

SEACON

ALL-WET

UNDERWATER ELECTRICAL WET-MATE CONNECTORS



TE
connectivity

S E A C O N



ALL-WET ROUND SERIES

UNDERWATER ELECTRICAL WET-MATE CONNECTORS

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PRODUCT NEWS

ALL-WET SERIES CONNECTOR ENHANCEMENTS

INTRODUCTION

As part of our continuous improvement process the **SEACON** Group consistently reviews its product ranges through both customer feedback and internal improvements. It is via these processes that **SEACON** identified a design enhancement to the **ALL-WET** connector ranges.

DESIGN FEATURES

The design change is associated with the Male Pin connectors only and has been introduced to improve and extend the life of the connectors by decreasing the stresses that are applied to the sealing interface between the male contact pin and the sealing rubber around the pin during the connectors mate and de-mate cycles.

The newly designed male contact has a "Lead in" as part of the contact pin itself which replaces the current rubber lead in. The introduction of the new pin removes any potential wear to the sealing interface between the male contact pin and the sealing rubber around the pin which may occur with many repeated make and breaks of the connector pairs. The new pin will maintain the full connector sealing properties and will provide a greater life expectancy of the connectors.

The incorporation of this design change to the Male Pin connectors will not affect the existing Female Socket connectors currently being used by **SEACON**'s customers and therefore full intermateability will be maintained. In addition, **SEACON** would also like to confirm that pricing will also not be affected.

Please note that the new Male Pin is not yet available across the entire **ALL-WET** range. Please contact **SEACON** for details.

TESTING

This new pin design concept has been fully tested and has been utilized in both the **U-MATE** and **SEA-MATE** connector ranges for a number of years.

INTRODUCTION

SEACON's **ALL-WET** connector series was developed to provide inexpensive yet reliable rubber molded connectors that allow the user to make and break connections both on the surface and underwater.

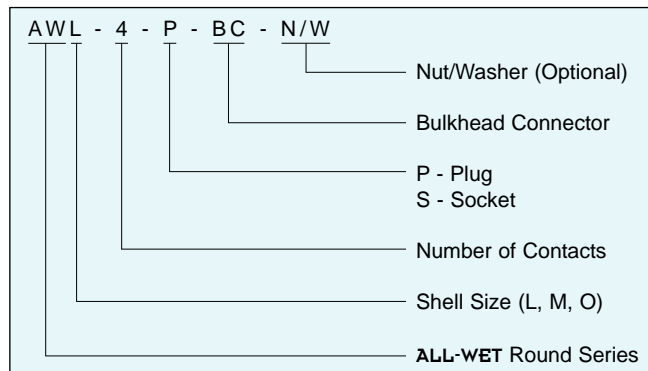
Manufactured using only high quality materials, the **ALL-WET** bulkhead connector's metal shell is produced using CA630 per QQ-C 465 as standard, although other materials are available upon request. Contacts are gold plated to ASTM B488 providing superior corrosion resistance.

AVAILABILITY

The **ALL-WET** range offers four different style types; round (AW), split (AW), flat (FAW) and miniature hermaphroditic (MAW) with a number of configurations ranging from 2 to 54 contacts rated upto 50 amps maximum current (dependent on cable) and a mated pressure rating of upto 20,000 psi.

APPLICATIONS

The **ALL-WET** series is suitable for a variety of applications including underwater television and lights, diver communications, ROV systems, recreational submersibles, towed-array cable systems, current meters, animal migration and research and food processing equipment.

PART NUMBER SYSTEM - EXAMPLE**ALL-WET ROUND SERIES BULKHEAD CONNECTORS****SPECIAL ASSEMBLIES**

SEACON maintains all facilities necessary to furnish complete underwater and environmental electrical connector/cable systems, including Research and Development, Engineering, Manufacturing, Quality Control and Pressure Testing.

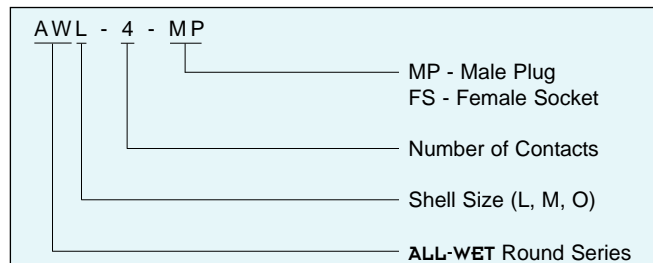
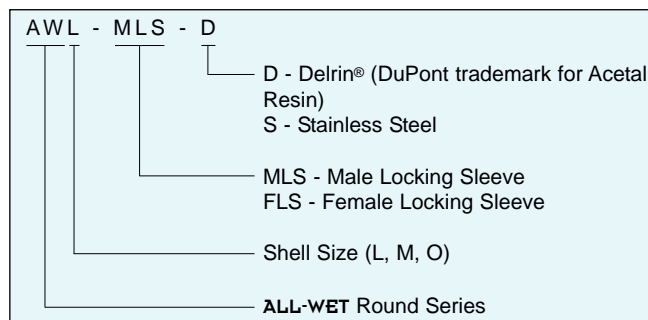
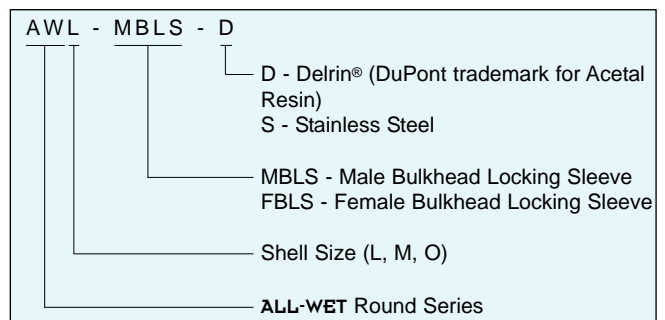
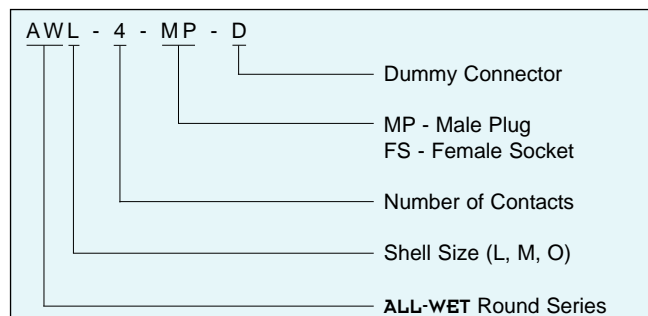
As well as supplying our standard 'off-the-shelf' items, we have the capability to design and manufacture **SPECIAL CUSTOMIZED CONNECTORS AND CABLE ASSEMBLIES** to suit your individual needs.

SEACON also prides itself with the ability to perform stringent quality conformance testing procedures which are in accordance with the MIL-SPEC programs.

NOTE:

ALL-WET connectors are intended to mate with **ALL-WET** connectors only. Although the **ALL-WET** and **WET-CON** connectors look similar, the numbering pattern and color codes are not the same.

We recommend, as general practice, to verify color code and pin location before installation.

ALL-WET ROUND SERIES IN-LINE CONNECTORS**ALL-WET ROUND SERIES IN-LINE LOCKING SLEEVES****ALL-WET ROUND SERIES BULKHEAD LOCKING SLEEVES****ALL-WET ROUND SERIES DUMMY CONNECTORS**

GENERAL INFORMATION

COMPONENT	MATERIAL
BULKHEAD BODY: STANDARD: OPTIONAL:	CA630 per QQ-C-465 Many materials including 316 Stainless Steel and Glass Reinforced Epoxy (GRE). Other materials available on request
CONNECTOR BODY	Neoprene per B/A X5727
CONTACTS	Copper Alloy Gold Plated per ASTM B488
GUIDE PINS	304 Stainless Steel
O-RINGS	Nitrile (formerly known as Buna N)
IN-LINE CABLE	#18 AWG SO as standard
BULKHEAD PIGTAILS	Teflon® (registered trademark for DuPont) type E hook-up wire

CATEGORY	VALUE
OPEN FACE PRESSURE	Up to 1,000 psi (contact SEACON for higher ratings)
MATED PRESSURE BULKHEADS	Up to 10,000 psi
MATED PRESSURE IN-LINES	20,000 psi
VOLTAGE	600 VDC based on standard cable (contact SEACON for higher ratings)
CURRENT	Up to 50 amps per contact available. Please contact SEACON
CONTACT RESISTANCE	<0.01 ohms
INSULATION RESISTANCE	>500 megohms after wet mating

NOTES:

- Locking sleeves are at additional charge and must be specified. We recommend that bulkhead locking sleeves are specified to be installed at the factory.
- Bulkhead nut/washer is not standard and must be ordered separately. Available in Stainless Steel although other materials are available on request.
- In-line cable and hook up wire is 18 inch as standard, longer lengths to be specified when ordering.
- Please contact SEACON for your non standard cable requirements. Some cables may require terminating to a bulkhead connector and overmolding.

AMPACITY CHART FOR STANDARD PARTS (18 AWG SO CABLE)

PART DESCRIPTION NUMBER OF CONTACTS	AMPACITY
AWL - 2	7 amps
AWL - 3	7 amps
AWL - 4	5.6 amps
AWL - 5	5.6 amps

PART DESCRIPTION NUMBER OF CONTACTS	AMPACITY
AWM - 6	5.6 amps
AWM - 8	4.9 amps
AWO - 12	3.5 amps

STANDARD IN-LINE WIRING COLOR CODE (SO CABLE)

CONTACT #	COLOR
1	WHITE
2	BLACK
3	GREEN
4	RED
5	ORANGE
6	BLUE

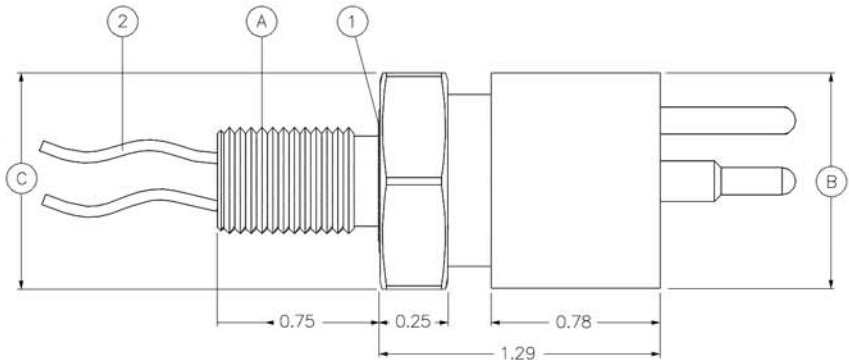
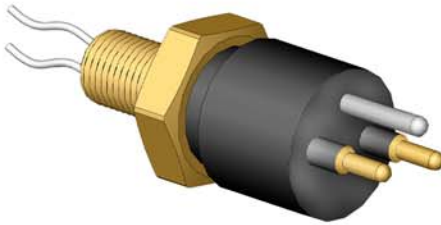
CONTACT #	COLOR
7	WHITE/BLACK
8	RED/BLACK
9	GREEN/BLACK
10	ORANGE/BLACK
11	BLUE/BLACK
12	BLACK/WHITE

CAUTION:

- ALL-WET connectors are intended to mate with ALL-WET connectors only. Although the ALL-WET and WET-CON connectors look similar, the numbering pattern and color codes are not the same. We recommend as general practice, to verify color code and pin location before installation.

