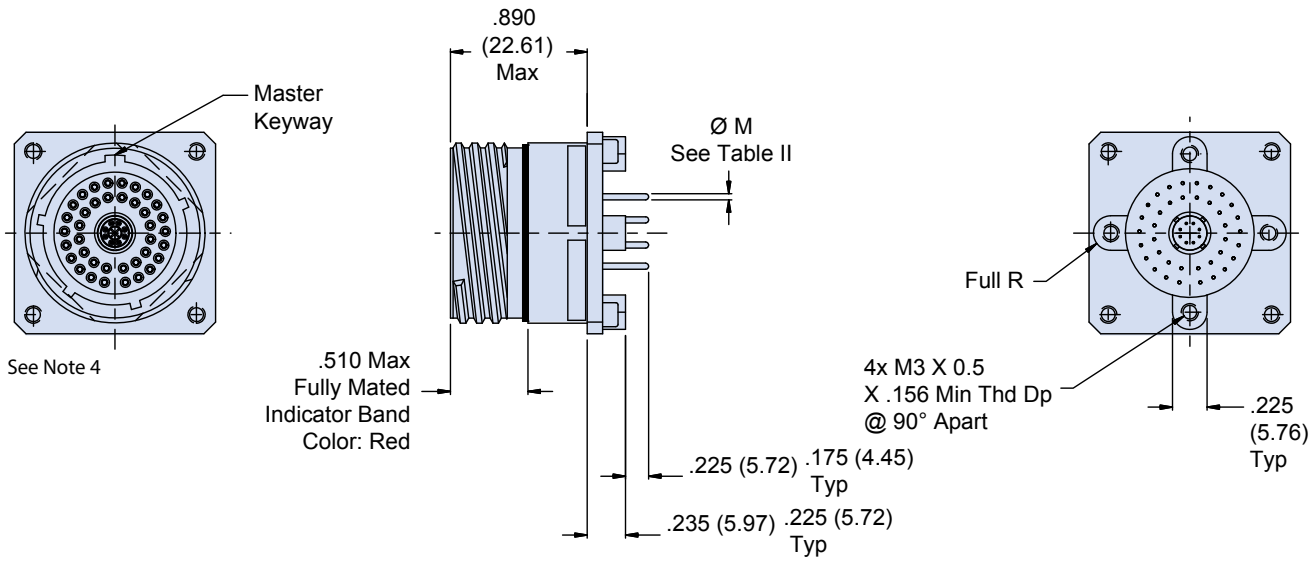
233-218 PC tail receptacle with threaded standoffs

MIL-DTL-38999 Series III type

HS - WALL MOUNT RECEPTACLE WITH STANDARD HELICOILS



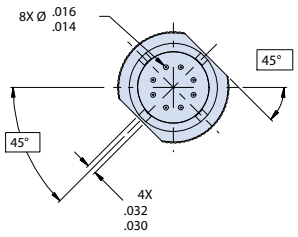
HM - WALL MOUNT RECEPTACLE WITH METRIC HELICOILS

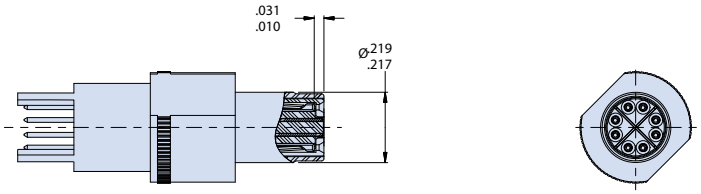


233-218 PC tail contact - dimensions and footprints

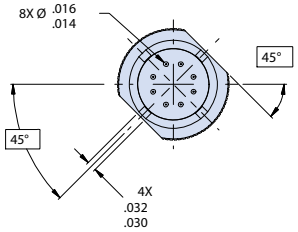
MIL-DTL-38999 Series III type

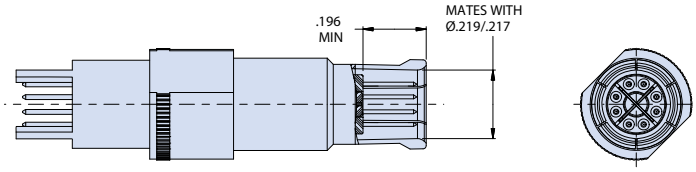
EL OCHITO®



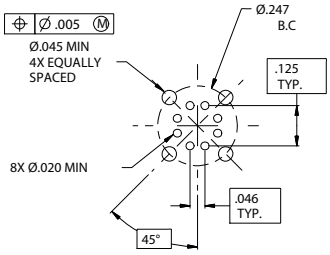


SIZE #8 EL OCHITO PIN, PC TAIL DETAIL





SIZE #8 EL OCHITO SOCKET, PC TAIL DETAIL

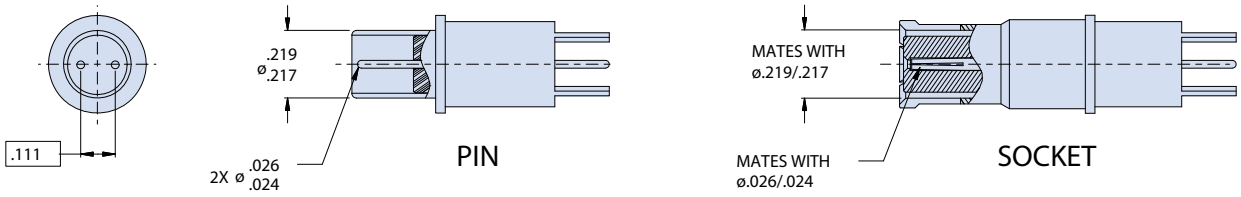


RECOMMENDED PC BOARD LAYOUT

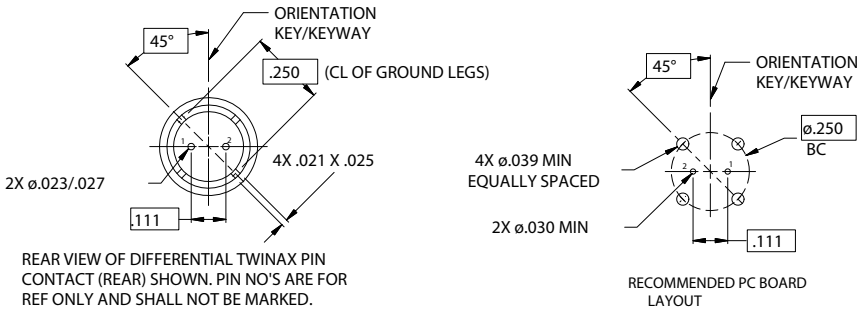
233-218 PC tail contact - dimensions and footprints

MIL-DTL-38999 Series III type

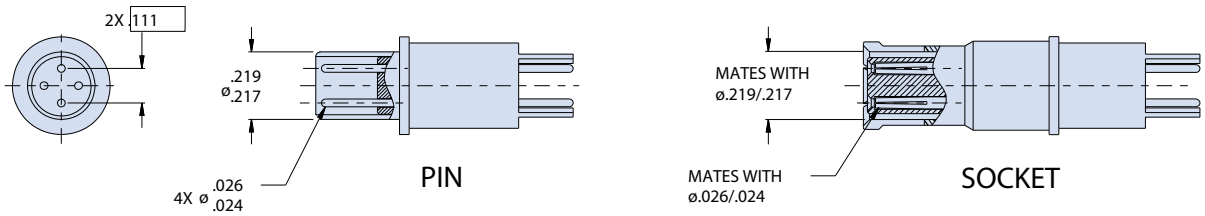
DIFFERENTIAL TWINAX



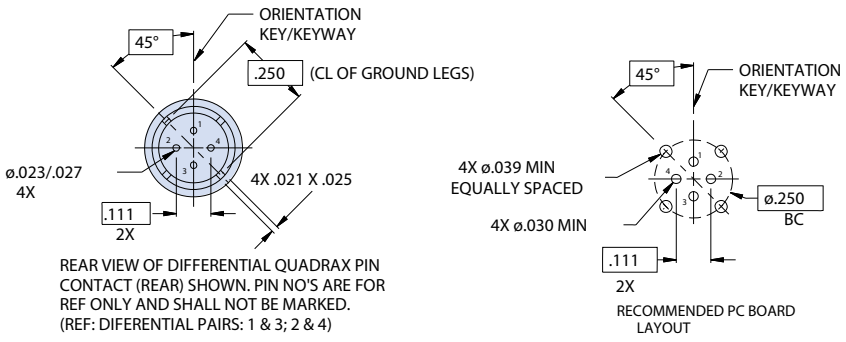
TWINAX CONTACT DETAILS



QUADRAX



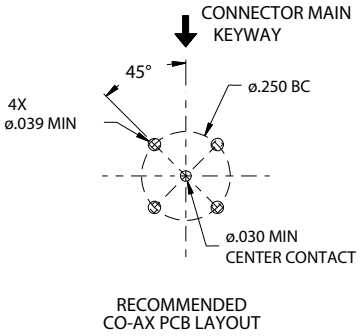
QUADRAX CONTACT DETAILS



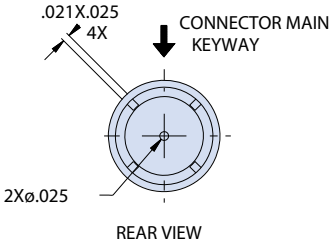
233-218 PC tail contact - dimensions and footprints

MIL-DTL-38999 Series III type

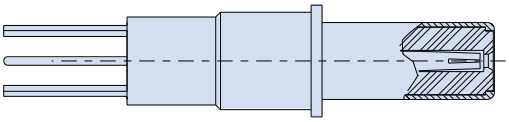
COAX



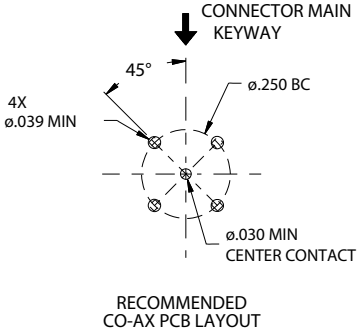
RECOMMENDED
CO-AX PCB LAYOUT



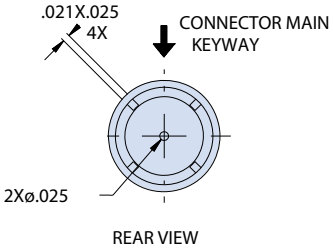
REAR VIEW



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



RECOMMENDED
CO-AX PCB LAYOUT



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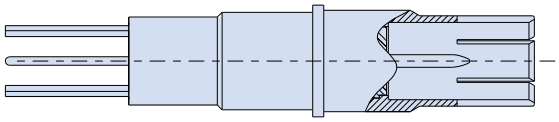


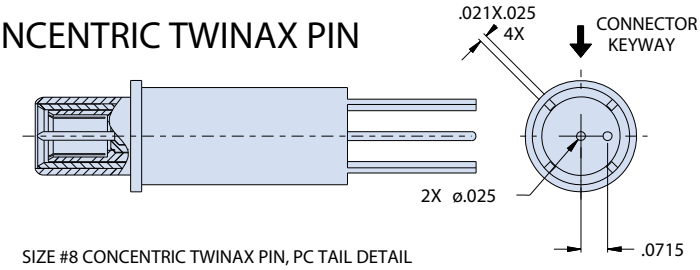
SIZE #8 CO-AX SOCKET, PC TAIL DETAIL
INTERFACE PER M39029/59
(CONTACT FACTORY FOR OTHER INTERFACE)

233-218 PC tail contact - dimensions and footprints

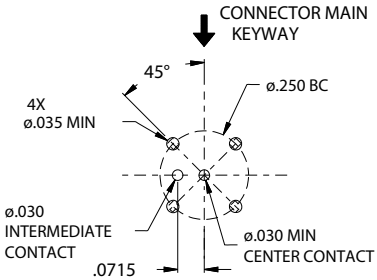
MIL-DTL-38999 Series III type

CONCENTRIC TWINAX

CONCENTRIC TWINAX PIN

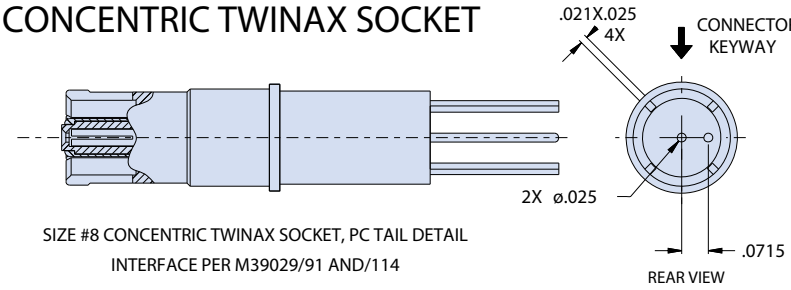


SIZE #8 CONCENTRIC TWINAX PIN, PC TAIL DETAIL
INTERFACE PER M39029/90 AND/113

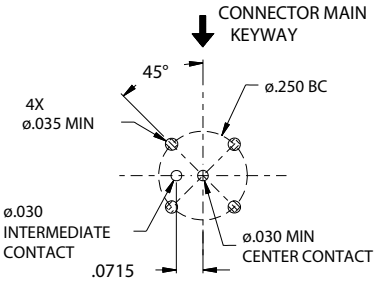


RECOMMENDED
TWINAX PCB LAYOUT

CONCENTRIC TWINAX SOCKET



SIZE #8 CONCENTRIC TWINAX SOCKET, PC TAIL DETAIL
INTERFACE PER M39029/91 AND/114



RECOMMENDED
TWINAX PCB LAYOUT

C

HERMETIC

SuperNine®

DSCC qualified MIL-DTL-38999 series III glass-sealed hermetic connectors in both pin and socket configurations

Features

- **DSCC qualified MIL-DTL-38999 Series III hermetics in both pin and socket configurations**
- **Available sealing (helium leak rate) from <1X10^{-7} cc/sec to 1X10^{-10}**
- **No material breakdown or aging over time**
- **Matched and compression seal glass-to-metal technologies**
- **Pressure resistance to 32,000+ PSI**
- **Stainless steel, titanium, Kovar® and Inconel® shell material options**

GLASS-SEALED Hermetic CONNECTORS

Glenair®

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

SuperNine® Hermetic connectors

QPL and advanced performance commercial derivatives

MIL-DTL-38999 Series III type

Product Selection Guide

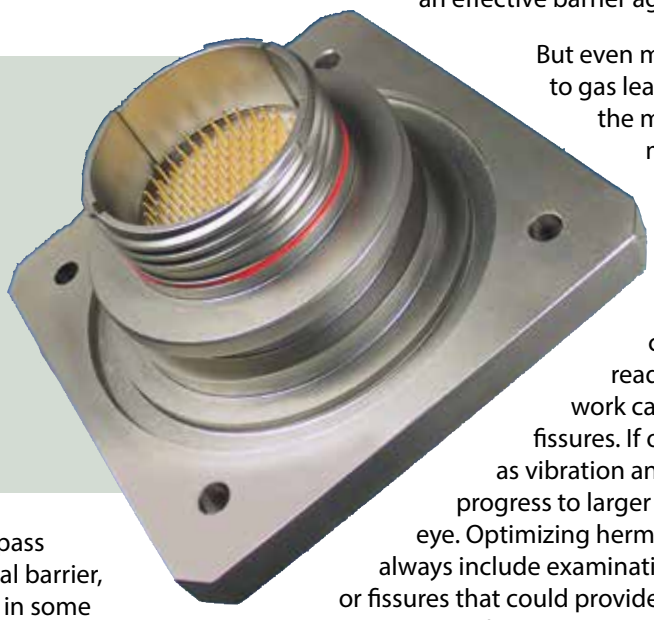
SuperNine® Hermetic connectors

QPL and advanced performance commercial derivatives

MIL-DTL-38999 Series III type

Series 23 SuperNine® MIL-DTL-38999 series III QPL and commercial hermetic connectors are designed for use in pressurized or severe environmental applications. Typical environments include geophysical, medical and military aerospace—in fact, the requirement for connector hermeticity was originally driven by military electronic applications. Hermeticity is generally defined as the state or condition of being air or gas tight. In interconnect applications, "hermetic" refers to packaging technology designed to prevent gasses from passing through pressure barriers via the connector, as it is important to prevent any moisture in the leaked gas from condensing inside the pressurized enclosure. The point at which moisture will condense is called the "dew point"—or the precise moment when humidity, pressure, and temperature allows condensation to form.

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



When an electric current must pass through a high-pressure differential barrier, the potential exists for gases, and, in some rare cases, particulate matter, to penetrate the barrier and, as described above, to form condensation in the equipment enclosure. In the receptacle cabling on the vacuum side of the barrier this may result in dielectric breakdown, corrosion, and loss of insulation resistance between conductors (a properly built plug assembly on the non-vacuum side is adequately sealed with conventional environmental protections and so is impervious to moisture ingress).

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

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

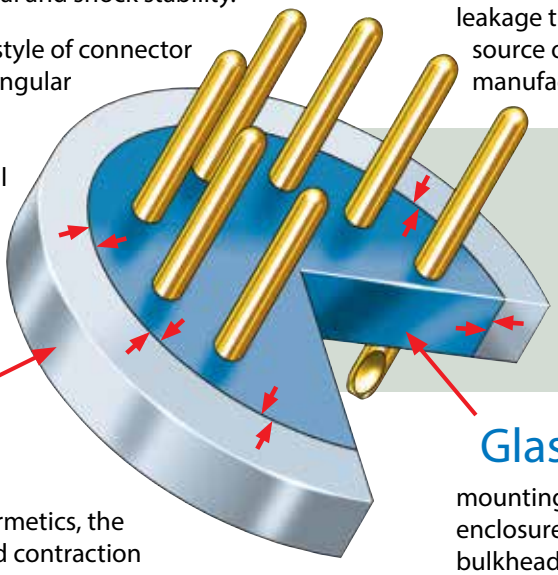
But even metal materials are permeable to gas leakage to some degree, and the minimal permeability of metal materials can be worsened when weld and solder joints are formed between connector shell materials and the base material of the bulkhead. Electrode coatings used in welding readily attract moisture in the work causing micro cracks and fissures. If other stresses are present, such as vibration and shock, micro-cracking can progress to larger fissures visible to the human eye. Optimizing hermeticity should therefore always include examination of welds for any cracks or fissures that could provide a leakage path. Although moderately effective sealing may be produced with simple techniques such as epoxy potting, fused glass-to-metal seals are usually specified in high-reliability applications.

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

Fused glass seals may be produced from various recipes of ground, non-crystalline solids such as silicates, borates and phosphates. When heated to high temperature and then cooled, these materials fuse into an amorphous solid called glass.

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

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



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

Matched Seals are extremely important in glass hermetic connectors such as the Micro-D, since the rectangular shape of the connector shell can exert varying degrees of stress on the glass. At ambient temperatures, the glass is well wetted (bonded) to the metal shell and contacts, but under little or no pressure or stress. Matched Seals can withstand high thermal and mechanical shocks, and are generally easier to manufacture than Mismatched (Compression) Hermetic Seals. Kovar, a combination of iron, nickel and cobalt, is the material of choice for Match Seal hermetic receptacles—both shells and contacts. Kovar is a low-expansion metal with a coefficient of expansion rating matched to the glass material that forms the hermetic seal.

In Mismatched (Compression) Seals, the thermal expansion/contraction of the metal exceeds that of the glass. During the firing process, the metal materials, usually stainless steel, expand at a greater rate than the glass. During cooling, the metals contract back into the already solidifying glass to form an extremely robust compression bond. This type of seal is consequently the most frequently specified for connectors used in extreme, high-pressure applications since the seal produced is reliable to pressures as high as 14,000 psi (1000 bars). The MIL-DTL-38999 connector falls into this category.

The total potential for leakage in a hermetic connector is the sum of any permeation which may occur via the metal materials themselves through cracks or open pores, and any leakage that may result from a defective seal. An additional source of leakage—uncontrolled from the connector manufacturer's perspective— results from sub-standard mounting of the hermetic package on the bulkhead or enclosure. Depending on the surface material of the bulkhead, hermetic receptacles may be welded or soldered in place. Low temperature brazing is also possible in certain applications as is the use of adhesive sealants.

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

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

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

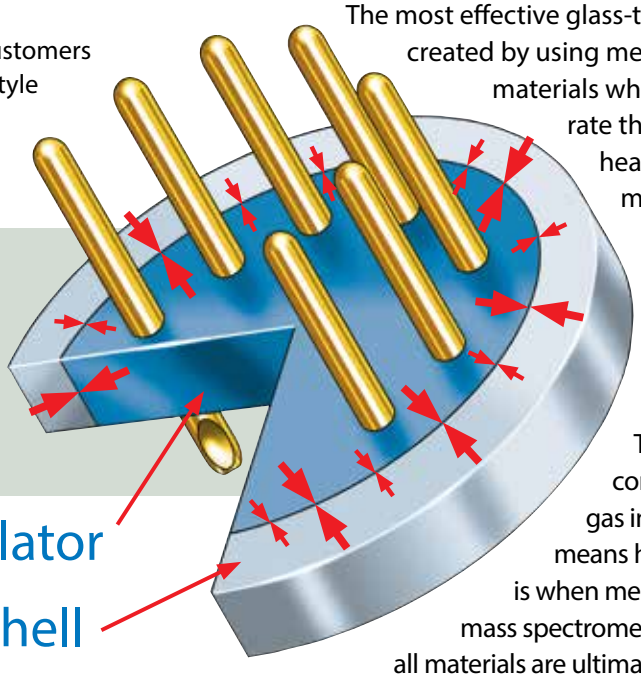
Hermetic seals are qualified via various methodologies including helium testing and dye penetrant. The purpose of both types of tests is to detect and measure leakage under pressure. The dye penetrant method has the advantage of revealing the exact location of a leak, while Helium testing measures overall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

the internal volume of the package and the external environment is created.

The resultant pressure gradient causes the helium or liquid dye to diffuse through the connector shell, contacts and/or glass seals. Quantitative and qualitative measurements are then taken using appropriate sensing instruments. Glenair MIL-DTL-38999 qualified hermetic connectors are rated to 1 X 10^{-6} cc/second maximum helium leakage rate.

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

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



HERMETIC GLOSSARY

Air Leakage
The measure of gas ingress across an hermetic barrier. Total air leakage is the sum of the gas which passes through the seal itself, the permeable shell materials or via cracks or gaps in the mounting area.

Bonding
In hermetic glass-to-metal sealing, the permanent fusing of the constituent connector parts —contacts, connector body and glass seal—to one another using surface preparation techniques and high-heat.

Coefficient of Expansion
A mathematically derived value describing the dimensional change of a material when subjected to a measured change in temperature. Factored into hermetic connector fabrication to insure the glass and metal materials return to a known state of compression after the heating and cooling process is completed.

Compression Seal
The most effective glass-to-metal sealing. It is created by using metal shell and contact materials which expand at a greater rate than the glass during heating. During cooling, the metal materials contract back into the already solidifying glass to form a robust compression bond.

Hermeticity
The measure of a connector's permeability to gas ingress. In general terms, it means how "airtight" the device is when measured using a helium mass spectrometer leakage test. Since all materials are ultimately permeable to gas ingress at some point, hermeticity ratings are used to define acceptable performance levels as required by each individual application.

Kovar®
An iron-nickel-cobalt alloy with a coefficient of expansion closely matched to certain glass seals commonly used in both connector bodies and contacts.

Solder or Weld Mount
One of the most common mounting configurations for hermetic connector, especially for electronic equipment such as switches and transducers. Unlike jam-nut mounted connectors, weld mount hermetics are permanently attached to the pressurized bulkhead typically with laser, TIG or MIG welding technology

Kovaar® is a registered trademark of Westinghouse Electric Company

Material/finish, panel cut-out dimensions and mod codes
MIL-DTL-38999 Series III type

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

Standard Materials and Finishes

- Shell, barrel coupling jam nut, coupling nut – CRES/passivate or CRES/nickel plate
- Pin contacts - nickel-iron alloy/ gold plate
- Socket contacts - copper alloy/ gold plate
- Pin insulator - vitreous glass
- Socket insulator - 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
- Hermeticiy - <1 x 10^{-7} sccHe/sec @ 1 ATM Differential

Shell Type and Sizes

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

DWV Voltage Levels	
Service Rating	Voltage AC RMD 60 Hz
M	1300 VAC
I	1800 VAC
II	2300 VAC
N	1000VAC

Hermetic Class Materials	
Shell, Barrel, Coupling and Jam Nut (Hermetic)	Stainless steel per AMS-QQ-S-763
Shell, Barrel, Coupling Nut and Jam Nut (Hermetic)	Carbon steel per ASTM-A108, Tin plated per ASTM-B545
Front and Rear Insulators	Glass-filled liquid crystal polymer (LCP) in accordance with MIL-M-24519, Type GLP-30F
Grommet, Peripheral Seal and Interfacial Seal	Blended elastomer, 30% silicone per ZZ-R-765, 70% fluorosilicone per MIL-R-25988
Hermetic Insert	Vitreous glass
Pin Contact (Hermetic)	Nickel-iron alloy per ASTM F30 (Alloy 52),50 microinches gold plated per ASTM B488 Type 3 Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches
Socket Contact (Hermetic)	Copper Alloy, Gold Plated IAW ASTM B488, Type 3, Code C
Adhesives	Silicone and epoxy
Potting Compound, PCB and Solder Cup Versions	Environmental and Hermetic Connectors: High-strength epoxy, Hysol EE4215. Filter Connectors: Stycast 2850FT/Catalyst 11 thermally conductive epoxy encapsulant.

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

Nasa Screening Levels and Modification Codes			
NASA Screening Level	Special Screening Only	Special Screening Plus Outgassing Processing	
		48 Hour Oven Bake 175° C.	**Thermal Vacuum Outgassing** 24 hrs. 125° C.
Level 1 Highest Reliability	Mod 429B	Mod 429J	Mod 429C
Level 2 High Reliability	Mod 429	Mod 429K	Mod 429A
Level 3 Standard Reliability	(Use standard part number)	Mod 186	Mod 186M

Hermetic Leak Rate Mod Codes	
Designator	Required Leak Rate
A	1 x 10^{-10} cc's Helium per second
B	1 x 10^{-9} cc's Helium per second
C	1 x 10^{-8} cc's Helium per second

Performance specifications
MIL-DTL-38999 Series III type

<table>
<tr><th colspan="3">Performance Specifications, IAW MIL-DTL-38999 Series III REV. L, Glenair SuperNine</th></tr>
<tr><th>Test</th><th>Test Requirements</th><th>Requirement Met</th></tr>
<tr><td>Dielectric Withstanding Voltage</td><td>Test voltage at sea level — 1300 Volts AC (rms).
Wired, assembled, unmated connectors withstand the following:<table><tr><td>550 VAC (rms) @ 50,000 ft.</td></tr><tr><td>350 VAC (rms) @ 70,000 ft.</td></tr><tr><td>200 VAC (rms) @ 100,000 ft.</td></tr></table></td><td>(meets MIL-DTL-38999, paragraph 3.14)</td></tr>
<tr><td>Insulation Resistance</td><td>Unmated connectors shall be tested as specified in test method EIA-364-21
5000 megohms min. at 25° C</td><td>(meets MIL-DTL-38999, paragraph 3.13)</td></tr>
<tr><td>Supported Wire Size</td><td><table><tr><th>Contact Size</th><th>Wire Gauge</th></tr><tr><td>22D</td><td>#22 - #28</td></tr><tr><td>20</td><td>#20 - #24</td></tr><tr><td>16</td><td>#16 - #20</td></tr><tr><td>12</td><td>#12 - #14</td></tr><tr><td>10</td><td>#10 - #12</td></tr></table></td><td>(meets MIL-DTL-38999, paragraph 3.4.3.1)</td></tr>
<tr><td>EMI Shielding</td><td>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<table><tr><th rowspan="2">Frequency MHz</th><th colspan="3">Attenuation Minimum dB</th></tr><tr><th>Series I</th><th>Series II</th><th>Series III and IV</th></tr><tr><td>100</td><td>90</td><td>65</td><td>90</td></tr><tr><td>200</td><td>88</td><td>60</td><td>88</td></tr><tr><td>300</td><td>88</td><td>55</td><td>88</td></tr><tr><td>400</td><td>87</td><td>55</td><td>87</td></tr><tr><td>800</td><td>85</td><td>45</td><td>85</td></tr><tr><td>1,000</td><td>85</td><td>45</td><td>85</td></tr><tr><td>1,500</td><td>69</td><td>—</td><td>76</td></tr><tr><td>2,000</td><td>65</td><td>—</td><td>70</td></tr><tr><td>3,000</td><td>61</td><td>—</td><td>69</td></tr><tr><td>4,000</td><td>58</td><td>—</td><td>68</td></tr><tr><td>6,000</td><td>55</td><td>—</td><td>66</td></tr><tr><td>10,000</td><td>50</td><td>—</td><td>65</td></tr></table></td><td>(meets MIL-DTL-38999, paragraph 3.31)</td></tr>
<tr><td>Thermal Shock</td><td>After cycling the connector between -65° C and +175° C, it will meet all applicable electrical and mechanical requirements.</td><td>(meets MIL-DTL-38999, paragraph 3.7)</td></tr>
<tr><td>Physical Shock</td><td>No loosening of parts, cracking or other deleterious results hindering further part operation after 300 G's in each of 3 mutually perpendicular planes.</td><td>(meets MIL-DTL-38999, paragraph 3.27)</td></tr>
<tr><td>Fluid Compatibility</td><td>Designed to function in all fluids encountered in any modern military or aerospace environment</td><td>(meets MIL-DTL-38999, paragraph 3.33)</td></tr>
</table>

<table>
<tr><th colspan="3">Performance Specifications, IAW MIL-DTL-38999 Series III REV. L, Glenair SuperNine</th></tr>
<tr><th>Test</th><th>Test Requirements</th><th>Requirement Met</th></tr>
<tr><td>Fluid Immersion</td><td><table><tr><th>Frequency (MHz)</th><th>Classes H, K, and Y</th></tr><tr><td>100</td><td>80</td></tr><tr><td>200</td><td>75</td></tr><tr><td>300</td><td>73</td></tr><tr><td>400</td><td>71</td></tr><tr><td>800</td><td>66</td></tr><tr><td>1,000</td><td>65</td></tr><tr><td>1,500</td><td>59</td></tr><tr><td>2,000</td><td>55</td></tr><tr><td>3,000</td><td>52</td></tr><tr><td>4,000</td><td>50</td></tr><tr><td>6,000</td><td>48</td></tr><tr><td>10,000</td><td>45</td></tr></table></td><td>(meets MIL-DTL-38999, paragraph 3.31)</td></tr>
<tr><td>High Impact Shock</td><td>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.</td><td>(meets MIL-DTL-38999, paragraph 3.27)</td></tr>
<tr><td>Vibration</td><td>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.</td><td>(meets MIL-DTL-38999, paragraph 3.26)</td></tr>
<tr><td>Fungus</td><td>Materials used in the construction of these connectors shall be fungus inert per certification of method 508.4 of MIL-STD-810</td><td>(meets MIL-DTL-38999, paragraph 4.2.2)</td></tr>
<tr><td>Corrosion</td><td>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</td><td>(meets MIL-DTL-38999, paragraph 3.16)</td></tr>
<tr><td>Mating / Unmating Forces</td><td>The coupling torque for mating and unmating of the counterpart connectors and protective covers shall meet the requirements of the table shown below.</td><td>(meets MIL-DTL-38999, paragraph 3.10)</td></tr>
<tr><td>Durability</td><td>No electrical or mechanical defects after 500 cycles of engagement and disengagement</td><td>(meets MIL-DTL-38999, paragraph 3.11)</td></tr>
<tr><td>Insert Retention</td><td>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.</td><td>(meets MIL-DTL-38999, paragraph 3.15)</td></tr>
<tr><td>Contact Retention</td><td>The axial displacement of the contact shall not exceed .012 inch (0.30 mm). No damage to contacts or inserts shall result.</td><td>(meets MIL-DTL-38999, paragraph 3.23)</td></tr>
<tr><td>Coupling Pin Strength</td><td>Bayonet coupling pins shall withstand a load of 50 +5, -0 pounds without displacement or perceptible loosening of coupling pins.</td><td>(meets MIL-DTL-38999, paragraph 3.20) Applicable to series I and II only</td></tr>
</table>

<table>
<tr><th colspan="3">Performance Specifications, IAW MIL-DTL-38999 Series III REV. L, Glenair SuperNine</th></tr>
<tr><th>Test</th><th>Test Requirements</th><th>Requirement Met</th></tr>
<tr><td>Contact Engagement and Disengagement Forces</td><td>Contact engagement and separating forces shall be within the limits specified in SAE-AS39029.</td><td>(meets MIL-DTL-38999, paragraph 3.16)
Applicable to hermetic connectors with sockets only</td></tr>
<tr><td>Resistance to Probe Damage</td><td>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.</td><td>(meets MIL-DTL-38999, paragraph 3.42)
Applicable to hermetic connectors with sockets only</td></tr>
<tr><td>EMI Ground Spring Forces</td><td>The forces necessary to engage and separate EMI plugs with receptacle shells shall be within the values specified in the table shown below:
<table>
<tr><th colspan="5">Axial force for Series III</th></tr>
<tr><td rowspan="2">Shell size</td><td>Maximum</td><td>Minimum</td><td>Maximum</td><td>Minimum</td></tr>
<tr><td>Pounds</td><td>Newtons</td><td>Pounds</td><td>Newton</td></tr>
<tr><td>8/9</td><td>25</td><td>111</td><td>0.5</td><td>2</td></tr>
<tr><td>10/11</td><td>25</td><td>111</td><td>0.5</td><td>2</td></tr>
<tr><td>12/13</td><td>30</td><td>133</td><td>0.5</td><td>2</td></tr>
<tr><td>14/15</td><td>30</td><td>133</td><td>0.5</td><td>2</td></tr>
<tr><td>16/17</td><td>35</td><td>156</td><td>0.5</td><td>2</td></tr>
<tr><td>18/19</td><td>35</td><td>156</td><td>0.5</td><td>2</td></tr>
<tr><td>20/21</td><td>35</td><td>156</td><td>0.5</td><td>2</td></tr>
<tr><td>22/23</td><td>35</td><td>156</td><td>0.5</td><td>2</td></tr>
<tr><td>24/25</td><td>35</td><td>156</td><td>0.5</td><td>2</td></tr>
</table></td><td>(meets MIL-DTL-38999, paragraph 3.30)</td></tr>
<tr><td>Current Rating</td><td>
<table>
<tr><td rowspan="2">Contact Size</td><td colspan="2">Maximum Amps</td></tr>
<tr><td>Crimp</td><td>Hermetic</td></tr>
<tr><td>22D</td><td>5</td><td>3</td></tr>
<tr><td>20</td><td>7.5</td><td>5</td></tr>
<tr><td>16</td><td>13</td><td>10</td></tr>
<tr><td>12</td><td>23</td><td>17</td></tr>
<tr><td>10</td><td>33</td><td>24</td></tr>
</table></td><td>(meets MIL-C-39029, paragraph 1.3.1)</td></tr>
<tr><td>Contact Millivolt Drop</td><td>
<table>
<tr><td rowspan="2">Contact Size</td><td colspan="2">Maximum Millivolt Drop</td></tr>
<tr><td>Crimp</td><td>Hermetic</td></tr>
<tr><td>22D</td><td>73</td><td>85</td></tr>
<tr><td>20</td><td>55</td><td>60</td></tr>
<tr><td>16</td><td>49</td><td>85</td></tr>
<tr><td>12</td><td>42</td><td>82</td></tr>
<tr><td>10</td><td>33</td><td>72</td></tr>
</table></td><td></td></tr>
</table>

Performance specifications
MIL-DTL-38999 Series III type

Performance Specifications, IAW MIL-DTL-38999 Series III REV. L, Glenair SuperNine		
Test	**Test Requirements**	**Requirement Met**
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.	*(meets MIL-DTL-38999, paragraph 3.17)*

Class	Contact Size	Wire Size	Test Amperes	Millivolt Drop Maximum	
				Initial	After Conditioning
H, N and Y	12	12	17	85	100
	16	16	10	85	100
	20	20	5	60	75
	22D	22	3	85	95

MIL-DTL-38999 CONTACT MATERIALS AND SPECIFICATIONS		
Component	Material	Notes
Pin Contact	Beryllium copper alloy per ASTM B197, 50 microinches gold plated per ASTM B488 Type 3 Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches	Approved for Space Flight
Pin Contact, Hermetic	Nickel-iron alloy per ASTM F30 (Alloy 52),50 microinches gold plated per ASTM B488 Type 3 Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches	Ferromagnetic material.
Socket Contact	Beryllium copper alloy per ASTM B197, 50 microinches gold plated per ASTM B488 Type 3 Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches.	Approved for Space Flight
Socket Contact Hood	Stainless steel, passivated per AMS-QQ-P-35	Approved for Space Flight

SuperNine® Hermetic connectors

233-100-H2 Box mount hermetic receptacle

MIL-DTL-38999 Series III type

How To Order: Commercial						
Sample Part Number	**233-100**	**-H2**	**Z1**	**11-35**	**P**	**N**
Series / Basic Part No.	Series 23 SuperNine® Hermetic Receptacle					
Connector Style	**H2** = Box Mount					
Finish	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish					
Shell Size-Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, Solder Cup **X** = Pin, Eyelet **C** = Pin, PCB Flex Feedthru **S** = Socket, Solder Cup **Z** = Socket, Eyelet **D** = Socket, PCB Flex Feedthru					
Alternate Key Position*	**A, B, C, D, E, N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number

D

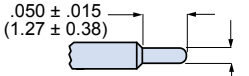
Connector Dimensions							
Shell Size Code	Shell Size	A Thread	B Sq ±.012(0.3)	C Bsc	D Bsc	E ±.008(0.2)	F ±.008(0.2)
A	9/09	.6250-.1P-.3L-TS-2A	.937(23.8)	.719(18.3)	.594(15.1)	.128(3.3)	.216(5.5)
B	11	.7500-.1P-.3L-TS-2A	1.031(26.2)	.812(20.6)	.719(18.3)	.128(3.3)	.194(4.9)
C	13	.8750-.1P-.3L-TS-2A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

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

Contact Size & Diameter

PRINTED CIRCUIT TAIL CONFIGURATIONS
CONTACT STYLE C AND D

SIZE 12 AND SIZE 16



SIZE 22D AND SIZE 20

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

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

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

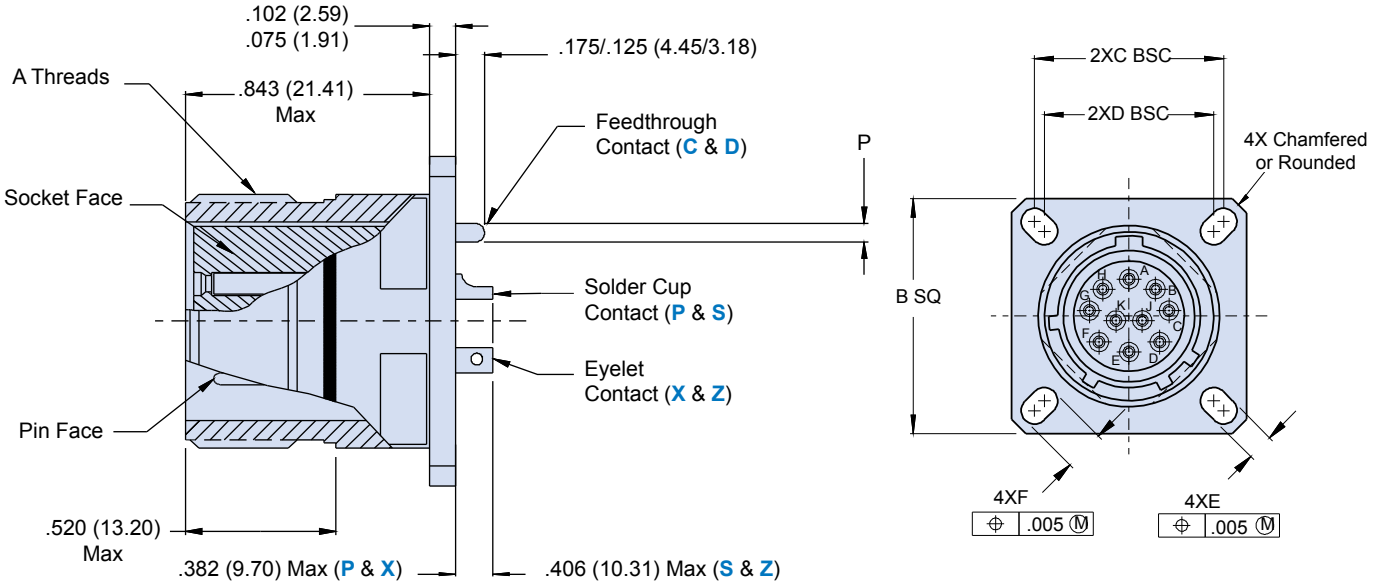
SuperNine® Hermetic connectors

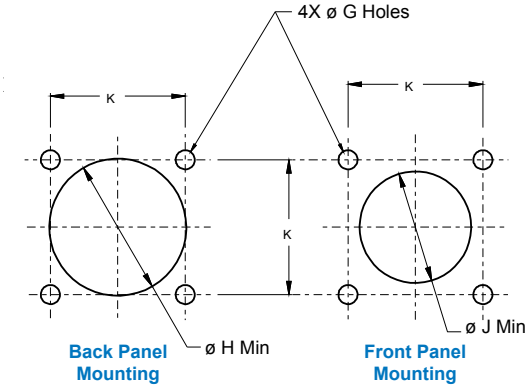
D38999/21 Box mount hermetic receptacle

MIL-DTL-38999 Series III QPL

How To Order: MS						
Sample Part Number	D38999	/21	Y	11-35	P	N
Series / Basic Part No.	MIL-DTL-D38999 Series III Type					
Connector Style	**/21** = Box Mount					
Finish	**Y** = CRES, Passivated **N** = CRES, Nickel Finish					
Shell Size - Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, Solder Cup **X** = Pin, Eyelet **C** = Pin, PCB Flex Feedthru	**S** = Socket, Solder Cup **Z** = Socket, Eyelet **D** = Socket, PCB Flex Feedthru				
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number





Mates With	
Plug Part Number	**Description**
233-105SG6	SuperNine® plug with single integrated band porch
233-105BG6	SuperNine® plug with integrated band porch and boot groove
233-105DG6	SuperNine® plug with double integrated band porch
233-105-G6	SuperNine® plug with accessory attachment threads

SuperNine® Hermetic connectors

233-100-H5 Solder mount hermetic receptacle

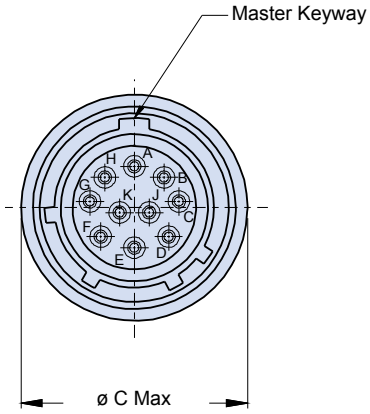
MIL-DTL-38999 Series III type

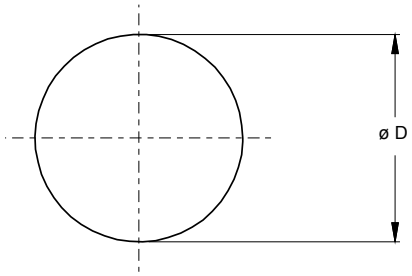
How To Order Commercial						
Sample Part Number	**233-100**	**-H5**	**Z1**	**11-35**	**P**	**N**
Series / Basic Part No.	Series 23 SuperNine® Hermetic Receptacle					
Connector Style	**H5** = Solder Mount					
Finish	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish					
Shell Size - Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, Solder Cup **X** = Pin, Eyelet **C** = Pin, PCB	**S** = Socket, Solder Cup **Z** = Socket, Eyelet **D** = Socket, PCB				
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number

D

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





Recommended Panel Cut-Out

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

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

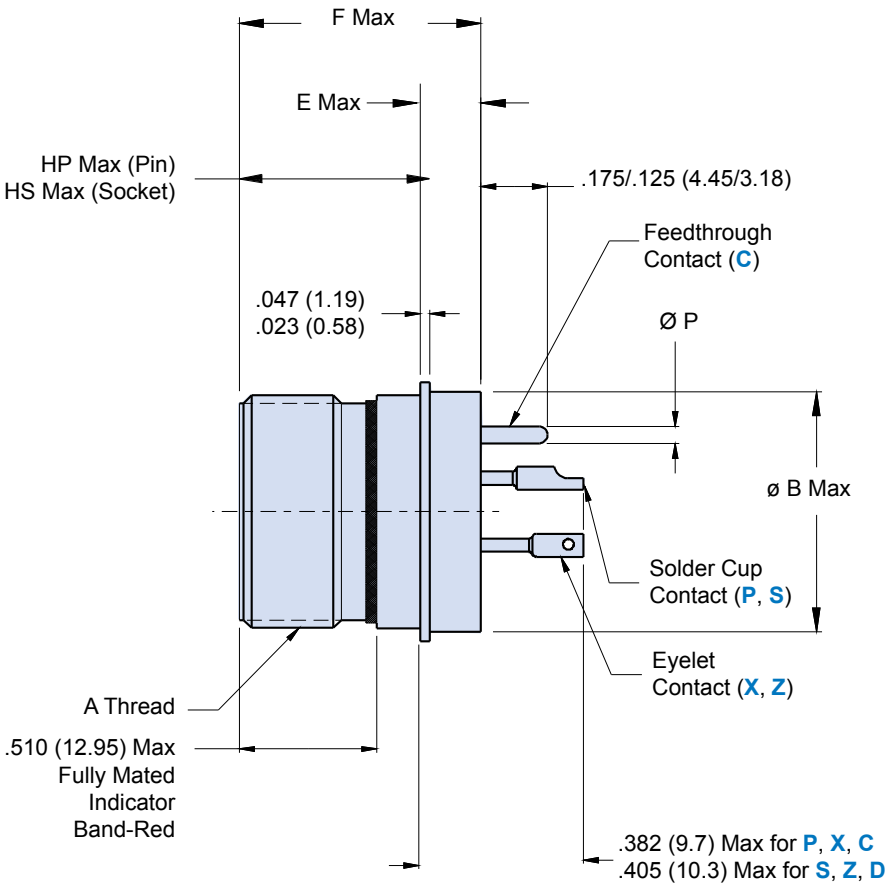
SuperNine® Hermetic connectors

D38999/25 Solder mount hermetic receptacle

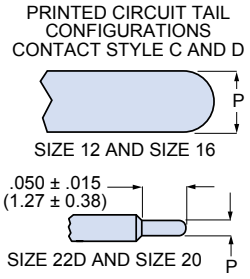
MIL-DTL-38999 Series III QPL

How To Order MS						
Sample Part Number	**D38999**	**/25**	**Y**	**11-35**	**P**	**N**
Series / Basic Part No.	MIL-DTL-D38999 Series III Type					
Connector Style	**/25** = Solder Mount					
Finish*	**Y** = CRES, Passivated **N** = CRES, Nickel Finish					
Shell Size - Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, Solder Cup **X** = Pin, Eyelet **C** = Pin, PCB Flex Feedthru	**S** = Socket, Solder Cup **Z** = Socket, Eyelet **D** = Socket, PCB Flex Feedthru				
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number



