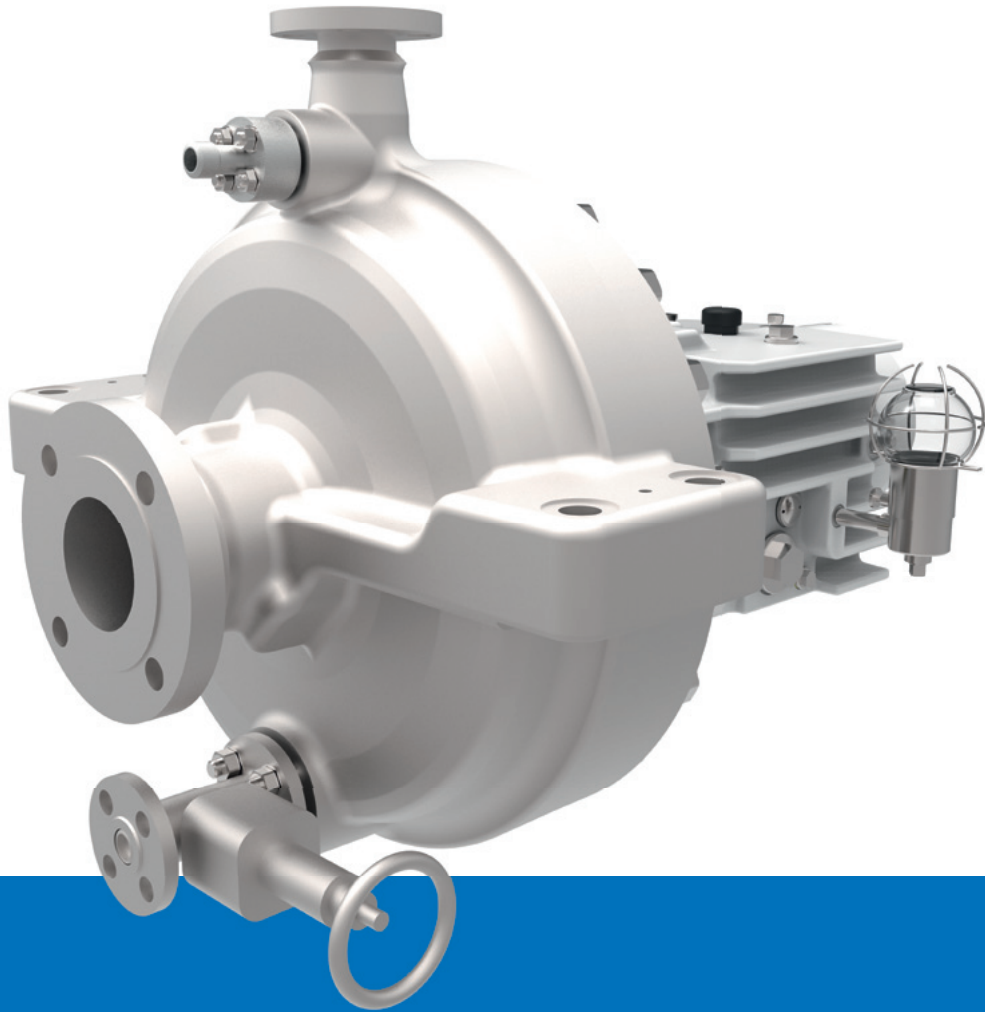


# HORIZONTAL, SINGLE- OR DOUBLE-STAGE PROCESS PUMP, SPECIAL DESIGN FOR LOW FLOW AND HIGH HEAD

**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
- High-temperature application
- Petrochemical plants
- Power plant engineering

## 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
- 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

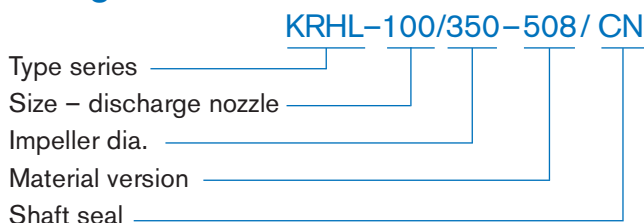
Separate seal chamber suitable for a variety of mechanical seals – from single and double mechanical seals up to cartridge mechanical seals and gland packing – all variants are available.

Pumps of this version have a standard design with cartridge mechanical seal. Assembly space according to API 610/682.

