HABERMANN AURUM
PUMPEN

PUMPS FOR HEAVY APPLICATIONS

MINING
TUNNEL CONSTRUCTION
SPECIAL CIVIL ENGINEERING

www.habermann-aurum-pumpen.de

TRAFFIC TUNNEL | SUPPLY TUNNEL | PIPE JACKING | SLUDGE TREATMENT | MICRO TUNNELLING

Contents.

Pumps for tunnel construction and special civil engineering.

Highly reliable machine technology is a decisive success factor when realising projects in a large number of underground infrastructure projects involving the supply of water and energy, as well as water removal and micro tunnelling around the world. Habermann Aurum Pumpen GmbH offers a broad range of innovative solutions with a variety of pumps and materials for diverse tasks in mechanised tunnel construction and special civil engineering. Do you require special pumps for vertical or horizontal drilling? Our slurry pumps are designed for the challenging operating conditions in tunnel construction and special civil engineering where a harsh operating environment and confined installation conditions are commonplace. We support our customers in construction projects around the globe, by supplying original spare parts produced from our own stainless steel and polyurethane qualities.

Made in Germany.

DAS UNTERNEHMEN

HABERMANN AURUM PUMPEN
has been offering reliable solutions and extensive know-how in slurry transportation since 1927.

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1927.

Habermann Aurum Pumpen is one of the leading manufacturers of centrifugal pumps, ideal for processing slurries. With almost 100 years of experience and more than 30,000 pumps installed worldwide, serving various applications, we have built a strong market position across the globe. Our fundamental goal is to create the most durable and sustainable industrial pumps by combining our multi-decade experience with the state-of-the-art technologies. Our pumps are integrated into a wide variety of industries, such as: mining and mineral processing, energy industry, metallurgy, chemical and pigment industries, tunnelling and special civil engineering. We are continuously improving our pumping systems to ensure their exceptional quality and optimal performance capabilities. Based on the technical skills of our work force, we customize and manufacture pumps you can rely on, most of which have been in trouble-free operation for more than 60 years, which speaks for their longevity, safety and efficiency. We always ensure your industrial needs are covered with our proven operational designs combined with the most reliable and robust materials to make a functional unit. Our broad product line of pumps, valves and fittings complies with the most diverse and challenging pumping requirements. Thanks to our in-house engineering we can find solutions to any system demand, regardless of technical complexity or application conditions.
We have built an excellent quality profile, which allowed us to establish Habermann Aurum as a high-valued and reliable partner for industrial pumping systems. We proudly design, produce and install our pumps all over the world. Through our network of partners and branch offices, our market presence extends across continents from Europe to America, Asia and Africa. We are well prepared to meet current and future market demands and to support our customers in the best possible way.

Tradition meets modern technologies.

Tunnel construction and micro tunnelling.

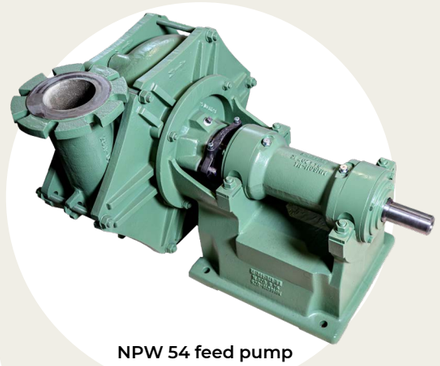
Pumps for pipe jacking

Feed and discharge pumps from the KB, KBH and NPW series

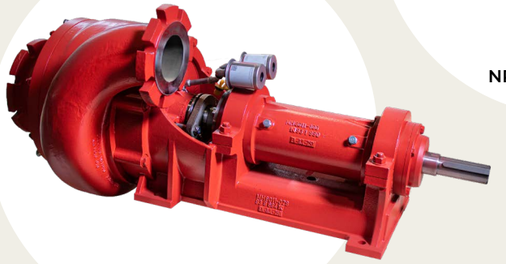
The compact design of our powerful and highly wear-resistant pumps from the KB, KBK, KBKT and NPW series are tailor-made for use as delivery or feed pumps under confined installation conditions in micro tunnelling and pipe jacking.

The pumps with discharge nozzle up to DN 400 are available for a wide range of applications.

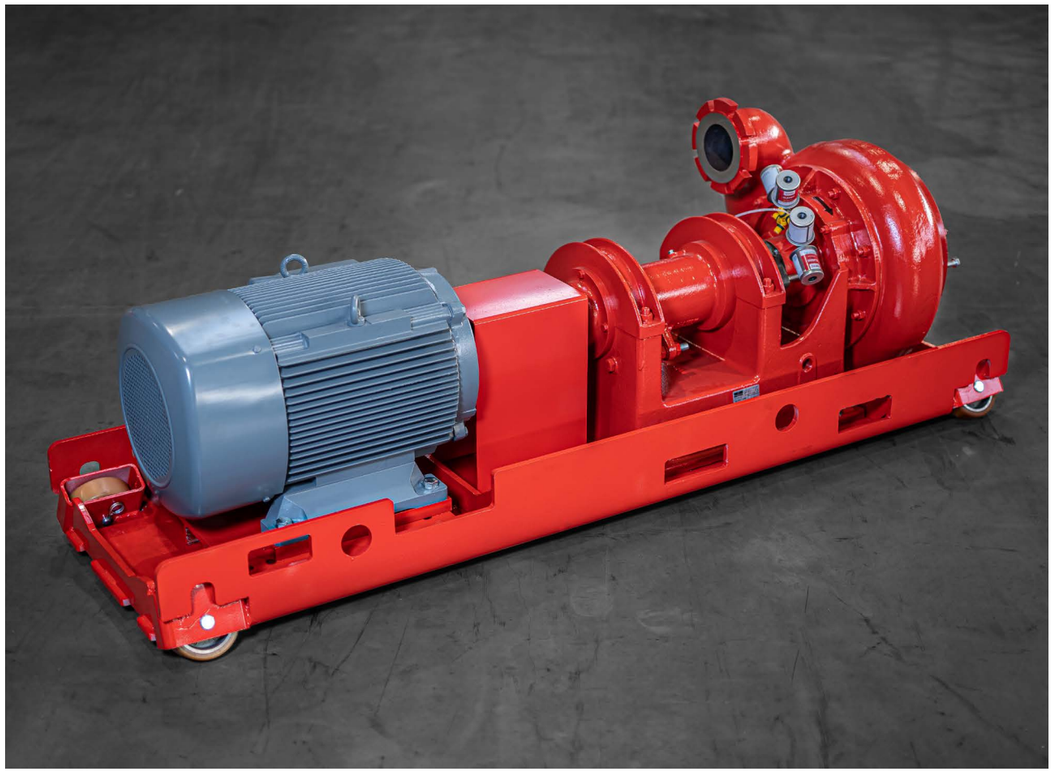
Low construction heights, highly wear-resistant materials and shaft seals with expeller or our self-developed mechanical seal HGD guarantee safe use in AVN jacking systems worldwide.

