

**G**lenair®



Geo-Marine®  
Connectors, Cables  
and Backshells

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

# Selection Guide

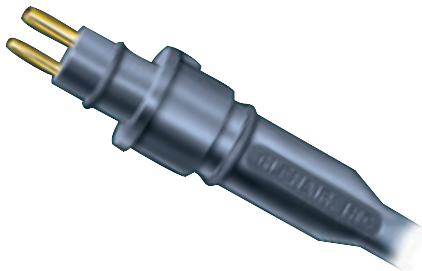
## Geo-Marine® Connectors, Cables and Backshells



Series 22  
Geo-Marine®  
Connectors  
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Series 22 Geo-Marine®  
Bulkhead Feed-Through  
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10KPSI  
Underwater Interconnect  
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MIL-C-5015 Type  
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Custom Overmolded  
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#### PRODUCT FEATURES

- Stainless Steel Hermetic
- 2 to 128 Pin Layouts
- Environmentally Sealed
- Nickel-Aluminum-Bronze Coupling Rings
- Anti-decoupling Device
- Keyed Polarization
- Available Molding Adapter Option

## Corrosion-resistant materials increase system integrity and lower system cost

### *Designed for use in geo-physical and other harsh marine and oil-patch applications*

Glenair's Series 22 Geo-Marine® Connectors offer high-density insert arrangements for a variety of oceanographic, geophysical and other severe environmental applications. The mated stainless steel plug and receptacle have a hydrostatic pressure sealing capability of up to 5000 psi (345 bar) and are available in either glass-seal hermetic or rigid dielectric environmental insulators. Other key features of the Series 22 Geo-Marine connectors include:

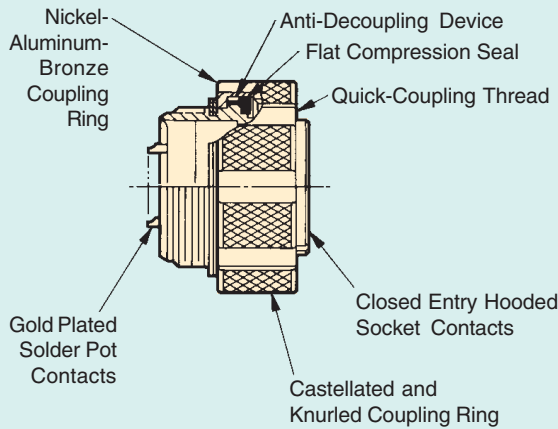
- Single-start, stub-Acme thread for quick-coupling of plug and receptacle reduces thread fouling and binding due to dirt, grit and other foreign matter.
- Castellated and knurled plug coupling ring provides easy mating and unmating, even with arctic gloves.
- Plug shell leading edge configuration assures key-keyway alignment and engagement prior to mating of the plug coupling ring threads.

The full-spectrum product line also includes **Bulkhead Feedthrough Connectors**, **Connector Savers** and a choice of separate rear **Connector Accessories** to satisfy various cable or wire bundle termination requirements. Protective sealing covers are available for both plug and receptacle connectors and provide 500 psi hydrostatic sealing when installed per recommended torque values. Special **10KPSI Underwater Interconnects** are also available for submersible applications up to 10,000 psi.

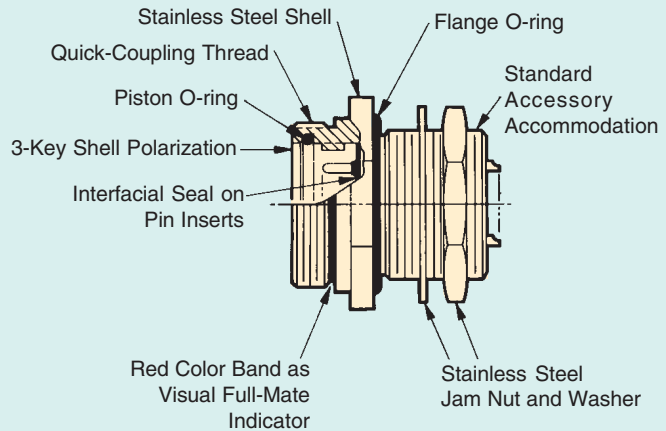
Geo-Marine® is a registered trademark of Glenair, Inc

**STANDARD FEATURES  
GEO-MARINE® HIGH-DENSITY CIRCULAR CONNECTORS**

**PLUG**



**RECEPTACLE**



**DEPTH/PRESSURE CONVERSION CHART**

FEET	METERS	P.S.I.	BAR
1	.3	.4	.0296
10	3.1	4.3	.2965
50	15.2	21.7	1.4962
100	30.5	43.3	2.9854
250	76.2	108.3	7.4670
500	152.4	216.5	4.9271
1,000	304.8	433.0	9.8543
1,500	457.2	649.5	44.7814
2,500	762.0	1082.5	74.6357
5,000	1524.0	2165.0	149.2715
10,000	3048.0	4330.0	298.5430
11,547	3519.5	5000.0	344.7379

**CABLE/WIRED.C.  
RESISTANCE CHART**

COPPER CONDUCTORS AT ROOM TEMPERATURE		
AWG	OHMS PER 1000 FEET	
28	66.2	MAX
26	41.6	MAX
24	26.2	MAX
22	16.5	MAX
20	10.4	MAX
18	6.5	MAX
16	4.1	MAX
14	2.6	MAX
12	1.6	MAX

# Series 22 Geo-Marine® High Density Circular Electrical Connectors Specifications



## Performance Characteristics

<b>Hydrostatic Pressure Rating</b>	5000 psi/345 bar (fully mated)
<b>Operating Temperature Range</b>	-55° C to +125° C
<b>Durability</b>	250 mating cycles
<b>Class H Hermetic Receptacles:</b>	
Open-Face Pressure Rating	1000 to 5000 psi/70 to 345 bar (depending on insert arrangement)
Hermeticity	Less than 1 x 10 <sup>-6</sup> cc/sec at 1 atmosphere
<b>Current Rating:</b>	
Size 12 Contact	17 amps at 750 Vdc
Size 16 Contact	10 amps at 750 Vdc
Size 20 Contact	5 amps at 500 Vdc
Size 22 Contact	3 amps at 500 Vdc
<b>Dielectric Withstanding Voltage:</b>	
Size 12 Contact	2300 Vdc
Size 16 Contact	2300 Vdc
Size 20 Contact	1800 Vdc
Size 22 Contact	1300 Vdc
<b>Insulation Resistance</b>	1000 Megaohms, minimum at 500 Vdc

### CAUTION

Electrical safety limits must be established by the user. Peak voltages, switching surges, transients, etc., should be used to determine the safety of application.

### Notes:

Electrical ratings are based on connectors only, not terminated to a cable or conductors, with proper cleaning and drying after hydrostatic testing.

Unless otherwise specified, tolerances on dimensions are as follows:

.xx = ± .03  
.xxx = ± .015  
angles = ± 5°

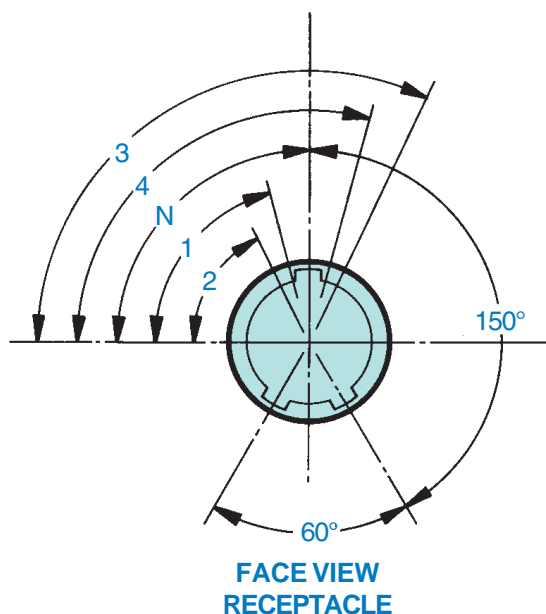
## Materials/Finishes

ITEM	MATERIAL	FINISH
Connector Shells and Protective Covers	Corrosion Resistant Steel QQ-S-763, AISI 316	Passivate per QQ-P-35
Solder Mount Bulkhead Receptacle (Page 9)	Corrosion Resistant Steel QQ-S-763, AISI 316	Nickel Plate per QQ-N-290, Class 2
Plug Coupling Nut	Nickel-Aluminum-Bronze QQ-C-465	None
Strain Reliefs	See Individual Product Pages	
<b>Insulators</b>		
Class E	Epiall 1908, Diallyl Phthalate, or Hysol CP2-4289	None
Class H	Full-Webb. Fused Glass	None
<b>Contacts</b>		
Pin (Class H)	Alloy 52, MIL-I-23011, Class 2	Gold Plate Per MIL-G-45204, Type II, Class 1
Pin (Class E) Socket (Class E)	Leaded Nickel Copper Anaconda CA7021	Gold Plate Per MIL-G-45204, Type II, Class 1
Socket Hood	Corrosion Resistant Steel QQ-S-763, AISI 305	Passivate Per QQ-P-35
O-rings *	Nitrile (Buna-N) Rubber MIL-G-21569, Class 1	None
Interfacial and Flat Seals	Fluorosilicone Rubber MIL-R-25988	None

\* Note: To maintain optimum performance, piston O-rings should be inspected/replaced as required.

## Series 22 Geo-Marine® High Density Circular Electrical Connectors Insert Arrangements

INSERT ARRANGEMENTS					
SHELL SIZE REF.	INSERT ARRANGEMENT DASH NO.	CONTACT SIZE QUANTITY			
		22	20	16	12
10	10-2			2	
	10-4			4	
	10-6		6		
	10-13	13			
12	12-8			8	
	12-10		10		
	12-22	22			
14	14-4				4
	14-12			12	
	14-19		19		
	14-37	37			
16	16-6				6
	16-19			19	
	16-26		26		
	16-55	55			
18	18-8				8
	18-22			22	
	18-32		32		
	18-66	66			
20	20-11				11
	20-30			30	
	20-41		41		
	20-79	79			
22	22-19				19
	22-38			38	
	22-55		55		
	22-85	85			
24	24-48			48	
	24-61		61		
	24-100	100			
	24-128	128			



SHELL SIZE DESIG.	ALTERNATE KEYWAY POSITIONS				
	N°	1°	2°	3°	4°
10	90	76	62	118	104
12	90	70	58	122	110
14	90	69	56	124	111
16	90	72	60	120	108
18	90	72	62	120	108
20	90	72	60	120	108
22	90	75	64	116	105
24	90	75	64	115	105

### CUSTOM INSERT ARRANGEMENTS

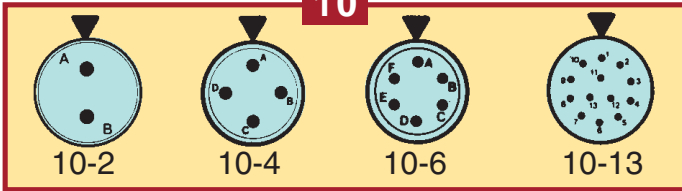
Series 22 inserts may be tooled for alternative contact insert arrangements including variably sized electrical contacts—from size 12 to 22—as well as hybrid arrangements incorporating fiber optic, Co-ax and other contact types. Glenair has produced hundreds of custom arrangements beyond those shown in this catalog. Please contact your local Glenair representative, or the factory, for assistance.

# Series 22 Geo-Marine® High Density Circular Electrical Connectors Insert Arrangements



Geo-Marine®  
Connectors

**10**

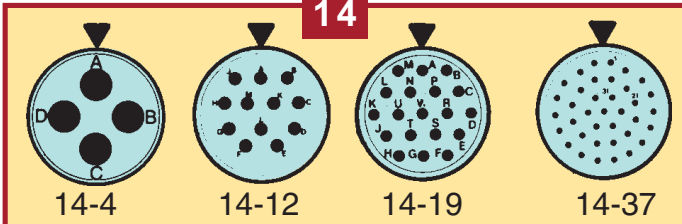


**12**

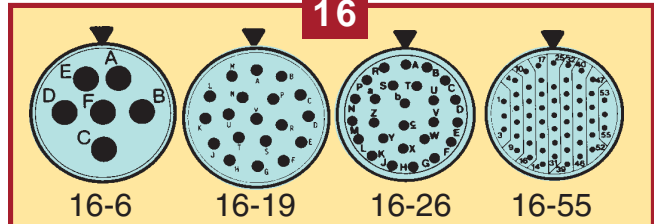


FRONTFACE  
OF PIN  
INSERTS  
ILLUSTRATED

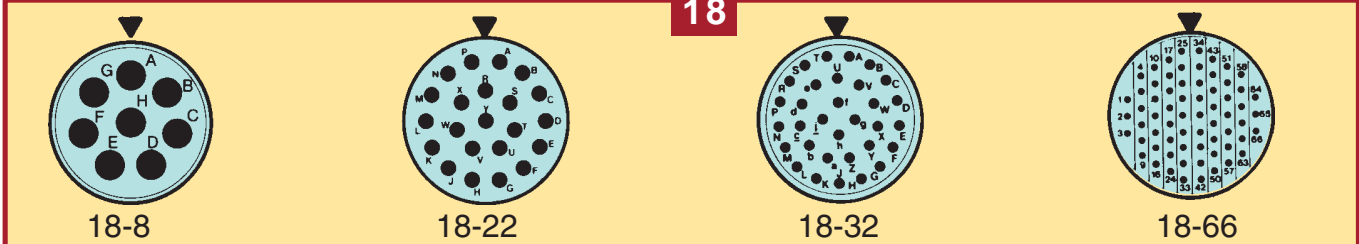
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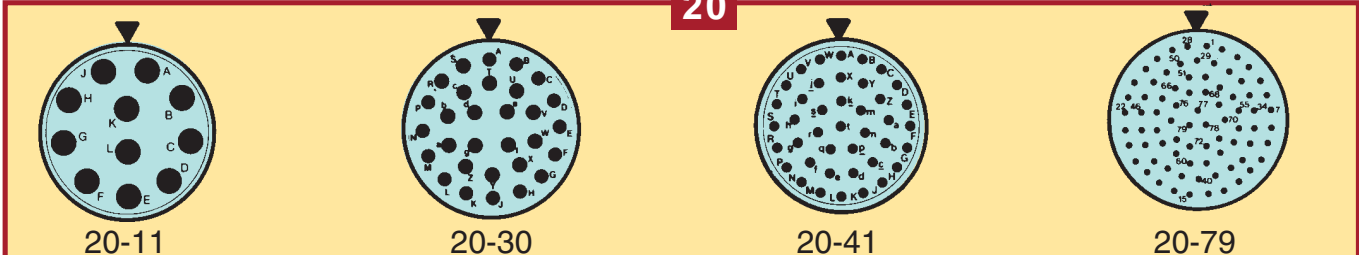
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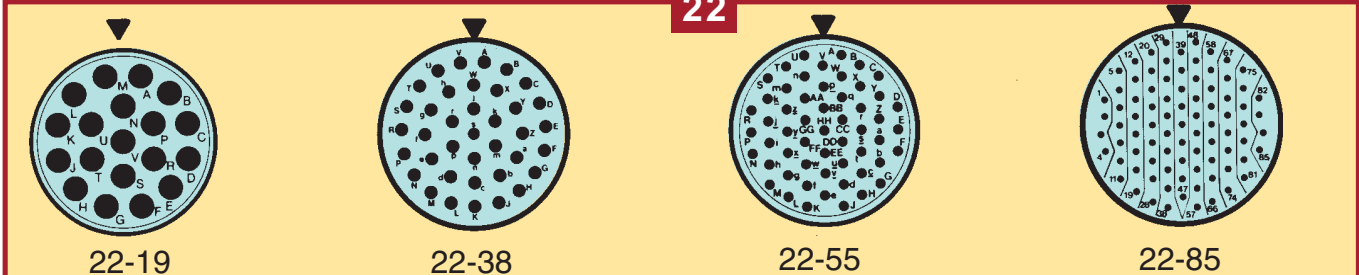
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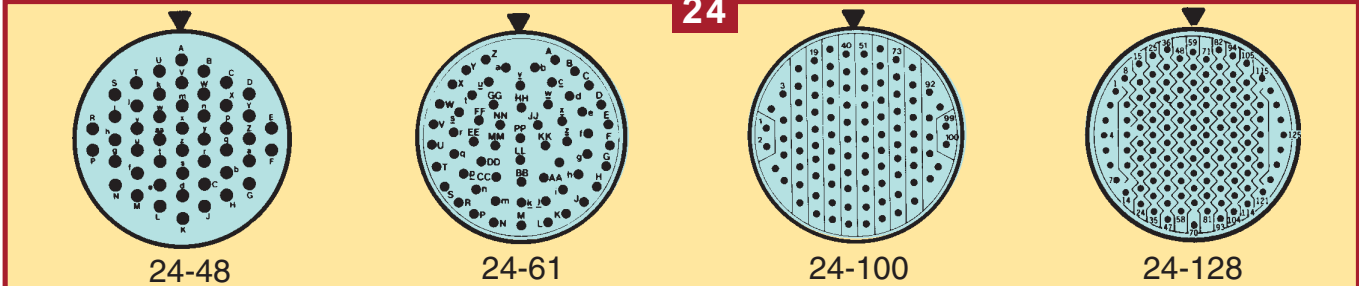
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**22**

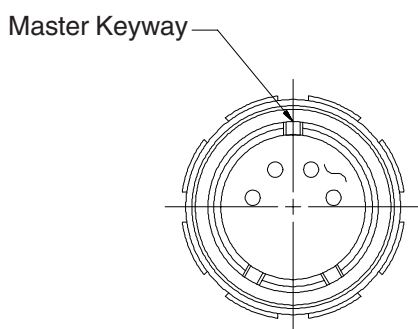


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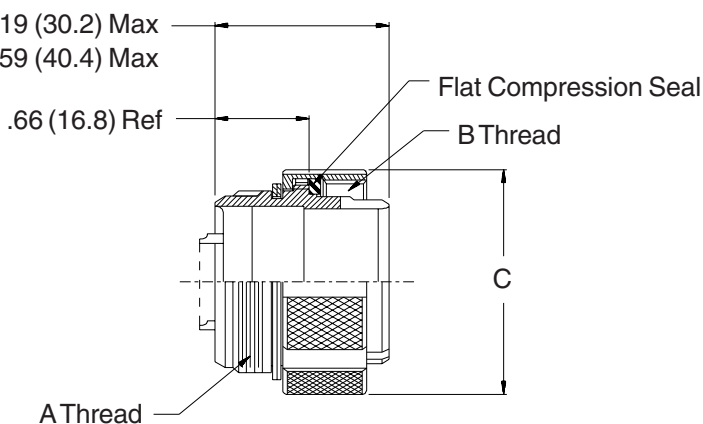




## 220-06 and 220-16 Cable Connector Plug Assembly



220-06: 1.19 (30.2) Max  
220-16: 1.59 (40.4) Max



**220-06 E 24-61 S N**

Series No. \_\_\_\_\_  
Shell Style \_\_\_\_\_  
    06 = Standard  
    16 = Scoop Proof  
Class \_\_\_\_\_  
    E = Environmental

\_\_\_\_\_ Polarization  
    (N, 1, 2, 3, 4)  
    P = Pins  
    S = Sockets

\_\_\_\_\_ Insert Arrangement

\_\_\_\_\_ Shell Size

Metric dimensions (mm) are indicated in parentheses.

