Subsea Connectors

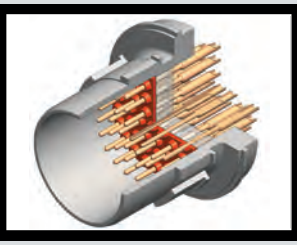
Burton

Electro Oceanic

COOPER Interconnect

Solutions You Can Trust In Challenging Conditions

Underwater Solutions for Harsh Environments



Cooper Interconnect offers one of the most comprehensive product lines of connectors and cable assemblies for Subsea and Underwater environments.

No matter how harsh the environment, Cooper Interconnect provides connectors designed for the toughest conditions, whether requiring a hydrostatic pressure of 20,000 PSI, or ensuring a perfect working camera for an underwater marine picture.

Whatever your underwater interconnection need, Cooper Interconnect has a solution for you.

Burton Connectors

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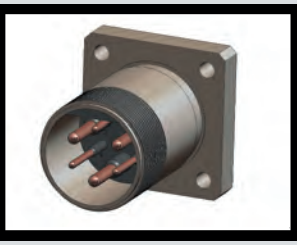


The Burton name is one of the most trusted in the subsea world, offering high-quality, rugged connectors for the most demanding applications. They are designed for durability and extreme reliability.

Trust your interconnect needs to Cooper Interconnect's Burton connectors.

Solid works models and PDF drawings available upon request.

5500 Series Overview

BURTON

The 5500 Series is an extremely rugged and reliable underwater electrical connector. It is the standard Burton connector series with pins in the receptacles and sockets in the plugs.

The pin and socket relationship is due to the fact that in most applications, power runs from the plug into the receptacle. For safety reasons, it is desirable never to have power available on the pin side. For reverse power applications, refer to Burton's 6600 Series.

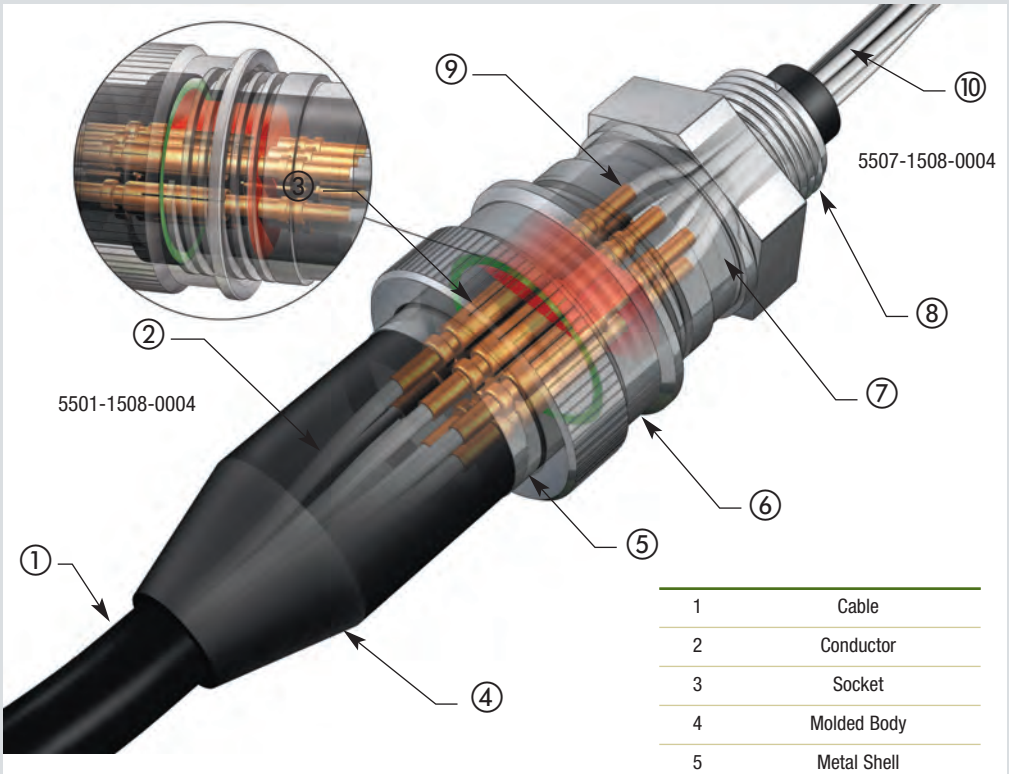
For over four decades, the Burton 5500 Series has been the industry standard connector for applications, which require reliable service in severe situations. The rugged metal shells, recessed pins, and face-type seals assure dependable service in the most demanding situations

