ODI

Nautilus™ Wet Mate Connectors

Electrical Technology for Subsea Control and Instrumentation

NAUTILUS™
ROV WET MATE
ELECTRICAL
CONNECTOR

NAUTILUS™
MANUAL MATE
WET MATE
ELECTRICAL
CONNECTOR

NAUTILUS™
STAB MATE
WET MATE
ELECTRICAL
CONNECTOR

TELEDYNE MARINE
Everywhereyoulook™

TELEDYNE OIL & GAS

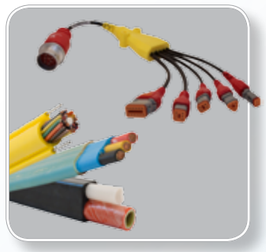
Everywhereyoulook™

Complementary Teledyne Oil & Gas Product Lines

TELEDYNE AG GEOPHYSICAL PRODUCTS

Interconnect, transducers, firing cables, and hydrophones for extreme environments

TELEDYNE CABLE SOLUTIONS



Application-specific cable assemblies and harnesses for harsh environments

TELEDYNE CORMON

Erosion/corrosion monitoring, pressure and temperature sensing solutions

TELEDYNE DGO

High Pressure/High Temperature Electrical and Optical Interconnect Glass-to-Metal Seal Technology

TELEDYNE IMPULSE

Harsh environment electrical and optical interconnect

TELEDYNE ODI

Subsea interconnect and data networking

For the latest version of the catalog, visit www.teledyneoilandgas.com Rev. 1/2016

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Teledyne Oil & Gas:

RELIABLE POWER TRANSMISSION, DATA TRANSMISSION, NEW PRODUCT DEVELOPMENT AND SENSING SOLUTIONS FOR HARSH ENVIRONMENTS

Teledyne Oil & Gas (TOG), is a market-focused alliance of Teledyne Technologies product lines, consisting of 7 industry-leading brands. Teledyne Oil & Gas consists primarily of AG Geophysical Products, Cormon, DGO, Impulse, ODI, Storm Cable, and VariSystems product lines, with the allied contributions of additional Teledyne Marine and Teledyne Technologies, Inc. companies, and with research partner Teledyne Scientific Corporation.

BENEFITS & VALUE

- Health, Safety & Environmental (HSE) culture
- Innovative engineered solutions
- Aerospace levels of reliability
- Materials science & certification expertise
- Instrumentation integration
- Global manufacturing centers
- Rapid response global field support
- Integrated team support: A single purchase order, set of terms & focused contact
- Security of supply

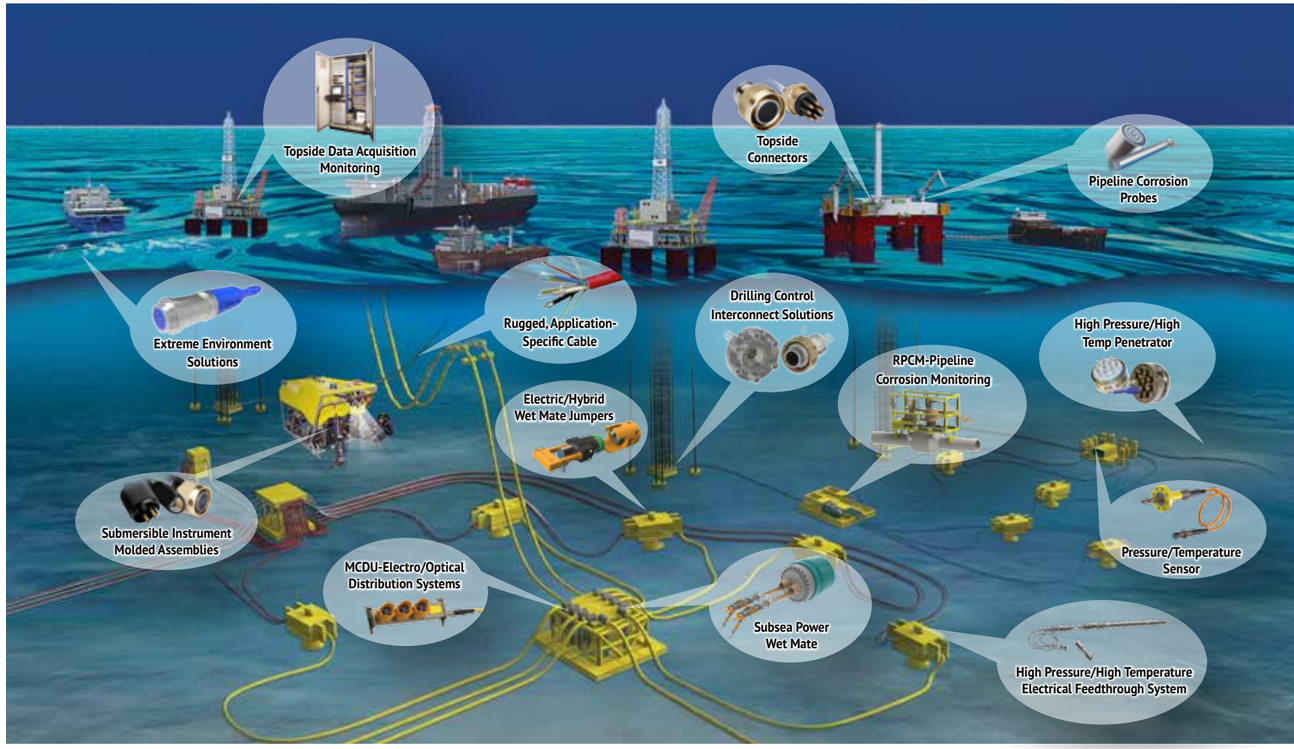
ENGINEERED SOLUTIONS

- Electrical and optical distribution systems
- Power and data transmission networking interconnection systems
- Wellhead feed-through systems
- Corrosion and erosion sensing and monitoring networks
- Turn-key sensor interconnect assembly solutions
- Subsea engineering
- Application-focused new product development with systems and material reliability expertise
- Ruggedized harsh environment cable assemblies
- High pressure, high temperature (HP/HT) penetrations and feed-throughs for differential pressure
- High power connection systems

Teledyne ODI:

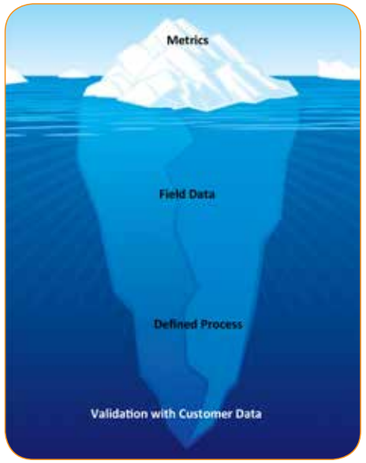
SUPPLYING MISSION CRITICAL SYSTEMS TO THE OIL & GAS PRODUCTION INDUSTRY

Teledyne ODI was formed in 1988 and created the original designs that enabled deep water wet mate interconnection of subsea modules. Today, with over 162,000 electrical and fiber optic interconnect packages deployed worldwide, ODI is a leader in innovation and subsea reliability around the globe with a dedicated team of engineers driving innovation to meet emerging technical challenges.



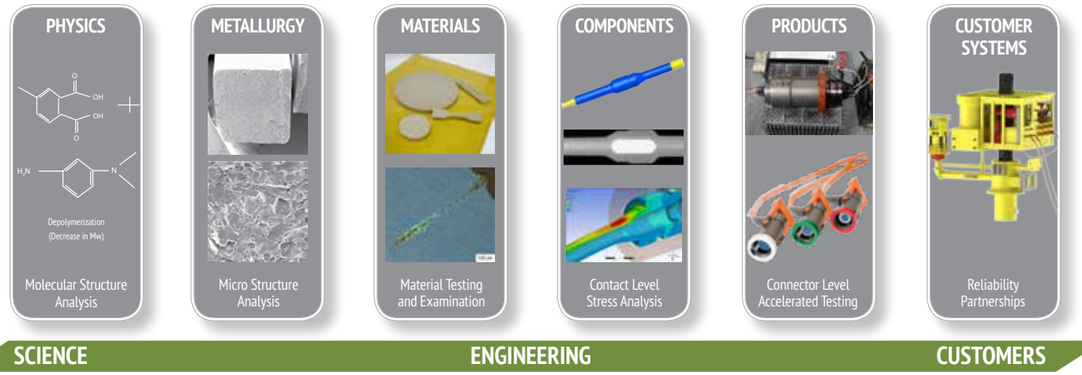
TOG Reliability:

RELIABILITY PROGRAM

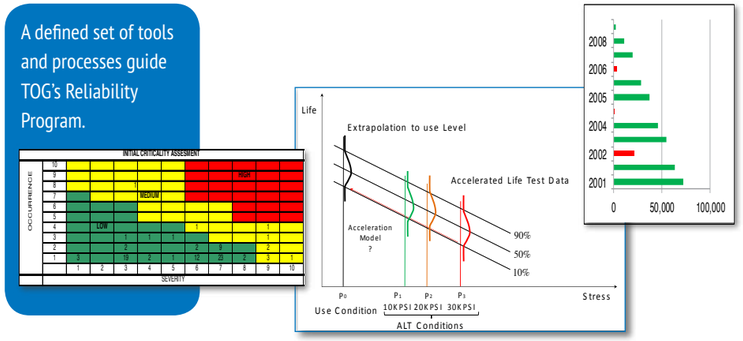


Teledyne Oil and Gas products operate in environments that are difficult or impossible to access, meaning that to our customers, having the peace of mind that equipment won't fail is paramount. From the start of product development, through the first deployment, and continuing for the life of the product, reliability is a primary focus at Teledyne Oil and Gas.

Having internal metrics is just the tip of the iceberg. Dedicated Reliability Engineers at Teledyne Oil and Gas gather and analyze field data from customer deployments, and continuously validate the results. This process is what sets Teledyne Oil and Gas apart from the rest.



A defined set of tools and processes guide TOG's Reliability Program.



- Finite Element Analysis
- Operational Study
- FRACAS – Root Cause Analysis
- Design Validation Testing
- Qualification Testing
- Accelerated Aging
- Reliability Assurance Plan
- FMECA (D, P & O)
- Block Diagram Analysis
- Design of Experiments
- Fault Tree Analysis
- Weibull Analysis

TOG Quality:

TELEDYNE OIL & GAS IS COMMITTED TO SAFELY PROVIDING PRODUCTS AND SERVICES OF THE HIGHEST INTEGRITY AND RELIABILITY.


Certificate of Registration

Intertek

Teledyne Oil & Gas

A business unit of Teledyne Instruments

ISO 9001:2008

ANAB

QUALITY ASSURANCE

Teledyne ODI has been certified by INTERTEK to the ISO 9001:2008 standard for the design, manufacture, test, and service of subsea or hostile environment electrical and optical interconnection systems.

QUALITY ASSURANCE

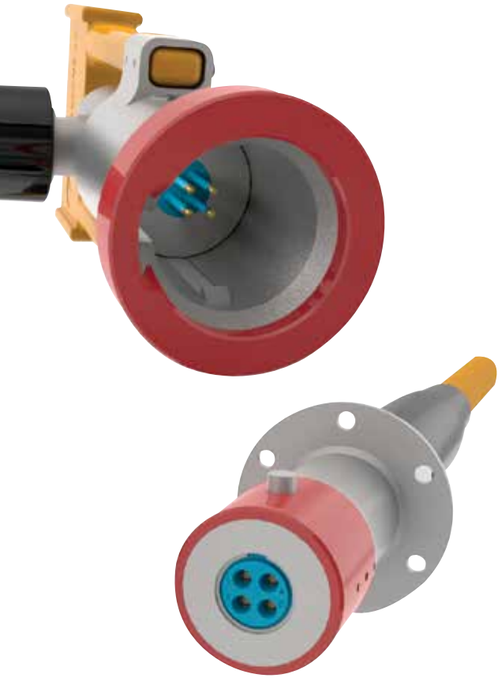
The Quality System includes the appraisal and assessment of component and part quality using sophisticated measurement systems. The product is manufactured, tested and inspected under the control of a high-level factory management system with full material and operational traceability.

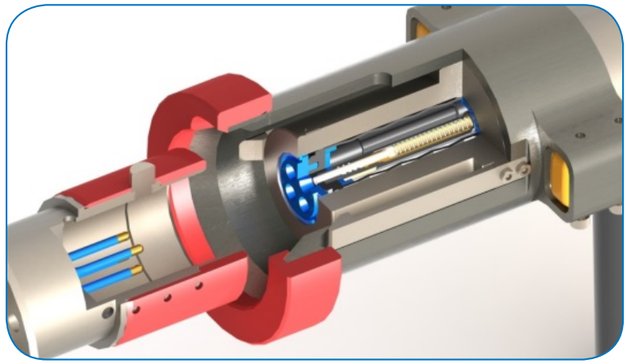
FACTORY ACCEPTANCE TESTING

Final product acceptance testing includes functioning within a hyperbaric environment using computerized data acquisition of pressure profiles and circuit performance measurements. The data is maintained both electronically and on hard copy for availability upon customers' requests.