### DIMENSIONS

SHELL SIZE	A THREAD CLASS 2A	B THREAD CLASS 2B	C DIA MAX
10	5/8 - 24 UNEF	.750 - .1P - .1L	1.000 (25.4)
12	3/4 - 20 UNEF	.875 - .1P - .1L	1.125 (28.6)
14	7/8 - 20 UNEF	1.000 - .1P - .1L	1.250 (31.8)
16	1 - 20 UNEF	1.125 - .1P - .1L	1.375 (34.9)
18	1 1/8 - 16 UN	1.250 - .1P - .1L	1.594 (40.5)
20	1 1/4 - 16 UN	1.375 - .1P - .1L	1.719 (43.7)
22	1 3/8 - 16 UN	1.500 - .1P - .1L	1.894 (48.1)
24	1 1/2 - 16 UN	1.625 - .1P - .1L	1.969 (50.0)

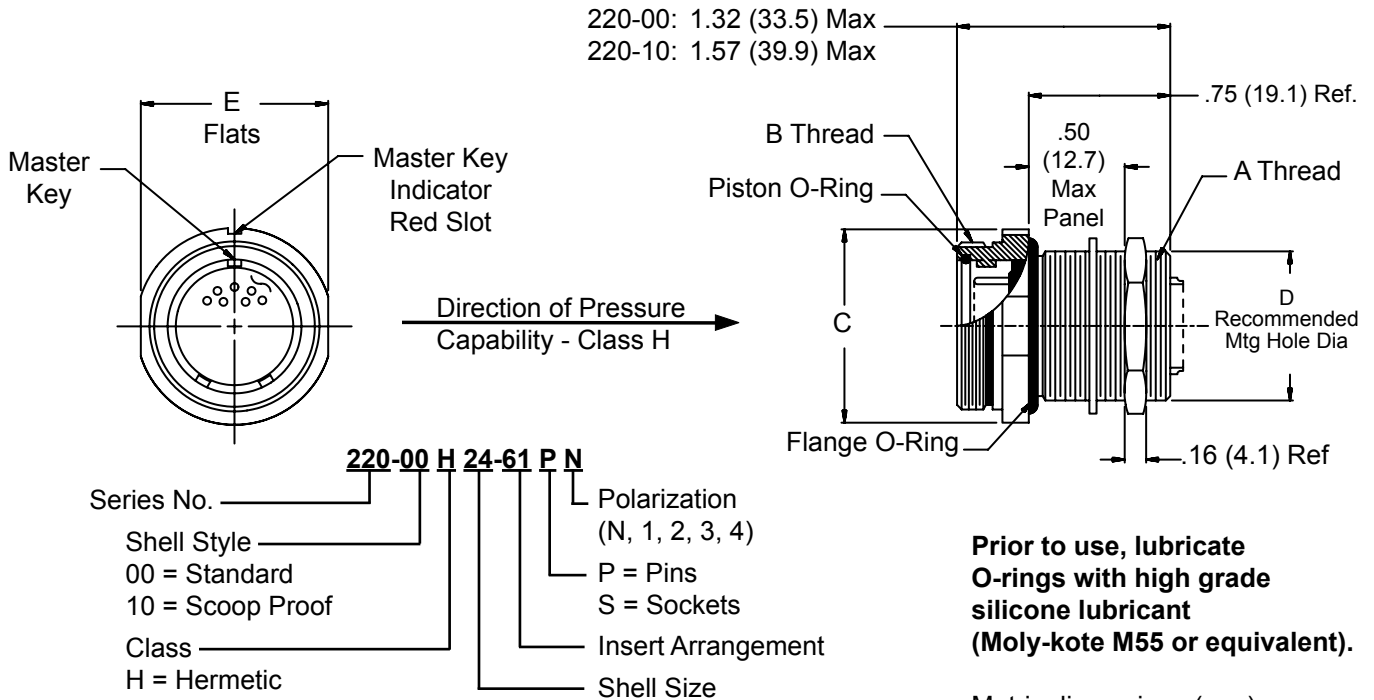
### RECOMMENDED COUPLING NUT ASSEMBLY TORQUE VALUES

SHELL SIZE	INCH-POUNDS		NEWTON-METERS	
	MIN	MAX	MIN	MAX
10	20	40	2.26	4.52
12	20	40	2.26	4.52
14	30	50	3.39	5.65
16	30	50	3.39	5.65
18	40	60	4.52	6.78
20	50	70	5.65	7.91
22	60	80	6.78	9.04
24	80	100	9.04	11.30

### REPLACEMENT FLAT COMPRESSION SEAL

SHELL SIZE	GLENAIR PART NO.
10	G70653-10
12	G70653-12
14	G70653-14
16	G70653-16
18	G70653-18
20	G70653-20
22	G70653-22
24	G70653-24

# 220-00 and 220-10 Bulkhead Connector Receptacle Assemblies Front Mounted Jam-Nut



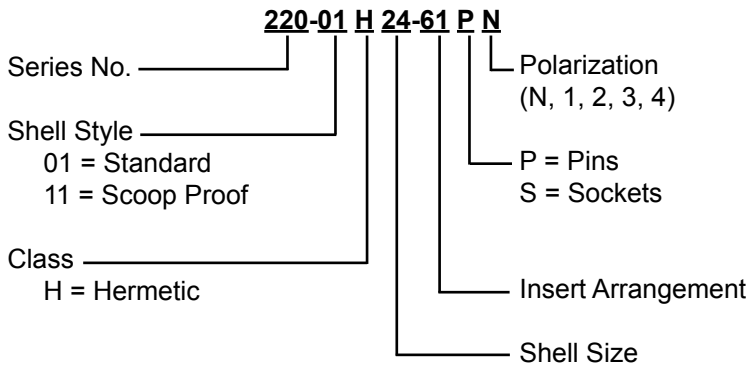
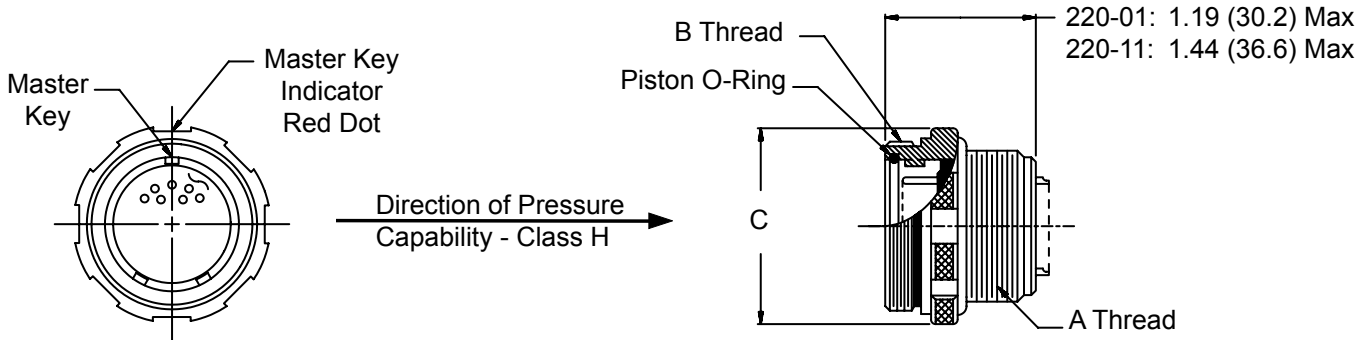
DIMENSIONS						
SHELL SIZE	A THREAD CLASS 2A	B THREAD CLASS 2A	C DIA MAX	D ±.005 ±(0.1)	E FLATS	
10	5/8 - 24 UNEF	.750 - .1P - .1L	1.03 (26.2)	.635 (16.1)	.875 (22.2)	
12	3/4 - 20 UNEF	.875 - .1P - .1L	1.16 (29.5)	.760 (19.3)	1.000 (25.4)	
14	7/8 - 20 UNEF	1.000 - .1P - .1L	1.28 (32.5)	.885 (22.5)	1.125 (28.6)	
16	1 - 20 UNEF	1.125 - .1P - .1L	1.41 (35.8)	1.010 (25.7)	1.250 (31.8)	
18	1 1/8 - 16 UN	1.250 - .1P - .1L	1.66 (42.2)	1.135 (28.8)	1.500 (38.1)	
20	1 1/4 - 16 UN	1.375 - .1P - .1L	1.78 (45.2)	1.260 (32.0)	1.625 (41.3)	
22	1 3/8 - 16 UN	1.500 - .1P - .1L	1.91 (48.5)	1.385 (35.2)	1.750 (44.5)	
24	1 1/2 - 16 UN	1.625 - .1P - .1L	2.03 (51.6)	1.510 (38.4)	1.875 (47.6)	

RECOMMENDED JAM NUT INSTALLATION TORQUE VALUES		
SHELL SIZE	TORQUE ± 5%	
	INCH-POUNDS	NEWTON-METERS
10	95	10.73
12	110	12.43
14	140	15.82
16	170	19.21
18	195	22.03
20	215	24.29
22	235	26.55
24	260	29.38

REPLACEMENT O-RING PART NUMBERS *		
SHELL SIZE	PISTON O-RING	FLANGE O-RING
10	2-014	2-016
12	2-016	2-018
14	2-018	2-020
16	2-020	2-023
18	2-022	2-025
20	2-024	2-027
22	2-026	2-029
24	2-028	2-030

\* Parker O-ring part numbers. Compound N674-70 or equivalent.

## 220-01 and 220-11 Connector Receptacle Assembly In-Line



**Prior to use, lubricate O-rings with high grade silicone lubricant (Moly-kote M55 or equivalent).**

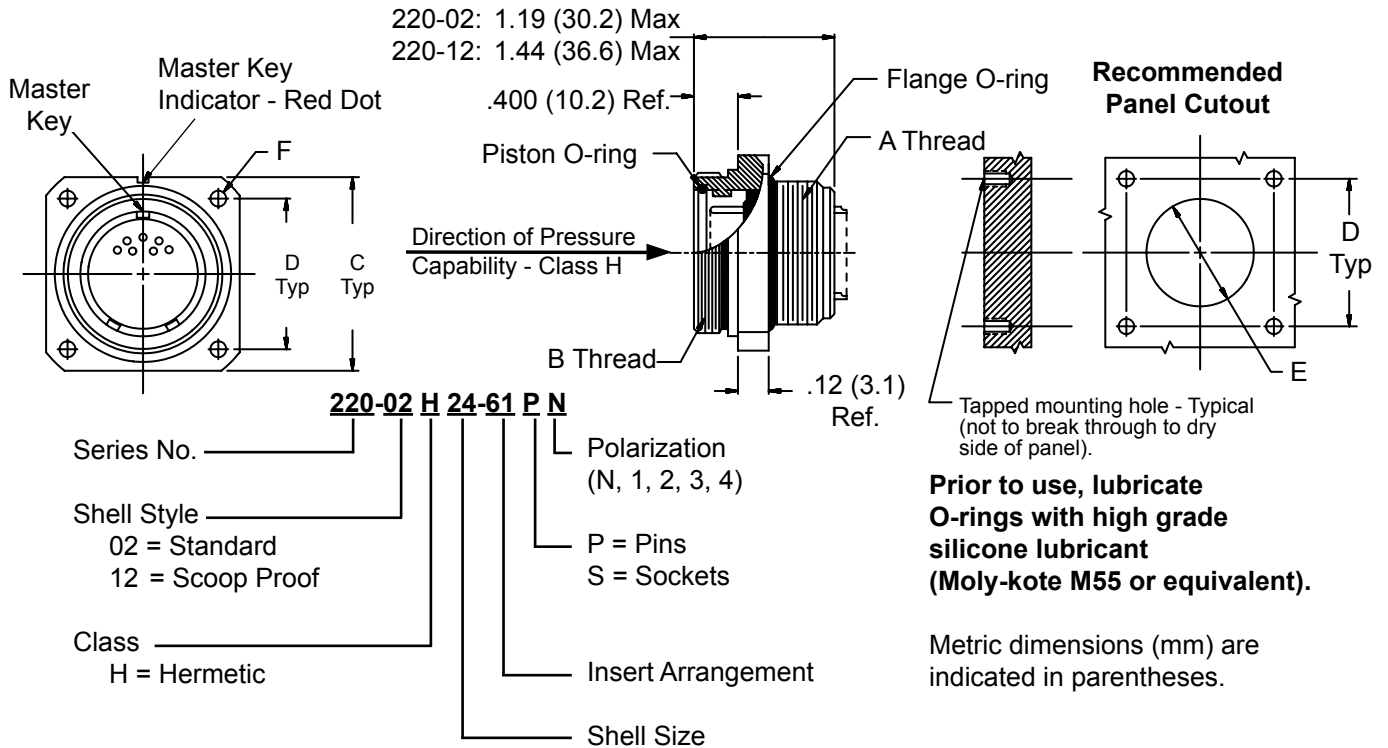
Metric dimensions (mm) are indicated in parentheses.

DIMENSIONS			
SHELL SIZE	A THREAD CLASS 2A	B THREAD CLASS 2A	C DIA MAX
10	5/8 - 24 UNEF	.750 - .1P - .1L	.906 (23.0)
12	3/4 - 20 UNEF	.875 - .1P - .1L	1.031 (26.2)
14	7/8 - 20 UNEF	1.000 - .1P - .1L	1.156 (29.4)
16	1 - 20 UNEF	1.125 - .1P - .1L	1.281 (32.5)
18	1 1/8 - 16 UN	1.250 - .1P - .1L	1.531 (38.9)
20	1 1/4 - 16 UN	1.375 - .1P - .1L	1.656 (42.1)
22	1 3/8 - 16 UN	1.500 - .1P - .1L	1.781 (45.2)
24	1 1/2 - 16 UN	1.625 - .1P - .1L	1.906 (48.4)

REPLACEMENT O-RING PART NUMBERS *	
SHELL SIZE	PISTON O-RING
10	2-014
12	2-016
14	2-018
16	2-020
18	2-022
20	2-024
22	2-026
24	2-028

\* Parker O-ring part numbers. Compound N674-70 or equivalent.

# 220-02 and 220-12 Connector Receptacle Assembly Square Flange Mount



## DIMENSIONS

SHELL SIZE	A THREAD CLASS 2A	B THREAD CLASS 2A	C DIM	D DIM	E DIA	
					+0.015 -0.000	+0.4 -(0.0)
10	5/8 - 24 UNEF	.750 - .1P - .1L	1.188 (30.2)	.938 (23.8)	.844 (21.4)	
12	3/4 - 20 UNEF	.875 - .1P - .1L	1.312 (33.3)	1.062 (27.0)	.969 (24.6)	
14	7/8 - 20 UNEF	1.000 - .1P - .1L	1.438 (36.5)	1.188 (30.2)	1.078 (27.4)	
16	1 - 20 UNEF	1.125 - .1P - .1L	1.562 (39.7)	1.250 (31.8)	1.219 (31.0)	
18	1 1/8 - 16 UN	1.250 - .1P - .1L	1.750 (44.5)	1.375 (34.9)	1.359 (34.5)	
20	1 1/4 - 16 UN	1.375 - .1P - .1L	1.875 (47.6)	1.500 (38.1)	1.515 (38.5)	
22	1 3/8 - 16 UN	1.500 - .1P - .1L	2.000 (50.8)	1.625 (41.3)	1.640 (41.7)	
24	1 1/2 - 16 UN	1.625 - .1P - .1L	2.125 (54.0)	1.750 (44.5)	1.765 (44.8)	

## MOUNTING/HARDWARE INFORMATION

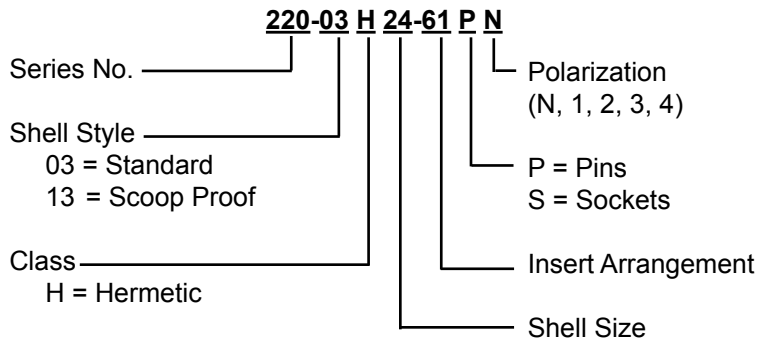
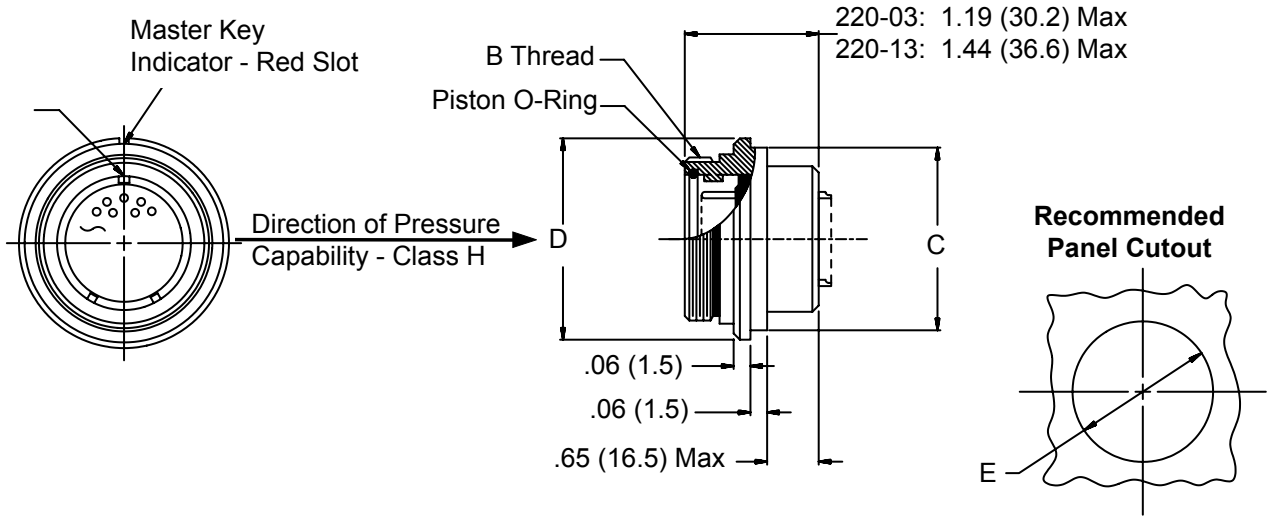
SHELL SIZE	F DIA	MTG SCREW REF.
10	.125 (3.2)	No. 4
12	.125 (3.2)	No. 4
14	.125 (3.2)	No. 4
16	.125 (3.2)	No. 4
18	.125 (3.2)	No. 4
20	.125 (3.2)	No. 4
22	.125 (3.2)	No. 4
24	.156 (4.0)	No. 6

## REPLACEMENT O-RING PART NUMBERS \*

SHELL SIZE	PISTON O-RING	FLANGE O-RING
10	2-014	2-021
12	2-016	2-023
14	2-018	2-025
16	2-020	2-027
18	2-022	2-029
20	2-024	2-030
22	2-026	2-031
24	2-028	2-032

\* Parker o-ring part numbers.  
Compound N674-70 or equivalent.

## 220-03 and 220-13 Bulkhead Connector Receptacle Assemblies Solder Mount



**Prior to use, lubricate O-rings with high grade silicone lubricant (Moly-kote M55 or equivalent).**

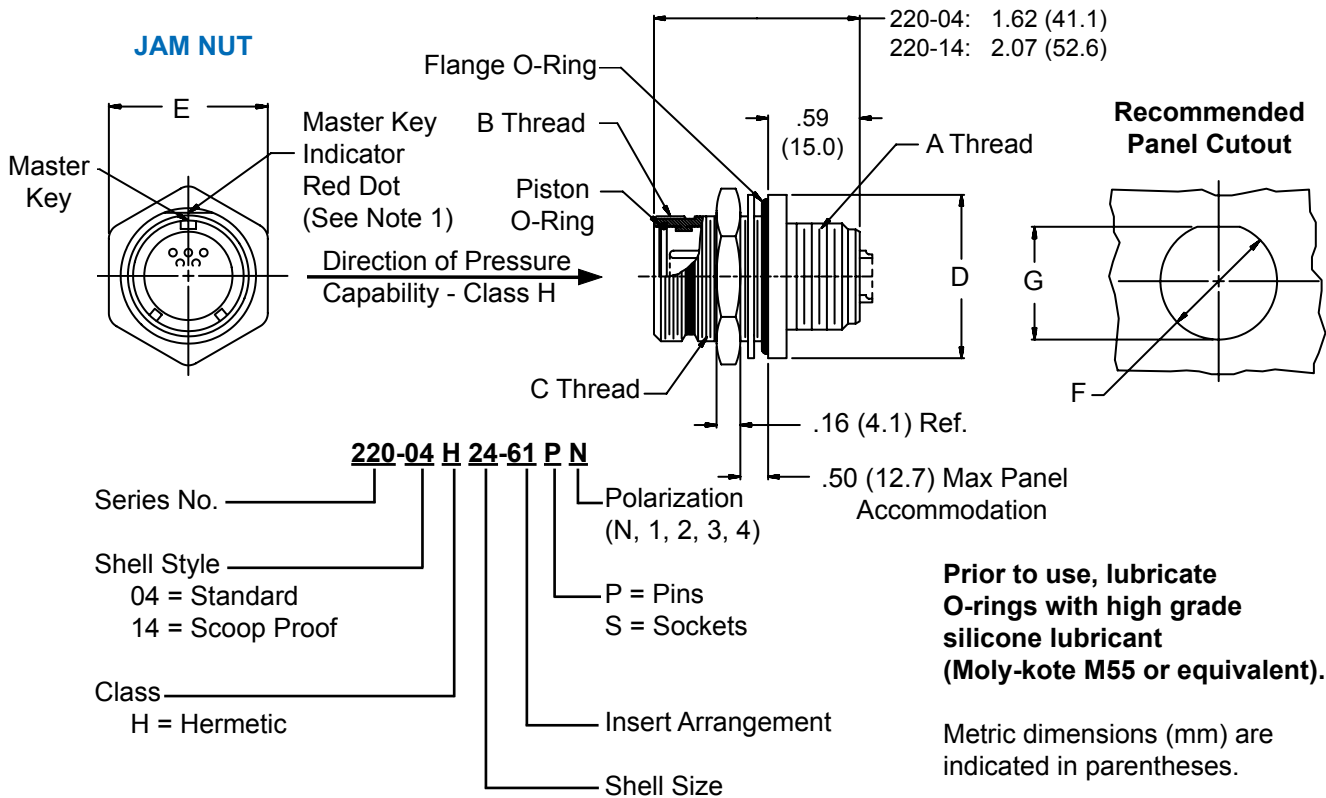
Metric dimensions (mm) are indicated in parentheses.

SHELL SIZE	B THREAD CLASS 2A	C DIA MAX	D DIA	E DIA	
				+0.10 -0.00	+(0.3) -(0.0)
10	.750 - .1P - .1L	.870 (22.1)	1.00 (25.4)	.875 (22.2)	
12	.875 - .1P - .1L	.995 (25.3)	1.13 (28.7)	1.000 (25.4)	
14	1.000 - .1P - .1L	1.120 (28.4)	1.25 (31.8)	1.125 (28.6)	
16	1.125 - .1P - .1L	1.245 (31.6)	1.38 (35.1)	1.250 (31.8)	
18	1.250 - .1P - .1L	1.370 (34.8)	1.50 (38.1)	1.375 (34.9)	
20	1.375 - .1P - .1L	1.495 (38.0)	1.63 (41.4)	1.500 (38.1)	
22	1.500 - .1P - .1L	1.620 (41.1)	1.75 (44.5)	1.625 (41.3)	
24	1.625 - .1P - .1L	1.745 (44.3)	1.88 (47.8)	1.750 (44.5)	

REPLACEMENT O-RING PART NUMBERS *	
SHELL SIZE	PISTON O-RING
10	2-014
12	2-016
14	2-018
16	2-020
18	2-022
20	2-024
22	2-026
24	2-028

\* Parker O-ring part numbers. Compound N674-70 or equivalent.

