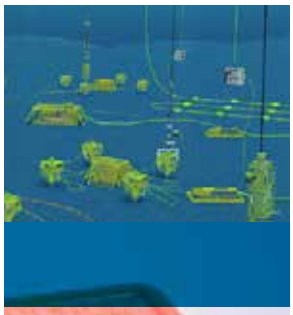


HydraElectric Wet-Mate Connector

HydraElectric Electrical Wet-Mate Connectors Provide Rugged, Reliable, Cost-Effective Subsea Connectivity Solutions for Oil and Gas Applications

SEACON
HydraElectric Wet-Mate Connector

Fully Electrical Subsea Modular Interconnect Solution, Qualified to 4,000m

ADVANCED TECHNOLOGY

- Modular construction with 4, 7 or 12 electrical contacts
- ROV, manual and stab plate configurations with industry standard panel interfaces
- Socket and pin flying leads
- Termination and boot seals up to size AWG#12 wire

MEETS INDUSTRY STANDARDS

- Designed in accordance with ISO 13628-6 and API 17F - SEAFOM TSD-02, Statoil and Total requirements
- SEACON MKII Pressure Balanced Oil Filled (PBOF) hose interface as standard
- Elastomers compatible with industry standard requirements

DEEPWATER CAPABILITY

- Qualified for use at 4,000m water depth
- Dual barriers oil-filled, pressure compensated design
- Corrosion resistant without cathodic protection

TE Connectivity (TE)'s HydraElectric wet-mate connector has been designed, developed, tested and qualified in accordance with the latest industry standards and customer specifications. The design features a modular construction that enables many configurations to be assembled from a minimum number of components. Industry standard panel, bulkhead and stab plate interfaces have been met enabling the opportunity for the HydraElectric wet-mate connector to replace incumbent product with no impact to customer hardware.

OPERATION

- Modular and compliant ROV D-handle as standard
- Unique locking mechanism with visible mating verification
- **Max. ROV Mate Force:** 750N
- **Max. ROV De-Mate Force:** 750N
- **Max. Handling Load:** 2,500N
- **Max. ROV Load Without Damage:** Axial 5,000N, Transverse 2,500N
- **Max. Rotational Misalignment:** ± 15°
- **Max. Angular Misalignment:** ± 20°
- **Max. Radial Misalignment:** ± 20mm

MATERIALS

- **Shell:** Super Duplex Stainless Steel
- **Inserts/Pin/Socket Insulation:** PEEK
- **Contacts:** Gold plated copper
- **Bladders:** Silicone Rubber
- **O-rings:** Nitrile Butadiene Rubber (NBR)

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.

DESIGN RATINGS

- **Design Life:** Up to 30 years
- **Min. Number of Mate/Demate Cycles:** 1,000 (250 in turbid seawater)
- **Depth Rating:** Qualified for use at 4,000 m (412 bar)
- **Rated Voltage Conductor-to-Conductor (U):**
  - 1,000 VAC RMS
  - 1,500 VDC
- **Rated Voltage Between Conductor and Earth (Uo):**
  - 600 VAC RMS
  - 1,500 VDC
- **Max. Voltage Between Contacts with Two Adjacent Pairs 180° Out of Phase (Um):**
  - 1,200 VAC RMS
- **Partial discharge free @ 2.5kV (<10pC) & 4.5kV (<50pC)**
- **Long term (3 months) DC testing @ 4.1kVDC**
- **Operating Current:**

Maximum Operating Current

No. of Contacts	Dry, 40°C	Wet, 40°C
4 Contacts	30A	40A
7 Contacts	20A	30A
12 Contacts	15A	25A

Maximum temperature rise is 30°C

- **Insulation Resistance:** >20 GΩ
- **Contact Resistance:** <5 mΩ
- **Operating Temperature:**
  - Dry: -18°C to 40°C
  - Wet: -5°C to 40°C
- **Storage Temperature:** -40°C to +50°C
- Maintenance-free over design life (within number of mate/demate cycles)

CONFIGURATIONS

- ROV
- Manual
- Stab Plate
- Flying Lead
- Panel
- Bulkhead
- Dummy
- Parking
- Dust Cap

- **Contact count colour codes:**
  - RED indicates 4 contacts
  - GREEN indicates 7 contacts
  - WHITE indicates 12 contacts

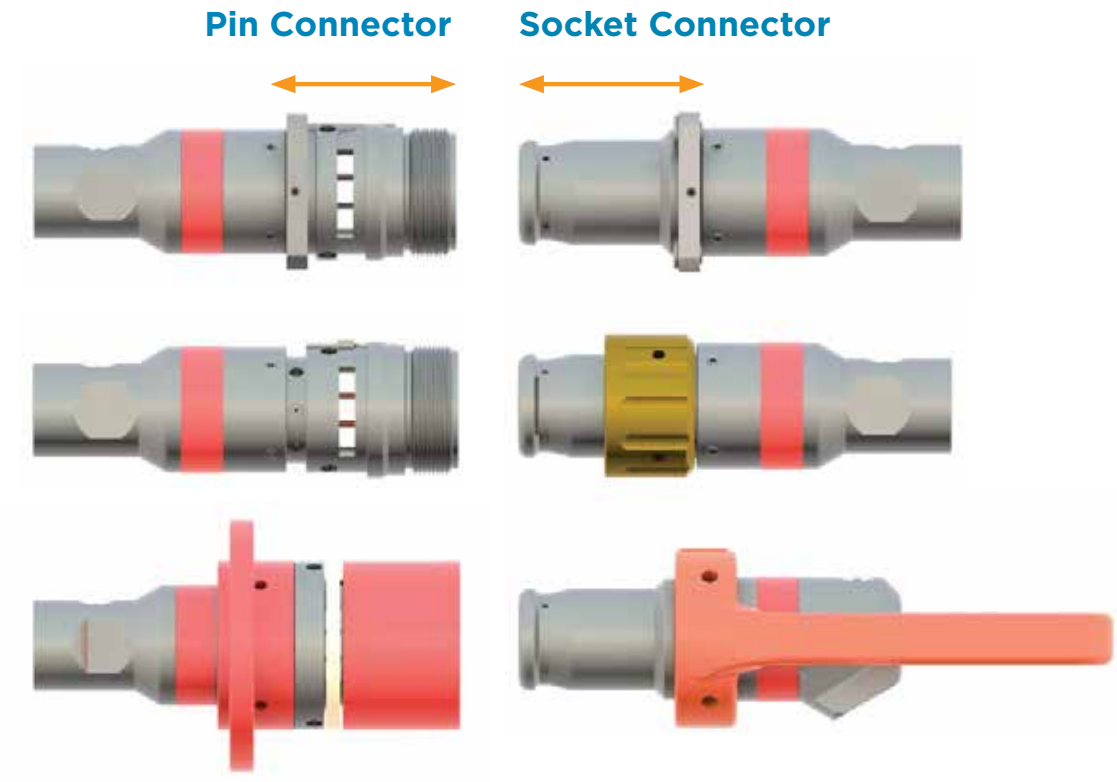
Fathom the Possibilities

With TE, you have unlimited opportunity with one of the widest ranges of underwater electrical and fiber optic connectors available anywhere in the world. This range of connectors covers not only optical, signal, and power, but hybrid connectors mixing these capabilities in a single unit. Our broad range of cable, connectors, penetrators, sensors, and switches gives you the flexibility to configure the ideal connector system for your most extreme applications.

The release of our HydraElectric electrical wet-mate connector follows our field proven HydraLight connector in joining our subsea distribution portfolio Modular in design with few parts and qualified to 4,000m, it is manufactured from Super Duplex stainless steel for excellent corrosion resistance and strength, and boasts up to a 30 year design life.

MODULAR DESIGN - ROV, MANUAL, AND STAB

- Inserts interchangeable and intermateable for ROV, Manual, and Stab
- All backshells interchangeable
- Genders reversable
- Shells same for 4, 7 and 12 contacts
- Color coding for 4, 7 and 12 contacts



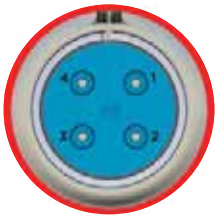
Contact Configurations

The connector bodies and shells are same size for all 3 contact configurations (4, 7 and 12). This enables flexible production and assembly processes and many configurations from few parts.

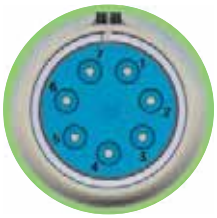
Even though the external geometry is the same, the 3 different contact configurations must not be mated with each other. Damage will occur if a connector is mated with a different configuration. To further differentiate the configurations all connectors are equipped with color coding identifying the relevant configuration.

NOTE:
It is recommended to isolate the connectors from the cathodic protection systems to reduce calcium carbonate build up to a minimum. Connectors must not be mated or de-mated when power is turned on.

4-Contact Socket



7-Contact Socket



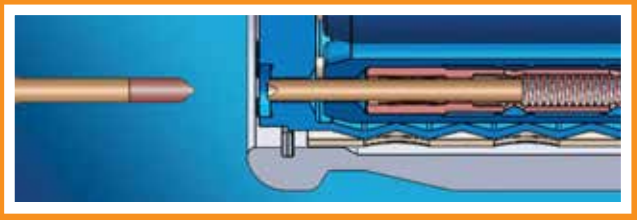
12-Contact Socket

4-Contact Pin

7-Contact Pin

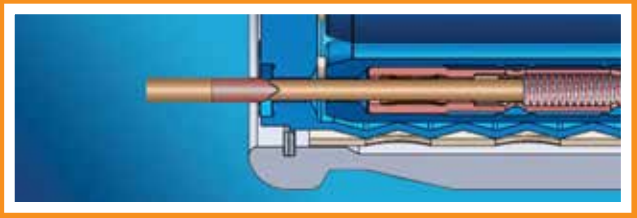
12-Contact Pin

PRINCIPLE OF OPERATION - PIN AND SOCKET CONTACT



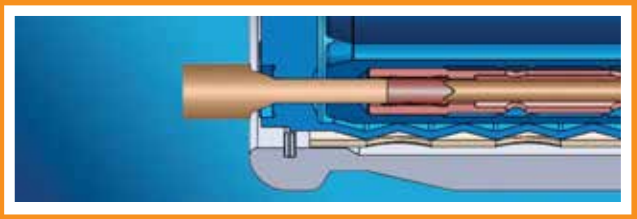
1) Pin and socket contact prior to mating

The outer and inner bladders are filled with dielectric fluid and are pressure balanced with no differential pressure and provides dual independent seals. When un-mated, the shuttle pin prevents water from entering into either of the volumes.



2) Pin engages shuttle pin at socket contact

The shuttle pin is pushed in front of the pin contact through the mating process maintaining the dual barrier system.



3) Fully mated

When pin contacts have passed through both barriers, the insulation materials outer diameter on the pin contact maintains the dual barriers toward seawater and full electrical contact is established.

Ethernet Capabilities

The 12 contact version of the HydraElectric has Ethernet capabilities which allows for data transfer speeds at 100 Mbit/s.

It is qualified according to SEAFOM TSD-02 which includes the following standards for CAT 5 (100 Mbit/s); IEEE 802.3-2012, ANSI/TIA/EIA-568-A, ISO/IEC 11801:1995(Class D), and SIIS Level 3.

