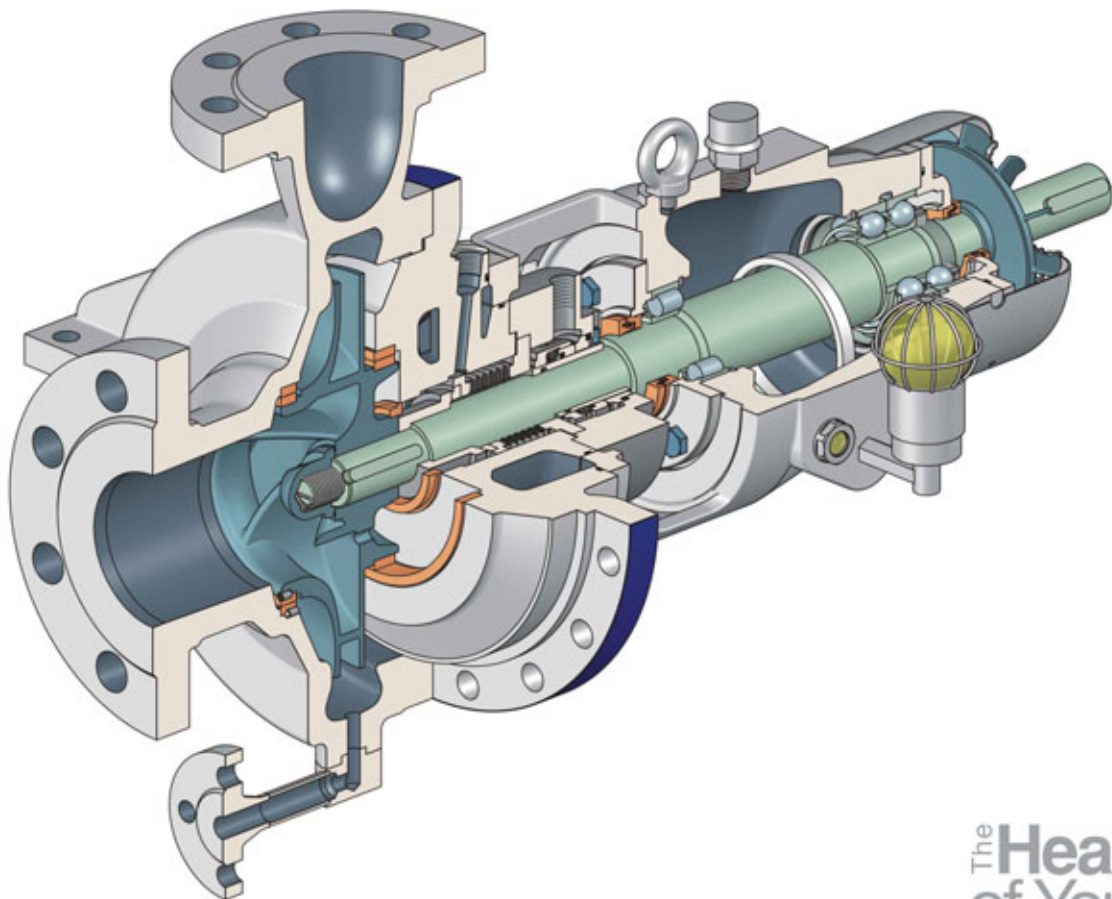


ZE/ZF Process Pump API 610



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.



Innovation, Expertise and Research

Innovation

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

**Know-how
that provides
greater
performance
and savings**

Research

Research and Development have always received top priority at Sulzer Pumps. Basic research focuses on hydraulics, cavitation, erosion, corrosion and mechanical design, which is then applied to advance product development. Our engineers work closely with customers all over the world on the practical implementation of innovative ideas. At any point, they can call upon the diverse expertise of the many research specialists working in our laboratories. Successful research and development activities require continuous investment. Beyond immediate job results, this benefits our customers by ensuring that they have a stable business partner at the leading edge of pump technology.