Contact Size & Diameter



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

Mates With

Plug Part Number	Description
233-105SG6	SuperNine® plug with single integrated band porch
233-105BG6	SuperNine® plug with integrated band porch and boot groove
233-105DG6	SuperNine® plug with double integrated band porch
233-105-G6	SuperNine® plug with accessory attachment threads

SuperNine® Hermetic connectors

233-100-H7 Jam nut mount hermetic receptacle

MIL-DTL-38999 Series III type

How To Order Commercial						
Sample Part Number	**233-100**	**-H7**	**Z1**	**11-35**	**P**	**N**
Series / Basic Part No.	Series 23 SuperNine® Hermetic Receptacle					
Connector Style	**H7** = Jam Nut Mount					
Finish*	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish					
Shell Size-Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, Solder Cup **X** = Pin, Eyelet **C** = Pin, PCB **S** = Socket, Solder Cup **Z** = Socket, Eyelet **D** = Socket, PCB					
Alternate Key Position*	**A, B, C, D, E, N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number

D

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

Dimensions (Continued)					
J ±.008(0.2)	**K Dia ±.005 (0.1)**	**L Max**	**M Max**		**N ±.005 (0.1)**
			P&X	**S&Z**	
.106(2.7)	.693 (17.60)	1.149(29.2)	.208(5.3)	.232(5.9)	.657 (16.70)
.106(2.7)	.825 (20.96)	1.149(29.2)	.208(5.3)	.232(5.9)	.771 (19.59)
.106(2.7)	1.010 (25.65)	1.153(29.3)	.200(5.1)	.224(5.7)	.955 (24.26)
.106(2.7)	1.135 (28.83)	1.153(29.3)	.200(5.1)	.224(5.7)	1.085 (27.56)
.106(2.7)	1.260 (32.01)	1.153(29.3)	.200(5.1)	.224(5.7)	1.210 (30.73)
.138(3.5)	1.385 (35.18)	1.185(30.1)	.200(5.1)	.224(5.7)	1.335 (33.91)
.138(3.5)	1.510 (38.35)	1.185(30.1)	.200(5.1)	.224(5.7)	1.460 (37.08)
.138(3.5)	1.635 (41.53)	1.185(30.1)	.200(5.1)	.224(5.7)	1.585 (40.26)
.138(3.5)	1.760 (44.70)	1.185(30.1)	.200(5.1)	.224(5.7)	1.710 (43.43)

Mates With	
Plug Part Number	**Description**
233-105SG6	SuperNine® plug with single integrated band porch
233-105BG6	SuperNine® plug with integrated band porch and boot groove
233-105DG6	SuperNine® plug with double integrated band porch
233-105-G6	SuperNine® plug with accessory attachment threads

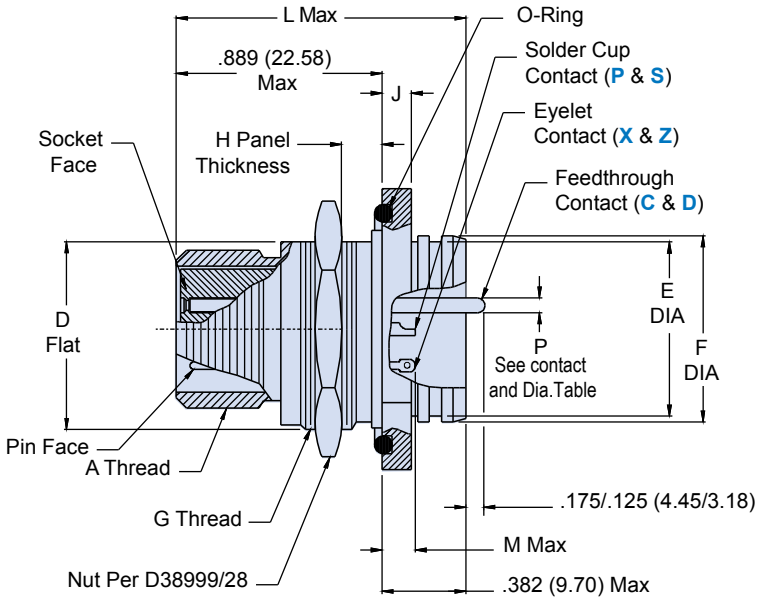
SuperNine® Hermetic connectors

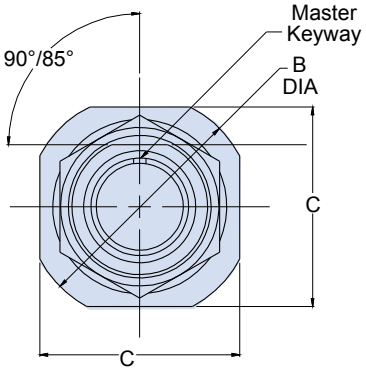
D38999/23 Jam nut mount hermetic receptacle

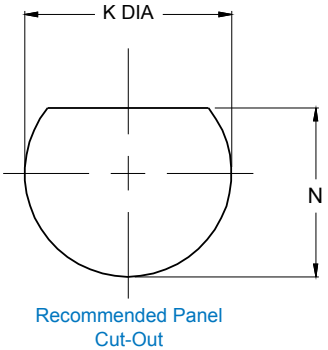
MIL-DTL-38999 Series III QPL

How To Order: MS						
Sample Part Number	**D38999**	**/23**	**Y**	**11-35**	**P**	**N**
Series / Basic Part No.	MIL-DTL-D38999 Series III Type					
Connector Style	**/23** = Jam Nut Mount					
Finish*	**Y** = CRES, Passivated **N** = CRES, Nickel Finish					
Shell Size - Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, Solder Cup **X** = Pin, Eyelet **C** = Pin, PCB Flex Feedthru	**S** = Socket, Solder Cup **Z** = Socket, Eyelet **D** = Socket, PCB Flex Feedthru				
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

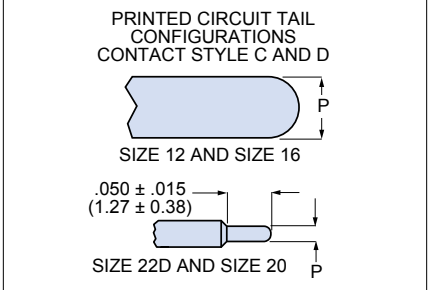
***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number







Contact Size & Dia.



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

Wire Accommodation

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

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

SuperNine® Hermetic connectors

233-100-H8 Weld mount hermetic receptacle

MIL-DTL-38999 Series III type

How To Order Commercial						
Sample Part Number	**233-100**	**-H8**	**Z1**	**11-35**	**P**	**N**
Series / Basic Part No.	Series 23 SuperNine® Hermetic Receptacle					
Connector Style	**H8** = Weld Mount					
Finish*	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish					
Shell Size - Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, Solder Cup **X** = Pin, Eyelet **C** = Pin, PCB	**S** = Socket, Solder Cup **Z** = Socket, Eyelet **D** = Socket, PCB				
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number

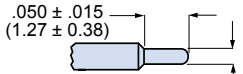
D

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

Contact Size & Dia.

PRINTED CIRCUIT TAIL CONFIGURATIONS
CONTACT STYLE C AND D

SIZE 12 AND SIZE 16



SIZE 22D AND SIZE 20

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

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

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

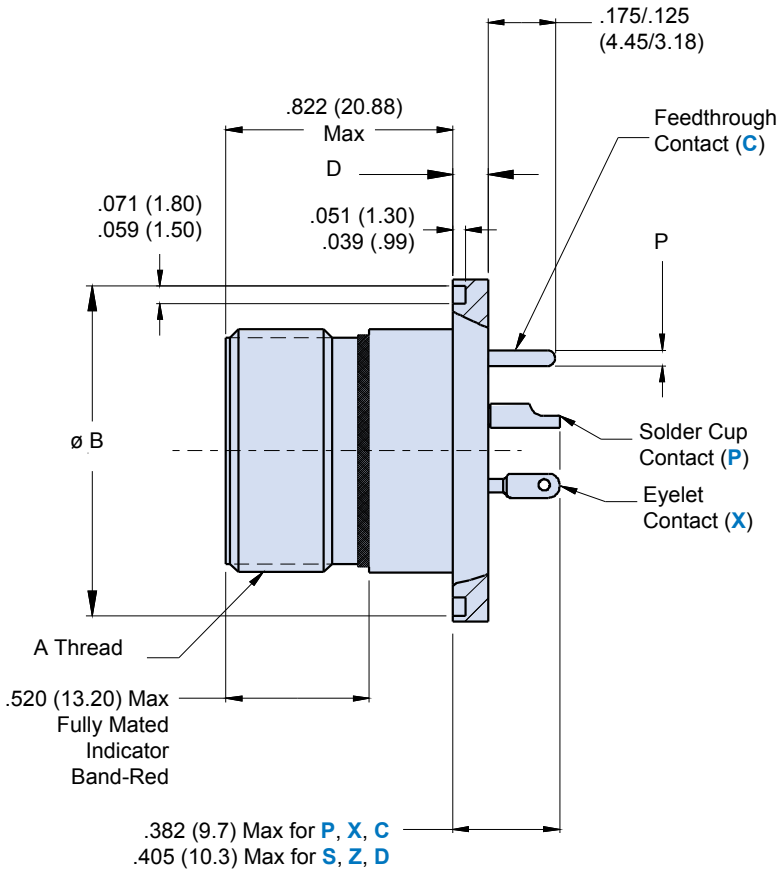
SuperNine® Hermetic connectors

D38999/27 Weld mount hermetic receptacle

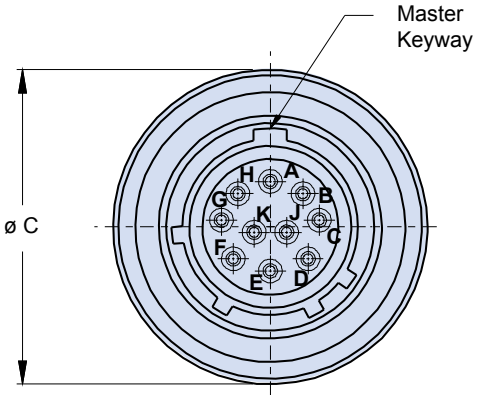
MIL-DTL-38999 Series III QPL

How To Order MS						
Sample Part Number	**D38999**	**/27**	**Y**	**11-35**	**P**	**N**
Series / Basic Part No.	MIL-DTL-D38999 Series III Type					
Connector Style	**/27** = Weld Mount					
Finish*	**Y** = CRES, Passivated **N** = CRES, Nickel Finish					
Shell Size - Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, Solder Cup **X** = Pin, Eyelet **C** = Pin, PCB Flex Feedthru	**S** = Socket, Solder Cup **Z** = Socket, Eyelet **D** = Socket, PCB Flex Feedthru				
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number



Consult Factory for Recommended Panel Cutout Dimensions



Mates With	
Plug Part Number	**Description**
233-105SG6	SuperNine® plug with single integrated band porch
233-105BG6	SuperNine® plug with integrated band porch and boot groove
233-105DG6	SuperNine® plug with double integrated band porch
233-105-G6	SuperNine® plug with accessory attachment threads

SuperNine® Hermetic connectors

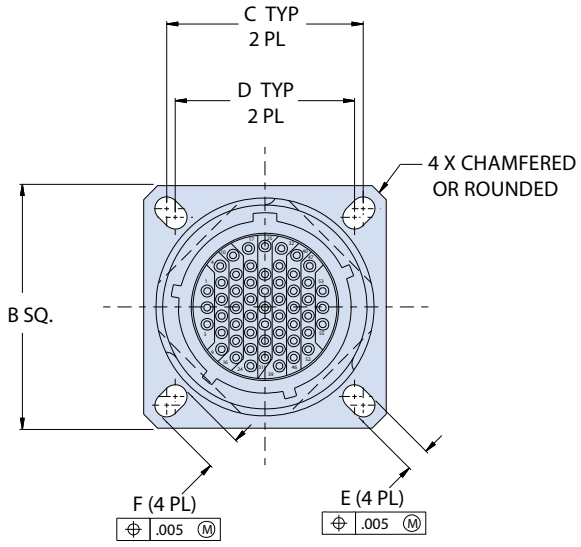
233-103-H2 Flange mount bulkhead feedthru

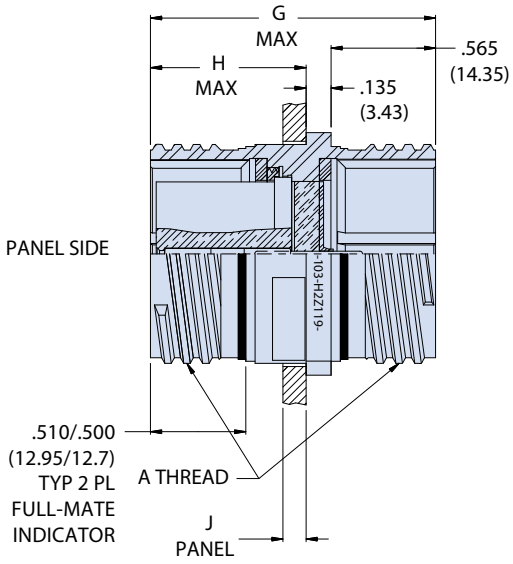
MIL-DTL-38999 Series III type

H2 - SQUARE FLANGE HERMETIC FOR PANELS FROM .125" TO .500"

How To Order: 233-103							
Sample Part Number	233-103	-H2	Z1	19-35	S	N	-02
Series / Basic Part No.	Series 23 SuperNine® Hermetic Bulkhead Feedthru						
Connector Style	**H2** = Box Mount Receptacle						
Finish*	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish						
Shell Size-Insert Arrangement*	Per 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)						
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal						
Panel Thickness	**-01** = 125/.062 **-02** = .250/.062 **-03** = .500/.062; See Panel Thickness Table						

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number





NOTES

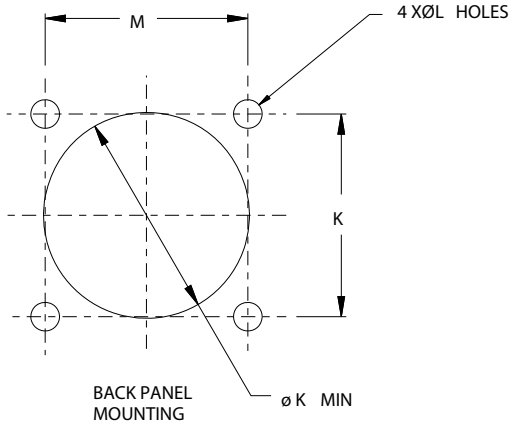
1. For PP or SS style, only symmetrical layouts may be selected. Power to a given contact on one end will result in power to contact directly opposite, regardless of identification letter.
2. Will mate with any QPL manufacturer's 38999 Series III plug of same shell size, polarization and opposite contact gender.
3. Hermeticity = less than 1 x 10^{-7} ccHe/sec at one atmosphere.
4. Dimensions in Inches (millimeters) are subject to change without notice
5. For additional finishes consult factory

SuperNine® Hermetic connectors

233-103-H2 Flange mount bulkhead feedthru

MIL-DTL-38999 Series III type

Dimensions						
Shell Size	A Thread .1 P-.3L-TS-2A	B Sq.	C Bsc.	D Bsc.	E	F
9	.6250	0.949 (24.1) 0.925 (23.5)	0.719 (18.3)	0.594 (15.1)	0.136 (3.5) 0.120 (3.0)	0.224 (5.7) 0.208 (5.3)
11	.7500	1.043 (26.5) 1.019 (25.9)	0.812 (20.6)	0.719 (18.3)	0.136 (3.5) 0.120 (3.0)	0.202 (5.1) 0.186 (4.7)
13	.8750	1.138 (28.9) 1.114 (28.3)	0.906 (23.0)	0.812 (20.6)	0.136 (3.5) 0.120 (3.0)	0.202 (5.1) 0.186 (4.7)
15	1.0000	1.232 (31.3) 1.208 (30.7)	0.969 (24.6)	0.906 (23.0)	0.136 (3.5) 0.120 (3.0)	0.181 (4.6) 0.165 (4.2)
17	1.1875	1.323 (33.6) 1.299 (33.0)	1.062 (27.0)	0.969 (24.6)	0.136 (3.5) 0.120 (3.0)	0.202 (5.1) 0.186 (4.7)
19	1.2500	1.449 (36.8) 1.425 (36.2)	1.156 (29.4)	1.062 (27.0)	0.136 (3.5) 0.120 (3.0)	0.202 (5.1) 0.186 (4.7)
21	1.3750	1.575 (40.0) 1.551 (39.4)	1.250 (31.8)	1.156 (29.4)	0.136 (3.5) 0.120 (3.0)	0.202 (5.1) 0.186 (4.7)
23	1.5000	1.701 (43.2) 1.677 (42.6)	1.375 (34.9)	1.25 (31.8)	0.162 (4.1) 0.146 (3.7)	0.250 (6.4) 0.234 (5.9)
25	1.6250	1.823 (46.3) 1.799 (45.7)	1.500 (38.1)	1.375 (34.9)	0.162 (4.1) 0.146 (3.7)	0.250 (6.4) 0.234 (5.9)



RECOMMENDED MOUNTING HOLES FOR BOX MOUNT RECEPTACLES

Panel Thickness			
Dash No.	G Dim, OAL	H Dim, Max	J Dim, Panel
-01	1.600 (40.6) max	.843 (21.4)	.125/.062 (3.2/1.6)
-02	1.730 (43.9) max	1.040 (26.4)	.250/.062 (6.4/1.6)
-03	2.000 (50.8) max	1.290 (32.8)	.500/.062 (12.7/1.6)

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

Recommended Mounting Holes			
Shell Size	Ø K Min	Ø L Holes	M
9	0.656 (1.7)	0.133 (0.34) 0.123 (0.31)	0.724 (1.8) 0.714 (1.8)
11	0.781 (2.0)	0.133 (0.34) 0.123 (0.31)	0.817 (2.1) 0.807 (2.0)
13	0.921 (2.3)	0.133 (0.34) 0.123 (0.31)	0.911 (2.3) 0.901 (2.3)
15	1.047 (2.7)	0.133 (0.34) 0.123 (0.31)	0.973 (2.5) 0.963 (2.4)
17	1.218 (3.1)	0.133 (0.34) 0.123 (0.31)	1.067 (2.7) 1.057 (2.7)
19	1.296 (3.3)	0.133 (0.34) 0.123 (0.31)	1.161 (2.9) 1.151 (2.9)
21	1.421 (3.6)	0.133 (0.34) 0.123 (0.31)	1.255 (3.2) 1.245 (3.2)
23	1.546 (3.9)	0.159 (0.40) 0.149 (0.38)	1.380 (3.5) 1.370 (3.5)
25	1.672 (4.2)	0.159 (0.40) 0.149 (0.38)	1.505 (3.8) 1.495 (3.8)

SuperNine® Hermetic connectors

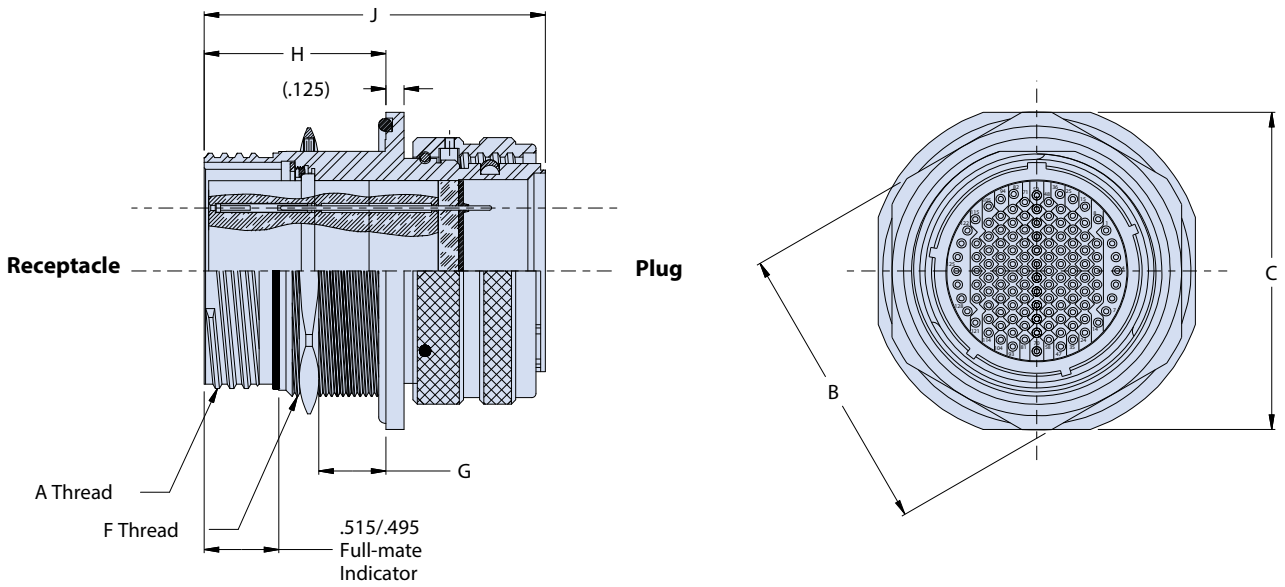
233-103-H9 Jam nut plug/receptacle gender changer

MIL-DTL-38999 Series III type

H9 - JAM NUT HERMETIC GENDER CHANGER FOR PANELS FROM .125" TO .500"

How To Order: 233-103							
Sample Part Number	**233-103**	**-H9**	**Z1**	**19-35**	**S**	**N**	**-01**
Series / Basic Part No.	Series 23 SuperNine® Hermetic Bulkhead Feedthru						
Connector Style	**H9** = Jam Nut Plug/Receptacle Gender Changer						
Finish*	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish						
Shell Size-Insert Arr*	Per MIL-STD-1560						
Contact Type	**P** = Pin on panel side **S** = Socket on panel side						
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal						
Panel Thickness	**-01** = 125/.062 **-02** = .250/.062 **-03** = .500/.062; See Panel Thickness Table						

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number



NOTES

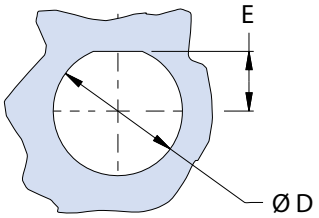
1. Test requirements:
   DWV - per DWV Voltage Level Table
   I.R. - 5 gigohms min @ 500 VDC
   Hermeticity - <1 x 10^{-7} sccHe/sec @ 1 ATM differential
2. Metric dimensions (mm) are indicated in parentheses.

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

233-103-H9 Jam nut plug/receptacle gender changer

MIL-DTL-38999 Series III type

Dimensions						
Shell Size	A Thread 0.1 P-0.3L-TS-2	B Max	C Dim Max	D Dia	E Dia	F Thread X1-6G-0.100R
9	.6250	.945(24.0)	1.09 (27.7)	0.703 (17.9) 0.693 (17.6)	0.661 (16.8) 0.653 (16.6)	M17
11	.7500	1.063(27.0)	1.28 (32.5)	0.835 (21.2) 0.825 (21.0)	0.771 (19.6) 0.761 (19.3)	M20
13	.8750	1.260(32.0)	1.40 (35.6)	1.020 (25.9) 1.010 (25.7)	0.955 (24.3) 0.945 (24.0)	M25
15	1.0000	1.417(36.0)	1.53 (38.9)	1.145 (29.1) 1.135 (28.8)	1.085 (27.6) 1.075 (27.3)	M28
17	1.1875	1.457(37.0)	1.66 (42.2)	1.270 (32.3) 1.260 (32.0)	1.210 (30.7) 1.200 (30.5)	M32
19	1.2500	1.614(41.0)	1.84 (46.7)	1.395 (35.4) 1.385 (35.2)	1.335 (33.9) 1.325 (33.7)	M35
21	1.3750	1.811(46.0)	1.97 (50.5)	1.520 (38.6) 1.510 (38.4)	1.460 (37.1) 1.450 (36.8)	M38
23	1.5000	1.968(50.0)	2.09 (53.1)	1.645 (41.8) 1.635 (41.5)	1.585 (40.3) 1.575 (40.0)	M41
25	1.6250	2.017(51.2)	2.21 (56.1)	1.770 (45.0) 1.760 (44.7)	1.710 (43.4) 1.700 (43.2)	M44



Recommended Panel Cut-out

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	
Service Rating	Voltage AC RMS 60 Hz
M	1300 VAC
I	1800 VAC
II	2300 VAC
N	1000 VAC

SuperNine® Hermetic Connectors

233-103-H7 Jam nut mount bulkhead feedthru

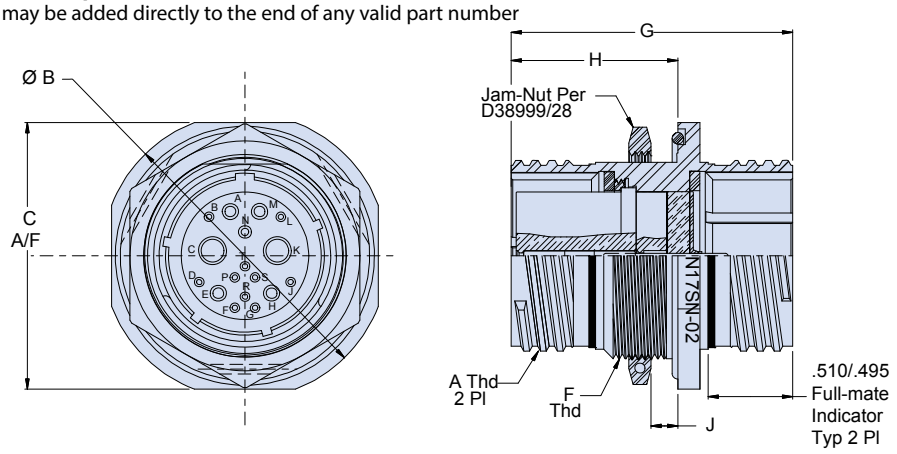
MIL-DTL-38999 Series III type

H7 - JAM NUT HERMETIC FOR PANELS FROM .125" TO .500"

How To Order: 233-103							
Sample Part Number	**233-103**	**-H7**	**Z1**	**19-35**	**S**	**N**	**-01**
Series / Basic Part No.	Series 23 SuperNine® Hermetic Bulkhead Feedthru						
Connector Style	**H7** = Jam Nut Mount Receptacle						
Finish*	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish See materials and finish summary page for this section						
Shell Size-Insert Arrangement*	Per MIL-STD-1560						
Contact Type	**P** = Pin on jam nut side **S** = Socket on jam nut side **PP** = Pin-Pin (See note 1) **SS** = Socket-Socket (See note 1)						
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal						
Panel Thickness	**-01** = 125/.062 **-02** = .250/.062 **-03** = .500/.062; See Panel Thickness Table						

***Refer to Section A for complete details**

Modification codes may be added directly to the end of any valid part number



Dimensions						
Shell Size	**A Thread 0.1 P-0.3L-TS-2**	**B Dia**	**C**	**D Dia**	**E Dim**	**F Thread Metric X 1.0–6g**
9	.6250	1.189 (30.2)	1.063 (27.0)	.703/.693 (17.9/16.6)	.661/.653 (16.8/16.6)	M17
11	.7500	1.375 (34.9)	1.252 (31.8)	.835/.825 (21.2/21.0)	.771/.761 (19.6/19.3)	M20
13	.8750	1.500 (38.1)	1.374 (34.9)	1.020/1.010 (25.9/25.7)	.955/.945 (24.3/24.0)	M25
15	1.0000	1.626 (41.3)	1.500 (38.1)	1.145/1.135 (29.1/28.8)	1.085/1.075 (27.6/27.3)	M28
17	1.1875	1.752 (44.5)	1.626 (41.3)	1.270/1.260 (32.3/32.0)	1.210/1.200 (30.7/30.5)	M32
19	1.2500	1.937 (49.2)	1.811 (46.0)	1.395/1.385 (35.4/35.2)	1.335/1.325 (33.9/33.7)	M35
21	1.3750	2.063 (52.4)	1.937 (49.2)	1.520/1.510 (38.6/38.4)	1.460/1.450 (37.1/36.8)	M38
23	1.5000	2.189 (55.6)	2.063 (52.4)	1.645/1.635 (41.8/41.5)	1.585/1.575 (40.3/40.0)	M41
25	1.6250	2.311 (58.7)	2.189 (55.6)	1.770/1.760 (45.0/44.7)	1.710/1.700 (43.4/43.2)	M44

Hermetic Leak Rate Mod Codes	
Mod Code	**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

Panel Thickness			
Dash No.	**G Dim, OAL**	**H Dim, Max**	**J Dim, Panel**
-01	1.650 (41.9) max.	.889 (22.6)	.125/.062 (3.2/1.6)
-02	1.780 (45.2) max.	1.090 (27.7)	.250/.062 (6.4/1.6)
-03	2.030 (51.6) max.	1.340 (34.0)	.500/.062 (12.7/1.6)

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. Hermeticity = less than 1 x 10^{-7} cc/sec at one atmosphere. Not for use in liquid atmosphere.
3. Dimensions in Inches (millimeters) are subject to change without notice
4. Consult factory for additional information

SuperNine® Hermetic connectors

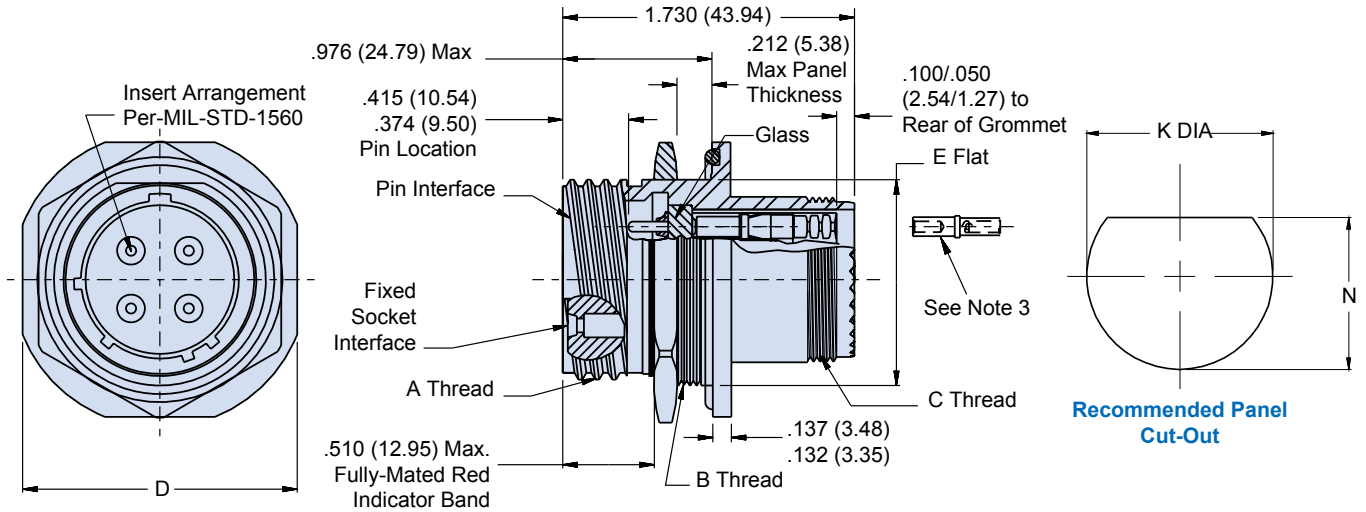
257-332 Jam nut receptacle with crimp contacts

MIL-DTL-38999 Series III type

How To Order 257-332						
Sample Part Number	**257-332**	**Z1**	**17**	**-8**	**P**	**A**
Series / Basic Part No.	Hermetic MIL-DTL-38999 Series III Type Receptacle					
Finish*	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish					
Shell Size	**9**, **11**, **13**, **15**,**17**, **19**, **21**, **23**, **25**					
Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin Contacts **S** = Socket Contacts					
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**

Modification codes may be added directly to the end of any valid part number



Dimensions								
SHELL SIZE	SHELL SIZE CODE	A THREAD	B THREAD	C THREAD	D +/- .016 (MM)	E +/-.004-.006 (MM)	**K DIA ± .005 (0.1)**	**N ± .005 (0.1)**
9	A	.6250-.1P.3L-TS-2A	M17x1-6g 0.100R	M12x1-6g 0.100R	1.062 (2.70)	0.651 (1.65)	.693 (17.60)	.657 (16.70)
11	B	.7500-.1P.3L-TS-2A	M20x1-6g 0.100R	M15x1-6g 0.100R	1.252 (3.18)	0.751 (1.91)	.825 (20.96)	.771 (19.59)
13	C	.8750-.1P.3L-TS-2A	M25x1-6g 0.100R	M18x1-6g 0.100R	1.374 (3.49)	0.938 (2.38)	1.010 (25.65)	.955 (24.26)
15	D	1.000-.1P.3L-TS-2A	M28x1-6g 0.100R	M22x1-6g 0.100R	1.500 (3.81)	1.062 (2.70)	1.135 (28.83)	1.085 (27.56)
17	E	1.1875-.1P.3L-TS-2A	M32x1-6g 0.100R	M25x1-6g 0.100R	1.626 (4.13)	1.187 (3.01)	1.260 (32.01)	1.210 (30.73)
19	F	1.250-.1P.3L-TS-2A	M35x1-6g 0.100R	M28x1-6g 0.100R	1.811 (4.60)	1.312 (3.33)	1.385 (35.18)	1.335 (33.91)
21	G	1.375-.1P.3L-TS-2A	M38x1-6g 0.100R	M31x1-6g 0.100R	1.937 (4.92)	1.437 (3.65)	1.510 (38.35)	1.460 (37.08)
23	H	1.500-.1P.3L-TS-2A	M41x1-6g 0.100R	M34x1-6g 0.100R	2.063 (5.24)	1.562 (3.97)	1.635 (41.53)	1.585 (40.26)
25	J	1.625-.1P.3L-TS-2A	M44x1-6g 0.100R	M37x1-6g 0.100R	2.189 (5.56)	1.687 (4.28)	1.760 (44.70)	1.710 (43.43)

NOTES

1. Assembly to be identified with Glenair's name and part number and date code, space permitting.
2. Crimp removable socket contacts to conform to: AS39029/57-359 - size 12: AS39029/57-358 - size 16; AS39029/57-357 - size 20; and AS39029/57-354 - size 22D (supplied loose)

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

SuperNine® Hermetic connectors

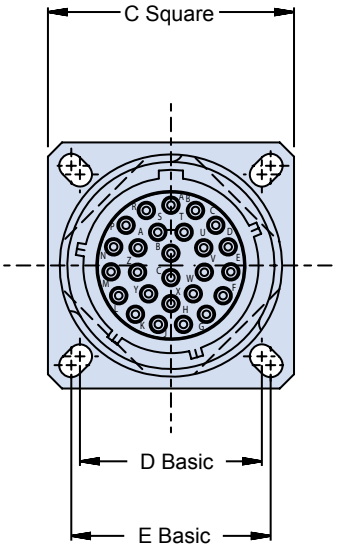
257-288 Box mount hermetic receptacle, crimp contacts

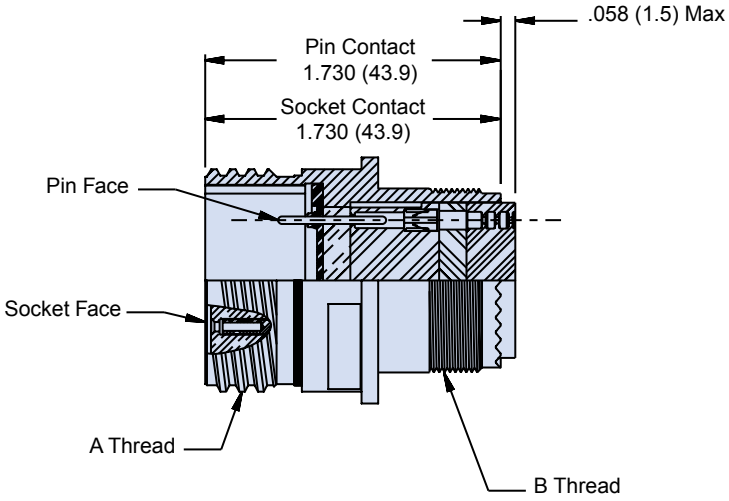
MIL-DTL-38999 Series III type

How To Order 257-288						
Sample Part Number	**257-288**	**Z1**	**17**	**-26**	**P**	**N**
Series / Basic Part No.	Hermetic MIL-DTL-38999 Series III Type Receptacle					
Finish*	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish					
Shell Size	**9**, **11**, **13**, **15**,**17**, **19**, **21**, **23**, **25**					
Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin Face **S** = Socket Face					
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**

Modification codes may be added directly to the end of any valid part number





Mates With	
Plug Part Number	**Description**
233-105SG6	SuperNine® plug with single integrated band porch
233-105BG6	SuperNine® plug with integrated band porch and boot groove
233-105DG6	SuperNine® plug with double integrated band porch
233-105-G6	SuperNine® plug with accessory attachment threads

SuperNine® Hermetic connectors

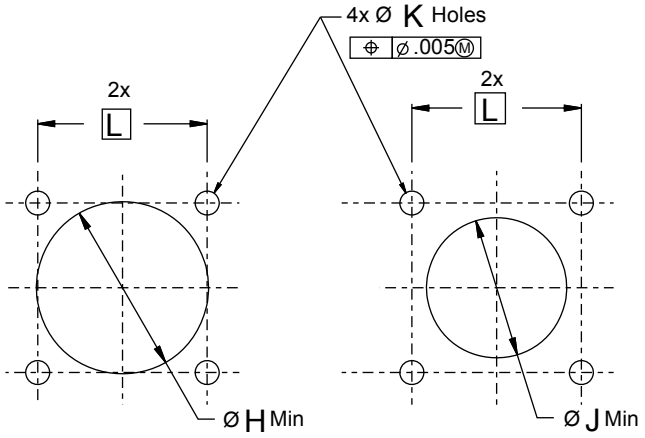
257-288 Box mount hermetic receptacle, crimp contacts

MIL-DTL-38999 Series III type

Dimensions																	
Shell Size	Ref. Code	A Thread 0.1 P-0.3L-TS-2A		B Thread	C Square		D Bsc		E Bsc		Ø H Min		Ø J Min		Ø K Holes		L Basic	
		In	mm		In	mm	In	mm	In	mm	In	mm	In	mm	In	mm	In	mm
9	A	0.625	15.88	M12X1-6g 0.100R	.949 .925	24.10 23.50	.594	15.09	.719	18.26	.656	16.66	.516	13.11			.719	18.26
11	B	0.750	19.05	M15X1-6g 0.100R	1.043 1.020	26.49 25.91	.719	18.26	.812	20.62	.796	20.22	.625	15.88			.812	20.62
13	C	0.875	22.23	M18X1-6g 0.100R	1.138 1.114	28.91 28.30	.812	20.62	.906	23.01	.922	23.42	.750	19.05			.906	23.01
15	D	1.000	25.40	M22X1-6g 0.100R	1.232 1.209	31.29 30.71	.906	23.01	.969	24.61	1.047	26.59	.906	23.01	.133 .123	3.38 3.12	.969	24.61
17	E	1.187	30.15	M25X1-6g 0.100R	1.323 1.299	33.60 32.99	.969	24.61	1.062	26.97	1.219	30.96	1.016	25.81			1.062	26.97
19	F	1.250	31.75	M28X1-6g 0.100R	1.449 1.425	36.80 36.20	1.062	26.97	1.156	29.36	1.297	32.94	1.141	28.98			1.156	29.36
21	G	1.375	34.93	M31X1-6g 0.100R	1.575 1.551	40.0 39.40	1.156	29.36	1.250	31.75	1.422	36.12	1.266	32.16			1.250	31.75
23	H	1.500	38.10	M34X1-6g 0.100R	1.701 1.677	43.21 42.60	1.250	31.75	1.375	34.93	1.547	39.29	1.375	34.93	.159 .149	4.04 3.78	1.375	34.93
25	J	1.625	41.28	M37X1-6g 0.100R	1.823 1.799	46.30 45.69	1.375	34.93	1.500	38.10	1.672	42.47	1.484	37.69	.155 .145	3.94 3.68	1.500	38.10

D

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



Recommended Mounting Holes

NOTES

1. Assembly identified with manufacturer's name and PN, space permitting.
2. Crimp removable socket contacts to conform to MIL-C-39029/57-358, size 16, MIL-C-39029/57-357 size 20 and MIL-C-39029/57-354 size 22D (supplied loose)
3. Metric dimensions (mm) are indicated in parentheses.

