

Dry installed end-suction pumps, LSN-series

according to ISO 2858 / ISO 5199



Flygt



ITT Industries
Engineered for life

Technical characteristics



The model LSN is designed according to international standards
ISO 2858 / EN 22858
ISO 5199 / EN 25199
ISO 3069, ISO 3661

Performance	50 Hz	60 Hz
Capacity up to	600 m ³ /h	2900 USgpm
Head up to	170 m	800 feet
Speed up to	2950 rpm	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 PSI)

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 PSI)

Volute casing pumps for higher capacities, pump sizes up to DN 600 (24") and capacities up to 5100 m³/h (22.500 USgpm) refer to LS-series

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

Galvanisation and painting systems

Materials

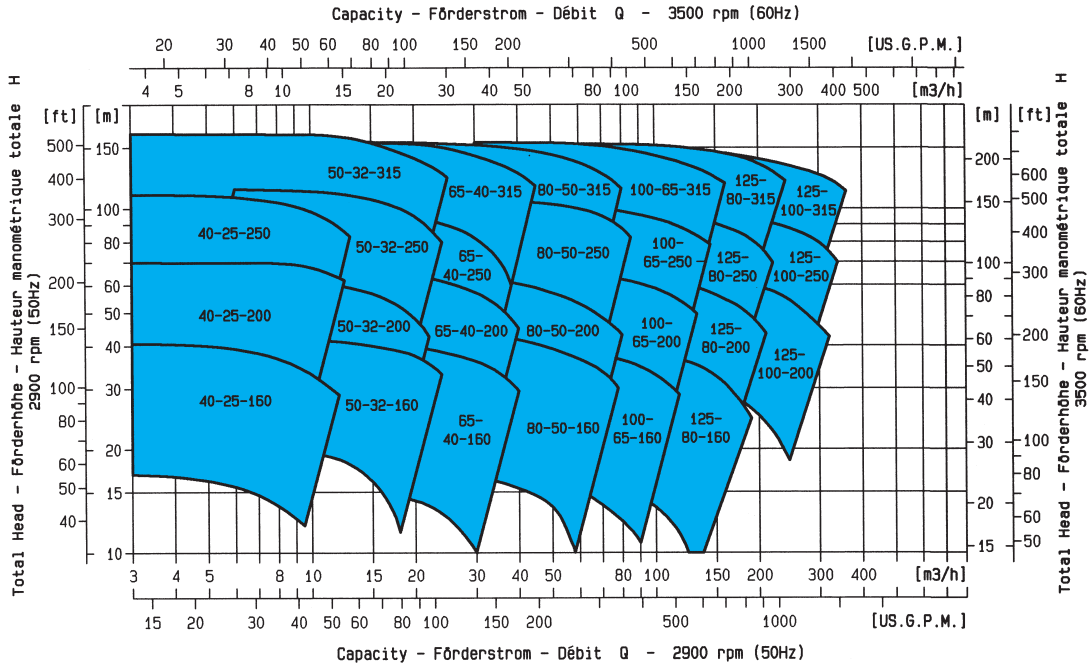
Ductile iron - 0.7043

Stainless steel - 1.4408

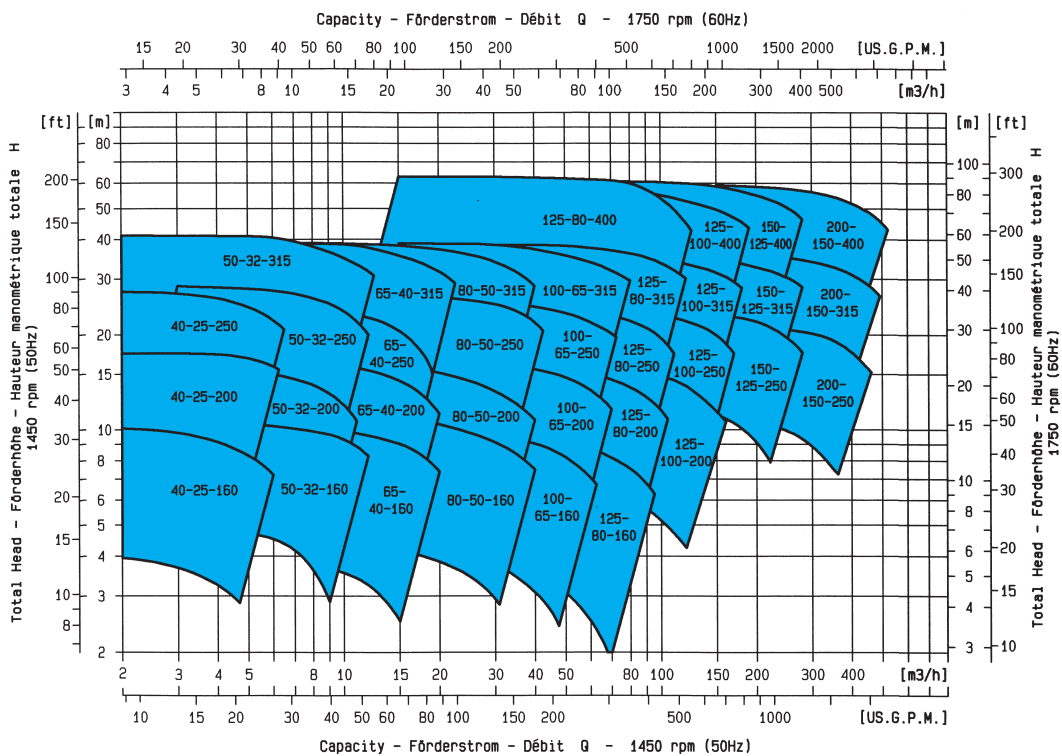
Duplex - 1.4517

Performance range

Performance 2950 rpm, 50 Hz / 3550 rpm, 60 Hz



Performance 1450 rpm, 50 Hz / 1750 rpm, 60 Hz