# 220-04 and 220-14 Connector Receptacle Assemblies Rear Mounted Jam Nut Wall Mount



DIMENSIONS							
SHELL SIZE	A THREAD CLASS 2A	B THREAD CLASS 2A	C THREAD CLASS 2A	D DIA	E FLATS	F DIA ±.005 ±(0.1)	G ±.005 ±(0.1)
10	5/8 - 24 UNEF	.750 - .1P - .1L	7/8 - 20 UNEF	1.25 (31.8)	1.125 (28.6)	.885 (22.5)	.835 (21.2)
12	3/4 - 20 UNEF	.875 - .1P - .1L	1 - 20 UNEF	1.38 (35.1)	1.250 (31.8)	1.010 (25.7)	.960 (24.4)
14	7/8 - 20 UNEF	1.000 - .1P - .1L	1 1/8 - 16 UN	1.50 (38.1)	1.500 (38.1)	1.135 (28.8)	1.085 (27.6)
16	1 - 20 UNEF	1.125 - .1P - .1L	1 1/4 - 16 UN	1.63 (41.4)	1.625 (41.3)	1.260 (32.0)	1.210 (30.7)
18	1 1/8 - 16 UN	1.250 - .1P - .1L	1 3/8 - 16 UN	1.75 (44.5)	1.750 (44.5)	1.385 (35.2)	1.335 (33.9)
20	1 1/4 - 16 UN	1.375 - .1P - .1L	1 1/2 - 16 UN	1.88 (47.8)	1.875 (47.6)	1.510 (38.4)	1.460 (37.1)
22	1 3/8 - 16 UN	1.500 - .1P - .1L	1 5/8 - 16 UN	2.00 (50.8)	2.000 (50.8)	1.635 (41.5)	1.585 (40.3)
24	1 1/2 - 16 UN	1.625 - .1P - .1L	1 3/4 - 16 UN	2.12 (53.8)	2.125 (54.0)	1.760 (44.7)	1.710 (43.4)

RECOMMENDED JAM NUT INSTALLATION TORQUE VALUES		
SHELL SIZE	TORQUE ± 5%	
	INCH-POUNDS	NEWTON-METERS
10	95	10.73
12	110	12.43
14	140	15.82
16	170	19.21
18	195	22.03
20	215	24.29
22	235	26.55
24	260	29.38

REPLACEMENT O-RING PART NUMBERS *		
SHELL SIZE	PISTON O-RING	FLANGE O-RING
10	2-014	2-021
12	2-016	2-023
14	2-018	2-025
16	2-020	2-027
18	2-022	2-029
20	2-024	2-030
22	2-026	2-031
24	2-028	2-032

\* Parker O-ring part numbers.  
Compound N674-70 or equivalent.

**NOTE 1:** Flat and master key indicator rotates with master key per position noted on Page 6.

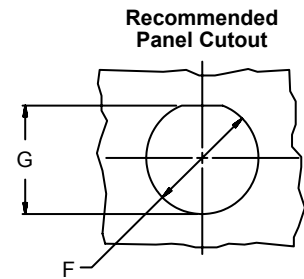
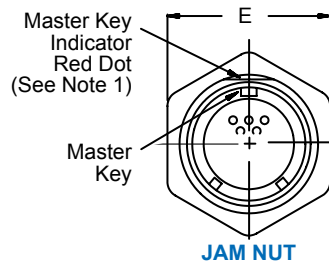
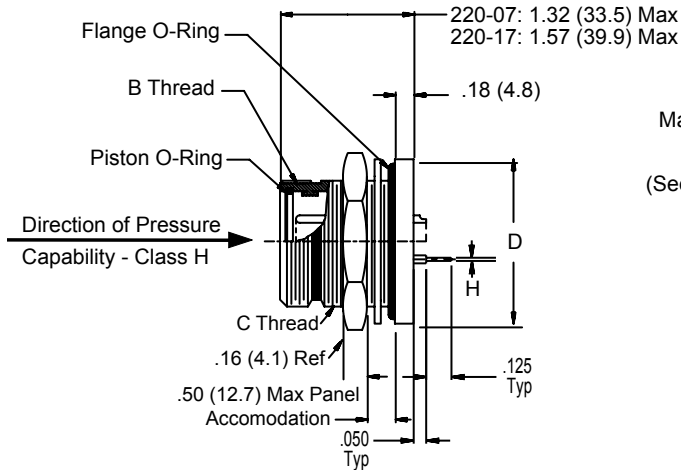
## 220-07 and 220-17 Receptacle Assemblies Rear Mounted Jam Nut Box Mount

**220-07 H 24-61 P N**

Series No. \_\_\_\_\_  
 Shell Style \_\_\_\_\_  
   07 = Standard  
   17 = Scoop Proof  
 Class \_\_\_\_\_  
   H = Hermetic  
   E = Environmental

Polarization  
 (N, 1, 2, 3, 4)  
 P = Pin, Solder Cup  
 S = Socket, Solder Cup  
 C = Pin, PCB  
 D = Socket, PCB

Insert Arrangement \_\_\_\_\_  
 Shell Size \_\_\_\_\_



**Prior to use, lubricate O-Rings with high grade silicone lubricant (Moly-Kote M55 or equivalent).**

### DIMENSIONS

SHELL SIZE	B THREAD CLASS 2A	C THREAD CLASS 2A	D DIA	E FLATS	F DIA		G		CONTACT SIZE	H DIA
					±.005	±(0.1)	±.005	±(0.1)		
10	.750 - .1P - .1L	7/8 - 20 UNEF	1.25 (31.8)	1.125 (28.6)	.885 (22.5)	.835 (21.2)			12	.095/.093 (2.413/2.362)
12	.875 - .1P - .1L	1 - 20 UNEF	1.38 (35.1)	1.250 (31.8)	1.010 (25.7)	.960 (24.4)				
14	1.000 - .1P - .1L	1 1/8 - 16 UN	1.50 (38.1)	1.500 (38.1)	1.135 (28.8)	1.085 (27.6)			16	.0635/.061 (1.613/1.549)
16	1.125 - .1P - .1L	1 1/4 - 16 UN	1.63 (41.4)	1.625 (41.3)	1.260 (32.0)	1.210 (30.7)				
18	1.250 - .1P - .1L	1 3/8 - 16 UN	1.75 (44.5)	1.750 (44.5)	1.385 (35.2)	1.335 (33.9)			20	.028/.024 (0.711/0.610)
20	1.375 - .1P - .1L	1 1/2 - 16 UN	1.88 (47.8)	1.875 (47.6)	1.510 (38.4)	1.460 (37.1)				
22	1.500 - .1P - .1L	1 5/8 - 16 UN	2.00 (50.8)	2.000 (50.8)	1.635 (41.5)	1.585 (40.3)			22	.021/.018 (0.533/0.457)
24	1.625 - .1P - .1L	1 3/4 - 16 UN	2.12 (53.8)	2.125 (54.0)	1.760 (44.7)	1.710 (43.4)				

### RECOMMENDED JAM NUT INSTALLATION TORQUE VALUES

SHELL SIZE	TORQUE ± 5%	
	INCH-POUNDS	NEWTON-METERS
10	95	10.73
12	110	12.43
14	140	15.82
16	170	19.21
18	195	22.03
20	215	24.29
22	235	26.55
24	260	29.38

**NOTE 1:** Flat and master key indicator rotates with master key per position noted on Page 6.

### REPLACEMENT O-RING PART NUMBERS \*

SHELL SIZE	PISTON O-RING	FLANGE O-RING
12	2-016	2-023
14	2-018	2-025
16	2-020	2-027
18	2-022	2-029
20	2-024	2-030
22	2-026	2-031
24	2-028	2-032

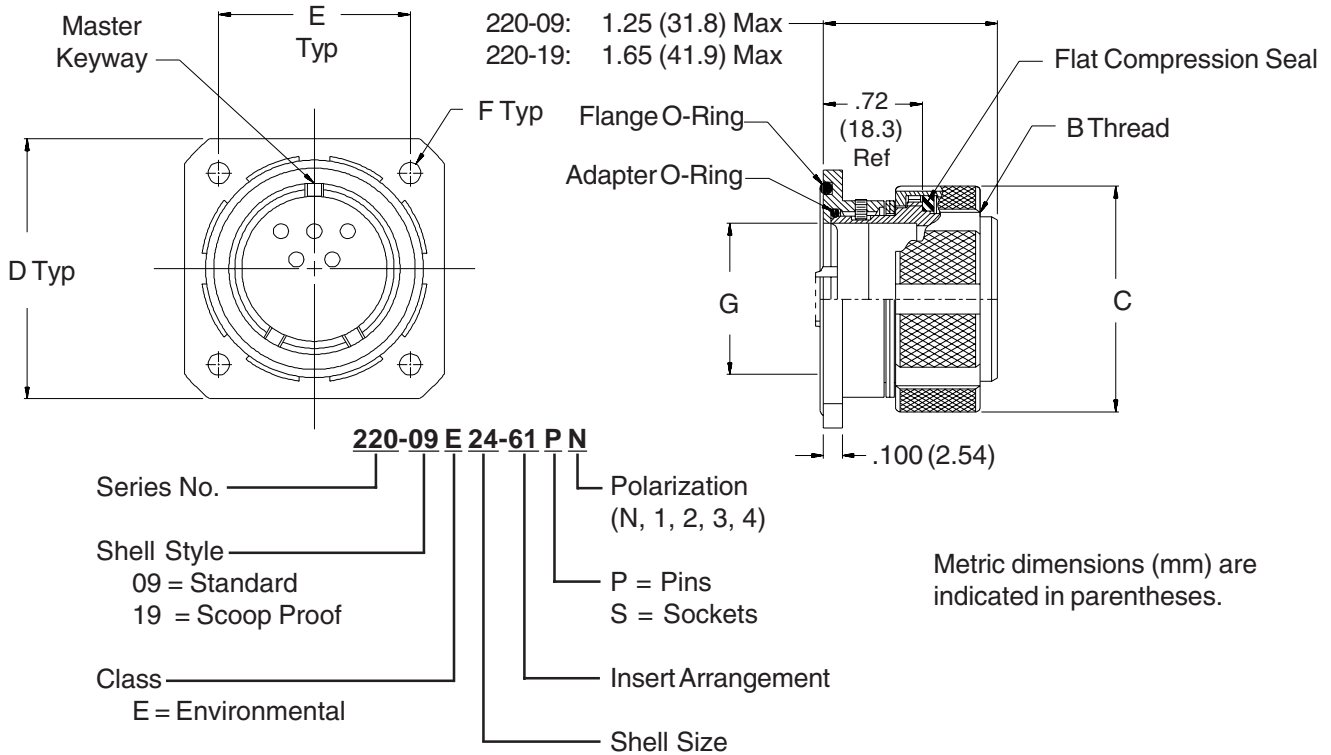
\* Parker O-ring part numbers.  
Compound N674-70 or equivalent.

Metric dimensions (mm) are indicated in parentheses.

# 220-09 and 220-19 Plug Connector Assemblies Flange Mount



Geo-Marine®  
Connectors



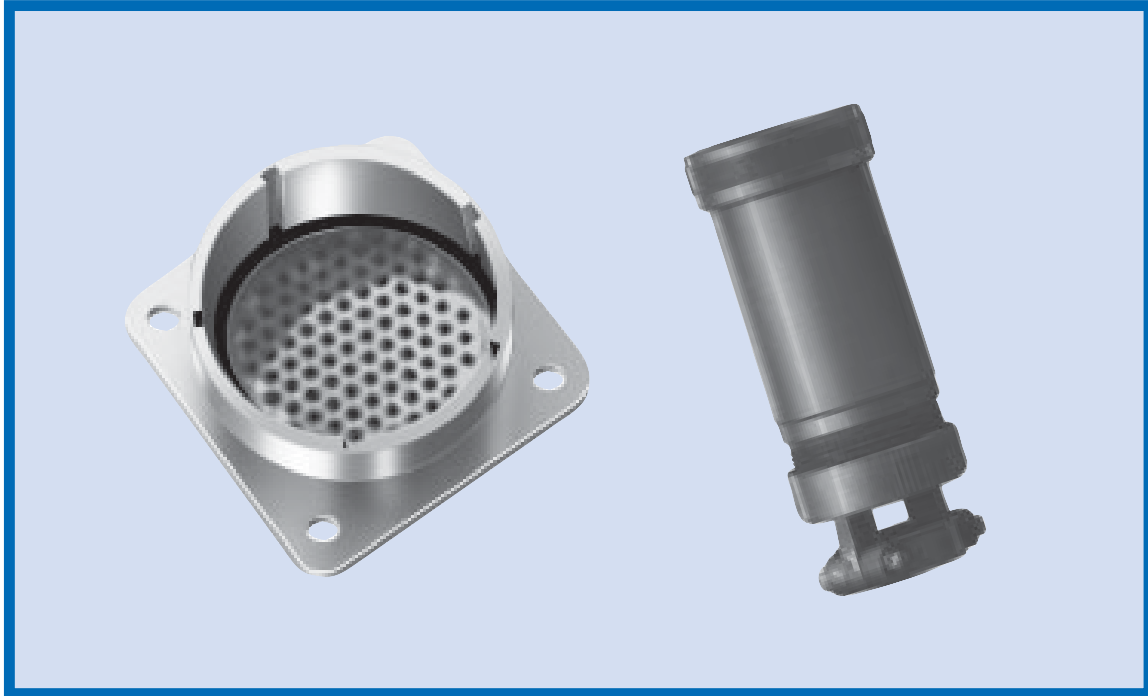
DIMENSIONS									
SHELL SIZE	BTHREAD CLASS 2B	C DIA MAX	D DIM	E DIM	F DIA	MTG SCREW REF.	G PANEL CUTOUT		
10	.750 - .1P - .1L	1.000 (25.4)	1.09 (27.7)	.844 (21.4)	.125 (3.2)	No. 4	.625 (15.9)		
12	.875 - .1P - .1L	1.125 (28.6)	1.19 (30.2)	.938 (23.8)	.125 (3.2)	No. 4	.750 (19.1)		
14	1.000 - .1P - .1L	1.250 (31.8)	1.25 (31.8)	1.000 (25.4)	.125 (3.2)	No. 4	.875 (22.2)		
16	1.125 - .1P - .1L	1.375 (34.9)	1.34 (34.0)	1.094 (27.8)	.125 (3.2)	No. 4	1.000 (25.4)		
18	1.250 - .1P - .1L	1.594 (40.5)	1.44 (36.6)	1.188 (30.2)	.125 (3.2)	No. 4	1.125 (28.6)		
20	1.375 - .1P - .1L	1.719 (43.7)	1.55 (39.4)	1.281 (32.5)	.125 (3.2)	No. 4	1.250 (31.8)		
22	1.500 - .1P - .1L	1.844 (46.8)	1.72 (43.7)	1.375 (34.9)	.125 (3.2)	No. 4	1.375 (34.9)		
24	1.625 - .1P - .1L	1.969 (50.0)	1.85 (47.0)	1.500 (38.1)	.156 (4.0)	No. 6	1.500 (38.1)		

REPLACEMENT PART NUMBERS			
SHELL SIZE	ADAPTER O-RING *	FLANGE O-RING *	COMPRESSION FLAT SEAL **
10	2-014	2-019	G70653-10
12	2-016	2-021	G70653-12
14	2-018	2-022	G70653-14
16	2-020	2-024	G70653-16
18	2-022	2-025	G70653-18
20	2-024	2-027	G70653-20
22	2-026	2-029	G70653-22
24	2-028	2-030	G70653-24

\* Parker O-ring part numbers. Compound N674-70 or equivalent.  
\*\* Glenair, Inc. Part Numbers



## Need a Mil-Spec Connector Instead?



## Glenair is MIL-C-28840 Qualified

The standard connector series for shipboard use, MIL-C-28840 offers high-density insert arrangement and high-shock performance. Glenair's qualified product line is now fully tooled and many popular part numbers are in stock, ready for same-day shipment. The MIL-C-28840 features RFI/EMI shielding, scoop-proof shells and corrosion-resistant materials and finishes. In addition to all the connector

types and styles, Glenair makes all the backshell accessory slash numbers as well. The addition of the MIL-C-28840 connector product line is part of Glenair's total commitment to meeting all your shipboard interconnect requirements. So when you think M28840, think Glenair—from connectors to accessories. Please call the factory, or see our website, for order information.



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Glendale, California 91201-2497  
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PRODUCT FEATURES

- Stainless Steel Hermetic
- 2 to 128 Pin Layouts
- Environmentally Sealed
- Jam Nut Mount
- Standard and Scoop-Proof Designs
- Pin and Socket Insert Arrangements
- Keyed Polarization

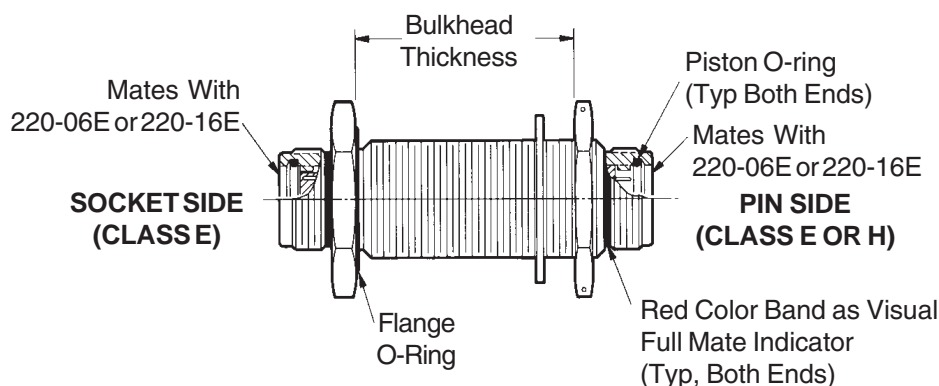
## Geo-Marine® Feed-Thru Connectors are Designed for High-Pressure Applications

*Environmental and pressure sealed hermetic feed-throughs are ideal for all geo-physical applications*

Series 22 Bulkhead Feed-Through Connectors are double ended receptacles with feed-through pin-pin, socket-socket, or pin-socket contacts which accommodate corresponding mating 220-06/220-16 plugs on each end. The pin contact side can be supplied in either Class E (environmental) or Class H (hermetic) to meet specific application requirements. The basic construction of these feed-through connectors is the same as the standard Series 22 receptacles.

**Series 22 Bulkhead Feed-Through Connectors can be designed and produced to meet individual installation requirements, such as mounting style, bulkhead thickness and sealing provisions. Contact Glenair for further details to meet specific application needs.**

Prior to use, lubricate O-rings with high grade silicone lubricant (Moly-kote M55 or equivalent).



**227-039-10-2 P N P N 03 D**

Basic Part Number \_\_\_\_\_  
 227-039 = Standard Shell  
 (mates with 220-06 plug)  
 227-040 = Scoop Proof Shell  
 (mates with 220-16 plug)

Shell Size \_\_\_\_\_

Insert Arrangement Dash No. (See Page 7)  
 (Note: For Pin/Pin or Socket/Socket, the  
 Insert Arrangement Must Be Symmetrical.)

Side A Configuration: P = Pin, S = Socket,  
 H = Hermetic Pin

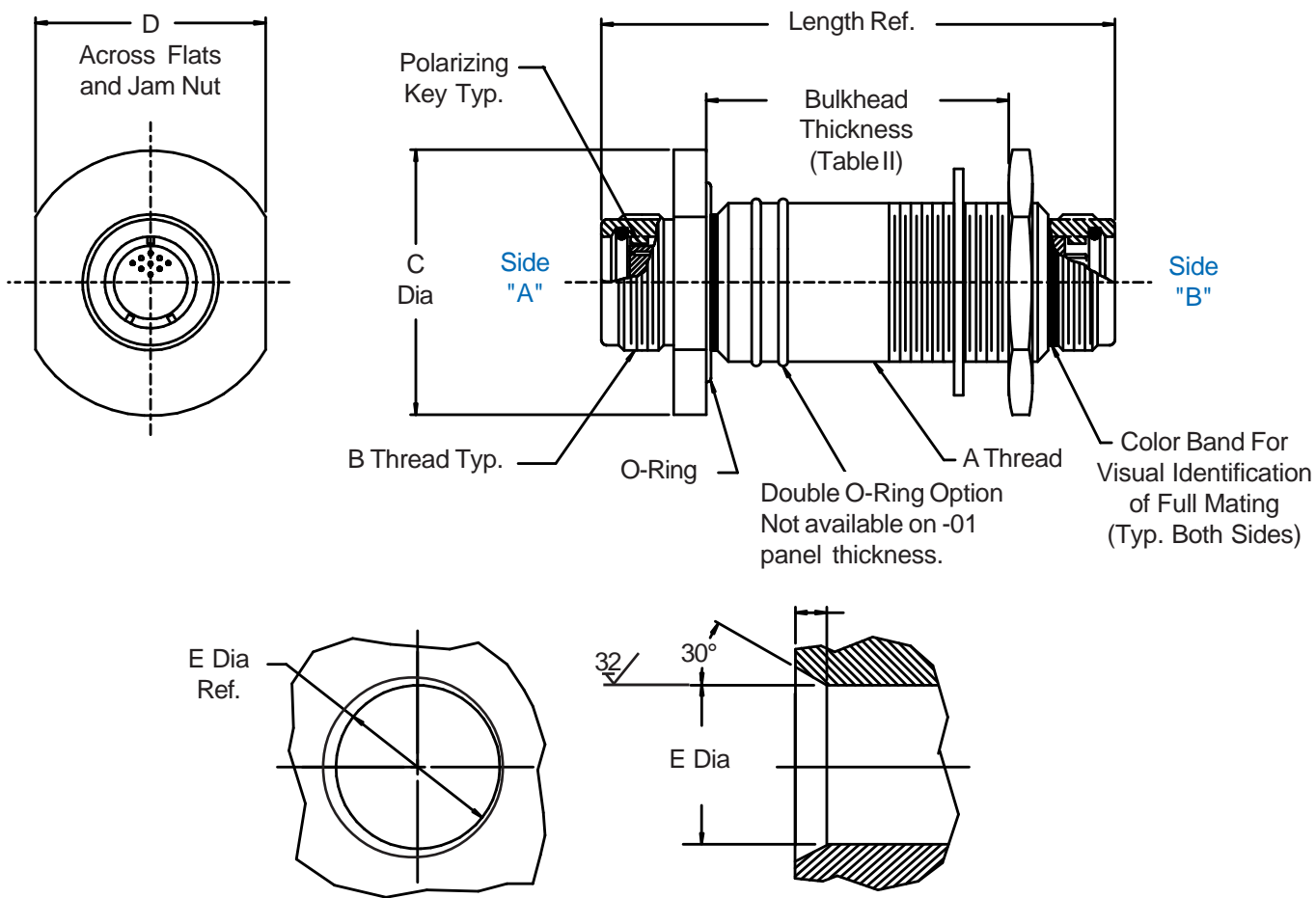
Double O-Ring Option (Omit For None)  
 Not available on -01 panel thickness.

