

**YOUR**  
**PARTNER**  
**FOR SUCCESS**



**Gaskets to the World**



## ASIAN SEALING PRODUCTS

manufacture specialized seals  
and precision metal components for the  
oil & gas industry, Valve Industry as well as for  
a broad range of industrial applications.

We have invested in a state-of-the-art production  
facility to ensure that most advanced technologies are  
used in the production of precision metal components,  
Ring Gaskets, Spiral Wound Gaskets, Exchanger Gaskets,  
Cammprofile Gaskets, Non Asbestos Gaskets,  
Flange Insulation Gaskets, IX Seal Rings  
and Valve Seat Rings.

Dedication and commitment to utilize the best  
technologies to achieve the highest quality standards  
has been ASP's culture since its very inception. Stringent  
quality control measures are followed right from  
sourcing the raw material to the final packing,  
shipping and maintenance of material  
traceability records.



ISO 9001:2015  
ISO 14001:2015  
ISO 45001:2018  
Reach Certified



API 6A-1189  
API 17D-0077

## Ring Gaskets

At ASP, manufacturing of Ring Gaskets is done as per international standards such as API 6A, API 17D and ASME B16.20. We produce Ring gaskets as per user specifications as well. Traceability is maintained right from the raw material until the final production.

Ring Gaskets are of three types which are used in High temperature and high-pressure applications where API 6B or API 6BX or ASME B16.50 flanges are used. Those are R, RX and BX types.

### R Type of Ring Gasket

R type gaskets are of two shapes which are Oval and Oct as shown in Figure 1.0 and 1.1. These types have matching pitch diameter to the flange groove they belong to. The octagonal type has a superior sealing capacity than the other. The oval type will only suit the round bottom groove of the flange; however, both the types of R type Ring gasket will fit in flat bottom grooves. As per the international flange standards these gaskets can withstand between 5000 psi to 6250 psi.



Figure 1.0



Figure 1.1

### RX Type of Ring Gasket

RX type ring gasket has an exclusive self-sealing action. The outside bevels of the ring make the initial contact with the groove as the flanges are brought together with the flange bolting. This provides initial sealing of the joint with the gasket seating against the groove surfaces. During pressurization the gasket loading increases against the groove. Type RX ring gaskets as specified in ASME B16.20 and API 6A are completely interchangeable with the oval and octagonal series of identical reference numbers and are used in the same flange grooves. The cross section of RX type Ring Gasket is as shown in Figure 1.2.



Figure 1.2

## BX Type of Ring Gasket

BX type ring gasket is designed to specifications shown in ASME B16.20 or API 6A, for use with grooved flanges on special applications involving high pressures from 5000 psi to 15000 psi. Cross section of BX type ring gasket, as shown in Figure 1.3 has a 90° hole drilled on the face of the gasket is used as pressure balance. The pitch diameter of the ring is slightly larger than the pitch diameter of the groove, thus initial contact is made on the outside of the ring, pre-loading the gasket and creating a pressure energized seal. BX type of ring gasket can only be used with API BX flanges and are not interchangeable with the type RX series.



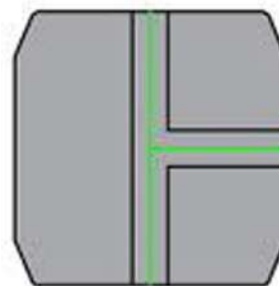
Figure 1.3

## SBX Type

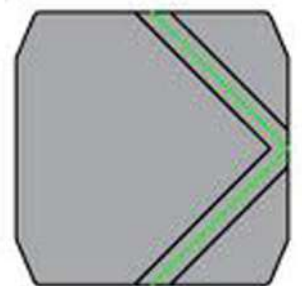
SBX type of ring joint gaskets are dimensionally the same as BX type ring gaskets. The "S" before BX represents additional interconnecting pressure passing vent hole to 90° vent hole present in BX type ring gaskets. This additional vent hole prevents from pressure getting trapped during assembly.

As far as the drill type is concerned, API 17D 3<sup>rd</sup> edition has recommended two options as option "A" and option "B" as given below however most widely chosen option is option "A". Both BX ring gasket and SBX ring joint gaskets are used in subsea 6BX flanges and/or 17D ring joint flanges

Our SBX ring joint gaskets complies to the requirements of API 17D 3<sup>rd</sup> edition, and we have API 17D monogram license to produce SBX ring type gaskets.



Option A



Option B

ASP has an in-house facility for coating/plating on all types of Ring gaskets on Soft Iron, Low Carbon Steel and low alloy material grades. The coating done here is zinc yellow passivation, zinc blue passivation and zinc nickel. The in-house coating facility is also equipped with silver coating process. The coating/plating is done as per API 6A specification and user specification.





