



PUMPS



Who Are We?

WHY LICAR?

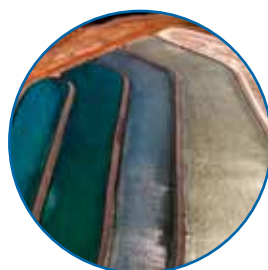
Licar was founded in 1954 and owns over 50 years' experience in the manufacturing of centrifugal pumps for industrial applications.

We manufacture equipment for the paper industry and centrifugal pumps for industrial use, as well as original spare parts for all of them.

We have an Engineering Department, as well as our own workshop, which allows us to carry out any kind of work related with centrifugal pumps (new, spare parts, repairs).

Licar has extensive experience backed by major industry sector. Thanks to our expertise, we have quality products designed and manufactured in our own factory without any intermediary in the production.

Licar is renowned for the flexibility and adaptability of its equipment, and our engineering unit provides direct contact and personal attention to the Clients.



SECTORS TO ADDRESS THE LICAR PUMPS

The high quality of our pumps makes it possible their effective use in a wide range of sectors without giving up our identity: specialization and adaptability to the needs and requirements of our customer at all times.

Automobile Industry

Spray booths, primer, and bonder-emulsion, grinding dust and corundum slurries.

Building industry

Concrete slurry, sand, gravel, stone, and marble dust in water.

Cellulose Industry

Semi-chemical pulp, sulphite/sulphate pulp, black-liquor, wood chips, pulp with knots, digester blowing pumps, splinters from wood grinder.

Chemical Industry

Crystal suspensions, filter slurries, latex, polystyrene beads in water, caustic soda solutions 50%, hot brine, washing powder slurries, zinc slurry, paint suspensions, bicarbonate slurry, etc.

Dredging

Sand, gravel, lake and harbour cleaning.

Fibre industry

Asbestos-cement, slurry, rock-wool, leather fibres, glass-fibres, textile fibres, nitro-cellulose.

Food industry

Peas, beans, carrots, turnips, pig feed, fruit suspensions, chicken waste with feathers.

Mining industry

Stone slurries, bentonite, coal washing water, mine drainage pumps.

Paper industry

Waste paper pulp, rag pulp, defibrator pulp, Kaolin 80%, bagasse, bamboo, rejects, pulper rejects.

Petrochemicals

Slops, catalytic sludge, carbon oil, drilling sludge, raw tar with coke.

Power stations

Ash, dust-screen, sludge, etc.

Shipbuilding

Sewage, bilge water, fish offal.

Steel

Scale in water, ash-soot-slurries, and coke and coal water mixtures.

Sugar Industry

Beet and crushed beet juice, beet roots, beet washing water; grout lime to 95°C, lime sludge decanters.

Textile industry

Natural and artificial fibres; suspensions, fibrous waste water.

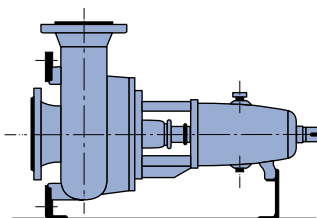
Waste water treatment

Raw unscreened sewage, raw fresh sludge, digested sludge, grit channel pumps, abattoir waste water, community and industrial effluents.

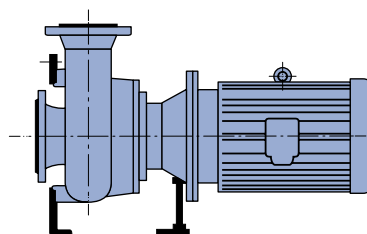


Dry Mounting Pumps

Constructions Naming

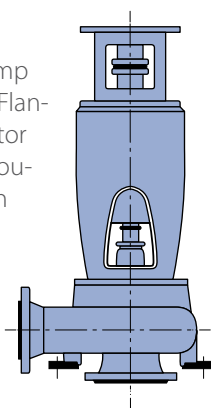


H = Horizontal pump with bearing housing. Pump either with standard packing (DIN3780) or mechanical seals (DIN 24960).

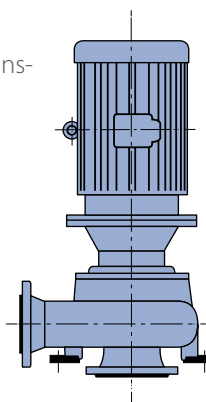


HF = Horizontal pump. Impeller directly fitted to motor shaft. IEC standard flange/foot motor. Can only be fitted with mechanical seal (DIN 24960).

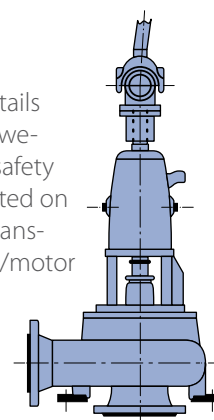
V = Vertical dry-pit pump with bearing housing. Flange motor fitted on motor support with flexible coupling. Pump either with standard packing (DIN 3780) or mechanical seals (DIN 24960).



VF = Vertical construction, pump details identical to HF.

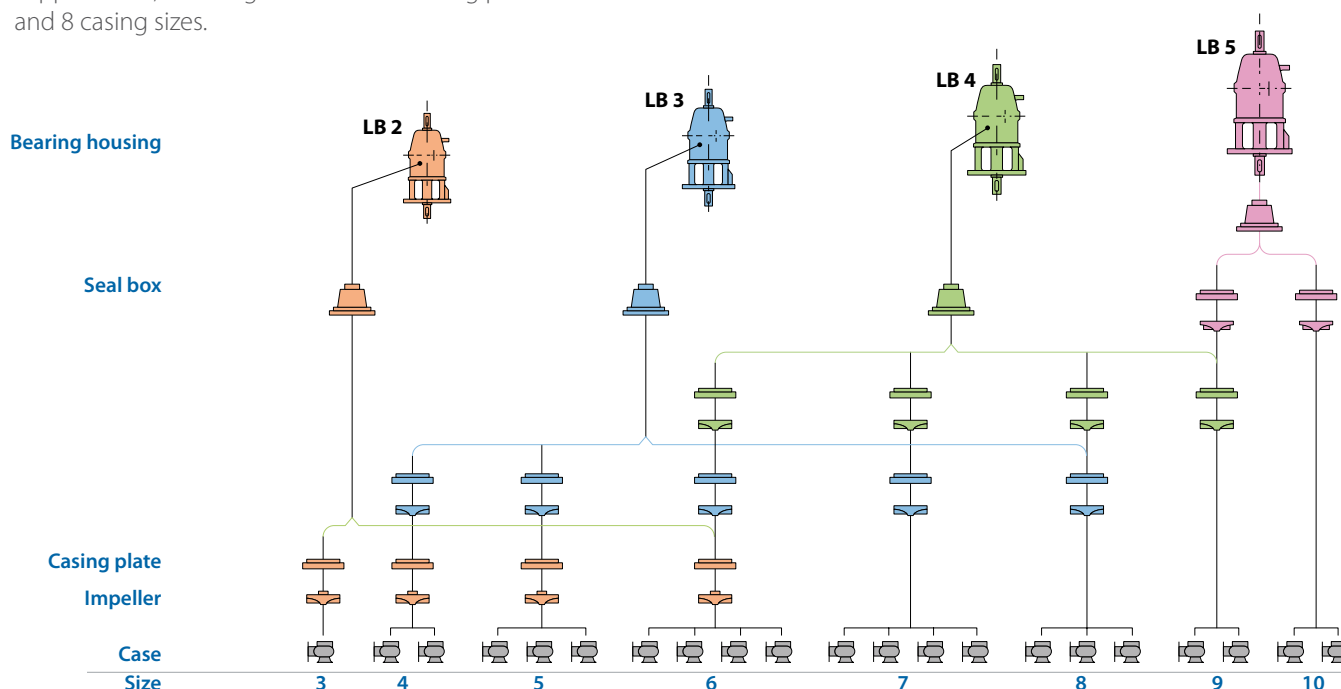


VK = Pump details identical V, however motor for safety reasons mounted on higher level. Transmission pump/motor by means of cardan shaft.



Program Explanation

A wide range of pumps based on only 4 bearing support sizes, 4 sealing box sizes and casing plates and 8 casing sizes.



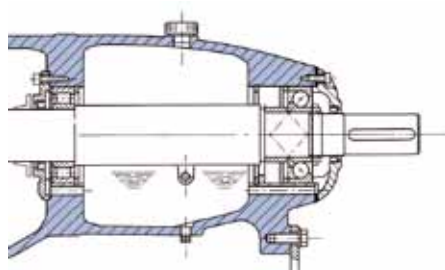
Naming: **TV • 61 • 100 • H • 4**
TV series (T, TV, TW, TE, D) • **Size 61** • **Discharge DN 100** • **Construction H** (H, HF, V, VF, VK) • **N° of motor poles 4** (2, 4, 6, 8)

Bearing Support

The bearing supports for dry mounted pumps use oil bath lubricated bearings.

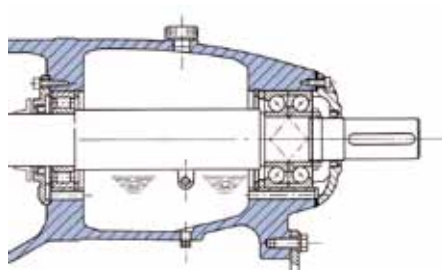
In the VK construction (vertical mounting with remote pump motor) bearings are grease lubricated.

All bearings have been calculated for a minimum life of 16,000 hours.



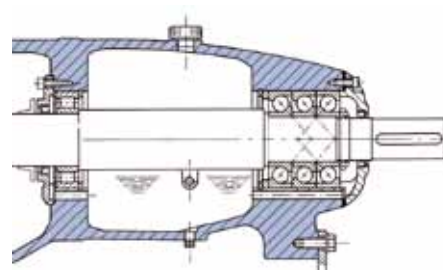
Execution A

Standard version with two single-row bearings.