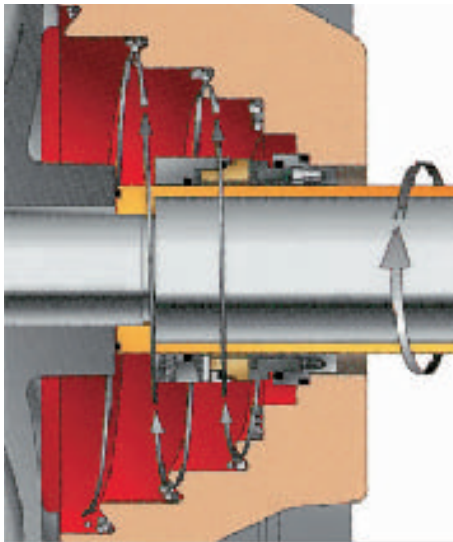


Design features



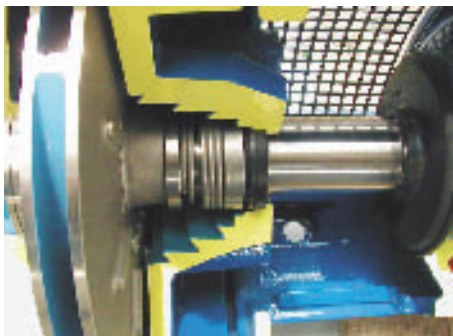
Cyclone seal chamber

- The 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 volume improve the cooling and lubrication of the mechanical seal.
- The self-venting design prevents the accumulation of gas (vapour) in the sealing environment.
- Seal chamber installation dimensions in accordance with ISO 3096 / DIN 24960.



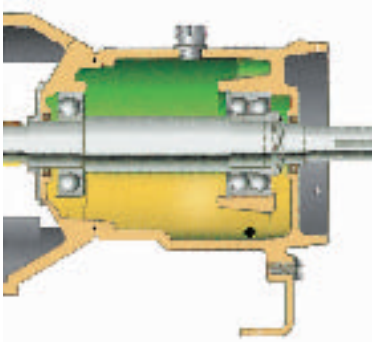
Shaft sealing

- The correct seal selection is essential for the life time of the mechanical seal. The flexible sealing system allows for seal selection according to the 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 mechanical seals
 - Stationary seal design
 - Balanced design
 - No dynamic O-rings
 - Springs outside of the pumped liquid
 - Simplified installation due to integrated shaft sleeve



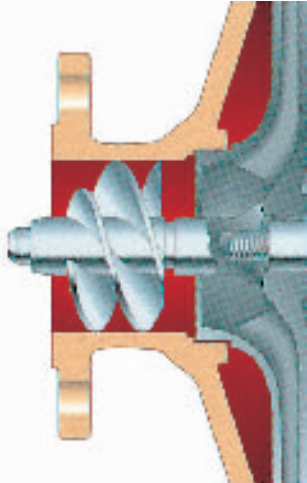
Compact design

- 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.