**Engineering
with ideas
– a fresh
approach
to identify
areas of
improvement**

**Staying
focused,
meeting
challenges,
making a
difference**

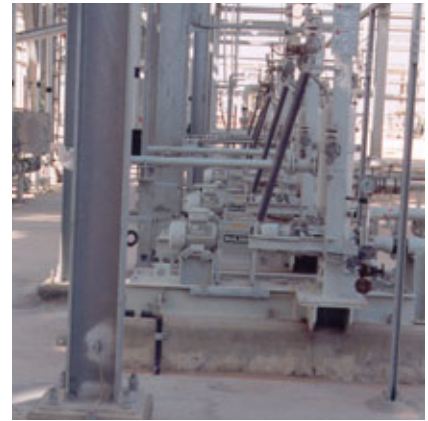
Expertise

Sulzer Pumps' innovative technological solutions and equipment support the sophisticated processes which convert crude oil into transportation fuel and feed stocks for the petrochemical industry.

Sulzer Pumps has always been at the forefront of pre-engineered and engineered pump designs, using the widest range of materials to produce safe and reliable equipment for handling process liquids at a full range of pressures and temperatures and at the same time taking full consideration of the environmental impact.

Product Development

The ZE/ZF process pump range is an example of innovative product development. Compliance with the requirements of API 610 and expertise gained over many years of operational experience has resulted in this Sulzer process pump. Optimized in terms of material technology and design, all requirements for heavy duty pumps can be fulfilled. More over the Z range modular construction system offers wide ranging interchangeability of components such as shafts, casing covers, wear rings, shaft seals and bearings among the various pump ranges.



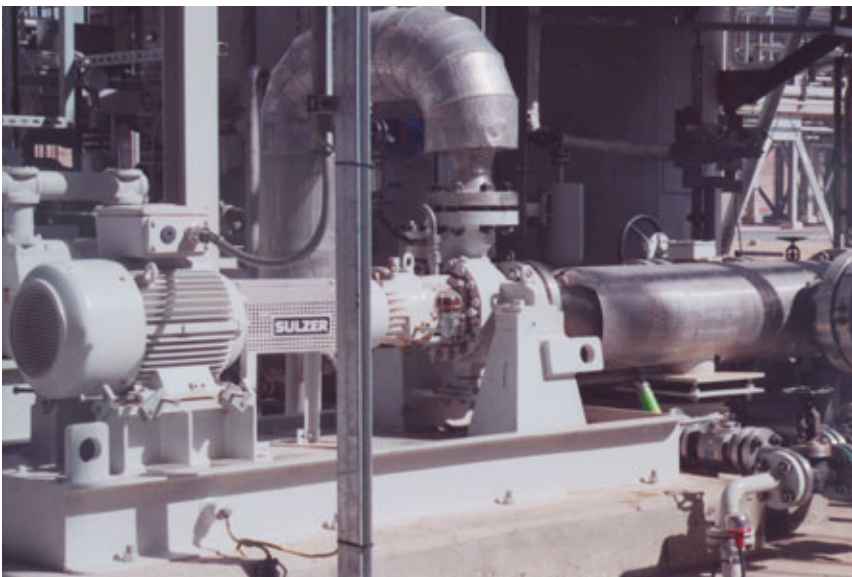
Design and Application Range

Sulzer Pumps provides a broad range of API centrifugal pumps for the demanding applications of the Hydrocarbon Processing Industry. The Z range pump is a horizontal, single stage, radially split heavy duty centerline mounted process pump with single flow closed radial impeller. Axial suction branch, vertical radial discharge branch with flanges machined to meet ANSI or DIN standards. Selection is available with two casing designs, ZE or ZF with wall

thickness optimized to cover the various pressure ranges. Fully confined gasket between volute casing, casing cover and seal cover. Shaft sealing chamber per ISO 21049 (API 682), specified for the installation of single and double mechanical seals, cartridge design is standard. Connections for flushing, cooling, heating, quench and buffer fluids. Piping as per API plans. Rugged fabricated steel API standard baseplate with drain pan and lifting lugs.

The pumps are designed for the delivery of most fluids found in refinery processes. The application ranges from liquid gases at low temperatures through light and heavy fuels up to gas oil containing solids and distillation residues at the highest temperatures.

ZE/ZF pumps can also be employed as turbines for the recovery of energy.



