ITT

Vogel Pumpen

Vogel - Volute Casing Pumps

Design LSN

according ISO 2828 / ISO 5199

Engineered for life

Volute Casing Pumps - Design LSN - according ISO 2858 / ISO 5199

VOGEL model LSN are horizontal volute casing pumps built according international standards
ISO 2858 / EN 22858
ISO 5199 / EN 25199
ISO 3069, ISO 3661

Performance

Capacity up to	450 m^3/h	(1980 USgpm)
Head up to	150 m	(492 feet)
Speed up to	2950/3550 min^{-1}	(2950/3550 rpm)

Pump Sizes

DN 25 up to DN 150 (1“ up to 6“) Discharge

Temperature

-40 °C up to + 180 °C (-40 °F up to + 350° F)

Casing Pressure

up to 16 bar (235 psig)
Pump sizes 50-32-315, 65-40-315, 80-50-315, 100-65-315, 125-80-315 and 125-100-315 up to 25 bar (363 psig)

Volute casing pumps for higher capacities, pump sizes up to DN 600 (24‘‘) and capacities up to 4600 m^3/h (20.250 USgpm) refer to design LS - brochure 1300.1.B.

Liquids

Clean and slightly contaminated fluids
(without bigger solids)
Cold and hot water
Condensate and VE water
Oil, brine, caustic and acid
Suspensions

Applications

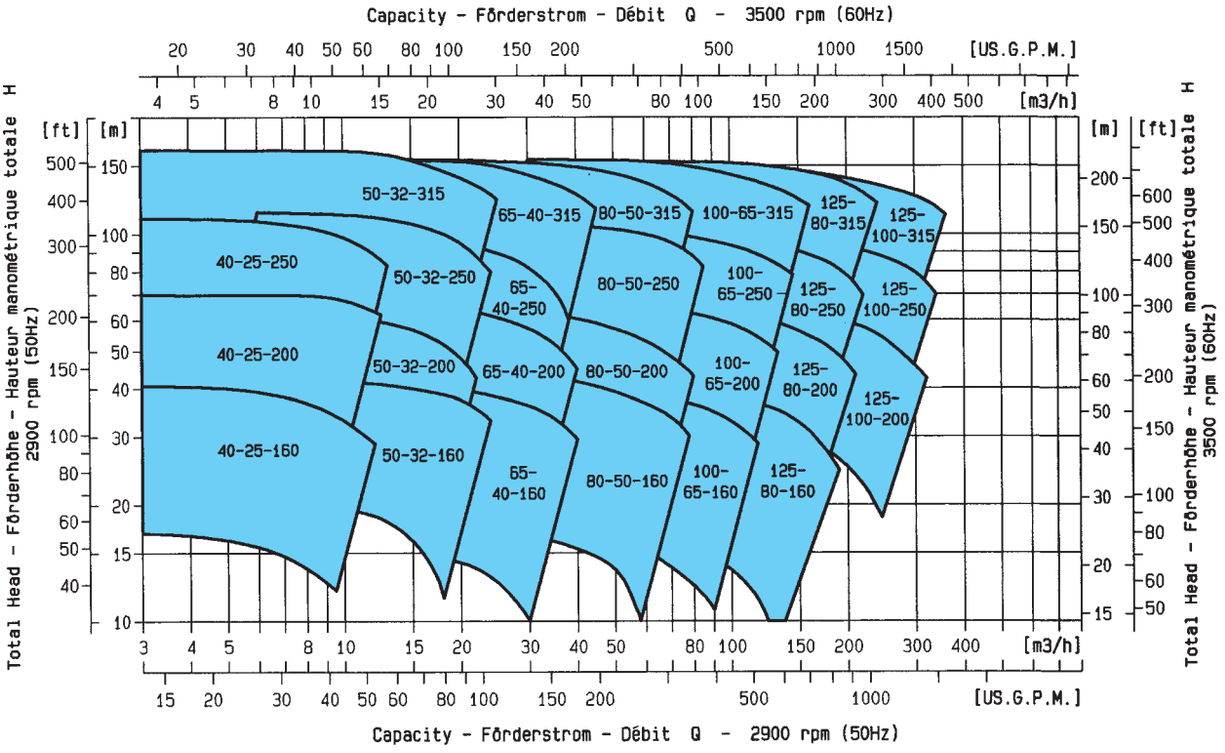
Water supply and water treatment
Cooling water supply
Hot water circulation
District heating
General industry
Food and beverage industry
Filter systems, ultra filtration
Coolant filtration
Parts washing machines
Galvanisation and painting systems

