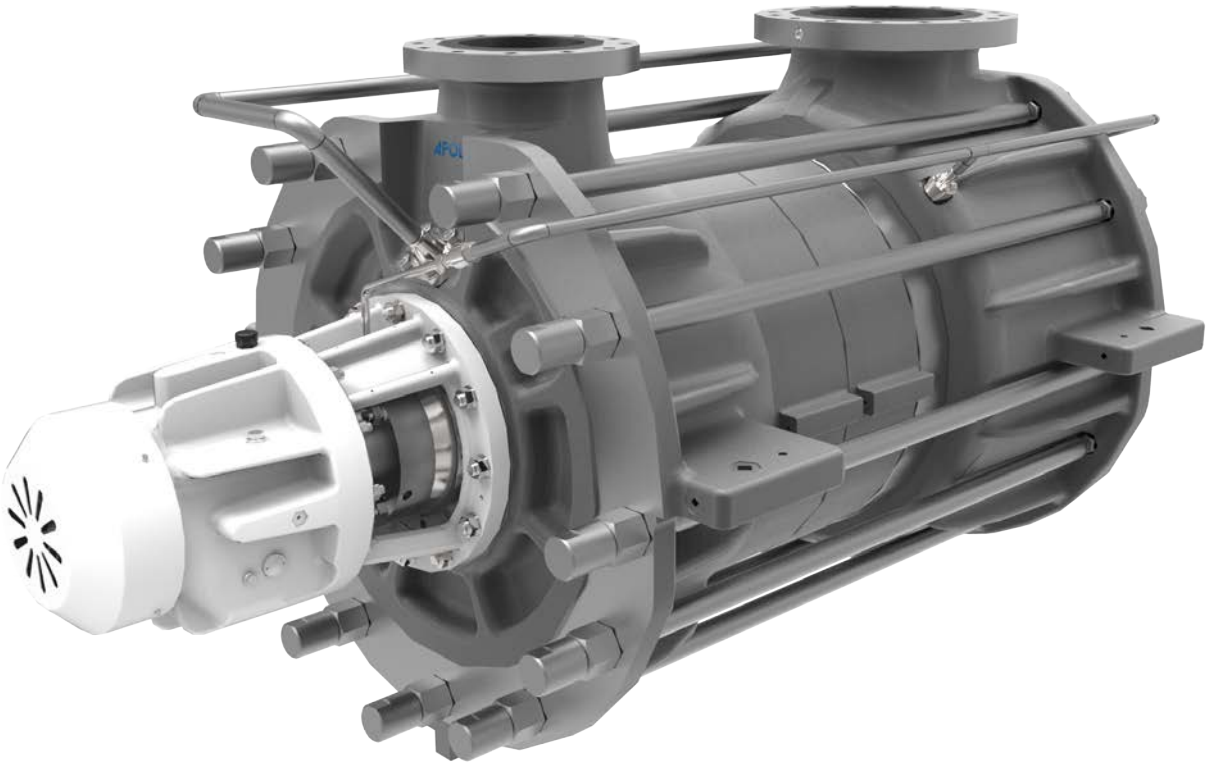
MULTISTAGE HIGH-PRESSURE PUMPS

GMHD

RING-SECTION DESIGN
API 610 / TYPE BB4



- Best NPSH values due to double-flow suction impeller
- High-pressure pump for big volumetric flow rates
- Hydraulically balanced concept regarding range of application, efficiency and rotor dynamics
- Modular design for best possible adaptation to customer's requirements and low operating costs

APOLLO
Pumps | Pumping Systems

Range of Application

Based on the excellent hydraulic characteristics, the perfectly optimized performance field and modern structural design according to API610 latest edition, the pumps are suitable for applications such as:

- offshore applications especially for sea water
- for pumping brine
- applications in refineries
- applications in power plants, e. g. for pumping condensate
- applications in oil & gas industry

Design

- Horizontal, multistage ring-section high-pressure pump, between bearings design
- Centerline casing support for max. reliability at high nozzle loads
- Bearing types: antifriction bearings with ring oil lubrication,

  Mixed bearings: radial slide bearings, axial antifriction bearings

  with ring oil lubrication, radial and axial slide bearings with pressure oil lubrication
- axial thrust compensation by balancing piston or double piston
- 1st stage as a standard with double-flow suction impeller for extremely low NPSH values
- flanges according to ASME or DIN EN in different pressure ratings
- Special casing optimization for duplex or super-duplex materials

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

Designation

GMHD – 200 B / 5 – 608 / CN

- Type series
- Size - discharge nozzle
- Type of hydraulics
- Number of stages
- Material version
- Shaft seal

