

# SEACON OPTI-CON Optical Hybrid Dry-Mate Connectors

OPTI-CON Optical Hybrid Dry-Mate Connectors  
Provide Diverse and Robust Connectivity  
Solutions for Subsea Applications

# SEACON

## OPTI-CON Optical Hybrid Dry-Mate Connectors

Diverse and Robust Connectivity Solutions for Subsea Applications

### KEY FEATURES

- 5 shell sizes
- Up to 20 contacts in electrical or optical configuration; single-mode or multi-mode
- Up to 7,500 psig (approx. 16,900ft/5,200m) dependent on cable, shell material & configuration
- 600 VDC
- 4 amps
- Oil filled hose as standard with molded unit as a cost option
- Stainless steel
- Typical uses: Cameras, monitoring equipment, sonars, towed arrays and any applications requiring high data transfer rates



With an increase in the use of fiber optics throughout the subsea industry, TE Connectivity (TE) is pleased to present its SEACON standard, dry-mate, fiber optic hybrid connector range.

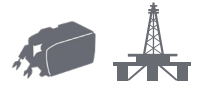
The OPTI-CON connector series is a design that allows the customer to choose a combination of optical and electrical configurations to suit their particular needs. This connector range is manufactured from 316L stainless steel as standard, but other materials are available upon request.

**TE Components . . . TE Technology . . . TE Know-how . . .**

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## APPLICATION

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- Underwater Cameras
- Monitoring Equipment
- Sonars
- Towed Arrays
- High Data Transfer Rate Applications

## SPECIFICATIONS

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- **Mated Pressure:** Up to 7,500 psig (approx.16,900ft/5,200m) dependent on cable, shell material & configuration. See page 4 for more details.
- **Voltage Rating:** 600 VDC @ 4 amps.
- **Temperature Rating:** -50°C to +70°C (-58°F to 158°F).
- **Typical Optical Return Loss:** <-50dB @1310 and 1550nm using single-mode fiber.
- **Length:** Up to 30m maximum hose length at additional cost.

## MATERIALS

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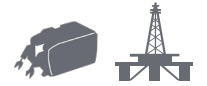
- **Connector Body (BCR/FCR):** 316L Stainless Steel.
- **CCP Body:** 316L Stainless Steel with Aluminum Bronze engaging nut per NES 833.
- **CCR Body:** 316L Stainless Steel.
- **Electrical Contacts:** Aluminum Bronze per NES 833 GRE overmolded contact size 20 AWG.
- **Optical Contacts:** Single or multi-mode with insertion losses of <0.5dB typically <0.3dB.
- **O-Ring:** Nitrile (formerly known as Buna N).

## TESTING

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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:** Tested to 1,000 VDC with regard to shell and other conductors with a minimum Insulation Resistance of 1,000 megohms.
- **Multi-mode optical contact:** Tested to 10,000 psi, including cycling, with recorded dB losses well under the 0.3dB acceptance. (Typically 0.2dB).
- **Single-mode optical contact:** Tested to 10,000 psi, including cycling, with recorded dB losses well under the 0.3dB acceptance. (Typically 0.2dB).
- **Mixed optical (single and multi-mode) and electrical contacts:** Pressure tested to 10,000 psi, including cycling, with no degradation in performance.



## Pressure Ratings

The minimum length for a PBOF hose is 3 meters. Shorter lengths will incur an extra charge due to a higher manufacturing attrition rate.

Pressure ratings for cable versions are dependent on cable.

Connector	Cable Version		PBOF Version	
	Stainless Steel	Titanium	Stainless Steel	Titanium
OPT-F-SINGLE WAY	1,500 psi	1,500 psi	7,500 psi	7,500 psi
OPT-G-4-WAY	7,500 psi	7,500 psi	7,500 psi	7,500 psi
OPT-M-8-WAY	7,500 psi	7,500 psi	7,500 psi	7,500 psi
OPT-Q-12-WAY	2,000 psi	7,500 psi	2,000 psi	7,500 psi
OPT-T-20-WAY	2,000 psi	7,500 psi	2,000 psi	7,500 psi





## OPTI-CON Connectors

### Ordering Information

**Family Designator** \_\_\_\_\_

**OPTI-CON**

**Shell Size** \_\_\_\_\_

- F** 1 Way
- G** 4 Way
- M** 8 Way
- Q** 12 Way
- T** 20 Way

**Number of Contacts Total** \_\_\_\_\_

**Number of Fiber Optic Contacts Required** \_\_\_\_\_

(eg. 2FO)

