

HORIZONTAL, SINGLE- OR DOUBLE-STAGE PROCESS PUMP, SPECIAL DESIGN FOR LOW FLOW AND HIGH HEAD

**KRHL
KRZ / L**

API 610 / TYPE OH2
WITH SEMI-OPEN IMPELLER OR CLOSED IMPELLER



- „back pull-out“ version for maximum ease of maintenance
- modular system for the entire type series
- unique low flow capability
- low NPSH values
- high reliability and low operating costs

Range of Application

Based on solid design, heavy-duty bearing housing, low NPSH values and the suitability for high pressure and high temperature this pump series has various applications:

- refineries
- offshore engineering
- high-temperature application
- petrochemical plants
- power plants

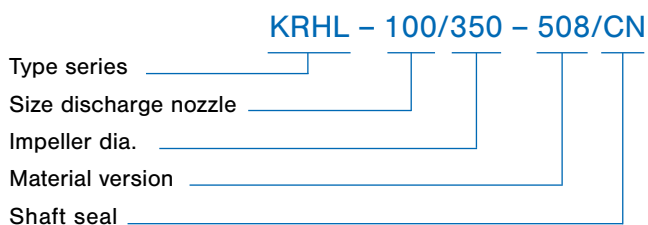
Design

- Pump meets all requirements of API 610
- Version for low capacity and high head
- Semi-open impeller with straight vanes or closed impeller for KRZ type
- Optionally: exchangeable wear plate and inducer
- Antifriction bearings with oil lubrication
- Hydraulic parameters can be adapted exactly to the customer requirements
- Heavy duty bearing design due to the use of the same bearing units as KRH type series
- Version with heating jacket possible
- KRZ as „two-stage OH2“ version with various nozzle options, „top-top“ and „end-top“
- KRZL as „two-stage“ version with semi-open impeller

Shaft seal

Separate seal chamber suitable for a variety of mechanical seals – from single and double mechanical seals up to cartridge mechanical seals and gland packing – all variants are available. Pumps of this version have a standard design with cartridge mechanical seal. Assembly space according to API 610/682.

Designation



Operating data

KRHL / KRZ

Nozzle size (mm)	from 25 to 50
Capacity	from 0.5 up to 45 m ³ /h
Head	up to 270 m / up to 390 m
Design pressure	up to 50 bar
Speed	up to 3600 rpm
Temperature limits	up to 450 °C

Materials

	S-5	S-6	C-6	A-8	D-1	D-2
Volute Casing	Carbon steel	Carbon steel	12 % Chromium steel	316AUS	Duplex	Super duplex
Casing cover	Carbon steel	12 % Chromium steel	12 % Chromium steel	316AUS	Duplex	Super duplex
Shaft	12 % Chromium steel	12 % Chromium steel	12 % Chromium steel	Duplex	Duplex	Super duplex
Bearing housing	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
Impeller	12 % Chromium steel	12 % Chromium steel	12 % Chromium steel	316AUS	Duplex	Super duplex

Materials according to API, Norsok, NACE and special alloys are available.



Discharge casing

- large corrosion allowance on all pressure casings
- design for high suction pressure available

Impeller

- Semi-open design dynamically balanced
- Low NPSH values
- Inducer version as an option
- balance holes provides balanced axial thrust

Flanges

- ASME or DIN EN
- class 600
- Flanges are completely machined

Diffuser

- Single or double throat diffusers
- exactly adaptable to customer requirements

Casing / casing cover

- with metal to metal fit
- variety of seal options available, to be selected by application
- fully chambered metal-graphite seal as standard

Bearing housing

- heavy-duty, oil-lubricated bearings
- prepared for all necessary measuring and monitoring equipment
- fan cooling as an option
- water cooling as an option
- use of high-quality bearing isolators

Shaft

- robust rigid shafts for long life and very smooth running
- minimum deflection in the area of mechanical seal

Seal chamber

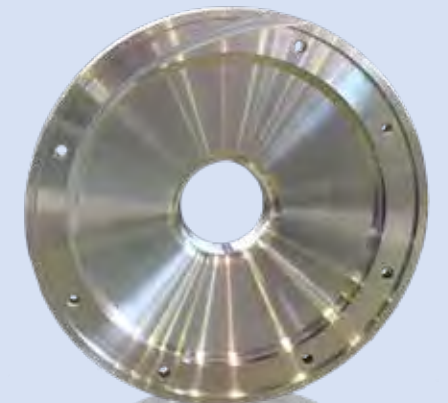
- separate seal chamber according to API 610/682
- all common seal variants and API piping plans possible

