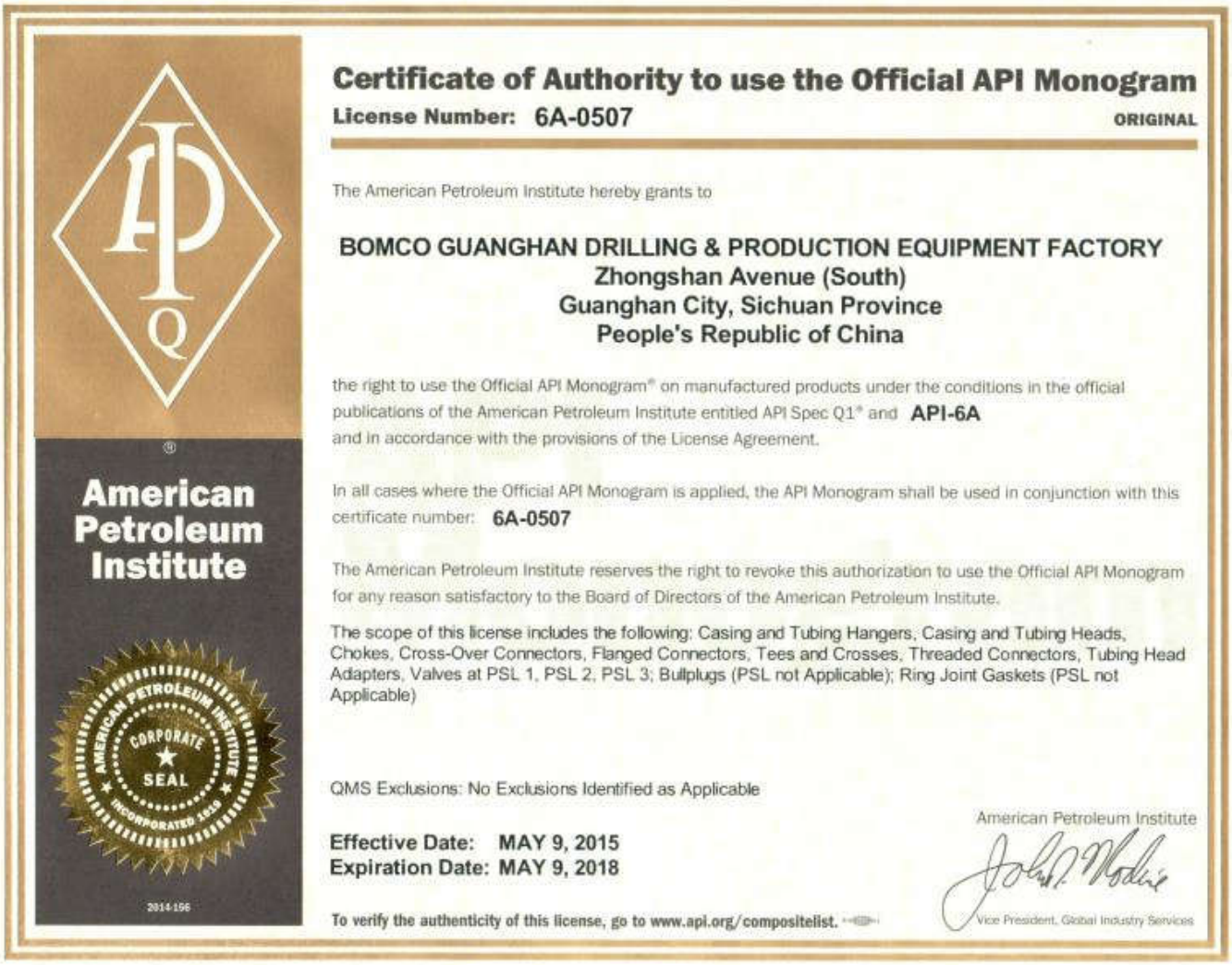
# API 6A PRODUCTS

OILMAN GROUP LTD



American Petroleum Institute

2014-156

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**License Number: 6A-0507** ORIGINAL

The American Petroleum Institute hereby grants to

**BOMCO GUANGHAN DRILLING & PRODUCTION EQUIPMENT FACTORY**
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QMS Exclusions: No Exclusions Identified as Applicable

