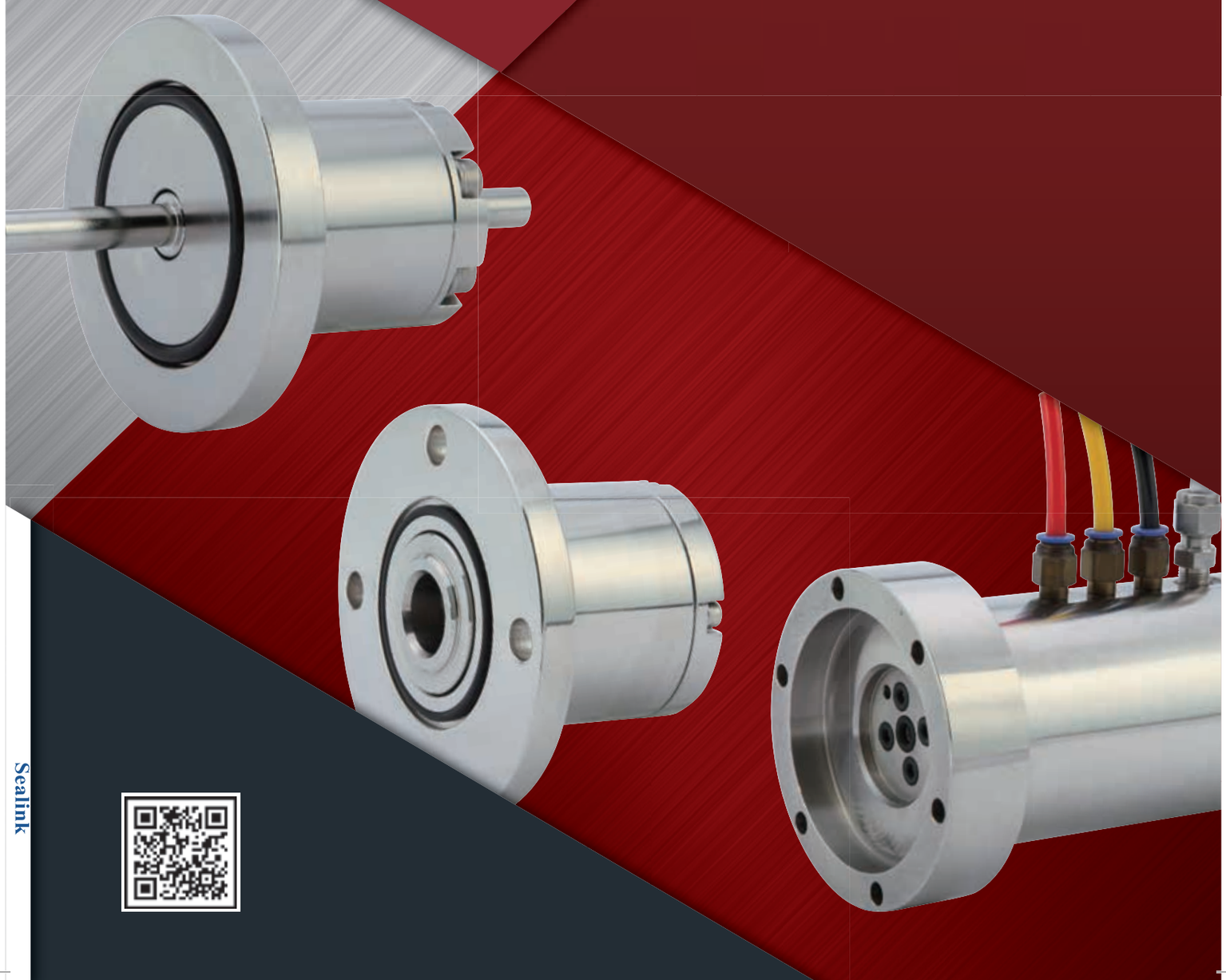
Sealink

# HIGH
# VACUUM & PRESSURE
# ROTARY SEALING UNIT



HIGH VACUUM & PRESSURE ROTARY SEALING UNIT

Sealink

# Sealink Corp.

Sealink Corp. is one of the world's leading companies specialized in designing, manufacturing and marketing rotary sealing solutions for vacuum and pressure .

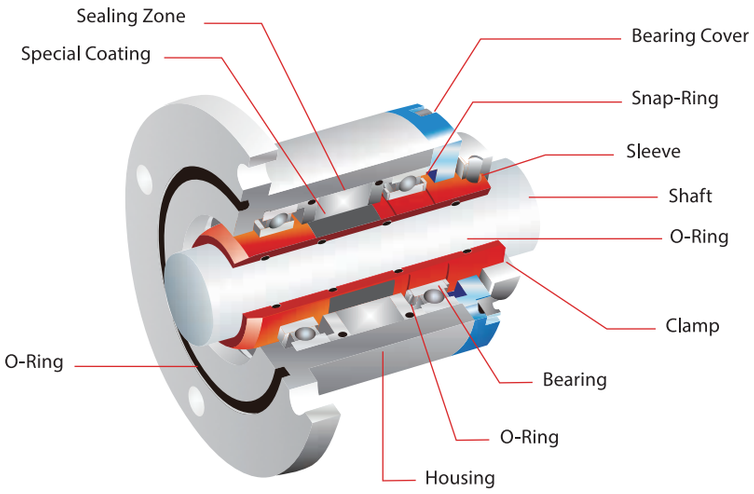
These solutions include rotary feedthroughs, linear feedthroughs, double acting - rotary & linear motion - feedthroughs and rotary unions applied to high vacuum or high pressure process lines. These simplify and further improve the conventional magnetic and mechanical sealing units.

We offer customized sealing units to meet customer's application requirements as well as standard sealing units for a wide range of industries including semiconductor, LCD and OLED industries, pharmaceutical and chemical processing Industries, etc.

All our products are manufactured under strict quality control and in ISO 9001 / ISO 14001 certified manufacturing facility in Korea and we will always continue to improve our present products and technology for further customer satisfaction.

# CONTENTS

# Sealink Technology : *Sealing Mechanism*




In a successful rotary seal, a thin continuous liquid film, on the order of 1㎛ thick and approximately 0.05 ~ 0.1mm in axial length, exists between the seal and the rotating shaft. This film prevents mechanical and thermal damage to the seal, and reduces wear and heat generation. Thus, a central objective of a seal design must be the creation of a fluid film with desirable characteristics. The film is kept intact by elevated pressures within the film, which provide the load support necessary to lift the seal off of the shaft. These pressures are hydrodynamically generated by asperities on the seal surface, acting in conjunction with the rotating shaft, which drags fluid past the asperities in the circumferential direction. The asperities therefore act as miniature slide bearings.

It is also well known that the asperities on the seal surface play a dominant role in preventing leakage of fluid through the film. When the shaft rotates, it induces circumferential shear stresses in the film and the seal surface, which deform the seal surface and the asperities. If the seal macro-geometry is designed properly, the deformed asperities act like a shear pump and produce reverse pumping from the air-side of the seal towards the air-side, and prevents leakage. The micro-geometry of the seal surface in the sealing zone is very important. If the surface is very smooth, with very few asperities, then the reverse pumping rate will be insufficient and the seal will not perform well. The macro-geometry of the seal, i.e. the seal cross-section, is another important factor. Asperities on the shaft surface play a secondary role, since the shaft surface becomes polished during the running-in period, and is much smoother than the seal.

The load support mechanism and the reverse pumping mechanism of rotary seal can be modeled by utilizing an elastohydrodynamic analysis which requires a hydrodynamic analysis of the flow in the lubricating film and a deformation analysis of the seal. These two analysis must be coupled since the hydrodynamic analysis yields the pressure and shear stress distribution, which affects the hydrodynamics. This coupling is handled by means of an interactive computation procedure.

The hydrodynamic analysis consists of a numerical solution following the Reynolds equation which governs the flow field in the fluid film, using a mass-conserving algorithm that accounts for cavitation.

$$\frac{\partial}{\partial x}\left(\frac{h^3}{\eta}\frac{\partial p}{\partial x}\right)+\lambda^2\frac{\partial}{\partial y}\left(\frac{h^3}{\eta}\frac{\partial p}{\partial y}\right)=\Lambda\frac{\partial \rho h}{\partial x}$$

The film thickness h can be expressed as :

$$h=\delta+h_n+h_s$$

Where $\delta$ denotes average film thickness, hn and hs are film thickness due to normal and shear deformation of seal surface.

The Reynolds equation can be solved using a finite difference scheme and the radial and circumferential seal deformations are computed through a coefficient approach. The couplings between the governing equations are handled by an interactive computational procedure.

