



SEACON Optical Hybrid Dry-Mate Connectors

Optical Hybrid Dry-Mate Connectors Offer
High Performance and Robust Connectivity
Solutions for Mission Critical Applications

SEACON

Optical Hybrid Dry-Mate Connectors

High Performance and Robust Connectivity Solutions for Mission Critical Applications

KEY FEATURES

- Single-mode & multi-mode
- Up to 20,000 psig (approx. 45,000ft/13,700m)
- Glass sealed options available in some connector styles and types
- Typical uses; Sonar & surveillance systems, Remotely Operated Vehicle (ROV)'s/Autonomous Underwater Vehicle (AUV)'s, Blow Out Preventer (BOP) monitoring equipment, neutrino detection, stress monitoring, subsea camera systems & downhole applications



As organizations in the subsea industry develop more applications with fiber optic technology in mind, there has been a dramatic increase in the quantity and complexity of electro-optic connector configurations needed to fit these applications.

In order to meet the changing requirements of customers, TE Connectivity (TE) has developed a comprehensive and extensive range of fiber optic products which are designed and manufactured to meet the specific and varied environmental conditions imposed on connectors today.

With years of experience in underwater optical connectivity, TE can offer SEACON optical dry-mate, wet-mate, underwater mateable connectors, optical penetrators and optical fiber management systems.

APPLICATION

- Lights & Cameras
- ROV's
- Drilling Systems
- Umbilical Links
- Submarines
- Defense

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

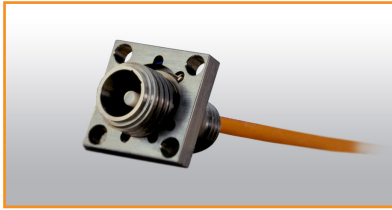
AMP | AGASTAT | CII | HARTMAN | KILOVAC | MICRODOT | NANONICS | POLAMCO | Raychem

SEACON | Rochester | DEUTSCH

Empower Engineers to Solve Problems, Moving the World Forward.



Optical MINI-CON Connectors



The MINI-CON series was the first of the SEACON connector lines to be adapted to fiber optic and hybrid electro/optic applications several years ago. In the intervening time, we have created many different configurations using nearly all of the

MINI-CON connector sizes. We can provide multi-mode and single-mode products with and without electrical contacts in the mix.

Furthermore we are able to adapt to many cable designs used for interconnects and umbilicals. When considering an optical application, we encourage you to contact TE's Marine, Oil & Gas (MOG) group so we can help provide you with the best solution for your requirements.

OPTI-CON Connectors



With an increase in the use of fiber optics throughout the subsea industry, 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.

Optical Military Connectors



TE manufactures a comprehensive range of SEACON military hybrid fiber optic connectors for use in harsh environments.

Available in a variety of materials including 316 stainless steel, monel and titanium and in a number of shell sizes and contact configurations with single-mode and multi-mode cable, these connectors have a mated pressure rating up to 10,000 psig. For further information please view our range of military products, which include glass to metal sealed connectors, single and multi-pin electrical feed thru connectors and rubber and specialized molded cable assemblies.

KEY FEATURES

STANDARD

- Type 316 stainless steel
- 8 shell sizes
- Up to 24 optics
- Many versions with optics and electricals
- 600 volt standard ratings (contact us for higher voltage applications)
- Pressure ratings dependent on cable and application

OPTIONS

- Different material options are available - please contact us
- Glass to metal inserts
- Unibody optical connectors with optical positions machined directly into the shell
- Pressure Balanced Oil Filled (PBOF)
- Cable to connector terminations
- [See Page 4 for more details](#)

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
- [See Page 16 for Contact Configurations available or TE's SEACON OPTI-CON brochure for more details](#)

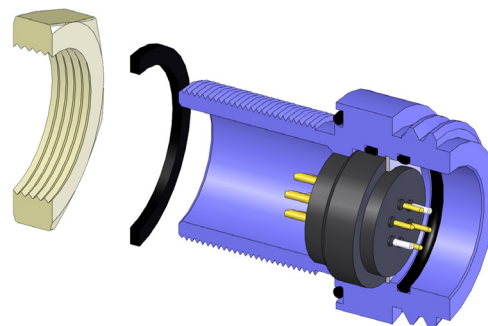
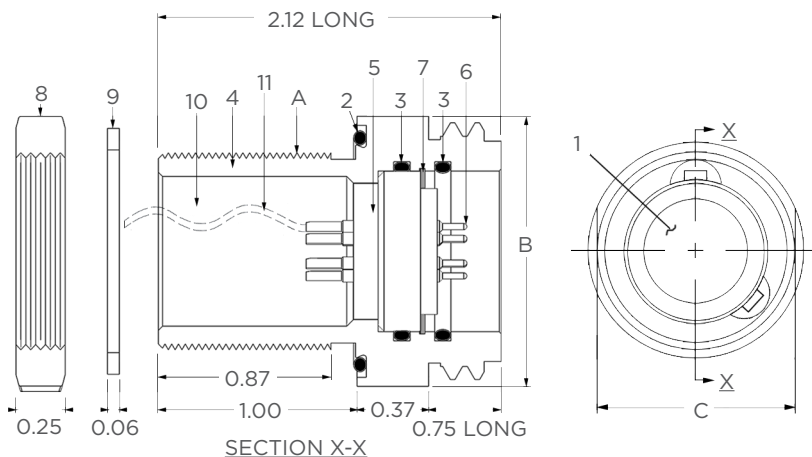
KEY FEATURES

- Up to 10,000 psig (approx. 22,500ft/7,000m)
- Contact TE for voltage details
- Contact TE for current details
- Stainless steel, monel, titanium
- Typical uses: Sonar & surveillance systems, Remotely Operated Vehicles (ROV)'s/ Autonomous Underwater Vehicles (AUV)'s, Blowout Preventer (BOP) monitoring equipment, neutrino detection, stress monitoring, subsea camera systems & downhole applications
- [See Page 12 for more details](#)



MIN-BCRL

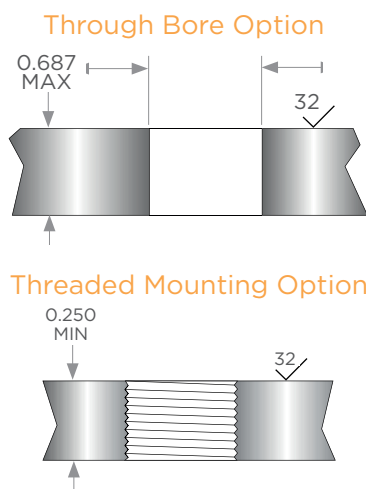
Bulkhead Connector Receptacle Long



When ordering MIN-BCRL you receive:
2, 3, 4, 5, 6, 7.