**Effective Date: MAY 9, 2015**
**Expiration Date: MAY 9, 2018**

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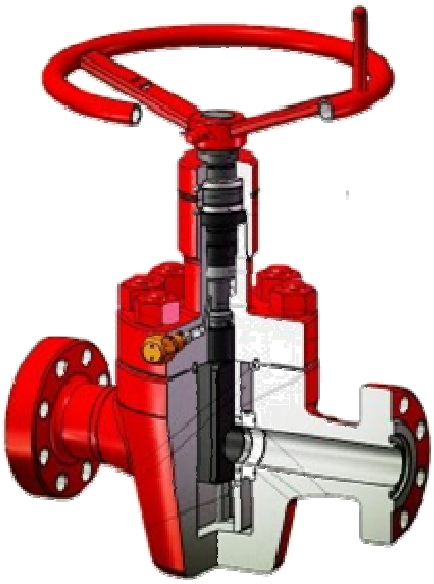
American Petroleum Institute

Vice President, Global Industry Services

***BOMCO Guanghan Drilling & Production Equipment Factory is a subsidiary of CNPC and provides the best API 6A & 16A products to esteemed customers all over the world.***

# FC TYPE GATE VALVE

FC type gate valve features a non-rising stem with a slab gate, full-bore, thru-conduit design, floating slab gate and seats, floating seat ring and body bushing design to provide safe dependable service. It is availllable in flanged or threaded ends in standard bore size from 1-13/16” thru 4-1/16” in working pressure of 3,000 psi thru 15,000 psi. Seat rings, body bushings, gate, stem are easily replaced in the field.Simple routine maintenance program limits repairs, eases operation, protects against corrosion, and extends service life.



## Features

- Desigend and manufactured meet or exceed API 6A requirement
- Forged steel body and bonnet
- Bi-directional valve
- The stem pin protects the stem and internal parts from failure by shearing if the handwheel is over torqued.
- PSL 1,2,3
- Material Classes:DD,EE,FF as per NACE MR0175
- Available for 5,000psi to 15,000psi
- Bearing-manual or piston-hydraulic
- Parts interchangeble with OEM’s product

FC Type Valve Availability

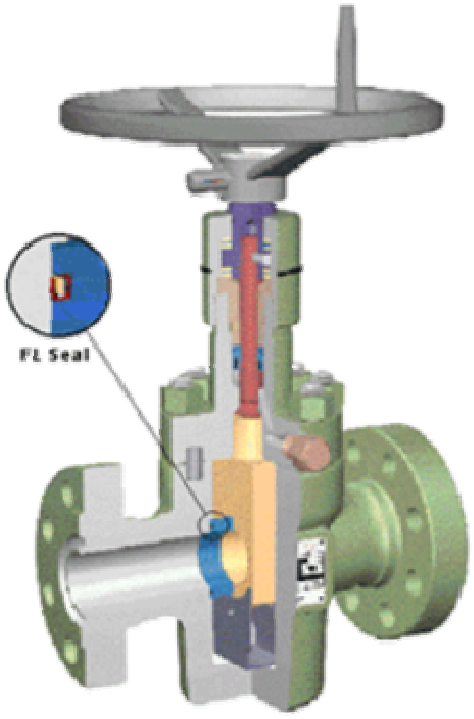
| Nominal Pressure(psi) | Nominal Size(Inch) | | | | | |
|---|---|---|---|---|---|---|
| 3,000 | | | | 3- 1/8 | | 4-1/16 |
| 5,000 | | 2-1/16 | 2-9/16 | 3- 1/8 | | 4-1/16 |
| 10,000 | 1-13/16 | 2-1/16 | 2-9/16 | | 3-1/16 | 4-1/16 |
| 15,000 | 1-13/16 | 2-1/16 | 2-9/16 | | 3-1/16 | |

## FL TYPE GATE VALVE

FL type gate valve is a full-bore, through-conduit valve and available in standard double flange, threaded-end and special block body configurations.It is a forged valve which is available in 2,000, 3,000, and 5,000 psi WP and in bore sizes from 2-1/16” to 4-1/16” and can be fitted with a wide range of actuator.