**Single/Multi-Mode** \_\_\_\_\_

- SM** Single-Mode
- MM** Multi-Mode

**Number of Electrical Contacts Required** \_\_\_\_\_

(eg. 2E)

**Connector Type** \_\_\_\_\_

- BCR** Bulkhead Connector Receptacle
- FCR** Flange Connector Receptacle
- CCR** Cable Connector Receptacle
- CCP** Cable Connector Plug
- PSR** Plastic Sealing Receptacle
- PSP** Plastic Sealing Plug
- DSR** Dummy Sealing Receptacle
- DSP** Dummy Sealing Plug

**Molded/Oil Filled (if required) \*** \_\_\_\_\_

- M** Molded
- OF** Oil Filled

**OPTX - X - (XXX, XX, XX) - XXX - X\***

### **OPTG-4-(2FO,SM,2E)-BCR-M\*** (if required)

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 bulkhead receptacle shell style. Oil filled hoses CCP and CCR connectors will be supplied as standard. If molded 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 although other materials are available upon request. Preferred material should be specified at time of enquiry.

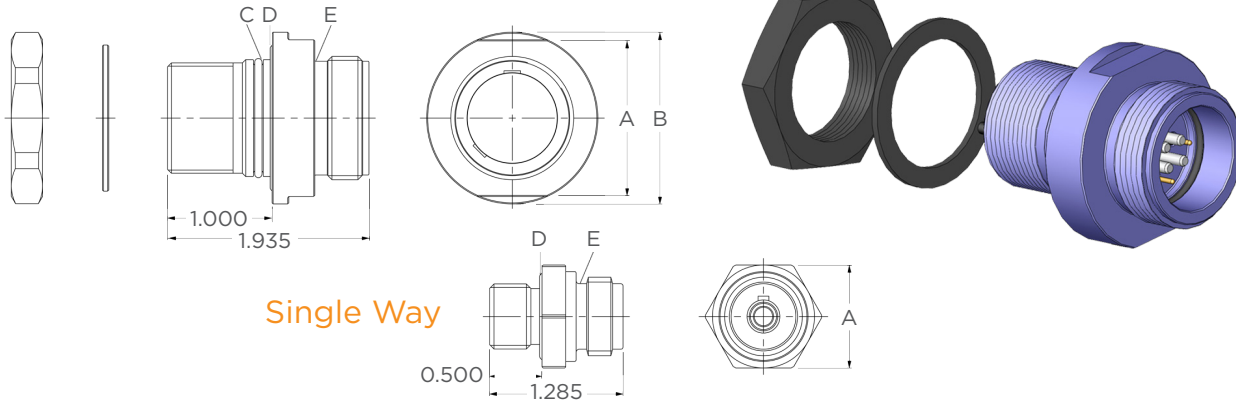
### Notes:

\* Standard supply is hose, however if cable is required please supply sample or specification.



## OPT-BCR

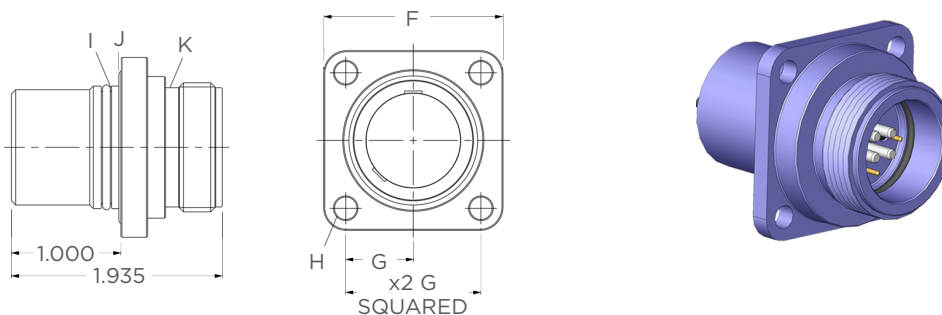
### Bulkhead Connector Receptacle



Shell Size	A Flats (In)	B Ø (In)	C O-Ring	D O-Ring	E O-Ring (Internal)	Torque Values	Part Number
F	0.980	N/A	N/A	017	011	-	OPTF-1-(XXX, XX, XX)-BCR-X
G	1.25	1.400	018	022	016	18 / 20Nm (160/178 In-lbs.)	OPTG-4-(XXX, XX, XX)-BCR-X
M	1.50	1.645	022	026	020	20 / 23Nm (178/204 In-lbs.)	OPTM-8-(XXX, XX, XX)-BCR-X
Q	2.00	2.145	029	031	028	23 / 26Nm (204/231 In-lbs.)	OPTQ-12-(XXX, XX, XX)-BCR-X
T	2.25	2.520	032	034	031	26 / 29Nm (231/255 In-lbs.)	OPTT-20-(XXX, XX, XX)-BCR-X