Design Features and Benefits

Casing Seal

- Confined controlled compression gasket with metal to metal rabbet fit

Flanges

- Backfaced ANSI B16.5 300#R. F./600#R.F. flanges with required serrations
- DIN and DIN-EN flanges available

Pressure boundary components

- Self venting, centerline discharge
- Double volutes for larger sizes

Casing cover

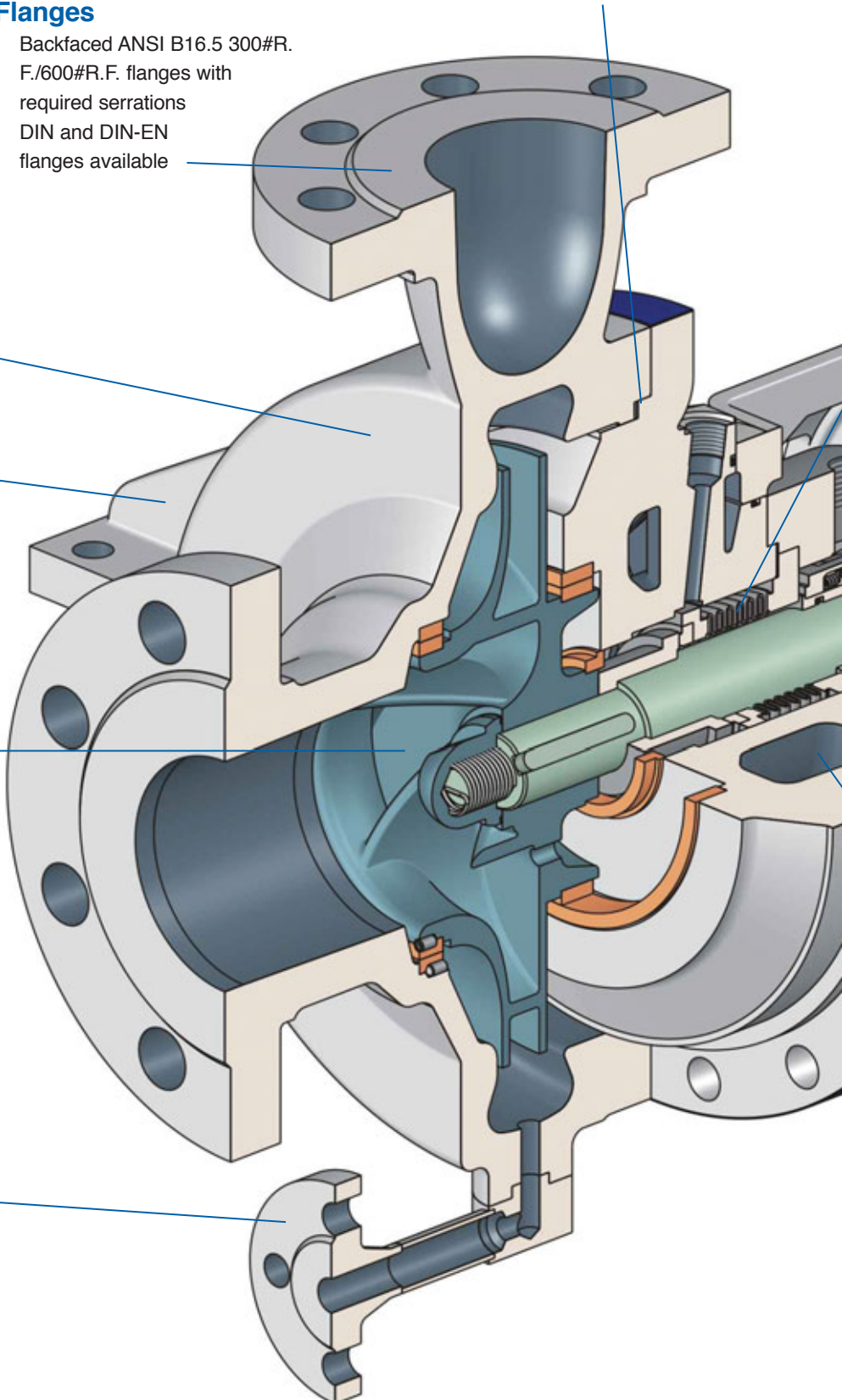
- Casing mounting feet and base-plate designed to meet API 610 nozzle loads
- 2 x API nozzle load option available

