

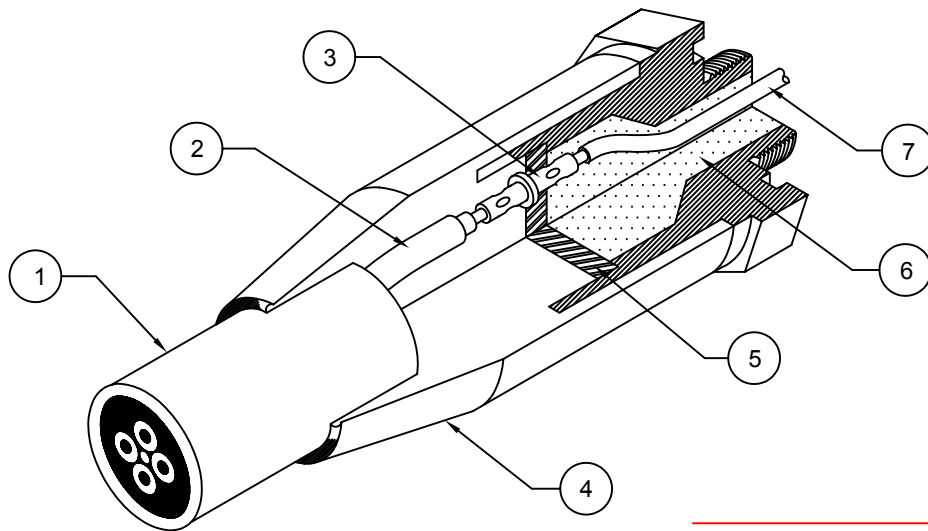
5400 Series

The 5400 Series is an extremely rugged and reliable underwater electrical penetrator for pressures of up to 10,000 psi. It should be used in situations where electrical disconnection is unneeded or unwanted.

These penetrators have a complete Burton style conductor level water blocking system. This will protect valuable pressure bottles in the event of a catastrophic failure such as the destruction of the face of the penetrator or the cable being torn away.

This series of penetrator is only available in the straight configuration. For applications requiring right angle, please consult the factory.

Special configurations are available such as high voltage, pipe threaded bulkhead mount, and flange mount.



1	Cable
2	Conductor
3	"blind" contact
4	Molded body
5	Pressure wafer
6	Epoxy backfill
7	Pigtails

Data and Specifications	
Pressure Rating	10,000 PSI
Voltage Rating	600 - 3000
Ampacity	see Appendix

Materials	
Contacts	High cond. copper alloy
Penetrator Shell	316L SS (passivated)
Penetrator Body	Integrally molded elastomer
Cable	UL SOW-A or Mil-C-915
Pigtails	Mil-W-16878

Part Number System

54 00 - 16 08 - 0004

Series

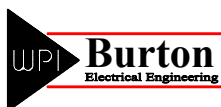
Shell size

Number of contacts

Length in feet

Style:
0-straight (bulkhead mount)
6-flange mount

Special designation:
0-600v (standard)
1-1000v
2-2000v
3-3000v



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5400 Series

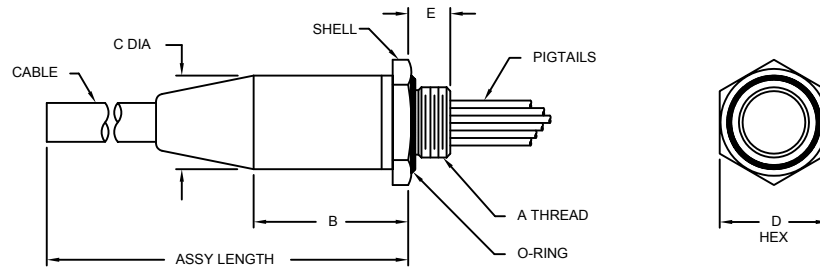


FIGURE A

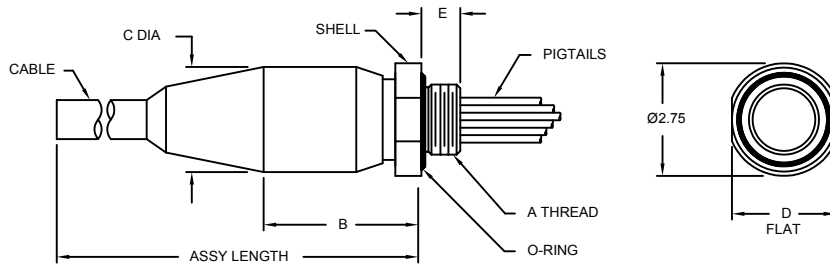


FIGURE B

5400 Series Dimensions (metric dims in parentheses)

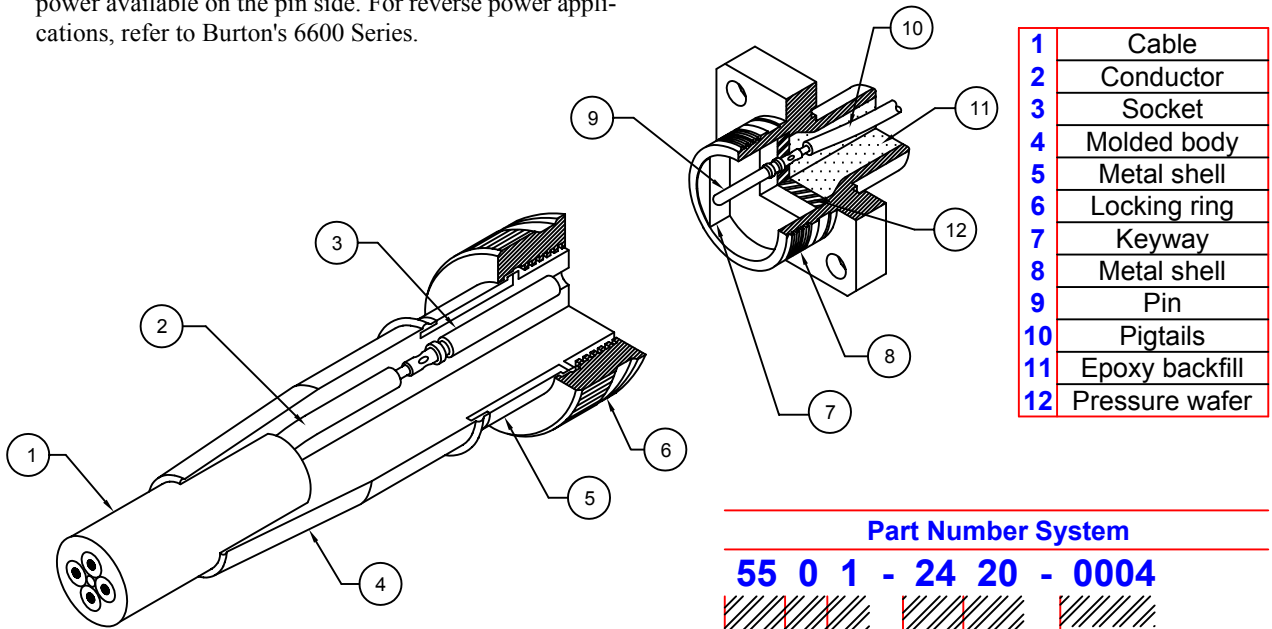
Part #	Fig.	A	B	C	D	E	Size	O-RING
1001							8 AWG	
1002	A	5/8	1.75	1.10	1.125	0.50	12 AWG	2-116
1004			(44.5)	(27.9)	(28.7)	(12.7)	16 AWG	
1601							4 AWG	
1604	A	1"	2.00	1.45	1.50	0.50	8 AWG	2-122
1608		14NF	(50.8)	(36.8)	(38.1)	(12.7)	14 AWG	
1620							16 AWG	
2401							1/0	
2404	A	1 1/2	3.60	1.85	2.00	0.50	4 AWG	2-130
2410		12NF	(91.4)	(47.0)	(50.8)	(12.7)	12 AWG	
2424							16 AWG	
2801							4/0	
2804	B	1 3/4	6.50	2.75	2.50	1.25	2 AWG	2-134
2820		12NF	(165.1)	(69.9)	(63.5)	(31.8)	12 AWG	
2832							16 AWG	

5500 Series

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 3 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.



1	Cable
2	Conductor
3	Socket
4	Molded body
5	Metal shell
6	Locking ring
7	Keyway
8	Metal shell
9	Pin
10	Pigtails
11	Epoxy backfill
12	Pressure wafer

Data and Specifications	
Pressure Rating	10,000 PSI
Voltage Rating	600 - 3000
Ampacity	see Appendix

Materials	
Contacts	High cond. copper alloy
Penetrator Shell	316L SS (passivated)
Penetrator Body	Integrally molded elastomer
Cable	UL SOW-A or Mil-C-915
Pigtails	Mil-W-16878

Part Number System

55 0 1 - 24 20 - 0004

Length in feet

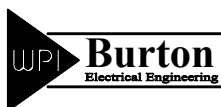
Number of contacts

Shell size

Style:
 1-CCP
 2-CCR
 6-FCR
 7-BCR

Special designation:
 A-Attachable
 R-Right angle
 0-600v (standard)
 1-1000v
 2-2000v
 3-3000v
 9-1100v (special)

Series



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5500 Series

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

5500 Series Features

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

Stub acme threads are used on the 20-size and large 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 more minutes at 300+degrees. This assures a complete bond which prevents water migration.

Receptacle Features

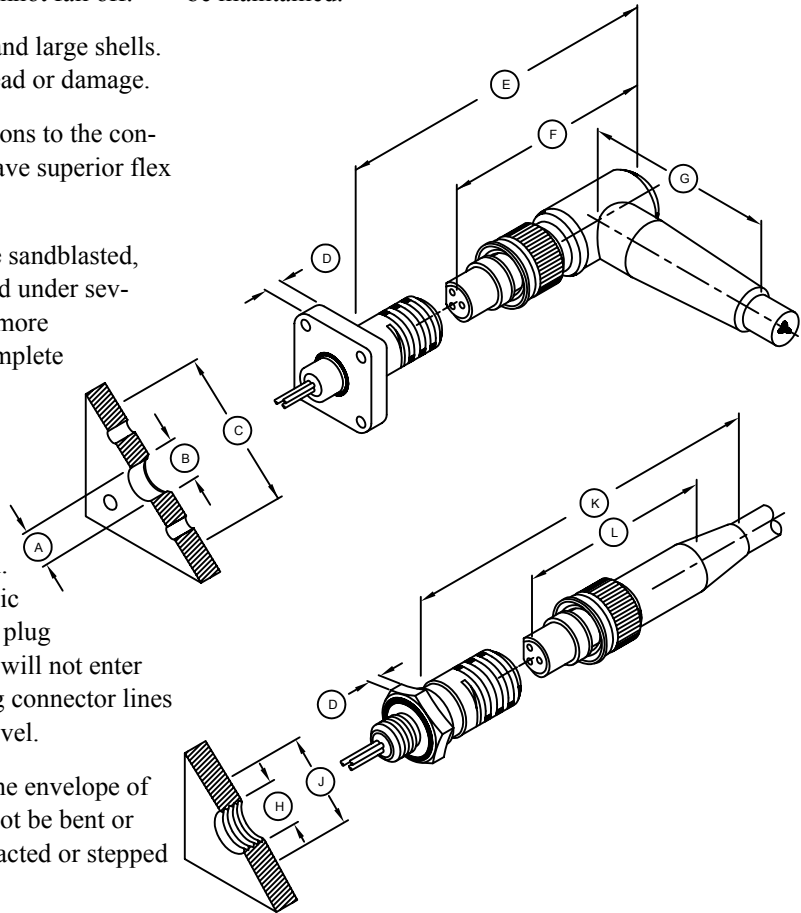
Burton 5500 Series receptacles have a unique water blocking system. The water blocking exists down to the conductor level. This means that in the event of a catastrophic failure of the connector system, such as the plug being torn away from the receptacle, water will not enter your valuable equipment.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