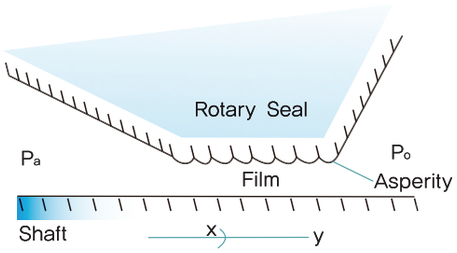
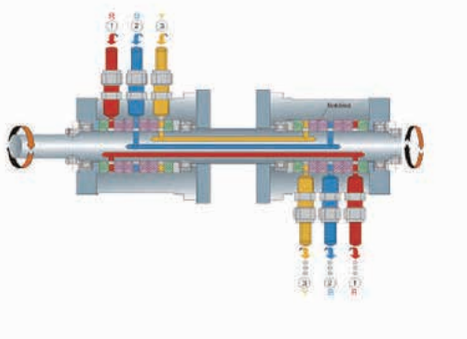
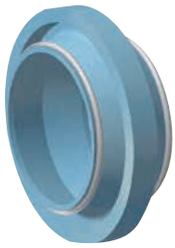


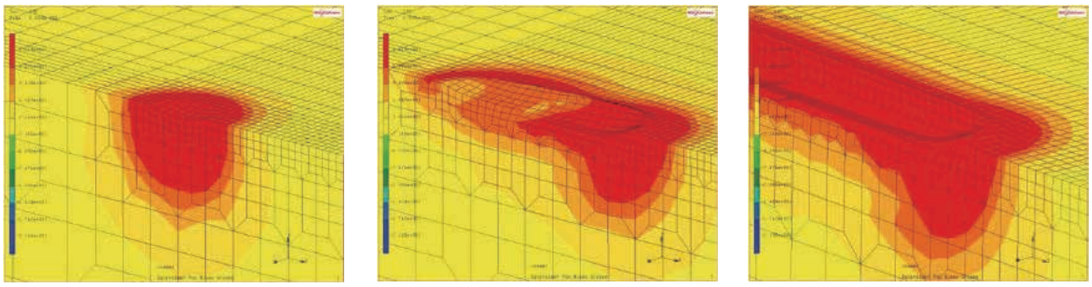

Fig. Schematic diagram of sealing zone





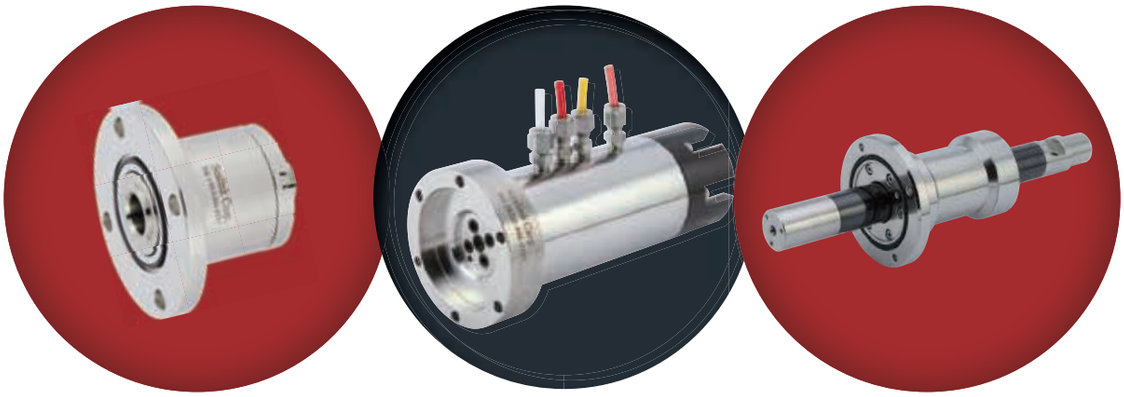
(1) A sample of nonlinear seal profile

(2) 3D shape with shaft



(3) Stress distribution

# Sealink Products



**Rotary Feedthrough**
(RF Type)

**Rotary Union**
(RU Type)

**Rotary & Linear Feedthrough**
(RL Type)

**Condition**
- High Vacuum
- High Pressure

**Media to be sealed**
- Reactive Gas & Liquid
- Inert Gas & Liquid
- Water
- Oil, etc

# Specifications

| | |
|---|---|
| **Motion** | Rotary, Linear, Rotary & Linear, Co-Axial, Multi-Axial |
| **Media** | Reactive Gas, Inert Gas, Water, Oil and other Liquids |
| **Temperature Range** | -20 ~ 150°C (-4 ~ +300°F) without cooling system<br>-20 ~ 400°C (-4 ~ +750°F) with optional cooling system |
| **Leakage Rate in Vacuum** | Up to 7.5 x $10^{-10}$ Pa·$m^3$/s by Helium Leakage Detector |
| **Leakage Rate in Pressure** | Up to 3.5 x $10^{-2}$ bar/min, 0.5 psi/min by Nitrogen gas |
| **Vacuum** | Max. $10^{-8}$ Torr, Max. $10^{-6}$ Pa |
| **Pressure** | Max. 50 bar (PV Limits : Max. 50) |
| **Speed** | Max. 15 m/s |
| **Shaft Diameter** | ø6 ~ ø1,800 mm |
| **Torque** | Depending on the type and customer's application requirements |

*Sealink also provides customized products to meet the operating conditions of your devices.*

# *Comparison of Three Types of Sealing Units*

| Seal Type | Mechanical Seal | Magnetic Seal | Sealink Seal |
|---|---|---|---|
| **Theory** | Face Contact | Ferrofluid | **Nonlinear Contact** |
| **Vacuum** | X | O | **O** |
| **Pressure** | O | X | **O** |
| **Gas** | X | O | **O** |
| **Liquid** | O | X | **O** |
| **Lubricant** | Required | Not Required | **Not Required** |

All our products are hermetically sealed by our unique sealing technology and operated in dry running condition without buffer fluid reservoir for the lubricants and cooling systems below 150°C/300°F (operable up to 400°C/750°F with optional cooling systems).
And our linear sealing systems do NOT use metallic bellows which result in saving space and cost.

# *We have PATENTS !*

## Applications

### Semiconductor Equipment, LCD and OLED Industries

CVD, MOCVD, LPCVD, PECVD, PCD, ALD, CMP, OLED, LCD device, FPD device, Wafer handling device, Vacuum deposition system, Ion Implanter, Etcher, Asher, Edge Grinder, Scrubber, RTP, Sputter, Lamp device, Autoclave, Wafer robot, etc.

### Petrochemical, Fine Chemical, Marine, Steel and General Machinery Industries

Mixer, Agitator, Reactor Vessel, etc.

# 1. Sealink Unit : Rotary Feedthrough, RF Type

A rotary feedthrough is a precision mechanical device which allows to transfer rotational motion from atmosphere into vacuum or differential pressure environments.

The rotating components of our rotary feedthroughs are hermetically sealed by our unique sealing technology with nonlinear contact, unlike a face contact of conventional mechanical seals which need lubricant for lowering the friction. Therefore, Sealink Seals don't need lubricant supplying system and eliminate the risk of explosion caused by a leak of lubricant.
We provide standard rotary feedthroughs with solid or hollow shaft and customized products with various options such as pressure, vacuum, speed, and temperature requirements. Therefore, you can retrofit conventional feedthroughs with Sealink's products without extra equipment.

Our hollow shaft type rotary feedthroughs are suitable for applications that require the use of a non-magnetic shaft or a shaft having a special shape such as tube, drive shaft or the like.

## ● Advantages

- Hermetically sealed with our unique and most advanced sealing technology
- Being able to operate under both high vacuum and high pressure environments
- A variety of media to be sealed: Both gas and liquid such as reactive gas, inert gas, chemical, oil, water and coolants, etc.
- No Cooling Unit required up to 150°C/300°F (Operable up to 400°C/750°F with cooling system).
- No Lubricant Supply required, resulting in eliminating explosion accidents by leaks of lubricating oil
- Compact and Simple Construction
- Solid shaft and Hollow shaft types available
- Customized design available
- Optional Real-time Leakage Monitoring system available

## ● Typical Applications

### Semiconductor Equipment, LCD and OLED Industries

CVD, MOCVD, LPCVD, PECVD, PCD, ALD, CMP, OLED, LCD device, FPD device, Wafer handling device Vacuum deposition system, Ion Implanter, Etcher, Asher, Edge Grinder, Scrubber, RTP, Sputter, Lamp device, Autoclave, Wafer robot, etc.

### Petrochemical, Fine Chemical, Marine, Steel and General Machinery Industries

Mixer, Agitator, Reactor Vessel, etc.

