



RISER & DRILLING SYSTEMS

OR-21 Connector

Introduction

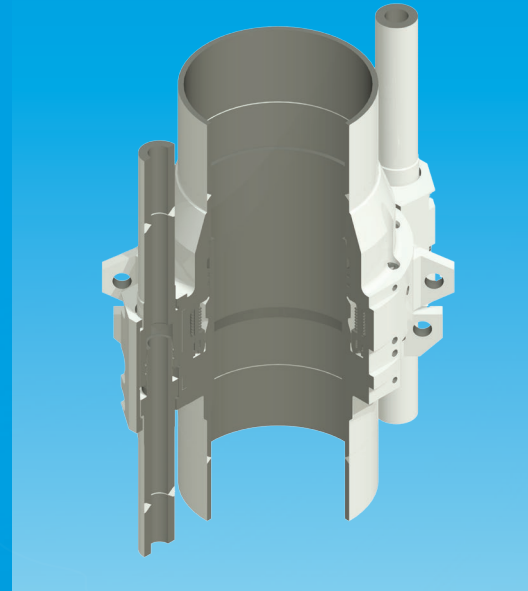
Oil States Industries is a world leader in the design and manufacture of advanced connection systems for offshore use. Our connectors provide fast make-up and high performance ideal for SCRs, TLPs, tethers, conductors, casing, new and replacement caissons, HP risers, pipelines and jacket piles. Oil States 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-21 Connector

Oil States' OR-21 riser connector are designed in-house, lab tested in accordance with API 16R, and certified by DNV. These dog-type connectors are simple to operate and field proved to provide high pre-load and fast make-up of the riser connection.



OR-21 Connector

Features

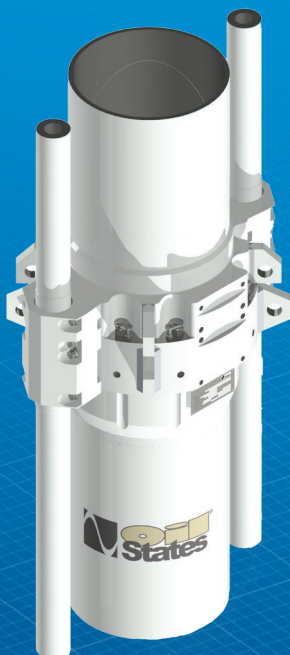
- Preload 1.1 million lbs
- Make-up torque 300ft-lbs

OR-21 Risers

When activated 8 Actuating blocks move 4 Lock-rings into profiles machined into the OD of the riser pin.

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

The male stab pins of all lines are inlaid with Stellite to increase wear resistance during stabbing.



OR-21 Connector Assembly





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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.

Qualification

- OR-21 risers are designed and manufactured in accordance with API 16R (riser connectors) and API 16F (main risers)
- C&K and booster lines are designed to meet H2S (sour gas) service per NACE MR-01 75
- Design Verification Review packages are reviewed and approved by DNV
- DNV/ABS certification is available

Testing

Finite element analysis has been performed on the riser connector/locking dogs.

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

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



oilstates.com

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riser.connectors@oilstates.com

OIL STATES INDUSTRIES

MANUFACTURING, ENGINEERING & SALES

UK
2 Heartlands Terrace
Heartlands Business Park
Whitburn, West Lothian, EH47 0SF
Scotland, UK
Tel +44 1506 896000

Asia

SINGAPORE
42-H Penjuru Road
Singapore 609158
Tel +65 6773 7555
Fax +65 6773 7667

SALES OFFICES Europe & Eurasia

FRANCE
5 Allée des Mésanges
13012 Marseille, France
Tel +33 491 95 60 51

UK

Moss Road, Gateway Business Park
Nigg, Aberdeen, AB12 3GQ
Scotland, UK

AZERBAIJAN

Suite 5, 1 F. Amirov Street
Baku, AZ1000 Azerbaijan
Tel/Fax +994 125 981 125

Middle East

UAE
Jumeirah Lake Towers
Cluster F HDS Tower
Unit 2209
Dubai, United Arab Emirates
Tel +971 4 452 8482

South America

BRAZIL
02 Corporate & Offices
Ed. Evolution III
Bloco 2, Sala 105
Av. Paisagista José Silva de Azevedo
Neto, No. 200
Barra da Tijuca, RJ, Brazil
CEP 22775-056
Tel +55 21 3503 2400