Standard design with improved reliability

Corresponds to ISO 5199 and ISO 2858 for maximum reliability and easy of installation.

Superior hydraulic design for maximum performance and extended mechanical reliability.

Casing

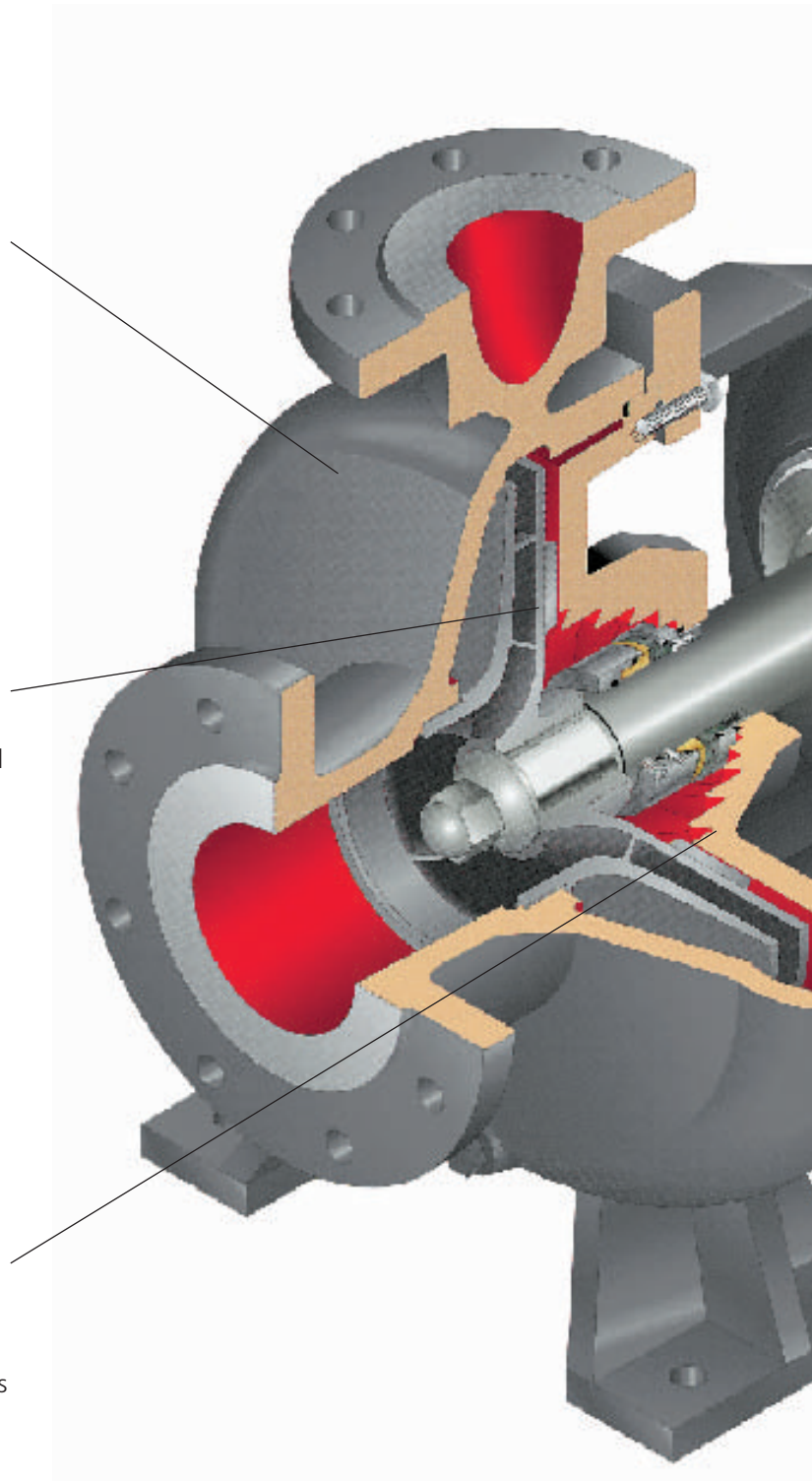
- Heavy duty, top center-line discharge casing with integral cast feet provides maximum resistance to pipe loads for improved seal and bearing life
- Minimum 3 mm corrosion allowance maximizes pump life for corrosive and erosive applications.
- Rear access dismantling design makes maintenance activities safe and simple.
- Standard 318" NPT casing drain for safe maintenance.
- Renewable wear ring maintains pump performance over the life of the pump (optional)

