

S E A C O N®



Micro MINI-CON

UNDERWATER MINIATURE ELECTRICAL DRY-MATE CONNECTORS

UNDERWATER MINIATURE ELECTRICAL DRY-MATE CONNECTORS

I N T R O D U C T I O N

To meet the ever increasing demand for smaller high density connectors, SEA CON® 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 ranging in size from 1/2" to just over 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 and bulkhead connectors are retained using Shape Memory Alloy (SMA) retaining rings manufactured from a non-corrosive material and designed to be as thin as possible but without compromising reliability. The memory characteristic is extremely beneficial when there is a need to remove the insert from the shell.

The Micro MINI-CON inserts are aligned so that the key engages first before the o-ring and electrical contacts become seated (scoop proof). The key is also designed to engage and secure the insert in the axial and rotational planes.

In many applications a flange mounted receptacle is preferred instead of a screw-in type, however SEA CON® has designed a modular flange that fits over the screw-in type eliminating the need to purchase a separate shell, again without compromising performance.

A V A I L A B I L I T Y

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.

A P P L I C A T I O N S

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

T E S T I N G

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 Withstand Voltage

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

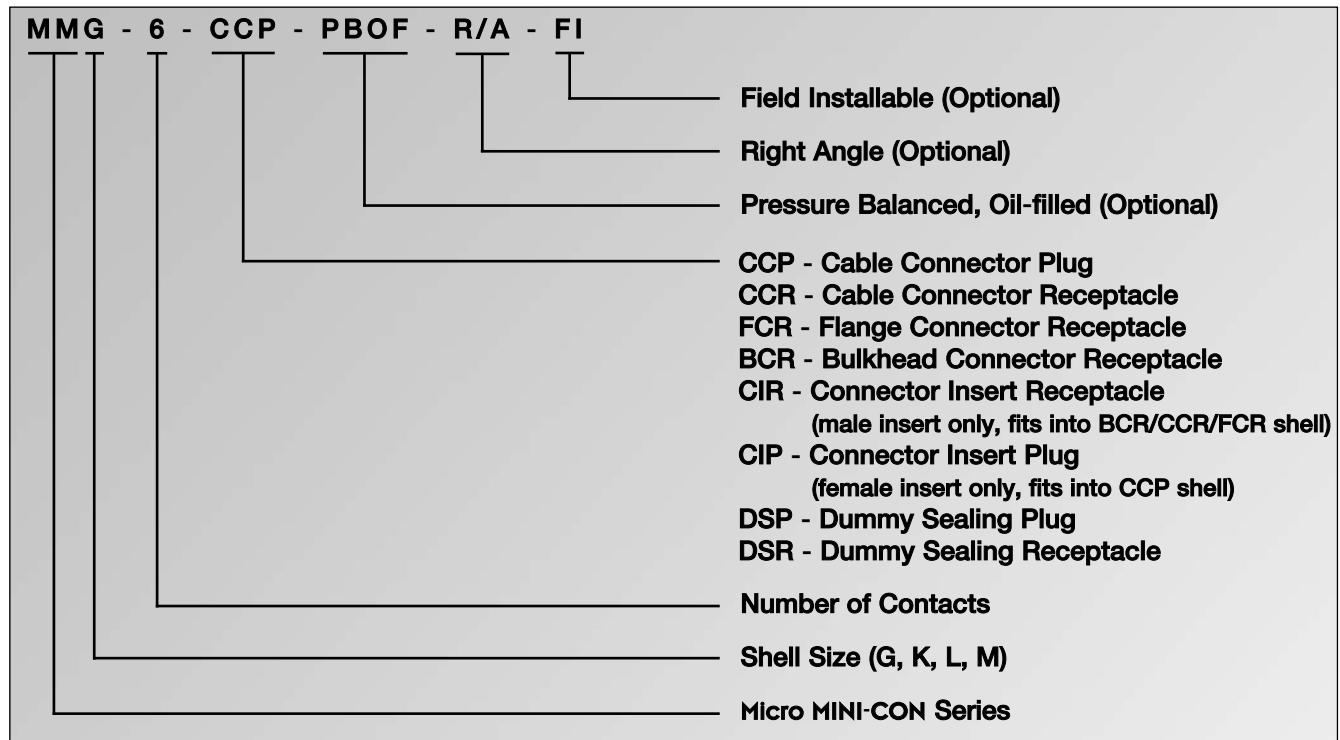
Insulation Resistance

- Tested in accordance with MIL-STD-202, Method 302

MICRO MINI-CON SERIES

PART NUMBER SYSTEM

EXAMPLE:



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 CONTACT	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 SEA CON® for further information
CURRENT RATING	Upto 4 amps dependent on contact size and cable

