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# Smart Flange Plus

## Permanent pipeline and riser repair

Our Smart Flange Plus connectors enable the safe completion of efficient permanent pipeline and riser repairs. The catalog of connectors has been used to complete thousands of global installations in shallow to ultra-deepwater applications. The flanges effectively eliminate the need for costly hyperbaric welding.



### FEATURES

**Fully mechanical, easy-to-install design**

**Lightweight and compact**

**Offshore subsea and topside applications**

Connecting What's Needed with What's Next™

# Smart Flange Plus

## Permanent pipeline and riser repair

Oceaneering developed the Smart Flange Plus connectors for various offshore applications including:

- » Pipeline spool piece repairs
- » Pipeline reroutes
- » Pipeline abandonments
- » Riser repairs
- » Structural repairs
- » Valve installations
- » Tee installations

Available worldwide, Smart Flange Plus connectors are stocked in a variety of sizes to accommodate asset diameters of 2 to 24 inches. Specially-designed connectors up to 48 inches have been delivered and installed.

Benefits of using the Smart Flange Plus connector to complete repairs include:

- » No requirement for hotwork permits
- » Elimination of straight pipe and riser cuts
- » Requires minimal pipe preparation
- » Connectors can be seal tested
- » Accepts external loading

### Design Parameters

Nominal pipe size (NPS): Any API Specification 5L pipe and wall thickness

Service: Standard (i.e. crude oil, natural gas, hydrocarbons, water or chemical injection, etc.)

Design pressure rating: up to ANSI Class 2500, up to API Class 10000

Design Temperature Range: 25° F to 250°F / -4°C to 121°C

Design Life: 25 years

### Material Specifications

Housing with weld neck flange (RTJ): ASTM A105, ASTM A694 F60 forging

End cap: ASTM A105, ASTM A694 F60 forging

Piston, slip anchor, and cone: AISI 4140 forging

Elastomer seals: Viton B or Buna-N

Studs and nuts: ASTM A193 Gr. B7 studs and ASTM A194 Gr. 2H heavy hex nuts, all Xylan coated (i.e. PTFE, dark blue)

External coating: Carboline® 890 marine epoxy paint system, safety yellow color

### Applicable Design Codes, Standards, and Specifications (latest editions)

ISO 9001:2000 Quality Assurance – Quality Control Procedures and Oceaneering PCRS Operating Procedures

ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 and 2

ASME B31.4, Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids

ASME B31.8, Gas Transmission and Distribution Systems

ASME B18.2.1, Square and Hex Bolts and Screws Inch Series

API 5L, Specification for Line Pipe

API 6A, Specification for Wellhead and Christmas Tree Equipment

API 6H, Specification on End Closures, Connectors, and Swivels

NACE MR0175, Sulfide Stress Cracking Resistant Metallic Materials for Oilfield Equipment

### Certifications

Bureau Veritas (BV) Oil and Gas Type Approval Certificate

ISO 9001:2008 – World Certification Services Ltd. – Accredited by UKAS Quality Management

DNV GL Type Approval Certificate