

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.

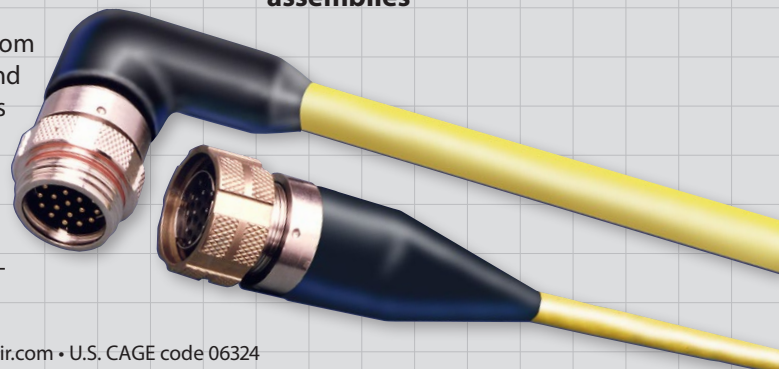
Design

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.



Geo-Marine®

- 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 +125°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

Contact Size	Suggested Operational Voltage (Sea Level)		Test Voltage (Sea Level)
	AC(RMS)	DC	
22 GA	400	550	1300 VDC
20 GA	600	850	1800 VDC
16 GA	900	1250	2300 VDC
12 GA	300	450	2300 VDC

Insulation Resistance: 1000 Megohms minimum at 500 VDC

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

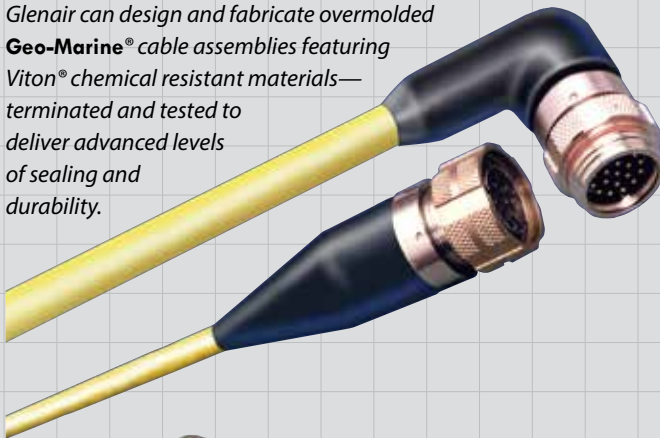


Series 22 Geo-Marine® Specifications



Materials/Potting		
Item	Material	Potting
Connector Shells	CRS 316 SAE-AMS-QQ-S-763	Stycast 2651/Catalyst 9
Protective Covers	CRS 316 SAE-AMS-QQ-S-763	
Solder Mount Receptacle	CRS 316 SAE-AMS-QQ-S-763	
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	
Insulators, Class "H"	Fused Vitreous Glass	
Contacts, Pin - Class "E"	Leaded Nickel Copper, CA 7021	
Contacts, Pin - Class "H"	Nickel-Iron Alloy 52 - MIL-I-23011, Class 2	
Contacts, Socket	Copper Alloy, CA7021	
Contacts, Socket Hood	CRS, SAE-AMS-QQ-S-763 AISI 305	
O-Rings	Nitrile (Buna-N) Rubber MIL-G-21569	
Interfacial and Peripheral Seals	Flourosilicone Rubber MIL-DTL-25988	

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.



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 = $\pm 5^\circ$

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.