## RTJ with PTFE Insert

Style R and RX with PTFE Inserts Style R and RX Ring Type Joints can also be supplied with PTFE inserts, in order to reduce turbulent flow and eliminate gasket/flange erosion. For the RX style Ring Type Joints, the insert is specially designed with radially drilled pressure passage holes so that the self energising performance of the RX Ring Joint is not impaired. As can be seen in the sectional view, the insert is located between the inside diameter of the Ring Type Joint and the bore of the flange. On assembly, the insert is completely trapped between the make up of the flanges, filling the annular space between the flange bore and gasket. The cross section of R and RX with PTFE Inserts is as shown in Figure 2.0

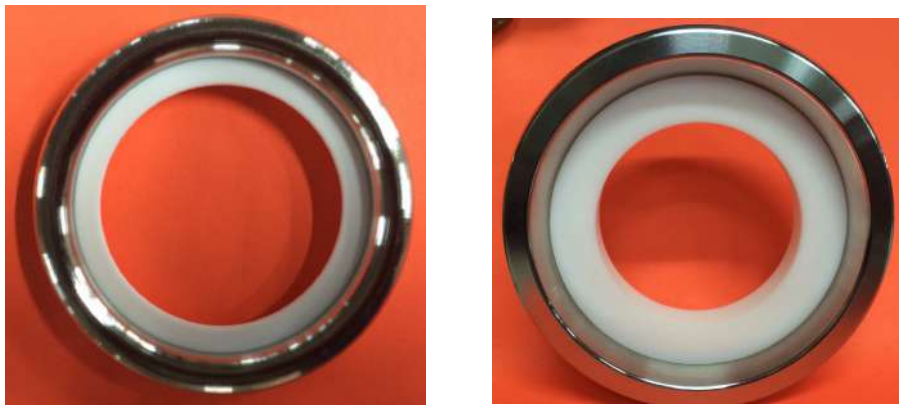
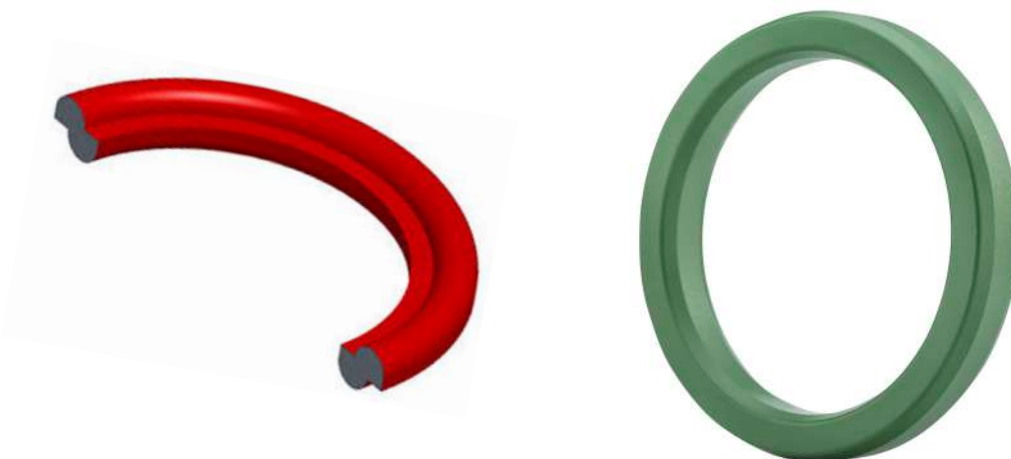


Figure 2.0

## Combo or Transition Rings / RTJ PTFE Coated

These are combination rings which consist of two different sizes having the same pitch circle diameter. They are used for sealing Ring Type Joint flanges where the mating flanges have different ring groove geometry. Transition Ring Type Joints are available with either oval or octagonal facings and are not encompassed within the API or ASME specifications.



## RTJ – Rubber Coated

This is an oval Ring Type Joint totally enclosed in a nitrile rubber coating. The Ring Type Joint material is usually soft iron or low carbon steel.

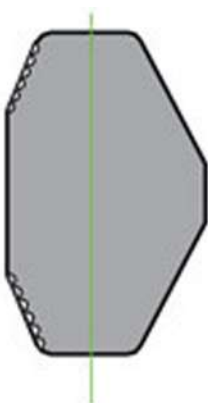
Advantage of this type of gasket:

- Used in pressure testing to minimise damage to flanges.
- Rubber contact points provide additional seals while protecting the flange surfaces.
- Provides increased assurance against corrosion, which can occur between conventional Ring Type Joints and the engaged surfaces of the groove.