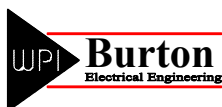


5500 Series Assembly Dimensions

Shell Size	A	B	C	D	E	F	G	H	J	K	L
15	0.65	0.68	1.95	0.31	3.19	2.75	2.12	0.68	1.30	3.00	1.78
16	0.65	0.68	2.12	0.38	---	---	---	0.68	1.30	3.89	2.45
20	0.77	0.79	2.31	0.38	3.97	3.24	2.90	0.79	1.44	5.40	2.75
24	1.02	1.04	2.66	0.38	4.50	3.87	3.25	1.05	1.73	5.43	2.80
32	1.52	1.54	3.50	0.38	5.13	4.50	4.59	1.55	2.31	6.12	3.94

5500 Series Assembly Dimensions in Metric

Shell Size	A	B	C	D	E	F	G	H	J	K	L
15	16.5	17.3	49.5	7.9	81.0	69.9	53.8	17.3	33.0	76.2	45.2
16	16.3	17.0	53.8	9.7	---	---	---	17.0	33.0	98.8	62.2
20	19.6	20.1	58.7	9.7	100.8	82.3	73.7	20.1	36.6	137.2	69.9
24	25.9	26.4	67.6	9.7	114.3	98.3	82.6	26.7	43.9	137.9	71.1
32	38.6	39.1	88.9	9.7	130.3	114.3	116.6	39.4	58.7	155.4	100.1



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5500 Series

5500 Series Connector Configurations

Please refer to the illustration on the facing page. The receptacles (which have pin contacts) are shown on the left. The plugs (which have socket contacts) are shown on the right. 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's 6600 Series.

The descriptions below correspond to the illustration to the right. The receptacles are listed on the left and the plugs on 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 5 holes instead of 1. 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 CCP 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 Burton factory.

CCR-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 consult the factory for details.

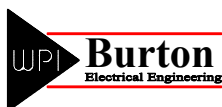
5500 Series Dimensions in English

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	1 ⁵ / ₁₆ -20	2.45	1.09	1.13	1.25	0.50	0.312	5/8-18	1.000	1.500	2.12	0.625	1.47	0.78	1.55	-116	0.683	0.219	2.75	2.87
16	1-9	3.31	1.17	1.13	1.50	0.50	0.375	5/8-18	1.125	1.625	---	0.625	---	---	---	-116	---	0.219	---	---
20	1 ¹ / ₄ -9	4.80	1.50	1.25	1.50	0.50	0.375	3/4-16	1.250	1.750	2.90	0.740	1.59	1.06	1.66	-118	1.087	0.281	3.24	4.10
24	1 ¹ / ₂ -9	4.80	1.75	1.50	1.50	0.50	0.375	1-14	1.500	2.000	3.25	0.990	1.68	1.32	1.66	-122	1.324	0.281	3.87	4.88
32	2-9	5.57	2.25	2.00	1.50	0.50	0.375	1 ¹ / ₂ -12	2.000	2.625	4.59	1.490	1.70	1.81	1.78	-130	1.812	0.344	4.50	5.57

5500 Series Dimensions in Metric (thread dimensions in English)

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	1 ⁵ / ₁₆ -20	62.2	27.7	28.6	31.8	12.7	7.92	5/8-18	25.4	38.10	53.8	15.88	37.3	19.8	39.4	-116	17.35	5.563	69.9	72.9
16	1-9	84.1	29.7	28.6	38.1	12.7	9.53	5/8-18	28.6	41.28	---	15.88	---	---	---	-116	---	5.563	---	---
20	1 ¹ / ₄ -9	121.9	38.1	31.8	38.1	12.7	9.53	3/4-16	31.8	44.45	73.7	18.80	40.4	26.9	42.2	-118	27.61	7.137	82.3	104.1
24	1 ¹ / ₂ -9	121.9	44.5	38.1	38.1	12.7	9.53	1-14	38.1	50.80	82.6	25.15	42.7	33.5	42.2	-122	33.63	7.137	98.3	124.0
32	2-9	141.5	57.2	50.8	38.1	12.7	9.53	1 ¹ / ₂ -12	50.8	66.68	116.6	37.85	43.2	46.0	45.2	-130	46.02	8.738	114.3	101.6

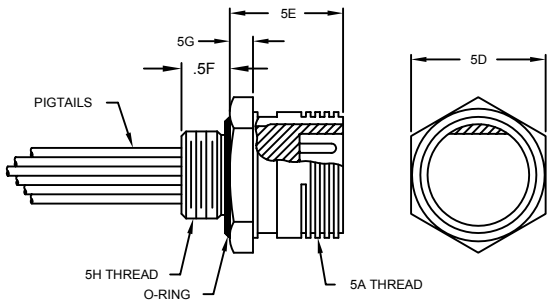
* thread, special
** thread, UNF-2A



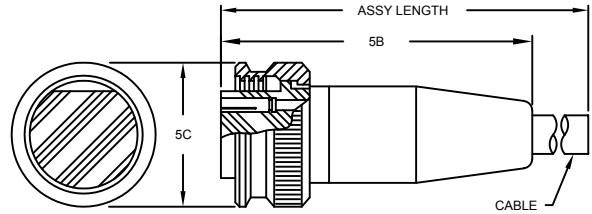
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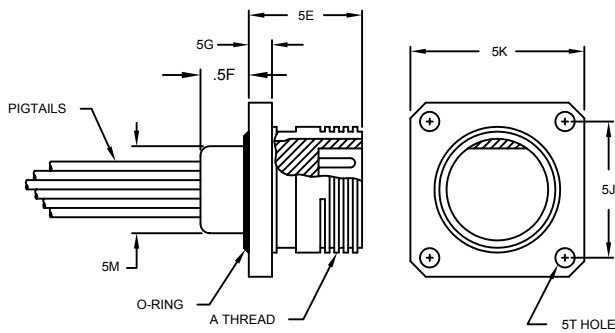
5500 Series



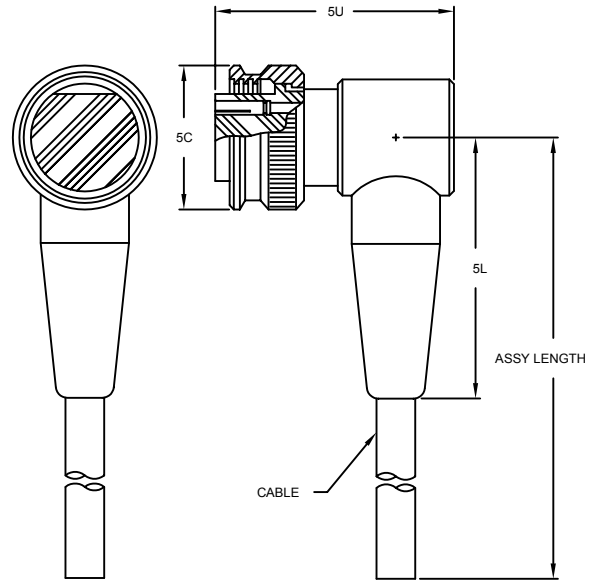
BCR
RECEPTACLE, BULKHEAD
PIN INSERT
5507 SERIES



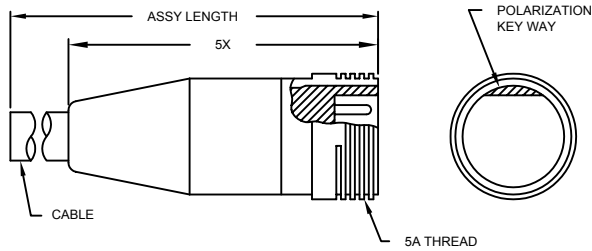
CCP
PLUG, CABLE
SOCKET INSERT
5501 SERIES



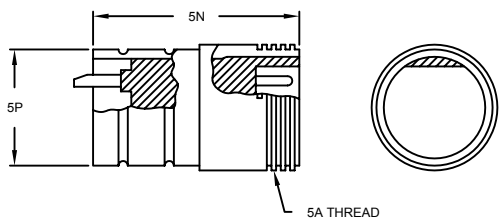
FCR
RECEPTACLE, FLANGE
PIN INSERT
5506 SERIES



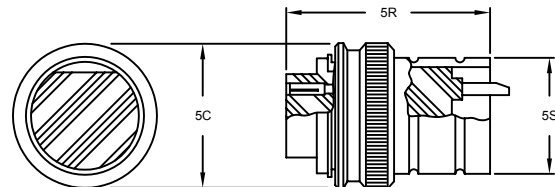
CCP-RA
PLUG, RIGHT ANGLE
SOCKET INSERT
55R1 SERIES



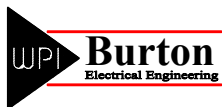
CCR
RECEPTACLE, CABLE
PIN INSERT
5502 SERIES



CCR-AT
RECEPTACLE, ATTACHABLE
55A2 SERIES



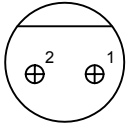
CCP-AT
PLUG, ATTACHABLE
55A1 SERIES



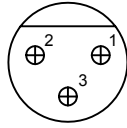
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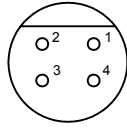
5500 Series



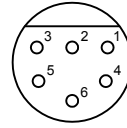
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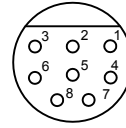
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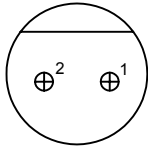
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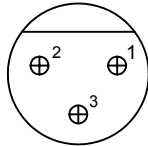
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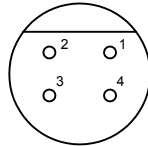
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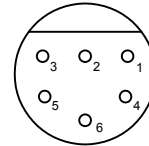
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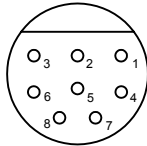
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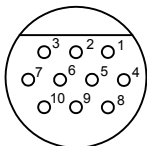
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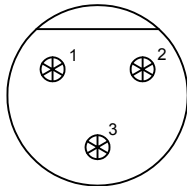
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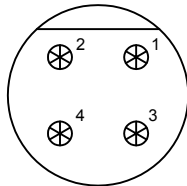
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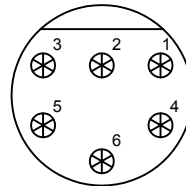
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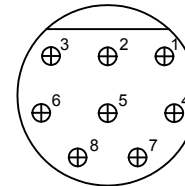
2003
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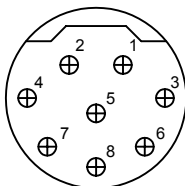
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(4 #16 AWG)



