

**BBT/BBT-D Two Stage Radially Split
Between Bearings Process Pump
API 610, 9th Edition (ISO 13709)**

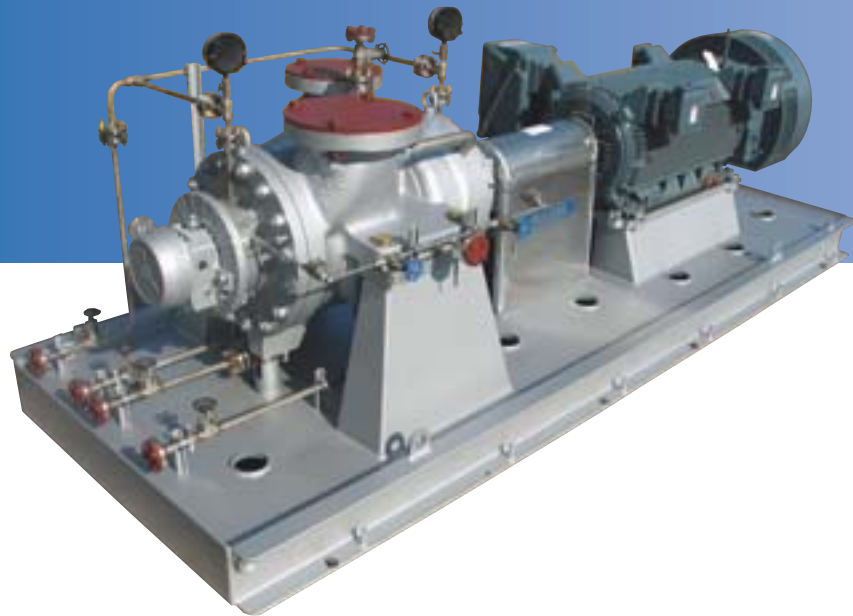


Sulzer Pumps

Sulzer Pumps combines more than 135 years of experience in pump development and manufacturing with a deep commitment to fully understand the needs of our customers.

Our detailed process and application knowledge has allowed us to develop innovative pumping solutions for our focus segments including tailor made systems if required. Our active research & development supports the customer oriented approach.

Sulzer Pumps has sales and service facilities in all the major markets of the world to provide fast and flexible response and support.



Extensive Product Range



Sulzer Pumps has a long history of providing innovative pumping solutions to business partners in the following industries:

- **Oil & Gas**
- **Hydrocarbon Processing**
- **Pulp and Paper**
- **Power Generation**
- **Food, Metals & Fertilizers**
- **Water and Wastewater**

Hydrocarbon Processing

Hydrocarbon extraction plants, refineries, petrochemical plants and gas plants operate sophisticated production processes requiring reliable pumping solutions. Continuous product innovations such as our new line of hermetically sealed, horizontal and vertical process pumps, are helping the industry improve its operational efficiency.

Sulzer Pumps, with its high-quality product line, is known for being able to consistently meet these expectations. All our pumps are engineered in line with the latest standards issued by API, ISO and ANSI in order to ensure reliable and safe operation at your site. The Hydrocarbon Processing Industry is one of the core business segments within Sulzer Pumps. Following industry practice, we further subdivide the segment into:

- Synfuels
- Refining
- Gas Processing
- Petrochemicals

The market and therefore our customers require specialty applications for each subsegment.

Product Development

The next generation of Sulzer's BBT and BBT-D (double suction) pumps has been optimized in terms of material technology, shaft sealing, hydraulics, and bearings. It is a combination of the CMA, CJDB, HZZ and CD2 product features and performances - some dating back over 20 years. It has evolved to meet or exceed the requirements of API 610, 9th edition (ISO 13709). This means greater availability and reliability at low operating cost.



Heavy Duty Applications

The BBT and BBT-D pumps are designed for heavy duty, high pressure and high temperature applications in industrial and HPI services.

Applications range from light hydrocarbons at low temperatures, to corrosive fluids, coker furnace charge, vacuum bottoms and other services at high temperatures.

- Refinery
- Petrochemical plants
- Gas processing
- Coal processing
- Offshore installation

For low NPSH applications, the BBT-D with its double suction first stage impeller is utilized. A variety of hydraulics is available in each size to suit particular applications.