Execution B

Reinforced support holding two single row angular contact ball bearings in the motor side.



Execution C

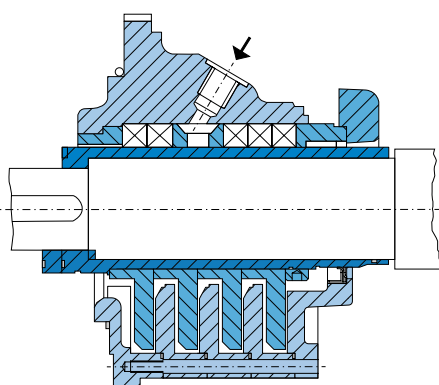
Reinforced to support axial forces, with three single row angular contact ball bearings in the motor side.

Shaft Sealing

We use standard DIN sealing types:

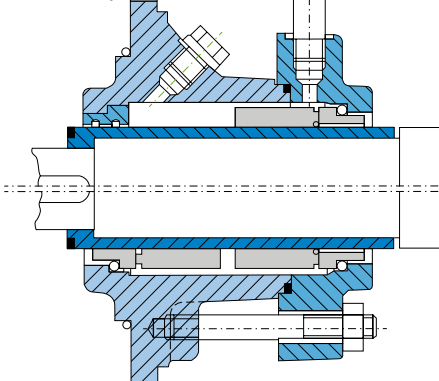
- Gland packing
- Mechanical Seal
- Hydrodynamic

With gland packing according with DIN 3780



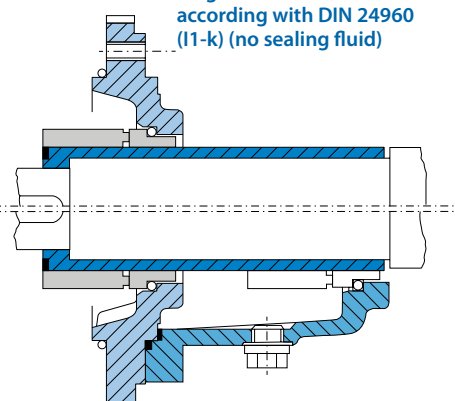
Hydrodynamic seal

Single mechanical seal according with DIN 24960 (with flow reducer)



Double mechanical seal according with DIN 24960 (I1-k) mounted back to back (with external cooling)

Single mechanical seal according with DIN 24960 (I1-k) (no sealing fluid)



Double mechanical seal according with DIN 24960 (I1-k) mounted in tandem (external sealing fluid)

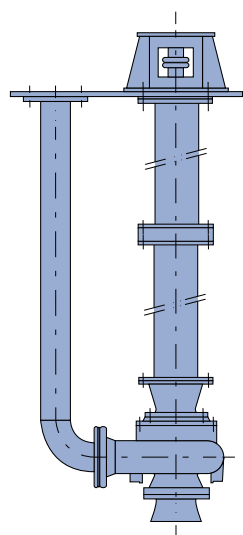
Advantages

- Great flexibility in the choice of sealing.
- Same shaft sleeves for all sealing types.
- Minimum stock of spare parts.
- Reduced maintenance.
- The shaft is never in contact with

the pumped liquid. Allows use carbon steel materials regardless of hydraulics.

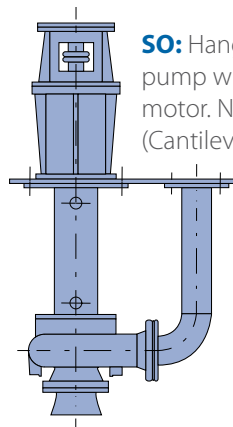
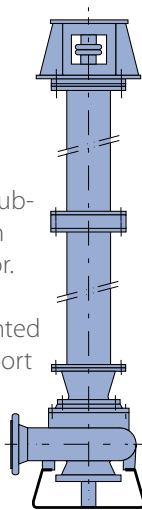
Vertical Wet-Pit Pumps

Constructions Naming



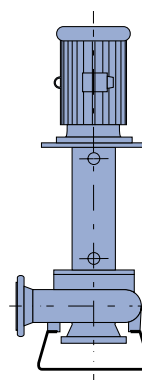
S: Hanging submerged pump with dry-mounted motor. Intermediate shafts and bearings mounted on watertight support tube. Standardized lengths.

F: Bottom resting submerged pump with dry-mounted motor. Intermediate shafts and bearings mounted on watertight support tube. Standardized lengths. With kickstand.



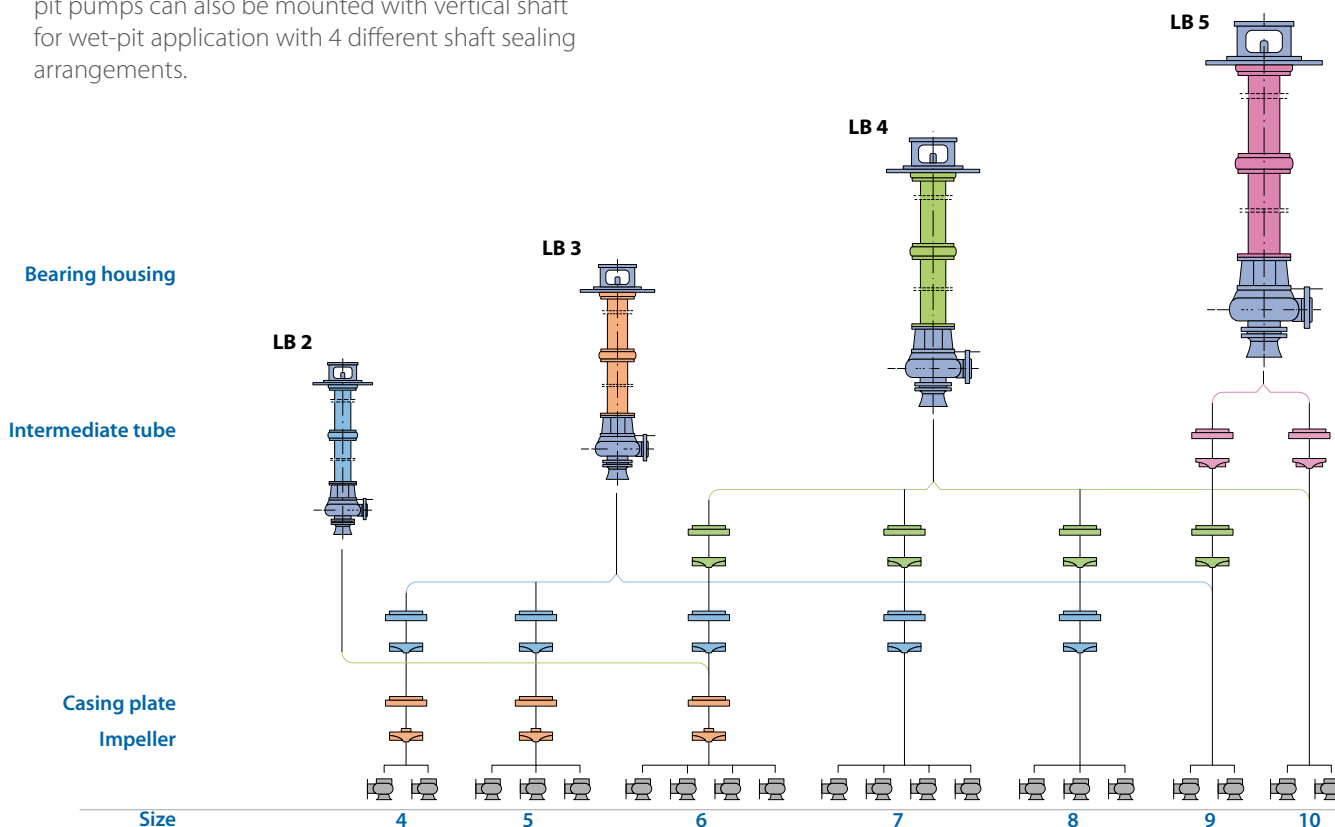
SO: Hanging submerged pump with dry-mounted motor. No lower bearing (Cantilever). No shaft seal. Limited range of lengths and speeds.

SOF/FOF: Same as SO except monobloc.



Program Explanation

Parallel to the horizontal and vertical mounted dry-pit pumps can also be mounted with vertical shaft for wet-pit application with 4 different shaft sealing arrangements.



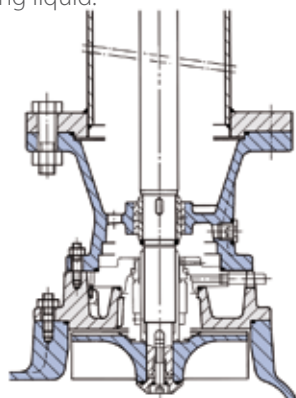
Naming: **TV • 61 • 100 • SG • 4**
TV Series (T, TV, TW, TE, D) • **Size 61** • **Discharge DN 100** • **Construction SG** (SG, SW, SR, SO) • **N° of motor poles 4** (2, 4, 6, 8)

Shaft Sealing and Bearings Support

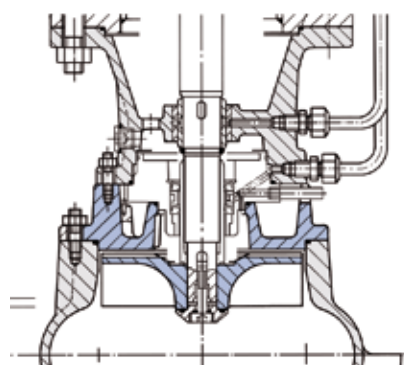


With lower bearing

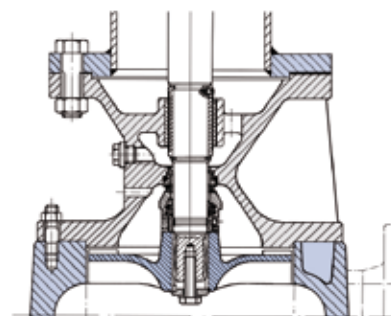
SG: Journal bearing and single mechanical seal. Internal lubrication and cooling liquid.



