SEACON

Micro MINI-CON

UNDERWATER ELECTRICAL DRY-MATE CONNECTORS

SECTION PAGE

Micro MINI-CON SERIES

INTRODUCTION

To meet the ever increasing demand for smaller high density connectors, SEACON developed the Micro MINI-CON series. This miniature connector series incorporates all of the engineering concepts and design features of our highly successful MINI-CON range, but in a smaller configuration beginning at 1/2" in diameter.

In order to maintain the miniaturization and provide minimal wall thickness, special o-rings were developed to seal the interfaces on all plugs and receptacles. The inserts are retained in the connector shells using custom designed and manufactured retaining rings made of 17/4 PH Stainless Steel.

In many applications a flange mounted receptacle is preferred instead of a screw-in type. To fill this need, SEACON has developed a modular flange that adapts a standard BCR connector for use as an FCR. An added benefit of this design is the ability to clock the FCR in several orientations with respect to the bolt pattern. This can be however SEACON has designed a modular flange that fits over the screw-in type eliminating the need to purchase a separate shell, again without compromising performance.

AVAILABILITY

The Micro MIN-CON dry-mateable connector range is available in 6 different shell sizes ranging from 4 to 202 contacts with a pressure rating of 13,500 psi mated and is also available in a fiber optic configuration (please see our Optical Dry-Mate Hybrid section). In addition, this series also offers the option of right angles, over-molding of the cable plug, field installing the cable using boots or terminating with a Pressure Balanced Oil-Filled (PBOF) system.

APPLICATIONS

The Micro MINI-CON is suitable for a variety of applications including cameras and lights or any application where size is an issue.

TESTING

The Micro MINI-CON range of connectors have been subjected to the following testing:

Environmental

Humidity (Steady State)
- Tested in accordance with MIL-STD-202, Method 103.

Thermal Shock
- Tested in accordance with MIL-STD-202, Method 107.

Mechanical Shock
- Tested in accordance with MIL-S-901, Grade A, Class 1.

Hydrostatic Pressure
- Tested in accordance with MIL-STD-202, Method 1006.

Physical

Vibration
- Tested in accordance with MIL-STD-202, Method 301.

Electrical

Dielectric Withstanding Voltage
- Tested in accordance with MIL-STD-202, Method 301.

Insulation Resistance
- Tested in accordance with MIL-STD-202, Method 302.

PART NUMBER SYSTEM - EXAMPLE

MMG - 6 - CCP - PBOF - R/A - FI

- FI — Field Installable (Optional)
- R/A — Right Angle (Optional)
- PBOF — Pressure Balanced, Oil-filled (Optional)
- CCP — Cable Connector Plug
  - CCR - Cable Connector Receptacle
  - FCR - Flange Connector Receptacle
  - BCR - Bulkhead Connector Receptacle
  - CIR - Connector Insert Receptacle (male insert only, fits into BCR/CCR/FCR shell)
  - CIP - Connector Insert Plug (female insert only, fits into CCP shell)
  - DSR - Dummy Sealing Receptacle
  - DSP - Dummy Sealing Plug
- 6 — Number of Contacts
- G — Shell Size (G, K, L, M)
- MMG — Micro MINI-CON Series

GENERAL INFORMATION

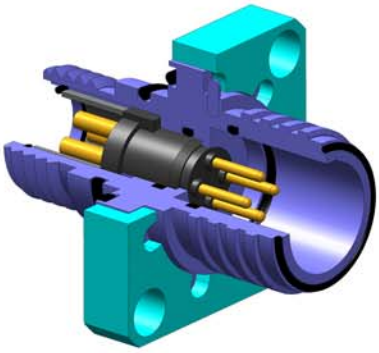
COMPONENT	MATERIAL
BULKHEAD BODY (BCR/FCR)	Ti6A14V
CCP BODY	Ti6A14V c/w Ti Grade 2 Engaging Nut
CONTACT INSERT	Glass Filled Epoxy MIL-G-24325
ELECTRICAL CONTACTS	Copper Alloy Gold Plated per MIL-G-45204
O-RINGS	Nitrile (formerly known as Buna N)

CATEGORY	VALUE
OPEN FACE PRESSURE	3,000 psi (inserted prepared)
MATED PRESSURE	Up to 13,500 psi mated and potted
VOLTAGE RATING	300 VDC although higher voltage ratings are available. Please contact SEACON for further information
CURRENT RATING	Up to 4 amps dependent on contact size and cable

OPTIONS:
- Pressure Balanced Oil Filled (PBOF).
- Higher voltages.
- Available in alternative materials.
- Glass sealed CIR design available.