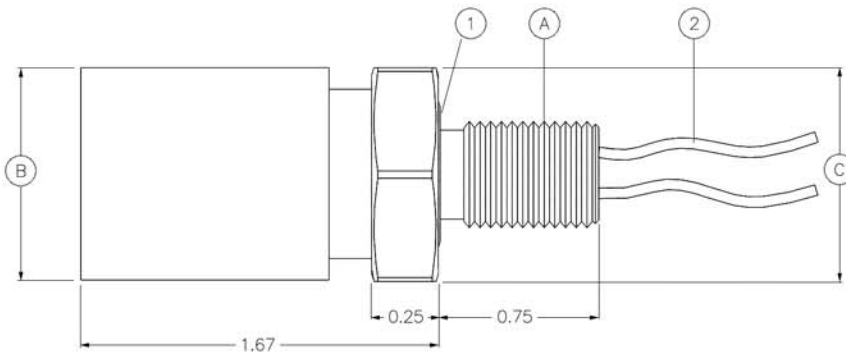
ALL-WET SERIES AW-P-BC

ALL-WET Round Bulkhead Connector
Mates with AW-FS
Dummy Connector: AW-FSD



ALL-WET SERIES AW-S-BC

ALL-WET Round Bulkhead Connector
Mates with AW-MP
Dummy Connector: AW-MPD



CONNECTOR	A - THREAD	B - Ø (INCHES)	C - HEX FLATS (INCHES)	1 - O-RING	2 - HOOK-UP WIRE	BULKHEAD MOUNTING TORQUE (INCH POUNDS)
AWL-P/S-BC	1/2-20 UNF-2A	1.00	1.00	2-114	18 AWG	50
AWM-P/S-BC	3/4-16 UNF-2A	1.25	1.25	2-118	18 AWG	85
AWO-P/S-BC	1-14 UNS-2A	1.60	1.62	2-122	18 AWG	125

GRE SPECIAL ORDER SIZES

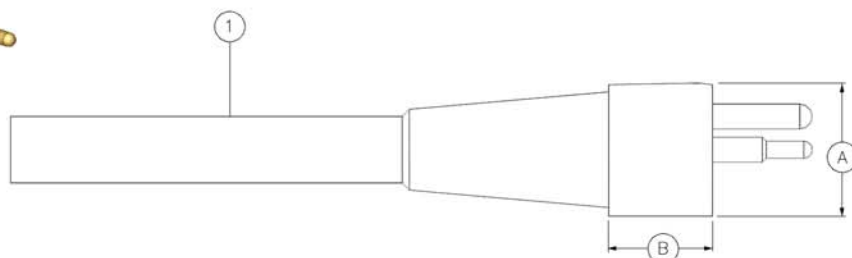
CONNECTOR	A - THREAD	B - Ø (INCHES)	C - HEX FLATS (INCHES)	1 - O-RING	2 - HOOK-UP WIRE	BULKHEAD MOUNTING TORQUE (INCH POUNDS)
AWL-P/S-BC	1/2-20 UNF	1.00	1.00	2-114	18 AWG	15
AWL-P/S-BC	3/4-16 UNS*	1.00	1.25	2-118	18 AWG	50
AWM-P/S-BC	3/4-16 UNF	1.25	1.25	2-118	18 AWG	50
AWM-P/S-BC	1-14 UNS*	1.25	1.50	2-122	18 AWG	85
AWO-P/S-BC	1-14 UNS	1.60	1.62	2-122	18 AWG	85

NOTES:

- * Optional, more robust design.
- Bulkhead Locking Sleeve: Optional; Factory installation only for AWL/M/O-BC (see page 10).
- Nut and washer: Optional.
- Dummy Connector: Optional.
- Dummy Shorting Plug Connector: Optional.
- Connectors must be lubricated prior to mating.
- Torque values referenced in this literature assume installation into dry metal threads. For other applications, please contact SEACON for recommendations.
- Connectors are designed for installation on one atmosphere vessels. Contact SEACON for recommendations if using compensated vessels.

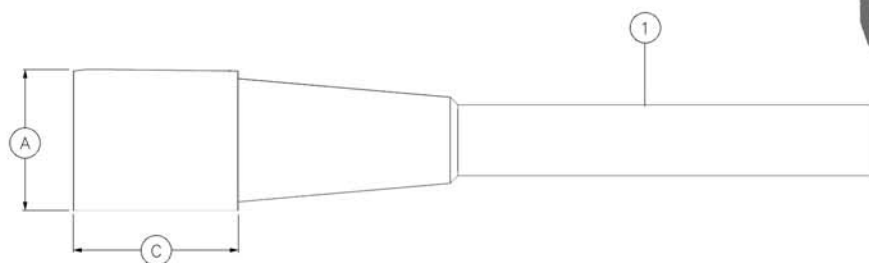
ALL-WET SERIES AW-MP

ALL-WET Round In-Line Connector
Mates with AW-FS and AW-S-BC
Dummy Connector: AW-FSD



ALL-WET SERIES AW-FS

ALL-WET Round In-Line Connector
Mates with AW-MP and AW-P-BC
Dummy Connector: AW-MPD



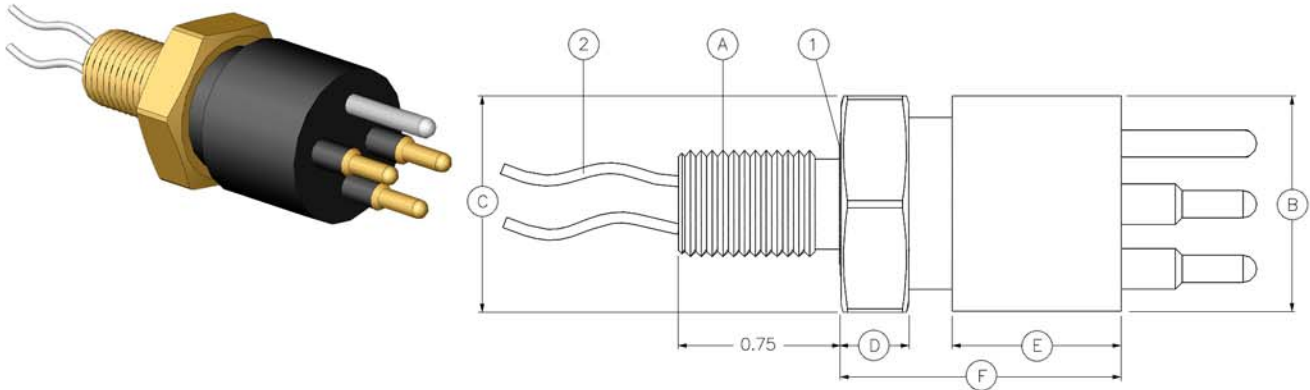
CONNECTOR	A - Ø (INCHES)	B - LENGTH (INCHES)	C - LENGTH (INCHES)	1 - STANDARD CABLE	MAXIMUM CABLE O.D.
AWL-MP/FS	1.00	0.78	1.16	18 AWG SO	1/2 (0.500)
AWM-MP/FS	1.25	0.78	1.16	18 AWG SO	7/8 (0.875)
AWO-MP/FS	1.60	0.78	1.16	18 AWG SO	1 1/4 (1.250)

NOTES:

- Locking Sleeve: Optional (see page 10).
- Dummy Connector: Optional.
- Dummy Shorting Plug Connector: Optional.
- Connectors must be lubricated prior to mating.

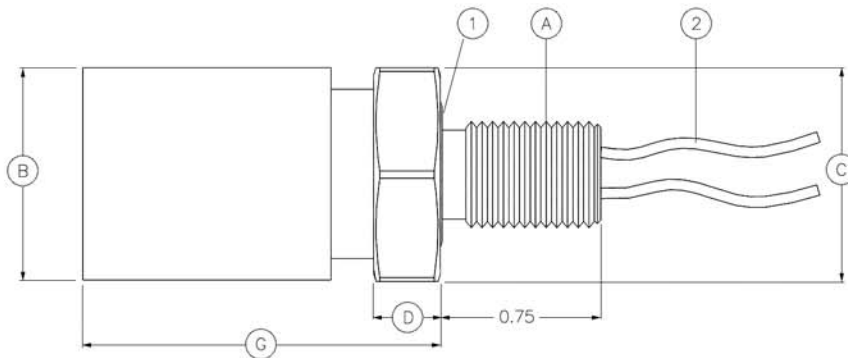
ALL-WET SERIES AW-P-BC with Ground (w/G)

ALL-WET Round Bulkhead Connector
Mates with AW-FS
Dummy Connector: AW-FSD



ALL-WET SERIES AW-S-BC with Ground (w/G)

ALL-WET Round Bulkhead Connector
Mates with AW-MP
Dummy Connector: AW-MPD



CONNECTOR	A - THREAD	B - Ø (INCHES)	C - HEX FLATS (INCHES)	D - LENGTH (INCHES)	E - LENGTH (INCHES)	F - LENGTH (INCHES)	G - LENGTH (INCHES)	1 - O-RING	2 - HOOK-UP WIRE	BULKHEAD MOUNTING TORQUE (INCH POUNDS)
AWL-P/S-BC-w/G	1/2-20 UNF-2A	1.00	1.00	0.25	0.78	1.29	1.67	2-114	18 AWG	50
AWM-P/S-BC-w/G	3/4-16 UNF-2A	1.25	1.25	0.25	0.78	1.29	1.67	2-118	18 AWG	85
AWO-P/S-BC-w/G	1-14 UNS-2A	1.60	1.62	0.50	1.15	2.31	2.69	2-122	8 AWG	125

