



**DICKOW
PUMPEN**



**Submersible Long Shaft Pumps
for the Chemical Industry
Type NCT/NMT**

General

The DICKOW submersible pump, type NCT, for the chemical industry is a vertical pump with separate discharge pipe.

The maximum capacity goes up to 700 m³/h. Higher capacities are available on request.

The pump type NCT has been developed for chemical, petrochemical and related industries. With a wide selection of materials, the DICKOW submersible pumps are suitable for handling almost all liquids which are used in above mentioned industries.

For example: acids, lyes, hydrocarbons, condensation products, solvents etc.

Design

The chemical submersible pump NCT is a single-stage, single-flow volute casing pump with separate column pipe and discharge pipe.

The hydraulic part of the pump is mounted inside of the vessel, the driving motor is located outside. All standard motors with normal shaft design can be used. No special shaft design is required.

The motor shaft is connected with the pump shaft via an elastic coupling. By using spacer-type couplings, service on ball bearings or on the available shaft sealing system can be performed without removing the motor. Submersible length according to customer's specification.

Volute casing

The volute casing is a one piece casting and bolted to the column pipe via the intermediate casing. In case the liquid temperature drops below the melting- or crystallization point, volute casings and tubes with heating jackets are available. For example: handling of sulphur liquid or viscous residuals or slurry liquids.

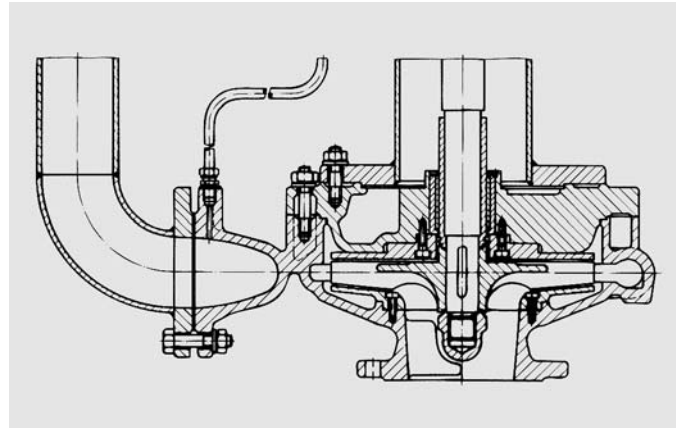
Impeller

The standard design of the DICKOW submersible pump has a closed impeller. The impeller is cast in one piece and hydraulically balanced to reduce thrust loads to a minimum. Residual loads are carried by the double ball bearings located in the motor support lantern. All impellers are dynamically balanced, according to DIN ISO 1940T1 balance grade 6.3 which grants a smooth vibration free operation. Finer balancing grades are available on request.

The impellers are placed on the pump shaft in overhung position and secured by key and cap nut with Heli-Coil insert.

NCTo-design

For handling liquids with solids or suspensions, the type NCTo with open impeller is also available. The NCTo-pumps are fitted with renewable wear disks to minimize maintenance costs.



Wear rings

The volute casings and the intermediate casings of the NCT-pumps are fitted with renewable wear rings as standard. The running clearances between casing wear rings and impeller comply with the recommendation of API 610.

Shaft

The shaft assembly consists of the drive shaft, one or more intermediate shafts and the pump shaft. These shafts are connected by rigid metallic plug-in couplings, secured by keys and locking fasteners.

Discharge pipe, column pipe

The discharge and column pipes consist of seamless pipe material with welded connection flanges.

Dome cover plate (mounting flange)

Standard material for the cover plate is carbon steel, 1.4571 (AISI 316L) S.S. is available as an option on request.

The cover plate with the drilled holes for pump installation on site is made according to customer's specification, or approved dimensional drawing.