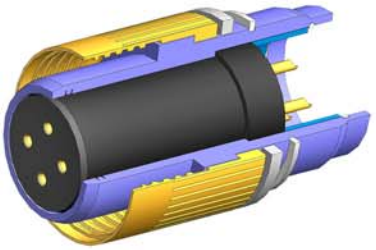
Micro MINI-CON SERIES
MM-BCR/FCR

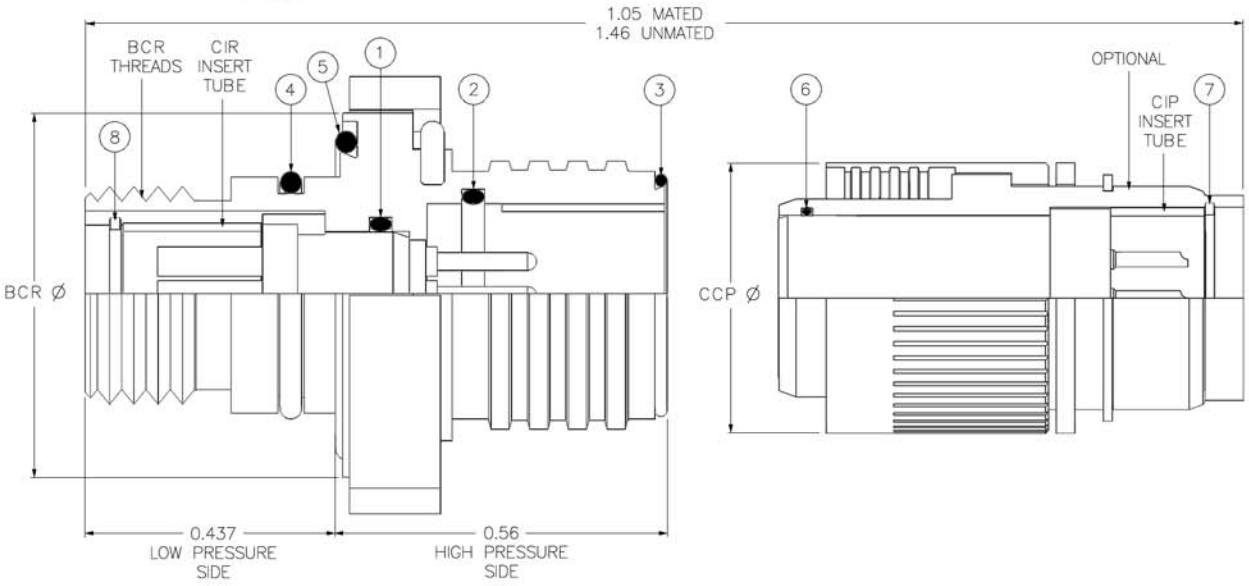
Micro MINI-CON Bulkhead Connector Receptacle/Flange Connector Receptacle
Mates with MMG-CCP
Dummy Connector: MMG-DSP

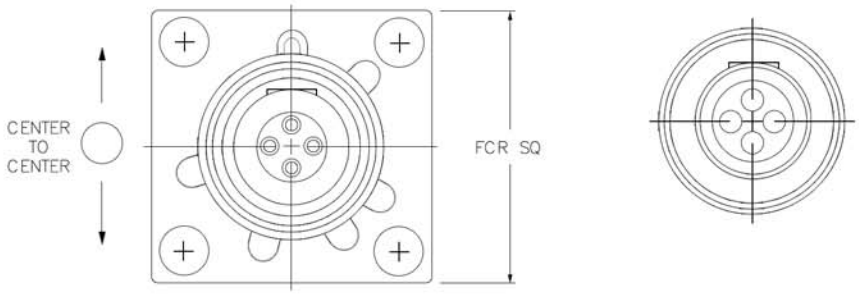


Micro MINI-CON SERIES
MM-CCP

Micro MINI-CON Cable Connector Plug
Mates with MMG-BCR/FCR/CCR
Dummy Connector: MMG-DSR