GRE SPECIAL ORDER SIZES

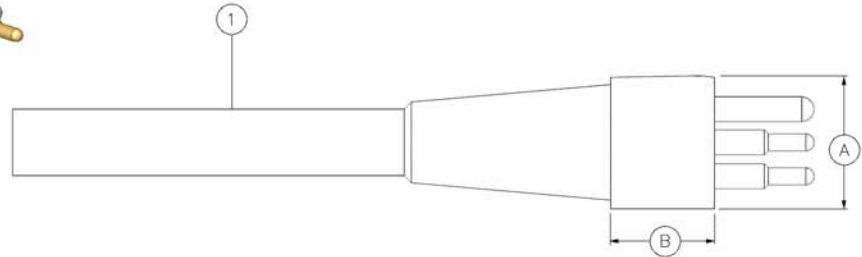
CONNECTOR	A - THREAD	B - Ø (INCHES)	C - HEX FLATS (INCHES)	1 - O-RING	2 - HOOK-UP WIRE	BULKHEAD MOUNTING TORQUE (INCH POUNDS)
AWL-P/S-BC-w/G	1/2-20 UNF	1.00	1.00	2-114	18 AWG	15
AWL-P/S-BC-w/G	3/4-16 UNS*	1.00	1.25	2-118	18 AWG	50
AWM-P/S-BC-w/G	3/4-16 UNF	1.25	1.25	2-118	18 AWG	50
AWM-P/S-BC-w/G	1-14 UNS*	1.25	1.50	2-122	18 AWG	85
AWO-P/S-BC-w/G	1-14 UNS	1.60	1.62	2-122	8 AWG	85

NOTES:

- This series offers a ground pin that will make contact prior to the line pins and break contact last upon demating.
- * Optional, more robust design.
- Optional thread sizes: AWL-7/16-20 UNF-2A. AWM-5/8-18 UNF-2A.
- Bulkhead Locking Sleeve: Optional; Factory installation only for AWL/M/O-BC (see page 10).
- Nut and washer: Optional.
- Dummy Connector: Optional.
- Dummy Shorting Plug Connector: Optional.
- Connectors must be lubricated prior to mating.
- Torque values referenced in this literature assume installation into dry metal threads. For other applications, please contact SEA CON for recommendations.
- Connectors are designed for installation on one atmosphere vessels. Contact SEA CON for recommendations if using compensated vessels.

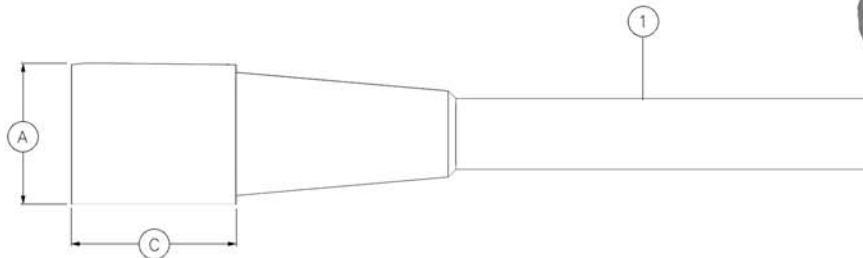
ALL-WET SERIES AW-MP with Ground (w/G)

ALL-WET Round with Ground In-Line Connector
Mates with AW-FS and AW-S-BC
Dummy Connector: AW-FSD



ALL-WET SERIES AW-FS with Ground (w/G)

ALL-WET Round with Ground In-Line Connector
Mates with AW-MP and AW-P-BC
Dummy Connector: AW-MPD



CONNECTOR	A - Ø (INCHES)	B - LENGTH (INCHES)	C - LENGTH (INCHES)	1 - STANDARD CABLE	MAXIMUM CABLE O.D.
AWL-MP/FS-w/G	1.00	0.78	1.16	18 AWG SO	1/2 (0.500)
AWM-MP/FS-w/G	1.25	0.78	1.16	18 AWG SO	7/8 (0.875)
AWO-MP/FS-w/G	1.85	1.39	1.23	8 AWG SO	1 1/4 (1.250)

STANDARD IN-LINE w/GROUND COLOR CODE

AWL-2 w/G-MP/FS

CONTACT #	COLOR
1	WHITE
2	BLACK
G	GREEN

AWL-3 w/G-MP/FS AWM-3 w/G-MP/FS

CONTACT #	COLOR
1	WHITE
2	BLACK
3	RED
G	GREEN

AWM-5 w/G-MP/FS

CONTACT #	COLOR
1	WHITE
2	BLACK
3	RED
4	ORANGE
5	BLUE
G	GREEN

AWO-15 w/G-MP/FS

CONTACT #	COLOR
1	WHITE
2	BLACK
3	RED
4	ORANGE
5	BLUE
6	WHITE/BLACK
7	RED/BLACK
8	GREEN/BLACK
9	ORANGE/BLACK
10	BLUE/BLACK
11	BLACK/WHITE
12	GREEN/WHITE
13	RED/WHITE
14	BLUE/WHITE
15	BLACK/RED
G	GREEN

NOTES:

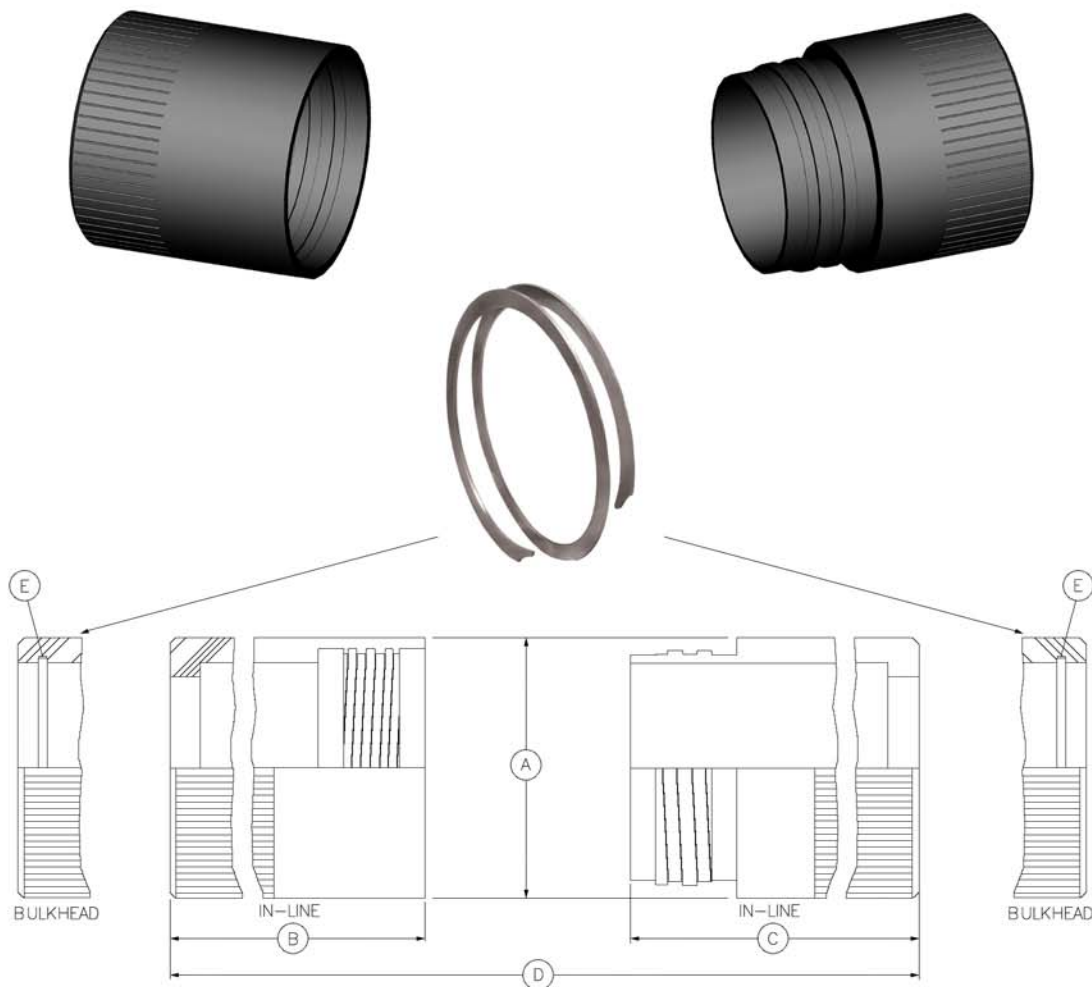
- This series offers a ground pin that will make contact prior to the line pins and break contact last upon demating.
- Locking Sleeve: Optional (see page 10).
- Dummy Connector: Optional.
- Dummy Shorting Plug Connector: Optional.
- Connectors must be lubricated prior to mating.
- For Bulkhead Connectors, please contact SEACON for availability.
- AWO-15 w/G has one pin that makes contact last.