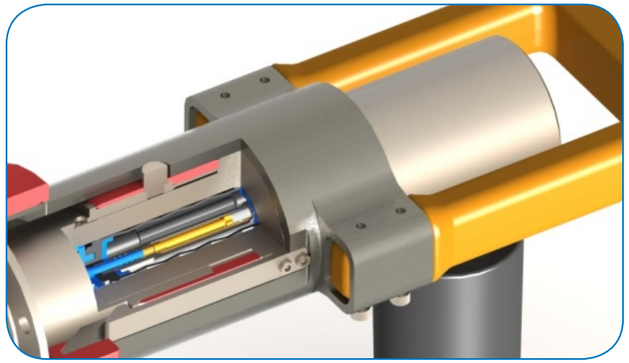
Nautilus™ Technology Overview:

Teledyne ODI's Nautilus™ is a wet-mateable, multi-channel electrical connector. First introduced in 1991, the Nautilus is recognized as the leading choice for high reliability underwater mateable electrical connectors. Nautilus has been utilized on thousands of projects at depths up to 6,000 m (>19,000 ft) and in diverse industries. Nautilus is fully qualified to the latest industry standards. The design features that make Nautilus so reliable include the dual independent seals and oil reservoirs providing two completely separate barriers. This patented design of electrical contact allows the pin to enter these reservoirs and transfer sealing via a shuttle pin and dual wiper seal assembly, simultaneously cleaning and sealing the pin. Over 110,000+ Nautilus™ connectors are currently operational, accumulating more than 4.7 billion service hours.





Unmated



Mated

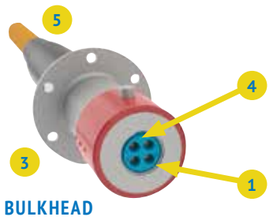
Nautilus™ Technical Specifications

Operational Depth:	20,997 ft (6,400 m)	
Operational Pressure: (Pressure Balanced)	10,000 psi (689 bar)	
Operational Temperature:	**SEAWATER** -5°C to +40°C (23°F to 104°F)	**AIR** -10°C to +50°C (14°F to 122°F)
Storage Temperature:	-30°C to +60° (-22°F to 140°F)	
Subsea Mate/De-mate Cycles:	1000 total cycles maximum after factory testing 200 cycles maximum in turbid seawater conditions	
Maximum Mate/De-Mate Force:	112 lb-f (< 500N)	
Configurations:	ROV, Stab, Manual-Mate & Penetrator	
Material:	ROV configuration in Titanium Other materials available for Stab & Manual-Mate configurations (e.g. 316L SS, plastic, etc.)	
Design Life:	25 Years	
Number of Circuits:	4, 7, or 12	
Max Operational Current:	30 Amps	
Max Operational AC Voltage:	1.0 KVAC Phase-to-Ground 1.73 KVAC Phase-to-Phase	
Max Operational DC Voltage:	3.3 KVDC	
Insulation Resistance:	≥ 10 GΩ @ 1 KVDC	
Contact Resistance:	≤10 mΩ per contact	

For additional information, see FDS - D/N 325994 and operation and installation manual (D/N 10368-1}

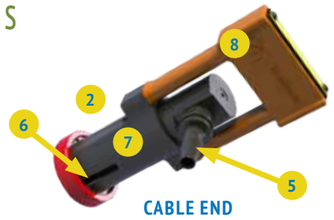
Dimensions for reference only. For official values, contact the factory.

Nautilus™ Connector Attributes



ORDERING DESCRIPTION EXAMPLE

04ROV	CEP60	XXXTI	XXXXX
1 2	3 4 5	6 7	8



STANDARD CONNECTOR ATTRIBUTES

1. CONNECTIONS:

Indicates the Description of ways. The standard are 4,7, and 12 circuits (1-128 are available).

- 04: 4-Way (Red)
- 07: 7-Way (Green)
- 12: 12-Way (White/Black)

2. MATE CONFIGURATION:

Indicates the mating method used.

- ROV: ROV Connection
- MAN: Diver or Manual Connection
- STB: Stab Plate Connection

3. MOUNTING:

Indicates type of mounting configuration.

- CE: Cable End (Flying)
- FM: Front Mounted Bulk Head (Fixed)
- RM: Rear Mounted Bulk Head (Fixed)

4. CONNECTION TYPE:

Indicates the gender of the connector. Plugs always have pin and receptacles always have sockets.

- P: Plug (Pins)
- R: Receptacle (Sockets)
- A: Parking Position (No Inserts)
- B: Parking Position (Sockets)
- C: Protection Cap (No Inserts)
- D: Dummy (Sockets)
- E: Plug Test Receptacle (Sockets)
- F: Receptacle Test Plug (Pins)
- G: Heavy Duty Plug Transportation Protection Cap
- H: Heavy Duty Receptacle Transportation Protection Cap

5. TERM ARRANGEMENT:

Indicates the exit angle of the PBOF Hose.

- NA: None
- 00: Straight (0°)
- 45: 45°
- 60: 60°
- 90: 90°

OPTIONAL CONNECTOR ATTRIBUTES

6. KEYING ARRANGEMENT:

Indicates the clocking angle position of the polarizing key slot relative to the top of the Cable End Part.

- XXX: Standard 180°
- 000: 0°

Other dual key arrangements upon request, consult ODI

7. MATERIAL:

Indicates material of the connector. The material of the ROV connector shell is always Ti GR2 (Titanium)

- TI: Ti GR2 (Titanium)
- SS: Stainless Steel

8. HANDLE OPTIONS:

Indicates the handle type of the flying connectors.

- XXXXX: Standard
- EXLNG: Extended Length
- STDVN: V-Notch Handle
- EXTVN: Extended V-Notch Handled
- FSHTL: Fish Tail

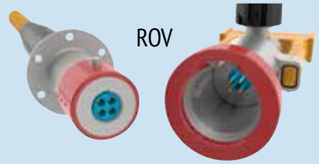
Connector attributes will provide a generic identifier part description. Please consult the factory to confirm your selection.

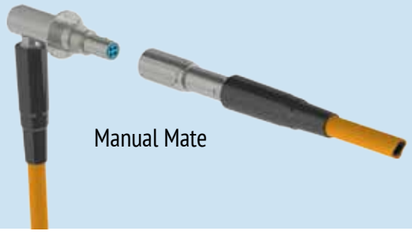
Nautilus™ Connector **STANDARD** Attributes

1. CIRCUITS:

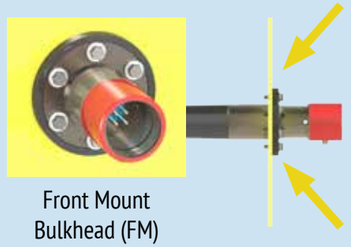
- Standard 4, 7, 12 circuits (1-128 Available)
- **Red** bushing indicates 4-way
- **Green** bushing indicates 7-way
- **Black bushing** (on BH) / **White bushing** (on CE) indicates 12-way

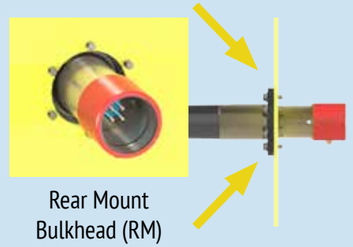
2. MATE CONFIGURATIONS:





3. MOUNTING (ROV MATE):





4. CONTACT GENDER TYPE:


Bulk Head Plug


Plug


Cable End Plug


Bulk Head Receptacle

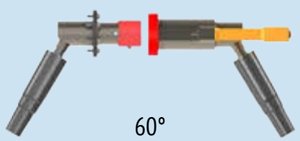

Receptacle

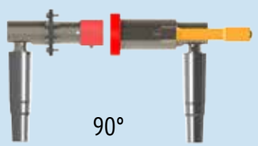

Cable End Receptacle

5. TERMINATION ARRANGEMENT:


0°

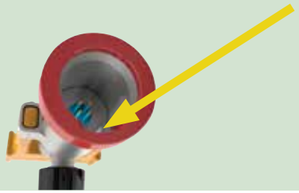

45°


60°


90°

Nautilus™ Connector OPTIONAL Attributes

6. KEYING ARRANGEMENT:



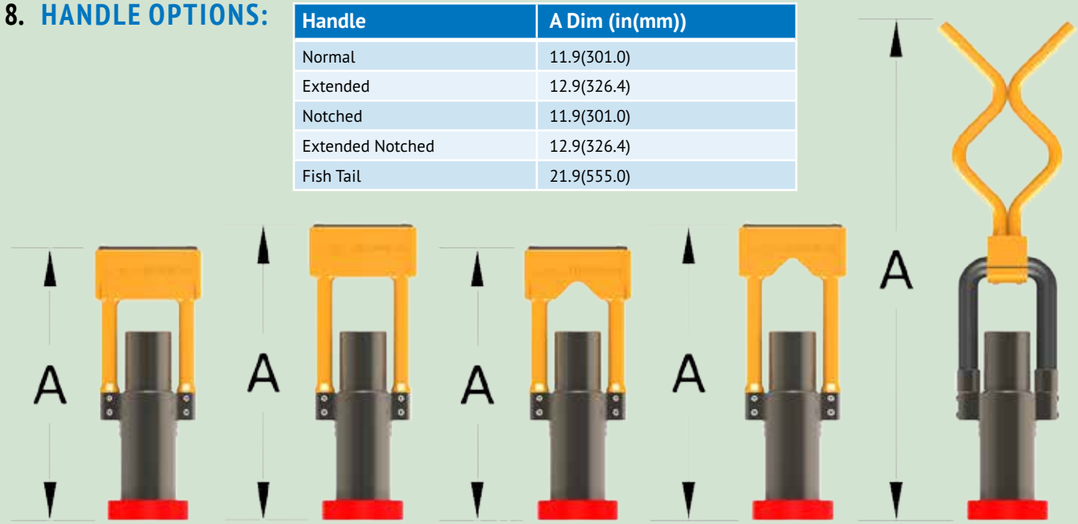
The **Keying Arrangement** identifies the angle position of the key slot. **Blank (or No Selection)** indicates the standard arrangement at 180° as illustrated.

7. MATERIAL:

The material system of the ROV connector shells is **ALWAYS** Titanium. Other configurations like Manual Mate & Stab Mate are available in both stainless steel & titanium.

8. HANDLE OPTIONS:

Handle	A Dim (in(mm))
Normal	11.9(301.0)
Extended	12.9(326.4)
Notched	11.9(301.0)
Extended Notched	12.9(326.4)
Fish Tail	21.9(555.0)



Standard Handle | Extended Handle | V-Notch Handle | Extended V-Notch Handle | Fish Tail Handle

Dimensions for reference only. For official values, contact the factory.

Nautilus ROV Connectors

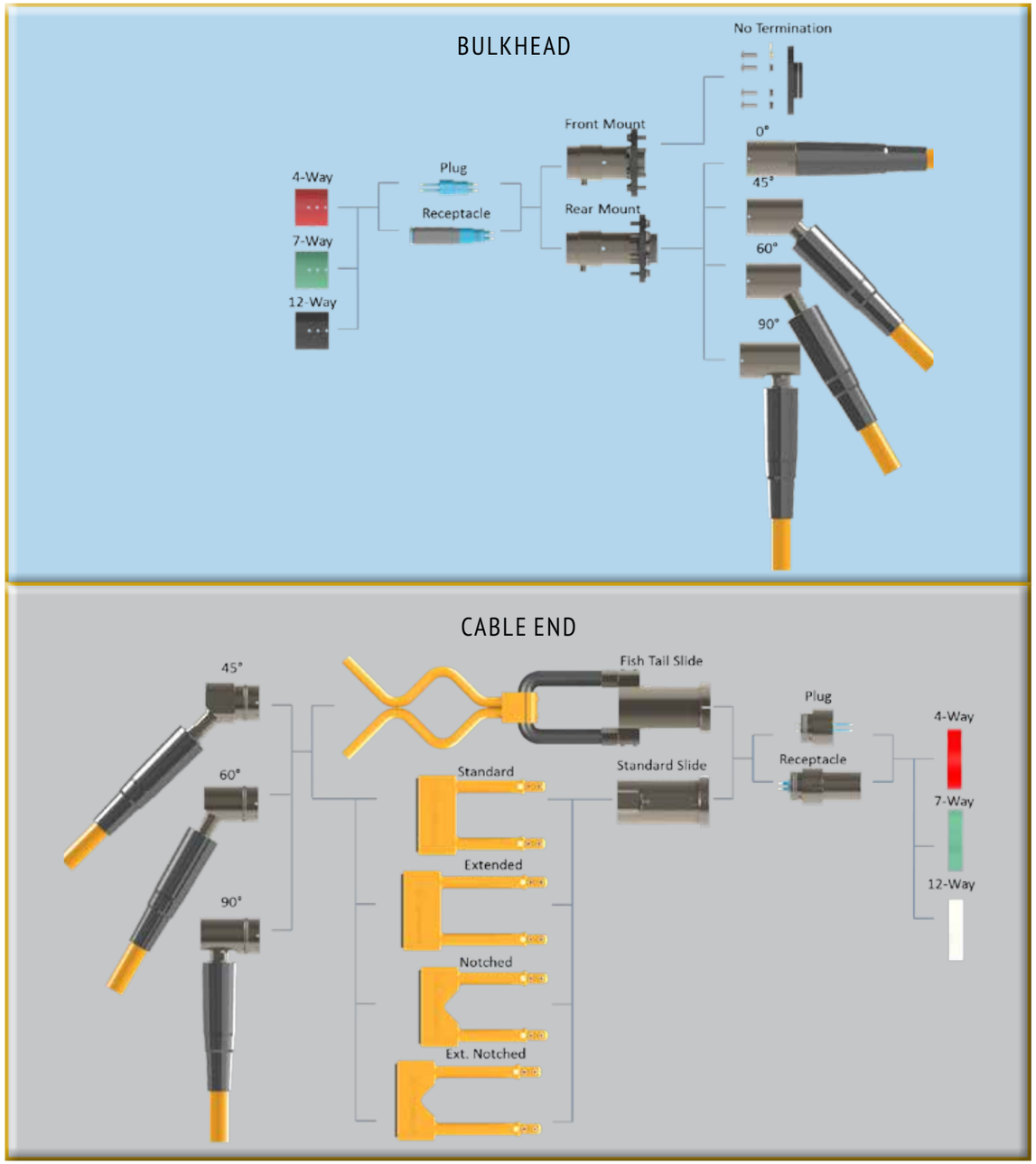
Nautilus ROV connectors are designed to be mated at full ocean depth with the use of Remotely Operated Vehicles. The shells of the ROV connectors are constructed from Titanium to allow the connectors to withstand the rugged handling of mating operations.