NOTE:
Please refer to the MINI-CON master parts and materials list on page 15.

| Shell Size | A Mounting Thread | B Ø (In) | 2 O-Ring | 3 Retaining Ring | 4 O-Ring | 5 C Wrench Flats (In) | 6 Hex Nut Across Flats (In) | 7 Hex Nut Across Points (In) | 8 Washers OD (In) | 9 Part Number |
|------------|-------------------|----------|----------|------------------|----------|-----------------------|-----------------------------|------------------------------|-------------------|---------------|
| M | 1-20 UNEF-2A | 1.37 | 2-023 | UR81 | 2-019 | 1.25 | 1.25 | 1.44 | 1.25 | MINM-X-BCRL |
| O | 1 1/8-16 UN-2A | 1.62 | 2-026 | UR106 | 2-023 | 1.50 | 1.50 | 1.75 | 1.50 | MINO-X-BCRL |
| P | 1 1/4-16 UN-2A | 1.75 | 2-028 | UR118 | 2-025 | 1.62 | 1.63 | 1.88 | 1.63 | MINP-X-BCRL |
| Q | 1 3/8-16 UN-2A | 1.87 | 2-029 | UR137 | 2-028 | 1.75 | 1.75 | 2.00 | 1.75 | MINQ-X-BCRL |
| R | 1 1/2-16 UN-2A | 2.00 | 2-029 | UR150 | 2-029 | 1.87 | 1.88 | 2.16 | 1.88 | MINR-X-BCRL |
| T | 2-16 UN-2A | 2.50 | 2-034 | UR175 | 2-031 | 2.37 | 2.38 | 2.75 | 2.38 | MINT-X-BCRL |
| U | 2 1/4-16 UN-2A | 2.75 | 2-036 | UR200 | 2-033 | 2.62 | 2.63 | 3.03 | 2.63 | MINU-X-BCRL |
| X | 2 3/4-16 UN-2A | 3.50 | 2-041 | UR250 | 2-037 | 3.15 | 3.16 | 3.63 | 3.16 | MINX-X-BCRL |



| Size | BCR/L Mounting Torque* (In-lbs) | |
|------|---------------------------------|---------|
| | Bore Ø +0.015 -0.000 (In) | |
| M | 1.000 | 120-150 |
| O | 1.125 | 130-160 |
| P | 1.250 | 140-170 |
| Q | 1.375 | 150-180 |
| R | 1.500 | 170-220 |
| T | 2.000 | 210-250 |
| U | 2.250 | 220-260 |
| X | 2.750 | 240-280 |

* Torque specified is for dry metal threads.

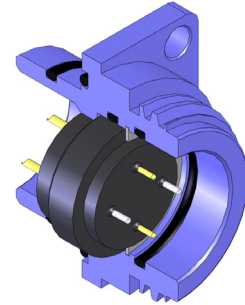
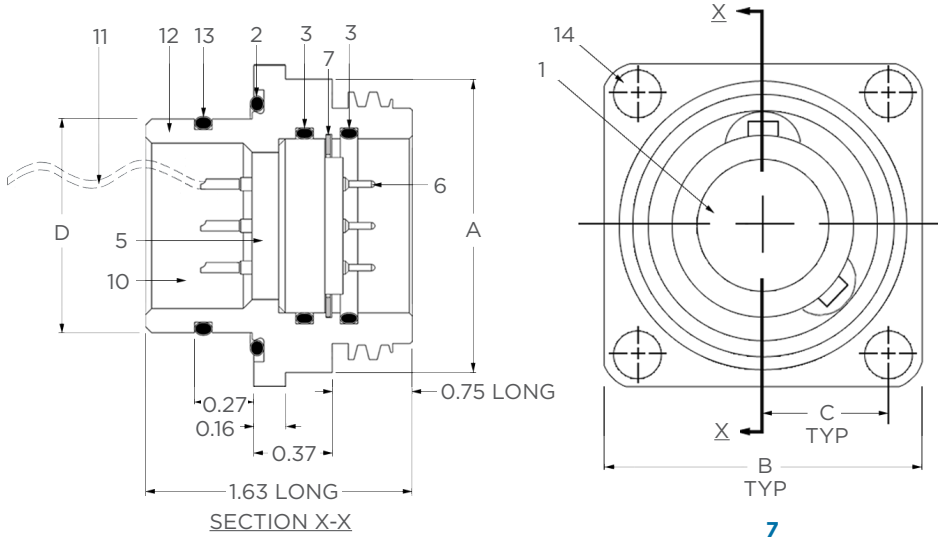
Notes:

1. Bore must be perpendicular to spot face.
2. Spotface diameter to be equal or greater than the connector diameter.
3. If threaded mount is used, lead thread chamfer is not to exceed diameter shown in bore column.



MIN-FCRL

Flange Connector Receptacle Long

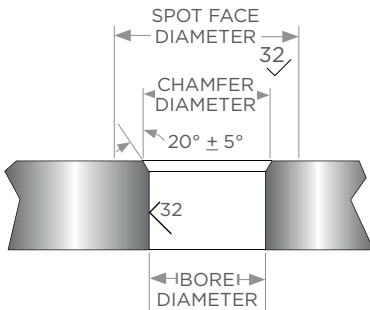


When ordering MIN-FCRL you receive: 2, 3, 5, 6, 7, 12, 13.

NOTE:
Please refer to the MINI-CON master parts and materials list on page 15.

| Shell Size | A Ø (In) | B Square (In) | C Mounting Hole Location (In) | D Ø (In) | 13 O-Ring | Retaining Ring | 2 O-Ring | Socket Head Screwcap | 3 O-Ring | Part Number |
|------------|-------------|------------------|-------------------------------|----------|-----------|----------------|----------|----------------------|----------|-------------|
| M | 1.37 | 1.50 | 0.593 | 0.998 | 2-020 | UR81 | 2-023 | 8-32 UNC-2A | 2-019 | MINM-X-FCRL |
| O | 1.62 | 1.75 | 0.723 | 1.123 | 2-022 | UR106 | 2-026 | 8-32 UNC-2A | 2-023 | MINO-X-FCRL |
| P | 1.75 | 1.87 | 0.777 | 1.248 | 2-024 | UR118 | 2-028 | 8-32 UNC-2A | 2-025 | MINP-X-FCRL |
| Q | 1.87 | 2.00 | 0.831 | 1.373 | 2-026 | UR137 | 2-029 | 10-24 UNC-2A | 2-028 | MINQ-X-FCRL |
| R | 2.00 | 2.12 | 0.884 | 1.498 | 2-028 | UR150 | 2-029 | 10-24 UNC-2A | 2-029 | MINR-X-FCRL |
| T | 2.50 | 2.62 | 1.043 | 1.998 | 2-032 | UR175 | 2-034 | 1/4-20 UNC-2A | 2-031 | MINT-X-FCRL |
| U | 2.75 | 2.87 | 1.113 | 2.248 | 2-034 | UR200 | 2-036 | 1/4-20 UNC-2A | 2-033 | MINU-X-FCRL |
| X | 3.50 | 3.62 | 1.470 | 2.748 | 2-038 | UR250 | 2-041 | 3/8-16 UNC-2A | 2-037 | MINX-X-FCRL |

Through Bore Option



| Shell Size | Bore Ø +0.002 -0.000 (In) | Chamfer Ø ±0.010 (In) | Spot Face Ø ±0.015 * (In) | Spot Face Ø ±0.015 ** (In) |
|------------|---------------------------|-----------------------|---------------------------|----------------------------|
| M | 1.000 | 1.040 | 1.31 | 2.12 |
| O | 1.125 | 1.175 | 1.50 | 2.44 |
| P | 1.250 | 1.290 | 1.62 | 2.62 |
| Q | 1.375 | 1.425 | 1.81 | 2.81 |
| R | 1.500 | 1.540 | 1.87 | 3.00 |
| T | 2.000 | 2.050 | 2.50 | 3.75 |
| U | 2.250 | 2.290 | 2.75 | 4.00 |
| X | 2.750 | 2.800 | 3.31 | 5.06 |