ALL-WET SERIES FLS

ALL-WET Female Locking Sleeve

ALL-WET SERIES MLS

ALL-WET Male Locking Sleeve

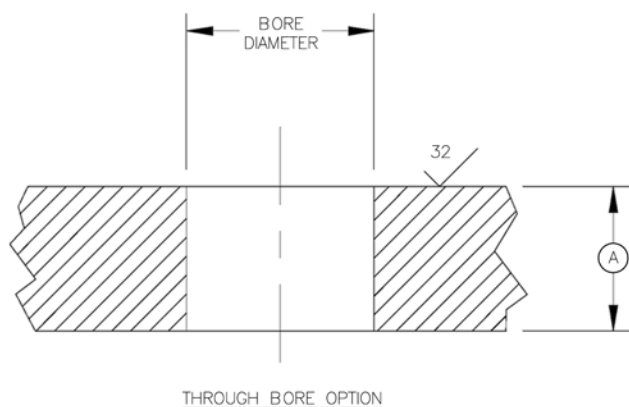


ALL-WET LOCKING SLEEVES		A - Ø (INCHES)	B - LENGTH (INCHES)	C - LENGTH (INCHES)	D - LENGTH (INCHES)	E - SPIROLOX
IN-LINE	BULKHEAD					
AWL-FLS	AWL-FBLS	1.25	1.23	-	2.10	RR-100
AWL-MLS	AWL-MBLS	1.25	-	1.38	2.10	RR-100
AWM-FLS	AWM-FBLS	1.50	1.23	-	2.10	RR-125
AWM-MLS	AWM-MBLS	1.50	-	1.38	2.10	RR-125
AWO-FLS	AWO-FBLS	1.85	1.23	-	2.10	RR-162
AWO-MLS	AWO-MBLS	1.85	-	1.38	2.10	RR-162
-	AWQ-FBLS	2.50	1.44	-	2.94	-
AWQ-MLS	-	2.50	-	2.00	2.94	-

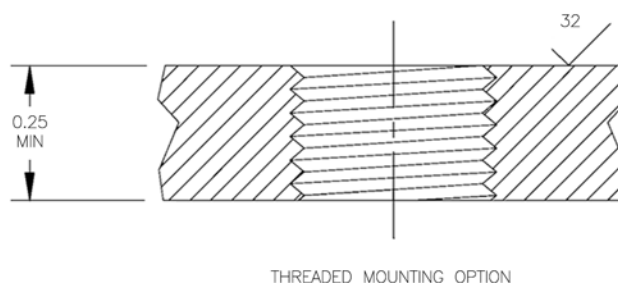
NOTES:

- D - Delrin® (DuPont trademark for Acetal Resin).
- S - Stainless Steel.
- Locking Sleeves will fit standard **ALL-WET** Connectors and **ALL-WET** Split Connectors.
- Specify Bulkhead or In-Line type locking sleeve.
- Bulkhead Locking Sleeve: Optional.
- If locking sleeves are required for AWL/M/O bulkhead connectors, they must be specified at time of connector order as they are factory installations only.

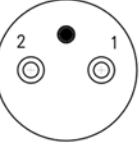
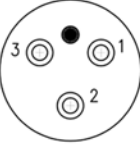
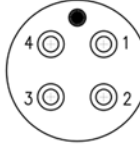
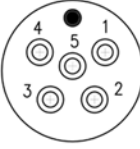
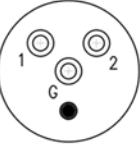
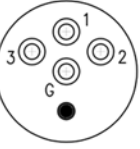
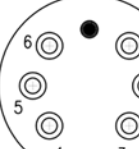

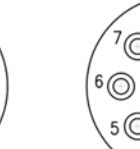
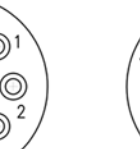

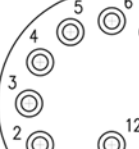

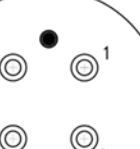
ALL-WET SERIES
AW-P/S-BC
THROUGH BORE OPTION
 ALL-WET Round Bulkhead Connector



ALL-WET SERIES
AW-P/S-BC
THREADED MOUNTING OPTION
 ALL-WET Round Bulkhead Connector



CONNECTOR	THREAD	BORE Ø (INCHES)	MOUNTING TORQUE (INCH POUNDS)	SPOT FACE Ø (INCHES)	A - MAX (INCHES)
AWL-BC	1/2-20 UNF-2A	0.500 +0.015 -0.000	50	1.19	0.44
AWM-BC	3/4-16 UNF-2A	0.750 +0.015 -0.000	85	1.50	0.44
AWO-BC	1-14 UNS-2A	1.000 +0.015 -0.000	125	1.88	0.44

SIZE	ALL-WET ROUND SERIES CONTACT CONFIGURATIONS (FEMALE FACE VIEW ONLY* - NOT TO SCALE)					
L						
	2	3	4***	5	2 w/GRD**	3 w/G**
						
	6	8	8x	3 w/G**	5 w/G**	
						
	12S	3 w/G**	15 w/G**			

NOTES:

- * For male face view contact configurations available please contact SEA CON.
- ** ALL-WET series w/Ground.
- *** AWL-4-S mates with AWL-2/4-MP Split connectors.

S E A C O N



ALL-WET SPLIT SERIES

UNDERWATER ELECTRICAL WET-MATE CONNECTORS

GENERAL INFORMATION

COMPONENT	MATERIAL
BULKHEAD BODY: STANDARD: OPTIONAL:	CA630 per QQ-C-465* Many materials including 316 Stainless Steel, 6A14V Titanium, Glass Reinforced Epoxy (GRE)
CONNECTOR BODY: STANDARD: OPTIONAL:	Neoprene per B/A X5727 Hypalon per B/A X6830
CONTACTS	Copper Alloy Gold Plated per ASTM B488
GUIDE PINS	304 Stainless Steel
O-RINGS	Nitrile (formerly known as Buna N)

CATEGORY	VALUE
OPEN FACE PRESSURE	Up to 1,000 psi
MATED PRESSURE	Up to 10,000 psi
VOLTAGE	Will vary by pattern, determined by the cable
CURRENT	Up to 13 amps per contact**
CONTACT RESISTANCE	<0.01 ohms
INSULATION RESISTANCE	>500 megohms after wet mating
MATING CYCLES	>500 wet matings***

NOTES:

- * Except AWM-2/12S-BC (Standard = 316 Stainless Steel).
- ** Maximum current carrying capacity for contacts may be affected by cable selection.
- *** Provided proper handling procedures are adhered to.
- Locking sleeves are not standard and must be ordered separately. Available in Delrin® (DuPont trademark for Acetal Resin) or Stainless Steel.
- Bulkhead nut/washer is not standard and must be ordered separately. Available in Stainless Steel.

AMPACITY CHART FOR STANDARD PARTS

Please see page 15 of this **ALL-WET** Split section.

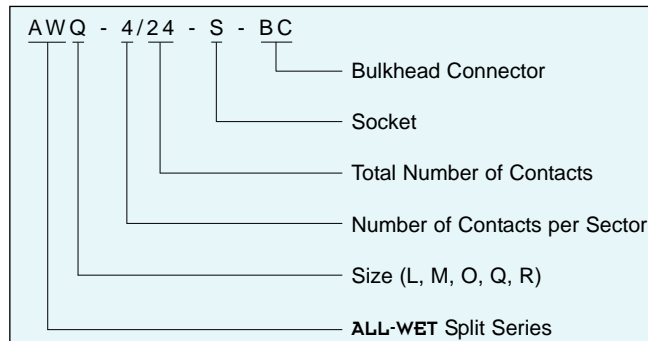
STANDARD IN-LINE WIRING COLOR CODE (SO CABLE)

CONTACT #	COLOR
1	WHITE
2	BLACK
3	GREEN
4	RED
5	ORANGE
6	BLUE

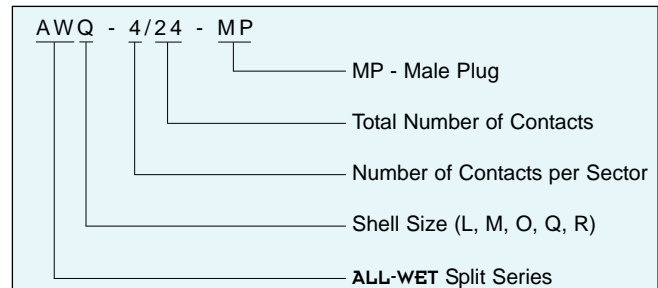
CONTACT #	COLOR
7	WHITE/BLACK
8	RED/BLACK
9	GREEN/BLACK
10	ORANGE/BLACK
11	BLUE/BLACK
12	BLACK/WHITE

PART NUMBER SYSTEM - EXAMPLE

ALL-WET SPLIT SERIES BULKHEAD CONNECTORS

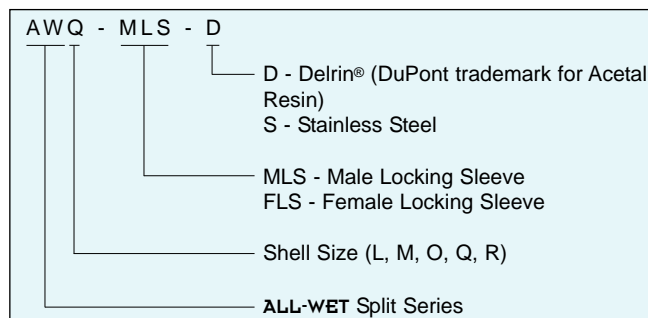


ALL-WET SPLIT SERIES IN-LINE CONNECTORS



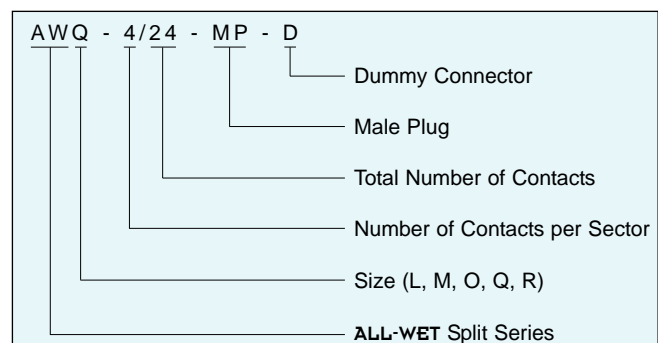
ALL-WET SPLIT SERIES LOCKING SLEEVES

Locking sleeves are available for ALL-WET Split Series connectors as an option, see page 10.



ALL-WET SPLIT SERIES DUMMY CONNECTORS

Dummy male plug connectors are available for all bulkhead connectors in the ALL-WET Split Series. To order, add the suffix-D after the part number.