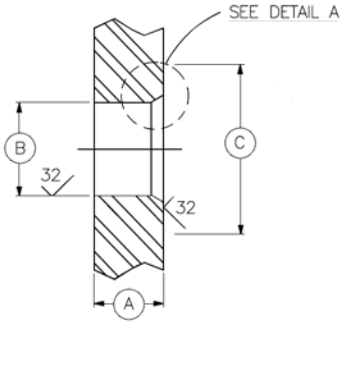


SIZE	OD BCR (INCHES)	OD ENGAGING NUT (INCHES)	FCR SQUARE (INCHES)	BCR THREADS	1 - O-RING	2 - O-RING	3 - O-RING	4 - O-RING	5 - O-RING	6 - O-RING	7 - RET RING CCP	8 - RET RING B/F/CCR
G*	0.625	0.500	0.750	0.375-24 UNF	SS-201	SS-301	SS-303	SS-302	SS-404	SS-201	MMRR-25	MMRR-25
K*	0.750	0.625	0.875	0.500-20 UNF	SS-301	SS-401	SS-403	SS-402	SS-601	SS-301	MMRR-35	MMRR-35
L*	0.875	0.750	1.000	0.593-18 UNF	SS-401	SS-501	SS-503	SS-502	SS-702	SS-401	MMRR-45	MMRR-45
M	1.000	0.875	1.125	0.687-20 UN	SS-602	SS-602	SS-603	SS-602	SS-801	SS-501	MMRR-61	MMRR-64

NOTES:
· * Reverse load; insert loaded from the low pressure side as shown in drawing above. All other insert sizes are loaded from the high pressure side.

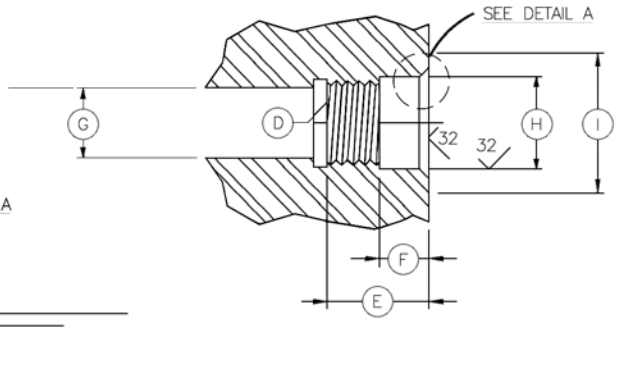
Micro MINI-CON SERIES
MM-BCR
THROUGH BORE OPTION