SuperNine® Hermetic connectors

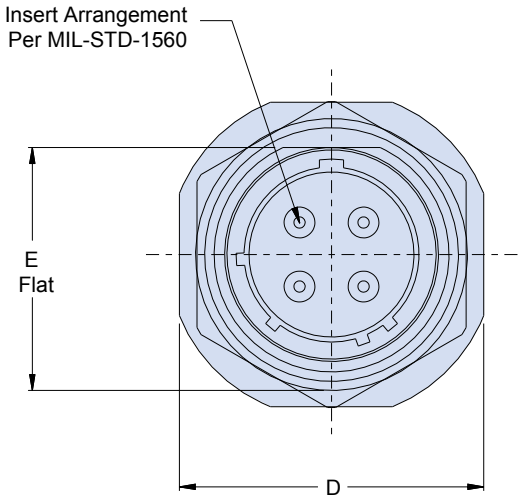
257-333 Jam nut mount receptacle, crimp contacts

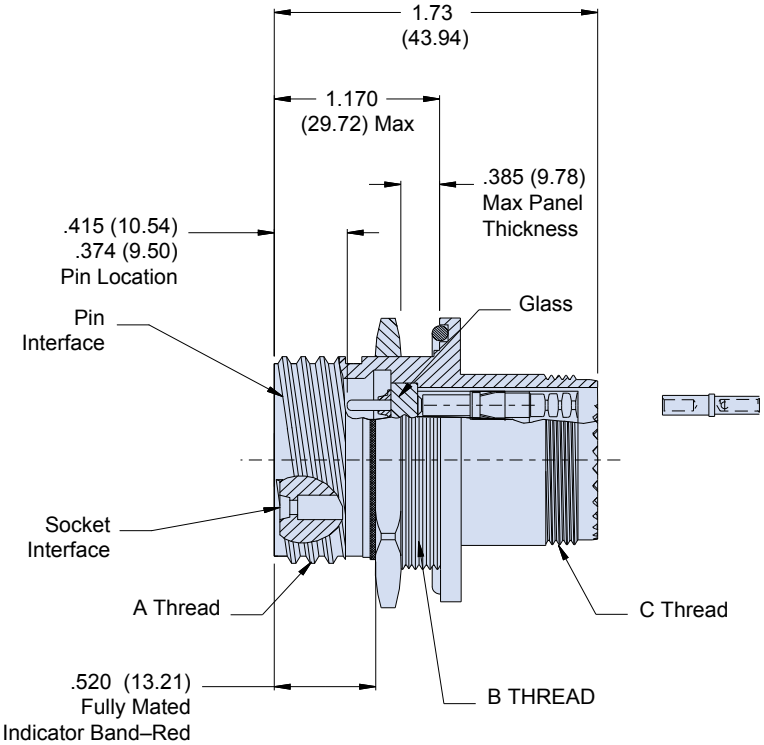
MIL-DTL-38999 Series III type

How To Order 257-333						
Sample Part Number	**257-333**	**Z1**	**17**	**-8**	**P**	**A**
Series / Basic Part No.	Hermetic MIL-DTL-38999 Series III Type Receptacle					
Finish*	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish					
Shell Size	**9**, **11**, **13**, **15**,**17**, **19**, **21**, **23**, **25**					
Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin **S** = Socket					
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number

D

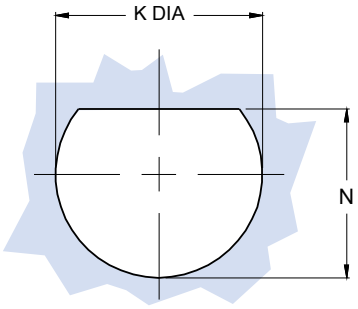




SuperNine® Hermetic connectors

257-333 Jam nut mount receptacle, crimp contacts

MIL-DTL-38999 Series III type



Recommended Panel Cut-Out

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

Mates With	
Plug Part Number	**Description**
233-105SG6	SuperNine® plug with single integrated band porch
233-105BG6	SuperNine® plug with integrated band porch and boot groove
233-105DG6	SuperNine® plug with double integrated band porch
233-105-G6	SuperNine® plug with accessory attachment threads

D

Dimensions								
Shell Size	**Shell Size Code**	**A Thread**	**B Thread**	**C Thread**	**D +/- .016 (mm)**	**E +/-.004-.006 (mm)**	**K Dia ± .005 (0.1)**	**N ± .005 (0.1)**
9	A	.6250-.1P.3L-TS-2A	M17x1-6g 0.100R	M12x1-6g 0.100R	1.062 (2.70)	0.651 (1.65)	.693 (17.60)	.657 (16.70)
11	B	.7500-.1P.3L-TS-2A	M20x1-6g 0.100R	M15x1-6g 0.100R	1.252 (3.18)	0.751 (1.91)	.825 (20.96)	.771 (19.59)
13	C	.8750-.1P.3L-TS-2A	M25x1-6g 0.100R	M18x1-6g 0.100R	1.374 (3.49)	0.938 (2.38)	1.010 (25.65)	.955 (24.26)
15	D	1.000-.1P.3L-TS-2A	M28x1-6g 0.100R	M22x1-6g 0.100R	1.500 (3.81)	1.062 (2.70)	1.135 (28.83)	1.085 (27.56)
17	E	1.1875-.1P.3L-TS-2A	M32x1-6g 0.100R	M25x1-6g 0.100R	1.626 (4.13)	1.187 (3.01)	1.260 (32.01)	1.210 (30.73)
19	F	1.250-.1P.3L-TS-2A	M35x1-6g 0.100R	M28x1-6g 0.100R	1.811 (4.60)	1.312 (3.33)	1.385 (35.18)	1.335 (33.91)
21	G	1.375-.1P.3L-TS-2A	M38x1-6g 0.100R	M31x1-6g 0.100R	1.937 (4.92)	1.437 (3.65)	1.510 (38.35)	1.460 (37.08)
23	H	1.500-.1P.3L-TS-2A	M41x1-6g 0.100R	M34x1-6g 0.100R	2.063 (5.24)	1.562 (3.97)	1.635 (41.53)	1.585 (40.26)
25	J	1.625-.1P.3L-TS-2A	M44x1-6g 0.100R	M37x1-6g 0.100R	2.189 (5.56)	1.687 (4.28)	1.760 (44.70)	1.710 (43.43)

NOTES

1. Assembly to be identified with Glenair's name and part number and date code, space permitting.
2. Crimp removable socket contacts to conform to:
   SAE AS39029/57-359 - size 12;
   SAE AS39029/57-358 - size 16;
   SAE AS39029/57-357 - size 20;
   and SAE AS39029/57-354 - size 22D (supplied loose)

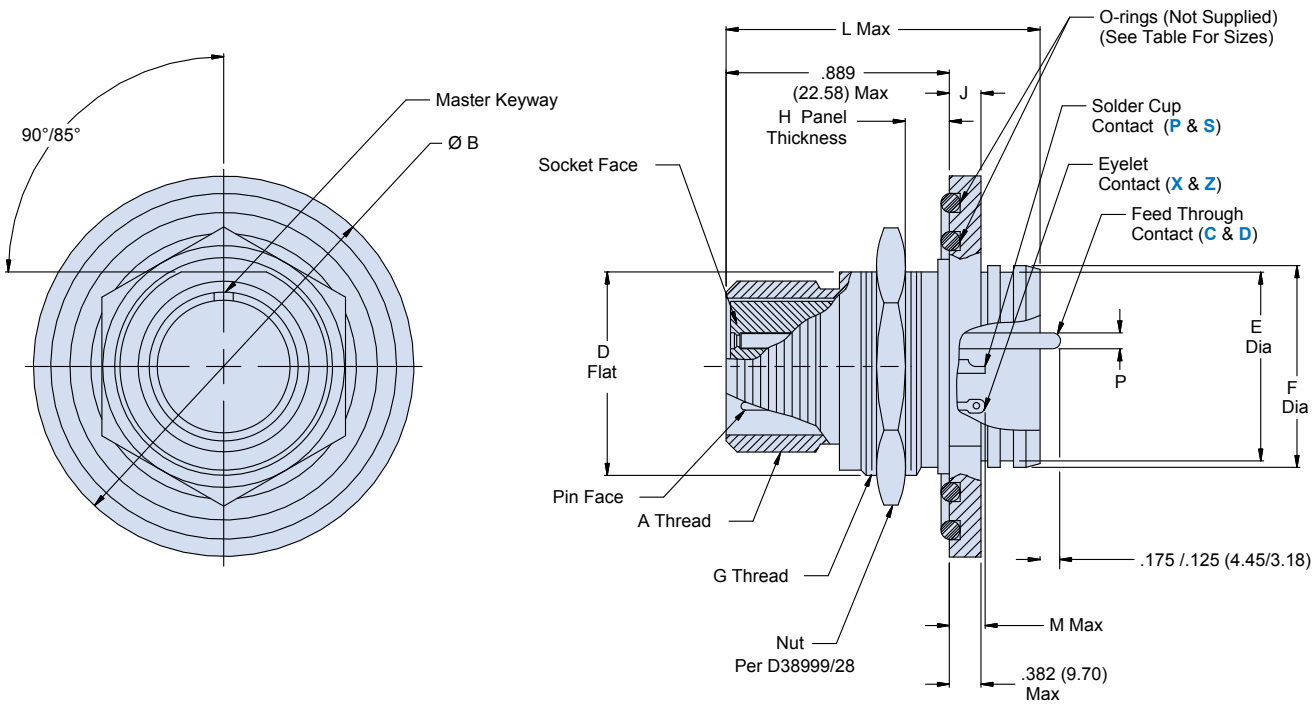
SuperNine® Hermetic connectors

237-033 Jam nut receptacle with double O-rings

MIL-DTL-38999 Series III type

How To Order 237-033						
Sample Part Number	**237-033**	**ZL**	**11**	**-35**	**P**	**N**
Series / Basic Part No.	Series 23 SuperNine® Hermetic Jam Nut Receptacle					
Finish	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish					
Shell Size	**9**, **11**, **13**, **15**,**17**, **9**, **21**, **23**, **25**					
Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, Solder Cup **X** = Pin, Eyelet **C** = Pin, Feedthru	**S** = Socket, Solder Cup **Z** = Socket, Eyelet **D** = Socket, Feedthru				
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number



NOTES

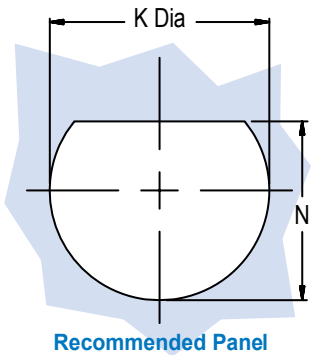
1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Modified major diameter 31.95-31.80 (1.257-1.252).
3. Glenair 237-033 receptacle conector is designed to mate with and QPL manufacturer's MIL-DTL-38999 Series III plug connector having the same insert arrangement and polarization.
4. Glenair 237-033 same as D38999/23 except double O-Ring configuration.

SuperNine® Hermetic connectors

237-033 Jam nut receptacle with double O-rings

MIL-DTL-38999 Series III type

Dimensions							
Shell Size Code	Shell Size	A Thread -0.1P-0.03L-TS	B Dia	D Flat	E Dia	F Dia	G Thread ISO Metric x 1.0-6g
A	9	.6250	1.270/1.260 (32.26/32.00)	.654/.645 (16.61/16.38)	.614/.591 (15.60/15.01)	.653/.642 (16.59/16.31)	M17
B	11	.7500	1.385/1.375 (35.18/34.93)	.754/.745 (19.15/18.92)	.736/.713 (18.69/18.11)	.775/.764 (19.69/19.41)	M20
C	13	.8750	1.585/1.575 (40.26/40.01)	.941/.932 (23.90/23.67)	.862/.839 (21.89/21.31)	.905/.894 (22.99/22.71)	M25
D	15	1.0000	1.700/1.690 (43.18/42.93)	1.065/1.056 (27.05/26.82)	.988/.965 (25.10/24.51)	1.031/1.020 (26.19/25.91)	M28
E	17	1.1875	1.860/1.850 (47.24/46.99)	1.190/1.181 (30.23/30.00)	1.114/1.091 (28.30/27.71)	1.153/1.142 (29.29/29.01)	M32 (See Note 2)
F	19	1.2500	1.975/1.965 (50.17/49.91)	1.315/1.3 06 (33.40/33.17)	1.240/1.217 (31.50/30.91)	1.278/1.268 (32.46/32.21)	M35
G	21	1.3750	2.095/2.085 (53.21/52.96)	1.440/1.431 (36.58/36.35)	1.362/1.339 (34.59/34.01)	1.405/1.394 (35.69/35.41)	M38
H	23	1.5000	2.213/2.203 (56.21/55.96)	1.565/1.556 (39.75/39.52)	1.488/1.465 (37.80/37.21)	1.531/1.520 (38.89/38.61)	M41
J	25	1.6250	2.325/2.315 (59.06/58.80)	1.690/1.681 (42.93/42.70)	1.614/1.591 (41.0/40.41)	1.653/1.642 (41.99/41.71)	M44



Recommended Panel Cut-out

D

Dimensions (Continued)								
Shell Size Code	Shell Size	H	J	K Dia	L Max	M Max		N
						P and X	S and Z	
A	9	.125/.062 (3.18/1.57)	.114/.098 (2.90/2.49)	.710/.700 (18.03/17.78)	1.149 (29.18)	.208 (5.28)	.232 (5.89)	.670/.660 (17.02/16.76)
B	11	.125/.062 (3.18/1.57)	.114/.098 (2.90/2.49)	.832/.822 (21.13/20.88)	1.149 (29.18)	.208 (5.28)	.232 (5.89)	.769/.759 (19.53/19.28)
C	13	.125/.062 (3.18/1.57)	.114/.098 (2.90/2.49)	1.017/1.007 (25.83/25.58)	1.153 (29.29)	.200 (5.08)	.224 (5.69)	.955/.945 (24.26/24.0)
D	15	.125/.062 (3.18/1.57)	.114/.098 (2.90/2.49)	1.144/1.134 (29.06/28.80)	1.153 (29.29)	.200 (5.08)	.224 (5.69)	1.084/1.074 (27.53/27.28)
E	17	.125/.062 (3.18/1.57)	.114/.098 (2.90/2.49)	1.271/1.261 (32.28/32.03)	1.153 (29.29)	.200 (5.08)	.224 (5.69)	1.208/1.198 (30.68/30.4)
F	19	.125/.062 (3.18/1.57)	.146/.130 (3.71/3.30)	1.394/1.384 (35.41/35.15)	1.185 (30.10)	.200 (5.08)	.224 (5.69)	1.333/1.323 (33.86/33.60)
G	21	.125/.062 (3.18/1.57)	.146/.130 (3.71/3.30)	1.517/1.507 (38.53/28.28)	1.185 (30.10)	.200 (5.08)	.224 (5.69)	1.459/1.449 (37.06/36.80)
H	23	.125/.062 (3.18/1.57)	.146/.130 (3.71/3.30)	1.644/1.634 (41.76/41.50)	1.185 (30.10)	.200 (5.08)	.224 (5.69)	1.580/1.570 (40.13/39.88)
J	25	.125/.062 (3.18/1.57)	.146/.130 (3.71/3.30)	1.746/1.736 (44.35/44.09)	1.185 (30.10)	.200 (5.08)	.224 (5.69)	1.709/1.699 (43.41/43.15)

Contact Size and Diameter	
Contact Size	Ø P
22D	.011/.015 (0.28/0.38)
20	.024/.028 (0.61/0.71)
16	.0635/.0615 (1.61/1.56)
12	.095/.093 (2.41/2.36)
10	.126/.124 (3.20/3.15)

Flange O-Rings	
Shell Size	Flange O-rings (Ø.070 C/S)
9	2-022; 2-018
11	2-020; 2-024
13	2-023; 2-027
15	2-025; 2-029
17	2-027; 2-030
19	2-029; 2-031
21	2-030; 2-032
23	2-031; 2-033
25	2-032; 2-034

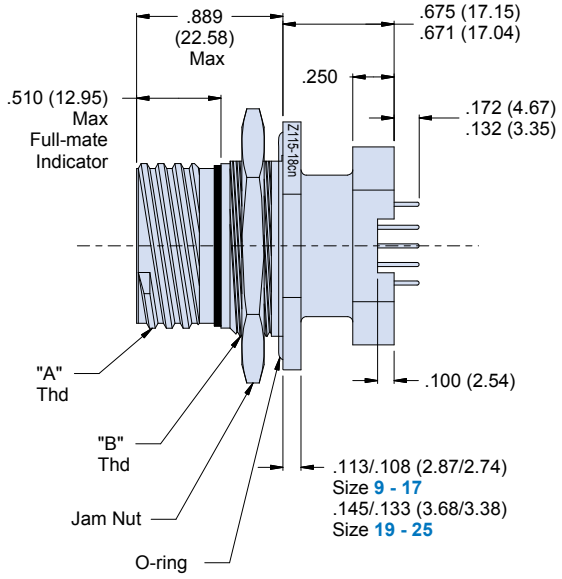
SuperNine® Hermetic Connectors

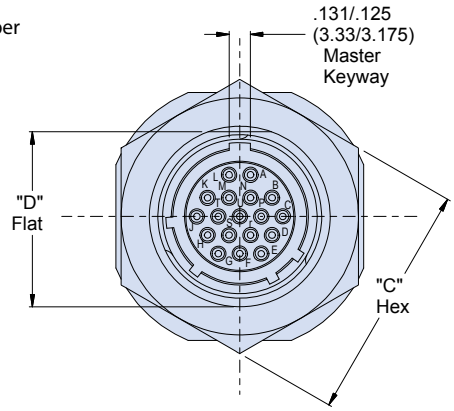
237-153 Dual flange jam nut mount hermetic receptacle

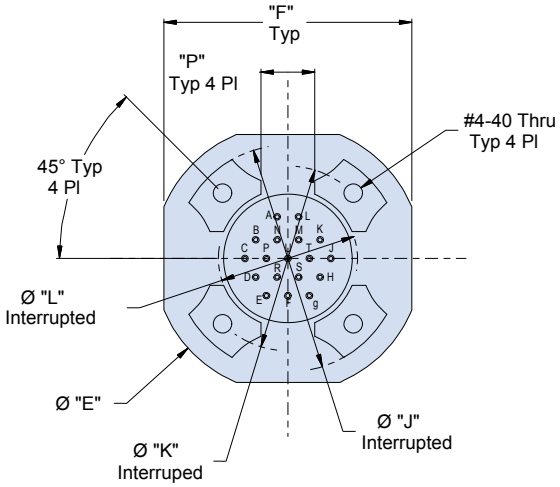
MIL-DTL-38999 Series III type

How To Order 237-153						
Sample Part Number	**237-153**	**ZL**	**15**	**-18**	**C**	**N**
Series / Basic Part No.	Series 23 SuperNine® Hermetic Dual Flange Jam Nut Mount					
Finish	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish **ZW** = CRES; Cadmium, O.D					
Shell Size	**9**, **11**, **13**, **15**,**17**, **19**, **21**, **23**, **25**					
Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**C** = Pin, PC Termination **D** = Socket, PC Termination					
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number







SuperNine® Hermetic connectors

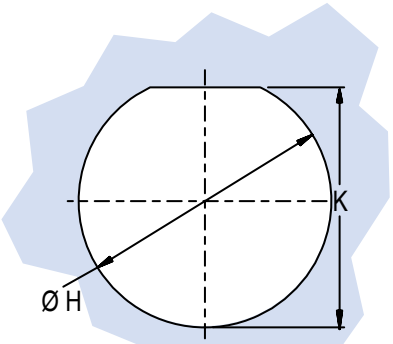
237-153 Dual flange jam nut mount hermetic receptacle

MIL-DTL-38999 Series III type

Dimensions						
Shell Size	A Thread -0.1P-0.03L-TS (Plated)	B Thread Metric (Plated)	C ± .015 (0.38)	D ± .005 (0.13)	Ø E ± .012 (0.30)	F ± .016 (0.41)
9	.6250	M17 x 1-6g-0.10R	.875 (22.2)	.651 (16.5)	1.250 (31.8)	1.063 (27.0)
11	.7500	M20 x 1-6g-0.10R	1.000 (25.4)	.751 (19.1)	1.377 (35.0)	1.259 (32.0)
13	.8750	M25 x 1-6g-0.10R	1.187 (30.1)	.937 (23.8)	1.500 (38.1)	1.374 (34.9)
15	1.0000	M28 x 1-6g-0.10R	1.375 (34.9)	1.063 (27.0)	1.625 (41.3)	1.500 (38.1)
17	1.1875	M32 x 1-6g-0.10R	1.437 (36.5)	1.187 (30.2)	1.750 (44.5)	1.625 (41.3)
19	1.2500	M35 x 1-6g-0.10R	1.562 (39.7)	1.311 (33.3)	1.937 (49.2)	1.822 (46.3)
21	1.3750	M38 x 1-6g-0.10R	1.750 (44.5)	1.434 (36.4)	2.063 (52.4)	1.940 (49.3)
23	1.5000	M41 x 1-6g-0.10R	1.875 (47.6)	1.561 (39.7)	2.190 (55.6)	2.073 (52.7)
25	1.6250	M44 x 1-6g-0.10R	2.000 (50.8)	1.687 (42.9)	2.311 (58.7)	2.189 (55.6)

Contact Size and Diameter	
Contact Size	Ø P
22	.022/.018 (0.56/0.46)
20	.027/.023 (0.69/0.58)
16	.042/.038 (1.07/0.97)
12	.052/.048 (1.32/1.22)

Dimensions (Continued)						
Shell Size	H ± .020 (0.51)	Ø J ± .005 (0.13)	Ø K Basic	L ± .005 (0.13)	N ± .020 (0.51)	P ± .010 (0.25)
9	.225 (5.7)	1.016 (25.8)	.752 (19.1)	.532 (13.5)	.275 (7.0)	.225 (5.7)
11	.250 (6.4)	1.062 (27.0)	.850 (21.6)	.595 (15.1)	.290 (7.4)	.250 (6.4)
13	.375 (9.5)	1.250 (31.8)	.994 (25.2)	.720 (18.3)	.370 (9.4)	.250 (6.4)
15	.438 (11.1)	1.375 (34.9)	1.119 (28.4)	.843 (21.4)	.440 (11.2)	.325 (8.2)
17	.562 (14.3)	1.500 (38.1)	1.237 (31.4)	1.000 (25.4)	.495 (12.6)	.375 (9.5)
19	.875 (22.2)	1.625 (41.3)	1.379 (35.0)	1.125 (28.6)	.540 (13.7)	.500 (12.7)
21	1.170 (29.7)	1.750 (44.5)	1.489 (37.8)	1.240 (31.5)	.625 (15.9)	.562 (14.3)
23	1.250 (31.8)	1.875 (47.6)	1.619 (41.1)	1.328 (33.7)	.660 (16.8)	.688 (17.5)
25	1.375 (34.9)	2.000 (50.8)	1.744 (44.3)	1.453 (36.9)	.740 (18.8)	.750 (19.1)



Recommended Panel Cut-out

D

NOTES

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Performance test criteria:
   Hermeticity - $<1x10^{-7}$ ccHe/sec @1 ATM differential.
   D.W.V. - per DTL-38999 pin-to-pin and pin-to-shell w/o breakdown
   I.R. - 5000 MegOhms min @ 500 VDC.
3. Glenair 237-153 receptacle conector is designed to mate with and QPL manufacturer's MIL-DTL-38999 Series III plug connector having the same shell size, insert arrangement, polarization and opposite contact gender.
4. Metric dimensions (mm) are indicated in parentheses.

Mates With	
Plug Part Number	Description
233-105SG6	SuperNine® plug with single integrated band porch
233-105BG6	SuperNine® plug with integrated band porch and boot groove
233-105DG6	SuperNine® plug with double integrated band porch
233-105-G6	SuperNine® plug with accessory attachment threads

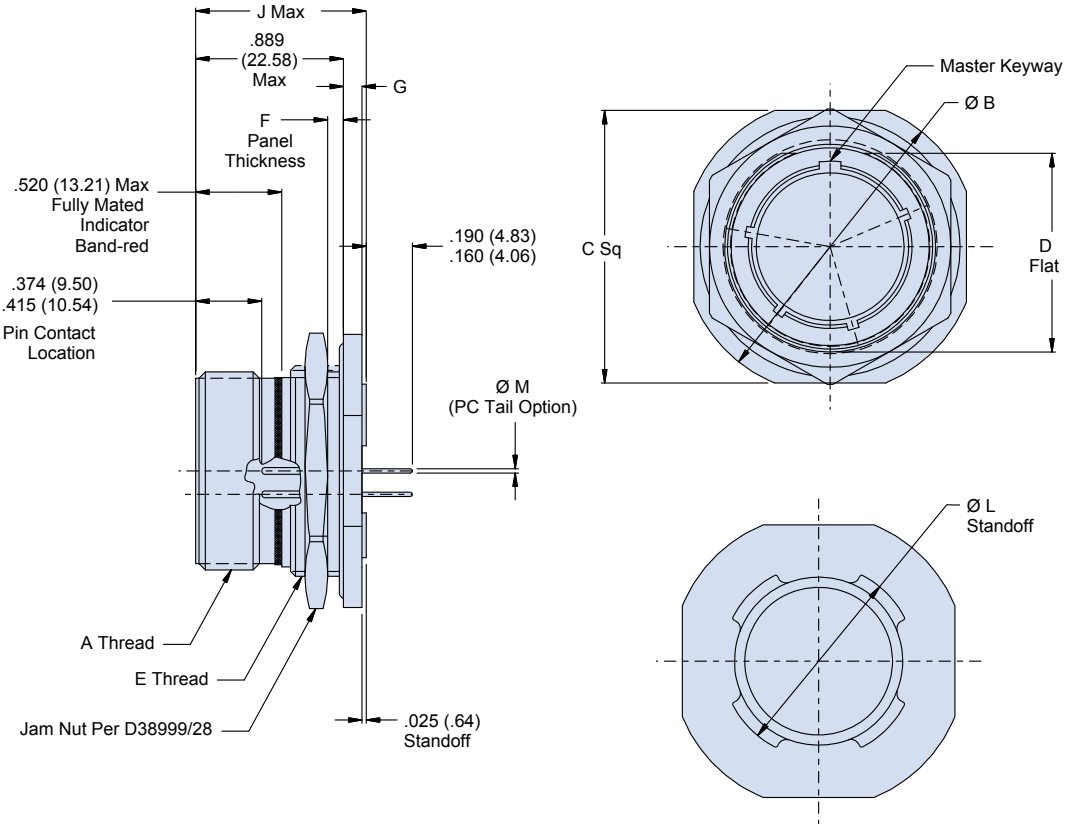
SuperNine® Hermetic connectors

237-063 Flush-flange jam nut with PC tail contacts

MIL-DTL-38999 Series III type

How To Order 237-063						
Sample Part Number	**237-063**	**Z1**	**9**	**-35**	**C**	**N**
Series / Basic Part No.	Series 23 SuperNine® Hermetic Jam Nut with PC Tails					
Finish	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish					
Shell Size	**9**, **11**, **13**, **15**,**17**, **19**, **21**, **23**, **25**					
Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**C** = Pin, PC Termination					
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number



NOTES

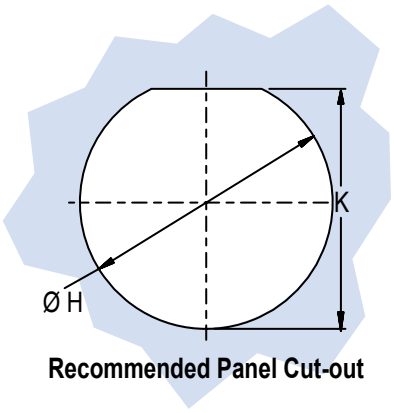
1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Modified major diameter 31.95-31.80 (1.257-1.252).
3. Insert arrangement IAW MIL-STD-1560
4. Metric dimensions (mm) are indicated in parentheses.

SuperNine® Hermetic connectors

237-063 Flush-flange jam nut with PC tail contacts

MIL-DTL-38999 Series III type

Dimensions						
Shell Size Code	Shell Size	A Thread -0.1P-0.03L-TS	B Dia	C A/F	D Flat	E Thread ISO Metric x 1.0-6g
A	9	.6250	1.200/1.178 (30.48/29.92)	1.078/1.048 (27.38/26.62)	.654/.645 (16.61/16.38)	M17
B	11	.7500	1.385/1.363 (35.18/34.62)	1.267/1.237 (32.18/31.42)	.754/.745 (19.15/18.92)	M20
C	13	.8750	1.511/1.489 (38.38/37.82)	1.389/1.359 (35.28/34.52)	.941/.932 (23.90/23.67)	M25
D	15	1.0000	1.637/1.615 (41.58/41.02)	1.515/1.485 (38.48/37.72)	1.065/1.056 (27.05/26.82)	M28
E	17	1.1875	1.763/1.741 (44.78/44.22)	1.641/1.611 (41.68/40.92)	1.190/1.181 (30.23/30.00)	M32 (See Note 2)
F	19	1.2500	1.948/1.926 (49.48/48.92)	1.826/1.796 (46.38/45.62)	1.315/1.306 (33.40/33.17)	M35
G	21	1.3750	2.074/2.051 (52.68/52.10)	1.952/1.922 (49.58/48.82)	1.440/1.431 (36.58/36.35)	M38
H	23	1.5000	2.200/2.177 (55.88/55.30)	2.078/2.048 (52.78/52.02)	1.565/1.556 (39.75/39.52)	M41
J	25	1.6250	2.322/2.300 (58.98/58.42)	2.204/2.174 (55.98/55.22)	1.690/1.681 (42.93/42.70)	M44



Recommended Panel Cut-out

D

Dimensions (Continued)							
Shell Size Code	Shell Size	F	G	H Dia	J Max	K	L Dia
A	9	.125/.062 (3.18/1.57)	.113/.108 (2.87/2.74)	.710/.700 (18.03/17.78)	1.149 (29.18)	.670/.660 (17.02/16.76)	.653/.642 (16.59/16.31)
B	11	.125/.062 (3.18/1.57)	.113/.108 (2.87/2.74)	.832/.822 (21.13/20.88)	1.149 (29.18)	.769/.759 (19.53/19.28)	.775/.764 (19.69/19.41)
C	13	.125/.062 (3.18/1.57)	.113/.108 (2.87/2.74)	1.017/1.007 (25.83/25.58)	1.153 (29.29)	.955/.945 (24.26/24.0)	.905/.894 (22.99/22.71)
D	15	.125/.062 (3.18/1.57)	.113/.108 (2.87/2.74)	1.144/1.134 (29.06/28.80)	1.153 (29.29)	1.084/1.074 (27.53/27.28)	1.031/1.020 (26.19/25.91)
E	17	.125/.062 (3.18/1.57)	.113/.108 (2.87/2.74)	1.271/1.261 (32.28/32.03)	1.153 (29.29)	1.208/1.198 (30.68/30.4)	1.153/1.142 (29.29/29.01)
F	19	.125/.062 (3.18/1.57)	.145/.133 (3.68/3.38)	1.394/1.384 (35.41/35.15)	1.185 (30.10)	1.333/1.323 (33.86/33.60)	1.279/1.268 (32.49/32.21)
G	21	.125/.062 (3.18/1.57)	.145/.133 (3.68/3.38)	1.517/1.507 (38.53/28.28)	1.185 (30.10)	1.459/1.449 (37.06/36.80)	1.405/1.394 (35.69/35.41)
H	23	.125/.062 (3.18/1.57)	.145/.133 (3.68/3.38)	1.644/1.634 (41.76/41.50)	1.185 (30.10)	1.580/1.570 (40.13/39.88)	1.531/1.520 (38.89/38.61)
J	25	.125/.062 (3.18/1.57)	.145/.133 (3.68/3.38)	1.769/1.759 (44.93/44.68)	1.185 (30.10)	1.709/1.699 (43.41/43.15)	1.653/1.642 (41.99/41.71)

Contact Size and Diameter	
Contact Size	Ø M
22	.022/.018 (0.56/0.46)
20	.027/.023 (0.69/0.58)
16	.042/.038 (1.07/0.97)
12	.052/.048 (1.32/1.22)

SuperNine® Hermetic connectors

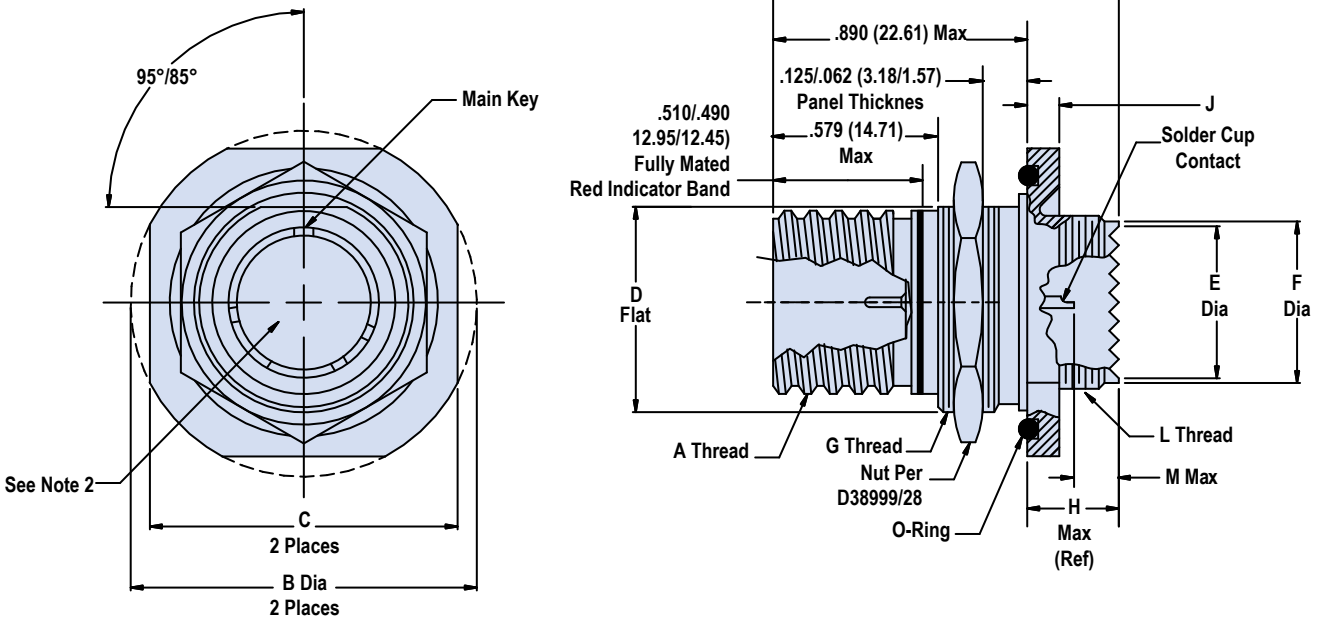
257-121 Jam nut receptacle with accessory threads

MIL-DTL-38999 Series III type

How To Order 257-121						
Sample Part Number	257-121	Z1	9	-35	P	N
Series / Basic Part No.	Hermetic MIL-DTL-38999 Series III Type Jam Nut Receptacle					
Finish	**Z1** = CRES, Passivated **ZL** = CRES, Nickel Finish **Z1S** - CRES, Passivated (Space Rated)					
Shell Size	**9**, **11**, **13**, **15**,**17**, **19**, **21**, **23**, **25**					
Insert Arrangement*	Per MIL-STD-1560					
Contact Type	**P** = Pin, Solder Cup **S** = Socket, Solder Cup **X** = Pin, Eyelet **Z** = Socket, Eyelet					
Alternate Key Position*	**A**, **B**, **C**, **D**, **E**, **N** = Normal					

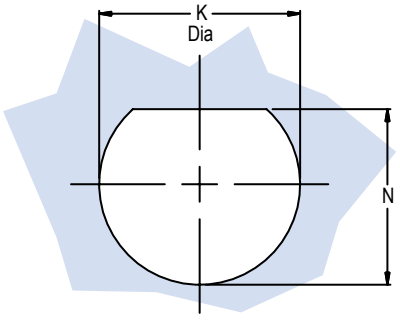
***Refer to Section A for complete details**
Modification codes may be added directly to the end of any valid part number

D



NOTES

1. Assembly identified with manufacturer's name and PN, space permitting.
2. Insert arrangement in accordance with MIL-STD-1560.
3. Glenair 257-121 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.
4. Modified major diameter 31.95-31.80 (1.257-1.252)



Recommended Panel Cut-Out

257-121 Jam nut receptacle with accessory threads

MIL-DTL-38999 Series III type

Dimensions								
Shell Size	Shell Code Ref	A Thread 0.1 P-0.3L-TS	B Dia	C A/F	D Flat	E Dia Max	F Dia	G Thread Iso Metric
9	A	0.6250	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
11	B	0.7500	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
13	C	0.8750	1.511 (38.78) 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
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
17	E	1.1870	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 (See Note 4)
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
21	G	1.3750	2.075 (52.71) 2.051 (52.10)	1.952 (49.59) 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
23	H	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
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

Dimensions (Continued)							
Shell Size	Shell Code Ref	H Max	J	K Dia	L Thread Iso Metric	M Max	N
9	A	.390 (9.91)	.122 (3.10) .083 (2.11)	.710 (18.03) .700 (17.78)	M12 X 1-6G 0.100R	.200 (5.08)	.670 (17.02) .660 (16.76)
11	B	.390 (9.91)	.122 (3.10) .083 (2.11)	.835 (21.21) .825 (20.96)	M15 X 1-6G 0.100R	.200 (5.08)	.771 (19.58) .761 (19.33)
13	C	.390 (9.91)	.122 (3.10) .083 (2.11)	1.020 (25.91) 1.010 (25.65)	M18 X 1-6G 0.100R	.200 (5.08)	.955 (24.26) .945 (24.00)
15	D	.390 (9.91)	.122 (3.10) .083 (2.11)	1.145 (29.08) 1.135 (28.83)	M22 X 1-6G 0.100R	.200 (5.08)	1.085 (27.56) 1.075 (27.31)
17	E	.390 (9.91)	.122 (3.10) .083 (2.11)	1.270 (32.26) 1.260 (32.00)	M25 X 1-6G 0.100R	.200 (5.08)	1.210 (30.73) 1.200 (30.48)
19	F	.390 (9.91)	.153 (3.89) .114 (2.90)	1.395 (35.43) 1.385 (35.18)	M28 X 1-6G 0.100R	.200 (5.08)	1.335 (33.91) 1.325 (33.66)
21	G	.390 (9.91)	.153 (3.89) .114 (2.90)	1.520 (38.61) 1.510 (38.35)	M31 X 1-6G 0.100R	.200 (5.08)	1.460 (37.08) 1.450 (36.83)
23	H	.390 (9.91)	.153 (3.89) .114 (2.90)	1.645 (41.78) 1.635 (41.53)	M34 X 1-6G 0.100R	.200 (5.08)	1.585 (40.26) 1.575 (40.01)
25	J	.390 (9.91)	.153 (3.89) .114 (2.90)	1.770 (44.96) 1.760 (44.70)	M37 X 1-6G 0.100R	.200 (5.08)	1.710 (43.43) 1.700 (43.18)

RJ45 AND USB

SuperNine®

Ruggedized SuperSeal™ RJ45/USB technology assures superior sealing, grounding, and ease-of-assembly when a commercial Ethernet or high-speed USB interface is required

Features

- **Superior sealing—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 in D38999 type**
- **Intermateable, one-to-one equivalent solutions for other industry-standard commercial data interface field-duty connectors**

RJ45/USB SUPER SEAL™

Glenair®

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

SuperNine® RJ45 and USB connectors
Advanced Performance Super Seal connectors
MIL-DTL-38999 Series III type

Glenair®

Product Selection Guide

RJ45

E

SuperNine® RJ45 and USB connectors
Advanced Performance SuperSeal® connectors
MIL-DTL-38999 Series III type

Glenair®

Product Selection Guide

USB

SuperNine® RJ45 and USB connectors

Materials, performance specifications and panel cut-outs

MIL-DTL-38999 Series III type

Material and Finishes:
Shell/coupling – High strength aluminum alloy*
Plating – Cadmium olive drab over electroless nickel; Nickel PTFE; Electroless nickel*
Contacts – PC tails, solder cup, and crimp contacts: Copper alloy, gold plated
RJ45 coupler housing – PPS
Seals – Silicone based elastomer
**Composite, stainless steel and other materials and finishes available. Please consult factory.*

Shell Type and Sizes:
Shell Type – D38999 Series III Type
Sizes – Shell sizes 17 and 19

Electrical Specifications:
Data Rate – 10BASE-T, 100BASE-TX, 1000BASE-T/1000BASE-TX and 10GBASE-T (Cat 6a only)
Current Rating –1.5 Amps, Cat5e and Cat 6a
D.W.V. – 700 VAC (1000 VDC)
Frequency – 100 MHz, Cat 5e • 500 MHz, Cat 6a
Wiring – Straight through, Cat 5e and Cat 6a
Shield Continuity – Continuous through coupler and grounded to shell (Grounding through coupler only available for Cat5e, consult factory)

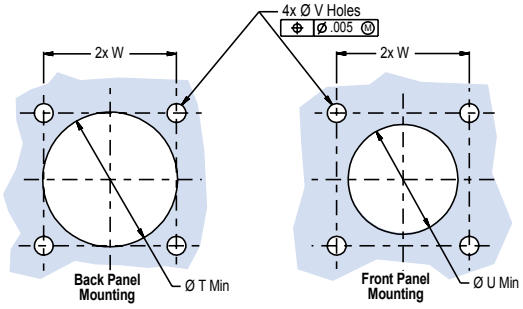
Environmental / Mechanical

Performance
Sealing – IP67 unmated condition, IP68 mated condition
Outgassing – UL94 V0 low smoke, zero halogen
Operating Temperature Range – -40°C to +120°C
Vibration – 20g's, 3 Axis, 10 - 2000 Hz
Mechanical Shock – 300 g's
Backshell Interface – MIL-DTL-38999 connector designator H
Mating Cycles – 500

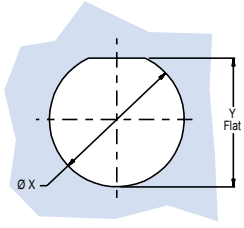
Options:
Metal gland backshell, round mounting holes, self-locking clinch nuts, plug-and-play cordsets, self-closing spring-loaded cover or anti-decoupling covers (receptacle only), integral shrink boot adapter and low-temp shrink boot (plug only).

Panel Cut-Out Dimensions

Shell Size	T Dia Min	U Dia Min	V Holes	W	X Dia	Y Flat
17	1.219 (30.96)	1.016 (25.81)	.133 (3.38) .123 (3.12)	1.062 (26.97)	1.270 (32.26) 1.260 (32.00)	1.210 (30.73) 1.208 (30.68)
19	1.297 (32.94)	1.141 (28.98)		1.156 (29.36)	1.395 (35.43) 1.385 (35.18)	1.335 (33.91) 1.333 (33.86)



Square Flange Mount
Recommended Mounting Holes
Panel Thickness .288 (7.32) Max



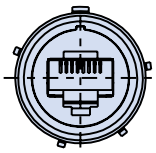
Jam Nut Mount
Recommended Panel Cut-Out
Panel Thickness .126 - .062 (3.2 - 1.6)

Electrical Specifications for RJ45 Cat 5e and Cat 6a MIL-DTL-38999 Series III type

Rating	Cat 5e	Cat 6a
Data Rate	10BASE-T, 100BASE-TX, 1000BASE-T/1000BASE-TX AND 10GBASE-T* (10GBASE-T Cat 6a Only)	
Current Rating	1.5 Amps	1.5 Amps
Frequency	100 MHz	500 MHz
Wiring	Straight Through	Straight Through
Shield Continuity	Continuos Through Coupler and Grounded to the Shell*	Continuos Through Coupler and Grounded to the Shell
Cabling Length	100 Meters	100 Meters

*Grounding through coupler only available for Cat5e. Consult factory

RJ45 Orientation Options (Plug Face)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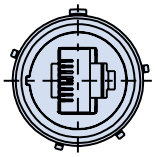
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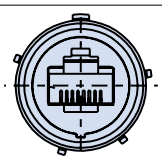
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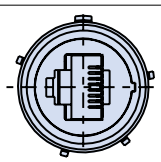

Code 4

E

SuperNine® RJ45 and USB connectors

233-300 RJ45 jack/jack or plug/jack couplers

MIL-DTL-38999 Series III type

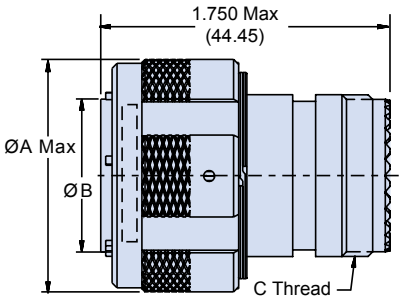
How To Order 233-300									
Sample Part Number	**233-300**	**NF**	**00**	**G**	**17**	**6A**	**N**	**1**	**T**
Series / Basic Part No.	SuperSeal® RJ45 Connector								
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE								
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **01** = Square Flange Receptacle with Metal Cable Gland **07** = Jam Nut Receptacle **05** = In-Line Receptacle **08** = In-Line Receptacle with Metal Cable Gland **G6** = Plug **G7** = Plug with Metal Cable Gland								
Insert-to-Shell Grounding	**G** = Insert grounded to shell (for use with shielded cable)								
Shell Size	**17** or **19**								
Temperature Rating	**5H** = Cat5e, High Temp **6A** = Cat6a, High Temp **5L** = Cat5e, Low Temp								
Alternate Key Position	**A, B, C, D, E, N** = Normal; Per MIL-DTL-38999								
RJ45 Orientation Option	**1, 2, 3, or 4**; see page E-2								
Shrink Boot	**T** = Part No. 770-028 (Omit for None)								

For panel cut-out dimensions, and electrical specifications see page E-3

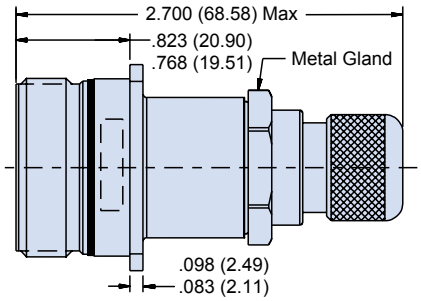
Plug
Front View

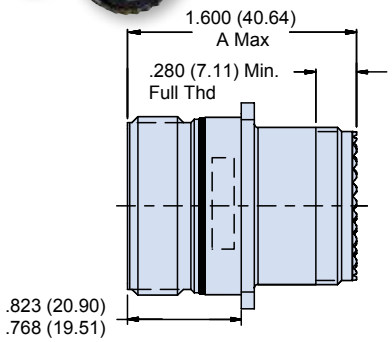
Receptacle
Front View

Receptacle
Rear View



Plug with
Male RJ45 Module

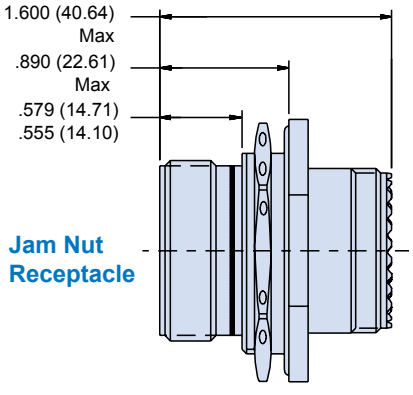




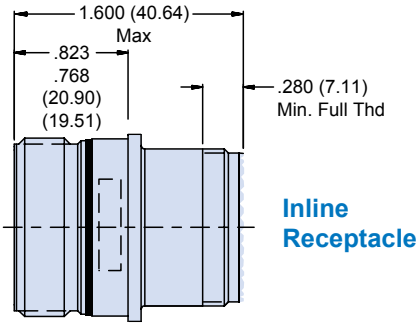
Square Flange Receptacle
with and without cable sealing gland

All External Dimensions, Features, etc.
compliant with D38999/20, /24 & /26.
Consult Factory for Additional Information

Dimensions			
Shell Size	**A Dia Max**	**B Dia**	**C Thread**
17	1.406 (35.71)	.928/.922 23.57/23.42	M25 X 1.0-6g 0.100R
19	1.156 (29.36)	1.033/1.027 26.24/26.09	M25 X 1.0-6g 0.100R



Jam Nut
Receptacle



Inline
Receptacle

SuperNine® RJ45 and USB connectors

233-301 RJ45 jack or plug to rear crimp contact termination

MIL-DTL-38999 Series III type

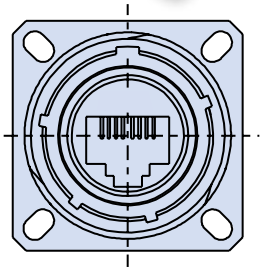
How To Order 233-301								
Sample Part Number	**233-301**	**NF**	**00**	**G**	**17**	**6A**	**N**	**T**
Series / Basic Part No.	SuperSeal® RJ45 Connector							
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE							
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle **05** = In-Line Receptacle **G6** = Plug							
Insert-to-Shell Grounding	**G** = Insert grounded to shell (for use with shielded cable)							
Shell Size	**17** or **19**							
Temperature Rating	**5H** = Cat5e, High Temp **6A** = Cat6a, High Temp **5L** = Cat5e, Low Temp							
Alternate Key Position	**A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999							
Shrink Boot	**T** = Part No. 770-028 (Omit for None)							

For panel cut-out dimensions, and electrical specifications see page E-3

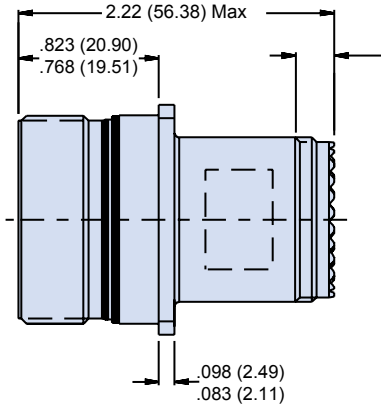
Receptacle Front View

Receptacle Rear View

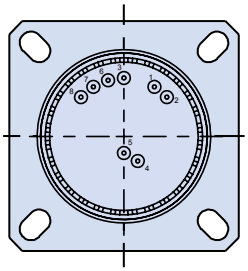
Dimensions			
Shell Size	A Dia Max	B Dia	C Thread
17	1.406 (35.71)	.928/.922 23.57/23.42	M25 X 1.0-6g 0.100R
19	1.156 (29.36)	1.033/1.027 26.24/26.09	M25 X 1.0-6g 0.100R