Mating and demating of connectors is performed only the power is disconnected and all residual charge is drained. A variety of protective caps and parking positions are available for use when the bulkhead connectors are in the unused state subsea.

SHIPPING CAPS

- We will be providing certain products with updated shipping and storage caps that offer additional protection as standard.
- The caps can be used to protect connectors during shipping, storage, as well as in between use for laboratory test connectors.
- The caps are not for subsea use. They must be removed before deployment.
- These elastomeric caps are easily installed and removed by hand with no tools required. They are reusable and recyclable.

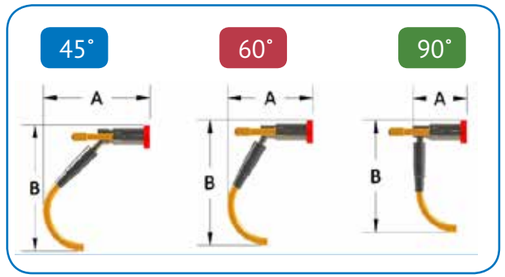
Common ROV Modular Diagram

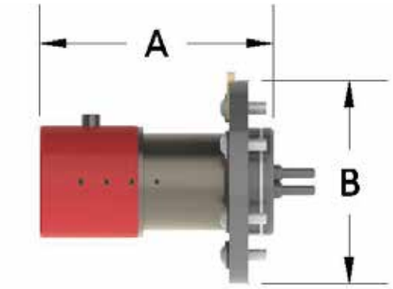


ROV Cable End Receptacle (sockets)

MATES WITH

ROV **FRONT** Mount Bulkhead Plug (pins)





45° Term ROV Cable End Receptacle (Sockets) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	16.3[413.1]	19.3[489.7]	04ROV-CER45-XXXTI-XXXXX
7	16.3[413.1]	19.3[489.7]	07ROV-CER45-XXXTI-XXXXX
12	16.3[413.1]	19.3[489.7]	12ROV-CER45-XXXTI-XXXXX

60° Term ROV Cable End Receptacle (Sockets) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	13.1[332.3]	19.1[485.9]	04ROV-CER60-XXXTI-XXXXX
7	13.1[332.3]	19.1[485.9]	04ROV-CER60-XXXTI-XXXXX
12	13.1[332.3]	19.1[485.9]	04ROV-CER60-XXXTI-XXXXX

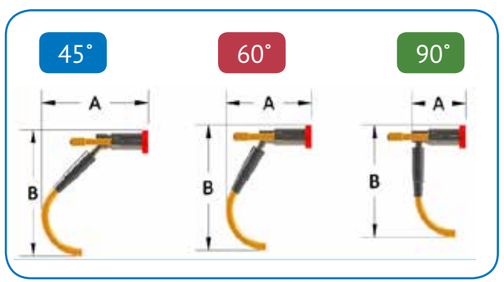
90° Term ROV Cable End Receptacle (Sockets) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	8.3[413.1]	17.1[434.6]	04ROV-CER90-XXXTI-XXXXX
7	8.3[413.1]	17.1[434.6]	07ROV-CER90-XXXTI-XXXXX
12	8.3[413.1]	17.1[434.6]	12ROV-CER90-XXXTI-XXXXX

No Term ROV Front Mount Bulkhead Plug (Pins)			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	4.6[117.2]	4.0[101.1]	04ROV-FMPNA-XXXTI
7	4.6[117.2]	4.0[101.1]	07ROV-FMPNA-XXXTI
12	4.6[117.2]	4.0[101.1]	12ROV-FMPNA-XXXTI

Connector attributes will provide a generic identifier part description. Please consult the factory to confirm your selection.
Refer to Connector Selection Legend on page 10. Dimensions for reference only. For official values, contact the factory.

*All A and B Dimensions are using a -12 PBOF Hose with a 5.0"(127.0mm) minimum bend radius. *No difference between Receptacle and Plug A and B dimensions.
*Typically no terminations are front mounted and with terminations are rear mounted.

ROV Cable End Plug (Pins) MATES WITH ROV **FRONT** Mount Bulkhead Receptacle (Sockets)



45° Term ROV Cable End Plug (Pins) for PBOF Hose

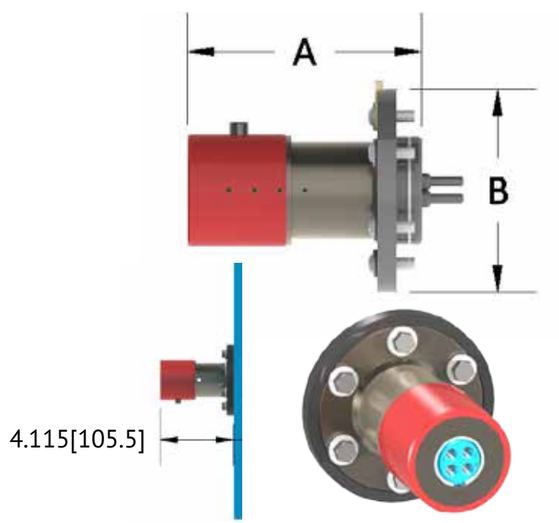
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	16.3[413.1]	19.3[489.7]	04ROV-CEP45-XXXTI-XXXXX
7	16.3[413.1]	19.3[489.7]	07ROV-CEP45-XXXTI-XXXXX
12	16.3[413.1]	19.3[489.7]	12ROV-CEP45-XXXTI-XXXXX

60° Term ROV Cable End Plug (Pins) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	13.1[332.3]	19.1[485.9]	04ROV-CEP60-XXXTI-XXXXX
7	13.1[332.3]	19.1[485.9]	04ROV-CEP60-XXXTI-XXXXX
12	13.1[332.3]	19.1[485.9]	04ROV-CEP60-XXXTI-XXXXX

90° Term ROV Cable End Plug (Pins) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	8.3[413.1]	17.1[434.6]	04ROV-CEP90-XXXTI-XXXXX
7	8.3[413.1]	17.1[434.6]	07ROV-CEP90-XXXTI-XXXXX
12	8.3[413.1]	17.1[434.6]	12ROV-CEP90-XXXTI-XXXXX



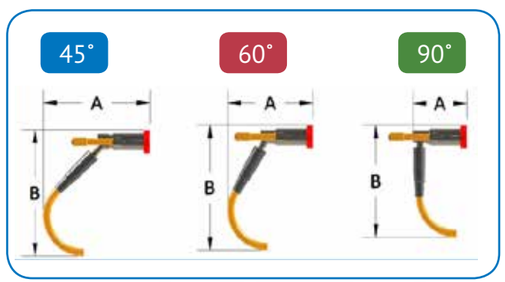
No Term ROV Front Mount Bulkhead Receptacle (Sockets)

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	4.6[117.2]	4.0[101.1]	04ROV-FMRNA-XXXTI
7	4.6[117.2]	4.0[101.1]	07ROV-FMRNA-XXXTI
12	4.6[117.2]	4.0[101.1]	12ROV-FMRNA-XXXTI

Connector attributes will provide a generic identifier part description. Please consult the factory to confirm your selection.
Refer to Connector Selection Legend on page 10. Dimensions for reference only. For official values, contact the factory.

*All A and B Dimensions are using a -12 PBOF Hose with a 5.0"(127.0mm) minimum bend radius. *No difference between Receptacle and Plug A and B dimensions.
*Typically no terminations are front mounted and with terminations are rear mounted.

ROV Cable End Receptacle (Sockets) MATES WITH ROV **REAR** Mount Bulkhead Plug (Pins)



45° Term ROV Cable End Receptacle (Sockets) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	16.3[413.1]	19.3[489.7]	04ROV-CER45-XXXTI-XXXXX
7	16.3[413.1]	19.3[489.7]	07ROV-CER45-XXXTI-XXXXX
12	16.3[413.1]	19.3[489.7]	12ROV-CER45-XXXTI-XXXXX

60° Term ROV Cable End Receptacle (Sockets) for PBOF Hose

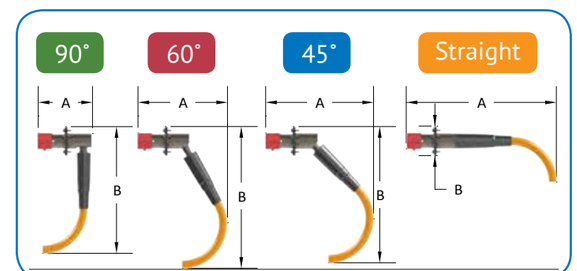
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	13.1[332.3]	19.1[485.9]	04ROV-CER60-XXXTI-XXXXX
7	13.1[332.3]	19.1[485.9]	04ROV-CER60-XXXTI-XXXXX
12	13.1[332.3]	19.1[485.9]	04ROV-CER60-XXXTI-XXXXX

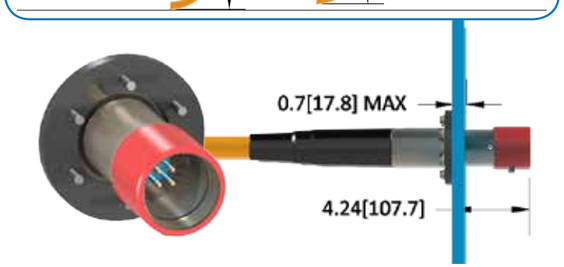
90° Term ROV Cable End Receptacle (Sockets) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	8.3[413.1]	17.1[434.6]	04ROV-CER90-XXXTI-XXXXX
7	8.3[413.1]	17.1[434.6]	07ROV-CER90-XXXTI-XXXXX
12	8.3[413.1]	17.1[434.6]	12ROV-CER90-XXXTI-XXXXX

Connector attributes will provide a generic identifier part description.
Please consult the factory to confirm your selection.

Refer to Connector Selection Legend on page 10.
Dimensions for reference only. For official values, contact the factory.





45° Term ROV Rear Mount Bulkhead Plug (Pins) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	15.5[393.2]	18.6[471.7]	04ROV-RMP45-XXXTI
7	15.5[393.2]	18.6[471.7]	07ROV-RMP45-XXXTI
12	15.5[393.2]	18.6[471.7]	12ROV-RMP45-XXXTI

60° Term ROV Rear Mount Bulkhead Plug (Pins) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	13.0[329.2]	19.3[490.7]	04ROV-RMP60-XXXTI
7	13.0[329.2]	19.3[490.7]	07ROV-RMP60-XXXTI
12	13.0[329.2]	19.3[490.7]	12ROV-RMP60-XXXTI

90° Term ROV Rear Mount Bulkhead Plug (Pins) for PBOF Hose

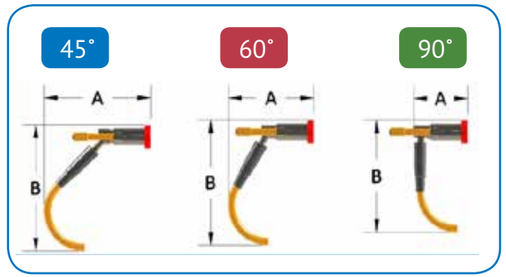
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	8.2[207.3]	17.1[434.6]	04ROV-RMP90-XXXTI
7	8.2[207.3]	17.1[434.6]	07ROV-RMP90-XXXTI
12	8.2[207.3]	17.1[434.6]	12ROV-RMP90-XXXTI

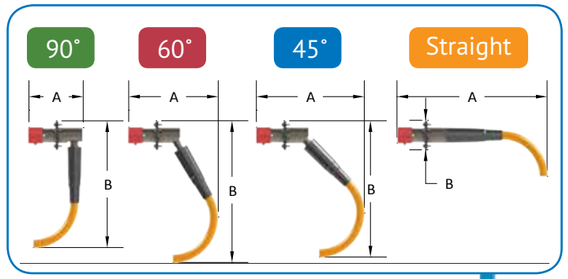
STR Term ROV Rear Mount Bulkhead Plug (Pins) for PBOF Hose

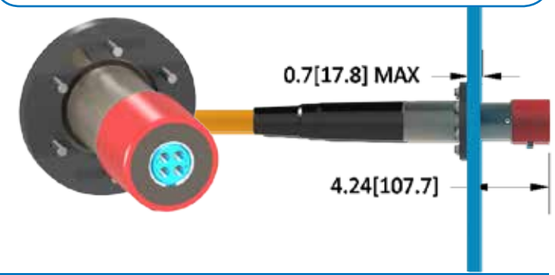
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	21.2[538.5]	4.0[101.1]	04ROV-RMP00-XXXTI
7	21.2[538.5]	4.0[101.1]	07ROV-RMP00-XXXTI
12	21.2[538.5]	4.0[101.1]	12ROV-RMP00-XXXTI

*All A and B Dimensions are using a -12 PBOF Hose with a 5.0"(127.0mm) minimum bend radius. *No difference between Receptacle and Plug A and B dimensions.
*Typically no terminations are front mounted and with terminations are rear mounted.