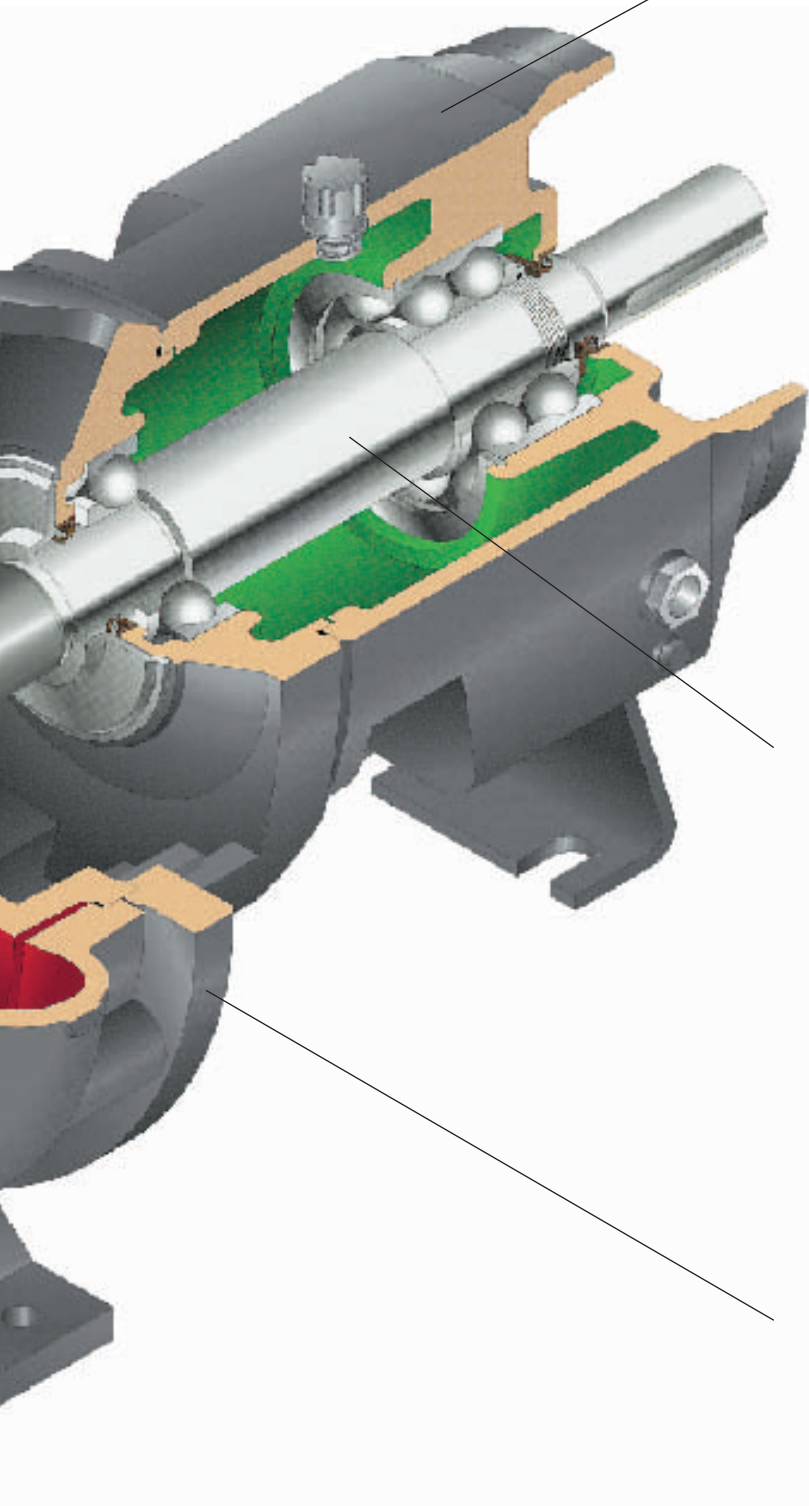
Impeller

- 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.
- "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.