### Features

- Bi-directional design provides flow direction versatility and increased service life.
- Metal-to-metal sealing (gate-to-seat and seat-to-body).
- Spring-loaded, pressure energized, non-elastomeric lip-seal between each seat and body assists in low pressure sealing.
- Backseating stem allows stem seal replacement under pressure.
- Metal-to-metal bonnet seal.
- Easy closing and sealing without excessive force.
- Grease fitting in bonnet eliminates body penetration

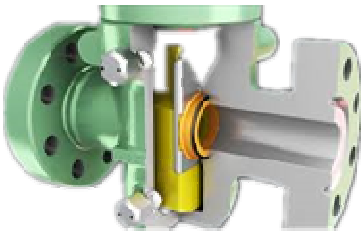



FL Type Valve Availability

| Nominal Pressure(psi) | Nominal Size(Inch) | | | |
|---|---|---|---|---|
| 2,000 | 2-1/16 | 2-9/16 | 3- 1/8 | 4-1/16 |
| 3,000 | 2-1/16 | 2-9/16 | 3- 1/8 | 4-1/16 |
| 5,000 | 2-1/16 | 2-9/16 | 3- 1/8 | 4-1/16 |

## FLS TYPE GATE VALVE

The FLS type valve shares the most features of FL type and is a full-bore, through-conduit valve available in standard double flange, threaded-end and special block body configurations. It is a forged valve available in pressure ratings from 2000 to 20,000 psi and bore sizes from 1-13/16”to 9”. It can be fitted with a wide range of actuators.



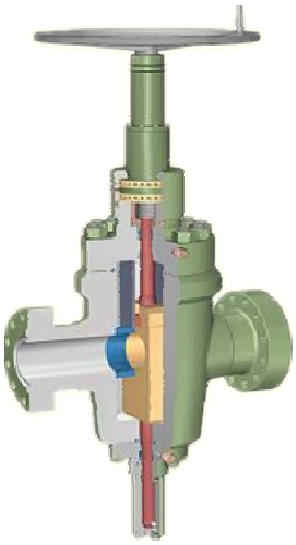
### Features

- Bi-directional design provides flow direction versatility and increased service life.
- Positive metal-to-metal sealing (gate-to-seat and seat-to-body).
- Two spring-loaded, pressure energized, non-elastomeric lip-seals between each seat and body.
- Metal-to-metal bonnet seal, (pressure energized 10,000 psi WP and above).
- It is available to replace the stem seal with the valve under pressure while backseat the stem.
- Easy closing and sealing without excessive torque.

FLS Type Valve Availability

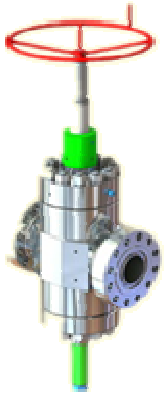
| Nominal Pressure(psi) | Nominal Size(Inch) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | | 2-1/16 | 2-9/16 | 3 - 1 / 8 | | 4-1/16 | 5 - 1 / 8 | 6 - 3 / 8 | | |
| 3,000 | | 2-1/16 | 2-9/16 | 3 - 1 / 8 | | 4-1/16 | 5 - 1 / 8 | 6 - 3 / 8 | | |
| 5,000 | | 2-1/16 | 2-9/16 | 3 - 1 / 8 | | 4-1/16 | 5 - 1 / 8 | 6 - 3 / 8 | 7-1/16 | 9 |
| 10,000 | 1-13/16 | 2-1/16 | 2-9/16 | | 3-1/16 | 4-1/16 | 5 - 1 / 8 | 6 - 3 / 8 | 7-1/16 | 9 |
| 15,000 | 1-13/16 | 2-1/16 | 2-9/16 | | 3-1/16 | 4-1/16 | 5 - 1 / 8 | 6 - 3 / 8 | | |
| 20,000 | 1-13/16 | | 2-9/16 | | 3-1/16 | | | | | |

## FLS-R TYPE GATE VALVE



FLS-R type Gate Valve was designed for use in highpressure,

large bore applications. This valve incorporates a lower balancing stem and unique ball screw mechanism for ease of operation in the field. The FLS-R is value-engineered for reliability, low torque, ease of operation and service. The FLS-R has many of the same features as the FLS including the gate and seat design.