Design

Pumps are in full compliance with API 610, 9th edition (ISO 13709). For high pressure applications, these pump types are designed as between bearings, horizontal two stage, and have a radially split case construction. Centerline mounting is utilized to minimize thermally induced misalignment. Fully confined gaskets are furnished as required by API 610. Suction and discharge nozzles are furnished in accordance with ANSI or DIN Standards and are configured in the top/top orientation.

Seal chambers comply with API 682. Seal chamber pressure is equalized by use of an internal balance line. This ensures that the seals at each end of the pump can be used interchangeably. Cartridge type single, dual pressurized and dual unpressurized seals are used as required to suit the application. All API 682 Seal piping plans are available.

As required by API 610 the rotor design is "classically stiff" with dry critical speed more than 120% above design speed. Shaft deflections at seal faces and wear rings are well within API 610 limits.

Impellers are dynamically balanced, enclosed for high efficiency and positively keyed and locked to the shaft. The impellers and casing are equipped with replaceable wear rings and bushings.

Baseplates comply with API 610. Optional baseplates that are designed to accept two times API 610 nozzle loads, non-grouted installation, pre-grouted for quick installation, or offshore 3 point trundle mount, are common place.

Materials

API 610 material codes S-4, S-5, S-6, C-6, A-8, D-1, D-2 and 317L are standard.

Others are readily available.

Design Features and Benefits

Casing

- Extra heavy mounting feet for minimum distortion under 2 times API nozzle loads
- 3 mm (1/8") corrosion allowance as required by API 610
- Radially split for high pressure services
- Longer life even with severe service requirements

Stiff shaft design

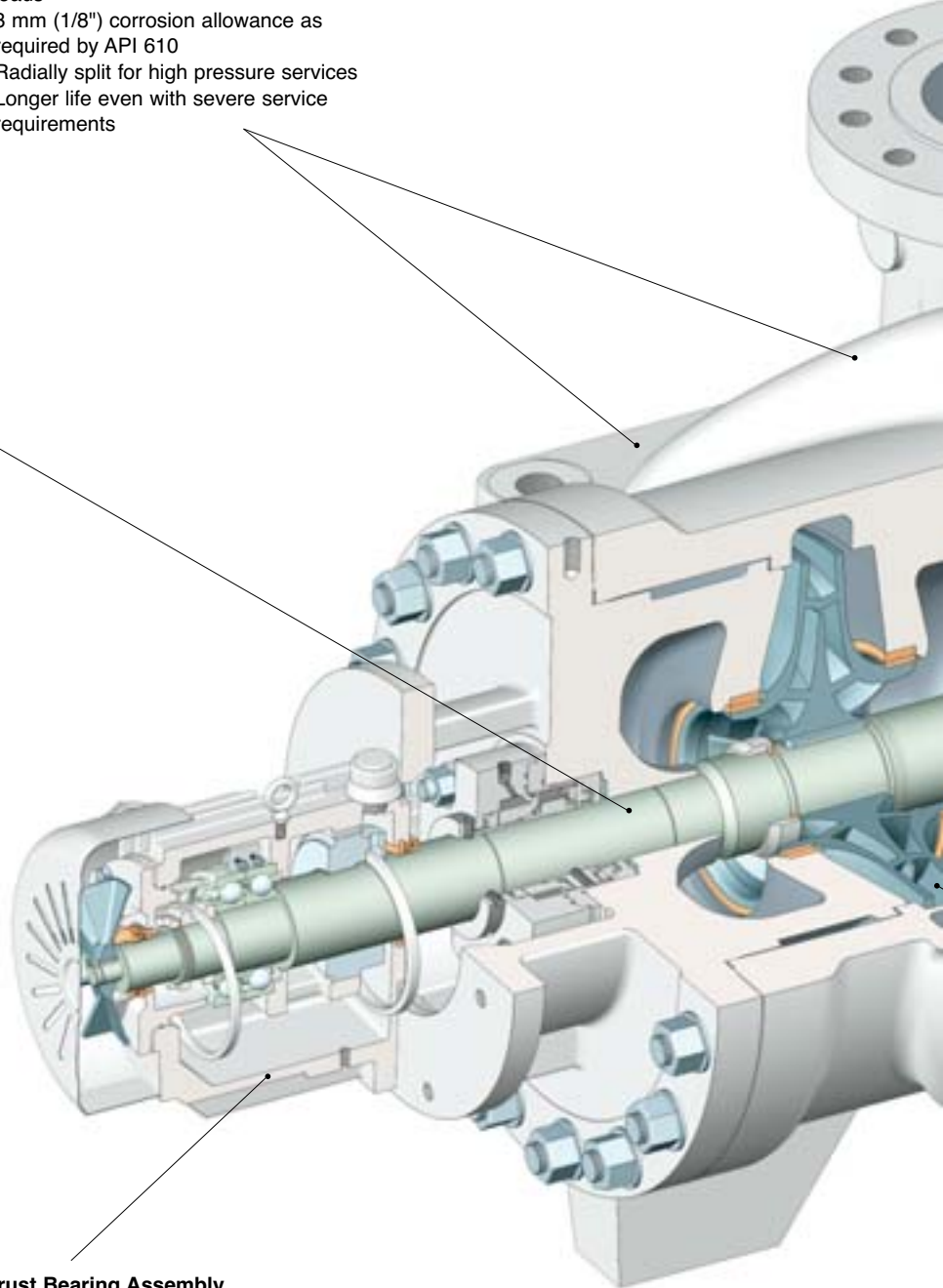
- Classically stiff shaft design required by API 610
- Greater mechanical seal life
- Less wear due to lower deflection
- Reliable rotor dynamic performance
- Low vibration

