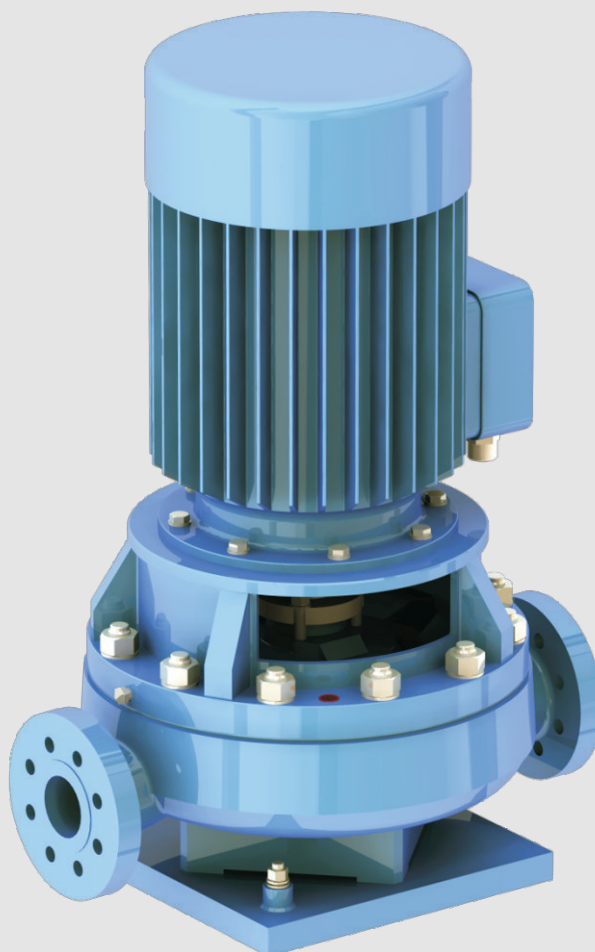




► The power of proven technology

ETL
ETLS

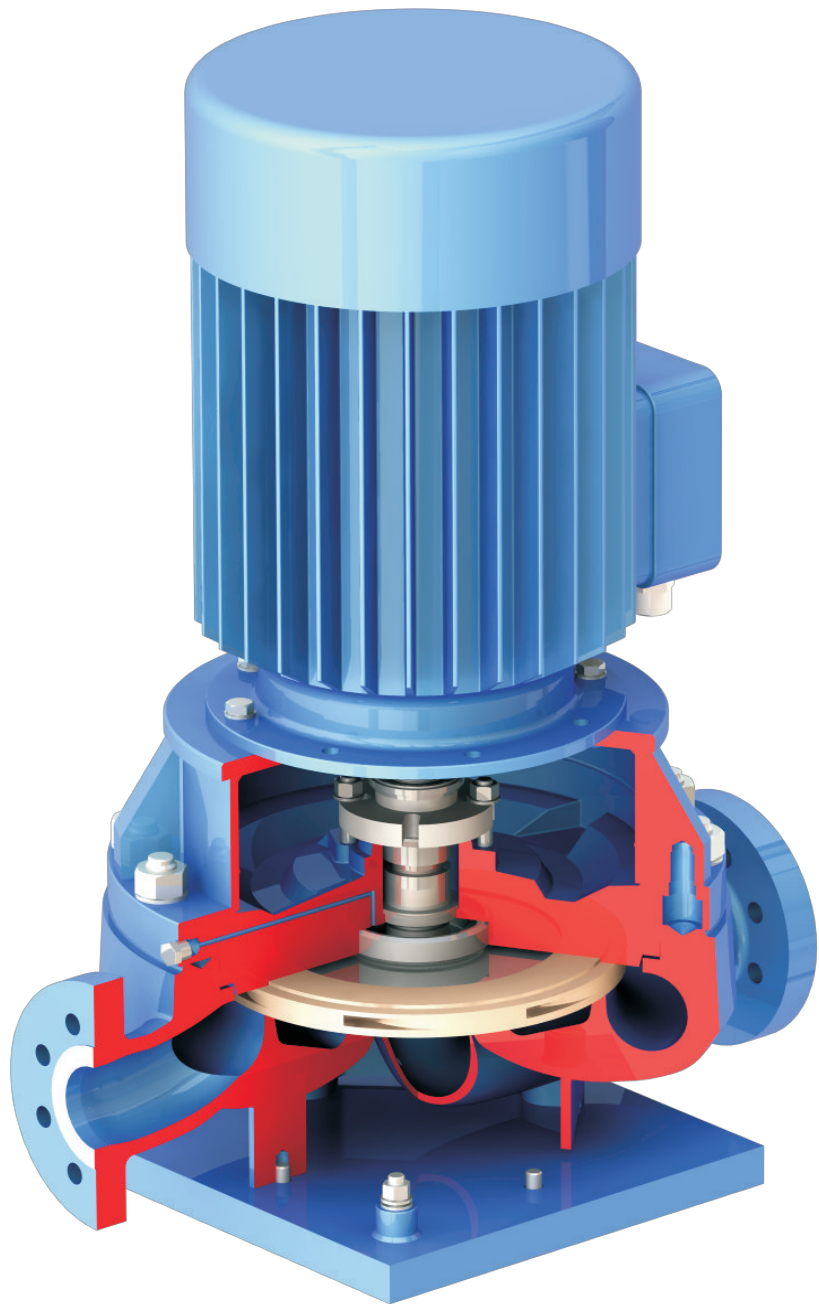


Type OH4, OH5 Vertical Inline Diffuser
Design Process Pumps
Acc. ISO-13709 (API-610) and BS 4082-1

General design description

The ETL is a series of Vertical-In-line Diffuser type Centrifugal Process Pumps.

The design of ETL is based on the latest edition of the American Petroleum Institute standard 'Centrifugal Pumps For General Refinery Services', also known as ISO-13709 (API 610). Satisfying this standard, the ETL complies with the stringent requirements as per latest edition of ISO-13709 (API 610) and with the external dimensions as per BS 4082-1.



General characteristics

Basic design in closed coupled execution, where the impeller is directly fixed to the extended shaft of a vertical flanged type electrical motor. (Oh5)

➤ Optional design (type ETLs) with separate bearing bracket and spacer type rigid

coupling, driven by a standard flanged type electrical motor. This type is selected for high temperature applications (> 250° C) (OH 4)

➤ Hydraulics by means of extended range of impeller-diffuser combinations

➤ Specific the ETL range of

pumps counts limited number of parts, which in a lesser extent is also applicable for the ETLs

➤ Accommodates all API 682 mechanical seal cartridge configurations and consequent mechanical seal fluid systems