Impeller

- Enclosed impeller provided for lower NPSHr
- Dynamically balanced impeller
- Wear rings and balance holes optimized to maximize seal and bearing life

Flanged Drain

- Flanged drains are standard
- Gussets or bracing available to suit customer specification



Cartridge shaft seal

- ISO 21049 (API 682) seal chambers and flush piping for improved seal life
- Single or dual cartridge type mechanical seals available to meet all process requirements

High duty radial and thrust bearings

- Thrust bearings are back-to-back, 7300 series, 40° angular contact with steel cages (machined brass cages optional)
- For heavy duty applications double taper roller bearings are available
- Radial bearings are cylinder roller bearings, ball bearings are optional

Coupling

- Flexible metal spacer coupling available

Bearing housing

- 6 sizes of bearing housings cover the entire product range for maximum interchangeability
- Low noise fan added for high ambient or operating temperatures
- Oil sump heater available for low ambient conditions
- Optional oil mist lubrication available
- Carbon steel bearing housing finned for added heat dissipation and API 610 compliance

Oil ring

- Mixes the oil in the oil sump
- Prevents partially overheating

Instrumentation

- A variety of instrumentation is available for monitoring such as
 - pressure
 - temperature
 - vibration

Seals

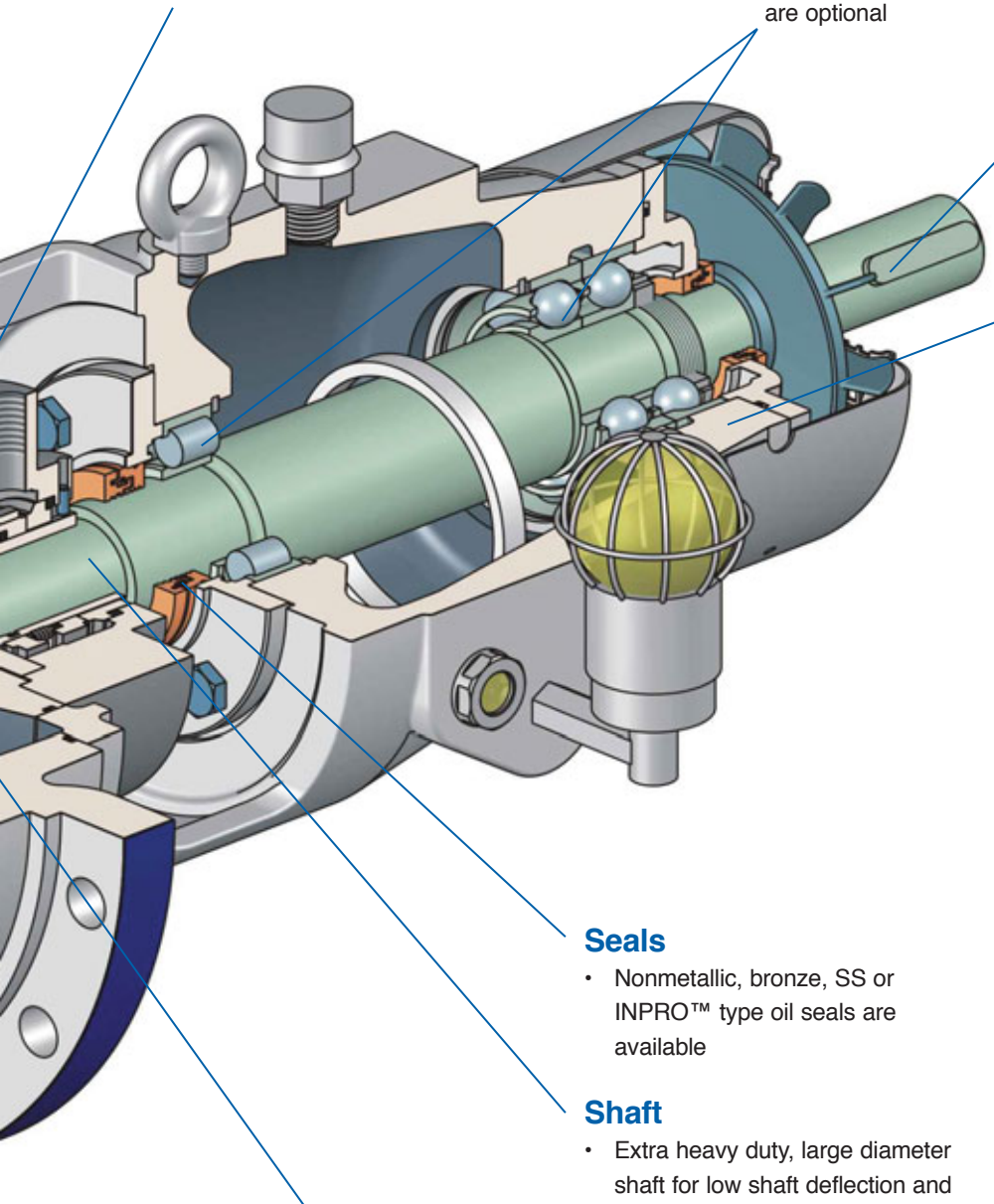
- Nonmetallic, bronze, SS or INPRO™ type oil seals are available