## RTJ Blind Gaskets

Ring Type Joint gaskets can also be manufactured as a blind profile.



## RTJ – Kammprofile-Pressure Energized Gaskets

Kammprofile - PEG with Kammprofiled sealing surfaces, where a RX type ring is typically used for high pressure reactors. Frequently, custom ring are used in the top and bottom of hydro processing reactors. To greatly enhance sealing ability, top and bottom OD angled sealing gasket surfaces are serrated per Kammprofiled specifications and faced with oxidation inhibited flexible graphite. It has the benefits of under compression graphite flows into minor imperfections creating higher seal tightness.

## RTJ – Kammprofile-Adapter Gaskets

Kammpro-Adapter gaskets allow for ring type joint flanges to be mated up to a raised face flanges, utilizing the strengths of the full metallic with the added benefit of kamm profiled sealing surfaces laminated with flexible graphite. Provided the pitch of the groove is sufficiently located under the raised face, this design is among the stoutest of adapter styles.



## Bridgeman Gaskets



This pressure-activated design is used for pressure vessel and valve bonnet gaskets, at pressures 103 bar (1500 psi) and higher.

This design has also been adapted to pipe joints which are subject to extreme thermal shock conditions.

## Delta Gaskets

The pressure-activated Delta cross-section is a pressure vessel or valve bonnet gasket, useful for pressure ranges of 344 bar (5000 psi) and higher.



## Lens Rings



These are for high temperature, high pressure applications on pipework, valves and pressure vessels.

Lens rings have two (2) spherical faces and are used between flanges with straight tapered twenty degree (20°) faces. Providing a line contact seal approximately one-third across the gasket face, the specially designed cross-section affects a pressure-energized seal.

## IX-Rings for Compact Flanges

The IX-rings are designed and used where the NORSOK CFC (Compact Flange Connections) are in use. The rings come in three different kinds of steel and are coated with PTFE in varying colours in order to distinguish between them. Standard identification NORSOK STANDARD L-005 (NCF5).

All markings should be on the Inner Diameter of the ring.

Flange Material	Service temperature	Ring Material	Color
Carbon steel	-50°C to +250°C	Carbon steel CS360LT or low alloy steels, e.g. AISI 4140	●
Stainless steel	-50°C to +250°C	22Cr Duplex	●
Stainless steel	-50°C to +250°C	17/4-PH	●
Stainless steel	-101°C to +250°C	Nickel alloys such as Alloy 625 or similar	●





## Spiral Wound Gasket

Spiral wound gaskets have the ability to recover under the action of fluctuating loads caused by process fluid pressure and temperature changes, flange face temperature variations, flange rotation, bolt stress relaxation and creep.

The gasket sealing element consists of a pre-formed metallic winding strip with layers of a softer, more compressible sealing material which during compression, is compressed and flows to fill imperfections in the flange surfaces when the gasket is seated. The metal strip holds the filler giving the gasket mechanical resistance and resilience.

Spiral wound gasket's basic sealing element, several layers of specially formed continuous V-shaped metal strip are spirally wound with alternate plies of soft filler strip. The "V" profile allows the gasket to act as a spring and the depth is carefully controlled to bestow the sealing element with the best compression and recovery characteristics. In order to further enhance the mechanical and sealing properties of the gasket, it is normal practice to apply several layers of the metal strip only to the inner and outer diameters.

Controlled winding through machines are carefully monitored and adjust the tension of the winding strips. A uniform density throughout the product is produced. This provides the spring-like action within the gasket which enables it to maintain a seal even when subject to fluctuating compressive loads.

### Type CGI (Gasket with Centering Ring & Inner Ring)

- ✓ Solid metallic inner & outer ring
- ✓ Suitable for high pressure and temperature applications
- ✓ Standard spiral wound gasket for raised face applications
- ✓ Prevents turbulence and erosion damage to flange
- ✓ Prevents damage to the gasket bore and inner windings
- ✓ Inner ring acts as a heat shield and as a corrosion barrier
- ✓ Wide choice of materials for filler and metal strip
- ✓ General and critical duties

### Type CG (Gasket with Centering Ring)

- ✓ Solid metallic outer ring used as a centering device and compression stop.
- ✓ Used mainly on raised face and flat face flanges
- ✓ Wide choice of materials for filler and metal strip
- ✓ General duties