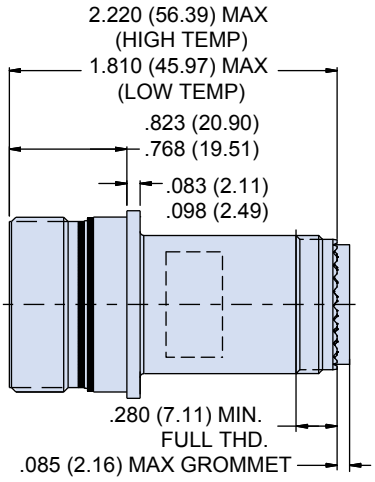
Receptacle Front View



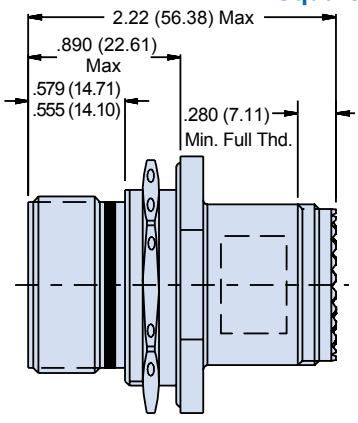
Square Flange Mount Receptacle



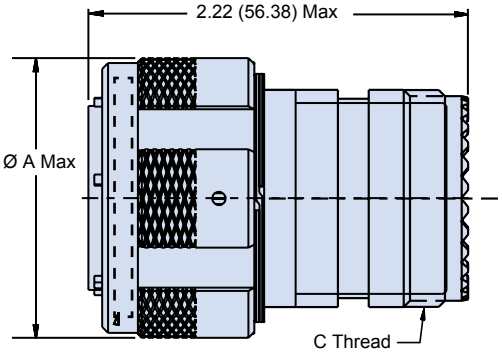
Receptacle Rear View Size #22 Crimp



In-Line Receptacle



Jam Nut Receptacle



Plug Connector

SuperNine® RJ45 and USB connectors

233-302 RJ45 jack to PC tail termination

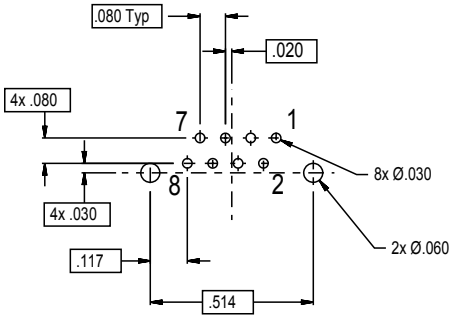
MIL-DTL-38999 Series III type

How To Order 233-302							
Sample Part Number	**233-302**	**NF**	**00**	**G**	**17**	**5L**	**N**
Series / Basic Part No.	SuperSeal® RJ45 Connector						
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE						
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle **05** = In-Line Receptacle **G6** = Plug						
Insert-to-Shell Grounding	**G** = Insert grounded to shell (for use with shielded cable)						
Shell Size	**17** or **19**						
Temperature Rating	**5H** = Cat5e, High Temp **6A** = Cat6a, High Temp **5L** = Cat5e, Low Temp						
Alternate Key Position	**A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999						

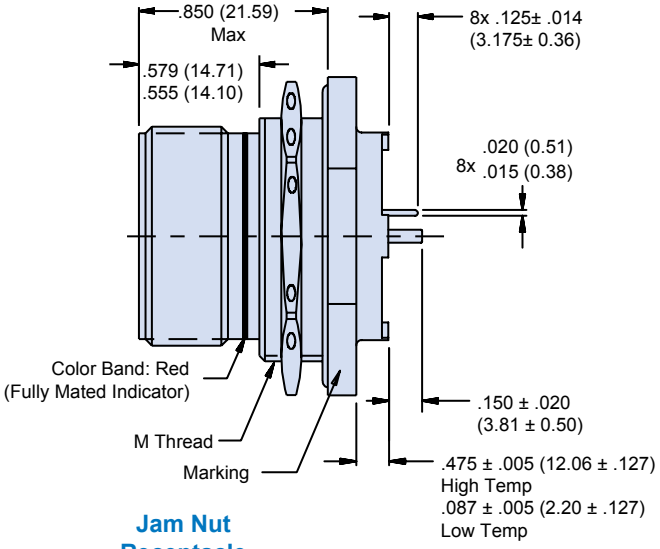
For panel cut-out dimensions, and electrical specifications see page E-3

Receptacle
Front View

Receptacle
Rear View

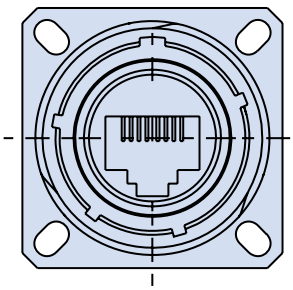


Recommended PCB Layout
(Solder Side Of Board)

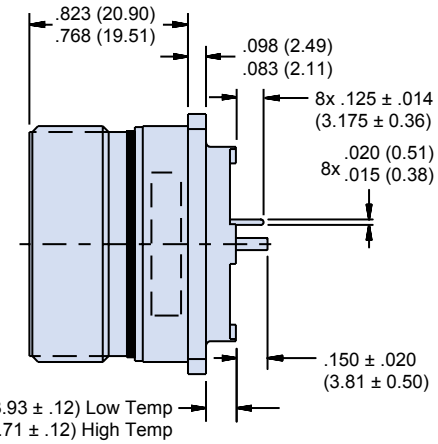


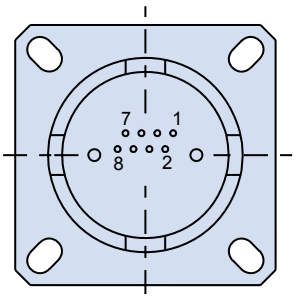
Jam Nut
Receptacle

Square
Flange
Receptacle



Receptacle
Front View





Receptacle
Rear View

SuperNine® RJ45 and USB connectors

233-303 RJ45 jack to solder cup wire termination

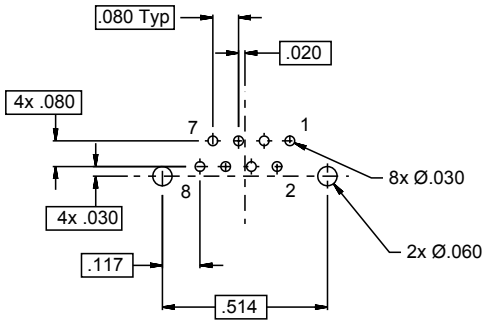
MIL-DTL-38999 Series III type

How To Order 233-303							
Sample Part Number	**233-303**	**NF**	**00**	**G**	**17**	**5L**	**N**
Series / Basic Part No.	SuperSeal® RJ45 Connector						
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE						
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle						
Insert-to-Shell Grounding	**G** = Insert grounded to shell (for use with shielded cable)						
Shell Size	**17** or **19**						
Temperature Rating	**5H** = Cat5e, High Temp **6A** = Cat6a, High Temp **5L** = Cat5e, Low Temp						
Alternate Key Position	**A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999						

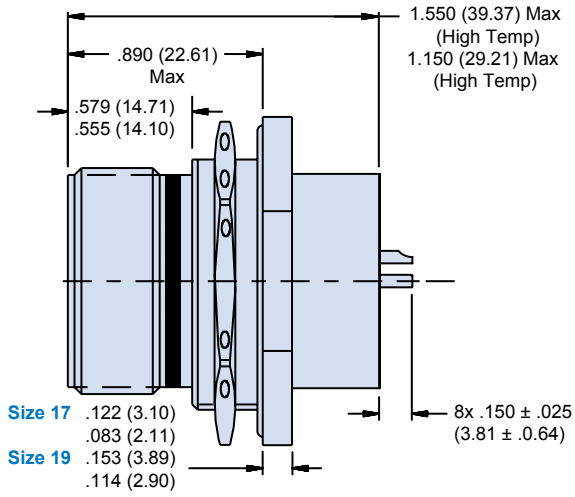
For panel cut-out dimensions and electrical specifications see page E-3

Receptacle Front View

Receptacle Rear View

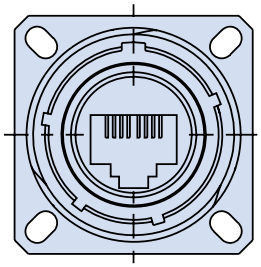


Recommended PCB Layout (Solder Side Of Board)

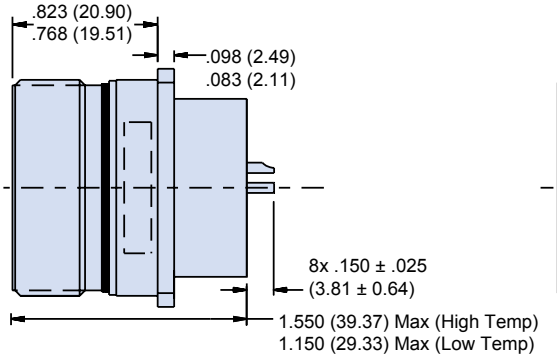


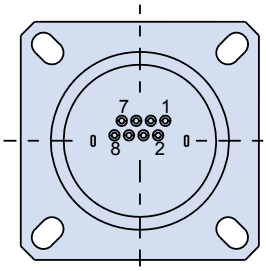
Jam Nut Receptacle

Square Flange Receptacle



Receptacle Front View





Receptacle Rear View

SuperNine® RJ45 and USB connectors

233-304 with pin or socket contacts to RJ45 jack or plug

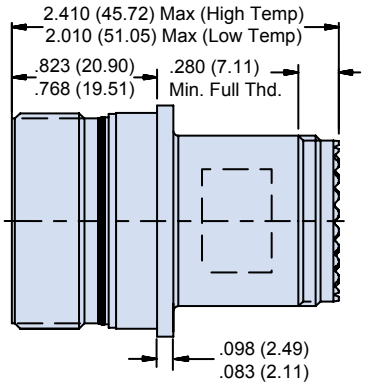
MIL-DTL-38999 Series III type

How To Order 233-304								
Sample Part Number	**233-304**	**NF**	**00**	**17-35**	**P**	**5L**	**N**	**T**
Series / Basic Part No.	SuperSeal® RJ45 Connector							
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE							
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle **05** = In-Line Receptacle **G6** = Plug							
Shell Size - Insert Arr.	**17-35** or **19-35**							
Contact Style	**P** = Pin **S** = Socket							
Temperature Rating	**5H** = Cat5e, High Temp **6A** = Cat6a, High Temp **5L** = Cat5e, Low Temp							
Alternate Key Position	**A, B, C, D, E, N** = Normal; Per MIL-DTL-38999							
Shrink Boot	**T** = Part No. 770-028 (Omit for None)							

Receptacle Front View

Receptacle Rear View

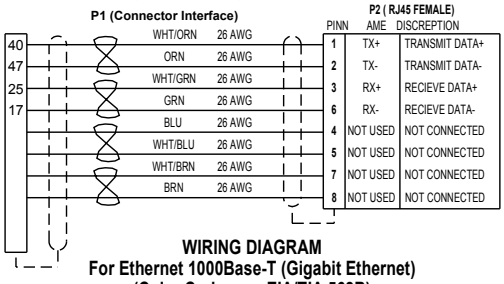
For panel cut-out dimensions and electrical specifications see page E-3



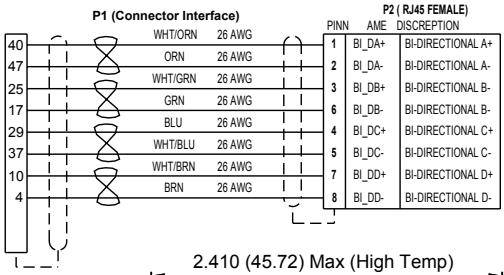
Square Flange Receptacle

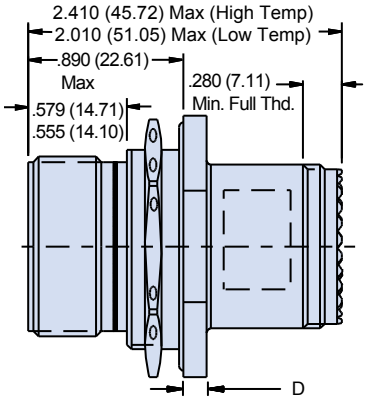
Dimensions				
Shell Size	**A Dia Max**	**B Dia**	**C Thread M25 X 1.0-6g**	**D**
17	1.406 (35.71)	.928/.922 (23.57/23.42)	0.100R	.122 (3.10) .083 (2.11)
19	1.156 (29.36)	1.033/1.027 (26.24/26.09)	0.100R	.153 (3.89) .114 (2.90)

WIRING DIAGRAM
For Ethernet 10Base-T & 100 Base-TX
(Color Codes per EIA/TIA 568B)

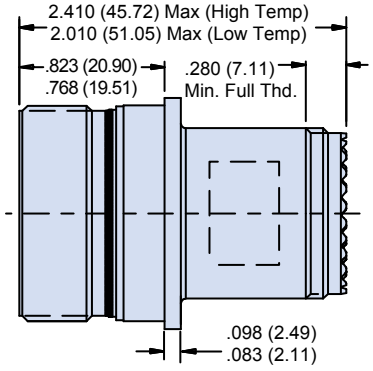


WIRING DIAGRAM
For Ethernet 1000Base-T (Gigabit Ethernet)
(Color Codes per EIA/TIA 568B)

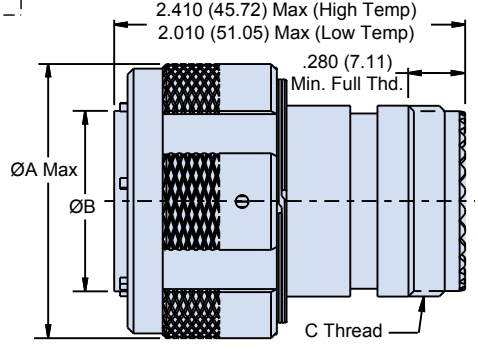




Jam Nut



Inline



Plug

SuperNine® RJ45 and USB connectors

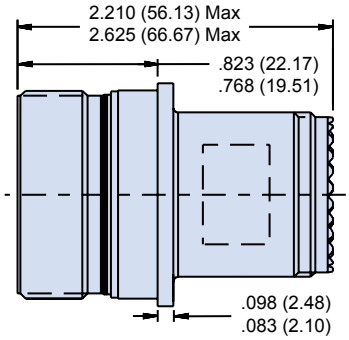
233-305 RJ45 with pin or socket quadrax to RJ45 jack or plug

MIL-DTL-38999 Series III type

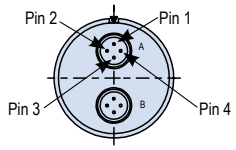
How To Order 233-305									
Sample Part Number	**233-305**	**NF**	**00**	**G**	**17**	**5L**	**P**	**N**	**T**
Series / Basic Part No.	SuperSeal® RJ45 Connector								
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE								
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle **05** = Inline Receptacle **G6** = Plug Connector								
Insert-to-Shell Grounding	**G** = Insert grounded to shell (for use with shielded cable)								
Shell Size	**17** or **19**								
Temperature Rating	**5H** = Cat5e, High Temp **6A** = Cat6a, High Temp **5L** = Cat5e, Low Temp								
Contact Style	**P** = Pin **S** = Socket								
Alternate Key Position	**A, B, C, D, E, N** = Normal; Per MIL-DTL-38999								
Shrink Boot	**T** = Pat No. 770-028 (Omit for None)								

Receptacle Rear View

Receptacle Front View



Square Flange

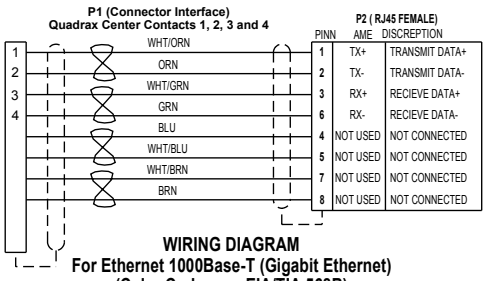


Quadrax Pin Locations

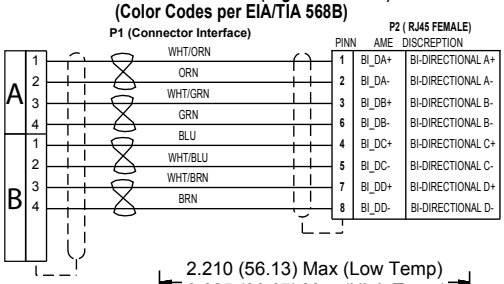
Dimensions				
Shell Size	**A Dia Max**	**B Dia**	**C Thread** M25 X 1.0-6g	**D**
17	1.406 (35.71)	.928/.922 (23.57/23.42)	0.100R	.122 (3.10) .083 (2.11)
19	1.156 (29.36)	1.033/1.027 (26.24/26.09)	0.100R	.153 (3.89) .114 (2.90)

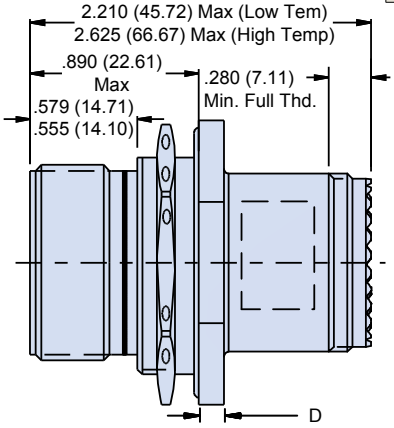
For panel cut-out dimensions and electrical specifications see page E-3

WIRING DIAGRAM
For Ethernet 10Base-T & 100 Base-TX
(Color Codes per EIA/TIA 568B)

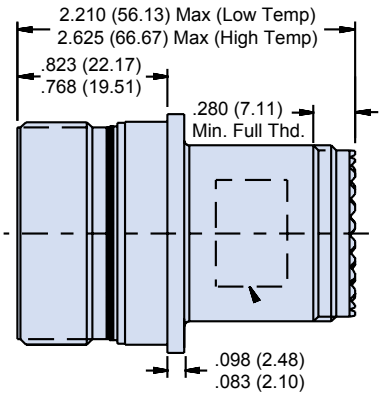


WIRING DIAGRAM
For Ethernet 1000Base-T (Gigabit Ethernet)
(Color Codes per EIA/TIA 568B)

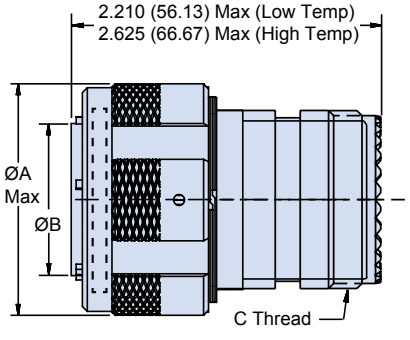




Jam Nut



Inline



Plug

SuperNine® RJ45 and USB connectors

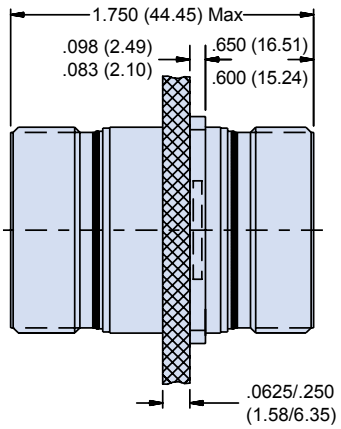
233-330 bulkhead feedthrough with back-to-back RJ45 jacks

MIL-DTL-38999 Series III type

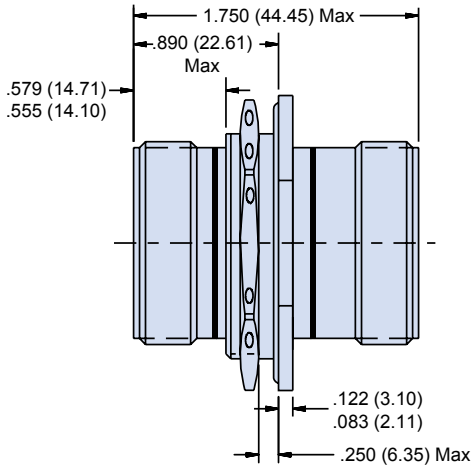
How To Order 233-330							
Sample Part Number	**233-330**	**NF**	**00**	**-17**	**5H**	**N**	**1**
Series / Basic Part No.	SuperSeal® RJ45 Connector						
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE						
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle						
Shell Size	**17**						
Temperature Rating	**5H** = Cat5e, High Temp **6A** = Cat6a, High Temp **5L** = Cat5e, Low Temp						
Alternate Key Position	**A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999						
RJ45 Orientation Options	**1**, **2**, **3**, or **4**						

For panel cut-out dimensions, electrical specifications and RJ45 Orientation Options see page E-3

Bulk Head Feedthrough



Square Flange Mount Receptacle Feed Through Connector



Jam Nut Mount Receptacle Feed Through Connector

SuperNine® RJ45 and USB connectors
Materials, performance specifications and PCB layout
MIL-DTL-38999 Series III type

Material and Finishes:
Shell/coupling – High strength aluminum alloy
Plating – Cadmium olive drab over electroless nickel; Nickel PTFE; Electroless nickel*
Contacts – PC tails, solder cup, and crimp contacts: Copper alloy, gold plated
Contacts – USB 2.0 Type A
Seals – Silicon-based elastomer
USB
Dielectric: Hi-temp thermoplastic UL94V-0, white
Housing: UL94V-0 compliant PPS, black
**Composite, stainless steel and other materials and finishes available. Please consult factory.*

Shell Type and Sizes:
Shell Type – D38999 Series III Type
Sizes – Shell sizes 15 and 17

Electrical Specifications:
Data Rate – 480 Mbps USB 2.0 Type A
Signal Method – Pulling 2.0 USB Type A, Synchronous
Power Usage – 500 mAmps USB 2.0 Type A
Current Rating –1.5 Amps, USB 2.0 Type A
D.W.V. – 500 VAC USB 2.0 Type A
Frequency – 1000 MegOhms USB 2.0 Type A
Wiring – Straight through
Cabling Length – 5.0 Meters USB 2.0 Type A
Shield Continuity – Continuous through coupler and grounded to shell, full shielding.

Environmental / Mechanical Performance:
Sealing – IP68 mated condition
Outgassing – UL94 V0 low smoke, zero halogen
Operating Temperature Range – -40°C to +120°C
Vibration – 20g's, 3 Axis, 10 - 2000 Hz
Mechanical Shock – 300 g's
Backshell Interface – MIL-DTL-38999 connector designator H
Mating Cycles – 500

Options:
Round mounting holes, self-locking clinch nuts, plug-and-play cordsets, self-closing spring-loaded cover or anti-decoupling covers (receptacle only), integral shrink boot adapter and low-temp shrink boot (plug only).

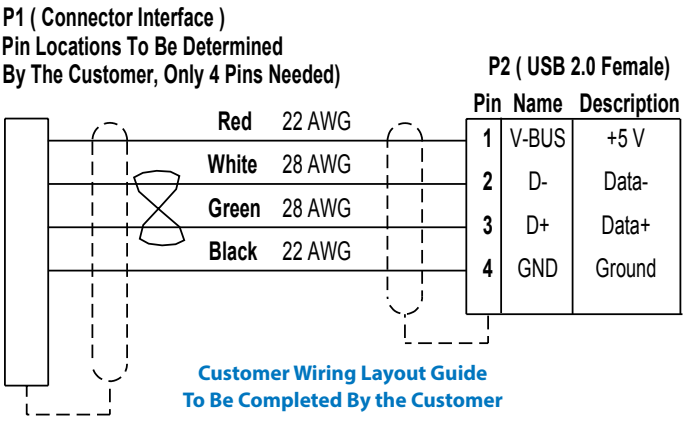
**All External Dimensions, Features, etc.
Compliant with D38999/20, /24 & /26
Consult Factory for Additional Information**

E

SuperNine® RJ45 and USB connectors

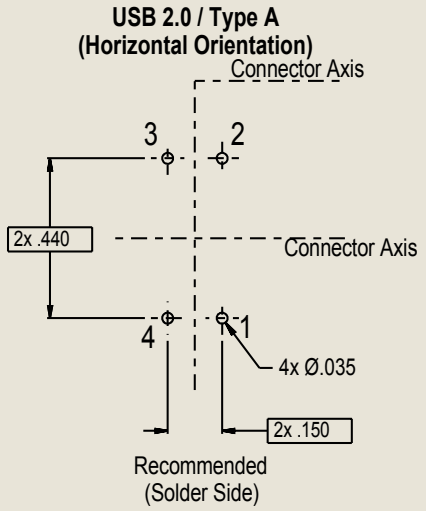
Ruggedized USB 2.0 connectors

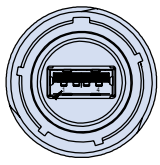
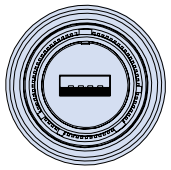
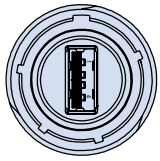
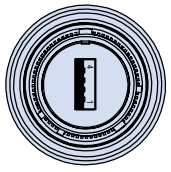
Wiring guides, USB orientation and recommended mounting holes

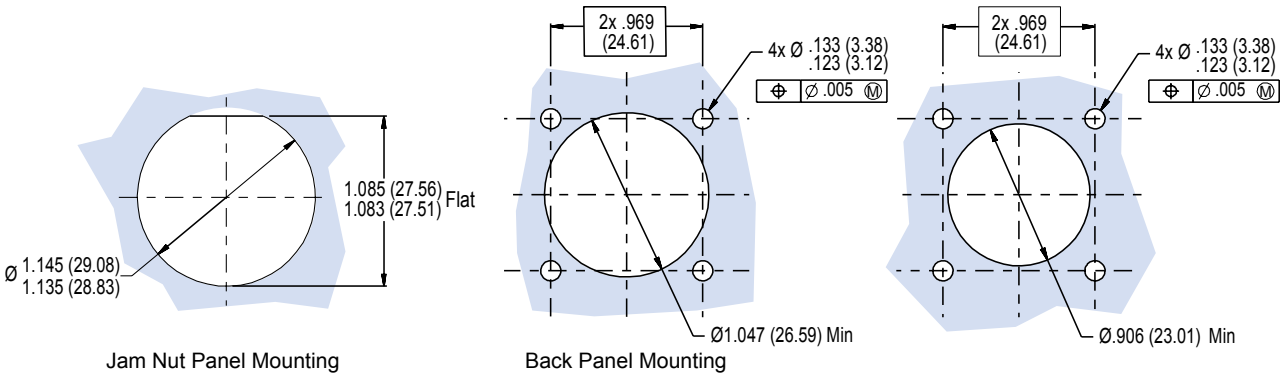


USB 2.0 Wiring				
Pin	Name	Cable Color (USB)	Description	Recommended Wire Sizes (AWG)
1	(V BUS)	Red	+5 V	22
2	(D-)	White	Data -	28
3	(D+)	Green	Data +	28
4	(GND)	Black	Ground	22

RECOMMENDED PCB LAYOUT



USB Orientation Options (Partial Views Shown)	
Receptacle	Plug
	
Horizontal	Horizontal
	
Vertical	Vertical



Recommended Mounting Holes For Wall Mount Receptacles

SuperNine® RJ45 and USB connectors

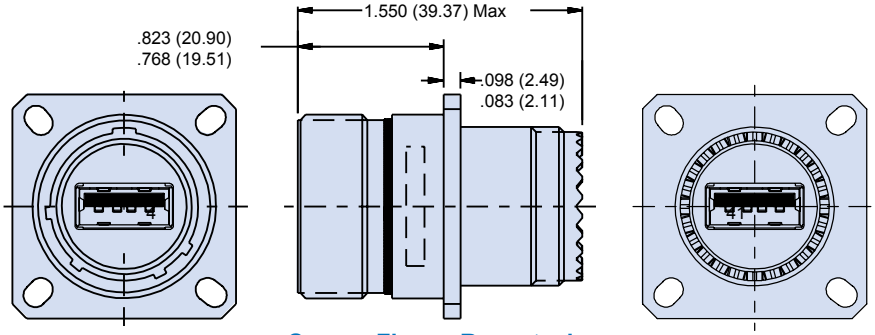
233-340 USB to USB connectos

MIL-DTL-38999 Series III type

How To Order 233-340										
Sample Part Number	**233-340**	**NF**	**00**	**-15**	**2**	**A**	**A**	**N**	**H**	**T**
Series / Basic Part No.	SuperSeal® USB 2.0 Connector									
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE									
Connector Style*	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle **G6** = Plug									
Shell Size	**15**									
USB Performance	**2** = USB Performance 2.0									
USB Back Interface	**A** = USB Type A Interface									
USB Front Interface	**A** = USB Type A Interface									
Alternate Key Position	**A, B, C, D, E, N** = Normal; Per MIL-DTL-38999									
USB Orientation*	**H** = Horizontal **V** = Vertical									
Shrink Boot	**T** = Shrink Boot Part No. 770-028 (Omit for None)									

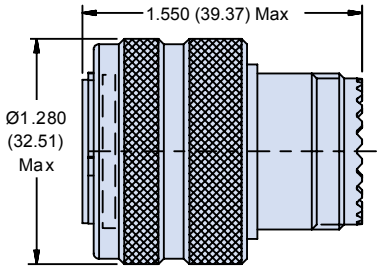
*For panel cut-out dimensions, electrical specifications and RJ45 Orientation Options see page E-11

Square Flange Receptacle Front View

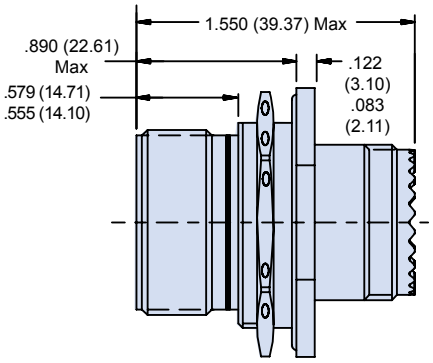


Square Flange Receptacle

Jam Nut Receptacle Front View



Plug



Jam Nut

Plug Front View

NOTES

1. All external dimensions, features, etc. compliant with D38999/20, /24 & /26.
2. Consult factory for additional information
3. Size 17 shells also available. Consult factory, refer to P/N 233-360.
4. Consult factory for additional information

SuperNine® RJ45 and USB connectors

233-341 type A receptacle to size 22D crimp contacts

MIL-DTL-38999 Series III type

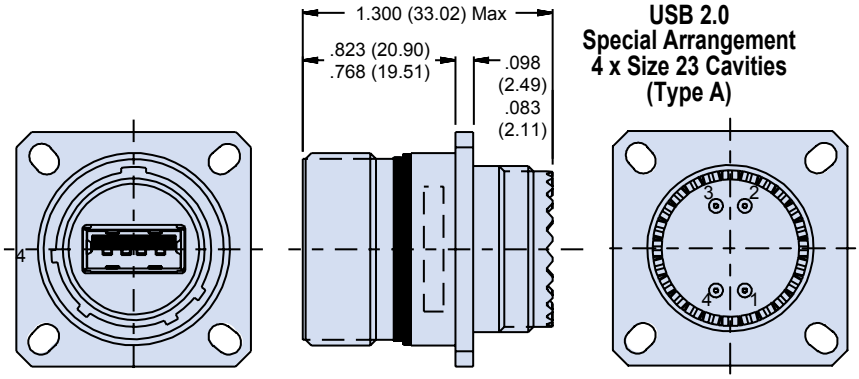
How To Order 233-341									
Sample Part Number	**233-341**	**NF**	**00**	**-15**	**2**	**A**	**N**	**H**	**T**
Series / Basic Part No.	SuperSeal® USB 2.0 Connector								
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE								
Connector Style*	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle **G6** = Plug								
Shell Size	**15**								
USB Performance	**2** = USB Performance 2.0								
USB Front Interface	**A** = USB Type A Interface								
Alternate Key Position	**A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999								
USB Orientation*	**H** = Horizontal **V** = Vertical								
Shrink Boot	**T** = Shrink Boot Part No. 770-028 (Omit for None)								

* For panel cut-out dimensions, electrical specifications and RJ45 Orientation Options see page E-11

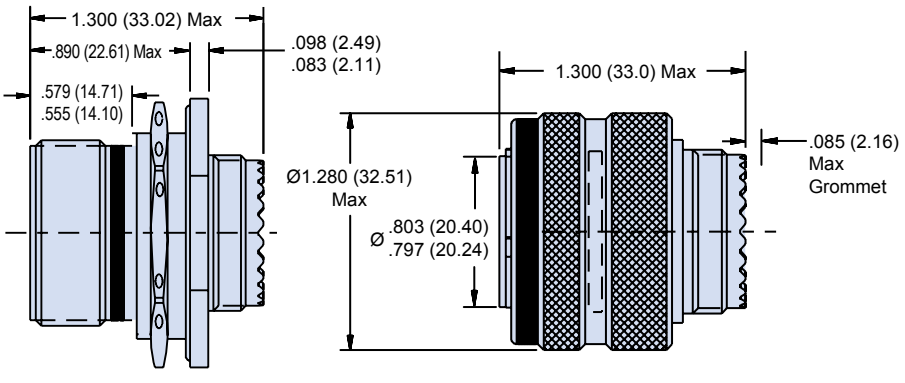
Square Flange Receptacle
Rear View

Jam Nut Receptacle
Front View

Plug
Front View



Square Flange Receptacle



Jam Nut **Plug**

NOTES

1. All External dimensions, features, etc. compliant with D38999/20, /24 & /26.
2. Consult Factory for Additional Information

SuperNine® RJ45 and USB connectors

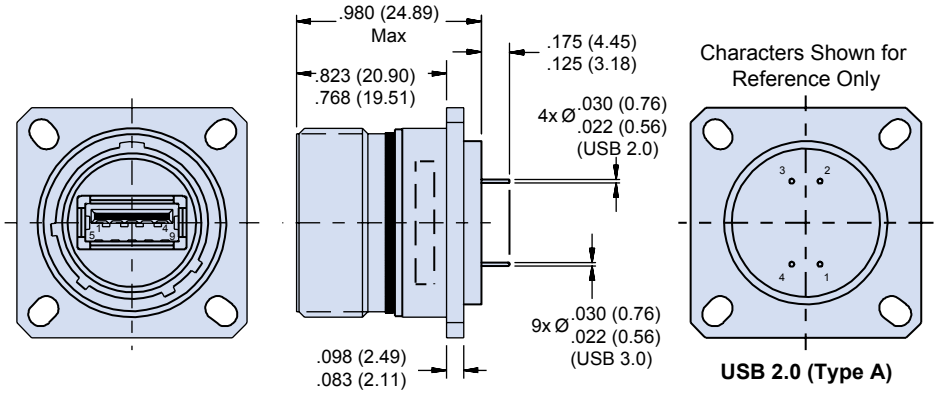
233-342 type A receptacle to PC tail termination

MIL-DTL-38999 Series III type

How To Order 233-342								
Sample Part Number	**233-342**	**NF**	**00**	**-15**	**2**	**A**	**N**	**H**
Series / Basic Part No.	SuperSeal® USB 2.0 Connector							
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE							
Connector Style*	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle							
Shell Size	**15**							
USB Performance	**2** = USB Performance 2.0							
USB Front Interface	**A** = USB Type A Interface							
Alternate Key Position	**A, B, C, D, E, N** = Normal; Per MIL-DTL-38999							
USB Orientation*	**H** = Horizontal **V** = Vertical							

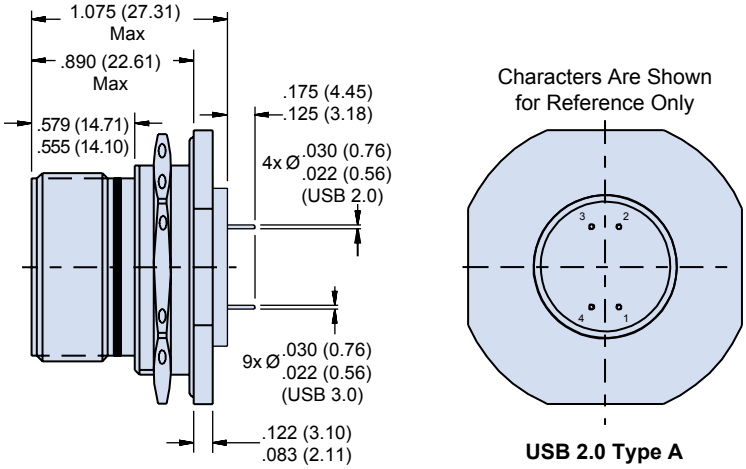
* For panel cut-out dimensions, PCB layout electrical specifications and RJ45 orientation options see page E-3

Jam Nut Receptacle Front View



Square Flange Receptacle

Square Flange Receptacle Rear View



Jam Nut

NOTES

1. All external dimensions,
2. features, etc. compliant with
3. D38999/20, /24 & /26.
4. Consult factory for additional information

SuperNine® RJ45 and USB connectors

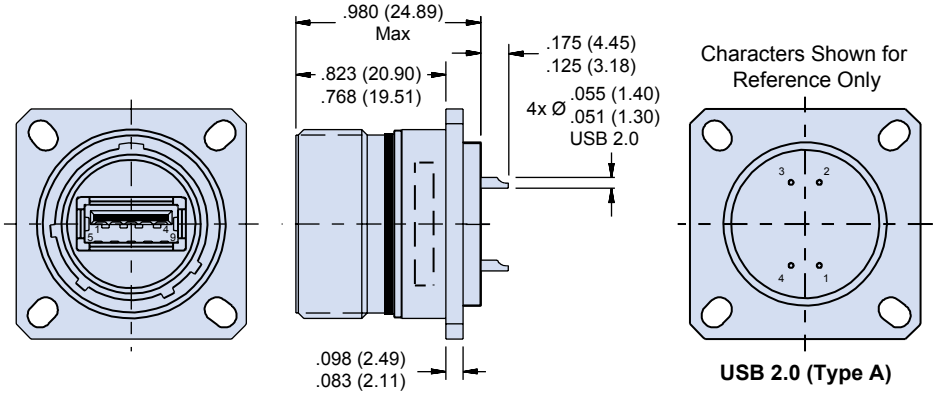
233-343 type A receptacle to solder cup termination

MIL-DTL-38999 Series III type

How To Order 233-343								
Sample Part Number	**233-343**	**NF**	**00**	**-15**	**2**	**A**	**N**	**H**
Series / Basic Part No.	SuperSeal® USB 2.0 Connector							
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE							
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle							
Shell Size	**15**							
USB Performance	**2** = USB Performance 2.0							
USB Front Interface	**A** = USB Type A Interface							
Alternate Key Position	**A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999							
USB Orientation	**H** = Horizontal **V** = Vertical							

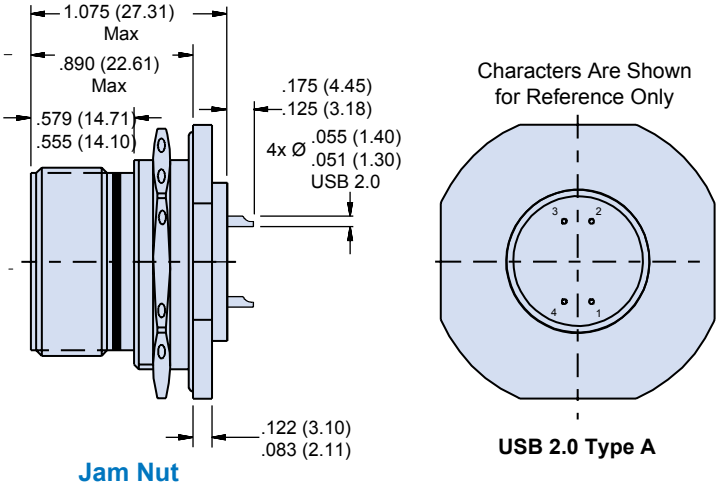
* For panel cut-out dimensions, electrical specifications and RJ45 Orientation Options see page E-11

Jam Nut Receptacle Front View



Square Flange Receptacle

Jam Nut Receptacle Rear View



Jam Nut

NOTES

1. All external dimensions, features, etc. compliant with D38999/20, /24 & /26.
2. Consult factory for additional information

SuperNine® RJ45 and USB connectors

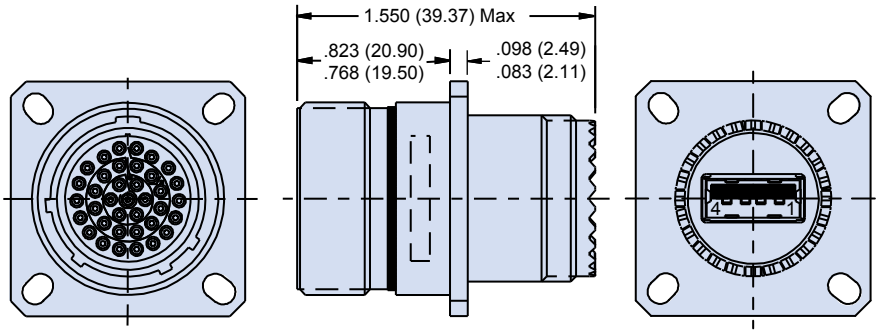
233-344 size 22 pin or socket contacts to type A receptacle

MIL-DTL-38999 Series III type

How To Order 233-344									
Sample Part Number	**233-344**	**NF**	**00**	**-15**	**35**	**2**	**A**	**P**	**N**
Series / Basic Part No.	SuperSeal® USB 2.0 Connector								
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE								
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle **G6** = Plug								
Shell Size	**15**								
Insert Arrangement	**35** = IAW MIL-STD-1560								
USB Performance	**2** = USB Performance 2.0								
USB Rear Interface	**A** = USB Type A Interface								
Contact Stlyle	**P** = Pin **S** = Socket								
Alternate Key Position	**A, B, C, D, E, N** = Normal; Per MIL-DTL-38999								

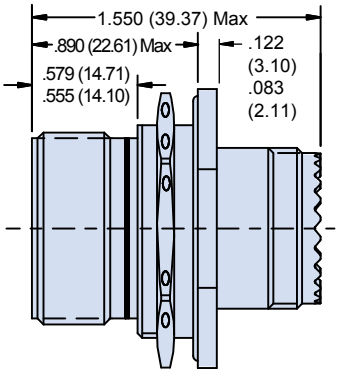
* For panel cut-out dimensions, PCB Layout, electrical specifications and RJ45 Orientation Options see page E-11

Receptacle Front View

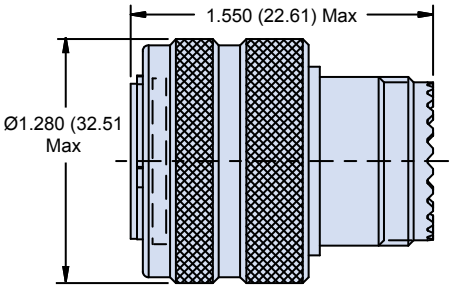


Square Flange Receptacle

Plug Front View



Jam Nut



Plug

NOTES

1. All external dimensions, features, etc. compliant with D38999/20, /24 & /26.
2. Consult factory for additional information.
3. Size 17 shells also available. Consult factory, refer to P/N 233-361

SuperNine® RJ45 and USB connectors

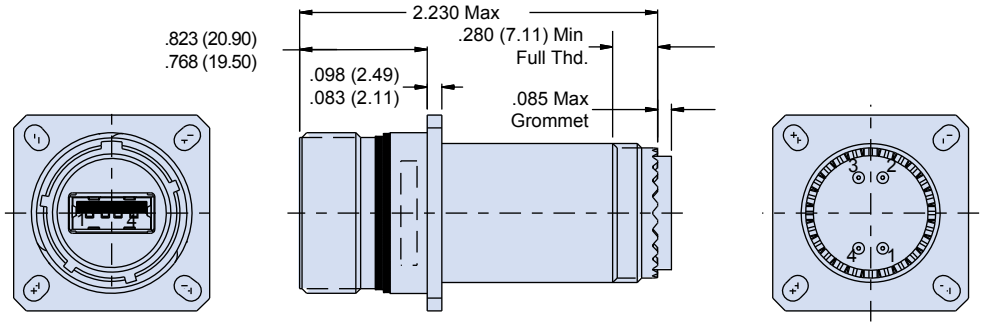
233-345 Hi-temp crimp removable contacts to USB type A

MIL-DTL-38999 Series III type

How To Order 233-345									
Sample Part Number	**233-345**	**NF**	**00**	**15**	**2**	**A**	**N**	**H**	**T**
Series / Basic Part No.	SuperSeal® USB 2.0 Connector								
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE								
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle **G6** = Plug								
Shell Size	**15**								
USB Performance	**2** = USB Performance 2.0								
USB Rear Interface	**A** = USB Type A Interface								
Alternate Key Position	**A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999								
USB Orientation	**H** = Horizontal **V** = Vertical								
Shrink Boot	**T** = Shrink Boot Part No. 770-028 (Omit for None)								

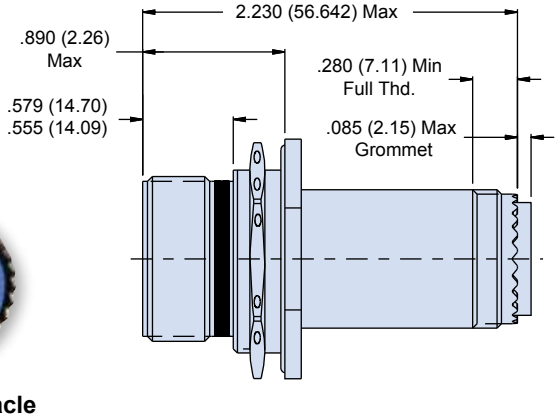
For panel cut-out dimensions, electrical specifications and RJ45 Orientation Options see page E-3

Square Flange Receptacle Front View

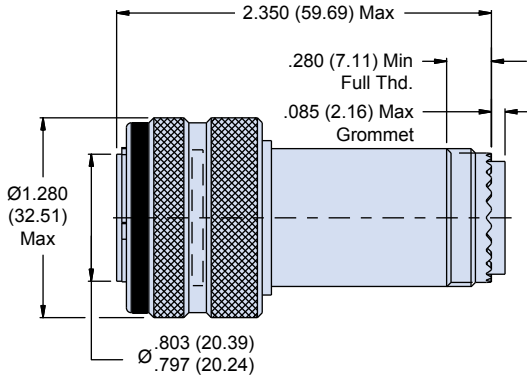


Square Flange Receptacle

Square Flange Receptacle Back View



Jam Nut



Plug

NOTES

1. All external dimensions, features, etc. compliant with D38999/20, /24 & /26.
2. Consult factory for additional information.