Materials

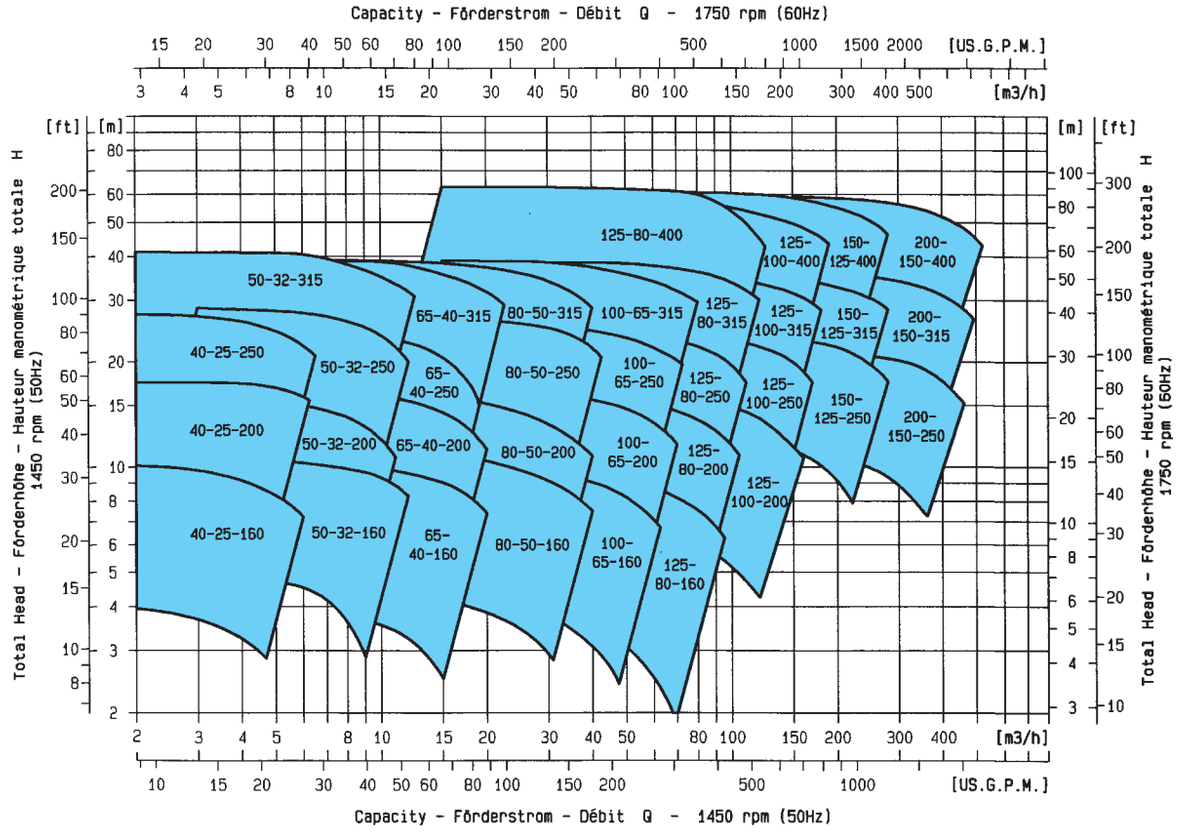
Ductile iron - 0.7043
Stainless steel - 1.4408
Duplex - 1.4517