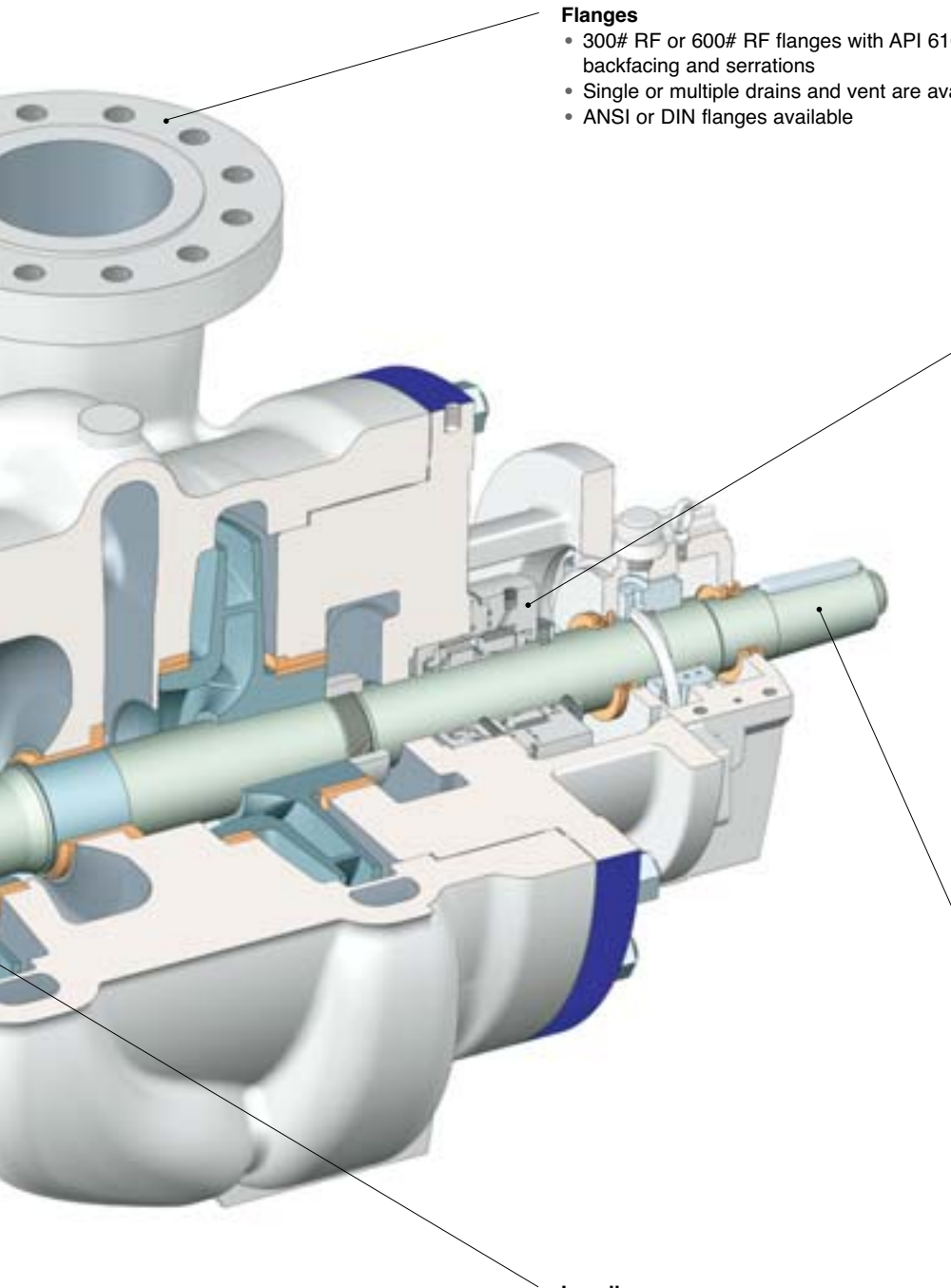
Hydraulics

- Opposed volutes on smaller sizes for radial load balance
- Dual volute on larger sizes
- Opposed impellers selected to balance axial loads
- Variety of performances in each size
- Provide efficient, reliable hydraulic performance in wide range of service conditions

Thrust Bearing Assembly

- 40° angular contact bearings
- Ring oil lubrication
- INPRO™ shaft seals
- Finned carbon steel housing
- Low bearing oil and bearing temperatures
- Ball/ball, sleeve/ball and sleeve/pivot shoe bearings are all available as required to suit the pump size and application





Flanges

- 300# RF or 600# RF flanges with API 610 required backfacing and serrations
- Single or multiple drains and vent are available
- ANSI or DIN flanges available

API 682 Seal Chambers

- Outside driven, API 682 cartridge type mechanical seal
- Single, dual pressurized and dual unpressurized seals as required to meet the application
- Seal chambers are pressure balanced to equalize seal chamber pressure for interchangeable seals
- Registered fit on seal gland plates assures alignment
- All API 682 seal piping plans available to improve seal life

