

# SEACON®

UNDERWATER ELECTRICAL AND FIBRE OPTIC CONNECTORS

## OPTI-CON



DRY MATE FIBRE OPTIC HYBRID CONNECTORS



**SEACON**  
**eu**rope  
LIMITED

# OPTI-CON RANGE

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## DRY MATE FIBRE OPTIC HYBRID CONNECTORS

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### INTRODUCTION

With an increase in the use of fibre optics throughout the subsea industry, SEACON (europe) Ltd, part of SEACON® Brantner & Associates, Inc is pleased to introduce its standard, drymate, fibre optic hybrid connector range.

**OPTI-CON** is a unique design that allows the customer to choose any combination of optical and electrical configurations to suit their particular needs. The manufacture of all parts in house ensures that each connector is supplied with the highest of standards. This connector range is manufactured from 316L Stainless Steel as standard, but other materials are available upon request.

### AVAILABILITY

**OPTI-CON** offers interchangeable electric or optic contacts and is available in 5 shell sizes from 1 to 20 contact configurations, oil filled or over-moulded to any type of cable. Pressure rated to 7,500 psi (5,200m water depth) this series is offered in a variety of fibre types from single mode to multi mode with optical insertion losses of <0.5dB, typically <0.3dB.

### TESTING

Due to the modular nature of the **OPTI-CON** series, testing has been conducted to simulate the extremes of operation, this means carrying out the qualification four times on each assembly as the options are: -

Electrical contact

Multi mode optical contact

Single mode optical contact

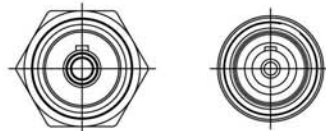
Mixed optical (single and multi mode) and electrical contacts

- The electrical contacts have been tested to 1000 VDC with regard to shell and other conductors with a minimum Insulation Resistance of 1000 Meg Ohms.
  - Mated single mode optical contacts have been tested to 10,000 psi, including cycling, with recorded dB losses well under the 0.3 dB acceptance. (Typically 0.2dB)
  - Mated multi mode optical contacts have been tested to 10,000 psi, including cycling, with recorded dB losses well under the 0.3 dB acceptance. (Typically 0.2dB)
  - Mated electrical contacts have been pressure tested to 10,000 psi, including cycling, with no degradation in performance.
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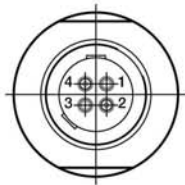
# GENERAL INFORMATION

COMPONENT	MATERIAL	CATEGORY	VALUE
Bulkhead Body (BCR/FCR)	316L SS	Mated Pressure	7,500 psi (5,200m water depth)
CCP Body	316L SS with Aluminium Bronze engaging nut per NES 833	Voltage Rating	600 vdc @ 4 amps
CCR Body	316L SS	Temperature Rating	-50 to +70 deg C (-58 to +158 deg F)
Electrical Contacts	Aluminium Bronze per NES 833 GRE Overmoulded	Typical Optical Return Loss	<-50dB @1310 and 1550nm using single mode fibre
Optical Contacts	Single or multi mode with insertion losses of <0.5dB typically <0.3dB	Length	Upto 30m maximum hose length at additional cost
O' Ring	Nitrile		

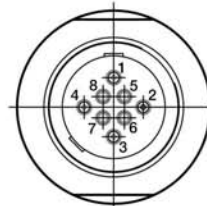
# CONTACT CONFIGURATIONS



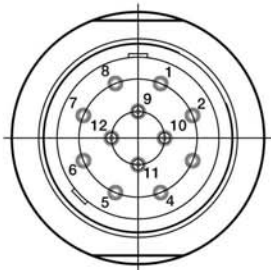
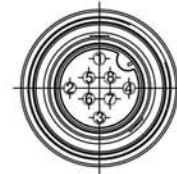
SINGLE-WAY RECEPTACLE AND PLUG



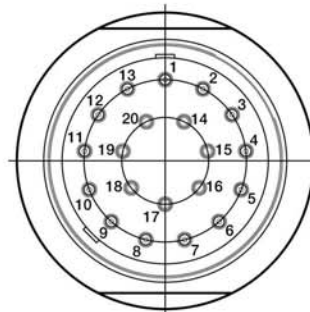
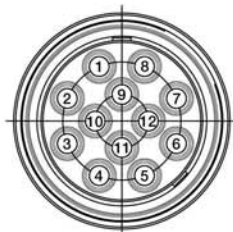
4-WAY RECEPTACLE AND PLUG