Applications



- Offshore applications
- Hydrocarbon storage facilities
- Liquid gas plants

- Energy and general industry

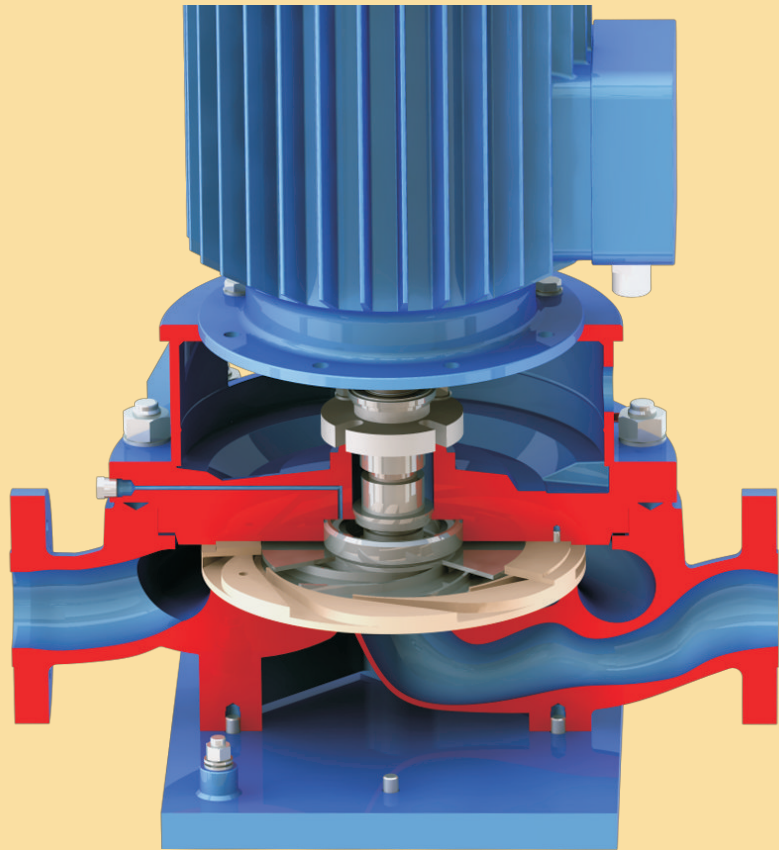


- Crude oil refining
- Petrochemical processing
- Chemical processing



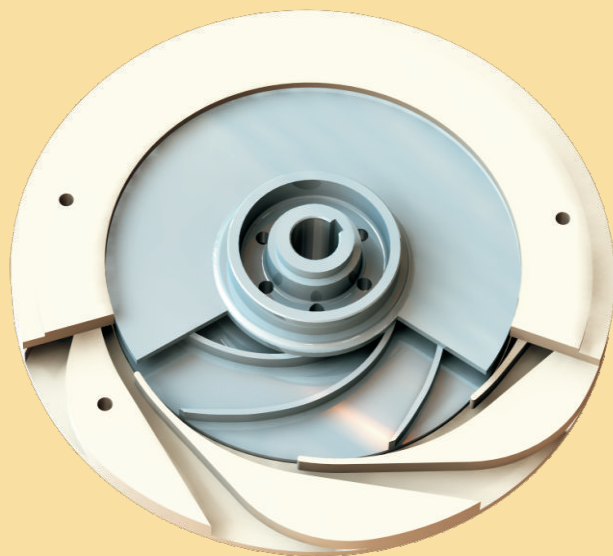
Features and benefits

- Vertical-In-line Design
- Space saving design up to 50% less floor space needed compared to a horizontal pump application
- Reduced installation cost due to its alignment-free construction
- No alignment disturbance due to piping forces and thermal deformation
- Meeting the external dimensional data as per BS 4082-1, allows for early project installation plot plan design
- Standardized seal chamber design to fit all recognized API 682 seal configurations
- All of them available as full cartridge seal, which can reduce seal replacement by 50%
- Simplified spare parts logistics
- Does not requires grouting
- Saves platform cost and FPSO deck cost



Diffuser Design

- Selecting the right available impeller-diffuser combination results in an optimum rated duty point
- Higher efficiencies than single volute pumps
- Lower noise levels than single volute pumps
- Almost zero radial loads at any flow, resulting in longer bearing and mechanical seal life time, thus extended MTBPM
- Lower minimum flow levels than single volute pumps
- Stable head characteristics at any rated flow
- Reduces installed weight



Basic Design Parameters and Operating Envelop

- Capacity: up to 400 m³/hr. at 50Hz and 450 m³/hr. at 60 Hz speed
- Differential head: up to 180 m at 50 Hz and 230 m at 60 Hz speed
- Design pressure up to 40 bar
- Design temperature up to 250° C (ETL) and up to 450° C (ETLS type)
- Maximum speed 3600 rpm
- Maximum viscosity 300 mm²/s