Receptacle Installation
Bulkhead connectors should be torqued to the following specifications.

Shell	Torque
15	125 lb-In
16	125 lb-In
20	165 lb-In
24	225 lb-In
32	335 lb-In

For panel mount receptacles, use 4 bolts to hold them in place. Recommended sizes and torques are:

Shell	Bolt	Torque
15	#10	25 lb-In
16	#10	25 lb-In
20	1/4	45 lb-In
24	1/4	45 lb-In
32	5/16	85 lb-In



1	Cable
2	Conductor
3	Socket
4	Molded Body
5	Metal Shell
6	Locking Ring
7	Keyway
8	Metal Shell
9	Pin
10	Pigtails

Part Number System

55 0 1 - 24 20 - 0004

- 0004: Length in feet or assembly length
- 20: Number of contacts
- 24: Shell size
- 1: Style:
  - 1-CCP
  - 2-CCR
  - 6-FCR
  - 7-BCR
- 0: Special designation:
  - A-Attachable
  - R-Right angle
  - 0-600v (standard)
  - 1-1000v
  - 2-2000v
  - 3-3000v
  - 9-1100v (special)
- 55: Series

Data and Specifications

Pressure Rating	10,000 PSI
Voltage Rating	600 - 3000
Ampacity	See Appendix

Materials

Contact	High cond. copper alloy
Penetrator Shell	316L SS (passivated) Titanium, Monel, and other materials available upon request
Penetrator Body	Integrally molded elastomer
Cable	UL SOW-A or Mil-C-915
Pigtails	Mil-W-16878

5500 Series Assembly

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The 5500 Series has a number of features which are designed to make them rugged and reliable even in severe service. Use the Burton 5500 Series for mission critical applications.

5500 Series Features

Burton 5500 Series connectors have no O-Ring seal between the plug and receptacle. Our seal is a face-type seal integrally molded as part of the plug and cannot fall off.

Stub acme threads are used on the 16-size and larger shells. Stub acme threads are difficult to cross thread or damage.

The electrical contacts have crimp connections to the conductor; not solder joints. Crimp contacts have superior flex life compared to soldered joints.

All elastomer to metal bonding surfaces are sandblasted, cleaned, and primed. Then units are molded under several thousand pounds of pressure for 20 or minutes at high temperature. This assures a complete bond which prevents water migration.