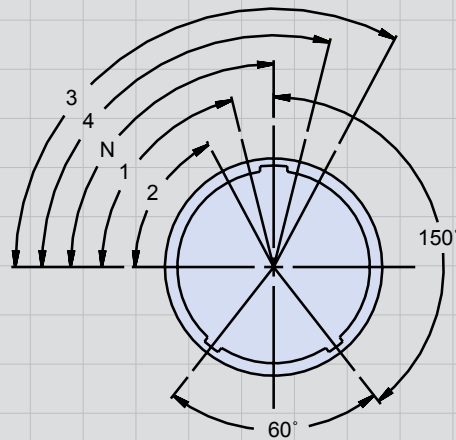


Series 22 Geo-Marine® Harsh-Environment Connectors, Cables and Accessories Contact Arrangements

A

STANDARD AND CUSTOM CONTACT ARRANGEMENTS AND KEYWAY POSITIONS (POLARIZATION)

Insert Arrangements					
Shell Size	Series 22 Pattern	Contact Size/Quantity			
		22	20	16	12
10	10-2			2	
	10-4			4	
	10-6		6		
	10-13	13			
12	12-8			8	
	12-10		10		
	12-22	22			
14	14-4				4
	14-12			14	
	14-19		19		
	14-37	37			
16	16-6				6
	16-19			19	
	16-26		26		
	16-55	55			
18	18-8		8		
	18-11			11	
	18-22			22	
	18-32		32		
	18-66	66			
20	20-11				11
	20-30			30	
	20-38		30	8	
	20-41		41		
	20-79	79			
22	22-19				19
	22-38			38	
	22-50	48			2
	22-55		55		
	22-85	85			
24	24-24			12	12
	24-48			48	
	24-61		61		
	24-100	100			
	24-128	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	62	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.

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

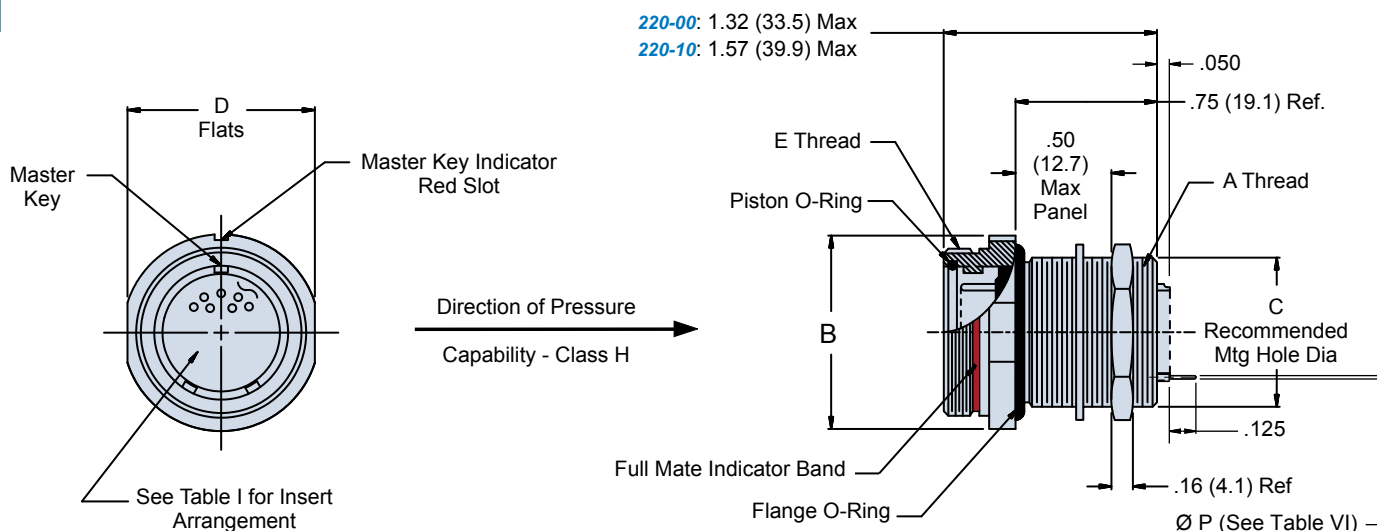
SERIES 22 RECEPTACLE IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS



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).