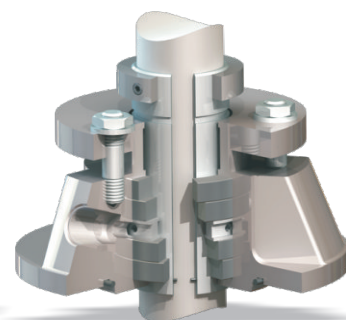
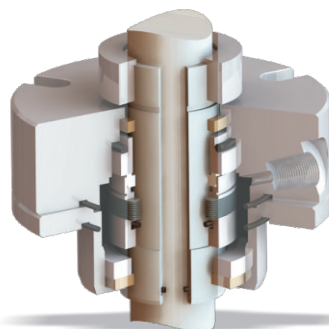
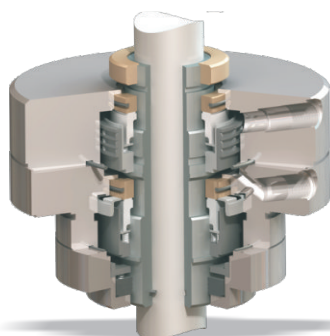
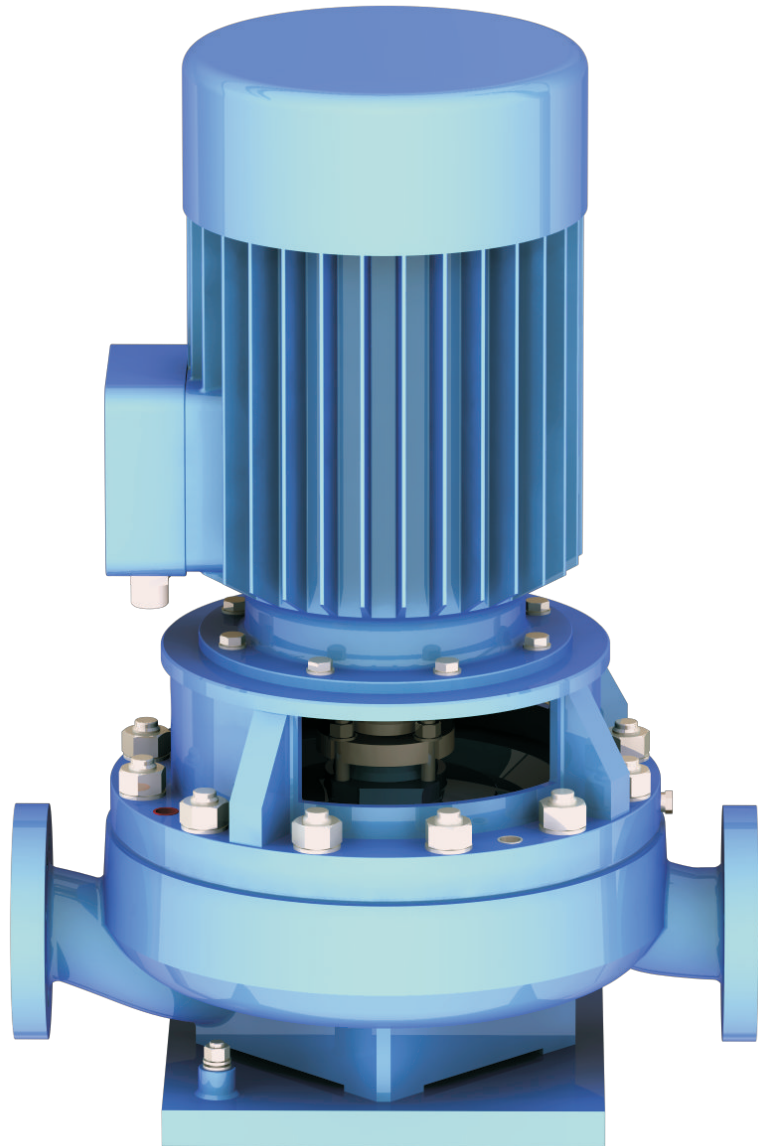
Materials

