Leakage Proof Sealing Solution

CHEMICAL & FERTILIZER
PETROCHEMICALS
POWER GENERATION
OIL & GAS REFINERIES
FOOD & PHARMA

PUMPS
AGITATORS
COMPRESSORS
BLOWERS
ROTARY APPLICATION

Mechanical Seals & Sealing System

www.microseals.com
Welcome to the world of Mechanical Seal.

This Product Brochure is designed to make you familiar with the latest Seal Group products and services.

**Micor Seals** has focused on seal selection based on application and industry. Application engineering based sealing technology helps you to decide on the right type of seal.

You will have an immediate impression of the Mechanical Seal's main application target and operating window by just looking at the content of section provided in this brochure.

Further more, we have incorporated a basic explanation on seal operation and additional technical background information.

**Company Profile**
- Micro Seals is one of the leading Designers & Suppliers of world-class Mechanical Seal & Seal Support system for Pumps, Compressors, Aftators, Mixers and Reactors.
- We are implementing ISO 9001:2015 Quality Management Standard & manufacture mechanical seal according to international Quality and safety standards with same design and fitting. (EN 12756-DIN24960, API-682, and ISO 3069.)
- We have computer aided design facility for designing and developing mechanical seal to meet and fulfill customer requirements

**Mission and Vision**
- We tend to work in close co-ordination with our clients to offer unique fluid handling solutions.
- We aim to fulfill our commitment of providing superior quality products to our clients at the optimum cost.

**Our Product**
- We offer a wide variety of highly Reliable and efficient mechanical seals a like Pusher Seal, Metal Bellows Seal, Cartridge seal, Agitator & Mixer Seal, Thermosyphon, Cyclone Separator & Heat Exchanger
- These Mechanical Seals are similar and well replaceable with John Carne, Eagle Burgmann, Flowserve, AES, Chestron, US Seal, and so on

**Our Team**
Our team comprises of qualified and experienced professionals, who continuously work for the development of the company.

**Infrastructure**
Our State-of-the-art infrastructure is located in the industrial hub of Mumbai. we have well equipped infrastructure with modern machineries and equipment for manufacturing and testing facilities.
QUALITY COMMITMENT

Quality Policy:

→ The Primary goal of Micro selas is to achieve the highest standard of quality in all practices and operation without compromise.

→ It is the policy of Micro Seals to distinguish itself as the industry leader by providing superior, cost effective quality products and services to its customers.

→ To achieve this we will: Provide each Associate with the training, tools, skills and motivation to produce the high quality products and services which meet or exceed our customer’s needs.

→ Empower the work force so that everyone is responsible and accountable for achieving the goal of superior quality products and services.

Micro Seals

Quality Process:

→ Made by premium quality raw material, our products offer continuous operation and flawless performance.

→ Raw materials, parts and complete assemblies are inspected by using latest instrument in all stages to prevent any lapse in quality.

→ To confirm to the strict quality control, our customized mechanical seals undergo pressure and leak testing before being sent out to our customers.

Warranty:

Due to strict quality control from start of production until shipment, our products are warranted against defects and workmanship. We are able to guarantee our customers reliability and back-up in providing leak proof solutions.

Commitment:

→ Rigorous Quality control and timely delivery to meet customers requirement.

→ Standardized design and tailor-made solution.

→ Economical pricing and cost effective solution.

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SEALING TECHNOLOGY

The technology has come off the age and proved to enviormental protection system. API 682 standard is devoted standard for mechanical seal. The new sealing technologies are based on advanced computer programs used to optimize the seal design. Combined with advancement in the seal face materials the equipment availability and reliability has increased substantially. other related standard are : API 610, DIN 24960, ISO 3609, DIN EN 12756 and ISO 21049.

BASIC SEAL CONSTRUCTION

Sealing Mechanism : Two Lapped faces, one rotating with shaft and another stationery in gland are brought in contact with each other by means of spring force. the surfaces are separated by micron thickness of film of fluid being sealed. The generation of this film is automatic due to micro asperities on the lapped surfaces thus the film acts as a lubricant and reduced the friction and heat generation well within the limit of seal face material. Generally the lubrication regime is mixed one. Typical coefficient of friction is 0.07 for general purpose seal and 0.015 for well designed high pressure seals.