Notes: CHAMFER IS TO BE 20° ± 5°

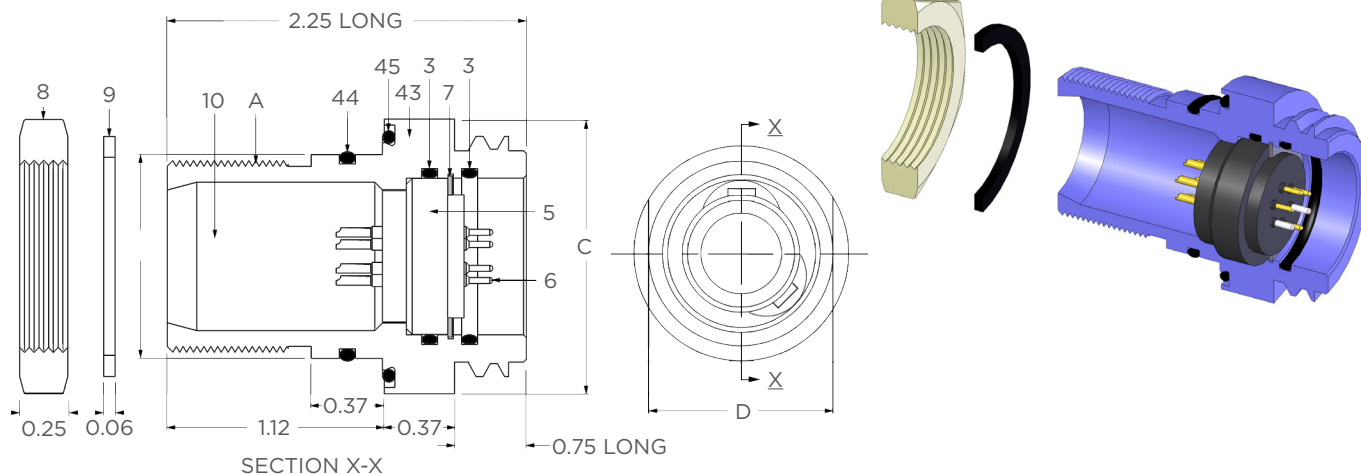
* This dimension is to be used if spotface is less than or equal to 0.001 inches deep.

** This dimension is to be used if spotface is greater than 0.001 inches deep.



MIN-BCRL-DO

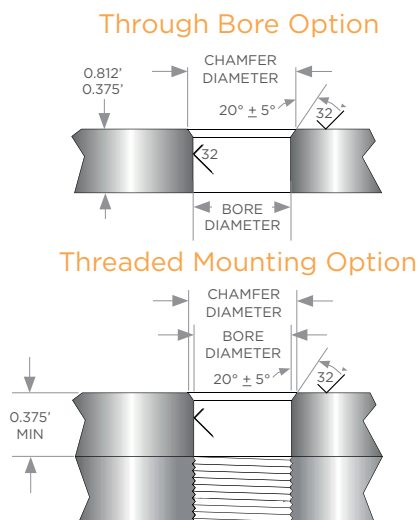
Bulkhead Connector Receptacle Long Dual O-Ring



| Shell Size | A Mounting Thread | B Ø (In) | C Square (In) | D Wrench Flats (In) | 44 O-Ring | 45 O-Ring | 3 O-Ring | 7 Retaining Ring | 8 Hex Nut Across Flats (In) | 8 Hex Nut Points (In) | 9 Washer OD (In) | Part Number |
|------------|-------------------|----------|---------------|---------------------|-----------|-----------|----------|------------------|-----------------------------|-----------------------|------------------|----------------|
| M | 1-20 UNEF-2A | 1.060 | 1.43 | 1.31 | 2-021 | 2-024 | 2-019 | UR81 | 1.25 | 1.44 | 1.25 | MINM-X-BCRL-DO |
| O | 1 1/8-16 UN-2A | 1.185 | 1.68 | 1.56 | 2-023 | 2-027 | 2-023 | UR106 | 1.50 | 1.75 | 1.50 | MINO-X-BCRL-DO |
| P | 1 1/4-16 UN-2A | 1.310 | 1.81 | 1.68 | 2-025 | 2-029 | 2-025 | UR118 | 1.62 | 1.88 | 1.63 | MINP-X-BCRL-DO |
| Q | 1 3/8-16 UN-2A | 1.435 | 1.93 | 1.81 | 2-027 | 2-030 | 2-028 | UR137 | 1.75 | 2.00 | 1.75 | MINQ-X-BCRL-DO |
| R | 1 1/2-16 UN-2A | 1.623 | 2.06 | 1.93 | 2-029 | 2-031 | 2-029 | UR150 | 1.87 | 2.16 | 1.88 | MINR-X-BCRL-DO |
| T | 2-16 UN-2A | 2.123 | 2.62 | 2.43 | 2-033 | 2-035 | 2-031 | UR175 | 2.37 | 2.75 | 2.38 | MINT-X-BCRL-DO |
| U | 2 1/4-16 UN-2A | 2.373 | 3.00 | 2.68 | 2-035 | 2-037 | 2-033 | UR200 | 2.75 | 3.03 | 2.63 | MINU-X-BCRL-DO |
| X | 2 3/4-16 UN-2A | 2.873 | 3.62 | 3.22 | 2-039 | 2-041 | 2-037 | UR250 | 3.25 | 3.63 | 3.16 | MINX-X-BCRL-DO |

Notes:

- * Torque specified is for dry metal threads.
- For contact configurations please refer to pages 16-17.
- When ordering MIN-BCR-DO you receive: 2, 3, 5, 6, 7, 12, 43, 44, 45. Please refer to the MINI-CON Master Parts and Materials list on page 15.
- Nut and washer are optional.
- Bore must be perpendicular to spot face.
- If threaded mount is used, thread must be concentric with bore.

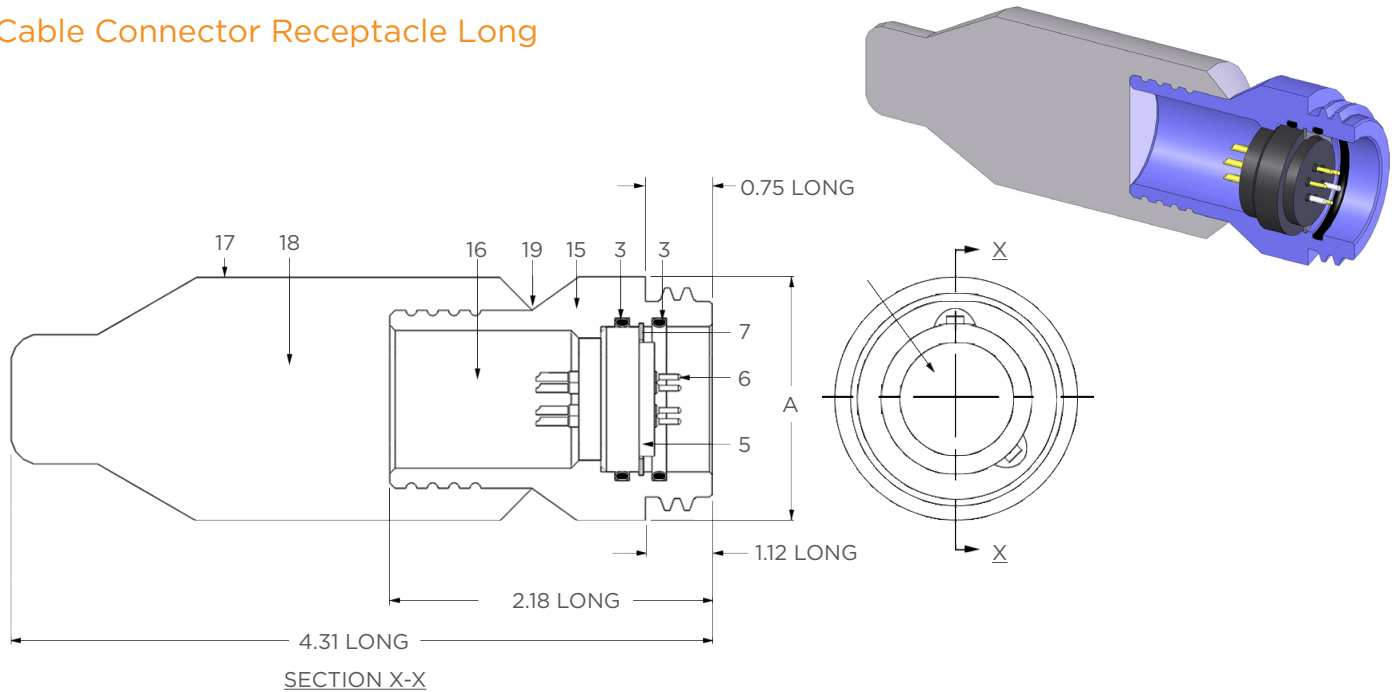


| Shell Size | Bore Ø | | Torque* (In-Pounds) |
|------------|--------------------|-----------------------|---------------------|
| | +0.002 -0.000 (In) | Chamfer Ø ±0.010 (In) | |
| M | 1.062 | 1.112 | 120-150 |
| O | 1.187 | 1.237 | 130-160 |
| P | 1.312 | 1.362 | 140-170 |
| Q | 1.437 | 1.487 | 150-180 |
| R | 1.625 | 1.675 | 170-220 |
| T | 2.125 | 2.175 | 210-250 |
| U | 2.375 | 2.425 | 220-260 |
| X | 2.875 | 2.925 | 240-280 |