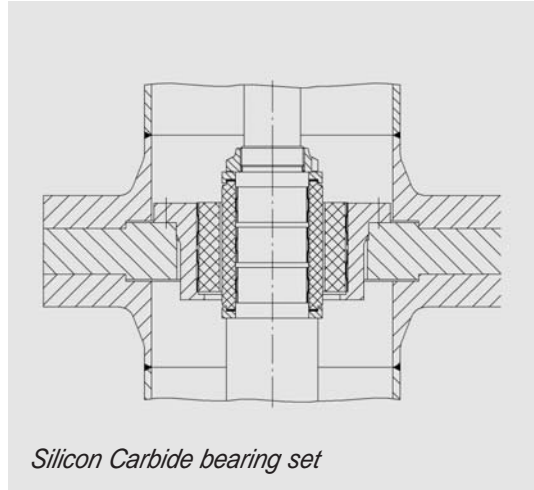
If the pump is supposed to be installed in a pressurized vessel, the thickness of the cover plate will be calculated and sized according to the German Pressure Vessel Code. Material certificates 3.1 can be supplied on request.

Bearings

The intermediate shafts and the pump shaft are carried in sleeve bearings which are corrosion and abrasion resistant. The maximum space between the shaft guide bearings follows the recommendation of API 610.

The drive shaft is carried in two angular ball bearings. These bearings are grease lubricated and protected against shaft sealing leakage by two grease filled radial seal rings.

Several sleeve bearing options are available. E.g. for handling liquids with solids we can offer pure and wear resistant Silicon Carbide bearing sets.



Motor support lantern

The welded motor support lantern is made of fabricated steel. Ball bearings and shaft sealing are integrated in the support lantern. The lantern is machined in a way that alignment to the cover plate and alignment of drive shaft and motor shaft is guaranteed.

Standard materials:

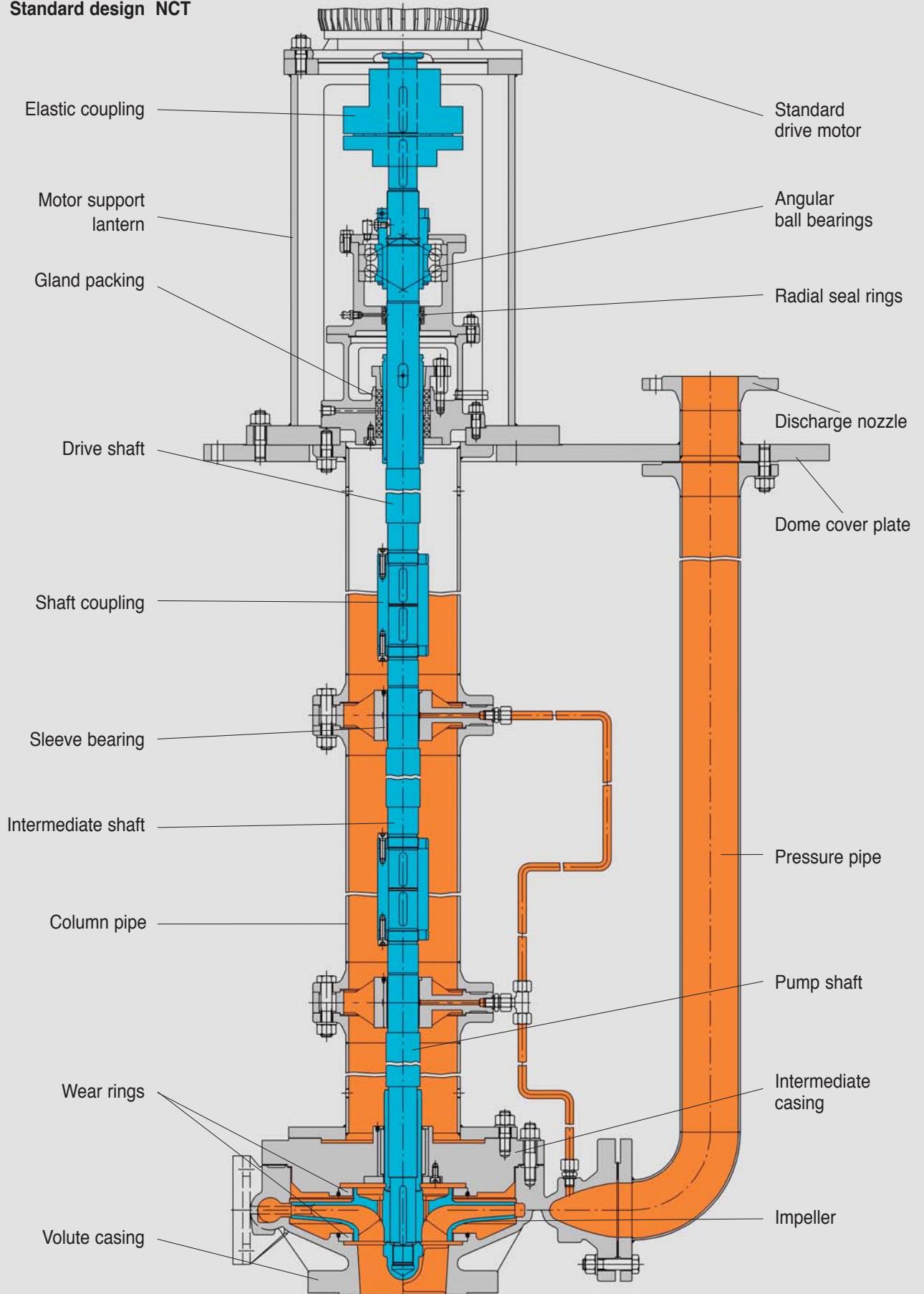
(Special materials available as an option)