Bulkhead Thickness Dash No. (Table II)

Side B Alternate Insert Position - N, 1, 2, 3  
 or 4 (See Page 6)

Side B Configuration: P = Pin, S = Socket

Side A Alternate Insert Position - N, 1, 2, 3,  
 or 4 (See Page 6)



**Recommended Panel Cutout**

227-039 and 227-040  
Bulkhead Feed-Through  
Connector Assemblies



**TABLE I**

Shell Size	A Thread Class 2A	B Thread Class 2A	C Dia	D Flat	E Dia *
10	7/8 - 20 UNEF	.750 - .1P - .1L	1.41 (35.8)	1.250 (31.8)	.875 (22.2)
12	1 - 20 UNEF	.875 - .1P - .1L	1.53 (38.9)	1.375 (34.9)	1.000 (25.4)
14	1 1/8 - 18 UNEF	1.000 - .1P - .1L	1.66 (42.2)	1.500 (38.1)	1.125 (28.6)
16	1 1/4 - 16 UN	1.125 - .1P - .1L	1.78 (45.2)	1.625 (41.3)	1.250 (31.8)
18	1 3/8 - 16 UN	1.250 - .1P - .1L	1.91 (48.5)	1.750 (44.5)	1.375 (34.9)
20	1 1/2 - 16 UN	1.375 - .1P - .1L	2.03 (51.6)	1.875 (47.6)	1.500 (38.1)
22	1 5/8 - 16 UN	1.500 - .1P - .1L	2.16 (54.9)	2.000 (50.8)	1.625 (41.3)
24	1 3/4 - 16 UN	1.625 - .1P - .1L	2.28 (57.9)	2.125 (54.0)	1.750 (44.5)

\* Standard Shell +.010 (.3) -.000 (.0)  
\* Scoop-Proof Shell +.002 (.3) -.000 (.0)

**TABLE II**

Dash No.	Panel Min	Panel Max	Length (Ref.)	
			Standard Shell	Scoop Proof Shell
01	.03 (.8)	1.00 (25.4)	2.30 (58.4)	2.30 (58.4)
02	1.00 (25.4)	2.00 (50.8)	3.30 (83.8)	3.30 (83.8)
03	2.00 (50.8)	3.00 (76.2)	4.30 (109.2)	4.30 (109.2)
04	3.00 (76.2)	4.00 (101.6)	5.30 (134.6)	5.30 (134.6)
05	4.00 (101.6)	5.00 (127.0)	6.30 (160.0)	6.30 (160.0)
06	5.00 (127.0)	6.00 (152.4)	7.30 (185.4)	7.30 (185.4)
07	6.00 (152.4)	7.00 (177.8)	8.30 (210.8)	8.30 (210.8)
08	7.00 (177.8)	8.00 (203.2)	9.30 (236.2)	9.30 (236.2)

1. Metric dimensions (mm) are indicated in parentheses.
2. Power to a given contact on one end will result in power to contact directly opposite, regardless of identification letter.



## MIL-DTL-38999 Hermetic Connectors DSCC Approved QPL Product Line Announcement



### Glenair MIL-DTL-38999 Series I, II & III Hermetic Connectors:

**Jam Nut Mount Receptacles  
Box Mount Receptacles  
Wall Mount Receptacles  
Solder Mount Receptacles  
Weld Mount Receptacles**

### PRODUCT FACTS

- DSCC Approved QPL
- Compression Glass Seals
- Alloy 52 Gold-Plated Contacts
- Three Coupling Styles: Scoop-Proof Bayonet, Low-Profile Bayonet, and Triple-Start Threaded Coupling
- Fluorosilicone Interfacial Seals
- Passivated and Nickel-Plated Stainless Steel Shells

### REFERENCE INFORMATION

**MIL-STD-1560A:** *Military Standard Insert Arrangements for MIL-DTL-38999 Series Electrical, Circular Connectors; U.S. Department of Defense*

**MIL-DTL-38999:** *Detail Specifications for Fixed, Hermetic, Solder Contact, Miniature, High Density, Circular Connectors*

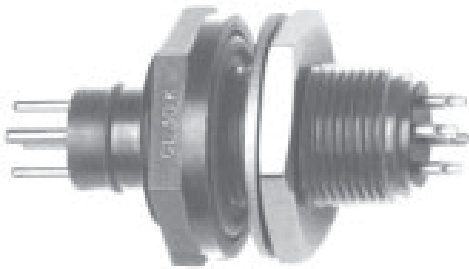
## Complete In-House Hermetic Capabilities Makes Glenair Your Best Value MIL-DTL-38999 Supplier

The MIL-DTL-38999 Hermetic Connector is an ideal choice for high-pressure/low-leakage applications in air, sea and space environments.

Glenair is on the Qualified Product List (QPL) for all families of MIL-DTL-38999 Series I, II, and III Hermetic Connectors. We offer the entire range of wall mount, jam-nut

mount, solder mount and box mount receptacles in all the standard shell sizes and insert arrangements.

And because Glenair maintains complete in-house capabilities to machine and fire hermetic interconnects, we can offer you outstanding price and delivery on the entire product line.

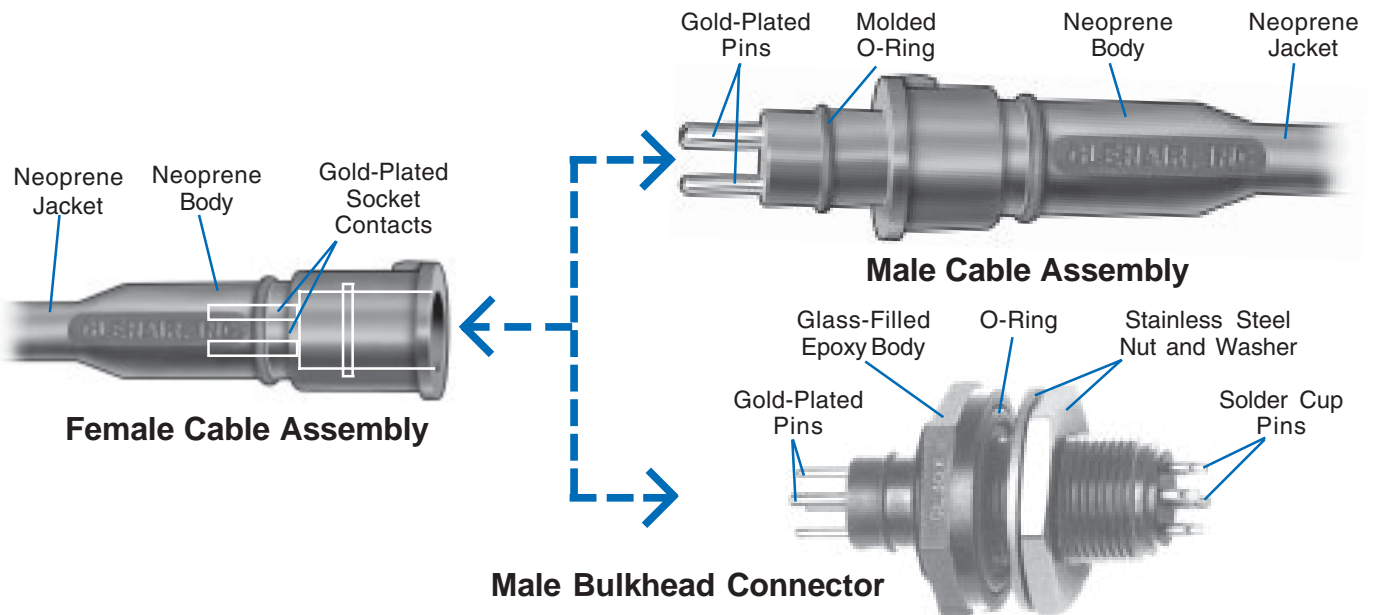


**PRODUCT FEATURES**

- 7.5 Amps to 200 Amps
- One to Eight Contacts
- 10,000 PSI (Mated) Pressure Rating
- Catalog and Custom Cable Options
- Chemically Resistant

## These Connectors Handle the Water—and the Pressure

Glenair 10 KPSI Underwater Interconnects provide a cost-effective solution for high pressure underwater applications. Ideal for any harsh environment application, these molded neoprene cables and epoxy bulkhead connectors are impervious to most chemicals.



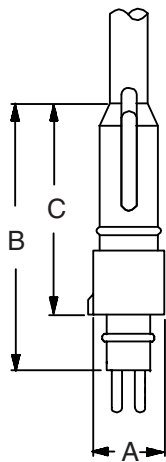
**SPECIFICATIONS**

<b>Contacts</b>	Copper Alloy, Gold-Plated
<b>O-Rings</b>	Nitrile
<b>Nut, Washer</b>	Stainless Steel
<b>Cable</b>	Neoprene insulation, Stranded Copper
<b>Bulkhead Connector</b>	Conductor
<b>Body</b>	Glass-Filled Epoxy
<b>Voltage Rating</b>	600 VDC
<b>Current Rating</b>	See Contact Arrangements
<b>Temperature Rating</b>	-55°C to +105°C



## Geo-Marine® 10KPSI Underwater Interconnects Part Number Development

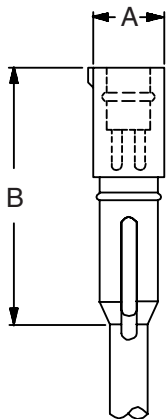
### Male Cable Assemblies



Number of Contacts	Contact Size/Quantity	Cable Length*	Part Number	A Dia	B	C
1	1 # 10	2 Feet	GL20G1P-M	.75 (19.1)	2.65 (67.3)	2.00 (50.8)
	1 # 0	2 Feet	GL20K1P-M	1.06 (26.9)	3.25 (82.6)	2.62 (66.5)
2	1 # 10, 1 # 12	2 Feet	GL20G2P-M	.75 (19.1)	2.65 (67.3)	2.00 (50.8)
3	1 # 10, 2 # 12	2 Feet	GL20G3P-M	.75 (19.1)	2.65 (67.3)	2.00 (50.8)
4	1 # 12, 3 # 16	2 Feet	GL20G4P-M	.75 (19.1)	2.65 (67.3)	2.00 (50.8)
	1 # 10, 3 # 12	2 Feet	GL20K4P-M	1.06 (26.9)	3.25 (82.6)	2.62 (66.5)
5	1 # 10, 4 # 16	2 Feet	GL20K5P-M	1.06 (26.9)	3.25 (82.6)	2.62 (66.5)
6	1 # 12, 5 # 16	2 Feet	GL20K6P-M	1.06 (26.9)	3.25 (82.6)	2.62 (66.5)
8	1 # 12, 7 # 16	2 Feet	GL20K8P-M	1.06 (26.9)	3.25 (82.6)	2.62 (66.5)

\*For other lengths, add overall length in feet to the part number.  
Example: GL20G1P-M-6 specifies a cable assembly 6 feet in length.

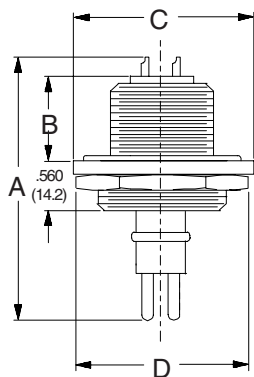
### Female Cable Assemblies



Number of Contacts	Contact Size/Quantity	Cable Length*	Part Number	A Dia	B
1	1 # 10	2 Feet	GL20G1S-F	.75 (19.1)	2.65 (67.3)
	1 # 0	2 Feet	GL20K1S-F	1.06 (26.9)	3.50 (88.9)
2	1 # 10, 1 # 12	2 Feet	GL20G2S-F	.75 (19.1)	2.65 (67.3)
3	1 # 10, 2 # 12	2 Feet	GL20G3S-F	.75 (19.1)	2.65 (67.3)
4	1 # 12, 3 # 16	2 Feet	GL20G4S-F	.75 (19.1)	2.65 (67.3)
	1 # 10, 3 # 12	2 Feet	GL20K4S-F	1.06 (26.9)	3.50 (88.9)
5	1 # 10, 4 # 16	2 Feet	GL20K5S-F	1.06 (26.9)	3.50 (88.9)
6	1 # 12, 5 # 16	2 Feet	GL20K6S-F	1.06 (26.9)	3.50 (88.9)
8	1 # 12, 7 # 16	2 Feet	GL20K8S-F	1.06 (26.9)	3.50 (88.9)

\*For other lengths, add overall length in feet to the part number.  
Example: GL20G1S-F-6 specifies a cable assembly 6 feet in length.

### Male Bulkhead Connectors



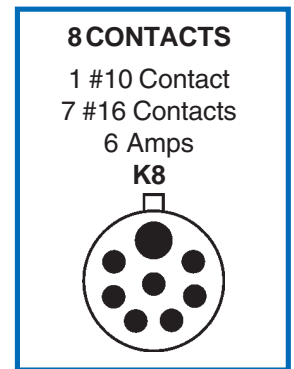
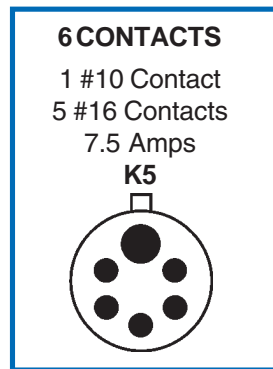
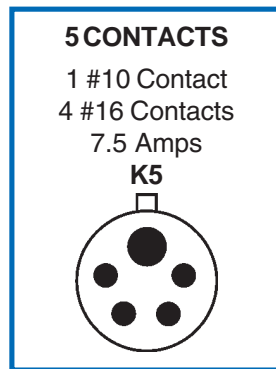
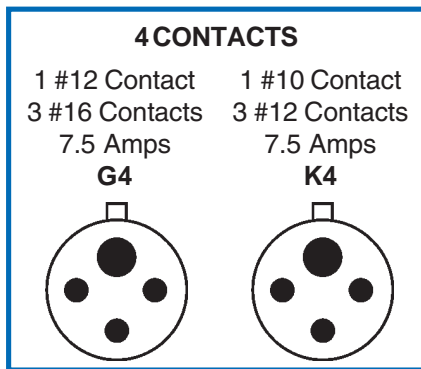
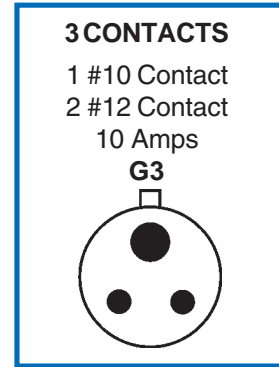
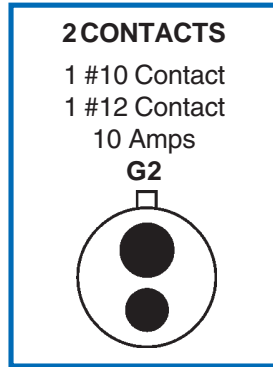
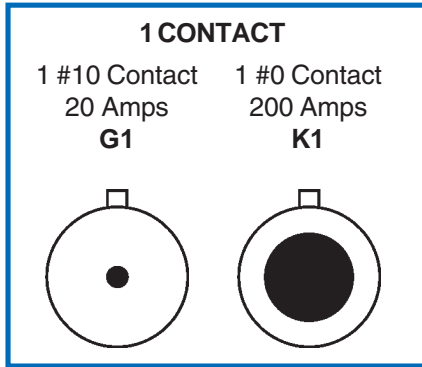
No. of Contacts	Contact Size/Quantity	Part Number	A	B	C Max	D Hex	E Thread
1	1 #10	GL30G1P-BC	2.625 (66.7)	.625 (15.9)	1.58 (40.1)	1.375 (34.9)	3/4 - 16
	1 #0	GL30K1P-BC	3.625 (92.1)	1.375 (34.9)	1.89 (48.0)	1.625 (41.3)	1 - 14
2	1 #10, 1 #12	GL30G2P-BC	2.625 (66.7)	.625 (15.9)	1.58 (40.1)	1.375 (34.9)	3/4 - 16
3	1 #10, 2 #12	GL30G3P-BC	2.625 (66.7)	.625 (15.9)	1.58 (40.1)	1.375 (34.9)	3/4 - 16
4	1 #12, 3 #16	GL30G4P-BC	2.625 (66.7)	.625 (15.9)	1.58 (40.1)	1.375 (34.9)	3/4 - 16
	1 #10, 3 #12	GL30K4P-BC	3.625 (92.1)	1.375 (34.9)	1.89 (48.0)	1.625 (41.3)	1 - 14
5	1 #10, 4 #16	GL30K5P-BC	3.625 (92.1)	1.375 (34.9)	1.89 (48.0)	1.625 (41.3)	1 - 14
6	1 #12, 5 #16	GL30K6P-BC	3.625 (92.1)	1.375 (34.9)	1.89 (48.0)	1.625 (41.3)	1 - 14
8	1 #12, 7 #16	GL30K8P-BC	3.625 (92.1)	1.375 (34.9)	1.89 (48.0)	1.625 (41.3)	1 - 14

**Geo-Marine® 10KPSI  
Underwater Interconnects  
Contact Arrangements and Accessories**



10KPSI  
Connectors

**Contact Arrangements**



**Accessories**

**Locking Sleeves**



Locking Sleeves enable a mated pair of cable assemblies to be locked together, preventing accidental unmating. Material: Delrin.

**HOW TO ORDER LOCKING SLEEVES**

Cable Part Number	Type	Sleeve Part Number
GL20G*P	Male	GL20G401
GL20K*P	Male	GL20K403
GL20G*S	Female	GL20G402
GL20K*S	Female	GL20K404

**O-Rings**



Replacement O-Rings are available for bulkhead connectors. Material: Nitrile

**HOW TO ORDER O-RINGS**

Cable Part Number	O-Ring
GL30G	2-213
GL30K	2-217



# To Most People It's Just a Connector



## To Glenair It's a Promise

**M**ost customers have a simple expectation when they go shopping for safety-critical interconnect components: They want fast and accurate service. Glenair addresses this most basic customer requirement in several different ways. First and foremost, by providing immediate access to our technical information and product documentation: whether you prefer an office visit, the telephone, the Internet, a CD or a printed catalog, Glenair is ready with answers to your most complex questions and design challenges. Secondly, Glenair stocks thousands of popular catalog products for those

situations when even a two or three week lead-time is just too long. We stock over 35,000 interconnect components—bagged and tagged and ready for immediate shipment. And for those situations when a customized solution is required, our engineers are fully versed in all aspects of interconnect system design: from shielding against EMI, to reducing weight and connector package size, to stopping corrosion and other forms of environmental damage.

You have a simple expectation: fast and accurate service. At Glenair, we're ready to give you exactly that. It's a promise.



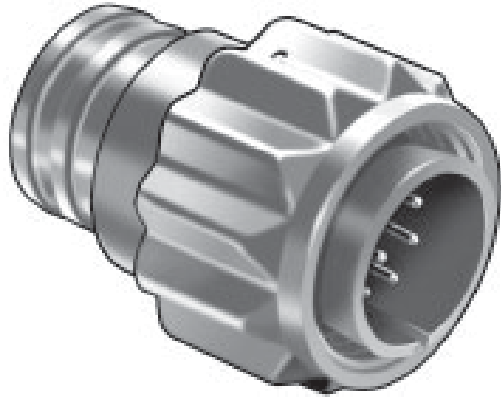
1211 Air Way

Glendale, California 91201-2497

Telephone: 818-247-6000 · Facsimilie: 818-500-9912 · EMail: sales@glenair.com

United States · United Kingdom · Germany · Nordic · France · Italy · Spain

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#### PRODUCT FEATURES

- Stainless Steel Hermetic
- Optional Composite Thermoplastic Shell Materials
- 2 to 18 Pin Layouts
- Environmentally Sealed
- Large Profile Knurling for Ease of Handling
- Keyed Polarization
- Available Molding Adapter Option

## Corrosion Resistant Stainless Steel and Composite Mil-C-5015 Type Harsh Environment Connectors

***Designed for use in oil patch applications, this connector is ideal for all harsh environment settings***

Glenair's line of 5015 Type Harsh Environment Connectors are designed to provide outstanding corrosion resistance and rugged performance. These stainless steel and composite thermoplastic plugs and receptacles are ideally suited for severe environments such as geophysical exploration, mining and other settings where resistance to extreme temperatures, salt spray and caustic chemicals is a critical requirement.

Fully compliant with the Mil-C-5015 specification, the connectors offer additional design features and materials advantages which make them exceptional values for many interconnect applications. Composite versions are manufactured from a 40% glass filled Ryton engineering plastic. Ryton is a high temperature, injection molded material with good mechanical properties and excellent chemical resistance at elevated temperatures, up to 500° F. The material provides outstanding resistance to a broad spectrum of aggressive chemicals and has very stable dielectric and insulating properties.

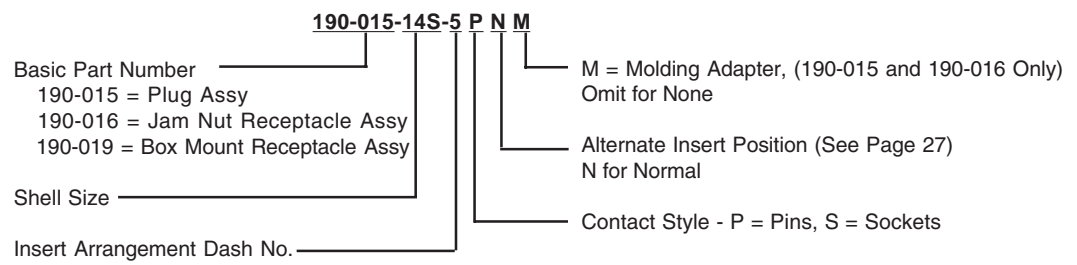
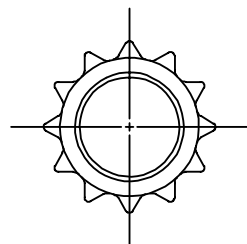
The connectors are designed for rugged field use, and feature large profile knurlings for ease of handling, and anti-decoupling springs for maintenance-free performance. A complete range of pin sizes and insert arrangements are available.



