



# MECH PROOF<sup>TM</sup> Engineering

Mfg. Mechanical Shaft Seal & Components



- ✓ Petrochemicals
- ✓ Fertilizers
- ✓ Refineries
- ✓ Pharmaceuticals
- ✓ Pulp & Paper
- ✓ Food & Beverages



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## Company Profile:

Mech proof Engineering has made significant contributions to the Indian Process industry. Manufacture mechanical seals. introduce flexible graphite, gaskets, packing..install facilities for manufacture of Silicon Carbide and High Alumina Ceramic seal faces, cartridges heavy duty feed pump seals.. and so on. The pioneering spirit pervades our business philosophy even today. We continually endeavor to meet client's opportunity by offering them efficient and modify approach toward each order and our ethical business dealings. This has given us a long list of clients located all over india and abroad. Besides this our relationship also reaches out to other potential customer, merchants and exporters. We believe in quality and class in engineering excellence rather than volumes. This is reflected in our predominant position in the higher end seals market in India. And, in the remarkable successes of our innovative application engineered seals, even in the most severe duty conditions. Our Seals developed indigenously for Petroleum Refinery and Oil & Gas Industry, Dry Gas Seals for Compressors, Boiler Feed Pumps; turbulent slurry applications; have made significant impact in the Indian industry. We possess an ultra modern manufacturing unit at Mumbai in Maharashtra, India equipped with all modern and advanced machining facilities like drilling machines, grinding CNC machines, lathe machines and lapping machines to manufacture products in bulk to fulfill various requirement of mechanical seals through quality control process. In chemical process industries, our mechanical seals itself serves as explanatory products to various sealing solutions. We provide the best Mechanical Seals to the clients.

## Single Spring Unbalanced Seal

### MPE-01

MPE-01 Seal is more suitable for application where crystallizing solution are handled. It is simple in construction and easy to install. Due to its unique positive drive lug it's direction rotates independently. These seals are simple, reliable & rugged enough for the clogging type application.

### Materials

Hardware : SS 316 / SS 304 / Alloy 20 / Hastelloy C  
Seal Ring : Carbon / SiC / TC  
Mating Ring : SiC / Ceramic / TC  
Secondary Seal : PTFE / TTV / FKM / NBR / EPR

### Operating Limit

Pressure : Upto 16 kg/cm<sup>2</sup>  
Temperature : -20°C to 280°C (Depending on elastomer)  
Speed : 4500 RPM

### Salient Features

- High performance.
- Low maintenance cost.
- Easy to install.



## Teflon Bellow Unbalanced Seal

### MPE-02

MPE-02 Seal are externally mounted Teflon bellow seal. It is mainly use to handle at corrosive media. Because the design of this seal elements the contact between metal parts of the seal and corrosive liquid which it handles. The seal contain PTFE + GFT composite bellows which is hydraulically balanced and is machined with high precision to form the prescribed contour.

### Materials

Hardware : PTFE + GFT Composite  
Seal Ring : GFT / CFT / SiC  
Mating Ring : Ceramic / SiC  
Secondary Seal : PTFE + GFT

### Operating Limit

Pressure : Upto 5.9 kg/cm<sup>2</sup>  
Temperature : -45°C to 120°C  
Speed : Upto 3500 RPM

### Salient Features

- Such type of seal does not affect on shaft or any other damage.
- No dynamic elastomer.
- Low maintenance.
- It has replaceable faces.



# Metal Bellow Balanced Seals

## MPE-03

MPE-03 Specially developed for high temperature ranges and sliding velocities. It insulate the flexible element from direct shaft vibration and promotes more positive sealing while significantly extending seal life. Each welded set of plates has a fixed axial movement along the shaft. Pressure capability of the standard seal can be enhanced by using this. It is mainly used in Petrochemical, Thermic Fluid & Refineries.

### Materials

Hardware : SS 316 / Alloy 20 / Hastelloy C  
End fitting material : SS 316 / Alloy 20 / Hastelloy C  
Material of bellow : Alloy 20 / Hastelloy C / AM 350 / SS 316  
Seal Ring : Carbon / SiC / TC  
Mating Ring : SiC / TC  
Secondary Seal : PTFE / Karlez / Flexible Graphite / Chemraz

### Operating Limit

Pressure : Upto 20 kg/cm<sup>2</sup>  
Temperature : -70°C to 330°C (Depending on elastomer)  
Speed : 4500 RPM

### Salient Features

- Self cleaning, non-clogging construction.
- Highly corrosion resistant.
- Ability to handle abrasive media without separators or clean flushes.