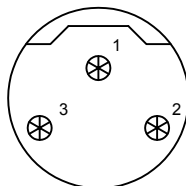
2006
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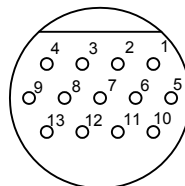
2008
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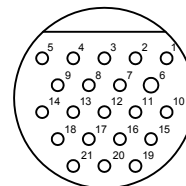
20A8
(8 #16 AWG)



20B3
(3 #16 AWG)

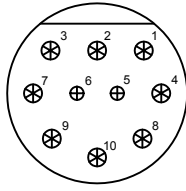


2013
(13 #18 AWG)

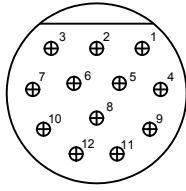


2021
(21 #18 AWG)

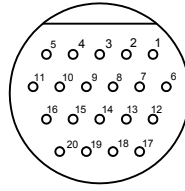
5500 Series



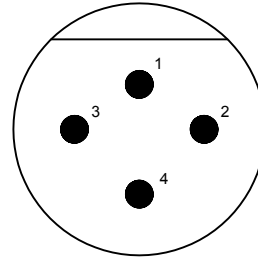
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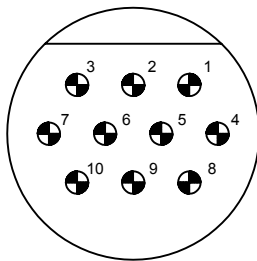
2412
(12 #16 AWG)



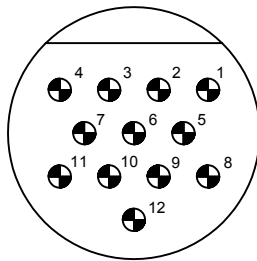
2420
(20 #18 AWG)



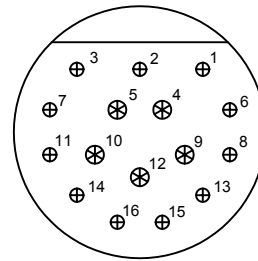
3204
(4 #8 AWG)



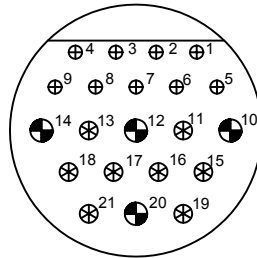
3210
(10 #16 AWG)



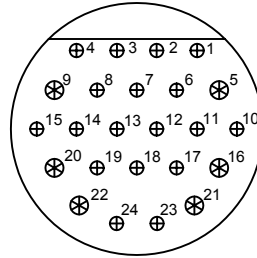
3212
(12 #16 AWG)



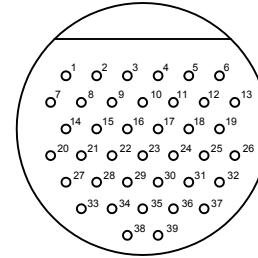
3216
(16 #16 AWG)



3221
(21 #16 AWG)



3224
(24 #16 AWG)



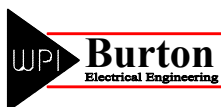
3239
(39 #18 AWG)

PIN DIAMETER	1/16 ○	3/32 ⊕	1/8 ⊗	5/32 ⊖	3/16 ●
--------------	--------	--------	-------	--------	--------

The contact patterns shown on these 2 pages are available for any connector type with the Burton 5500 Series. Burton is constantly adding new items. Please register your catalog to receive automatic updates.

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 pages.



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5500 Series

5500 Series High Voltage Connectors

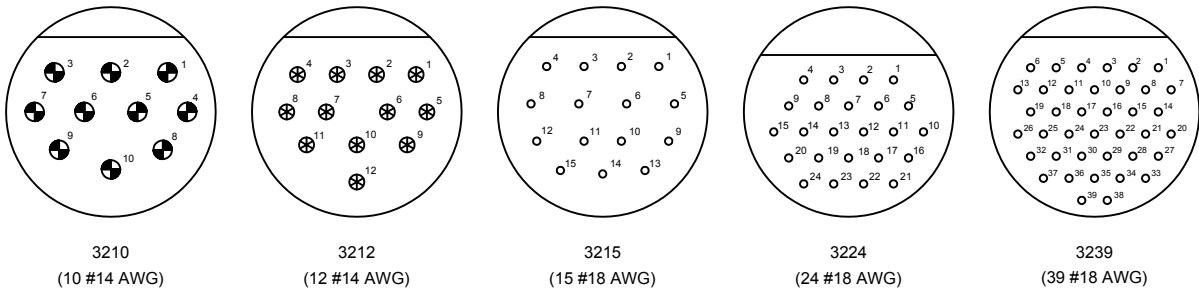
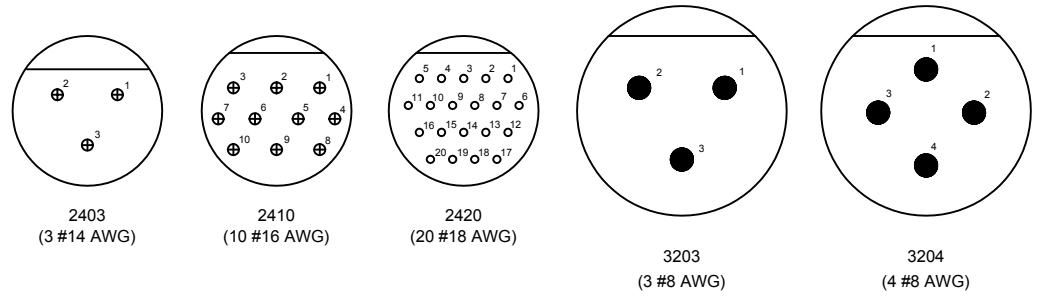
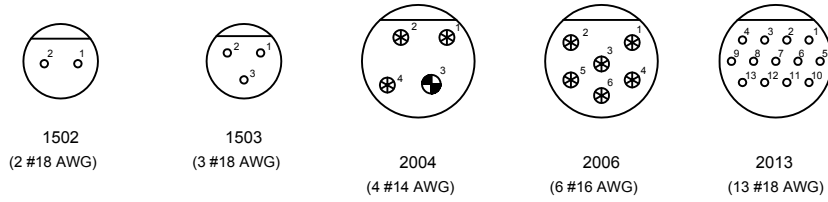
A number of 5500 Series contact patterns are available with higher voltage ratings (standard rating is 600v). Ratings of 1000v, 2000v, and 3000v are available. Due to certain design constraints and material limitations, not all patterns are available in all voltage ratings.

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.

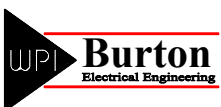
All Burton high voltage connectors are built to be equally rugged and reliable as the standard voltage rated items.

The following contact patterns are available. Burton is continuously adding products, please contact the factory for availability of other patterns.

High Voltage Availability			
Pattern	1000v	2000v	3000v
1502	X	X	
1503	X	X	
2004	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	
3212	X	X	
3215	X	X	X
3224	X		
3239	X		



PIN DIAMETER	1/16	3/32	1/8	5/32	3/16
	○	⊕	⊗	⊙	●



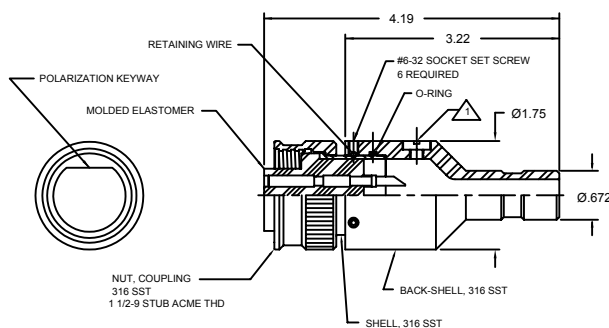
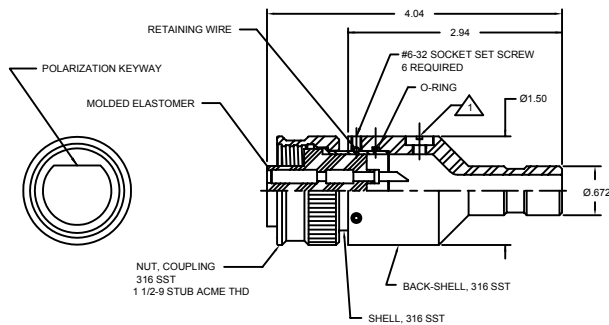
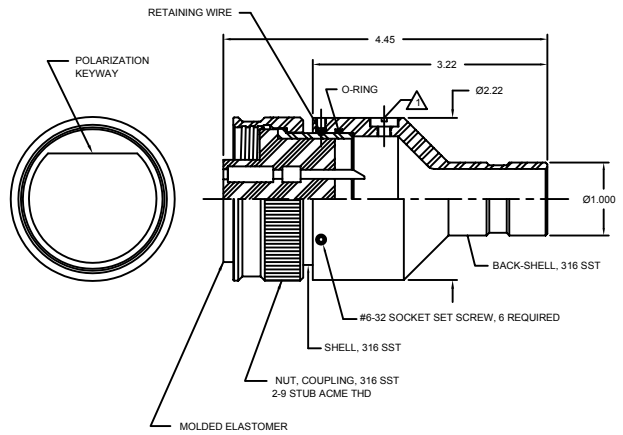
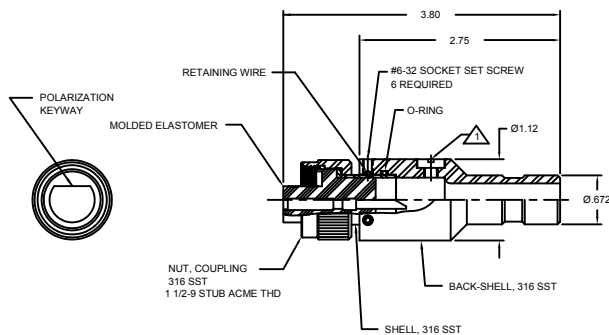
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5500 Series

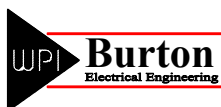
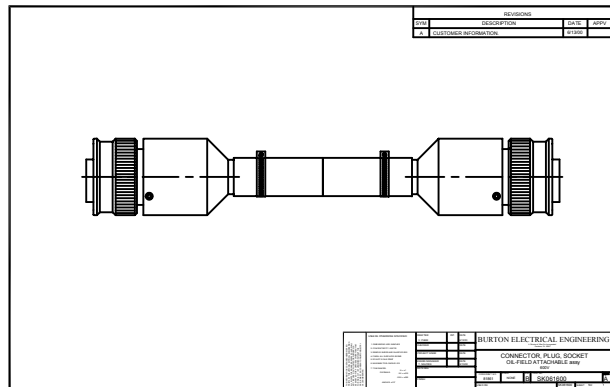
Pressure Balanced Oil Filled (PBOF)

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.



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.