### Features

- Bi-directional design provides flow direction versatility and increased service life.
- Positive metal-to-metal sealing (gate-to-seat and seat-to-body).
- Two spring-loaded, pressure energized, non-elastomeric lip-seals between each seat and body assist in low pressure sealing.
- Lower stem balances pressure thrust on upper stem to reduce

operating torque, prevents body cavity pressure build-up during operation, and provides position indication.

- Spring-loaded, pressure energized, non-elastomeric stem seal covers full range of pressures,temperatures, and fluids.
- Pressure-energized metal-to-metal bonnet seal.
- Either stem can be backseated to allow stem seal replacement with valve under pressure.

FLS-R Type Valve Availability

| Nominal Pressure(psi) | Nominal Size(Inch) | | | | |
|---|---|---|---|---|---|
| 5,000 | | | | | 9 |
| 10,000 | | 5-1/8 | 6-3/8 | 7-1/16 | 9 |
| 15,000 | 4-1/16 | 5-1/8 | 6-3/8 | | |

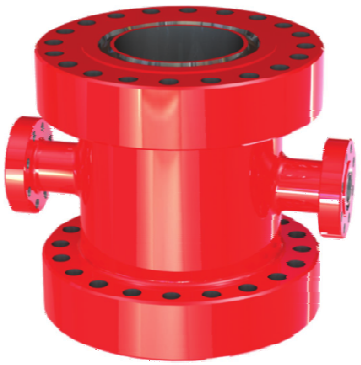
## SPACER SPOOL

Oilman can provide a substantial inventory of API 6A Spacer Spools which are manufactured with a variety of end and outlet configurations based on customer needs.

### Features

Flanged, studded, and hubbed ends available, in any combination

- Any combination of size and pressure ratings
- Outlets can be added as specified to standard spacer spool
- Available with stainless steel or corrosion resistant alloy ring grooves



SPECIFICATIONS

Working pressure : 2,000psi – 20,000psi

Working medium: Oil, Natural Gas, Mud

Working temperature: -29 -121℃ (82°F -250°F)

Material class: DD, EE, FF

Specification class: PSL1, PSL2, PSL3,PSL4

Performance class : PR1, PR2

Connection: API 6A Flange, API 16A Clamp, WECO Union

## ADAPTER SPOOL

The adapter spools have different nominal end connections.

- Oilman provides a large selection of Adapter Spools in various sizes and pressure ratings used for oilfield applications.
- Designed and manufactured in accordance with API 6A standards.
- The Adapter Spool can be supplied with material specifications of AISI 4130 or 410SS as per customer's requirement.

Note: Adapter has same specifications with Spacer Spool, please refer to Spacer Spool section.

## DOUBLE STUDED ADAPTER

A Double Studded Adapter (DSA) is commonly used to connect flanges with different nominal sizes, pressure ratings, and configurations. Oilman supplys the best quality products in a range of different sizes and pressure ratings.

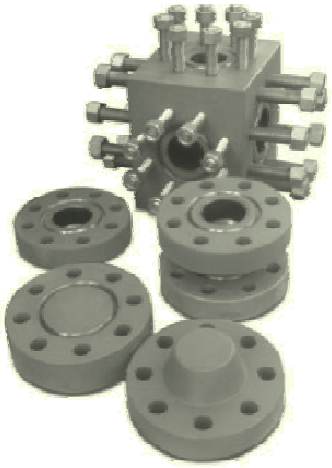
### Features:

- Can be used to connect flanges with any combination of sizes and pressure ratings
- Supplied with standard or customer specific thicknesses
- Normally provided with tap-end studs and nuts
- Available for general service and sour service in compliance with any temperature rating and material requirements specified in API Specification 6A
- Available with Stainless Steel 316L or Inconel 625 corrosion resistant ring grooves

Note: Double Studed Adapter has same specifications with Spacer Spool, please refer to Spacer Spool section.

