OCEANEERING®

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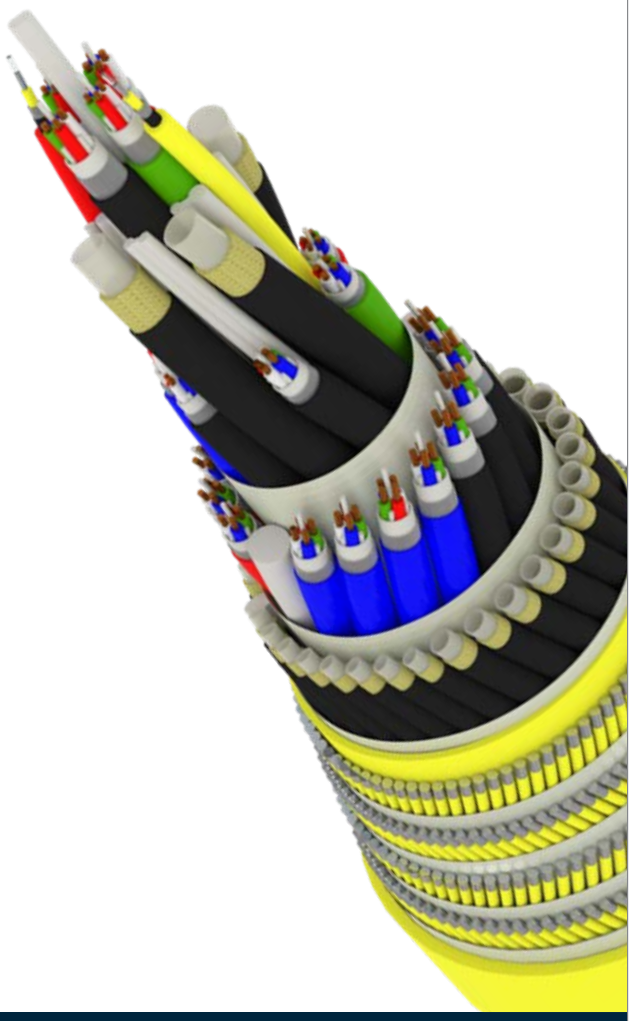
Thermoplastic Hose Umbilicals

Providing flexible hydraulic control and chemical injection lines for demanding applications

Thermoplastic hoses included in an umbilical's design provide a safe and efficient method for the distribution of hydraulic fluids and chemicals, supporting chemical injection and hydraulic control.

Further power and communication functions may be supported with the inclusion of electrical and fiber optic cables.

Oceaneering also offers High Collapse Resistant (HCR), Medium Collapse Resistant (MCR) and low permeation hose options.



FEATURES

- **Hose bore sizes from 3/16 in to 2 in**
- **Hose working pressures up to 15,000 psi**
- **Ideal for severe dynamic service**

Thermoplastic Hose Umbilicals

Oceaneering® thermoplastic hose umbilical designs incorporate our standard line of thermoplastic hoses with diameters from 3/16 in to 2 in and design working pressures from 3,000 psi to 15,000 psi. Low permeation PermaLiner hoses are also used in product designs.

Advantages and characteristics

- Inherent flexibility allows bending to a tighter radius than steel tube counterparts
- Used in harsh dynamic conditions where significant levels of bending are imposed on the umbilical
- Requires armor wire to provide torque balancing, tensile strength, weight for seabed stability, and stiffness for dynamic loading
- Oceaneering® PermaLiner hoses address fluid permeation concerns
- Significant historical analysis and qualification data can be used to verify suitability and integrity of designs and hoses
- High collapse resistant (HCR) hoses available for the injection of lightweight chemicals in deepwater applications (image displayed to the left)
- Thermoplastic hose umbilicals can be used in flying lead assemblies typically utilized in shallow water environments
- Smaller storage minimum bend radius (MBR) when compared to steel tube umbilicals allow for greater flexibility for storage and transportation

Parameter	Value
Maximum diameter	12.6 in / 320 mm (maximum outside diameter, to date)
Strength member	Galvanized steel armor wire, helically wound
Manufacturing length limitations	Qualified splicing and joining processes are available Length limited by umbilical design and installation method
Maximum allowable installation tension, breaking tension, and crush load	Umbilical armor wire package can be sized to meet application requirements
Axial, bending, and torsional stiffness	Optimized by design
Tension/torsion factor	Designs are torque balanced
Design life	25 years, as standard Longer design life can be provided
Packing, transportation, and load out	Determined by umbilical characteristics and client requirements Options available include: reel, carousel, crates, pallets, baskets
Installation methods	Umbilicals designed to suit client's installation method
Industry specification compliance	ISO 13628-5 / API 17E

Thermoplastic Hoses

Control Hoses

Oceaneering® control hoses use Nylon liners and are supplied in a range of hose bore sizes and working pressures. The hoses provide high flexibility and chemical compatibility with the majority of control fluids. Typically designed with a safety factor of 4:1, our control hoses offer a reliable method of controlling subsea equipment in the most challenging environments.

Part code	Internal diameter	Design working pressure (psi)
3H3.5	3/16 in	3,500
3H5	3/16 in	5,000
3H7.5	3/16 in	7,500
3H10	3/16 in	10,000
4H5	1/4 in	5,000
4H7.5	1/4 in	7,500
4H10	1/4 in	10,000
4H15	1/4 in	15,000
6H3	3/8 in	3,000
6H5	3/8 in	5,000
6H7.5	3/8 in	7,500
6H10	3/8 in	10,000
8H3	1/2 in	3,000
8H5	1/2 in	5,000
8H7.5	1/2 in	7,500
8H10	1/2 in	10,000
10H3	5/8 in	3,000
10H5	5/8 in	5,000
10H7.5	5/8 in	7,500
12H3	3/4 in	3,000
12H5	3/4 in	5,000
12H6	3/4 in	6,000
12H7.5	3/4 in	7,500
16H3	1 in	3,000
16H5	1 in	5,000
16H5.8	1 in	5,800
18H2	1 1/8 in	2,000

Chemical Hoses

Thermoplastic hoses are used for injection of chemical fluids. When hoses are empty, fluids are kept at low pressures, and/or when injecting fluids less dense than seawater, hose collapse becomes a design consideration. Oceaneering offers a range of medium and high collapse resistant hoses for inclusion in designs, dependent on application.

High Collapse Resistant (HCR) Hoses

Part code	Internal diameter	Design working pressure (psi)
8P5	1/2 in	5,000
8P7.5	1/2 in	7,500
10P5	5/8 in	5,000
16P5	1 in	5,000
20P5	1 1/4 in	5,000
32P5	2 in	5,000

Medium Collapse Resistant (MCR) Hoses

Part code	Internal diameter	Design working pressure (psi)
10H5.5-MCR	5/8 in	5,500
12H5-MCR	3/4 in	5,000

PermaLiner

For gas and small molecule fluid injection and when fluid permeation may be a concern, our range of low permeation hoses is the recommended solution. Using a low permeation polymer liner, the hoses provide approximately 100 times improvement in performance when reviewing permeation.

Part code	Internal diameter	Design working pressure (psi)
8H7.5	1/2 in	7,500
12H5.5	3/4 in	5,500
12H7.5	3/4 in	7,500
16H5	1 in	5,000

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