B



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	2-017
12	2-016	2-019
14	2-018	2-021
16	2-020	2-023
18	2-022	2-025
20	2-024	2-027
22	2-026	2-029
24	2-028	2-030

*Parker O-Ring Part Numbers.
Compound N674-70 Or Equivalent

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



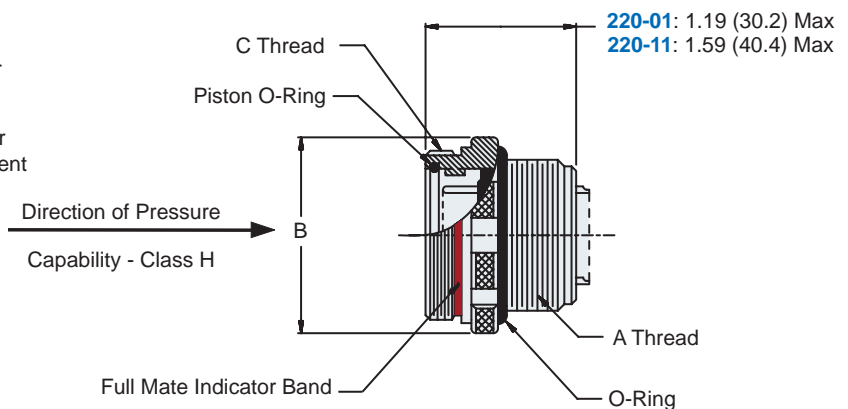
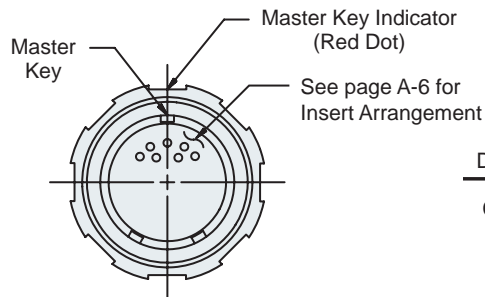
SERIES 22 IN-LINE RECEPTACLE IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS



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

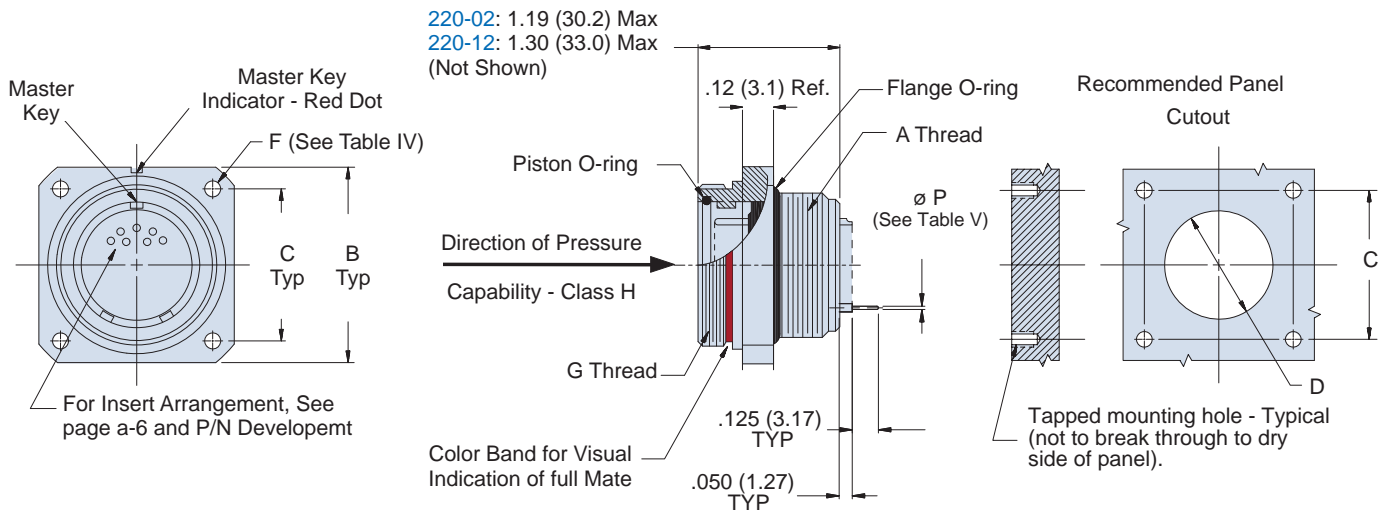
SERIES 22 SQUARE FLANGE RECEPTACLE IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS



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).