SuperNine® RJ45 and USB connectors

233-370 Size 17 jam nut or square flange receptacle

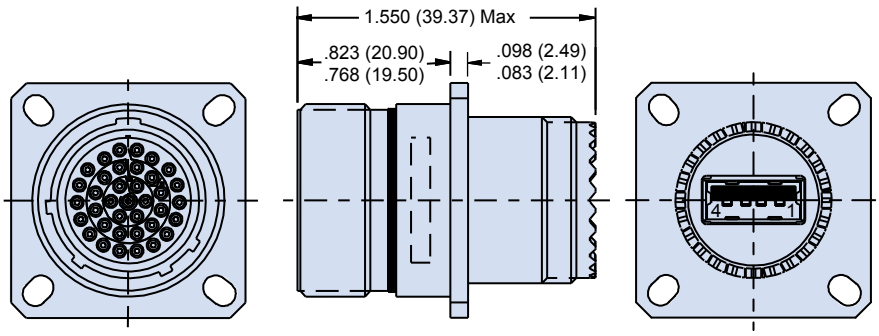
MIL-DTL-38999 Series III type

How To Order 233-370										
Sample Part Number	**233-370**	**NF**	**00**	**-17**	**2**	**A**	**A**	**N**	**H**	**T**
Series / Basic Part No.	SuperSeal® USB 2.0 Connector									
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE									
Connector Style	**00** = Square Flange Receptacle with Slotted Holes **07** = Jam Nut Receptacle									
Shell Size	**17**									
USB Performance	**2** = USB Performance 2.0									
USB Front Interface	**A** = USB Type A Interface									
USB Back Interface	**A** = USB Type A Interface									
Alternate Key Position	**A**, **B**, **C**, **D**, **E**, **N** = Normal; Per MIL-DTL-38999									
USB Orientation	**H** = Horizontal **V** = Vertical									
Shrink Boot	**T** = Shrink Boot Part No. 770-028 (Omit for None)									

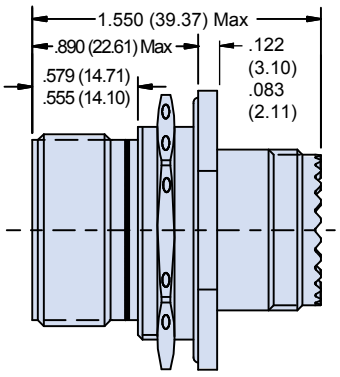
For panel cut-out dimensions, electrical specifications and RJ45 Orientation Options see page E-3

Square Flange Receptacle
Front View

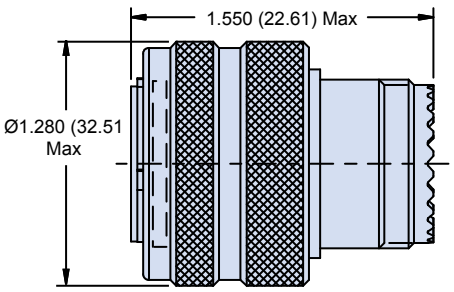
Jam Nut Receptacle
Front View



Square Flange Receptacle



Jam Nut



Plug

NOTES

1. All external dimensions, features, etc. compliant with D38999/20, /24 & /26.
2. Consult factory for additional information.
3. For wiring guides, PCB layout, USB orientation and recommended mounting holes for wall mount receptacles see page E-11

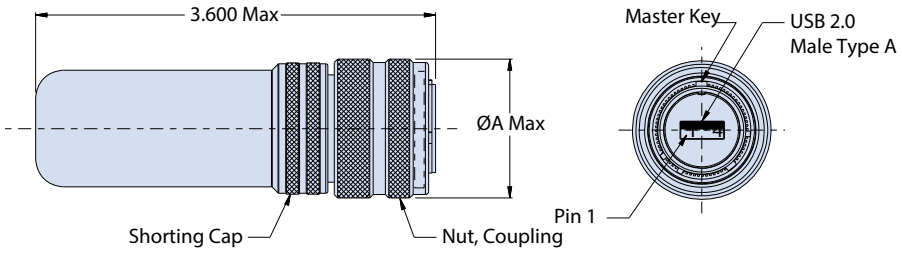
SuperNine® RJ45 and USB connectors

233-390 USB 2.0 memory stick

MIL-DTL-38999 Series III type

How To Order 233-390							
Sample Part Number	**233-390**	**NF**	**32**	**-15**	**N**	**H**	**P**
Series / Basic Part No.	SuperSeal® USB 2.0 Connector						
Finish	**NF** = Cadmium Olive Drab **ME** = Electroless Nickel **MT** = Nickel PTFE						
Storage Capacity Options	**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)						

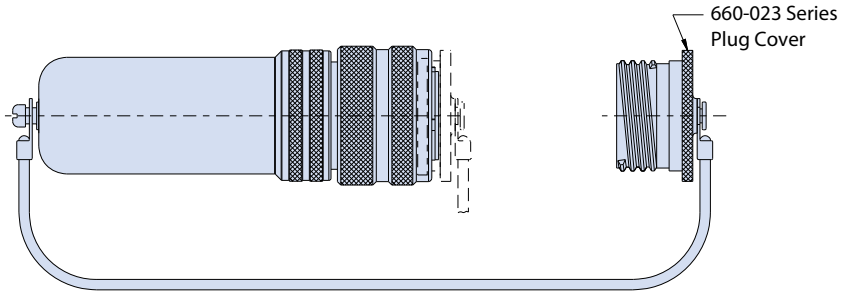
For panel cut-out dimensions, electrical specifications and RJ45 Orientation Options see page E-3



View shown with Protective Cap

Table I: 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

1. This connector is designed to mate with Glenair part numbers 233-340,-341,-342,-343 &-345.
2. USB flash memory specifications: Storage capacity - 8 Gb, 16 Gb, 32 Gb (consult factory for other capacity options)
3. System requirements - Windows 2000, XP, Vista, Windows 7.
4. Compatibility - plug and play; USB 2.0 Compliance.
5. Interface - USB 2.0, Type A male.
6. Data transfer rates - USB 2.0: Up to 25 Mb/sec read, 10Mb/sec write.
7. Password protection and AES encryption.
8. Environmental parameters: Operating temperatures - 0°C to 70°C or -40°C to 85°C (see part number development)
9. Storage temperatures - -40°C to 85°C
10. Humidity range operating - 10% to 95%

MATERIAL/FINISHES:

Barrel, coupling nut - see table I
Insulators-high grade rigid dielectric/N.A.
Seal: fluorosilicone/N.A.
EMI grounding spring-BeCu /electroless nickel plate.
Hardware: stainless steel/passivated

SuperNine® Filter connectors

Advanced performance filter connectors

MIL-DTL-38999 Series III type

Product Selection Guide

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SuperNine® Filter connectors

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.

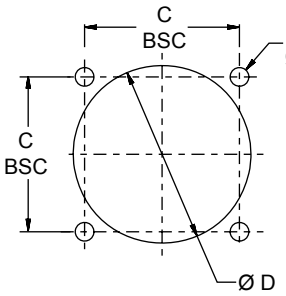
Operating Temperature:

- -55°C to +125°C

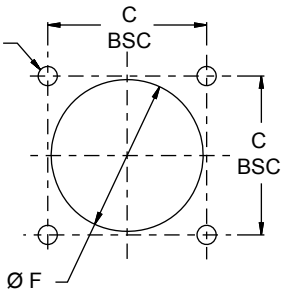
Materials/Finishes:

- 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

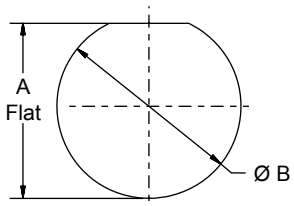
PANEL CUT-OUT DIMENSIONS



Square Flange Rear Panel Mount



Square Flange Front Panel Mount



Jam Nut

Square Flange Panel Cut-Outs MIL-DTL-38999 Series III				
Shell Size	Ø A Min Back Panel	Ø B Min Front Panel	Ø C Holes	D BSC
9	.656 (16.7)	.516 (13.1)	.133 (3.4) .123 (3.1)	.719 (18.3)
11	.796 (20.2)	.625 (15.9)		.812 (20.6)
13	.922 (23.4)	.750 (19.1)		.906 (23.0)
15	1.047 (26.6)	.906 (23.0)		.969 (24.6)
17	1.219 (31.0)	1.016 (25.8)		1.062 (27.0)
19	1.297 (32.9)	1.141 (29.0)		1.156 (29.4)
21	1.422 (36.1)	1.266 (32.2)		1.250 (31.8)
23	1.547 (39.3)	1.375 (34.9)	.159 (4.0) .149 (3.8)	1.375 (34.9)
25	1.672 (42.5)	1.484 (37.7)	.155 (3.9) .145 (3.7)	1.500 (38.1)

Jam Nut Panel Cut-Out MIL-DTL-38999 Series III		
Shell Size	Ø E	F Flat
9	.710 (18.0) .700 (17.8)	.670 (17.0) .660 (16.8)
11	.835 (21.2) .825 (21.0)	.771 (19.6) .761 (19.3)
13	1.020 (25.9) 1.010 (25.7)	.955 (24.3) .945 (24.0)
15	1.145 (29.1) 1.135 (28.8)	1.085 (27.6) 1.075 (27.3)
17	1.270 (32.3) 1.260 (32.0)	1.210 (30.7) 1.200 (30.5)
19	1.395 (35.4) 1.385 (35.2)	1.335 (33.9) 1.325 (33.7)
21	1.520 (38.6) 1.510 (38.4)	1.460 (37.1) 1.450 (36.8)
23	1.645 (41.8) 1.635 (41.5)	1.585 (40.3) 1.575 (40.0)
25	1.770 (45.0) 1.760 (44.7)	1.710 (43.4) 1.700 (43.2)

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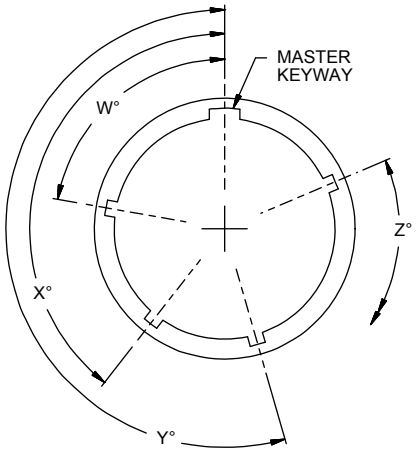
SuperNine® Filter connectors

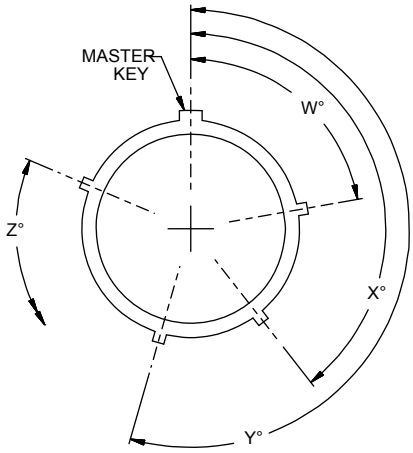
Alternate keying positions

MIL-DTL-38999 Series III type

RECEPTACLE



PLUG



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°
	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°

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SuperNine® Filter connectors

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)

SuperNine® Filter connectors
Compliance Matrix
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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)
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.

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.

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.

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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)

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)

SuperNine® Filter connectors

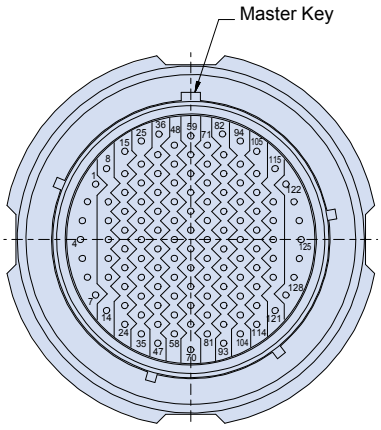
240-383P Plug connector with solder cup contacts

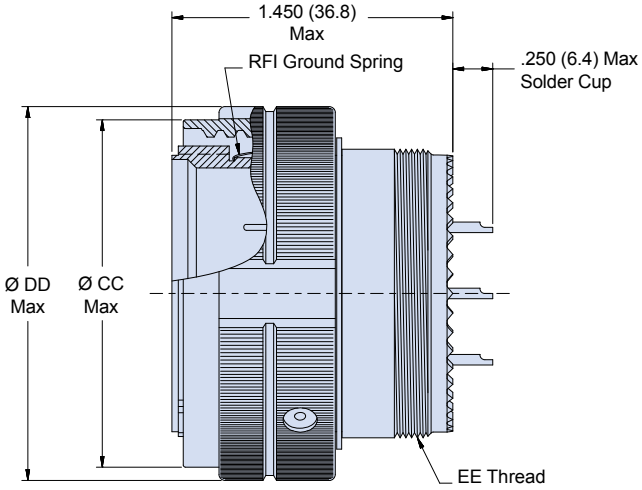
MIL-DTL-38999 Series III type

D38999 SERIES III TYPE PLUG

How To Order										
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





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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.

SuperNine® Filter connectors

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.

SuperNine® Filter connectors

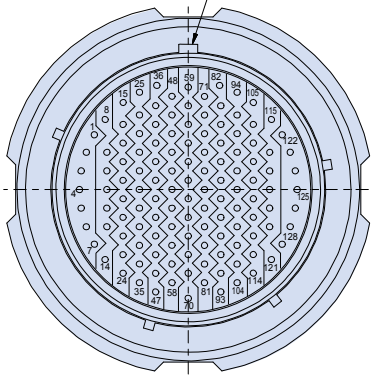
240-383Q Plug connector with crimp removable contacts

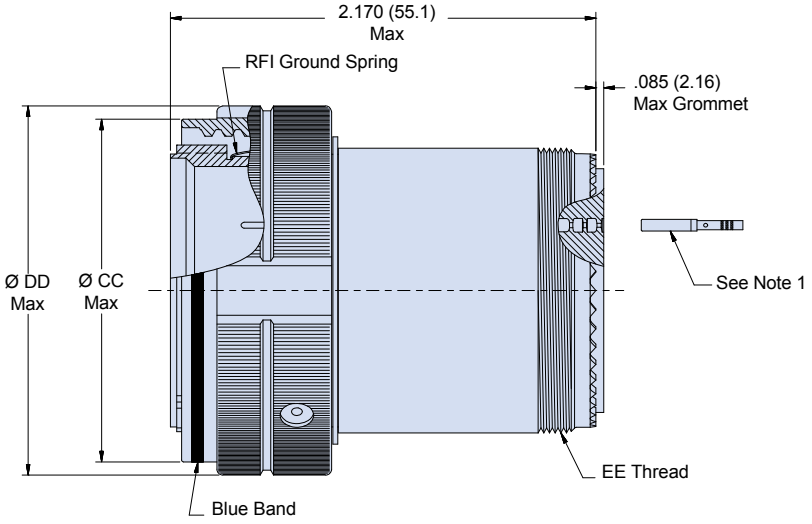
MIL-DTL-38999 Series III type

D38999 SERIES III TYPE PLUG WITH CRIMP REMOVABLE CONTACTS

How To Order										
Sample Part Number	**240-383**	**Q**	**ME**	**15-35**	**P**	**C**	**P**	**A**	**N**	**N**
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.

SuperNine® Filter connectors

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**	**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.

SuperNine® Filter connectors

240-383W Wall mount receptacle connector

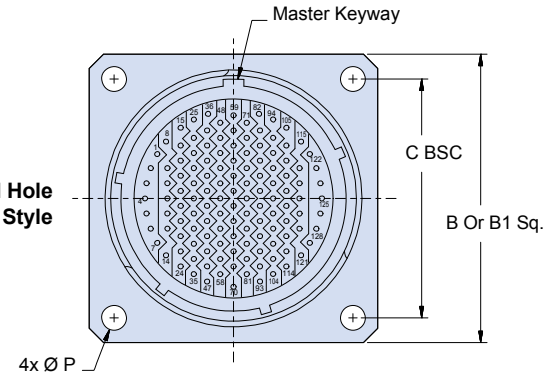
MIL-DTL-38999 Series III type

D38999 SERIES III TYPE WALL MOUNT RECEPTACLE WITH SOLDER CUP OR PC TAIL TERMINATION

How To Order										
Sample Part Number	**240-383**	**W**	**ME**	**15-35**	**P**	**S**	**P**	**A**	**C**	**N**
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

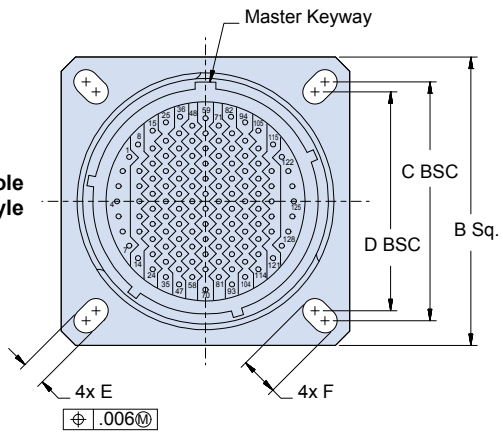
Round Hole Flange Mounting Style

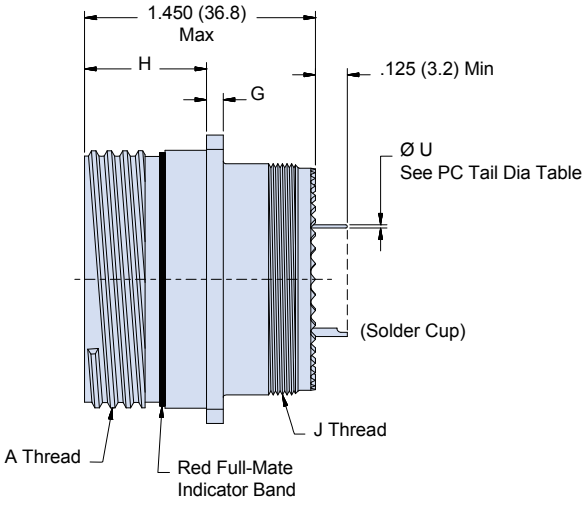


NOTES

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.

Slotted Hole Flange Mounting Style





SuperNine® Filter connectors

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)

F

SuperNine® Filter connectors

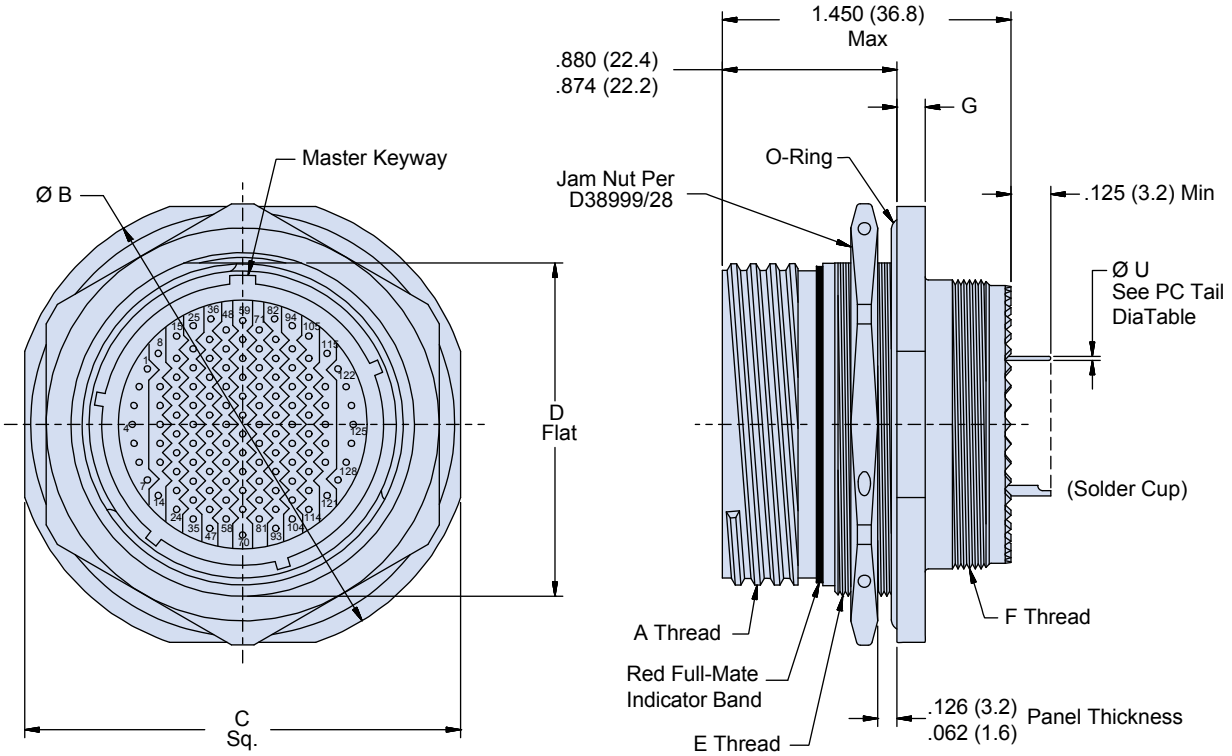
240-383J Jam nut receptacle connector

MIL-DTL-38999 Series III type

D38999 SERIES III TYPE JAM NUT RECEPTACLE WITH SOLDER CUP OR PC TAIL TERMINATION

How To Order										
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



NOTES

1. Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.

SuperNine® 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.

SuperNine® Filter connectors

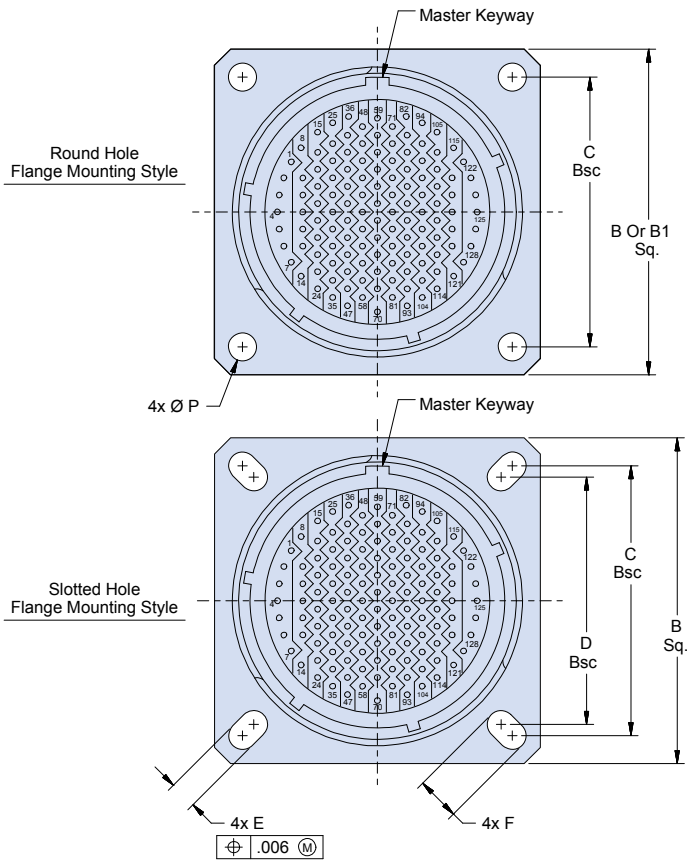
240-383R Wall mount receptacle with crimp contacts

MIL-DTL-38999 Series III type

D38999 SERIES III TYPE WALL MOUNT RECEPTACLE WITH CRIMP REMOVABLE CONTACTS

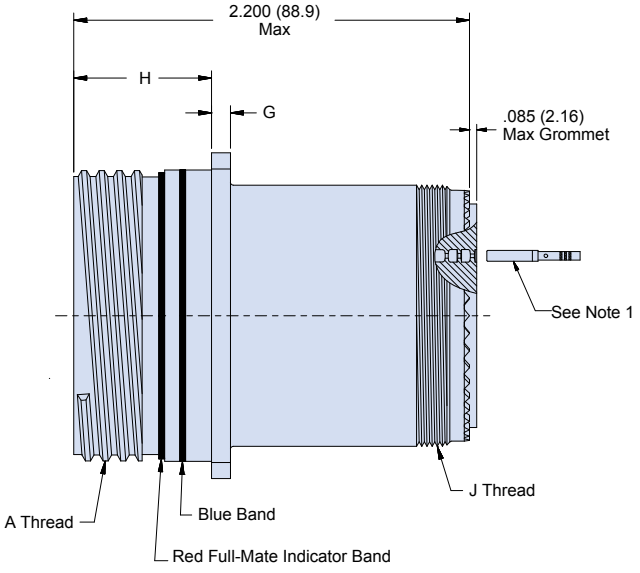
How To Order										
Sample Part Number	**240-383**	**R**	**ME**	**15-35**	**P**	**C**	**P**	**A**	**C**	**N**
Filter Connector	MIL-DTL-38999 Series III Type									
Shell Style	**R** = Wall Mount with Crimp Contacts									
Connector Class	See Connector Class Table									
Insert Arrangement*	IAW 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



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.



F

SuperNine® Filter connectors

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.

F

SuperNine® Filter connectors

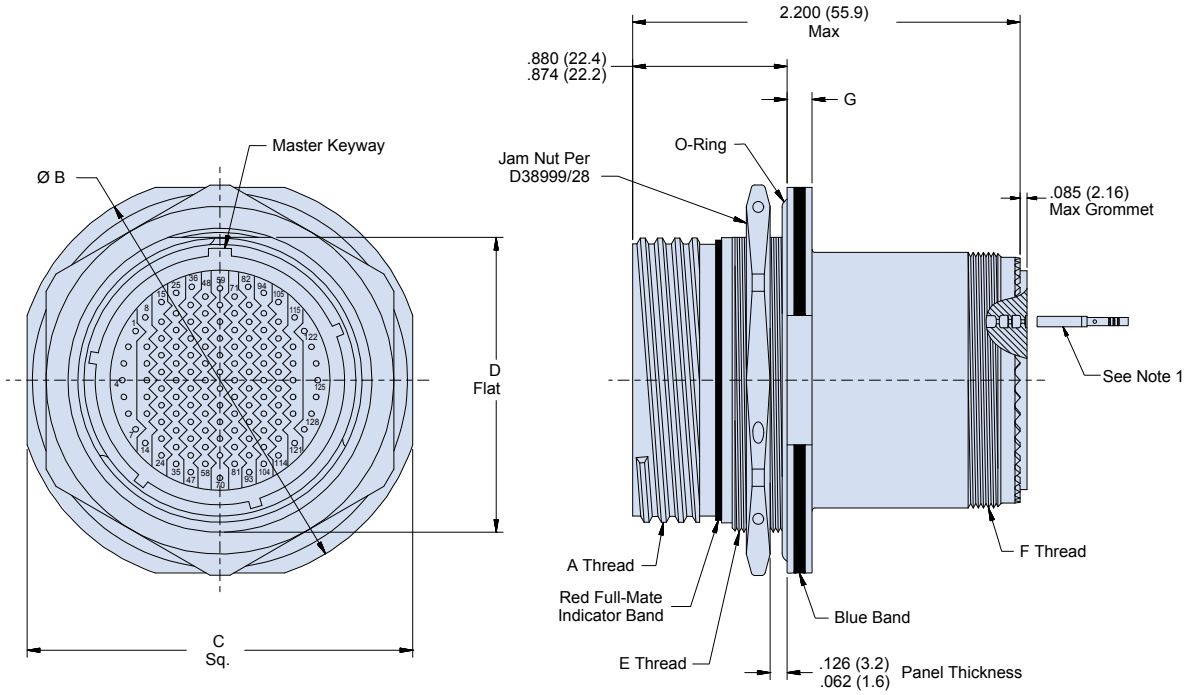
240-383S Jam nut receptacle connector with crimp contacts

MIL-DTL-38999 Series III type

D38999 SERIES III TYPE JAM NUT RECEPTACLE WITH CRIMP REMOVABLE CONTACTS

How To Order										
Sample Part Number	**240-383**	**S**	**ME**	**15-35**	**P**	**C**	**P**	**A**	**N**	**N**
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.

SuperNine® Filter connectors

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.

F

SuperNine® Filter connectors

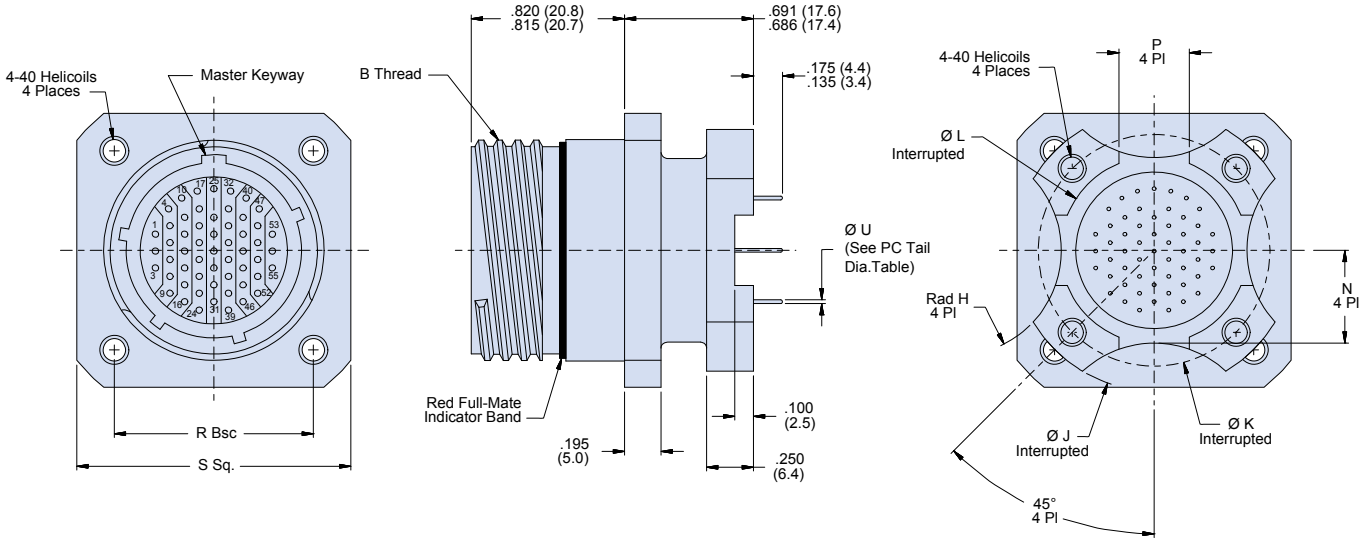
240-383D Dual flange wall mount receptacle connector

MIL-DTL-38999 Series III type

D38999 SERIES III TYPE WALL MOUNT RECEPTACLE WITH PC TAILS

How To Order										
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



NOTES

1. Other filter styles (C-L, L-C, Unbalanced Pi, Multi-Stage, Multi-Value) are available, please consult the factory.

SuperNine® Filter connectors

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)

F

SuperNine® Filter connectors

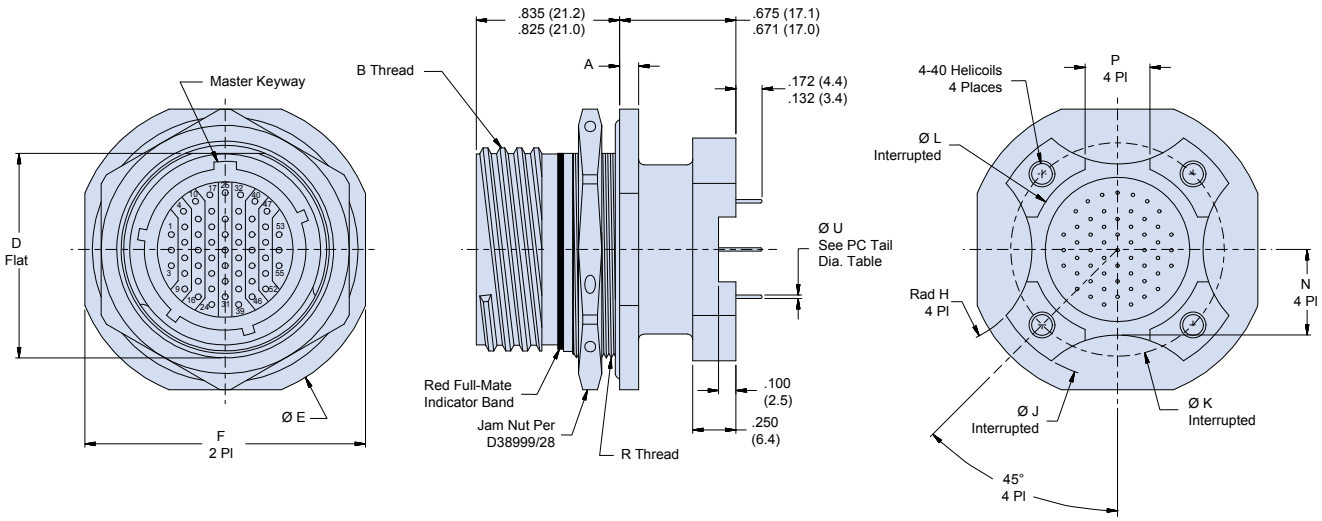
240-383E Dual flange jam nut receptacle connector

MIL-DTL-38999 Series III type

D38999 SERIES III TYPE JAM NUT RECEPTACLE WITH PC TAILS

How To Order										
Sample Part Number	**240-383**	**E**	**ME**	**15-35**	**P**	**P**	**P**	**A**	**N**	**N**
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**



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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.

SuperNine® Filter connectors

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 ±.005 (.13)**	**Ø E ±.012 (.30)**	**F ±.016 (.40)**	**P ±.010 (.25)**	**R Thread**	**Ø J ±.005 (.13)**	**Ø K Bsc**	**Ø L ±.005 (.13)**	**Rad H ±.020 (.51)**	**N ±.020 (.51)**	**A**
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.

F

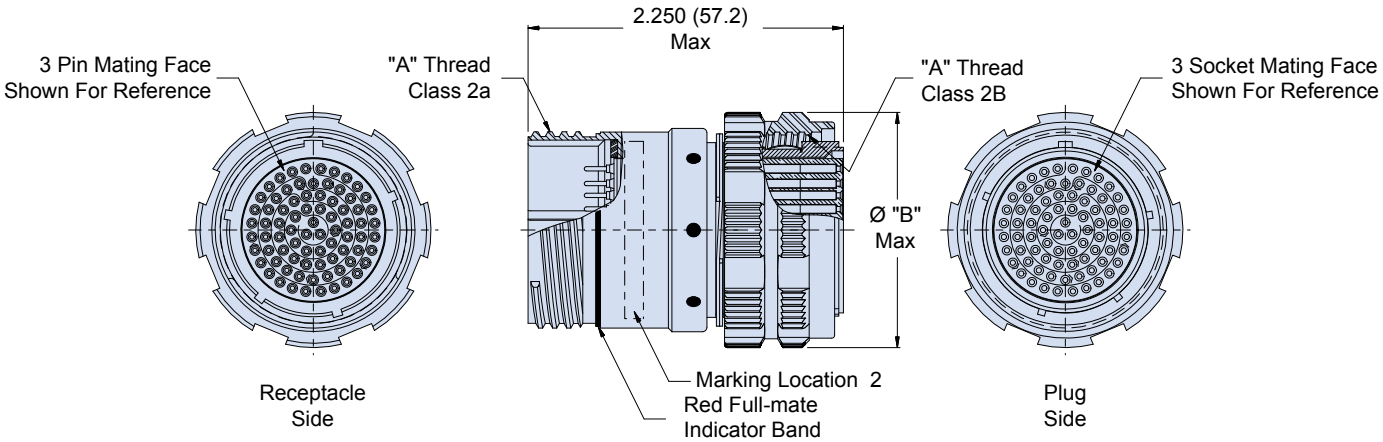
240-383B Filter connector adapter

MIL-DTL-38999 Series III type

D38999 SERIES III TYPE FILTER CONNECTOR ADAPTER

How To Order									
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



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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. 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.

FIBER OPTIC

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 air and space, the Glenair tight-tolerance MIL-DTL-38999 type fiber optic connection system has been successfully deployed in applications ranging from the F-35 Joint Strike Fighter and the venerable F-22 to dozens of other fixed wing and rotary aircraft applications. Ultra-lightweight composite thermoplastic connectors deliver years of reliable service, free from the destructive effects of corrosion and less susceptible to vibration and shock compared to conventional metal connectors.

Features

- **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**
- **Insert arrangements from 2 to 37 ways**

Glenair®

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

SuperNine® Fiber optic connectors

Advanced fiber optic connectors

MIL-DTL-38999 Series III type

Product Selection Guide

G

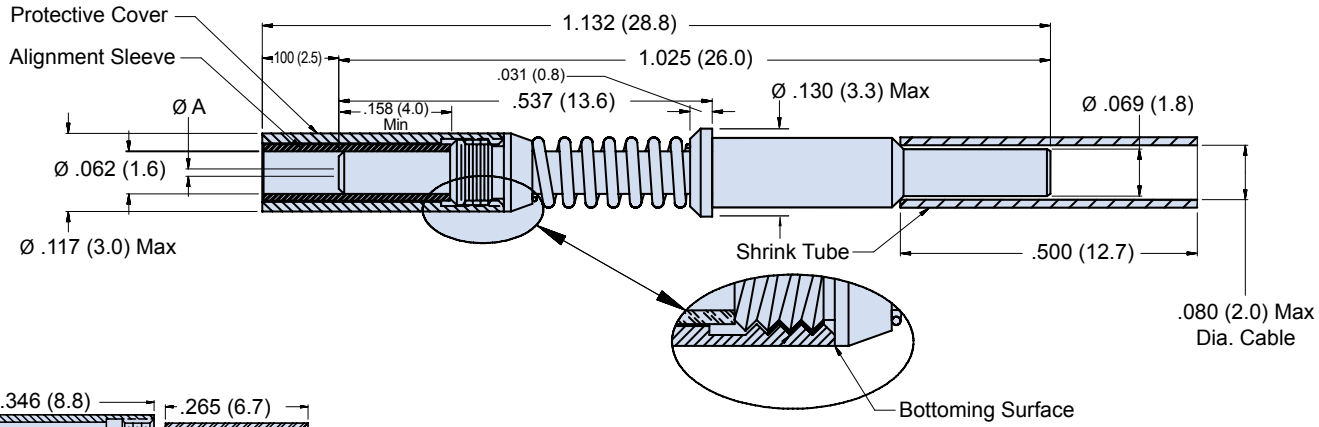
SuperNine® Fiber optic connectors

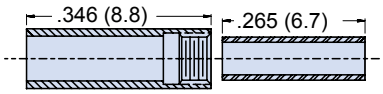
181-001 • M29504/05 Size #16 fiber optic socket terminus

MIL-DTL-38999 Series III type

ULTRA LOW DB LOSS QPL'D SOCKET TERMINUS FOR MIL-DTL-38999 SERIES III

Part Number	Fiber Size Core/Cladding/Coating (Microns)	Ø A (Microns)	Ref. M29504/05-XXXX
181-001-125	9/125 (Singlemode)	125.5	M29504/05-4237
181-001-126S	9/125 (Singlemode)	126.0	M29504/05-4238
181-001-126	50/125 & 62.5/125	126.0	M29504/05-4239
181-001-127	50/125 & 62.5/125	127.0	M29504/05-4046
181-001-142	100/140	142.0	M29504/05-4049
181-001-144	100/140	144.0	N/A
181-001-145	100/140	145.0	M29504/05-4050
181-001-156	62.5/125/155 (Polyimide)	156.0	M29504/05-4240
181-001-157	62.5/125/155 (Polyimide)	157.0	M29504/05-4241
181-001-173	100/140/172 (Polyimide)	173.0	M29504/05-4088
181-001-175	100/140/172 (Polyimide)	175.0	M29504/05-4242
181-001-231	200/230	231.0	N/A
181-001-236	200/233	236.0	M29504/05-4243
181-001-286	200/280	286.0	M29504/05-4244
181-001-448	400/440	448.0	M29504/05-4245
181-001-533	486/500	533.0	N/A





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	Ceramic Alignment Sleeve
181-001-K	Stainless Steel Alignment Sleeve
181-001-C	Protective cover

MATERIAL AND FINISH

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

NOTES

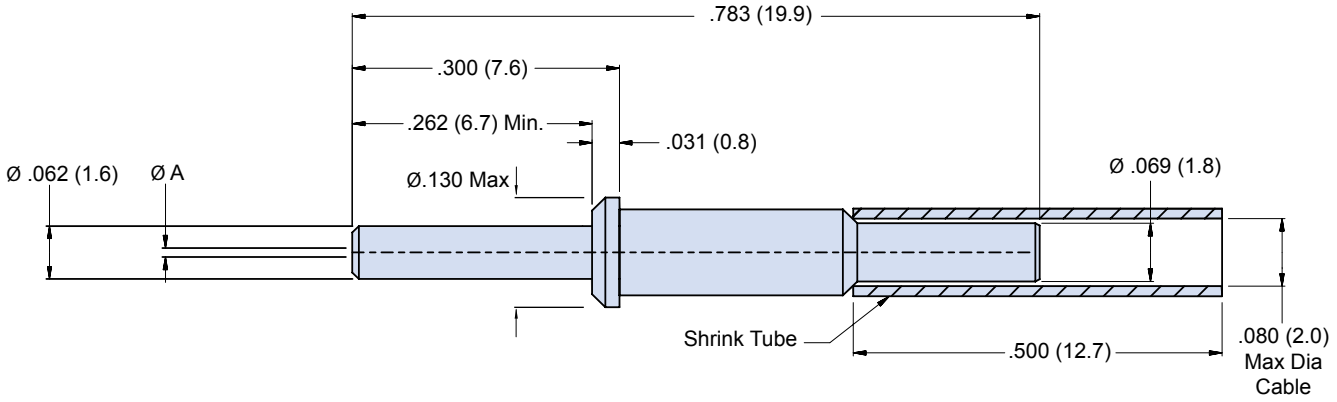
Alignment Sleeve & Protective Cover can also be ordered separately Accessories Table.
See assembly procedure GAP-015 for complete termination instructions.
Recommended Insertion/Extraction tool: P/N M81969/14-03 or equivalent

181-002 • M29504/04 Size #16 fiber optic pin terminus

MIL-DTL-38999 Series III type

ULTRA LOW DB LOSS QPL'D PIN TERMINUS FOR MIL-DTL-38999 SERIES III

Part Number	Fiber Size Core/Cladding/Coating	Ø A (Microns)	Ref. M29504/04-XXXX
181-002-125	9/125 (Singlemode)	125.5	M29504/04-4208
181-002-126S	9/125 (Singlemode)	126.0	M29504/04-4209
181-002-126	50/125 & 62.5/125	126.0	M29504/04-4210
181-002-127	50/125 & 62.5/125	127.0	M29504/04-4040
181-002-142	100/140	142.0	M29504/04-4043
181-002-144	100/140	144.0	N/A
181-002-145	100/140	145.0	M29504/04-4044
181-002-156	62.5/125/155 (Polyimide)	156.0	M29504/04-4211
181-002-157	62.5/125/155 (Polyimide)	157.0	M29504/04-4212
181-002-173	100/140/172 (Polyimide)	173.0	M29504/04-4087
181-002-175	100/140/172 (Polyimide)	175.0	M29504/04-4213
181-002-231	200/230	231.0	N/A
181-002-236	200/233	236.0	M29504/04-4214
181-002-286	200/280	286.0	M29504/04-4215
181-002-448	400/440	448.0	M29504/04-4216
181-002-533	486/500	533.0	N/A



MATERIAL AND FINISH

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

NOTES

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

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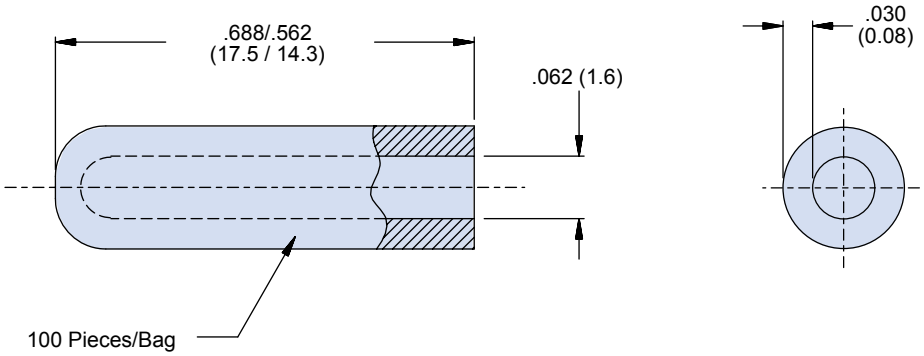
187-019/187-029 Size #16 termini pin and socket dust caps

MIL-DTL-38999 Series III type

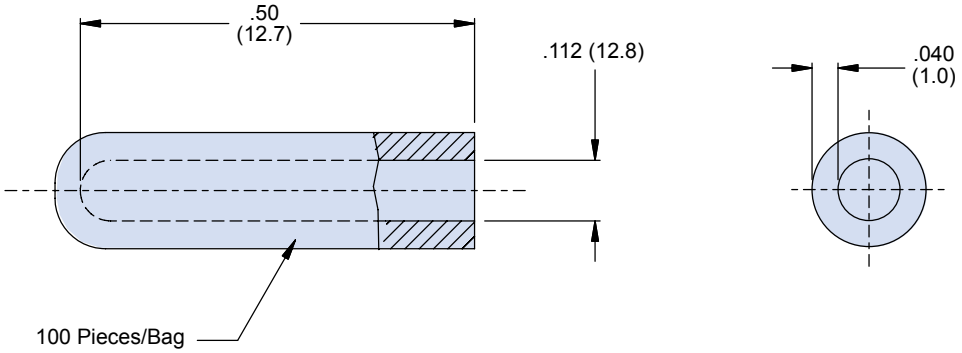
SIZE 16 PIN TERMINUS VINYL DUST CAPS

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



SIZE 16 SOCKET TERMINUS VINYL DUST CAPS

187-029 Vinyl Dust Cap for Socket Terminus with Cover



NOTES

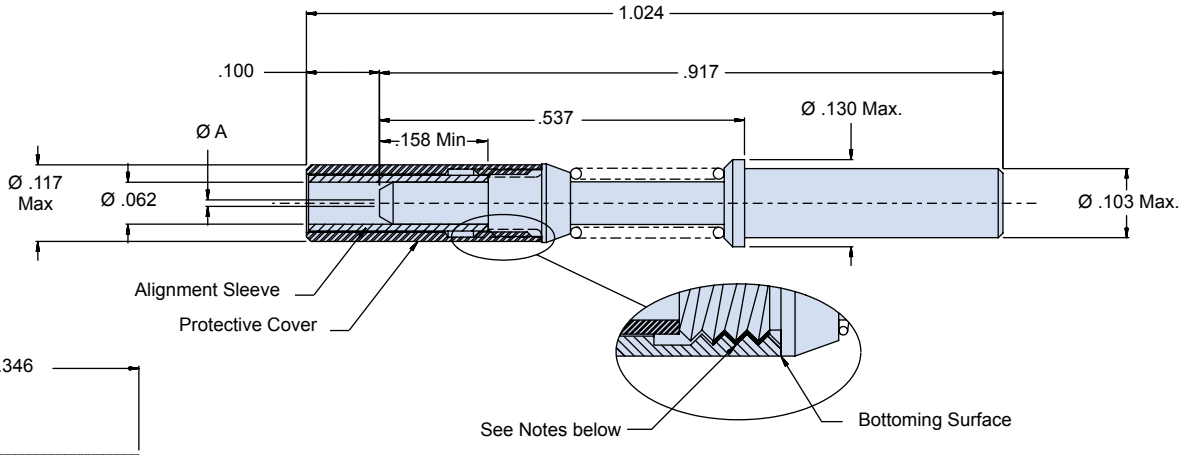
Installs over metal protective cover/hood on terminus

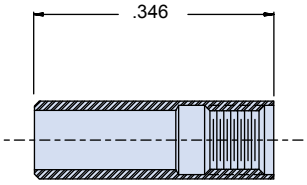
181-035 large core fiber optic socket terminus

MIL-DTL-38999 Series III type

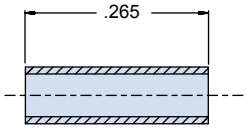
LARGE CORE FIBER OPTIC MIL-DTL-38999 TYPE SIZE 16 SOCKET TERMINUS

Part Number	Fiber Size Core/Cladding (Microns)	ØA (Microns)
181-035-600	600 Micron	610.0
181-035-1000	1000 Micron (Plastic)	1117.0
Ceramic alignment sleeve supplied with terminus. Add K to the end of part number development to supply with optional stainless steel alignment sleeve *e.g. 181-035-1000**K***.		