Pump type	NCTs	NCThu	NCTh
Volute casing	GGG40.3	GS-C25	1.4408
Impeller	GG25	GG25	1.4408
Intermediate casing	GGG40.3	GS-C25	1.4408
Cover plate	St37	St37	1.4571
Shafts	1.4057	1.4057	1.4571
Sleeve bearing casing	GG25	GG25	1.4408
Motor support lantern	St37	St37	St/1.4571
Bearing housing	GG25	GG25	GG25
Tubes	St37	St37	1.4571
Column pipe	St37	St37	1.4571
Discharge pipe	St37	St37	1.4571

Ductile iron	GGG40.3	→ A 395	1.4408 (G-X5 CrNiMo 18.10)	→ A 296 CF8M
Cast iron	GG25	→ A 48 No 30	1.4571 (X10 CrNiMoTi 18.10)	→ AISI 316L
Cast steel	GS-C25	→ A 216-WCB	1.4057 (X22 CrNi 17)	→ A 431
Carbon steel	St37	→ A 53 Gr.A.		

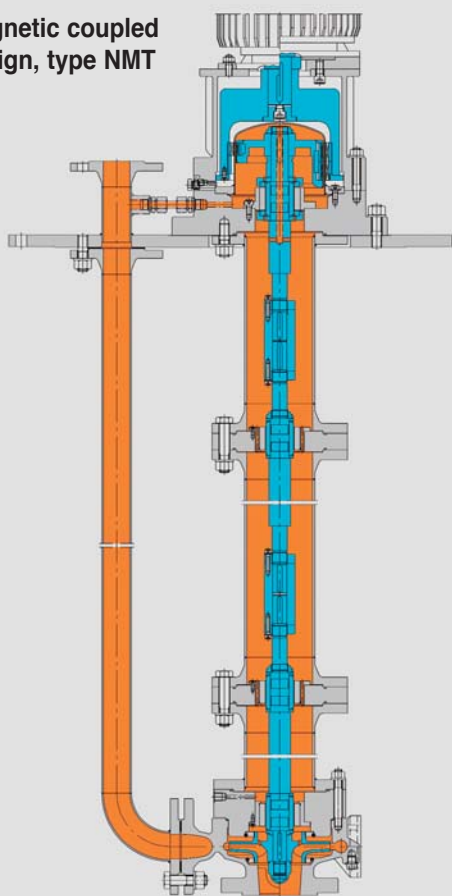
Sectional drawings

Standard design NCT

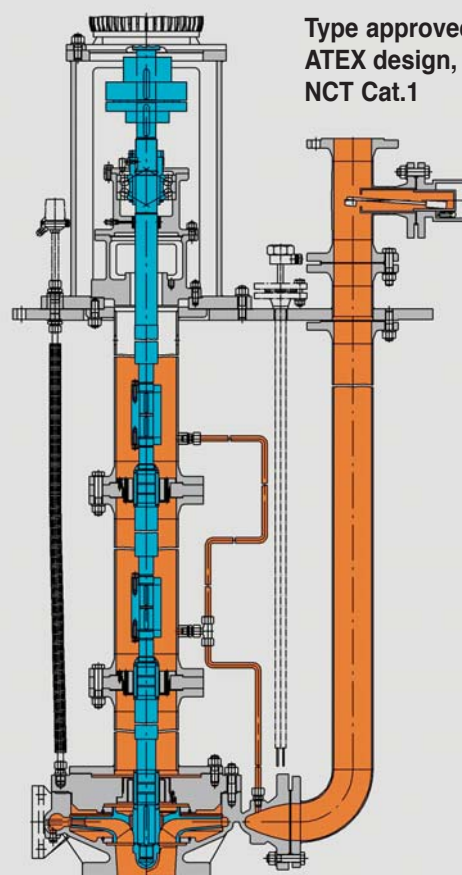


Optional designs

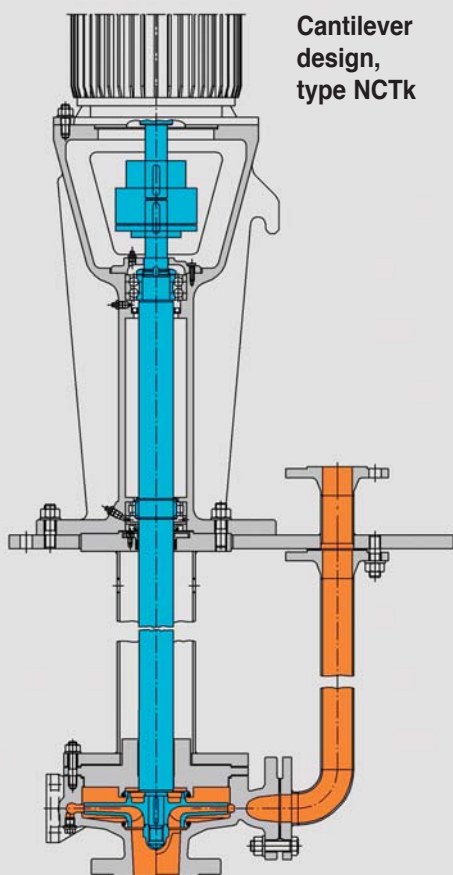
**Magnetic coupled
design, type NMT**



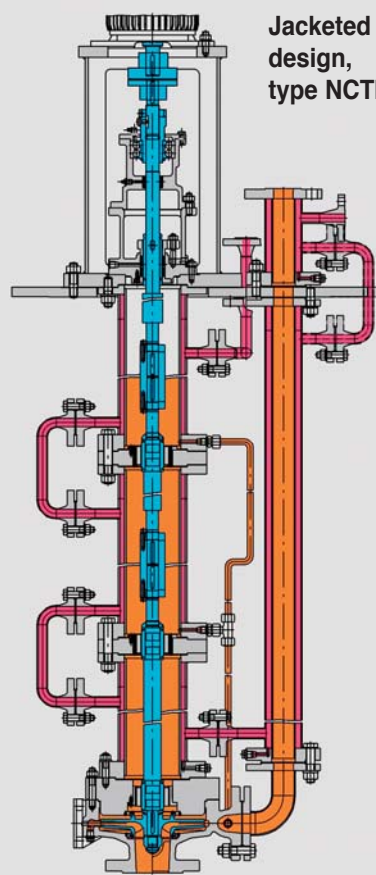
**Type approved
ATEX design,
NCT Cat.1**