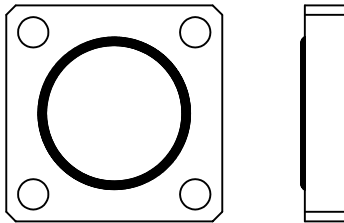
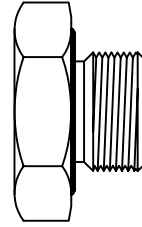


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5500 Series

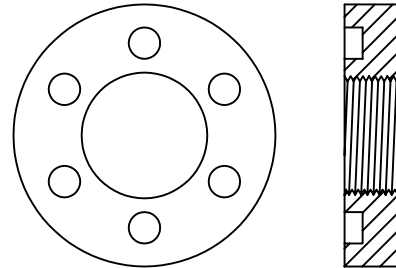
5500 Series Accessories

A number of accessories are available for the 5500 Series. Some are shown on this page. Please contact the factory for specific requests.

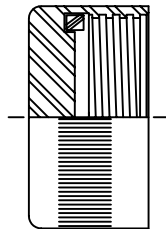


FCR Mounting Cover	
Size	Part Number
15	5106-1500-0000
20	5106-2000-0000
24	5106-2400-0000
32	5106-3200-0000

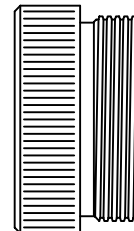
BCR Mounting Plug	
Size	Part Number
15	5107-1500-0000
20	5107-2000-0000
24	5107-2400-0000
32	5107-3200-0000



BCR Retaining Ring	
Size	Part Number
15	5109-1500-0000
20	5109-2000-0000
24	5109-2400-0000
32	5109-3200-0000

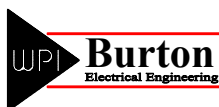


Receptacle Pressure Cap (SS)	
Size	Part Number
15	5101-1500-0000
20	5101-2000-0000
24	5101-2400-0000
32	5101-3200-0000



Receptacle Dust Cap (hard rubber)	
Size	Part Number
15	6700-0124-0151
20	6700-0124-0201
24	6700-0124-0241
32	6700-0124-0321

Plug Dust Cap	
Size	Part Number
15	6700-0125-0151
20	6700-0125-0201
24	6700-0125-0241
32	6700-0125-0321



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5500 Series

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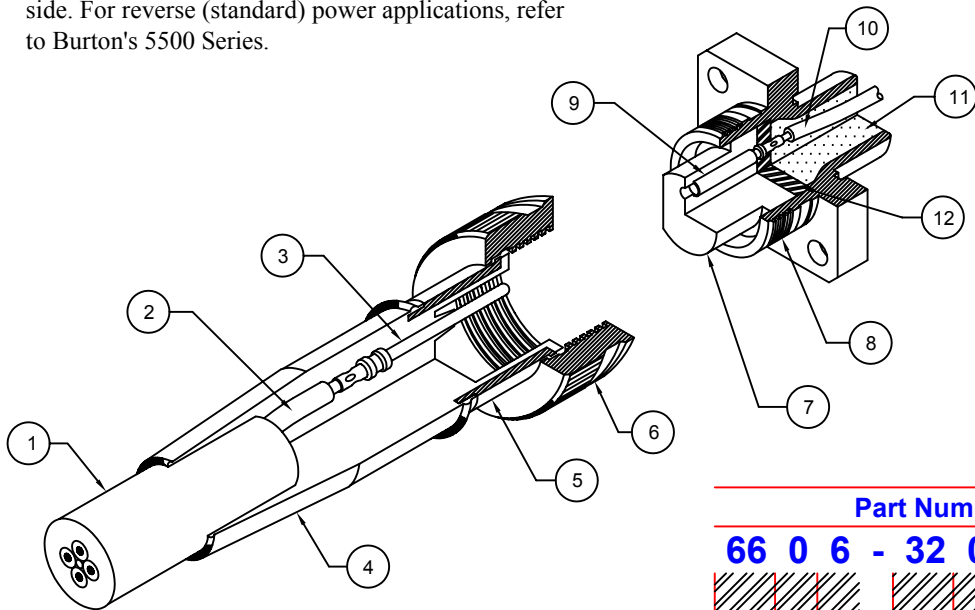
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6600 Series

The 6600 Series is an extremely rugged and reliable underwater electrical connector. It is the alternate Burton connector series with pins in the plugs and sockets in the receptacles (the inverse of the 5500 series).

Along with the Burton 5500 Series, the 6600 Series has, for over 2 decades, become 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.

Occasionally it is desirable to run power from the receptacle to the plug (for example a power supply or battery pack). In these instances, use the 6600 Series. For safety reasons, it is desirable to never have power available on the pin side. For reverse (standard) power applications, refer to Burton's 5500 Series.



1	Cable
2	Conductor
3	Pin
4	Molded body
5	Metal shell
6	Locking ring
7	Recept. face
8	Metal shell
9	Socket
10	Pigtails
11	Epoxy backfill
12	Pressure wafer

Data and Specifications	
Pressure Rating	10,000 PSI
Voltage Rating	600 - 3000
Ampacity	see Appendix

Materials	
Contacts	High cond. copper alloy
Penetrator Shell	316L SS (passivated)
Penetrator Body	Integrally molded elastomer
Cable	UL SOW-A or Mil-C-915
Pigtails	Mil-W-16878

Part Number System

66 0 6 - 32 08 - 0004

Length in feet

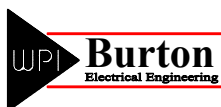
Number of contacts

Shell size

Style:
 1-CCP
 2-CCR
 6-FCR
 7-BCR

Special designation:
 A-Attachable
 R-Right angle
 0-600v (standard)
 1-1000v
 2-2000v
 3-3000v
 9-1100v (special)

Series



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6600 Series

Like the 5500 Series, the 6600 Series has a number of features which are designed to make them rugged and reliable even in severe service. Use the Burton 6600 Series for mission critical applications where you need power flowing in opposite the usual direction.

6600 Series Features

Burton 6600 Series connectors have no O-Ring seal between the plug and receptacle. That seal is a face-type seal integrally molded as part of the plug and cannot fall off.

Stub acme threads are used on all shell sizes. 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 more minutes at 300+degrees. This assures a complete bond which prevents water migration.

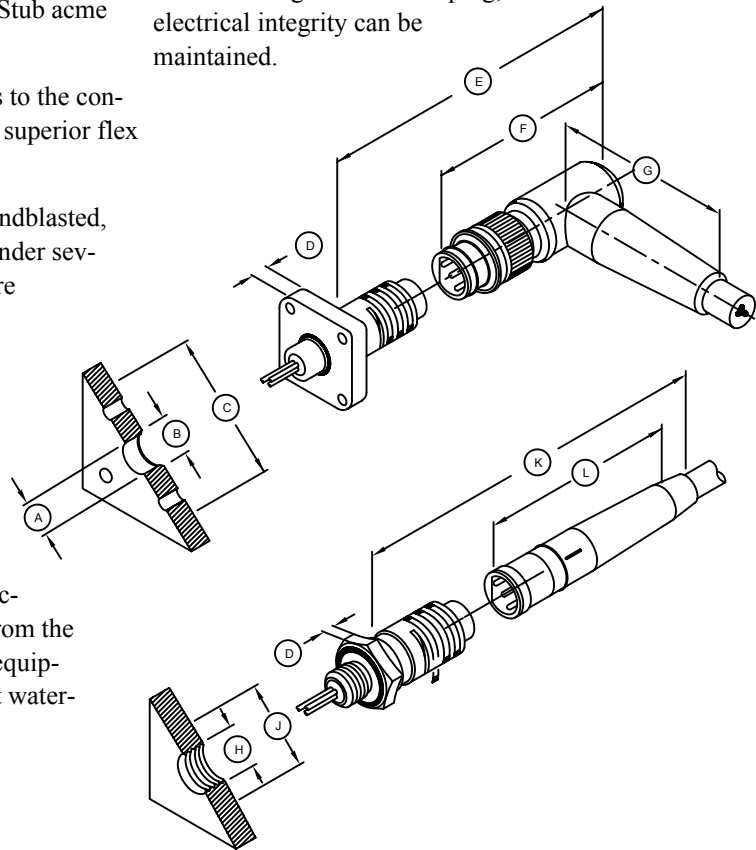
Receptacle Features

Like the Burton 5500 Series, the 6600 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 water-block down to the conductor level.

Plug Features

The plugs have a metal shell under the elastomeric body. It makes them very rugged and resistant to flexing damage. The pins are completely contained within the envelope of the metal shell. This means that the pins will not be bent or damaged when the connector has been impacted or stepped on.

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.

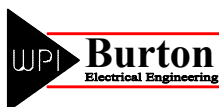


6600 Series Assembly Dimensions in English

Shell Size	A	B	C	D	E	F	G	H	J	K	L
16	0.64	0.66	2.15	0.375	---	---	---	0.79	1.44	3.72	2.15
20	0.77	0.79	2.28	0.375	4.00	3.24	2.90	0.79	1.44	5.26	2.14
24	1.02	1.04	2.63	0.375	4.50	3.87	3.25	1.05	1.73	5.87	2.30
32	1.52	1.54	3.50	0.375	5.12	4.50	4.59	1.55	2.31	6.57	3.50

6600 Series Assembly Dimensions in Metric

Shell Size	A	B	C	D	E	F	G	H	J	K	L
16	16.3	16.8	54.6	9.5	---	---	---	20.1	33.6	94.5	54.6
20	19.6	20.1	57.9	9.5	101.6	82.3	73.7	20.1	36.6	133.6	54.4
24	25.9	26.4	66.8	9.5	114.3	98.3	82.6	26.7	43.9	149.1	59.2
32	38.6	39.1	88.9	9.5	130.0	114.3	116.6	39.4	58.7	166.9	88.9



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6600 Series

6600 Series Connector Configurations

Please refer to the illustration on the facing page. The receptacles (which have socket contacts) are shown on the left. The plugs (which have pin contacts) are shown on the right. This pin/socket relationship is opposite of the 5500 Series. It is used for occasions where you wish power to flow from the receptacle to the plug. 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 5500 Series.

The descriptions below correspond to the illustration to the right. The receptacles are listed on the left and the plugs on the right. The part number refers to the first 4 digits of the part number.

BCR Bulkhead Connector Receptacle (6607)

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 (6606)

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 5 holes instead of 1. 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 (6602)

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 (66A2)

Used in the same applications as the CCP except that it is designed to be attached to its cable by the customer.

CCP Cable Connector Plug (6601)

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 Burton factory.

CCR-RA Cable Connector Plug, Right Angle (66R1)

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 (66A1)

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 consult the factory for details.