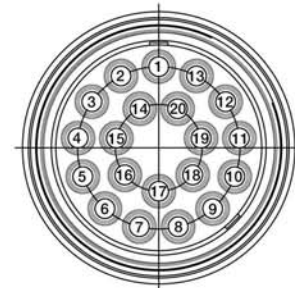
8-WAY RECEPTACLE AND PLUG



12-WAY RECEPTACLE AND PLUG



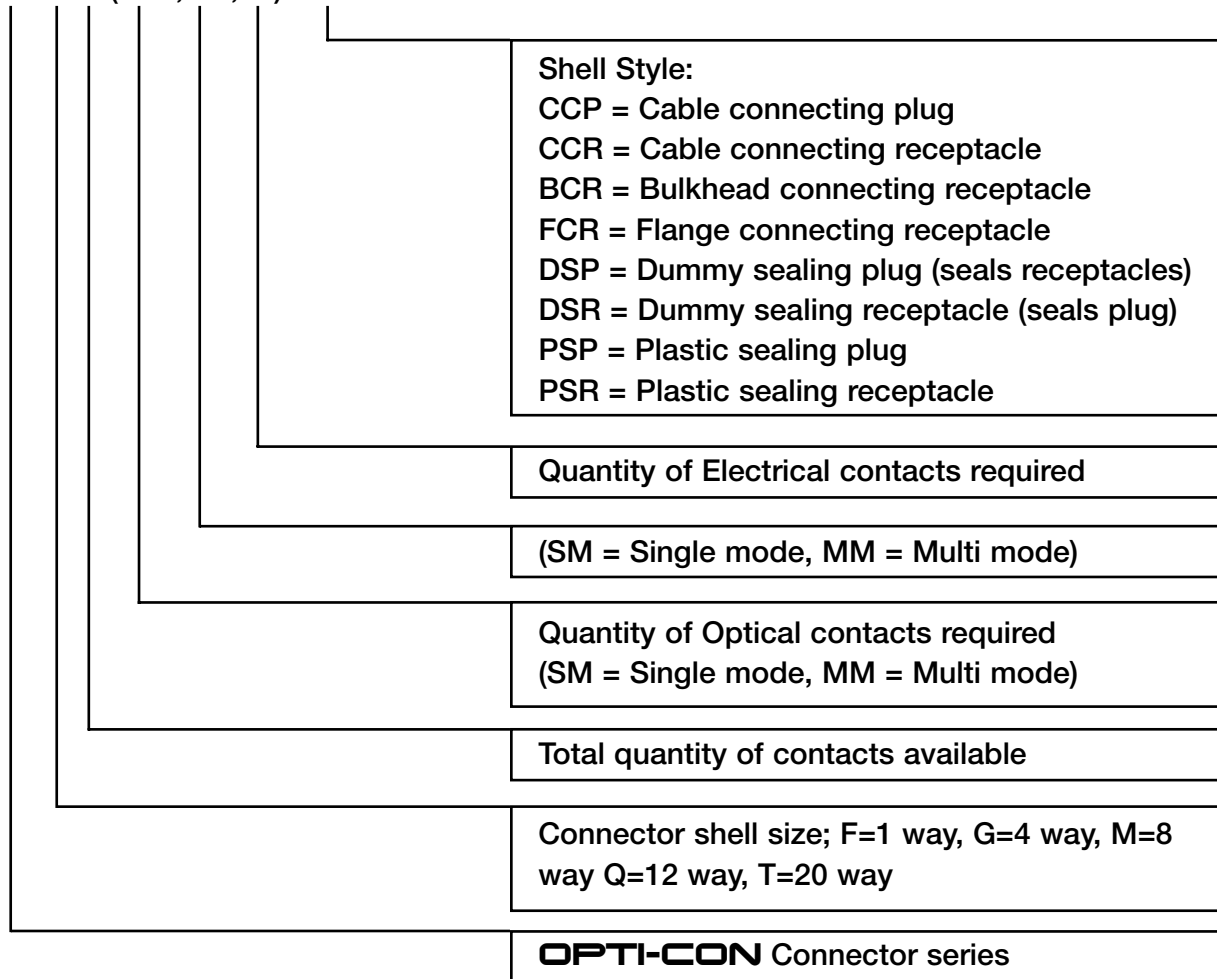
20-WAY RECEPTACLE AND PLUG



# PART NUMBERING

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OPT-G-4-(2FO,SM,2E)-CCP



The above example would be the part number required to order a 4 way **OPTI-CON** connector, it would be a "G" size, would have 2 optical contacts (SM or MM to be specified), it would have 2 electrical contacts and would be a cable plug shell style.

