



OIL STATES INDUSTRIES

# RISER TECHNOLOGY

## Riser & Drilling Products

### OR-F Connector

Oil States Industries is a world leader in the design and manufacture of advanced connection systems for offshore use. Our connectors provide fast make-up and high performance ideal for SCRs, TLPs, tethers, conductors, casing, new and replacement caissons, HP risers, pipelines and jacket piles. Oil States is a proven provider of riser components for deep water, production, drilling and completion risers. We also offer comprehensive riser system design services for completion, drilling, subsea and surface equipment to complement our field-proven connector technologies.

### Marine Drilling Riser System

Marine drilling risers provide a conduit from the drilling vessel to the subsea BOP. Drilling operations and fluids pass through the riser to the subsea well, with drilling mud and returns traveling back to the vessel. Risers typically include a riser main pipe; box and pin connectors; choke and kill (C&K) lines; and auxiliary lines.

### OR-F Connector

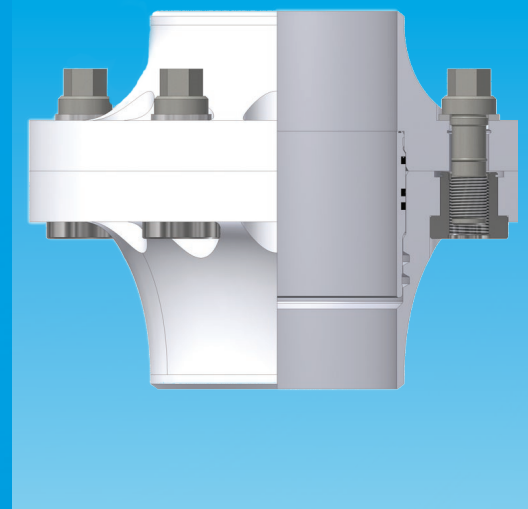
Oil States' OR-F flanged riser connectors are designed in-house, lab tested in accordance with API 16R, and certified by DNV. These flange bolt-type connectors are simple to operate and field-proven. Application of the recommended torque to the riser bolts provides the required pre-load and by the selection of the appropriate tooling provide fast make-up of the riser joints.

### Features

- Simple and robust design
- Highly pre-loaded connection
- 2.5M lbs. tensile load rating per API 16R

### OR-F Risers

OR-F flanged risers are run 'box up' and 'pin down' to provide access to riser bolts during makeup on the spider. Riser box connectors feature a typical dog groove profile to interface with handling tools for ease of shipment and installation. Make-up takes place via the rotary table mounted spider/gimbal.



*OR-F Connector*

OR-F flanged risers are supplied in lengths from 5 ft. pup joint to full length 90 ft. joints and can either be slick or fitted with buoyancy. OR-F flanged riser connectors are simple to operate by applying the recommended torque to six main bolts to achieve the required pre-loading.

Replaceable seal subs are installed into the main riser pin connector, which then stabs into the main riser box connector to provide a connection seal.

Choke and kill (C&K) lines are designed for working pressure of either 10,000 or 15,000 PSI. C&K and booster lines are designed to meet H<sub>2</sub>S (sour gas) service as per NACE MR-01 75. Booster and Hydraulic lines are designed for working pressure of 3,000, 5,000 or 6,000 PSI.

The seal grooves of the female stab boxes in the C&K and booster lines are inlaid when required with Inconel to prevent corrosion.



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The male stab pins of the C&K, booster and hydraulic lines are inlaid with Stellite to improve wear resistance during stabbing.

Riser components are designed to be maintenance-friendly. For example, C&K, booster and hydraulic lines feature sleeve nuts that simplify line removal and reinstallation during repair.

### Handling/Tooling

Manual riser handling and test tools are available for flanged risers. Horizontal lifting/handling attachments such as spreader bars and shackle lifting tools are also available.

### Testing

Finite Element Analysis is performed for riser connectors, riser bolts and threaded inserts.

Prototype testing of riser connectors are carried out at Oil States' UKAS-accredited test laboratory; witnessed and approved by the reputed DNV.

### Qualification

- OR-F flanged risers are designed and manufactured in accordance with API 16R (riser connectors) and API 16F (main risers)
- Design Verification Review (DVR) packages are reviewed and approved by DNV
- DNV/ABS certification is available

Oil States Capital Drilling Equipment includes the following:-

- Spider Assembly
- Gimbal Assembly
- Diverter System
- FlexJoints™
- Telescopic Joints
- TJ Support Ring Assembly
- Termination Joint
- LMRP and Wellhead LynxGrip™ Connector



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#### RISER & DRILLING SYSTEMS

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