



RISER & DRILLING SYSTEMS

Alligator Connector

Introduction

Oil States Industries is a world leader in the design and manufacture of advanced connection systems for offshore applications. Our connectors provide fast make-up and high performance ideal for Risers, 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.

The Alligator connector is a slimline collet connector ideally suited to situations where space is at a premium. The connector's maximum diameter is normally less than the diameter of a standard flange of the same pressure rating. Typical applications for this connector include riser applications, floating production systems, flexible risers, satellite trees, manifolds and turret moored vessels.

Material

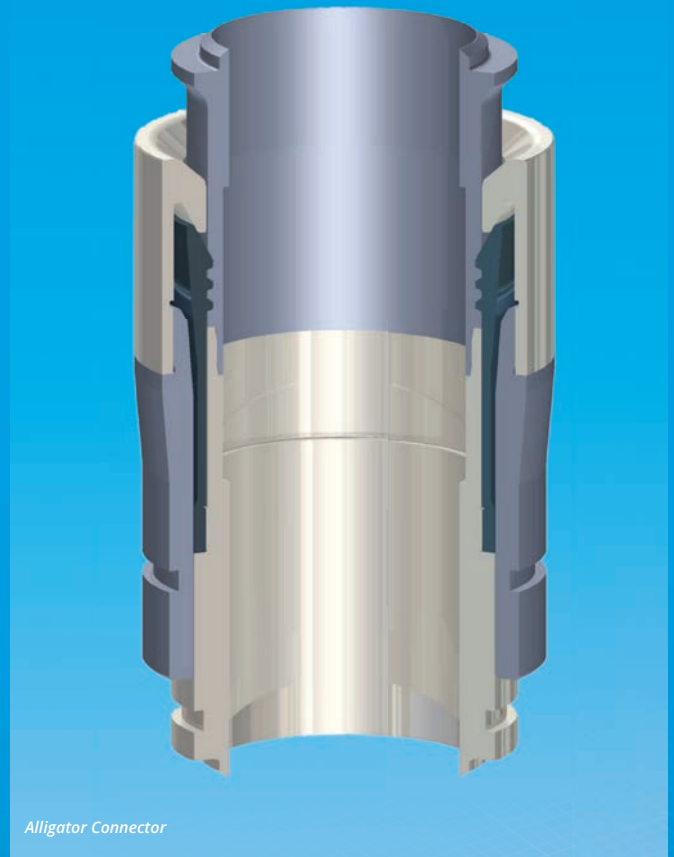
The Alligator connector can be manufactured from a variety of different material types including carbon steel and duplex. For high strength steel, collet fingers must have a minimum yield stress of 100 ksi.

Sizes

Alligator connectors are available in a range of sizes from 3" to 20" diameters.

Features

- Compact, slimline design
- Full-bore, smooth profile
- Preloaded abutment face
- Non-rotational assembly
- Carbon steel or duplex construction
- Secondary lock
- Integral hydraulic or external clamp operation available
- No angular alignment required on assembly self-aligns axially
- Suitable for deepwater applications
- High fatigue capability
- Extremely good bending, tension and shear capacity
- When breaking away will part with angular force applied, tested to 40°



Alligator Connector

- Bore can be weld inlaid if necessary to meet NACE requirements
- Multiple sealing possible with both elastomeric or metal-to-metal sealing
- Fast, reliable and repeatable make-up in under a minute
- Suitable for emergency disconnect applications



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Alligator Components

The Alligator connector typically consists of the following major components:

Male Hub, Female Hub, Collet Fingers Collet Nose, Locking Sleeve, Secondary Lock Ring and Piston.

Make-up Sequence

The connector is assembled in seconds by external activation of the locking sleeve by an axial hydraulic clamp. The locking sleeve is located between the guide nose and secondary lock-ring and has a conical internal profile. When moved in the direction of the male hub, this conical profile engages on the outside of the collet fingers, producing inward radial movement of the fingers and engaging with the teeth of the main hub. The secondary lock-ring forms an interference fit with the female hub and provides a secondary lock.

Analysis and Testing

Alligator connectors have been subjected to rigorous finite element analysis and full-scale prototype testing. All connectors are subjected to full hydrostatic pressure at twice design pressure. Additional testing, such as tension and/or bending, is available at our Oil States' Industries UKAS accredited test laboratory.

Quality

Oil States Industries. The Company holds ISO 9001, ISO18001 and ISO 14001 certifications, and our on-site test laboratory holds UKAS accreditation. The Alligator connector has also been certified by Det Norske Veritas.

Previous Experience

The Oil States Industries Alligator connector has been in service in the North Sea since 1989 and is currently in use in the West Troll, Balder and Blenheim fields.

Qualification

Certified by DNV in accordance with ISO 13628-4/ISO 10423 PR2.

Manual Release

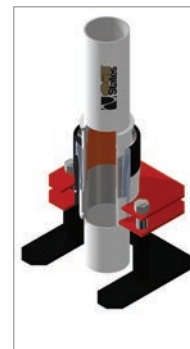
If hydraulic power is lost, the connector maybe released by venting the hydraulic connections and moving the piston backward towards the female hub by means of an external pull.

Maintenance

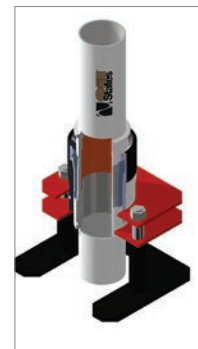
Very little maintenance and no special tooling is required for the Alligator connector. The only serviceable parts are the "O" rings and seals which require periodic replacement dependent on usage. Stripping down the connector to replace seals is simple because each component is screwed with ACME threads.



Male hub enters female hub



Prior to clamp actuation



Connector locked

OIL STATES INDUSTRIES RISER & DRILLING SYSTEMS

Sales, Engineering & Manufacturing
EUROPE & EURASIA
2 Heartlands Terrace
Heartlands Business Park
Whitburn, West Lothian
EH47 05F
Scotland, UK
Tel +44 1506 896 000

ASIA
42-H Penjuru Road
Singapore 609158
Tel +65 6773 7555

Regional Sales
EUROPE & EURASIA
Moss Road
Gateway Business Park
Nigg, Aberdeen
AB12 3GQ
Scotland, UK
Tel +44 1224 290 000

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

Vagif Mustafazade Street 6/10
1st Floor, Sahibtac Business Centre
Old City, Baku AZ1010
Azerbaijan
Tel +994 12 598 1125

SOUTH AMERICA
02 Corporate & Offices
Ed. Evolution III
Bloco 2, Sala 105
Av. Paisagista José Silva de Azevedo
Neto, 200
Barra da Tijuca, RJ Brazil
CEP 22775-056
Tel +55 21 3503 2400

MIDDLE EAST
HDS Tower, Unit 2209, Cluster F
Jumeirah Lakes Towers
Dubai, United Arab Emirates
Tel +971 4 452 8482

wellhead.connectors@oilstates.com

oilstates.com