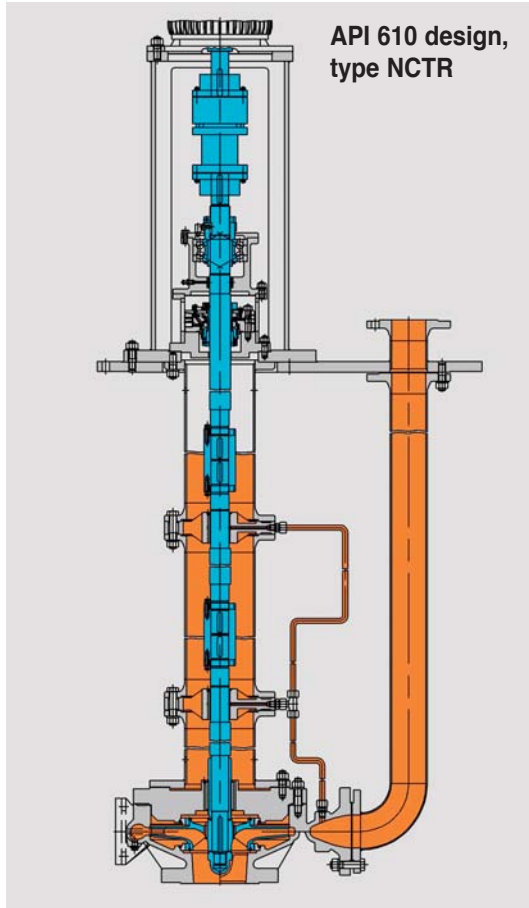
**Cantilever
design,
type NCTk**



**Jacketed
design,
type NCTb**

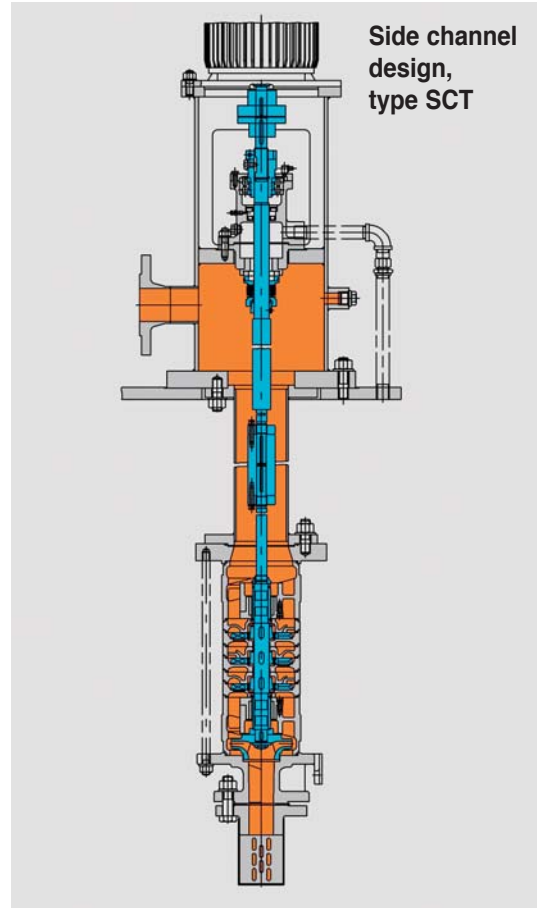


Optional designs



Design features:

- mechanical seal acc. to API 682
- impeller- and casing wear rings



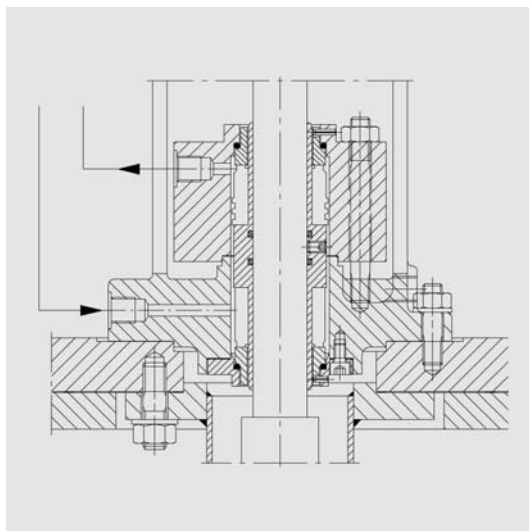
Special design for low flow and high head applications. Pump body and performance table is identical to type SC (see corresponding leaflet).