Tests performed are:
- Insertion Loss
- Return Loss
- NEXT Loss
- FEXT Loss

NOTE:
Test data made with network analyzer, presenting the relationship between the reflected and induced power waves at each of the network ports.

Key Standards and Specifications

Entity Source	Number	Description
ISO	ISO 13628-6	Petroleum and natural gas industry – Design and operation of subsea production systems
API 17F	SEAFOM TSD-02	Functional design and test specification for subsea electrical an optical connectors and jumpers
Statoil	TR2390 Ver2	Electrical/optical connectors and jumpers for subsea control system
Total	GS EP SPS 021 Rev. 07	Subsea mateable electrical/optical connectors

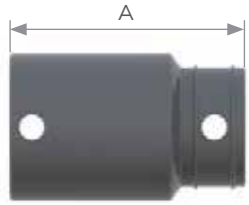
HydraElectric Connector Accessories

A variety of accessories can be provided to work in conjunction with the HydraElectric connector range. These are available for all modes of operation, ROV, Manual and Stab + pin and socket gender.:

- Flying dummy connectors for subsea use, with/without looping of contacts
- Panel mounted parking connectors for subsea use, with/without looping of contacts
- Dust caps for topside use only, universal with regards to mode of operation, number of contacts and electrical gender. The same dust cap can be used for both pin and socket connector, for ROV, Manual and Stab Plate
- Test connectors for topside use, with Raychem SPEC 44 AWG 16 wiring or Ethernet compatible wiring as standard. The test connectors are universal and can be used for any mode of operation; ROV, Manual and Stab Plate
- Pin gender dummy connectors and parking places are offered as universal with regards to the number of contacts in black colour

The use of dummy connectors or parking places is recommended when connectors are exposed to seawater. Maximum exposure time in subsea environment without sunlight exposure and with temperatures below 10°C is 30 days. In environments with high marine growth, a cleaning of connectors may be required before mating.

Dust Caps



Number of Contacts	A mm(In)	B Ø mm(In)	Part Number
Universal	**95** (3.74)	**59.4** (2.34)	HE-XXX-X-DC-XX-X-X-XX-X

HydraElectric Connectors

Ordering Information

HE - xxx - x - xx - xx - x - x - xx - x

Family Designator

- **HE** HydraElectric

Mode of Operation [1]

- **ROV** Remotely Operated Vehicle
- **MAN** Manual
- **STA** Stab Plate

Electrical Gender

- **S** Sockets
- **P** Pins

Connector Type [1]

- **FL** Flying Lead
- **PN** Panel
- **BH** Bulkhead
- **DY** Dummy
- **PK** Parking
- **DC** Dust Cap

Number of Contacts [1]

- **04**
- **07**
- **12**

Hose Termination [1]

- **0** MKII 0° (Straight) [2]
- **1** MKII 60° [2]

Cable Termination Exit Angle [1]

- **0** 0° (Straight)
- **1** 90°

Stab Plate Mounting Options [1]

- **FX** Fixed
- **FL** Floating
- **SX** Fixed Split Flange
- **SL** Floating Split Flange

Looping Options [1,3]

- **0** Custom Looping
- **1** 1-3, 2-4, 5-7, 6-8, 9-11, 10-12
- **2** 1-2, 3-4, 5-6, 7-8, 9-10, 11-12

Notes:

[1] Dependent on configuration, this field can be populated with;

- **X/XX/XXX** Not applicable

[2] MKII termination will be compatible with PBOF hoses of the following sizes: 20, 13 and 8 mm.

[3] Options available for **DY** and **PK** only.

HydraElectric Test Connectors

Ordering Information

HE - TST - x - xx - x - x

Family Designator
- **HE** HydraElectric

Mode of Operation
- **TST** Test Connector

Electrical Gender
- **S** Sockets
- **P** Pins

Number of Contacts
- **04**
- **07**
- **12**

Pigtail Length
- **0** 3m
- **1** 5m
- **2** 10m

Wiring Option
- **0** Standard (AWG 16)
- **1** Ethernet

Notes:

Test Connectors with pigtails ≥ 5m are delivered with protection sleeve.

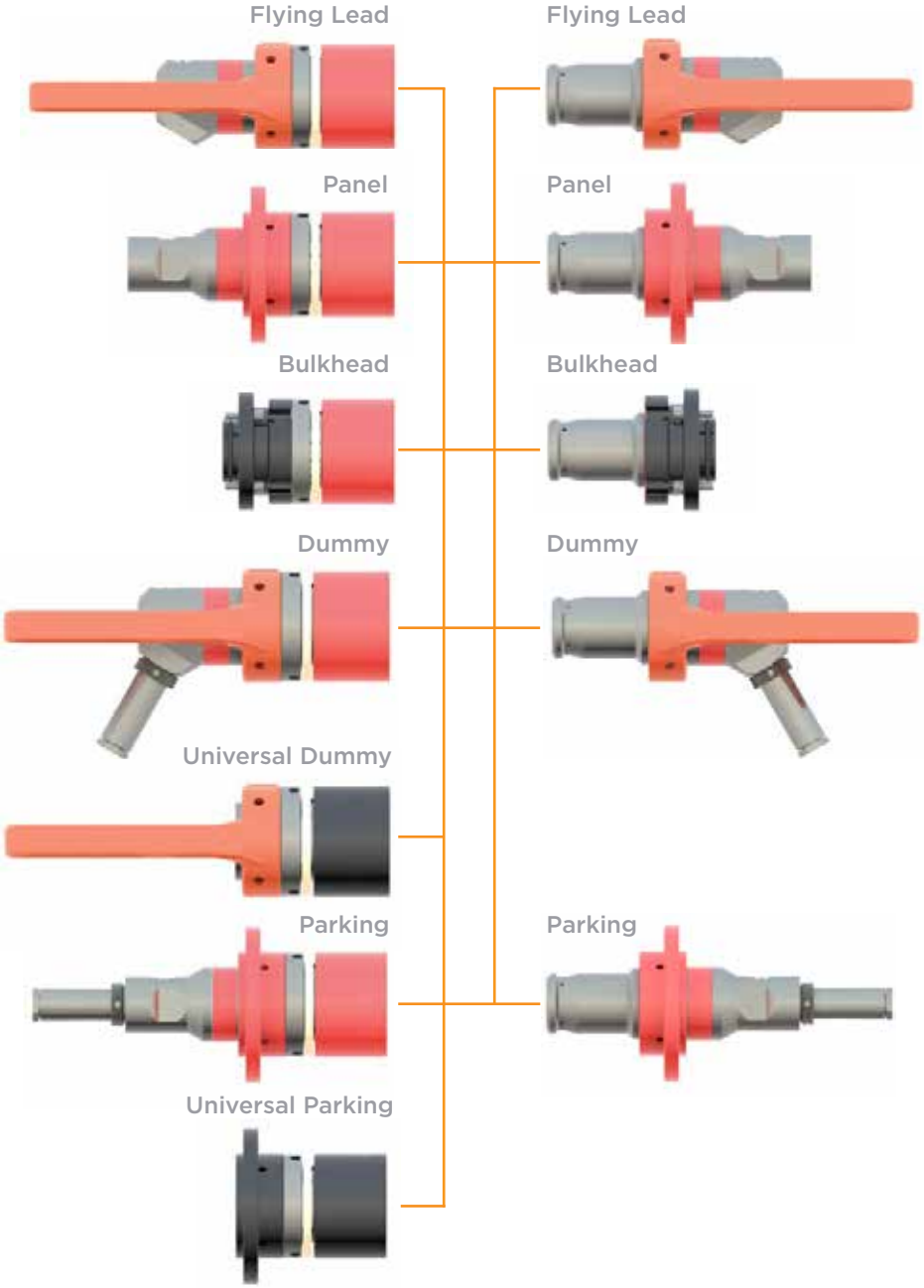
HydraElectric ROV Connector Series

The HydraElectric ROV series is designed to be operated by ROV's in some of the most harsh environments. They are designed and tested to help meet the rough handling and forces potentially seen during ROV operation, both mated, de-mated and during the mating sequence. The alignment mechanism of the connector bodies helps ensure proper alignment before pin contacts engage the socket contacts and electrical contact is established.

ROV Configurations

4, 7 and 12 contacts.

- 4 contacts
- 7 contacts
- 12 contacts

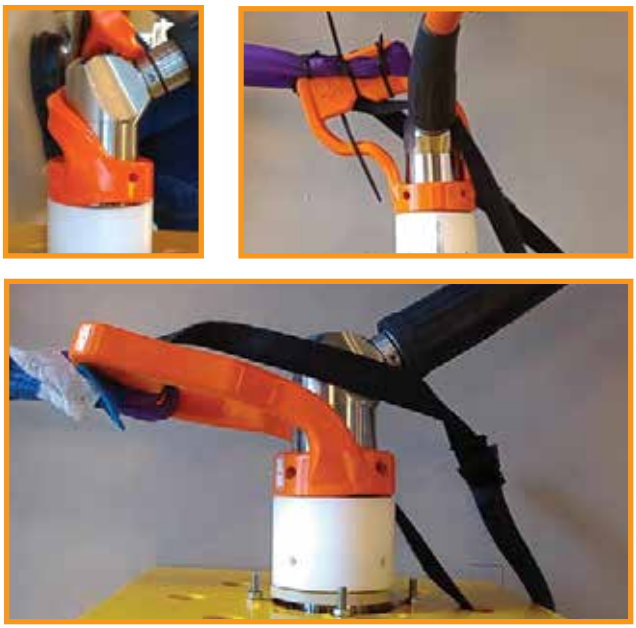


Handling the Rigors of the Harshest of Environments

TE has a wide experience in advanced material technology. Combining it's years of experience and a track record in subsea environments TE are able to provide products utilizing plastic materials in flanges and handles, which allows a beneficial ratio between weight, flexibility and mechanical strength.

Both the ROV handle and panel flange is made of plastic materials carefully selected to help meet the requirements of many of the harshest environments. At the same time the materials have to be flexible enough to avoid damage during operation. The materials are tested and stressed to their maximum to ensure that they perform according to requirements.

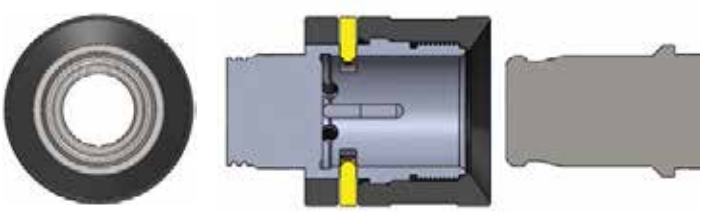
The latching mechanism provides proper locking of connector halves in a mated position. The latch member is allowed to expand freely without external limitations. It is made of a plastic material which minimizes corrosion and calcium carbonate build up caused by cathodic protection of subsea structures. The latch mechanism provides visual positive latch identification and contains a minimal number of parts. The latch member can easily be replaced both topside and subsea without disengaging the connector.