Seal Balancing :
for seal to perform, the seal faces must be in contact with each other in dynamic conditions. The heat generation due to interface pressure load must not vaporize the liquid film. seal balancing is a geometrical feature provided to seal face that avoids such condition.

Interface Pressure = Pf =Δp(b-k)+Psp
Diff. pressure across seal = Δp
k = Seal face press. Variation constant = 0.5 generally
Psp = Spring load pressure on face = 1.8 to 2.8 kg/ cm²
MATERIALS

Most of the seal designs have stood the test of time and are still in regular usage. The improvements, however, have been tremendous in the seal face materials. The development of superior and highly reliable resin impregnated carbon as also antimony impregnated carbon has enable successful seal operation even in marginal lubricant conditions particularly in light hydrocarbon and high temperature water applications.

for corrosive liquids resin impregnated carbon and sintered silicon carbide grades have proved the ideal solutions. the hardness and thermal conductivity of silicon carbide is extremely high as shown in the table below

<table>
<thead>
<tr>
<th>Material</th>
<th>Compressive Strength N/mm²</th>
<th>Density g/cm³</th>
<th>Modulus Elasticity of kN/mm²</th>
<th>Coeff. of Thermal Expansion x10⁻⁶°C</th>
<th>Thermal Conductivity W/m°C</th>
<th>Hardness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon resin impregnated</td>
<td>250</td>
<td>1.83</td>
<td>234</td>
<td>2.88</td>
<td>6</td>
<td>100*</td>
</tr>
<tr>
<td>Carbonantimony impregnated</td>
<td>350</td>
<td>2.15</td>
<td>262</td>
<td>3.96</td>
<td>8</td>
<td>115*</td>
</tr>
<tr>
<td>Tungsten Carbide</td>
<td>4750</td>
<td>15</td>
<td>635</td>
<td>5</td>
<td>100</td>
<td>1500*</td>
</tr>
<tr>
<td>Silicon Carbide</td>
<td>2750</td>
<td>3.1</td>
<td>365</td>
<td>4.5</td>
<td>145</td>
<td>2400*</td>
</tr>
<tr>
<td>Alumina Oxide</td>
<td>2620</td>
<td>3.9</td>
<td>385</td>
<td>4.32</td>
<td>25</td>
<td>1800**</td>
</tr>
</tbody>
</table>

Surface Roughness

Roughness 10μm precision turned

- 5μm ground
- 1μm lapped
- 0.1μm polished

Percentage bearing area: 4%

Lapped sliding face made out of different materials having the following average, arithmetic mean roughness values (Ra)

- Tungsten carbide: 0.01μm
- Silicon carbide: 0.04μm
- Carbon graphite: 0.10μm
- Alumina oxide: 0.15μm

Extrusion characteristics of elastomeric O-rings

The extrusion resistance of elastomeric O-rings can be greatly enhanced by use of support rings.

MAXIMUM PRESSURE x VELOCITY VALUES

- Carbon vs SIC
- SIC vs TC
- TC vs SIG
- Carbon Ceramic

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**SINGLE SPRING SEAL**  
**TYPE : MS-1100**

**Feature :**
This Seal are single coil balanced seals, rugged enough for variety of applications. The balance & unbalanced version can just be obtained by simply changing the carbon face assembled through circlip provided. It is used in abrasive, corrosive and viscous media.

**Application :**
- Refineries
- Fertilizers
- High Pressure Pumps
- Petroleum Pipelines

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**Description**

1. Stationery Seat
2. Rotary Seal Face
3. Thrust Ring
4. Rotary Seal Face “O” Ring
5. Stationery Seat “O” Ring
6. Spring
7. Grub Screw

---

**Performance Range**

<table>
<thead>
<tr>
<th>Diameter: (mm)</th>
<th>Speed: (m/sec)</th>
<th>Pressure: (bar)</th>
<th>Temperature: (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>15</td>
<td>30</td>
<td>+160</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>0</td>
<td>-50</td>
</tr>
</tbody>
</table>

---

**Materials Of Construction**

- **Sealing Faces :** Carbon, Ceramic, Sic, Tungsten Carbide
- **Secondary Seals :** Viton, Aflas, Ptf, Gft
- **Metal Parts :** SS304, SS316, Special Alloy

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**SINGLE SPRING SEAL**

**TYPE : MS-1200**

**Feature :**
This Seal are single coil unblanced seals. These seals are simple in design and reliable and ragged enough for the most difficult applications. “V” Packing used as secondary seals respectively. Special notched helps the seal is independent of direction of rotation. It is used in abrasive, corrosive and viscous media of high temperature.