# Grundfos Pump Cartridge Seal

## MPE-04

MPE-04 Cartridge type mechanical seals are very easy to replace and gives maximum reliability. It is durable and made from hardwearing material which prevent the downtime and prolong the lifetime of the seal. All axial movement has been eliminated, preventing wear of the shaft and the rubber parts. There is no special tool required to replace the seal or dismantling the pump. With a custom built pump solution from Cartridge, your pump is capable of handling even higher pressures, more aggressive liquids, excessive liquid temperature etc.

### Materials

Hardware : SS 304 / SS 316  
Seal Ring : Carbon / SiC  
Mating Ring : TC / SiC / Carbon / Special Cast  
Secondary Seal : PTFE / EPDM / Nitrile / Neoprene / Silicon / FKM

### Operating Limit

Pressure : Upto 20 kg/cm<sup>2</sup>  
Temperature : -200 to 180°C  
Speed : 3000 RPM

### Salient Features

- It gives long and reliable seal life.
- Easy to install without any tool.
- Can handle higher pressure and excessive liquid temperature.





# Dry Running Seal

## MPE-05

MPE-05 Dry-running mechanical seals are used for mixers, agitators and reactors for cleanability. These seals were developed for sanitary applications where product contamination from barrier fluids is unacceptable. The seals feature sloped internal surfaces to facilitate drainage and enhance cleanability, including the debris well flush ports. Internal metallic parts exposed with optional electro-polishing and all components.

### Materials

Hardware : SS 316  
Seal Ring : Carbon  
Mating Ring : TC / SiC  
Secondary Seal : FKM / TTV / PTFE / GFT / FEP / Chemraz

### Operating Limit

Pressure : Full Vacuum To 6 Bar  
Temperature : -20° C To 120° C  
Speed : 4000 RPM

### Salient Features

- Long and reliable service life.
- Innovative seal setting mechanism.
- Self lubricants faces. • Easy to install.



# Double Reactor Seal

## MPE-06

MPE-06 Seals are used to seal agitators, mixers and blenders as top, bottom and side entry drives and working with the use of coolant and buffer fluid and applied in case of aggressive and hazardous media. These seals find application in various industries such as chemicals, petrochemicals, oil refineries, solvents, fertilizers and others. It requires no shaft or sleeve step for balancing, shrink disk attachments, inboard stationary seat axially secured flange accordingly. It eliminates the possibility of product contamination, since there is no use of barrier fluid. It gives good performance in high vacuum conditions which is cost effective and economical. These seals can be easily implemented and repaired.

### Materials

Hardware : SS 316  
Seal Ring : Carbon / SiC  
Mating Ring : TC / SiC  
Secondary Seal : PTFE / FKM / TTV / EPR / Karlez / FEP / Chemraz

### Operating Limit

Pressure : Full vacuum to 40 bar  
Temperature : -40° to 280°C  
Speed : RPM subject to specification

### Salient Features

- Cooling jacket help for maintaining temperature as per requirement.
- Available with / without bearing.
- Easy to install.
- It has a high performance.



# Rubber Bellow Unbalanced Seal

## MPE-07

MPE-07 Seal has been designed for high volume production. This type of seal can be used regardless of direction or rotation. The unique rubber bellows secondary seals provide a high degree of axial flexibility to compensate for misalignment and lack of concentricity of the shaft and due to thrust movement of the shaft as there is no relative movement between the rubber bellows and the shaft. These seals offers a very high degree of interchangeability with the various contemporary seals

### Materials

Hardware : SS 304 / SS 316  
Seal Ring : Carbon / SiC / TC  
Mating Ring : Ceramic / SiC / TC  
Secondary Seal : FKM / NBR / Neoprene / EPDM / Nitrile.

### Operating Limit

Pressure : Below 10 kg/cm<sup>2</sup>  
Temperature : -35°C to 105°C  
Speed : Bellow 3000 RPM

### Salient Features

- It may easily produce in mass production.
- It is easy to install.
- Long lasting.
- Low maintenance.
- Economically priced.



