



ULTRA HARSH-ENVIRONMENT

GEO-MARINE®

HIGH-PRESSURE ENVIRONMENTAL AND HERMETIC CONNECTORS AND CABLES

MAY 2014

SERIES 22

GEO-MARINE®



Geo-Marine®

*Rugged marine bronze / stainless steel
harsh-environment connectors, cables,
and accessories*



Glenair Series 22 Geo-Marine® connectors, cables and accessories are designed for severe, high-pressure environment geophysical and oceanographic applications—from offshore oil drilling to seabed exploration and pipeline inspection systems. Preferred by the U.S. Navy and oil patch equipment manufacturers for decades, this third-generation product features: Marine-grade stainless steel machined shells and naval bronze plug coupling rings • High-pressure environmental and hermetic options • Power and signal insert arrangements from 2 to 128 contacts • Anti-decoupling devices on all plugs • Locksmith-keyed polarization • A full line of backshells, protective covers, and molding adapters. Glenair stocks all popular Series 22 Geo-Marine® components for immediate, same-day shipping, and can design and fabricate Geo-Marine® overmolded cable assemblies for the ultimate in high-pressure, extreme environment interconnect protection.

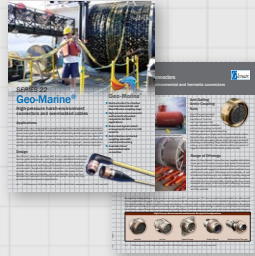


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**Series 22 Geo-Marine®
Harsh-Environment Connectors, Cables and Accessories
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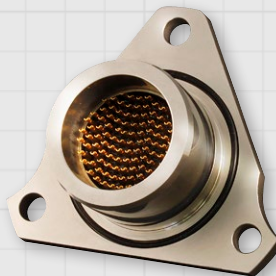
Section C



**Backshells, Protective Covers and
Other Accessories**

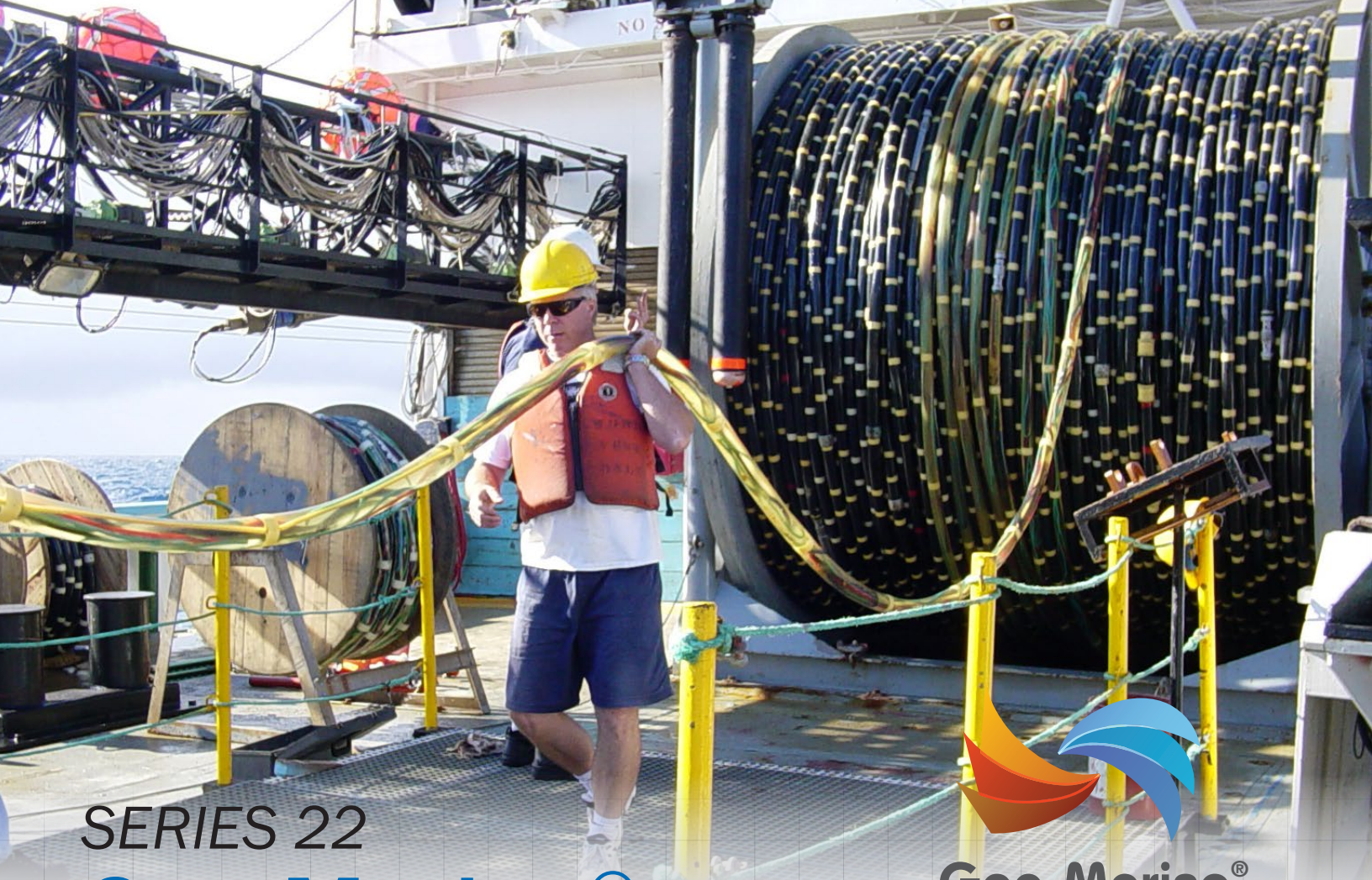
C

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**Special-Purpose Connector
Configurations**

D



SERIES 22 Geo-Marine®

High-pressure harsh-environment connectors and overmolded cables

Applications

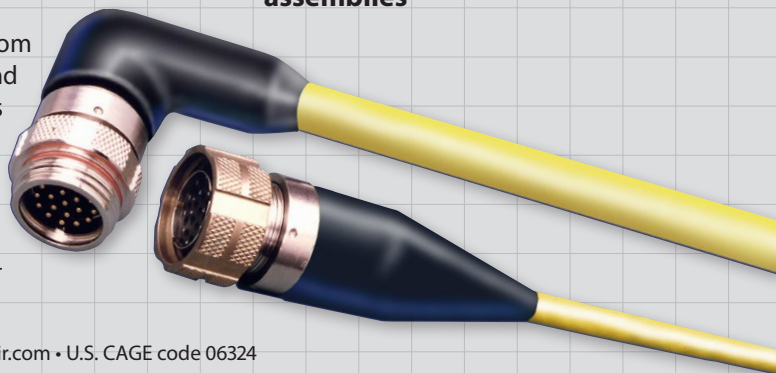
Designed for use in oceanographic, geophysical and other severe industrial environments, Glenair Series 22 Geo-Marine® Connectors and Cables are the ultimate harsh-environment power and signal connector solution. Built to withstand hydrostatic pressures up to 5,000 PSI and exposure to extreme temperatures and corrosives, the Series 22 Geo-Marine® is ideally suited for applications such as US Navy towed array sonar systems, military land vehicles, submersibles and ROV's, offshore-oil drilling equipment, seabed exploration, pipeline inspection systems, well monitoring equipment, and digital seismic streamers.

Design

Geo-Marine® plugs are equipped with arctic coupling nuts—made from marine-grade naval bronze—with easy-to-grip castellated knurling and a powerful ratcheted anti-decoupling mechanism which guarantees reliable mating and demating performance in even the harshest environments. Supplied as discrete connectors—or more typically in build-to-print overmolded cable assemblies—the Series 22 Geo-Marine® has delivered reliable, proven performance for over four decades and represents the ultimate interconnect solution for high-pressure, harsh-environment applications.



- Marine Grade 316 stainless steel machined shells and Naval Bronze coupling rings
- High-pressure environmental and hermetically sealed receptacles for field applications
- Power and signal contact arrangements from 2 to 128 contacts
- Anti-vibration ratcheted coupling nuts with castellated knurling
- Available Viton® overmolded cable assemblies



High-pressure environmental and hermetic connectors



photo: Seismometer, geophysical observatory, Neumayer Station, Antarctica by Dr. Hannes Grobe



Anti-Galling Arctic Coupling Nuts

One of the most valuable features of the Series 22 Geo-Marine® from the user's perspective is the specially-designed castellated and knurled coupling nut which facilitates rapid mating and demating in field applications. Single-start, stub Acme threads reduce thread fouling and binding, and are supplied with an anti-vibration/anti-decoupling device which prevents accidental loosening or decoupling. Plugs contribute to high-pressure sealing, up to 5,000 PSI in the mated condition, by means of rugged and durable interfacial and peripheral seals.



Range of Offerings

Series 22 Geo-Marine® connectors are supplied with either fused-glass ("H" hermetic class) or high grade thermoplastic ("E" environmental class) insulators. Both classes of connectors are supplied with rugged, corrosion-resistant materials. Low-profile and scoop-proof cable plugs and receptacles, as well as bulkhead feed-throughs are available. Specially-designed cable sealing backshells as well as EMI/RFI shield termination backshells and environmentally-sealed protective covers complete the range of discrete product offerings. 35 insert arrangements (contact sizes #12, #16, #20 and #22) are tooled and fully available.

Receptacle Configurations: High-pressure environmental ("E") and hermetic ("H") class receptacles are available for cable as well as box applications. Rugged o-ring piston seals located inside the receptacle barrel contribute to reliable high-pressure sealing in the mated condition. Glenair is able to supply Geo-Marine® customers with a wide range of receptacle configurations for unique requirements including low-profile and scoop-proof designs, pin and socket contact designs, solder cup and printed circuit board termination, unique flange shapes and mounting configurations, in-line cable receptacles, connector savers and gender changers.

High-Pressure Environmental and Hermetic Receptacle Configurations



Jam Nut



In-Line



Square Flange



Solder-Mount



Bulkhead Feed-Through



Series 22 Geo-Marine® Specifications

A

Performance Characteristics

Hydrostatic Pressure Rating:	5,000 PSI (fully mated)
Operating Temperature:	-65°C to +150°C
Durability:	500 Cycles of mate/demate

Class H Hermetic Receptacles

Open-Face Pressure Rating	1,000 to 5,000 PSI
Hermeticity	Less than 1×10^{-6} sccHe/second @ 1 atmosphere

Current Rating

Current Rating	Environmental	Hermetic
Contact Size 22	5 amps	3 amps
Contact Size 20	7.5 amps	5 amps
Contact Size 16	13 amps	10 amps
Contact Size 12	23 amps	17 amps

Service Rating

Service Rating	Suggested Operational Voltage (Sea Level)		Test Voltage (Sea Level)	Test Voltage 50,000 FT.	Test Voltage 70,000 FT.	Test Voltage 110,000 FT.
	AC(RMS)	DC				
M	400	550	1300 VRMS	550 VRMS	350 VRMS	200 VRMS
N	300	450	1000 VRMS	400 VRMS	260 VRMS	200 VRMS
I	600	850	1800 VRMS	550 VRMS	400 VRMS	200 VRMS
II	900	1250	2300 VRMS	550 VRMS	500 VRMS	200 VRMS

Insulation Resistance:	1000 Megohms minimum at 500 VDC
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Depth/Pressure Conversion

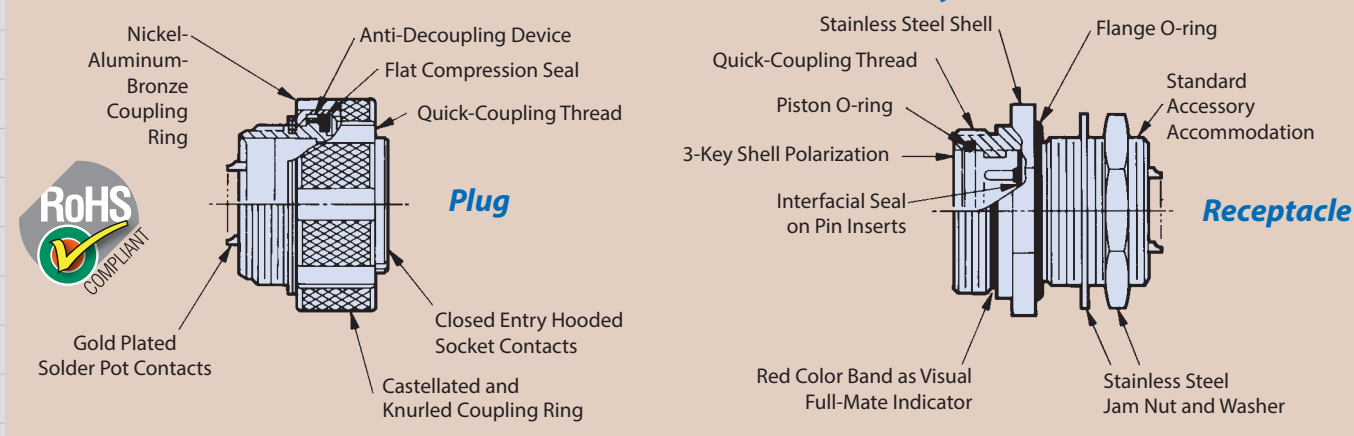
Feet	Meters	P.S.I.	Bar	Feet	Meters	P.S.I.	Bar
1	.3	.4	.0296	1,000	304.8	433.0	29.8543
10	3.1	4.3	.2965	1,500	457.2	649.5	44.7814
50	15.2	21.7	1.4962	2,500	762.0	1082.5	74.6357
100	30.5	43.3	2.9854	5,000	1524.0	2165.0	149.2715
250	76.2	108.3	7.4670	10,000	3048.0	4330.0	298.5430
500	152.4	216.5	14.9271	11,547	3519.35	5000.0	344.7379

Cable/Wire D.C. Resistance

Copper Conductors at Room Temperature

AWG	Ohms per 1000 feet	AWG	Ohms per 1000 feet
28	66.2 Max	20	10.4 Max
26	41.6 Max	18	6.5 Max
24	26.2 Max	16	4.1 Max
22	16.5 Max	14	2.6 Max
		12	1.6 Max

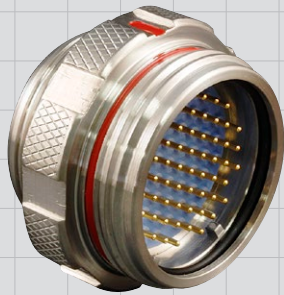
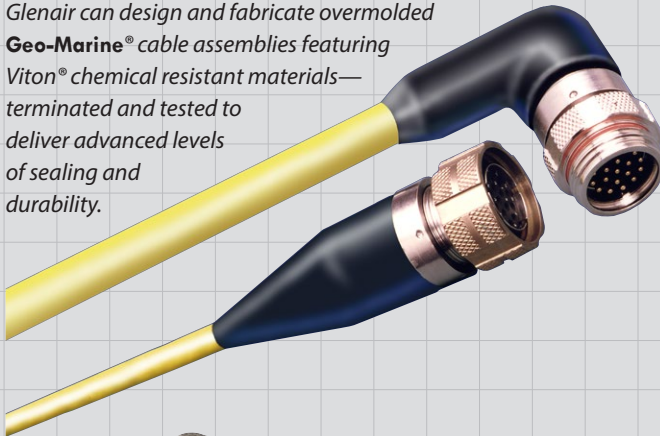
Geo-Marine® Connector Anatomy



Series 22 Geo-Marine® Specifications



Glenair can design and fabricate overmolded **Geo-Marine®** cable assemblies featuring Viton® chemical resistant materials—terminated and tested to deliver advanced levels of sealing and durability.



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.

Materials/Finishes		
Item	Material	Finish
Connector Shells	CRS 316 SAE-AMS-QQ-S-763	Passivate-ASTM A967
Protective Covers	CRS 316 SAE-AMS-QQ-S-763	Passivate-ASTM A967
Solder Mount Receptacle	CRS 316 SAE-AMS-QQ-S-763	Nickel SAE-AMS-QQ-N-290, Class 2
Plug Coupling Nut	Marine Bronze SAE AMS-4640	
Molding Adapters and Backshells	See individual product pages	
Insulators, Class "E"	Epiall 1908, Diallyl Phthalate or Hysol CP2-4289	None
Insulators, Class "H"	Fused Vitreous Glass	None
Contacts, Pin - Class "E"	Leaded Nickel Copper, CA 7021	Gold/Ni
Contacts, Pin - Class "H"	Nickel-Iron Alloy 52 - MIL-I-23011, Class 2	Gold/Ni
Contacts, Socket	Copper Alloy, CA7021	
Contacts, Socket Hood	CRS, SAE-AMS-QQ-S-763 AISI 305	Passivate-ASTM A967
O-Rings	Nitrile (Buna-N) Rubber MIL-G-21569	None
Interfacial and Peripheral Seals	Flourosilicone Rubber MIL-DTL-25988	None



Catalog Notes

For all parts in this catalog:

- All parts will be identified with manufacturer's name and part number, space permitting.
- Glenair 600 series backshell assembly tools are recommended for assembly and installation.
- Electrical ratings are based on connectors only, not terminated to a cable or conductors, with proper cleaning and drying after hydrostatic testing.
- On all length callouts, tolerance is $\pm .060$ unless otherwise specified.
- Metric dimensions appear in parentheses in diagrams and tables, based on 1 inch = 25.4 mm, for reference only. Unless otherwise specified, the following other dimensional tolerances apply:

.xx = $\pm .03$ (0.8)

.xxx = $\pm .015$ (0.4)

Lengths = $\pm .060$ (1.52)

Angles = $\pm 5^\circ$

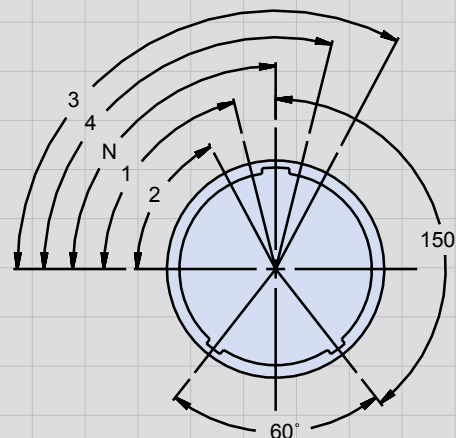


Series 22 Geo-Marine® Harsh-Environment Connectors, Cables and Accessories Contact Arrangements

STANDARD AND CUSTOM CONTACT ARRANGEMENTS AND KEYWAY POSITIONS (POLARIZATION)

A

Insert Arrangements						
Shell Size	Series 22 Pattern	Service Rating	Contact Size/Quantity			
			22	20	16	12
10	10-2	I			2	
	10-4	I			4	
	10-6	I		6		
	10-13	M	13			
12	12-8	I			8	
	12-10	I		10		
	12-22	M	22			
14	14-4	I				4
	14-12	II			14	
	14-19	I		19		
	14-37	M	37			
16	16-6	I				6
	16-19	II			19	
	16-26	I		26		
	16-55	M	55			
18	18-8	I		8		
	18-11	II			11	
	18-22	II			22	
	18-32	I		32		
	18-66	M	66			
20	20-11	I				11
	20-30	II			30	
	20-38	I		30	8	
	20-41	I		41		
	20-79	M	79			
22	22-19	I				19
	22-38	II			38	
	22-50	M	48			2
	22-55	I		55		
	22-85	M	85			
24	24-24	I			12	12
	24-48	I			48	
	24-61	I		61		
	24-100	M	100			
	24-128	M	128			



**FACE VIEW
RECEPTACLE**

Alternate Keyway Positions						
Shell Size Desig.	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	60	120	108	
20	90	72	60	120	108	
22	90	75	64	116	105	
24	90	75	64	116	105	

Custom Contact 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, Coax 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.

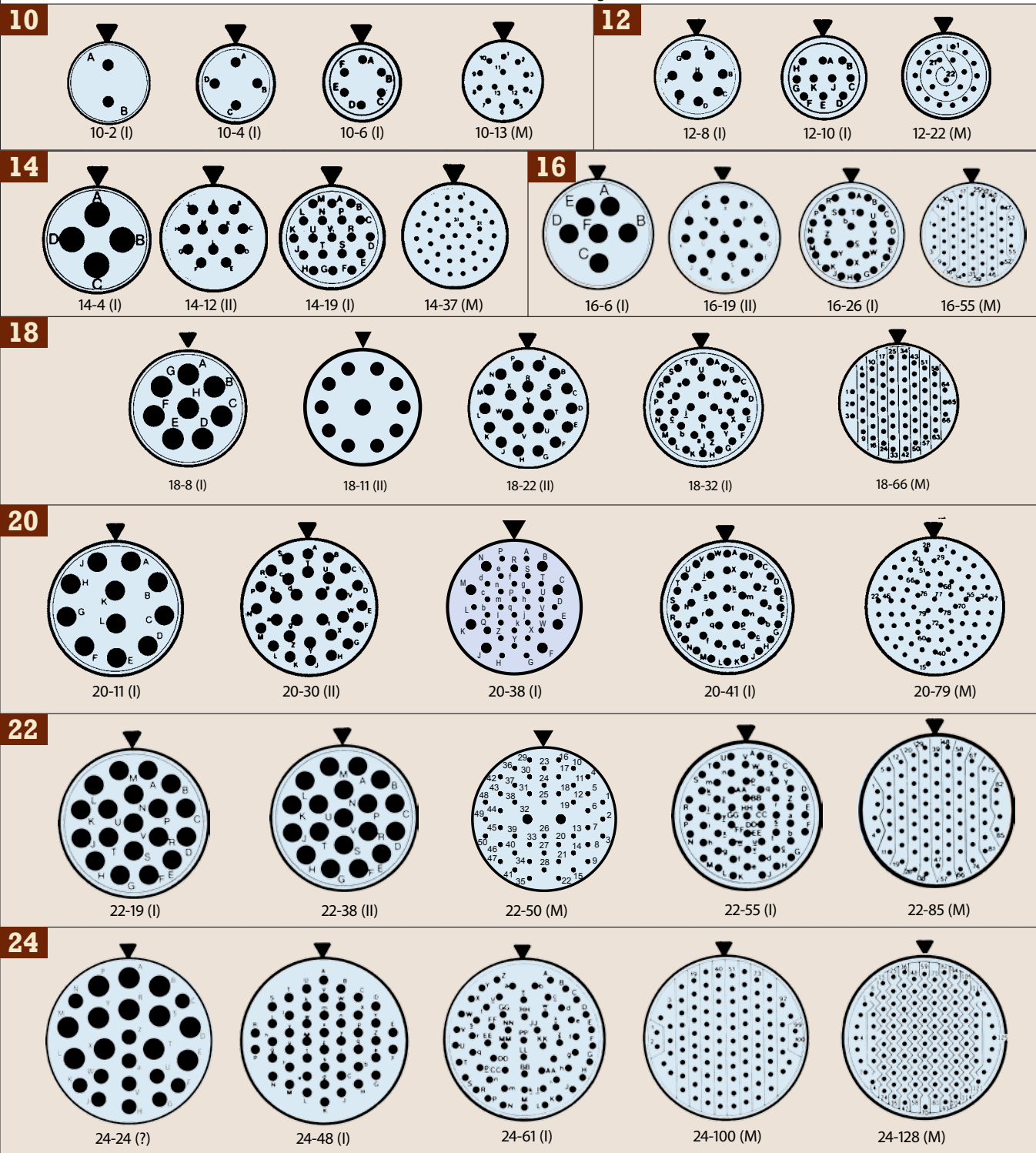
Series 22 Geo-Marine® Harsh-Environment Connectors, Cables and Accessories Contact Arrangements



Geo-Marine
Introduction

Series 22 Geo-Marine® Contact Insert Arrangements

Front Face of Pin Inserts Illustrated - Service Ratings Indicated in Parentheses

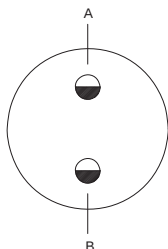


A

Series 22 Geo-Marine®
Harsh-Environment Connectors, Cables and Accessories
PCB Footprints

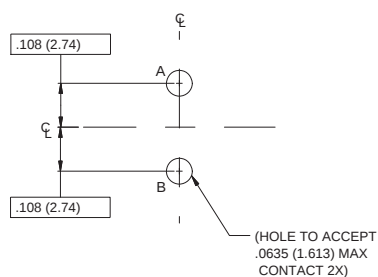
Geo-Marine® PCB Footprints: Size 10

Insert Arrangement

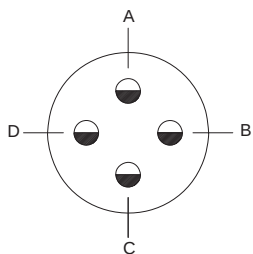


Insert Arrangement
10-2
2 #16 Contacts

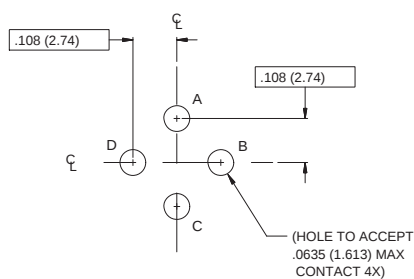
PCB Footprint



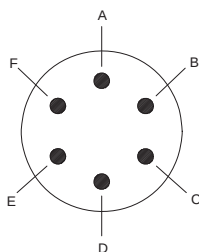
Pin Connector



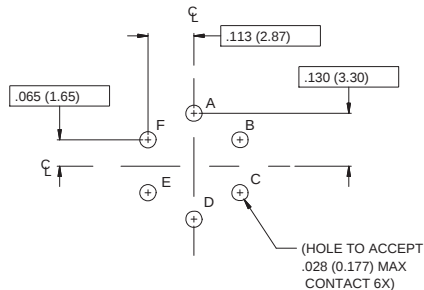
Insert Arrangement
10-4
4 #16 Contacts



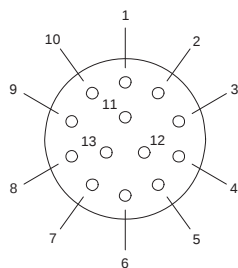
Pin Connector



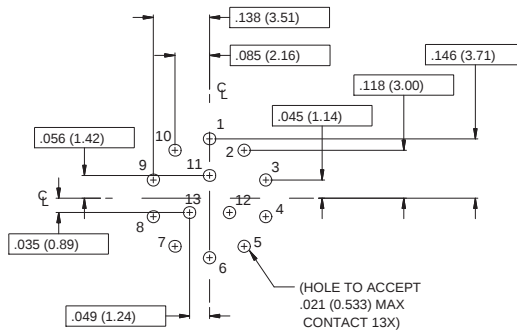
Insert Arrangement
10-6
6 #20 Contacts



Pin Connector



Insert Arrangement
10-13
13 #22 Contacts



Pin Connector

Series 22 Geo-Marine® Harsh-Environment Connectors, Cables and Accessories PCB Footprints

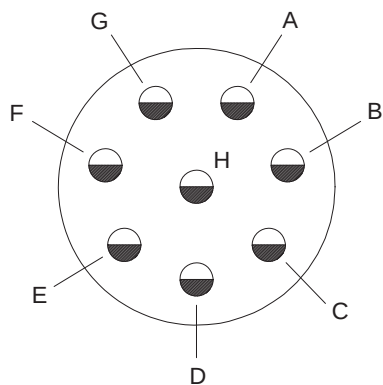


Geo-Marine®
Introduction

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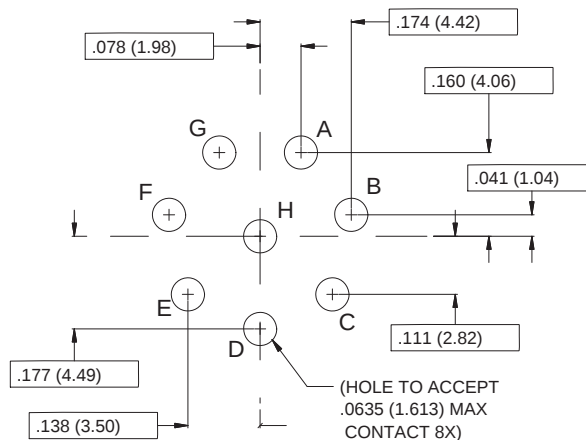
Geo-Marine® PCB Footprints: Size 12

Insert Arrangement

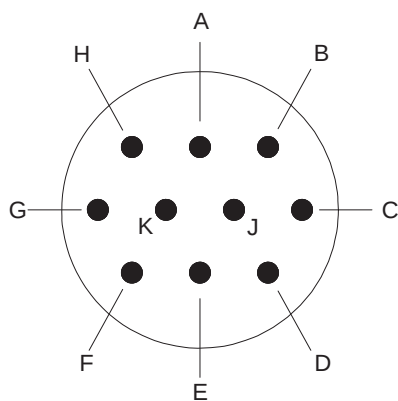


Insert Arrangement
12-08
8 #16 Contacts

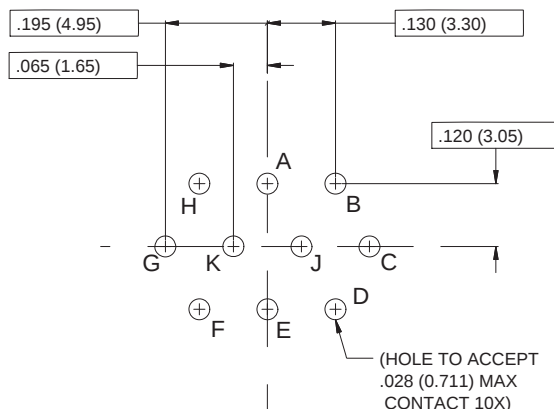
PCB Footprint



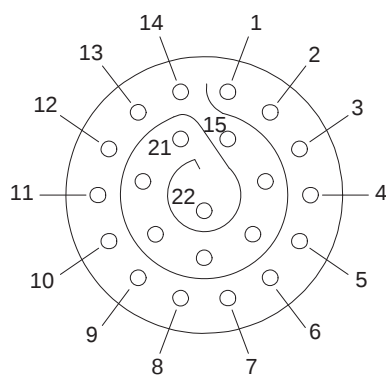
Pin Connector



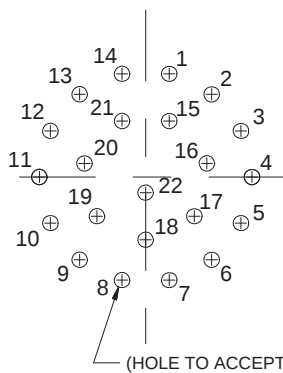
Insert Arrangement
12-10
10 #20 Contacts



Pin Connector



Insert Arrangement
12-22
22 #22 Contacts



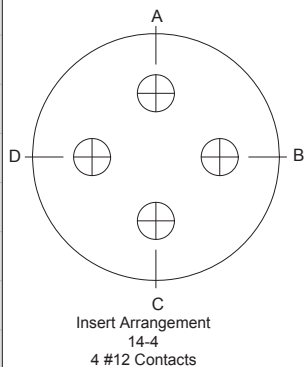
Pin Connector

I.D. NO.	X	Y
	In. mm.	In. mm.
1	.045 (1.14)	.197 (5.00)
2	.126 (3.20)	.158 (4.01)
3	.182 (4.62)	.088 (2.23)
4	.203 (5.15)	.000 (.000)
5	.182 (4.62)	-.088 (-2.23)
6	.126 (3.20)	-.158 (-4.01)
7	.045 (1.14)	-.197 (-5.00)
8	-.045 (-1.14)	-.197 (-5.00)
9	-.126 (-3.20)	-.158 (-4.01)
10	-.182 (-4.62)	-.088 (-2.23)
11	-.203 (-5.15)	.000 (.000)
12	-.182 (-4.62)	.088 (2.23)
13	-.126 (-3.20)	.158 (4.01)
14	-.045 (-1.14)	.197 (5.00)
15	.045 (1.14)	.107 (2.72)
16	.117 (2.97)	.026 (0.660)
17	.093 (2.36)	-.075 (-1.90)
18	.000 (.000)	-.120 (-3.05)
19	-.093 (-2.36)	-.075 (-1.90)
20	-.117 (-2.97)	.026 (0.660)
21	-.045 (-1.14)	.107 (2.72)
22	.000 (.000)	-.030 (-0.762)

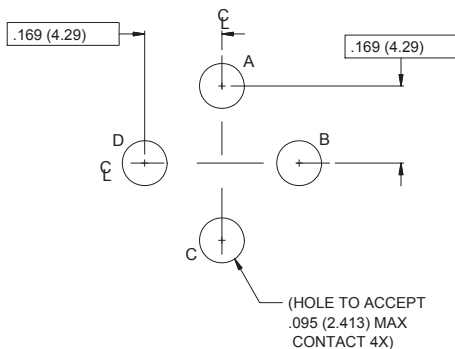
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Geo-Marine® PCB Footprints: Size 14

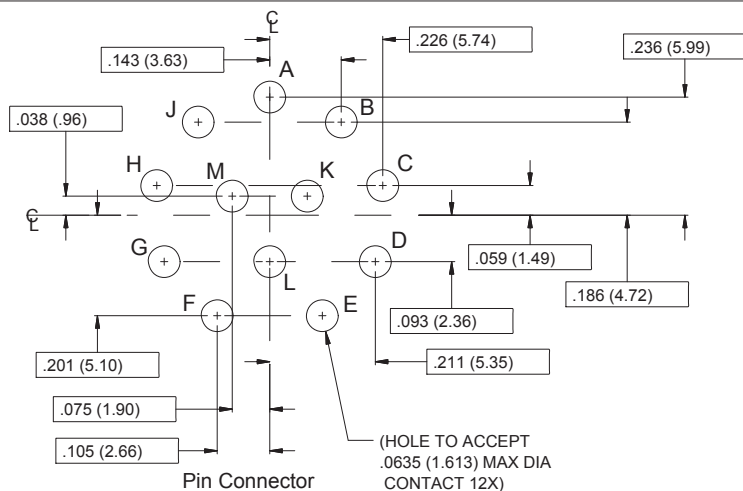
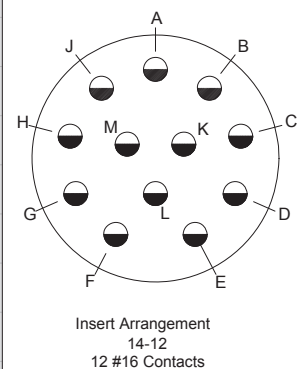
Insert Arrangement