MIN-CCRL

Cable Connector Receptacle Long



Shell

| Size | A Ø mm(In) | 3 O-Ring | 7 Retaining Ring | R/A Height (In) | Rear Shell OD (In) | Part Number |
|------|------------|----------|------------------|-----------------|--------------------|-------------|
| M | 1.37 | 2-019 | UR81 | 2.81/3.18 | 1.000 | MINM-X-CCR |
| O | 1.62 | 2-023 | UR106 | 2.81/3.18 | 1.187 | MINO-X-CCR |
| P | 1.75 | 2-025 | UR118 | 3.00/3.37 | 1.312 | MINP-X-CCR |
| Q | 1.87 | 2-028 | UR137 | 3.00/3.37 | 1.500 | MINQ-X-CCR |
| R | 2.00 | 2-029 | UR150 | 3.19/3.56 | 1.562 | MINR-X-CCR |
| T | 2.50 | 2-031 | UR175 | Varies w/cable | 1.875 | MINT-X-CCR |
| U | 2.75 | 2-033 | UR200 | Varies w/cable | 2.062 | MINU-X-CCR |
| X | 3.50 | 2-037 | UR250 | Varies w/cable | 2.687 | MINX-X-CCR |

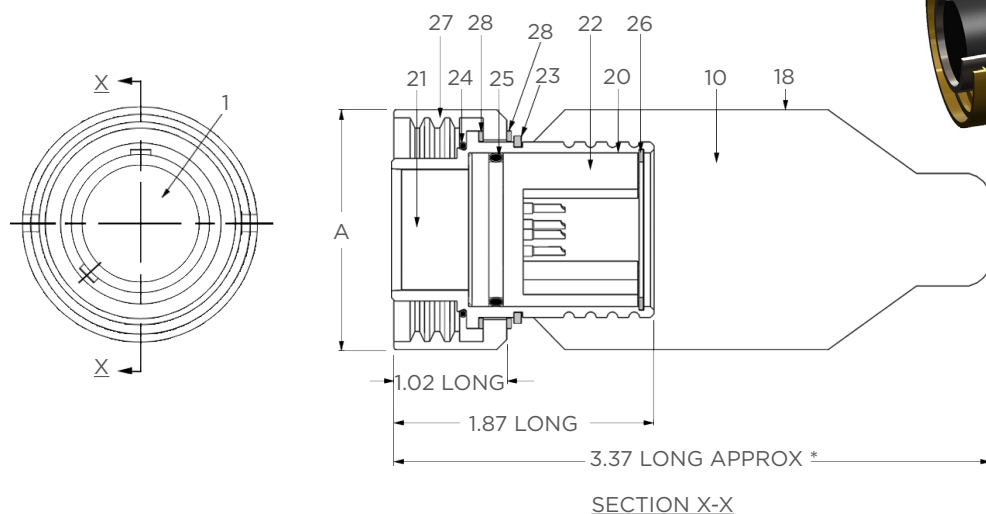
Notes:

- For contact configurations please refer to pages 16-17.
- When ordering MIN-CCRL you receive: 3, 5, 6, 7, 15. Please refer to the MINI-CON Master Parts and Materials list on page 15.
- * BCRL may be used as CCRL. CCRL is not available at this time for MIND and MINE sizes.
- Molding is optional.
- Field Installable Boot is available and cable diameter must be specified at time of order.



MIN-CCPL

Cable Connector Plug Long



| Shell Size | A Ø (In) | 23 Retaining Ring | 24 O-Ring | 25 O-Ring | 26 Retaining Ring | R/A Height (In) | Rear Shell OD (In) | CCP/L Engaging Nut Torque (In/lbs) ** | Part Number |
|------------|----------|-------------------|-----------|-----------|-------------------|-----------------|--------------------|---------------------------------------|-------------|
| M | 1.37 | 5100-100 | 2-020 | 2-018 | UR87 | 2.81/3.18 | 1.000 | 65-95 | MINM-X-CCPL |
| O | 1.62 | 5100-118 | 2-024 | 2-020 | UR100 | 2.81/3.18 | 1.187 | 75-105 | MINO-X-CCPL |
| P | 1.75 | 5100-131 | 2-027 | 2-022 | UR112 | 3.00/3.37 | 1.312 | 80-110 | MINP-X-CCPL |
| Q | 1.87 | 5100-150 | 2-028 | 2-025 | UR131 | 3.00/3.37 | 1.500 | 85-115 | MINQ-X-CCPL |
| R | 2.00 | 5100-156 | 2-029 | 2-026 | UR137 | 3.19/3.56 | 1.562 | 90-120 | MINR-X-CCPL |
| T | 2.50 | 5100-187 | 2-032 | 2-029 | UR162 | Varies w/cable | 1.875 | 125-150 | MINT-X-CCPL |
| U | 2.75 | 5100-206 | 2-033 | 2-031 | UR187 | Varies w/cable | 2.062 | 135-160 | MINU-X-CCPL |
| X | 3.50 | 5100-268 | 2-038 | 2-033 | UR212 | Varies w/cable | 2.687 | 155-180 | MINX-X-CCPL |

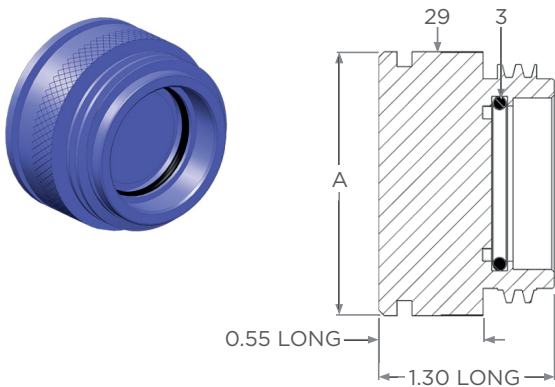
Notes:

- For contact configurations please refer to pages 16-17.
- When ordering MIN-CCPL you receive: 20, 21, 22, 23, 24, 25, 26, 27, 28. Please refer to the MINI-CON Master Parts and Materials list on page 15.
- * Will vary with cable size.
- ** During engaging it may be necessary to use 50% of the engaging nut torque value.
- Molding is optional.
- Field Installable Boot is available and cable diameter must be specified at time of order.



