High-Performance *SEALOL*®
Edge-Welded Metal Bellows Seals

Low-Temperature and High-Temperature Series

High-Performance *SEALOL*® Bellows Seals

Sealol developed the first welded metal bellows seal in 1957 to solve critical and demanding applications for NASA, and extended this technology to the process industry. Over 40 years of reliable performance in a broad range of applications, combined with an annual output of over 200,000 bellows seals, establishes Sealol as the leader in bellows sealing technology.

Leader in Bellows Sealing Technology

Sealol Low-Temperature and High-Temperature bellows seals assure low emissions and optimized Mean-Time-Between-Planned-Maintenance (MTBPM).

- **Superior Bellows Design**
  These seals are manufactured with a 45° tilt edge at the bellows' inside diameter to disperse stresses and maximize operating life.
- **Superior Plate Shape**
  The plate shape used by John Crane Sealol is called a nesting ripple. With a three-sweep radius, this plate design allows the bellows device to be flexed repeatedly without the metal being stressed beyond its endurance limit.
- **Self-Cleaning Design**
  Rotating bellows throw off suspended particles that clog spring-type seals. This self-cleaning action eliminates the need for external flushing, filters or cyclone separators and their associated costs.

- **World-class Bellows Manufacture**
  Our bellows production facility has an outstanding manufacturing process with state-of-the-art stamping, welding and testing technology.
- **Application Flexibility**
  A wide range of metallurgies, face combinations and packing materials are used to seal a variety of demanding applications.

Scientists at John Crane conduct in-depth research that points the way to tomorrow's products.

- **Design Versatility**
  The Low-Temperature and High-Temperature Series seals are available as either single or dual shaft-mounted designs. Combined with a secondary containment seal (ECS™), they will also perform in hazardous applications where emission control is required. For easier installation and higher reliability, they can be designed in a variety of cartridge arrangements.

API-682 Qualified (Type 670, 604 and 609)

The Low-Temperature and High-Temperature Series Sealol Bellows Seals are fully qualified and comply with all API-682 technical design requirements.

Advanced Research and Development

The Sealol bellows incorporate all of the design features resulting from key engineering competencies, such as metallic thin shell methodology, tribology and fluid sealing technology, and thin film/fluid mechanics.

Sealol is a registered trademark of John Crane.
ECS is a trademark of John Crane.

Low-Temperature Series

Type 670

The Type 670 is an all Alloy C-276 rotating bellows seal, providing high strength and excellent corrosion resistance. It is extremely durable in applications where temperature and media (fluid) result in an aggressive environment.

The Type 670 has been tested per API-682 Type B seals for low-temperature refinery services. Other common applications include acids, caustics, amines, and products with H_2S, such as sour water and sour hydrocarbons.

The Type 670 can be designed as a dual seal using a non-pressurized buffer or pressurized barrier fluid. A pumping ring recirculates barrier fluid, assuring cooler operating temperatures and extended reliable performance.

Type 675/676

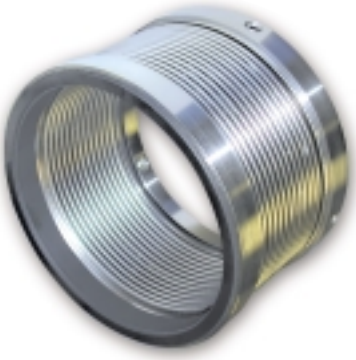
The Type 675 and 676 provide the same performance benefits as the Type 670, but use different materials of construction. The Type 675, with a Titanium bellows, is ideal for chlorine, chlorine dioxide, and ferric chloride services. The Type 676, with an AM350 stainless steel bellows, is well-suited for mild corrosive and abrasive applications, such as miscellaneous water and paper stock.

Type 680

The Type 680 is the ideal seal for general-purpose applications. Its Alloy-20 bellows provide corrosion resistance in a broad range of services. Its cost-effective design, combined with a reliable performance history, has made the Type 680 the standard for many low-temperature applications found in the chemical, water and wastewater, pulp and paper, and utility industries.