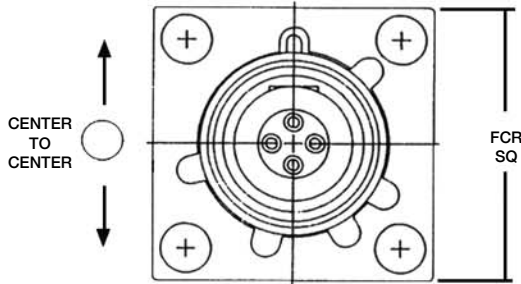
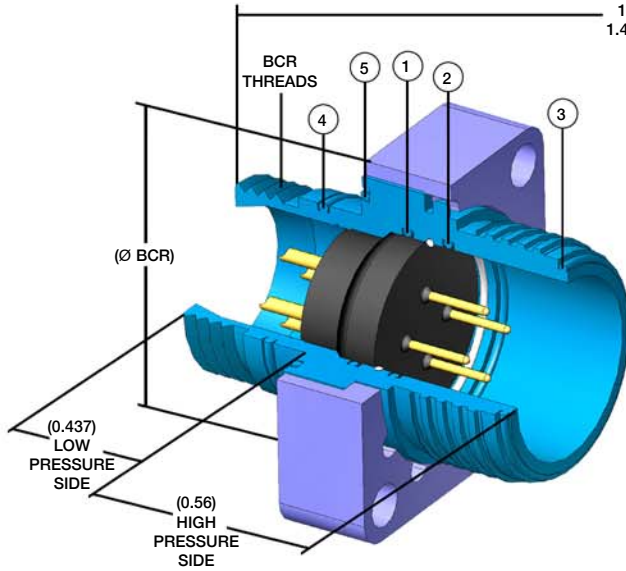
OPTIONS

Pressure Balanced Oil Filled (PBOF).
Higher Voltages.
Available in alternative materials.
Glass sealed CIR design available.

DIMENSION DETAILS

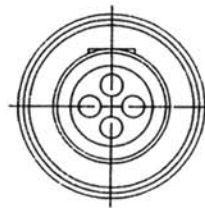
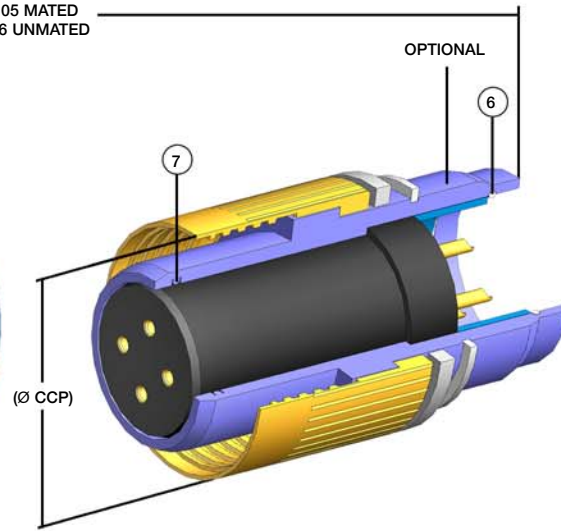
Micro MINI-CON SERIES MM-BCR

Micro MINI-CON Bulkhead 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	OD ENGAGING NUT	FCR SQUARE	BCR THREADS	1 - O-RING	2 - O-RING	3 - O-RING	4 - O-RING	5 - O-RING	6 - O-RING	7 - O-RING	RET RING CCP	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-302	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-402	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-502	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-701	SS-501	MMRR-61	MMRR-64

* 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.

INTERFACE DETAILS

Micro MINI-CON SERIES MM-BCR

Micro MINI-CON Bulkhead Connector Receptacle
THROUGH BORE OPTION

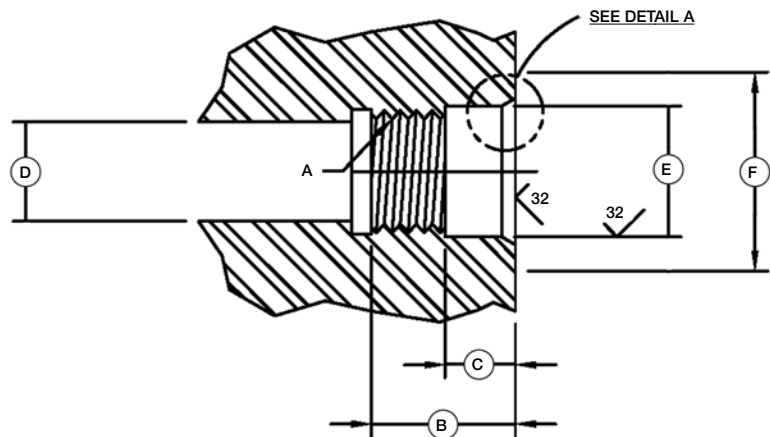


BCR INTERFACE MOUNTING INFORMATION

CONNECTOR	A - LENGTH	B - ϕ	C - ϕ
MMG-BCR	0.250	0.408	0.62
	0.156	0.407	
MMK-BCR	0.250	0.537	0.75
	0.156	0.536	
MML-BCR	0.250	0.632	0.87
	0.156	0.631	
MMM-BCR	0.310	0.711	1.00
	0.200	0.710	