## ● Specifications

| | | |
|---|---|---|
| **Vacuum** | | Max. $10^{-8}$ Torr, Max. $10^{-6}$ Pa |
| **Pressure** | | Max. 50 bar (PV Limits : Max. 50) |
| **Leakage Rate** | **Vacuum** | Up to 7.5 x $10^{-10}$ Pa·$m^3$/s by Helium Leak Detector |
| | **Pressure** | Up to 0.5 psi/min by Nitrogen Gas |
| **Temperature Range** | | -20 ~ 150°C (-4 ~ +300°F) without cooling system<br>-20 ~ 400°C (-4 ~ +750°F) with optional cooling system |
| **Media Type** | | Gas and Liquid (Reactive Gas, Inert Gas, Water, Oil, Steam, Air, Chemical, Coolant, and a variety of other media) |
| **Speed** | | Max. 15 m/s |
| **Shaft Diameter** | | ø6 ~ ø1,200mm |
| **Material** | **Housing** | 304 or 316L Stainless Steel or others |
| | **Shaft** | 304 or 316L Stainless Steel or others |
| | **Bearing** | SUJ2 High Carbon Chrome Bearing Steel or others |

## ● Model Numbers of Rotary Feedthroughs

**RF** — **HS** — **010** **F** **N**

**Product**
**RF:** Rotary Feedthrough
**RU:** Rotary Union
**RL:** Rotary & Linear Feedthrough

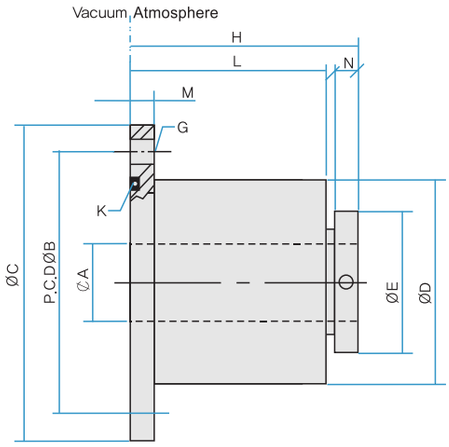
**Shaft Type**
**SS:** Solid Shaft
**HS:** Hollow Shaft

**Shaft Diameter**
**Metric Size:** mm
**Inch Size:** inch
**010** = 10 mm
**250** = 0.250 inch

**Mounting Type**
**F:** Flange mount
**T:** Threaded mount
**N:** Nut mount
**C:** Cartridge mount

**Media Compatibility**
**N:** Inert Gas
**R:** Reactive Gas
**C:** Chemical
**W:** Water
**O:** Oil

# RF-HS-F series Hollow Shaft Rotary Feedthrough (Flange Mount)




## Inch Sizes

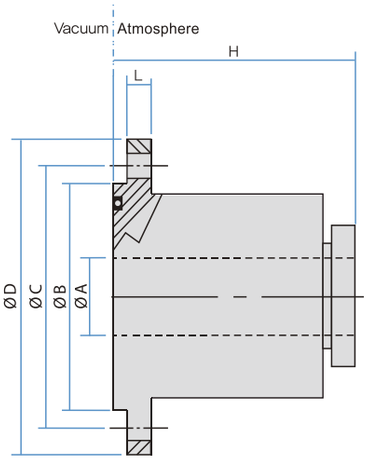
| Model No. | ØA | ØB | ØC | ØD | H | L | M | N | G | K |
|---|---|---|---|---|---|---|---|---|---|---|
| **RF-HS-250FN** | 0.250 | 2.312 | 2.73 | 1.50 | 4.06 | 2.56 | 0.5 | 0.75 | 0.265 | O-Ring |
| **RF-HS-375FN** | 0.375 | 2.312 | 2.73 | 1.50 | 4.56 | 3.06 | 0.50 | 0.75 | 0.265 | O-Ring |
| **RF-HS-500FN** | 0.500 | 4.750 | 6.00 | 2.87 | 6.03 | 3.56 | 0.38 | 1.25 | 0.750 | O-Ring |
| **RF-HS-750FN** | 0.750 | 4.750 | 6.00 | 2.87 | 6.03 | 3.562 | 0.38 | 1.218 | 0.750 | O-Ring |

## Metric Sizes

| Model No. | ØA | ØB | ØC | ØD | ØE | H | L | M | N | G | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **RF-HS-010FN** | 10 | 70 | 90 | 51 | 34 | 78 | 64 | 10 | 10 | 4- Ø10 | O-Ring |
| **RF-HS-020FN** | 20 | 85 | 105 | 63 | 44 | 82.5 | 68.5 | 10 | 10 | 4- Ø10 | O-Ring |
| **RF-HS-025FN** | 25 | 100 | 120 | 71 | 49 | 88 | 74 | 10 | 10 | 4- Ø10 | O-Ring |
| **RF-HS-030FN** | 30 | 100 | 120 | 78 | 54 | 93 | 79 | 10 | 10 | 4- Ø10 | O-Ring |
| **RF-HS-040FN** | 40 | 120 | 145 | 90 | 69 | 96 | 80 | 10 | 10 | 4- Ø12 | O-Ring |
| **RF-HS-050FN** | 50 | 135 | 160 | 103 | 79 | 98 | 82 | 12 | 12 | 4- Ø12 | O-Ring |
| **RF-HS-075FN** | 75 | 185 | 210 | 143 | 109 | 115 | 96 | 12 | 12 | 4- Ø12 | O-Ring |

* Shaft tolerance is h8 by ISO 286 / BS 4500

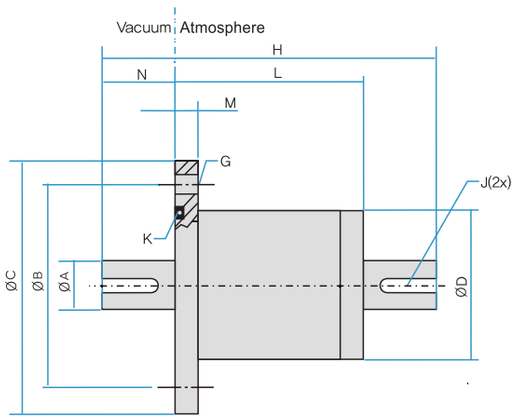
# RF-HS-F series




## Metric Sizes

| Model No. | ØA | ØB | ØC | ØD | L | H |
|---|---|---|---|---|---|---|
| **RF-HS-040FN** | 40 | 91 | 110 | 175 | 115 | 165 |
| **RF-HS-050FN** | 50 | 107 | 176 | 240 | 115 | 175 |
| **RF-HS-060FN** | 60 | 120 | 176 | 240 | 125 | 195 |
| **RF-HS-080FN** | 80 | 149 | 204 | 275 | 140 | 215 |
| **RF-HS-100FN** | 100 | 174 | 234 | 305 | 140 | 230 |
| **RF-HS-125FN** | 125 | 199 | 260 | 330 | 160 | 255 |
| **RF-HS-140FN** | 140 | 218 | 313 | 395 | 170 | 275 |
| **RF-HS-160FN** | 160 | 237 | 313 | 395 | 170 | 275 |
| **RF-HS-180FN** | 180 | 263 | 364 | 445 | 190 | 300 |
| **RF-HS-200FN** | 200 | 288 | 364 | 445 | 190 | 320 |
| **RF-HS-220FN** | 220 | 326 | 422 | 505 | 200 | 335 |

# RF-SS-F series Solid Shaft Rotary Feedthrough (Flange Mount)



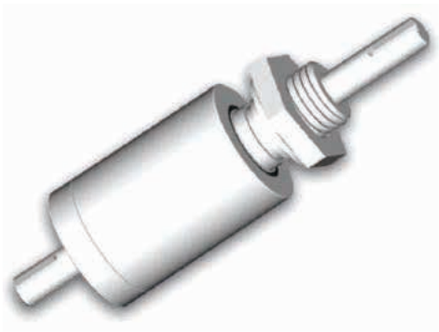

## Inch Sizes

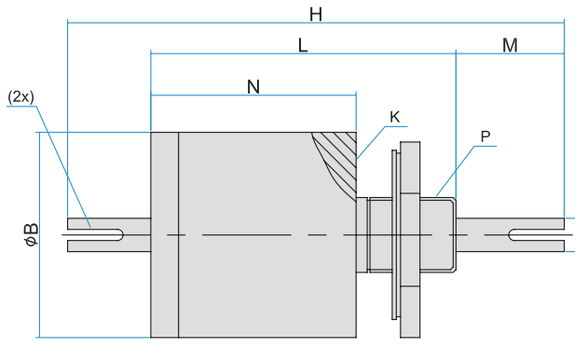
| Model No. | ØA | ØB | ØC | ØD | H | L | M | N | G | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **RF-SS-250FN** | 0.250 | 2.312 | 2.73 | 1.50 | 4.06 | 2.56 | 0.5 | 0.75 | 0.265 | 0.030dx40L(flat) | O-Ring |
| **RF-SS-375FN** | 0.375 | 2.312 | 2.73 | 1.50 | 4.56 | 3.06 | 0.50 | 0.75 | 0.265 | 0.030dx40L(flat) | O-Ring |
| **RF-SS-500FN** | 0.500 | 4.750 | 6.00 | 2.87 | 6.03 | 3.56 | 0.38 | 1.25 | 0.750 | 0.126wx0.77dx1.0L | O-Ring |
| **RF-SS-750FN** | 0.750 | 4.750 | 6.00 | 2.87 | 6.03 | 3.562 | 0.38 | 1.218 | 0.750 | 0.188wx0.114dx10L | O-Ring |