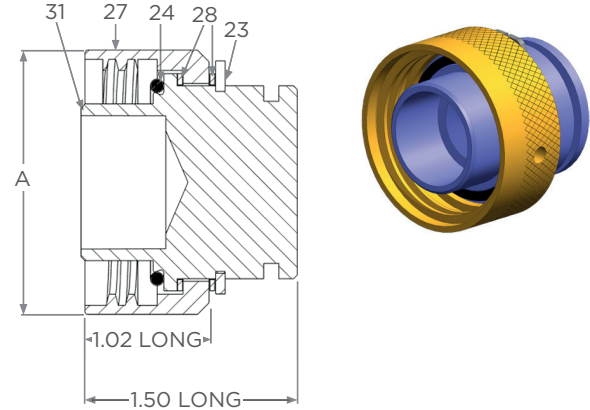
MIN-DSRL

Dummy Sealing Receptacle Long



MIN-DSPL

Dummy Sealing Plug Long



| Shell Size | A Ø (In) | 3 O-Ring | 23 Retaining Ring | 24 O-Ring | DSPL Engaging Nut Torque (Inch-Pounds) ** | Part Number |
|------------|----------|----------|-------------------|-----------|--|------------------|
| M | 1.37 | 2-019 | 5100-100 | 2-020 | 65-95 | MINM-X-DSRL/DSPL |
| O | 1.62 | 2-023 | 5100-118 | 2-024 | 75-105 | MINO-X-DSRL/DSPL |
| P | 1.75 | 2-025 | 5100-131 | 2-027 | 80-110 | MINP-X-DSRL/DSPL |
| Q | 1.87 | 2-028 | 5100-150 | 2-028 | 85-115 | MINQ-X-DSRL/DSPL |
| R | 2.00 | 2-029 | 5100-156 | 2-029 | 90-120 | MINR-X-DSRL/DSPL |
| T | 2.50 | 2-031 | 5100-187 | 2-032 | 125-150 | MINT-X-DSRL/DSPL |
| U | 2.75 | 2-033 | 5100-206 | 2-033 | 135-160 | MINU-X-DSRL/DSPL |
| X | 3.50 | 2-037 | 5100-268 | 2-038 | 155-180 | MINX-X-DSRL/DSPL |

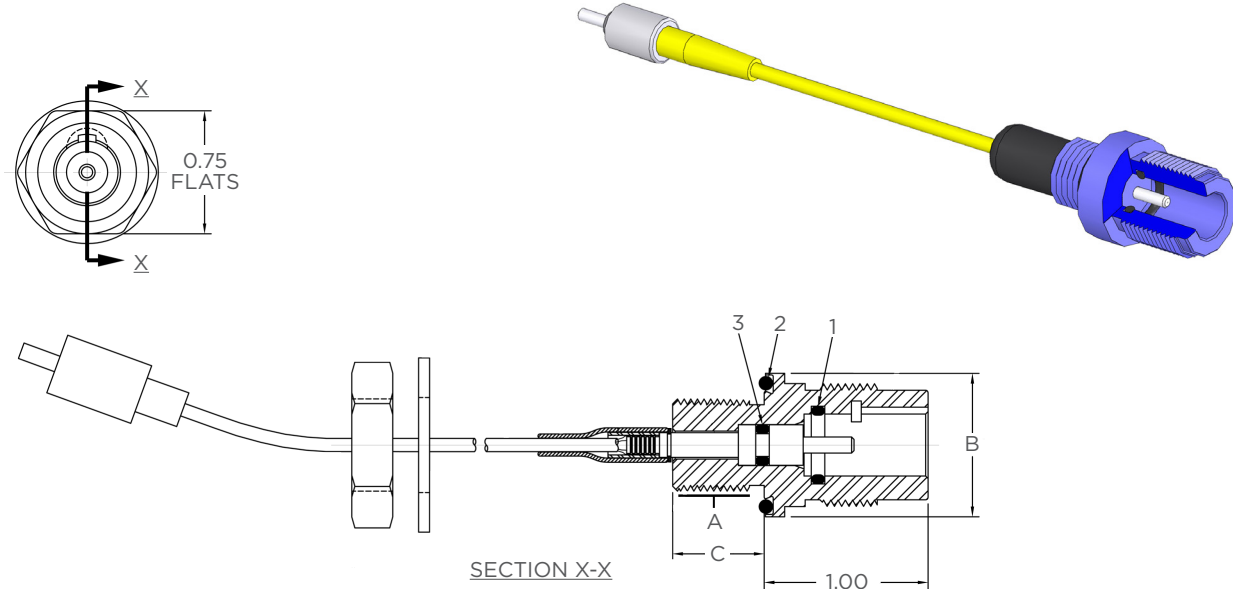
Notes:

- When ordering MIN-DSRL you receive: 3, 29. When ordering MIN-DSPL you receive: 23, 24, 27, 28, 31. Please refer to the MINI-CON Master Parts and Materials list on page 15.
- Please contact TE for appropriate dummy connectors for use on compensated systems or PBOF connectors.
- Splashproof connectors are not designed for submergence.
- * High Grade Stainless Steel.
- ** During engaging it may be necessary to use 50% of the engaging nut torque value.



MINF-BCR-1FO

Fiber Optic Bulkhead Connector Receptacle



| Shell Size | A Mounting Thread | B Ø (In) | C Length (in) | 1 O-Ring | 2 O-Ring | 25 O-Ring | Part Number |
|------------|-------------------|----------|---------------|----------|----------|-----------|----------------------------|
| F | 9/16-18 UNF-2A | 0.87 | 0.56 | 2-012 | 2-016 | 2-006 | MINF-1FO-BCR |
| F | 9/16-18 UNF-2A | 0.95 | 1.00 | 2-012 | 2-017 | 2-006 | MINF-1FO-BCR 1 INCH |
| F | 9/16-18 UNF-2A | 0.95 | 2.25 | 2-012 | 2-017 | 2-006 | MINF-1FO-BCR 2 1/4 INCH |

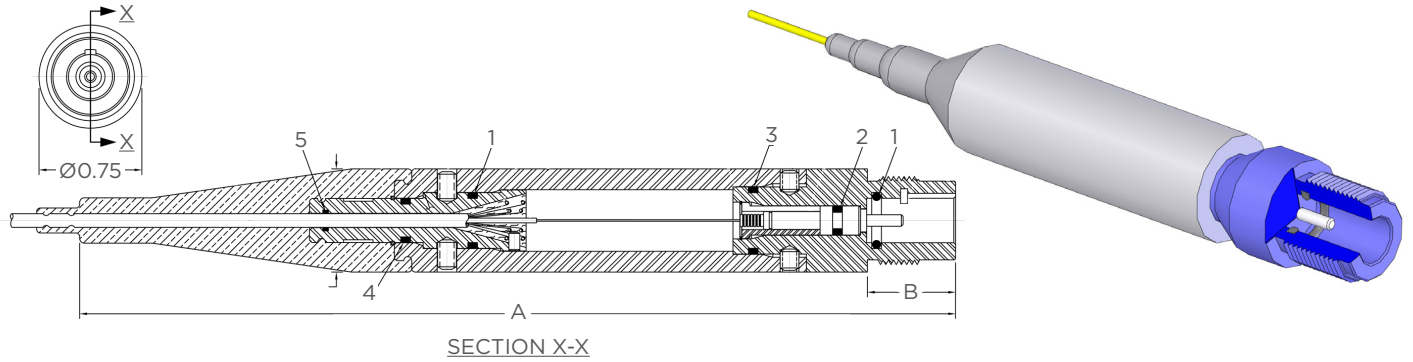
Notes:

- Please specify fiber optic cable type (Single-Mode, Multi-Mode) at time of ordering.
- Hex Nut and Washer is optional.



