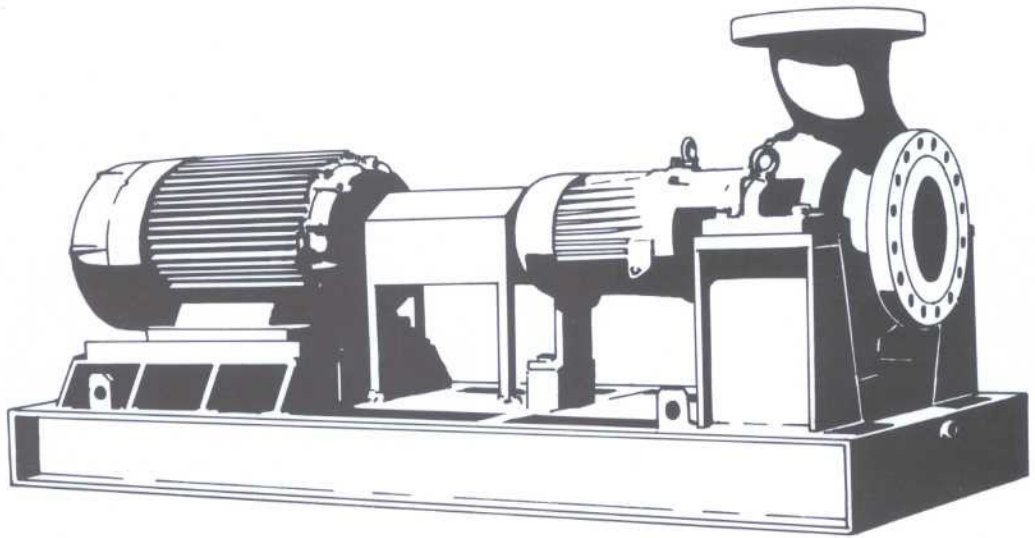


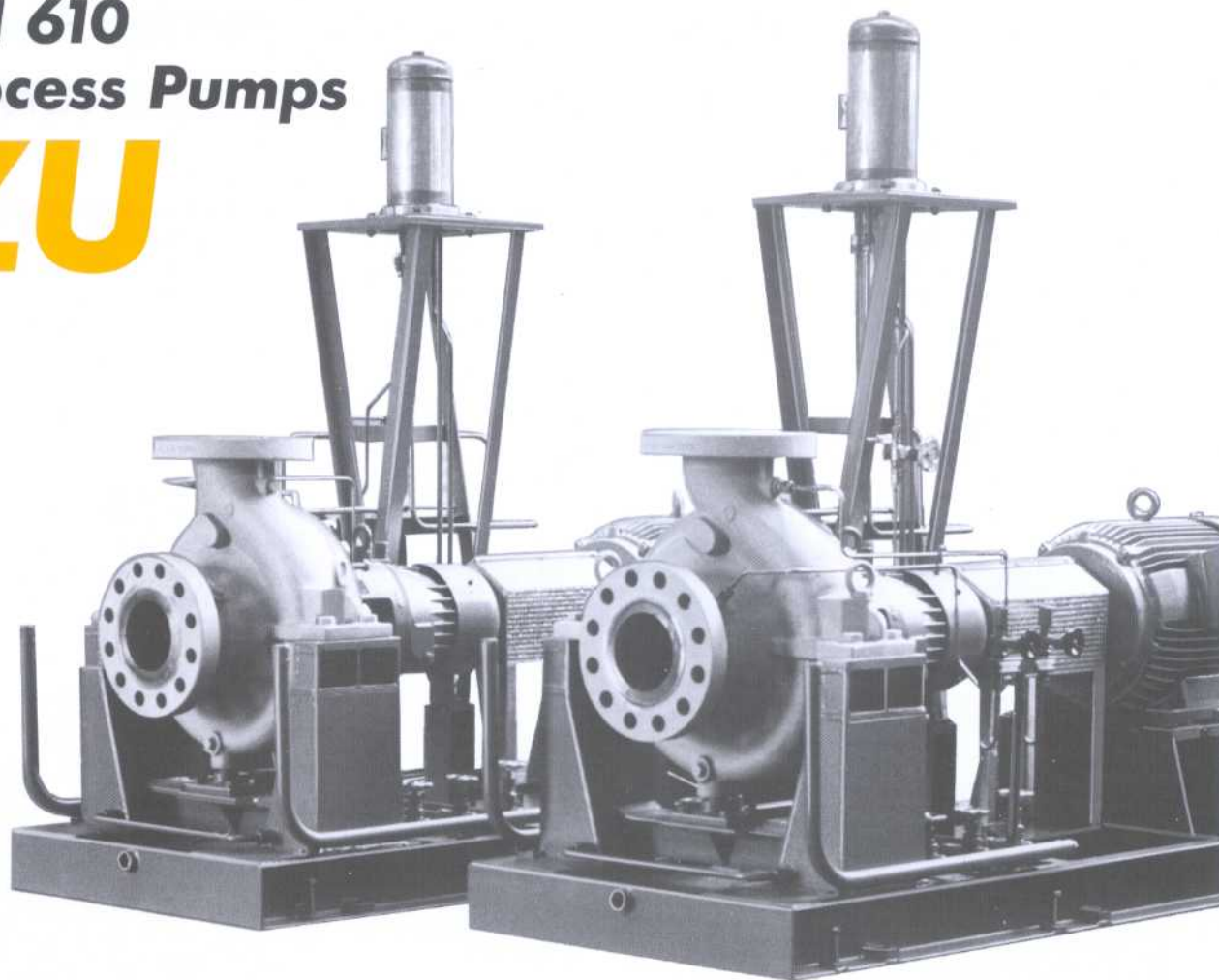
SULZER PUMPS

API 610 PROCESS PUMPS



ZU

API 610 Process Pumps ZU



Centrifugal pumps in process design, series ZU, according to API 610 or VDMA 24 297, requirement stage A (heavy duty).

Application

For pumping clean or slightly polluted, cold or hot, chemically neutral or aggressive liquids

- in petrochemical plants
- in coal processing processes
- in general processing industry
- in energy generating plants
- in medium-sized and large heating and air-conditioning plants
- in environmental protection engineering

Operating data

Sizes		1.5" up to 16"
Capacities	Q	up to 2200 m ³ /h 9 680 U.S.gpm
Heads	H	up to 220 m, 720 ft
Operating pressures	p	up to 150 bar, 2175 psi
Operating temperatures	t	-80 up to +450 °C -112 up to +842 °F

Design

Single-stage, horizontal, radially split volute casing pumps with feet on centreline and single-entry radial impeller, end suction branch, radially upwards discharge branch. Casing cover with cooling or heating connections, shaft sealing by mechanical seals of any design (single- or double-working), connections for cooling, flushing or sealing liquid. Standardized pipework according to API plans. Cooling of baseplate pedestal possible. Motor adjustment device for drivers above 11 kW. Flanges possible according to DIN or ANSI. Same nominal pressure for suction and discharge flanges. Direction of rotation clockwise seen from driven end.

Materials

Casing parts chrome steel. Impellers cast iron or chrome steel. Shaft chrome or duplex steel.

ZU

Modern, matured pump technology – reliable, durable, economical –

Replaceable stationary and rotating wear rings

- Secured by radial pins
- API gap clearances

Fully confined casing seal

- Suitably pressed by metal seat
- Safe bolt pre-tensioning

Heavy duty shaft

- Big shaft diameter for minimal shaft deflection and maximum moments
- Completely sealed against the fluid

Single piece, heavy-duty bearing bracket

- Oil-lubricated antifriction bearings
- Stable and precise shaft support
- Only few parts required