Receptacle Features

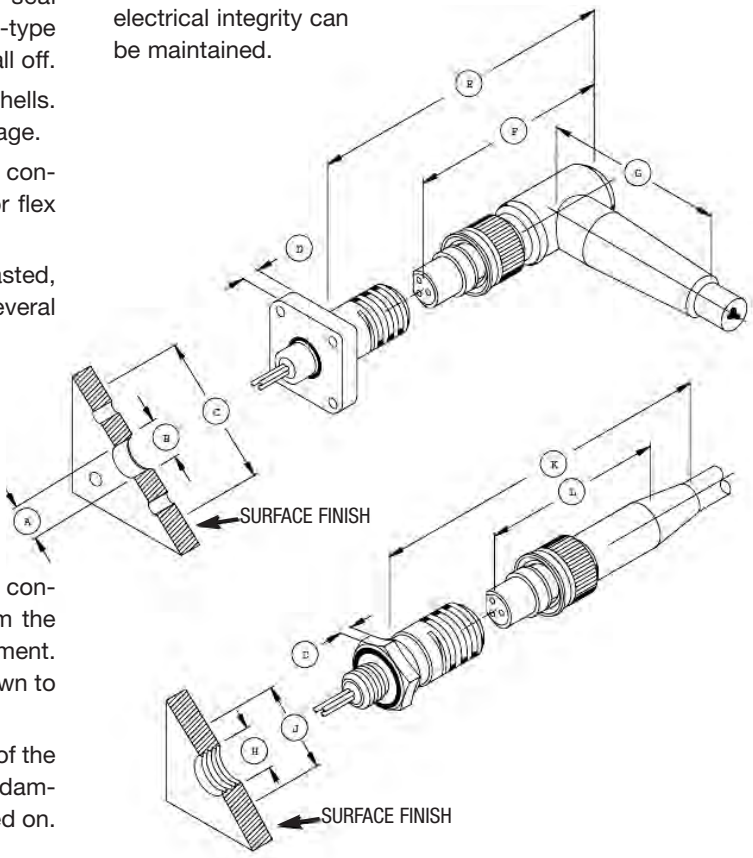
The Burton 5500 Series receptacles have a unique water blocking system. The water blocking exists down to the conductor level. This means that in the event of a catastrophic failure of the connector system, such as the plug being torn away from the receptacle, water will not enter your valuable equipment. Many competing connector lines do not waterblock down to the conductor level.

The pins are completely contained within the envelope of the metal shell. This means that pins will not be bent or damaged when the connector has been impacted or stepped on.

Plug Features

The plugs have a metal shell under the elastomeric body. It makes them very rugged and resistant to flexing damage.

The plug contacts are completely bonded and isolated from each other. This means that if the cable jacket is damaged and water migrates into the plug, electrical integrity can be maintained.



5500 Series Assembly Dimensions in English (Metric)

Shell Size	A	B	C	D	E	F	G	H	J	K	L
15	0.65 (16.5)	0.68 (17.3)	1.95 49.5)	0.31 (7.9)	3.19 (81.0)	2.75 (69.9)	2.12 (53.8)	0.68 (17.3)	1.30 (33.0)	3.00 (76.2)	1.78 (45.2)
16	0.65 (16.6)	0.68 (17.8)	2.12 (53.8)	0.38 (9.7)	---	---	---	0.68 (17.0)	1.30 (33.0)	3.89 (98.8)	2.45 (62.2)
20	0.77 (19.6)	0.79 (20.1)	2.31 (58.7)	0.38 (9.7)	3.97 (100.8)	3.24 (82.3)	2.90 (73.7)	0.79 (20.1)	1.44 (36.6)	5.40 (137.2)	2.75 (69.9)
24	1.02 (25.9)	1.04 (26.4)	2.66 (67.6)	0.38 (9.7)	4.50 (114.3)	3.87 (98.3)	3.25 (82.6)	1.05 (26.7)	1.73 (43.9)	5.43 (137.9)	2.80 (71.1)
32	1.52 (38.6)	1.54 (39.1)	3.50 (88.9)	0.38 (9.7)	5.13 (130.3	4.50 (114.3)	4.59 (116.6)	1.55 (39.4)	2.31 (58.7)	6.12 (155.4)	3.94 (100.1)

5500 Series Connector Configurations

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Please refer to the illustrations on the facing page. The receptacles (which have pin contacts) are shown on the top. The plugs (which have socket contacts) are shown on the bottom. This is the standard arrangement as power normally flows from the plug into the socket. For safety reasons, the possibility of live power on pins should not be allowed. If the reverse contact arrangement is required, please refer to the Burton 6600 Series.

The descriptions below correspond to the illustration to the right. The part number refers to the first 4 digits of the part number.

BCR Bulkhead Connector Receptacle (5507)
Less expensive than the FCR, this is the standard receptacle mount. It may be used with any plugs. When using the BCR with a right angle plug (CCP-RA), a BCR retaining ring must be used instead of tapped threads. This is due to keyway orientation.