Type GL1B

The Type GL1B is a DOUBLE-PLY Inconel® 625 rolled metal bellows seal. The open profile of the bellows allows easy cleaning making it particularly suitable within the Pharmaceuticals and Food processing industries. The combination of the rolled bellows design and material of construction also make this suitable for a variety of abrasive applications. With compliance to DIN 24960, ISO 3069 and ANSI B73 it can be fitted to most process pump designs.



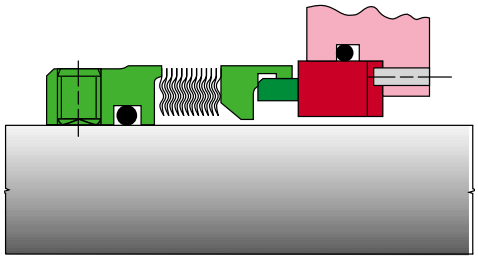
Low-Temperature Bellows Assemblies

Performance Capabilities*

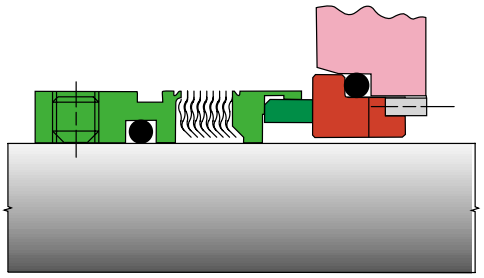
Pressure	Vacuum to 25 bar / 360 psi for Types 670,675,676,680 Vacuum to 16 bar /230 psi for Types GL1B *(see Basic Pressure Ratings curve on Product Specification sheet)*
Speed	Up to 25 m/s **/** 5,000 fpm
Temperature	-75°C to +290°C / -100°F to +550°F *for Types 670,675,676,680* -40°C to +260°C / -40°F to +500°F *for Type GL1B* *(depending on material being used)*

**For more detailed information, see product specification sheet reference S-670/676/680, and S-GL1B.*

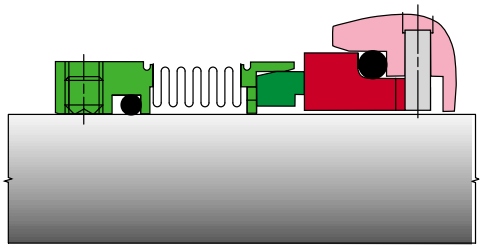
Type 670/675/676



Type 680



Type GL1B



Materials of Construction

Bellows	**Type 670:**	Alloy C-276 (UNS N10276)	**Type 675:**	Titanium (UNS R52400)
	Type 676:	AM350 (UNS S35500)	**Type 680:**	Alloy 20 (UNS N08020)
	Type GL1B:	Alloy 625 (UNS N06625)		
End-Fittings	**Type 670:**	Alloy C-276 (UNS N10276)	**Type 675:**	Titanium (UNS R50400)
	Type 676:	316L Stainless Steel (UNS S31603)	**Type 680:**	Alloy 20 (UNS N08020)
	Type GL1B:	CrNiMo Steel (Duplex SS)		
Faces	Carbon, Tungsten Carbide, Silicon Carbide			
Static Seals	Fluorocarbon, EPR, PTFE-Encapsulated Fluorocarbon, Perfluoroelastomer, Nitrile			

High-Temperature Series

Type 604

The Type 604 is the leading seal of choice for demanding, high-temperature applications. Available in either AM350 or Alloy 718, its high-strength design provides maximum reliability. The stationary bellows design accommodates high shaft-to-seal-chamber misalignment.

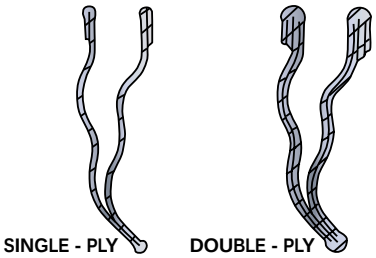
Unlike rotating seals that must flex on every revolution to accommodate shaft-to-seal-chamber misalignment, the stationary 604 adapts to this condition by flexing only once during installation. This reduces seal movement, resulting in increased seal life.