Shaft sealing

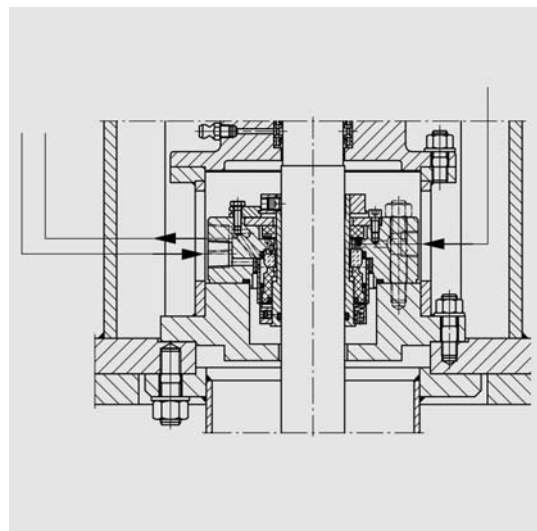
The drive shaft is sealed against the atmosphere by a shaft sealing arrangement, located in the motor support lantern. The shaft sealing is not pressurized by the pump itself. Besides the

standard gland packing with self-lubricating graphite ring, mechanical seals can also be applied. Retrofitting from packing to seal on site is possible without remachining any pump parts.