**Application :**
- Refineries
- Fertilizers
- Nuclear Plants
- Petroleum Pipelines.

**Description**

1. Stationery Seat
2. Rotary Seal Face
3. S. R. Shell
4. Rotary Seal Face “O” Ring
5. Stationery Seat “O” Ring
6. Spring
7. Grub Screw
8. Pin

**Performance Range**

<table>
<thead>
<tr>
<th>DIAMETER: (mm)</th>
<th>SPEED: (m/sec)</th>
<th>PRESSURE: (bar)</th>
<th>TEMPERATURE: (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>15</td>
<td>10</td>
<td>+230</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>0</td>
<td>-50</td>
</tr>
</tbody>
</table>

**Materials Of Construction**

- **Sealing Faces** : Carbon, Ceramic, Sic, Tungsten Carbide
- **Secondary Seals** : Viton, Aflas, Pte, Gft
- **Metal Parts** : SS304, SS316, Special Alloy
MULTI SPRING SEAL  TYPE : MS-1300

Feature:
“Multi Spring Balance Seal” are pusher type balanced. Multi Spring Seals generally used where high pressure installation. These seals can be provided with single, double, tandem arrangement with external seals support system & devices.

Application:
- Chemicals
- Hydrocarbons
- Petrochemicals
- Petroleum Refineries

Description
1. Stationery Seat
2. Rotary Seal Face
3. S. R. Shell
4. Rotary Seal Face “O” Ring
5. Stationery Seat “O” Ring
6. Spring
7. Grub Screw
8. Pin

Performance Range

<table>
<thead>
<tr>
<th>DIAmETER: (mm)</th>
<th>SPEED: (m/sec)</th>
<th>PRESSURE: (bar)</th>
<th>TEMPERATURE: (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>25</td>
<td>30</td>
<td>+260</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>0</td>
<td>-50</td>
</tr>
</tbody>
</table>

Materials Of Construction

- **Sealing Faces**: Carbon, Ceramic, Sic, Tungsten Carbide
- **Secondary Seals**: Viton, Aflas, Ptfe, Gft
- **Metal Parts**: SS304, SS316, Special Alloy
MULTI SPRING UNBALANCE SEAL

TYPE : MS-1400

Feature:
This seal are general purpose multi spring unbalance seals. These seal can be easily assemble or dismantled through circlip provided and can be change to balance version. These seal can be provided with single, double or tandem arrangement with external seal support system.

Application:
- Petrochemicals.
- Light Hydrocarbons
- General Industrial fluids

Description
1 Stationery Seat
2 Rotary Seal Face
3 Stationery Seat “O” Ring
4 Rotary Seal Face “O” Ring
5 Spring
6 Grub Screw
7 Thrust Ring
8 Pin

Performance Range

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Speed (m/sec)</th>
<th>Pressure (bar)</th>
<th>Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>20</td>
<td>10</td>
<td>+250</td>
</tr>
</tbody>
</table>

Materials Of Construction

→ Sealing Faces: Carbon, Ceramic, Sic, Tungsten Carbide
→ Secondary Seals: Viton, Aflas, Pfte, Gft
→ Metal Parts: SS304, SS316, Special Alloy

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**Feature:**
This seal eliminated the shaft step or sleeves for balancing. These seals are externally mounted and hence the metal parts including the springs do not come in contract with circulating media and therefore can be use for corrosive or abrasive media sealing.

**Application:**
- Corrosive Chemicals.
- General & Light Chemicals.

**Description**
1. Stationary Seat
2. Rotary Seal Face
3. Thrust Ring
4. Rotary Seal Face “O” Ring
5. Gasket
6. Spring
7. Grub Screw

**Performance Range**

<table>
<thead>
<tr>
<th>DIAMETER: (mm)</th>
<th>SPEED: (m/sec)</th>
<th>PRESSURE: (bar)</th>
<th>TEMPERATURE: (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>25</td>
<td>10</td>
<td>+180</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>0</td>
<td>-50</td>
</tr>
</tbody>
</table>

**Materials Of Construction**
- **Sealing Faces**: Carbon, Ceramic, Sic, Tungsten Carbide
- **Secondary Seals**: Viton, Aflas, Ptf, Gft
- **Metal Parts**: SS304, SS316, Special Alloy
CONICAL SPRING UNBALANCE SEAL

TYPE : MS-1600

Feature:
This seal are extremely rugged & reliable & therefore used in wide range of sealing applications. These seals have very few parts & hence can be easily assembled or dismantled. The seals arrangement does not warrant any modification even in case of conversion from gland packing. The compact design eliminates the requirement of extra radial & axial space for its installation.