SR: Journal bearing and radial shaft seal. Grease lubricated.



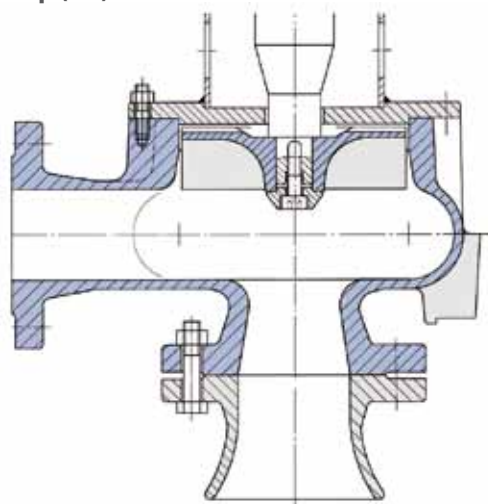
SW: Journal bearing and no shaft seal. Cooled by pumped or external fluid.



Without lower bearing. Cantilever Pump (SO)

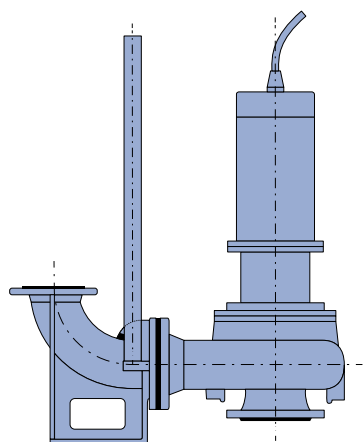
Cantilever pumps advantage:

- No bearings in contact with the pumped fluid.
- No shaft seals in contact with the pumped fluid.
- Increased availability.
- Lower maintenance cost.

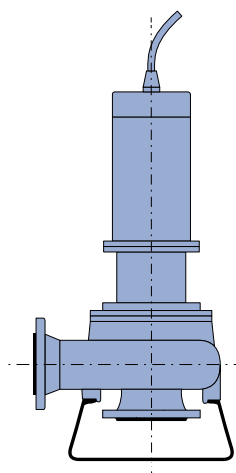


Submerged Pumps

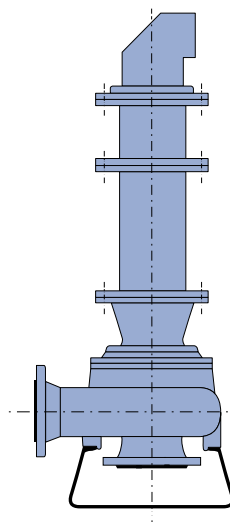
Constructions Naming



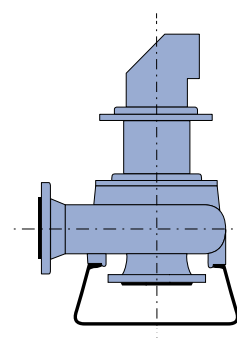
U: Submersible motor pump for stationary installation. Automatic coupling to the docking base



UM: Same as **U**, but mobile installation. Flexible discharge pipe recommended.



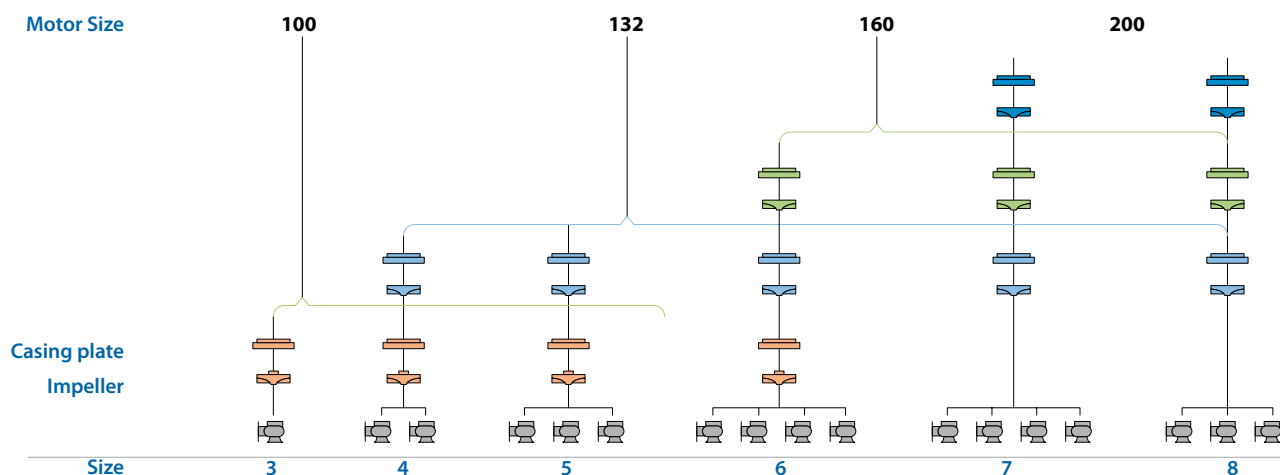
FUH: Same as **S** but driven by remote hydraulic motor.



UMH: Same as **UM** but driven by remote hydraulic motor.

Program Explanation

Many of the horizontal and vertical mounted pumps can also be mounted with submersible motors, sharing spare parts.



Naming: **TV • 61 • 100 • UM • 4**
Serie TV (T, TV, TW, TE, D) • **Size 61** • **Discharge DN 100** • **Construction UM** (U, UM, FUH, UMH) • **N° of motor poles 4** (2, 4, 6, 8)

Bearings, Sealing & Motor

Bearings

Submerged motor pumps use oversized bearings greased for life.

Execution A

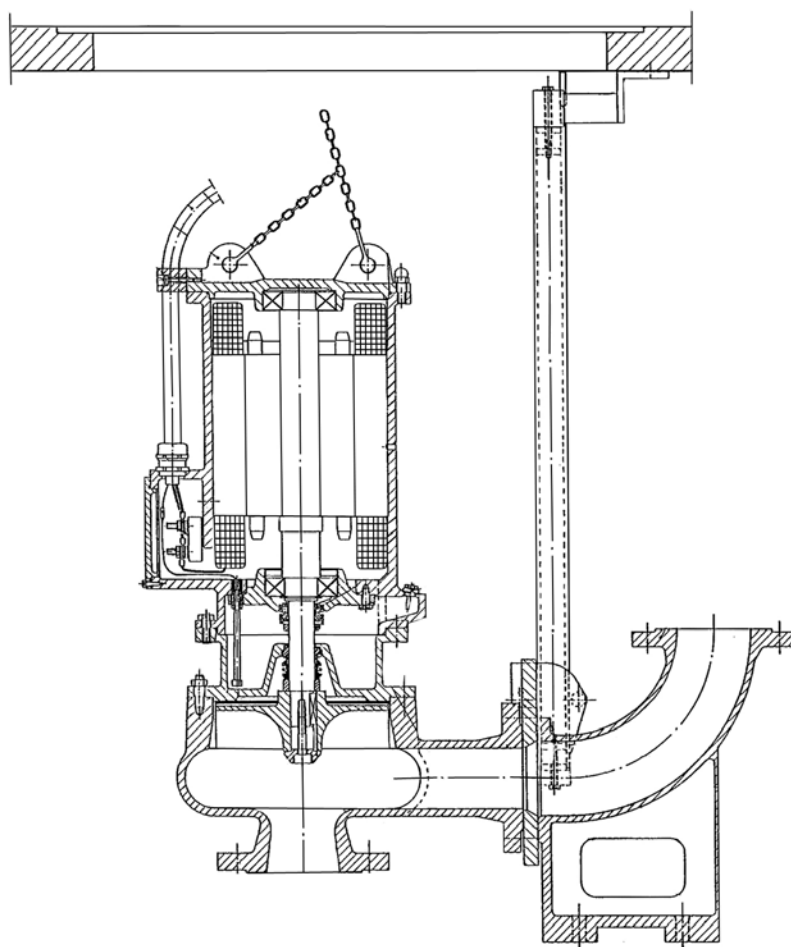
Standard version with two single-row bearings.

Execution B

Reinforced double row ball bearings in the motor side.

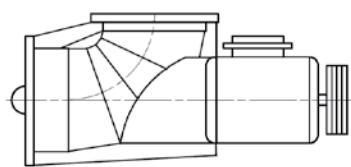
Sealing & Motor

- The motor is isolated from the pump by means of two mechanical seals and an oil chamber.
 - Primary seal inside the oil chamber, sealing the motor.
 - Secondary seal, bellow type in the pumping fluid (behind the impeller) sealing the oil chamber. Sealing ring faces in SiC.
- Watertight cable entry, with IP68 cable glands.
- Moisture detector installed in the oil chamber.
- Watertight motor, with insulation rated Class F.
- Service rate S1 when motor submerged 2/3 (minimum level for continuous run).
- Maximum depth 25m.