ROV Cable End Plug (Pins) MATES WITH ROV **REAR** Mount Bulkhead Receptacle (Sockets)







45° Term ROV Cable End Plug (Pins) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	16.3[413.1]	19.3[489.7]	04ROV-CEP45-XXXTI-XXXXX
7	16.3[413.1]	19.3[489.7]	07ROV-CEP45-XXXTI-XXXXX
12	16.3[413.1]	19.3[489.7]	12ROV-CEP45-XXXTI-XXXXX

60° Term ROV Cable End Plug (Pins) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	13.1[332.3]	19.1[485.9]	04ROV-CEP60-XXXTI-XXXXX
7	13.1[332.3]	19.1[485.9]	04ROV-CEP60-XXXTI-XXXXX
12	13.1[332.3]	19.1[485.9]	04ROV-CEP60-XXXTI-XXXXX

90° Term ROV Cable End Plug (Pins) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	8.3[413.1]	17.1[434.6]	04ROV-CEP90-XXXTI-XXXXX
7	8.3[413.1]	17.1[434.6]	07ROV-CEP90-XXXTI-XXXXX
12	8.3[413.1]	17.1[434.6]	12ROV-CEP90-XXXTI-XXXXX

Connector attributes will provide a generic identifier part description.
Please consult the factory to confirm your selection.

Refer to Connector Selection Legend on page 10.
Dimensions for reference only. For official values, contact the factory.

45° Term ROV Rear Mount Bulkhead Receptacle (Sockets) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	15.5[393.2]	18.6[471.7]	04ROV-RMR45-XXXTI
7	15.5[393.2]	18.6[471.7]	07ROV-RMR45-XXXTI
12	15.5[393.2]	18.6[471.7]	12ROV-RMR45-XXXTI

60° Term ROV Rear Mount Bulkhead Receptacle (Sockets) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	13.0[329.2]	19.3[490.7]	04ROV-RMR60-XXXTI
7	13.0[329.2]	19.3[490.7]	07ROV-RMR60-XXXTI
12	13.0[329.2]	19.3[490.7]	12ROV-RMR60-XXXTI

90° Term ROV Rear Mount Bulkhead Receptacle (Sockets) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	8.2[207.3]	17.1[434.6]	04ROV-RMR90-XXXTI
7	8.2[207.3]	17.1[434.6]	07ROV-RMR90-XXXTI
12	8.2[207.3]	17.1[434.6]	12ROV-RMR90-XXXTI

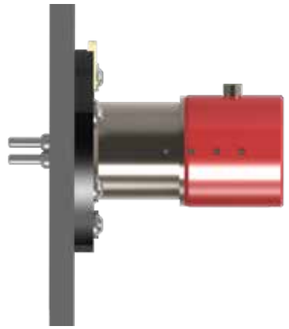
STR Term ROV Rear Mount Bulkhead Receptacle (Sockets) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	21.2[538.5]	4.0[101.1]	04ROV-RMR00-XXXTI
7	21.2[538.5]	4.0[101.1]	07ROV-RMR00-XXXTI
12	21.2[538.5]	4.0[101.1]	12ROV-RMR00-XXXTI

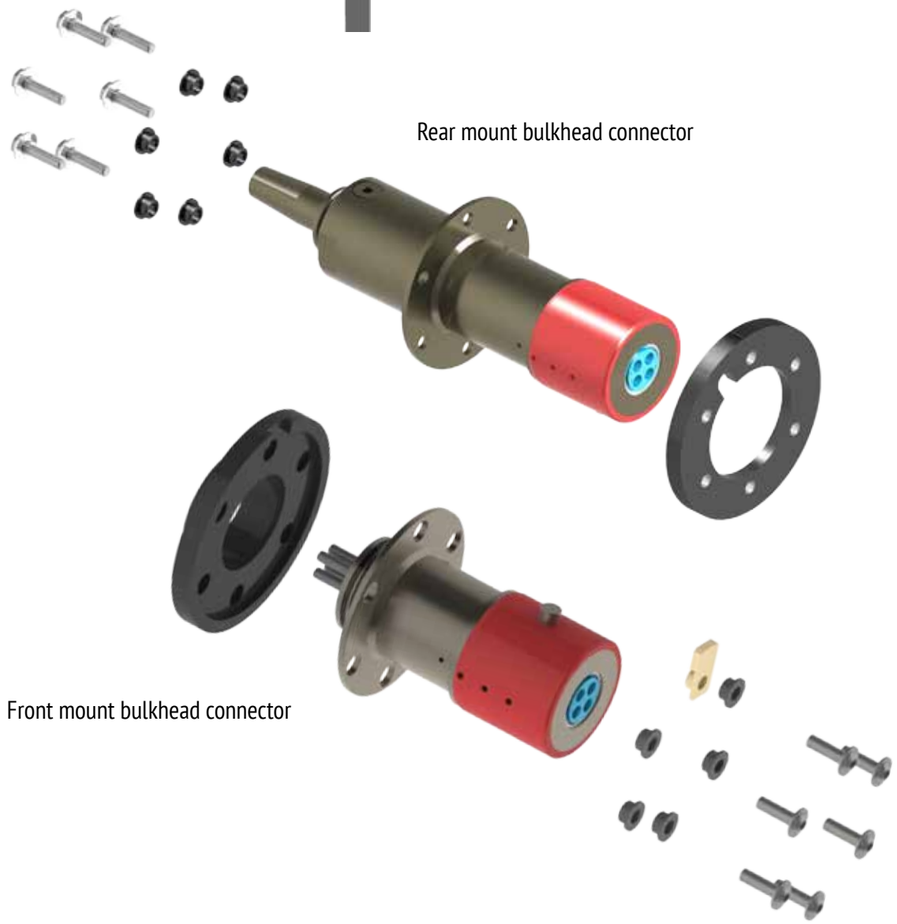
*All A and B Dimensions are using a -12 PBOF Hose with a 5.0"(127.0mm) minimum bend radius. *No difference between Receptacle and Plug A and B dimensions.
*Typically no terminations are front mounted and with terminations are rear mounted.

ISOLATION HARDWARE:

ROV Bulkhead Connectors are typically installed directly to a customer vessel such as a Subsea Control Module. The isolation hardware is provided to prevent accelerated metal degradation caused by galvanic coupling of dissimilar metals.

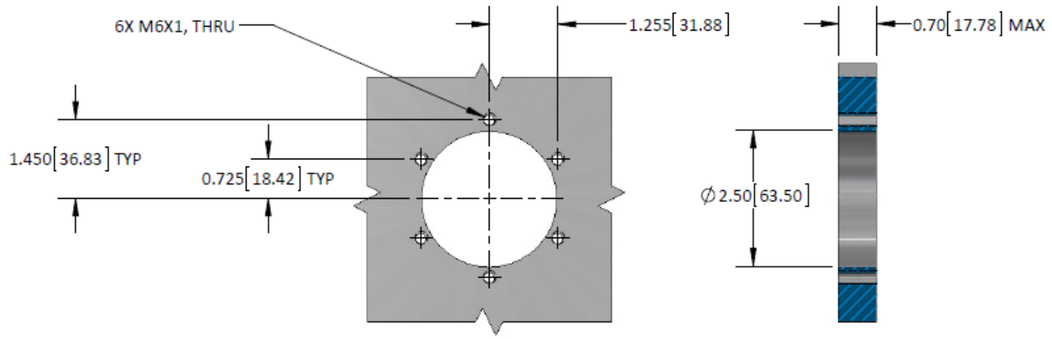


Rear mount bulkhead connector

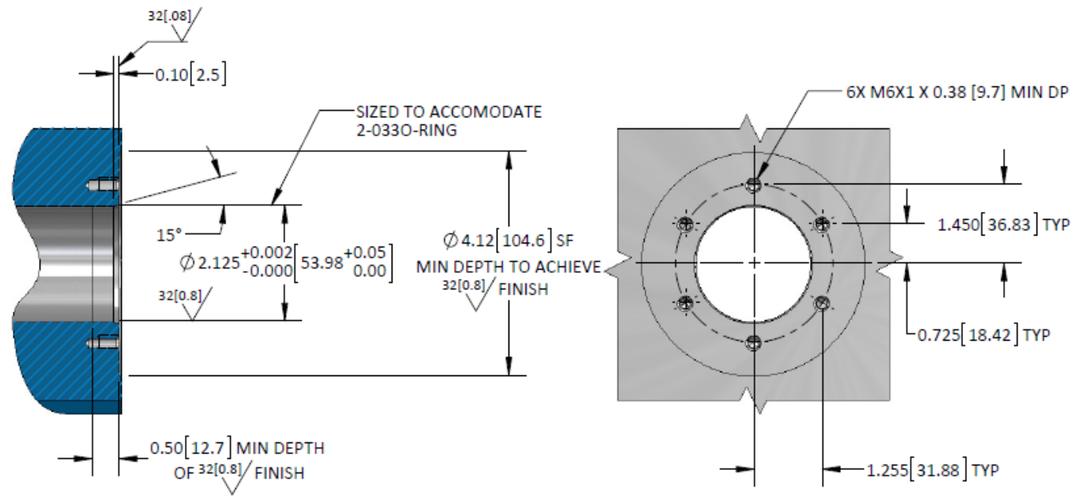


Front mount bulkhead connector

ROV Bulkhead Mounting Interface



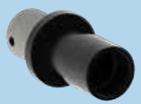
REAR MOUNTED BULKHEAD OUTLINE INTERFACE



FRONT MOUNTED BULKHEAD NO TERMINATION OUTLINE INTERFACE

*All measurements are in inches and all measurements in [] are mm. Dimensions for reference only. For official values, contact factory.
If using a front mount with hose, a slotted opening is required. *Typically no terminations are front mounted and with terminations are rear mounted.

ROV Connector Accessories: Dummy, Parking Positions, and Protective Caps

	ACCESSORY	MATING CONNECTOR
	Limited Use* Dummy Protection Receptacle	ROV Bulkhead Plug
	Unlimited Use* Dummy Protection Receptacle	
	Mechanical Protection Cap	ROV Bulkhead Receptacle
	Titanium Universal Parking Position	ROV Cable End Receptacle
	Delrin Universal Parking Position	
	Dummy Receptacle Parking Position	ROV Cable End Plug
	Heavy Duty Cable End Transportation Protection Cap	ROV Cable End Plug or Receptacle
	Heavy Duty Bulkhead Transportation Protection Cap *Not for subsea use.	ROV Bulkhead Plug or Receptacle

*The primary purpose of the protective cap is to protect the exposed pins of the Nautilus™ (male) plug connector when operational scenarios require extended time subsea in the unused subsea stored condition. Limited Use offers a lower cost and has a reduced maximum number of mate/de-mate cycles in a sand/silt environment, as compared to the Unlimited version.