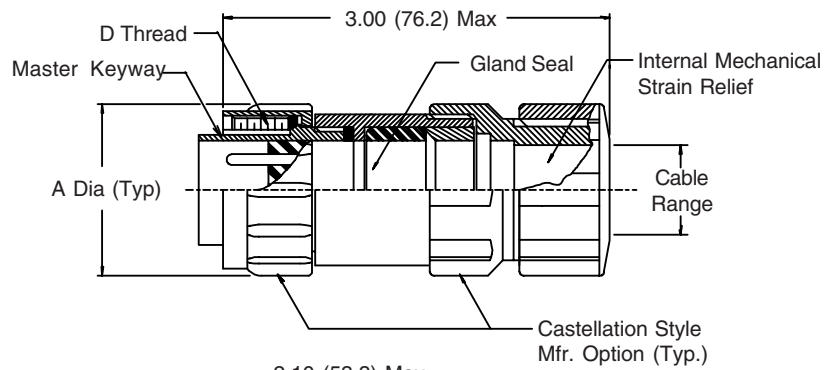
# 190-015 Composite Plug, 190-016 Composite Jam Nut Receptacle & 190-019 Composite Box Mount Receptacle



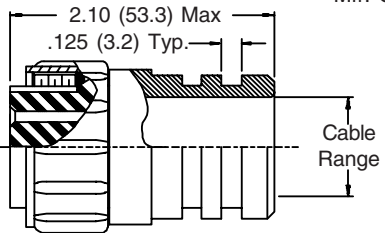
40% Glass Filled  
Ryton Engineering  
Composite  
Thermoplastic



## 190-015 Plug Assembly

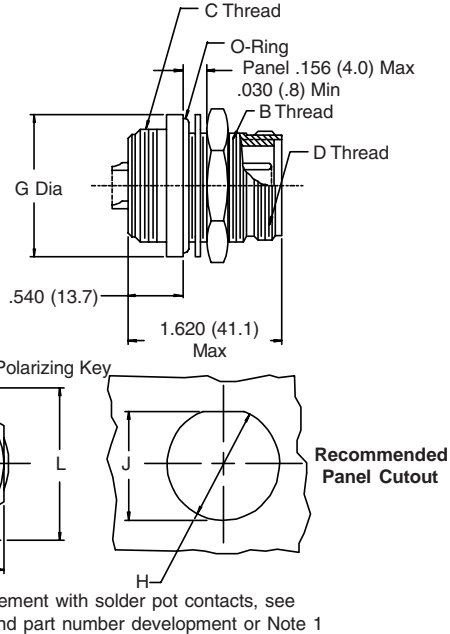


**Sym M**  
Molding Adapter  
Option

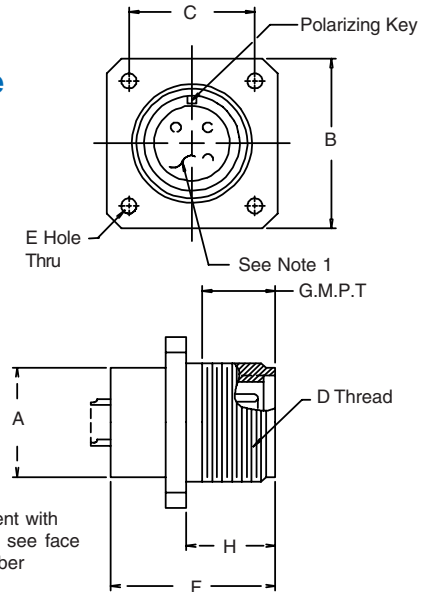


For Environmental Dust  
Covers Ref. Glenair P/N  
667-009 (plug) and  
667-010 (receptacle)

## 190-016 Jam Nut Receptacle Assembly



## 190-019 Box Mount Receptacle Assembly



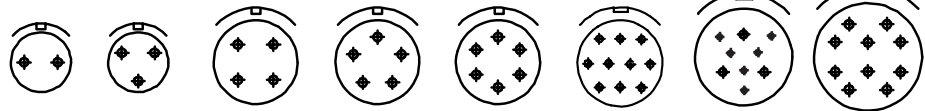
NOTE:  
1. Insert arrangement with  
solder pot contacts, see face  
views and part number  
development

Metric dimensions (mm) are indicated in parentheses

# 190-015 Composite Plug, 190-016 Composite Jam Nut Receptacle & 190-019 Composite Box Mount Receptacle



## Insert Arrangements



Shell Size - Insert Arrangement Dash No.	10SL-4	10SL-3	14S-2	14S-5	14S-6	14S-10	16-2	18-1
Contact Size & Quantity	2 - #16	3 - #16	4 - #16	5 - #16	6 - #16	10 - #20	3 - #12, 6 - #20	10 - #16
MS Service Rating	A	A	INST.	INST.	INST.	INST.	INST.	4 A, 6 Inst.
Available Alternate Insert Positions (Degrees rotation clockwise looking into the front of the pin insert)	n/a	n/a	X=120°, Y= 240°	n/a	n/a	n/a	n/a	W=70°, X=145°, Y=215°, Z=290°

## DIMENSIONAL DETAILS (190-019)

Shell Size	A Max	B Sq ±.031 (0.8)	C ±.005 (0.1)	D Thread Class 2A	E ±.010 (0.3) - .005 (0.1)	F Max	G M.P.T.	H ±.031 (0.8) - .000
10SL	.609 (15.5)	1.000 (25.4)	.719 (19.3)	.625 - .1P-.1L	.120 (3.0)	1.000 (25.4)	.375 (9.5)	.562 (14.3)
14S	.733 (18.6)	1.188 (30.2)	.906 (25.7)	.875 - .1P-.1L	.120 (3.0)	1.000 (25.4)	.375 (9.5)	.562 (14.3)
18	.975 (24.8)	1.375 (34.9)	1.062 (32.0)	1.125 - .1P-.1L	.120 (3.0)	1.120 (28.4)	.625 (15.9)	.724 (18.4)

## DIMENSIONAL DETAILS (190-015)

Shell Size	D Thread Class 2B	Standard Cable Range Min	Standard Cable Range Max	Length Max
10SL	.625 - .1P-.1L	.203 (5.2)	.375 (9.5)	3.000 (76.2)
14S	.875 - .1P-.1L	.203 (5.2)	.375 (9.5)	3.000 (76.2)
18	1.125 - .1P-.1L	.328 (8.3)	.500 (12.7)	3.000 (76.2)

## DIMENSIONAL DETAILS (190-016)

Shell Size	B Thread Class 2A	C Thread Class 2A	D Thread Class 2A	D Dia Max	E Dia +.010 (0.3) - .000	F +.010 (0.3) - .000	G Dia (Flats)	H Max	Cable Range* Min	Cable Range* Max
10SL	3/4 - 20 UNEF	5/8 - 24 UNEF	.625 - .1P-.1L	1.100 (27.9)	.760 (19.3)	.710 (18.0)	.938 (23.8)	1.090 (27.7)	.210 (5.3)	.312 (7.9)
14S	1 - 20 UNEF	7/8 - 20 UNEF	.875 - .1P-.1L	1.450 (36.8)	1.010 (25.7)	.960 (24.4)	1.250 (31.8)	1.440 (36.6)	.210 (5.3)	.312 (7.9)
18	1 1/4 - 18 UNEF	1 1/8 - 16 UN	1.125 - .1P-.1L	1.750 (44.5)	1.260 (32.0)	1.210 (30.7)	1.500 (38.1)	1.730 (43.9)	.310 (7.9)	.438 (11.1)

\* Cable Range Min. Not Applicable with Molding Adapter Option

Products are manufactured from a 40% glass filled Ryton engineering plastic—a high temperature, injection molded material with good mechanical properties and excellent chemical resistance at elevated temperatures, up to 500° F.

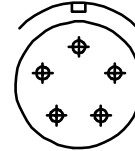
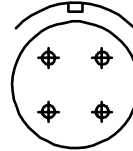
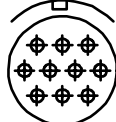
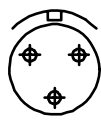
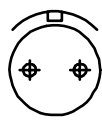
## PERFORMANCE RATINGS

Shell, Barrel, Coupling Nut and Rear Accy Hdwr.	High Grade Engineering Thermoplastic
Insulator, O-Ring, Grommet	Nitrile/Neoprene
Grommet Follower (Plug Assy)	Nylon
Contacts	Gold Plated Copper Alloy With Solder Pots
Contact Current Rating	#12: 12.5 Amps; #16: 10 Amps; #20: 7.5 Amps
Rated Operating Voltage	Service Rating INST - 250 VDC Service Rating A - 700 VDC
Dielectric Withstanding Voltage (Hi-Pot)	Service Rating INST - 1000 VRMS Service Rating A - 2000 VRMS
Insulation Resistance	5000 Megohms minimum at 500 VDC and +25°C
Temperature Range	-55°C to +125°C

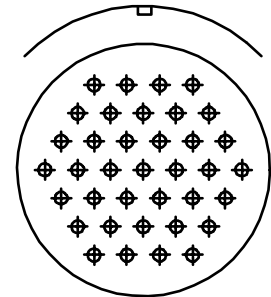
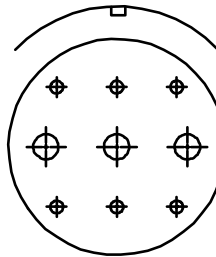
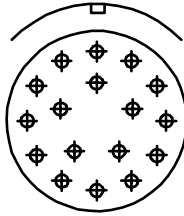
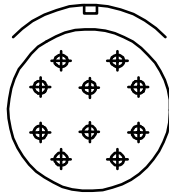
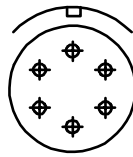
1. Metric dimensions (mm) are indicated in parentheses.
2. Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of application.



257-003, 257-005, 257-007 and 257-012  
Insert Arrangements & Misc. Information  
(Face View of Pin Insert Shown)



<b>Insert Arrangement</b>	10SL-4	10SL-3	12-10	14S-2	14S-5
<b>Contact Size &amp; Quantity</b>	2 - #16	3 - #16	10 - #20	4 - #16	5 - #16
<b>MS Service Rating</b>	A	A	INST	INST	INST
<b>Alternative Position</b>	N/A	N/A	N/A	X & Y	X

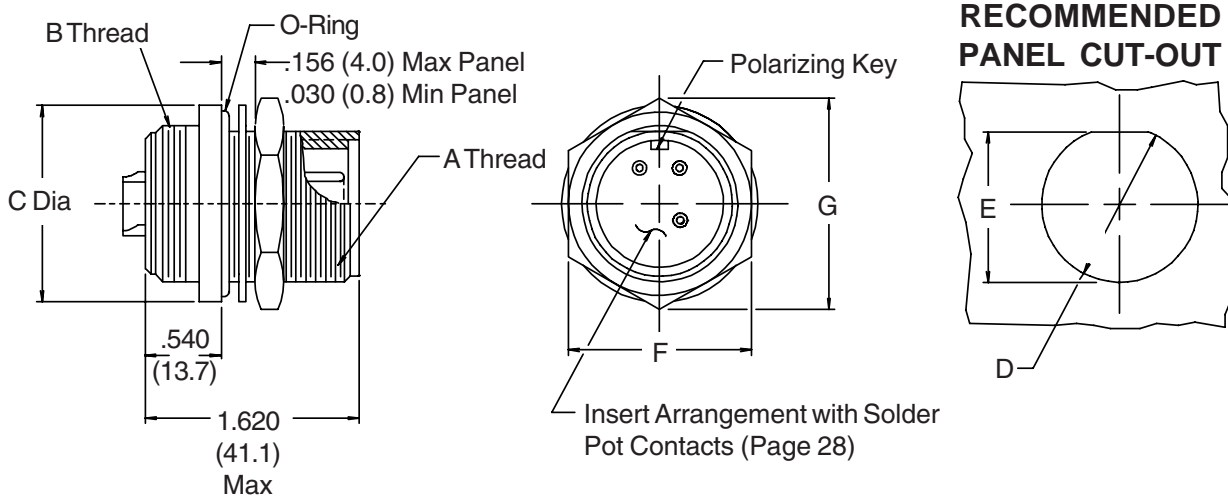
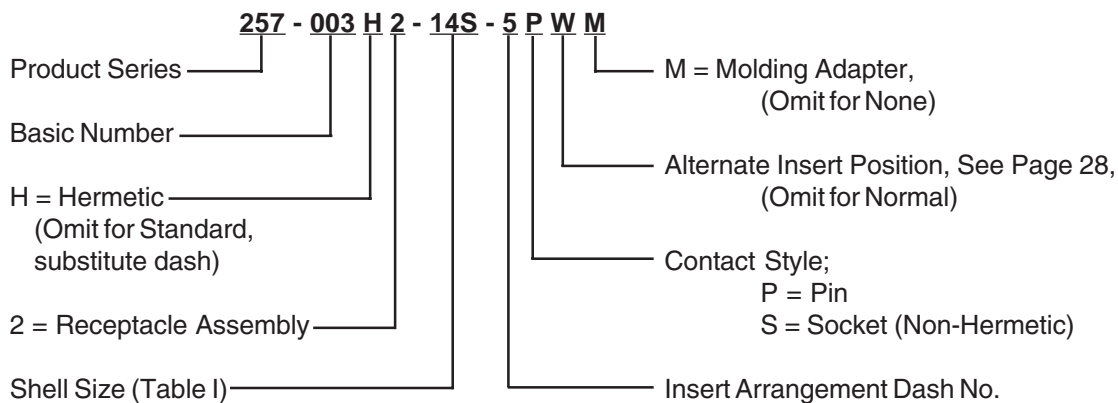


<b>Insert Arrangement</b>	14S-6	16S-1	18-1	20-29	24-11
<b>Contact Size &amp; Quantity</b>	6 - #16	7 - #16	10 - #16	17 - #16	6 - #12, 3 - #8
<b>MS Service Rating</b>	INST	A	4A 6 INST	A	A
<b>Alternative Position</b>	N/A	W & Z	W, X, Y & Z	W & Z	W,X,Y & Z

**TABLE III**

Barrel and Rear Accy Hdwr.	Passivated Stainless Steel
Coupling Nut	Nickel/Aluminum/Bronze
Insulator, O-Ring, Grommet	Nitrile/Neoprene
Contacts	Gold Plated Copper Alloy With Solder Pots
Contact Current Rating	#20-5 Amps #16-10 Amps #12-17 Amps #8-35 Amps
Rated Operating Voltage	Service Rating INST - 250 VDC Service Rating A - 700 VDC
Dielectric Withstanding Voltage (Hi-Pot)	Service Rating INST - 1000 VRMS Service Rating A - 2000 VRMS
Insulation Resistance	5000 Megohms minimum at 500 VDC and +25°C
Temperature Range	-55°C to +125°C

# 257-003 Connector Receptacle Assembly Stainless Steel Harsh Environment



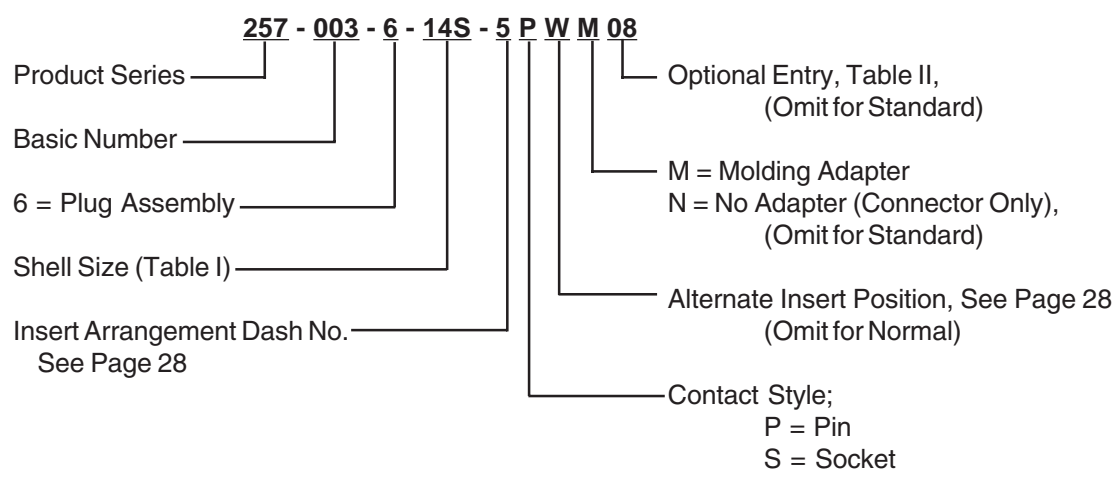
**TABLE I**

Shell Size	A Thread Class 2A	B Thread Class 2A	C Max	D		F Max	G Max
				+ .010 (0.3) - .000 (0)	+ .010 (0.3) - .000 (0)		
10SL	5/8 - 24 UNEF	5/8 - 24 UNEF	1.030 (26.2)	.653 (16.6)	.585 (14.9)	.812 (20.6)	.940 (23.9)
12	3/4 - 20 UNEF	3/4 - 20 UNEF	1.160 (29.5)	.760 (19.3)	.710 (18.0)	.938 (23.8)	1.090 (27.7)
14S	7/8 - 20 UNEF	7/8 - 20 UNEF	1.280 (32.5)	.885 (22.5)	.835 (21.2)	1.125 (28.6)	1.250 (31.8)
18	1 1/8 - 18 UNEF	1 1/8 - 16 UN	1.660 (42.2)	1.135 (28.8)	1.085 (27.6)	1.500 (31.8)	1.690 (42.9)
20	1 1/4 - 18 UNEF	1 1/4 - 16 UN	1.780 (45.2)	1.260 (32.0)	1.210 (30.7)	1.625 (41.3)	1.820 (46.2)
24	1 1/2 - 18 UNEF	1 1/2 - 16 UN	2.030 (51.6)	1.510 (38.4)	1.460 (37.1)	1.875 (47.6)	2.120 (53.8)
28	1 3/4 - 18 UNEF	1 3/4 - 16 UN	2.280 (57.9)	1.760 (44.7)	1.710 (43.4)	2.125 (54.0)	2.420 (61.5)

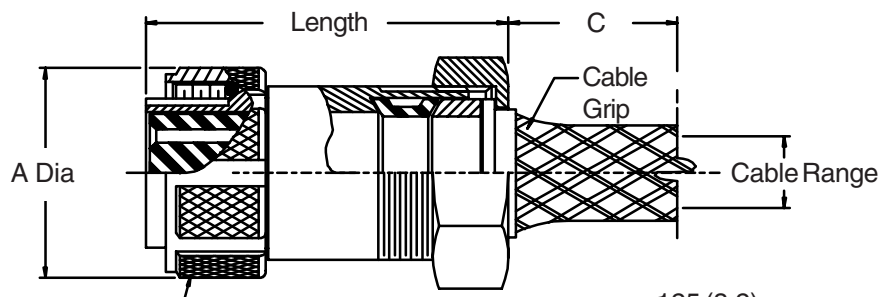
1. Metric dimensions (mm) are indicated in parentheses.
2. Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of the application.



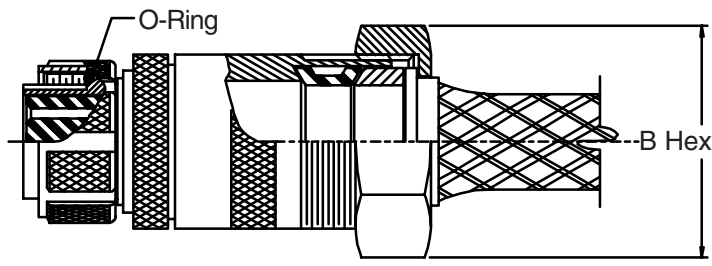
**257-003**  
**Connector Plug Assembly**  
**Stainless Steel Harsh Environment**



**STYLE I**

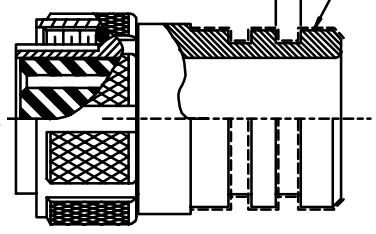


Knurl Style Mfr Option



**STYLE II**

.125 (3.2) Sand Blast



**STYLE M**  
**MOLDING ADAPTER**  
**OPTION**

**257-003**  
**Connector Plug Assembly**  
**Stainless Steel Harsh Environment**



**TABLE I**

Shell Size	A Max	B Flats	Standard Cable Range		Config. Style	Max Cable Entry (Table II)	Length Max
			Min	Max			
10SL	1.031 (26.2)	1.000 (25.4)	.210 (5.3)	.312 (7.9)	I	04	3.000 (76.2)
12	1.125 (28.6)	1.380 (35.1)	.500 (12.7)	.625 (15.9)	II	08	3.000 (76.2)
14S	1.219 (31.0)	1.000 (25.4)	.210 (5.3)	.312 (7.9)	I	10	3.000 (76.2)
18	1.406 (35.7)	1.220 (31.0)	.310 (7.9)	.438 (11.1)	I	12	3.000 (76.2)
20	1.531 (38.9)	1.500 (38.1)	.530 (13.5)	.750 (19.1)	I	14	3.500 (88.9)
24	1.781 (45.2)	1.500 (38.1)	.530 (13.5)	.750 (19.1)	I	16	3.500 (88.9)
28	2.031 (51.6)	1.500 (38.1)	.530 (13.5)	.750 (19.1)	I	16	3.500 (88.9)

**TABLE II**

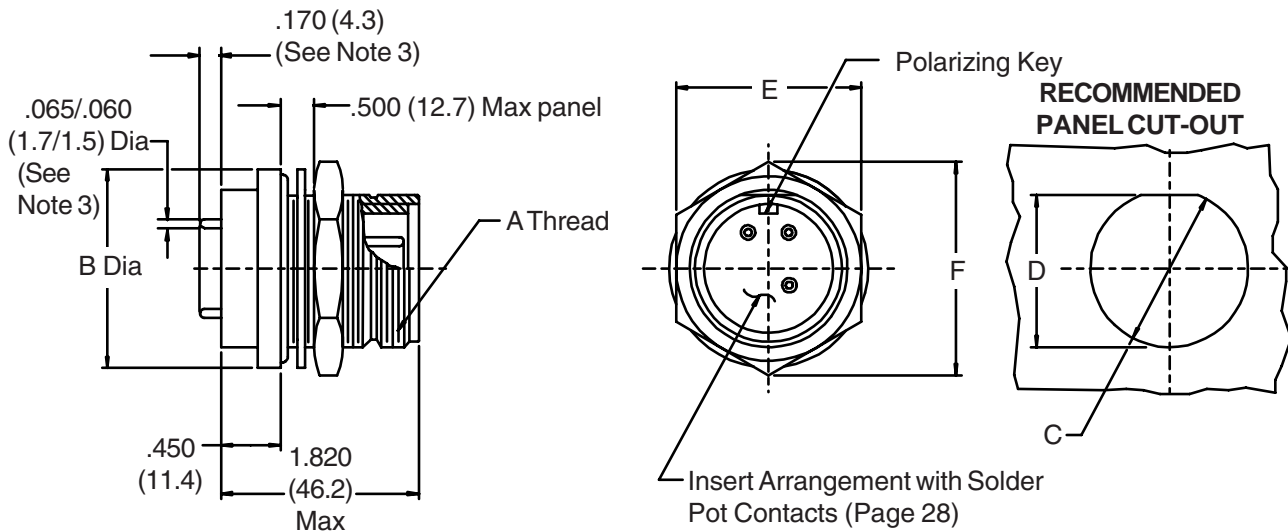
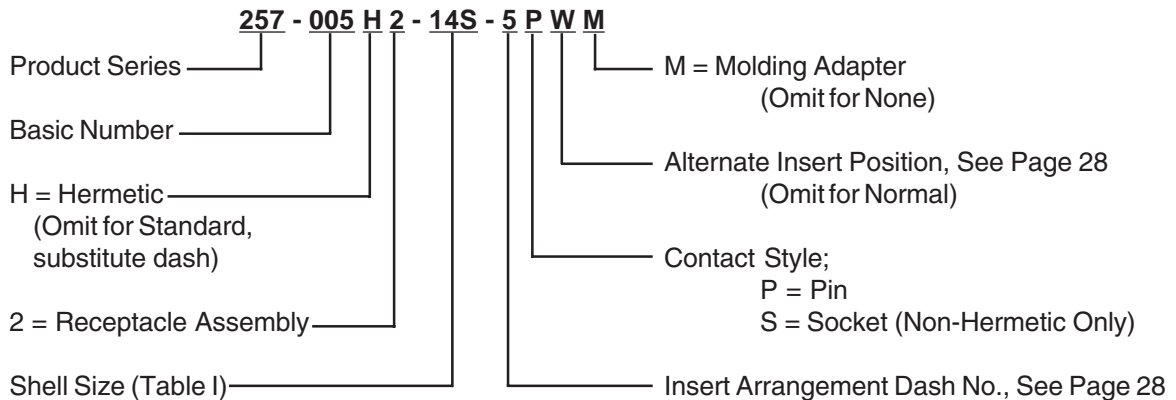
Dash No.	C Ref	Cable Range	
		Min	Max
03	5.120 (130.0)	.180 (4.6)	.210 (5.3)
04	5.750 (146.1)	.210 (5.3)	.312 (7.9)
06	7.000 (177.8)	.310 (7.9)	.438 (11.1)
08	7.120 (180.8)	.438 (11.1)	.500 (12.7)
10	7.370 (184.3)	.500 (12.7)	.625 (15.9)
12	9.000 (228.6)	.530 (13.5)	.750 (19.1)
14	8.000 (203.2)	.750 (19.1)	.875 (22.2)
16	9.000 (228.6)	.875 (22.2)	1.000 (25.4)

1. Metric dimensions (mm) are indicated in parentheses.
2. Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of the application.