## OPT-FCR

### Flange Connector Receptacle



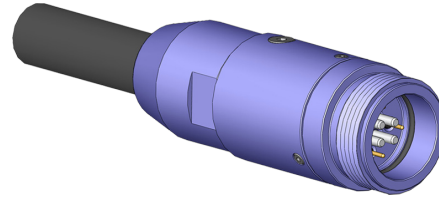
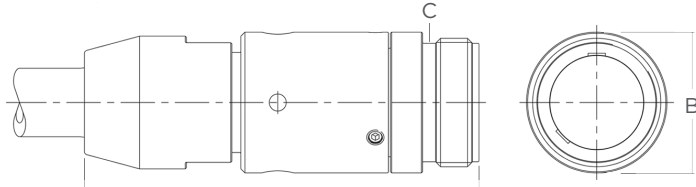
Shell Size	F Square (In)	G (In)	H Ø (In)	I O-Ring	J O-Ring	K O-Ring (Internal)	Part Number
F	1.180	0.425	0.167	012	017	011	OPTF-1-(XXX, XX, XX)-FCR-X
G	1.400	0.540	0.167	018	022	016	OPTG-4-(XXX, XX, XX)-FCR-X
M	1.645	0.620	0.206	022	026	020	OPTM-8-(XXX, XX, XX)-FCR-X
Q	2.145	0.825	0.245	029	031	028	OPTQ-12-(XXX, XX, XX)-FCR-X
T	2.520	1.000	0.245	032	034	031	OPTT-20-(XXX, XX, XX)-FCR-X





# OPT-CCR (Hose Shown)

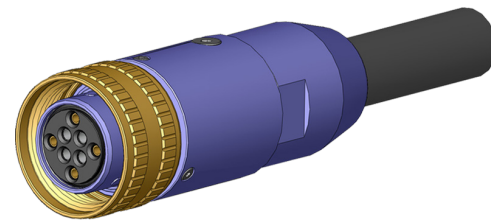
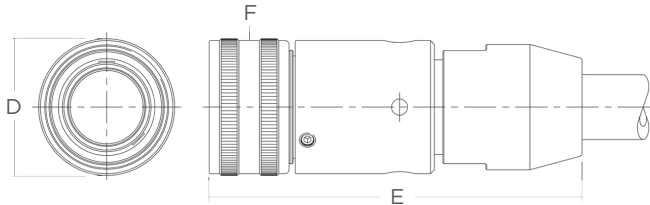
## Cable Connector Receptacle



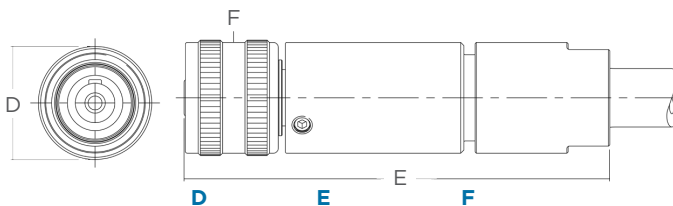
Shell Size	A * (In)	B Ø (In)	C O-Ring (In)	Max Cable O.D (In)	Hose Nominal I.D (In)	Part Number
F	3.16	0.860	011	0.256	0.250	OPTF-1-(XXX, XX, XX)-CCR-X
G	3.12	1.050	017	0.433	0.250	OPTG-4-(XXX, XX, XX)-CCR-X
M	3.64	1.295	021	0.678	0.375	OPTM-8-(XXX, XX, XX)-CCR-X
Q	4.65	1.795	517	1.000	0.500	OPTQ-12-(XXX, XX, XX)-CCR-X
T	4.83	2.170	031	1.430	0.625	OPTT-20-(XXX, XX, XX)-CCR-X