MINF-CCR-1FO

Fiber Optic Cable Connector Receptacle



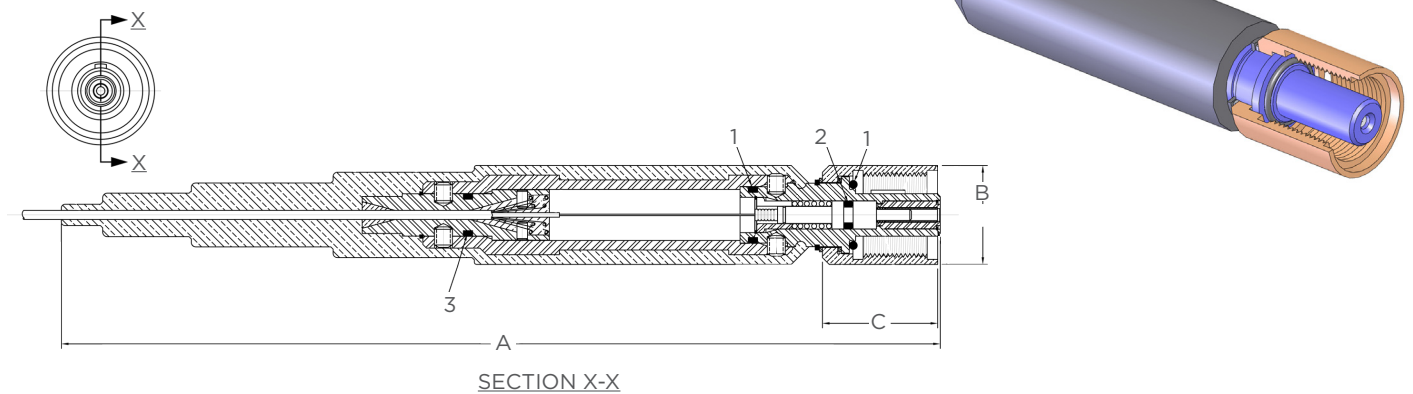
| Shell Size | A Length (in) | B Thread Length (in) | 1 O-Ring | 2 O-Ring | 3 O-Ring | 4 O-Ring | Part Number |
|------------|---------------|----------------------|----------|----------|----------|----------|--------------|
| F | 7.45 | 0.750 | 2-012 | 2-006 | 2-013 | 5-632 | MINF-1FO-CCR |

Notes:

- Other variations are available to suit different cable types. Please contact TE for further information.
- Please specify fiber optic cable type (Single-Mode, Multi-Mode) at time of ordering.

MINF-CCP-1FO

Fiber Optic Cable Connector Plug



| Shell Size | A Length (in) | B Ø (in) | C Thread Length (in) | 1 O-Ring | 2 O-Ring | 3 O-Ring | Part Number |
|------------|---------------|----------|----------------------|----------|----------|----------|--------------|
| F | 7.50/8.00 | 0.87 | 1.02 | 2-012 | 2-006 | 2-010 | MINF-1FO-CCP |

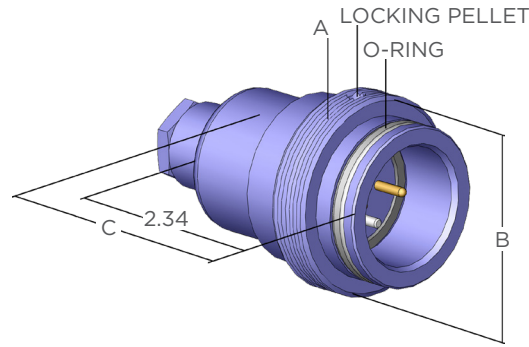
Notes:

- Other variations are available to suit different cable types. Please contact TE for further information.
- Please specify fiber optic cable type (Single-Mode, Multi-Mode) at time of ordering.



MIL-HYB-FO-CCR

Military Hybrid Fiber Optic Cable Connector Receptacle

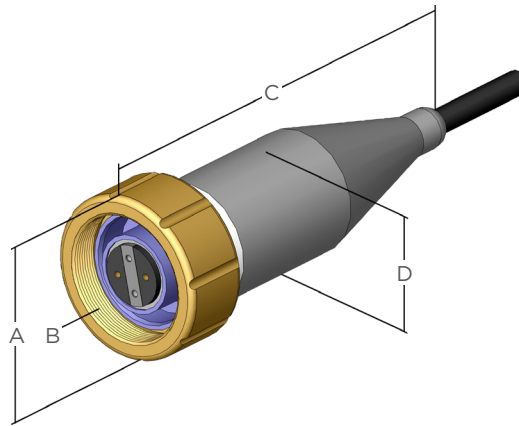


| Qty of Fibers | Electrical Contacts | O-Ring Type | Locking Pellet | PPD P/N | Mating Connector | A Thread | B Thread Length Ø (In) | C Thread Length (In) |
|---------------|---------------------|-----------------|------------------|---------------------|---|---------------|------------------------|----------------------|
| 2 | 6 EA. 16 AWG | MS28775 -215 | M24231/ 5-077 | 802-6337554.8.7.1-3 | CP2296 / CP2299-1 CP2299-2 / CP2299-3 / CP2299-4 | 1.688-12UN-2A | 1.688 | 3.20 |
| 2 | 6 EA. 16 AWG | MS28775 -220 | M24231/ 5-077 | 802-6337554.8.7.2-2 | CP2304 / CP2300-1 CP2300-2 / CP2300-3 / CP2300-4 | 2.000-12UN-2A | 2.00 | 3.13 |
| 4 | N/A | MS28775 -215 | M24231/ 5-077 | 802-6337554.8.7.1-1 | CP2298 / CP2301-1 CP2301-2 / CP2301-3 / CP2301-4 | 1.688-12UN-2A | 1.688 | 3.10 |
| 8 | N/A | MS28775 -215 | M24231/ 5-077 | 802-6337554.8.7.1-2 | CP2297 / CP2302-1 CP2302-2 / CP2302-3 / CP2302-4 | 1.688-12UN-2A | 1.688 | 3.10 |
| 15 | N/A | MS28775 -220 | M24231/ 5-077 | 802-6337554.8.7.2-1 | CP2303 / CP2305-1 CP2305-2 / CP2305-3 / CP2305-4 | 2.000-12UN-2A | 2.00 | 3.13 |



MIL-HYB-FO-CCP

Military Hybrid Fiber Optic Cable Connector Plug

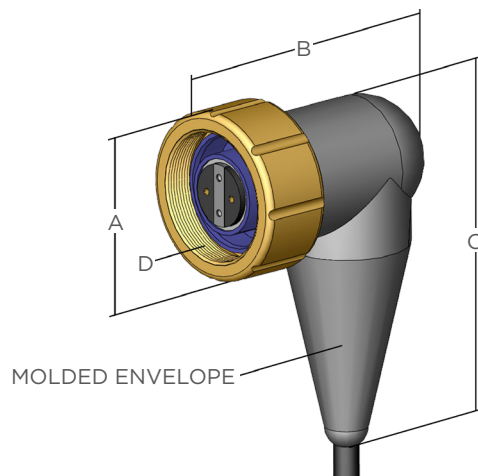


| Qty of Fibers | Electrical Contacts | PPD P/N | Mating Connector | A Ø (In) | B Thread | C Length (In) | D Ø (In) |
|---------------|---------------------|----------------------|--------------------------------|----------|---------------|---------------|----------|
| 2 | 6 EA. 16 AWG | 802-6337554.8.8.1-15 | 802-6337554.8.7.1-3 / CR2294-3 | 2.00 | 1.688-12UN-2B | 5.36 | 1.49 |
| 2 | 6 EA. 16 AWG | 802-6337554.8.8.2-10 | 802-6337554.8.7.2-2 / CR2295-2 | 2.50 | 2.000-12UN-2B | 5.93 | 1.88 |
| 4 | N/A | 802-6337554.8.8.1-10 | 802-6337554.8.7.1-1 / CR2294-1 | 2.00 | 1.688-12UN-2B | 5.36 | 1.49 |
| 8 | N/A | 802.6337554.8.8.1-5 | 802-6337554.8.7.1-2 / CR2294-2 | 2.00 | 1.688-12UN-2B | 5.36 | 1.49 |
| 15 | N/A | 802-6337554.8.8.2-5 | 802-6337554.8.7.2-1 / CR2295-1 | 2.50 | 2.000-12UN-2B | 5.93 | 1.88 |