### Type GI (Gasket with Inner Ring)

- ✓ Solid metallic inner ring
- ✓ High pressure & high temperature capability
- ✓ Male to female flanges in vessels, valves and pumps
- ✓ Wide choice of materials for filler and metal strip
- ✓ General and critical duties

### Type G (Gasket only)

- ✓ Wide choice of materials for filler and metallic strip
- ✓ Suitable for high pressure and temperature applications
- ✓ Recommended flanges are tongue & groove, male to female and flat face to recess in vessels, valves and pumps
- ✓ General and critical duties



# CAMPROFILE GASKET

Camprofile is a composite gasket which utilises a serrated metal core with a soft facing material. The metal core is machined on each contact face with concentric serrations which provide high pressure areas, ensuring that the soft coating flows into any imperfections in the flange even at relatively low bolt loads. The soft facing material is engineered to compress in to the serrations on the core and form a thin film across the peaks creating the ideal sealing density in the grooves of the profile. The result is a gasket which combines the benefits of soft cut materials with the advantages of seal integrity associated with metallic gaskets.

Expanded graphite is the most common facing material used for camprofile gaskets. However, other materials can be used, such as PTFE for chemically aggressive duties or mica for high temperature service.

## General Properties of Camprofile Gaskets

- ✓ A wide range of seating stresses under which the seal is effected and maintained
- ✓ Can be used when there is insufficient bolt load to seal conventional gasket materials
- ✓ Easy to handle and fit
- ✓ Suitable for a wide range of operating conditions
- ✓ The soft facing layer prevents damage to the mating flange
- ✓ Sealing is not sensitive to uneven bolt loading conditions
- ✓ Can be refurbished with a new facing layer and reused

## Core Design

- ✓ Standard core design is parallel which offers the advantage of even stress distribution across the gasket face. Convex Camprofiles are also available which have a reduced depth of grooves towards the profile Centre. This type of profile ensures a high seating stress in the middle of the profile and is effective for low bolt load applications.



# METAL JACKETED GASKET

Metal Jacketed gaskets are the most basic type of semi-metallic gaskets combining the high pressure suitability and blow out resistance of metallic materials with the improved compressibility of soft materials. Metal jacketed gaskets offer an economical seal where sealing faces are narrow and can be produced in a variety of shapes, making them a good option for heat exchanger jointing.

## General Properties

- ✓ Economical
- ✓ Easy to handle and install
- ✓ Suitable for high temperatures
- ✓ Suitable for narrow flanges
- ✓ Good blow-out resistance

Metal Jacketed and corrugated gaskets can be manufactured to suit a range of chemical environments by the selection of a suitable alloy jacket or core. The following materials are available:

### 1. Double Jacketed

Constructed of soft filler encapsulated by a metal jacket and insert. Designed for use on high temperature and pressure applications

## Properties

- ✓ Economical, basic with added strength from metallic jacket
- ✓ Metal jacket provides increased gasket stability and blow-out resistance
- ✓ Chemical resistance to a wide range of media can be accommodated by selection of a suitable metal

### 2. Single Jacketed

Constructed of soft filler completely enclosed in a single jacket for use in applications where the width does not permit the use of a double jacketed gasket.



## CORRUGATED GASKET



Corrugated gaskets are a highly versatile family of products, available in wide variety of Configurations and suited to a wide range of applications. For improved sealing performance the gaskets can be partially or completely

Comprises a single corrugated core faced with either PTFE or Graphite dependent on application. The soft facing layer provides the gasket with a high level of tightness while the core gives the gasket both resilience and integrity. Used in variety of applications including heat exchangers, valve bonnet application and small recess gaps.

### Properties

- ✓ Corrugated metallic core provides the gasket with improved handling characteristics over graphite laminates
- ✓ Corrugations on the core create high stress regions to allow excellent sealing properties even with low gasket loads
- ✓ Provides greater recovery properties than graphite laminate gaskets

## SOLID GASKETS

Solid Gasket is a composite gasket which utilizes a metal core with a soft facing material. The solid metal core is a machined which provides low pressure areas, ensuring that the soft coating flows into any imperfections in the flange even at relatively bolt loads. The soft facing material is engineered to compress in to the surface on the core and form a thin film across the surface creating the ideal sealing.

Expanded graphite is the most common facing material used for Solid gaskets.



### Properties

- ✓ Economical alternative to Camprofile gaskets for lower pressure, lower criticality applications
- ✓ Medium pressure gasket with a wide seating stress range
- ✓ Excellent tightness at low bolt loads

## REINFORCED GRAPHITE GASKET

Flexible graphite materials are universal sealing products consisting of pure carbon in which the crystalline structure has been considerably expanded through a special chemical and thermal procedure. The expanded crystals are formed into foil by a multi-stage calendaring process. The thin flexible graphite foil can then be laminated into thicker sheets to manufacture a range of sealing products.