## Metric Sizes

| Model No. | ØA | ØB | ØC | ØD | H | L | M | N | G | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **RF-SS-006FN** | 6 | 60 | 80 | 38 | 97.5 | 57.5 | 10 | 20 | 4- Ø 10 | 0.5d x 12L(Flat) | O-Ring |
| **RF-SS-010FN** | 10 | 60 | 80 | 44 | 119.5 | 69.5 | 10 | 25 | 4- Ø 10 | 3w x 1.8d x 14L | O-Ring |
| **RF-SS-012FN** | 12 | 70 | 90 | 48 | 133.5 | 73.5 | 10 | 30 | 4- Ø 10 | 4W x 2.5d x 20L | O-Ring |
| **RF-SS-020FN** | 20 | 85 | 105 | 63 | 151.5 | 81.5 | 10 | 35 | 4- Ø 10 | 6W x 3.5d x 25L | O-Ring |
| **RF-SS-030FN** | 30 | 135 | 160 | 105 | 220 | 140 | 20 | 40 | 4- Ø 12 | 10w x 5d x 30L | O-Ring |
| **RF-SS-040FN** | 40 | 156 | 188 | 116 | 312.5 | 152.5 | 20 | 80 | 6- Ø 12 | 12W x 5d x 40L | O-Ring |
| **RF-SS-050FN** | 50 | 185 | 225 | 145 | 373.5 | 173.5 | 20 | 100 | 6- Ø 12 | 15w x 5d x 50L | O-Ring |

# RF-SS-T Series Solid Shaft Rotary Feedthrough (Threaded Mount)






## Inch Sizes

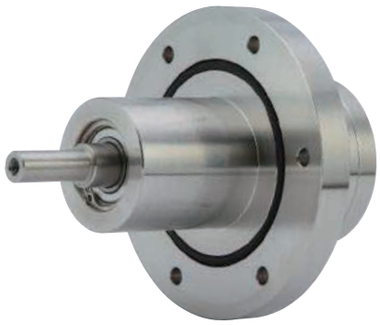
| Model No. | ØA | ØB | H | L | M | N | P | J | K |
|---|---|---|---|---|---|---|---|---|---|
| **RF-SS-188TN** | 0.1875 | 0.63 | 2.562 | 1.58 | 0.50 | 1.3 | 5/16-24 UNF-2A | 0.030dx0.37L(flat) | O-Ring |
| **RF-SS-250TN** | 0.250 | 0.75 | 3.437 | 1.937 | 0.75 | 1.562 | 7/16-20 UNF-2A | 0.030dx0.40L(flat) | O-Ring |
| **RF-SS-500TN** | 0.500 | 2.87 | 8.812 | 5.072 | 2.49 | 3.562 | 1"-14 UNS-2A* | 0.126wx0.77dx1.0L | O-Ring |
| **RF-SS-750TN** | 0.75 | 2.87 | 8.812 | 5.072 | 2.49 | 3.562 | 1"-14 UNS-2A* | 0.188wx0.114dx1.0L | O-Ring |

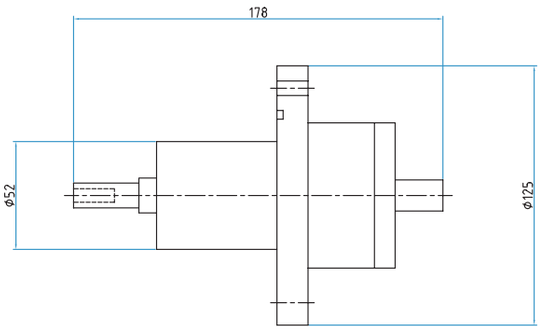
## Metric Sizes

| Model No. | ØA | ØB | H | L | M | N | P | J | K |
|---|---|---|---|---|---|---|---|---|---|
| **RF-SS-004TN** | 4 | 21 | 76.5 | 46.5 | 15 | 36.5 | M12x1.5 | 0.5dx10L(flat) | O-Ring |
| **RF-SS-005TN** | 5 | 21 | 76.5 | 46.5 | 15 | 36.5 | M12x1.5 | 0.5dx10L(flat) | O-Ring |
| **RF-SS-006TN** | 6 | 21 | 76.5 | 46.5 | 15 | 36.5 | M12x1.5 | 0.5dx10L(flat) | O-Ring |
| **RF-SS-012TN** | 12 | 48 | 179 | 109 | 40 | 74 | M25x1.5 | 4Wx2.5dx20L | O-Ring |
| **RF-SS-020TN** | 20 | 63 | 211 | 121 | 55 | 82 | M30x1.5 | 6Wx3.5dx25L | O-Ring |

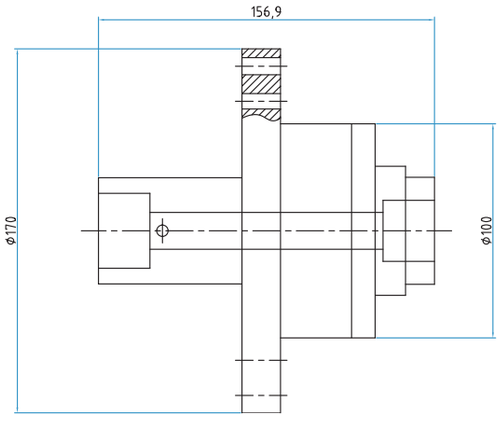
# New Products

## RF-SS-F Series

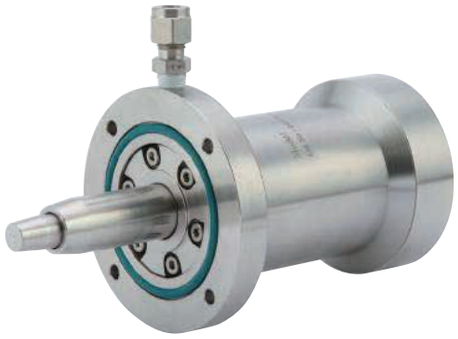


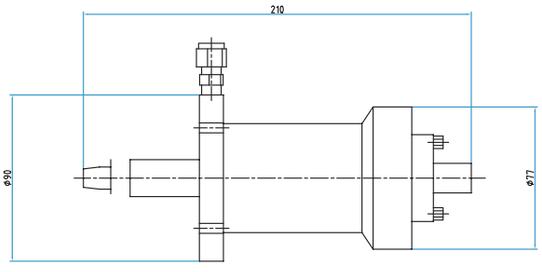



## RF-HS-F Series

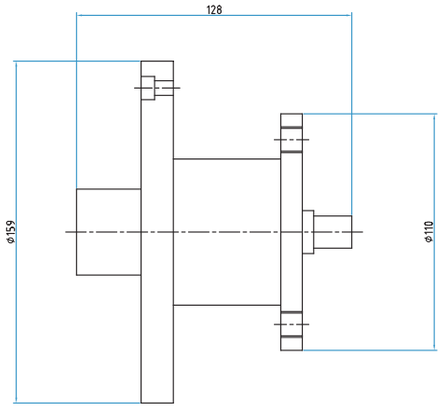



## RF-SS-F Series

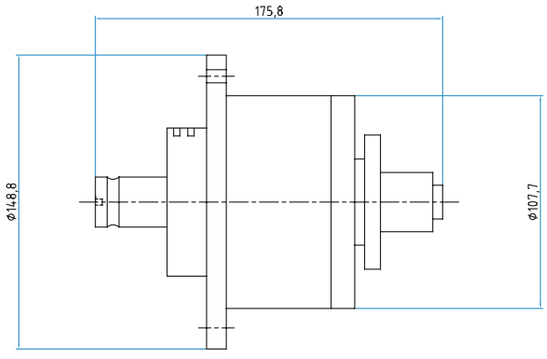




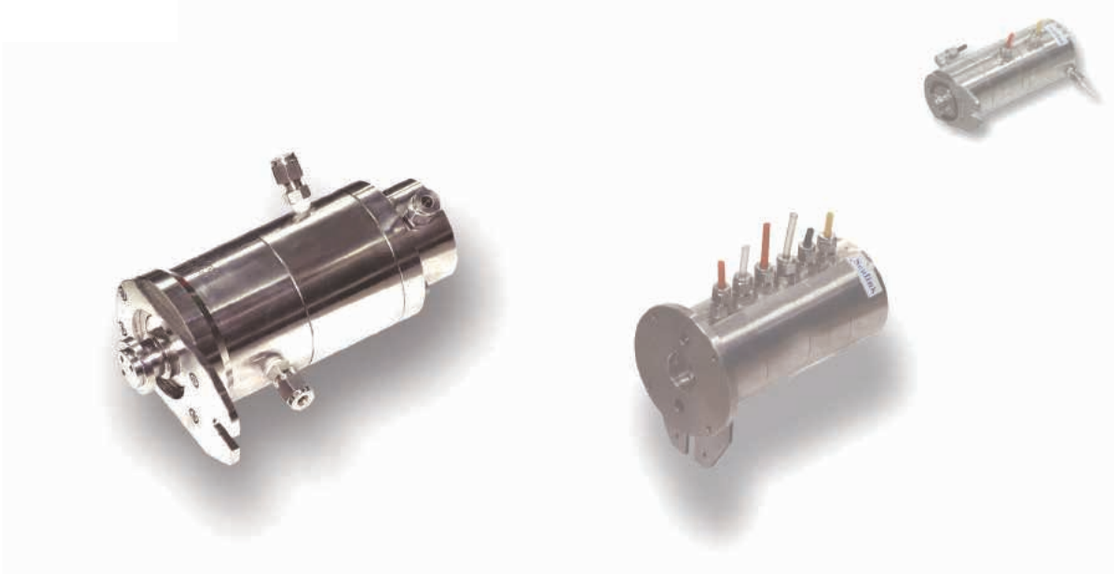
## ● RF-SS-F Special




## ● RF-SS-F Special




## For CMP



# 2. Rotary Union : RU Type

A rotary union is a precision mechanical device which allows to transfer fluid (liquid or gaseous media) under vacuum or differential pressure environments from a stationary source to a rotating part of machinery, preserving and isolating the fluid connection.