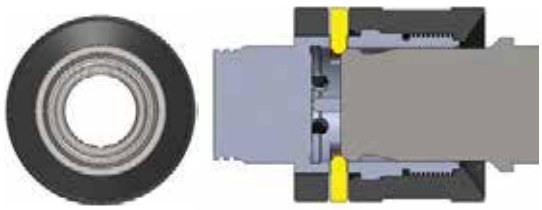
HydraElectric handle undergoing testing

LATCHING MECHANISM

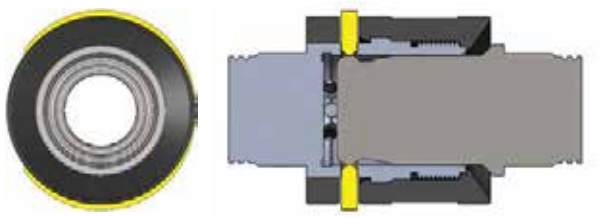
1) Prior to Latching



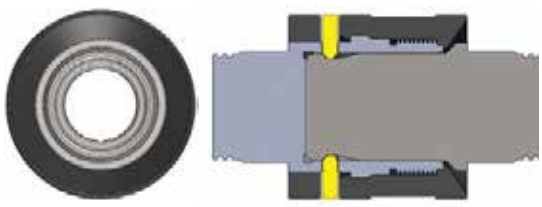
2) Start of Latching



3) Maximum Engagement

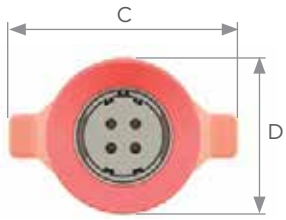


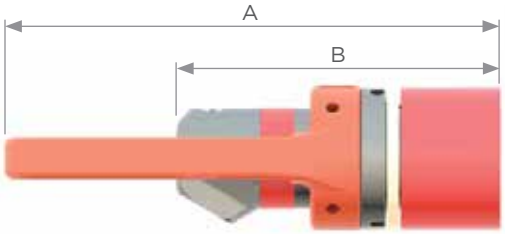
4) Fully Mated



ROV - Pins

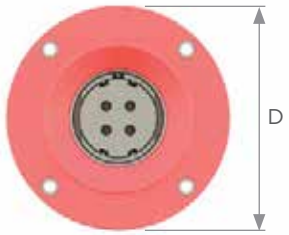
Flying Lead

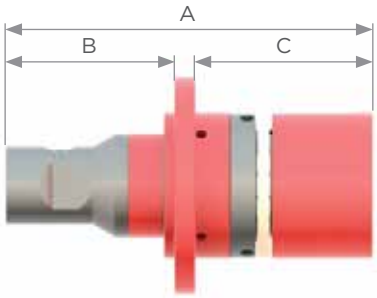




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Part Number
4	**292.4** (11.51)	**191.5** (7.54)	**125.0** (4.92)	**85.5** (3.37)	HE-ROV-P-FL-04-1-X-XX-X
7					HE-ROV-P-FL-07-1-X-XX-X
12					HE-ROV-P-FL-12-1-X-XX-X

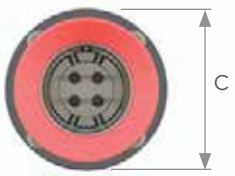
Panel

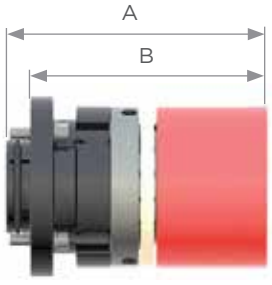




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D Ø mm(In)	Interface Dwg Reference No.	Part Number
4	**211.6** (8.33)	**97.1** (3.82)	**102.5** (4.03)	**125.0** (4.92)	21400	HE-ROV-P-PN-04-0-X-XX-X
7						HE-ROV-P-PN-07-0-X-XX-X
12						HE-ROV-P-PN-12-0-X-XX-X

Bulkhead

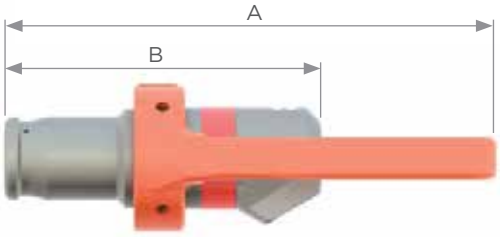


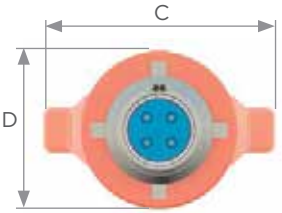


Number of Contacts	A mm(In)	B mm(In)	C Ø mm(In)	Interface Dwg Reference No.	Part Number
4	**137.2** (5.40)	**124.5** (4.90)	**94.0** (3.70)	21440	HE-ROV-P-BH-04-X-X-XX-X
7					HE-ROV-P-BH-07-X-X-XX-X
12					HE-ROV-P-BH-12-X-X-XX-X

ROV - Sockets

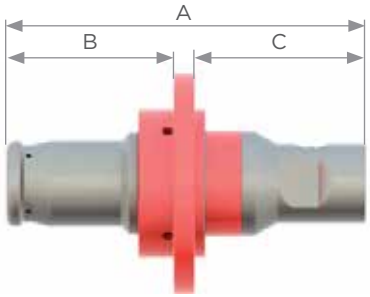
Flying Lead

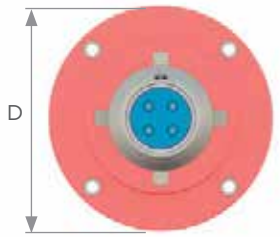




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Part Number
4	**284.8** (11.21)	**183.9** (7.24)	**125.0** (4.92)	**85.5** (3.37)	HE-ROV-S-FL-04-1-X-XX-X
7					HE-ROV-S-FL-07-1-X-XX-X
12					HE-ROV-S-FL-12-1-X-XX-X

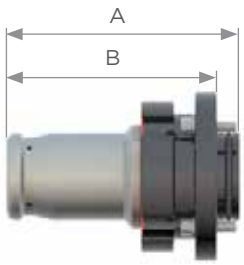
Panel

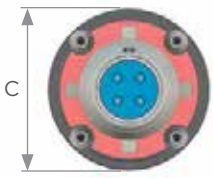




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D Ø mm(In)	Interface Dwg Reference No.	Part Number
4	**204.0** (8.03)	**94.9** (3.73)	**97.1** (3.82)	**125.0** (4.92)	21400	HE-ROV-S-PN-04-0-X-XX-X
7						HE-ROV-S-PN-07-0-X-XX-X
12						HE-ROV-S-PN-12-0-X-XX-X

Bulkhead

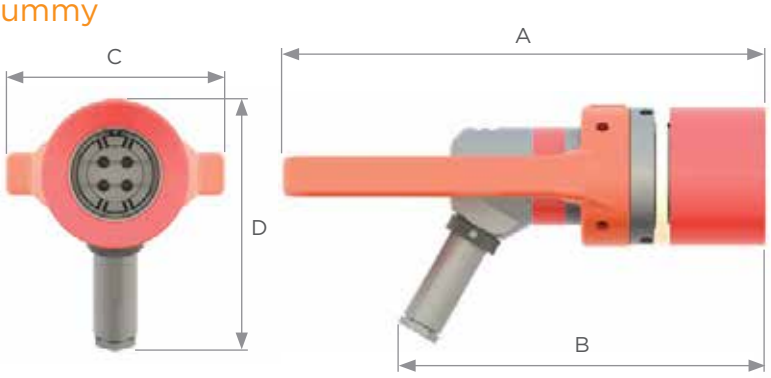




Number of Contacts	A mm(In)	B mm(In)	C Ø mm(In)	Interface Dwg Reference No.	Part Number
4	**137.2** (5.40)	**124.5** (4.90)	**94.0** (3.70)	21440	HE-ROV-S-BH-04-X-X-XX-X
7					HE-ROV-S-BH-07-X-X-XX-X
12					HE-ROV-S-BH-12-X-X-XX-X

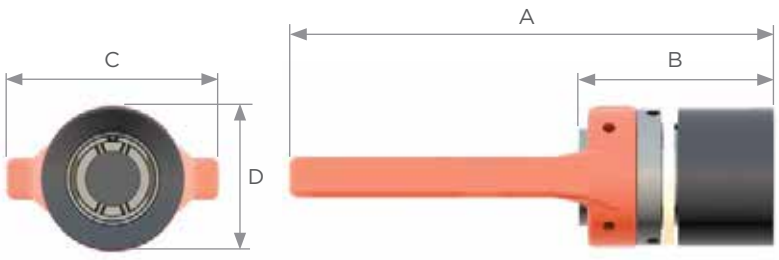
ROV - Pins

Dummy



Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Looping Options	Part Number
4	**292.4** (11.51)	**222.0** (8.74)	**125.0** (4.92)	**144.0** (5.67)	Custom	HE-ROV-P-DY-04-X-X-XX-0
					1-3, 2-4	HE-ROV-P-DY-04-X-X-XX-1
					1-2, 3-4	HE-ROV-P-DY-04-X-X-XX-2
7					Custom	HE-ROV-P-DY-07-X-X-XX-0
					1-3, 2-4, 5-7	HE-ROV-P-DY-07-X-X-XX-1
					1-2, 3-4, 5-6	HE-ROV-P-DY-07-X-X-XX-2
12					Custom	HE-ROV-P-DY-12-X-X-XX-0
					1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-ROV-P-DY-12-X-X-XX-1
					1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-ROV-P-DY-12-X-X-XX-2

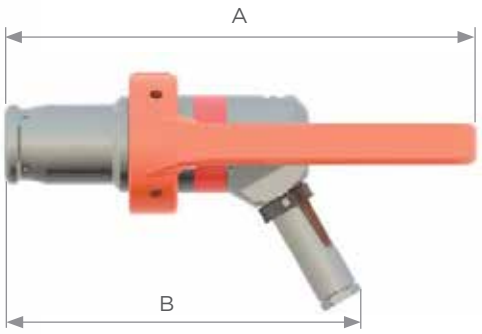
Universal Dummy

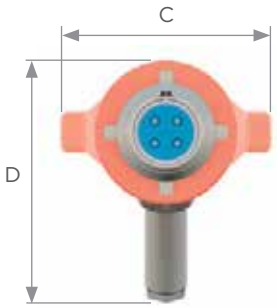


Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Part Number
Universal	**292.4** (11.51)	**118.0** (4.65)	**125.0** (4.92)	**85.5** (3.37)	HE-ROV-P-DY-XX-X-X-XX-X