Flexible graphite sheet can also be supplied with reinforcing materials to increase the tensile strength, load bearing capacity and improve handling characteristics. Laminated graphite sheet materials are often used as a replacement for asbestos-based materials owing to their excellent chemical resistance and temperature.

Graphite laminate materials are ideal for steam applications as they do not contain a rubber binder and are not subjected to hardening of the material.

### Properties

- ✓ Outstanding resistance to high and low temperature
- ✓ Chemically resistant to virtually all media
- ✓ High compressibility
- ✓ Low creep under temperature or pressure
- ✓ Seals gases and liquids effectively at low bolt loadings
- ✓ Unlimited storage life

### Reinforcements

- ✓ Tanged Stainless steel 316
- ✓ Tanged Stainless steel 304





## PTFE GASKET

Polytetrafluoroethylene (PTFE) is almost chemically inert being attacked only under extreme conditions by molten alkali metals, certain fluorine compounds at elevated temperature and nuclear radiation. In this respect PTFE is very useful as a gasket material, but unfortunately, the material has a tendency to creep under load and has limited use in such applications.

Modified PTFE materials allow the benefits of PTFE to be utilized at higher compressive loads and higher temperatures. Expanding the PTFE, for example, produces a softer material with a higher strength than conventional PTFE. Whereas the addition of a filler such as silica, silicon carbide or barium sulphate lends the material better hot and cold flow resistance without negatively affecting the chemical resistance.

PTFE can also be used as an envelope to a more conventional compressed fibre gasket material insert. This combines the chemical resistance of the PTFE with the stress retention and recovery properties of the insert and reduces the negative effect of the PTFE on the joint's mechanical stability.

### General Properties of PTFE

- ✓ Outstanding chemical resistance
- ✓ Suitable for use with foodstuffs and pharmaceutical applications
- ✓ Insoluble in solvents, even at increased temperature
- ✓ Stable to light
- ✓ Does not absorb water
- ✓ Excellent electrical insulating capacity
- ✓ Low thermal conductivity



### Expanded PTFE

Expanded PTFE materials have good creep resistance and bolt torque retention properties allowing it to be used to higher temperatures and to seal higher internal pressures.

Expanded PTFE tape forms with a pressure sensitive adhesive backing strip to assist with installation. Since the material is available in roll form it offers a solution to jointing needs without the need to maintain large stocks of cut gaskets.

### Properties

- ✓ Good mechanical properties at low to medium temperatures
- ✓ Excellent chemical resistance
- ✓ Highly compressible
- ✓ Available in sheet form and as cut gaskets

### PTFE Envelope with compressed fibre insert Properties

- ✓ Excellent chemical resistance
- ✓ PTFE envelope gaskets comprise a compressed synthetic fibre gasket material insert with a PTFE envelope. The PTFE envelope protects the gasket from chemical attack. The insert provides the strength and resilience needed for demanding sealing operation
- ✓ This gasket offers excellent chemical resistance under moderate conditions of temperature and pressure

# RUBBER

## 1. Nitrile (NBR) Rubber Properties

- ✓ A universal, oil resistant rubber
- ✓ A good quality general purpose nitrile sheet
- ✓ Recommended where added resistance to mineral oils, alcohols and petroleum is required especially under hot conditions
- ✓ It is not recommended for use in sunlight, or near sparking electrical apparatus

## 2. Neoprene Rubber Properties

- ✓ A good general purpose poly-chloroprene sheet
- ✓ Recommended for use in less demanding situations with air, water, non-oxidizing acid and aliphatic hydrocarbons or where extra-resistance to heat, ozone or weathering is required

## 3. SBR Rubber Properties

- ✓ The general purpose, synthetic equivalent to natural rubber, offering similar mechanical properties but better high temperature performance, flexibility and a greater resistance to attack from animal and vegetable oils

## 4. EPDM Rubber Properties

- ✓ This material has good mechanical properties and is resistant to ageing, weathering, ozone, oxygen, steam and water
- ✓ Recommended for use where resistance to sunlight, weather, steam and ozone attack is important
- ✓ Suitable for use with phosphate ester-based hydraulic fluids and many mineral acids
- ✓ Not suitable for use with petroleum based oils or fluids