# OPT-CCP (Hose Shown)

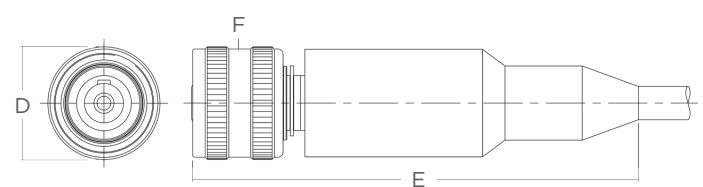
## Cable Connector Plug



## Single Way CCP Hose



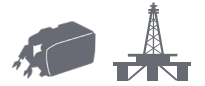
## Single Way CCP Cable



Shell Size	Ø (In)	Length (In)	O-Ring (In)	Max Cable O.D (In)	Hose Nominal I.D (In)	Part Number
F (CABLE)	0.895	3.60	013	0.256	-	OPTF-1-(XXX, XX, XX)-CCP-X
F (HOSE)	0.895	3.32*	013	-	0.250	OPTF-1-(XXX, XX, XX)-CCP-OF
G	1.085	3.13*	017	0.433	0.250	OPTG-4-(XXX, XX, XX)-CCR-X
M	1.330	3.64*	021	0.678	0.375	OPTM-8-(XXX, XX, XX)-CCR-X
Q	1.830	4.66*	517	1.000	0.500	OPTQ-12-(XXX, XX, XX)-CCR-X
T	2.205	4.84*	031	1.430	0.625	OPTT-20-(XXX, XX, XX)-CCR-X

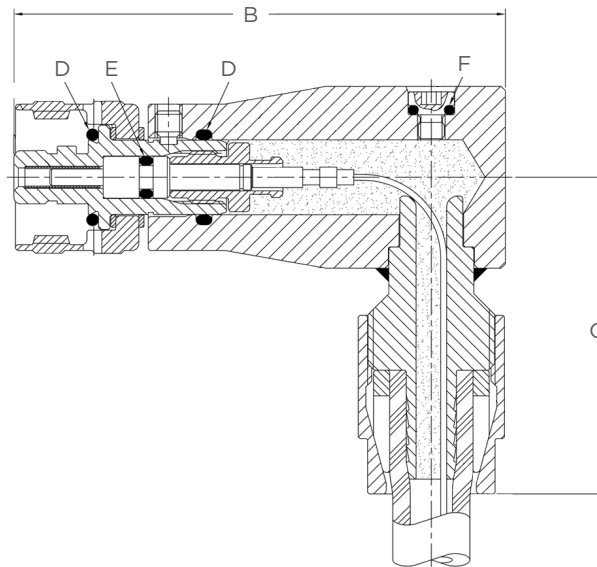
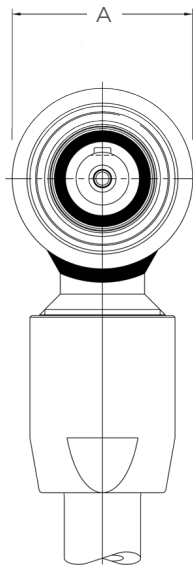
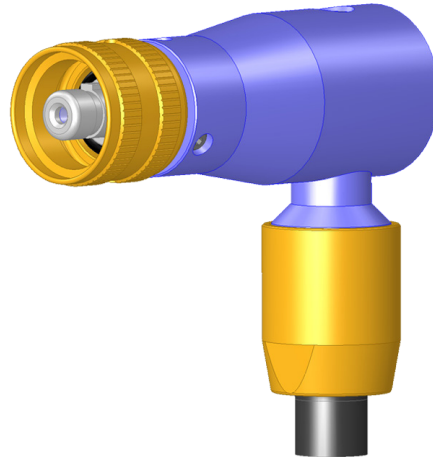
**Notes:**

\* Standard supply is hose, however if cable is required please supply sample or specification.