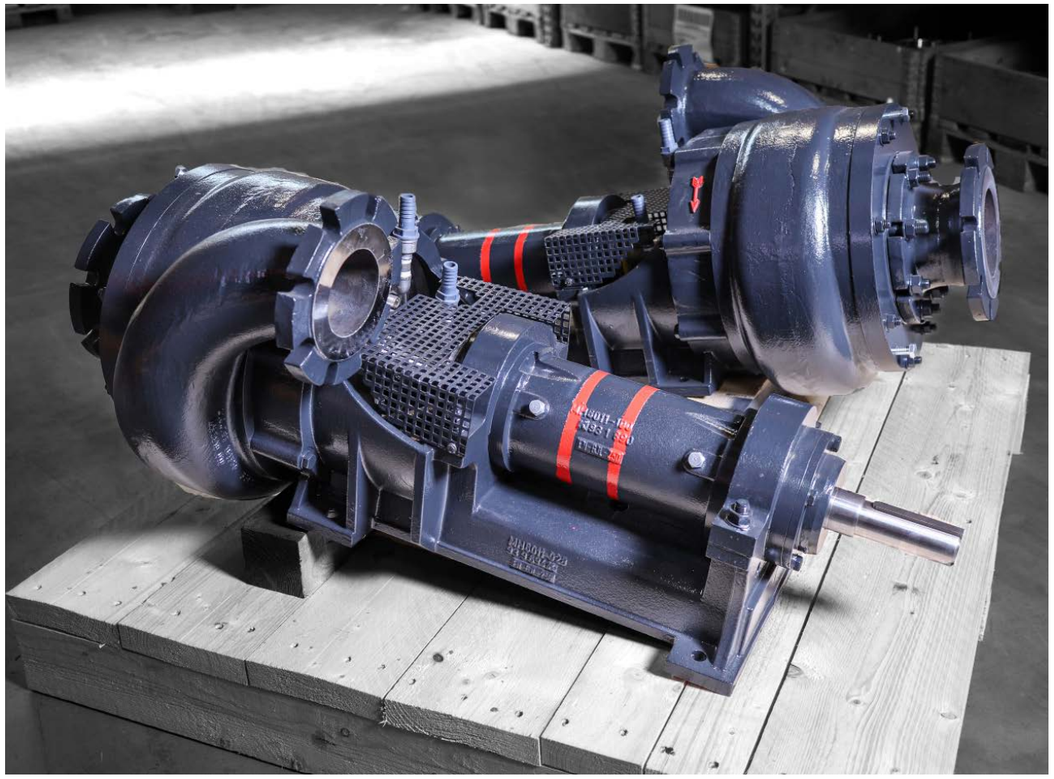


NPW 54 feed pump



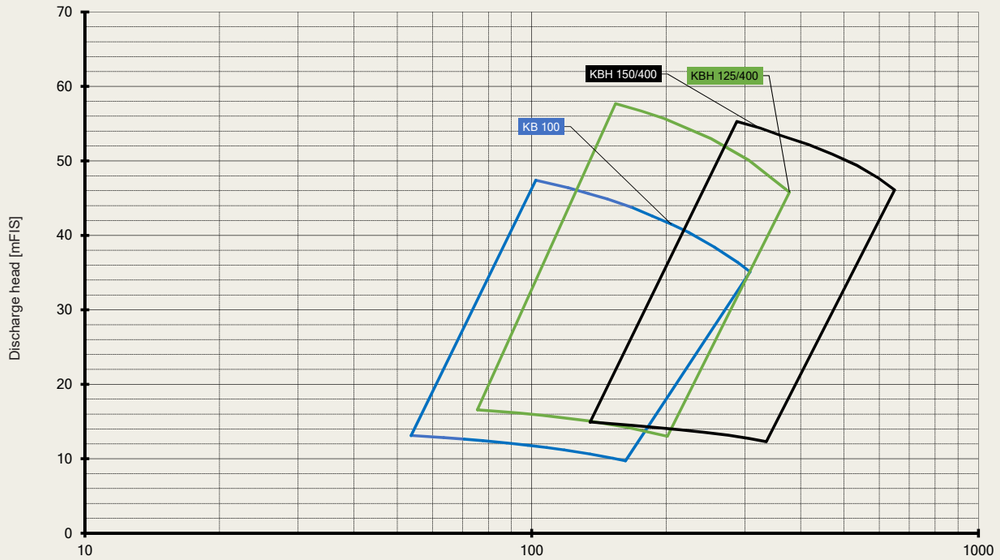
KB 100 tunnel pump





Performance range of KB and KBH pumps

KB and KBH delivery pumps

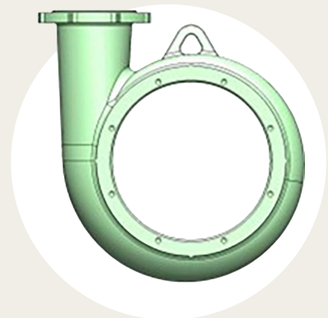


The combination can be adapted to the customer's requirements. The **tunnel version** is used for micro tunnelling in the majority of cases due to the limited space available. The **shaft version** is used as a feed pump or booster pump in the shaft, from the shaft to the separation plant. Shaft versions are more frequently used for larger pipe jacking dimensions, whereby the discharge nozzle settings can be variably adjusted within the technically possible framework.

Our diverse range of pump housings for the KB and KBH series

KB 100S

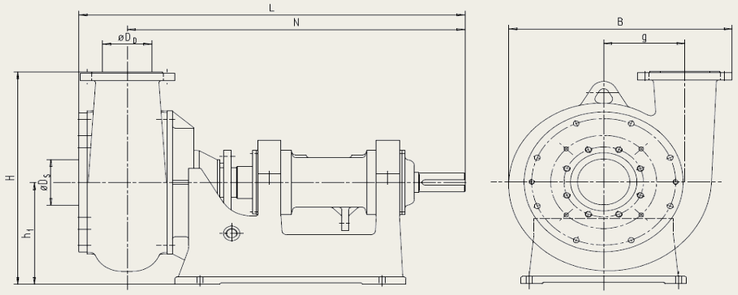
KBH 125/400S



KBH 150/400S

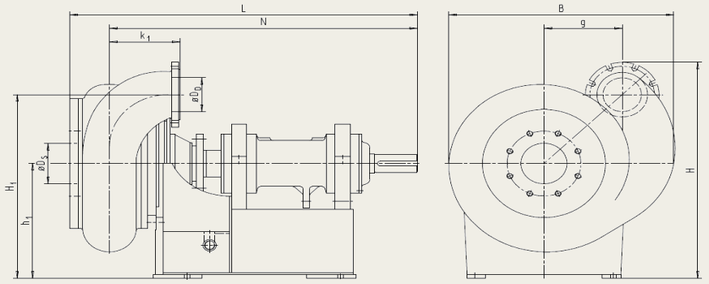
Dimension sheet for the KB and KBH pumps

KBH delivery pump in a shaft design



	øDS	øDD	B	g	H	H1	h1	k1	L	N	Weight [kg]
KBH 125/400 S	150	125	726	300	650	-	350	-	1131	1002	580
KBH 150/400 S	150	150	674	245	730	-	350	-	1166	1019	590
KB 100 S	125	100	521	245	433,5	-	240	-	1052,5	922,5	327

KB and KBH discharge pumps for micro tunnelling



	øDS	øDD	B	g	H	H1	h1	k1	L	N	Weight [kg]
KB 100	125	100	523	191	524	366	175	250	1171	923	330
KBH 125/400 T	150	125	736	255	730	605	350	230	1131	1002	610
KBH 150/400 T	150	150	736	269	762	619	350	350	1166	1019	630