## 5. Viton Rubber Properties

- ✓ High temperature rubber material with resistance to a wide range of chemicals
- ✓ A high quality fluorocarbon rubber which exhibits a wide range of chemical resistance
- ✓ Extremely resistant to the effects of oxygen and ozone
- ✓ Retains excellent mechanical properties even when subjected to high temperatures for long periods of time

## 6. Butyl Rubber Properties

- ✓ This material is resistant to phosphate ester based hydraulic fluids and mineral oils
- ✓ It is highly impermeable to gas and moisture but is not recommended for petroleum oils and fluids
- ✓ Good resistance to phosphate ester based hydraulic fluids and mineral oils
- ✓ It is highly impermeable to gas and moisture and has good general chemical resistance including mineral acids
- ✓ Resistance to petroleum oils and fuels is low

## 7. Natural Rubber Properties

- ✓ A good general purpose poly-chloroprene sheet
- ✓ Recommended for use in less demanding situations with air, water, non-oxidizing acid and aliphatic hydrocarbons or where extra-resistance to heat, ozone or weathering is required
- ✓ A medium quality commercial grade which exhibits the qualities required for a good gasket
- ✓ Suitable for gaskets and packing where no particularly high resistance to heat, oils or solvents is required e.g. cold water, sewage pipes, etc.

## 8. Silicone Rubber Properties

- ✓ A high quality silicone rubber with excellent resistance to temperature extremes
- ✓ Good weathering properties and can be used in contact with foodstuffs and a white silicone rubber is also available



# COMPRESSED NON ASBESTOS FIBRE

CNAF is a range of specially formulated and designed to meet the highest standards of performance for a wide range of industrial applications. Based on high performance inorganic or organic fibres blended with elastomeric compounds, CNAF gaskets provide a long term sealing solution even under the most exacting operating conditions.

## General Properties of CNAF

- ✓ Capable of sealing a wide range of industrial applications
- ✓ Easy to handle and install
- ✓ Excellent bolt stress retention properties
- ✓ Excellent sealing performance
- ✓ Easy to remove due to CNAF's proprietary anti-stick coating
- ✓ Economical

## Aramid Fibre with NBR Binder Properties

- ✓ Good resistance to oils, fuels, hydrocarbons
- ✓ Very successful in internal combustion engine applications
- ✓ Available in sheet form and as cut gaskets
- ✓ 3xA anti-stick finish on both sides

## Aramid & Glass Fibre with NBR Binder Properties

- ✓ Good resistance to oils, fuels, hydrocarbons
- ✓ An economic grade for general industrial services
- ✓ Available in sheet form and as cut gaskets
- ✓ 3xA anti-stick finish on both sides

## Aramid Fibre with SBR/NR Binder Properties

- ✓ Premium grade, controlled-swell material.
- ✓ Available in sheet form and as cut gaskets
- ✓ 3xA anti-stick finish on both sides

## Synthetic Fibre NBR Binder Properties

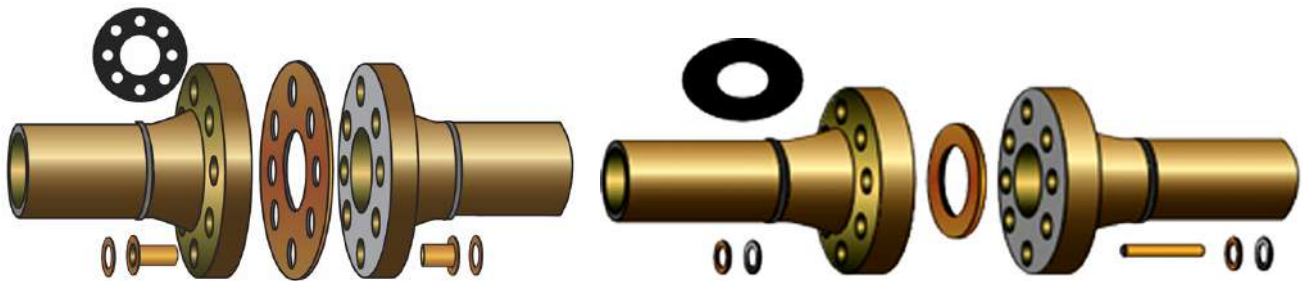
- ✓ Excellent seal-ability even at low bolt loads
- ✓ Economical
- ✓ Good resistance to oils, fuels, hydrocarbons, water etc.
- ✓ Excellent gas leakage properties
- ✓ Available in sheet form and as cut gaskets
- ✓ 3xA anti-stick finish on both sides



## FLANGE INSULATION KIT

Flanges, the most common trouble area, need to be sealed properly to prevent leakage and must also be cathodically isolated to prevent stray currents which cause undo corrosion and eventual breakdown of the metal. ASP Manufactures and maintains a supply of quality products and materials which help solve most flange sealing problems, therefore preventing subsequent corrosion and saving the integrity of the pipeline.