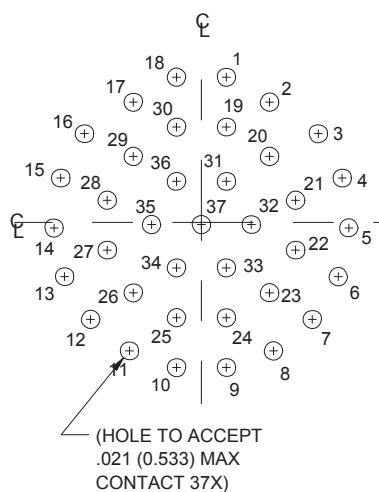
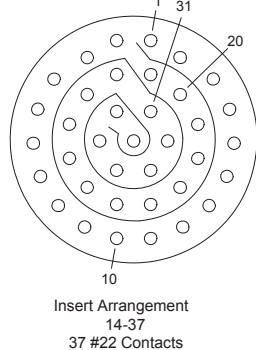
PCB Footprint



Pin Connector



Pin Connector



Pin Connector

I.D. NO.	X		Y		I.D. NO.	X		Y	
	In.	mm	In.	mm		In.	mm	In.	mm
1	.045	(1.14)	.262	(6.65)	20	.123	(3.12)	.119	(3.02)
2	.123	(3.12)	.217	(5.51)	21	.170	(4.31)	.040	(1.02)
3	.211	(5.35)	.160	(4.06)	22	.170	(4.31)	-.050	(-1.27)
4	.254	(6.45)	.080	(2.03)	23	.123	(3.12)	-.127	(-3.22)
5	.266	(6.75)	-.010	(-0.25)	24	.045	(1.14)	-.172	(-4.36)
6	.247	(6.27)	-.098	(-2.48)	25	-.045	(-1.14)	-.172	(-4.36)
7	.200	(5.08)	-.175	(-4.44)	26	-.123	(-3.12)	-.127	(-3.22)
8	.130	(3.30)	-.232	(-5.89)	27	-.170	(-4.31)	-.050	(-1.27)
9	.045	(1.14)	-.262	(-6.65)	28	-.170	(-4.31)	.040	(1.02)
10	-.045	(-1.14)	-.262	(-6.65)	29	-.123	(-3.12)	.119	(3.02)
11	-.130	(-3.30)	-.232	(-5.89)	30	-.045	(-1.14)	.172	(4.36)
12	-.200	(-5.08)	-.175	(-4.44)	31	.045	(1.14)	.074	(1.87)
13	-.247	(-6.27)	-.098	(-2.48)	32	.090	(2.28)	-.004	(-0.10)
14	-.266	(-6.75)	-.010	(-0.25)	33	.045	(1.14)	-.082	(-2.08)
15	-.254	(-6.45)	.080	(2.03)	34	-.045	(-1.14)	-.082	(-2.08)
16	-.211	(-5.35)	.160	(4.06)	35	-.090	(-2.28)	-.004	(-0.10)
17	-.123	(-3.12)	.217	(5.51)	36	-.045	(-1.14)	.074	(1.87)
18	-.045	(-1.14)	.262	(6.65)	37	.000	(0.00)	-.004	(-0.10)
19	.045	(1.14)	.172	(4.36)					

Series 22 Geo-Marine® Harsh-Environment Connectors, Cables and Accessories PCB Footprints

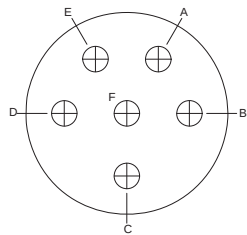


Geo-Marine®
Introduction

A

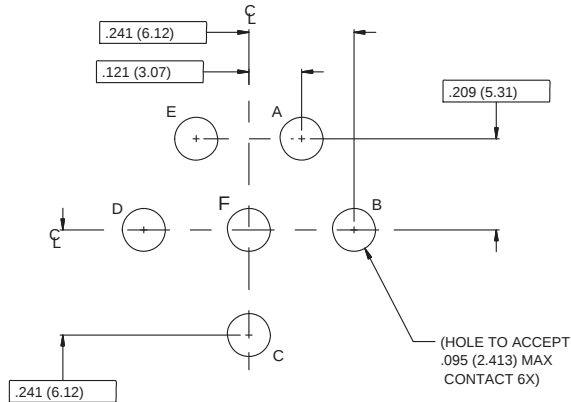
Geo-Marine® PCB Footprints: Size 16

Insert Arrangement

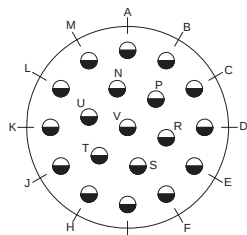


Insert Arrangement
16-6
6 #12 Contacts

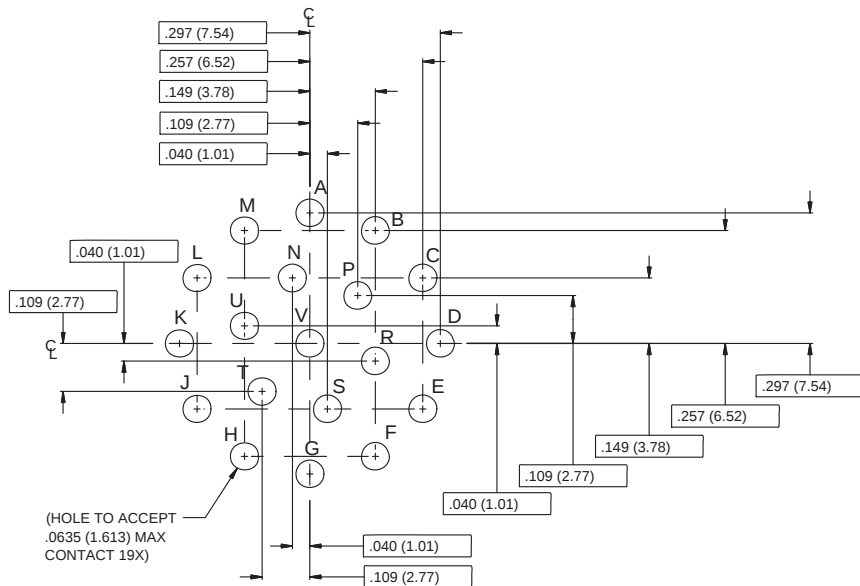
PCB Footprint



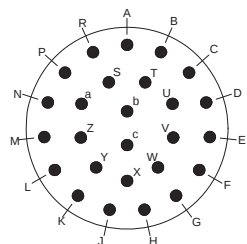
Pin Connector



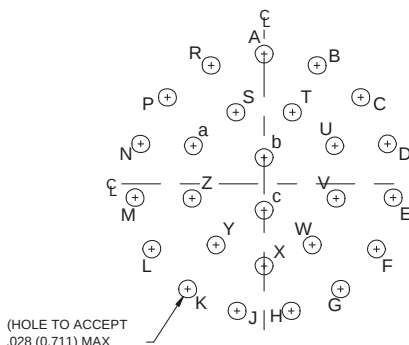
Insert Arrangement
16-19
19 #16 Contacts



Pin Connector



Insert Arrangement
16-26
26 #20 Contacts



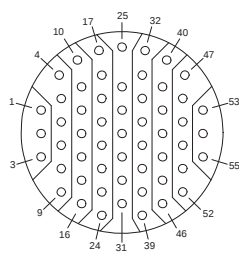
Pin Connector

I.D. NO	X In. mm	Y In. mm	I.D. NO	X In. mm	Y In. mm
A	.000 (0.00)	.321 (81.53)	P	-.239 (-6.07)	.214 (5.43)
B	.131 (3.32)	.293 (7.44)	R	-.131 (-3.32)	.293 (7.44)
C	.239 (6.07)	.214 (5.43)	S	-.070 (-1.77)	.177 (4.49)
D	.305 (7.74)	.099 (2.51)	T	.070 (1.77)	.177 (4.49)
E	.319 (8.10)	-.034 (-0.86)	U	-.119 (-3.02)	.094 (2.38)
F	.278 (7.06)	-.161 (-4.08)	V	.178 (4.52)	-.036 (-0.91)
G	.189 (4.80)	-.260 (-6.60)	W	.119 (3.02)	-.151 (-3.83)
H	.067 (1.70)	-.314 (-7.97)	X	.000 (0.00)	-.203 (-5.15)
J	-.067 (-1.70)	-.314 (-7.97)	Y	-.119 (-3.02)	-.151 (-3.83)
K	-.189 (-4.80)	-.260 (-6.60)	Z	-.178 (-4.52)	-.036 (-0.91)
L	-.278 (-7.06)	-.161 (-4.08)	a	-.175 (-4.44)	.094 (2.38)
M	-.319 (-8.10)	-.034 (-0.86)	b	.000 (0.00)	.065 (1.65)
N	-.305 (-7.74)	.099 (2.51)	c	.000 (0.00)	-.065 (-1.65)

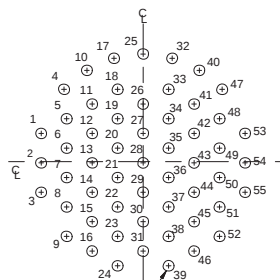
Series 22 Geo-Marine® Harsh-Environment Connectors, Cables and Accessories PCB Footprints

Geo-Marine® PCB Footprints: Size 16 (continued)

Insert Arrangement



Insert Arrangement
16-55
55 #22 Contacts



(HOLE TO ACCEPT
.021 (0.533) MAX
CONTACT 55X)

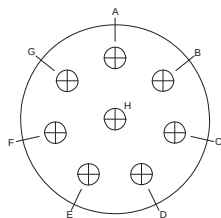
Pin Connector

PCB Footprint

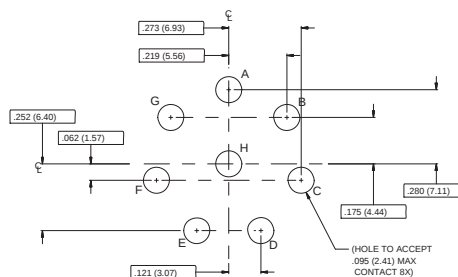
I.D. NO	X		Y		I.D. NO	X		Y		I.D. NO	X		Y	
	In.	mm	In.	mm		In.	mm	In.	mm		In.	mm	In.	mm
1	-.312	(-7.92)	.086	(2.18)	20	-.078	(-1.98)	.041	(1.04)	39	.078	(1.98)	-.319	(-8.10)
2	-.312	(-7.92)	-.004	(-0.10)	21	-.078	(-1.98)	-.049	(-1.24)	40	.172	(4.36)	.279	(7.08)
3	-.312	(-7.92)	-.094	(-2.38)	22	-.078	(-1.98)	-.139	(-3.53)	41	.156	(3.96)	.176	(4.47)
4	-.242	(-6.14)	.221	(5.61)	23	-.078	(-1.98)	-.229	(-5.81)	42	.156	(3.96)	.086	(2.18)
5	-.234	(-5.94)	.131	(3.32)	24	-.078	(-1.98)	-.319	(-8.10)	43	.156	(3.96)	-.004	(-0.10)
6	-.234	(-5.94)	.041	(1.04)	25	.000	(0.00)	.329	(8.35)	44	.156	(3.96)	-.094	(-2.38)
7	-.234	(-5.94)	-.049	(-1.24)	26	.000	(0.00)	.176	(4.47)	45	.156	(3.96)	-.184	(-4.67)
8	-.234	(-5.94)	-.139	(-3.53)	27	.000	(0.00)	.086	(2.18)	46	.156	(3.96)	-.274	(-6.95)
9	-.234	(-5.94)	-.229	(-5.81)	28	.000	(0.00)	-.004	(-0.10)	47	.242	(6.14)	.221	(5.61)
10	-.172	(-4.36)	.279	(7.08)	29	.000	(0.00)	-.094	(-2.38)	48	.234	(5.94)	.131	(3.32)
11	-.156	(-3.96)	.176	(4.47)	30	.000	(0.00)	-.184	(-4.67)	49	.234	(5.94)	.041	(1.04)
12	-.156	(-3.96)	.086	(2.18)	31	.000	(0.00)	-.274	(-6.95)	50	.234	(5.94)	-.049	(-1.24)
13	-.156	(-3.96)	-.004	(-0.10)	32	.089	(2.26)	.316	(8.02)	51	.234	(5.94)	-.139	(-3.53)
14	-.156	(-3.96)	-.094	(-2.38)	33	.078	(1.98)	.221	(5.61)	52	.234	(5.94)	-.229	(-5.81)
15	-.156	(-3.96)	-.184	(-4.67)	34	.078	(1.98)	.131	(3.32)	53	.312	(7.92)	.086	(2.18)
16	-.156	(-3.96)	-.274	(-6.95)	35	.078	(1.98)	.041	(1.04)	54	.312	(7.92)	-.004	(-0.10)
17	-.089	(-2.26)	.316	(8.02)	36	.078	(1.98)	-.049	(-1.24)	55	.312	(7.92)	-.094	(-2.38)
18	-.078	(-1.98)	.221	(5.61)	37	.078	(1.98)	-.139	(-3.53)					
19	-.078	(-1.98)	.131	(3.32)	38	.078	(1.98)	-.229	(-5.81)					

Geo-Marine® PCB Footprints: Size 18

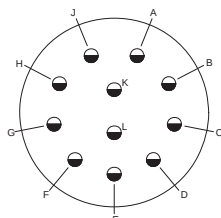
Insert Arrangement



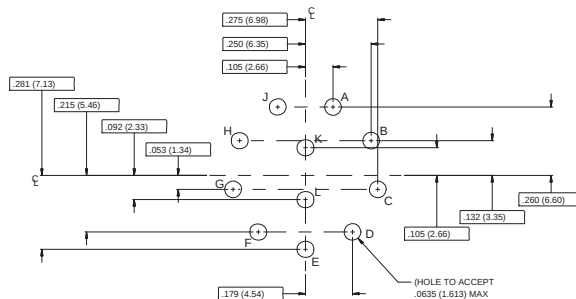
Insert Arrangement
18-8
8 #12 Contacts



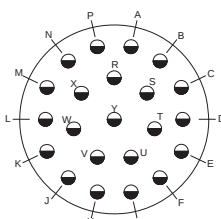
Pin Connector



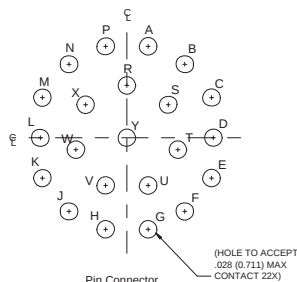
Insert Arrangement
18-11
11 #16 Contacts



Pin Connector



Insert Arrangement
18-22
22 #16 Contacts



(HOLE TO ACCEPT
.028 (0.711) MAX
CONTACT 22X)

I.D. NO	X		Y		I.D. NO	X		Y	
	In.	mm	In.	mm		In.	mm	In.	mm
A	.077	(1.95)	.332	(8.43)	M	-.307	(-7.79)	.146	(3.70)
B	.210	(5.33)	.267	(6.78)	N	-.210	(-5.33)	.267	(6.78)
C	.307	(7.79)	.146	(3.70)	P	-.077	(-1.95)	.332	(8.43)
D	.341	(8.66)	.000	(0.00)	R	.000	(0.00)	.190	(4.82)
E	.307	(7.79)	-.146	(-3.70)	S	.150	(3.81)	.120	(3.04)
F	.210	(5.33)	-.267	(-6.78)	T	.185	(4.69)	-.043	(-1.09)
G	.077	(1.95)	-.332	(-8.43)	U	.077	(1.95)	-.173	(-4.39)
H	-.077	(-1.95)	-.332	(-8.43)	V	-.077	(-1.95)	-.173	(-4.39)
J	-.210	(-5.33)	-.267	(-6.78)	W	-.185	(-4.69)	-.043	(-1.09)
K	-.307	(-7.79)	-.146	(-3.70)	X	-.150	(-3.81)	.120	(3.04)
L	-.341	(-8.66)	.000	(0.00)	Y	.000	(0.00)	.000	(0.00)

Series 22 Geo-Marine® Harsh-Environment Connectors, Cables and Accessories PCB Footprints

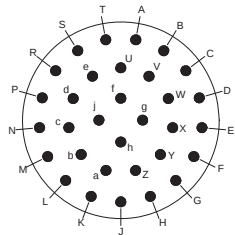


Geo-Marine®
Introduction

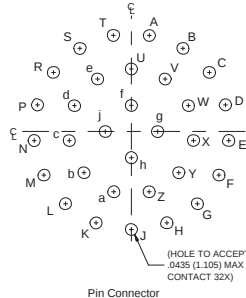
A

Geo-Marine® PCB Footprints: Size 18 (continued)

Insert Arrangement



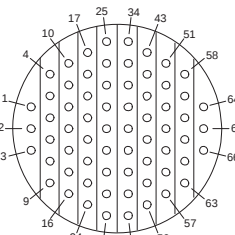
Insert Arrangement
18-32
32 #20 Contacts



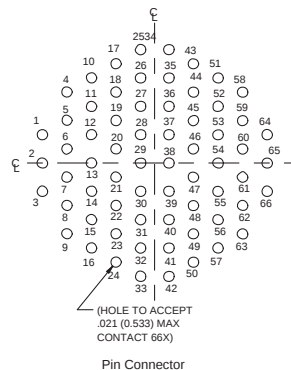
Pin Connector

PCB Footprint

I.D. NO	X In. mm	Y In. mm	I.D. NO	X In. mm	Y In. mm	I.D. NO	X In. mm	Y In. mm
A	.066 (1.67)	.353 (8.96)	N	-.357 (-9.06)	-.033 (-0.83)	a	-.065 (-1.65)	-.221 (-5.61)
B	.189 (4.80)	.305 (7.74)	P	-.345 (-8.76)	.098 (2.48)	b	-.174 (-4.41)	-.151 (-3.83)
C	.286 (7.26)	.217 (5.51)	R	-.286 (-7.26)	.217 (5.51)	c	-.228 (-5.79)	-.033 (-0.83)
D	.345 (8.76)	.098 (2.48)	S	-.189 (-4.80)	.305 (7.74)	d	-.209 (-5.30)	.095 (2.41)
E	.357 (9.06)	-.033 (-0.83)	T	-.066 (-1.67)	.353 (8.96)	e	-.124 (-3.14)	.193 (4.90)
F	.321 (8.15)	-.160 (-4.06)	U	.000 (0.00)	.230 (5.84)	f	.000 (0.00)	.096 (2.43)
G	.242 (6.14)	-.265 (-6.73)	V	.124 (3.14)	.193 (4.90)	g	.096 (2.43)	.000 (0.00)
H	.130 (3.30)	-.335 (-8.50)	W	.209 (5.30)	.095 (2.41)	h	.000 (0.00)	-.096 (-2.43)
J	.000 (0.00)	-.359 (-9.11)	X	.228 (5.79)	-.033 (-0.83)	j	-.096 (-2.43)	.000 (0.00)
K	-.130 (-3.30)	-.335 (-8.50)	Y	.174 (4.41)	-.151 (-3.83)			
L	-.242 (-6.14)	-.265 (-6.73)	Z	.065 (1.65)	-.221 (-5.61)			
M	-.321 (-8.15)	-.160 (-4.06)						



Insert Arrangement
18-66
66 #22 Contacts

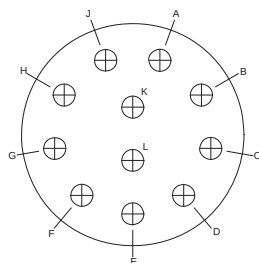


Pin Connector

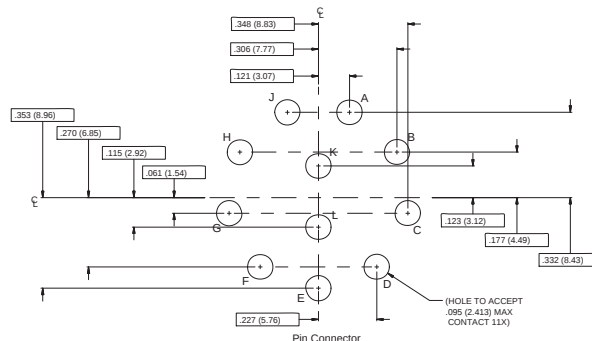
I.D. NO	X In. mm	Y In. mm	I.D. NO	X In. mm	Y In. mm	I.D. NO	X In. mm	Y In. mm
1	-.357 (-9.06)	.090 (2.28)	23	-.123 (-3.12)	-.225 (-5.71)	45	.123 (3.12)	.135 (3.42)
2	-.357 (-9.06)	.000 (0.00)	24	-.123 (-3.12)	-.315 (-8.00)	46	.123 (3.12)	.045 (1.14)
3	-.357 (-9.06)	-.090 (-2.28)	25	-.045 (-1.14)	.360 (9.14)	47	.123 (3.12)	-.045 (-1.14)
4	-.279 (-7.08)	.225 (5.71)	26	-.045 (-1.14)	.270 (6.85)	48	.123 (3.12)	-.135 (-3.42)
5	-.279 (-7.08)	.135 (3.42)	27	-.045 (-1.14)	.180 (4.57)	49	.123 (3.12)	-.225 (-5.71)
6	-.279 (-7.08)	.045 (1.14)	28	-.045 (-1.14)	.090 (2.28)	50	.123 (3.12)	-.315 (-8.00)
7	-.279 (-7.08)	-.045 (-1.14)	29	-.045 (-1.14)	.000 (0.00)	51	.201 (5.10)	.270 (6.85)
8	-.279 (-7.08)	-.135 (-3.42)	30	-.045 (-1.14)	-.090 (-2.28)	52	.201 (5.10)	.180 (4.57)
9	-.279 (-7.08)	-.225 (-5.71)	31	-.045 (-1.14)	-.180 (-4.57)	53	.201 (5.10)	.090 (2.28)
10	-.201 (-5.10)	.270 (6.85)	32	-.045 (-1.14)	-.270 (-6.85)	54	.201 (5.10)	.000 (0.00)
11	-.201 (-5.10)	.180 (4.57)	33	-.045 (-1.14)	-.360 (-9.14)	55	.201 (5.10)	-.090 (-2.28)
12	-.201 (-5.10)	.090 (2.28)	34	-.045 (-1.14)	.360 (9.14)	56	.201 (5.10)	-.180 (-4.57)
13	-.201 (-5.10)	.000 (0.00)	35	.045 (1.14)	.270 (6.85)	57	.201 (5.10)	-.270 (-6.85)
14	-.201 (-5.10)	-.090 (-2.28)	36	.045 (1.14)	.180 (4.57)	58	.279 (7.08)	.225 (5.71)
15	-.201 (-5.10)	-.180 (-4.57)	37	.045 (1.14)	.090 (2.28)	59	.279 (7.08)	.135 (3.42)
16	-.201 (-5.10)	-.270 (-6.85)	38	.045 (1.14)	.000 (0.00)	60	.279 (7.08)	.045 (1.14)
17	-.123 (-3.12)	.315 (8.00)	39	.045 (1.14)	-.090 (-2.28)	61	.279 (7.08)	-.045 (-1.14)
18	-.123 (-3.12)	.225 (5.71)	40	.045 (1.14)	-.180 (-4.57)	62	.279 (7.08)	-.135 (-3.42)
19	-.123 (-3.12)	.135 (3.42)	41	.045 (1.14)	-.270 (-6.85)	63	.279 (7.08)	-.225 (-5.71)
20	-.123 (-3.12)	.045 (1.14)	42	.045 (1.14)	-.360 (-9.14)	64	.357 (9.06)	.090 (2.28)
21	-.123 (-3.12)	-.045 (-1.14)	43	.123 (3.12)	.315 (8.00)	65	.357 (9.06)	.000 (0.00)
22	-.123 (-3.12)	-.135 (-3.42)	44	.123 (3.12)	.225 (5.71)	66	.357 (9.06)	-.090 (-2.28)

Geo-Marine® PCB Footprints: Size 20

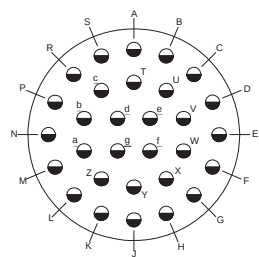
Insert Arrangement



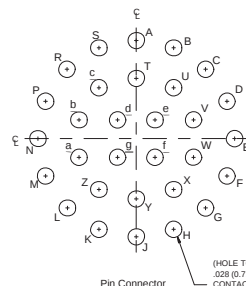
Insert Arrangement
20-11
11 #12 Contacts



Pin Connector

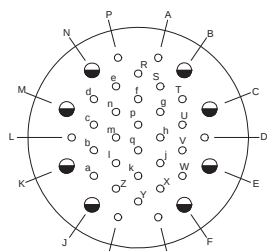
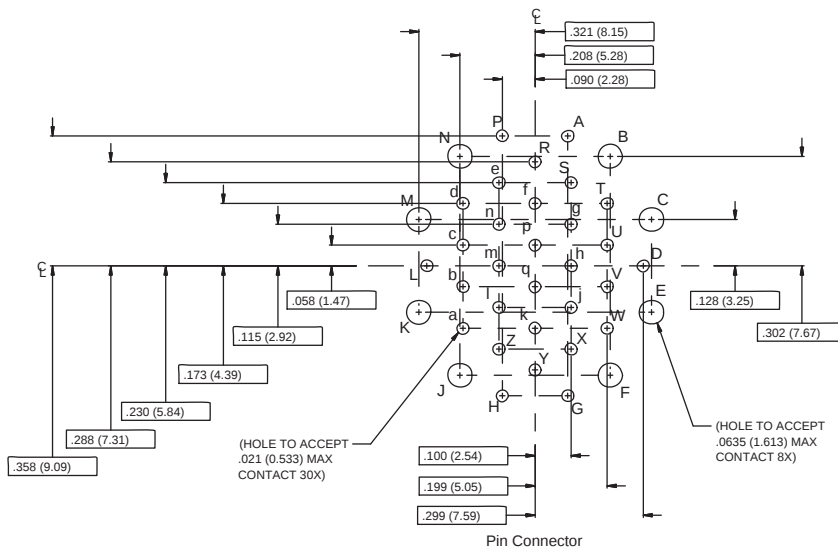
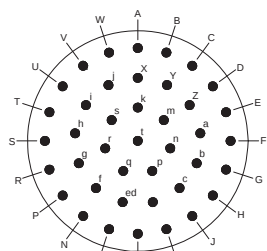
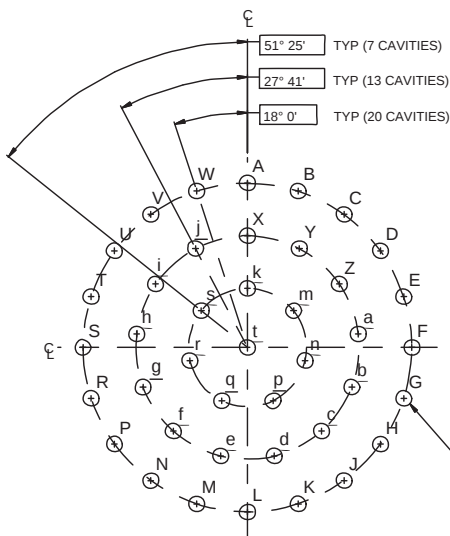
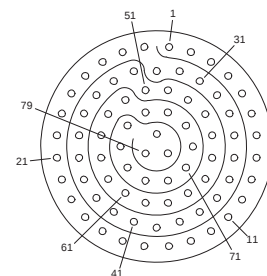
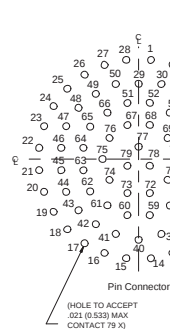


Insert Arrangement
20-30
30 #16 Contacts



Pin Connector

I.D. NO	X In. mm	Y In. mm	I.D. NO	X In. mm	Y In. mm	I.D. NO	X In. mm	Y In. mm
A	.000 (0.00)	.399 (10.13)	L	-.282 (-7.16)	-.282 (-7.16)	X	.152 (3.86)	-.207 (-5.25)
B	.152 (3.86)	.369 (9.37)	M	-.369 (-9.37)	-.152 (-3.86)	Y	.000 (0.00)	-.245 (-6.22)
C	.282 (7.16)	.282 (7.16)	N	-.400 (-10.16)	.000 (0.00)	Z	-.152 (-3.86)	-.207 (-5.25)
D	.369 (9.37)	.152 (3.86)	P	-.369 (-9.37)	.152 (3.86)	a	-.233 (-5.91)	-.076 (-1.93)
E	.400 (10.16)	.000 (0.00)	R	-.282 (-7.16)	.282 (7.16)	b	-.233 (-5.91)	.076 (1.93)
F	.369 (9.37)	-.152 (-3.86)	S	-.152 (-3.86)	.369 (9.37)	c	-.152 (-3.86)	.207 (5.25)
G	.282 (7.16)	-.282 (-7.16)	T	.000 (0.00)	.245 (6.22)	d	-.076 (-1.93)	.076 (1.93)
H	.152 (3.86)	-.369 (-9.37)	U	.152 (3.86)	.207 (5.25)	e	.076 (1.93)	.076 (1.93)
J	.000 (0.00)	-.399 (-10.13)	V	.233 (5.91)	.076 (1.93)	f	.076 (1.93)	-.076 (-1.93)
K	-.152 (-3.86)	-.369 (-9.37)	W	.233 (5.91)	-.076 (-1.93)	g	-.076 (-1.93)	-.076 (-1.93)

A**Geo-Marine® PCB Footprints: Size 20 (continued)****Insert Arrangement****Insert Arrangement
20-38**
8 #16 Contacts
30 #22 Contacts**PCB Footprint****Pin Connector****Insert Arrangement
20-41**
41 #20 Contacts**Pin Connector****Insert Arrangement
20-79**
79 #22 Contacts

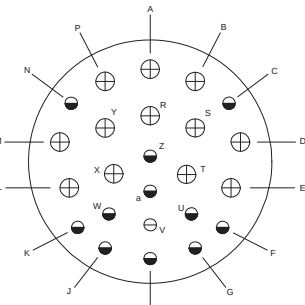
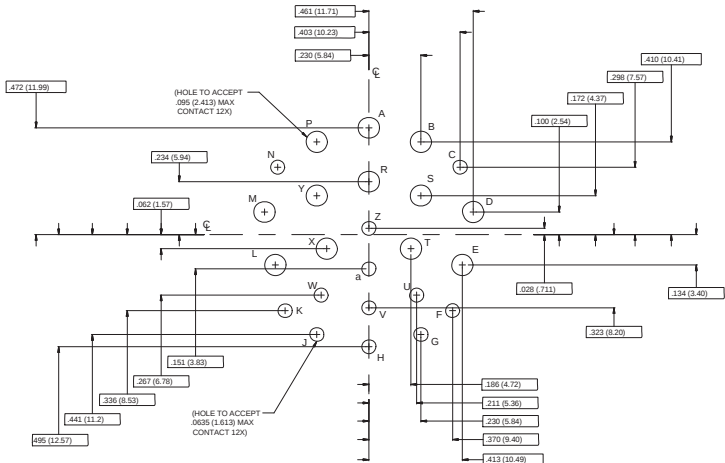
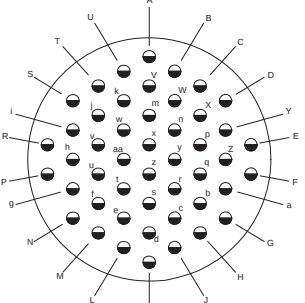
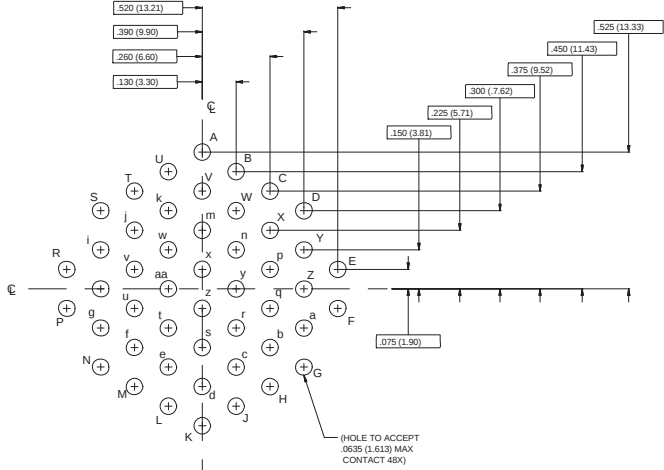
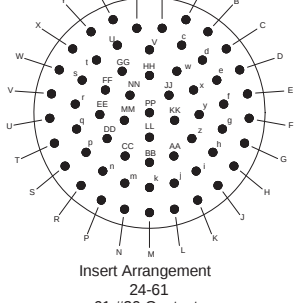
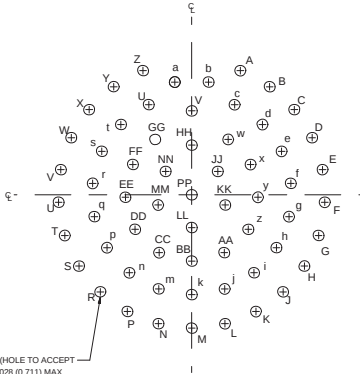
I.D. NO	X	Y	I.D. NO	X	Y	I.D. NO	X	Y	I.D. NO	X	Y
1	.053 (1.35)	.426 (10.82)	21	-.427 (-10.84)	-.048 (-1.22)	41	-.098 (-2.48)	-.322 (-8.18)	61	-.134 (-3.40)	-.199 (-5.05)
2	.146 (3.71)	.404 (10.26)	22	-.427 (-10.84)	.048 (1.22)	42	-.184 (-4.67)	-.280 (-7.11)	62	-.208 (-5.28)	-.139 (-3.53)
3	.232 (5.89)	.362 (9.19)	23	-.406 (-10.31)	.141 (3.58)	43	-.258 (-6.55)	-.220 (-5.59)	63	-.237 (-6.02)	-.048 (-1.22)
4	.306 (7.77)	.302 (7.67)	24	-.365 (-9.27)	.227 (5.76)	44	-.311 (-7.90)	-.141 (-3.58)	64	-.237 (-6.02)	.048 (1.22)
5	.365 (9.27)	.227 (5.76)	25	-.306 (-7.77)	.302 (7.67)	45	-.332 (-8.43)	-.048 (-1.22)	65	-.208 (-5.28)	.139 (3.53)
6	.406 (10.31)	.141 (3.58)	26	-.232 (-5.89)	.362 (9.19)	46	-.332 (-8.43)	.048 (1.22)	66	-.134 (-3.40)	.199 (5.05)
7	.427 (10.84)	.048 (1.22)	27	-.146 (-3.71)	.404 (10.26)	47	-.311 (-7.90)	.141 (3.58)	67	-.048 (-1.22)	.146 (3.71)
8	.427 (10.84)	-.048 (-1.22)	28	-.053 (-1.35)	.426 (10.82)	48	-.258 (-6.55)	.220 (5.59)	68	.048 (1.22)	.146 (3.71)
9	.406 (10.31)	-.141 (-3.58)	29	.000 (0.00)	.323 (8.20)	49	-.184 (-4.67)	.280 (7.11)	69	.125 (3.17)	.090 (2.28)
10	.365 (9.27)	-.227 (-5.76)	30	.098 (2.48)	.322 (8.18)	50	-.098 (-2.48)	.322 (8.18)	70	.155 (3.94)	.000 (0.00)
11	.306 (7.77)	-.302 (-7.67)	31	.184 (4.67)	.280 (7.11)	51	-.048 (-1.22)	.241 (6.12)	71	.125 (3.17)	-.090 (-2.28)
12	.232 (5.89)	-.362 (-9.19)	32	.258 (6.55)	.220 (5.59)	52	.048 (1.22)	.241 (6.12)	72	.048 (1.22)	-.146 (-3.71)
13	.146 (3.71)	-.404 (-10.26)	33	.311 (7.90)	.141 (3.58)	53	.134 (3.40)	.199 (5.05)	73	-.048 (-1.22)	-.146 (-3.71)
14	.053 (1.35)	-.426 (-10.82)	34	.332 (8.43)	.048 (1.22)	54	.208 (5.28)	.139 (3.53)	74	.125 (-3.17)	-.090 (-2.28)
15	-.053 (-1.35)	-.426 (-10.82)	35	.332 (8.43)	-.048 (-1.22)	55	.237 (6.02)	.048 (1.22)	75	.155 (-3.94)	.000 (0.00)
16	-.146 (-3.71)	-.404 (-10.26)	36	.311 (7.90)	-.141 (-3.58)	56	.237 (6.02)	-.048 (-1.22)	76	.125 (-3.17)	.090 (2.28)
17	-.232 (-5.89)	-.362 (-9.19)	37	.258 (6.55)	-.220 (-5.59)	57	.208 (5.28)	-.139 (-3.53)	77	.000 (0.00)	.053 (1.35)
18	-.306 (-7.77)	-.302 (-7.67)	38	.184 (4.67)	-.280 (-7.11)	58	.134 (3.40)	-.199 (-5.05)	78	.048 (1.22)	-.029 (-0.74)
19	-.365 (-9.27)	-.227 (-5.76)	39	.098 (2.48)	-.322 (-8.18)	59	.048 (1.22)	-.241 (-6.12)	79	.048 (-1.22)	-.029 (-0.74)
20	-.406 (-10.31)	-.141 (-3.58)	40	.000 (0.00)	-.347 (-8.81)	60	-.048 (-1.22)	-.241 (-6.12)			