Protective Cover



Alignment Sleeve

MATERIAL AND FINISH

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

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

NOTES

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

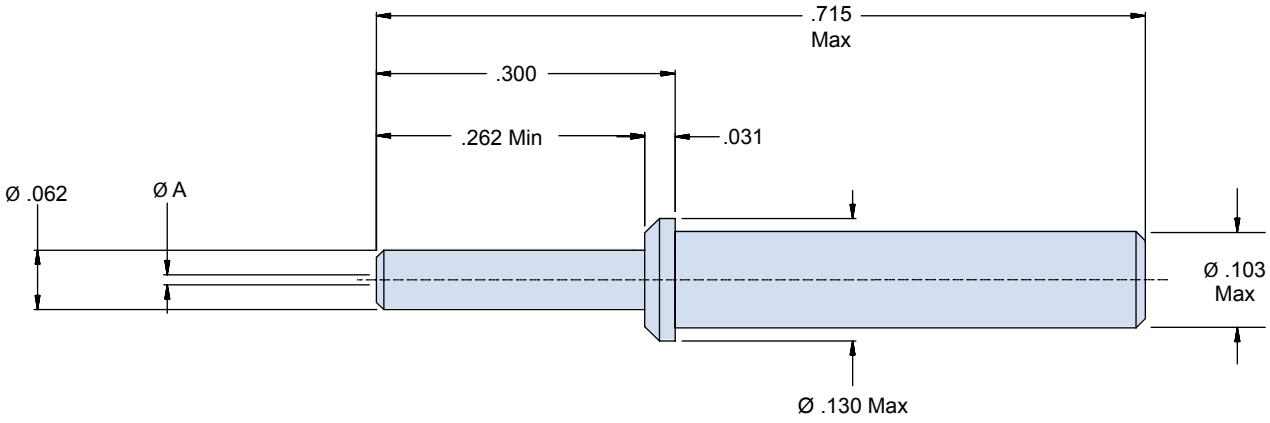
G

181-036 large core optical fiber pin terminus

MIL-DTL-38999 Series III type

LARGE CORE FIBER OPTIC MIL-DTL-38999 TYPE SIZE 16 PIN TERMINUS

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



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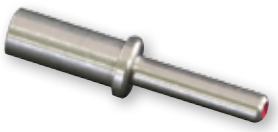
MATERIAL AND FINISH

Ferrule and Terminus Body: Stainless Steel/Passivate

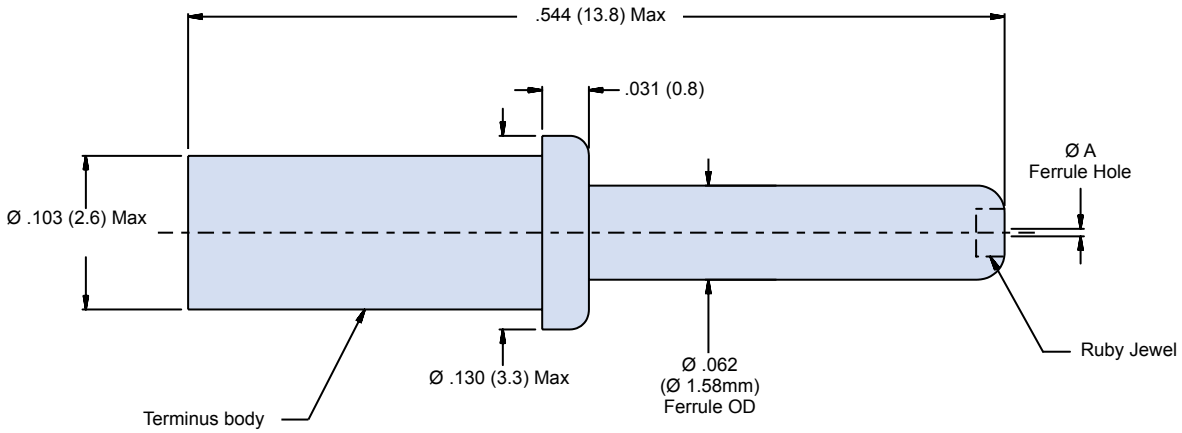
NOTES

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

MIL-DTL-38999 TYPE FIBER OPTIC JEWEL PIN TERMINUS



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. 181-052-127**L***. Omit to include preforms.		



MATERIAL AND FINISH

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

NOTES

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

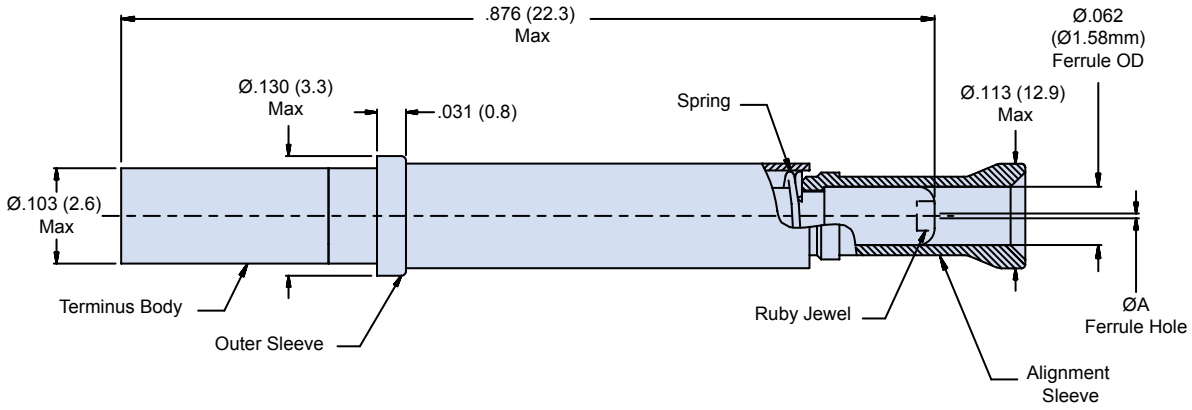
Terminus Accessories	
Part Number	Terminus Accessory
189-070-6	Reducing Sleeve, Ø1.90mm Max Cable Jacket
181-052-E	Epoxy Preforms

181-053 fiber optic jewel socket terminus

MIL-DTL-38999 Series III type

FIBER OPTIC JEWEL SOCKET TERMINUS FOR MIL-DTL-38999 TYPE CONNECTORS

Part Number	Ferrule Hole Ø A (Microns)	Typical Fiber Size Core/Cladding/Coating (Microns)
181-053-125	125.0	9/125 (Singlemode)
181-053-127	127.0	50/125, 62.5/125
181-053-142	142.0	100/140
181-053-157	157.0	62.5/125/155 (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. 181-053-127**L***. Omit to include preforms.		



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MATERIAL AND FINISH

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

NOTES

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

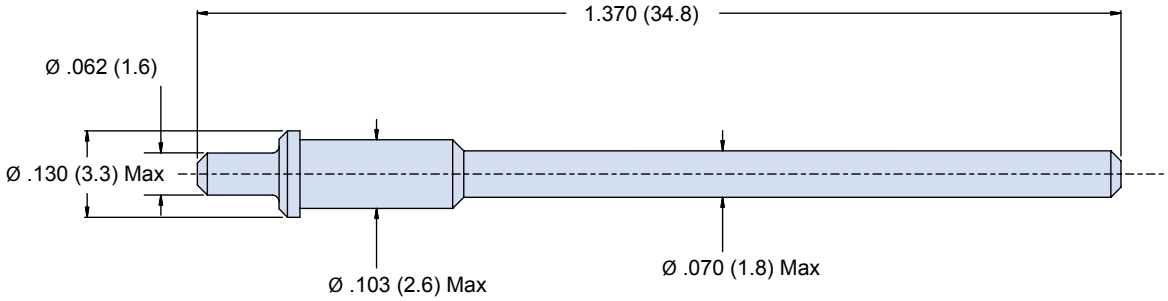
Terminus Accessories	
Part Number	Terminus Accessory
189-070-6	Reducing Sleeve Ø1.90mm Max Cable Jacket
189-075	Alignment Sleeve
182-031	Alignment Sleeve Installation Tool
182-032	Alignment Sleeve Extraction Tool
181-053-E	Epoxy Preforms

181-048 size #16 dummy terminus

MIL-DTL-38999 Series III type

DUMMY TERMINUS FOR MIL-DTL-38999 CONNECTORS

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

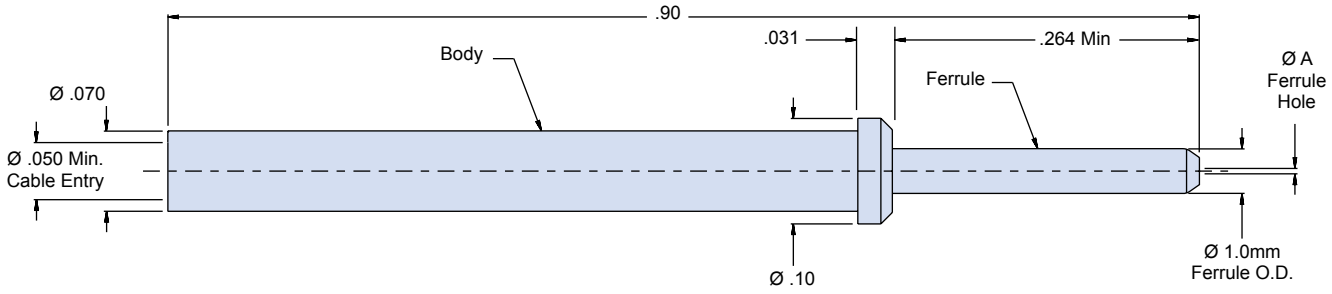


MATERIAL AND FINISH/NOTES

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

MIL-DTL-38999 SERIES III TYPE SIZE 20 PIN TERMINUS

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



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MATERIAL AND FINISH

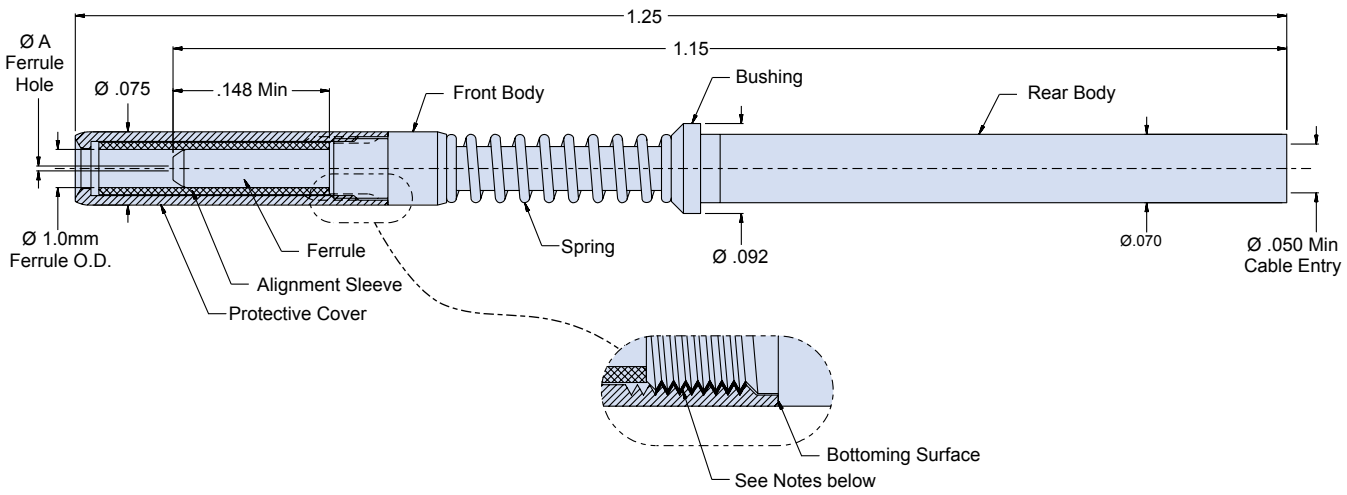
Ferrule: Zirconia Ceramic
Body: Copper-Nickel-Zinc Alloy

NOTES

Consult factory for appropriate termination and assembly tools/procedures.

MIL-DTL-38999 TYPE SIZE 20 SOCKET TERMINUS

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



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MATERIAL AND FINISH

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

NOTES

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

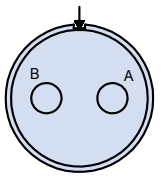
Terminus Accessories	
Part Number	Terminus Accessory
181-066-S	Ceramic Alignment Sleeve
181-066-C	Protective Cover

SuperNine® Fiber optic connectors

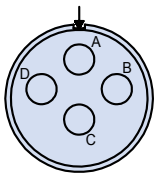
insert arrangements

MIL-DTL-38999 Series III type

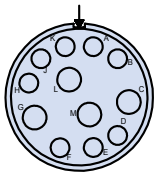
MIL-DTL-38999 TYPE ADVANCED FIBER OPTIC CONNECTORS



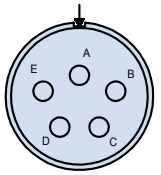
Shell Size 11
Arrangement 2



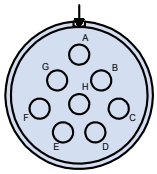
Shell Size 13
Arrangement 4



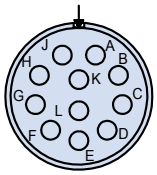
Shell Size 15
Arrangement 97



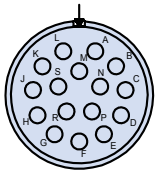
Shell Size 15
Arrangement 5



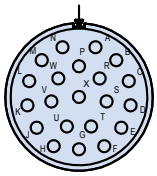
Shell Size 17
Arrangement 8



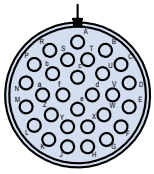
Shell Size 19
Arrangement 11



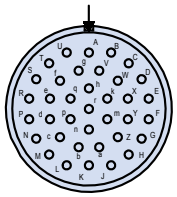
Shell Size 21
Arrangement 16



Shell Size 23
Arrangment 21



Shell Size 25
Arrangement 29



Shell Size 25
Arrangement 37

Mating face of pin insert shown

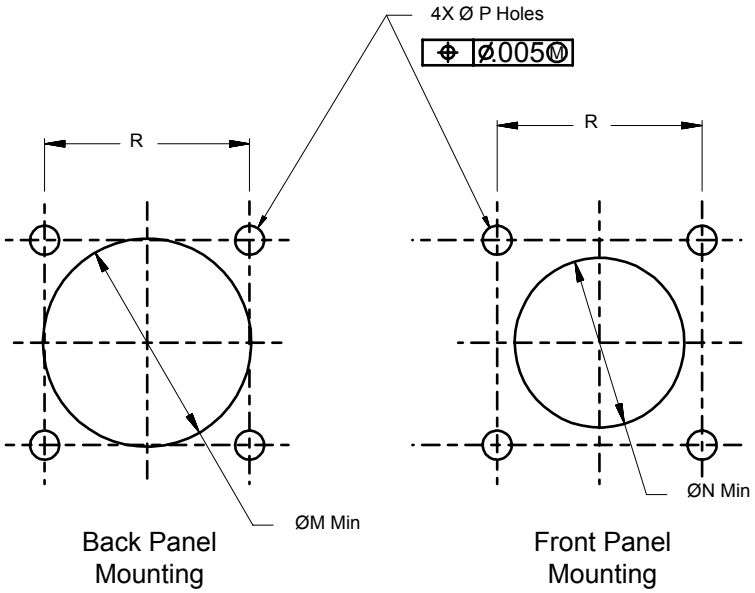
Contact Arrangements per MIL-STD-1560

G

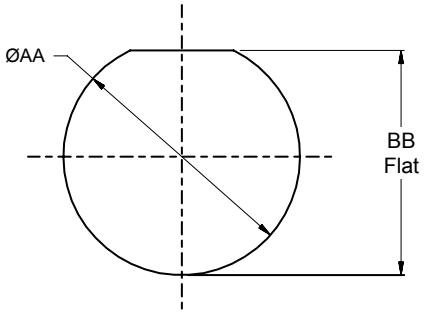
Panel cutout dimensions

MIL-DTL-38999 Series III type

Dimensions							
Shell Size Code	Shell Size	Ø AA	BB Flat	Ø M Min	ØN Min	Ø P Holes	R BSC
B	11	.835 (21.2) .825 (21.0)	.771 (19.6) .761 (19.3)	.796 (20.2)	.625 (15.9)	.133 (3.4) .123 (3.1)	.812 (20.6)
C	13	1.020 (25.9) 1.010 (25.7)	.955 (24.3) .945 (24.0)	.922 (23.4)	750 (19.1)	.133 (3.4) .123 (3.1)	.906 (23.0)
D	15	1.145 (29.1) 1.135 (28.8)	1.085 (27.6) 1.075 (27.3)	1.047 (26.6)	.906 (23.0)	.133 (3.4) .123 (3.1)	.969 (24.6)
E	17	1.270 (32.3) 1.260 (32.0)	1.210 (30.7) 1.200 (30.5)	1.219 (31.0)	1.016 (25.8)	.133 (3.4) .123 (3.1)	1.062 (27.0)
F	19	1.395 (35.4) 1.385 (35.2)	1.335 (33.9) 1.325 (33.7)	1.297 (32.9)	1.141 (29.0)	.133 (3.4) .123 (3.1)	1.156 (29.4)
G	21	1.520 (38.6) 1.510 (38.4)	1.460 (37.1) 1.450 (36.8)	1.422 (36.1)	1.266 (32.2)	.133 (3.4) .123 (3.1)	1.250 (31.8)
H	23	1.645 (41.8) 1.635 (41.5)	1.585 (40.3) 1.575 (40.0)	1.547 (39.3)	1.375 (34.9)	.159 (4.0) .149 (3.8)	1.375 (34.9)
J	25	1.770 (45.0) 1.760 (44.7)	1.710 (43.4) 1.700 (43.2)	1.672 (42.5)	1.484 (37.7)	.155 (3.9) .145 (3.7)	1.500 (38.1)



Recommended Panel Cutout
Wall Mount Receptacle

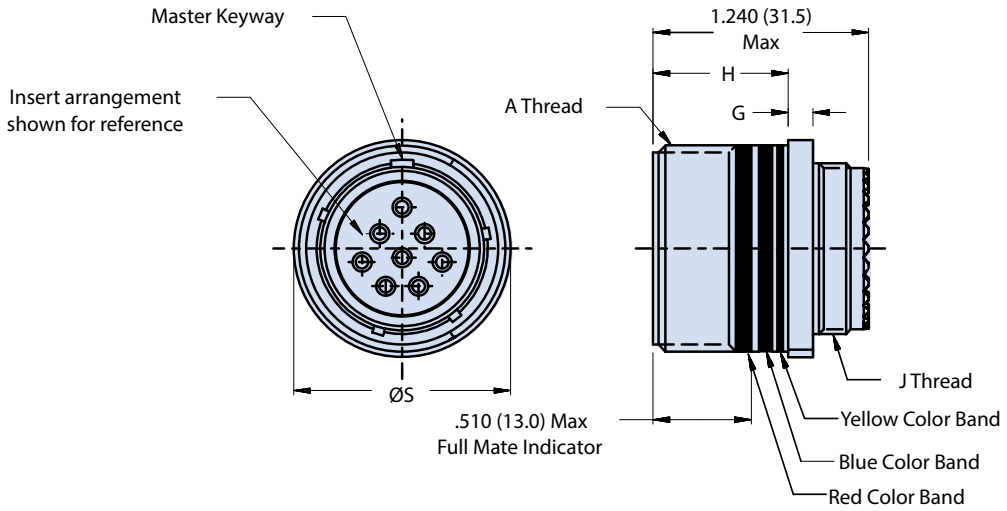


Recommended Panel Cutout
Jam Nut Receptacle

G

MIL-DTL-38999 TYPE ADVANCED FIBER OPTIC RECEPTACLE CONNECTOR

How To Order 180-091						
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					



05 - IN-LINE RECEPTACLE

G

MATERIAL AND FINISH

Shell: See Material and Finish Table
Insulator: High Grade Rigid Dielectric
Seals: Fluorosilicone
Retention Clip: Copper Alloy

NOTES

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

SuperNine® Fiber optic connectors

180-091 (05) in-line receptacle

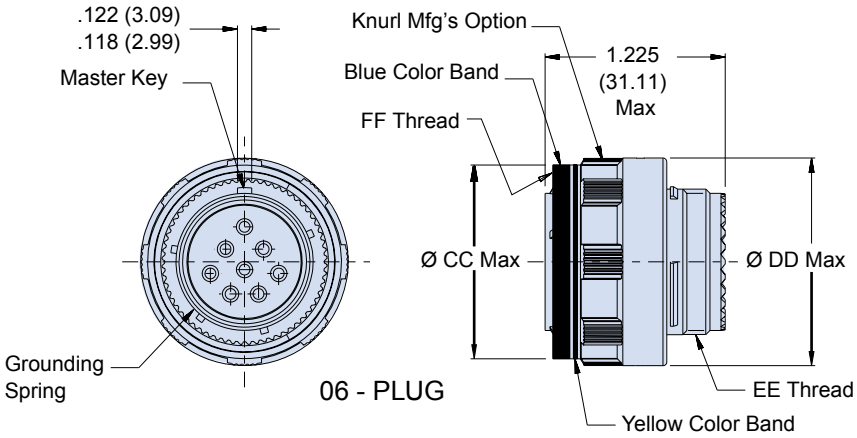
MIL-DTL-38999 Series III type

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

Material/Finish		
Code	Material	Finish Description
M	Aluminum Alloy	Electroless Nickel
MT		Nickel - PTFE, Grey
NF		Cadmium, Olive Drab
ZN		Zinc-Nickel, Olive Drab
ZNU		Zinc-Nickel, Black
XM	Composite	Electroless Nickel
XMT		Nickel - PTFE, Grey
XW		Cadmium, Olive Drab
XZN		Zinc-Nickel, Black
MS	Stainless Steel	Electroless Nickel
ZL		Electro-Deposited Nickel
Z1		Passivate

MIL-DTL-38999 TYPE ADVANCED FIBER OPTIC PLUG CONNECTOR

How To Order 180-091						
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					



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

NOTES

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

180-091 (06) plugs

MIL-DTL-38999 Series III type

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

Material and Finish		
Code	Material	Finish Description
M	Aluminum Alloy	Electroless Nickel
MT		Nickel - PTFE, Grey
NF		Cadmium, Olive Drab
ZN		Zinc-Nickel, Olive Drab
ZNU		Zinc-Nickel, Black
XM	Composite	Electroless Nickel
XMT		Nickel - PTFE, Grey
XW		Cadmium, Olive Drab
XZN		Zinc-Nickel, Black
MS	Stainless Steel	Electroless Nickel
ZL		Electro-Deposited Nickel
Z1		Passivate

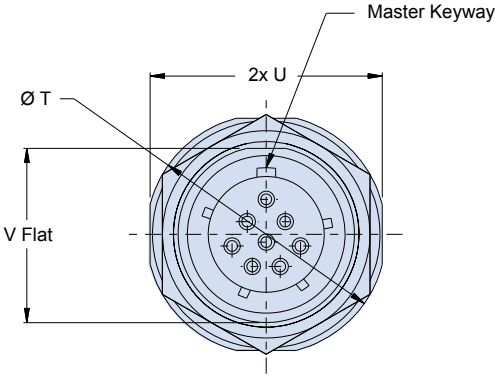
SuperNine® Fiber optic connectors

180-091 (08) jam nut receptacles

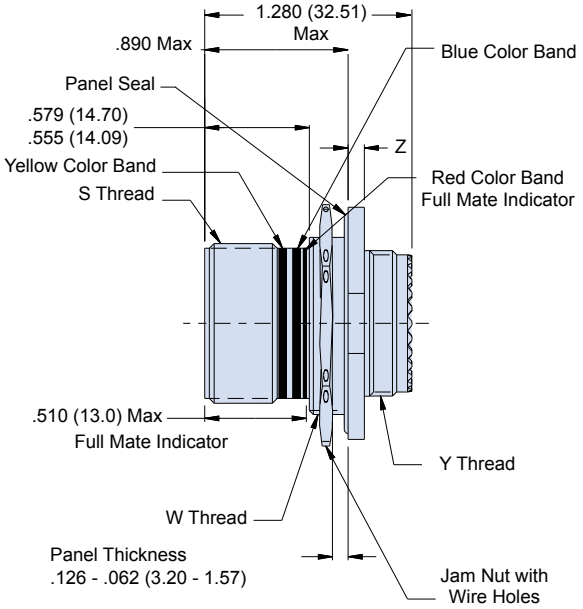
MIL-DTL-38999 Series III type

MIL-DTL-38999 TYPE ADVANCED FIBER OPTIC RECEPTACLE CONNECTOR

How To Order 180-091						
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					



08 - Jam Nut Mount Receptacle



G

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

NOTES

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

SuperNine® Fiber optic connectors

180-091 (08) jam nut receptacles

MIL-DTL-38999 Series III type

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

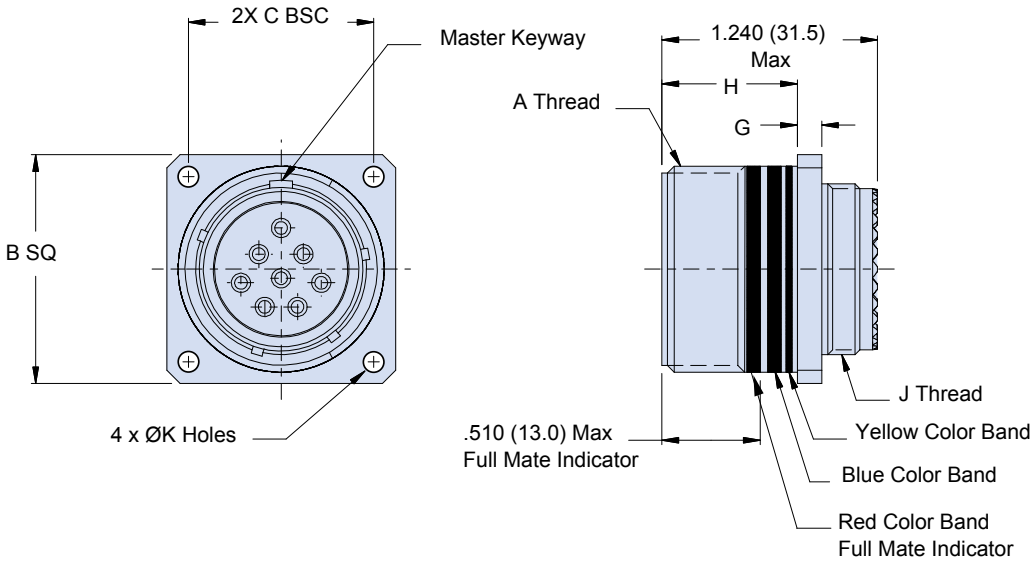
Material and Finish		
Code	Material	Finish Description
M	Aluminum Alloy	Electroless Nickel
MT		Nickel - PTFE, Grey
NF		Cadmium, Olive Drab
ZN		Zinc-Nickel, Olive Drab
ZNU		Zinc-Nickel, Black
XM	Composite	Electroless Nickel
XMT		Nickel - PTFE, Grey
XW		Cadmium, Olive Drab
XZN		Zinc-Nickel, Black
MS	Stainless Steel	Electroless Nickel
ZL		Electro-Deposited Nickel
Z1		Passivate

180-091 (H7) wall mount receptacle, standard round holes

MIL-DTL-38999 Series III type

MIL-DTL-38999 TYPE ADVANCED FIBER OPTIC RECEPTACLE CONNECTOR

How To Order 180-091						
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 Standard 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					



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

MATERIAL AND FINISH

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

NOTES

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

180-091 (H7) wall mount receptacle, standard round holes

MIL-DTL-38999 Series III type

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

Material and Finish		
Code	Material	Finish Description
M	Aluminum Alloy	Electroless Nickel
MT		Nickel - PTFE, Grey
NF		Cadmium, Olive Drab
ZN		Zinc-Nickel, Olive Drab
ZNU		Zinc-Nickel, Black
XM	Composite	Electroless Nickel
XMT		Nickel - PTFE, Grey
XW		Cadmium, Olive Drab
XZN		Zinc-Nickel, Black
MS	Stainless Steel	Electroless Nickel
ZL		Electro-Deposited Nickel
Z1		Passivate

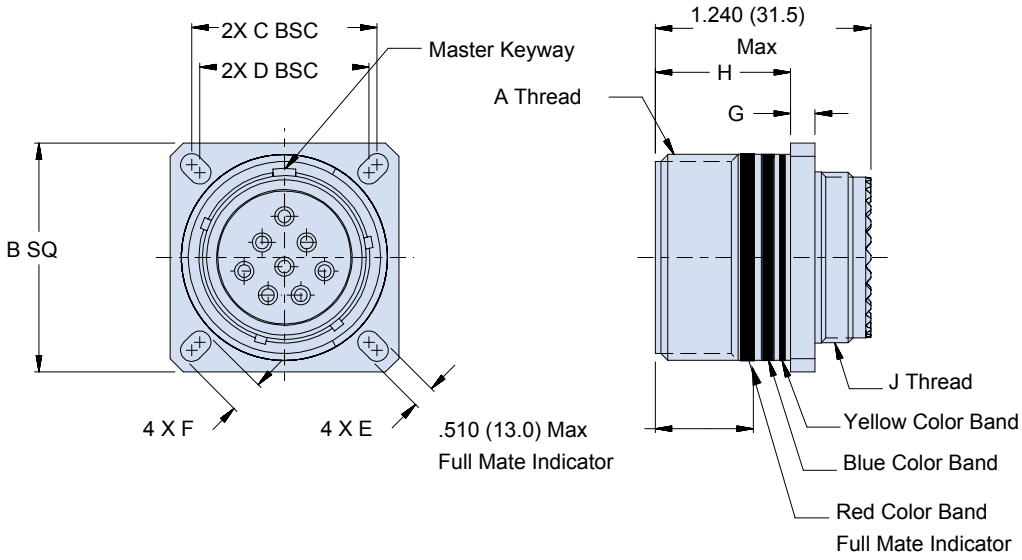
SuperNine® Fiber optic connectors

180-091 (S7) wall mount receptacle, slotted holes

MIL-DTL-38999 Series III type

MIL-DTL-38999 TYPE ADVANCED FIBER OPTIC RECEPTACLE CONNECTOR

How To Order 180-091						
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 Standard 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					



S7 - WALL MOUNT RECEPTACLE
WITH SQUARE FLANGE AND SLOTTED HOLES

MATERIAL AND FINISH

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

NOTES

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

SuperNine® Fiber optic connectors

180-091 (S7) wall mount receptacle, slotted holes

MIL-DTL-38999 Series III type

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

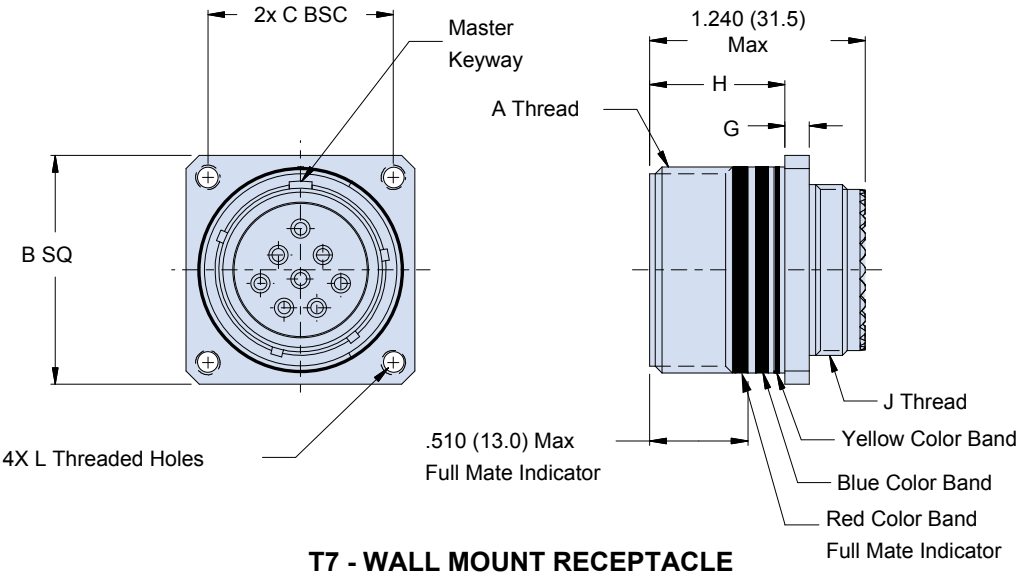
Material and Finish		
Code	Material	Finish Description
M	Aluminum Alloy	Electroless Nickel
MT		Nickel - PTFE, Grey
NF		Cadmium, Olive Drab
ZN		Zinc-Nickel, Olive Drab
ZNU		Zinc-Nickel, Black
XM	Composite	Electroless Nickel
XMT		Nickel - PTFE, Grey
XW		Cadmium, Olive Drab
XZN		Zinc-Nickel, Black
MS	Stainless Steel	Electroless Nickel
ZL		Electro-Deposited Nickel
Z1		Passivate

180-091 (T7) wall mount receptacle, threaded holes

MIL-DTL-38999 Series III type

MIL-DTL-38999 TYPE ADVANCED FIBER OPTIC RECEPTACLE CONNECTOR

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



T7 - WALL MOUNT RECEPTACLE
SQUARE FLANGE WITH THREADED HOLES

MATERIAL AND FINISH

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

NOTES

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

180-091 (T7) wall mount receptacle, threaded holes

MIL-DTL-38999 Series III type

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

Material and Finish		
Code	Material	Finish Description
M	Aluminum Alloy	Electroless Nickel
MT		Nickel - PTFE, Grey
NF		Cadmium, Olive Drab
ZN		Zinc-Nickel, Olive Drab
ZNU		Zinc-Nickel, Black
XM	Composite	Electroless Nickel
XMT		Nickel - PTFE, Grey
XW		Cadmium, Olive Drab
XZN		Zinc-Nickel, Black
MS	Stainless Steel	Electroless Nickel
ZL		Electro-Deposited Nickel
Z1		Passivate

SuperNine® Fiber optic connectors

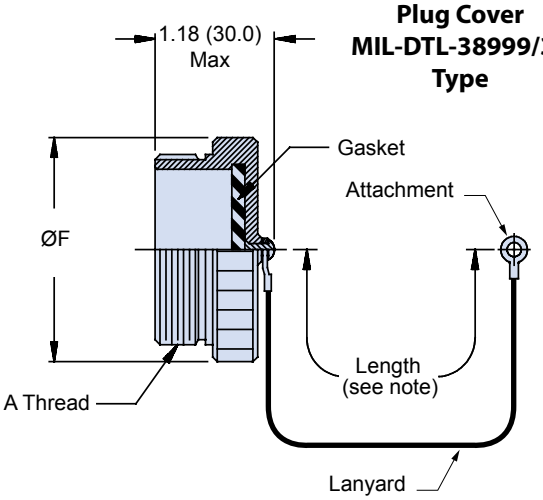
660-023, -024/660-049, -050 metal and composite covers

MIL-DTL-38999 Series III type

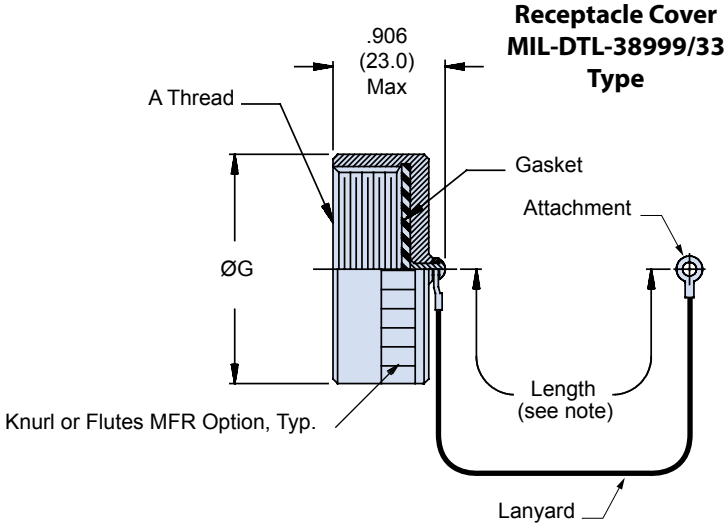
MIL-DTL-38999 SERIES III TYPE METAL AND COMPOSITE PROTECTIVE COVERS

How To Order							
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						

-023 and -049 Plug Cover MIL-DTL-38999/32 Type



-024 and -050 Receptacle Cover MIL-DTL-38999/33 Type



MATERIAL AND FINISH

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

NOTES

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

SuperNine® Fiber optic connectors

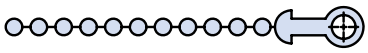
660-023, -024/660-049, -050 metal and composite covers

MIL-DTL-38999 Series III type

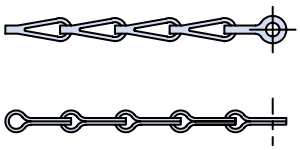
Dimensions			
Shell Size	A Thread	Ø F Max	Ø G Max
09	.6250 - 0.1P-0.3L-TS	0.906 (23.0)	.906 (23.0)
11	.7500 - 0.1P-0.3L-TS	1.024 (26.0)	1.102 (28.0)
13	.8750 - 0.1P-0.3L-TS	1.220 (31.0)	1.220 (31.0)
15	1.0000 - 0.1P-0.3L-TS	1.300 (33.0)	1.260 (32.0)
17	1.1875 - 0.1P-0.3L-TS	1.457 (37.0)	1.457 (37.0)
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
Z1	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)

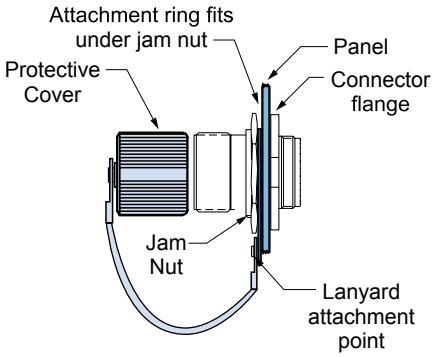
Rope (Types F, G, H, K, R, T, U)

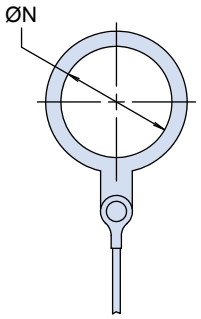
SuperNine® Fiber optic connectors

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)





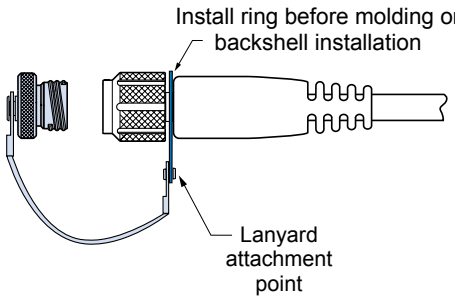
Solid Ring - Style A

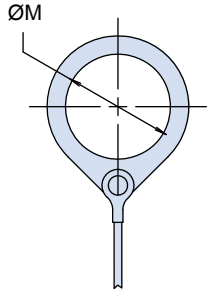
Table I: Solid Ring Style A		
Dash No.	Ø N ± .015	180-091 Shell Size
106	.896 (22.8)	11
107	1.016 (25.9)	13
108	1.141 (29.0)	15
109	1.266 (32.3)	17
110	1.391 (35.3)	19
111	1.521 (38.6)	21
112	1.641 (41.7)	23
113	1.766 (45.0)	25

NOTES

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

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





Solid Ring - Style B

Table 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

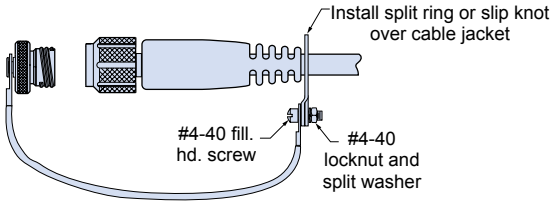
NOTES

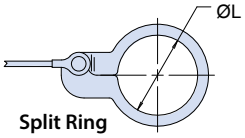
Solid ring style B dash numbers and shell sizes shown are for Glenair 180-091 fiber optic connectors only.
Consult factory for additional sizes.

Metal and composite covers - attachment options

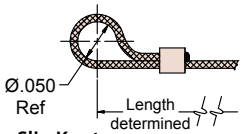
MIL-DTL-38999 Series III type

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





Split Ring Style C

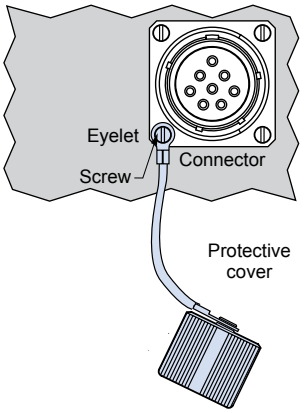


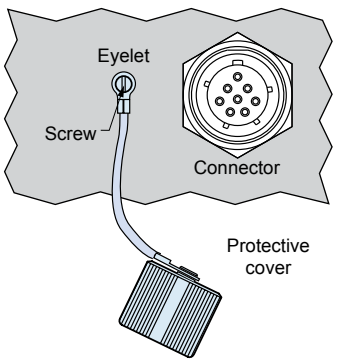
Slip Knot (Type SK)

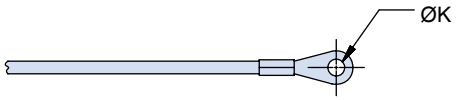
Table III: Split Ring Style C

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	

G

BACKSHELLS

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®

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

SuperNine® Backshells and accessories

High-performance connector accessories

MIL-DTL-38999 Series III type

Product Selection Guide

H

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

Space Grade Quick Clamp Backshells

Series 620 Strain Relief Clamps

Ultra Low-Profile EMI/RFI Backshells

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Self-Locking and Standard Protective Covers

High-Performance Banding Backshells

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SERIES 23

SuperNine® Backshells and accessories

High-performance connector accessories

MIL-DTL-38999 Series III type

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**

Glenair®

For more information contact Glenair at **818-247-6000** or visit our website at **www.glenair.com**
U.S. CAGE code 06324

SuperNine® Backshells and accessories

Military standard backshells and accessories selection guide

MIL-DTL-38999

Miltary 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°

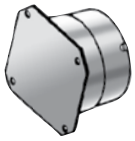
Miltary Connector Specification	 45 Qwik-Ty Strain Reliefs		 62 Strain Reliefs		 68 Mounting Flanges and Gaskets
	Non-Self-Locking	Self-Locking	Non-Self-Locking	Self-Locking	
MIL-DTL-38999 Series III	M85049/15- 45° M85049/16- 90°	No Ground Lug M85049/15S 45° M85049/16S 90° With Ground Lug M85049/15G 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° M80549/92 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

Miltary 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

Torque Values for Cable Clamp Screws	
required value in In-Lbs for corrosion resistant or 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						
Miltary Connector Specification	 Three-Finger Strain Relief	 Banding Adapters	 Cable Clamp Strain Relief	Dust Caps  Plug	 Receptacle	 Dummy Stowage Receptacles
MIL-DTL-38999 Series III	M85049/45 M85049/46	M85049/88 M85049/89 M85049/90	M85049/91 M85049/92	M38999/32 Series III Only	M38999/33 Series III Only	D38999/22

Miltary 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°

Miltary Connector Specification	 60 Connector Wrenches	 60 Connector Sockets	 61 "E" Nuts	
			Non-Self-Locking	Self-Locking
MIL-DTL-38999 Series III	TG90*	600H005*	M80549/14-	M80549/14S

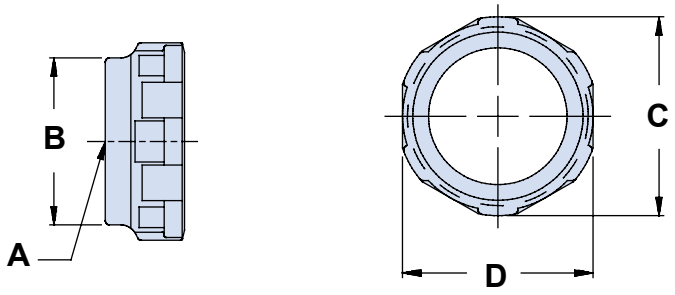
Installation Torque Values for Circular Connector Accessories		
Shell Sizes	MIL-DTL-38999 Series III	Composite Material Coupling Threads (See Note 1)
8, 9, A	51/61	35
3, 10, 10SL, 11, B	71/81	35
7, 12, 12S, 13, C	103/113	45
14, 14S, 15, D	111/121	45
16, 16S, 17, E	111/121	45
18, 19, 27, F	111/121	45
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 interface standards
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)
13	D	7/8-20 UNEF	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)



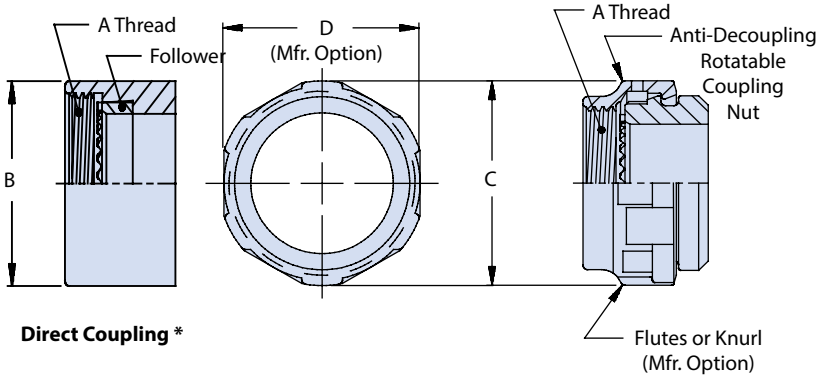
NOTES
Connector shell size designations in blue are for reference only; do not use in part numbers.
Metric dimensions (mm) are in parentheses and are for reference only. (1 inch = 25.4 mm)
Consult factory for accessory interface data not listed.
Use Glenair 600-091 or 600-157 tool to tighten coupling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

Circular Connector Common Interface Standards

Connector Designator **H**

SPECIFICATION
MIL-DTL-38999
EN3645

SERIES
III & IV



Direct Coupling *

NOTES
Direct coupling supplied with O-ring for moisture sealing. Add modifier code 101A to end of part number for O-ring to be supplied on rotatable coupling.
* Consult factory for direct coupling part numbers.