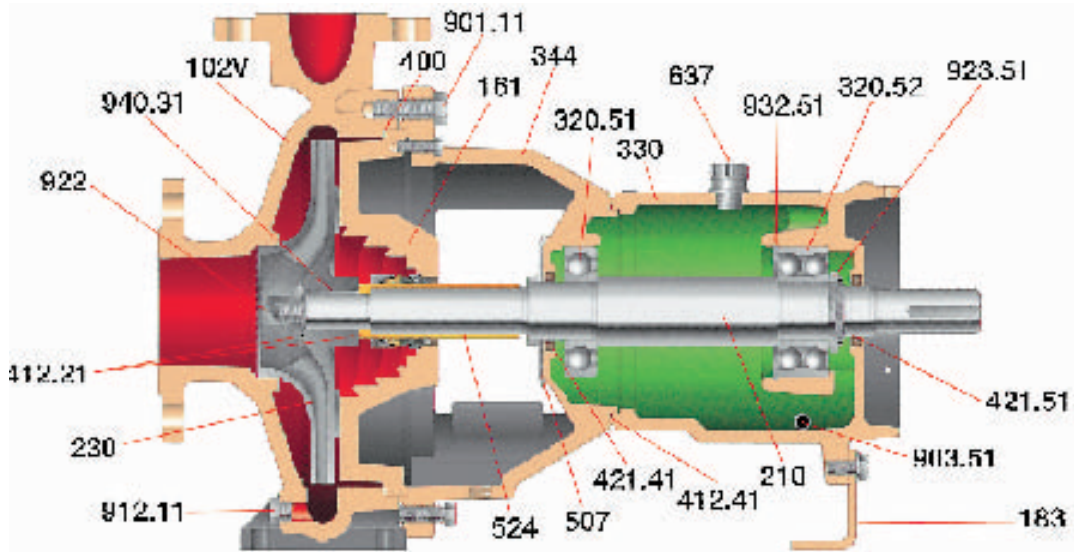
Heavy duty shaft and bearings

- Rigid shaft designed for less than 0.05 mm shaft deflection.
- Heavy duty ball bearings engineered to provide L10 bearing life in exce 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.

Part and material list



Itcnl Number	Part Name	Ductile iron (NL)	31655 (VV)	Duplex (WW)
102 V	Casing	Ductile iron	316 SS	Duplex SS
161	Seal chamber/Stuffing box cover	Ductile iron	316 SS	Duplex SS
183	Support foot	Carbon steel		
210	Shaft	Stainless steel (1.4021)		
230	Impeller	Cast iron	316 SS	Duplex SS
320.51	Radial bearing	Single row, ball bearing		
320.52	Thrust bearing	Double row angular contact ball bearing		
330	Bearing bracket	Castiron		
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	316 SS		
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	316 SS		
458	Lantern ring	Glass Filled PTFE		
461	Packing	PTFE impregnated		
502.11	Wear ring (optional)	316 SS		
642	Oil level sight glass	Glass/Plastic		

Design LSN and Technovar

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, avoids 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 control valves, panels and controllers.

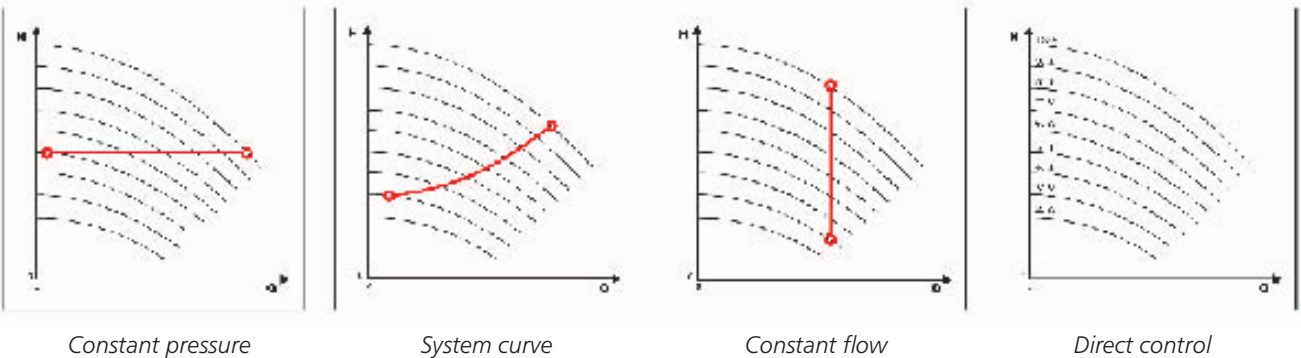


Advantages

- Patented microprocessor based pump controller for variable speed operation, specifically developed for pump operation.
- Easy start up without programming, simplifies installation.
- Power range up to 45 kW.