B



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



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

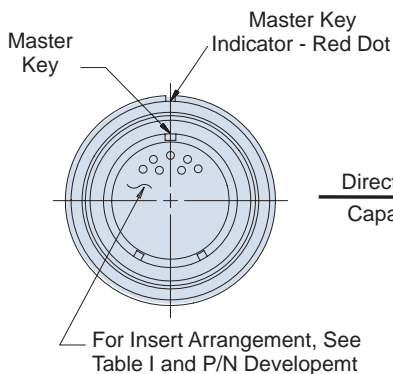


220-13 Scoop-Proof Shell

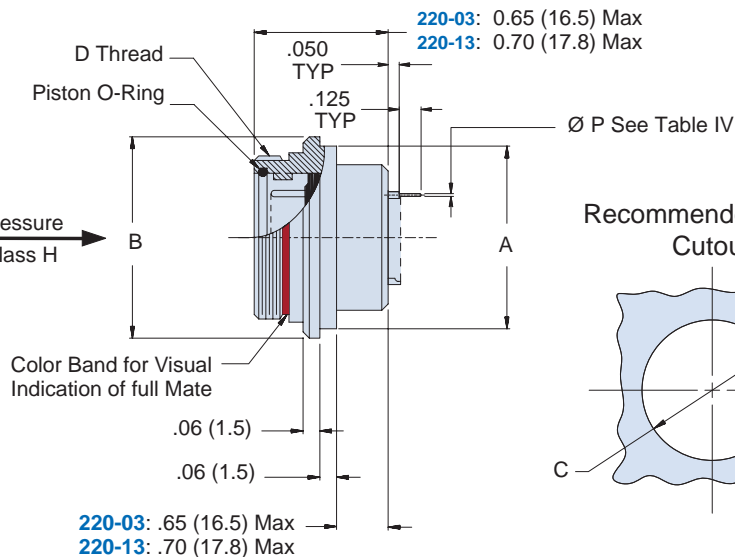
How To Order					
Sample Part Number	220-03	H	24-61	P	N
Series and Shell Style	220-03 - Standard 220-13 - Scoop-Proof				
Class	H = Hermetic				
Shell Size - Insert Arrangement	See page A-6				
Contact Style	P = Pins S = Sockets C = Pin, PC Termination D = Socket, PC Termination				
Polarization	N, 1,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

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

B



Direction of Pressure Capability - Class H



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

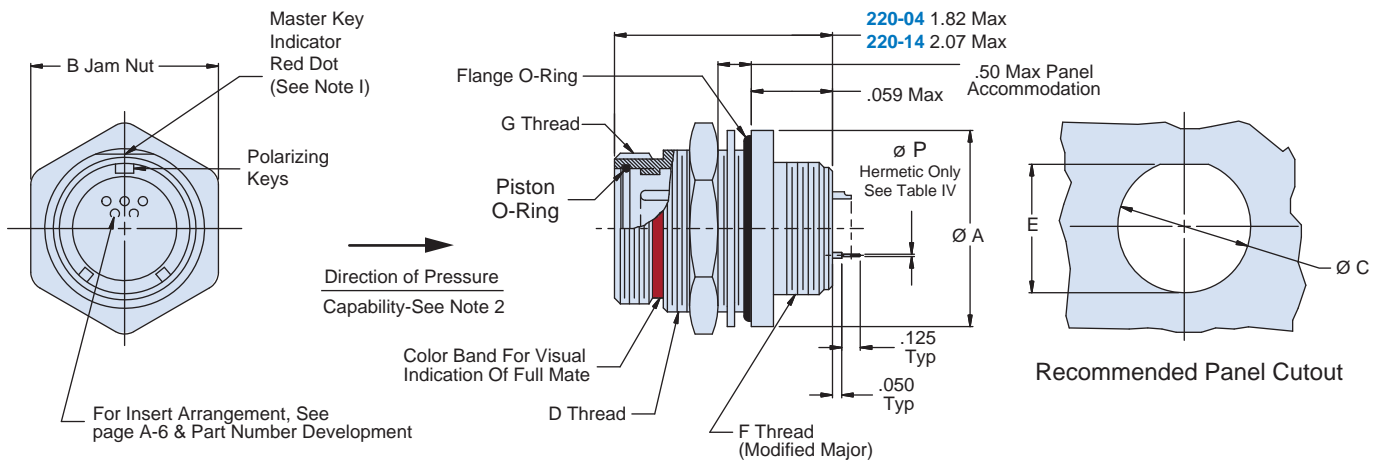
SERIES 22 RECEPTACLE IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS



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).

B



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 ±.005±(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 ±.005 ±(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.

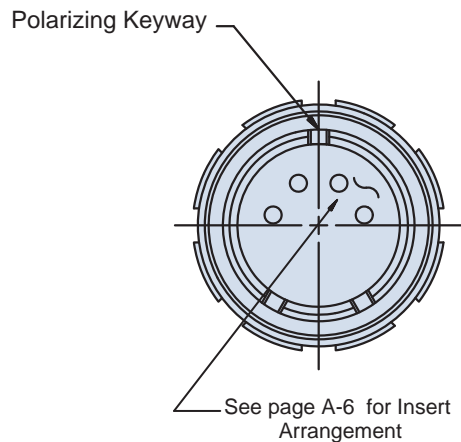


SERIES 22 CABLE PLUG IN STANDARD OR SCOOP-PROOF SHELL WITH PIN OR SOCKET CONTACTS

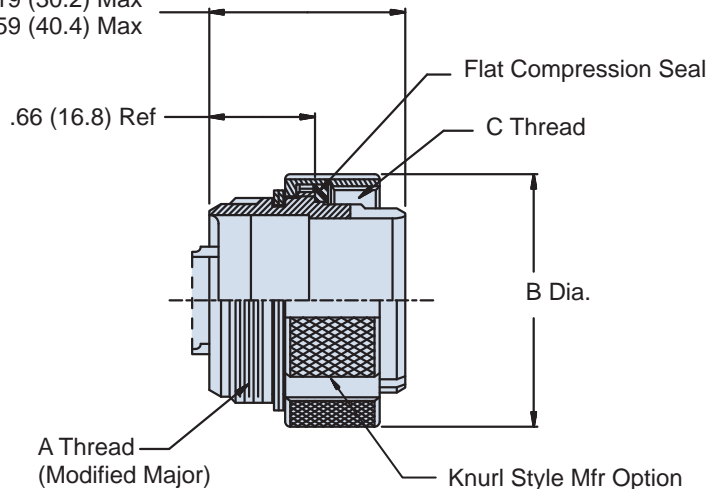


How To Order					
Sample Part Number	220-06	E	24-61	S	N
Series and Shell Style	220-06 - Standard 220-16 - Scoop-Proof				
Class	E = High-Pressure Environmental				
Shell Size - Insert Arrangement	See page A-6				
Contact Style	P = Pin S = Socket				
Polarization	N, 1, 2, 3, 4 See page A-6				