ROV - Sockets

Dummy

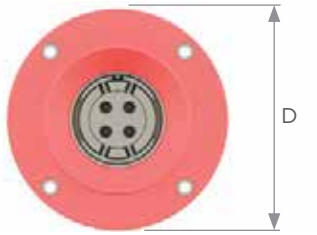


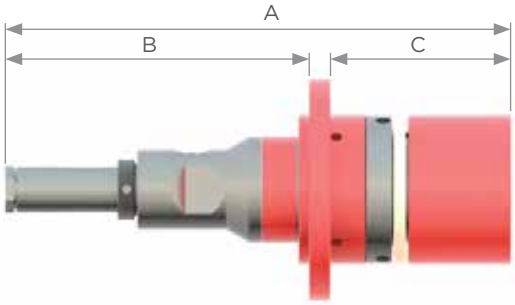


Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Looping Options	Part Number
4	**284.8** (11.21)	**203.6** (8.02)	**125.0** (4.92)	**144.0** (5.67)	None	HE-ROV-S-DY-04-X-X-XX-X
					Custom	HE-ROV-S-DY-04-X-X-XX-0
					1-3, 2-4	HE-ROV-S-DY-04-X-X-XX-1
					1-2, 3-4	HE-ROV-S-DY-04-X-X-XX-2
7					None	HE-ROV-S-DY-07-X-X-XX-X
					Custom	HE-ROV-S-DY-07-X-X-XX-0
					1-3, 2-4, 5-7	HE-ROV-S-DY-07-X-X-XX-1
					1-2, 3-4, 5-6	HE-ROV-S-DY-07-X-X-XX-2
12					None	HE-ROV-S-DY-12-X-X-XX-X
					Custom	HE-ROV-S-DY-12-X-X-XX-0
					1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-ROV-S-DY-12-X-X-XX-1
					1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-ROV-S-DY-12-X-X-XX-2

ROV - Pins

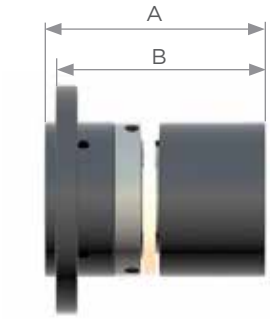
Parking





Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D Ø mm(In)	Interface Dwg Reference No.	Looping Options	Part Number
4	**285.6** (11.24)	**171.6** (6.76)	**102.0** (4.02)	**125.0** (4.92)	21400	Custom	HE-ROV-P-PK-04-X-X-XX-0
						1-3, 2-4	HE-ROV-P-PK-07-X-X-XX-1
						1-2, 3-4	HE-ROV-P-PK-12-X-X-XX-2
7						Custom	HE-ROV-P-PK-04-X-X-XX-0
						1-3, 2-4, 5-7	HE-ROV-P-PK-07-X-X-XX-1
						1-2, 3-4, 5-6	HE-ROV-P-PK-12-X-X-XX-2
12						Custom	HE-ROV-P-PK-04-X-X-XX-0
						1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-ROV-P-PK-07-X-X-XX-1
						1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-ROV-P-PK-12-X-X-XX-2

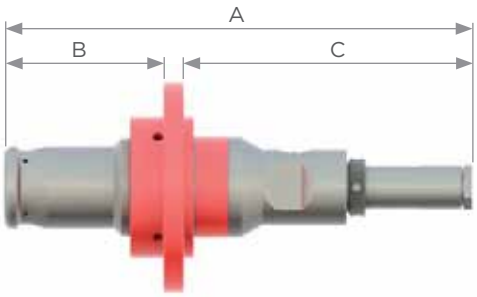
Universal Parking

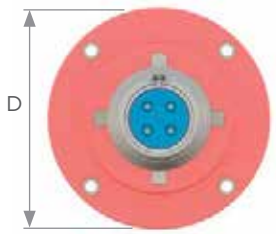


Number of Contacts	A mm(In)	B mm(In)	C Ø mm(In)	Interface Dwg Reference No.	Part Number
Universal	**120.5** (4.74)	**114.5** (4.51)	**125.0** (4.92)	21400	HE-ROV-P-PK-XX-X-X-XX-X

ROV - Sockets

Parking





Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D Ø mm(In)	Interface Dwg Reference No.	Looping Options	Part Number
4	**278.5** (10.96)	**94.9** (3.74)	**171.6** (6.76)	**125.0** (4.92)	21400	None	HE-ROV-S-PK-04-X-X-XX-X
						Custom	HE-ROV-S-PK-04-X-X-XX-0
						1-3, 2-4	HE-ROV-S-PK-04-X-X-XX-1
						1-2, 3-4	HE-ROV-S-PK-04-X-X-XX-2
7						None	HE-ROV-S-PK-07-X-X-XX-X
						Custom	HE-ROV-S-PK-07-X-X-XX-0
						1-3, 2-4, 5-7	HE-ROV-S-PK-07-X-X-XX-1
						1-2, 3-4, 5-6	HE-ROV-S-PK-07-X-X-XX-2
12						None	HE-ROV-S-PK-12-X-X-XX-X
						Custom	HE-ROV-S-PK-12-X-X-XX-0
						1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-ROV-S-PK-12-X-X-XX-1
						1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-ROV-S-PK-12-X-X-XX-2

HydraElectric Manual Mate Connector Series

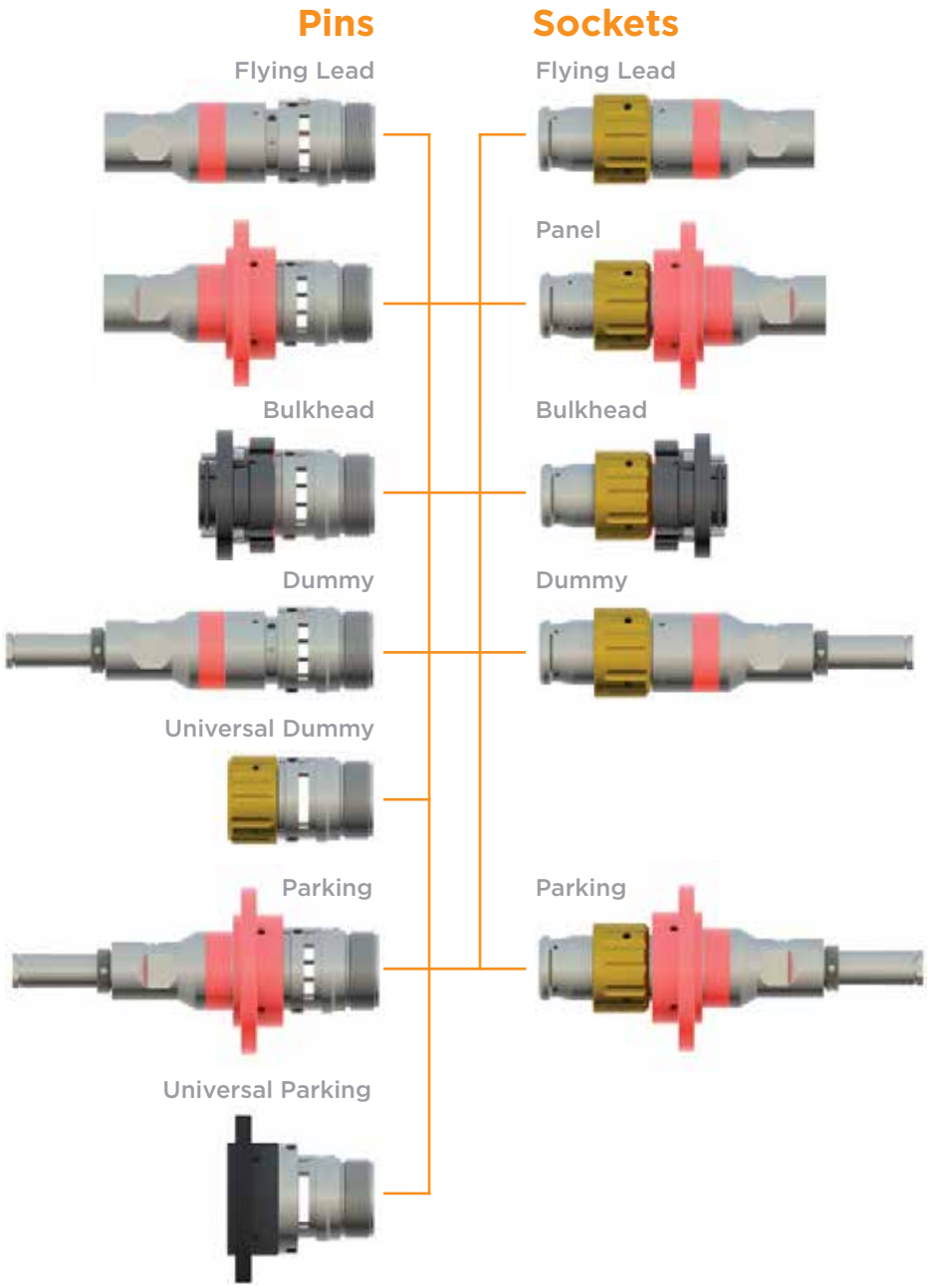
The manual mate connectors are designed to be operated manually. They are typically mated/de-mated topside, on surface or in shallow waters, but they are of course designed and tested to be used at full design depth of 4,000m. A threaded engaging nut provides proper mating of connectors with a minimum amount of force required for operation.

Panel flanges can be front and rear mounted. The same flange is used for both options, but a slotted interface might be required depending on application.

4, 7 and 12 contacts.

- 4 contacts
- 7 contacts
- 12 contacts

Manual Mate Configurations



Bulkhead Flange

The bulkhead connectors are used in applications where there is a need for a sealing surface towards a separate oil filled and pressure compensated/balanced volume. These are available for ROV and Manual mode of operation.

Sealing is provided through dual o-ring barriers, with one radial and one axial o-ring. Bootseals provide the internal barrier towards the solder pots. It is suitable for several applications such as:

- Retrievable canisters and modules
- Junction boxes
- Control modules
- Power distribution modules

The plastic material in the flange provides electrical isolation between the connector and the CP (Cathodic Protection) system.

NOTE:
Bulkhead connectors are designed for pressure balanced enclosures only, and are not intended for 1 atmospheric chambers. Special orders are available upon request. Please contact TE for details.

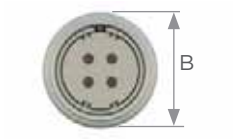
Panel Flange

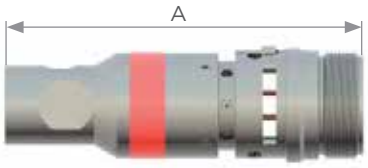
The same panel flange is used on ROV and Manual connectors. Made from plastic materials carefully selected to help meet the requirements of many of the harshest environments.

At the same time the materials have to be flexible enough to avoid damage during operation. The materials are tested and stressed to their maximum to help ensure that they perform according to specifications. This flange can be used for both front and rear mount. The flange and Part number is the same for both mounting options. The plastic material in the flange provides electrical isolation between the connector and the CP (Cathodic Protection) system.