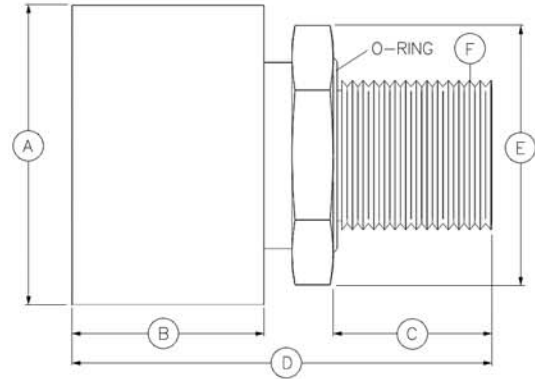
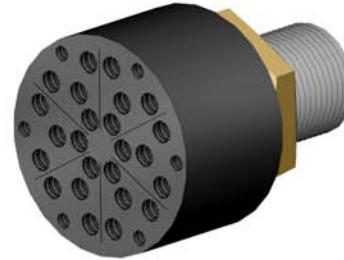
ALL-WET SERIES AW-MP SPLIT

ALL-WET Split In-Line Pie Connector



ALL-WET SERIES AW-S-BC

ALL-WET Split Bulkhead Connector




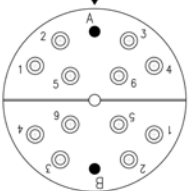
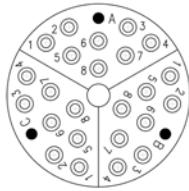

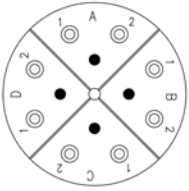
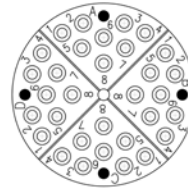
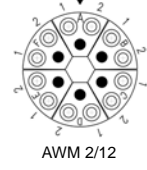

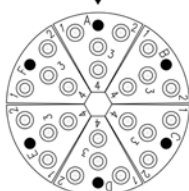
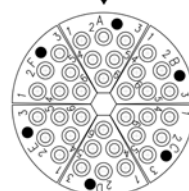
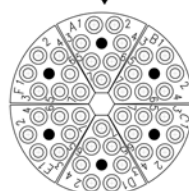
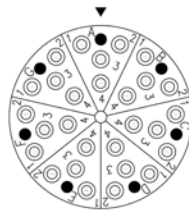
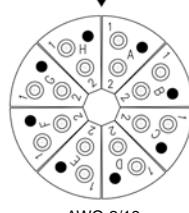

CONNECTOR	A - Ø (INCHES)	B - LENGTH (INCHES)	C - LENGTH (INCHES)	D - LENGTH (INCHES)	E - LENGTH (INCHES)	F - THREAD	O - RING	BC 18" TEFLON® ** TYPE E HOOK-UP WIRE	MP w/18" CABLE	VDC	AMP PER CONTACT	CABLE AMPACITY	BULKHEAD MOUNTING TORQUE (INCH POUNDS)
AWL-2/4*	1.00	1.16	0.75	2.42	1.00	1/2-20 UNF-2A	2-114	18 AWG	18/2 SJO	300	19	7.0	50
AWM-2/12	1.25	1.16	0.75	2.42	1.25	1/2-20 UNF-2A	2-114	20 AWG	18/2 SJO	300	19	7.0	50
AWO-2/12	For dimension details and ratings please contact SEACON.												
AWQ-2/8	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	18 AWG	18/2 SO	600	19	7.0	125
AWQ-6/12	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	18 AWG	18/6 SO	600	19	5.6	125
AWQ-2/16	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	18 AWG	18/2 SO	600	19	7.0	125
AWQ-2/24	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	18 AWG	18/2 SJO	300	10	7.0	125
AWQ-4/24	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	18 AWG	18/4 SO	600	19	5.6	125
AWQ-4/28	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	18 AWG	18/4 SO	600	19	5.6	125
AWQ-8/24	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	18 AWG	18/8 SO	600	19	4.9	125
AWQ-8/32	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	18 AWG	18/8 SO	600	10	4.9	125
AWQ-6/36	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	20 AWG	18/6 SO	600	10	5.6	125
AWQ-12/36	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	20 AWG	18/12 SO	600	10	3.5	125
AWQ-7/42	2.00	1.28	1.00	2.80	1.50	1-14 UNS-2A	2-123	20 AWG	18/7 SO	600	10	4.9	125

GRE SPECIAL ORDER SIZES

CONNECTOR	THREAD	HEX FLATS (INCHES)	BULKHEAD MOUNTING TORQUE (INCH POUNDS)
AWL	1/2-20 UNF-2A	1.00	50
AWM	3/4-16 UNF-2A	1.25	85
AWO	1-14 UNS-2A	1.62	125
AWQ	1-14 UNS-2A	1.50	85

NOTES:

- Multiple connectors required to fill all sectors of bulkhead connector.
- Pressure Rating: 10,000 psi, mated/1,000 psi, open face.
- Dummy Connector: Optional. Please contact SEACON for availability.
- Dummy Shorting Plug Connector: Optional.
- Connectors must be lubricated prior to mating.
- Locking Sleeves: Optional (see page 10).
- Nut and washer: Optional.
- Torque values referenced in this literature assume installation into dry metal threads. For other applications, please contact SEACON for recommendations.
- Contact SEACON for custom cable molding needs.
- Bulkhead Locking Sleeve. Factory installation only for AWL/M-BC (see page 10).
- Connectors are designed for installation onto one atmosphere vessels. Contact SEACON for recommendations if using compensated vessels.
- * AWL-2/4 is available in 2 different MP's. 1) Has guide pin along with pins 1 & 4; 2) Has no guide pin and pins 3 & 4.
- ** Registered trademark for DuPont.

SIZE	ALL-WET SPLIT SERIES CONTACT CONFIGURATIONS (FEMALE FACE VIEW ONLY - NOT TO SCALE)				
2	 AWL 2/4*  AWQ 6/12				
3	 AWQ 8/24  AWQ 12/36				
4	 AWQ 2/8  AWQ 8/32				
6	 AWM 2/12  AWO 2/12  AWQ 4/24  AWQ 6/36  AWQ 7/42				
7	 AWQ 4/28				
8	 AWQ 2/16				
12	 AWQ 2/24				

NOTES:

- All configurations shown are the face view of the Bulkhead Connector (BC). Standard bulkhead contacts are female.
- The mating male plugs (MP) are "split" into equally shaped sections.
- For customer configurations or special applications contact **SEACON** or sales representative.
- * AWL-2/4-MP mates with standard AWL-4S-BC.

S E A C O N



ALL-WET FLAT SERIES

UNDERWATER ELECTRICAL WET-MATE CONNECTORS

GENERAL INFORMATION

COMPONENT	MATERIAL
BULKHEAD BODY: STANDARD: OPTIONAL:	CA630 per QQ-C-465 Many materials including 316 Stainless Steel and 6A14V Titanium, Hard Anodized
CONNECTOR BODY: STANDARD: OPTIONAL:	Neoprene per B/A X5727 Hypalon per B/A X6830
CONTACTS	Copper Alloy Gold Plated per ASTM B488
O-RINGS	Nitrile (formerly known as Buna N)
IN-LINE CABLE: FAWL: FAWM 8: FAWM 10: MAW:	#18 AWG SO* #20 AWG SO* #22 AWG SO* IN2*
BULKHEAD NUT/WASHER	Brass
BULKHEAD PIGTAILS	Teflon® (registered trademark for DuPont) Type E Hook-up wire* FAWL #18 AWG* FAWM 8 #20 AWG* FAWM 10 #22 AWG* MAW IN2*

CATEGORY	VALUE
OPEN FACE PRESSURE #BULKHEADS	Up to 1,000 psi
MATED PRESSURE BULKHEADS	Up to 10,000 psi
MATED PRESSURE IN-LINES	Up to 10,000 psi
VOLTAGE FAW: MAW:	600 VDC except FAWM-10*** 300 VDC
CURRENT FAW: MAW:	Up to 10 amps per contact** Up to 3 amps per contact**
CONTACT RESISTANCE	<0.01 ohms
INSULATION RESISTANCE	>500 megohms after wet mating
MATING CYCLES	>500 wet matings****

NOTES:

- * 18 inch standard length.
- ** Maximum current carrying capacity for contacts may be affected by cable selection.
- *** Rated to 300 VDC.
- **** Provided proper handling procedures are adhered to.

AMPACITY CHART FOR STANDARD PARTS

PART DESCRIPTION NUMBER OF CONTACTS	AMPACITY
FAWL - 2	7 amps
FAWL - 3	7 amps
FAWL - 4	5.6 amps

· Higher ampacities are available.