Shaft

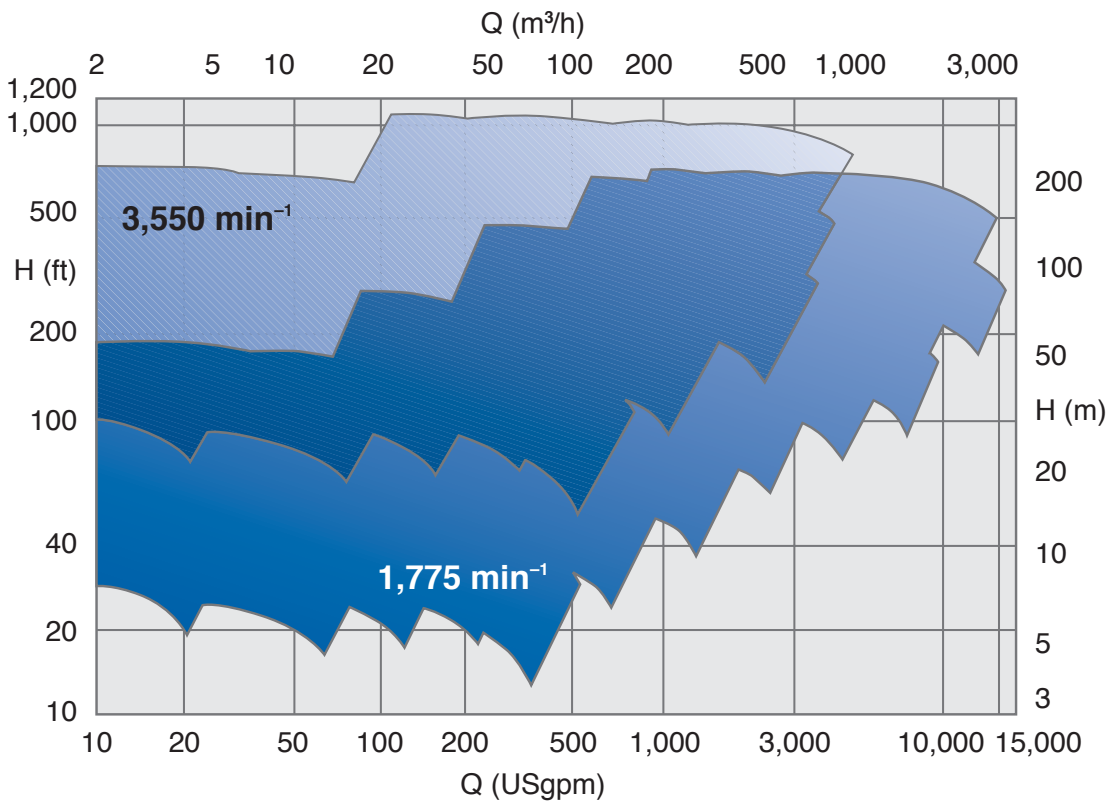
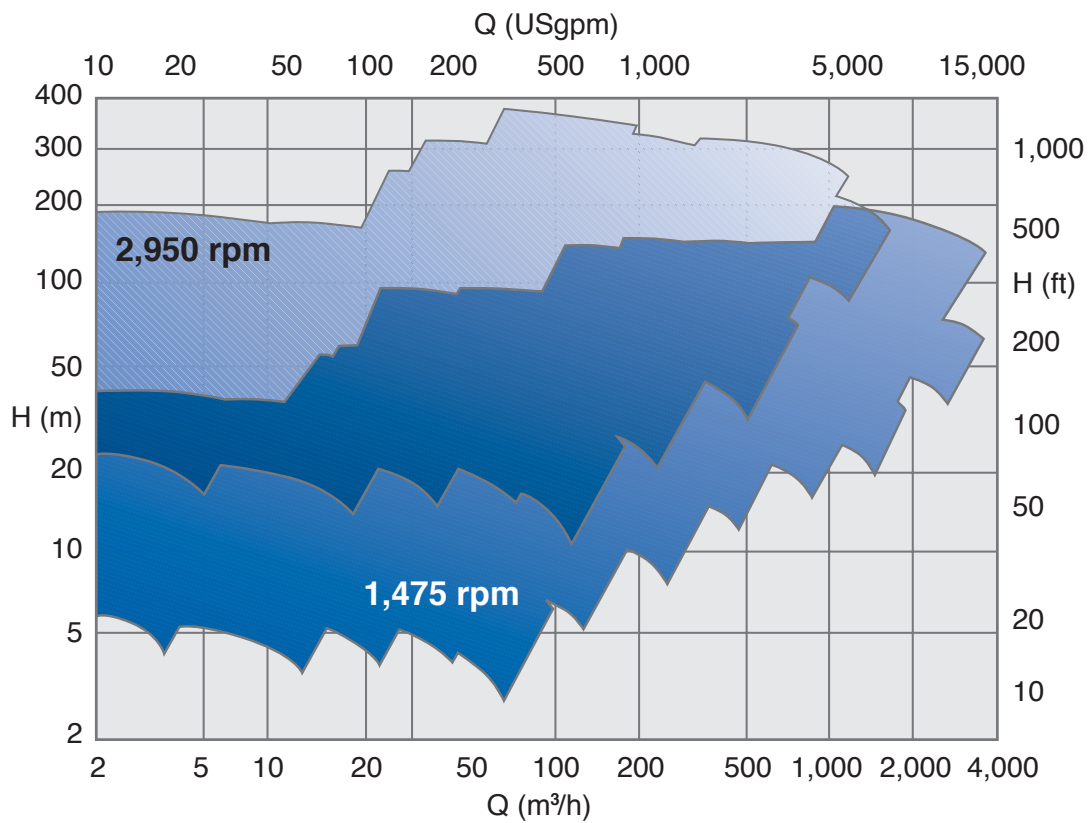
- Extra heavy duty, large diameter shaft for low shaft deflection and long life for bearing and mechanical seal

Cooling/heating chambers

- Cooling/heating chambers are standard
- Chamber easy to clean



Performance Range



Product Development

Inducer

In case of very low NPSHa on site pumps can be equipped with an inducer. The inducer is positioned in front of the impeller and is fixed to the shaft. Combining the inducer with a standard centrifugal impeller reduces the required NPSH without sacrificing efficiency. The inducer is a proven component for pumps and offers new opportunities for the system designer as well as for the plant operator regarding the system concept to increase the operating safety and to lower the life cycle cost.



Top suction nozzle configuration

This option is available for ease of piping configuration by reducing space requirements and reducing installation cost. The suction branch is welded onto the casing and is additionally supported.



Operating Data

	ZE/ZF	
Pump sizes	25 mm to 400 mm	1 to 16 inches
Capacities	up to 2,600 m ³ /h	up to 11,440 USgpm
Heads	up to 300 m	up 1,000 feet
Pressures	up to 100 bar	up to 1,450 psi
Temperatures	up to 425° C	up to 800° F

Standardized Materials of construction:

API 610 Material Classes: S-1, S-6, C-6, A-8, D-1 and D-2.



Check our worldwide offices at
www.sulzerpumps.com
E-mail: hpi.pumps@sulzer.com