Operating data

Nozzle size (mm)	200
Capacity	up to 1100 m^3/h
Head	up to 320 m
Design pressure	up to 63 bar
Speed	up to 1780 rpm
Temperature limits	up to 180 °C

Materials

	S-1	S-5	S-6	C-6	A-8	D-1	D-2
Discharge casing	Carbon steel	Carbon steel	Carbon steel	12 % Chromium steel	316AUS	Duplex	Super duplex
Internal casing parts	Cast iron	Carbon steel	12 % Chromium steel	12 % Chromium steel	316AUS	Duplex	Super duplex
Shaft	12 % Chromium steel	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	Carbon steel
Impeller	Cast iron	12 % Chromium steel	12 % Chromium steel	12 % Chromium steel	316AUS	Duplex	Super duplex
Suction impeller	12 % Chromium steel	12 % Chromium steel	12 % Chromium steel	12 % Chromium steel	316AUS	Duplex	Super duplex

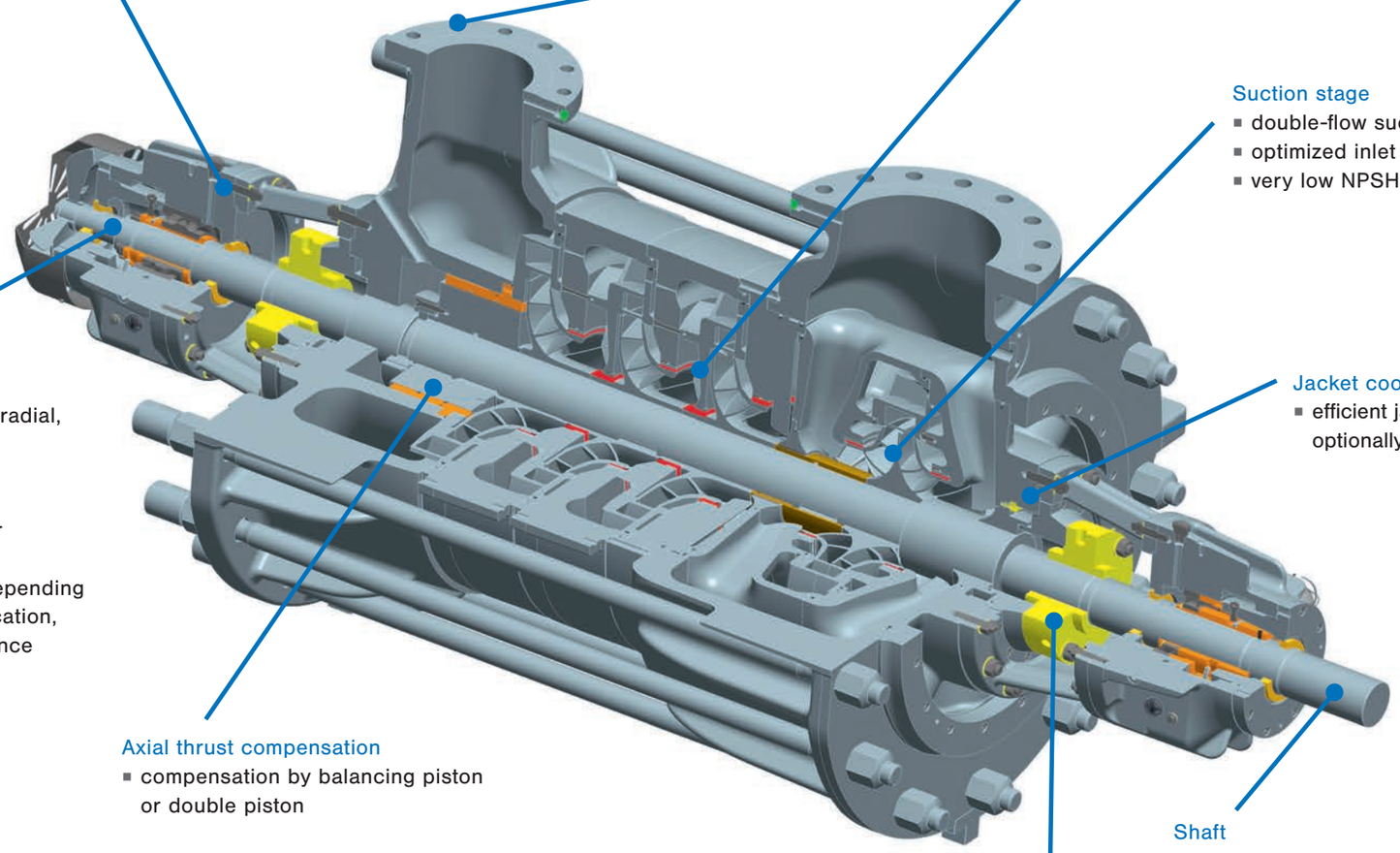
Materials according to API, NORSOK, NACE and special alloys are available.