Our diverse range of pump housings for the KB and KBH series

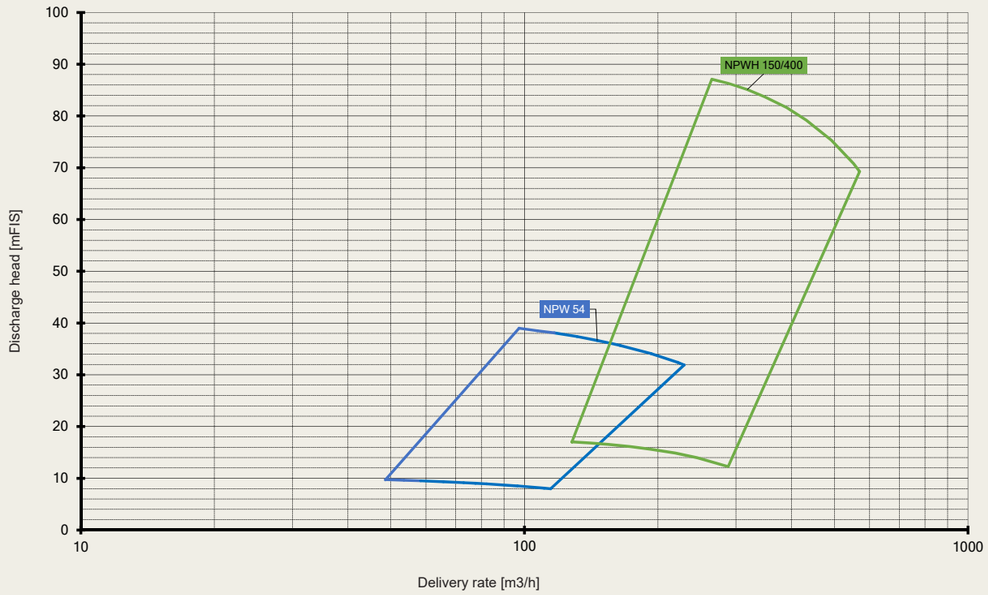
KB 100

KBH 125/400T

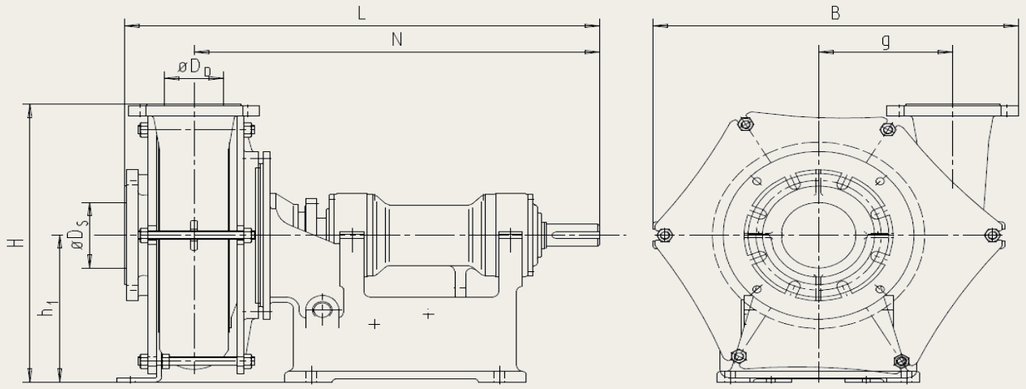
KBH 150/400T

Performance range of NPW pumps

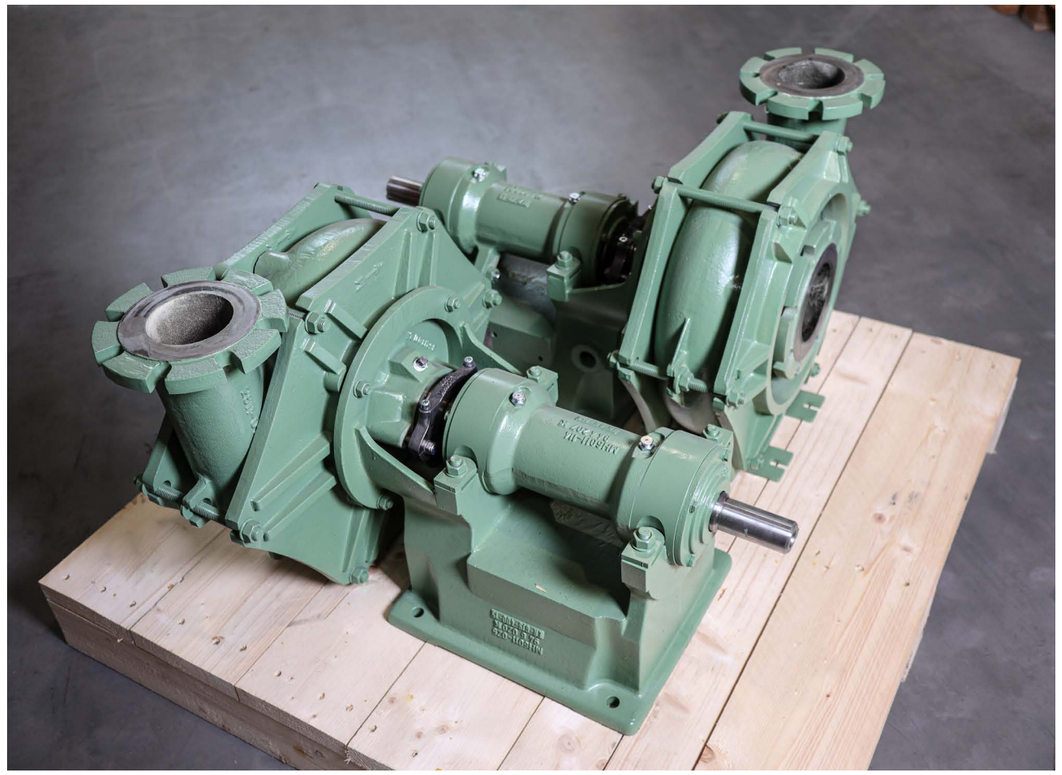
NPW feed pumps



Dimension sheet for the NPW pumps



	øDS	øDD	B	g	H	H1	h1	k1	L	N	Weight [kg]
NPW 54	125	100	615	225	530	-	280	-	796.5	680	225
NPWH 150/400	200	150	723	285	650	-	350	-	1094	989	465



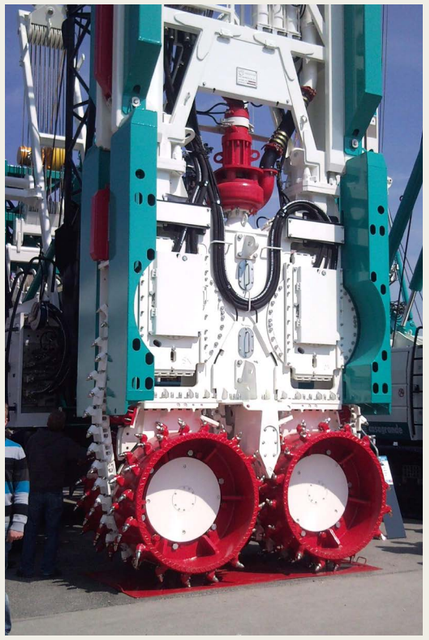
Special civil engineering.

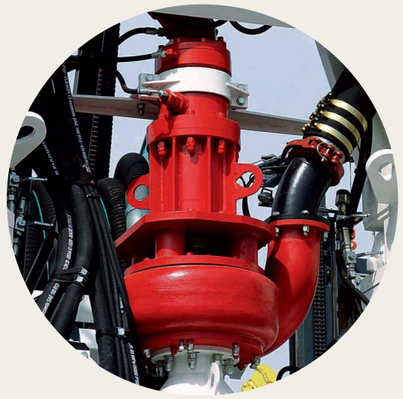
Pumps for slurry-wall cutters and shaft sinking systems

Special pumps from the KBKT-V1 series

Today, ultra-modern shaft sinking systems or slurry wall cutters are used in the construction of start and target shafts, as well as diaphragm walls. During this process, the vertical milling work is always carried out within the suspension-filled shaft or diaphragm wall. The suspension accumulates solids during the milling process, and must be continuously transported to the separation plant where treatment takes place by means of a highly wear-resistant centrifugal pump.

Pumps of the KBKT-V1 series are specially adapted for use directly on the slurry wall cutter to safely transport the slurry mixture to the separation plant. In addition to its compact design and the use of highly wear-resistant cast iron qualities, the pump is also equipped with a special mechanical seal. These special pumps are ideally driven by a hydraulic motor, which allows them to adapt to different operating conditions.

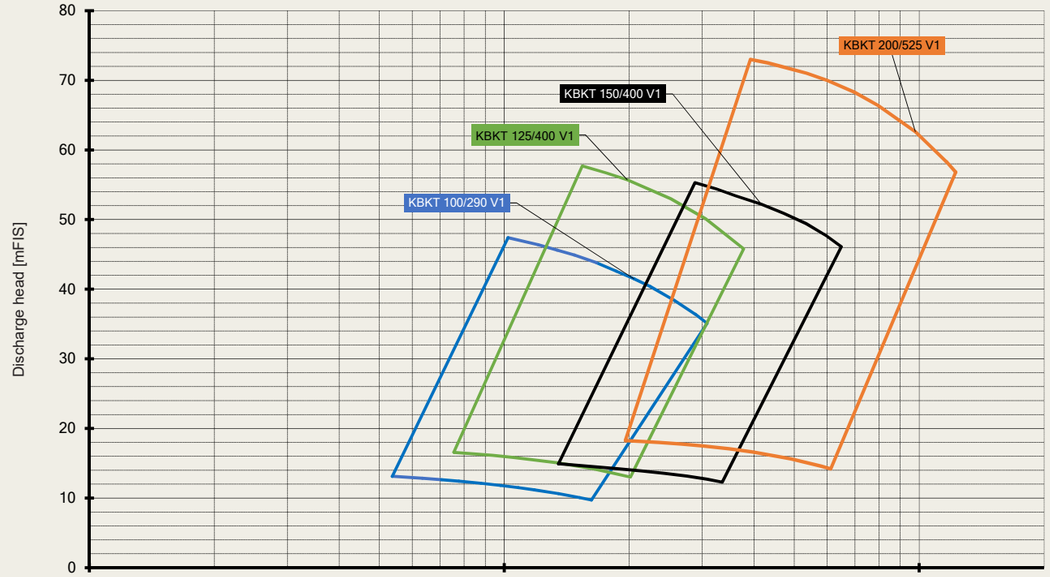




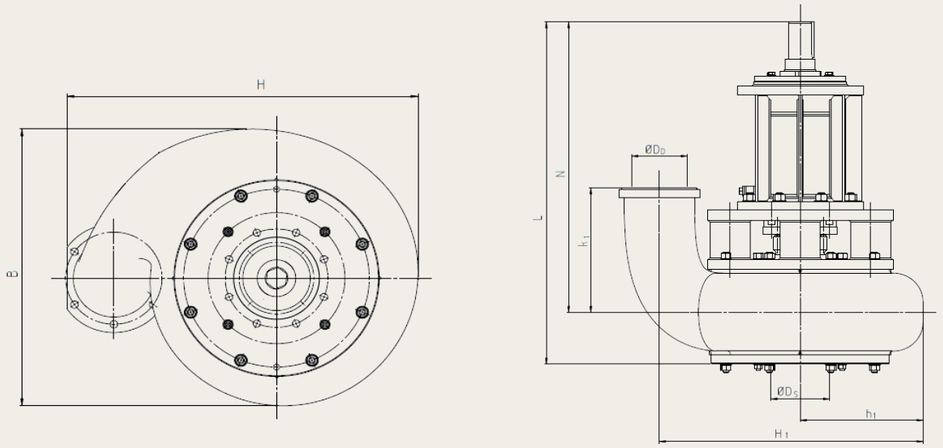
KBKT-V1 vertical pump

Performance range of KBKT pumps

KBKT-V1 delivery pumps



Dimension sheet for the KBKT series



	øDS	øDD	B	g	H	H1	h1	k1	L	N	Weight [kg]
KBKT 100/290 V1	125	100	455	-	612.5	502.5	232.5	250	833.5	703.5	270
KBKT 125/400 V1	150	125	645	-	803	678	318	230	930	801	490
KBKT 150/400 V1	150	150	674	-	820	711	330	350	965	818.5	510
KBKT 150/400 V1 T	150	150	674	245	685	-	305	-	965	818.5	460
KBKT 200/525 V1 T	200	200	1052	400	923.5	-	503.5	-	1320	1135	1595

Solids transport.

Robust dredger pump for highly coarse-grained solids

KBKM centrifugal pump fabricated from highly wear-resistant cast iron

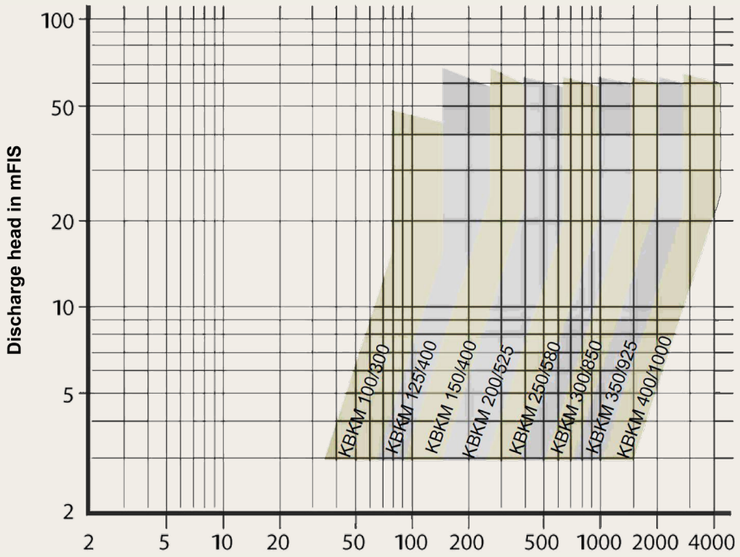
Finest grain and also grain sizes of up to 250 mm as well as smallest and largest concentrations are processed with various pump sizes of the KBKM series. The KBKM serie is frequently used in extraction processes in the sand and gravel sector for very coarse materials. An important criterion for reliable solids transport is the minimum flow speed required to avoid sedimentation. This is essentially determined by the sinking rate of the solids and therefore by the mineral weight, grain size, grain shape and transport concentration. In the case of coarse grain, it is necessary to consider that the maximum grain should not be larger than half the pipe diameter.