Series 22 Geo-Marine® Harsh-Environment Connectors, Cables and Accessories PCB Footprints



Geo-Marine®
Introduction

A

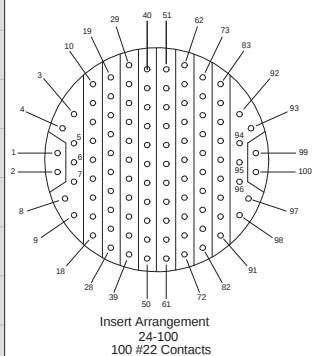
Geo-Marine® PCB Footprints: Size 24																																																																																																																																																																																																																																													
Insert Arrangement	PCB Footprint																																																																																																																																																																																																																																												
 Insert Arrangement 24-24 12 #16 Contacts 12 #12 Contacts	 Pin Connector																																																																																																																																																																																																																																												
 Insert Arrangement 24-48 48 #16 Contacts	 Pin Connector																																																																																																																																																																																																																																												
 Insert Arrangement 24-61 61 #20 Contacts	 Pin Connector <table><tr><th>I.D. NO.</th><th>X</th><th>Y</th><th>I.D. NO.</th><th>X</th><th>Y</th><th>I.D. NO.</th><th>X</th><th>Y</th></tr><tr><th></th><th>In. mm.</th><th>In. mm.</th><th></th><th>In. mm.</th><th>In. mm.</th><th></th><th>In. mm.</th><th>In. mm.</th></tr><tr><td>A</td><td>.196 (4.98)</td><td>.500 (12.7)</td><td>a</td><td>.068 (1.72)</td><td>.454 (11.53)</td><td>AA</td><td>.131 (3.33)</td><td>-.233 (-5.92)</td></tr><tr><td>B</td><td>.314 (7.98)</td><td>.435 (11.05)</td><td>b</td><td>-.068 (-1.72)</td><td>.454 (11.53)</td><td>BB</td><td>.000 (0.00)</td><td>-.267 (-6.78)</td></tr><tr><td>C</td><td>.413 (10.5)</td><td>.343 (8.71)</td><td>c</td><td>.173 (4.39)</td><td>.383 (9.72)</td><td>CC</td><td>-.131 (-3.33)</td><td>-.233 (-5.92)</td></tr><tr><td>D</td><td>.485 (12.3)</td><td>.230 (5.84)</td><td>d</td><td>.285 (7.24)</td><td>.283 (7.19)</td><td>DD</td><td>-.228 (-5.79)</td><td>-.139 (-3.53)</td></tr><tr><td>E</td><td>.527 (13.4)</td><td>.101 (2.57)</td><td>e</td><td>.362 (9.19)</td><td>.175 (4.44)</td><td>EE</td><td>-.267 (-6.78)</td><td>-.010 (-.254)</td></tr><tr><td>F</td><td>.536 (13.6)</td><td>-.030 (-.762)</td><td>f</td><td>.399 (10.1)</td><td>.046 (1.17)</td><td>FF</td><td>-.237 (-6.02)</td><td>.122 (3.099)</td></tr><tr><td>G</td><td>.511 (13.0)</td><td>-.164 (-4.165)</td><td>g</td><td>.392 (9.95)</td><td>-.088 (-2.24)</td><td>GG</td><td>-.147 (-3.73)</td><td>.223 (5.66)</td></tr><tr><td>H</td><td>.454 (11.5)</td><td>-.287 (-7.29)</td><td>h</td><td>.341 (8.66)</td><td>-.213 (-5.41)</td><td>HH</td><td>.000 (0.00)</td><td>.200 (5.08)</td></tr><tr><td>J</td><td>.368 (9.34)</td><td>-.391 (-9.93)</td><td>j</td><td>.251 (6.37)</td><td>-.314 (-7.97)</td><td>JJ</td><td>.105 (2.67)</td><td>.094 (2.39)</td></tr><tr><td>K</td><td>.259 (6.58)</td><td>-.470 (-11.94)</td><td>k</td><td>.133 (3.38)</td><td>-.379 (-9.63)</td><td>KK</td><td>.135 (3.43)</td><td>-.041 (-1.04)</td></tr><tr><td>L</td><td>.134 (3.40)</td><td>-.519 (-13.18)</td><td>l</td><td>.000 (0.00)</td><td>-.402 (-10.21)</td><td>LL</td><td>.000 (0.00)</td><td>-.132 (-3.35)</td></tr><tr><td>M</td><td>.000 (0.00)</td><td>-.537 (-13.64)</td><td>m</td><td>-.133 (-3.38)</td><td>-.379 (-9.63)</td><td>MM</td><td>-.135 (-3.43)</td><td>-.041 (-1.04)</td></tr><tr><td>N</td><td>-.134 (-3.40)</td><td>-.519 (-13.18)</td><td>n</td><td>-.251 (-6.37)</td><td>-.314 (-7.97)</td><td>NN</td><td>-.105 (-2.67)</td><td>.094 (2.39)</td></tr><tr><td>P</td><td>-.259 (-6.58)</td><td>-.470 (-11.94)</td><td>p</td><td>-.341 (-8.66)</td><td>-.213 (-5.41)</td><td>PP</td><td>.000 (0.00)</td><td>.000 (0.00)</td></tr><tr><td>R</td><td>-.368 (-9.34)</td><td>-.391 (-9.93)</td><td>q</td><td>-.392 (-9.95)</td><td>-.088 (-2.24)</td><td></td><td></td><td></td></tr><tr><td>S</td><td>-.454 (-11.5)</td><td>-.287 (-7.29)</td><td>q</td><td>-.399 (-10.1)</td><td>.046 (1.17)</td><td></td><td></td><td></td></tr><tr><td>T</td><td>-.511 (-13.0)</td><td>-.164 (-4.16)</td><td>s</td><td>-.362 (-9.19)</td><td>.175 (4.44)</td><td></td><td></td><td></td></tr><tr><td>U</td><td>-.536 (-13.6)</td><td>.030 (.762)</td><td>t</td><td>-.285 (-7.24)</td><td>.283 (7.19)</td><td></td><td></td><td></td></tr><tr><td>V</td><td>-.527 (-13.4)</td><td>.101 (2.56)</td><td>u</td><td>-.173 (-4.39)</td><td>.383 (9.72)</td><td></td><td></td><td></td></tr><tr><td>W</td><td>-.485 (-12.3)</td><td>.230 (5.84)</td><td>v</td><td>.000 (0.00)</td><td>.338 (8.58)</td><td></td><td></td><td></td></tr><tr><td>X</td><td>-.413 (-10.5)</td><td>.343 (8.71)</td><td>w</td><td>.147 (3.73)</td><td>.223 (5.66)</td><td></td><td></td><td></td></tr><tr><td>Y</td><td>-.314 (-7.98)</td><td>.435 (11.05)</td><td>x</td><td>.237 (6.02)</td><td>.122 (3.099)</td><td></td><td></td><td></td></tr><tr><td>Z</td><td>-.196 (-4.98)</td><td>.500 (12.7)</td><td>y</td><td>.267 (6.78)</td><td>-.010 (-.254)</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td>z</td><td>.228 (5.79)</td><td>-.139 (-3.53)</td><td></td><td></td><td></td></tr></table>			I.D. NO.	X	Y	I.D. NO.	X	Y	I.D. NO.	X	Y		In. mm.	In. mm.		In. mm.	In. mm.		In. mm.	In. mm.	A	.196 (4.98)	.500 (12.7)	a	.068 (1.72)	.454 (11.53)	AA	.131 (3.33)	-.233 (-5.92)	B	.314 (7.98)	.435 (11.05)	b	-.068 (-1.72)	.454 (11.53)	BB	.000 (0.00)	-.267 (-6.78)	C	.413 (10.5)	.343 (8.71)	c	.173 (4.39)	.383 (9.72)	CC	-.131 (-3.33)	-.233 (-5.92)	D	.485 (12.3)	.230 (5.84)	d	.285 (7.24)	.283 (7.19)	DD	-.228 (-5.79)	-.139 (-3.53)	E	.527 (13.4)	.101 (2.57)	e	.362 (9.19)	.175 (4.44)	EE	-.267 (-6.78)	-.010 (-.254)	F	.536 (13.6)	-.030 (-.762)	f	.399 (10.1)	.046 (1.17)	FF	-.237 (-6.02)	.122 (3.099)	G	.511 (13.0)	-.164 (-4.165)	g	.392 (9.95)	-.088 (-2.24)	GG	-.147 (-3.73)	.223 (5.66)	H	.454 (11.5)	-.287 (-7.29)	h	.341 (8.66)	-.213 (-5.41)	HH	.000 (0.00)	.200 (5.08)	J	.368 (9.34)	-.391 (-9.93)	j	.251 (6.37)	-.314 (-7.97)	JJ	.105 (2.67)	.094 (2.39)	K	.259 (6.58)	-.470 (-11.94)	k	.133 (3.38)	-.379 (-9.63)	KK	.135 (3.43)	-.041 (-1.04)	L	.134 (3.40)	-.519 (-13.18)	l	.000 (0.00)	-.402 (-10.21)	LL	.000 (0.00)	-.132 (-3.35)	M	.000 (0.00)	-.537 (-13.64)	m	-.133 (-3.38)	-.379 (-9.63)	MM	-.135 (-3.43)	-.041 (-1.04)	N	-.134 (-3.40)	-.519 (-13.18)	n	-.251 (-6.37)	-.314 (-7.97)	NN	-.105 (-2.67)	.094 (2.39)	P	-.259 (-6.58)	-.470 (-11.94)	p	-.341 (-8.66)	-.213 (-5.41)	PP	.000 (0.00)	.000 (0.00)	R	-.368 (-9.34)	-.391 (-9.93)	q	-.392 (-9.95)	-.088 (-2.24)				S	-.454 (-11.5)	-.287 (-7.29)	q	-.399 (-10.1)	.046 (1.17)				T	-.511 (-13.0)	-.164 (-4.16)	s	-.362 (-9.19)	.175 (4.44)				U	-.536 (-13.6)	.030 (.762)	t	-.285 (-7.24)	.283 (7.19)				V	-.527 (-13.4)	.101 (2.56)	u	-.173 (-4.39)	.383 (9.72)				W	-.485 (-12.3)	.230 (5.84)	v	.000 (0.00)	.338 (8.58)				X	-.413 (-10.5)	.343 (8.71)	w	.147 (3.73)	.223 (5.66)				Y	-.314 (-7.98)	.435 (11.05)	x	.237 (6.02)	.122 (3.099)				Z	-.196 (-4.98)	.500 (12.7)	y	.267 (6.78)	-.010 (-.254)							z	.228 (5.79)	-.139 (-3.53)			
I.D. NO.	X	Y	I.D. NO.	X	Y	I.D. NO.	X	Y																																																																																																																																																																																																																																					
	In. mm.	In. mm.		In. mm.	In. mm.		In. mm.	In. mm.																																																																																																																																																																																																																																					
A	.196 (4.98)	.500 (12.7)	a	.068 (1.72)	.454 (11.53)	AA	.131 (3.33)	-.233 (-5.92)																																																																																																																																																																																																																																					
B	.314 (7.98)	.435 (11.05)	b	-.068 (-1.72)	.454 (11.53)	BB	.000 (0.00)	-.267 (-6.78)																																																																																																																																																																																																																																					
C	.413 (10.5)	.343 (8.71)	c	.173 (4.39)	.383 (9.72)	CC	-.131 (-3.33)	-.233 (-5.92)																																																																																																																																																																																																																																					
D	.485 (12.3)	.230 (5.84)	d	.285 (7.24)	.283 (7.19)	DD	-.228 (-5.79)	-.139 (-3.53)																																																																																																																																																																																																																																					
E	.527 (13.4)	.101 (2.57)	e	.362 (9.19)	.175 (4.44)	EE	-.267 (-6.78)	-.010 (-.254)																																																																																																																																																																																																																																					
F	.536 (13.6)	-.030 (-.762)	f	.399 (10.1)	.046 (1.17)	FF	-.237 (-6.02)	.122 (3.099)																																																																																																																																																																																																																																					
G	.511 (13.0)	-.164 (-4.165)	g	.392 (9.95)	-.088 (-2.24)	GG	-.147 (-3.73)	.223 (5.66)																																																																																																																																																																																																																																					
H	.454 (11.5)	-.287 (-7.29)	h	.341 (8.66)	-.213 (-5.41)	HH	.000 (0.00)	.200 (5.08)																																																																																																																																																																																																																																					
J	.368 (9.34)	-.391 (-9.93)	j	.251 (6.37)	-.314 (-7.97)	JJ	.105 (2.67)	.094 (2.39)																																																																																																																																																																																																																																					
K	.259 (6.58)	-.470 (-11.94)	k	.133 (3.38)	-.379 (-9.63)	KK	.135 (3.43)	-.041 (-1.04)																																																																																																																																																																																																																																					
L	.134 (3.40)	-.519 (-13.18)	l	.000 (0.00)	-.402 (-10.21)	LL	.000 (0.00)	-.132 (-3.35)																																																																																																																																																																																																																																					
M	.000 (0.00)	-.537 (-13.64)	m	-.133 (-3.38)	-.379 (-9.63)	MM	-.135 (-3.43)	-.041 (-1.04)																																																																																																																																																																																																																																					
N	-.134 (-3.40)	-.519 (-13.18)	n	-.251 (-6.37)	-.314 (-7.97)	NN	-.105 (-2.67)	.094 (2.39)																																																																																																																																																																																																																																					
P	-.259 (-6.58)	-.470 (-11.94)	p	-.341 (-8.66)	-.213 (-5.41)	PP	.000 (0.00)	.000 (0.00)																																																																																																																																																																																																																																					
R	-.368 (-9.34)	-.391 (-9.93)	q	-.392 (-9.95)	-.088 (-2.24)																																																																																																																																																																																																																																								
S	-.454 (-11.5)	-.287 (-7.29)	q	-.399 (-10.1)	.046 (1.17)																																																																																																																																																																																																																																								
T	-.511 (-13.0)	-.164 (-4.16)	s	-.362 (-9.19)	.175 (4.44)																																																																																																																																																																																																																																								
U	-.536 (-13.6)	.030 (.762)	t	-.285 (-7.24)	.283 (7.19)																																																																																																																																																																																																																																								
V	-.527 (-13.4)	.101 (2.56)	u	-.173 (-4.39)	.383 (9.72)																																																																																																																																																																																																																																								
W	-.485 (-12.3)	.230 (5.84)	v	.000 (0.00)	.338 (8.58)																																																																																																																																																																																																																																								
X	-.413 (-10.5)	.343 (8.71)	w	.147 (3.73)	.223 (5.66)																																																																																																																																																																																																																																								
Y	-.314 (-7.98)	.435 (11.05)	x	.237 (6.02)	.122 (3.099)																																																																																																																																																																																																																																								
Z	-.196 (-4.98)	.500 (12.7)	y	.267 (6.78)	-.010 (-.254)																																																																																																																																																																																																																																								
			z	.228 (5.79)	-.139 (-3.53)																																																																																																																																																																																																																																								

Series 22 Geo-Marine® Harsh-Environment Connectors, Cables and Accessories PCB Footprints

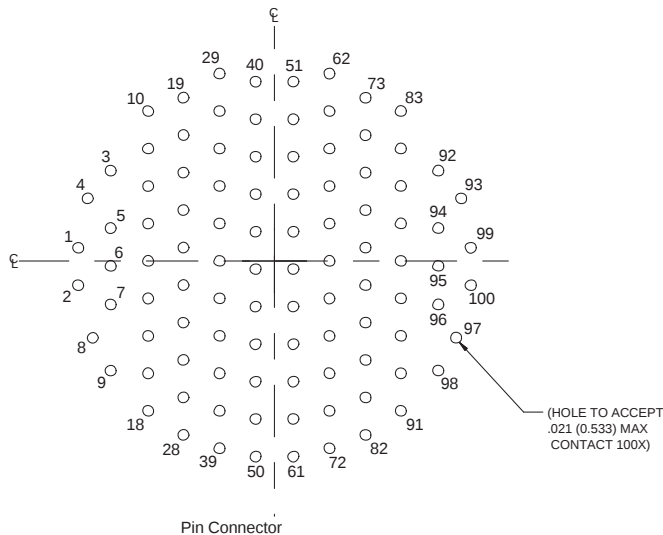
A

Geo-Marine® PCB Footprints: Size 24

Insert Arrangement



PCB Footprint



I.D. NO.	X In. mm.	Y In. mm.	I.D. NO.	X In. mm.	Y In. mm.	I.D. NO.	X In. mm.	Y In. mm.	I.D. NO.	X In. mm.	Y In. mm.
1	-.550 (-13.97)	.039 (.990)	26	.255 (-6.48)	-.278 (-7.06)	51	.053 (1.35)	.502 (12.75)	76	.255 (6.48)	.142 (3.607)
2	-.550 (-13.97)	-.068 (-1.73)	27	.255 (-6.48)	-.383 (-9.73)	52	.053 (1.35)	.397 (10.08)	77	.255 (6.48)	.037 (.940)
3	-.459 (-11.67)	.253 (6.42)	28	.255 (-6.48)	-.488 (-12.39)	53	.053 (1.35)	.292 (7.42)	78	.255 (6.48)	-.068 (-1.73)
4	-.523 (-13.3)	.175 (4.44)	29	.154 (-3.91)	.525 (13.34)	54	.053 (1.35)	.187 (4.75)	79	.255 (6.48)	-.173 (-4.39)
5	-.459 (-11.67)	.092 (2.34)	30	-.154 (-3.91)	.420 (10.67)	55	.053 (1.35)	.082 (2.083)	80	.255 (6.48)	-.278 (-7.06)
6	-.459 (-11.67)	-.014 (-.355)	31	-.154 (-3.91)	.315 (8.00)	56	.053 (1.35)	-.023 (-.584)	81	.255 (6.48)	-.383 (-9.73)
7	-.459 (-11.67)	-.122 (-3.099)	32	-.154 (-3.91)	.210 (5.33)	57	.053 (1.35)	-.128 (-3.25)	82	.255 (6.48)	-.488 (-12.39)
8	-.509 (-12.9)	-.215 (-5.46)	33	-.154 (-3.91)	.105 (2.67)	58	.053 (1.35)	-.233 (-5.92)	83	.354 (8.99)	.420 (10.67)
9	-.459 (-11.67)	-.307 (-7.80)	34	.154 (-3.91)	.000 (.000)	59	.053 (1.35)	-.338 (-8.58)	84	.354 (8.99)	.315 (8.00)
10	-.354 (-8.99)	.420 (10.67)	35	-.154 (-3.91)	-.105 (-2.67)	60	.053 (1.35)	-.443 (-11.25)	85	.354 (8.99)	.210 (5.33)
11	-.354 (-8.99)	.315 (8.00)	36	-.154 (-3.91)	-.210 (-5.33)	61	.053 (1.35)	-.548 (-13.92)	86	.354 (8.99)	.105 (2.67)
12	-.354 (-8.99)	.210 (5.33)	37	-.154 (-3.91)	-.315 (-8.00)	62	.154 (3.91)	.525 (13.34)	87	.354 (8.99)	.000 (.000)
13	-.354 (-8.99)	.105 (2.67)	38	-.154 (-3.91)	-.420 (-10.67)	63	.154 (3.91)	.420 (10.67)	88	.354 (8.99)	-.105 (-2.67)
14	-.354 (-8.99)	.000 (.000)	39	.154 (-3.91)	-.525 (-13.34)	64	.154 (3.91)	.315 (8.00)	89	.354 (8.99)	-.210 (-5.33)
15	-.354 (-8.99)	-.105 (-2.67)	40	.053 (-1.35)	.502 (12.75)	65	.154 (3.91)	.210 (5.33)	90	.354 (8.99)	-.315 (-8.00)
16	-.354 (-8.99)	-.210 (-5.33)	41	-.053 (-1.35)	.397 (10.08)	66	.154 (3.91)	.105 (2.67)	91	.354 (8.99)	-.420 (-10.67)
17	-.354 (-8.99)	-.315 (-8.00)	42	-.053 (-1.35)	.292 (7.42)	67	.154 (3.91)	.000 (.000)	92	.459 (11.66)	.253 (6.42)
18	-.354 (-8.99)	-.420 (-10.67)	43	-.053 (-1.35)	.187 (4.75)	68	.154 (3.91)	-.105 (-2.67)	93	.523 (13.28)	.175 (4.44)
19	-.255 (-6.47)	.457 (11.60)	44	-.053 (-1.35)	.082 (2.08)	69	.154 (3.91)	-.210 (-5.33)	94	.459 (11.66)	.092 (2.34)
20	-.255 (-6.47)	.352 (8.94)	45	-.053 (-1.35)	-.023 (-.58)	70	.154 (3.91)	-.315 (-8.00)	95	.459 (11.66)	-.014 (-.356)
21	-.255 (-6.47)	.247 (6.27)	46	-.053 (-1.35)	-.128 (-3.25)	71	.154 (3.91)	-.420 (-10.67)	96	.459 (11.66)	-.122 (-3.10)
22	-.255 (-6.47)	.142 (3.61)	47	-.053 (-1.35)	-.233 (-5.92)	72	.154 (3.91)	-.525 (-13.34)	97	.509 (12.93)	-.215 (-5.46)
23	-.255 (-6.47)	.037 (.94)	48	-.053 (-1.35)	-.338 (-8.58)	73	.255 (6.48)	.457 (11.60)	98	.459 (11.66)	-.307 (-7.80)
24	-.255 (-6.47)	-.068 (-1.73)	49	-.053 (-1.35)	-.443 (-11.25)	74	.255 (6.48)	.352 (8.94)	99	.550 (13.97)	.039 (.991)
25	-.255 (-6.47)	-.173 (-4.39)	50	-.053 (-1.35)	-.548 (-13.92)	75	.255 (6.48)	.247 (6.27)	100	.550 (13.97)	-.068 (-1.73)

Series 22 Geo-Marine® Harsh-Environment Connectors, Cables and Accessories PCB Footprints

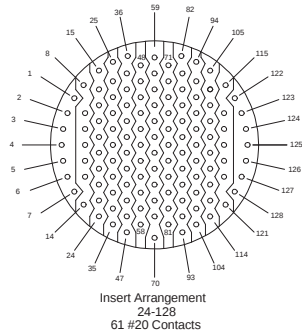


Geo-Marine®
Introduction

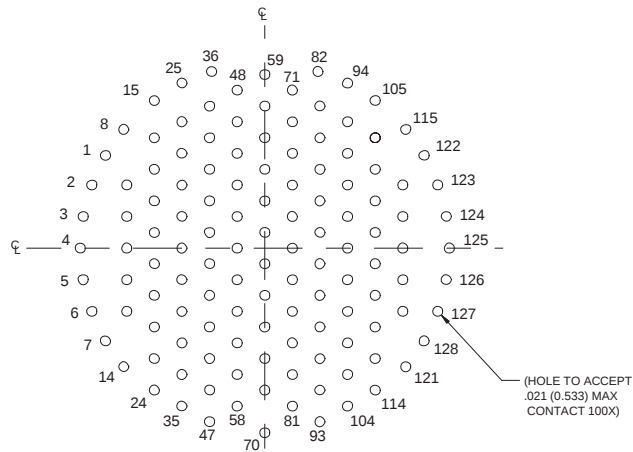
A

Geo-Marine® PCB Footprints: Size 24

Insert Arrangement



PCB Footprint



Pin Connector

I.D. NO.	X In. mm.	Y In. mm.	I.D. NO.	X In. mm.	Y In. mm.	I.D. NO.	X In. mm.	Y In. mm.	I.D. NO.	X In. mm.	Y In. mm.
1	-.479 (-12.17)	.279 (7.09)	33	-.249 (-6.32)	-.285 (-7.24)	65	.000 (.000)	-.047 (-1.19)	97	.249 (6.32)	.190 (4.82)
2	-.520 (-13.21)	.190 (4.82)	34	-.249 (-6.32)	-.380 (-9.65)	66	.000 (.000)	-.142 (-3.607)	98	.249 (6.32)	.095 (2.41)
3	-.546 (-13.87)	.095 (2.41)	35	-.249 (-6.32)	-.475 (-12.06)	67	.000 (.000)	-.237 (-6.02)	99	.249 (6.32)	.000 (.000)
4	-.555 (-14.1)	.000 (.000)	36	-.166 (-4.21)	.531 (13.48)	68	.000 (.000)	-.332 (-8.43)	100	.249 (6.32)	.095 (-2.41)
5	-.546 (-13.87)	-.095 (-2.41)	37	-.166 (-4.21)	.427 (10.84)	69	.000 (.000)	-.427 (-10.84)	101	.249 (6.32)	.190 (-4.82)
6	-.520 (-13.2)	-.190 (-4.82)	38	-.166 (-4.21)	.332 (8.43)	70	.000 (.000)	-.555 (-14.1)	102	.249 (6.32)	.285 (-7.24)
7	-.479 (-12.17)	-.279 (-7.09)	39	-.166 (-4.21)	.237 (6.02)	71	.083 (2.11)	.475 (12.06)	103	.249 (6.32)	.380 (-9.65)
8	-.424 (-10.77)	.357 (9.07)	40	-.166 (-4.21)	.142 (3.607)	72	.083 (2.11)	.380 (9.65)	104	.249 (6.32)	.475 (-12.06)
9	-.415 (-10.54)	.190 (4.82)	41	-.166 (-4.21)	.047 (1.19)	73	.083 (2.11)	.285 (7.24)	105	.332 (8.43)	.444 (11.27)
10	-.415 (-10.54)	.095 (2.41)	42	-.166 (-4.21)	-.047 (-1.19)	74	.083 (2.11)	.190 (4.82)	106	.332 (8.43)	.332 (8.43)
11	-.415 (-10.54)	.000 (.000)	43	-.166 (-4.21)	-.142 (-3.607)	75	.083 (2.11)	.095 (2.41)	107	.332 (8.43)	.237 (6.02)
12	-.415 (-10.54)	-.095 (-2.41)	44	-.166 (-4.21)	-.237 (-6.02)	76	.083 (2.11)	.000 (.000)	108	.332 (8.43)	.142 (3.607)
13	-.415 (-10.54)	-.190 (-4.82)	45	-.166 (-4.21)	-.332 (-8.43)	77	.083 (2.11)	-.095 (-2.41)	109	.332 (8.43)	.047 (1.19)
14	-.424 (-10.77)	-.357 (-9.07)	46	-.166 (-4.21)	-.427 (-10.84)	78	.083 (2.11)	-.190 (-4.82)	110	.332 (8.43)	.047 (-1.19)
15	-.332 (-8.43)	.444 (11.27)	47	-.166 (-4.21)	-.522 (-13.26)	79	.083 (2.11)	-.285 (-7.24)	111	.332 (8.43)	.142 (-3.607)
16	-.332 (-8.43)	.332 (8.43)	48	-.083 (-2.11)	.475 (12.06)	80	.083 (2.11)	-.380 (-9.65)	112	.332 (8.43)	.237 (-6.02)
17	-.332 (-8.43)	.237 (6.02)	49	-.083 (-2.11)	.380 (9.65)	81	.083 (2.11)	-.475 (-12.06)	113	.332 (8.43)	.332 (-8.43)
18	-.332 (-8.43)	.142 (3.607)	50	-.083 (-2.11)	.285 (7.24)	82	.166 (4.21)	.531 (13.5)	114	.332 (8.43)	.427 (-10.84)
19	-.332 (-8.43)	.047 (1.19)	51	-.083 (-2.11)	.190 (4.82)	83	.166 (4.21)	.427 (10.84)	115	.424 (10.77)	.357 (9.07)
20	-.332 (-8.43)	-.047 (-1.19)	52	-.083 (-2.11)	.095 (2.41)	84	.166 (4.21)	.332 (8.43)	116	.415 (10.54)	.190 (4.82)
21	-.332 (-8.43)	-.142 (-3.607)	53	-.083 (-2.11)	.000 (.000)	85	.166 (4.21)	.237 (6.02)	117	.415 (10.54)	.095 (2.41)
22	-.332 (-8.43)	-.237 (-6.02)	54	-.083 (-2.11)	-.095 (-2.41)	86	.166 (4.21)	.142 (3.607)	118	.415 (10.54)	.000 (.000)
23	-.332 (-8.43)	-.332 (-8.43)	55	-.083 (-2.11)	-.190 (-4.82)	87	.166 (4.21)	.047 (1.19)	119	.415 (10.54)	.095 (2.41)
24	-.332 (-8.43)	-.427 (-10.84)	56	-.083 (-2.11)	-.285 (-7.24)	88	.166 (4.21)	-.047 (-1.19)	120	.415 (10.54)	.190 (-4.82)
25	-.249 (-6.32)	.496 (12.6)	57	-.083 (-2.11)	-.380 (-9.65)	89	.166 (4.21)	-.142 (-3.607)	121	.424 (10.77)	.357 (-9.07)
26	-.249 (-6.32)	.380 (9.65)	58	-.083 (-2.11)	-.475 (-12.06)	90	.166 (4.21)	-.237 (-6.02)	122	.479 (12.17)	.279 (7.08)
27	-.249 (-6.32)	.285 (7.24)	59	.000 (.000)	.522 (13.26)	91	.166 (4.21)	-.332 (-8.43)	123	.520 (13.2)	.190 (4.82)
28	-.249 (-6.32)	.190 (4.82)	60	.000 (.000)	.427 (10.84)	92	.166 (4.21)	-.427 (-10.84)	124	.546 (13.87)	.095 (2.41)
29	-.249 (-6.32)	.095 (2.41)	61	.000 (.000)	.332 (8.43)	93	.166 (4.21)	-.522 (-13.26)	125	.555 (14.1)	.000 (.000)
30	-.249 (-6.32)	.000 (.000)	62	.000 (.000)	.237 (6.02)	94	.249 (6.32)	.496 (12.6)	126	.546 (13.87)	.095 (-2.41)
31	-.249 (-6.32)	-.095 (-2.41)	63	.000 (.000)	.142 (3.607)	95	.249 (6.32)	.380 (9.65)	127	.520 (13.2)	.190 (-4.82)
32	-.249 (-6.32)	-.190 (-4.82)	64	.000 (.000)	.047 (1.19)	96	.249 (6.32)	.285 (7.24)	128	.479 (12.17)	.279 (-7.08)

SERIES 22

GEO-MARINE[®] CONNECTORS



*Standard · scoop-proof · high-
pressure environmental · hermetic*



Designed for use in geophysical and other harsh marine and oil-patch applications, Series 22 Geo-Marine[®] connectors feature specially designed castellated and knurled coupling nuts for quick connect and disconnect. Single-start, stub Acme threads reduce thread fouling and binding, and an integrated anti-vibration/anti-decoupling mechanism prevents accidental loosening or decoupling. Interfacial, peripheral and piston o-ring seals provide environmental sealing to 5,000 PSI in mated condition. Standard cable plugs (shown below) as well as special-purpose configurations including flange-mount, cable grip, and lanyard quick-disconnect are available.

Standard Plug Configurations



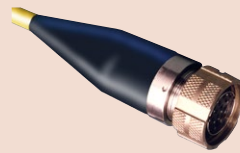
Cable Plug



Flange-Mount



Overmold Adapter



Overmolded



Glenair, Inc.