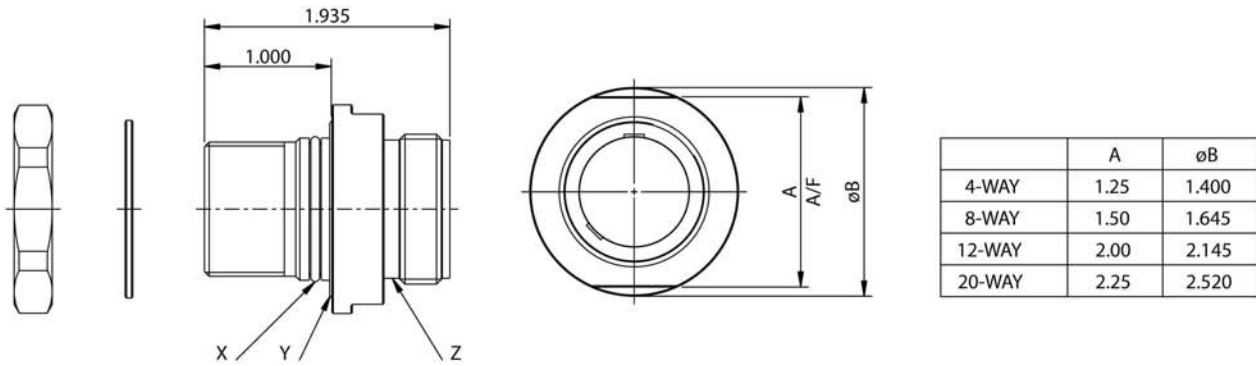
Oil filled hoses CCP and CCR connectors will be supplied as standard. If moulded versions are required "-M" must be added to the end of the part number and a sample of cable supplied for test purposes.

Where ST or other style of connectors are required to be attached onto the BCR or FCR tails the style required and the length would need to be specified and would be priced accordingly.

Standard shell material is 316L stainless steel with NES833 engaging nut. **OPTI-CON** can be produced in most materials and the preferred material should be specified when requesting prices.

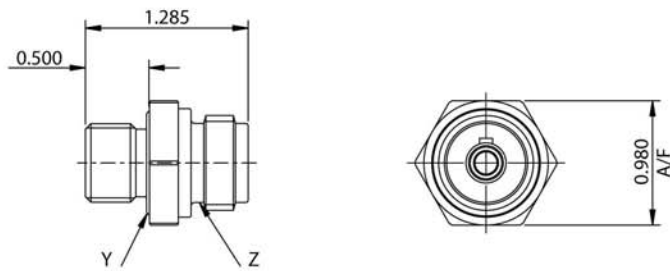
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# DIMENSION DETAILS