FCR Flange Connector Receptacle (5506)
Like the BCR, this is a mounted receptacle. It is more expensive since it is machined from a larger block of stainless steel. It is also more difficult to mount since it requires five holes instead of one. However, it is ideal for use with the right angle plug since keyway orientation can be controlled. It is possible to get this receptacle with an extra O-Ring seal mounted on the F surface for an additional piston type seal (available by special order).

CCR Cable Connector Receptacle (5502)
An in-line receptacle mounted on a cable. It can be used as part of a cable splice unit or other specialized application.

CCR-AT, Attachable (55A2)
Used in the same applications as the CCR except that it is designed to be attached to its cable by the customer.

CCP Cable Connector Plug (5501)
The standard plug for most applications. Like all of the plugs, it mates to any of the receptacles. This plug is molded to cable at the Cooper Interconnect factory.

CCP-RA Cable connector Plug, Right Angle (55R1)
This plug should be used when the cable must exit the receptacle at a 90-degree angle. Normally, the FCR is recommended for use with the right angle plug to assure keyway orientation.

CCP-AT Cable Connector Plug, Attachable (55A1)
Used in the same applications as the CCP except that it is designed to be attached to its cable by the customer. A variation of this plug is available as a PBOF (pressure balanced oil filled) assembly. The connector shell is modified to accept a new backshell, which has an oil fill port and a hose attachment. Please see page 11 for details.

5500 Series Dimensions in English (Metric)

Shell Size	5A thd*	5B	5C	5D	5E	5F	5G	5H thd*	5J	5K	5L	5M dia	5N	5P dia	5R	O-Ring	5S	5T dia	5U	5X
15	15/16-20	2.45 (62.2)	1.09 (27.7)	1.13 (28.6)	1.25 (31.8)	0.50 (12.7)	0.31 (7.92)	5/8-18	1.00 (25.4)	1.50 (38.10)	2.12 (53.8)	0.63 (15.88)	1.47 (37.3)	0.78 (19.8)	1.55 (39.4)	-116	0.68 (17.35)	0.22 (5.563)	2.75 (69.9)	2.87 (72.9)
16	1-9	3.31 (84.1)	1.17 (29.7)	1.13 (28.6)	1.50 (38.1)	0.50 (12.7)	0.38 (9.53)	5/8-18	1.13 (28.6)	1 .63 (41.28)	—	0.63 (15.88)	—	—	—	-116	—	0.22 (5.563)	—	—
20	1-1/4-9	4.80 (121.9)	1.50 (38.1)	1.25 (31.8)	1.50 (38.1)	0.50 (12.7)	0.38 (9.53)	3/4-16	1.25 (31.8)	1.75 (44.45)	2.90 (73.7)	0.74 (18.80)	1.59 (40.4)	1.06 (26.9)	1.66 (42.2)	-118	1.087 (27.61)	0.28 (7.137)	3.24 (82.3)	4.10 (104.1)
24	1-1/2-9	4.80 (121.9)	1.75 (44.5)	1.50 (38.1)	1.50 (38.1)	0.50 (12.7)	0.38 (9.53)	1-14	1.50 (38.1)	2.00 (50.80)	3.25 (82.6)	0.99 (25.15)	1.68 (42.7)	1.32 (33.5)	1.66 (42.2)	-122	1.32 (33.63)	0.28 (7.137)	3.87 (98.3)	4.88 (124.0)
32	2-9	5.57 (141.5)	2.25 (57.2)	2.00 (50.8)	1.50 (38.1)	0.50 (12.7)	0.38 (9.53)	2-9	2.00 (50.8)	2.63 (66.68)	4.59 (116.6)	1.49 (37.85)	1.70 (43.2)	1.81 (46.0)	1.78 (42.2)	-130	1.81 (46.02)	0.34 (8.738)	4.50 (114.3)	5.57 (101.6)