1211 Air Way

Glendale, CA

91201-2497

818-247-6000

sales@glenair.com

www.glenair.com

Series 22 Geo-Marine® Connectors



Geo-Marine®
Connectors

Quick Selection Guide



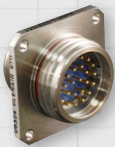
High-Pressure Environmental/Hermetic Jam Nut Bulkhead Receptacle, Front Mount
220-00 (Standard) and 220-10 (Scoop-Proof)

B-2



High-Pressure Environmental/Hermetic In-Line Receptacle Connector
220-01 (Standard) and 220-11 (Scoop-Proof)

B-4



High-Pressure Environmental/Hermetic Square Flange Mount Receptacle Connector
220-02 (Standard) and 220-12 (Scoop-Proof)

B-6



Hermetic Solder-Mount Bulkhead Receptacle Connector, Front Mount
220-03 (Standard) 220-13 (Scoop-Proof)

B-8



High-Pressure Environmental/Hermetic Jam Nut Receptacle with Accessory Threads, Rear Mount
220-04 (Standard) and 220-14 (Scoop-Proof)

B-10



High-Pressure Environmental Cable Plug
220-06 (Standard) and 220-16 (Scoop-Proof)

B-12



High-Pressure Environmental/Hermetic Jam Nut Receptacle, Rear Box Mount
220-07 (Standard) and 220-17 (Scoop-Proof)

B-14



High-Pressure Environmental Box-Mount Plug
220-09 (Standard) and 220-19 (Scoop-Proof)

B-16



High-Pressure Environmental/Hermetic Jam Nut Mount Bulkhead Feed-Through
227-039 (Standard) and 227-040 (Scoop-Proof)

B-18

B



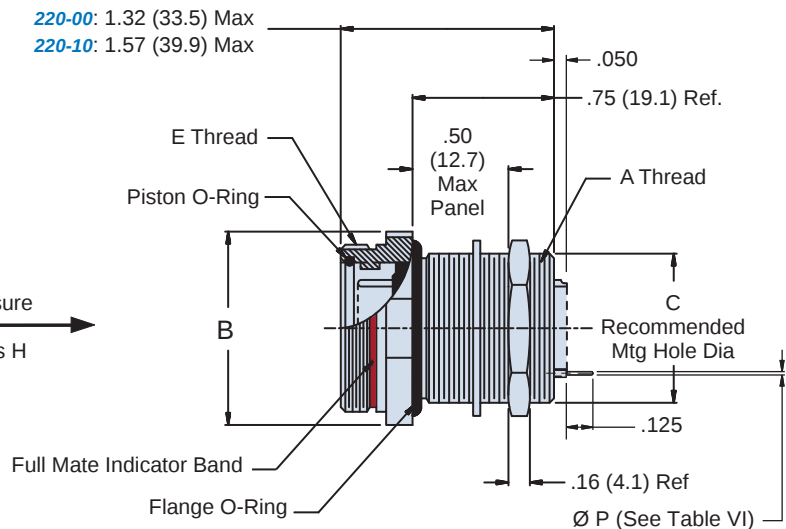
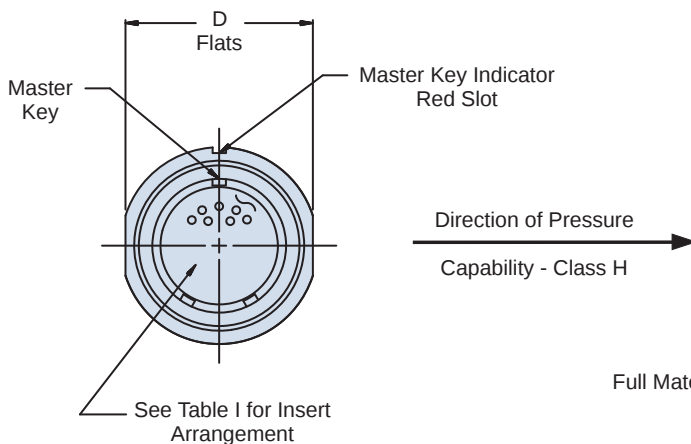
220-00 and 220-10 High-Pressure Environmental/Hermetic Jam Nut Bulkhead Receptacle, Front Mount

SERIES 22 RECEPTACLE IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS



How To Order					
Sample Part Number	220-00	H	24-61	P	N
Series and Shell Style	220-00 - Standard 220-10 - Scoop-Proof (Not Shown)				
Class	H = Hermetic E = Environmental				
Shell Size - Insert Arrangement	See page A-6				
Contact Style	P = Pins S = Sockets C = Pin PC Termination D = Socket PC Termination				
Polarization	N, 1, 2, 3, 4 See page A-6				

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



Metric dimensions (mm) are indicated in parentheses

220-00 and 220-10 High-Pressure Environmental/Hermetic Jam Nut Bulkhead Receptacle, Front Mount



Table II: Dimensions

Shell Size	A Thread Class 2A	Ø B Max	C ±.005 ±(0.1)	D Flats	E Thread Class 2A
10	5/8 - 24 UNEF	1.03 (25.4)	.635 (16.1)	.875 (22.2)	.750 - .1P - .1L
12	3/4 - 20 UNEF	1.16 (28.6)	.760 (19.3)	1.000 (25.4)	.875 - .1P - .1L
14	7/8 - 20 UNEF	1.28 (31.8)	.885 (22.5)	1.125 (28.6)	1.000 - .1P - .1L
16	1 - 20 UNEF	1.41 (34.9)	1.010 (25.7)	1.250 (31.8)	1.125 - .1P - .1L
18	1 1/8 - 16 UN	1.66 (40.5)	1.135 (28.8)	1.500 (38.1)	1.250 - .1P - .1L
20	1 1/4 - 16 UN	1.78 (43.7)	1.260 (32.0)	1.625 (41.3)	1.375 - .1P - .1L
22	1 3/8 - 16 UN	1.91 (48.1)	1.385 (35.2)	1.750 (44.5)	1.500 - .1P - .1L
24	1 1/2 - 16 UN	2.03 (50.0)	1.510 (38.4)	1.875 (47.6)	1.625 - .1P - .1L

Table III: Recommended Jam Nut
Installation Torque Values

Shell Size	Torque ± 5%	
	Inch - Lbs.	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

Table IV: 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	2-023	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		

Table VI

Contact Size	Ø P
22D	0.021 0.018
20	0.024 0.028
16	0.0635 0.0615
12	0.095 0.093



220-01 and 220-11 High-Pressure Environmental/Hermetic In-Line Receptacle

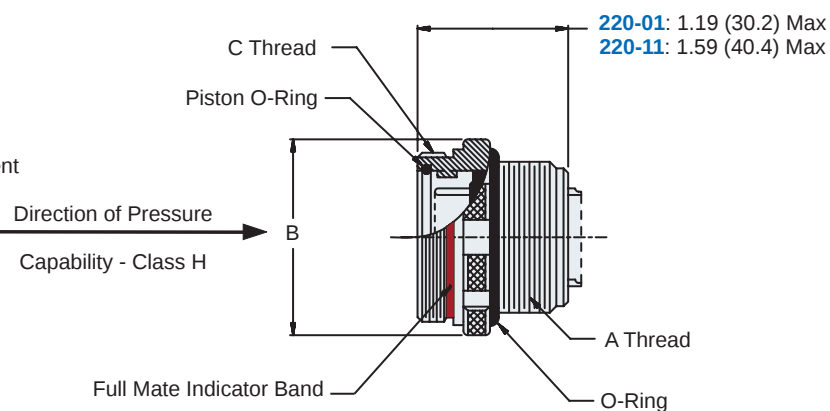
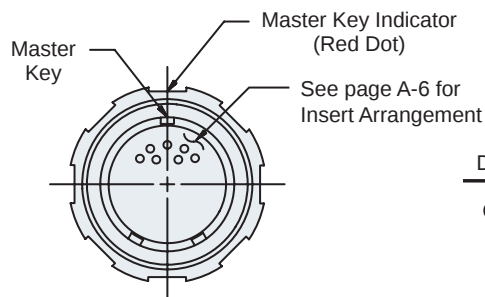
SERIES 22 IN-LINE RECEPTACLE IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS



How To Order					
Sample Part Number	220-01	H	24-61	P	N
Series and Shell Style	220-01 - Standard 220-11 - Scoop-Proof (Not Shown)				
Class	H = Hermetic E = Environmental				
Shell Size - Insert Arrangement	See page A-6				
Contact Style	P = Pins S = Sockets				
Polarization	N, 1, 2, 3, 4 See page A-6				

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

B



220-01 and 220-11 High-Pressure Environmental/Hermetic In-Line Receptacle



Table II: Dimensions

Shell Size	A Thread Class 2A	Ø B Max	C Thread Class 2A
10	5/8 - 24 UNEF	.906 (23.0)	.750 - .1P - .1L
12	3/4 - 20 UNEF	1.031 (26.2)	.875 - .1P - .1L
14	7/8 - 20 UNEF	1.156 (29.4)	1.000 - .1P - .1L
16	1 - 20 UNEF	1.359 (34.5)	1.125 - .1P - .1L
18	1 1/8 - 16 UN	1.531 (38.9)	1.250 - .1P - .1L
20	1 1/4 - 16 UN	1.656 (42.1)	1.375 - .1P - .1L
22	1 3/8 - 16 UN	1.781 (45.2)	1.500 - .1P - .1L
24	1 1/2 - 16 UN	1.906 (48.4)	1.625 - .1P - .1L

B

Table IV: 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



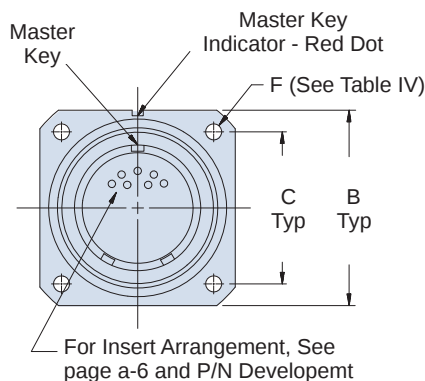
220-02 and 220-12 High-Pressure Environmental/Hermetic Square Flange Mount Receptacle

SERIES 22 SQUARE FLANGE RECEPTACLE IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS

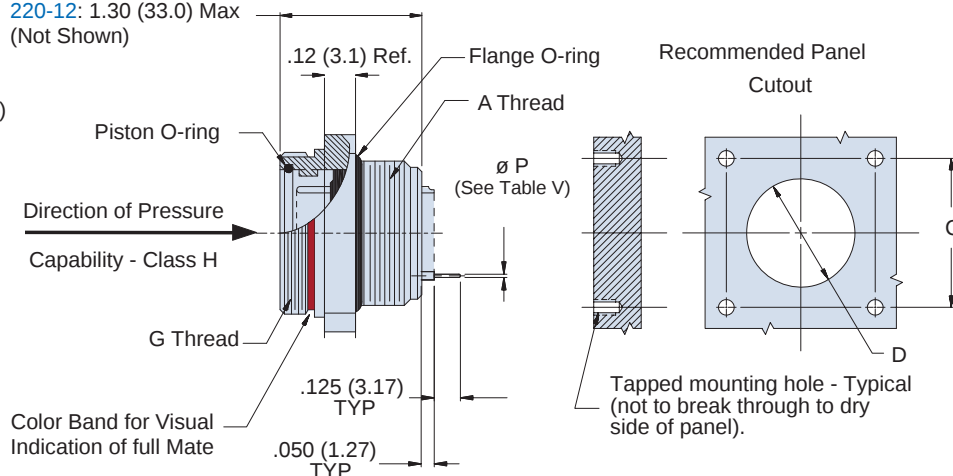


How To Order					
Sample Part Number	220-02	E	24-61	P	N
Series and Shell Style	220-02 - Standard 220-12 - Scoop-Proof				
Class	H = Hermetic E = Environmental				
Shell Size - Insert Arrangement	See page A-6				
Contact Style	P = Pin S = Socket C = Pin, PC Termination D = Socket, PC Termination				
Polarization	N, 1, 2, 3, 4 See page A-6				

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



220-02: 1.19 (30.2) Max
220-12: 1.30 (33.0) Max
(Not Shown)



220-02 and 220-12 High-Pressure Environmental/Hermetic Square Flange Mount Receptacle



Table II: Dimensions

Shell Size	A Thread Class 2A	B Dim	C Dim	D Dia +.015 +(0.4) -.000 -(0.0)	G Thread Class 2A
10	5/8 - 24 UNEF	1.188 (30.2)	.938 (23.8)	.844 (21.4)	.750 - .1P - .1L
12	3/4 - 20 UNEF	1.312 (33.3)	1.062 (27.0)	.969 (24.6)	.875 - .1P - .1L
14	7/8 - 20 UNEF	1.438 (36.5)	1.188 (30.2)	1.078 (27.4)	1.000 - .1P - .1L
16	1 - 20 UNEF	1.562 (39.7)	1.250 (31.8)	1.219 (31.0)	1.125 - .1P - .1L
18	1 1/8 - 16 UN	1.750 (44.5)	1.375 (34.9)	1.359 (34.5)	1.250 - .1P - .1L
20	1 1/4 - 16 UN	1.875 (47.6)	1.500 (38.1)	1.515 (38.5)	1.375 - .1P - .1L
22	1 3/8 - 16 UN	2.000 (50.8)	1.625 (41.3)	1.640 (41.7)	1.500 - .1P - .1L
24	1 1/2 - 6 UN	2.125 (54.0)	1.750 (44.5)	1.765 (44.8)	1.625 - .1P - .1L

Table IV: 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

Table VI: 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.

Table V

Contact Size	Ø P
22D	0.021 0.018
20	0.024 0.028
16	0.0635 0.0615
12	0.095 0.093



220-03 and 220-13 Hermetic Solder Mount Bulkhead Receptacle Front Mount

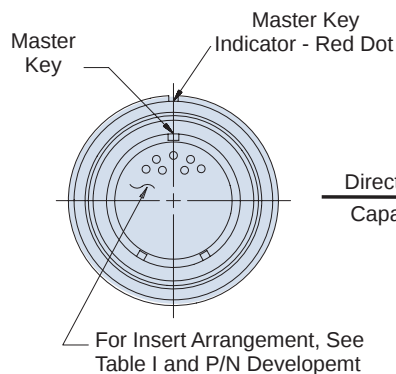
SERIES 22 RECEPTACLE IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS



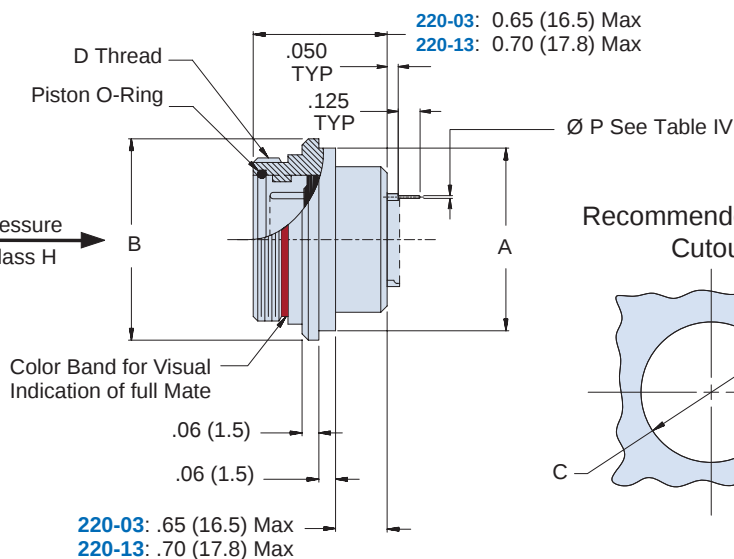
220-13 Scoop-Proof Shell

How To Order					
Sample Part Number	220-03	H	24-61	P	N
Series and Shell Style	220-03 - Standard 220-13 - Scoop-Proof				
Class	H = Hermetic				
Shell Size - Insert Arrangement	See page A-6				
Contact Style	P = Pins S = Sockets C = Pin, PC Termination D = Socket, PC Termination				
Polarization	N, 1, 2, 3, 4 See page A-6				

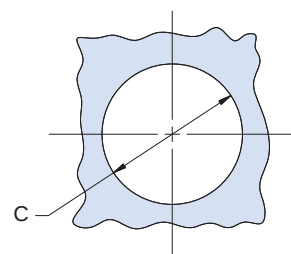
Prior to use, lubricate O-rings with high grade silicone lubricant (Moly-kote M55 or equivalent).



Direction of Pressure Capability - Class H



Recommended Panel Cutout



220-03 and 220-13 Hermetic Solder Mount Bulkhead Receptacle Front Mount



Table II: Dimensions

Shell Size	A Dia Max	B Dia	C Dia +.010 +(0.3) -.000 -(0.0)	D Thread Class 2A
10	.870 (22.1)	1.00 (25.4)	.875 (22.2)	.750 - .1P - .1L
12	.995 (25.3)	1.13 (28.7)	1.000 (25.4)	.875 - .1P - .1L
14	1.120 (28.4)	1.25 (31.8)	1.125 (28.6)	1.000 - .1P - .1L
16	1.245 (31.6)	1.38 (35.1)	1.250 (31.8)	1.125 - .1P - .1L
18	1.370 (34.8)	1.50 (38.1)	1.375 (34.9)	1.250 - .1P - .1L
20	1.495 (38.0)	1.63 (41.4)	1.500 (38.1)	1.375 - .1P - .1L
22	1.620 (41.1)	1.75 (44.5)	1.625 (41.3)	1.500 - .1P - .1L
24	1.745 (44.3)	1.88 (47.8)	1.750 (44.5)	1.625 - .1P - .1L

Table IV: Contact Dimensions

Contact Size	Ø P
22D	0.021 0.018
20	0.024 0.028
16	0.0635 0.0615
12	0.095 0.093

Table V: 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.	



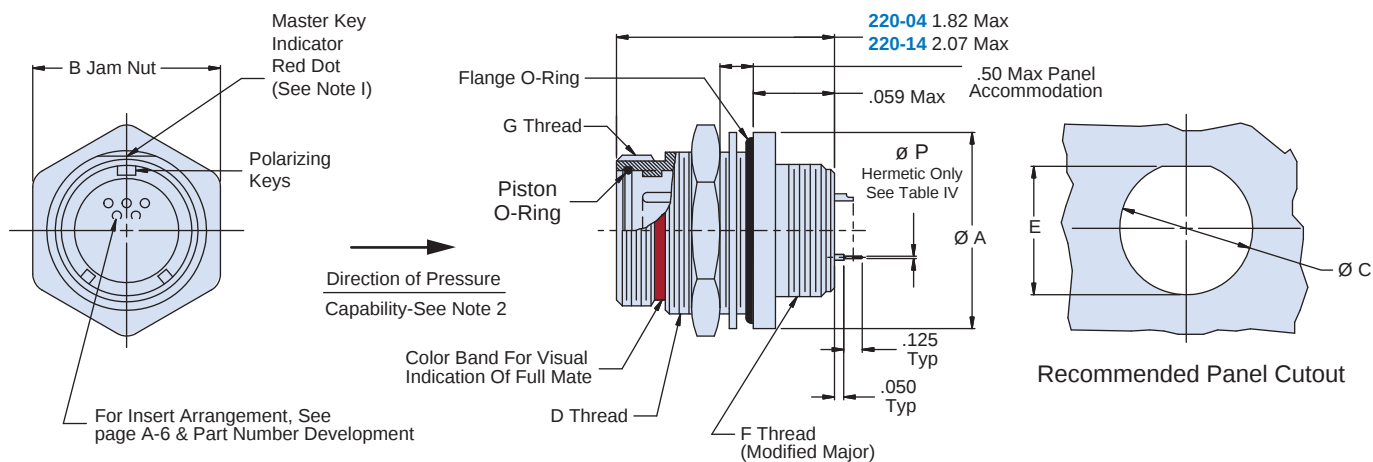
220-04 and 220-14 High-Pressure Environmental/Hermetic Jam Nut Receptacle with Accessory Threads, Rear Mount

SERIES 22 RECEPTACLE IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS



How To Order					
Sample Part Number	220-04	E	24-61	P	N
Series and Shell Style	220-04 - Standard 220-14 - Scoop-Proof				
Class	H = Hermetic E = Environmental				
Shell Size- Insert Arrangement	See page A-6				
Contact Style	P = Pins S = Sockets C = Pin, P.C. Term (Hermetic Only, See Table VI) D = Socket, P.C. Term (Hermetic Only, See Table VI)				
Polarization	N, 1, 2, 3, 4 See page A-6				

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



220-04 and 220-14 High-Pressure Environmental/Hermetic Jam Nut Receptacle with Accessory Threads, Rear Mount



Table II: Dimensions

A Dia	B Flats	C Dia $\pm .005 \pm (0.1)$	D Thread Class 2A
1.25 (31.8)	1.125 (28.6)	.885 (22.5)	7/8 - 20 UNEF
1.38 (35.1)	1.250 (31.8)	1.010 (25.7)	1 - 20 UNEF
1.50 (38.1)	1.500 (38.1)	1.135 (28.8)	1 1/8 - 16 UN
1.63 (41.4)	1.625 (41.3)	1.260 (32.0)	1 1/4 - 16 UN
1.75 (44.5)	1.750 (44.5)	1.385 (35.2)	1 3/8 - 16 UN
1.88 (47.8)	1.875 (47.6)	1.510 (38.4)	1 1/2 - 16 UN
2.00 (50.8)	2.000 (50.8)	1.635 (41.5)	1 5/8 - 16 UN
2.12 (53.8)	2.125 (54.0)	1.760 (44.7)	1 3/4 - 16 UN

Table II: Dimensions (continued)

Shell Size	E $\pm .005 \pm (0.1)$	F Thread Class 2A	G Thread Class 2A
10	.835 (21.2)	5/8 - 24 UNEF	.750 - .1P - .1L
12	.960 (24.4)	3/4 - 20 UNEF	.875 - .1P - .1L
14	1.085 (27.6)	7/8 - 20 UNEF	1.000 - .1P - .1L
16	1.210 (30.7)	1 - 20 UNEF	1.125 - .1P - .1L
18	1.335 (33.9)	1 1/8 - 16 UN	1.250 - .1P - .1L
20	1.460 (37.1)	1 1/4 - 16 U N	1.375 - .1P - .1L
22	1.585 (40.3)	1 3/8 - 16 UN	1.500 - .1P - .1L
24	1.710 (43.4)	1 1/2 - 16 UN	1.625 - .1P - .1L

Table IV

Contact Size	Ø P
22D	0.021 0.018
20	0.024 0.028
16	0.0635 0.0615
12	0.095 0.093

Table V: 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.



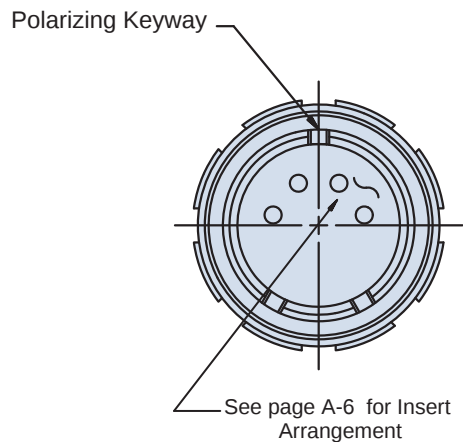
220-06 and 220-16 High-Pressure Environmental Cable Plug

SERIES 22 CABLE PLUG IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS

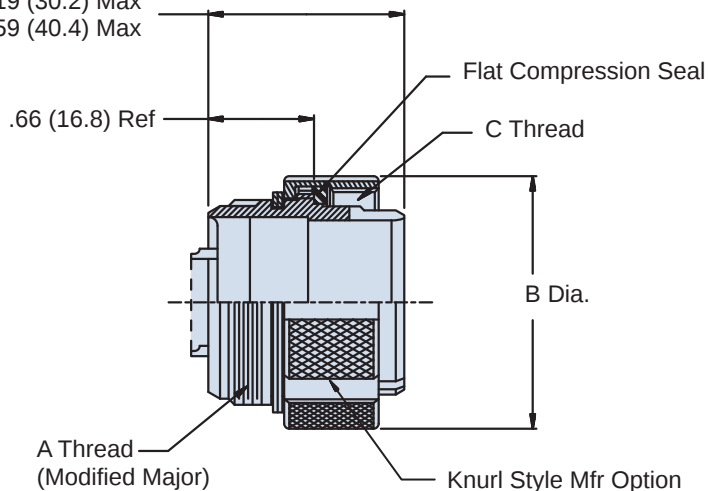


How To Order					
Sample Part Number	220-06	E	24-61	S	N
Series and Shell Style	220-06 - Standard 220-16 - Scoop-Proof				
Class	E = High-Pressure Environmental				
Shell Size - Insert Arrangement	See page A-6				
Contact Style	P = Pin S = Socket				
Polarization	N, 1, 2, 3, 4 See page A-6				

B



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



Metric dimensions (mm) are indicated in parentheses

220-06 and 220-16 High-Pressure Environmental Cable Plug



Table II: Dimensions

Shell Size	A Thread Class 2A	Ø B Max	C Thread Class 2B
10	5/8 - 24 UNEF	1.000 (25.4)	.750 - .1P - .1L
12	3/4 - 20 UNEF	1.125 (28.6)	.875 - .1P - .1L
14	7/8 - 20 UNEF	1.250 (31.8)	1.000 - .1P - .1L
16	1 - 20 UNEF	1.375 (34.9)	1.125 - .1P - .1L
18	1 1/8 - 16 UN	1.594 (40.5)	1.250 - .1P - .1L
20	1 1/4 - 16 UN	1.719 (43.7)	1.375 - .1P - .1L
22	1 3/8 - 16 UN	1.894 (48.1)	1.500 - .1P - .1L
24	1 1/2 - 16 UN	1.969 (50.0)	1.625 - .1P - .1L

Table IV: 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

Table V: 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



220-07 and 220-17 High-Pressure Environmental/Hermetic Jam Nut Receptacle, Rear Box Mount

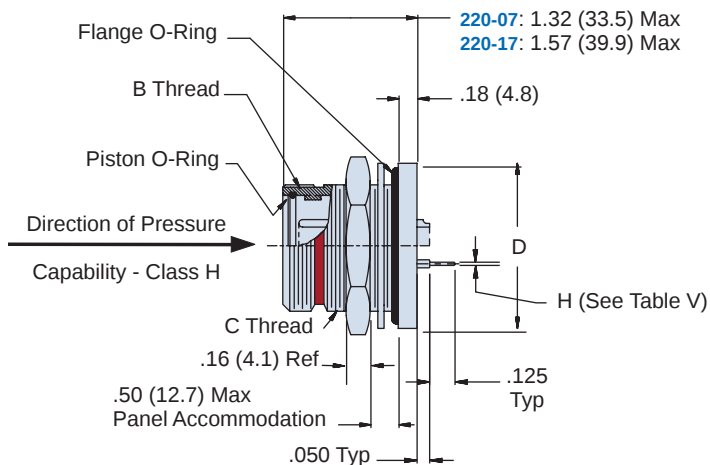
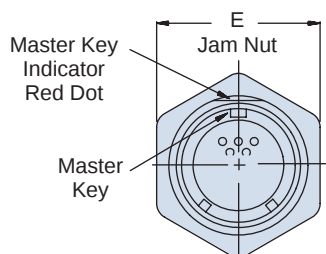
SERIES 22 JAM NUT RECEPTACLE WITH PIN, SOCKET, PIN PCB OR SOCKET PCB CONTACTS



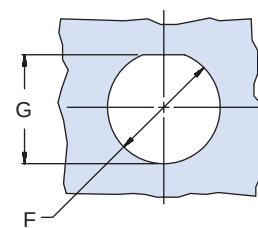
How To Order					
Sample Part Number	220-07	H	24-61	P	N
Series and Shell Style	220-07 - Standard 220-17 - Scoop-Proof				
Class	H = Hermetic E = Environmental				
Shell Size- Insert Arrangement	See page A-6				
Contact Style	P = Pin S = Socket C = Pin PCB D = Socket PCB				
Polarization	N, 1, 2, 3, 4 See page A-6				

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

B



Recommended
Panel Cutout



220-07 and 220-17 High-Pressure Environmental/Hermetic Jam Nut Receptacle, Rear Box Mount



Table II: Dimensions

Shell Size	B Thread Class 2A	C Thread Class 2A	D Dia	E Flats	F Dia $\pm .005 \pm (0.1)$	G $\pm .005 \pm (0.1)$
10	.750 - .1P - .1L	7/8 - 20 UNEF	1.25 (31.8)	1.125 (28.6)	.885 (22.5)	.835 (21.2)
12	.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	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	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)
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)

Metric dimensions (mm) are indicated in parentheses.

Table IV: 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.

Table V: Recommended Jam Nut Installation
Torque Values

Shell Size	Torque $\pm 5\%$	
	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

Table VI: Contact Diameter

Contact Size	H Dia
12	.095/.093 (2.413/2.362)
16	.0635/.0615 (1.613/1.549)
20	.024/.028 (0.711/0.610)
22D	.021/.018 (0.533/0.457)

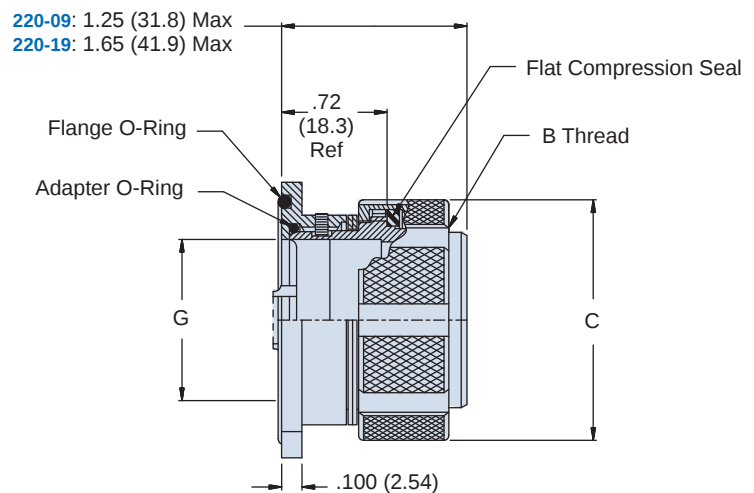
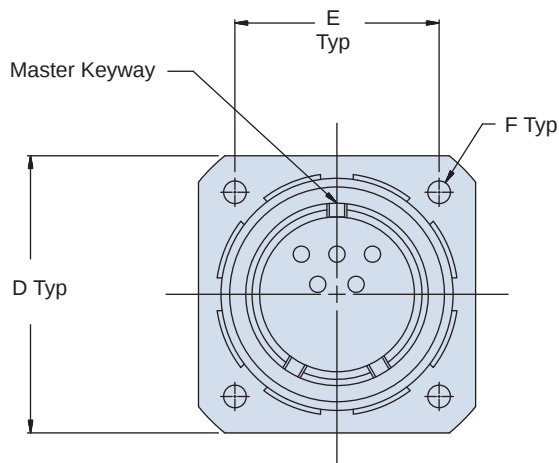
220-09 and 220-19 High-Pressure Environmental Box-Mount Plug

SERIES 22 BOX-MOUNT PLUG WITH PIN OR SOCKET CONTACTS



How To Order					
Sample Part Number	220-09	E	24-61	P	N
Series and Shell Style	220-09 - Standard 220-19 - Scoop-Proof				
Class	E = High-Pressure Environmental				
Shell Size - Insert Arrangement	See page A-6				
Contact Style	P = Pins S = Sockets				
Polarization	N, 1, 2, 3, 4 See page A-6				

B



220-09 and 220-19 High-Pressure Environmental Box-Mount Plug



Table II : Dimensions

Shell Size	B Thread 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)

Table III: 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

Seal Replacement Part Numbers

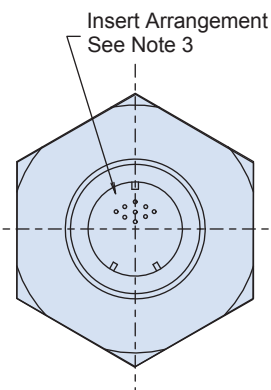
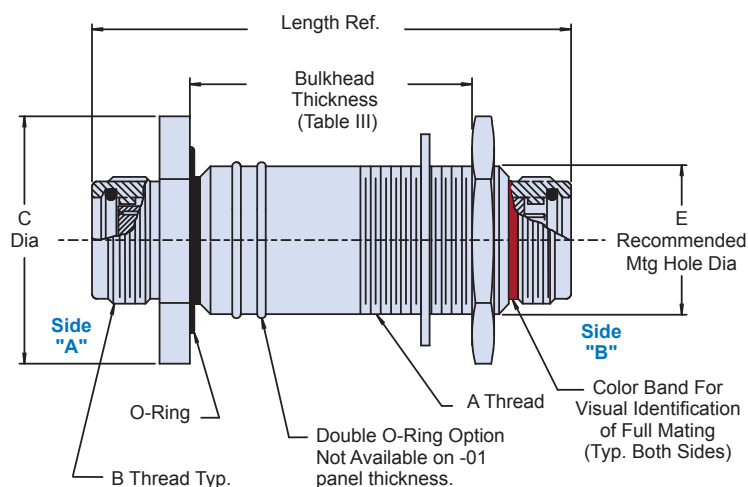
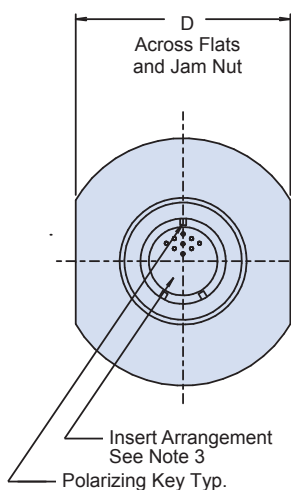
Shell Size	Adapter O-Ring	Flange O-Ring	Compression Flat Seal
10	2-014	2-019	G70653-10
12	2-016	2-021	G70653-12
14	2-018	2-022	G70653-14
16	2-020	2-024	G70653-16
18	2-022	2-025	G70653-18
20	2-024	2-027	G70653-20
22	2-026	2-029	G70653-22
24	2-028	2-030	G70653-24

227-039 and 227-040 High-Pressure Environmental/Hermetic Jam Nut Mount Bulkhead Feed-Through

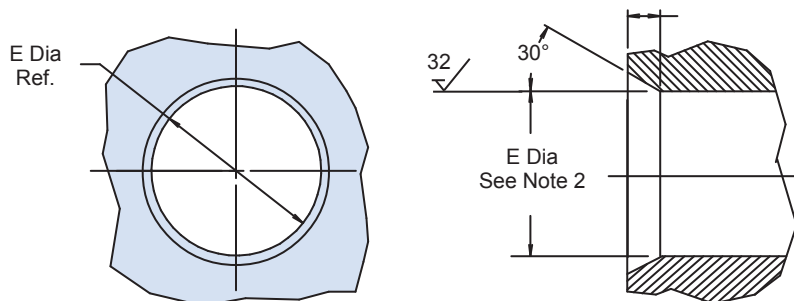
JAM NUT BULKHEAD FEED-THROUGH FOR PANEL THICKNESSES UP TO 8 INCHES



How To Order								
Sample Part Number	227-040	-24-61	S	N	P	N	03	D
Series and Shell Style	227-039 - Standard shell (mates with 220-06 plug) 227-040 - Scoop-Proof shell (mates with 220-016)							
Shell Size - Insert Arrangement	See page A-6							
Side A Contact Style	P = Pins S = Sockets H = Hermetic Pin							
Side A Polarization	N, 1, 2, 3, 4 See page A-6							
Side B Contact Style	P = Pin S = Socket H = Hermetic Pin							
Side B Polarization	N, 1, 2, 3, 4 See page A-6							
Bulkhead Thickness Dash No.	See Table III							
Double O-Ring Option	D (Omit for None)							



