



RGD O Rings  
Liner Wiper Plugs  
Pump Down Plugs  
-Seal Stack  
Packer Element  
Bonded Seal  
Metal End Cap Seal  
S Seal / T Seal  
Centralizer Rubber Fins  
PEEK Back Up Ring



## Downhole Tool Seals

Guangzhou JST Seals Technology Co., Ltd.

# Company Profile

JST Seals is a leading manufacturer of high-performance seals for countless industries including construction, oil and gas, semiconductor, LNG, wind power, chemistry, coal mining, medical equipment and others. We aim high and look far, providing professional and reliable sealing solutions for particular harsh applications.

We have elastomer seal production workshop, polymer seal production workshop, class 10,000 clean room, and tooling processing workshop.



JST's products and services cover oil & gas drilling, chemicals, semiconductor, new energy, construction machinery, LNG, aerospace, nuclear & wind power, medical equipment and other industries, and meet the complex and harsh working conditions and technical requirements of various industries with its strength.

JST has businesses in more than 40 countries and regions, and established partnerships with top industrial companies worldwide. JST is winning global recognition and attention.



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# Company Profile



JST has a complete technical system, including material formulation laboratory , comprehensive performance laboratory for high & low temperature and high pressure products, -196°C cryogenic temperature laboratory, equipped with high and low temperature tensile testing machine, material abrasion testing machine, material immersion testing machine, low temperature retraction testing machine , DSC vulcanization tester, carbon black dispersion analyzer, creep tester, finite element analysis (FEA) , and in combination with the company's PLM system, it can make deeper researches on elastomer materials, polymer composites and product performance.

JST materials receive rigorous internal and thirty-party tests and have obtained NORSOK M-710 immersion test certificates by Element laboratory in UK, Alpine laboratory in US, and laboratory of China University of Petroleum, as well as RGD test certificate by BV and API 6A PR2 test certificate by DNV for sealing of various devices. Passed ISO9001 certification, API Q1 certification and HSE certification.

## Main Products:

- ◆ API 6A gate valve seal
- ◆ API 6A wellhead equipment seal
- ◆ Downhole packer element
- ◆ Downhole seal stack
- ◆ Well service pump packing
- ◆ Hammer union seal
- ◆ API 6D ball valve and LNG seal
- ◆ Hydraulic seal
- ◆ FFKM seal / O ring
- ◆ Oil-free lubricated pump seal

## Ability:

- ◆ API Spec Q1
- ◆ ISO 9001:2015
- ◆ HSE management system
- ◆ API 6A PR2 test
- ◆ RGD test
- ◆ H2S immersion test(Norsok M710)
- ◆ Low temperature test(-196°C)
- ◆ FEA/Finite Element Analysis
- R & D center
- More than 52 patents & inventions

# Introduction

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JST offers a wide range of molded elastomer (rubber) products for exploration, drilling, and well-service applications.

## Product Series

- RGD O Rings
- Liner Wiper Plugs
- Pump down Plugs
- Seal Stack
- Packer Element
- Bonded Seal
- Metal End Cap Seal
- S Seal
- T Seal
- Centralizer Rubber Fins
- PEEK Back Up Ring

## Elastomer Materials

### Material Codes:

- Blank (omit dash)
- N
- 75HNBR
- 80HNBR
- 80FKM
- 90FKM
- 90Aflas

### Material Description:

- = 65 Shore A SBR (Styrene Butadiene)
- = 70 Shore A NBR (Nitrile Rubber)
- = 75 Shore A HNBR (Hydrogenated Nitrile)
- = 80 Shore A HNBR (Hydrogenated Nitrile)
- = 80 Shore A FKM (Fluorocarbon)
- = 90 Shore A FKM (Fluorocarbon)
- =90 Shore A Aflas (Tetrafluoroethylene-propylene)

# RGD O Rings



## RGD (Rapid Gas Decompression) O-rings

Rapid gas decomposition (RGD) resistant materials (HNBR, FKM).

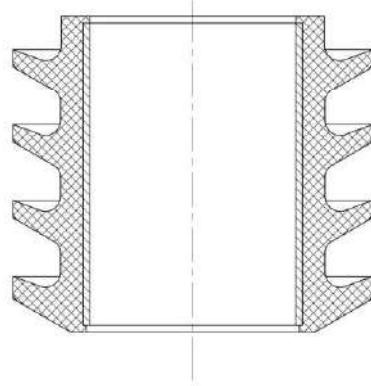
Metric size and Imperial size.

RGD O-rings or non RGD O-rings are available.