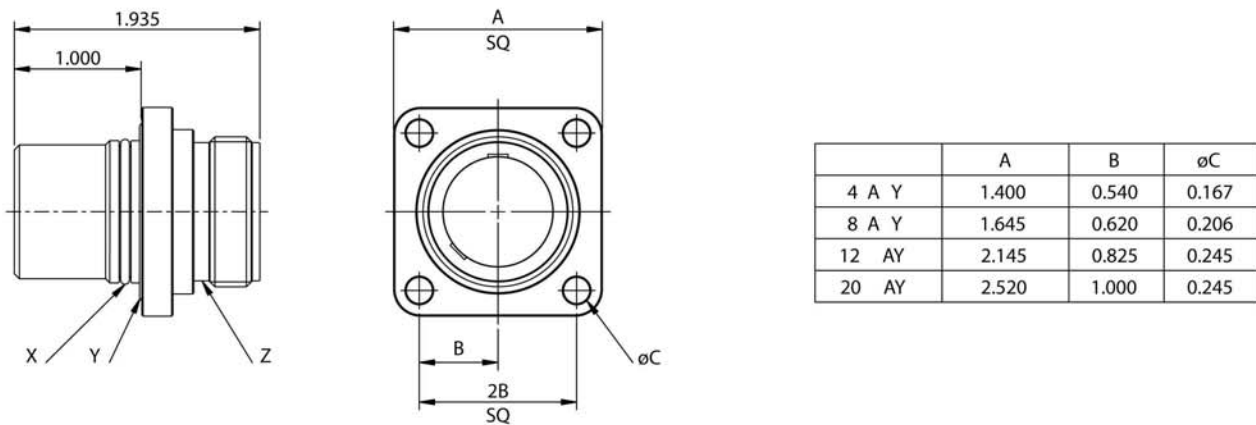


	A	øB
4-WAY	1.25	1.400
8-WAY	1.50	1.645
12-WAY	2.00	2.145
20-WAY	2.25	2.520

**BCR**



**SINGLE WAY BCR**

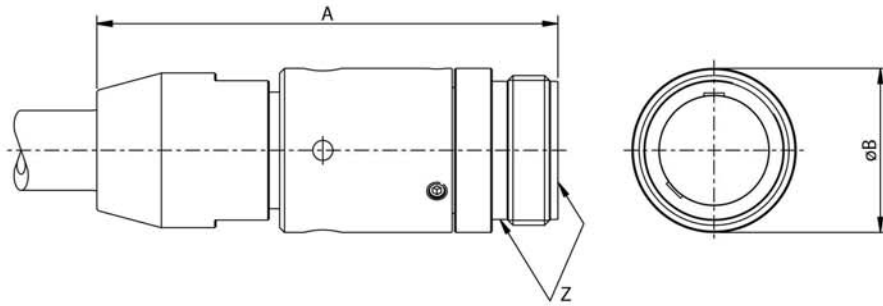


	A	B	øC
4 A Y	1.400	0.540	0.167
8 A Y	1.645	0.620	0.206
12 AY	2.145	0.825	0.245
20 AY	2.520	1.000	0.245

**FCR**

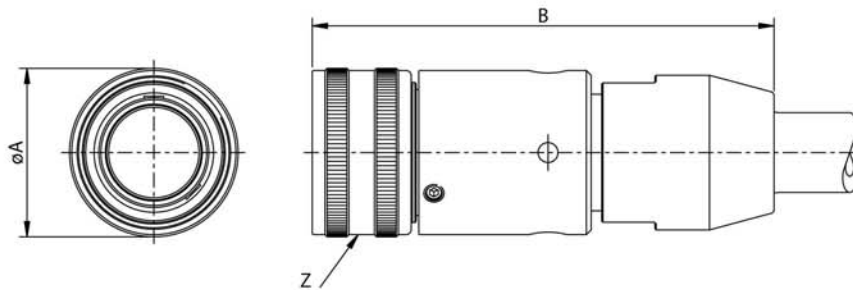
BS1806 O-RING SIZES			
SINGLE-WAY	-	017	011
4-WAY	018	022	016
8-WAY	022	026	020
12-WAY	029	031	028
20-WAY	032	034	031

# D I M E N S I O N   D E T A I L S



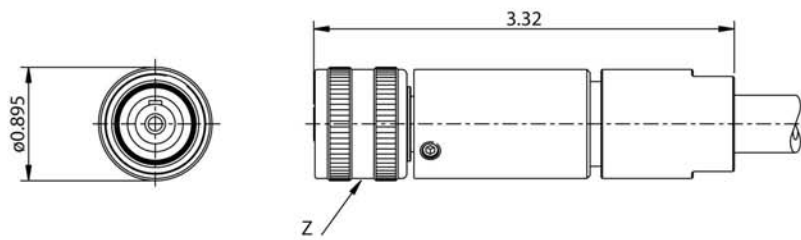
CCR - HOSE		
	A	$\phi B$
4-WAY	3.12	1.050
8-WAY	3.64	1.295
12-WAY	4.65	1.795
20-WAY	4.83	2.170

