

SEACON[®]

UNDERWATER ELECTRICAL AND FIBER OPTIC CONNECTORS



HUMMER

UNDERWATER ELECTRICAL DRY-MATE CONNECTORS

SEACON
global
PRODUCTION

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INTRODUCTION

This unique, ultra miniature design incorporates the proven characteristics of some of our popular connectors in a smaller, rugged and reliable package. The contacts are gold plated and range from 28 awg, 0.10 amp to 22 awg, 1.50 amp sizes and are rated to 10,000 psi mated. The bulkhead connector consists of a metal shell with molded GRE (Glass Reinforced Epoxy) inserts which are all supplied pigtailed and back potted. The cable connector is molded in neoprene to standard or custom cable lengths upon request. This design makes for a rugged, economical connector.

SEA CON®'s Engineers have achieved an extremely high contact density connector whilst keeping the installation as easy as possible by using standard sizes and only requiring the use of standard SAE porting tools for bulkhead preparation.

AVAILABILITY

The connector range is built to stock which provides quick, 'off the shelf' deliveries in reasonable quantities of standard products. Please contact the SEA CON® for assistance with significant quantity special orders.

APPLICATIONS

The HUMMER is perfectly suited for applications where size and weight are an issue such as ROV systems, diver communications, current meters and food processing facilities.

TESTING

The following information shows a summary of the testing that has been performed. Formal qualification test data is available from SEA CON® if required.

- Dielectric withstanding voltage testing at 1,000 VAC on GRE (Glass Reinforced Epoxy) inserts with readings at 0.1ma (acceptance level is <0.5ma).
- Insulation resistance qualification testing at >50,000 megohms @ 500 VDC*.
- Pressure testing; 20 cycles and various hold times at facility. Maximum 20,000 psi in a mated condition with IR readings >50,000 megohms.
- Open face testing; various cycles as high as 20,000 psi without electrical or physical failure.
- Durability testing; 50 mate and de-mate cycles without degradation in conductor or insulation resistance readings.

PART NUMBER SYSTEM - EXAMPLE



GENERAL INFORMATION

| COMPONENT | MATERIAL |
|-----------------------------|---|
| BULKHEAD BODY** | Brass (CA #360) |
| CCP/DSR/DSP | Neoprene |
| CONTACTS | Brass-gold plated |
| O-RING | Nitrile (formerly known as Buna N) |
| ENGAGING NUT** | Delrin® (DuPont trademark for Acetal Resin) |
| IN-LINE CABLE*** | Teflon® (Registered trademark for DuPont) Insulated, Neoprene Jacketed Neoprene #22 Gage Neoprene #28 Gage |
| G2, K5, L12 G5, K12, L28 | |
| STANDARD LENGTH | 18 inches |
| HOOK-UP WIRE | Teflon® (Registered trademark for DuPont) or Tefzel® #22/#28 |

| CATEGORY | VALUE |
|---|--|
| OPEN FACE PRESSURE | Up to 10,000 psi (700 bar) by special order |
| MATED PRESSURE | 10,000 psi (700 bar) |
| VOLTAGE RATING | 300 VDC |
| INSULATION RESISTANCE | >200 megohms @ 300 VDC (acceptance level) |
| OPERATING TEMPERATURE | 25°F to 140°F (-4°C to 60°C) |
| BULKHEAD MOUNTING TORQUE | HUMG 12in-lb HUMG 30in-lb HUML 60in-lb |
| TORQUE VALES REFER TO INSTALLATION INTO DRY METAL THREADS | |

AMPACITY CHART FOR STANDARD PARTS

| PART DESCRIPTION NUMBER OF CONTACTS | AMPACITY |
|--|-----------|
| HUMG - 2 | 1.50 amps |
| HUMG - 5 | 0.24 amps |
| HUMK - 5 | 1.10 amps |

| PART DESCRIPTION NUMBER OF CONTACTS | AMPACITY |
|--|-----------|
| HUMK - 12 | 0.16 amps |
| HUML - 12 | 0.80 amps |
| HUML - 28 | 0.10 amps |