5500 Series Connector Configurations

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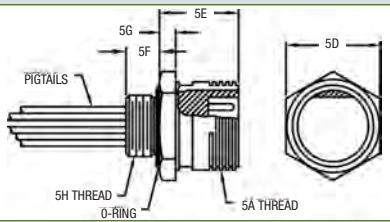
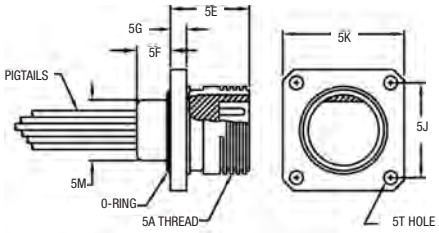
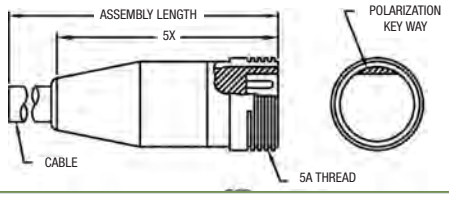
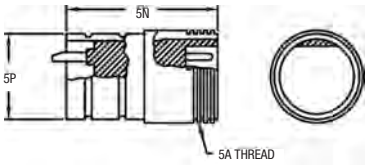
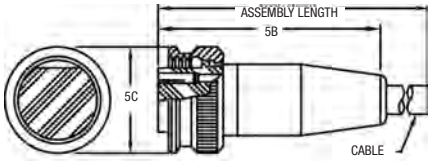
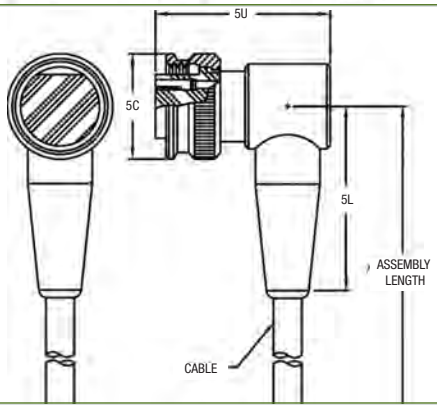
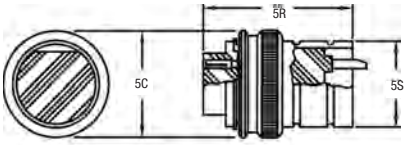
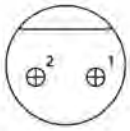
BCR **RECEPTACLE, BULKHEAD** PIN INSERT 5507 SERIES		
FCR **RECEPTACLE, FLANGE** PIN INSERT 5506 SERIES		
CCR **RECEPTACLE, CABLE** PIN INSERT 5502 SERIES		
CCR-AT **RECEPTACLE, ATTACHABLE** 55A2 SERIES		
CCP **PLUG, CABLE** SOCKET INSERT 5501 SERIES		
CCP-RA **PLUG, RIGHT ANGLE** SOCKET INSERT 55R1 SERIES		
CCP-AT **PLUG, ATTACHABLE** 55A1 SERIES		

5500 Series Contact Arrangements

Face view of pin connectors shown. Attaching wire sizes are in parentheses.



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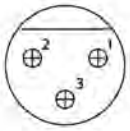
(2 #16 AWG)



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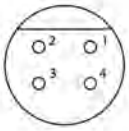

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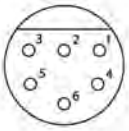

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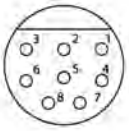

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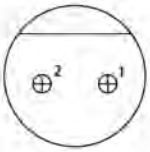

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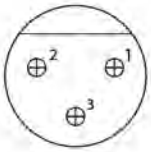

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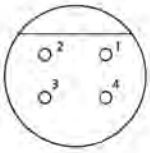

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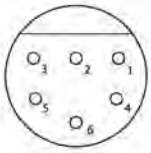

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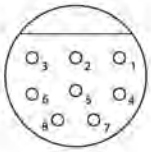

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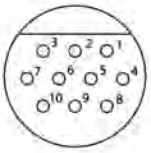

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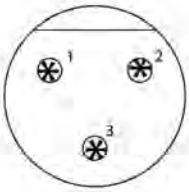

2003
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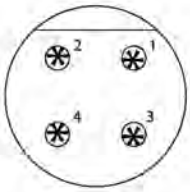