Type 609

The Type 609 incorporates all of the rugged features of the Type 604, but is intended for those demanding applications where a dependable, high-strength, rotating seal is preferred. A narrow cross-section design enables the Type 609 to fit in the most popular pumps without expensive and time-consuming seal chamber modifications. This makes it the ideal seal for heat transfer, hydrocarbon, and other applications that commonly use pumps with limited seal chamber clearances.

Type 606

The Type 606 is a rotating seal with the same high-strength design features as the Type 609. In addition, the Type 606 incorporates drive lugs under the bellows that provide added rotational drive. This reduces torsional stress on the bellows, and makes the Type 606 the ideal seal for maximum reliability and extended life in viscous or thermosetting applications.



DOUBLE-PLY for High-Pressure Applications

The John Crane High-Temperature Series seals also come with DOUBLE-PLY bellows for high-pressure applications. For more information, contact John Crane Engineering.

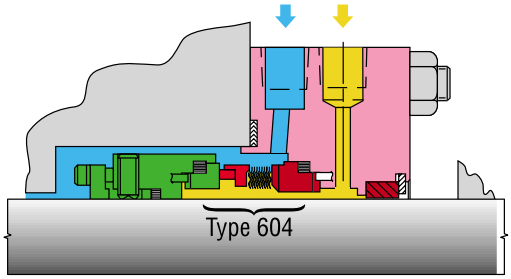
High-Temperature Bellows Assemblies

Performance Capabilities*

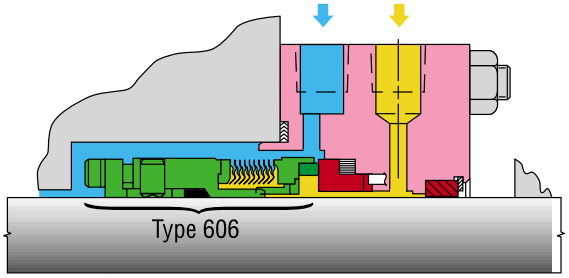
Pressure	Vacuum to 25 bar / 360 psi Vacuum to 69 bar / 1,000 psi *with DOUBLE-PLY bellows* *(see Basic Pressure Ratings curve on Product Specification sheet)*
Speed	Up to 25 m/s **/** 5,000 fpm for Types 606 and 609 Up to 50 m/s **/** 10,000 fpm for Type 604
Temperature	-75°C to +425°C / -100°F to +800°F *with Flexible Graphite static packing*

**For more detailed information, see product specification sheet reference S-604/606/609.*

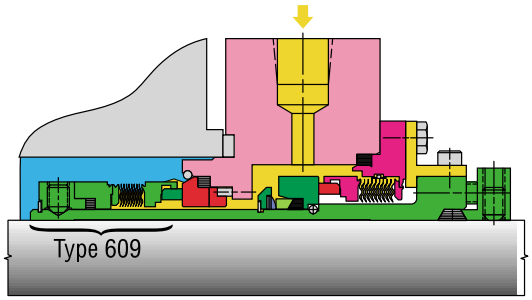
Type 604



Type 606



Type 609



Materials of Construction

Bellows	Heat-Treated AM350 (UNS S35000), Alloy 718 (UNS N07718)
Shell/Primary Ring	Alloy 42 (UNS K94100)
Adapter	Alloy 625 (UNS N06625) with Alloy 718 bellows 347 Stainless Steel (UNS S34700) with AM350 bellows
Faces	Carbon, Tungsten Carbide, Silicon Carbide
Static Seals	Flexible Graphite

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For your nearest John Crane facility, please contact one of the locations above.

If the products featured will be used in a potentially dangerous and/or hazardous process, your John Crane representative should be consulted prior to their selection and use.
In the interest of continuous development, John Crane Companies reserve the right to alter designs and specifications without prior notice. It is dangerous to smoke while handling products made from PTFE. Old and new PTFE products must not be incinerated.

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