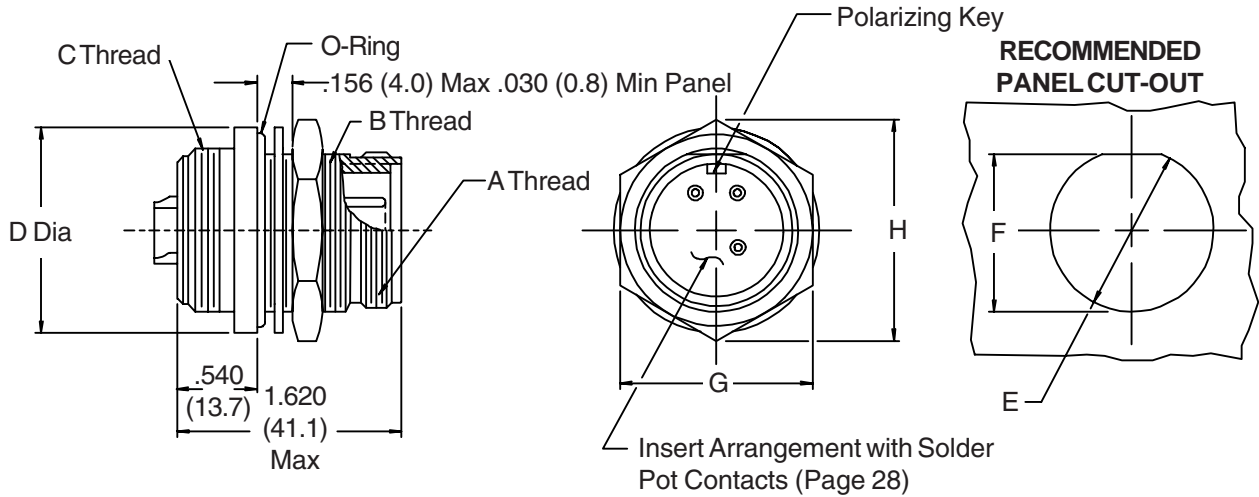
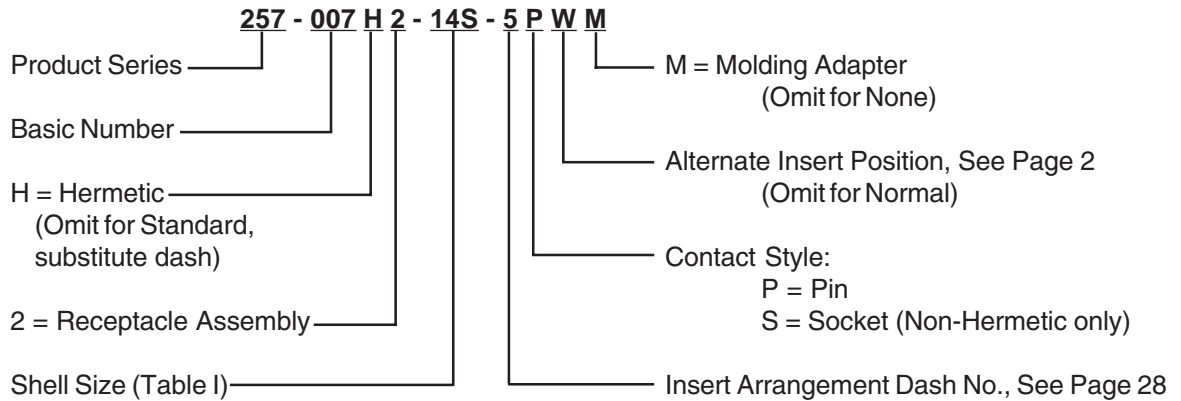
**257-005**  
**Connector Receptacle Assembly**  
**Stainless Steel Harsh Environment**  
**With Printed Circuit Contacts**



Shell Size	A Thread Class 2A	B Dia Max	C Dia +.010 (0.3) -.000 (0)	D +.010 (0.3) -.000 (0)	E Flats	F Ref
10SL	5/8 - 24 UNEF	1.030 (26.2)	.653 (16.6)	.585 (14.9)	.870 (22.1)	1.000 (25.4)
12	3/4 - 20 UNEF	1.160 (29.5)	.760 (19.3)	.710 (18.0)	.995 (25.3)	1.125 (28.6)
14S	7/8 - 20 UNEF	1.280 (32.5)	.885 (22.5)	.835 (21.2)	1.120 (28.4)	1.250 (31.8)
18	1 1/8 - 18 UNEF	1.660 (42.2)	1.135 (28.8)	1.085 (27.6)	1.495 (38.0)	1.730 (43.9)
20	1 1/4 - 18 UNEF	1.780 (45.2)	1.260 (32.0)	1.210 (30.7)	1.620 (41.1)	1.870 (47.5)
24	1 1/2 - 18 UNEF	2.030 (51.6)	1.510 (38.4)	1.460 (37.1)	1.870 (47.5)	2.165 (55.0)
28	1 3/4 - 18 UNEF	2.280 (57.9)	1.760 (44.7)	1.710 (43.4)	2.120 (53.8)	2.448 (62.2)

1. Metric dimensions (mm) are indicated in parentheses.
2. Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of the application.
3. Applies to size 16 contacts only. Consult factory for other sizes.

# 257-007 Connector Receptacle Assembly Stainless Steel Harsh Environment

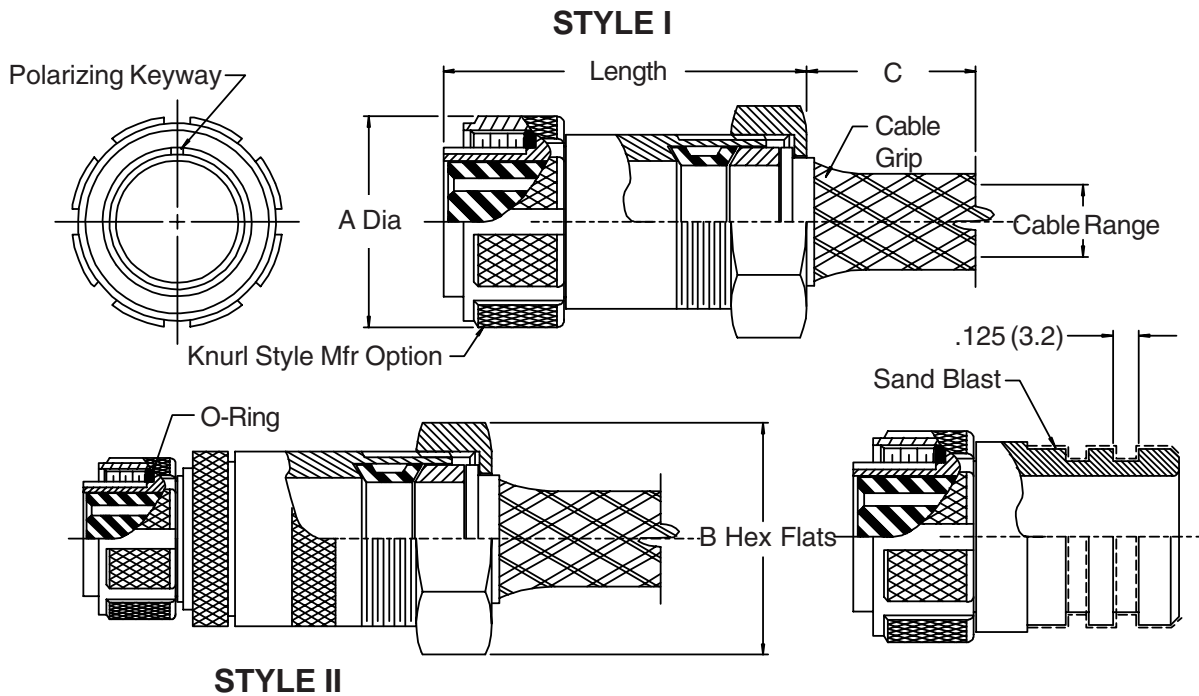
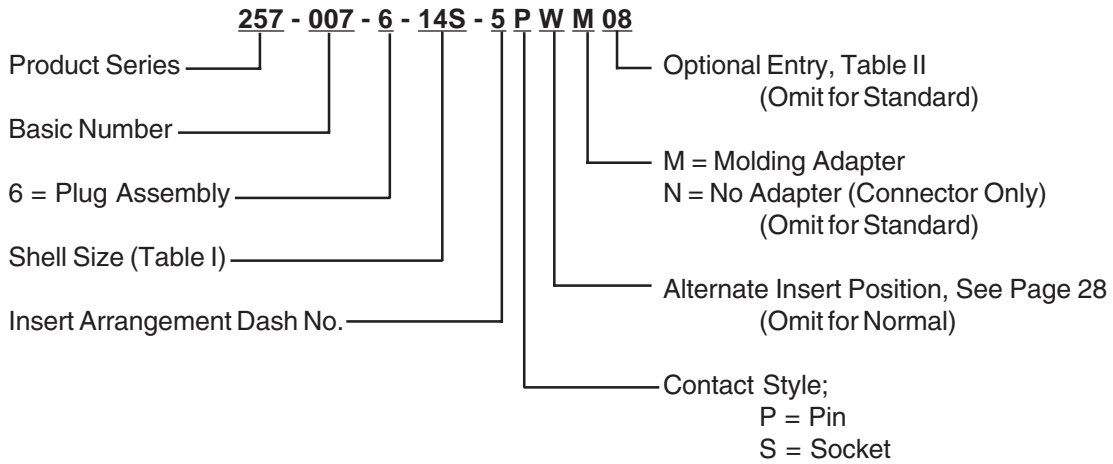


**TABLE I**

Shell Size	A Thread Class 2A	B Thread Class 2A	C Thread Class 2A	D Dia Max	E Dia + .010 (0.3) -.000 (0)	F + .010 (0.3) -.000 (0)	G Flats	H Max
10SL	.625 - .1P-1L	3/4 - 20 UNEF	5/8 - 24 UNEF	1.100 (27.9)	.760 (19.3)	.710 (18.0)	.938 (23.8)	1.090 (27.7)
12	.750 - .1P-1L	7/8 - 20 UNEF	3/4 - 20 UNEF	1.250 (31.8)	.885 (22.5)	.835 (21.2)	1.062 (27.0)	1.230 (31.2)
14S	.875 - .1P-1L	1 - 20 UNEF	7/8 - 20 UNEF	1.450 (36.8)	1.010 (25.7)	.965 (24.5)	1.250 (31.8)	1.440 (36.6)
18	1.125 - .1P-1L	1 1/4 - 18 UNEF	1 1/8 - 16 UN	1.750 (44.5)	1.260 (32.0)	1.210 (30.7)	1.500 (38.1)	1.730 (43.9)
20	1.250 - .1P-1L	1 1/2 - 18 UNEF	1 1/4 - 16 UN	2.030 (51.6)	1.510 (38.4)	1.460 (37.1)	1.750 (44.5)	2.020 (51.3)
24	1.500 - .1P-1L	1 3/4 - 18 UNEF	1 1/2 - 16 UN	2.340 (59.4)	1.760 (44.7)	1.710 (43.4)	2.000 (50.8)	2.320 (58.9)
28	1.750 - .1P-1L	2 - 18 UNEF	1 3/4 - 16 UN	2.550 (64.8)	2.010 (51.1)	1.960 (49.8)	2.187 (55.5)	2.530 (64.3)

1. Metric dimensions (mm) are indicated in parentheses.
2. Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of the application.

# 257-007 Connector Plug Assembly Stainless Steel Harsh Environment



**257-007**  
**Connector Plug Assembly**  
**Stainless Steel Harsh Environment**



**TABLE I**

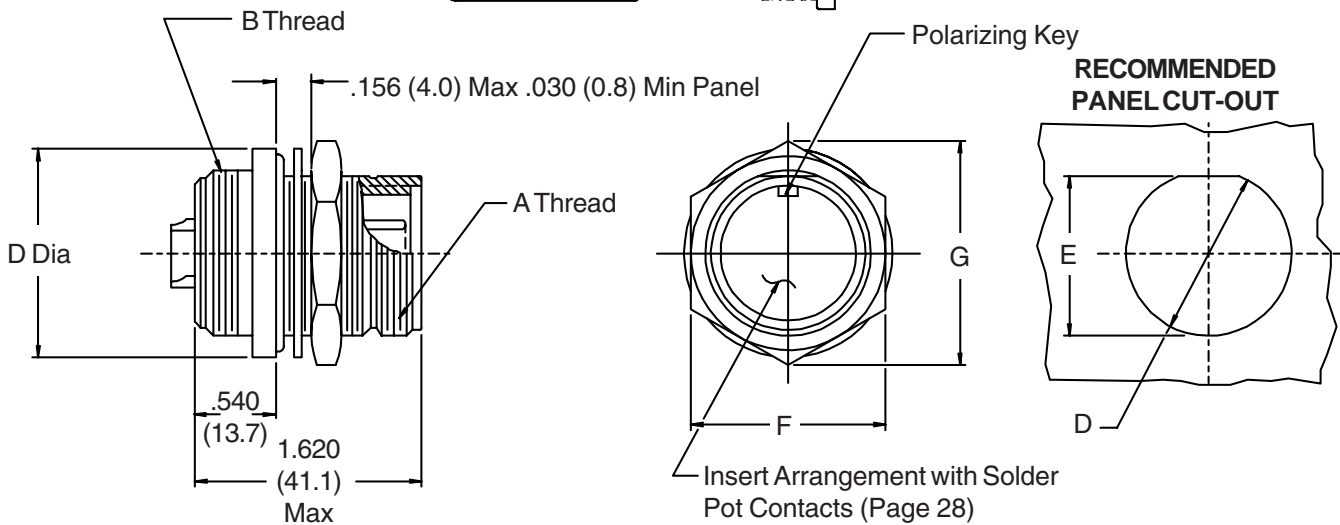
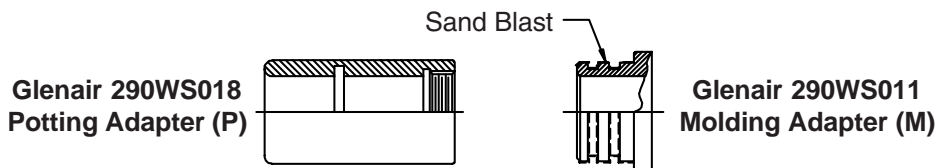
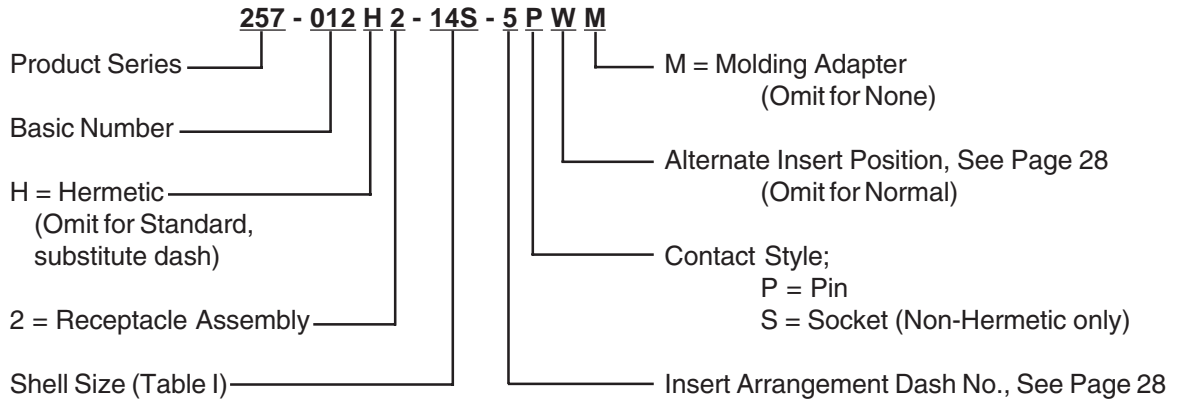
Shell Size	A Max	B Flats	Standard Cable Range		Config. Style	Max Cable Entry (Table II)	Length Max
			Min	Max			
10SL	1.031 (26.2)	.870 (22.1)	.210 (5.3)	.312 (7.9)	I	04	3.000 (76.2)
12	1.125 (28.6)	1.250 (31.8)	.500 (12.7)	.625 (15.9)	II	08	3.000 (76.2)
14S	1.219 (31.0)	.870 (22.1)	.210 (5.3)	.312 (7.9)	I	10	3.000 (76.2)
18	1.406 (35.7)	1.000 (25.4)	.310 (7.9)	.438 (11.1)	I	12	3.000 (76.2)
20	1.531 (38.9)	1.380 (35.1)	.530 (13.5)	.750 (19.1)	I	14	3.500 (88.9)
24	1.781 (45.2)	1.380 (35.1)	.530 (13.5)	.750 (19.1)	I	16	3.500 (88.9)
28	2.031 (51.6)	1.380 (35.1)	.530 (13.5)	.750 (19.1)	I	16	3.500 (88.9)

**TABLE II**

Dash No.	C Ref	Cable Range	
		Min	Max
03	5.120 (130.0)	.180 (4.6)	.210 (5.3)
04	5.750 (146.1)	.210 (5.3)	.312 (7.9)
06	7.000 (177.8)	.310 (7.9)	.438 (11.1)
08	7.120 (180.8)	.438 (11.1)	.500 (12.7)
10	7.370 (184.3)	.500 (12.7)	.625 (15.9)
12	9.000 (228.6)	.530 (13.5)	.750 (19.1)
14	8.000 (203.2)	.750 (19.1)	.875 (22.2)
16	9.000 (228.6)	.875 (22.2)	1.000 (25.4)

1. Metric dimensions (mm) are indicated in parentheses.
2. Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of the application.

## 257-012 Connector Receptacle Assembly Stainless Steel Harsh Environment



**TABLE I**

Shell Size	A Thread Class 2A	B Thread Class 2A	C Max	D		F Max	G Max
				+ .010 (0.3) - .000 (0)	E + .010 (0.3) - .000 (0)		
10SL	5/8 - 24 UNEF	5/8 - 24 UNEF	1.030 (26.2)	.653 (16.6)	.585 (14.9)	.875 (22.2)	.940 (23.9)
12	3/4 - 20 UNEF	3/4 - 20 UNEF	1.160 (29.5)	.760 (19.3)	.710 (18.0)	1.000 (25.4)	1.090 (27.7)
14S	7/8 - 20 UNEF	7/8 - 20 UNEF	1.280 (32.5)	.885 (22.5)	.835 (21.2)	1.125 (28.6)	1.250 (31.8)
16S	1 - 20 UNEF	1 - 20 UNEF	1.420 (36.1)	1.010 (25.7)	.960 (24.4)	1.250 (31.8)	1.390 (35.3)
18	1 1/8 - 18 UNEF	1 1/8 - 16 UN	1.660 (42.2)	1.135 (28.8)	1.085 (27.6)	1.500 (38.1)	1.690 (42.9)
20	1 1/4 - 18 UNEF	1 1/4 - 16 UN	1.780 (45.2)	1.260 (32.0)	1.210 (30.7)	1.625 (41.3)	1.820 (46.2)
24	1 1/2 - 18 UNEF	1 1/2 - 16 UN	1.030 (26.2)	1.510 (38.4)	1.460 (37.1)	1.875 (47.6)	2.120 (53.8)
28	1 3/4 - 18 UNEF	1 3/4 - 16 UN	2.280 (57.9)	1.760 (44.7)	1.710 (18.4)	2.125 (54.0)	2.420 (61.5)

1. Metric dimensions (mm) are indicated in parentheses.
2. Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of the application.
3. Mates to MIL-C-5015 (MS3106) Type Plug Connectors.