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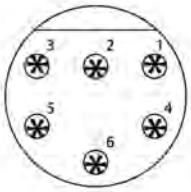

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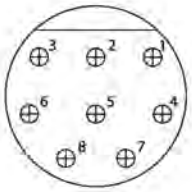

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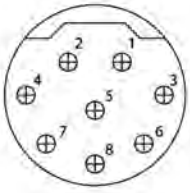

20A8
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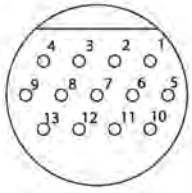
20B3
(3 #16 AWG)



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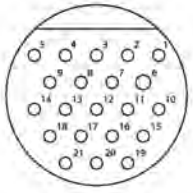
(13 #18 AWG)



2021
(21 #18 AWG)

5500 Series Contact Arrangements

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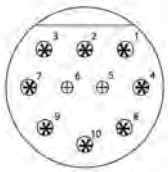
Face view of pin connectors shown. Attaching wire sizes are in parentheses.



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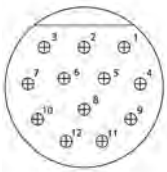

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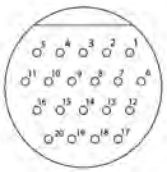

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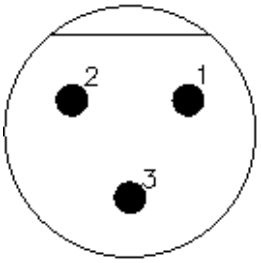

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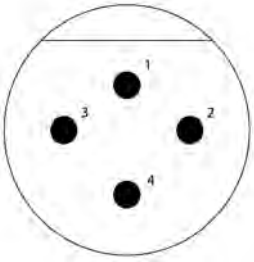
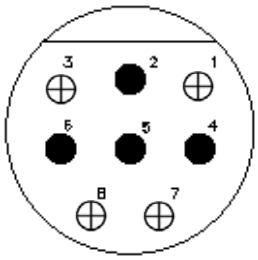
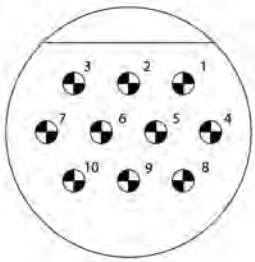


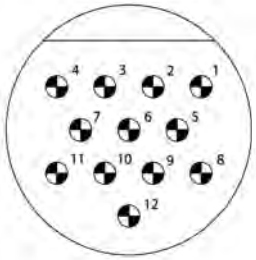
3204
(4 #8 AWG)



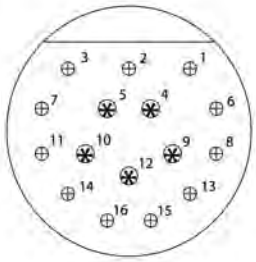
3208
(4 #16 AWG)
(4 #8 AWG)



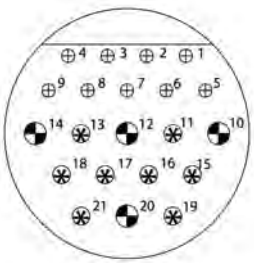
3210
(10 #16 AWG)



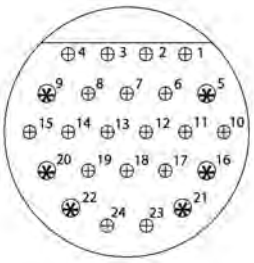
3212
(12 #16 AWG)



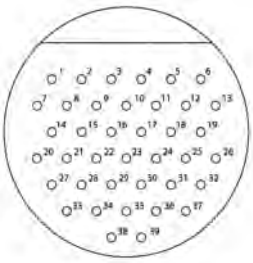
3216
(16 #16 AWG)



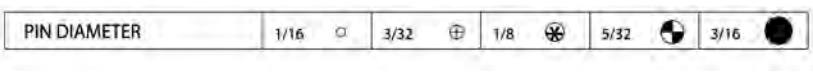
3221
(21 #16 AWG)



3224
(24 #16 AWG)



3239
(39 #18 AWG)



The contact patterns shown on these 2 pages are available for any connector type with the Cooper Interconnect 5500 Series. Cooper Interconnect is constantly adding new items. Some contact patterns are available with larger sized conductors. For example, the 3210 and 3212 are available with up to 12 AWG conductors. For high voltage contact patterns, please see the next page.