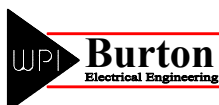
6600 Series Dimensions in English

Shell Size	6A thd*	6B	6C	6D	6E	6F	6G	6H thd**	6J	6K	6L	6M dia	6N	6P dia	6R	O-Ring	6S	6T dia	6U	6X
16	1-9	3.01	1.17	1.13	1.50	0.50	0.375	3/8-18	1.125	1.625	---	0.615	---	---	1.72	-116	0.837	0.219	---	---
20	1 1/4-9	3.74	1.50	1.25	1.50	0.50	0.375	3/4-16	1.250	1.750	2.90	0.740	1.59	1.06	1.62	-118	1.087	0.281	2.65	4.12
24	1 1/2-9	4.33	1.75	1.50	1.50	0.50	0.375	1-14	1.500	2.000	3.57	0.990	1.68	1.32	1.62	-122	1.324	0.281	3.25	4.78
32	2-9	5.07	2.25	2.00	1.50	0.50	0.375	1 1/2-12	2.000	2.625	4.59	1.490	1.70	1.81	1.62	-130	1.812	0.344	4.00	5.47

6600 Series Dimensions in Metric (thread dimensions in English)

Shell Size	6A thd*	6B	6C	6D	6E	6F	6G	6H thd**	6J	6K	6L	6M dia	6N	6P dia	6R	O-Ring	6S	6T dia	6U	6X
16	1-9	76.5	29.7	28.6	38.1	12.7	9.53	3/8-18	28.6	41.28	---	15.62	---	---	43.7	-116	21.26	5.563	---	---
20	1 1/4-9	95.0	38.1	31.8	38.1	12.7	9.53	3/4-16	31.8	44.45	73.7	18.80	40.4	26.9	41.1	-118	27.61	7.137	67.3	104.7
24	1 1/2-9	110.0	44.5	38.1	38.1	12.7	9.53	1-14	38.1	50.80	90.7	25.15	42.7	33.5	41.1	-122	33.63	7.137	82.6	121.4
32	2-9	128.8	57.2	50.8	38.1	12.7	9.53	1 1/2-12	50.8	66.68	116.6	37.85	43.2	46.0	41.1	-130	46.02	8.738	101.6	138.9

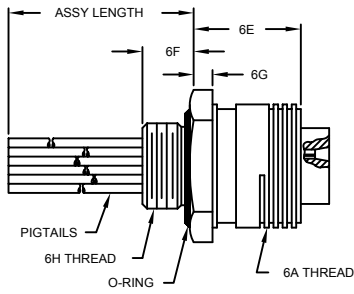
* thread, special
** thread, UNF-2A



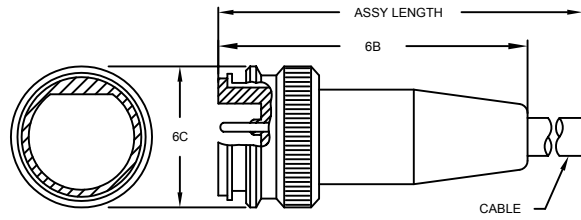
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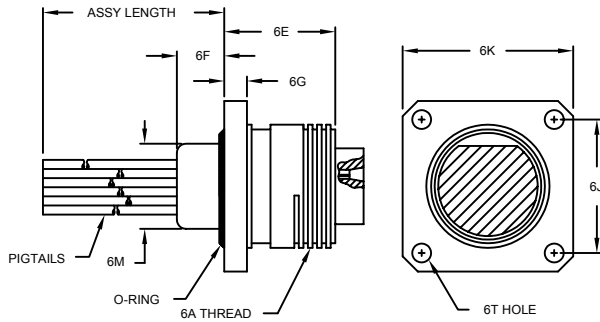
6600 Series



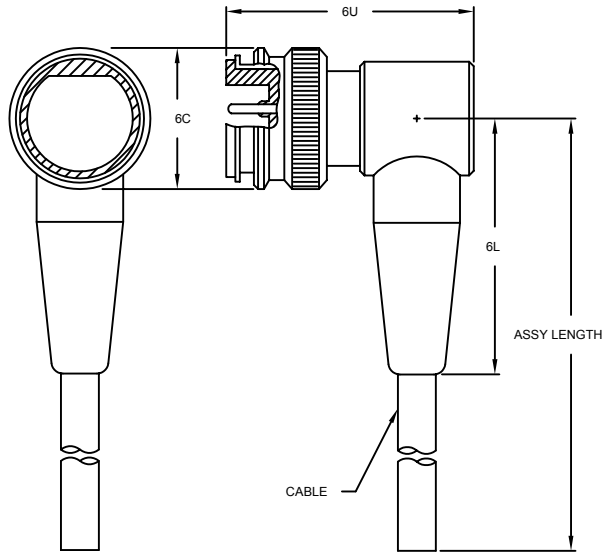
RECEPTACLE, BULKHEAD
PIN INSERT
6607 SERIES



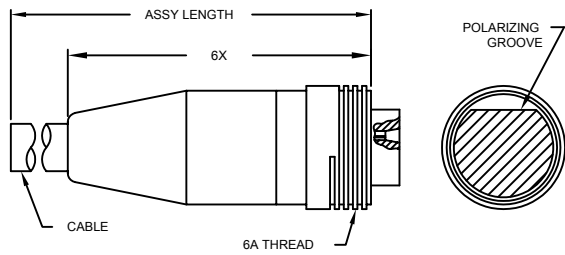
PLUG, CABLE
PIN INSERT
6601 SERIES



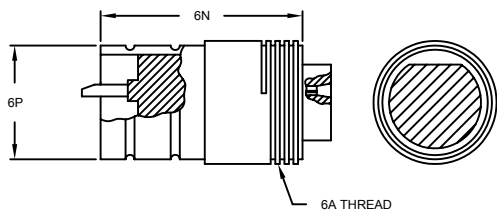
RECEPTACLE, FLANGE
SOCKET INSERT
6606 SERIES



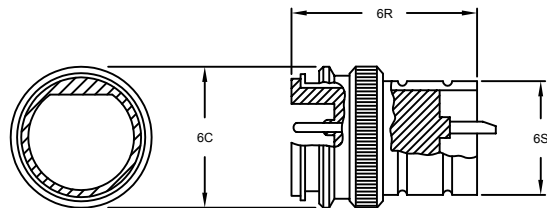
PLUG, RIGHT ANGLE
PIN INSERT
66R1 SERIES



RECEPTACLE, CABLE
SOCKET INSERT
6602 SERIES

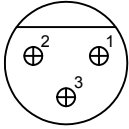


RECEPTACLE, ATTACHABLE
66A2 SERIES

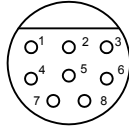


PLUG, ATTACHABLE
66A1 SERIES

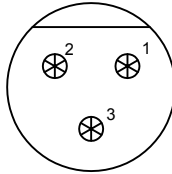
6600 Series



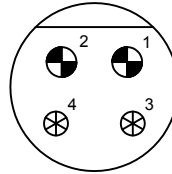
1603
(3 #16 AWG)



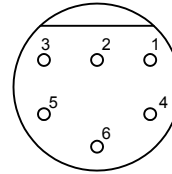
1608
(8 #18 AWG)



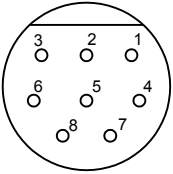
2003
(3 #16 AWG)



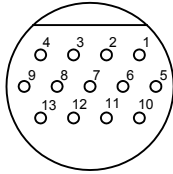
2004
(4 #16 AWG)



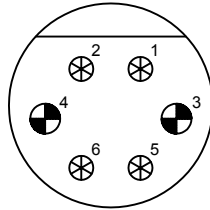
2006
(6 #18 AWG)



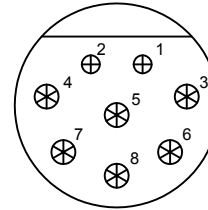
2008
(8 #18 AWG)



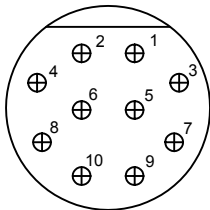
2013
(13 #18 AWG)



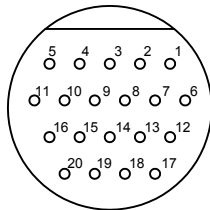
2406
(6 #16 AWG)



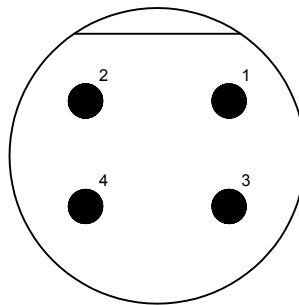
2408
(8 #16 AWG)



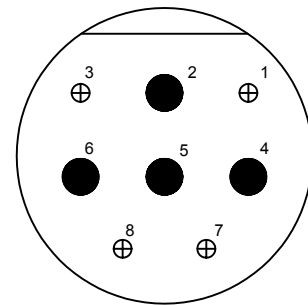
2410
(10 #16 AWG)



2420
(20 #18 AWG)

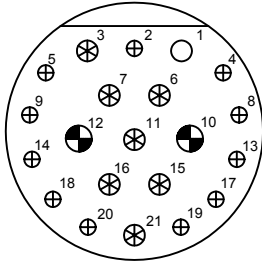


3204
(4 #8 AWG)

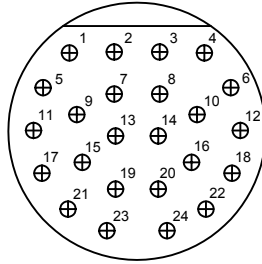


3208
(8 #16 AWG)

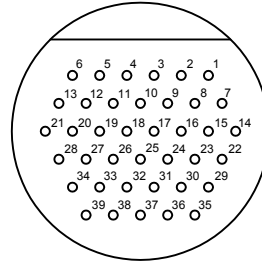
6600 Series



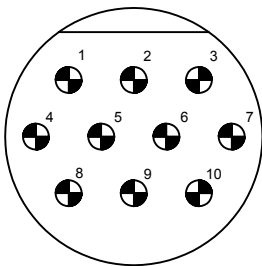
3221
(21 #16 AWG)



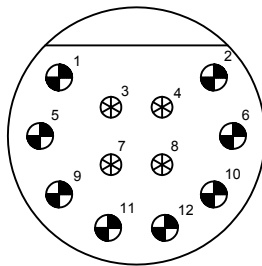
3224
(24 #16 AWG)



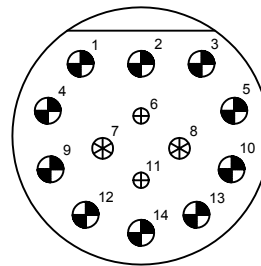
3239
(39 #18 AWG)



3210
(10 #16 AWG)



3212
(12 #16 AWG)



3214
(14 #16 AWG)

PIN DIAMETER	1/16	○	3/32	⊕	1/8	⊗	5/32	⊕	3/16	●
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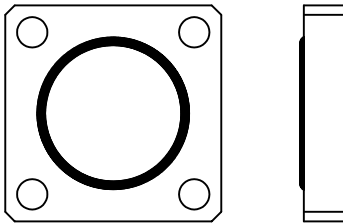
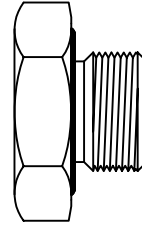
The contact patterns shown on these 2 pages are available for any connector type with the Burton 6600 Series. Burton is constantly adding new items. Please register your catalog to receive automatic updates.

All Burton 6600 Series connectors are available in high voltage ratings. Please contact the factory for details.

6600 Series

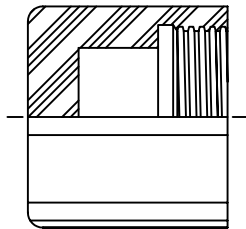
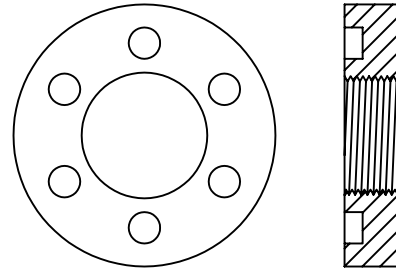
6600 Series Accessories

A number of accessories are available for the 6600 Series. Some are shown on this page. Please contact the factory for specific requests.