ROV Connector Accessories: Surface Testing

	ACCESSORY	MATING CONNECTOR
	ROV Cable End Test Receptacle	ROV Bulkhead Plug
	ROV Cable End Test Plug	ROV Bulkhead Receptacle
	ROV Bulkhead Test Receptacle	ROV Cable End Plug
	ROV Bulkhead Test Plug	ROV Cable End Receptacle

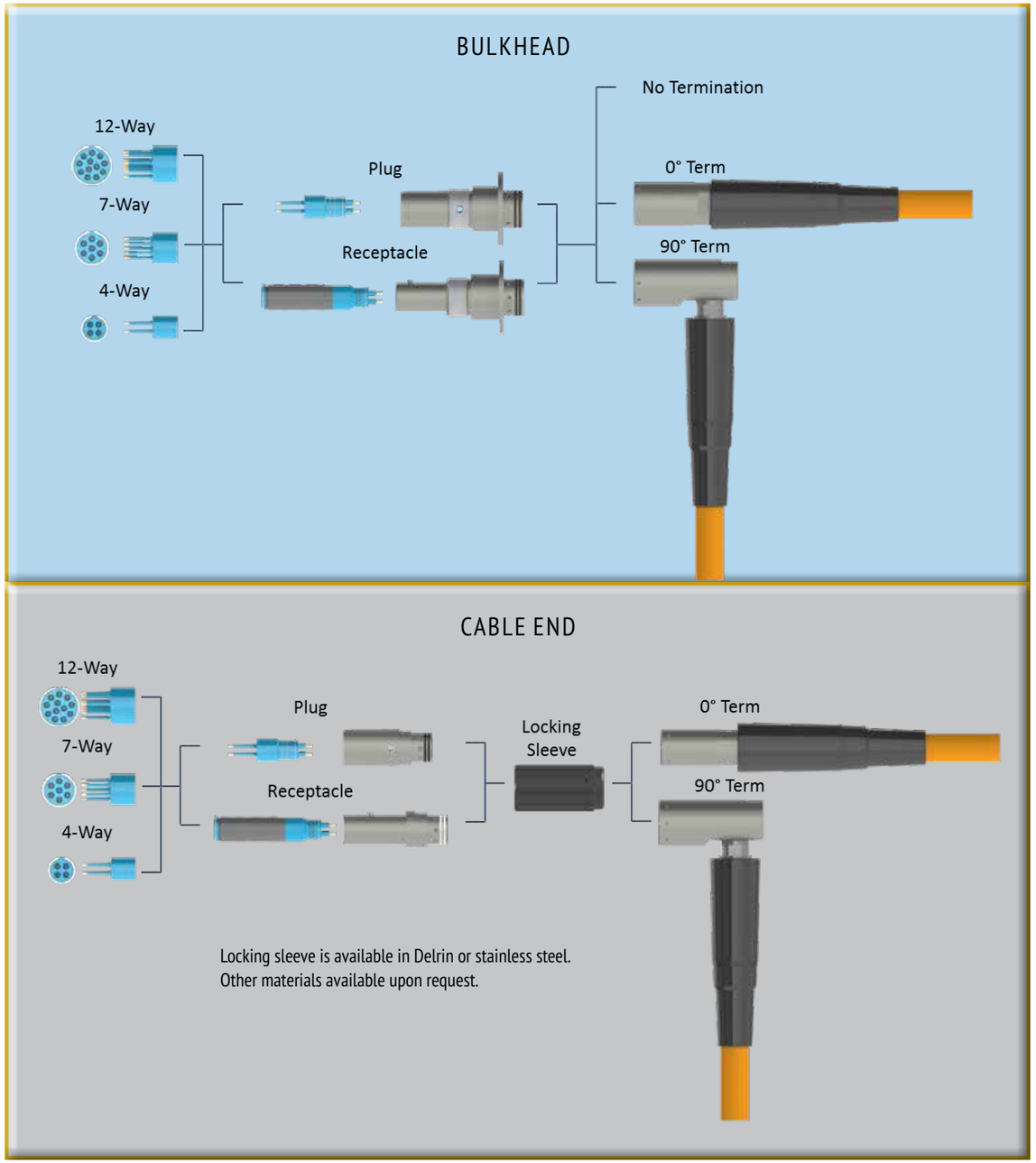
*Test connectors not for subsea use.

Manual Mate Nautilus Connectors

Manual Mate Nautilus Connectors, sometimes referred to as “Diver Mate”, feature a manually actuated threaded locking sleeve arrangement for mechanical coupling and are available with two material configuration options.

These connectors are used in shallow water where the subsea wet mate coupling is achieved by divers rather than by ROV. Manual Mate Connectors are also used as highly reliable surface connectors that can be deployed in deep water applications.

Common Manual Mate Modular Diagram

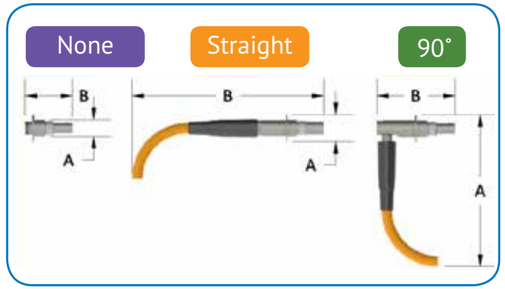


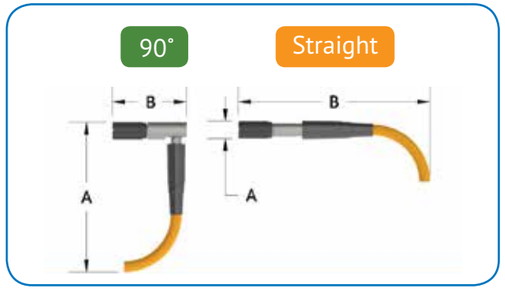
Dimensions for reference only. For official values, contact the factory.

Manual Mate Bulkhead Receptacle (Sockets)

MATES WITH

Manual Mate Cable End Plug (Pins)





No Term Manual Mate Bulkhead Receptacle (Sockets)			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	1.9[48.3]	5.2[132.1]	04MAN-RMRNA-XXXSS
7	2.2[55.9]	5.2[132.1]	07MAN-RMRNA-XXXSS
12	2.4[61.0]	5.2[132.1]	12MAN-RMRNA-XXXSS

STR Term Manual Mate Bulkhead Receptacle (Sockets) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	3.0[76.2]	21.2[538.7]	04MAN-RMR00-XXXSS
7	3.5[88.9]	21.2[538.7]	07MAN-RMR00-XXXSS
12	3.5[88.9]	21.2[538.7]	12MAN-RMR00-XXXSS

90° Term Manual Mate Bulkhead Receptacle (Sockets) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	16.7[423.2]	7.5[190.5]	04MAN-RMR90-XXXSS
7	17.2[436.1]	8.2[208.3]	07MAN-RMR90-XXXSS
12	17.2[436.1]	8.6[218.4]	12MAN-RMR90-XXXSS

STR Term Manual Mate Cable Plug (Pins) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	1.9[48.3]	20.5[521.3]	04MAN-CEP00-XXXSS
7	2.2[55.9]	20.5[521.3]	07MAN-CEP00-XXXSS
12	2.4[61.0]	20.5[521.3]	12MAN-CEP00-XXXSS

90° Term Manual Mate Cable Plug (Pins) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	16.1[408.8]	8.0[208.3]	04MAN-CEP90-XXXSS
7	16.2[411.5]	8.0[208.3]	07MAN-CEP90-XXXSS
12	16.4[416.6]	7.6[193.0]	12MAN-CEP90-XXXSS

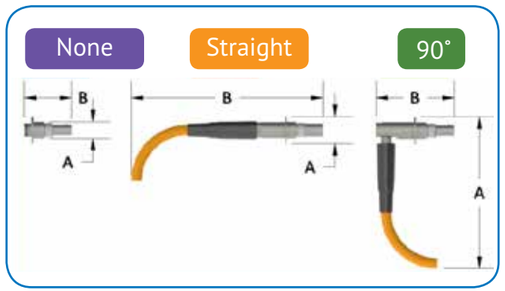
Connector attributes will provide a generic identifier part description. Please consult the factory to confirm your selection.
Refer to Connector Selection Legend on page 10. Dimensions for reference only. For official values, contact the factory.

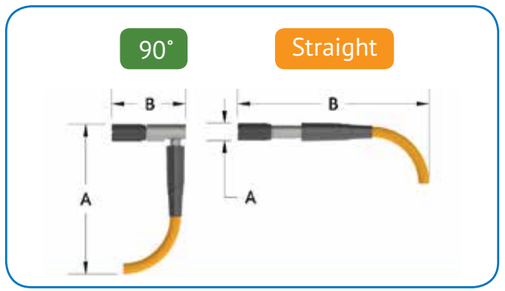
*All A and B Dimensions are using a -12 PBOF Hose with a 5.0"(127.0mm) minimum bend radius. *No difference between Receptacle and Plug A and B dimensions.
*Typically no terminations are front mounted and with terminations are rear mounted.

Manual Mate Bulkhead Plug (Pins)

MATES WITH

Manual Mate Cable End Receptacle (Sockets)





No Term Manual Mate Bulkhead Plug (Pins)			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	1.9[48.3]	4.9[124.5]	04MAN-RMPNA-XXXSS
7	2.2[55.9]	4.9[124.5]	07MAN-RMPNA-XXXSS
12	2.4[61.0]	4.9[124.5]	12MAN-RMPNA-XXXSS

STR Term Manual Mate Bulkhead Plug (Pins) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	3.0[76.2]	21.0[533.4]	04MAN-RMP00-XXXSS
7	3.5[88.9]	21.0[533.4]	07MAN-RMP00-XXXSS
12	3.5[88.9]	21.0[533.4]	12MAN-RMP00-XXXSS

STR Term Manual Mate Cable Receptacle (Sockets) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	1.9[48.3]	20.5[521.3]	04MAN-CER00-XXXSS
7	2.2[55.9]	20.5[521.3]	07MAN-CER00-XXXSS
12	2.4[61.0]	20.5[521.3]	12MAN-CER00-XXXSS

90° Term Manual Mate Bulkhead Plug (Pins) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	16.7[423.2]	7.3[185.4]	04MAN-RMP90-XXXSS
7	17.2[436.1]	8.0[203.2]	07MAN-RMP90-XXXSS
12	17.2[436.1]	8.4[213.4]	12MAN-RMP90-XXXSS

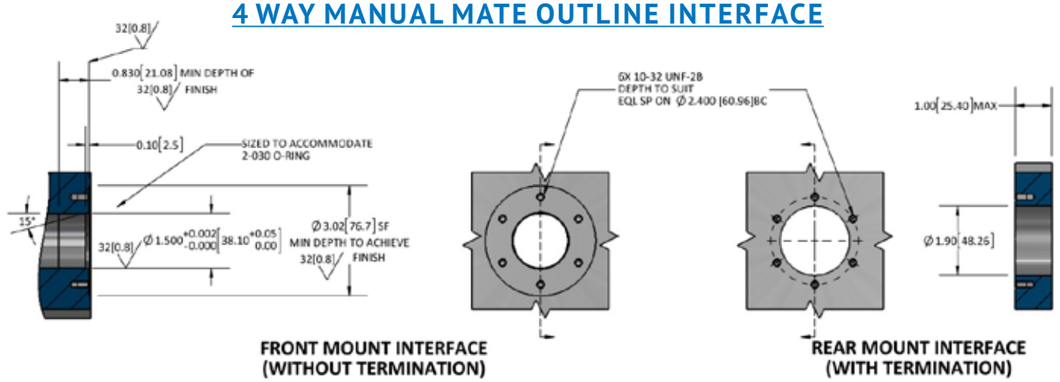
90° Term Manual Mate Cable Receptacle (Sockets) for PBOF Hose			
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	16.1[408.8]	8.0[208.3]	04MAN-CER90-XXXSS
7	16.2[411.5]	8.0[208.3]	07MAN-CER90-XXXSS
12	16.4[416.6]	7.6[193.0]	12MAN-CER90-XXXSS

Connector attributes will provide a generic identifier part description. Please consult the factory to confirm your selection.
Refer to Connector Selection Legend on page 10. Dimensions for reference only. For official values, contact the factory.

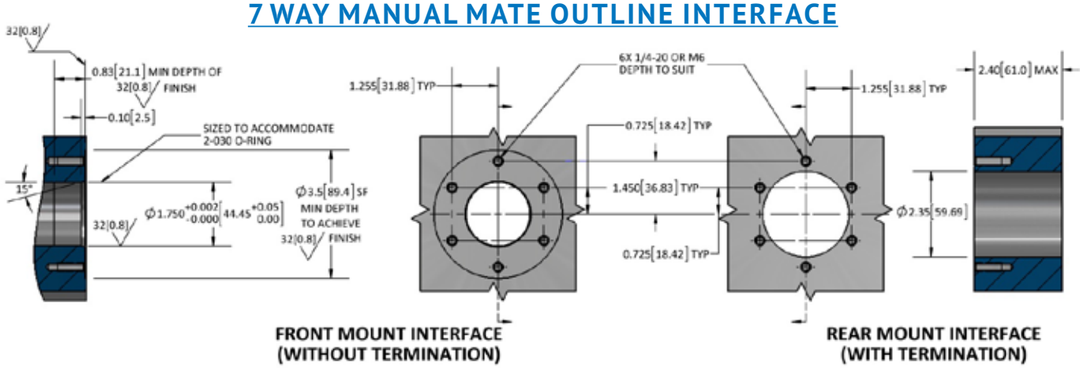
*All A and B Dimensions are using a -12 PBOF Hose with a 5.0"(127.0mm) minimum bend radius. *No difference between Receptacle and Plug A and B dimensions.
*Typically no terminations are front mounted and with terminations are rear mounted.

Manual Mate Bulkhead Mounting Interface

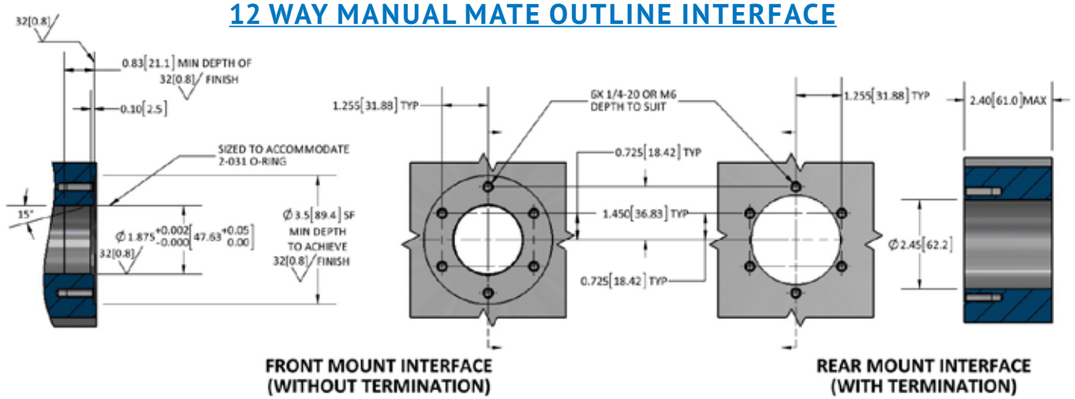
4 WAY MANUAL MATE OUTLINE INTERFACE



7 WAY MANUAL MATE OUTLINE INTERFACE

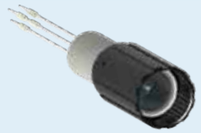
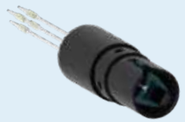


12 WAY MANUAL MATE OUTLINE INTERFACE



*All measurements are in inches and all measurements in [ ] are mm. *Typically No Terminations are Front Mounted and With Terminations are Rear Mounted
Dimensions for reference only. For official values, contact factory.