# Conical Unbalanced Seal

## MPE-08

MPE-08 Conical Spring Seals are extremely sharp and reliable, therefore it is used for various sealing applications. Conical Springs are loaded with various combination of face such as solid carbon and shrink fitted. They cover a wide spectrum of applications – in water pumps, sewage pumps, submerged pumps, chemical pumps etc.

### Materials

Hardware : SS 316 / SS 304  
Seal Ring : Carbon / SiC / TC  
Mating Ring : SiC / Ceramic / TC / Carbon  
Secondary Seal : PTFE / NBR / EPR / Neoprene / FEP / FKM / TTV

### Operating Limit

Pressure : 10 kg/cm<sup>2</sup>  
Temperature : -20°C to 280°C (Depending on elastomer)  
Speed : 4000 RPM

### Salient Features

- High performance.
- Low maintenance cost.
- Easy to install.



# Rubber Bellow Unbalanced Seal

## MPE-09

MPE-09 The positive static seal between the bellows and the shaft, along with the free movement of the bellows, means that there is no sliding action that could lead to shaft damage by fretting. This ensures that the seal will automatically compensate for normal shaft run-out and axial movements. These versatile seal can be used on a wide range of equipment including centrifugal, rotary and turbine pumps, compressors, chillers, and other rotary shaft equipment.

### Materials

Hardware : SS 304 / SS 316  
Seal Ring : Carbon / TC / SiC  
Mating Ring : TC / SiC / Ceramic / Special Cast  
Secondary Seal : EPDM / Nitrile / Neoprene / Silicon / FKM

### Operating Limit

Pressure : Upto 15kg/cm<sup>2</sup>  
Temperature : -200 to 160° C  
Speed : 3000 RPM

### Salient Features

- Self-aligning unit automatically adjusts for shaft end play and run-out.
- Easy to install.
- Can be used with practically any type of mating ring.



# Wave Spring Unbalanced Seal

## MPE-10

MPE-10 Seal has been designed for most general application like paper & pulp industries, sugar & waste water etc. The SM-51 mechanical seal range is designed for universal application and ideal suited for standardisation. It is robust drive mechanism. The loosely inserted seal faces are easily exchanged. It may also reduce spares inventory and the flexibility of maintenance.

### Materials

Hardware : SS 316 / SS 304  
Seal Ring : SiC / Special Caste  
Mating Ring : SiC / Carbon  
Secondary Seal : FKM / Silicon / NBR / EPR / Neoprene / Karlez

### Operating Limit

Pressure : Upto 15 kg/cm<sup>2</sup>  
Temperature : Upto 280°C (Depending on elastomer)  
Speed : 4000 RPM

### Salient Features

- High performance.
- Easy to install.
- Low maintenance cost.



# Single Acting Balanced Seal

## MPE-11

MPE-11 Single Coil balanced mechanical seals are reliable for various contaminations. The balanced & unbalanced version can just be obtained by simply changing the carbon face assembled through circlip provided on it. The Single Spring Seals provided by us are made for handling various media and are ideal for Slurries, Sludges and Crystallizing Solutions. These Single Spring Seals do not get affected with the rotation of shaft direction. Generally handled by high-pressure pumps.

### Materials

Hardware : SS 316 / SS 304 / Alloy 20 / Hastelloy C  
Seal Ring : Carbon / TC / SiC / Ceramic  
Mating Ring : TC / SiC / Ceramic / Stellite  
Secondary Seal : PTFE Wedge / FEP / FKM / NBR / TTV / Neoprene.

### Operating Limit

Pressure : Upto 15kg/cm<sup>2</sup>  
Temperature : -20°C to 280°C (Depending on elastomer)  
Speed : 4500 RPM

### Salient Features

- High performance.
- Low maintenance cost.
- Easy to install.



# Multi Spring Type Seal

## MPE-12

MPE-12 Incorporate secondary seals that move axially along a shaft or sleeve to maintain contact at the seal faces. The seal faces are loosely inserted and can be easily ex-changed. The rotary face is shrink fitted in metal shell thereby giving additional advantage of offering both hard faces. Springs are fully immersed in the process fluid, hence do not get clogged because of the centrifugal forces.

### Materials

Hardware : SS 316 / Alloy 20 / Hastelloy C  
Seal Ring : SiC / TC  
Mating Ring : SiC / TC / Carbon  
Secondary Seal : PTFE / FEP / TTV / Chemraz / Karlez / FKM

### Operating Limit

Pressure : Upto 25 bar  
Temperature : -20°C to 280°C (Depending on elastomer)  
Speed : 4500 RPM

### Salient Features

- It enables handling of the abrasives and corrosive liquids.
- It can be easily install by non-skilled person.
- It provides excellent sealing performance and extend seal life.