MIL-HYB-FO-CCP-R/A

Military Hybrid Fiber Optic Cable Connector Plug Right Angle



| Qty of Fibers | Electrical Contacts | Key Angle | PPD P/N | Mating Connector | A Ø (In) | B Length (In) | C R/A Height (In) | D Thread |
|---------------|---------------------|-----------|----------------------|--------------------------------|----------|---------------|-------------------|---------------|
| 2 | 6 EA. 16 AWG | 0 | 802-6337554.8.8.1-11 | 802-6337554.8.7.1-3 / CR2294-3 | 2.00 | 3.78 | 4.34 | 1.688-12UN-2A |
| 2 | 6 EA. 16 AWG | 90 | 802-6337554.8.8.1-12 | 802-6337554.8.7.1-3 / CR2294-3 | 2.00 | 3.78 | 4.34 | 1.688-12UN-2A |
| 2 | 6 EA. 16 AWG | 180 | 802-6337554.8.8.1-13 | 802-6337554.8.7.1-3 / CR2294-3 | 2.00 | 3.78 | 4.34 | 1.688-12UN-2A |
| 2 | 6 EA. 16 AWG | 270 | 802-6337554.8.8.1-14 | 802-6337554.8.7.1-3 / CR2294-3 | 2.00 | 3.78 | 4.34 | 1.688-12UN-2A |
| 2 | 6 EA. 16 AWG | 0 | 802-6337554.8.8.2-6 | 802-6337554.8.7.2-2 / CR2295-2 | 2.50 | 4.06 | 4.77 | 2.000-12UN-2A |
| 2 | 6 EA. 16 AWG | 90 | 802-6337554.8.8.2-7 | 802-6337554.8.7.2-2 / CR2295-2 | 2.50 | 4.06 | 4.77 | 2.000-12UN-2A |
| 2 | 6 EA. 16 AWG | 180 | 802-6337554.8.8.2-8 | 802-6337554.8.7.2-2 / CR2295-2 | 2.50 | 4.06 | 4.77 | 2.000-12UN-2A |
| 2 | 6 EA. 16 AWG | 270 | 802-6337554.8.8.2-9 | 802-6337554.8.7.2-2 / CR2295-2 | 2.50 | 4.06 | 4.77 | 2.000-12UN-2A |
| 4 | N/A | 0 | 802-6337554.8.8.1-1 | 802-6337554.8.7.1-1 / CR2294-1 | 2.00 | 3.78 | 4.35 | 688-12UN-2A |
| 4 | N/A | 90 | 802-6337554.8.8.1-2 | 802-6337554.8.7.1-1 / CR2294-1 | 2.00 | 3.78 | 4.35 | 688-12UN-2A |
| 4 | N/A | 180 | 802-6337554.8.8.1-3 | 802-6337554.8.7.1-1 / CR2294-1 | 2.00 | 3.78 | 4.35 | 688-12UN-2A |
| 4 | N/A | 270 | 802-6337554.8.8.1-4 | 802-6337554.8.7.1-1 / CR2294-1 | 2.00 | 3.78 | 4.35 | 688-12UN-2A |
| 8 | N/A | 0 | 802-6337554.8.8.1-6 | 802-6337554.8.7.1-2 / CR2294-2 | 2.00 | 3.78 | 4.35 | 688-12UN-2A |
| 8 | N/A | 90 | 802-6337554.8.8.1-7 | 802-6337554.8.7.1-2 / CR2294-2 | 2.00 | 3.78 | 4.35 | 688-12UN-2A |
| 8 | N/A | 180 | 802-6337554.8.8.1-8 | 802-6337554.8.7.1-2 / CR2294-2 | 2.00 | 3.78 | 4.35 | 688-12UN-2A |
| 8 | N/A | 270 | 802-6337554.8.8.1-9 | 802-6337554.8.7.1-2 / CR2294-2 | 2.00 | 3.78 | 4.35 | 688-12UN-2A |
| 15 | N/A | 0 | 802-6337554.8.8.2-1 | 802-6337554.8.7.2-1 / CR2295-1 | 2.50 | 4.06 | 4.77 | 2.000-12UN-2A |
| 15 | N/A | 90 | 802-6337554.8.8.2-2 | 802-6337554.8.7.2-1 / CR2295-1 | 2.50 | 4.06 | 4.77 | 2.000-12UN-2A |
| 15 | N/A | 180 | 802-6337554.8.8.2-3 | 802-6337554.8.7.2-1 / CR2295-1 | 2.50 | 4.06 | 4.77 | 2.000-12UN-2A |
| 15 | N/A | 270 | 802-6337554.8.8.2-4 | 802-6337554.8.7.2-1 / CR2295-1 | 2.50 | 4.06 | 4.77 | 2.000-12UN-2A |



MINI-CON Master Parts and Materials List

| Item | Qty | Part / Description | Notes |
|------|-----|----------------------------------|--------|
| 1 | - | Insert Face Pattern | *11 |
| 2 | 1 | O-Ring | *6 *13 |
| 3 | AR | O-Ring | *6 |
| 4 | 1 | MIN-BCR | *1 *13 |
| 5 | 1 | MIN-CIR / MIN-CIR-PBOF-HP | *2 |
| 6 | AR | Contact Pins | *3 *11 |
| 7 | 1 | Retaining Ring | *5 |
| 8 | 1 | Bulkhead Hex Nut (Optional) | *5 |
| 9 | 1 | Bulkhead Washer (Optional) | *5 |
| 10 | AR | Epoxy (Optional) | *7 |
| 11 | AR | Hook-Up Wire (Optional Pigtails) | *8 |
| 12 | 1 | MIN-FCR | *1 *13 |
| 13 | 1 | O-Ring | *6 |
| 14 | 4 | Socket Cap Hex Screw (Optional) | *5 |
| 15 | 1 | MIN-CCR | *1 |
| 16 | AR | Fill Compound Required | *14 |
| 17 | 1 | MIN-CCP / CCR FI Boot (Optional) | *4 *12 |
| 18 | AR | Overmold (Optional) | *4 *12 |
| 19 | 2 | Nylon Cable Tie (Optional) | *12 |
| 20 | 1 | MIN-CCP | *1 *13 |
| 21 | 1 | MIN-CIP / MIN-CIP-PBOF-HP | *2 |
| 22 | AR | Contact Sockets | *3 *11 |

| Item | Qty | Part / Description | Notes |
|------|-----|---|--------|
| 23 | 1 | Retaining Ring | *5 |
| 24 | 1 | O-Ring | *6 *13 |
| 25 | 1 | O-Ring | *6 |
| 26 | 1 | Retaining Ring | *5 |
| 27 | 1 | Engaging Nut | *10 |
| 28 | 2 | Engaging Nut Washer | *9 |
| 29 | 1 | MIN-DSR / DSRL | *1 |
| 31 | 1 | MIN-DSP / DSPL | *1 |
| 33 | 1 | MIN-PSR / PSRL | *9 |
| 35 | 1 | MIN-PSP / PSPL | *9 |
| 37 | 1 | MIN-CCP-PBOF-HP-FWD END | *1 |
| 38 | 1 | MIN-CCP-PBOF-AFT END | *1 |
| 39 | 1 | MIN-CCP-PBOF-R/A AFT END | *1 |
| 40 | 1 | O-Ring | *6 |
| 41 | 3 | 8-32 UNC-2A Hex Socket Screw / Cup Point | *5 |
| 42 | 1 | 10-24 UNC-2A Pan Head Screw with 5-105 O-Ring | *5 *6 |
| 43 | 1 | MIN-BCR Dual O-Ring | *1 *13 |
| 44 | 1 | O-Ring | *6 |
| 45 | 1 | O-Ring | *6 *13 |
| 46 | 1 | MIN-CCR-PBOF | *1 |
| 47 | 1 | O-Ring | *6 *13 |