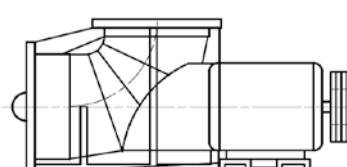
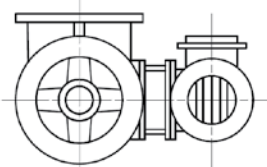


Elbow Propeller Pumps

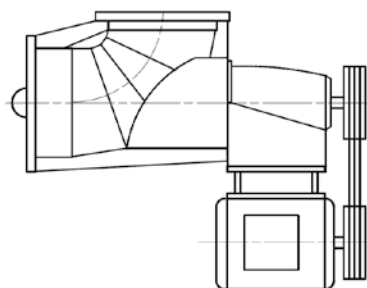
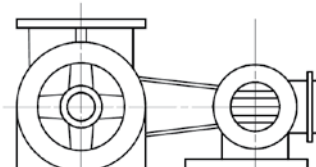
Constructions Naming



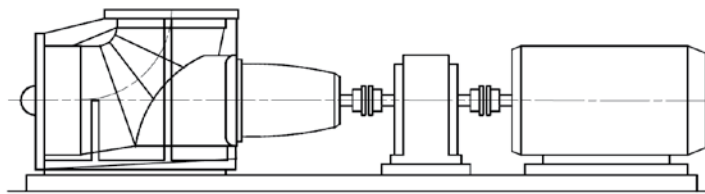
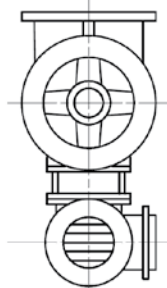
Fitted to pipe and belt driven with lateral motor.



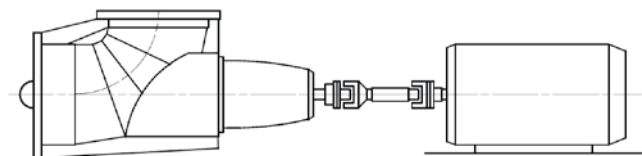
Fitted with feet and belt driven.



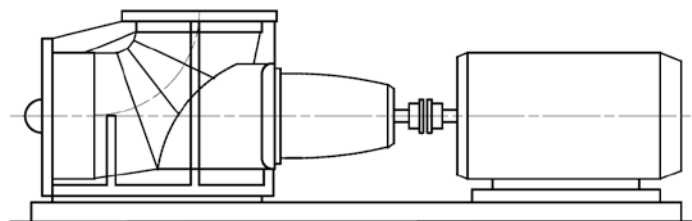
Fitted to pipe and belt driven with motor below.



Fitted with feet and gear box driven.



Fitted to pipe and Cardan coupled motor.



Fitted with feet and direct coupling.

Program Explanation

The propeller pumps are used to handle large flows. According with the hydraulic principles, axial flow pumps generate only low heads.

The elbow propeller pumps are especially suitable for circulations of cold or hot liquids in the chemical industry and also in the sugar, the paper and the cellulose industries and the water treatment plants.

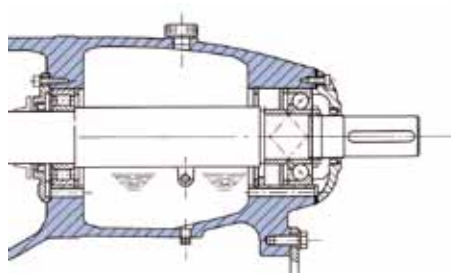
Licar manufactures elbow propeller pumps with flanges DN400 to DN700, with flow capacity up to 2.300 l/s and heads up to 8 m.

Bearings Support

The propeller head is fitted on a cantilever shaft supported outside the elbow casing in heavy duty bearings.

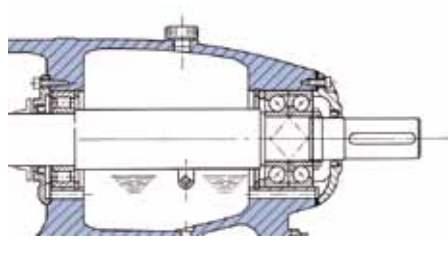
The bearing supports use oil bath lubricated bearings.

All bearings have been calculated for a minimum life of 16,000 hours.



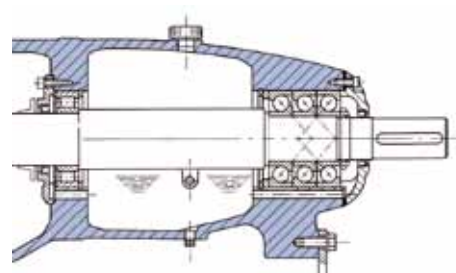
Execution A

Standard version with a single-row roller and a single row angular contact ball bearings.



Execution B

Reinforced support holding two single row angular contact ball bearings in the motor side.



Execution C

Reinforced to support axial forces, with three single row angular contact ball bearings in the motor side.

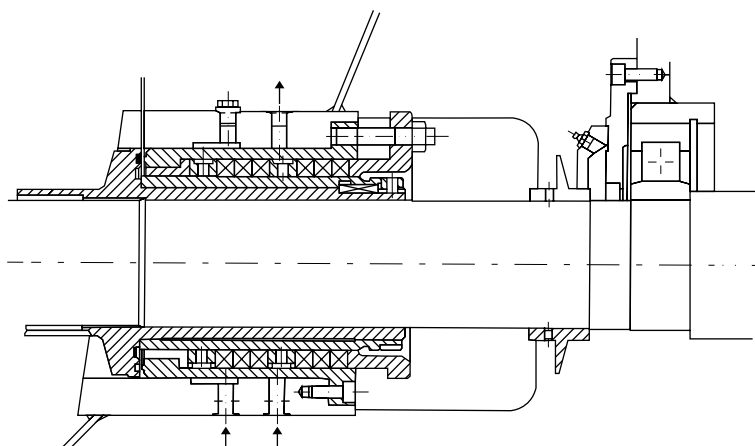
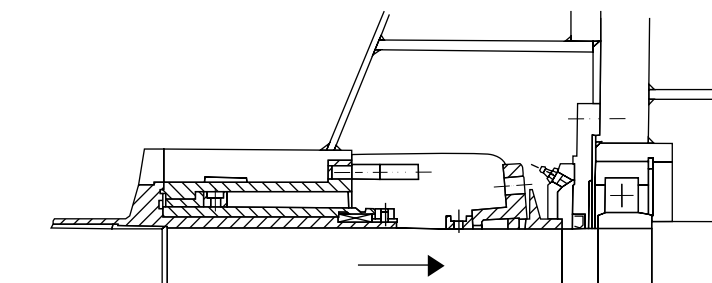
Shaft Sealing

The shaft is not in contact with the liquid but protected by means of a shaft protection tube. In the stuffing box a shaft sleeve is used to protect it from wear.

Different stuffing box sealing arrangements (DIN 3780) are possible.

By displacing axially the shaft it is possible to seal the stuffing box against the liquid in the pump elbow. This way it is possible to replace the packing rings without having to empty the pump elbow and the process vessels.

Mechanical seals (DIN 24960) can be fitted on request



Non Clogging Pumps (Vortex Impeller) T Series

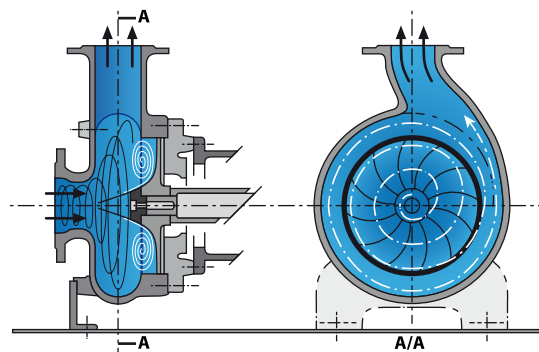
Torque Flow Technology

Torque Flow Technology

In this type of LICAR pumps the energy transmission to the fluid follows the Hydrodynamic Liquid Coupling principle.

Thanks to the fully displaced position of the impeller, only a 15% of the fluid contacts directly with it. The energy transmission to the rest of the fluid comes from the torque flow coupling principle.

The radial thrust gets cancelled because the impeller is housed in a concentric circle area of the casing.



Advantages of the Free Passage Technology

Silent.

Smooth and vibration free operation, ideally suited for the use of mechanical or hydrodynamic seals.

Reliability.

Non-clogging. Solids up to the full diameter of the discharge pipe can be pumped without risk of clogging.

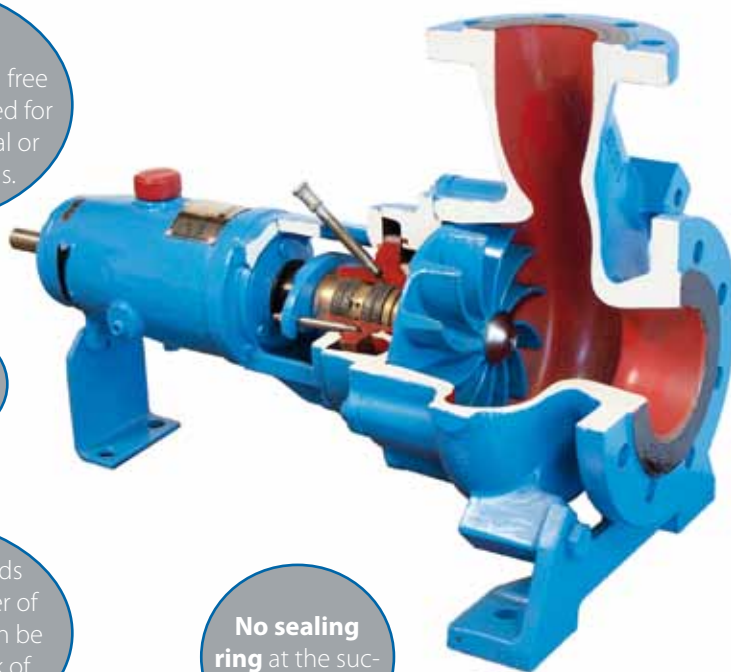
No sealing ring at the suction side.