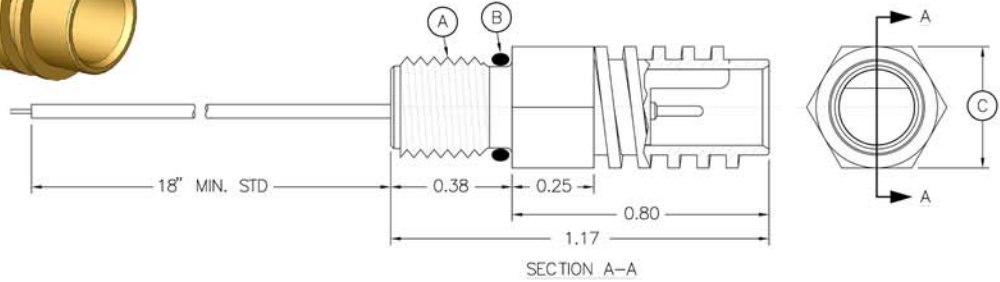
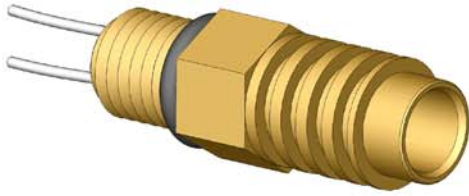
NOTES:

- Amperage ratings are based on standard cables.
- Maximum rating is for a "fully loaded" connector and cable rating must not be exceeded.

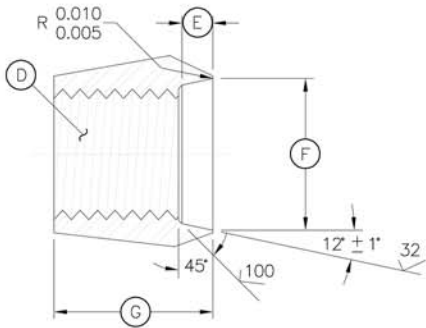
- * In service rating 300 VDC.
- ** Contact SEA CON® for special order materials.
- *** Incorporation of special cables will be determined on a case by case basis.

HUMMER SERIES HUM-BCR SAE*

HUMMER Bulkhead Connector Receptacle
Mates with HUM-CCP
Dummy Connector: HUM-DSP



| CONNECTOR | A - SAE THREAD | B - O-RING | C - HEX FLATS (INCHES) |
|-----------|----------------|------------|------------------------|
| HUMG-BCR | 5/16-24 UNF-2A | 3-902 | 0.37 |
| HUMK-BCR | 3/8-24 UNF-2A | 3-903 | 0.50 |
| HUML-BCR | 1/2-20 UNF-2A | 3-905 | 0.62 |

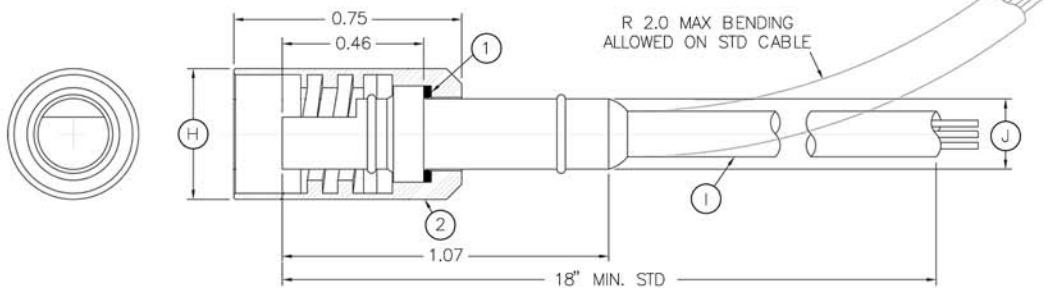


MOUNTING INFORMATION

| CONNECTOR | D - SAE THREAD | E - (INCHES) | F - Ø (INCHES) | G - (INCHES) |
|-----------|----------------|------------------------|----------------|--------------|
| HUMG-BCR | 5/16-24 UNF-2B | 0.074 +0.010 -0.005 | 0.363 0.358 | 0.38 |
| HUMK-BCR | 3/8-24 UNF-2B | 0.074 +0.010 -0.000 | 0.426 0.421 | 0.43 |
| HUML-BCR | 1/2-20 UNF-2B | 0.093 +0.010 -0.000 | 0.555 0.550 | 0.43 |

HUMMER SERIES HUM-CCP

HUMMER Cable Connector Plug
Mates with HUM-BCR
Dummy Connector: HUM-DSR



| CONNECTOR | H - Ø (INCHES) | I - MAX CABLE Ø (INCHES) | J - Ø (INCHES) |
|-----------|----------------|--------------------------|----------------|
| HUMG-CCP | 0.43 | 0.187 | 0.23 |
| HUMK-CCP | 0.56 | 0.275 | 0.35 |
| HUML-CCP | 0.69 | 0.375 | 0.48 |