PART DESCRIPTION NUMBER OF CONTACTS	AMPACITY
FAWL - 5	5.6 amps
FAWM - 8	4.9 amps
FAWM - 10	2.5 amps

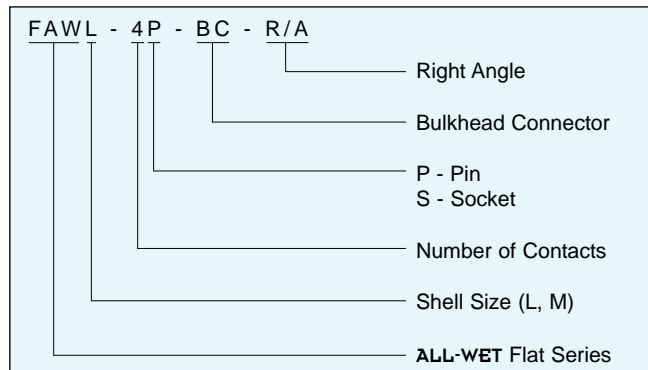
STANDARD IN-LINE WIRING COLOR CODE

CONTACT #	COLOR
1	WHITE
2	BLACK
3	GREEN
4	RED
5	ORANGE

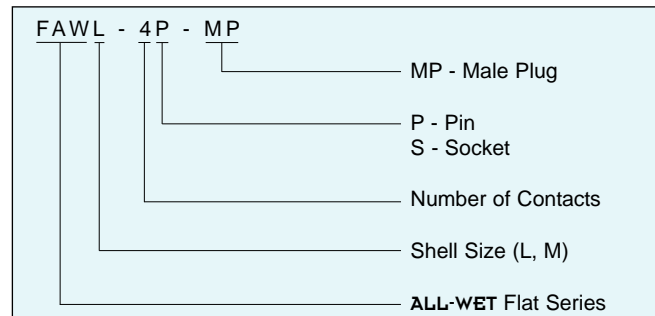
CONTACT #	COLOR
6	BLUE
7	WHITE/BLACK
8	RED/BLACK
9	GREEN/BLACK
10	ORANGE/BLACK

PART NUMBER SYSTEM - EXAMPLE

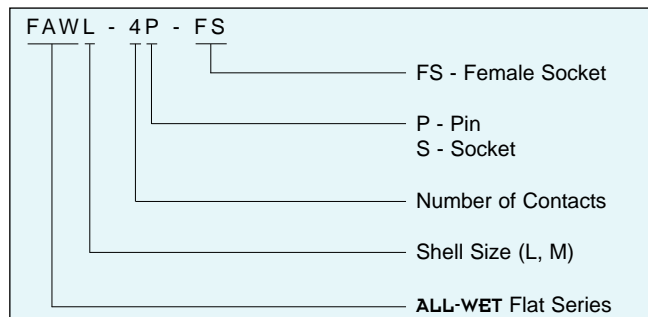
ALL-WET FLAT SERIES BULKHEAD CONNECTORS



ALL-WET FLAT SERIES IN-LINE MP CONNECTORS

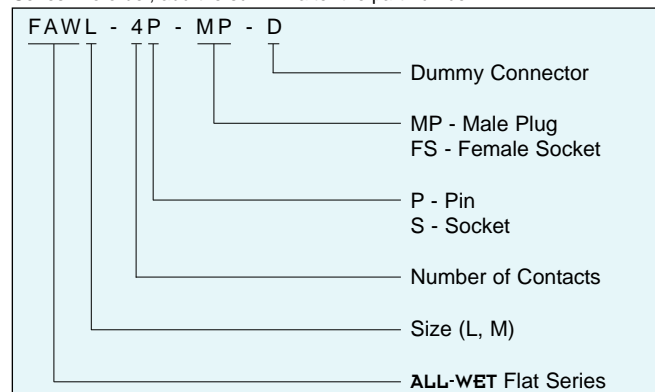


ALL-WET FLAT SERIES IN-LINE FS CONNECTORS



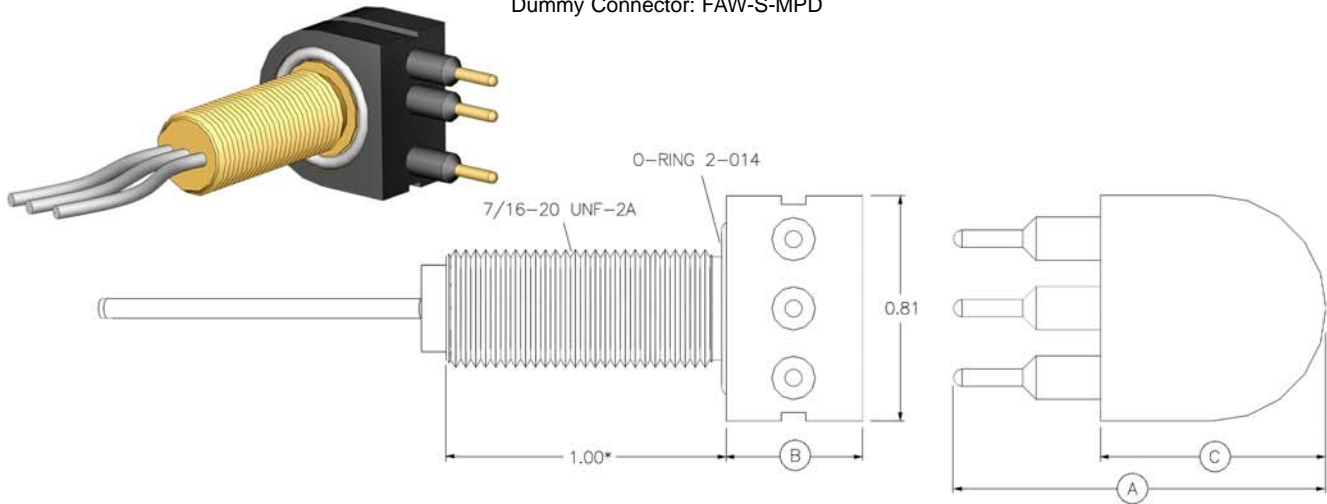
ALL-WET FLAT SERIES DUMMY CONNECTORS

Dummy connectors are available for all connectors in the ALL-WET Flat Series. To order, add the suffix-D after the part number.



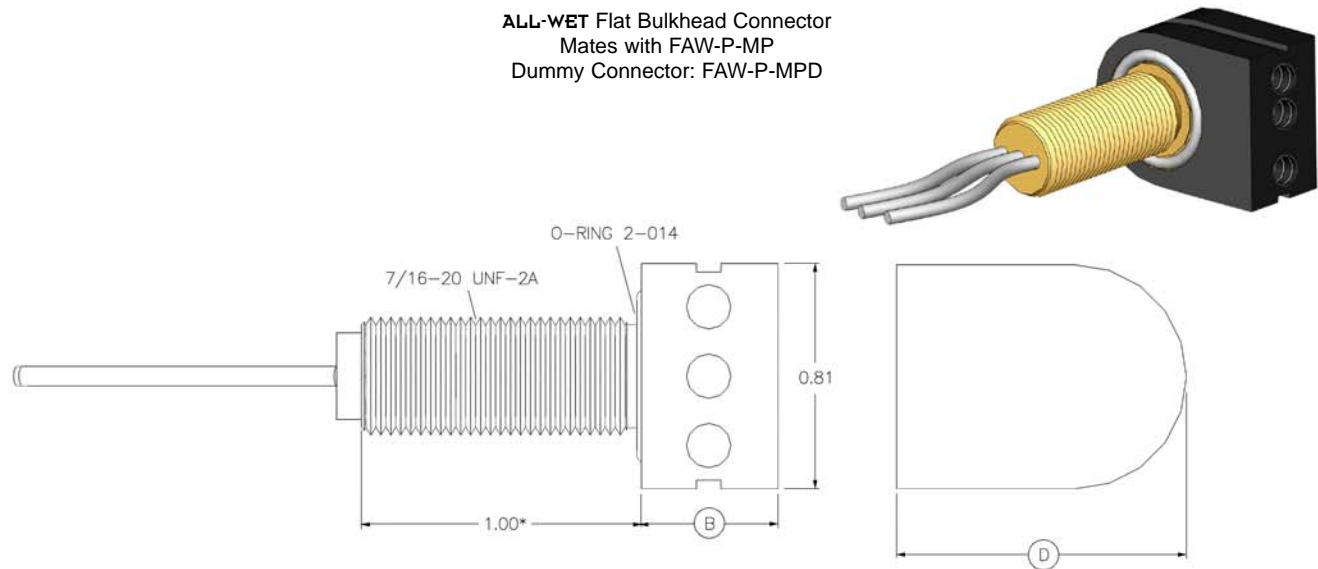
ALL-WET SERIES FAW-P-BC-R/A

ALL-WET Flat Bulkhead Connector
Mates with FAW-S-MP
Dummy Connector: FAW-S-MPD



ALL-WET SERIES FAW-S-BC-R/A

ALL-WET Flat Bulkhead Connector
Mates with FAW-P-MP
Dummy Connector: FAW-P-MPD



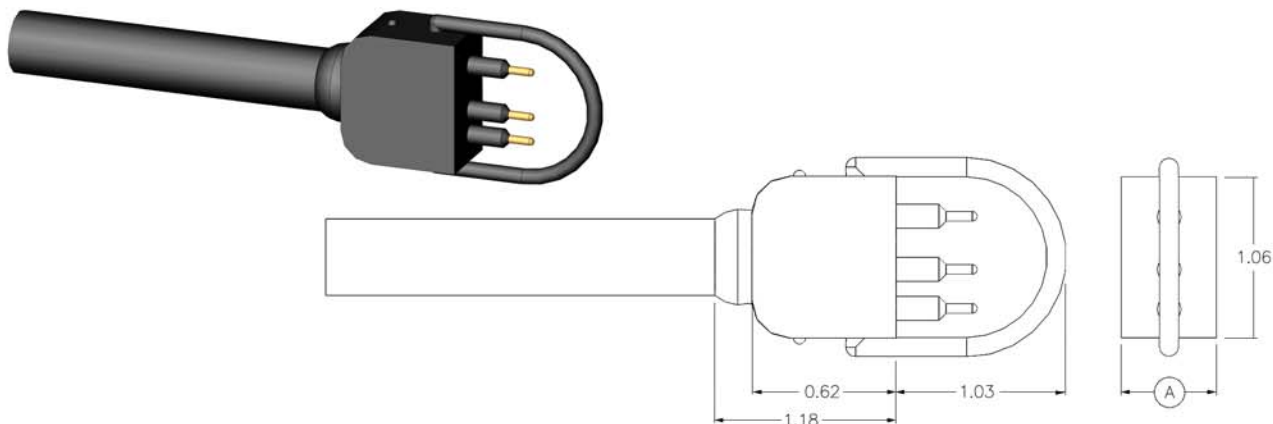
CONNECTOR	A - LENGTH (INCHES)	B - LENGTH (INCHES)	C - LENGTH (INCHES)	D - LENGTH (INCHES)
FAWL-P/S-BC-R/A	1.34	0.50	0.81	1.05
FAWM-P/S-BC-R/A	1.48	0.63	0.95	1.12

NOTES:

- Thread length is 1.00" standard. If shorter thread is required, specify as follows: FAW-P(or S)-BC-R/A (1/2" thread length).
- Available thread length: 1/2", 3/4" and 1".
- Bulkhead mounting torque: 40 inch pounds.
- Nuts and washer supplied.
- Connectors must be lubricated prior to mating.
- Connectors are designed for installation on one atmosphere vessels. Contact SEACON for recommendations if using compensated vessels.
- Dummy Connectors: Optional.
- Dummy Shorting Plug: Optional.

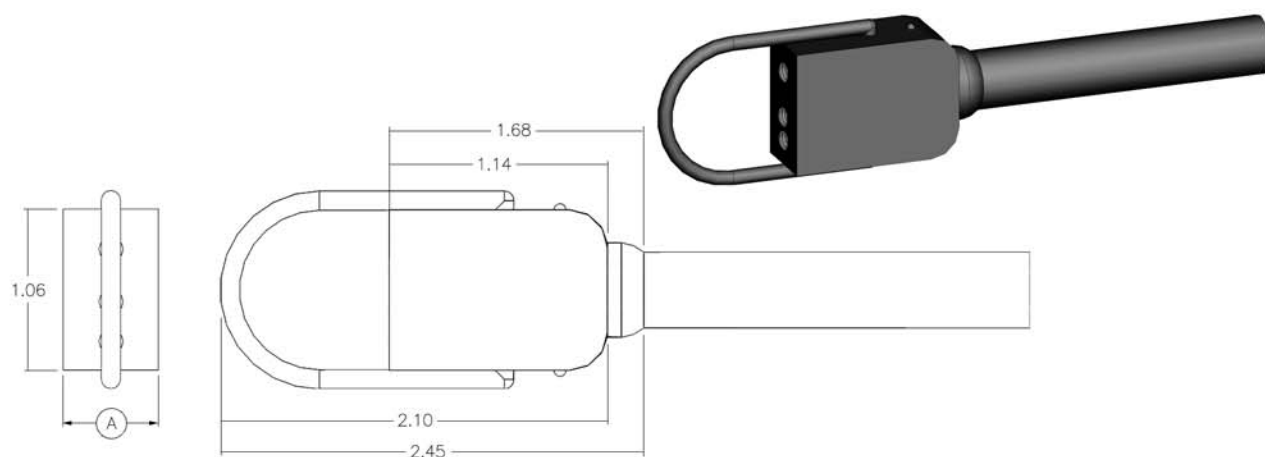
ALL-WET SERIES FAW-P-MP

ALL-WET Flat In-Line Connector
Mates with FAW-S-FS and FAW-S-BC-R/A
Dummy Connector: FAW-S-FSD