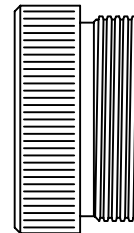
FCR Mounting Cover	
Size	Part Number
15	5106-1500-0000
20	5106-2000-0000
24	5106-2400-0000
32	5106-3200-0000

BCR Mounting Plug	
Size	Part Number
15	5107-1500-0000
20	5107-2000-0000
24	5107-2400-0000
32	5107-3200-0000



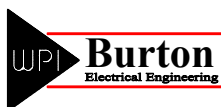
BCR Retaining Ring	
Size	Part Number
15	5109-1500-0000
20	5109-2000-0000
24	5109-2400-0000
32	5109-3200-0000

Receptacle Pressure Cap (SS)	
Size	Part Number
16	6101-1600-0000
20	6101-2000-0000
24	6101-2400-0000
32	6101-3200-0000



Receptacle Dust Cap (hard rubber)	
Size	Part Number
16	6700-0520-0161
20	6700-0520-0201
24	6700-0520-0241
32	6700-0520-0321

Plug Dust Cap	
Size	Part Number
16	6700-0125-0161
20	6700-0125-0201
24	6700-0125-0241
32	6700-0125-0321



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6600 Series

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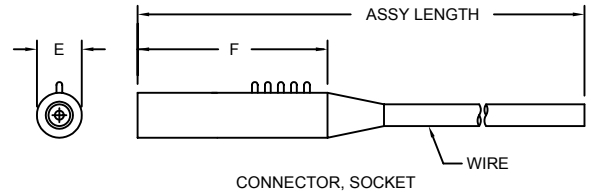
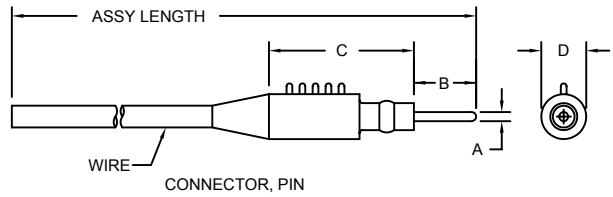
Other Products

Single Pin Penetrators

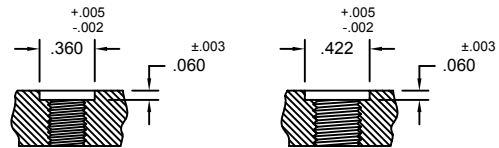
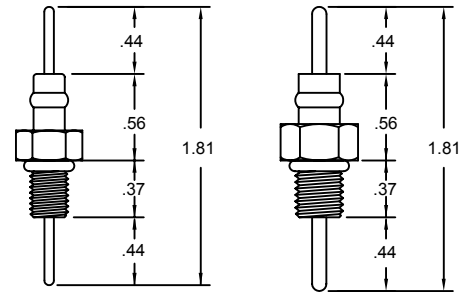
Burton Electrical Engineering offers a number of models of single pin penetrators and inline connectors. These penetrators are typically used where space is at a premium and/or extremely high pressures are expected.

The penetrators include a glass sealed contact and so most designs can also withstand equal back pressure (internal pressure), partially depending on their O-Ring configuration.

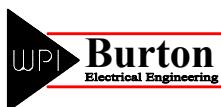
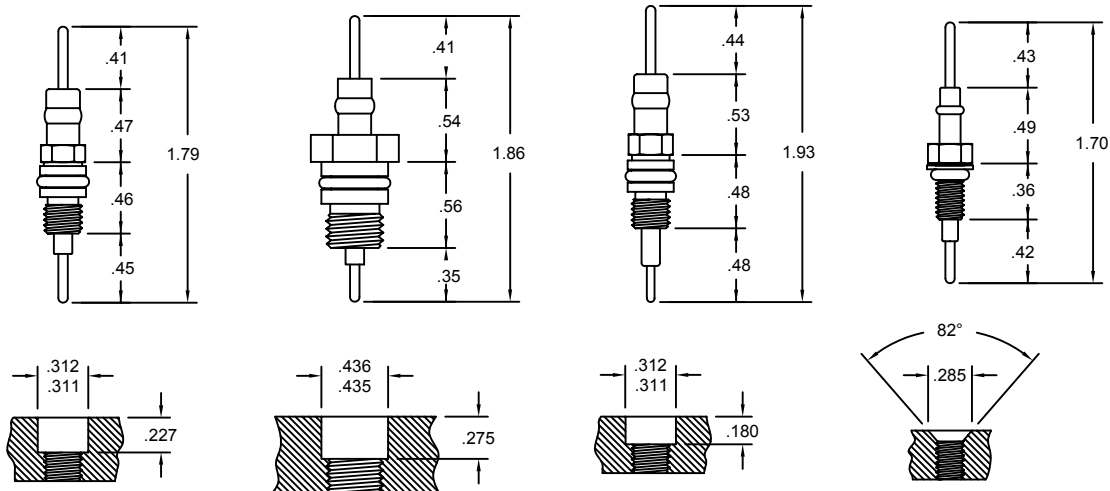
The set at right is Burton's original standard series.



Burton Single-Pin Dimensions			
Penetrator	pin OD	thread	hex
5002-1501-0000	0.062	1/4-28 UNF	0.375
5012-1501-0000	0.093	5/16-24 UNF	0.437
Connector, pin			
A	B	C	
5002-0011-XXXX	0.062	0.44	1.00
5012-0011-XXXX	0.093	0.44	1.06
Connector, socket			
D	E	F	
5002-0012-XXXX	0.312	0.312	1.32
5012-0012-XXXX	0.375	0.375	1.43



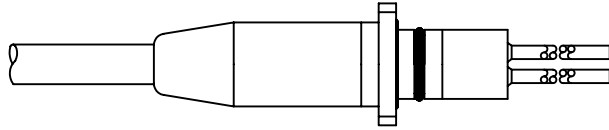
Recently, Burton has acquired the EnviroCon line of single pin penetrators (below). EnviroCon penetrators have been a worldwide standard for several decades. Pin and socket inline connectors are also available for these units. Please contact the factory for further details.



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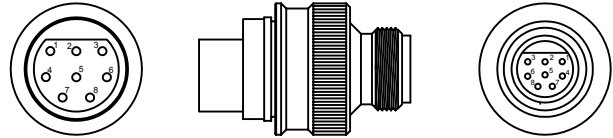
Other Products

Burton makes a wide range of other products for the underwater industry. This page includes some examples. If you have a special requirement, please contact the factory.



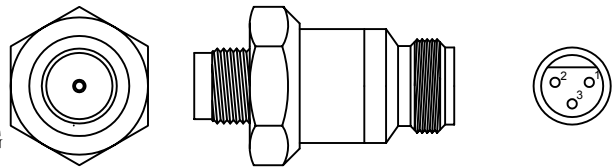
Back Pressure (Motor) Penetrator

Some penetrator applications are subject to back pressure. An example is a submerged motor. Normally pressure balanced, an overheated motor may have higher pressure inside. Most penetrators are not capable of handling this condition resulting in oil or water entering the penetrator from the rear causing it to fail electrically. Burton has developed a line of penetrators that can handle this back pressure. Capacities include voltages from 600v to 5kV; and ampacities over 140. Please contact the factory with your specific requirements. The example above is a 5kV, 6AWG (36 amp) motor penetrator.



Adapter; part number: 5999-XXXX-0000

This unit allows a 5501-1508 plug into a 2008 receptacle. Typically it is used to plug a new "mini-Burton" camera cable assembly into an older camera body.

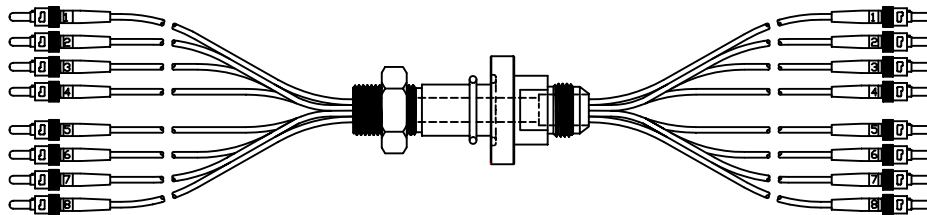


Special Bulkhead Receptacles

Burton makes some bulkhead receptacles with special configurations. The example above is an underwater light connector built for and available from Deep Sea Power & Light Co. Other configurations are possible.

Fiber Optic Penetrators

Burton offers a line of fiber optic penetrators in both the bulkhead and flange mounting. Fiber counts up to 12 in either single or multimode are available. Many different possible configurations are available.



Appendix

Notes

The simplicity of an underwater connector obscures the sophistication they possess just under their shiny black rubber exterior. The connector is a precision device which is critical to the performance of underwater equipment. The connector is the crucial link between the flexible electrical cable and the rigid metal pressure vessel. In this role it must smoothly make the flexible/rigid transition, keep the electrical integrity of the cable, exclude both high and low pressure water, operate easily and not give any problems. To perform these functions properly some simple guidelines should be followed. To improve your operation Burton has compiled the following information which will be useful to you.

Engagement and Disengagement of Connector

Always be sure the power is turned off before either engaging or disengaging a connector. Electrical shocks are easy to get (especially on a wet deck) but hard on people and equipment.

To engage:

1. Lightly coat the face, sides and sealing surface of the plug with clean Dow Corning DC-4 silicone grease. Be sure there is no moisture on the components.
2. Align the polarizing keyway in plug and receptacle and push to engage the contacts. Push the plug in until the rubber sealing surface and the metal sealing surface touch. A gentle rocking motion will allow trapped air to escape. On the 32 size connectors with many contacts it takes quite a bit of push. Using the coupling nut as an aid to engagement is acceptable but never use a wrench.
3. When the sealing surfaces touch, spin the coupling nut on until it just touches and give it an additional one half turn (1 full turn on 15 size). Caution: The sealing surfaces must be touching for the additional half turn to seal the connector properly. If the coupling nut is used as an aid to engagement, back the nut off completely to obtain visual confirmation of the sealing surface contact. Then spin the nut back on and add the turn. Applying more turns than specified will distort the rubber, possibly resulting in leakage and/or physical damage.

To disengage:

1. Unscrew the coupling nut completely. Note: After deep initial dives the nut may be loose. This is normal.

2. Grasp the connector body firmly and pull the plug out. Gentle rocking motion may ease pull. Caution: Do not disengage the plug by pulling on the cable, it may break a wire inside the connector.

Receptacle Installation

The O-Ring sealing surfaces of the receptacles and pressure vessels require an RMS 32 finish, free of scratches, dents, or nicks. Apply a thin coat of clean Dow Corning DC-4 silicone grease to the O-Ring and install the O-Ring in it's groove. Remove O-Ring with a nonmetallic object only (such as a wooden tooth pick).

For bulkhead receptacles, apply a light coat of oil or anti-seize compound to the mounting threads (be careful not to get any on the O-ring) and assemble the unit. The bulkhead connectors should be torqued to the following specifications.