KBKM 150/400 dredger pump

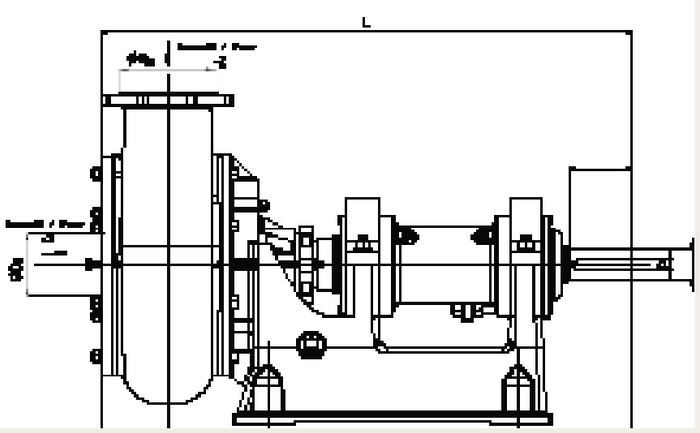
KBKM 150/300 dredger pump
with free shaft end

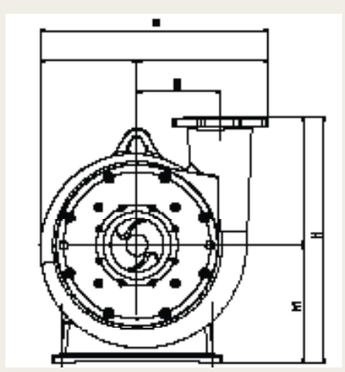
Performance range of KBKM pumps

KBKM discharge pumps



Dimension sheet for the KBKM series

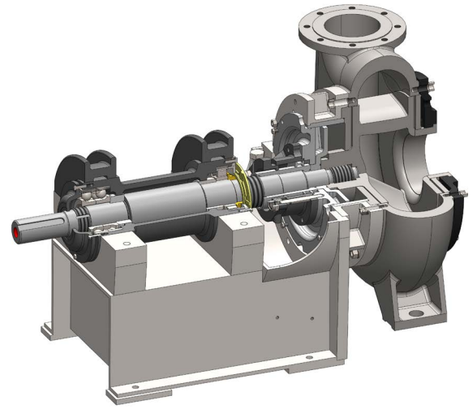




	PN	øDss	øDds	L	B	H	g	h1
KBKM 100/300	10	125	100	1052,5	521	433,5	245	243,5
KBKM 125/400	10	150	125	1130,5	735	680	340	425
KBKM 150/400	10	150	150	1210	687,5	755	215	425
KBKM 200/525	10	200	200	1258	980	910	290	510
KBKM 250/580	10	300	250	1795	1400	1300	520	750
KBKM 300/850	10	350	300	1830	1550	1350	530	750
KBKM 350/925	10	400	350	1871	1875	1500	680	750
KBKM 350/925	16	400	350	1887,5	1875	1550	680	800
KBKM 400/1000	10	450	400	1972,5	2005	1625	750	800
KBKM 400/1000	16	450	400	1972,5	2005	1625	750	800

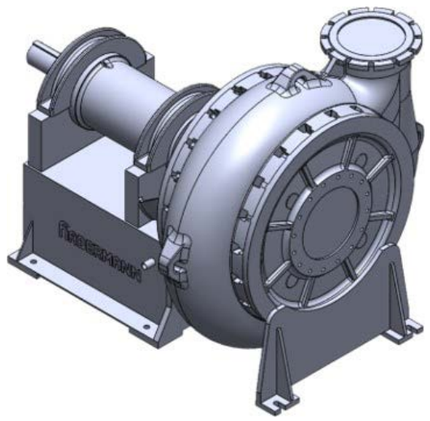
Bearings

The heavily dimensioned pump shaft is equipped with grease-lubricated bearings in a separate bearing housing. The bearing housing is supported by the bearing bracket. This design enables axial displacement of the entire bearing so that the gap at the suction nozzle can be precisely adjusted and readjusted if wear occurs. This type of design of the pump bearing in the bearing bracket makes it possible to replace a defective bearing - with a corresponding stock of spare parts - in the shortest possible time and thus prevent longer downtimes in production.



Wearing parts

Slurry pumps, e.g. in the sand and gravel industry, have sliding wear not only due to the very fine solids content but also due to the very high proportion of coarse particlesThis series is characterised by correspondingly strong wall thicknesses for impeller, housing and wear plates. Multi-bladed channel impellers with optimised passage cross sections are used as impellers. The impeller is mounted using a trapezoidal thread.



The wall thicknesses of the stressed parts such as the housing, wear plates and impeller are dimensioned accordingly.

We Pump Quality into Your Project.

Sludge treatment.

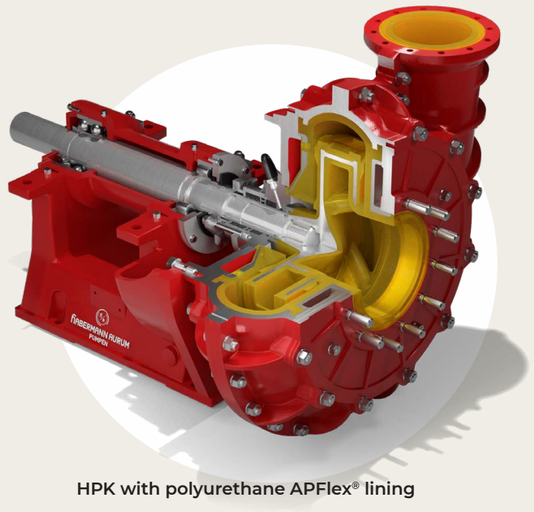
Pumps for separation and sludge treatment

HPK pump series

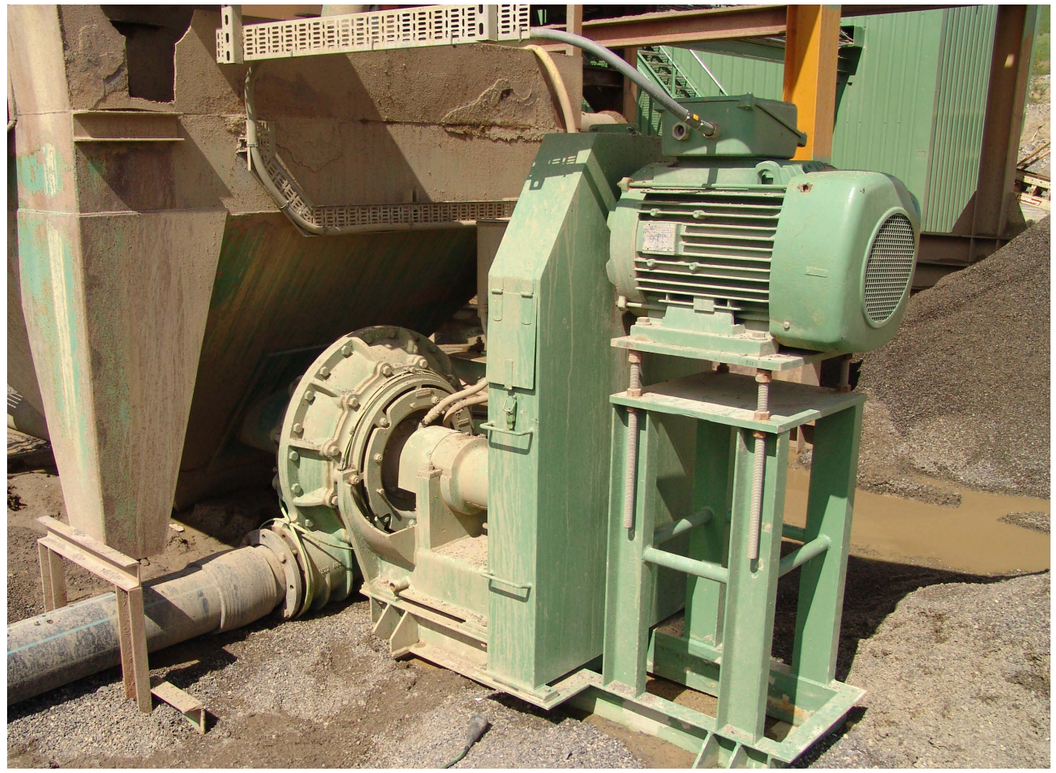
A high-performance separation plant is an important part of the system used for processing the bentonite slurry enriched with sand and solids. It ensures high pipe jacking performance on construction sites in the construction of traffic and supply tunnels, and in special civil engineering. The fine and coarse-grained soil components present in the pumping circuit place the highest demands on the wear resistance of the materials used.

HPK series pumps ensure uninterrupted system operation and a longer service life, because all pump components that come into contact with the medium are fabricated from hot-cast, highly wear-resistant special polyurethane APFlex® in various qualities. Depending on the grain size, HPK pumps can also be equipped with an impeller and suction-side wear plates made of wear-resistant heat-treatable steels. The pumps with discharge nozzle from DN 40 up to 500 are available for a wide range of applications.

All wearing parts that come into contact with the medium are made of elastic, non-metallic materials and are individually selected according to the requirements in terms of material quality.