Material	Type	Recommend operating temperature	H2S Resistance	Test standard
HNBR	H3385	-46~150°C	API 6A FF/HH	NORSOK M710 ISO23936-2
HNBR	H6390	-29~150°C	API 6A FF/HH	NORSOK M710 ISO23936-2
HNBR	H7090	-29~150°C	API 6A FF/HH	NORSOK M710 ISO23936-2
HNBR	H7790	-46~150°C	API 6A DD/EE	NORSOK M710 ISO23936-2
FKM	V5390	-29~250°C	API 6A FF/HH	NORSOK M710 ISO23936-2
FKM	V7090	-20~250°C	API 6A FF/HH	NORSOK M710 ISO23936-2
FKM	V8090	-20~250°C	-	NORSOK M710 ISO23936-2

# Liner Wiper Plugs

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**Liner Wiper Plugs** separates drilling fluid from cement during displacement. It can reverse in the pipe without breaking the lips. Products can be produced in a variety of compounds and are available in sizes ranging from 3 ½” to 9 5/8”.

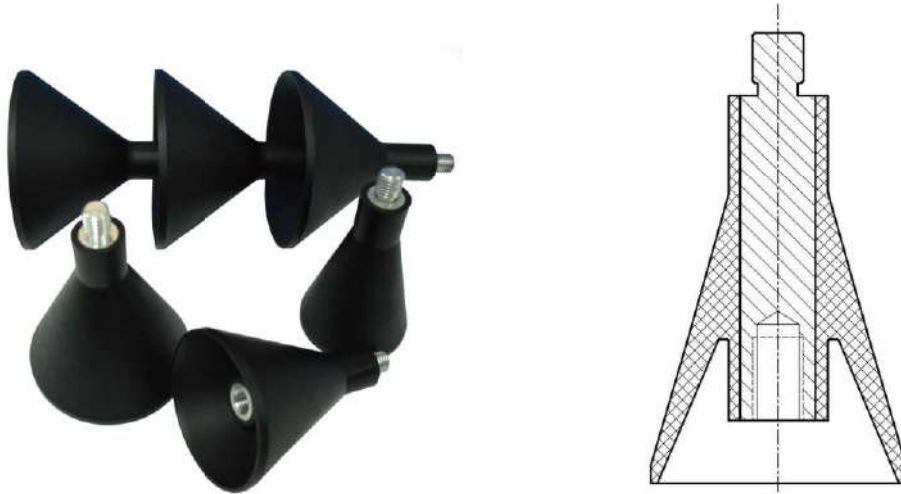
## Materials:

NBR, HNBR, FKM, Aflas

## Benefits

- Improves cement Integrity at the liner toe by separating displacement fluids in the running string and liner
- Reduces drillout times and operating costs with antirotation feature, which allows plugs to be drilled quickly

# Pump Down Plugs



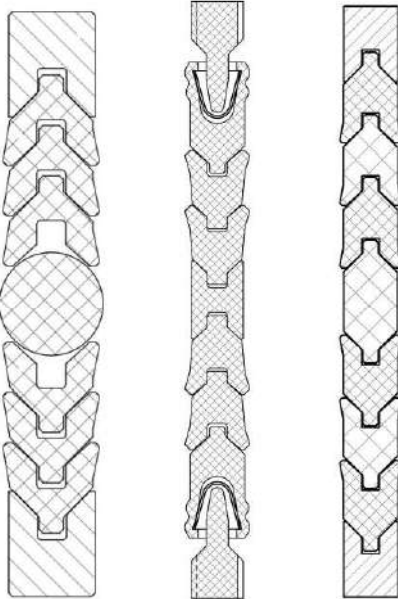
**Pump Down Plugs** separate cement from the displacement fluid during liner cementing operations.

It released from the cementing manifold at the surface between the cement and the displacement fluid, wipes cement from the drill pipe and lands in the liner wiper plug.

## Benefits

- Cementing operations during liner applications
- Wiping of the running string behind the cement with Pump down plug
- Wiping of the liner behind the cement with liner wiper plug
- Separation of cement from the displacement fluid during cementing operations with Pump down plug and liner plugs

# Seal Stack



**Seal Stack** is comprising a top adapter or anti-extrusion ring , Vee Rings and a bottom adapter .

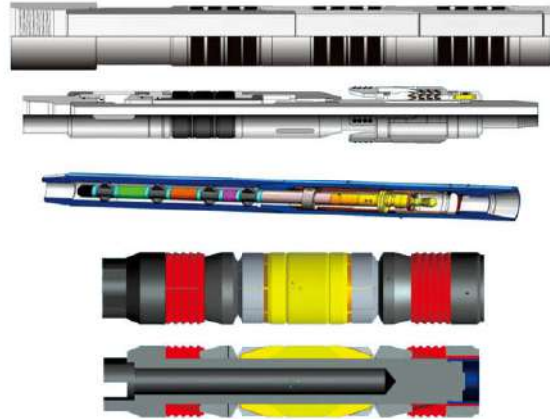
In the assembly the energizing axial force is transferred between the individual packing rings so that each ring is pressed into positive contact with the mating hardware surface. Special material grades are available for a large variety of working conditions.