**CCR-HOSE**



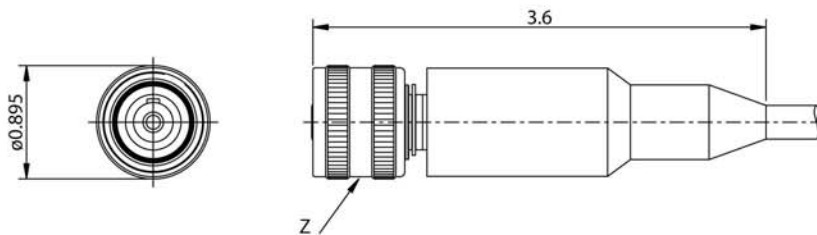
CCP - HOSE		
	$\phi A$	B
4-WAY	1.085	3.13
8-WAY	1.330	3.64
12-WAY	1.830	4.66
20-WAY	2.205	4.84

**CCP-HOSE**



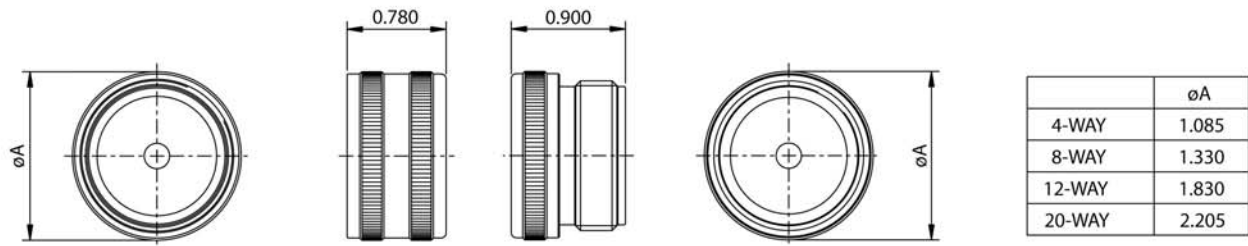
BS1806 O-RING SIZES	
	Z (INTERNAL)
SINGLE-WAY	013
4-WAY	017
8-WAY	021
12-WAY	517
20-WAY	031