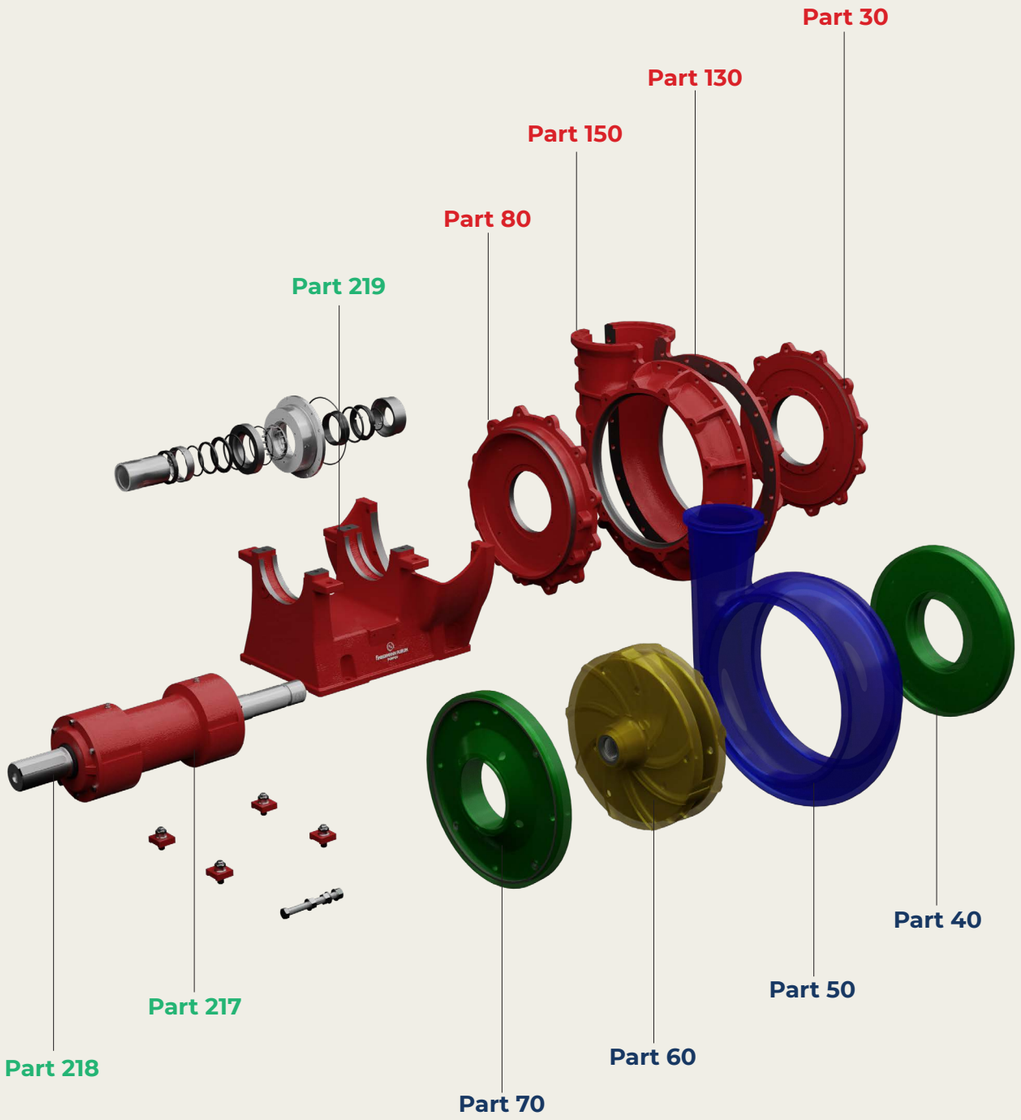


HPK with polyurethane APFlex® lining



Replaceable parts.

HPK pump series



Outer casing

Front casing cover	**Part 30**
Rear casing cover	**Part 80**
Front casing half	**Part 130**
Rear casing half	**Part 150**

Bearings

Pump bracket	**Part 219**
Bearing cartridge	**Part 217**
Shaft	**Part 218**

Wearing parts

Impeller closed	**Part 60**
Suction side wear plate	**Part 40**
Drive side wear plate	**Part 70**
Casing liner	**Part 50**

Suction and drive side wear plates

The replaceable wear plates have a metal core onto which our special polyurethane APFlex® is cast. The wear plates are screwed to the metal outer casing.

Casing liner

The radially centrally split outer casing is protected against wear and corrosion by the APFlex® casing liner. Depending on the operating pressure, the outer casing is made of spheroidal graphite iron as standard and cast steel for higher pressures. The pressure stages PN 10, PN 16 and PN 25 are possible.

Impeller

The impeller has a metal core onto which our special polyurethane APFlex® is cast. Closed or semi-open three or four-channel impellers are available. To relieve the pressure on the shaft seal and to reduce the backflow to the suction nozzle, both rear sides of the cover discs are fitted with relief blades.

The pumps are equipped with easily replaceable wear parts and a simple adjustment facility for the suction gap.

Apollon® submersible pumps.

Pumps for wastewater and residual water

Habermann Aurum Pumpen supplies submersible pumps, which further complement the extensive product portfolio. The new innovative range includes drainage, sewage, slurry and light drainage pumps. The extremely low-wear components - such as the high-chrome impeller treated with tried and tested ACrS technology - enable a reduction in operating costs and deliver long service lives, even when operating with highly abrasive media such as sand and gravel.

These pumps are used in general drainage, sewage treatment plants, construction, industry, sludge handling and numerous other applications.

Pump foot for a guide rail system for sewage pumps

Various types of Apollon® submersible pumps

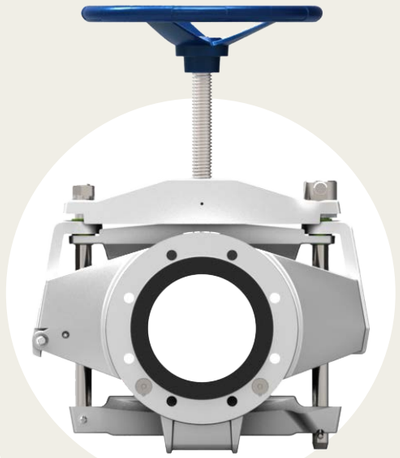
Our submersible pumps are designed for continuous operation, deliver excellent performance, facilitate easy maintenance, and have already proven their reliability and durability.

Valves for tunnel construction and mining.

Valves based on reliable technology

Habermann Aurum Pumpen offers a wide range of valves for highly abrasive media. Our butterfly valves and gate valves are specially developed for the harsh operating conditions that occur when transporting solids in tunnelling and special civil engineering.

Our gate valves can be operated with the following drives:
- Manual drives
- Pneumatic drives
- Electric and hydraulic drives
- And with additional accessories such as solenoid valves, electronic limit switches, positioners, etc.



Pinch valve for highly abrasive media

Passage channel as flexible hose

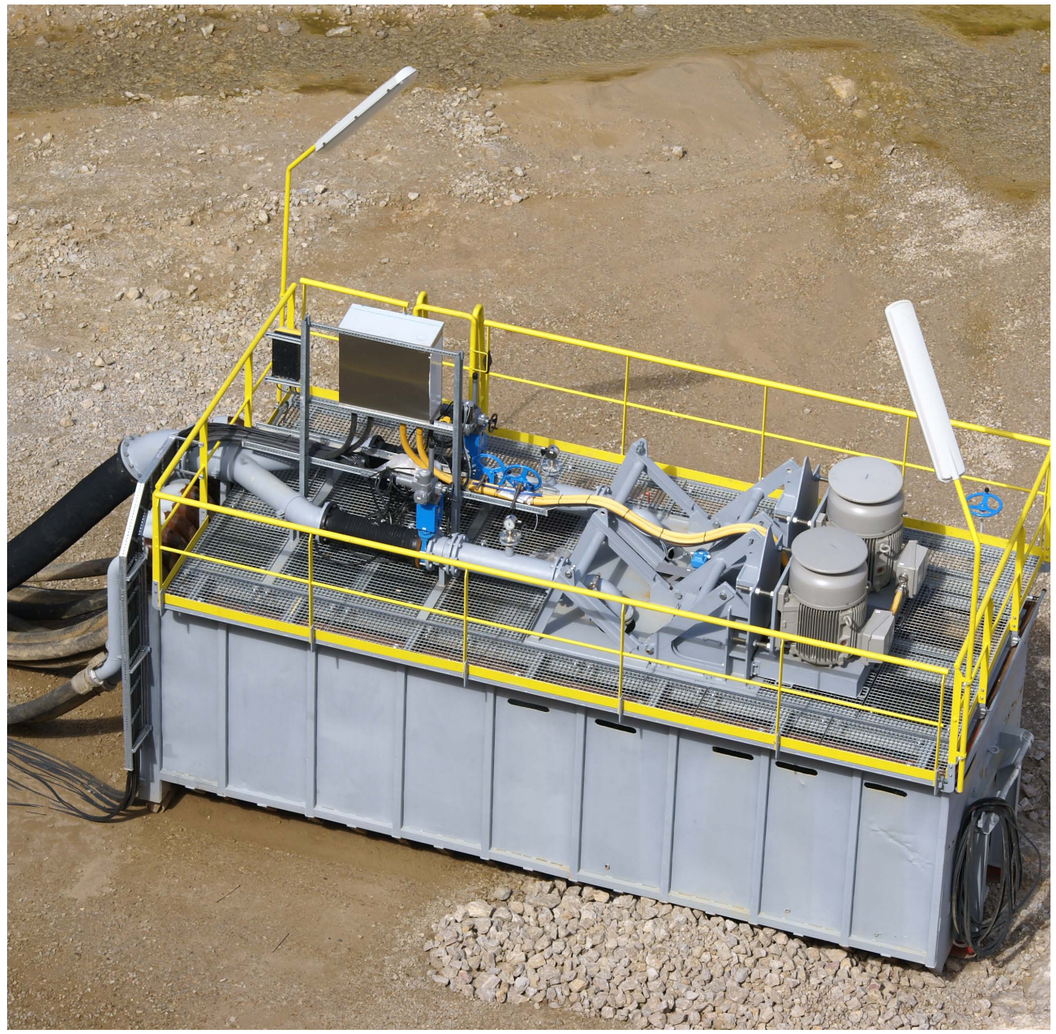
Dewatering solutions.