Volute Casing Pumps - Design LSN - according ISO 2858 / ISO 5199

Performance 2950 min^{-1}, 50 Hz / 3550 min^{-1}, 60 Hz



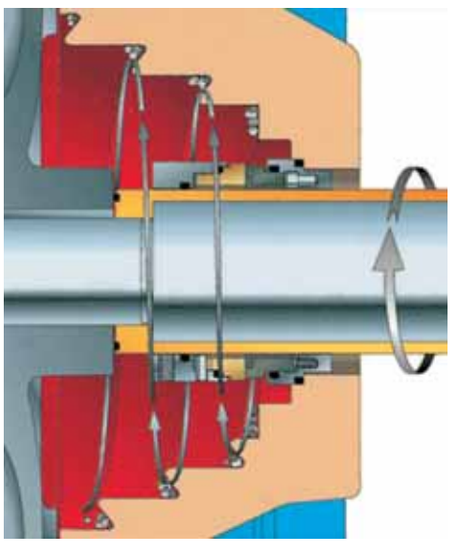
Performance 1450 min^{-1}, 50 Hz / 1750 min^{-1}, 60 Hz



Volute Casing Pumps - Design LSN - according ISO 2858 / ISO 5199

Cyclone Seal Chamber

- The patented design of the cyclone seal chamber improves the life time of the mechanical seal.
- Spiral grooves in the big conical seal chamber avoid contamination of the sealing environment with solids.
- Enlarged radial clearance and the big volume improve the cooling and lubrication of the mechanical seal.
- The selfventing design prevents the accummulation of gas (vapour) in the sealing environment.
- Seal chamber installation dimensions in accordance with ISO 3096 / DIN 24960.



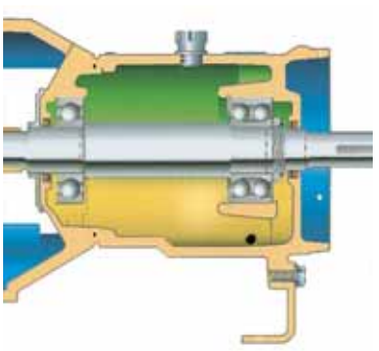
Shaft Sealing

- The correct seal selection is essential for the life time of the mechanical seal. The flexible sealing system allows seal selection according customer requirements for individual seal designs and seal brands.
- Standard seal chamber with installing dimensions according ISO 3096 (DIN 24960) combined with the features of the cyclone seal chamber design.

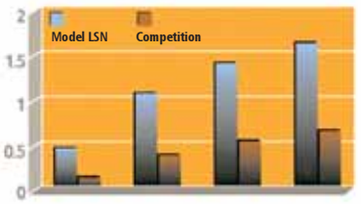
- Optional Vogel mechanical seals
  - Stationary seal design
  - Balanced design
  - No dynamic O-rings
  - Springs outside of the pumped liquid
  - Simplyfied installation due to integrated shaft sleeve

Volute Casing Pumps - Design LSC - according ISO 2858 / ISO 5199

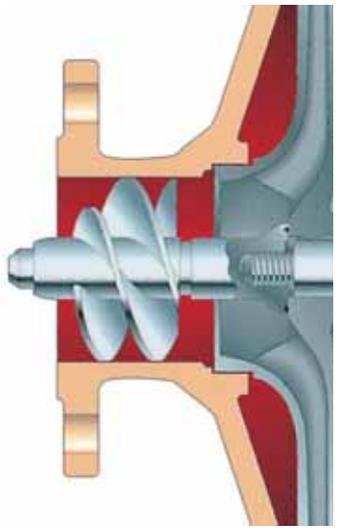
Bearing Frame



- The robust bearing frame design improves the reliability of the pump.
- Oil sump with enlarged volume ensures cool and clean oil.
- Rigid shaft made of corrosion resistant stainless steel minimizes shaft deflection < 0,05 mm.
- Double lip seals protecting the oil chamber.
- Options
  - Labyrinth seals
  - Oil sump cooling for temperatures > 160°C



Inducers



- Reduction of the pumps NPSH value by 25 down to 50%.
- Ideal for applications at low system NPSH demands.
- Inducers are available for pump sizes DN 32 and bigger, standard material Duplex 1.4462
- Ability to handle liquids containing entrained gases.
- Enables lower positive suction heads and reduces required space on site - cost reduction.
- Application experience for 30 years.