NOTES:

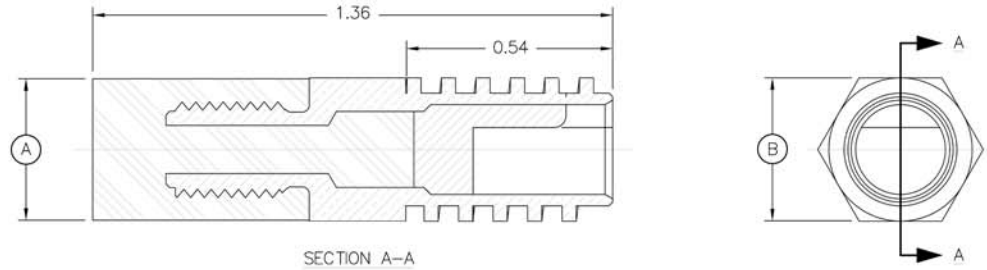
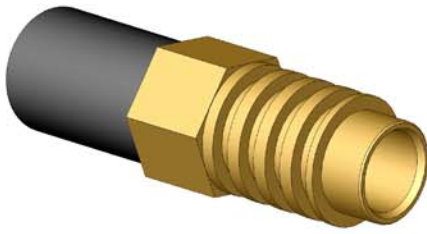
1. Locking sleeve washer - Delrin® (DuPont trademark for Acetal Resin).
2. Locking sleeve - Brass (shown above as a cost option) or Delrin® (DuPont trademark for Acetal Resin).

* Reference SAE J1926.

Connectors are designed for installation on one atmosphere vessels. Contact SEA CON® for recommendations if using compensated vessels.

HUMMER SERIES HUM-DSR

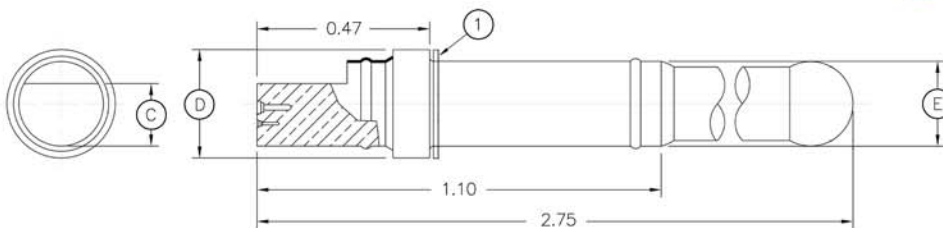
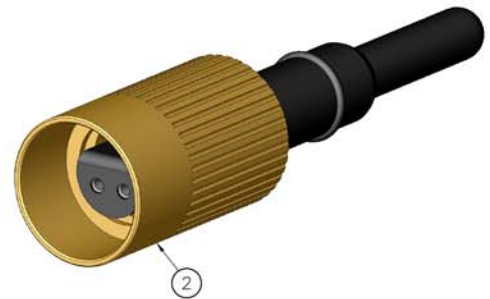
HUMMER Dummy Sealing Receptacle
Mates with HUM-CCP



| CONNECTOR | A - Ø (INCHES) | B - HEX FLATS (INCHES) |
|-----------|----------------|------------------------|
| HUMG-DSR | 0.37 | 0.37 |
| HUMK-DSR | 0.50 | 0.50 |
| HUML-DSR | 0.62 | 0.62 |