Manual Mate Connector Accessories: Test, Dummy, Parking Positions, and Protective Caps

	ACCESSORY	MATING CONNECTOR
	Manual Mate Cable End Test Receptacle	Manual Mate Bulkhead Plug
	Manual Mate Cable End Receptacle Dummy	
	Manual Mate Cable End Test Plug	Manual Mate Bulkhead Receptacle
	Manual Mate Bulkhead Test Receptacle	Manual Mate Cable End Plug
	Manual Mate Bulkhead Parking Position	
	Manual Mate Bulkhead Test Plug	Manual Mate Cable End Receptacle
	Manual Mate Heavy Duty Plug Transportation Protection Cap	Manual Mate Plug
	Manual Mate Heavy Duty Receptacle Transportation Protection Cap *Not for subsea use.	Manual Mate Receptacle

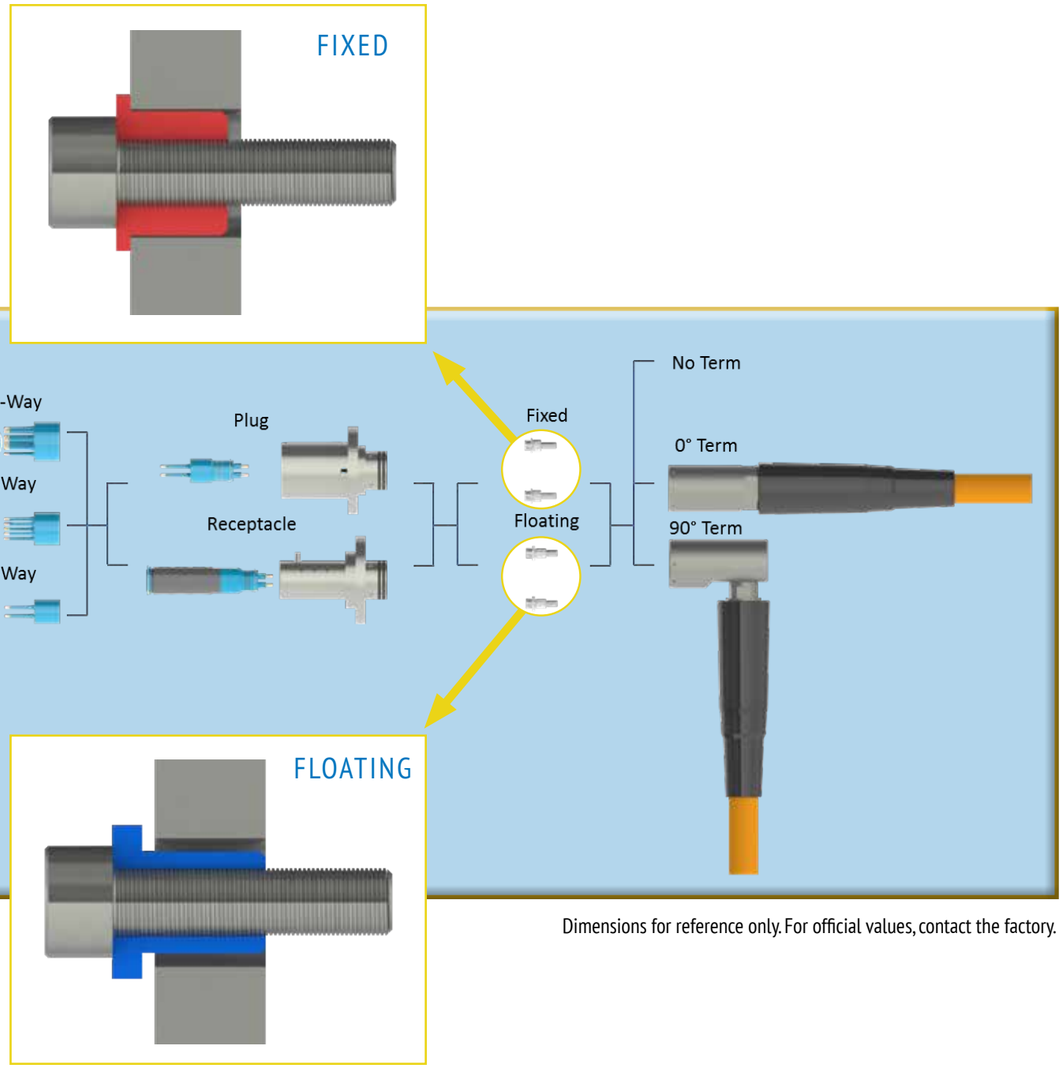
Stab Mate Nautilus Connectors

Stab Mate Nautilus connectors are used as fixed elements where two pieces of equipment are coupled and held in place through gravity with no mechanical locking mechanism. The alignment of the connections is built into the equipment.

Stab Plate Common Modular Diagram:

FIXED VS. FLOATING

Stab Plate mating connector pairs consist of one fixed and one floating connector. The bushing configuration determines fixed or floating. The floating bushing allows the stab plate to move axially +.041in[1.04mm] and radially ±.040in[1.02]mm. The floating bushing also allows for a rotational movement of ±1.6° and an angular movement of ±0.7°.

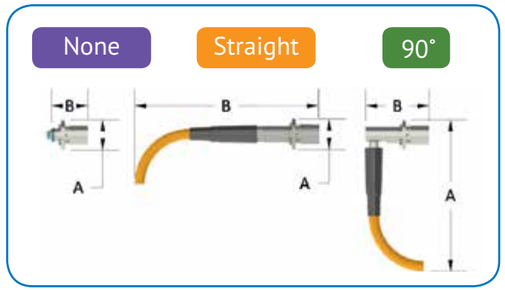


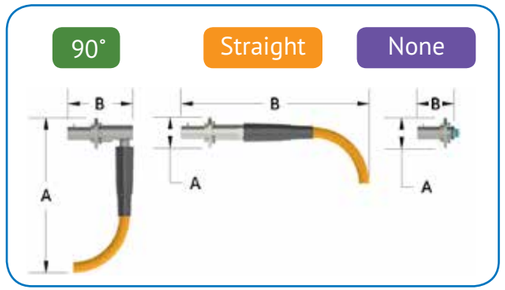
Dimensions for reference only. For official values, contact the factory.

Stab Plate Plug (Pins)

MATES WITH

Stab Plate Receptacle (Sockets)





No Term Stab Plate Plug (Pins)

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	3.4[85.9]	4.1[103.9]	04STB-RMPNA-XXXSS
7	3.4[85.9]	4.1[103.9]	07STB-RMPNA-XXXSS
12	3.4[85.9]	4.1[103.9]	12STB-RMPNA-XXXSS

No Term Stab Plate Receptacle (Sockets)

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	3.4[85.9]	4.2[106.2]	04STB-RMRNA-XXXSS
7	3.4[85.9]	4.2[106.2]	07STB-RMRNA-XXXSS
12	3.4[85.9]	4.2[106.2]	12STB-RMRNA-XXXSS

STR Term Stab Plate Plug (Pins) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	3.4[85.9]	4.1[103.9]	04STB-RMP00-XXXSS
7	3.4[85.9]	4.1[103.9]	07STB-RMP00-XXXSS
12	3.4[85.9]	4.1[103.9]	12STB-RMP00-XXXSS

STR Term Stab Plate Receptacle (Sockets) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	3.4[85.9]	20.6[522.7]	04STB-RMR00-XXXSS
7	3.4[85.9]	20.6[522.7]	07STB-RMR00-XXXSS
12	3.4[85.9]	20.6[522.7]	12STB-RMR00-XXXSS

90° Term Stab Plate Plug (Pins) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	16.0[406.4]	7.1[180.1]	04STB-RMP90-XXXSS
7	16.0[406.4]	7.1[180.1]	07STB-RMP90-XXXSS
12	16.0[406.4]	7.1[180.1]	12STB-RMP90-XXXSS

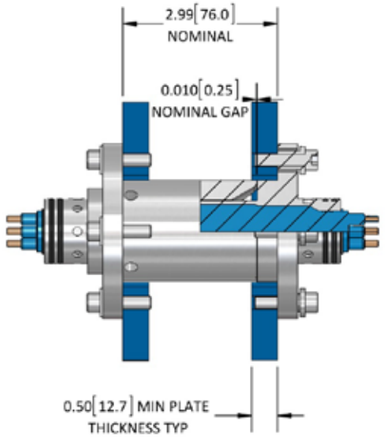
90° Term Stab Plate Receptacle (Sockets) for PBOF Hose

# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description
4	16.0[406.4]	7.2[182.4]	04STB-RMR90-XXXSS
7	16.0[406.4]	7.2[182.4]	07STB-RMR90-XXXSS
12	16.0[406.4]	7.2[182.4]	12STB-RMR90-XXXSS

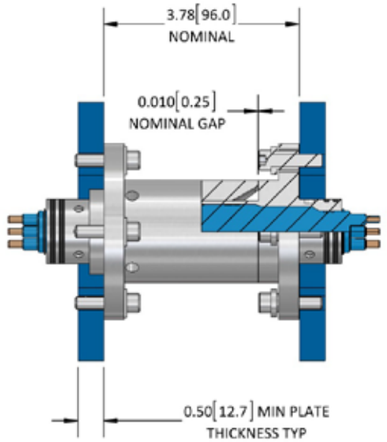
Connector attributes will provide a generic identifier part description. Please consult the factory to confirm your selection.
Refer to Connector Selection Legend on page 10. Dimensions for reference only. For official values, contact the factory.

*All A and B Dimensions are using a -12 PBOF Hose with a 5.0"(127.0mm) minimum bend radius. *No difference between Receptacle and Plug A and B dimensions.
*Typically no terminations are front mounted and with terminations are rear mounted.

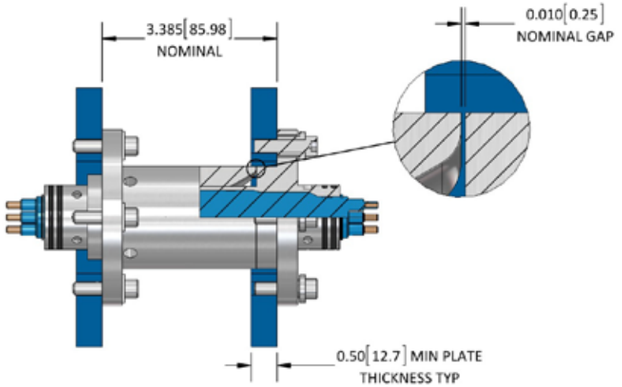
Front Mount vs. Rear Mount



REAR MOUNT VERSION



FRONT MOUNT VERSION



FRONT MOUNT / REAR MOUNT VERSION

The interface of the stab plate connector is interchangeable to front mount or rear mount.

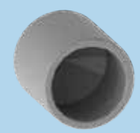
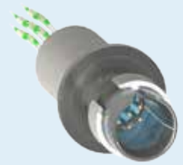
If both connectors are mounted between the two plates (front mount version), the distance between the inside faces of the plates is 3.78in [96.0mm].

If both connectors are mounted to the outside faces of the plates (rear mount version), the distance between the outside face of the plates is 2.99in [76.0m].

If one connector is mounted on the inside face and the other on the outside face of the plates (rear/front mount version), the distance between the inside face and outside face is 3.385 in [85.98mm].

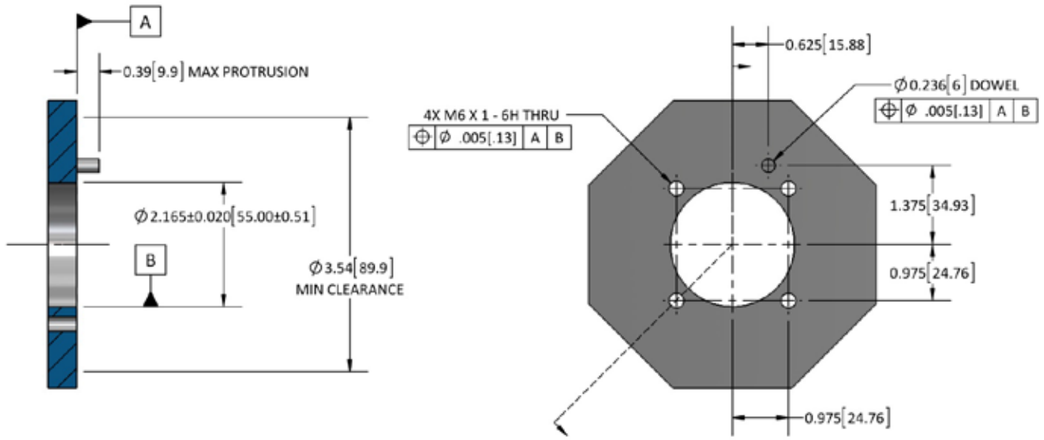
*All measurements are in inches and all measurements in [ ] are mm. *No termination connectors have different nominal spacing. Please contact for more information. Dimensions for reference only. For official values, contact factory.