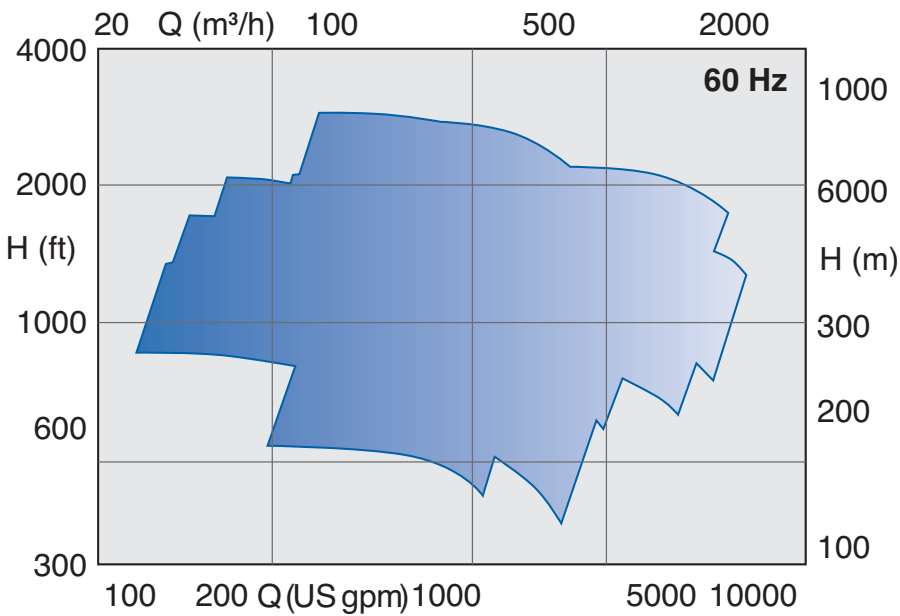
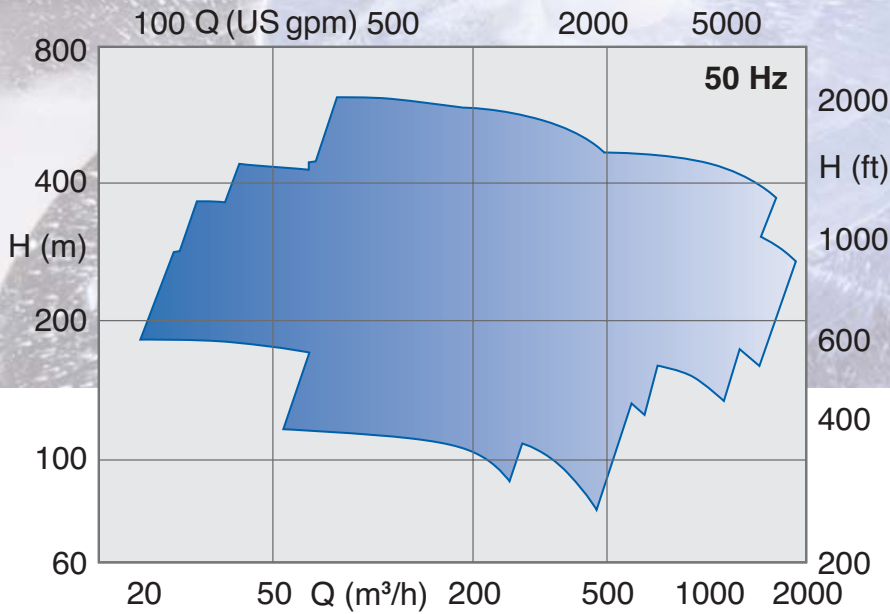
Tapered Shaft

- Tapered shaft is standard for ease of seal maintenance
- Hydraulic fit couplings and shaft drilling is optional

Impellers

- Enclosed and dynamically balanced for improved efficiency and reliability
- Standard design limited to 11,000 Nss
- Optional design on some sizes for improved suction performance
- Double suction (BBT-D) for very low NPSH
- Positively retained

Performance Range



Operating Data

	BBT/BBT-D	
Pump Sizes	50mm to 300mm	2 to 12 inches
Capacities	up to 2,000 m ³ /h	up to 10,000 usgpm
Heads	up to 740 m	up to 2,400 feet
Pressures	up to 100 bar	up to 1,480 psi
Temperatures	up to +425°C	up to +800°F



Your Global Partner

Sulzer operates over 20 test facilities world-wide. Our facilities are suitable for horizontal or vertical, open pit, high flow rate/high energy and multiphase testing. We have the ability to perform tests at 50 & 60Hz and, depending on the site, are able to operate using diesel engines, gas engines and gas turbines in addition to conventional electric motors.

A specialty of Sulzer is the ability to fully string test large high-energy pumps to prove the pump package as a whole to our customers. This ability is particularly important for critical offshore applications where on site correction is both expensive and time consuming.

Customer Support Service

Through our worldwide network of over 50 service centers we provide our customers with a full range of services for pumps and other associated equipment. Local 24 hours a day, 7 days a week customer service backed up by our service groups' global solutions, concept development and support team.

Applying our unique combination of experience and expertise, we are consistently able to deliver high quality, value added rotating equipment support. Furthermore, we can also design, deliver and fit high integrity components for non-Sulzer machinery using our in-house re-engineering specialists.

Sulzer Customer Alliances

Sulzer Pumps' business strategy is simply to work closely with our partners to gain an understanding of their requirements and expectations, and provide products and services which meet those expectations better than anyone else. We can look back on 10 years of alliance experience.

Our customer alliance agreements are key to our strategy and represent a mutual long term commitment for the purpose of achieving world class pumping system life cycle cost by maximizing the effectiveness of our Partner's and Sulzer's resources. Sulzer currently has agreements with many of the major oil companies focusing on solving problems and simplifying work processes.

- Divisional Headquarters
- Manufacturing facilities
- Customer Support Service Centre
- Sales Office





Check our worldwide offices at
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