The rotating components of our rotary unions are hermetically sealed by our unique sealing technology with nonlinear contact for low friction, unlike a face contact of conventional mechanical seals which need lubricating oil for lowering the friction. Therefore, Sealink Seals don't need lubricant supplying systems and eliminate the risk of explosion caused by a leak of lubricant.

We provide standard rotary unions with single- or multiple-independent flow channels and transfer different type of media-both liquid and gases-simultaneously. We also provide customized products with various options such as pressure, vacuum, speed, number of ports and temperature requirements. Therefore, you can retrofit conventional feedthroughs with Sealink's products without extra equipment.

## ● Advantages

- Hermetically sealed with our unique non-linear contact technology
- Being able to operate under both high vacuum and high pressure environments
- A Variety of media to be sealed : Both gas and liquid such as reactive gas, inert gas, chemical, oil, water and coolants, etc.
- No Cooling Unit required up to 150°C/300°F (Operable up to 400°C/750°F with cooling system).
- No Lubricant Supply required, resulting in eliminating explosion accidents by leaks of lubricating oil
- Compact and Simplified Construction - Easy machining and maintenance, long service life and installation space saved
- Solid shaft and Hollow shaft types available
- Customized design available
- Optional Real-time Leakage Monitoring system available

## ● Typical Applications

### Semiconductor Equipment, LCD and OLED Industries

CVD, MOCVD, LPCVD, PECVD, PCD, ALD, CMP, OLED, LCD device, FPD device, Wafer handling device, Vacuum deposition system, Ion Implanter, Etcher, Asher, Edge Grinder, Scrubber, RTP, Sputter, Lamp device, Autoclave, Wafer robot, etc.

### Petrochemical, Fine Chemical, Marine, Steel and General Machinery Industries

Mixer, Agitator, Reactor Vessel, etc.

## ● Specifications

| | | |
|---|---|---|
| **Vacuum** | | Max. $10^{-8}$ Torr, Max. $10^{-6}$ Pa |
| **Pressure** | | Max. 50 bar (PV Limits : Max. 50) |
| **Leakage Rate** | **Vacuum** | Up to 7.5 x $10^{-10}$ Pa·$m^3$/s by Helium Leak Detector |
| | **Pressure** | Up to 0.5 psi/min by Nitrogen Gas |
| **Number of Ports** | | 1 ~ 14 ports |
| **Temperature Range** | | -20 ~ 150°C (-4 ~ +300°F) without cooling system<br>-20 ~ 400°C (-4 ~ +750°F) with optional cooling system |
| **Media Type** | | Gas and Liquid (Reactive Gas, Inert Gas, Water, Oil, Steam, Air, Chemical, Coolant, and a variety of other media) |
| **Speed** | | Max. 15 m/s |
| **Shaft Diameter** | | ø15 ~ ø1,100mm |
| **Material** | **Housing** | 304 or 316L Stainless Steel or others |
| | **Shaft** | 304 or 316L Stainless Steel or others |
| | **Bearing** | SUJ2 High Carbon Chrome Bearing Steel or others |

* Applications with operating temperatures above 150°C require a cooling system

## ● Model Numbers of Rotary Unions

**RU** — **HS** — **160** — **02** **N**

**Product**
**RU:** Rotary Union

**RF:** Rotary Feedthrough
**RL:** Rotary & Linear Feedthrough

**Shaft Type**
**SS:** Solid Shaft
**HS:** Hollow Shaft

**Shaft Diameter**
**Metric Size:** mm
**Inch Size:** inch
**010** = 10 mm
**250** = 0.250 inch

**# of Ports**

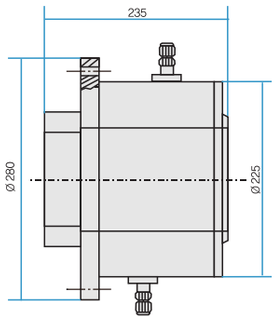
**Media Compatibility**
**N:** Inert Gas
**R:** Reactive Gas
**C:** Chemical
**W:** Water
**O:** Oil

# RU-HS Series Hollow Shaft Rotary Union

## ● RU-HS-160-02N/C/W/O

### 2-Passage Hollow Shaft Rotary Union

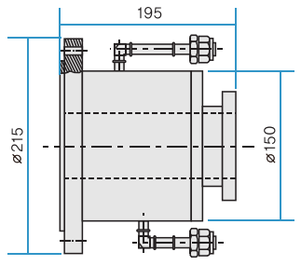
| | |
|---|---|
| **Number of Port** | 2 Ports |
| **Media** | Inert Gas, Chemical, Oil, Water, etc |
| **Temperature** | -20°C~ 150°C (-4°F ~ 300°F) |
| **Speed** | 100 rpm |
| **Pressure** | 12 Bar |
| **Leakage Rate** | 0.5 psi/min by Nitrogen Gas |
| **Connection Size** | 1/2" NPT. Other sizes available upon request |




## ● RU-HS-080-02N/C/W/O

### 2-Passage Hollow Shaft Rotary Union

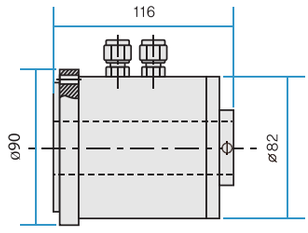
| | |
|---|---|
| **Number of Port** | 2 Ports |
| **Media** | Inert Gas, Chemical, Oil, Water, etc |
| **Temperature** | -20°C~ 150°C (-4°F ~ 300°F) |
| **Speed** | 50 rpm |
| **Pressure** | 10 Bar |
| **Leakage Rate** | 0.5 psi/min by Nitrogen Gas |
| **Connection Size** | 1/4" NPT. Other sizes available upon request |



## ● RU-HS-030-02N/C/W/O

### 2-Passage Hollow Shaft Rotary Union

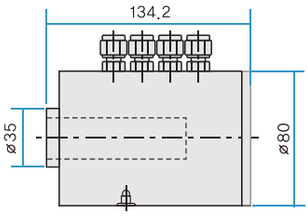
| | |
|---|---|
| **Number of Port** | 2 Ports |
| **Media** | Inert Gas, Chemical, Oil, Water, etc |
| **Temperature** | 0°C~ 150°C (32°F ~ 300°F) |
| **Speed** | 100 rpm |
| **Pressure** | 30 psi |
| **Leakage Rate** | 0.5 psi/min by Nitrogen Gas |
| **Connection Size** | 1/4" NPT. Other sizes available upon request |




## ● RU-HS-035-04N/R/W/O

### 4-Passage Hollow Shaft Rotary Union

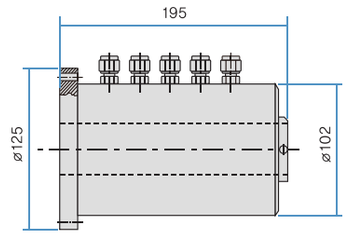
| | |
|---|---|
| **Number of Port** | 4 Ports |
| **Media** | Inert Gas, Reactive Gas, Oil, Water, etc |
| **Temperature** | -20°C~ 150°C (-4°F ~ 300°F) |
| **Speed** | 350 rpm |
| **Pressure** | 150 psi |
| **Leakage Rate** | 0.5 psi/min by Nitrogen Gas |
| **Connection Size** | 1/4" NPT. Other sizes available upon request |

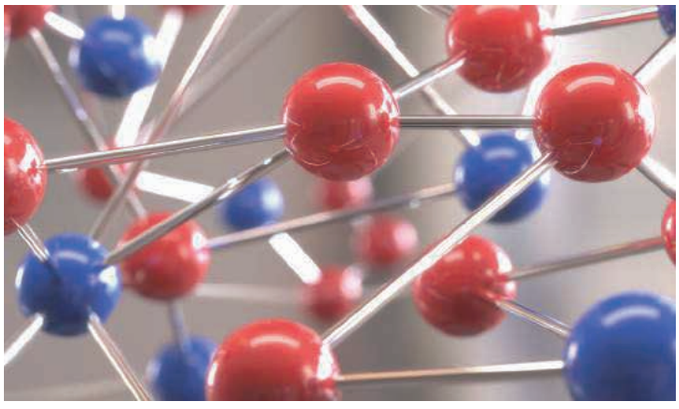


## ● RU-HS-050-05R/N/W/O

### 5-passage Hollow Shaft Rotary Union

| | |
|---|---|
| **Number of Port** | 5 Ports |
| **Media** | Inert Gas, Reactive Gas, Oil, Water, etc |
| **Temperature** | 0°C~ 120°C (32°F ~ 250°F) |
| **Speed** | 350 rpm |
| **Vacuum** | 1 x $10^{-3}$ Torr |
| **Pressure** | 35 psi |
| **Leakage Rate** | 0.5 psi/min by Nitrogen Gas |
| **Connection Size** | 1/4" NPT. Other sizes available upon request |