Casing drainage

- flanged drains as standard
- screwed drains are possible

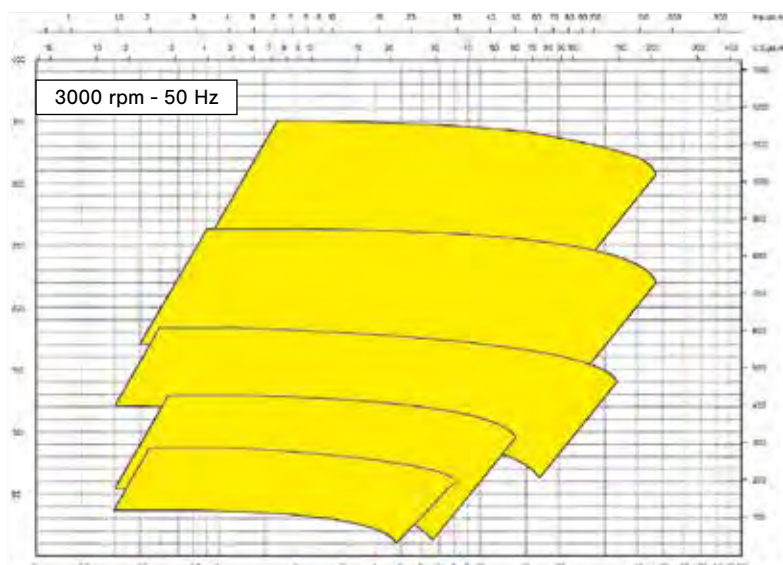


■ Impeller

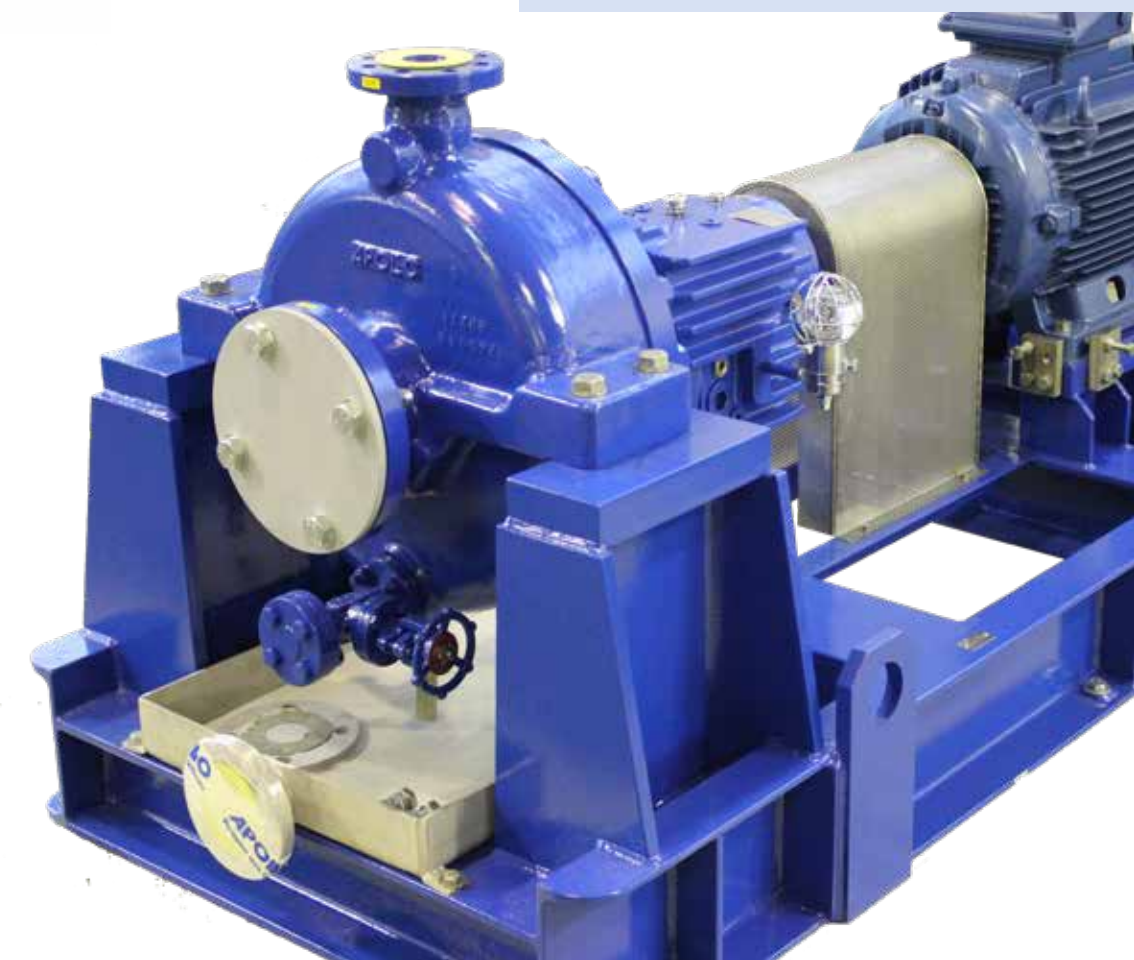


■ Machined diffuser channel

Performance range



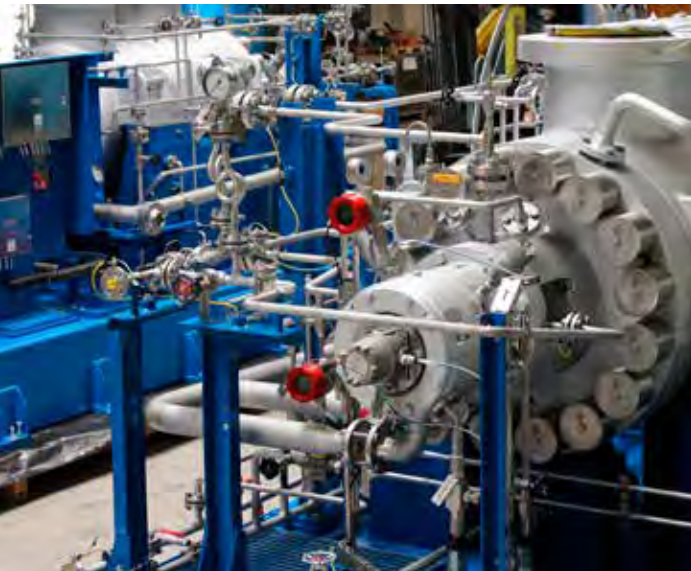
■ Pump type: KRZ





Since more than 100 years APOLLO in Goessnitz has been developing and producing pumps for different applications with most different operating principles.

In continuation of this history Apollo has developed to a Manufacturer of high quality heavy-duty Process Pumps – especially according to API 610 Standard.



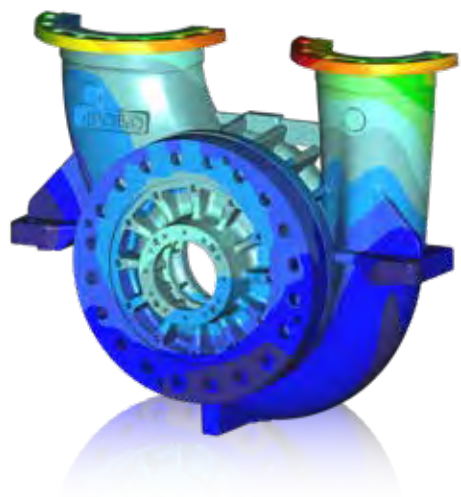
20 years ago, the business Division „System Engineering & System Technology“ was founded. With this division we can offer our Customers complete solutions from a single source. Apollo has high-killed Personnel for Pumps and Pumping Systems up to Specialists for Electrical and Control Engineering. By taking advantage of these synergies, of short lines of communication, of optimized process

chains and of high Flexibility of our company, we provide our Customers with best support in solving their problems and tasks worldwide.

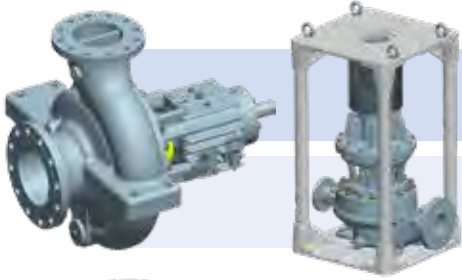