5500 Series High Voltage Connectors

BURTON

5500 Series High Voltage Connectors

A number of 5500 Series contact patterns are available with higher voltage ratings (standard rating is 600v). Ratings of 1000v, 2000v, and 3000v are available. Due to certain design constraints and material limitations, not all patterns are available in all voltage ratings.

The Burton 5500 Series high voltage connectors differ from the standard rated units in several areas. There is a contact shoulder, which increases the surface track distance between contacts. Different insulation materials may also be used.

All Cooper Interconnect high voltage connectors differ from the standard rated units in several areas. There is a contact shoulder, which increases the surface track distance between contacts. Different insulation materials may also be used.

All Cooper Interconnect high voltage connectors are built to be equally rugged and reliable as the standard voltage rated items.

The following contact patterns are available. Cooper Interconnect is continuously adding products; please contact the factory for availability of other patterns or specific requirements.

High Voltage Availability			
Pattern	1000v	2000v	3000v
1502	X	X	
1503	X	X	
2004	X	X	X
2006	X		
2013	X		
2403	X	X	X
2410	X	X	
2420	X		
3203	X	X	X
3204	X	X	X
3210	X	X	X
3212	X	X	
3215	X	X	X
3224	X		
3239	X		

1502
(2 #18 AWG)

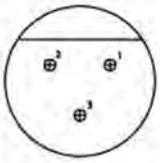
1503
(3 #18 AWG)

1603
(3 #16 AWG)

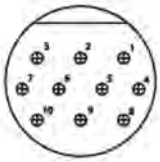
2004
(4 #14 AWG)

2006
(6 #16 AWG)

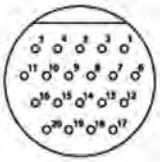
2013
(13 #18 AWG)



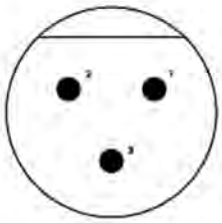
2403
(3 #14 AWG)



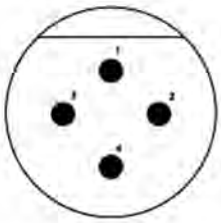
2410
(10 #16 AWG)



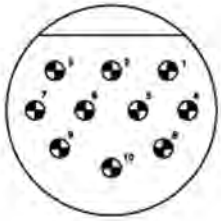
2420
(20 #18 AWG)



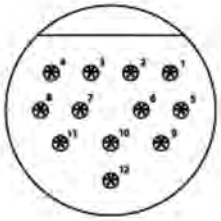
3203
(3 #8 AWG)



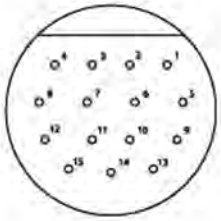
3204
(4 #8 AWG)



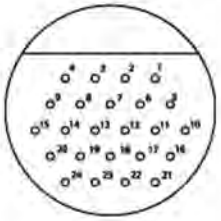
3210
(10 #14 AWG)



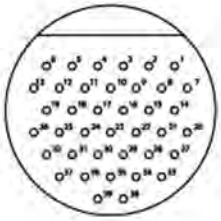
3212
(12 #14 AWG)



3215
(15 #18 AWG)

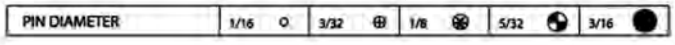


3224
(24 #18 AWG)



3239
(39 #18 AWG)

Face view of pin connectors shown. Attaching wire sizes are in parentheses.