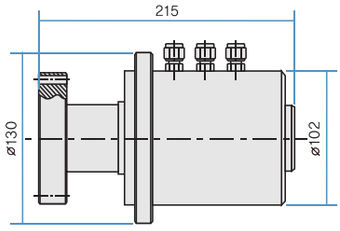



# RU-SS Series Solid Shaft Rotary Union

## ● RU-SS-050-03R/N

### 3-Passage Solid Shaft Rotary Union

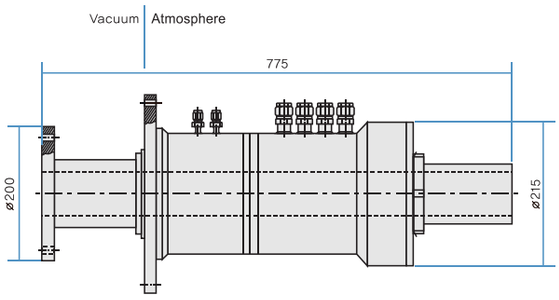
| | |
|---|---|
| **Number of Port** | 3 Ports |
| **Media** | Reactive Gas, Inert Gas |
| **Temperature** | -20°C~ 150°C (-4 °F ~ 300°F) |
| **Speed** | 200 rpm |
| **Vacuum** | 1 x $10^{-3}$ Torr |
| **Pressure** | 35 psi |
| **Leakage Rate** | Up to 7.5 x $10^{-10}$ Pa·$m^3$/s |
| **Connection Size** | 1/2" NPT. Other sizes available upon request |




## ● RU-HS-110-06N/W

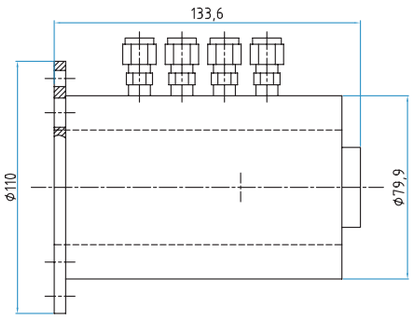
### 6-Passage Hollow Shaft Rotary Union

| | |
|---|---|
| **Number of Port** | 6 Ports |
| **Media** | Inert Gas, Water |
| **Temperature** | 0°C~ 150°C (32°F ~ 300°F) |
| **Speed** | 20 rpm |
| **Vacuum** | 1 x $10^{-3}$ Torr |
| **Pressure** | 10 Bar |
| **Leakage Rate (Pressure)** | 0.5 psi/min by Nitrogen gas |
| **Leakage Rate (Vacuum)** | Up to 7.5 x $10^{-10}$ Pa·$m^3$/s |
| **Connection Size** | 1/4" & 1/2" NPT. Other sizes available upon request |

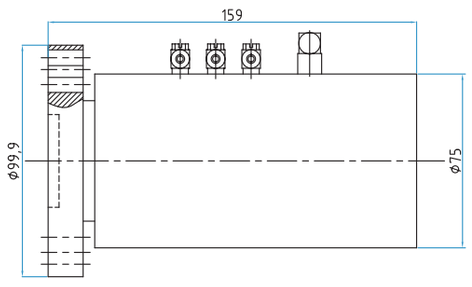


# New Products

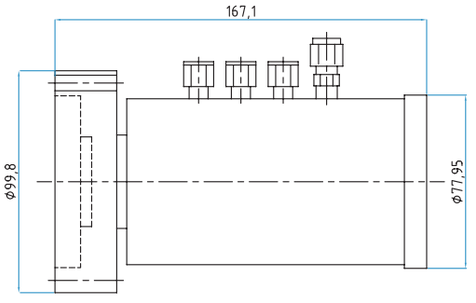
## RU-SS-030-04W



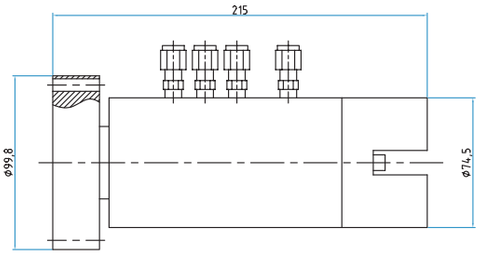

## RU-SS-030-04N/W/C



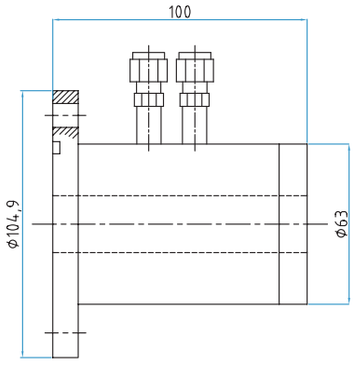

## RU-SS-030-04N/W/O



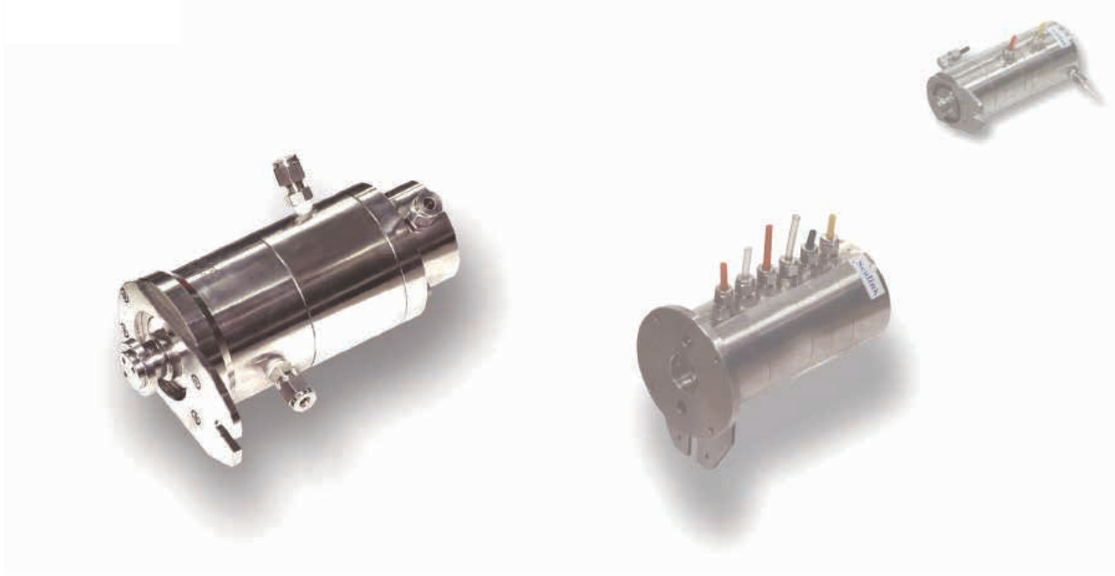
## ● RU-SS-030-04N/W




## ● RU-HS-025-02N/R


## For CMP



# 3. Rotary & Linear Feedthrough : RL Type

A rotary & linear feedthrough is a precision mechanical device which allows to transfer both linear and rotational motions at same time from atmosphere into vacuum or differential pressure environments.

The rotary & linear feedthroughs are hermetically sealed by our unique sealing technology with nonlinear contact for low friction, unlike a face contact of conventional mechanical seal which need lubricating oil for lowering the friction. Therefore, Sealink Seals don't need lubricant supplying systems and eliminate the risk of explosion caused by a leak of lubricant.

We provide standard rotary & linear feedthroughs and customized products with various options such as pressure, vacuum, stroke, speed, and temperature requirements. Therefore, you can retrofit conventional feedthroughs with Sealink's products without extra equipment.

## ● Advantages

- Hermetically sealed with our unique nonlinear contact technology with no bellows
- Being able to operate under both high vacuum and high pressure environments
- A variety of media to be sealed: Both gas and liquid such as reactive gas, inert gas, chemical, oil, water and coolants, etc.
- 360° continuous rotating and up to 4,000mm linear travel
- No Cooling Unit required up to 150°C/300°F (operable up to 400°C/750°F with cooling system)
- No Lubricant Supply required, resulting in eliminating explosion accidents by leaks of lubricating oil
- Compact and Simplified Construction - Easy machining and maintenance, long service life and installation space saved
- Customized design available
- Optional Real-time Leakage Monitoring system available

## ● Typical Applications

### Semiconductor Equipment, LCD and OLED Industries

CVD, MOCVD, LPCVD, PECVD, PCD, ALD, CMP, OLED, LCD device, FPD device, Wafer handling device, Vacuum deposition system, Ion Implanter, Etcher, Asher, Edge grindr, Scrubber, RTP, Sputter, Lamp device, Autoclave, Wafer robot, etc.