ALL-WET SERIES FAW-S-MP

ALL-WET Flat In-Line Connector
Mates with FAW-P-FS and FAW-P-BC-R/A
Dummy Connector: FAW-P-FSD



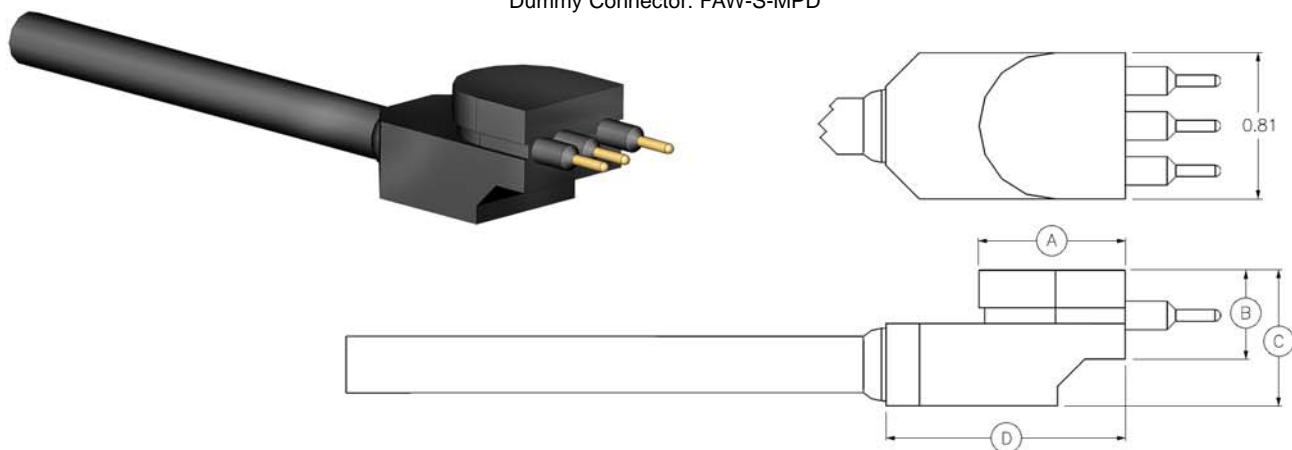
CONNECTOR	A - LENGTH (INCHES)
FAWL-P/S-MP	0.50
FAWM-P/S-MP	0.63

NOTES:

- Neoprene lanyard wraps around groove on in-line or bulkhead mate.
- Dummy connectors: Optional.
- Dummy Shorting Plug: Optional.
- Connectors must be lubricated prior to mating.

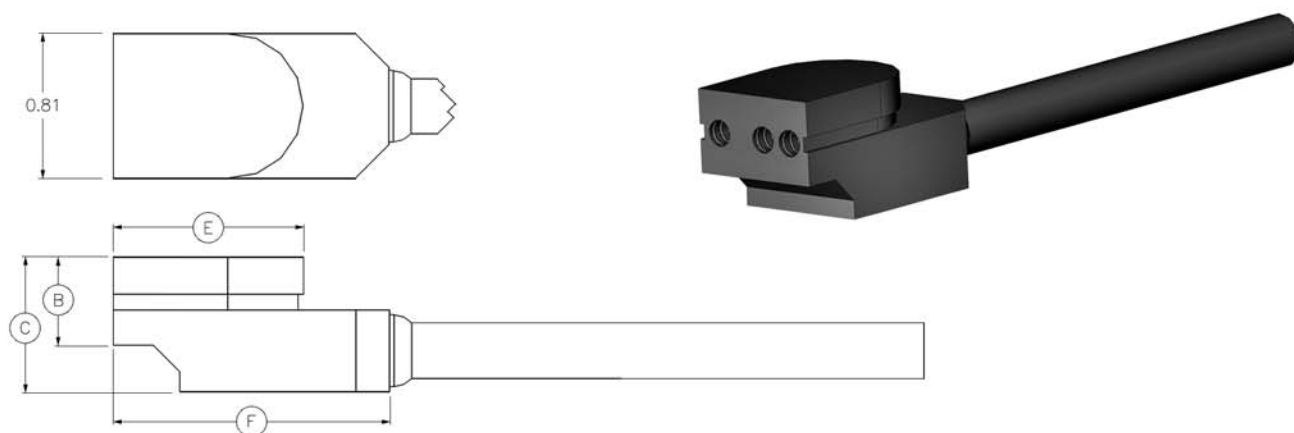
ALL-WET SERIES FAW-P-FS

ALL-WET Flat In-Line Connector
Mates with FAWL-S-MP
Dummy Connector: FAW-S-MPD



ALL-WET SERIES FAW-S-FS

ALL-WET Flat In-Line Connector
Mates with FAWL-P-MP
Dummy Connector: FAW-P-MPD



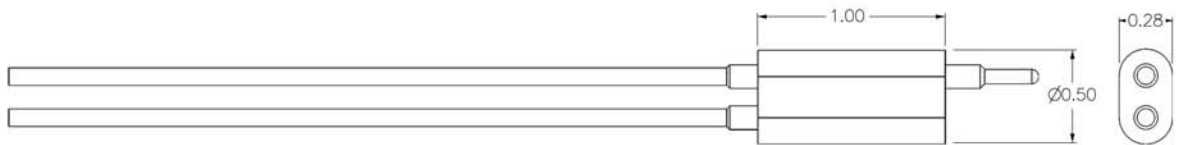
CONNECTOR	A - LENGTH (INCHES)	B - LENGTH (INCHES)	C - LENGTH (INCHES)	D - LENGTH (INCHES)	E - LENGTH (INCHES)	F - LENGTH (INCHES)
FAWL-P/S-FS	0.81	0.50	0.88	1.31	1.05	1.55
FAWM-P/S-FS	0.98	0.63	0.94	1.33	1.15	1.52

NOTES:

- Dummy Connector: Optional.
- Dummy Shorting Plug: Optional.
- Connectors must be lubricated prior to mating.

ALL-WET SERIES MAW-2-HC w/IN2 CABLE

ALL-WET Miniature Hermaphroditic In-Line Connector
Mates with itself and MAW-2-HC-BC-R/A



ALL-WET SERIES MAW-2-HC w/18/2 SJO CABLE

ALL-WET Miniature Hermaphroditic In-Line Connector
Mates with itself and MAW-2-HC-BC-R/A

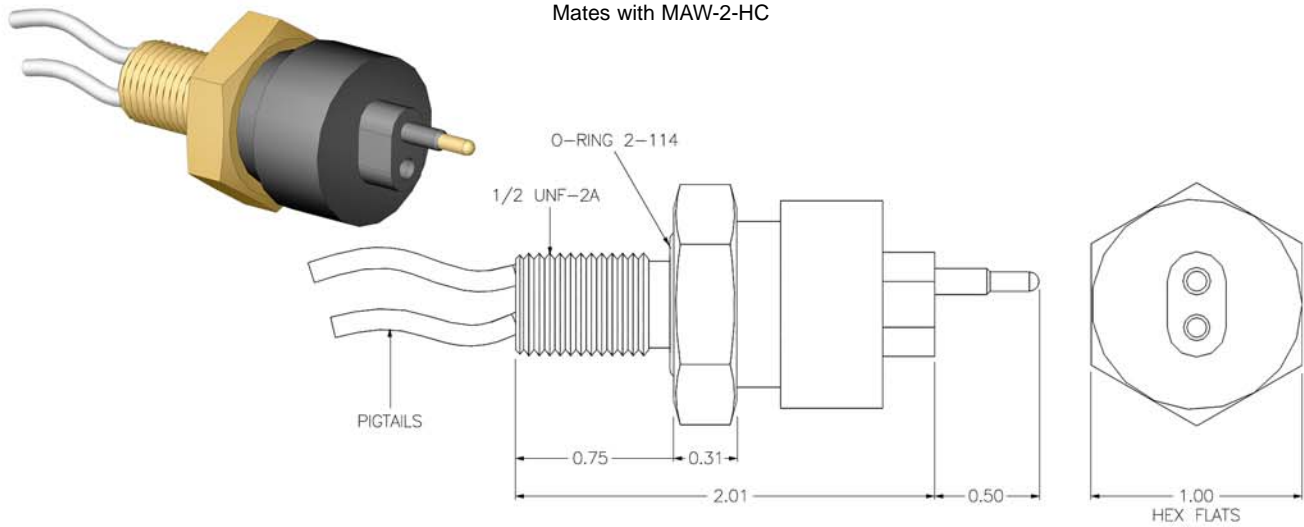


NOTES:

- Current-carrying capacity: MAW-2-HC w/IN2 CABLE - 3 amps per contact.
MAW-2-HC w/18/2 SJO CABLE - 7 amps per contact.
- Operating pressure: 10,000 psi.
- Open face pressure: 1,000 psi.
- Working voltage: 300 VDC.
- Dummy Connector: Optional.
- Dummy Shorting Plug: Optional.
- Connectors must be lubricated prior to mating.

