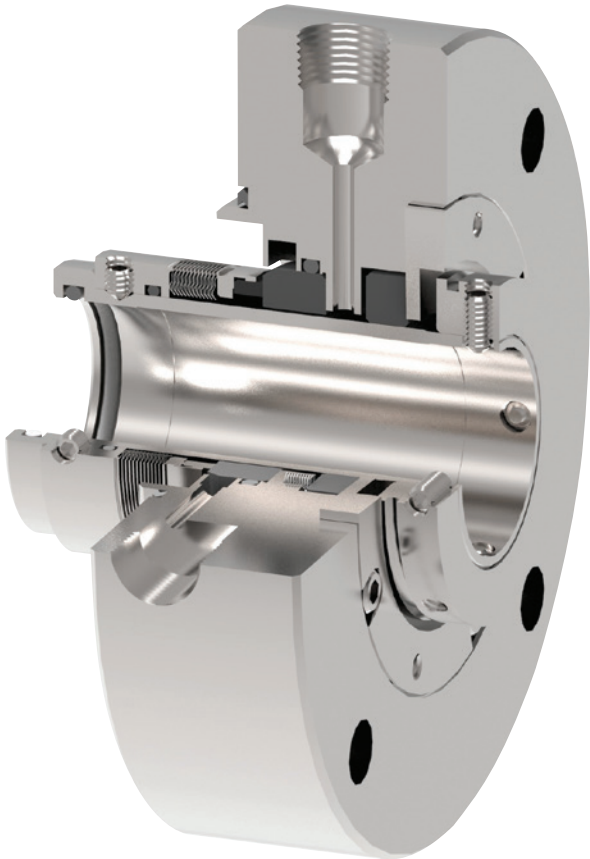


## METAL BELLOWS SEAL



### DESIGN BENEFITS

- Proven performance  
API 682 qualified
- Utilizes a single point or  
distributed flush
- Available with pumping ring  
(API Plan 23)
- Incorporates a fixed, floating or  
segmented spring-loaded throttle  
bushing for effective containment

## PRODUCT DESCRIPTION

■ ■ ■ ■ An edge-welded, metal bellows, single rotating API 682 Category II and III, Type B, Arrangement 1 cartridge seal which provides a reliable means of sealing fluids in aggressive chemical environments.

The Type 1670 utilizes an Alloy C-276 (UNS N10276) metal bellows seal providing high strength and excellent corrosion resistance.

## METAL BELLOWS SEAL

### API 682 Qualified

The Type 1670 is an API 682 qualified low-temperature single rotating bellows cartridge seal and is designed as an easy-to-install cartridge featuring the design and material requirements outlined in API 682. The seal is designed to be operated as an Arrangement 1 (single) seal. Type 1670 provides a robust, compact cartridge seal design.

### Corrosion Resistance

The Type 1670 provides the extra corrosion resistance of an all-Alloy C-276 seal head assembly and is ideally suited for aggressive fluids such as crystallizing, caustic and acid services.

### Distributed Flush

The Type 1670 API 682 Arrangement 1, Category II and III seals utilize a distributed flush. The distributed flush optimizes circulation of liquid at the seal faces and prevents trapped vapor.

Piping plans typically recommended with the Type 1670 include:

- API Plan 11: Recirculation from pump case through orifice to seal
- API Plan 21: Recirculation from pump case through orifice and cooler or heat exchanger to seal
- API Plan 23: Recirculation from seal with pumping ring through a heat exchanger and back to the seal segmented spring-loaded carbon throttle bushing

### Segmented Spring-loaded Carbon Throttle Bushing

A segmented spring-loaded carbon throttle bushing can be provided to deliver the optimum degree of containment of the various bushing options available.

### John Crane Edge-welded Metal Bellows:

#### Design Features:

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

#### John Crane Bellows Benefits:

- Uniform plate rigidity and stress distribution
- Enhanced fatigue strength
- Pressure-balanced by design
- Less heat
- Lower power consumption

### Performance Capabilities

Temperature	Pressure	Speed
-100° to 500°F/-75° to 260°C	Vacuum to 300 psig/20 barg <i>(Consult basic pressure rating curves and John Crane Engineering for maximum pressure rating for your application).</i>	Up to 5,000 fpm/25 ms <sup>-1</sup>

Together, we will work with you to keep your mission-critical operations up and running with support and guidance from our experienced team.

Consult John Crane Engineering for your specific seal selection.



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