Stab Plate Connector Accessories: Test, Dummy, and Protective Caps

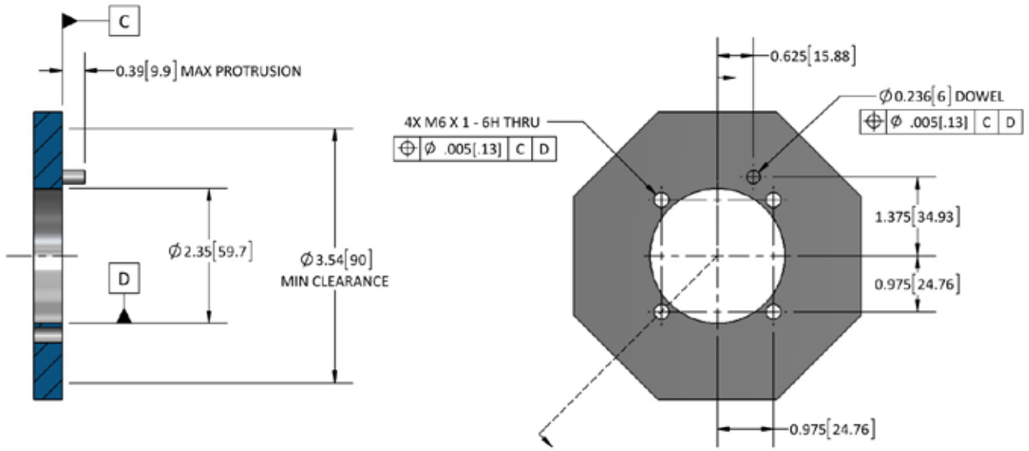
	ACCESSORY	MATING CONNECTOR
	Stab Plate Test Receptacle	
	Stab Plate Dummy Receptacle	Stab Plate Plug
	Stab Plate Heavy Duty Plug Transportation Protection Cap	
	Stab Plate Test Plug	
	Stab Plate Protection Cap	Stab Plate Receptacle
	Stab Plate Heavy Duty Receptacle Transportation Protection Cap	

Stab Plate Front and Rear Mount Outline Interface Drawing

4 WAY MOUNTING INTERFACE



7 / 12 WAY MOUNTING INTERFACE



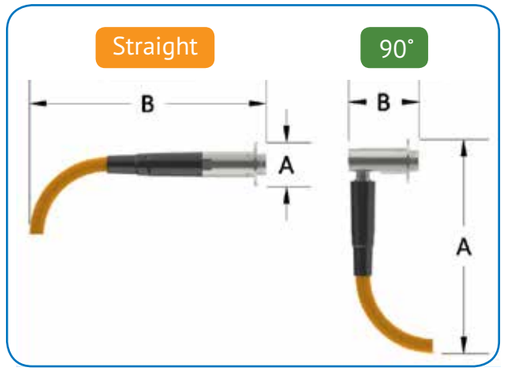
*All measurements are in inches and all measurements in [ ] are mm. *Please contact factory for no termination outline interface drawings. Dimensions for reference only. For official values, contact factory.

Nautilus Penetrators

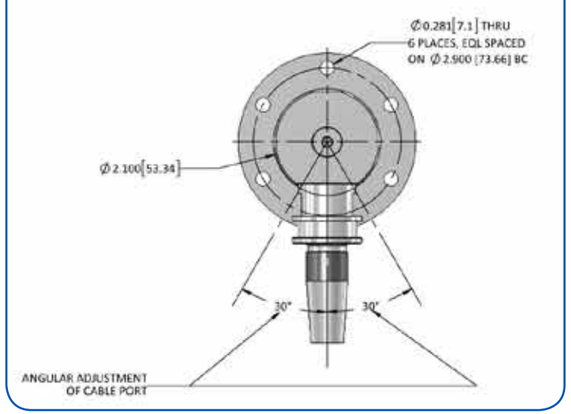
Nautilus Electrical Penetrators meet the same electrical performance characteristics as Nautilus connectors and are used where the need to mate and demate is not necessary, generally at the second end of a pressure-balanced oil-filled (PBOF) assembly with a Nautilus connector at the end. The Penetrator is typically attached directly to a pressure vessel.

The Nautilus Penetrator forms a pressure barrier where differential pressure exists between the PBOF assembly and a 1 ATM vessel.

Bulkhead Penetrators



PENETRATOR OUTLINE INTERFACE DRAWING



STR Term Penetrator for Direct PV Mount				
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description	PGTL (In M)
4	3.5[88.9]	7.5[189.7]	04PEN-FMP00-XXXSS	X
7	3.5[88.9]	7.5[189.7]	07PEN-FMP00-XXXSS	X
12	3.5[88.9]	7.5[189.7]	12PEN-FMP00-XXXSS	X

90° Term Penetrator for Direct PV Mount				
# of Ways	A Dim (In(mm))	B Dim (In(mm))	Ordering Description	PGTL (In M)
4	17.1[433.2]	5.6[141.7]	04PEN-FMP90-PGTSS	X
7	17.1[433.2]	5.6[141.7]	07PEN-FMP90-PGTSS	X
12	17.1[433.2]	5.6[141.7]	12PEN-FMP90-PGTSS	X

Define Pigtail length in Meters & Wire AWG.
Connector attributes will provide a generic identifier part description. Please consult the factory to confirm your selection.
Refer to Connector Selection Legend on page 10. Dimensions for reference only. For official values, contact the factory.

*All A and B Dimensions are using a -12 PBOF Hose with a 5.0"(127.0mm) minimum bend radius. *Though not standard 45° and 60 ° Terminations are available.
*For Titanium Front Mount Penetrator refer to ROV outline interface drawings. Dimensions for reference only. For official values, contact factory.

Additional Solutions from Teledyne ODI

- Sensor Integration
- Gross Alignment Funnel/Enhanced Latching Indicator
- Subsea Junction Boxes
- Modular Connectorized Distribution Unit (MCDU)
- Field Assembled Cable Termination (FACT)
- Pressure-Balanced Oil-Filled (PBOF) Hose

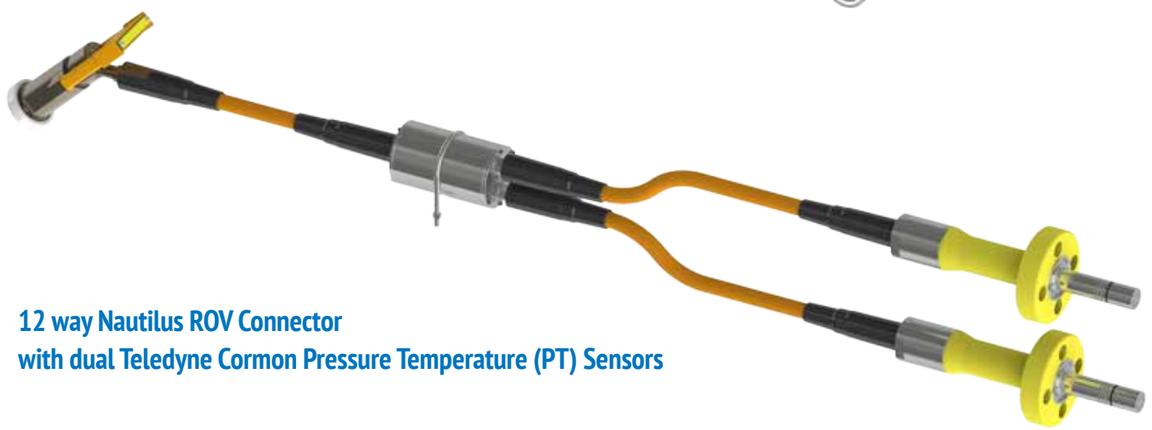
Additional Solutions from Teledyne ODI

Sensor Integration:

Teledyne ODI offers fully integrated and tested turn-key sensor wet mate jumper assemblies with Teledyne or third party sensors. Turn-key integration is accomplished in our Daytona Beach (USA) manufacturing headquarters, and Houston, Brazil, Worthing (UK) and Johor Bahru (Malaysia) service centers. Contact factory for details.

12 way Nautilus ROV Connector with Teledyne Cormon Erosion Sensor

12 way Nautilus ROV Connector with Teledyne Cormon Corrosion Sensor



12 way Nautilus ROV Connector with dual Teledyne Cormon Pressure Temperature (PT) Sensors

Additional Solutions from Teledyne ODI

Gross Alignment Funnel (GAF) Enhanced Latch Indicator (ELI):

Wet-mate connector enhancements, designed to optimize ROV mating efficiency and reduce operator time

GROSS ALIGNMENT FUNNEL (GAF)

The Teledyne ODI Gross Alignment Funnel (GAF) is used to overcome severe approach angles of ROV connectors during mating. Easily installed onto an existing Nautilus™ or Rolling Seal bulkhead mounted connector, the Gross Alignment Funnel significantly reduces ROV operator variability, ultimately resulting in faster mating and demating, and lower overall operator cost.

SPECIFICATIONS

Max Side Load Tolerance: (as Installed)	1,000 lbs
Max Mating Tilt Angle Possible: (with ELI installed on ROV connector)	4 deg.
Material:	Acetal

ENHANCED LATCHING INDICATOR (ELI)

The Teledyne ODI ELI presents clear visual mating indication to ROV operators with high-visibility yellow indicators near the handle. When unmated, four high-visibility yellow indicators rest inside the handle and when a successful mate occurs, the indicators extend outward. The Enhanced Latching Indicator is easily retrofitted onto deployed Nautilus or Rolling Seal Flying Lead Connectors.

SPECIFICATIONS

Operational Temperature:	-5°C to +40°C (seawater) -18°C to +50°C (air)
Storage Temperature:	-30°C to +60°C
Max. Operational Pressure:	10,000 psi
Mate/Demate Cycles:	100 (Rolling Seal) 1,000 (Nautilus™)
Mating Force Due to Latching Indicator:	< 10 lbs
Demating Force Due to Latching Indicator:	< 10 lbs
Material:	Acetal and Titanium

Dimensions for reference only. For official values, contact the factory.

Additional Solutions from Teledyne ODI

Subsea Junction Boxes:

Subsea Junction Boxes serve two main purposes:

1. To distribute input signals to multiple output signals where wire splicing typically occurs within the Junction Box to distribute the signals.
2. To marshal the input signals to multiple output connections, typically where no splicing is necessary inside of the Junction Box,

Teledyne ODI offers Junction Boxes integrated with wet mate connectors to provide a turn-key solution for reliable subsea distribution.

JUNCTION BOX APPLICATION CHECKLIST

Number of Electrical Circuits: _____

Input Circuit Count: _____

Output Circuit Count:_____

Wire gauge required: _____

Type of Wire: Single ❑ TP ❑ TSJP ❑

Operating Voltage: _____AC / DC

Operating Current: _____(A)

Water Depth or Operating Pressure: _____

Additional Solutions from Teledyne ODI

MCDU- Modular Connectorized Distribution Unit:

A modular family of subsea distribution units that provide oil-filled, pressure balanced junctions for flexible configurations.

The modular design and versatility of the Teledyne ODI MCDU allows for a variety of configurations with wet mate connectors, including the industry standard Nautilus Electrical, Rolling Seal Optical, and Nautilus Rolling Seal Hybrid. Functioning as the hub of an expandable subsea network, the MCDU can provide input connectivity through a variety of sources.

MCDU APPLICATION CHECKLIST

of Optical Circuits: _____

# of Electrical Circuits: _____

Input Connectivity Source (select one):

___ Hose

___ Penetrator

___ Closed Circuit Assembly

Operating Voltage:

_____ AC / DC

Operating Current _____ (A)

Water Depth or Operating Pressure: _____

Frame Required? Y / N

Type (select one): _____

____ Retrievable

____ Fixed Mount

Housing Material (select one):

_____ SS _____ Titanium

Additional Solutions from Teledyne ODI

FACT – Field Assembled Cable Termination:

The standard FACT components allow Teledyne ODI to factory build and test the majority of the termination assembly. As a result, only cable breakout, soldering, and encapsulation are performed in the field, thus significantly reducing operator dependence, and termination time, thereby significantly increasing reliability. The FACT design isolates the dry side from the wet side and eliminates the known causes of internal failures.

FACT
1-way through 7-way configurations

COMPACT FACT
Suited for subsea termination applications with space limitations.
The Compact FACT employs the same design philosophy as the FACT, but features a total of four electrical circuits and a 70% smaller size.

SPECIFICATIONS

Operational Temperature:	-10°C to +50°C
Max Operational Depth:	14,750 ft (4,500 m)*
Min Cable Diameter:	**FACT** 0.625 in (15.8 mm) **Compact FACT** 0.50 in (12.7 mm)
Max Cable Diameter:	**FACT** 1.27 in (32.3 mm) **Compact FACT** 1.00 in (25.4 mm)
Design Life:	25 Years
Number of Circuits:	**FACT:** 7 **Compact FACT:** 4
Max Operational Current:	30 amps per circuit
Max Operational AC/DC Voltage:	1.8 kV/3.3 kV
Insulation Resistance:	≥10 GΩ @ 1 kVDC

Dimensions for reference only. For official values, contact the factory.