Direction of Pressure



Recommended Panel Cutout

227-039 and 227-040 High-Pressure Environmental/Hermetic Jam Nut Mount Bulkhead Feed-Through



Table II: Dimensions

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 (.254) -.000 (.0)

* Double "O" Ring Option +.002 (.05) -.000 (.0)

B

Table III: Panel Thickness

Dash No.	Panel Min	Panel Max	Length (Ref.)	
			Standard Shell Length	Scoop-Proof Shell Length
01	.03 (.8)	1.00 (25.4)	2.30 (58.4)	3.00 (76.2)
02	1.00 (25.4)	2.00 (50.8)	3.30 (83.8)	4.00 (101.6)
03	2.00 (50.8)	3.00 (76.2)	4.30 (109.2)	5.00 (127.0)
04	3.00 (76.2)	4.00 (101.6)	5.30 (134.6)	6.00 (152.4)
05	4.00 (101.6)	5.00 (127.0)	6.30 (160.0)	7.00 (177.8)
06	5.00 (127.0)	6.00 (152.4)	7.30 (185.4)	8.00 (203.2)
07	6.00 (152.4)	7.00 (177.8)	8.30 (210.8)	9.00 (228.6)
08	7.00 (177.8)	8.00 (203.2)	9.30 (236.2)	10.00 (254.0)

Notes

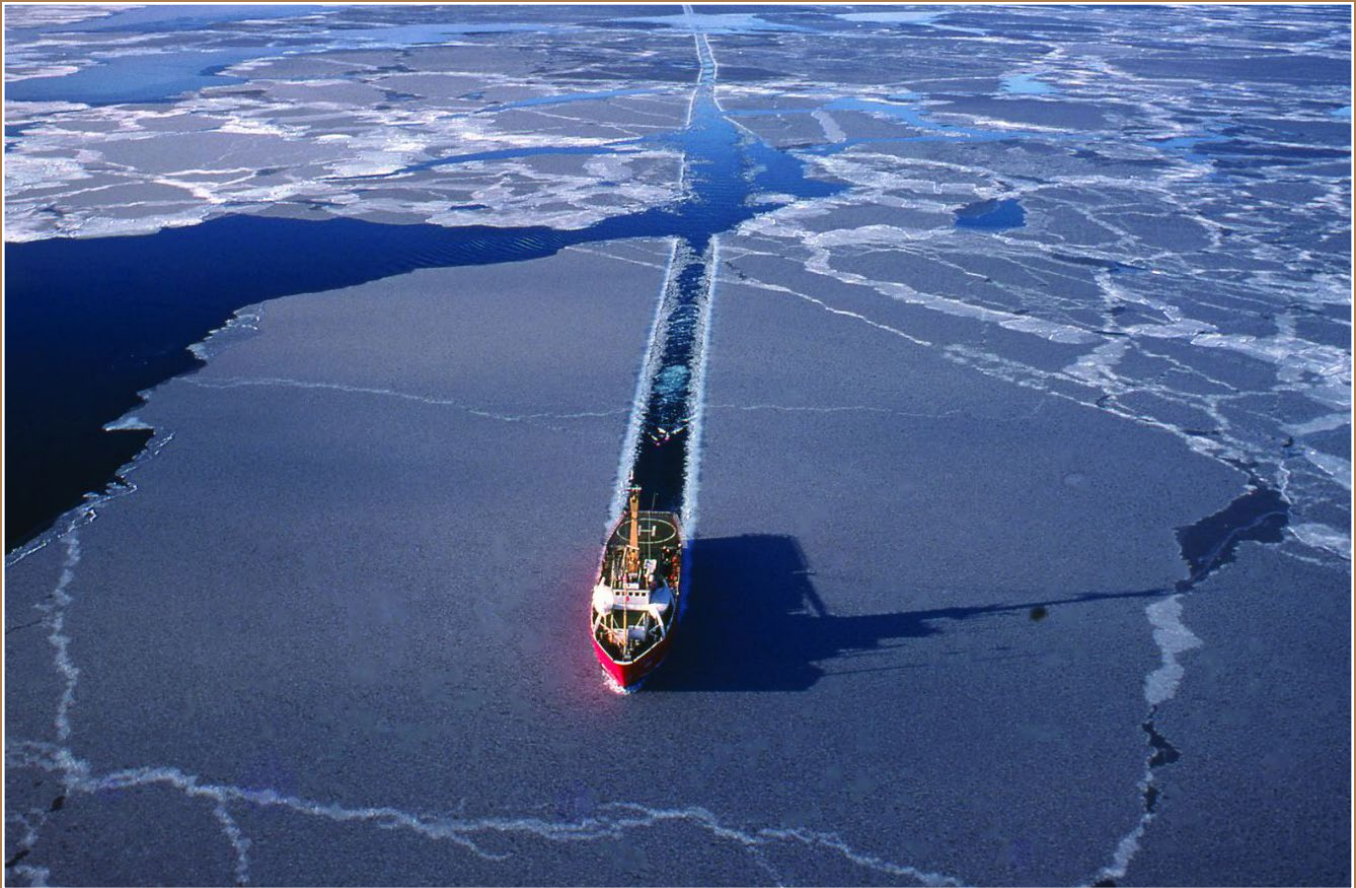
1. Power to a given contact on one end will result in power to contact directly opposite, regardless of identification letter.
2. For standard o-ring option, $\sqrt[32]{}$ does not apply and E dia s/b +.010
-.000
3. For pin/pin and skt/skt, symmetrical layouts only, consult factory for available insert arrangements.

SERIES 22

BACKSHELLS AND ACCESSORIES



*Complete harsh-environment
interconnect system protection*



The Glenair Series 22 Geo-Marine® full-spectrum product line includes a range of fixed or variable entry molding adapters, straight and 90° strain-relief backshells, and metal or composite covers for protection and sealing of Geo-Marine® plugs and receptacles. Glenair can also design and fabricate wired and overmolded Geo-Marine® cable assemblies for the ultimate harsh-environment sealing protection. Glenair Geo-Marine® accessories and backshells are in stock and available for immediate shipment. Contact the factory for further details to meet specific application needs.



Glenair, Inc.

1211 Air Way
Glendale, CA
91201-2497

818-247-6000
sales@glenair.com
www.glenair.com



Accessories for front and back-end protection—plus turnkey overmolded cordsets

Cable sealing backshells, strain-reliefs and protective covers extend the life of Geo-Marine® interconnect systems

Glenair Geo-Marine® 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 (SAE-AMS-QQ-S-763 AISI 300 Series) are passivated to ASTM A967. Harsh-environment overmolded cables are available in point-to-point or complex multibranch configurations, or pigtails terminated with non-hydroscopic potting compound.

Product Features

- Protective covers effectively seal unmated connectors up to 5000 psi and provide robust mechanical protection to connector contacts and threads
- Turnkey overmolded cordsets for complete high-pressure, harsh-environment interconnect protection
- Passivated stainless steel, aluminum, and composite thermoplastic accessories available
- Environmental and strain-relief backshells in straight and 90° versions

Quick Selection Guide

Part No.	Description	Page
290-011	Fixed SST molding adapter	C-2
290-012	Variable entry SST molding adapter	C-2
290-003	Straight or 90° Strain-relief backshell	C-4
290-004	Straight or 90° Environmental Strain Relief backshell	C-4
297W-003	EMI/RFI Strain Relief Backshell	C-6
290-009	Metal shell protective plug cover	C-8
290-010	Metal shell protective receptacle cover	C-9
290-016	Metal shell protective scoop-proof plug cover	C-10
667-011	Composite shell protective plug cover	C-14
667-012	Composite shell protective receptacle cover	C-14



290-011 and 290-012 Stainless Steel Molding Adapters

STAINLESS STEEL MOLDING ADAPTERS, STANDARD OR WITH OPTIONAL CABLE ENTRY DIAMETERS



How To Order		
Sample Part Number	290WS011	-18
Basic Number	290WS011	
Shell Size	See Table I	



How To Order		
Sample Part Number	290WS012	-18 12
Basic Number	290WS012	
Shell Size	See Table II	
Cable Entry Size	See Table II	

Tips

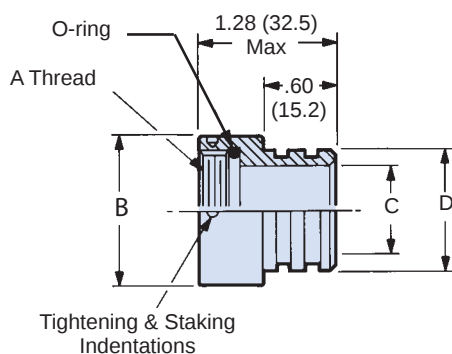
To select the appropriate molding adapter, consider the following basic suggestions to ensure a high integrity, quality molded termination:

- 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.

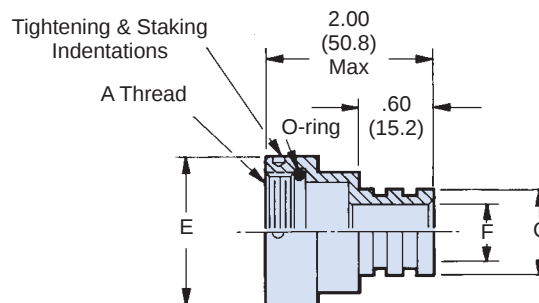
Notes

1. Prior to use, lubricate O-rings with high grade silicone lubricant (Molykote M55 or equivalent).
2. Material:
Adapter - stainless steel.
O-ring - nitrile

290WS011 STANDARD



290WS012 OPTIONAL CABLE ENTRY DIAMETERS



290-011 and 290-012 Stainless Steel Molding Adapters



Table I: 290WS011 Fixed Entry Dimensions

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)

Table II: 290WS012 Variable Entry Dimensions

Shell Size	A Thread Class 2B	E Dia Max	Max Entry	F Dia	G Dia
10	5/8 - 24 UNEF	.855 (21.7)		.430 (10.9)	.670 (17.0)
12	3/4 - 20 UNEF	.965 (24.5)	12	.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)	16	.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)	20	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)	24	1.255 (31.9)	1.510 (38.4)

Table IV:
Torque Values

Entry No.	Torque ± 5 In. Lbs.
10	80
12	100
14	120
16	120
18	140
20	140
22	140
24	150

Table V: 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.

Instructions for using cable molding adapters

1. Slide 290WS011/012 adapter over cable
2. Prepare cable and wires
3. If using shrink sleeves, slide them over wire insulation and solder terminated wires to solder cup contacts; slide shrink sleeves to correct position and apply recommended heat.
4. Slide 290WS011/012 adapter and attach hand-tight to plug connector.
5. Use Plug Holding Tool (P/N 600-005) along with Hand Held Torque Wrench (P/N 600-076) and Spanner Wrench (P/N 600-171) to tighten to recommended torque value.

Please note that the "tightening/staking indentations" are on the 290WS011/012 Adapter, NOT on the Marine Bronze Coupling Nut. The "holes" in the coupling nut retain the spring for the anti-decoupling feature of the cable plug.

The TG70 Strap Wrench and the 600-076 Torque Wrench should be utilized to properly torque the cable/plug assembly to the appropriate receptacle

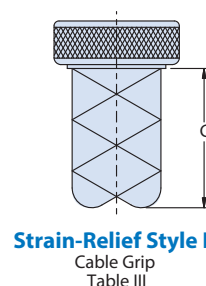
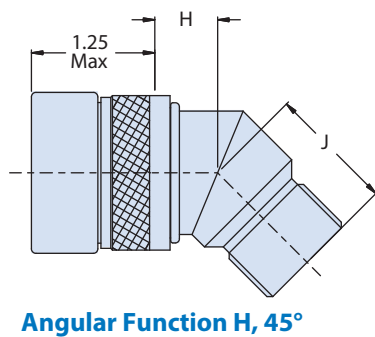
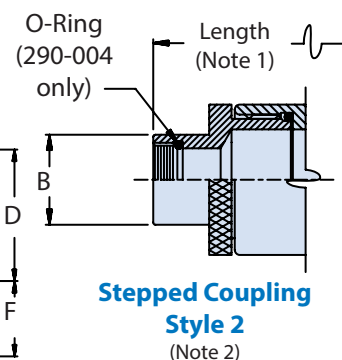
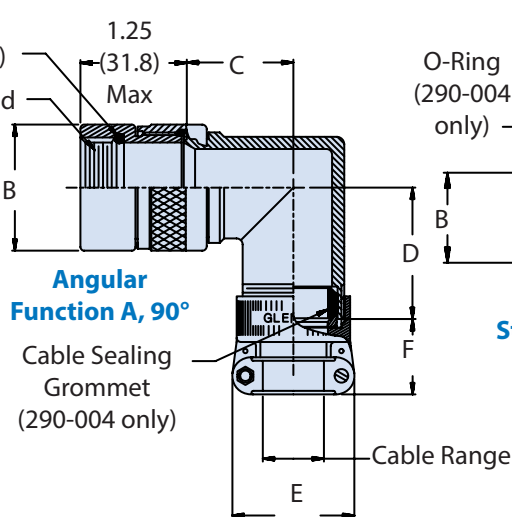
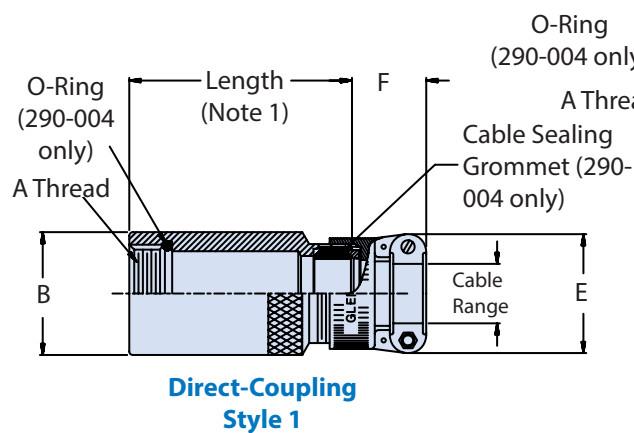


290-003 and 290-004 Strain-Relief Clamps and Environmental Backshells

90°, 45° OR STRAIGHT ENVIRONMENTAL BACKSHELL AND/OR CABLE CLAMP



How To Order									
Sample Part Number	290	W	A	003	NF	16	10	H	6
Product Series	290								
Connector Designator	W								
Angular Function	A = 90° H = 45° S = Straight								
Basic Part Number	003 = Strain Relief 004 = Environmental Seal/Strain Relief								
Material/Finish	B, G, M, GB, NF, Z1 See Table IV,								
Shell Size	10, 12, 14, 16, 18, 20, 22, 24, 28 See Table I								
Cable Entry Dash No.	04, 06, 08, 10, 12, 16, 18, 20, 24, 28, 32 See Table II								
Strain Relief Style	H = Cable Clamp, Table II K = Cable Grip, Table III								
Length (S Only)	1/2 inch Increments, e.g. 6 = 3.0 inches; See Note 2								



290-003 and 290-004 Strain-Relief Clamps and Environmental Backshells



Table I: Connector Mating Dimensions

Shell Size	A Thread Class 2B	B Dia Max
10	5/8-24 UNEF	0.781 (19.8)
12	3/4-20 UNEF	0.906 (23.0)
14	7/8-20 UNEF	1.031 (26.2)
16	1-20 UNEF	1.156 (29.4)
18	1 1/8-16 UN	1.281 (32.5)
20	1 1/4-16 UN	1.406 (35.7)
22	1 3/8-16 UN	1.531 (38.9)
24	1 1/2-16 UN	1.656 (42.1)
28	1 5/8-18 UNEF	1.781 (45.2)

Table II: Backshell and Style H Dimension

Dash No.	C Max	D Max	E Max	F Max	H Max	J Max	Cable Entry	
							Min	Max
04	0.94 (23.9)	1.16 (29.5)	0.957 (24.3)	0.780 (19.8)	0.74 (18.8)	0.95 (24.1)	0.125 (3.2)	0.312 (7.9)
06	0.98 (24.9)	1.22 (31.0)	1.145 (29.1)	0.780 (19.8)	0.76 (19.3)	0.98 (24.9)	0.250 (6.4)	0.437 (11.1)
08	1.03 (26.2)	1.25 (31.8)	1.332 (33.8)	0.780 (19.8)	0.78 (19.8)	1.00 (25.4)	0.312 (7.9)	0.562 (14.3)
10	1.09 (27.7)	1.32 (33.5)	1.332 (33.8)	0.780 (19.8)	0.80 (20.3)	1.03 (26.2)	0.350 (8.9)	0.625 (15.9)
12	1.12 (28.4)	1.36 (34.5)	1.551 (39.4)	0.811 (20.6)	0.82 (20.8)	1.05 (26.7)	0.500 (12.7)	0.750 (19.1)
16	1.25 (31.8)	1.45 (36.8)	1.770 (45.0)	0.905 (23.0)	0.87 (22.1)	1.09 (27.7)	0.625 (15.9)	0.937 (23.8)
20	1.41 (35.8)	1.65 (41.9)	2.113 (53.7)	1.092 (27.7)	1.14 (29.0)	1.35 (34.3)	0.875 (22.2)	1.250 (31.8)
24	1.41 (35.8)	1.65 (41.9)	2.363 (60.0)	1.124 (28.5)	1.14 (29.0)	1.35 (34.3)	1.000 (25.4)	1.375 (34.9)
28	1.60 (40.6)	1.88 (47.8)	2.770 (70.4)	1.399 (35.5)	1.27 (32.3)	1.43 (36.3)	1.250 (31.8)	1.625 (41.3)
32	1.60 (40.6)	1.88 (47.8)	3.020 (76.7)	1.399 (35.5)	1.27 (32.3)	1.43 (36.3)	1.437 (36.5)	1.875 (47.6)

Table III: Style K Dimensions

Dash No	G Length Ref	Grip Range	
		Min	Max
03	2.12 (53.8)	0.180 (4.6)	0.210 (5.3)
04	2.75 (69.9)	0.210 (5.3)	0.310 (7.9)
06	4.00 (101.6)	0.310 (7.9)	0.438 (11.1)
08	4.12 (104.6)	0.438 (11.1)	0.500 (12.7)
10	4.37 (111.0)	0.500 (12.7)	0.625 (15.9)
12	6.00 (152.4)	0.625 (15.9)	0.750 (19.1)
14	5.00 (127.0)	0.750 (19.1)	0.875 (22.2)
16	6.00 (152.4)	0.875 (22.2)	1.000 (25.4)
20	6.25 (158.8)	1.000 (25.4)	1.250 (31.8)
24	7.25 (184.2)	1.125 (28.6)	1.375 (34.9)

Table IV: Finish

Sym	Finish Description
B	Cadmium Plate/Olive Drab
G	Hard Coat, Mil-A-8625 Color Gray
M	Electroless Nickel
N	Cadmium Plate/Olive Drab Over Nickel Plate
GB	Hard Coat, Mil-A-8625 Color Black
NF	Cad/O. D. Over Electroless Nickel (1000 Hour Salt Spray)
Z1	Stainless Steel Material Passivate Per QQ-P-35

Notes

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Standard minimum length for Style I is 1.50 Inch, for Style II is 2.00 Inches. For shorter length, consult factory. Note: applies to Sym S, straight, only.
3. When cable diameter exceeds inside diameter or connector shell, Style II will be supplied.
4. Glenair 600 series backshell assembly tools are recommended for assembly and installation.
5. Material/finish:
Elbows, adapter, coupling & gland nuts, clamp - Al alloy or CRES/see Table II.
Grip, hardware - CRES/passivate.



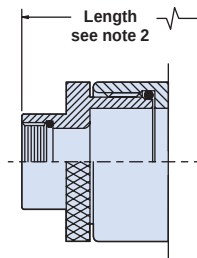
297W-003

EMI/RFI Strain Relief Backshell

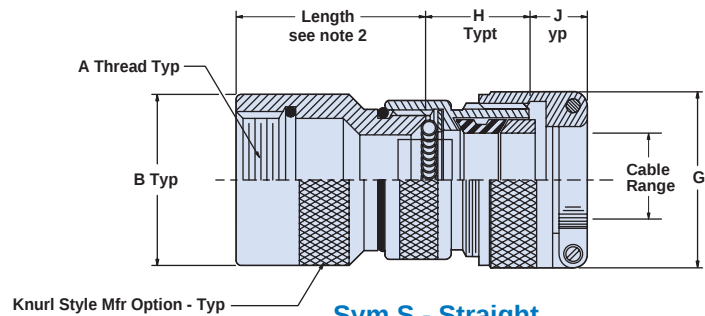
Cable Sealing for Geo-Marine® Connectors

ENVIRONMENTAL 45°, 90° AND STRAIGHT STRAIN RELIEF BACKSHELLS

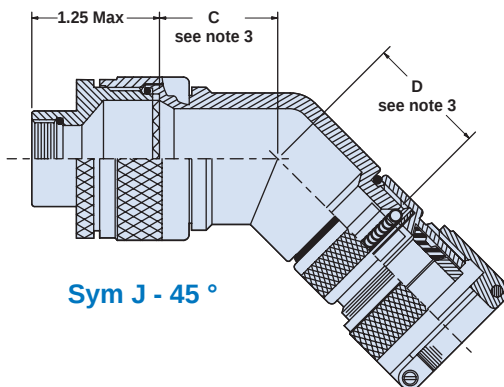
How To Order							
Sample Part Number	297W	S	003	16	10	D	6
Product Series and Connector Designator	297W						
Angular Function	H = 45° J = 90° S = Straight						
Basic Number	003						
Shell Size	See Table I						
Cable Entry Dash No.	See Table II						
Gland Nut	D = Gland Nut Omit for Clamp, Substitute Dash						
Length	1/2 Inch Increments; E.G. 6 = 3 Inches See Note 2 Length "F Dim" for 90A in 1/2 Inch Increments Length "D Dim" for 45A in 1/2 Inch Increments Omit for Standard Length D & F on 45A and 90A Assembly						



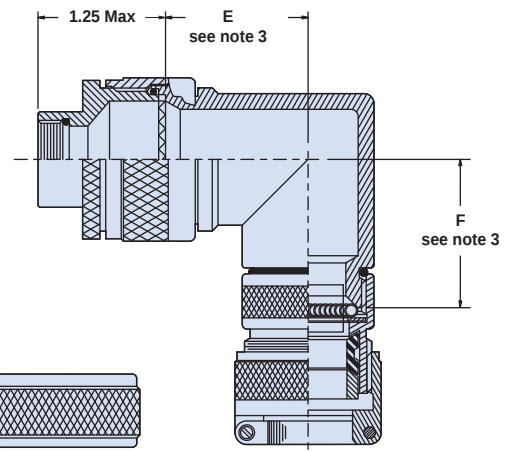
Syle II
see note 3



Sym S - Straight



Sym J - 45°



Sym D - Gland Nut

Sym J - 90°

297W-003
EMI/RFI Strain Relief Backshell
Cable Sealing for Geo-Marine® Connectors



Table I: Dimensions

Shell Size	A Thread Class 2B	B Max		C Max		D (Standard) Max		E Max		F (Standard) Max	
10	5/8-24 UNEF	.781	(19.8)	.688	(17.5)	.86	(21.8)	.87	(22.1)	1.04	(26.4)
12	3/4-20 UNEF	.906	(23.0)	.705	(17.9)	.89	(22.6)	.97	(24.6)	1.11	(28.2)
14	7/8-20 UNEF	1.031	(26.2)	.732	(18.6)	.91	(23.1)	.98	(24.9)	1.17	(29.7)
16	1-20 UNEF	1.156	(29.4)	.748	(19.0)	.92	(23.4)	1.02	(25.9)	1.19	(30.2)
18	1 1/8-16 UN	1.281	(32.5)	.773	(19.6)	.94	(23.9)	1.08	(27.4)	1.25	(31.8)
20	1 1/4-16 UN	1.406	(35.7)	.800	(20.3)	.98	(24.9)	1.14	(29.0)	1.33	(33.8)
22	1 3/8-16 UN	1.531	(38.9)	.823	(20.9)	1.01	(25.7)	1.20	(30.5)	1.40	(35.6)
24	1 1/2-16 UN	1.656	(42.1)	1.041	(26.4)	1.18	(30.0)	1.48	(37.6)	1.64	(41.7)

Table II: Cable Entry Dash Number Dimensions

Dash No	Cable Entry				G Max		H Ref		J Ref	
	Min		Max							
03	.156	(4.0)	.250	(6.4)	.844	(21.4)	1.03	(26.2)	.760	(19.3)
04	.188	(4.8)	.312	(7.9)	.906	(23.0)	1.03	(26.2)	.760	(19.3)
06	.281	(7.1)	.4381	(11.1)	1.903	(48.3)	1.03	(26.2)	.760	(19.3)
08	.344	(8.7)	.5621	(14.3)	1.187	(30.1)	1.03	(26.2)	.760	(19.3)
10	.375	(9.5)	.6251	(15.9)	1.281	(32.5)	1.19	(30.2)	.760	(19.3)
12	.438	(11.1)	.750	(19.1)	1.500	(38.1)	1.19	(30.2)	.760	(19.3)
16	.562	(14.3)	.938	(23.8)	1.719	(43.7)	1.19	(30.2)	1.073	(27.3)
20	.750	(19.1)	1.250	(31.8)	2.062	(52.4)	1.19	(30.2)	1.323	(33.6)
24	.781	(19.8)	1.375	(34.9)	2.312	(58.7)	1.19	(30.2)	1.323	(33.6)
28	.969	(24.6)	1.625	(41.3)	2.719	(69.1)	1.19	(30.2)	1.572	(39.9)
32	1.125	(28.6)	1.875	(47.6)	2.969	(75.4)	1.19	(30.2)	1.572	(39.9)
40	1.469	(37.3)	2.375	(60.3)	3.531	(89.7)	1.19	(30.2)	1.572	(39.9)

Notes

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Standard minimum length for Style I is 1.50 Inch, for Style II is 2.00 Inches. For shorter length, consult factory. Note: applies to Sym S, straight, only.
3. When maximum cable range exceeds inside diameter of connector shell:
 Sym S: Style II will be supplied.
 Sym H and Sym J: dimension C, D, E & F does not apply.
4. Glenair 600 series backshell assembly tools are recommended for assembly and installation.
5. Material/Finish:
 - Elbow, adapter, clamp, hardware, spring follower, coupling and gland nuts - CRES/pasivate
 - Washer - teflon/n.a.
 - Grommet, o-rings - silicone/n.a.



290-009 Metal Plug Protective Covers for Standard (Non-Scoop-Proof) Series 22 Connectors

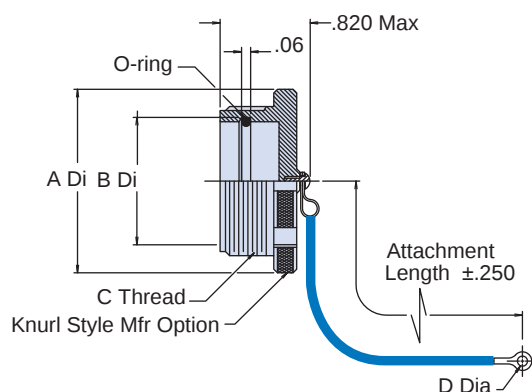


Table I: Dimensions

Shell Size	A Max	B Max	C Thread Class 2A	Piston O-Ring Size*
10	0.900 (22.9)	0.602 (15.3)	.750 -1P-.1L	2-014
12	1.025 (26.0)	0.727 (18.5)	.875 -1P-.1L	2-016
14	1.150 (29.2)	0.852 (21.6)	1.000 -1P-.1L	2-018
16	1.275 (32.4)	0.977 (24.8)	1.125 -1P-.1L	2-020
18	1.525 (38.7)	1.102 (28.0)	1.250 -1P-.1L	2-022
20	1.650 (41.9)	1.227 (31.2)	1.375 -1P-.1L	2-024
22	1.775 (45.1)	1.352 (34.3)	1.500 -1P-.1L	2-026
24	1.900 (48.3)	1.477 (37.5)	1.625 -1P-.1L	2-028

* Reference piston o-ring P/N when purchasing replacement rings

Table III: Attachment Type

Sym	Attachment	Sym	Attachment	Sym	Attachment
B	Bead chain, brass, nickel plated, with terminal	G	Bead chain, CRES, passivated, no terminal	T	Wire rope, no jacket, w/terminal
C	Link chain, brass, nickel plated, with clevis terminal	H	Wire rope, teflon jacket w/ terminal	K	Nylon rope
D	Bead chain, CRES, passivated, with terminal	N	Attachment omitted	S	#8 Sash chain, CRES, passivate
E	Link chain, CRES, passivated, with clevis terminal	R	Wire rope, pvc jacket w/terminal	U	Wire rope, polyurethane jacket, with terminal
F	Wire rope, nylon jacket w/terminal				

How To Order Plug Cover

Sample Part Number	290-009	S	18	03-	5
Series - Shell Style	290-009 = Standard Plug				
Attachment Type	See Table III				
Shell Size	See Table I				
Dash No.	See Table II or Table IV				
Attachment Length	5 = 5 inches				

Notes:

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Protective cover is capable of hydrostatic sealing pressures to 5000 PSI, when fully mated with counterpart plug.
3. Material/finish:
Cover, hardware & split ring - 300 series stainless steel/passivate
Wire rope - CRES, see Table III/passivate
O-ring - nitrile/n.a.

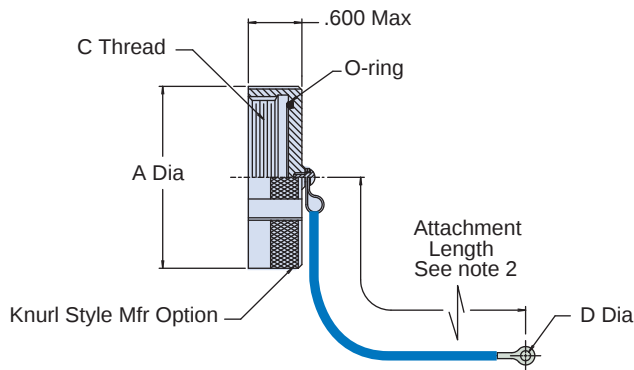
Table II: Solid Ring Dia.

Dash No	D Dia
01	0.125 (31.8)
02	0.140 (3.6)
03	0.167 (4.2)
04	0.182 (4.6)
05	0.191 (4.9)
06	0.197 (5.0)

Table IV: Split Ring Dia.

Dash No	E Dia	Dash No	E Dia
50	0.425 (10.8)	66	1.250 (31.8)
52	0.485 (12.3)	68	1.350 (34.3)
54	0.640 (16.3)	70	1.375 (34.9)
56	0.750 (19.1)	72	1.485 (37.7)
58	0.890 (22.6)	74	1.625 (41.3)
60	1.015 (25.8)	76	1.750 (44.5)
62	1.095 (27.8)	78	1.875 (47.6)
64	1.130 (28.7)	80	1.980 (50.3)
		82	2.060 (52.3)

290-010 Metal Receptacle Protective Covers for Standard (Non-Scoop-Proof) Series 22 Connectors



How To Order Receptacle Cover

Sample Part Number		290-010	S	18	03	-6
Series - Shell Style	290-010 = Scoop Proof					
Attachment Type	See Table III					
Shell Size	See Table I					
Dash No.	See Table II or Table IV					
Attachment Length	5 = 5 inches					

Notes:

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Length tolerance for link chain (e) and sash chain (s) is $\pm$ one (1) link, for all other attachments $\pm$.25.
3. Protective cover is capable of hydrostatic sealing pressures to 5000 PSI, when fully mated with counterpart plug.
4. Material/finish:
Cover, hardware & split ring - 300 series stainless steel/passivate
Attachment - see Table III/passivate
O-ring - nitrile/n.a.

Table I: Dimensions

Shell Size	A Max	B Max	C Thread Class 2B	Piston O-Ring Size*
10	0.900 (22.9)	0.430 (10.9)	.750 -1P-.1L	2-014
12	1.025 (26.0)	0.555 (14.1)	.875 -1P-.1L	2-016
14	1.150 (29.2)	0.680 (17.3)	1.000 -1P-.1L	2-018
16	1.275 (32.4)	0.805 (20.4)	1.125 -1P-.1L	2-020
18	1.525 (38.7)	0.930 (23.6)	1.250 -1P-.1L	2-022
20	1.650 (41.9)	1.055 (26.8)	1.375 -1P-.1L	2-024
22	1.775 (45.1)	1.180 (30.0)	1.500 -1P-.1L	2-026
24	1.900 (48.3)	1.305 (33.1)	1.625 -1P-.1L	2-028

* Reference piston o-ring P/N when purchasing replacement rings

Table III: Attachment Type

Sym	Attachment	Sym	Attachment	Sym	Attachment
B	Bead chain, brass, nickel plated, with terminal	G	Bead chain, CRES, passivated, no terminal	T	Wire rope, no jacket, w/terminal
C	Link chain, brass, nickel plated, with clevis terminal	H	Wire rope, teflon jacket w/ terminal	K	Nylon rope
D	Bead chain, CRES, passivated, with terminal	N	Attachment omitted	S	#8 Sash chain, CRES, passivate
E	Link chain, CRES, passivated, with clevis terminal	R	Wire rope, pvc jacket w/terminal	U	Wire rope, polyurethane jacket, with terminal
F	Wire rope, nylon jacket w/terminal				

Table II: Solid Ring Dia.

Dash No	D Dia
01	0.125 (3.2)
02	0.140 (3.6)
03	0.167 (4.2)
04	0.182 (4.6)
05	0.191 (4.9)
06	0.197 (5.0)
10	0.266 (6.8)

Table IV: Split Ring Dia.