## FLANGE, BLIND FLANGE, TEE AND CROSSOVER

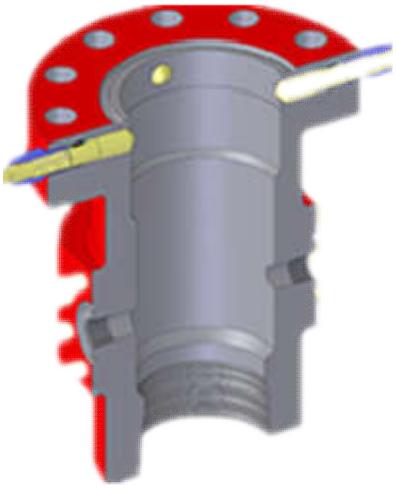
Oilman Group can supply blind falnage, flange, tees and crossover in all kinds of nominal sizes, pressure ratings which designed and manufactured according to API 6A speciications.



| | |
|---|---|
| Working pressure: | 2,000psi – 20,000psi |
| Working medium: | Oil, Natural Gas, Mud |
| Working temperature: | -29 -121℃ (82°F -250°F) |
| Material class: | DD,EE,FF |
| Specification class: | PSL1,PSL2,PSL3,PSL4 |
| Performance class : | PR1, PR2 |

# Casing head and spool

The Casing Head Housing seals off the surface casing and provides a landing bowl for the next casing string as well as an attachment for the BOP stack. The Casing Spool seals off the surface casing string and its landing bowl provides support for the next casing string.



Features:

●Bowl Design

Dual 45° shoulder design provides capability to hang heavy casing strings without damage. The upper shoulder supports pack-off hydraulic pressure and test loads while the lower shoulder provides independent support for the casing load.

●Lock Screw Configurations

Housings and Spools are available with Lock Screws in the top flange as follows:

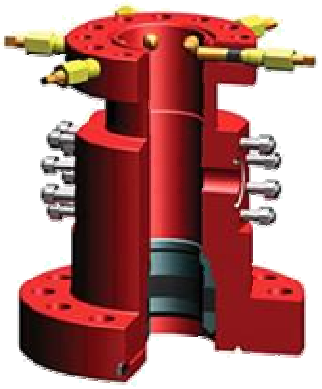
- Two lock screws 180° apart for retention of the wear bushing during drilling.

- A full complement of lock screws used for retention of the casing hanger (exact number dependents on flange size).

●Side Outlets

Available with line pipe threaded and studded outlets.

Studded outlets are threaded for valve removal plugs.



●Test and Injection Ports

All test ports are metal sealing and are designed to allow venting. Injection ports include buried check valves.

●Secondary seals are available.

●Pipeline adapters are available.

## Casing Head dimensions

| Top Flange | | Casing Size(in.) | Outlets | | |
|---|---|---|---|---|---|
| Nominal Size (in.) | WP (psi) | | Threaded | Studded | |
| | | | Size (in.) | Size (in.) | WP (psi) |
| 9 | 2000 | 8-5/8 | 2 | 2-1/16 | 2000 |
| 9 | 3000 | 8-5/8 | 2 | 2-1/16 | 5000 |
| 11 | 3000 | 8-5/8 | 2 | 2-1/16 | 5000 |
| 11 | 3000 | 9-5/8 | 2 | 2-1/16 | 5000 |
| 11 | 3000 | 10-3/4 | 2 | 2-1/16 | 5000 |
| 11 | 5000 | 8-5/8 | 2 | 2-1/16 | 5000 |
| 11 | 5000 | 9-5/8 | 2 | 2-1/16 | 5000 |
| 11 | 5000 | 10-3/4 | 2 | 2-1/16 | 5000 |
| 13-5/8 | 3000 | 11-3/4 | 2 | 2-1/16 | 5000 |
| 13-5/8 | 3000 | 13-3/8 | 2 | 2-1/16 | 5000 |
| 13-5/8 | 5000 | 11-3/4 | 2 | 2-1/16 | 5000 |
| 13-5/8 | 5000 | 13-3/8 | 2 | 2-1/16 | 5000 |
| 16-3/4 | 3000 | 16 | 2 | 2-1/16 | 2000 |
| 21-1/4 | 3000 | 20 | 2 | 2-1/16 | 2000 |
| 21-1/4 | 3000 | 18-5/8 | 2 | 2-1/16 | 5000 |
| 21-1/4 | 3000 | 20 | 2 | 2-1/16 | 5000 |
| 21-1/4 | 5000 | 20 | 2 | 2-1/16 | 5000 |