HUMMER SERIES HUM-DSP

HUMMER Dummy Sealing Plug
Mates with HUM-BCR



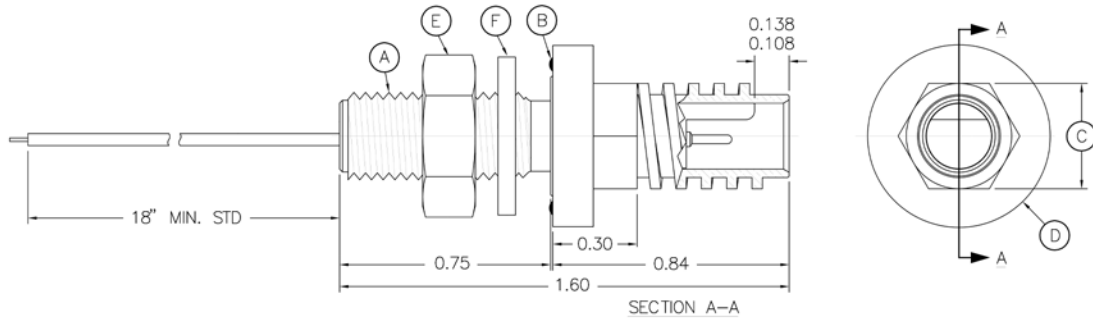
| CONNECTOR | C - (INCHES) | D - Ø (INCHES) | E - Ø (INCHES) |
|-----------|--------------|----------------|----------------|
| HUMG-DSP | 0.17 | 0.29 | TYPICALLY 0.24 |
| HUMK-DSP | 0.23 | 0.42 | TYPICALLY 0.36 |
| HUML-DSP | 0.30 | 0.55 | TYPICALLY 0.49 |

NOTES:

- 1. Locking sleeve washer - Delrin® (DuPont trademark for Acetal Resin).
- 2. Locking sleeve - Brass (shown above as a cost option) or Delrin® (DuPont trademark for Acetal Resin).

HUMMER SERIES HUM-BCR FACE SEAL

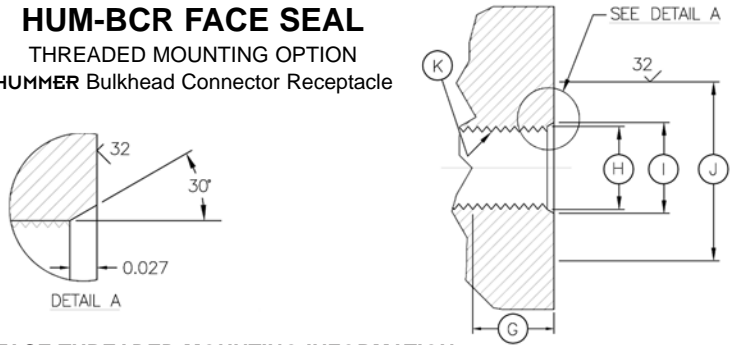
HUMMER Bulkhead Connector Receptacle
Mates with HUM-CCP/DSP



| CONNECTOR | A - SAE THREAD | B - O-RING | C - HEX FLATS (INCHES) | D - Ø FLANGE (INCHES) | E - NUT* | F - WASHER* |
|--------------------|----------------|------------|------------------------|-----------------------|----------|-------------|
| HUMG-BCR FACE SEAL | 5/16-24 UNF-2A | 2-013 | 0.37 | 0.65 | 605-G01 | 705-G01 |
| HUMK-BCR FACE SEAL | 3/8-24 UNF-2A | 2-014 | 0.50 | 0.71 | 610-G01 | 710-G01 |
| HUML-BCR FACE SEAL | 1/2-20 UNF-2A | 2-016 | 0.62 | 0.84 | 615-1 | 715-1 |

HUMMER SERIES HUM-BCR FACE SEAL THREADED MOUNTING OPTION

HUMMER Bulkhead Connector Receptacle

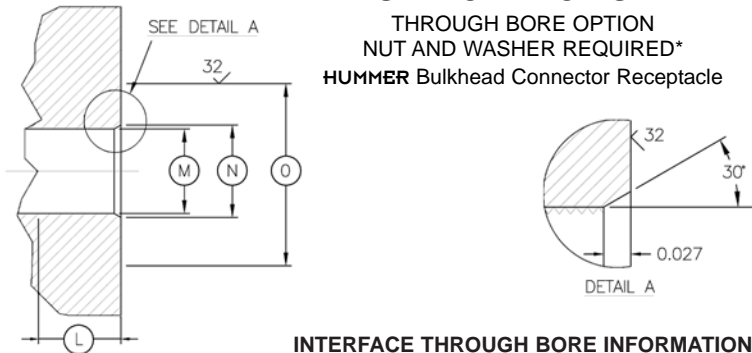


INTERFACE THREADED MOUNTING INFORMATION

| CONNECTOR | G - MIN LENGTH (INCHES) | H - Ø (INCHES) | I - Ø (INCHES) | J - MIN Ø (INCHES) | K - THREAD |
|-----------|-------------------------|----------------|----------------|--------------------|----------------|
| HUMG-BCR | 0.20 | 0.320 | 0.350 | 0.690 | 5/16-24 UNF-2B |
| HUMK-BCR | 0.22 | 0.385 | 0.415 | 0.750 | 3/8-24 UNF-2B |
| HUML-BCR | 0.32 | N/A | 0.540 | 0.875 | 1/2-20 UNF-2B |