Full Free Passage

from suction to discharge pipe thanks to the recessed position of the impeller.

Long service life.

Wear resistance. The new LICAR pump casing (axial spiral) ensures that the solids in the flow are quickly discharged. Wear concentrates in the impeller and the ring that surrounds it.



Hydraulic characteristics

Flange diameter: 50 – 150 mm.

Flow: up to 110 l/s.

Total Head: up to 125 mcl.

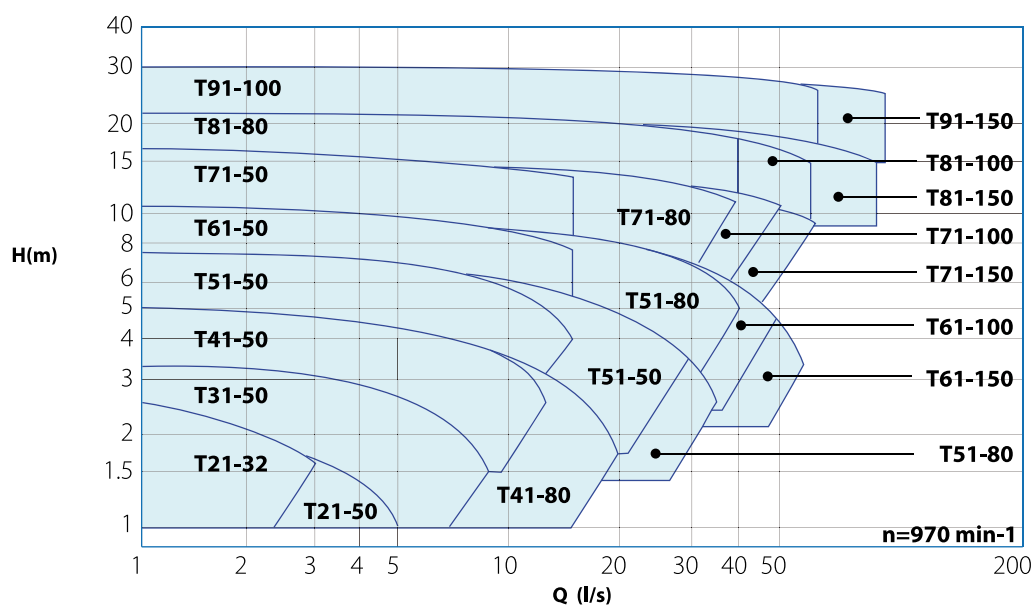
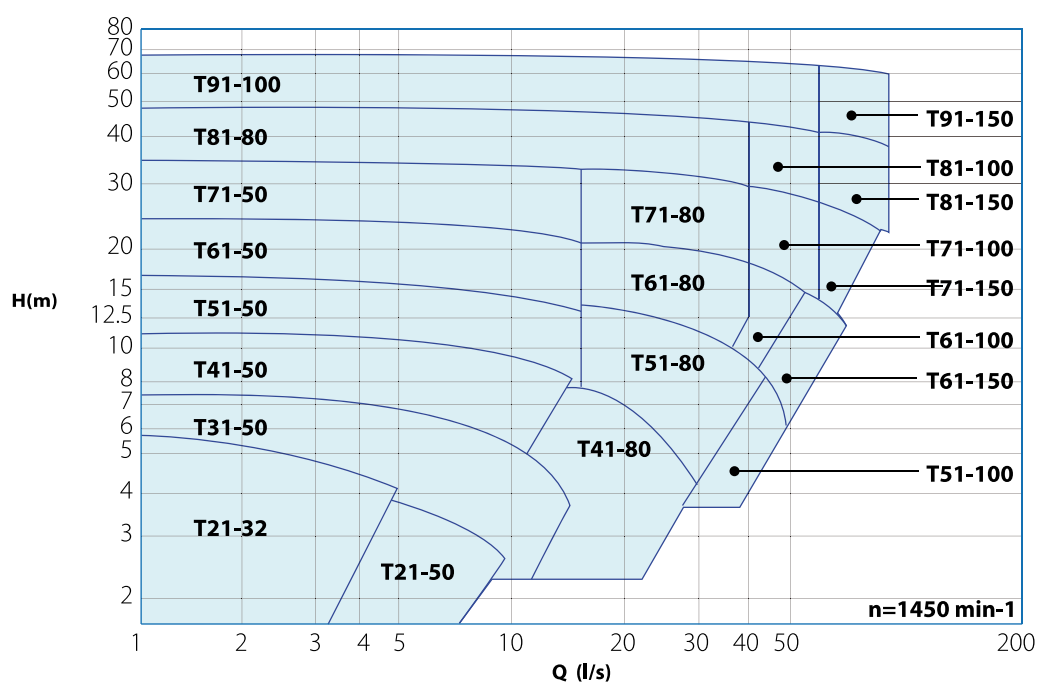
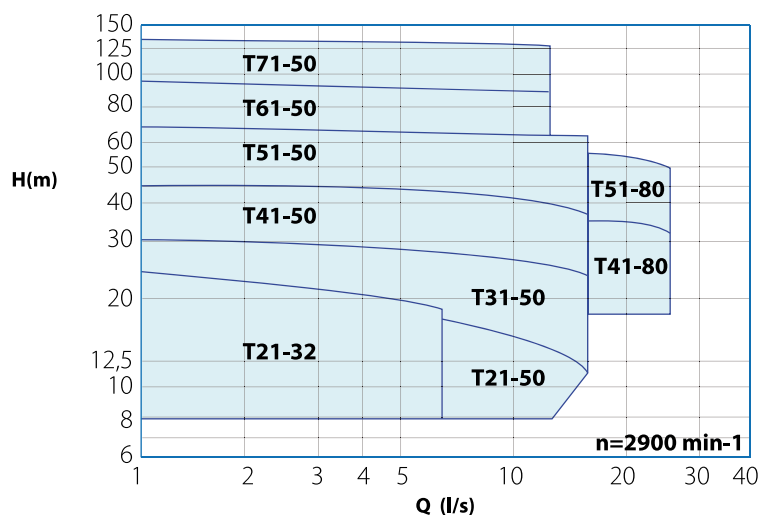
Fluid Temperature: up to 90°C.

Operating Pressure: up to 10 bar.

Use

Because of its good resistance to wear and its non-clogging feature the LICAR Vortex pumps are ideally suited for pumping all kind of charged liquids or high content solids liquids.

- Raw waste water, urban or industrial.
- Sludge from sewage plants.
- Muddy waters of all kinds.
- Suspensions of synthetic materials.
- Liquids containing any type of solids with maximum size up to the discharge diameter.



Channel Type Impeller Pumps - D Series

D Impeller

Channel Type Impeller Pumps

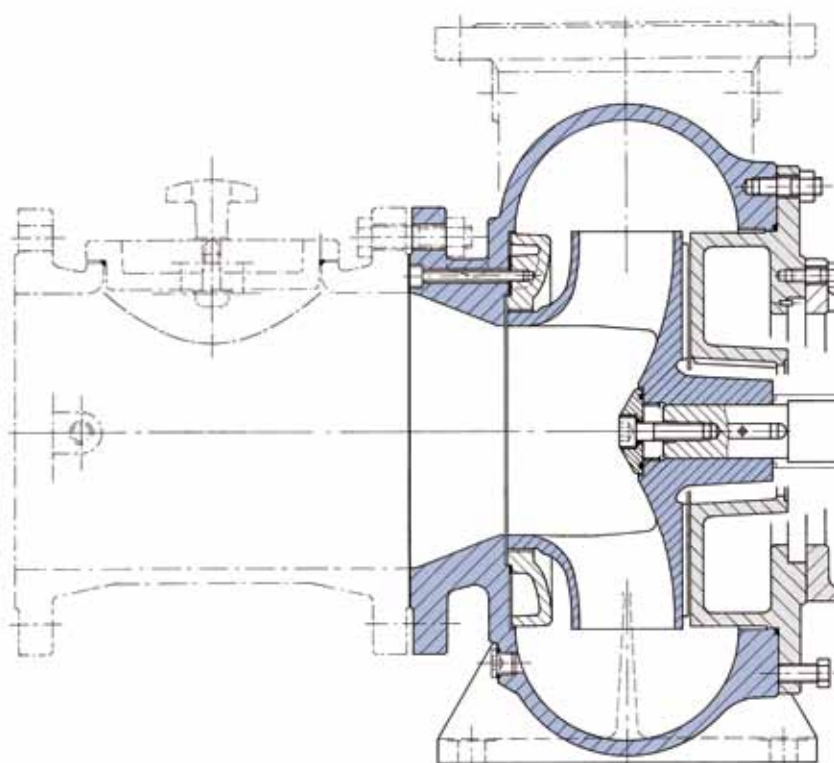
The channel type impellers have counter blades in the pressure side to balance the axial thrust and relief the pressure to the shaft sealing.

All the casings are provided with a replaceable suction tube. Depending on the size they also have a sealing ring the same way as the impeller itself.

A shaft sleeve protects it and prevents its contact with the fluid.

We deliver them in horizontal or vertical mounting, dry-pit or submersible.

When dry-pit mounted a supplemental suction pipe piece with quick release opening can be used.



