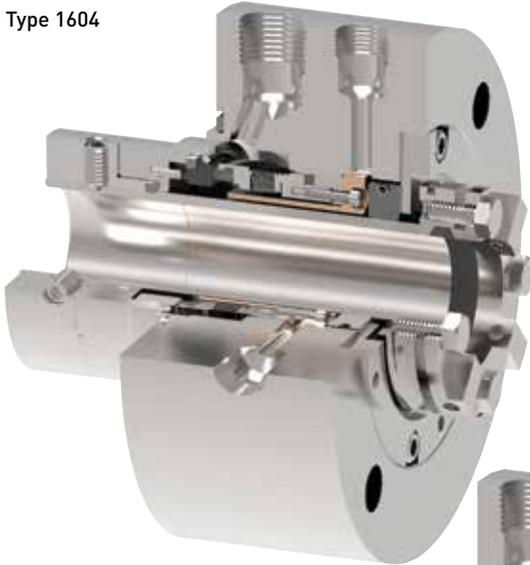
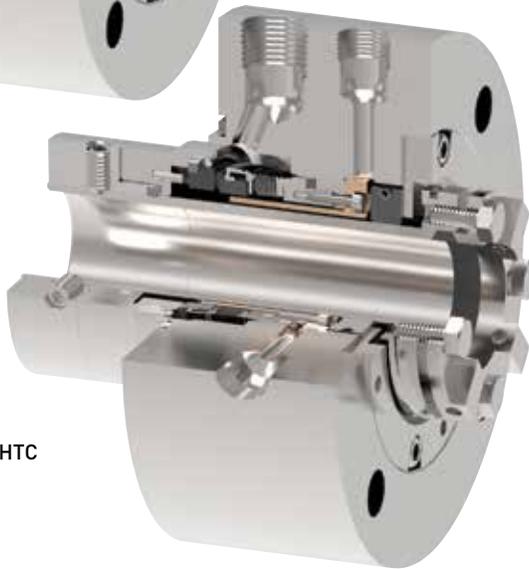


## METAL BELLOWS SEAL

Type 1604



Type 1604HTC



### DESIGN BENEFITS

- Proven performance  
API 682 qualified
- HTC technology for superior face  
stability (Type 1604HTC)
- Steam guide for effective mitigation  
of coking hot hydrocarbons
- Segmented spring-loaded throttle  
bushing for effective containment
- Retained mating ring available  
for vacuum service

## PRODUCT DESCRIPTION

- ■ ■ ■ Type 1604 and 1604HTC single, stationary API 682 Type C, Arrangement 1 cartridge seals provide a reliable means of sealing fluids in harsh high temperature corrosive environments.

The Type 1604HTC incorporates John Crane patented HTC technology which provides exceptional seal face stability at elevated temperatures. The Type 1604 is the general-purpose stationary bellows API 682 single Type C, Arrangement 1 cartridge assembly which uses a standard Type 604 stationary seal head assembly.

The Type 1604 and 1604HTC seals are normally supported with API Plan 62 steam quench to help eliminate coking in hot hydrocarbon applications and are capable of handling high shaft speeds and high shaft-to-seal chamber misalignment.



Your Name  
Is How We Make Ours

# TYPE 1604 AND 1604HTC

## METAL BELLOWS SEAL

### HTC Technology and Excellent Corrosion Resistance

The 1604HTC seal provides an effective solution in sealing corrosive fluids at elevated temperatures by using an all-Inconel® 604HTC seal head assembly and unique face seal technology that provides exceptional stability across a wide range of pressure/temperature conditions. The HTC has proven to be a superior design for high temperature corrosive applications up to 800°F/425°C.

### Corrosion Resistance

The Type 1604HTC is ideally suited for fluids that contain organic acids (naphthenic acids) and sulfur compounds that attack most other alloys in aggressive, hot, sour crude environments, retaining excellent mechanical properties over a wide temperature range. Alloy 718 is utilized

for the bellows plates and unique shell design and is the highest strength bellows material available.

The Type 1604 cartridge seal with standard Alloy 42 shell and Inconel or AM350 bellows can be utilized in corrosive environments that are not typically subject to naphthenic acid corrosion.

### Retained Mating Ring for Vacuum Service and Steam Guide

The Types 1604 and 1604HTC can be provided with a retained mating ring that safely accommodates vacuum service. In addition, the seals incorporate a steam guide (steam deflector or anti-coking baffle) as standard which efficiently directs steam to the area where coke would tend to form and routes the steam to carry material away from the seal and seal faces.

### Segmented Spring-loaded carbon throttle bushing

This inherently safe design provides a degree of process fluid containment from leakage migrating past the primary seal interface and contains the steam quench fluid (API Plan 62).

### Stationary Design

The Type 1604 and 1604HTC cartridge seals have a stationary design that accommodates high shaft-to-seal chamber misalignment and higher shaft speeds.

### Performance Capabilities

Temperature	Pressure	Speed
-100° to 800°F/-75° to 425°C	Single-ply: Vacuum to 300 psig/20 barg <i>(Consult basic pressure rating curves.)</i>	Up to 10,000 fpm/50 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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