Manual - Pins

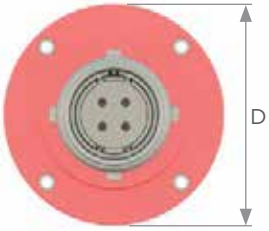
Flying Lead

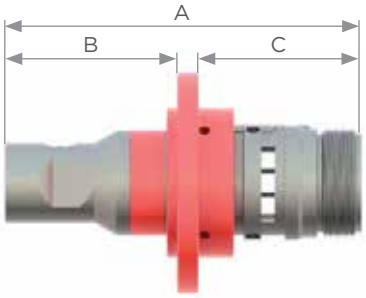




Number of Contacts	A mm(In)	B Ø mm(In)	Part Number
4	**200.9** (7.91)	**65.0** (2.56)	HE-MAN-P-FL-04-0-X-XX-X
7			HE-MAN-P-FL-07-0-X-XX-X
12			HE-MAN-P-FL-12-0-X-XX-X

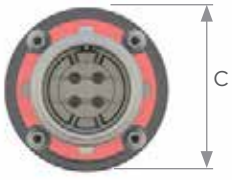
Panel

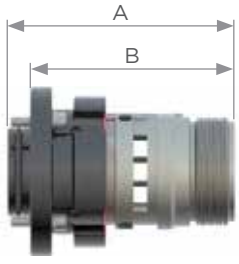




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D Ø mm(In)	Interface Dw Reference No.	Part Number
4	**200.9** (7.91)	**97.1** (3.82)	**91.8** (3.61)	**125.0** (4.92)	21400	HE-MAN-P-PN-04-0-X-XX-X
7						HE-MAN-P-PN-07-0-X-XX-X
12						HE-MAN- P-PN-12-0-X-XX-X

Bulkhead

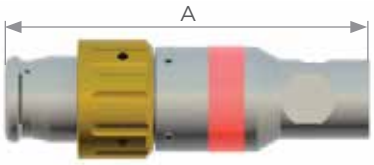


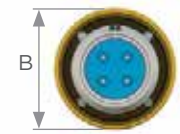


Number of Contacts	A mm(In)	B mm(In)	C Ø mm(In)	Interface Dwg Reference No.	Part Number
4	**126.5** (4.98)	**113.8** (4.48)	**94.0** (3.70)	21440	HE-MAN-P-BH-04-X-X-XX-X
7					HE-MAN-P-BH-07-X-X-XX-X
12					HE-MAN-P-BH-12-X-X-XX-X

Manual - Sockets

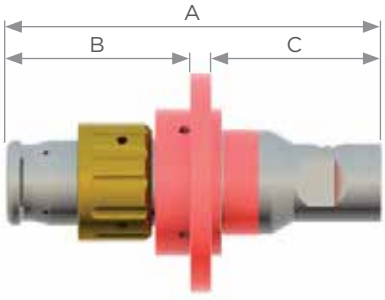
Flying Lead

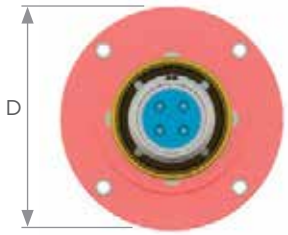




Number of Contacts	A mm(In)	B Ø mm(In)	Part Number
4	**204.0** (8.03)	**68.0** (2.68)	HE-MAN-S-FL-04-0-X-XX-X
7			HE-MAN-S-FL-07-0-X-XX-X
12			HE-MAN-S-FL-12-0-X-XX-X

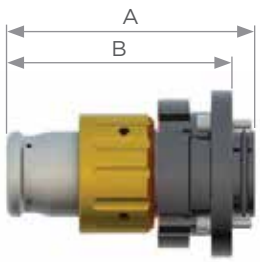
Panel

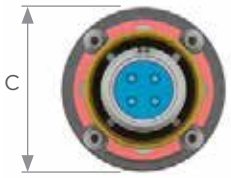




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D Ø mm(In)	Interface Dwg Reference No.	Part Number
4	**214.0** (8.42)	**104.9** (4.13)	**97.1** (3.82)	**125.0** (4.92)	21400	HE-MAN-S-PN-04-0-X-XX-X
7						HE-MAN-S-PN-07-0-X-XX-X
12						HE-MAN-S-PN-12-0-X-XX-X

Bulkhead

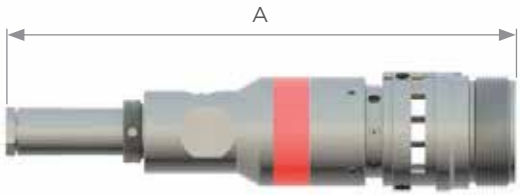




Number of Contacts	A mm(In)	B mm(In)	C Ø mm(In)	Interface Dwg Reference No.	Part Number
4	**139.6** (5.49)	**126.9** (4.99)	**94.0** (3.70)	21440	HE-MAN-S-BH-04-X-X-XX-X
7					HE-MAN-S-BH-07-X-X-XX-X
12					HE-MAN-S-BH-12-X-X-XX-X

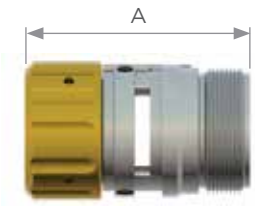
Manual - Pins

Dummy



Number of Contacts	A mm(In)	B Ø mm(In)	Looping Options	Part Number
4	**275.3** (10.84)	**65.0** (2.56)	Custom	HE-MAN-P-DY-04-X-X-XX-0
			1-3, 2-4	HE-MAN-P-DY-04-X-X-XX-1
			1-2, 3-4	HE-MAN-P-DY-04-X-X-XX-2
7			Custom	HE-MAN-P-DY-07-X-X-XX-0
			1-3, 2-4, 5-7	HE-MAN-P-DY-07-X-X-XX-1
			1-2, 3-4, 5-6	HE-MAN-P-DY-07-X-X-XX-2
12			Custom	HE-MAN-P-DY-12-X-X-XX-0
			1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-MAN-P-DY-12-X-X-XX-1
			1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-MAN-P-DY-12-X-X-XX-2

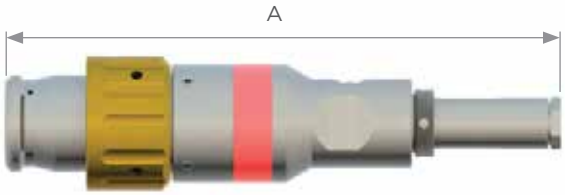
Universal Dummy

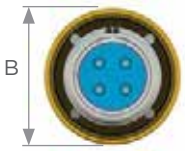


Number of Contacts	A mm(In)	B Ø mm(In)	Part Number
Universal	**110.0** (4.33)	**68.0** (2.68)	HE-MAN-P-DY-XX-X-X-XX-X

Manual - Sockets

Dummy

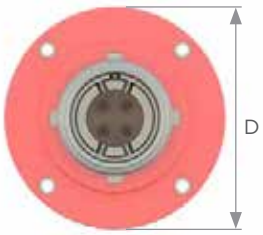


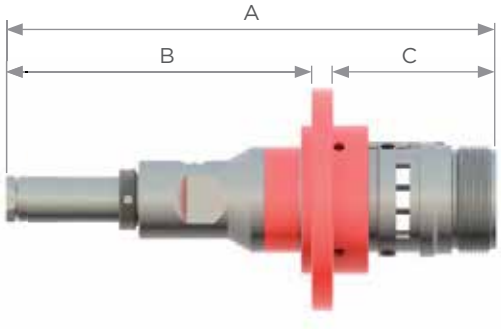


Number of Contacts	A mm(In)	B Ø mm(In)	Looping Options	Part Number
4	**278.5** (10.96)	**68.0** (2.68)	None	HE-MAN-S-DY-04-X-X-XX-X
			Custom	HE-MAN-S-DY-04-X-X-XX-0
			1-3, 2-4	HE-MAN-S-DY-04-X-X-XX-1
			1-2, 3-4	HE-MAN-S-DY-04-X-X-XX-2
7			None	HE-MAN-S-DY-07-X-X-XX-X
			Custom	HE-MAN-S-DY-07-X-X-XX-0
			1-3, 2-4, 5-7	HE-MAN-S-DY-07-X-X-XX-1
			1-2, 3-4, 5-6	HE-MAN-S-DY-07-X-X-XX-2
12			None	HE-MAN-S-DY-12-X-X-XX-X
			Custom	HE-MAN-S-DY-12-X-X-XX-0
			1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-MAN-S-DY-12-X-X-XX-1
			1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-MAN-S-DY-12-X-X-XX-2

Manual - Pins

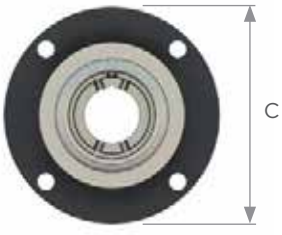
Parking

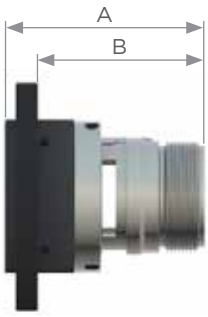




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D Ø mm(In)	Interface Dwg Reference No.	Looping Options	Part Number
4	**275.3** (10.84)	**171.6** (6.76)	**91.8** (3.61)	**125.0** (4.92)	21400	Custom	HE-MAN-P-PK-04-X-X-XX-0
						1-3, 2-4	HE-MAN-P-PK-04-X-X-XX-1
						1-2, 3-4	HE-MAN-P-PK-04-X-X-XX-2
7						Custom	HE-MAN-P-PK-07-X-X-XX-0
						1-3, 2-4, 5-7	HE-MAN-P-PK-07-X-X-XX-1
						1-2, 3-4, 5-6	HE-MAN-P-PK-07-X-X-XX-2
12						Custom	HE-MAN-P-PK-12-X-X-XX-0
						1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-MAN-P-PK-12-X-X-XX-1
						1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-MAN-P-PK-12-X-X-XX-2

Universal Parking

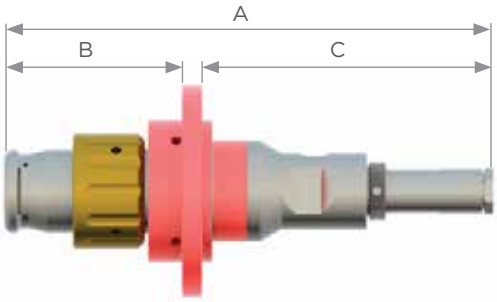


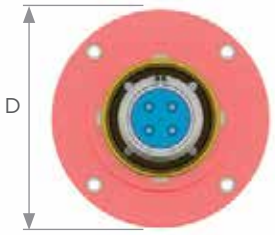


Number of Contacts	A mm(In)	B mm(In)	C Ø mm(In)	Interface Dwg Reference No.	Part Number
Universal	**275.3** (10.84)	**91.8** (3.61)	**91.8** (3.61)	21400	HE-MAN-P-PK-XX-X-X-XX-X