## Operating data

|                    |                                     |
|--------------------|-------------------------------------|
| Nozzle size (mm)   | from 25 to 50                       |
| Capacity           | from 0.5 up to 45 m <sup>3</sup> /h |
| Head               | up to 390 m                         |
| Pressure design    | up to 50 bar                        |
| Speed              | up to 3600 rpm                      |
| Temperature limits | up to 450°C                         |

## Designation



## Materials

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

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

### 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 seals

- 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

### Flanges

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

### Diffuser

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

### Shaft

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

### Seal chamber

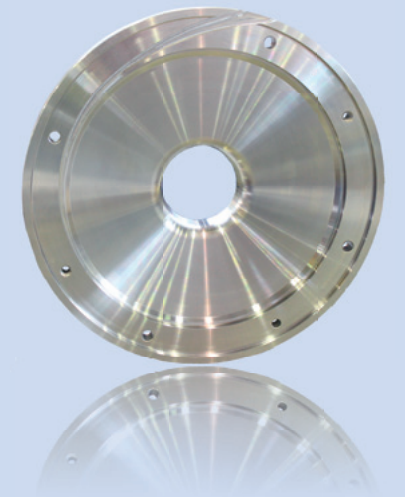
- separate seal chamber according to API 610 / 682
- all common seal variants and API piping plans possible

### Casing drainage

- flanged drains as standard
- screwed drains are possible

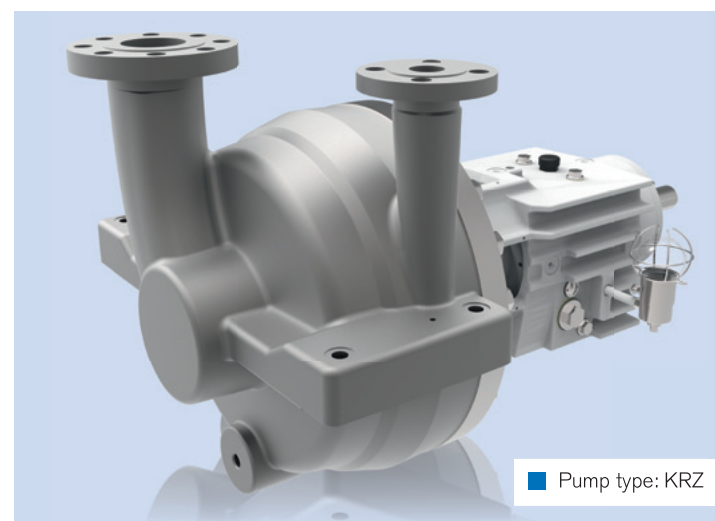
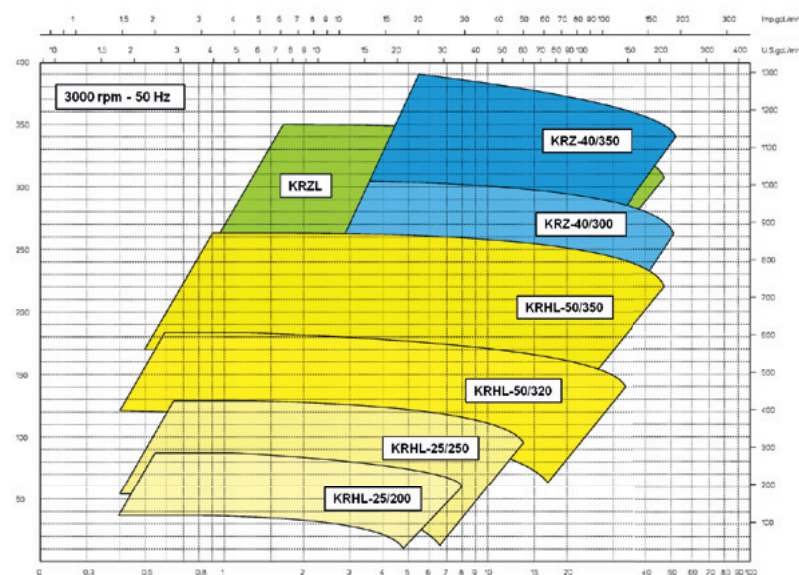