**SINGLE-WAY CCP HOSE**



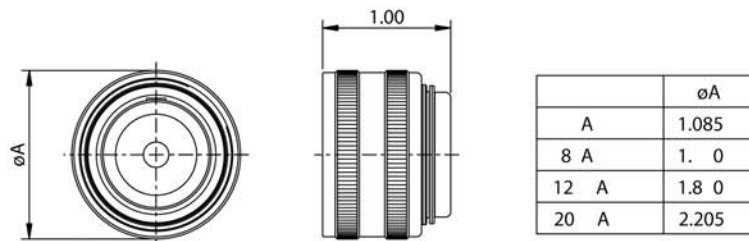
**SINGLE-WAY CCP CABLE**

# D I M E N S I O N   D E T A I L S

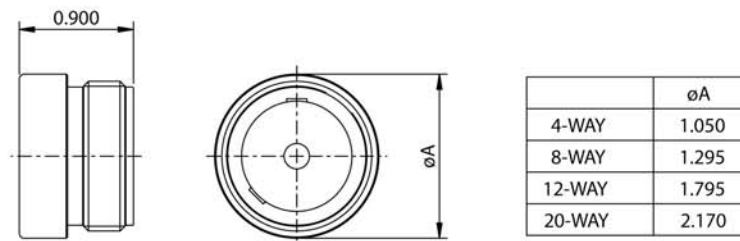


PSP

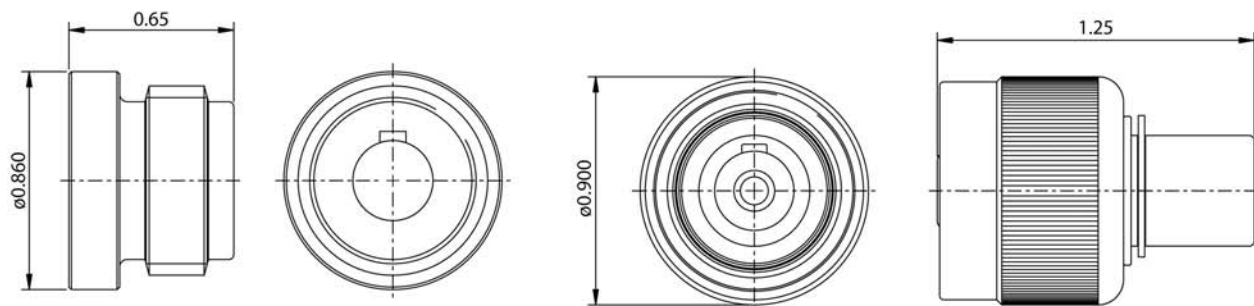
PSR



DSP



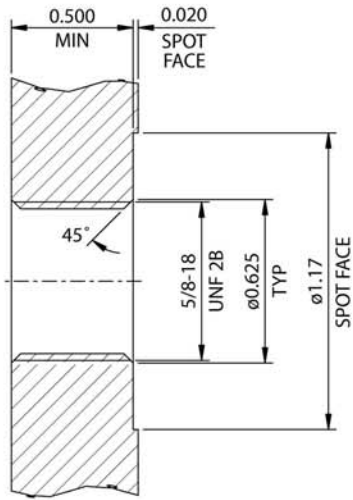
DSR



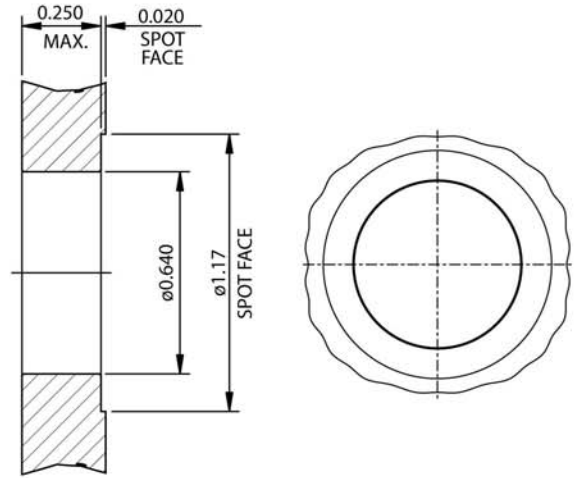
SINGLE-WAY DSR

DSP

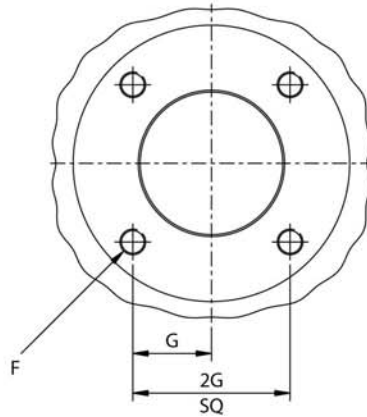
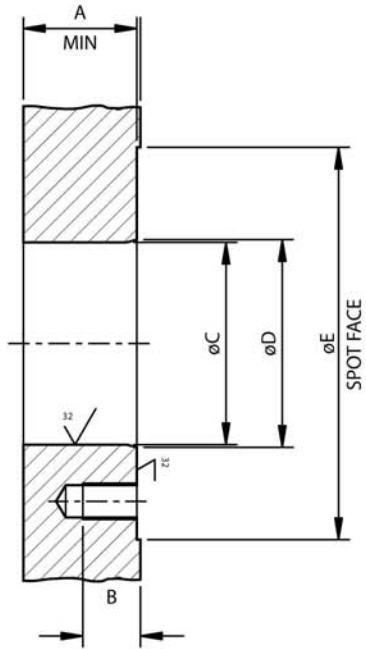
# INTERFACE DETAILS