Flange Isolation Gasket Kits are manufactured according to ANSI B16.5 specifications up to 144".



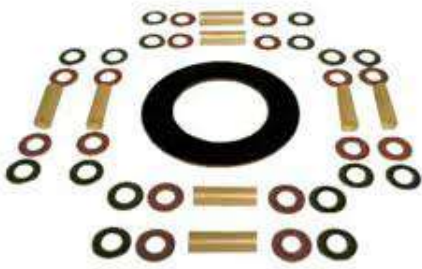
### TYPE E (FULL FACE TYPE GASKET)

Type E is a full-faced gasket with the same outside diameter as the flange and precision cut bolt holes. This design facilitates proper alignment of the gasket during installation and foreign material prevented from shorting the flange isolation. Type E gaskets are available in plain face or Nitrile faced phenolic, as well as a variety of high temperature materials. Standard thickness of 1/8".



### TYPE F (RAISED FACE TYPE GASKET)

Type F gaskets are made to fit the raised face portion of the flange only. As there are no bolt holes in the F gasket, the inside diameter of the bolt hole circle is slightly smaller than the outside diameter of the gasket, assuring an exact, automatic positioning of the gasket. Type F gaskets are available in the same materials as the type E gasket. Standard thickness of 1/8".



## TYPE D (RTJ TYPE GASKETS)

Type D gaskets are specifically designed to fit into the ring groove of ring-type-joint flanges. They are manufactured of a medium weave, fabric-reinforced phenolic material and are sized to ANSI specifications available in basic oval as well as octagonal shape. Also available are BX gaskets with pressure ratings to 15,000 PSI.



## g10 / g11 with viton / spring energised gaskets

We use a machined glass-reinforced epoxy (GRE) resin with an o-ring or spring energised seal to produce this insulation set. It can be used for flange ratings from class 150 to 600 and offers greatly improved compressive strength over conventional insulation sets with greater resistance to over compression and cracking.

## metal core with g10 / G11 gaskets

These gaskets are high reliability gasket used for both insulating and general sealing purposes in Very Critical Services. The gasket has a proven track record of integrity in aggressive sealing situations. It is suitable in all services up to and including ANSI 2500# and API 15,000# classes. This gasket consists of a PTFE (Teflon) spring-energized face seal, or an elastomeric o-ring, seated in an insulating laminate, which is permanently bonded to a high-strength metal gasket core.