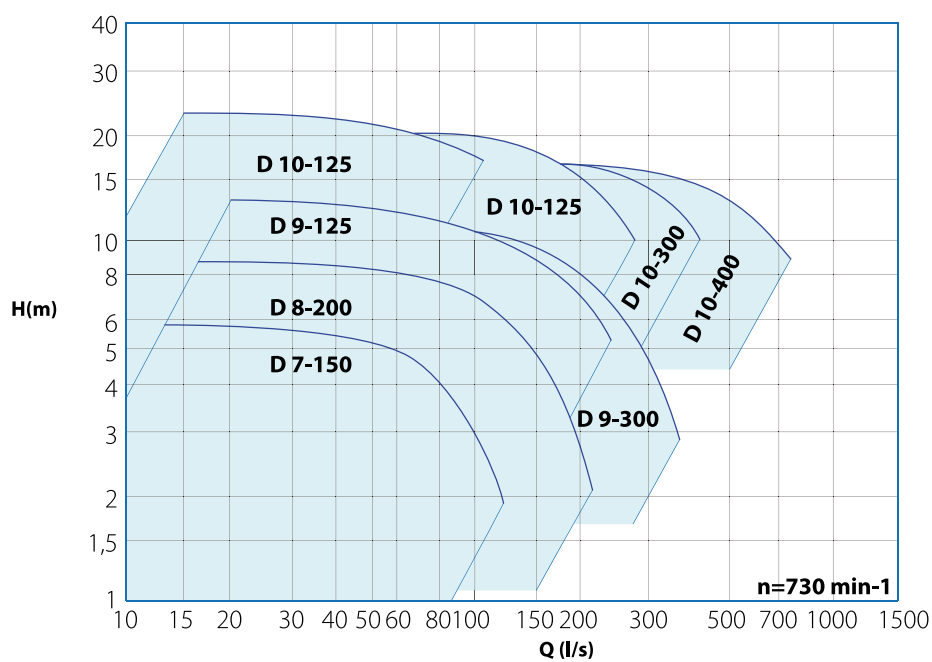
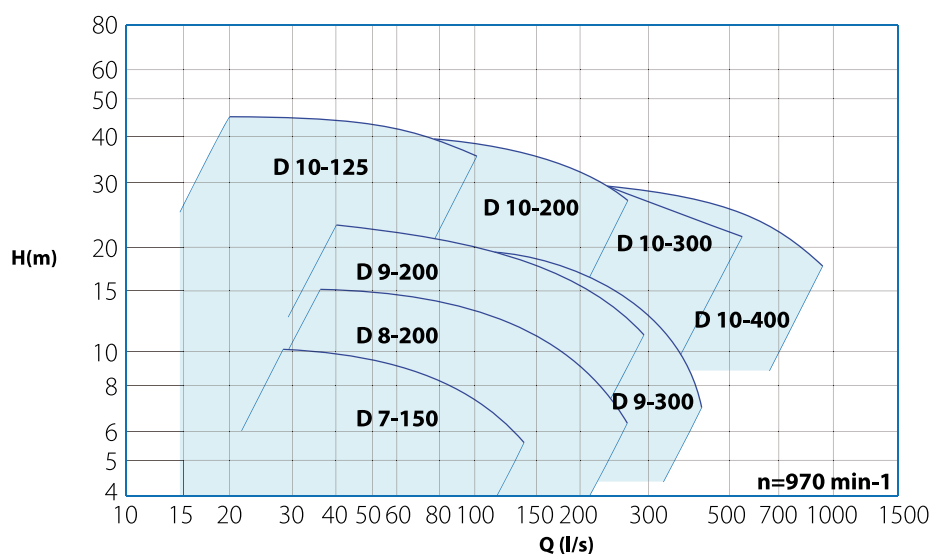
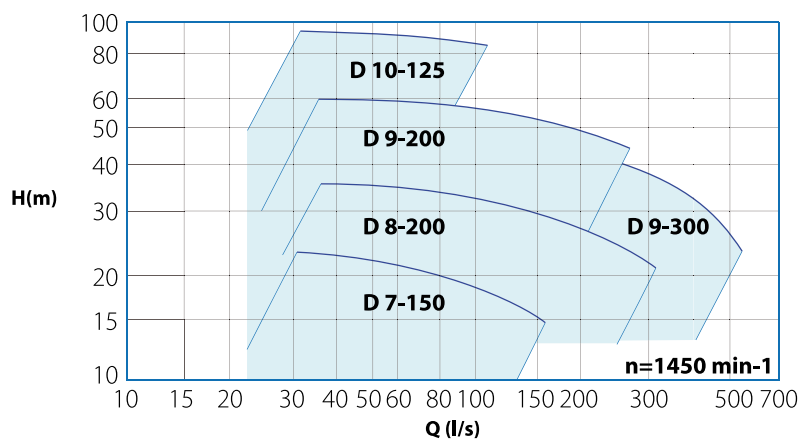
Use

The channel type impeller pump is a single step pump well suited for pumping charged liquids which do not form lumps, as:

- Pumping of pre-treated waste water.
- Liquids with solids.
- Chemical water.

Hydraulic characteristics

Flange diameter: 150 - 500 mm.
 Flow: up to 1.500 l/s.
 Total Head: up to 90 mcl.
 Fluid Temperature: up to 90°C.
 Operating Pressure: up to 10 bar.



Closed Type Impeller Pumps - TW Series

TW Impeller

TW Impeller

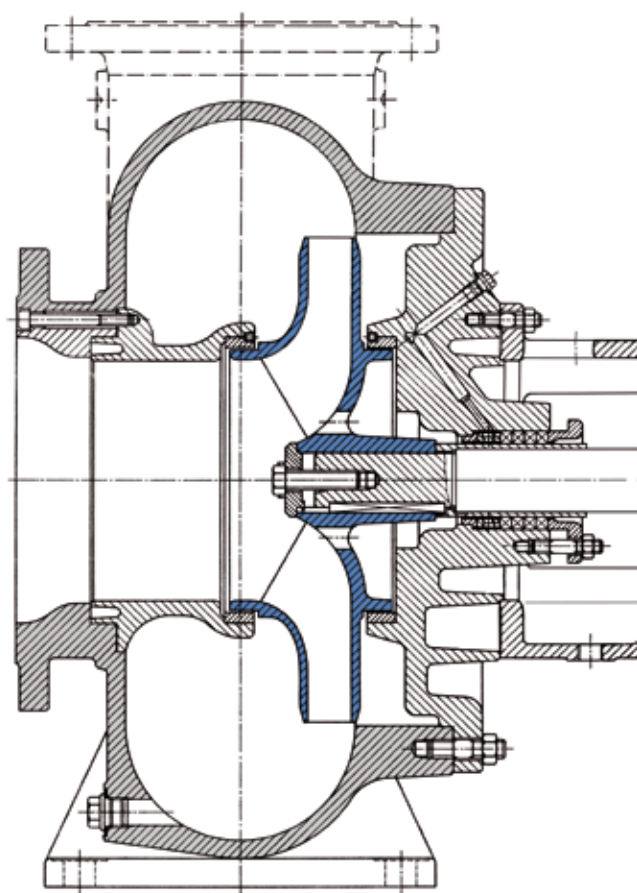
High performance impeller, with 6 blades and traditional closed design suited for clean liquids or slightly and homogeneously charged liquids.

Pump

With internal and replaceable suction pipe and sealing rings.

Provided with a shaft sleeve for wear protection, the shaft never contacts the pumped liquid.

We deliver them in horizontal or vertical mounting, with the motor always mounted dry.



Use

TW impeller pumps are used mainly with:

- Cleaned paper stock up to 2% consistency.
- Fresh water.
- White water and filtered water.
- Steam condensate.
- Liquors.
- Diluted solutions
- Filtered effluents.