Application:
- Corrosive Chemicals.
- Hydrocarbons
- General & Light Chemicals.

Description
1. Stationery Seat
2. Rotary Seal Face
3. Thrust Ring
4. Rotary Seal Face “O” Ring
5. Stationery Seat “O” Ring
6. Spring
7. Pin

Performance Range

<table>
<thead>
<tr>
<th>DIAMETER: (mm)</th>
<th>SPEED: (m/sec)</th>
<th>PRESSURE: (bar)</th>
<th>TEMPERATURE: (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>20</td>
<td>12</td>
<td>+180</td>
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<tr>
<td>12</td>
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<td>0</td>
<td>-40</td>
</tr>
</tbody>
</table>

Materials Of Construction

- Sealing Faces: Carbon, Ceramic, Sic, Tungsten Carbide
- Secondary Seals: Viton, Aflas, Ptfe, Gft
- Metal Parts: Ss304, SS316

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**RUBBER BELLOW SEAL**

**TYPE : MS-1700**

**Feature:**
This seal are most commonly used rubber bellow seal, Due to its compact design it can be easily mounted. It has a unique rubber bellow secondary seal, which provides a high degree of axial flexibility to compensate for lack of concentricity of the shaft & misalignment & wear due to thrust movement of the shaft.

**Application:**
- Sewage Application
- Waste Water Pumps
- Fuel Injection Pumps

**Description**
1. Stationery Seat
2. Rotary Seal Face
3. Stationery Seat “O” Ring
4. Spring
5. Elastomer
6. S. S. Body

**Performance Range**

<table>
<thead>
<tr>
<th>DIAMETER: (mm)</th>
<th>SPEED: (m/sec)</th>
<th>PRESSURE: (bar)</th>
<th>TEMPERATURE: (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>10</td>
<td>30</td>
<td>+230</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>0</td>
<td>-50</td>
</tr>
</tbody>
</table>

**Materials Of Construction**

- **Sealing Faces:** Carbon, Ceramic, Sic, Tungsten Carbide
- **Secondary Seals:** Viton, Aflas, Ptf, Gft
- **Metal Parts:** SS304, SS316, Special Alloy
RUBBER BELLOW SEAL

TYPE: MS-1800

Feature:
The seal can be used regardless of direction of rotation since the driving torque is not transmitted through the coil spring. The required driving torque is enhanced through the unique rubber bellow which fits on the shaft. There are no bonded Joints and all the face materials are interchangeable without having to modify any dimensions.

Application:
- Oil Pumps
- Fuel Injection Pumps
- Hot & Cold Water Pumps
- Refrigeration Compressor

Description
1. Stationary Seat
2. Rotary Seal Face
3. Thrust Ring
4. Elastomer
5. Stationary Seat "O" Ring
6. Spring
7. Pin

Performance Range

<table>
<thead>
<tr>
<th>DIAMETER: (mm)</th>
<th>SPEED: (m/sec)</th>
<th>PRESSURE: (bar)</th>
<th>TEMPERATURE: (°C)</th>
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<tbody>
<tr>
<td>120</td>
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<tr>
<td>12</td>
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</tbody>
</table>

Materials Of Construction

- **Sealing Faces**: Carbon, Ceramic, Sic, Tungsten Carbide
- **Secondary Seals**: Viton, Aflas, PTFE, GfT
- **Metal Parts**: SS304, SS316, Special Alloy

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TEFLON BELLOW SEAL  TYPE : MS-1900

Feature:
This seal are outside mounted with simple installation procedure and hence cost effective for corrosive media sealing. We manufacture fixed as well as replaceable bellow face for replaceable version which allow flexibility for selection of face material as per the media, which can be easily removed and replaced.