Dash No	E Dia	Dash No	E Dia
50	0.425 (10.8)	72	1.485 (37.7)
52	0.485 (12.3)	74	1.625 (41.3)
54	0.640 (16.3)	76	1.750 (44.5)
56	0.750 (19.1)	78	1.875 (47.6)
58	0.890 (22.6)	80	1.980 (50.3)
60	1.015 (25.8)	82	2.060 (52.3)
62	1.095 (27.8)	84	2.235 (56.8)
64	1.130	86	2.310 (58.7)
66	1.250 (31.8)	88	2.475 (62.9)
68	1.350 (34.3)	90	2.655 (67.4)
70	1.375 (34.9)	92	2.810 (71.4)
		94	3.045 (77.3)



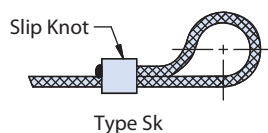
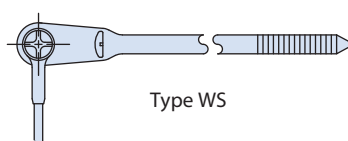
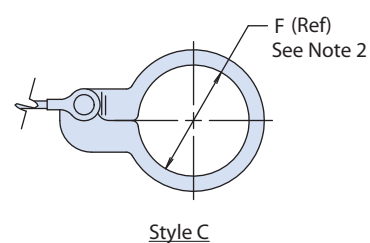
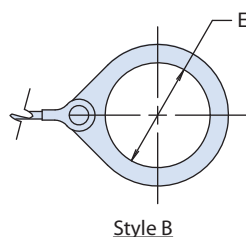
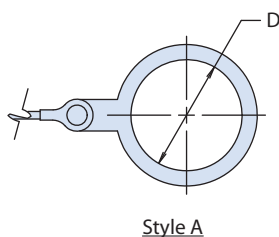
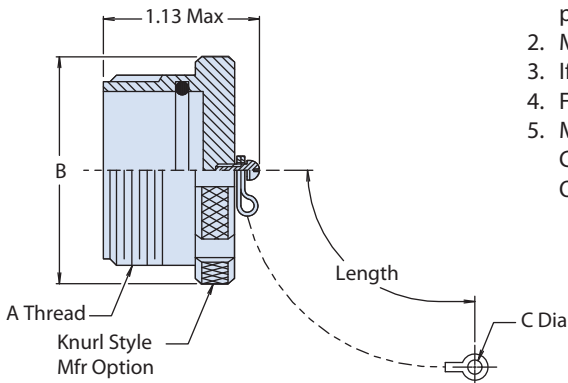
290-016 Metal Plug Protective Covers for Scoop-Proof Series 22 Connectors

METAL SHELL SCOOP-PROOF PLUG COVER

How To Order Receptacle Cover					
Sample Part Number	290-016	S	18	03-	6
Series - Shell Style	290-016 = Scoop Proof				
Attachment Type	See Table III				
Shell Size	See Table I				
Dash No.	See Table II, IV, V or VI, omit for Type SK				
Attachment Length	In Inches; $\pm .25$ for Rope, $\pm$ Link for Chain				

Notes:

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Max. diameter mandrel over which assembled ring will rotate freely.
3. If retaining ring is desired, use Tables IV & V (solid) or Table VI (split ring).
4. For terminal lug or type "WS", use Table II.
5. Material/finish:
Cover, attachment, clevis, hardware - CRES/passivate
O-ring - nitrile/n.a.



290-016

Metal Plug Protective Covers for Scoop-Proof Series 22 Connectors



Table I: Dimensions

Dash No	A Thread Class 2A	B Max
10	0.750 -.1P-.1L	0.900 (22.9)
12	0.875 -.1P-.1L	1.025 (26.0)
14	1.000 -.1P-.1L	1.150 (29.2)
16	1.125 -.1P-.1L	1.275 (32.4)
18	1.250 -.1P-.1L	1.525 (38.7)
20	1.375 -.1P-.1L	1.650 (41.9)
22	1.500 -.1P-.1L	1.775 (45.1)
24	1.625 -.1P-.1L	1.900 (48.3)

Table II: Split Ring Dimensions

Dash No.	C Dia.	
01	0.125	(3.2)
02	0.140	(3.6)
03	0.167	(4.2)
04	0.182	(4.6)
05	0.191	(4.9)
06	0.197	(5.0)
WS	With Strap	

Table III: Attachment Type

Sym	Attachment
B	Bead chain, brass, nickel plated, with terminal
C	Link chain, brass, nickel plated, with clevis terminal
D	Bead chain, CRES, passivated, with terminal
E	Link chain, CRES, passivated, with clevis terminal
F	Wire rope, nylon jacket w/ terminal
H	Wire rope, teflon jacket w/ terminal
K	Nylon rope
N	Attachment omitted
R	Wire rope, PVC jacket w/terminal
T	Wire rope, no jacket, w/terminal
S	#8 Sash chain, CRES, passivated
SK	Nylon rope, (black) with slip knot
U	Wire rope, polyurethane jacket with terminal

Table IV: Style A Solid Ring Dimensions

Dash No	D Dia ±.015	
095	0.312	(7.9)
100	0.391	(9.9)
101	0.516	(13.1)
102	0.583	(14.8)
103	0.641	(16.3)
104	0.708	(18.0)
105	0.766	(19.5)
205	0.788	(20.0)
106	0.896	(22.8)
206	0.907	(23.0)
107	1.016	(25.8)
207	1.025	(26.0)
108	1.141	(29.0)
308	1.188	(30.2)
208	1.203	(30.6)
109	1.266	(32.2)
209	1.312	(33.3)
110	1.391	(35.3)
210	1.438	(36.5)
111	1.521	(38.6)
211	1.536	(39.0)
112	1.641	(41.7)
113	1.766	(44.9)
213	1.812	(46.0)
114	1.891	(48.0)
214	1.938	(49.2)
115	2.078	(52.8)
116	2.406	(61.1)
117	2.510	(63.8)

Table V: Style B Solid Ring Dimensions

Dash No	E Dia ±.015	
08	0.468	(11.9)
10	0.593	(15.1)
12	0.718	(18.2)
13	0.765	(19.4)
14	0.844	(21.4)
15	0.890	(22.6)
16	0.968	(24.6)
17	1.015	(25.8)
18	1.093	(27.8)
19	1.140	(29.0)
20	1.203	(30.6)
21	1.265	(32.1)
22	1.343	(34.1)
23	1.453	(36.9)
24	1.484	(37.7)
25	1.577	(40.1)
27	1.640	(41.7)
28	1.687	(42.8)
29	1.765	(44.8)
30	1.890	(48.0)
31	1.953	(49.6)
32	1.968	(50.0)
33	2.077	(52.8)
35	2.140	(54.4)
36	2.187	(55.5)
40	2.406	(61.1)
44	2.656	(67.5)
48	3.031	(77.0)

Table VI: Style C Ring Dimensions

Dash No	F Dia	
50	0.425	(10.8)
52	0.485	(12.3)
54	0.640	(16.3)
56	0.750	(19.1)
58	0.890	(22.6)
60	1.015	(25.8)
62	1.095	(27.8)
64	1.130	(28.7)
66	1.250	(31.8)
68	1.350	(34.3)
70	1.375	(34.9)
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)

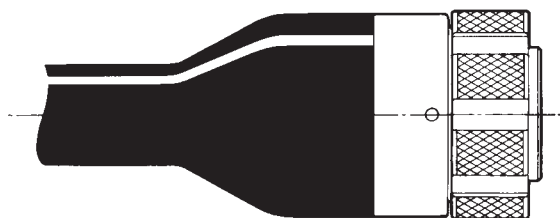


Custom Overmolded Geo-Marine® Cable Assemblies

All Series 22 connectors can be supplied complete with molded cable terminations or open wire bundles to meet specific application requirements. **Custom Overmolded 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 user's 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

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

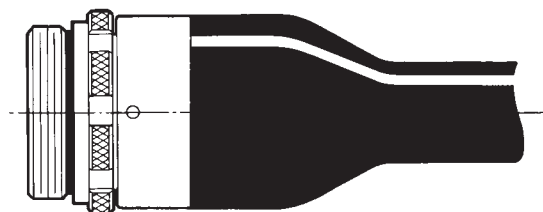
- Neoprene
- Polyurethane
- Viton

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

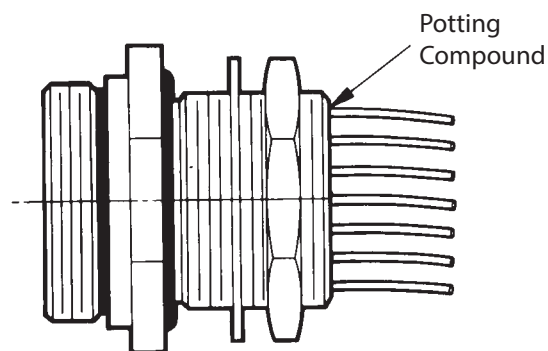
Additional custom features include items such as EMI shielding, Kevlar stress members, multiple breakouts, as well as open wire bundles or "pigtails" which are terminated with a non-hydroscopic potting compound.

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

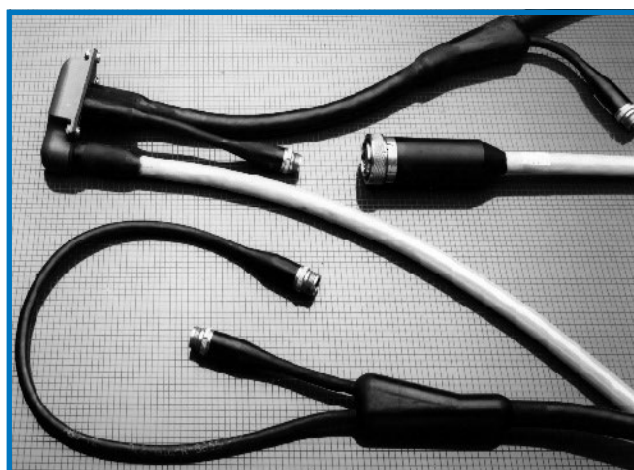
Contact Glenair's ABC Division for further information on complete cable assemblies using the Series 22 Geo-Marine® connectors.



CABLE RECEPTACLE WITH MOLDED CABLE



BULKHEAD RECEPTACLE WITH PIGTAILS



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.

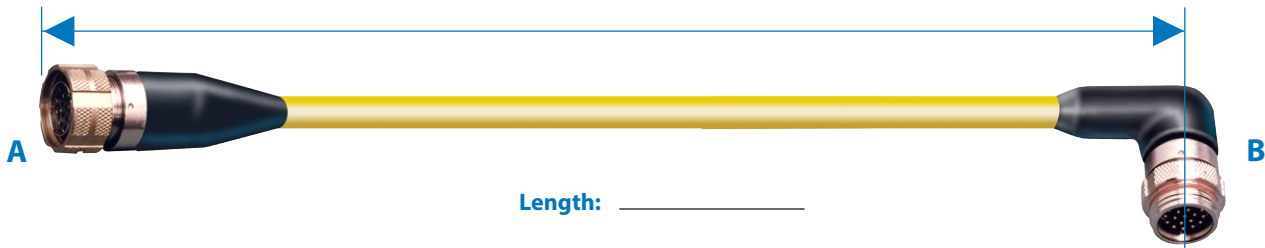
**Custom Overmolded Geo-Marine®
Cable Assemblies
Application Worksheet**



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 _____



Length: _____

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 B:

Gender: ☐ Pin ☐ Socket
Type: ☐ 06 ☐ 16 ☐ 01 ☐ 11
Class: ☐ Environmental ☐ Hermetic
Polarization: ☐ N ☐ 1 ☐ 2
☐ 3 ☐ 4

Shell Size and Insert Arrangements:

_____ - _____ (See Section A)

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 Section A)

Cable Exit Angle: ☐ Straight ☐ 45° ☐ 90°

Dust Cover: ☐ Yes ☐ No

Marking Instructions: _____

SERIES 22



UNIQUE APPLICATION CONNECTORS

Special flange designs and custom configurations



Glenair has provided solutions to the toughest environmental interconnect challenges for decades. Put Glenair's experience to work for you—our engineers are ready to design high-pressure, harsh-environment interconnect components to fit even the most challenging and unusual applications. From space-saving special flange designs to unique coupling-nut configurations, these pages demonstrate some of Glenair's design capabilities.

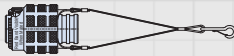
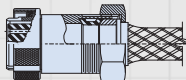
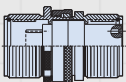
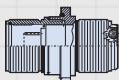
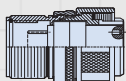
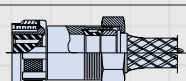
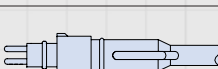


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Geo-Marine® Special Purpose, Custom Application Connector Capabilities



Quick Selection Guide

	High-Pressure Environmental Plug with Quick Disconnect Lanyard 227-015	D-2
	High-Pressure Environmental Cable Plug with Wire Mesh Cable Grip 227-158	D-3
	High-Pressure Environmental In-Line Gender Changer 227-152	D-5
	High-Pressure Environmental Square Flange Wall-Mount Gender Changer 940-016	D-6
	High-Pressure Environmental Sav-Con® Connector Saver (Non Scoop-Proof) 940-014	D-8
	High-Pressure Environmental Jam Nut Mount Sav-Con® Connector Saver 940-015	D-9
	High-Pressure Environmental Sav-Con® Connector Saver (Scoop-Proof) 940-025	D-10
	Hermetic Receptacle With Triangular Flange Mount 227-162H	D-12
	High-Pressure Environmental Box Mount Plug with Circular Flange 227-163	D-13
	Stainless Steel Harsh Environment Connector Receptacle Assembly 257-003	D-15
	Stainless Steel Harsh Environment Receptacle Assembly with PCB Contacts 257-005	D-18
	Stainless Steel Harsh Environment Connector Receptacle Assembly 257-007	D-19
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	Flange Mount and Weld Mount Stainless Steel Connector Receptacle Assemblies 257-163 and 257-164	D-23
	Stainless Steel Plug and Receptacle Assemblies 257-165 and 257-166	D-25
	10KPSI Series Underwater Interconnect Assemblies	D-27



227-015 High-Pressure Environmental Plug with Quick-Disconnect Lanyard

**MATES
WITH
SERIES
22**

How To Order						
Sample Part Number	227-015	-24	-128	P	N	6
Series No.	227-015					
Shell Size	-24					
Insert Arrangement	128 (See Note 3)					
Contact Style	P = Pin, S = Socket					
Alternate Key Position	N, 1, 2, 3 or 4					
Lanyard Length	In Inches; e.g. 6 = 6 inches					

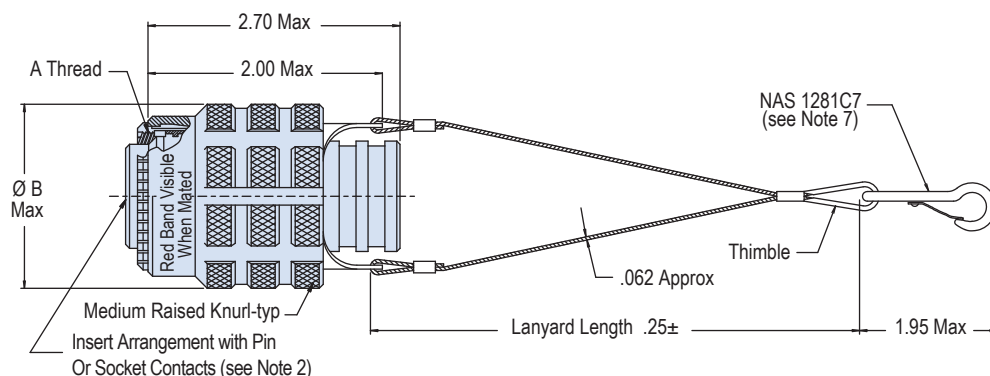


Table I: Dimensions		
Shell Size	A Thread	B Dia
10	.750-.1P-.1L	1.000 (25.40)
12	.875-.1P-.1L	1.125 (28.58)
14	1.000-.1P-.1L	1.250 (31.75)
16	1.125-.1P-.1L	1.375 (34.93)
18	1.250-.1P-.1L	1.594 (40.49)
20	1.375-.1P-.1L	1.719 (43.66)
22	1.500-.1P-.1L	1.894 (48.11)
24	1.625-.1P-.1L	1.969 (50.01)

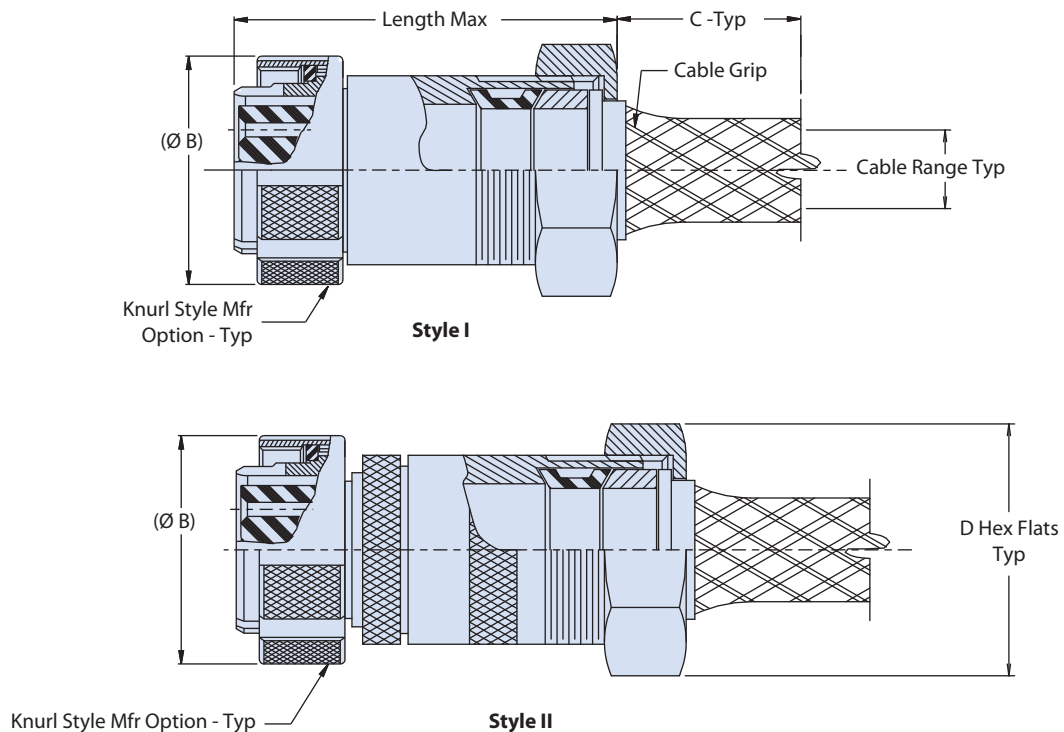
Notes:

- Assembly identified with manufactures name and P/N, space permitting.
- 227-015 Connector is designed to mate with Glenair 220 series connector receptacles.
- For available insert arrangement, see Glenair Geo-Marine® catalog or consult factory.
- Performance capabilities:
Current rating: see Glenair Geo-Marine® catalog.
- For cable or wire assemblies, consult factory.
- Material/finish:
Coupling nut, adapter, barrel, lanyard ferrule, bushing, ring, coil spring, lanyard - stainless/passivate.
Contacts - copper alloy/gold plate
Inner sleeve - nickel aluminum bronze/degreased
Insulator - high grade rigid dielectric/N.A.
Retaining springs - phos. bronze/n.a.
Thimble - per NAS AN100C3
Hook - per NAS 1281C7
O-ring - nitrile/N.A.
Flat seal - fluorosilicone/N.A.
- Snap hook will accept a diameter of .19 and is included in the open position

227-158 High-Pressure Environmental Cable Plug with Wire Mesh Cable Grip



How To Order							
Sample Part Number	227-158	24	-61	S	N	-CG	12
Basic No.	227-158						
Shell Size	See Table II						
Insert Arrangement Dash No.	See Table I						
Contact Style	P = Pin, S = Socket						
Alternate Key Position	N, 1, 2, 3 or 4						
Cable Grip Designator	Supplied with wire mesh cable grip. Omit for None						
Cable Entry Dash Number	03, 04, 06, 08, 10, 12, 14, 16	See Table III					



Notes:

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Performance capabilities:
Current rating:
 - Size 12 contact - Environmental: 23 amps
 - Size 16 contact - Environmental: 13 amps
 - Size 20 contact - Environmental: 7.5 amps
 - Size 22 contact - Environmental: 5 amps
Hydrostatic pressure rating: 5000 PSI, fully mated.
Insulation resistance: 1000 megaohms min at 500 VDC

Note: electrical safety limits to be set by user. Peak voltages, switching surges, transients, etc., should be used to determine safe applications.

3. Material/finish:
Barrel - 316L stainless steel/passivate
Contacts - copper alloy/gold plate
Coupling nut - nickel-aluminum-bronze/degrease
Hardware - 300 series stainless steel/passivate
Insulator - high grade rigid dielectric/n.a.
Seals - fluorosilicone



227-158 High-Pressure Environmental Cable Plug with Wire Mesh Cable Grip

Table I: Insert Arrangements

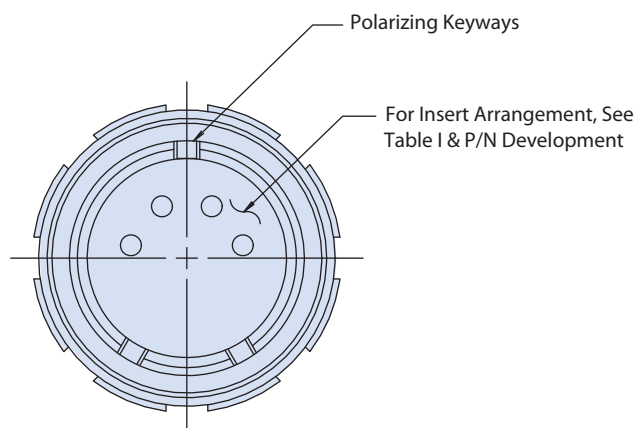
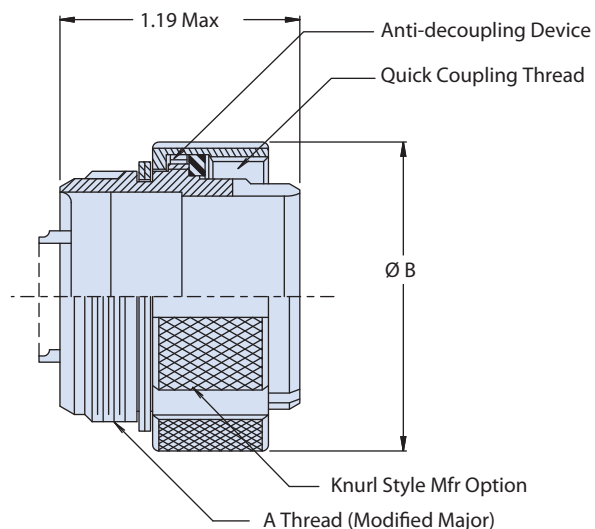
Shell Size	Insert Arrangement Dash No	Contact Size and Quantity			
		22	20	16	12
10	-2			2	
	-4		6	4	
	-6				
	-13	13			
12	-8		10	8	
	-10				
	-22	22			
14	-8A	4			4
	-12		19	12	
	-19				
	-37	37			
16	-19		26	19	
	-26				
	-55	55			
18	-11			11	
	-22		32	22	
	-32				
	-66	66			
20	30		41	30	
	-41				
	-79	79			
22	-38			38	
	-50	48	55		2
	-55				
	-85	85			
24	-24			16	16
	-48		61	48	
	-61				
	-100	100			

Table II: Dimensions

Shell Size	A Thread Class 2A	B Dia Max	Max (Style 1) Dash Numbers	Length Max
08	1/2-28 UNEF	.875	03	3.00
10	5/8-24UNEF	1.000	04	3.00
12	3/4-20UNEF	1.125	08	3.00
14	7/8-20UNEF	1.250	10	3.00
16	1-20UNEF	1.375	12	3.00
18	1 1/8-16UN	1.594	12	3.50
20	1 1/4-16UN	1.719	14	3.50
22	1 3/8-16UN	1.894	16	3.50
24	1 1/2-16UN	1.969	16	3.50

Table III: Cable Entry Dash Number

Dash No	C Ref	Cable Range		D Flats
		Min	Max	
03	2.12	.180	.210	.75
04	2.75	.210	.312	1.00
06	4.00	.310	.438	1.00
08	4.12	.438	.500	1.00
10	4.37	.500	.625	1.12
12	6.00	.530	.750	1.50
14	5.00	.750	.875	1.75
16	6.00	.875	1.000	



227-152 High-Pressure Environmental In-Line Gender Changer



How To Order

Sample Part Number	227-152	Z1	16	-19	N
Series No.	227-152				
Finish Sym	Z1				
Shell Size	10, 12, 14, 16, 18, 20, 22, 24				
Insert Arrangement	See Table I				
Alternate Key Position	N, 1, 2, 3 or 4				

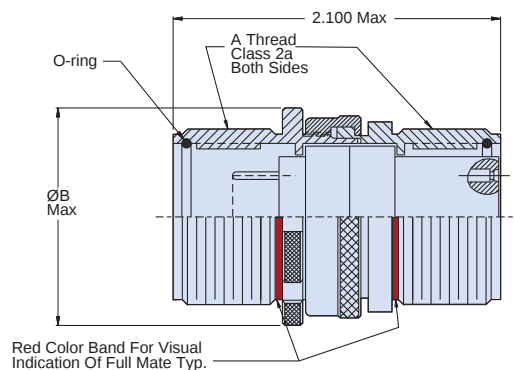
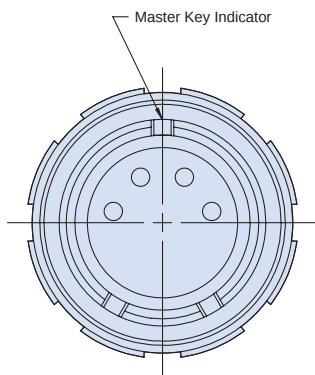
Table II: Dimensions

Shell Size	A Thread	B Dia
10	.750-.1P-.1L	.906
12	.875-.1P-.1L	1.031
14	1.000-.1P-.1L	1.156
16	1.125-.1P-.1L	1.281
18	1.250-.1P-.1L	1.531
20	1.375-.1P-.1L	1.656
22	1.500-.1P-.1L	1.781
24	1.625-.1P-.1L	1.906

Notes:

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Glenair 227-152 connector receptacle is designed to mate with Glenair 220-16 series Geo-Marine® connectors. (scoop-proof)
3. Material/Finish:
 - Shell, lock nut - CRES/passivate.
 - Contacts - copper alloy/gold plate.
 - Insulators - high grade rigid dielectric/n.a.
 - Interface seal - fluorosilicone/n.a.
 - O-rings - nitrile/n.a.

**MATES
WITH 220-16**





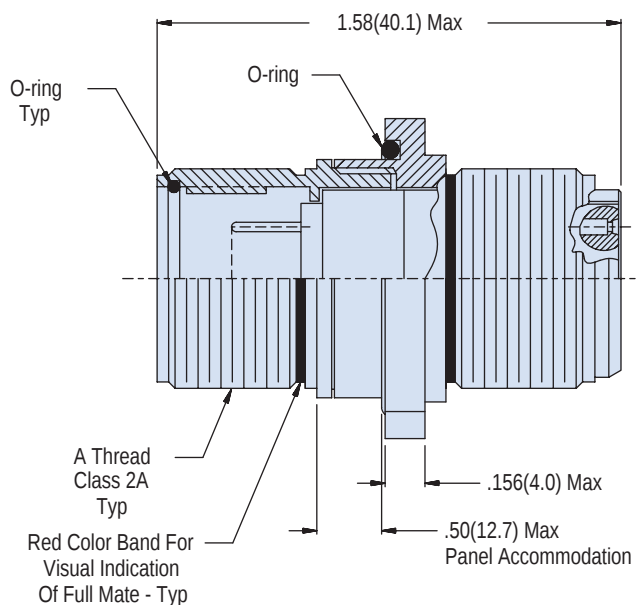
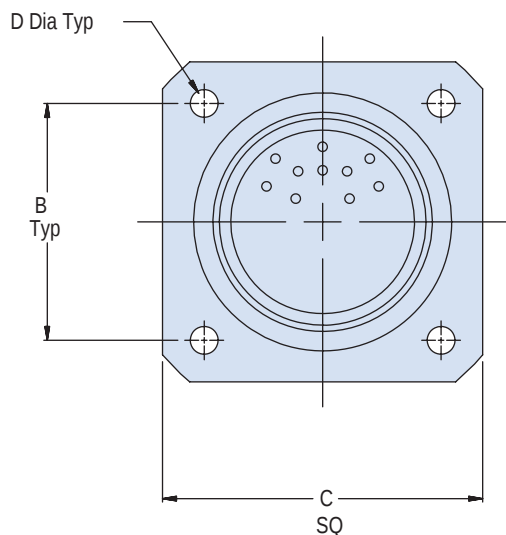
940-016 High-Pressure Environmental Square Flange Wall-Mount Gender Changer

How To Order							
Sample Part Number		940-016	M	24	-61	S	N
Series No.	940-016						
Finish Symbol	B, J, M, N, NF, T, Z1		See Table III				
Shell Size	10, 12, 14, 16, 18, 20, 22, 24		See Table II				
Insert Arrangement	See Table I						
Contact Style	P = Pins, Panel Side PP = Pin to Pin Config.		S = Sockets Panel Side SS = Socket to Socket Config.				
Alternate Key Position	N, 1, 2, 3 or 4						

Notes

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Glenair 940-016 connector saver is designed to mate with Glenair 22 - series Geo-Marine® connectors.
3. Material/Finish:
 Barrel, shell, coupling & jam nut - see Table II.
 Contacts - copper alloy/gold plate.
 Insulators - high grade rigid dielectric/n.a.
 O-ring & seals - silicone/n.a.

**MATES
WITH
SERIES
22**



940-016 High-Pressure Environmental Square Flange Wall-Mount Gender Changer



Geo-Marine®
Custom Applications

Table I: Contact Arrangements

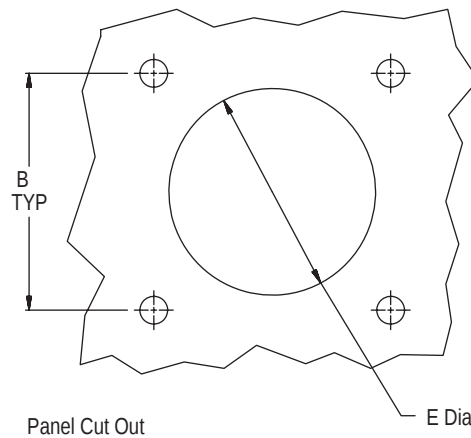
Shell Size	Insert Arrangement Dash No	Contact Size and Quantity			
		22	20	16	12
10	-2			2	
	-4		6	4	
	-6				
	-13	13			
12	-8		10	8	
	-10				
	-22	22			
14	-12		19	12	
	-19				
	-37	37			
16	-19		26	19	
	-26				
	-55	55			
18	-11			11	
	-22		32	22	
	-32				
	-66	66			
20	30		41	30	
	-41				
	-79	79			
22	-38			38	
	-50	48	55		2
	-55				
	-85	85			
24	-24			16	16
	-48		61	48	
	-61				
	-100	100			

Table II: Dimensions

Shell Size	A Thread	B Dim	C Dim	D	E
10	.750-.1P-.1L	.938(23.8)	1.188(30.2)	.125(3.2)	.890(22.6)
12	.875-.1P-.1L	1.062(27.0)	1.312(33.3)	.125(3.2)	1.015(25.8)
14	1.000-.1P-.1L	1.188(30.2)	1.438(36.5)	.125(3.2)	1.140(29.0)
16	1.125-.1P-.1L	1.250(31.8)	1.562(39.7)	.125(3.2)	1.265(32.1)
18	1.250-.1P-.1L	1.375(34.9)	1.750(44.5)	.125(3.2)	1.390(32.5)
20	1.375-.1P-.1L	1.500(38.1)	1.875(47.6)	.125(3.2)	1.515(38.5)
22	1.500-.1P-.1L	1.625(41.3)	2.000(50.8)	.125(3.2)	1.640(41.7)
24	1.625-.1P-.1L	1.750(44.5)	2.125(54.0)	.156(4.0)	1.765(44.8)

Table III: Material and Finish

SYM	Finish Description
B	Cadmium plate/olive drab
J	Gold iridite over cadmium plate over nickel
M	Electroless nickel
N	Cadmium plate/olive drab over nickel
NF	CAD/O. D. over electroless nickel (500 hour salt spray)
T	Cadmium plate/bright dip over nickel
Z1	Stainless steel, passivated



D



940-014 High-Pressure Environmental Sav-Con® Connector Saver (Non Scoop-Proof)

How To Order

Sample Part Number	940	-014	M	24	-61	S	N
Series No.	940						
Basic No.	014						
Finish Symbol	B, J, M, N, NF, T, Z1 See Table II						
Shell Size	10, 12, 14, 16, 18, 20, 22, 24 See Table III						
Insert Arrangement	See Table I						
Contact Style	P = Pins, Plug Side S = Sockets, Plug Side						
Alternate Key Position	N, 1, 2, 3 or 4						

Notes

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Glenair 940-014 connector saver is designed to mate with Glenair 220-06 series Geo-Marine® connectors. (Non-scoop-proof)
3. Material/finish:
Barrel, shell, coupling nuts - see Table II.
Contacts - copper alloy/gold plate.
Insulators - high grade rigid dielectric/N.A.
O-ring & seals - silicone/N.A.