■ Impeller

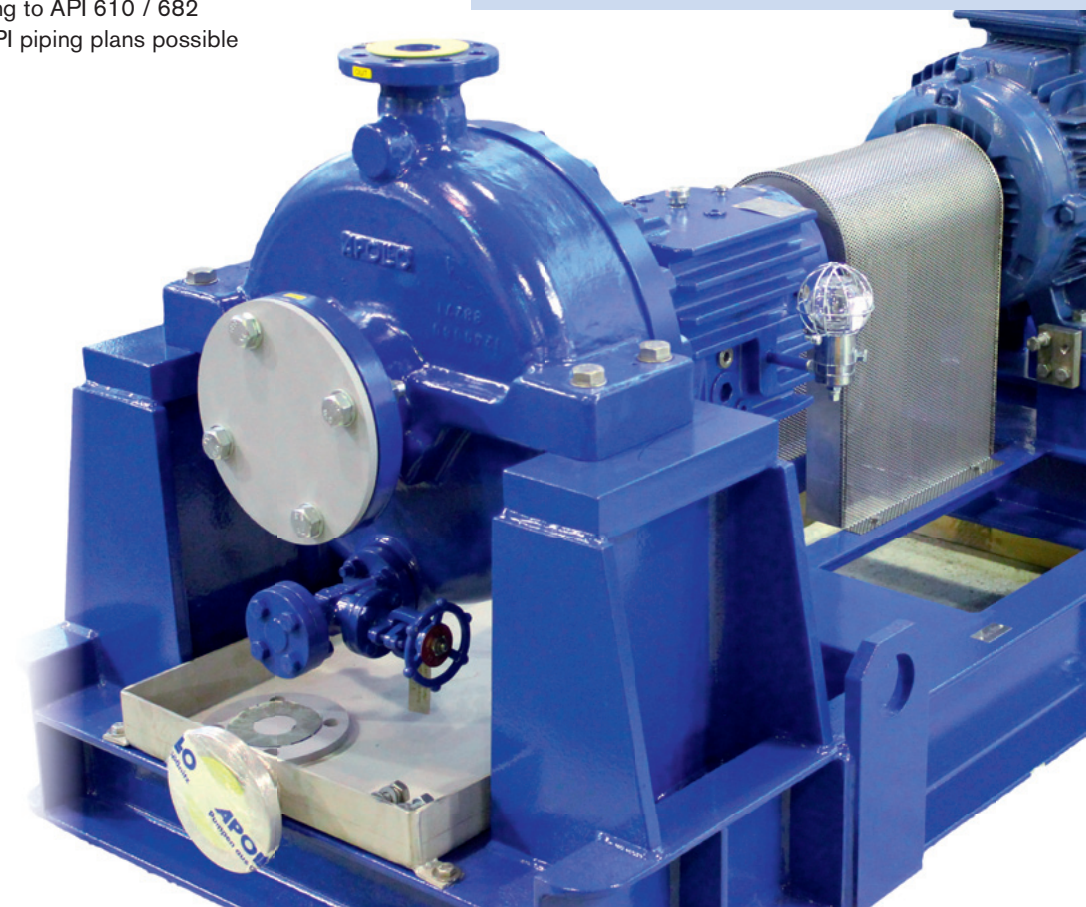


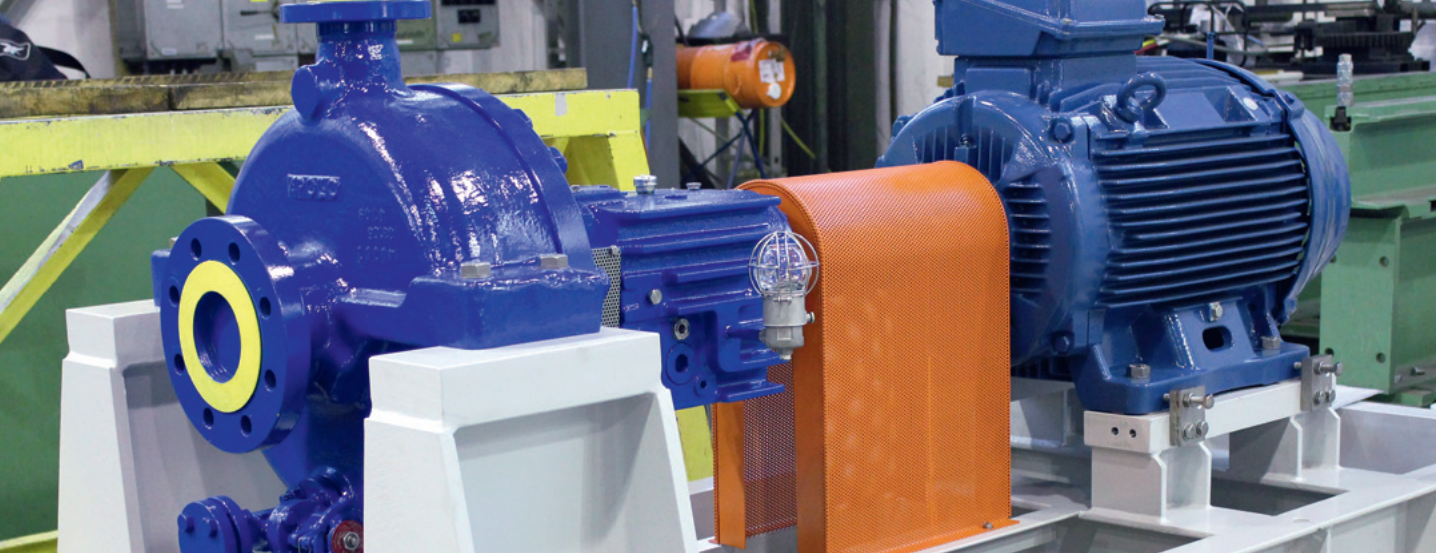
■ Machined diffuser channel

## Performance range



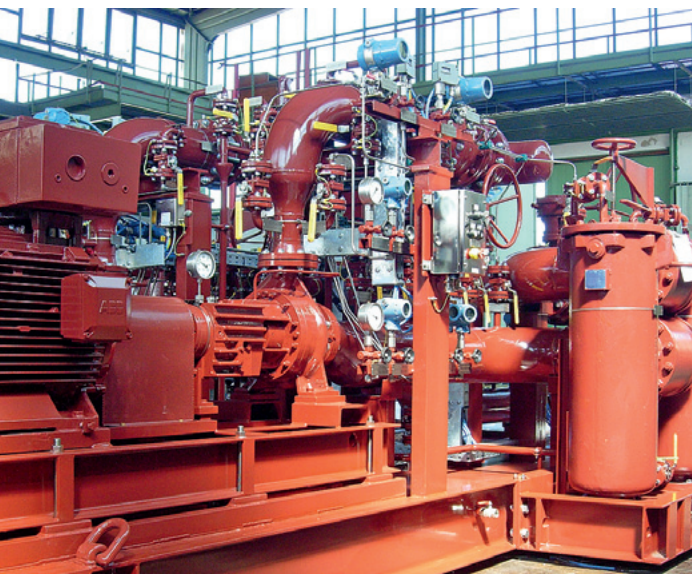
■ Pump type: KRZ





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-skilled 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.

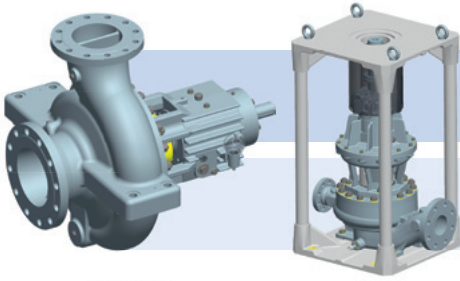
Our production methods and systems meet the highest level of quality and allow the implementation of orders according to different standards and regulations.

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.

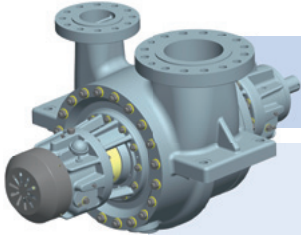