Manual - Sockets

Parking



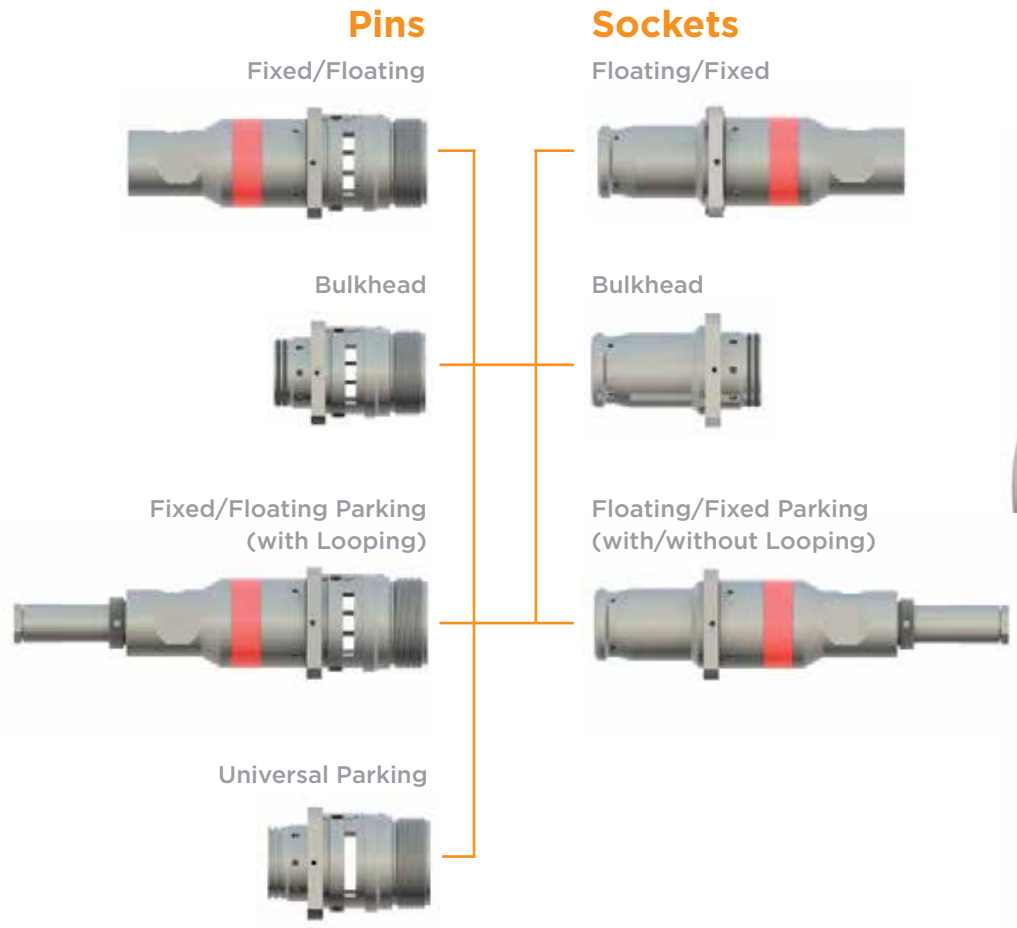


Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D Ø mm(In)	Interface Dwg Reference No.	Looping Options	Part Number
4	**288.5** (11.36)	**104.9** (4.13)	**171.6** (6.76)	**125.0** (4.92)	21400	None	HE-MAN-S-PK-04-X-X-XX-X
						Custom	HE-MAN-S-PK-04-X-X-XX-0
						1-3, 2-4	HE-MAN-S-PK-04-X-X-XX-1
						1-2, 3-4	HE-MAN-S-PK-04-X-X-XX-2
7						None	HE-MAN-S-PK-07-X-X-XX-X
						Custom	HE-MAN-S-PK-07-X-X-XX-0
						1-3, 2-4, 5-7	HE-MAN-S-PK-07-X-X-XX-1
						1-2, 3-4, 5-6	HE-MAN-S-PK-07-X-X-XX-2
12						None	HE-MAN-S-PK-12-X-X-XX-X
						Custom	HE-MAN-S-PK-12-X-X-XX-0
						1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-MAN-S-PK-12-X-X-XX-1
						1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-MAN-S-PK-12-X-X-XX-2

HydraElectric Stab Plate Connector Series

The stab plate connectors are used as elements in a stab arrangement, providing movement and latching of the connectors. Stab connectors do not have a built in latching mechanism. The connectors are made of Super Duplex which provides excellent corrosion resistance and do not need to be connected to a cathodic protection system.

Stab Plate Configurations

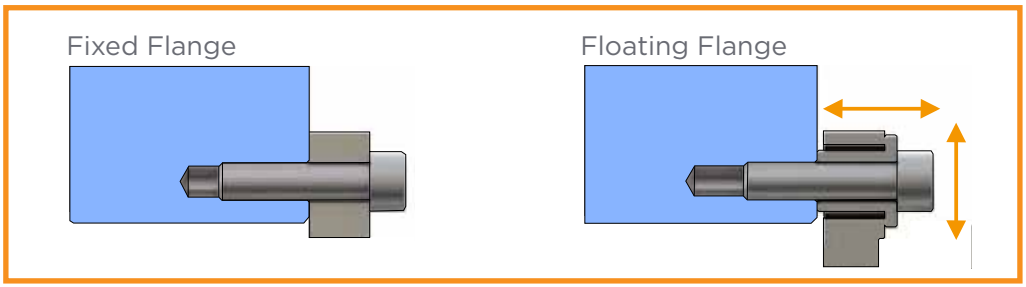


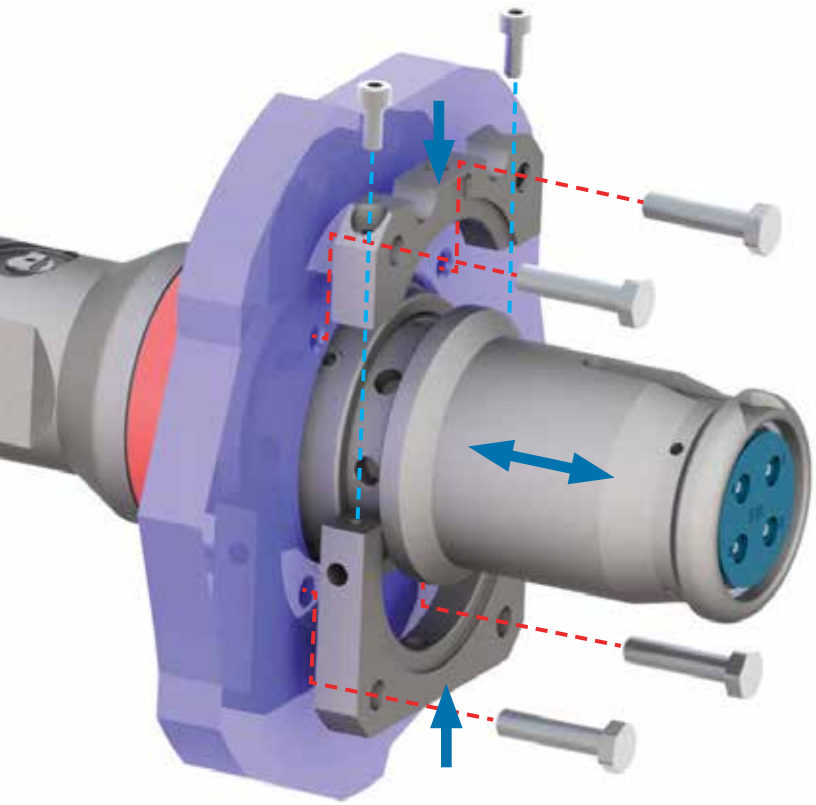
4, 7 and 12 contacts.

- 4 contacts
- 7 contacts
- 12 contacts

Stab Plate Mounting Details

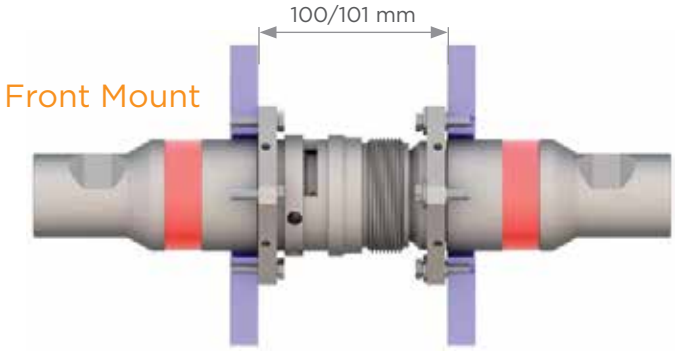
One of the connectors in a mating pair must be provided with floating flange, allowing the connector to move +/- 1mm axial and radial. Flanges on stab connectors are 10 mm thick and are interchangeable between front and rear mount.

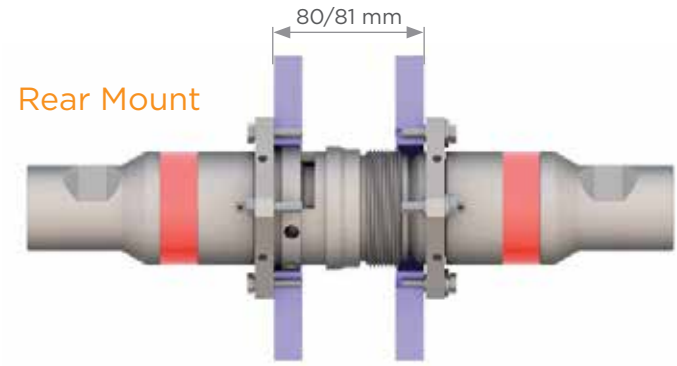


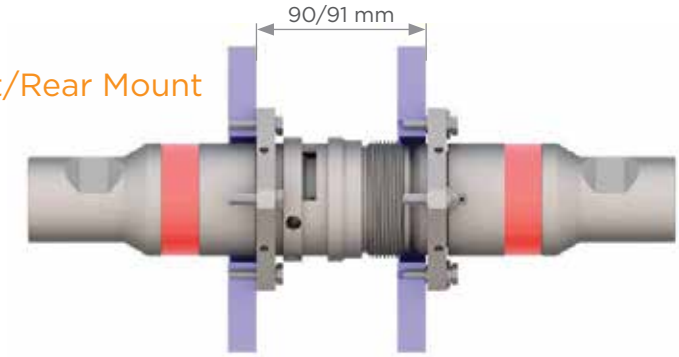


Split Flange

There is also a split flange option available for the stab plate connectors. This enables the connector to be front mounted, even when pre-terminated to a jumper or assembly.

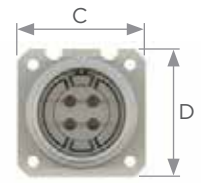


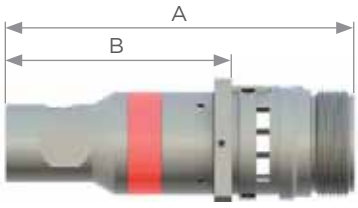




Stab Plate - Pins

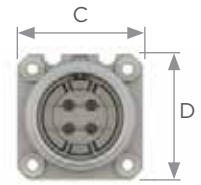
Fixed

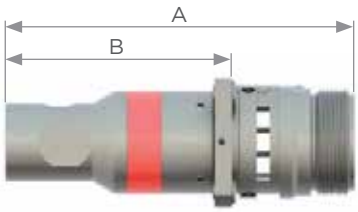




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Interface Dwg Reference No.	Ordering Information
4	**200.9** (7.91)	**130.0** (5.12)	**73.5** (2.89)	**73.5** (2.89)	22699	HE-STA-P-XX-04-0-X-FX/SX-X
7						HE-STA-P-XX-07-0-X-FX/SX-X
12						HE-STA-P-XX-12-0-X-FX/SX-X

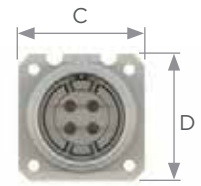
Floating

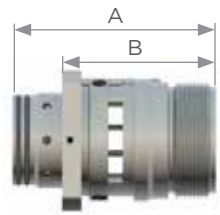




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Interface Dwg Reference No.	Ordering Information
4	**200.9** (7.91)	**130.0** (5.12)	**73.5** (2.89)	**73.5** (2.89)	22699	HE-STA-P-XX-04-0-X-FL/SL-X
7						HE-STA-P-XX-07-0-X-FL/SL-X
12						HE-STA-P-XX-12-0-X-FL/SL-X