Application:
- Acids
- Alkalis
- Extremely Corrosive Services

Description
1. Stationery Seat
2. Rotary Seal Face
3. Thrust Ring
4. Spring Holder
5. Bellow
6. Spring
7. Clamp Ring
8. Gasket
9. Pin

Performance Range

<table>
<thead>
<tr>
<th>DIA (mm)</th>
<th>SPEED (m/sec)</th>
<th>PRESSURE (bar)</th>
<th>TEMPERATURE (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>25</td>
<td>0.05</td>
<td>+80</td>
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</tbody>
</table>

Materials Of Construction
- Sealing Faces: Carbon, Ceramic, Sic
- Secondary Seals: Viton, Aflas, Pte, Gft
- Metal Parts: SS316, Hast - C
**METAL BELLOWS SEAL**  
**TYPE : MS-2000**

**Feature:**
This seal are independent of rotation. The unique feature in this seal is no “O” ring and therefore it will never hangup or damage the shaft and sleeve it has an ability to handle corrosive, abrasive and viscous media. These seals has self - cleaning and non - clogging construction.

**Application:**
- Highly Corrosive Chemicals
- High Temperature Application
- Petroleum Refineries

**Description**

1. Stationery Seat
2. Rotary Seal Face
3. Face Housing
4. Bellow
5. Packing
6. Head Screw
7. Grub Screw
8. Pin
9. Packing

**Performance Range**

<table>
<thead>
<tr>
<th>DIAMETER: (mm)</th>
<th>SPEED: (m/sec)</th>
<th>PRESSURE: (bar)</th>
<th>TEMPERATURE: (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
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</tr>
<tr>
<td>20</td>
<td>0</td>
<td>0</td>
<td>-50</td>
</tr>
</tbody>
</table>

**Materials Of Construction**

- **Sealing Faces**: Carbon, Ceramic, Sic, Tungsten Carbide
- **Secondary Seals**: Viton, Aflas, Ptf, Gft
- **Metal Parts**: SS316

[Image of seal and diagram]

[www.microseals.com](http://www.microseals.com)
HIGH TEMPERATURE SEAL

TYPE : MS-2100

**Feature:**
“High Pressure Seals” are designed for heavy duty service involving high pressure & sliding velocities. The seal has positive drive arrangement & study construction making the seal suitable for high pressure application. Multiple spring design provides uniform face loading. The seal is supplied as a cartridge unit & can be directly bolted to stuffing box. These are normally used in main oil pipelines, waste injection pumps & boiler feed water pumps.

**Application:**
- Paper Industries
- Petrochemicals
- Petroleum Refineries

**Description**
1. Stationary Seat
2. Rotary Seal Face
3. Stationary Seat “O” Ring
4. Rotary Seal Face “O” Ring
5. Sleeve
6. O - Ring
7. Pin
8. Thrust Ring
9. Head Screw

**Performance Range**

<table>
<thead>
<tr>
<th>DIAMETER: (mm)</th>
<th>SPEED: (m/sec)</th>
<th>PRESSURE: (bar)</th>
<th>TEMPERATURE: (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>20</td>
<td>70</td>
<td>+220</td>
</tr>
<tr>
<td>25</td>
<td>0</td>
<td>0</td>
<td>-20</td>
</tr>
</tbody>
</table>

**Materials Of Construction**

- **Sealing Faces**: Carbon, Ceramic, Sic, Tungsten Carbide
- **Secondary Seals**: Viton, Aflas, Pte, Gft
- **Metal Parts**: SS304, SS316, Hastello-C, Alloy 20

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SINGLE CARTAGE SEAL

TYPE : MS-2200

**Feature:**
This series seal are used where there is corrosion and erosion in the seal media. This seal have good demand in sealing of rotation equipments. Single Cartidge seal are special purpose multi spring balance seals designees for use in abrasive solid media.