Bearing housing
- prepared for all required connections for measuring and monitoring equipment
- application of high-grade metallic bearing isolators
- cooling fans standard
- water cooling as option
- 360° mounting

Flanges
- ASME or DIN EN

Wear rings
- replaceable wear rings
- different material options and coatings available
- PEEK version with reduced clearances

Suction stage
- double-flow suction impeller
- optimized inlet geometry
- very low NPSH values



Bearing
- antifriction bearings radial, axial
- mixed bearings
- plain bearings
- ring oil lubrication or forced lubrication
- bearing selection, depending on customer specification, speed and performance

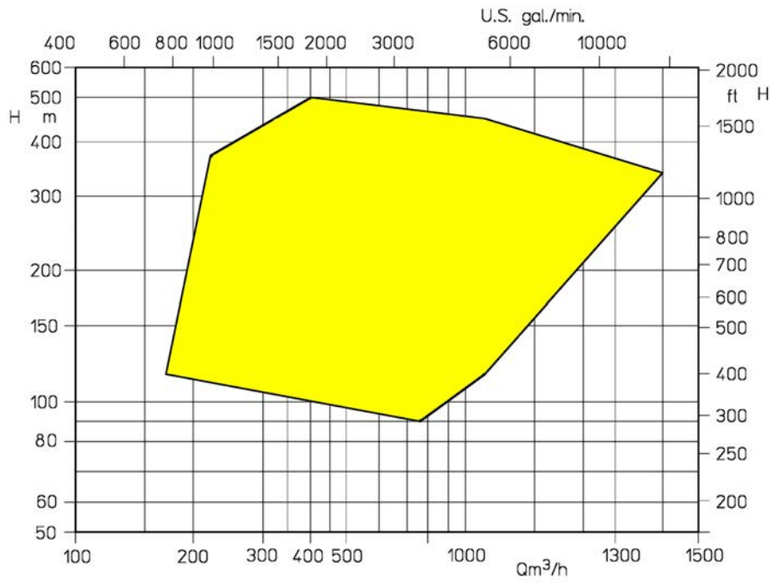
Jacket cooling
- efficient jacket cooling optionally available

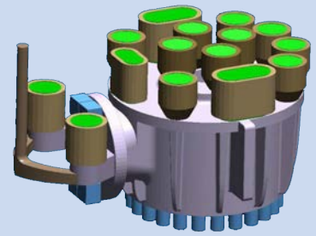
Axial thrust compensation
- compensation by balancing piston or double piston

Shaft
- rotor-dynamically optimized solid shafts
- cylindrical or conical shaft end

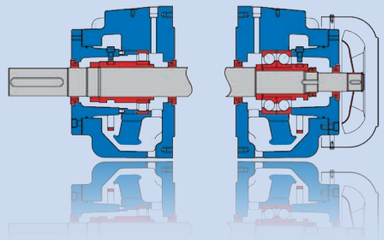
Seal chamber
- separate seal chamber according to API 610 / 682
- all the usual variations of sealing and API piping schemes are possible
- equipped with a cartridge mechanical seal as standard

Performance range

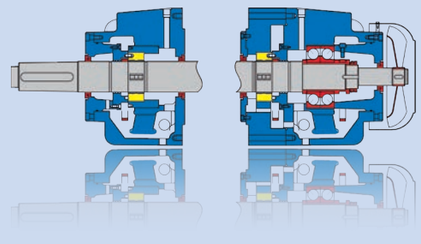




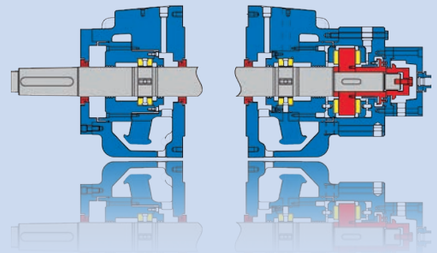
Casting-specific design for duplex and super duplex material



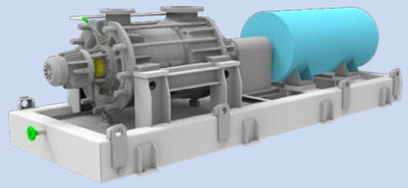
Antifriction bearings with oil-ring lubrication



Mixed bearings: radial plain bearings, axial antifriction bearings with oil-ring lubrication