Pumps in a container

Vertical pumps integrated in a container

A special solution is the installation of a roll-off container with the inlet pipes, in which the pumped surface water is collected. Two large pumps manufactured to Habermann specifications are installed on the platform and are operated mutually redundantly, therefore facilitating trouble-free operation. This guarantees that construction projects will not be jeopardised - even if a pump fails or heavy precipitation occurs.
In projects involving dredging or drilling, the probability of encountering groundwater is high. To provide you with the best possible support for your construction project and to optimally protect you against flooding and uncertainties, Habermann Aurum Pumpen offers effective and customised special solutions, which are always formulated in close cooperation with our customers. As such, Habermann Aurum pumps offer an optimal dewatering solution that will secure your construction progress and keep the building ground dry.

KBKM 150/400 dredger pump



Practical example
As described above, a roll-off container with inlet pipes was installed at the customer's site, in which the pumped surface water was collected. This customised solution was designed because the quarry was still growing and there was no common pump sump, but rather different hollows and cavities containing water. This dewatering solution also offers the option of placing the complete structure on a floating pontoon in a second step and within a very short time - resulting in a floating pump station.

Dewatering solutions.

Floating pontoon

Dynamic NPW V300 installation on pontoon

A further special solution is the installation of a floating pump station, which offers significant advantages:

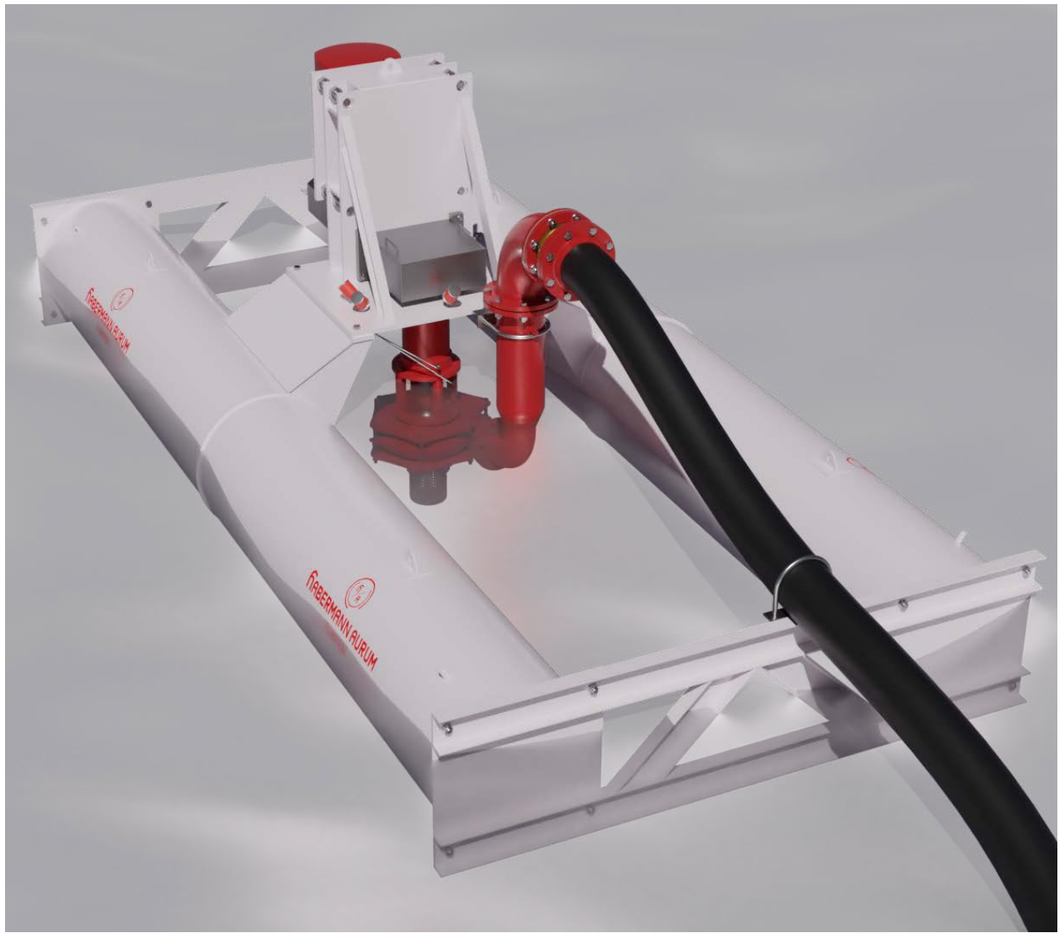
- The floating pump station is flood-proof because the float follows the fluctuation of the water level;
- Simple and flexible installation possible, because the floating pump station can be positioned on bodies of water anywhere and at any time;
- Can be used as an active backwash station to the conveying lake (wet conveying of sand), in the suction dredger area.

Areas of application

- Quarry dewatering
- Groundwater lowering
- Use in a settling basin
- Solid transport suction dredger
- Active dewatering

NPW V300 floating pontoon

Simple maintenance work
The vertical pumps are convenient to repair because they can be swivelled into the maintenance position.



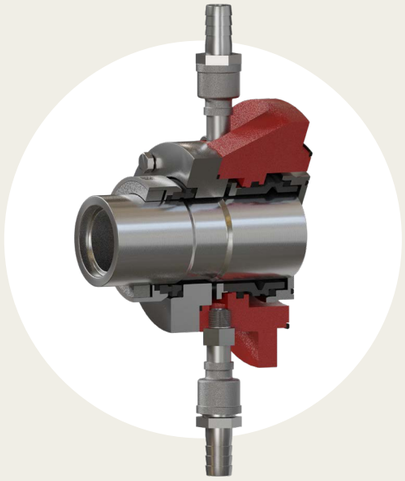
Both fixed and floating pump stations are equipped with a large rubber hose (see images), which first pumps to a fixed riser in a catch basin. From there, the purified water (after sedimentation of the suspended solids) is fed into lakes or rivers. All this takes place in accordance with strict environmental regulations.

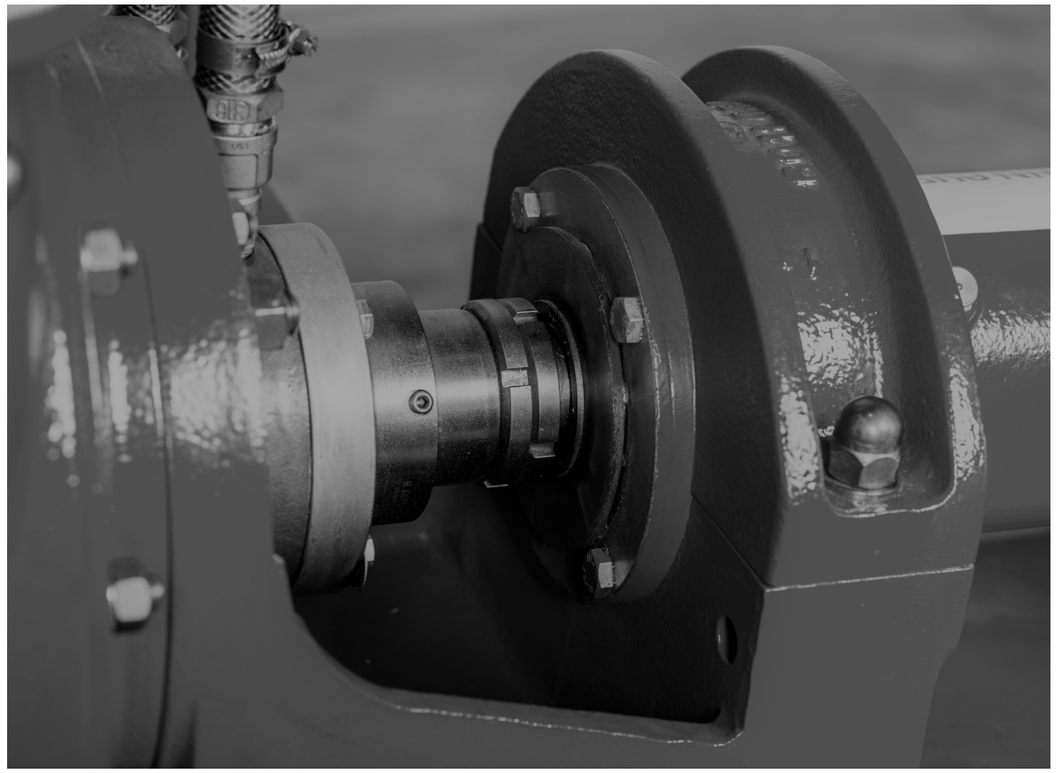
Shaft sealing with mechanical seal.