**MATES
WITH
220-006**

other end - any
geomarine non
scoop proof recpt

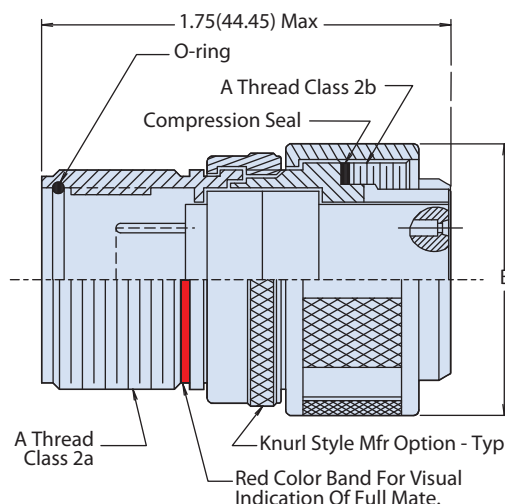


Table I: Insert Arrangements

Shell Size	Insert Arrangement Dash No	Contact Size and Quantity			
		22	20	16	12
10	-2			2	
	-4		6	4	
	-6				
	-13	13			
12	-8		10	8	
	-10				
	-22	22			
14	-12		19	12	
	-19				
	--37	37			
	-19		26	19	
16	-26				
	-55	55			
	-11			11	
18	-22		32	22	
	-32				
	-66	66			
	30		41	30	
20	-41				
	-79	79			
	-38			38	
22	-50	48	55		2
	-55				
	-85	85			
	-24			16	16
24	-48		61	48	
	-61				
	-100	100			

Table II: Dimensions

Shell Size	A Thread	B Dia
10	.750-.1P-.1L	1.000 (25.40)
12	.875-.1P-.1L	1.125 (28.58)
14	1.000-.1P-.1L	1.250 (31.75)
16	1.125-.1P-.1L	1.375 (34.93)
18	1.250-.1P-.1L	1.594 (40.49)
20	1.375-.1P-.1L	1.719 (43.66)
22	1.500-.1P-.1L	1.894 (48.11)
24	1.625-.1P-.1L	1.969 (50.01)

Table III: Material/Finish

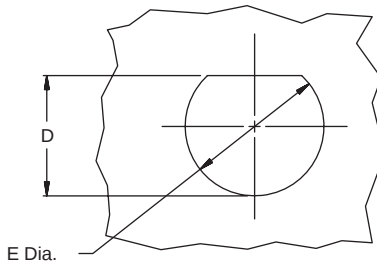
Sym	Finish Description
B	Aluminum/Cadmium Plate/Olive Drab
J	Aluminum/Gold Iridite Over Cadmium Plate Over Nickel
M	Aluminum/Electroless Nickel
N	Aluminum/Cadmium Plate/Olive Drab Over Nickel
NF	Aluminum/Cad/O. D. Over Electroless Nickel (500 Hour Salt Spray)
T	Aluminum/Cadmium Plate/Bright Dip Over Nickel
Z1	Stainless Steel/Passivate Coupling Nut Nickel - Aluminum - Bronze/Degrease

940-015 High-Pressure Environmental Jam Nut Mount Sav-Con® Connector Saver



Table I: Insert Arrangements

Shell Size	Insert Arrangement Dash No	Contact Size and Quantity			
		22	20	16	12
10	-2			2	
	-4		6	4	
	-6				
	-13	13			
12	-8		10	8	
	-10				
	-22	22			
14	-12		19	12	
	-19				
	-37	37			
16	-19		26	19	
	-26				
	-55	55			
18	-11			11	
	-22		32	22	
	-32				
	-66	66			
20	30		41	30	
	-41				
	-79	79			
22	-38			38	
	-50	48	55		2
	-55				
	-85	85			
24	-24			16	16
	-48		61	48	
	-61				
	-100	100			



How To Order

Sample Part Number	940-015	M	24	-61	S	N
Series No.	940-015					
Finish Symbol	B, J, M, N, NF, T, Z1 See Table III					
Shell Size	10, 12, 14, 16, 18, 20, 22, 24 See Table II					
Insert Arrangement	See Table I					
Contact Style	P = Pin, S = Socket					
Alternate Key Position	N, 1, 2, 3 or 4					

Notes

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Glenair 940-014 connector saver is designed to mate with Glenair Series 22 Geo-Marine® connectors.
3. Material/finish:
Barrel, shell, coupling & jam nut - Al alloy/see Table III.
Contacts - copper alloy/gold plate.
Insulators - high grade rigid dielectric/n.a. O-ring & seals - silicone/n.a.

MATES WITH SERIES 22

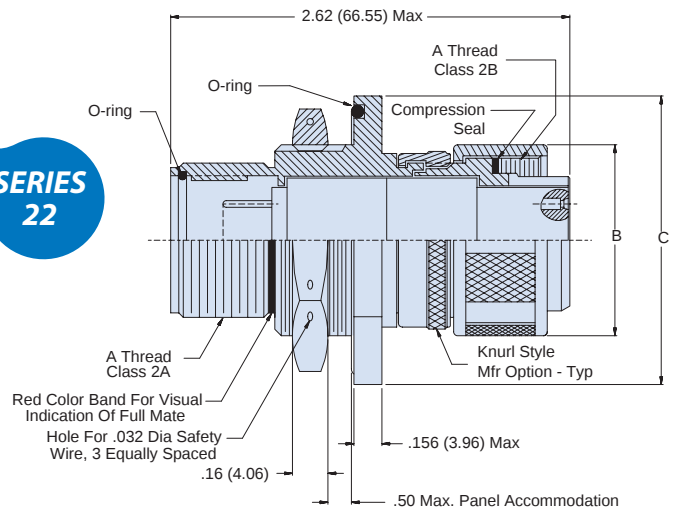


Table II: Dimensions

Shell Size	Recommended Panel Cut Out	C Dia	D	E	
10	.750-.1P-.1L	1.000 (25.40)	1.25 (31.75)	.835 (21.21)	.885 (22.48)
12	.875-.1P-.1L	1.125 (28.58)	1.38 (35.05)	.960 (24.38)	1.010 (27.94)
14	1.000-.1P-.1L	1.250 (31.75)	1.50 (38.10)	1.085 (27.56)	1.135 (28.83)
16	1.125-.1P-.1L	1.375 (34.93)	1.63 (41.40)	1.210 (30.73)	1.260 (32.00)
18	1.250-.1P-.1L	1.594 (40.49)	1.75 (44.45)	1.335 (33.91)	1.385 (35.18)
20	1.375-.1P-.1L	1.719 (43.66)	1.88 (47.75)	1.460 (37.08)	1.510 (38.35)
22	1.500-.1P-.1L	1.894 (48.11)	2.00 (50.80)	1.585 (40.26)	1.635 (41.53)
24	1.625-.1P-.1L	1.969 (50.01)	2.12 (53.85)	1.710(43.43)	1.760(44.70)

Table III: Finishes

Sym	Finish Description
B	Cadmium Plate/Olive Drab
J	Gold Iridite Over Cadmium Plate Over Nickel
M	Electroless Nickel
N	Cadmium Plate/Olive Drab Over Nickel
NF	Cad/O. D. Over Electroless Nickel (500 Hour Salt Spray)
T	Cadmium Plate/Bright Dip Over Nickel



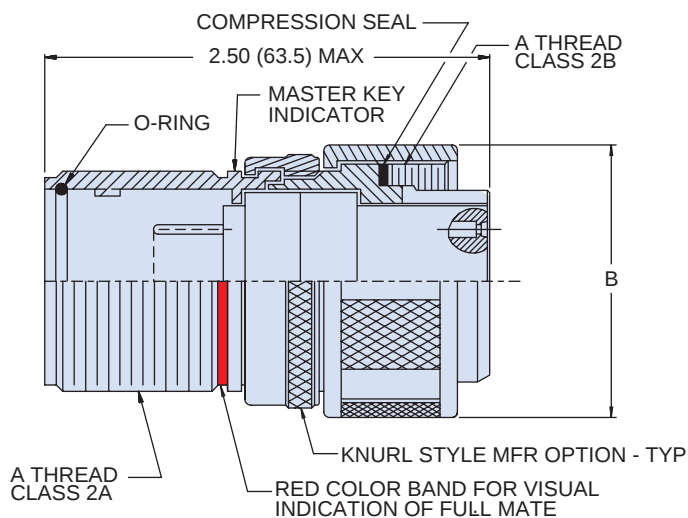
940-025 High-Pressure Environmental Sav-Con® Connector Saver (Scoop-Proof)

How To Order							
Sample Part Number	940	-025	M	16	-26	S	N
Series No.	940						
Basic No.	-025						
Finish Symbol	B, J, M, N, NF, T, Z1						
	See Table II						
Shell Size	10, 12, 14, 16, 18, 20, 22, 24						
	See Table I						
Insert Arrangement	See Table I						
Contact Style	P = Pins, Panel Side S = Sockets Panel Side						
Alternate Key Position	N, 1, 2, 3 or 4						

Notes:

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Glenair 940-025 connector saver is designed to mate with Glenair 220-16 series Geo-Marine® connectors. (Scoop-Proof)
3. Material/Finish:
 - Barrel, shell, coupling nuts - see Table II.
 - Contacts - copper alloy/gold plate.
 - Insulators - high grade rigid dielectric/n.a.
 - O-ring & seals - silicone/n.a.

**MATES
WITH
220-16**



940-025
High-Pressure Environmental
Sav-Con® Connector Saver (Scoop-Proof)



Geo-Marine®
Custom Applications

Table I: Insert Arrangements

Shell Size	Insert Arrangement Dash No	Contact Size and Quantity			
		22	20	16	12
10	-2			2	
	-4		6	4	
	-6				
	-13	13			
12	-8		10	8	
	-10				
	-22	22			
14	-12		19	12	
	-19				
	-37	37			
16	-19		26	19	
	-26				
	-55	55			
18	-11			11	
	-22		32	22	
	-32				
	-66	66			
20	30		41	30	
	-41				
	-79	79			
22	-38			38	
	-50	48	55		2
	-55				
	-85	85			
24	-24			16	16
	-48		61	48	
	-61				
	-100	100			

Table II: Dimensions

Shell Size	A Thread	B Dia
10	.750-.1P-.1L	1.000 (25.40)
12	.875-.1P-.1L	1.125 (28.58)
14	1.000-.1P-.1L	1.250 (31.75)
16	1.125-.1P-.1L	1.375 (34.93)
18	1.250-.1P-.1L	1.594 (40.49)
20	1.375-.1P-.1L	1.719 (43.66)
22	1.500-.1P-.1L	1.894 (48.11)
24	1.625-.1P-.1L	1.969 (50.01)

Table III: Material/Finish

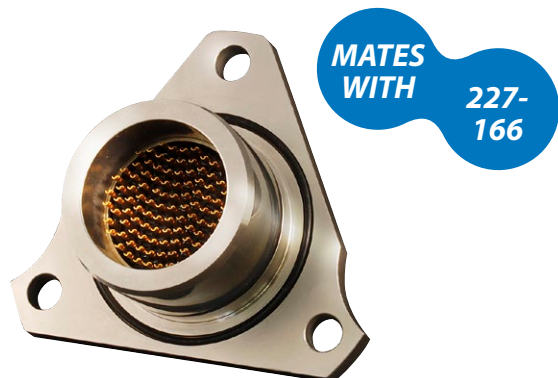
SYM	Finish Description
B	Aluminum/Cadmium Plate/Olive Drab
J	Aluminum/Gold Iridite Over Cadmium Plate Over Nickel
M	Aluminum/Electroless Nickel
N	Aluminum/Cadmium Plate/Olive Drab Over Nickel
NF	Aluminum/Cad/O. D. Over Electroless Nickel (500 Hour Salt Spray)
T	Aluminum/Cadmium Plate/Bright Dip Over Nickel
Z1	Stainless Steel/Passivate Coupling Nut Nickel - Aluminum - Bronze/Degrease

D

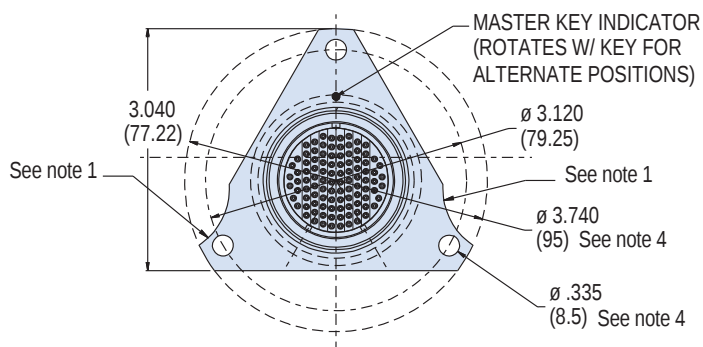
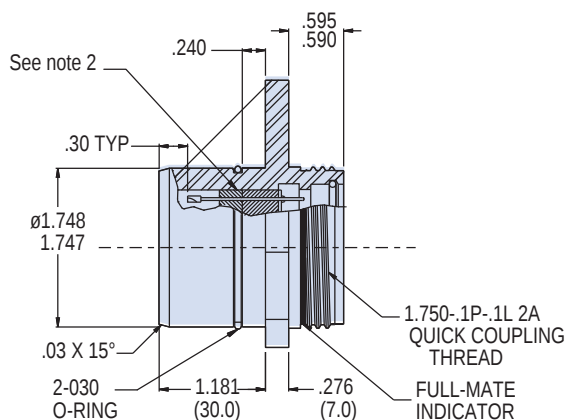


227-162H Hermetic Receptacle with Triangular Flange Mount

RECEPTACLE CONNECTOR WITH SPECIAL TRIANGULAR FLANGE



How To Order					
Sample Part Number	227-162H	24	-100	P	N
Series - Shell Style	227-162H				
Shell size	24				
Insert Arrangement Dash No.	-100				
Contact Style	P = Pin				
Polarization	N, 1, 2, 3 or 4				



Notes

1. Clearance for 1 inch hex socket wrench.
2. Prepot with epoxy.
3. Mates with Glenair 227-166 plug connector.
4. Dimensions per V0GEE0017A, Rev. B.
5. Assembly to be identified with manufacturer's name, part number and date code.
6. Performance capabilities:
Current rating:
 - 4 power contacts- 2.0 Amps @ 660 vac, continuous
 - 96 Signal contacts- 1.5 Amps @ 200VDC max., continuous
 DWV and IR:
 - DWV- 1500 vac between pin to pin and pins to shell.
 - Insulation resistance- 100 megohms min @ 1000/250VDC pin to pin and pins to shell
 Pressure and hermeticity:

- Hydrostatic pressure rating: - 5800 PSI, open face, in both directions.
 - hermeticity - 1×10^{-6} ccHe/sec @ 1 atm. diff.
- NOTE: electrical safety limits to be set by user. Peak voltages, switching surges, transients, etc. Should be used to determine safe application of product. Glenair is not liable if the voltage and current exceed the limit set forth.

7. Material/finish:
 - Shell- 316L/passivate
 - Contacts- 52 ni alloy/gold plated
 - Insulator- full glass with epoxy backfill/n.a.
 - Interfacial and o-ring seals- nitrile/n.a.

NOTE: unless otherwise stated

227-163 High-Pressure Environmental Box Mount Plug with Circular Flange



PLUG CONNECTOR WITH SPECIAL CIRCULAR FLANGE

How To Order					
Sample Part Number	227-163	24	-61	S	N
Series - Shell Style	227-163				
Shell size	10,12, 14, 16, 18, 20, 22, 24 See Table II				
Insert Arrangement Dash No.	See Table I				
Contact Style	P = Pin, S = Socket				
Polarization	N, 1, 2, 3 or 4				

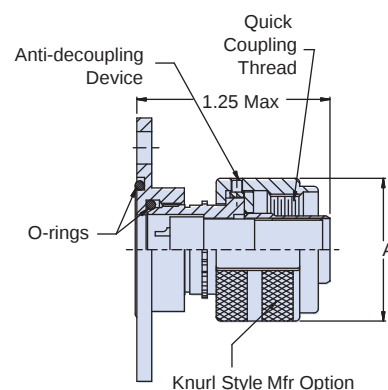
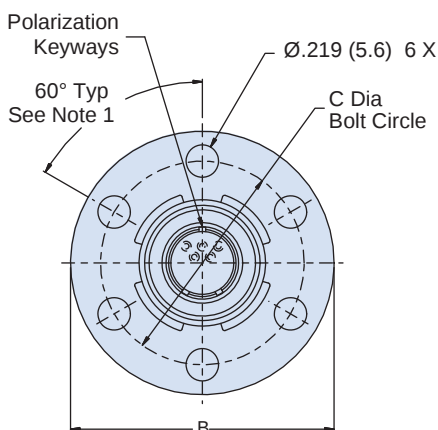


Table I: Contact Arrangements

Shell Size	Insert Arrangement Dash No.	Contact Size and Quantity		
		22	20	16
10	- 4			4
	- 6		6	
	- 13	13		
12	- 8			8
	- 10		10	
	- 22	22		
14	- 12			12
	- 19		19	
	- 37	37		
16	- 19			19
	- 26		26	
	- 55	55		
18	- 22			22
	- 32		32	
	- 66	66		
20	- 30			30
	- 38	30		8
	- 41		41	
22	- 79	79		
	- 38			38
	- 55		55	
24	- 85	85		
	- 48			48
	- 61		61	
	-100	100		

Table II: Dimensions

Shell Size	A Dia Max	B Dim	C Dim	Shell Size	A Dia Max	B Dim	C Dim
10	1.000 (25.4)	1.78 (45.2)	1.375 (34.9)	18	1.594 (40.5)	2.38 (60.5)	1.969 (50.0)
12	1.125 (28.6)	1.91 (48.5)	1.500 (38.1)	20	1.719 (43.7)	2.50 (63.5)	2.094 (53.2)
14	1.250 (31.8)	2.03 (51.6)	1.625 (41.3)	22	1.844 (46.8)	2.63 (66.8)	2.219 (56.4)
16	1.375 (34.9)	2.16 (54.9)	1.750 (44.5)	24	1.969 (50.0)	2.75 (69.9)	2.344 (59.5)

Notes

1. Assembly identified with manufacturer's name and P/N, space permitting.
2. Performance capabilities:
 - Current rating: size 16 contact - 750 VDC, 10 amps size 20 contact - 500 VDC, 5 amp size 22 contact - 500 VDC, 3 amp
 - Hydrostatic pressure rating: 5000 PSI, fully mated
 - Insulation resistance: 1000 megaohms @ 500 VDC

Note: electrical safety limits to be set by user peak voltages switching surges, transients, etc. should be used to determine safe applications.

Position from keyway will vary.

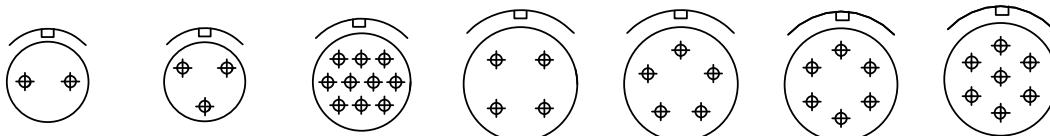
3. Material/finish:

- Barrel - 316 stainless steel/passivate
- Hardware - 300 series stainless steel/passivate coupling nut - nickel-aluminum-bronze/degrease
- Contacts - copper alloy/gold plate
- Insulator - high grade rigid dielectric/na o-rings - nitrile/na



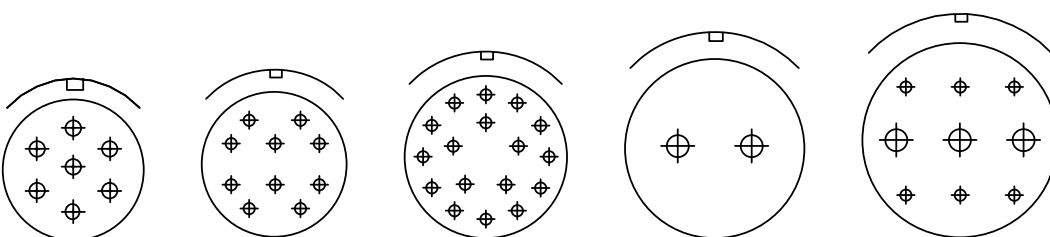
Geo-Marine® MIL-DTL-5015 Type Connectors 257-003, 257-005, 257-007 and 257-012 Insert Arrangements and Specifications

(Face View of Pin Insert
Shown)



Insert Arrangement	10SL-4	10SL-3	12-10	14S-2	14S-5	14S-6	14S-7
Contact Size & Quantity	2 - #16	3 - #16	10 - #20	4 - #16	5 - #16	6 - #16	7 - #16
MS Service Rating	A	A	INST	INST	INST	INST	INST
Alternative Position	N/A	N/A	N/A	X & Y	X	N/A	N/A

(Face View of Pin Insert
Shown)



Insert Arrangement	16S-1	18-1	20-29	22-1	24-11
Contact Size & Quantity	7 - #16	10 - #16	17 - #16	2 - #8	6 - #12, 3 - #8
MS Service Rating	A	4A 6 INST	A	D	A
Alternative Position	W & Z	W, X, Y & Z	W & Z	N/A	W, X, Y & Z

Connector Specifications

Barrel and Rear Accessory Hardware	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	#20-7.5 Amps #16-13 Amps #12-23 Amps #8-43 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

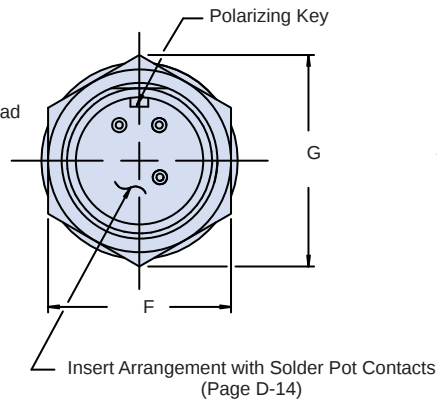
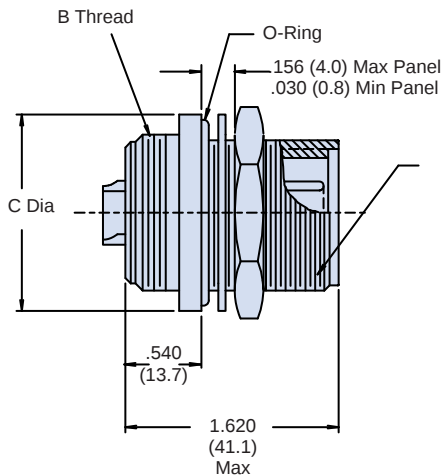
Stainless Steel Harsh Environment

UNEF Threads



Geo-Marine®
Custom Applications

How To Order									
Sample Part Number	257	-003	H	2	-14S	-5	P	W	M
Series No.	257								
Basic No.	-003								
Class	H = Hermetic - = Standard								
Connector Style	2 = Receptacle								
Shell Size	See Table I								
Insert Arrangement Dash No.	See page D-14								
Contact Style	P = Pin S = Socket (Non-Hermetic)								
Alternate Insert Position	See page D-14								
Molding Adapter	M = Molding Adapter Omit for none								



RECOMMENDED PANEL CUT-OUT

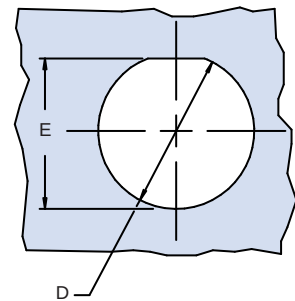


Table I							
Shell Size	A Thread Class 2A	B Thread Class 2A	C Max	D +.010 (0.3) -.000	E +.010 (0.3) -.000	F Max	G Max
10SL	5/8 - 24 UNEF	5/8 - 24 UNEF	1.030 (26.2)	.653 (16.6)	.585 (14.9)	.812 (20.6)	.940 (23.9)
12	3/4 - 20 UNEF	3/4 - 20 UNEF	1.160 (29.5)	.760 (19.3)	.710 (18.0)	.938 (23.8)	1.090 (27.7)
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)

Notes:

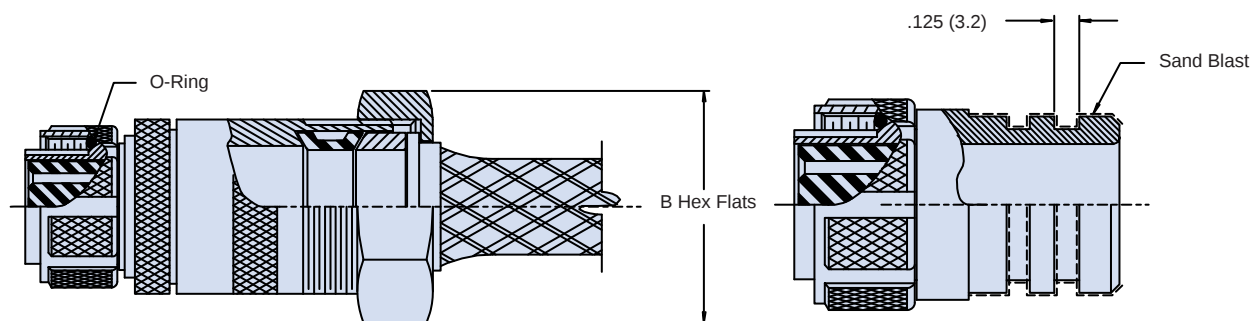
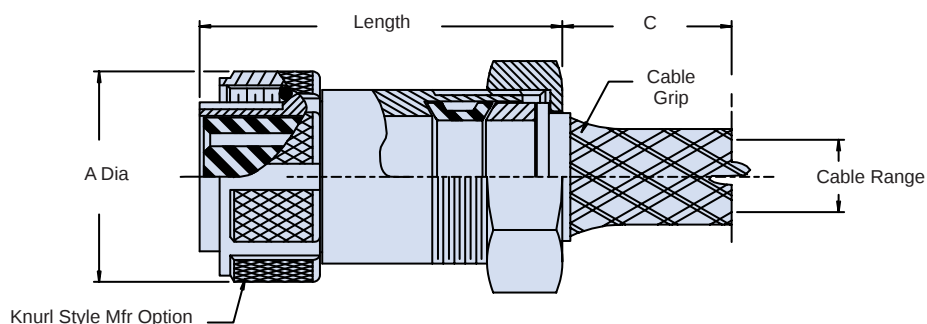
1. Metric dimensions (mm) are indicated in parentheses.
2. Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of the application.



257-003 Connector Plug Assembly Stainless Steel Harsh Environment

How To Order									
Sample Part Number	257	-003	-6	-14S	-5	P	W	M	08
Series No.	257								
Basic No.	-003								
Connector Style	6 = Plug								
Shell Size	See Table I								
Insert Arrangement Dash No.	See page D-14								
Contact Style	P = Pin S = Socket (Non-Hermetic)								
Alternate Insert Position	See page D-14								
Molding Adapter	M = Molding Adapter N = No Adapter (Connector Only) Omit = Connector with Wire Mesh Cable Grip								
Optional Entry	See Table II. Omit for Standard								

STYLE I



STYLE II

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)

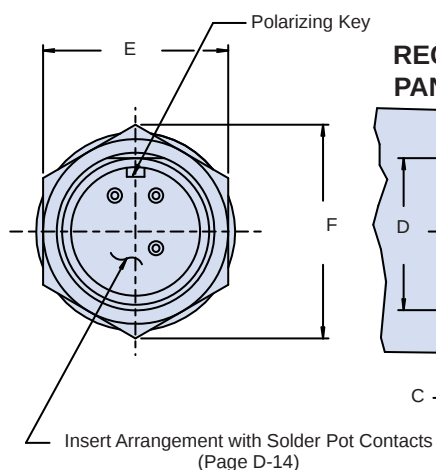
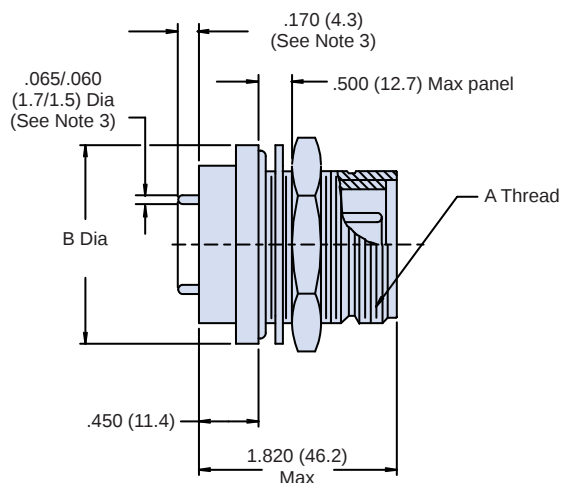
Table II			
Dash No.	C Ref	Cable Range	
		Min	Max
03	5.120 (130.0)	.180 (4.6)	.210 (5.3)
04	5.750 (146.1)	.210 (5.3)	.312 (7.9)
06	7.000 (177.8)	.310 (7.9)	.438 (11.1)
08	7.120 (180.8)	.438 (11.1)	.500 (12.7)
10	7.370 (184.3)	.500 (12.7)	.625 (15.9)
12	9.000 (228.6)	.530 (13.5)	.750 (19.1)
14	8.000 (203.2)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

Notes:

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 Board Contacts

How To Order									
Sample Part Number	257	-005	H	2	-14S	-5	P	W	M
Series No.	257								
Basic No.	-005								
Class	H = Hermetic - = Standard								
Connector Style	2 = Receptacle								
Shell Size	See Table I								
Insert Arrangement Dash No.	See page D-14								
Contact Style	P = Pin S = Socket (Non-Hermetic)								
Alternate Insert Position	See page D-14. Omit for Normal								
Molding Adapter	M = Molding Adapter Omit = None								



RECOMMENDED PANEL CUT-OUT

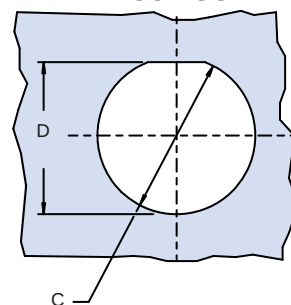


Table I						
Shell Size	A Thread Class 2A	B Dia Max	C Dia +.010 (0.3) -.000	D +.010 (0.3) -.000	E Flats	F Ref
10SL	5/8 - 24 UNEF	1.030 (26.2)	.653 (16.6)	.585 (14.9)	.870 (22.1)	1.000 (25.4)
12	3/4 - 20 UNEF	1.160 (29.5)	.760 (19.3)	.710 (18.0)	.995 (25.3)	1.125 (28.6)
14S	7/8 - 20 UNEF	1.280 (32.5)	.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)

Notes:

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

Special Threads



Geo-Marine®
Custom Applications

How To Order									
Sample Part Number	257	-007	H	2	-14S	-5	P	W	M
Series No.	257								
Basic No.	-007								
Class	H = Hermetic - = Standard								
Connector Style	2 = Receptacle								
Shell Size	See Table I								
Insert Arrangement Dash No.	See page D-14								
Contact Style	P = Pin S = Socket (Non-Hermetic)								
Alternate Insert Position	See page D-14. Omit for Normal								
Molding Adapter	M = Molding Adapter Omit = None								

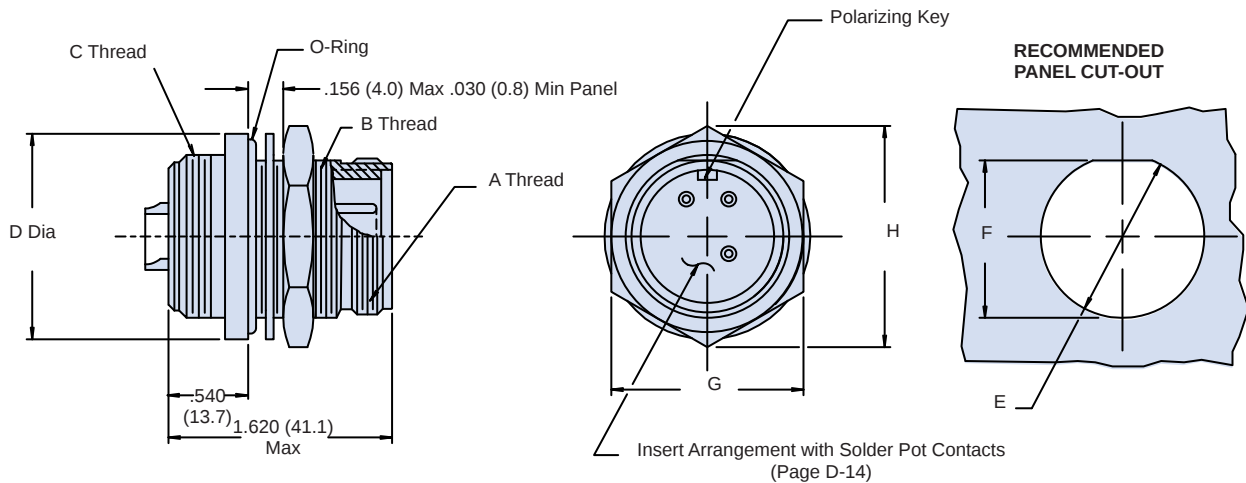


Table I								
Shell Size	A Thread Class 2A	B Thread Class 2A	C Thread Class 2A	D Dia Max	E Dia + .010 (0.3) -.000 (0)	F + .010 (0.3) -.000 (0)	G Flats	H Max
10SL	.625 - .1P-1L	3/4 - 20 UNEF	5/8 - 24 UNEF	1.100 (27.9)	.760 (19.3)	.710 (18.0)	.938 (23.8)	1.090 (27.7)
12	.750 - .1P-1L	7/8 - 20 UNEF	3/4 - 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)

Notes:

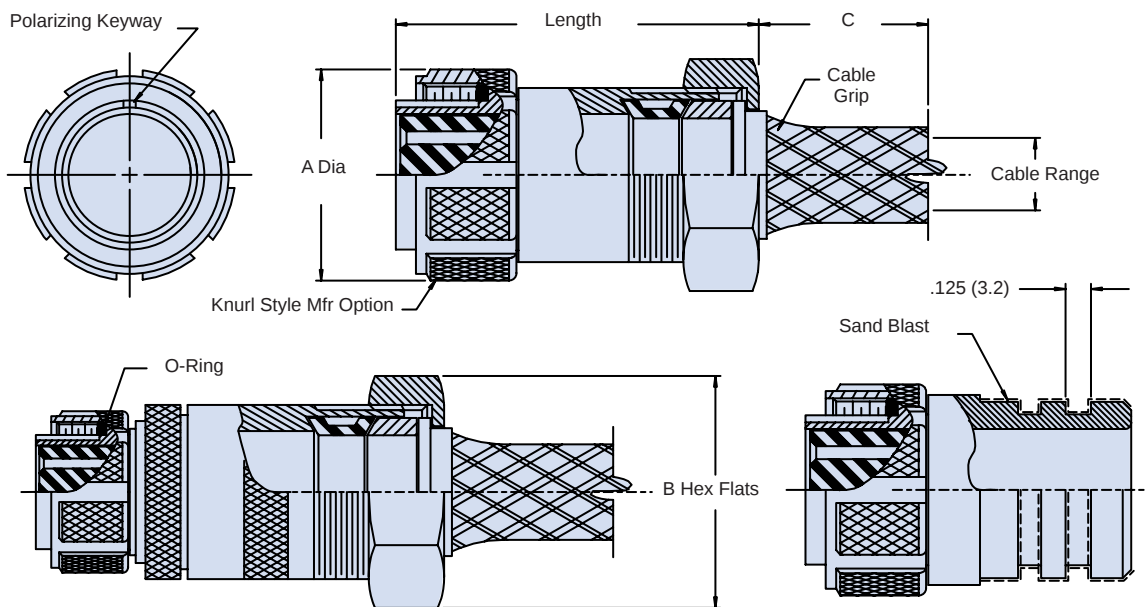
1. Metric dimensions (mm) are indicated in parentheses.
2. Electrical safety limits must be established by the user. Peak voltages, switching surges, etc., should be used to determine the safety of the application.