Our production methods and systems meet the highest level of quality and allow the implementation of orders according to different standards and regulations.

The Quality Assurance in all areas of the company, including suppliers and cooperation partners, is the top priority and is consistently implemented. The most up-to-date test fields provide realistic test conditions.

Today we develop and manufacture with the most modern methods – from the hydraulic design over to 3D CAD design and engineering, FEM calculation to the casting patterns and parts manufacture via CAD -CAM Interfaces.



PROCESS PUMPS | API 610



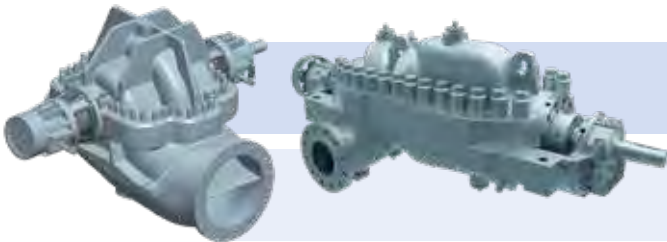
Single stage pumps: **OH1, OH2, OH3**

■ KRH ■ KRHA ■ KRHL / KRPO ■ KRP / KRPH ■ KRI / KRIL



Single and two-stage between bearings pumps: **BB2**

■ ZPR ■ ZPRA ■ KGR / KGRD



Axial split between bearings pumps: **BB1, BB3**

■ ZMK ■ ZMKV ■ AMG



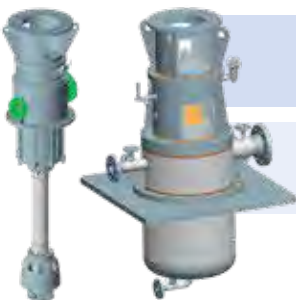
Multistage high-pressure pumps, ring sections type: **BB4**

■ HP ■ GP „back-to-back“ ■ GMHD



Multistage high-pressure barrel pumps: **BB5**

■ TL ■ TG „back-to-back“ ■ TGDX



Single and multistage, vertical pumps: **VS1, VS4, VS6**

■ HPTV ■ HPV ■ HPVX ■ GSTV