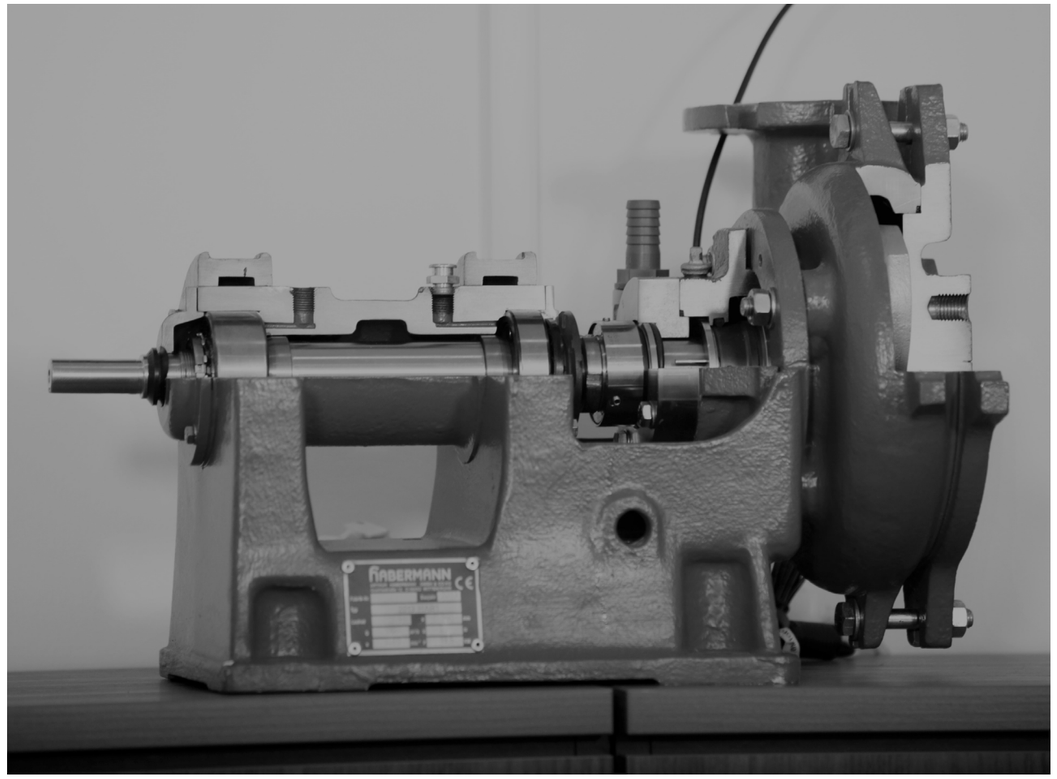
The mechanical seal as a shaft seal is determined by the pumped medium or the required delivery head. Abrasion and corrosion as well as the use of the cooling liquid determine the design of the seal. Depending on the design of the mechanical seal the cooling liquid can get into the medium.

Double-acting mechanical seal

Mechanical seals are available in various designs to handle diverse operating conditions. Due to our precisely machined assembly, the leakage from mechanical seal is extremely low. Our innovative design can withstand high pressures from 16 up to 25 bar. A complex pressurized sealing system is not required. The hydraulic and mechanical forces generated during operation create a tight and leak-free arrangement and prevent solid particles from entering the seal. The space between two seals is lubricated and cooled by means of cooling water. When the seal is flushed, the water entry pressure should not exceed 0.5 bar. With mechanical seals ranging from ø43 to ø100 in size, cooling water consumption is about 5-20 l/h.
As an alternative, thermosyphon system with unpressurized quench fluid may be used to flush the seals. As the fluid absorbs the heat from the seals, it is cooled and reused in a closed circuit. In addition, the quench fluid must be extremely clean (drinking water), as the seal is quite sensitive to the abrasion by solid particles. The feed thread on the protective shaft sleeve supports fluid's recirculation in the seal.

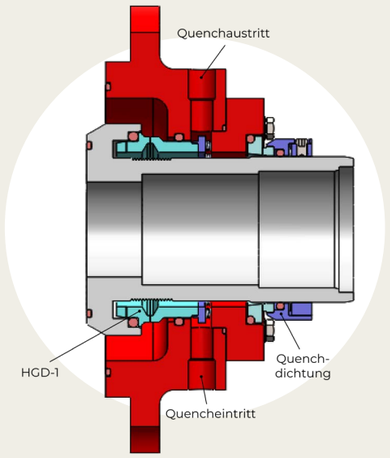




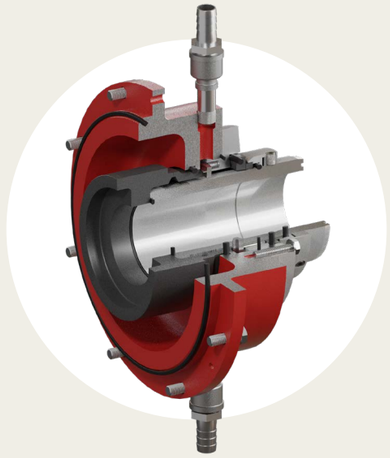


HGD-1 as cartridge version

The cartridge seal version is based on a proven HGD-1 design. It consists of an entirely pre-assembled and factory tested seal unit, which allows to avoid assembly errors. After installing it into the pump, the only thing left to do is to remove the assembly locks and the seal will be ready for operation. It is not necessary to realign the primary seal after a wear-related impeller readjustment. The self-adjusting design ensures the seal alignment to be compensated automatically. The HGD-1 cartridge version is available in both double and single mechanical seal types.



HGD-1



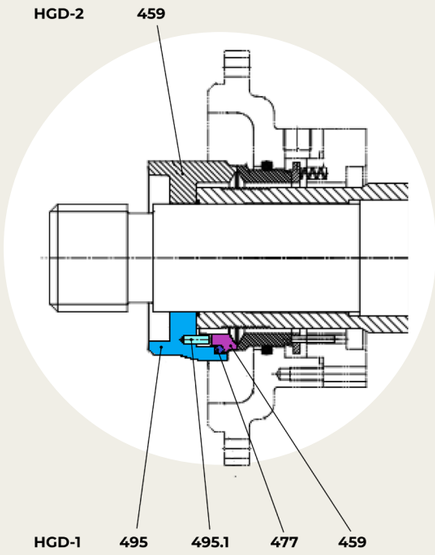
HGD-2

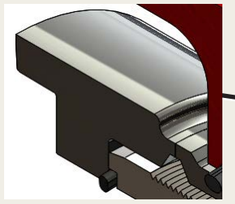
HGD-2 Mechanical seal

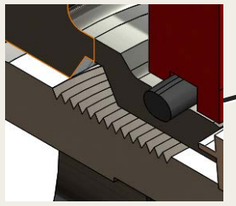
The HGD-2 is a further modified HGD-1 version and is the mechanical seal used for polyurethane lined impellers of the HPK series. Just like the mechanical seal HGD1, the double-acting mechanical seal type HGD-2/ QD is a shaft seal for which operating pressures of up to 16 or 25 bar does not present any problems. In HGD-1 type the clutch drive ring is integrated into the rotating seal ring, which was replaced as a single seal ring for the HGD-2 seal. In addition to the two cylinder pins, the round sealing ring and the clutch drive ring itself are no longer required.
In this way, the group suspension located in the quench chamber is not exposed to the pumped medium and the compact sliding ring enables relatively simple and quick installation in the event of a repair.
The other advantages, such as the elimination of a complex pressurized sealing system, direct cooling of the seal rings through the quench connection, and restricted entry of solid particles due to generated rotational forces, are identical to those of HGD-1 type.
The required cooling water consumption of approx. 5-20 l/h is also similar to the HGD-1. Alternatively, as with the HGD1, an unpressurised thermosiphon system can be used, whereby a feed thread on the shaft sleeve supports circulation in the quench circuit (cooling and lubrication circuit).

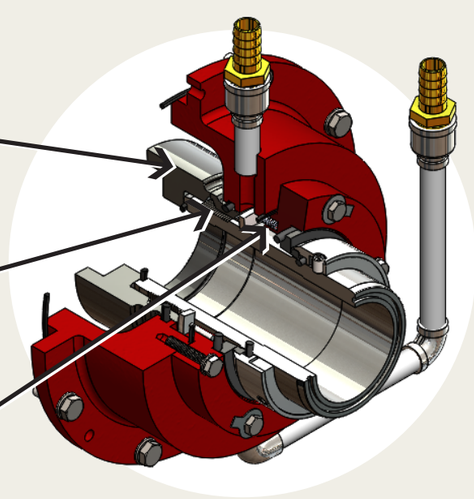
Comparison HGD-1 / HGD-2

HGD-2 type is just as reliable as HGD-1, but has a more compact design. In HGD-1 type the clutch drive ring (Item 495) is integrated into the rotating seal ring (Item 459), which was replaced by a single seal ring (Item 459) for HGD-2. As a result, springs (item 495.1), the O-ring (item 477) and the clutch drive ring (item 495) are no longer required for the overall assembly.