Volute Casing Pumps LSN - according ISO 2858 / ISO 5199

Standard design with improved reliability

Casing

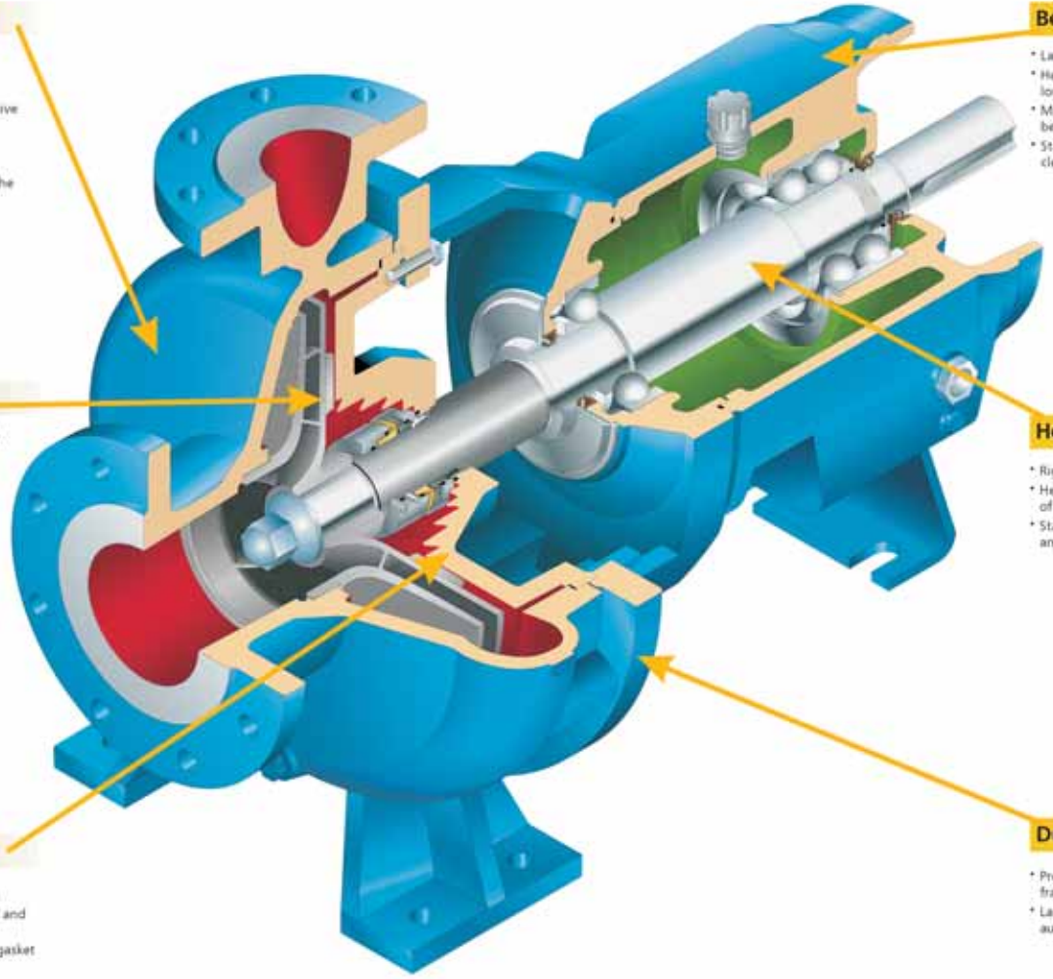
* Heavy duty, top centerline discharge casing with integral cast feet provides maximum resistance to pipe loads for improved seal and bearing life.
* Minimum 3 mm corrosion allowance maximizes pump life for corrosive and erosive applications.
* Back pull out design makes maintenance activities safe and simple.
* Standard 3/8" NPT casing drain for safe maintenance.
* Renewable wear ring maintains pump performance over the life of the

Impeller

* Precision-cast enclosed impeller design provides maximum efficiency and optimum NPSH performance.
* Preferred by ISO 5199 for maximum mechanical seal life.
* Standard back vanes or balance holes reduce axial thrust and seal chamber pressure for extended bearing and seal life.
* Key driven for maximum reliability, eliminates spin-offs due to reverse rotation during start-up.