# Multi Spring Type Balanced Seal

## MPE-13

MPE-13 Seals are designed to handle clear liquids under normal PV condition. This type of seal do not require step on the shafts for installation, due to which, this are preferred choice for double tandem arrangements with external seal support systems & device. These seal required lower stuffing box for installation. These types of seals are used in Petrochemicals, Petroleum Refinery, Solvents, Hydrocarbons & General Industrial fluids.

### Materials

Hardware : SS 316 / SS 304 / Alloy 20 / Hastelloy C  
Seal Ring : Carbon / SiC / TC  
Mating Ring : TC / SiC / Carbon / Ceramic  
Secondary Seal : PTFE / FKM / FEP / Chemraz / TTV

### Operating Limit

Pressure : Upto 35 Kg/cm<sup>2</sup>  
Temperature : -40 ° to 280° C  
Speed : 4500 RPM

### Salient Features

- No shaft fretting.
- None clogging.
- Uniform face loading.
- Easy to replace individual seal-wear parts.



# Double Mechanical Seal

## MPE-14

MPE-14 Patent pending design for pump. Integral bi-directional flow inducer. Directed barrier fluid flow circulation. Fits on pumps with thin radial cross sectional spaces. The hybrid design offers a metal to metal inboard drive and an integral bi-directional pumping device allowing the seal to fill in radial cross sectional space.

### Materials

Hardware : SS 316 / SS 304 / Alloy 20  
Seal Ring : Carbon / SiC / TC  
Mating Ring : TC / SiC / Carbon  
Secondary Seal : PTFE / FKM / FEP / Chemraz

### Operating Limit

Pressure : Upto 15kg/cm<sup>2</sup>  
Temperature : 40 ° to 200° C  
Speed : 4000 RPM

### Salient Features

- The diverted barrier fluid flow path achieves effective heat removal at both sets of seal faces.
- High performance.
- It gives long & reliable seal life.





# Cartridge Metal Bellow Seal

## MPE-15

MPE-15 Seal is specifically designed for the most demanding of high and low temperature services as well as being suitable for high speed application in a wide range of media. It is a unique design for easy to install. Hydraulically balanced for reduced seal face loading which maximize seal life and allows for vacuum service capability. The Bellows is precision manufactured and is subject to the very highest levels of quality control to ensure consistent and reliable operating performance.

### Materials

Hardware : SS 316 / Alloy 20 / Hastelloy C  
End fitting material : SS 316 / Alloy 20 / Hastelloy C  
Material of bellow : Alloy 20 / Hastelloy C / AM 350  
Seal Ring : Carbon / SiC / TC  
Mating Ring : SiC / TC  
Secondary Seal : PTFE / FKM / Karlez / TTV / FEP / Chemraz

### Operating Limit

Pressure : Upto 20kg/cm<sup>2</sup>  
Temperature : -70°C to 300°C (Depending on elastomer)  
Speed : RPM subject to specification

### Salient Features

- Eliminates the costly and often long lead time issues of exotic elastomers compounds.
- No shaft fretting.
- Unit design for ease of installation.



# Cartridge Balanced Seal

## MPE-16

MPE-16 Seal is hydraulically balanced seal face technology for reducing power consumption. It is basically conceived as multipurpose, multi featured seals which can be used on most of the applications from simple solvents to slurries and from solidifying or crystallizing liquids to even thermic fluids at moderate temperatures under pressure or vacuum. It may use in slurries, big bore pumps, vacuum distillations, salt solution & processing equipments etc. Also it may reduce spares inventory and the flexibility of maintenance.

### Materials

Hardware : SS 316 / SS 304 / Alloy 20 / Hastelloy C  
Seal Ring : SiC / TC  
Mating Ring : SiC / Carbon / TC  
Secondary Seal : FEP / FKM / NBR / Chemraz / PTFE / TTV / Karlez

### Operating Limit

Pressure : Upto 25 kg/cm<sup>2</sup>  
Temperature : -40°C to 280°C (Depending on elastomer)  
Speed : RPM subject to specification

### Salient Features

- High performance.
- It can tolerate reversible pressure.
- Non clogging spring protection.
- It may easily replace on conventional double seal.