Availability of materials per ISO 13709 (API 610) Table H1

- Steel
- Stainless steel
- 12% Chromium steel
- Duplex and Super duplex

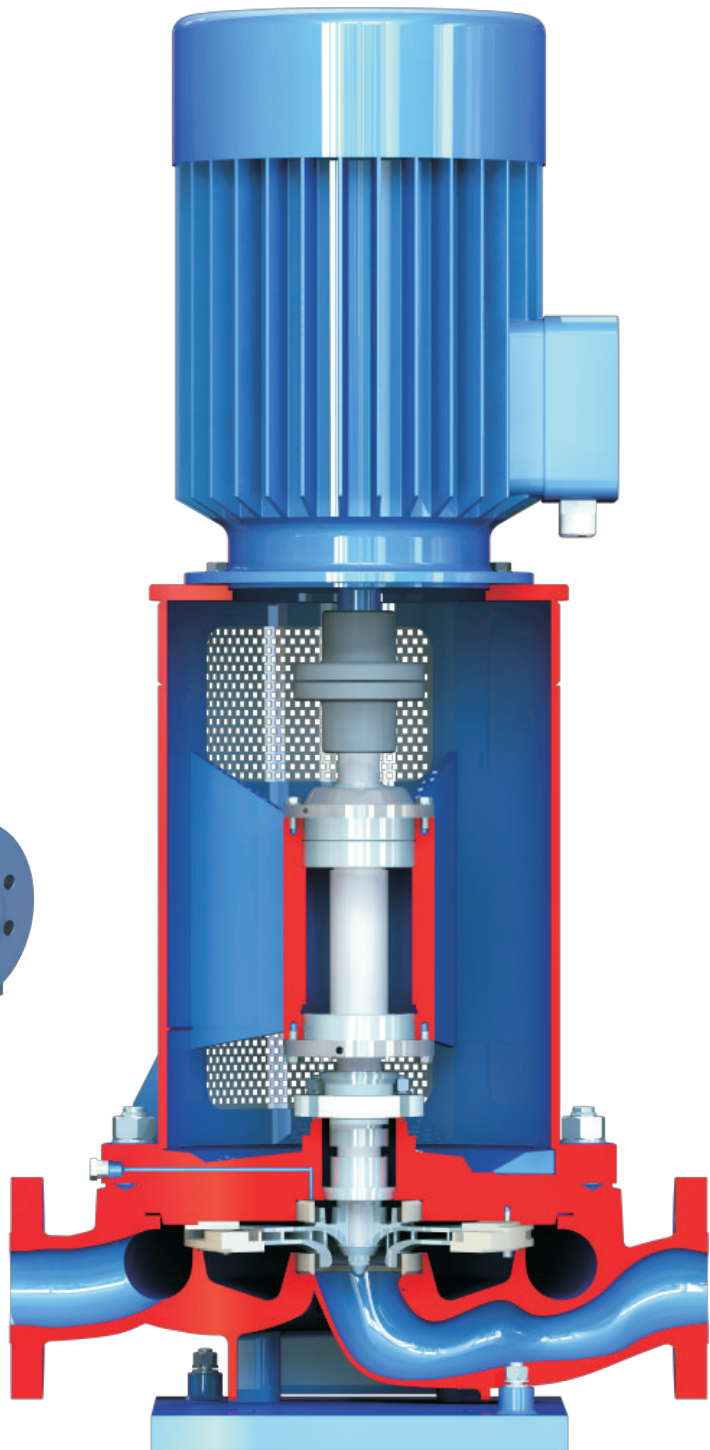
Shaft sealing

Accommodates all API 682 mechanical seal cartridge configurations and consequent mechanical seal fluid systems.