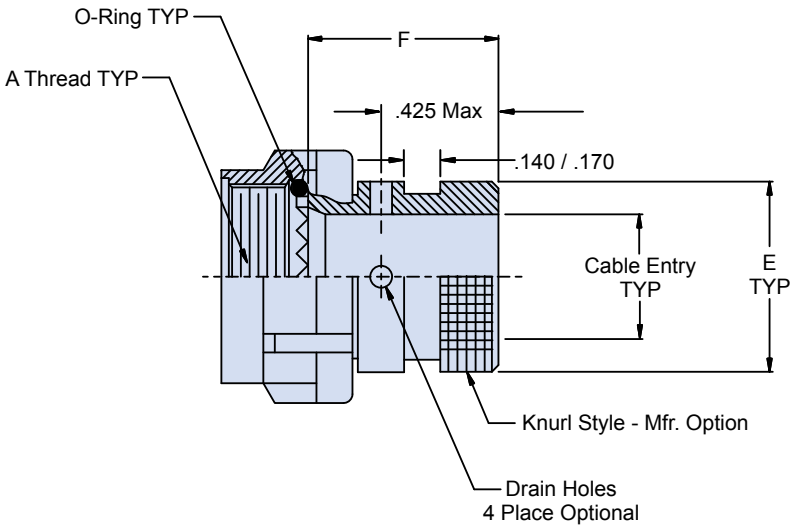
310-045 Composite shrink boot adapter

MIL-DTL-38999

STANDARD PROFILE WITH SELF-LOCKING ROTATABLE COUPLING NUT

How To Order 310-045								
Sample Part Number	**310**	**F**	**S**	**045**	**XM**	**15**	**D**	**T**
Product Series	Composite shrink boot adapter							
Connector Designator	**H** = MIL-DTL-38999 Series III							
Angle	**S** = Straight							
Basic Number	**045**							
Finish	**XB** = No plating, black **XM** = Electroless Nickel **XD** = No Plating, Desert Tan **XMT** = Nickel-PTFE *1000 Hour Gray* **XW** = Cadmium O/D over Electroless Nickel							
Connector Shell Size	See Dimensions Table							
Drain Holes	**D** = Drain Holes, omit for none.							
Shrink Boot Option	**T** = Shrink Boot, omit for none.							

Composite



Dimensions		
H Code Shell Size	**E Max**	**Cable Entry Min.**
09	.533 (13.5)	.250 (6.4)
11	.605 (15.4)	.355 (9.0)
13	.774 (19.7)	.491 (12.5)
15	.838 (21.3)	.565 (14.4)
17	.963 (24.5)	.690 (17.5)
19	1.042 (26.5)	.769 (19.5)
21	1.217 (30.9)	.894 (22.7)
23	1.355 (34.4)	1.019 (25.9)
25	1.443 (36.7)	1.134 (28.8)

NOTES

(Straight) 770-001S**-0 shrink boot supplied with "T" option.
Coupling nut supplied unplated.

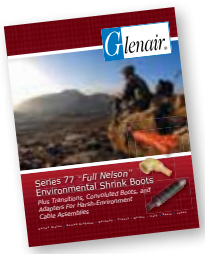
HEATSHRINK BOOTS

Heatshrink boots provide strain relief 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.

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, technical information, installation instructions and other heatshrink products. Contact Glenair or go to *www.glenair.com*.

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.

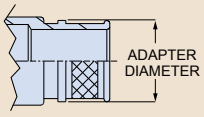
2 **Zero Halogen Polyolefin** -30°C to +135°C**.** Low Smoke Zero Halogen (LSZH) polyolefin boots meet low smoke and toxicity requirements of shipboard, transit and aircraft systems. Oxygen index greater than 30%, smoke index less than 20, and toxicity index under 3 per 100 grams. Material meets requirements of NAVSEA 5617649, VG95343 Part 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. ***Compatible with Type 1 boot material only.***

How to Order

Series	Material	Boot Size	Adhesive Lining
770-003S Heatshrink Boot Lipped Straight	**1** High Performance Elastomer, Semi-Rigid, -75°C to +150°C **2** Low Smoke, Zero Halogen Polyolefin, Semi-Flexible, -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. ***Use with Type 1 High Performance Elastomer only. Not for use with Type 2 material.***

Adapter Diameter

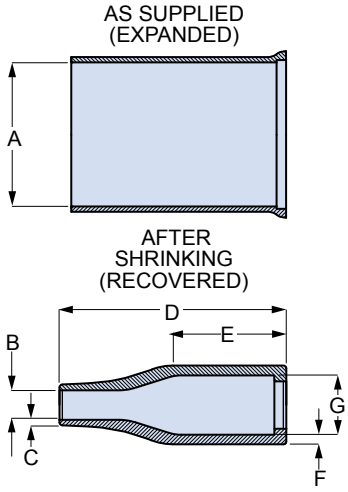
Boot Size	Inches Min.	Inches Max.	mm. Min.	mm. Max.
02	.350	.600	8.9	15.2
03	.450	.850	11.4	21.6
04	.600	1.000	15.2	25.4
05	.750	1.200	19.1	30.5
06	.900	1.350	22.9	34.3
07	1.250	1.650	31.8	41.9

Sample Part Number			
770-003S	2	06	R

SuperNine® Backshells and accessories

Series 77 heatshrink boots

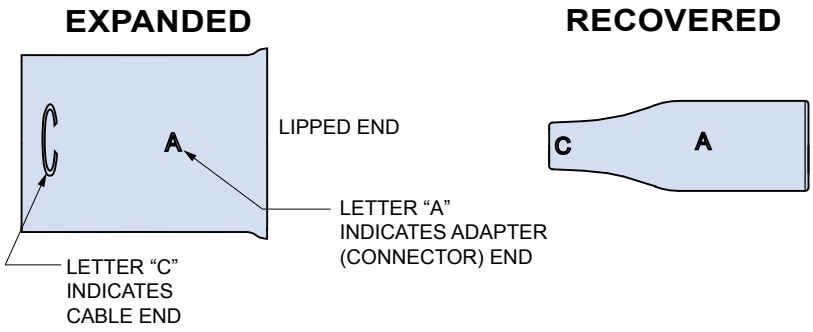
HEATSHRINK BOOT DIMENSIONS



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.

H

SuperNine® Backshells and accessories

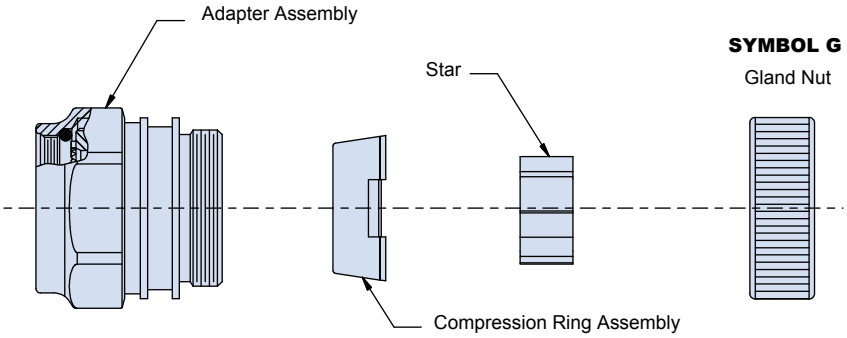
470-017 StarShield™ EMI/RFI composite backshell

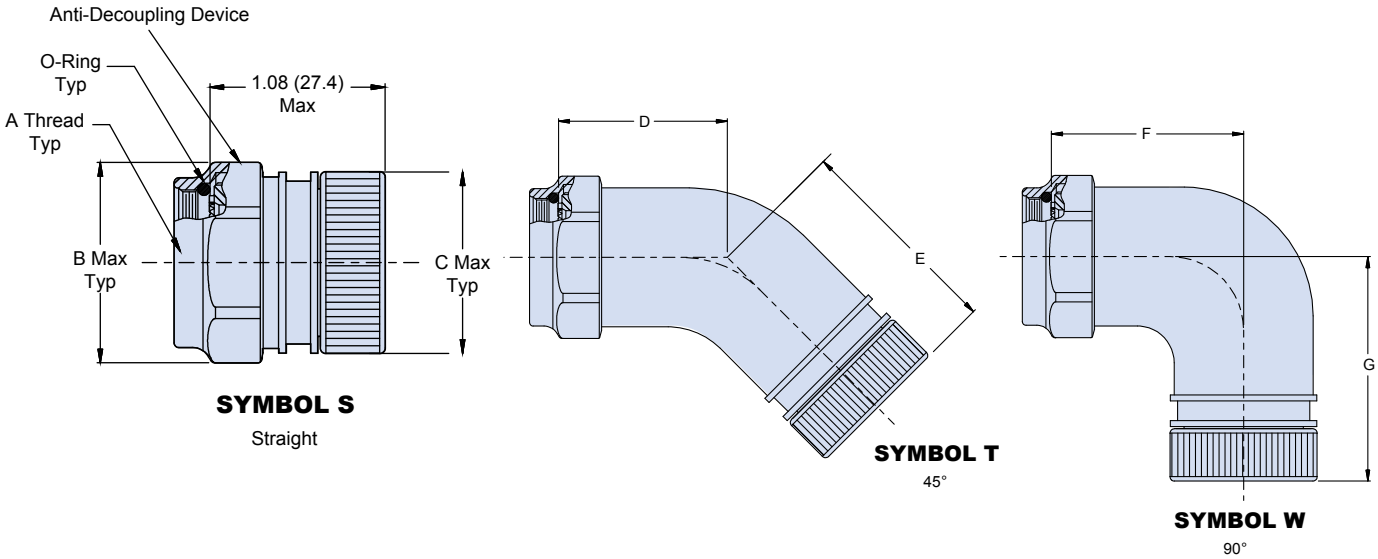
MIL-DTL-38999

EMI/RFI SHIELD TERMINATION BACKSHELL WITH SELF LOCKING COUPLING

How To Order 470-017										
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 backshellt									
Finish	**XB** = No plating, black **XM** = Electroless Nickel **XD** = No Plating, Desert Tan **XMT** = Nickel-PTFE *1000 Hour Gray* **XW** = Cadmium O/D over Electroless Nickel									
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									

Composite





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SuperNine® Backshells and accessories

470-017 StarShield™ EMI/RFI composite backshell

MIL-DTL-38999

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*	
										Std.	Opt.
09	A	9	M12 X 1 - 6H	.83 (21.1)	.681 (17.30)	0.75 (19.05)	1.09 (27.69)	0.72 (18.29)	1.20 (30.48)	1	-
11	B	11	M15 X 1 - 6H	.96 (24.4)	.885 (22.48)	0.78 (19.81)	1.12 (28.45)	0.78 (19.81)	1.26 (30.04)	2	-
13	C	13	M18 X 1 - 6H	1.09 (27.7)	.917 (23.29)	0.78 (19.81)	1.14 (28.96)	0.85 (21.59)	1.32 (33.53)	3	-
15	D	15	M22 X 1 - 6H	1.22 (31.0)	1.055 (26.80)	0.78 (19.81)	1.17 (29.702)	0.91 (23.11)	1.39 (35.31)	5	-
17	E	17	M25 X 1 - 6H	1.35 (34.3)	1.173 (29.79)	0.81 (20.57)	1.20 (30.48)	0.97 (24.64)	1.45 (36.83)	6	7
19	F	19	M28 X 1 - 6H	1.48 (37.6)	1.291 (32.79)	0.82 (20.82)	1.21 (30.73)	1.03 (26.16)	1.51 (38.35)	7	-
21	G	21	M31 X 1 - 6H	1.62 (41.1)	1.409 (37.79)	0.85 (21.59)	1.23 (31.24)	1.10 (27.94)	1.57 (39.88)	9	11
23	H	23	M34 X 1 - 6H	1.75 (44.5)	1.527 (38.79)	0.89 (22.67)	1.27 (32.26)	1.16 (29.46)	1.64 (41.66)	10	13
25	J	25	M37 X 1 - 6H	1.89 (48.0)	1.665 (42.29)	0.92 (23.37)	1.30 (33.02)	1.22 (30.99)	1.70 (43.18)	12	17

* See Note 4

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

Material/Finish:	
Backshell, compression ring and star	High grade engineering thermoplastic/ see Table III
Nuts	High grade engineering thermoplastic/ color black
O-ring	Silicone/n.a.

NOTES

- Assembly identified with manufacturer's name and P/N, space permitting.
- 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

H

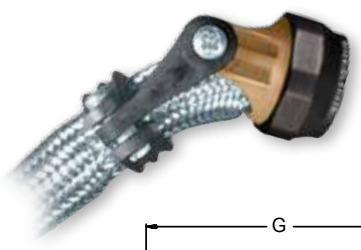
SuperNine® Backshells and accessories

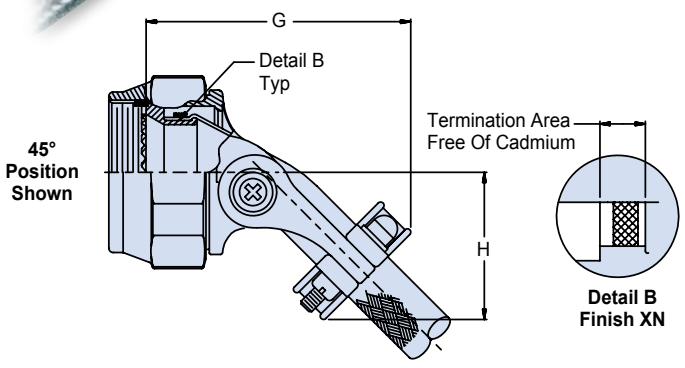
319-180 Composite Swing-Arm™ strain relief

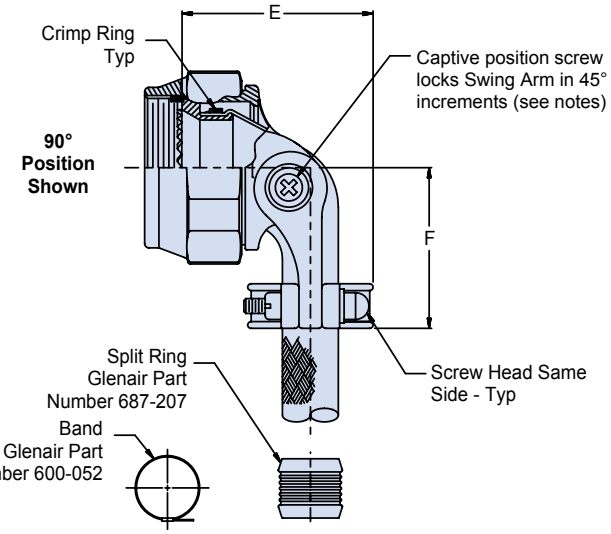
MIL-DTL-38999

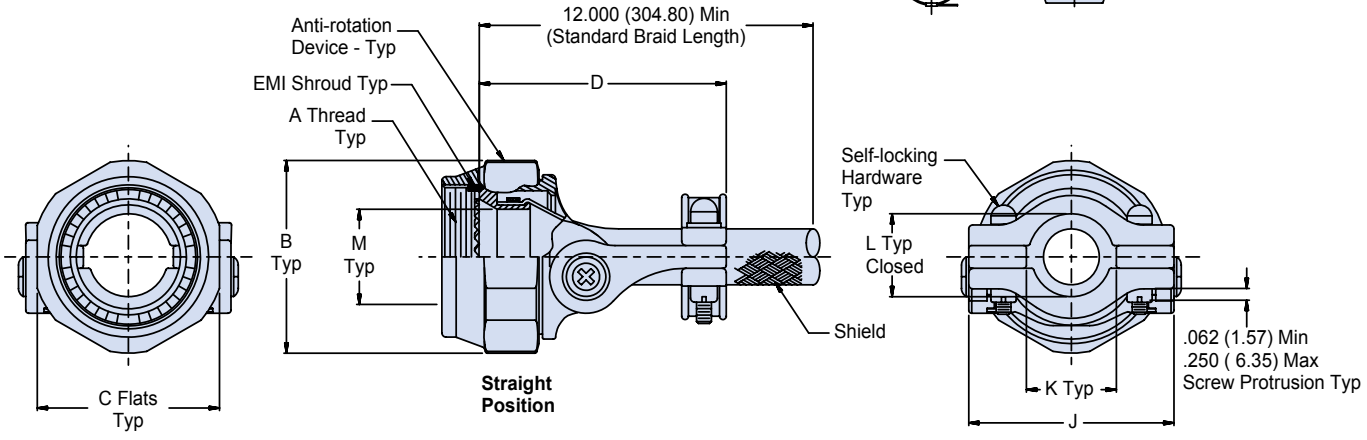
COMPOSITE BACKSHELL WITH SHIELD SOCK AND SELF-LOCKING ROTATABLE COUPLING NUT

How To Order 319-180								
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 **XM** = Electroless Nickel **XD** = No Plating, Desert Tan **XMT** = Nickel-PTFE *1000 Hour Gray* **XW** = Cadmium O/D over Electroless Nickel							
Dash Number	See Dimensions Table							
Optional Braid Material	**A** = 100% AmberStrand® **B** = 75%/25% AmberStrand® blend **L** = 100% ArmorLite™ **T** = Tin/Copper 34AWG (Omit for standard Nickel/Copper 34AWG)							
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.							









SuperNine® Backshells and accessories

319-180 Composite Swing-Arm™ strain relief

MIL-DTL-38999

Dimensions														
Connector Designator H			B Max Dia	C Flats Max	C Flats Min	D Max	E Max	F Max	G Max	H Max	J Max	K Min	L Max	M Min
Dash No.	Shell Size Ref	A Thread ISO Metric												
09	A	M12 X 1.0-6H	.812 (20.62)	.750 (19.05)	.736 (18.69)	1.500 (38.10)	.950 (24.13)	.840 (21.34)	1.430 (36.32)	.760 (19.30)	.980 (24.89)	.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)	1.540 (39.12)	.990 (25.15)	.900 (22.86)	1.490 (37.85)	.820 (20.83)	1.050 (26.67)	.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)	1.620 (41.15)	1.140 (28.96)	1.000 (25.40)	1.640 (41.66)	.920 (23.37)	1.200 (30.48)	.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)	1.630 (41.40)	1.240 (31.50)	1.070 (27.18)	1.730 (43.94)	.980 (24.89)	1.300 (33.02)	.470 (11.94)	.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)	1.730 (43.94)	1.360 (34.54)	1.130 (28.70)	1.860 (47.24)	1.080 (27.43)	1.440 (36.58)	.550 (13.97)	.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)	1.730 (43.94)	1.460 (37.08)	1.200 (30.48)	1.930 (49.02)	1.120 (28.45)	1.560 (39.62)	.620 (15.75)	.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)	1.880 (47.75)	1.550 (39.37)	1.260 (32.00)	2.080 (30.68)	1.210 (30.73)	1.690 (42.93)	.700 (17.78)	.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)	1.910 (48.51)	1.630 (41.40)	1.330 (33.78)	2.150 (54.61)	1.270 (32.26)	1.770 (44.96)	.780 (19.81)	.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)	1.940 (49.28)	1.700 (43.18)	1.400 (35.56)	2.230 (56.64)	1.330 (33.78)	1.890 (48.01)	.850 (21.59)	.896 (22.76)	1.217 (30.91)

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.
- Add MOD Code -475 to end of part number for use with Series II connector. Backshell to be supplied less shroud.
- Metric dimensions (mm) indicated in parentheses.

MATERIAL/FINISH:

Clamp body, coupling nut, saddles - High grade thermoplastic/See Table III.
Clamp hardware - CRES/Passivate
Crimp ring - Copper/Tin plated.

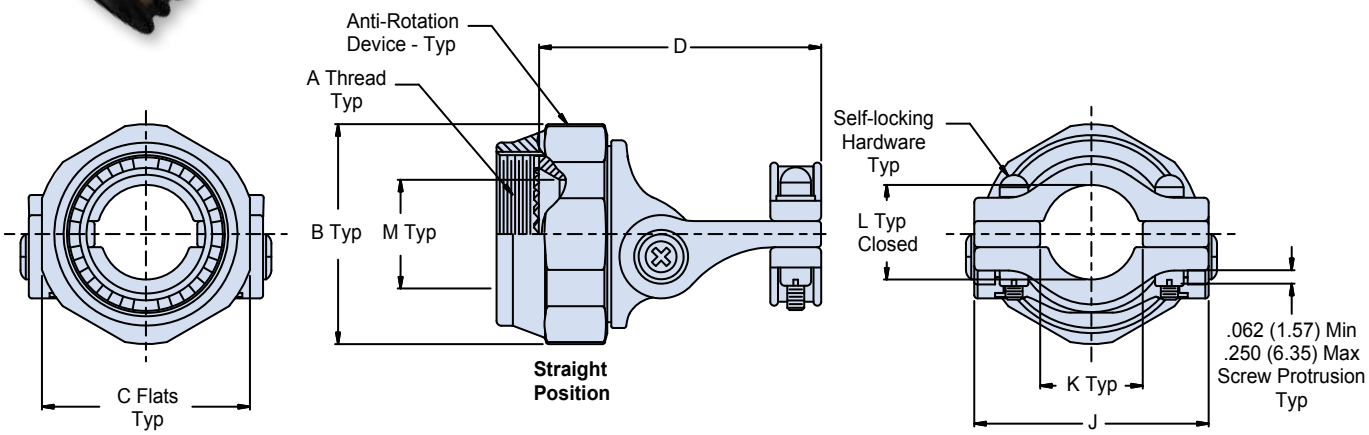
SuperNine® Backshells and accessories

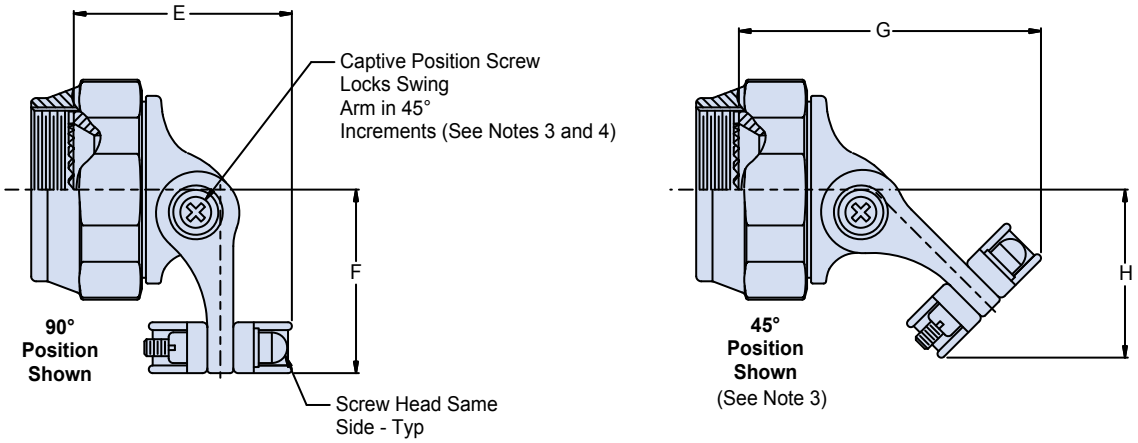
620-072 Composite strain-relief clamp

MIL-DTL-38999

How To Order 620-072					
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	**XB** = No plating, black **XM** = Electroless Nickel **XD** = No Plating, Desert Tan **XMT** = Nickel-PTFE *1000 Hour Gray* **XW** = Cadmium O/D over Electroless Nickel				
Dash Number	See Dimensions Table				

Composite





H

620-072 Composite strain-relief clamp

MIL-DTL-38999

Dimensions					
Connector Designator H			B Max Dia	C Flats	
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)
11	B	M15 x 1.0-6H	.938 (23.83)	.875 (22.23)	.860 (21.84)
13	C	M18 x 1.0-6H	1.125 (28.58)	1.000 (25.40)	.980 (24.89)
15	D	M22 x 1.0-6H	1.250 (31.75)	1.125 (28.58)	1.000 (25.40)
17	E	M25 x 1.0-6H	1.375 (34.93)	1.250 (31.75)	1.224 (31.09)
19	F	M28 x 1.0-6H	1.500 (38.10)	1.375 (34.93)	1.348 (34.24)
21	G	M31 x 1.0-6H	1.625 (41.28)	1.500 (38.10)	1.469 (38.00)
23	H	M34 x 1.0-6H	1.750 (44.45)	1.625 (41.28)	1.581 (40.16)
25	I	M37 x 1.0-6H	1.875 (47.63)	1.750 (44.45)	1.690 (42.93)

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

NOTES

Assembly identified with manufacturer's name and P/N, space permitting.
Glenair 600 Series backshell assembly tools are recommended for assembly and installation.
Swing arm locks in 45° increments in sizes 09 through 25. Additional positioning increments is manufacturer's option.
Screw is captive to the arm when disengaged. When tightened, the screw shall not protrude into the inside surfaces.

MATERIAL/FINISH:

Clamp body, coupling nut, saddles - High grade engineering thermoplastic, black/No plating.
Clamp hardware - CRES/Passivate.
Anti-Rotation device - Corrosion resistant material.

Composite Swing-Arm™ strain relief assembly procedure

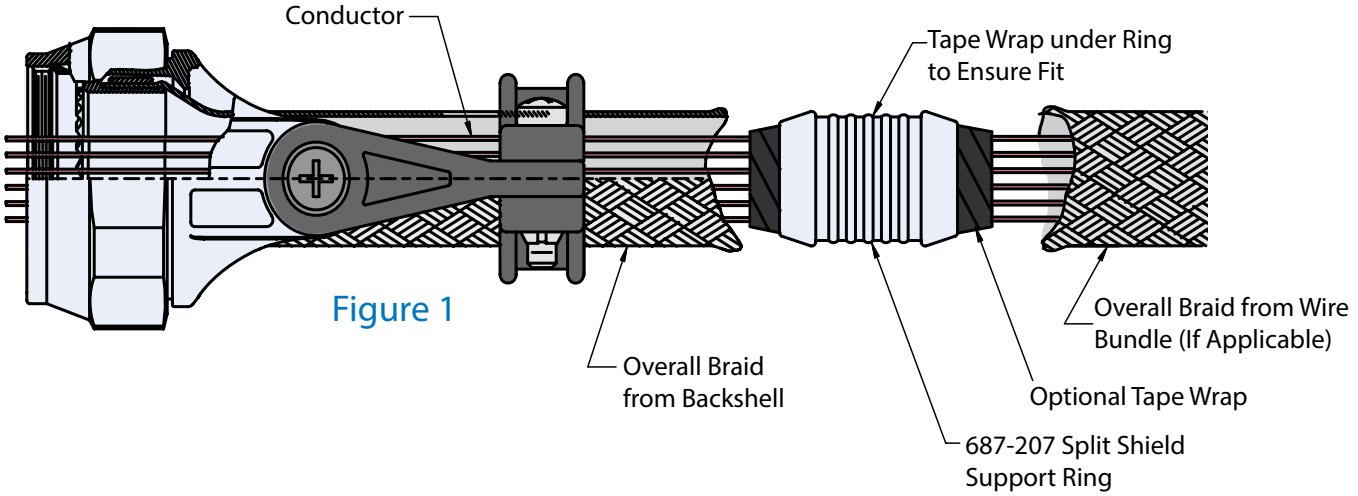


Figure 1

GLENAIR SWING-ARM OFFERS EXTREMELY FAST AND TROUBLE-FREE TERMINATION OF EMI SHIELDING:

Choose Straight, 45° or 90° angle, and tighten screws to lock arms in place. Leave the saddle clamp hardware loose.

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

Loosely assembly the adapter to the connector and push back the backshell braid. Insert the wire bundle into the adapter and bottom it against the connector. Holding the cable, mark or tag the location where the shield support ring (Glenair Part Number 687-207) 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.

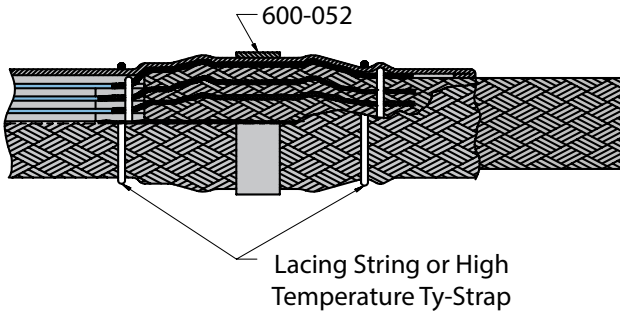


Figure 2

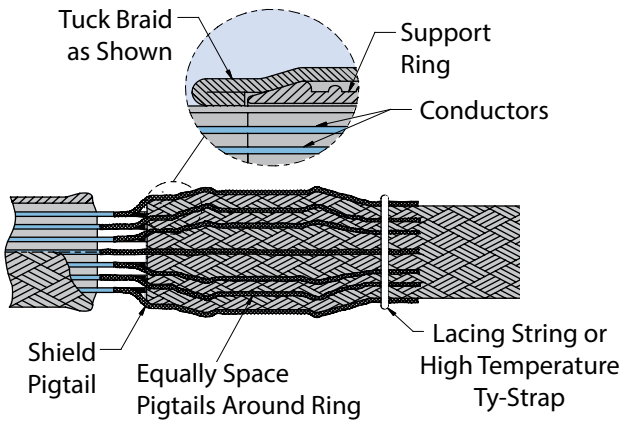


Figure 3

Composite Swing-Arm™ strain relief assembly procedure

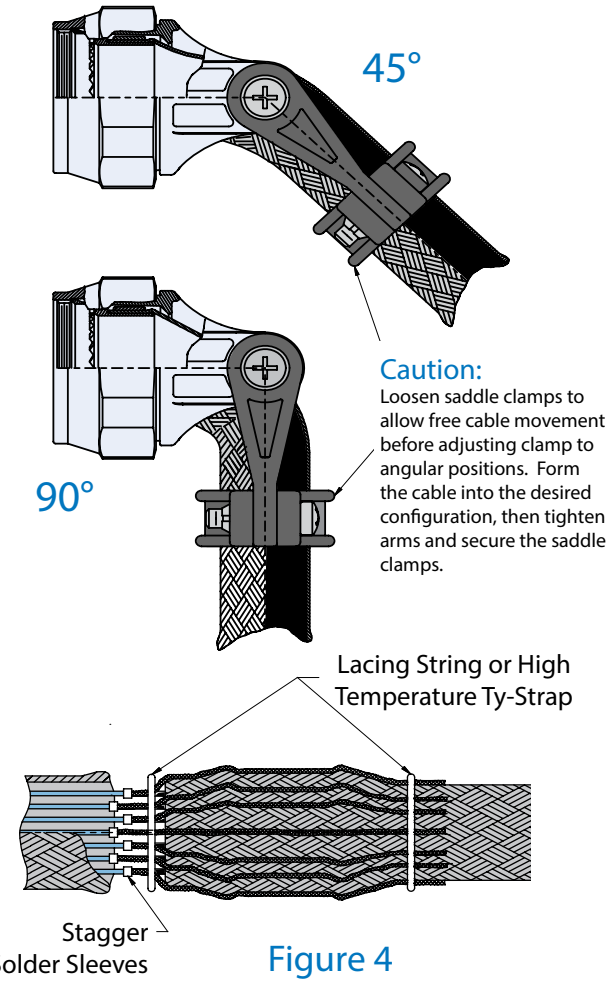


Figure 4

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.

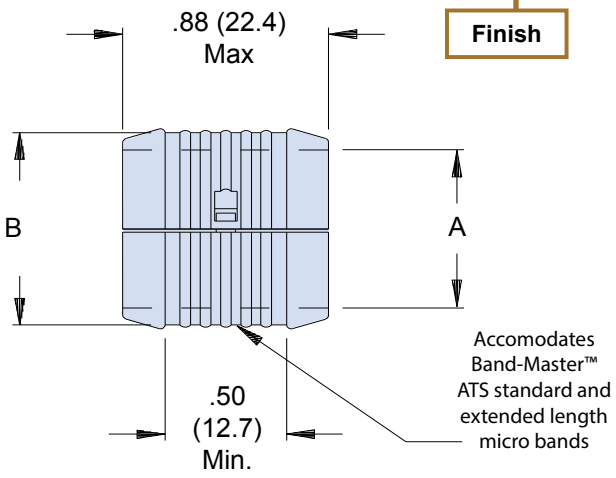
Next, you can wrap the shield support ring assembly with high temperature tape. Place lacing cord, high temperature tape, or high temperature plastic Ty-Straps on the braid transition to the rear of the backshell to secure the overbraid on wire bundle. If you wish, you can cover the overbraid with 102-080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

Basic Number	Dash Number	
687-749	XB	16
	Finish	



Dash Number		
Dash No.	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)

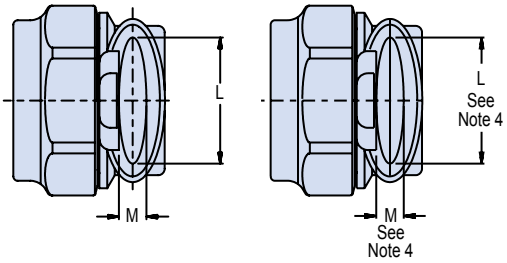
SuperNine® Backshells and accessories

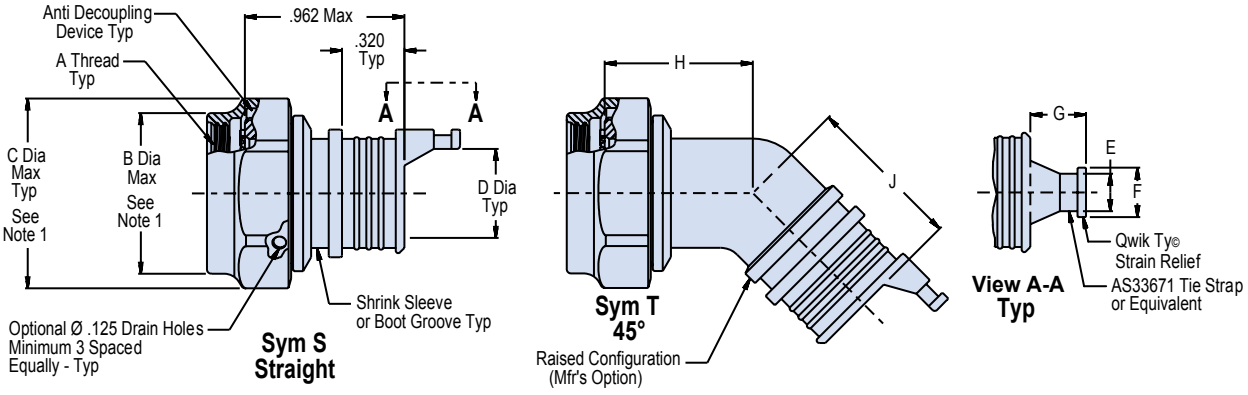
440-143 Composite ultra-low-profile EMI/RFI backshell

MIL-DTL-38999

COMPOSITE BACKSHELL WITH QWIK-TY, SHRINK BOOT PORCH, AND SELF-LOCKING COUPLING NUT

How To Order 440-143											
Sample Part Number	**440**	**H**	**S**	**143**	**XM**	**15**	**09**	**D**	**B**	**T**	**S**
Product Series	EMI/RFI non-environmental micro-banding backshells										
Connector Designator	**H** = MIL-DTL-38999 Series III										
Angle and Profile	**S** = Straight T = 45° Elbow **A** = 90° Standard Profile **E** = 90° Low Profile, Split **W** = 90° Low Profile, Solid										
Basic Number	**144**										
Finish	**XB** = No plating, black **XM** = Electroless Nickel **XD** = No Plating, Desert Tan **XMT** = Nickel-PTFE *1000 Hour Gray* **XW** = Cadmium O/D over Electroless Nickel										
Connector Shell Size	**09**, **11**, **13**, **15**, **17**, **19**, **21**, **23**, **25**,										
Cable Entry	**04**, **05**, **07**, **09**, **11**, **13**, **15**, **16** ,**17**; Omit for Low Profile options 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.										





NOTES

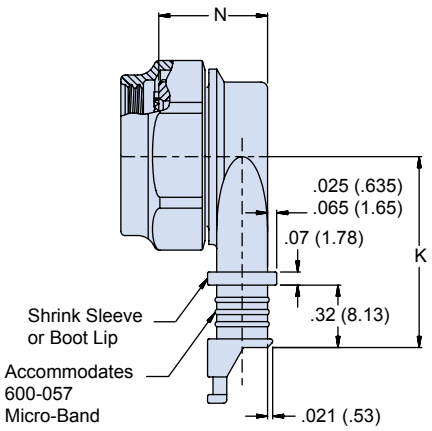
770-001S**-0 shrink boot supplied with T option. See shrink boot product page for more details.
Coupling nut supplied unplated.
See Table I in Intro for front-end dimensional details.
For Sym "E" low profile split shell size 25 dimensions, use indicated row in Table I.

SuperNine® Backshells and accessories

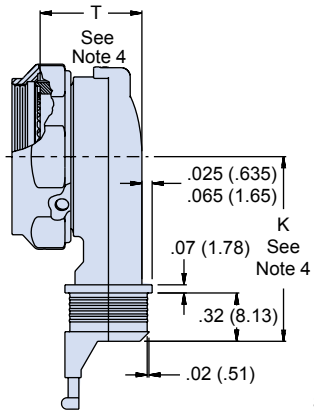
440-143 Composite ultra-low-profile EMI/RFI backshell

MIL-DTL-38999

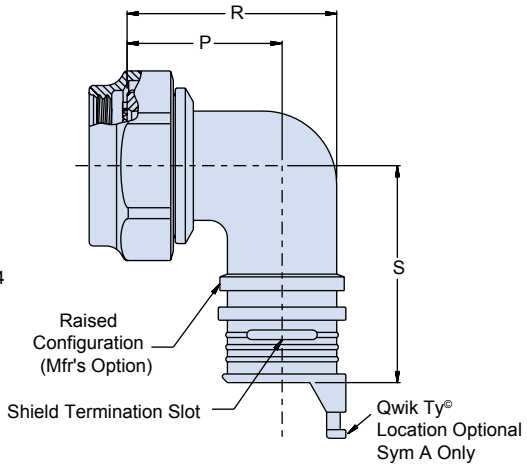
Dimensions									
Shell Size	Entry Code Available for Straight, 45° and 90° Std Configuration	K ± .03	L	M	N Max	P ±.09	R ±.09	S Max	T Max
09	04	1.042 (26.5)	.304 (7.7)	.160 (4.1)	.630 (16.0)	.690 (17.5)	.880 (22.4)	1.360 (34.5)	.810 (20.6)
11	05	1.107 (28.1)	.432 (11.0)	.174 (4.4)	.660 (16.8)	.750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



Sym W
90° - Low Profile
(Solid)



Sym E
90° - Low Profile
(Split)



Sym A
90° - Std

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

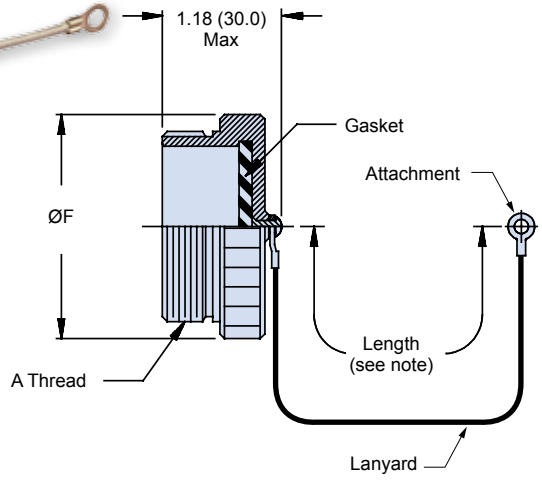
SuperNine® Backshells and accessories

660-049 and -050 Composite protective covers

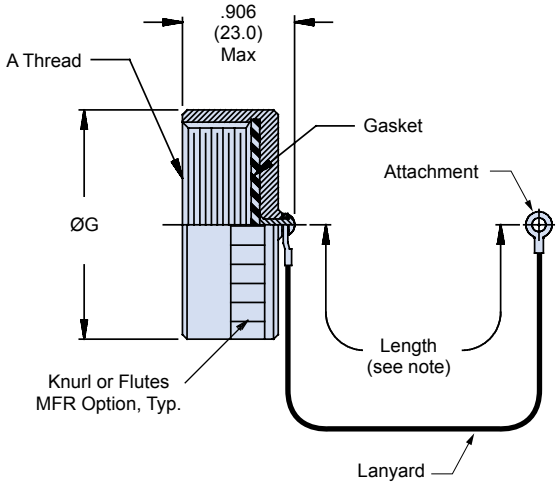
MIL-DTL-38999

How To Order 660-049 and 660-050						
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 **XM** = Electroless Nickel **XD** = No Plating, Desert Tan **XMT** = Nickel-PTFE *1000 Hour Gray* **XW** = Cadmium O/D over Electroless Nickel					
Connector Shell Size	**09**, **11**, **13**, **15**, **15**, **17**, **19**, **21**, **23**, **25**; See Dimensions Table					
Lanyard Type	**D**, **F**, **G**, **H**, **K**, **N**, **R**, **S**, **SK**, **T**, **U**; See Lanyard Code Table					
Attachment Length	In Inches					
Ring Style Dash No.	**See** Tables I, II, III					

Composite



-049 Plug Cover
MIL-DTL-38999/32 Type



-050 Receptacle Cover
MIL-DTL-38999/33 Type

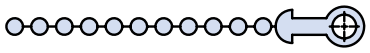
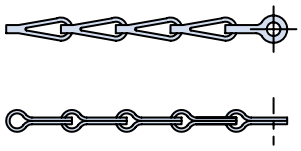
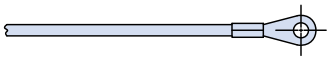
Dimensions			
Shell Size	**A Thread**	**Ø F Max**	**Ø G Max**
09	.6250 - 0.1P-0.3L-TS	0.906 (23.0)	.906 (23.0)
11	.7500 - 0.1P-0.3L-TS	1.024 (26.0)	1.102 (28.0)
13	.8750 - 0.1P-0.3L-TS	1.220 (31.0)	1.220 (31.0)
15	1.0000 - 0.1P-0.3L-TS	1.300 (33.0)	1.260 (32.0)
17	1.1875 - 0.1P-0.3L-TS	1.457 (37.0)	1.457 (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)

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

SuperNine® Backshells and accessories

660-049 and -050 Composite protective covers

MIL-DTL-38999

Available Lanyard Types (shown with optional eyelet attachment)		
		
Bead Chain (Type D)	Sash Chain (Type S)	Rope (Types F, G, H, K, R, T, U)

SPLIT RING

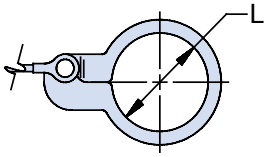


Table I	
Dash No	L Dia ±.015 (0.4)
50	.425 (10.8)
52	.485 (12.3)
54	.640 (16.3)
56	.750 (19.1)
58	.890 (22.6)
60	1.015 (25.8)
62	1.095 (27.8)
64	1.130 (28.7)
66	1.250 (31.8)
68	1.350 (34.3)
70	1.390 (35.3)
72	1.485 (37.7)
74	1.625 (41.3)
76	1.750 (44.5)
78	1.875 (47.6)
80	1.980 (50.3)
82	2.060 (52.3)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

SOLID RING

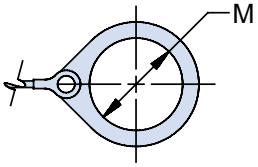


Table II	
Dash No	M Dia ±.015 (0.4)
08	.468 (11.9)
10	.593 (15.1)
12	.718 (18.2)
13	.765 (19.4)
14	.844 (21.4)
15	.890 (22.6)
16	.968 (24.6)
17	1.015 (25.8)
18	1.093 (27.8)
19	1.140 (29.0)
20	1.203 (30.6)
21	1.265 (32.1)
22	1.343 (34.1)
23	1.453 (36.9)
24	1.484 (37.7)
25	1.577 (40.1)
27	1.640 (41.7)
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)

SOLID RING

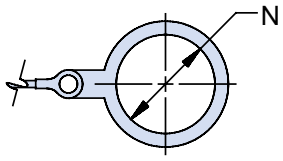


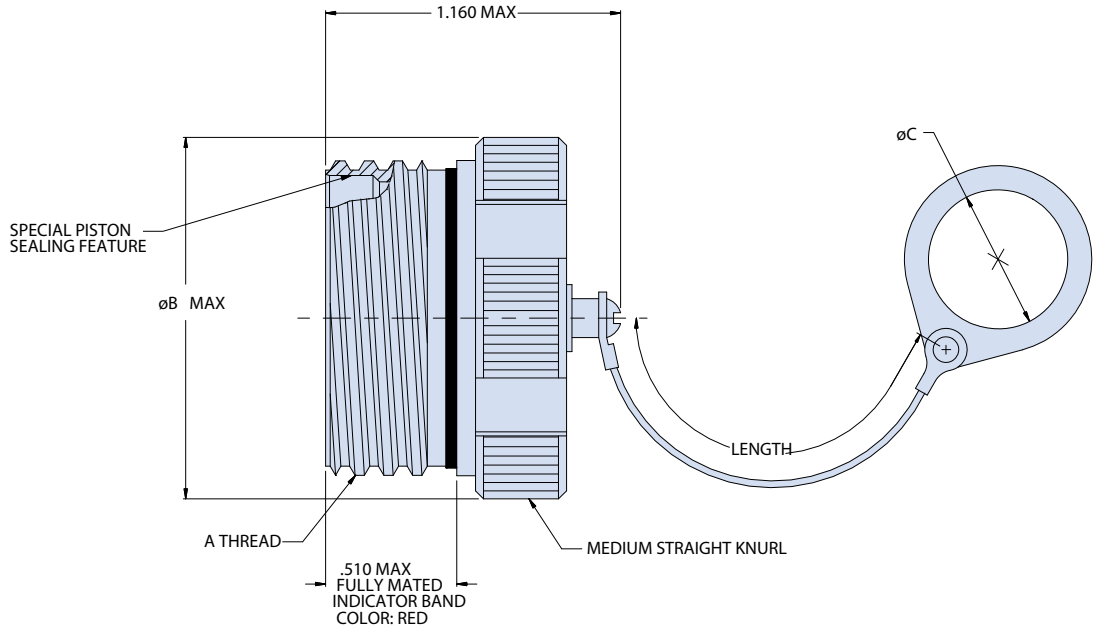
Table III	
Dash No	N Dia ±.015 (0.4)
100	.391 (9.9)
101	.516 (13.1)
102	.583 (14.8)
103	.641 (16.3)
104	.708 (18.0)
105	.766 (19.5)
205	.788 (20.0)
106	.896 (22.2)
206	.907 (23.0)
107	1.016 (25.8)
207	1.025 (26.0)
108	1.141 (29.0)
208	1.203 (30.6)
109	1.266 (32.2)
110	1.391 (35.3)
111	1.521 (38.6)
211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

SuperNine® Backshells and accessories

239-200 Plug cover for 233-215 piston-seal connector

MIL-DTL-38999

How To Order 239-200						
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**, **T0**, **TPS**, **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	In Inches					
Ring Style Dash No.	See Table I					



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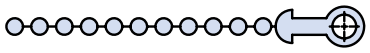
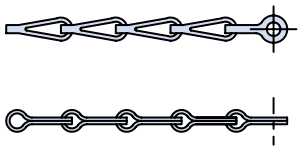
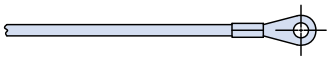
NOTES

Material/Finish: Hardware, Rivet - CRES/Passivate
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 233-200 piston-sealed connector series.
Length tolerance for sash chain (S) is ± one link, for all other attachments ± .25
Diameter C is maximum mandrel dia. which attachment will rotate freely over

SuperNine® Backshells and accessories

239-200 Plug cover for 233-215 piston-seal connector

MIL-DTL-38999

Available Lanyard Types (shown with optional eyelet attachment)		
		
Bead Chain (Type D)	Sash Chain (Type S)	Rope (Types F, G, H, K, R, T, U)

Dimensions		
Shell Size	A Thread	Ø B Max
09	.6250 - 0.1P-0.3L-TS	.858 (21.8)
11	.7500 - 0.1P-0.3L-TS	.984 (25.0)
13	.8750 - 0.1P-0.3L-TS	1.157 (29.4)
15	1.0000 - 0.1P-0.3L-TS	1.280 (32.5)
17	1.1875 - 0.1P-0.3L-TS	1.406 (35.7)
19	1.2500 - 0.1P-0.3L-TS	1.516 (38.5)
21	1.3750 - 0.1P-0.3L-TS	1.642 (41.7)
23	1.5000 - 0.1P-0.3L-TS	1.768 (44.9)
25	1.6250 - 0.1P-0.3L-TS	1.890 (48.0)

SOLID RING

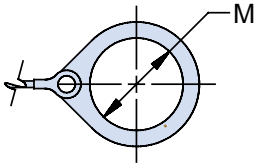


Table I	
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35	2.140 (54.4)
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Lanyard Codes	
Code	Description
D	Bead Chain, CRES, Passivated
F	Wire Rope, Nylon Jacket
G	Nylon Rope, Black
H	Wire Rope, Teflon Jacket
K	Nylon Rope, Olive Drab
N	No Lanyard
R	Wire Rope, PVC Jacket
S	#8 Sash Chain, CRES, Passivated
T	Wire Rope, No Jacket
U	Wire Rope, Polyurethane Jacket

Material/Finish			
Sym	Material	Finish Description	RoHS
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	☑

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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 opto-electronic, 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 other assembly aids.