257-007 Connector Plug Assembly Stainless Steel Harsh Environment

How To Order									
Sample Part Number	257	-007	-6	-14S	-5	P	W	M	08
Series No.	257								
Basic No.	-003								
Connector Style	6 = Plug								
Shell Size	See Table I								
Insert Arrangement Dash No.	See page D-14								
Contact Style	P = Pin S = Socket								
Alternate Insert Position	See page D-14. Omit for Normal								
Molding Adapter	M = Molding Adapter N = No Adapter (Connector Only) Omit = Connector with Wire Mesh Cable Grip								
Optional Entry	See Table II. Omit for Standard								

STYLE I



STYLE II

257-007

Connector Plug Assembly

Stainless Steel Harsh Environment



Geo-Marine®
Custom Applications

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)

Notes:

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 Test Connector Receptacle Assembly Stainless Steel Harsh Environment

How To Order									
Sample Part Number	257	-012	H	2	-14S	-5	P	W	M
Series No.	257								
Basic No.	-005								
Class	H = Hermetic - = Standard								
Connector Style	2 = Receptacle								
Shell Size	See Table I								
Insert Arrangement Dash No.	See page D-14								
Contact Style	P = Pin S = Socket (Non-Hermetic)								
Alternate Insert Position	See page D-14. Omit for Normal								
Molding Adapter	M = Molding Adapter Omit = None								

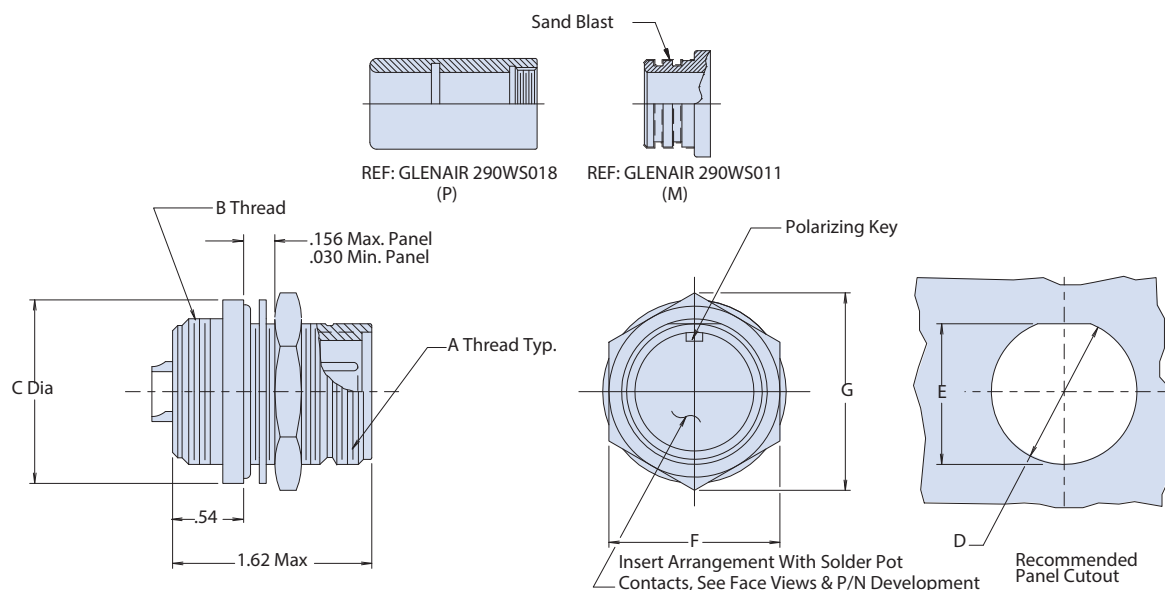


Table I							
Shell Size	A Thread Class 2A	B Thread Class 2A	C Max	D + .010 (0.3) -.000 (0)	E + .010 (0.3) -.000 (0)	F Max	G Max
10SL	5/8 - 24 UNEF	5/8 - 24 UNEF	1.030 (26.2)	.653 (16.6)	.585 (14.9)	.875 (22.2)	.940 (23.9)
12	3/4 - 20 UNEF	3/4 - 20 UNEF	1.160 (29.5)	.760 (19.3)	.710 (18.0)	1.000 (25.4)	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 (43.4)	2.125 (54.0)	2.420 (61.5)

Notes:

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.

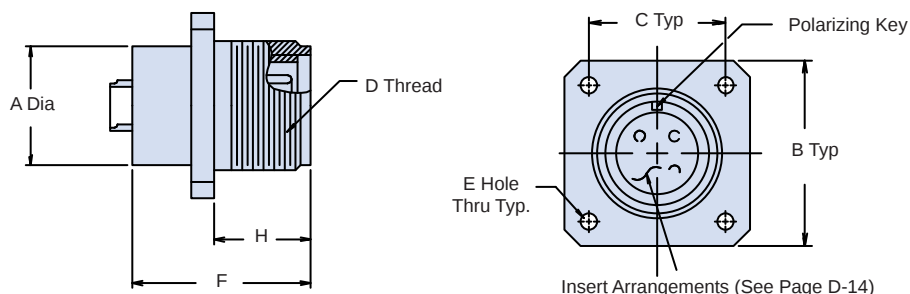
257-163 Flange Mount and 257-164 Weld Mount Connector Receptacle Assemblies Stainless Steel



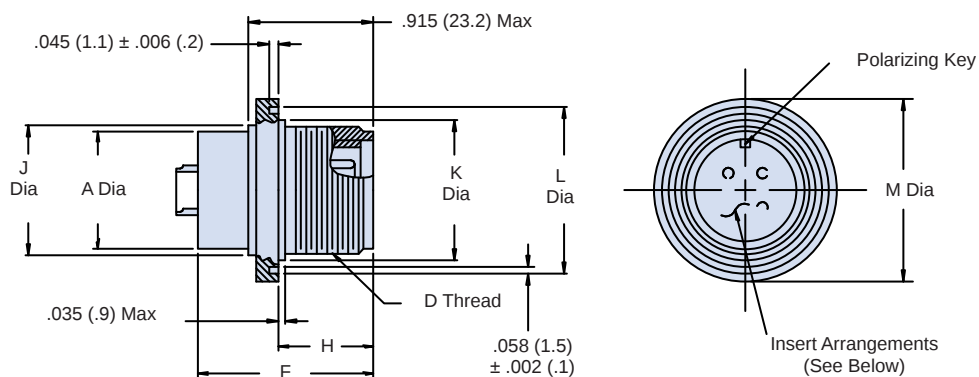
Geo-Marine®
Custom Applications

How To Order								
Sample Part Number	257	-163	H	-14S	-5	P	W	M
Series No.	257							
Basic No.	-005							
Class	H = Hermetic - = Standard							
Shell Size	See Table I							
Insert Arrangement Dash No.	See page D-14							
Contact Style	P = Pin S = Socket (Non-Hermetic)							
Alternate Insert Position	See page D-14. Omit for Normal							

**257-163
Flange Mount**



**257-164
Weld Mount**





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

Table I

Shell Size	A Max	B Sq.±.031 (.8)	C ±.005 (.1)	D Thread Class 2A UNEF	E +.010 (.1) -.005 (1.3)	F 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

Shell Size	H +.031 (.8) -.000 (.0)	J Dia	K Dia	L Dia	M 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: Material/Finish

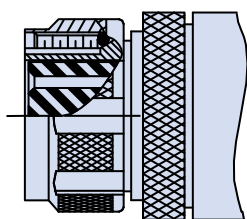
	Non-Hermetic Receptacles	Hermetic Receptacles
Shell	Passivated Stainless Steel	Passivated Stainless Steel
Insulator	Nitrile/Neoprene	Full Glass
O-Ring, Grommet	Nitrile/Neoprene	Nitrile/Neoprene
Contacts	Gold Plated Copper Alloy With Solder Pots	Alloy 52/Gold Plate
Contact Current Rating	#20-7.5 Amps #16-13 Amps #12-23 Amps #8-43 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

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

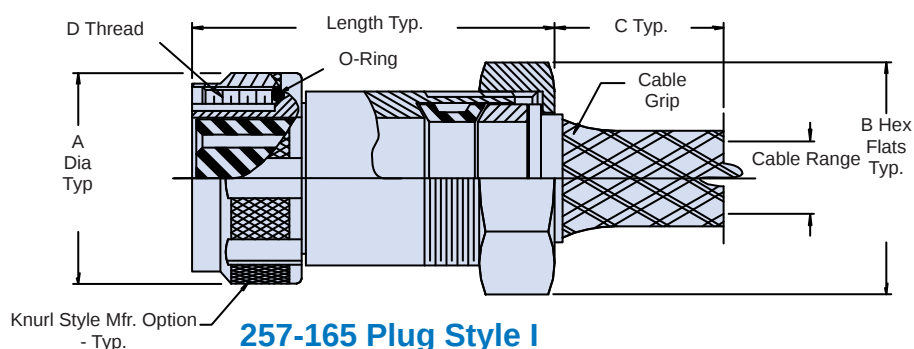


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Custom Applications

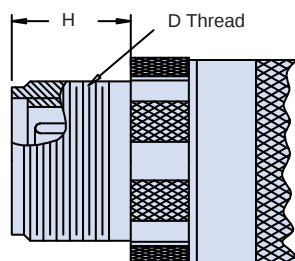
How To Order							
Sample Part Number	257	-165	-14S	P	X	M	08
Series No.	257						
Basic No.	-165 = Plug -166 = Receptacle						
Shell Size/Insert Arrangement	See page D-14						
Contact Style	P = Pin S = Socket (Non-Hermetic)						
Alternate Insert Position	See page D-14. N for Normal						
Molding Adapter	M = Molding Adapter N = No Adapter, Connector Only Omit for Standard						
Optional Entry	See Table II						



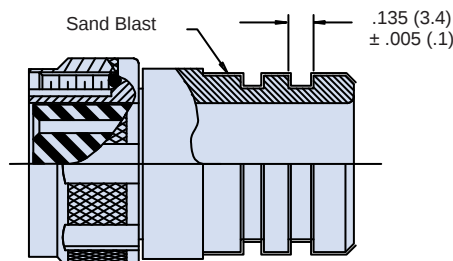
257-165 Plug Style II



257-165 Plug Style I



257-166 Receptacle



Molding Adapter Option

D



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

Table I

Shell Size	Config. Style	A Max	B Flats	D Thread Class 2A UNEF	H +.031 (.8) -.000 (0)	Length Max
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)

Shell Size	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: Material/Finish

Barrel and Rear Accessory Hardware	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	#20-7.5 Amps #16-13 Amps #12-23 Amps #8-43 Amps
Rated Operating Voltage	Service Rating INST - 250 VDC Service Rating A - 700 VDC Service Rating D - 1250 VDC
Dielectric Withstanding Voltage (Hi-Pot)	Service Rating INST - 1000 VRMS Service Rating A - 2000 VRMS Service Rating D - 2800 VRMS
Insulation Resistance	5000 Megohms minimum at 500 VDC and +25°C
Temperature Range	-55°C to +125°C



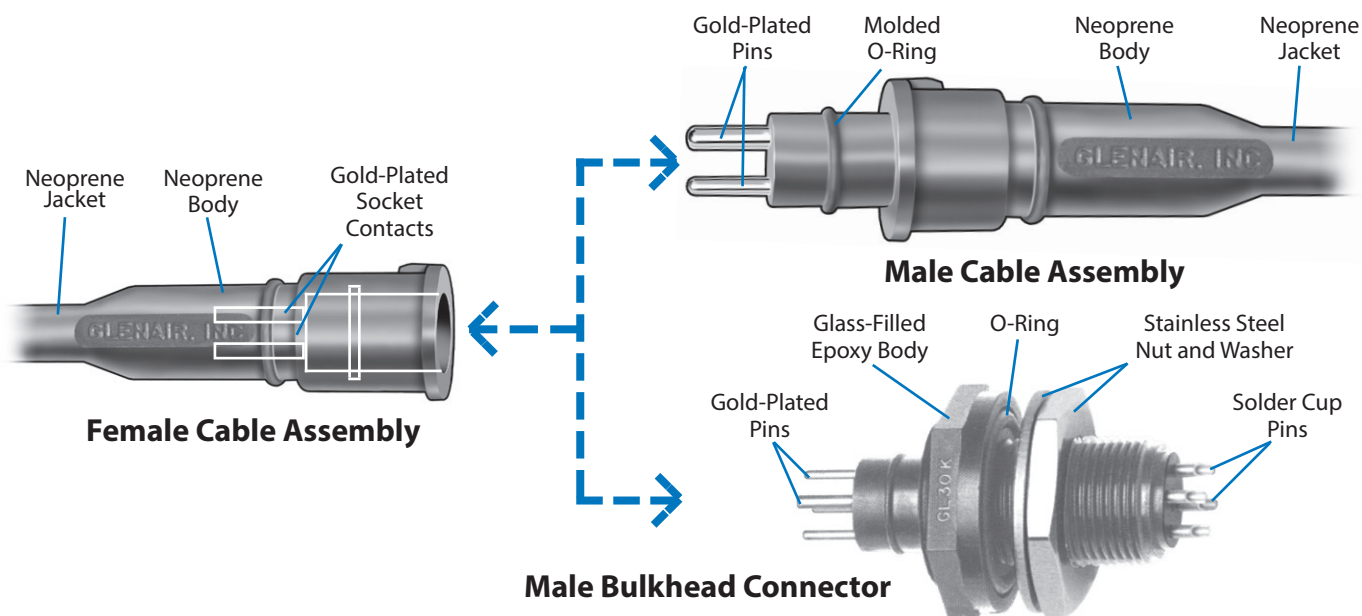
SERIES 10KPSI

Underwater Interconnect Assemblies

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.



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



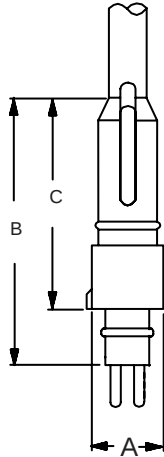
SERIES 10KPSI

Underwater Interconnect Assemblies

How-to-order



MALE CABLE ASSEMBLIES

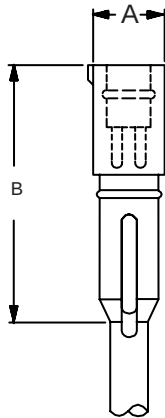


Number of Contacts	Contact Quantity/Size	Cable Length*	Part Number	A Dia	B	C
1	1 #10	2 feet	GL20G1P-M	.75 (19.1)	2.65 (67.3)	2.00 (50.8)
	1 #0	2 feet	GL20K1P-M	1.06 (26.9)	3.25 (82.6)	2.62 (66.5)
2	1 #10, 1#12	2 feet	GL20G2P-M	.75 (19.1)	2.65 (67.3)	2.00 (50.8)
3	1 #10, 2 #12	2 feet	GL20G3P-M	.75 (19.1)	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

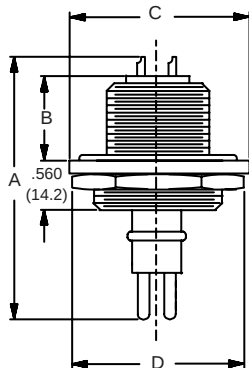


Number of Contacts	Contact Quantity/Size	Cable Length*	Part Number	A Dia	B
1	1 #10	2 feet	GL20G1S-F	.75 (19.1)	2.65 (67.3)
	1 #0	2 feet	GL20K1S-F	1.06 (26.9)	3.50 (88.9)
2	1 #10, 1#12	2 feet	GL20G2S-F	.75 (19.1)	2.65 (67.3)
3	1 #10, 2 #12	2 feet	GL20G3S-F	.75 (19.1)	2.65 (67.3)
4	1 #12, 3 #16	2 feet	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



Number of Contacts	Contact Quantity/Size	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

Specifications, contact arrangements and accessories



Male Bulkhead Connector

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

Contact Arrangements and Current Rating			
1 Contact		2 contacts	3 contacts
1 #10 Contact 20 Amps G1	1 #0 Contact 200 Amps K1	1 #10 Contact 1 #12 Contact 10 Amps G2	1 #10 Contact 2 #12 Contact 10 Amps G3
4 contacts		5 contacts	6 contacts
1 #12 Contact 3 #16 Contacts 7.5 Amps G4	1 #10 Contact 3 #12 Contacts 7.5 Amps K4	1 #10 Contact 4 #16 Contacts 7.5 Amps K5	1 #10 Contact 5 #16 Contacts 7.5 Amps K5
		8 contacts	
		1 #10 Contact 7 #16 Contacts 6 Amps K8	

ACCESSORIES

Locking Sleeves

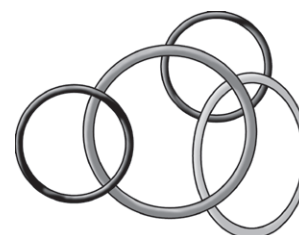
Locking Sleeves enable a mated pair of cable assemblies to be locked together, preventing accidental unmating. Material: Delrin.



Cable Part No.	Type	Sleeve Part No.
GL20G*P	Male	GL20G401
GL20K*P	Male	GL20K403
GL20G*S	Female	GL20G402
GL20K*S	Female	GL20K404

O-Rings

Replacement O-Rings for bulkhead connectors. Material: Nitrile



Cable Part No.	O-Ring
GL30G	2-213
GL30K	2-217

QUALIFIED MIL-DTL-28840 Connectors and Accessories



MIL-DTL-28840 qualified connectors
in-stock and ready for immediate,
same-day shipment

- High Density, Scoop Proof Contact Arrangements
- Flange Mount, Box Mount, Jam-Nut and In-Line Receptacles
- Straight, 45° and 90° Strain Reliefs and Backshell Assemblies
- Sav-Con® Connector Savers
- MIL-DTL-28840 Qualified
- Additional Glenair Commercial Part Numbers with Features Not Available in the Mil-Spec

Qualified military standard electrical connectors
and accessories for shipboard—and all rugged
environmental applications



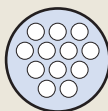
Performance Specifications	
Current Rating (Maximum)	Size #20 Contact; 20AWG 7.5A, 22AWG 5.0A, 28AWG 1.5A, 30AWG 1.0A
Test Voltage (DWV)	1000 VAC RMS at sea level. Test per EIA-364-20
Insulation Resistance	5000 megohms minimum (at ambient temperature) per EIA-364-21
Contact Resistance	Per SAE-AS39029
Operating Temperature	-55° C. to +200° C.
Immersion	per test method EIA-364-09
Shock	in accordance with MIL-S-901 grade A
Vibration	per EIA-364-28 test procedure
Magnetic Permeability	2.0 μ (Aluminum), 5.0 μ (Stainless Steel) maximum; ASTM-A342/A342M



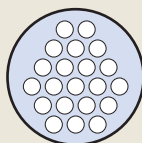
Splined
MIL-DTL-28840
connector-to-backshell
interface is ideally suited for
heavy backshells and cables



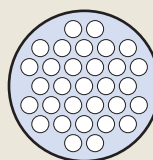
Shell Size 11
7 Contacts



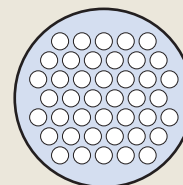
Shell Size 13
12 Contacts



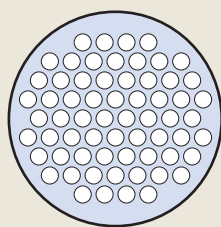
Shell Size 15
21 Contacts



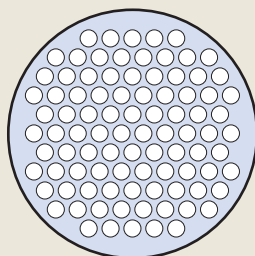
Shell Size 17
31 Contacts



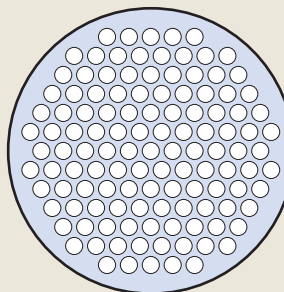
Shell Size 19
42 Contacts



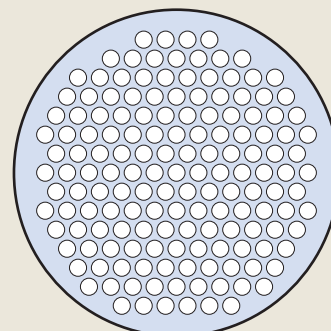
Shell Size 23
64 Contacts



Shell Size 25
92 Contacts



Shell Size 29
121 Contacts

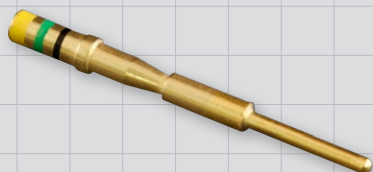


Shell Size 33
155 Contacts

QUALIFIED MIL-DTL-28840 Connectors and Accessories



STANDARD PIN CRIMP CONTACT FOR MIL-DTL-28840 CONNECTORS

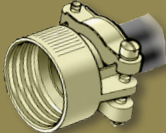
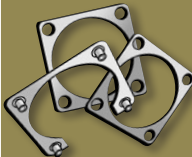
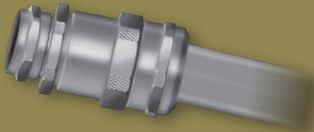


Mating End Size	Wire Accomodation	Military Part Number	Glenair Part Number
20	28-32 AWG	M39029/83-451	850-004-20-451
20	22-26 AWG	M39029/83-450	850-004-20-450
20	20-24 AWG	M39029/83-508	850-004-20-508

STANDARD SOCKET CRIMP CONTACT FOR MIL-DTL-28840 CONNECTORS



Mating End Size	Wire Accomodation	Military Part Number	Glenair Part Number
20	28-32 AWG	M39029/84-453	850-005-20-453
20	22-26 AWG	M39029/84-452	850-005-20-452
20	20-24 AWG	M39029/84-509	850-005-20-509

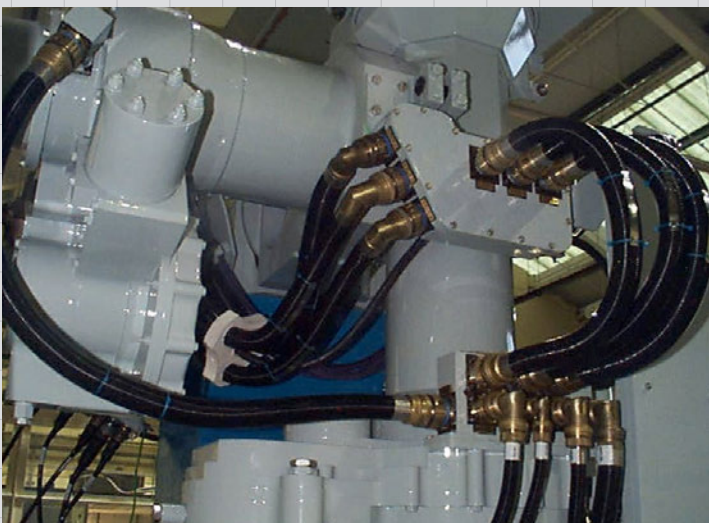
 Crimping Tools		 Insertion & Removal Tools		 Pin Contact		 Socket Contact	
M22520/34-01 Basic Crimp Tool M22520/34-02 Positioner M22520/35 Gage		M81969/33-01 Straight Insertion Tool M81969/33-02 Offset Insertion Tool M81969/34-01 Removal Tool		M39029/83 Standard Duty Electrical Pin Contact		M39029/84 Standard Duty Electrical Socket Contact	
 Environmental Backshells		 EMI/RFI Environmental Backshells		 Connector Sockets		 "E" Nuts	
				 Strain Reliefs			
M28840/6 B Straight M28840/9 B 45° M28840/8 B 90°		M28840/6 A Straight M28840/8 A 90° M28840/9 A 45°		600G005		M28840/23	
						M28840/1 Straight M28840/3 45° M28840/2 90°	
 Dummy Stowage Receptacles		 Protective Plug Covers		 Protective Receptacle Covers		 Jam Nuts	
				 Mounting Flanges and Gaskets		 MIL-PRF-24758A Conduit Fittings	
M28840/7		M28840/15		M28840/13		M53186	
						M28840/24 Gasket	
						M24758-14 Straight (M24758/14 Straight.) M28840/5 Straight • M28840/25 90° • M28840/27 45° • M28840/30 Coupling	

A large offshore oil rig with multiple cranes and complex piping, situated in the middle of the ocean under a cloudy sky.

MARINE BRONZE Seacrow Connectors

for harsh-environment applications

Glenair manufactures connectors qualified to V96929, VG95234 and VG95328 standards. These connectors are mostly used in harsh-environment military applications for ground vehicles and ground systems. Our new Marine Bronze version increases the level of robustness of these connectors to be successfully used in all severe environment navy installations, as well as off-shore platforms, sea ports, geological and oceanographic applications.



- Marine bronze alloy for superior corrosion resistance in seawater and other harsh environments
- Ideal for shipboard and offshore drilling applications
- Available in Series ITS, Series IPT, Series IGE and Series IT
- IP67 standard environmental sealing, IP68 available

Harsh-environment shipboard application

ITS-MB REVERSE-BAYONET CONNECTORS



VG95234 Compliant Marine Bronze Series

ITS-MB connectors are compliant with VG95234, using all the same insert arrangements available in the standard ITS Reverse Bayonet Connectors catalogue. Typically they are used for power and signal transmission, with wires from 32 AWG to 4/0. A wide variety of backshells allow the ITS-MB to accept jacketed cables, single or multi-poles, with or without RFI/EMI shielding, conduits with PG or metric thread. IP67 protection is the standard performance. IP68 on request.

IPT-MB MIL-C-26482 HIGH DENSITY CONNECTORS



VG95328 Compliant Marine Bronze Series

IPT-MB connectors are the choice for reliability when 20-16 AWG signal cables are used. The insert arrangements as well as the electrical characteristics are detailed in the IPT IPT-SE Catalogue. Backshells suitable for EMI shield terminations and heat shrink boots are also available.

The receptacle is also available with PCB contacts. IP67 protection is the standard performance. IP68 on request.

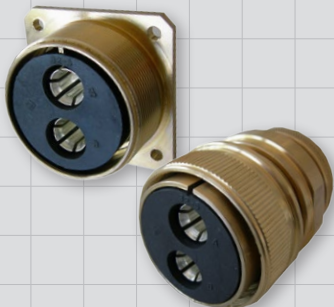
IGE-MB REVERSE-BAYONET SINGLE-POLE CONNECTORS



VG96929 Compliant Marine Bronze Series

IGE-MB High Power Single Pole Connectors are used with cables from 16 to 240 mmq. These connectors achieve high-performance working current and peak current, and are ideal for engines, power supplies, and power distribution boxes. Several backshells are available, either straight or 90° elbows for the most reliable cable accommodation. See the VG96929 Catalogue for detailed electrical characteristics. IP67 protection is the standard performance. IP68 on request.

IT-MB MIL-C-5015G THREADED CONNECTORS



VG95234 Compliant Marine Bronze Series

IT-MB is a threaded connector compliant with the MIL-DTL-5015 standard. All the electrical characteristics are available in the IT standard catalogue. IT-MB family is a threaded version mostly used for power and signal, frequently utilized with high-performance IP68 sealing. IP67 is considered standard performance.



RADGRIP™ COUPLING NUTS

**For fast, easy mating of ITS Series bayonet connectors
plus improved coupling nut mechanical protection**

Better grip, improved durability

Glenair ITS-RG Series connector plugs with RadGrip™ rubber coupling nut covers was developed for harsh environmental field applications. RadGrip™ covers feature wide, easy-to-grip castellations as well as a raised thumb tab. Built for maximum durability and mechanical protection of plug coupling nuts, RadGrip™ is the perfect solution for advanced protection against shock and other forms of mechanical damage. In addition, RadGrip™ facilitates rapid mating and demating of connectors, even when surfaces are contaminated with oil, dust, water and other fluids. The highly durable rubber compound may be specified in seven different colors for improved connector and cable identification.

Colors available: Black, Yellow, Red, Blue, Light Green, Orange and Grey.

RadGrip™ material specifications

IAW UNI-CEI 11170 - AFNOR NF-F 16101 - BSS 7239 - ASTM E-162, ASTM E-662

RadGrip™ covers adhere easily to Aluminum alloy, Stainless steel and Marine bronze.



- Fast, easy 1/4 turn bayonet coupling
- Ergonomically designed for use with arctic gloves
- High Shock and Vibration Resistant
- Compatible with all Series ITS 5015 type connector shell sizes
- Durable chemical-resistant material
- Colored materials facilitate connector and cable identification and/or connector phases

SERIES ITS-RG

RadGrip™ Easy-Mate Rubber Covered Coupling Nut Connectors

Straight and 90° Plugs

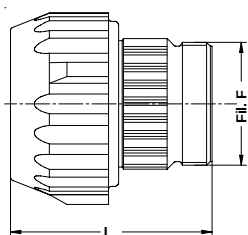


90° right-angle plug with RGG cable gland

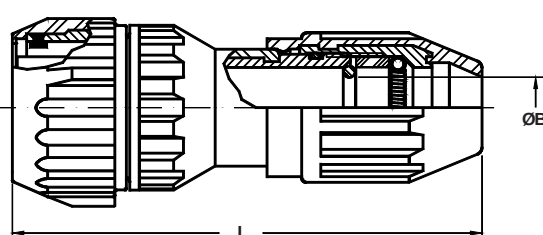
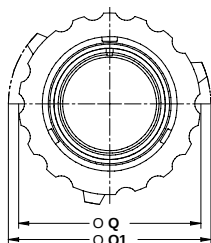


Straight plug with optional strain relief clamp. Consult factory for additional backshell options in the ITS-RG series

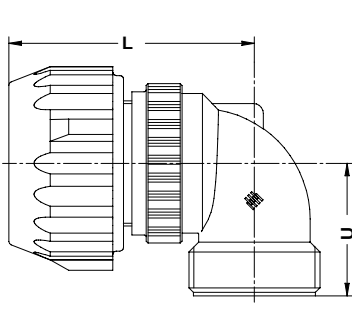
How To Order										
Sample Part Number	ITS	G	31	06	RGG	20-27	P	Y	BK	
Product Series	Reverse-Bayonet Coupling Connector									
Grounding Fingers	G = Grounding Fingers Omit for Standard									
Contact Type	31 = Solder 41 = Crimp									
Shell Style	06 = Straight Plug with Accessory Threads 08 = Plug with 90° Backshell									
Connector/Backshell Class	RGG = Plug, environmental with rubber-covered coupling nut and cable gland RRG = Plug, environmental with rubber-covered coupling nut and rubber-covered EMI/RFI cable sealing backshell									
Shell Size/Insert Arrangement	See Catalog									
Contact Gender	P = Pin S = Socket									
Alternate Insert Rotation	Omit for Normal									
Color Code	BK = Black RD = Red YL = Yellow BL = Blue OR = Orange LG = Light Green GY = Grey									



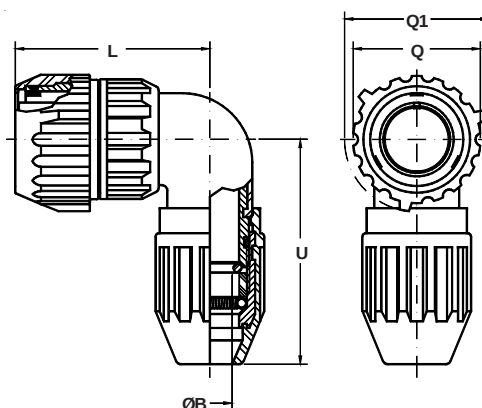
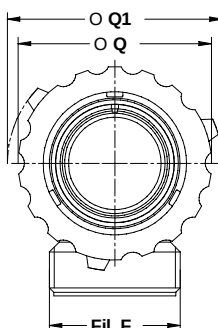
ITS-RGG (06) Straight Plug



ITS-RRG (06) Straight Plug with EMI/RFI Cable Sealing Backshell



ITS-RGG (08) 90° Right-Angle Plug



ITS-RRG (08) 90° Right-Angle Plug with EMI/RFI Cable Sealing Backshell

Why Choose **GLENAIR?**



Plenty of Raw Materials!



Outstanding
Customer Service!



Abundant Machining Capacity!



In-House Assembly!



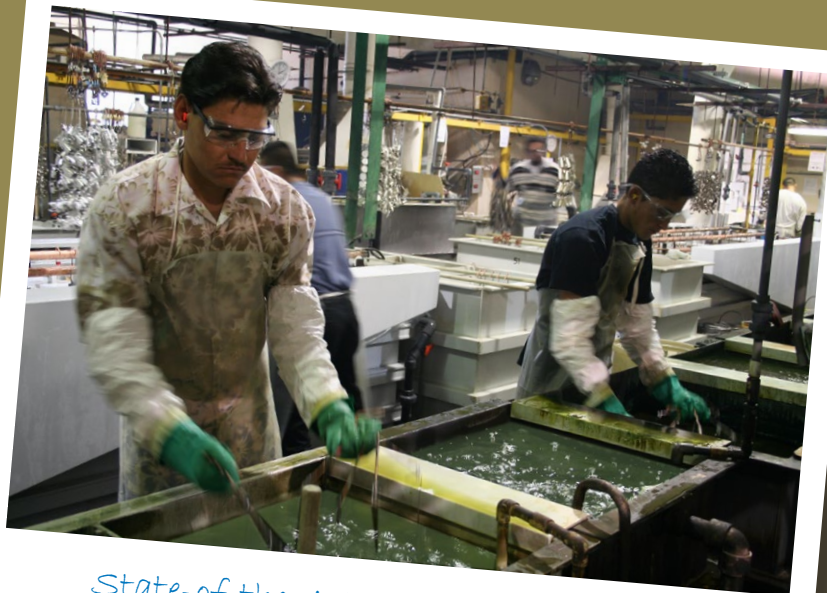
Huge "Same-Day" Inventory!



One of North America's
and Machining



High-Production Injection
Molding Equipment



State-of-the-Art Plating Capabilities



The Industry's Most Experienced
EMI/RFI Braided Shielding Specialists



Largest CNC Milling
Installations



Clean Rooms for Filter Array and Printed
Circuit Board Assembly



Out of This World
**INTERCONNECT
SOLUTIONS**

Glenair, Inc.

1211 Air Way • Glendale, California • 91201-2497
Telephone: 818-247-6000 • Fax: 818-500-9912 • sales@glenair.com
www.glenair.com

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Products Group**

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06492

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Glenair Italia S.p.A.

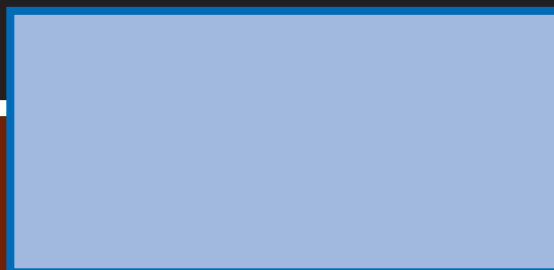
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sales@glenair.fr





SERIES 22 GEO-MARINE® CONNECTORS AND CABLES