SHELL TORQUE

15	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. The recommended bolt sizes and torques are:

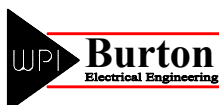
SHELL BOLT TORQUE

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

The above torques are minimum values which will be acceptable. They may be increased base upon the engineer's knowledge of bolt diameter, thread pitch and the material used for both the bolts and the housing.

Storage

Two simple storage precautions will assure your connectors of long storage life. The precautions are:



Appendix

- A. Store connectors in bags in a clean, dry environment not exceeding 72° F.
- B. Do not expose them to direct sunlight or ozone.

Cleaning and Re-use

- A. Clean the plug and receptacle carefully by hand. Use only a bristle brush (no metal allowed), liquid soap and water.
- B. Dry the connectors by shaking off excess water then using alcohol to eliminate the remaining water as described below.
- C. Flood the connector with alcohol, then pour it out and allow the connector to air dry. Caution: Compressed air contains many contaminants such as water, oil and dirt and must not be used. Use alcohol only in a well-ventilated area.

Inspection

- A. Inspect the connector for bent or otherwise damaged pins and corrosion.
- B. Metal sealing surfaces must have a RMS 32 finish and be free of scratches, nicks and dents. This applies to both O-Ring sealing surfaces and connector sealing surfaces.
- C. The rubber sealing surfaces must also be free of cuts, nicks and tears. Notes: On used connectors the rubber sealing surface may have an impression of the metal sealing surface on it. This is normal.
- D. The cable and rubber molded plug must be free of cuts, tears and rubber separations. Carefully inspect the rubber condition near the metal shell. Tears are common here, caused by using the connector in a bent position or using it as a handle.
- E. When connectors are being re-used, remember to always use new O-Ring in the receptacles and to inspect the threads of the coupling nut for the presence of the dry film lubrication used to prevent galling of the metal. A light coat of "Molyube" may be used if necessary.

General Considerations for Designing Cables and using Connectors

- A. Although it looks inviting, a connector is not a handle. Provide methods of handling, holding and tying down your device which do not invite using the connectors for that purpose.

B. Accidental damage is one of the most frustrating problems. Provide protection for the connectors to prevent equipment from rolling into or onto them. If this protection can not be incorporated into the device, then incorporate it into the handling fixtures. Most damage seems to occur during storage and transportation! Damage during the transition from ship to water is common. Once the connectors are in the water, damage seldom occurs.

- C. Connectors last much longer if their "as installed" position does not bend them. All flexing motion should be taken by the cable, not the connector. Consider clamping the cable, if necessary, to eliminate flexing at the connector.
- D. Wire which will experience many flexural cycles must have a large number of copper strands in each conductor to avoid premature wire breakage. Chose coaxial cable to be used under flexing conditions very carefully, The center conductor of a coax cable should always be stranded.
- E. The screw-in bulkhead receptacle cannot have it's polarizing key oriented in a specific direction. This must be taken into account, for the cable may have to be twisted to engage the connector (up to 1/2 turn). The right angle connector must have the receptacle polarizing key specifically oriented to point the connector in the correct direction . Therefore panel mount receptacles are normally used. Panel mount receptacles require a bit more space and care must be taken to orient the mounting bolt pattern on the pressure vessel.
- F. Cables are flexible, but they are not suitable for being twisted. Avoid twisting because it shortens the life of both cable and connector. If twisting is necessary to align polarization keys, remember that short and/or large diameter cables are more difficult to twist than long and/or small diameter cables.
- G. Corrosion of the connector body, particularly the receptacle, must be taken into consideration. Burton connectors are made with type 316 corrosion resistant steel for maximum materials compatibility. The connectors work well in aluminum and in ordinary steel pressure vessels. In corrosion-resistant steel or nonmetallic vessels, special consideration must be

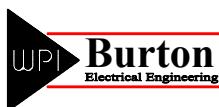
Appendix

taken to mitigate crevice corrosion between connector and vessel. In brass, bronze or any other copper based alloys, the corrosion situation is rather complex as the connector can be either anodic or cathodic to the vessel. In difficult corrosion situations give serious consideration to sacrificial anodes. Never attempt to paint a connector.

- H. In several instances Burton recommends using a thin (or light) coat of silicone grease. It is of the utmost importance to use silicone grease sparingly. In small quantities it is your O-Ring and your connectors' best friend. In large quantities it is your O-Ring and your connectors' worst enemy. Light films reduce friction and allow the components to work as they are designed to work. Larger quantities create the equivalent of a "Hydraulic Lock" and completely destroy the function of the O-Ring and/or connector.
- J. Cleanliness is extremely important to maintain electrical contact and leak-free performance. During the design phase, allow for access to the connectors for cleaning as well as positioning them to allow water to run off of, (not into) them after removal from the water or during cleaning.
- K. The use of dust caps will keep the connectors clean and help prevent accidental damage both in storage and in service.
- L. The Neoprene Rubber in the connectors is compatible with most fluids used around underwater equipment, including crude oils, mineral oils, etc. However, it is incompatible with many solvents such as the aromatic hydrocarbons. Be careful not to use (or spill) these types of solvent on the connectors.
- M. Electrical cable is not designed to be a weight carrying cable, do not use it as such. Support it frequently to prevent leakage. A broken electrical cable has a great potential for damage to personnel and equipment.
- N. The amperage capacity of a cable is determined by the maximum allowable insulation temperature at the conductor/insulation interface. This is a very complicated heat transfer analysis involving current, voltage, conductor insulation, number of conductors, time, temperature of the cooling media and the heat transfer properties of the cooling media. Burton uses NEC data for our recommendations. Our standard type SO cable has a 60°C maximum temperature at

transfer properties of the cooling media. Burton uses the ampacity of cable, be sure to account for any cable on reels, in the air or laying on a hot deck.

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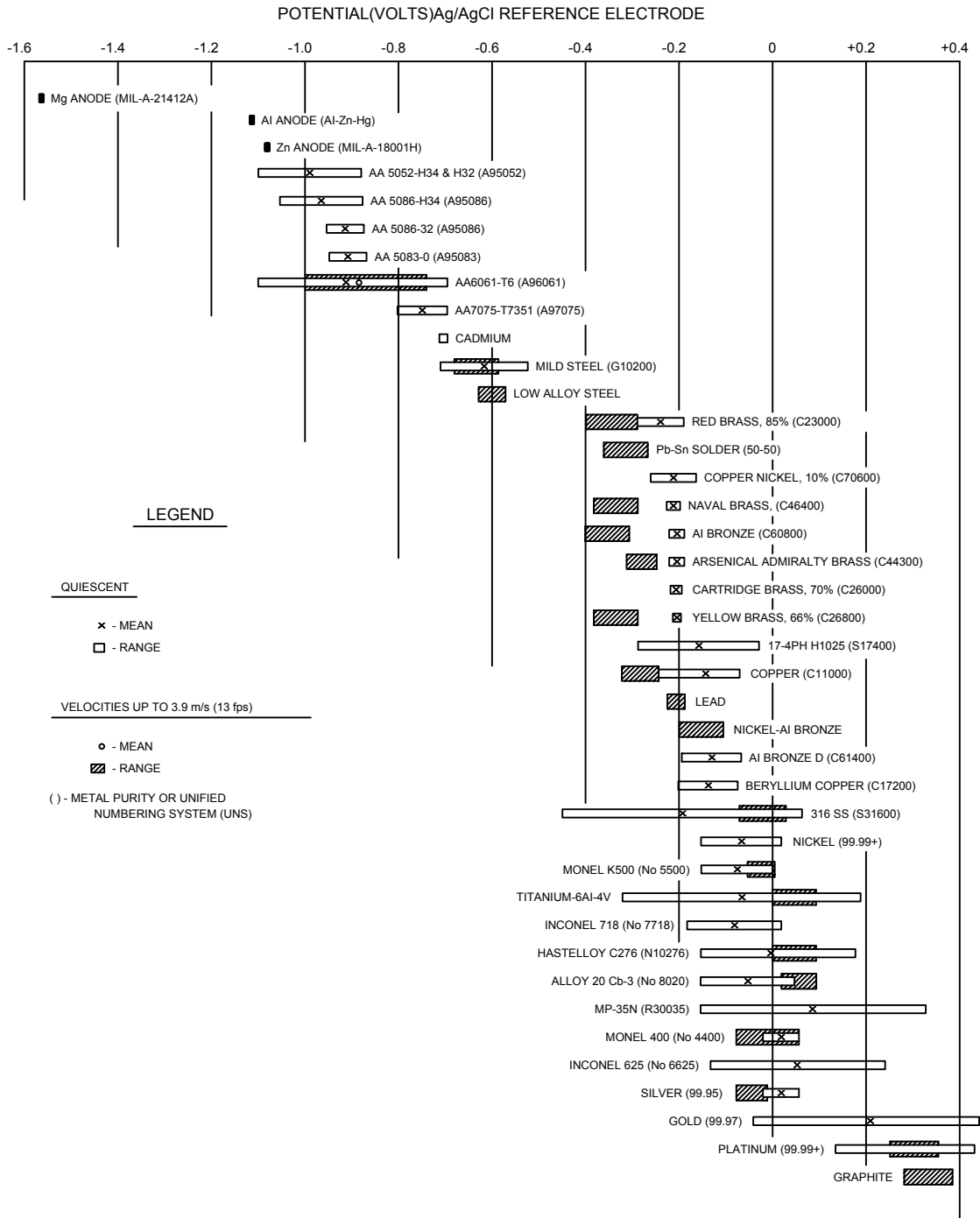
Appendix

Galvanic Series

Care must be taken that certain types of different metals not be in contact with each other in salt water without some type of cathodic protection.

With that in mind, we reprint here a chart of galvanic values. Numbers closest to each other and on the same side of zero, work best together. Of course, it is always desirable to use similar metals together if possible.

GALVANIC SERIES OF METALS & ALLOYS IN SEAWATER



Appendix

The Ampacity, or current carrying ability, of an insulated conductor is determined by the maximum temperature, the insulation can withstand without significant degradation for a period of 40 years at standard conditions. The maximum insulation temperature is the conductor temperature at the conductor/insulation interface so the data is usually listed as an allowable Ampacity at a given conductor temperature. The Ampacity of a conductor is therefore a problem of heat transfer.

One source of such data is the National Electrical Code (NEC), which lists 40 amps at 90°C for single 12 AWG (3.3 mm ²) copper conductors:

If conductors are bundled together into a cable the heat transfer is reduced and thus the Ampacity of each conductor must also be reduced. The standard ambient temperature for the Ampacity rating above was 30°C for the first 3 and 40°C for the last 2. If the ambient temperatures exceed these standard values the Ampacities must also be reduced. There are tables in the NEC for this purpose.

But an underwater vehicle is not a building nor is it expected to last for 40 years. This means that liberties may be taken with the very conservative NEC ratings at no great peril. The insulation degradation process is essentially a chemical process so if the conductor temperature is increased 10°C the life of the insulated conductor is halved. There is, of course, an upper limit to the maximum conductor temperature when the insulation degradation becomes nonlinear. To Burton's knowledge no studies have been made on this aspect conductor temperature when of Ampacity. Burton uses type SO cable in most of it's products and this cable is rated @ 90°C.

