# Газовые барьеры и ограничители

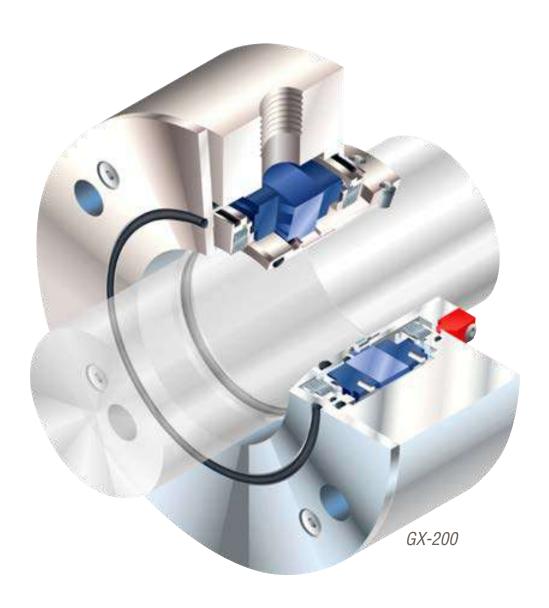
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## GAS BARRIER AND CONTAINMENT

Running a liquid seal dry almost always means trouble, whether it's equipment failure, unwanted downtime or unsafe conditions. Flowserve gas barrier seals have non-contacting seal faces that lift off during operation, so they run safely and reliably, no matter what's happening in the seal chamber. They also use less power and employ simplified support systems. Flowserve containment seals normally run dry as a ready backup behind a liquid-lubricated inboard seal. During upset events, the containment seal takes over primary sealing responsibilities until the equipment can be safely serviced. Both designs offer significant cost and environmental advantages, either minimizing or eliminating emissions.

### **Gas Barrier and Containment** – Quick Reference

Product	Sub-Type	Pressures to	Temperatures	Speeds	Sizes
GF-200	Industrial Process	34.5 bar (500 psi)	-40°C to 260°C (-40°F to 500°F)	1.3 to 25 m/s (4 to 82 fps)	25.4 to 152 mm (1.000 to 6.000 in)
GX-200	Industrial Process	13.8 bar (200 psi)	-40°C to 260°C (-40°F to 500°F)	2.5 to 35 m/s (8 to 115 fps)	25.4 to 76.2 mm (1.000 to 3.000 in)
GSL	API Process	41.4 bar (600 psi)	-40°C to 204°C (-40°F to 400°F)	1.5 to 30.5 m/s (5 to 100 fps)	20.6 to 152 mm (0.813 to 6.000 in)
GSDH	API Process	20.7 bar (300 psi)	-73°C to 427°C (-100°F to 800°F)	to 19.8 m/s (57 fps)	28.2 to 128.9 mm (1.110 to 5.073 in)
GTSP	API Process	17.2 bar (250 psi)	-73°C to 427°C (-100°F to 800°F)	3 to 46 m/s (10 to 150 fps)	47.6 to 104.8 mm (1.875 to 4.125 in)

### GAS BARRIER AND CONTAINMENT

#### INDUSTRIAL PROCESS

### **GF-200**

This dual pressurized non-contacting, gas barrier pusher seal is used in applications where zero emissions of hazardous pumped products can be tolerated.



- Greater reliability enabled by spring energized O-ring technology to maintain proper seal face tracking
- · Longer service life from silicon carbide seal faces using APG precision face topography, which creates a stiff, thin gas film that prevents wear
- · Economical performance via non-contacting seal faces that require very low power consumption during startup and operation

#### **SPECIFICATIONS**

Press. to: 34.5 bar (500 psi) Temp: -40°C to 260°C (-40°F to 500°F) Speeds: 1.3 to 25 m/s (4 to 82 fps)

Sizes: 25.4 to 152 mm (1.000 to 6.000 in)

Refer to literature FSD137 at /library.