Automatic lubrication and oil level regulation

- Few bearing checks

Double volute

- (from DN 80 on)
- Only slight radial thrust

Casing drain

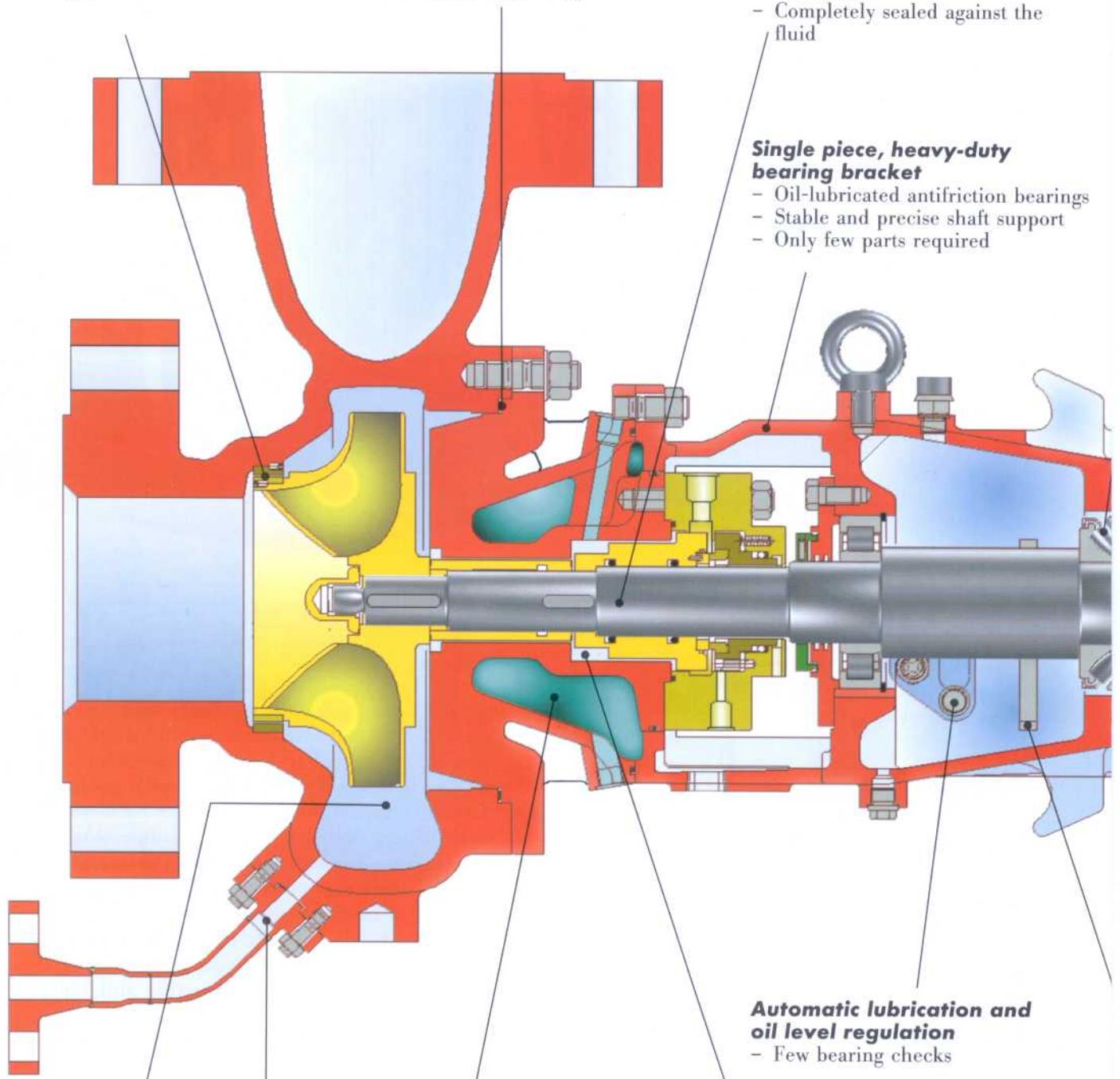
- Drain valve possible
- Plug possible

Casing cover with heat barrier

- Generally equipped for cooling
- Large throttle distances between pump chamber and shaft sealing chamber (pre-cooling distance)
- Cooling chambers easily accessible

Spacious sealing chamber

- Universal application of all types of mechanical seals and seal arrangements (single, double or tandem mechanical seals)