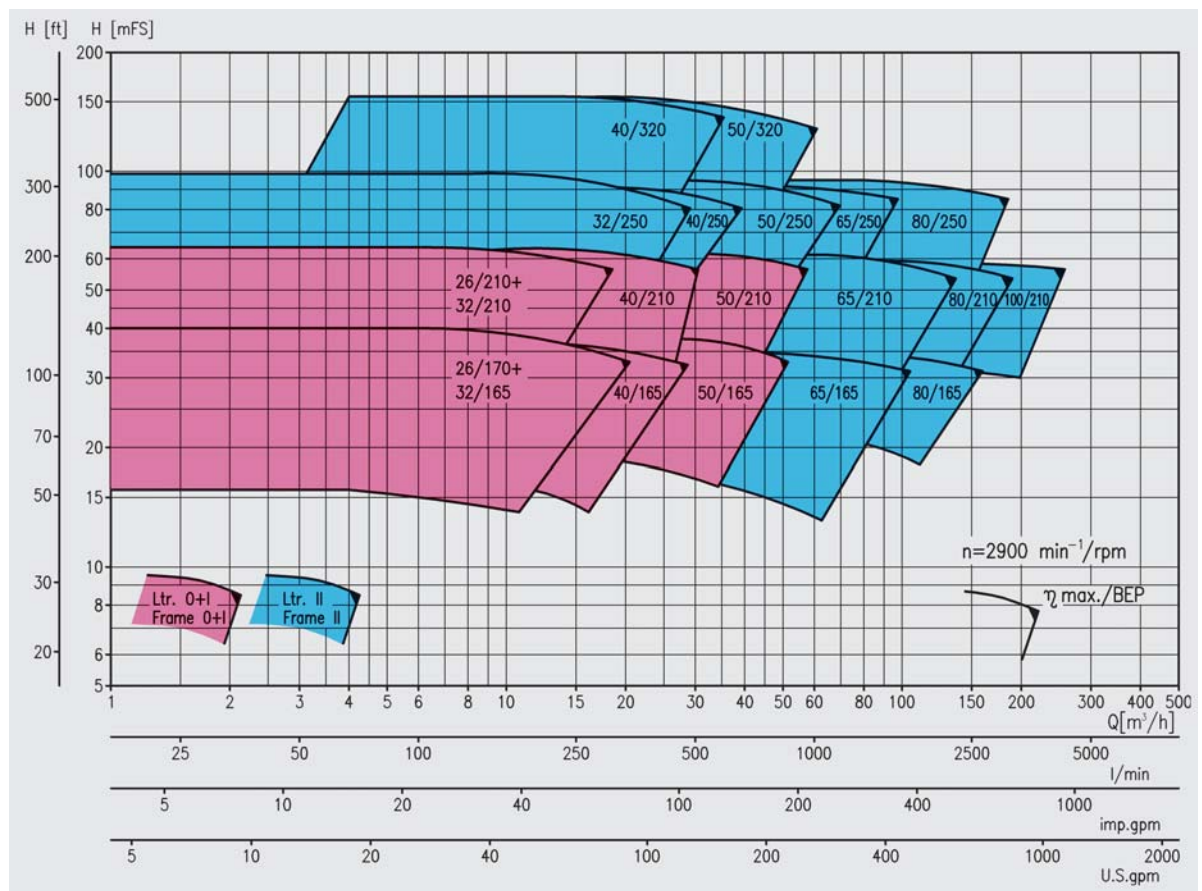
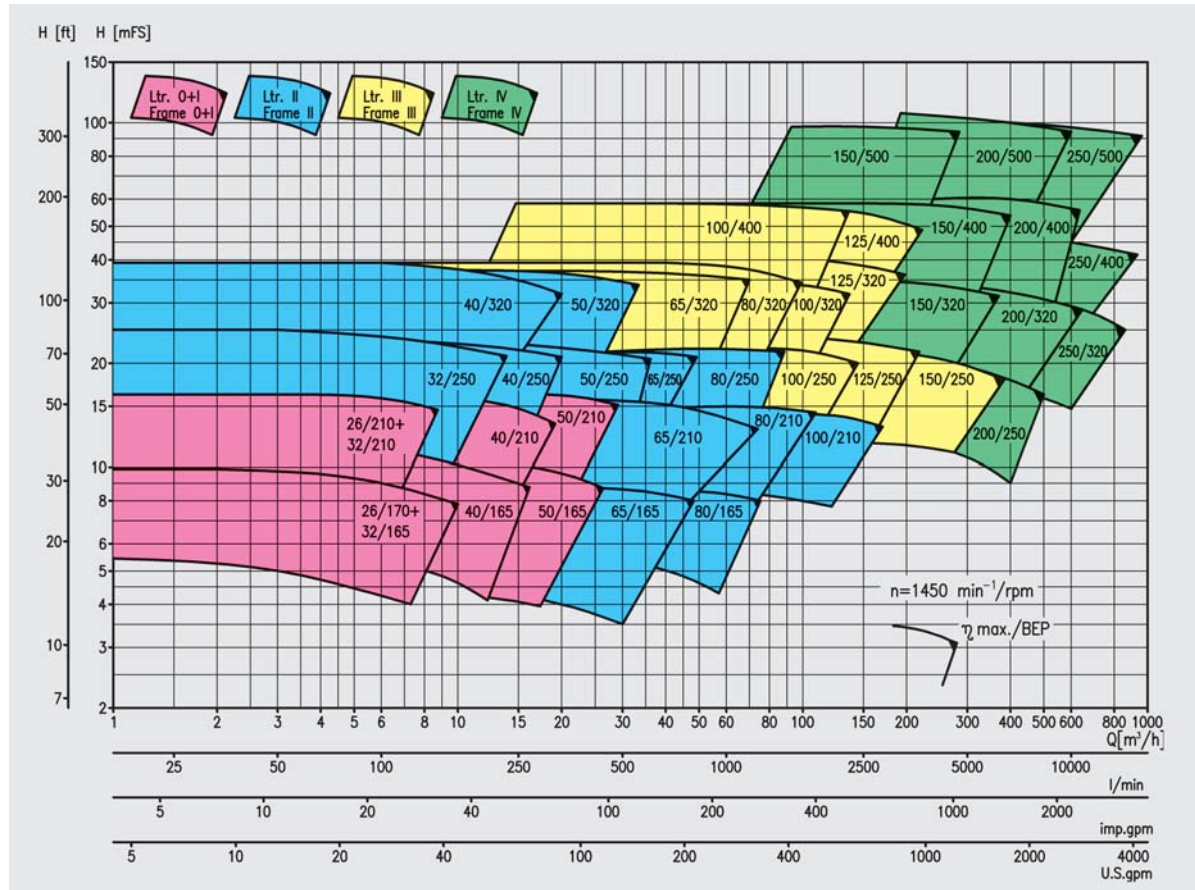
Double mechanical seal,
back-to-back arrangement



Single mechanical seal,
cartridge type acc. to API 682



Performance range



Performance curves for the different pump sizes are available on request and are supplied with our technical offers in general.



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