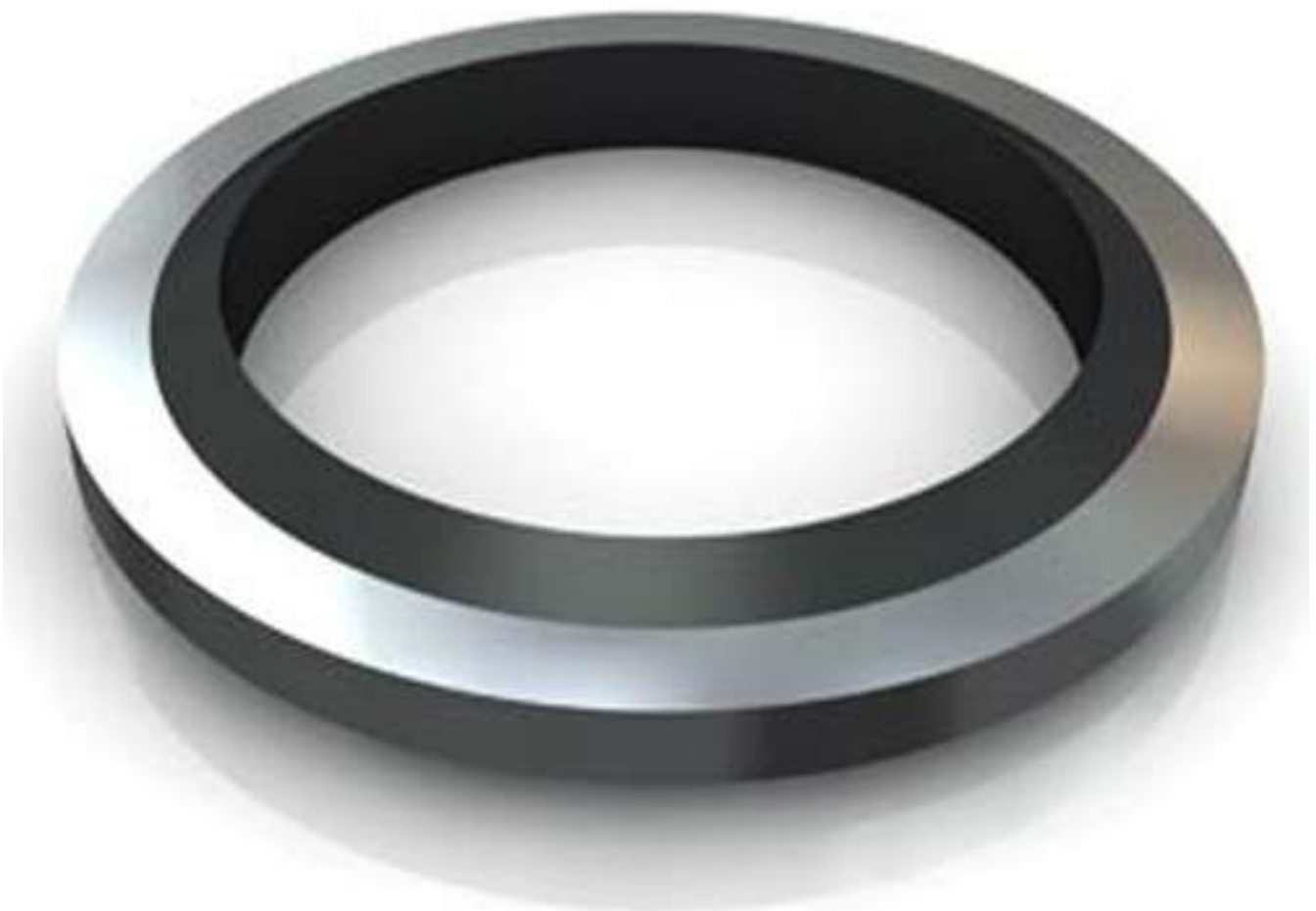
Due to its unique pressure activated sealing mechanism, the gasket requires far less bolt stress to seal than any other gasket. Gasket inner diameter is exactly matched to the flange bore to eliminate turbulent flow and flange face erosion/corrosion. The seal elements are replaceable in the reusable gasket retainer.





## Metal Seal Ring

The seal ring resembles a “T” cross section. The leg of the “T” forms a rib that is held by the hub faces as the connection is made up. The two arms form lip seals that create an area of sealing surface with the inner surface of the hub. Internal pressure works to reinforce this seal. Seal rings are available in the following standard material grades: AISI 4130/40, 630 SS (17/4PH), Super Duplex F55) and Alloy 718. Other materials are also available (including F316, F44 and 660 SS) to suit particular client applications. Seal rings are supplied with either PTFE or MoS<sub>2</sub> dry film lubrication to aid make-up. Both are suitable for general oilfield service; for service conditions above 230°C (450°F) use MoS<sub>2</sub>. Seal rings should be handled and stored with care, inspected for damage and interference. The seal ring should be discarded if there is any damage to the tapered seal surfaces.



## Metal Hubs

The clamp fits over the two hubs and forces them against the seal ring rib. As the hubs are drawn together by the clamp assembly, the seal ring lips deflect against the inner sealing surfaces of the hubs. This deflection elastically loads the lips of the seal ring against the inner sealing surface of the hub, forming a self-energized seal.

The simplicity, sealing efficiency, and economy of the connector benefits a wide range of industries in various applications: hubs are made from the same generic material as the piping system they connect. The standard materials are A350 LF2 (modified), A182 F316, A182 F51 (UNS S31803) and A182 F55 (UNS S32760), but the hubs can be manufactured from almost any machinable metal, typically carbon steels, stainless steels, duplex steels, nickel alloys and titanium as well as other materials. All hubs are provided with suitable corrosive protection and protective caps on seat area. The welding bevel is fully tolerance in accordance with ANSI B16.5 as standard. Carbon, Low alloy and Duplex grades can be supplied with Alloy 625 weld cladding (seat and bore) or overlay (seat only) for severe corrosion applications.

## Benefits

The rib of the seal ring prevents the seal lip from being crushed by over-tightening. While it acts as a positive stop during makeup, the rib also transfers compressive and bending loads from one hub element to another. The rib bearing area is ample to carry the most severe loading that a piping system can withstand.

## Application

Petrochemical Industry — Reactor vessel nozzles, vessel closures, general piping/valve ends in petroleum refining and chemical processing plants.

Oil and Gas Production — Onshore and offshore wellheads, tees and ells, manifolds, chokes, valve ends, compressors, general piping, loading risers and pipelines.















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