# PROCESS PUMPS | API 610



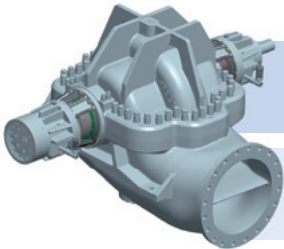
Single stage pumps: **OH1, OH2, OH3**

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



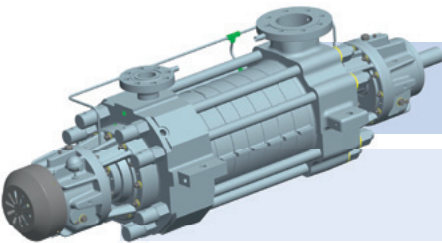
Single and two-stage between bearings pumps: **BB2**

■ ZPR ■ ZPRA ■ KGR / KGRD



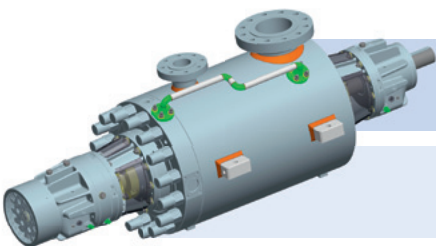
Axial split between bearings pumps: **BB1, BB3**

■ ZMK ■ ZMKV ■ AMG



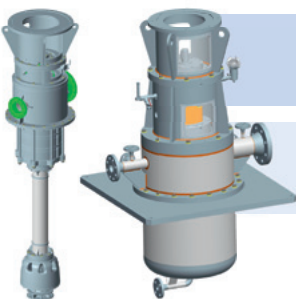
Multistage high-pressure pumps, ring sections type: **BB4**

■ 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

**APOLO**

— PUMPS —

A member of  **HMS GROUP**



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