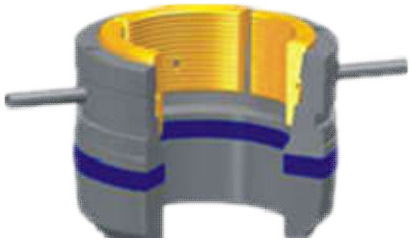
## Casing Spool Dimensions

| Top Flange | | Bottom Flange | | Outlets | | |
|---|---|---|---|---|---|---|
| Nominal Size (in.) | WP (psi) | Nominal Size (in.) | WP (psi) | Threaded | Studded | |
| | | | | Size (in.) | Size (in.) | WP (psi) |
| 11 | 3000 | 13-5/8 | 3000 | 2 | 2-1/16 | 5000 |
| 11 | 5000 | 11 | 3000 | 2 | 2-1/16 | 5000 |
| 11 | 5000 | 11 | 5000 | 2 | 2-1/16 | 5000 |
| 11 | 5000 | 13-5/8 | 3000 | 2 | 2-1/16 | 5000 |
| 11 | 5000 | 13-5/8 | 5000 | 2 | 2-1/16 | 5000 |
| 11 | 5000 | 16-3/4 | 3000 | 2 | 2-1/16 | 5000 |
| 11 | 10,000 | 11 | 10,000 | 2 | 2-1/16 | 10000 |
| 11 | 10,000 | 13-5/8 | 5000 | 2 | 2-1/16 | 10000 |
| 11 | 10,000 | 13-5/8 | 10000 | 2 | 2-1/16 | 10000 |
| 13-5/8 | 5000 | 13-5/8 | 5000 | 2 | 2-1/16 | 5000 |
| 13-5/8 | 5000 | 20-3/4 | 3000 | 2 | 2-1/16 | 5000 |

## Casing Hangers for Casing Head Housings and Spools

Hangers can be lowered through the BOP as soon as the cement plug hits bottom. Once in place, they support the entire casing weight and seal the annular. Mandrel style casing hangers can also be supplied.

Slip Hanger



●Single taper structure,

●Reliable clamping,

●strong loading capacity,

●Easy installation and maintenance,

●Rubber sealing will be stimulated by the own weight of the casing.

Threaded (Mandrel ) type casing hanger

●Connected through threads

●Seat hung on the sealing surface of casing spool and loading shoulder

## Wellhead and oil(gas) Xmas tree

The series of well head cover Oil Wellhead, Gas Wellhead, Electric Oil Production Wellhead, Water Injection Wellhead, Max press level reach to 140MPa,Specification Level reach to PSL4, Pressure bearing parts adopt high-quality anti-sulfur alloy steel.

Features:

●Up to PR2, HH level,

●High reliability and high resistance to H2S corrosion,

●Suitable for high temperature, high pressure, high sulfur oil (gas) wells;

●Reasonable structural design, material selection and advanced cavity welding process.

Main Performance：

| | |
|---|---|
| Tem. Class | L, P, R,S, T, U, V, X |
| Working Medium | Mud, Crude Oil, Natural Gas |
| Performance Level | PR1-PR2 |
| Specification Level | PSL1-PSL4 |
| Material Code | 36K, 45K, 60K, 75K |
| Material Class | AA, BB, CC, DD, EE, FF, HH |

## Fracture Wellhead

Feature：

●Combined functions of fracturing acidizing and oil (gas) production, suitable for working conditions of high pressure, large discharge, high scouring and high corrosion

●Adapting to multistage segment fracturing of horizontal drilling

●New structure to avoid shearing failure of tubing hangers and Jacks crew seals

●Wedge structure is adopted by the adjustable throttle valve rod to improve the service life

Performance Data：

| | |
|---|---|
| Tem. Class | L-X（-46℃~180℃ -50° F~350° F） |
| Performance Level | PR1-PR2 |
| Specification Level | PSL3G |
| Material Code | 75K |
| Material Class | EE, FF, HH |
| Rated Pressure | 10,000psi/15,000psi /20,000psi |