## Benefits

- Very robust seal
- Multiple sealing lips for positive seal
- Easy replacement in the field with split rings
- Extensive range of sizes
- Can be used with poor counter surfaces
- Operating temperatures of  $-49^{\circ}\text{ F}$  to  $+500^{\circ}\text{ F}$  ( $-45^{\circ}\text{ C}$  to  $+260^{\circ}\text{ C}$ ) depending on the elastomer
- Compatible with virtually all media



# Packer Element



**Packer Elements** are rubber seals that operate under specific down-hole conditions and provide an elastomeric seal for either short - term or long - term completion.

**Packer Elements** are used between sections of oil and gas production tubing to prevent fluids and pressure from leaking through the joints. This protects the casing , production tubing , liner and wellbore wall above and below the producing zone. Packer elements are designed for operating in corrosive or harsh conditions and manufactured from elastomers compatible with the media that needs to be sealed.

## Benefits

- Operating temperatures of  $-49^{\circ}$  F to  $+500^{\circ}$  F ( $- 45^{\circ}$  C to  $+260^{\circ}$  C) depending on the elastomer
- Extensive range of sizes

# Bonded Seal

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**The Bonded Seal** is used in work - over and sand control operations. With the bonding of elastomer to a steel core, this serve to prevent excessive rubber compression under loading.

JST manufactures a complete size-range of rubber-to-metal bonded seals. We use an exclusive two-phase manufacturing process to produce highly-reliable bonded seals capable of controlling either conventional wellbore fluids or exotic media. By using bonding processes, we overcame the problems customarily associated with bonding Viton® and Aflas® to corrosion resistant metal and can provide seals for high temperature and/or H<sub>2</sub>S applications.

# Metal End Cap Seal



**Metal End Cap Seal** is a customized elastomer to metal seal.

Stainless steel metal end caps provide an anti - extrusion mechanism and encapsulate the seal for protection. Because it contains a radially squeezed pressure energized rubber core, it can tolerate surface imperfections and mechanical damage on the wellhead bore.

## Benefits

- Metal end caps are chemically bonded to element of high performance elastomer.
- Elastomer energizes the system for efficient sealing.
- Intimate metal - to - metal contact between end cap and sealing surface.
- End caps provide extrusion resistance and support for elastomeric element.
- Metal components of stainless steel or nickel alloy for corrosion resistance.

# S Seal

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**S Seals** are well suited for sealing wellheads, connectors, downhole tools, high pressure valves and other demanding oil and gas applications. The non-extrusion springs can be fabricated from different metals.

## Benefits

- Alternative engineered seal design to using T Seals or O-Rings, traditional S Seals utilize metal spring for supporting sealing of various extrusion gaps.
- Designed as an engineered replacement for T Seals and O-Rings.
- One piece design for easier installation into glands vs. multiple component seals.



**T Seals** are three-piece seals with an elastomeric lip and hard plastic anti-extrusion rings, it is proved to be of long-time service.

T Seals provide excellent sealing solutions for static or reciprocating dynamic applications. They can be designed to be modified into existing O-ring grooves (piston and connecting rod directions) or optimized for specific application requirements.

T Seals are manufactured by machining or moulding made of different HNBR or FKM-types as sealing material and a backup ring made of PEEK.

The design of the T Seal uses the system pressure to actively energize the backup ring to ensure effective resistance to extrusion in unidirectional and bidirectional pressure applications under static and dynamic conditions.

JST STA series T Seal is for piston. STB series T Seal is for rod.

## Benefits

- Improve equipment reliability
- Extend seal and equipment service life
- Reduce installation time, delay and damage
- Protect system from loose materials

# Centralizer Rubber Fins

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JST's **centralizer rubber fins** are made according to customer requirements. The centralizer fin has a retrievable, resealable, flexible design. This Rubber and metal reinforced rubber centralizer fins are available for a variety of MWD (measurement while drilling) tools and oil well logging and monitoring instruments.

It consists of two parts: corrosion-resistant, wear-resistant, non-magnetic alloy body and strong wear-resistant elastomer covered on the body. The specified vulcanization process is formulated to keep the elastomer layer firmly bonded to the alloy body under the harsh environment of downhole high temperature and high-speed drilling mud erosion.

The Centralizer rubber fin material could be NBR and HNBR.

## Benefits

- Easy to install,
- excellent quality.

# PEEK Back Up Rings

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JST makes custom and standard **PEEK Back-up Rings**. Custom sizes up to 24" outer diameter.

**PEEK Back-up Rings** are designed to prevent extrusion in elastomer O-ring sealing systems.

The combination of high pressures and high temperatures is a common occurrence in fluid systems. This establishes the need for the back-up ring in preventing O-Ring extrusion.

## PEEK Back-up Rings material

### Virgin PEEK

- Engineered thermoplastic.
- PEEK can be used up to 480°F.
- Excellent chemical resistance.
- Very low moisture absorption.
- Good wear and abrasion resistance.

### Glass filled PEEK

- PEEK with the addition of glass fibers.
- Glass fibers reduce the expansion rate and increase the flexural modulus.

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