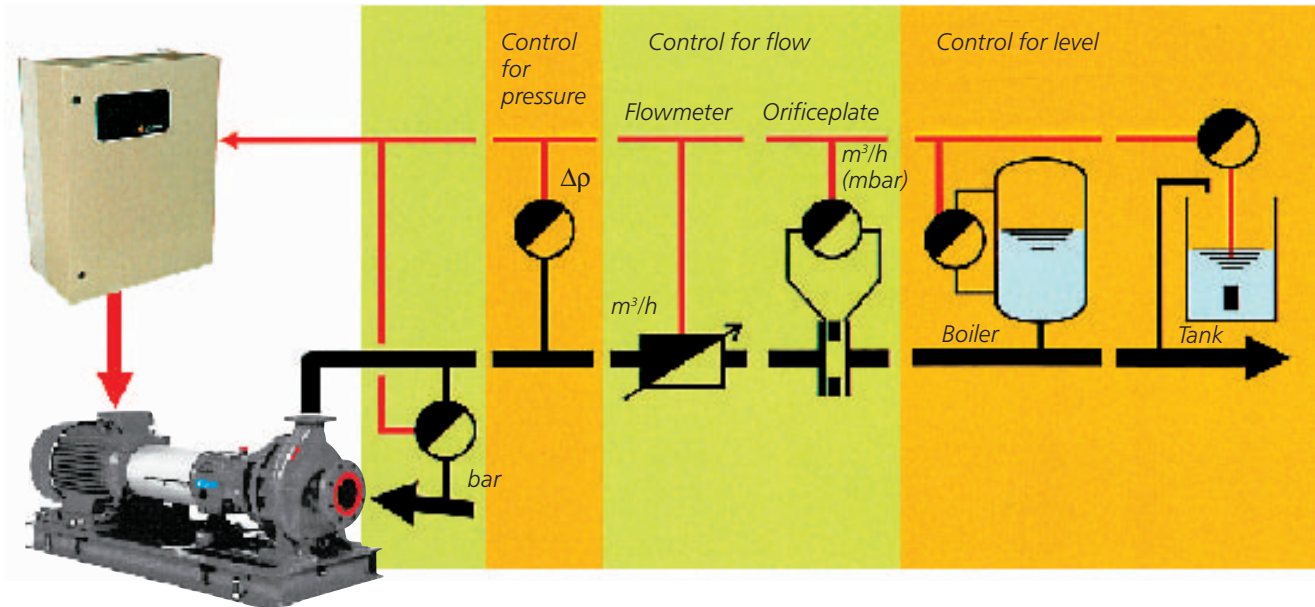


Operating options



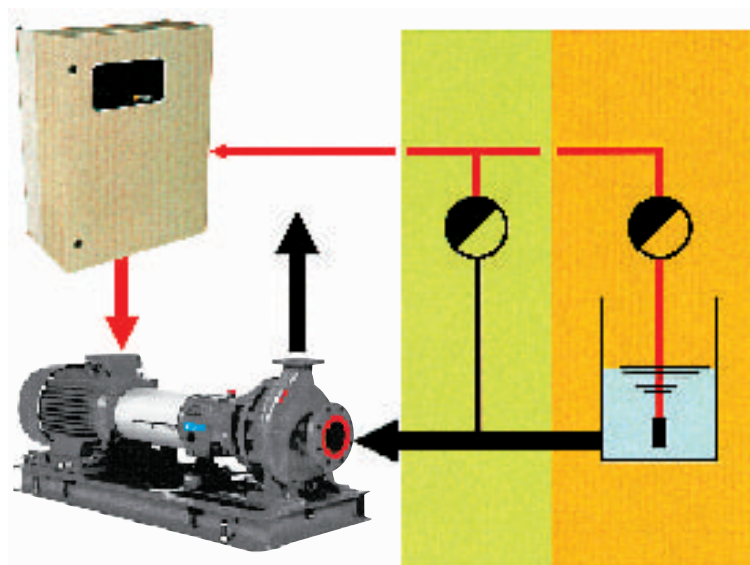
Design LSN and Technovar

Setting of: Normal controller mode



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

Setting of: Inverse controller mode



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

Program extension

Block pumps – 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



Dry installed end-suction pumps – design LS

- Extended performance range to model LSN, pump sizes up to DN 600 (24")
- Capacities up to 5100 m³/h (22500 USgpm)