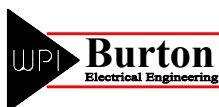
There are many other considerations, of course. Water is an excellent heat sink, so in-water operation is not usually a problem. Burton has received reports of successful operations in excess of 4x recommended ampacity in fully submerged applications. However, be cautioned that checkout and testing on deck can be a problem if the benefit of in-water operation is factored into the ampacity although heat buildup is relatively slow most of the time and short "overload" periods are usually tolerated. Caution must be exercised if a wire overheats, the insulation may be damaged enough to preclude it's operation as a voltage insulator.

Because Ampacity is such a complex subject, most designers are as cautious as Burton in specifying the Ampacity of the wire and cable in their equipment.

Burton does not guarantee the accuracy of the NEC data. It is up to the customer to determine the correct conductor size and ampacity for his application.

The following table summarizes the NEC data:

Conductor ampacities according to NEC guidelines						
AWG	18	16	14	12	8	6
mm ²	0.823	1.31	2.08	3.31	8.37	13.3
circ mils	1620	2580	4110	6530	16510	26240
1 cond	14	20	30	40	70	90
2 cond	7	10	15	20		
3 cond	7	10	15	20		
4 cond	5.6	8	12	16	28	36
6 cond	5.6	8	12	16		
8 cond	4.9	7	10.5	14		
10 cond	3.5	5	7.5	10		
12 cond	3.5	5	7.5	10		
14 cond	3.5	5				
16 cond	3.5	5				
20 cond	3.5	5				
24 cond	3.2	4.5				
32 cond	3					
40 cond	2.8					



Appendix

It is not generally appreciated that an o-ring is a dynamic device. Even o-rings used as static seals are dynamic, i.e., moving devices. A failure to allow for the dynamic nature of an o-ring can create some unfortunate circumstances.

The dynamic nature of the o-ring is shown in the three sketches below (after illustrations in the Parker o-ring handbook).

The important thing to note in the sketches is the o-ring moving across the groove, distorting and sealing against the bottom and one side of the groove and the flat surface on top.

Because the o-ring must move across the groove and distort in order to seal it is common for them to leak at very low pressures. Softer o-rings move more easily than hard ones, but will distort and fail as shown in the third sketch at higher pressures. Hard o-rings fail in the same manner, but at higher pressures. Thus soft o-rings seal low pressures better than hard ones, but hard o-rings resist high pressure better than soft ones. There are many other variables as well.

An o-ring face seal with pressure from only one direction can be designed such that the o-ring in the as-installed position would look much like the o-ring in the sealing position and thus reduce the need for the o-ring to move across the groove in order to seal. Burton Underwater Connector o-ring

face seals on our metal receptacles are designed in this manner to seal at the low pressures encountered near the ocean surface. Burton connectors seal the electrical areas with an integrally-molded rubber surface which seals by a different method.

Because the o-ring must move in order to seal properly it should be lightly greased and it must be kept free of contaminants such as dust or sand which interrupt the smooth rubber-to-metal sealing surface and create leakage paths.

All o-ring seals must be installed in a groove which has a cross-sectional area greater than the cross sectional area

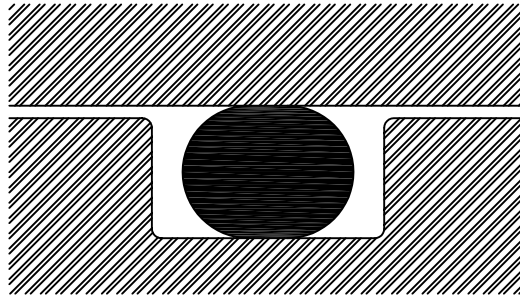
of the o-ring and, when installed, there must be a space between the o-ring and the groove wall on at least the pressure side of the seal. If this is not done the o-ring will distort into the corners of the groove instead of against the wall opposite the pressure and it will leak. The sketch below illustrates this phenomenon.

Note that there is no space on either side of the o-ring. This exact same phenomenon occurs if the mechanic uses too much grease, packing the o-ring groove.

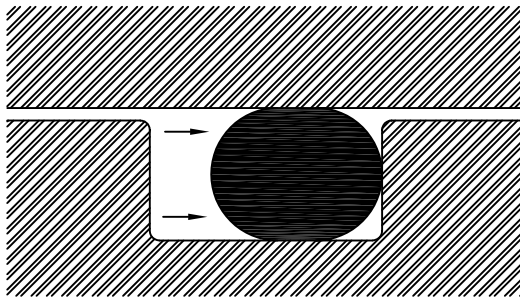
This design occurs occasionally when this rather subtle phenomena is not understood. It creates a great number of leaks before it is located

and corrected.

The data given in o-ring handbooks should be read.



O-Ring as installed.



O-Ring, sealing.

Appendix

carefully and followed explicitly. Only when a designer is positive that changing these guidelines will not result in a leak should the guidelines be varied. O-rings have been used for years and the o-ring manufactures know what can and cannot be done with their product.

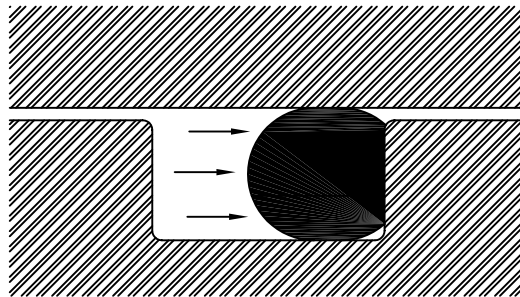
There are many variations that may be necessary for special designs. The above discussion (plus the additional requirements of course) still applies to each type of seal. O-ring seals on angled surfaces, o-rings with back-up rings for high pressure or dynamic longevity, extreme high or low temperature operation, sealing aggressive gasses or fluids, extremely long life, or plastic o-ring are examples of special designs. Each of these have special design requirements, however plastic (such as teflon) o-ring seals should be approached with particular caution because plastic materials do not behave in the same manner as do elastomeric (rubber) materials.

When using an o-ring in an "exotic" environment for which you do not have experience, the choice of o-ring material can prove to be a problem and materials compatibility charts may not be fully satisfactory. Two examples

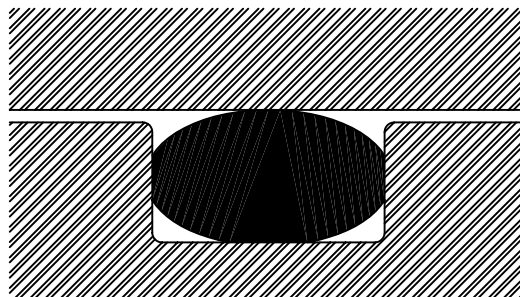
come to mind: 1) Nitrile absorbs CO₂ and will fail by decompression when CO₂ pressure is cycled. And 2) Neoprene becomes brittle when subjected to hydrogen sulfide. There are other anomalies such as these. Materials compatibility charts do not always give a complete picture of compatibility due to the constraints of testing parameters and/or space available to print the results. Neither of the above two situations will be found in materials compatibility charts, however they remain a good place to make the initial material selection.

In general, observe the following o-ring design guidelines:

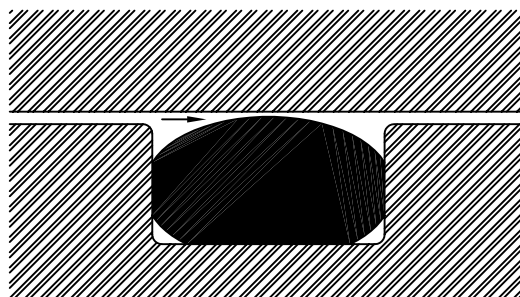
1. Follow the o-ring manufactures recommendations.
2. Use the smallest size access holes (and thus o-ring I.D.) possible
3. Use the largest o-ring cross-section possible.
4. Chose the o-ring material carefully
5. Remember the o-ring is a dynamic de vice
6. When in doubt:
 - a. Check with the o-ring manufacturer,
 - b. Check with companies who have experience in these areas,
 - c. Test, test, test,
 - d. All of the above.



O-Ring under excess pressure.



O-Ring incorrect size.



O-Ring incorrect size, under pressure.

Appendix

Terms and Conditions

Terms are net 30 days for approved customers. The acceptance by Burton of any order is contingent on Burton's approval of Buyer's credit. Current delinquencies from prior orders may suspend or void approved credit. If, in Burton's opinion, Buyer's credit at any time is unsatisfactory, then at Burton's opinion the terms of payment provided herein may be altered, the contract terminated without liability to Burton and/or performance may be suspended pending receipt of satisfactory security. Any overdue payments are considered delinquent and will bear interest at the rate of one percent (1%) per month. In the event Burton engages the services of any attorney to collect such amounts, Buyer agrees to any reasonable attorney's fees and costs, incurred by Burton, not withstanding further legal action.

In the event Buyer shall become insolvent or make a general assignment for the benefit of creditors, or files or has filed against it a petition in bankruptcy or for reorganization or pursues any other remedy under law relating to the relief of debtors, or in the event a receiver be appointed of Buyer's property or business, Burton may, at its option, terminate its performance under the contract and treat the Buyer as in default.

Schedule

Burton shall not be liable for delays in delivery occasioned by force majeure or any cause beyond its control, including actions of the Buyer, its representatives or customers. Any such delay shall effect a corresponding extension of delivery date, and if necessary, an equitable adjustment in the purchase order.

F.O.B. Delivery and Title

The F.O.B. point is Gardena, California. Title and risk of loss or damage shall pass to the Buyer upon delivery to carrier. Burton shall retain a security interest in the unit(s) sold until the full purchase price and any related amounts are paid by the Buyer in full. Upon Burton's written request and at Buyer's expense, the Buyer agrees to execute promptly any documentation reasonably required to perfect Burton's security interest in the unit(s).

Freight Charges

Freight charges are not included in our price.

Warranty

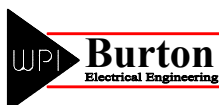
Burton only warrants that at the time of delivery any parts supplied by Burton pursuant to the purchase order are free from defects in materials and workmanship under normal use and service for a period of 90 days after delivery to the first purchaser. All warranty services will be performed at Burton's Gardena, California facility and Buyer is responsible for shipping costs. The Buyer shall give written notice to Burton of any breach of these warranties within the stated warranty periods. The exclusive remedy of the Buyer under these warranties and the limit of liability of Burton for any and all losses, injuries, and damages of any kind or nature whatsoever to person or property caused by or resulting from the Buyer's use of parts provided pursuant to this contract (including claims based in contract, negligence, strict liability, other tort, or otherwise) shall at the sole election of Burton, be for Burton either to replace the parts or to make an equitable adjustment in the price paid by the Buyer for such parts. THIS WARRANTY SHALL BE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PURPOSE. In no event shall Burton be liable for indirect, incidental, special, or consequential damages of any kind to person or property caused by or resulting from the Buyer's use of the parts provided pursuant to this contract.

Termination

In the event the Buyer must terminate the purchase order of any reason, Burton shall receive payment from the Buyer for costs incurred up to the time of termination, costs for job closure activities, and a reasonable profit thereon. A Termination Notice shall be conveyed in writing. If a verbal notice is necessary, it shall be followed by a written confirmation.

Applicable Law

The Purchase Order shall be interpreted in accordance with the laws of the State of California.



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