Bulkhead

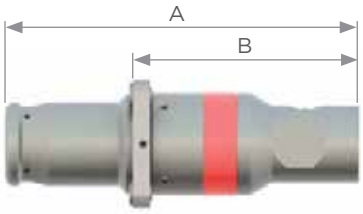


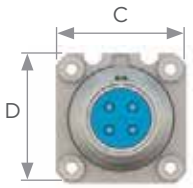


Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Interface Dwg Reference No.	Ordering Information
4	**106.6** (4.19)	**80.4** (3.17)	**73.5** (2.89)	**73.5** (2.89)	24100	HE-STA-P-BH-04-X-X-XX-X
7						HE-STA-P-BH-07-X-X-XX-X
12						HE-STA-P-BH-12-X-X-XX-X

Stab Plate - Sockets

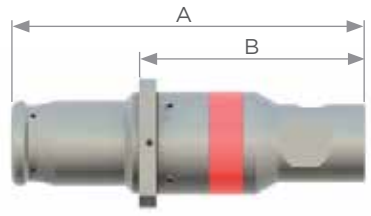
Floating

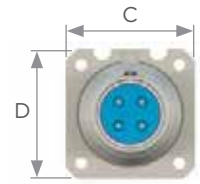




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Interface Dwg Reference No.	Ordering Information
4	**204.0** (8.03)	**130.0** (5.12)	**73.5** (2.89)	**73.5** (2.89)	22699	HE-STA-S-XX-04-0-X-FL/SL-X
7						HE-STA-S-XX-07-0-X-FL/SL-X
12						HE-STA-S-XX-12-0-X-FL/SL-X

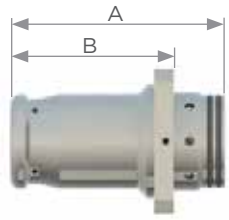
Fixed

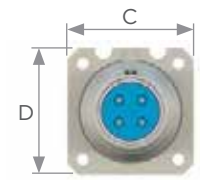




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Interface Dwg Reference No.	Ordering Information
4	**204.0** (8.03)	**130.0** (5.12)	**73.5** (2.89)	**73.5** (2.89)	22699	HE-STA-S-XX-04-0-X-FX/SX-X
7						HE-STA-S-XX-07-0-X-FX/SX-X
12						HE-STA-S-XX-12-0-X-FX/SX-X

Bulkhead

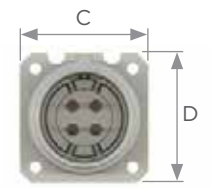


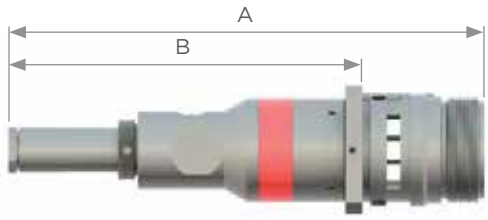


Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Interface Dwg Reference No.	Ordering Information
4	**109.7** (4.32)	**83.6** (3.29)	**73.5** (2.89)	**73.5** (2.89)	24100	HE-STA-S-BH-04-X-X-XX-X
7						HE-STA-S-BH-07-X-X-XX-X
12						HE-STA-S-BH-12-X-X-XX-X

Stab Plate - Pins

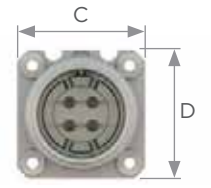
Fixed Parking

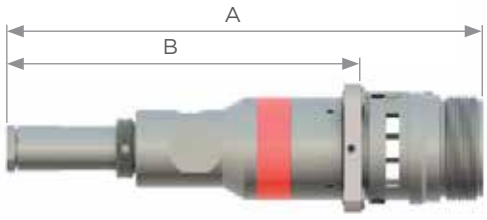




Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Interface Dwg Reference No.	Looping Options	Part Number
4	**275.3** (10.84)	**204.5** (8.05)	**73.5** (2.89)	**73.5** (2.89)	22699	Custom	HE-STA-P-PK-04-X-X-FX/SX-0
						1-3, 2-4	HE-STA-P-PK-04-X-X-FX/SX-1
						1-2, 3-4	HE-STA-P-PK-04-X-X-FX/SX-2
7						Custom	HE-STA-P-PK-07-X-X-FX/SX-0
						1-3, 2-4, 5-7	HE-STA-P-PK-07-X-X-FX/SX-1
						1-2, 3-4, 5-6	HE-STA-P-PK-07-X-X-FX/SX-2
12						Custom	HE-STA-P-PK-12-X-X-FX/SX-0
						1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-STA-P-PK-12-X-X-FX/SX-1
						1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-STA-P-PK-12-X-X-FX/SX-2

Floating Parking

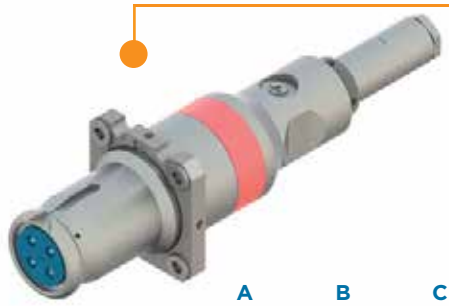


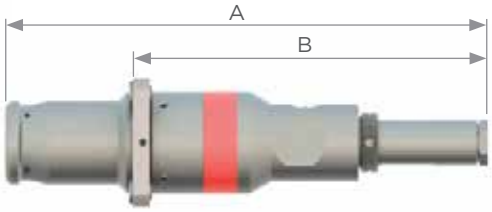


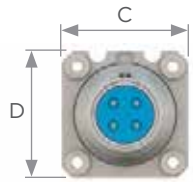
Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Interface Dwg Reference No.	Looping Options	Part Number
4	**275.3** (10.84)	**204.5** (8.05)	**73.5** (2.89)	**73.5** (2.89)	22699	Custom	HE-STA-P-PK-04-X-X-FL/SL-X
						1-3, 2-4	HE-STA-P-PK-04-X-X-FL/SL-X
						1-2, 3-4	HE-STA-P-PK-04-X-X-FL/SL-X
7						Custom	HE-STA-P-PK-07-X-X-FL/SL-X
						1-3, 2-4, 5-7	HE-STA-P-PK-07-X-X-FL/SL-X
						1-2, 3-4, 5-6	HE-STA-P-PK-07-X-X-FL/SL-X
12						Custom	HE-STA-P-PK-12-X-X-FL/SL-X
						1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-STA-P-PK-12-X-X-FL/SL-X
						1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-STA-P-PK-12-X-X-FL/SL-X

Stab Plate - Sockets

Floating Parking

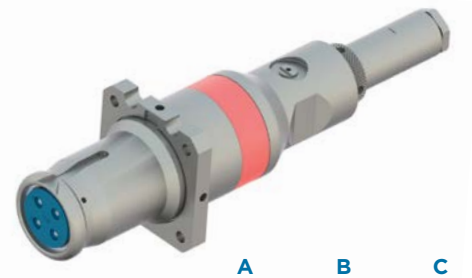


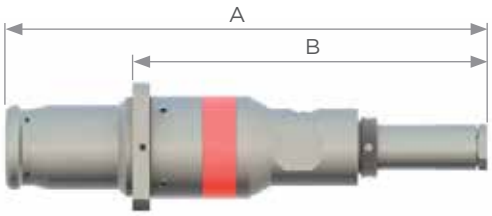


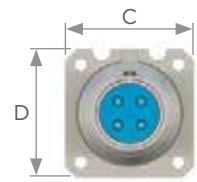


Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Interface Dwg Reference No.	Looping Options	Part Number
4	**278.0** (10.94)	**204.5** (8.05)	**73.5** (2.89)	**73.5** (2.89)	22699	None	HE-STA-S-PK-04-X-X-FL/SL-X
						Custom	HE-STA-S-PK-04-X-X-FL/SL-0
						1-3, 2-4	HE-STA-S-PK-04-X-X-FL/SL-1
						1-2, 3-4	HE-STA-S-PK-04-X-X-FL/SL-2
7						None	HE-STA-S-PK-07-X-X-FL/SL-X
						Custom	HE-STA-S-PK-07-X-X-FL/SL-0
						1-3, 2-4, 5-7	HE-STA-S-PK-07-X-X-FL/SL-1
						1-2, 3-4, 5-6	HE-STA-S-PK-07-X-X-FL/SL-2
12						None	HE-STA-S-PK-12-X-X-FL/SL-X
						Custom	HE-STA-S-PK-12-X-X-FL/SL-0
						1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-STA-S-PK-12-X-X-FL/SL-1
						1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-STA-S-PK-12-X-X-FL/SL-2

Fixed Parking

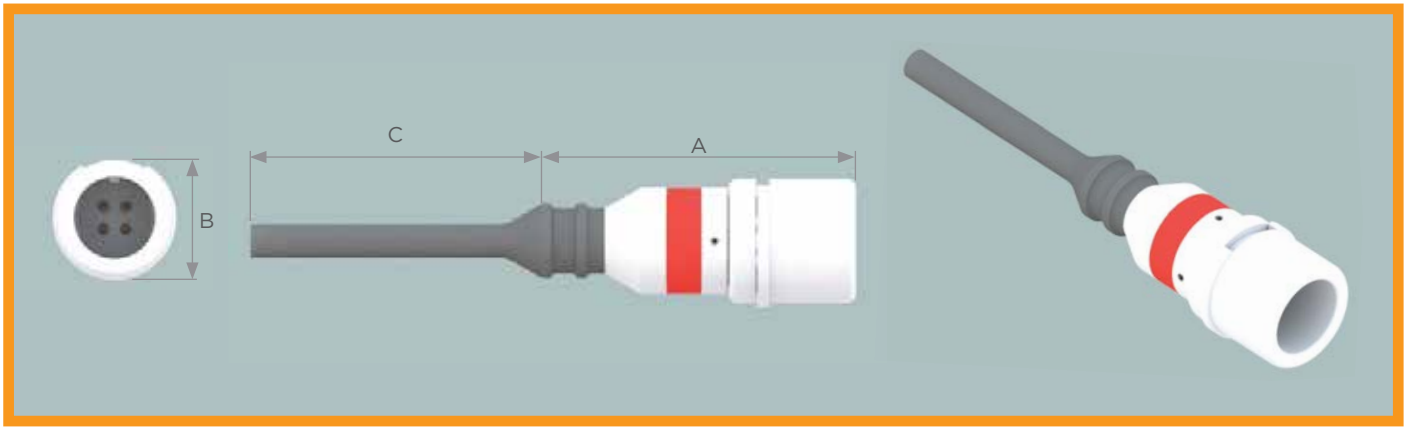






Number of Contacts	A mm(In)	B mm(In)	C mm(In)	D mm(In)	Interface Dwg Reference No.	Looping Options	Part Number
4	**278.0** (10.94)	**204.5** (8.05)	**73.5** (2.89)	**73.5** (2.89)	22699	None	HE-STA-S-PK-04-X-X-FX/SX-X
						Custom	HE-STA-S-PK-04-X-X-FX/SX-0
						1-3, 2-4	HE-STA-S-PK-04-X-X-FX/SX-1
						1-2, 3-4	HE-STA-S-PK-04-X-X-FX/SX-2
7						None	HE-STA-S-PK-07-X-X-FX/SX-X
						Custom	HE-STA-S-PK-07-X-X-FX/SX-0
						1-3, 2-4, 5-7	HE-STA-S-PK-07-X-X-FX/SX-1
						1-2, 3-4, 5-6	HE-STA-S-PK-07-X-X-FX/SX-2
12						None	HE-STA-S-PK-12-X-X-FX/SX-X
						Custom	HE-STA-S-PK-12-X-X-FX/SX-0
						1-3, 2-4, 5-7, 6-8, 9-11, 10-12	HE-STA-S-PK-12-X-X-FX/SX-1
						1-2, 3-4, 5-6, 7-8, 9-10, 11-12	HE-STA-S-PK-12-X-X-FX/SX-2