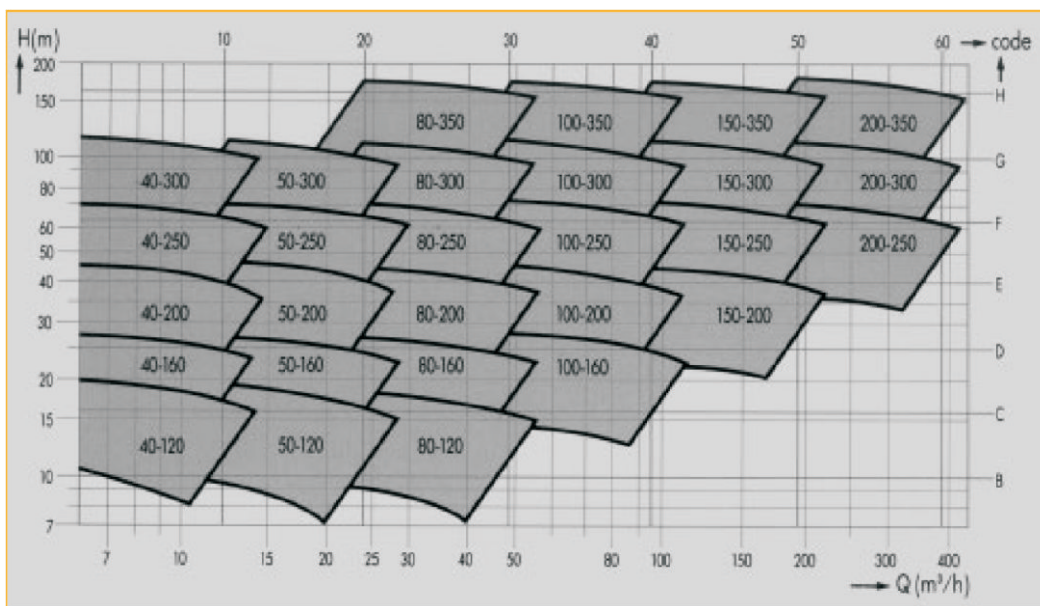
ETLS

The ETLS is a pump provided with a spacer coupling.

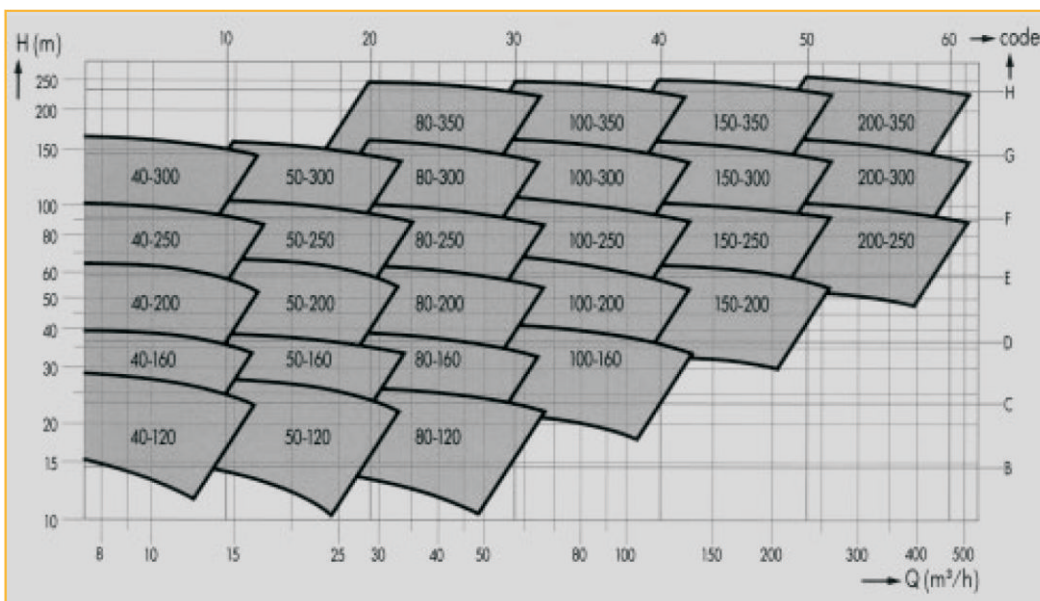


Curves

N=2900 rpm
50 Hz



N=3500 rpm
60 Hz





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