Engineered Shaft Sealing Environment

* Wide choice of sealing arrangements for maximum sealing flexibility.
* Patented „cyclone" seal chamber improves lubrication, heat removal and solid handling for ultimate seal life.
* Confined casing gasket provides safe pressure containment against gasket „blow out" and protects alignment fits from corrosion for ease of maintenance.



Bearing Frame

* Large capacity oil sump reduces oil temperature for extended bearing life.
* Heavy duty cast iron frame gives rigid support to shaft and bearings for longer service.
* Magnetic drain plug maintains a clean oil environment for extended bearing life.
* Standard double lip seals at pump and coupling end maintain a seal tight, clean operating environment.

Heavy Duty Shaft and Bearings

* Rigid shaft designed for less than 0.05 mm shaft deflection.
* Heavy duty ball bearings engineered to provide L10 bearing life in excess of 17,000 hours.
* Standard stainless steel shaft (1.4021) provides reliable power transmission and corrosion resistance at both the pump and coupling ends.

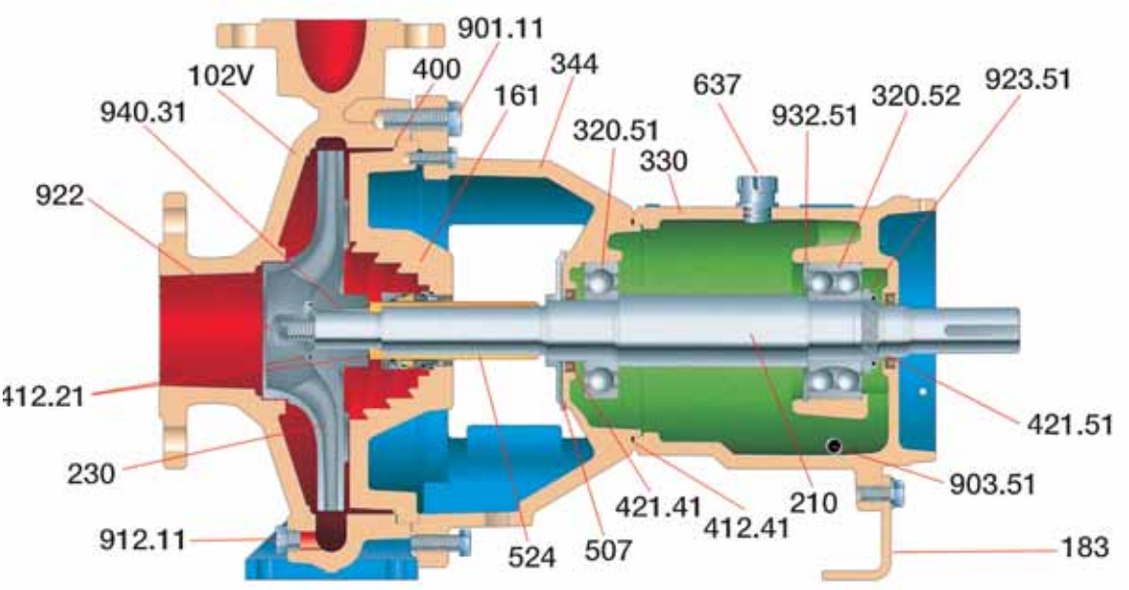
Ductile Iron Lantern / Frame Adapter

* Provides safe and accurate alignment for the liquid end to the bearing frame.
* Large access windows make installation and maintenance of seal and auxiliary support systems trouble-free.

Corresponds to ISO 5199 and ISO 2858 for maximum reliability and ease of installation.
Superior hydraulic design for maximum performance and extended mechanical reliability.