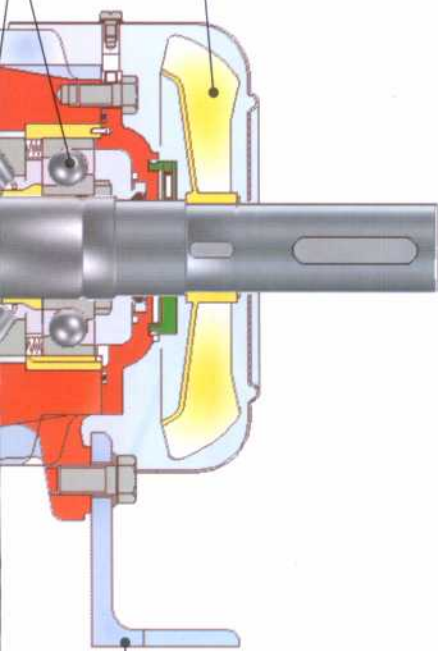


Heavy duty thrust bearing

- Thrust spherical roller bearing, spring pre-loaded
- For highest suction pressures
- Service life (L10) as per API exceeded by far

Fan cooling is standard

- No cooling water lines
- No cooling water consumption

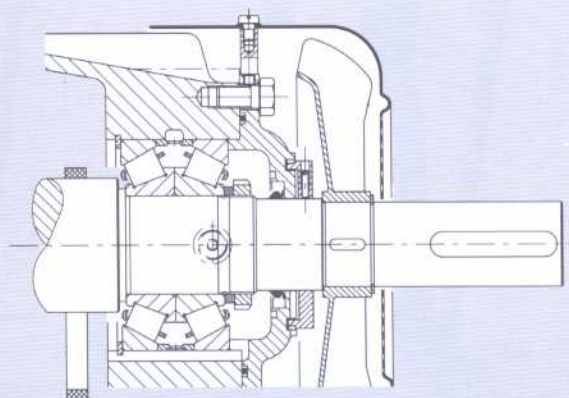


Back support foot

- Allows shaft with only minimum staggering, also in case of high external forces

Lubricating ring

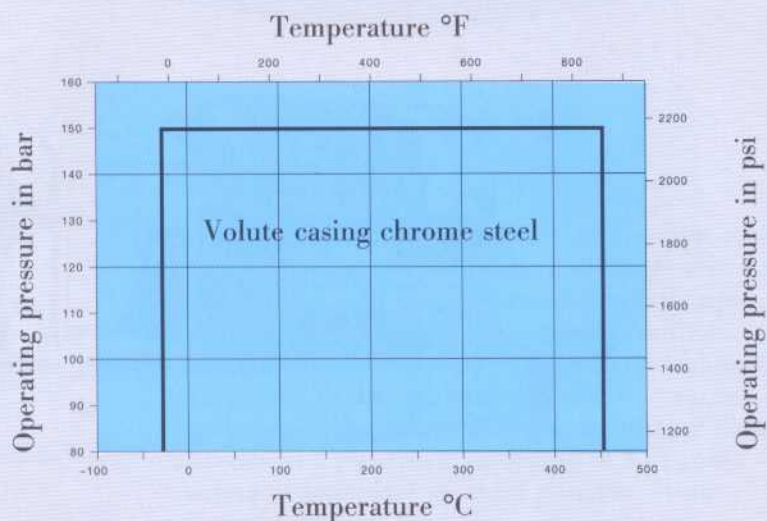
- Preventing partial oil heating in the bearing area
- Better mixing of the lubrication oil



Tapered roller thrust bearing

- Thrust bearing for pumps with the bearing bracket sizes 2 and 3
- Alternatively for bearing bracket sizes 4 to 7, if suction pressures are low
- Pre-set, paired bearing unit