### Petrochemical/Fine Chemical, Marine, Steel and General Machinery Industries

Mixer, Agitator, Reactor Vessel, etc

## ● Specifications

| | | |
|---|---|---|
| **Vacuum** | | Max. $10^{-8}$ Torr, Max. $10^{-6}$ Pa |
| **Pressure** | | Max. 50 bar (PV Limits : Max. 50) |
| **Leakage Rate** | **Vacuum** | Up to 7.5 x $10^{-10}$ Pa·$m^3$/s by Helium Leak Detector |
| | **Pressure** | Up to 0.5 psi/min by Nitrogen Gas |
| **Stroke of Shaft** | | 0 to 4,000mm |
| **Temperature Range** | | -20 ~ 150°C (-4 ~ +300°F) without cooling system<br>-20 ~ 400°C (-4 ~ +750°F) with optional cooling system |
| **Media Type** | | Gas and Liquid (Reactive Gas, Inert Gas, Water, Oil, Steam, Air, Chemical, Coolant, and a variety of other media) |
| **Speed** | | Max. 15 m/s |
| **Shaft Diameter** | | ø6 ~ ø1,100mm |
| **Material** | **Housing** | 304 / 316L Stainless Steel or others |
| | **Shaft** | 304 / 316L Stainless Steel or others |
| | **Bearing** | SUJ2 High carbon Chrome Bearing Steel or others |

## ● Model Names of Rotary & Linear Feedthroughs

**RL** — **025** — **0150** **N**

**Product**
**RL:** Rotary & Linear Feedthrough

**RF:** Rotary Feedthrough
**RU:** Rotary Union

**Shaft Diameter**
**Metric Size:** mm
**Inch Size:** inch
**010** = 10 mm
**250** = 0.250 inch

**Stroke**
(mm)

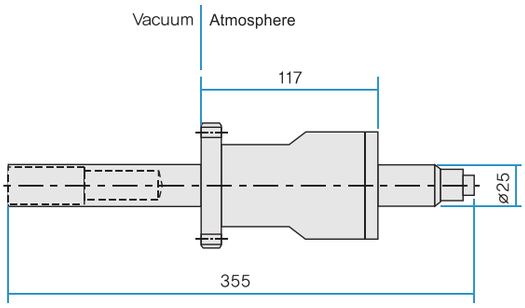
**Media Compatibility**
**N:** Inert Gas
**R:** Reactive Gas
**C:** Chemical
**W:** Water
**O:** Oil

# Rotary & Linear Feedthrough

## ● RL-025-0150R/N

### Rotary & Linear Feedthrough

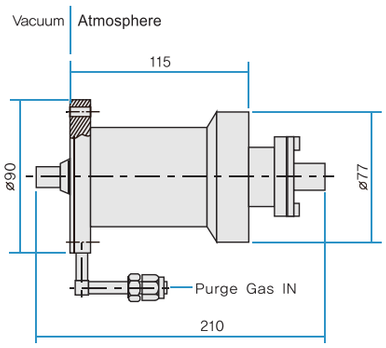
| | |
|---|---|
| **Gas Compatibility** | Reactive Gas, Inert Gas |
| **Rotating Speed** | 120 rpm |
| **Linear Speed** | 20 mm/s |
| **Stroke** | 150 mm |
| **Temperature** | 0°C ~ 150°C (32°F ~ 300°F) without cooling system,<br>up to 400°C (750°F) with optional cooling system |
| **Leakage Rate** | Up to 7.5 x $10^{-10}$ Pa·$m^3$/sec |




## ● RL-012-0050R/N

### Rotary & Linear Feedthrough

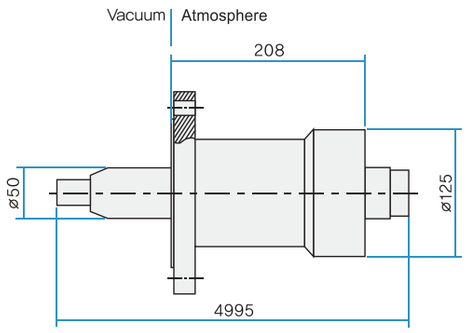
| | |
|---|---|
| **Gas Compatibility** | Reactive Gas, Inert Gas |
| **Rotating Speed** | 60 rpm |
| **Linear Speed** | 5 mm/s |
| **Stroke** | 50 mm |
| **Temperature** | 0°C ~ 150°C (32°F ~ 300°F) without cooling system,<br>up to 400°C (750°F) with optional cooling system |
| **Leakage Rate** | Up to 7.5 x $10^{-10}$ Pa·$m^3$/sec |



## ● RL-050-4000R/N

### Rotary & Linear Feedthrough

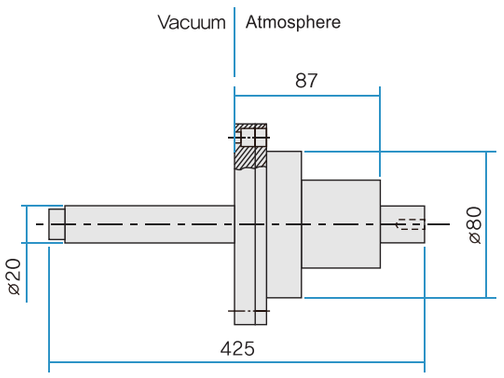
| | |
|---|---|
| **Gas Compatibility** | Reactive Gas, Inert Gas |
| **Rotating Speed** | 120 rpm |
| **Linear Speed** | 50 mm/s |
| **Stroke** | 4,000 mm |
| **Temperature** | 0°C ~ 150°C (32°F ~ 300°F) without cooling system,<br>up to 400°C (750°F) with optional cooling system |
| **Leakage Rate** | Up to 7.5 x $10^{-10}$ Pa·$m^3$/sec |




## ● RL-020-0250R/N

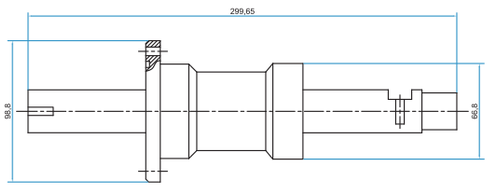
### Rotary & Linear Feedthrough

| | |
|---|---|
| **Gas Compatibility** | Reactive Gas, Inert Gas |
| **Rotating Speed** | 50 rpm |
| **Linear Speed** | 50 mm/s |
| **Stroke** | 250 mm |
| **Temperature** | 0°C ~ 150°C (32°F ~ 300°F) without cooling system,<br>up to 400°C (750°F) with optional cooling system |
| **Leakage Rate** | Up to 7.5 x $10^{-10}$ Pa·$m^3$/sec |

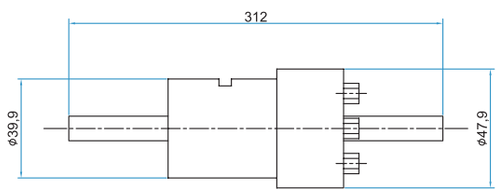


# New Products

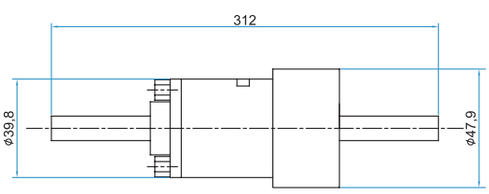
## RL-SS-030-0150C




## RL-SS-010-0250N




## RL-SS-010-0250N/R



# Request for Quotation

Please complete the form below. We will get back to you shortly with sealing solutions that are suitable to your application.

## Customer Contact Information

| | | | |
|---|---|---|---|
| **Company** | | | |
| **Contact Name** | | **Title/Department** | |
| **Address** | | | |
| **Phone Number** | | | |
| **Fax Number** | | **Email Address** | |

| | | | |
|---|---|---|---|
| **A. Information on your equipment to use mechanical feedthroughs or rotary unions** | | | |
| **Equipment** | | | |
| **Manufacturer** | | **Model / Type** | |
| **B. Mechanical Feedthroughs and Rotary Unions being used now (if known)** | | | |
| **Manufacturer** | | | |
| **Model / Type** | | **Quantity used now** | |
| **If any problem, please describe :** | | | |

## Operational Conditions

| | | | | |
|---|---|---|---|---|
| **Product Type** | ☐ Rotary Union | ☐ Rotary Feedthrough | ☐ Linear Feedthrough | ☐ Rotary & Linear |
| **Sealing Condition** | ☐ Vacuum | ☐ Pressure | | |
| **Media** | ☐ Inert Gas | ☐ Reactive Gas | ☐ Water | ☐ Steam |
| | ☐ Hydraulic Oil | ☐ Hot Oil | ☐ Other (specify: ) | |
| **Shaft** | ☐ Solid Shaft | ☐ Hollow Shaft | | |
| **Mounting** | ☐ Flange mount | ☐ Threaded(Nose) mount | ☐ Threaded Body(Nut) mount | ☐ Other |
| **Mounting Direction** | ☐ Vertical Top | ☐ Vertical Bottom | ☐ Vertical | ☐ Horizontal |
| | ☐ Angle( degree) | | | |
| **# of Flow Passage** | Total # of Ports | Gas Ports | Liquid Ports | Other Ports |
| | | | | |
| **Stroke (Linear)** | ( ) ☐ mm ☐ inch | | | |
| **Vacuum** | Minimum | Operating | Maximum | Unit |
| | | | | ☐ Torr ☐ Pa ☐ psi |
| **Pressure** | | | | ☐ Bar ☐ Pa ☐ psi |
| **Temperature** | | | | ☐ °C ☐ °F |
| **Speed (Rotation)** | ( ) rpm | | | |
| **Speed (Linear)** | ( ) mm/s | | | |