Volute Casing Pumps - Design LSN - according ISO 2858 / ISO 5199

Part and Material list



Item Number	Part Name	Ductile Iron (NL)	316SS (VV)	Duplex (WW)
102 V	Casing	Ductile Iron	316SS	Duplex SS
161	Seal Chamber / Stuffing Box Cover	Ductile Iron	316SS	Duplex SS
183	Support Foot	Carbon Steel		
210	Shaft	Stainless Steel (1.4021)		
230	Impeller	Cast Iron	316SS	Duplex SS
320.51	Radial Bearing	Single Row, Ball Bearing		
320.52	Thrust Bearing	Double Row Angular Contact Ball Bearing		
330	Bearing Bracket	Cast Iron		
344	Lantern	Ductile Iron		
400	Case Gasket	Non-Asbestos Aramid Fiber		
412.21	O-ring, Shaft Sleeve & Impeller Nut	Teflon		
412.41	O-ring Bearing Bracket	Viton		
421.41	Oil Seal, Inboard	Lip Seal (Buna & Steel)		
421.51	Oil Seal, Outboard	Lip Seal (Buna & Steel)		
507	Flinger	Noryl 66		
524	Shaft Sleeve	Duplex SS (1.4462)		
637	Oil Vent	Steel		
901.11	Casing Bolts, Hex Cap Screw	Stainless Steel (A2)		
903.51	Drain Plug	Steel Magnetic Tipped		
912.11	Case Drain Plug	316SS		
922	Impeller Nut	Duplex SS		
923.51	Bearing Lock Nut	Steel/Nylon		
932.51	Snap Ring / Circlip	Carbon Steel		
940.31	Impeller Key	Carbon Steel		

Other Parts Not Shown		
236	Inducer (optional)	Duplex SS (1.4462)
452	Packing Gland	316SS
458	Lantern Ring	Glass Filled PTFE
461	Packing	PTFE Impregnated
502.11	Wear Ring (optional)	316SS
642	Oil Level Sight Glass	Glass/Plastic

Volute Casing Pumps - Design LSN and HYDROVAR

HYDROVAR - Pumping System Solutions

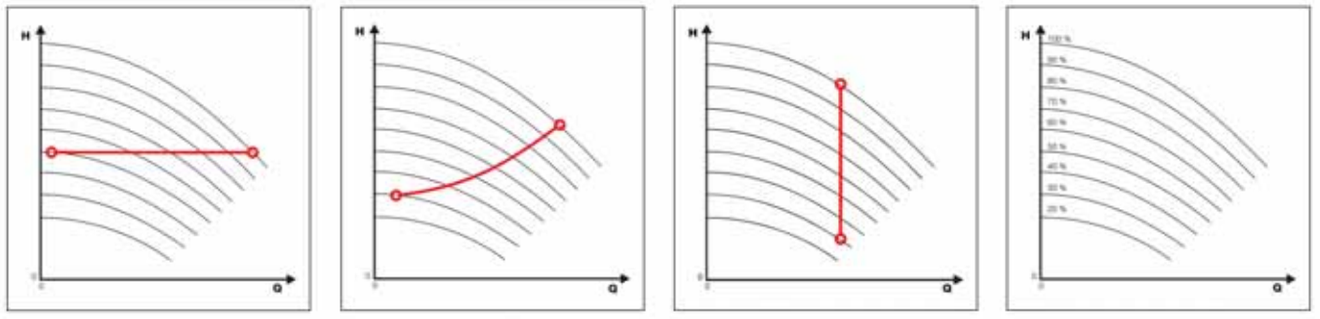
By optimizing the pump performance according system demand high potential of savings are achievable.

- Energy savings up to 50%.
- Increasing reliability and improved life time due to controlled operating conditions, avoid dry run, head losses and cavitation.
- Reduced hydraulic forces improve bearing and mechanical seal life time.
- Lower installation costs due to elimination of control valves as well as pannels and controllers.

HYDROVAR Advantages

- Patented microprocessor based pump controller for variable speed operation, specific developed for pump operation.
- Easy start up without programming, simplyfies installation.
- Power range up to 45 kW.
- **Hydrovar Smart:** Hydrovar function and features without power limitation, combination with all std. frequency inverters possible.