**Application:**
- General Chemical
- Petrochemicals
- Petroleum Refineries
- Light Hydrocarbons

**Description**
1. Stationery Seat
2. Rotary Seal Face
3. Rotary Seal “O” Ring
4. Spring
5. Sleeve
6. Stationery Seat “O” Ring

**Performance Range**

<table>
<thead>
<tr>
<th>DIAMETER: (mm)</th>
<th>SPEED: (m/sec)</th>
<th>PRESSURE: (bar)</th>
<th>TEMPERATURE: (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>10</td>
<td>30</td>
<td>+230</td>
</tr>
</tbody>
</table>

| 12         | 0              | 0              | -50              |

**Materials Of Construction**

- **Sealing Faces**: Carbon, Ceramic, Sic, Tungsten Carbide
- **Secondary Seals**: Viton, Aflas, Ptf, Gft
- **Metal Parts**: SS304, SS316, Special Alloy

[www.microseals.com](http://www.microseals.com)
DOUBLE CARTAGE SEAL  TYPE : MS-2300

Feature:
This cartridge seals are self cartridge units consisting of a shafts, sleeve, seal and gland plate. The unit is fitted on to the pump shaft as a built assembly, and no further fitting is required. They are supplied with various tapings to provide for flashing, cooling water injection and disaster control. The setting position of the seal is set by the cartridge design but the seal unit should not be screwed to the shaft.

Application:
- General Chemical
- Petroleum Refineries
- Petrochemicals

Description
1. Stationery Seat
2. Rotary Seal Face
3. Stationery Seat “O” Ring
4. Rotary Seal Face “O” Ring
5. Bellow
6. Sleeeve

Performance Range

<table>
<thead>
<tr>
<th>DIAMETER: (mm)</th>
<th>SPEED: (m/sec)</th>
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<tbody>
<tr>
<td>120</td>
<td>10</td>
<td>30</td>
<td>+230</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>0</td>
<td>-50</td>
</tr>
</tbody>
</table>

Materials Of Construction

- Sealing Faces: Carbon, Ceramic, Sic, Tungsten Carbide
- Secondary Seals: Viton, Aflas, Pte, Gft
- Metal Parts: SS304, SS316
**DOUBLE AGITATOR SEAL**  
**TYPE : MS-2400**

**Description**
1. Stationary Seat  
2. Rotary Seal Face  
3. Stationary Seat “O” Ring  
4. Spring  
5. Sleeve  
6. Oil Seal  
7. Hex Head Screw  
8. Bearing  
9. Housing

**Feature:**  
This seal are top entry agitator double mechanical seal designed for medium to high pressure applications. These seal are successfully used for many years in all kind of mixer, reactors, paints and pulps etc. these seals can be easily installed without disturbing the delicate mating faces.

**Application:**
- General Chemical & its Vapours  
- Petrochemicals & its Vapours  
- Light Hydrocarbons & its Vapours

**Performance Range**

<table>
<thead>
<tr>
<th>DIA. (mm)</th>
<th>SPEED (m/sec)</th>
<th>PRESSURE (bar)</th>
<th>TEMPERATURE (°C)</th>
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</thead>
<tbody>
<tr>
<td>150</td>
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<tr>
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<td>0</td>
<td>-50</td>
</tr>
</tbody>
</table>

**Materials Of Construction**
- **Sealing Faces**: Carbon, Ceramic, Sic, Tungsten Carbide  
- **Secondary Seals**: Viton, Aflas, PTFE, GfT  
- **Metal Parts**: SS304, SS316, Alloy -20

www.microseals.com
DRY RUNNING SEAL
TYPE : MS-2500

Feature:
Seal are outside balance seal which require no shafts or sleeve step for balancing. This seal shows good performance in high vacuum conditions. Since no auxiliary equipments are needed for installation. It is very cost effective and reasonable. These can be easily installed and repaired on the field to minimized cost and down time.

Application:
- Ash Slurry
- Clinker Grinder
- Pulp
- Syrup
- Sludge

Description
1. Stationery Seat
2. Rotary Seal Face
3. Rotary Seal Face “O” Ring
4. Stationery Seat “O” Ring
5. Sleeve
6. Pin
7. Hex Head-Screw

Performance Range

<table>
<thead>
<tr>
<th>DIAMETER: (mm)</th>
<th>SPEED: (m/sec)</th>
<th>PRESSURE: (bar)</th>
<th>TEMPERATURE: (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>10</td>
<td>08</td>
<td>+220</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>0</td>
<td>-50</td>
</tr>
</tbody>
</table>

Materials Of Construction

- **Sealing Faces**: Carbon, Ceramic, Sic, Tungsten Carbide
- **Secondary Seals**: Viton, Aflas, Ptfe, Gft
- **Metal Parts**: SS304, SS316, Special Alloy

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**Heat Exchanger**

*Micro Seals* Heat Exchangers are incorporated in API Plans 21, 23, 41 to bring down the temperature of buffer fluid before it enters into seal chamber. Heat Exchanger may be mounted either vertically or horizontally, the vertical mounting being preferred because of better thermosyphon effects.