## Limits

| | | |
|---|---|---|
| **Shaft Diameter** | Solid Shaft : ( ) mm | |
| | Hollow Shaft : Outer - ( ) mm, Inner - ( ) mm | |
| **Max. Torque Capacity** | ( ) N.m | |
| **Leakage Rate** | **Vacuum** | ( ) $Pa \cdot m^3/s$ |
| | **Pressure** | ( ) psi/min |
| **Shaft Friction** | | |
| **Gland Length** | ( ) mm | |

## Performance

| | | | |
|---|---|---|---|
| **Life Cycle** | | | |
| **Shaft Runout** | | **Eccentricity** | |

* If you have, please attach drawing or layout design and send to **Sealink Corp. Fax +82-2-866-8757 / e-mail : sales@esealink.com**

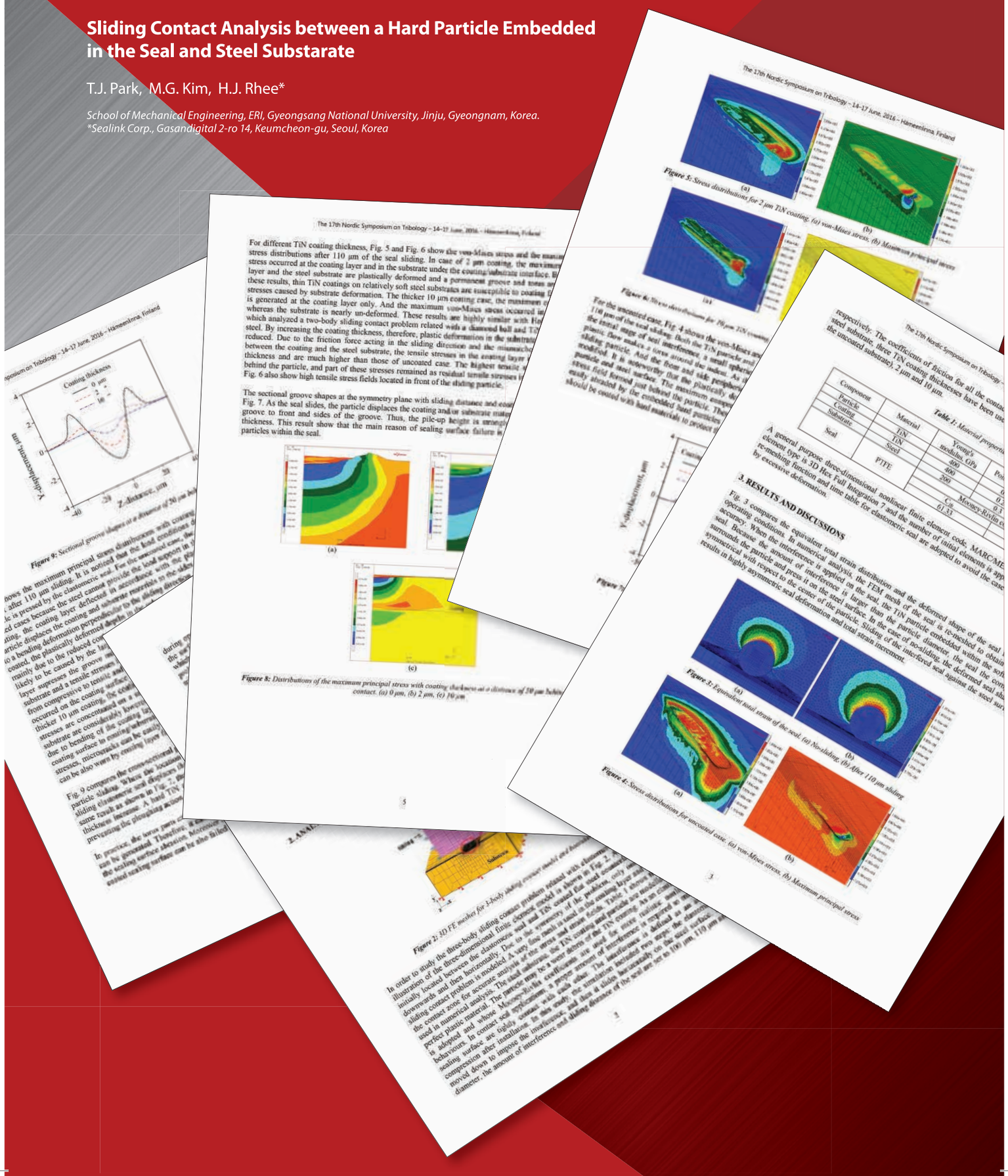
# Top Sealink in the World™

The 17th Nordic Symposium on Tribology, 2016 - Hämeenlinna, Finland

## Sliding Contact Analysis between a Hard Particle Embedded in the Seal and Steel Substarate

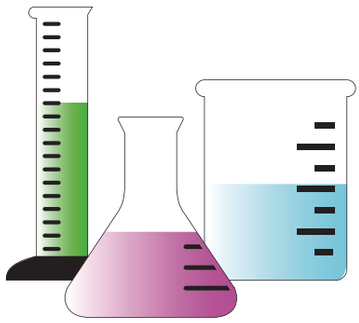
T.J. Park, M.G. Kim, H.J. Rhee*

*School of Mechanical Engineering, ERI, Gyeongsang National University, Jinju, Gyeongnam, Korea.*
**Sealink Corp., Gasandigital 2-ro 14, Keumcheon-gu, Seoul, Korea*



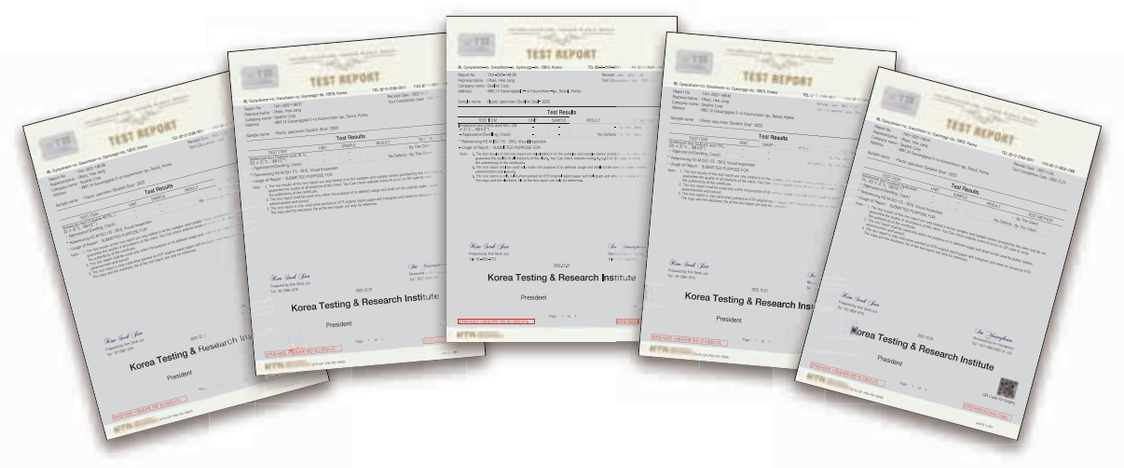
# Chemical Resistance Test Results of Sealink Seal

| No. | Chemicals | % | No. | Chemicals | % |
|---|---|---|---|---|---|
| 1 | Sulfuric Acid, 75% | 0.77 | 9 | Toluene, 99.5% | 1.36 |
| 2 | Sulfuric Acid, 10% | 0.12 | 10 | Methanol, 99.5% | 0.96 |
| 3 | Nitric Acid, 40% | 0.17 | 11 | Ethanol, 96% | 0.75 |
| 4 | Hydrochloric Acid, 10% | 0.17 | 12 | Sodium Carbonate, 20% | 0.30 |
| 5 | Acetic Acid, 99.5% | 2.18 | 13 | Sodium Chloride, 10% | 0.20 |
| 6 | Sodium Hydroxide, 40% | 0.54 | 14 | Diethyl Ether, 100% | 0.66 |
| 7 | Sodium Hydroxide, 1% | 0.63 | 15 | Hydrogen Peroxide, 30% | 0.23 |
| 8 | Acetone, 100% | 2.02 | | | |



% : Weight Change Ratio

5:2011 for 168hrs(7days) at Korea Testing & Research Institute.




# Note

**Sealink Corp.** #907, 14 Gasandigital 2-ro, Keumcheon-Gu, Seoul 08592, Korea
**Tel** +82-2-866-8737 **Fax** +82-2-866-8757 **E-mail** sales@esealink.com **www.esealink.com**


HIGH VACUUM & PRESSURE ROTARY SEALING UNIT

Sealink

## Top Sealink in the World ™

**Sealink Corp.** #907, 14 Gasandigital 2-ro, Keumcheon-Gu, Seoul 08592, Korea
**Tel** +82-2-866-8737 **Fax** +82-2-866-8757 **E-mail** info@esealink.com **www.esealink.com**