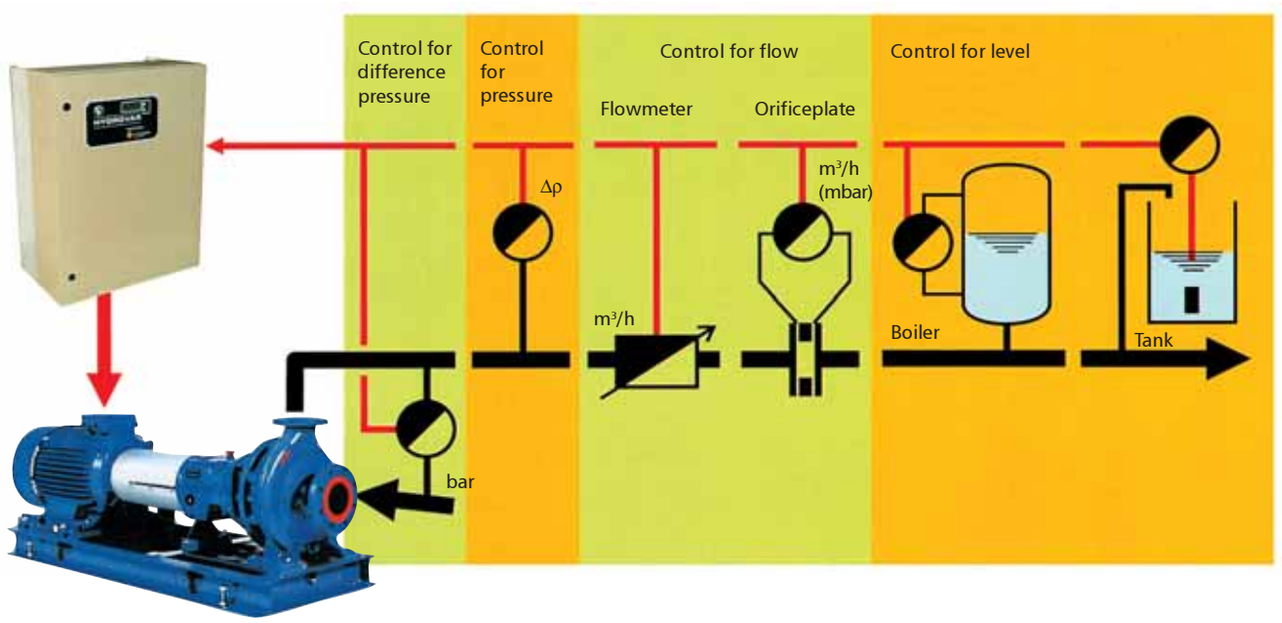
HYDROVAR - Operating Options



Constant Pressure | System characteristics | Constant Flow | Actuator Mode

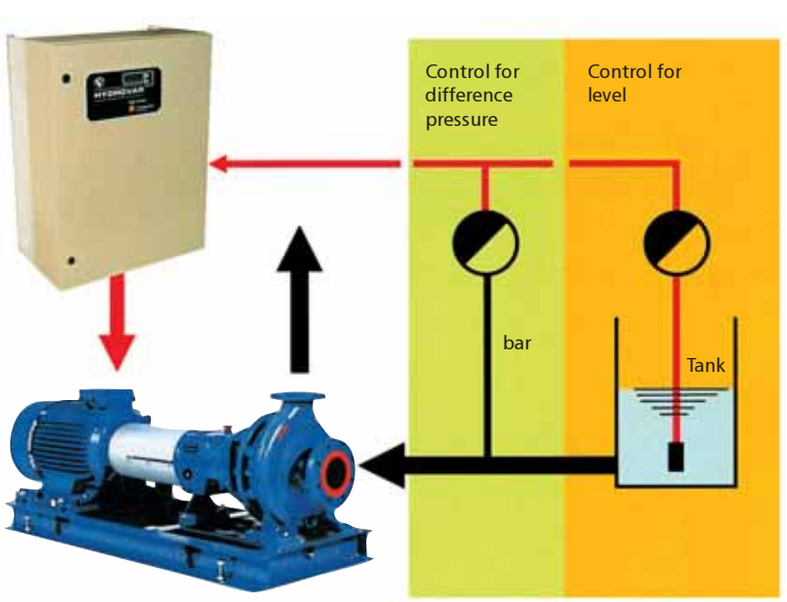
Volute Casing Pumps - Design LSN and HYDROVAR

Hydrovar: Controller Mode „Normal"



At controller mode „normal" the operating frequency will be increased in case the measurement signal decreases.