Test Connectors - Pins



Standard (AWG 16)

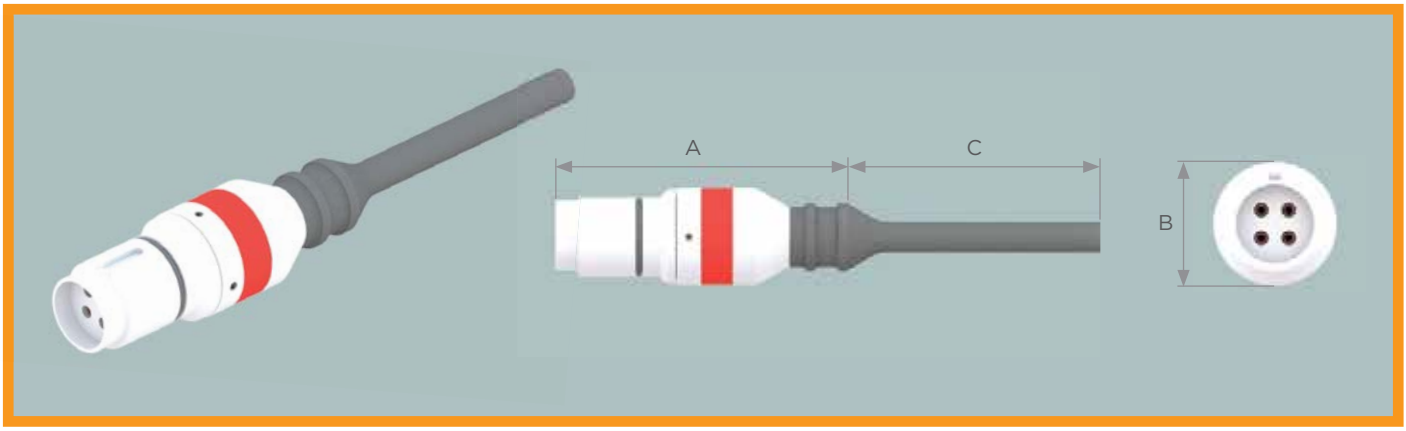
Number of Contacts	A - Length mm(In)	B Ø mm(In)	C - Pigtail Length m (ft)	Ordering Information
4	**171.5** (6.75)	**75.0** (2.95)	**3** (9.84)	HE-TST-P-04-0-0
			5 (16.40)	HE-TST-P-04-1-0
			10 (32.81)	HE-TST-P-04-2-0
7			**3** (9.84)	HE-TST-P-07-0-0
			5 (16.40)	HE-TST-P-07-1-0
			10 (32.81)	HE-TST-P-07-2-0
12			**3** (9.84)	HE-TST-P-12-0-0
			5 (16.40)	HE-TST-P-12-1-0
			10 (32.81)	HE-TST-P-12-2-0

Ethernet

Number of Contacts	Pigtail Length m (ft)	Ordering Information
12	**3** (9.84)	HE-TST-P-12-0-1
	5 (16.40)	HE-TST-P-12-1-1
	10 (32.81)	HE-TST-P-12-2-1

NOTE:
Ethernet connectors are wired according to Subsea Instrumentation Interface Standardisation (SIIS) level 3.

Test Connectors - Sockets



Standard (AWG 16)

Number of Contacts	A - Length mm(In)	B Ø mm(In)	C - Pigtail Length m (ft)	Ordering Information
4	**175.0** (6.89)	**59.8** (2.35)	**3** (9.84)	HE-TST-S-04-0-0
			5 (16.40)	HE-TST-S-04-1-0
			10 (32.81)	HE-TST-S-04-2-0
7			**3** (9.84)	HE-TST-S-07-0-0
			5 (16.40)	HE-TST-S-07-1-0
			10 (32.81)	HE-TST-S-07-2-0
12			**3** (9.84)	HE-TST-S-12-0-0
			5 (16.40)	HE-TST-S-12-1-0
			10 (32.81)	HE-TST-S-12-2-0

The test connectors are universal and the same connector can be used for all modes of operation; ROV, Manual and Stab Plate. The test connector bodies are in plastic material and they are not designed for subsea use.

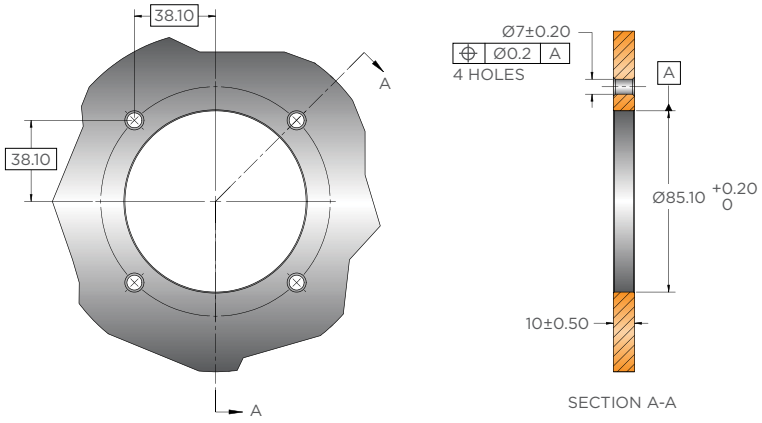
Ethernet

Number of Contacts	Pigtail Length m (ft)	Ordering Information
12	**3** (9.84)	HE-TST-S-12-0-1
	5 (16.40)	HE-TST-S-12-1-1
	10 (32.81)	HE-TST-S-12-2-1

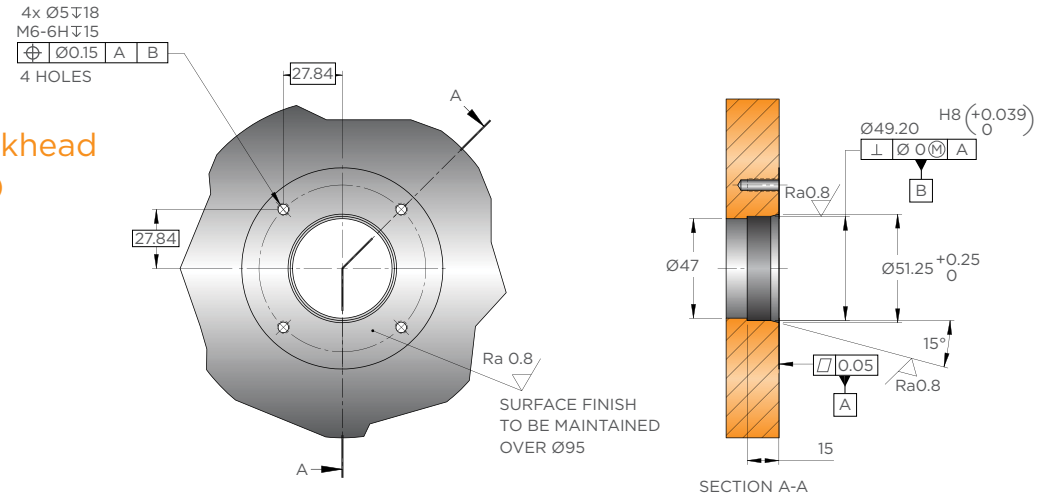
NOTE:
Ethernet connectors are wired according to Subsea Instrumentation Interface Standardisation (SIIS) level 3.

Interface Drawings

ROV and Manual Panel
Reference No. 21400

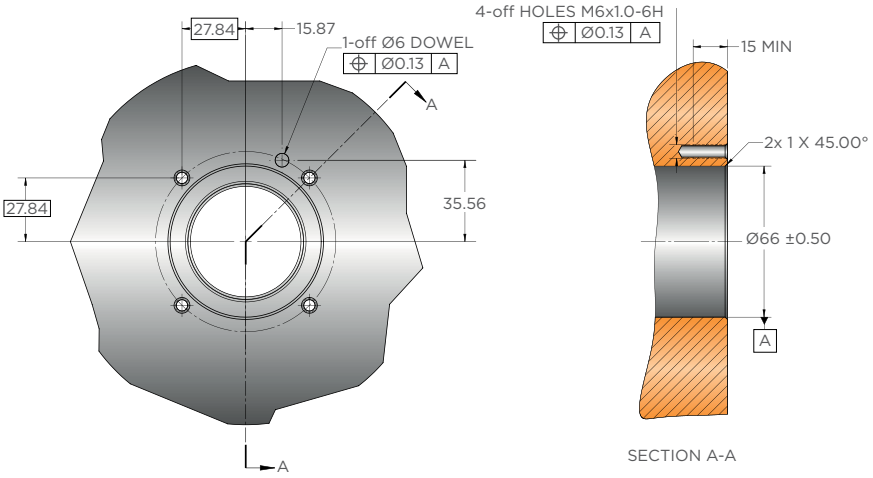


ROV and Manual Bulkhead
Reference No. 21440

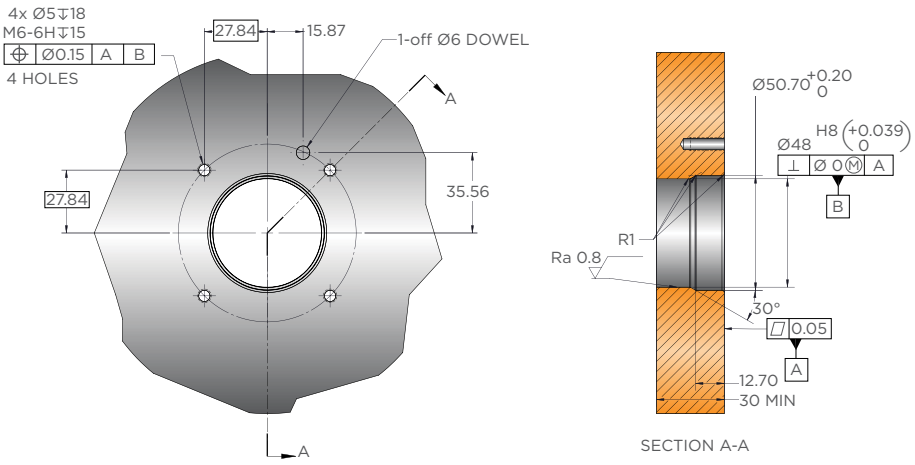


Interface Drawings

Stab Plate
Reference No. 22699



Stab Plate Bulkhead
Reference No. 24100



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