# 257-163 Flange Mount and 257-164 Weld Mount Connector Receptacle Assemblies Stainless Steel



5015 Type  
Connectors

**257-163 H 14S-5 P X**

Basic Part Number  
257-163 Flange Mount  
257-164 Weld Mount

H = Hermetic, Substitute  
Dash For Non-Hermetic

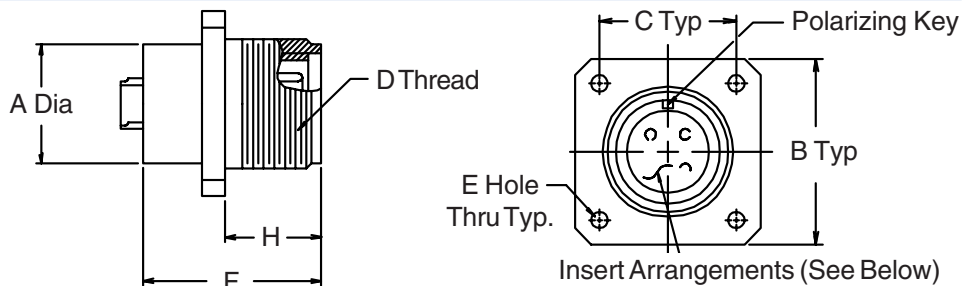
Shell Size

Alternate Insert Position (See Below),  
N for Normal

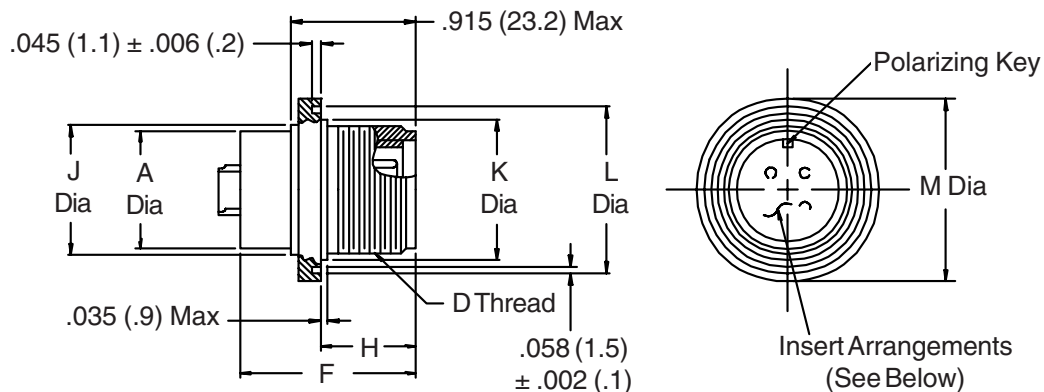
Contact Style: P = Pin,  
S = Socket (Non-Hermetic Only)

Insert Arrangement Dash No.

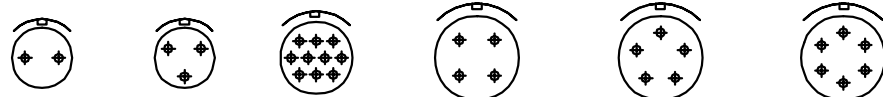
## 257-163 Flange Mount



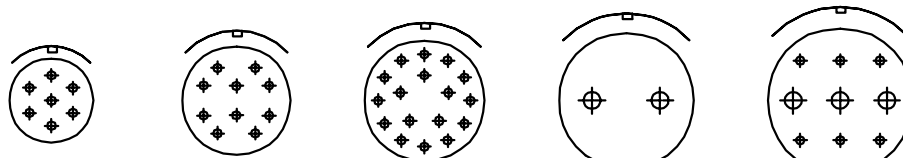
## 257-164 Weld Mount



## Insert Arrangements



Shell Size - Insert Arr. Dash No.	10SL-4	10SL-3	12-10	14S-2	14S-5	14S-6
Contact Size & Quantity	2 - #16	3 - #16	10 - #20	4 - #16	5 - #16	6 - #16
MS Service Rating	A	A	Inst.	Inst.	Inst.	Inst.
Available Alternate Insert Positions (Degrees rotation clockwise looking into the front of the pin insert)	n/a	n/a	n/a	X=120°, Y=240°	X=110°	n/a



Shell Size - Insert Arr. Dash No.	14S-7	18-1	20-29	22-1	24-11
Contact Size & Quantity	7 - #16	10 - #16	17 - #16	2 - #16	6 - #16, 3 - #18
MS Service Rating	Inst.	4 A, 6 Inst.	A	D	A
Available Alternate Insert Positions (Degrees rotation clockwise looking into the front of the pin insert)	W=90°, X=180°, Y=270°	W=70°, X=145°, Y=215°, Z=290°	W=80°, Z=280°	n/a	W=35°, X=110°, Y=250°, Z=325°

## 257-163 Flange Mount and 257-164 Weld Mount Connector Receptacle Assemblies Stainless Steel

### TABLE I

Dash No.	A		B Sq.		C		D Thread	E		F
	Max	(.8)	±.031	(.8)	±.005	(.1)	Class 2A UNEF	+010 -.005	(.1) (1.3)	Max
10SL	.609	(15.5)	1.000	(25.4)	.719	(18.3)	.625 - 24	.120	(3.0)	1.000 (25.4)
12	.650	(16.5)	1.094	(27.8)	.812	(20.6)	.750 - 20	.120	(3.0)	1.000 (25.4)
14S	.733	(18.6)	1.188	(30.2)	.906	(23.0)	.875 - 20	.120	(3.0)	1.000 (25.4)
18	.975	(24.8)	1.375	(34.9)	1.062	(27.0)	1.125 - 18	.120	(3.0)	1.200 (30.5)
20	1.105	(28.1)	1.500	(38.1)	1.156	(29.4)	1.250 - 18	.120	(3.0)	1.200 (30.5)
22	1.328	(33.7)	1.625	(41.3)	1.250	(31.8)	1.375 - 18	.147	(3.7)	1.200 (30.5)
24	1.350	(34.3)	1.750	(44.5)	1.375	(34.9)	1.500 - 18	.147	(3.7)	1.200 (30.5)

### TABLE II

Dash No.	H		J	K	L	M
	+031 -.000	(.8) (.0)	Dia	Dia	Dia	Dia
10SL	.562	(14.3)	.750 (19.1)	.825 (21.0)	1.061 (26.9)	1.132 (28.8)
12	.562	(14.3)	.906 (23.0)	.950 (24.1)	1.187 (30.1)	1.258 (32.0)
14S	.562	(14.3)	1.016 (25.8)	1.075 (27.3)	1.279 (32.5)	1.345 (34.2)
18	.724	(18.4)	1.250 (31.8)	1.275 (32.4)	1.479 (37.6)	1.550 (39.4)
20	.724	(18.4)	1.375 (34.9)	1.450 (36.8)	1.654 (42.0)	1.725 (43.8)
22	.724	(18.4)	1.500 (38.1)	1.575 (40.0)	1.744 (44.3)	1.815 (46.1)
24	.724	(18.4)	1.625 (41.3)	1.700 (43.2)	1.879 (47.7)	1.950 (49.5)

### TABLE III

	Non-Hermetic Receptacles	Hermetic Receptacles
Shell	Passivated Stainless Steel	Passivated Stainless Steel
Insulator	Nitrile/Neoprene	Full Glass
O-Ring, Grommet	Nitrile/Neoprene	Nitrile/Neoprene
Contacts	Gold Plated Copper Alloy With Solder Pots	Alloy 52/Gold Plate
Contact Current Rating	#20-5 Amps #16-10 Amps #12-17 Amps #8-35 Amps	#20-5 Amps #16-10 Amps #12-17 Amps #8-35 Amps
Rated Operating Voltage	Service Rating INST - 250 VDC Service Rating A - 700 VDC Service Rating D - 1250 VDC	250 VDC
Dielectric Withstanding Voltage (Hi-Pot)	Service Rating INST - 1000 VRMS Service Rating A - 2000 VRMS Service Rating D - 2800 VRMS	1000 VRMS
Insulation Resistance	5000 Megohms minimum at 500 VDC and +25°C	5000 Megohms minimum at 500 VDC and +25°C
Temperature Range	-55°C to +125°C	-55°C to +125°C

1. Metric dimensions (mm) are indicated in parentheses.
2. **Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of application.**

# 257-165 Stainless Steel Plug Assembly and 257-166 Stainless Steel Receptacle Assembly



5015 Type  
Connectors

**257-165-14S-5 P X M 08**

Basic Part Number ———— 257-165 Plug Assembly  
257-166 Receptacle Assy

Shell Size ————

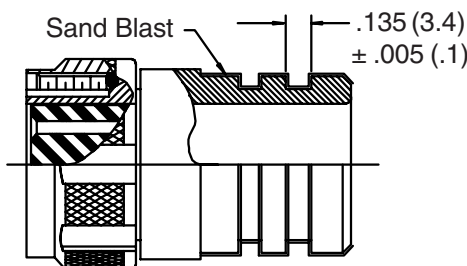
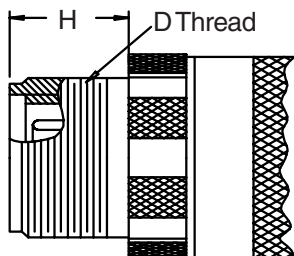
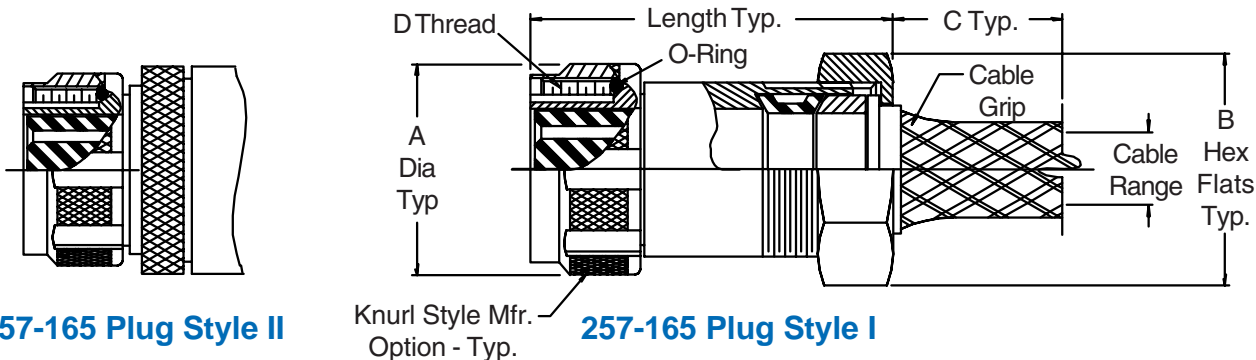
Insert Arrangement Dash No. ————

Contact Style: P = Pin, S = Socket

Optional Entry (Table II)

M = Molding Adapter  
N = No Adapter, Connector Only  
Omit for Standard

Alternate Insert Position (See Below),  
N for Normal



## Insert Arrangements

Shell Size - Insert Arr. Dash No.	10SL-4	10SL-3	12-10	14S-2	14S-5	14S-6
Contact Size & Quantity	2 - #16	3 - #16	10 - #20	4 - #16	5 - #16	6 - #16
MS Service Rating	A	A	Inst.	Inst.	Inst.	Inst.
Available Alternate Insert Positions (Degrees rotation clockwise looking into the front of the pin insert)	n/a	n/a	n/a	X=120°, Y=240°	X=110°	n/a
Shell Size - Insert Arr. Dash No.	14S-7	18-1	20-29	22-1	24-11	
Contact Size & Quantity	7 - #16	10 - #16	17 - #16	2 - #16	6 - #16, 3 - #18	
MS Service Rating	Inst.	4 A, 6 Inst.	A	D	A	
Available Alternate Insert Positions (Degrees rotation clockwise looking into the front of the pin insert)	W=90°, X=180°, Y=270°	W=70°, X=145°, Y=215°, Z=290°	W=80°, Z=280°	n/a	W=35°, X=110°, Y=250°, Z=325°	



## 257-165 Stainless Steel Plug Assembly 257-166 Stainless Steel Receptacle Assembly

### TABLE I

Dash No.	Config. Style	A		B		D Thread		H		Length Max
		Max	(mm)	Flats	(mm)	Class 2A UNEF	+0.031 (-0.001)	(mm)	(mm)	
10SL	I	1.031	(26.2)	1.00	(25.4)	.625 - 24	.562	(14.3)	3.00	(76.2)
12	II	1.125	(28.6)	1.35	(34.3)	.750 - 20	.562	(14.3)	3.00	(76.2)
14S	I	1.219	(31.0)	1.00	(25.4)	.875 - 20	.562	(14.3)	3.00	(76.2)
18	I	1.406	(35.7)	1.12	(28.4)	1.125 - 18	.724	(18.4)	3.50	(88.9)
20	I	1.531	(38.9)	1.50	(38.1)	1.250 - 18	.724	(18.4)	3.50	(88.9)
22	I	1.645	(41.8)	1.50	(38.1)	1.375 - 18	.724	(18.4)	3.50	(88.9)
24	I	1.781	(45.2)	1.50	(38.1)	1.500 - 18	.724	(18.4)	3.50	(88.9)

### TABLE I (Continued)

Dash No.	Cable Range		Max Dash No. Style I
	Min	Max	
10SL	.210 (5.3)	.312 (7.9)	04
12	.500 (12.7)	.625 (15.9)	08
14S	.210 (5.3)	.312 (7.9)	10
18	.310 (7.9)	.438 (11.1)	12
20	.530 (13.5)	.750 (19.1)	14
22	.530 (13.5)	.750 (19.1)	14
24	.530 (13.5)	.750 (19.1)	16

### TABLE II (Optional Entries)

Dash No.	Cable Range		C Ref.
	Min	Max	
03	.180 (4.6)	.210 (5.3)	5.12 (130.0)
04	.210 (5.3)	.312 (7.9)	5.75 (146.1)
06	.310 (7.9)	.438 (11.1)	7.00 (177.8)
08	.438 (11.1)	.500 (12.7)	7.12 (180.8)
10	.500 (12.7)	.625 (15.9)	7.37 (187.2)
12	.530 (13.5)	.750 (19.1)	9.00 (228.6)
14	.750 (19.1)	.875 (22.2)	8.00 (203.2)
16	.875 (22.2)	1.000 (25.4)	9.00 (228.6)

### TABLE III

Barrel and Rear Accy Hdwr.	Passivated Stainless Steel
Coupling Nut	Nickel/Aluminum/Bronze
Insulator, O-Ring, Grommet	Nitrile/Neoprene
Contacts	Gold Plated Copper Alloy With Solder Pots
Contact Current Rating	#20-5 Amps #16-10 Amps #12-17 Amps #8-35 Amps
Rated Operating Voltage	Service Rating INST - 250 VDC Service Rating A - 700 VDC
Dielectric Withstanding Voltage (Hi-Pot)	Service Rating INST - 1000 VRMS Service Rating A - 2000 VRMS
Insulation Resistance	5000 Megohms minimum at 500 VDC and +25°C
Temperature Range	-55°C to +125°C

1. Metric dimensions (mm) are indicated in parentheses.
2. **Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of application.**



#### PRODUCT FEATURES

- Passivated Stainless Steel
- Molding Adapters, Strain-Reliefs and Protective Covers for all Series 22 Connectors
- Straight and 90° Configurations
- Environmentally Sealed Versions

## Front and Back-End Protection for Series 22 Connectors

### *Cable sealing backshells, strain-reliefs and protective covers extend the life of expensive interconnect systems*

Glenair stainless steel connector accessories are ideally suited for use in harsh environments where resistance to high temperatures, outgassing, corrosive fluids, fire, shock and vibration is required. Corrosive resistant stainless steel connector accessories (QQ-S-763 AISI 300 Series) are passivated to QQ-P-35. Several styles, including molding adapters and cable strain-reliefs are available as standard catalog offerings. Glenair is also able to offer other backshell types for EMI/RFI applications. Please consult factory for EMI/RFI and combined EMI/RFI/Environmental designs.



# 290-011 and 290-012 Stainless Steel Molding Adapters

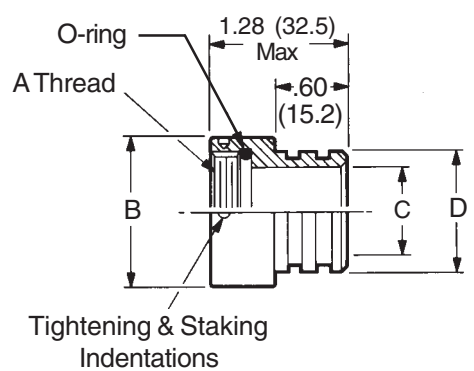
To select the appropriate molding adapter, consider the following basic suggestions to ensure a high integrity, quality molded termination:

- Select a molding adapter which will provide adequate inside working room to accept the termination envelope, especially if there are shield terminations, splices, etc.
- If the termination is to be molded with neoprene or other material using a transfer molding process, select the molding adapter cable entry diameter close to the outside diameter of the cable or termination envelope.

**Prior to use, lubricate O-rings with high grade silicone lubricant (Molykote M55 or equivalent).**

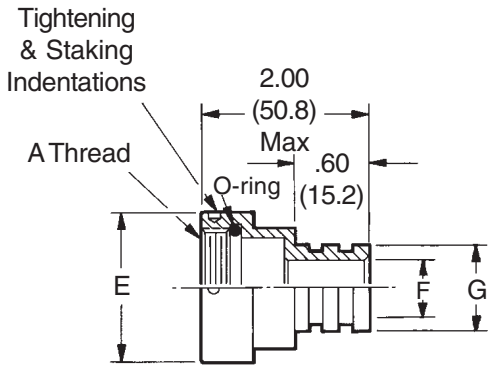
Metric dimensions (mm) are indicated in parentheses.

### FIXED ENTRY



Basic Part No. 290WS011-18  
Shell Size (Table I) \_\_\_\_\_

### VARIABLE ENTRY



Basic Part No. 290WS012-18 12  
Shell Size (Table II) \_\_\_\_\_  
Entry Size (Table III) \_\_\_\_\_

SHELL SIZE	A THREAD CLASS 2B	B DIA MAX	C DIA	D DIA
10	5/8 - 24 UNEF	.855 (21.7)	.430 (10.9)	.670 (17.0)
12	3/4 - 20 UNEF	.965 (24.5)	.535 (13.6)	.780 (19.8)
14	7/8 - 20 UNEF	1.090 (27.7)	.660 (16.8)	.905 (23.0)
16	1 - 20 UNEF	1.220 (31.0)	.785 (19.9)	1.020 (25.9)
18	1 1/8 - 16 UN	1.370 (34.8)	.880 (22.4)	1.135 (28.8)
20	1 1/4 - 16 UN	1.525 (38.7)	1.005 (25.5)	1.250 (31.8)
22	1 3/8 - 16 UN	1.655 (42.0)	1.130 (28.7)	1.383 (35.1)
24	1 1/2 - 16 UN	1.775 (45.1)	1.255 (31.9)	1.510 (38.4)

SHELL SIZE	PISTON O-RING
10	2-014
12	2-016
14	2-018
16	2-020
18	2-022
20	2-024
22	2-026
24	2-028

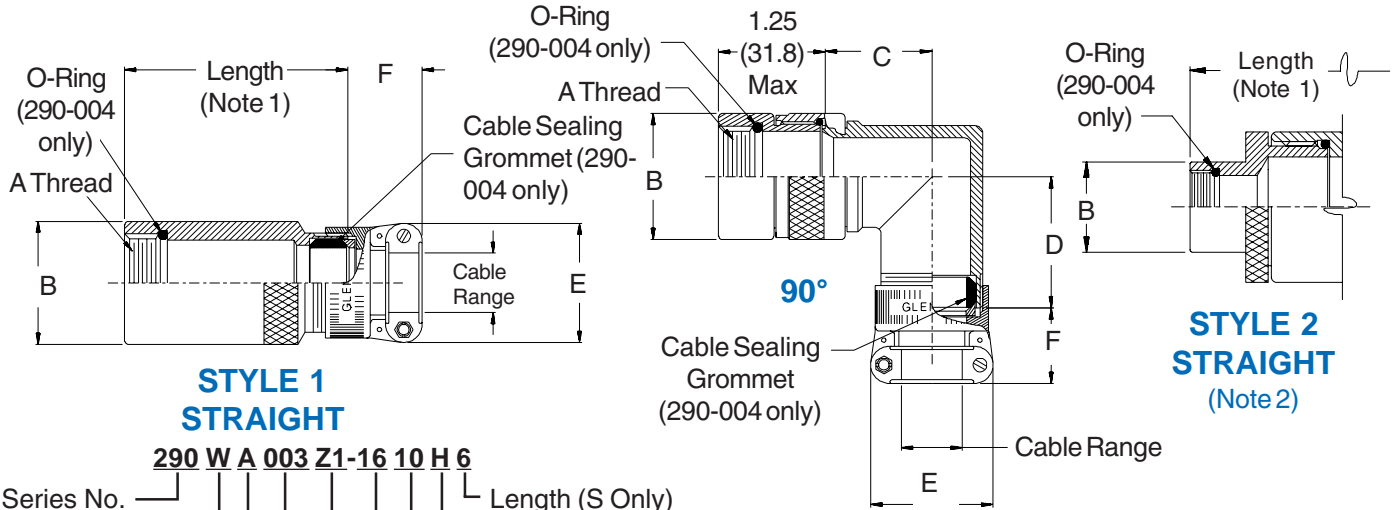
\* Parker o-ring part numbers. Compound N674-70 or equivalent.

SHELL SIZE	A THREAD CLASS 2B	E DIA MAX	MAX ENTRY
10	5/8 - 24 UNEF	.855 (21.7)	
12	3/4 - 20 UNEF	.965 (24.5)	12
14	7/8 - 20 UNEF	1.090 (27.7)	
16	1 - 20 UNEF	1.220 (31.0)	16
18	1 1/8 - 16 UN	1.370 (34.8)	
20	1 1/4 - 16 UN	1.525 (38.7)	20
22	1 3/8 - 16 UN	1.655 (42.0)	
24	1 1/2 - 16 UN	1.775 (45.1)	24

ENTRY NO.	F DIA	G DIA
10	.430 (10.9)	.670 (17.0)
12	.535 (13.6)	.780 (19.8)
14	.660 (16.8)	.905 (23.0)
16	.785 (19.9)	1.020 (25.9)
18	.880 (22.4)	1.135 (28.8)
20	1.005 (25.5)	1.250 (31.8)
22	1.130 (28.7)	1.383 (35.1)
24	1.255 (31.9)	1.510 (38.4)

ENTRY NO.	TORQUE ± 5 IN. LBS.
10	80
12	100
14	120
16	120
18	140
20	140
22	140
24	150

# 290-003 and 290-004 Strain Relief Backshells



**STYLE 1  
STRAIGHT**

**STYLE 2  
STRAIGHT  
(Note 2)**

**290 W A 003 Z1-16 10 H 6**

Series No. ————

Connector Desig. ————

Angular Function ————  
A = 90°  
S = Straight

Basic Part Number ————  
003 = Strain Relief  
004 = Environmental Seal/Strain Relief

Length (S Only)  
(1/2 inch increments;  
e.g. 6 = 3 inches)

Strain Relief Style

Dash No. (Table III)

Shell Size (Table II)

Material/Finish (Table I)

**NOTES**

1. Standard minimum length for Style 1 is 1.5 (38.1); for Style 2 is 2.0 (50.8). Consult factory for shorter lengths. Applicable to symbol S only.
2. When cable diameter exceeds inside diameter of connector shell, Style 2 will be supplied.
3. Consult factory for other backshell types available for Series 22 connectors, EMI shield terminations, etc.
4. Metric dimensions (mm) are indicated in parentheses.