### INDUSTRIAL PROCESS

### GX-200

GX-200 dual metal bellows seals utilize APG non-contacting seal face technology for outstanding performance in a variety of applications. Fits standard or small bore seal chambers without modifications.

- Environmental regulatory compliance assured by inert gas barrier that operates with zero process emissions
- Long-term reliability provided by high alloy metal bellows that resist contamination and hang-up while providing pressure reversal product containment during upset events
- Lower operation and maintenance costs provided by unique design that eliminates the costs of maintaining a liquid barrier system and the risks of barrier fluid contamination
- Economical performance enabled by energy-efficient design that delivers the industry's lowest power consumption for conventional pumps

#### **SPECIFICATIONS**

Press. to: 13.8 bar (200 psi) Temp: -40°C to 260°C (-40°F to 500°F) Speeds: 2.5 to 35 m/s (8 to 115 fps) Sizes: 25.4 to 76.2 mm

(1.000 to 3.000 in)

Refer to literature FSD105 at /library.

#### API PROCESS

### GSL

GSL non-contacting gas seals are designed for dry running vapor containment and full pressure wet backup sealing in light hydrocarbon, crude oil and hazardous services.



- Greater reliability and service life assured by silicon carbide seal face with a bidirectional wave pattern that provides the lift necessary for non-contacting operation
- Improved plant and personnel safety from backup sealing capability to 600 psi (41.4 bar), allowing safe shutdown if primary seal fails
- Faster, trouble-free startup via cartridge assembly that simplifies installation
- Meets environmental emission limits with available nitrogen sweep auxiliary system

#### **SPECIFICATIONS**

Press. to: 41.4 bar (600 psi)

Temp: -40°C to 204°C (-40°F to 400°F)

Speeds: 1.5 to 30.5 m/s (5 to 100 fps) Sizes: 20.6 to 152 mm

(0.813 to 6.000 in)

Refer to literature FSD143 at /library.



#### API PROCESS

### **GSDH**

GSDH seals are dry-running metal bellows containment seals for high-temperature hydrocarbons, heat transfer fluids, and other fluids pumped beyond the temperature limits of elastomers.

- Fully compliant with API 682 Type C, Arrangement 2 containment seal requirements
- Simplified maintenance compared to liquid buffer or barrier fluid dual seals; lowpressure steam or nitrogen purge gas helps achieve near-zero emission levels
- Greater reliability via high alloy rotating metal bellows that clear convolutions and prevent accumulation of debris
- Improved safety with spring-energized graphite gasket that seals with minimal seal face distortion and offers outstanding chemical compatibility

#### **SPECIFICATIONS**

Press. to: 20.7 bar (300 psi) Temp: -73°C to 427°C (-100°F to 800°F) Speeds: to 19.8 m/s (57 fps) Sizes: 28.2 to 128.9 mm

Refer to literature FSD260 at /library.

(1.110 to 5.073 in)

#### API PROCESS

### **GTSP**



This dual pressurized, high-temperature metal bellows gas seal is engineered for the hottest process pumps found in refinery and hydrocarbon services. Qualification tested per API 682 Type C, Arrangement 3 requirements.

- Increased reliability and service life at lower cost from design that eliminates
  process leakage and coking problems while avoiding liquid barrier seal issues
- Lower operating costs with laser-applied precision face topography technology, creating a gas film barrier for non-contacting, low-drag, low-energy consumption
- High-temperature performance enhanced by design engineered to operate without cooling and tolerate high axial overtravel during warm-up or thermal transients
- Simplified installation on double-ended pumps via sinusoidal waves, allowing bi-directional operation

#### SPECIFICATIONS

Press. to: 17.2 bar (250 psi) Temp: -73°C to 427°C (-100°F to 800°F)

Speeds: 3 to 46 m/s (10 to 150 fps)

Sizes: 47.6 to 104.8 mm (1.875 to 4.125 in)

Refer to literature FSD241 at / library.



### По вопросам продаж и поддержки обращайтесь:

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