Pressure-Temperature Diagram

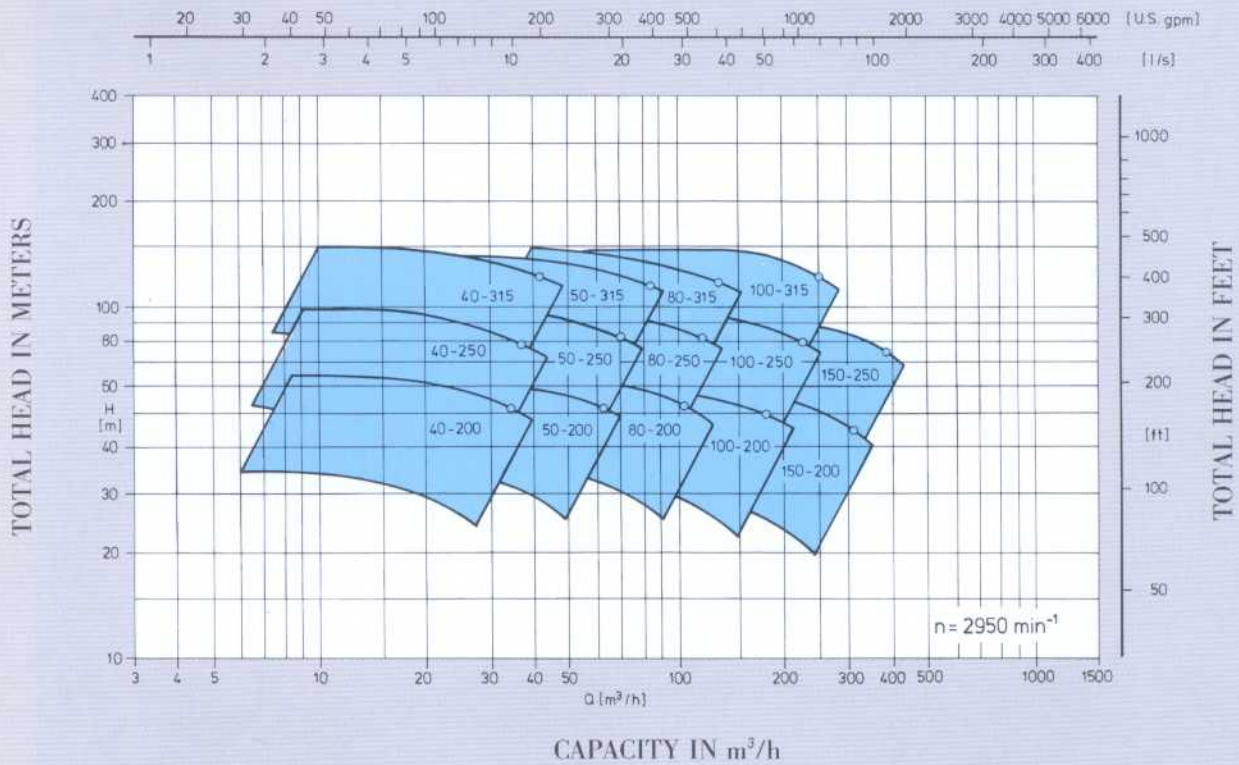


Test pressure = 1,5 x Operating pressure

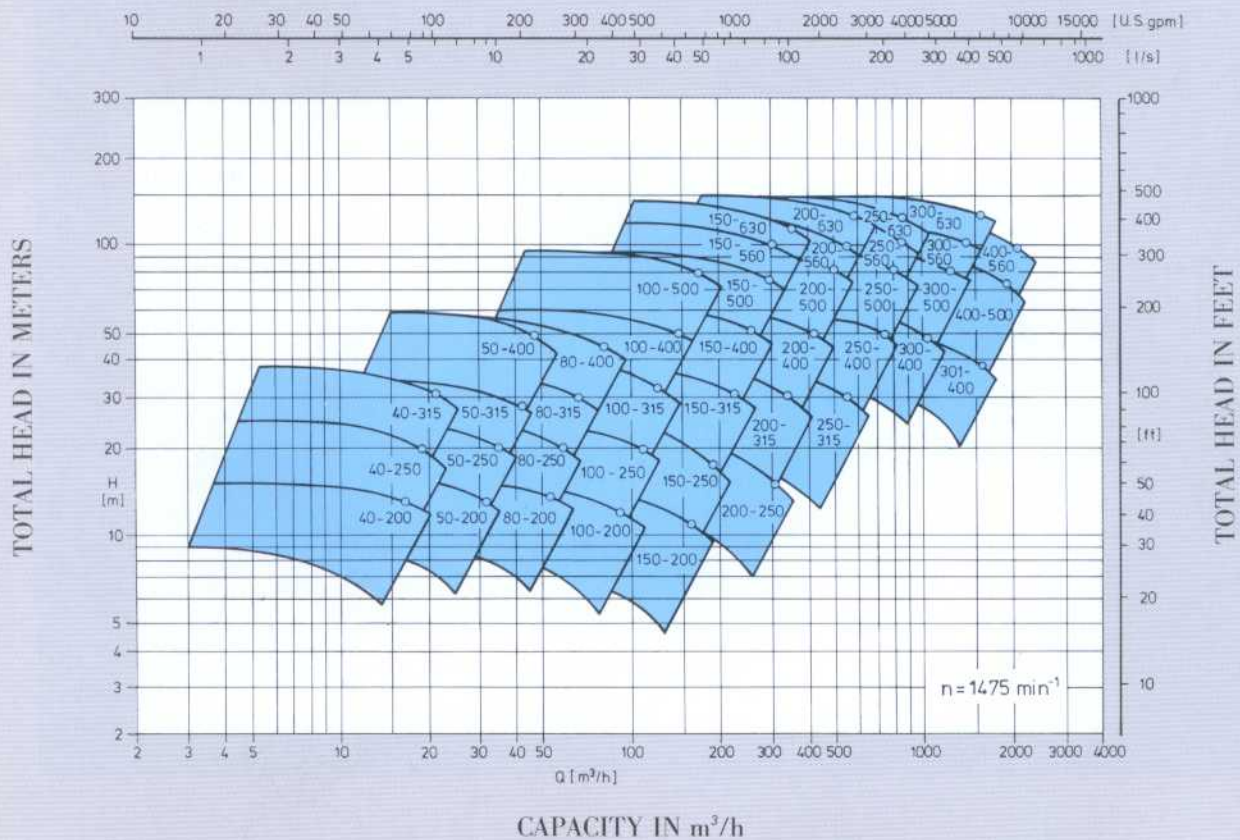
Hydraulic Performance Range

50 Hz

CAPACITY IN U.S. GPM

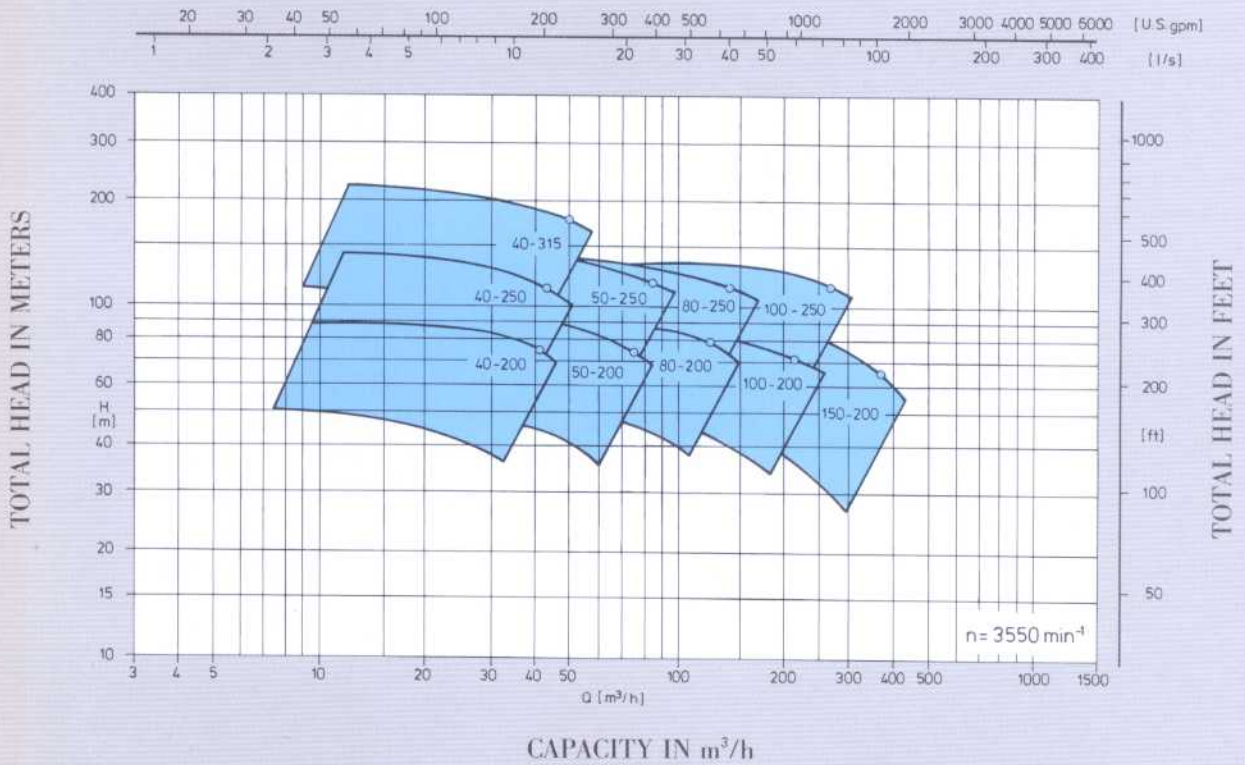


CAPACITY IN U.S. GPM

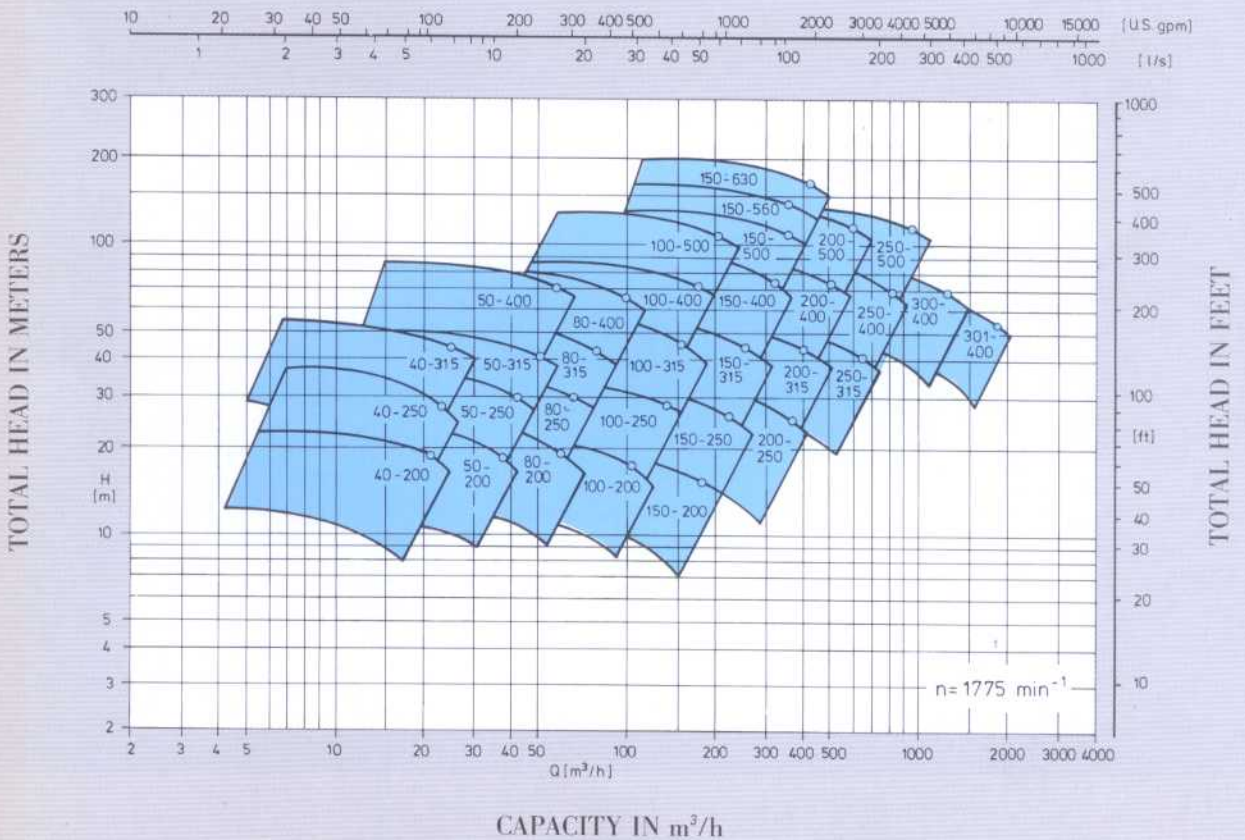


60 Hz

CAPACITY IN U.S. GPM



CAPACITY IN U.S. GPM



ZU Design Characteristics – Your Benefit

Feature	Advantage	Benefit
<p>Process design API 610</p> <p>Assembly unit</p> <p>Coupling with spacer</p>	<p>Design and maintenance standard complying with process industry is ensured</p> <p>Rapid disassembly or assembly</p> <p>Disassembly without removal of pipework and driver</p>	<p>High reliability and interchangeability</p> <p>Short shut-downs</p> <p>Low maintenance costs</p>