Micro MINI-CON Bulkhead Connector Receptacle



Micro MINI-CON SERIES
MM-BCR
THREADED MOUNTING OPTION

Micro MINI-CON Bulkhead Connector Receptacle

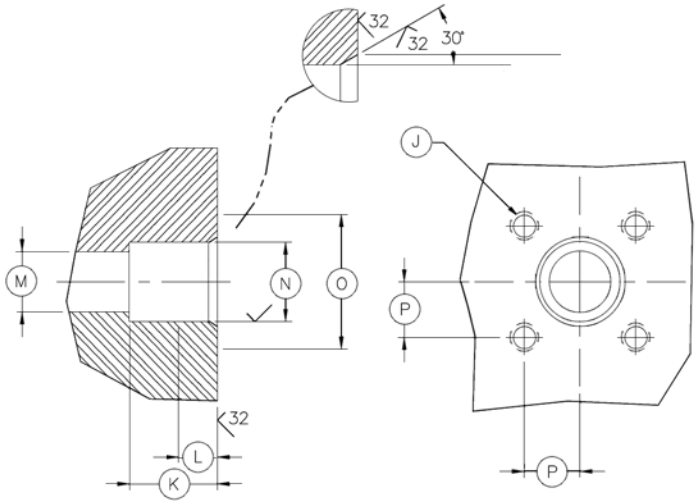


BCR INTERFACE MOUNTING INFORMATION

CONNECTOR	A - LENGTH (INCHES)	B - Ø (INCHES)	C - Ø (INCHES)	D - THREAD	E - LENGTH (INCHES)	F - Ø (INCHES)	G - Ø (INCHES)	H - Ø (INCHES)	I - Ø (INCHES)
MMG-BCR	0.250 0.156	0.408 0.407	0.62	0.375-24 UNF-2B	0.45	0.22	0.31	0.408 0.407	0.62
MMK-BCR	0.250 0.156	0.537 0.536	0.75	1/2-20 UNF-2A	0.45	0.22	0.37	0.537 0.536	0.75
MML-BCR	0.250 0.156	0.632 0.631	0.87	19/32-18 UNF-2B	0.45	0.22	0.45	0.632 0.631	0.87
MMM-BCR	0.310 0.200	0.711 0.710	1.00	0.687-20 UN-2B	0.510	0.29	N/A	0.711 0.710	1.00

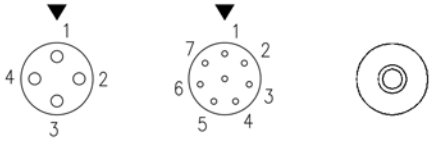
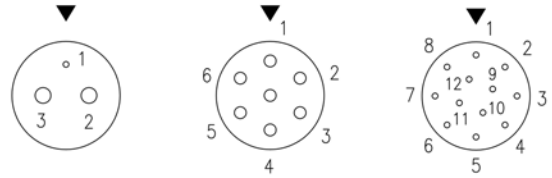
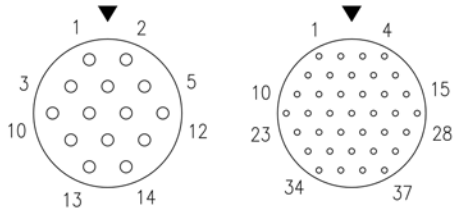
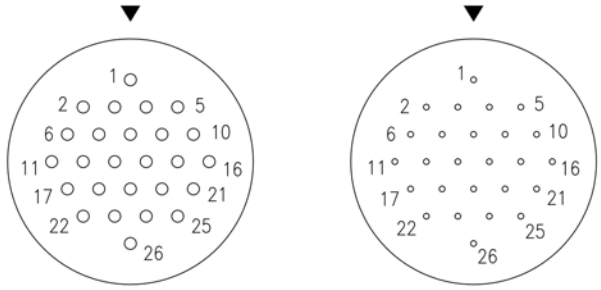
Micro MINI-CON SERIES
MM-FCR
MOUNTING DETAILS

Micro MINI-CON Flange Connector Receptacle



FCR INTERFACE MOUNTING INFORMATION

CONNECTOR	J - THREAD	K - LENGTH (INCHES)	L - Ø (INCHES)	M - Ø (INCHES)	N - Ø (INCHES)	O - Ø (INCHES)	P - Ø (INCHES)
MMG-FCR	4 X 4-40 UNC-2B	0.45	0.20	0.31	0.408 0.407	0.62	0.286
MMK-FCR	4 X 4-40 UNC-2B	0.45	0.20	0.37	0.537 0.536	0.750	0.343
MML-FCR	4 X 4-40 UNC-2B	0.50	0.13	0.50	0.632 0.631	0.88	0.400
MMM-FCR	4 X 6-32 UNC-2B	0.52	0.20	0.50	0.711 0.710	1.00	0.438

SIZE	Micro MINI-CON SERIES CONTACT CONFIGURATIONS (MALE FACE VIEW ONLY - NOT TO SCALE)
G	
K	
L	
M	

NOTES:

- All configurations shown are the face view of the Bulkhead Connector (BC).
- Standard bulkhead contacts are male.
- Numbers are for reference only.
- For custom configurations or special applications please contact SEACON.
- * Micro MINI-CON fiber optic configuration.

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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 assume installation into dry metal threads. Bulkhead connector receptacle (BCR) o-ring should be lubricated with an appropriate silicone grease before installing. This lubricant should be applied to form an adequate film. Excessive lubrication is detrimental to the operation of the connector. Care must be taken to ensure no grease or dirt is present on the face of the fiber optic contact. Cleaning of the contact is recommended using only suitable products. CCP o-ring should be greased as above with the same care being taken.

CARE AND MAINTENANCE

Once mated the connector requires no maintenance. When stored all fiber contacts should be protected with suitable dust caps. **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 and exposed to seawater drag should be adequately clamped to prevent fatigue and possible failure.

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.