Hydraulic characteristics

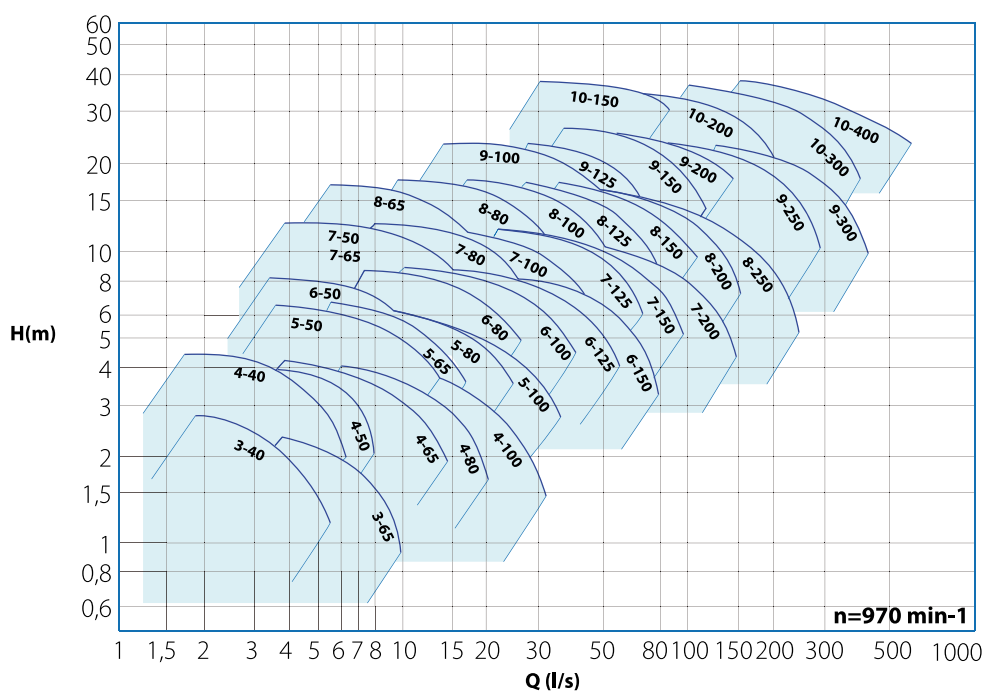
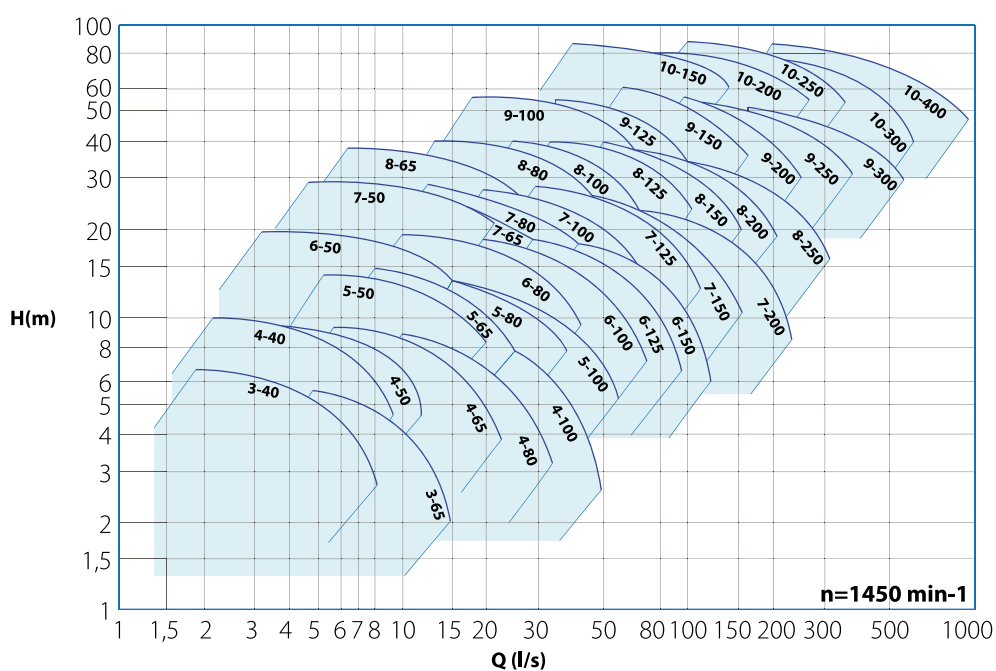
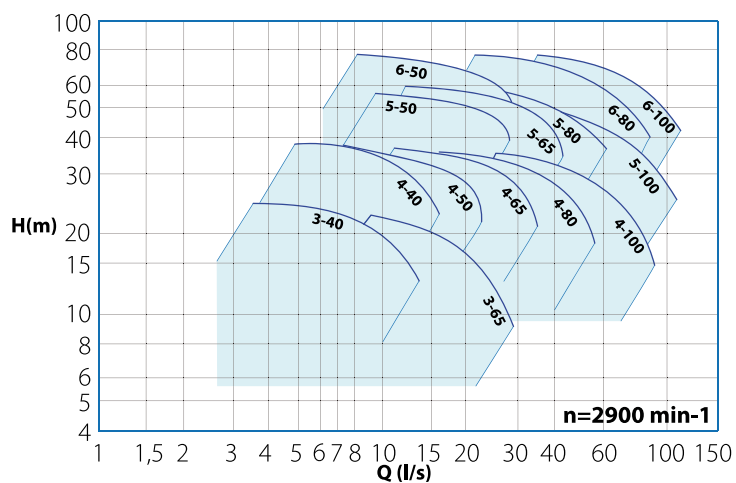
Flange diameter: 40 - 400 mm.

Flow: up to 900 l/s.

Total Head: up to 90 mcl.

Fluid Temperature: up to 90°C.

Operating Pressure: up to 10 bar.



Closed & Semi-Open Type Impeller Pumps TE & TES Series

● TE / TES Impeller

TE / TES Impeller

High performance impeller, with 4 blades and divergent channels that differentiate it from classic impeller.

TE Impeller: closed impeller

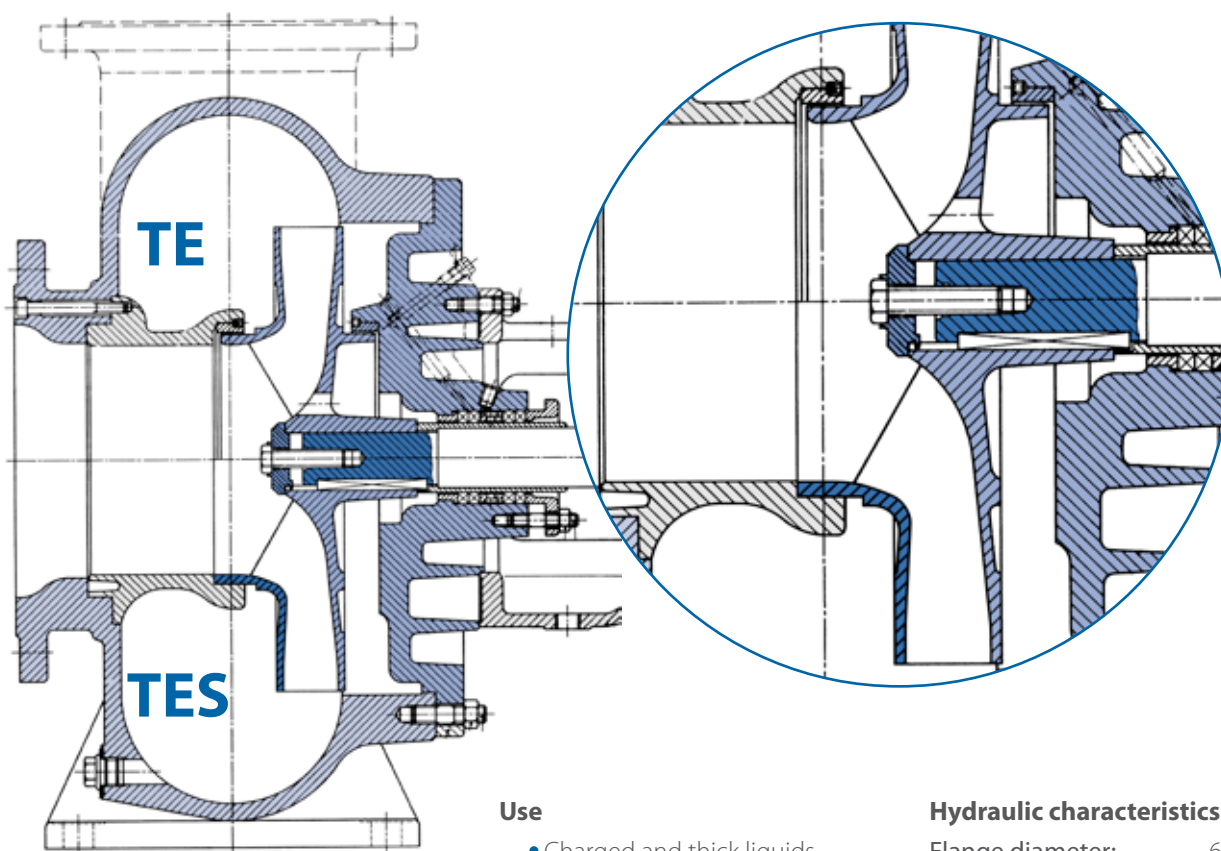
TES Impeller: semi-open impeller, with a supplement that shapes the channels.

Pump

With internal and replaceable suction pipe and sealing rings.

Provided with a shaft sleeve for wear protection. The shaft never contacts the pumped liquid.

We deliver them in horizontal or vertical mounting, with the motor always mounted dry.