# OPT-CCP-PBOF-R/A

Cable Connector Plug Pressure Balanced Oil Filled Right Angle



Shell Size	A Ø (In)	B Length (In)	C Length (In)	D O-Ring	E O-Ring	F O-Ring	Part Number
F	0.895	2.89	1.86 APPROX.	013	006	007	OPTF-1-1FO-SM-CCP-PBOF-RA-OF

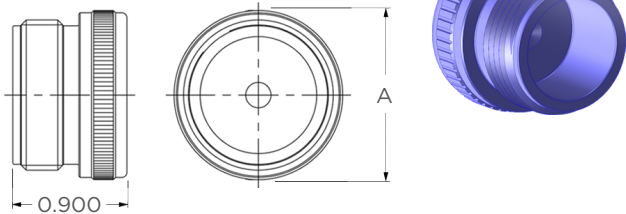




# Dust/Shipping Caps

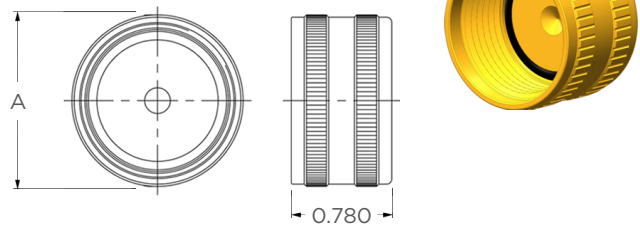
## OPT-PSR

Plastic Sealing Receptacle



## OPT-PSP

Plastic Sealing Plug

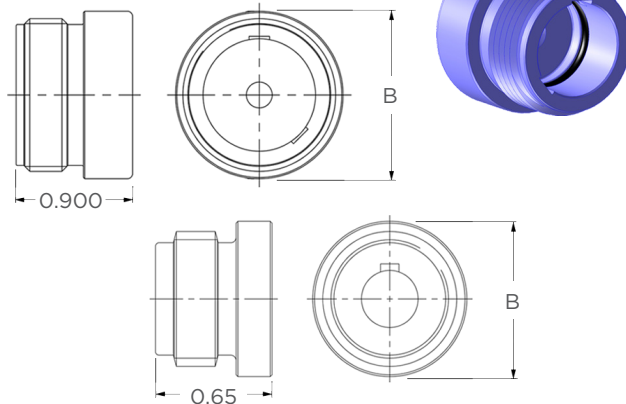


Shell Size	A Ø (In)	Part Number
F	0.900	OPTF-1-PSR/PSP
G	1.085	OPTG-4-PSR/PSP
M	1.330	OPTM-8-PSR/PSP
Q	1.830	OPTQ-12-PSR/PSP
T	2.205	OPTT-20-PSR/PSP

# Full Depth Sealing Caps

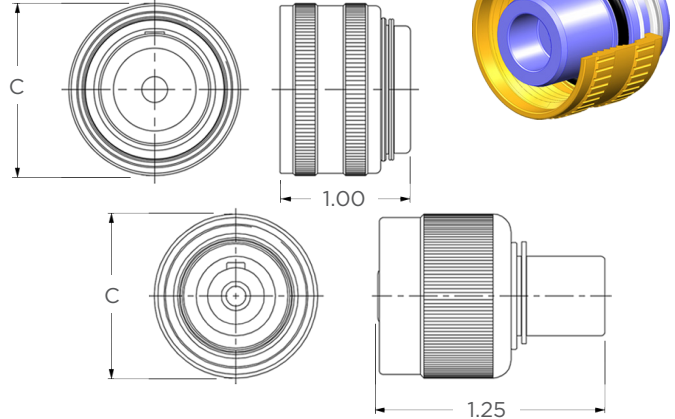
## OPT-DSR

Dummy Sealing Receptacle



## OPT-DSP

Dummy Sealing Plug



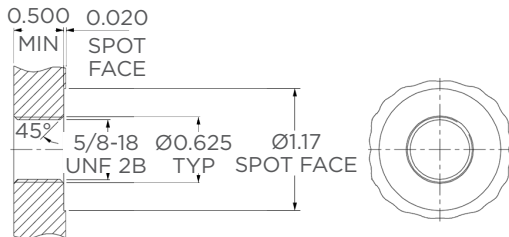
Shell Size	B Ø (In)	C Ø (In)	Part Number
F	0.860	0.900	OPTF-1-DSR/DSP
G	1.050	1.085	OPTG-4-DSR/DSP
M	1.295	1.330	OPTM-8-DSR/DSP
Q	1.795	1.830	OPTQ-12-DSR/DSP
T	2.170	2.205	OPTT-20-DSR/DSP



# Interface Details

## OPT-BCR Single Way

### Threaded Mounting Option

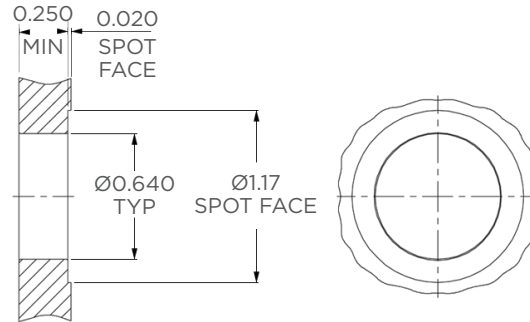


**Note:**

- Single-Way Bulkhead Mounting Torque: 85 inch pounds.