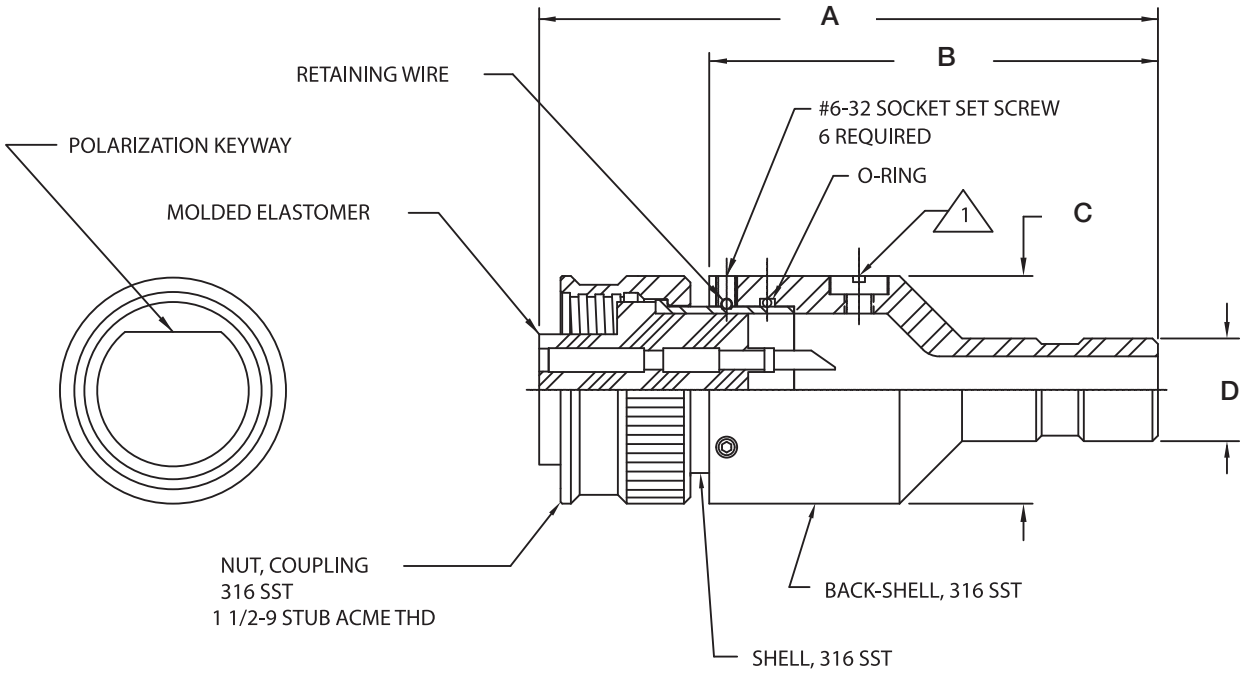
COOPER Interconnect

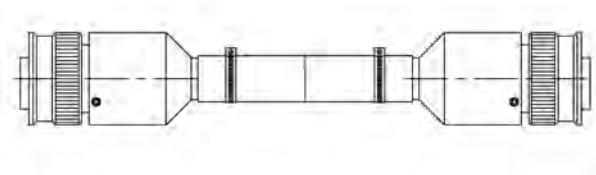
BURTON

Pressure Balanced Oil Filled (PBOF)

The 5500 plugs are also available in PBOF form factor. The plug is a modified 55A1 attachable designed to accommodate a special backshell which has a hose barb and oil fill port. The part number becomes 55P1-XXXX-0000.

Shell Size	A	B	C	D
9	2.29	1.72	0.66	0.40
15	3.80	2.75	1.12	0.67
16	3.95	2.80	1.25	0.67
20	4.04	2.94	1.50	0.67
24	4.19	3.22	1.75	0.67
32	4.25	3.22	2.22	1.00





For special extreme applications, a JIC type fitting is available on the backshell. This makes it possible to use a hydraulic hose instead of clear tubing.

PBOF connectors may be ordered separately or made up as cable assemblies. Due to the difficulty of shipping cable assemblies with oil, we leave that to the customer.