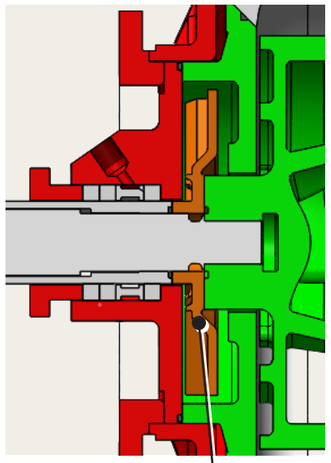






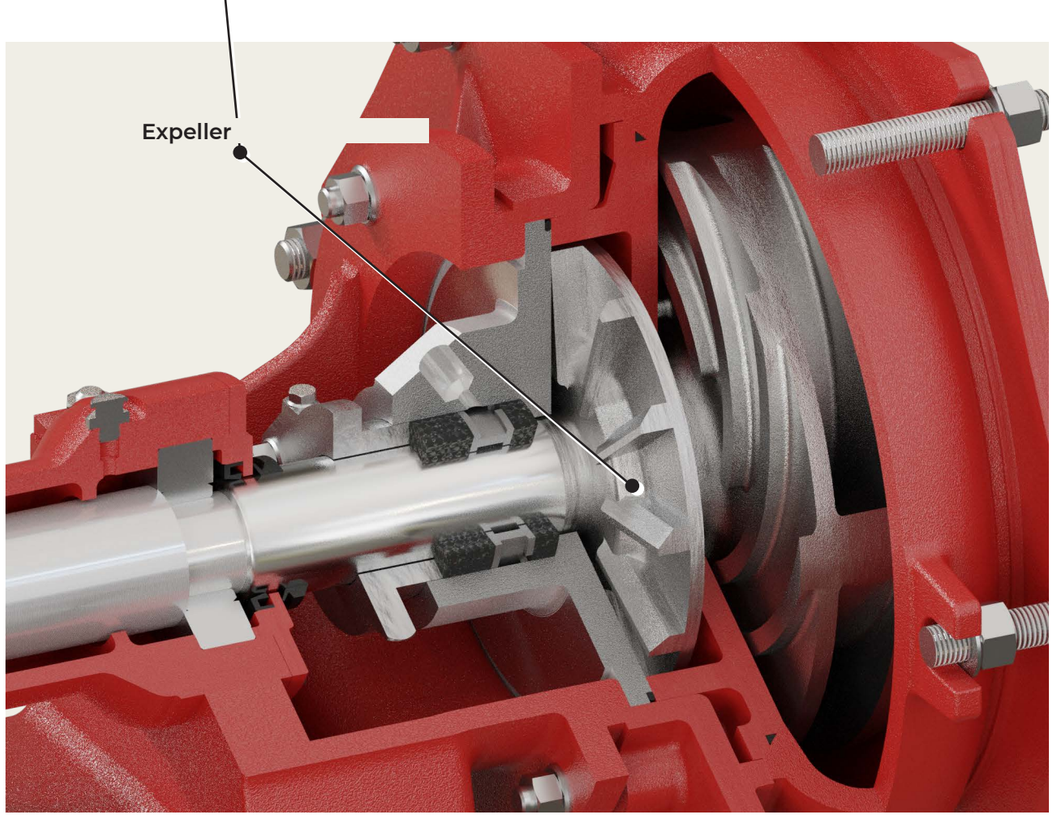
HGD-2 double mechanical seal with quench chamber.

Hydrodynamic sealing.



Expeller

Shaft sealing by means of expeller, also known as relief impeller, is available for most of our pump series. This sealing type is particularly suitable for fine-grained pulp. It can be used as an alternative to mechanical seals for extreme applications or if the supply of clean sealing water is not possible due to the installation conditions. The application limit is close to the boiling point of the pumped media. The gland packing serves as a stationary seal and the expeller - as a dynamic component. The most commonly used materials for the expeller are metal, special polyurethane APFlex® or a combination of these materials.



Cast materials.

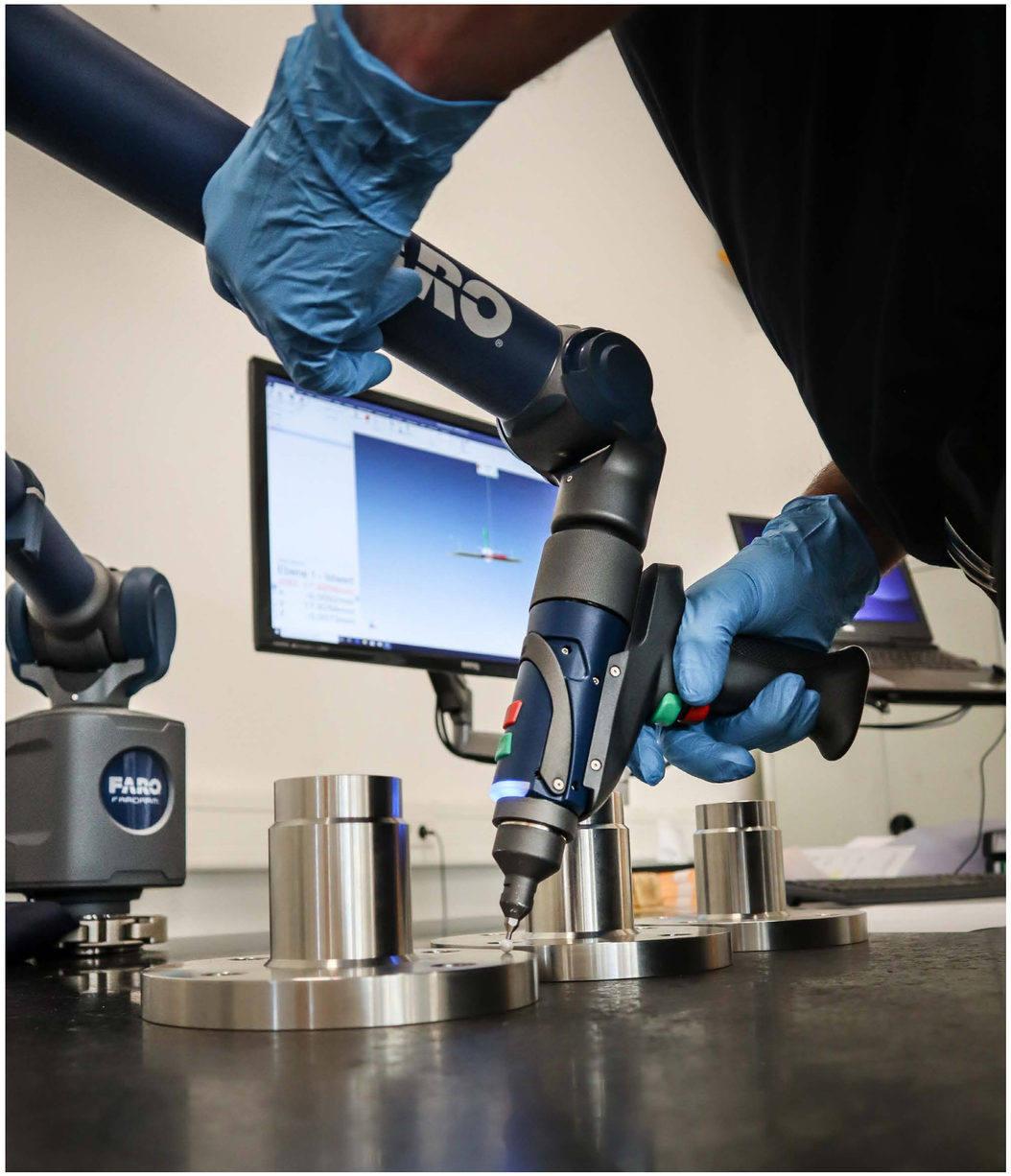
Highly wear-resistant cast materials from Habermann Aurum Pumpen are modified materials developed on the basis of our own experience. We have developed our wear and corrosion resistant alloys especially for pumps used in medium to heavy duty applications. Thanks to the special alloy and high degree of hardness, these materials significantly improve the mechanical properties of pump components. In addition to heat-treated steel and duplex steel, we offer in-house developed cast materials that are tailored to the respective application: HBN 440, HBN 450, HBN 480 Brinell hardness of up to 650 HB.

Polyurethane and rubber.

Innovative special Apflex® polyurethane

Elastic materials utilise the so-called "trampoline effect", which gives them major advantages in terms of wear behaviour compared to metallic cast materials. In the fine grain range, i.e. grain sizes of 0 - 5 mm (scattered grain, depending on size up to 10mm), the Apflex® elastic lining should be selected if the operating temperature permits this. This lining allows materials to be exposed to abrasive and corrosive media. Thanks to their elasticity, indentation strength and chemical resistance, the materials are far superior to any highly wear-resistant cast steel when it comes to fine-grained media. **This means that in most cases a multiple service life can be achieved.**

Quality	APFlex® 60-01	APFlex® 10-01	APFlex® 50-01	APG 2201	APG 2210
Shore hardness	A 75-80	A 88-90	A 88-90	65	55
Temperature	-30 to +75 °C	-30 to +75 °C	-30 to +95 °C	max. 130 °C	100-105 °C
pH	5-9	0-14	0-14	0-14	0-14
Special properties	Particularly abrasion resistant	Suitable for acids and alkalis	Suitable for acids and alkalis	Suitable for acids and alkalis	Suitable for acids and alkalis



Our service team with trained specialists will help you after purchase and commissioning to ensure that your pump always works reliably
aftersales@aurumpumpen.de
+49 234 893 570 0

Pump service.

Our professional team of experts is here to offer you complete optimization and repair services to ensure the safety and efficiency of your pumping system.

Our goal is to not only properly repair your pump, but to clarify why a possible failure could occur and ensure that all pump components are in fully operational condition.

Spare parts

With original spare parts from Habermann Aurum Pumpen, you get the highest quality and functionality when replacing individual components. Powered by our multi-decade experience and a vast network of partners, we can support you with suitable products and solutions globally.

Modernization

Our modernization services allow you to modify and improve Habermann Aurum pumps and systems that have been in operation for a number of years. Whether you wish to maximize your production capacity or optimize specific processes within an application, we will assist you every step of the way. Thereby you can ensure an optimal performance across your network and extend your pump's service life without having to invest in new systems. We will work with you to find the best possible solutions that are tailored to your needs.

Maintanance and repair services

- System analysis
- Inspection
- Execution of measurements
- Maintanance
- Pump commissioning and integration

We have the solution for you.

HABERMANN AURUM PUMPEN

PUMPS | VALVES | DREDGERS | ENGINEERING

WE LOOK FORWARD TO WORKING WITH YOU!

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