FACT APPLICATION CHECKLIST

Provide manufacturers' cross sectional drawing.

# of Conductors: ____ AWG / mm² of Conductors: ____

Armor? Y / N Conductor Diameter: _____

Jacket Material Composition? _____

Cable OD: _____

Cable Inner Core OD (as applicable):

Operating Voltage: _____ Operating Current (A): _____

Water Depth/Operating Pressure: _____
Axial Load? _____

Mounting Required? Y / N

Termination onshore / offshore? _____

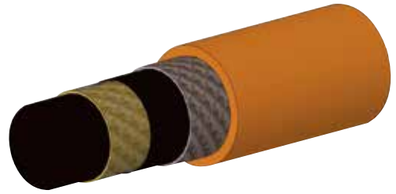
Flying Lead Connector output (4, 7, 12-Way): _____

Additional Solutions from Teledyne ODI

Pressure-Balanced Oil-Filled (PBOF) Hose:

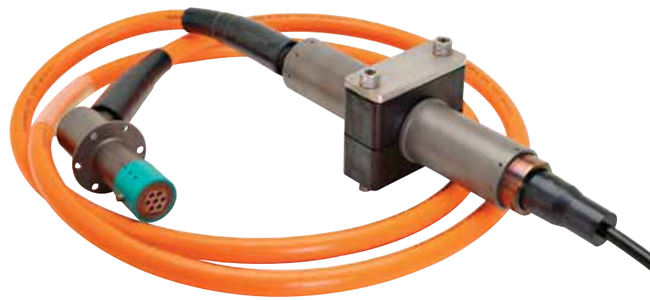
Custom-Manufactured hose assembly system available in -6, -8 and -12 sizes designed specifically for subsea harnesses.

Teledyne ODI has met the challenges of designing a cable specifically for the subsea environment. Teledyne ODI's Oil-Filled Hose (jumper) assemblies have proven to be a reliable and economical means for passing electrical and/or optical circuits, compensating its internal pressure as the external environmental pressure changes. The hose can be terminated into a variety of hose end fittings, which enables the ease of assembly to any combination of connectors or feed-throughs. These hose end fittings include the standard JIC and the Teledyne ODI integral hose termination.



FEATURE	-6 RATING	-8 RATING	-12 RATING (standard)
Minimum Bend Radius:	3" (76.2mm)	4" (101.6mm)	5" (127mm)
Axial Load / Max Working:	300 lbs	400 lbs	600 lbs
Axial Load / Min Failure:	450 lbs	600 lbs	1150lbs (TBC)
Max Axial Stretch:	2% @ 300 lbs	2% @ 400 lbs	2% @ 600 lbs
Pressure Rating (Max Working):	225 psi		
Temperature Rating:	-4°F to 122°F (-20°C to +50°C)		

For additional information, see operation and installation manual (D/N 103971-1}
Dimensions for reference only. For official values, contact the factory.



Request For Proposal Guide

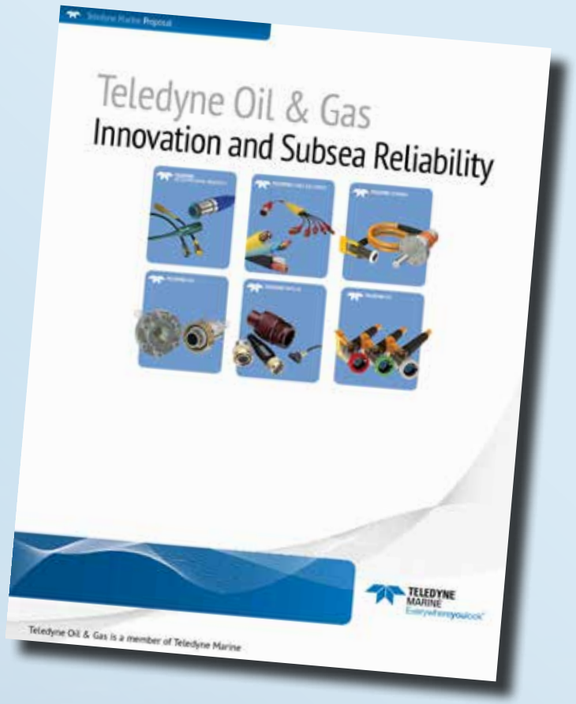
Please use the following forms to guide your product selections. If you have a functional design specification, please provide it with your request for proposal submission.

For proposal assistance and/or current product specifications:

ODI_Marketing@teledyne.com

For email submission of Request for Proposals:

ODI_RFQs@Teledyne.com



APPLICATION CHECKLIST GENERAL:

Company: _____ Contact:

Location: _____ Title: Email:_____

Project Name: _____ Phone: _____ Fax:_____

Installation Location: _____ Required Delivery Date: _____

GENERAL:

- Do you have a Functional Design Specification? ❑ Yes ❑ No
  If yes, please send to your local representative or to **ODI_RFQs@teledyne.com** with this inquiry.
- Please check the following application questions:

APPLICATION:

Electrical Options: ❑ High Power ❑ Standard Low Voltage (3.3kVDC/1.73kVAC)
❑ Optical (fiber optics) ❑ Hybrid (combination of fiber and electrical) ❑ Optical with >45dB Return Loss
❑ Combination

TOG PRODUCT REQUIREMENTS (CHECK ALL THAT APPLY):

❑ Point to Point Jumper ❑ Multi-Leg Harness ❑ Bulkhead Connector(s) ❑ Penetrator(s)
❑ Field Assembled Cable Termination (FACT) ❑ Molded Connector(s) and/or cable assembly
❑ Multiple Connector Distribution Unit (MCDU) ❑ Test Connector(s)

MATING CONFIGURATION REQUIREMENTS:

Wet-mate Options: ❑ ROV ❑ Manual-mate ❑ Stab-mate / ❑ Dry-mate (Submersible) ❑ Combination

- Project Description and Application (Brief Summary):

_____
_____
_____

ENVIRONMENTAL:

- Project operating depth? _____ Ft. or _____ Meters
- If using bulkhead mounted connectors, then identify the application:
  ❑ Free Flooded ❑ 1 ATM ❑ Pressure Balanced
  If pressure balanced, then identify the fluid that will be in contact with the terminated side of the connector:
  Fluid(s): _____
- Connectors are designed for seawater exposure.
  Identify other fluids, if any: _____
- Identify temperature requirements:
  Minimum _____°F or _____°C Maximum _____°F or _____°C

HARDWARE:

- Connector Material: ❑ 316 Stainless Steel ❑ Titanium ❑ S. Duplex ❑ Other* ❑ Combination
  *If "other" Please describe: _____
- ❑ Check if Fluid-Filled Hose (Point to Point Jumper): Maximum Length Required: _____ Ft. or _____ Meters
- ❑ Check if Molded Cable (Point to Point Jumper): Maximum Length Required: _____ Ft. or _____ Meters
- ❑ Check if Field Assembled Cable Termination (FACT) required: ❑ Electrical ❑ Optical ❑ Hybrid ❑ Combination

APPLICATION CHECKLIST GENERAL (con't):

CIRCUIT REQUIREMENTS:

- Identify continuous operating voltage: _____ ❑ kVAC or _____ ❑ kVDC
- Identify continuous operating current: _____ Amps
- Identify connector circuit configuration required: ❑ 4-Way ❑ 7-Way ❑ 12-Way ❑ Combination
- Wire construction preference: ❑ Single Conductor ❑ Twisted Pair ❑ Twisted Shielded Pair ❑ Combination
- Wire gage preference: ❑ 14AWG (power applications) ❑ 16AWG (communication applications) ❑ Combination
- Identify wire gage preference if any: _____ AWG or _____ mm^2
- Identify optical requirements: ❑ Single Mode ❑ Multi-Mode ❑ Combination ❑ Other: _____
- Identify optical operating wavelength: ❑ 850nm ❑ 1310nm ❑ 1550nm ❑ Combination ❑ Other: _____
- Required number of optical circuits per connector: _____ (max. 8 for standard connector)

CABLE TERMINATION:

- If utilizing a mechanical (FACT) cable termination, then please include a copy of the cable cross-section and specification details with this enquiry.

PROJECT REQUIREMENTS:

- Please identify unique project requirements such as Statoil, API, ISO if any: _____
- Please include a copy of project requirements with this enquiry if any.
- Please feel free to contact Teledyne Oil and Gas for technical assistance: **Don.Heinz@teledyne.com**

NOTES:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Jumper Sketch Worksheet

Designer: _____ Company: _____

Contact Phone: _____ Contact Email: _____

System: _____ Project Name: _____

Sketch Name: _____

HOSE LENGTH/ # OF WIRES / WIRE AWG

STANDARD CONNECTOR ATTRIBUTES					OPTIONAL CONNECTOR ATTRIBUTES		
Connections	Mate Config	Mounting	Type	Term Arrangmt	Keying Arrangmt	Material	Handle Options
04	ROV	CE	P	NA	XXX	TI	XXXXX
07	MAN	FM	R	00	000	SS	EXLNG
12	STB	RM	D	45			STDVN
	PEN		A	60			EXTVN
			B	90			FSHTL
			C				
			E				
			F				
			G				
			H				

EXAMPLE: 04 ROV – CE P 60 – 090 TI – XXXXX

PBOF Hose: _____ Length (M or Ft): _____

# of Wires: _____ Wires AWG: _____

Special Notes: _____

_____

Action Requested: Quote ❑ Yes or ❑ No Please Call ❑ Yes or ❑ No

Field Service / Aftermarket Service:

IN THE EVENT OF A FIELD SERVICE EMERGENCY, PLEASE CALL +1 386 236 0780.

The Company maintains a staff of experienced technicians located in the USA, Europe and South America to service customers.

Teledyne ODI's technicians are certified to work in the most extreme environments such as offshore oil & gas facilities.

The Field Service Team maintains an around-the-clock service that includes representatives from Engineering for technical support and Operations for manufacturing/spare parts support of the field teams.

TO SCHEDULE ROUTINE FIELD SERVICE REQUESTS OR RETURN AN ODI PRODUCT, PLEASE VISIT

WWW.TELEDYNEOILANDGAS.COM

CALL +1 **386 236 0780 OR +1 800 234 6930**

EMAIL: **TOG_SERVICE@TELEDYNE.COM**

GLOBAL FIELD SERVICE LOCATIONS

Daytona Beach, FL
+1 386 236 0780

Houston, TX
+1 800 234 6930

Aberdeen, Scotland
+44 (0) 1224 047001

Johor Bahru, Malaysia
+603.7859.7713 / 7714 / 7716

Rio de Janeiro, Brasil
+55 21 2714 6072

Commonly Used Acronyms

Abbreviation:	Definition
AMP:	Ampere
API:	American Petroleum Institute
ATM:	Atmospheric
AWG:	American Wire Gauge
BLKHD:	Bulkhead
CE:	Cable End
DWG:	Drawing
EHP:	Electrical Hull Penetrator
FACT:	Field Assembled Cable Termination
FITA:	Field Installed Termination Assembly
FMEA:	Failure Mode Effects Analysis
FMBH:	Front Mount Bulkhead
FXD:	Fixed
GND:	Ground
GΩ:	Gigaohms
Hg:	Mercury
HP/HT:	High Pressure/High Temperature
HSE:	Health, Safety, Environmental
Hz:	Hertz
ISO:	International Organization for Standardization
KHz:	Kilohertz
Kohm:	Kilohms
kv:	Kilovolt
O/I:	Outline Interface
PBOF:	Pressure Balanced Oil Filled
PD:	Partial Discharge
RCPT:	Receptacle
RMBH:	Rear Mount Bulkhead

Temperature Conversion Table (°F to °C)

° Farenheit	° Celsius	° Farenheit	° Celsius
-4	-20	311	155
5	-15	329	165
23	-5	347	175
41	5	365	185
59	15	374	190
77	25	383	195
95	35	392	200
113	45	401	205
131	55	410	210
149	65	419	215
167	75	428	220
185	85	437	225
203	95	446	230
221	105	455	235
239	115	464	240
257	125	473	245
275	135	482	250
293	145	491	255

DEPTH/PRESSURE CONVERSION TABLE

METERS	FEET	P.S.I.	BAR
100	328	161	11.1
500	1640	744	51.3
1000	3281	1473	101.5
1500	4921	2202	151.8
2000	6562	2930	202.1
3000	9843	4388	302.6
5000	16404	7304	503.6
10000	32808	15594	1006.2

TELEDYNE OIL & GAS
Everywhereyoulook™

FOR EMERGENCY FIELD SERVICE:
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+1 888 506 2326

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tel: +44 (0) 1903 854800

MALAYSIA
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tel: +603 7805 7712

HOUSTON
Teledyne Oil & Gas
tel: +1 281 875 1717

SCOTLAND
Teledyne Oil & Gas
tel: +44 (0) 1358 729564

oilandgas@teledyne.com

Global Presence

Teledyne Oil & Gas is a global organization with manufacturing facilities and service and test centers around the world. A team of 30+ cross-trained, multi-lingual field service technicians remain ready 24/7 for routine and emergency deployments anywhere Teledyne products are being used.

TELEDYNE MARINE
Everywhereyoulook™

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