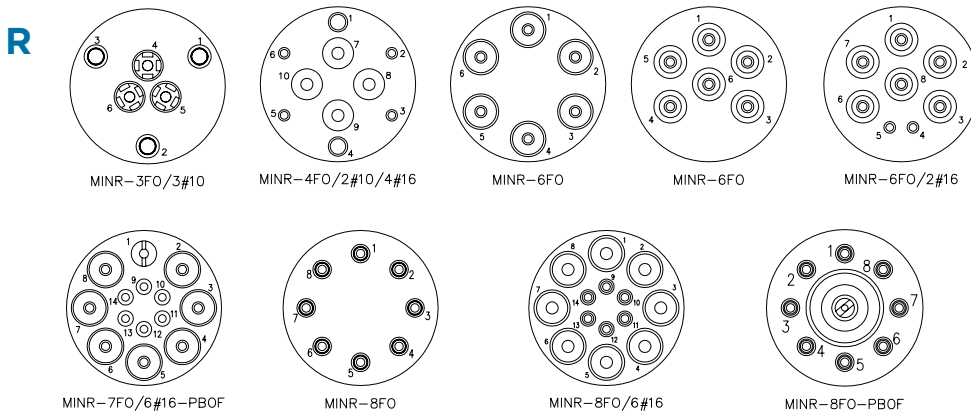
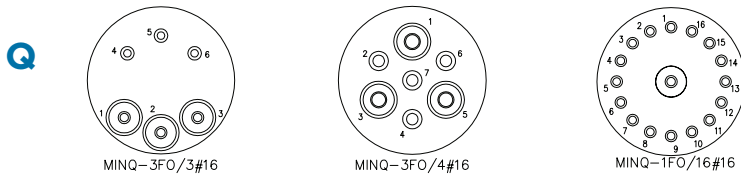
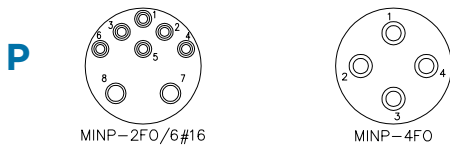
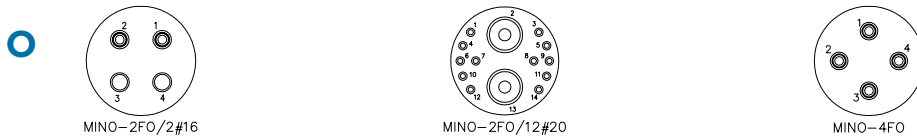
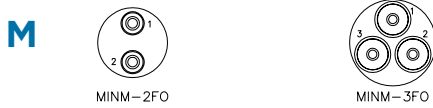
Notes:

- *1 Material: 316 Stainless Steel per ASTM A 484.
- *2 Material: Glass Reinforced Epoxy, SEACON XS-2748.
- *3 Material: Copper Alloy & Gold Plated per ASTM B 488.
- *4 Material: Neoprene Molding per SEACON X-5727.
- *5 Material: High Grade Stainless Steel.
- *6 Material: Nitrile (formerly known as Buna N).
- *7 Material: Epon 828/Ciba 840.
- *8 Material: TFE insulated wire.
- *9 Material: Acetal per ASTM D 4181, Black.
- *10 Material: Copper Alloy 630 per ASTM B 150.
- *11 Reference face configurations for size of contacts and locations.
- *12 An overmold or field installable boot is optional on both the CCP and the CCR.
- *13 Dovetail groove to prevent loss of o-ring.
- *14 Not supplied.



MINI-CON Fiber Optic Contact Configurations

Male Face View Only - Not to Scale



Notes:

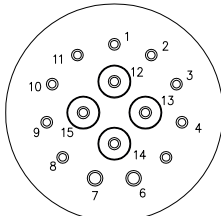
- Fiber Optic connectors available in the long shell size only.
- Please see the Dry-Mate Hybrid section of the catalog or contact TE for further information.



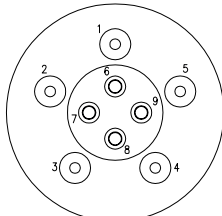
MINI-CON Fiber Optic Contact Configurations

Male Face View Only - Not to Scale

T

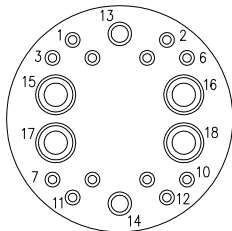


MINT-4FO/9#16/2#14

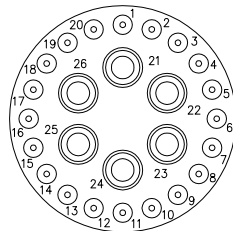


MINT-4FO/5#16

U

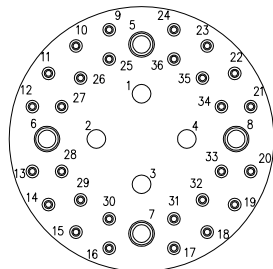


MINU-4FO/2#10/12#16



MINU-6FO/20#20

X



MINX-4FO/4#10/28#20

Notes:

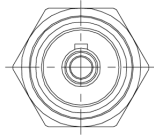
- Fiber Optic connectors available in the long shell size only.
- Please see the Dry-Mate Hybrid section of the catalog or contact TE for further information.



OPTI-CON Contact Configurations

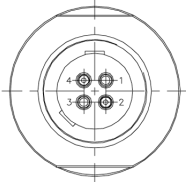
BCR/FCR/CCR Face View Only* - Not to Scale

1



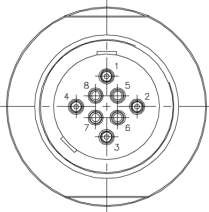
OPT-F-1

4



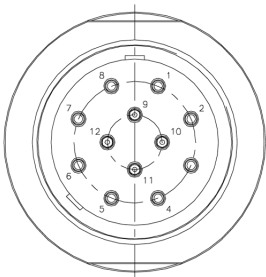
OPT-G-4

8



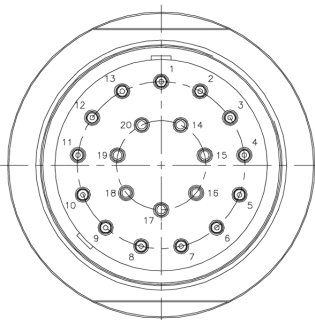
OPT-M-8

12



OPT-Q-12

20



OPT-T-20

Notes:

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



Customer Checklist

SPECIFY THE FIBER

- Single-Mode or Multi-Mode. Quantity of each type.
- Fiber size, 9/125 or 50/125 or 62.5/125
- Wavelength:
 - 850 and 1300 nanometers, multi-mode fibers
 - 1310 and 1550 nanometers, single-mode fibers
- Acceptable optical insertion loss in decibels, TE standard is -1.0dB per mated channel.
- Return loss requirement for single mode? TE standard >-35dB.

CONNECTORS & CABLES IN GENERAL

- Cable Customer furnished or TE furnished?
 - CF cable must be accompanied with a cross sectional drawing detailing all diameters and materials, including the optical fiber components.
- Is the connector to be overmolded or field installable?
- What pressure will be used as a design maximum amount? (How deep will it go?)
- Is open face pressure rating required for receptacle side? To what pressure?
- Required temperature ratings, for use and extremes of storage.
- What materials to be used? Stainless Steel typical for most shells.
- Any electrical requirements? Number and size of contacts, voltage and amperage?
- A general idea of environment for the connector to be used in, such as, ocean, mud, ice, downhole, hydrothermal, aircraft.

ARMORED CABLES

- Does the cable include an armor component? (Steel or Kevlar?)
- Does the armor need to be terminated in the connector or away from connector?
 - To what axial load? If a remote strength termination, TE or customer to provide?
- What is the tensile strength of the cable (breaking and working)?
- Is a bend limiter desired at the cable entry to back end of CCP? For what application?

PRESSURE BALANCED OIL FILLED (PBOF)

- Bulkhead mounted on PBOF system?
- Type of oil/fluid used to pressure balance cable and system.
- Customer or TE specified PBOF tubing? Size and type.

GENERAL

- Quantity of each type of connector required.
- Program or project name.
- Special tests required, e.g. hydrostatic pressure test.

* This checklist is for general purpose and may not address all requirements. Please contact TE for additional assistance.

LET'S CONNECT

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