ALL-WET SERIES MAW-2-HC-BC

ALL-WET Miniature Hermaphroditic Bulkhead Connector
Mates with MAW-2-HC

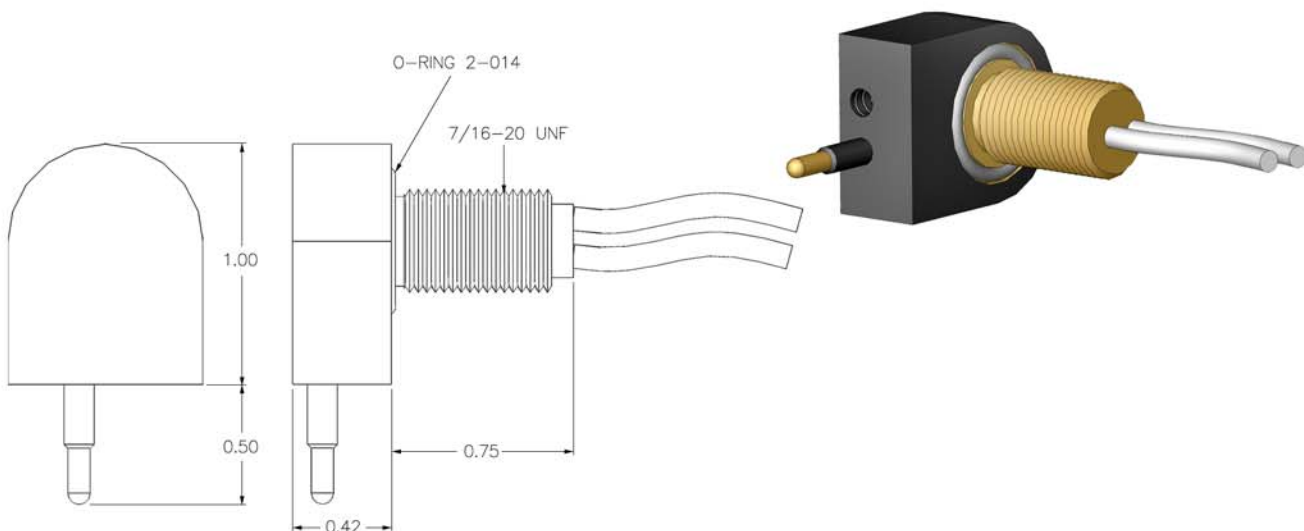


NOTES:

- Dummy connector: Optional.
- Dummy Shorting Plug: Optional.
- Pigtails: 18 AWG Type E, 18 inches long.
- Connectors must be lubricated prior to mating.
- Nut and washer: Optional.
- For GRE bulkhead mounting torques please contact **SEACON**. Torque value referenced in this literature assume installation into dry metal threads. For other applications please contact **SEACON** for recommendations.
- Connectors are designed for installation on one atmosphere vessels. Contact **SEACON** for recommendations if using compensated vessels.

ALL-WET SERIES MAW-2-HC-BC-R/A

ALL-WET Miniature Hermaphroditic Bulkhead Right Angle Connector
Mates with MAW-2-HC

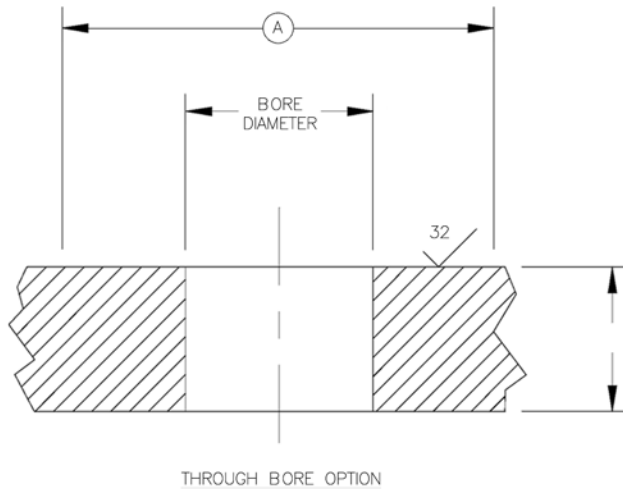


NOTES:

- Dummy connector: Optional.
- Dummy Shorting Plug: Optional.
- Connectors must be lubricated prior to mating.
- Nuts and washer supplied.
- Connectors are designed for installation on one atmosphere vessels. Contact **SEACON** for recommendations if using compensated vessels.

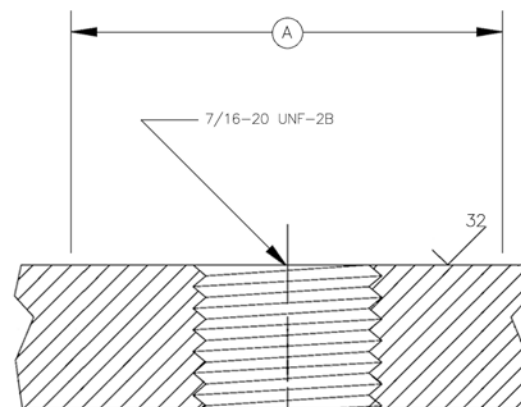
ALL-WET SERIES FAW-P/S-BC THROUGH BORE OPTION

ALL-WET Flat Bulkhead Connector

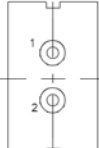
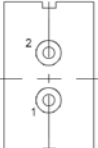
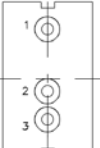

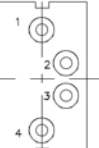
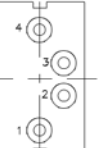
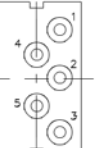
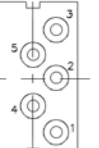
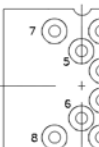
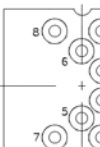
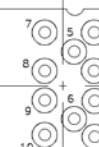
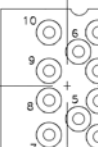
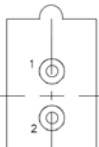
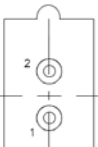
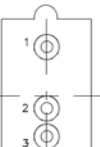
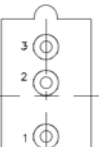
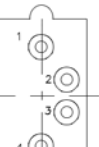
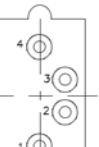
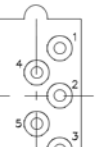
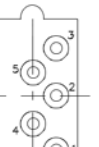
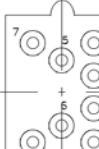
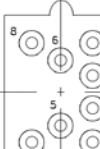
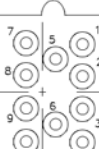
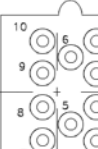


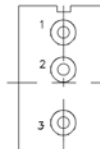

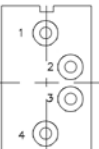
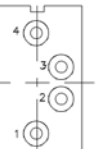
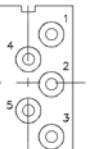
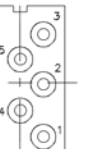

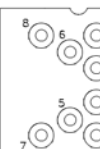
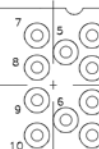
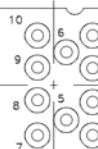


ALL-WET SERIES FAW-P/S-BC THREADED MOUNTING OPTION

ALL-WET Flat Bulkhead Connector

**NOTES:**

- A - Spot face to 32 finish, minimum diameter 1.25 (to be equal to or greater than connector diameter).
- Bore, through or threaded, must be perpendicular to spot face.
- If threaded mount is used, the lead thread chamfer is not to exceed diameter 0.450.

SIZE	ALL-WET FLAT SERIES RIGHT ANGLE BULKHEAD CONTACT CONFIGURATIONS (NOT TO SCALE)							
L	 FAWL-2P-BC-R/A	 FAWL-2S-BC-R/A	 FAWL-3P-BC-R/A	 FAWL-3S-BC-R/A	 FAWL-4P-BC-R/A	 FAWL-4S-BC-R/A	 FAWL-5P-BC-R/A	 FAWL-5S-BC-R/A
M	 FAWM-8P-BC-R/A	 FAWM-8S-BC-R/A	 FAWM-10P-BC-R/A	 FAWM-10S-BC-R/A				
SIZE	ALL-WET FLAT SERIES IN-LINE CONTACT CONFIGURATIONS (NOT TO SCALE)							
L	 FAWL-2P-MP	 FAWL-2S-MP	 FAWL-3P-MP	 FAWL-3S-MP	 FAWL-4P-MP	 FAWL-4S-MP	 FAWL-5P-MP	 FAWL-5S-MP
M	 FAWM-8P-MP	 FAWM-8S-MP	 FAWM-10P-MP	 FAWM-10S-MP				
SIZE	ALL-WET FLAT SERIES IN-LINE CONTACT CONFIGURATIONS (NOT TO SCALE)							
L	 FAWL-2P-FS	 FAWL-2S-FS	 FAWL-3P-FS	 FAWL-3S-FS	 FAWL-4P-FS	 FAWL-4S-FS	 FAWL-5P-FS	 FAWL-5S-FS
M	 FAWM-8P-FS	 FAWM-8S-FS	 FAWM-10P-FS	 FAWM-10S-FS				

HANDLING PROCEDURES AND SPECIAL CAPABILITIES

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Even though these procedures appear simple, only qualified technicians should perform the installation and maintenance. Connectors are designed for installation on one atmosphere vessels. Contact **SEACON** for recommendations if using compensated vessels.

INSTALLATION PROCEDURES

Torque values referenced in this literature assume installation into dry metal threads. For other applications, please contact **SEACON** for recommendations.

BULKHEAD CONNECTOR (BC): The BC may be installed using one of two methods. The preferred method is to spotface the bulkhead surface and thread the hole, then screw the connector by means of a nut and washer. The bored hole (or threaded hole) should be free of any "burrs" and all o-ring sealing surfaces polished to a number 32 finish. Lubricate the BC o-ring with an appropriate silicone spray or grease before installing. This lubrication should be applied to form an adequate film. Excessive lubrication is detrimental to the operation of the connector. Bulkhead nut, if used, should not be over-torqued.

IN-LINE CONNECTOR: Lubricate the sealing areas around the male pins, using an appropriate silicone spray, or grease lightly.

CARE AND MAINTENANCE

The **ALL-WET** connectors require very little maintenance. They are designed to be used in harsh environments and thus limited amounts of dirt and grit do not affect their performance.

It is recommended that, upon disconnecting or retrieving the system, the connectors be cleaned, to storage (if possible, remate with dummy plugs). Prior to deployment the following maintenance procedure is recommended:

1. Demate the connector set.
2. Flush connector interface with fresh water (deionized water if available), remove all dirt, grit and grease.
3. Inspect for damage in sealing areas, excessive corrosion, debonding of the cable and connector interface and cuts in the cable jacket.
4. Apply thin film of dielectric compound (DC) grease, silicon based, to sealing areas of male connector and across the face of the female connector*. If the BC is removed from its housing then replace facial o-ring and make sure that o-rings are lubricated and in good condition.
5. Mate the connector halves, wipe away any excess grease off the interface line of the mated set.

* **CAUTION:** The use of some oil-based propellants in spray cans can cause conductivity problems in neoprene.

CABLE AND CONTINUITY PRESERVATION

Avoid sharp bends in cables. Cables subjected to vibration or exposed to seawater drag should be adequately clamped to prevent conductor fatigue and ultimate failure.

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