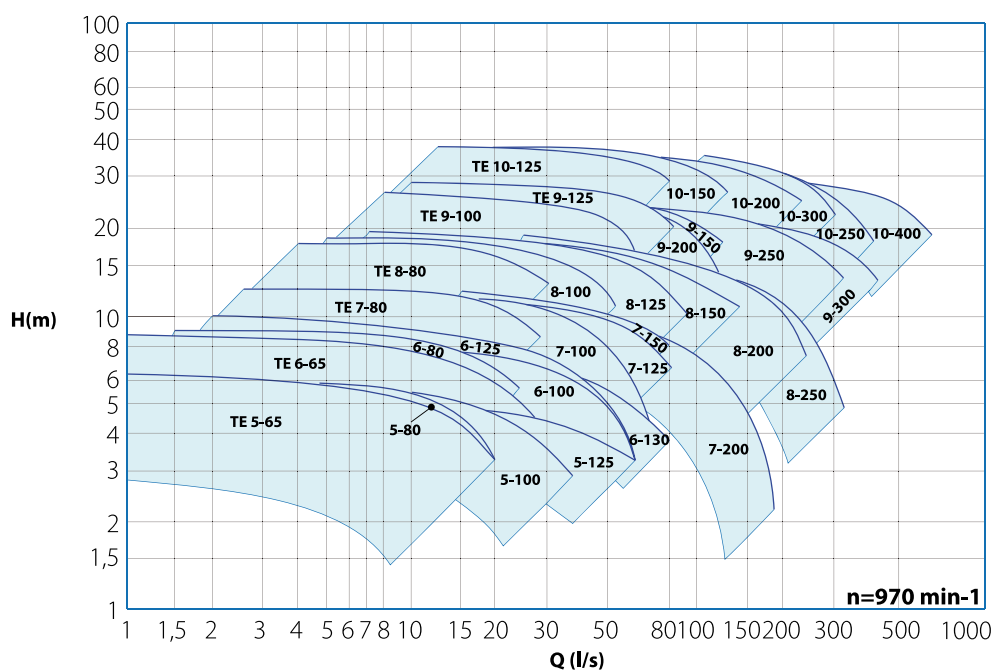
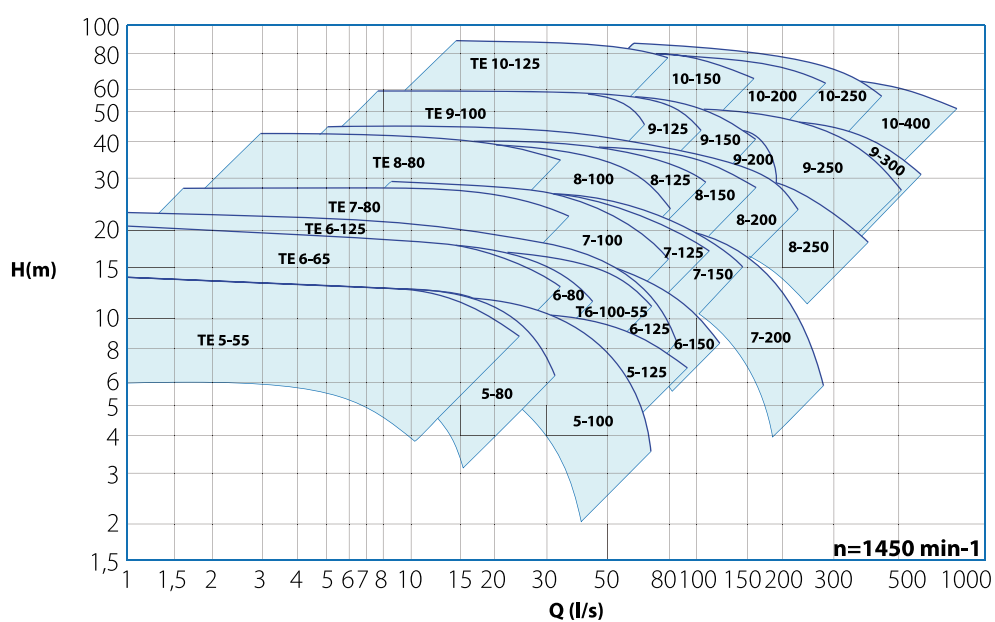
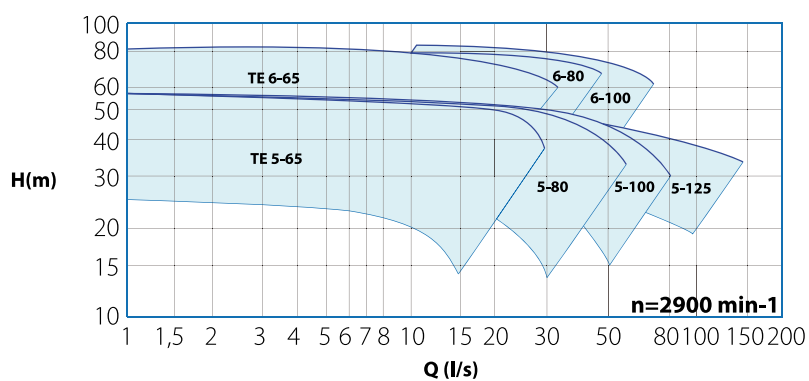


Use

- Charged and thick liquids
 - TE impeller:** up to 2% solids
 - TES impeller:** up to 5% solids.
- Fibre suspensions
- Clear and process water
- Filtered waste water
- Filtered effluents

Hydraulic characteristics

Flange diameter: 65 - 400 mm.
 Flow: up to 700 l/s.
 Total Head: up to 90 mcl
 Fluid Temperature: up to 90°C.
 Operating Pressure: . . . up to 10 bar.



Pumps with Propeller Impeller - RPP Series

Propeller Impeller

Propeller Impeller

Consist of a 4 blades propeller mounted on a cantilever shaft. There is no bearing in contact with the liquid.

The variable pitch blades are bolted to the hub with the angle adjusted to the specific requirements of each installation. The pitch angle can be modified off-line.

LICAR carefully balances the complete impeller, both static and dynamically.



Elbow Propeller Pump

The Elbow Propeller Pumps are ideally suited for pumping great flows with small Head.



Use

The Elbow Propeller Pumps are commonly used for recirculating hot and cold liquids in the:

- Chemical industry
- Process industry
- Sugar industry

Hydraulic characteristics

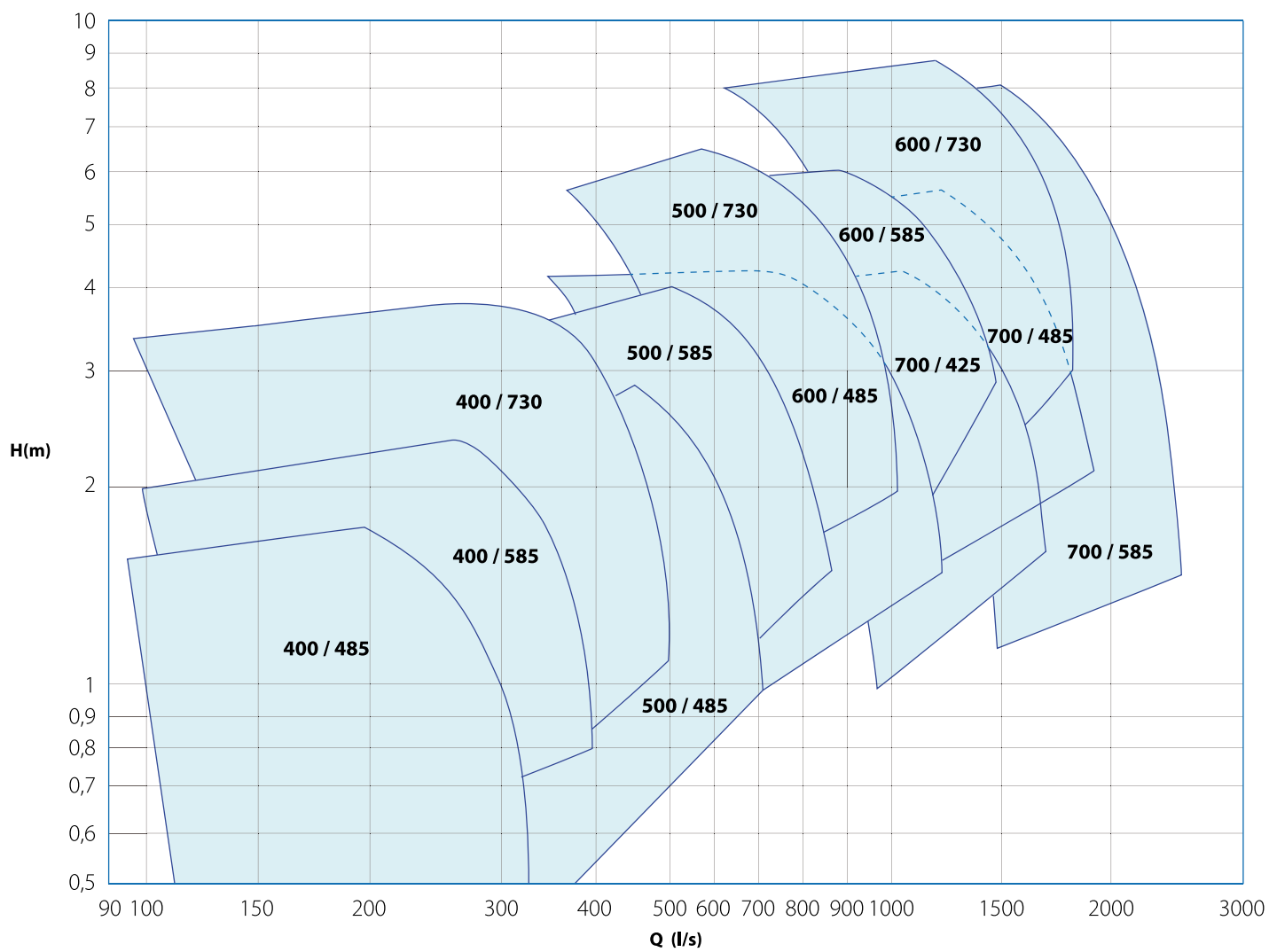
Flange diameter: 400 - 700 mm.

Flow: up to 2.300 l/s.

Total Head: up to 8 mcl.

Fluid Temperature: up to 90°C.

Operating Pressure: . . . up to 10 bar.



Standard Materials

Licar pumps can be configured with different material combinations to adapt to the pumped liquid conditions. These are the most commonly used:

Grey cast iron

GG-25

DIN 1691 = UNI 5007-69 = ASTM A48-74

Yield limit = 250 N/mm²

Hardness = 180 – 240 HB

Stainless Steel

AISI 316

DIN 1.4408 = UNI 6900 = ASTM CF8M

Yield limit = 440 – 640 N/mm²

Hardness = 130 – 200 HB

Abrasion resistant steel

CA-40

Martensitic stainless steel

DIN 1.4028 = UNI 6900 = AISI 420

Yield limit = 440 – 640 N/mm²

Hardness = 270 – 290 HB

CA-40T: Hardened by tempering

Hardness = 520 – 540 HB

Carbon steel

CK-45

AISI 1045

Yield limit = 650 – 800 N/mm²

Ferritic-Pearlitic cast

GGK-FP

Yield limit = 250 N/mm²

Hardness = 160 – 220 HB

Fluid temperature up to 90°C with standard materials.

For higher fluid temperatures or other materials please contact us.

Other material combinations are possible on demand.

We have great ability to make different material combinations to adapt to customer specific demands. The selection of the materials to use is based in the liquid characteristics, but also local ambient and labour conditions.

Last safety rules are applied to the coupling safety protections.

Technical Support

Spare parts

Licar offers original spare parts adjusted to customer requirements thus, providing maximum availability and security. These parts are manufactured following the same production processes than components built during Licar pumps fabrication.

Maintenance and repairs

Licar offer includes revamping and repairs of both Licar's and other's equipment to meet customer's maintenance requirements and pumps improvements.

Installation and Start-Up

Licar counts with a high skilled and qualified team of technicians to offer on-site installation and start-up of centrifugal pumps.



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