Hydrovar: Controller Mode „Invers"



At controller mode „invers" the operating frequency will be decreased in case the measurement signal decreases.

For more detailed information of HYDROVAR refer to brochure 5810-8 e.

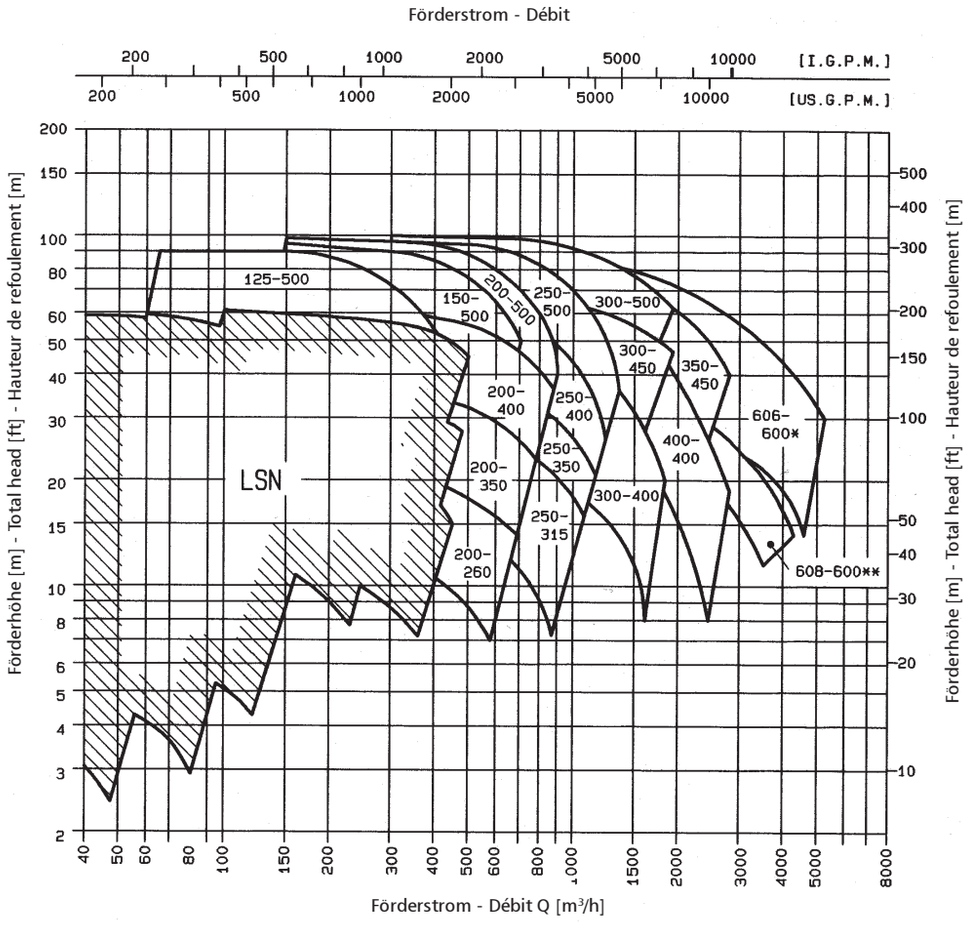
Volute Casing Pumps - Design LSN - Program Extension

Blockpumps - Design LSB

- Compact and low space block design
- Close coupled motors according IEC, design B5
- Pump sizes DN 25 up to DN 150
- Motor power up to 37 kW / 2950 min^{-1} and 30 kW / 1450 min^{-1}
- Refer to brochure 1220.1.B

Volute Casing Pumps - Design LS

- Extended performance range to model LSN, pump sizes up to DN 600 (24")
- Capacities up to 4600 m^3/h (20250 USgpm)
- Refer to brochure 1300.1.B



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Liste 1200.1.B
6/2006-e

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