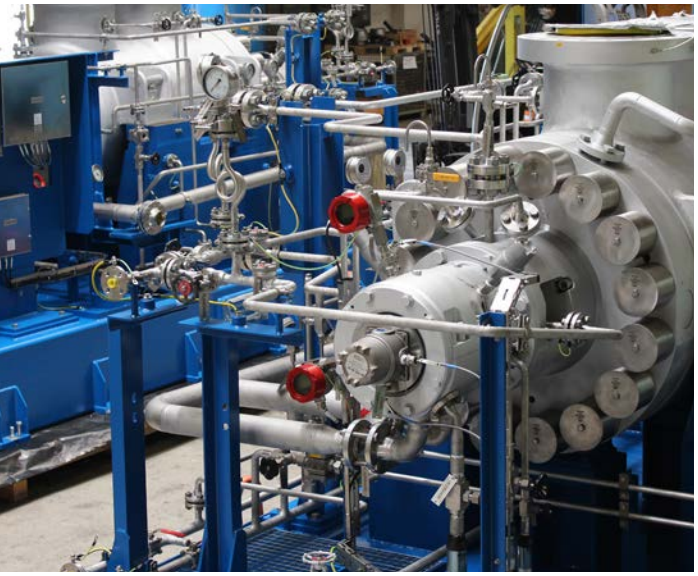
Plain bearings axial, radial with forced oil lubrication



BB4 pump skid

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.

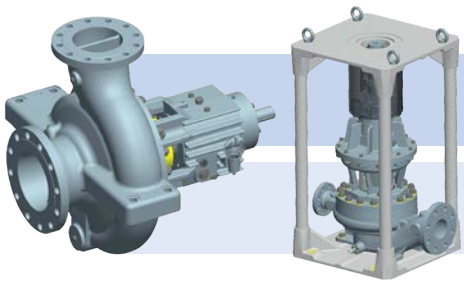


20 years ago, the business Division „System Engineering & System Technology“ was founded. With this division we can offer our Customers complete solutions from a single source. Apollo has high-skilled Personnel for Pumps and Pumping Systems up to Specialists for Electrical and Control Engineering. By 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.

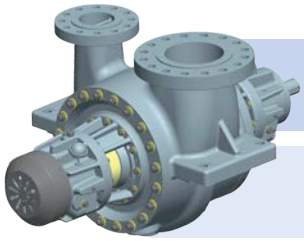
Today we develop and manufacture with the most modern methods – from the hydraulic design over to 3D CAD design and engineering, FEM calculation to the casting patterns and parts manufacture
via CAD-CAM Interfaces.

PROCESS PUMPS I API 610



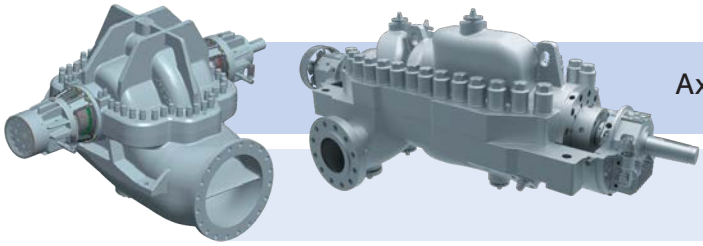
Single stage pumps: **OH1, OH2, OH3**

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



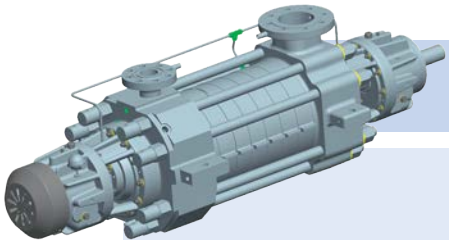
Single and two-stage between bearings pumps: **BB2**

■ ZPR ■ ZPRA ■ KGR / KGRD



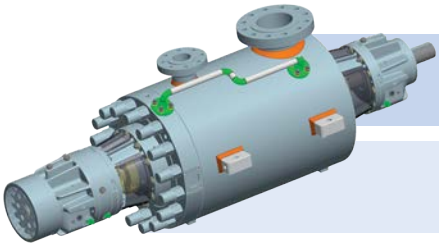
Axial split between bearings pumps: **BB1, BB3**

■ ZMK ■ ZMKV ■ AMG



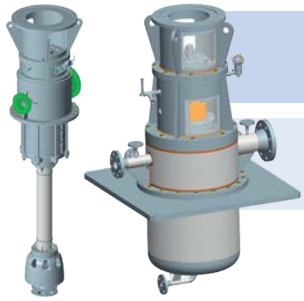
Multistage high-pressure pumps, ring sections type: **BB4**

■ 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

APOLLO
Pumps | Pumping Systems

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