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

Product Selection Guide

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EXTENDED DUTY CRIMP CONTACTS

How-To-Order Extended Duty Crimp Contacts					
Mating End Size	Wire Accomodation	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 µinches gold over 45 µinches palladium alloy.
Rated to 1500 cycles of durability.

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 M17/094-RG179	852-004-12-558	M39029/102-558	Green	Green	Gray
Socket	M17/113-RG316 M17/094-RG179	852-005-12-559	M39029/103-559	Green	Green	White

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 #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

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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

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 Conectric 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)

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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 Conectric 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

#8 HIGH POWER CONTACTS

How-To-Order #8 High Power Contacts		
Mating End Size	Wire Accommodation	Glenair Part Number
8	8 AWG	850-013
8	8AWG	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

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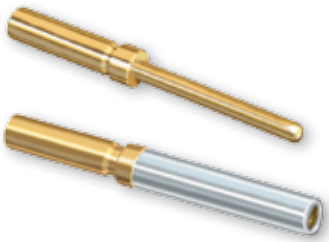
THERMOCOUPLE CONTACTS

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

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
Pin	#22 – #28	BeCu	M39029/18-177	None
Socket	#22 – #28	BeCu	M39029/17-172	None

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.

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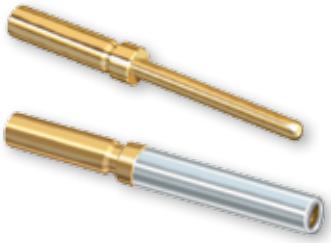
SIZE #23 CONTACTS FOR HIGH-DENSITY CONTACT ARRANGEMENTS



How-To-Order Size #23 Contacts for High-Density Arrangements				
Contact Type	Wire Size	Material	Part Number	Color Band
Pin	#22 – #28	BeCu	M39029/18-177	None
Socket	#22 – #28	BeCu	M39029/17-172	None

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.

SIZE #8 CAVITY OPTO-ELECTRONIC CONTACT

TX (with blue stripe)

RX

Patent Pending

Size 8 Cavity Opto-electronic 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 Opto-Electronic 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)

J

Crimp contact termination instructions

HOW TO TERMINATE, INSTALL AND REMOVE CRIMP CONTACTS

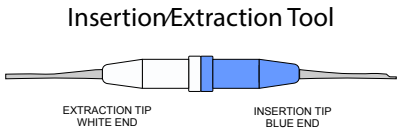
1 ***Set Up Crimp Tool.*** Install proper positioner into crimp tool. The label on the positioner shows the proper tool setting for each wire size. Turn the adjustment wheel to the correct setting.

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.

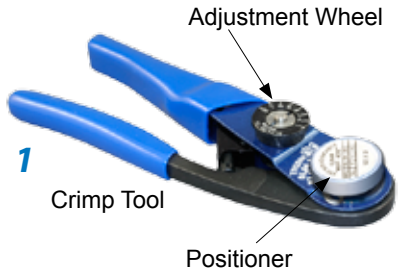
4 Insert contact into crimp tool as shown. Make sure that the contact is fully inserted into the tool. Squeeze handle completely. The ratchet mechanism will not allow a partial crimp. Release handle and remove contact.

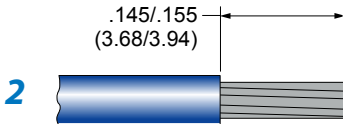
5 ***Inspect crimped contact.*** Wire should be fully inserted and the crimp should be uniform in appearance.

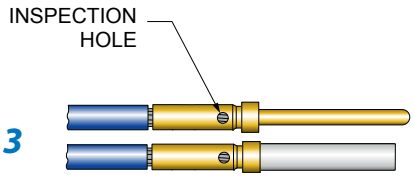


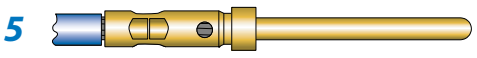
6 ***Install contact into connector.*** Push the contact through the rear grommet until the contact locks into place. This can usually be done by hand without the need for a tool. If the wire gage is #26 or smaller, a tool is helpful. There are two techniques for installing contacts with a tool. One 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.**

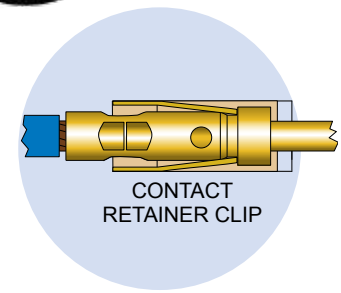
7 ***Contact Extraction.*** Use tool M81969/14-01. The white end is used for contact extraction. First, push the wire into the groove of the metal tip. Slide the tip of the tool into the connector. Push the tool into the connector cavity until the tip bottoms in the connector. Avoid wiggling or rocking 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.**

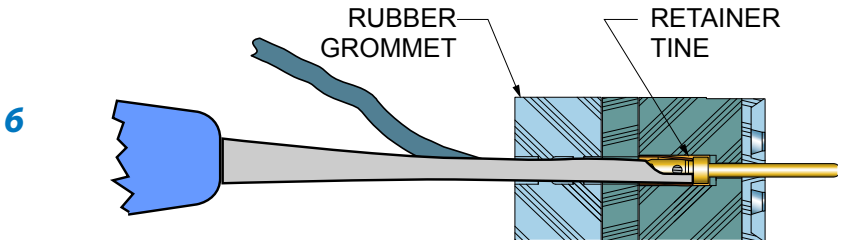


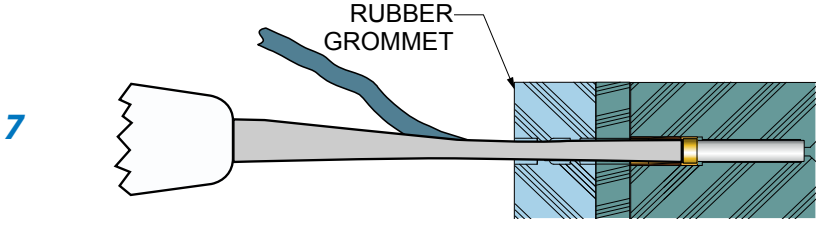












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MINIATURE ADJUSTABLE CRIMP TOOLS

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.

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

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	809-005	(none)	K1461	Size #23 contacts for #22-#28 AWG wire
D	809-057	(none)	(none)	Small bore #23 for #26-#30 AWG wire
E	809-125	M22520/2-35	K532-1	M39029/76 and /78 coax inner contact
F	809-124	(none)	K1360	Matched impedance #12 coax inner contact
G	809-135	M22520/2-34	K323	M39029/27 and /28 coax inner contact
H	859-006	(none)	K1721	Matched impedance #12 coax inner contact. (Use with 809-128 crimp tool)
I	809-206	(none)	(none)	#20HD contacts
Not Shown		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

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CRIMP TOOL AND POSITIONER FOR #12, #16 AND #20 POWER CONTACTS, CRIMP ADAPTERS

J 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.

K Positioner for use with size #20, #12 and #16 Power contacts.

L Positioner for use with 809-093 Mighty Mouse and Micro Crimp wire adapters.

Figure	Part Number	Military Part Number	Daniels Part Number
J	809-136	M22520/1-01	AF8
K	809-137	M22520/1-04	TH163
L	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.

M Crimp tool for use with size #16 coaxial contacts. Blue handles. 9.75 inches OAL, 1.25 pounds.

N 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
M	809-127	M22520/4-01	GS100-1
N	809-126	M22520/4-02	GP295

CRIMP TOOL AND POSITIONER FOR #12 COAXIAL OUTER CONTACT

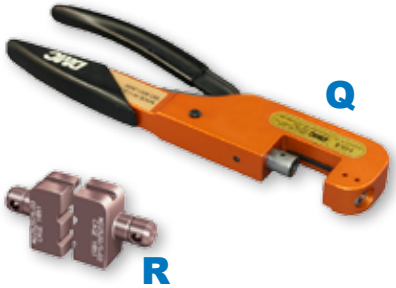
For crimping size #12 shield sleeves. These mil spec approved tools feature a ratchet mechanism to prevent damage from over crimping. Check calibration with M22520/3 gage.

O Crimp tool for use with size #12 coaxial contacts. Black handles. 9.75 inches OAL, 1.25 pounds.

P 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
O	809-133	M22520/31-01	GS200-1
P	809-134	M22520/31-02	G2P330

PARALLEL ACTION CRIMP TOOL AND HEX DIE SET FOR 50 OHM MATCHED IMPEDANCE #12 COAX



Q 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.

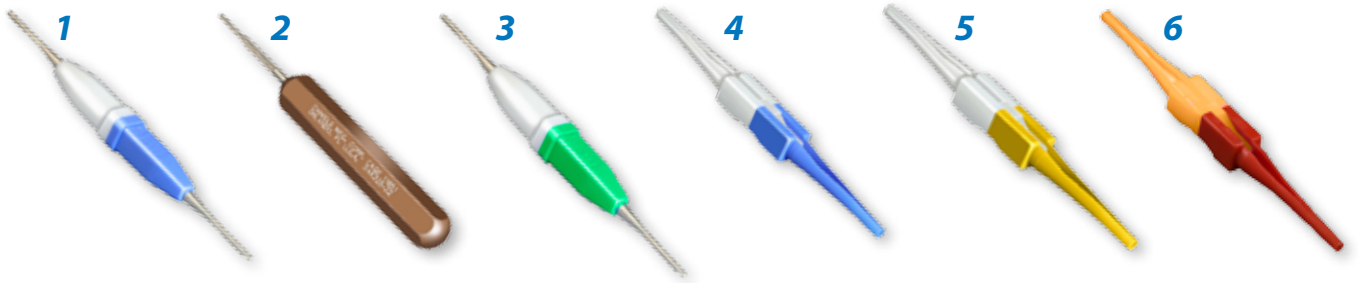
R Die set for terminating coaxial shield to outer contact. Use with size #12 matched impedance M39029/102 and 103 type coaxial contacts. Set consists of upper and lower halves. Made of hardened steel with black oxide finish. Die set has two closures.

Figure	Part Number	Military Part Number	Daniels Part Number
Q	809-129	M22520/5-01	HX4
R	809-130	M22520/5-03	Y196

Contact tools

Insertion and extraction tools and retention tester

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)

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SuperNine®

Band-Master™ ATS Banding Tool

For Standard Bands 601-005, -040, and -049

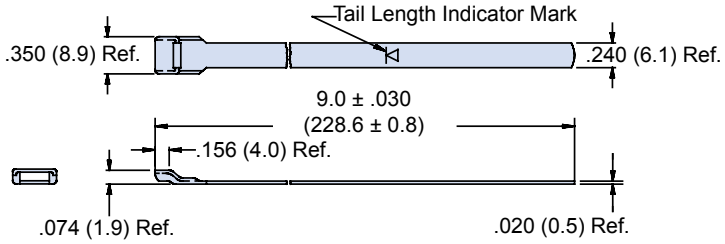
The 601-100 Standard Band-Master™ ATS Tool weighs 1.18 lbs., and is designed for standard flat .24" width clamping bands (601-005, 601-040 and 601-049) in a tension range from 100 to 180 lbs. Calibrate at 150 lbs. ± 5 lbs. for most shield terminations. Tool and band should never be lubricated.

	Band-Master™ ATS Band Selection							
	Length		Part Number				Fits Diameter	
Bands	in.	mm.	Flat	Pre-Coiled	100 Count Flat	100 Count Precoiled	in.	mm.
Short Standard Ba nd	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	304 SS	0.24"	.020"	150 lbs	160 lbs
Micro	304 SS	0.12"	.015"	80 lbs	80 lbs
Nano	304 SS	0.075"	.010"	35 lbs	100 lbs*

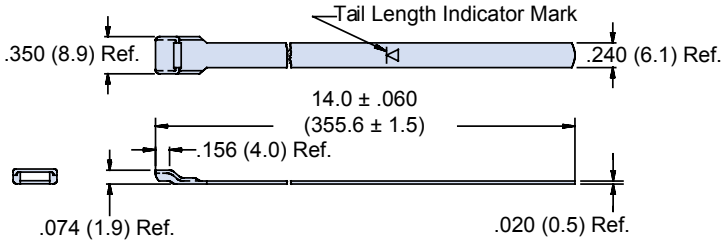
Short Flat 601-005
Short Precoiled 601-006

Standard Bands are precision constructed of 300 Series SST/Passivate. 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).



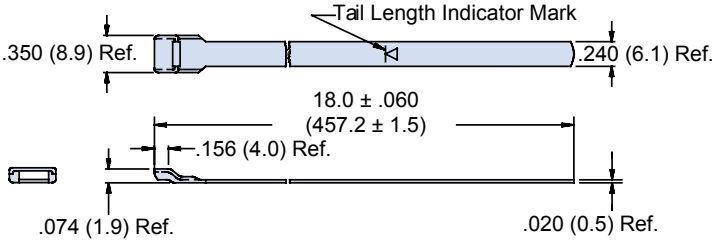
Medium Flat 601-040
Medium Precoiled 601-041

Standard Bands are precision constructed of 300 Series SST/Passivate. 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. 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).



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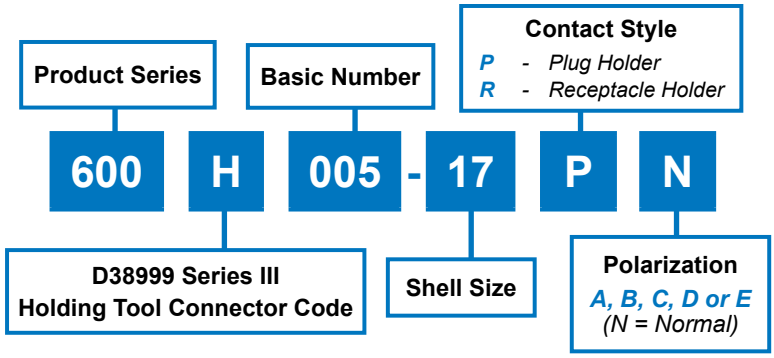
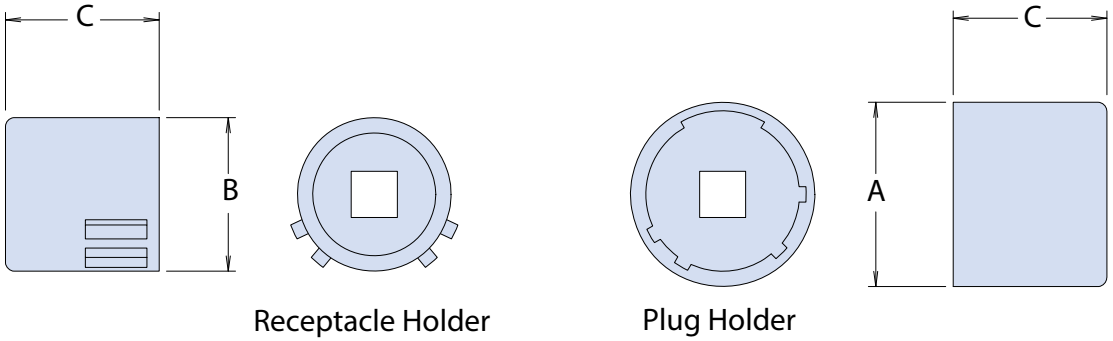
600H005 Connector holding tool, plug and receptacle





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

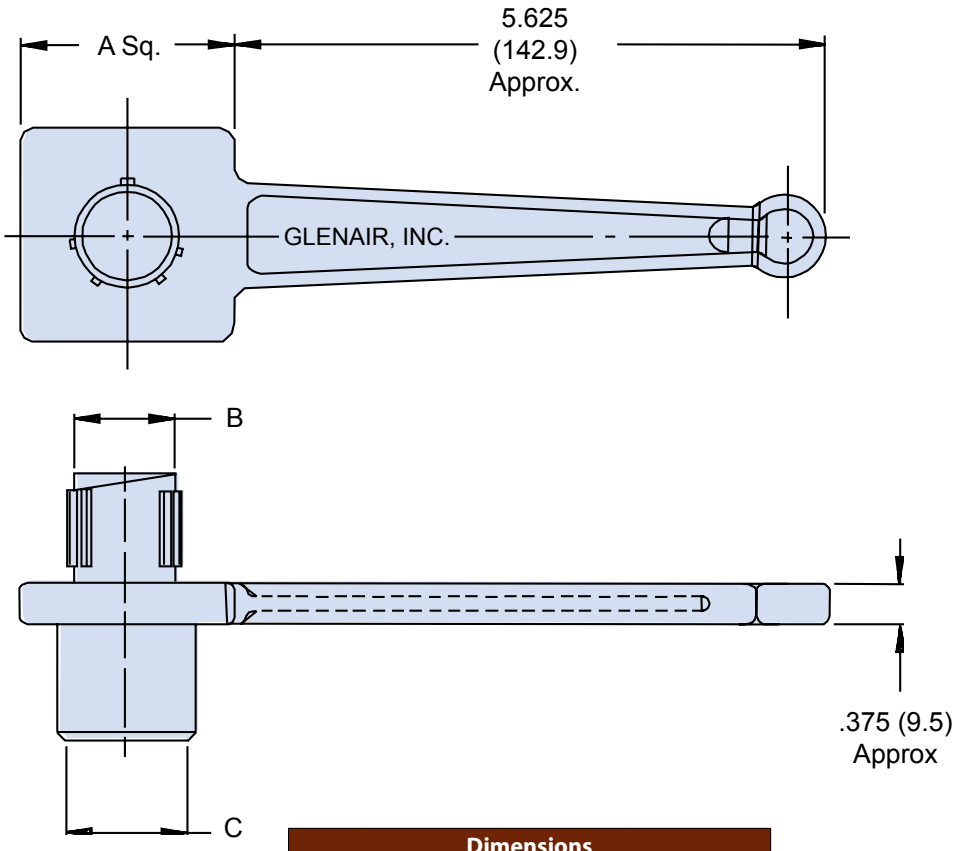
J

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.

TG90 Connector wrench

TG90	-	15	A
Basic Part Number		Shell Size	Polarization *A, B, C, D, E* (Omit for Normal)



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)

NOTES

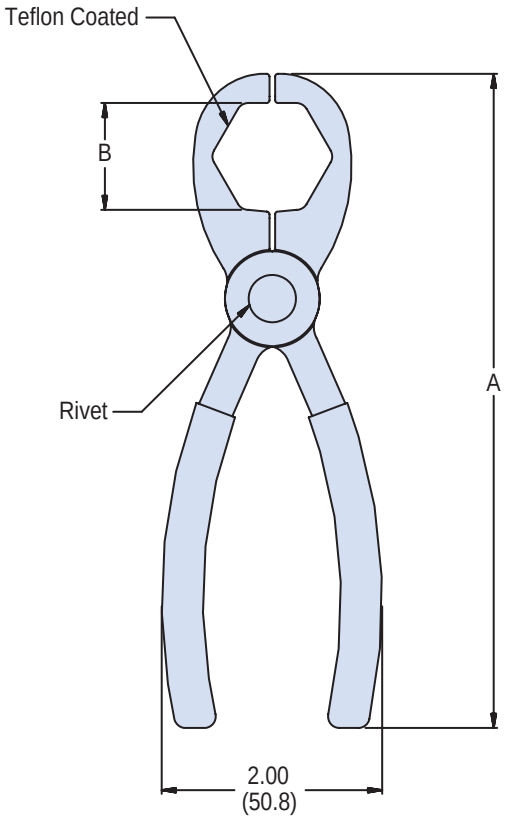
1. Metric dimensions (mm) are indicated in parentheses.
2. Material: Aluminum alloy with electroless nickel finish.

600-157 Composite hex-coupling wrench

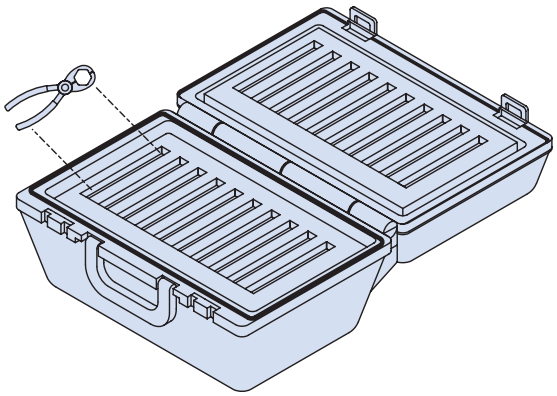
STAINLESS STEEL TOOL FOR USE WITH GLENAIR COMPOSITE BACKSHELLS

600 - 157 - K

- **600** — Product Series
- **157** — Basic Number
- **K** — Dash Number for Individual Wrench or:
  - ***K*** *- All Wrench Sizes 08 through 24, No Case*
  - ***KC*** *- All Wrench Sizes 08 through 24 with Case*



Dash Number			
Dash Number	A Ref	B Hex ±.005 (0.1)	Connector for Shell Size Code H
09	6.700 (170.2)	.750 (19.1)	09
11	6.750 (171.5)	.875 (22.2)	11
13	6.810 (173.0)	1.000 (25.4)	13
15	6.880 (174.8)	1.125 (28.6)	15
17	6.950 (176.5)	1.250 (31.8)	17
19	7.050 (179.1)	1.375 (34.9)	19
21	7.150 (181.6)	1.500 (38.1)	21
23	7.380 (187.5)	1.625 (41.3)	23
25	7.440 (189.0)	1.750 (44.5)	25



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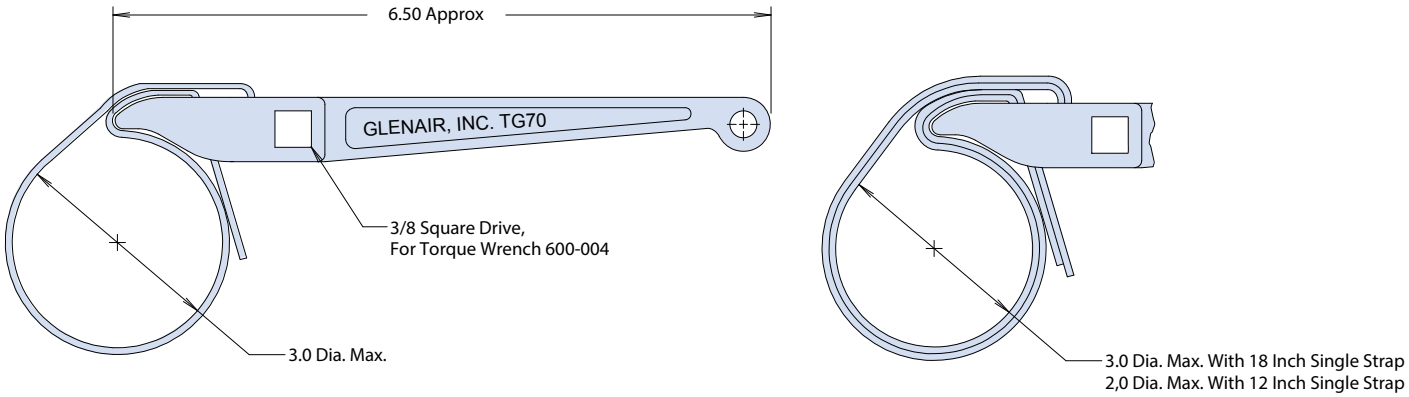
NOTES

1. This backshell assembly tool is designed for Glenair composite hex coupling applications and should be used in conjunction with Glenair torque wrenches (see page 14).
2. These wrenches are made of stainless steel with vinyl grips.
3. Metric dimensions (mm) are indicated in parentheses.

TG70 Connector strap wrench with 3/8" square drive



Basic Part Number | **Torque Wrench** *(Omit for None)*

TG70 - 1 - 18

Strap Length in Inches (See Notes2 and 4)
Lengths Available: 12, 18, 24 and 36-Inch Only
Standard length is 12 Inches,
Omit Dash Number for Standard

NOTES

1. These wrenches are made of the following materials:
   Wrench Handle - Aluminum Alloy/Nickel Plate.
   Wedge - Stainless Steel/Passivated.
   Strap - Impregnated Fabric. Straps are 1/2 inch (12.7) in width.
2. Replacement straps are available. Specify part number G70515-xx for 12,
   18, 24 or 36-inch strap. 24 and 36 inch for double wrap.
3. Metric dimensions (mm) are indicated in parentheses.
4. Double wrap as shown for heavy duty range.
5. Not recommended for composite coupling nuts (use 600-091 or 600-157).

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

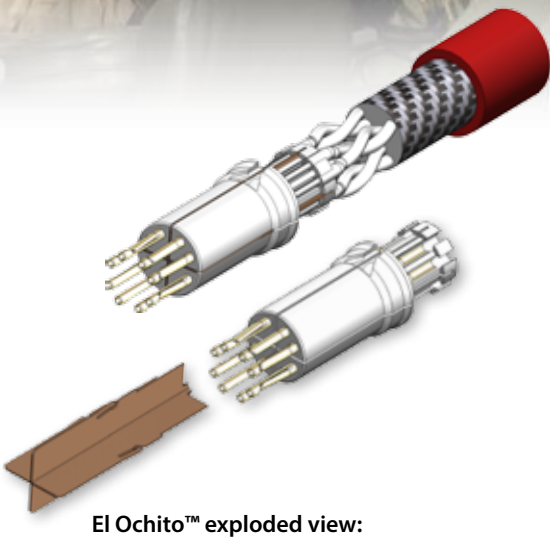
VARIANCE CHART NOTES

1. Recommended installation torque is approximately 80% of MIL-C-85049 accessory thread strength values.
2. 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.
3. 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.
4. Glenair recomends that heavy duty torque values be directly read through the connector shell body with the use of 600-005 connectors holding tools.

El Ochito™: The Ultimate Ethernet Contact

"The Little Eight": Eight miniaturized contacts in a standard size #8 shielded module—10G Ethernet ready, with dramatic size and weight reduction compared to all other available solutions

- Up to 50% total weight savings compared to Quadrax-based solutions
- One full Ethernet channel per standard size #8 cavity
- Fast and easy crimp termination of wires to contacts—PC Tails available
- 100% drop-in solution to installed connectors—no redesign or reinstallation of interfaces
- Supplied as crimp contacts, wire pigtails, or in PC tail configurations in the connector of your choice—up to 8 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 Series 80 Mighty Mouse, as well as D38999 Series III, EN4165, EN3645, EPX® and other ARINC standards and is ideally suited for Ethernet, high-definition video, high-speed data loading, and other 1Gb/sec and 10Gb/sec applications.

El Ochito™: The Ultimate Ethernet Contact

Specifications and ordering

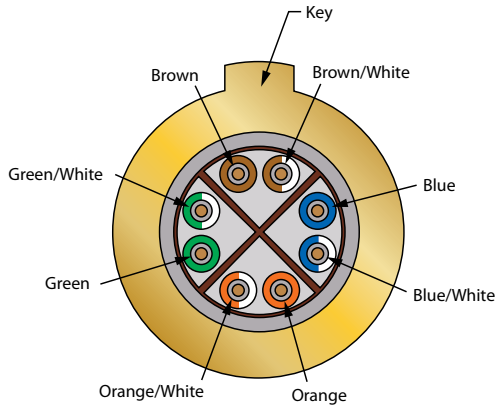
How-To-Order El Ochito™ Contacts			
			
858-003 Size 8 Ochito 26-AWG crimp or solder Pin	**858-004** Size 8 Ochito 26-AWG crimp or solder Socket	**858-007** Size 8 Ochito PC-Tail Pin (available in factory terminated connectors only)	**858-008** Size 8 Ochito PC-Tail Socket (available in factory terminated connectors only)

El Ochito™ utilizes Stinger™ contact technology. These small, durable, low mating force contacts provide El Ochito™ with optimized performance.

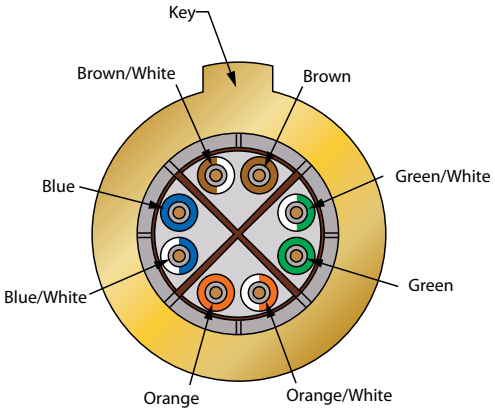
Contact Performance Specifications	
Temperature Range	-55°C to +175°C
Environmental Sealing	IAW connector specification
Corrosion Resistance	48 hours salt spray
Fire, Smoke and Toxicity	IAW FAR 25
EMI Shielding	360° shielding for each pair
Nominal Current	1 Amp
Contact Resistance	Max 60 milliohms
Wire	IAW TIA/EIA Cat 6A and ISO EA
Mating Cycles	> 500
DWV	500 VAC RMS sea level

Recommended wire-to-contact assignments

Pin Interface



Socket Interface



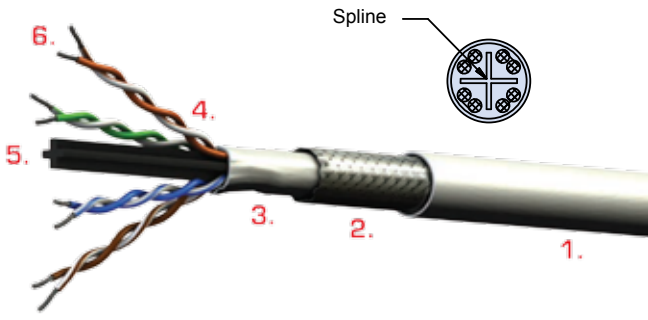
GLENAIR SUPPLIED CABLE FOR OCHITO APPLICATIONS (PIC WIRE DATAMATE LITE) 963-003-26

CABLE PHYSICAL DATA

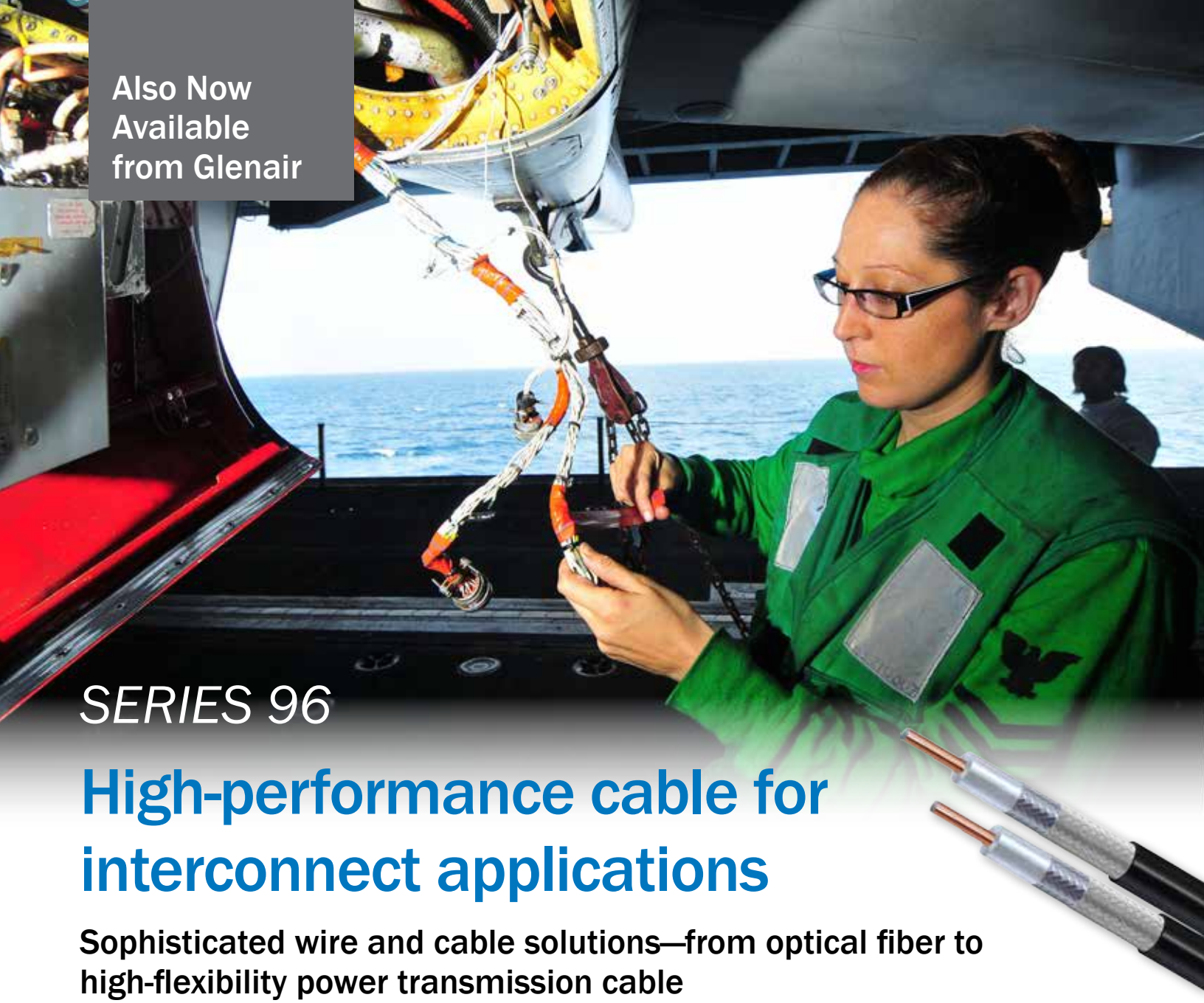
- Conductors: 26AWG stranded SPC
- Shield coverage: 80% (braid)
- Temperature: -55°C to +200°C
- Outer diameter: 0.220 (5.588mm)
- Minimum bend radius: 1.13 (78.702mm)
- Weight (lbs/100 ft): 3.05 (4.54 kg/100m)

CABLE CONSTRUCTION

1. White PTFE laser-printable jacket
2. Silver-plated copper shield
3. Fluoropolymer tape
4. PFA insulation
5. Fluoropolymer spline
6. Silver-plated copper conductors



Also Now Available from Glenair



SERIES 96

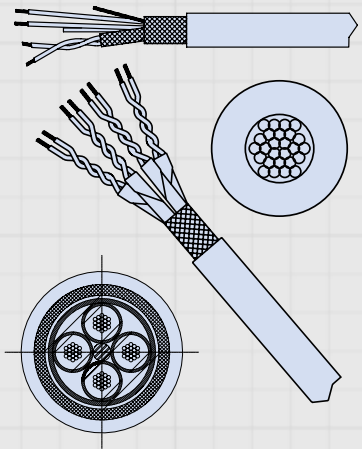
High-performance cable for interconnect applications

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



SERIES 23

SuperNine®

Part number index

K

Part number index

Part number index

Also Now 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.

MIL-DTL-38999 Series IV

Industry standard breech-lock connector
Super fast turnaround on quotes and orders

SERIES 234-105 PLUG AND RECEPTACLE, LOCKING, HIGH-VIBRATION

How To Order							
Sample Part Number	**234-105**	**-44**	**NF**	**11**	**-35**	**P**	**N**
D38999 Series IV Type Connectors	**234-105** = Environmental Class*						
Connector Style	See Table I						
Material/Finish	See Table II						
Shell Size	**11**, **13**, **15**, **17**, **19**, **21**, **23**, **25**						
Contact Arrangement	Per MIL-DTL-1560						
Contact Designator	**P** = Pin **A** = Pin Gender, Less Contacts **S** = Socket **B** = Socket Gender, Less Contacts						
Polarization	**N** (Normal), **A**, **B**, **C**, **D**, **K**, **L**, **M**, **R**, & **U**						

Table I: Connector Style	
40	Square-flange wall mount receptacle
42	Box-mount square flange receptacle
44	Jam nut receptacle
46	Plug with EMI grounding spring
47	Plug without EMI grounding spring
49	In-line cable receptacle

*Glenair also supplies a full line of qualified MIL-DTL-38999 Series IV pin and socket contact hermetic receptacles—most popular part numbers in stock and ready for immediate shipment

Table II: Material / Finish		
Symbol	**Material**	**Finish**
ME	Aluminum	Electroless Nickel
NF		Cad O.D. over Electroless Nickel
G2		Anodize, Hardcoat
ZR		Zinc Nickel, Black
MT		Nickel-PTFE
Z1*	Stainless Steel	Passivate
ZL*		Electro-Deposited Nickel
*Available in receptacle only. Not firewall rated.		

NOTES

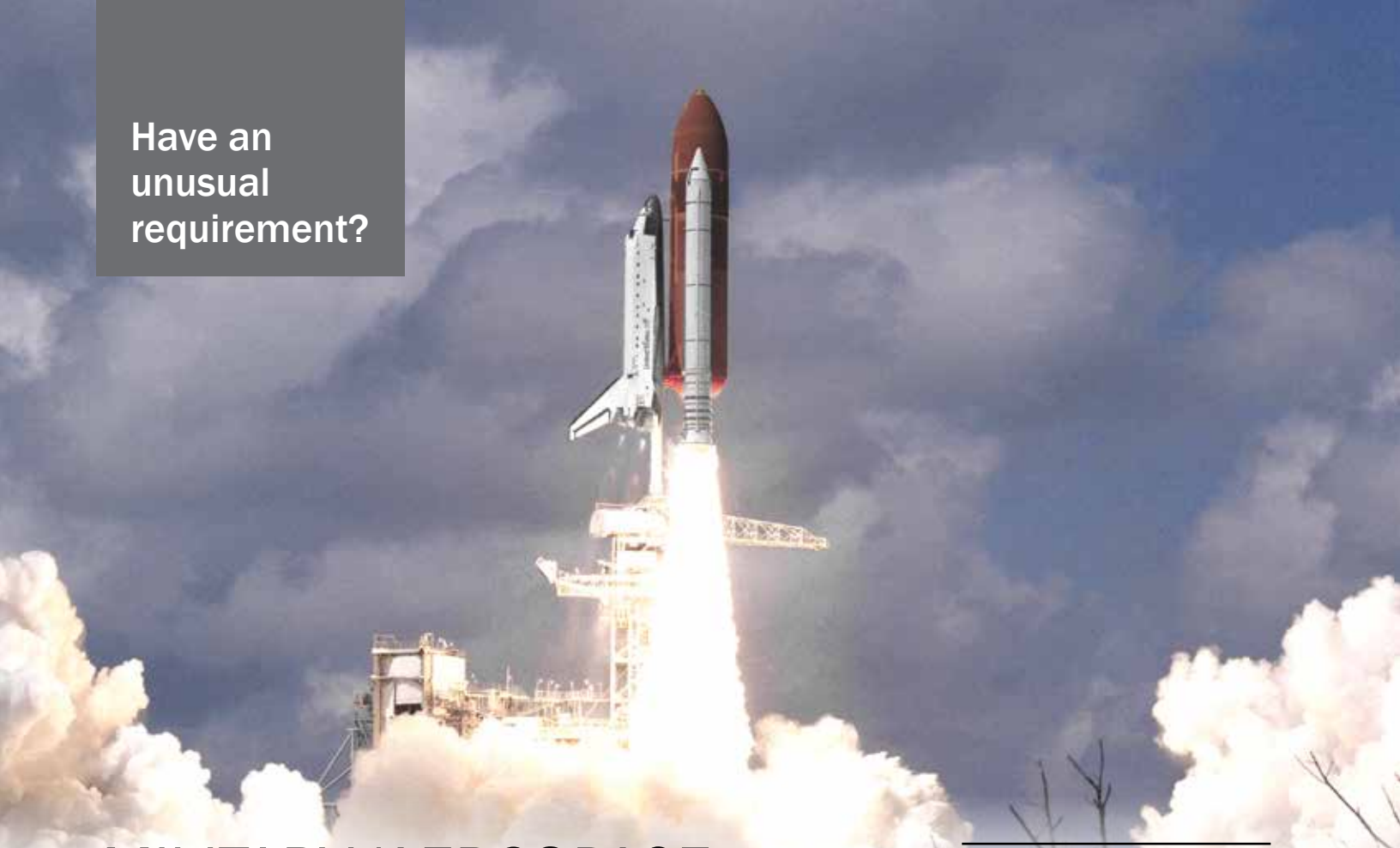
1. Materials and finish
   Insulator: High grade rigid dielectric
   O-ring: Silicone
   Contacts: IAW AS39029
   Seals: Fluorosilicone blend
2. Blue color band indicates rear release contact retention system
3. Connector supplied with contacts (including spares), insertion/removal tools and sealing plugs IAW MIL-DTL-38999
4. Glenair 234-105 connectors are designed to mate with any QPL manufacturer's MIL-DTL-38999 Series IV connectors with the same insert arrangement and polarization. Mil-spec qualification pending.

A complete range of application tooling is available, including adjustable crimp tools, contact insertion and removal tools, Band-Master™ EMI shield termination system tools and others—all available for immediate, same-day shipment

Glenair®

For more information contact Glenair at **818-247-6000** or visit our website at **www.glenair.com**
U.S. CAGE code 06324

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

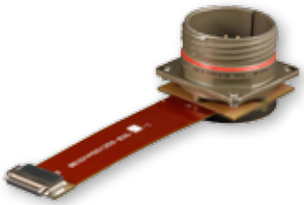
Unique coupling nut castellations and coverings

Special-purpose connector go-betweens and buffers

MIL-DTL-38999 DERIVATIVES AND OTHER

Mil-Aero Connector Specials

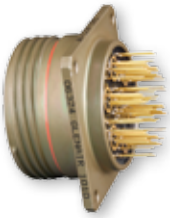
INNOVATIVE TERMINATION TECHNOLOGIES



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

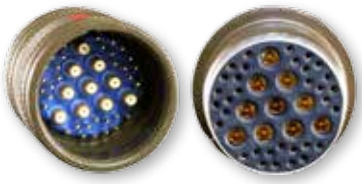
Sealed Coax Insert Arrangement

Hybrid Shielded Contact / Signal
Contact Insert Arrangement

Opto-Electronic (Transmitter/
Receiver) Contact Arrangement

INNOVATIVE MATING TECHNOLOGIES

Center Jackpost and
Guide Pin Integration



QDC Quick-Disconnect
Push-Pull Mating

Quick-Disconnect Lanyard-Release Assemblies

Glenair®

Out of This World

INTERCONNECT SOLUTIONS

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