**BCR SINGLE WAY INTERFACE  
THREADED MOUNTING**



**BCR SINGLE WAY THROUGH  
BORE MOUNTING**

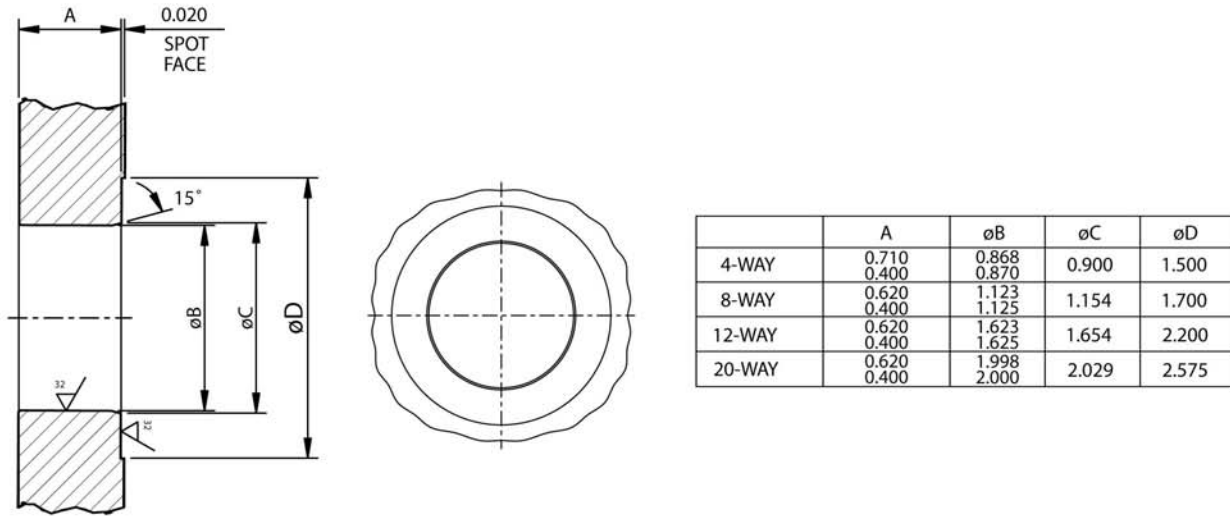


**FCR INTERFACE**

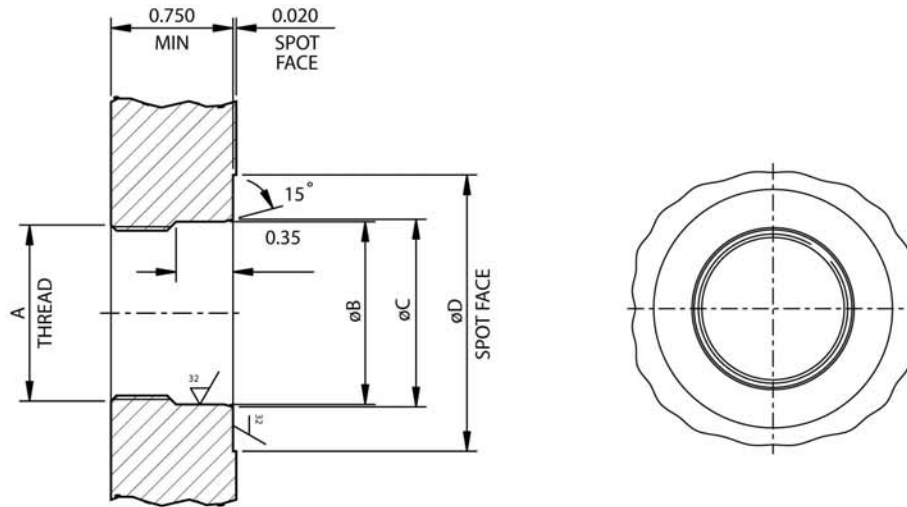
	A	B	øC	øD	øE	F - THREAD	G
4-WAY	0.480	0.30	0.868 0.870	0.900	1.875	M4	0.540
8-WAY	0.630	0.30	1.123 1.125	1.154	2.180	M5	0.620
12-WAY	0.830	0.48	1.623 1.625	1.654	2.860	M6	0.825
20-WAY	0.830	0.48	1.998 2.000	2.029	3.380	M6	1.000



# INTERFACE DETAILS



**BCR THROUGH BORE MOUNTING OPTION  
UTILISING BACK NUT AND WASHER**



**BCR INTERFACE FOR  
THREAD MOUNTING OPTION**

	A	øB	øC	øD
4-WAY	13/16-20 UNEF 2B	0.868 0.870	0.900	1.500
8-WAY	1 1/16-20 UN 2B	1.123 1.125	1.154	1.700
12-WAY	1 9/16-20 UN 2B	1.623 1.625	1.654	2.200
20-WAY	1 15/16-20 UN 2B	1.998 2.000	2.029	2.575

# HANDLING PROCEDURES AND SPECIAL CAPABILITIES



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Even though these procedures appear simple, only qualified technicians should perform the installation and maintenance.

## 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 fibre 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 fibre contacts should be protected with suitable dust caps.

## CABLE AND CONTINUITY PRESERVATION

Avoid sharp bends in both the hose assembly and the tail ends of the BCR so that breakage of the fibre does not occur.

## SPECIAL ASSEMBLIES

SEACON (europe) Ltd 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 CUSTOMISED CONNECTORS AND CABLE ASSEMBLIES to suit your individual needs.

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