**TABLE I**

DESIGNATOR	MATERIAL	FINISH
G	Aluminum Alloy QQ-A-225/8 (Backshell Body)	Hard Coat (Anodize) MIL-A-8625, Type III, Class 1
Z1	Corrosive Resistant Steel QQ-S-763 AISI 300 Series	Passivate QQ-P-35

**TABLE II**

SHELL SIZE	A THREAD CLASS 2B	B DIA	MAX ENTRY
10	5/8 - 24 UNEF	.781 (19.8)	06
12	3/4 - 20 UNEF	.906 (23.0)	06
14	7/8 - 20 UNEF	1.031 (26.2)	10
16	1 - 20 UNEF	1.156 (29.4)	12
18	1 1/8 - 16 UN	1.281 (32.5)	12
20	1 1/4 - 16 UN	1.406 (35.7)	16
22	1 3/8 - 16 UN	1.531 (38.9)	16
24	1 1/2 - 16 UN	1.656 (42.1)	24

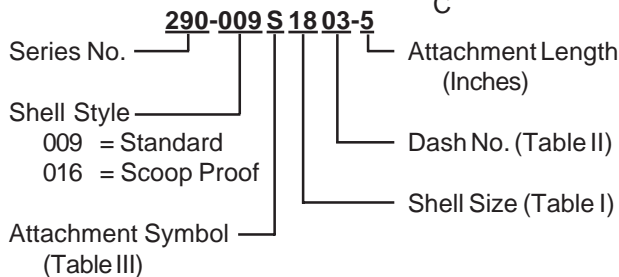
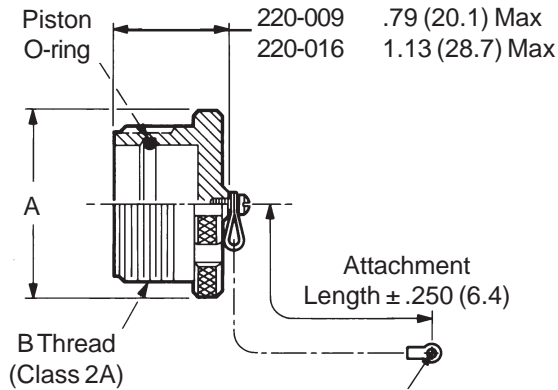
**TABLE III**

DASH NO.	C MAX	D MAX	E MAX	F MAX	CABLE RANGE MIN	CABLE RANGE MAX	TORQUE ± 5 IN. LBS.
04	.94 (23.9)	1.16 (29.5)	.957 (24.3)	.780 (19.8)	.125 (3.2)	.312 (7.9)	80
06	.98 (24.9)	1.22 (31.0)	1.145 (29.1)	.780 (19.8)	.250 (6.4)	.437 (11.1)	100
08	1.03 (26.2)	1.25 (31.8)	1.332 (33.8)	.780 (19.8)	.312 (7.9)	.562 (14.3)	120
10	1.09 (27.7)	1.32 (33.5)	1.332 (33.8)	.780 (19.8)	.350 (8.9)	.625 (15.9)	120
12	1.12 (28.4)	1.36 (34.5)	1.551 (39.4)	.811 (20.6)	.500 (12.7)	.750 (19.1)	140
16	1.25 (31.8)	1.45 (36.8)	1.770 (45.0)	.905 (23.0)	.625 (15.9)	.937 (23.8)	140
20	1.41 (35.8)	1.65 (41.9)	2.113 (53.7)	1.092 (27.7)	.875 (22.2)	1.250 (31.8)	140
24	1.41 (35.8)	1.65 (41.9)	2.363 (60.0)	1.124 (28.5)	1.000 (25.4)	1.375 (34.9)	150

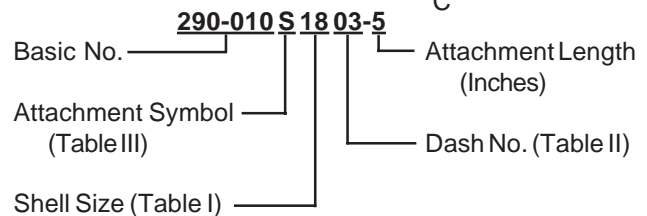
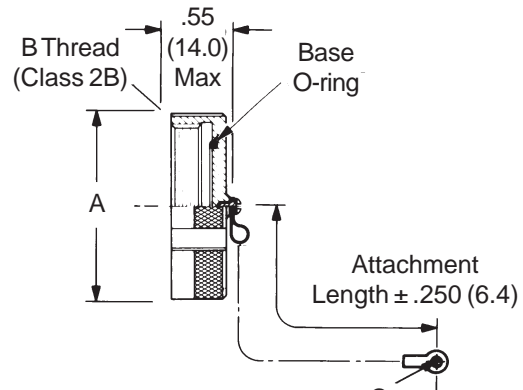


## 290-009, 290-010 and 290-016 Protective Covers for Standard 220 Series Connectors

### PLUG COVER



### RECEPTACLE COVER



**TABLE I**

SHELL SIZE	A MAX	BTHREAD CLASS 2A/2B	TORQUE ± 5 IN. LBS.
10	.900 (22.9)	.750 - .1P - .1L	100
12	1.025 (26.0)	.875 - .1P - .1L	120
14	1.150 (29.2)	1.000 - .1P - .1L	120
16	1.275 (32.4)	1.125 - .1P - .1L	140
18	1.525 (38.7)	1.250 - .1P - .1L	140
20	1.650 (41.9)	1.375 - .1P - .1L	140
22	1.775 (45.1)	1.500 - .1P - .1L	150
24	1.900 (48.3)	1.625 - .1P - .1L	150

### PERFORMANCE RATING

The protective covers for Series 22 Geo-Marine connectors provide a hydrostatic sealing capability of up to 5000 psi when mated and tightened to the recommended torque values.

**TABLE II**

DASH NO.	C DIA
01	.125 (3.2)
02	.140 (3.6)
03	.167 (4.2)
04	.182 (4.6)
05	.191 (4.9)
06	.197 (5.0)

**TABLE III**

SYMBOL	ATTACHMENT
H	Wire Rope, Teflon Jacket, With Terminal
N	Attachment Omitted
S	#8 Sash Chain, Cres, Passivate
U	Wire Rope, Polyurethane Jacket, With Terminal

**REPLACEMENT O-RING PART NUMBERS \***

SHELL SIZE	PISTON O-RING	BASE O-RING
10	2-014	2-014
12	2-016	2-016
14	2-018	2-018
16	2-020	2-020
18	2-022	2-022
20	2-024	2-024
22	2-026	2-026
24	2-028	2-028

\* Parker O-Ring part numbers.  
Compound N674-70 or equivalent.

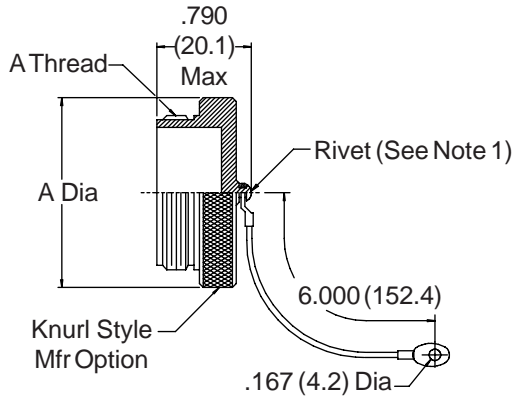
**Prior to use, lubricate O-rings with high grade silicone lubricant (Moly-kote M55 or equivalent).**

Metric dimensions (mm) are indicated in parentheses.

**667-009 Plug and 667-010 Receptacle  
Protective Covers - Composite  
For Glenair 257-007 Connectors**

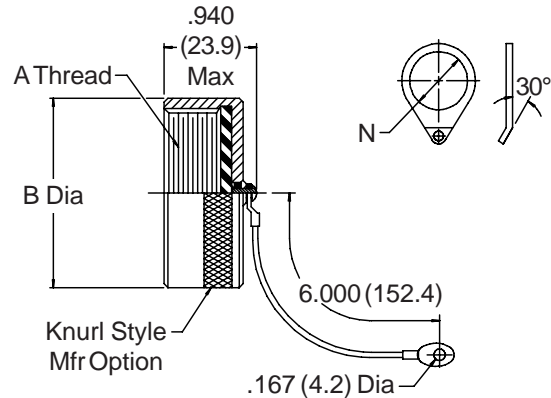


**667-009 PLUG COVER**



Product Series **667-009-14**  
Shell Size (Table I)

**667-010 RECEPTACLE COVER**



Product Series No. **667-010-14-03**  
Shell Size (Table I)  
Attachment Ring (Table III)  
Omit for Standard  
Lug Termination

**TABLE I**

SHELL SIZE	A MAX	B MAX	A THREAD CLASS 2A
10	1.031 (26.2)	.820 (20.8)	.625 - .1P - .1L
12	1.125 (28.6)	.940 (23.9)	.750 - .1P - .1L
14	1.219 (31.0)	1.060 (26.9)	.875 - .1P - .1L
16	1.312 (33.3)	1.190 (30.2)	1.000 - .1P - .1L
18	1.406 (35.7)	1.320 (33.5)	1.125 - .1P - .1L
20	1.531 (38.9)	1.440 (36.6)	1.250 - .1P - .1L
22	1.645 (41.8)	-	1.375 - .1P - .1L
24	1.781 (45.2)	1.690 (42.9)	1.500 - .1P - .1L
28	2.031 (51.6)	1.940 (49.3)	1.750 - .1P - .1L

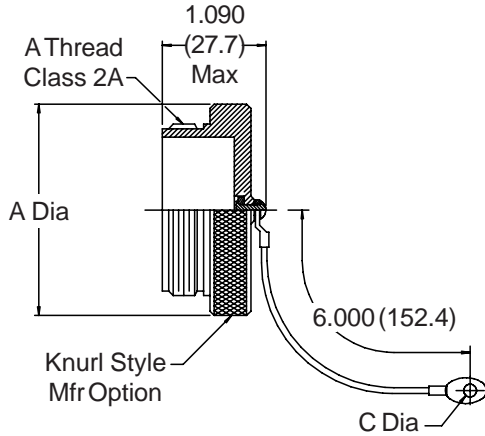
**TABLE II**

DASH NO.	SHELL SIZE	N DIA
01	10	.765 (19.4)
02	12	.890 (22.6)
03	14	1.015 (25.8)
04	16	1.140 (29.0)
05	18	1.265 (32.1)
06	20	1.577 (40.1)
08	22	-
10	24	1.765 (44.8)
13	28	2.077 (52.8)

**Notes:**

1. Metric dimensions (mm) are indicated in parentheses.
2. Rivet to be ultrasonically or chemically welded to cover.
3. Plug cover mates with Glenair 257-007 and 190-015 Connectors; Receptacle cover mates with 257-007-2, 190-016 and 190-019 Connectors.
4. Attachment is Wire Rope, Heavy Duty, Cres/Passivated with black polyurethane jacketing.
5. Material/Finish: Cover and Rivet - Ultem

**667-011 PLUG COVER**

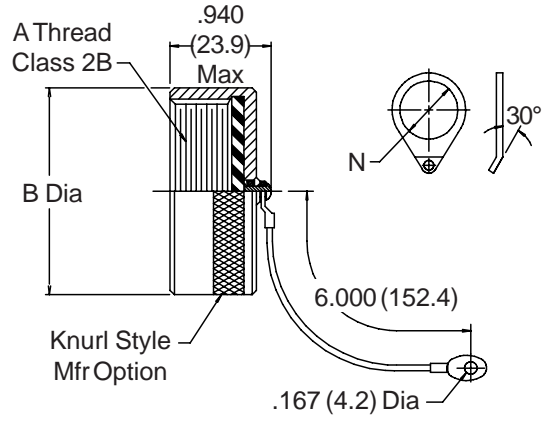


Product Series **667-011 - 14 - 04**

Shell Size (Table I)

Attachment Dash No.  
No Dash Required for  
Standard .167 (4.2) Dia.

**667-012 RECEPTACLE COVER**



Product Series **667-012 - 14 - 02**

Shell Size (Table I)

Attachment Ring (Table II)  
Omit for Standard Lug  
Termination or N = No  
Attachment

**TABLE I**

SHELL SIZE	A MAX	B MAX	ATHREAD CLASS 2A & 2B
10	1.031 (26.2)	.820 (20.8)	5/8 - 24 UNEF
12	1.125 (28.6)	.940 (23.9)	3.4 - 20 UNEF
14	1.219 (31.0)	1.060 (26.9)	7/8 - 20 UNEF
16	1.312 (33.3)	1.190 (30.2)	1 - 20 UNEF
18	1.406 (35.7)	1.320 (33.5)	1 1/8 - 18 UNEF
20	1.553 (39.4)	1.440 (36.6)	1 1/4 - 18 UNEF
24	1.781 (45.2)	1.690 (42.9)	1 1/2 - 18 UNEF
28	2.031 (51.6)	<b>1.940 (49.3)</b>	1 3/4 - 18 UNEF
32	2.281 (57.9)	2.190 (55.6)	2 - 18 UNS
36	2.553 (64.8)	2.440 (62.0)	2 1/4 - 16 UN
40	2.781 (70.6)	2.630 (66.8)	2 1/2 - 16 UN

**TABLE II**

DASH NO.	SHELL SIZE	C DIA	D DIA
01	10 & 12	.140 (3.6)	.765 (19.4)
02	14	.182 (4.6)	.890 (22.6)
03	16	.191 (4.9)	1.015 (25.8)
04	18	.197 (5.0)	1.140 (29.0)
06	20	.125 (3.2)	1.265 (32.1)
08	24	—	1.577 (40.1)
10	28	—	1.765 (44.8)
Std		.167 (4.2)	.167 (4.2)
N	No Attachment		—

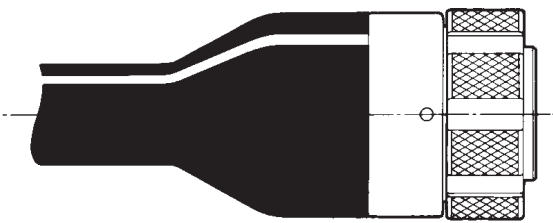
**Notes:**

1. Metric dimensions (mm) are indicated in parentheses.
2. Rivet to be ultrasonically or chemically welded to cover.
3. Attachment is Wire Rope, Heavy Duty, Cres/Passivated with black polyurethane jacketing.

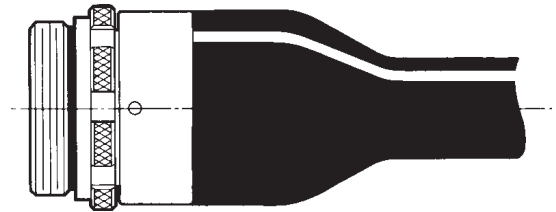
All Series 22 connectors can be supplied complete with molded cable terminations or open wire bundles to meet specific application requirements. **Custom Over Molded Cable Assemblies**, built in our tightly controlled, 100% inspection and test facilities, are a turnkey solution to the complex requirements of harsh environment interconnect systems.

Glenair offers users of Series 22 Geo-Marine connectors a complete custom cabling service, designing and producing cable assemblies or harnesses to meet the users' specific application requirements.

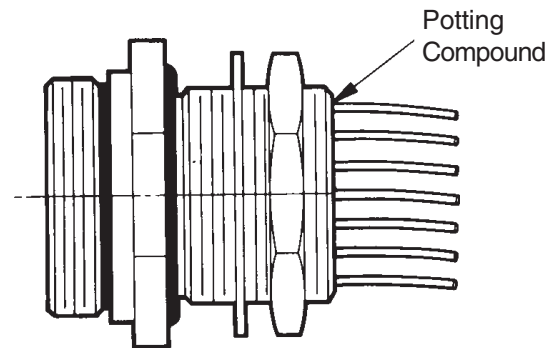
Glenair has over 30 years experience and expertise in designing and producing cable assemblies to meet many unique environmental conditions, supported by test facilities to provide the user with proven reliability and performance.



**CABLE PLUG WITH MOLDED CABLE**



**CABLE RECEPTACLE WITH MOLDED CABLE**



**BULKHEAD RECEPTACLE WITH PIGTAILS**

Molded connector-to-cable terminations are the common application for the Series 22 connectors, with materials and compounds available to satisfy the most stringent application. Typical molding and cable jacketing materials include:

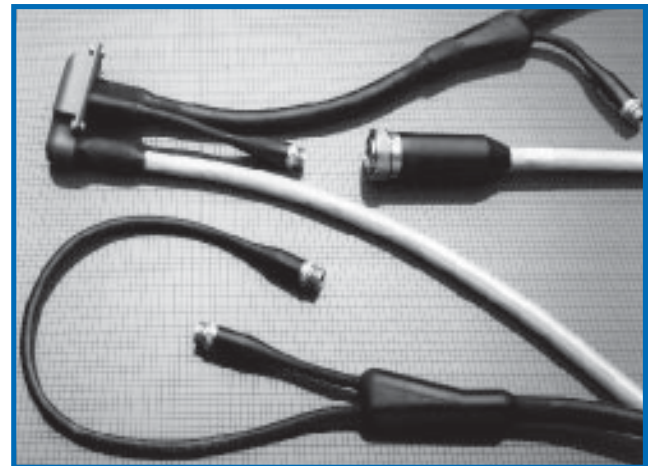
- Neoprene
- Polyurethane
- Viton

Conductor insulation on wire is selected for compatibility with the molding and jacket materials for optimum performance and cost-effectiveness.

Additional custom features include items such as EMI shielding, Kevlar stress members, multiple breakouts, as well as open wire bundles or "pigtails" which are terminated with a non-hydroscopic potting compound.

Special molded shapes are available to accommodate unusual space limitations or cable routing.

Contact Glenair's ABC Division for further information on complete cable assemblies using the Series 22 Geo-Marine connectors.



Depicted here is a typical cable assembly designed to withstand pressure to 5000 psi. Glenair's standard molding material is solvent and oil resistant neoprene per MIL-S-6855 molded to neoprene jacketed cable containing either rubber or Teflon insulated, fine stranded, copper conductors. Special molded shapes and cable configurations are available per customer requirements.



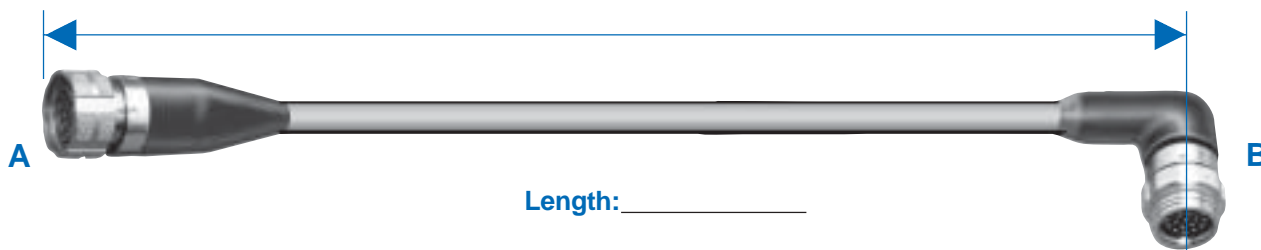


# Custom Overmolded Geo-Marine® Cable Assemblies Application Worksheet

Glenair specializes in the manufacture of fast-turnaround cable assemblies, and our ability to rapidly respond to requests for our unique, overmolded Geo-Marine Cables is well known throughout the industry. For a fast quote on your next *point-to-point* cable, just photocopy this page and fax or mail the completed form to your local Glenair representative, or directly to the Glenair factory. For multi-branch cables, or more complex assemblies, please call the factory to speak directly with an application engineer, or submit your drawing via FAX or E-mail.

### Originator Contact Information

Contact Name and Title \_\_\_\_\_  
 Company Name/Division \_\_\_\_\_  
 Street Address \_\_\_\_\_  
 City and State/Province \_\_\_\_\_  
 Country and Postal Code/Zip \_\_\_\_\_  
 Telephone \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_  
 Name of Project or Program \_\_\_\_\_ Description \_\_\_\_\_  
 Initial Quantity \_\_\_\_\_ Required Delivery Date \_\_\_\_\_ Potential Long-Term Quantity \_\_\_\_\_



**Wire Gauge:**  12  16  20  22      **Kevlar Strength Members:**  Yes  No

**Overmolding Material Type:**  Neoprene  Viton  Polyurethane

**Tin/Copper EMI Shielding:**  None  Single Overall Shield  Double Overall      **Other:** Consult Factory

#### Connector A:

**Gender:**  Pin  Socket  
**Type:**  06  16  01  11  
**Class:**  Environmental  Hermetic  
**Polarization:**  N  1  2  
                            3  4  
**Shell Size and Insert Arrangements:**  
 \_\_\_\_\_ - \_\_\_\_\_ (See Page 5)  
**Cable Exit Angle:**  Straight  45°  
                                    90°  
**Dust Cover:**  Yes  No  
**Marking Instructions:** \_\_\_\_\_

#### Connector B:

**Gender:**  Pin  Socket  
**Type:**  06  16  01  11  
**Class:**  Environmental  Hermetic  
**Polarization:**  N  1  2  
                                    3  4  
**Shell Size and Insert Arrangements:**  
 \_\_\_\_\_ - \_\_\_\_\_ (See Page 5)  
**Cable Exit Angle:**  Straight  45°  
                                    90°  
**Dust Cover:**  Yes  No  
**Marking Instructions:** \_\_\_\_\_