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

B

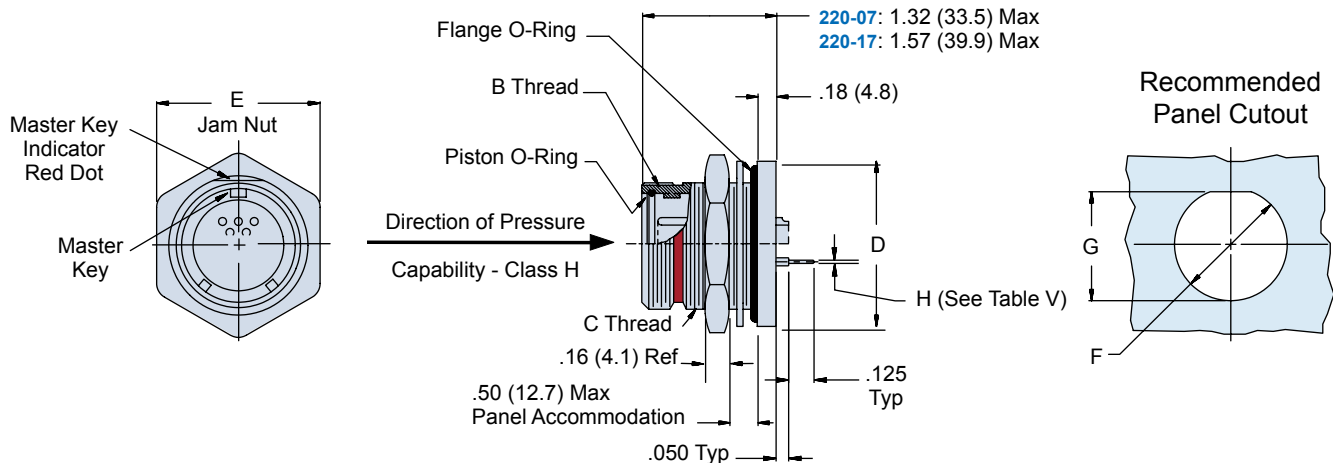
SERIES 22 JAM NUT RECEPTACLE WITH PIN, SOCKET, PIN PCB OR SOCKET PCB CONTACTS



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



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 ±.005± (0.1)	G ±.005± (0.1)
10	.750 - .1P - .1L	7/8 - 20 UNEF	1.25 (31.8)	1.125 (28.6)	.885 (22.5)	.835 (21.2)
12	.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	2-020
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 ± 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

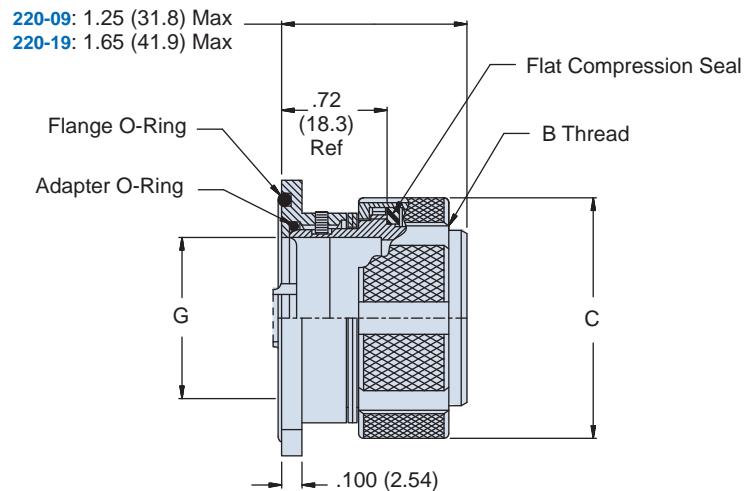
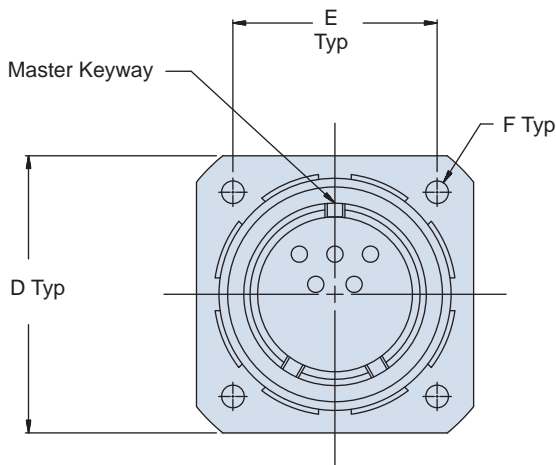
Contact Size	H Dia
12	.095/.093 (2.413/2.362)
16	.0635/.0615 (1.613/1.549)
20	.024/.028 (0.711/0.610)
22D	.021/.018 (0.533/0.457)

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