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**Thermosyphon Vessel**

With *Micro Seals* Thermosyphon system it is possible to supply barrier fluid to double seal arrangement. The pressure of barrier fluid is higher than the pressure of the fluid being sealed. Thus seal faces remain in contact with each other and sealing area temperature is controlled. Thermosyphon system is as per API682.

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**Cyclone Separator**

Cyclone Separator are designed for removing dirt, sand and solid particles from injection flow to mechanical seal. The separation is obtained by centrifugal force generated by differential pressure across the cyclone.

- **Size** 1/2" NPT / 1/2" BSP
- **Pressure** 120 bar
- **Temperature** 200°C
**Shaft end play** - Axial shaft movement (end play) must not exceed 0.004" (0.10 mm) full indicator movement (F.I.M) on ball type thrust bearings.

**Shaft radial deflection** - must not exceed 0.002" (0.5 mm) full indicator movement at any point along the shaft.

**Shaft run out** - must not exceed 0.002" (0.5 mm) full indicator movement at any point along the shaft.

**Seal Chamber face run out** - Seal Chamber face should be square to shaft centre line within 0.005" (0.13 mm) full indicator movement.

**Seal Chamber bore concentricity** - Shaft concentricity to seal chamber bore should not exceed 0.005" (0.13 mm) full indicator movement.

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**Plan 11**
Circulation from discharge through orifice.

**Plan 13**
Circulation from seal cavity through orifice to suction.

**Plan 21**
Circulation from discharge through orifice and cooler

**Plan 23**
Forced circulation through cooler back to seal, by pumping ring.

**Plan 31**
Circulation from discharge through cyclone separator.

**Plan 32**
Flush from external source

**Plan 52**
External pressure less vessel, either thermosyphon or forced circulation by pumping ring.

**Plan 53**
External pressurised vessel, either thermosyphon or forced circulation by pumping ring.

**Plan 54**
Forced barrier circulation from external system.

**Plan 61**
Plugged quench and drain ports
Seals Repairs & Refurbishment

Seals Repair Tips

→ If your pump seals are in need of repair, we can bring them back to “Like new” condition
→ If you use seals, you know repairing them can easily save you 50% of the cost of a new seal. with the exception of the most common the “throw aways”, Repairing Seals will save your money.
→ Ship your seals to us so that we can provide you turnaround service within few days.

Repairing Process

→ We are able to evaluate worn-out seals and to refurbish quickly and economically.
→ We have a fully operational workshop where we recondition all types of mechanical seals if the condition allows giving the mechanical seal or components a second life.
→ Our experienced Engineers, appropriate machines and equipments, enables us to quickly point out the root cause accurately. We conside all aspects of the seal condition and operation history to determine the root cause of any problems.

Our Strength :

→ We repair all brands, and all styles of Mechanical Seal from all seal manufacturers including but not limited to John Crane, Flowserve, Chesterton,AES, Flex-A-Seal, Burgmann, Robco, Us-Seal Etc.
→ We are Specialized in handling Repairing of all makes and models of Agitators, Mixers, Reactors, Atomizers and centrifuges, (Any size Variation)
→ Repaired mechanical seals can also upgraded by replacing carbon faces with Silicon Carbide or Tungsten Carbide for much less than upgrading to a new seal.

→ All seal components are completely cleaned, measured, pressure tested, and inspected by the engineering department to determine which parts can be re-used or require replacement.
→ All of the seals we repair are cleaned or sand blasted, inspected for factory tolerance, receive new faces if required (otherwise lapped), new springs, new elastomeric (rubber boot or O-rings), new set screws, new setting clips (if a cartridge seal), lapped to industry standards (2-3 light bands) assembled Re - inspected and shipped.
→ We offer our support in the assembly and start-up of more critical systems.

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Types of Mating Ring

- MS1
- MS2
- MS3
- MS4
- MS5
- MS6
- MS7
- MS8
- MS9
- MS10
- MS11

Elastomers & Sealing Faces

- SILICON / TUNGSTEN CARBIDE
- CARBON
- TEFLON
- GRAFOIL
- CERAMIC
- RUBBER