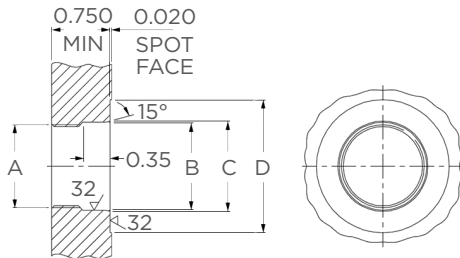
## OPT-BCR Single Way

### Through Bore Mounting Option



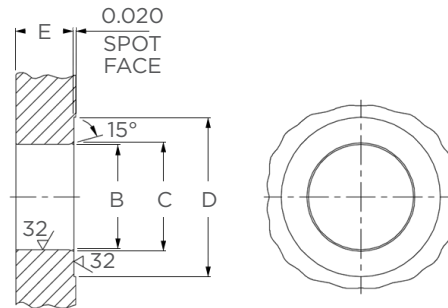
## OPT-BCR

### Threaded Mounting Option



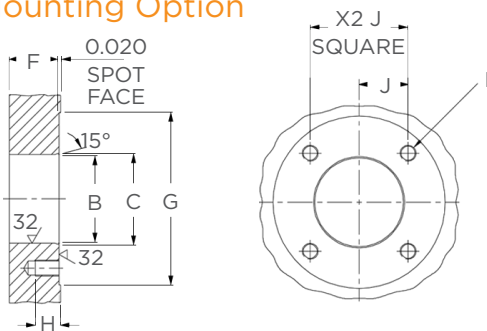
## OPT-BCR

### Through Bore Mounting Option Utilizing Back Nut and Washer



## OPT-FCR

### Mounting Option



Shell Size	A Thread	B Ø (In)	C Ø (In)	D Ø (In)	E (In)	F (In)	G Spot Face Ø (In)	H (In)	I Thread	J (In)
G	13/16-20 UNEF 2B	0.868 0.870	0.900	1.500	0.710 0.400	0.480	1.875	0.30	M4	0.540
M	1 1/16-20 UN 2B	1.123 1.125	1.154	1.700	0.620 0.400	0.630	2.180	0.30	M5	0.620
Q	1 9/16-20 UN 2B	1.623 1.625	1.654	2.200	0.620 0.400	0.830	2.860	0.48	M6	0.825
T	1 15/16-20 UN 2B	1.998 2.000	2.029	2.575	0.620 0.400	0.830	3.380	0.48	M6	1.000

**Note:**

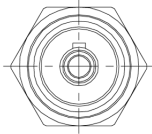
- \* These torque values are based on clean, dry, non-lubricated threads and as new condition 316L Stainless Steel connector and interface.



# Contact Configurations

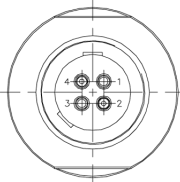
BCR/FCR/CCR Face View Only\* - Not to Scale

1



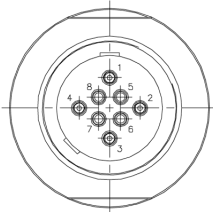
OPT-F-1

4



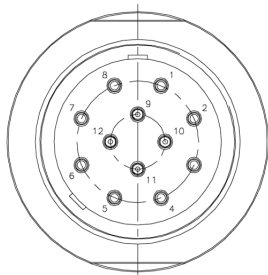
OPT-G-4

8



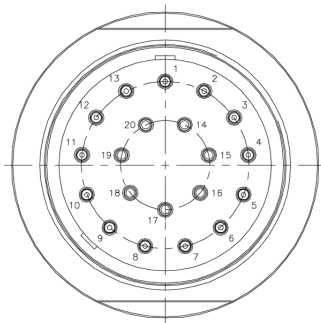
OPT-M-8

12



OPT-Q-12

20



OPT-T-20

**Notes:**

- \* For CCP face view contact configurations available please contact TE.

## LET'S CONNECT

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Consult TE for the latest dimensions and design specifications.

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