<p>Interchangeable modular elements for various sizes</p>	<p>Only 7 bearing brackets for 41 sizes</p> <p>Same hydraulics (impellers) and bearing brackets as for heavy duty series ZA/ZE and ZF</p>	<p>Few components, economic spare part stockkeeping, low stockkeeping costs</p>
<p>Double volute casing (above 3" branch size)</p> <p>Large branches</p> <p>Increased corrosion allowance</p> <p>Confined casing gasket</p>	<p>Small radial thrust, small shaft deflection (<0.05 mm) in the area of the shaft seal</p> <p>Low branch velocity, low noise level due to additional primary measures at impeller, long rated life of casings, casing joint cannot break</p>	<p>Long rated life of antifriction bearings, long rated life of shaft seals, short shut-downs, low maintenance costs</p> <p>Higher efficiency, low operating costs, low costs for pipework support and sound protection, low spare part and repair costs, high reliability</p>
<p>Impeller</p> <p>Closed impeller with curved vanes</p> <p>Secondary impeller (inducer) possible</p>	<p>Optimum compliance with various operating conditions, high efficiencies, low NPSHR values</p> <p>Extremely low NPSHR values</p> <p>Small suction heads required</p>	<p>High reliability of pumps, low maintenance periods, low energy costs due to careful pump selection</p> <p>Small investment costs for plants</p>
<p>Interchangeable wear parts</p> <p>Impeller and casing wear rings, Shaft sleeve in the area of the shaft seal</p>	<p>When casing and impeller wear rings and shaft seal are subject to wear, casing, impeller and shaft can be reused</p>	<p>Considerable saving of repair and spare part stockkeeping costs, short repair periods</p>
<p>One-piece heavy duty bearing bracket</p> <p>Oil-lubricated antifriction bearings, with automatic lubrication and oil level control</p> <p>Air cooling (fan)</p> <p>Labyrinth sealing without contact (standard)</p> <p>Interchangeable sealing ring possible</p>	<p>Stable, aligning shaft position, robust shaft with small shaft deflection, critical speed > operating speed</p> <p>Few components, few bearing checks required</p> <p>No cooling water pipework, no cooling water consumption</p> <p>No increased bearing heating</p>	<p>Short shut-downs</p> <p>Easy maintenance, low operating costs</p> <p>No investment costs for cooling system</p> <p>Wear-resistant bearing sealing</p>
<p>Well dimensioned stuffing box chamber</p>	<p>Possibility of replacing mechanical seals of any design</p>	<p>High interchangeability, low modification costs</p>

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