Micro MINI-CON SERIES MM-BCR

Micro MINI-CON Bulkhead Connector Receptacle
THREADED MOUNTING OPTION



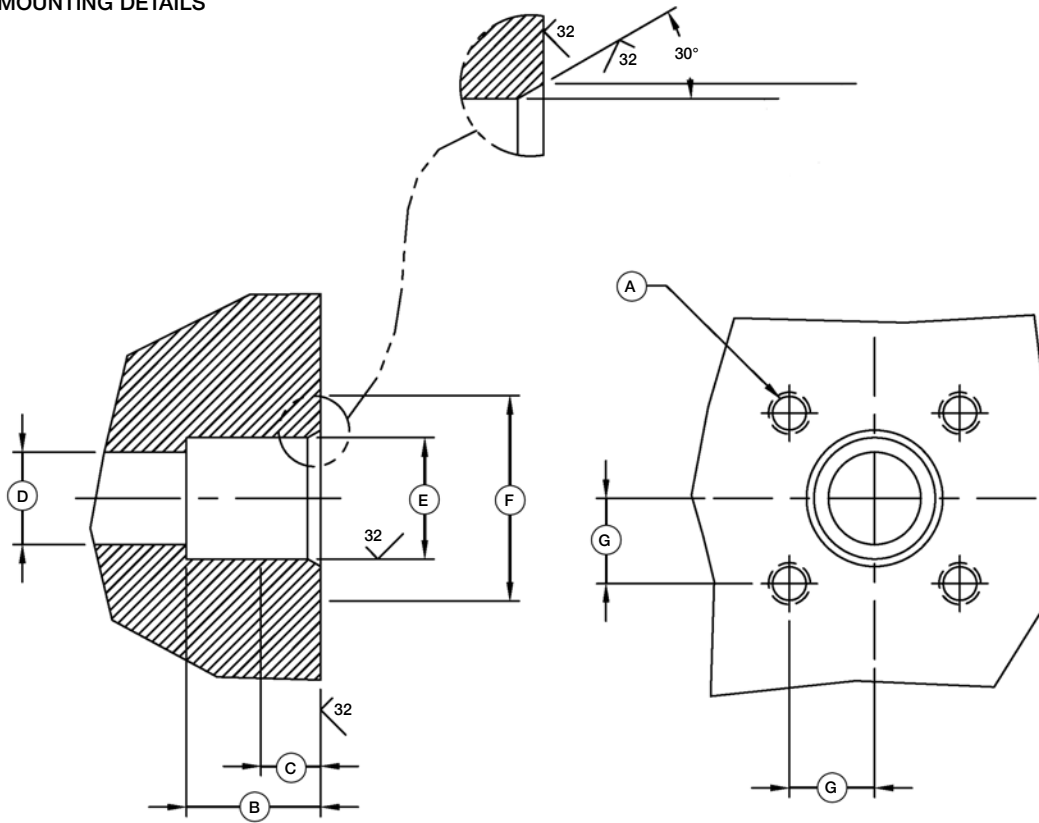
BCR INTERFACE THREADED MOUNTING INFORMATION

CONNECTOR	A - THREAD	B - LENGTH	C - ϕ	D - ϕ	E - ϕ	F - ϕ
MMG-BCR	0.375-24 UNF-2B	0.45	0.22	0.31	0.408	0.62
					0.407	
MMK-BCR	1/2-20 UNF-2A	0.45	0.22	0.37	0.537	0.75
					0.536	
MML-BCR	19/32-18 UNF-2B	0.45	0.22	0.45	0.632	0.87
					0.631	
MMM-BCR	0.687-20 UN-2B	0.510	0.29	N/A	0.711	1.00
					0.710	

INTERFACE DETAILS

Micro MINI-CON SERIES MM-FCR

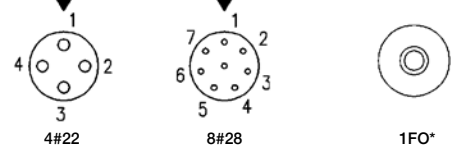
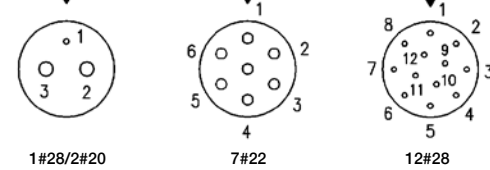
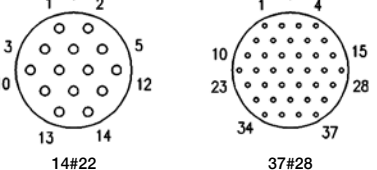
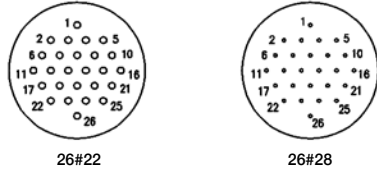
Micro MINI-CON Flange Connector Receptacle
MOUNTING DETAILS



FCR INTERFACE MOUNTING INFORMATION

CONNECTOR	A - THREAD	B - LENGTH	C - Ø	D - Ø	E - Ø	F - Ø	G - Ø
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

CONTACT CONFIGURATIONS

SIZE	Micro MINI-CON SERIES CONTACT CONFIGURATIONS AVAILABLE
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 SEA CON®.

* Micro MINI-CON fiber optic configuration.

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 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.

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.

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