HUMMER SERIES HUM-BCR FACE SEAL


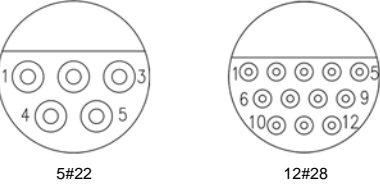
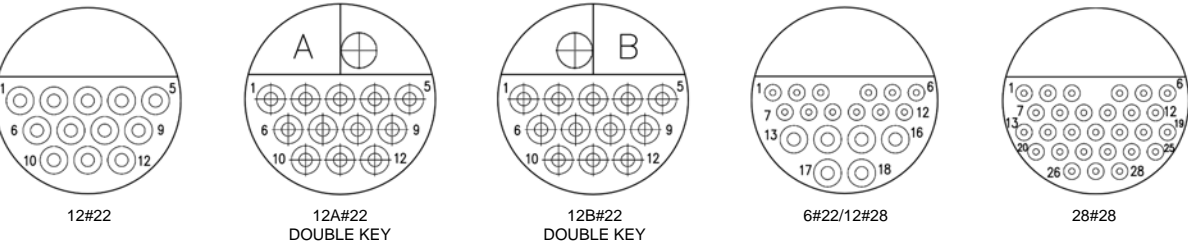
THROUGH BORE OPTION
NUT AND WASHER REQUIRED*
HUMMER Bulkhead Connector Receptacle



INTERFACE THROUGH BORE INFORMATION

| CONNECTOR | L - MAX LENGTH (INCHES) | M - Ø (INCHES) | N - Ø (INCHES) | O - MIN Ø (INCHES) |
|-----------|-------------------------|----------------|----------------|--------------------|
| HUMG-BCR | 0.50 | 0.320 | 0.350 | 0.690 |
| HUMK-BCR | 0.47 | 0.385 | 0.415 | 0.750 |
| HUML-BCR | 0.37 | 0.510 | 0.540 | 0.875 |

NOTES:
* Nut and Washer are not included and are sold separately.

| SIZE | HUMMER SERIES CONTACT CONFIGURATIONS (MALE FACE VIEW ONLY - NOT TO SCALE)* | | | | |
|------|--|--|--|--|--|
| G |  | | | | |
| K |  | | | | |
| L |  | | | | |
| | | | | | |

NOTES:

· * For female face view contact configurations please contact SEA CON®.

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 **SEA CON®** 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 **SEA CON®** for recommendations.

All connectors should be clean and free from moisture prior to mating.

Bulkhead Connector Receptacle (BCR): The BCR is mounted using a standard SAE port per SAE J1926 or MS16142. Lubricate the BCR o-ring with an appropriate silicone grease before installing. This lubrication should be applied to form an adequate film. Excessive lubrication is detrimental to the operation of the connector.

Cable Connector Plug (CCP): Lubricate the sealing areas using an appropriate silicone grease.

CARE AND MAINTENANCE

After mating, the **HUMMER** connector requires no maintenance.

It is recommended that upon disconnecting or retrieving a system that utilizes the **HUMMER** series, the **HUMMER** connectors should be dried, cleaned, regreased and remated prior to deploying or storage. It is recommended that when not mated, the BCR or CCP should be protected with a Dummy Sealing Plug (DSP) or Dummy Sealing Receptacle (DSR).

NOTE: Do not insert, inspect or probe the socket with any instrument or pin that is not the exact pin or mating insert to the connector in test. Improper tools or pins may cause damage to the sockets.

CABLE AND CONTINUITY PRESERVATION

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

SPECIAL ASSEMBLIES

SEA CON® 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.

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

All reasonable efforts have been taken to ensure that the information contained herein is accurate at the date of publication, but no representation or warranty as to the accuracy or completeness of such information is intended or to be implied by its inclusion herein. Any and all representations and warranties pertaining to the information and products referred to herein shall be set forth in **SEA CON®** standard sales order form. In addition, **SEA CON®** reserves the right to make changes to the contents hereof without notice, therefore it is suggested that at the time of inquiry, the appropriate sales office or factory be contacted directly for verification of published specifications and products availability.

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