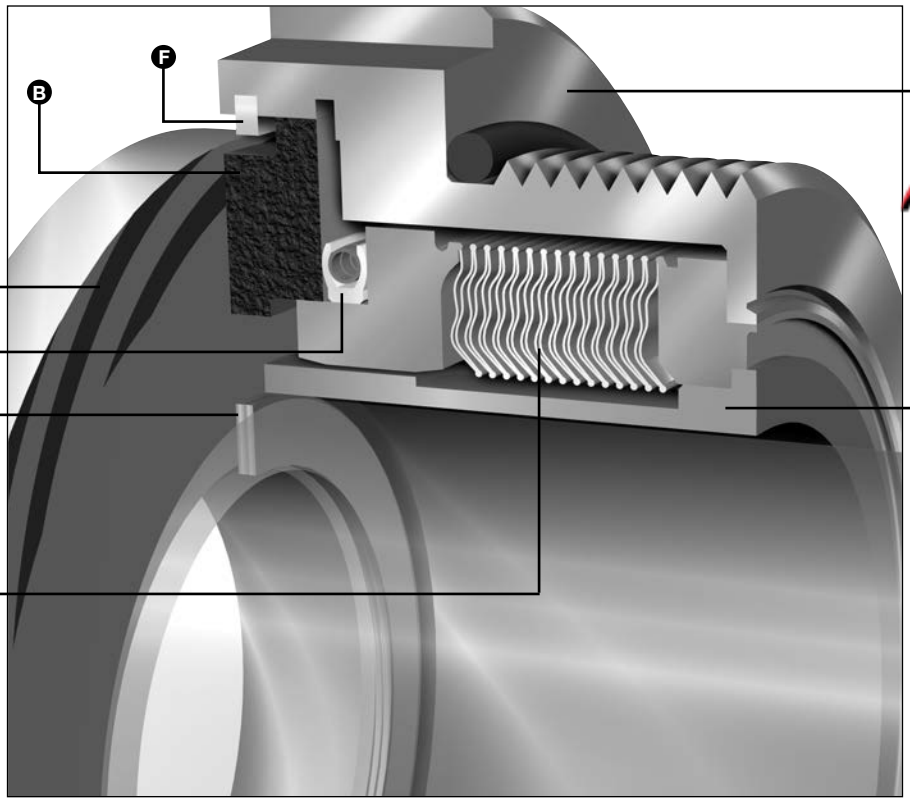
# TYPE 285

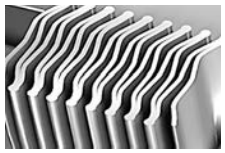
## NON-CONTACTING METAL BELLOWS SEAL

Technical Specification

**A** – Spiral-Grooved Rotor/Mating Ring
**B** – Stator/Primary Ring
**C** – Metal Bellows
**D** – Anti-Spark Sleeve
**E** – Spring-Energized Seal
**F** – Retaining Ring
**G** – Housing
**H** – Shims




Welded Metal Bellows



### Product Description

- The Type 285 is a non-contacting welded metal bellows seal for cryogenic applications.
- Thanks to its design and materials of construction, the Type 285 can safely seal the most common industrial liquid gases. It fits the most popular cryogenic pumps: site-based and road tanker pumps.

### Performance Capabilities

- Temperature: -196˚C/-320˚F to Ambient
- Pressure: up to 7 bar g/100 psig
- Speed: up to 10,000 rpm
- End play/axial float allowance: 0.13mm/0.005" F.I.M. max.
- Shaft runout: 0.001mm per mm/0.001"per inch of shaft diameter F.I.M. max.

### Design Features/Benefits

- No face wear under normal operating conditions
- Specially designed stationary bellows
- Floating stator
- Compact design
- Meets liquid oxygen (LOX) safety standards
- Anti-spark sleeve and retaining ring
- Reduced power consumption
- Minimal product loss
- Available as cartridge seal

### Applications

Industrial liquid gases, including:

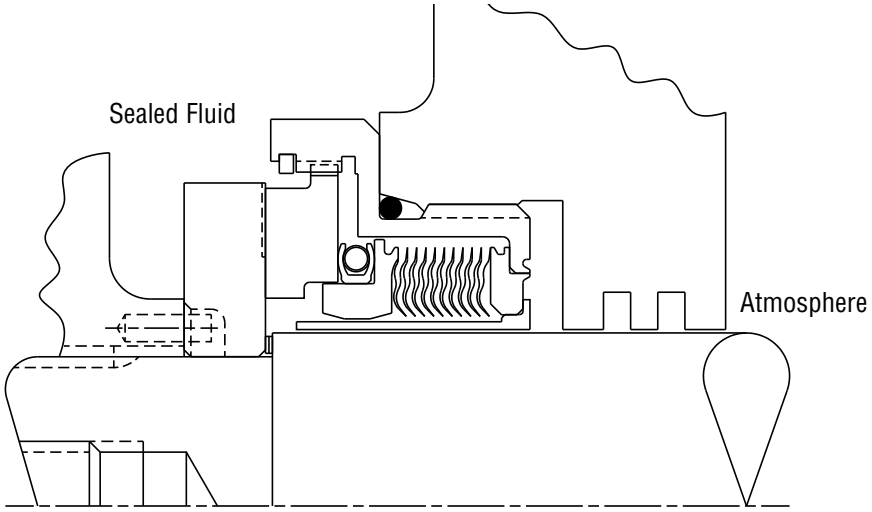
- Oxygen
- Nitrogen
- Argon

# TYPE 285

## NON-CONTACTING METAL BELLOWS SEAL

Technical Specification

## Type 285 Typical Arrangement




## Materials of Construction

| SEAL COMPONENTS | STANDARD MATERIALS |
|---|---|
| Rotor/Mating Ring | Tungsten Carbide |
| Stator/Primary Ring | Carbon |
| Spring-Energized Seal | Virgin PTFE, Cobalt Chrome Alloy Spring |
| Anti-Spark Sleeve | Tin Bronze |
| Metal Bellows | Alloy 718 (Alloy 625 End Fittings) |
| Retaining Ring | Nickel-Copper Alloy |
| Shims | Copper Alloy |
| Other Metal Parts | 316L Stainless Steel |

## Sealol Welded Metal Bellows

**Sealol design features**

- Optimum 45° tilt angle
- Three-sweep radius
- Nesting ripple plate design
- Light spring loads

**Sealol bellows benefits**

- Uniform plate rigidity and stress distribution
- Enhanced fatigue strength
- Self-cleaning through flexing/slicing action
- Pressure-balanced by design

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Technical Specification

## John Crane Non-contacting Technology

**John Crane Design Features**

- Uni-directional pattern
- Non-contacting operation
- Superior film stiffness

**John Crane Spiral Groove Technology Benefits**

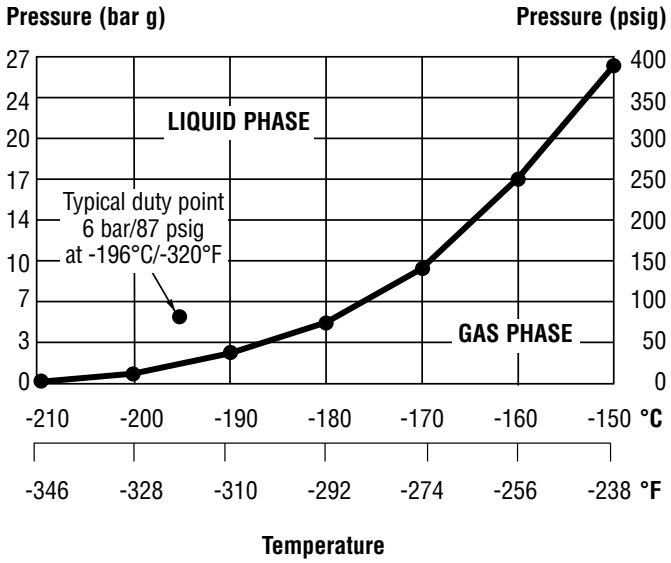
- Eliminates face wear under normal operating conditions
- Increases mean time between planned maintenance (MTBPM)
- Minimizes product loss
- Reduces power consumption
- Eliminates Lubrication Support Systems Required with Labyrinth Seals

## Characteristics of Cryogenic Fluids

**Boiling Points**

| At atmospheric pressure | ˚C | ˚F |
|---|---|---|
| Oxygen | -183 | -297 |
| Nitrogen | -196 | -320 |
| Argon | -186 | -303 |

**Vapor Pressure Curve for Nitrogen**



# TYPE 285

## NON-CONTACTING METAL BELLOWS SEAL

Technical Specification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**Middle East & Africa**
United Arab Emirates
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Fax: 971-488-62830

**Asia Pacific**
Singapore
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